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TESIS

**TÍTULO DE TESIS: TIPOS Y APLICACIONES DEL EQUIPO DE CONSTRUCCIÓN
EN CARRETERAS: CASO DE ESTUDIO "PPS QUERÉTARO - IRAPUATO"**

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El presente trabajo da por terminado un ciclo importante en mi vida, por lo que considero necesario darle las gracias a todas aquellas personas que para bien o para mal ayudaron a que se diera esto que hoy es una realidad.

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TÍTULO: TIPOS Y APLICACIONES DEL EQUIPO DE CONSTRUCCIÓN EN CARRETERAS: CASO DE ESTUDIO “PPS QUERÉTARO - IRAPUATO”

OBJETIVO: MOSTRAR LOS DIFERENTES TIPOS DE EQUIPOS QUE SE EMPLEAN EN LA CONSTRUCCIÓN, REHABILITACIÓN Y MODERNIZACIÓN DE CARRETERAS.

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MOSTRAR LOS DIFERENTES TIPOS DE EQUIPOS QUE SE EMPLEAN EN LA CONSTRUCCIÓN, REHABILITACIÓN Y MODERNIZACIÓN DE CARRETERAS.

INTRODUCCIÓN

La construcción hoy en día se ha vuelto tan compleja debido al gran avance de la tecnología y de las nuevas necesidades que se deben cubrir en la actualidad ya que es necesario el desarrollo de técnicas modernas que permitan construir obras en tiempos reducidos así como tener un importante ahorro de tiempo y costo, además de que se debe tener especial cuidado en el respeto a el ambiente.

Afortunadamente para el constructor en la actualidad se cuenta con herramientas mecánicas que sin duda alguna han revolucionado la manera de llevar a cabo los más complicados proyectos inimaginables algunas décadas atrás sería inimaginable su construcción debido a lo complicado de estas o la costoso que estas serian en cuanto al tiempo de ejecución de los trabajos.

Hoy en día estas obras son una realidad gracias a que se cuenta con un sin número de maquinarias y equipos especiales para realizar todo tipo de actividades dentro del área de construcción.

Antiguamente era algo inimaginable construir grandes presas, carreteras o edificios con las condiciones que tenemos en la actualidad ya que hoy en día si es necesario puede instalarse una planta de concreto en el sitio de la obra o tal vez una asaltadora a la orilla de la carretera en construcción, se cuenta con la ayuda de grandes grúas que hacen de la construcción de edificios una tarea más sencilla, económica y rápida y qué decir del movimiento de tierras en la construcción de carreteras, y podríamos mencionar más casos pero los dejaremos para tratarlos más adelante y con un mayor detenimiento.

Este tipo de maquinarias en la construcción va desde maquinas muy simples como puede ser una revoladora de concreto hasta un complejo escudo de excavación para túneles.

En este escrito la clasificación que estudiaremos a detalle será la maquinaria de construcción utilizada en carreteras, poniendo un interés especial en la que se ocupa en la construcción de el PPS Carretera Querétaro – Irapuato.

De una manera general el equipo en carretera puede estar conformado de la siguiente manera:

CLASIFICACIÓN DE EQUIPO DE CONSTRUCCIÓN

- Equipo para pavimentación.
- Tractores y sus aditamentos opcionales.
- Equipo para carga.
- Motoescrepas.
- Motoconformadoras.
- Equipo para compactación.
- Equipos utilizados en plantas de trituración, cribado y lavado de agregados.
- Equipo auxiliar usado en obra.
- Equipo para transporte.
- Equipo para barrenación y sus accesorios

Tabla 1. Clasificación de equipo de construcción

Sin embargo el quipo de construcción que utilizaremos en la obra dependerá de otros factores que regirán que tipo de maquinaria utilizaremos un factor en común que será el tipo de proyecto a desarrollar.

Más adelante se definirán cada uno de los tipos de maquinaria existente así como sus principales características, rendimientos, costos, mantenimiento y todo lo relacionado a estas.

En términos generales tenemos que el equipo de construcción es un campo que deberá ser analizado a detalle para comprender sus características y condiciones de funcionamiento así como sus rendimientos para que el constructor pueda decidir por la mejor opción al momento de seleccionar un equipo en especial

Es por eso que este trabajo está encaminado a dar una orientación a todos aquellos que estén interesados en este tipo de maquinas desarrollando una análisis y estudio sobre las características de cada uno de los equipos definidos en la clasificación de la tabla.

1. ANTECEDENTES.

La comunicación vía terrestre, por medio de carreteras es un sistema de transporte tan amplio que para su estudio se puede clasificar ya sea por su aforo vehicular, administrativamente, por sus dimensiones, etc. Entre otras más del tipo técnico. En este primer tema de este trabajo haremos un análisis sobre los diferentes tipos de carreteras en México y en el mundo, la maquinaria usada en su construcción, la importancia de la utilización de esta en los procesos constructivos así como algunos métodos modernos en la construcción de carreteras.

1.1 DIFERENTES TIPOS DE CARRETERAS.



Fig. 1 Tipos de carreteras.

En la actualidad, las carreteras son la principal vía de transporte y comunicación, lo que las hace un campo de estudio complicado y extenso, motivo por el cual ha sido necesario que se realicen diferentes clasificaciones tomando en consideración ya sea aspectos constructivos, de servicio o técnicos para realizar un mejor estudio de estos sistemas de comunicación.

Pero para saber un poco más de este tema comencemos con definir lo que es una carretera. Según la definición general de diccionario la **carretera** es una vía de dominio público, proyectada y construida fundamentalmente para la circulación de vehículos automóviles. Una definición más técnica define a la carretera como la adaptación de una faja sobre la superficie terrestre que llene las condiciones de ancho, alineamiento y pendiente para permitir el rodamiento adecuado de los vehículos para los cuales ha sido acondicionado.

Las diferentes clasificaciones tienen un fin común, el de mostrar con claridad y entendimiento el significado de estas, y para esto tomaremos para nuestro estudio la clasificación aceptada por la Secretaría de Comunicaciones y Transportes que es la dependencia federal encargada de administrar todos los sistemas de comunicación en el país y que regula la construcción de carreteras con normas y reglamentos apropiados a las necesidades de la actualidad.

Pero antes haremos una mención de algunos otros métodos para la clasificación de carreteras.

I) Transibilidad:

- Pavimentado.
- Revestido.
- De terracería.



Fig. 2 Representación grafica de tipos de rodamiento.

II) Administrativamente:

- Federales: son aquellas cuyo costo, construcción, operación y mantenimiento a cargo de la federación y se encuentran a su cargo.

- Estatales: son las que su costo, construcción, operación y mantenimiento son por medio de un sistema de cooperación a razón de 50% aportados por el estado en que se construye y el otro 50% es aportado por la federación. Su conservación y mantenimiento se hace vía juntas locales de caminos y ahora sistema de caminos.
- Vecinales o rurales: Construcción por la federación, el estado y particulares las cuales son pagadas en un tercio del valor aportado por cada una de las partes antes mencionadas. Operación y mantenimiento a cargo del Estado vía sistema de caminos.
- De cuota: este tipo de carreteras quedan a cargo de la dependencia oficial descentralizada denominada Caminos y Puentes Federales de Ingresos y Servicios y Conexos y otras como las carreteras o autopistas concesionadas a la iniciativa privada por tiempo determinado, siendo la inversión recuperable a través de cuotas de paso.

III) Según índice de circulación (es la clasificación más usada):

- Tipo A: El TDPA (Tránsito Diario Promedio Anual) es mayor de 3000 vehículos por día.
- Tipo B: El TDPA es de 1500-3000 vehículos por día.
- Tipo C: El TDPA es de 500-1500 vehículos por día.
- Tipo D: El TDPA es de 100-500 vehículos por día.
- Tipo E: El TDPA es de hasta 100 vehículos por día. Y tiene una corona (ancho) de 4m.

IV) En cuanto a medidas del ancho sigue una clasificación similar:

- Tipo A: hasta 22m. (Cuatro carriles)
- Tipo B: 9m.
- Tipo C: 7m.
- Tipo D: 6m.
- Tipo E: 4m.

Sin embargo en el país la clasificación técnica oficial estipulada por la Secretaría de Comunicaciones y Transportes (S. C. T.) es en relación a la clasificación del inciso numero III con algunas modificaciones, esta clasificación permite distinguir en forma precisa la categoría física del camino ya que se basa en el volumen final de tránsito sobre la vialidad al termina del periodo económico del mismo que para fines prácticos se maneja de 20 años y las especificaciones geométricas aplicadas. De este modo la clasificación de carreteras en México autorizado y regulado por la Secretaría de Comunicaciones y Transportes es de la manera siguiente:

A Tipo especial.

Para Transito Promedio Diario anual superior a 3000 vehículo, equivalente a un tránsito horario máximo anual de 360 vehículos o mas (12 % de T.P.D.) pudiendo tener corona de dos o de cuatro carriles en un solo cuerpo, designándoles A2 o A4, respectivamente, o empleando cuatro carriles en dos cuerpos diferentes designándoseles como A4, S.

TIPO A.

Para un tránsito promedio diario de 1500 a 3000 equivalente a un tránsito horario máximo anual de 180 a 360 vehículos (12% del T.P.D.).

TIPO B.

Para un tránsito promedio diario anual de 500 a 1500 vehículos, equivalente a un tránsito horario máximo anual de 60 a 180 vehículos (12% de T.P.D.).

TIPO C.

Para un tránsito promedio diario anual de 50 a 500 vehículos, equivalente a un tránsito horario máximo anual de 6 a 60 vehículos (12% de T.P.D.).

En la clasificación técnica anterior, que ha sufrido algunas modificaciones desde su implantación, se ha considerado un 50% de vehículos pesados igual a 3 toneladas por eje. El número de vehículos es total en ambas direcciones y sin considerar ninguna transformación de vehículos comerciales a vehículos ligeros.

Sin embargo en el mundo existen algunas carreteras vanguardistas que por su diseño y construcción están muy por encima de las carreteras mexicanas como puede ser la súper carretera en Alemania donde por su geometría y estructura se puede transitar a velocidades muy altas.



Fig. 3

carretera federal.

Caseta de cobro en

1.2. LA IMPORTANCIA DE LA MAQUINARIA EN EL PROCESO CONSTRUCTIVO DE UNA CARRETERA.

Hoy en día, es prácticamente imposible la construcción de carreteras sin la ayuda de las herramientas que nos proporciona la tecnología debido a las necesidades que tenemos como sociedad de tener mejor infraestructura y que además debe ser construida en un tiempo determinado, siempre cuidando la calidad y el tiempo de construcción, por lo cual se ha tenido la necesidad de crear herramientas que permita cumplir las dichas necesidades, gracias al desarrollo de la tecnología que ha provisto a los constructores de equipo y maquinaria para la construcción de carreteras se ha podido cubrir las expectativas modernas en materia de construcción de carreteras.

En épocas pasadas bastaba con usar solo pequeños caminos de terracerías o veredas que eran construidos con métodos poco prácticos en la actualidad y que sin embargo en su época bastaba con eso para satisfacer las necesidades más elementales.

Hoy en día se busca construir carreteras con mayor vida útil pero sobre todo que sean construidas con un método eficiente y que cumplan a la perfección las expectativas de su diseño, así como el menor tiempo de ejecución.

Debido a las necesidades de transportación en nuestra época las carreteras necesitan de métodos sofisticados para su construcción, es por eso que se ha tenido que valerse de la maquinaria existente para lograr los estándares mínimos necesarios para las carreteras.

Sin embargo el que hoy existan todo tipo de herramientas para la construcción en carreteras, es necesario hacer análisis detallados sobre su funcionalidad, rendimiento, y demás factores que pueden influir en la construcción del proyecto que estemos realizando.



Fig. 4 Camino rural.

Debido a esta es necesario hacer análisis de costos y rendimientos de las maquinarias y valorar que tanto nos son de utilidad, pero sobre todo que beneficio tendremos de determinado equipo ya que no podemos utilizar una maquina que es para arrastre en una tarea que sería de empuje a la hora de nivelar la zona de trabajo.

La maquinaria además de su importancia en el proceso constructivo también juega un papel importante en el costo total de la obra, por lo que el contratista debe realizar de la manera más precisa el cálculo en los costos y rendimientos ya que una mala elección de determinado equipo generaría costos superiores a los programados o peor aun el retraso de las actividades.

La participación del costo total de maquinaria en el presupuesto de una obra en la actualidad oscila entre el 30 y el 40 por ciento de una obra de ahí su importancia en el proceso constructivo.



2 PARTES Y MECANISMOS PRINCIPALES DEL EQUIPO DE CONSTRUCCIÓN UTILIZADO EN CARRETERAS.



Fig. 6 Maquinaria para carretera.

La definición de maquina proviene del latín *machīna* que significa conjunto de piezas o elementos móviles y fijos, cuyo funcionamiento posibilita aprovechar, dirigir, regular o transformar energía o realizar un trabajo. Por lo tanto el termino maquinaria también proviene del término latín *machinariŭs* y se define como al conjunto de maquinas que se aplican para un mismo fin y al mecanismo que da movimiento al dispositivo

Maquinaria se ha vuelto un término complejo ya que no solo comprende a las maquinas en si sino también a las piezas y demás elementos que formen parte de esa ejecución mayor, es decir, que la combinación de piezas, maquinas, accesorios, novedades técnicas, etc., todas en conjunto dan como resultado la maquinaria.

Si sabemos que una maquinaria es el conjunto de uno o más elementos que conforman un todo es necesario saber las funciones y las características de esos elementos principales. Pero debido al enorme número de maquinaria utilizado en la construcción de carreteras haremos primero un análisis de la maquina en general y posteriormente lo haremos para los equipos más comunes en la carretera.

MOTOR

Es de importancia mencionar que el motor también es una máquina que tiene como función transformar la energía original (electica, química, potencial, cinética. Es por esto que el motor es tan vital en la maquinaria como lo es el corazón en el hombre ya

que sin este sencillamente no funcionaria. Al motor lo definiremos primero de una manera general como una máquina capaz de transformar la energía almacenada en combustibles, baterías u otras fuentes, en energía mecánica para realizar un trabajo determinado.

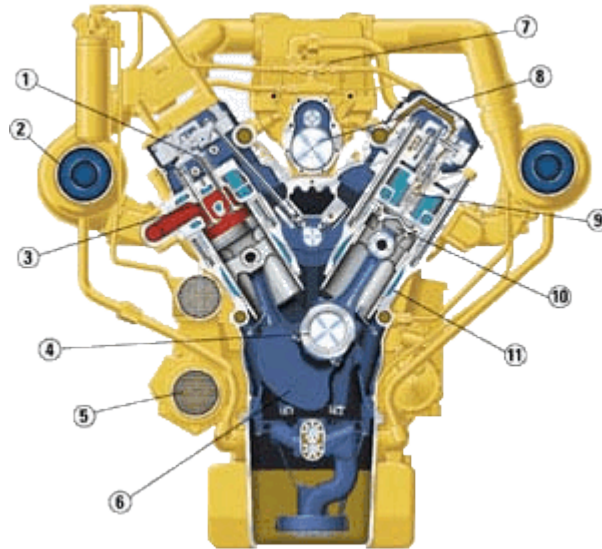


Fig. 7 Motor de camión.

Sin embargo no solo hay un tipo de motor por lo que se ha tenido la necesidad de clasificarlo, sin embargo debido a lo complejo que son estas maquinas existe una gran variedad de maneras de clasificarlo, pero una de las clasificaciones más comunes es de la manera siguiente:

Motores térmicos: son aquellos en el que el trabajo se obtiene por medio de la energía térmica y dentro de estos existe una sub clasificación en motores de combustión interna y en motores de combustión externa.

Motores de combustión interna: son motores térmicos en los cuales se produce una combustión del fluido motor, transformando su energía química en energía térmica, a partir de la cual se obtiene energía mecánica. El fluido motor antes de iniciar la combustión es una mezcla de un comburente como puede ser el aire y un combustible, como los derivados del petróleo o del gas natural o biocombustibles.

Motores de combustión externa: son motores térmicos en los cuales se produce una combustión en un fluido distinto al fluido motor. El fluido motor alcanza un estado térmico de mayor energía mediante la transmisión de energía a través de una pared.

Motores eléctricos: son aquellos cuando el trabajo se obtiene a partir de una corriente eléctrica.

Teniendo esta clasificación general de los motores, centraremos nuestro estudio en los motores de combustión interna, que por las características de operación, facilidad de instalación, adaptabilidad, respuesta rápida a demandas ha sido utilizado para proporcionar la energía que requiere la maquinaria en la construcción.

El ciclo de este tipo de motores se efectúa en cuatro tiempos, o cuatro carreras de émbolos, los cuales se definen a continuación.

Ciclo de un Motor de Combustión Interna

1er tiempo: carrera de admisión. Se abre la válvula de admisión, el pistón baja y el cilindro se llena de aire mezclado con combustible.

2do tiempo: carrera de compresión. Se cierra la válvula de admisión, el pistón sube y comprime la mezcla.

3er tiempo: carrera de expansión. Se enciende la mezcla comprimida y el calor generado por la combustión expande los gases que ejercen presión sobre el pistón.

4to tiempo: carrera de escape. Se abre la válvula de escape, el pistón se desplaza hacia el punto muerto superior, expulsando los gases quemados.

Sobre la orilla del eje de un motor de combustión en operación actúa una fuerza producto de la explosión en la cámara de combustión y que se transmite por la biela y esto se conoce como par motor.

Todos las maquinas de carriles están equipados con un convertidor de par que proporciona la multiplicación del par y la capacidad de adaptarse a la carga automáticamente con el trabajo. El convertidor consta de un impulsor conectado al volante del motor, una turbina conectada a un eje de salida y un estator y, hace las veces de un acoplamiento que transfiere y multiplica el par motor a los mandos finales. El convertidor sirve también para amortiguar los componentes del tren de fuerza cuando se cambia de marcha bajo carga y, el enfriador del aceite controla la temperatura del aceite del convertidor del par con el fin de lograr una vida útil más larga. El divisor de par de salida trabaja con el convertidor de par para lograr eficiencia máxima, rápida respuesta de la máquina y rendimiento sin calarse. El divisor de par divide la potencia de salida del volante de forma tal que le 70% pasa al convertidor y el 30% directamente a la transmisión. Los motores diesel proporcionan potencia, alta reserva de par, fiabilidad y rendimiento asegurados.

Las cámaras de combustión, dicho sistema libre de regulado o ajustes ahorra tiempo y el consumo económico de combustible ahorra dinero. Los Inyectores unitarios electrónicos hidráulicos en nuevos modelos e tractores optimizan el rendimiento del motor al aumentar la eficiencia del combustible, reducir el humo, mejorar el arranque en frío y aumentar las capacidades de diagnóstico.

Los Inyectores unitarios electrónicos (EUI) en un tractor de gran tamaño hacen que el Módulo de Control Electrónico (ECM) funcione casi como un regulador mecánico, pero sin piezas móviles. El ECM envía señales a los inyectores para regular el suministro de combustible y controlar así la velocidad y potencia del motor. La inyección electrónica proporciona las siguientes ventajas: reduce el humo de escape, compensa automáticamente por la altitud y protege contra arranques en frío.

La cámara de pre combustión es una pequeña cámara conectada por un pasaje abierto a la cámara principal de combustión.

En los motores de combustión interna, la potencia desarrollada esta proporcionada por la combustión del carburante en los cilindros. A alturas elevadas a causa de la disminución de la densidad del aire, el volumen de aire aspirado no contiene ya tanto oxígeno debido a lo cual la combustión utiliza únicamente una cantidad reducida de combustible. En la práctica, se considera que la altura sobre el nivel del mar afecta la potencia útil de los motores arriba de los 1,500 m. sobre el nivel el mar del orden de 1% por cada 100 m. adicionales de altura.

TRANSMISIÓN

La trasmisión es parte componente del tren de fuerza, es como en cualquier máquina la encargada de situar el par motor en las ruedas motrices. Este elemento varía dependiendo del equipo y funciones a realizar, algunos de los más representativos son el los tractores y motoconformadoras.

Existen transmisiones de propulsión directa y las llamadas automáticas, algunos tipos de tractor pueden venir de fábrica con cualquiera de los dos tipos, pero en general los tractores grandes generalmente, solo se fabrican con transmisión automática. La propulsión directa puede tener 5 ó 6 velocidades en avance y 4 de retroceso. Los engranajes son helicoidales y poseen el embrague en aceite.

Las transmisiones planetarias se arman alrededor de un eje central con juegos de engranajes apiñados de un extremo a otro.

En la tabla siguiente se esquematiza los tres tipos de transmisiones que montan las motoconformadoras actuales:

Directa		Hidráulica		Hidrostática	
Embrague		Caja de cambios	Convertidor de par	Servo transmisión	
Seco	En baño de aceite	De piñones desplazables	De toma constante	De contra eje	Planetaria

Tabla 2. Tipos de transmisión.

La transmisión directa consta de dos partes o elementos principales: el embrague y la caja de cambios. El embrague a su vez puede ser de dos tipos: seco o en baño de aceite; el primero suele ser mono-disco y el de baño de aceite suele ser más comúnmente de doble o triple disco. A su vez, según el accionamiento, pueden ser puramente mecánicos o bien mecánicos con ayuda hidráulica. Para facilitar el paso de marchas dentro de la caja de cambios, algunos modelos incorporan un freno de embrague. Generalizando se puede considerar que los modelos con embrague tipo seco suelen ser los de potencias menores a 80 ó 90 hp, en tanto que las unidades con potencias entre las citadas y 125 hp, suelen incorporar el embrague en baño de aceite. Por otra parte, y en un aspecto puramente técnico, la transmisión directa tiene un mejor rendimiento que la hidráulica.

La transmisión hidráulica se compone de la casi totalidad de los casos de dos elementos muy importantes: el convertidor o divisor de par y la caja hidráulica de cambios, llamada también servo-transmisión. El primer elemento puede ser de una, dos e incluso triple fase. El segundo elemento se puede encontrar en dos versiones; del tipo contra eje o del planetario. Volviendo a citar la norma más común, hay que decir que éste tipo de transmisión hidráulica va montado en las unidades de más de 125 hp, que han sido proyectadas para hacer frente a trabajos duros y que necesitan de la protección y multiplicación de par que le ofrece el convertidor y de la comodidad y cortedad de tiempos de maniobra y suavidad de la servo-transmisión.

La transmisión hidrostática es técnicamente el mayor avance actual en este tipo de elementos. No necesita embrague, ni convertidor ni divisor de par, ni servo-transmisión, el aceite es enviado por medio de la bomba correspondiente, en mayor o menor cantidad, a los motores hidráulicos que facilitan tracción a las ruedas motrices.

BASTIDOR

Es la estructura rígida que soporta el motor y el mecanismo, garantizando el enlace entre todos los elementos.

DIRECCIÓN

El sistema más generalizado es el de dirección mecánica asistida hidráulicamente. No obstante existen otros tipos de dirección; así hay unidades que instalan direcciones mecánicas e hidráulicas completamente independientes y otras que montan dirección hidrostática, tipo por ejemplo Orbitrol, que llega a permitir la obtención de dos velocidades de giro, una rápida y otra lenta.

EJE

Un eje es un **elemento constructivo** destinado a guiar el movimiento de **movimiento de rotación** a una **pieza** o de un conjunto de piezas, como una **rueda** o un **engrane**. Un eje se aloja por un diámetro exterior al diámetro interior de un agujero, como el de **cojinete** o un **cubo**, con el cual tiene un determinado tipo de **ajuste**. En algunos casos el eje es fijo, no gira, y un sistema de **rodamientos** o de **bujes** inserto en el centro de la pieza permiten que esta gire a alrededor del eje. En otros casos, la rueda gira solidariamente al eje y sistema de guiado se encuentra en la superficie que soporta el eje.

Los ejes son componentes del mecanismo de un **vehículo**. Los ejes mantienen la posición relativa de las ruedas entre sí y estas respecto al chasis del vehículo. En la mayoría de los vehículos las ruedas son la única parte que toca el suelo y los ejes deben soportar el peso del vehículo así como cualquier carga adicional que este transporte, junto con otros esfuerzos como las fuerzas de aceleración y frenado. Además del objetivo de componente estructural, los ejes deben cumplir con una o más de las siguientes funciones dependiendo del diseño del vehículo:

- **Transmisión:** uno o más ejes deben formar parte del sistema de transmisión. Un sistema mecánico ejerce una fuerza descentrada sobre el eje que, da lugar a un momento de fuerzas sobre el eje que es transferido hacia las ruedas para la aceleración del vehículo.
- **Frenado:** para disminuir la velocidad de un vehículo se aplica una fuerza descentrada de forma que, se forma un momento de fuerzas en sentido contrario a la rotación de la rueda. Tanto los **frenos de disco** como los **frenos de tambor**, ejercen esta fuerza descentrada. Además puede aplicarse el **freno motor** a través de la transmisión, que tiene un efecto más significativo en vehículos pesados y con relativamente poca deceleración máxima.
- **Guía:** el eje de una rueda debe además guiar la rueda para que no se desplace axialmente, así como que no gire involuntariamente respecto a un eje perpendicular al eje de giro. El sistema de dirección controla el ángulo de guiado de las ruedas respecto al chasis, en la mayoría de los casos solo las del el eje delantero.
- Un eje rígido es una barra rígida que une una rueda de un lado con otra rueda del otro lado. Este elemento puede ser o no concéntrico con el eje de giro de las ruedas. Este tipo de diseño es más simple que el de eje independiente y proporciona una mayor **rigidez** y resistencia al guiado de las ruedas, pero normalmente proporciona menos confort y maniobrabilidad al circular por baches a alta velocidad. Los ejes rígidos son utilizados trenes y en los ejes traseros de camiones y vehículos todo

terreno en los ejes independientes o de **suspensión independiente**, cada rueda está unida a un eje por separado.



Fig. 8 Camión de carga.

Un eje libre es aquel que no forma parte del sistema de transmisión y gira libre. El eje trasero en un automóvil con tracción delantera se puede considerar un eje libre. Los camiones y remolques utilizan tracción trasera debido a su **reparto de cargas**, a las ventajas del eje rígido para estos vehículos, lo que permite el uso de ruedas libres delanteras.

Algunos camiones y remolques tienen un eje portador, que es un eje libre en tándem que puede subirse o bajarse con mecanismos neumáticos para que soporte o no parte del peso del vehículo. El eje se puede bajar para incrementar la capacidad de carga o para distribuir el peso sobre más ruedas, por ejemplo para cruzar un puente con restricciones de peso por eje.

SISTEMA DE RODAMIENTO

El rendimiento de cualquier vehículo de ruedas depende de la tracción entre los neumáticos y el suelo, El esfuerzo de arrastre es, matemáticamente, el producto del peso sobre las ruedas motrices y el coeficiente de tracción entre los neumáticos y el terreno. Dicho coeficiente es el resultado de la resistencia de fricción del terreno y también del agarre del dibujo del neumático. Por esta razón es tan importante seguir la recomendación del fabricante, en cuanto al dibujo a utilizar (sin olvidar las correspondientes a presiones de inflado). Neumáticos con dibujo inadecuado o con dibujo apropiado, pero mal montados, reducen la fuerza de arrastre, con la consiguiente pérdida de rendimiento.

Otro tipo de desplazamiento lo conforman los sistemas de orugas o carriles. El sistema de tránsito consta de cadenas formadas por pernos y eslabones, a los cuales se atornillan las zapatas de apoyo. Estas cadenas se deslizan sobre rodillos conocidos como "roles". En el extremo posterior de la cadena se encuentra la cadena que es un engrane propulsor que transmite la fuerza tractiva. Sus ventajas son que proporcionan mayor tracción y son utilizados para realizar trabajos en pendientes o en terrenos hostiles.



Fig. 9 Neumático y Oruga.

FRENOS

Un freno es un dispositivo utilizado para detener o disminuir el **movimiento** de algún cuerpo, generalmente, un **eje**, **árbol** o **tambor**. Los frenos son transformadores de **energía**, por lo cual pueden ser entendidos como una **máquina per se**, ya que transforman la **energía cinética** de un cuerpo en **calor** o **trabajo** y en este sentido pueden visualizarse como “extractores” de energía. A pesar de que los frenos son también máquinas, generalmente se les encuentra en la literatura del diseño como un elemento de máquina y en literaturas de **teoría de control** pueden encontrarse como actuadores.

FRENOS DE FRICCIÓN:

Los frenos de fricción están diseñados para actuar mediante fuerzas de **fricción**, siendo este el medio por el cual se transforma en calor la energía cinética del cuerpo a desacelerar. Siempre constan de un cuerpo fijo sobre el cual se presiona un cuerpo a desacelerar. Son muy utilizados en los vehículos.

- **Frenos de cinta** o de banda. Utilizan una banda flexible, las mordazas o zapatas (suelen ser de amianto) se aplican para ejercer tensión sobre un cilindro o *tambor giratorio* que se encuentra solidario al eje que se pretenda controlar. La banda al ejercer presión, ejerce la fricción con la cual se disipa en calor la energía cinética del cuerpo a regular.
- **Freno de disco**
- **Freno de tambor**
- **Freno de llanta**. Utilizan como cuerpo móvil la llanta de una rueda. Son muy utilizados en bicicletas y existen varios tipos.

Otros tipos de tipos de frenos

- Según el tipo de accionamiento
- **Freno neumático**
- **Frenos mecánicos**
- **Frenos hidráulicos**
- **Freno de mano**

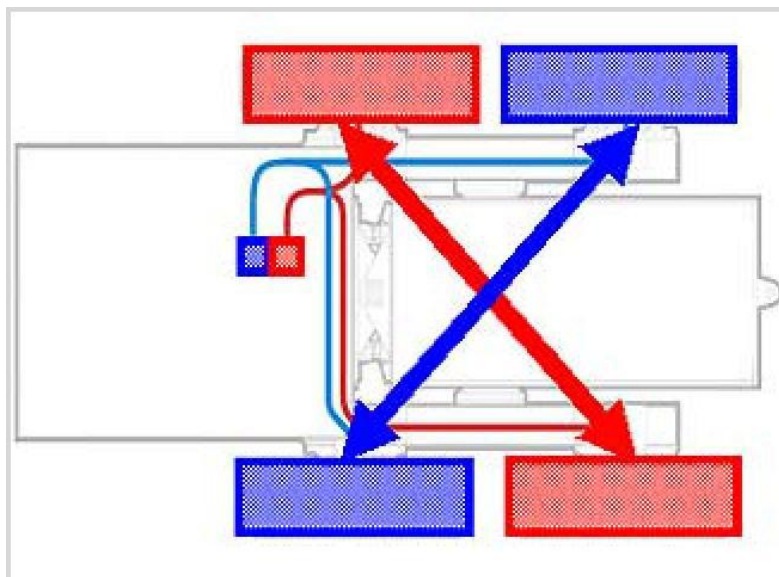


Fig. 10 Sistema de frenos de una motoconformadora.

A groso modo esta sería una clasificación muy general de las partes que conforman la maquinaria. Sin embargo es necesario saber cuáles son las partes y mecanismos principales que forman y hacen posible la existencia de la maquinaria en la construcción de una carretera. Para lo cual será necesario identificar la maquinaria más común en la construcción de carreteras.

3 TIPOS Y APLICACIONES DEL EQUIPO UTILIZADO EN LA CONSTRUCCIÓN DE CARRETERAS.

3.1 EQUIPO PARA PAVIMENTACIÓN.

En la actualidad existen dos tipos de acabados en las carreteras, uno puede ser con concreto hidráulico y el otro es con mezcla asfáltica. En el segundo tipo el elemento primordial para tener una carretera es necesario precisamente este, el asfalto, un asfalto es un material bituminoso sólido o semisólido, con propiedades adherentes, que se licua por calentamiento y en el cual los constituyentes predominantes son betunes (o bitúmenes) que existen en forma sólida o semisólida en la naturaleza, o que es producido por la destilación del petróleo crudo. Este proceso puede ocurrir naturalmente, dando por resultado los lagos de asfalto.



Fig. 11. Tipos de superficie de rodamientos en carreteras.

Sin embargo en la actualidad lo mejor para la construcción de carreteras es producirlo in situ por así decirlo, ya que se produce en pequeñas plantas portátiles muy cerca del lugar a colocar.

Este tema puede ser muy amplio si se considera desde el equipo necesario para la elaboración o fabricación del asfalto. Si bien es necesario tener conocimiento de este tipo de equipo nos basaremos principalmente en el equipo utilizado en el tendido de asfalto ya que hondar mas en tema sobrepasaría los fines de esta obra. Sin embargo haremos una breve mención del equipo que pudiera utilizarse en la elaboración de todo tipo de asfaltos.

PLANTAS DE ASFALTO

El proceso de fabricación del asfalto, requiere una planta altamente controlada. Dichas plantas tienen muchos componentes que requieren cuidados en sus funciones específicas. Estas funciones consisten en manejar los agregados calificados, calentarlos y quitar la humedad en ellos, cuentan con un sistema con el cual son capaces de clasificar de nuevo los agregados ya calientes para proporcionar, junto con el material bituminoso (previamente calentado), mezcla asfáltica, mientras que al mismo tiempo satisface normas ambientales importantes, particularmente en el área de las emisiones del aire.

El asfalto de tipo caliente-mezclado se produce en una planta central y se transporta al sitio de pavimentación en camiones.

Algunos tipos de planta son los siguientes:

Las plantas tipo bacha han sido aceptadas tradicionalmente como las más precisas por cuanto el secado se hace separadamente y la dosificación se hace íntegramente por peso.



Fig. 12 Equipo de planta de asfalto.

Plantas de Bachas: Las plantas de bachas datan del principio de la industria del asfalto, proporcionan y mezclan el asfalto con los agregados en hornos individuales. Sus componentes primarios en el orden del flujo material son:

- Sistema de alimentación en frío (tolvas).
- Tambores de secado.
- Elevador caliente.
- Cribas calientes.
- Compartimientos calientes.
- Mezclador de Asfalto.
- Dirección del sistema.
- Colectores de polvo.
- Silo de almacenamiento.

Son las más económicas, fáciles de trasladar, montar y mantener y su operación es muy sencilla.

Plantas de Mezcla Asfáltica Continua: La producción se puede dividir en tres secciones:

- Dosificación de áridos.
- Secador y colector de polvos
- Dosificación y mezclado de materiales calientes.

Los componentes primarios de una planta de la mezcla del tambor o mezcladora continua son:

- Sistema frío de la alimentación
- Sistema de procesamiento del asfalto
- Elevadores del tambor que se seca y que se mezcla
- Colectores de polvo
- Silo del almacenaje



Fig. 13 Planta de asfalto.

Ahora el equipo que realmente se utiliza en la carretera consta de una petrolizadora, extendedora de asfalto, camiones de carga y si se tuviera que realizar un mejoramiento podría ser una fresadora, una barredora y una rompedora. Comenzaremos a describir las funciones y características de algunos equipos.

Antes de comenzar a tender el asfalto es necesario realizar algunos trabajos para garantizar la correcta colocación de este material por lo que será necesario limpiar el pavimento existente, fresarlo, barrerlo, aplicar riego de liga y otras acciones más. El equipo para realizar estas actividades es el siguiente:

FRESADO

El fresado (también denominado perfilado en frío) ofrece muchas ventajas cuando se necesita reparar una carretera mediante repavimentación ya que restablece una superficie uniforme restablecimiento de una superficie uniforme es esencial si se han de reparar apropiadamente estas carreteras.

El fresado puede reducir o hasta eliminar los problemas de agrietamientos

Así, una superficie correctamente fresada se une perfectamente bien con la nueva superficie de asfalto que se aplica.



Fig. 14 Fresadora de carreteras.

En la actualidad, se puede fresar la superficie de una carretera con un costo casi igual que el de aplicar una capa ligante. Además del fresado, existen otras opciones para prevenir el agrietamiento o rotura del pavimento subyacente.

Trituración el pavimento subyacente. Esto implica el reducir del pavimento subyacente a escombros. Este escombros entonces se utiliza como complemento de una base de alta calidad para apoyar un recubrimiento flexible. Esta tarea se hace típicamente con uno de los siguientes equipos:

TRITURADOR RESONANTE DEL PAVIMENTO

Este equipo pulsa el pavimento rígido en la amplitud baja con una placa pequeña en la frecuencia resonante de la losa que hace a la losa romperse. A este equipo le lleva generalmente cerca de 14 a 18 pasadas para triturar un carril entero de 50 m.

TRITURADOR DE MULTI-CABEZA

Este equipo utiliza una serie de martillos altos independientes controlados para romper la losa. Típicamente, está equipado con entre 12 y 16 martillos, cada uno que pesa entre 450 - 680 kilogramos. Los martillos pueden caer de alturas variables (0.30 a 1.50 m.) y con ciclos con un índice de 30 - 35 impactos por minuto. El rendimiento de esta maquinaria proporciona poder trabajarla sobre un carril entero (hasta 50 m.) en una sola pasada.

El transporte de la mezcla implica todo lo requerido para mover la mezcla asfáltica de una planta de producción, acarreándola al sitio de colocación y descargar la mezcla en la tolva del vehículo de la transferencia, completa el ciclo de transportación de la mezcla, el acarreo de la planta a la extendedora; esto es, el viaje del camión cargado y su retorno vacío.

RIEGO DE LIGA (PETROLIZADORAS)

Una capa de sello en asfalto, es una emulsión o una capa líquida bituminosa fina aplicada entre las capas del pavimento de mezcla asfáltica para conseguir una adherencia adecuada entre la superficie de existente y la capa que se va a colocar, esta parte del proceso es crítica para conseguir que la estructura terminada del pavimento se comporte como una sola unidad. Si las capas adyacentes no se enlazan una con la otra se comportan como capas delgadas independientes múltiples.



Fig. 15 Petrolizadora.

Al aplicar el riego de liga, se utiliza un carro distribuidor especialmente diseñado. Un camión distribuidor del asfalto requiere la supervisión constante para producir un esparcido uniforme. Todas las galgas y aparatos de medición tales como el tacómetro de la bomba, termómetros, y los aspersores del bitumen deben ser calibrados correctamente. Las barras e inyectores de distribución deben estar perfectamente limpios y fijados en la altura apropiada sobre la superficie que recibe el riego. Los factores que afectan el uso uniforme son:

- La temperatura de rociadura del asfalto.
- La presión líquida a través de la longitud de la barra de aspersión.
- El ángulo de los inyectores de aspersión.
- La altura del inyector sobre la superficie.
- La velocidad del distribuidor.

Antes de la colocación de una mezcla asfáltica en una nueva base, una primera capa se aplica a la base. Los índices normales del uso para el riego varían entre 0.7 y 2.5 lt/sy. El riego garantiza la adherencia entre la base y la mezcla asfáltica sobrepuesta, ya sea un agregado triturado, un material estabilizado, o una terracería. La capa de riego debe penetrar cerca de $\frac{1}{4}$ ", llenando los vacíos de la base. La primera capa actúa como barrera impermeable que previene la penetración de humedad a la superficie de la base. Las capas de riego se diseñan para crear un enlace entre los pavimentos existentes y los recubrimientos nuevos del asfalto. También se aplican entre las capas sucesivas durante la nueva construcción, actuando como pegamento para prevenir el resbalamiento de las dos capas.

EXTENDEDORA, PAVIMENTADORA DE ASFALTO

El extendido de la mezcla asfáltica se lleva a cabo con una máquina extendedora-pavimentadora. Consiste ésta de dos partes principales: una es la parte tractiva y la otra es una plancha flotante.

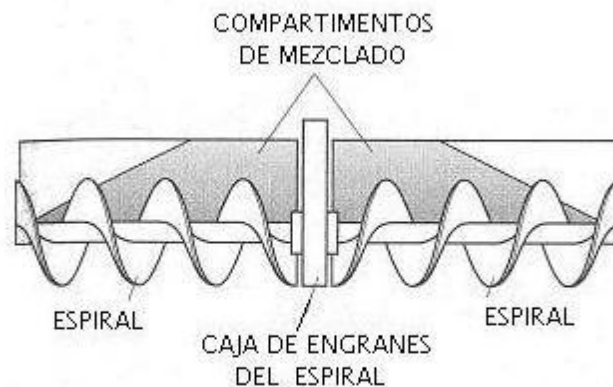
La unidad tractiva incluye:

- la tolva receptora
- los tornillos distribuidores de la mezcla al motor
- transmisiones
- dos centros de control
- el sitio para el operador.



Fig. 16 Pavimentadora de asfalto.

La unidad de energía de tractor tiene una tolva de recepción en el frente y un sistema de transportadores para mover la mezcla a través de un túnel debajo del tractor en la parte trasera de la unidad. En la parte posterior de la unidad del tractor, la mezcla se deposita en la superficie que se pavimentará, y los escariadores se utilizan para separar el asfalto a través del frente de arrastre uniformemente.



MECANISMO DE UN PAVIMENTADOR DE ASFALTO

Fig. 17 Mecanismo de una pavimentadora de asfalto.

Durante la selección de equipo existen dos tipos de maquinaria, que son la unidad tractiva proporciona la fuerza motriz a través de bandas de orugas o de neumáticos que ruedan sobre la base; siendo estas las únicas alternativas, pues en cuanto a la capacidad, está determinada por el tamaño de la planta. La plancha maestra es jalada por la unidad tractiva y ésta consta de:

- la placa maestra
- vibradores o barra compactadora
- controles para variar el espesor del tendido
- controles para variar la pendiente transversal
- los calentadores de la placa.



Fig. 18 Tren de colocación de asfalto.

A cada lado de la plancha maestra tiene un largo brazo que conecta la unidad tractiva con un centro pivote. Este mecanismo le permite, a la plancha maestra flotar sobre la mezcla mientras esta se tiende. La plancha, al recibir la mezcla que reparten los tornillos, la extiende con el nivel, el ancho y la profundidad proporcionados por los controles y le aplica una compactación inicial al material asfáltico mediante una barra o vibradores.

Hay algunos modelos de pavimentador que tiene dos sistemas de tornillos gemelos, en vez de transportadores, para mover la mezcla a través del túnel en la parte trasera del pavimentador. El uso de los transportadores del tornillo es para reducir la segregación de la mezcla.

Elevadores La mejor forma de controlar la continuidad del extendido, es mediante el empleo de un acamellonador y de un levantador de mezcla. El acamellonador es un mecanismo que, mediante ganchos, se pega al camión de volteo. Es una caja de acero con lámina ajustable en la que vierte su carga el camión. Al avanzar éste, la puerta (previamente ajustada para que deje pasar la cantidad de mezcla que exactamente se va a usar), va formando un camellón frente a la extendidora. Frente a ésta se instala un levantador de aspas o cangilones que recoge la mezcla del camellón y la deposita en la tolva de la extendidora. Los elevadores de las hileras del material fueron desarrollados para reducir los efectos que provocaban las filas de los camiones para la descarga del material.

Dispositivos de Transferencia de Materiales Vehículos de transferencia de los materiales (MTVS). Los vehículos de transferencia de materiales, se utilizan para asistir al pavimentador en aceptar la mezcla asfáltica caliente. La mayoría de los pavimentadores se equipan para recibir la mezcla asfáltica directamente de la descarga de la caja o de los camiones inferiores vivos, no obstante en ciertas situaciones puede ser necesario utilizar los vehículos de transferencia.

La pavimentación usando los vehículos de transferencia es muy recomendable porque permite que el pavimentador funcione continuamente sin parar, Para mejorar la calidad de un pavimento se utiliza un dispositivo de transferencia de materiales, ya que puede recibir varios camiones de mezcla asfáltica, remezclar el material, y entregarlo a la tolva del pavimentador y esto reduce al mínimo el tiempo de espera del camión en la planta productora de asfalto y puede llevar al mínimo problemas relacionados con la segregación y la temperatura.

Nivelación Puesto que no es práctico controlar manualmente la elevación del remolque, los pavimentadores funcionan generalmente con un control automático, los controles mantienen la elevación del punto usando una referencia.

Stringline (trazar una línea). Esto consiste en trazar las elevaciones especificadas que son independientes de la elevación del terreno existente. Esto se hace siempre que es posible, usando un equipo de prueba y un plano detallado de la elevación.

Referencia móvil. Esto consiste en un sistema de referencia mediante un sistema de una viga o un tubo largo que esta unido al pavimentador (llamado dispositivo de "contacto").

Esquí. Esto consiste generalmente en un esquí o zapato pequeño unido al pavimentador que resbala en una superficie existente cerca del pavimentador. Los sensores ultrasónicos logran la misma tarea sin el tacto de la superficie existente usando pulsos para determinar la elevación.



Fig. 19 Nivelación del tendido de asfalto.

3.2 TRACTORES

Los tractores se al igual que la maquinaria pueden clasificarse en varias formas:

Clasificación por su envergadura

- Pequeños
- Medianos
- Grandes

Por la forma en que mueve su hoja

- Tildozer
- Pushdozer
- Angledozer
- Tipdozer

Por su sistema de rodamiento

- De neumáticos
- De oruga o carriles

ESPECIFICACIONES TECNICAS DE MODELOS CATERPILLAR			
TRACTORES DE CADENA		TRACTORES DE NEUMATICOS	
PEQUEÑOS			
POTENCIA hp	78 a 100		
CILINDRADA	4,998 cm ³		
PESO KG	7,640 a 8,821		
MEDIANOS			
POTENCIA hp	110 a 140	POTENCIA hp	220 a 440
		RADIO DE GIRO	9.91 m
PESO KG	13,100 a 27,776	PESO KG	18, 611 a 46,355
GRANDES			
POTENCIA hp	305 a 850	POTENCIA hp	625 a 850
PESO KG	37,580 a 111,590	RADIO DE GIRO	12.5 a 17

Tabla 3 Especificaciones técnicas de tractores Caterpillar.

Esta última es la clasificación más usual.

PRINCIPALES DIFERENCIAS ENTRE TRACTOR DE ORUGAS Y NEUMÁTICO	
ORUGAS	NEUMÁTICO
Mayor tracción	
Deterioro en condiciones húmedas	No deteriora el pavimento
Requiere de camión para transportarse	Se desestabiliza más rápido
Funciona bien en grandes volúmenes de tierra	Trabaja mejor en un río, suelos granulares, dunas
Trabaja en suelos arcillosos y mojados	con fango patina
Distancia máxima económica = 100 mts.	Distancia máxima económica = 150 a 180 mts.

Tabla 4 Diferencias entre tractores de orugas y neumáticos.



Fig. 20 Bulldozer.

Las funciones y características son similares y su principal diferencia es precisamente su sistema de desplazamiento. Dentro de la clasificación de los tractores, el más usado en la construcción de carreteras tenemos al llamado BULLDOZER o TOPADORAS.

Definición: máquina para movimiento de tierra con una gran potencia y robustez en su estructura, diseñada especialmente para el trabajo de corte y al mismo tiempo empuje con la hoja topadora en estas maquinas suelen ser montados diversos equipos para ejecutar diversas actividades, además, debido a su gran potencia tienen la posibilidad de arrojar o apoyar a otras maquinas cuando estas lo necesiten.

El tractor de neumáticos por lo regular es ocupado para trabajos en donde se dispone de suelos resistentes y bien conservados, esto con el fin de poder lograr rapidez en los acarreos pero se sacrifica su potencia y fuerza tractiva utilizables ya que son menores a las que corresponden a los tractores de orugas que cuentan con capacidad similar. Los tractores de neumáticos tienen su campo de aplicación en operaciones de remolcar otros vehículos como es el caso de cajas con remolque, vagonetas, pipas, rodillos de compactación, etc.

Sin embargo para excavar, el de carriles es más conveniente en términos generales. Desde luego para seleccionar el tractor que debe usarse es necesario tomar en cuenta el tipo de obra por ejecutar, superficie de rodamiento y pendientes, dureza de los materiales por excavar, distancias de acarreo, dificultades de ataque, cantidades de obra por ejecutor, y otra serie de factores, pero cuando se requieren tractores para excavar podemos atrevemos a decir que el de orugas es el más utilizado. El tractor de carriles consta principalmente de un motor diesel, apoyado en un chasis, un sistema de transmisión de diseño planetario para enviar la potencia generada por el motor mediante mandos finales al sistema de tránsito.

Por lo anterior al seleccionarse un tractor debe considerarse distintos factores que determinaran el tamaño, potencia, tipo de hoja a utilizar, entre otros. Algunos de estos factores son:

- El tamaño que se requiere para determinada obra.
- La clase de obra en la que se empleara, conformación, jalando una escrepa, jalando un vagón, arando, etc.
- El tipo de terreno sobre el que viajara, alta o baja eficiencia de tracción.
- La firmeza del camino de acarreo.
- La rigurosidad del camino.
- Pendiente del camino.
- La longitud de acarreo.
- El tipo de trabajo que tenga que hacerse después de terminada la obra.

TRACTORES DE RUEDAS

La movilidad, maniobrabilidad y una buena velocidad hacen que los tractores de ruedas se adapten a trabajos en patios y en pila de material así como limpieza alrededor de palas. Se pueden obtener costos de mantenimiento más bajos en ciertos suelos que pueden ser demasiado abrasivos para trenes de rodaje de cadenas.



Fig. 21 Tractor sobre neumáticos.

TRACTORES DE CARRILES

Un tractor de carriles puede funcionar en pendientes hasta de 45°. Consideradas como máquinas de tracción, se diseñan para esos trabajos que requieren alto esfuerzo tractivo. Ningún otro equipo puede proporcionar la energía, la tracción, y la flotación necesaria en diversas condiciones de trabajo. El peso del tractor es importante en muchos proyectos porque el esfuerzo tractivo máximo que un tractor puede proporcionar se limita al producto del peso y el coeficiente de tracción para la unidad y la superficie de tierra particular, sin importar la energía provista por el motor.

Los tractores de carriles pueden trabajar en una variedad de suelos con materiales afilados no muy abrasivos aunque la arena fina aumentará el desgaste corriente del engranaje.

Los accesorios especiales como cuchillas de empuje, desraizadores y escarificadores, y los dispositivos de carga de diversos tipos, permiten utilizar los tractores en la construcción de carreteras y para toda clase de trabajos, tales como arrastre directo, arrastre con deslizadores y trineos y arrastre con arcos forestales y trinquivales. Se pueden utilizar también para la carga de madera, transporte por cable aéreo flojo y descuaje de tierras forestales.

Los tractores oruga son lentos, lo que constituye un inconveniente importante cuando las máquinas pueden desplazarse sobre un terreno relativamente duro o sobre una carretera.



Fig. 22 Tractor sobre orugas.

TRACTOR DE ORUGAS CON TRANSMISIÓN DIRECTA

La transmisión directa significa que la energía está transmitida a través de la transmisión como si hubiera un solo eje. Esto generalmente sucede cuando la transmisión está en su engranaje más alto. En el resto de los engranajes, los elementos mecánicos emparejan velocidad y el esfuerzo de torsión. Los tractores de transmisión directa son superiores cuando el trabajo implica condiciones de carga constantes. Un trabajo en donde las cargas de la hoja topadora se deben empujar a largas distancias sería un uso apropiado de una máquina con impulsión directa.

APLICACIONES DE LOS TRACTORES

En el ámbito de la industria de la construcción, la máquina que tiene una gran variedad de aplicaciones dada su gran versatilidad es el tractor empujador, el cuál puede clasificarse de acuerdo a su tipo de rodamiento. De neumáticos y de orugas; también se clasifican por los aditamentos que este pueda tener considerando el trabajo que realice y este es:

- Con hoja frontal.
- Con desgarrador ó ripper.
- Como tiende tubos.
- Como tractor doble.
- Submarino.

Las actividades que estos equipos pueden realizar se cuentan las de jalar, empujar, acarrear, y servir como grúa con pluma lateral.



Fig. 23 Tractor de orugas en construcción de caminos.

El diseño del tractor tiene por objeto fundamentalmente convertir su potencia en fuerza tractiva de utilización práctica en muy diversas operaciones, pero debe considerarse siempre que estos trabajos no rebasen la capacidad de la máquina, esto es no abusar de su capacidad para tener un mejor aprovechamiento.

Un tractor que trabaja con hoja topadora debe considerar para la selección de la misma, dos condiciones de trabajo:

- I) Materiales a mover y;
- II) Limitaciones de los tractores.

Dentro de los materiales que se van a mover se considerarán las siguientes situaciones:

- Tamaño y forma de las partículas.
- Vacíos.
- Contenido de agua.

El efecto de congelamiento depende del grado de humedad. Se intensifica la ligazón entre partículas en función del mayor contenido de humedad y del descenso de temperatura. El enfriamiento de una materia completamente seca no altera sus características.

La penetración fácil de la hoja depende de la relación de KW por metro ó HP por pie de la cuchilla. Cuánto más alta sea la relación de KW/m, mejor es la penetración. La relación de potencia por m³ de material suelto indica la capacidad de la hoja para empujar tierra.

Cuanto mayor sea la relación KW/m³ suelto, más capacidad tiene la hoja para empujar la tierra con más velocidad.

Para las limitaciones de los tractores se debe tomar en cuenta que el peso y la potencia disponible de la máquina determinan su capacidad de empuje, ningún tractor puede aplicar más empuje en Kg. que el peso de la máquina y que la fuerza máxima que suministre el tren de fuerza. Ciertas características del terreno y las condiciones del suelo en la obra limitan la capacidad del tractor para utilizar su peso y potencia, sin embargo, los tractores estándar están diseñados para trabajo pesado como topadores y para nivelación general.

Los tractores de oruga tienen diversos aditamentos, siendo el principal la hoja empujadora o dozer cuyas funciones pueden ser:

- Desmonte, desenraicé y deshierbe, aun en zonas con gran densidad de vegetación.
- Construcción de brechas, independientemente de que el terreno sea plano, en ladera, o media ladera, etc.
- Excavación, acarreo y colocación de terracería: hasta distancias menores de 100 m.
- Afine tosco de bordes y taludes.
- Como tractor empujador, auxiliando a las escrepas y motoescrepas.
- Sirven para retirar toconos.
- Creación de terraplenes
- Abrir los caminos experimentales a través de las montañas o del terreno rocoso.
- Relleno de trincheras, zanjas, etc.

El tractor de orugas tiene la gran ventaja de que construye sus propios caminos de acceso para llegar a los sitios de trabajo, puede operar en zonas montañosas y de fuerte pendiente, tiene mejor tracción al tener mayor adherencia con la superficie de apoyo que los tractores de llanta.

El diseño del tractor tiene por objeto fundamentalmente convertir su potencia en fuerza tractiva de utilización práctica en muy diversas operaciones, pero debe considerarse siempre que estos trabajos no rebasen la capacidad de la máquina, esto es no abusar de su capacidad para tener un mejor aprovechamiento.

Algunas de las principales actividades que el tractor puede realizar dentro de la construcción son las siguientes:

DESMONTE, DESRAICE Y DESPALME: Los terrenos en los que se van a efectuar excavaciones, hacer rellenos ó a nivelarse, deben desmontarse primero. En el desmonte se incluye la remoción de la vegetación que pueden ser hierbas, malezas, matorrales ó tocones. Actualmente se han desarrollado una gran variedad de aditamentos para tractores que lo habilitan para realizar los trabajos más severos de desmonte tales como cuchillas de filo cortante, taladores en “V”, cuchillas tipo rastrillo, empujadores de árboles, aradores cortadores de raíces, etc.

EQUIPO DE MOTOESCREPAS: Los tractores empujadores se necesitan casi siempre para llenar bien con eficiencia las motoescrepas de un solo motor, y aún; en algunos casos, las de dos motores, y con las escrepas de arrastre que son de tamaño excesivo para el tractor que las remolca o cuando el terreno es duro. Para esta actividad el tractor empujador debe ser equipado con la hoja topadora.

EXCAVACIONES: El tractor se opera levantando o bajando la hoja, inclinándola hacia delante ó hacia atrás según sea el tipo de material a cortar y el tipo de excavación que se vaya a realizar. Conforme va moviéndose hacia delante el material se va excavando y apilando al frente y avanza junto con el tractor. La inclinación correcta de la hoja es un factor muy importante para la eficiencia del trabajo sobre todo en terrenos duros.

TENDIDO DE MATERIAL: El tractor empujador puede extender montones de material caminando sobre los mismos con la cuchilla elevada a la rasante deseada.

ARRASTRE DE OTROS EQUIPOS: El tractor está habilitado para jalar tanto como para empujar por lo que su aplicación como auxiliar de otros equipos es grande. Se utiliza para jalar compactadores, motoescrepas de arrastre, arados, etc.

DESGARRAMIENTO: Cuándo el tractor se utiliza para el desgarrar de suelos se le denomina desgarrador y dada la importancia de este aprovechamiento se tratará en otra sección, de modo más amplio.

Otros usos ó aplicaciones que se tienen de los tractores pueden ser o mejor dicho son en la construcción de líneas de tuberías, en este caso los tractores son equipados con pluma lateral y se les llama tiende-tubos para llevar a cabo la justa tarea de tender la tubería en su posición final.



Fig. 24 Grúa tendedora de tubos.

3.3 MOTOCONFORMADORAS

La definición de motoconformadora podría considerarse como una maquina muy versátil usada para mover tierra u otro material suelto. Su principal función es nivelar, modelar o dar pendiente necesaria al material en que se trabaja.se considera como una máquina de terminación superficial. Su versatilidad está dada por los diferentes movimientos de su hoja, como por la serie de accesorios que puede tener.

Puede imitar todo tipo de tractores, pero su diferencia radica en que la motoniveladora es más frágil, ya que no es capaz de aplicar la potencia de movimiento ni la de corte del tractor. Debido a esto es más utilizada en tareas de acabado o trabajos de precisión.

Existe una gran variedad de proveedores de este tipo de maquinaria así como de sus accesorios, pero uno de los mayores distribuidores es Caterpillar, a continuación se muestra una tabla con algunas especificaciones técnicas de estos modelos:

MODELO	POTENCIA NETA AL VOLANTE (KW)	MODELO DEL MOTOR	VELOCIDAD MAXIMA DE AVANCE (KM/HR)	VELOCIDAD MAXIMA DE RETROCESO (KM/HR)	RADIO MINIMO DE GIRO (M)
120 G	93	3304	40.9	38.6	6.7
130 G	101	3304	39.4	36.9	7.3
120 G	101	3406	39.4	39.4	7.3
140 G	112	3406	41	41	7.3
140 G AWD	134	3406	41	41	7.8
14 G	149	3406	43	50.1	7.9
16 G	205	3406	43.6	43.6	8.2

Tabla 5. Modelos de motoconformadoras Caterpillar.

APLICACIONES

Lo más normal es que, al trabajar, la motoconformadora se mueva en dirección de avance, aunque esto no es impedimento para que puede trabaja en marcha atrás, debido a no contar con espacio suficiente para realizar la maniobra de giro. En este caso puede utilizar la hoja en la misma posición que llevaba en avance o bien invirtiéndola, de manera que la hoja quede mirando hacia el operador; lógicamente, en ambos casos, el trabajo comúnmente realizado es el de extensión del material y también a veces el de emparejamiento dejando la hoja en posición flotante.

La hoja de una motoconformadora se puede usar hasta un límite como hoja empujadora, ya que la carga que deba empujar está limitada por la potencia y tracción de la máquina que usualmente es mucho menor que un tractor del mismo peso. La forma cóncava hace rodar mejor la carga, de tal modo que puede empujar una gran cantidad sin derramarse sobre la parte superior de la misma.

ACAMELLONAMIENTO Y MEZCLA DE MATERIALES

Estas operaciones se llevan a cabo cuando los materiales depositados a lo largo de un camino, tengan que ser homogeneizados en lo que a humedad y granulometría se refiere. Si el material se extiende tal como lo deposita el camión de volteo, existe el riesgo de que con el tiempo, aparezcan irregularidades por no haber homogeneizado en un principio la humedad natural, lo cual se logra acamellonándolo antes de mezclarlo. Una vez hecho lo anterior se procede a mezclar e incorporar la cantidad de agua necesaria para lograr la humedad óptima; el número de pasadas para alcanzar la homogeneización del material la puede determinar el laboratorio.

AFINE DE SUPERFICIES O TERRAPLENES

Para todos los trabajos de nivelación, es recomendable que la hoja forme un ángulo de 50º con el eje longitudinal de la máquina, de esta forma, la hoja arrastra los montículos y rellena los surcos con la tierra extraída de aquellos, vertiendo el exceso lateralmente; para el refinado último; la hoja se coloca casi perpendicular al eje longitudinal. Para trabajos de extendido es conveniente inclinar la hoja hacia delante en función de la velocidad del avance.



Fig. 25 Afine de taludes.

ESCARIFICACIÓN

Cuando se tenga que levantar una superficie ya sea porque se encuentre erosionada, en mal estado de conservación, etc., se podrá hacer uso del escarificador; si la potencia disponible de la máquina es suficiente se bajan escarificador y hoja al mismo tiempo. La hoja apartará hacia los lados los materiales removidos por el escarificador o bien los extiende uniformemente sobre la superficie en que se trabaje. Para trabajo ligero se puede utilizar el juego completo, pero para una perforación profunda o roturación de materiales que tiendan a montarse enfrente de los dientes, usualmente se retiran los dientes alternos. Para trabajo entre rocas alteradas, el número de los dientes es menor utilizando a veces uno o dos.

LA MOTOCONFORMADORA UTILIZADA COMO EMPUJADORA

Si bien casi todas las motoconformadoras ofrecen como equipo opcional una hoja frontal de empuje a manera de pequeño tractor, se va a considerar la máquina en trabajos de empujadora sin la utilización de este equipo opcional, cuyo uso es exactamente igual al de un tractor de neumáticos. La tendencia general de fabricantes de equipos de movimiento de tierras es hacia el gigantismo. La motoconformadora, no podía escapar de esta tendencia, de ahí que cada vez sean más frecuentes los modelos superiores a 200 HP de potencia e incluso existen algunos con potencias comprendidas entre 500 y algo más de 600 HP. Lógicamente hay que pensar que cualquiera de estas motoconformadoras puede realizar trabajos de empuje con mayor producción incluso que auténticos tractores de potencia no superiores a 100 HP, por lo tanto es interesante considerar esta faceta de trabajo dentro de las motoconformadoras especialmente en las de gran tamaño.

Para facilitar el trabajo de la motoconformadora en estas tareas de empuje, las unidades encargadas de verter los montones de material procurarán depositarlos intermitentemente a lo largo del eje de trabajo de la motoconformadora y en alturas que no sean demasiado elevadas para su mejor manipulación. La motoconformadora puede utilizarse también para trabajos ligeros de corte y relleno en la construcción y nivelación de caminos, lo que son, en definitiva, ligeros trabajos de excavación y terraplenado, que tienen la particularidad de ir combinados con la nivelación del mismo. A mayor potencia en la máquina será de mayor cantidad el trabajo de excavación que realice. La ventaja de este tipo de excavaciones de gran longitud y baja cota a profundizar es que la motoconformadora es mucho más rápida que un tractor sobre carriles. La hoja de la motoconformadora es sensiblemente más baja que la de un tractor, pero su perfil posee un superior grado de curvatura, estudiada de tal forma que la carga acumulada en su frente no mantiene una posición semiestática, sino que rueda, de modo que se puede empujar una cantidad grande de material sin que éste se derrame por la parte superior.

TRABAJOS DE EMPUJE LATERAL

Cuando la hoja se coloca en ángulo con respecto a la dirección de avance, la carga empujada tenderá a moverse hacia el lado de la hoja más cercano a las ruedas traseras. La acción de rodamiento causada por la curvatura del perfil de la hoja ayuda a este movimiento lateral. A medida que se aumente el ángulo de la cuchilla aumentará la velocidad del desplazamiento lateral del material, además el no acarrear de esta forma tanto hacia delante, el corte que se realice puede ser más profundo. El movimiento de la carga hacia un lado ejerce un empuje contra la cuchilla en dirección opuesta, que tiende a desviar el frente de la motoconformadora hacia la orilla de guía.



Fig. 26 Empuje lateral.

Este empuje se controla mediante la inclinación de las ruedas delanteras para producir a su vez un contraempuje y girando la dirección lo suficiente como para compensar cualquier desviación lateral que ocurra a pesar de esta inclinación mencionada. La manera más normal para señalar la posición de la hoja es diciendo que una cuchilla cuando es normal al eje longitudinal de la máquina está en 0 y todas las otras posiciones se describen por su distancia angular desde esta posición. La mayoría de la conformación y mantenimiento de caminos se hace a un ángulo de 25° a 30°, utilizándose ángulos menores para extender camellones y mayores para cortes difíciles de excavación de cunetas. Actualmente, la casi totalidad de los modelos poseen control desde la cabina para el ajuste del ángulo de la hoja. La mayoría de los mismos se realiza con la intervención de un pequeño motor hidráulico, si bien algunos fabricantes prefieren la utilización de un cilindro hidráulico que en forma intermitente mueve la hoja de 60° en 60°.

TRABAJOS DE RASTREO

Si la hoja se coloca con un determinado ángulo, puede utilizarse para nivelar superficies irregulares, rebajándola al cortar el material suficiente de los puntos prominentes para rellena los agujeros que existen en el trazado. Deberá de cortarse el suficiente material extra para mantener siempre una carga sustancial delante de la hoja. La tierra una vez excavada sufre golpeteos en su movimiento hacia delante y lateral, los cuales contribuyen a aflojarla y por lo tanto su distribución en las oquedades es más eficiente. Si se deja un camellón en la orilla de salida de la cuchilla se recoge en el pase siguiente. En el pase final se hace un corte más ligero y la orilla de salida de la cuchilla se levanta lo suficiente como para permitir que el material sobrante pase por debajo y no alrededor de ella, evitando de esta manera dejar un cordón lateral. Este tipo de enrase ligero producirá una superficie uniforme bajo condiciones favorables, pero el relleno de los agujeros es probable que se asiente o se comprima quedando bajo las secciones de corte. La cuchilla también puede vibrar en un corte de poco espesor, particularmente si el mecanismo está suelto o gastado o posee fugas.

CONSERVACIÓN Y REPARACIÓN DE CAMINOS

Cuando el tramo que va a rastrearse es de un camino de tierra o grava, generalmente se da un bombeo, de manera que el agua escurra hacia los lados. La secuencia de los pases para este tipo de trabajo es la siguiente:

El material del camino se empuja con la cuchilla hacia adentro desde las cunetas, colocándose en la parte superior de la corona con la cuchilla en ángulo cero, o con un ángulo pequeño que empujará lateralmente algo de material a cualquier lado que pueda requerirlo. Los camellones se extienden entonces hacia el centro, poniendo la cuchilla a un ángulo de 10º a 25º y utilizando una velocidad mayor de trabajo. La cuchilla se mantiene por encima del nivel de la superficie no alterada, para evitar choques con los objetos duros. La velocidad hace que el material suelto sea arrojado de la hoja de modo que salte y se mezcle en la parte superior. Cualquier protuberancia formada en el centro se extiende después a cierta velocidad con la cuchilla normal.

Esto deberá terminar el trabajo, pero puede ser conveniente volver a pasar la cuchilla o volver a repasar algunas secciones donde no se obtuvo la conformación apropiada de la corona del camino.

Si el camino es de grava o de otro material suelto, y la cuneta de material cohesivo, el camino puede embarrarse al utilizar demasiado la cuchilla desde las orillas. Puesto que el camino debe conformarse de modo que desagüe hacia los lados, puede hacerse necesario facilitar con la hoja fáciles salidas para el agua.

El césped y los escombros llevados al camino desde las cunetas interfieren la nivelación, ya que los terrones recogidos debajo de la cuchilla dejan surcos y obstruyen el desplazamiento lateral de la tierra. Por esto antes de hacer el corte central es mejor retirar los escombros de los camellones laterales, y procurar contaminar lo menos posible la parte central del camino con los materiales de los bordes. Las piedras son una molestia más seria, tanto porque dificultan o impiden nivelar las rasantes, como por el daño que causan a la máquina durante el corte.

CONSTRUCCIÓN DE CAMINOS NUEVOS

Una motoconformadora, sin ayuda de otras máquinas o trabajo manual, puede realizar un camino a través de un campo, mediante la excavación de un par de cunetas paralelas, y utilizando el material, procedente de esta excavación, para formar la corona de este camino. Sin embargo el césped o material vegetal de la montera del terreno puede hacer la operación de acabado tediosa e insatisfactoria, ya que tiende a apelonarse debajo de la cuchilla y que ésta lo recoja y lo saque de las superficies sueltas. Por esta razón, la franja deberá prepararse con una grada de discos inclinables (otro posible equipo opcional de la motoconformadora) antes de que la conformación de inicie.



Fig. 27 Construcción de caminos.

Antes de comenzar el trabajo, las líneas exteriores de las cunetas deberán señalarse mediante estacas o bien por una orilla que deja la franja arada con la grada de discos. El primer corte de cada lado se hace aproximadamente a 60 centímetros de la orilla hacia el interior. La cuchilla se conserva a un ángulo muy pronunciado, tal vez 50° ó 60°, con el borde delantero exactamente afuera de la huella de la rueda; el camellón que se va formando se hace rodar hacia a fuera por debajo de la motoconformadora.

El corte es ligero y se hace, primordialmente, para señalar la orilla de trabajo y para impedir que se corran las ruedas lateralmente. El siguiente corte se hace a un ángulo de 25°, vertiendo el material cortado más allá de las ruedas interiores. Si el camellón es suficientemente grande, se le extiende hacia el centro. De otra manera, se hacen cortes de cunetas adicionales hasta que se amontone suficiente material para esparcir.

Los cortes de las cunetas, alternados con el empuje y el extendido, se continúan hasta que las mismas tengan la profundidad apropiada. Una vez hecho esto se corta el talud exterior, y el material excavado se mueve hacia fuera del talud interior para posteriormente extenderse sobre el camino. El otro lado o cuneta se hace de la misma manera y los rellenos se mezclan en la parte superior. Los cortes de las cunetas, excepto el primero o el segundo, pueden hacerse tanto hacia delante como marcha atrás. El empuje y el extendido pueden hacerse en cualquier dirección, pero siempre en marcha hacia delante es más eficiente si el camellón a mover es grande. Los fabricantes recomiendan hacer los cortes de cuneta hacia delante y el otro trabajo pesado de conformación en segunda marcha, a una velocidad de 5 a 7 km/h. La manipulación de los camellones con la hoja y el manejo de material suelto, puede hacerse a menudo en tercera velocidad y a velocidades de hasta 10 km/hr.

3.4 EQUIPO PARA COMPACTACIÓN

A continuación hablaremos sobre la maquinaria usada por la compactación, entendiendo por compactar la acción de aplicar durante la construcción del relleno, la energía necesaria para producir una disminución apreciable del volumen de huecos del material empleado y por tanto del volumen total del mismo.

La necesidad de compactar apareció no hace aun muchos años debido a la urgencia de utilizar las obras inmediatamente, sin tiempo para que el tráfico o los agentes atmosféricos produjesen los asientos definitivos.

Por tanto, los sistemas de compactación se han ido desarrollando paralelamente a la mecanización de las obras, ya que la aplicación de la energía necesaria exige una maquina adecuada en potencia y movilidad, para cada caso.

Por lo tanto el problema más importante en la compactación es elegir la maquina adecuada para cada trabajo. Para dicha elección tenemos hoy día unas ideas generales, consecuencia de ensayos prácticos más o menos guiados por teorías, que nos permiten de entrada y a la vista de las principales características del material a compactar, decidir el tipo de maquinas idóneo.

Los factores principales que influyen en la capacidad de compactación de los suelos, son la composición granular y el contenido de humedad. Dentro de la composición granular, lo más importante es el tamaño del grano, mucho más —incluso— que la composición del mismo.

Compactación.- Compactar es la operación previa, para aumentar la resistencia superficial de un terreno sobre el cual deba construirse una carretera y otra obra. Aplicando una cantidad de energía la cual es necesaria para producir una disminución apreciable del volumen de hueco del material utilizado.

CLASIFICACION DE LAS MAQUINAS DE COMPACTACION

Clasificación de las maquinas compactadoras según sus diferentes principios de trabajo:

- I) Por presión estática.
- II) Por impacto.
- III) Por vibración.



Fig. 28 Diversos equipos de compactación.

Las primeras trabajan fundamentalmente mediante una elevada presión estática que debido a la fricción interna de los suelos, tienen un efecto de compactación limitado, sobre todo en terrenos granulares donde un aumento de la presión normal repercute en el aumento de las fuerzas de fricción internas, efectuándose únicamente un encantamiento de los gruesos.

Las segundas, de impacto, trabajan únicamente según el principio de que un cuerpo que choca contra una superficie, produce una onda de presión que se propaga hasta una mayor profundidad de acción que una presión estática, comunicando a su vez a las partículas una energía oscilatoria que produce un movimiento de las mismas.

Las de vibración, trabajan mediante una rápida sucesión de impactos contra la superficie del terreno, propagando hacia abajo trenes de ondas, de presión que producen en las partículas movimientos oscilatorios, eliminando la fricción interna de las mismas que se acoplan entre sí fácilmente y alcanzan densidades elevadas. Es un efecto de ordenación en que los granos más pequeños rellenan los huecos que quedan entre los mayores. Por lo tanto, ya vemos que según sea el material, capaz de ser ordenado o no, este sistema de compactación por vibración, será más o menos efectivo.

MAQUINAS QUE COMPACTAN POR PRESION ESTATICA

- Apisonadoras clásicas de rodillos lisos.
- Rodillos patas de cabra.
- Compactadores de ruedas neumáticas.

APISONADORAS CLASICAS DE RODILLOS LISOS

En estas apisonadoras la característica más importante es la presión que ejercen sobre el terreno. Se considera un área de contacto en función del diámetro de los rodillos, peso de la maquina y tipo de suelo, a través del cual se transmite la presión estática.



Fig. 28 Compactadora de 1 rodillo liso.

Estas maquinas, aunque muy empleadas, la verdad es que su efecto de compactación alcanza muy poca profundidad en suelos coherentes. En los no coherentes, causan desgarros en la superficie, transversales a la dirección de la marcha, destruyendo de esta manera parte de su propio trabajo. Sin embargo son útiles para el planchado y sellado de superficies regadas con emulsiones asfálticas. Su utilización máxima la tienen hoy día en las primeras pasadas de compactación de aglomerados asfálticos.

RODILLOS DE PATAS DE CABRA

Estos compactadores concentran su peso sobre la pequeña superficie de las puntas cónicas solidarias al rodillo, ejerciendo por lo tanto unas presiones estáticas muy grandes en los puntos en que las mencionadas partes penetran en el suelo. Conforme se van dando pasadas y el material se compacta, dichas partes profundizan cada vez menos en el terreno, llegando un momento en que no se aprecia mejora alguna, pues la superficie, en una profundidad de unos 6 centímetros siempre quedara distorsionada. Al pasar la maquina sobre la nueva superficie de material se compacta perfectamente esa superficie distorsionada de la capa anterior.



Fig. 29 Compactadora pata de cabra.

Este tipo de compactador trabaja bien con suelos coherentes, sin piedras, en capas de 20 cm. Con humedad adecuada, se consiguen resultados satisfactorios en unas 8/10 pasadas. Debido a su alta presión específica (15/30 kg/cm²) y a los efectos de amasado que producen las partes, compactan bien los suelos altamente plásticos, con poco contenido de agua e incluso pobres de aire y de vacíos.

Como se trata de una maquina muy sencilla y robusta, el rendimiento que se obtiene es francamente bueno.

Los pesos de estos compactadores oscilan entre 1.000 y 8.000 kg., pudiendo acoplarse en paralelo o en también varias unidades para obtener mejores rendimientos.

COMPACTADORES CON RUEDAS NEUMÁTICAS

Estas maquinas trabajan principalmente por el efecto de la presión estática que producen debido a su peso, pero hay un segundo efecto, debido al modo de transmitir esta presión por los neumáticos que tiene singular importancia. Las superficies de contacto de un neumático dependen de la carga que soporta y de la presión a que este inflado, pero la presión que transmite al suelo el neumático a través de la superficie elíptica de contacto no es uniforme. Por lo tanto y para simplificar el problema se emplea el término “presión media” de contacto que se obtiene dividiendo la carga sobre cada rueda por la superficie de contacto. Estas superficies de contacto se obtienen para las diferentes presiones de inflado y cargas sobre rueda, marcando las huellas de contacto sobre una placa de acero con el neumático en posición estática.

Es norma general esperar una presión del orden del 90 % de la presión en la superficie a profundidades de 70 cm. y actuando en un ancho de unos 2/3 del ancho de la huella del neumático. Esto obliga a las maquinas compactadoras de estos tipos a procurar un cierto margen entre las huellas de los neumáticos delanteros y traseros.

Los neumáticos para compactadores deben ser de banda de rodadura ancha y lisa y capaces de ejercer una presión media de contacto entre 60 y 90 p.s.i. uniformemente sobre la superficie de contacto ajustando la presión de inflado.



Fig. 30 Compactadora de neumáticos.

COMPACTADORES CON RUEDAS NEUMÁTICAS AUTOPROPULSADAS

Equipados, generalmente, con dos ejes, con pesos normales entre 9 y 15 toneladas y con 8 hasta 13 neumáticos, son apropiados para suelos coherentes de granulado fino y arenas y grava bien graduadas. Son específicos para cerrar los aglomerados asfálticos.

Son máquinas complicadas que exigen mantenimiento cuidadoso; la altura de capas suele variar de 15 a 20 cm., y requieren 8/12 pasadas. Su velocidad de trabajo oscila sobre los 3 km/hr.



Fig. 31 Compactadora de neumáticos.

COMPACTADORES CON RUEDAS NEUMÁTICAS REMOLCADOS

Por lo general poseen un solo eje y pocos neumáticos, con pesos de trabajo hasta de 200 Tm. son apropiados para terrenos coherentes, influyendo poco los grandes tamaños de piedra. Estas máquinas son muy sencillas y no requieren más cuidado que el vigilar las presiones de los neumáticos. Los grandes compactadores de este tipo hay que arrastrarlos con bulldozers de grandes potencias y por lo tanto requieren para su buena utilización grandes áreas de trabajo.

Naturalmente, que cualquier máquina o vehículo, en el sentido más amplio del concepto de compactación, se puede considerar un compactador por presión estática, ya que su peso actuando a través del área de contacto de sus elementos de soporte, produce una presión sobre el terreno y como tal un efecto de consolidación.

Normalmente el material de relleno es transportado con equipos pesados, precisamente circulando por encima de los propios terraplenes en ejecución. Estas máquinas transmiten cargas considerables al terreno y en consecuencia actúan como compactadores. Como esta máquina suele ir equipada con ruedas neumáticas su efecto es similar al que produce los compactadores neumáticos.

MAQUINAS QUE COMPACTAN POR IMPACTO

Vamos a considerar ahora algunas maquinas de compactación que trabajan según el principio de impacto:

- Placas de caída libre.
- Pisones de explosión.

PLACAS DE CAIDA LIBRE

Se trata de unas placas de hierro de superficie de contacto lisa de 0.5 m², de forma rectangular y con un peso que oscila entre las 2 y 3 tm, las cuales se elevan mediante cables hasta una altura de 1.5 a 2 m sobre el suelo y se les deja caer libremente sobre el mismo. Para ello se necesita una maquina adicional tal como una excavadora o grúa.

La presión de contacto que produce la caída es muy alta y comprime en combinación con una cierta sacudida hasta los suelos pesados, rocosos. Es únicamente en la compactación de roca donde puede ser interesante.

PISONES DE EXPLOSIÓN

Este tipo de maquina se levanta del suelo debido a la explosión de su motor, que por reacción contra el mismo produce la suficiente fuerza ascendente para elevar toda ella unos 20 cm. Al caer ejerce un segundo efecto compactador dependiente de su peso y altura de elevación.

Estos pisones son muy apropiados para suelos coherentes, aunque también dan resultado con otra clase de materiales. Son muy buenos para la compactación de zanjas, bordes de terraplenes, cimientos de edificios, etc. La habilidad del operador es decisiva en el rendimiento y calidad del trabajo. Los pisones grandes, de 500 a 1.000 kg., llegan a compactar incluso superficies de unos 30 centímetros de espesor en 4 ó 6 pasadas.



Fig. 32 Pisón de explosión

MAQUINAS QUE COMPACTAN POR VIBRACIÓN

- Placas vibrantes.
- Rodillos vibratorios.

Hoy día es quizá la maquina más utilizada. En los últimos años ha sido tal el número de tipos y marcas disponibles en el mercado, que casi resulta materialmente imposible conocerlas todas. Se han empleado en la compactación de toda clase de suelos sin distinción: bases granulares artificiales, sub-bases naturales, suelo-cementos, rellenos rocosos, asfaltos, arcillas, arenas, etc., y naturalmente, el éxito ha sido variable.

Otra característica que hay que tener en cuenta con las maquinas vibratorias es la de su peso estático, ya que el efecto vibratorio sobre el suelo es función del peso estático de la maquina y del movimiento vertical y horizontal.

PLACAS VIBRANTES

Consisten en una plancha base que produce un golpeteo en sentido vertical, debido al movimiento giratorio de un plato excéntrico accionado por un motor. Las fuerzas vibratorias engendradas son mayores que el peso de la maquina y por lo tanto la maquina se levanta del suelo en cada ciclo de rotación del plato excéntrico, como ya se explico anteriormente. El movimiento de traslación se consigue utilizando parte de la energía de vibración según la componente horizontal.

Estas maquinas son útiles para trabajos pequeños, tales como relleno de zanjas, arceos, paseos, etcétera. Sin embargo, se pueden unir 2, 3 6 mas vibradores de placa en paralelo y obtener de esta manera una poderosa máquina de compactación.



Fig. 33 Placas vibrocompactadoras.

RODILLOS VIBRATORIOS AUTOPROPULSADOS

Son máquinas que precisamente por su condición están un poco entre las apisonadoras estáticas clásicas y el rodillo vibratorio remolcado. Para algunos trabajos en que la maniobrabilidad es importante o bien que se requiera previamente a la vibración un planchado, son muy útiles. Su empleo está indicado en los suelos granulares bien graduados sobre todo cuando los tajos son estrechos y no permiten alar la vuelta fácilmente a los rodillos remolcados.



Fig. 34 Rodillo vibrador compactando la base de una calle.

Tienen el inconveniente, desde el punto de vista de maquinaria, de que son bastante más complicados, requieren más entretenimiento y por último, al tener que ir los maquinistas vibrando sobre la máquina, estos suelen arreglárselas para que esta vibre lo menos posible en frecuencia y tiempo, con el consiguiente empeoramiento del rendimiento. También suelen aparecer problemas de adherencia entre las ruedas motrices y el suelo cuando su contenido de humedad es elevado o se presentan pendientes fuertes.

RODILLOS VIBRANTES REMOLCADOS

Forman hoy día la gama más extensa de máquinas de compactación. Los hay desde diámetros y pesos mínimos, hasta diámetros de 2 metros y 10 toneladas, de peso propio. Para los inferiores a 1.000 kilogramos, se puede aplicar casi todo lo dicho referente a placas vibratorias, con ventajas e inconvenientes según la particularidad de cada tipo.



Fig. 35 Rodillo.

La gama de los 3.000 a 5.000 kg. forman un tipo interesante de maquinas. Pueden ser con motor incorporado para producir la vibración o bien producir esta por medio de una transmisión elástica a partir del toma fuerzas del tractor. Son muy apropiados para compactar arenas y grava no cohesivas o ligeramente cohesivas, así como terrenos naturales rocosos, siempre que los fragmentos de roca sean pequeños. En suelos coherentes no dan buen resultado pues la vibración que producen en las partículas, no suele ser suficiente para vencer la cohesión existente entre ellas y como consecuencia su efecto sobre el material, es el puramente estático.

Este tipo de maquinas que es la ideal para compactar bases, sub-bases, suelo-cementos, etc. En capas de 20 a 30 cm., entre 6 y hasta 10 pasadas y a velocidad de trabajo alrededor de los 20 metros por minuto.

COMPACTADORES VIBRATORIOS “PATAS DE CABRA”

Estos rodillos fueron construidos pensando en compactación de suelos coherentes y en particular en los terrenos arcillosos, pues al concentrar las fuerzas estáticas y dinámicas sobre áreas pequeñas, es más fácil conseguir la energía necesaria y suficiente para romper las fuerzas de cohesión (de naturaleza capilar), entre sus partículas.

Las patas de estos rodillos producen una acción mezcladora y rompedora muy beneficiosa, sobre todo si el terreno no es homogéneo. También favorecen la unión entre las diferentes capas, pues al quedar la superficie de cada capa distorsionada, esta se compacta junto con la siguiente eliminando la tendencia hacia la laminación o separación de estas.



Fig. 36 Pata de cabra vibratorio.

3.5 CARGADORES Y RETROEXCAVADORAS

CARGADORES FRONTALES

Los cargadores frontales son principalmente de dos tipos, cargadores frontales montados sobre orugas y cargadores frontales montados sobre ruedas.

Los cargadores son equipo de excavación, carga y acarreo y por esta causa es más conveniente en algunos casos que la pala mecánica pues en esta es necesario el uso de camiones para el acarreo del material aunque sea a distancias cortas.



Fig. 37 Cargador frontal Doosan 600v.

DESCARGA FRONTAL

Los cargadores con descarga frontal son los más usuales de todos. Estos voltean el cucharón o bote hacia la parte delantera del tractor, accionándolo por medio de gatos hidráulicos. Su acción es a base de desplazamientos cortos y se usa para excavaciones subterráneas, a cielo abierto, para la manipulación de materiales suaves o fracturados, en los bancos de arena, grava, arcilla, etc. También se usa con frecuencia en rellenos de zanjas y en alimentación de agregados a plantas dosificadoras o trituradoras.

DESCARGA LATERAL

Los de descarga lateral tienen un gato adicional que acciona al cucharón volteándolo hacia uno de los costados del cargador. Esto tiene como ventaja que el cargador no necesita hacer tantos movimientos, para colocarse en posición de cargar al camión o vehículo que se desee, sino que basta que se coloque el vehículo en paralelo.

Desde luego este tipo es más caro que el de descarga frontal, y solo se justifica su uso en condiciones especiales de trabajo, por ejemplo, en sitios donde no hay muchos espacios para maniobras, como rezaga de túneles de gran sección, o en cortes largos de camino, ferrocarriles o canales.



Fig. 38. Descarga lateral.

DESCARGA TRASERA

Los equipos de descarga trasera se diseñaron con la intención de evitar maniobras del cargador. En estos el cucharón ya cargado pasa sobre la cabeza del operador y descarga hacia atrás directamente al camión o a bandas transportadoras o a tolvas, etc. Estos equipos resultan ser sumamente peligrosos y causan muchos accidentes, porque los brazos del equipo y el cucharón cargado pasan muy cerca del operador. Algunos de estos equipos han sido diseñados con una cabina especial de protección, para esto resta eficiencia a la máquina porque reduce la visibilidad, además de que añade peso al cargador.

Los cargadores son usualmente utilizados para la carga de materiales de todo tipo, para la carga de camiones y para la excavación de tierras. El cargador es un vehículo versátil, diseñado para excavar sobre el nivel de piso. Su sistema hidráulico ejerce una fuerza impresionante con el movimiento de ascenso de su bote. Este equipo no requiere de algún otro para limpiar el terreno en donde está trabajando.

CARGADORES MONTADOS SOBRE ORUGAS

Originalmente los cargadores de carriles sólo tenían movimiento de giro del cucharón y vertical a lo largo de un marco que le servía de guía al cucharón, que se colocaba en la parte delantera del tractor. Cuando el cucharón estaba a nivel de piso el tractor avanzaba hacia delante y el cucharón se introducía en el material para cargar; después se subía el cucharón a base de cables y poleas accionadas por una toma de fuerza del motor del tractor, y con el cucharón en esta posición, el tractor se movía hasta colocarse con el cucharón en la parte superior del vehículo. Que se deseaba cargar y se dejaba que el cucharón girara por el peso del material, y el cucharón mismo, aflojando uno de los cables de control. De este tipo de equipo quedan muy pocos trabajando pero fueron el origen de los actuales.



Fig. 39 Cargador frontal sobre orugas.

Al conjunto formado por el tractor de orugas y el equipo se le llama cargador frontal, tractor pala y más comúnmente trascabo, que es la degeneración del nombre de un modelo de una marca determinada, pero que en México se ha generalizado y se le nombra así a la de todas las marcas. Las dimensiones anchas son necesarias para la estabilidad de esta maquinaria ya que las inclinaciones de algunos de sus lados al cargar altos pesos podrían volcarla. Las cargas al frente mueven el centro de equilibrio hacia delante así que también las dimensiones anchas permiten solucionar este problema y darle un mejor comportamiento.

CARGADORES FRONTALES DE NEUMATICOS

Si los motores y trenes de transmisión han experimentado cambios lo suficientemente amplios para hacer posible la consecución del moderno cargador, para trabajos intensivos, los neumáticos también han evolucionado. Los de base estrecha inflados a alta presión han sido sustituidos por neumáticos de amplia base, alto índice de tracción, gran flotación y larga vida en servicio.



Fig. 40 Cargadores sobre neumáticos.

Quizás el resultado más significativo de las investigaciones sobre neumáticos, llevadas a cabo por fabricantes, es el desarrollo de neumáticos de gran base, sin cámara, especiales para el movimiento de tierra y para actuar sobre roca. Las presiones de inflado más bajas y las bases más amplias, han impulsado a una reconsideración de los conceptos de resistencia a la rodadura.

Otro resultado de la investigación llevada a cabo con neumáticos de base ancha es el referente a la presión por pulgada cuadrada ejercida sobre el suelo por el neumático, que es aproximadamente igual a la presión de inflado del neumático.

RETOEXCAVADORAS

El término retroexcavadoras se aplica a una máquina del grupo de las palas mecánicas, donde se encuentran también, la pala normal, la pala niveladora, la draga o excavadora con cucharón de arrastre, la excavadora con cucharón de almeja, etc., antiguamente la mayoría de los constructores elegían sus excavadoras de modo que pudieran servir para cualquier tipo de excavación. Las operaciones necesarias para cambiar de un tipo a otro, se reducían a la sustitución de las plumas, los cables, la herramienta excavadora y algún accesorio.

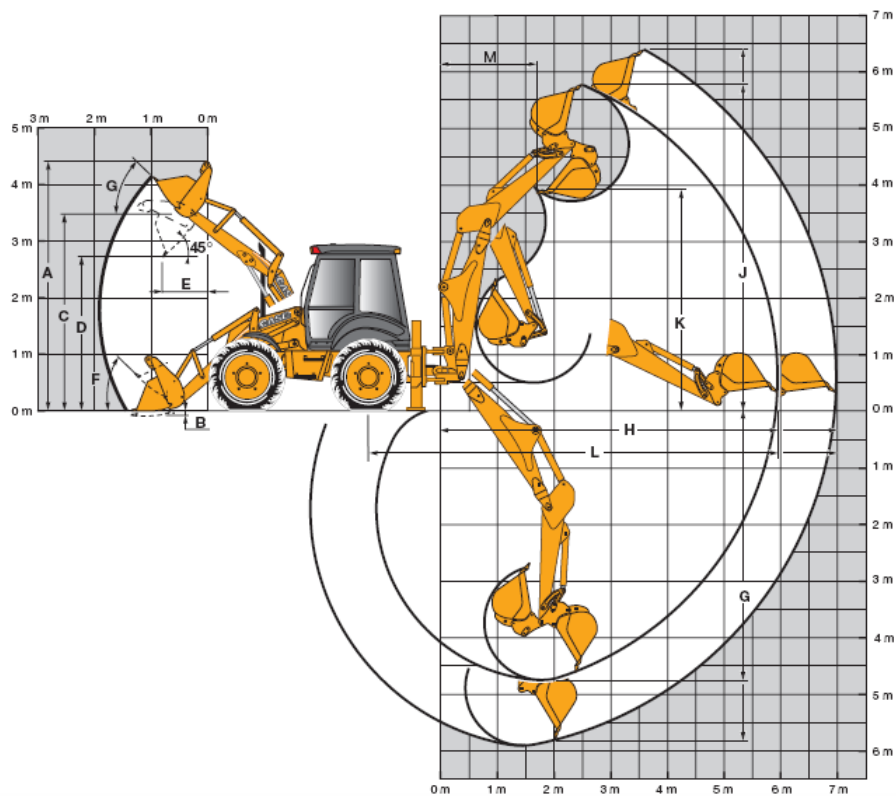


Fig. 41 Retroexcavadora.

Además del término de retroexcavadora a este tipo de máquina se le conoce como, excavadora de pala, retroexcavador, pala retroexcavadora o simplemente retro.

La retroexcavadora es una de las máquinas más versátiles en las áreas de construcción y de obras viales, en lo se refiere a movimientos de tierra y traslado de materiales. Diseñada para cumplir con las más altas exigencias en cuanto a seguridad y por sobre todo de la vida útil de la máquina.

Se caracteriza por un robusto diseño de sección de pluma y balancín, que es además estrecho, de forma que la visibilidad es excelente a todo lo largo de la pluma hasta la cuchara sea cual sea la profundidad a la que se excave.

El chasis de la retroexcavadora es fabricado de manera muy resistente, de esta manera se consiguen mejor índice de productividad resistencia y durabilidad gracias a su diseño como cargadora y excavadora versátil. En cuanto a la capacidad de excavación es excepcional gracias a la geometría y al potente sistema hidráulico de flujo compensado y sensible a la carga, que proporcionan además una mayor capacidad de elevación y ciclos de carga más rápidos.

RETROEXCAVADORAS MONTADAS SOBRE LLANTAS

Este tipo de retroexcavadora, son: máquinas veloces las que para su mejor rendimiento deben trabajar sobre terrenos en buen estado y donde los caminos sean transitables, generalmente tienen estabilizadores que son dispositivos a base de cilindro hidráulico para elevar la máquina durante el trabajo, son accionados desde la cabina, entonces las ruedas, se mantienen en posición elevada y la retro reposa sobre una plataforma en la que puede girar 360.

Las unidades sobre llantas pueden tener dos o más ejes, y su potencia puede ser transmitida en cuatro o más ruedas. Estas variaciones aparecen en la especificación de la unidad, y así, puede tratarse de una retro de 4 x 4 o de 6 x 4. El primer dígito indica el número de ruedas, y el segundo se refiere a las ruedas motrices o impulsoras, para diferenciarlas de las ruedas locales, o de movimiento libre. Este equipo desarrolla unas velocidades máximas de 16 a 35km/hr.



Fig. 42 Retroexcavadora montada sobre ruedas.

RETROEXCAVADORAS MONTADAS SOBRE ORUGAS

Un equipo móvil de construcción que deba trabajar sobre superficies de material tosco o suelto que aportan un apoyo deficiente, debe estar montado sobre carriles de oruga. Se recomienda lo anterior, en particular cuando el equipo después de ser instalado en el lugar de las obras, no necesita ser movido frecuentemente, usualmente este es el caso de las retroexcavadoras. El montaje de oruga aporta el máximo de área de apoyo para los trabajos en tierra suelta, a la vez que puede soportar el mayor abuso de la superficie de soporte en términos ásperos y distribuye el propio peso de las grandes máquinas que llega a ser de 190 toneladas aproximadamente.

El montaje sobre orugas consta de dos cintas de oruga continuas, paralelas, que sostienen un bastidor de base. La longitud de apoyo de las cintas de oruga depende de la superficie y de la profundidad de penetración en ésta. Esta longitud puede tomarse, con bastante seguridad, como la distancia entre los centros de las ruedas dentadas extremas de la oruga, o los ejes de la rueda guía, sobre las que giran las cintas.

El ancho de apoyo es igual al doble del ancho de una de las cintas. Normalmente, para una excavadora motorizada estas dimensiones dan origen a presiones de 0.35 a 2.70 Kg/cm².



Fig. 43 Retroexcavadora montada sobre orugas.

3.6 EQUIPO DE TRITURACIÓN

Las carreteras están conformadas como ya se dijo anteriormente por cuatro o cinco capas principales dependiendo de la superficie de rodamiento, en el caso de las carreteras con superficie de rodamiento de asfalto se utilizan cinco capas y en las de concreto hidráulico cuatro. Aunque una manera más generalizada considera cuatro capas aun para las carreteras de asfalto.

Estas bases están formadas por agregados pétreos que se obtienen ya sea de un río o de un banco de material. En ambos casos es necesario emplear un sistema de trituración para obtener materiales con las características deseadas de los agregados en cuanto a su granulometría.

Los materiales de la parte superior, la que va a soportar las cargas del tránsito, se construye con materiales colocados de tal manera que sean estables frente a las sollicitaciones a que va a estar sometido.

Las principales capas de una carretera son: sub-base, base, carpeta asfáltica y sello. Se producen por vía seca, por ser más económico y para producir los finos que le darán continuidad a la curva granulométrica indispensable en materiales para base y carpeta. Los tamaños recomendados son:

Material de sub-base:	2" - 1 1/2"	0
Material de base:	1 1/2"	0
Material de carpeta:	3/4"	0
Material de sello:	3/8"	3/16"

Tabla 6. Tamaños recomendados de agregados.

Estos materiales se obtienen como ya se dijo por medio de la trituración de la roca, por lo que comenzaremos a realizar una breve mención de los métodos de trituración.

Se dice que una roca es triturada, cuando una fuerza es aplicada con la suficiente energía para romper las fuerzas internas o planos especialmente frágiles que existen dentro de la roca.

El objetivo de la trituración en la producción de agregados, es la reducción de tamaño en un rango específico de tamaños. Por consiguiente, el controlar los grados de fractura en una roca y realizarlos en varias etapas de triturado y cribado, son un concepto fundamental y de vital importancia.

CLASIFICACIÓN DE LAS TRITURADORAS

Las trituradoras se clasifican de acuerdo a la fase de trituración que realizan dentro del mismo proceso, como primarias, secundarias, terciarias. La trituradora primaria recibe la roca directamente del acarreo proveniente del banco de roca o del río y se obtiene la primera reducción de tamaño. Este material va a otra trituradora para realizarle otra reducción y así puede pasar hasta, por lo general, a otras 2 o 3 trituradoras hasta reducirlo al tamaño requerido.

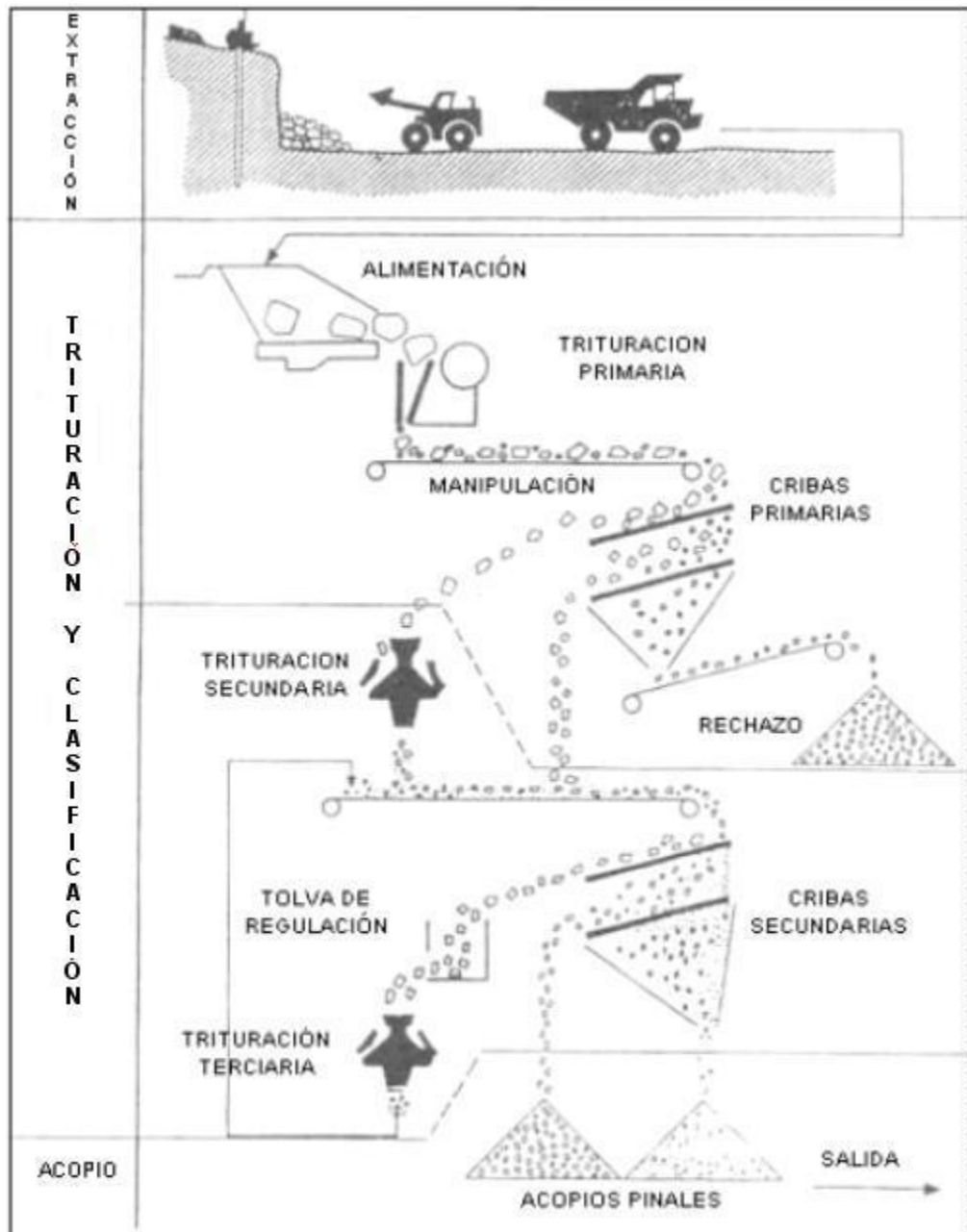


Fig. 44 Esquema de procesos de trituración.

Las rocas se fracturan debido a tres causas principales:

- I) 1.- Abrasión o desgaste
- II) 2.- Compresión
- III) 3.- Impacto

Abrasión.- Ocurre cuando la energía aplicada no es suficiente como para causar una fractura significativa en toda la roca

Compresión.- La energía resultante es aplicada en algunas regiones de la roca hasta un punto de fractura y el resultado es una cantidad considerable de rocas de menor tamaño. Comúnmente esto ocurre bajo condiciones de compresión donde la roca se alivia inmediatamente después de la carga que recibe.

Impacto.- El resultado es un número mayor de fracturas y por lo tanto varios tamaños de rocas.

Las máquinas de trituración más utilizadas en las obras civiles, emplean los métodos mecánicos de reducción antes mencionados mostrados en la tabla.

TRITURADORA METODO DE REDUCCIÓN			
	IMPACTO	DESGASTE	COMPRESIÓN
QUIJADAS	X		X
GIRATORIAS	X		X
CONO	X		X
RODILLOS			X
MARTILLOS	X	X	
IMPACTO	X		
PULVERIZADOR	X		

Tabla 7. Métodos de reducción que utilizan las distintas trituradoras.

El cuadro siguiente, muestra las diferentes etapas de trituración y sus equipos respectivos, señalando el tamaño del agregado desde su llegada y la reducción resultante a la salida (ambas en pulgadas), así como el equipo utilizado.

Trituración Primaria Greña a 10'' – 4''	Trituradoras de Quijadas Trituradoras Giratorias
Trituración Secundaria 12'' – 4'' a 3'' – 1''	Trituradoras de Cono Trituradoras de Rodillo
Trituración Terciaria 3'' – 1'' a ¾'' - ¼''	Trituradoras de Impacto Trituradoras de Cono Trituradoras de Rodillo Trituradoras de Martillos
Trituración Cuaternaria ó Molienda ¾'' a ¼'' a menor de ¼''	Trituradora de Conos Molinos de Barras Molinos de Bolas Pulverizadoras

Tabla 8. Etapas de trituración y equipo utilizado.

TRITURADORAS DE MANDÍBULAS DE DOBLE EFECTO O "BLAKE"

Una de las mandíbulas se mueve respecto a otra fija para triturar la roca, un motor mueve un excéntrico unido a una biela, que transmite la fuerza a la mandíbula por medio de dos tejas que son un eficiente multiplicador de fuerzas. Para garantizar el retroceso de la mandíbula móvil, está unida al bastidor por medio un vástago soportado por un muelle.



Fig. 45 Trituradora de doble quijada.

El sistema anti desgaste consiste en unas placas que recubren las mandíbulas y que pueden ser reversibles para aumentar su duración (la parte inferior sufre un mayor desgaste).

El sistema anti intriturbables consiste en una teja debilitada, y en el momento en que entra un intriturable (tornillos, tuercas, piezas metálicas...) la teja debilitada se rompe retrocediendo la mandíbula móvil por efecto del muelle citado previamente.

El mecanismo de regulación del tamaño de salida permite mover el apoyo fijo de la segunda mandíbula para acercarla o alejarla a la fija. La boca de entrada es cuadrada o rectangular y la salida es rectangular (ranura), el ángulo de la placa móvil es de unos 26° con respecto a la vertical.

La regulación es la separación entre mandíbulas en la posición más separada y el recorrido es el trayecto que recorre la mandíbula móvil.

La razón de reducción de estas máquinas está entre 4 y 8. Son muy resistentes a la abrasión, no soporta materiales pegajosos ya que se hace una pasta a la salida impidiendo la salida del material.

TRITURADORAS DE MANDÍBULAS DE SIMPLE EFECTO

Es una simplificación con respecto a las anteriores y es que un solo eje hace a la vez de articulación para el giro de la mandíbula y de excéntrica, por lo que la mandíbula es a la vez biela. El resto de sistemas son iguales a la Blake. Esta simplificación abarata la máquina, pero por el contrario debido al nuevo movimiento de elipse del extremo inferior de la mandíbula móvil aumenta el efecto de la abrasión.

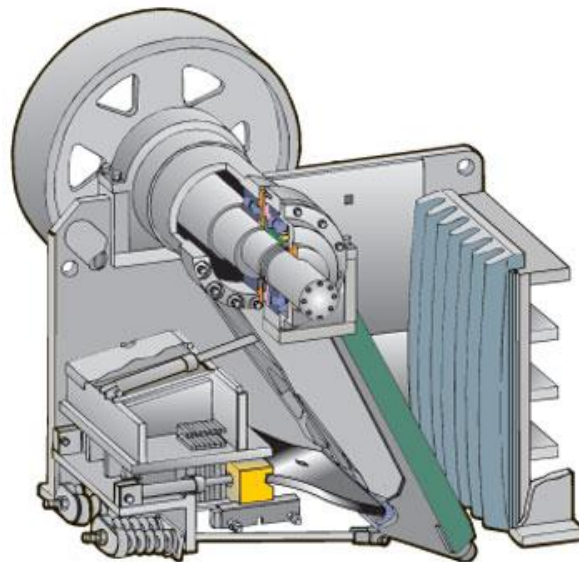


Fig. 46 Trituradora de simple efecto.

TRITURADORAS GIRATORIAS PRIMARIAS

Se pueden considerar en principio como la adaptación de las machacadoras de simple efecto con un eje de revolución en su esquema. Constan de una mandíbula fija con forma de tronco de cono invertido "cóncavo", en el interior del cual se mueve de forma excéntrica por medio de un eje otro tronco de cono que se denomina "nuez" o "cabeza". El eje se mueve por medio de un apoyo excéntrico, el eje y la nuez van montados locos de forma que en carga la nuez no gira, sino que tiene un simple

movimiento de cabeceo, comprimiendo la roca contra la mandíbula fija en puntos sucesivos a lo largo de circunferencias sobre ella. Al mismo tiempo que se realiza la aproximación en un punto, en el puesto se realiza la salida de material. De modo que siendo en si discontinua aparece como continua externamente debido a la simetría de revolución de la máquina, regularizándose el trabajo del motor y pidiéndose eliminar los volantes de inercia.

El mecanismo de regulación consiste en esencia en subir o bajar la nuez respecto al cóncavo.

El mecanismo de seguridad consiste en un elemento de resistencia calculador que se rompe al sobrepasar un cierto esfuerzo.

La descarga es por gravedad (rampa inclinada) y sensible a la humedad. Estas trituradoras se designan por su apertura de boca que es la distancia radial desde el borde del cóncavo hasta la nuez y es un poco menor que la mitad del diámetro del cóncavo.

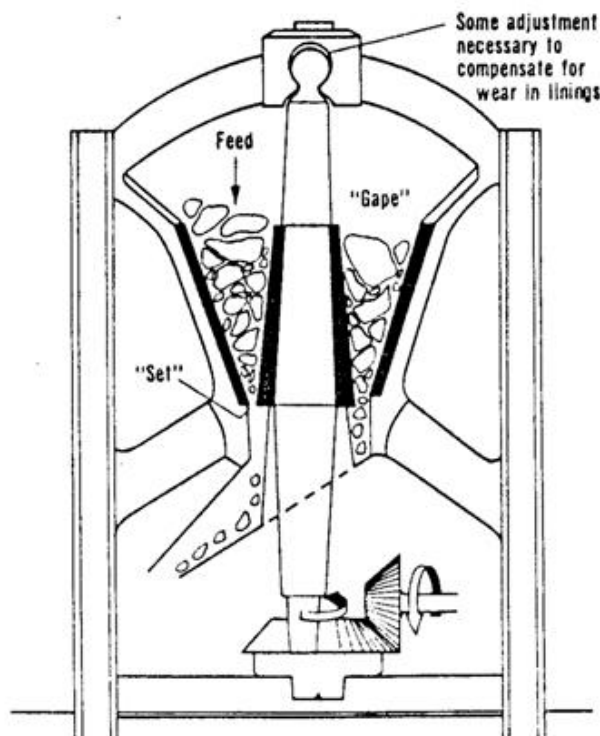


Fig. 47 Trituradora giratoria.

TRITURADORAS GIRATORIAS SECUNDARIAS Y CONOS

Para alimentaciones más finas se pueden utilizar máquinas más pequeñas, pudiendo funcionar con mayores velocidades, aunque con un descenso notable de la capacidad. Para aumentar la capacidad se realizaron nuevos diseños, siendo preciso variar el perfil del cóncavo y de la nuez que adoptan las formas correspondientes a un cono Symons.

Son muy sensibles a la humedad, debido a que la roca no puede salir sin haber sido triturada al menos una vez en la zona paralela entre cóncavo y nuez, se asegura que una de las dimensiones del grano es igual o inferior a la abertura en esa posición cerrada (regulación). La nuez y el cóncavo van recubiertos de camisas de acero al manganeso.

El mecanismo de regulación de la abertura consiste en que el cóncavo va soportado en una pieza que está roscada sobre una parte de la estructura soporte y se puede variar de esta forma su posición relativa con respecto a la nuez. En una variante, hidroconos, el eje de la nuez va soportado en un pistón hidráulico y la regulación se efectúa mediante el movimiento de este pistón.

El mecanismo de seguridad en los Symons consiste en que la estructura que soporta al cóncavo está unida a la general por una corona de muelles, que cuando entra un intriturable pueden ceder bajo el esfuerzo permitiendo su evacuación, para después retornar a su posición original. En los hidroconos consiste en un balón o acumulador de gas situado en el circuito hidráulico.

Estas máquinas permiten buenas relaciones de reducción que pueden ser de 6 a 8 en trituración secundaria clásica o de 2 a 3 en trituraciones muy finas o moliendas gruesas y con una buena cubricidad. La alimentación debe ser uniforme, cribada y tener siempre la cámara llena. Existen dos tipos de conos: "Standard" y de "cabeza corta" y se pueden montar sobre diversos tipos de cámaras: fina, media, gruesa y extragruesa.

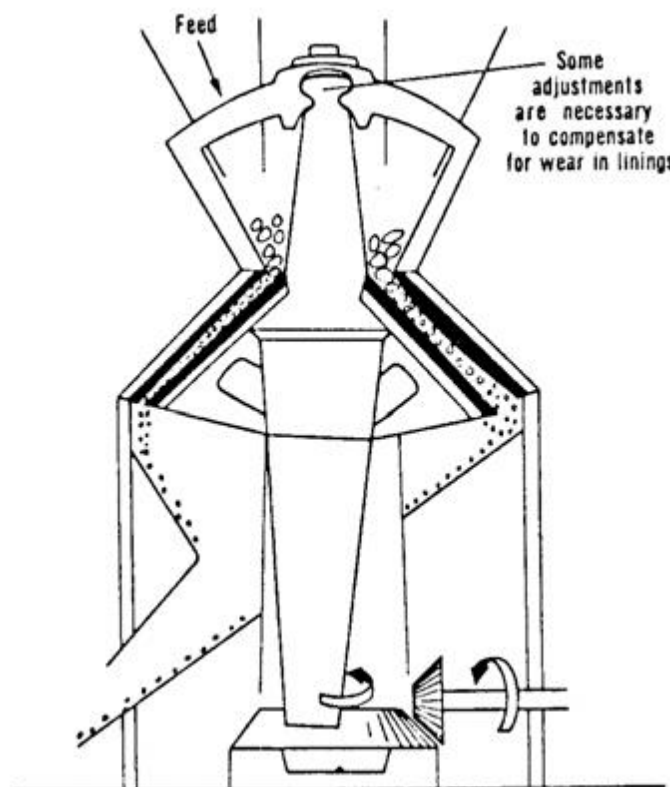


Fig. 48 Trituradora de cono.

TRITURADORAS DE CILINDROS (RODILLOS)

CILINDROS LISOS

Los más frecuentes son los de igual velocidad en ambos cilindros. Consisten en dos cilindros lisos enfrentados y separados una cierta distancia que giran en sentidos opuestos movidos por dos motores independientes. Los rodillos llevan una cierta distancia, que giran en sentidos opuestos movidos por dos motores independientes. Los rodillos llevan una camisa de acero al manganeso como protección al desgaste. Uno de los rodillos va montado sobre unos muelles que hacen de sistema de seguridad, el otro rodillo va montado sobre unos soportes o tornillos que permiten regular su posición respecto al anterior.

Los granos que caen entra los rodillos son rotos por compresión. Estas máquinas se pueden alimentar a tragante lleno o “en una capa” que produce muy pocos finos pero reduce la producción notablemente. Su relación de reducción normal es de 3 a 4, son muy robustas y sencillas pero se utilizan muy poco.



Fig. 49 Trituradora de rodillos lisos.

RODILLOS DENTADOS

Rodillo único y placa

Al girar el rodillo atrapa con sus picos la roca y la va desmenuzando obligándola a pasar por la separación entre rodillo y placa. Los dientes están sometidos a grandes esfuerzos y por ello solo es apta para rocas muy friables y no muy duras o materiales blandos.



Fig. 50 Rodillo simple.

DOS RODILLOS DENTADOS

Es similar pero con otro rodillo en vez de placa, estando los dientes o picos situados de tal forma que se alteran y pueden actuar además de cómo picas, como tamiz haciendo pasar rápidamente todos los tamaños inferiores ya producidos.

Trituran por picado (tracción) al actuar los picos y por compresión en el momento de obligar a pasar a los trozos entre los rodillos. La selección se hace teniendo en cuenta el tamaño de grano máximo a triturar, estimándose el tamaño del rodillo. En todos estos aparatos la potencia se calcula por la fórmula de Bond.

APARATOS QUE ACTÚAN POR IMPACTO O PERCUSIÓN

Para triturar grandes trozos la energía cinética se produce en una gran masa metálica giratoria (rotor) que proyecta la roca contra una superficie fija causando su rotura. En los aparatos para finos se tiene una serie de masas no muy grandes no muy grandes (martillos), girando a gran velocidad y que chocan contra el grano produciendo su rotura. Son aparatos de concepción sencilla, ligeros y baratos y con relaciones de reducción altas. Debido a su forma de actuación se produce un intenso frotamiento e impacto originándose un desgaste muy alto.

TRITURADORAS DE ROTORES DE EJE HORIZONTAL

Se suelen utilizar trituradores de uno o dos rotores, que consisten en tambores de acero recubiertos de placas de desgaste reemplazables. Los rotores giran dentro de una carcasa que lleva una serie de placas o barrotes cuya posición puede ser en muchos casos, ajustada al valor requerido.

La regulación es la distancia mínima entre la parte exterior de las barras del rotor y las placas o barras de choque. Los trozos de roca que caen sobre el rotor son alcanzados por las barras del rotor, que los lanzan contra las barras de choque donde se produce la rotura por impacto y los fragmentados vuelven a caer sobre el rotor para volver a ser lanzados. Se obtienen relaciones de reducción muy elevadas, de entre 30 y 40, debido a esto se requiere que el espacio dentro de la máquina sea muy amplio. Estas trituradoras se pueden utilizar con descarga libre por gravedad o cerrada por una rejilla, en descarga libre el único control del tamaño de grano se realiza por la variación de la regulación de los tornillos. Las placas o barras de choque van sujetas a la carcasa por muelles que les permiten ceder en caso de que entren intriturbables.

En trituración secundaria el control de posición de las barras o placas debe ser mucho más cuidadoso. Otra variable que puede lograr un control de los tamaños, es el control de la velocidad del rotor que influye directamente en la energía cinética.

El desgaste es uno de los factores limitantes, las barras impulsoras se han diseñado para que mantengan al máximo su perfil frente al desgaste y a la vez o alternativamente también para que sean reversibles. Se construyen normalmente de aleaciones con cromo y molibdeno (que pueden ser más frágiles pero intriturbables). Las placas de recubrimiento son modulares para permitir un fácil intercambio.

TRITURADORAS DE ROTORES DE EJE VERTICAL

La alimentación es por gravedad desde la parte superior y la evacuación del rotor es por fuerza centrífuga para ser lanzados los trozos contra las superficies de rotura. Los trozos son lanzados por el rotor contra las partes metálicas de la máquina en lo que se denomina trituración roca-metal. Debido al intenso roce con la placa o cubierta del disco lanzador y sus guías se produce una gran abrasión, más patente aún que en los tipos de eje horizontal, siendo por los demás el material producido de unas características similares a los de otros compactadores. Efectúan un cierto trabajo de calibración directa. La relación de reducción es alta.

La verdadera importancia de los aparatos de eje vertical es que han dado lugar a otro tipo de máquinas en los que la trituración se hace roca contra roca, reduciendo así enormemente el desgaste de las partes metálicas, se acumula roca en unas repisas junto a la zona de impacto y es esta roca contra la que choca la lanzada por el rotor. La velocidad de lanzamiento ha de ser elevada (60-70 m/s) para conseguir relaciones de reducción razonables. Estas máquinas en trituración consumen una gran cantidad de energía, por lo que se las ha empleado más como correctores de forma de los granos que como trituradoras.



Fig. 51 Trituradora de rotores vertical.

TRITURADORAS Y MOLINOS DE MARTILLOS

Utilizan el mismo principio que los de impacto, pero están adaptadas para recibir y producir tamaños más finos sobre todo los que se denominan molinos de martillos. Constan de un rotor que lleva en su periferia una serie de masa o martillos que están articulados en su base al núcleo del rotor. Esta disposición permite a los martillos retroceder cuando impactan sobre un intriturable o un grano demasiado grande, evitando de esta forma su rotura. Estos aparatos toleran muy mal la presencia de abrasivos, la alimentación debe tener menos de 4 – 5 % de sílice en las trituradoras y de 2 % en los molinos.



Fig. 52 Molino de bolas.

3.7 EQUIPO PARA TRANSPORTE

Otra de las tareas importantes en la construcción de carreteras es sin duda alguna el equipo de transporte de carga. Este tipo de equipo es quizás uno de los más importantes debido a las tareas que realiza dentro de la construcción.



Fig. 53 Camión de volteo de 3 ejes.

Sin ellos no sería posible la construcción de carreteras o de cualquier otro tipo de obra civil, ya que es imposible que el constructor tenga todos los materiales necesarios en situ. Es aquí donde entra la labor de los equipos de carga ya que son ellos los que proveen de materiales para la realización d todo tipo de obra trasportando el material necesario al sitio donde será utilizado.

En el caso de la construcción en carreteras son utilizados en la realización prácticamente de todas las actividades y son variados los tipos de transporte que usara el constructor en cada una de las etapas de la construcción de la carretera lo cual dependerá del rendimiento y tipo de material que se requiera en estas.

El camión de volteo es, probablemente, la más familiar de las máquinas que se usan para hacer el acarreo en movimiento de tierras.

Uso de los camiones de volteo.

Los camiones de volteo para circular en las carreteras tienen un peso combinado de chasis y caja, igual a 0.7 o 0.8 de su capacidad de carga. Como resultado, el camión para circular por la carretera es un medio de acarreo muy suficiente cuando las

condiciones de operación son adecuadas. No deberán usarse constantemente en bancos con piso irregular, en caminos para acarreo mal conservado o con pendientes excesivamente fuertes. Sin embargo, el camión de volteo es el preferido para las obras donde las distancias son grandes y los caminos se conservan bien, y las condiciones de carga y del suelo no son muy duras.

Este equipo es necesario para los contratistas que tienen que hacer acarreo en las calles y caminos. Incluyen la mayor parte de las excavaciones para las cimentaciones, caminos urbanos y suburbanos, para surtir arena, grava, material para rellenos, y tierra vegetal, así para la mayor parte de otras obras de tamaño medio y pequeño. En la construcción de caminos importantes es, generalmente, posible obtener permisos para operar vehículos para fuera de la carretera en tramos cortos de los caminos públicos, pero es probable que el contratista tenga que reconstruirlos después de haberlos usado.



Fig. 54 Utilización de camión para acarreo de material.

REMOLQUE O TRÁILER

El remolque o tráiler, consiste en una plataforma plana de madera, que puede tener la altura de las llantas o menor, descansando en dos ejes (uno a cada lado de la línea central) atrás, y sobre de un enganche de cuello de cisne al frente. En un remolque completo, el cuello de cisne es un soporte giratorio, y en los semirremolques se apoya en la “quinta rueda” del camión de arrastre. La plataforma debe quedar al nivel de la parte superior de las llantas, o más abajo.

Los ejes traseros están montados en su centro en muñones que permiten las oscilaciones laterales, permitiendo de esta manera distribuir con suavidad la carga en terreno irregular. Cada eje son de 15 o 18 “, y el tamaño de las llantas oscila entre 7.50 a 10.00 “. La cubierta tiene un espesor de 2 o 3. Las llantas exteriores se cambian de la misma manera que las de un camión. Se usan frenos de aire comprimido o de aire

enrarecido en los cuatro cubos de las ruedas. Que se controlan desde la cabina del camión por medio de tuberías y de mangueras flexibles provistas de coples enganchables. Están proyectadas de tal manera, que si se desconectan las mangueras, se aplican automáticamente los frenos para evitar que se desboquen.



Fig. 55 Cama baja.

Si el remolque se va a usar con y sin la carretilla delantera, la carretilla se puede equipar con una quinta rueda del tipo de tractor, en vez de la mesa giratoria ordinaria. Se fabrican también carretillas con dos ejes que pueden oscilar transversalmente, cada uno de los cuales lleva dos o cuatro llantas.

Las plataformas horizontales son más cortas, presentan un espacio mayor sin estorbos, y son algo más fáciles de cargar y descargar por el extremo trasero. Las plataformas inclinadas disminuyen la altura de la máquina cargada en seis pulgadas o más y son fáciles de cargar por los lados pero se reducen las distancias para despejar el camino. Estos remolques se fabrican ordinariamente con capacidades de quince a treinta toneladas, con anchuras de 8 y de 10 pies. La altura de la defensa trasera varía entre 30 y 36 “, según el tamaño de las llantas. La altura libre sobre el pavimento es de 10 a 18 “.

Los remolques mayores pueden tener ruedas traseras en tándem se usan dos ejes cortos a cada lado, que se apoyan en muñones longitudinales. Este montaje aumenta la longitud total, pero proporciona espacio en la plataforma entre las llantas, que puede utilizarse para soportar las rampas, o para llevar un cucharón de pala. El remolque tipo D tiene ocho pares de ruedas traseras en cuatro ejes oscilan individualmente en un par de vigas longitudinales. Las ruedas se pueden ajustar

automáticamente a las irregularidades del terreno en cualquier dirección. Estos remolques tienen capacidades de 30 75 ton. Los anchos son de 8 y 10 pies, y las longitudes de las plataformas, adelante de las ruedas traseras, son de 16 o 18 pies. Las alturas de las plataformas son semejantes a las de los modelos "H". Las plataformas se pueden extender hacia atrás, o hacia los lados.

REMOLQUES PARA CARGAR.

Es una costumbre ordinaria subir la maquinaria que tiene autopropulsión a los remolques de reversa, con la ayuda de rampas, bloques, o bancos, o su combinación.



Fig. 56 Remolque.

3.8 EQUIPO AUXILIAR UTILIZADO EN OBRA

BARREDORA

Cuando se va a realizar una repavimentación la barredora se utiliza para quitar el polvo de la superficie del pavimento existente antes de poner el asfalto nuevo, la capa del polvo debe ser totalmente retirada con la escoba de la barredora. Esto se hace para asegurar la adherencia apropiada entre el asfalto nuevo y el viejo pavimento.



Fig. 57 Barredora.

COMPRESOR

Los compresores se usan en la construcción para generar potencia neumática para una variedad de herramientas de mano, martillos y ciertos equipos de atomización y transporte.

El principio de funcionamiento de los compresores de aire utilizados en la construcción es el siguiente.



Fig. 58 Compresor.

El aire comprimido se transmite en movimiento lineal simple. El movimiento se controla con válvulas y canales de dirección. La fuerza impulsora que produce el movimiento, se genera mediante un diafragma, un embolo o un impulsor giratorio alojados en el interior del compresor.

Los modelos de compresores usados en la construcción son, generalmente compresores de aire portátiles. Un compresor portátil es una planta integral para producir aire comprimido, que tiene un motor de combustión interna, un compresor, un recipiente y mecanismos para arranque, enfriamiento, lubricación y autorregulación. Los motores para los compresores portátiles hasta de 8.5 m³/min (300 pcm) de capacidad, son de gasolina o diesel, mientras que los de los compresores mayores son por lo general de diesel. Estas unidades portátiles son enfriadas por agua o por aire, y en su mayoría, son compresores de una o dos etapas. Su presión de descarga es relativamente estándar, y varía entre 6.3 y 8.75 kg/cm² de acuerdo con las necesidades de la mayoría de las herramientas neumáticas portátiles.

Compresores rotatorios. El compresor rotatorio es un tipo de compresor de desplazamiento positivo, que tiene cierta semejanza con el compresor recíproco. La diferencia principal radica en que el compresor rotatorio funciona con un impulsor rotatorio que fuerza el paso del aire a través de una cámara curvada de confinamiento, para comprimirlo a una presión mayor. Sirve para accionar la misma variedad de accesorios, y en consecuencia, tiene esencialmente los mismos usos de construcción que el compresor recíproco.

La innovación más reciente y de gran aceptación para compresores portátiles de tipo rotatorio, es el del mecanismo de tornillos giratorios. El centro de este mecanismo consiste en dos rotores helicoidales encajados, que giran en direcciones contrarias dentro de una cámara de compresión.

APLICACIONES DE LOS COMPRESORES EN LA CONSTRUCCIÓN.

Para accionar herramientas de mano para

- Cortar material con sierras circulares o de cadena,
- Hacer barrenos en piezas de madera,
- Hacer barrenos en roca o en otro material triturable,
- Extraer material pegajoso, como la arcilla,
- Romper material triturable, como asfalto o concreto,
- Vibrar concreto vaciado para lograrla densidad óptima,
- Terminar las aristas rugosas para dar el acabado final a materiales vaciados o fraguados,
- Colocar remaches en su lugar,
- Apretar o aflojar tornillos estructurales,

- Apisonar material terreo de relleno para mejorar su consolidación, etc.
- Para diversos usos en la perforación de túneles.
- Para mezclar y atomizar para lanzamiento.
- Para el transporte de fluidos a través de tuberías.
- Para bombas centrifugas accionadas por aire.
- Para accionar tambores o frenos de malacates movidos por aire.
- Herramientas comunes activadas por medio de compresores.
- Martillo cincelador
- Cincel o excavadora de arcilla
- Rompedora de pavimentos

GRÚA

Una grúa es una máquina de elevación de movimiento discontinuo destinado a elevar y distribuir cargas en el espacio suspendidas de un gancho.

Por regla general son ingenios que cuentan con poleas acanaladas, contrapesos, mecanismos simples, etc. para crear ventaja mecánica y lograr mover grandes cargas

Existen muchos tipos de grúas diferentes, cada una adaptada a un propósito específico. Los tamaños se extienden desde las más pequeñas grúas de horca, usadas en el interior de los talleres, grúas torres, usadas para construir edificios altos, hasta las grúas flotantes, usadas para construir aparejos de aceite y para rescatar barcos encallados.

Son muy comunes en obras de construcción, puertos, instalaciones industriales y otros lugares donde es necesario trasladar cargas. Existe una gran variedad de grúas, diseñadas conforme a la acción que vayan a desarrollar:

- Plumines, habitualmente situados en la zona de carga de los camiones.
- Auto grúas, de gran tamaño y situadas convenientemente sobre vehículos especiales.
- Grúas pórtico o grúas puente, empleadas en la construcción naval y en los pabellones industriales.
- *Transtainers* o grúas *Luffing*, grúas móviles empleadas en el transporte y estiba de contenedores.
- Grúas torres, destinadas principalmente a la construcción de edificios.
- Grúas autodesplegables, pequeñas grúas de construcción de fácil transporte y de montaje más o menos automático.
- Grúa Derrick
- Grúas horquilla

Un camión grúa es aquel que lleva incorporado en su chasis una grúa, que se utiliza para cargar y descargar mercancías en el propio camión, o para desplazar dichas mercancías dentro del radio de acción de la grúa. Con la incorporación de una grúa en el camión, se consigue una mayor independencia a la hora de la carga y descarga del material transportado, no dependiendo de maquinaria auxiliar como carretillas elevadoras.



Fig. 59 Camión grúa.

GENERADOR

Este tipo de dispositivos se utiliza como auxiliar para proporcionar energía mecánica para activar reflectores y diversas herramientas que utilizan como fuente de energía la electricidad y que por la ubicación de los trabajos no se cuenta con esta.

Utilizan como combustible la gasolina que es fácil de transportar en recipientes al lugar de utilización.



Fig. 60 Generador.

DOBLADORA

Esta máquina es de gran utilidad en la construcción de obra complementaria en carreteras y en la construcción de estructuras de concreto armado.

Permiten con gran facilidad hacer todo tipo de estribos así como dobleces en la varilla que se utiliza como acero de refuerzo en las estructuras.



Fig. 61 Dobladora.

PLANTA SOLDADORA ELÉCTRICA

La máquina de soldar es uno de los dispositivos o herramientas más utilizadas por el ser humano. La máquina de soldar, como toda herramienta, fue evolucionando con el tiempo, sus aplicaciones fueron transformándose, se convirtieron en herramientas mucho más perfectas. Su objetivo o aplicación principal es calentar las piezas para luego provocar una unión entre ellas; calentando los materiales y las mezclas se logra que el material se vuelva más resistente al ejercer alguna fuerza sobre ellos. Hasta su invención, los únicos métodos que se utilizaban en su lugar eran los de aleación y forja; luego recién a principios del 1900 la electricidad empezó a desarrollar diferentes utilidades. Lo que hoy conocemos como máquina de soldar se inició mucho antes mediante una corriente directa que contenía electrodos de carbón y distintos acumuladores. Realizaban su trabajo mediante un arco eléctrico fundiendo los metales y el electrodo; hoy podemos encontrar distintos tipos de máquinas de soldar, con varias formas y estilos, pero todas ellas sólo cuentan con dos tipos de salida: c.a. y c.d.



Fig. 62 Planta de soldar eléctrica.

BOMBAS

Una bomba es una turbo máquina generadora para líquidos. La bomba se usa para transformar la energía mecánica en energía hidráulica.

Las bombas se emplean para bombear toda clase de líquidos, (agua, aceites de lubricación, combustibles ácidos, líquidos alimenticios, cerveza, leche, etc.), éste grupo constituyen el grupo importante de las bombas sanitaria. También se emplean las bombas para bombear los líquidos espesos con sólidos en suspensión, como pastas de papel, melazas, fangos, desperdicios, etc.

Un sistema de bombeo puede definirse como la adición de energía a un fluido para moverse o trasladarse de un punto a otro.

Bomba centrífuga

Una bomba centrífuga es un tipo de bomba hidráulica que transforma la energía mecánica de un impulsor rotatorio llamado rodete en energía cinética y potencial requeridas. El fluido entra por el centro del rodete, que dispone de unos álabes para conducir el fluido, y por efecto de la fuerza centrífuga es impulsado hacia el exterior, donde es recogido por la carcasa o cuerpo de la bomba, que por el contorno su forma lo conduce hacia las tubuladuras de salida o hacia el siguiente rodete (siguiente etapa).

Aunque la fuerza centrífuga producida depende tanto de la velocidad en la periferia del impulsor como de la densidad del líquido, la energía que se aplica por unidad de masa del líquido es independiente de la densidad del líquido. Por tanto, en una bomba dada que funcione a cierta velocidad y que maneje un volumen definido de líquido, la energía que se aplica y transfiere al líquido, (en pie-lb/lb de líquido) es la misma para cualquier líquido sin que importe su densidad. Por tanto, la carga o energía de la bomba en pie-lb/lb se debe expresar en pies o en metros y es por eso por lo que se denomina genéricamente como "altura".



Fig. 63 Bomba centrífuga.

Bomba sumergible

Una bomba sumergible es una bomba que tiene un motor sellado a la carcasa. El conjunto se sumerge en el líquido a bombear. La ventaja de este tipo de bomba es que puede proporcionar una fuerza de elevación significativa pues no depende de la presión de aire externa para hacer ascender el líquido.

Un sistema de sellos mecánicos se utiliza para prevenir que el líquido que se bombea entre en el motor y cause un cortocircuito. La bomba se puede conectar con un tubo, manguera flexible o bajar abajo de los carriles o de los alambres de guía de modo que la bomba siente en "un acoplador del pie de los platos", de tal forma conectándola con la tubería de salida.

Las bombas sumergibles encuentran muchas utilidades, las bombas de etapa simple se utilizan para el drenaje, el bombeo de aguas residuales, el bombeo industrial general y el bombeo de la mezcla. Las bombas sumergibles se colocan habitualmente en la parte inferior de los depósitos de combustible y también se utilizan para la extracción de agua de pozos de agua.



Fig. 64 Bomba sumergible.

REVOLVEDORA DE 1 Y 2 SACOS

Sin duda la revolvedora es de gran ayuda en la fabricación de concreto y mortero en obra en pequeñas cantidades. Es una máquina que funciona por medio de un sistema de engranes que son impulsados por la acción de un motor de gasolina.

Consta básicamente de un bote que está dotado de un sistema de aspas en su parte interna que son los encargados de homogenizar los agregados para el concreto en su interior, además de un motor que es el que proporciona la energía necesaria para hacer girar los engranes y revolver los agregados. Los hay de diversas capacidades y existen un gran número de empresas que lo fabrican por su utilidad y versatilidad.



Fig. 65 Revolvedora.

CAMIÓN PIPA

El camión cisterna es una de las muchas variedades de camión que sirve tanto para el transporte de líquidos como para su mantenimiento por tiempo prolongado según sus características.

Entre estos se destacan por su mayor uso los de agua para regadío y trasvase, los de transportes de combustibles líquidos como gasolina, queroseno, gas lp y otros, o los de productos químicos líquidos, estando el transporte de éstos regulado en casi todo el mundo por su peligrosidad.

Coloquialmente también se le ha llamado "zeppelin" o "pipa"; como por ejemplo, un camión cisterna que transporta agua a alguna comunidad, es conocido como la "*pipa de agua*".



Fig. 66 Camión pipa.

4 DESCRIPCIÓN DEL EQUIPO UTILIZADO EN EL “PPS QUERÉTARO – IRAPUATO”

4.1 EQUIPO UTILIZADO EN EL PPS QUERÉTARO - IRAPUATO

EQUIPO PARA PAVIMENTACIÓN

PLATA DE ASFALTO MARCA TEREX PVM 300

El E3 continúa con la evolución de las mezcladoras de tambor, este tambor marca una revolución en el diseño, la combinación de alta productividad y alta capacidad proporciona una sencillez y una confiabilidad satisfactoria.

Características:

- Disponible en ambos portátiles y reubicable
- Una larga duración de batería principal se encuentra rodeado por un bidón exterior PAR PAR que el pleno se calienta antes de mezclarlo con AC
- De tres ejes con sistema de suspensión de ballestas estándar en 300P
- Cuatro ejes con sistema de suspensión de ballestas estándar en 400P y 500P
- Automático de dosificación de asfalto, flujo regulado por una frecuencia variable de CA
- Unidad de masa con caudalímetro

Especificaciones:

- Diámetros:
E3-300 7 x 4 pies 10 pies 4 en x 7 pies 4 en (2,23 mx 3,15 mx 2,23 m)
E3-400 8 pies 4 en x 11 pies x 8 pies 4 en (2,54 mx 3,35 mx 2,54 m)
E3-500 9 pies 3 en x 11 pies 10 pies x 9 en 3 en (2,82 mx 3,61 mx 2,82 m)
- Longitud:
E3-300 42 pies (12,80 m)
E3-400 47 pies 6 en (14,48 m)
E3-500 47 pies 6 en (14,48 m)

- Producción:
E3-300 300 t/h (272 t / h)
E3-400 400 t / h (362,8 m / h)
E3-500 500 t / h (446 t / h)



Fig. 67 Diferentes elementos que conforman la planta de asfalto.

PLANTA DE ASFALTO CMI

DESCRIPCIÓN:

Planta 250 toneladas portátil

- Tambor mezclador Ventury UVM 250 con quemador de llama ancha modelo SJ350.
- Dosificador de asfalto líquido.
- Control de contaminación de gases tipo húmedo.
- Tambor con entrada para material reciclado.
- Medidor de flujo y bomba de asfalto líquido.
- Motores de frecuencia variable de 380 Volts 50 ciclos.
- tolvas portátiles de 20 toneladas cada uno con sus cintas dosificadoras de velocidad variable y cinta colectora.
- Una carreta tipo container portátil con tableros y controles.
- Una cinta inclinada de alimentación, tambor, con sistema de pesaje electrónico.
- Silo de almacenamiento de 100 toneladas.
- Compresor de aire de 15 HP.
- 1 transportador de mezcla inclinado que transporta asfalto desde el tambor hasta el silo acumulador.

- Caldera marca CEI modelo 1500 con capacidad de 1.692.000 de VTU / hora para calentar el aceite.
- 2 estanques de 30.000 litros con serpentines.

EXTENDEDORA DE ORUGAS DF 145 CS

Con capacidad de extendido de aglomerado asfáltico desde 2,5 a 13 m de anchura y espesores de capa de hasta 35 cm, la extendedora de orugas DF 145 CS de Metso Dynapac se caracteriza por su alta capacidad de trabajo, robustez, versatilidad, facilidad de empleo y servicio, gracias a la incorporación de la última tecnología.



Fig. 68 La primera imagen muestra a los rastrilleros ejecutando su trabajo después de que pasa la extendedora de asfalto; la segunda imagen muestra la parte de descarga del asfalto; en la tercera se muestra el vaciado de asfalto y en la cuarta se muestra el sistema de nivelación de la extendedora.

FRESADOR MODELO PM-565B

MODEL	PM-565B	
Gross Power	466 kW	625 hp
Operating Weight	38 595 kg	85,100 lb
Engine Model	3408E TA (HEUI)	
Rated Engine RPM	2100	
No. of Cylinders	8	
Bore	137 mm	5.4"
Stroke	152 mm	6"
Displacement	18 L	1099 in3
Drive Systems: Rotor	Mechanical	
Ground	Hydrostatic with 4 track design	
Discharge Conveyor Width	914 mm	3'0"
Width of Standard Track Shoe	348 mm	13.7"
Track Length on Ground	2045 mm	6'8.5"
Ground Contact Area		
(w/std. shoe)	0.43 m2	672 in2
Operating Dimensions:		
Height	5040 mm	16'6"
Width	2790 mm	9'2"
Length	15.1 m	49'5"
Standard Mandrel (Width of Cut)	2100 mm	6'11"
No. of Teeth	170	
Depth of Cut (max.)	305 mm	12"
Speeds: Operating (max.)	0-40 m/min	0-132 fpm
Speeds: Travel (max.)	0-6 km/h	0-3.7 mph
Inside Turning Radius: Righ	4674 mm	15'4"
Grade Control	Standard Non Contact Electric	
	Over Hydraulic	
Slope Control	Standard	
Fuel Capacity	946 L	250 U.S. gal
Water Capacity	3787 L	1000 U.S. gal

Tabla 9. Características técnicas de la fresadora PM - 565B.



Fig. 69 Fresadora Caterpillar en acción.

FRESADOR EN FRIO WIRTGEN W2100

Fresadora en frío de gran rendimiento, sobre orugas, para la eliminación de grandes superficies en carreteras y aeropuertos en todo su espesor. Carga frontal del material fresado mediante el sistema de cinta cargadora de dos piezas.



La **W 2100** es la de más grande rendimiento entre las máquinas que fresan en frío de Wirtgen de la clase de 2 m

Anchura de fresado:	2.100 mm
Profundidad de fresado:	0-320 mm
Potencia de motor:	522 kw / 710 PS
Peso de servicio, CE:	36.300 daN (kg)
Accionamiento del tambor de fresado:	mecánico
Número de orugas:	4
Accionamiento de traslación:	hidráulica en todas las orugas



Fig. 70 Fresadora Wirtgen W 2100.

PETROLIZADORA ROSCO MAXIMIZER II



Características

- Automática en la cabina de control
- Viking 400 GPM Bomba de asfalto
- Válvulas internas Spraybar
- Circulación plena Spraybar
- ENVIRO-FLUSH Limpieza de salida del sistema
- Precisa la aplicación de principio a fin
-

ROMPEDORA DE PAVIMENTO



MX90A & B

90 libras de clase Breaker Manipule fijo

La MX90 es el golpe más duro para romper el de su clase, y es ideal para realizar pesados trabajos de demolición de espesor en hormigón, asfalto y el rock.

Características

- No costoso barras laterales y manantiales
- Esta unidad cuenta con un poder tiempos pistón que ofrece más potencia a la superficie de trabajo y elimina el costoso desgaste tema, el bloque yunque
- Compuesto válvula elimina oxidación
- Dirección de escape elimina golpe atrás
- Construido en lubricador
- Muchas piezas intercambiables con el MX60
- Reparables por parte vástago no requiere una rueda de prensa al servicio
- Backhead se ajusta a la pierna operators
- 1-1/8 pulgadas x 6 pulgadas = caña MX90A
- 1-1/4 pulgadas x 6 pulgadas = caña MX90B
- Silenciador se vende por separado, ninguna parte. 51953453

TRACTORES



Tractor de Cadenas D6R de la Serie III

Diseñado para trabajos exigentes. El D6R de la Serie III está diseñado para ser productivo en una variedad de aplicaciones. Mantiene el material moviéndose con la fiabilidad y los bajos costos de operación que espera de las máquinas Cat.

MODEL	D6R XL Series III		D6R XW Series III		D6R LGP Series III	
Flywheel Power	149 kW	200 hp	149 kW	200 hp	149 kW	200 hp
Operating Weight:						
Power Shift Clutch Brake (FTC)	—		—		—	
Power Shift Differential Steer	—		—		—	
SU Blade	20,081 kg	44,270 lb	20,572 kg	46,673 lb	21,716 kg	47,874 lb
Engine Model	C8 ACERT		C8 ACERT		C8 ACERT	
Rated Engine RPM	1860		1860		1860	
No. of Cylinders	8		8		8	
Bore	112 mm	4.4"	112 mm	4.4"	112 mm	4.4"
Stroke	149 mm	5.9"	149 mm	5.9"	149 mm	5.9"
Displacement	8.8 L	637 in ³	8.8 L	637 in ³	8.8 L	537 in ³
Track Rollers (Each Side)	7		7		8	
Width of Standard Track Shoe	560 mm	22"	760 mm	30"	915 mm	36"
VPAT	560 mm	22"	760 mm	30"	810 mm	32"
Length of Track on Ground	2.87 m	9'6"	2.87 m	9'5"	3.28 m	10'9"
Ground Contact Area (W/Std. Shoe)	3.22 m ²	4972 in ²	4.36 m ²	6780 in ²	5.99 m ²	9288 in ²
VPAT	3.22 m ²	4972 in ²	4.36 m ²	6780 in ²	5.31 m ²	8258 in ²
Track Gauge	1.88 m	74"	2.03 m	80"	2.29 m	90"
VPAT	2.13 m	84"	2.29 m	90"	2.29 m	90"
GENERAL DIMENSIONS:						
Height (Stripped Top)**	2.38 m	7'10"	2.38 m	7'10"	2.43 m	8'0"
Height (To Top of ROPS Canopy)	3.20 m	10'8"	3.20 m	10'8"	3.25 m	10'8"
Height (To Top of ROPS Cab)	3.20 m	10'8"	3.20 m	10'8"	3.25 m	10'8"
Overall Length (Without Blade)	3860 mm	12'8"	3,860 mm	12'8"	4.25 m	13'11"
With S Blade	—		—		5.47 m 17'11"	
With SU Blade	5.33 m	17'8"	5.33 m	17'8"	—	
With VPAT Blade	5.27 m	17'4"	5.27 m	17'4"	5.97 m	19'7"
With Angle Blade	5.21 m	17'1"	5.21 m	17'1"	—	
Overall Length (VPAT)	3.86 m	12'8"	3.86 m	12'8"	4.25 m	13'11"
With S Blade	—		—		5.47 m 17'11"	
With SU Blade	5.33 m	17'8"	5.33 m	17'8"	—	
With VPAT Blade	5.27 m	17'4"	5.27 m	17'4"	5.97 m	19'7"
With Angle Blade	5.21 m	17'1"	5.21 m	17'1"	—	
Width (Over Trunnion)	2.64 m	8'8"	2.95 m	9'8"	3.43 m	8'8"
Width (W/O Trunnion — Std. Track)	2.44 m	8'0"	2.74 m	9'0"	3.15 m	10'4"
Width (W/O Trunnion — Std. Shoe)	—		—		—	
Ground Clearance	383 mm	1'3"	383 mm	1'3"	433 mm	1'6"
Blade Types and Widths:						
Straight	—		—		4.06 m	13'4"
Angle Straight	4.17 m	13'8"	4.20 m	13'9"	—	
Full 25° Angle	3.78 m	12'6"	3.81 m	12'6"	—	
Semi-U	3.26 m	10'8"	3.56 m	11'8"	—	
VPAT (Variable pitch, angle, & tilt)						
straight	3.88 m	12'9"	4.16 m	13'8"	4.16 m	13'8"
VPAT Full 24° Angle	3.55 m	11'8"	3.81 m	12'6"	3.81 m	12'6"
Fuel Tank Refill Capacity	382 L	101 U.S. gal	382 L	101 U.S. gal	382 L	101 U.S. gal

Tabla 10. Datos técnicos de tractor de cadenas D6R III.



Fig. 71 Tractor D6R III en empuje de tierras.



Fig. 72 Tractor D6R III en desempalme de suelos.

D6T Track-Type Tractor



Engineered for demanding work. The D6T is designed to be productive in a variety of applications. It keeps material moving with the reliability and low operating costs you expect from Cat machines.

Modelo de motor	Cat C9 ACERT
Potencia en el volante	185 hp
Peso en orden de trabajo	46690 lb



Puesto del operador

El puesto del operador del D6R de la Serie III ha sido diseñado para mayor comodidad y facilidad de operación.



Motor

Mediante una combinación de innovaciones en el punto de combustión, la tecnología ACERT optimiza el rendimiento del motor a la vez que cumple con las regulaciones de emisiones para obras.



Tren de fuerza

La servotransmisión y la dirección del diferencial funcionan con el nuevo motor C9 para suministrar la potencia y la fiabilidad extraordinarias esperadas de Caterpillar.



Tractor de cadenas D8T

Diseñado para trabajos exigentes. La construcción duradera del D8T está bien adaptada para condiciones de trabajo difíciles. Combinado con el motor C15 para un rendimiento superior, economía de combustible y conformidad con las normas de emisiones gracias a la Tecnología ACERT, el D8T mantiene el material en movimiento con la fiabilidad y los bajos costos de operación que usted espera de los tractores Cat.

MODEL	D8T	
Flywheel Power	231 kW	310 hp
Operating Weight:		
Power Shift Clutch Brake	—	
Power Shift Differential Steer	39 488 kg	84,850 lb
Engine Model	C15 ACERT	
Rated Engine RPM	1860	
No. of Cylinders	6	
Bore	137 mm	5.4"
Stroke	172 mm	6.76"
Displacement	15.2 L	928 in ³
Track Rollers (Each Side)	8	
Width of Standard Track Shoe	560 mm	22"
Length of Track on Ground	3.21 m	10'8"
Ground Contact Area (W/Std. Shoe)	3.57 m ²	6644 in ²
Track Gauge	2.08 m	8'10"
GENERAL DIMENSIONS:		
Height (Stripped Top)**	2.67 m	8'9"
Height (To Top of ROPS Canopy)	3.46 m	11'4"
Height (To Top of ROPS Cab)	3.46 m	11'4"
Overall Length (With SU Blade)****	6.09 m	20'0"
(Without Blade)	4.64 m	16'8"
Width (Over Trunnion)	3.06 m	10'0"
Width (W/O Trunnion — Std. Shoe)	2.64 m	8'8"
Ground Clearance	618 mm	2'4"
Blade Types and Widths:		
Angle Straight	4.99 m	16'4"
Full 25° Angle	4.52 m	14'10"
Universal	4.26 m	14'0"
Semi-U	3.94 m	12'11"
Fuel Tank Refill Capacity	643 L	170 U.S. gal

Tabla 11. Ficha técnica de tractor D8T.



Fig. 73 Tractor D8T en empuje de material de excavación.



Fig. 74 Tractor D8T extendiendo material.

MOTOCONFORMADORAS



120H Standard Motor Grader

The 120H Standard blends productivity and durability to give you the best return on your investment. The Cat 3306 engine, direct-drive power shift transmission and load-sensing hydraulics are designed to work together to deliver top productivity in all applications.



Fig. 75 Motoconformadora en construcción de caminos.



Fig. 76 Motoconformadora nivelando carretera.

MODEL	120H	
Net Flywheel Power: Gears 4-8	104 kW	140 hp
Gears 1-3▲	93 kW	126 hp
Operating Weight*	11 358 kg	26,040 lb
Engine Model	3118 DITA	
Rated Engine RPM	2000	
No. of Cylinders	6	
Displacement	6.6 L	403 in ³
Max. Torque Rise	33%	
No. of Speeds Forward/Reverse	8/8	
Top Speed: Forward	42.6 km/h	28.6 mph
Reverse	33.7 km/h	20.9 mph
Std. Tires — Front & Rear	13.00-24 (10 PR) (G-2)	
Front Axle/Steering:		
Oscillation Angle	32°	
Wheel Lean Angle	18°	
Steering Angle	50°	
Articulation Angle	20°	
Minimum Turning Radius**	7.2 m	23'8"
Front Frame Section Modulus:		
Min.	1619 cm ³	99 in ³
Max.	3681 cm ³	226 in ³
No. Circle Support Shoes	4	
Hydraulics: Pump Type	Axial Piston	
Max. Pump Flow	148 L/min	39 gpm
System Capacity	61 L	16 U.S. gal
Implement Pressure: Max.	24 150 kPa	3500 psi
Min.	3100 kPa	460 psi
Electrical:		
System Size	24V	
Std. Battery CCA @ 0° F	760	
Std. Alternator	35 amp	
GENERAL DIMENSIONS:		
Height (to top of ROPS)	3.11 m	10'2"
Height (stripped top)***	2.91 m	9'7"
Overall Length	8.14 m	28'9"
With Ripper & Pushplate	9.64 m	31'8"
Wheelbase	5.87 m	19'3"
Blade Base	2.60 m	8'8"
Overall Width (at top of front tires)	2.44 m	8'0"
Standard Blade: Length	3.66 m	12'0"
Height	610 mm	2'0"
Thickness	22 mm	0.87"
Lift Above Ground	457 mm	18"
Max. Shoulder Reach:¶		
Frame Straight	1.84 m	6'0"
Articulated Position	2.78 m	9'1"
Fuel Tank Capacity	284 L	76 U.S. gal

Tabla 12. Ficha técnica de motoconformadora 120 H.

EQUIPO PARA COMPACTACIÓN

El compactador de tierras SD100D es uno de los modelos de mayor peso operativo de la amplia gama fabricada por la firma Ingersoll Rand. Es un rodillo mixto, de gama pesada pero de alta calidad, extremadamente duro y robusto que proporciona seguridad y fiabilidad en todas las operaciones.



Fig. 77 Compactador mixto SD100D.

Su manejo es simple y ofrece una visibilidad muy buena, de 360° sin obstrucción en ninguna dirección, lo que confiere al conductor la máxima seguridad y calidad en la ejecución de las tareas. Éste no necesita desplazarse de su asiento ni asomarse para poder ver la zona a compactar.

El SD100 es idóneo para la compactación en la construcción de caminos, infraestructuras, zanjas de 1,5 m y obras de servicios públicos. Con rulo liso, está indicado para terrenos granulares, mixtos o de conglomerado, mientras que, equipado con pata de cabra, puede actuar en terrenos cohesivos.

COMPACTADOR VIBRATORIO DE SUELO CP-533E

El Compactador de Suelo CP-533E ofrece un alto rendimiento de compactación, velocidad y buen rendimiento en las pendientes para maximizar la productividad y proporcionar fiabilidad y duración excepcionales.



Fig. 78 Trabajos de compactación de asfalto y terracerías.

MODEL	CS-533E			
Gross Power	97 kW	103 hp	High amplitude	1.80 mm 0.071"
Rated Engine RPM	2200		Low amplitude	0.85 mm 0.033"
No. Cylinders	4		Centrifugal Force	
Displacement	4.4 L	269 in3	Maximum	234 Kn 52,600 lb
Engine Model	3054C		Minimum	133 kN 30,000 lb
Speeds	2 forward/2 reverse		General Dimensions:	
Max. Speed (For./Rev.)	12 km/h	7.5 mph	Overall width w/blade	2430 mm 8'0"
Working Speed	8 km/h	4.9 mph	Overall width w/o blade	2286 mm 7'6"
Operating Weight	10 840 kg	23,900 lb	Drum width	2130 mm 7'0"
Shipping Weight	10 265 kg	22,635 lb	Drum diameter	1534 mm 5'0"
Drive	Drive Drum/Rear Wheel		Tires	23.1 X 26-8 ply
Steering:			Overall height	3060 mm 10'1"
Inside radius	3680 mm	12'1"	Wheel to drum	2900 mm 9'6"
Outside radius	5810 mm	19'1"	Overall length	5510 mm 18'1"
Steering angle	±34°		Curb clearance	521 mm 20.5"
Vibratory System:			Service Refill Capacities:	
Ecc.Weight Drive	Hydraulic		Fuel tank	180 L 47 U.S. gal
Frequency	31 Hz	1860 vpm	Crankcase	9 L 2.4 U.S. gal
Amplitude	2		Hydraulic fluid	60 L 16 U.S. gal

Tabla 13. Ficha técnica de compactador CS-533E.



COMPACTADOR VIBRATORIO DE ASFALTO CB-534D

El compactador de asfalto **CB-534D** ofrece un alto rendimiento de compactación, versatilidad en la aplicación y comodidad del operador para maximizar la productividad mientras proporciona una calidad excepcional del producto. Basado en la reputación probada en

la industria de los compactadores de asfalto Caterpillar, el CB-534D establece nuevos estándares innovadores para productividad y fiabilidad de la industria de compactación de asfalto. El tren de fuerza resistente Cat, los sistemas hidráulicos y los sistemas vibratorios probados en campo y el sistema más grande del mundo de respaldo de los distribuidores asegura que el Compactador de Asfalto CB-534D proporcionará la máxima productividad. La cabina del operador proporciona un ambiente espacioso y confortable para el usuario que promueve una operación productiva. Servicio simple e intervalos de servicio prolongados minimizan el tiempo de mantenimiento y aumentan la producción de la máquina.

MODEL	CB-534D			
Gross Power	97 Kw 130 hp			
Rated Engine RPM	2200		Low Amplitude	0.33 mm 0.013"
No. Cylinders	4		Centrifugal Force	
Displacement	4.4 L 269 in ³		High Amplitude	112 kN 25,208 lb
Engine Model	3054C		Low Amplitude	35 kN 7922 lb
Speeds			General Dimensions:	
Max. Speed (For./Rev.)	0-13 km/h	0-8 mph	Overall width	1883 mm 6'2"
Working Speed	0-13 km/h	0-8 mph	Drum width	1700 mm 5'7"
Operating Weight	10 000 kg	22,050 lb	Drum diameter	1300 mm 4'3"
Shipping Weight	9370 kg	20,660 lb		
Drive	Hydraulic		Overall height (ROPS)	3050 mm 10'0"
Steering:			Wheelbase	3640 mm 11'11"
Inside radius	4150 mm	13'7"	Overall length	4940 mm 16'2"
Outside radius	5850 mm	19'2"	Curb clearance	870 mm 34.5"
Steering angle	±40°		Ground clearance	306 mm 12"
Vibratory System:			Service Refill Capacities:	
Ecc.Weight Drive	Hydraulic direct		Fuel tank	219 L 58 U.S. gal
	auto reversing		Crankcase	9 L 2.4 U.S. gal
Frequency (Max.)	42 Hz	2520 vpm		
Amplitude	5		Hydraulic tank	60 L 15.8 U.S. gal
High Amplitude	1.05 mm	0.041"	Sprinkler water	1100 L 290 U.S. gal

Tabla 14. Ficha técnica de compactador CB-534D.



Fig. 79 Compactadora en trabajos sobre asfalto.

COMPACTADOR PS300C

MODELO	MOTOR	POTENCIA BRUTA KW/HP	MASA EN ORDEN DE TRABAJO KG	ANCHURA DE COMPACTACION M
PS300C	3054C T	75/102	21 300	1.9



Fig. 80 Compactador PS-300C en trabajos sobre la carretera Querétaro - Irapuato.



Fig. 81 Compactador PS-300C.

MODEL	PF-300B/PS-300B2	Steering:	
Gross Power	74 kW 99 hp	Inside radius	5800 mm 19'0"
Rated Engine RPM	2200	Outside radius	7700 mm 25'3"
No. Cylinders	4	General Dimensions:	
Displacement	4 L 243 in ³	Overall width	1960 mm 6'5"
Engine Model	3054 T	Rolling width	1920 mm 6'5"
Speeds	3 forward/3 reverse	Tire width	300 mm 11.8"
Max. Speed (For./Rev.)	19 km/h 11.8 mph	Tire overlap	30 mm 1.2"
Working Speed	12.7 km/h 7.9 mph	Overall height (ROPS)	3000 mm 9'10"
Wheel Configuration	3 front/4 rear	Wheelbase	4030 mm 13'3"
Tires	13/80 X 20 X 20	Overall length	5300 mm 17'5"
Operating Weight Empty (no ballast)	14 000 kg 30,860 lb	Ground clearance	250 mm 10"
Operating Weight Full (max. ballast)	23 050 kg 50,820 lb	Service Refill Capacities:	
Maximum Weight per Wheel	3300 kg 7260 lb	Fuel tank	215 L 56.8 U.S. gal
Shipping Weight	14 000 kg 30,860 lb	Crankcase	7 L 1.8 U.S. gal
Drive	Mechanical	Hydraulic fluid	10 L 2.6 U.S. gal
		Sprinkler water	460 L 121 U.S. gal

Tabla 15. Ficha técnica de compactador PS-300C.



815F SERIES 2 SOIL COMPACTOR

The new 815F Series 2 Soil Compactor offers greater power, productivity and compaction. Combine this with the finest customer support system in the world - the Caterpillar® dealer network of service and parts - and you get the lowest operating cost with the best up-time in the industry!

MODEL	815F	Feet per Wheel	60
Flywheel Power	179 kW 240 hp	Feet per Row	12
Operating Weight*	20 755 kg 45,765 lb	Rows of Feet	5
Engine Model	3176C ATAAC	Foot Length	191 mm 7.5"
Rated Engine RPM	2100	End Area Per Foot	134 cm ² 20.8 in ²
No. Cylinders	6	Width of Two Pass Coverage	4.2 m 13'9"
Displacement	10.3 L 629 in ³	GENERAL DIMENSIONS:	
Speeds:		Height (top of ROPS)	3.34 m 11'0"
Forward	3	Height (stripped top)**	2.39 m 7'10"
Reverse	3	Wheel Base	3.35 m 11'0"
Turning Radius — outside Corner of Blade	7.2 m 23'7"	Overall Length with Dozer	6.80 m 23'6"
Fuel Tank Refill Capacity	446 L 117.8 U.S. gal	Width over Drums	3.24 m 10'8"
TAMPING FOOT WHEELS:		Ground Clearance	390 mm 15.4"
Each Drum Width	991 mm 3'3"	STRAIGHT BULLDOZER:	
Diameters, over feet	1.42 m 4'8"	Width over End Bits	3.76 m 12'4"
Diameters, over drum	1.03 m 3'5"	Height with Cutting Edge	860 mm 2'10"

Tabla 16. Ficha técnica de compactador 815F.



Fig. 82 Compactador pata de cabra sobre suelo de base.

COMPACTADORA/APISONADOR MIKASA MT74F

Motor Robin OHV 4 tiempos, peso 73 kg., 3600 r.p.m, golpes por min. 640-680, fuerza impacto 1400 kg.

Este equipo es utilizado para compactar pequeñas aéreas así como lugares donde un equipo de mayores dimensiones no puede compactar.



Fig. 83 Bailarina o apisonador.

CARGADORES Y RETROEXCAVADORAS

CARGADOR 966 H

MODEL	966H	
Flywheel Power: Net	195 kW	262 hp
Max.	195 kW	262 hp
Engine Model	C11 ATAAC	
Rated Engine RPM	1800	
Bore	130 mm	5.1"
Stroke	140 mm	5.5"
No. Cylinders	6	
Displacement	11.1 L	677 in ³
Speeds Forward	km/h	mph
1st	6.7	4.2
2nd	12.6	7.8
3rd	22.1	13.8
4th	37.4	23.4
Speeds Reverse		
1st	7.4	4.6
2nd	13.9	8.7
3rd	24.3	15.2
4th	37.4	23.4
Hydraulic Cycle Time, Rated Load in Bucket:	Seconds	
Raise	5.9	
Dump	1.6	
Lower (Empty, Float Down)	2.4	
Total	9.9	
Tread Width	2.23 m	7'4"
Width Over Tires	2.96 m	9'9"
Ground Clearance	565 mm	22"
Fuel Tank Capacity	410 L	108 U.S. gal
Hydraulic Tank Capacity	110 L	29 U.S. gal
Hydraulic System Capacity (Includes tank)	200 L	52 U.S. gal

Tabla 17. Ficha técnica de cargador 966H.



Fig. 84 Cargador 966H.

CARGADOR RETRO 416 E

Motor	55 kW
Potencia neta - SAE J1349	
Modelo de motor (estándar)	3054C DINA Cat®
Potencia neta - ISO 9249	56 kW
Potencia bruta - SAE J1995	58 kW
Potencia bruta - ISO 14396	56 kW
Potencia neta - EEC 80/1269	56 kW
Modelo de motor (optativo)	3054C DIT Cat®
Potencia bruta SAE J1995	69 kW
Potencia bruta - ISO 14396	68 kW
Potencia neta - SAE J1349	66 kW
Potencia neta - ISO 9249	67 kW
Potencia neta - EEC 80/1269	67 kW
Calibre	105 mm
Carrera	127 mm
Cilindrada	4.4 L
Reserva de par neta a 1.400 rpm - estándar	27 %
Reserva de par neta a 1.400 rpm - optativa	37 %
Par máximo neto a 1.400 rpm - estándar - SAE J1349	296 N·m
Par máximo neto a 1.400 rpm - optativo - SAE J1349	386 N·m
Retroexcavadora	
Profundidad de excavación - estándar	4360 mm
Brazo extensible retraído	4402 mm
Brazo extensible extendido	5456 mm
Alcance desde el pivote de rotación - estándar	5618 mm
Rotación del cucharón	205 Grados
Fuerza de excavación del cucharón - estándar	51.8 kN
Brazo extensible retraído	51.1 kN
Brazo extensible extendido	51.1 kN
Fuerza de excavación del brazo - estándar	31.8 kN
Brazo extensible retraído	31.8 kN
Brazo extensible extendido	23.4 kN
Levantamiento del brazo a 2.440 mm (8 pies) - estándar	2321 kg
Brazo extensible retraído	2112 kg
Brazo extensible extendido	1323 kg
Altura de carga - estándar	3636 mm
Brazo extensible retraído	3577 mm
Brazo extensible extendido	4145 mm
Alcance de carga - estándar	1768 mm
Brazo extensible retraído	1868 mm

Cargador

Capacidad del cucharón - Uso General	.76 m ³
Ancho del cucharón - Uso general	2262 mm
Altura de descarga a ángulo máximo	2651 mm
Alcance de descarga a ángulo máximo	772 mm
Profundidad de excavación	106 mm
Capacidad de levantamiento a altura máxima	2547 kg
Fuerza de desprendimiento del cucharón	40.9 kN



Fig. 85 Retroexcavador en trabajos de excavación y corte de material.

CARGADOR SOBRE NEUMÁTICOS CATERPILLAR 928 GZ

MODEL	928Gz	
Flywheel Power: Net	107 kW	143 hp
Max.	115 kW	155 hp
Engine Model	3058 DI ATAAC	
Rated Engine RPM	2300	
Bore	100 mm	3.94"
Stroke	127 mm	5"
No. Cylinders	8	
Displacement	6 L	368 in ³
Speeds Forward	km/h	mph
1st	7.9	4.9
2nd	12.6	7.8
3rd	25.8	16.0
4th	37.7	23.4
Speeds Reverse		
1st	7.9	4.9
2nd	12.6	7.8
3rd	25.8	16.0
Hydraulic Cycle Time, Rated Load in Bucket:	Seconds	
Raise	8.1	
Dump	1.2	
Lower (Empty, Float Down)	2.8	
Total	10.1	
Tread Width	1.95 m	6'5"
Width Over Tires	2.44 m	8'0"
Ground Clearance	408 mm	16"
Fuel Tank Capacity	225 L	68.4 U.S. gal
Hydraulic Tank Capacity	70 L	18.6 U.S. gal
Hydraulic System Capacity (Includes tank)	125 L	33 U.S. gal

Tabla 18. Ficha técnica.



RETROEXCAVADORA SOBRE ORUGAS CATERPILLAR 330 DL

Motor	Diesel Caterpillar modelo C9, 6 cilindros, con potencia al neta de 268 hp equipado con Tecnología ACERT, el cual optimiza el rendimiento del motor entregando más potencia efectiva y cumpliendo con lo establecido por las normas Tier III y controlado por el ADEMTMA4
Cilindrada	8800 cm ³
Transmisión	Hidrostática con pedales y accionamiento manual.
Cabina	Cerrada con A/C, y asiento suspensión de aire en vinil. La del sistema de monitoreo es de fácil acceso y posee varios idiomas a escoger.
Tren de rodaje	Los rodillos inferiores y superiores así como las ruedas guías son sellados y lubricados de alta duración. El ancho de las zapatas es de 800 mm con una longitud de 5020 mm de doble garra.
Longitud del stick	2.55 metros
Boom	Boom es de excavación masiva.
Profundidad máxima de excavación	6633 mm
Altura máxima de Corte	10023 mm
Altura máxima de Carga	6629 mm
Fuerza excavación del Cucharón	271 kN (60923 lbf)
Fuerza excavación del Stick	195.2 kn (43883 lbf)
Capacidad del balde	3.15 m ³ y 1676 mm de ancho.
Sistema hidráulico	Bomba de sistema piloto independiente de las bombas principales, dotada de amortiguadores de cilindros, sistema de detección de carga cruzada, válvula hidráulica auxiliar
Control de la pluma	Joystick pilotado de bajo esfuerzo

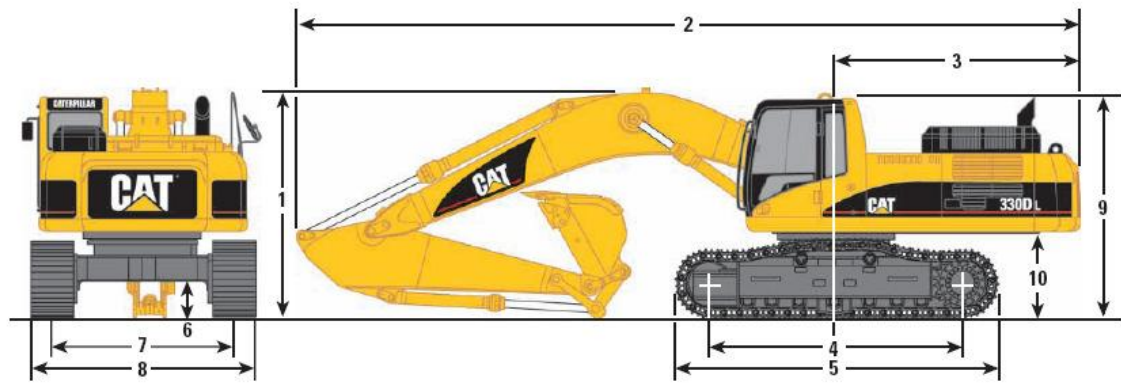


Fig. 86 Excavadora 330DL.



Fig. 87 Excavadora 330 DL llenando la criba.



Fig. 88 Excavadora 330DL excavando y llenando camión de volteo.

EQUIPO DE TRITURACIÓN

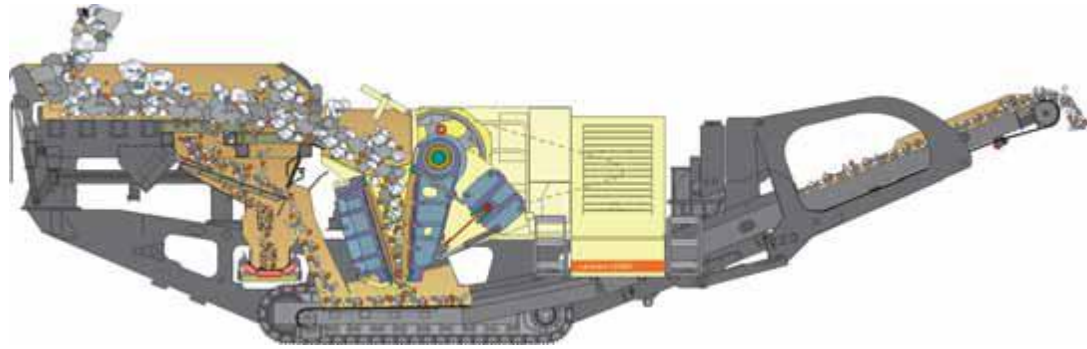


Fig. 89 Esquema interno de trituradora.

LOKOTRACK LT110

Trituradora de mandíbulas Nordberg C110

- Abertura de alimentación: 1.100x850 mm
- Rango de reglaje (cantera): 70-170 mm

Tolva de alimentación

- Volumen: 7 m³
- Anchura: 2.750 mm

Alimentador por barrotos VF544-2V

- Longitud: 4.400 mm
- Anchura: 1.300 mm

Cinta transportadora de descarga principal H14-12

- Anchura de cinta: 1.400 mm
- Altura de descarga: 3.500 mm

Cinta transportadora lateral H8-10

- Anchura de cinta: 800 mm
- Altura de descarga: 3,65 m

Motor

- Caterpillar C-13
- Potencia: 310 kW
- Autorización Tier 3
- Accionamiento directo de la trituradora
- Demás accionamientos de tipo hidráulico

Dimensiones de transporte (unidad estándar)

Longitud: 17.400 mm

Anchura: 3.500 mm

Altura: 3.800 mm

Peso: 66.000 kg



Fig. 90 Planta de trituración utilizada en el proyecto.



Fig. 91 Tren de procedimiento completo de planta de trituración utilizada en el proyecto.

TRITURADORA DE CONO FINTEC 1080

El C3 trituradora reúne exigentes demandas de calidad de los productos. Total se han hecho más estrictas las especificaciones y esta tendencia hacia niveles más altos se mantendrá. El C3 trituradora y el CSC (cúbica forma aplastante) técnica desarrollada por Sandvik, producir el material de forma excelente y de alta calidad.

El C3 está equipado con un sistema de hydroset que proporciona la seguridad y el establecimiento de funciones de ajuste, e incorpora un pesado cilindro hidráulico, que apoya la mainshaft y ajusta su posición. El semi-automático de ajuste de sistema de regulación no solo optimiza la producción, sino que también realiza un seguimiento en línea de desgaste. Esto hace que sea fácil de planificar los cambios de línea y minimizar las interrupciones en la producción.



Fig. 92 Trituradora FINTEC.

Además de la alta capacidad, el 1080 es compacto, que le hace muy fácil de mover y de instalar.

Características estándar

- Robusto, de alta resistencia, cámara de trituración
- Alta capacidad, reducción de alto rendimiento
- En condiciones de aceptar "todos en la alimentación animal" en la mayoría de los casos
- Dirección hidráulica
- Alimentador automático de alto nivel para mantener el estrangulador piensos.
- Alimentador hidráulico móvil para el transporte.
- CAT C13 - 328 Kw (385 Hp) motor
- Pesados, chasis y pista de marco
- 500mm de ancho pistas
- Detector de metales instalados de serie.

LOKOTRACK LT300HP CONO PLANTA MOVIL

La pista montada Lokotrack LT300HP, equipada con la probada trituradora de cono Nordberg HP300, tiene un rendimiento de hasta 550 MTPH (660 stph). Además de la selección de las trituradoras de cono de alto rendimiento, la LT300HP también ofrece una variedad de opciones de alimentación y equipos de detección. Esto hace que LT300HP la forma más eficiente y flexible secundario / terciario en la planta de trituración de mercado que pueden ser transportados de un sitio a otro como una sola unidad.

LT300HP tiene una construcción robusta para las más duras de la trituración de roca dura sitios. La trituradora de cavidad se pueden seleccionar de acuerdo con las necesidades específicas de las aplicaciones para lograr alta capacidad, alta calidad de los productos, así como bajos costos de parte de desgaste. Fácil de transporte en un remolque permite el uso rentable de LT300HP de alta capacidad de contratación.



El Lokotrack LT300HP características principales:

Construido alrededor de la probada trituradora de cono HP300
Trituradora cavidad se pueden seleccionar con precisión
IC600 trituradora de automatización estándar
Amplia variedad de opciones de equipamiento disponibles

Especificaciones técnicas

Trituradora	Trituradora de cono Nordberg HP300	
Pantalla	Nordberg TK13-30S pantalla (opcional)	

Transporte dimensiones - unidad básica

Longitud:	16 300 mm	56 pies 6 en
Ancho:	3500 mm	11 pies 6 en
Altura:	3800 mm	12 pies 6 en
Peso:	43 000 kg	95 000 libras

TEREX FINLAY 694

3 Cubierta de pantalla con la innovadora forma dividida en 4. La Finlay 694 es la última historia de éxito en el móvil de detección y es considerada como un importante beneficio para los operadores de aplastamiento. El producto se puede alimentar en una trituradora secundaria antes de volver a selección, o un cuarto del producto puede ser almacenado, que a menudo elimina la necesidad de una nueva pantalla. Las aplicaciones incluyen análisis de agregados triturados, arena y grava, el carbón y el cribado de materiales de demolición.

- 3 cubierta de alto rendimiento de pantalla
- Sin complicaciones de alto rendimiento con 2, con velocidad controlada screenbox motores hidráulicos
- Cuatro transportadores de productos con alta descarga de mayor altura
- Longitud extra amplia pasarela que permite el acceso sin restricciones en todos los ámbitos de la screenbox
- Control remoto de depósito
- Alta capacidad

Opciones

- Sencilla o Doble cubierta vibrante red
- Trituradora de la tolva de entrada de la tolva de alimentación
- Cubre polvo
- Opción de ruedas: Opción de ruedas y orugas



EQUIPO DE TRANSPORTE

KENWORTH T800B



CAMION PIPA CHEVROLET KODIAK PARA COMBUSTIBLE



CAMION PIPA CHEVROLET KODIAK PARA AGUA



KENWORTH T600

El Kenworth T600 fue, y sigue siendo el camión más aerodinámico en el mercado. El T600 continúa tendiendo, en la actualidad, el más alto en diseño en aerodinámica, funcionamiento y comodidad.



La aerodinámica sin igual del T600 le hace un tractocamión perfecto para la adaptación de cajas secas. Con su maniobrabilidad superior proporcionada por la distancia hacia atrás más de lo normal de su eje delantero, el T600 es el camión perfecto para recolección, entrega y aplicaciones con caja corta. Seleccione de la amplia gama de opciones de ahorro por peso y el T600 es la unidad ideal para cargadores a granel o cualquier persona que trate de maximizar la carga.

El T600 está diseñado y construido pensando en la comodidad del conductor. Ya sea que usted lo maneje o tenga operadores, disfrutará de la quietud de la cabina, los controles en los lugares adecuados, y detalles de alta calidad en los interiores. El resorte delantero de 64", suspensión de aire de 8 bolsas y la combinación de la suspensión de la cabina y el dormitorio proporcionan un paseo excepcionalmente agradable.

El T600, como todos los productos KW, está diseñado para tener un fácil mantenimiento. Esto aunado a su aerodinámica, su confiabilidad y el alto valor de reventa hacen del T600 una excelente inversión

CAMA BAJA LOAD KING



EQUIPO AUXILIAR UTILIZADO EN OBRA

BARREDORA AUTOPROPULSADA ROSCO RB-48

Descripción

El PB-48, Challenger y SweepPro V barredoras son su opción para la maniobrabilidad, la visibilidad, la fiabilidad y la rentabilidad de una variedad de aplicaciones de barrido. De la seguridad y la comodidad de todas las cabinas, operador de control de presión del cepillo, barriendo el ángulo y la velocidad de respuesta con el joystick de control de escoba y de transmisión hidrostática y dirección. El nuevo Challenger V incorpora un potente Sweepster pincel.



COMPRESOR PORTATIL INGERSOLL RAND P 185



SOLDADORA ELECTRICA MILLER XMT456



BOMBA SUMERGIBLE WACKER PS2 750



DOBLADORA ELECTRICA ALBA DAR 55



Modelo	DAR 55
Velocidad del plato	5/10 r.p.m.
Potencia del motor	4 Kw.
Peso neto (Kg.)	1050
Dimensiones (mm.)	1600x1070x1050

4.2 DISPOSICIÓN FINAL DE RESIDUOS PELIGROSOS

Hoy más que nunca los constructores debemos tomar conciencia sobre las repercusiones que pueden traer el realizar todo tipo de construcción, llámese carretera, edificio, fraccionamiento, presa, etc. Ya que la situación actual de las condiciones naturales del planeta están deterioradas debido a la mala planeación del crecimiento poblacional y a la falta de conciencia de la humanidad entera.

Es por eso que el constructor debe tomar en cuenta que debido al largo proceso de ejecución de los proyectos es necesario llevar un control de la generación de residuos que se generan en la construcción además de las medidas previas sobre el efecto de la obra en el impacto ambiental.

En el país existe un órgano regulador que se encarga de dictar las normas y reglamentos a seguir en cuanto a impacto ambiental se refiere y que legisla además sobre la disposición de los residuos generados, este órgano es la SEMARNAT.

Este órgano ha promulgado leyes que guía y legisla sobre la disposición de los residuos generados por medio de la LGEEPA la cual hace referencia sobre la normatividad que se debe seguir con dichos residuos.

Dicha ley define en el Capítulo I todos aquellos conceptos que interfieren en el proceso de la disposición final de los residuos generados, desde la generación de estos durante el proceso hasta llegar a la disposición final.

Todo constructor debe estar consciente de que es un generador de residuos por lo que el artículo 8 hace una definición sobre las obligaciones del generador.

ARTICULO 8o.- El generador de residuos peligrosos deberá:

- I) Inscribirse en el registro que para tal efecto establezca la Secretaría;
- II) Llevar una bitácora mensual sobre la generación de sus residuos peligrosos;
- III) Dar a los residuos peligrosos, el manejo previsto en el Reglamento y en las normas técnicas ecológicas correspondientes;
- IV) Manejar separadamente los residuos peligrosos que sean incompatibles en los términos de las normas técnicas ecológicas respectivas;
- V) Envasar sus residuos peligrosos, en recipientes que reúnan las condiciones de seguridad previstas en este reglamento y en las normas técnicas ecológicas correspondientes.
- VI) Identificar a sus residuos peligrosos con las indicaciones previstas en este Reglamento y en las normas técnicas ecológicas respectivas;
- VII) Almacenar sus residuos peligrosos en condiciones de seguridad y en áreas que reúnan los requisitos previstos en el presente Reglamento y en las normas técnicas ecológicas correspondientes.

- VIII) Transportar sus residuos peligrosos en los vehículos que determine la Secretaría de Comunicaciones y Transportes y bajo las condiciones previstas en este Reglamento y en las normas técnicas ecológicas que correspondan;
- IX) Dar a sus residuos peligrosos el tratamiento que corresponda de acuerdo con lo dispuesto en el Reglamento y las normas técnicas ecológicas respectivas;
- X) Dar a sus residuos peligrosos la disposición final que corresponda de acuerdo con los métodos previstos en el Reglamento y conforme a lo dispuesto por las normas técnicas ecológicas aplicables;
- XI) Remitir a la Secretaría, en el formato que ésta determine, un informe semestral sobre los movimientos que hubiere efectuado con sus residuos peligrosos durante dicho período; y
- XII) Las demás previstas en el Reglamento y en otras disposiciones aplicables.

Más adelante en el capítulo 2 habla sobre el manejo de los residuos y en el artículo 15 habla sobre cómo se deben almacenar los residuos.

ARTICULO 15.- Las áreas de almacenamiento deberán reunir como mínimo, las siguientes condiciones:

- I) Estar separadas de las áreas de producción, servicios, oficinas y de almacenamiento de materias primas o productos terminados;
- II) Estar ubicadas en zonas donde se reduzcan los riesgos por posibles emisiones, fugas, incendios, explosiones e inundaciones;
- III) Contar con muros de contención, y fosas de retención para la captación de los residuos o de los lixiviados;
- IV) Los pisos deberán contar con trincheras o canaletas que conduzcan los derrames a las fosas de retención, con capacidad para contener una quinta parte de lo almacenado;
- V) Contar con pasillos lo suficientemente amplios, que permitan el tránsito de montacargas mecánicos, electrónicos o manuales, así como el movimiento de los grupos de seguridad y bomberos en casos de emergencia;
- VI) Contar con sistemas de extinción contra incendios. En el caso de hidrantes, éstos deberán mantener una presión mínima de 6 Kg/cm² durante 15 minutos; y
- VII) Contar con señalamientos y letreros alusivos a la peligrosidad de los mismos, en lugares y formas visibles.

De no acatarse el reglamento se aplicara sanciones que al igual marca esta ley.

Además la Ley General para la Prevención y Gestión de Residuos hace una clasificación de los residuos especiales y de cuál debe ser el manejo de estos:

Artículo 19.- Los residuos de manejo especial se clasifican como se indica a continuación, salvo cuando se trate de residuos considerados como peligrosos en esta Ley y en las normas oficiales mexicanas correspondientes:

- I) Residuos de las rocas o los productos de su descomposición que sólo puedan utilizarse para la fabricación de materiales de construcción o se destinen para este fin, así como los productos derivados de la descomposición de las rocas, excluidos de la competencia federal conforme a las fracciones IV y V del artículo 5 de la Ley Minera;
- II) Residuos de servicios de salud, generados por los establecimientos que realicen actividades médico-asistenciales a las poblaciones humanas o animales, centros de investigación, con excepción de los biológico-infecciosos;
- III) Residuos generados por las actividades pesqueras, agrícolas, silvícolas, forestales, avícolas, ganaderas, incluyendo los residuos de los insumos utilizados en esas actividades;
- IV) Residuos de los servicios de transporte, así como los generados a consecuencia de las actividades que se realizan en puertos, aeropuertos, terminales ferroviarias y portuarias y en las aduanas;
- V) Lodos provenientes del tratamiento de aguas residuales;
- VI) Residuos de tiendas departamentales o centros comerciales generados en grandes volúmenes;
- VII) Residuos de la construcción, mantenimiento y demolición en general;
- VIII) Residuos tecnológicos provenientes de las industrias de la informática, fabricantes de productos electrónicos o de vehículos automotores y otros que al transcurrir su vida útil, por sus características, requieren de un manejo específico, y
- IX) Otros que determine la Secretaría de común acuerdo con las entidades federativas y municipios, que así lo convengan para facilitar su gestión integral.

Debe ponerse especial cuidado es los residuos que marca el artículo 31:

Artículo 31.- Estarán sujetos a un plan de manejo los siguientes residuos peligrosos y los productos usados, caducos, retirados del comercio o que se desechen y que estén clasificados como tales en la norma oficial mexicana correspondiente:

- I) Aceites lubricantes usados;
- II) Disolventes orgánicos usados;
- III) Convertidores catalíticos de vehículos automotores;
- IV) Acumuladores de vehículos automotores conteniendo plomo;
- V) Baterías eléctricas a base de mercurio o de níquel-cadmio;
- VI) Lámparas fluorescentes y de vapor de mercurio;
- VII) Aditamentos que contengan mercurio, cadmio o plomo;
- VIII) Fármacos;
- IX) Plaguicidas y sus envases que contengan remanentes de los mismos;
- X) Compuestos orgánicos persistentes como los bifenilos policlorados;

- XI) Lodos de perforación base aceite, provenientes de la extracción de combustibles fósiles y lodos provenientes de plantas de tratamiento de aguas residuales cuando sean considerados como peligrosos;
- XII) La sangre y los componentes de ésta, sólo en su forma líquida, así como sus derivados;
- XIII) Las cepas y cultivos de agentes patógenos generados en los procedimientos de diagnóstico e investigación y en la producción y control de agentes biológicos;
- XIV) Los residuos patológicos constituidos por tejidos, órganos y partes que se remueven durante las necropsias, la cirugía o algún otro tipo de intervención quirúrgica que no estén contenidos en formol, y
- XV) Los residuos punzo-cortantes que hayan estado en contacto con humanos o animales o sus muestras biológicas durante el diagnóstico y tratamiento, incluyendo navajas de bisturí, lancetas, jeringas con aguja integrada, agujas hipodérmicas, de acupuntura y para tatuajes. La Secretaría determinará, conjuntamente con las partes interesadas, otros residuos peligrosos que serán sujetos a planes de manejo, cuyos listados específicos serán incorporados en la norma oficial mexicana que establece las bases para su clasificación.

También la ley marca que el generador es responsable durante determinado periodo de sus residuos durante el tiempo que estos sigan representando un riesgo para el equilibrio ecológico.

Dentro de esto en la construcción de carreteras como es el caso del PPS Querétaro Irapuato, como es de suponerse se lleva un estricto control sobre el manejo de los residuos generados por la construcción de dicha obra.

El departamento de ambiental tiene convenios con diversas empresas que se encargan ya sea del almacenamiento o disposición final de los residuos que durante la ejecución del proyecto se dan.

En lo referente a aceites, aditivos, líquidos para frenos, combustible y demás material contaminado que se encuentra en el rango de residuos especiales se cuenta con la colaboración de una empresa especializada que se encarga de transportar el material generado en contenedores a una empresa en monterrey quien realiza la disposición final de estos residuos.

En cuanto a la basura generada durante la obra ocasionada por el personal que labora en la obra como pueden ser envases o envolturas estos son llevados a el relleno municipal con quienes se cuenta con un convenio para realizar dicha acción.

En materia de neumáticos se encuentra en pláticas con una empresa que hará disposición de estas para generar un tipo especial de asfalto en el que se le agrega el neumático triturado.

Otra cosa interesante es que con los filtros de aire de los camiones se pretende hacer una lámpara artesanal que dará un fin benéfico y útil para estos elementos.

En la obra se cuenta con un lugar especial en donde son almacenados los materiales conforme a norma y que sirve para acumular los residuos generados por cierto tiempo en el que se espera la llegada de la empresa que los trasladara a su destino final.

Otra medida importante es que en todos los procesos se cuida la máximo el no dañar el entorno en la medida de lo posible aunado a la utilización de equipo ecológico o en su defecto de poca contaminación.



Fig. 93 Contenedor de basura.

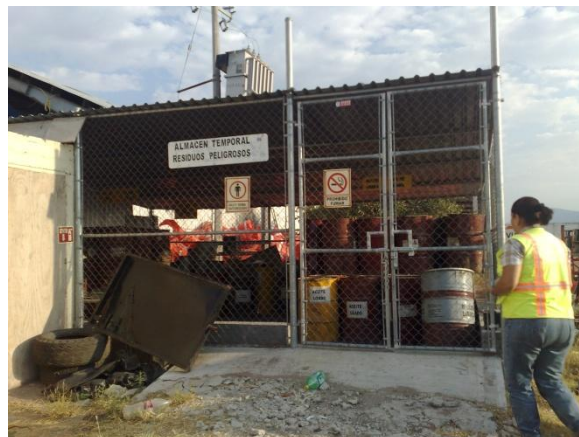


Fig. 94 Almacén de residuos peligrosos.



Fig. 95 Contenedores de residuos especiales.



Fig. 96 Almacén de plásticos.



Fig. 97 Almacén de neumáticos.

5 CONCLUSIONES

El equipo o maquinaria de construcción se ha convertido en una herramienta para el constructor indispensable debido a los altos beneficios que esta representa durante los procesos de construcción en ahorro en tiempo y recursos materiales y económicos.

Sabiendo de lo útil que son estas herramientas es de esperarse que se tengan ciertas consideraciones al momento de seleccionar un equipo ya que de esto dependerá el éxito que tenga nuestro proyecto, por lo cual antes de decidir la utilización de un equipo es necesario hacer una valoración de los costos y beneficios que esto pueda representar ya que los equipos por similares que sean siempre existirá un factor diferente que pueda marcar una diferencia importante al momento de hacer la selección, así como realizar comparativas con diferentes equipos y al final por decidir el que mejor satisfaga nuestras necesidades.

Una de las características en las que se debe tener un especial cuidado es en el rendimiento que nos pueda proporcionar el equipo ya que esta dependerá en gran medida de la realización correcta de los trabajos.

Otro factor importante después de que hemos elegido el equipo adecuado que emplearemos es el procurar tener a la mano las refacciones que se necesitaran siempre y cuando esto no afecte la economía del proyecto, así como el contar con un adecuado mantenimiento para que nuestro equipo funcione a la perfección durante la obra y así evitar demoras en los tiempos de ejecución además de evitar costos que la mala planeación pudiera ocasionarnos.

También es necesario considerar el dar a los operadores de estos equipos una capacitación constante para evitar posibles incidentes en la obra, además de que el rendimiento en horas maquinas será mayor cuando se tenga personal capacitado tanto operadores como personal de mantenimiento ya que el avance tecnológico es tan acelerado que en muchas de las ocasiones rebasa las capacidades de respuesta de las empresas.

Después de que se ha elegido el equipo idóneo y que se ha realizado una buena planeación en cuanto a mantenimiento y utilización de estos, es necesario que se tenga un especial cuidado en cuanto al daño ambiental que se pueda ocasionar debido a la ejecución del proyecto y la relación que esto pueda ocasionar debido a la generación de residuos que de este provengan por lo que es necesario un adecuado control de residuos ya sea para evitar enfermedades, accidentes, mala imagen, sanciones pero sobre todo evitar dañar el ambiente.

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Ley General del Equilibrio Ecológico y Protección al Ambiente

Ley General para la Prevención y Gestión Integral de los Residuos

Caterpillar Performance Handbook

Edition 36

CATERPILLAR[®]

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CATERPILLAR® PERFORMANCE HANDBOOK

a Cat® publication by Caterpillar Inc., Peoria, Illinois, U.S.A.

APRIL 2006

Performance information in this booklet is intended for estimating purposes only. Because of the many variables peculiar to individual jobs (including material characteristics, operator efficiency, underfoot conditions, altitude, etc.), neither Caterpillar Inc. nor its dealers warrant that the machines described will perform as estimated.

NOTE: Always refer to the appropriate Operation and Maintenance Manual for specific product information.

Materials and specifications are subject to change without notice.

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PREFACE

Machine performance must ultimately be measured in unit cost of material moved, a measure that includes both production and costs. Factors bearing directly on productivity include such things as weight to horsepower ratio, capacity, type of transmission, speeds and operating costs. The Performance Handbook considers these factors in detail. There are other less direct machine performance factors for which no tables, charts or graphs are possible. Serviceability, parts availability and operator convenience are examples. In comparing machine performance, all factors should be considered. This Handbook is intended as an aid which, when coupled with experience and a good knowledge of local conditions, can assist in estimating true machine performance.

Many sections of the Handbook include tables or curves showing cycle times or hourly production figures for Caterpillar machines under certain conditions. Statements of conditions always accompany or precede the curves or tables. Before using any performance information in this Handbook, a complete understanding of the qualifying conditions is essential. The data is based on field testing, computer analysis, laboratory research and experience; and every effort has been made to assure their correctness.

However, all such data is based upon 100% efficiency in operation — a status which cannot be achieved continuously even under ideal conditions. Thus, in using such performance and production data, it is necessary to correct the results indicated in the handbook tables by appropriate factors. This allows for the anticipated actual job efficiency, operator efficiency, material characteristics, haul road conditions, altitude and other factors which may reduce performance or production on a particular job.

Methods for estimating machine owning and operating costs vary widely, depending on locality, industry practices, owner preferences and other factors. One method is suggested in the Handbook section on Owning and Operating Costs. When used with good judgment, it has provided reasonably accurate estimates in the past. Included in the Owning and Operating Section are guidelines, based on working conditions, to assist in estimating consumption of fuel and lubricants, tire life and repair costs for Caterpillar machines. However, what one Handbook user regards as “excellent” conditions, another may consider “severe” or “average”, depending on his own experience and basis of comparison. Therefore, these guidelines should be considered only approximations.

Caterpillar Inc. has made every effort to assure that the information contained in this Handbook is accurate and is a fair statement of the results to be achieved in the circumstances indicated. However, because of the many variables involved in estimating the production or performance of earthmoving machinery, their consumption of fuel and lubricants, tire life and repair costs, and the possibility of inadvertent errors or omissions in assembling this data, Caterpillar cannot and does not imply that all data in this book are complete nor that this level of performance will be achieved on a given job.

Specifications shown in this Handbook were current at time of printing. However, due to Caterpillar’s many machine improvement programs, specifications and materials may change without notice. For current specifications relating to a machine’s performance, please refer to the most recent Caterpillar product specification sheet.

Caterpillar Inc.

OPERATOR AND MACHINE PROTECTION

A well trained operator, working under suitable conditions, utilizing a modern, properly-equipped machine provides a machine-operator team capable of giving maximum production. These factors, along with appropriate job site rules and communication procedures, are essential to coordinate people and machines working together. Appropriately protected and maintained machines are less likely to suffer premature component failure or damage, and give operators the confidence and assurance they need to carry out their work. Furthermore, training is not complete until the operator reads, understands and agrees to follow the instructions provided in the Operation and Maintenance Manual included with every Caterpillar machine.

Employers have a duty to provide a safe work place for their employees. The purchaser of a Caterpillar machine has a duty to review his/her particular application and job site for the machine to identify potential hazards inherent to that application or job site. Based on the results of this hazard analysis, the appropriate operator and machine protection configuration can be determined.

Caterpillar designs, builds, and tests its products to ensure the safety of operators, maintenance persons, service persons, and bystanders. Caterpillar provides as standard equipment the appropriate operator and machine protection for most applications. However, particular applications may require additional operator and/or machine protection. Caterpillar offers related options for most such applications. However, there may be very special applications where the Caterpillar Dealer or the Purchaser may want to fabricate, or request Caterpillar to provide, custom or special guarding. Your Caterpillar Dealer can help you with this hazard analysis and guarding configuration process.

I. Operator Training and Protection Practices

Remember that any kind of machine or mechanical device can be hazardous if not kept in good condition, or if operated by careless or improperly trained operators, or if operated in an irresponsible manner.

Listed below are some recommended basic steps that can be broadly applied to most work environments:

- Train operators for the job they are assigned to do. The length and type of training must comply with governmental and local regulations wherever they apply. As an example, machine operators in mining activities must be trained in accordance with Mine Safety and Health Administration (MSHA) regulations. Where specific regulations do not apply, no operator should be assigned to a job until he or she meets the following minimum requirements:
 - Completes proper training to operate the assigned machine and understands that seat belts must be worn whenever seated in operator's compartment.
 - Reads and understands the Operation & Maintenance manual for that machine, and knows that a copy of that manual is stored in the operator's compartment.
 - Reads and understands the EMI (Equipment Manufacturer's Institute), CIMA (Construction Industry Manufacturers Association), or any other furnished manual related to rules for safe machine operation and identification of hazards.
 - Has appropriate personal safety equipment and knows how to use it. This includes such things as hard hat, gloves, safety glasses, hearing protection and safety shoes.
 - Knows what the job requirements are, what other machines are working in the area, and is aware of any hazardous conditions that may arise.
- Be sure operators are alert and in proper physical and mental condition to perform their work assignments safely. No machine should be operated by a person who is drowsy, under the affect of medicines or drugs, suffers blackouts, or is suffering from any physical or mental distraction that could contribute to unsafe operation.

- Maintain proper job conditions and working procedures. Check the job for possible hazards, both above and below ground level. Look for all possible sources of danger to the operator and others in the area. Pay particular attention to conditions which may be hazardous or near the operating limits of the machine: e.g., side slopes, steep grades, potential overloads, etc. Examine the work site for restricted traffic patterns, obstructed views, congestion, etc. Hazardous work conditions should be corrected wherever possible and adequate warnings should be posted when applicable.
- Provide the correct machine to handle the job and equip it properly for the job to provide the necessary operator protection. Check for compliance with all applicable governmental and local regulations. It is the machine owner's or employer's legal responsibility to see that his equipment complies with, and is operated in accordance with, all such requirements.
- Make sure the machine is properly maintained. A walk-around inspection should be performed at the beginning of each shift before the machine is placed in operation. If this inspection reveals any problems that could affect safety, the machine must not be operated until these problems are corrected. Some examples include:
 - Loose, bent or missing grab irons, railings or steps;
 - Worn, cut or missing seat belts (any seat belt over three (3) years old must be replaced regardless of condition);
 - Damaged windows in the operator's compartment;
 - Worn, rubbing or abraded electrical insulation and hoses;
 - Any fluid leaks; and
 - Missing or damaged guards.

It is the machine owner's or employer's responsibility to ensure the machine is properly maintained. Your Caterpillar Dealer will be glad to assist you in selecting and equipping the machine best suited for your job and in providing maintenance for your machines.

II. Machine Modifications

Modifications must not be made to the machine that:

- Interfere with operator visibility;
- Interfere with ingress, egress from the machine;
- Exceed the rated payload or gross combination weight of the machine resulting in overloading the braking and/or steering system or the roll-over protective structure (ROPS) capacity rating (shown on a plate affixed to the ROPS); or
- Place objects in the cab that intrude into the operator's space or that are not firmly fixed into place.

III. Operator-related Equipment Options

Each job presents unique conditions that must be taken into account. Consider direct dangers to the operator as well as all possible sources of distraction that could reduce operator efficiency and increase the chances of costly and dangerous mistakes. Climate-controlled, sound-suppressed cabs, and special exterior lighting are options available from Caterpillar that can address requirements of special working environments.

"Flexible" machines include hydraulic excavators (track-type, wheel-type, and compact), skid-steer loaders, backhoe loaders and integrated tool-carriers. Work tools or any tool used in hazardous applications like demolition and logging, can create a need for special operator guarding. When flying debris from impact, cutting, shearing or sweeping attachments is present, additional protective devices such as a front screen, Falling Object Guarding System (FOGS, includes top & front guarding), thick polycarbonate windshields or a combination of these is recommended by Caterpillar. Contact your Caterpillar Dealer for operator guarding options on your machine.

IV. Machine Protection

Check the job for unusually demanding conditions that could cause premature failure or excessive wear of machine components. Additional protective devices such as heavy-duty radiator guards, crankcase guards, engine enclosures, track roller guards and/or brake shields may be needed. Also, consider the use of anti-vandalism devices, such as cap locks and instrument panel guards. Contact your Caterpillar dealer for machine-protection and vandalism-prevention options for your machine.

V. Fire Prevention

Remember that most fluids on your machine are flammable!

To minimize the risk of fire, Caterpillar recommends following these basic steps:

- Remove trash (leaves, twigs, papers, etc.) that may accumulate in the engine compartment.
- Do not operate a machine if leakage of flammable fluids is noticed. Repair leaks before resuming machine operation. Most fluids used in Caterpillar machines should be considered flammable.
- Keep access doors to major machine compartments in working order to permit the use of fire fighting equipment, should a fire occur.
- Avoid attaching electrical wiring to hoses and tubes that contain flammable or combustible fluids.

- Replace any rubbing, damaged, frayed, kinked or leaking hydraulic hoses or fittings.
- Follow safe fueling practices as described in Caterpillar Operation & Maintenance Manuals, EMI or CIMA Safety Manuals, and local regulations.

As an additional safety measure, keep a 10-pound (4.5 kg) minimum fire extinguisher on the machine in a location as specified in the Operator and Maintenance Manual.

VI. Safety Regulations

Regulations vary from country to country and often within country. Your Caterpillar dealer can assist you in properly equipping your machine to meet applicable requirements. **Note: The general summaries given below are not substitutes for reading and being familiar with the appropriate local laws.**

(a) United States (US)

With a few exceptions, all machine operations in the United States are covered by federal and/or state regulations. If the machine is used in mining activities, the regulations are administered by the Mine Safety and Health Administration (MSHA). Other activities, including construction, are under regulations administered by the Occupational Safety and Health Administration (OSHA). These agencies require employers to provide a safe working environment for employees. Caterpillar has the same objective.

OSHA and MSHA have adopted criteria for ROPS, Falling Object Protective Structures (FOPS), seat belts, warning horns, back-up alarms, operator sound levels, steering systems, and braking systems. Additional operator's compartment protection may be required for machines engaged in logging, demolition and other special applications.

(b) European Union (EU)

The EU Machinery Safety Directive applies to Caterpillar machines and most work tools. It requires that the "CE mark" be applied to the product and that a manufacturer's declaration be provided. The "CE mark" indicates that safety issues have been addressed by applying the appropriate safety standards in the design and manufacture of the machine. The objective of the Safety Directive is to protect operators, spectators and maintenance personnel. Caterpillar fully supports this objective.

VII. Sound Suppression

Different marketing areas have different noise emission requirements. Noise regulations usually specify limits for operators and spectators.

(a) United States

OSHA and MSHA noise-control regulations set permissible noise-exposure limits for machine operators and employees. Operator protection from machine noise can be achieved by use of factory-built cabs as offered in the Caterpillar Price List. These cabs, when properly maintained and operated with the doors and windows closed, reduce the operator sound level for an eight-hour operating period to meet the OSHA and MSHA noise-exposure limits in effect at the date of manufacture. Variables that may be encountered on the job site, such as other nearby noise sources or noise-reflecting surfaces, may reduce the allowable work hours. If this occurs, ear protective devices may be required.

(b) European Union

Operator sound-exposure requirements for machines in Europe are very similar to the OSHA and MSHA regulations mentioned above. In addition to operator sound-exposure requirements, certain types of Caterpillar machines are subject to European Commission regulations for exterior sound levels. Caterpillar ensures its products sold in the EU comply with the applicable noise regulations.

VIII. Replacement Parts for your Caterpillar Machine

⚠ WARNING

When replacement parts are required for this product, Caterpillar recommends using Caterpillar replacement parts or parts with equivalent specifications including, but not limited to, physical dimensions, type, strength and material. Failure to heed this warning can lead to premature failures, product damage, personal injury or death.

Nomenclature

THE CATERPILLAR PRODUCT LINE

TRACK-TYPE TRACTORS

Flywheel power 52 to 634 kW (70 to 850 hp)

*Waste Handling Arrangements (WHA)

available for sanitary landfill applications



D3G XL
D3G LGP



D4G XL
D4G LGP



D5G XL
D5G LGP



D5N XL
D5N LGP



D6N XL
D6N LGP



D6G



D6R Series III*
D6R XL Series III*
D6R XW Series III*
D6R LGP Series III*



D7G



D7R Series II*
D7R XR Series II*
D7R LGP Series II*



D8R
D8T*
D8R LGP
D8T LGP



D9R
D9T*



D10T*



D11T
D11T CD

MOTOR GRADERS

Flywheel power 104 to 373 kW (140 to 500 hp)

*All Wheel Drive.



120H Standard
120H Global



135H Standard
135H Global



12H Standard
12H Global



140H Standard
140H Global



143H* Global



160H Standard
160H Global



163H* Global



14H Global



16H Global



24H Global

SKID STEER LOADERS

Operating Weight 2600 to 4350 kg (5710 to 9570 lb)



216B/226B
232B



236B/242B
246B/248B
252B/262B
268B

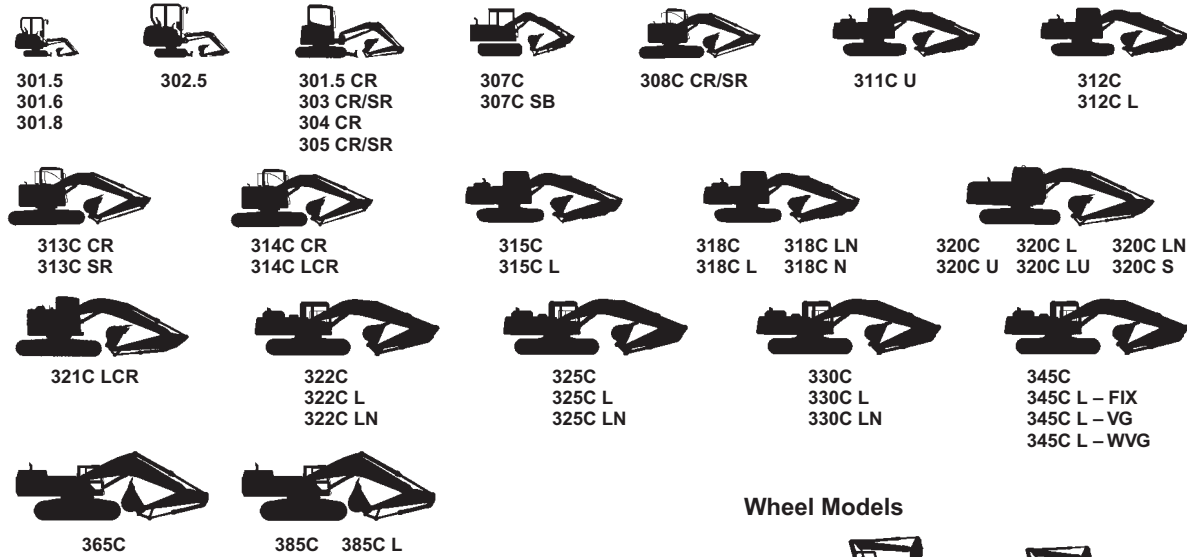


Multi-Terrain
247B/257B
267B/277B
287B

HYDRAULIC EXCAVATORS

Operating Weight 1650 to 316 600 kg (3640 to 698,000 lb)

Track Models

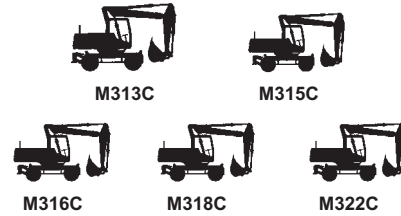


Front Shovels

Operating Weight 55 600 to 318 500 kg (122,600 to 702,000 lb)



Wheel Models



BACKHOE LOADERS

Digging depth 4420 to 6528 mm (14'6" to 21'5")

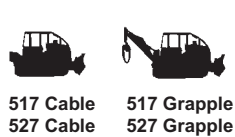


FOREST PRODUCTS

Wheel Skidders



Track Skidders



Track Forest Machines

320C FM
322C FM
322C FM LGP
325C FM
330C FM
345B II Logger

Wheel Forest Machines

914G 962G IT14G
924Gz 966G II IT24G
928G 980G II IT28G
938G 988G IT38G
950G II 990G IT62G II

Work Tools

Grapples
Logging Forks
Woodchip Dozers
Scoops
Rakes

Track Harvesters

TK 701 TK 732
TK 701 HD TK 741
TK 711 TK 751
TK 721 TK 752
TK 722

Track Feller Bunchers

TK 711 TK 741
TK 721 TK 751
TK 722 TK 752
TK 732

Wheel Feller Bunchers

TK 340
TK 350
TK 360

Felling Heads

HF 181
HF 201
HF 202
HF 221
HF 222
HS 20 Shear

Wheel Forwarders

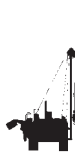
TK 434
TK 434L
TK 436
TK 456
TK 458

Knuckleboom Loaders

TK 520 TK 520 SM
TK 540 TK 520 SM/EHC
TK 560 TK 570 SM
TK 570 TK 570 SM/EHC
TK 575

PIPELAYERS

Lifting capacity 18 145 to 104 330 kg (40,000 to 230,000 lb)



561N



572R Series II



583T



589

WHEEL TRACTOR-SCRAPERS

*Available in auger scraper version.

Standard Models

Heaped capacity 17 to 33.6 m³ (22 to 44 yd³)



621G*



631G*

Tandem Powered Scrapers

Heaped capacity 15.3 to 33.6 m³ (20 to 44 yd³)



627G*



637G*



657G*

Elevating Scrapers

Heaped capacity 8.4 to 26 m³ (11 to 34 yd³)



613C Series II



615C Series II



623G

Push-Pull Scrapers

Heaped capacity 15.3 to 33.6 m³ (20 to 44 yd³)



627G



637G



657G

CONSTRUCTION & MINING TRUCKS/TRACTORS

Construction & Mining Trucks

Capacity 37 to 326 metric ton — 41 to 359 U.S. tons



769D
771D



773E
775E



777D



785C



789C



793D



797B

Construction & Mining Tractors

Flywheel power 699 to 962 kW (938 to 1290 hp)



776D



784C

ARTICULATED TRUCKS

Capacity 22.7 to 36.3 metric tons (25 to 40 U.S. tons)



725



730
730 Ejector



735



740
740 Ejector

WHEEL DOZERS

Flywheel power 164 to 597 kW (220 to 800 hp)



814F



824H



834H



844H



854G

LANDFILL COMPACTORS

Flywheel power 164 to 358 kW (220 to 480 hp)



816F



826H



836H



815F



825H

SOIL COMPACTORS

Flywheel power 164 to 235 kW (220 to 315 hp)

WHEEL LOADERS & INTEGRATED TOOLCARRIERS

Bucket Capacity (Heaped) 0.6 to 30 m³ (0.78 to 40 yd³)

* High lift arrangement available.

† Waste handling arrangement available.



904B



906



908



914G/IT14G



924Gz†



924G Pin On
924G Hook On†



928Gz



938G*†
IT38G†



950H



962H
IT62H



966H



972H



980H



988G*



990 Series II*



992G*



994D*

TRACK LOADERS

Bucket Capacity (Heaped)* 1.15 to 3.6 m³ (1.5 to 4.2 yd³)

*General Purpose Bucket.

†Waste handling arrangement available.



939C



953C†



963C†



973C†

TELESCOPIC HANDLERS



TH210



TH215



TH220B



TH330B



TH340B



TH350B



TH360B



TH460B



TH560B



TH580B

PAVING PRODUCTS

Cold Planers

Cutting width 2100 mm (6'11")
Flywheel power 466 kW (625 hp)



PM-565B

Reclaimer/Soil Stabilizers

Flywheel power 250-321 kW (335-430 hp)
Cutting width 2438 mm (8'0")



RM-250C



RM-350B

Windrow Elevators

Operating weight 7984 kg (17,600 lb)



BG-650

Asphalt Pavers

Paving width 914 to 9754 mm (3 to 32 ft)



AP-800C



AP-900B



AP-1000B



AP-650B



AP-655C



AP-1050B



AP-1055B



BG-230



BG-240C



BG-260C



BG-225C



BG-245C



BG-2455C

PAVING PRODUCTS (Continued)

Vibratory and Pneumatic Tire Compactors

Single Drum Smooth

Drum width 1270 to 2130 mm (4'2" to 7'0")



CS-323C



CS-423E



CS-433E



CS-533E



CS-563E



CS-573E



CS-583E



CS-663E



CS-683E

Single Drum, Padded

Drum width 1270 to 2130 mm (4'2" to 7'0")



CP-323C



CP-433E



CP-533E



CP-563E



CP-573E



CP-583E



CP-663E

Double Drum and Combi

Drum width 1000 to 2130 mm (3'3.4" to 7'0")



CB-214E



CB-224E



CB-225E



CB-334E



CB-335E



CB-434D



CB-534D



CB-534D XW



CB-634D

Pneumatic Tire Asphalt Compactors

Wheel loads 1134 to 5000 kg (2500 to 11,020 lb)



PS-150C



PS-360B



PF-300B PS-300B

UNDERGROUND MINING

Load-Haul-Dump

Bucket sizes 2.8-8.8 m³ (3.7-15 yd³)



R1300G II



R1600G



R1700G



R2900G
R2900G XTRA

Articulated Trucks

40-55 t (44-61 T) capacity



AD30



AD45B



AD55

HYDROMECHANICAL WORK TOOLS

Hydraulic Hammers

H45/H45 s	H115 s
H55D s	H120C s
H63/H63 s	H130 s
H70/H70 s	H140D s
H90/H90 s	H160D s
H100/H100 s	H180 s

Mobile Scrap and Demolition Shears

S305	S340
S320	S365
S325	S390

Concrete Crushers

CR20	CR35
CR28	CR50

Multi-Processors

MP15	MP30
MP20	MP40

Sorting and Demolition Grapples

G315	G310B
G320	G315B
G330	G320B

Orange Peel Grapples

GSH9	GSH20
GSH15	GSH22

TRACK-TYPE TRACTORS

Hydraulic Controls

Bulldozers

Rippers & Winches

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TRACK-TYPE TRACTORS

Features:

- **Cat Diesel Engines** provide the power, high torque rise, reliability and performance you can depend on.
- **Hydraulic Electronic Unit Injection (HEUI)** on D5N, D6N, D6R Series III, D9R and D10T increases fuel efficiency, reduces smoke, improves cold starting and enhances diagnostic capabilities.
- **Electronic Unit Injection (EUI)** on D7R Series II, D8T and D11T. The Electronic Control Module (ECM) performs much like a mechanical governor, but has no moving parts. The ECM signals the injectors regulating the fuel supply thus controlling engine speed and power. EUI provides: Reduced exhaust smoke, automatic altitude compensation and cold start protection.
- **Oil cooled steering clutches and brakes** standard on D5N, D6N, D6N FTC, D6R, D7R, D9R, D10T and D11T.
- **Finger Tip Controls (FTC)** of transmission, steering clutches and brakes on D5N, D6N FTC, D6R Series III, D7R Series II, D10T and D11T.
- **Differential steering** allows infinitely variable turning radius. Standard on the D6N D/S, D8R and D8T and optional on the D6R Series II, D7R Series II and D9R, allows the tractor to make a “power turn” keeping both tracks working for more traction and higher performance.
- **Electronic Hydrostatic Power Train System** on D3G thru D5G allows power turns, stepless speed range, smooth modulation, dynamic hydrostatic braking, superior maneuverability and excellent controllability.
- **Combined hand lever steering** located left of operator provides easier operation on D9R.
- **Standard Tractors** designed for heavy dozing and general grading.
- **XL Tractor D6R Series III** offers higher horsepower and longer roller frames for increased finish grading capability, flotation and productivity.
- **Extra Wide (XW) gauge** on D6R Series III XL length roller frame provides wider shoes for greater flotation and stability for steep slope grading.
- **Sealed and Lubricated Track** reduces pin and bushing wear for lower undercarriage repair costs. Heavy duty track chain available on D5G, D5N, D6N, D6R Series III and D7R Series II improves wear life and reduces pin/bore stretching and cracking.
- **Elevated sprockets** on D5N XL and up eliminate final drive stress induced by roller frame movement and ground impact loads. Final drives pull chain only. Seals moved up out of dirt, sand and water for longer life. Blade visibility improved because operator sits higher.
- **Resilient mounted bogie undercarriage** on D8R, D8T, D9T, D10T and D11R reduces shock transmitted to tractor. Allows track to conform to rough ground for better traction.
- **Solid mounted undercarriage** standard on D3G through D7R Series II and optional on the D8R and D8T provides stable platform for low impact, and high abrasion applications. Provides optimum finish grading performance.
- **Accessible modular design** on D5N XL and up greatly reduces drive train removal and installation time resulting in reduced repair costs.
- **Tag link** on D7R Series II and up; L-shaped push arms on D6N through D6R Series III. Both designs allow closer mounting of dozer blades. This reduces total tractor length, improves maneuverability, balance, blade penetration and pryout.
- **Low ground pressure (LGP)** tractors offer greater flotation in soft, swampy conditions.

								
MODEL	D3G XL Hystat		D3G LGP Hystat		D4G XL Hystat		D4G LGP Hystat	
Flywheel Power	52 kW	70 hp	52 kW	70 hp	60 kW	80 hp	60 kW	80 hp
Operating Weight*	7351 kg	16,227 lb	7784 kg	17,160 lb	7855 kg	17,317 lb	8198 kg	18,073 lb
Engine Model	3046 T		3046 T		3046 T		3046 T	
Rated Engine RPM	2200		2200		2200		2200	
No. of Cylinders	6		6		6		6	
Bore	94 mm	3.7"	94 mm	3.7"	94 mm	3.7"	94 mm	3.7"
Stroke	120 mm	4.7"	120 mm	4.7"	120 mm	4.7"	120 mm	4.7"
Displacement	5 L	305 in³	5 L	305 in³	5 L	305 in³	5 L	305 in³
Track Rollers (Each Side)	6		6		7		7	
Width of Standard Track Shoe	406 mm	16"	635 mm	25"	457 mm	18"	635 mm	25"
Length of Track on Ground	2055 mm	6'8.9"	2055 mm	6'8.9"	2210 mm	7'3"	2210 mm	7'3"
Ground Contact Area (W/Std. Shoe)	1.67 m ²	2586 in²	2.61 m ²	4045 in²	2.03 m ²	3153 in²	2.80 m ²	4352 in²
Track Gauge	1448 mm	4'9"	1676 mm	5'6"	1499 mm	4'11"	1676 mm	5'6"
GENERAL DIMENSIONS:								
Height (To Top of ROPS)	2.77 m	9'1"	2.77 m	9'1"	2.77 m	9'1"	2.77 m	9'1"
Overall Length (With P Blade)	4.02 m	13'2"	4.02 m	13'2"	4.04 m	13'3"	4.04 m	13'3"
(Without Blade)	3.10 m	10'2"	3.10 m	10'2"	3.10 m	10'2"	3.10 m	10'2"
Width (W/O Trunnion — Std. Shoe)	1.85 m	6'1"	2.31 m	7'7"	1.96 m	6'5"	2.31 m	7'6"
Ground Clearance	374 mm	14.7"	374 mm	14.7"	374 mm	14.7"	374 mm	14.7"
Blade Types and Widths:								
"P" Straight	2.46 m	8'1"	3.15 m	10'4"	2.67 m	8'9"	3.15 m	10'4"
Angled	2.25 m	7'5"	2.87 m	9'5"	2.44 m	8'0"	2.87 m	9'5"
Fuel Tank Refill Capacity	165 L	43.6 U.S. gal	165 L	43.6 U.S. gal	187 L	48.6 U.S. gal	187 L	48.6 U.S. gal

*Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, back-up alarm, seat belts, lights, rigid drawbar, front pull device and standard service crankcase guard.

Track-Type Tractors

Specifications







MODEL	D5G XL Hystat		D5G LGP Hystat		D5N XL		D5N LGP	
Flywheel Power:								
Hydrostatic	67.1 kW	90 hp	67.1 kW	90 hp	—	—	—	—
Power Shift	—	—	—	—	90 kW	121 hp	90 kW	121 hp
Operating Weight:*								
Hydrostatic	8919 kg	19,662 lb	9269 kg	20,434 lb	—	—	—	—
Power Shift	—	—	—	—	12 818 kg	28,258 lb	13 665 kg	30,126 lb
Engine Model	3046 T		3046 T		3126B DITAAC		3126B DITAAC	
Rated Engine RPM	2200		2200		2000		2000	
No. of Cylinders	6		6		6		6	
Bore	94 mm	3.7"	94 mm	3.7"	110 mm	4.33"	110 mm	4.33"
Stroke	120 mm	4.7"	120 mm	4.7"	127 mm	5"	127 mm	5"
Displacement	5 L	305 in³	5 L	305 in³	7.2 L	439 in³	7.2 L	439 in³
Track Rollers (Each Side)	7		7		7		8	
Width of Standard Track Shoe	510 mm	20"	660 mm	26"	560 mm	22"	760 mm	30"
Length of Track on Ground	2.32 m	7'7.2"	2.32 m	7'7"	2.39 m	7'10"	2.60 m	8'7"
Ground Contact Area (W/Std. Shoe)	2.36 m ²	3663 in²	3.06 m ²	4741 in²	2.67 m ²	4144 in²	3.96 m ²	6135 in²
Track Gauge	1.55 mm	5'1"	1.73 mm	5'8"	1.77 m	5'10"	2.00 m	6'7"
GENERAL DIMENSIONS:								
Height (Stripped Top)**	—	—	1.75 m	5'9"	2.26 m	7'5"	2.38 m	7'9"
Height (To Top of ROPS Canopy)	—	—	2.78 m	9'1"	3.00 m	9'10"	3.04 m	10'0"
Height (To Top of ROPS)	2.78 m	9'1"	—	—	—	—	—	—
Height (To Top of ROPS Cab)	—	—	—	—	3.00 m	9'10"	3.04 m	10'0"
Overall Length (With P Blade)***	4.34 m	14'3"	4.25 m	13'0"	4.56 m	15'0"	5.06 m	16'1"
(Without Blade)	3.18 m	10'5"	3.19 m	10'5"	3.54 m	11'8"	3.72 m	12'2"
Width (W/O Trunnion — Std. Shoe)	2.06 m	6'9"	—	—	—	—	—	—
Width (W/O Trunnion & Blade — Std. Shoe)	—	—	2.39 m	7'10"	2.33 m	7'8"	2.76 m	9'1"
Ground Clearance	384 mm	15.1"	384 mm	15.1"	378 mm	15"	422 mm	17"
Blade Types and Widths:								
"P" Straight	2.69 m	8'10"	3.25 m	10'8"	—	—	—	—
Angled	2.46 m	8'2"	2.97 m	9'9"	—	—	—	—
VPAT	—	—	—	—	3.08 m	10'1"	3.36 m	11'0"
Fuel Tank Refill Capacity	187 L	48.6 U.S. gal	187 L	48.6 U.S. gal	257 L	67.9 U.S. gal	257 L	67.9 U.S. gal

*Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, back-up alarm, seat belts, lights, rigid drawbar, front pull device and standard service crankcase guard.

**Height (stripped top) — without ROPS, exhaust, seat back or other easily removed encumbrances.

***D5N XL, D5N LGP with VPAT blade (Variable Pitch, Angle and Tilt).

								
MODEL	D6N XL		D6N LGP		D6G****		D6R Series III	
Flywheel Power	112 kW	150 hp	108 kW	145 hp	116 kW	155 hp	138 kW	185 hp
Operating Weight:*								
Power Shift	—		—		15 430 kg	34,017 lb	—	
Power Shift Clutch Brake (FTC)	15 498 kg	34,167 lb	17 632 kg	38,872 lb	—		—	
Power Shift Differential Steer	16 085 kg	35,462 lb	18 219 kg	40,166 lb	—		—	
SU Blade							18,326 kg	40,400 lb
Engine Model	3126B DITAAC		3126B DITAAC		3306 T		C9 ACERT	
Rated Engine RPM: Power Shift	2200		2200		1900		1850	
No. of Cylinders	6		6		6		6	
Bore	110 mm	4.33"	110 mm	4.33"	121 mm	4.75"	112 mm	4.4"
Stroke	127 mm	5"	127 mm	5"	152 mm	6"	149 mm	5.9"
Displacement	7.2 L	439 in ³	7.2 L	439 in ³	10.5 L	638 in ³	8.8 L	537 in ³
Track Rollers (Each Side)	7		8		7		6	
Width of Standard Track Shoe	610 mm	24"	860 mm	34"	508 mm	20"	560 mm	22"
Length of Track on Ground	2.55 m	8'4"	3.10 m	10'1"	2.67 m	8'9"	2.67 m	8'9"
Ground Contact Area (W/Std. Shoe)	3.11 m ²	4822 in ²	5.34 m ²	8217 in ²	2.72 m ²	4216 in ²	2.98 m ²	4620 in ²
Track Gauge	1.89 m	6'2"	2.16 m	7'1"	1.88 m	6'2"	1.88 m	7'4"
GENERAL DIMENSIONS:								
Height (Stripped Top)***	2.36 m	7'9"	2.47 m	8'1"	2.10 m	6'11"	2.38 m	7'10"
Height (To Top of ROPS Canopy)	3.02 m	9'11"	3.14 m	10'4"	2.90 m	9'5"	3.20 m	10'6"
Height (To Top of ROPS Cab)	3.08 m	10'1"	3.20 m	10'6"	3.10 m	10'3"	3.19 m	10'5"
Overall Length (With VPAT Blade)	4.80 m	15'9"	5.39 m	17'8"	—		—	
(Without Blade)	3.74 m	12'3"	4.15 m	13'7"	3.70 m	12'3"	—	
Overall Length (Without Blade)	3.74 m	12'3"	4.15 m	13'7"	3.94 m	12'9"	3.86 m	12'8"
With S Blade†	4.92 m	16'2"	—		5.00 m	16'4"	4.90 m	16'1"
With SU Blade	—		—		—		5.10 m	16'9"
With Angle Blade	—		—		—		5.01 m	16'5"
Width (Over Trunnion)	2.63 m	8'7"	—		—		2.64 m	8' 8"
Width (W/O Trunnion — Std. Shoe)	2.49 m	8'2"	3.02 m	9'11"	2.39 m	7'10"	2.44 m	8'0"
Ground Clearance	424 mm	16.7"	538 mm	19.2"	310 mm	12.2"	383 mm	1'3"
Blade Types and Widths:								
Straight	—		—		3.20 m	10'6"	3.36 m	11'0"
Angle Straight	—		—		3.90 m	12'9"	4.17 m	13'8"
Full 25° Angle	—		—		—		3.78 m	12'5"
Semi-U	3.17 m	10'6"	—		3.20 m	10'6"	3.26 m	10'8"
VPAT (Variable pitch, angle & tilt)	3.27 m	10'9"	4.08 m	13'5"	—		—	
Fuel Tank Refill Capacity	299 L	79 U.S. gal	299 L	79 U.S. gal	300 L	79 U.S. gal	382 L	101 U.S. gal

FTC — Fingertip clutch/brake control





*Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, straight dozer with tilt (VPAT on D6N) rigid drawbar, front towing device, engine enclosures and suspension seat.

**Japan only.

***Height (stripped top) — without ROPS canopy, exhaust, pre-cleaner, seat back or other easily removed encumbrances.

****Not sold in U.S., Canada, Japan or Europe.

†SU blade on D6N.

								
MODEL	D6R XL Series III		D6R XW Series III		D6R LGP Series III		D7G***	
Flywheel Power	149 kW	200 hp	149 kW	200 hp	149 kW	200 hp	149 kW	200 hp
Operating Weight:* Power Shift Clutch Brake (FTC)	—		—		—		20 094 kg	44,300 lb
Power Shift Differential Steer	—		—		—		—	
SU Blade	20,081 kg	44,270 lb	20,672 kg	45,573 lb	21,716 kg	47,874 lb	—	
Engine Model	C9 ACERT		C9 ACERT		C9 ACERT		3306 T	
Rated Engine RPM	1850		1850		1850		2000	
No. of Cylinders	6		6		6		6	
Bore	112 mm	4.4"	112 mm	4.4"	112 mm	4.4"	121 mm	4.75"
Stroke	149 mm	5.9"	149 mm	5.9"	149 mm	5.9"	152 mm	6"
Displacement	8.8 L	537 in ³	8.8 L	537 in ³	8.8 L	537 in ³	10.5 L	638 in ³
Track Rollers (Each Side)	7		7		8		6	
Width of Standard Track Shoe	560 mm	22"	760 mm	30"	915 mm	36"	508 mm	20"
VPAT	560 mm	22"	760 mm	30"	810 mm	32"	—	
Length of Track on Ground	2.87 m	9'5"	2.87 m	9'5"	3.28 m	10'9"	2.72 m	8'11"
Ground Contact Area (W/Std. Shoe)	3.22 m ²	4972 in ²	4.36 m ²	6780 in ²	5.99 m ²	9288 in ²	2.76 m ²	4280 in ²
VPAT	3.22 m ²	4972 in ²	4.36 m ²	6780 in ²	5.31 m ²	8256 in ²	—	
Track Gauge	1.88 m	74"	2.03 m	80"	2.29 m	90"	1.98 m	6'6"
VPAT	2.13 m	84"	2.29 m	90"	2.29 m	90"	—	
GENERAL DIMENSIONS:								
Height (Stripped Top)**	2.38 m	7'10"	2.38 m	7'10"	2.43 m	8'0"	2.27 m	7'5"
Height (To Top of ROPS Canopy)	3.20 m	10'6"	3.20 m	10'6"	3.25 m	10'8"	3.25 m	10'8"
Height (To Top of ROPS Cab)	3.20 m	10'6"	3.20 m	10'6"	3.25 m	10'8"	—	
Overall Length (Without Blade)	3860 mm	12'8"	3.860 mm	12'8"	4.25 m	13'11"	4.19 m	13'9"
With S Blade	—		—		5.47 m	17'11"	5.28 m	17'4"
With SU Blade	5.33 m	17'6"	5.33 m	17'6"	—		—	
With VPAT Blade	5.27 m	17'4"	5.27 m	17'4"	5.97 m	19'7"	—	
With Angle Blade	5.21 m	17'1"	5.21 m	17'1"	—		—	
Overall Length (VPAT)	3.86 m	12'8"	3.86 m	12'8"	4.25 m	13'11"	—	
With S Blade	—		—		5.47 m	17'11"	—	
With SU Blade	5.33 m	17'6"	5.33 m	17'6"	—		—	
With VPAT Blade	5.27 m	17'4"	5.27 m	17'4"	5.97 m	19'7"	—	
With Angle Blade	5.21 m	17'1"	5.21 m	17'1"	—		—	
Width (Over Trunnion)	2.64 m	8'8"	2.95 m	9'8"	3.43 m	8'8"	—	
Width (W/O Trunnion — Std. Track)	2.44 m	8'0"	2.74 m	9'0"	3.15 m	10'4"	—	
Width (W/O Trunnion — Std. Shoe)	—		—		—		2.55 m	8'5"
Ground Clearance	383 mm	1'3"	383 mm	1'3"	433 mm	1'5"	347 mm	13.7"
Blade Types and Widths:								
Straight	—		—		4.06 m	13'4"	3.66 m	12'0"
Angle Straight	4.17 m	13'8"	4.20 m	13'9"	—		4.27 m	14'0"
Full 25° Angle	3.78 m	12'5"	3.81 m	12'6"	—		3.90 m	12'8"
Semi-U	3.26 m	10'8"	3.56 m	11'8"	—		—	
VPAT (Variable pitch, angle, & tilt)	—							
straight	3.88 m	12'9"	4.16 m	13'8"	4.16 m	13'8"	—	
VPAT Full 24° Angle	3.55 m	11'8"	3.81 m	12'6"	3.81 m	12'6"	—	
Fuel Tank Refill Capacity	382 L	101 U.S. gal	382 L	101 U.S. gal	382 L	101 U.S. gal	435 L	115 U.S. gal

FTC — Fingertip clutch/brake control

*Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluid, SU blade, horn, back-up alarm, retrieval hitch and front pull hook.

— D7G includes end track guiding guards.

**Height (stripped top) — without ROPS canopy, exhaust, seat back or other easily removed encumbrances.

***Not sold in U.S., Canada, Japan or Europe.



MODEL	D7R Series II		D7R XR Series II		D7R LGP Series II		D8R	
Flywheel Power	179 kW	240 hp	179 kW	240 hp	179 kW	240 hp	228 kW	305 hp
Operating Weight:*								
Power Shift Clutch Brake (FTC)	24 766 kg	54,600 lb	25 310 kg	55,800 lb	26 762 kg	59,000 lb	—	
Power Shift Differential Steer	24 970 kg	55,050 lb	25 673 kg	56,600 lb	27 034 kg	59,600 lb	37 580 kg	82,850 lb
Engine Model	3176C SCAC		3176C SCAC		3176C SCAC		3406E TA	
Rated Engine RPM	2100		2100		2100		2100	
No. of Cylinders	6		6		6		6	
Bore	125 mm	4.92"	125 mm	4.92"	125 mm	4.92"	137 mm	5.4"
Stroke	140 mm	5.5"	140 mm	5.5"	140 mm	5.5"	165 mm	6.5"
Displacement	10.3 L	629 in³	10.3 L	629 in³	10.3 L	629 in³	14.6 L	893 in³
Track Rollers (Each Side)	7		8		7		8	
ERF†	—		—		9		—	
Width of Standard Track Shoe	560 mm	22"	610 mm	24"	914 mm	36"	560 mm	22"
Length of Track on Ground	2.89 m	9'5"	3.05 m	10'0"	3.16 m	10'5"	3.21 m	10'6"
Ground Contact Area (W/Std. Shoe)	3.22 m ²	4996 in²	3.72 m ²	5768 in²	5.78 m ²	8960 in²	3.57 m ²	5544 in²
Track Gauge	1.98 m	6'6"	1.98 m	6'6"	2.24 m	7'4"	2.08 m	6'10"
GENERAL DIMENSIONS:								
Height (Stripped Top)**	2.56 m	8'5"	2.56 m	8'5"	2.74 m	9'0"	2.67 m	8'9"
Height (To Top of ROPS Canopy)	3.53 m	11'7"	3.53 m	11'7"	3.52 m	11'6"	3.51 m	11'6"
Height (To Top of ROPS Cab)	3.43 m	11'2"	3.43 m	11'2"	3.58 m	11'9"	3.45 m	11'3"
Overall Length (With SU Blade)***	—		—		—		6.91 m	22'8"
(Without Blade)	—		—		—		4.93 m	16'2"
Overall Length (With S Blade)	5.69 m	18'8"	5.81 m	19'1"	5.78 m	19'0"	—	
(Without Blade)	4.67 m	15'4"	4.67 m	15'4"	4.67 m	15'4"	—	
Width (Over Trunnion)	2.87 m	9'5"	2.87 m	9'5"	3.37 m	11'1"	3.05 m	10'0"
Width (W/O Trunnion — Std. Shoe)	2.54 m	8'4"	2.59 m	8'6"	3.15 m	10'4"	2.70 m	8'8"
Ground Clearance	414 mm	16.3"	414 mm	16.3"	496 mm	1'7.5"	606 mm	1'11"
Blade Types and Widths:								
Straight	3.52 m	11'7"	3.32 m	11'7"	4.55 m	14'11"	—	
Angle Straight	4.50 m	14'9"	4.50 m	14'9"	—		4.99 m	16'4"
Full 25° Angle	4.12 m	13'6"	4.12 m	13'6"	—		4.52 m	14'10"
Universal	3.98 m	13'1"	3.98 m	13'1"	—		4.26 m	14'0"
Semi-U	3.69 m	12'2"	3.69 m	12'2"	—		3.94 m	12'11"
Fuel Tank Refill Capacity	479 L	127 U.S. gal	479 L	127 U.S. gal	479 L	127 U.S. gal	625 L	165 U.S. gal

FTC — Fingertip clutch/brake control

*Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluid, straight dozer with tilt, horn, back-up alarm, retrieval hitch and front pull hook.

— D8R equipped with track guides, ROPS/FOPS cab, single shank ripper and SU blade.

**Height (stripped top) — without ROPS canopy, exhaust, seat back or other easily removed encumbrances.

***Includes drawbar.

†ERF — Extended Track Roller Frame. Extends frame 366 mm (14.4"), adds 3 track sections and 2 rollers/side.

Track-Type Tractors

Specifications



MODEL	D8T		D8R LGP		D8T LGP		D9R	
Flywheel Power	231 kW	310 hp	228 kW	305 hp	231 kW	310 hp	306 kW	410 hp
Operating Weight: [*]	—		—		—		49 147 kg	108,350 lb
Power Shift Clutch Brake	—		—		—		49 510 kg	109,150 lb
Power Shift Differential Steer	38 488 kg	84,850 lb	33 730 kg	74,360 lb	38 488 kg	84,850 lb	49 510 kg	109,150 lb
Engine Model	C15 ACERT		3406E SCAC		C15 ACERT		3408E SCAC	
Rated Engine RPM	1850		2100		1850		1900	
No. of Cylinders	6		6		6		8	
Bore	137 mm	5.4"	137 mm	5.4"	137 mm	5.4"	137 mm	5.4"
Stroke	172 mm	6.75"	165 mm	6.5"	172 mm	6.75"	152 mm	6"
Displacement	15.2 L	928 in³	14.6 L	893 in³	15.2 L	928 in³	18 L	1099 in³
Track Rollers (Each Side)	8		8		8		8	
Width of Standard Track Shoe	560 mm	22"	965 mm	38"	965 mm	38"	610 mm	24"
Length of Track on Ground	3.21 m	10'6"	3.20 m	10'6"	3.20 m	10'6"	3.47 m	11'5"
Ground Contact Area (W/Std. Shoe)	3.57 m ²	5544 in²	6.2 m ²	9576 in²	6.2 m ²	9576 in²	4.24 m ²	6569 in²
Track Gauge	2.08 m	6'10"	2.34 m	7'8"	2.34 m	7'8"	2.25 m	7'5"
GENERAL DIMENSIONS:								
Height (Stripped Top)**	2.67 m	8'9"	2.67 m	8'9"	2.67 m	8'9"	3.00 m	9'10"
Height (To Top of ROPS Canopy)	3.46 m	11'4"	3.51 m	11'6"	3.45 m	11'4"	3.99 m	13'1"
Height (To Top of ROPS Cab)	3.46 m	11'4"	3.45 m	11'3"	3.45 m	11'4"	3.82 m	12'6"
Overall Length (With SU Blade)***	6.09 m	20'0"	6.91 m	22'8"	6.09 m	20'0"	6.84 m	22'5"
(Without Blade)	4.64 m	15'3"	4.93 m	16'2"	4.98 m	16'4"	5.18 m	17'0"
Width (Over Trunnion)	3.06 m	10'0"	3.55 m	11'7"	3.06 m	10'0"	3.30 m	10'10"
Width (W/O Trunnion — Std. Shoe)	2.64 m	8'8"	3.30 m	10'10"	2.64 m	8'8"	2.93 m	9'8"
Ground Clearance	618 mm	2'4"	574 mm	1'11"	609 mm	2'0"	591 mm	1'11"■
Blade Types and Widths:								
Angle Straight	4.99 m	16'4"	—	—	—	—	—	—
Full 25° Angle	4.52 m	14'10"	—	—	—	—	—	—
Universal	4.26 m	14'0"	—	—	—	—	4.65 m	15'3"
Semi-U	3.94 m	12'11"	4.40 m	14'5"	4.40 m	14'5"	4.31 m	14'2"
Fuel Tank Refill Capacity	643 L	170 U.S. gal	625 L	165 U.S. gal	643 L	170 U.S. gal	818 L	216 U.S. gal

^{*}Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, semi universal blade with tilt, back-up alarm, seat belts, lights, rigid drawbar and front towing device.

— D8R and D9R equipped with track guides, ROPS/FOPS cab, single shank ripper and SU blade.

^{**}Height (stripped top) — without ROPS canopy, exhaust, seat back or other easily removed encumbrances.

^{***}Includes drawbar.

■ SAE J1234.

Specifications | Track-Type Tractors



MODEL	D9T		D10T		D11T		D11T CD	
Flywheel Power	306 kW	410 hp	433 kW	580 hp	634 kW	850 hp	634 kW	850 hp
Operating Weight:* Power Shift Clutch Brake	—		66 451 kg	146,500 lb	104 600 kg	230,100 lb	113 000 kg	248,600 lb
Power Shift Differential Steer	47 900 kg	105,600 lb	—		—		—	
Engine Model	C18 ACERT		C27 ACERT		3508B		3508B	
Rated Engine RPM	1800		1800		1800		1800	
No. of Cylinders	6		12		8		8	
Bore	145 mm	5.7"	137 mm	5.4"	170 mm	6.7"	170 mm	6.7"
Stroke	183 mm	7.2"	152 mm	6"	190 mm	7.5"	190 mm	7.5"
Displacement	18.1 L	1104 in ³	27 L	1647.5 in ³	34.5 L	2105 in ³	34.5 L	2105 in ³
Track Rollers (Each Side)	8		8		8		8	
Width of Standard Track Shoe	610 mm	24"	610 mm	24"	710 mm	28"	910 mm	36"
Length of Track on Ground (Idler to Idler)	3.47 m	11'5"	3.88 m	12'9"	4.44 m	14'7"	4.44 m	14'7"
Ground Contact Area (W/Std. Shoe)	4.24 m ²	6569 in ²	4.74 m ²	7347 in ²	6.30 m ²	9781 in ²	8.10 m ²	12,581 in ²
Track Gauge	2.25 m	7'5"	2.55 m	8'4"	2.90 m	9'6"	2.90 m	9'6"
GENERAL DIMENSIONS:								
Height (Stripped Top)**	—		3.222 m	10'7"	3.61 m	11'10"	3.61 m	11'10"
Height (To Top of ROPS Canopy)	4.00 m	13'1"	4.340 m	14'3"	4.66 m	15'3"	4.66 m	15'3"
Height (To Top of ROPS Cab)	3.82 m	12'6"	4.078 m	13'4"	4.40 m	14'5"	4.40 m	14'5"
Overall Length:								
(With SU Blade & Ripper)	6.63 m	21'10"	9.260 m	30'5"	10.83 m	35'6"	10.50 m	34'5"
(Without Blade & Ripper)	4.91 m	16'1"	5.331 m	17'6"	6.16 m	20'3"	6.16 m	20'3"
Width (Over Trunnion)	3.31 m	10'11"	3.716 m	12'2"	4.37 m	14'4"	4.37 m	14'4"
Width (W/O Trunnion — Std. Shoe)	2.87 m	9'5"	3.160 m	10'4"	3.60 m	11'10"	3.60 m	11'10"
Ground Clearance	596 mm	1'11"	615 mm	2'0"	623 mm	2'0"■	623 mm	2'0"■
Blade Types and Widths:								
Straight (Carry Dozer)	—		—		—		6.71 m	22'0"
Universal	4.65 m	15'3"	5.26 m	17'3"	6.35 m	20'10"	—	
Semi-U	4.31 m	14'2"	4.86 m	15'11"	5.60 m	18'4"	—	
Fuel Tank Refill Capacity	889 L	235 U.S. gal	1204 L	318 U.S. gal	1609 L	425 U.S. gal	1609 L	425 U.S. gal

*Operating Weight includes operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, SU blade with tilt, back-up alarm, seat belts, lights, rigid drawbar and front towing device.

— D10T includes 10 SU blade single shank ripper and ROPS cab.

— D11R includes 11U ABR Dual Tilt Bulldozer, single shank ripper with pin puller, ROPS cab, fast fuel fill and engine doors.

— D11R CD includes 11D Dual Tilt Bulldozer, single shank ripper with pin puller, ROPS cab, fast fuel fill and engine doors.

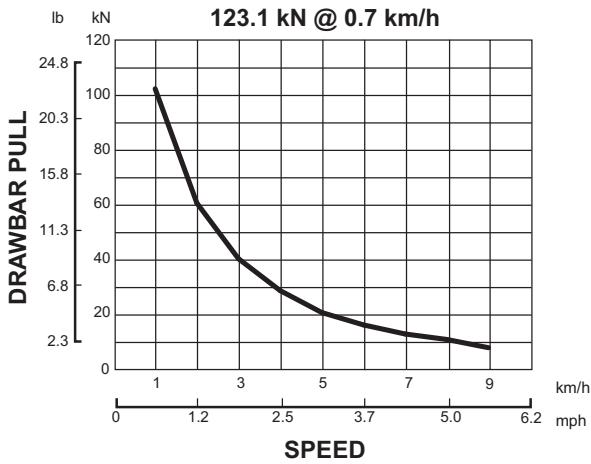
**Height (stripped top) — without ROPS canopy, exhaust, seat back or other easily removed encumbrances.

■ SAE J1234.

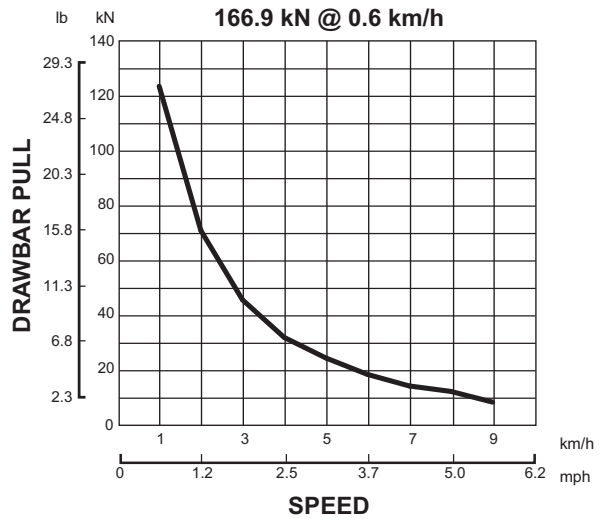
Track-Type Tractors

Drawbar Pull vs. Ground Speed ● Hydrostatic Drive

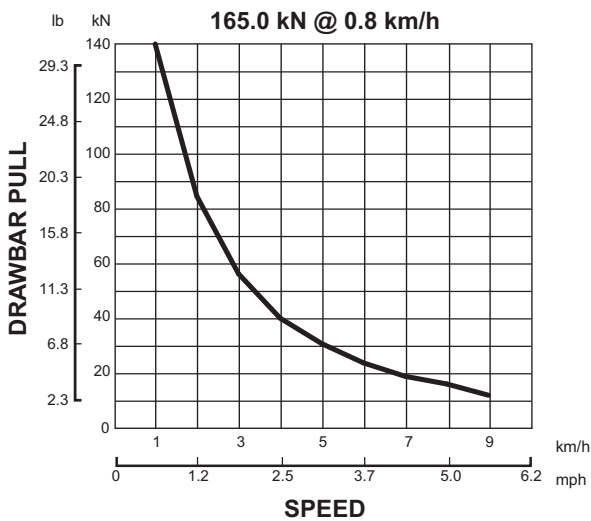
**D3G XL Hystat
D3G LGP Hystat**



**D4G XL Hystat
D4G LGP Hystat**

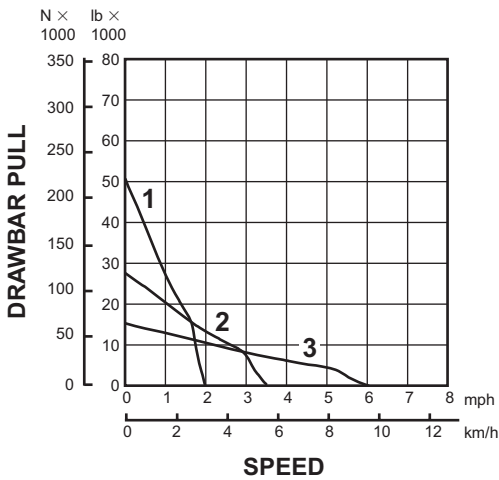


**D5G XL Hystat
D5G LGP Hystat**

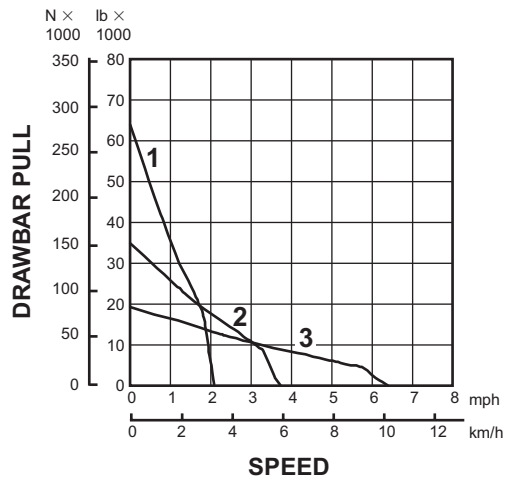


- NOTES:** Usable pull will depend upon weight and traction of equipped tractor.
- Assumes sufficient machine weight for <5% track slip at POR pressure.
 - Assumes pumps and motors are broken in.
 - Assumes nominal engine power and valve settings.
 - Drawbar pull at track stall will be lower.

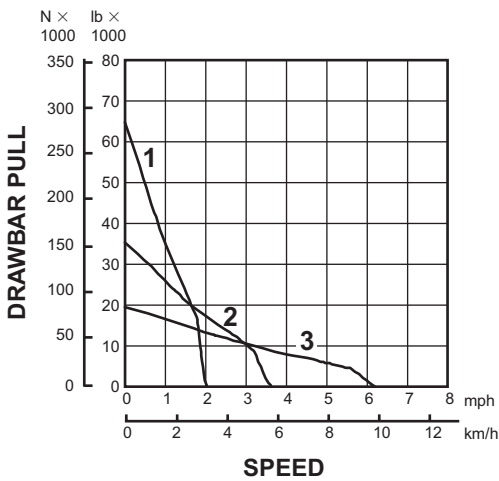
**D5N XL
D5N LGP**



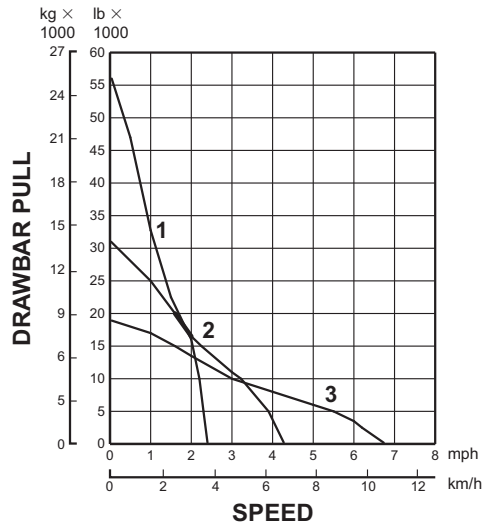
**D6N
Steering Clutches & Brakes (FTC)**



**D6N
Differential Steering (D/S)**



D6G



KEY

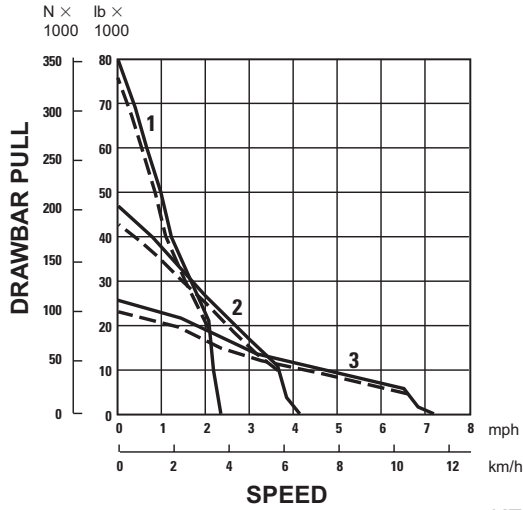
- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear

NOTE: Usable pull will depend upon weight and traction of equipped tractor.

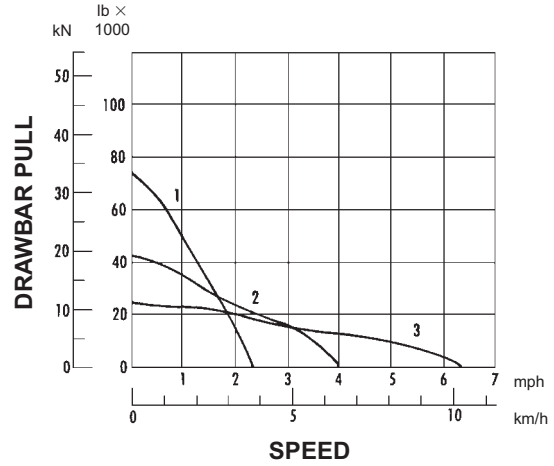
Track-Type Tractors

Drawbar Pull vs. Ground Speed ● Power Shift

D6R Series III

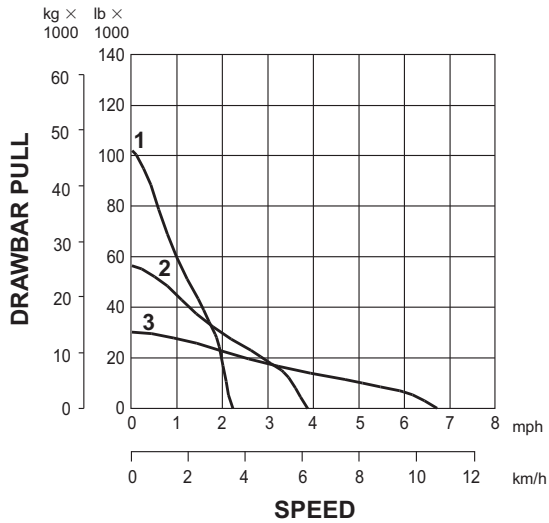


D7G

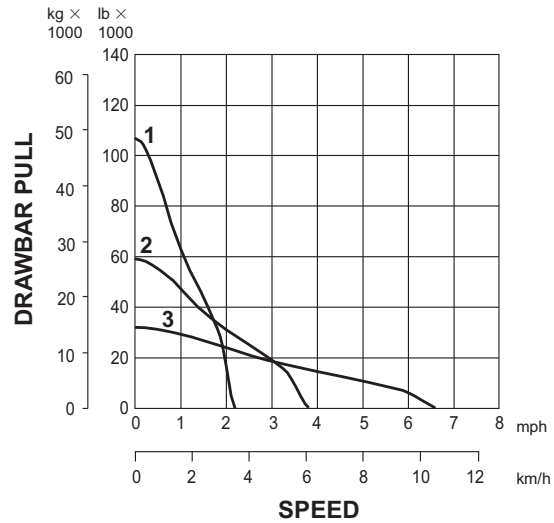


KEY
 --- STD
 — XL/XW/LGP

**D7R Series II Standard/XR/LGP
Steering Clutches & Brakes (FTC)**



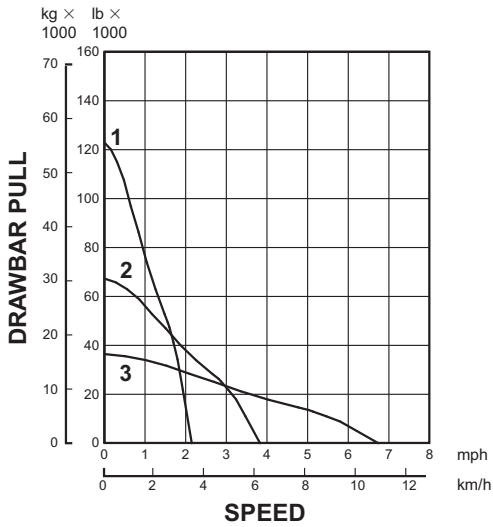
**D7R Series II Standard/XR/LGP
Differential Steer**



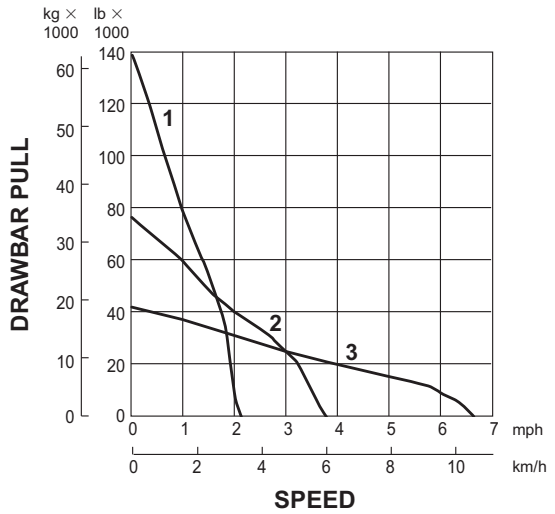
KEY
 1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear

NOTE: Usable pull will depend upon weight and traction of equipped tractor.

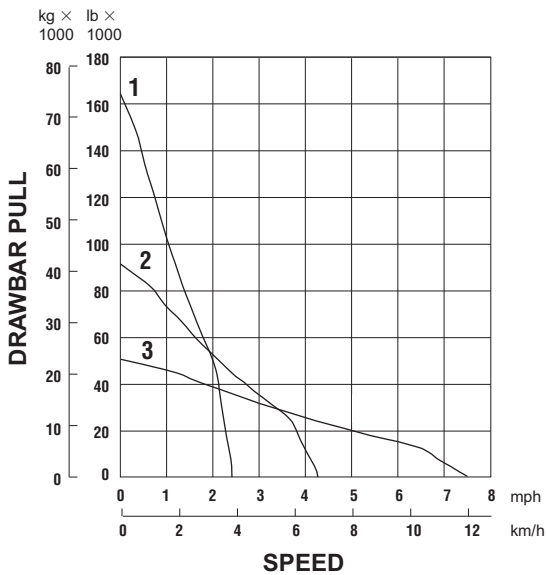
**D8R
D8R LGP**



**D8T
D8T LGP**



**D9R Power Shift with
Steering Clutches & Brakes**



KEY

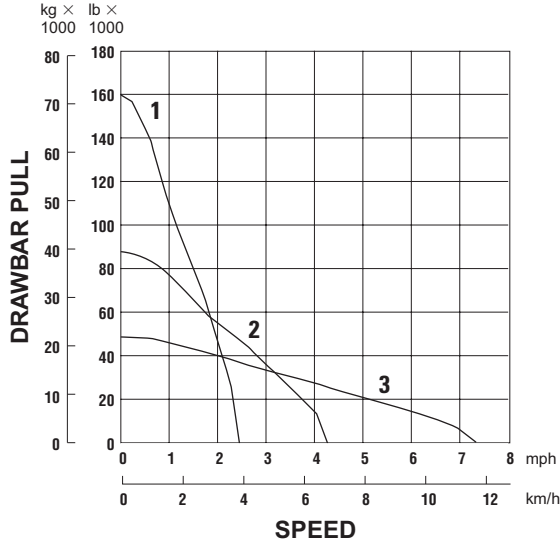
- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear

NOTE: Usable pull will depend upon weight and traction of equipped tractor.

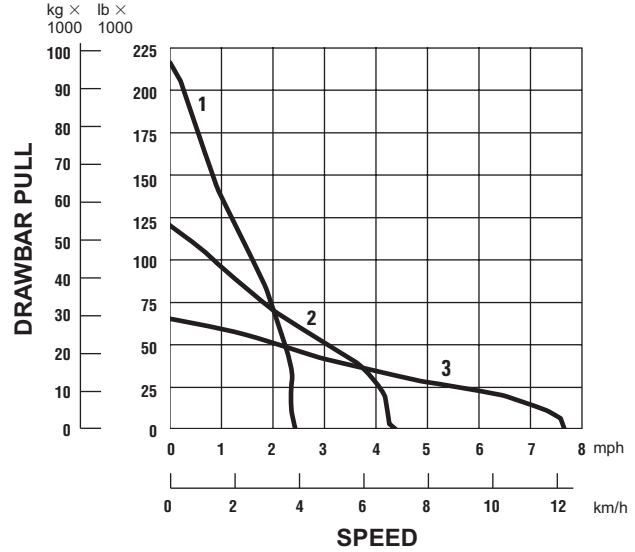
Track-Type Tractors

Drawbar Pull vs. Ground Speed ● Power Shift

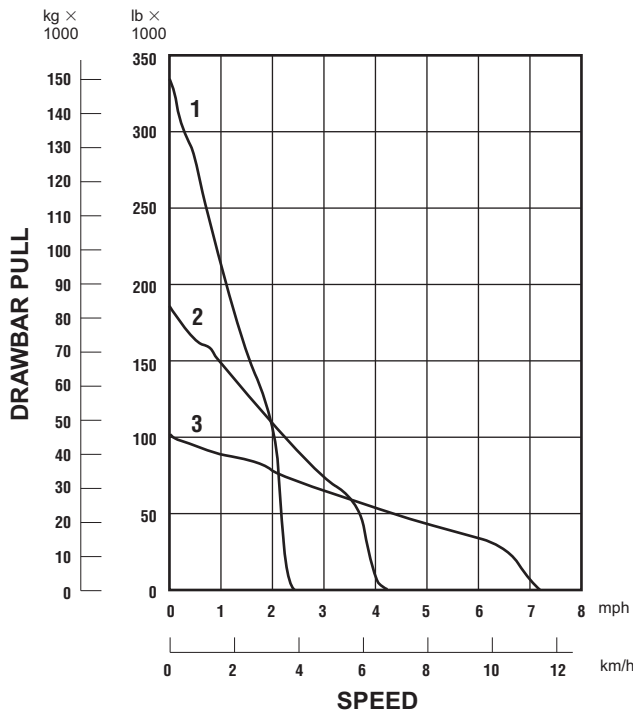
D9T Differential Steering



D10T



D11T/D11T CD



KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear

NOTE: Usable pull will depend upon weight and traction of equipped tractor. Tractors with suspended undercarriage can provide up to 15% more tractive effort than tractors with non-suspended undercarriage.

TRAVEL SPEED

POWER SHIFT MODEL	D3G All Models		D4G All Models		D5G All Models		D5N XL/LGP		D5N LGP* PS DD		D6N FTC	
	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
FORWARD												
1	—	—	—	—	—	—	3.1	1.9	2.8	1.7	3.3	2.0
2	—	—	—	—	—	—	5.4	3.3	5.0	3.1	5.7	3.5
3	—	—	—	—	—	—	9.1	5.6	8.7	5.4	10.0	6.2
REVERSE												
1	—	—	—	—	—	—	3.8	2.3			4.0	2.5
2	—	—	—	—	—	—	6.7	4.1	**		7.2	4.4
3	—	—	—	—	—	—	11.3	6.9			12.3	7.6
HYDROSTATIC												
FORWARD	0-9.0	0-5.6	0-9.0	0-5.6	0-9.0	0-5.6	—	—	—	—	—	—
REVERSE	0-9.6	0-6.0	0-9.6	0-6.0	0-9.6	0-6.0	—	—	—	—	—	—

POWER SHIFT MODEL	D6N D/S		D6G		D6R Series III (FTC)		Differential Steer D6R Series III		D7G		D7R Series II (FTC)		Differential Steer D7R Series II	
	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
FORWARD														
1	3.3	2.0	4.0	2.5	3.8	2.4	3.8	2.3	3.7	2.3	3.7	2.3	3.5	2.2
2	5.7	3.5	6.9	4.3	6.6	4.1	6.6	4.1	6.4	4.0	6.4	4.0	6.2	3.8
3	9.7	6.0	10.8	6.7	11.5	7.2	11.4	7.1	10.0	6.2	11.1	6.9	10.7	6.7
REVERSE														
1	4.0	2.5	4.8	3.0	4.9	3.0	4.8	3.0	4.5	2.8	4.8	3.0	4.6	2.9
2	7.0	4.3	8.4	5.2	8.5	5.3	8.4	5.2	7.9	4.9	8.3	5.1	8.0	5.0
3	12.0	7.4	12.9	8.0	14.7	9.1	14.5	9.0	11.9	7.4	14.3	8.9	13.8	8.6

POWER SHIFT MODEL	Differential Steer D8R		D8T		D9R		D9T		D10T		D11T/CD		D11T/CD High Altitude	
	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
FORWARD														
1	3.5	2.2	3.4	2.1	3.8	2.4	3.9	2.4	4.0	2.5	3.9	2.4	4.0	2.5
2	6.2	3.9	6.1	3.8	6.8	4.2	6.8	4.2	7.2	4.5	6.8	4.2	7.0	4.4
3	10.8	6.7	10.6	6.6	11.9	7.4	11.7	7.3	12.7	7.9	11.8	7.3	12.0	7.5
REVERSE														
1	4.7	2.9	4.5	2.8	4.7	2.9	4.7	2.9	5.2	3.2	4.7	2.9	4.8	3.0
2	8.1	5.0	8.0	5.0	8.4	5.2	8.4	5.2	9.0	5.6	8.2	5.1	8.3	5.2
3	13.9	8.6	14.2	8.8	14.7	9.1	14.3	8.9	15.8	9.8	14.0	8.7	14.9	9.0

*Power Shift direct drive transmission available for Japan domestic market only.

**Not available at time of printing.

Track-Type Tractors

Travel Speed and Drawbar Pull Forward ● Direct Drive

TRAVEL SPEED

DIRECT DRIVE MODEL	D6R** P.S./D.D.	
	km/h	mph
FORWARD		
1	3.4	2.1
2	5.9	3.7
3	10.4	6.5
4	—	—
5	—	—
6	—	—
REVERSE		
1	4.3	2.7
2	7.5	4.7
3	13.3	8.3
4	—	—
5	—	—
6	—	—

DRAWBAR PULL FORWARD*

FORWARD	At Rated RPM		
	kN	kg	lb
1	122.5	12 500	27,530
2	93.2	9520	20,960
3	70.0	7140	15,740
4	—	—	—
5	—	—	—
6	—	—	—
	Max. at Lug		
1	159.0	16 220	35,750
2	121.6	12 410	27,340
3	91.9	9370	20,650
4	—	—	—
5	—	—	—
6	—	—	—

*Specified pull is based on nominal engine performance derated for transmission lube, control and optional implement hydraulic pumps, with corrections made for drive-line mechanical efficiency and rolling resistance on firm level ground. Usable pull will depend on particular attachments, weight and traction of equipped tractor.
**Japan only.

GROUND PRESSURES

Pressures computed from operating weights given earlier in this section in the specifications tables.

MODEL	SHOE WIDTH		CONTACT AREA		GROUND PRESSURE	
	mm	in	m ²	in ²	kPa	psi
D3G XL Hystat	406	16	1.67	2586	43.2	6.27
D3G LGP Hystat	635	25	2.61	4045	29.3	4.24
D4G XL Hystat	457	18	2.03	3153	38.0	5.49
D4G LGP Hystat	635	25	2.81	4352	28.6	4.15
D5G XL Hystat	510	20	2.36	3663	37.1	5.37
D5G LGP Hystat	660	26	3.06	4741	29.7	4.31
D5N XL	510	20	2.44	3775	51.5	7.49
◀	560	22	2.67	4146	47.1	6.82
D5N LGP	610	24	3.18	4924	42.2	6.12
◀	760	30	3.96	6135	33.9	4.91
	770	30	4.01	6216	33.4	4.85
D6N XL (FTC)	560	22	2.86	4427	53.2	7.72
◀	600	24	3.06	4743	49.7	7.20
D6N LGP (FTC)	710	28	4.40	6820	39.3	5.70
◀	840	33	5.21	8078	33.2	4.81
	860	34	5.34	8277	32.4	4.70
	865	34	5.37	8324	32.2	4.67
D6G	457	18	2.43	3766	60.0	8.70
◀	508	20	2.71	4200	54.0	7.83
	560	22	2.98	4619	49.0	7.10
	610	24	3.25	5040	45.0	6.54
D6R Series III	508	20	2.70	4200	66.6	9.62
	560	22	2.98	4620	60.3	8.74
	610	24	3.25	5040	55.3	8.02
D6R XL Series III	508	20	2.92	4520	67.5	9.79
	560	22	3.22	4972	61.4	8.90
	610	24	3.50	5424	56.3	8.16
D6R XW Series III	610	24	3.50	5424	57.9	8.40
	760	30	4.36	6780	46.3	6.72
D6R LGP Series III	810	32	5.31	8256	40.0	5.80
	915	36	5.99	9288	35.5	5.15
	991	39	6.49	10,062	32.8	4.76
D6N XL (DS)	560	22	2.86	4427	55.2	8.01
◀	600	24	3.06	4743	51.6	7.48
D6N LGP (DS)	710	28	4.40	6820	40.6	5.89
◀	840	33	5.21	8078	34.3	4.97
	860	34	5.34	8277	33.5	4.85
	865	34	5.37	8324	33.3	4.83

◀ Standard Shoe.
 FTC — Finger Tip Control
 DS — Differential Steer

MODEL	SHOE WIDTH		CONTACT AREA		GROUND PRESSURE	
	mm	in	m ²	in ²	kPa	psi
D7G	508	20	2.76	4280	73.0	10.60
◀	559	22	3.04	4708	66.0	9.60
	610	24	3.31	5136	60.0	8.80
D7R Series II	510	20	2.94	4560	83.4	11.71
◀	560	22	3.24	5016	76.0	10.69
	610	24	3.53	5472	69.8	9.87
	660	26	3.82	5928	64.0	9.17
D7R XR Series II	560	22	3.43	5315	71.5	10.16
◀	610	24	3.75	5808	65.9	9.37
	660	26	4.06	6282	61.2	8.70
D7R LGP Series II	760	30	4.80	7504	55.1	7.74
	915	36	5.82	9029	46.0	6.55
D7R LGP ERF Series II*	915	36	6.49	10,060	42.0	6.09
D8R/D8T	560	22	3.59	5565	103.4	14.98
◀	610	24	3.91	6062	94.9	13.76
	660	26	4.23	6559	87.7	12.71
	710	28	4.55	7056	81.5	11.82
D8R LGP/D8T LGP	965	38	6.20	9746	54.0	7.82
D9R/D9T	560	22	3.89	6031	124.8	18.10
◀	610	24	4.24	6569	114.6	16.62
	685	27	4.74	7374	102.0	14.80
	760	30	5.28	8185	92.0	13.34
D10T	610	24	4.74	7321	135.7	19.63
◀	710	28	5.52	8551	116.2	16.86
	800	31.5	6.22	9635	103.1	14.97
D11T	710	28	6.31	9781	162.4	23.57
◀	810	32	7.20	11,159	142.4	20.66
	915	36	8.13	12,605	126.0	18.29
D11T CD	810	32	7.20	11,159	153.8	22.32
◀	915	36	8.13	12,594	136.7	19.76

* Extended track roller frame.

◀ Standard shoe.

NOTE: Ground contact area = width of track shoe × length of track on ground × 2.

$$\text{Ground pressure} = \frac{\text{operating weight}}{\text{ground contact area}}$$

EXTREME SLOPE OPERATION

The following table gives the MAXIMUM fore and aft slope on which each tractor will have proper lubrication. Consult Operation & Maintenance Manual (if applicable) for POWER TRAIN fluid level overfill requirements for operation on extreme slopes. Extreme slope operation is anytime the slope exceeds 25° (47%).

The ENGINE should never be overfilled with oil. This may lead to rapid overheating. For extreme slope operation, engine oil should be maintained at the full mark.

NOTE: Both ENGINE and POWER TRAIN fluid levels should be checked on level ground before working sidehills and slopes.

Tractor	D3G	D4G	D5G	D5N	D6N
Percent Grade or Degrees Slope	100 45	100 45	100 45	100 45	100 45

Tractor	D6G/ D6R Series III	D7G/ D7R Series II	D8R/ D8T	D9R/ D9T	D10T	D11T/ D11T CD
Percent Grade or Degrees Slope	100 45	100 45*	100 45	100 45	100 45	100 45

Pipelayer	561M	572R	583T	589
Percent Grade or Degrees Slope	100 45	100 45	100 45	100 45

When working sidehills and slopes, consideration should be given to the following important points:

- Speed of travel — At higher speeds, inertia forces tend to make the tractor less stable.
- Roughness of terrain or surface — Ample allowance should be made where the terrain or surface is uneven.
- Mounted equipment — Bulldozers, sidebooms, winches, and other mounted equipment cause the tractor to balance differently.
- Nature of surface — New earthen fills may give way with the weight of the tractor. Rocky surfaces may promote side slipping of tractor.
- Track slippage due to excessive loads — This may cause downhill track to “dig in,” increasing angle of tractor.

- Implements hitched to the drawbar — This may decrease weight on uphill track, e.g., logging arch, two-wheel wagon.
- Height of hitch on tractor — When a high drawbar is used the tractor is less stable than with the standard drawbar.
- Width of shoes — Wide track shoes tend to decrease “digging in”, hence tractor is more stable.
- Operated equipment — Be aware of the stability and other performance features of the equipment operated by the tractor.
- Keep all attachments or pulled loads low to the ground for optimum stability.

*The D7G requires a 23 L (6 gal) transmission overfill for acceptable operation on slopes above 25° (47%).

NOTE: Safe operation on steep slopes may require special machine maintenance as well as excellent operator skill and proper equipment for the specific application. Consult Operation & Maintenance Manual (if applicable) for proper fluid level requirements.

HYDRAULIC CONTROLS

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Features1-19
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Features:

- **Designed and built for specific tractor applications.** Valves and components sized for exacting quality and performance.
- **Job requirements matched** through various arrangements.
- **Hydraulic blade and ripper controls:** Mechanical controls on G and M Series. Pressure compensated on D6R Series III and D9R. Pilot operated on D7R Series II. Electro hydraulic blade and ripper controls on D8T, D9T, D10T and D11T.
- **Full flow filters***... all oil completely filtered.
- **Dual tilt** — standard on D11T, optional on D9R and D10T.

*Exception — D8R 2-pump.

MODEL	D3G Hystat	D4G Hystat	D5G Hystat
Mounting Point	Fender	Fender	Fender
Number of Valves	3 or 4	3 or 4	3 or 4
Flow at 6890 kPa (1000 psi)	61.1 L/min @ 2200 RPM 16.1 gpm	61.1 L/min @ 2200 RPM 16.1 gpm	61.1 L/min @ 2200 RPM 16.1 gpm
Tank Capacity (Oil)	47 L 12 U.S. gal	47 L 12 U.S. gal	47 L 12 U.S. gal
Lift Relief Valve Setting	20 000 kPa 2900 psi	20 000 kPa 2900 psi	20 000 kPa 2900 psi
Weight Installed	16 kg 36 lb* (Four Valves)	16 kg 36 lb* (Four Valves)	16 kg 36 lb* (Four Valves)

MODEL	D5N	D6N
Mounting Point	Right Rear Fender	Right Rear Fender
Number of Valves	3 or 4	3 or 4
Flow at 6890 kPa (1000 psi)	91 L/min @ 2200 RPM 24 gpm	121 L/min @ 2200 RPM 32 gpm
Tank Capacity (Oil)	29.5 L 7.8 U.S. gal	29.5 L 7.8 U.S. gal
Lift Relief Valve Setting XL & LGP	21 000 kPa 3000 psi	25 000 kPa 3600 psi
Weight Installed: 3 Valve	216 kg 440 lb	295 kg ** 650 lb
4 Valve	232 kg 475 lb	314 kg ** 703 lb

MODEL	D6G	D6R Series III	D6R Series III (Differential Steer)
Mounting Point	Dash	Under Operators Platform	Under Operators Platform
Number of Valves	1, 2 or 3	2, 3 or 4	2, 3, 4 or 5
Flow at 6890 kPa (1000 psi)	167 L/min @ 1900 RPM 44 gpm	216 L/min @ 2125 RPM (PMP) 57 gpm	214 L/min @ 2125 RPM (PMP) 57 gpm
Tank Capacity (Oil)	49 L 13 U.S. gal	47.3 L 12.5 U.S. gal	47.3 L 12.5 U.S. gal
Lift Relief Valve Setting	15 500 kPa 2250 psi	19 305 kPa 2800 psi	19 305 kPa 2800 psi
Weight Installed	318 kg 700 lb (Two Valves)	311 kg 685 lb (Two Valves)	311 kg 686 lb (Two Valves)

MODEL	D7G (173B)	D7R Series II	D7R Series II (Differential Steer)
Mounting Point	Fender	Under Operators Platform	Under Operators Platform
Number of Valves	1, 2 or 3	2 or 3	2 or 3
Flow at 6890 kPa (1000 psi)	227 L/min @ 2080 RPM 60 gpm	227 L/min @ 2231 RPM (PMP) 60 gpm	289 L/min @ 2231 RPM (PMP) 76 gpm
Tank Capacity (Oil)	91 L 24 U.S. gal	54 L 14.3 U.S. gal	54 L 14.3 U.S. gal
Lift Relief Valve Setting	15 500 kPa 2250 psi	22 750 kPa 3300 psi	22 750 kPa 3300 psi
Weight Installed	458 kg 1010 lb (Two Valves)	358 kg 789 lb (Two Valves)	358 kg 784 lb (Two Valves)

*Hydraulic tank not included.

**Steering system not included.

NOTE: Weight installed, two valves, includes pump, tank with filters, valves, lines, linkage, oil cooler and control levers.

MODEL	D8R	D8T	D9R	D9T
Mounting Point	Under Operators Platform	At Rear Under Fuel Tank	Under Operators Platform	Under Operators Platform
Number of Valves	2 Std. 4 with Ripper◀ Pilot Control System	2 Std. 4 with Ripper Electro/Hydraulic Control System	4 + Dual Tilt (Attach.) Radiator Guard	4 + Dual Tilt (Attach.) Electro/Hydraulic Control System
Flow at 6890 kPa (1000 psi)	240 L/min 63 gpm @ 2100 RPM (PMP)	270 L/min 71.3 gpm @ 2200 RPM	239 L/min 63 gpm @ 1900 RPM	239 L/min 63 gpm @ 1900 RPM
Tank Capacity (Oil)	72 L 19 U.S. gal	75 L 19.8 U.S. gal	77.2 L 20.4 U.S. gal	89 L 23.5 U.S. gal
Lift Relief Valve Setting	24 200 kPa 3500 psi	24 200 kPa 3500 psi	26 200 kPa 3800 psi	26 200 kPa 3800 psi
Weight Installed	Included in Std. Tractor (Two Valves)	Included in Std. Tractor	Included in Std. Tractor (Two Valves)	Included in Std. Tractor

MODEL	D10T	D11T	D11T CD
Mounting Point	Under Operators Platform	Under Operators Platform	Under Operators Platform
Number of Valves	2 Std. 4 with Ripper At Rear Under Fuel Tank 1◀ + Dual Tilt (Attach.) Radiator Guard	2 At Rear Under Fuel Tank 1◀ + Dual Tilt Standard Radiator Guard	2 At Rear Under Fuel Tank 1◀ Dual Tilt Standard Quick Dump Valve Standard Both on Radiator Guard
Flow at 6890 kPa (1000 psi)	450 L/min 118.7 gpm @ 1800 RPM	620 L/min 164 gpm @ 1890 RPM	670 L/min 177 gpm @ 1890 RPM
Tank Capacity (Oil)	139 L 36.7 U.S. gal	227 L 60 U.S. gal	227 L 60 U.S. gal
Lift Relief Valve Setting	Lift: 18 790 kPa 2725 psi Tilt: 20 325 kPa 2950 psi	22 750 kPa 3300 psi	24 115 kPa 3500 psi
Weight Installed	Included in Std. Tractor (Two Valves)	Included in Std. Tractor (Two Valves)	Included in Std. Tractor (Two Valves)

◀Ripper valve.

NOTE: Weight installed, two valves, includes pump, tank with filters, valves, lines, linkage, oil cooler and control levers.

Notes —

BULLDOZERS

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Features:

- **Straight Bulldozers** — adjustable pitch angle controls blade penetration.
- **Variable cutting edge Power Angle and Tilt (VPAT)** — blade is available on the D3G, D4G, D5G, D5N, and D6R Series III. The blade can be mechanically tipped forward for improved penetration or back for more productivity and easier finish grading.
- **Angling Bulldozers** — 25° right/left angling; C-frame allows mounting other tools.
- **Universal Bulldozers** — 25° wings provide increased capacity, less spillage.
- **Semi-Universal Bulldozers** — combines penetration ability of straight blade with increased load capacity provided by short 25° wings.
- **Wheel Dozer blades** are straight design, with hydraulic pitch and tilt control.
- **Box-section construction** on blades adds rigidity and strength.
- **Cutting edges** are heat treated and reversible for extra life.

Bulldozers

Summary Blade Options for Caterpillar Built Machines

MODEL	CATERPILLAR BLADES								SPECIAL BLADES													
	S	U	SU	A	FS	LFS	VP	RC	WC	CL	HU	LF	TW	CU	CPB	CB	VR	WCB	CS	WCS	W	
D3G XL							●															
D3G LGP							●															
D4G XL							●															
D4G LGP							●															
D5G XL							●															
D5G LGP							●															
D5N XL							●															
D5N LGP							●															
D5E				●																		
D6N XL			●				●						●									
D6N LGP							●															
D6R Series III	●		●	●					●	●		●					●					
D6R XL Series III			●	●			●															
D6R LGP Series III	●						●		●	●		●						●				
D6R XW Series III			●	●			●															
D6G	●			●																		
D7R	●	●	●	●					●	●		●	●					●				
D7R LGP	●																	●				
D7G	●	●		●									●									
D8R/D8T		●	●	●				●	●	●		●		●	●		●					
D8R LGP/D8T LGP																						
D9R/D9T		●	●					●	●	●		●		●	●	●		●				
D10T		●	●					●	●	●		●		●	●	●						
D11R		●	●					●		●												
814F	●									●	●									●	●	
815F					●																	
816F						●						●										●
824G/824H	●								●	●	●										●	
825G					●																	
826G/826H						●						●										●
834G/834H	●	●							●	●										●	●	
836G/836H												●										●

CATERPILLAR SUPPLIED

- S — Straight
- U — Universal
- SU — Semi-Universal
- A — Angling
- FS — Fill Spreading
- LFS — Landfill Spreading
- VP — Variable Pitch, Lower, Angle & Tilt (VPAT)

SPECIAL SUPPLIED

- RC — Reclamation U
- WC — Woodchips
- CL — Coal
- HU — Heavy U
- LF — Landfill
- TW — Two-Way Dozer
- CU — Cushion Dozer
- CPB — Cushion Push Block
- CB — Coal Bowldozer
- VR — Variable Radius
- WCB — Wood Chip Bowldozer
- CS — Coal Scoop
- WCS — Wood Chip Scoop
- W — W-Blade

NOTE: This chart suggests a range of blade options for Caterpillar built machines. It is not totally inclusive of all blades available. For additional information consult your Caterpillar Dealer.

BLADE SELECTION

Properly matching tractor and dozer is a basic requirement for maximizing production. First consider the kind of work the tractor will be doing most of its life. Then evaluate:

- Material to be moved.
- Tractor limitations.

Materials to be moved

Most materials are dozeable. However, dozer performance will vary with material characteristics such as:

Particle Size & Shape — The larger the individual particle size, the harder it is for a cutting edge to penetrate. Particles with sharp edges resist the natural rolling action of a dozer blade. These particles require more horsepower to move than a similar volume of material with rounded edges.

Voids — Few voids or the absence of voids means the individual particles have most or all of their surface area in contact with other particles. This forms a bond which must be broken. A well graded material, which lacks voids, is generally heavy, and will be hard to remove from the bank state.

Water Content — In most materials the lack of moisture increases the bond between particles and makes the material difficult to remove from the bank state. A high moisture content makes dozing difficult because the material is heavy and requires more force to move. Optimum moisture reduces dust and offers the best condition for dozing ease and operator comfort.

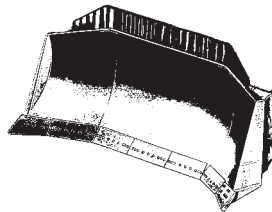
The effect of freezing depends on the moisture content. When frozen, the material's bond strengthens as moisture content increases and temperature decreases. However, freezing a completely dry material does not change its characteristics.

An indication of a blade's ability to penetrate and obtain a blade load is kW per meter (or horsepower per foot) of cutting edge. The higher the kW/meter (HP/foot), the more aggressive the blade. Kilowatt per Lm^3 (horsepower per loose cubic yard) indicates a blade's ability to push material. The higher the kW/ Lm^3 (HP/LCY), the greater the blade's potential capability for carrying material at a greater speed.

Tractor Limitations

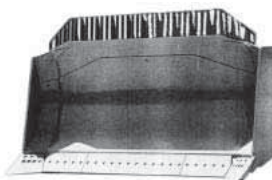
The weight and horsepower of the machine determines its ability to push. No tractor can exert more pounds push than the machine itself weighs and its power train can develop. Various terrain and underfoot conditions on the job limit the tractor's ability to use its weight and horsepower. The "approximate coefficient of traction factors" chart in the Tables Section presents these traction factors for common materials. To use the chart, take the total tractor weight (with attachments) times the factor to arrive at the maximum usable push the dozer can exert.

Production Dozing Tools



“U” — Universal blade — the large wings on this blade include one end bit and at least one section of cutting edge which make it efficient for moving big loads over long distances as in land reclamation, stockpile

work, charging hoppers and trapping for loaders. As this blade has a lower kW/meter (HP/foot) of cutting edge than an “S” or “SU”, penetration should not be a prime objective. With a lower kW/ Lm^3 (HP/LCY) than an “S” or “SU”, this blade is best for lighter or relatively easily dozed material. If equipped with tilt cylinders the U blade can be used to pry out, level, cut ditches and steer the tractor.



“SU” — The Semi-U blade combines the desirable characteristics of S and U-blades into one package. It has increased capacity by the addition of short wings which include only the dozer end

bits. The wings provide improved load retention capabilities while maintaining the blade's ability to penetrate and load quickly in tightly packed materials and to handle a wide variety of materials in production oriented applications. Tilt cylinder(s) increase both the productivity and versatility of this dozer. Equipped with a push plate, it is effectively used for push loading scrapers.

Bulldozers

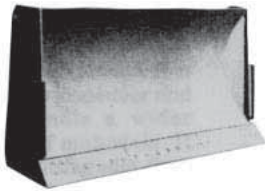
Blade Selection

- Production Dozing Tools
- General Purpose Dozing Tools
- Special Attachments “VR Blades”
- Special Application Dozing Tools



“CD” — The CD or Carrydozer Blade is available for the D11R Carrydozer only. It is built to the same high standard of structural integrity as the “U” and “SU” Dozers. The CD Blade has a unique “bucket” shape that allows it to carry several cubic yards or cubic meters of material in the blade. This acts as a disposable counterweight that allows the Carrydozer to push more material per pass than a standard D11R. The Carrydozer will not be as effective as the “U” or “SU” dozer in tightly packed or poorly shot material. It is also more sensitive to the carry-back in sticky materials.

General Purpose Dozing Tools



“S” — The Straight blade provides excellent versatility. Since it is physically smaller than the SU or U-blade, it is easier to maneuver and can handle a wider range of materials. It has a higher kW/meter (HP/foot) of cutting edge than the SU or U-blade; consequently, the “S” is more aggressive in penetrating and obtaining a blade load. A tilt cylinder increases both the productivity and versatility of this dozer. With a high kW/Lm³ (HP/LCY), the S-blade can handle heavy material easily.



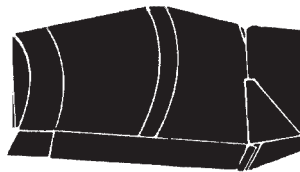
Power Angle and Tilt blade — Versatility is its key feature with its ability to perform a variety of site development to general dozing work as well as heavy-duty applications. Angle and tilt control is with 2 levers on some machines, 1 lever on others.

Variable Power Angle and Tilt (VPAT) blade can be mechanically tipped forward for improved penetration or shedding sticky material and backward for finish grading and improved productivity.

Special Application Dozing Tools

Caterpillar and other blade manufacturers provide specialty bulldozers for specific applications. The blades are designed to increase production while performing certain tasks. However, specialization may reduce the blade versatility. Following are the most popular special applications blades.

“VR Blades” (Variable Radius)



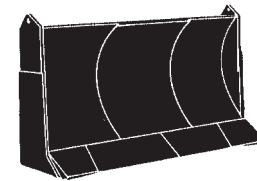
The Variable Radius Semi-U-Blade combines the benefits of a semi-U-blade such as “cutting” ability and ground penetration with U-blade characteristics of better load retention and less side spill.

This is achieved with the variable radius moldboard. The variable radius moldboard causes dirt to move to the center of the blade creating more rolling action. The extended side plates retain the load and increase capacities.

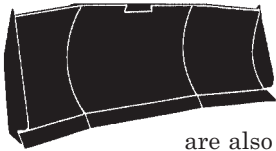
The variable radius semi-U-blade is an excellent tool for land improvement, soil conservation and reclamation.



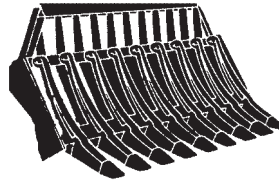
“A” — Or Angling blade can be positioned straight or angled 25 degrees to either side. It is designed for side-casting, pioneering roads, backfilling, cutting ditches and other similar tasks. It can reduce the amount of maneuvering required to do these jobs. Its “C” frame can be used for attachments such as pushing, land clearing, or snow removal tools. A-blades are not recommended for rock or severe applications.



“CU” — The Cushion blade is used for on-the-go push-loading. Rubber cushions allow the dozer to absorb the impact of contacting a scraper push block. When not push-loading, the dozer can be used for cut maintenance and other general dozing jobs. The narrow width of the C-blade increases machine maneuverability in congested cuts and reduces the possibility of cutting tires associated with SU and U-blades.



“U-Blades” — Provide high volume movement of light non-cohesive materials such as coal and wood-chips. Heavier U-blades are also offered for production dozing and reclamation work.



“Rakes” — Caterpillar offers a variety of rakes for use in land clearing applications. They handle vegetation up to tree size, and offer good soil penetration for removal of small stumps, rocks and roots. In most cases rake tines are replaceable.

“Landfill” — Designed to handle refuse and cover material. Open trash screen on top of blade allows good visibility and protects radiator. Curved mold-board keeps cover material rolling evenly.



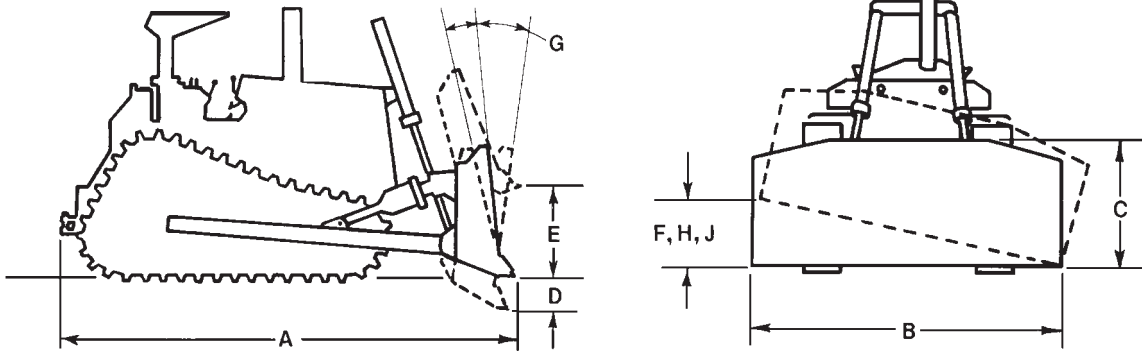
“K/G” — Offered by Rimco and Rome, the K/G-blade is used in many land clearing applications. In addition to cutting trees this versatile blade can pile vegetation, cut v-type drainage ditches and build woods roads and firebreaks.

“Two-Way Dozer” — Designed for use inside ship holds to move cargo such as grain, salt, iron ore, coal and chips. These blades can scrape material off walls and doze to center of hold. They can doze material forward or pull material.

Bulldozers

General Dimensions Key

- Tractor and Blade
- SAE Blade Capacity Definition



KEY

- A** Length (Blade Straight) Blade:
- B** Width (including standard end bits)
- C** Height
- D** Maximum Digging Depth
- E** Ground Clearance @ Full Lift
- F** Maximum Tilt (Manual)
- G** Maximum Pitch Adjustment
- H** Maximum Hydraulic Tilt
- J** Hydraulic Tilt (manual brace centered)
- K** Push Arm Trunnion Width (to Ball Centers)

Blade capacities on the following pages are as determined by SAE recommended practice J1265. Capacities are defined as:

$$V_s = 0.8 WH^2.$$

$$V_u = ZH (W-Z) \tan X.$$

Where: V_s = Capacity of straight or angling blade.

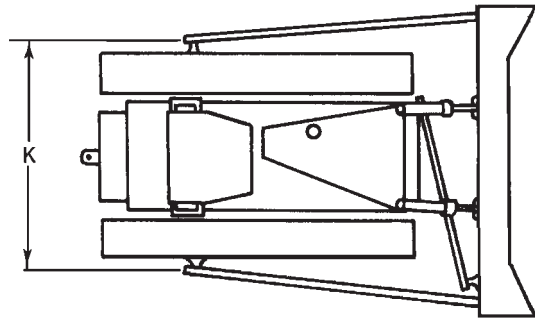
V_u = Capacity of semi-U or full U-blade.

W = Blade width exclusive of end bits.

H = Effective blade height considering tapered top corners, etc.

Z = Wing length measured parallel to blade width @ ground line of cutting edges.

X = Wing angle.



Blade Specifications

- D3G Hystat
- D4G Hystat
- D5G Hystat

Bulldozers

1

MODEL	D3G			
	D3G XL		D3G LGP	
Type	Variable Power Angling and Tilt		Variable Power Angling and Tilt	
Blade Capacities*	1.44 m ³	1.88 yd ³	1.53 m ³	2 yd ³
Weight Shipping** (Dozer)	1011 kg	2229 lb	1071 kg	2361 lb
Tractor & Dozer Dimensions:				
A Length (Blade Straight)	4.03 m	13'3"	4.00 m	13'1"
Length (Blade Angled)	4.50 m	14'9"	4.59 m	15'1"
Width (Blade Angled)	2.25 m	7'5"	2.87 m	9'5"
Width (with C-Frame only)	—		—	
Blade Dimensions:				
B Width (including std. end bits)	2.46 m	8'1"	3.15 m	10'4"
C Height	936 mm	3'1"	843 mm	2'9"
D Max. Digging Depth	554 mm	1'9"	527 mm	1'9"
E Ground Clearance @ Full Lift	688 mm	2'3"	695 mm	2'3"
G Pitch Adjustment	50°–55°		50°–55°	
J Hydraulic Tilt	369 mm	15"	456 mm	18"
Blade Angle	25°		25°	

MODEL	D4G				D5G			
	D4G XL		D4G LGP		D5G XL		D5G LGP	
Type	Variable Power Angling and Tilt		Variable Power Angling and Tilt		Power Angling and Tilt		Power Angling and Tilt	
Blade Capacities*	1.92 m ³	2.5 yd ³	1.84 m ³	2.4 yd ³	2.19 m ³	2.86 yd ³	2.34 m ³	3.1 yd ³
Weight Shipping** (Dozer)	1114 kg	2456 lb	1179 kg	2599 lb	1250 kg	2756 lb	1261 kg	2780 lb
Tractor & Dozer Dimensions:								
A Length (Blade Straight)	4.04 m	13'3"	4.03 m	13'3"	4.28 m	14'1"	4.21 m	13'10"
Length (Blade Angled)	4.53 m	14'10"	4.62 m	15'2"	4.79 m	15'9"	4.85 m	15'11"
Width (Blade Angled)	2.44 m	8'0"	2.87 m	9'5"	2.46 m	8'1"	2.97 m	9'9"
Blade Dimensions:								
B Width (including std. end bits)	2.67 m	8'9"	3.15 m	10'4"	2.69 m	8'10"	3.25 m	10'8"
C Height	1028 mm	3'4"	922 mm	3'0"	1101 mm	3'7"	1028 mm	3'4"
D Max. Digging Depth	568 mm	1'10"	521 mm	1'9"	630 mm	2'1"	582 mm	1'11"
E Ground Clearance @ Full Lift	686 mm	2'3"	733 mm	2'5"	760 mm	2'6"	789 mm	2'7"
G Pitch Adjustment	50°–55°		50°–55°		50°–55°		50°–55°	
J Hydraulic Tilt	387 mm	15"	456 mm	18"	390 mm	15"	471 mm	19"
Blade Angle	25°		25°		25°		25°	

*Blade capacities as determined by SAE J1265.

**Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

Bulldozers

Blade Specifications

- D5N XL ● D5N LGP ● D6N XL ● D6N LGP
- D6R Series III ● D6R XL Series III ● D6R LGP Series III

MODEL	D5N XL		D5N LGP		D6N XL			
	5VPAT		5VPAT LGP		6SU		6VPAT	
Type	Variable Pitch Power Angling and Tilt		Variable Pitch Power Angling and Tilt		Semi-U		Variable Pitch Power Angling and Tilt	
Blade Capacities*	2.6 m ³	3.4 yd ³	2.6 m ³	3.4 yd ³	4.28 m ³	5.57 yd ³	3.18 m ³	4.16 yd ³
Weight, Shipping** (Dozer)	1932 kg	4259 lb	2000 kg	4409 lb	2427 kg	5351 lb	2372 kg	5229 lb
Tractor & Dozer Dimensions:								
A Length (Blade Straight)	4.56 m	14'11"	5.06 m	16'1"	4.92 m	16'2"	4.80 m	15'9"
Length (Blade Angled)	5.09 m	16'8"	5.50 m	18'0"	—	—	5.53 m	17'10"
Width (Blade Angled)	2.79 m	9'2"	3.11 m	10'1"	—	—	2.96 m	9'9"
Width (with C-Frame only)	—		—		—		—	
Blade Dimensions:								
B Width (including std. end bits)	(inside mounted)		(inside mounted)		(outside mounted)		(inside mounted)	
C Height	3.08 m	10'1"	3.36 m	11'0"	3.19 m	10'4"	3.27 m	10'9"
D Max. Digging Depth	1109 mm	43.7"	1127 mm	35.8"	1244 mm	4'1"	1195 mm	3'11"
E Ground Clearance @ Full Lift	430 mm	16.9"	415 mm	13.2"	520 mm	1'8.5"	538 mm	21.1"
F Manual Tilt	933 mm	36.7"	1001 mm	39.3"	983 mm	3'2.7"	822 mm	33"
G Max. Pitch	+2° to 6°		+2° to 6°		±5°		+2° to 6°	
H Max. Hydraulic Tilt	—		—		665 mm	2'2.2"	—	
J Hydraulic Tilt	—		—		372 mm	14.6"	497 mm	20"
Blade Angle	25°		25°		—		25°	

*Blade capacities as determined by SAE J1265.

**Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

MODEL	D6N LGP		D6R Series III, D6R XL Series III & D6R XW Series III			
	6VPAT LGP		6A		6A XL	
Gauge	—		1880 mm	74"	1880 mm	74"
Type	Variable Pitch Power Angling and Tilt		Angling		Angling	
Blade Capacities*	3.16 m ³	4.11 yd ³	3.93 m ³	5.14 yd ³	3.93 m ³	5.14 yd ³
Weight, Shipping** (Dozer)	2819 kg	6215 lb	3138 kg	6904 lb	3109 kg	6839 lb
Tractor & Dozer Dimensions:						
A Length (Blade Straight)	5.39 m	17'8"	5.22 m	17'1"	5.43 m	17'10"
Length (Blade Angled)	6.20 m	20'4"	6.05 m	19'10"	6.26 m	20'6"
Width (Blade Angled)	3.70 m	12'2"	3.78 m	12'5"	3.78 m	12'5"
Width (with C-Frame only)	—		2.91 m	9'7"	2.98 m	9'10"
Blade Dimensions:						
B Width (including std. end bits)	(inside mounted)		4.16 m	13'8"	4.16 m	13'8"
C Height	4.08 m	13'5"	4.16 m	13'8"	4.16 m	13'8"
D Max. Digging Depth	1025 mm	3'4.4"	1155 mm	3'9.5"	1155 mm	3'9.5"
E Ground Clearance @ Full Lift	433 mm	17.0"	506 mm	1'7.9"	524 mm	1'8.6"
F Manual Tilt	1024 mm	3'4.3"	1141 mm	3'8.9"	1205 mm	3'11.4"
G Max. Pitch	—		408 mm	16.1"	408 mm	16.1"
H Max. Hydraulic Tilt	+2°-6°		—		—	
I Max. Hydraulic Tilt	598 mm	1'11.5"	408 mm	16.1"◀	408 mm	16.1"
Blade Angle	25°		25°		25°	

*Blade capacities as determined by SAE J1265. Tractor and dozer dimensions variations due to SystemOne are negligible.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

**Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

◀ Attachment includes two cylinders.

Blade Specifications
 ● D6R XL Series III ● D6R XW Series III
 ● D6R LGP Series III ● D6R Series III

Bulldozers

MODEL	D6R XL Series III, D6R XW Series III & D6R LGP Series III							
	6PAT XL		6VPAT XL		6VPAT XW		6VPAT LGP	
Gauge	1880 mm	74"	2134 mm	88"	2286 mm	90"	2286 mm	90"
Type	PAT		PAT		PAT		PAT	
Blade Capacities*	4.84 m ³	6.33 yd ³	4.2 m ³	5.5 yd ³	5.08 m ³	6.65 yd ³	4.2 m ³	5.5 yd ³
Weight, Shipping** (Dozer)	3246 kg	7150 lb	1615 kg	3560 lb	1656 kg	3650 lb	1642 kg	3620 lb
Tractor & Dozer Dimensions:								
A Length (Blade Straight)	5.44 m	17'10"	5.44 m	17'10"	5.44 m	17'10"	—	
Length (Blade Angled)	5.94 m	19'6"	5.94 m	19'6"	5.94 m	19'6"	—	
Width (Blade Angled)	3.29 m	10'9"	3.75 m	12'4"	3.44 m	11'1"	3.75 m	12'4"
Width (with C-Frame only)	2.49 m	8'2"	—		—		—	
Blade Dimensions:								
B Width (including std. end bits)	3.62 m	11'9"	3880 mm	12'9"	4160 mm	13'8"	4160 mm	13'8"
C Height	1372 mm	54"	1295 mm	51.0"	1295 mm	51.0"	1191 mm	46.9"
D Max. Digging Depth	732 mm	28.7"	737 mm	29.0"	737 mm	29.0"	672 mm	26.5"
E Ground Clearance @ Full Lift	1181 mm	46.5"	1181 mm	46.5"	1181 mm	46.5"	1283 mm	50.5"
F Manual Tilt	—		—		—		—	
G Max. Pitch	—		+0° to -3.8°		+0° to -3.8°		+0° to -4.0°	
H Max. Hydraulic Tilt	440 mm	17.3"	502 mm	19.8"	460 mm	18.1"	502 mm	19.8"
Blade Angle	25°		25°		25°		25°	
J Hydraulic Tilt (Manual Brace Centered)	—		—		—		—	

MODEL	D6R Series III, D6R XL Series III & D6R LGP Series III					
	6S		6SU		6SU XL	
Type	Straight		Semi Universal		Semi Universal	
Blade Capacities*	3.89 m ³	5.09 yd ³	5.61 m ³	7.34 yd ³	5.61 m ³	7.34 yd ³
Weight, Shipping** (Dozer)	2599 kg	5717 lb	2699 kg	5937 lb	2973 kg	6540 lb
Tractor & Dozer Dimensions:						
A Length (Blade Straight)	5.12 m	16'9"	5.31 m	17'5"	5.55 m	18'2"
Length (Blade Angled)	—		—		—	
Width (Blade Angled)	—		—		—	
Width (with C-Frame only)	—		—		—	
Blade Dimensions:						
B Width (including std. end bits)	3.36 m	11'0"	3.26 m	10'8"	3.26 m	10'8"
C Height	1257 mm	4'1.5"	1411 mm	4'7.6"	1411 mm	4'7.6"
D Max. Digging Depth	473 mm	18.6"	473 mm	18.6"	459 mm	18.1"
E Ground Clearance @ Full Lift	1104 mm	3'7.5"	1104 mm	3'7.5"	1195 mm	3'11.1"
F Manual Tilt	689 mm	2'3.1"	670 mm	2'2.4"	670 mm	2'2.4"
G Max. Pitch	+5.3° to 4.8°		+5.3° to 4.8°		+5.3° to 4.8°	
H Max. Hydraulic Tilt	764 mm	2'6.1"	743 mm	2'5.3"	743 mm	2'5.3"
Blade Angle	—		—		—	
J Hydraulic Tilt (Manual Brace Centered)	420 mm	16.5"	408 mm	16.1"	408 mm	16.1"

* Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

Bulldozers

Blade Specifications

- D6R Series III ● D6R XL Series III ● D6R LGP Series III
- D7R Series III ● D7R LGP Series III

MODEL	D6R Series III, D6R XL Series III & D6R LGP Series III					
	6S LGP		6A XW		6SU XW	
Type	Straight		Angling		Semi Universal	
Blade Capacities*	3.70 m ³	4.83 yd³	4.3 m ³	5.63 yd³	5.62 m ³	7.4 yd³
Weight, Shipping** (Dozer)	2840 kg	6262 lb	3260 kg	7180 lb	2950 kg	6500 lb
Tractor & Dozer Dimensions:						
A Length (Blade Straight)	5.47 m	17'11"	5.21 m	17'1"	—	
Length (Blade Angled)	—		5.72 m	18'9"	—	
Blade Dimensions:						
B Width (including std. end bits)	4.04 m	13'3"	4.20 m	13'8"	3.56 m	11'8"
C Height	1101 mm	3'7.3"	1169 mm	3'10"	1412 mm	4'8"
D Max. Digging Depth	655 mm	2'1.2"	500 mm	1'7.7"	459 mm	18.1"
E Ground Clearance @ Full Lift	1083 mm	3'6.6"	1242 mm	4'1"	1195 mm	3'11"
F Manual Tilt	632 mm	2'0.9"	408 mm	16.1"	670 mm	2'2.4"
G Max. Pitch	+5.3° to 4.8°		+5.3° to 4.8°		+5.3° to 4.8°	
H Max. Hydraulic Tilt	701 mm	2'3.6"	408 mm	16.1"	743 mm	2'5.3"
J Hydraulic Tilt (Manual Brace Centered)	385 mm	15.2"	408 mm	16.1"	743 mm	2'5.3"

*Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

MODEL	D7R Series II & D7R LGP Series II					
	7A		7S		7SU	
Type	Angling		Straight		Semi Universal	
Blade Capacities*	3.89 m ³	5.08 yd³	5.16 m ³	6.75 yd³	6.86 m ³	8.98 yd³
Weight, Shipping** (Dozer)	3527 kg	7750 lb	3500 kg	7716 lb	3593 kg	7904 lb
Tractor & Dozer Dimensions:						
A Length (Blade Straight)	6.10 m	20'0"	5.81 m	19'1"	6.03 m	19'9"
Length (Blade Angled)	6.98 m	22'11"	—		—	
Width (Blade Angled)	4.12 m	13'6"	—		—	
Width (with C-Frame only)	3.09 m	10'1"	—		—	
Blade Dimensions:						
B Width (including std. end bits)	4.50 m	14'9"	3.90 m	12'10"	3.69 m	12'1"
C Height	1111 mm	3'7.7"	1363 mm	4'5.7"	1524 mm	5'0"
D Max. Digging Depth	669 mm	2'2.3"	527 mm	1'8.7"	527 mm	1'8.7"
E Ground Clearance @ Full Lift	1115 mm	3'7.9"	1145 mm	3'9.1"	1145 mm	3'9.1"
F Manual Tilt	466 mm	18.3"	—		—	
G Max. Pitch Adjustment	—		+3.1° to 3.9°		+3.1° to 3.9°	
Blade Angle (either side)	25°		—		—	
H Max. Hydraulic Tilt	627 mm	2'0.7"◀	845 mm	2'9.3"	799 mm	2'7.4"
J Hydraulic Tilt (Manual Brace Centered)	—		501 mm	1'7.7"	474 mm	18.6"

*Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

◀ Attachment includes two cylinders.

MODEL	D7R Series II & D7R LGP Series II					
	7U		7S LGP		7S LGP ERF†	
Type	Universal		Straight		Straight	
Blade Capacities*	8.34 m ³	10.91 yd ³	5.89 m ³	7.7 yd ³	5.89 m ³	7.7 yd ³
Weight, Shipping** (Dozer)	3920 kg	8624 lb	3732 kg	8229 lb	3732 kg	8210 lb
Tractor & Dozer Dimensions:						
A Length (Blade Straight)	6.27 m	20'7"	5.81 m	19'1"	5.81 m	19'1"
Length (Blade Angled)	—	—	—	—	—	—
Width (Blade Angled)	—	—	—	—	—	—
Width (with C-Frame only)	—	—	—	—	—	—
Blade Dimensions:						
B Width (including std. end bits)	3.98 m	13'1"	4.50 m	14'9"	4.50 m	14'9"
C Height	1553 mm	5'1.1"	1343 mm	4'4.9"	1343 mm	4'4.9"
D Max. Digging Depth	527 mm	1'8.7"	668 mm	2'2.3"	668 mm	2'2.3"
E Ground Clearance @ Full Lift	1145 mm	3'9.1"	1153 mm	3'9.4"	1153 mm	3'9.4"
F Manual Tilt	—	—	—	—	—	—
G Max. Pitch Adjustment	+3.1° to 3.9°		+3.0° to 3.9°		+3.0° to 3.9°	
Blade Angle (either side)	—		—		—	
H Max. Hydraulic Tilt	861 mm	2'9.9"	686 mm	2'3"	686 mm	2'3"
J Hydraulic Tilt						
(Manual Brace Centered)	511 mm	1'8.1"	426 mm	16.8"	426 mm	16.8"

*Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

† Extended track roller frame.

Bulldozers

Blade Specifications

● D8R/D8T ● D9R/D9T

MODEL	D8R/D8T						D9R/D9T			
	8A		8SU		8U		9SU		9U	
Type	Angling		Semi-U		Universal		Semi-U		Universal	
Blade Capacities*	4.7 m ³	6.1 yd³	8.7 m ³	11.4 yd³	11.7 m ³	15.3 yd³	13.5 m ³	17.7 yd³	16.4 m ³	21.4 yd³
Weight, Shipping** (Dozer)	5459 kg	12,009 lb	4789 kg	10,557 lb	5352 kg	11,800 lb	6543 kg	14,425 lb	7134 kg	15,727 lb
Tractor & Dozer Dimensions:										
A Length (Blade Straight)	6.57 m	21'7"	6.39 m	21'0"	6.79 m	22'3"	6.84 m	22'5"	7.18 m	23'7"
Length (Blade Angled)	7.62 m	25'0"	—	—	—	—	—	—	—	—
Width (Blade Angled)	4.52 m	14'10"	—	—	—	—	—	—	—	—
Width (with C-Frame only)	3.38 m	11'1"	—	—	—	—	—	—	—	—
Blade Dimensions:										
B Width (including std. end bits)	4.99 m	16'4"	3.94 m	12'11"	4.26 m	14'0"	4.31 m	14'2"	4.65 m	15'3"
C Height	1174 mm	3'10.2"	1690 mm	5'6.5"	1740 mm	5'8.5"	1934 mm	6'4.1"	1934 mm	6'4.1"
D Max. Digging Depth	628 mm	2'0.7"	575 mm	22.6"	575 mm	22.6"	606 mm	1'11.9"	606 mm	1'11.9"
E Ground Clearance @ Full Lift	1308 mm	4'3.5"	1225 mm	48.2"	1225 mm	48.2"	1422 mm	4'8"	1422 mm	4'8"
G Max. Pitch Adjustment	—	—	+3.0° to 2.9°	—	+3.0° to 2.9°	—	+3.4° to 2.9°	—	+3.4° to 2.9°	—
Blade Angle (either side)	25°		—	—	—	—	—	—	—	—
H Max. Hydraulic Tilt	729 mm	2'4.7"◀	883 mm	34.8"	954 mm	37.5"	940 mm	3'1"	1014 mm	3'3.9"
J Hydraulic Tilt (Manual Brace Centered)	—	—	596 mm	23"	644 mm	25"	570 mm	1'10.4"	616 mm	2'0.3"
K Push Arm Trunnion Width (to Ball Centers)	2.98 m	9'9"	2.98 m	9'9"	2.98 m	9'9"	3.17 m	10'3"	3.17 m	10'3"
Maximum Track Width Permitted	712 mm	2'4"	711 mm	2'4"	711 mm	2'4"	762 mm	2'6"	762 mm	2'6"
Dual Tilt Option										
G Dual Pitch Adj.	—	—	±4.6°	—	±4.6°	—	+4.8° to 5.2°	—	+4.8° to 4.9°	—
H Dual Max. Hyd. Tilt	—	—	879 mm	34.5"	950 mm	37.3"	1139 mm	3'8.8"	1231 mm	4'0.5"

* Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

◀ Attachment includes two cylinders.

MODEL	D10T				D11T					
	10SU		10U		11SU		11U		11 CD	
Type	Semi-U		Universal		Semi-U		Universal		Universal	
Blade Capacities*	18.5 m ³	24.2 yd ³	22.0 m ³	28.7 yd ³	27.2 m ³	35.5 yd ³	34.4 m ³	45.0 yd ³	43.6 m ³	57.0 yd ³
Weight, Shipping**										
Standard Dozer	10 229	22,550	10 784	23,775	14 813	32,658	17 296	38,131	22 070	48,660
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Abrasion Dozer	11 069	24,403	12 413	27,366	16 192	35,698	18 823	41,498	—	
	kg	lb	kg	lb	kg	lb	kg	lb		
Tractor & Dozer Dimensions:										
A Length	7.76 m	25'5"	8.01 m	26'3"	8.38 m	27'6"	8.83 m	28'11"	8.34 m	26'8"
Width	4.86 m	15'11"	5.26 m	17'3"	5.60 m	18'4"	6.35 m	20'10"	6.71 m	22'0"
Blade Dimensions:										
B Width (including std. end bits)	4.86 m	15'11"	5.26 m	17'3"	5.60 m	18'4"	6.35 m	20'10"	6.71 m	22'0"
C Height	2.12 m	6'11"	2.12 m	6'11"	2.37 m	7'9"	2.37 m	7'9"	3.26 m	10'8"
D Max. Digging Depth	674 mm	2'2.5"	674 mm	2'2.5"	766 mm	2'6.2"	766 mm	2'6.2"	766 mm	2'6.2"
E Ground Clearance @ Full Lift	1497 mm	4'10.9"	1497 mm	4'10.9"	1533 mm	5'0.4"	1533 mm	5'0.4"	1533 mm	5'0.4"
G Max. Pitch Adjustment	+1.7° to 2.3°		+1.7° to 2.3°		+2.1° to 2.2°		+2.1° to 2.2°		—	
H Max. Hydraulic Tilt	993 mm	3'3.1"	1074 mm	3'6.3"	1184 mm	3'10.6"	1344 mm	4'4.9"	1344 mm	4'4.9"
J Hydraulic Tilt (Manual Brace Centered)	722 mm	2'4.4"	782 mm	2'6.8"	886 mm	2'10.9"	1006 mm	3'3.6"	—	
K Push Arm Trunnion Width (to Ball Centers)	3.60 m	11'10"	3.60 m	11'10"	4.18 m	13'9"	4.18 m	13'9"	4.18 m	13'9"
Maximum Track Width Permitted	762 mm	2'6"	762 mm	2'6"	914 mm	3'0"	914 mm	3'0"	914 mm	3'0"
Dual Tilt Option					+7.5° to 7.6° or		+7.5° to 7.6° or			
G Dual Pitch Adj.	+5.2° to 5.5°		+5.2° to 5.5°		+0° to 13°		+0° to 13°		+47.8° to 10.4°	
H Dual Max. Hyd. Tilt	1441 mm	4'8.7"	1560 mm	5'1.4"	1706 mm	5'7.2"	1938 mm	6'4.3"	—	

*Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

**Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

Bulldozers

Blade Specifications

- D4E SR
- D6G

MODEL	D4E SR	
	4A	
Type	Angling	
Blade Capacities	1.28 m ³	1.65 yd³
Weight, Shipping* (Dozer)	1395 kg	3075 lb
Tractor & Dozer Dimensions:		
A Length (Blade Straight)	3.87 m	12'9"
Length (Blade Angled)	4.50 m	14'9"
Width (Blade Angled)	2.84 m	9'4"
Width (with C-frame only)	2.39 m	7'10"
Blade Dimensions:		
B Width (including std. end bits)	3.12 m	10'3"
C Height	706 mm	2'3.8"
D Max. Digging Depth	240 mm	9.4"
E Ground Clearance @ Full Lift	811 mm	2'7.9"
F Manual Tilt	475 mm	18.7"
G Max. Pitch Adjustment	—	
Blade Angle (either side)	25°	
H Max. Hydraulic Tilt	330 mm	13"
J Hydraulic Tilt (Manual Brace Centered)	—	

MODEL	D6G					
	6A		6S		6SU ▶	
Type	Angling		Straight		Semi-U	
Blade Capacities	2.40 m ³	3.14 yd³	3.27 m ³	4.28 yd³	3.80 m ³	4.96 yd³
Weight, Shipping* (Dozer)	2325 kg	5126 lb	1998 kg	4405 lb	2460 kg	5423 lb
Tractor & Dozer Dimensions:						
A Length (Blade Straight)	5.15 m	16'11"	5.07 m	16'8"	5.13 m	16'10"
Length (Blade Angled)	5.91 m	19'5"	—		—	
Width (Blade Angled)	3.52 m	11'6"	—		—	
Width (with C-frame only)	2.85 m	9'4"	—		—	
Blade Dimensions:						
B Width (including std. end bits)	3.88 m	12'9"	3.23 m	10'7"	3.20 m	10'6"
C Height	924 mm	3'0.4"	1126 mm	3'8.3"	1235 mm	4'0.6"
D Max. Digging Depth	444 mm	17.5"	474 mm	18.7"	472 mm	18.6"
E Ground Clearance @ Full Lift	908 mm	35.7"	907 mm	2'11.7"	915 mm	3'0"
F Manual Tilt	367 mm	14.4"	679 mm	2'2.7"	680 mm	2'2.8"
G Max. Pitch Adjustment	—		—		—	
Blade Angle (either side)	25°		—		—	
H Max. Hydraulic Tilt	—		810 mm	2'8"	810 mm	2'7.9"
J Hydraulic Tilt (Manual Brace Centered)	—		467 mm	18.4"	465 mm	18.3"

*Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

Notice that the capacity of the SU-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the SU-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

▶ Caterpillar Custom Product.

MODEL	D7G			
	7A		7S	
Type	Angling		Straight	
Blade Capacities*	2.9 m ³	3.8 yd³	4.2 m ³	5.5 yd³
Weight, Shipping** (Dozer)	3227 kg	7115 lb	3475 kg	7660 lb
Tractor & Dozer Dimensions:				
A Length (Blade Straight)	5.49 m	18'0"	5.30 m	17'5"
Length (Blade Angled)	6.35 m	20'10"	—	—
Width (Blade Angled)	3.86 m	12'8"	—	—
Width (with C-Frame only)	3.12 m	10'3"	—	—
Blade Dimensions:				
B Width (including std. end bits)	4.26 m	14'0"	3.65 m	12'0"
C Height	960 mm	3'1.8"	1274 mm	4'2.1"
D Max. Digging Depth	468 mm	18.4"	438 mm	17.2"
E Ground Clearance @ Full Lift	1206 mm	3'11.5"	1188 mm	3'10.8"
F Manual Tilt	—	—	—	—
G Max. Pitch Adjustment	—	—	+5.2° to 3.0°	
Blade Angle (either side)	—	25°	—	—
H Max. Hydraulic Tilt	300 mm	11.8"◀	721 mm	2'4.4"
J Hydraulic Tilt (Manual Brace Centered)	—	—	505 mm	1'7.9"

* Blade capacities as determined by SAE J1265.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

◀ Attachment includes two cylinders.

BULLDOZER PRODUCTION OFF-THE-JOB

You can estimate bulldozer production using the production curves that follow and the correction factors that are applicable. Use this formula:

$$\text{Production (Lm}^3\text{/hr)} = \text{Maximum production} \times \text{Correction factors}$$

$$\text{(LCY/hr)}$$

The bulldozer production curves give maximum uncorrected production for universal, semi-universal, and straight blades and are based on the following conditions:

1. 100% efficiency (60 minute hour — level cycle).
2. Power shift machines with 0.05 min. fixed times.
3. Machine cuts for 15 m (50 feet), then drifts blade load to dump over a high wall. (Dump time — 0 sec.)
4. Soil density of 1370 kg/Lm³ (2300 lb/LCY).
5. Coefficient of traction:*
 - a. Track machines — 0.5 or better
 - b. Wheel machines — 0.4 or better
6. Hydraulic controlled blades used.
7. Dig 1F**
Carry 2F**
Return 2R**

To obtain estimated production in bank cubic meters or bank cubic yards, appropriate load factor from the Tables section should be applied to the corrected production as calculated above.

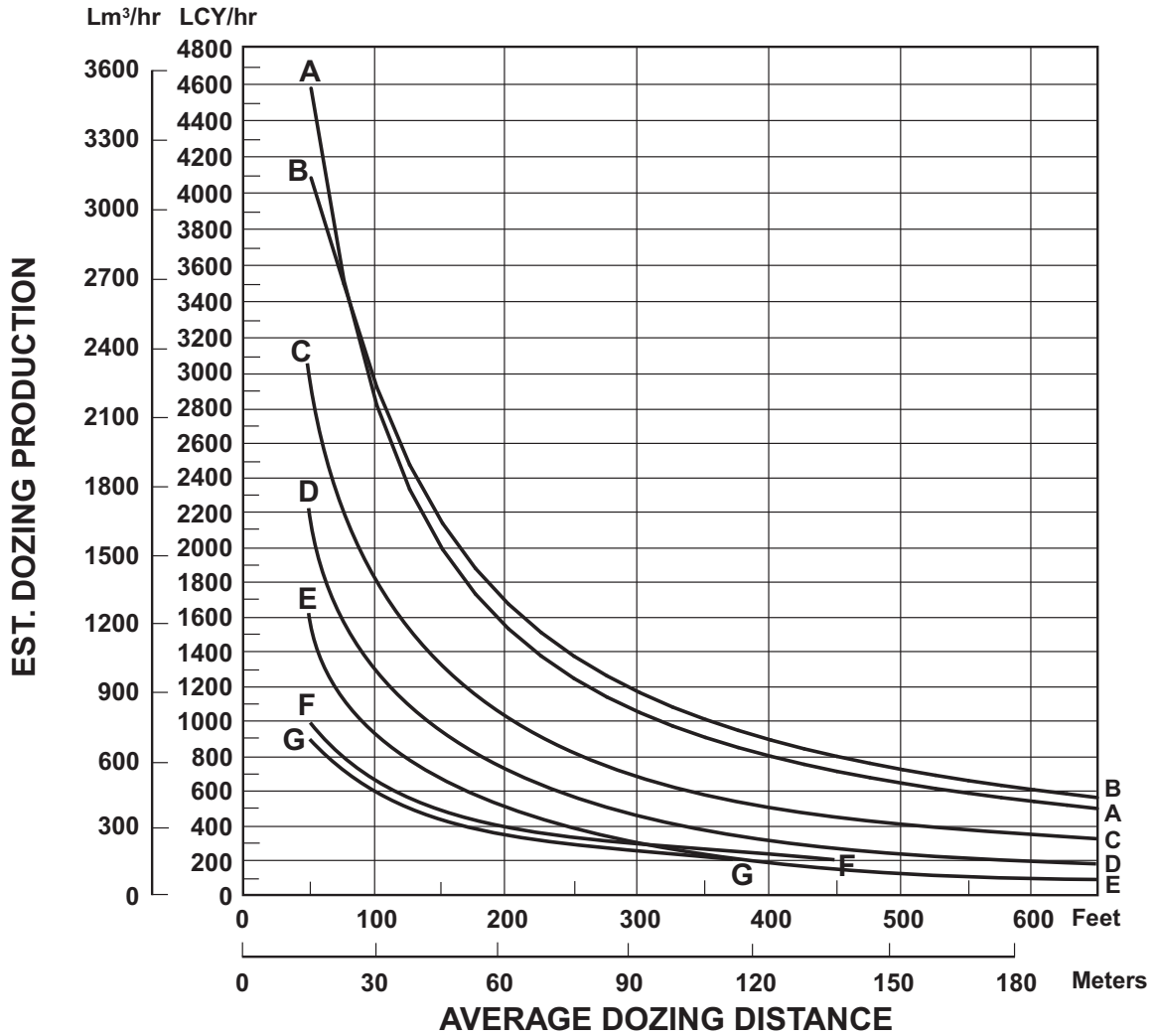
$$\text{Production Bm}^3\text{/hr} = \text{Lm}^3\text{/hr} \times \text{LF}$$

$$\text{(BCY/h)} = \text{(LCY/h)} \times \text{LF}$$

*Coefficient of traction assumed to be at least 0.4. While poor traction affects both track and wheel vehicles, causing them to take smaller blade loads, wheeled units are affected more severely and production falls much more rapidly. While no fixed rules can predict this production loss, a rough rule of thumb is that wheel dozer production falls off 4% for each one-hundredth decrease in coefficient of traction below 0.40. If, for example, coefficient of traction is 0.30, the difference is ten-hundredths (0.10), and production is 60% (10 × 4% = 40% decrease).

**This gear sequence is based on level to downhill terrain, light to medium density material, and no blade extensions such as spill plates, rock guards, etc. Exceeding these conditions may require carry in 1F, but productivity should equal or exceed “standard conditions” due to the larger loads that can be carried in 1F.

ESTIMATED DOZING PRODUCTION • Universal Blades • D7G through D11T



KEY

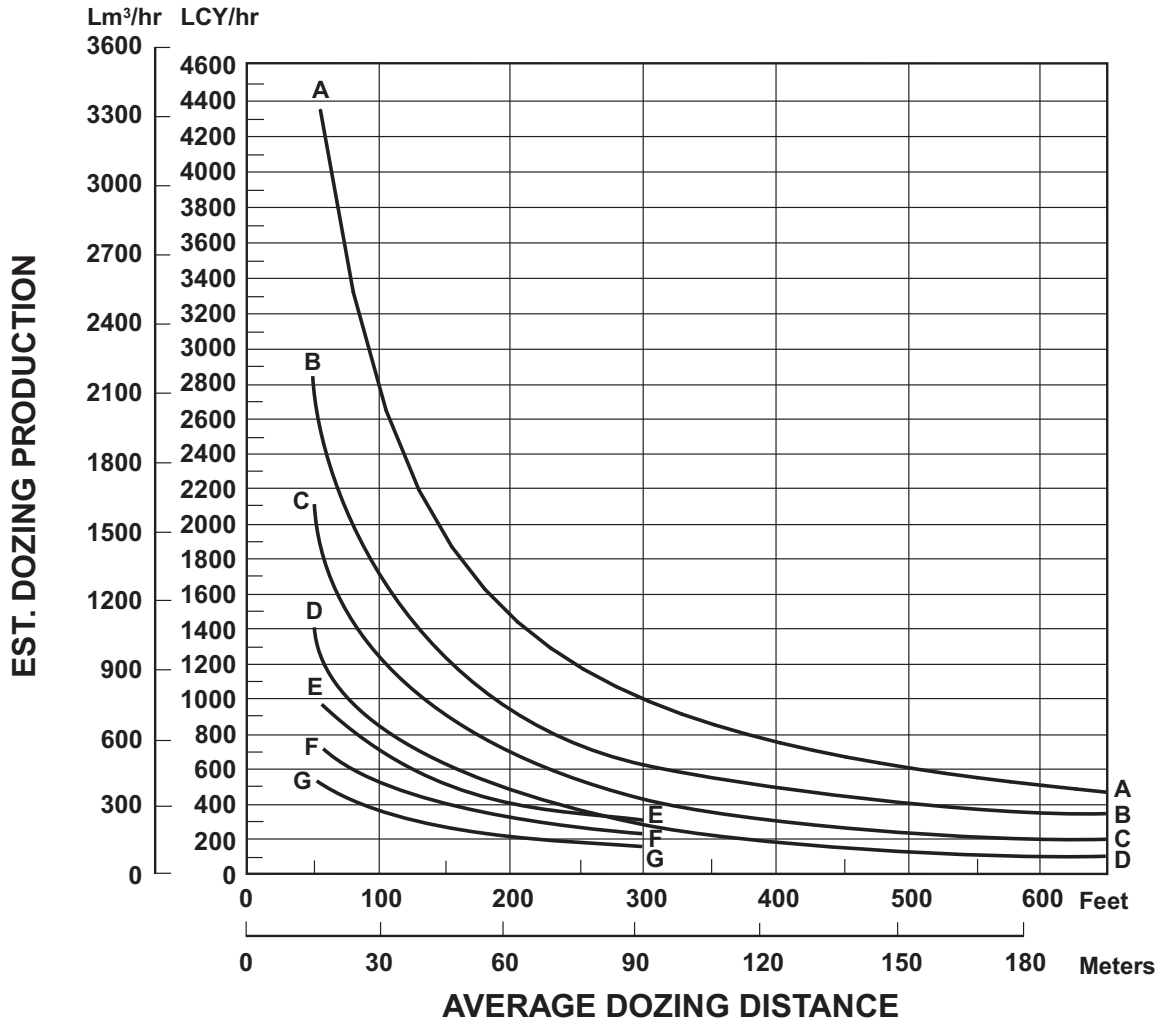
- A — D11T-11U
- B — D11T CD
- C — D10T-10U
- D — D9R/D9T-9U
- E — D8R/D8T-8U
- F — D7R Series II-7U
- G — D7G-7U

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Bulldozers

Estimating Production Off-The-Job
 ● SU-Blades

ESTIMATED DOZING PRODUCTION • Semi-Universal Blades • D6N through D11T

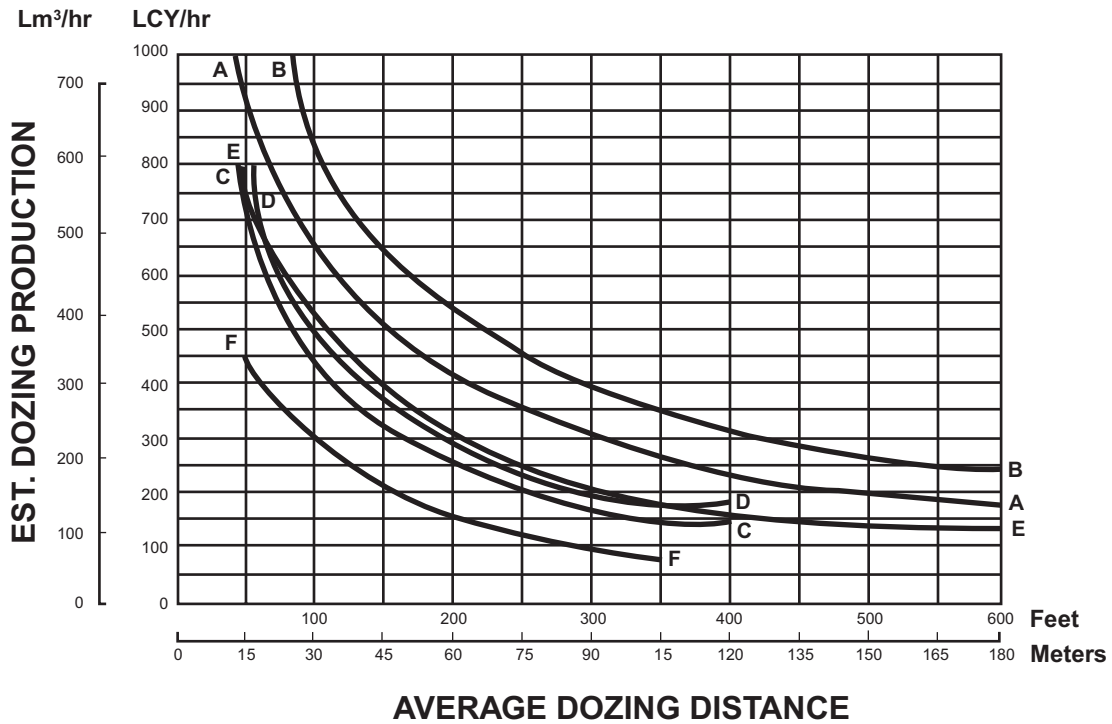


KEY

- A — D11T-11SU
- B — D10T-10SU
- C — D9R/D9T-9SU
- D — D8R/D8T-8SU
- E — D7R Series II-7SU
- F — D6R Series III-6SU
- G — D6N-6SU

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

ESTIMATED DOZING PRODUCTION
Straight Blades • D6, D7, 814, 824, 834



NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors on the next page.
 Estimated production of the 834B with U-blade can be found in the Coal Handling section of this handbook.

KEY

- A — 824-S
- B — 834-S
- C — D7G-7S
- D — D7R Series II-7S
- E — 814-S
- F — D6R Series III-6S

Bulldozers

Job Factors Estimating Production Off-The-Job ● Example Problem

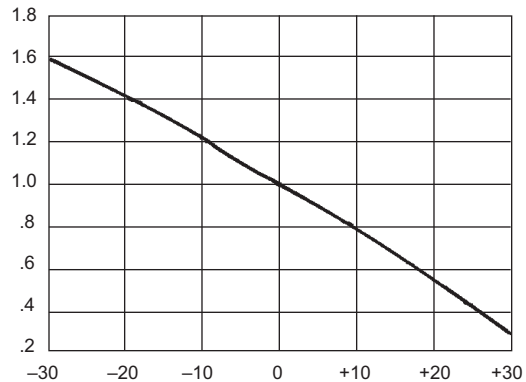
JOB CONDITION CORRECTION FACTORS

	TRACK- TYPE TRACTOR	WHEEL- TYPE TRACTOR
OPERATOR —		
Excellent	1.00	1.00
Average	0.75	0.60
Poor	0.60	0.50
MATERIAL —		
Loose stockpile	1.20	1.20
Hard to cut; frozen —		
with tilt cylinder	0.80	0.75
without tilt cylinder	0.70	—
Hard to drift; “dead” (dry, non-cohesive material) or very sticky material	0.80	0.80
Rock, ripped or blasted	0.60-0.80	—
SLOT DOZING	1.20	1.20
SIDE BY SIDE DOZING	1.15-1.25	1.15-1.25
VISIBILITY —		
Dust, rain, snow, fog or darkness	0.80	0.70
JOB EFFICIENCY —		
50 min/hr	0.83	0.83
40 min/hr	0.67	0.67
BULLDOZER*		
Adjust based on SAE capacity relative to the base blade used in the Estimated Dozing Production graphs.		
GRADES — See following graph.		

*NOTE: Angling blades and cushion blades are not considered production dozing tools. Depending on job conditions, the A-blade and C-blade will average 50-75% of straight blade production.

% Grade vs. Dozing Factor

(-) Downhill
(+) Uphill



ESTIMATING DOZER PRODUCTION OFF-THE-JOB

Example problem:

Determine average hourly production of a D8T/8SU (with tilt cylinder) moving hard-packed clay an average distance of 45 m (150 feet) down a 15% grade, using a slot dozing technique.

Estimated material weight is 1600 kg/Lm³ (2650 lb/LCY). Operator is average. Job efficiency is estimated at 50 min/hr.

Uncorrected Maximum Production — 458 Lm³/h (600 LCY/hr) (example only)

Applicable Correction Factors:

Hard-packed clay is “hard to cut” material -0.80
 Grade correction (from graph) -1.30
 Slot dozing -1.20
 Average operator -0.75
 Job efficiency (50 min/hr) -0.83
 Weight correction (2300/2650) -0.87

Production = Maximum Production × Correction Factors

$$= (600 \text{ LCY/hr}) (0.80) (1.30) (1.20) (0.75) (0.83) (0.87) = 405.5 \text{ LCY/hr}$$

To obtain production in metric units, the same procedure is used substituting maximum uncorrected production in Lm³.

$$= 458 \text{ Lm}^3/\text{h} \times \text{Factors} = 309.6 \text{ Lm}^3/\text{h}$$

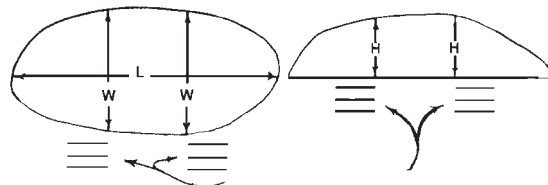
MEASURING PRODUCTION ON-THE-JOB

Three generally accepted methods of measuring bulldozer production are listed below. The third method is empirical, but is the simplest to conduct.

1. Employing Surveying Techniques
 - a. Conduct time study and then cross-section the cut to determine the volume of material removed. (Production in Bm^3 or BCY per unit of time)
 - b. Conduct time study and then cross-section the fill to determine the volume of fill material. (Production in Lm^3 or LCY per unit of time)
2. Weighing Blade Loads
Conduct time study and weigh material moved by bulldozer by weighing the loader bucket loads.
3. Measuring Blade Loads
 - a. Dozer operation
 - (1) Pick up and carry load onto a level area and stop.
 - (2) Raise the blade directly over the pile pulling forward slightly as blade comes up, leaving a nearly symmetrical pile.
 - (3) Reverse to clear the pile.
 - b. Measurements
 - (1) The average *height* (H) of the pile in feet. Hold the tape vertically at the inside edge of each grouser mark. Sight along top of the pile to obtain the correct measurement.

TOP VIEW

SIDE VIEW



GROUSER MARKS

- (2) The average *width* (W) of the pile in feet. Hold the tape horizontally over the pile and sight at the inside edge of each grouser mark and the corresponding opposite side of the pile.
- (3) The greatest *length* (L) of the pile in feet. Hold the tape horizontally over the pile and sight at each end of the pile.
- c. With the above measurements, now compute the blade load.
 - (1) Average the height measurement (H)
 - (2) Average the width measurement (W)
 - (3) Load (Lm^3 or LCY) = $0.0138 \times (HWL)$
 - (4) Load (Bm^3 or BCY) = Lm^3 or $LCY \times LF$
- d. Combine the calculated blade load with time study to figure production.

WORK TOOLS

**VARIABLE RADIUS (VR)
SEMI-U BLADES**

	D6R Series III		D7R Series II		D8R/D8T	
Capacity	5.81 m ³	7.6 yd³	7.84 m ³	10.25 yd³	11.28 m ³	14.75 yd³
Width	3349 mm	11'0"	3912 mm	12'10"	4369 mm	14'4"
Height	1473 mm	4'10"	1626 mm	5'4"	1778 mm	5'10"
Weight	1360 kg	3000 lb	2000 kg	4400 lb	3010 kg	6640 lb

LANDFILL BLADES

	D6R Series III		D7R Series II		D8R/D8T		D9R/D9T	
Capacity	12.5 m ³	16.4 yd³	18.1 m ³	23.7 yd³	24.4 m ³	32 yd³	38.5 m ³	50.3 yd³
Width	3886 mm	12'9"	4267 mm	14'0"	4928 mm	16'2"	5442 mm	17'10"
Height	1796 mm	5'10.7"	2083 mm	6'10"	2286 mm	7'6"	2178 mm	7'1.75"
Weight	1450 kg	3200 lb	2608 kg	5750 lb	3175 kg	7000 lb	4900 kg	10,800 lb

This list is not all inclusive. Contact your Caterpillar Dealer for special attachment needs.

Bulldozers

Special Attachments

- Cushion Dozers
- Coal U-Blades
- Woodchip Dozers
- Reclamation U-Blades

COAL U-BLADES	D6R Series III		D7R Series II		D8R/D8T		D9R/D9T	
Capacity	9.7 m ³	12.63 yd³	16.1 m ³	21.0 yd³	21.4 m ³	28 yd³	37 m ³	48 yd³
Width	4267 mm	14'0"	4953 mm	16'3"	5537 mm	18'2"	5940 mm	18'10"
Height	1473 mm	4'10"	1829 mm	6'0"	1930 mm	6'4"	2540 mm	8'4"
Weight	1452 kg	3200 lb	2405 kg	5300 lb	3200 kg	7050 lb	4490 kg	9900 lb

COAL U-BLADES	D10T		D11T	
Capacity	46.1 m ³	60.3 yd³	74.9 m ³	98.0 yd³
Width	6191 mm	20'1"	7416 mm	24'4"
Height	2794 mm	9'2"	3330 mm	10'11"
Weight	6670 kg	14,700 lb	11 340 kg	25,000 lb

WOODCHIP DOZERS	D6R Series III		D7R Series II		D8R/D8T		D9R/D9T		D10T	
Capacity	15 m ³	20 yd³	19.9 m ³	26 yd³	28.3 m ³	37 yd³	45.9 m ³	60 yd³	72.6 m ³	95 yd³
Width	4267 mm	14'0"	4826 mm	16'8"	5486 mm	18'0"	5486 mm	18'0"	6300 mm	20'8"
Height	1880 mm	6'2"	2083 mm	6'10"	2337 mm	7'8"	3086 mm	10'1.5"	3480 mm	11'5"
Weight	1724 kg	3800 lb	2765 kg	6100 lb	2903 kg	6400 lb	5080 kg	11,200 lb	7575 kg	16,700 lb

RECLAMATION U-BLADES	D8R/D8T		D9R/D9T		D10T	
Capacity	16.4 m ³	21.5 yd³	20.9 m ³	27.3 yd³	30.6 m ³	40 yd³
Width	4877 mm	16'0"	5182 mm	17'0"	5664 mm	18'7"
Height	1880 mm	6'2"	2032 mm	6'8"	2388 mm	7'10"
Weight	3810 kg	8400 lb	5220 kg	11,500 lb	6440 kg	14,200 lb

CUSHION DOZERS	D8R/D8T		D9R/D9T		D10T		D11T	
Width	2889 mm	9'5.75"	3048 mm	10'0"	3505 mm	11'6"		
Height	1499 mm	4'11"	1575 mm	5'2"	1676 mm	5'6"		*
Weight	3185 kg	7020 lb	4310 kg	9500 lb	6440 kg	14,200 lb		
Rear Cushion Push Block		*	2175 kg	4800 lb	3105 kg	6850 lb		*

*Available upon request.

This list is not all inclusive. Contact your Caterpillar Dealer.

RIPPERS

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Features:

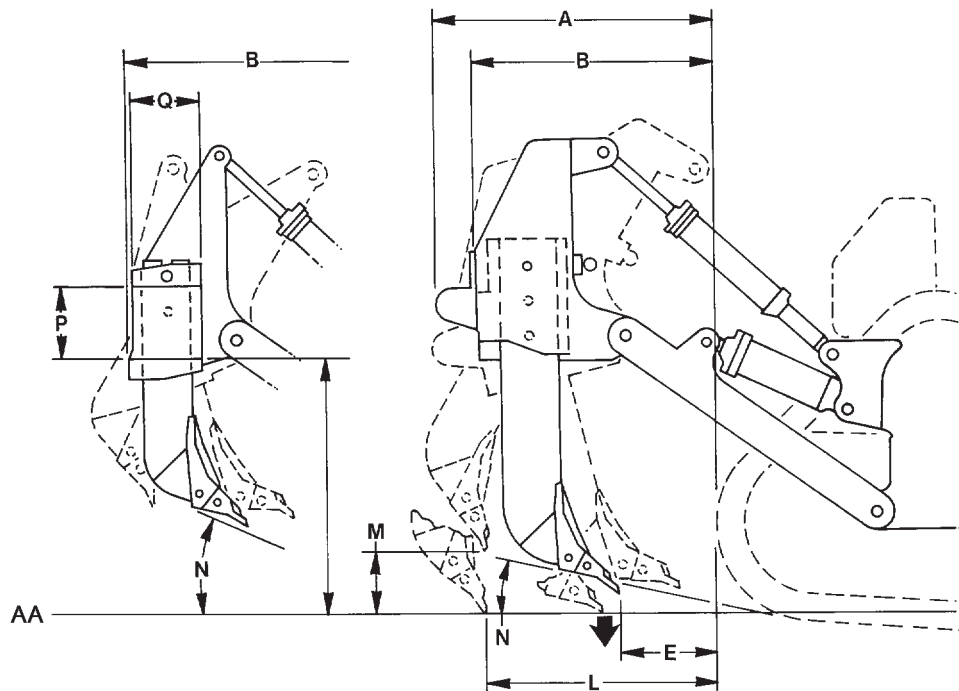
- **Parallelogram linkage with hydraulically variable pitch** on D8R/D8T, D9R/D9T, D10T, D11T and optional on D7R Series II. Operator can adjust angle of ripper tip to the material for penetration at all ripping depths to increase production.
- **Fixed Parallelogram linkage design** used on D3G, D4G, D5G, D6N, D6G, D6R Series III, D7G, D6R XR Series III, D6R XL Series III, D7R Series II and D7R XR Series II. This design holds tooth angle constant at all ripping depths.
- **Fixed Radial rippers** are Multishank with wide beam coverage for utility ripping close to walls, footings and embankments. Ripper tooth angle changes as ripper is raised or lowered. Three shanks available for the D5N.
- **Adjustable Single shank** arrangements available for D8R/D8T, D9R/D9T, D10T and D11T for tough ripping applications and deep ripping requirements.
- **Hydraulically Variable Pitch Multishank** arrangements available on D8R/D8T, D9R/D9T, D10T and D11T allow wide-beam coverage in easier-to-rip materials.

DEFINITION OF FORCES SHOWN IN TABLES THAT FOLLOW

“Pryout,” (Breakout) newtons (and pounds) — the maximum sustained upward force, generated by the lift cylinders measured at the ripper tip. Breakout force is measured with the shank in the top hole, shank vertical and ripper full down. Breakout force may be hydraulically or balance limited.

“Penetration force,” kilonewtons (and pounds) — the maximum sustained downward force, generated by the ripper lift cylinders measured at the ripper tip, which is required to raise the back end of the vehicle with the tip on ground and the shank (pinned in the top hole) vertical.

Adjustable Parallelogram Ripper

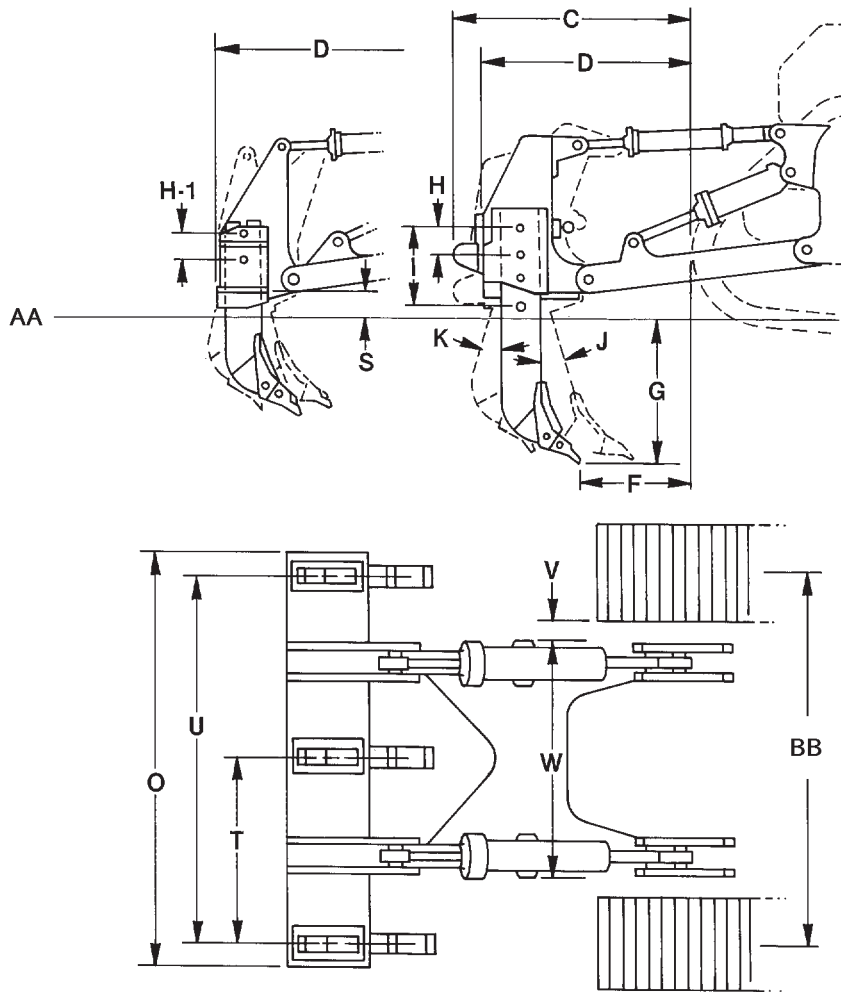


NOTE: Letters correspond to ripper specifications on pages that follow.

KEY

AA — Ground Line

Adjustable Parallelogram Ripper



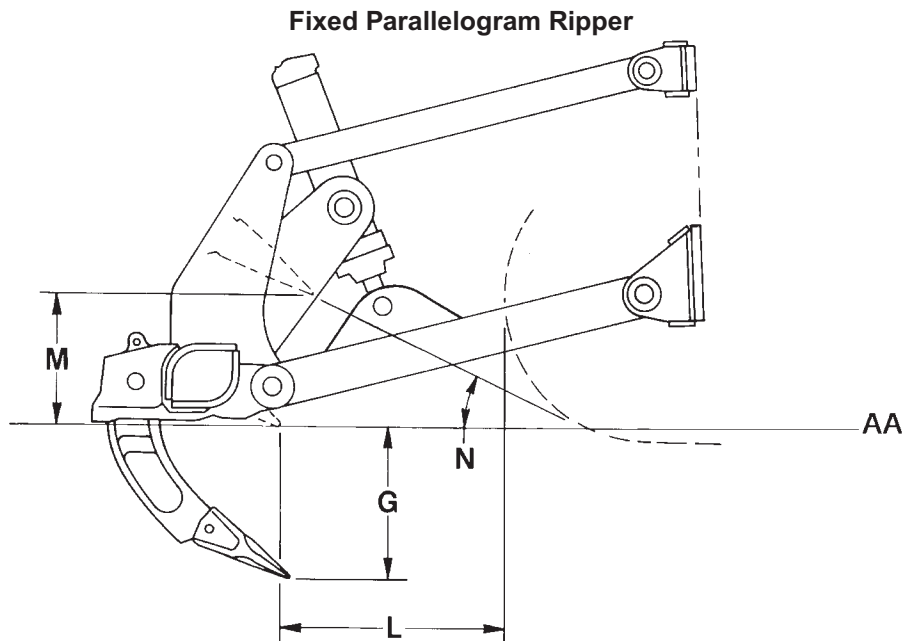
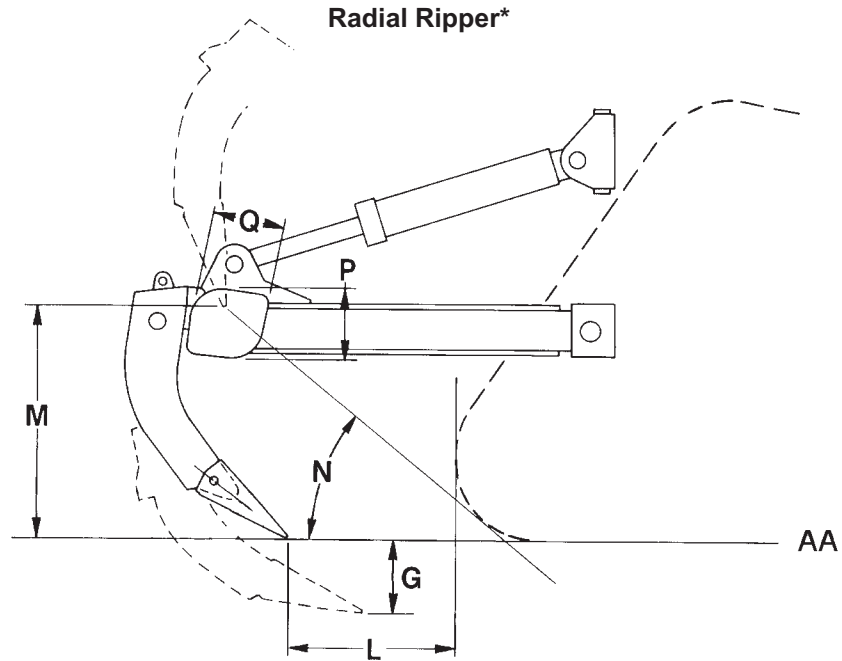
NOTE: Letters correspond to ripper specifications on pages that follow.

KEY
 AA — Ground Line
 BB — Track Gauge

Rippers

Specification Diagrams

- Radial Ripper
- Fixed Parallelogram Ripper



NOTE: Letters correspond to ripper specifications on pages that follow.

KEY

AA — Ground Line
* — Tip Standard

TRACTOR/RIPPER	D3G		D4G		D5G		D5N XL**	
Ripper Type	Fixed Parallelogram		Fixed Parallelogram		Fixed Parallelogram		Radial	
Dimensions:								
Ripper Shank								
G Maximum digging depth	337 mm	13.3"	337 mm	13.3"	337 mm	13.3"	350 mm	13.8"
L Maximum reach at ground line	739 mm	2'5"	627 mm	2'1"	615 mm	2'0"	668 mm	2'2.3"
M Maximum ground clearance under tip (shank pinned in bottom hole)	412 mm	1'4"	412 mm	1'4"	423 mm	1'5"	482 mm	1'7"
N Maximum ramp angle, ripper up (shank pinned in bottom hole)	26°		30°		30°		25.2°	
Shank section	36 × 76 mm (1.4" × 3")				36 × 76 mm (1.4" × 3")		58 × 139 mm (2.3" × 5.5")	
Ripper Beam								
O Overall width	1.71 m	5'7"	1.71 m	5'7"	1.71 m	5'7"	1.95 m	6'5"
P Height	165 mm	6.5"	165 mm	6.5"	165 mm	6.5"	165 mm	6.5"
Q Length	190 mm	7.5"	190 mm	7.5"	190 mm	7.5"	211 mm	8.3"
Number of Pockets	3		3		3		3	
T Pocket Spacing	775 mm	2'7"	775 mm	2'7"	775 mm	2'7"	896 mm	2'11.3"
U Shank Gauge	1.55 m	5'1"	1.55 m	5'1"	1.55 m	5'1"	1.79 m	5'10"
V Track clearance with standard shoe	113 mm	4.4"	113 mm	4.4"	113 mm	4.4"	108 mm	4.3"
Installed weights:								
Ripper with standard shank	554 kg	1220 lb	554 kg	1220 lb	554 kg	1220 lb	758 kg	1671 lb
Each additional shank	—		—		11 kg 24 lb		34 kg 74 lb	
Ripper Forces:*								
Penetration Force	2250 kg	4970 lb	2520 kg	5560 lb	2780 kg	6130 lb	4010 kg	8840 lb
Pryout Force	44 kN	9900 lb	44 kN	9900 lb	44 kN	9900 lb	188 kN	42,165 lb

*This value may vary slightly with various vehicle configurations.

**D5N XL Penetration and pryout forces are for machines equipped with VPAT-Blade and Power Shift Transmission.

NOTE: Letters correspond to ripper dimension drawings.

Rippers

Specifications

- D5N LGP
- D6N XL ● D6N LGP

TRACTOR/RIPPER	D5N LGP		D6N XL		D6N LGP	
Ripper Type	Radial		Parallelogram		Parallelogram	
Dimensions:						
Ripper Shank						
G Maximum digging depth	298 mm	11.7"	474 mm	18.6"	360 mm	14.2"
L Maximum reach at ground line	696 mm	2'3.4"	516 mm	1'8.3"	453 mm	17.8"
M Maximum ground clearance under tip (shank pinned in bottom hole)	536 mm	1'9.1"	392 mm	15.4"	506 mm	17.3"
N Maximum ramp angle, ripper up (shank pinned in bottom hole)	25.9°		34.4°		49.5°	
Shank section	58 × 139 mm (2.3" × 5.5")		73 × 176 mm (2.9" × 6.9")		73 × 176 mm (2.9" × 6.9")	
Ripper Beam						
O Overall width	1.95 m	6'5"	2.20 m	7'3"	2.20 m	7'3"
P Height	165 mm	6.5"	216 mm	8.5"	216 mm	8.5"
Q Length	211 mm	8.3"	254 mm	10"	254 mm	10"
Number of Pockets	3		3		3	
T Pocket Spacing	896 mm	2'11.3"	1000 mm	3'3.4"	1000 mm	3'3.4"
U Shank Gauge	1.79 m	5'10"	2 m	6'7"	2 m	6'7"
V Track clearance with standard shoe	124 mm	4.9"	99 mm	3.9"	104 mm	4.1"
Installed weights:						
Ripper with standard shank	758 kg	1671 lb	1406 kg	3100 lb	1406 kg	3100 lb
Each additional shank	34 kg	74 lb	78 kg	172 lb	78 kg	172 lb
Ripper Forces:*						
Penetration Force	4669 kg	10,293 lb	6023 kg	13,278 lb	7198 kg	15,869 lb
Pryout Force	19 260 kg	42,461 lb	12 600 kg	27,778 lb	12 600 kg	27,778 lb

*This value may vary slightly with various vehicle configurations. D5N LGP and D6N LGP equipped with VPAT-blade and Power Shift Transmission.
NOTE: Letters correspond to ripper dimension drawings.

TRACTOR/RIPPER	D6R Series III		D6R XL Series III		D7R Series II	
Ripper Type	Parallelogram		Parallelogram		Adj. Parallelogram	
Dimensions:						
Ripper Shank						
G Maximum digging depth	500 mm	1'7.7"	500 mm	1'7.7"	748 mm	2'5.4"
L Maximum reach at ground line	729 mm	2'4.7"	729 mm	2'4.7"	1.07 m	3'6.1"
M Maximum ground clearance under tip (shank pinned in bottom hole)	520 mm	1'8.5"	520 mm	1'8.5"	638 mm	2'1.1"
N Maximum ramp angle, ripper up (shank pinned in bottom hole)	26°		26°		26.6°	
Shank section	74 × 175 mm (2.9" × 6.9")		74 × 175 mm (2.9" × 6.9")		72 × 228 mm (2.8" × 6.9")	
Ripper Beam						
O Overall width	2.20 m	7'3"	2.20 m	7'3"	2.21 m	7'3"
P Height	216 mm	8.5"	216 mm	8.5"	279 mm	11"
Q Length	254 mm	10"	254 mm	10"	343 mm	13.5"
Number of Pockets	3		3		3	
T Pocket Spacing	1000 mm	3'3.4"	1000 mm	3'3.4"	991 mm	3'3"
U Shank Gauge	2 m	6'7"	2 m	6'7"	1.98 m	6'6"
V Track clearance with standard shoe	120 mm	4.7"	120 mm	4.7"	95 mm	3.7"
Installed weights:						
Ripper with standard shank	1456 kg	3203 lb	1456 kg	3203 lb	3277 kg	7225 lb
Each additional shank	70 kg	154 lb	70 kg	154 lb	138 kg	305 lb
Ripper Forces:*						
Penetration Force	6558 kg	14,428 lb	7485 kg	16,505 lb	8664 kg	19,104 lb
Pryout Force	9155 kg	20,140 lb	9155 kg	20,140 lb	18 007 kg	39,705 lb

*Tractor equipped with ripper, OROPS, SU dozer and heavy duty track. Values may vary slightly with various configurations.
NOTE: Letters correspond to ripper dimension drawings.

Rippers

Specifications

- D8R/D8T
- D9R/D9T

TRACTOR/RIPPER	D8R/D8T		D9R/D9T	
	Adjustable Parallelogram		Adjustable Parallelogram	
Ripper Type	Single Shank	Multishank	Single Shank	Multishank
Dimensions:				
Ripper to Track				
Ripper length behind track, shank vertical, ripper up				
A With Pushblock	N/A	N/A	N/A	N/A
B Without Pushblock	1.69 m 5'7"	1.6 m 5'2"	1.57 m 5'2"	1.33 m 4'4"
Ripper length behind track, shank vertical, ripper down				
C With Pushblock	N/A	N/A	N/A	N/A
D Without Pushblock	1.84 m 6'0"	1.71 m 5'7"	1.88 m 6'2"	1.71 m 5'7"
Tip to track distance, shank vertical				
E Ripper Up	694 mm 2'3.3"	640 mm 2'1.2"	689 mm 2'3.2"	510 mm 1'8.1"
F Ripper Down	950 mm 3'1.4"	899 mm 2'11.4"	944 mm 3'1.2"	890 mm 2'11"
Ripper Shank*				
G Maximum digging depth	1130 mm 3'8.5"	780 mm 2'6.7"	1231 mm 4'0.6"	798 mm 2'7.6"
H Dig adjustment per hole	305 mm 12"	250 mm 10"	295 mm 12"	250 mm 10"
I Total dig adjustment	610 mm 2'0"	250 mm 10"	590 mm 1'11.2"	250 mm 10"
Pitch Adjustment, ripper down:				
J Forward	15°	14.9°	10.6°	10°
K Backward	9.9°	10°	15.2°	15.1°
L Maximum reach at ground line	1.32 m 4'3"	1.17 m 3'10"	1.25 m 4'1"	1.16 m 3'10"
M Maximum ground clearance under tooth (shank pinned in bottom hole)				
	636 mm 2'1"	593 mm 1'11.3"	882 mm 2'10.9"	885 mm 2'10.7"
N Maximum ramp angle, ripper up (shank pinned in bottom hole)				
	28.2°	28.4°	36.9°	37.5°
Shank Section				
	75 × 333 mm 2.9" × 13.1"	75 × 333 mm 2.9" × 13.1"	90 × 355 mm 3.5" × 14"	75 × 333 mm 2.9" × 13.1"
Ripper Beam				
O Overall width	N/A	2.46 m 8'1"	N/A	2.64 m 8'8"
P Height	N/A	334 mm 13.1"	N/A	380 mm 15"
Q Length	N/A	457 mm 18"	N/A	457 mm 18"
Clearance under beam, shank vertical				
R Ripper Up	N/A	1.55 m 5'1"	N/A	1.77 m 5'10"
S Ripper Down	N/A	449 mm 17.7"	N/A	378 mm 14.9"
Number of Pockets				
	1	3	1	3
T Pocket Spacing	N/A	1092 mm 3'7"	N/A	1180 mm 3'10.4"
U Shank Gauge	N/A	2.17 m 7'1"	N/A	2.35 m 7'8"
V Track Clearance with standard shoe	76 mm 3"	76 mm 3"	71 mm 2.8"	71 mm 2.8"
W Width across widest part of lift cylinders				
	1.37 m 4'5"	1.37 m 4'5"	1.50 m 4'11"	1.50 m 4'11"
Installed Weights:				
Ripper with standard shank				
	4085 kg 9005 lb	4213 kg 9287 lb	4854 kg 10,700 lb	4885 kg 10,770 lb
Each additional tooth group				
	N/A	332 kg 730 lb	N/A	332 kg 733 lb
Ripper Forces:**				
Penetration Force, shank vertical				
	127 400 N 28,620 lb	124 200 N 27,920 lb	153 885 N 34,581 lb	147 958 N 33,249 lb
Pryout Force, shank vertical				
	222 800 N 50,070 lb	227 900 N 51,230 lb	320 511 N 72,025 lb	324 680 N 74,639 lb

*Deep Ripping Shank is available for D8R/D8T and D9R/D9T single shank rippers. Hydraulic pin puller is standard with deep ripping shank. Deep Ripping Arrangement maximum digging depth is 1.57 m (5'2") for D8R/D8T and 1.66 m (5'5") for D9R/D9T.

**Forces are for a ripper on a tractor equipped with EROPS, U-Dozer and performance track. Forces will vary slightly with other vehicle configurations.

NOTE: Letters correspond to ripper dimension drawings.

TRACTOR/RIPPER	D10T		D11R		D11T	
	Adjustable Parallelogram		Adjustable Parallelogram Single Shank		CD Single Shank	
Ripper Type	Single Shank	Multishank				
Dimensions:						
Ripper to Track						
Ripper length behind track, shank vertical, ripper up (A)						
A With Pushblock	2.08 m 6'10"	N/A	2.19 m 7'2"	N/A	N/A	
B Without Pushblock	1.76 m 5'9"	1.56 m 5'1"	1.85 m 6'1"		2.04 m 6'8"	
Ripper length behind track, shank vertical, ripper down (A)						
C With Pushblock	2.48 m 8'2"	N/A	2.59 m 8'6"	N/A	N/A	
D Without Pushblock	2.16 m 7'1"	1.96 m 6'5"	2.29 m 7'6"		2.48 m 8'2"	
Tip to track distance, shank vertical (A)						
E Ripper Up	730 mm 2'4.7"	651 mm 2'1.6"	622 mm 2'0.5"		622 mm 2'0.5"	
F Ripper Down	1130 mm 3'8.5"	1050 mm 3'5.3"	1041 mm 3'5"		1041 mm 3'5"	
Ripper Shank*						
G Maximum digging depth	1494 mm 4'11"	876 mm 2'10.5"	1612 mm 5'3.5"		1612 mm 5'3.5"	
H Dig adjustment per hole	355 mm 14"	250 mm 10"	280 mm 11"		280 mm 11"	
I Total dig adjustment	710 mm 2'4"	250 mm 10"	840 mm 2'9.1"		840 mm 2'9.1"	
Pitch Adjustment, ripper down:						
J Forward	15.7°	18°	15°		15°	
K Backward	23.5°	19.7°	18.3°		18.3°	
L Maximum reach at ground line	1.50 m 4'11"	1.36 m 4'6"	1.73 m 5'8"		1.73 m 5'8"	
M Maximum ground clearance under tooth (shank pinned in bottom hole)	1058 mm 3'5.7"	1045 mm 3'5.1"	1115 mm 3'7.9"		1115 mm 3'7.9"	
N Maximum ramp angle, ripper up (shank pinned in bottom hole)	36.9°	37.5°	33.9°		33.9°	
Shank Section						
	100 × 400 mm 4" × 15.75"	90 × 355 mm 3.5" × 14"	110 × 450 mm 4.3" × 17.7"		110 × 450 mm 4.3" × 17.7"	
Ripper Beam						
O Overall width	N/A	2.92 m 9'7"	N/A		N/A	
P Height	N/A	460 mm 18.1"	N/A		N/A	
Q Length	N/A	485 mm 1'7.1"	N/A		N/A	
Clearance under beam, shank vertical						
R Ripper Up	N/A	2.03 m 6'8"	N/A		N/A	
S Ripper Down	N/A	380 mm 15"	N/A		N/A	
Number of Pockets						
	1	3	1		1	
T Pocket Spacing	N/A	1320 mm 4'4"	N/A		N/A	
U Shank Gauge	N/A	2.63 m 8'8"	N/A		N/A	
V Track Clearance with standard shoe	97 mm 4"	97 mm 4"	141 mm 5.6"		141 mm 5.6"	
W Width across widest part of lift cylinders	1.75 m 5'9"	1.75 m 5'9"	1.90 m 6'3"		1.90 m 6'3"	
Installed Weights:						
Ripper with standard shank	7117 kg 15,690 lb	6919 kg 15,253 lb	9643 kg 21,215 lb		12 971 kg 28,536 lb	
Each additional tooth group	N/A	524 kg 1155 lb	N/A		N/A	
Ripper Forces:**						
Penetration Force, shank vertical	205 000 N 45,980 lb	205 000 N 45,980 lb	279 860 N 62,890 lb		311 903 N 70,091 lb	
Pryout Force, shank vertical	429 000 N 96,360 lb	429 000 N 96,360 lb	657 840 N 147,830 lb		625 577 N 140,579 lb	

*Deep Ripping Shank is available for D10T and D11T single shank rippers. Hydraulic pin puller is standard with deep ripping shank. Deep Ripping Arrangement maximum digging depth is 1.86 m (6'3") for D10T and 2.18 m (7'2") for D11T.

**Forces are for a ripper on a tractor equipped with an EROPS, U-Dozer and performance track. Forces will vary slightly with other vehicle configurations.

TRACTOR/RIPPER	D11T		D11T		D11T	
Ripper Type	CD Single Shank		CD Multishank		Multishank	
Dimensions:						
Ripper to Track						
Ripper length behind track, shank vertical, ripper up (A)						
A With Pushblock	N/A		N/A		N/A	
B Without Pushblock	2.04 m	6'8"	1.92 m	6'4"	1.92 m	6'4"
Ripper length behind track, shank vertical, ripper down (A)						
C With Pushblock	N/A		N/A		N/A	
D Without Pushblock	2.48 m	8'2"	1.92 m	6'4"	1.92 m	6'4"
Tip to track distance, shank vertical (A)						
E Ripper Up	622 mm	2'0.5"	651 mm	2'1.6"	651 mm	2'1.6"
F Ripper Down	1041 mm	3'5"	1030 mm	3'4.6"	1030 mm	3'4.6"
Ripper Shank*						
G Maximum digging depth	1612 mm	5'3.5"	1070 mm	3'6.1"	1070 mm	3'6.1"
H Dig adjustment per hole	280 mm	11"	280 mm	11"	280 mm	11"
I Total dig adjustment	840 mm	2'9.1"	280 mm	11"	280 mm	11"
Pitch Adjustment, ripper down:						
J Forward	15°		15°		15°	
K Backward	18.3°		18.5°		18.5°	
L Maximum reach at ground line	1.73 m	5'8"	1.57 m	5'2"	1.57 m	5'2"
M Maximum ground clearance under tooth (shank pinned in bottom hole)	1115 mm	3'7.9"	1137 mm	3'8.8"	1137 mm	3'8.8"
N Maximum ramp angle, ripper up (shank pinned in bottom hole)	33.9°		37.1°		37.1°	
Shank Section						
	110 × 450 mm		100 × 400 mm		100 × 400 mm	
	4.3" × 17.7"		3.9" × 15.7"		3.9" × 15.7"	
Ripper Beam						
O Overall width	N/A		3.33 m	10'11"	3.33 m	10'11"
P Height	N/A		560 mm	1'10"	560 mm	1'10"
Q Length	N/A		560 mm	1'10"	560 mm	1'10"
Clearance under beam, shank vertical						
R Ripper Up	N/A		2.06 m	6'9"	2.06 m	6'9"
S Ripper Down	N/A		282 mm	11.1"	282 mm	11.1"
Number of Pockets						
	1		3		3	
T Pocket Spacing	N/A		1500 mm	5'9"	1500 mm	5'9"
U Shank Gauge	N/A		2.99 m	9'10"	2.99 m	9'10"
V Track Clearance with standard shoe	141 mm	5.6"	166 mm	5.6"	166 mm	5.6"
W Width across widest part of lift cylinders	1.9 m	6'3"	1.9 m	6'3"	1.9 m	6'3"
Installed Weights:						
Ripper with standard shank						
	12 971 kg	28,536 lb	12,389 kg	27,256 lb	9545 kg	21,000 lb
Each additional tooth group						
	N/A		N/A		N/A	
Ripper Forces:**						
Penetration Force, shank vertical						
	295 807 N	66,494 lb	274 917 N	61,804 lb	225 680 N	50,715 lb
Pryout Force, shank vertical						
	625 577 N	140,579 lb	549 834 N	123,608 lb	451 360 N	101,430 lb

*Hydraulic pin puller is standard with deep ripping shank. Deep Ripping Arrangement maximum digging depth is 2.18 m (7'2").

**Forces are for a ripper on a tractor equipped with an EROPS, U-Dozer and performance track. Forces will vary slightly with other vehicle configurations.

TRACTOR/RIPPER	D6G/No. 6		D7G/No. 7	
Ripper Type	Parallelogram		Parallelogram	
Dimensions:				
Ripper Shank				
G Maximum digging depth	530 mm	1'8.9"	737 mm	2'5"
L Maximum reach at ground line	551 mm	1'9.7"	994 mm	3'3.1"
M Maximum ground clearance under tip (shank pinned in bottom hole)	218 mm	8.6"	462 mm	18.2"
N Maximum ramp angle, ripper up (shank pinned in bottom hole)	16°		21°	
Shank Section	76 × 178 mm 3" × 7"		72 × 228 mm 2.8" × 9"	
Ripper Beam				
O Overall width	2.34 m	7'8"	2.21 m	7'3"
P Height	214 mm	8.4"	279 mm	11"
Q Length	254 mm	10"	343 mm	13.5"
Number of Pockets	5		3	
T Pocket Spacing	536 mm	1'9.1"	991 mm	3'3"
U Shank Gauge	2.15 m	7'1"	1.98 m	6'6"
V Track clearance with standard shoe	213 mm	8.4"	185 mm	7.3"
Installed weights:				
Ripper with standard shank	1500 kg	3300 lb	2429 kg	5344 lb
Each additional shank	64 kg	141 lb	155 kg	341 lb

NOTE: Letters correspond to ripper dimension drawings.

TIP SELECTION FOR THE D8R/D8T, D9R/D9T, D10T AND D11T RIPPERS

Three tip configurations (short, intermediate and long) in two styles (centerline and penetration) are available for economical operation in a variety of conditions.

RECOMMENDED TIP USAGE

Short — Use in high impact conditions where breakage problems occur. The shorter the tip, the more it resists breakage.

Intermediate — Most effective in moderate impact conditions where abrasion is not excessive.

Long — Use in loose, abrasive materials where breakage is not a problem. Generally offers the most wear material.

Centerline vs Penetration

The materials being ripped and the tractor doing the ripping will both have an effect on which tip will do the best job. High density material requires a “penetration” tip. High impact material requires a “centerline” tip. The following is a general guide to tip application.

Ripping Condition	Tips to use		
	D8R/D8T D9R/D9T	D10T	D11T
Tandem Tractors	Short	Short	Short
Single Shank & Multi-Shank			
Extreme Duty	Int.	Short	Short
Medium Duty	Long	Int.	Int.
Abrasive Duty	Long	Long	Long

Always use the longest tip that will wear without excessive breakage. Different tips should be tried to determine the most economical.

ESTIMATING RIPPING PRODUCTION

Ripping costs must be compared to other methods of loosening the material — usually drilling and blasting — on a cost per ton or bank cubic yard basis. Thus, an accurate estimation of ripper production is needed to determine unit ripping costs.

There are three general methods of estimating ripping production:

1. The best method is to record the time spent ripping, then remove (using scrapers or loaders and trucks) and weigh the ripped material. The total weight divided by the time spent will give hourly production. If the contractor is paid by volume, then a density must be used and the accuracy is only as good as the density used. For payment by volume removed, method 2 may be desirable. Some care will be needed to assure that only ripped material is removed.
2. Another method is to cross-section the area and then record the time spent ripping. After the material has been removed, cross-section the area again to determine the volume of rock removed. The volume divided by the time spent ripping gives the ripping rate per minute or hour.
3. Timing the ripper over a measured distance is the least accurate method, but valuable for quick estimating on the job. An average cycle time should be determined from a number of timed cycles. Turn-around or back-up time must be included. Measure the average rip distance, rip spacing and depth of penetration. This data will give the volume per cycle from which the production in bank cubic yards can be calculated. Experience has shown results obtained from this method are about 10 to 20% higher than the more accurate method of cross-sectioning.

An example of the measured distance method for calculating ripper production is:

Data — D10T — No. 10 with one shank.
910 mm (36 in) between passes.
1.6 km/h (1 mph) average speed (including slip-page and stalls).

Every 91 m (300 ft) requires 0.25 min to raise, pivot, turn, and lower again: 91 m (300 ft) = 1 pass.
610 mm (24 in) penetration.
Full time ripping (no pushing or dozing assignment).

Example of Estimating Production (Metric)

Time per pass:

1.6 km/h = 26.7 m/min. Then $\frac{91 \text{ m}}{26.7 \text{ m/min}} = 3.41 \text{ min};$

3.41 min + 0.25 min (turn time) = 3.66 min/pass.

If the operator works an average of 45 min per h, it is possible to make $= \frac{45}{3.66} = 12.3$ passes per h

Volume ripped: $91 \text{ m} \times 0.9 \text{ m} \times 0.6 \text{ m} = 49.1 \text{ BCM}$ per pass

Production = $49.1 \times 12.3 = 604 \text{ BCM}$ per h

Remember the results from this method are usually 10 to 20 per cent higher than the actual production that can be expected on the job.



Example of Estimating Production (English)

Time per pass:

MPH = 88 fpm. Then $\frac{300 \text{ ft}}{88 \text{ fpm}} = 3.41 \text{ min};$

3.41 min + 0.25 min. (turn time) = 3.66 min/pass.

If the operator works an average of 45 min per hr, it is possible to make $\frac{45}{3.66} = 12.3$ passes per hr

Volume ripped: $\frac{300 \times 3 \times 2}{27} = 66.7 \text{ BCY}$ per pass

Production = $66.7 \times 12.3 = 820 \text{ BCY}$ per hr



NOTE: The demands of heavy ripping will increase the normal owning and operating costs of the tractor.

These costs should be increased no less than 30-40% in heavy ripping applications to estimate rock loosening costs.

There is no ready answer or rule-of-thumb solution to predict ripping production. Even if everything is known about the seismic velocity of the material, its composition, job conditions, equipment and operator, only a “guesstimate” can be given. The final answer must come from a production study obtained on the job site.

Sample problem (Metric)

Determine the loosening costs in the following situation:

- Machine — D10T Tractor with No. 10 Single Shank Ripper
- Rip Spacing — 915 mm
- Ripper Penetration — 610 mm
- Rip Distance — 91 m
- Rip Time — 3.41 minutes
- Maneuver Time — 0.25 minutes
- Seismic Velocity — 1830 meters per second
- Assume 60 min. hour

Solution:

1. Total Cycle Time = $3.41 + 0.25 = 3.66 \text{ min}$
Cycles/hour = $\frac{60 \text{ min/hr}}{3.66 \text{ min/cycle}} = 16.4$
2. Production per cycle = $91 \text{ m} \times 0.9 \text{ m} \times 0.6 \text{ m} = 49.1 \text{ BCM/cycle}$
3. Production = $49.1 \text{ BCM/cycle} \times 16.4 \text{ cycles/h} = 805 \text{ BCM/h}$
4. Remember results of this method are usually 10 to 20% high.
Actual Production = 80% of 805 BCM/h = 644 BCM/h
Or 90% of 805 BCM/h = 725 BCM/h
5. Owning and Operating Costs
AD10T (ripping only) could have a \$115.00/h O & O costs including \$30/h operator.
6. Loosening Costs
 $\$115.00/\text{hr} \div 644 \text{ BCM/h} = \$0.179/\text{BCM}$
 $\$115.00/\text{hr} \div 725 \text{ BCM/h} = \$0.159/\text{BCM}$
The loosening cost should range from 15.9¢ to 17.9¢/BCM



Sample problem (English)

Determine the loosening costs in the following situation:

- Machine — D10T Tractor with No. 10 Single Shank Ripper
- Rip Spacing — 3 feet
- Ripper Penetration — 2 feet
- Rip Distance — 300 feet
- Rip Time — 3.41 minutes
- Maneuver Time — 0.25 minutes
- Seismic Velocity — 6000 feet per second
- Assume 60 min. hour

Solution:

1. Total Cycle Time = $3.41 + 0.25 = 3.66$ min
Cycles/hour = $\frac{60 \text{ min/hr}}{3.66 \text{ min/cycle}} = 16.4$
2. Production per cycle = $\frac{300 \times 3 \times 2}{27} = 66.7$ BCY/cycle
3. Production = $66.7 \text{ BCY/cycle} \times 16.4 \text{ cycles/hr} = 1094$ BCY/hour
4. Remember results of this method are usually 10 to 20% high.
Actual Production = $80\% \times 1094 = 875$ BCY/hr
or $90\% \times 1094 = 984$ BCY/hr
5. Owning and Operating Costs
AD10T (ripping only) could have a \$115.00/hr
O & O costs including \$30/hr operator
6. Loosening Costs
 $\$115.00/\text{hr} \div 875 \text{ BCY/hr} = \$0.131/\text{BCY}$
 $\$115.00/\text{hr} \div 984 \text{ BCY/hr} = \$0.117/\text{BCY}$
The loosening cost should range from 11.7¢ to 13.1¢/BCY



- Low seismic velocities of sedimentaries can indicate probable rippability. However, if the fractures and bedding joints do not allow tooth penetration, the material may not be ripped effectively.
- Pre-blasting or “popping” may induce sufficient fracturing to permit tooth entry, particularly in the caliches, conglomerates and some other rocks; but the economics should be checked carefully when considering popping in the higher grades of sandstones, limestones and granites.

Ripping is still more art than science, and much will depend on operator skill and experience. Ripping for scraper loading may call for different techniques than if the same material is to be dozed away. Cross-ripping requires a change in approach. The number of shanks used, length and depth of shank, tooth angle, direction, throttle position — all must be adjusted according to field conditions. Ripping success may well depend on the operator finding the proper combination for those conditions.

USE OF SEISMIC VELOCITY CHARTS

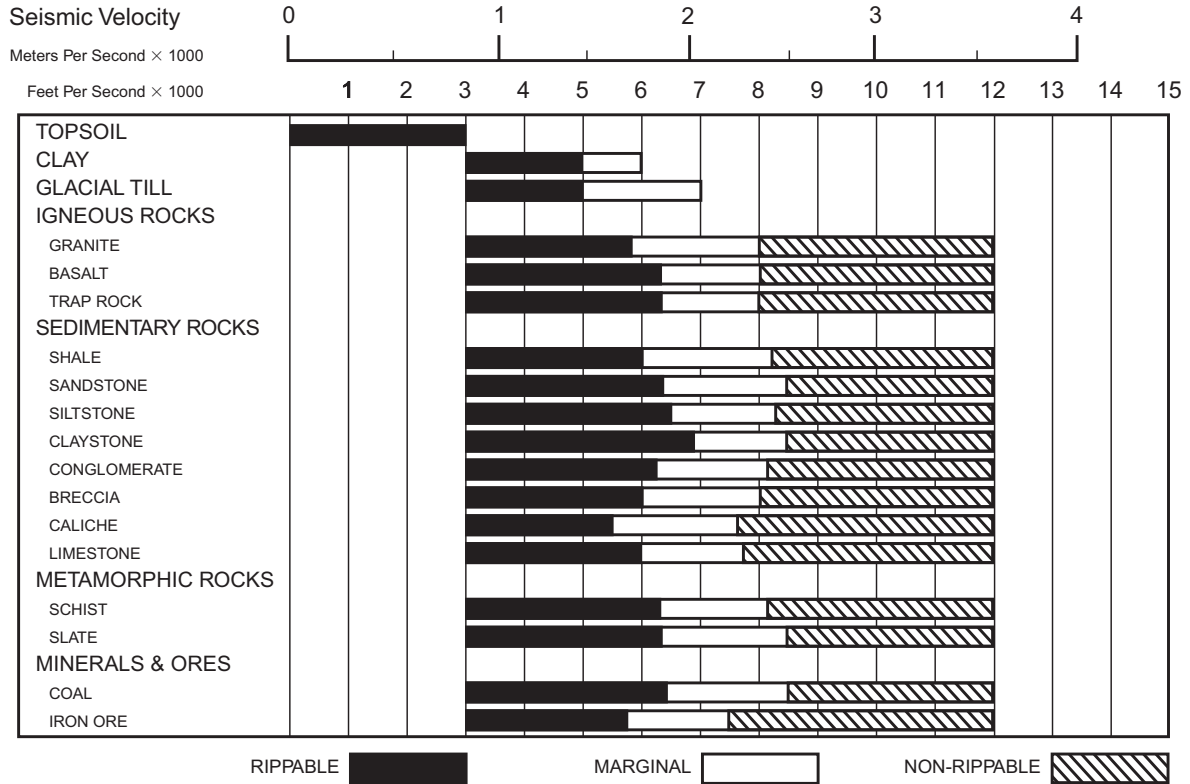
The charts of ripper performance estimated by seismic wave velocities have been developed from field tests conducted in a variety of materials. Considering the extreme variations among materials and even among rocks of a specific classification, the charts must be recognized as being at best only one indicator of rippability.

Accordingly, consider the following precautions when evaluating the feasibility of ripping a given formation:

- Tooth penetration is often the key to ripping success, regardless of seismic velocity. This is particularly true in homogeneous materials such as mudstones and claystones and the fine-grained caliches. It is also true in tightly cemented formations such as conglomerates, some glacial tills and caliches containing rock fragments.

D8R/D8T

- Multi or Single Shank No. 8 Ripper
- Estimated by Seismic Wave Velocities

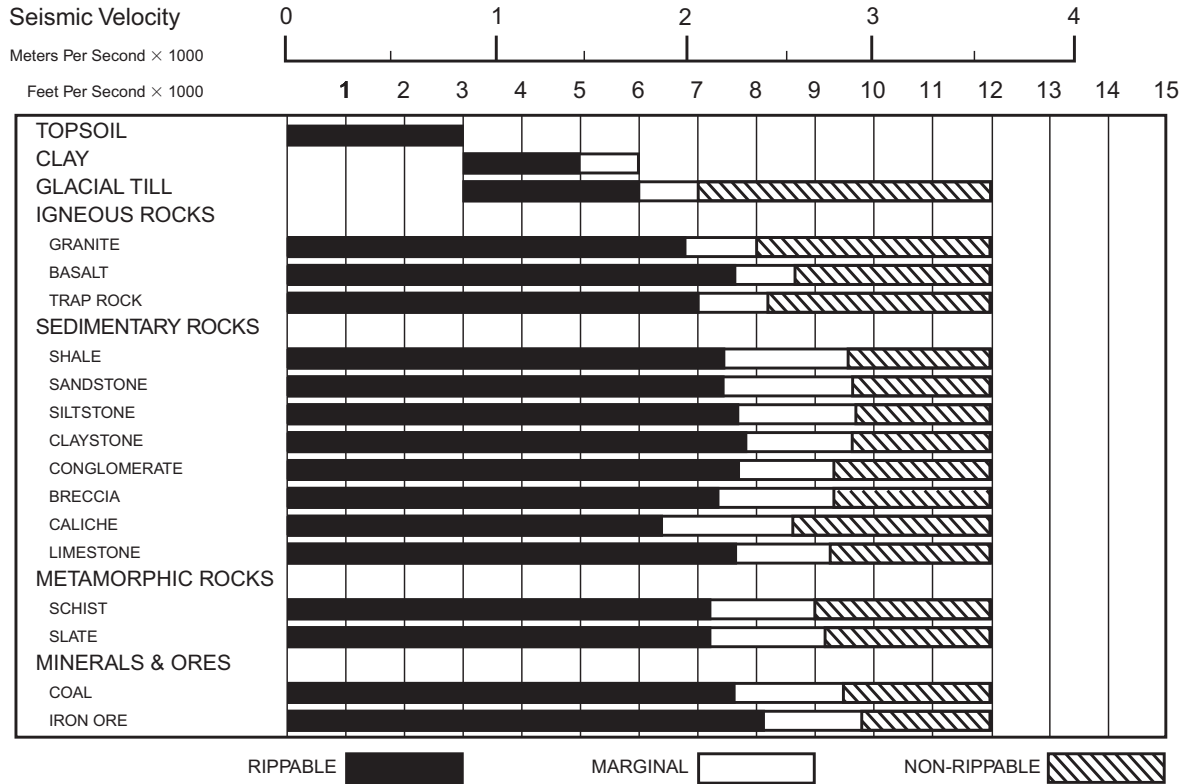


Rippers

Ripper Performance ● D9R/D9T

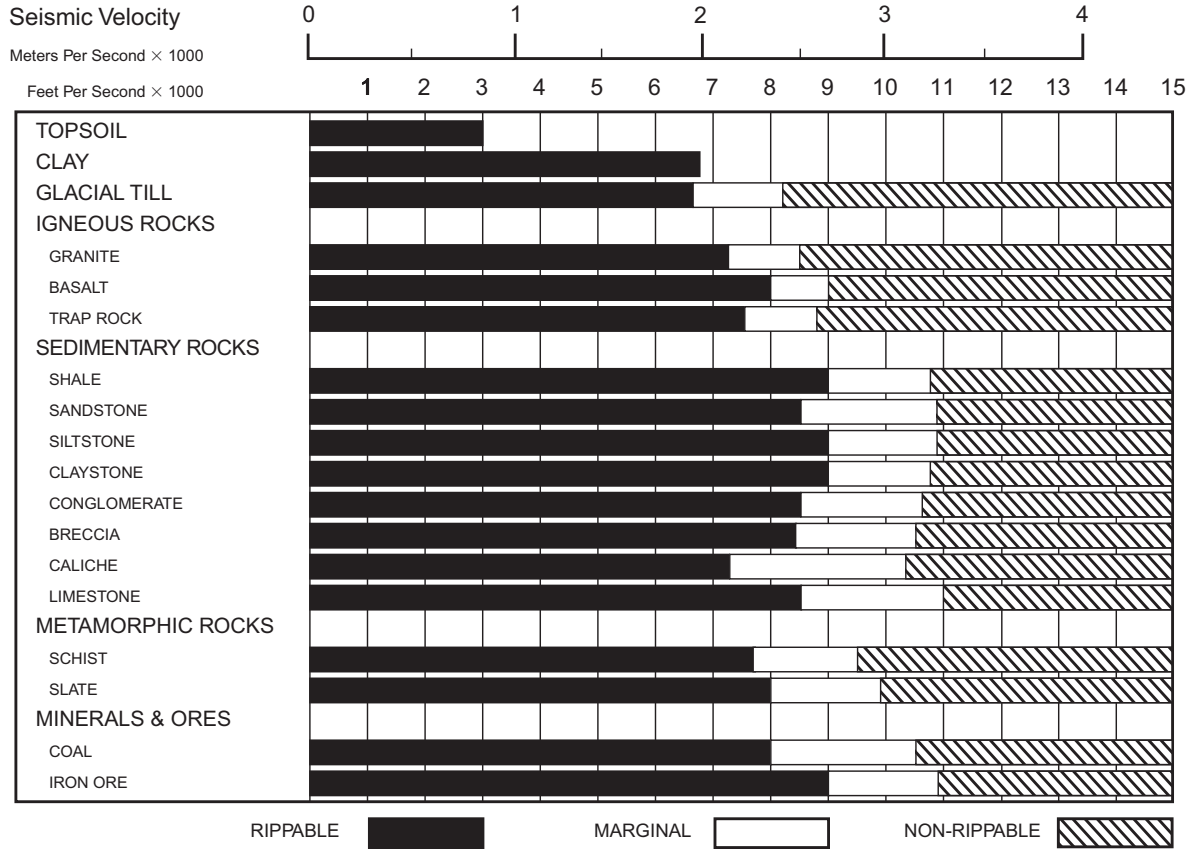
D9R/D9T

- Multi or Single Shank No. 9 Ripper
- Estimated by Seismic Wave Velocities



D10T

- Multi or Single Shank No. 10 Ripper
- Estimated by Seismic Wave Velocities

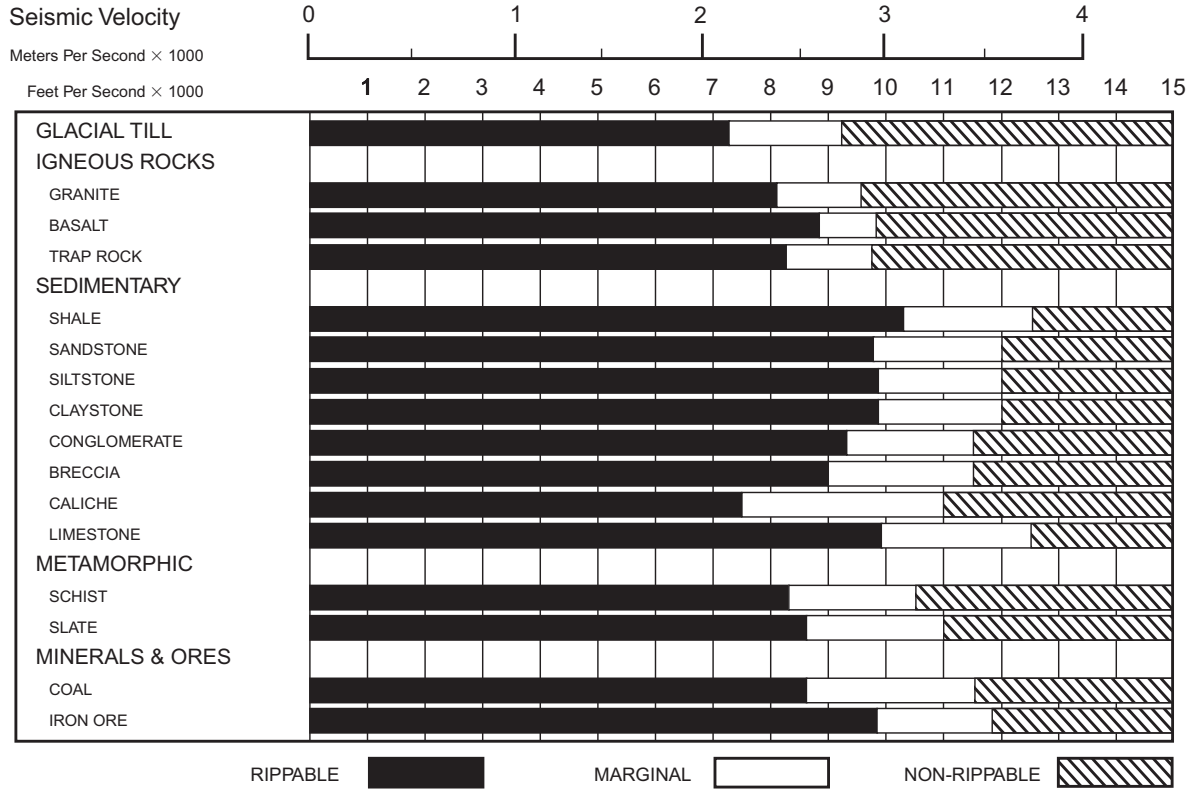


Rippers

Ripper Performance
 ● D11T

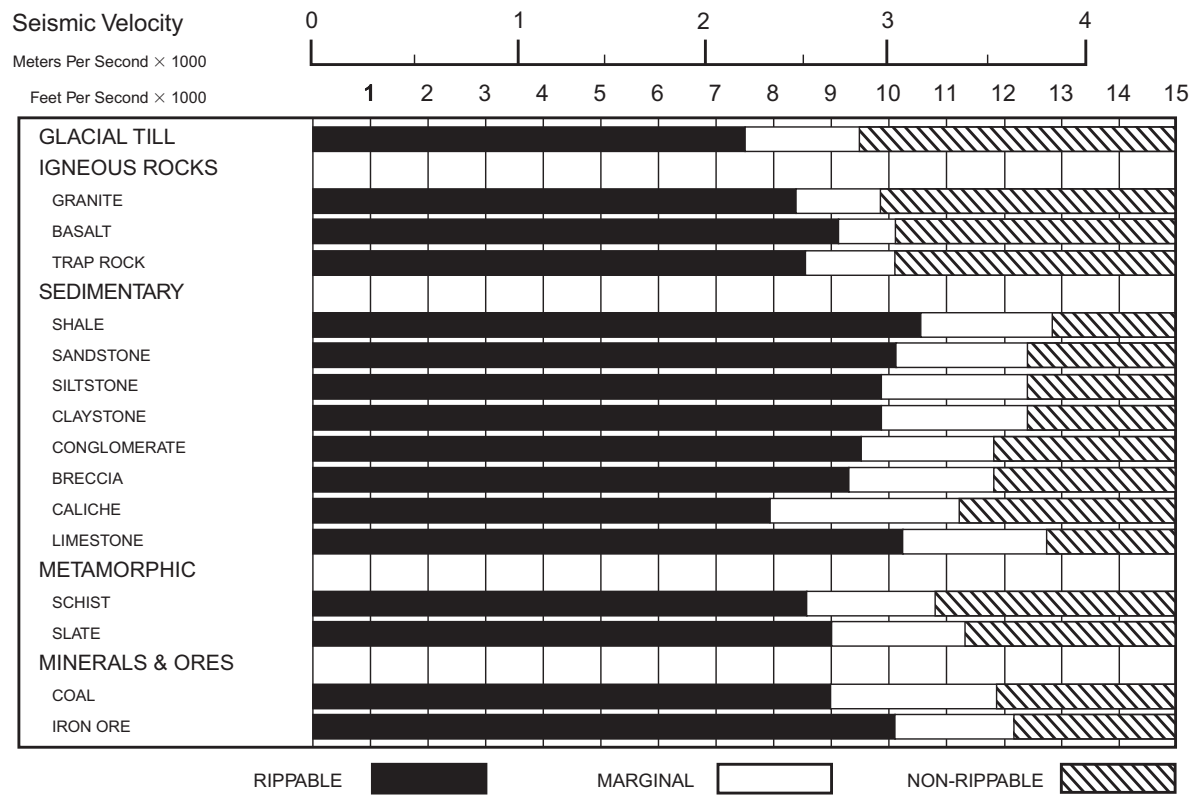
D11T

- Multi or Single Shank No. 11 Ripper
- Estimated by Seismic Wave Velocities



D11T CD

- Single Shank No. 11 Ripper
- Estimated by Seismic Wave Velocities



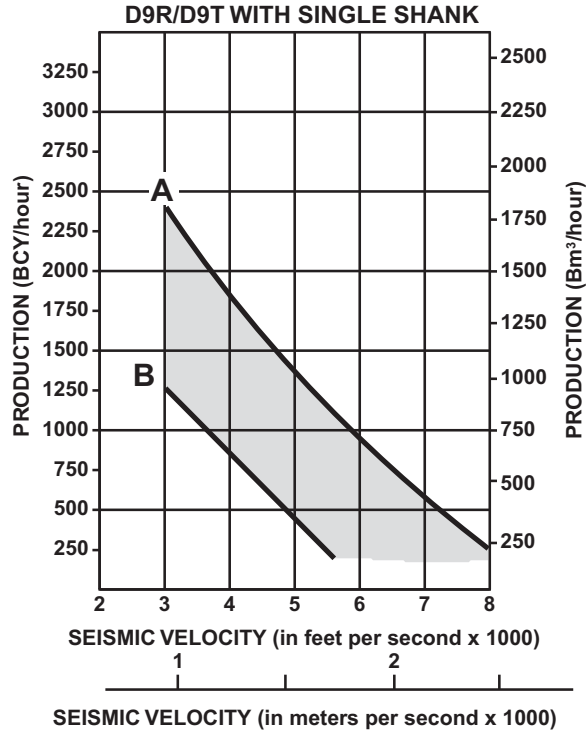
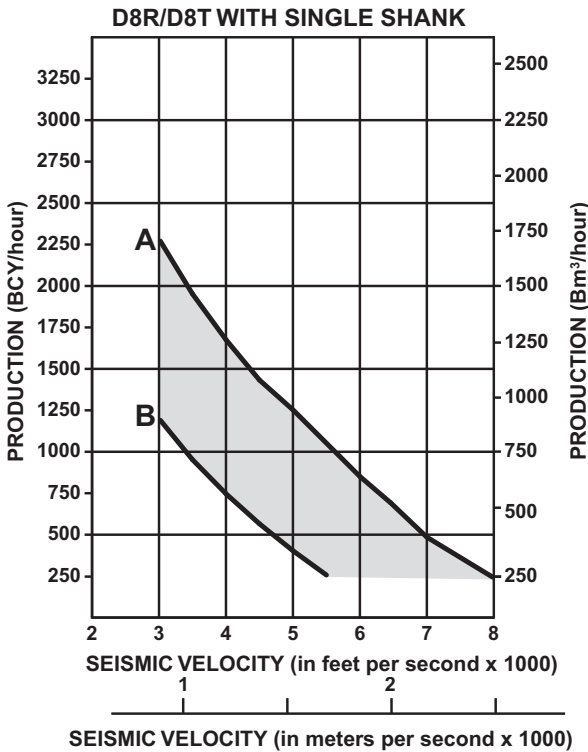
Rippers

Estimated Ripper Production Graphs

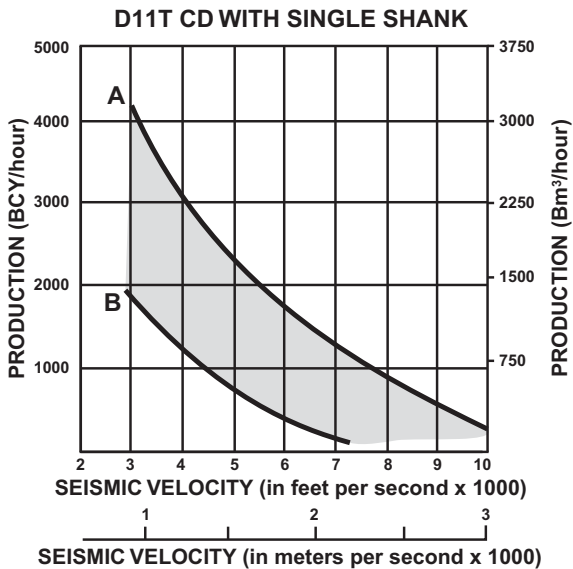
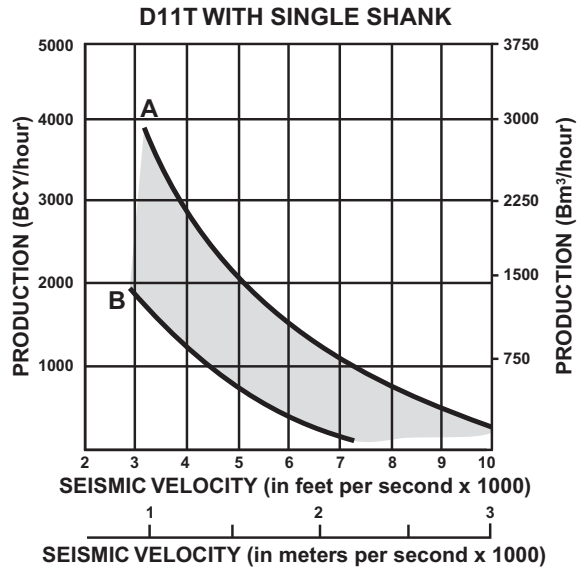
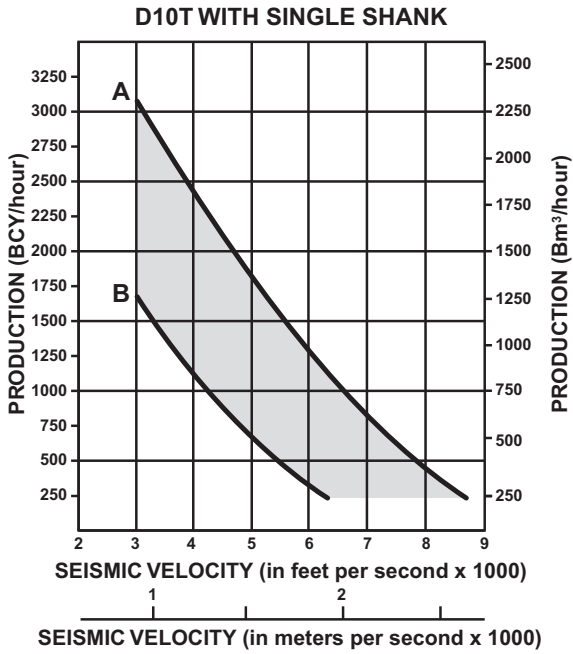
- D8R/D8T
- D9R/D9T

CONSIDERATIONS FOR USING PRODUCTION ESTIMATED GRAPHS:

- Machine rips full-time — no dozing.
- Power shift tractors with single shank rippers.
- 100% efficiency (60 min hour).
- Charts are for all classes of material.
- In igneous rock with seismic velocity of 8000 fps (2450 mps) or higher for the D11R, and 6000 fps (1830 mps) or higher for the D10T, D9R/D9T and D8R/D8T, the production figures shown should be reduced by 25%.
- Upper limit of charts reflect ripping under ideal conditions only. If conditions such as thick lamination, vertical lamination or any factor which would adversely affect production are present, the lower limit should be used.



KEY
 A — IDEAL
 B — ADVERSE



KEY
 A — IDEAL
 B — ADVERSE

Notes —

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Paccar Features:

PA40

- **Durable cast winch case** with fairlead mounting lugs, log arch mounting lugs, and heavy duty drawbar.
- **Closed loop hydrostatic operation** with variable displacement motor and dedicated variable displacement pump.
- **Infinitely variable control** of line speed and line pull including positive inching control at maximum rated line pull.
- **Standard full function “reel-in” and “reel-out” control.** This is optional on most competitive winches.
- **Standard “drive-away” and “free spool”** with easily adjustable drag.

PA55, PA56 & PA80

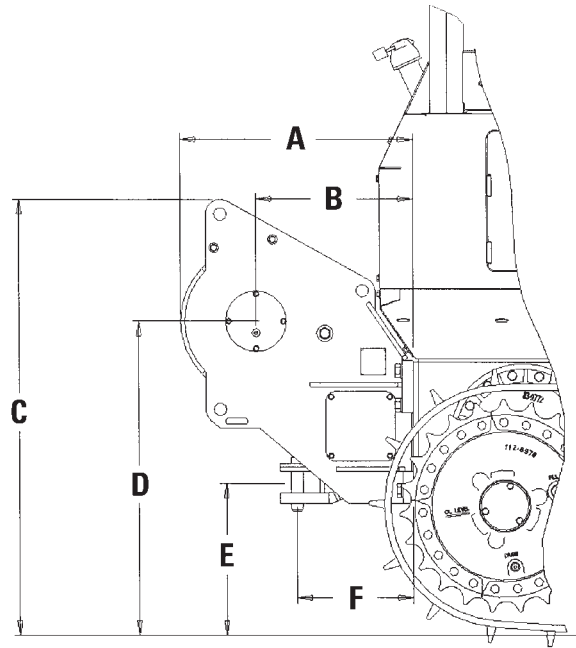
- **Durable cast winch case** with fairlead mounting lugs, log arch mounting lugs, and heavy duty drawbar.
- **Internal Hydraulic System** with maintenance-free gear pump and accumulator for easy installation.
- **Equal speed gearing in forward and reverse** to provide smooth and predictable performance.
- **Single lever control** for hydraulically actuated multiple disc clutches, brake, and free spool for ease of operation.
- **Standard “drive-away” and available “free spool”** with easily adjustable drag.

H70VS, PA110BVS & PA140VS

- **Fabricated steel winch case** with integral heavy duty drawbar provides excellent durability and easy weldability.
- **Hydraulically driven winch** for infinitely variable control of line speed and line pull including positive inching control at maximum rated line pull.
- **Dual braking system** provides a static brake with sprag clutch to eliminate fall-back and a hydraulic brake valve for dynamic braking.
- **Single lever joystick control** for ease of operation. **Pilot hydraulic** control system requires no regular maintenance.
- **Three roller fairlead** is standard for improved wire rope life during side pulls.

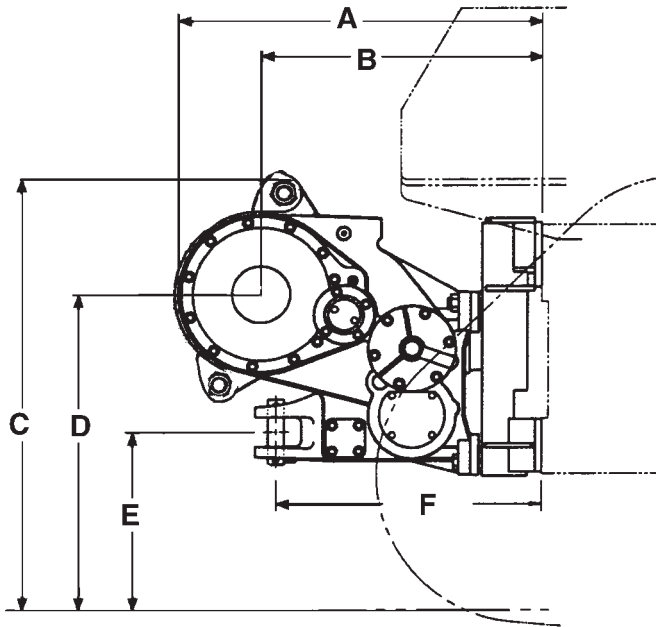
Allied Features:

- **Over 70 years of reliability on Caterpillar tractors** starting with Hyster winches. Allied acquired Hyster winches and continues with the design and tradition. Existing dealer parts inventory will support the thousands of Allied/Hyster winches in the field.
- **Electronic Control** available for all models for precise speed control. Simple plug-in connection makes installation easy.
- **Self-Contained Hydraulics (SCH) design.** All hoses, pump and valve are inside winch frame, totally eliminating external leakage. Installation is a simple task of a few hours.
- **Full line of power take-off (PTO) driven winch** available for D5N, D6N, D6R, D6G, D7G, D7R, D8R/D8T, D9R/D9T and D10T. PTO-driven winches deliver virtually full engine horsepower for heavy-duty pull. As much as four times more powerful than hydraulic winches driven by auxiliary ripper circuit. Hydrostatic winch is also available.
- **Fabricated steel frame** withstands tough conditions. Easy to weld on attachments, and easy to repair.
- **Standard equipment:**
 - Multiple-disk oil clutches and brake are constantly oil-cooled for long life.
 - Adjustable freespool drag to allow cable to be pulled easily by hand.
 - Heavy-duty drawbar provides an additional hitch for pulling.
 - Brake-off (half-brake) design keeps cable tight to prevent cable bird-nesting.
 - Power reel-in and power reel-out.
- **Optional equipment:**
 - Fairlead to handle maximum line pull from all angles. Strong vertical and horizontal rollers reduce cable wear to extend cable life.
 - Arch works like a raised fairlead to lift logs off ground for efficient log skidding. Vertical and horizontal rollers extend cable life.
 - Choice of standard gear ratio for fast operation in logging, and slow speed gear ratio for fine speed control in pipelaying and construction applications.



WINCH MODEL	PA40VS			
TRACTOR MODEL	D3G, D4G		D5G	
Transmission	Hydrostatic		Hydrostatic	
A Tractor to rear of winch	705 mm	2'4"	705 mm	2'4"
B Tractor to drum centerline	476 mm	1'7"	476 mm	1'7"
C Ground to top of winch	1315 mm	4'4"	1325 mm	4'4"
D Ground to drum centerline	947 mm	3'1"	957 mm	3'2"
E Ground to center of hitch	448 mm	1'6"	458 mm	1'6"
F Tractor to pin centerline	365 mm	1'2"	365 mm	1'2"
Overall width (not shown)	741 mm	2'5"	741 mm	2'5"
Drum diameter (not shown)	254 mm	10"	254 mm	10"
Weight*	685 kg	1510 lb	685 kg	1510 lb
Oil refill capacity (gear train)	4.3 L	4.5 qts	4.3 L	4.5 qts
Wire rope diameter:				
Recommended	16 mm	0.625"	16 mm	0.625"
Optional	19 mm	0.75"	19 mm	0.75"
Drum capacity:				
Recommended rope	113 m	371'0"	113 m	371'0"
Optional rope	78 m	257'0"	78 m	257'0"
Wire rope ferrule size (length)	54 × 65 mm	2.12 × 2.56"	54 × 65 mm	2.12 × 2.56"

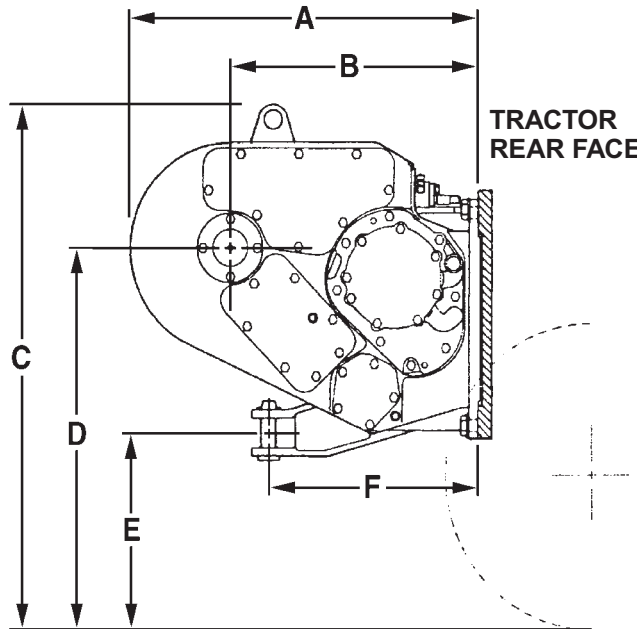
*Operating weight includes weight of installation arrangement and auxiliary pump drive.



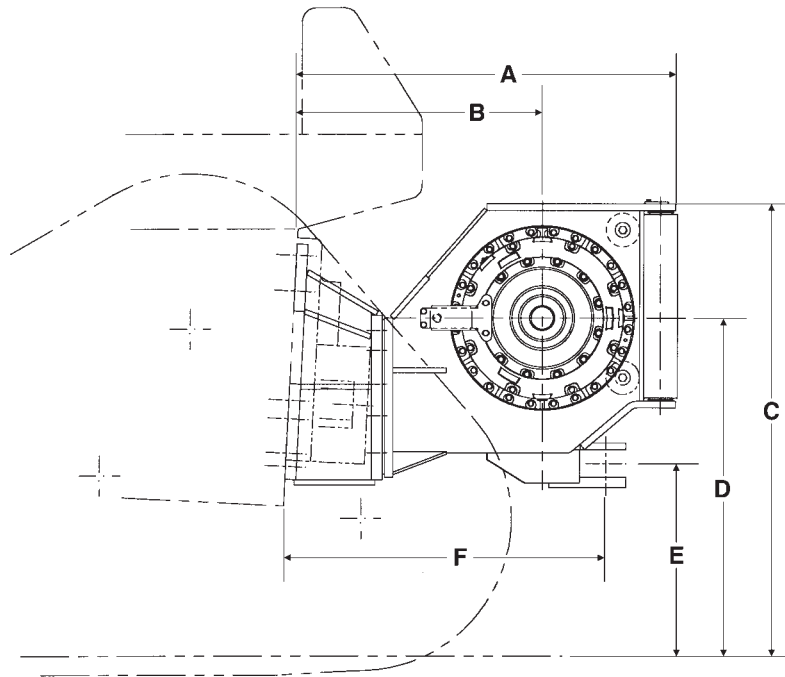
WINCH MODEL	PA55							
TRACTOR MODEL	D5N XL		D5N LGP		D6N XL		D6N LGP	
Transmission	Powershift		Powershift		Powershift		Powershift	
Winch drive	PTO		PTO		PTO		PTO	
A Tractor to rear of winch	1145 mm	3'9.1"	1145 mm	3'9.1"	1145 mm	3'9.1"	1145 mm	3'9.1"
B Tractor to drum centerline	890 mm	2'11.1"	890 mm	2'11.1"	890 mm	2'11.1"	890 mm	2'11.1"
C Ground to top of winch	1330 mm	4'4.3"	1380 mm	4'6.3"	1395 mm	4'7"	1510 mm	4'11.5"
D Ground to drum centerline	960 mm	3'1.8"	1010 mm	3'3.8"	1030 mm	3'4.5"	1145 mm	3'9"
E Ground to center of hitch	525 mm	1'8.7"	575 mm	1'10.7"	595 mm	1'11.4"	710 mm	2'3.9"
F Tractor to pin centerline	845 mm	2'9.2"	845 mm	2'9.2"	845 mm	2'9.2"	845 mm	2'9.2"
Overall width* (not shown)	975 mm	3'2.3"	975 mm	3'2.3"	975 mm	3'2.3"	975 mm	3'2.3"
Drum diameter (not shown)	255 mm	10"	255 mm	10"	255 mm	10"	255 mm	10"
Weight**	1180 kg	2600 lb	1180 kg	2600 lb	1180 kg	2600 lb	1180 kg	2600 lb
Oil refill capacity	74 L	19.5 U.S. gal	74 L	19.5 U.S. gal	74 L	19.5 U.S. gal	74 L	19.5 U.S. gal
Wire rope diameter:								
Recommended	19 mm	0.75"	19 mm	0.75"	19 mm	0.75"	19 mm	0.75"
Optional	22 mm	0.88"	22 mm	0.88"	22 mm	0.88"	22 mm	0.88"
Drum capacity:								
Recommended rope	122 m	400'0"	122 m	400'0"	122 m	400'0"	122 m	400'0"
Optional rope	88 m	290'0"	88 m	290'0"	88 m	290'0"	88 m	290'0"
Wire rope ferrule size (length)	54 ×	2.1 ×	54 ×	2.1 ×	54 ×	2.1 ×	54 ×	2.1 ×
	65 mm	2.63"	65 mm	2.63"	65 mm	2.63"	65 mm	2.63"

*Width does not include mounting brackets/adapters (if any).

**Weight shown includes installation arrangement and oil but does not include wire rope.



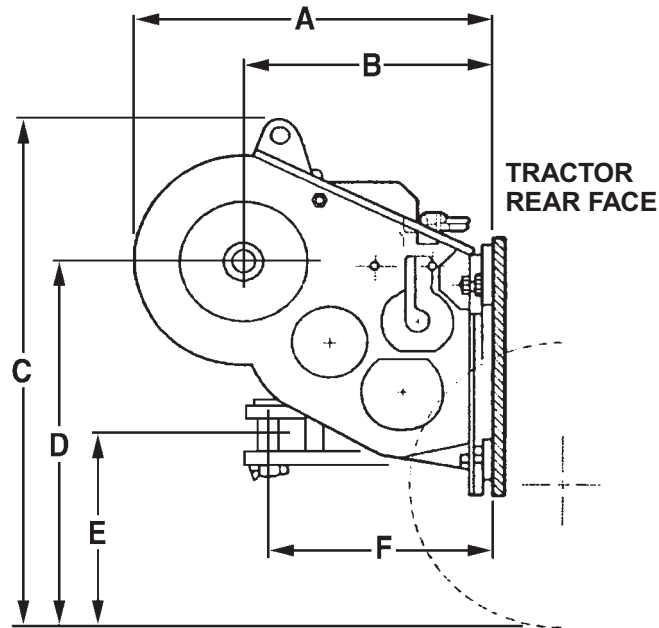
WINCH MODEL	W5C					
	D5N XL		D5N LGP		D6N XL	
Transmission	Powershift		Powershift & Direct Drive			
A Tractor to rear of winch	1041 mm	3'5"	1041 mm	3'5"	1041 mm	3'5"
B Tractor to drum centerline	813 mm	2'8"	813 mm	2'8"	813 mm	2'8"
C Ground to top of winch	1219 mm	4'0"	1270 mm	4'2"	1287 mm	4'3"
D Ground to drum centerline	914 mm	3'0"	965 mm	3'2"	982 mm	3'3"
E Ground to center of hitch	508 mm	1'8"	559 mm	1'10"	576 mm	1'11"
F Tractor to pin centerline	711 mm	2'4"	711 mm	2'4"	711 mm	2'4"
Overall width (not shown)	813 mm	2'8"	813 mm	2'8"	813 mm	2'8"
Drum diameter (not shown)	217 mm	8.56"	217 mm	8.56"	217 mm	8.56"
Weight	953 kg	2100 lb	953 kg	2100 lb	953 kg	2100 lb
Oil refill capacity	49 L	13 U.S. gal	49 L	13 U.S. gal	49 L	13 U.S. gal
Wire rope diameter:						
Recommended	19 mm	0.75"	19 mm	0.75"	19 mm	0.75"
Optional	22 mm	0.875"	22 mm	0.875"	22 mm	0.875"
Drum capacity:						
Recommended rope	91 m	298'0"	91 m	298'0"	91 m	298'0"
Optional rope	66 m	215'0"	66 m	215'0"	66 m	215'0"
Wire rope ferrule size (length)	51 × 57 mm	2.0 × 2.25"	51 × 57 mm	2.0 × 2.25"	51 × 57 mm	2.0 × 2.25"



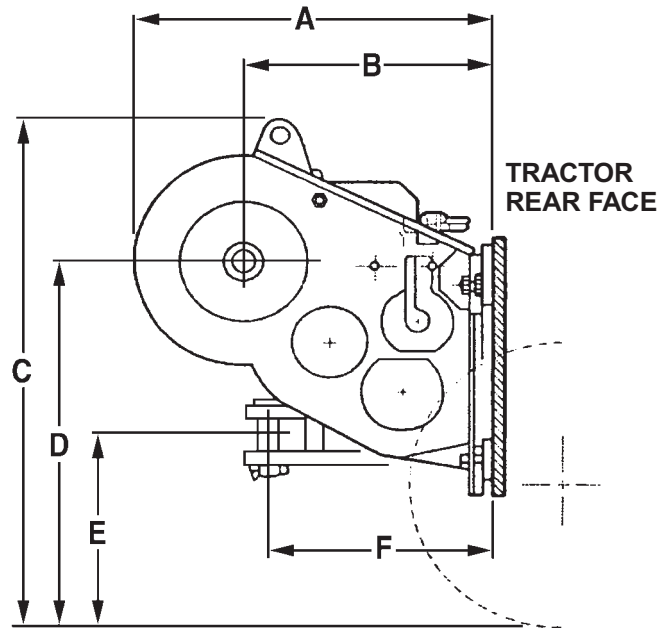
WINCH MODEL	PA56		PA57G		PA80	
TRACTOR MODEL	D6G	D6R Series III	D7G	D7G	D7G	D7G
Transmission	Powershift		—		Powershift	
Winch drive	PTO		—		PTO	
A Tractor to rear of winch	950 mm	1200 mm	973 mm	950 mm	950 mm	950 mm
B Tractor to drum centerline	695 mm	945 mm	693 mm	695 mm	695 mm	695 mm
C Ground to top of winch	1430 mm	1475 mm	1570 mm	1515 mm	1515 mm	1515 mm
D Ground to drum centerline	1065 mm	1110 mm	1176 mm	1145 mm	1145 mm	1145 mm
E Ground to center of hitch	630 mm	680 mm	610 mm	710 mm	710 mm	710 mm
F Tractor to pin centerline	650 mm	915 mm	752 mm	650 mm	650 mm	650 mm
Overall width* (not shown)	975 mm	975 mm	1148 mm	975 mm	975 mm	975 mm
Drum diameter (not shown)	255 mm	255 mm	305 mm	305 mm	305 mm	305 mm
Weight**	1180 kg	1180 kg	1727 kg	1180 kg	1180 kg	1180 kg
Oil refill capacity	74 L	67 L	75 L	74 L	74 L	74 L
	19.5	17.75	20	19.5	19.5	19.5
	U.S. gal	U.S. gal	U.S. gal	U.S. gal	U.S. gal	U.S. gal
Wire rope diameter:						
Recommended	22 mm	22 mm	25 mm	22 mm	22 mm	22 mm
Optional	25 mm	25 mm	29 mm	25 mm	25 mm	25 mm
Drum capacity:						
Recommended rope	88 m	88 m	73 m	88 m	88 m	88 m
Optional rope	67 m	67 m	58 m	67 m	67 m	67 m
Wire rope ferrule size (length)	54 ×	54 ×	60 ×	54 ×	54 ×	54 ×
	2.1 ×	2.1 ×	2.38 ×	2.1 ×	2.1 ×	2.1 ×
	65 mm	65 mm	70 mm	65 mm	65 mm	65 mm
	2.63"	2.63"	2.75"	2.63"	2.63"	2.63"

*Width does not include mounting brackets/adapters (if any).

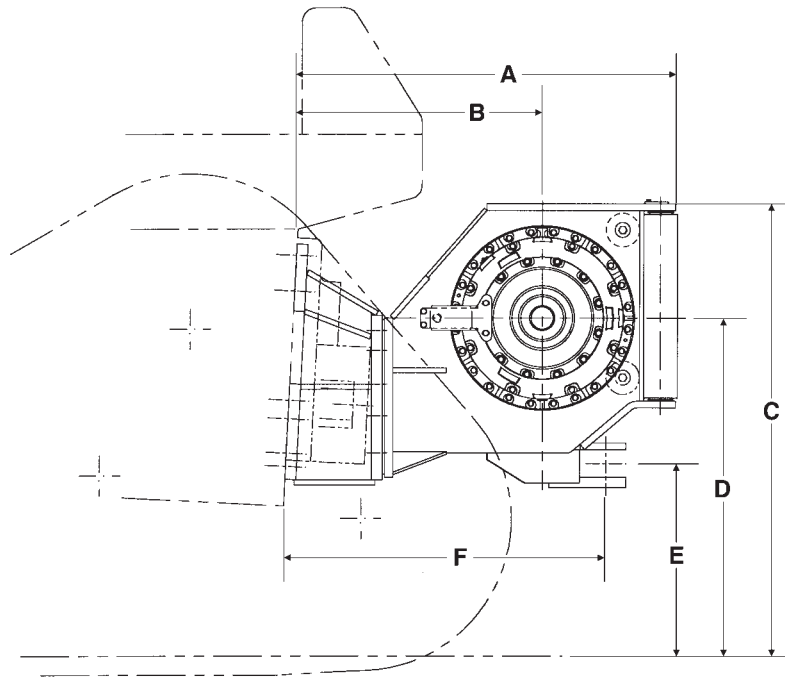
**Weight shown includes installation arrangement and oil but does not include wire rope.



WINCH MODEL	W6G					
	D6G		D6N		D6R	
A Tractor to rear of winch	965 mm	3'2"	1194 mm	3'11"	1270 mm	4'2"
B Tractor to drum centerline	686 mm	2'3"	940 mm	3'1"	991 mm	3'3"
C Ground to top of winch	1524 mm	5'0"	1473 mm	4'10"	1524 mm	5'0"
D Ground to drum centerline	1143 mm	3'9"	1092 mm	3'7"	1143 mm	3'9"
E Ground to center of hitch	686 mm	2'3"	457 mm	1'6"	686 mm	2'3"
F Tractor to pin centerline	635 mm	2'1"	889 mm	2'11"	940 mm	3'1"
Overall width (not shown)	991 mm	3'3"	991 mm	3'3"	991 mm	3'3"
Drum diameter (not shown)	254 mm	10"	254 mm	10"	254 mm	10"
Weight	1134 kg	2500 lb	1406 kg	3100 lb	1406 kg	3100 lb
Oil refill capacity	72 L	19 U.S. gal	72 L	19 U.S. gal	72 L	19 U.S. gal
Wire rope diameter:						
Recommended	22 mm	0.88"	22 mm	0.88"	22 mm	0.88"
Optional	25 mm	1"	25 mm	1"	25 mm	1"
Drum capacity:						
Recommended rope	87 m	287'0"	87 m	287'0"	87 m	287'0"
Optional rope	68 m	223'0"	68 m	223'0"	68 m	223'0"
Wire rope ferrule size (length)	51 × 57 mm	2.0 × 2.25"	51 × 57 mm	2.0 × 2.25"	51 × 57 mm	2.0 × 2.25"



WINCH MODEL	W8L					
	D7G		D7R		D8R/D8T	
A Tractor to rear of winch	864 mm	2'10"	1245 mm	4'1"	1245 mm	4'1"
B Tractor to drum centerline	584 mm	1'11"	965 mm	3'2"	965 mm	3'2"
C Ground to top of winch	1575 mm	5'2"	1600 mm	5'3"	1727 mm	5'8"
D Ground to drum centerline	1194 mm	3'11"	1219 mm	4'0"	1346 mm	4'5"
E Ground to center of hitch	559 mm	1'10"	610 mm	2'0"	737 mm	2'5"
F Tractor to pin centerline	686 mm	2'3"	1067 mm	3'6"	1067 mm	3'6"
Overall width (not shown)	1041 mm	3'5"	1041 mm	3'5"	1041 mm	3'5"
Drum diameter (not shown)	305 mm	12"	305 mm	12"	305 mm	12"
Weight	1270 kg	2800 lb	1543 kg	3400 lb	1725 kg	3800 lb
Oil refill capacity	79 L	21 U.S. gal	79 L	21 U.S. gal	79 L	21 U.S. gal
Wire rope diameter:						
Recommended	25 mm	1"	25 mm	1"	25 mm	1"
Optional	29 mm	1.13"	29 mm	1.13"	29 mm	1.13"
Drum capacity:						
Recommended rope	84 m	275'0"	84 m	275'0"	84 m	275'0"
Optional rope	67 m	220'0"	67 m	220'0"	67 m	220'0"
Wire rope ferrule size (length)	57 × 60 mm	2.25 × 2.38"	57 × 60 mm	2.25 × 2.38"	57 × 60 mm	2.25 × 2.38"

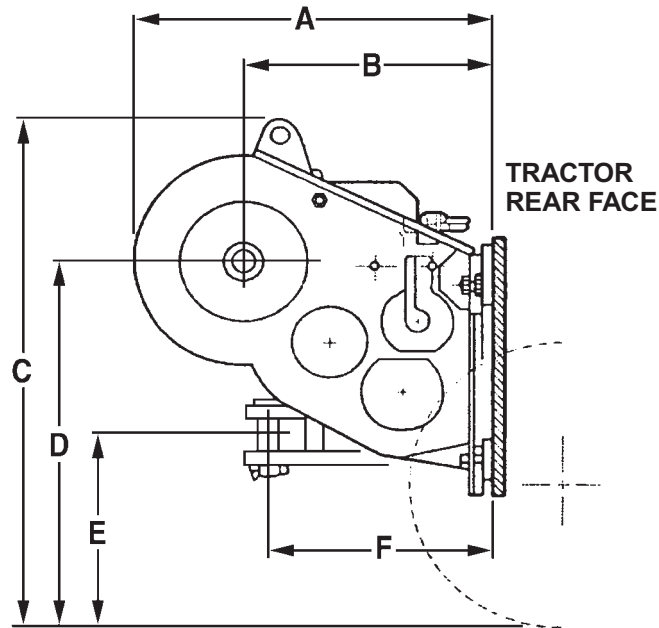


WINCH MODEL	H70VS		PA110BVS		PA140VS			
TRACTOR MODEL	D6R Series III		D7R Series II		D8R/D8T		D9R/D9T	
Winch drive	Hydraulic		Hydraulic		Hydraulic		Hydraulic	
A Tractor to rear of winch	1380 mm	4'6.4"	1435 mm	4'8.5"	1430 mm	4'8.4"	1550 mm	5'1.1"
B Tractor to drum centerline	880 mm	2'10.7"	925 mm	3'0.4"	940 mm	3'1"	1040 mm	3'5"
C Ground to top of winch	1680 mm	5'6.3"	1715 mm	5'7.5"	1710 mm	5'7.4"	1740 mm	5'8.4"
D Ground to drum centerline	1235 mm	3'9.6"	1275 mm	4'2.2"	1275 mm	4'2.1"	1300 mm	4'3.1"
E Ground to center of hitch	670 mm	2'2.4"	725 mm	2'4.5"	720 mm	2'4.4"	745 mm	2'5.4"
F Tractor to pin centerline	1160 mm	3'9.7"	1220 mm	4'0"	1215 mm	3'11.9"	1285 mm	4'2.5"
Overall width* (not shown)	1090 mm	3'7"	1160 mm	3'9.6"	1160 mm	3'9.6"	1160 mm	3'9.6"
Drum diameter (not shown)	320 mm	12.5"	320 mm	12.5"	320 mm	12.5"	320 mm	12.5"
Weight**	1630 kg	3600 lb	1790 kg	950 lb	1790 kg	3950 lb	1790 kg	3950 lb ***
Oil refill capacity	15 L	4 U.S. gal	15 L	4 U.S. gal	15 L	4 U.S. gal	15 L	4 U.S. gal
Wire rope diameter:								
Recommended	25 mm	1"	29 mm	1.13"	29 mm	1.13"	29 mm	1.13"
Optional	29 mm	1.13"	32 mm	1.25"	32 mm	1.25"	32 mm	1.25"
Drum capacity:								
Recommended rope	62 m	203'0"	84 m	276'0"	84 m	276'0"	84 m	276'0"
Optional rope	57 m	187'0"	58 m	193'0"	58 m	193'0"	58 m	193'0"
Wire rope ferrule size (length)	60 ×	2.38 ×	60 ×	2.38 ×	60 ×	2.38 ×	60 ×	2.38 ×
	65 mm	2.56"	70 mm	2.75"	70 mm	2.75"	70 mm	2.75"

*Width does not include mounting brackets/adapters (if any).

**Weight shown includes installation arrangement and oil but does not include wire rope.

***3700 kg (8150 lb) with counterweight.



WINCH MODEL	W12E					
	D8R/D8T		D9R/D9T		D10T	
A Tractor to rear of winch	1475 mm	4'10"	1422 mm	4'8"	1422 mm	4'8"
B Tractor to drum centerline	1168 mm	3'10"	1067 mm	3'8"	1067 mm	3'8"
C Ground to top of winch	1727 mm	5'8"	1675 mm	5'6"	2057 mm	6'9"
D Ground to drum centerline	1321 mm	4'4"	1270 mm	4'2"	1651 mm	5'5"
E Ground to center of hitch	660 mm	2'2"	610 mm	2'0"	991 mm	3'3"
F Tractor to pin centerline	1219 mm	4'0"	1219 mm	4'0"	1219 mm	4'0"
Overall width (not shown)	1219 mm	4'0"	1219 mm	4'0"	1219 mm	4'0"
Drum diameter (not shown)	355 mm	14"	355 mm	14"	355 mm	14"
Weight	2860 kg	6300 lb	2860 kg	6300 lb	3766 kg	8300 lb
Oil refill capacity	114 L	30 U.S. gal	114 L	30 U.S. gal	114 L	30 U.S. gal
Wire rope diameter:						
Recommended	29 mm	1.13"	29 mm	1.13"	29 mm	1.13"
Optional	32 mm	1.25"	32 mm	1.25"	32 mm	1.25"
Drum capacity:						
Recommended rope	69 m	228'0"	69 m	228'0"	69 m	228'0"
Optional rope	55 m	181'0"	55 m	181'0"	55 m	181'0"
Wire rope ferrule size (length)	57 × 60 mm	2.25 × 2.38"	57 × 60 mm	2.25 × 2.38"	57 × 60 mm	2.25 × 2.38"

WINCH MODEL		PA40VS	H70VS	PA110BVS	
TRACTOR MODEL		D3G, D4G, D5G	D6R Series III	D7R Series II	D7R Series II
British Units of Measure					
Transmission		Hydrostatic	Powershift D/S	Powershift D/S	Powershift C/B
Winch Drive		Hydrostatic	Hydraulic	Hydraulic	Hydraulic
Bare Drum	Maximum line pull ⁽¹⁾	40,000	90,000	110,000	101,200
	Rated line speed ⁽²⁾	—	54	33	30
	Maximum line speed ⁽³⁾	132	87	100	68
Full Drum	Maximum line pull ⁽¹⁾	25,000	56,600	73,600	65,400
	Rated line speed ⁽²⁾	—	85	52	47
	Maximum line speed ⁽³⁾	207	139	154	103
Metric Units of Measure					
Bare Drum	Maximum line pull ⁽¹⁾	18 140	40 800	49 900	45 900
	Rated line speed ⁽²⁾	—	16	10	9
	Maximum line speed ⁽³⁾	40	26	30	21
Full Drum	Maximum line pull ⁽¹⁾	11 340	25 650	33 400	29 650
	Rated line speed ⁽²⁾	—	26	16	14
	Maximum line speed ⁽³⁾	63	42	47	31

⁽¹⁾Maximum line pull⁽¹⁾ is lesser of winch catalog rating or predicted line pull at maximum tractor hydraulic system pressure.

⁽²⁾Rated line speed⁽²⁾ is actual line speed at maximum line pull.

⁽³⁾Maximum line speed⁽³⁾ is no-load speed at maximum tractor hydraulic system flow.

⁽⁴⁾Hydraulic winch line pull ratings are based on gear train mechanical efficiency of 91%.

WINCH MODEL		PV140VS			
TRACTOR MODEL		D8R	D8T	D9R	D9T
British Units of Measure					
Transmission		Powershift	Powershift	Powershift	Powershift
Winch Drive		Hydraulic	Hydraulic	Hydraulic	Hydraulic
Bare Drum	Maximum line pull ⁽¹⁾	140,000	140,000	140,000	140,000
	Rated line speed ⁽²⁾	23	23	24	23
	Maximum line speed ⁽³⁾	47	46	49	46
Full Drum	Maximum line pull ⁽¹⁾	90,300	90,300	96,200	98,000
	Rated line speed ⁽²⁾	37	36	38	36
	Maximum line speed ⁽³⁾	73	71	76	71
Metric Units of Measure					
Bare Drum	Maximum line pull ⁽¹⁾	63 500	63 500	63 500	63 500
	Rated line speed ⁽²⁾	7	7	7	7
	Maximum line speed ⁽³⁾	14	14	15	14
Full Drum	Maximum line pull ⁽¹⁾	40 950	40 950	43 600	44 450
	Rated line speed ⁽²⁾	11	11	12	11
	Maximum line speed ⁽³⁾	22	22	23	22

⁽¹⁾Maximum line pull⁽¹⁾ is lesser of winch catalog rating or predicted line pull at maximum tractor hydraulic system pressure.

⁽²⁾Rated line speed⁽²⁾ is actual line speed at maximum line pull.

⁽³⁾Maximum line speed⁽³⁾ is no-load speed at maximum tractor hydraulic system flow.

⁽⁴⁾Hydraulic winch line pull ratings are based on gear train mechanical efficiency of 91%.

WINCH MODEL		PA55		PA56		PA80
TRACTOR MODEL		D5N	D6N	D6G	D6R Series III	D7G
British Units of Measure						
<i>Standard speed gearing</i>						
Transmission		Powershift	Powershift	Powershift	Powershift	Powershift
Winch Drive		PTO	PTO	PTO	PTO	PTO
Bare Drum	Rated line pull ⁽¹⁾lb	31,600	36,600	58,700	59,100	45,100
	Maximum line pull ⁽²⁾lb	64,200	69,200	89,800	89,800	86,900
	Rated line speed ⁽³⁾fpm	85	97	70	80	107
	Maximum line speed ⁽⁴⁾fpm	150	147	132	130	190
Full Drum	Rated line pull ⁽¹⁾lb	18,100	21,000	34,200	34,400	29,900
	Maximum line pull ⁽²⁾lb	36,700	54,100	65,400	76,300	57,500
	Rated line speed ⁽³⁾fpm	148	169	120	136	161
	Maximum line speed ⁽⁴⁾fpm	263	257	226	224	286
<i>Slow speed gearing</i>						
Bare Drum	Rated line pull ⁽¹⁾lb	50,000	50,000	70,000	70,000	—
	Maximum line pull ⁽²⁾lb	69,200	69,200	89,800	89,800	—
	Rated line speed ⁽³⁾fpm	35	40	31	35	—
	Maximum line speed ⁽⁴⁾fpm	63	61	59	58	—
Full Drum	Rated line pull ⁽¹⁾lb	43,300	50,000	70,000	70,000	—
	Maximum line pull ⁽²⁾lb	69,200	69,200	89,800	89,800	—
	Rated line speed ⁽³⁾fpm	62	70	56	63	—
	Maximum line speed ⁽⁴⁾fpm	110	107	104	103	—
Metric Units of Measure						
<i>Standard speed gearing</i>						
Bare Drum	Rated line pull ⁽¹⁾kg	14 350	16 600	26 600	26 800	20 450
	Maximum line pull ⁽²⁾kg	29 100	31 400	40 750	40 750	40 750
	Rated line speed ⁽³⁾mpm	26	30	21	24	33
	Maximum line speed ⁽⁴⁾mpm	46	45	40	40	58
Full Drum	Rated line pull ⁽¹⁾kg	8200	9500	15 500	15 600	13 550
	Maximum line pull ⁽²⁾kg	16 650	24 550	29 650	34 600	26 100
	Rated line speed ⁽³⁾mpm	45	52	37	41	49
	Maximum line speed ⁽⁴⁾mpm	80	78	69	68	87
<i>Slow speed gearing</i>						
Bare Drum	Rated line pull ⁽¹⁾kg	22 650	22 650	31 750	31 750	—
	Maximum line pull ⁽²⁾kg	31 400	31 400	40 750	40 750	—
	Rated line speed ⁽³⁾mpm	11	12	9	11	—
	Maximum line speed ⁽⁴⁾mpm	19	19	18	18	—
Full Drum	Rated line pull ⁽¹⁾kg	19 650	19 650	31 750	31 750	—
	Maximum line pull ⁽²⁾kg	31 400	31 400	40 750	40 750	—
	Rated line speed ⁽³⁾mpm	19	21	17	19	—
	Maximum line speed ⁽⁴⁾mpm	34	33	32	31	—

⁽¹⁾"Rated line pull" is lesser of winch catalog rating or actual line pull at maximum PTO horsepower.
⁽²⁾"Maximum line pull" is lesser of actual line pull at maximum PTO output torque or catalog breaking strength of maximum optional size new IWRC IPS wire rope.
⁽³⁾"Rated line speed" is actual line speed at maximum PTO output horsepower.
⁽⁴⁾"Maximum line speed" is no-load speed at maximum tractor engine rpm.
⁽⁵⁾Mechanical winch line pull ratings are based on gear train mechanical efficiency of 90%.

WINCH MODEL		H4A	W5C	
TRACTOR MODEL		D5N	D5N	D6N
British Units of Measure				
<i>Standard speed gearing</i>				
Winch Drive		HYD	PTO	PTO
Bare Drum	Rated line pulllb	—	46,676	34,474
	Maximum line pulllb	44,000	69,200	69,200
	Rated line speedfpm	—	59	54
	Maximum line speedfpm	85	90	60
Full Drum	Rated line pulllb	—	25,265	18,660
	Maximum line pulllb	25,475	54,800	69,200
	Rated line speedfpm	—	108	101
	Maximum line speedfpm	148	166	112
<i>Slow/Low speed gearing</i>				
Bare Drum	Rated line pulllb	—	69,200	—
	Maximum line pulllb	—	69,200	—
	Rated line speedfpm	—	39	—
	Maximum line speedfpm	—	59	—
Full Drum	Rated line pulllb	—	33,137	—
	Maximum line pulllb	—	69,200	—
	Rated line speedfpm	—	72	—
	Maximum line speedfpm	—	110	—
Tractor rating		—	115 hp @ 1560 rpm	140 hp @ 2200 rpm
Metric Units of Measure				
<i>Standard speed gearing</i>				
Bare Drum	Rated line pullkg	—	21 172	15 637
	Maximum line pullkg	19 958	31 389	31 389
	Rated line speedmpm	—	18	16
	Maximum line speedmpm	25.9	27	18
Full Drum	Rated line pullkg	—	11 460	8464
	Maximum line pullkg	11 555	24 857	31 389
	Rated line speedmpm	—	33	31
	Maximum line speedmpm	45.1	51	34
<i>Slow/Low speed gearing</i>				
Bare Drum	Rated line pullkg	—	31 389	—
	Maximum line pullkg	—	31 389	—
	Rated line speedmpm	—	12	—
	Maximum line speedmpm	—	18.0	—
Full Drum	Rated line pullkg	—	15 031	—
	Maximum line pullkg	—	31 389	—
	Rated line speedmpm	—	22	—
	Maximum line speedmpm	—	34	—
Tractor rating		—	86 kW @ 1560 rpm	104 kW @ 2200 rpm

WINCH MODEL		W6G		
TRACTOR MODEL		D6G	D6N	D6R
British Units of Measure				
<i>Standard speed gearing</i>				
Winch Drive		PTO	PTO	PTO
Bare Drum	Rated line pulllb	45,013	15,404	50,544
	Maximum line pulllb	89,800	89,800	89,800
	Rated line speedfpm	85	138	79
	Maximum line speedfpm	141	156	145
Full Drum	Rated line pulllb	24,757	8472	27,799
	Maximum line pulllb	54,683	49,669	56,765
	Rated line speedfpm	154	251	144
	Maximum line speedfpm	257	284	264
<i>Slow/Low speed gearing</i>				
Bare Drum	Rated line pulllb	89,800	52,374	89,800
	Maximum line pulllb	89,800	89,800	89,800
	Rated line speedfpm	25	41	23
	Maximum line speedfpm	42	46	43
Full Drum	Rated line pulllb	84,175	28,806	89,800
	Maximum line pulllb	89,800	89,800	89,800
	Rated line speedfpm	45	74	46
	Maximum line speedfpm	76	84	78
Tractor rating		155 hp @ 1900 rpm	158 hp @ 2160 rpm	165 hp @ 1800 rpm
Metric Units of Measure				
<i>Standard speed gearing</i>				
Bare Drum	Rated line pullkg	20 418	6987	22 926
	Maximum line pullkg	40 733	40 733	40 733
	Rated line speedmpm	25.9	42	24.1
	Maximum line speedmpm	43.0	48	44.2
Full Drum	Rated line pullkg	11 230	3843	12 609
	Maximum line pullkg	24 804	22 529	25 748
	Rated line speedmpm	46.9	77	43.9
	Maximum line speedmpm	78.3	87	80.5
<i>Slow/Low speed gearing</i>				
Bare Drum	Rated line pullkg	40 733	23 756	40 733
	Maximum line pullkg	40 733	40 733	40 733
	Rated line speedmpm	7.6	12	7.0
	Maximum line speedmpm	12.8	14.0	13.1
Full Drum	Rated line pullkg	38 181	13 066	40 733
	Maximum line pullkg	40 733	40 733	40 733
	Rated line speedmpm	13.7	23	14.0
	Maximum line speedmpm	23.2	26	23.8
Tractor rating		116 kW @ 1900 rpm	118 kW @ 2160 rpm	123 kW @ 1800 rpm

WINCH MODEL		W8L		
TRACTOR MODEL		D7G	D7R	D8R/D8T
British Units of Measure				
<i>Standard speed gearing</i>				
Winch Drive		PTO	PTO	PTO
Bare Drum	Rated line pulllb	51,942	57,328	113,000
	Maximum line pulllb	113,000	113,000	113,000
	Rated line speedfpm	97	110	60
	Maximum line speedfpm	166	171	89
Full Drum	Rated line pulllb	31,894	35,745	74,605
	Maximum line pulllb	69,447	78,337	113,000
	Rated line speedfpm	157	176	99
	Maximum line speedfpm	270	274	147
<i>Slow/Low speed gearing</i>				
Bare Drum	Rated line pulllb	98,044	108,209	113,000
	Maximum line pulllb	113,000	113,000	113,000
	Rated line speedfpm	51	58	45
	Maximum line speedfpm	88	90	67
Full Drum	Rated line pulllb	60,202	67,471	99,209
	Maximum line pulllb	113,000	113,000	113,000
	Rated line speedfpm	83	93	75
	Maximum line speedfpm	143	145	110
Tractor rating		200 hp @ 2000 rpm	240 hp @ 2100 rpm	305 hp @ 2100 rpm
Metric Units of Measure				
<i>Standard speed gearing</i>				
Bare Drum	Rated line pullkg	23 560	26 004	51 256
	Maximum line pullkg	51 256	51 256	51 256
	Rated line speedmpm	29.6	33.5	18.3
	Maximum line speedmpm	50.6	52.1	27.1
Full Drum	Rated line pullkg	14 467	16 214	33 840
	Maximum line pullkg	31 501	35 533	51 256
	Rated line speedmpm	47.9	53.6	30.2
	Maximum line speedmpm	82.3	83.5	44.8
<i>Slow/Low speed gearing</i>				
Bare Drum	Rated line pullkg	44 472	49 083	51 256
	Maximum line pullkg	51 256	51 256	51 256
	Rated line speedmpm	15.5	17.7	13.7
	Maximum line speedmpm	26.8	27.4	20.4
Full Drum	Rated line pullkg	27 307	30 604	45 000
	Maximum line pullkg	51 256	51 256	51 256
	Rated line speedmpm	25.3	28.3	22.9
	Maximum line speedmpm	43.6	44.2	33.5
Tractor rating		149 kW @ 2000 rpm	179 kW @ 2100 rpm	231 kW @ 2000 rpm

WINCH MODEL		W12E		
TRACTOR MODEL		D8R/D8T	D9R/D9T	D10T
British Units of Measure				
<i>Standard speed gearing</i>				
Winch Drive		PTO	PTO	PTO
Bare Drum	Rated line pull	95,600	138,800	138,800
	Maximum line pull	138,800	138,800	138,800
	Rated line speed	79	38	40
	Maximum line speed	117	56	58
Full Drum	Rated line pull	61,400	138,800	138,800
	Maximum line pull	138,800	138,800	138,800
	Rated line speed	123	59	62
	Maximum line speed	182	87	91
<i>Slow/Low speed gearing</i>				
Bare Drum	Rated line pull	138,800	—	—
	Maximum line pull	138,800	—	—
	Rated line speed	45	—	—
	Maximum line speed	66	—	—
Full Drum	Rated line pull	109,000	—	—
	Maximum line pull	138,800	—	—
	Rated line speed	69	—	—
	Maximum line speed	102	—	—
Tractor rating		370 hp @ 2000 rpm	405 hp @ 1900 rpm	570 hp @ 1900 rpm
Metric Units of Measure				
<i>Standard speed gearing</i>				
Bare Drum	Rated line pull	43 363	62 959	62 959
	Maximum line pull	62 959	62 959	62 959
	Rated line speed	24.1	11.6	12.2
	Maximum line speed	35.7	17.1	17.7
Full Drum	Rated line pull	27 851	62 959	62 959
	Maximum line pull	62 959	62 959	62 959
	Rated line speed	37.5	18.0	18.9
	Maximum line speed	55.5	26.5	27.7
<i>Slow/Low speed gearing</i>				
Bare Drum	Rated line pull	62 959	—	—
	Maximum line pull	62 959	—	—
	Rated line speed	13.7	—	—
	Maximum line speed	20.1	—	—
Full Drum	Rated line pull	49 442	—	—
	Maximum line pull	62 959	—	—
	Rated line speed	21.0	—	—
	Maximum line speed	31.1	—	—
Tractor rating		231 kW @ 2000 rpm	302 kW @ 1900 rpm	425 kW @ 1900 rpm

MOTOR GRADERS

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Industries Served

The motor grader is one of the most versatile work tools in the Caterpillar product line. The H-Series machines are used in numerous applications within a wide range of industries. The major industries using Cat motor graders, along with the typical applications within each, are summarized below.

- **Heavy Construction**
 - Highway Construction
 - Paving/Resurfacing
 - Airport Construction
 - Railroad Construction
 - Dam and Levee Construction
 - Haul Road Maintenance
- **Governmental**
 - Road Maintenance
 - Road Construction
 - Ditch Building/Cleaning
 - Snow Removal
- **Building Construction**
 - Residential Construction
 - Commercial Construction
 - Industrial Construction
 - Sewer and Water Systems
- **Industrial**
 - Waste Disposal
 - Pipeline Construction

- **Mining**
 - Haul Road Maintenance
 - Snow Removal
- **Forestry**
 - Access Road Construction
 - Forest Development
 - Snow Removal
 - Haul Road Maintenance

Features, H-Series Motor Graders:

- **Geographic Versions** — The H-Series was specifically designed to meet the needs of different geographic regions. Standard and Global Versions are available with an assortment of standard features and optional equipment. All motor graders feature advanced electronically controlled Caterpillar engines, power train components, hydraulics and machine structures. The 24H was designed to meet the productivity and durability expectations of Caterpillar mining customers.
- **Power to the Ground** — Proven Caterpillar designed and manufactured components are carefully matched to maximize productivity and efficiency. Caterpillar H-Series engines have excellent lugging performance and fuel economy. Variable Horsepower (VHP) (Global Versions only — standard on models 143H and 163H, optional on all other models) provides more power in gears 4F-8F and 3R-6R to increase productivity and improve gradeability when roading. VHP Plus — provides even more power in gears 4F-6F and 7F-8F. (Optional on 12H, 140H, 143H, 160H and 163H). Engine Power Management (standard on all Global and Standard Versions except 12H) delivers full rated power in gears 4F-8F and 3R-6R. In lower gears, where traction is limited, engine horsepower is automatically reduced, lowering fuel consumption and reducing tire slippage. All models have Caterpillar transmissions that provide on-the-go, full-power shifting and inching capability. Auto-shift is standard equipment on the 24H and optional on certain Global models. In addition, the 24H is equipped with a lockup clutch torque converter which allows the machine to operate in direct drive at high output speeds.

- **Blade Positioning** — The H-Series provides a broad range of extended blade positions particularly beneficial in mid-range bank sloping, ditch cutting and ditch cleaning. A long wheel base allows for an aggressive blade angle permitting material to roll more freely, reducing power requirements.
- **Brakes** — Caterpillar designs and builds multi-disc brakes that are completely sealed, oil-bathed, adjustment-free and offer unmatched reliability and durability. They are located at each tandem wheel to eliminate braking loads on the power train and to speed up servicing. The large brake surface provides dependable braking capability and long life. The 24H brakes are oil-actuated and all other models are air-actuated.
- **Visibility** — Ample glass area and carefully placed components provide excellent visibility to enhance operator confidence and productivity in all motor grader applications. The H-Series gives the operator an exceptional view forward to the blade toe, working surface and front tires. Rearward visibility to the ripper and tandem tires and sideways to the blade heel and front tandem tires is maximized. The slanted rear window and optional sunshade reduce glare.
- **Controllability** — The H-Series features motor grader-specific hydraulic controls providing smooth, predictable response every time a lever is moved. The machines can perform multiple, hydraulic-control operations with little effect on the engine or implement speeds. The result is more production in almost any application. The Proportional, Priority, Pressure-Compensated (PPPC) Hydraulic System is load-sensing and provides hydraulic power on demand, consuming horsepower only when needed. The system provides proportionate flow to each circuit when the system demand exceeds the available flow. Lock valves, built into all control valves, maintain exact cylinder positioning. The implement valves provide superior modulation, system response and predictability.
- **Safety** — The H-Series machines provide a safe working environment for both the operator and ground personnel. ROPS and FOPS structures meeting current SAE and ISO requirements are standard on all Global machines. Back-up alarms are also standard on the Global Version, and all models are equipped with a horn that meets ISO sound requirements. A fully hydraulic power steering system is standard on all models, ensuring precise machine control. Optional secondary steering system, available on all Global Versions (standard on 24H), provides steering if the main hydraulic pump fails. Sturdy, well-placed access steps provide safe entry into the cab, and a cloth contour suspension seat with retractable seat belt (standard on Global Versions) secures the operator once in the cab. The best visibility in the industry allows the operator to see what is happening around the machine. Various work and warning light packages are also available which provide even more visibility for the operator. A circle drive slip clutch, standard on all H-Series models, reduces the possibility of the grader making abrupt directional changes when hidden objects are encountered. Optional blade lift accumulators absorb vertical shocks when immovable objects are encountered, further protecting both the machine and the operator.
- **Operator Comfort** — The H-Series provides a comfortable environment to keep the operator alert and focused. Conveniently located, low-effort controls reduce fatigue. The interior noise level is maintained between 75 and 80 dBA with the doors and windows closed. Other standard and optional operator-comfort features may include (availability dependent on model):
 - key engine start-stop switch
 - pressurized cab
 - air conditioning and heating (16 air vents)
 - fully adjustable Caterpillar Contour Series Seat
 - adjustable steering and implement control console
 - easy-to-see gauges
 - provisions for entertainment and communication radios
 - lunch box location
 - coat hook
 - sweepout cab floor
 - suspended pedals
 - cigarette lighter and ashtray
 - cupholder
 - 12 volt power port
 - lower-opening front windows
 - sliding side windows
 - speedometer/tachometer
 - hour meter
 - defroster fans
 - rear sunshade
 - intermittent wipers

- **Environmental Design** — The H-Series responds to important environmental concerns such as noise and air pollution. Designed with low exterior sound levels and low-emissions engines (except on Standard Version models 12H, 140H and 160H), Caterpillar motor graders are quiet and clean. Low exterior sound levels range from 80 to 84 dBA due to slower engine speeds, underhood mufflers, rubber-mounted engines, transmissions and slower fans. R134a refrigerant is used in the air conditioner. To minimize oil leaks and withstand high working pressures and temperatures, Caterpillar designed, heavy-duty XT hose and O-ring face seals are used.
- **Serviceability** — H-Series motor graders are designed for fast, easy servicing. Easy access to service areas allows for quick maintenance and ensures that routine service is performed on time. Features promoting easy servicing include:
 - Electronic Monitoring System (EMS III on all Global Versions) to alert the operator to potential problems (EMS II on the 24H)
 - easily replaceable wear inserts to keep the drawbar, circle and blade tight and prevent damage to expensive components
 - large, hinged, engine side doors to provide ample access to the engine and transmission service points (optional on Standard Versions)
 - air cleaner located above the engine, accessible from left side
 - hydraulic oil level sight gauge
 - tandem oil level sight gauge (24H)
 - extended oil change interval — 500 hours between engine oil and filter changes
 - sample ports for engine, hydraulic, transmission fluids, coolant and fuel
 - oil sampling capability from tandem and power train systems (24H)
 - clustered lube points located at the bolster, drawbar, articulation joint and ripper for ground-level service (24H)
 - auto-lube option available (24H)
 - diagnostic connectors for Electronic Technician (ET) (excluding 14H and 16H)
 - modular wiring harness
 - engine disconnect switch
 - fuse panel located inside the cab
 - spin on filters
 - lockable battery box cover is easily removed without tools
 - modular powertrain components
 - radiator cleanout access
 - Extended Life Coolant (ELC) extends coolant life to 6000 hours
 - ATAAC (Air to Air Aftercooler)
- **143H and 163H All Wheel Drive Motor Graders** — All Wheel Drive (AWD) improves tractive performance in poor underfoot conditions such as snow, mud and sand. This feature also provides excellent steering and sidedraft control. AWD is available in gears 1F-7F and 1R-5R, making it effective in both low-speed and high-speed applications. VHP is standard (VHP Plus optional) on AWD models and delivers maximum power in all gears when AWD is engaged. Three operating modes are available: automatic, manual or off.
- **24H Motor Grader** — To meet the specialized needs of Caterpillar's large mining customers, the 24H is sized to maintain haul roads for large mining-truck fleets. The Caterpillar 3412E Hydraulic Electronic Unit Injector (HEUI) engine, power train components and machine structures are designed to meet the rigors of this application.
- **Best Product Support** — Caterpillar motor grader users are assured the best product support anywhere in the world. With industry-best parts availability, training and an offering of inspection, maintenance and repair, Caterpillar dealers can provide the support needed to keep the machines productive.

APPLICATIONS

The Caterpillar H-Series line of motor graders consists of 10 different models, ranging from the versatile 120H up to the rugged 24H. This broad line allows the customer to choose a motor grader that best fits the intended application. Below is a summary of the typical motor grader applications.

Finish Grading

This application involves preparing a roadway or site surface for future paving or other construction activity. The material being moved is usually a hard, dry base material on a solid underfoot. Finish blading is the motor grader application that requires the highest degree of accuracy. Thus, it is primarily done at low operating speeds — usually less than 3 mph — in gears 1 and 2. To ensure a smooth, even finished surface, one gear is usually maintained for a given pass. Pass lengths during this application are usually less than 600 m (2000 feet) for road construction and 150 m (500 feet) for site development. Most finish blading is performed by contractors in the Heavy Construction and Building Construction industries.

Heavy Blading

This application involves cutting, moving, and mixing material, usually in the initial stages of surface preparation. A variety of material types are moved in this manner, and the blade tip position varies accordingly. Full blade loads are usually experienced during heavy blading, since moving material is the primary goal. Pass lengths within this application vary, but are usually less than 600 m (2000 feet). Unlike with finish blading, the speed of the machine is dependent on the load being moved when heavy-blading material. Typical operating speeds are from 0-10 km/h (0 to 6 mph). Therefore, gears 2 through 4 are frequently used in this application. Most heavy blading activity is performed by contractors in the Heavy Construction, Governmental, Industrial, and Forestry industries.

Site Preparation

This application involves any material cutting, moving, and mixing necessary to prepare a residential, commercial, or industrial site for construction. A variety of materials are encountered in this application. Blade loads vary depending on the activity being performed. Both heavy blading and

finish blading are performed when preparing a site. Pass lengths are typically in the range of 30-300 m (100 to 1000 feet). Typical operating speeds for site preparation vary depending on whether heavy blading or finish blading activities are being performed. Most site preparation activities are performed by contractors in the Building Construction industry.

Road Maintenance

This application involves reshaping dirt or gravel roads to maintain a crown or superelevation, or restoring the surface itself. This generally involves secondary roads maintained by governmental bodies such as townships and counties. Materials being moved in this application vary from extremely hard dirt bases to moist gravel surfaces. The typical blade load falls between that of finish blading and heavy blading. Pass lengths are frequently longer than 600 m (2000 feet), and can extend for miles. The general speed range for this application is 5-16 km/h (3 to 10 mph), corresponding to gears 2 (heavy dirt) through 5 (soft gravel). As with finish blading, accuracy of the graded surface is the primary concern in this application. Thus, frequent shifts should be avoided whenever possible. A gear should be chosen and maintained unless there is a significant change in the material being moved. Most road maintenance activities are performed by the Governmental industry.

Haul Road Maintenance

This application of the motor grader involves reshaping haul roads at mining, construction, or forestry work sites, usually for the purpose of maintaining smooth travel surfaces for equipment. Materials being moved while maintaining haul roads vary widely depending on the application. Typical blade loads are about one-third to half of full capacity. Some haul roads that experience large hauling units travelling on soft material may require heavy blade loads in order to reshape the road surface. Pass lengths vary depending on the application, but can extend for miles on remote forestry or large mine haul roads. The general speed range for haul road maintenance is heavily dependent on the material being moved as well as the grade of the haul road. Many mine sites are in mountainous areas, requiring haul roads with steep grades. Generally, haul-road maintenance is performed at speeds similar to those required for general road maintenance 5-16 km/h (3 to 10 mph).

A travel surface that allows for the safe and efficient movement of machinery is the ultimate goal with this motor grader application. Very precise roadway elevations and slopes are desired, but are not as crucial as they are when finish blading. Most haul road maintenance activities are performed by the Mining, Heavy Construction, and Forestry industries.

Side/Bank Slope Work

This application involves preparing side slopes or bank slopes along roadways by placing the moldboard on a sloped surface. Slopes of up to a 2:1 angle can be cut using a motor grader. Often the motor grader is operated on the level surface adjacent to the slope, and the moldboard is extended outward to the sloped surface. Fine soils are generally encountered in this application of the motor grader. Blade loads are usually less than half of the full-blade capacity, and pass lengths are seldom longer than 600 m (2000 feet). A smooth-graded sloped surface is the primary concern in this application, so frequent shifts should be avoided. The typical speed range is 0-6 km/h (0 to 4 mph), corresponding to a gear selection of 1 to 3. The nominal speed is heavily dependent on the type of material being moved and on the slope of the surface. Most side/bank slope work is performed by the Heavy Construction and Governmental industries.

Ditch Building/Cleaning

This application involves cutting “V” and flat-bottom ditches for drainage purposes and rebuilding them when necessary. Due to excessive rain and/or poor material, ditches often need cleaning and reshaping. When building ditches, materials with a wide range of densities are encountered. Blade loads vary accordingly, from half to full-blade capacity. Pass lengths are usually less than 600 m (2000 feet). The primary objective is to move material in a manner that yields a ditch with the desired slope. Ditch building often involves cutting and moving material of high density. Therefore, typical speed ranges vary. Most ditch-building work, however, is performed in gears 1 through 3, corresponding to a maximum speed of about 8 km/h (5 mph). Ditch cleaning usually involves blading moist materials underneath a sod cover. Blade loads are usually less than half of full-blade capacity when cleaning ditches, and pass lengths are similar to those encountered in ditch building. Typical maximum speeds for this activity are similar to that of ditch building, but less of a blade load is experienced. Ditch building and cleaning

activities are usually performed by the Heavy Construction and Governmental industries.

Ripping/Scarifying

This application involves conditioning hard, rough soils before they are bladed. Shanks on the ripper and/or scarifier are pushed into the ground, thus breaking up otherwise hard surfaces. Hard materials such as asphalt can also be loosened in order to make grading operations less damaging to the moldboard. Rippers and scarifiers can also be used to mix aggregates together. The materials being ripped/scarified are usually hard and dry. Rippers generally penetrate 150-300 mm (6 to 12 inches) into the ground, while scarifiers typically penetrate to a depth of 25-200 mm (1 to 8 inches). Pass lengths are generally less than 600 m (2000 feet) for both activities.

Since the material being ripped/scarified is generally hard, the typical maximum speed for this application is about 6 km/h (4 mph) gears 1-2. If the ripper/scarifier is used for mixing aggregates, the typical operating range becomes 6-20 km/h (4 to 12 mph) gears 3-6. Most ripping/scarifying activities are performed by the Heavy Construction and Governmental industries.

Snow Removal

Snow removal is the process of cutting and removing snow or ice from the roadway. In addition to the standard motor grader moldboard, other attachments such as a snow wing, V-plow, one-way plow, or reversible plow can be used to remove the snow. The moldboard itself is the most commonly used attachment for snow plowing. It is used in areas where snow depths are low, the terrain is relatively flat, and where excessive drifting does not occur. A snow wing is a moldboard that attaches to the machine's right side. The wing's curvature lifts the snow and “wings” it off the plowed surface. The snow wing is often used in conjunction with the standard moldboard, where the moldboard cuts the material and feeds it onto the wing. V-plows are mounted in front of the motor grader and are designed to dig into and lift packed snow.

The typical speed range for snow removal is 10-30 km/h (6 to 18 mph), corresponding to a gear range of 3 to 7. Snow plowing often involves lower speeds than snow removal. The typical operating range for snow plowing is 8-19 km/h (5 to 12 mph) gears 2 through 4. The majority of Snow Removal/Plowing operations are performed by the Governmental, Mining, and Forestry industries.

Motor Graders Standard Versions

Specifications



MODEL	120H		135H		12H	
Net Flywheel Power: Gears 4-8	104 kW	140 hp	116 kW	155 hp	104 kW	140 hp
Gears 1-3▲	93 kW	125 hp	101 kW	135 hp	104 kW	140 hp
Operating Weight*	11 358 kg	25,040 lb	11 788 kg	25,990 lb	13 077 kg	28,830 lb
Engine Model	3116 DITA		3116 DITA		3306 DINA	
Rated Engine RPM	2000		2000		2000	
No. of Cylinders	6		6		6	
Displacement	6.6 L	403 in³	6.6 L	403 in³	10.45 L	638 in³
Max. Torque Rise	33%		33%		30%	
No. of Speeds Forward/Reverse	8/6		8/6		8/6	
Top Speed: Forward	42.6 km/h	26.5 mph	41.9 km/h	26 mph	41.7 km/h	25.9 mph
Reverse	33.7 km/h	20.9 mph	33.1 km/h	20.6 mph	32.9 km/h	20.5 mph
Std. Tires — Front & Rear	13.00-24 (10 PR) (G-2)		13.00-24 (10 PR) (G-2)		13.00-24 (10 PR) (G-2)	
Front Axle/Steering:						
Oscillation Angle	32°		32°		32°	
Wheel Lean Angle	18°		18°		18°	
Steering Angle	50°		50°		50°	
Articulation Angle	20°		20°		20°	
Minimum Turning Radius**	7.2 m	23'8"	7.2 m	23'8"	7.4 m	24'3"
Front Frame Section Modulus:						
Min.	1619 cm ³	99 in³	1619 cm ³	99 in³	2083 cm ³	127 in³
Max.	3681 cm ³	225 in³	3681 cm ³	225 in³	4785 cm ³	291 in³
No. Circle Support Shoes	4		4		6	
Hydraulics: Pump Type	Axial Piston		Axial Piston		Axial Piston	
Max. Pump Flow	148 L/min	39 gpm	148 L/min	39 gpm	148 L/min	39 gpm
System Capacity	61 L	16 U.S. gal	61 L	16 U.S. gal	73 L	19 U.S. gal
Implement Pressure: Max.	24 150 kPa	3500 psi	24 150 kPa	3500 psi	24 150 kPa	3500 psi
Min.	3100 kPa	450 psi	3100 kPa	450 psi	3100 kPa	450 psi
Electrical:						
System Size	24V		24V		24V	
Std. Battery CCA @ 0° F	750		750		750	
Std. Alternator	35 amp		35 amp		35 amp	
GENERAL DIMENSIONS:						
Height (to top of ROPS)	3.11 m	10'2"	3.11 m	10'2"	3.11 m	10'2"
Height (stripped top)***	2.91 m	9'7"	2.91 m	9'7"	3.05 m	10'0"
Overall Length	8.14 m	26'9"	8.14 m	26'9"	8.45 m	27'9"
With Ripper & Pushplate	9.64 m	31'8"	9.64 m	31'8"	10.01 m	32'10"
Wheelbase	5.87 m	19'3"	5.87 m	19'3"	6.09 m	20'0"
Blade Base	2.60 m	8'6"	2.60 m	8'6"	2.57 m	8'5"
Overall Width (at top of front tires)	2.44 m	8'0"	2.44 m	8'0"	2.44 m	8'0"
Standard Blade: Length	3.66 m	12'0"	3.66 m	12'0"	3.66 m	12'0"
Height	610 mm	2'0"	610 mm	2'0"	610 mm	2'0"
Thickness	22 mm	0.87"	22 mm	0.87"	22 mm	0.87"
Lift Above Ground	457 mm	18"	457 mm	18"	452 mm	18.9"
Max. Shoulder Reach:◀						
Frame Straight	1.84 m	6'0"	1.84 m	6'0"	1.85 m	6'1"
Articulated Position	2.78 m	9'1"	2.78 m	9'1"	2.96 m	9'2"
Fuel Tank Capacity	284 L	75 U.S. gal	284 L	75 U.S. gal	284 L	75 U.S. gal

*Operating Weight — based on standard machine configuration, full fuel tank, coolant, lubricants and operator.

**Minimum Turning Radius — combining the use of articulated frame steering, front wheel steer and unlocked differential.

***Height (stripped top) — without ROPS, exhaust, or other easily removed encumbrances.

◀ Applicable for the standard blade with hydraulic sideshift and tip control. Maximum shoulder reach is obtainable to the right.

▲ Engine Power Management automatically reduces power in gears 1F-3F and 1R-2R.

Specifications

Motor Graders Standard Versions



2

MODEL	140H		160H	
Net Flywheel Power: Gears 4-8	138 kW	185 hp	149 kW	200 hp
Gears 1-3▲	123 kW	165 hp	134 kW	180 hp
Operating Weight*	13 552 kg	29,880 lb	14 416 kg	31,780 lb
Engine Model	3306 DIT		3306 DIT	
Rated Engine RPM	1900		1900	
No. of Cylinders	6		6	
Displacement	10.45 L	638 in ³	10.45 L	638 in ³
Max. Torque Rise	33%		33%	
No. of Speeds Forward/Reverse	8/6		8/6	
Top Speed: Forward	41.1 km/h	25.5 mph	40.7 km/h	25.3 mph
Reverse	32.4 km/h	20.2 mph	32.1 km/h	20 mph
Std. Tires — Front & Rear	14.00-24 (10 PR) (G-2)		14.00-24 (10 PR) (G-2)	
Front Axle/Steering:				
Oscillation Angle	32°		32°	
Wheel Lean Angle	18°		18°	
Steering Angle	50°		50°	
Articulation Angle	20°		20°	
Minimum Turning Radius**	7.4 m	24'3"	7.4 m	24'3"
Front Frame Section Modulus:				
Min.	2083 cm ³	127 in ³	2083 cm ³	127 in ³
Max.	4785 cm ³	291 in ³	4785 cm ³	291 in ³
No. Circle Support Shoes	6		6	
Hydraulics: Pump Type	Axial Piston		Axial Piston	
Max. Pump Flow	155 L/min	40.9 gpm	155 L/min	40.9 gpm
System Capacity	73 L	19 U.S. gal	73 L	19 U.S. gal
Implement Pressure: Max.	24 150 kPa	3500 psi	24 150 kPa	3500 psi
Min.	3100 kPa	450 psi	3100 kPa	450 psi
Electrical:				
System Size	24V		24V	
Std. Battery CCA @ 0° F	750		750	
Std. Alternator	35 amp		35 amp	
GENERAL DIMENSIONS:				
Height (to top of ROPS)	3.12 m	10'3"	3.12 m	10'3"
Height (stripped top)***	3.05 m	10'0"	3.05 m	10'0"
Overall Length	8.49 m	27'10"	8.49 m	27'10"
With Ripper & Pushplate	10.01 m	32'10"	10.01 m	32'10"
Wheelbase	6.09 m	20'0"	6.09 m	20'0"
Blade Base	2.57 m	8'5"	2.52 m	8'3"
Overall Width (at top of front tires)	2.46 m	8'1"	2.46 m	8'1"
Standard Blade: Length	3.66 m	12'0"	4.27 m	14'0"
Height	610 mm	2'0"	686 mm	2'3"
Thickness	22 mm	0.87"	25 mm	1"
Lift Above Ground	480 mm	18.9"	452 mm	17.8"
Max. Shoulder Reach:◀				
Frame Straight	1.85 m	6'1"	1.85 m	6'1"
Articulated Position	2.96 m	9'2"	2.96 m	9'2"
Fuel Tank Capacity	284 L	75 U.S. gal	341 L	90 U.S. gal

*Operating Weight — based on standard machine configuration with full fuel tank, coolant, lubricants and operator.

**Minimum Turning Radius — combining the use of articulated frame steering, front wheel steer and unlocked differential.

***Height (stripped top) — without ROPS, exhaust, or other easily removed encumbrances.

◀ Applicable for the standard blade with hydraulic sideshift and tip control. Maximum shoulder reach is obtainable to the right.

▲ Engine Power Management automatically reduces power in gears 1F-3F and 1R-2R.

Motor Graders Global Versions

Specifications



MODEL	120H		135H		12H	
Net Flywheel Power	93 kW	125 hp	101 kW	135 hp	108 kW	145 hp
Variable Horsepower: Gears 4-8	104 kW	140 hp	116 kW	155 hp	123 kW	165 hp
Variable Horsepower Plus: Gears 7-8	—		—		138 kW	185 hp
Operating Weight*	12 650 kg	27,880 lb	13 080 kg	28,840 lb	14 200 kg	31,320 lb
Engine Model	3126B		3126B		C-9	
Rated Engine RPM	2000		2000		2000	
No. of Cylinders	6		6		6	
Displacement	7.2 L	439 in³	7.2 L	439 in³	8.8 L	537 in³
Max. Torque Rise	50%		50%		50%	
No. of Speeds Forward/Reverse	8/6		8/6		8/6	
Top Speed: Forward	42.6 km/h	26.5 mph	41.9 km/h	26.1 mph	44 km/h	27.4 mph
Reverse	33.7 km/h	20.9 mph	33.1 km/h	20.6 mph	34.7 km/h	21.6 mph
Std. Tires — Front & Rear	13.00-24 (10 PR) (G-2)		13.00-24 (10 PR) (G-2)		13.00-24 (10 PR) (G-2)	
Front Axle/Steering:						
Oscillation Angle	32°		32°		32°	
Wheel Lean Angle	18°		18°		18°	
Steering Angle	50°		50°		50°	
Articulation Angle	20°		20°		20°	
Minimum Turning Radius**	7.3 m	24'0"	7.3 m	24'0"	7.4 m	24'3"
Front Frame Section Modulus:						
Min.	1619 cm ³	99 in³	1619 cm ³	99 in³	2083 cm ³	127 in³
Max.	3681 cm ³	225 in³	3681 cm ³	225 in³	4785 cm ³	291 in³
No. Circle Support Shoes	4		4		6	
Hydraulics: Pump Type	Axial Piston		Axial Piston		Axial Piston	
Max. Pump Flow	148 L/min	39 gpm	148 L/min	39 gpm	196 L/min	51.9 gpm
System Capacity	53 L	14 U.S. gal	53 L	14 U.S. gal	80 L	20.8 U.S. gal
Implement Pressure: Max.	24 150 kPa	3500 psi	24 150 kPa	3500 psi	24 150 kPa	3500 psi
Min.	3100 kPa	450 psi	3100 kPa	450 psi	3100 kPa	450 psi
Interior Sound Level/SAE J919	75 dBA		75 dBA		75 dBA	
Electrical:						
System Size	24V		24V		24V	
Std. Battery CCA @ 0° F	750		750		750	
Std. Alternator	50 amp		50 amp		35 amp	
GENERAL DIMENSIONS:						
Height (to top of ROPS)	3.11 m	10'2"	3.11 m	10'2"	3.11 m	10'2"
Height (stripped top)***	2.91 m	9'7"	2.91 m	9'7"	3.04 m	10'0"
Overall Length	8.31 m	27'3"	8.31 m	27'3"	8.57 m	28'1"
With Pushplate	8.55 m	28'0"	8.55 m	28'0"	10.01 m	32'10"▼
Wheelbase	5.92 m	19'5"	5.92 m	19'5"	6.09 m	20'0"
Blade Base	2.60 m	8'6"	2.60 m	8'6"	2.57 m	8'5"
Overall Width (at top of front tires)	2.44 m	8'0"	2.44 m	8'0"	2.44 m	8'0"
Standard Blade: Length	3.66 m	12'0"	3.66 m	12'0"	3.66 m	12'0"
Height	610 mm	2'0"	610 mm	2'0"	610 mm	2'0"
Thickness	22 mm	0.87"	22 mm	0.87"	22 mm	0.87"
Lift Above Ground	457 mm	18"	457 mm	18"	480 mm	18.9"
Max. Shoulder Reach:◀						
Frame Straight	1.91 m	6'3"	1.91 m	6'3"	1.97 m	6'6"
Articulated Position	2.85 m	9'4"	2.85 m	9'4"	2.91 m	9'7"
Fuel Tank Capacity	340 L	90 U.S. gal	340 L	90 U.S. gal	378 L	100 U.S. gal

*Operating Weight — based on standard machine configuration with full fuel tank, coolant, lubricants and operator.

**Minimum Turning Radius — combining the use of articulated frame steering, front wheel steer and unlocked differential.

***Height (stripped top) — without ROPS, exhaust, seat back or other easily removed encumbrances.

◀ Applicable for the standard blade with hydraulic sideshift and tip control. Maximum shoulder reach is obtainable to the right.

▼ Includes optional rear ripper.

Specifications

Motor Graders Global Versions



2

MODEL	140H		143H		160H		163H	
Net Flywheel Power	123 kW	165 hp	123 kW	165 hp	134 kW	180 hp	134 kW	180 hp
Variable Horsepower: Gears 4-8	138 kW	185 hp	138 kW	185 hp	149 kW	200 hp	149 kW	200 hp
Variable Horsepower Plus: Gears 7-8	153 kW	205 hp	153 kW	205 hp	164 kW	220 hp	164 kW	220 hp
Operating Weight*	14 680 kg	32,360 lb	15 270 kg	33,670 lb	15 680 kg	34,560 lb	16 280 kg	35,890 lb
Engine Model	3176C		3176C		3176C		3176C	
Rated Engine RPM	2000		2000		2000		2000	
No. of Cylinders	6		6		6		6	
Displacement	10.3 L	628 in³	10.3 L	628 in³	10.3 L	628 in³	10.3 L	628 in³
Max. Torque Rise	50%		50%		50%		50%	
No. of Speeds Forward/Reverse	8/6		8/6		8/6		8/6	
Top Speed: Forward	44 km/h	27.4 mph	44 km/h	27.4 mph	43.6 km/h	27.1 mph	43.6 km/h	27.1 mph
Reverse	34.7 km/h	21.6 mph	34.7 km/h	21.6 mph	34.4 km/h	21.4 mph	34.4 km/h	21.4 mph
Std. Tires — Front & Rear	14.00-24 (10 PR) (G-2)		14.00-24 (10 PR) (G-2)		14.00-24 (12 PR) (G-2)		14.00-24 (12 PR) (G-2)	
Front Axle/Steering:								
Oscillation Angle	32°		32°		32°		32°	
Wheel Lean Angle	18°		18°		18°		18°	
Steering Angle	50°		50°		50°		50°	
Articulation Angle	20°		20°		20°		20°	
Minimum Turning Radius**	7.5 m	24'7"	7.5 m	24'7"	7.5 m	24'7"	7.5 m	24'7"
Front Frame Section Modulus:								
Min.	2083 cm ³	127 in³	2083 cm ³	127 in³	2083 cm ³	127 in³	2083 cm ³	127 in³
Max.	4785 cm ³	291 in³	4785 cm ³	291 in³	4785 cm ³	291 in³	4785 cm ³	291 in³
No. Circle Support Shoes	6		6		6		6	
Hydraulics: Pump Type	Axial Piston		Axial Piston		Axial Piston		Axial Piston	
Max. Pump Flow	206 L/min	54.4 gpm	206 L/min	54.4 gpm	206 L/min	54.4 gpm	206 L/min	54.4 gpm
System Capacity	80 L	20.8 U.S. gal	98 L	25.5 U.S. gal	80 L	20.8 U.S. gal	98 L	25.5 U.S. gal
Implement Pressure: Max.	24 150 kPa	3500 psi	24 150 kPa	3500 psi	24 150 kPa	3500 psi	24 150 kPa	3500 psi
Min.	3100 kPa	450 psi	3100 kPa	450 psi	3100 kPa	450 psi	3100 kPa	450 psi
Interior Sound Level/SAE J919	75 dBA		77 dBA		75 dBA		77 dBA	
Electrical:								
System Size	24V		24V		24V		24V	
Std. Battery CCA @ 0° F	1100		1100		1100		1100	
Std. Alternator	75 amp		75 amp		75 amp		75 amp	
GENERAL DIMENSIONS:								
Height (to top of ROPS)	3.12 m	10'3"	3.12 m	10'3"	3.12 m	10'3"	3.12 m	10'3"
Height (stripped top)***	3.04 m	10'0"	3.04 m	10'0"	3.04 m	10'0"	3.04 m	10'0"
Overall Length	8.71 m	28'7"	8.71 m	28'7"	8.71 m	28'7"	8.71 m	28'7"
With Ripper & Pushplate	10.1 m	33'1"	10.1 m	33'1"	10.1 m	33'1"	10.1 m	33'1"
Wheelbase	6.17 m	20'3"	6.17 m	20'3"	6.17 m	20'3"	6.17 m	20'3"
Blade Base	2.57 m	8'5"	2.57 m	8'5"	2.52 m	8'3"	2.52 m	8'3"
Overall Width (at top of front tires)	2.46 m	8'1"	2.55 m	8'5"	2.48 m	8'2"	2.55 m	8'5"
Standard Blade: Length	3.66 m	12'0"	3.66 m	12'0"	4.27 m	14'0"	4.27 m	14'0"
Height	610 mm	2'0"	610 mm	2'0"	686 mm	2'3"	686 mm	2'3"
Thickness	22 mm	0.87"	22 mm	0.87"	25 mm	1"	25 mm	1"
Lift Above Ground	480 mm	18.9"	480 mm	18.9"	452 mm	17.8"	452 mm	17.8"
Max. Shoulder Reach:◀								
Frame Straight	1.97 m	6'6"	1.97 m	6'6"	1.96 m	6'5"	1.96 m	6'5"
Articulated Position	2.91 m	9'7"	2.91 m	9'7"	2.90 m	9'6"	2.90 m	9'6"
Fuel Tank Capacity	397 L	105 U.S. gal	397 L	105 U.S. gal	397 L	105 U.S. gal	397 L	105 U.S. gal

***Operating Weight** — based on standard machine configuration with full fuel tank, coolant, lubricants and operator.

****Minimum Turning Radius** — combining the use of articulated frame steering, front wheel steer and unlocked differential.

*****Height (stripped top)** — without ROPS, exhaust, seat back or other easily removed encumbrances.

◀ Applicable for the standard blade with hydraulic sideshift and tip control. Maximum shoulder reach is obtainable to the right.

Motor Graders Global Versions

Specifications



MODEL	14H		16H		24H	
Net Flywheel Power	164 kW	220 hp	198 kW	265 hp	373 kW	500 hp
Variable Horsepower: Gears 4-8	179 kW	240 hp	213 kW	285 hp	—	
Operating Weight*	18 600 kg	41,010 lb	24 740 kg	54,350 lb	61 950 kg	136,610 lb
Engine Model	3176C		3196		3412E HEUI	
Rated Engine RPM	2000		2000		2000	
No. of Cylinders	6		6		12	
Displacement	10.3 L	628 in³	11.9 L	726 in³	27 L	1647 in³
Max. Torque Rise	50%		50%		30%	
No. of Speeds Forward/Reverse	8/8		8/8		6/3	
Top Speed: Forward	46.1 km/h	28.7 mph	48.1 km/h	29.9 mph	37.7 km/h	23.4 mph
Reverse	51.1 km/h	31.8 mph	43.2 km/h	26.9 mph	36.1 km/h	22.4 mph
Std. Tires — Front & Rear	16.00-24 (12 PR) (G-2)		18.00-25 (12 PR) (E-2)		29.5-29	
Front Axle/Steering:						
Oscillation Angle	32°		32°		32°	
Wheel Lean Angle	18°		18°		18°	
Steering Angle	50°		50°		50°	
Articulation Angle	20°		20°		25°	
Minimum Turning Radius**	8 m	26'3"	8.2 m	27'0"	12 m	39'11"
Front Frame Section Modulus:						
Min.	2649 cm ³	162 in³	3746 cm ³	228 in³	9655 cm ³	589 in³
Max.	5091 cm ³	310 in³	8057 cm ³	491 in³	22 490 cm ³	1372 in³
No. Circle Support Shoes	6		6		8	
Hydraulics: Pump Type	Axial Piston		Axial Piston		Axial Piston	
Max. Pump Flow	243 L/min	64.1 gpm	243 L/min	64.1 gpm	508 L/min	134 gpm
System Capacity	125 L	32.5 U.S. gal	130 L	33.8 U.S. gal	250 L	65 U.S. gal
Implement Pressure: Max.	24 150 kPa	3500 psi	24 150 kPa	3500 psi	24 150 kPa	3500 psi
Min.	3100 kPa	450 psi	3100 kPa	450 psi	3100 kPa	450 psi
Interior Sound Level/SAE J919	80 dBA		80 dBA		75 dBA	
Electrical:						
System Size	24V		24V		24V	
Std. Battery CCA @ 0° F	1100		1300		1300	
Std. Alternator	75 amp		75 amp		100 amp	
GENERAL DIMENSIONS:						
Height (to top of ROPS)	3.34 m	10'11"	3.52 m	11'7"	4.35 m	14'3"
Height (stripped top)***	2.85 m	9'4"	3.11 m	10'2"	—	
Overall Length	9.34 m	30'8"	9.99 m	32'9"	14.16 m	46'6"
With Ripper & Pushplate	10.77 m	35'4"	11.62 m	38'2"	15.80 m	51'10"
Wheelbase	6.55 m	21'6"	6.96 m	22'10"	10.23 m	33'7"
Blade Base	2.86 m	9'5"	3.07 m	10'1"	4.08 m	13'4"
Overall Width (at top of front tires)	2.82 m	9'3"	3.08 m	10'1"	4.23 m	13'8"▲
Standard Blade: Length	4.27 m	14'0"	4.88 m	16'0"	7.32 m	24'0"
Height	686 mm	2'3"	787 mm	2'7"	1067 mm	3'6"
Thickness	25 mm	1"	25 mm	1"	51 mm	2"
Lift Above Ground	419 mm	16.5"	419 mm	16.5"	634 mm	25"
Max. Shoulder Reach:◀						
Frame Straight	2.08 m	6'10"	2.31 m	7'7"	3.22 m	10'7"
Articulated Position	3.07 m	10'1"	3.37 m	11'1"	5.05 m	16'7"
Fuel Tank Capacity	416 L	110 U.S. gal	492 L	130 U.S. gal	1207 L	319 U.S. gal

*Operating Weight — based on standard machine configuration with full fuel tank, coolant, lubricants and operator. 24H includes ripper.

**Minimum Turning Radius — combining the use of articulated frame steering, front wheel steer and unlocked differential.

***Height (stripped top) — without ROPS, exhaust, seat back or other easily removed encumbrances.

◀ Applicable for the standard blade with hydraulic sideshift and tip control. Maximum shoulder reach is obtainable to the right on 14H, both sides on 16H.

▲ Overall width with optional rear fenders 4.22 m (13'10").

- Travel Speeds (All Versions)
- All Wheel Drive
- M10 Scarifiers

Motor Graders

2

TRAVEL SPEEDS @ RATED RPM WITH STD. TIRES (ALL VERSIONS)

Gear		1		2		3		4		5		6		7		8	
		km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
120H	Forward	3.6	2.3	5.0	3.1	7.2	4.5	9.9	6.2	15.7	9.7	21.3	13.2	29.3	18.2	42.6	26.5
	Reverse	2.9	1.8	5.4	3.3	7.8	4.9	12.3	7.7	23.1	14.4	33.7	20.9	—	—	—	—
135H	Forward	3.6	2.3	4.9	3.1	7.2	4.5	9.9	6.2	15.4	9.6	20.9	13.0	28.8	17.9	41.9	26.1
	Reverse	2.9	1.8	5.4	3.3	7.8	4.9	12.1	7.5	23.0	14.3	33.1	20.6	—	—	—	—
12H*	Forward	3.8	2.3	5.1	3.2	7.4	4.6	10.3	6.4	16.2	10.0	22.0	13.7	30.3	18.8	44.0	27.4
	Reverse	3.0	1.8	5.6	3.5	8.1	5.0	12.8	7.9	23.9	14.8	34.7	21.6	—	—	—	—
140H	Forward	3.8	2.3	5.1	3.2	7.4	4.6	10.3	6.4	16.2	10.0	22.0	13.7	30.3	18.8	44.0	27.4
	Reverse	3.0	1.8	5.6	3.5	8.1	5.0	12.8	7.9	23.9	14.8	34.7	21.6	—	—	—	—
143H	Forward	3.8	2.3	5.1	3.2	7.4	4.6	10.3	6.4	16.2	10.0	22.0	13.7	30.3	18.8	44.0	27.4
	Reverse	3.0	1.8	5.6	3.5	8.1	5.0	12.8	7.9	23.9	14.8	34.7	21.6	—	—	—	—
160H	Forward	3.8	2.4	5.1	3.2	7.5	4.7	10.3	6.4	16.0	9.9	21.8	13.5	30.0	18.6	43.6	27.1
	Reverse	3.0	1.9	5.6	3.5	8.1	5.1	12.6	7.9	23.7	14.7	34.4	21.4	—	—	—	—
163H	Forward	3.8	2.4	5.1	3.2	7.5	4.7	10.3	6.4	16.0	9.9	21.8	13.5	30.0	18.6	43.6	27.1
	Reverse	3.0	1.9	5.6	3.5	8.1	5.1	12.6	7.9	23.7	14.7	34.4	21.4	—	—	—	—
14H	Forward	4.0	2.5	5.7	3.5	7.7	4.8	11.1	6.9	16.8	10.4	23.5	14.6	31.9	19.8	46.1	28.7
	Reverse	4.5	2.8	6.3	3.9	8.5	5.3	12.3	7.6	18.6	11.5	26.1	16.2	35.3	21.9	51.1	31.8
16H	Forward	4.2	2.6	5.9	3.7	8.0	5.0	11.6	7.2	17.5	10.9	24.6	15.3	33.2	20.7	48.1	29.9
	Reverse	3.8	2.3	5.3	3.3	7.2	4.5	10.4	6.5	15.7	9.8	22.1	13.7	29.9	18.6	43.2	26.9
24H Wide-based tires	Forward	3.2	2.0	4.9	3.1	8.5	5.3	13.1	8.1	24.3	15.1	37.7	23.4	—	—	—	—
	Reverse	4.7	2.9	12.6	7.8	36.1	22.4	—	—	—	—	—	—	—	—	—	—

*For 12H Standard Version travel speeds, multiply by 0.95.

ALL WHEEL DRIVE (AWD)	143H	163H		
Power with AWD engaged: VHP	149 kW	200 hp	164 kW	220 hp
VHP Plus	164 kW	220 hp	179 kW	240 hp
Working Range:				
Forward Gears	1-7	1-7		
Reverse Gears	1-5	1-5		
Pump Type	Axial Piston	Axial Piston		
System Capacity	175 L/min	46.2 gpm	175 L/min	46.2 gpm
Operating Pressure: Max.	35 000 kPa	5080 psi	35 000 kPa	5080 psi
Min.	5500 kPa	800 psi	5500 kPa	800 psi

M10 — MOUNTED SCARIFIERS	120H, 135H, 12H, 140H, 143H, 160H, 163H			
Type	V	Straight*		
Working Width	1184 mm	46.6"	1800 mm	71"
Depth (Max.)	292 mm	11.5"	317 mm	12.5"
Number of Shank Holders	11		17	
Spacing	116 mm	4.6"	111 mm	4.38"

*Available on Global Versions only.

MOTOR GRADER/ RIPPER	12H/140H/143H/ 160H/163H		14H		16H		24H			
Parallelogram — Rear Mounted	Ripper		Ripper/Scarifier		Ripper		Ripper			
Tire Size (std.) Front & Rear	13.00-24		14.00-24***		16.00-24		18.00-25		29.5-29	
Dimensions:										
Scarifier										
Maximum digging depth	—		411 mm	16.2"	—		—		—	
Number of pockets	—		9		—		—		—	
Spacing	—		267 mm	10.5"	—		—		—	
Ripper Shank										
Maximum digging depth	262 mm	10.3"	462 mm	18.2"	401 mm	15.8"	452 mm	17.8"	490 mm	1'7.3"
Maximum reach at ground line*	1034 mm	3'4.7"	1168 mm	3'10"	1380 mm	4'6.3"	1500 mm	4'11"	1165 mm	3'9.9"
Maximum ground clearance under tip (shank pinned in bottom hole)	652 mm	2'1.6"	521 mm	1'8.5"	663 mm	2'2.1"	673 mm	2'2.5"	739 mm	2'5.1"
Maximum ramp angle, ripper up (shank pinned in bottom hole)	23°		23°		21°		21°		20°	
Shank Section	36 × 76 mm 1.4" × 3"		61 × 140 mm 2.4" × 5.5"		61 × 140 mm 2.4" × 5.5"		76 × 178 mm 3" × 7"		78 × 178 mm 3" × 7"	
Ripper Beam										
Overall Width	2.30 m	7'7"	2.30 m	7'7"	2.60 m	8'6"	2.98 m	9'9"	3.91 m	12'10"
Height	152 mm	6"	152 mm	6"	165 mm	6.5"	214 mm	8.4"	216 mm	8.5"
Length	182 mm	7.2"	229 mm	9"	211 mm	8.3"	254 mm	10"	254 mm	10"
Number of Pockets	5		5		7		7		7	
Pocket Spacing:										
Inside	533 mm	1'9"	533 mm	1'9"	472 mm	1'7"	500 mm	1'8"	593 mm	1'11.4"
Middle	533 mm	1'9"	533 mm	1'9"	373 mm	15"	445 mm	17.5"	604 mm	1'11.8"
Outside	533 mm	1'9"	533 mm	1'9"	373 mm	15"	445 mm	17.5"	604 mm	1'11.8"
Shank Gauge	2.13 m	7'0"	2.13 m	7'0"	2.44 m	8'0"	—		—	
Installed weights:										
Ripper with standard shank	613 kg	1350 lb	1060.5 kg	2336 lb	1542 kg	3399 lb	2177 kg	4799 lb	2812 kg	6186 lb
Each additional shank	11 kg	24 lb	31 kg	68 lb	31 kg	68 lb	68 kg	150 lb	68 kg	150 lb
Ripper Forces ◀										
Penetration Force ◀	4343 kg	9566 lb	8047 kg**	17,740 lb**	10 676 kg	23,541 lb	10 163 kg	22,410 lb	117 720 N	39,987 lb
Pryout Force	2279 kg	5020 lb	9281 kg	20,460 lb	11 804 kg	26,028 lb	15 323 kg	33,788 lb	263 880 N	59,373 lb

*Measured from mounting face on frame.

**Applies to 12H, 140H and 143H. Penetration force for 160H and 163H is 8518 kg (18,780 lb).

***12H std. tire is 13.00-24.

NOTE: See Section 1 for Ripper Tips.

◀This value may vary slightly with various vehicle configurations.

PRODUCTION

The motor grader is used in a variety of applications in a variety of industries. Therefore, there are many ways to measure its operating capacity, or production. One method expresses a motor grader's production in relation to the area covered by the moldboard.

Formula:

$$A = S \times (L_e - L_o) \times 1000 \times E \quad (\text{Metric})$$

$$A = S \times (L_e - L_o) \times 5280 \times E \quad (\text{English})$$

where A: Hourly operating area (m²/h or ft²/h)

S: Operating speed (km/h or mph)

L_e: Effective blade length (m or ft)

L_o: Width of overlap (m or ft)

E: Job efficiency

Operating Speeds:

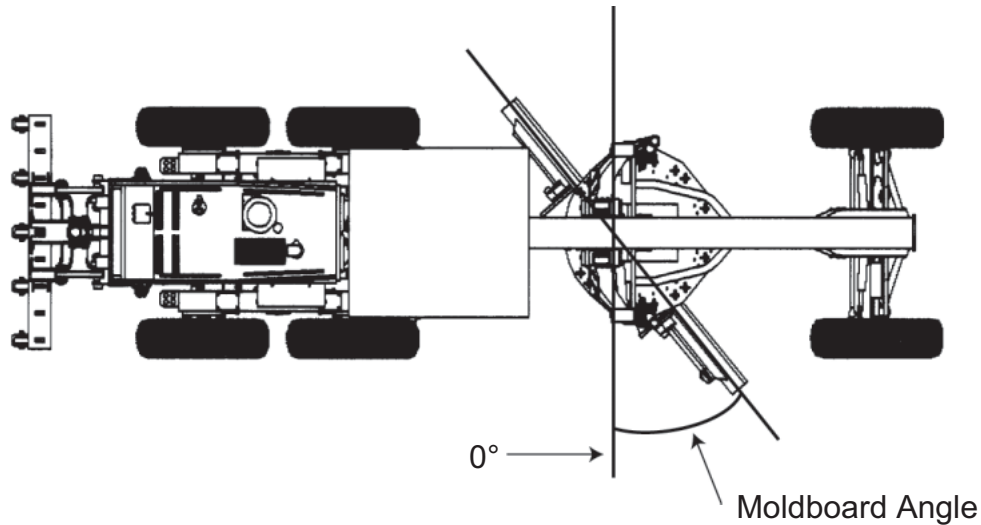
Typical operating speeds by application

Finish Grading:	0-4 km/h	(0-2.5 mph)
Heavy Blading:	0-9 km/h	(0-6 mph)
Ditch Repair:	0-5 km/h	(0-3 mph)
Ripping:	0-5 km/h	(0-3 mph)
Road Maintenance:	5-16 km/h	(3-9.5 mph)
Haul Road Maintenance:	5-16 km/h	(3-9.5 mph)
Snow Plowing:	7-21 km/h	(4-13 mph)
Snow Winging:	15-28 km/h	(9-17 mph)

Effective Blade Length:

Since the moldboard is usually angled when moving material, an effective blade length must be computed to account for this angle. This is the actual width of material swept by the moldboard.

NOTE: Angles are measured as shown below. The effective length becomes shorter as the angle increases.



Moldboard Length, m (ft)	Effective Length, m (ft) 30 degree blade angle	Effective Length, m (ft) 45 degree blade angle
3.658 (12)	3.17 (10.4)	2.59 (8.5)
3.962 (13)	3.43 (11.3)	2.80 (9.2)
4.267 (14)	3.70 (12.1)	3.02 (9.9)
4.877 (16)	4.22 (13.9)	3.45 (11.3)
7.315 (24)	6.33 (20.8)	5.17 (17.0)

For other blade lengths and carry angles:
 Effective length = COS [Radians (Blade L)] × Blade Length

Width of Overlap:

The width of overlap is generally 0.6 m (2.0 ft). This overlap accounts for the need to keep the tires out of the windrow on the return pass.

Job Efficiency:

Job efficiencies vary based on job conditions, operator skill, etc.

A good estimation for efficiency is approximately 0.70 to 0.85, but actual operating conditions should be used to determine the best value.

Example problem:

A 140H motor grader with a 3.66 m (12 ft) moldboard is performing road maintenance on a township road. The machine is working at an average speed of 13 km/h (8 mph) with a moldboard carry angle of 60 degrees. What is the motor grader’s production based on coverage area?

Note: Due to the long passes involved in road maintenance — fewer turnarounds — a higher job efficiency of 0.90 is chosen.

Solution:

From the table, the effective blade length is 3.17 m (10.4 ft).

Metric

$$\begin{aligned} \text{Production, A} &= 13 \text{ km/h} \times (3.17 \text{ m} - 0.6 \text{ m}) \times \\ & \quad 1000 \times 0.90 \\ &= \mathbf{30\ 069 \text{ m}^2/\text{hr} (3.07 \text{ hectares/hr})} \end{aligned}$$

English

$$\begin{aligned} \text{Production, A} &= 8 \text{ mph} \times (10.4 \text{ ft} - 2.0 \text{ ft}) \times \\ & \quad 5280 \times 0.90 \\ &= \mathbf{319,334 \text{ ft}^2/\text{hr} (7.33 \text{ acres/hr})} \end{aligned}$$

Figure 1

MOTOR GRADER COMPARISON in HAUL ROAD MAINTENANCE					Worksheet Variables		
Motor Grader Model	Moderate	Difficult	Moderate	Difficult	Application Variables		
	Cat 16H	Cat 16H	Cat 24H	Cat 24H	Pass Overlap Width (m)	Moldboard Angle	Road Width (m)
Haul Road Length Maintained (meters)	1000	1000	1000	1000	2	36	35
Haul Road Width (meters)	35	35	35	35			
Motor Grader Blade Width (meters)	4.9	4.9	7.3	7.3			
Blade Carry Angle	36	36	36	36			
1st Pass Blade Coverage (meters)	3.9	4.0	5.9	5.9			
Remaining Passes Blade Coverage (meters)	1.9	2.0	3.9	3.9			
Grader Passes Required/Road Width	17	17	8	8			
Maintenance Transmission Gear	3	3	3	3			
Maintenance Speed (kph)	9.0	6.0	10.0	7.0			
Time Analysis:							
Time/Pass (minutes)	6.67	10.00	6.00	8.57			
Maneuver Time/Pass (minutes)	0.50	0.50	0.50	0.50			
Total Time/Pass (minutes)	7.17	10.50	6.50	9.07			
Total Time to Grade Haul Road (hours)	1.91	2.80	0.76	1.06			
Total Time to Grade 1 km (50-min. hour)	2.29	3.36	0.91	1.27			
Road Coverage Requirements							
Coverage Requirement:					Frequency of Maintenance	Percentage	
Total km of Haul Roads	30	30	30	30	Total km of Haul Roads	30	
% Graded One Time Per 14 Shifts (1 week)	10%	10%	10%	10%	Weekly	10%	
% Graded One Time Per 4 Shifts (2 days)	30%	30%	30%	30%	Every other day	30%	
% Graded One Time Per 2 Shifts (1 day)	15%	15%	15%	15%	Daily	15%	
% Graded One Time Per Shift	25%	25%	25%	25%	Once per shift	25%	
% Graded Two Times Per Shift	20%	20%	20%	20%	Twice per shift	20%	
% Graded Three Times Per Shift	0%	0%	0%	0%	Three times per shift	0%	
Total km of Haul Roads/Shift	24.2	24.2	24.2	24.2	Total — must equal 100%	100%	
Working Hours Per Shift	11	11	11	11			
km of Road/Grader/Shift	4.79	3.27	12.08	8.66			
Fleet Requirement:							
"Working" Motor Graders Required/Shift	5.1 to 7.4		2.0 to 2.8				
Motor Grader Mechanical Availability	90%	90%	90%	90%			
Motor Grader Fleet Required (units)	5.6 to 8.2		2.2 to 3.1				

NOTE: The above numbers are generated from the formulas and inputs in figure 2. This is the finished spreadsheet's output when set up according to figure 2.

- Moderate:
- Road Maintenance
 - Pad Cleaning
 - Rock Clearing
 - Shoulder Sweeping

- Difficult:
- Ripping
 - Spreading Dump Material
 - Road Profiling/Reshaping

Figure 2

MOTOR GRADER COMPARISON in HAUL ROAD MAINTENANCE		Worksheet Variables		
	Moderate Cat 16H	Application Variables		
		Pass Overlap Width (m)	Moldboard Angle	Road Width (m)
Motor Grader Model				
Haul Road Length Maintained (meters)	1000			
Haul Road Width (meters)	= \$M\$8	2	36	35
Motor Grader Blade Width (meters)	4.88			
Blade Carry Angle	= \$L\$8			
1st Pass Blade Coverage (meters)	= COS(RADIANS(B10))*B9			
Remaining Passes Blade Coverage (meters)	= B11 – \$J\$8			
Grader Passes Required/Road Width	= ROUND((B8 – B11)/B12,0)			
Maintenance Transmission Gear	3			
Maintenance Speed (kph)	9			
Time Analysis:				
Time/Pass (minutes)	= (+ B7/1000)*(60/B15)			
Maneuver Time/Pass (minutes)	0.5			
Total Time/Pass (minutes)	= SUM(B18:B19)			
Total Time to Grade Haul Road (hours)	= B13*B20/60			
Total Time to Grade 1 km (50-min. hour)	= 1000/B7*B22/0.833			
		Road Coverage Requirements		
		Frequency of Maintenance	Percentage	
Coverage Requirement:				
Total km of Haul Roads	= \$M\$28	Total km of Haul Roads	30	
% Graded One Time Per 14 Shifts (1 week)	= \$M\$29	Weekly	0.1	
% Graded One Time Per 4 Shifts (2 days)	= \$M\$30	Every other day	0.3	
% Graded One Time Per 2 Shifts (1 day)	= \$M\$31	Daily	0.15	
% Graded One Time Per Shift	= \$M\$32	Once per shift	0.25	
% Graded Two Times Per Shift	= \$M\$33	Twice per shift	0.2	
% Graded Three Times Per Shift	= \$M\$34	Three times per shift	0	
Total km of Haul Roads/Shift	= (B28*B29*0.0714) + (B28*B30*0.25) + (B28*B31*0.5) + (B28*B32*1) + (B28*B33*2) + (B28*B34*3)	Total — must equal 100%	= SUM(M29:M34)	
Working Hours Per Shift	11			
km of Road/Grader/Shift	= B37/B24			
Fleet Requirement:				
“Working” Motor Graders Required/Shift	= B35/B38			
Motor Grader Mechanical Availability	0.9			
Motor Grader Fleet Required (units)	= B41/B42			

NOTE: The formulas in the “Moderate — Cat 16H” column are the same formulas needed for the “Difficult — Cat 16H,” “Moderate — Cat 24H” and “Difficult — Cat 24H” columns.

Input the data from this spreadsheet exactly how you see it here. This will allow you to generate figure 1. If you have any questions or difficulties please contact the Motor Grader Marketing Group at 217-475-4638. If you can receive e-mails Motor Grader Marketing will e-mail you the file containing the spreadsheet.

BLADE PULL

This specification is also known as drawbar pull. This spec can be calculated as follows:

Variables:

Rear weight of machine = Wr

Tire traction coefficient = T (Section 26, look up the table entitled "Coefficient of Traction Factors")

$$\text{Wr} \times \text{T} = \text{Blade Pull}$$

Example problem:

Calculate the blade pull for a 140H NA version machine operating in a quarry pit...

Metric

RW = 10 501 kg

T = 0.65

$$10\,501 \times 0.65 = 6825.65$$

English

RW = 23,151 lb

T = 0.65

$$23,151 \times 0.65 = 15,048.15$$

BLADE DOWN PRESSURE

This spec can be calculated as follows:

Variables:

Blade to front axle length = BA

Wheel base length = WB

Weight on front wheels = FW

Blade down pressure = BD

$$\frac{\text{WB}}{\text{WB} - \text{BA}} \times \text{FW} = \text{BD}$$

Example problem:

Calculate the blade down pressure for a 140H NA version machine...

Metric

BA = 2565 mm FW = 4223 kg

WB = 6086 mm BD = ?

$$\frac{6086}{(6086 - 2565)} \times 4223 = 7299 \text{ kg}$$

English

BA = 101 in

FW = 9310 lb

WB = 240 in

BD = ?

$$\frac{240}{(240 - 101)} \times 9310 = 16,075 \text{ lb}$$

This specification is only a minor indicator of a motor grader's productivity. It alone gives no measure of overall machine productivity. When considering motor grader production you need an optimum balance between the machine's front and rear weights. If a machine has too much weight on the front axle it might have a high blade down pressure spec, however it will lack the essential rear weight and traction needed to push through the load. Too much weight in the rear and it will not have the necessary weight in the front during heavy cuts to maintain proper steering control.

Caterpillar machines are built with this optimum balance in mind. A Cat motor grader is engineered with the proper weight distribution necessary for maximum productivity.

Effective Blade Length*

		Moldboard							
		3.66 m (12')		4.27 m (14')		4.88 m (16')		7.32 m (24')	
Angle°		m	ft	m	ft	m	ft	m	ft
	0°	3.66	12.00	4.27	14.00	4.88	16.00	7.32	24.00
	5°	3.64	11.95	4.25	13.95	4.86	15.94	7.29	23.91
	10°	3.60	11.82	4.20	13.79	4.80	15.76	7.21	23.64
	15°	3.53	11.59	4.12	13.52	4.71	15.45	7.07	23.18
	20°	3.44	11.28	4.01	13.16	4.58	15.04	6.87	22.55
	25°	3.32	10.88	3.87	12.69	4.42	14.50	6.63	21.75
	30°	3.17	10.39	3.69	12.12	4.22	13.86	6.33	20.78
	35°	3.00	9.83	3.50	11.47	4.00	13.11	5.99	19.66
	40°	2.80	9.19	3.27	10.72	3.74	12.26	5.61	18.39
45°	2.59	8.49	3.02	9.90	3.45	11.31	5.17	16.97	

*Effective blade length is the amount of blade coverage the machine is capable of when the blade is at a given angle.

EXTREME SLOPE OPERATION

There are two ways of defining slope work. The slope perpendicular to the machines direction of travel is commonly referred to as “Side Sloping.” The slope parallel to the machines direction of travel — the machines ability to travel up or down terrain, is commonly referred to as “Gradeability.”

Side Sloping capability for our H-Series graders is somewhat subjective but general agreement among professional operators is that working on a slope ratio of 2.5:1 (21.8 degrees) is the safe limit ... an experienced operator may be able to operate on a 2:1 (28 degrees) slope. There are many factors, which influence this limit, such as operator experience, machine configuration, tires, soil conditions, but a 2.5:1 is achievable. Further, a 3:1 slope is the approximate maximum side slope a grader can work on in straight frame configuration. The steeper side slopes all require the machine to be articulated to safely negotiate the slope.

Gradeability is approximately 22 degrees. This is established by the graders ability to stop without skidding the tires while moving downhill. The motor grader can, however, *climb* grades steeper than 22 degrees. The traction coefficient is the critical factor in determining whether a grader can safely negotiate the slope. Caterpillar recommends that you never climb a slope steeper than you can safely descend.

Maximum lubrication angle: We have measured the graders on a tilt table and pump cavitation occurs around 45 degrees (100% or 1:1). This is beyond the grade or slope a motor grader can operate on.

When working side hills and slopes, consideration should be given to the following important points.

- **Speed of Travel** — At higher speeds, inertia forces tend to make the grader less stable.
- **Roughness of Terrain or Surface** — Ample allowance should be made where the terrain or surface is uneven.
- **Mounted Equipment** — Mounted attachments such as front plows, snow wings, rippers and other mounted equipment cause the tractor to balance differently.
- **Nature of Surface** — New earthen fills may give way with the weight of the grader. Rocky surfaces may promote side slipping of grader.
- **Wheel Slippage Due to Excessive Loads or Side Draft** — This may cause downhill tire to “dig in,” increasing the angle of grader.
- **Tire Selection and Maintenance** — Consideration should be given to proper tire selection and air pressure. Consult with Caterpillar publication AEDG0480 — Motor Grader Tire Selection Guide and Operation and Maintenance manual for more information.
- **Drawbar, Circle and Blade Position** — The position of the blade can affect the stability of the machine.
- **Articulation Angle** — Articulation angle can affect the stability of the machine.
- **Wheel Lean Angle** — Wheel lean angle can affect the stability of the machine.

NOTE: Safe operation on steep slopes may require special machine maintenance as well as excellent operator skill and proper equipment setup for the specific application. Consult Operation & Maintenance Manual, Caterpillar publication AEGQ0945 — Motor Grader Application Guide, and the Grade Comparison Chart in the Tables section of this Performance Handbook, for further operating tips.

Work Tool	120H	135H	12H	140H	143H	160H	163H	14H	16H
Lift Group	X	X	X	X	X	X	X	X	X
V-Plow	X	X	X	X	X	X	X	X	
One Way Plow	X	X	X	X	X	X	X	X	
Manual Reversible Plow	X	X	X	X	X	X	X	X	
Hydraulic Reversible Plow	X	X	X	X	X	X	X	X	
Snow Wing	X	X	X	X	X	X	X	X	
Scarifier	X	X	X	X	X	X	X	X	X
Manual Angle Blade	X	X	X	X	X	X	X	X	
Hydraulic Angle Blade	X	X	X	X	X	X	X	X	
Straight Blade	X	X	X	X	X	X	X	X	X

This list is not all inclusive. Contact your Caterpillar Dealer for special attachment needs.

NOTE: Attachments for Cat H-Series Motor Graders require additional hydraulics. All front-mounted attachments require a Quick Attach-Detach Parallel Lift Group. Contact your Caterpillar Dealer for details.

Notes —

SKID STEER LOADERS

Multi Terrain Loaders

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MULTI TERRAIN LOADERS

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Features:

- **Caterpillar engines** provide high horsepower and torque. Closed circuit breather, glow-plug starting aid, ecology drain and SOS oil sampling ports standard.
- **Ergonomically designed cab** provides maximum operator comfort & visibility.
- **Low-effort**, pilot hydraulic joystick controls, arm-rest & retractable seat belt for easy operation.
- **Deep skid resistant steps** and two tilt cylinders makes egress/ingress easy.
- **Hand and foot throttle** for continuous or variable engine speed.
- **Exclusive anti-stall feature** provides maximum rimpull and hydraulic power while lugging the engine.
- **High hydraulic horsepower** gets work done quickly.
- **Direct drive hystat pumps** eliminate universal joints and belts.
- **Tilt-up cooling package** provides access to engine compartment.
- **Long life coolant** and extended hour service intervals for low operating costs.
- **Single engine belt** drives alternator and water pump.
- **Deutsch connectors** are color coded, numbered and protected with nylon braiding.
- **Electro-depositioned** or “E” coat corrosion protection for long life.
- **High flow XPS hydraulics** standard on 248B and 268B.
- **High flow hydraulics** optional on 226B and 242B.

Skid Steer Loaders

Specifications



MODEL	216B		226B		232B	
Flywheel Power: Net	36 kW	48 hp	42.5 kW	57 hp	36 kW	48 hp
Gross	38 kW	51 hp	46 kW	62 hp	38 kW	51 hp
Engine Model	3024C		3024C T		3024C	
Rated Engine RPM	3000		3000		3000	
Bore	84 mm	3.3"	84 mm	3.3"	84 mm	3.3"
Stroke	100 mm	3.9"	100 mm	3.9"	100 mm	3.9"
Displacement	2.2 L	134 in ³	2.2 L	134 in ³	2.2 L	134 in ³
No. Cylinders	4		4		4	
Speeds Forward						
Infinite	0-11.3 kph	0-7.0 mph	0-12.6 kph	0-7.8 mph	0-9.9 kph	0-6.15 mph
Speeds Reverse						
Infinite	0-11.3 kph	0-7.0 mph	0-12.6 kph	0-7.8 mph	0-9.9 kph	0-6.15 mph
Hydraulic Cycle Time, Empty Bucket:	Seconds		Seconds		Seconds	
Raise	2.7		2.7		3.0	
Dump	2.2		2.2		2.2	
Lower (Empty, Float Down)	2.8		2.8		3.0	
Total	7.7		7.7		8.2	
Tread Width	1244 mm	4'1"	1244 mm	4'1"	1244 mm	4'1"
Width Over Tires	1511 mm	5'0"	1511 mm	5'0"	1511 mm	5'0"
Ground Clearance	195 mm	7.6"	195 mm	7.6"	145 mm	5.7"
Fuel Tank Capacity	65 L	17 U.S. gal	65 L	17 U.S. gal	69 L	18.2 U.S. gal
Hydraulic Tank Capacity	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal
Hydraulic System Capacity (includes tank)	55 L	14.5 U.S. gal	55 L	14.5 U.S. gal	55 L	14.5 U.S. gal
Hydraulic Pump Capacity	60 L/min	15.6 gpm	60 L/min	15.6 gpm	60 L/min	15.6 gpm

Specifications

Skid Steer Loaders



MODEL	236B		242B		246B	
Flywheel Power: Net	51 kW	68 hp	42.5 kW	57 hp	57 kW	76 hp
Gross	53 kW	71 hp	46 kW	62 hp	60 kW	80 hp
Engine Model	3044C DIT		3024C T		3044C DIT	
Rated Engine RPM	2600		3000		2600	
Bore	94 mm	3.7"	84 mm	3.3"	94 mm	3.7"
Stroke	120 mm	4.7"	100 mm	3.9"	120 mm	4.7"
Displacement	3.3 L	201 in ³	2.2 L	134 in ³	3.3 L	201 in ³
No. Cylinders	4		4		4	
Speeds Forward						
Infinite	0-12.1 kph	0-7.5 mph	0-11.0 kph	0-6.8 mph	0-12.1 kph	0-7.5 mph
Speeds Reverse						
Infinite	0-12.1 kph	0-7.5 mph	0-11.0 kph	0-6.8 mph	0-12.1 kph	0-7.5 mph
Hydraulic Cycle Time, Empty Bucket:	Seconds		Seconds		Seconds	
Raise	2.7		3.0		2.7	
Dump	2.2		2.2		2.2	
Lower (Empty, Float Down)	2.8		3.0		2.8	
Total	7.7		8.2		7.7	
Tread Width	1514 mm	5'0"	1362 mm	4'6"	1514 mm	5'0"
Width Over Tires	1829 mm	6'0"	1672 mm	5'6"	1829 mm	6'0"
Ground Clearance	235 mm	9"	185 mm	7.3"	235 mm	9"
Fuel Tank Capacity	90 L	23.8 U.S. gal	69 L	18.2 U.S. gal	90 L	23.8 U.S. gal
Hydraulic Tank Capacity	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal
Hydraulic System Capacity (includes tank)	52 L	13.7 U.S. gal	55 L	14.5 U.S. gal	52 L	13.7 U.S. gal
Hydraulic Pump Capacity	83 L/min	22 gpm	60 L/min	15.6 gpm	83 L/min	22 gpm

Skid Steer Loaders

Specifications



MODEL	248B		252B		262B		268B	
Flywheel Power: Net	56 kW	75 hp	51 kW	68 hp	57 kW	76 hp	56 kW	75 hp
Gross	60 kW	80 hp	53 kW	71 hp	60 kW	80 hp	60 kW	80 hp
Engine Model	3044C DIT		3044C DIT		3044C DIT		3044C DIT	
Rated Engine RPM	2600		2600		2600		2600	
Bore	94 mm	3.7"	94 mm	3.7"	94 mm	3.7"	94 mm	3.7"
Stroke	120 mm	4.7"	120 mm	4.7"	120 mm	4.7"	120 mm	4.7"
Displacement	3.3 L	201 in³	3.3 L	201 in³	3.3 L	201 in³	3.3 L	201 in³
No. Cylinders	4		4		4		4	
Speeds Forward	0-12.1 kph 0-7.5 mph		0-11.3 kph 0-7.0 mph		0-11.6 kph 0-7.2 mph		0-11.6 kph 0-7.2 mph	
Infinite								
Speeds Reverse	0-12.1 kph 0-7.5 mph		0-11.3 kph 0-7.0 mph		0-11.6 kph 0-7.2 mph		0-11.6 kph 0-7.2 mph	
Infinite								
Hydraulic Cycle Time, Empty Bucket:	Seconds		Seconds		Seconds		Seconds	
Raise	2.7		4.8		4.8		3.8	
Dump	2.1		2.2		2.2		2.1	
Lower (Empty, Float Down)	2.8		3.6		3.6		3.6	
Total	7.6		10.6		10.6		9.5	
Tread Width	1514 mm	5'0"	1514 mm	5'0"	1514 mm	5'0"	1514 mm	5'0"
Width Over Tires	1829 mm	6'0"	1824 mm	6'0"	1824 mm	6'0"	1824 mm	6'0"
Ground Clearance	235 mm	9"	196 mm	8"	196 mm	8"	196 mm	8"
Fuel Tank Capacity	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal
Hydraulic Tank Capacity	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal
Hydraulic System Capacity (includes tank)	53 L	14 U.S. gal	53 L	14 U.S. gal	53 L	14 U.S. gal	53 L	14 U.S. gal
Hydraulic Pump Capacity	125 L/min	32.5 gpm	83 L/min	22 gpm	83 L/min	22 gpm	125 L/min	32.5 gpm

Performance Data
● 216B/226B

Skid Steer Loaders

3

Bucket Type	General Purpose						Multi-Purpose		
	1520 mm (60") 10 x 16.5			1680 mm (66") 10 x 16.5			1520 mm (60") 10 x 16.5		
Bucket Width Tire Size									
Ground Engaging Type		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge
Rated bucket capacity	m ³ yd ³	0.36 0.47	0.37 0.48	0.36 0.47	0.40 0.52	0.40 0.52	0.41 0.53	0.30 0.39	0.31 0.41
Struck capacity	m ³ yd ³	0.26 0.34	0.27 0.35	0.26 0.34	0.29 0.38	0.29 0.38	0.29 0.38	0.22 0.29	0.22 0.29
Width	mm in	1576 62	1586 62	1576 62	1730 68	1740 68	1730 68	1595 63	1595 63
Dump clearance at maximum lift/dump	mm in	2133 84	2103 83	2069 81	2130 84	2100 83	2066 81	2122 84	2092 82
Reach at maximum lift/dump	mm in	546 21	557 22	620 24	549 22	560 22	623 25	560 22	571 22
Floor angle at maximum lift/dump	degrees	39.9°	39.9°	39.9°	40°	40°	40°	40.2°	40.2°
Floor angle at maximum lift/rack back	degrees	96.7°	96.7°	96.7°	96.5°	96.5°	96.5°	96.4°	96.4°
Clearance at maximum lift/level bucket	mm in	2658 105	2642 104	2657 105	2656 105	2640 104	2655 105	2655 105	2683 106
Hinge pin height at maximum lift	mm in	2849 112	2849 112	2849 112	2849 112	2849 112	2849 112	2849 112	2849 112
Maximum overall height	mm in	3762 148	3790 149	3860 152	3759 148	3787 149	3857 152	3746 147	3774 149
Reach at level lift arm/bucket	mm in	1333 52	1361 54	1431 56	1335 53	1363 54	1433 56	1346 53	1374 54
Maximum floor angle at minimum lift	degrees	26.1°	26.1°	26.1°	26°	26°	26°	25.8°	25.8°
Dig depth with level bucket	mm in	0 0.0	16 0.6	1 0.0	0 0.0	16 0.6	1 0.0	0 0.0	15 0.6
Overall length with bucket on ground	mm in	3286 129	3314 130	3384 133	3286 129	3314 130	3384 133	3290 130	3318 131
Front clearance circle radius (w/bucket)	mm in	1989 78	2016 79	2079 82	2021 80	2048 81	2110 83	1992 78	2020 80
Tipping load	216B kg lb	1183 2609	1129 2489	1157 2551	1164 2567	1110 2448	1142 2518	1044 2302	1002 2209
	226B kg lb	1258 2774	1203 2653	1232 2717	1239 2732	1185 2613	1217 2683	1118 2465	1075 2370
Breakout force — lift	216B kg lb	1336 2945	1291 2847	1320 2911	1324 2919	1277 2817	1309 2886	1236 2725	1195 2635
	226B kg lb	1438 3170	1390 3064	1421 3133	1425 3141	1375 3031	1409 3106	1330 2933	1286 2836
Breakout force — tilt	216B kg lb	1580 3484	1484 3271	1563 3445	1575 3473	1479 3260	1559 3438	1517 3344	1431 3155
	226B kg lb	1699 3746	1595 3518	1680 3705	1694 3734	1590 3506	1676 3696	1631 3596	1539 3393
Operating weight	216B kg lb	2648 5839	2677 5903	2664 5874	2664 5874	2697 5947	2681 5912	2779 6128	2809 6194
	226B kg lb	2704 5962	2734 6028	2720 5998	2721 6000	2754 6073	2737 6035	2835 6251	2865 6317

Skid Steer Loaders

Performance Data ● 216B/226B

Bucket Type		Multi-Purpose				Dirt				
Bucket Width		1520 mm (60")	1680 mm (66")			1520 mm (60")		1680 mm (66")		
Tire Size		10 x 16.5	10 x 16.5			10 x 16.5		10 x 16.5		
Ground Engaging Type		Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Holes Only	Bolt-on Edge	
Rated bucket capacity	m ³	0.30	0.33	0.33	0.34	0.34	0.35	0.37	0.38	
	yd ³	0.39	0.43	0.43	0.44	0.44	0.46	0.48	0.49	
Struck capacity	m ³	0.22	0.24	0.25	0.24	0.25	0.25	0.27	0.27	
	yd ³	0.29	0.31	0.33	0.31	0.33	0.33	0.35	0.35	
Width	mm	1595	1749	1749	1749	1576	1586	1730	1740	
	in	63	69	69	69	62	62	68	69	
Dump clearance at maximum lift/dump	mm	2058	2122	2092	2058	2169	2140	2169	2140	
	in	81	84	82	81	85	84	85	84	
Reach at maximum lift/dump	mm	634	560	571	634	505	520	505	520	
	in	25	22	22	25	20	20	20	20	
Floor angle at maximum lift/dump	degrees	40.2°	40.2°	40.2°	40.2°	39.9°	39.9°	39.9°	39.9°	
Floor angle at maximum lift/rack back	degrees	96.4°	96.4°	96.4°	96.4°	96.7°	96.7°	96.7°	96.7°	
Clearance at maximum lift/level bucket	mm	2654	2655	2683	2654	2661	2648	2661	2648	
	in	104	105	106	104	105	104	105	104	
Hinge pin height at maximum lift	mm	2849	2849	2849	2849	2849	2849	2849	2849	
	in	112	112	112	112	112	112	112	112	
Maximum overall height	mm	3844	3746	3774	3844	3709	3739	3709	3739	
	in	151	147	149	151	146	147	146	147	
Reach at level lift arm/bucket	mm	1444	1346	1374	1444	1280	1310	1280	1310	
	in	57	53	54	57	50	52	50	52	
Maximum floor angle at minimum lift	degrees	25.8°	25.8°	25.8°	25.8°	26.1°	26.1°	26.1°	26.1°	
Dig depth with level bucket	mm	1	0	16	1	0	16	0	16	
	in	0.0	0.0	0.6	0.0	0.0	0.6	0.0	0.6	
Overall length with bucket on ground	mm	3388	3290	3318	3388	3233	3263	3233	3263	
	in	133	130	131	133	127	128	127	128	
Front clearance circle radius (w/bucket)	mm	2083	1992	2020	2113	1940	1970	1970	2000	
	in	82	78	80	83	76	78	78	79	
Tipping load	216B	kg	1029	1024	972	1003	1274	1221	1250	1193
		lb	2269	2258	2143	2212	2809	2692	2756	2631
	226B	kg	1103	1097	1045	1077	1360	1297	1327	1269
		lb	2432	2419	2304	2375	2999	2860	2926	2798
Breakout force — lift	216B	kg	1223	1221	1176	1206	1408	1363	1389	1342
		lb	2696	2692	2593	2659	3104	3004	3063	2958
	226B	kg	1316	1314	1266	1298	1515	1467	1495	1444
		lb	2902	2898	2791	2862	3341	3234	3297	3184
Breakout force — tilt	216B	kg	1506	1504	1411	1488	1722	1617	1713	1605
		lb	3320	3317	3111	3281	3798	3566	3776	3540
	226B	kg	1619	1618	1517	1600	1852	1739	1842	1726
		lb	3570	3567	3345	3528	4084	3834	4061	3806
Operating weight	216B	kg	2795	2797	2830	2813	2589	2619	2614	2647
		lb	6163	6167	6240	6203	5709	5775	5764	5837
	226B	kg	2852	2854	2887	2870	2646	2676	2671	2703
		lb	6289	6293	6366	6328	5834	5901	5890	5960

Work Tool		Pallet Fork			
		910 mm (36")	1070 mm (42")	1220 mm (48")	
Tine Length					
Tire Size		10 x 16.5	10 x 16.5	10 x 16.5	
Carriage overall width without step	mm	1157	1157	1157	
	in	45	45	45	
Carriage step additional width	mm	108	108	108	
	in	4.25	4.25	4.25	
Carriage height above blade top	mm	923.5	923.5	923.5	
	in	36.4	36.4	36.4	
Blade surface height at maximum height	mm	2741	2741	2741	
	in	107.9	107.9	107.9	
Shank front face reach at maximum height	mm	290	290	290	
	in	11.4	11.4	11.4	
Blade surface height at level lift arms	mm	1383	1383	1383	
	in	54.4	54.4	54.4	
Shank front face reach at level lift arms	mm	743	743	743	
	in	29.3	29.3	29.3	
Blade surface height at minimum lift	mm	91	91	91	
	in	3.6	3.6	3.6	
Shank front face reach at minimum lift	mm	345	345	345	
	in	13.6	13.6	13.6	
Overall length at minimum lift, level tine	mm	3602	3762	3912	
	in	141.8	148.1	154.0	
Tipping load	216B	kg	926	872	825
		lb	2042	1922	1819
	226B	kg	985	928	878
		lb	2172	2046	1936
Operating weight	216B	kg	2630	2640	2650
		lb	5799	5821	5843
	226B	kg	2687	2697	2707
		lb	5925	5947	5969

Skid Steer Loaders

Performance Data ● 232B

Bucket Type	General Purpose									
	1520 mm (60") 10 x 16.5			1680 mm (66") 10 x 16.5			1830 mm (72") 10 x 16.5			
Bucket Width Tire Size										
Ground Engaging Type		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth
Rated bucket capacity	m ³ yd ³	0.36 0.47	0.37 0.48	0.36 0.47	0.40 0.52	0.40 0.52	0.41 0.53	0.44 0.57	0.44 0.57	0.45 0.59
Struck capacity	m ³ yd ³	0.26 0.34	0.27 0.35	0.26 0.34	0.29 0.38	0.29 0.38	0.29 0.38	0.32 0.42	0.32 0.42	0.32 0.42
Width	mm in	1576 62	1586 62	1576 62	1730 68	1740 68	1730 68	1883 74	1893 75	1883 74
Dump clearance at maximum lift/dump	mm in	2220 87	2189 86	2148 85	2220 87	2189 86	2148 85	2220 87	2189 86	2148 85
Reach at maximum lift/dump	mm in	759 30	766 30	822 32	759 30	766 30	822 32	759 30	766 30	822 32
Floor angle at maximum lift/dump	degrees	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°
Floor angle at maximum lift/rack back	degrees	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°
Clearance at maximum lift/level bucket	mm in	2831 111	2815 111	2830 111	2831 111	2815 111	2830 111	2831 111	2815 111	2830 111
Hinge pin height at maximum lift	mm in	3026 119	3026 119	3026 119	3026 119	3026 119	3026 119	3026 119	3026 119	3026 119
Maximum overall height	mm in	3907 154	3934 155	4004 158	3907 154	3934 155	4004 158	3907 154	3934 155	4004 158
Reach at level lift arm/bucket	mm in	1356 53	1384 54	1453 57	1356 53	1384 54	1453 57	1356 53	1384 54	1453 57
Maximum floor angle at minimum lift	degrees	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°
Dig depth with level bucket	mm in	4 0.2	21 0.8	5 0.2	4 0.2	21 0.8	5 0.2	4 0.2	21 0.8	5 0.2
Overall length with bucket on ground	mm in	3490 137	3518 139	3588 141	3490 137	3518 139	3588 141	3490 137	3518 139	3588 141
Front clearance circle radius (w/bucket)	mm in	2192 86	2224 88	2259 89	2221 87	2253 89	2286 90	2252 89	2283 90	2313 91
Tipping load	kg lb	1676 3696	1617 3565	1649 3636	1656 3651	1599 3526	1634 3603	1648 3634	1587 3499	1625 3583
Breakout force — lift	kg lb	1565 3452	1520 3353	1550 3418	1553 3425	1506 3321	1538 3392	1547 3411	1498 3303	1532 3379
Breakout force — tilt	kg lb	1579 3483	1483 3270	1562 3444	1574 3471	1478 3258	1558 3436	1570 3462	1472 3246	1555 3428
Operating weight	kg lb	3055 6736	3085 6802	3071 6772	3071 6772	3104 6844	3088 6809	3079 6789	3115 6869	3095 6824

Bucket Type	Multi-Purpose								
	1520 mm (60") 10 x 16.5			1680 mm (66") 10 x 16.5			1830 mm (72") 10 x 16.5		
Bucket Width Tire Size	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	0.30 0.39	0.31 0.41	0.30 0.39	0.33 0.43	0.33 0.43	0.34 0.44	0.37 0.48	0.37 0.48
Struck capacity	m ³ yd ³	0.22 0.29	0.22 0.29	0.22 0.29	0.24 0.31	0.25 0.33	0.24 0.31	0.27 0.35	0.28 0.35
Width	mm in	1595 63	1595 63	1595 63	1749 69	1749 69	1749 69	1902 75	1902 75
Dump clearance at maximum lift/dump	mm in	2218 87	2287 90	2143 84	2218 87	2287 90	2143 84	2218 87	2287 90
Reach at maximum lift/dump	mm in	762 30	769 30	825 32	762 30	769 30	825 32	762 30	769 30
Floor angle at maximum lift/dump	degrees	49.6°	49.6°	49.6°	49.6°	49.6°	49.6°	49.6°	49.6°
Floor angle at maximum lift/rack back	degrees	86.8°	86.8°	86.8°	86.8°	86.8°	86.8°	86.8°	86.8°
Clearance at maximum lift/level bucket	mm in	2834 112	2818 111	2833 112	2834 112	2818 111	2833 112	2834 112	2818 111
Hinge pin height at maximum lift	mm in	3026 119	3026 119	3026 119	3026 119	3026 119	3026 119	3026 119	3026 119
Maximum overall height	mm in	3911 154	3938 155	4008 158	3911 154	3938 155	4008 158	3911 154	3938 155
Reach at level lift arm/bucket	mm in	1360 54	1387 55	1457 57	1360 54	1387 55	1457 57	1360 54	1387 55
Maximum floor angle at minimum lift	degrees	25.3°	25.3°	25.3°	25.3°	25.3°	25.3°	25.3°	25.3°
Dig depth with level bucket	mm in	3 0.1	19 0.7	4 0.2	3 0.1	19 0.7	4 0.2	3 0.1	19 0.7
Overall length with bucket on ground	mm in	3494 138	3522 139	3591 141	3494 138	3522 139	3591 141	3494 138	3522 139
Front clearance circle radius (w/bucket)	mm in	2182 86	2214 87	2249 89	2211 87	2243 88	2276 90	2242 88	2273 89
Tipping load	kg lb	1530 3374	1484 3272	1515 3341	1509 3327	1454 3206	1489 3283	1491 3288	1433 3160
Breakout force — lift	kg lb	1463 3226	1422 3135	1450 3197	1448 3193	1402 3092	1433 3160	1434 3162	1386 3056
Breakout force — tilt	kg lb	1516 3342	1430 3154	1505 3319	1504 3316	1410 3110	1487 3280	1496 3298	1402 3092
Operating weight	kg lb	3186 7025	3216 7091	3202 7060	3204 7065	3237 7138	3221 7102	3223 7107	3259 7186

Skid Steer Loaders

Performance Data ● 232B

Bucket Type	Dirt						
	1520 mm (60") 10 x 16.5		1680 mm (66") 10 x 16.5		1830 mm (72") 10 x 16.5		
Bucket Width Tire Size							
Ground Engaging Type		Holes Only	Bolt-on Edge	Holes Only	Bolt-on Edge	Holes Only	Bolt-on Edge
Rated bucket capacity	m ³ yd ³	0.34 0.44	0.35 0.46	0.37 0.48	0.38 0.49	0.41 0.54	0.42 0.55
Struck capacity	m ³ yd ³	0.25 0.33	0.25 0.33	0.27 0.35	0.27 0.35	0.29 0.38	0.31 0.41
Width	mm in	1576 62	1586 62	1730 68	1740 69	1883 74	1893 75
Dump clearance at maximum lift/dump	mm in	2261 89	2229 88	2261 89	2229 88	2261 89	2229 88
Reach at maximum lift/dump	mm in	724 29	732 29	724 29	732 29	724 29	732 29
Floor angle at maximum lift/dump	degrees	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°
Floor angle at maximum lift/rack back	degrees	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°
Clearance at maximum lift/level bucket	mm in	2831 111	2815 111	2831 111	2815 111	2831 111	2815 111
Hinge pin height at maximum lift	mm in	3026 119	3026 119	3026 119	3026 119	3026 119	3026 119
Maximum overall height	mm in	3854 152	3881 153	3854 152	3881 153	3854 152	3881 153
Reach at level lift arm/bucket	mm in	1302 51	1330 52	1302 51	1330 52	1302 51	1330 52
Maximum floor angle at minimum lift	degrees	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°
Dig depth with level bucket	mm in	4 0.2	20 0.8	4 0.2	20 0.8	4 0.2	20 0.8
Overall length with bucket on ground	mm in	3437 135	3465 136	3437 135	3465 136	3437 135	3465 136
Front clearance circle radius (w/bucket)	mm in	2137 84	2169 85	2154 85	2185 86	2198 87	2229 88
Tipping load	kg lb	1778 3920	1720 3793	1755 3870	1692 3731	1742 3841	1675 3693
Breakout force — lift	kg lb	1639 3614	1594 3514	1620 3572	1572 3467	1610 3550	1559 3439
Breakout force — tilt	kg lb	1722 3796	1617 3564	1712 3775	1605 3539	1706 3761	1595 3517
Operating weight	kg lb	2996 6606	3026 6672	3021 6661	3054 6734	3054 6734	3070 6769

Work Tool		Pallet Fork		
		910 mm (36")	1070 mm (42")	1220 mm (48")
Tine Length		910 mm (36")	1070 mm (42")	1220 mm (48")
Tire Size		10 x 16.5	10 x 16.5	10 x 16.5
Carriage overall width without step	mm	1157	1157	1157
	in	45	45	45
Carriage step additional width	mm	108	108	108
	in	4.25	4.25	4.25
Carriage height above blade top	mm	924	924	924
	in	36.4	36.4	36.4
Blade surface height at maximum height	mm	2911	2911	2911
	in	114.6	114.6	114.6
Shank front face reach at maximum height	mm	624	624	624
	in	24.6	24.6	24.6
Blade surface height at level lift arms	mm	1506	1506	1506
	in	59.3	59.3	59.3
Shank front face reach at level lift arms	mm	762	762	762
	in	30.0	30.0	30.0
Blade surface height at minimum lift	mm	56	56	56
	in	2.2	2.2	2.2
Shank front face reach at minimum lift	mm	468	468	468
	in	18.4	18.4	18.4
Overall length at minimum lift, level tine	mm	3806	3966	4116
	in	149.8	156.1	162.0
Tipping load	kg	1308	1236	1173
	lb	2884	2725	2586
Operating weight	kg	3037	3047	3057
	lb	6697	6719	6741

Skid Steer Loaders

Performance Data ● 242B

Bucket Type		General Purpose								
		1520 mm (60") 12 x 16.5			1680 mm (66") 12 x 16.5			1830 mm (72") 12 x 16.5		
Bucket Width Tire Size		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth
Ground Engaging Type										
Rated bucket capacity	m ³ yd ³	0.36 0.47	0.37 0.48	0.36 0.47	0.40 0.52	0.40 0.52	0.41 0.53	0.44 0.57	0.44 0.57	0.45 0.59
Struck capacity	m ³ yd ³	0.26 0.34	0.27 0.35	0.26 0.34	0.29 0.38	0.29 0.38	0.29 0.38	0.32 0.42	0.32 0.42	0.32 0.42
Width	mm in	1576 62	1586 62	1576 62	1730 68	1740 68	1730 68	1883 74	1893 75	1883 74
Dump clearance at maximum lift/dump	mm in	2240 88	2209 87	2168 85	2240 88	2209 87	2166 85	2240 88	2209 87	2166 85
Reach at maximum lift/dump	mm in	759 30	766 30	822 32	759 30	766 30	822 32	759 30	766 30	822 32
Floor angle at maximum lift/dump	degrees	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°
Floor angle at maximum lift/rack back	degrees	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°
Clearance at maximum lift/level bucket	mm in	2851 112	2835 112	2850 112	2851 112	2835 112	2850 112	2851 112	2835 112	2850 112
Hinge pin height at maximum lift	mm in	3046 120	3046 120	3046 120	3046 120	3046 120	3046 120	3046 120	3046 120	3046 120
Maximum overall height	mm in	3927 155	3954 156	4024 158	3927 155	3954 156	4024 158	3927 155	3954 156	4024 158
Reach at level lift arm/bucket	mm in	1356 53	1384 54	1453 57	1356 53	1384 54	1453 57	1356 53	1384 54	1453 57
Maximum floor angle at minimum lift	degrees	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°
Dig depth with level bucket	mm in	4 0.2	21 0.8	5 0.2	4 0.2	21 0.8	5 0.2	4 0.2	21 0.8	5 0.2
Overall length with bucket on ground	mm in	3490 137	3518 139	3588 141	3490 137	3518 139	3588 141	3490 137	3518 139	3588 141
Front clearance circle radius (w/bucket)	mm in	2192 86	2224 88	2259 89	2221 87	2253 89	2286 90	2252 89	2283 90	2313 91
Tipping load	kg lb	1753 3865	1693 3733	1726 3806	1733 3821	1675 3693	1711 3773	1725 3804	1664 3669	1703 3755
Breakout force — lift	kg lb	1683 3711	1635 3605	1667 3675	1670 3682	1620 3571	1654 3647	1663 3668	1611 3552	1648 3633
Breakout force — tilt	kg lb	1698 3745	1594 3516	1679 3703	1693 3733	1589 3504	1676 3695	1688 3723	1583 3490	1672 3686
Operating weight	kg lb	3118 6875	3148 6941	3134 6910	3135 6913	3168 6985	3151 6948	3143 6930	3178 7007	3159 6966

Bucket Type	Multi-Purpose								
	1520 mm (60") 12 x 16.5			1680 mm (66") 12 x 16.5			1830 mm (72") 12 x 16.5		
Bucket Width Tire Size	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	0.30 0.39	0.31 0.41	0.30 0.39	0.33 0.43	0.33 0.43	0.34 0.44	0.37 0.48	0.37 0.48
Struck capacity	m ³ yd ³	0.22 0.29	0.22 0.29	0.22 0.29	0.24 0.31	0.25 0.33	0.24 0.31	0.27 0.35	0.28 0.36
Width	mm in	1595 63	1595 63	1595 63	1749 69	1749 69	1749 69	1902 75	1902 75
Dump clearance at maximum lift/dump	mm in	2238 88	2207 87	2163 85	2238 88	2207 87	2163 85	2238 88	2207 87
Reach at maximum lift/dump	mm in	762 30	769 30	825 32	762 30	769 30	825 32	762 30	769 30
Floor angle at maximum lift/dump	degrees	49.6°	49.6°	49.6°	49.6°	49.6°	49.6°	49.6°	49.6°
Floor angle at maximum lift/rack back	degrees	86.8°	86.8°	86.8°	86.8°	86.8°	86.8°	86.8°	86.8°
Clearance at maximum lift/level bucket	mm in	2854 112	2838 112	2853 112	2854 112	2838 112	2853 112	2854 112	2838 112
Hinge pin height at maximum lift	mm in	3046 120	3046 120	3046 120	3046 120	3046 120	3046 120	3046 120	3046 120
Maximum overall height	mm in	3931 155	3958 156	4028 159	3931 155	3958 156	4028 159	3931 155	3958 156
Reach at level lift arm/bucket	mm in	1360 54	1387 55	1457 57	1360 54	1387 55	1457 57	1360 54	1387 55
Maximum floor angle at minimum lift	degrees	25.3°	25.3°	25.3°	25.3°	25.3°	25.3°	25.3°	25.3°
Dig depth with level bucket	mm in	3 0.1	19 0.7	4 0.2	3 0.1	19 0.7	4 0.2	3 0.1	19 0.7
Overall length with bucket on ground	mm in	3494 138	3522 139	3591 141	3494 138	3522 139	3591 141	3494 138	3522 139
Front clearance circle radius (w/bucket)	mm in	2182 86	2214 87	2249 89	2211 87	2243 88	2276 90	2242 88	2273 89
Tipping load	kg lb	1607 3543	1560 3440	1592 3510	1586 3497	1530 3374	1566 3453	1568 3457	1509 3327
Breakout force — lift	kg lb	1573 3469	1529 3370	1559 3438	1557 3433	1508 3325	1541 3398	1542 3400	1490 3286
Breakout force — tilt	kg lb	1630 3594	1538 3391	1618 3569	1617 3566	1516 3344	1599 3527	1608 3546	1508 3324
Operating weight	kg lb	3250 7166	3280 7232	3266 7202	3268 7206	3301 7279	3284 7241	3286 7246	3323 7327

Skid Steer Loaders

Performance Data ● 242B

Bucket Type	Dirt						
	1520 mm (60") 12 x 16.5		1680 mm (66") 12 x 16.5		1830 mm (72") 12 x 16.5		
Bucket Width Tire Size							
Ground Engaging Type		Holes Only	Bolt-on Edge	Holes Only	Bolt-on Edge	Holes Only	Bolt-on Edge
Rated bucket capacity	m ³ yd ³	0.34 0.44	0.35 0.46	0.37 0.48	0.38 0.49	0.41 0.54	0.42 0.55
Struck capacity	m ³ yd ³	0.25 0.33	0.25 0.33	0.27 0.35	0.27 0.35	0.29 0.38	0.31 0.41
Width	mm in	1576 62	1586 62	1730 68	1740 69	1883 74	1893 75
Dump clearance at maximum lift/dump	mm in	2281 90	2249 89	2281 90	2249 89	2281 90	2249 89
Reach at maximum lift/dump	mm in	724 29	732 29	724 29	732 29	724 29	732 29
Floor angle at maximum lift/dump	degrees	49.5°	49.5°	49.5°	49.5°	49.5°	49.5°
Floor angle at maximum lift/rack back	degrees	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°
Clearance at maximum lift/level bucket	mm in	2851 112	2835 112	2851 112	2835 112	2851 112	2835 112
Hinge pin height at maximum lift	mm in	3046 120	3046 120	3046 120	3046 120	3046 120	3046 120
Maximum overall height	mm in	3874 153	3901 154	3874 153	3901 154	3874 153	3901 154
Reach at level lift arm/bucket	mm in	1302 51	1330 52	1302 51	1330 52	1302 51	1330 52
Maximum floor angle at minimum lift	degrees	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°
Dig depth with level bucket	mm in	4 0.2	20 0.8	4 0.2	20 0.8	4 0.2	20 0.8
Overall length with bucket on ground	mm in	3437 135	3465 136	3437 135	3465 136	3437 135	3465 136
Front clearance circle radius (w/bucket)	mm in	2137 84	2169 85	2154 85	2185 86	2198 87	2229 88
Tipping load	kg lb	1858 4097	1799 3967	1835 4046	1771 3905	1822 4018	1755 3870
Breakout force — lift	kg lb	1763 3887	1714 3778	1742 3841	1691 3728	1731 3817	1677 3697
Breakout force — tilt	kg lb	1851 4082	1738 3833	1841 4059	1726 3805	1834 4045	1715 3782
Operating weight	kg lb	3060 6747	3090 6813	3085 6802	3118 6875	3098 6831	3134 6910

Work Tool		Pallet Fork		
		910 mm (36")	1070 mm (42")	1220 mm (48")
Tine Length		910 mm (36")	1070 mm (42")	1220 mm (48")
Tire Size		12 x 16.5	12 x 16.5	12 x 16.5
Carriage overall width	mm	1157	1157	1157
	in	45	45	45
Carriage step additional width	mm	108	108	108
	in	4.25	4.25	4.25
Carriage height above blade top	mm	924	924	924
	in	36.4	36.4	36.4
Blade surface height at maximum height	mm	2931	2931	2931
	in	115.4	115.4	115.4
Shank front face reach at maximum height	mm	624	624	624
	in	24.6	24.6	24.6
Blade surface height at level lift arms	mm	1526	1526	1526
	in	60.1	60.1	60.1
Shank front face reach at level lift arms	mm	762	762	762
	in	30.0	30.0	30.0
Blade surface height at minimum lift	mm	76	76	76
	in	3.0	3.0	3.0
Shank front face reach at minimum lift	mm	468	468	468
	in	18.4	18.4	18.4
Overall length at minimum lift, level tine	mm	3346	3506	3656
	in	131.7	138.0	143.9
Tipping load	kg	1362	1287	1221
	lb	3003	2838	2692
Operating weight	kg	3101	3111	3121
	lb	6838	6860	6882

Skid Steer Loaders

Performance Data ● 236B/246B/248B

Bucket Type		General Purpose						Multi-Purpose	
		1680 mm (66") 12 x 16.5			1830 mm (72") 12 x 16.5			1680 mm (66") 12 x 16.5	
Bucket Width Tire Size		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	0.40 0.52	0.40 0.52	0.41 0.53	0.44 0.57	0.44 0.57	0.45 0.59	0.33 0.43	0.33 0.43
Struck capacity	m ³ yd ³	0.29 0.38	0.29 0.38	0.29 0.38	0.32 0.42	0.32 0.42	0.32 0.42	0.24 0.31	0.25 0.33
Width	mm in	1730 68	1740 68	1730 68	1883 74	1893 75	1883 74	1749 69	1749 69
Dump clearance at maximum lift/dump	mm in	2360 92.9	2331 91.8	2299 90.5	2360 92.9	2331 91.8	2299 90.5	2356 92.8	2326 91.6
Reach at maximum lift/dump	mm in	587 23.1	593 23.3	655 25.8	581 22.9	594 23.4	656 25.8	591 23.3	605 23.8
Floor angle at maximum lift/dump	degrees	39.9°	39.9°	39.9°	39.9°	39.9°	39.9°	40.1°	40.1°
Floor angle at maximum lift/rack back	degrees	97.3°	97.3°	97.3°	97.3°	97.3°	97.3°	97.2°	97.2°
Clearance at maximum lift/level bucket	mm in	2904 114.3	2887 113.7	2902 114.3	2904 114.3	2887 113.7	2902 114.3	2905 114.4	2889 113.7
Hinge pin height at maximum lift	mm in	3098 122.0	3227 127.0	3227 127.0	3227 127.0	3227 127.0	3227 127.0	3227 127.0	3227 127.0
Maximum overall height	mm in	4014 158.0	4042 159.1	4112 161.9	4014 158.0	4042 159.1	4111 161.9	4019 158.2	4046 159.3
Reach at level lift arm/bucket	mm in	1409 55.5	1438 56.6	1507 59.3	1409 55.5	1439 56.7	1508 59.4	1419 55.9	1449 57.0
Maximum floor angle at minimum lift	degrees	27.9°	27.9°	27.9°	27.9°	27.9°	27.9°	27.3°	27.3°
Dig depth with level bucket	mm in	0 0	16 0.63	1 0.04	0 0	16 0.63	1 0.04	0 0	16 0.63
Overall length with bucket on ground	mm in	3568 140.5	3596 141.6	3666 144.3	3568 140.5	3596 141.6	3666 144.3	3572 140.6	3600 141.7
Front clearance circle radius (w/bucket)	mm in	2134 84.0	2165 85.2	2198 86.5	2166 85.3	2197 86.5	2226 87.6	2136 84.1	2168 85.4
Tipping load	236B kg lb	1690 3726	1634 3603	1668 3678	1682 3709	1622 3577	1660 3660	1544 3405	1490 3285
	246B kg lb	1767 3896	1710 3771	1745 3848	1758 3876	1698 3744	1737 3830	1620 3572	1565 3451
	248B kg lb	1772 3907	1715 3782	1750 3859	1764 3890	1703 3755	1742 3841	1625 3583	1570 3462
Breakout force — lift	236B kg lb	2032 4481	1976 4357	2016 4445	2025 4465	1968 4339	2009 4430	1919 4231	1864 4110
	246B kg lb	2032 4481	1976 4357	2016 4445	2025 4465	1968 4339	2009 4430	1919 4231	1864 4110
	248B kg lb	2004 4419	1949 4298	1988 4384	1998 4406	1940 4278	1982 4370	1891 4170	1837 4051
Breakout force — tilt	236B kg lb	2303 5078	2178 4802	2286 5041	2299 5069	2173 4791	2284 5036	2226 4908	2105 4642
	246B kg lb	2303 5078	2178 4802	2286 5041	2299 5069	2173 4791	2284 5036	2226 4908	2105 4642
	248B kg lb	2303 5078	2178 4802	2286 5041	2299 5069	2173 4791	2284 5036	2226 4908	2105 4642
Operating weight	236B kg lb	3228 7118	3261 7191	3244 7153	3236 7135	3271 7213	3252 7171	3361 7411	3394 7484
	246B kg lb	3289 7252	3322 7325	3305 7288	3297 7270	3332 7347	3313 7305	3422 7546	3455 7618
	248B kg lb	3370 7431	3403 7504	3387 7468	3378 7448	3414 7528	3394 7484	3503 7724	3536 7797

Performance Data
● 236B/246B/248B

Skid Steer Loaders

3

Bucket Type		Multi-Purpose				Dirt			
Bucket Width		1680 mm (66")	1830 mm (72")			1520 mm (60")		1680 mm (66")	
Tire Size		12 x 16.5	12 x 16.5			12 x 16.5		12 x 16.5	
Ground Engaging Type		Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Holes Only	Bolt-on Edge
Rated bucket capacity	m ³ yd ³	0.34 0.44	0.37 0.48	0.37 0.48	0.37 0.48	0.34 0.44	0.35 0.46	0.37 0.48	0.38 0.49
Struck capacity	m ³ yd ³	0.24 0.31	0.27 0.35	0.28 0.36	0.27 0.35	0.25 0.33	0.25 0.33	0.27 0.35	0.27 0.35
Width	mm in	1749 69	1902 75	1902 75	1902 75	1576 62	1586 62	1730 68	1740 69
Dump clearance at maximum lift/dump	mm in	2292 90.2	2356 92.8	2326 91.6	2292 90.2	2398 94.4	2369 93.3	2398 94.4	2369 93.3
Reach at maximum lift/dump	mm in	665 26.2	591 23.3	605 23.8	665 26.2	540 21.3	554 21.8	541 21.3	555 21.9
Floor angle at maximum lift/dump	degrees	40.1°	40.1°	40.1°	40.1°	39.9°	39.9°	39.9°	39.9°
Floor angle at maximum lift/rack back	degrees	97.2°	97.2°	97.2°	97.2°	97.4°	97.4°	97.4°	97.4°
Clearance at maximum lift/level bucket	mm in	2902 114.3	2904 114.3	2889 113.7	2902 114.3	2908 114.5	2893 113.9	2908 114.5	2892 113.9
Hinge pin height at maximum lift	mm in	3227 127.0	3227 127.0	3227 127.0	3227 127.0	3227 127.0	3227 127.0	3227 127.0	3227 127.0
Maximum overall height	mm in	4116 162.0	4018 158.2	4046 159.3	4116 162.0	3965 156.1	3992 157.2	3965 156.1	3992 157.2
Reach at level lift arm/bucket	mm in	1518 59.8	1420 55.9	1449 57.0	1518 59.8	1356 53.4	1385 54.5	1357 53.4	1386 54.6
Maximum floor angle at minimum lift	degrees	27.3°	27.3°	27.3°	27.3°	28°	28°	28°	28°
Dig depth with level bucket	mm in	1 0.04	0 0	16 0.63	1 0.04	0 0	16 0.63	0 0	16 0.63
Overall length with bucket on ground	mm in	3670 144.5	3572 140.6	3600 141.7	3670 144.5	3515 138.4	3543 139.5	3515 138.4	3543 139.5
Front clearance circle radius (w/bucket)	mm in	2200 86.6	2168 85.4	2200 86.6	2229 87.8	2067 81.4	2094 82.4	2097 82.6	2125 83.7
Tipping load	236B kg lb	1525 3363	1526 3365	1470 3241	1506 3321	1811 3993	1754 3868	1787 3940	1727 3808
	246B kg lb	1600 3528	1602 3532	1544 3405	1582 3488	1889 4165	1832 4040	1866 4115	1804 3978
	248B kg lb	1605 3539	1607 3543	1549 3416	1587 3499	1894 4176	1837 4051	1871 4126	1809 3989
Breakout force — lift	236B kg lb	1902 4194	1903 4196	1847 4073	1888 4163	2132 4701	2078 4582	2112 4657	2055 4531
	246B kg lb	1902 4194	1903 4196	1847 4073	1888 4163	2132 4701	2078 4582	2112 4657	2055 4531
	248B kg lb	1875 4134	1876 4137	1820 4013	1860 4101	2104 4639	2050 4520	2083 4593	2027 4470
Breakout force — tilt	236B kg lb	2210 4873	2217 4888	2097 4624	2204 4860	2497 5506	2361 5206	2487 5484	2349 5180
	246B kg lb	2210 4873	2217 4888	2097 4624	2204 4860	2497 5506	2361 5206	2487 5484	2349 5180
	248B kg lb	2210 4873	2217 4888	2097 4624	2204 4860	2497 5506	2361 5206	2487 5484	2349 5180
Operating weight	236B kg lb	3377 7446	3379 7451	3415 7530	3396 7488	3153 6952	3183 7019	3178 7007	3211 7080
	246B kg lb	3438 7581	3440 7585	3476 7665	3457 7623	3214 7087	3244 7153	3239 7142	3272 7215
	248B kg lb	3520 7762	3522 7766	3558 7845	3538 7801	3295 7265	3325 7332	3320 7321	3353 7393

Skid Steer Loaders

Performance Data ● 236B/246B/248B

Work Tool		Pallet Fork			
		910 mm (36")	1070 mm (42")	1220 mm (48")	
Tine Length					
Tire Size		12 x 16.5	12 x 16.5	12 x 16.5	
Carriage overall width without step	mm	1157	1157	1157	
	in	45	45	45	
Carriage step additional width	mm	108	108	108	
	in	4.25	4.25	4.25	
Carriage height above blade top	mm	923.5	923.5	923.5	
	in	36.4	36.4	36.4	
Blade surface height at maximum height	mm	2969	2969	2969	
	in	116	116	116	
Shank front face reach at maximum height	mm	271	271	271	
	in	10.7	10.7	10.7	
Blade surface height at level lift arms	mm	1494	1494	1494	
	in	58	58	58	
Shank front face reach at level lift arms	mm	762	762	762	
	in	30	30	30	
Blade surface height at minimum lift	mm	71	71	71	
	in	2.8	2.8	2.8	
Shank front face reach at minimum lift	mm	339	339	339	
	in	13	13	13	
Overall length at minimum lift, level tine	mm	3884	4044	4194	
	in	152.9	159.2	165.1	
Tipping load	236B	kg	1343	1272	1211
		lb	2961	2805	2670
	246B	kg	1403	1330	1267
		lb	3094	2933	2794
	248B	kg	1408	1334	1270
		lb	3105	2941	2800
Operating weight	236B	kg	3194	3204	3214
		lb	7043	7065	7087
	246B	kg	3255	3265	3275
		lb	7177	7199	7221
	248B	kg	3336	3346	3356
		lb	7356	7378	7400

Performance Data
● 252B/262B/268B

Skid Steer Loaders

Bucket Type		General Purpose						Multi-Purpose	
		1680 mm (66") 12 x 16.5			1830 mm (72") 12 x 16.5			1680 mm (66") 12 x 16.5	
Bucket Width Tire Size		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	0.40 0.52	0.40 0.52	0.41 0.53	0.44 0.57	0.44 0.57	0.45 0.59	0.33 0.43	0.33 0.43
Struck capacity	m ³ yd ³	0.29 0.38	0.29 0.38	0.29 0.38	0.32 0.42	0.32 0.42	0.32 0.42	0.24 0.31	0.25 0.33
Width	mm in	1730 68	1740 68	1730 68	1883 74	1893 75	1883 74	1749 69	1749 69
Dump clearance at maximum lift/dump	mm in	2439 96.0	2394 94.3	2318 91.3	2439 96.0	2394 94.3	2318 91.3	2435 95.9	2392 94.2
Reach at maximum lift/dump	mm in	769 30.3	780 30.7	841 33.1	769 30.3	780 30.7	841 33.1	773 30.4	784 30.9
Floor angle at maximum lift/dump	degrees	51°	51°	51°	51°	51°	51°	51°	51°
Floor angle at maximum lift/rack back	degrees	87°	87°	87°	87°	87°	87°	87°	87°
Clearance at maximum lift/level bucket	mm in	3039 119.6	3032 119.4	3031 119.3	3039 119.6	3032 119.4	3031 119.3	3039 119.6	3032 119.4
Hinge pin height at maximum lift	mm in	3227 127	3227 127	3227 127	3227 127	3227 127	3227 127	3227 127	3227 127
Maximum overall height	mm in	4091 161.1	4131 162.6	4229 166.5	4091 161.1	4131 162.6	4229 166.5	4096 161.3	4135 162.8
Reach at level lift arm/bucket	mm in	1290 50.8	1331 52.4	1429 56.3	1290 50.8	1331 52.4	1429 56.3	1295 51	1335 52.3
Maximum floor angle at minimum lift	degrees	27°	27°	27°	27°	27°	27°	27°	27°
Dig depth with level bucket	mm in	0 0	16 0.63	1 0.04	0 0	16 0.63	1 0.04	0 0	16 0.63
Overall length with bucket on ground	mm in	3628 142.8	3669 144.4	3767 148.3	3628 142.8	3669 144.4	3767 148.3	3633 143	3673 144.6
Front clearance circle radius (w/bucket)	mm in	2187 86.1	2234 88	2298 90.5	2217 87.3	2264 89.1	2325 91.5	2191 86.3	2236 88
Tipping load	252B kg lb	2370 5226	2305 5083	2350 5182	2364 5213	2299 5069	2342 5164	2217 4888	2158 4758
	262B kg lb	2370 5226	2305 5083	2350 5182	2364 5213	2299 5069	2342 5164	2217 4888	2158 4758
	268B kg lb	2385 5259	2323 5122	2363 5210	2377 5241	2311 5096	2354 5191	2229 4915	2170 4785
Breakout force — lift	252B kg lb	2303 5078	2247 4955	2287 5043	2296 5063	2238 4935	2280 5027	2187 4822	2133 4703
	262B kg lb	2303 5078	2247 4955	2287 5043	2296 5063	2238 4935	2280 5027	2187 4822	2133 4703
	268B kg lb	2285 5038	2229 4915	2269 5003	2278 5023	2220 4895	2263 4990	2170 4785	2115 4664
Breakout force — tilt	252B kg lb	2317 5109	2189 4827	2299 5069	2312 5098	2183 4814	2296 5063	2233 4924	2110 4653
	262B kg lb	2317 5109	2189 4827	2299 5069	2312 5098	2183 4814	2296 5063	2233 4924	2110 4653
	268B kg lb	2317 5109	2189 4827	2299 5069	2312 5098	2183 4814	2296 5063	2233 4924	2110 4653
Operating weight	252B kg lb	3603 7945	3635 8015	3619 7980	3610 7960	3646 8039	3627 7998	3735 8236	3768 8308
	262B kg lb	3603 7945	3635 8015	3619 7980	3610 7960	3646 8039	3627 7998	3735 8236	3768 8308
	268B kg lb	3662 8075	3695 8147	3679 8112	3670 8092	3706 8172	3686 8128	3795 8368	3828 8441

Skid Steer Loaders

Performance Data ● 252B/262B/268B

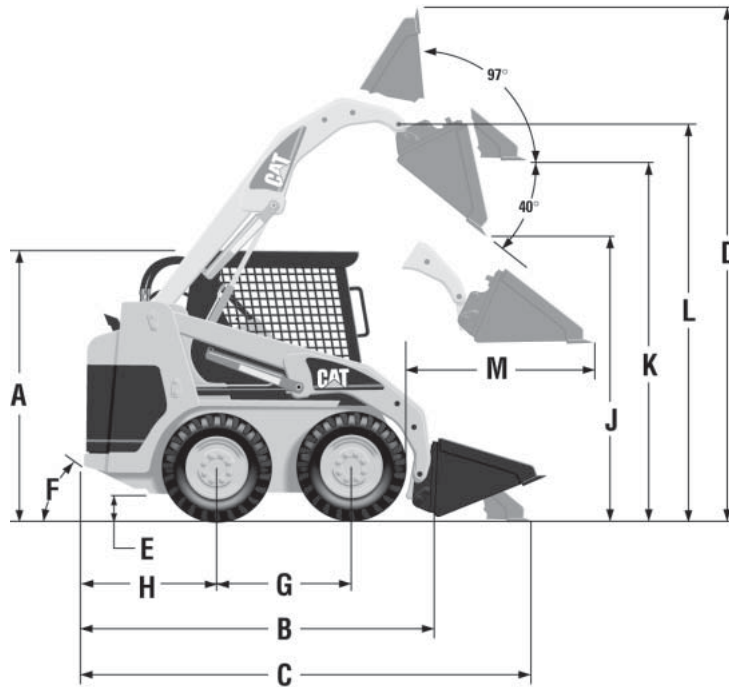
Bucket Type		Multi-Purpose				Dirt			
Bucket Width		1680 mm (66")	1830 mm (72")			1520 mm (60")		1680 mm (66")	
Tire Size		12 x 16.5	12 x 16.5			12 x 16.5		12 x 16.5	
Ground Engaging Type		Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Holes Only	Bolt-on Edge
Rated bucket capacity	m ³ yd ³	0.34 0.44	0.37 0.48	0.37 0.48	0.37 0.48	0.34 0.44	0.35 0.46	0.37 0.48	0.38 0.49
Struck capacity	m ³ yd ³	0.24 0.31	0.27 0.35	0.28 0.36	0.27 0.35	0.25 0.33	0.25 0.33	0.27 0.35	0.27 0.35
Width	mm in	1749 69	1902 75	1902 75	1902 75	1576 62	1586 62	1730 68	1740 69
Dump clearance at maximum lift/dump	mm in	2316 91.2	2435 95.9	2392 94.2	2316 91.2	2435 95.9	2403 94.6	2435 95.9	2403 94.6
Reach at maximum lift/dump	mm in	845 33.3	773 30.4	784 30.9	845 33.3	746 29.4	752 29.6	746 29.4	752 29.6
Floor angle at maximum lift/dump	degrees	51°	51°	51°	51°	51°	51°	51°	51°
Floor angle at maximum lift/rack back	degrees	87°	87°	87°	87°	87°	87°	87°	87°
Clearance at maximum lift/level bucket	mm in	3031 119.3	3039 119.6	3032 119.4	3031 119.3	3039 119.6	3032 119.4	3039 119.6	3032 119.4
Hinge pin height at maximum lift	mm in	3227 127	3227 127	3227 127	3227 127	3227 127	3227 127	3227 127	3227 127
Maximum overall height	mm in	4232 166.6	4096 161.3	4136 162.8	4232 166.6	4078 160.6	4105 161.6	4078 160.6	4105 161.6
Reach at level lift arm/bucket	mm in	1433 56.4	1295 51	1335 52.3	1433 56.4	1630 64.2	1587 65.5	1603 64.2	1587 65.5
Maximum floor angle at minimum lift	degrees	27°	27°	27°	27°	27°	27°	27°	27°
Dig depth with level bucket	mm in	1 0.04	0 0	16 0.63	1 0.04	0 0	16 0.63	0 0	16 0.63
Overall length with bucket on ground	mm in	3771 148.5	3633 143	3673 144.6	3771 148.5	3616 142.4	3644 143.5	3616 142.4	3644 143.5
Front clearance circle radius (w/bucket)	mm in	2301 90.6	2222 87.5	2267 89.3	2328 91.7	2161 85.1	2193 86.3	2190 86.2	2222 87.5
Tipping load	252B kg lb	2198 4847	2199 4849	2137 4712	2179 4805	2510 5535	2446 5393	2487 5484	2419 5334
	262B kg lb	2198 4847	2199 4849	2137 4712	2179 4805	2510 5535	2446 5393	2487 5484	2419 5334
	268B kg lb	2210 4873	2211 4875	2149 4739	2192 4833	2524 5565	2460 5424	2501 5515	2432 5363
Breakout force — lift	252B kg lb	2171 4787	2172 4789	2115 4664	2156 4754	2404 5301	2349 5180	2383 5255	2326 5129
	262B kg lb	2171 4787	2172 4789	2115 4664	2156 4754	2404 5301	2349 5180	2383 5255	2326 5129
	268B kg lb	2154 4750	2155 4752	2098 4626	2139 4716	2386 5261	2332 5142	2366 5217	2309 5091
Breakout force — tilt	252B kg lb	2216 4886	2225 4906	2101 4633	2209 4871	2515 5546	2375 5237	2504 5521	2362 5208
	262B kg lb	2216 4886	2225 4906	2101 4633	2209 4871	2515 5546	2375 5237	2504 5521	2362 5208
	268B kg lb	2216 4886	2225 4906	2101 4633	2209 4871	2515 5546	2375 5237	2504 5521	2362 5208
Operating weight	252B kg lb	3751 8271	3753 8275	3790 8357	3770 8313	3527 7777	3557 7843	3552 7832	3585 7905
	262B kg lb	3751 8271	3753 8275	3790 8357	3770 8313	3527 7777	3557 7843	3552 7832	3585 7905
	268B kg lb	3811 8403	3814 8410	3850 8489	3830 8445	3587 7909	3617 7975	3612 7964	3645 8037

Work Tool		Pallet Fork			
		910 mm (36")	1070 mm (42")	1220 mm (48")	
Tine Length					
Tire Size		12 x 16.5	12 x 16.5	12 x 16.5	
Carriage overall width without step	mm	1157	1157	1157	
	in	45	45	45	
Carriage step additional width	mm	108	108	108	
	in	4.25	4.25	4.25	
Carriage height above blade top	mm	923.5	923.5	923.5	
	in	36.4	36.4	36.4	
Blade surface height at maximum height	mm	3124	3124	3124	
	in	123	123	123	
Shank front face reach at maximum height	mm	671	671	671	
	in	26.4	26.4	26.4	
Blade surface height at level lift arms	mm	1695	1695	1695	
	in	66.7	66.7	66.7	
Shank front face reach at level lift arms	mm	737	737	737	
	in	29	29	29	
Blade surface height at minimum lift	mm	79	79	79	
	in	3.1	3.1	3.1	
Shank front face reach at minimum lift	mm	387	387	387	
	in	15.2	15.2	15.2	
Overall length at minimum lift, level tine	mm	3985	4145	4295	
	in	156.9	163.2	169.1	
Tipping load	252B	kg	1885	1787	1703
		lb	4156	3940	3755
	262B	kg	1885	1787	1703
		lb	4156	3940	3755
	268B	kg	1888	1790	1706
		lb	4163	3947	3762
Operating weight	252B	kg	3568	3578	3588
		lb	7867	7889	7912
	262B	kg	3568	3578	3588
		lb	7867	7889	7912
	268B	kg	3628	3638	3648
		lb	8000	8022	8044

Skid Steer Loaders

Dimensions

- 216B/226B/232B



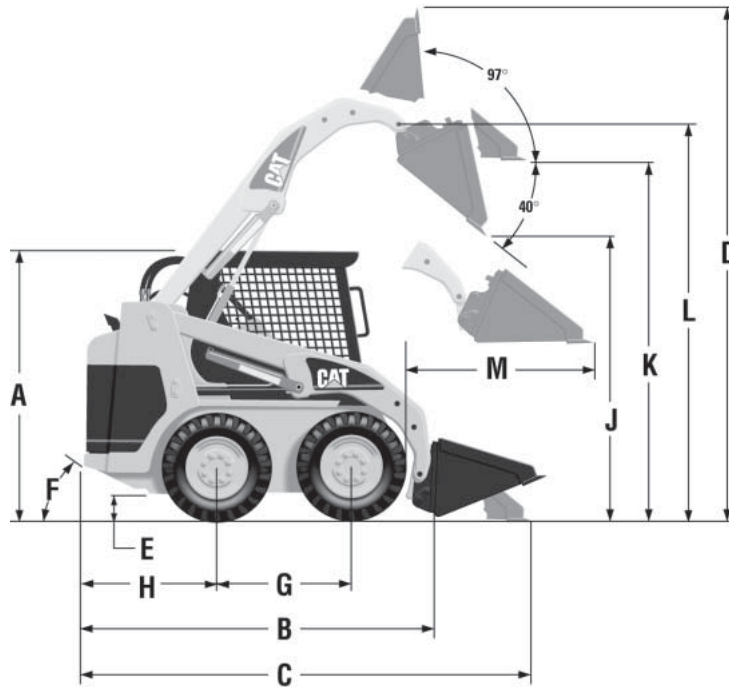
MODEL	216B		226B		232B	
Rated operating capacity*	635 kg	1400 lb	680 kg	1500 lb	793 kg	1750 lb
A Height to top of ROPS	1950 mm	6'5"	1950 mm	6'5"	1950 mm	6'5"
B Length to coupler	2519 mm	8'3"	2519 mm	8'3"	2760 mm	9'1"
C Length with bucket on ground	3233 mm	10'7"	3233 mm	10'7"	3437 mm	11'3"
D Maximum overall height	3709 mm	12'2"	3709 mm	12'2"	3894 mm	12'9"
E Ground clearance	195 mm	8"	195 mm	8"	145 mm	5.7"
F Departure angle		26°		26°		28°
G Wheelbase	986 mm	3'3"	986 mm	3'3"	1094 mm	3'7"
H Bumper overhang from axle	967 mm	3'2"	967 mm	3'2"	989 mm	3'3"
Bucket overall width	1524 mm	5'2"	1524 mm	5'2"	1524 mm	5'2"
J Clearance at maximum lift/dump	2169 mm	7'1"	2169 mm	7'1"	2281 mm	7'6"
Floor angle at maximum lift/dump		39.9°		39.9°		49.5°
Floor angle at maximum lift/rack		96.7°		96.7°		96.7°
K Clearance at maximum lift/level	2661 mm	8'9"	2661 mm	8'9"	2851 mm	9'4"
L Hinge pin height at maximum lift	2854 mm	9'4"	2854 mm	9'4"	3013 mm	9'11"
M Reach at level lift arm/bucket	1280 mm	4'2"	1280 mm	4'2"	1356 mm	4'5"
Hinge pin height at carry position	236 mm	8"	236 mm	8"	247 mm	9.7"
Maximum floor angle at carry position		27.7°		27.7°		28.1°

*SAE J818 MAY87, ISO 5998:1986.

NOTE: 216B/226B machine dimensions shown with standard machine equipped with optional 10 x 16.5 10 PR tires and 1520 mm (60") dirt bucket.
232B machine dimensions shown with standard machine equipped with optional 12 x 16.5 10 PR tires and 1730 mm (66") dirt bucket.

Dimensions
● 236B/242B/246B

Skid Steer Loaders



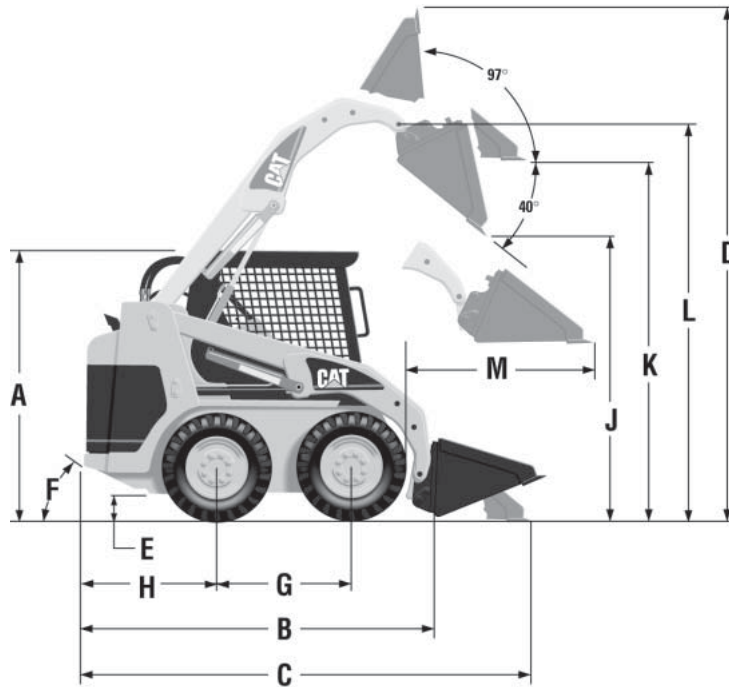
MODEL	236B		242B		246B	
Rated operating capacity*	793 kg	1750 lb	907 kg	2000 lb	907 kg	2000 lb
A Height to top of ROPS	2092 mm	6'10"	1986 mm	6'6"	2092 mm	6'10"
B Length to coupler	2800 mm	9'2"	2760 mm	9'1"	2800 mm	9'2"
C Length with bucket on ground	3515 mm	11'6"	3437 mm	11'3"	3515 mm	11'6"
D Maximum overall height	3965 mm	13'0"	3927 mm	12'11"	3965 mm	13'0"
E Ground clearance	235 mm	9"	185 mm	7.3"	235 mm	9"
F Departure angle		28°		28°		28°
G Wheelbase	1134 mm	3'9"	1094 mm	3'7"	1134 mm	3'9"
H Bumper overhang from axle	1038 mm	3'5"	989 mm	3'3"	1038 mm	3'5"
Bucket overall width	1730 mm	5'8"	1524 mm	5'2"	1730 mm	5'8"
J Clearance at maximum lift/dump	2398 mm	7'10"	2281 mm	7'6"	2398 mm	7'10"
Floor angle at maximum lift/dump		39.9°		49.5°		39.9°
Floor angle at maximum lift/rack		97.4°		96.7°		97.4°
K Clearance at maximum lift/level	2908 mm	9'6"	2851 mm	9'4"	2908 mm	9'6"
L Hinge pin height at maximum lift	3099 mm	10'2"	3046 mm	10'0"	3099 mm	10'2"
M Reach at level lift arm/bucket	1357 mm	4'5"	1356 mm	4'5"	1357 mm	4'5"
Hinge pin height at carry position	257 mm	10"	300 mm	11.8"	257 mm	10"
Maximum floor angle at carry position		29.4°		28.1°		29.4°

*SAE J818 MAY87, ISO 5998:1986.

NOTE: 236B/242B/246B machine dimensions shown with standard machine equipped with optional 12 x 16.5 10 PR tires and 1730 mm (66") dirt bucket.

Skid Steer Loaders

Dimensions 248B/252B/262B/268B



MODEL	248B		252B		262B		268B	
Rated operating capacity*	907 kg	2000 lb	1134 kg	2500 lb	1225 kg	2700 lb	1225 kg	2700 lb
A Height to top of ROPS	2092 mm	6'10"	2080 mm	6'8"	2080 mm	6'8"	2080 mm	6'8"
B Length to coupler	2800 mm	9'2"	2910 mm	9'5"	2910 mm	9'5"	2910 mm	9'5"
C Length with bucket on ground	3515 mm	11'6"	3616 mm	11'9"	3616 mm	11'9"	3616 mm	11'9"
D Maximum overall height	3965 mm	13'0"	4078 mm	13'4"	4078 mm	13'4"	4078 mm	13'4"
E Ground clearance	235 mm	9"	196 mm	8"	196 mm	8"	196 mm	8"
F Departure angle	28°		27°		27°		27°	
G Wheelbase	1134 mm	3'9"	1228 mm	4'0"	1228 mm	4'0"	1228 mm	4'0"
H Bumper overhang from axle	1038 mm	3'5"	1043 mm	3'4"	1043 mm	3'4"	1043 mm	3'4"
Bucket overall width	1730 mm	5'8"	1730 mm	5'8"	1730 mm	5'8"	1730 mm	5'8"
J Clearance at maximum lift/dump	2398 mm	7'10"	2435 mm	8'0"	2435 mm	8'0"	2435 mm	8'0"
Floor angle at maximum lift/dump	39.9°		51°		51°		51°	
Floor angle at maximum lift/rack	97.4°		87°		87°		87°	
K Clearance at maximum lift/level	2908 mm	9'6"	3039 mm	10'0"	3039 mm	10'0"	3039 mm	10'0"
L Hinge pin height at maximum lift	3099 mm	10'2"	3227 mm	10'6"	3227 mm	10'6"	3227 mm	10'6"
M Reach at level lift arm/bucket	1357 mm	4'5"	1603 mm	5'4"	1603 mm	5'4"	1603 mm	5'4"
Hinge pin height at carry position	257 mm	10"	213 mm	8"	213 mm	8"	213 mm	8"
Maximum floor angle at carry position	29.4°		27°		27°		27°	

*SAE J818 MAY87, ISO 5998:1986.

NOTE: 248B/252B/262B/268B machine dimensions shown with standard machine equipped with optional 12 x 16.5 10 PR tires and 1730 mm (66") dirt bucket.

MULTI TERRAIN LOADERS

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Features:

- **Caterpillar engines** provide high horsepower and torque. Closed circuit breather, glow plug starting aid, ecology drain and S•O•S oil sampling ports standard.
- **Ergonomically designed cab** provides maximum operator comfort and visibility.
- **Low effort**, pilot hydraulic joystick controls, arm-rest and retractable seat belt for easy operation.
- **Deep skid resistant steps** and two tilt cylinders makes egress/ingress easy.
- **Hand and foot throttle** for continuous or variable engine speed.
- **Exclusive anti-stall feature** provides maximum rimpull and hydraulic power while lugging the engine.
- **High hydraulic horsepower** gets work done quickly.
- **Direct drive hystat pumps** eliminate universal joints and belts.
- **Tilt-up cooling package** provides access to engine compartment.
- **Long life coolant** and extended hour service intervals for low operating costs.
- **Single engine belt** drives alternator and water pump.
- **Deutsch connectors** are color coded, numbered and protected with nylon braiding.
- **Electro-deposition** or “E” coat corrosion protection for long life.
- **High flow hydraulics** optional on 257B.

**Skid Steer Loaders
Multi Terrain**

Specifications
● 247B/257B/267B



MODEL	247B		257B		267B	
Flywheel Power: Net	42.5 kW	57 hp	42.5 kW	57 hp	51 kW	68 hp
Gross	46 kW	62 hp	46 kW	62 hp	53 kW	71 hp
Engine Model	3024C T		3024C T		3044C DIT	
Rated Engine RPM	3000		3000		2600	
Bore	84 mm	3.3"	84 mm	3.3"	94 mm	3.7"
Stroke	100 mm	3.9"	100 mm	3.9"	120 mm	4.7"
Displacement	2.2 L	134 in³	2.2 L	134 in³	3.3 L	201 in³
No. Cylinders	4		4		4	
Speeds Forward						
Infinite	0-12.0 kph	0-7.4 mph	0-11.2 kph	0-6.9 mph	0-9.7 kph	0-6.0 mph
Speeds Reverse						
Infinite	0-12.0 kph	0-7.4 mph	0-11.2 kph	0-6.9 mph	0-9.7 kph	0-6.0 mph
Hydraulic Cycle Time, Empty Bucket:	Seconds		Seconds		Seconds	
Raise	2.7		3.0		2.7	
Dump	2.2		2.2		2.2	
Lower (Empty, Float Down)	2.8		3.0		2.8	
Total	7.7		8.2		7.7	
Tread Width (per side)	381 mm	15"	381 mm	15"	457 mm	18"
Width Over Tracks	1676 mm	5'6"	1676 mm	5'6"	1898 mm	6'3"
Ground Clearance	267 mm	10"	257 mm	10"	353 mm	14"
Fuel Tank Capacity	62 L	17 U.S. gal	90 L	23.8 U.S. gal	82 L	21.7 U.S. gal
Hydraulic Tank Capacity	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal
Hydraulic System Capacity (includes tank)	55 L	14.5 U.S. gal	55 L	14.5 U.S. gal	52 L	13.7 U.S. gal
Hydraulic Pump Capacity	60 L/min	15.6 gpm	60 L/min	15.6 gpm	82 L/min	22 gpm

Specifications
● 277B/287B

Skid Steer Loaders
Multi Terrain



MODEL	277B		287B	
Flywheel Power: Net	57 kW	76 hp	57 kW	76 hp
Gross	60 kW	80 hp	60 kW	80 hp
Engine Model	3044C DIT		3044C DIT	
Rated Engine RPM	2600		2600	
Bore	94 mm	3.7"	94 mm	3.7"
Stroke	120 mm	4.7"	120 mm	4.7"
Displacement	3.3 L	201 in ³	3.3 L	201 in ³
No. Cylinders	4		4	
Speeds Forward				
Infinite	0-9.7 kph	0-6.0 mph	0-11.0 kph	0-7.0 mph
Speeds Reverse				
Infinite	0-9.7 kph	0-6.0 mph	0-11.0 kph	0-7.0 mph
Hydraulic Cycle Time, Empty Bucket:	Seconds		Seconds	
Raise	2.7		4.8	
Dump	2.2		2.2	
Lower (Empty, Float Down)	2.8		3.6	
Total	7.7		10.6	
Tread Width (per side)	457 mm	18"	457 mm	18"
Width Over Tracks	1898 mm	6'3"	1982 mm	6'6"
Ground Clearance	353 mm	14"	283 mm	11"
Fuel Tank Capacity	82 L	21.7 U.S. gal	110 L	29 U.S. gal
Hydraulic Tank Capacity	35 L	9.2 U.S. gal	35 L	9.2 U.S. gal
Hydraulic System Capacity (includes tank)	52 L	13.7 U.S. gal	51 L	13.5 U.S. gal
Hydraulic Pump Capacity	82 L/min	22 gpm	82 L/min	22 gpm

Skid Steer Loaders
Multi Terrain

Performance Data
● 247B

Bucket Type		General Purpose						Multi-Purpose	
		1680 mm (66")			1829 mm (72")			1680 mm (66")	
Bucket Width		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	0.40 0.52	0.40 0.52	0.41 0.53	0.44 0.57	0.44 0.57	0.45 0.59	0.33 0.43	0.33 0.43
Struck capacity	m ³ yd ³	0.29 0.38	0.29 0.38	0.29 0.38	0.32 0.42	0.32 0.42	0.32 0.42	0.24 0.31	0.25 0.33
Width	mm in	1730 68	1740 68	1730 68	1883 74	1893 75	1883 74	1749 69	1749 69
Dump clearance at maximum lift/dump	mm in	2134 84.0	2101 82.7	2067 81.4	2134 84.0	2101 82.7	2067 81.4	2133 84.0	2103 82.8
Reach at maximum lift/dump	mm in	625 24.6	637 25.1	696 27.4	625 24.6	637 25.1	696 27.4	628 24.7	640 25.2
Floor angle at maximum lift/dump	degrees	40.8°	40.8°	40.8°	40.8°	40.8°	40.8°	40.8°	40.8°
Floor angle at maximum lift/rack back	degrees	95.7°	95.7°	95.7°	95.7°	95.7°	95.7°	95.6°	95.6°
Clearance at maximum lift/level bucket	mm in	2667 105.0	2651 104.4	2666 105.0	2667 105.0	2651 104.4	2666 105.0	2673 105.2	2653 104.4
Hinge pin height at maximum lift	mm in	2862 112.7	2862 112.7	2862 112.7	2862 112.7	2862 112.7	2862 112.7	2862 112.7	2862 112.7
Maximum overall height	mm in	3770 148.4	3799 149.6	3867 152.2	3770 148.4	3799 149.6	3867 152.2	3774 148.6	3804 149.8
Reach at level lift arm/bucket	mm in	1395 54.9	1423 56.0	1493 58.8	1395 54.9	1423 56.0	1493 58.8	1399 55.1	1427 56.2
Maximum floor angle at minimum lift	degrees	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°	25.3°	25.3°
Dig depth with level bucket	mm in	0 0.0	16 0.6	1 0.0	0 0.0	16 0.6	1 0.0	0 0.0	16 0.6
Overall length with bucket on ground	mm in	3285 129.3	3313 130.4	3382 133.1	3285 129.3	3313 130.4	3382 133.1	3289 129.5	3317 130.6
Front clearance circle radius (w/bucket)	mm in	2157 84.9	2189 86.2	2223 87.5	2189 86.2	2221 87.4	2251 88.6	2142 84.3	2174 85.6
Tipping load	kg lb	1772 3907	1715 3782	1750 3859	1764 3890	1703 3755	1742 3841	1624 3581	1569 3460
Breakout force — lift	kg lb	1418 3127	1368 3017	1402 3091	1412 3112	1360 2998	1396 3078	1308 2883	1259 2776
Breakout force — tilt	kg lb	1694 3734	1590 3506	1676 3696	1689 3724	1583 3491	1673 3688	1618 3567	1517 3345
Operating weight	kg lb	3024 6668	3056 6738	3040 6703	3031 6683	3067 6763	3048 6721	3156 6959	3189 7032

Bucket Type	Multi-Purpose				Dirt				
Bucket Width	1680 mm (66")	1829 mm (72")			1680 mm (66")	1829 mm (72")			
Ground Engaging Type	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Holes Only	Bolt-on Edge	
Rated bucket capacity	m ³ yd ³	0.34 0.44	0.37 0.48	0.37 0.48	0.37 0.48	0.37 0.48	0.38 0.49	0.41 0.54	0.42 0.55
Struck capacity	m ³ yd ³	0.24 0.31	0.27 0.35	0.28 0.36	0.27 0.35	0.27 0.35	0.27 0.35	0.29 0.38	0.31 0.41
Width	mm in	1749 69	1902 75	1902 75	1902 75	1730 68	1740 69	1883 74	1893 75
Dump clearance at maximum lift/dump	mm in	2066 81.3	2133 84.0	2103 82.8	2066 81.3	2167 85.3	2138 84.2	2167 85.3	2138 84.2
Reach at maximum lift/dump	mm in	702 27.6	628 24.7	640 25.2	702 27.6	584 23.0	596 23.5	584 23.0	596 23.5
Floor angle at maximum lift/dump	degrees	40.8°	40.8°	40.8°	40.8°	40.8°	40.8°	40.8°	40.8°
Floor angle at maximum lift/rack back	degrees	95.6°	95.6°	95.6°	95.6°	95.7°	95.7°	95.7°	95.7°
Clearance at maximum lift/level bucket	mm in	2668 105.0	2673 105.2	2653 104.4	2668 105.0	2667 105.0	2651 104.4	2667 105.0	2651 104.4
Hinge pin height at maximum lift	mm in	2862 112.7	2862 112.7	2862 112.7	2862 112.7	2862 112.7	2862 112.7	2862 112.7	2862 112.7
Maximum overall height	mm in	3872 152.4	3774 148.6	3804 149.8	3872 152.4	3717 146.3	3746 147.5	3717 146.3	3746 147.5
Reach at level lift arm/bucket	mm in	1497 58.9	1399 55.1	1427 56.2	1497 58.9	1342 52.8	1370 53.9	1342 52.8	1370 53.9
Maximum floor angle at minimum lift	degrees	25.3°	25.3°	25.3°	25.3°	25.4°	25.4°	25.4°	25.4°
Dig depth with level bucket	mm in	1 0.0	0 0.0	16 0.6	1 0.0	0 0.0	13 0.5	0 0.0	13 0.5
Overall length with bucket on ground	mm in	3386 133.3	3289 129.5	3317 130.6	3386 133.3	3232 127.2	3260 128.3	3233 127.3	3261 128.4
Front clearance circle radius (w/bucket)	mm in	2208 86.9	2152 84.7	2183 85.9	2213 87.1	2097 82.6	2128 83.8	2110 83.1	2141 84.3
Tipping load	kg lb	1604 3537	1606 3541	1548 3413	1586 3497	1895 4178	1837 4051	1871 4126	1818 4009
Breakout force — lift	kg lb	1291 2848	1293 2850	1242 2739	1277 2816	1488 3282	1437 3169	1478 3258	1424 3140
Breakout force — tilt	kg lb	1600 3528	1609 3548	1508 3326	1594 3514	1842 4061	1726 3806	1835 4046	1717 3786
Operating weight	kg lb	3173 6996	3175 7001	3211 7080	3192 7038	2948 6500	2978 6566	2973 6555	3006 6628

Skid Steer Loaders
Multi Terrain

Performance Data
● 247B

Work Tool		Pallet Fork		
		910 mm (36")	1070 mm (42")	1220 mm (48")
Tine Length				
Carriage overall width	mm	1159	1159	1159
without step	in	45.6	45.6	45.6
Carriage step	mm	108	108	108
additional width	in	4.3	4.3	4.3
Carriage height above	mm	923.5	923.5	923.5
blade top	in	36.4	36.4	36.4
Blade surface height at	mm	2754	2754	2754
maximum height	in	108.4	108.4	108.4
Shank front face reach at	mm	373	373	373
maximum height	in	14.7	14.7	14.7
Blade surface height at	mm	1419	1419	1419
level lift arms	in	55.9	55.9	55.9
Shank front face reach at	mm	802	802	802
level lift arms	in	31.6	31.6	31.6
Blade surface height at	mm	106	106	106
minimum lift	in	4.2	4.2	4.2
Shank front face reach at	mm	392	392	392
minimum lift	in	15.4	15.4	15.4
Overall length at minimum lift,	mm	3601	3761	3911
level tine	ft/in	11'10"	12'4"	12'10"
Tipping load	kg	1405	1327	1260
	lb	3098	2926	2778
Operating weight	kg	2989	3000	3009
	lb	6591	6615	6635

Bucket Type		General Purpose						Multi-Purpose	
		1680 mm (66")			1829 mm (72")			1680 mm (66")	
Bucket Width		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	0.40 0.52	0.40 0.52	0.41 0.53	0.44 0.57	0.44 0.57	0.45 0.59	0.33 0.43	0.33 0.43
Struck capacity	m ³ yd ³	0.29 0.38	0.29 0.38	0.29 0.38	0.32 0.42	0.32 0.42	0.32 0.42	0.24 0.31	0.25 0.33
Width	mm in	1730 68	1740 68	1730 68	1883 74	1893 75	1883 74	1749 69	1749 69
Dump clearance at maximum lift/dump	mm in	2278 89.7	2275 89.6	2201 86.7	2275 89.6	2244 88.3	2205 86.8	2274 89.5	2242 88.3
Reach at maximum lift/dump	mm in	790 31.1	797 31.4	853 33.6	790 31.1	798 31.4	854 33.6	793 31.2	801 31.5
Floor angle at maximum lift/dump	degrees	40.5°	40.5°	40.5°	40.5°	40.5°	40.5°	40.5°	40.5°
Floor angle at maximum lift/rack back	degrees	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°
Clearance at maximum lift/level bucket	mm in	2889 113.7	2870 113.0	2885 113.6	2885 113.6	2870 113.0	2885 113.6	2887 113.7	2871 113.0
Hinge pin height at maximum lift	mm in	3081 121.3	3081 121.3	3081 121.3	3081 121.3	3081 121.3	3081 121.3	3081 121.3	3081 121.3
Maximum overall height	mm in	3963 156.0	3990 157.1	4060 159.8	3963 156.0	3990 157.1	4060 159.8	3966 156.1	3994 157.2
Reach at level lift arm/bucket	mm in	1387 54.6	1415 55.7	1484 58.4	1388 54.6	1416 55.7	1486 58.5	1391 54.8	1419 55.9
Maximum floor angle at minimum lift	degrees	25.4°	25.4°	25.4°	25.4°	25.4°	25.4°	25.3°	25.3°
Dig depth with level bucket	mm in	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
Overall length with bucket on ground	mm in	3490 137.4	3518 138.5	3588 141.3	3491 137.4	3519 138.5	3588 141.3	3494 137.6	3522 138.7
Front clearance circle radius (w/bucket)	mm in	2261 89.0	2293 90.3	2327 91.6	2292 90.2	2323 91.5	2354 92.7	2250 88.6	2282 89.8
Tipping load	kg lb	2096 4622	2038 4494	2074 4573	2088 4604	2026 4467	2066 4556	1943 4284	1887 4161
Breakout force — lift	kg lb	1670 3683	1620 3572	1654 3648	1664 3668	1611 3552	1648 3634	1557 3434	1508 3325
Breakout force — tilt	kg lb	1693 3732	1589 3504	1675 3694	1688 3722	1583 3490	1672 3686	1617 3565	1516 3343
Operating weight	kg lb	3428 7559	3461 7632	3444 7594	3436 7576	3471 7654	3452 7612	3561 7852	3594 7925

Skid Steer Loaders
Multi Terrain

Performance Data
● 257B

Bucket Type		Multi-Purpose				Dirt			
		1680 mm (66")	1829 mm (72")			1680 mm (66")		1829 mm (72")	
Bucket Width		1680 mm (66")	1829 mm (72")			1680 mm (66")		1829 mm (72")	
Ground Engaging Type		Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Holes Only	Bolt-on Edge
Rated bucket capacity	m ³ yd ³	0.34 0.44	0.37 0.48	0.37 0.48	0.37 0.48	0.37 0.48	0.38 0.49	0.41 0.54	0.42 0.55
Struck capacity	m ³ yd ³	0.24 0.31	0.27 0.35	0.28 0.36	0.27 0.35	0.27 0.35	0.27 0.35	0.29 0.38	0.31 0.41
Width	mm in	1749 69	1902 75	1902 75	1902 75	1730 68	1740 69	1883 74	1893 75
Dump clearance at maximum lift/dump	mm in	2199 86.6	2274 89.5	2242 88.3	2199 86.6	2318 91.3	2288 90.1	2316 91.2	2285 90.0
Reach at maximum lift/dump	mm in	856 33.7	793 31.2	801 31.5	856 33.7	756 29.8	763 30.0	756 29.8	763 30.0
Floor angle at maximum lift/dump	degrees	40.5°	40.5°	40.5°	40.5°	40.5°	40.5°	40.5°	40.5°
Floor angle at maximum lift/rack back	degrees	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°	86.9°
Clearance at maximum lift/level bucket	mm in	2886 113.6	2887 113.7	2871 113.0	2886 113.6	2885 113.6	2869 113.0	2885 113.6	2869 113.0
Hinge pin height at maximum lift	mm in	3081 121.3	3081 121.3	3081 121.3	3081 121.3	3081 121.3	3081 121.3	3081 121.3	3081 121.3
Maximum overall height	mm in	4064 160.0	3966 156.1	3994 157.2	4064 160.0	3910 153.9	3937 155.0	3910 153.9	3937 155.0
Reach at level lift arm/bucket	mm in	1489 58.6	1391 54.8	1419 55.9	1489 58.6	1334 52.5	1362 53.6	1334 52.5	1362 53.6
Maximum floor angle at minimum lift	degrees	25.3°	25.3°	25.3°	25.3°	25.4°	25.4°	25.4°	25.4°
Dig depth with level bucket	mm in	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
Overall length with bucket on ground	mm in	3591 141.4	3494 137.6	3522 138.7	3591 141.4	3437 135.3	3465 136.4	3437 135.3	3465 136.4
Front clearance circle radius (w/bucket)	mm in	2317 91.2	2281 89.8	2312 91.0	2344 92.3	2205 86.8	2237 88.1	2236 88.0	2268 89.3
Tipping load	kg lb	1924 4242	1926 4247	1866 4115	1905 4201	2201 4853	2136 4710	2188 4825	2119 4672
Breakout force — lift	kg lb	1541 3399	1542 3400	1491 3287	1527 3366	1742 3842	1691 3728	1731 3818	1677 3698
Breakout force — tilt	kg lb	1599 3526	1608 3546	1507 3324	1593 3512	1841 4059	1725 3805	1834 4044	1716 3784
Operating weight	kg lb	3577 7887	3579 7892	3615 7971	3596 7929	3378 7448	3411 7521	3391 7477	3427 7557

Work Tool		Pallet Fork		
		910 mm (36")	1070 mm (42")	1220 mm (48")
Tine Length				
Carriage overall width	mm	1159	1159	1159
without step	in	45.6	45.6	45.6
Carriage step	mm	108	108	108
additional width	in	4.3	4.3	4.3
Carriage height above	mm	923.5	923.5	923.5
blade top	in	36.4	36.4	36.4
Blade surface height at	mm	2968	2968	2988
maximum height	in	116.9	116.9	117.6
Shank front face reach at	mm	655	655	655
maximum height	in	25.8	25.8	25.8
Blade surface height at	mm	1554	1554	1554
level lift arms	in	61.2	61.2	61.2
Shank front face reach at	mm	793	793	793
level lift arms	in	31.2	31.2	31.2
Blade surface height at	mm	112	112	112
minimum lift	in	4.4	4.4	4.4
Shank front face reach at	mm	500	500	500
minimum lift	in	19.7	19.7	19.7
Overall length at minimum lift,	mm	3806	3966	4116
level tine	ft/in	12'6"	13'0"	13'6"
Tipping load	kg	1700	1686	1674
	lb	3748	3717	3691
Operating weight	kg	3394	3404	3414
	lb	7484	7506	7528

**Skid Steer Loaders
Multi Terrain**

**Performance Data
● 267B/277B**

Bucket Type		General Purpose					
		1829 mm (72")			1981 mm (78")		
Bucket Width		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth
Ground Engaging Type							
Rated bucket capacity	m ³ yd ³	0.44 0.57	0.44 0.57	0.45 0.59	0.48 0.62	0.48 0.62	0.48 0.62
Struck capacity	m ³ yd ³	0.32 0.42	0.32 0.42	0.32 0.42	0.34 0.44	0.34 0.44	0.34 0.44
Width	mm in	1883 74.1	1893 74.5	1883 74.1	2035 80.1	2045 80.5	2035 80.1
Dump clearance at maximum lift/dump	mm in	2345 92.3	2315 91.1	2282 89.8	2346 92.4	2313 91.1	2284 89.9
Reach at maximum lift/dump	mm in	676 26.6	676 26.6	716 28.2	676 26.6	676 26.6	716 28.2
Floor angle at maximum lift/dump	degrees	40.6°	40.6°	40.6°	40.6°	40.6°	40.6°
Floor angle at maximum lift/rack back	degrees	96.6°	96.6°	96.6°	96.6°	96.6°	96.6°
Clearance at maximum lift/level bucket	mm in	2896 114	2880 113.4	2895 114	2896 114	2877 113.2	2895 114
Hinge pin height at maximum lift	mm in	3091 121.7	3091 121.7	3091 121.7	3091 121.7	3091 121.7	3091 121.7
Maximum overall height	mm in	4025 158.5	4054 159.6	4121 162.2	4025 158.5	4055 159.6	4121 162.2
Reach at level lift arm/bucket	mm in	1455 57.3	1483 58.4	1553 61.1	1455 57.3	1483 58.4	1553 61.1
Maximum floor angle at minimum lift	degrees	27.4°	27.4°	27.4°	27.4°	27.4°	27.4°
Dig depth with level bucket	mm in	0 0	16 0.63	1 0.04	0 0	16 0.63	1 0.04
Overall length with bucket on ground	mm in	3684 145	3712 146.1	3782 148.9	3684 145	3712 146.1	3782 148.9
Front clearance circle radius (w/bucket)	mm in	2482 97.7	2514 99	2546 100	2512 98.9	2544 100.2	2574 101.3
Tipping load	267B kg lb	2918 6434	2850 6284	2896 6385	2903 6401	2835 6251	2880 6350
	277B kg lb	2918 6434	2850 6284	2896 6385	2903 6401	2835 6251	2880 6350
Breakout force — lift	267B kg lb	2026 4467	1968 4339	2010 4432	2014 4440	1955 4310	1997 4403
	277B kg lb	2026 4467	1968 4339	2010 4432	2014 4440	1955 4310	1997 4403
Breakout force — tilt	267B kg lb	2527 5572	2389 5267	2510 5534	2520 5556	2381 5250	2501 5514
	277B kg lb	2527 5572	2389 5267	2510 5534	2520 5556	2381 5250	2501 5514
Operating weight	267B kg lb	4265 9404	4301 9483	4282 9441	4279 9435	4316 9516	4297 9474
	277B kg lb	4265 9404	4301 9483	4282 9441	4279 9435	4316 9516	4297 9474

Bucket Type		Multi-Purpose					
		1829 mm (72")			1981 mm (78")		
Bucket Width		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth
Ground Engaging Type							
Rated bucket capacity	m ³ yd ³	0.37 0.48	0.37 0.48	0.37 0.48	0.41 0.53	0.41 0.53	0.41 0.53
Struck capacity	m ³ yd ³	0.27 0.35	0.28 0.36	0.27 0.35	0.30 0.39	0.31 0.39	0.30 0.39
Width	mm in	1902 74.9	1902 74.9	1902 74.9	2055 80.9	2055 80.9	2055 80.9
Dump clearance at maximum lift/dump	mm in	2347 92.4	2314 91.1	2280 89.8	2344 92.3	2312 91	2280 89.8
Reach at maximum lift/dump	mm in	679 26.7	679 26.7	719 28.3	679 26.7	679 26.7	719 28.3
Floor angle at maximum lift/dump	degrees	40.7°	40.7°	40.7°	40.7°	40.7°	40.7°
Floor angle at maximum lift/rack back	degrees	96.5°	96.5°	96.5°	96.5°	96.5°	96.5°
Clearance at maximum lift/level bucket	mm in	2898 114.1	2881 113.4	2896 114	2897 114.1	2878 113.3	2896 114
Hinge pin height at maximum lift	mm in	3091 121.7	3091 121.7	3091 121.7	3091 121.7	3091 121.7	3091 121.7
Maximum overall height	mm in	4028 158.6	4057 159.7	4125 162.4	4028 158.6	4058 159.8	4125 162.4
Reach at level lift arm/bucket	mm in	1460 57.5	1488 58.6	1558 61.3	1460 57.5	1487 58.5	1558 61.3
Maximum floor angle at minimum lift	degrees	27.3°	27.3°	27.3°	27.3°	27.3°	27.3°
Dig depth with level bucket	mm in	0 0	16 0.63	1 0.04	0 0	16 0.63	1 0.04
Overall length with bucket on ground	mm in	3688 145.2	3716 146.3	3786 149.1	3688 145.2	3716 146.3	3786 149.1
Front clearance circle radius (w/bucket)	mm in	2464 97	2496 98.3	2529 99.6	2494 98.2	2527 99.5	2557 100.7
Tipping load	267B kg lb	2746 6054	2681 5911	2726 6010	2739 6039	2671 5889	2716 5988
	277B kg lb	2746 6054	2681 5911	2726 6010	2739 6039	2671 5889	2716 5988
Breakout force — lift	267B kg lb	1904 4198	1848 4074	1888 4163	1888 4163	1830 4035	1870 4123
	277B kg lb	1904 4198	1848 4074	1888 4163	1888 4163	1830 4035	1870 4123
Breakout force — tilt	267B kg lb	2437 5373	2305 5082	2422 5340	2429 5355	2293 5056	2409 5300
	277B kg lb	2437 5373	2305 5082	2422 5340	2429 5355	2293 5056	2409 5300
Operating weight	267B kg lb	4409 9721	4445 9801	4425 9757	4429 9765	4466 9847	4447 9805
	277B kg lb	4409 9721	4445 9801	4425 9757	4429 9765	4466 9847	4447 9805

**Skid Steer Loaders
Multi Terrain**

**Performance Data
● 267B/277B**

Work Tool		Pallet Fork			
		910 mm (36")	1070 mm (42")	1220 mm (48")	
Tine Length					
Carriage overall width	mm	1159	1159	1159	
without step	in	45.6	45.6	45.6	
Carriage step	mm	108	108	108	
additional width	in	4.3	4.3	4.3	
Carriage height above	mm	923.5	923.5	923.5	
blade top	in	36.4	36.4	36.4	
Blade surface height at	mm	2988	2988	2988	
maximum height	in	117.6	117.6	117.6	
Shank front face reach at	mm	379	379	379	
maximum height	in	14.9	14.9	14.9	
Blade surface height at	mm	1619	1619	1619	
level lift arms	in	63.7	63.7	63.7	
Shank front face reach at	mm	846	846	846	
level lift arms	in	33.3	33.3	33.3	
Blade surface height at	mm	92	92	92	
minimum lift	in	3.6	3.6	3.6	
Shank front face reach at	mm	415	415	415	
minimum lift	in	16.3	16.3	16.3	
Overall length at minimum lift,	mm	4001	4161	4311	
level tine	ft/in	13'1"	13'7"	14'1"	
Tipping load	267B	kg	2419	2301	2198
		lb	5333	5073	4846
	277B	kg	2419	2301	2198
		lb	5333	5073	4846
Operating weight	267B	kg	4223	4234	4243
		lb	9311	9335	9355
	277B	kg	4223	4234	4243
		lb	9311	9335	9355

Bucket Type		General Purpose					
		1829 mm (72")			1981 mm (78")		
Bucket Width		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth
Ground Engaging Type							
Rated bucket capacity	m ³ yd ³	0.44 0.57	0.44 0.57	0.45 0.59	0.48 0.62	0.48 0.62	0.48 0.62
Struck capacity	m ³ yd ³	0.32 0.42	0.32 0.42	0.32 0.42	0.34 0.44	0.34 0.44	0.34 0.44
Width	mm in	1883 74.1	1893 74.5	1883 74.1	2035 80.1	2045 80.5	2035 80.1
Dump clearance at maximum lift/dump	mm in	2418 95.2	2386 93.9	2342 92.2	2418 95.2	2386 93.9	2342 92.2
Reach at maximum lift/dump	mm in	830 32.7	837 33.0	892 35.1	830 32.7	837 33.0	892 35.1
Floor angle at maximum lift/dump	degrees	50.6°	50.6°	50.6°	50.6°	50.6°	50.6°
Floor angle at maximum lift/rack back	degrees	86.6°	86.6°	86.6°	86.6°	86.6°	86.6°
Clearance at maximum lift/level bucket	mm in	3056 120.3	3039 119.6	3055 120.3	3056 120.3	3039 119.6	3055 120.3
Hinge pin height at maximum lift	mm in	3250 128.0	3250 128.0	3250 128.0	3250 128.0	3250 128.0	3250 128.0
Maximum overall height	mm in	4155 163.6	4182 164.6	4252 167.4	4155 163.6	4182 164.6	4252 167.4
Reach at level lift arm/bucket	mm in	1378 54.3	1406 55.4	1476 58.1	1378 54.3	1406 55.4	1476 58.1
Maximum floor angle at minimum lift	degrees	27.4°	27.4°	27.4°	27.4°	27.4°	27.4°
Dig depth with level bucket	mm in	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
Overall length with bucket on ground	mm in	3669 144.4	3697 145.6	3767 148.3	3669 144.4	3697 145.6	3767 148.3
Front clearance circle radius (w/bucket)	mm in	2371 93.3	2402 94.6	2433 95.8	2401 94.5	2433 95.8	2462 96.9
Tipping load	kg lb	3482 7677	3406 7510	3459 7627	3465 7640	3390 7474	3442 7589
Breakout force — lift	kg lb	2296 5062	2238 4934	2280 5027	2285 5038	2225 4906	2267 4998
Breakout force — tilt	kg lb	2312 5097	2183 4813	2296 5062	2306 5084	2175 4795	2287 5042
Operating weight	kg lb	4644 10,240	4679 10,317	4660 10,275	4658 10,270	4695 10,352	4676 10,310

Skid Steer Loaders
Multi Terrain

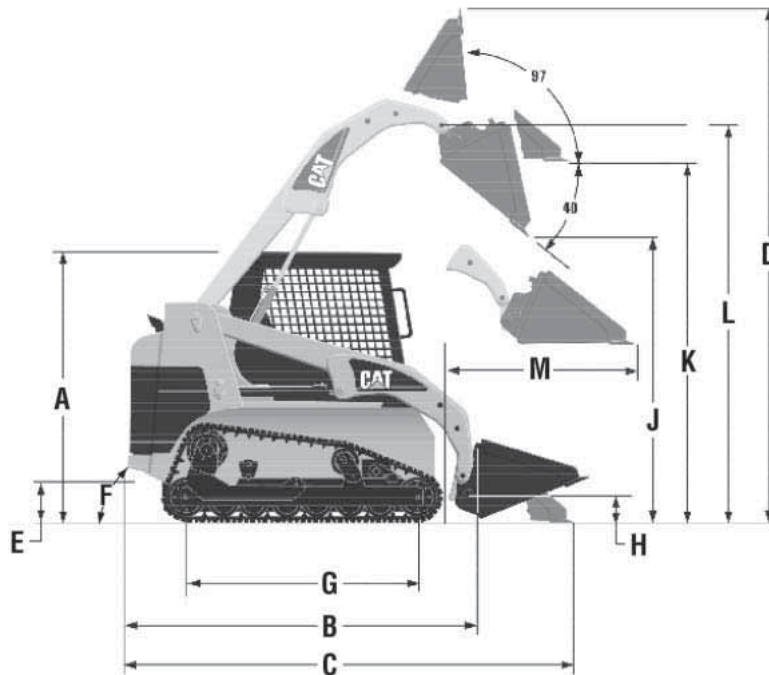
Performance Data
● 287B

Bucket Type		Multi-Purpose					
		1829 mm (72")			1981 mm (78")		
Bucket Width		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth
Ground Engaging Type		Holes Only	Bolt-on Edge	Bolt-on Teeth	Holes Only	Bolt-on Edge	Bolt-on Teeth
Rated bucket capacity	m ³ yd ³	0.37 0.48	0.37 0.48	0.37 0.48	0.41 0.53	0.41 0.53	0.41 0.53
Struck capacity	m ³ yd ³	0.27 0.35	0.28 0.36	0.27 0.35	0.30 0.39	0.31 0.39	0.30 0.39
Width	mm in	1902 74.9	1902 74.9	1902 74.9	2055 80.9	2055 80.9	2055 80.9
Dump clearance at maximum lift/dump	mm in	2416 95.1	2384 93.9	2339 92.1	2416 95.1	2384 93.9	2339 92.1
Reach at maximum lift/dump	mm in	840 33.1	832 32.8	895 35.2	840 33.1	832 32.8	895 35.2
Floor angle at maximum lift/dump	degrees	50.7°	50.7°	50.7°	50.7°	50.7°	50.7°
Floor angle at maximum lift/rack back	degrees	86.5°	86.5°	86.5°	86.5°	86.5°	86.5°
Clearance at maximum lift/level bucket	mm in	3057 120.4	3044 119.8	3056 120.3	3057 120.4	3044 119.8	3056 120.3
Hinge pin height at maximum lift	mm in	3250 128.0	3250 128.0	3250 128.0	3250 128.0	3250 128.0	3250 128.0
Maximum overall height	mm in	4159 163.7	4186 164.8	4256 167.6	4159 163.7	4186 164.8	4256 167.6
Reach at level lift arm/bucket	mm in	1386 54.6	1414 55.7	1483 58.4	1386 54.6	1414 55.7	1483 58.4
Maximum floor angle at minimum lift	degrees	27.3°	27.3°	27.3°	27.3°	27.3°	27.3°
Dig depth with level bucket	mm in	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
Overall length with bucket on ground	mm in	3673 144.6	3701 145.7	3771 148.5	3673 144.6	3701 145.7	3771 148.5
Front clearance circle radius (w/bucket)	mm in	2362 93.0	2394 94.3	2423 95.4	2394 94.3	2424 95.4	2454 96.6
Tipping load	kg lb	3298 7272	3226 7113	3278 7227	3295 7265	3221 7102	3271 7212
Breakout force — lift	kg lb	2172 4789	2115 4663	2156 4753	2156 4753	2097 4623	2138 4714
Breakout force — tilt	kg lb	2225 4906	2101 4632	2210 4873	2216 4886	2089 4606	2197 4844
Operating weight	kg lb	4787 10,555	4824 10,636	4804 10,592	4808 10,601	4845 10,683	4826 10,641

Work Tool		Pallet Fork		
		910 mm (36")	1070 mm (42")	1220 mm (48")
Tine Length				
Carriage overall width	mm	1159	1159	1159
without step	in	45.6	45.6	45.6
Carriage step	mm	108	108	108
additional width	in	4.3	4.3	4.3
Carriage height above	mm	923.5	923.5	923.5
blade top	in	36.4	36.4	36.4
Blade surface height at	mm	3141	3141	3141
maximum height	in	123.7	123.7	123.7
Shank front face reach at	mm	723	723	723
maximum height	in	28.5	28.5	28.5
Blade surface height at	mm	1799	1799	1799
level lift arms	in	70.8	70.8	70.8
Shank front face reach at	mm	789	789	789
level lift arms	in	31.1	31.1	31.1
Blade surface height at	mm	109	109	109
minimum lift	in	4.3	4.3	4.3
Shank front face reach at	mm	441	441	441
minimum lift	in	17.4	17.4	17.4
Overall length at minimum lift,	mm	3990	4150	4300
level tine	ft/in	13'1"	13'7"	14'1"
Tipping load	kg	2800	2659	2538
	lb	6174	5863	5596
Operating weight	kg	4602	4612	4622
	lb	10,147	10,169	10,191

**Skid Steer Loaders
Multi Terrain**

Dimensions
● 247B/257B/267B/277B/287B



MODEL	247B		257B		267B/277B		287B	
Rated operating capacity*	885 kg	1950 lb	1047 kg	2310 lb	267B 1316 kg 2900 lb 277B 1338 kg 2950 lb		1632 kg	3600 lb
A Height to top of ROPS	1990 mm	6'6"	2022 mm	6'7"	2074 mm	6'8"	2123 mm	6'11"
B Length to coupler	2518 mm	8'3"	2701 mm	8'10"	2923 mm	9'7"	2901 mm	9'6"
C Length with bucket on ground	3285 mm	10'8"	3490 mm	11'5"	3684 mm	12'1"	3697 mm	12'1"
D Maximum overall height	3770 mm	12'4"	3963 mm	13'0"	4025 mm	13'2"	4182 mm	13'9"
E Ground clearance	267 mm	10.5"	257 mm	10"	353 mm	14"	283 mm	11"
F Departure angle	41.5°		37.3°		62.4°		47°	
G Wheelbase	1499 mm	4'11"	1499 mm	4'11"	2045 mm	6'9"	1842 mm	6'0"
H Hinge pin height at carry position	234 mm	8"	284 mm	11"	251 mm	10"	218 mm	8.5"
Bucket overall width w/edge	1730 mm	6'6"	1730 mm	6'6"	2035 mm	6'8"	2045 mm	6'8"
J Clearance at maximum lift/dump	2113 mm	7'0"	2278 mm	7'5"	2349 mm	7'8"	2386 mm	7'10"
Floor angle at maximum lift/dump	40.8°		40.5°		41°		50°	
Floor angle at maximum lift/rack	95.7°		86.9°		97°		87°	
K Clearance at maximum lift/level	2667 mm	8'8"	2889 mm	9'5"	2896 mm	9'5"	3039 mm	10'0"
L Hinge pin height at maximum lift	2862 mm	9'4"	3081 mm	10'1"	3091 mm	10'2"	3250 mm	10'8"
M Reach at level lift arm/bucket	1395 mm	4'7"	1387 mm	4'6"	1455 mm	4'9"	1406 mm	4'7"
Bumper overhang from axle	576 mm	1'10"	672 mm	2'2"	391 mm	1'3"	391 mm	1'3"
Maximum floor angle at carry position	26.4°		26.8°		28.9°		27.4°	

*SAE J818 MAY87, ISO 5998:1986.

NOTE: 247B/257B machine dimensions shown with standard machine equipped with 1676 mm (66") general purpose bucket.

267B/277B/287B machine dimensions shown with standard machine equipped with 1981 mm (78") general purpose bucket.

CAT WORK TOOL COMPATIBILITY

Buckets	247B	257B	267B	277B	287B
General Purpose Buckets					
1524 mm (60")	A	A	NR	NR	NR
1676 mm (66")	O	O	NR	NR	NR
1829 mm (72")	O	O	A	A	A
1981 mm (78")	A	A	O	O	O
Dirt Buckets					
1372 mm (54")	NR	NR	NR	NR	NR
1524 mm (60")	A	A	NR	NR	NR
1676 mm (66")	O	O	NR	NR	NR
1829 mm (72")	O	O	A	A	A
Utility Buckets					
1524 mm (60")	A	A	NR	NR	NR
1676 mm (66")	O	O	NR	NR	NR
1829 mm (72")	O	O	O	O	O
Light Material Buckets					
1829 mm (72")	O	O	A	A	A
1981 mm (78")	A	A	O	O	O
2134 mm (84")	A	O	O	O	O
Multi-Purpose Buckets					
1524 mm (60")	A	A	NR	NR	NR
1676 mm (66")	O	O	NR	NR	NR
1829 mm (72")	O	O	A	A	A
1981 mm (78")	A	A	O	O	O
Industrial Grapple Buckets					
1524 mm (60")	A	A	NR	NR	NR
1676 mm (66")	O	O	NR	NR	NR
1829 mm (72")	O	O	A	A	A
1981 mm (78")	A	A	O	O	O
Industrial Grapple Forks					
1676 mm (66")	O	O	NR	NR	NR
1829 mm (72")	O	O	A	A	A
Utility Grapple Buckets					
1676 mm (66")	O	O	NR	NR	NR
1829 mm (72")	O	O	A	A	A

O – Provides Optimum Performance.
A – Provides Acceptable Performance.
NR – Not Recommended.

	247B	257B	267B	277B	287B
Pallet Forks					
910 mm (36") Tines	O	O	O	O	
1070 mm (42") Tines	O	O	O	O	
1220 mm (48") Tines	O	O	O	O	
Carriage	O	O	O	O	
Utility Grapple Forks					
1676 mm (66")	O	O	NR	NR	NR
1829 mm (72")	O	O	A	A	A
Utility Forks					
1676 mm (66")	O	O	NR	NR	NR
1829 mm (72")	O	O	A	A	A
Angle Blades					
1829 mm (72")	A	A	NR	NR	NR
2134 mm (84")	O	O	A	A	A
A14B Auger	O	O	O	O	O
A19B Auger	A	A	O	O	O
A26B Auger	X	X	X	X	X
BP15B Pickup Broom	O	O	A	A	A
BP18B Pickup Broom	X	O	O	O	O
BA18 Angle Broom	O	O	O	O	O
PC3 Cold Planer	O	O	O	O	O
PC204 Cold Planer	X	A	O	O	O
PC205 Cold Planer	X	X	X	X	X
PC206 Cold Planer	X	X	X	X	X
H50/H50s Hammer	O	O	X	X	X
H63/H63s Hammer	A	A	O	O	O
LR15B Landscape Rake	O!	O!	NR	NR	NR
LR18B Landscape Rake	O!	O!	O!	O!	O
LT13B Landscape Tiller	O	O	NR	NR	NR
LT18B Landscape Tiller	O	O	O	O	O
Material Handling Arm	O	O	O	O	O
SG16B Stump Grinder	O	O	O	O	O
SG18B Stump Grinder	X	X	X	X	X
T9B Trencher	A	O	O	O	O
T15 Trencher	X	X	X	X	X
CV16B Vibratory Compactor	O	O	O	O	O
CV18B Vibratory Compactor	X	X	O	O	O
SW45 Wheel Saw	X	X	X	X	X

O – Provides Optimum Performance.
A – Provides Acceptable Performance.
NR – Not Recommended.
X – Not Approved. Do Not Use.
! – Lift Restriction.

Features:

- **Cat XT hose and O-ring face seals** are used throughout for superior leak-free performance.
- **Both standard and tree bits are available in a variety of sizes** for a wide range of projects.
- **Standard bit teeth and pilot points** are produced from hardened steel. Optional hardfaced and carbide inserted versions are also available.
- **Optional bit extension is available** in 305 mm (12") length.
- **Hex-to-round shaft adapter is available** to accommodate existing round auger bit mountings.
- **A14B and A19B** are compatible with both mini hydraulic excavators and skid steer loaders.

A14B Auger

- **Chain reduction drive system** transfers power from the drive motor to the drive shaft, reducing motor speed and increasing torque.
- **Drive and driven sprockets are keyed** to both shafts for overload protection and easy servicing.
- **Durable continuous roller drive chain** transmits power from the drive sprocket to the driven sprocket.
- **Chain tension** is controlled with an adjustment cam.

A19B Auger

- **Planetary reduction drive system** transfers power from the drive motor to the drive shaft, reducing motor speed and increasing torque.
- **Drive motor shaft** is splined and couples directly to the planetary gearbox.

A26B Auger

- **Double reduction planetary drive system** transfers power from the drive motor to the drive shaft, reducing motor speed and increasing torque.
- **Drive motor shaft** is splined and couples directly to the planetary gearbox.

Market Opportunities

- **Agriculture** — Augers are an effective work tool around the farm to drill holes for fence posts, pole barn supports and footers for outbuildings.

- **Building/General Construction** — Augers are an essential work tool on many construction sites to drill holes for deck posts and footings, signs and fencing.
- **Landscaping/Landscape Maintenance** — Augers with special tree bits are ideal for preparing holes for tree planting. They are also ideal for school, park, golf course and recreational maintenance departments to drill holes for playground supports, trees and shrubs, fence posts, and signs.
- **Governmental/Municipalities** — Augers with multiple bit sizes are popular work tools to do a wide spectrum of jobs, including digging holes for traffic signs, poles, posts and trees.
- **Rental** — Augers are one of the highest opportunity rental work tool after buckets.
- **Specialty Trades/Utility** — Augers are ideal for electrical, fencing and plumbing contractors when installing lighting, fence posts and gas/water mains.

Augers are typically not a full time work tool, however they are a highly utilized option for specialized applications. They are often used in conjunction with a bucket, set of pallet forks and/or a trencher.

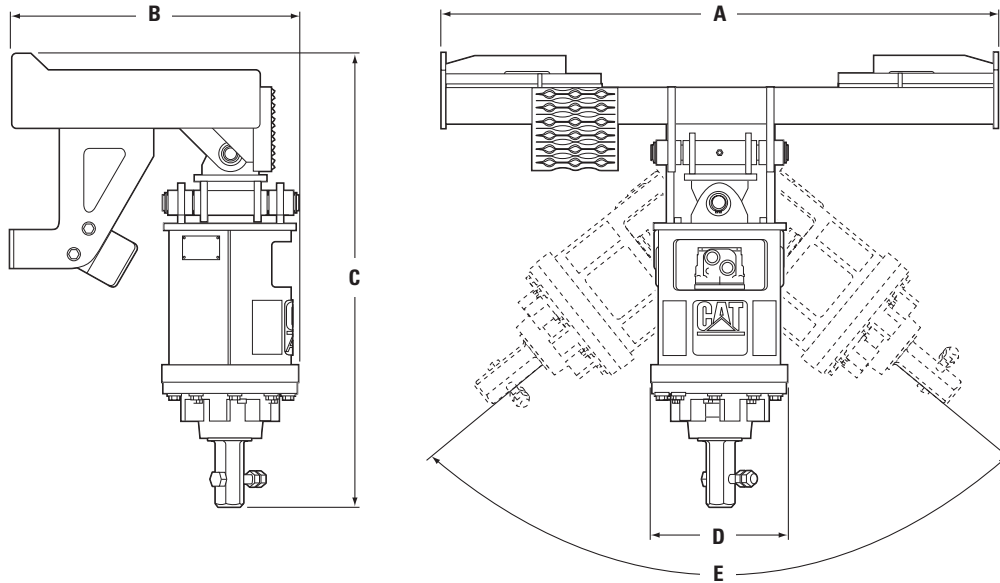
Auger Bits

Auger bits are available in both standard and tree bit configurations with standard hardened, reversible teeth and cast/hardened pilot point. Optional hardfaced and carbide inserted teeth and pilot points are available for aggressive boring conditions. Standard bits are available diameters ranging from 6"-36"; tree bits are available in 24" and 36" diameters. Typical digging depth is 48", however for deeper holes, optional 12" extensions are available. A special HEX to round adapter is also available for customers who use existing round shaft auger bits.

Machine Compatibility

The following are the recommended and approved Caterpillar machine/Auger combinations for maximum system performance.

Auger Model	Machine Model(s)
A14B	302.5, 303.5, 216B, 226B, 232B, 236B, 242B, 246B, 248B, 252B, 262B, 247B, 257B, 267B, 277B
A19B	303.5, 304.5, 216B, 226B, 236B, 246B, 248B, 252B, 262B
A26B	248B



MODEL	A14B		A19B		A26B	
A Overall width w/bracket	1152 mm	45"	1152 mm	45"	1152 mm	45"
B Overall length w/bracket	593 mm	23"	593 mm	23"	593 mm	23"
C Overall drive unit height	1020 mm	40"	940 mm	37"	978 mm	39"
D Housing diameter	252 mm	10"	252 mm	10"	252 mm	10"
E Swing range	102°		102°		102°	
Drive unit weight w/ hydraulic lines w/o bit	84 kg	185 lb	79 kg	174 lb	102 kg	225 lb
Mounting frame weight w/clevis	87 kg	192 lb	87 kg	192 lb	87 kg	192 lb
Total weight w/o bit	171 kg	377 lb	166 kg	366 lb	189 kg	417 lb
Drive method	Gerotor Motor — Direct		Gerotor Motor — Single Planetary Reduction		Gear Motor — Double Planetary Reduction	
Required hydraulic flow range	42-80 L/min	11-21 gpm	42-80 L/min	11-21 gpm	95-130 L/min	25-34 gpm
Optimal hydraulic pressure range	145-230 bar	2103-3336 psi	145-230 bar	2103-3336 psi	207-290 bar	3002-4206 psi
Effective displacement	629.1 cm ³	38.39 in ³	250 cm ³	15.26 in ³	43.77 cm ³	2.685 in ³
Drive shaft torque @ maximum pressure*	2304 N•m	1700 lb-ft	4122 N•m	3040 lb-ft	6826 N•m	5034 lb-ft
Bit speed (drive shaft) @ maximum flow	127 rpm		71 rpm		84 rpm	
HEX output shaft size	51 mm	2"	51 mm	2"	51 mm	2"
Auger bit retention method	Cross bolts/nuts		Cross bolts/nuts		Cross bolts/nuts	
Hydraulic hose	Cat XT-3 ES		Cat XT-3 ES		Cat XT-6 ES	

*Theoretical values calculated at 100% efficiency.

A14B Auger

Theoretical Bit Speed			Theoretical Digging Torque			
L/min	gpm	rpm	bar	psi	N•m	lb-ft
42	11	54	145	2100	1764	1300
45	12	59	152	2200	1848	1362
49	13	64	159	2300	1932	1424
53	14	69	166	2400	2016	1486
57	15	74	172	2500	2100	1548
61	16	79	179	2600	2184	1610
64	17	84	186	2700	2268	1672
68	18	89	193	2800	2352	1734
72	19	94	200	2900	2436	1795
76	20	99	207	3000	2520	1857
80	21	104	214	3100	2604	1919
83	22	109	221	3200	2688	1981
87	23	114	228	3300	2772	2043

A19B Auger

Theoretical Bit Speed			Theoretical Digging Torque			
L/min	gpm	rpm	bar	psi	N•m	lb-ft
42	11	38	145	2100	2535	1868
45	12	41	152	2200	2655	1956
49	13	45	159	2300	2776	2045
53	14	48	166	2400	2897	2134
57	15	52	172	2500	3017	2223
61	16	55	179	2600	3138	2312
64	17	59	186	2700	3259	2401
68	18	62	193	2800	3379	2490
72	19	65	200	2900	3500	2579
76	20	69	207	3000	3621	2668
80	21	72	214	3100	3741	2757
83	22	76	221	3200	3862	2846
87	23	79	228	3300	3983	2935

A26B Auger

Theoretical Bit Speed			Theoretical Digging Torque			
L/min	gpm	rpm	bar	psi	N•m	lb-ft
95	25	61	207	3000	4719	3492
99	26	64	214	3100	4880	3611
102	27	66	220	3200	5034	3725
106	28	69	227	3300	5191	3841
110	29	71	234	3400	5348	3958
114	30	74	241	3500	5506	4074
118	31	76	248	3600	5663	4191
121	32	79	255	3700	5820	4307
125	33	81	262	3800	5977	4423
129	34	84	269	3900	6135	4540
133	35	86	276	4000	6292	4656
136	36	88	282	4100	6449	4772
140	37	91	289	4200	6607	4889
144	38	93	296	4300	6764	5005
148	39	96	303	4400	6921	5122
152	40	98	310	4500	7079	5238

Features:

- **Two standard flow sizes available:** the 305 mm (12") maximum drum width PC3 and the 406 mm (16") maximum drum width PC4. Both units efficiently utilize the standard flow auxiliary hydraulic horsepower capabilities of Cat Skid Steer Loaders.
- **Direct drive system on the PC3 and PC4** transmits power directly from the drive motor shaft to the planing drum.
- **Two high flow cold planers are available:** the 610 mm (24") drum width PC6 and the 812 mm (32") drum width PC9. Both units efficiently utilize the high flow auxiliary hydraulic horsepower capabilities of Cat Skid Steer Loaders.
- **Planetary drive system on the PC6 and PC9** transmits power directly from the drive motor to the planing drum, maintaining optimum cutting bit speed and providing maximum torque.
- **Four pivoting skids** on the planer housing provide a stable platform when planing.
- **Optimal drum bit pattern and standard all purpose conical bits** provide maximum cutting performance and efficiency.
- **Hydraulic side shift** is standard allowing planing as close as 76 mm (3") to curbs, walls and other obstructions.
- **Tilt and depth functions** help ensure precision beveling and pavement removal.
- **Cat XT hose and O-ring face seals** are used throughout for superior leak-free performance.
- **Optional drum widths** are available for the PC3 and PC4 for specialty planing jobs.
- **Optional water sprinkler kit** is available for dust suppression.

Conical Bits: Cold planer drums are designed with an optimal bit pattern to provide maximum cutting performance and efficiency, while ensuring superior surface texture. Standard all-purpose tungsten carbide inserted conical bits provide all-purpose planing in most applications.

Market Opportunities

- **Infrastructure/Heavy Construction** — Skid steer mounted cold planers are frequently used on bridges to remove pavement where large dedicated planers are restricted due to weight.
- **Concrete/Masonry (Including Asphalt/Paving)** — Cold planers are used extensively by paving contractors in urban and rural settings to remove damaged pavement prior to overlay, remove excess pavement, provide specific surface texture (skid resistance), remove traffic lane stripes and re-establish proper draining characteristics of pavement.
- **Governmental/Municipalities (Street and Road Maintenance)** — Cold planers are ideal for urban road and parking lot maintenance departments to remove cracked or deteriorated pavement, mill bumps or imperfections in expanded pavement.

Cold planers are highly utilized work tools for specialized applications. They are often used in conjunction with a bucket and broom.

Machine Compatibility

The following are the recommended and approved Caterpillar machine/Cold Planer combinations for maximum system performance.

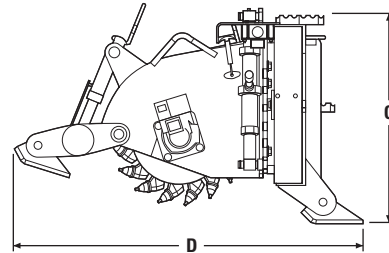
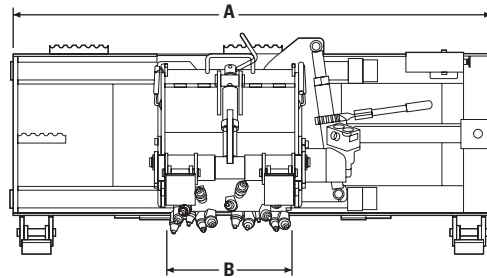
Cold Planer Model	Machine Model(s)
PC3	216B, 226B, 232B, 236B, 242B, 246B, 248B, 252B, 262B, 247B, 257B, 267B, 277B
PC4	226B, 236B, 246B, 248B, 252B, 262B
PC6	248B
PC9	248B

Skid Steer Loaders

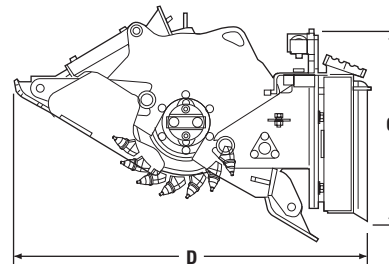
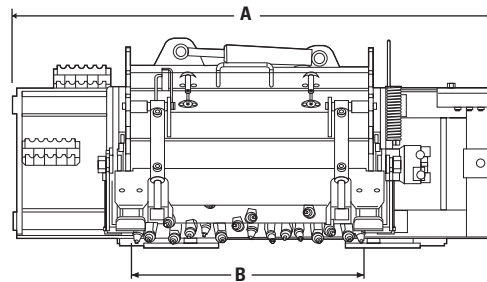
Attachments

● Cold Planers

PC3/PC4



PC6/PC9



MODEL	PC3		PC4		PC6		PC9	
A Overall width	1676 mm	66"	1676 mm	66"	1676 mm	66"	1676 mm	66"
B Maximum drum width	305 mm	12"	406 mm	16"	610 mm	24"	812 mm	32"
Optional drum widths	64 mm 102 mm 152 mm	2.5" 4" 6"	64 mm 102 mm 152 mm	2.5" 4" 6"	Not currently available		Not currently available	
C Overall height	762 mm	30"	762 mm	30"	810 mm	32"	810 mm	32"
D Length	1168 mm	46"	1168 mm	46"	1320 mm	52"	1320 mm	52"
Weight	481 kg	1060 lb	522 kg	1150 lb	900 kg	1984 lb	915 kg	2017 lb
Drive method	Direct drive		Direct drive		Planetary drive		Planetary drive	
Required hydraulic flow range	53- 83 L/min	14- 22 gpm	53- 83 L/min	14- 22 gpm	95- 125 L/min	25- 33 gpm	95- 125 L/min	25- 33 gpm
Optimal hydraulic pressure range	172- 227 bar	2500- 3300 psi	172- 227 bar	2500- 3300 psi	193- 345 bar	2800- 5000 psi	193- 345 bar	2800- 5000 psi
Drum torque @ max. pressure	1131 N·m	832 lb-ft	1429 N·m	1051 lb-ft	4015 N·m	2952 lb-ft	4015 N·m	2952 lb-ft
Drum speed @ max. flow	267 rpm		212 rpm		171 rpm		171 rpm	
Bit speed @ max. flow	395 mpm	1295 fpm	313 mpm	1026 fpm	296 mpm	969 fpm	296 mpm	969 fpm
Number of conical bits	28 per 305 mm (12") drum		50 per 406 mm (16") drum		70 per 610 mm (24") drum		85 per 812 mm (32") drum	
Standard bit type	All purpose		All purpose		All purpose		All purpose	
Optional bit type	Concrete		Concrete		Concrete		Concrete	
Maximum depth of cut	127 mm	5"	127 mm	5"	152 mm	6"	152 mm	6"
Cut diameter	470 mm	18.5"	470 mm	18.5"	549 mm	21.6"	549 mm	21.6"
Tilt angle range	±19°		±19°		±15°		±15°	
Side shift travel	559 mm	22"	559 mm	22"	600 mm	23.6"	600 mm	23.6"

Features:

- **Two sizes available:** the 1321 mm (52") working width LT13B and the 1854 mm (73") working width LT18B. Both units efficiently utilize the standard flow auxiliary hydraulic horsepower capabilities of Cat Skid Steer Loaders.
- **Direct drive system** features two in-line motors that transmit power directly from the drive motor shaft to the tiller shaft. Power to both ends of the shaft eliminates torque twist and increased system performance.
- **Adjustable skid shoes** provide a working depth range of 25-152 mm (1"-6").
- **High strength medium carbon alloy steel tines** are hardened for maximum strength, durability and wear life in the toughest soil conditions.
- **Cat XT hose and O-ring face seals** are used throughout for superior leak-free performance.

Market Opportunities

- **Agriculture** — Landscape tillers provide an effective work tool around the farm or orchard to breakup and condition soil prior to planting.
- **Building/General Construction** — Landscape tillers can be used on construction sites to level soil and remove ruts.
- **Landscaping/Landscape Maintenance** — Landscape tillers are ideal for mixing and composting soils for improved seedbeds, soil stabilization and soil preparation prior to landscaping and laying sod.
- **Governmental/Municipalities** — Landscape tillers are ideal for city maintenance departments and parks to recondition, level and stabilize soil after utility work or prior to yearly landscaping.

Landscape tillers are productive work tools for specialized applications. They are often used in conjunction with a bucket, landscape rake and auger.

Machine Compatibility

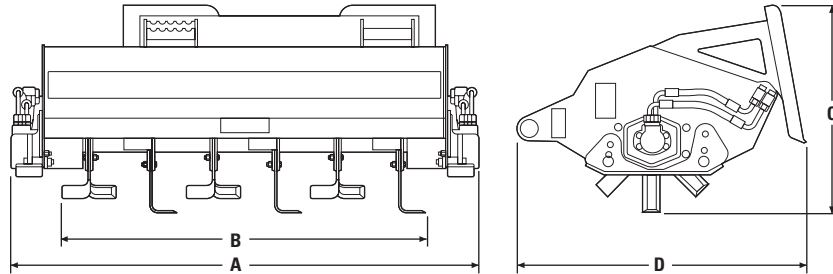
The following are the recommended and approved Caterpillar machine/Landscape Tiller combinations for maximum system performance.

Landscape Tiller Model	Machine Model(s)
LT13B	216B, 226B, 232B, 236B, 242B, 246B, 248B, 252B, 262B, 247B, 257B
LT18B	232B, 236B, 242B, 246B, 248B, 252B, 262B, 247B, 257B

Skid Steer Loaders

Attachments

- Landscape Tillers



	LT13B		LT18B	
A Overall width	1788 mm	70.5"	2271 mm	89.5"
B Working width	1321 mm	52"	1854 mm	73"
C Height	755 mm	30"	755 mm	30"
D Length	956 mm	38"	956 mm	38"
Working depth range	25-152 mm	1"-6"	25-152 mm	1"-6"
Weight	340 kg	750 lb	476 kg	1050 lb
Drive method	Direct drive		Direct drive	
Number of motors	Two in-line		Two in-line	
Hydraulic flow range	42-83 L/min	11-22 gpm	95-114 L/min	25-30 gpm
Hydraulic pressure range	145-227 bar	2100-3300 psi	207-310 bar	3000-4500 psi
Motor size	305 cm ³	18.6 in³	305 cm ³	18.6 in³
Effective displacement	629.1 cm ³	38.4 in³	629.1 cm ³	38.4 in³
Drum speed @ maximum flow	127 rpm @ 80 L/min	127 rpm @ 21 gpm	127 rpm @ 80 L/min	127 rpm @ 21 gpm
Fasteners	Cat		Cat	
Hydraulic hose	Cat XT-3 ES		Cat XT-3 ES	
Number of tines	24		36	

Features:

- **Two sizes available:** the 1321 mm (62") working width LR15B and the 1880 mm (74") working width LR18B. Both units efficiently utilize the standard flow auxiliary hydraulic horsepower capabilities of Cat Skid Steer Loaders.
- **Chain reduction drive system** features #80H roller chain for strength and durability, a variable speed unidirectional gerotor motor for maximum performance and cartridge relief valve for system protection.
- **Durable #2060H conveyor chain** provides strength, durability and long life in a variety of soil conditions.
- **High strength medium carbon alloy steel teeth** are hardened for maximum strength, durability and wear life in the toughest soil conditions.
- **Quick dumping capability** is accomplished with a poppet check valve. Once the hopper bucket is full, simply reverse flow to actuate the rake head and dump the bucket.
- **Cat XT hose and O-ring face seals** are used throughout for superior leak-free performance.

Market Opportunities

- **Agriculture** — Landscape rakes provide an effective work tool around the farm or nursery to condition, level and remove rock and foreign material from soil prior to planting.
- **Building/General Construction** — Landscape rakes can be used on construction sites to level and remove debris from soil prior to landscaping and seeding.
- **Demolition** — Landscape rakes provide an excellent means to clean up loose material after the demolition work is complete.
- **Landscaping/Landscape Maintenance** — Landscape rakes are ideal for aerating, conditioning, leveling and removing rocks from soil prior to seeding or laying sod. They also are ideal for conditioning and cleaning baseball fields.

Landscape rakes are productive work tools for specialized applications. They are often used in conjunction with a bucket, landscape tiller and auger.

Machine Compatibility

The following are the recommended and approved Caterpillar machine/Landscape Rake combinations for maximum system performance.

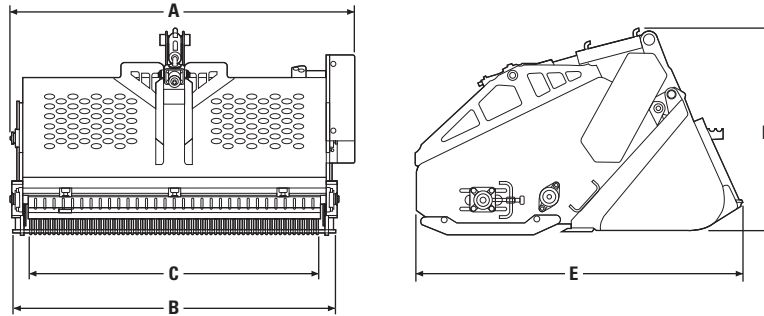
Landscape Rake Model	Machine Model(s)*
LR15B	216B, 226B, 232B, 242B, 248B, 252B, 262B, 247B, 257B
LR18B	232B, 236B, 242B, 246B, 248B, 252B, 262B, 247B, 257B

*Lift restriction! Do not raise lift arm — work tool hinge higher than 1 m (3 ft) above the ground. Tipping can result.

Skid Steer Loaders

Attachments

● Landscape Rakes



	LR15B		LR18B	
A Overall width	1683 mm	66"	1990 mm	78"
B Working width	1576 mm	62"	1883 mm	74"
C Raking width	1384 mm	55"	1655 mm	65"
D Height	989 mm	39"	989 mm	39"
E Length	1620 mm	64"	1620 mm	64"
Weight	595 kg	1312 lb	615 kg	1355 lb
Drive method	Chain reduction		Chain reduction	
Drive chain	#80H		#80H	
Conveyor chain	#2060H		#2060H	
Hydraulic flow range	42-83 L/min	11-22 gpm	42-83 L/min	11-22 gpm
Hydraulic pressure range	145-227 bar	2100-3000 psi	145-227 bar	2100-3000 psi
Bucket capacity (struck)*	0.31 m ³	0.4 yd³	0.34 m ³	0.44 yd³
Motor size	305 cm ³	18.6 in³	305 cm ³	18.6 in³
Effective displacement	484.5 cm ³	29.5 in³	484.5 cm ³	29.5 in³
Driven shaft speed	165 rpm @ 80 L/min	165 rpm @ 21 gpm	165 rpm @ 80 L/min	165 rpm @ 21 gpm
Torque @ 230 bar (3336 psi)	1774 N•m	1310 lb-ft	1774 N•m	1310 lb-ft
Fasteners	Cat		Cat	
Hydraulic hose	Cat XT-3 ES		Cat XT-3 ES	
Number of teeth	372		444	
Rock size	19-52 mm	0.75"-6"	19-52 mm	0.75"-6"

*Rated struck capacities shown as per ISO 7546: 1983 and SAE J742 FEB85.

Features:

- **Two direct drive models, the standard flow T9 and the high flow T15** provide maximum performance and durability. A variable speed, bi-directional motor is matched to the Cat Skid Steer Loader’s auxiliary hydraulic circuit for excellent torque output.
- **Durable double standard anti-backflex chain** is standard for strength, durability and long life in all soil types.
- **Standard boom length is 1219 mm (48") on the T9 and 1524 mm (60") on the T15. 152 mm (6") cutting width** is standard for all-purpose performance.
- **Hard faced, medium carbon alloy steel teeth** deliver long life in the toughest soil conditions.
- **Hydraulic sideshift is standard for the T15. Hydraulic or manual sideshift options** are available for the T9 for close trenching flexibility near foundations and other structures.
- **Optional cutting widths and crumber bar** are available for wider trenching requirements and loose material removal.
- **Cat XT hose and O-ring face seals** are used throughout for superior leak-free performance.

Market Opportunities

- **Agriculture** — Trenchers provide an effective work tool around the farm or nursery to cut trenches for water lines, electrical cables and other utilities.
- **Building/General Construction** — Trenchers are often used on construction sites to cut trenches for plumbing, electrical, telephone and cable television lines.
- **Landscaping/Landscape Maintenance** — Trenchers are popular landscaping work tools when installing irrigation and water sprinkler systems. They can also be used to remove roots that grow too close to buildings or cart paths. Landscapers, golf course maintenance departments and irrigation contractors are prime users.
- **Specialty Trades/Utilities** — Trenchers are excellent work tools for specialty trades and utility contractors that need to bury water and gas pipe, conduit, electrical, telephone and cable television lines.

Trenchers are productive work tools for specialized applications. They are often used in conjunction with a bucket and auger.

Machine Compatibility

The following are the recommended and approved Caterpillar machine/Trencher combinations for maximum system performance.

Trencher Model	Machine Model(s)
T9	216B, 226B, 232B, 236B, 242B, 246B, 248B, 252B, 262B
T15	248B

T9 Trencher

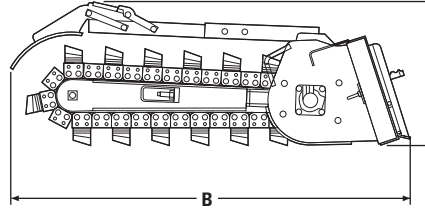
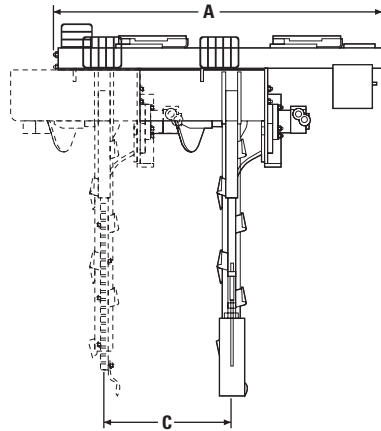
Theoretical Drive Shaft Torque			
Pressure		Torque	
bar	psi	N•m	lb-ft
145	2100	911	670
152	2200	956	703
159	2300	1000	735
166	2400	1043	767
172	2500	1088	800
179	2600	1130	831
183	2650	1156	850
186	2700	1174	863
193	2800	1217	895
200	2900	1261	927
207	3000	1304	959
214	3100	1348	991
221	3200	1391	1023
228	3300	1435	1055

T15 Trencher

Theoretical Drive Shaft Torque			
Pressure		Torque	
bar	psi	N•m	lb-ft
207	3000	2058	1513
214	3100	2126	1563
220	3200	2195	1614
227	3300	2263	1664
235	3400	2331	1714
242	3500	2400	1765
248	3600	2468	1815
255	3700	2538	1866
262	3800	2606	1916
269	3900	2675	1967
276	4000	2743	2017
283	4100	2811	2067
290	4200	2880	2118
297	4300	2948	2168
304	4400	3018	2219
311	4500	3086	2269

Skid Steer Loaders

Attachments ● Trenchers



	T9		T15	
A Overall width	1701 mm	67"	1701 mm	67"
B Overall length	2066 mm	81"	2066 mm	81"
C Side shift travel (center to right)	660 mm	26"	660 mm	26"
D Height	739 mm	29"	739 mm	29"
Standard boom length	1219 mm	48"	1524 mm	60"
Optional boom length	—	—	1219 mm	48"
Weight	537 kg*	1185 lb*	634 kg**	1398 lb**
Required hydraulic flow range	42-83 L/min	11-22 gpm	95-152 L/min	25-40 gpm
Optimal hydraulic pressure range	145-227 bar	2100-3300 psi	207-310 bar	3000-4500 psi
Drive shaft torque @ max. pressure	1435 N•m	1055 lb-ft	3086 N•m	2269 lb-ft
Chain pull @ max. pressure	1619 kg	3567 lb	2570 kg	5661 lb
Chain speed @ max. flow	162 mpm	531 fpm	187 mpm	612 fpm
Drive shaft speed @ max. flow	211 rpm		243 rpm	
Standard teeth type	Hardfaced cupped		Hardfaced cupped	
Optional teeth type	Rock teeth		Rock teeth	
Standard cutting width	152 and 203 mm	6" and 8"	152 mm	6"
Optional cutting widths	254 and 305 mm	10" and 12"	203 and 254 mm	8" and 10"
Maximum recommended cutting width with 1219 mm (48") boom	254 mm	10"	305 mm	12"
Maximum recommended cutting width with 1524 mm (60") boom	—	—	254 mm	10"
Number of teeth (every other station)	15		21	

*T9 Maximum Saleable Weight — Equipped with 1219 mm (**48"**) boom, hydraulic sideshift control, double standard anti-backflex chain, 254 mm (**10"**) cutting width and standard hardfaced cupped teeth.

T15 Maximum Saleable Weight — Equipped with 1524 mm (60"**) boom, double standard anti-backflex chain, 254 mm (**10"**) cutting width and standard hardfaced cupped teeth.

Features:

- **Two sizes available:** the 1676 mm (66") drum width CV16 and the 1854 mm (73") drum width CV18. Both units efficiently utilize the standard flow auxiliary hydraulic horsepower capabilities of Cat Skid Steer Loaders.
- **Direct drive system** uses a variable speed bi-directional gear motor that drives an eccentric weighted shaft, resulting in drum vibration.
- **Durable high strength steel drums** are roll formed and butt welded for long life.
- **A spring-loaded scraper bar** is standard to prevent material buildup on the drum.
- **Oscillating tilt** is capable from a pivoting interface that allows + 15 degrees of oscillation to follow ground contour.
- **Cat XT hose and O-ring face seals** are used throughout for superior leak-free performance.

Market Opportunities

- **Building/General Construction** — Vibratory compactors can be used on construction sites to level and compact soil around building foundations after backfilling.
- **Governmental/Municipalities (Street and Road Maintenance)** — Vibratory compactors are useful work tools for compacting soil and crushed rock prior to paving or pouring concrete. They are also useful for compacting small areas of asphalt (pot-hole repair).
- **Landscaping/Landscape Maintenance** — Vibratory compactors are used by landscaping contractors after installing irrigation and water sprinkler systems. Golf course maintenance departments will often use this product to compact greens and fairways.
- **Paving** — Vibratory compactors are used by paving contractors for smaller paving jobs (compact-ing soil and crushed stone), compacting hot patch (pot hole repair) or compacting material in tight areas where a dedicated roller can't maneuver.
- **Specialty Trades/Utilities** — Vibratory com-pactors are ideal for compacting back-filled soil after trenching and backhoe work.

Vibratory compactors are productive work tools for specialized applications. They are often used in conjunction with a bucket, cold planer and trencher.

Machine Compatibility

The following are the recommended and approved Caterpillar machine/Vibratory Compactor combinations for maximum system performance.

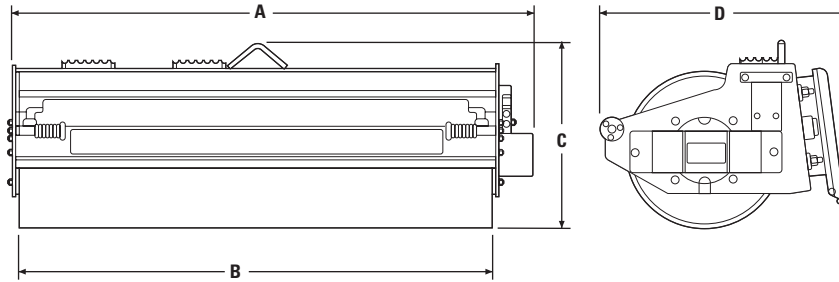
Vibratory Compactor Model	Machine Model(s)*
CV16	216B*, 226B, 232B, 236B, 242B, 246B, 248B, 252B, 262B, 247B, 257B
CV18	232B, 236B, 242B, 246B, 248B, 252B, 262B, 247B, 257B, 267B, 277B

*Lift restriction! Do not raise lift arm — work tool hinge higher than 1 m (3 ft) above the ground. Tipping can result.

Skid Steer Loaders

Attachments

● Vibratory Compactors



	CV16		CV18	
A Overall width	1901 mm	75"	2080 mm	82"
B Drum width	1676 mm	66"	1854 mm	73"
C Overall height	737 mm	29"	737 mm	29"
D Overall length	965 mm	38"	965 mm	38"
Drum diameter	610 mm	24"	610 mm	24"
Weight	749 kg	1650 lb	780 kg	1720 lb
Drive method	Direct drive		Direct drive	
Number of motors	One		One	
Motor size	31.5 cm ³	1.9 in³	31.5 cm ³	1.9 in³
Hydraulic flow range	42-83 L/min	11-22 gpm	42-83 L/min	11-22 gpm
Hydraulic pressure range	145-227 bar	2100-3300 psi	145-227 bar	2100-3300 psi
Drum oscillation range	±15°		±15°	
Drum frequency @ maximum flow	2933 vpm		2933 vpm	
Dynamic force	3972 kg	8740 lb	4654 kg	10,240 lb
Total applied force	4737 kg	10,440 lb	5530 kg	12,189 lb
Fasteners	Cat		Cat	
Hydraulic hose	Cat XT-3 ES		Cat XT-3 ES	

Features:

- **Sweeping Widths:** Choose the 1524 mm (60") BP15B, the 1829 mm (72") BP18B pickup brooms or the 2134 mm (84") BA18 angle broom. All units efficiently utilize the standard flow auxiliary hydraulic horsepower capabilities of Cat Skid Steer Loaders.
- **Direct drive system** provides maximum performance and durability. The BP15B and BA18 use a single variable speed unidirectional motor that drives the brush core; the BP18B uses two inline motors.
- **Durable polypropylene/steel wire brush sections** are standard and provide tough cleaning action on most paved surfaces.
- **Manual or hydraulic angling** is available on BA18 for quick angle changes up to 30° right or left of center.
- **A large integrated hopper bucket on BP15B and BP18B** provides ample capacity for collected dirt and debris. Caterpillar bolt on cutting edges are standard for long wear life.
- **Optional gutter brush for BP15B and BP18B** are available to assist in removing material from gutters.
- **Optional water sprinkler kit** available for dust suppression.
- **Optional brush types** are available for various surface types.
- **Cat XT hose and O-ring face seals** are used throughout for superior leak-free performance.

Market Opportunities

- **Building/General Construction** — Brooms are often found on construction sites once the construction is complete to remove and collect dirt, rock and other construction debris from driveways, sidewalks and streets.
- **Demolition** — Brooms are ideal for collecting loose dirt and debris from demolition sites.

- **Governmental/Municipalities (Street and Road Maintenance)** — Brooms are useful work tools for cleaning city streets, sidewalks and parking areas. Airport maintenance is another popular application.
- **Industrial/Recycling** — Pickup brooms are excellent for cleaning factory floors or industrial pavements.
- **Landscaping/Landscape Maintenance** — Brooms are used by landscaping contractors to clean paved surfaces after the landscaping is complete. Golf course maintenance departments will often use this product to clean cart paths, parking lots and even turf.
- **Paving** — Pickup brooms are often used by paving contractors to sweep and collect milled asphalt and concrete. Angle brooms are used to clean milled surfaces.
- **Specialty Trades/Utilities** — Brooms are often utilized by specialty trades and utility contractors to clean up after trenching and backhoe work.

Pickup brooms are productive work tools for specialized applications. They are often used in conjunction with a bucket, cold planer and trencher.

Machine Compatibility

Following are the recommended and approved Cat Skid Steer Loader/Broom combinations for maximum system performance.

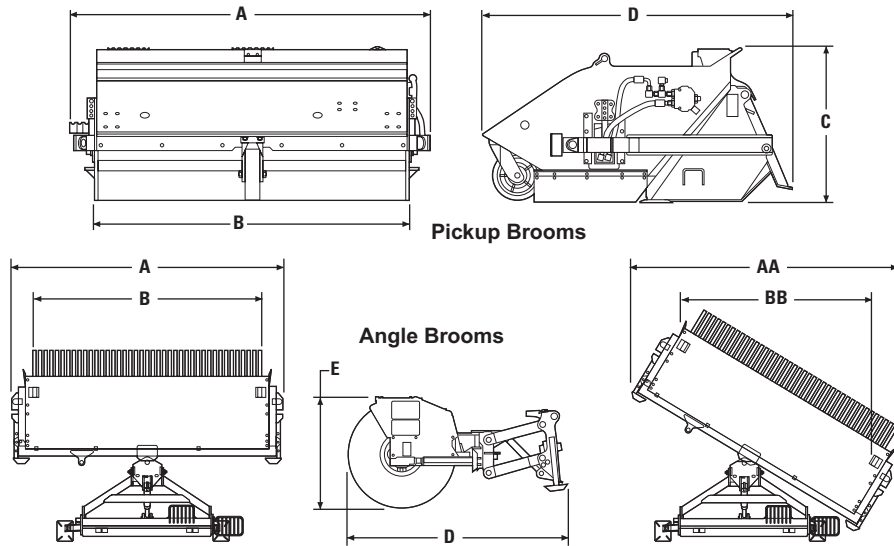
Model	BP15B Broom	BP18B Broom	BA18 Broom
216B Skid Steer Loader	●*	!	●
226B Skid Steer Loader	●	!	●
232B Skid Steer Loader	●	●	●
236B Skid Steer Loader	●	●	●
242B Skid Steer Loader	●	●	●
246B Skid Steer Loader	●	●	●
248B Skid Steer Loader	●	●	●
252B Skid Steer Loader	●	●	●
262B Skid Steer Loader	●	●	●
268B Skid Steer Loader			
247B Multi Terrain Loader	●	●	●
257B Multi Terrain Loader	●	●	●
267B Multi Terrain Loader	!	●	●
277B Multi Terrain Loader	!	●	●
287B Multi Terrain Loader			

● Provides optimum system performance.
! Not approved. Do not use.
* Lift restriction! Do not raise lift arm — work tool hinge pin higher than 1 m (3 ft) above the ground. Tipping can result.

Skid Steer Loaders

Attachments

● Brooms



	BP15B Pickup Broom		BP18B Pickup Broom		BA18 Angle Broom	
A Overall width	1828 mm	72"	2108 mm	83"	2388 mm	94"
AA Overall width angled*	—	—	—	—	2362 mm	93"
B Sweeping width	1524 mm	60"	1829 mm	72"	2134 mm	84"
BB Sweeping width angled*	—	—	—	—	1702 mm	67"
C Height	787 mm	31"	787 mm	31"	864 mm	34"
D Length	1575 mm	62"	1575 mm	62"	1676 mm	66"
Weight**	395 kg	870 lb	472 kg	1040 lb	404 kg	890 lb
Drive method	Direct drive		Direct drive		Direct drive	
Number of motors	One		Two in-line		One	
Motor size	250 cm ³	15.3 in ³	200 cm ³ each	12.2 in ³ each	410 cm ³	24.9 in ³
Effective displacement	250 cm ³	15.3 in ³	400 cm ³	24.4 in ³	410 cm ³	24.9 in ³
Hydraulic flow range	30-83 L/min	8-22 gpm	57-95 L/min	15-25 gpm	42-83 L/min	11-22 gpm
Hydraulic pressure range	145-227 bar	2100-3300 psi	145-227 bar	2100-3300 psi	145-227 bar	2100-3300 psi
Rated brush speed @ maximum flow	150 rpm		237 rpm		204 rpm	
Hopper capacity***	0.42 m ³	0.55 yd ³	0.45 m ³	0.59 yd ³	—	—
Fasteners	Cat		Cat		Cat	
Hydraulic hose	Cat XT-3 ES		Cat XT-3 ES		Cat XT-3 ES	
Brush diameter	660 mm	26"	660 mm	26"	813 mm	32"
Brush head retention	Dual chain/ loader arm bracket		Dual chain/ loader arm bracket		—	
Brush material (standard)	Replaceable polypropylene/ steel wire sections		Replaceable polypropylene/ steel wire sections		Replaceable polypropylene/ steel wire sections	

*31° right or left.

**With gutter brush.

***Rated struck capacities shown as per ISO 7546: 1983 and SAE J742 FEB85.

Features:

- **Two direct drive models, the standard flow SG16B and the high flow SG18B** feature a variable speed, unidirectional motor that is matched to the Cat Skid Steer Loader's auxiliary hydraulic horsepower capabilities. Provides high torque for efficient grinding performance.
- **Heavy-duty 550 mm (22") cutting wheel and 32 bolt-on carbide teeth** provide maximum durability and cutting efficiency.
- **Heavy-duty, dual height, pivoting stand feet** provide a stable platform when grinding.
- **Standard hydraulic cutting wheel swing** (full 70 degrees) and extension [279 mm (11 in) max.].
- **Hydraulic depth control on SG18B, depth control on SG16B** is manually adjustable using a 3-position depth control bar.
- **Extension slider rods** are chrome plated for long life.
- **Cat XT and medium pressure hose, couplings and O-Rings.**

Market Opportunities

- **Landscaping/Landscaping Maintenance** — Stump grinders are ideal for economically removing tree stumps in residential, commercial and agricultural settings.
- **Rental** — Stump grinders are a high opportunity rental work tool for lawn care and for clean up after natural disasters such as tornadoes and hurricanes where many trees are damaged.

Stump grinders are productive work tools for specialized applications. Maneuverability and compact size compared to tow behind stump grinders lend it be to very popular in lawn care and golf course maintenance.

Machine Compatibility

The following are the recommended and approved Caterpillar Skid Steer Loader — Stump Grinder combinations for maximum system performance.

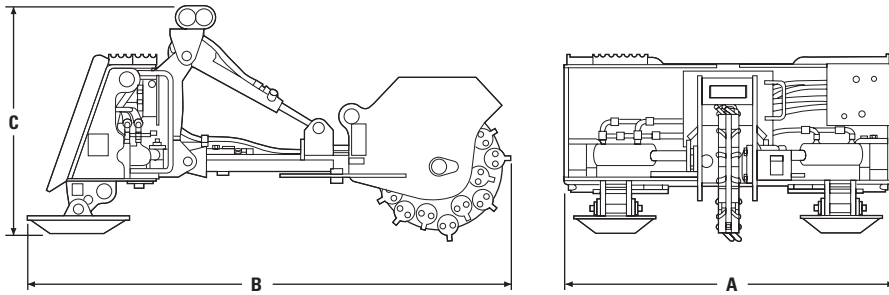
Model	SG16B Stump Grinder	SG18B Stump Grinder
216B Skid Steer Loader	■	!
226B Skid Steer Loader	●	!
232B Skid Steer Loader	●	!
236B Skid Steer Loader	●	!
242B Skid Steer Loader	●	!
246B Skid Steer Loader	●	!
248B Skid Steer Loader	●	●
252B Skid Steer Loader	●	!
262B Skid Steer Loader	●	!
268B Skid Steer Loader		
247B Multi Terrain Loader	●	!
257B Multi Terrain Loader	●	!
267B Multi Terrain Loader	●	!
277B Multi Terrain Loader	●	!
287B Multi Terrain Loader		

■ Provides acceptable system performance.
● Provides optimum system performance.
! Not approved. Do not use. Requires high flow hydraulics.

Skid Steer Loaders

Attachments

- Stump Grinders



	SG16B		SG18B	
A Overall width	1175 mm	46"	1175 mm	46"
B Overall length	1737 mm	69"	1737 mm	69"
C Overall height	730 mm	30"	813 mm	32"
Unit weight	379 kg	775 lb	400 kg	840 lb
Drive method	Gerotor Motor — Direct		Gerotor Motor — Direct	
Required hydraulic flow	42-83 L/min	11-22 gpm	95-114 L/min	25-30 gpm
Optimal hydraulic pressure	145-227 bar	2100-3300 psi	207-310 bar	3000-4500 psi
Effective displacement	80 cm ³	4.9 in³	100 cm ³	6.2 in³
Drive shaft torque @ maximum pressure	295 N•m @ 230 bar	218 lb-ft @ 3336 psi	469 N•m @ 290 bar	346 lb-ft @ 4206 psi
Cutting head speed (drive shaft) @ maximum flow	993 rpm @ 80 L/min	993 rpm @ 21 gpm	1280 rpm @ 130 L/min	1280 rpm @ 34 gpm
Cutting wheel width (w/teeth)	83 mm	3.3"	83 mm	3.3"
Cutting wheel diameter (w/teeth)	550 mm	22"	550 mm	22"
Cutting width (full swing range)	1524 mm	60"	1524 mm	60"
Cutting head swing range		70°		70°
Cutting height (above ground)	470 mm	18.5"	470 mm	18.5"
Cutting height (below ground)	547 mm	21.5"	547 mm	21.5"
Cutting head extension	280 mm	11"	280 mm	11"
Fasteners	Cat		Cat	
Hydraulic hose	XT-3 ES, medium pressure		XT-6 ES, medium pressure	
Ground Engaging Tools (GET)	12.7 mm (½") square bolt-on carbide teeth		12.7 mm (½") square bolt-on carbide teeth	
Number of carbide teeth per cutting wheel	32		32	

SG16B Stump Grinder

Theoretical Drive Shaft Torque			
Pressure		Torque	
bar	psi	N•m	lb-ft
145	2100	186	137
152	2200	194	143
158	2300	204	150
166	2400	212	156
172	2500	222	163
179	2600	230	169
186	2700	239	176
193	2800	248	182
200	2900	257	189
207	3000	265	195
214	3100	275	202
220	3200	283	208
227	3300	292	215

SG18B Stump Grinder

Theoretical Drive Shaft Torque			
Pressure		Torque	
bar	psi	N•m	lb-ft
207	3000	336	247
214	3100	347	255
221	3200	358	263
227	3300	370	272
234	3400	381	280
241	3500	392	288
248	3600	403	296
255	3700	413	304
262	3800	426	313
269	3900	437	321
276	4000	447	329
282	4100	458	337
289	4200	471	346
296	4300	481	354
303	4400	492	362
310	4500	503	370

SG16B Stump Grinder

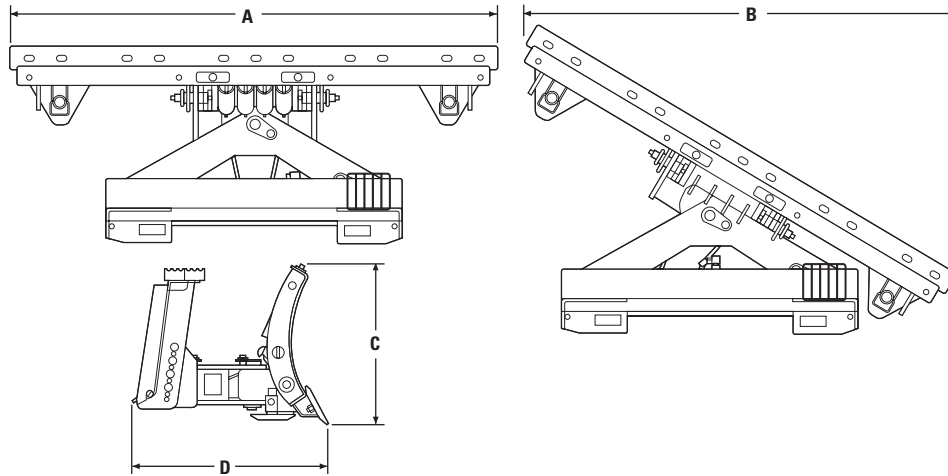
Theoretical Cutting Head Speed (Drive Shaft)		
Flow		Cutting Head Speed
L/min	gpm	rpm
42	11	519
45	12	566
49	13	613
53	14	660
57	15	707
61	16	754
64	17	801
68	18	849
72	19	896
76	20	943
80	21	990
83	22	1037

SG18B Stump Grinder

Theoretical Cutting Head Speed (Drive Shaft)		
Flow		Cutting Head Speed
L/min	gpm	rpm
95	25	931
99	26	969
102	27	1006
106	28	1043
110	29	1080
114	30	1118
118	31	1155
122	32	1192
125	33	1230

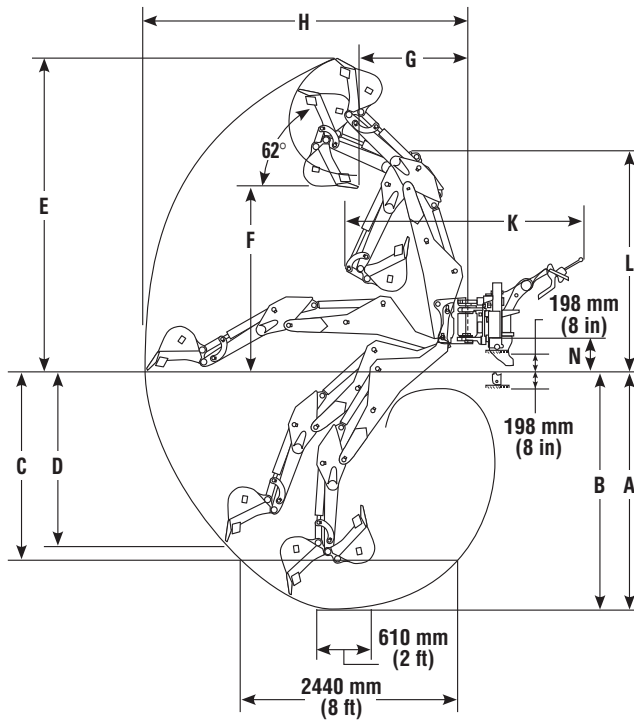
Skid Steer Loaders

Attachments ● Angle Blades



A Overall width (straight)*	1829 mm	72"	2134 mm	84"
B Overall width (angled 30° — right or left of center)*	1685 mm	66"	1949 mm	78"
C Height	610 mm	24"	610 mm	24"
D Length	753 mm	30"	753 mm	30"
Weight	313 kg	690 lb	331 kg	730 lb
Adjustable cutting depth (three positions — 25.4 mm (1") increments)	0, 25 and 51 mm	0", 1" and 2"	0, 25 and 51 mm	0", 1" and 2"
Maximum blade angle — (right or left of center)		30°		30°
Maximum blade trip angle		60°		60°

*Measured from moldboard edges; overall width is approximately 50 mm (2") wider with bolt-on edge.

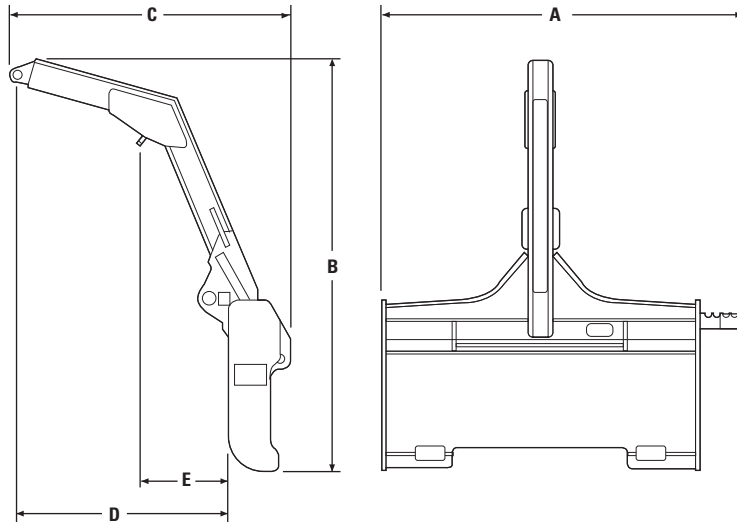


	BH30		BH30W	
Operational Specifications				
A Digging depth maximum	2896 mm	114"	2896 mm	114"
B Digging depth 0.61 m (2') flat bottom	2870 mm	113"	2870 mm	113"
C Digging depth 2.44 m (8') flat bottom	2413 mm	95"	2413 mm	95"
D Straight wall digging depth	1981 mm	78"	1981 mm	78"
E Overall operating height	3556 mm	140"	3582 mm	141"
F Loading height	2134 mm	84"	2159 mm	85"
G Loading reach	1321 mm	52"	1321 mm	52"
H Reach from swing pivot	3734 mm	147"	3734 mm	147"
K Overall length	2692 mm	106"	2743 mm	108"
Side shift length	838 mm	33"	1067 mm	42"
Swing arc		180°		180°
Bucket rotation		185°		185°
Bucket breakout force	1488 kg	3280 lb	1882 kg	4148 lb
Stick breakout force	1596 kg	3518 lb	1596 kg	3518 lb
Transport Dimensions				
L Transport height	2489 mm	98"	2515 mm	99"
N Boom pivot height	381 mm	15"	406 mm	16"
Ground clearance	167.6 mm	6.6"	134.6 mm	5.3"
Operating weight	790 kg	1741 lb	800 kg	1764 lb

Skid Steer Loaders

Attachments

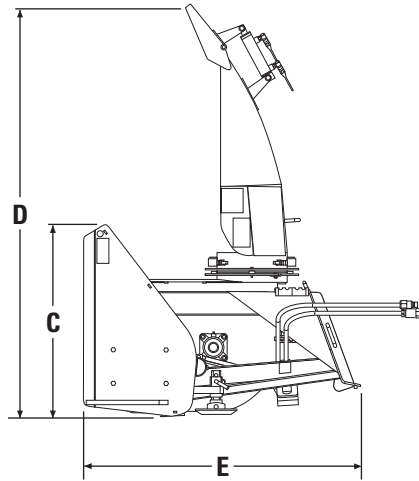
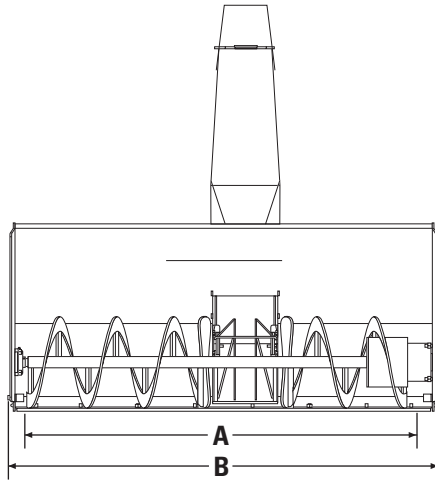
● Material Handling Arm



A Width w/side step	1309 mm	52"
B Height	1473 mm	58"
C Length	1016 mm	40"
D Load length (end point)	768 mm	30"
E Load length (mid point)	311 mm	12"
Rated structural capacity*	907 kg	2000 lb
Maximum reach (horizontal)**	2134 mm	84"
Weight	127 kg	280 lb

*Rated structural capacity is the maximum load that can be carried by the work tool and does not imply that the specific host machine has the tipping capacity to lift the load. Refer to the Caterpillar Skid Steer Loader and Multi Terrain Loader Operation and Maintenance Manual (OMM) for Caterpillar Skid Steer Loader and Multi Terrain Loader rated operating capacity with Material Handling Arm.

**Maximum horizontal reach is measured from the front tire with the loader arms approximately 1.5 m (5') off the ground and work tool tilted forward approximately 68 degrees at the end point.

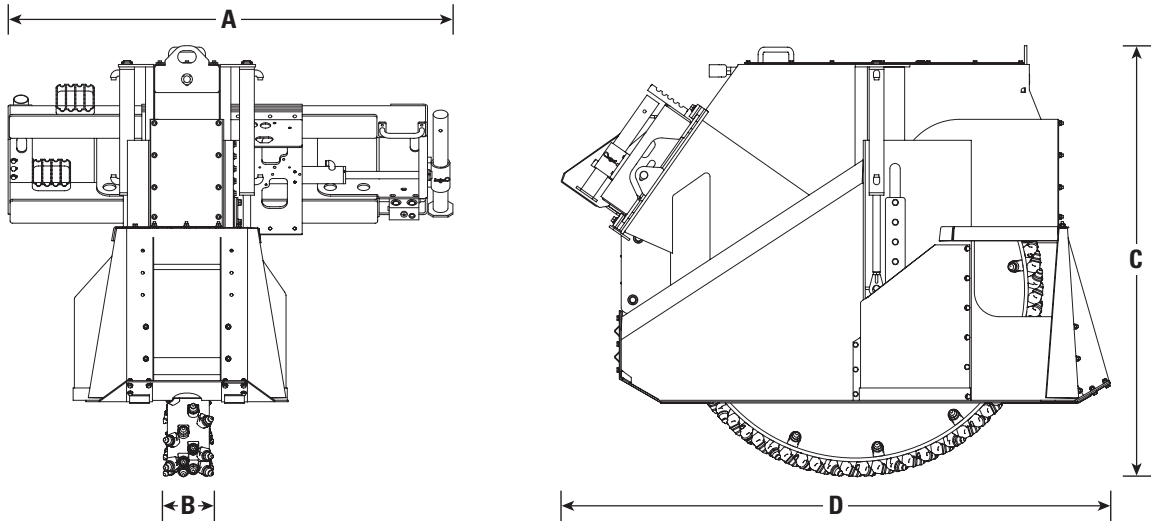


	SR17		SR18		SR21	
A Intake width	1702 mm	67"	1854 mm	73"	2159 mm	85"
B Overall width	1765 mm	69.5"	1918 mm	75.5"	2223 mm	87.5"
C Cutting height	609.6 mm	24"	812.8 mm	32"	914.4 mm	36"
D Overall height	1582 mm	62.3"	1582 mm	62.3"	1735 mm	68.3"
E Overall length	1148 mm	45.2"	1209 mm	47.6"	1440 mm	56.7"
Weight	404.5 kg	890 lb	450 kg	990 lb	555 kg	1220 lb
Maximum throw distance*	9.1 m	30'0"	12.2 m	40'0"	12.2 m	40'0"
Auger diameter	304.8 mm	12"	406.4 mm	16"	457.2 mm	18"
Impeller/fan diameter	518.2 mm	20.4"	518.2 mm	20.4"	679.5 mm	26.75"
Chute rotation		180°		180°		180°
Required hydraulic flow	53-76 L/min	14-20 gpm	68-91 L/min	18-24 gpm	98-129 L/min	26-34 gpm

*Theoretical values calculated at 100% efficiency.

Skid Steer Loaders

Attachments ● Wheel Saws



	SW45 80 mm (3")		SW45 160 mm (6")		SW45 200 mm (8")		SW60 160 mm (6")		SW60 200 mm (8")	
A Overall width	1803 mm	71"	1803 mm	71"	1803 mm	71"	1866 mm	74"	1866 mm	74"
B Maximum wheel width	80 mm	3"	160 mm	6"	200 mm	8"	160 mm	6"	200 mm	8"
C Overall height	1440 mm	57"	1435 mm	56"	1435 mm	56"	1746 mm	69"	1746 mm	69"
D Length	1992 mm	78"	1992 mm	78"	1992 mm	78"	2230 mm	88"	2230 mm	88"
Weight	1004 kg	2213 lb	932 kg	2054 lb	961 kg	2118 lb	1169 kg	2577 lb	1192 kg	2628 lb
Trench cleaning device	No		Yes		Yes		Yes		Yes	
Drive method	Piston motor/ Planetary		Piston motor/ Planetary		Piston motor/ Planetary		Piston motor/ Planetary		Piston motor/ Planetary	
Required hydraulic flow range	90- 160 L/min	24- 42 gpm	90- 160 L/min	24- 42 gpm	90- 160 L/min	24- 42 gpm	100- 160 L/min	26- 42 gpm	100- 160 L/min	26- 42 gpm
Optimal hydraulic pressure range	180- 300 bar	2611- 4351 psi	180- 300 bar	2611- 4351 psi	180- 300 bar	2611- 4351 psi	180- 300 bar	2611- 4351 psi	180- 300 bar	2611- 4351 psi
Wheel torque @ maximum pressure	1131 N·m	832 lb-ft	1429 N·m	1051 lb-ft	1429 N·m	1051 lb-ft	1429 N·m	1051 lb-ft	1429 N·m	1051 lb-ft
Wheel speed @ maximum flow	267 rpm		212 rpm		212 rpm		212 rpm		212 rpm	
Bit speed @ maximum flow	395 mpm	1295 fpm	313 mpm	1026 fpm	313 mpm	1026 fpm	313 mpm	1026 fpm	313 mpm	1026 fpm
Conical bits	64 per wheel		56 per wheel		62 per wheel		96 per wheel		96 per wheel	
Standard bit type	Concrete		Concrete		Concrete		Concrete		Concrete	
Optional bit type	All purpose		All purpose		All purpose		All purpose		All purpose	
Maximum depth of cut	450 mm	18"	450 mm	18"	450 mm	18"	600 mm	24"	600 mm	24"
Sideshift travel	650 mm	26"	650 mm	26"	650 mm	26"	650 mm	26"	650 mm	26"

Notes —

Notes —

EXCAVATORS

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EXCAVATORS





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Excavators

Specifications

								
MODEL	301.5		301.5 CR		301.6		301.8	
Sourcing	U.K.		Japan		U.K.		U.K.	
Flywheel Power	13 kW	17.4 hp	11.3 kW	15 hp	13 kW	17.4 hp	13 kW	17.4 hp
Operating Weight*	1650 kg	3640 lb	1575 kg	3470 lb	1690 kg	3726 lb	1725 kg	3803 lb
Bucket Capacity	0.018-	0.023-	0.03-	0.039-	0.018-	0.023-	0.018-	0.023-
Range (heaped)	0.056 m ³	0.073 yd³	0.04 m ³	0.052 yd³	0.056 m ³	0.073 yd³	0.056 m ³	0.073 yd³
Engine Model	3003		L3E		3003		3003	
Rated Engine RPM	2300		2100		2300		2300	
No. of Cylinders	3		3		3		3	
Bore	75 mm	2.95"	76 mm	3"	75 mm	2.95"	75 mm	2.95"
Stroke	72 mm	2.83"	70 mm	3"	72 mm	2.83"	72 mm	2.83"
Displacement	0.95 L	58.2 in³	0.953 L	58.1 in³	0.95 L	58.2 in³	0.95 L	58.2 in³
Max. Implement								
Hydraulic Pump	2 × 17/	2 × 4.5/	2 × 18.3/	2 × 4.8/	2 × 17/	2 × 4.5/	2 × 17/	2 × 4.5/
Output at Rated RPM	1 × 18	1 × 4.8	1 × 12.2	1 × 3.2	1 × 18	1 × 4.8	1 × 18	1 × 4.8
	L/min	gpm	L/min	gpm	L/min	gpm	L/min	gpm
Relief Valve Settings:								
Implement Circuits	18 600 kPa	2700 psi	20 600 kPa	2990 psi	18 600 kPa	2700 psi	18 600 kPa	2700 psi
Travel Circuits	18 600 kPa	2700 psi	20 600 kPa	2990 psi	18 600 kPa	2700 psi	18 600 kPa	2700 psi
Swing Circuits	17 200 kPa	2500 psi	10 800 kPa	1570 psi	17 200 kPa	2500 psi	17 200 kPa	2500 psi
Pilot Circuits	—		3430 kPa	500 psi	—		—	
Maximum Drawbar Pull	13.6 kN	3060 lb	15.2 kN	3420 lb	13.6 kN	3060 lb	13.6 kN	3060 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel		Two Speed Travel		Two Speed Travel		Two Speed Travel	
Lo:	2.2 km/h	1.4 mph	2.3 km/h	1.4 mph	2.2 km/h	1.4 mph	2.2 km/h	1.4 mph
Hi:	4.4 km/h	2.7 mph	4.0 km/h	2.5 mph	4.4 km/h	2.7 mph	4.4 km/h	2.7 mph
Width of Standard Track Shoe	230 mm	9"	230 mm	9"	230 mm	9"	230 mm	9"
Overall Track Length	1390 mm	4'7"	1580 mm	5'2"	1486 mm	4'8"	1486 mm	4'8"
Ground Contact Area with Std. Shoe	0.52 m ²	806 in²	0.61 m ²	950 in²	0.57 m ²	883 in²	0.57 m ²	883 in²
Track Gauge								
Standard Undercarriage	750 mm	2'6"	750 mm	2'6"	750 mm	2'6"	750 mm	2'6"
Variable Width Undercarriage	—		1110 mm	3'8"	—		1110 mm	3'8"
Fuel Tank Refill Capacity	20 L	5.3 U.S. gal	22 L	6 U.S. gal	20 L	5.3 U.S. gal	20 L	5.3 U.S. gal
Hydraulic System (includes tank)	37 L	9.8 U.S. gal	24 L	6.3 U.S. gal	37 L	9.8 U.S. gal	37 L	9.8 U.S. gal

*Operating weight for 301.5, 301.6, and 301.8 includes coolant, lubricants, full fuel tank, cab, standard shoes, bucket, medium stick, and operator 75 kg (165 lb).

Operating weight for 301.5 CR includes coolant, lubricants, full fuel tank, canopy, rubber track, rubber shoes, bucket, medium stick, and operator 75 kg (165 lb).

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.

Contact your Caterpillar Dealer for details.



MODEL	302.5		303 SR		303 CR	
Sourcing	U.K.		Japan		Japan	
Flywheel Power	16.8 kW	22.5 hp	19.1 kW	26 hp	19.1 kW	26 hp
Operating Weight*	2730 kg	6020 lb	3025 kg	6670 lb	3210 kg	7077 lb
with Additional Counterweight						
Bucket Capacity Range (heaped)	0.035- 0.092 m ³	0.046- 0.12 yd³	0.036- 0.09 m ³	0.047- 0.12 yd³	0.049- 0.159 m ³	0.065- 0.208 yd³
Engine Model	3013		S3L2		S3L2	
Rated Engine RPM	2300		2300		2400	
No. of Cylinders	3		3		3	
Bore	84 mm	3.31"	78 mm	3"	78 mm	3"
Stroke	90 mm	3.54"	92 mm	4"	92 mm	4"
Displacement	1.5 L	91.7 in³	1.319 L	80 in³	1.3 L	79 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 32/ 1 × 19 L/min	2 × 8.5/ 1 × 4.9 gpm	2 × 33.5/ 1 × 27.7 L/min	2 × 8.8/ 1 × 7.3 gpm	2 × 33.5/ 1 × 23.4 L/min	2 × 8.8/ 1 × 6.2 gpm
Relief Valve Settings:						
Implement Circuits	20 600 kPa	2987 psi	24 500 kPa	3550 psi	24 500 kPa	3550 psi
Travel Circuits	20 600 kPa	2987 psi	24 500 kPa	3550 psi	24 500 kPa	3550 psi
Swing Circuits	17 200 kPa	2500 psi	20 600 kPa	2990 psi	20 600 kPa	2990 psi
Pilot Circuits	—		3430 kPa	500 psi	3430 kPa	500 psi
Maximum Drawbar Pull	22 kN	4950 lb	30 kN	6740 lb	30 kN	6740 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel		Two Speed Travel		Two Speed Travel	
	Lo: 2.5 km/h	1.55 mph	Lo: 2.6 km/h	1.6 mph	Lo: 2.6 km/h	1.6 mph
	Hi: 4.5 km/h	2.8 mph	Hi: 4.6 km/h	2.9 mph	Hi: 4.6 km/h	2.9 mph
Width of Standard Track Shoe	300 mm	12"	300 mm	12"	300 mm	12"
Overall Track Length	1910 mm	6'3"	2070 mm	6'9"	2070 mm	6'9"
Ground Contact Area with Std. Shoe	0.97 m ²	1503 in²	1.1 m ²	1710 in²	1.1 m ²	1705 in²
Track Gauge Standard Undercarriage	1150 mm	3'9"	1250 mm	4'1"	1250 mm	4'1"
Fuel Tank Refill Capacity	41.5 L	10.8 U.S. gal	42 L	11 U.S. gal	42 L	11 U.S. gal
Hydraulic System (includes tank)	50 L	13 U.S. gal	30 L	7.9 U.S. gal	30 L	7.9 U.S. gal

4

*Operating weight for 302.5 and 303 CR includes coolant, lubricants, full fuel tank, cab, standard shoes, bucket, medium stick, and operator 75 kg (165 lb).
 Operating weight for 303 SR includes coolant, lubricants, full fuel tank, canopy, rubber track, rubber shoes, bucket, medium stick, and operator 75 kg (165 lb).
NOTE: Certain models may not be available in all Sales areas.
 Specifications may also vary by Sales area.
 Contact your Caterpillar Dealer for details.

Excavators | Specifications



MODEL	304 CR		305 SR		305 CR	
Sourcing	Japan		Japan		Japan	
Flywheel Power	26.5 kW	36 hp	30 kW	40 hp	31.3 kW	42 hp
Operating Weight*	4300 kg 9480 lb		5385 kg 11 870 lb		4800 kg 10,582 lb	
with Additional Counterweight						
Bucket Capacity Range (heaped)	0.058-0.23 m ³ 0.076-0.30 yd³		0.051-0.22 m ³ 0.067-0.29 yd³		0.058-0.23 m ³ 0.076-0.30 yd³	
Engine Model	S4L2		K4N		K4N	
Rated Engine RPM	2500		2200		2400	
No. of Cylinders	4		4		4	
Bore	78 mm	3"	90 mm	4"	90 mm	4"
Stroke	92 mm	4"	90 mm	4"	90 mm	4"
Displacement	1.758 L	107 in³	2.290 L	140 in³	2.3 L	140 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 43.4/ 1 × 40.7 L/min	2 × 11.5/ 1 × 10.8 gpm	2 × 53.4/ 1 × 38.6 L/min	2 × 14.1/ 1 × 10.2 gpm	2 × 52.1/ 1 × 42.1 L/min	2 × 13.8/ 1 × 11.1 gpm
Relief Valve Settings:						
Implement Circuits	24 500 kPa	3550 psi	21 600 kPa	3130 psi	24 500 kPa	3550 psi
Travel Circuits	24 500 kPa	3550 psi	21 600 kPa	3130 psi	24 500 kPa	3550 psi
Swing Circuits	24 500 kPa	3550 psi	23 000 kPa	3340 psi	2450 kPa	360 psi
Pilot Circuits	3430 kPa	500 psi	3430 kPa	500 psi	3430 kPa	500 psi
Maximum Drawbar Pull	41.2 kN	9260 lb	40.7 kN	9150 lb	44.6 kN	10 020 lb
	Two Speed Travel		Two Speed Travel		Two Speed Travel	
Maximum Travel Speed at Rated RPM	Lo: 2.6 km/h Hi: 4.6 km/h	1.6 mph 2.9 mph	Lo: 2.6 km/h Hi: 4.3 km/h	1.6 mph 2.7 mph	Lo: 2.7 km/h Hi: 4.6 km/h	1.7 mph 2.9 mph
Width of Standard Track Shoe	400 mm	16"	400 mm	16"	400 mm	16"
Overall Track Length	2450 mm	8'0"	2450 mm	8'0"	2450 mm	8'0"
Ground Contact Area with Std. Shoe	1.7 m ²	2640 in²	1.7 m ²	2640 in²	1.7 m ²	2635 in²
Track Gauge Standard Undercarriage	1580 mm	5'2"	1600 mm	5'3"	1580 mm	5'2"
Fuel Tank Refill Capacity	62 L	16 U.S. gal	69 L	18 U.S. gal	68 L	18 U.S. gal
Hydraulic System (includes tank)	85 L	22.5 U.S. gal	80 L	21.1 U.S. gal	57 L	15.1 U.S. gal

*Operating weight for 304.5 and 305 CR includes coolant, lubricants, full fuel tank, cab, standard shoes, bucket, medium stick, and operator 75 kg (165 lb).
 Operating weight for 304 CR and 305 SR includes coolant, lubricants, full fuel tank, cab, rubber track, rubber shoes, bucket, medium stick, and operator 75 kg (165 lb).
NOTE: Certain models may not be available in all Sales areas.
 Specifications may also vary by Sales area.
 Contact your Caterpillar Dealer for details.



MODEL	307C		307C SB		308C SR	
Sourcing	Japan		Japan		Japan	
Flywheel Power	41 kW	54 hp	41 kW	54 hp	40.5 kW	54 hp
Operating Weight*	7210 kg	15,900 lb	8390 kg	18,500 lb	8430 kg	18,580 lb
Bucket Capacity Range (heaped)	0.15-0.34 m ³	0.2-0.45 yd³	0.15-0.34 m ³	0.2-0.45 yd³	0.14-0.28 m ³	0.076-0.30 yd³
Engine Model	4M40E1		4M40E1		K4N	
Rated Engine RPM	2100		2100		2100	
No. of Cylinders	4		4		4	
Bore	95 mm	3.7"	95 mm	3.7"	95 mm	4"
Stroke	100 mm	3.9"	100 mm	3.9"	100 mm	4"
Displacement	2.84 L	173 in³	2.84 L	173 in³	2.835 L	173 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 64 L/min	2 × 17 gpm	2 × 64 L/min	2 × 17 gpm	1 × 64/34 L/min	2 × 16.9/19 gpm
Relief Valve Settings:						
Implement Circuits	27 460 kPa	3980 psi	27 460 kPa	3980 psi	27 460 kPa	3980 psi
Travel Circuits	31 380 kPa	4550 psi	31 380 kPa	4550 psi	31 380 kPa	4550 psi
Swing Circuits	19 610 kPa	2840 psi	24 030 kPa	3480 psi	24 030 kPa	3480 psi
Pilot Circuits	4120 kPa	600 psi	4120 kPa	600 psi	4120 kPa	600 psi
Maximum Drawbar Pull	57 kN	12,810 lb	57 kN	12,810 lb	57 kN	12,810 lb
	Two Speed Travel		Two Speed Travel		Two Speed Travel	
Maximum Travel Speed at Rated RPM	Lo: 3.5 km/h	2.2 mph	Lo: 3.5 km/h	2.2 mph	Lo: 3.5 km/h	2.2 mph
	Hi: 5.3 km/h	3.3 mph	Hi: 5.3 km/h	3.3 mph	Hi: 5.3 km/h	3.3 mph
Width of Standard Track Shoe	600 mm	24"	600 mm	24"	450 mm	18"
Overall Track Length	2760 mm	9'1"	2760 mm	9'1"	2910 mm	9'7"
Ground Contact Area with Std. Shoe	2.81 m ²	4360 in²	2.81 m ²	4360 in²	3 m ²	4650 in²
Track Gauge Standard Undercarriage	1750 mm	5'9"	1750 mm	5'9"	1870 mm	6'2"
Fuel Tank Refill Capacity	135 L	36 U.S. gal	135 L	35.7 U.S. gal	115 L	30 U.S. gal
Hydraulic System (includes tank)	94 L	24.8 U.S. gal	94 L	24.8 U.S. gal	92 L	24.3 U.S. gal

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*Operating weight for 307C, 307C SB, and 307B SB includes coolant, lubricants, full fuel tank, cab, standard shoes, bucket, medium stick, and operator 75 kg (165 lb). Operating weight for 308C SR includes coolant, lubricants, full fuel tank, canopy, rubber shoes, bucket, medium stick, and operator 75 kg (165 lb).

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.
Contact your Caterpillar Dealer for details.

Excavators

Specifications



MODEL	308C CR		311C U		312C		312C	
Sourcing	Japan		Japan		Japan		France	
Flywheel Power	41 kW	55 hp	59 kW	79 hp	67 kW	90 hp	71 kW	96 hp
Operating Weight*	8040 kg	17,730 lb	11 980 kg	26,410 lb	12 860 kg	28,350 lb	13 140 kg	28,970 lb
Bucket Capacity	0.15-	0.2-	0.3-	0.39-	0.3-	0.39-	0.24-	0.31-
Range (heaped)	0.34 m ³	0.44 yd³	0.74 m ³	0.97 yd³	0.7 m ³	0.92 yd³	0.75 m ³	0.98 yd³
Engine Model	4M40E1		3064 T		3064 T		3064 T	
Rated Engine RPM	2100		1800		1950		1950	
No. of Cylinders	4		4		4		4	
Bore	95 mm	3.7"	102 mm	4"	102 mm	4"	100 mm	3.9"
Stroke	100 mm	4"	130 mm	5.1"	130 mm	5.1"	127 mm	5"
Displacement	2.84 L	173 in³	4.25 L	259 in³	4.25 L	259 in³	4 L	244 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 64 L/min	2 × 17 gpm	2 × 108 L/min	2 × 28 gpm	2 × 127 L/min	2 × 33.5 gpm	2 × 129 L/min	2 × 34 gpm
Relief Valve Settings:								
Implement Circuits	27 460 kPa	3980 psi	29 900 kPa	4340 psi	29 900 kPa	4340 psi	29 900 kPa	4332 psi
Travel Circuits	31 380 kPa	4550 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4970 psi
Swing Circuits	24 030 kPa	3480 psi	23 500 kPa	3410 psi	24 500 kPa	3560 psi	23 050 kPa	3343 psi
Pilot Circuits	4120 kPa	600 psi	4120 kPa	600 psi	4120 kPa	600 psi	4120 kPa	600 psi
Maximum Drawbar Pull	57 kN	12,810 lb	92.0 kN	20,680 lb	110 kN	24,720 lb	108 kN	24,279 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.3 km/h 3.3 mph		Two Speed Travel Lo: 3.4 km/h 2.1 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.8 km/h 2.4 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.6 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph	
Width of Standard Track Shoe	600 mm	24"	500 mm	20"	600 mm	24"	500 mm	20"
Overall Track Length	2910 mm	9'7"	3320 mm	10'11"	3490 mm	11'5"	3490 mm	11'5"
Ground Contact Area with Std. Shoe	3 m ²	4650 in²	2.86 m ²	4430 in²	3.63 m ²	5630 in²	3.03 m ²	4700 in²
Track Gauge Standard Undercarriage	1870 mm	6'2"	1990 mm	6'6"	1990 mm	6'6"	1990 mm	6'6"
Fuel Tank Refill Capacity	115 L	30 U.S. gal	195 L	52 U.S. gal	250 L	66 U.S. gal	250 L	66 U.S. gal
Hydraulic System (includes tank)	92 L	24.3 U.S. gal	160 L	42.3 U.S. gal	162 L	42.8 U.S. gal	164 L	43.5 U.S. gal

*Operating weight includes coolant, lubricants, full fuel tank, cab, standard shoes, bucket, medium stick, and operator 75 kg (165 lb).

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.
Contact your Caterpillar Dealer for details.



MODEL	312C L		312C L		313C SR		313C CR	
Sourcing	Japan		France		Japan		Japan	
Flywheel Power	67 kW	90 hp	71 kW	96 hp	59 kW	79 hp	59 kW	79 hp
Operating Weight*	13 140 kg	28,970 lb	15 150 kg	33,407 lb	14 000 kg	30,860 lb	13 400 kg	29,540 lb
Bucket Capacity	0.3-	0.39-	0.24-	0.31-	0.32-	0.42-	0.32-	0.42-
Range (heaped)	0.7 m ³	0.92 yd³	0.75 m ³	0.98 yd³	0.45 m ³	0.59 yd³	0.5 m ³	0.75 yd³
Engine Model	3064 T		3064 T		3064 T		3064 T	
Rated Engine RPM	1950		1950		1800		1800	
No. of Cylinders	4		4		4		4	
Bore	102 mm	4"	100 mm	3.9"	102 mm	4"	102 mm	4"
Stroke	130 mm	5.1"	127 mm	5"	130 mm	5"	130 mm	5"
Displacement	4.25 L	259 in³	4 L	244 in³	4.25 L	259 in³	4.25 L	259 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 127 L/min	2 × 33.5 gpm	2 × 129 L/min	2 × 34 gpm	2 × 117 L/min	2 × 30.9 gpm	2 × 117 L/min	2 × 30.9 gpm
Relief Valve Settings:								
Implement Circuits	29 900 kPa	4340 psi	29 900 kPa	4340 psi	29 900 kPa	4340 psi	29 900 kPa	4340 psi
Travel Circuits	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi
Swing Circuits	24 500 kPa	3550 psi	23 050 kPa	3340 psi	24 500 kPa	3550 psi	24 500 kPa	3550 psi
Pilot Circuits	4120 kPa	600 psi	4120 kPa	600 psi	4100 kPa	590 psi	4100 kPa	590 psi
Maximum Drawbar Pull: Standard	110 kN	24,720 lb	—	—	110 kN	24,720 lb	110 kN	24,720 lb
Heavy	—	—	126 kN	28,326 lb	—	—	—	—
Maximum Travel Speed at Rated RPM	Two Speed Travel		Two Speed Travel		Two Speed Travel		Two Speed Travel	
Lo:	3.8 km/h	2.4 mph	3.2 km/h	1.9 mph	3.6 km/h	2.2 mph	3.6 km/h	2.2 mph
Hi:	5.5 km/h	3.4 mph	5.1 km/h	3.1 mph	5.2 km/h	3.2 mph	5.2 km/h	3.2 mph
Width of Standard Track Shoe	600 mm	24"	600 mm	24"	500 mm	20"	500 mm	20"
Overall Track Length	3750 mm	12'4"	3750 mm	12'4"	2780 mm	9'1"	2780 mm	9'1"
Ground Contact Area with Std. Shoe	3.95 m ²	6120 in²	3.95 m ²	6120 in²	3.03 m ²	4700 in²	3.03 m ²	4700 in²
Track Gauge	1990 mm	6'6"	1990 mm	6'6"	1990 mm	6'6"	1990 mm	6'6"
Fuel Tank Refill Capacity	250 L	66 U.S. gal	250 L	66 U.S. gal	200 L	53 U.S. gal	200 L	53 U.S. gal
Hydraulic System (includes tank)	162 L	42.8 U.S. gal	164 L	43.5 U.S. gal	150 L	39.6 U.S. gal	150 L	39.6 U.S. gal

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*Operating weight for 312C L includes coolant, lubricants, full fuel tank, standard shoes, bucket, medium stick, and operator 75 kg (165 lb).
 Operating weight for 313C CR and 313C SR includes coolant, lubricants, full fuel tank, standard shoes, bucket, blade, medium stick, and operator 75 kg (165 lb).
NOTE: Certain models may not be available in all Sales areas.
 Specifications may also vary by Sales area.
 Contact your Caterpillar Dealer for details.

Excavators

Specifications



MODEL	314C CR		314C LCR		315C		315C L	
Sourcing	Japan		Japan		Japan		Japan	
Flywheel Power	67 kW	90 hp	67 kW	90 hp	82 kW	110 hp	82 kW	110 hp
Operating Weight*	14 610 kg	32,190 lb	14 810 kg	32,590 lb	16 400 kg	36,160 lb	16 750 kg	36,930 lb
Bucket Capacity	0.3-	0.39-	0.3-	0.39-	0.33-	0.43-	0.33-	0.43-
Range (heaped)	0.74 m ³	0.97 yd³	0.74 m ³	0.97 yd³	0.86 m ³	1.13 yd³	0.86 m ³	1.13 yd³
Engine Model	3064 T		3064 T		3046 T		3046 T	
Rated Engine RPM	1950		1950		2150		2150	
No. of Cylinders	4		4		6		6	
Bore	102 mm	4"	102 mm	4"	94 mm	3.7"	94 mm	3.7"
Stroke	130 mm	5.1"	130 mm	5.1"	120 mm	4.7"	120 mm	4.7"
Displacement	4.3 L	259 in³	4.3 L	259 in³	5 L	305 in³	5 L	305 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 127 L/min	2 × 33.5 gpm	2 × 127 L/min	2 × 33.5 gpm	2 × 150 L/min	2 × 39.6 gpm	2 × 150 L/min	2 × 39.6 gpm
Relief Valve Settings:								
Implement Circuits	29 900 kPa	4340 psi	29 900 kPa	4340 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Travel Circuits	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Swing Circuits	23 050 kPa	3340 psi	23 050 kPa	3340 psi	22 540 kPa	3270 psi	22 550 kPa	3270 psi
Pilot Circuits	4120 kPa	600 psi	4120 kPa	600 psi	4120 kPa	600 psi	4120 kPa	600 psi
Maximum Drawbar Pull	110 kN	24,720 lb	110 kN	24,720 lb	150 kN	33,710 lb	150 kN	33,710 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel Lo: 3.8 km/h 2.4 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.8 km/h 2.4 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.4 km/h 2.1 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.4 km/h 2.1 mph Hi: 5.5 km/h 3.4 mph	
Width of Standard Track Shoe	500 mm	20"	500 mm	20"	500 mm	20"	600 mm	24"
Overall Track Length	3490 mm	11'5"	3750 mm	12'4"	3690 mm	12'1"	3970 mm	13'0"
Ground Contact Area with Std. Shoe	3.63 m ²	5630 in²	3.95 m ²	6120 in²	3.8 m ²	5890 in²	4.14 m ²	6420 in²
Track Gauge	1990 mm	6'6"	1990 mm	6'6"	1990 mm	6'6"	1990 mm	6'6"
Fuel Tank Refill Capacity	200 L	53 U.S. gal	200 L	53 U.S. gal	285 L	75 U.S. gal	285 L	75 U.S. gal
Hydraulic System (includes tank)	150 L	39.6 U.S. gal	150 L	39.6 U.S. gal	190 L	50.2 U.S. gal	190 L	50.2 U.S. gal

*Operating weight for 314C CR and 314C LCR includes coolant, lubricants, full fuel tank, standard shoes, bucket, blade, medium stick, and operator 75 kg (165 lb). Operating weight for 315C and 315C L includes coolant, lubricants, full fuel tank, standard shoes, bucket, medium stick, and operator 75 kg (165 lb).

NOTE: Certain models may not be available in all Sales areas. Specifications may also vary by Sales area. Contact your Caterpillar Dealer for details.



MODEL	315C L		318C		318C L	
Sourcing	France		France		Japan	
Flywheel Power	83 kW	111 hp	93 kW	125 hp	93 kW	125 hp
Operating Weight*	16 734 kg	36,890 lb	19 600 kg	43,211 lb	19 650 kg	43,320 lb
Bucket Capacity Range (heaped)	0.41-1.35 m ³	0.54-1.77 yd³	0.41-1.35 m ³	0.54-1.77 yd³	0.4-1.2 m ³	0.52-1.33 yd³
Engine Model	3054E ATAAC		3066 T		3066 T	
Rated Engine RPM	1800		1800		1800	
No. of Cylinders	4		6		6	
Bore	105 mm	4.13"	102 mm	4"	102 mm	4"
Stroke	127 mm	5"	130 mm	5.11"	130 mm	5"
Displacement	4.4 L	269 in³	6.4 L	390.5 in³	6.4 L	390 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 150 L/min	2 × 39.6 gpm	2 × 190 L/min	2 × 50.2 gpm	2 × 190 L/min	2 × 50.2 gpm
Relief Valve Settings:						
Implement Circuits	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 320 kPa	4980 psi
Travel Circuits	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 320 kPa	4980 psi
Swing Circuits	22 540 kPa	3270 psi	23 050 kPa	3343 psi	20 100 kPa	2910 psi
Pilot Circuits	4120 kPa	600 psi	4100 kPa	595 psi	3930 kPa	570 psi
Maximum Drawbar Pull	152 kN	34,170 lb	195 kN	43,838 lb	202 kN	45,500 lb
	Two Speed Travel		Two Speed Travel		Two Speed Travel	
Maximum Travel Speed at Rated RPM	Lo: 3.2 km/h	1.9 mph	Lo: 3.0 km/h	1.86 mph	Lo: 3.3 km/h	2.0 mph
	Hi: 5.5 km/h	3.4 mph	Hi: 5.0 km/h	3.1 mph	Hi: 5.3 km/h	3.3 mph
Width of Standard Track Shoe	500 mm	20"	600 mm	24"	600 mm	24"
Overall Track Length	3960 mm	12'6"	4075 mm	13'4"	4250 mm	13'11"
Ground Contact Area with Std. Shoe	3.16 m ²	4907 in²	3.9 m ²	6045 in²	4.48 m ²	6940 in²
Track Gauge	1990 mm	6'6"	2200 mm	7'3"	2400 mm	7'10"
Fuel Tank Refill Capacity	285 L	75 U.S. gal	320 L	84.5 U.S. gal	320 L	85 U.S. gal
Hydraulic System (includes tank)	188 L	49.7 U.S. gal	188 L	49.7 U.S. gal	255 L	67.4 U.S. gal

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*Operating weight for 315C L includes coolant, lubricants, full fuel tank, standard shoes, bucket, medium stick, and operator 75 kg (165 lb).
 Operating weight for 318C and 318C L includes coolant, lubricants, full fuel tank, standard shoes, bucket, long stick, and operator 75 kg (165 lb).
NOTE: Certain models may not be available in all Sales areas.
 Specifications may also vary by Sales area.
 Contact your Caterpillar Dealer for details.



MODEL	318C L		318C LN		318C N	
Sourcing	France		Japan		France	
Flywheel Power	93 kW	125 hp	93 kW	125 hp	93 kW	125 hp
Operating Weight*	20 160 kg	44,450 lb	19 350 kg	42,660 lb	19 280 kg	42,505 lb
Bucket Capacity Range (heaped)	0.41-1.35 m ³	0.53-1.75 yd³	0.4-1.2 m ³	0.52-1.33 yd³	0.41-1.35 m ³	0.54-1.77 yd³
Engine Model	3066 T		3066 T		3066 T	
Rated Engine RPM	1800		1800		1800	
No. of Cylinders	6		6		6	
Bore	102 mm	4"	102 mm	4"	102 mm	4"
Stroke	130 mm	5"	130 mm	5"	130 mm	5"
Displacement	6.4 L	390 in³	6.4 L	390 in³	6.4 L	390 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 190 L/min	2 × 50.2 gpm	2 × 190 L/min	2 × 50.2 gpm	2 × 190 L/min	2 × 50.2 gpm
Relief Valve Settings:						
Implement Circuits	34 300 kPa	4970 psi	34 320 kPa	4980 psi	34 300 kPa	4970 psi
Travel Circuits	34 300 kPa	4970 psi	34 320 kPa	4980 psi	34 300 kPa	4970 psi
Swing Circuits	23 050 kPa	3343 psi	20 100 kPa	2910 psi	23 050 kPa	3343 psi
Pilot Circuits	4100 kPa	590 psi	3930 kPa	570 psi	4100 kPa	595 psi
Maximum Drawbar Pull	195 kN	43,840 lb	202 kN	45,500 lb	195 kN	43,838 lb
	Two Speed Travel		Two Speed Travel		Two Speed Travel	
Maximum Travel Speed at Rated RPM	Lo: 3.0 km/h	1.86 mph	Lo: 3.3 km/h	2.0 mph	Lo: 3.0 km/h	1.86 mph
	Hi: 5.0 km/h	3.1 mph	Hi: 5.3 km/h	3.3 mph	Hi: 5.0 km/h	3.1 mph
Width of Standard Track Shoe	600 mm	24"	500 mm	20"	500 mm	20"
Overall Track Length	4450 mm	13'3"	4250 mm	13'11"	4075 mm	13'4"
Ground Contact Area with Std. Shoe	4.3 m ²	6665 in²	3.73 m ²	5780 in²	3.26 m ²	5053 in²
Track Gauge	2800 mm	9'3"	1990 mm	6'6"	1990 mm	6'6"
Fuel Tank Refill Capacity	320 L	85 U.S. gal	320 L	85 U.S. gal	320 L	84.5 U.S. gal
Hydraulic System (includes tank)	188 L	49.7 U.S. gal	255 L	67.4 U.S. gal	188 L	49.7 U.S. gal

*Operating weight for 318C L includes coolant, lubricants, full fuel tank, standard shoes, bucket, long stick, and operator 75 kg (165 lb).

Operating weight for 318C LN and 318C N includes coolant, lubricants, full fuel tank, standard shoes, bucket, medium stick, and operator 75 kg (165 lb).

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.

Contact your Caterpillar Dealer for details.



MODEL	M313C		M315C		M316C	
Flywheel Power	88 kW	118 hp	96 kW	129 hp	103 kW	138 hp
Operating Weight*	14 400 kg	30,860 lb	16 150 kg	35,610 lb	17 700 kg	39,028 lb
Bucket Capacity Range (heaped)	0.28-0.72 m ³	0.37-0.94 yd³	0.35-0.91 m ³	0.45-1.19 yd³	0.35-0.91 m ³	0.45-1.19 yd³
Engine Model	3054E ATAAC		3054E ATAAC		3056E ATAAC	
Rated Engine RPM	2000		2000		2000	
No. of Cylinders	4		4		6	
Bore	105 mm	4.1"	105 mm	4.1"	100 mm	3.9"
Stroke	127 mm	5"	127 mm	5"	127 mm	5"
Displacement	4.4 L	269 in³	4.4 L	269 in³	5.98 L	365 in³
Max. Implement Hydraulic Pump Output at Rated RPM	190+80 L/min	50+21 gpm	215+80 L/min	57+21.2 gpm	245+80 L/min	65+21.1 gpm
Tires — standard	10.00-20 dual pneumatic		10.00-20 dual pneumatic		10.00-20 dual pneumatic	
— optional	10.00-20 dual solid rubber		10.00-20 dual solid rubber		10.00-20 dual solid rubber	
	18-R 19.5 XF single		18-R 19.5 XF single		18-R 19.5 XF single	
	600/40-22.5 single		600/40-22.5 single		600/40-22.5 single	
			11.00-20 dual pneumatic		11.00-20 dual pneumatic	
Maximum Travel Speed	34 km/h	21 mph	34 km/h	21 mph	34 km/h	21 mph
Wheel Base	2500 mm	8'2"	2500 mm	8'2"	2600 mm	8'6"
Width Over Tires**	2550 mm	8'4"	2550 mm	8'4"	2550 mm	8'4"
Ground Clearance**	370 mm	14.7"	370 mm	14.7"	370 mm	14.7"
Fuel Tank Refill Capacity	235 L	62 U.S. gal	235 L	62 U.S. gal	310 L	61 U.S. gal
Hydraulic System (includes tank)	165 L	44 U.S. gal	230 L	60.8 U.S. gal	230 L	81.9 U.S. gal

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*Operating weight includes full fuel tank, operator 75 kg (165 lb), one-piece boom, mid-size stick and bucket, and two sets of outriggers.

**With standard tires.

NOTE: Standard cold inflation pressure for all tires is 650 kPa (94 psi).

Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.

Contact your Caterpillar Dealer for details.

Excavators | Specifications



M318C



M322C

MODEL	M318C		M322C	
Flywheel Power	113 kW	151 hp	122 kW	164 hp
Operating Weight*	19 150 kg	42,220 lb	22 200 kg	48,940 lb
Bucket Capacity Range (heaped)	0.35-1.09 m ³	0.45-1.43 yd ³	0.54-1.26 m ³	0.71-1.65 yd ³
Engine Model	3056E ATAAC		3056E ATAAC	
Rated Engine RPM	2000		2000	
No. of Cylinders	6		6	
Bore	100 mm	3.9"	100 mm	3.9"
Stroke	127 mm	5"	127 mm	5"
Displacement	6 L	366 in ³	6 L	366 in ³
Max. Implement Hydraulic Pump Output at Rated RPM	280+112 L/min	73.9+29.6 gpm	340+112 L/min	89.8+29.6 gpm
Tires — standard	10.00-20 dual pneumatic		11.00-20 dual pneumatic	
— optional	10.00-20 dual solid rubber		11.00-20 dual solid rubber	
	18-R 19.5 XF single		18-R 19.5 XF single	
	600/40-22.5 single		600/40-22.5 single	
	11.00-20 dual pneumatic			
Maximum Travel Speed	34 km/h	21 mph	25 km/h	15 mph
Wheel Base	2600 mm	8'6"	2750 mm	9'0"
Width Over Tires**	2550 mm	8'4"	2750 mm	9'0"
Ground Clearance**	375 mm	15"	360 mm	14.1"
Fuel Tank Refill Capacity	385 L	102 U.S. gal	385 L	102 U.S. gal
Hydraulic System (includes tank)	255 L	67.4 U.S. gal	350 L	92.5 U.S. gal

*Operating weight includes full fuel tank, operator 75 kg (165 lb), one-piece boom, mid-size stick and bucket, and two sets of outriggers.

**With standard tires.

NOTE: Standard cold inflation pressure for all tires is 650 kPa (94 psi).
 Certain models may not be available in all Sales areas.
 Specifications may also vary by Sales area.
 Contact your Caterpillar Dealer for details.



MODEL	320C		320C		320C U		320C L	
Sourcing	Japan, Brazil		Belgium		Japan		Japan, Brazil	
Flywheel Power	103 kW	138 hp	103 kW	138 hp	103 kW	138 hp	103 kW	138 hp
Operating Weight*	19 700 kg	43,430 lb	21 310 kg	47,000 lb	22 300 kg	49,160 lb	21 000 kg	46,300 lb
Bucket Capacity	0.45-	0.59-	0.41-	0.54-	0.8-	1.05-	0.45-	0.59-
Range (heaped)	1.5 m ³	1.96 yd³	1.7 m ³	2.2 yd³	1.5 m ³	1.96 yd³	1.5 m ³	1.96 yd³
Engine Model	3066 ATAAC		3066 ATAAC		3066 ATAAC		3066 ATAAC	
Rated Engine RPM	1800		1800		1800		1800	
No. of Cylinders	6		6		6		6	
Bore	102 mm	4"	102 mm	4"	102 mm	4"	102 mm	4"
Stroke	130 mm	5"	130 mm	5"	130 mm	5.1"	130 mm	5"
Displacement	6.4 L	391 in³	6.4 L	391 in³	6.4 L	391 in³	6.4 L	391 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 205 L/min	2 × 54 gpm	2 × 205 L/min	2 × 54 gpm	2 × 205 L/min	2 × 54.2 gpm	2 × 205 L/min	2 × 54 gpm
Relief Valve Settings:								
Implement Circuits	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi
Travel Circuits	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi
Swing Circuits	25 000 kPa	3630 psi	26 000 kPa	3770 psi	25 000 kPa	3630 psi	25 000 kPa	3630 psi
Pilot Circuits	4140 kPa	600 psi	4120 kPa	600 psi	4120 kPa	600 psi	4140 kPa	600 psi
Maximum Drawbar Pull	196 kN	44,040 lb	196 kN	44,040 lb	196 kN	44,040 lb	196 kN	44,040 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph	
Width of Standard Track Shoe	600 mm	2'0"	600 mm	2'0"	600 mm	2'0"	800 mm	2'7"
Overall Track Length	4075 mm	13'4"	4075 mm	13'4.4"	4075 mm	13'4"	4455 mm	14'7"
Ground Contact Area with Std. Shoe	4.26 m ²	6600 in²	4.26 m ²	6600 in²	4.26 m ²	6600 in²	6.29 m ²	9750 in²
Track Gauge	2200 mm	7'3"	2200 mm	7'2.6"	2200 mm	7'3"	2380 mm	7'10"
Fuel Tank Refill Capacity	400 L	106 U.S. gal	320 L	84.5 U.S. gal	284 L	75 U.S. gal	400 L	106 U.S. gal
Hydraulic System (includes tank)	200 L	52.8 U.S. gal	200 L	52.8 U.S. gal	240 L	63.4 U.S. gal	200 L	52.8 U.S. gal

*Operating weight includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg (165 lb).
NOTE: Certain models may not be available in all Sales areas.
 Specifications may also vary by Sales area.
 Contact your Caterpillar Dealer for details.

Excavators

Specifications



MODEL	320C L		320C LU		320C LN		320C S	
Sourcing	Belgium		Japan		Belgium		Belgium	
Flywheel Power	103 kW	138 hp	103 kW	138 hp	103 kW	138 hp	103 kW	138 hp
Operating Weight*	21 850 kg	48,180 lb	23 000 kg	50,715 lb	21 730 kg	47,910 lb	23 160 kg	51,070 lb
Bucket Capacity	0.41-	0.54-	0.8-	1.05-	0.41-	0.54-	0.41-	0.54-
Range (heaped)	1.7 m ³	2.2 yd³	1.5 m ³	1.96 yd³	1.7 m ³	2.2 yd³	1.7 m ³	2.2 yd³
Engine Model	3066 ATAAC		3066 ATAAC		3066 ATAAC		3066 ATAAC	
Rated Engine RPM	1800		1800		1800		1800	
No. of Cylinders	6		6		6		6	
Bore	102 mm	4"	102 mm	4"	102 mm	4"	102 mm	4"
Stroke	130 mm	5"	130 mm	5.1"	130 mm	5"	130 mm	5"
Displacement	6.4 L	391 in³	6.4 L	391 in³	6.4 L	391 in³	6.4 L	391 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 205 L/min	2 × 54 gpm	2 × 205 L/min	2 × 54.2 gpm	2 × 205 L/min	2 × 54 gpm	2 × 205 L/min	2 × 54 gpm
Relief Valve Settings:								
Implement Circuits	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi
Travel Circuits	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi
Swing Circuits	26 000 kPa	3770 psi	25 000 kPa	3630 psi	26 000 kPa	3770 psi	26 000 kPa	3770 psi
Pilot Circuits	4120 kPa	600 psi	4120 kPa	600 psi	4120 kPa	600 psi	4120 kPa	600 psi
Maximum Drawbar Pull	196 kN	44,040 lb	196 kN	44,040 lb	196 kN	44,040 lb	236 kN	53,100 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 2.9 km/h 1.8 mph Hi: 4.5 km/h 2.8 mph	
Width of Standard Track Shoe	600 mm	2'0"	800 mm **	2'7"	500 mm	1'8"	550 mm	1'9"
Overall Track Length	4455 mm	14'7"	4455 mm	14'7"	4455 mm	14'7"	4358 mm	14'4"
Ground Contact Area with Std. Shoe	4.72 m ²	7320 in²	6.29 m ² **	9750 in²	3.93 m ²	6090 in²	4.15 m ²	6433 in²
Track Gauge	2380 mm	7'10"	2380 mm	7'10"	1990 mm	6'6"	1895 mm	6'3"
Fuel Tank Refill Capacity	320 L	84.5 U.S. gal	284 L	75 U.S. gal	320 L	84.5 U.S. gal	320 L	84.5 U.S. gal
Hydraulic System (includes tank)	200 L	52.8 U.S. gal	240 L	63.4 U.S. gal	200 L	52.8 U.S. gal	200 L	52.8 U.S. gal

*Operating weight includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg (165 lb).

**Europe, Africa, Middle East — standard track shoe 600 mm (24"). Ground contact 4.72 m² (7316 in²).

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.

Contact your Caterpillar Dealer for details.



MODEL	321C LCR		322C		322C L		322C L	
Sourcing	Japan		Japan		Japan, U.S.		Belgium	
Flywheel Power	103 kW	138 hp	121 kW	162 hp	123 kW	165 hp	123 kW	165 hp
Operating Weight*	24 000 kg	52,910 lb	23 000 kg	50,710 lb	24 200 kg	53,350 lb	25 325 kg	55,840 lb
Bucket Capacity	0.8-1.0 m ³ 1.0-1.3 yd³		0.8-1.3 m ³ 1.05-1.7 yd³		0.8-1.3 m ³ 1.05-1.7 yd³		0.63-2.2 m ³ 0.82-2.9 yd³	
Engine Model	3066 ATAAC		3126 TA		3126B ATAAC		3126B ATAAC	
Rated Engine RPM	1800		1800		1800		1800	
No. of Cylinders	6		6		6		6	
Bore	102 mm	4"	110 mm	4.3"	110 mm	4.3"	110 mm	4.3"
Stroke	130 mm	5.1"	127 mm	5"	127 mm	5"	127 mm	5"
Displacement	6.4 L	391 in³	7.2 L	439 in³	7.2 L	439 in³	7.2 L	439 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 205 L/min	2 × 54 gpm	2 × 220 L/min	2 × 58.1 gpm	2 × 200 L/min	2 × 58.1 gpm	2 × 220 L/min	2 × 58.1 gpm
Relief Valve Settings:								
Implement Circuits	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4980 psi
Travel Circuits	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi	34 300 kPa	4980 psi
Swing Circuits	25 000 kPa	3630 psi	24 500 kPa	3550 psi	24 500 kPa	3550 psi	24 500 kPa	3550 psi
Pilot Circuits	3900 kPa	570 psi	3920 kPa	570 psi	3920 kPa	570 psi	4100 kPa	595 psi
Maximum Drawbar Pull	196 kN	44,040 lb	223 kN	50,110 lb	223 kN	50,110 lb	223 kN	50,110 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel Lo: 3.5 km/h 2.2 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.4 km/h 2.1 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.4 km/h 2.1 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.4 km/h 2.1 mph Hi: 5.5 km/h 3.4 mph	
Width of Standard Track Shoe	800 mm **	2'7"	600 mm	2'0"	800 mm	2'8"	800 mm	2'8"
Overall Track Length	4455 mm	14'7"	4260 mm	14'0"	4640 mm	15'3"	4640 mm	15'3"
Ground Contact Area with Std. Shoe	6.29 m ² **	9750 in²	4.48 m ²	6940 in²	6.58 m ²	10,200 in²	6.58 m ²	10,200 in²
Track Gauge	2380 mm	7'10"	2390 mm	7'10"	2590 mm	8'6"	2590 mm	8'6"
Fuel Tank Refill Capacity	330 L	87 U.S. gal	400 L	106 U.S. gal	500 L	132 U.S. gal	500 L	132 U.S. gal
Hydraulic System (includes tank)	260 L	68.7 U.S. gal	245 L	64.7 U.S. gal	245 L	64.7 U.S. gal	250 L	66 U.S. gal

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*Operating weight includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg (165 lb).

**Europe, Africa, Middle East — standard track shoe 600 mm (24"). Ground contact 4.72 m² (7316 in²).

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.

Contact your Caterpillar Dealer for details.

Excavators

Specifications



MODEL	322C LN		325C		325C L		325C L	
Sourcing	Belgium		Japan		Japan, U.S.		Belgium	
Flywheel Power	123 kW	165 hp	140 kW	188 hp	140 kW	188 hp	128 kW	172 hp
Operating Weight*	24 680 kg	54,420 lb	26 900 kg	59,300 lb	28 600 kg	63,050 lb	29 140 kg	64,250 lb
Bucket Capacity	0.63-	0.82-	1.1-	1.4-	1.1-	1.4-	0.63-	0.82-
Range (heaped)	2.2 m ³	2.9 yd³	1.6 m ³	2.1 yd³	1.6 m ³	2.1 yd³	1.9 m ³	2.5 yd³
Engine Model	3126 ATAAC		3126B ATAAC		3126B ATAAC		3126B ATAAC	
Rated Engine RPM	1800		1800		1800		1800	
No. of Cylinders	6		6		6		6	
Bore	110 mm	4.3"	110 mm	4.3"	110 mm	4.3"	110 mm	4.3"
Stroke	127 mm	5"	127 mm	5"	127 mm	5"	127 mm	5"
Displacement	7.2 L	439 in³	7.2 L	439 in³	7.2 L	439 in³	7.2 L	439 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 220 L/min	2 × 58.1 gpm	2 × 235 L/min	2 × 62 gpm	2 × 235 L/min	2 × 62 gpm	2 × 235 L/min	2 × 62 gpm
Relief Valve Settings:								
Implement Circuits	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Travel Circuits	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Swing Circuits	24 500 kPa	3550 psi	27 500 kPa	3980 psi	27 500 kPa	3980 psi	25 000 kPa	3625 psi
Pilot Circuits	4100 kPa	595 psi	4120 kPa	600 psi	4120 kPa	600 psi	4100 kPa	595 psi
Maximum Drawbar Pull	223 kN	50,110 lb	244 kN	54,830 lb	244 kN	54,830 lb	236 kN	53,100 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel Lo: 3.4 km/h 2.1 mph Hi: 5.5 km/h 3.4 mph		Two Speed Travel Lo: 3.3 km/h 2.0 mph Hi: 5.3 km/h 3.3 mph		Two Speed Travel Lo: 3.3 km/h 2.0 mph Hi: 5.3 km/h 3.3 mph		Two Speed Travel Lo: 3.1 km/h 1.9 mph Hi: 5.0 km/h 3.1 mph	
Width of Standard Track Shoe	600 mm	2'0"	600 mm	2'0"	800 mm	2'8"	800 mm	2'8"
Overall Track Length	4640 mm	15'3"	4360 mm	14'4"	4660 mm	15'3"	4660 mm	15'3"
Ground Contact Area with Std. Shoe	4.94 m ²	7650 in²	4.19 m ²	6490 in²	6.08 m ²	9420 in²	6.56 m ²	10,200 in²
Track Gauge	2390 mm	7'10"	2390 mm	7'10"	2590 mm	8'6"	2590 mm	8'6"
Fuel Tank Refill Capacity	500 L	132 U.S. gal	500 L	132 U.S. gal	500 L	132 U.S. gal	500 L	132 U.S. gal
Hydraulic System (includes tank)	250 L	66 U.S. gal	310 L	81.9 U.S. gal	310 L	81.9 U.S. gal	310 L	81.9 U.S. gal

*Operating weight includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg (165 lb).

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.

Contact your Caterpillar Dealer for details.



MODEL	325C LN		330C		330C L		330C L	
Sourcing	Belgium		Japan		Japan, U.S.		Belgium	
Flywheel Power	128 kW	172 hp	184 kW	247 hp	184 kW	247 hp	181 kW	243 hp
Operating Weight*	28 010 kg	61,760 lb	33 200 kg	73,190 lb	35 100 kg	77,400 lb	35 280 kg	77,790 lb
Bucket Capacity	0.63-	0.82-	0.7-	0.9-	0.7-	0.9-	0.68-	1.2-
Range (heaped)	1.9 m ³	2.5 yd³	2.1 m ³	2.7 yd³	2.2 m ³	3 yd³	2.3 m ³	3.9 yd³
Engine Model	3126B ATAAC		C9 ATAAC		C9 ATAAC		C9 ATAAC	
Rated Engine RPM	1800		1800		1800		1800	
No. of Cylinders	6		6		6		6	
Bore	110 mm	4.3"	112 mm	4.4"	112 mm	4.4"	112 mm	4.4"
Stroke	127 mm	5"	149 mm	5.9"	149 mm	5.9"	149 mm	5.9"
Displacement	7.2 L	439 in³	8.8 L	537 in³	8.8 L	537 in³	8.8 L	537 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 235 L/min	2 × 62 gpm	2 × 280 L/min	2 × 74 gpm	2 × 280 L/min	2 × 74 gpm	2 × 280 L/min	2 × 74 gpm
Relief Valve Settings:								
Implement Circuits	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Travel Circuits	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Swing Circuits	25 000 kPa	3625 psi	27 900 kPa	4050 psi	27 900 kPa	4050 psi	27 900 kPa	4050 psi
Pilot Circuits	4100 kPa	595 psi	4120 kPa	600 psi	4120 kPa	600 psi	4120 kPa	600 psi
Maximum Drawbar Pull	236 kN	53,100 lb	294 kN	66,070 lb	294 kN	66,090 lb	294 kN	66,070 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel		Two Speed Travel		Two Speed Travel		Two Speed Travel	
Lo:	3.1 km/h	1.9 mph	3.3 km/h	2.0 mph	3.3 km/h	2.0 mph	3.3 km/h	2.0 mph
Hi:	5.0 km/h	3.1 mph	5.0 km/h	3.3 mph	5.0 km/h	3.3 mph	5.0 km/h	3.3 mph
Track Shoe Width	600 mm	2'0"	600 mm	2'0"	750 mm	2'6"	750 mm	2'5.5"
Overall Track Length	4.66 m	15'3"	4.58 m	15'0"	5.02 m	16'6"	5.02 m	16'6"
Ground Contact Area with Std. Shoe	4.92 m ²	7630 in²	4.74 m ²	7350 in²	6.58 m ²	10,200 in²	6.58 m ²	10,200 in²
Track Gauge	2.39 m	7'10"	2.59 m	8'6"	2.59 m	8'6"	2.59 m	8'6"
Fuel Tank Refill Capacity	500 L	132 U.S. gal	618 L	163 U.S. gal	618 L	163 U.S. gal	618 L	163 U.S. gal
Hydraulic System (includes tank)	310 L	81.9 U.S. gal	410 L	108 U.S. gal	410 L	108 U.S. gal	410 L	108 U.S. gal

*Operating weight includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg (165 lb).

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.
Contact your Caterpillar Dealer for details.

Excavators

Specifications



MODEL	330C LN		345C		345C L – FIX		345C L – VG	
Sourcing	Belgium		Japan		Japan, U.S.		U.S.	
Flywheel Power	181 kW	243 hp	239 kW	321 hp	257 kW	345 hp	257 kW	345 hp
Operating Weight*	34 600 kg	76,290 lb	44 500 kg	98,100 lb	44 970 kg	99,150 lb	46 970 kg	99,150 lb
Bucket Capacity	0.68-	1.2-	1.6-	1.91-	0.9-	1.18-	0.9-	1.18-
Range (heaped)	2.3 m ³	3.9 yd³	2.4 m ³	2.87 yd³	3.3 m ³	4.3 yd³	3.3 m ³	4.3 yd³
Engine Model	C9 ATAAC		C13 ACERT		C13 ACERT		C13 ACERT	
Rated Engine RPM	1800		1800		1800		1800	
No. of Cylinders	6		6		6		6	
Bore	112 mm	4.4"	130 mm	5.1"	130 mm	5.1"	130 mm	5.1"
Stroke	149 mm	5.9"	157 mm	6.2"	157 mm	6.2"	157 mm	6.2"
Displacement	8.8 L	537 in³	12.5 L	736 in³	12.5 L	736 in³	12.5 L	736 in³
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 280 L/min	2 × 74 gpm	2 × 360 L/min	2 × 95 gpm	2 × 360 L/min	2 × 95 gpm	2 × 360 L/min	2 × 95 gpm
Relief Valve Settings:								
Implement Circuits	34 300 kPa	4980 psi	35 000 kPa	5080 psi	35 000 kPa	5080 psi	35 000 kPa	5080 psi
Travel Circuits	34 300 kPa	4980 psi	35 000 kPa	5080 psi	35 000 kPa	5080 psi	35 000 kPa	5080 psi
Swing Circuits	27 900 kPa	4050 psi	31 400 kPa	4550 psi	31 400 kPa	4550 psi	31 400 kPa	4550 psi
Pilot Circuits	4120 kPa	600 psi	4110 kPa	596 psi	4110 kPa	596 psi	4110 kPa	596 psi
Maximum Drawbar Pull	294 kN	66,070 lb	331 kN	74,380 lb	331 kN	74,380 lb	331 kN	74,380 lb
Maximum Travel Speed at Rated RPM	Two Speed Travel		Two Speed Travel		Two Speed Travel		Two Speed Travel	
Lo:	3.3 km/h	2.0 mph	3.6 km/h	2.2 mph	3.5 km/h	2.2 mph	3.5 km/h	2.2 mph
Hi:	5.0 km/h	3.3 mph	4.4 km/h	2.7 mph	4.4 km/h	2.7 mph	4.4 km/h	2.7 mph
Track Shoe Width	600 mm	2'0"	750 mm	2'6"	750 mm	2'6"	750 mm	2'6"
Overall Track Length	5.02 m	16'6"	5.03 m	16'6"	5.36 m	17'7"	5.34 m	17'6"
Ground Contact Area with Std. Shoe	5.26 m ²	8150 in²	6.57 m ²	10,180 in²	7.07 m ²	10,960 in²	5.63 m ²	8730 in²
Track Gauge	2.39 m	7'10"	2.74 m	9'0"	2.74 m	9'0"	2.4 m	7'10"
Extended	—		—		—		2.89 m	9'6"
Fuel Tank Refill Capacity	618 L	163 U.S. gal	705 L	186 U.S. gal	705 L	186 U.S. gal	705 L	186 U.S. gal
Hydraulic System (includes tank)	410 L	108 U.S. gal	570 L	150 U.S. gal	570 L	150 U.S. gal	570 L	150 U.S. gal

*Operating weight includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg (165 lb).

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.

Contact your Caterpillar Dealer for details.



MODEL	345C L		345C L - VG		345C L - FG	
Sourcing	Japan		Belgium		Belgium	
Flywheel Power	239 kW	321 hp	239 kW	321 hp	239 kW	321 hp
Operating Weight*	46 700 kg	102,960 lb	50 419 kg	111,155 lb	48 222 kg	106,330 lb
Bucket Capacity Range (heaped)	1.6-3 m ³	1.91-4 yd ³	2.0-3.6 m ³	2.6-4.7 yd ³	2.0-3.6 m ³	2.6-4.7 yd ³
Engine Model	C15 ACERT		C13 ACERT		C13 ACERT	
Rated Engine RPM	1800		1800		1800	
No. of Cylinders	6		6		—	
Bore	130 mm	5.1"	130 mm	5.1"	130 mm	5.1"
Stroke	157 mm	6.2"	157 mm	6.2"	157 mm	6.2"
Displacement	12.5 L	736 in ³	12.5 L	736 in ³	12.5 L	736 in ³
Maximum Implement Hydraulic Pump Output at Rated RPM	2 × 360 L/min	2 × 95 gpm	2 × 360 L/min	2 × 95 gpm	2 × 360 L/min	2 × 95 gpm
Relief Valve Settings:						
Implement Circuits	35 000 kPa	5080 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi
Travel Circuits	35 000 kPa	5080 psi	34 300 kPa	4970 psi	34 300 kPa	4970 psi
Swing Circuits	31 400 kPa	4550 psi	27 500 kPa	3990 psi	27 500 kPa	3990 psi
Pilot Circuits	4110 kPa	596 psi	4120 kPa	600 psi	4120 kPa	600 psi
Maximum Drawbar Pull	331 kN	74,380 lb	338 kN	76,050 lb	338 kN	76,050 lb
Maximum Travel	Two Speed Travel		Two Speed Travel		Two Speed Travel	
Speed at Rated RPM	Lo: 3.6 km/h Hi: 4.4 km/h	2.2 mph 2.7 mph	Lo: 3.4 km/h Hi: 4.3 km/h	2.1 mph 2.7 mph	Lo: 3.4 km/h Hi: 4.3 km/h	2.1 mph 2.7 mph
Track Shoe Width	750 mm	2'6"	600 mm	2'0"	600 mm	2'0"
Overall Track Length	5.34 m	17'6"	5.33 m	17'6"	5.37 m	17'7"
Ground Contact Area with Std. Shoe	5.63 m ²	8730 in ²	5.19 m ²	8045 in ²	5.23 m ²	8106.5 in ²
Track Gauge	2.4 m	7'10"	2.39 m	7'10"	2.74 m	8'9"
Extended	2.89 m	9'6"	2.89 m	9'6"	—	—
Fuel Tank Refill Capacity	705 L	186 U.S. gal	720 L	190 U.S. gal	720 L	190 U.S. gal
Hydraulic System (includes tank)	570 L	150 U.S. gal	520 L	137 U.S. gal	520 L	137 U.S. gal
Hydraulic System	—	—	210 L	55 U.S. gal	210 L	55 U.S. gal

4

*Operating weight for 345C L includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg (165 lb).
 Operating weight for 345C L - VG and 345C L - FG includes coolant, lubricants, full fuel tank, one-piece boom, long stick, small profile bucket, operator 75 kg (165 lb) and wide shoes (standard shoes on 345C L - VG).
NOTE: Certain models may not be available in all Sales areas.
 Specifications may also vary by Sales area.
 Contact your Caterpillar Dealer for details.



MODEL	365B L Series II		365C L		385B	
Sourcing	Japan		Belgium		Japan	
Flywheel Power	301 kW	404 hp	302 kW	405 hp	382 kW	513 hp
Operating Weight*	66 100 kg	145,730 lb	65 960 kg	145,430 lb	82 900 kg	182,800 lb
Bucket Capacity Range (heaped)	2.5-3.5 m ³	3.27-4.58 yd³	1.6-4.6 m ³	1.9-6.0 yd³	1.9-5.8 m ³	2.49-7.59 yd³
Engine Model	3196 ATAAC		C15 ACERT		3456 ATAAC	
Rated Engine RPM	2000		1800		1800	
No. of Cylinders	6		6		6	
Bore	130 mm	5"	137 mm	5.4"	140 mm	5.51"
Stroke	150 mm	6"	171 mm	6.75"	171 mm	6.73"
Displacement	12 L	732 in³	15.2 L	928 in³	15.8 L	964 in³
Maximum Implement Hydraulic Pump Output at Rated RPM	2 × 400 L/min	2 × 105 gpm	2 × 400 L/min	2 × 105 gpm	2 × 490 L/min	2 × 129 gpm
Relief Valve Settings:						
Implement Circuits	32 000 kPa	4640 psi	32 000 kPa	4640 psi	32 000 kPa	4640 psi
Travel Circuits	35 000 kPa	5080 psi	35 000 kPa	5080 psi	35 000 kPa	5080 psi
Swing Circuits	28 000 kPa	4060 psi	28 000 kPa	4060 psi	26 000 kPa	3770 psi
Pilot Circuits	4100 kPa	590 psi	4120 kPa	600 psi	4100 kPa	590 psi
Maximum Drawbar Pull	461 kN	103,600 lb	462 kN	103,860 lb	592 kN	133,200 lb
Maximum Travel	Two Speed Travel		Two Speed Travel		Two Speed Travel	
Speed at Rated RPM	Lo: 2.8 km/h Hi: 4.1 km/h	1.7 mph 2.5 mph	Lo: 2.8 km/h Hi: 4.1 km/h	1.7 mph 2.5 mph	Lo: 2.8 km/h Hi: 4.5 km/h	1.7 mph 2.8 mph
Track Shoe Width	750 mm	2'6"	750 mm	2'6"	750 mm	2'6"
Overall Track Length	5.86 m	19'3"	5.86 m	19'2"	5.84 m	19'2"
Ground Contact Area with Std. Shoe	7.06 m ²	10,940 in²	7.06 m ²	10,943 in²	6.9 m ²	10,695 in²
Track Gauge	2.75 m	9'0"	2.75 m	9'0"	2.75 m	9'0"
Extended	3.25 m	10'8"	3.25 m	10'8"	3.51 m	11'6"
Fuel Tank Refill Capacity	800 L	211 U.S. gal	800 L	211 U.S. gal	1240 L	328 U.S. gal
Hydraulic System (includes tank)	670 L	177 U.S. gal	670 L	177 U.S. gal	995 L	263 U.S. gal
Hydraulic System	310 L	82 U.S. gal	310 L	82 U.S. gal	780 L	206 U.S. gal

*Operating weight for 365B L Series II and 365C L includes coolant, lubricants, full fuel tank, one-piece boom, long stick, small profile bucket, operator 75 kg (165 lb) and wide shoes.

Operating weight for 385B includes coolant, lubricants, full fuel tank, one-piece boom, long stick, small profile bucket, operator 75 kg (165 lb) and wide shoes.

NOTE: Certain models may not be available in all Sales areas.

Specifications may also vary by Sales area.

Contact your Caterpillar Dealer for details.



MODEL	385C		385B L		385C L	
Sourcing	Belgium		Japan		Belgium	
Flywheel Power	390 kW	523 hp	382 kW	513 hp	382 kW	513 hp
Operating Weight*	84 128 kg	185,502 lb	83 510 kg	183,490 lb	84 980 kg	187,360 lb
Bucket Capacity Range (heaped)	2.7-6.0 m ³	3.5-7.8 yd³	1.9-5.8 m ³	2.49-7.59 yd³	2.1-5.8 m ³	2.63-7.75 yd³
Engine Model	C18 ACERT		3456 ATTAC		C18 ACERT	
Rated Engine RPM	1800		1800		1800	
No. of Cylinders	6		6		8	
Bore	145 mm	5.71"	140 mm	5.51"	140 mm	5.51"
Stroke	183 mm	7.20"	171 mm	6.73"	171 mm	6.73"
Displacement	18.1 L	1104.5 in³	15.8 L	964 in³	18.1 L	1106 in³
Maximum Implement Hydraulic Pump Output at Rated RPM	2 × 490 L/min	2 × 129 gpm	2 × 490 L/min	2 × 129 gpm	2 × 490 L/min	2 × 129 gpm
Relief Valve Settings:						
Implement Circuits	32 000 kPa	4640 psi	32 000 kPa	4640 psi	32 000 kPa	4640 psi
Travel Circuits	35 000 kPa	5080 psi	35 000 kPa	5080 psi	35 000 kPa	5080 psi
Swing Circuits	26 000 kPa	3770 psi	26 000 kPa	3770 psi	26 000 kPa	3770 psi
Pilot Circuits	4100 kPa	590 psi	4100 kPa	590 psi	4100 kPa	590 psi
Maximum Drawbar Pull	592 kN	133,200 lb	591 kN	132,810 lb	592 kN	133,090 lb
Maximum Travel	Two Speed Travel		Two Speed Travel		Two Speed Travel	
Speed at Rated RPM	Lo: 2.8 km/h Hi: 4.5 km/h	1.7 mph 2.8 mph	Lo: 2.8 km/h Hi: 4.5 km/h	1.7 mph 2.8 mph	Lo: 2.8 km/h Hi: 4.5 km/h	1.7 mph 2.8 mph
Track Shoe Width	650 mm	2'1"	750 mm	2'6"	900 mm	3'0"
Overall Track Length	5.84 m	19'2"	6.36 m	20'10"	6.36 m	20'10"
Ground Contact Area with Std. Shoe	6.54 m ²	10,137 in²	7.68 m ²	11,900 in²	9.99 m ²	15,482 in²
Track Gauge	2.75 m	9'0"	2.94 m	9'8"	2.94 m	9'8"
Extended	3.51 m	11'6"	3.51 m	11'6"	3.51 m	11'6"
Fuel Tank Refill Capacity	1240 L	328 U.S. gal	1240 L	328 U.S. gal	1240 L	328 U.S. gal
Hydraulic System (includes tank)	995 L	263 U.S. gal	995 L	263 U.S. gal	995 L	263 U.S. gal
Hydraulic tank	810 L	214 U.S. gal	—		810 L	214 U.S. gal

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*Operating weight for 385B L includes coolant, lubricants, full fuel tank, one-piece boom, long stick, small profile bucket, operator 75 kg (165 lb) and wide shoes. Operating weight for 385C and 385C L includes coolant, lubricants, full fuel tank, reach boom, medium stick configuration, bucket and operator 75 kg (165 lb) and 1500 kg (3300 lb) for attachments.

NOTE: Certain models may not be available in all Sales areas. Specifications may also vary by Sales area. Contact your Caterpillar Dealer for details.

SHIPPING DIMENSIONS KEYS**301.5 through 385**

A	Cab height
B	House width, without mirrors
C	Track width, standard shoe
D	Ground clearance, frame
E	Ground clearance, counterweight
F	Tail swing radius
G	Overall track length (grouser bar to grouser bar)
H	Overall transport length
J	Shipping height
K	Length of track on ground
L	Track gauge

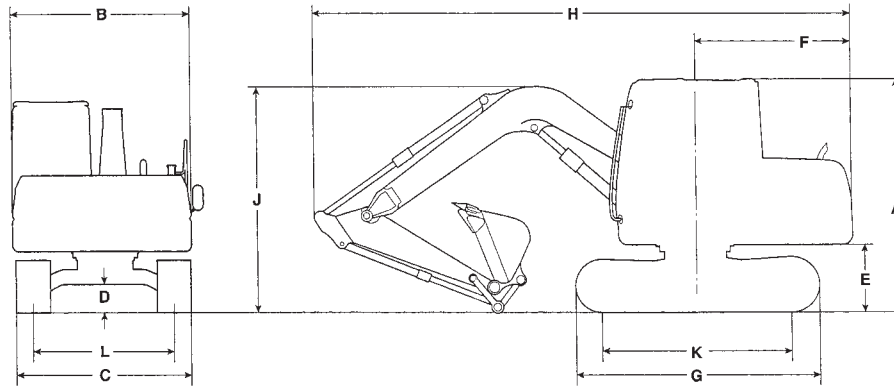
M313C through M322C

A	Cab height
B	Transport width
C	Overall tire width
D	Ground clearance, frame
E	Transport length without boom
F	Overall transport length
G	Transport height
H	Ground clearance, counterweight
J	Tail swing radius
K	Wheelbase length
L	Overall width (outrigger to outrigger)

Excavators

Shipping Dimensions

- 301.5 ● 301.5 CR ● 301.6 ● 301.8
- 302.5 ● 303 SR ● 303 CR ● 304 CR
- 305 SR ● 305 CR ● 307C ● 307C SB



4

Sourcing	301.5		301.5 CR		301.6		301.8		302.5		303 SR		303 CR	
	U.K.		Japan		U.K.		U.K.		U.K.		Japan		Japan	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2190	7'2"	2320	7'7"	2190	7'2"	2190	7'2"	2300	7'7"	2480	8'2"	2480	8'2"
B	980	3'3"	980	3'3"	980	3'3"	980	3'3"	1380	4'6"	1550	5'1"	1510	4'11"
C	980	3'3"	980	3'3"	980	3'3"	980	3'3"	1450	4'8"	1550	5'1"	1550	5'1"
D	220	8.7"	175	7"	220	8.7"	180	7"	310	12"	310	12"	310	12"
E	460	1'6"	450	1'6"	460	1'5"	460	1'5"	560	1'10"	570	1'10"	570	1'10"
F	1070	3'6"	625	2'1"	1070	3'6"	1070	3'6"	1280	4'2"	775	2'7"	775	2'7"
G	1390	4'7"	1580	5'2"	1486	4'9"	1486	4'9"	1910	6'3"	2070	6'9"	2070	6'9"
H*	3690	12'1"	3470	11'5"	3690	12'1"	3690	12'1"	4520	14'10"	3950	13'0"	4680	15'4"
J*	—	—	2320	7'7"	—	—	—	—	—	—	2480	8'2"	1420	4'8"
K	1020	3'4"	1210	4'0"	1116	3'7"	1116	3'7"	1470	4'10"	1640	5'5"	1640	5'5"
L	750	2'6"	750	2'6"	750	2'6"	750	2'6"	1150	3'9"	1250	4'1"	1250	4'1"

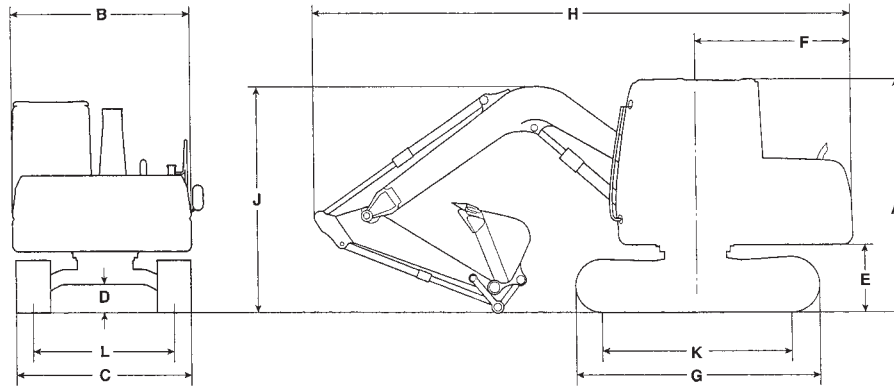
Sourcing	304 CR		305 SR		305 CR		307C		307C SB	
	Japan		Japan		Japan		Japan		Japan	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2595	8'6"	2530	8'4"	2595	8'0"	2630	8'8"	2630	8'8"
B	1920	6'4"	2000	6'7"	1920	6'4"	2230	7'4"	2230	7'4"
C	1980	6'6"	2000	6'7"	1980	6'6"	2290	7'6"	2290	7'6"
D	335	13"	330	13"	335	13"	380	15"	380	15"
E	625	2'1"	615	2'0"	625	2'1"	760	2'6"	760	2'6"
F	990	3'3"	1000	3'3"	990	3'3"	1750	5'9"	1750	5'9"
G	2450	8'0"	2450	8'0"	2450	8'0"	2760	9'1"	2760	9'1"
H*	5190	17'0"	5200	17'1"	5365	17'7"	6100	20'0"	6790	22'3"
J*	2595	8'6"	2530	8'4"	1750	5'9"	2780	9'1"	2630	8'8"
K	1920	6'4"	1920	6'4"	1920	6'4"	2120	6'11"	2120	6'11"
L	1580	5'2"	1580	5'2"	1580	5'2"	1750	5'9"	1750	5'9"

*Varies with stick length.

Excavators

Shipping Dimensions

- 308C SR ● 308C CR ● 311C U
- 312C ● 312C L ● 313C SR ● 313C CR
- 314C CR ● 314C LCR ● 315C ● 315C L



Sourcing	308C SR		308C CR		311C U		312C		312C		312C L		312C L	
	Japan		Japan		Japan		Japan		France		Japan		France	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2590	8'6"	2590	8'6"	2770	9'1"	2760	9'1"	2760	9'1"	2760	9'1"	2760	9'1"
B	2320	7'7"	2320	7'7"	2490	8'2"	2490	8'2"	2490	8'2"	2490	8'2"	2490	8'2"
C	2320	7'7"	2320	7'7"	2490	8'2"	2490	8'2"	2490	8'2"	2590	8'6"	2590	8'6"
D	384	15"	384	15"	445	18"	440	17"	440	17"	440	17"	440	17"
E	735	2'5"	755	2'6"	915	3'0"	910	3'0"	910	3'0"	910	3'0"	910	3'0"
F	1290	4'3"	1290	4'3"	1750	5'9"	2130	7'0"	2130	7'0"	2130	7'0"	2130	7'0"
G	2910	9'7"	2910	9'7"	3320	10'11"	3490	11'5"	3490	11'5"	3750	12'4"	3750	12'4"
H*	5830	19'2"	5830	19'2"	6910	22'8"	7570	24'10"	7570	24'10"	7570	24'10"	7570	24'10"
J*	2590	8'6"	2610	8'7"	2770	9'1"	2760	9'1"	2760	9'1"	2760	9'1"	2760	9'1"
K	2280	7'6"	2280	7'6"	2610	8'7"	2780	9'1"	2780	9'1"	3040	10'0"	3040	10'0"
L	1870	6'2"	1870	6'2"	1990	6'6"	1990	6'6"	1990	6'6"	1990	6'6"	1990	6'6"

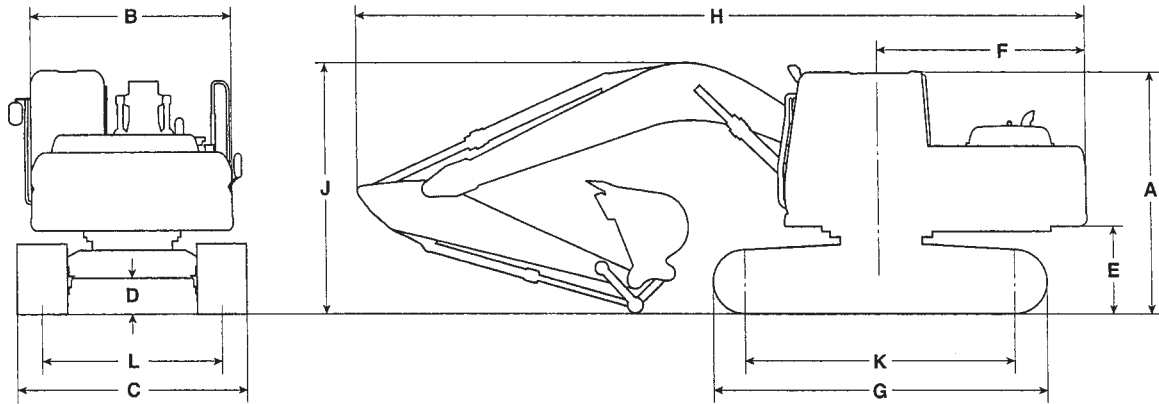
Sourcing	313C SR		313C CR		314C CR		314C LCR		315C		315C L	
	Japan		Japan		Japan		Japan		Japan		Japan	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2730	8'11"	2730	8'11"	2730	8'11"	2730	8'11"	2880	9'5"	2880	9'5"
B	2490	8'2"	2490	8'2"	2490	8'2"	2490	8'2"	2490	8'2"	2490	8'2"
C	2490	8'2"	2490	8'2"	2490	8'2"	2490	8'2"	2490	8'2"	2590	8'6"
D	455	18"	455	18"	455	18"	455	18"	460	18"	460	18"
E	915	3'0"	915	3'0"	915	3'0"	915	3'0"	1010	3'4"	1010	3'4"
F	1420	4'8"	1420	4'8"	1480	4'10"	1480	4'10"	2450	8'0"	2450	8'0"
G	3490	11'5"	3490	11'5"	3490	11'5"	3750	12'4"	3690	12'1"	3970	13'0"
H*	7480	24'6"	7280	23'11"	7280	23'11"	7410	24'4"	8500	27'11"	8500	27'11"
J*	2730	8'11"	2810	9'3"	2810	9'3"	2810	9'3"	2990	9'10"	2990	9'10"
K	2780	9'1"	2780	9'1"	2780	9'1"	3040	10'0"	2880	9'5"	3170	10'5"
L	1990	6'6"	1990	6'6"	1990	6'6"	1990	6'6"	1990	6'6"	1990	6'6"

*Varies with stick length.

Excavators

Shipping Dimensions

- 315C L ● 318C ● 318C L
- 318C LN ● 318B LN ● 318C N



4

Sourcing	315C L		318C		318C L		318C L	
	France		France		Japan		France	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3000	9'10"	2950	9'8"	2940	9'8"	2950	9'8"
B	2550	8'4"	2520	8'3"	2520	8'3"	2520	8'3"
C	2490	8'2"	2800	9'2"	2800	9'2"	2800	9'2"
D	460	18"	465	18"	460	18"	465	18"
E	1010	3'4"	1077	3'6"	1030	3'5"	1072	3'6"
F	2345	7'8"	2520	8'3"	2540	8'4"	2520	8'3"
G	3960	13'0"	4075	13'4"	4250	13'11"	4450	14'7"
H*	8454	27'8"	8820	28'11"	8870	29'1"	8820	28'11"
J*	2966	9'9"	3210	10'6"	3480	11'6"	3210	10'6"
K	3170	10'5"	3255	10'8"	3450	11'4"	3636	11'11"
L	1990	6'6"	2200	7'3"	2200	7'3"	2200	7'3"

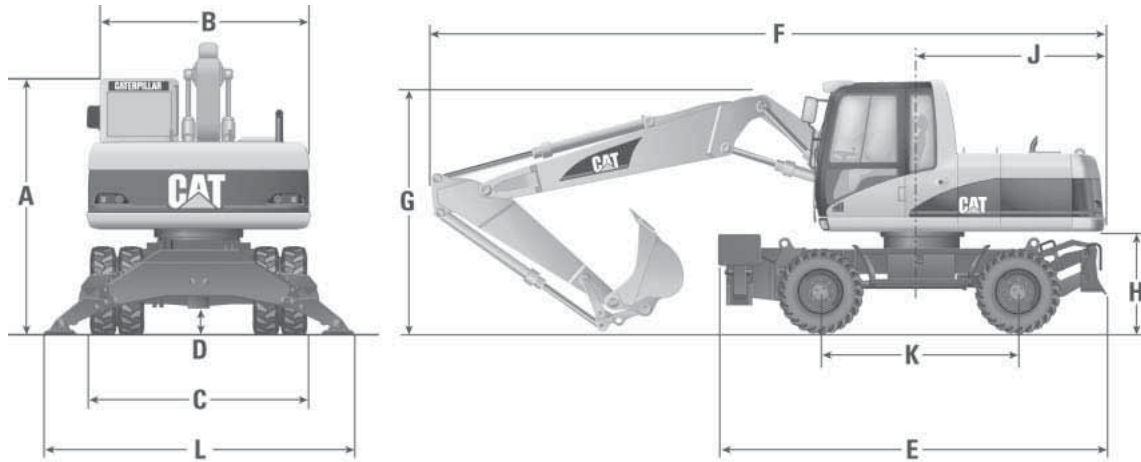
Sourcing	318C LN		318B LN		318C N	
	Japan		France		France	
	mm	ft	mm	ft	mm	ft
A	2940	9'8"	3040	9'9"	2950	9'8"
B	2520	8'3"	2490	8'2"	2520	8'3"
C	2490	8'2"	2495	8'2"	2490	8'2"
D	460	18"	470	18"	465	18"
E	1030	3'5"	1030	3'4"	1069	3'6"
F	2540	8'4"	2450	8'0"	2520	8'3"
G	4250	13'11"	4075	13'4"	4075	13'4"
H*	8870	29'1"	8690	28'6"	8820	28'11"
J*	3480	11'6"	2830	9'3"	3210	10'6"
K	3450	11'4"	3265	10'8"	3255	10'8"
L	1990	6'6"	1995	6'7"	1990	6'6"

*Varies with stick length.

Excavators

Shipping Dimensions

● M313C ● M315C ● M316C ● M318C ● M322C



	M313C		M315C		M316C		M318C		M322C	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	3120	10'3"	3150	10'4"	3170	10'5"	3170	10'5"	3200	10'6"
B	2540	8'4"	2540	8'4"	2540	8'4"	2540	8'4"	2670	8'9"
C*	2550	8'4"	2550	8'4"	2550	8'4"	2550	8'4"	2750	9'0"
Dozer width	2550	8'4"	2550	8'4"	2550	8'4"	2540	8'4"	2750	9'0"
D	370	1'3"	370	1'3"	370	1'3"	375	1'3"	360	1'2"
E¹	4875	17'0"	4925	16'2"	5025	16'6"	5025	16'6"	5250	17'3"
E²	4935	16'2"	4960	16'3"	5060	17'7"	5060	17'7"	5210	17'1"
E³	4160	14'8"	3610	12'10"	4330	14'2"	4330	14'2"	4503	14'9"
F	8080	27'6"	8320	27'4"	8400	28'7"	8960	29'5"	9640	31'8"
G	2990	10'10"	3150	10'4"	3170	10'5"	3210	11'6"	3250	10'8"
H	1232	4'1"	1262	4'2"	1280	4'2"	1275	4'2"	1307	4'3"
J	2049	7'9"	2197	7'2"	2290	8'6"	2500	8'2"	2750	9'0"
K	2500	8'2"	2500	8'2"	2600	8'6"	2600	8'6"	2750	9'0"
L	3665	12'0"	3665	12'0"	3675	12'1"	3676	12'1"	3960	14'0"

E¹ 2 Sets Outriggers.

E² Outriggers/Dozer.

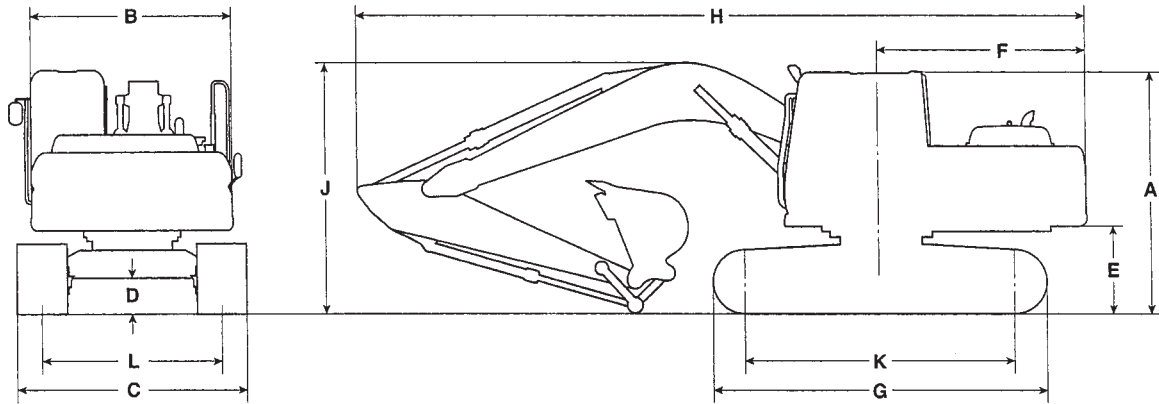
E³ Dozer only.

*10 × 20 Dual Tires.

NOTE: Shipping dimensions above are for standard machine equipped with one-piece boom and medium stick.

Excavators

- 320C, 320C U, 320C L, 320C LU, 321C LCR
- Japan Sourced



4

	320C Reach		320C Mass		320C U Reach		320C L Reach	
	mm	ft	mm	ft	mm	ft	mm	ft
A	2948	9'8"	2948	9'8"	2950	9'8"	2948	9'8"
B	2740	9'0"	2740	9'0"	2800	9'2"	2740	9'0"
C	2800	9'2"	2800	9'2"	2800	9'2"	3180	10'5"
D	475	1'7"	475	1'7"	475	1'7"	463	1'6"
E	1047	3'5"	1047	3'5"	1003	3'3"	1047	3'5"
F	2750	9'0"	2750	9'0"	2000	6'7"	2750	9'0"
G	4075	13'4"	4075	13'4"	4075	13'4"	4455	14'6"
H	9440	31'0"	9000	29'6"	8730	28'8"	9400	30'10"
J*	3010	9'11"	3050	10'0"	3010	9'11"	2930	9'7"
K	3270	10'9"	3270	10'9"	3265	10'9"	3650	12'0"
L	2200	7'3"	2200	7'3"	2200	7'3"	2380	7'10"

	320C L Mass		320C LU Reach		321C LCR	
	mm	ft	mm	ft	mm	ft
A	2948	9'8"	2950	9'8"	2960	9'9"
B	2740	9'0"	2800	9'2"	2980	9'9"
C	2980	9'9"	3180	** 10'5"	3180	** 10'5"
D	463	1'6"	475	1'7"	1003	3'3"
E	1047	3'5"	1003	3'3"	963	3'2"
F	2750	9'0"	2000	6'7"	1680	5'6"
G	4455	14'6"	4075	13'4"	4455	14'7"
H	9000	29'6"	8920	29'3"	8830	29'0"
J*	3050	10'0"	3010	9'11"	3170	10'5"
K	3650	12'0"	3650	12'0"	3650	12'0"
L	2380	7'10"	2380	7'10"	2380	7'10"

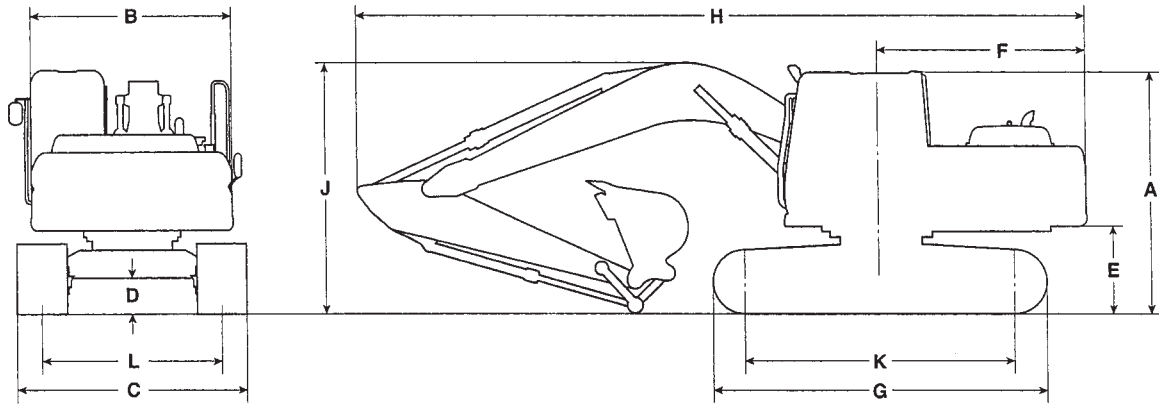
*Varies with stick length.

**Europe, Africa, Middle East — 2980 mm (9'9").

Excavators

Shipping Dimensions

- 320C, 320C L, 320C LN, 320C S
- Belgium Sourced



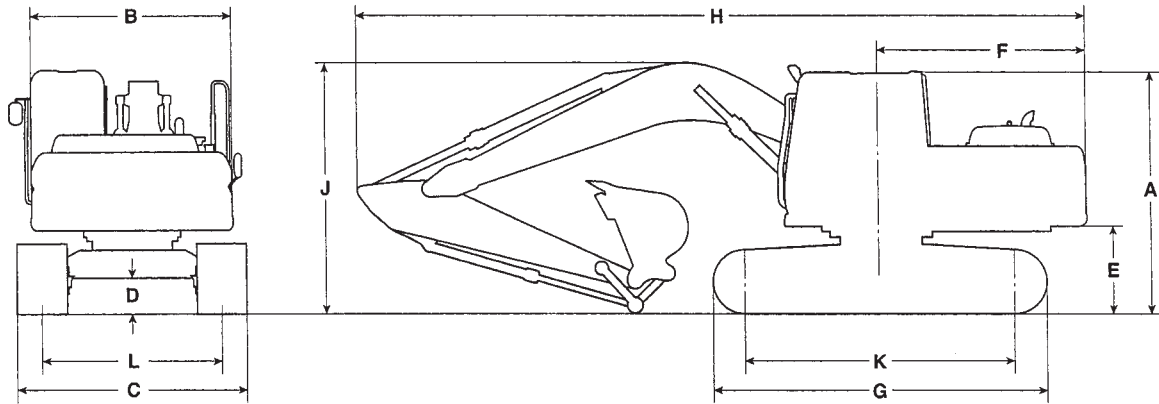
	320C Reach		320C Mass		320C VA		320C L Reach		320C L Mass		320C L VA	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2950	9'8"	2950	9'8"	2950	9'8"	2950	9'8"	2950	9'8"	2950	9'8"
B	2500	8'2"	2500	8'2"	2500	8'2"	2500	8'2"	2500	8'2"	2500	8'2"
C	2800	9'2"	2800	9'2"	2800	9'2"	2980	9'9"	2980	9'9"	2980	9'9"
D	460	18"	460	18"	460	18"	460	18"	460	18"	460	18"
E	1000	3'3"	1000	3'3"	1000	3'3"	1000	3'3"	1000	3'3"	1000	3'3"
F	2770	9'1"	2770	9'1"	2770	9'1"	2770	9'1"	2770	9'1"	2770	9'1"
G	4075	13'4"	4075	13'4"	4075	13'4"	4455	14'7"	4455	14'7"	4455	14'7"
H	9650	31'8"	9200	30'2"	9520	31'3"	9650	31'8"	9200	30'2"	9520	31'3"
J*	3120	10'3"	3250	10'8"	3010	9'11"	3120	10'3"	3250	10'8"	3010	9'11"
K	3265	10'8"	3265	10'8"	3265	10'8"	3650	12'0"	3650	12'0"	3650	12'0"
L	2200	7'3"	2200	7'3"	2200	7'3"	2380	7'10"	2380	7'10"	2380	7'10"

	320C LN Reach		320C LN Mass		320C LN VA		320C S Reach		320C S Mass		320C S VA	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2950	9'8"	2950	9'8"	2950	9'8"	3030	9'11"	3030	9'11"	3030	9'11"
B	2500	8'2"	2500	8'2"	2500	8'2"	2500	8'2"	2500	8'2"	2500	8'2"
C	2490	8'6"	2490	8'6"	2490	8'6"	2500	8'2"	2500	8'2"	2500	8'2"
D	460	18"	460	18"	460	18"	480	19"	480	19"	480	19"
E	1000	3'3"	1000	3'3"	1000	3'3"	1080	3'7"	1080	3'7"	1080	3'7"
F	2770	9'1"	2770	9'1"	2770	9'1"	2770	9'1"	2770	9'1"	2770	9'1"
G	4455	14'7"	4455	14'7"	4455	14'7"	4360	14'4"	4360	14'4"	4360	14'4"
H	9650	31'8"	9200	30'2"	9250	31'4"	9730	31'11"	9190	30'2"	9510	31'2"
J*	3120	10'3"	3250	10'8"	3010	9'11"	3160	10'4"	3275	10'9"	3090	10'2"
K	3650	12'0"	3650	12'0"	3650	12'0"	3490	11'5"	3490	11'5"	3490	11'5"
L	1995	6'7"	1995	6'7"	1995	6'7"	1895	6'3"	1895	6'3"	1895	6'3"

*Varies with stick length.

Excavators

- 322C, 322C L — Japan/U.S. Sourced
- 322C L, 322C LN — Belgium Sourced



4

Japan/U.S. Sourced

	322C Reach		322C Mass		322C L Reach		322C L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	2990	9'10"	2990	9'10"	2990	9'10"	2990	9'10"
B	2855	9'4"	2855	9'4"	2855	9'4"	2855	9'4"
C	2990	9'10"	2990	9'10"	3390	11'1"	3390	11'1"
D	470	19"	470	19"	470	19"	470	19"
E	1080	3'7"	1080	3'7"	1080	3'7"	1080	3'7"
F	2900	9'6"	2900	9'6"	2970	9'9"	2970	9'9"
G	4260	14'0"	4260	14'0"	4640	15'3"	4640	15'3"
H	9960	32'8"	9400	30'10"	9960	32'8"	9400	30'10"
J*	3120	10'3"	3450	11'4"	3120	10'3"	3450	11'4"
K	3450	11'4"	3450	11'4"	3830	12'7"	3830	12'7"
L	2390	7'10"	2390	7'10"	2590	8'6"	2590	8'6"

Belgium Sourced

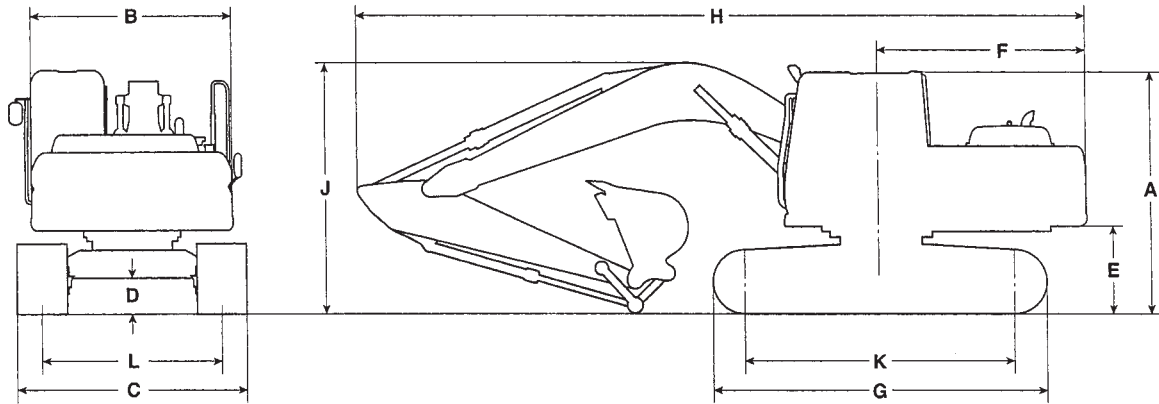
	322C L Reach		322C L Mass		322C L VA		322C LN Reach		322C LN Mass		322C LN VA	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2990	9'10"	2990	9'10"	2990	9'10"	2990	9'10"	2990	9'10"	2990	9'10"
B	2900	9'6"	2900	9'6"	2900	9'6"	2900	9'6"	2900	9'6"	2900	9'6"
C	3390	11'2"	3390	11'2"	3390	11'2"	2990	9'10"	2990	9'10"	2990	9'10"
D	470	1'7"	470	1'7"	470	1'7"	470	1'7"	470	1'7"	470	1'7"
E	1030	3'5"	1030	3'5"	1030	3'5"	1030	3'5"	1030	3'5"	1030	3'5"
F	2970	9'9"	2970	9'9"	2970	9'9"	2970	9'9"	2970	9'9"	2970	9'9"
G	4640	15'3"	4640	15'3"	4640	15'3"	4640	15'3"	4640	15'3"	4640	15'3"
H	10 170	33'4"	9582	31'5"	9700	31'10"	10 170	33'4"	9582	31'5"	9700	31'10"
J*	3290	10'10"	3468	11'5"	3322	10'11"	3290	10'10"	3468	11'5"	3322	10'11"
K	3830	12'7"	3830	12'7"	3830	12'7"	3830	12'7"	3830	12'7"	3830	12'7"
L	2590	8'6"	2590	8'6"	2590	8'6"	2390	7'10"	2390	7'10"	2390	7'10"

*Varies with stick length.

Excavators

Shipping Dimensions

- 325C, 325C L — Japan/U.S. Sourced
- 325C L, 325C LN — Belgium Sourced



Japan/U.S. Sourced

	325C Reach		325C Mass		325C L Reach		325C L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3040	10'0"	3040	10'0"	3040	10'0"	3040	10'0"
B	2900	9'6"	2900	9'6"	2900	9'6"	2900	9'6"
C	2990	9'10"	2990	9'10"	3190	10'6"	3190	10'6"
D	480	1'7"	480	1'7"	480	1'7"	480	1'7"
E	1110	3'8"	1110	3'8"	1110	3'8"	1110	3'8"
F	3050	10'0"	3050	10'0"	3050	10'0"	3050	10'0"
G	4360	14'4"	4360	14'4"	4660	15'3"	4660	15'3"
H	10 340	33'11"	9710	31'10"	10 340	33'11"	9710	31'10"
J*	3260	10'8"	3460	11'4"	3260	10'8"	3460	11'4"
K	3490	11'5"	3490	11'5"	3800	12'6"	3800	12'6"
L	2390	7'10"	2390	7'10"	2590	8'6"	2590	8'6"

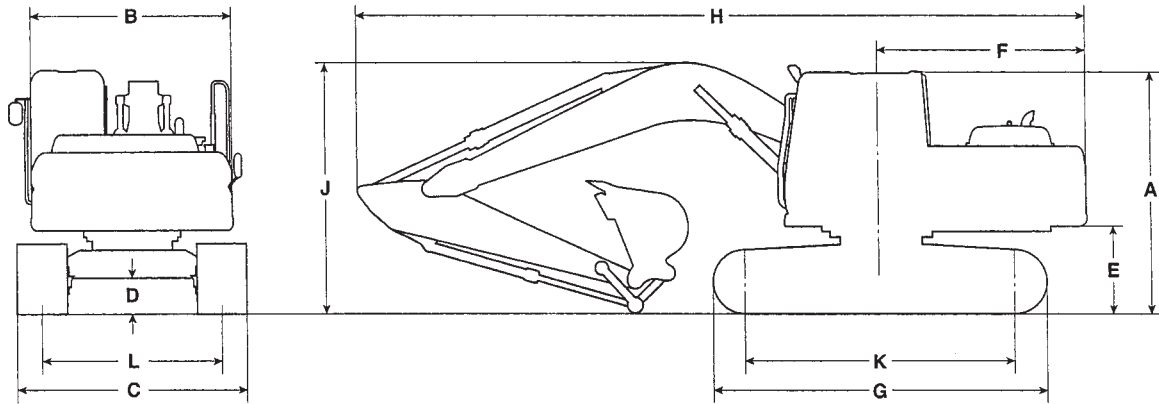
Belgium Sourced

	325C L Reach		325C L Mass		325C L VA		325C LN Reach		325C LN Mass		325C LN VA	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	3040	10'0"	3040	10'0"	3040	10'0"	3040	10'0"	3040	10'0"	3040	10'0"
B	2900	9'6"	2900	9'6"	2900	9'6"	2900	9'6"	2900	9'6"	2900	9'6"
C	3390	11'2"	3390	11'2"	3390	11'2"	2990	9'10"	2990	9'10"	2990	9'10"
D	480	1'7"	480	1'7"	480	1'7"	480	1'7"	480	1'7"	480	1'7"
E	1085	3'7"	1085	3'7"	1085	3'7"	1085	3'7"	1085	3'7"	1085	3'7"
F	3050	10'0"	3050	10'0"	3050	10'0"	3050	10'0"	3050	10'0"	3050	10'0"
G	4660	15'4"	4660	15'4"	4660	15'4"	4660	15'3"	4660	15'3"	4660	15'3"
H	10 460	34'4"	9850	32'4"	10 230	33'7"	10 460	34'4"	9850	32'4"	10 230	33'7"
J*	3330	10'11"	3380	11'1"	3100	10'2"	3330	10'11"	3380	11'1"	3100	10'2"
K	3800	12'6"	3800	12'6"	3800	12'6"	3800	12'6"	3800	12'6"	3800	12'6"
L	2590	8'6"	2590	8'6"	2590	8'6"	2390	7'10"	2390	7'10"	2390	7'10"

*Varies with stick length.

Excavators

- Shipping Dimensions
- 330C, 330C L — Japan/U.S. Sourced
 - 330C L, 330C LN — Belgium Sourced



4

Japan/U.S. Sourced

	330C Reach*		330C Mass*		330C L Reach**		330C L Mass**	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3140	10'4"	3150	10'4"	3150	10'4"	3150	10'4"
B	2960	9'9"	2990	9'10"	2990	9'10"	2990	9'10"
C	3190	10'6"	3190	10'6"	3340	10'11"	3340	10'11"
D	510	1'8"	510	1'8"	510	1'8"	510	1'8"
E	1250	4'1"	1250	4'1"	1250	4'1"	1250	4'1"
F	3500	11'6"	3500	11'6"	3500	11'6"	3500	11'6"
G	4580	15'0"	4580	15'0"	5020	16'6"	5020	16'6"
H	11 140	36'7"	10 760	35'4"	11 140	36'7"	10 760	35'4"
J*	3350	11'0"	3560	11'8"	3350	11'0"	3560	11'8"
K	3610	11'10"	3610	11'10"	4040	13'3"	4040	13'3"
L	2590	8'6"	2590	8'6"	2590	8'6"	2590	8'6"

*600 mm (24") shoes.

**750 mm (30") shoes.

Belgium Sourced

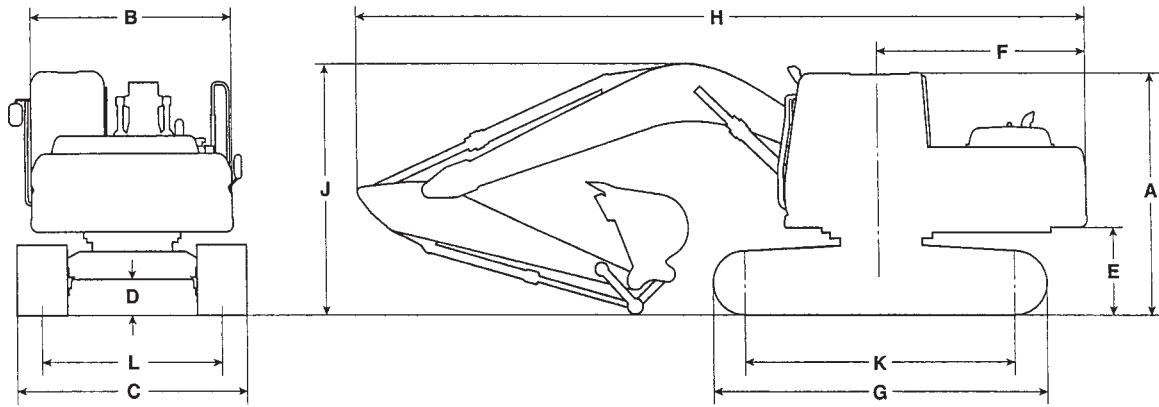
	330C L Reach		330C L Mass		330C LN Reach		330C LN Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3150	10'4"	3150	10'4"	3150	10'4"	3150	10'4"
B	3000	9'10"	3000	9'10"	3000	9'10"	3000	9'10"
C	3340	11'0"	3340	11'0"	2990	9'10"	2990	9'10"
D	510	1'8"	510	1'8"	510	1'8"	510	1'8"
E	1195	3'11"	1195	3'11"	1195	3'11"	1195	3'11"
F	3500	11'6"	3500	11'6"	3500	11'6"	3500	11'6"
G	5020	16'6"	5020	16'6"	5020	16'6"	5020	16'6"
H	11 450	37'7"	11 450	37'7"	11 450	37'7"	11 140	36'7"
J*	3670	12'0"	3590	11'9"	3670	12'0"	3590	11'9"
K	4040	13'3"	4040	13'3"	4040	13'3"	4040	13'3"
L	2590	8'6"	2590	8'6"	2390	7'10"	2390	7'10"

*Varies with stick length.

Excavators

Shipping Dimensions

● 345C, 345C L, 365C L — Belgium Sourced



	345C Reach		345C Mass		345C L – FIX Reach		345C L – FIX Mass		345C L – VG Reach		345C L – VG Mass	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A***	3210	10'6"	3210	10'6"	3210	10'6"	3210	10'6"	3360	11'0"	3360	11'0"
B****	2960	9'9"	2960	9'9"	2692	9'8"	2692	9'8"	2962	9'8"	2962	9'8"
C**	—	—	—	—	3640	11'11"	3640	11'11"	3540	11'7"	3540	11'7"
D	—	—	—	—	—	—	—	—	740	2'5"	740	2'5"
E	1320	4'4"	1320	4'4"	1320	4'4"	1320	4'4"	1470	4'10"	1470	4'11"
F	3770	12'4"	3770	12'4"	3770	12'4"	3770	12'4"	3770	12'4"	3770	12'4"
G	—	—	—	—	—	—	—	—	5340	17'6"	5340	17'6"
H*	11 920	39'1"	11 550	37'11"	11 920	39'1"	11 550	37'11"	11 910	39'1"	11 400	37'10"
J*	3630	11'11"	3970	13'0"	3630	11'11"	3970	13'0"	3760	12'3"	3990	13'1"
K	4030	13'3"	—	—	—	—	—	—	—	—	—	—
L	—	—	—	—	—	—	—	—	2640	8'8"	2640	8'8"

*Varies with stick length.
 **Transport position — 900 mm (36") track shoes.
 ***Without Falling Object Guard (FOG).
 ****No mirror or handrail.

Medium stick is available all models.
 Undercarriage is retracted.

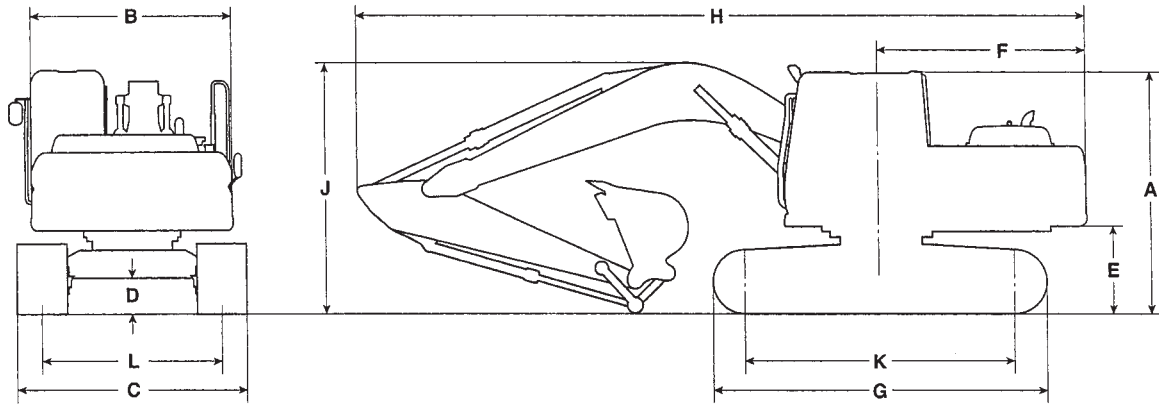
	345C L Reach		345C L – FG Reach		345C L – FG Mass		365C L Reach		365C L Mass 6.6 m (21'8") Boom		365C L Mass 7.0 m (23') Boom	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A***	3360	11'0"	3310	10'10"	3310	10'10"	3535	11'7"	3535	11'7"	3535	11'7"
B****	—	—	2995	20'10"	2995	20'10"	3465	11'4"	3465	11'4"	3465	11'4"
C**	3660	12'0"	3340	10'11"	3340	10'11"	—	—	—	—	—	—
D	—	—	476	1'7"	476	1'7"	—	—	—	—	838	2'9"
E	1470	4'10"	—	—	—	—	1509	4'11"	1509	4'11"	1509	4'11"
F	3770	12'4"	3765	12'4"	3765	12'4"	4020	13'3"	4020	13'3"	4020	13'3"
G	5340	17'6"	5371	17'7"	5371	17'7"	5860	19'3"	5860	19'3"	5860	19'3"
H*	11 920	39'1"	11 824	38'10"	11 530	37'10"	13 225	43'7"	12 160	39'11"	—	—
J*	—	—	3547	11'8"	3938	12'11"	4615	15'2"	—	—	—	—
K	4340	14'3"	4356	14'3"	4356	14'3"	—	—	—	—	—	—
L	—	—	2740	9'0"	2740	9'0"	—	—	—	—	—	—

*Varies with stick length.
 **Transport position — 900 mm (36") track shoes.
 ***Without Falling Object Guard (FOG).
 ****No mirror or handrail.

Medium stick is available all models.
 Undercarriage is retracted.

- Shipping Dimensions
- 385B, 385B L — Japan Sourced
 - 385C, 385C L — Belgium Sourced

Excavators



4

Japan Sourced

	385B Reach		385B GP		385B Mass		385B L Reach		385B L GP		385B L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	3800	12'6"	3800	12'6"	3800	12'6"	3800	12'6"	3800	12'6"	3800	12'6"
B	3470	11'5"	3470	11'5"	3470	11'5"	3470	11'5"	3470	11'5"	3470	11'5"
C	3500	11'6"	3500	11'6"	3500	11'6"	3840	12'7"	3840	12'7"	3840	12'7"
D	850	2'9"	850	2'9"	850	2'9"	850	2'9"	850	2'9"	850	2'9"
E	1630	5'4"	1630	5'4"	1630	5'4"	1630	5'4"	1630	5'4"	1630	5'4"
F	4590	15'1"	4590	15'1"	4590	15'1"	4590	15'1"	4590	15'1"	4590	15'1"
G	5840	19'2"	5840	19'2"	5840	19'2"	6360	20'10"	6360	20'10"	6360	20'10"
H	14 620	48'0"	14 620	48'0"	14 620	48'0"	14 620	48'0"	14 620	48'0"	14 620	48'0"
J	4950	16'3"	5240	17'2"	4890	16'1"	4950	16'3"	5240	17'2"	4890	16'1"
K	4600	15'1"	4600	15'1"	4600	15'1"	5120	16'10"	5120	16'10"	5120	16'10"
L	2750	9'0"	2750	9'0"	2750	9'0"	2940	9'8"	2940	9'8"	2940	9'8"

NOTE: 610 mm (24") shoes are available for 385B.
 750 mm (30") shoes are available for 385B L.
 Medium stick is available all Reach & Mass.
 3.4 m (11'2") short stick is available for GP.
 Undercarriage is retracted.

Belgium Sourced

	385C Reach		385C GP		385C Mass		385C L Reach		385C L GP		385C L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A*	3760	12'3"	3760	12'3"	3760	12'3"	3760	12'3"	3760	12'3"	3760	12'3"
B**	3470	11'4"	3470	11'4"	3470	11'4"	3470	11'4"	3470	11'4"	3760	11'4"
C	3400	11'2"	3400	11'2"	3400	11'2"	3500	11'2"	3500	11'2"	3500	11'2"
D	890	2'11"	890	2'11"	890	2'11"	890	2'11"	890	2'11"	890	2'11"
E	1580	5'2"	1580	5'2"	1580	5'2"	1580	5'2"	1580	5'2"	1580	5'2"
F	4590	15'1"	4590	15'1"	4590	15'1"	4590	15'1"	4590	15'1"	4590	15'1"
G	5840	19'2"	5840	19'2"	5840	19'2"	6360	19'2"	6360	19'2"	6360	19'2"
H	16 233	53'2"	14 633	48'0"	13 470	44'2"	16 233	53'2"	14 633	48'0"	13 470	44'2"
J	4937	16'2"	4960	16'3"	4782	15'7"	4937	16'2"	4960	16'3"	4782	15'7"
K	4600	15'1"	4600	15'1"	4600	15'1"	5120	15'1"	5120	15'1"	5120	15'1"
L	2750	9'0"	2750	9'0"	2750	9'0"	2750	9'0"	2750	9'0"	2750	9'0"

*Without Falling Object Guard (FOG).
 **No mirror or handrail.

Medium stick is available all models.

Excavators

Major Component Weights

- 301.5 ● 301.5 CR ● 301.6 ● 301.8 ● 302.5
- 303 SR ● 303 CR ● 304 CR ● 305 SR ● 305 CR

	301.5		301.5 CR		301.6		301.8		302.5	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Sticks:*										
Medium Stick	54	119	48	110	—	—	54	119	90	198
Long Stick	59	130	55	120	59	130	59	130	102	225
Booms:**										
One-piece	105	231	91	200	105	231	105	231	179	395
Other:										
Upperstructure (complete w/o ctwt)	802 †	1768	663	1460	802	1768	805	1775	1160 †	2557
Standard undercarriage (std shoe)	436	961	587	1290	443	977	549	1210	900	1984
Counterweight	100	220	90	200	125	276	100	220	118	260
Extra Counterweight	—	—	59	130	—	—	—	—	—	—

*Stick weights include stick, stick lines, bucket cylinder, bucket cylinder pins and bucket linkage.

**Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder, head end pin and stick lines.

†Includes canopy, does not include boom, stick, counterweight or work tool. Undercarriage includes blade, blade cylinder and lines, track motors, swivel joint and lines, swinger sprocket, idlers, rollers and rubber track.

	303 SR		303 CR		304 CR		305 SR		305 CR	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Sticks:*										
Medium Stick	58	130	95	210	142	310	190	420	145	320
Long Stick	77	170	127	280	187	410	218	480	189	420
Booms:**										
One-piece	285	630	195	430	279	610	648	1430	280	620
Other:										
Upperstructure (complete w/o ctwt)	1057	2330	1342	2970	1743	3840	1758	3880	1867	4120
Standard undercarriage (std shoe)	1046	2310	1059	2330	1565	3450	1903	4200	1704	3760
Counterweight	360	790	360	790	379	840	681	1500	603	1330
Extra Counterweight	210	460	220	490	190	420	190	420	190	420

*Stick weights include stick, stick lines, bucket cylinder, bucket cylinder pins and bucket linkage.

**Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder, head end pin and stick lines.

Major Component Weights

● 307C ● 307C SB ● 307B SB ● 308C SR ● 308C CR
● 311C U ● 312C ● 312C L ● 313C CR ● 313C SR

Excavators

	307C		307C SB		307B SB		308C SR		308C CR	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Sticks:*										
Medium Stick	142	310	142	310	142	310	159	350	150	330
Long Stick	217	480	217	480	217	480	—	—	220	490
Booms:**										
One-piece	387	850	380	840	590	1300	836	1840	385	850
Parallel-Offset	775	1710	—	—	—	—	—	—	—	—
VA (France sourced only)	—	—	—	—	—	—	—	—	—	—
Other:										
Upperstructure (complete w/o ctwt)	2490	5490	3030	6680	3150	6940	3120	6880	3020	6660
Standard undercarriage (std shoe)	2110	4650	2110	4650	2120	4670	2610	5750	2180	4810
Counterweight	750	1650	1250	2760	1150	2540	1170	2580	1170	2580

*Stick weights include stick, stick lines, bucket cylinder, bucket cylinder pins and bucket linkage.

**Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder, head end pin and stick lines.

	311C U		312C		312C L		312C/312C L		313C CR		313C SR	
Source	Japan		Japan		Japan		France		Japan		Japan	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Sticks:*												
Short Stick	—	—	—	—	—	—	314	690	—	—	—	—
Medium Stick	322	710	360	790	360	790	384	850	380	840	340	750
Long Stick	394	870	433	950	433	950	462	1020	460	1010	—	—
Heavy Duty Medium Stick	—	—	—	—	—	—	—	—	440	970	—	—
Booms:**												
One-piece Reach	708	1560	767	1690	767	1690	1198	2640	870	1920	—	—
Parallel-Offset	—	—	—	—	—	—	—	—	—	—	1590	3510
VA (France sourced only)	—	—	—	—	—	—	1720	3790	—	—	—	—
Other:												
Upperstructure (complete w/o ctwt)	3200	7050	4075	8980	4075	8980	4027	8880	3950	8710	4020	8860
Standard undercarriage (std shoe)	2040	4500	3890	8580	—	—	3890	8580	3900	8600	4680	10,320
Long undercarriage (std shoe)	—	—	—	—	4410	9720	4410	9720	—	—	—	—
Counterweight	1170	2580	2450	5400	2450	5400	2450	5400	2500	5510	2500	5510

*Stick weights include stick, stick lines, bucket cylinder, bucket cylinder pins, bucket linkage and stick nose pin.

**Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder and head end pin.

Excavators

Major Component Weights

- 314C CR ● 314C LCR ● 315C ● 315C L
- 318C ● 318C L ● 318C LN ● 318C N

Source	314C CR		314C LCR		315C		315C L		315C L	
	Japan		Japan		Japan		Japan		France	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Sticks:*										
Short Stick	—		—		490	1080	490	1080	488	1076
Medium Stick	353	780	353	780	450	990	450	990	470	1036
Long Stick	432	950	432	950	480	1060	480	1060	500	1102
Extra Long Stick	—		—		570	1260	570	1260	595	1312
Booms:**										
One-piece	768	1690	768	1690	950	2090	950	2090	1323	2917
VA (France sourced only)	—		—		—		—		1700	3748
Other:										
Upperstructure (complete w/o ctwt)	4380	9660	4380	9660	4720	10,410	4720	10,410	5350	11,795
Standard undercarriage (std shoe)	3890	8580	—		5420	11,950	—		5900	13,007
Long undercarriage (std shoe)	—		4180	9220	—		6000	13,230	5900	13,007
Counterweight	3000	6610	3000	6610	3010	6640	3010	6640	3000	6614

*Stick weights include stick, stick lines, bucket cylinder, bucket cylinder pins, bucket linkage and stick nose pin.

**Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder and head end pin.

Source	318C		318C L		318C L		318C LN		318C N	
	France		Japan		France		Japan		France	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Sticks:*										
Short Stick	567	1250	562	1240	567	1250	562	1240	567	1250
Medium Stick	545	1202	538	1190	545	1202	538	1190	545	1202
Long Stick	625	1378	566	1250	625	1378	566	1250	625	1378
Extra Long Stick	675	1488	700	1540	675	1488	700	1540	675	1488
Booms:**										
One-piece Reach	1900	4190	1300	2870	1900	4190	1300	2870	1900	4190
VA (France sourced only)	2400	5290	—		2400	5290	—		2400	5290
Other:										
Upperstructure (complete w/o ctwt)	5500	12,125	5560	12,260	5100	11,245	5560	12,260	5500	12,125
Standard undercarriage (std shoe)	6200	13,669	—		—		—		—	
Long undercarriage (std shoe)	—		6850	15,100	6470	14,260	—		—	
Narrow undercarriage (std shoe)	—		—		—		—		6190	13,650
Long narrow undercarriage (std shoe)	—		—		—		6560	14,460	—	
Counterweight	3350	7385	3610	7960	3350	7385	3610	7960	3350	7385

*Stick weights include stick, stick lines, bucket cylinder, bucket cylinder pins, bucket linkage and stick nose pin.

**Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder and head end pin.

● M313C ● M315C ● M316C ● M318C ● M322C

Major Component Weights

Excavators

	M313C		M315C		M316C		M318C		M322C	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Sticks:*										
Short Stick	606	1336	681	1501	681	1501	841	1854	961	2119
Medium Stick	636	1402	721	1590	721	1590	856	1887	981	2163
Long Stick	676	1490	731	1612	731	1612	896	1975	1051	2317
Booms:**										
VH Boom	1650	3638	1970	4343	2090	4608	2450	5401	2980	6570
One-piece Boom	1230	2712	1530	3373	1560	3439	1890	4167	2300	5071
Other:										
Upperstructure (with swing bearing, no boom)	3600	7937	4100	9039	4710	10,384	5480	12,081	5610	12,368
Undercarriage (with standard tires)	3505	7727	3805	8389	4110	9061	4150	9149	1770	3902
Outriggers (each set, with cylinders and linkage)	890	1962	890	1962	1020	2249	1020	2249	1310	2888
Dozer Blade (with cylinders and linkage)	645	1422	645	1422	760	1676	760	1676	910	2006

*Stick weight includes stick, stick lines, bucket cylinder, bucket cylinder pins, bucket linkage and bucket linkage pins.

**Boom weight includes boom, boom lines, boom cylinders, boom cylinder rod end pin, stick cylinder, stick cylinder head end pin and boom nose pin.

Excavators

Major Component Weights

- 320C ● 320C U ● 321C LCR ● 322C
- Japan/Brazil/U.S. Sourced

Source	320C		320C U		321C LCR		322C	
	Japan/Brazil		Japan/U.S.		Japan		Japan/U.S.	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb
Booms:**								
One-piece Reach	1400	3090	1400	3090	2106	4640	2460	5420
Heavy Duty One-piece Reach	2194	4840	—	—	—	—	—	—
Sticks:* (for Reach Boom)								
Short Stick	730	1610	—	—	—	—	—	—
Medium Stick	640	1410	640	1410	—	—	1160	2560
Long Stick	660	1460	660	1460	926	2040	1180	2600
Extra Long Stick	910	2010	910	2010	—	—	1300	2870
Heavy Duty Long Stick	1100	2430	—	—	—	—	1290	2840
Heavy Duty Medium Stick	1040	2290	—	—	—	—	—	—
Booms:**								
One-piece Mass	1410	3110	—	—	—	—	2560	5640
Sticks:* (for Mass Boom)								
Short Stick	720	1590	—	—	—	—	1420	3130
Medium Stick	750	1650	—	—	—	—	1480	3260
Upperstructure (complete w/o ctwt)	5780	12,740	5500	12,130	2373	5230	6340	13,980
Undercarriage — Standard	(600) 6650	14,660	(600) 6650	14,660	(600) 6649	14,660	(600) 7920	17,460
	(700) 7000	15,430	(700) 7000	15,430	—	—	(700) 8180	18,030
	(800) 7250	15,980	(800) 7250	15,980	—	—	(800) 8440	18,610
() Shoe width — Long (FIX)	(600) 7200	15,870	(600) 7200	15,870	(600) 7847	17,300	(600) 8540	18,830
	(700) 7580	16,710	(700) 7580	16,710	—	—	(700) 8820	19,440
	(800) 7850	17,310	(800) 7850	17,310	—	—	(800) 9110	20,080
	(900) 8120	17,900	(900) 8120	17,900	—	—	(900) 9380	20,680
Counterweight — Standard	3850	8490	6500	14,330	6100	13,450	4090	9016

*Stick weights include stick and stick lines.

**Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder and head end pin.

● 325C ● 325C L ● 330C ● 330C L ● 345B Series II
 ● Japan/U.S. Sourced

Excavators

Source	325C/325C L		330C/330C L		345B Series II	
	Japan/U.S.		Japan/U.S.		Japan/U.S.	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb
Booms:**						
One-piece Reach	2840	6260	3880	8550	—	—
One-piece Reach	—	—	4070	8970	3351	7390
Sticks:* (for Reach Boom)						
Short	—	—	1890	4170	—	—
•	890	1960	1720	3790	1746	3850
•	820	1810	1820	4010	1751	3860
•	890	1960	1950	4300	1771	3900
•	930	2050	2090	4610	—	—
•	—	—	2040	4500	—	—
Booms:**						
One-piece Mass	2770	6110	3950	8710	3870	8530
Sticks:* (for Mass Boom & VA Boom)						
Short	—	—	1890	4170	1800	3970
•	970	2140	1960	4320	1826	4030
Extra Long	930	2050	—	—	—	—
Upperstructure (complete w/o ctwt)	6279	13,840	8480	18,700	11 671	25,730
Undercarriage — Standard	(600) 9372	20,660	(600) 11 850	26,120	(600) 13 980	30,820
	—	—	—	—	(750) 15 202	33,510
	—	—	—	—	(900) 15 740	34,700
() Shoe width — Long (FIX)	—	—	—	—	(600) 15 010	33,090
	—	—	(750) 13 290	29,300	(750) 15 911	35,080
	(800) 11 087	24,440	—	—	(900) 16 870	37,190
— Long (VG)	—	—	—	—	(600) 16 680	36,770
	—	—	—	—	(750) 17 780	39,200
— Narrow	—	—	—	—	(900) 18 640	41,095
— Long Narrow	(600) 9215	20,320	(600) 11 560	25,490	—	—
	—	—	(750) 12 100	26,680	—	—
Counterweight — Standard	5611	12,370	6020	13,300	8500 †	18,740

*Stick weights include stick and stick lines.

**Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder and head end pin.

†8000 kg (17,600 lb) without counterweight attachment for U.S. sourced machine.

4

Excavators

Major Component Weights

- 320C ● 322C ● 325C ● 330C ● 345C
- Belgium Sourced

	320C		322C		325C		330C		345C	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Booms:**										
One-piece Reach	1260	2780	1525	3360	1770	3900	2445	5390	6890	15,190
Sticks:* (for Reach Boom)										
Short	680	1500	795	1750	900	1980	1100	2425	3680	8110
Medium	660	1455	690	1520	840	1850	1040	2290	3650	8050
Long	790	1740	720	1590	945	2080	1210	2670	—	—
Long HD	—	—	865	1910	1040	2290	1335	2940	—	—
Booms:**										
One-piece Mass	1270	2800	1625	3580	1830	4035	2445	5390	8040	17,730
VA Boom	1600	3530	2040	4500	2285	5040	—	—	—	—
Sticks:* (for Mass Boom)										
Short	680	1500	795	1750	900	1980	1100	2425	3750	8270
Medium	715	1580	860	1900	980	2160	1125	2480	3690	8140
Long	900	1980	—	—	—	—	—	—	—	—
Upperstructure (complete w/o ctwt)	5575	12,290	6860	15,126	6660	14,685	8570	18,900	13 140	28,970
Upperstructure with Eco-Mate	—	—	—	—	—	—	—	—	10 695	23,580
Undercarriage — Standard	7090	15,630	—	—	—	—	—	—	—	—
— L	7640	16,850	8830	19,470	10 685	23,560	13 225	29,160	41 410	91,310
— LN	7310	16,120	8210	18,100	9625	21,220	12 590	27,760	—	—
— S	8380	18,480	—	—	—	—	—	—	—	—
— ES	—	—	—	—	—	—	—	—	58 090	128,090
Counterweight — Standard	4120	9080	—	—	—	—	—	—	—	—
— L	4120	9080	4369	9634	5620	12,390	6250	13,780	20 510	45,220
— LN	4420	9750	4369	9634	5620	12,390	6250	13,780	—	—
— S	4420	9750	—	—	—	—	—	—	—	—

*Stick weights include stick and stick lines.

**Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder and head end pin.

NOTE: Heavy duty track shoes available.

Major Component Weights
 ● 365B L Series II ● 385B ● 385B L
 ● 365C L ● 385C ● 385C L

Excavators

	365B L Series II		365C L		385B/385B L		385C/385C L	
Buckets: (see data in bucket section)	kg	lb	kg	lb	kg	lb	kg	lb
Source	Japan		Belgium		Japan		Belgium	
Booms:*								
One-piece Reach	7751	17,090	6400	14,110	9520	21,000	9650	21,280
Sticks:** (for Reach Boom)								
Short	3274	7220	3370	7430	—	—	—	—
•	3485	7680	3580	7890	—	—	—	—
•	—	—	3800	8380	—	—	4550	10,030
Long	3842	8470	3980	8780	4495	9910	4860	10,720
Extra Long	—	—	—	—	4819	10,620	—	—
Booms:*								
One-piece General Purpose	—	—	—	—	8200	18,100	8240	18,170
Sticks:** (for General Purpose Boom)								
Short	—	—	—	—	4146	9140	4820	10,630
•	—	—	—	—	4300	9480	4550	10,030
Long	—	—	—	—	4975	10,970	4860	10,720
Extra Long	—	—	—	—	5299	11,680	—	—
Booms:*								
One-piece Mass	7871	17,350	6420 †	14,160	10 029	22,210	8320	18,350
•	—	—	6720 ‡	14,820	—	—	—	—
Sticks:** (for Mass Boom)								
Short	3927	8660	4050	8930	4827	10,640	4850	10,690
•	4121	9090	4230	9330	4922	10,850	4990	11,000
Upperstructure (complete w/o ctwt)	15 440	34,040	17 380	38,320	21 014	46,330	21 450	47,300
Undercarriage — Standard	—	—	—	—	31 335	69,080	(650)	(1433.25)
() Shoe width — Long	(750)	(1653.75)	(750)	(1653.75)	32 160	70,910	(750)	(1653.75)
() Shoe width — ES	26 452	58,320	26 970	59,470	33 082	72,930	32 900	72,540
() Shoe width — ES	—	—	(650)	(1433.25)	—	—	—	—
() Shoe width — ES	—	—	32 340	71,310	—	—	—	—
Counterweight — Standard	—	—	—	—	11 650	25,680	11 650	25,690
— Long	9700	21,380	10 090	22,250	—	—	—	—

*Boom weights include: boom, boom lines, cylinders, rod end pins, stick cylinder and head end pin.

**Stick weights include stick and stick lines.

†6.6 m (21'8").

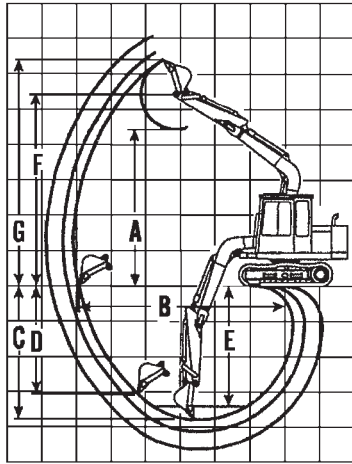
‡7.0 m (23'0").

NOTE: Heavy duty track shoes available.

Excavators

Range Dimensions

● 301.5 ● 301.5 CR ● 301.6 ● 301.8 ● 302.5 ● 303 SR



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

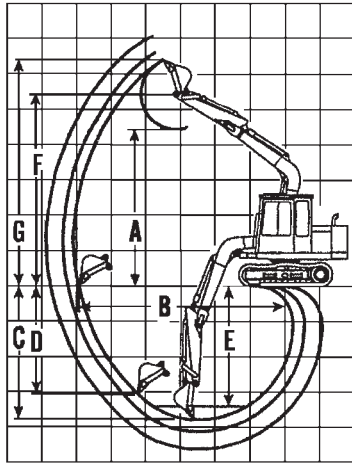
Stick	301.5		301.5 CR		301.6					
	890 mm	2'11"	1.09 m	3'6"	925 mm	3'0"	1.125 m	3'8"	1.09 m	3'6"
	m	ft	m	ft	m	ft	m	ft	m	ft
A	2.36	7'9"	2.47	8'1"	2.58	8'6"	2.72	8'11"	2.47	8'1"
B	3.61	11'8"	3.80	12'5"	3.71	12'2"	3.90	12'10"	3.80	12'5"
C	2.13	7'0"	2.33	7'6"	2.17	7'1"	2.37	7'9"	2.33	7'6"
D	1.62	5'4"	1.81	5'9"	1.72	5'8"	1.91	6'3"	1.81	5'9"
E	—	—	—	—	1.47	4'10"	1.76	5'9"	—	—
F	2.86	9'5"	2.97	9'7"	3.08	10'1"	3.22	10'7"	2.97	9'7"
G	3.32	10'11"	3.42	11'2"	3.57	11'9"	3.71	12'2"	3.42	11'2"

Stick	301.8		302.5		303 SR*							
	890 mm	2'11"	1.09 m	3'6"	1.11 m	3'8"	1.41 m	4'8"	1.2 m	3'11"	1.6 m	5'3"
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	2.36	7'9"	2.47	8'1"	3.10	10'2"	3.25	10'8"	3.84	12'7"	3.44	11'3"
B	3.61	11'8"	3.80	12'5"	4.56	15'0"	4.93	16'2"	4.11	13'6"	4.67	15'4"
C	2.13	7'0"	2.33	7'6"	2.65	8'8"	2.95	9'8"	2.90	9'6"	3.30	10'10"
D	1.62	5'4"	1.81	5'9"	2.12	6'11"	2.38	7'10"	2.27	7'5"	2.70	8'10"
E	—	—	—	—	—	—	—	—	2.32	7'7"	2.81	9'3"
F	2.86	9'5"	2.97	9'7"	3.75	12'4"	3.89	12'9"	4.50	14'9"	4.79	15'9"
G	3.32	10'11"	3.42	11'2"	4.38	14'4"	4.52	14'10"	5.06	16'7"	5.34	17'6"

*Power Offset Boom.

- Range Dimensions
- 303 CR ● 304 CR
 - 305 SR ● 305 CR

Excavators



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

4

Stick	303 CR				304 CR			
	1.26 m	4'2"	1.56 m	5'1"	1.38 m	4'6"	1.78 m	5'10"
	m	ft	m	ft	m	ft	m	ft
A	3.15	10'4"	3.24	10'8"	3.58	11'9"	3.81	12'6"
B	5.13	16'10"	5.39	17'8"	5.56	18'3"	5.95	19'6"
C	3.03	9'11"	3.33	10'11"	3.35	11'0"	3.75	12'4"
D	2.54	8'4"	2.72	8'11"	2.38	7'10"	2.78	9'1"
E	1.97	6'6"	2.42	7'11"	2.90	9'6"	3.36	11'0"
F	3.91	12'10"	4.00	13'1"	4.41	14'6"	4.64	15'3"
G	4.64	15'3"	4.71	15'5"	5.22	17'2"	5.44	17'10"

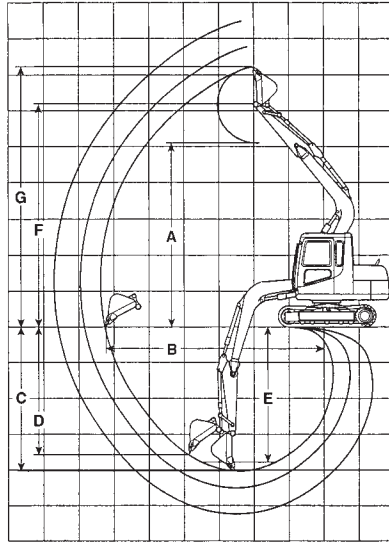
Stick	305 SR*				305 CR			
	1.62 m	5'4"	2.02 m	6'8"	1.43 m	4'7"	1.83 m	6'0"
	m	ft	m	ft	m	ft	m	ft
A	4.64	15'3"	5.01	16'5"	3.73	12'3"	3.96	13'0"
B	5.66	18'7"	6.05	19'10"	5.75	18'10"	6.14	20'2"
C	4.00	13'1"	4.38	14'4"	3.53	11'7"	3.93	12'11"
D	2.72	8'11"	3.20	10'6"	2.75	9'0"	3.37	11'1"
E	3.50	11'6"	3.98	13'1"	2.66	8'9"	3.21	10'6"
F	5.56	18'3"	5.90	19'4"	4.57	15'0"	4.79	15'9"
G	6.39	21'0"	6.76	22'2"	5.37	17'7"	5.60	18'4"

*Power Offset Boom.

Excavators

Range Dimensions

- 307C ● 307C SB
- 308C SR ● 308C CR



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

307C

Stick	1.67 m		2.21 m		1.67 m		2.21 m	
	m	5'6"	m	7'3"	m	5'6"	m	7'3"
A	5.15	16'11"	5.56	18'3"	4.16	13'8"	4.45	14'7"
B	6.20	20'4"	6.72	22'1"	6.97	22'10"	7.50	24'7"
C	4.11	13'6"	4.65	15'3"	4.16	13'8"	4.71	15'5"
D	3.67	12'0"	4.19	13'9"	3.00	9'10"	3.58	11'9"
E	3.77	12'4"	4.35	14'3"	3.76	12'4"	4.37	14'4"
F	6.24	20'6"	6.65	21'10"	5.25	17'3"	5.57	18'3"
G	7.29	23'11"	7.69	25'3"	6.18	20'3"	6.49	21'4"

307C SB

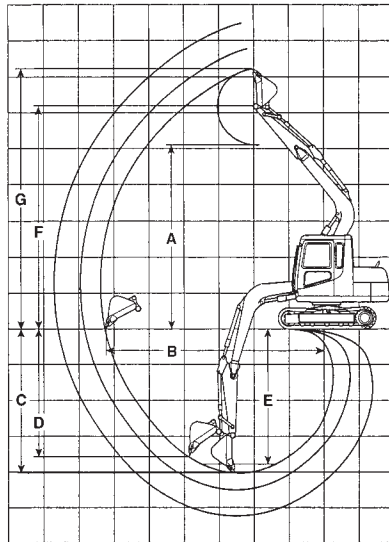
308C SR*

Stick	1.75 m		1.67 m		2.21 m	
	m	5'9"	m	5'6"	m	7'3"
A	5.09	16'8"	5.25	17'3"	5.67	18'7"
B	6.22	20'5"	6.25	20'6"	6.77	22'3"
C	4.37	14'4"	4.14	13'7"	4.69	15'5"
D	3.37	11'1"	3.60	11'10"	4.12	13'6"
E	3.96	13'0"	3.80	12'6"	4.38	14'4"
F	6.18	20'3"	6.34	20'10"	6.76	22'2"
G	7.21	23'8"	7.39	24'3"	7.81	25'7"

308C CR

*Power Offset Boom.

- Range Dimensions
- 311C U ● 312C ● 312C L ● 313C SR
 - 313C CR ● 314C CR ● 314C LCR
 - Japan Sourced ● France Sourced



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

Japan Sourced

Stick	311C U				312C, 312C L					
	2.25 m	7'5"	2.8 m	9'2"	2.1 m	6'11"	2.5 m	8'2"	3 m	9'10"
	m	ft	m	ft	m	ft	m	ft	m	ft
A	5.45	17'11"	5.77	18'11"	5.85	19'2"	6.10	20'0"	6.33	20'9"
B	7.57	24'10"	8.10	26'7"	7.79	25'7"	8.17	26'10"	8.62	28'3"
C	5.04	16'6"	5.59	18'4"	5.14	16'10"	5.55	18'3"	6.05	19'10"
D	4.43	14'6"	4.94	16'2"	4.49	14'9"	4.97	16'4"	5.34	17'6"
E	4.82	15'10"	5.44	17'10"	4.83	15'10"	5.34	17'6"	5.86	19'3"
F	6.69	21'11"	7.01	23'0"	7.06	23'2"	7.32	24'0"	7.56	24'10"
G	7.81	25'7"	8.12	26'8"	8.22	27'0"	8.48	27'10"	8.70	28'7"

France Sourced

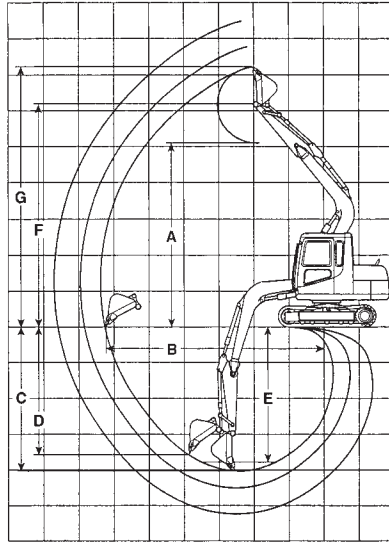
Stick	312C, 312C L			Japan Sourced 313C SR*		313C CR, 314C CR, 314C LCR						
	2.1 m	6'11"	2.5 m	8'2"	3 m	9'10"	2.13 m	7'0"	2.5 m	8'2"	3 m	9'10"
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	5.85	19'2"	6.10	20'0"	6.34	20'10"	6.06	19'11"	6.86	22'6"	7.19	23'7"
B	7.79	25'7"	8.17	26'10"	8.62	28'3"	7.23	23'9"	8.18	26'10"	8.63	28'4"
C	5.14	16'10"	5.54	18'2"	6.04	19'10"	4.84	15'11"	5.45	17'11"	5.95	19'6"
D	4.49	14'9"	4.95	16'3"	5.32	17'5"	3.60	11'10"	4.91	16'1"	5.33	17'6"
E	4.83	15'10"	5.24	17'2"	5.75	18'10"	4.47	14'8"	5.24	17'2"	5.77	18'11"
F	7.06	23'2"	7.32	24'0"	7.56	24'10"	7.47	24'6"	8.10	26'7"	8.43	27'8"
G	8.22	27'0"	8.48	27'10"	8.70	28'7"	8.47	27'9"	9.30	30'6"	9.62	31'7"

*Parallel-offset.

Excavators

Range Dimensions

- 315C ● 315C L
- Japan Sourced



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

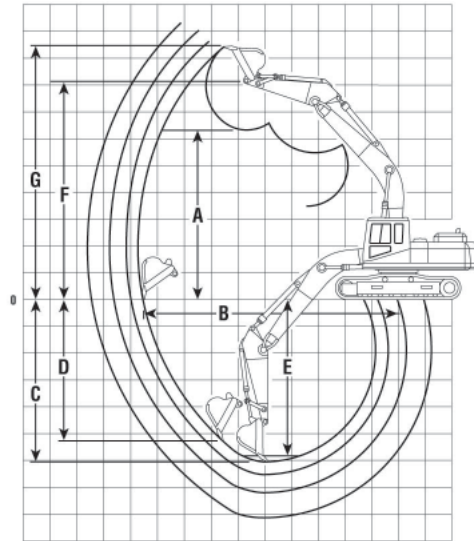
Japan Sourced

315C, 315C L

Stick	1.85 m		2.25 m		2.6 m		3.1 m	
	m	ft	m	ft	m	ft	m	ft
A	5.93	19'5"	6.15	20'2"	6.32	20'9"	6.41	21'0"
B	8.04	26'5"	8.42	27'7"	8.74	28'8"	9.14	30'0"
C	5.30	17'5"	5.70	18'8"	6.05	19'10"	6.55	21'6"
D	4.36	14'4"	5.45	17'11"	5.82	19'1"	6.33	20'9"
E	5.02	16'6"	4.93	16'2"	5.33	17'6"	5.57	18'3"
F	7.27	23'10"	7.49	24'7"	7.66	25'2"	7.75	25'5"
G	8.50	27'10"	8.70	28'7"	8.91	29'3"	8.97	29'5"

Range Dimensions
 ● 315C L
 ● France Sourced

Excavators



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

4

France Sourced

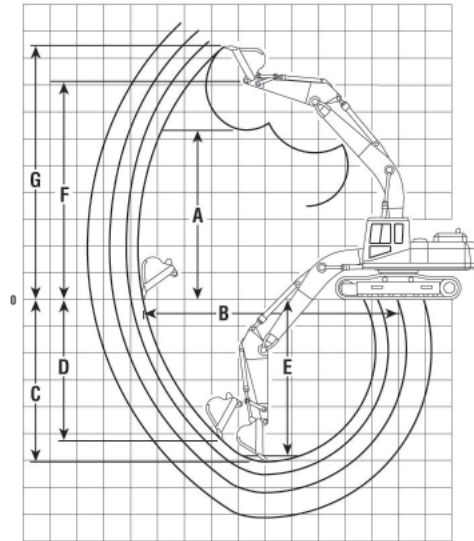
315C L

Stick	1.85 m		2.25 m		2.6 m		3.1 m	
	m	ft	m	ft	m	ft	m	ft
A	5.96	19'6"	6.18	20'3"	6.35	20'9"	6.44	21'1"
B	8.01	26'3"	8.39	27'6"	8.71	28'6"	9.11	29'1"
C	5.27	17'3"	5.67	18'7"	6.02	19'9"	6.25	20'6"
D	4.03	13'2"	4.56	14'11"	5.00	16'4"	5.19	17'0"
E	4.98	16'3"	5.42	17'9"	5.79	18'11"	5.29	17'4"
F	3.12	10'2"	2.72	8'11"	2.37	7'9"	1.87	6'1"
G	8.53	27'11"	8.76	28'8"	8.94	29'3"	9.00	29'6"

Excavators

Range Dimensions

- 318C ● 318C L ● 318C LN ● 318C N
- Japan Sourced ● France Sourced



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0\") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

Japan Sourced

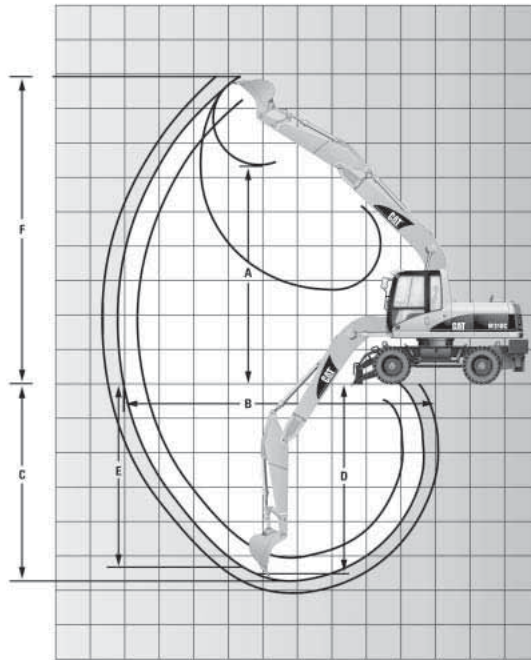
318C L, 318C LN

Stick	1.8 m		2.25 m		2.7 m		3.2 m	
	m	ft	m	ft	m	ft	m	ft
A	5.90	19'4"	6.16	20'3"	6.46	21'3"	6.86	22'6"
B	8.26	27'1"	8.70	28'5"	9.15	29'11"	9.63	31'7"
C	5.46	17'11"	5.92	19'5"	6.37	20'10"	6.87	22'6"
D	3.06	10'0"	4.83	15'10"	5.40	17'8"	6.01	19'9"
E	5.14	16'10"	5.60	18'4"	6.07	19'11"	6.59	21'7"
F	7.32	24'0"	7.60	24'11"	7.89	25'11"	8.29	27'2"
G	8.49	27'10"	8.92	29'3"	9.24	30'4"	9.65	31'8"

France Sourced

318C, 318C L, 318C N

Stick	1.8 m		2.25 m		2.7 m		3.2 m	
	m	ft	m	ft	m	ft	m	ft
A	5.93	19'5"	6.20	20'4"	5.50	18'0"	6.90	22'7"
B	8.24	27'0"	8.68	28'5"	9.13	29'11"	9.66	31'8"
C	5.49	17'11"	5.89	19'3"	6.34	20'9"	6.84	22'5"
D	5.12	16'9"	5.62	18'5"	6.12	20'0"	6.55	21'5"
E	3.74	12'3"	4.75	15'6"	5.32	17'5"	5.93	19'5"
F	3.29	10'9"	2.85	9'4"	2.39	7'9"	1.90	6'2"
G	8.64	28'4"	8.97	29'4"	9.28	30'4"	9.68	31'9"



One-Piece Boom Digging Envelope

- Standard 10 × 20 tires and undercarriage
- General purpose bucket

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.5 m (8'2") level bottom (straight clean up)
- F** Maximum height, to bucket teeth at highest arc

M313C

Stick	2 m	6'7"	2.3 m	7'7"	2.6 m	8'6"
Bucket	0.715 m ³	0.94 yd ³	0.64 m ³	0.84 yd ³	0.64 m ³	0.84 yd ³
	m	ft	m	ft	m	ft
A	6.06	19'11"	6.12	20'1"	6.30	20'8"
B	8.08	26'6"	8.32	27'4"	8.61	28'3"
C	4.84	15'11"	5.14	16'10"	5.44	17'10"
D	3.75	12'4"	3.74	12'3"	4.04	13'3"
E	4.59	15'1"	4.91	16'1"	5.23	17'2"
F	8.48	27'10"	8.51	27'11"	8.69	28'6"

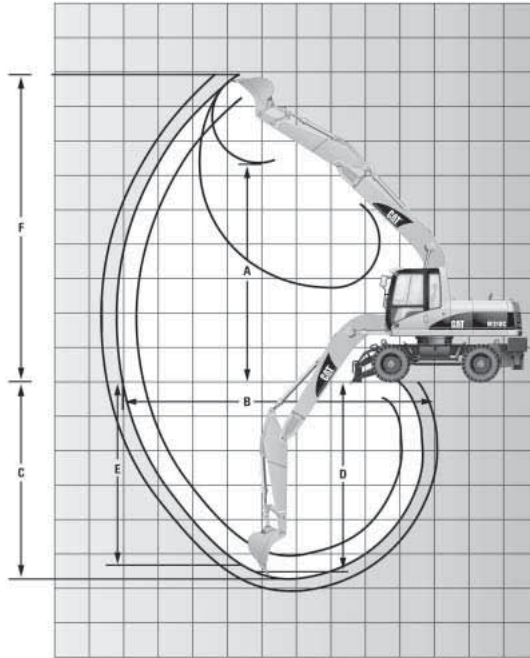
M315C

Stick	2.1 m	6'11"	2.4 m	7'10"	2.6 m	8'6"
Bucket	0.815 m ³	1.07 yd ³	0.7 m ³	0.92 yd ³	0.7 m ³	0.92 yd ³
	m	ft	m	ft	m	ft
A	6.15	20'2"	6.26	20'6"	6.37	20'11"
B	8.56	28'1"	8.83	29'0"	9.02	29'7"
C	5.24	17'2"	5.54	18'2"	5.74	18'10"
D	4.08	13'5"	4.24	13'11"	4.41	14'6"
E	5.01	16'5"	5.33	17'6"	5.54	18'2"
F	8.88	29'2"	8.97	29'5"	9.09	29'10"

Excavators

Range Dimensions

- M316C
- M318C
- M322C



One-Piece Boom Digging Envelope

- Standard 10 × 20 tires and undercarriage
- General purpose bucket

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.5 m (8'2") level bottom (straight clean up)
- F** Maximum height, to bucket teeth at highest arc

M316C

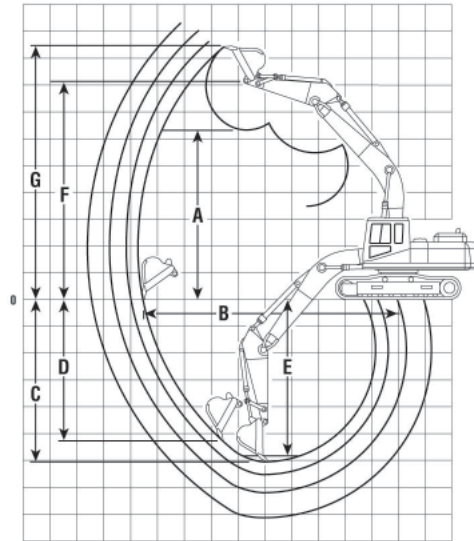
Stick	2.1 m 6'11"		2.4 m 7'10"		2.6 m 8'6"		2.2 m 7'3"		2.5 m 8'2"		2.8 m 9'2"	
	0.815 m ³ 1.07 yd ³		0.815 m ³ 1.07 yd ³		0.7 m ³ 0.92 yd ³		0.91 m ³ 1.19 yd ³		0.91 m ³ 1.19 yd ³		0.7 m ³ 0.92 yd ³	
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	6.17	20'3"	6.27	20'7"	6.39	21'0"	6.05	19'10"	6.27	20'7"	6.42	21'1"
B	8.56	28'1"	8.82	28'11"	9.02	29'7"	8.85	29'0"	9.16	30'1"	9.45	31'0"
C	5.23	17'2"	5.53	18'2"	5.73	18'10"	5.55	18'3"	5.85	19'2"	6.15	20'2"
D	4.06	13'4"	4.22	13'10"	4.40	14'5"	3.66	12'0"	4.12	13'6"	4.42	14'6"
E	5.00	16'5"	5.32	17'5"	5.53	18'2"	5.34	17'6"	5.65	18'6"	5.96	19'7"
F	8.90	29'2"	8.99	29'6"	9.11	29'11"	8.66	28'5"	8.91	29'3"	9.06	29'9"

M322C

Stick	2.2 m 7'3"		2.5 m 8'2"		2.9 m 9'6"	
	1.04 m ³ 1.36 yd ³		0.805 m ³ 1.05 yd ³		0.805 m ³ 1.05 yd ³	
	m	ft	m	ft	m	ft
A	6.50	21'4"	6.43	21'1"	6.65	21'10"
B	9.51	31'2"	9.73	31'11"	10.12	33'2"
C	5.57	18'3"	5.87	19'3"	6.27	20'7"
D	4.46	14'8"	4.66	15'3"	5.04	16'6"
E	5.35	17'7"	5.67	18'7"	6.09	20'0"
F	9.45	31'0"	9.31	30'7"	9.54	31'4"

- 320C
- 320C L
- 320C U
- Japan Sourced

Excavators



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

4

320C, 320C L with Reach Boom

Stick	1.9 m		2.5 m		2.9 m		3.9 m	
	6'3"		8'2"		9'6"		12'10"	
	m	ft	m	ft	m	ft	m	ft
A	5.96	19'7"	6.46	21'2"	6.65	21'10"	6.93	22'9"
B	8.76	28'9"	9.31	30'7"	9.70	31'10"	10.63	34'11"
C	5.63	18'6"	6.15	20'2"	6.57	21'7"	7.58	24'10"
D	4.68	15'4"	5.33	17'6"	5.96	19'7"	6.80	22'4"
E	5.31	17'5"	5.85	19'2"	6.38	20'11"	7.25	23'9"
F	7.45	24'5"	7.87	25'9"	8.06	26'5"	8.41	27'7"
G	8.78	28'10"	9.16	30'1"	9.35	30'8"	9.73	31'11"

320C, 320C L with Mass Boom

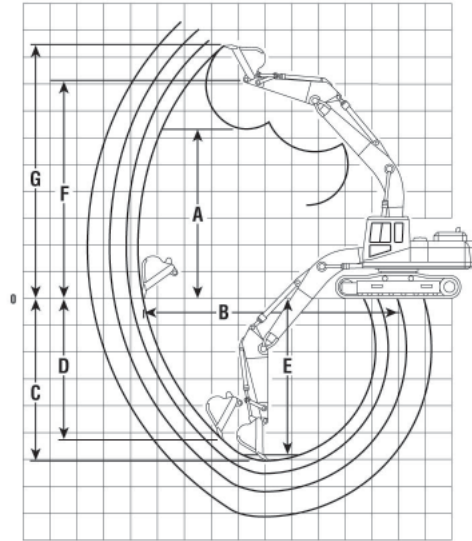
320C U with Reach Boom

Stick	2.4 m		2.5 m		2.9 m		3.9 m	
	7'10"		8'2"		9'6"		12'10"	
	m	ft	m	ft	m	ft	m	ft
A	5.92	19'5"	6.46	21'2"	6.65	21'10"	6.93	22'9"
B	8.76	28'9"	9.31	30'7"	9.70	31'10"	10.63	34'11"
C	5.70	18'8"	6.15	20'2"	6.57	21'7"	7.58	24'10"
D	4.94	16'2"	5.62	18'5"	5.96	19'7"	6.80	22'4"
E	4.93	16'2"	5.87	19'3"	6.38	20'11"	7.25	23'9"
F	7.43	24'5"	7.87	25'10"	8.06	26'5"	8.41	27'7"
G	8.77	28'9"	9.16	30'1"	9.35	30'8"	9.73	31'11"

Excavators

Range Dimensions

- 320C ● 320C L ● 320C LN ● 320C S
- Belgium Sourced



One-Piece and VA Booms Digging Envelope

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

320C, 320C L, 320C LN with Reach Boom

Stick	1.9 m 6'3"		2.5 m 8'2"		2.92 m 9'7"		1.9 m 6'3"		2.4 m 7'10"		2.9 m 9'6"	
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	5.90	19'4"	6.49	21'4"	6.67	21'11"	5.63	18'6"	5.86	19'3"	6.25	20'6"
B	8.85	29'0"	9.30	30'6"	9.71	31'10"	8.39	27'6"	8.85	29'0"	9.19	30'2"
C	5.69	18'8"	6.11	20'1"	6.55	21'6"	5.25	17'3"	5.75	18'10"	6.14	20'3"
D	3.68	12'1"	5.01	16'5"	5.44	17'10"	3.52	11'7"	3.97	13'0"	4.98	16'4"
E	5.43	17'10"	5.90	19'4"	6.37	20'11"	5.01	16'5"	5.55	29'0"	5.96	19'7"
F	—	—	—	—	—	—	—	—	—	—	—	—
G	8.81	28'11"	9.24	30'4"	9.44	31'0"	8.58	28'2"	8.80	28'10"	9.01	29'7"

320C, 320C L, 320C LN with Mass Boom

320C, 320C L, 320C LN with VA Boom

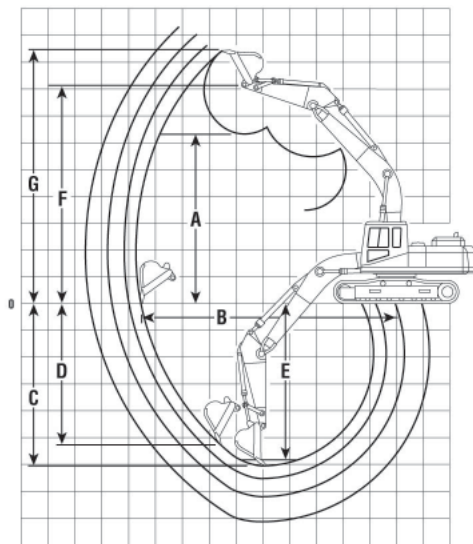
Stick	1.9 m 6'3"		2.4 m 7'10"		2.9 m 9'6"		1.9 m 6'3"		2.5 m 8'2"		2.9 m 9'6"	
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	7.10	23'4"	7.50	24'7"	8.11	26'7"	5.97	19'7"	6.57	21'7"	6.74	22'1"
B	8.74	28'8"	9.22	30'3"	9.57	31'5"	8.84	29'0"	9.28	30'5"	9.70	31'10"
C	5.20	17'1"	5.69	18'8"	6.03	19'9"	5.61	18'5"	6.03	19'9"	6.48	21'3"
D	3.55	11'8"	4.00	13'1"	4.68	15'4"	3.60	11'10"	4.94	16'2"	5.38	17'8"
E	5.07	16'8"	5.57	18'3"	5.93	19'5"	5.35	17'7"	5.83	19'2"	6.29	20'8"
F	—	—	—	—	—	—	—	—	—	—	—	—
G	10.26	38'8"	10.66	35'0"	10.93	35'10"	8.88	29'2"	9.31	30'7"	9.51	31'2"

320C S with Reach Boom

- 320C S ● 321C LCR ● 322C ● 322C L
- Belgium Sourced ● Japan/U.S. Sourced

Range Dimensions

Excavators



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0\") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

Stick	320C S* with Mass Boom				320C S with VA Boom					
	Belgium Sourced		2.4 m		1.9 m		2.4 m		2.9 m	
	1.9 m	6'3"	2.4 m	7'10"	1.9 m	6'3"	2.4 m	7'10"	2.9 m	9'6"
	m	ft	m	ft	m	ft	m	ft	m	ft
A	5.70	18'8"	5.93	19'5"	7.17	23'6"	7.57	24'10"	8.18	26'10"
B	8.37	27'4"	8.83	29'0"	8.72	28'7"	9.20	30'2"	9.55	31'4"
C	5.18	17'0"	5.68	18'8"	5.12	16'10"	5.60	18'4"	5.96	19'7"
D	3.44	11'3"	3.89	12'9"	3.47	11'5"	3.92	12'10"	4.60	15'1"
E	4.93	16'2"	5.47	17'11"	4.99	16'4"	5.49	18'0"	5.85	19'2"
F	—	—	—	—	—	—	—	—	—	—
G	8.65	28'5"	8.87	29'1"	10.33	33'11"	10.72	35'2"	11.00	36'1"

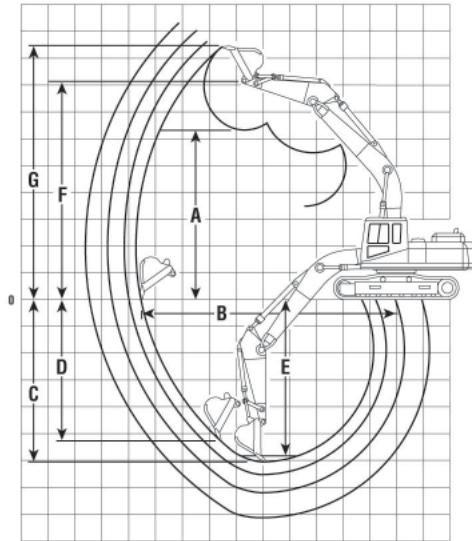
*Preliminary information.

Stick	Japan/U.S. Sourced 321C LCR Reach Boom				322C, 322C L with Reach Boom				322C, 322C L with Mass Boom			
	2.9 m		2.5 m		2.95 m		3.6 m		2 m		2.5 m	
	2.9 m	9'6"	2.5 m	8'2"	2.95 m	9'8"	3.6 m	11'10"	2 m	6'7"	2.5 m	8'2"
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	7.98	26'2"	6.54	21'5"	6.73	22'1"	7.15	23'5"	5.75	18'10"	5.98	19'7"
B	9.69	31'9"	9.59	31'6"	10.01	32'10"	10.47	34'4"	8.65	28'5"	9.12	29'11"
C	6.62	21'9"	6.26	20'6"	6.71	22'0"	7.22	23'8"	5.41	17'9"	5.91	19'5"
D	5.93	19'5"	5.26	17'3"	5.70	18'8"	6.45	21'2"	4.70	15'5"	5.18	17'0"
E	6.44	21'2"	5.94	19'6"	6.40	21'0"	6.91	22'8"	5.06	16'7"	5.56	18'3"
F	9.49	31'2"	8.08	26'6"	8.28	27'2"	8.56	28'1"	7.41	24'4"	7.63	25'0"
G	10.92	35'10"	9.48	31'1"	9.68	31'9"	9.83	32'3"	8.93	29'4"	9.16	30'1"

Excavators

Range Dimensions

- 322C L ● 322C LN
- Belgium Sourced



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

Stick	322C L, 322C LN with Belgium Sourced 5.9 m (19'4") Reach Boom						322C L, 322C LN with 5.3 m (17'5") Mass Boom			
	2.0 m	6'7"	2.5 m	8'2"	2.95 m	9'8"	2 m	6'7"	2.5 m	8'2"
	m	ft	m	ft	m	ft	m	ft	m	ft
A	6.24	20'6"	6.55	21'6"	6.75	22'2"	5.78	19'0"	6.00	19'8"
B	9.25	30'4"	9.60	31'6"	10.00	32'10"	8.65	28'5"	9.11	29'11"
C	5.84	19'2"	6.24	20'6"	6.69	21'11"	5.38	17'8"	5.88	19'3"
D	3.65	11'11"	4.00	13'1"	4.61	14'6"	3.41	11'2"	3.86	12'8"
E	5.60	18'4"	6.03	19'9"	6.50	21'4"	5.15	16'11"	5.69	18'8"
F	—	—	—	—	—	—	—	—	—	—
G	9.32	30'7"	9.44	31'0"	9.63	31'7"	8.88	29'2"	9.11	29'11"

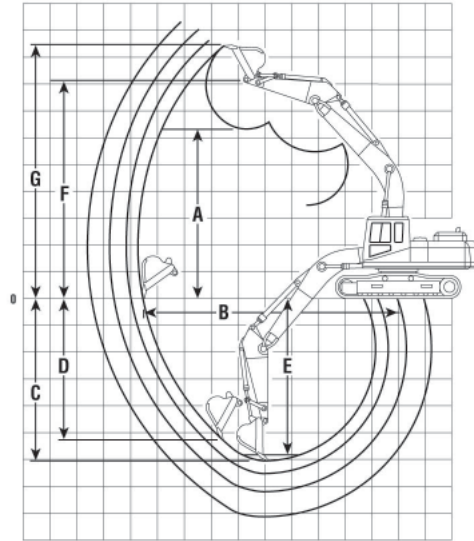
Belgium Sourced

322C L, 322C LN with 5.6 m (18'4") VA Boom

Stick	2.0 m	6'7"	2.5 m	8'2"
	m	ft	m	ft
A	7.41	24'4"	7.82	25'8"
B	9.13	29'11"	9.61	31'6"
C	5.37	17'7"	5.86	19'3"
D	3.58	11'9"	4.04	13'3"
E	5.26	17'3"	5.75	18'10"
F	—	—	—	—
G	10.73	35'2"	11.14	36'7"

Range Dimensions
 ● 325C ● 325C L
 ● Japan/U.S. Sourced

Excavators



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

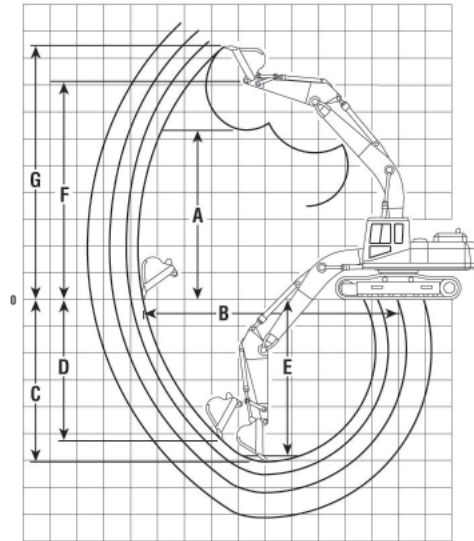
- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

Stick	325C, 325C L with Reach Boom						325C, 325C L with Mass Boom					
	2 m	6'7"	2.65 m	8'8"	3 m	9'10"	3.2 m	10'6"	2.5 m	8'2"	3.2 m	10'6"
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	6.31	20'8"	6.89	22'7"	7.01	23'0"	7.11	23'4"	6.10	20'0"	2.03	6'8"
B	9.52	31'3"	10.01	32'10"	10.32	33'10"	10.51	34'6"	9.35	30'8"	9.88	32'5"
C	6.06	19'11"	6.54	21'5"	6.89	22'7"	7.09	23'3"	6.01	19'9"	6.54	21'5"
D	5.26	17'3"	5.84	19'2"	6.13	20'1"	6.40	21'0"	5.21	17'1"	5.12	16'10"
E	5.83	19'2"	6.35	20'10"	6.72	22'1"	6.92	22'8"	5.81	19'1"	6.38	20'11"
F	7.97	26'2"	8.38	27'6"	8.50	27'11"	8.59	28'2"	7.76	25'6"	8.17	26'10"
G	9.46	31'0"	9.74	31'11"	9.85	32'4"	9.95	32'8"	9.24	30'4"	9.43	30'11"

Excavators

Range Dimensions

- 325C L ● 325C LN
- Belgium Sourced



One-Piece and VA Booms Digging Envelope

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

325C L, 325C LN with 6.15 m (20'2") Reach Boom

Stick	2 m		2.7 m		3.2 m		2 m		2.5 m	
	m	ft	m	ft	m	ft	m	ft	m	ft
A	6.34	20'10"	6.87	22'6"	7.07	23'2"	5.91	19'5"	6.12	20'1"
B	9.52	31'3"	10.08	33'1"	10.58	34'9"	8.88	29'1"	9.34	30'8"
C	6.03	19'9"	6.57	21'7"	7.12	23'4"	5.48	18'0"	5.98	19'7"
D	4.13	13'7"	4.61	15'1"	5.15	16'11"	3.42	11'3"	3.86	12'6"
E	5.79	19'0"	6.39	21'0"	6.96	22'10"	5.25	17'3"	5.78	19'0"
F	—	—	—	—	—	—	—	—	—	—
G	9.41	30'10"	9.76	32'0"	9.94	32'7"	8.98	29'6"	9.18	30'1"

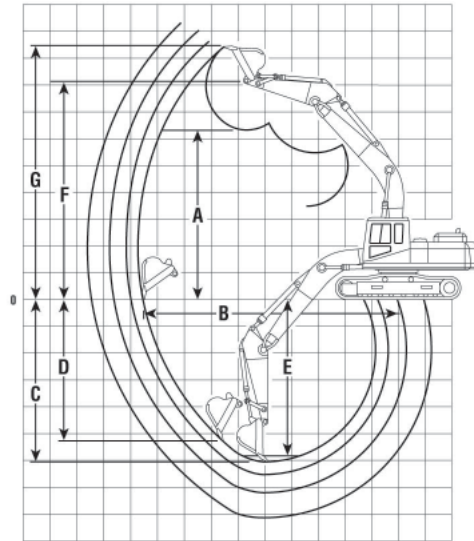
325C L, 325C LN with 5.55 m (18'3") Mass Boom

325C L, 325C LN with 5.66 m (18'7") VA Boom

Stick	2 m		2.5 m	
	m	ft	m	ft
A	7.59	24'11"	7.96	26'1"
B	9.33	30'7"	9.80	32'2"
C	5.41	17'9"	5.89	19'4"
D	3.55	11'8"	4.00	13'1"
E	5.29	17'4"	5.78	19'0"
F	—	—	—	—
G	10.89	35'9"	11.27	37'0"

● 330C ● 330C L ● 330C LN
 ● Japan/U.S. Sourced ● Belgium Sourced

Excavators



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

4

Stick		Japan/U.S. Sourced				330C, 330C L with Reach Boom				330C, 330C L with Mass Boom			
		2.15 m * 7'1"		2.8 m * 9'2"		3.2 m 10'6"		3.9 m 12'10"		2.15 m * 7'1"		2.55 m 8'4"	
		m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A		6.50	21'4"	7.20	23'7"	7.20	23'7"	7.64	25'1"	6.39	27'0"	6.67	21'11"
B		10.09	33'1"	10.62	34'10"	10.92	35'10"	11.64	38'2"	9.79	31'11"	10.21	33'6"
C		6.53	21'5"	6.99	22'11"	7.39	24'3"	8.09	26'7"	6.20	20'4"	6.60	21'8"
D		5.35	17'7"	6.04	19'10"	6.21	20'4"	7.35	24'1"	5.23	17'2"	5.85	19'2"
E		6.31	20'8"	6.82	22'5"	7.23	23'9"	7.96	26'1"	5.99	19'8"	6.43	21'1"
F		8.35	27'5"	8.86	29'1"	8.87	29'1"	9.30	30'6"	8.23	27'0"	8.51	27'11"
G		9.92	32'7"	10.34	33'11"	10.31	33'10"	10.81	35'6"	9.84	32'2"	10.17	33'4"

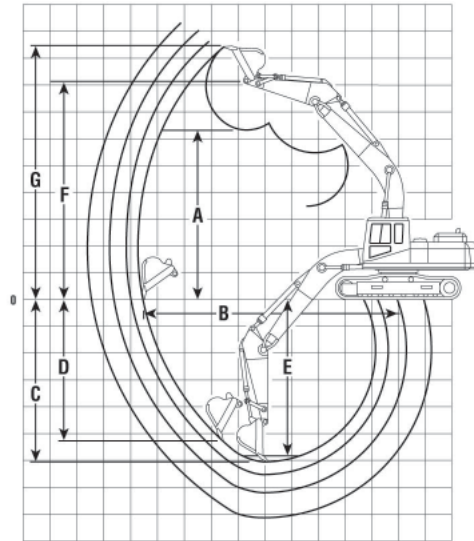
Stick		Belgium Sourced				330C L, 330C LN with Reach Boom				330C L, 330C LN with Mass Boom			
		2.15 m * 7'1"		2.8 m * 9'2"		3.2 m 10'6"		3.9 m 12'10"		2.15 m * 7'1"		2.55 m 8'4"	
		m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A		6.58	21'7"	7.24	23'9"	7.24	23'9"	7.67	25'2"	6.46	21'2"	6.74	22'1"
B		10.04	32'11"	10.61	34'10"	10.96	35'11"	11.64	38'2"	9.74	31'11"	10.16	33'4"
C		6.45	21'2"	6.96	22'10"	7.35	24'1"	8.06	25'7"	6.18	20'3"	6.58	21'7"
D		4.16	13'8"	4.66	15'3"	4.37	14'4"	5.85	19'2"	4.66	15'3"	5.30	17'5"
E		6.22	20'5"	6.78	22'3"	7.25	23'9"	7.91	25'11"	5.91	19'5"	6.34	20'10"
F		—	—	—	—	—	—	—	—	—	—	—	—
G		9.93	32'7"	10.31	33'10"	10.30	33'10"	10.77	35'4"	9.84	32'2"	10.17	33'4"

*Not available on U.S. sourced machines.

Excavators

Range Dimensions

- 345C — Japan Sourced
- 345C L – FIX — Japan/U.S. Sourced



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

Japan Sourced

345C with Reach Boom

345C with Mass Boom

Stick	2.9 m 9'6"		3.4 m 11'2"		3.9 m 12'10"		2.5 m 8'2"		3 m 9'11"	
	m	ft	m	ft	m	ft	m	ft	m	ft
A	7.29	23'11"	7.47	24'6"	7.50	24'7"	6.62	21'9"	6.81	22'4"
B	11.24	36'11"	11.66	38'3"	12.10	39'8"	10.71	35'2"	11.18	36'8"
C	7.15	23'5"	7.60	24'11"	8.15	26'9"	6.72	22'1"	7.22	23'8"
D	5.87	19'3"	6.30	20'8"	6.54	21'5"	4.92	16'2"	5.38	17'8"
E	6.99	22'11"	7.46	24'6"	8.02	26'4"	6.55	21'6"	7.07	23'2"
F	9.11	29'11"	9.29	30'6"	9.32	30'7"	8.64	28'4"	8.83	29'0"
G	10.62	34'10"	10.80	35'5"	10.78	35'4"	10.23	33'7"	10.42	34'2"

Japan/U.S. Sourced

345C L – FIX with Long Reach Boom

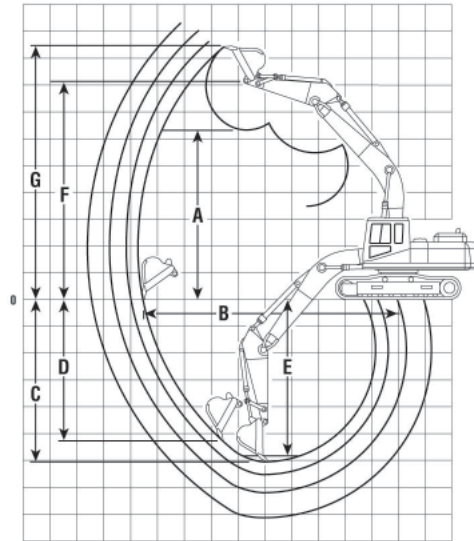
345C L – FIX with Reach Boom

345C L – FIX with Mass Boom

Stick	3.9 m 12'10"		4.3 m 14'1"		2.9 m 9'6"		3.4 m 11'2"		3.9 m 12'10"		2.5 m 8'2"		3 m 9'11"	
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	7.84	25'9"	7.97	26'2"	7.29	23'11"	7.47	24'6"	7.50	24'7"	6.62	21'9"	6.81	22'4"
B	12.55	41'2"	12.92	42'5"	11.24	36'11"	11.66	38'3"	12.10	39'8"	10.71	35'2"	11.18	36'8"
C	8.47	27'9"	8.87	29'1"	7.15	23'5"	7.60	24'11"	8.15	26'9"	6.72	22'1"	7.22	23'8"
D	6.65	21'10"	7.23	23'9"	5.87	19'3"	6.30	20'8"	6.54	21'5"	4.92	16'2"	5.38	17'8"
E	8.33	27'4"	8.74	28'8"	6.99	22'11"	7.46	24'6"	8.02	26'4"	6.55	21'6"	7.07	23'2"
F	9.66	31'8"	9.79	32'1"	9.11	29'11"	9.29	30'6"	9.32	30'7"	8.64	28'4"	8.83	29'0"
G	11.09	36'5"	10.25	33'8"	10.62	34'10"	10.80	35'5"	10.78	35'4"	10.23	33'7"	10.42	34'2"

Range Dimensions
 ● 345C L – VG — Japan Sourced

Excavators



**One-Piece Boom
Digging Envelope**

- Standard shoes and undercarriage

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

4

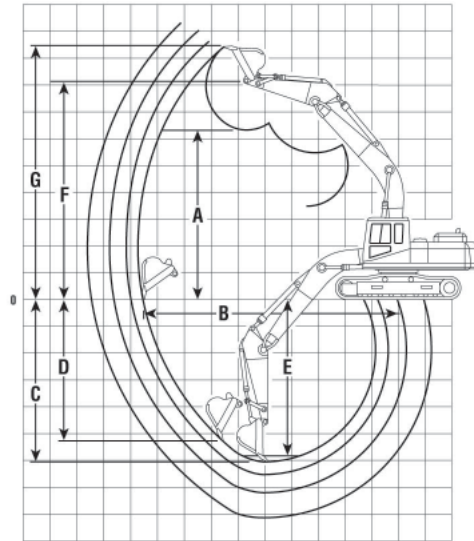
Japan Sourced

Stick	345C L – VG with Long Reach Boom				345C L – VG with Reach Boom				345C L – VG with Mass Boom					
	3.9 m	12'10"	4.3 m	14'1"	2.9 m	9'6"	3.4 m	11'2"	3.9 m	12'10"	2.5 m	8'2"	3 m	9'11"
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	7.99	26'3"	8.12	26'8"	7.40	24'3"	7.57	24'10"	7.65	25'1"	6.77	22'3"	6.96	22'10"
B	12.52	41'1"	12.89	42'3"	11.24	36'11"	11.80	38'9"	12.07	39'7"	10.71	35'2"	11.18	36'8"
C	8.33	27'4"	8.73	28'8"	7.05	23'2"	7.50	24'7"	8.01	26'3"	6.57	21'7"	7.07	23'2"
D	6.51	21'4"	7.08	23'3"	5.88	19'3"	6.31	20'8"	6.39	21'0"	4.78	15'8"	5.29	17'4"
E	8.19	26'10"	8.60	28'3"	6.89	22'7"	7.35	24'1"	7.87	25'10"	6.40	21'0"	6.92	22'8"
F	9.81	32'2"	9.94	32'7"	9.26	30'5"	9.43	30'11"	9.47	31'1"	8.79	28'10"	8.98	29'6"
G	11.24	36'11"	11.39	37'4"	10.79	35'5"	10.96	35'11"	10.92	35'10"	10.37	34'0"	10.57	34'8"

Excavators

Range Dimensions

- 345C L – VG
- U.S. Sourced ● Belgium Sourced



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

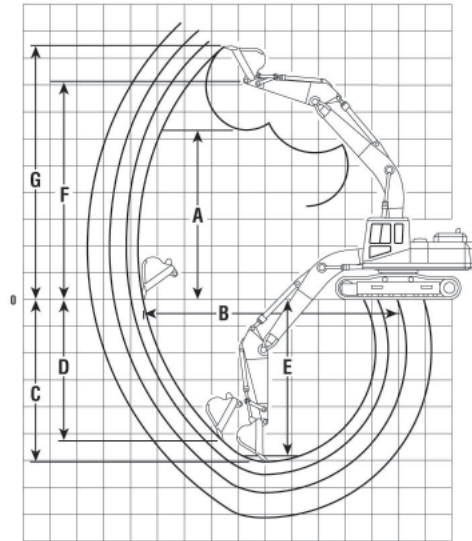
- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

U.S. Sourced	345C L – VG with Reach Boom						345C L – VG with Mass Boom		
	Stick	3.35 m	11'0"	3.9 m	12'10"	4.8 m	15'9"	3 m	9'11"
		m	ft	m	ft	m	ft	m	ft
A		7.57	24'10"	7.60	24'11"	7.74	25'5"	6.93	22'9"
B		11.68	38'4"	12.12	39'9"	12.49	41'0"	11.18	36'8"
C		7.50	24'7"	8.05	26'5"	8.45	27'9"	7.10	23'4"
D		5.07	16'7"	5.25	17'3"	5.77	18'11"	4.77	15'8"
E		7.36	24'2"	7.92	26'0"	8.33	27'4"	6.95	22'10"

Belgium Sourced	345C L – VG with Reach Boom				345C L – VG with Mass Boom				
	Stick	2.9 m	9'6"	3.35 m	11'0"	2.5 m	8'2"	3 m	9'11"
		m	ft	m	ft	m	ft	m	ft
A		7.40	24'3"	7.58	24'10"	6.72	22'0"	6.92	22'8"
B		11.28	37'0"	11.70	38'5"	10.76	35'4"	11.22	36'10"
C		7.04	23'1"	7.49	24'7"	6.61	21'8"	7.11	23'4"
D		4.89	16'0"	5.29	17'4"	3.92	12'10"	4.36	14'4"
E		6.88	22'7"	7.34	24'1"	6.44	21'1"	7.03	23'1"
F		9.11	29'11"	9.29	30'6"	8.64	28'4"	8.83	29'0"
G		10.83	35'6"	11.00	36'1"	10.41	34'2"	10.60	34'9"

Range Dimensions
 ● 365C L
 ● Japan/Belgium Sourced

Excavators



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

4

365C L with Reach Boom

Stick	2.84 m		9'4"		3.6 m		11'10"		4.15 m *		13'7"		4.67 m		15'4"	
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft		
A	8.39	27'6"	8.62	28'3"	8.85	29'0"	9.21	30'3"								
B	12.44	40'10"	13.01	42'8"	13.53	44'5"	14.07	46'2"								
C	7.68	25'2"	8.38	27'6"	8.93	29'3"	9.45	31'0"								
D	6.21	20'4"	6.38	20'11"	6.88	22'7"	7.58	24'10"								
E	7.52	24'8"	8.24	27'0"	8.80	28'10"	9.93	32'7"								
F	10.50	34'5"	10.66	35'0"	10.96	35'11"	11.25	36'11"								
G	12.42	40'9"	12.50	41'0"	12.73	41'9"	13.12	43'0"								

*Not available for all market areas.

365C L with 6.6 m (21'8") Mass Boom

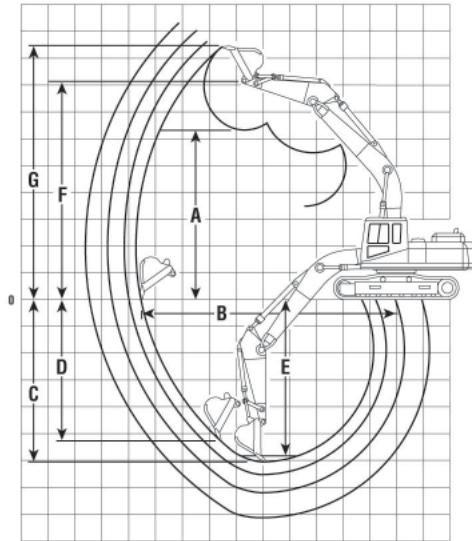
365C L with 7 m (23'0") Mass Boom

Stick	2.57 m		8'5"		3 m		9'10"		2.57 m		8'5"		3 m		9'10"	
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft		
A	6.77	22'2"	6.69	21'11"	7.12	23'4"	7.28	23'11"								
B	11.04	36'3"	11.44	37'6"	11.46	37'7"	11.86	38'11"								
C	6.90	22'8"	7.32	24'0"	7.18	23'7"	7.60	24'11"								
D	4.06	13'4"	4.43	14'6"	4.25	13'11"	4.61	15'1"								
E	6.74	22'1"	7.17	23'6"	7.02	23'0"	7.46	24'6"								
F	9.02	29'7"	9.19	30'2"	9.42	30'11"	9.58	31'5"								
G	10.73	35'2"	10.90	35'9"	11.08	36'3"	11.24	36'10"								

Excavators

Range Dimensions

- 385B ● 385B L
- Japan Sourced



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

385B, 385B L with Reach Boom

385B, 385B L with GP Boom

Stick	4.4 m		5.5 m		2.92 m		3.7 m	
	m	ft	m	ft	m	ft	m	ft
A	10.81	35'6"	11.23	36'10"	9.13	29'11"	9.25	30'4"
B	15.94	52'4"	16.96	55'8"	13.25	43'6"	13.75	45'1"
C	10.42	34'2"	11.52	37'10"	8.00	26'3"	8.68	28'6"
D	9.43	30'11"	10.53	34'7"	7.09	23'3"	6.48	21'3"
E	10.31	33'10"	11.42	37'6"	7.85	25'9"	8.55	28'1"
F	9.51	31'2"	10.34	33'11"	7.14	23'5"	8.00	26'3"
G	14.75	48'5"	15.19	49'10"	13.36	43'10"	13.12	43'1"

385B, 385B L with GP Boom

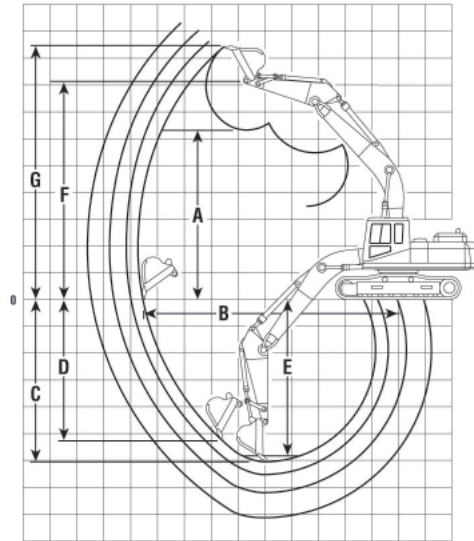
385B, 385B L with Mass Boom

Stick	4.4 m		5.5 m		2.92 m		3.4 m	
	m	ft	m	ft	m	ft	m	ft
A	9.55	31'4"	10.01	32'10"	8.43	27'8"	8.47	27'9"
B	14.40	47'3"	15.44	50'8"	12.45	40'10"	12.41	40'9"
C	9.37	30'9"	10.47	34'4"	7.42	24'4"	7.38	24'3"
D	8.50	27'11"	9.57	31'5"	5.85	19'2"	6.45	21'2"
E	9.26	30'5"	10.37	34'0"	7.28	23'11"	7.25	23'9"
F	8.64	28'4"	9.43	30'11"	6.21	20'4"	6.65	21'10"
G	13.53	44'5"	13.99	45'11"	12.53	41'1"	12.65	41'6"

Range Dimensions

- 385C L
- Belgium Sourced

Excavators



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

4

**385C L with
10 m (32'10") Reach Boom**

Stick	4.4 m		5.5 m		3.4 m		3.7 m	
	m	ft	m	ft	m	ft	m	ft
A	10.78	35'4"	11.20	36'9"	9.23	30'3"	9.25	30'4"
B	16.02	52'7"	17.04	55'11"	13.81	45'4"	13.75	45'1"
C	10.45	34'3"	11.55	37'11"	8.55	28'1"	8.68	28'6"
D	5.37	17'7"	6.30	20'8"	5.87	19'3"	7.11	23'4"
E	10.33	33'11"	11.45	37'7"	8.41	27'7"	8.55	28'1"
F	12.94	42'5"	13.37	43'10"	—	—	11.40	37'5"
G	14.51	47'7"	14.94	49'0"	13.58	44'7"	13.12	43'0"

**385C L with
8.4 m (27'7") General Purpose Boom**

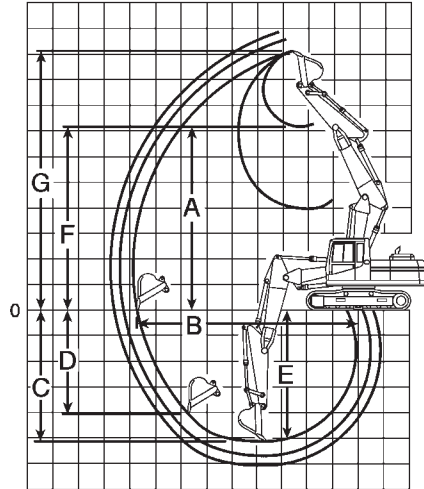
Stick	4.4 m		5.5 m		2.92 m		3.4 m	
	m	ft	m	ft	m	ft	m	ft
A	9.52	31'3"	9.98	32'9"	8.06	26'5"	8.23	27'0"
B	14.48	47'6"	15.52	50'11"	12.28	40'3"	12.70	41'8"
C	9.40	30'10"	10.50	34'5"	7.14	23'5"	7.62	25'5"
D	5.07	16'8"	6.00	19'8"	4.65	15'3"	4.92	16'2"
E	9.28	30'5"	10.40	34'1"	7.00	23'0"	7.49	24'7"
F	11.69	38'4"	12.14	39'10"	10.53	34'6"	10.70	35'1"
G	13.30	43'7"	13.76	45'2"	12.54	41'2"	12.68	41'7"

**385C L with
7.25 m (23'9") Mass Boom**

Excavators

Range Dimensions

- 312C ● 312C L ● 315B L
- France Sourced



Variable Adjustable Boom Digging Envelope

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0\") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

312C, 312C L

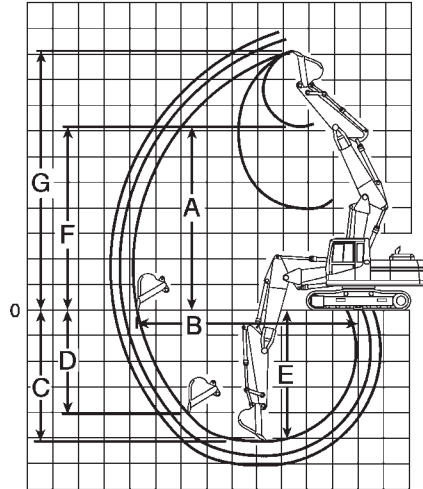
Stick	2.1 m		2.5 m		3 m	
	m	ft	m	ft	m	ft
A	6.82	22'5"	7.18	23'7"	7.57	24'10"
B	7.96	26'1"	8.34	27'4"	8.80	28'10"
C	4.84	15'11"	5.24	17'2"	5.73	18'10"
D	2.88	9'5"	3.18	10'5"	3.63	11'11"
E	4.71	15'5"	5.12	16'9"	5.61	18'5"
F	8.05	26'5"	8.41	27'7"	8.81	28'11"
G	9.28	30'5"	9.64	31'7"	10.04	32'11"

315B L

Stick	1.85 m		2.25 m		2.6 m		3.1 m	
	m	ft	m	ft	m	ft	m	ft
A	7.11	23'4"	7.24	23'9"	7.71	25'3"	7.75	25'5"
B	7.90	25'11"	8.20	26'11"	8.61	28'3"	8.92	29'3"
C	2.14	7'0"	2.72	8'11"	2.23	7'4"	3.15	10'4"
D	2.97	9'9"	3.35	11'0"	3.71	12'2"	4.18	13'8"
E	4.51	14'9"	4.87	16'0"	5.26	17'3"	5.68	18'7"
F	8.21	26'11"	8.41	27'7"	8.82	28'11"	8.95	29'4"
G	9.38	30'9"	9.62	31'7"	9.99	32'9"	10.16	33'4"

- Range Dimensions
- 318B L ● 318B LN
- France Sourced

Excavators



Variable Adjustable Boom Digging Envelope

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.44 m (8'0") level bottom (straight clean up)
- F** Maximum bucket hinge pin height
- G** Maximum height, to bucket teeth at highest arc

4

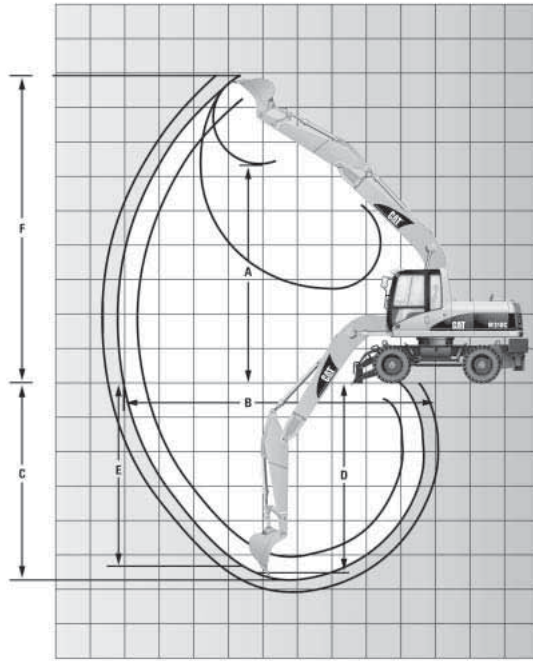
318B L, 318B LN

Stick	1.8 m		2.25 m		2.7 m		3.2 m	
	m	ft	m	ft	m	ft	m	ft
A	6.61	21'8"	6.99	22'11"	7.40	24'3"	7.78	25'6"
B	8.24	27'0"	8.68	28'6"	9.14	30'0"	9.60	31'6"
C	5.02	16'6"	5.48	18'0"	5.93	19'5"	6.33	20'9"
D	3.66	11'10"	4.36	14'4"	4.90	16'1"	4.26	14'0"
E	4.90	16'1"	5.36	17'7"	5.82	19'1"	6.24	20'6"
F	3.47	11'5"	3.92	12'10"	4.38	14'5"	—	—
G	9.68	31'9"	10.08	33'1"	10.49	34'5"	10.85	35'7"

Excavators

Range Dimensions

- M313C ● M315C



Hydraulic Adjustable Boom Digging Envelope

- Standard 10 × 20 tires and undercarriage
- General purpose bucket

KEY:

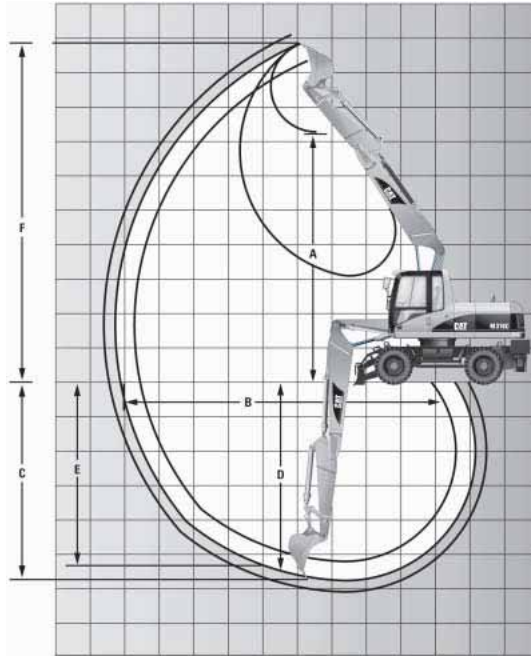
- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.5 m (8'2\") level bottom
- F** Maximum height, to bucket teeth at highest arc

M313C

Stick	2 m	6'7"	2.3 m	7'7"	2.6 m	8'6"
Bucket	0.64 m ³	0.84 yd ³	0.64 m ³	0.84 yd ³	0.56 m ³	0.73 yd ³
	m	ft	m	ft	m	ft
A	7.06	23'2"	7.21	23'8"	7.44	24'5"
B	8.33	27'4"	8.58	28'2"	8.88	29'2"
C	5.01	16'5"	5.30	17'5"	5.60	18'4"
D	3.68	12'1"	3.81	12'6"	4.10	13'5"
E	4.76	15'7"	5.07	16'8"	5.39	17'8"
F	9.52	31'3"	9.67	31'9"	9.91	32'6"

M315C

Stick	2.1 m	6'11"	2.4 m	7'10"	2.6 m	8'6"
Bucket	0.815 m ³	1.07 yd ³	0.7 m ³	0.92 yd ³	0.7 m ³	0.92 yd ³
	m	ft	m	ft	m	ft
A	7.10	23'4"	7.28	23'11"	7.44	24'5"
B	8.77	28'9"	9.04	29'8"	9.24	30'4"
C	5.24	17'2"	5.54	18'2"	5.74	18'10"
D	4.07	13'4"	4.28	14'1"	4.46	14'8"
E	5.22	17'2"	5.53	18'2"	5.74	18'10"
F	9.91	32'6"	10.09	33'1"	10.25	33'8"



Hydraulic Adjustable Boom Digging Envelope

- Standard 10 × 20 tires and undercarriage
- General purpose bucket

4

KEY:

- A** Maximum loading height of bucket with teeth
- B** Maximum reach at ground level
- C** Maximum digging depth
- D** Maximum vertical wall
- E** Maximum depth of cut for 2.5 m (8'2") level bottom
- F** Maximum height, to bucket teeth at highest arc

M316C

	2.1 m		2.4 m		2.6 m		2.2 m		2.5 m		2.8 m	
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
Stick	2.1 m	6'11"	2.4 m	7'10"	2.6 m	8'6"	2.2 m	7'3"	2.5 m	8'2"	2.8 m	9'2"
Bucket	0.815 m ³	1.07 yd ³	0.815 m ³	1.07 yd ³	0.7 m ³	0.92 yd ³	0.91 m ³	1.19 yd ³	0.91 m ³	1.19 yd ³	0.7 m ³	0.92 yd ³
A	7.11	23'4"	7.30	23'11"	7.46	24'6"	6.85	22'6"	7.12	23'4"	7.33	24'1"
B	8.76	28'9"	9.04	29'8"	9.24	30'4"	8.82	28'11"	9.14	30'0"	9.43	30'11"
C	5.43	17'10"	5.72	18'9"	5.92	19'5"	5.60	18'4"	5.90	19'4"	6.20	20'4"
D	4.05	13'3"	4.27	14'0"	4.44	14'7"	3.92	12'10"	4.29	14'1"	4.58	15'0"
E	5.20	17'1"	5.51	18'1"	5.72	18'9"	5.39	17'8"	5.70	18'8"	6.01	19'9"
F	9.92	32'7"	10.10	33'2"	10.27	33'8"	9.58	31'5"	9.87	32'5"	10.08	33'1"

M322C

	2.2 m		2.5 m		2.9 m	
	m	ft	m	ft	m	ft
Stick	2.2 m	7'3"	2.5 m	8'2"	2.9 m	9'6"
Bucket	1.04 m ³	1.36 yd ³	0.805 m ³	1.05 yd ³	0.805 m ³	1.05 yd ³
A	7.16	23'6"	7.21	23'8"	7.51	24'8"
B	9.32	30'7"	9.56	31'4"	9.95	32'8"
C	5.78	19'0"	6.08	19'11"	6.47	21'3"
D	4.36	14'4"	4.38	14'4"	4.75	15'7"
E	5.56	18'3"	5.88	19'3"	6.29	20'8"
F	10.18	33'5"	10.19	33'5"	10.49	34'5"

EXCAVATOR LIFTING CAPACITY

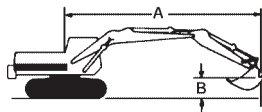
On many sewer jobs an excavator must lift and swing heavy pipe and manboxes in and out of the trench, place manholes and unload material from trucks. In some situations the excavator’s lift requirements may be so critical that they determine the size excavator selected.

An excavator’s lift capacity depends on its weight, center of gravity, the lift point position (see sketches) and its hydraulic capability. An excavator’s lifting capability for any given lift position is limited by its tipping stability or hydraulic capacity.

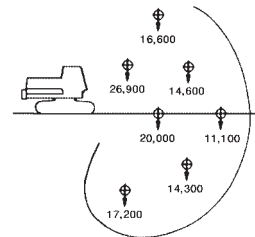
Changes in boom, stick and bucket position affect attachment geometry and can drastically change a machine’s hydraulic lifting capacity. Caterpillar defines excavator lifting capabilities using the following SAE guidelines.

Tipping Conditions — An excavator is considered to be at the tipping point when the weight in the bucket acting at the center of gravity causes the rear rollers to lift clear of the track rails. Suspended loads are considered to be hung from the back of the excavator’s bucket or bucket linkage by a sling or chain. Weights of attachments, slings or auxiliary lifting devices are considered part of the suspended load.

Thus, the tipping load is defined as the load producing a tipping condition at a specified radius. The load radius shall be measured as the horizontal distance from the axis of upper structure rotation (before loading) to the center of vertical load line with load applied (dimension A, below). The rating height is based on the vertical distance of the bucket lift point to the ground (dimension B).



- A. Radius from swing centerline
- B. Bucket lift point height



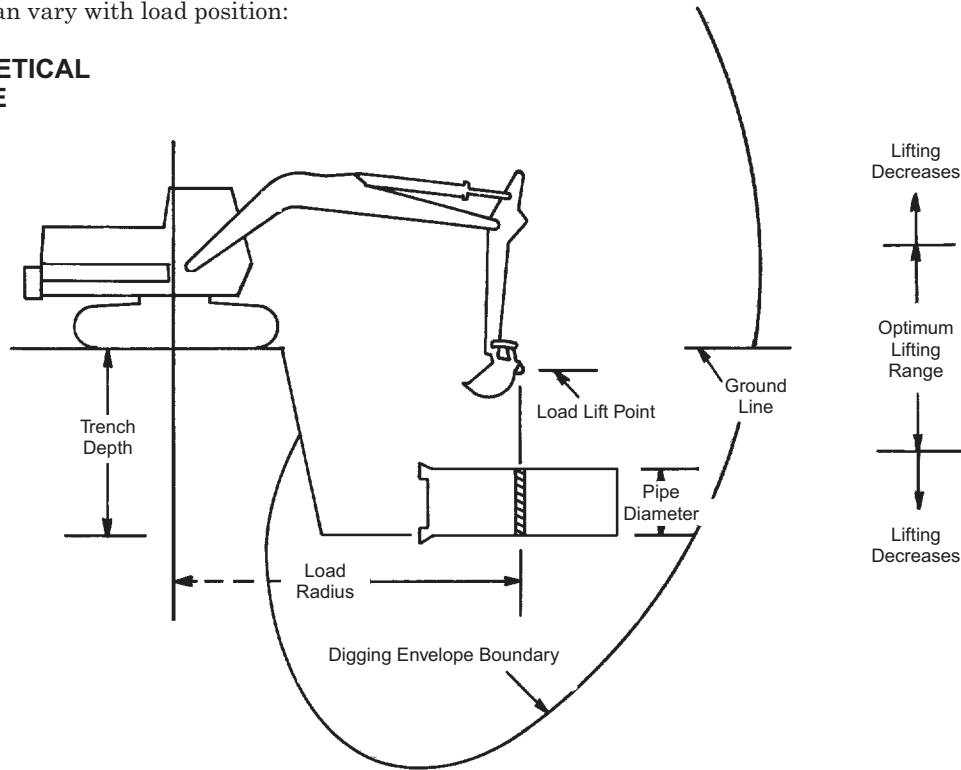
HYPOTHETICAL MACHINE

Rated Hoist Load — The rated load is established using the vertical distance of the lifting point to the ground and the radius of load. Ratings for the ability of a specific machine attachment to lift a load slung from the designated bucket are defined as follows:

- a. The rated load will not exceed 75% of the tipping load.
- b. The rated load will not exceed 87% of the excavator’s hydraulic capacity. This means the machine should be able to lift 115% of the rated load.
- c. The rated load will not exceed the machine’s structural capability.

This drawing shows how an excavator's lifting capacity can vary with load position:

HYPOTHETICAL MACHINE



Tips for Lifting Above Ground:

Get the load as close to the excavator as possible.
Use a cable short enough and position the excavator so as to put the load lift point in the “optimum lifting range” (see sketch).

Problem: Long reach cable — Can't lift.

Solution: Shorten reach and cable — Can lift.

Tips for Lifting Below Grade:

Use a cable for sufficient length to position the load lift point in the “optimum lifting range”.

Problem: Short cable, deep trench — Can't lift.

Solution: Lengthen cable to locate bucket hinge pin in optimum lifting area — Can lift.

GROUND LEVEL LIFTING CAPACITIES

The lifting capacities that are shown on the following pages are with the lifting point at ground level. These capacities are rated according to SAE Std. No. J1097.

(For lifting capacities at other heights or with other tools, refer to current Specification Sheets.)

Excavators

Lifting Capacity At Ground Level

● 301.5 ● 301.5 CR

301.5 ● Rubber Track ● Canopy ● Blade Raised

Stick	Bucket	1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
890 mm 2'11"	400 mm 16"	kg lb	—	—	620 1360	420 920	410 900	280 610	300 660	210 460	230 500	160 350	190 410	140 300
1090 mm 3'6"	400 mm 16"	kg lb	350 770	350 770	590 1300	390 860	380 830	270 590	280 610	200 440	220 480	150 330	160 350	120 260

301.5 ● Rubber Track ● Canopy ● Blade Lowered

Stick	Bucket	1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
890 mm 2'11"	400 mm 16"	kg lb	—	—	680 1490	490 1080	690 1520	330 720	490 1080	240 520	390 860	190 410	310 680	150 330
1090 mm 3'6"	400 mm 16"	kg lb	350 770	350 770	690 1520	460 1010	680 1490	310 680	480 1050	230 500	380 830	170 370	290 630	130 280

301.5 CR ● Reach Boom ● Standard Gauge ● Blade Raised

Stick		1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
925 mm 3'0"	kg lb	—	—	560 1200	290 620	350 740	190 390	250 530	130 280	190 400	100 210	140 310	70 160
1125 mm 3'8"	kg lb	—	—	550 1180	280 600	340 740	180 390	240 520	130 270	180 390	100 200	130 270	60 130

301.5 CR ● Reach Boom ● Standard Gauge ● Blade Lowered

Stick		1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
925 mm 3'0"	kg lb	—	—	690* 1550*	330 720	890* 1900*	220 460	630* 1350*	150 330	480* 1040*	120 240	310* 690*	90 190
1125 mm 3'8"	kg lb	—	—	730* 1680*	330 700	870* 1870*	210 450	610* 1310*	150 320	470* 1020*	110 240	270* 590*	80 160

301.5 CR ● Reach Boom ● Expanded Gauge ● Blade Raised

Stick		1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
925 mm 3'0"	kg lb	—	—	560 1200	580 1240	350 740	360 770	250 530	260 550	190 400	190 410	140 310	150 320
1125 mm 3'8"	kg lb	—	—	550 1180	570 1220	340 740	360 760	240 520	250 540	180 390	190 410	130 270	130 290

301.5 CR ● Reach Boom ● Expanded Gauge ● Blade Lowered

Stick		1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
925 mm 3'0"	kg lb	—	—	690* 1550*	640 1370	890* 1900*	400 850	630* 1350*	280 600	480* 1040*	210 450	310* 690*	160 350
1125 mm 3'8"	kg lb	—	—	730* 1680*	630 1350	870* 1870*	390 840	610* 1310*	280 590	470* 1020*	210 450	270* 590*	150 320

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
 ● 301.6 ● 301.8 ● 302.5

Excavators

301.6 ● Rubber Track ● Canopy ● Blade Raised

Stick	Bucket	1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
1090 mm 3'6"	400 mm 16"	kg 770	350 770	350 770	690 1520	440 970	490 1080	300 660	350 770	220 480	270 590	170 370	210 460	130 280

301.6 ● Rubber Track ● Canopy ● Blade Lowered

Stick	Bucket	1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
1090 mm 3'6"	400 mm 16"	kg 770	350 770	350 770	690 1520	510 1120	670 1470	340 750	470 1030	250 550	370 810	190 410	280 610	150 330

301.8 ● Rubber Track ● Canopy ● Blade Lowered

Stick	Bucket	1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
890 mm 2'11"	400 mm 16"	kg —	—	680 1490	680 1490	680 1490	530 1160	490 1080	380 830	380 830	300 660	300 660	250 550	
1090 mm 3'6"	400 mm 16"	kg 770	350 770	350 770	690 1520	690 1520	670 1470	530 1160	470 1030	380 830	370 810	290 630	280 610	220 480

301.8 ● Rubber Track ● Canopy ● Blade Raised

Stick	Bucket	1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
890 mm 2'11"	400 mm 16"	kg —	—	680 1490	680 1490	480 1050	480 1050	350 770	350 770	270 590	270 590	220 480	220 480	
1090 mm 3'6"	400 mm 16"	kg 770	350 770	350 770	690 1520	690 1520	470 1030	480 1050	340 750	350 770	270 590	270 590	200 480	200 480

302.5 ● Rubber Track ● Canopy ● Blade Raised

Stick	Bucket	1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1100 mm 3'6"	400 mm 16"	kg 740*	740*	1020 2240	750 1650	710 1560	540 1190	540 1190	420 920	430 940	340 740	—	—	360 600	280 310
1400 mm 4'6"	400 mm 16"	kg 1690	770 1690	1010 2220	750 1650	710 1560	540 1190	540 1190	410 900	430 940	330 720	350 770	270 590	320 700	250 550

302.5 ● Rubber Track ● Canopy ● Blade Lowered

Stick	Bucket	1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1100 mm 3'6"	400 mm 16"	kg 740*	740*	1470 3240	830 1830	1150 2535	600 1323	890 1962	460 1014	710 1565	370 816	—	—	600 1323	310 683
1400 mm 4'6"	400 mm 16"	kg 1690	770 1690	1530 3370	830 1830	1140 2510	590 1300	870 1910	460 1010	700 1540	360 790	590 1300	300 660	540 1190	270 590

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- 303 SR ● 303 CR

303 SR ● Reach Boom ● Blade Raised

Stick		1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1200 mm 3'11"	kg lb	898*	898*	1405*	1023	1020	657	702	453	523	341	407	264	—	—	382	247
1600 mm 5'3"	kg lb	827*	827*	1445*	1051	1033	646	708	457	524	341	404	261	319	202	317	200

303 SR ● Reach Boom ● Blade Lowered

Stick		1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1200 mm 3'11"	kg lb	898*	898*	1403*	1256	1656*	765	1369*	541	1114*	407	926*	317	—	—	880	297
1600 mm 5'3"	kg lb	827*	827*	1443*	1265	1730*	775	1543*	545	1093*	407	920*	314	689*	246	639*	244

303 CR ● Blade Raised

Stick		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"		4.5 m 15'0"		At Max. Reach			
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side		
1260 mm 4'2"	kg lb	1050	750	750	550	550	450	450	350	350	300	300	250	300	250	300	250
		2315	1653	1654	1213	1213	992	992	772	772	661	661	551	661	551	661	551
1560 mm 5'1"	kg lb	1000	750	700	550	550	400	400	350	350	250	300	200	250	200	250	200
		2205	1653	1543	1213	1213	882	882	772	772	551	661	441	551	441	551	441

303 CR ● Blade Lowered

Stick		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"		4.5 m 15'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1260 mm 4'2"	kg lb	1250*	750	1700*	550	1250*	450	1000*	350	850*	300	700*	250	650*	250
		2756*	1653	3748*	1213	2756*	992	2205*	772	1874*	661	1543*	551	1433*	551
1560 mm 5'1"	kg lb	1350*	750	1650*	550	1200*	400	950*	350	800*	250	700*	200	600*	200
		2976*	1653	3638*	1213	2646*	882	2094*	772	1764*	551	1543*	441	1323*	441

*Load limited by hydraulic capacity rather than tipping.

304 CR ● Reach Boom ● Blade Raised

Stick		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1260 mm 4'2"	kg lb	—	—	1450*	1450	1250	1000	950	750	750	600	600	500
				3350*	3100*	2700	2150	2000	1600	1600	1300	1300	1050
1560 mm 5'1"	kg lb	900*	900*	1400*	1400	1250	950	900	750	700	600	600	450
		2050*	2050*	3200*	3000	2650	2050	1950	1550	1550	1250	1250	1000

4

Stick		4.5 m 15'0"		5 m 16'5"		At Max. Reach	
		Front	Side	Front	Side	Front	Side
1260 mm 4'2"	kg lb	500	400	—	—	400	350
		1100	900			850	700
1560 mm 5'1"	kg lb	500	400	400	350	350	250
		1000	800	850	700	700	550

304 CR ● Reach Boom ● Blade Lowered

Stick		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1260 mm 4'2"	kg lb	—	—	1450*	1450*	2150*	1150	2350*	850	2000*	700	1650*	550
				3350*	3350*	4700*	2500	5200*	1850	4250*	1500	3550*	1200
1560 mm 5'1"	kg lb	900*	900*	1400*	1400*	2000*	1150	2250*	850	1900*	650	1500*	550
		2050*	2050*	3200*	3200*	4450*	2400	5000*	1800	4000*	1450	3350*	1150

Stick		4.5 m 15'0"		5 m 16'5"		At Max. Reach	
		Front	Side	Front	Side	Front	Side
1260 mm 4'2"	kg lb	1400*	500	—	—	900*	400
		3000*	1000			1900*	800
1560 mm 5'1"	kg lb	1350*	450	1200*	400	750*	300
		2900*	950	2550*	800	1550*	650

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- 305 SR ● 305 CR

305 SR ● Reach Boom ● Blade Raised

Stick		1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1430 mm 4'8"	kg lb	—	—	1350* 3000*	1350* 3000*	2150* 4900*	1750 3700	1650 3500	1200 2600	1250 2600	950 1950	950 2050	750 1550
1830 mm 6'0"	kg lb	950* 2100*	950* 2100*	1350* 2950*	1350* 2950*	2200* 5050*	1750 3750	1650 3550	1250 2650	1250 2650	950 2000	1000 2100	750 1600

Stick		4 m 13'1"		4.5 m 15'0"		5 m 16'5"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side
1430 mm 4'8"	kg lb	800 1650	600 1250	650 1400	500 1050	—	—	500 1050	400 800
1830 mm 6'0"	kg lb	800 1700	600 1300	650 1400	500 1050	550 1150	400 850	450 900	300 700

305 SR ● Reach Boom ● Blade Lowered

Stick		1 m 3'3"		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1430 mm 4'8"	kg lb	—	—	1350* 3000*	1350* 3000*	2150* 4900*	1750 3700	2200* 4800*	1200 2600*	1800* 3900*	950 2000	1550* 3300*	750 1550
1830 mm 6'0"	kg lb	950* 2100*	950* 2100*	1350* 2950*	1350* 2950*	2200* 5050*	1750 3750	2200* 4750*	1250 2650*	1800* 3850*	950 2000	1500* 3200*	750 1600

Stick		4 m 13'1"		4.5 m 15'0"		5 m 16'5"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side
1430 mm 4'8"	kg lb	1300* 2800*	600 1300	1150* 2450*	500 1050	—	—	900* 1950*	400 800
1830 mm 6'0"	kg lb	1300* 2750*	600 1300	1150* 2400*	500 1050	1000* 2150*	400 850	800* 1800*	300 700

305 CR ● Blade Raised

Stick		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"		4.5 m 15'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1430 mm 4'8"	kg lb	—	—	1800* 3968*	1800* 3968*	1550 3417	1300 2866	1150 2535	1000 2205	900 1984	800 1764	750 1653	650 1433	650 1433	550 1213	550 1213	450 992
1830 mm 6'0"	kg lb	1250* 2756*	1250* 2756*	1800* 3968*	1800* 3968*	1550 3417	1300 2866	1150 2535	1000 2205	900 1984	800 1764	750 1653	650 1433	650 1433	550 1213	500 1102	400 882

305 CR ● Blade Lowered

Stick		1.5 m 5'0"		2 m 6'7"		2.5 m 8'2"		3 m 10'0"		3.5 m 11'6"		4 m 13'1"		4.5 m 15'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1430 mm 4'8"	kg lb	—	—	1800* 3968*	1800* 3968*	2500* 5512*	1300 2866	2550* 5622*	1000 2205	2100* 4630*	800 1764	1750* 3858*	650 1433	1500* 3307*	550 1213	1300* 2866*	450 992
1830 mm 6'0"	kg lb	1250* 2756*	1250* 2756*	1800* 3968*	1800* 3968*	2450* 5401*	1300 2866	2550* 5622*	1000 2205	2050* 4519*	800 1764	1700* 3748*	650 1433	1450* 3197*	550 1213	1150* 2535*	400 882

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
 • 307C • 307C SB

Excavators

307C • Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
1665 mm 5'6"	750 mm 2'6"	kg lb	2550 5450	2050 4350	1350 2900	2200 2350	—	—	700* 1500*	700* 1500*
2210 mm 7'3"	600 mm 2'0"	kg lb	2550 5450	2050 4350	1350 2900	1100 2350	—	—	750* 1650*	650 1350

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307C SB • Reach Boom • Blade Raised

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
1665 mm 5'6"	750 mm 2'6"	kg lb	2650 5700	2100 4500	1450 3100	1100 2350	950 2050	750 1650	850 1800	650 1450
2210 mm 7'3"	600 mm 2'0"	kg lb	2650 5700	2100 4450	1450 3050	1150 2450	950 1950	750 1550	700 1550	550 1250

307C SB • Reach Boom • Blade Lowered

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
1665 mm 5'6"	750 mm 2'6"	kg lb	2800* 6450*	2250 4850	2750* 5850*	1250 2700	1650* 3550*	800 1800	1050* 2250*	700 1550
2210 mm 7'3"	600 mm 2'0"	kg lb	2800* 6550*	2250 4800	2550* 5350*	1250 2650	1750* 3800*	800 1700	950* 2100*	600 1350

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

● 308C SR ● 308C CR ● 311C U ● 312C

308C SR ● Reach Boom ● Blade Raised

Stick	Bucket		1.5 m 5'0"		3 m 10'0"		4.5 m 15'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
1750 mm	1070 mm	kg	1600*	1600*	2700	2200	1400	1200	900	750
5'9"	3'6"	lb	3527*	3527*	5952	4850	3086	2646	1984	1653

308C SR ● Reach Boom ● Blade Lowered

Stick	Bucket		1.5 m 5'0"		3 m 10'0"		4.5 m 15'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
1750 mm	1070 mm	kg	1600*	1600*	4100*	2200	2650*	1200	1450*	750
5'9"	3'6"	lb	3527*	3527*	9039*	4850	5842	2646	3197*	1653

308C CR ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
1665 mm	750 mm	kg	2900	2250	1550	1200	—	—	750*	750*
5'6"	2'6"	lb	6200	4800	3250	2600	—	—	1600*	1600*
2210 mm	600 mm	kg	2900	2250	1500	1200	—	—	800*	700
7'3"	2'0"	lb	6200	4800	3250	2550	—	—	1750*	1500

311C U ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2250 mm	760 mm	kg	6550	4500	3300	2400	2100	1500	—	—	1200*	1150
7'5"	2'6"	lb	13,950	9600	7100	5100	4450	3200	—	—	2600*	2500
2800 mm	610 mm	kg	6600	4550	3350	2400	2100	1500	—	—	950*	950*
9'2"	2'0"	lb	14,100	9750	7100	5150	4450	3200	—	—	2050*	2050

312C ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm	914 mm	kg	6200*	5050	4100	2750	2600	1800	—	—	1850*	1300
6'11"	3'0"	lb	14,400*	10,850	8800	5900	5600	3800	—	—	4000*	2850
2500 mm	914 mm	kg	6750*	5200	4150	2800	2650	1800	—	—	1500*	1200
8'2"	3'0"	lb	15,650*	11,100	8900	6000	5650	3850	—	—	3300*	2600
3000 mm	914 mm	kg	7800*	5200	4150	2800	2650	1800	1800	1200	1400*	1050
9'10"	3'0"	lb	17,800	11,150	9800	6000	5600	3800	4000	2650	3050*	2300

France Sourced

312C ● 500 mm (20") Track Shoes ● 1100 mm (43") Bucket

Stick			3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm		kg	7050*	5480	4390	3010	2920	2060	—	—	2330*	1810
6'11"		lb	15,560	12,090	9690	6640	6440	4540	—	—	5140	3990
2500 mm		kg	7130*	5580	4500	3110	2960	2100	—	—	1730*	1470
8'2"		lb	15,740	12,310	9930	6860	6530	4630	—	—	3810	3240
3000 mm		kg	8010*	5580	4490	3100	2940	2070	2130	1510	1620*	1330
9'10"		lb	17,680	12,310	9910	6840	6490	4560	4700	3330	3570	2930

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
● 312C ● 312C L

Excavators

France Sourced

312C ● 500 mm (20") Track Shoes ● 0.68 m³ (0.89 yd³) Bucket ● VA Boom

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	8540*	6070	4790	3340	3010	2110	—	—	1750*	1510
		18,827	13,882	10,560	7363	6636	4652			3858	3329
2500 mm 8'2"	kg lb	8100*	6220	4870	3400	3040	2140	—	—	1510*	1420
		17,857	13,713	10,736	7496	6702	4718			3329	3131
3000 mm 9'10"	kg lb	8800*	6350	4670	3440	3030	2130	2130	1480	1440*	1280
		19,400	13,999	10,296	7584	6680	4696	4696	3263	3175	2822

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312C L ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	1067 mm 3'6"	kg lb	6150*	5250	4850	2800	3050	1800	—	—	1800*	1300
			14,400*	11,300	10,450	6100	6600	3950			3950	2950
2500 mm 8'2"	1067 mm 3'6"	kg lb	6700*	5350	4900	2850	3100	1850	—	—	1500*	1200
			15,600*	11,500	10,550	6200	6650	4000			3300*	2700
3000 mm 9'10"	914 mm 3'0"	kg lb	7800*	5450	4950	2900	3100	1850	2100	1250	1400*	1100
			18,100*	11,650	10,600	6250	6650	3950	4650	2800	3050*	2400

France Sourced

312C L ● 600 mm (24") Track Shoes ● 1100 mm (43") Bucket

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	6550*	5960	5200	3330	3400	2260	—	—	2000*	1710
		14,450	13,150	11,470	7350	7500	4980			4410	3770
2500 mm 8'2"	kg lb	7130*	6040	5250	3370	3420	2280	—	—	1730*	1600
		15,730	13,330	11,580	7430	7540	5030			3810	3530
3000 mm 9'10"	kg lb	8010*	6050	5250	3360	3400	2260	2390*	1650	1620*	1450
		17,680	13,350	11,580	7410	7500	4980	5270	3640	3570	3200

312C L ● 600 mm (24") Track Shoes ● 0.68 m³ (0.89 yd³) Bucket ● VA Boom

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	8540*	6220	5440*	3420	3470	2170	—	—	1750*	1560
		18,827	13,713	11,993	7540	7650	4784			—	—
2500 mm 8'2"	kg lb	8100*	6380	5420	3490	3510	2200	—	—	1510*	1460
		17,857	14,065	11,949	7694	7738	4850			—	—
3000 mm 9'10"	kg lb	8800*	6510	5440	3530	3500	2190	2460	1530	1440*	1320
		19,400	14,352	11,993	7782	7716	4828	5423	3373	3175	2910

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

● 313C SR ● 313C CR ● 314C CR ● 314C LCR ● 315C

313C SR ● Reach Boom ● Blade Raised

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
2130 mm 7'0"	895 mm 2'11"	kg lb	5450* 9950*	4150 8850	3400 7250	2250 4750	2150 4550	1400 3000	1750 3800	1150 2500

313C SR ● Reach Boom ● Blade Lowered

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
2130 mm 7'0"	895 mm 2'11"	kg lb	5450* 9950*	4750 9950*	4950* 10,700*	2500 5400	3550* 7650*	1600 3400	2200* 4800*	1300 2800

313C CR ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2500 mm 8'2"	895 mm 2'11"	kg lb	4400* 9900*	4300 9200	3600 7700	2250 4850	2300 4850	1450 3100	1600 3450	1000 2150	1500 3300	950 2000
3000 mm 9'10"	700 mm 2'4"	kg lb	5000* 11,000*	4300 9150	3600 7750	2300 4950	2300 4900	1450 3100	1600 3400	1000 2100	1350 3000	850 1800

314C CR ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2500 mm 8'2"	910 mm 3'0"	kg lb	6600* 15,300*	5150 11,000	4250 9050	2750 5900	2700 5750	1800 3800	—	—	1550* 3350*	1200 2600
3000 mm 9'10"	760 mm 2'6"	kg lb	7550* 17,550*	5200 11,100	4250 9650	3000 6450	2700 5800	1800 3800	1900 4150	1200 2650	1400* 3100*	1050 2300

314C LCR ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2500 mm 8'2"	910 mm 3'0"	kg lb	6600* 15,300*	5200 11,100	4900 10,550	2800 6000	3100 6650	1800 3850	—	—	1500* 3300*	1200 2600
3000 mm 9'10"	760 mm 2'6"	kg lb	7550* 17,450*	5200 11,200	4950 10,550	2800 6000	3100 6650	1800 3800	2150 4700	1200 2650	1400* 3050*	1050 2300

315C ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1850 mm 6'1"	1220 mm 4'0"	kg lb	11,050* 24,350*	11,050*	5500 11,750	3500 7550	3500 7500	2300 4900	—	—	2500 5450	1600 3500
2250 mm 7'5"	1070 mm 3'6"	kg lb	5450* 12,550*	5450* 12,550*	5600 12,000	3650 7800	3550 7600	2350 5000	—	—	2550* 4900*	1500 3300
2600 mm 8'6"	1070 mm 3'6"	kg lb	5950* 13,700*	5950* 13,700*	5650 12,100	3650 7850	3600 7700	2400 5100	2500 5500	1650 3600	1950* 4300*	1400 3100
3100 mm 10'2"	770 mm 2'6"	kg lb	6950* 15,900*	6800 14,650	5650 12,100	3650 7850	3550 7650	2350 5000	2500 5300	1600 3400	1750 3800*	1250 2750

*Load limited by hydraulic capacity rather than tipping.

315C L ● Reach Boom

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1850 mm 6'1"	1220 mm 4'0"	kg lb	11,050* 11,050*	6550 14,100	3650 7850	4150 8900	2400 5100	—	—	2700* 5950*	1700 3700
2250 mm 7'5"	1070 mm 3'6"	kg lb	5450* 12,550*	6700 14,350	3750 8100	4200 9050	2450 5200	—	—	2250* 4900*	1550 3450
2600 mm 8'6"	1070 mm 3'6"	kg lb	5880* 13,500*	6700 14,400	3800 8100	4200 9050	2450 5200	2950 6450	1700 3650	1900* 4200*	1450 3150
3100 mm 10'2"	770 mm 2'6"	kg lb	6950* 15,900*	6750 14,450	3800 8150	4250 9050	2450 5250	2950 6300	1700 3600	1750* 3800*	1300 2900

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France Sourced

315C L ● 500 mm (20") Track Shoes ● 0.93 m³ (1.22 yd³) Bucket ● One Piece Boom

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1850 mm 6'1"	kg lb	—	—	6440 14,198	3580 7893	4050 8929	2300 5071	—	—	2480* 5490	1570 3460
2250 mm 7'5"	kg lb	5320* 11,729	5320* 11,729	6540 14,418	3670 8091	4090 9017	2350 5181	—	—	2040* 4490	1440 3175
2600 mm 8'6"	kg lb	5750* 12,677	5750* 12,677	6570 14,484	3690 8135	4090 9017	2340 5159	2820 6217	1580 3480	1740 3830	1320 2910
3100 mm 10'2"	kg lb	6750* 14,880	6750* 14,880	6570 14,480	3680 8110	4070 8970	2320 5110	2790 6150	1540 3390	1520* 3350	1160 2550

315C L ● 500 mm (20") Track Shoes ● 0.93 m³ (1.22 yd³) Bucket ● VA Boom

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1850 mm 6'1"	kg lb	11,450* 25,243	7480 16,491	6940 15,300	3960 8730	4130 9105	2350 5181	—	—	2530* 5578	1550 3417
2250 mm 7'5"	kg lb	10,800* 23,809	7710 16,998	6740* 14,859	4050 8929	4180 9215	2390 5269	—	—	2090* 4608	1430 3153
2600 mm 8'6"	kg lb	10,620* 23,413	7840 17,284	6770 14,925	4100 9039	4190 9237	2400 5291	2810 6195	1540 3395	1780* 3924	1300 2866
3100 mm 10'2"	kg lb	9710* 21,407	8010 17,659	6810 15,013	4150 9149	4180 9215	2540 5600	2780 6129	1510 3329	1550* 3417	1130 2491

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- 318C ● 318C L

France Sourced

318C ● 600 mm (24") Track Shoes ● 0.8 m³ (1.05 yd³) Bucket

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1800 mm 5'10"	kg lb	—	—	7670 16,909	4540 10,009	4830 10,648	2940 6482	—	—	3190 7033	1940 4277
2250 mm 7'5"	kg lb	—	—	7770 17,130	4620 10,185	4870 10,737	2980 6570	—	—	2920 6437	1770 3902
2700 mm 8'10"	kg lb	5080* 11,199	5080* 11,199	7790 17,174	4640 10,229	4850 10,692	2950 6504	3350 7385	2950 6504	2170* 4784	1550 3417
3200 mm 10'6"	kg lb	5140* 11,332	5140* 11,332	7850 17,306	4680 10,318	4680 10,318	2960 6564	3350 7385	2010 4431	1800* 3968	1370 3020

318C ● 600 mm (24") Track Shoes ● 0.8 m³ (1.05 yd³) Bucket ● VA Boom

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1800 mm 5'10"	kg lb	13 650* 30,093	9820* 21,649	8440 18,607	5140 11,332	4970 10,957	3020 6658	—	—	3300 7270	1970 4340
2250 mm 7'5"	kg lb	13 000* 28,660	10 100 22,267	8040 17,725	5250 11,574	5010 11,045	3060 6746	—	—	3010 6630	1790 3940
2700 mm 8'10"	kg lb	12 030* 26,522	10 340 22,796	8090 17,835	5310 11,707	5010 11,045	3050 6724	3350 7385	1980 4360	2200* 4850	1570 3460
3200 mm 10'6"	kg lb	12 940* 28,520	10 620* 23,410	8210 18,100	5440 11,990	5060 11,150	3330 7340	3350 7385	2060 4540	1820* 4010	1380 3040

Japan Sourced

318C L ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1800 mm 5'11"	1230 mm 4'0"	kg lb	—	—	8770 18,810	4680 10,070	5440 11,680	3000 6440	—	—	3590 7920	1950 4300
2250 mm 7'5"	1070 mm 3'6"	kg lb	—	—	8900* 19,140	4830 10,380	5530 11,880	3090 6840	—	—	3100* 6820*	1830 4030
2700 mm 8'10"	930 mm 3'1"	kg lb	5100* 11,780*	5100* 11,780*	8770* 18,960*	4910 10,560	5580 11,990	3140 6740	3870 8300	2150 4610	2170* 4780*	1670 3680
3200 mm 10'6"	770 mm 2'6"	kg lb	5150* 11,910*	5150* 11,910*	8480* 18,330*	4970 10,690	5620 12,060	3170 6800	3890 8340	2170 4640	1810* 4000*	1500 3300

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
 ● 318C L ● 318C LN

Excavators

France Sourced

318C L ● 600 mm (24") Track Shoes ● 0.8 m³ (1.05 yd³) Bucket

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1800 mm 5'10"	kg lb	13 680*	10 140	9020*	5280	6050	3110	—	—	3830*	2010
		30,159	22,355	19,886	11,640	13,338	6856			8444	4431
2250 mm 7'5"	kg lb	13 020*	10 420	8980*	5390	6090	3150	—	—	3080*	1380
		28,704	22,972	19,797	11,883	13,404	6945			6790	3042
2700 mm 8'10"	kg lb	12 050*	10 660	8910*	5460	6090	3150	4080	2040	2140*	1610
		26,567	23,501	19,643	12,037	13,404	6945	8995	4497	4718	3549
3200 mm 10'6"	kg lb	12 850*	10 640*	8950*	5580	6140*	3420	4090	2120	1780*	1420
		28,329	23,457	19,731	12,302	13,536	7540	9017	4674	3924	3132

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318C L ● 600 mm (24") Track Shoes ● 0.8 m³ (1.05 yd³) Bucket ● VA Boom

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1800 mm 5'10"	kg lb	13 700*	9920	8460	5150	4970	3020	—	—	3290	1960
		30,203	21,870	18,651	11,354	10,957	6658			7253	4321
2250 mm 7'5"	kg lb	13 040*	10 200	8080	5260	5020	3060	—	—	3000	1780
		28,748	22,487	17,813	11,596	11,067	6746			6614	3924
2700 mm 8'10"	kg lb	12 030*	10 340	8090	5310	5010	3050	3350	1980	2200*	1570
		26,522	22,796	17,835	11,707	11,045	6724	7385	4365	4850	3461
3200 mm 10'6"	kg lb	12 940*	10 620*	8210	5440	5060	3330	3350	2060	1820*	1380
		28,528	23,413	18,100	11,993	11,155	7341	7385	4542	4012	3042

Japan Sourced

318C LN ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1800 mm 5'11"	1080 mm 3'7"	kg lb	—	—	8680	4070	5400	2630	—	—	3600	1720
					18,620	8760	11,610	5650			7930	3780
2250 mm 7'5"	930 mm 3'1"	kg lb	—	—	8810	4180	5460	2680	—	—	3120*	1570
					18,890	8990	11,730	5760			6870*	3470
2700 mm 8'10"	770 mm 2'6"	kg lb	5160*	5160*	8830*	4290	5540	2760	3850	1890	2230*	1470
			11,930*	11,930*	19,090*	9230	11,900	5930	8270	4050	4910*	3230
3200 mm 10'6"	770 mm 2'6"	kg lb	5150*	5150*	8480*	4300	5530	2740	3820	1860	1810*	1260
			11,910*	11,910*	18,330*	9250	11,870	5880	8200	3970	4000*	2770

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level ● 318C N

France Sourced

318C N ● 500 mm (20") Track Shoes ● 0.8 m³ (1.05 yd³) Bucket

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1800 mm 5'10"	kg lb	—	—	7550 16,645	3920 8642	4750 10,472	2540 5600	—	—	3140 6933	1660 3660
2250 mm 7'5"	kg lb	—	—	7650 16,865	4000 8818	4790 10,560	2570 5666	—	—	2870 6327	1510 3329
2700 mm 8'10"	kg lb	5080* 11,199	5080* 11,199	7680 16,931	4010 8841	4770 10,516	2550 5622	3290 7253	1720 3792	2170* 4784	1310 2888
3200 mm 10'6"	kg lb	5140* 11,332	5140* 11,332	7730 17,042	4050 8929	4790 10,560	2560 5644	3290 7253	1720 3792	1800* 3968	1150 2535

318C N ● 500 mm (20") Track Shoes ● 0.8 m³ (1.05 yd³) Bucket ● VA Boom

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1800 mm 5'10"	kg lb	13 650* 30,093	8400 18,519	8330 18,364	4480 9877	4890 10,781	2610 5754	—	—	3240 7143	1680 3704
2250 mm 7'5"	kg lb	13 000* 28,660	8670 19,114	7920 17,461	4590 10,119	4940 10,891	2650 5842	—	—	2960 6525	1520 3351
2700 mm 8'10"	kg lb	12 030* 26,522	8890 19,599	7980 17,793	4640 10,229	4930 10,869	2640 5820	3290 7253	1670 3682	2200* 4850	1310 2888
3200 mm 10'6"	kg lb	12 940* 28,528	9210 20,305	8090 17,835	4770 10,516	4980 10,979	2910 6415	3300 7275	1760 3880	1820* 4012	1140 2513

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
 ● M313C ● One-Piece Boom ● Quick Coupler

Excavators

4

M313C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	—	—	4600 10,143	2600 5733	3000 6615	1800 3969	—	—	2100 4631	1300 2867
2300 mm 7'7"	kg lb	4000 8820	4000 8820	4600 10,143	2600 5733	3000 6615	1700 3749	—	—	1900 4190	1200 2646
2600 mm 8'6"	kg lb	4200 9261	4200 9261	4500 9923	2600 5733	2900 6395	1700 3749	2100 4631	1200 2646	1700 3749	1100 2426

M313C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	—	—	—	3100 6836	—	2100 4631	—	—	—	1500 3308
2300 mm 7'7"	kg lb	—	—	—	4000 8820	—	3100 6836	—	2100 4631	—	1400 3087
2600 mm 8'6"	kg lb	—	4200 9261	—	3100 6836	—	2000 4410	—	1400 3087	—	1300 2867

M313C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	—	—	—	3900 8600	—	2600 5733	—	—	—	1900 4190
2300 mm 7'7"	kg lb	—	4000 8820	—	3900 8600	—	2500 5513	—	—	—	1800 3969
2600 mm 8'6"	kg lb	—	4200 9261	—	3900 8600	—	2500 5513	—	1800 3969	—	1700 3749

M313C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	—	—	6100 13,451	6100 13,451	4400 9702	3900 8600	—	—	2100 4631	2100 4631
2300 mm 7'7"	kg lb	4000 8820	4000 8820	6200 13,671	5000 11,025	4000 9702	3200 7056	—	—	1900 4190	1900 4190
2600 mm 8'6"	kg lb	4200 9261	4200 9261	6100 13,451	5000 11,025	4400 9702	3200 7056	2400 5292	2300 5072	1700 3749	1700 3749

M313C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	—	—	6100 13,451	5000 11,025	4400 9702	3200 7056	—	—	2100 4631	2100 4631
2300 mm 7'7"	kg lb	4000 8820	4000 8820	6200 13,671	5000 11,025	4000 8820	3200 7056	—	—	1900 4190	1900 4190
2600 mm 8'6"	kg lb	4200 9261	4200 9261	6100 13,451	5000 11,025	4400 9702	3200 7056	2400 5292	2300 5072	1700 3749	1700 3749

Excavators

Lifting Capacity At Ground Level

- M313C
- VA Boom
- Quick Coupler

M313C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	9400 20,727	5500 12,128	5000 11,025	3000 6615	3100 6836	1900 4190	—	—	2000 4410	1200 2646
2300 mm 7'7"	kg lb	9300 20,507	5600 12,348	5000 11,025	3000 6615	3100 6836	1900 4190	2100 4631	1200 2646	1900 4190	1100 2426
2600 mm 8'6"	kg lb	8900 19,625	5600 12,348	4900 10,805	3100 6836	3200 7056	1900 4190	2100 4631	1200 2646	1800 3969	1000 2205

M313C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	—	6600 14,553	—	3500 7718	—	2200 4851	—	—	—	1400 3087
2300 mm 7'7"	kg lb	—	6600 14,553	—	3600 7938	—	2200 4851	—	1400 3087	—	1300 2867
2600 mm 8'6"	kg lb	—	6600 14,553	—	3600 7938	—	2200 4851	—	1400 3087	—	1200 2646

M313C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	—	8200 18,081	—	4300 9482	—	2700 5954	—	—	—	1400 3087
2300 mm 7'7"	kg lb	—	8200 18,081	—	4400 9702	—	2700 5954	—	1800 3969	—	1700 3749
2600 mm 8'6"	kg lb	—	8100 17,861	—	4300 9482	—	2700 5954	—	1800 3969	—	1500 3308

M313C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	9400 20,727	9400 20,727	6100 13,451	5300 11,687	4400 9702	3400 7497	—	—	2300 5072	2200 4851
2300 mm 7'7"	kg lb	9300 20,507	9300 20,507	6100 13,451	6100 13,451	4400 9702	4100 9041	2800 6174	2800 6174	2000 4410	2000 4410
2600 mm 8'6"	kg lb	8900 19,625	8900 19,625	6000 13,230	6000 13,230	4300 9482	4100 9041	3200 7056	2800 6174	1800 3969	1800 3969

M313C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	kg lb	9400 20,727	9400 20,727	6100 13,451	5300 11,687	4400 9702	3400 7497	—	—	2300 5072	2200 4851
2300 mm 7'7"	kg lb	9300 20,507	9300 20,507	6100 13,451	5300 11,687	4400 9702	3400 7497	2800 6174	2300 5072	2000 4410	2000 4410
2600 mm 8'6"	kg lb	8900 19,625	8900 19,625	6000 13,230	5300 11,687	4300 9482	3400 7497	3200 7056	2300 5072	1800 3969	1800 3969

Lifting Capacity At Ground Level
 ● M315C ● One-Piece Boom ● Quick Coupler

Excavators

4

M315C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	—	—	5300 11,687	3100 6836	3400 7497	2100 4631	—	—	2400 5292	1400 3087
2400 mm 7'10"	kg lb	3700 8159	3700 8159	6200 13,671	3100 6836	3400 7497	2100 4631	2500 5513	1500 3308	2200 4851	1300 2867
2600 mm 8'6"	kg lb	3900 8600	3900 8600	5300 11,687	3100 6836	3400 7497	2100 4631	2500 5513	1500 3308	2200 4851	1300 2867

M315C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	—	—	—	3600 7938	—	2400 5292	—	—	—	1700 3749
2400 mm 7'10"	kg lb	—	3700 8159	—	3600 7938	—	2400 5292	—	1700 3749	—	1500 3308
2600 mm 8'6"	kg lb	—	3900 8600	—	3600 7938	—	2400 5292	—	1700 3749	—	1500 3308

M315C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	—	—	—	4500 9923	—	3000 6615	—	—	—	2100 4631
2400 mm 7'10"	kg lb	—	3700 8159	—	4500 9923	—	3000 6615	—	2100 4631	—	1900 4190
2600 mm 8'6"	kg lb	—	3900 8600	—	4500 9923	—	3000 6615	—	2100 4631	—	1900 4190

M315C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	—	—	7300 16,097	7100 15,656	5300 11,687	4500 9923	—	—	2700 5954	2700 5954
2400 mm 7'10"	kg lb	3700 8159	3700 8159	8100 17,861	7100 15,656	5300 11,687	4500 9923	3900 8600	3200 7056	2400 5292	2400 5292
2600 mm 8'6"	kg lb	3900 8600	3900 8600	7300 16,097	5800 12,789	5000 11,025	4500 9923	4000 8820	3200 7056	2200 4851	2200 4851

M315C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	—	—	7300 16,097	5700 12,569	5300 11,687	3700 8159	—	—	2700 5954	2600 5733
2400 mm 7'10"	kg lb	3700 8159	3700 8159	8100 17,861	5700 12,569	5300 11,687	3700 8159	3900 8600	2700 5954	2400 5292	2400 5292
2600 mm 8'6"	kg lb	3900 8600	3900 8600	7300 16,097	5800 12,789	5000 11,025	3700 8159	4000 8820	2700 5954	2200 4851	2200 4851

Excavators

Lifting Capacity At Ground Level

- M315C
- VA Boom
- Quick Coupler

M315C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm	kg	10 900	6500	5900	3600	3700	2300	2500	1400	2300	1300
6'11"	lb	24,035	14,333	13,010	7938	8159	5072	5513	3087	5072	2867
2400 mm	kg	10 600	6600	5800	3600	3700	2300	2500	1400	2100	1200
7'10"	lb	23,373	14,553	12,789	7938	8159	5072	5513	3087	4631	2646
2600 mm	kg	10 300	6600	5800	3700	3800	2400	2500	1500	2100	1200
8'6"	lb	22,712	14,553	12,789	8159	8379	5292	5513	3308	4631	2646

M315C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm	kg	—	7700	—	4200	—	2600	—	1700	—	1600
6'11"	lb	—	16,979	—	9261	—	5733	—	3749	—	3528
2400 mm	kg	—	7800	—	4200	—	2700	—	1700	—	1500
7'10"	lb	—	—	—	9261	—	5954	—	3749	—	3308
2600 mm	kg	—	7900	—	4200	—	2700	—	1700	—	1400
8'6"	lb	—	17,420	—	9261	—	5954	—	3749	—	3087

M315C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm	kg	—	9600	—	5100	—	3200	—	2100	—	2000
6'11"	lb	—	21,168	—	11,246	—	7056	—	4631	—	4410
2400 mm	kg	—	9500	—	5100	—	3300	—	2100	—	1800
7'10"	lb	—	20,948	—	11,246	—	7277	—	—	—	3969
2600 mm	kg	—	9500	—	5100	—	3300	—	2200	—	1800
8'6"	lb	—	20,948	—	11,246	—	7277	—	4851	—	3969

M315C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm	kg	10 900	10 900	7200	7200	5200	4800	3700	3200	2600	2600
6'11"	lb	24,035	24,035	15,876	15,876	11,466	10,584	8159	7056	5733	5733
2400 mm	kg	10 600	10 600	7200	7200	5200	4800	3900	3200	2300	2300
7'10"	lb	23,373	23,373	15,876	15,876	11,466	10,584	8600	7056	5072	5072
2600 mm	kg	10 300	10 300	7200	6100	5200	4100	4000	2700	2200	2200
8'6"	lb	22,712	22,712	15,876	13,451	11,466	9041	8820	5954	4851	4851

M315C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm	kg	10 900	10 900	7200	6200	5200	4000	3700	2700	2600	2500
6'11"	lb	24,035	24,035	15,876	13,671	11,466	8820	8159	5954	5733	5513
2400 mm	kg	10 600	10 600	7200	6200	5200	4000	3900	2700	2300	2300
7'10"	lb	23,373	23,373	15,876	13,671	11,466	8820	8600	5954	5072	5072
2600 mm	kg	10 300	10 300	7200	6100	5200	4100	4000	2700	2200	2200
8'6"	lb	22,712	22,712	15,876	13,451	11,466	9041	8820	5954	4851	4851

Lifting Capacity At Ground Level
 ● M316C ● One-Piece Boom ● Quick Coupler

Excavators

4

M316C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	—	—	6200 1350	3500 7700	4000 8800	2400 5250	—	—	—	—	2700* 5950*	1700 3700
2400 mm 7'10"	kg lb	3800* 8350*	3800* 8350*	6200 1350	3500 7700	4000 8800	2400 5250	2900 6350	1700 3700	—	—	2400* 5250*	1600 3500
2600 mm 8'6"	kg lb	4000* 8800*	4000* 8800*	6200 1350	3500 7700	4000 8800	2400 5250	2900 6350	1700 3700	—	—	2200* 4850*	1500 3300

M316C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2100 mm 6'11"	kg lb	—	—	8100* 17,850*	4100 9000	5900* 13,000*	2800 6150	—	—	—	—	2700* 5950*	1700 3700
2400 mm 7'10"	kg lb	3800* 8350*	3800* 8350*	8100* 17,850*	4100 9000	5800* 12,750*	2700 5950	3900* 8550*	2000 4400	—	—	2400* 5250*	1800 3950
2600 mm 8'6"	kg lb	4000* 8800*	4000* 8800*	8100* 17,850*	4100 9000	5800* 12,750*	2700 5950	4500* 9900	2000 4400	—	—	2200* 4850*	1500 3300

M316C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2100 mm 6'11"	kg lb	—	—	8100* 17,850*	5100 11,200	5800 12,750	3400 7450	—	—	—	—	2700* 5950*	2400 5250
2400 mm 7'10"	kg lb	3800* 8350*	3800* 8350*	8100* 17,850*	5100 11,200	5800 12,750	2700 5950	3900 8550	2500 5500	—	—	2400* 5250*	2200 4850
2600 mm 8'6"	kg lb	4000* 8800*	4000* 8800*	8100* 17,850*	5100 11,200	5800 12,750	3400 7450	4100 9000	2500 5500	—	—	2200* 4850*	2200 4850

M316C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	—	—	8100* 17,850*	8000 17,640	5900* 13,000*	5100 11,200	—	—	—	—	2700* 5950*	2700* 5950*
2400 mm 7'10"	kg lb	3800* 8350*	3800* 8350*	8100* 17,850*	8000 17,640	5800* 12,750*	5100 11,200	3900* 8550*	3700 8150	—	—	2400* 5250*	2400* 5250*
2600 mm 8'6"	kg lb	4000* 8800*	4000* 8800*	8100* 17,850*	8000 17,640	5800* 12,750*	5100 11,200	4500* 9900*	3700 8150	—	—	2200* 4850*	2200* 4850*

M316C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	—	—	8100* 17,850*	6500 14,300	5900* 13,000*	4200 9250	—	—	—	—	2700* 5950*	2700* 5950*
2400 mm 7'10"	kg lb	3800* 8350*	3800* 8350*	8100* 17,850*	6400 14,100	5800* 12,750*	4200 9250	3900* 8550*	3000 6600	—	—	2400* 5250*	2400* 5250*
2600 mm 8'6"	kg lb	4000* 8800*	4000* 8800*	8100* 17,850*	6500 14,300	5800* 12,750*	4200 9250	4500* 9900*	3000 6600	—	—	2200* 4850*	2200* 4850*

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- M316C
- VA Boom
- Quick Coupler

M316C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	11 800* 26,000*	7300 16,050	6700 14,750	4000 8800	4300 9450	2600 5700	2900 6350	1700 3700	—	—	2600* 5700*	1500 3300
2400 mm 7'10"	kg lb	11 500* 25,350*	7300 16,050	6700 14,750	4100 9000	4300 9450	2600 5700	2900 6350	1700 3700	—	—	2300* 5050*	1400 3050
2600 mm 8'6"	kg lb	11 400* 25,100*	7400 16,300	6700 14,750	4100 9000	4300 9450	2700 5950	2900 6350	1700 3700	—	—	2200* 4850*	1400 3050

M316C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2100 mm 6'11"	kg lb	11 800* 26,000*	8600 18,950	8000* 17,600*	4700 10,350	5800* 12,750*	3000 6600	3900* 8550*	2000 4400	—	—	2600* 5700*	1800 3950
2400 mm 7'10"	kg lb	11 500* 25,350*	8700 19,150	8000* 17,600*	4700 10,350	5800* 12,750*	3000 6600	4300* 9450*	2000 4400	—	—	2300* 5050*	1700 3700
2600 mm 8'6"	kg lb	11 400* 25,100*	8700 19,150	8000* 17,600*	4700 10,350	5700* 12,550*	3000 6600	4400* 9700*	2000 4400	—	—	2200* 4850*	1600 3500

M316C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2100 mm 6'11"	kg lb	11 800* 26,000*	10 800* 23,800	8000* 17,600*	5700 12,550	5800* 12,750*	3600 7900	3900* 8550*	2400 5250	—	—	2600* 5700*	2300 5050
2400 mm 7'10"	kg lb	11 500* 25,350*	10 700* 23,550*	8000* 17,600*	5800 12,750	5800* 12,750*	3700 8150	4100 9000	2400 5250	—	—	2300* 5050*	2100 4600
2600 mm 8'6"	kg lb	11 400* 25,100*	10 700 23,550	8000* 17,600*	5700 12,550	5700* 12,550*	3700 8150	4100 9000	2500 5500	—	—	2200* 4850*	2000 4400

M316C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	11 800* 26,000*	11 800* 26,000*	8000* 17,600*	8000* 17,600*	5800* 12,750*	5400 11,900	3900* 8550*	3700 8150	—	—	2600* 5700*	2600* 5700*
2400 mm 7'10"	kg lb	11 500* 25,350*	11 500* 25,350*	8000* 17,600*	8000* 17,600*	5800* 12,750*	5400* 11,900*	4300* 9450*	3700 8150	—	—	2300* 5050*	2300* 5050*
2600 mm 8'6"	kg lb	11 400* 25,100*	11 400* 25,100*	8000* 17,600*	8000* 17,600*	5700* 12,550*	5300 11,650	4400* 9700*	3700 8150	—	—	2200* 4850*	2200* 4850*

M316C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2100 mm 6'11"	kg lb	11 800* 26,000*	11 800* 26,000*	8000* 17,600*	6900 15,200	5800* 12,750*	4500 9900	3900* 8550*	3000 6600	—	—	2600* 5700*	2600* 5700*
2400 mm 7'10"	kg lb	11 500* 25,350*	11 500* 25,350*	8000* 17,600*	6900 15,200	5800* 12,750*	4500 9900	4300* 9450*	3000 6600	—	—	2300* 5050*	2300* 5050*
2600 mm 8'6"	kg lb	11 400* 25,100*	11 400* 25,100*	8000* 17,600*	6800 14,950	5700* 12,550*	4500 9900	4400* 9700*	3100 6600	—	—	2200* 4850*	2200* 4850*

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
 ● M318C ● One-Piece Boom ● Quick Coupler

Excavators

M318C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	—	—	6800 14,950	4000 8800	4400 9700	2700 21,350	3200 7050	1900 4150	—	—	2800 6150	1700 3700
2500 mm 8'2"	kg lb	—	—	9400* 20,700*	4400 9700	6800* 14,950*	2900 6350	4900 10,800	2100 4600	—	—	2700* 5950*	1800 3950
2800 mm 9'2"	kg lb	4700* 10,350*	4700* 10,350*	6600 14,550	3800 8350	4300 9450	2500 5500	3100 6800	1800 3950	—	—	2400* 5250	1500 3300

M318C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2200 mm 7'3"	kg lb	—	—	9400* 20,700*	4400 9700	6800* 14,950*	3000 6600	4900 10,800	2200 4850	—	—	3500* 7700*	1900 4150
2500 mm 8'2"	kg lb	—	—	9400* 20,700*	4400 9700	6800* 14,950*	2900 6350	4900 10,800	2100 4600	—	—	2700* 5950*	1800 3950
2800 mm 9'2"	kg lb	4700* 10,350*	4700* 10,350*	9400* 20,700*	4400 9700	6700* 14,750*	2900 6350	4900 10,800	2100 4600	—	—	2400* 5250*	1700 3700

M318C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2200 mm 7'3"	kg lb	—	—	9400* 20,700*	5500 12,100	6200 13,650	3600 7900	4400 9700	2600 5700	—	—	3500* 7700*	2400 5250
2500 mm 8'2"	kg lb	—	—	9400* 20,700*	5500 12,100	6200 13,650	3600 7900	4400 9700	2600 5700	—	—	2700* 5950*	2200 4850
2800 mm 9'2"	kg lb	4700* 10,350*	4700* 10,350*	9400* 20,700*	5500 12,100	6200 13,650	3600 7900	4400 9700	2600 5700	—	—	2400* 5250*	2100 4600

M318C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	—	—	9400* 20,700*	8500 18,700	6800* 14,950*	5400 11,900	5200* 11,450*	3900 8550	—	—	3500* 7700*	3500* 7700*
2500 mm 8'2"	kg lb	—	—	9400* 20,700*	8500 18,700	6800 14,950*	5400 11,900	5300* 11,650*	3900 8550	—	—	2700* 5950*	2700* 5950*
2800 mm 9'2"	kg lb	4700* 10,350*	4700* 10,350*	9400* 20,700*	8500 18,700	6700* 14,750*	5400 11,900	5200* 11,450*	3900 8550	—	—	2400* 5250*	2400* 5250*

M318C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	—	—	9400* 20,700*	6800 14,950	6800* 14,950*	4500 9900	5200* 11,450*	3200 7050	—	—	3500* 7700*	2900 6350
2500 mm 8'2"	kg lb	—	—	9400* 20,700*	6800 14,950	6800* 14,950*	4400 9700	5300* 11,650*	3200 7050	—	—	2700* 5950*	2700* 5950*
2800 mm 9'2"	kg lb	4700* 10,350*	4700* 10,350*	9400* 20,700*	6800 14,950	6700* 14,750*	4400 9700	5200* 11,450*	3200 7050	—	—	2400* 5250*	2400* 5250*

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- M318C
- VA Boom
- Quick Coupler

M318C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	13 900* 30,600*	8100 17,850	7300* 16,050*	4500 9900	4700 10,350	2900 6350	3100 6800	1900 4150	—	—	2800 6150	1700 3700
2500 mm 8'2"	kg lb	13 300* 29,300*	8200 18 050	7300 16,050*	4500 9900	4700 10,350	2900 6350	3100 6800	1900 4150	—	—	2400* 5250*	1500 3300
2800 mm 9'2"	kg lb	13 200* 29,100*	8300 18,300	7200 15,850	4600 10,100	4800* 10,550	3000 6600	3200 7050	1900 4150	—	—	2200* 4850*	1400 3050

M318C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2200 mm 7'3"	kg lb	13 900* 30,600*	8100 17,850	7300* 16,050*	4500 9900	6700 14,750	2900 6350	3100 6800	1900 4150	—	—	2800 6150	1700 3700
2500 mm 8'2"	kg lb	13 300* 29,300*	9600 21,150	9300* 20,500*	5200 11,450	6700* 14,750*	3300 7250	4900 10,800	2200 4850	—	—	2400* 5250*	1800 3950
2800 mm 9'2"	kg lb	13 200* 29,100*	9500 20,900	9300* 20,500*	5200 11,450	6700* 14,750*	3400 3050	5000 11,000	2200 4850	—	—	2200* 4850*	1700 3700

M318C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2200 mm 7'3"	kg lb	13 900* 30,600*	11 900 26,200	9400* 20,700*	6300 13,850	6500 14,300	4000 8800	4400 9700	2700 5950	—	—	3200* 7050*	2400 5250
2500 mm 8'2"	kg lb	13 300* 29,300*	11 800 26,000	9300* 20,500*	6300 13,850	6400 14,100	4100 9000	4400 9700	2700 5950	—	—	2400* 5250*	2200 4850
2800 mm 9'2"	kg lb	13 200* 29,100*	11 700 25,750	9300* 20,500*	6300 13,850	6400* 14,100	4100 9000	4500 9900	2700 5950	—	—	2200* 4850*	2100 4600

M318C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	13 900* 30,600*	13 900* 30,600*	9400* 20,700*	8900* 19,600*	6800* 14,950*	5800 12,750	5100* 11,200*	3900 8550	—	—	3200* 7050*	3200* 7050*
2500 mm 8'2"	kg lb	13 300* 29,300*	13 300* 29,300*	9300* 20,500*	8800* 19,400*	6700* 14,750*	5800 12,750	5200* 11,450*	3900 8550	—	—	2400* 5250*	2400* 5250*
2800 mm 9'2"	kg lb	13 200* 29,100*	13 200* 29,100*	9300* 20,500*	8800* 19,400*	6700* 14,750*	5800 12,750	5200* 11,450*	4000 8800	—	—	2200* 4850*	2200* 4850*

M318C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	13 900* 30,600*	13 900* 30,600*	9400* 20,700*	7600 16,750	6800* 14,950*	4800 10,550	5100* 11,200*	3300 7250	—	—	3200* 7050*	2900 7250
2500 mm 8'2"	kg lb	13 300* 29,300*	13 300* 29,300*	9300* 20,500*	7500 16,500	6700* 14 750*	4900 10,800	5200* 11,450*	3300 7250	—	—	2400* 5250*	2400* 5250*
2800 mm 9'2"	kg lb	13 200* 29,100*	13 200* 29,100*	9300* 20,500*	7500 16,500	6700* 14,750*	4900 10,800	5200* 11,450*	3300 7250	—	—	2200* 4850*	2200* 4850*

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
 ● M322C ● One-Piece Boom ● Quick Coupler

Excavators

4

M322C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	—	—	7400 16,300	4600 10,100	4800 10,550	3100 6800	3500 7700	2300 5050	—	—	2600* 5700*	1900 4150
2500 mm 8'2"	kg lb	—	—	7400 16,300	4600 10,100	4800 10,550	3100 6800	3500 7700	2200 4850	—	—	2400* 5250*	1800 3950
2900 mm 9'6"	kg lb	—	—	7300 16,050	4600 10,100	4800 10,550	3100 6800	3400 7450	2200 4850	—	—	2000* 4400*	1600 3500

M322C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2200 mm 7'3"	kg lb	—	—	10 900* 24,000*	5300 11,650	7900* 17,400*	3600 7900	6100* 13,450*	2600 5700	—	—	2600* 5700*	2100 4600
2500 mm 8'2"	kg lb	—	—	10 900* 24,000*	5300 11,650	7900* 17,400*	3500 7700	6100 13,450	2600 5700	—	—	2400* 5250*	2000 4400
2900 mm 9'6"	kg lb	—	—	10 800* 23,800*	5300 11,650	7800* 17,000*	3500 7700	6000* 13,200*	2500 5500	—	—	2000* 4400*	1900 4150

M322C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2200 mm 7'3"	kg lb	—	—	10 900* 24,000*	6700 14,750	7700 16,950	4400 9700	5400 11,900	3200 7050	—	—	2600* 5700*	2600 5700
2500 mm 8'2"	kg lb	—	—	10 900* 24,000*	6700 14,750	7600 16,750	4400 9700	5400 11,900	3200 7050	—	—	2400* 5250*	2400* 5250*
2900 mm 9'6"	kg lb	—	—	10 800* 23,800*	6700 14,750	7600 16,750	4400 9700	5300 11,650	3200 7050	—	—	2000* 4400*	2000* 4400*

M322C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	—	—	10 900* 24,000*	10 700 23,550	7900* 17,400*	6800 14,950	6100* 13,450*	4900 10,800	—	—	2600* 5700*	2600* 5700*
2500 mm 8'2"	kg lb	—	—	10 900* 24,000*	10 700 23,550	7900* 17,400*	6800 14,950	6100* 13,450*	4800 10,550	—	—	2400* 5250*	2400* 5250*
2900 mm 9'6"	kg lb	—	—	10 800* 23,800*	10 700 23,550	7800* 17,150*	6700 14,750	6000* 13,200*	4800 10,550	—	—	2000* 4400*	2000* 4400*

M322C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	—	—	10 900* 24,000*	8500 18,700	7900* 17,400*	5500 12,100	6100* 13,450*	4000 8800	—	—	2600* 5700*	2600* 5700*
2500 mm 8'2"	kg lb	—	—	10 900* 24,000*	8500 18,700	7900* 17,400*	5500 12,100	6100* 13,450*	4000 8800	—	—	2400* 5250*	2400* 5250*
2900 mm 9'6"	kg lb	—	—	10 800* 23,800*	8500 18,700	7800* 17,150*	5500 12,100	6000* 13,200*	4000 8800	—	—	2000* 4400*	2000* 4400*

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- M322C
- VA Boom
- Quick Coupler

M322C ● Rear Dozer Up

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	15 100* 33,250*	10 000 22,050	8300 18,300	5500 12,100	5500 12,100	3600 7900	3600 7900	2400 5250	—	—	2500* 5500*	1900 4150
2500 mm 8'2"	kg lb	15 400* 33,950*	10 100 22,250	8200 18,050	5600 12,300	5500 12,100	3700 8150	3600 7900	2400 5250	—	—	2300* 5050*	1800 3950
2900 mm 9'6"	kg lb	14 200* 31,300*	10 300 22,700	8200 18,050	5600 12,300	5400 11,900	3700 8150	3700 8150	2400 5250	—	—	2000* 4400*	1600 3500

M322C ● Rear Dozer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2200 mm 7'3"	kg lb	15 100* 33,250*	11 700 25,750	10 900* 24,000*	6300 13,850	7800* 17,150*	4100 9000	6100* 13,450*	2700 5950	—	—	2500* 5500*	2200 4850
2500 mm 8'2"	kg lb	15 400* 33,950*	11 800 26,000	10 800* 23,800*	6300 13,850	7800* 17,150*	4100 9000	6100* 13,450*	2700 5950	—	—	2300* 5050*	2100 4600
2900 mm 9'6"	kg lb	14 200* 31,300*	11 600 25,550	10 800* 23,800*	6400 14,100	7700* 16,950*	4100 9000	6000* 13,200*	2700 5950	—	—	2000* 4400*	1900 4150

M322C ● Rear Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side	Rear	Side
2200 mm 7'3"	kg lb	15 100* 33,250*	14 800 32,600	10 900* 24,000*	7700 16,950	7800 17,150	5000 11,000	5500 12,100	3300 7250	—	—	2500* 5500*	2500* 5500*
2500 mm 8'2"	kg lb	15 400* 33,950*	14 600 32,150	10 800* 23,800*	7600 16,750	7800* 17,150*	5000 11,000	5500* 12,100*	3300 7250	—	—	2300* 5050*	2300* 5050*
2900 mm 9'6"	kg lb	14 200* 31,300*	14 200* 31,300*	10 800* 23,800*	7500 16,500	7700* 16,950*	5000 11,000	5600 12,300	3400 7450	—	—	2000* 4400*	2000* 4400*

M322C ● 4-Point Stabilizers Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	15 100* 33,250*	15 100* 33,250*	10 900* 24,000*	10 900* 24,000*	7800* 17,150*	7200* 15,850*	6100* 13,450*	5000 11,000	—	—	2500* 5500*	2500* 5500*
2500 mm 8'2"	kg lb	15 400* 33,950*	15 400* 33,950*	10 800* 23,800*	10 800* 23,800*	7800* 17,150*	7200 15,850*	6100* 13,450*	5000 11,000	—	—	2300* 5050*	2300* 5050*
2900 mm 9'6"	kg lb	14 200* 31,300*	14 200* 31,300*	10 800* 23,800*	10 800* 23,800*	7700* 16,950*	7100* 15,650*	6000* 13,200*	5000 11,000	—	—	2000* 4400*	2000* 4400*

M322C ● Dozer and Stabilizer Down

Stick		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2200 mm 7'3"	kg lb	15 100* 33,250*	15 100* 33,250*	10 900* 24,000*	9300 20,500	7800* 17,150*	6200 13,650	6100* 13,450*	4100 9000	—	—	2500* 5500*	2500* 5500*
2500 mm 8'2"	kg lb	15 400* 33,950*	15 400* 33,950*	10 800* 23,800*	9300 20,500	7800* 17,150*	6100 13,450	6100* 13,450*	4100 9000	—	—	2300* 5050*	2300* 5050*
2900 mm 9'6"	kg lb	14 200* 31,300*	14 200* 31,300*	10 800* 23,800*	9200 20,250	7700* 16,950*	6000 13,200	6000* 13,200*	4200 9250	—	—	2000* 4400*	2000* 4400*

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
 ● 320C ● 320C U ● 320C L ● 321C LCR

Excavators

4

Japan Sourced

320C ● Reach Boom ● 600 mm (24") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1900 mm 6'3"	C1370X 4'6"	kg lb	8050 17,250	4650 10,050	5050 10,850	3050 6500	—	—	—	—	—	—	3100 6800	1800 3950
2500 mm 8'2"	B1220X 4'0"	kg lb	8550 18,300	5150 11,050	5400 11,650	3350 7250	3850 8200	2400 5100	—	—	—	—	3000 6550	1850 4050
2900 mm 9'6"	B1100X 3'7"	kg lb	5450* 12,500*	5450* 12,500*	8650 18,500	5200 11,200	5450 11,700	3400 7300	3850 8250	2400 5150	—	—	2400* 5300*	1700 3750
3900 mm 12'10"	B1100X 3'7"	kg lb	6750* 15,500*	6750* 15,500*	8600 18,450	5200 11,100	5400 11,550	3350 7150	3750 8050	2300 4950	2750 5900	1650 3500	1950* 4250*	1350 2950

320C ● Mass Boom ● 600 mm (24") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2400 mm 7'10"	C1370X 4'6"	kg lb	7700* 17,800*	7700* 17,800*	8450 18,100	5000 10,750	5250 11,250	3200 6800	—	—	—	—	3150 6900	1850 4100

320C U ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2500 mm 8'2"	B1220X 4'0"	kg lb	—	—	9350 20,050	5600 12,050	5950 12,750	3700 7900	4250 9050	2600 5600	—	—	3150* 6900*	2050 4450
2900 mm 9'6"	B1100X 3'7"	kg lb	5450* 12,500*	5450* 12,500*	9450 20,250	5650 12,200	6000 12,850	3700 8000	4250 9100	2650 5650	—	—	2400* 5300*	1900 4150
3900 mm 12'10"	B1100X 3'7"	kg lb	6750* 15,500*	6750* 15,500*	9000* 19,400*	5650 12,100	5950 12,700	3650 7800	4150 8900	2550 5450	3100 6600	1850 3900	1950* 4250*	1500 3300

320C L ● Reach Boom ● 800 mm (32") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1900 mm 6'3"	C1470X 4'10"	kg lb	—	—	9500* 20,550*	5550 11,950	6400 13,700	3600 7700	—	—	—	—	3900 8550	2150 4750
2500 mm 8'2"	B1280X 4'2"	kg lb	—	—	9900* 21,400*	6050 12,950*	6750 14,450	3950 8450	4750 10,150	2800 6000	—	—	3100* 6850*	2150 4750
2900 mm 9'6"	B1220X 4'0"	kg lb	5400* 12,450*	5400* 12,450*	9750* 21,100*	6100 13,100	6800 14,550	4000 8550	4750 10,200	2800 6000	—	—	2400* 5250*	2000 4450
3900 mm 12'10"	B1100X 3'7"	kg lb	6750* 15,500*	6750* 15,500*	9000* 19,400*	6100 13,100	6450* 13,900*	3950 8400	4700 10,050	2750 5850	3500 7300*	2000 4250	1950* 4250*	1650 3600

320C L ● Mass Boom ● 800 mm (32") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2400 mm 7'10"	C1470X 4'10"	kg lb	7650* 17,700*	7650* 17,700*	9650* 20,850*	5900 12,650	6600 14,100	3750 8050	—	—	—	—	3950 8700	2250 4900

321C LCR ● Reach Boom

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2900 mm 9'6"	B1082HD 3'7"	kg lb	6000* 13,750*	6000* 13,750*	11 000* 23,800*	6250 13,450	7200 15,400	4100 8750	5050 10,850	2900 6200	—	—	2450* 5400*	2150 4700

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- 320C LU
- 320C Belgium Sourced

320C LU ● Reach Boom

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2500 mm 8'2"	B1280X 4'2"	kg 21,400*	6550 14,100	kg 15,350*	4300 9200	kg 11,200	3050 6550	—	—	—	—	kg 3100*	2400 5250
2900 mm 9'6"	B1220X 4'0"	kg 12,450*	5400* 12,450*	kg 21,100*	6650 14,250	kg 15,150*	4350 9300	5250	3100	11,200	6600	—	—
3900 mm 12'10"	B1100X 3'7"	kg 15,500*	6750* 15,500*	kg 19,400*	6600 14,200	kg 13,900*	4300 9200	5100*	3000	11,050*	6450	3850	2200
		lb		lb		lb		lb		lb		lb	lb

Belgium Sourced

320C ● Reach Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1.9 m 6'3"	0.95 m ³ 1.24 yd ³	kg —	5400 —	kg 18,900	5080 11,200	kg 11,900	3290 7200	—	—	—	—	kg 3240	1950 4250
2.5 m 8'2"	1.05 m ³ 1.37 yd ³	kg —	5390 —	kg 19,650	5390 11,850	kg 12,350	3490 7650	3930	2430	—	—	kg 2920*	1840 4050
2.9 m 9'6"	0.8 m ³ 1.04 yd ³	kg 5260*	5260* 11,550*	kg 19,800	5440 11,950	kg 12,400	3520 7750	3960	2460	—	—	kg 2240*	1720 3750
		lb		lb		lb		lb		lb		lb	lb

320C ● Mass Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1.9 m 6'3"	0.95 m ³ 1.24 yd ³	kg —	5310 —	kg 19,500	5310 11,700	kg 12,250	3430 7550	—	—	—	—	kg 3670	2250 4950
2.4 m 7'10"	0.95 m ³ 1.24 yd ³	kg 7700*	7700* 16,950*	kg 19,600	5350 11,750	kg 12,250	3430 7550	—	—	—	—	kg 3300	2000 4400
2.9 m 9'6"	0.8 m ³ 1.05 yd ³	kg 19,300	8760 19,300	kg 20,050	5540 12,200	kg 12,500	3550 7800	3960	2450	—	—	kg 2880	1910 4200
		lb		lb		lb		lb		lb		lb	lb

320C ● VA Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1.9 m 6'3"	0.95 m ³ 1.24 yd ³	kg —	5030 —	kg 19,000	5030 11,050	kg 11,950	3250 7150	—	—	—	—	kg 3300*	1980 4350
2.4 m 7'10"	0.95 m ³ 1.24 yd ³	kg —	5070 —	kg 19,050	5070 11,150	kg 11,950	3250 7150	3780	2240	—	—	kg 3000	1750 3850
2.9 m 9'6"	0.8 m ³ 1.05 yd ³	kg 12,600*	5720* 12,600*	kg 19,400	5220 11,500	kg 12,150	3340 7350	3840	2300	—	—	kg 2720*	1650 3600
		lb		lb		lb		lb		lb		lb	lb

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
● 320C L ● 320C LN

Excavators

Belgium Sourced

320C L ● Reach Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1.9 m 6'3"	0.95 m ³ 1.24 yd ³ kg lb	—	—	9500*	5820	6570	3770	—	—	—	—	3920	2250
2.5 m 8'2"	1.05 m ³ 1.37 yd ³ kg lb	—	—	9700*	6140	6770	3960	4720	2770	—	—	2920*	2110
2.9 m 9'6"	0.8 m ³ 1.04 yd ³ kg lb	5260*	5260*	9550*	6190	6800*	4000	4750	2800	—	—	2240*	1970
		11,550*	11,550*	21,050*	13,600	14,950*	8800	10,450	6150			4900*	4300

4

320C L ● Mass Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1.9 m 6'3"	0.95 m ³ 1.24 yd ³ kg lb	—	—	9690*	6060	6730	3900	—	—	—	—	4420	2580
2.4 m 7'10"	0.95 m ³ 1.24 yd ³ kg lb	7700*	7700*	9580*	6100	6730	3910	—	—	—	—	3840*	2300
2.9 m 9'6"	0.8 m ³ 1.05 yd ³ kg lb	8760	8760	9490	6300	6820	4030	4760	2800	—	—	2880	2190
		19,300	19,300	20,900	13,850	15,000	8850	10,450	6150			6350	4800

320C L ● VA Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1.9 m 6'3"	0.95 m ³ 1.24 yd ³ kg lb	—	—	8620*	5790	6360*	3730	—	—	—	—	3300*	2290
2.4 m 7'10"	0.95 m ³ 1.24 yd ³ kg lb	—	—	9040*	5830	6570*	3730	4590	2590	—	—	3230*	2040
2.9 m 9'6"	0.8 m ³ 1.04 yd ³ kg lb	5720*	5720*	9410*	5980	6700	3830	4660	2650	—	—	2720*	1920
		12,600*	12,600*	20,700*	13,150	14,750	8400	10,250	5800			5950*	4200

320C LN ● Reach Boom ● 500 mm (20") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1.9 m 6'3"	0.95 m ³ 1.24 yd ³ kg lb	—	—	9500*	4730	6700	3090	—	—	—	—	4000	1830
2.5 m 8'2"	1.05 m ³ 1.37 yd ³ kg lb	—	—	9700*	5040	6900	3280	4820	2290	—	—	2920*	1730
2.9 m 9'6"	0.8 m ³ 1.04 yd ³ kg lb	5260*	5260*	9550*	5090	6800*	3310	4850	2310	—	—	2240*	1620
		11,550*	11,550*	21,050*	11,200	14,950*	7250	10,650	5050			4900*	3550

320C LN ● Mass Boom ● 500 mm (20") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
1.9 m 6'3"	0.95 m ³ 1.24 yd ³ kg lb	—	—	9690*	4950	6860	3220	—	—	—	—	4510	2110
2.4 m 7'10"	0.95 m ³ 1.24 yd ³ kg lb	7700*	7700*	9580*	4990	6860	3220	—	—	—	—	3840*	1880
2.9 m 9'6"	0.8 m ³ 1.05 yd ³ kg lb	8760	8760	9490	5180	6820	3340	4850	2310	—	—	2880	1790
		16,950*	16,950*	21,100*	11,000	15,100	7100	10,650	5050			6350	3900

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- 320C LN ● 320C S

Belgium Sourced

320C LN ● VA Boom ● 500 mm (20") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
1.9 m 6'3"	0.95 m ³ 1.24 yd ³	kg lb	—	—	8620* 19,000*	4670 10,250	6360* 14,000*	3030 6650	—	—	—	—	3300* 7250*	1850 4050
2.4 m 7'10"	0.95 m ³ 1.24 yd ³	kg lb	—	—	9040* 19,900*	4700 10,350	6570* 14,450*	3030 6650	4690 10,300	2090 4600	—	—	3230* 7100*	1630 3550
2.92 m** 9'6"	0.8 m ³ 1.04 yd ³	kg lb	5720* 12,600*	5720* 12,600*	9410* 20,700*	4620 10,150	6610 14,550	2970 6500	4580 10,050	2030 4450	—	—	2720* 5950*	1440 3150

320C S ● Reach Boom ● 550 mm (22") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
1.9 m 6'3"	0.95 m ³ 1.24 yd ³	kg lb	—	—	9500* 20,900*	4820 10,600	6690 14,750	3160 6950	—	—	—	—	4050 8900	1900 4150
2.5 m 8'2"	1.05 m ³ 1.37 yd ³	kg lb	—	—	9710* 21,400*	5120 11,250	6880 15,150	3350 7350	4840 10,650	2350 5150	—	—	2940* 6450*	1790 3900
2.9 m 9'6"	0.8 m ³ 1.05 yd ³	kg lb	5410* 11,900*	5410* 11,900*	9580* 21,100*	5170 11,350	6830* 15,050*	3380 7450	4870 10,700	2380 5200	—	—	2260* 4950*	1680 3700

320C S ● Mass Boom ● 550 mm (22") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
1.9 m 6'3"	0.95 m ³ 1.24 yd ³	kg lb	—	—	9690* 21,350*	5040 11,100	6840 15,050	3290 7250	—	—	—	—	4560 10,050	2190 4800
2.4 m 7'10"	0.95 m ³ 1.24 yd ³	kg lb	7940* 17,500*	7940* 17,500*	9600* 21,150*	5070 11,150	6840 15,050	3290 7250	—	—	—	—	3870* 8500*	1950 4250

320C S ● VA Boom ● 550 mm (22") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
1.9 m 6'3"	0.95 m ³ 1.24 yd ³	kg lb	—	—	8550* 18,850*	4750 10,450	6310* 13,900*	3100 6800	—	—	—	—	3260* 7150*	1910 4200
2.4 m 7'10"	0.95 m ³ 1.24 yd ³	kg lb	—	—	8990* 19,800*	4780 10,500	6540* 14,400*	3100 6800	4660* 10,250*	2150 4700	—	—	3190* 7000*	1700 3700
2.92 m 9'6"	0.8 m ³ 1.05 yd ³	kg lb	5880* 12,950*	5880* 12,950*	9390* 20,700*	4930 10,850	6770* 14,900*	3200 7050	4770 10,500	2220 4850	—	—	2740 6000	1600 3500

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
● 322C ● 322C L

Excavators

Japan/U.S. Sourced

322C ● Reach Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2500 mm 8'2"	S1355X 4'5"	kg lb	—	—	10 650 22,800	6550 14,100	6650 14,300	4250 9150	4700 10,050	3000 6400	—	—	3500 7700	2200 4850
2950 mm 9'8"	S1225X 4'1"	kg lb	5150*	5150*	10 750 23,050	6650 14,300	6700 14,400	4300 9250	4700 10,100	3050 6450	—	—	3250 7150	2050 4500
3600 mm 11'10"	B1220X 4'0"	kg lb	6000*	6000*	10 900 23,300	6750 14,550	6800 14,600	4400 9400	4800 10,250	3100 6600	3550 7600	2250 4850	3000 6650	1900 4200

322C ● Mass Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2500 mm 8'2"	D1345X 4'5"	kg lb	—	—	10 500 22,500	6400 13,700	6450 13,800	4000 8550	4400 9400	2700 5750	—	—	3600 7950	2200 4800

322C L ● Reach Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2500 mm 8'2"	S1315X 4'4"	kg lb	—	—	12 100* 26,150*	7700 16,550	8200 17,600	5000 10,700	5750 12,300	3500 7550	—	—	4300 9450	2600 5750
2950 mm 9'8"	S1355X 4'5"	kg lb	5150*	5150*	11 950* 25,850*	7800 16,750	8250 17,700	5000 10,800	5750 12,350	3550 7600	—	—	3700* 8150*	2400 5300
3600 mm 11'10"	B1220X 4'0"	kg lb	6000*	6000*	11 650* 25,200*	7950 17,050	8350* 17,950	5150 11,000	5850 12,550	3650 7750	4350 9350	2700 5750	3150* 6950*	2300 5000

322C L ● Mass Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2500 mm 8'2"	D1430X 4'8"	kg lb	—	—	11 700* 25,250*	7550 16,150	8000 17,100	4750 10,150	5450 11,700	3250 6900	—	—	4300* 9500*	2650 5750

Belgium Sourced

322C L ● Reach Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2000 mm 6'6"	1.5 m ³ 1.37 yd ³	kg lb	—	—	11 390* 25,100*	7430 16,250	8010 17,600	4740 10,350	5550 12,150	3290 7150	—	—	4340 9500	2550 5550
2500 mm 8'2"	1.25 m ³ 1.63 yd ³	kg lb	—	—	11 920 26,250*	7990 17,450	8420 18,450	5140 11,200	5870 12,850	3620 7900	—	—	4310 9400	2640 5750
2950 mm 9'8"	1.25 m ³ 1.63 yd ³	kg lb	4990*	4990*	11 780* 25,950*	8070 17,650	8360* 18,400	5170 11,300	5880 12,850	3630 7900	—	—	3510* 7650*	2420 5250
2950 mm 9'8" HD	1.25 m ³ 1.63 yd ³	kg lb	4950*	4950*	11 620* 25,600*	7910 17,300	8230* 18,100	5060 11,000	5780 12,700	3530 7650	—	—	3470* 7650*	2350 5050

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- 322C L ● 322C LN

Belgium Sourced

322C L ● Mass Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2000 mm 6'7"	1.5 m ³ 1.96 yd ³	kg lb	—	—	11 630* 25,600*	7760 16,950	8230 18,050	4920 10,750	—	—	—	—	5030 11,050	3010 6550
2500 mm 8'2"	1.5 m ³ 1.96 yd ³	kg lb	—	—	11 510* 25,350*	7810 17,050	8190* 18,050	4910 10,700	5620 12,300	3350 7300	—	—	4120* 9050*	2670 5800

322C L ● VA Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2000 mm 6'7"	1.5 m ³ 1.96 yd ³	kg lb	—	—	10 150* 22,300*	7420 16,350	7580* 16,700	4720 10,300	5260* 11,600	3270 7,200	—	—	3570* 7800*	2610 5750
2500 mm 8'2"	1.5 m ³ 1.96 yd ³	kg lb	—	—	10 740* 23,600*	7470 16,450	7820* 17,100	4710 10,250	5400* 11,900	3220 7,100	—	—	3460* 7600*	2300 5050

322C LN ● Reach Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2000 mm 6'7"	1.5 m ³ 1.96 yd ³	kg lb	—	—	11 390* 25,100*	6420 14,000	7790 17,100	4110 8950	5390 11,800	2840 6150	—	—	4210 9200	2180 4750
2500 mm 8'2"	1.25 m ³ 1.63 yd ³	kg lb	—	—	11 920* 26,250*	6980 15,250	8200 18,000	4510 9850	5710 12,500	3170 6900	—	—	4180 9150	2290 5000
2950 mm 9'8"	0.95 m ³ 1.24 yd ³	kg lb	5070* 11,150*	5070* 11,150*	11 840* 26,100*	7110 15,500	8290 18,150	4600 10,000	5770 12,650	3230 7030	—	—	3570* 7800*	2160 4650
2950 mm 9'8" HD	0.95 m ³ 1.24 yd ³	kg lb	5030* 11,050*	5030* 11,050*	11 680* 25,750*	6960 15,200	8170 17,900	4480 9750	5680 12,450	3130 6800	—	—	3540* 7750*	2080 4500

322C LN ● Mass Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2000 mm 6'7"	1.5 m ³ 1.96 yd ³	kg lb	—	—	11 630* 25,600*	6740 14,700	8010 17,550	4290 9350	—	—	—	—	4880 10,700	2600 5650
2500 mm 8'2"	1.5 m ³ 1.96 yd ³	kg lb	—	—	11 510* 25,350*	6790 14,800	8000 17,550	4270 9300	5460 11,950	2890 6300	—	—	4120* 9050*	2290 4950

322C LN ● VA Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2000 mm 6'7"	1.5 m ³ 1.96 yd ³	kg lb	—	—	10 150* 22,300*	6400 14,100	7580* 16,700	4080 8950	5260* 11,600	2800 6,150	—	—	3570* 7800*	2230 4900
2500 mm 8'2"	1.5 m ³ 1.96 yd ³	kg lb	—	—	10 740* 23,600*	6440 14,150	7820* 17,100	4070 8900	5370 11,900	2760 6,050	—	—	3460* 7600*	1940 4300

*Load limited by hydraulic capacity rather than tipping.

Japan/U.S. Sourced

325C ● Reach Boom ● 600 mm (24") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	D1430X 4'8"	kg lb	—	—	12 500 26,800	7700 16,500	7800 16,800	5000 10,700	5500 11,800	3550 7550	—	—	4200 9250	2650 5850
2650 mm 8'8"	C1470X 4'10"	kg lb	—	—	13 000 27,850	8150 17,500	8150 17,500	5300 11,400	5750 12,350	3800 8100	—	—	4000 8850	2600 5750
3000 mm 9'10"	C1370X 4'6"	kg lb	—	—	13 050 27,900	8150 17,550	8150 17,550	5350 11,450	5750 12,350	3800 8100	4300 9450	2800 6150	3700 8200	2450 5400
3200 mm 10'6"	C1370X 4'6"	kg lb	4600 10,650	4600 10,650	13 050 27,950	8200 17,600	8150 17,550	5350 11,450	5750 12,350	3800 8100	4300 9200	2800 5950	3450 7600	2350 5150

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325C ● Mass Boom ● 600 mm (24") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2500 mm 8'2"	D1500X 4'11"	kg lb	—	—	13 000 27,850	8100 17,350	8050 17,250	5200 11,100	5600 12,000	3600 7700	—	—	4400 9650	2800 6150

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level ● 325C L

Belgium Sourced

325C L ● Reach Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	1.7 m ³ 2.22 yd ³ kg lb	—	—	14 700* 32,400*	8780 19,350	9190 20,250	5620 12,350	6390 14,050	3930 8650	—	—	4760 10,450	2900 6350
2650 mm 8'8"	1.35 m ³ 1.77 yd ³ kg lb	—	—	15 450* 34,050*	9390 20,700	9650 21,250	6080 13,400	6770 14,900	4310 9500	—	—	4110* 9050*	2920 6400
3200 mm 10'6"	1.35 m ³ 1.77 yd ³ kg lb	4440* 9750*	4440* 9750*	15 160* 33,400*	9430 20,750	9660 21,300	6070 13,350	6740 14,850	4280 9400	5010 11,000	3150 6900	3240* 7100*	2610 5750
3200 mm 10'6" HD	1.35 m ³ 1.77 yd ³ kg lb	4410* 9700*	4410* 9700*	15 060* 33,200*	9340 20,550	9580 21,100	6000 13,200	6680 14,700	4220 9300	4950 10,900	3090 6800	3210* 7050*	2570 5650

325C L ● Mass Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	1.7 m ³ 2.22 yd ³ kg lb	—	—	15 200* 33,500*	9210 20,300	9480 20,900	5880 12,950	—	—	—	—	5560 12,250	3460 7600
2500 mm 8'2"	1.7 m ³ 2.22 yd ³ kg lb	—	—	15 140* 33,350*	9250 20,350	9470 20,850	5860 12,900	6510 14,350	4040 8900	—	—	4680* 10,300*	3080 6750

325C L ● VA Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	1.7 m ³ 2.22 yd ³ kg lb	—	—	12 780* 28,150*	8650 19,050	9160 20,150	5520 12,150	6360 14,000	3840 8450	—	—	4670* 10,250*	2960 6500
2500 mm 8'2"	1.7 m ³ 2.22 yd ³ kg lb	—	—	13 650* 30,050*	8680 19,100	9150 20,150	5500 12,100	6310 13,900	3790 8350	—	—	4390* 9650*	2620 5750

Japan/U.S. Sourced

325C L ● Reach Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2000 mm 6'7"	D1520MX 5'0" kg lb	—	—	14 900 32,800	9100 19,550	9400 20,200	5850 12,600	6600 14,100	4150 8850	—	—	5050 11,050	3150 6900
2650 mm 8'8"	C1440MX 4'9" kg lb	—	—	15 700 33,900	9600 20,600	9750 21,000	6250 13,400	6900 14,750	4450 9550	—	—	4350 9550	3100 6800
3000 mm 9'10"	C1470X 4'10" kg lb	—	—	15 600 33,700	9600 20,650	9800 21,000	6250 13,400	6850 14,750	4450 9500	5150 11,300	3300 7250	3700 8150	2900 6400
3200 mm 10'6"	C1470X 4'10" kg lb	4600 10,600	4600 10,600	15 450 33,400	9650 20,700	9800 21,000	6250 13,400	6850 14,750	4450 9500	5150 11,000	3300 7050	3450 7550	2800 6150

325C L ● Mass Boom ● 800 mm (32") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2500 mm 8'2"	D1520MX 5'0" kg lb	—	—	15 500 33,550	9550 20,500	9650 20,750	6100 13,050	6700 14,350	4250 9100	—	—	4950 10,900	3350 7300

*Load limited by hydraulic capacity rather than tipping.

Belgium Sourced

325C LN • Reach Boom • 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2000 mm 6'7"	1.7 m ³ 2.22 yd ³	kg lb	—	—	14 400 31,750	7490 16,500	8800 19,400	4810 10,600	6100 13,450	3340 7350	—	—	4530 9950	2430 5350
2650 mm 8'8"	1.35 m ³ 1.77 yd ³	kg lb	—	—	15 050 33,150	8100 17,850	9260 20,400	5260 11,550	6480 14,250	3720 8200	—	—	4110* 9050*	2500 5500
3200 mm 10'6"	1.35 m ³ 1.77 yd ³	kg lb	4440* 9790*	4440* 9790*	15 110 33,300	8130 17,900	9260 20,400	5260 11,550	6450 14,200	3690 8100	4780 10,500	2690 5900	3240* 7100*	2220 4850
3200 mm 10'6" HD	1.35 m ³ 1.77 yd ³	kg lb	4410* 9700*	4410* 9700*	15 010 33,050	8040 17,700	9190 20,250	5190 11,400	6390 14,050	3630 8000	4730 10,400	2630 5750	3210* 7050*	2170 4750

325C LN • Mass Boom • 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2000 mm 6'7"	1.7 m ³ 2.22 yd ³	kg lb	—	—	14 930* 32,900*	7910 17,400	9090 20,000	5060 11,150	—	—	—	—	5310 11,700	2940 6450
2500 mm 8'2"	1.7 m ³ 2.22 yd ³	kg lb	—	—	14 990 33,050	7940 17,500	9070 19,950	5040 11,100	6230 13,700	3440 7550	—	—	4680* 10,300*	2600 5700

325C LN • VA Boom • 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2000 mm 6'7"	1.7 m ³ 2.22 yd ³	kg lb	—	—	12 780* 28,150*	7210 15,850	8650 19,050	4600 10,100	5980 13,150	3170 6950	—	—	4630 10,200	2420 5300
2500 mm 8'2"	1.7 m ³ 2.22 yd ³	kg lb	—	—	13 650* 30,050*	7370 16,250	8760 19,300	4670 10,250	6020 13,250	3190 7000	—	—	4230 9300	2170 4750

Japan/U.S. Sourced

330C • Reach Boom • 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2150 mm 7'1"	E1470X 4'10"	kg lb	—	—	16 250 34,800	10 450 22,450	10 100 21,700	6750 14,500	7100 15,250	4750 10,200	—	—	5000 11,000	3300 7300
2800 mm 9'2"	D1500X 4'11"	kg lb	—	—	16 850 36,150	11 050 23,700	10 500 22,550	7150 15,300	7400 15,850	5050 10,850	5500 11,800	3750 8000	4700 10,300	3150 6950
3200 mm 10'6"	D1430X 4'8"	kg lb	13,850	13,850	16 850 36,100	11 000 23,650	10 500 22,550	7100 15,300	7400 15,850	5050 10,800	5500 11,800	3750 8000	4450 9750	3000 6650
3900 mm 12'10"	D1345X 4'5"	kg lb	6750 15,400	6750 15,400	16 900 36,550	11 200 24,050	10 600 22,750	7200 15,500	7400 15,900	5100 10,900	5500 11,800	3750 7950	3600 7850	2600 5700

330C • Mass Boom • 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2550 mm 8'4"	E1470X 4'10"	kg lb	—	—	16 750 35,900	10 900 23,450	10 350 22,250	7000 15,000	7250 15,500	4900 10,500	—	—	4950 10,900	3300 7250

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level ● 330C L

Japan/U.S. Sourced

330C L ● Reach Boom ● 750 mm (30") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2150 mm 7'1"	E1470X 4'10"	kg lb	—	—	16 800 36,450	10 950 23,500	12 300 26,600	7050 15,200	8800 18,900	5000 10,750	—	—	6200 13,650	3500 7700
2800 mm 9'2"	D1520WX 5'0"	kg lb	—	—	17 500 37,850	11 500 24,700	12 550 27,100	7450 15,950	9050 19,400	5250 11,300	6750 14,450	3900 8350	5550 12,200	3300 7250
3200 mm 10'6"	D1500X 4'11"	kg lb	13,750	13,750	17 300 37,400	11 450 24,600	12 300 26,650	7400 15,900	9050 19,400	5250 11,250	6750 14,450	3900 8300	4650 10,250	3100 6850
3900 mm 12'10"	D1345X 4'5"	kg lb	6750 15,400	6750 15,400	16 900 36,550	11 650 25,100	11 950 25,850	7550 16,200	9100 19,550	5300 11,400	6800 14,550	3900 8400	3600 7850	2750 6050

330C L ● Mass Boom ● 750 mm (30") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2550 mm 8'4"	E1560X 5'1"	kg lb	—	—	17 300 37,450	11 350 24,350	12 400 26,850	7250 15,600	8900 19,050	5100 10,900	—	—	4900 10,800	3450 7550

Belgium Sourced

330C L ● Reach Boom ● 750 mm (30") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2150 mm 7'1"	1.9 m ³ 2.4 yd ³	kg lb	—	—	16 430* 36,200*	11 020 24,250	11 990* 26,400*	7090 15,600	8770 19,300	5000 11,000	—	—	6090 13,400	3430 7550
2800 mm 9'2"	1.5 m ³ 1.96 yd ³	kg lb	—	—	17 330* 38,200*	11 650 25,650	12 370* 27,250*	7560 16,650	9150 20,150	5380 11,850	6850 15,100	4010 8800	5420* 11,950*	3340 7350
3200 mm 10'5"	1.45 m ³ 1.89 yd ³	kg lb	—	—	17 130* 37,750*	11 710 25,800	12 200* 26,900*	7590 16,700	9160 20,150	5390 11,850	6840 15,050	4000 8820	4540* 10,000*	3160 6950
3900 mm 12'10"	1.3 m ³ 1.7 yd ³	kg lb	6720* 14,800*	6720* 14,800*	16 690* 36,800*	11 870 26,150	11 790* 25,950*	7660 16,850	9130* 20,100*	5410 11,900	6830 15,050	3990 8750	3450* 7600*	2760 6050

330C L ● Mass Boom ● 750 mm (30") Track Shoes

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2150 mm 7'1"	1.9 m ³ 2.4 yd ³	kg lb	—	—	16 770* 36,950*	11 340 25,000	12 180* 26,850*	7290 16,050	8910 19,600	5120 11,250	—	—	6550 14,400	3740 8200
2550 mm 8'4"	1.9 m ³ 2.4 yd ³	kg lb	—	—	16 910* 37,250*	11 440 25,200	12 120* 26,700*	7320 16,100	8910 19,600	5120 11,250	—	—	4820* 10,600*	3410 7500

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
● 330C LN ● 345C

Excavators

Belgium Sourced

330C LN ● Reach Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2150 mm 7'1"	1.9 m ³ 2.4 yd ³	kg lb	—	—	16 430* 36,200*	9650 21,250	11 990* 26,400*	6240 13,750	8590 18,900	4390 9650	—	—	5960 13,100	2980 6550
2800 mm 9'2"	1.5 m ³ 1.96 yd ³	kg lb	—	—	17 230* 37,950*	10 280 22,650	12 370* 27,250*	6710 14,750	8970 19,750	4780 10,500	6700 14,750	3540 7600	5420* 11,950*	2940 6450
3200 mm 10'5"	1.45 m ³ 1.89 yd ³	kg lb	—	—	17 130* 37,750*	10 330 22,750	12 200* 26,900*	6740 14,850	8980 19,800	4780 10,500	6690 14,750	3530 7750	4540* 10,000*	2770 6100
3900 m 12'10"	1.3 m ³ 1.7 yd ³	kg lb	6720*	6720*	16 690* 36,800*	10 480 23,100	11 790* 25,950*	6810 15,000	9010 19,850	4800 10,550	6690 14,750	3520 7750	3450* 7600*	2400 5250

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330C LN ● Mass Boom ● 600 mm (24") Track Shoes

Stick	Bucket	3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2150 mm 7'1"	1.9 m ³ 2.4 yd ³	kg lb	—	—	16 770* 36,950*	9960 21,950	12 180* 26,850*	6430 14,150	8730 19,200	4510 9900	—	—	6410 14,100	3270 7200
2550 mm 8'4"	1.9 m ³ 2.4 yd ³	kg lb	—	—	16 910* 37,250*	10 060 22,150	12 120* 26,700*	6470 14,250	8720 19,200	4510 9900	—	—	4820* 10,600*	2970 6500

Japan Sourced

345C ● Reach Boom ● 600 mm (24") Track Shoes

Bucket Type	Front Length		Heavy Lift		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		
	mm	ft			Front	Side	Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	3900	12'10"	on	kg	8650*	8650*	23 000*	15 700	16 300*	10 100	11 350	7150
	Bucket	1325	4'4"		lb	19,600*	19,600*	49,750*	33,750	35,000*	21,750	24,400*	15,400
TB1525XN	Stick	3900	12'10"	off	kg	8350*	8350*	22 150*	15 700	15 650*	10 100	11 350	7150
	Bucket	1325	4'4"		lb	18,900*	18,900*	47,950*	33,750	33,850*	21,750	24,400*	15,400
TB1525XN	Stick	3400	11'2"	on	kg	—	—	20 800*	15 550	16 150	10 000	11 300	7100
	Bucket	1525	5'0"		lb	16,100*	16,100*	48,300*	33,350	34,700*	21,500	24,250*	15,250
TB1628X	Stick	2900	9'6"	on	kg	—	—	19 800*	15 250	15 950*	9800	11 200	7000
	Bucket	1628	5'4"		lb	—	—	46,050*	32,750	34,300*	21,100	24,000*	15,000
TB1628X	Stick	2900	9'6"	off	kg	—	—	19 200*	15 250	15 950*	9800	11 200	7000
	Bucket	1628	5'4"		lb	—	—	44,650*	32,750	34,300*	21,100	24,000*	15,000

Bucket Type	Front Length		Heavy Lift		9 m 30'0"		10.5 m 35'0"		At Max. Reach		
	mm	ft			Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	3900	12'10"	on	kg	8450	5300	6550	4050	5400*	3450
	Bucket	1325	4'4"		lb	18,150	11,350	—	—	11,850*	7600
TB1525XN	Stick	3900	12'10"	off	kg	8450	5300	6550	4050	5200*	3450
	Bucket	1325	4'4"		lb	18,150	11,350	—	—	11,400*	7600
TB1525XN	Stick	3400	11'2"	on	kg	8400	5250	6550	4050	5400*	3700
	Bucket	1525	5'0"		lb	18,050	11,250	—	—	11,900*	8150
TB1628X	Stick	2900	9'6"	on	kg	8350	5200	6550	4050	6350*	4000
	Bucket	1628	5'4"		lb	17,950	11,150	—	—	14,000*	8750
TB1628X	Stick	2900	9'6"	off	kg	8350	5200	6550	4050	6150*	4000
	Bucket	1628	5'4"		lb	17,950	11,150	—	—	13,500*	8750

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- 345C ● 345C L – FIX

Japan Sourced

345C ● Mass Boom ● 600 mm (24") Track Shoes

Bucket Type	Front Length		Heavy Lift		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		
	mm	ft			Front	Side	Front	Side	Front	Side	Front	Side	
UB1550X	Stick	3000	9'10"	on	kg	—	—	22 350*	14 900	15 700	9450	10 850	6600
	Bucket	1550	5'1"					lb	48,350*	31,950	33,700	20,350	23,250
UB1729X	Stick	3000	9'10"	off	kg	—	—	21 500*	14 900	15 300*	9450	10 850	6600
	Bucket	1550	5'1"					lb	46,500*	31,950	33,050*	20,350	23,250
UB1729X	Stick	2500	8'2"	on	kg	—	—	22 300*	14 900	15 750	9500	10 900	6700
	Bucket	1729	5'8"					lb	48,400*	31,950	33,750	20,450	23,400
UB1729X	Stick	2500	8'2"	off	kg	—	—	21 450*	14 900	15 550*	9500	10 900	6700
	Bucket	1729	5'8"					lb	46,550*	31,950	33,650*	20,450	23,400

Bucket Type	Front Length		Heavy Lift		9 m 30'0"		10.5 m 35'0"		At Max. Reach		
	mm	ft			Front	Side	Front	Side	Front	Side	
UB1550X	Stick	3000	9'10"	on	kg	7950	4750	6550	4050	5900*	3600
	Bucket	1550	5'1"			lb	17,000	10,150	—	—	12,950*
UB1729X	Stick	3000	9'10"	off	kg	7950	4750	6550	4050	5650*	3600
	Bucket	1550	5'1"			lb	17,000	10,150	—	—	12,450*
UB1729X	Stick	2500	8'2"	on	kg	8050	4850	6550	4050	6900	4100
	Bucket	1729	5'8"			lb	—	—	—	—	15,150
UB1729X	Stick	2500	8'2"	off	kg	8050	4850	6550	4050	6900	4100
	Bucket	1729	5'8"			lb	—	—	—	—	15,150

345C L – FIX ● Long Reach Boom ● 900 mm (36") Track Shoes

Bucket Type	Front Length		Heavy Lift		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		
	mm	ft			Front	Side	Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	4300	14'1"	on	kg	6650*	6650*	17 750*	15 950	15 800*	10 300	12 100*	7350
	Bucket	1325	4'4"			lb	15,050*	15,050*	41,000*	34,300	34,150*	22,200	26,100*
TB1325XN	Stick	4300	14'1"	off	kg	6400*	6400*	17 150*	15 950	15 200*	10 300	11 600*	7350
	Bucket	1325	4'4"			lb	14,500*	14,500*	39,750*	34,300	32,850*	22,200	25,050*
TB1325XN	Stick	3900	12'10"	on	kg	—	—	16 700*	15 800	16 050*	10 200	12 300*	7300
	Bucket	1325	4'4"			lb	—	—	38,600*	33,950	34,700*	21,950	26,550*
TB1325XN	Stick	3900	12'10"	off	kg	—	—	16 150*	15 800	15 450*	10 200	11 800*	7300
	Bucket	1325	4'4"			lb	—	—	37,400*	33,950	33,350*	21,950	25,500*

Bucket Type	Front Length		Heavy Lift		9 m 30'0"		10.5 m 35'0"		At Max. Reach		
	mm	ft			Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	4300	14'1"	on	kg	9800*	5450	7600	4150	5100*	3100
	Bucket	1325	4'4"			lb	21,000	11,700	16,300	8850	11,250*
TB1325XN	Stick	4300	14'1"	off	kg	9350*	5450	7600	4150	4900*	3100
	Bucket	1325	4'4"			lb	20,250*	11,700	16,300	8850	10,800*
TB1325XN	Stick	3900	12'10"	on	kg	9750	5450	7600	4150	5750*	3300
	Bucket	1325	4'4"			lb	20,950	11,650	16,250	8850	12,700*
TB1325XN	Stick	3900	12'10"	off	kg	9500*	5450	7600	4150	5550*	3300
	Bucket	1325	4'4"			lb	20,550*	11,650	16,250	8850	12,200*

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
● 345C L – FIX

Excavators

Japan Sourced

345C L – FIX ● Reach Boom ● 900 mm (36") Track Shoes

Bucket Type	Front Length		Heavy Lift		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		
	mm	ft			Front	Side	Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	3900	12'10"	on	kg	8650*	8650*	23 000*	16 550	16 300*	10 650	12 500*	7600
	Bucket	1325	4'4"		lb	19,600*	19,600*	49,750*	35,500	35,200*	22,950	27,050*	16,250
TB1628X	Stick	3900	12'10"	off	kg	8350*	8350*	22 150*	16 550	15 650*	10 650	12 050*	7600
	Bucket	1325	4'4"		lb	18,900*	18,900*	47,950*	35,500	33,850*	22,950	26,000*	16,250
TB1628X	Stick	3400	11'2"	on	kg	—	—	20 800*	16 350	16 600*	10 550	12 750*	7500
	Bucket	1628	5'4"		lb	16,100*	16,100*	48,350*	35,150	35,850*	22,700	27,550*	16,150
TB1758X	Stick	3400	11'2"	off	kg	15,500*	15,500*	20 200*	16 350	15 950*	10 550	12 250*	7500
	Bucket	1628	5'4"		lb	15,500*	15,500*	46,850*	35,150	34,500*	22,700	26,500*	16,150
TB1758X	Stick	2900	9'6"	on	kg	—	—	19 750*	16 000	16 550*	10 300	12 750*	7350
	Bucket	1758	5'9"		lb	—	—	45,900*	34,350	35,800*	22,200	27,550*	15,800
TB1758X	Stick	2900	9'6"	off	kg	—	—	19 150*	16 000	15 900*	10 300	12 250*	7350
	Bucket	1758	5'9"		lb	—	—	44,500*	34,350	34,400*	22,200	26,450*	15,800

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Bucket Type	Front Length		Heavy Lift		9 m 30'0"		10.5 m 35'0"		At Max. Reach		
	mm	ft			Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	3900	12'10"	on	kg	10 000	5650	7750	4300	5400*	3700
	Bucket	1325	4'4"		lb	21,400	12,100	—	—	11,850*	8150
TB1628X	Stick	3900	12'10"	off	kg	9750*	5650	7750	4300	5200*	3700
	Bucket	1325	4'4"		lb	21,100*	12,100	—	—	11,400*	8150
TB1628X	Stick	3400	11'2"	on	kg	9950	5600	—	—	5450*	4000
	Bucket	1628	5'4"		lb	21,350	12,000	—	—	11,950*	8750
TB1758X	Stick	3400	11'2"	off	kg	9900*	5600	—	—	5250*	4000
	Bucket	1628	5'4"		lb	21,350	12,000	—	—	11,500*	8750
TB1758X	Stick	2900	9'6"	on	kg	9850	5500	—	—	6300*	4200
	Bucket	1758	5'9"		lb	21,100	11,800	—	—	13,900*	9250
TB1758X	Stick	2900	9'6"	off	kg	9850	5500	—	—	6100*	4200
	Bucket	1758	5'9"		lb	21,100	11,800	—	—	13,400*	9250

345C L – FIX ● Mass Boom ● 900 mm (36") Track Shoes

Bucket Type	Front Length		Heavy Lift		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		
	mm	ft			Front	Side	Front	Side	Front	Side	Front	Side	
UB1600X	Stick	3000	9'10"	on	kg	—	—	19 150*	18 300	13 650*	11 550	10 850*	7900
	Bucket	1600	5'3"		lb	—	—	41,100*	39,450	29,400*	24,850	23,500*	16,950
UB1729X	Stick	3000	9'10"	off	kg	—	—	21 600*	15 800	15 400*	10 100	11 750*	7100
	Bucket	1600	5'3"		lb	—	—	46,750*	33,950	33,250*	21,700	25,400*	15,150
UB1729X	Stick	2500	8'2"	on	kg	—	—	22 300*	15 700	16 200*	10 050	12 400*	7100
	Bucket	1729	5'8"		lb	—	—	48,400*	33,700	35,000*	21,600	26,850*	15,200
UB1729X	Stick	2500	8'2"	off	kg	—	—	21 450*	15 700	15 550*	10 050	11 900*	7100
	Bucket	1729	5'8"		lb	—	—	46,550*	33,700	33,650*	21,600	25,750*	15,200

Bucket Type	Front Length		Heavy Lift		9 m 30'0"		10.5 m 35'0"		At Max. Reach		
	mm	ft			Front	Side	Front	Side	Front	Side	
UB1600X	Stick	3000	9'10"	on	kg	9200*	5600	—	—	4900*	3750
	Bucket	1600	5'3"		lb	20,000*	11,900	—	—	10,700*	8250
UB1729X	Stick	3000	9'10"	off	kg	9400*	5150	—	—	5750*	4000
	Bucket	1600	5'3"		lb	20,200*	11,000	—	—	12,700*	8750
UB1729X	Stick	2500	8'2"	on	kg	9600	5200	—	—	7650*	4400
	Bucket	1729	5'8"		lb	—	—	—	—	16,850*	9700
UB1729X	Stick	2500	8'2"	off	kg	9400*	5200	—	—	7650*	4400
	Bucket	1729	5'8"		lb	—	—	—	—	16,850*	9700

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

● 345C L – VG

Japan Sourced

345C L – VG ● Long Reach Boom ● 900 mm (36") Track Shoes

Bucket Type	Front Length		Heavy Lift		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		
	mm	ft			Front	Side	Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	4300	14'1"	on	kg	7000*	7000*	17 750*	17 750*	15 900*	11 600	12 150*	8250
	Bucket	1325	4'4"		lb	15,850*	15,850*	41,050*	38,750	34,350*	24,950	26,250*	17,750
TB1325XN	Stick	4300	14'1"	off	kg	6750*	6750*	17 200*	17 200*	15 250*	11 600	11 650*	8250
	Bucket	1325	4'4"		lb	15,250*	15,250*	39,800*	38,750	33,000*	24,950	25,200*	17,750
TB1325XN	Stick	3900	12'10"	on	kg	—	—	16 900*	16 900*	16 100*	11 500	12 350*	8200
	Bucket	1325	4'4"		lb	14,600*	14,600*	39,000*	38,450	34,800*	24,750	26,650*	17,650
TB1325XN	Stick	3900	12'10"	off	kg	—	—	16 350*	16 350*	15 500*	11 500	11 850*	8200
	Bucket	1325	4'4"		lb	14,050*	14,050*	37,750*	37,750*	33,450*	24,750	25,600*	17,650

Bucket Type	Front Length		Heavy Lift		9 m 30'0"		10.5 m 35'0"		At Max. Reach		
	mm	ft			Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	4300	14'1"	on	kg	9800*	6200	7950	4750	5150*	3600
	Bucket	1325	4'4"		lb	21,200*	13,250	17,050	10,150	11,350*	7950
TB1325XN	Stick	4300	14'1"	off	kg	9400*	6200	7850*	4750	4950*	3600
	Bucket	1325	4'4"		lb	20,350*	13,250	16,950*	10,150	10,950*	7950
TB1325XN	Stick	3900	12'10"	on	kg	9950*	6150	7950	4750	5850*	3850
	Bucket	1325	4'4"		lb	21,500*	13,200	17,050	10,150	12,850*	8450
TB1325XN	Stick	3900	12'10"	off	kg	9550*	6150	7950*	4750	5600*	3850
	Bucket	1325	4'4"		lb	20,600*	13,200	17,050	10,150	12,350*	8450

345C L – VG ● Reach Boom ● 750 mm (30") Track Shoes

Bucket Type	Front Length		Heavy Lift		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		
	mm	ft			Front	Side	Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	3900	12'10"	on	kg	8950*	8950*	22 950*	19 850	16 250*	12 750	12 450*	9100
	Bucket	1325	4'4"		lb	20,300*	20,300*	49,600*	42,700	35,100*	27,400	26,950*	19,500
TB1325XN	Stick	3900	12'10"	off	kg	8650*	8650*	22 100*	19 850	15 600*	12 750	11 950*	9100
	Bucket	1325	4'4"		lb	19,600*	19,600*	47,750*	42,700	33,750*	27,400	25,850*	19,500
TB1672EXN	Stick	3400	11'2"	on	kg	7300*	7300*	20 600*	19 400	16 150*	12 350	12 350*	8750
	Bucket	1672	5'6"		lb	16,650*	16,650*	47,750*	41,600	34,900*	26,550	26,650*	18,750
TB1672EXN	Stick	3400	11'2"	off	kg	7050*	7050*	19 950*	19 400	15 550*	12 350	11 850*	8750
	Bucket	1672	5'6"		lb	16,000*	16,000*	46,250*	41,600	33,550*	26,550	25,550*	18,750
TB1758X	Stick	2900	9'6"	on	kg	—	—	19 850*	19 050	16 150*	12 150	12 350*	8650
	Bucket	1758	5'9"		lb	—	—	46,050*	40,900	34,900*	26,150	26,700*	18,550
TB1758X	Stick	2900	9'6"	off	kg	—	—	19 200*	19 050	15 500*	12 150	11 850*	8650
	Bucket	1758	5'9"		lb	—	—	44,600*	40,900	33,500*	26,150	25,600*	18,550

Bucket Type	Front Length		Heavy Lift		9 m 30'0"		10.5 m 35'0"		At Max. Reach		
	mm	ft			Front	Side	Front	Side	Front	Side	
TB1325XN	Stick	3900	12'10"	on	kg	10 100*	6800	8050*	5250	5350*	4600
	Bucket	1325	4'4"		lb	21,800*	14,600	—	—	11,700*	10,050
TB1325XN	Stick	3900	12'10"	off	kg	9700*	6800	7800*	5250	5100*	4600
	Bucket	1325	4'4"		lb	20,900*	14,600	—	—	11,250*	10,050
TB1672EXN	Stick	3400	11'2"	on	kg	9900*	6500	—	—	5000*	4550
	Bucket	1672	5'6"		lb	21,300*	13,900	—	—	11,000*	10,000
TB1672EXN	Stick	3400	11'2"	off	kg	9450*	6500	—	—	4800*	4550
	Bucket	1672	5'6"		lb	20,400*	13,900	—	—	10,550*	10,000
TB1758X	Stick	2900	9'6"	on	kg	9850*	6450	—	—	5950*	4900
	Bucket	1758	5'9"		lb	21,250*	13,800	—	—	13,100*	10,750
TB1758X	Stick	2900	9'6"	off	kg	9450*	6450	—	—	5700*	4900
	Bucket	1758	5'9"		lb	20,350*	13,800	—	—	12,550*	10,750

*Load limited by hydraulic capacity rather than tipping.

Lifting Capacity At Ground Level
 ● 345C L – VG ● 345C L – FIX

Excavators

Japan Sourced

345C L – VG ● Mass Boom ● 750 mm (30") Track Shoes

Bucket Type	Front Length		Heavy Lift		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		
	mm	ft			Front	Side	Front	Side	Front	Side	Front	Side	
UB1729X	Stick	3000	9'10"	on	kg	7850*	7850*	21 850*	18 800	15 500*	11 850	11 750*	8250
	Bucket	1729	5'8"		lb	17,900*	17,900*	47,300*	40,350	33,550*	25,450	25,400*	17,700
UB1829X	Stick	3000	9'10"	off	kg	7550*	7550*	21 000*	18 800	14 900*	11 850	11 250*	8250
	Bucket	1729	5'8"		lb	17,250*	17,250*	45,450*	40,350	32,150*	25,450	24,300*	17,700
UB1829X	Stick	2500	8'2"	on	kg	—	—	22 200*	19 150	16 150*	12 200	12 350*	8650
	Bucket	1829	6'0"		lb	—	—	48,100*	41,100	34,900*	26,300	26,700*	18,600
UB1829X	Stick	2500	8'2"	off	kg	—	—	21 350*	19 150	15 500*	12 200	11 850*	8650
	Bucket	1829	6'0"		lb	—	—	46,250*	41,100	33,500*	26,300	25,600*	18,600

Bucket Type	Front Length		Heavy Lift		9 m 30'0"		10.5 m 35'0"		At Max. Reach		
	mm	ft			Front	Side	Front	Side	Front	Side	
UB1729X	Stick	3000	9'10"	on	kg	9250*	6000	—	—	5500*	4550
	Bucket	1729	5'8"		lb	19,900*	12,800	—	—	12,050*	10,050
UB1729X	Stick	3000	9'10"	off	kg	8850*	6000	—	—	5250*	4550
	Bucket	1729	5'8"		lb	19,000*	12,800	—	—	11,550*	10,050
UB1829X	Stick	2500	8'2"	on	kg	9700*	6450	—	—	7700*	5550
	Bucket	1829	6'0"		lb	—	—	—	—	16,950*	12,250
UB1829X	Stick	2500	8'2"	off	kg	9300*	6450	—	—	7450*	5550
	Bucket	1829	6'0"		lb	—	—	—	—	16,350*	12,250

Japan/U.S. Sourced

345C L – FIX ● Reach Boom ● 900 mm (36") Triple Grouser

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
3350 mm 11'0"	1219 mm GP-C 4'0"	kg lb	6850* 15,700*	6850* 15,700*	20 710* 47,250*	16 090 34,600	16 250* 35,150*	10 360 22,300	12 470* 27,000*	9760 20,950
3900 mm 12'10"	1219 mm GP-C 4'0"	kg lb	8370 19,050*	8371 19,050*	22 550 48,750*	16 250 34,950	15 890 34,350	10 930 23,550	12 170* 26,350	7360 15,800

Stick	Bucket		9 m 30'0"		10.5 m 35'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side
3350 mm 11'0"	1219 mm GP-C 4'0"	kg lb	9760 20,950*	5440 11,700	—	—	5240 11,500*	3770 8300
3900 mm 12'10"	1219 mm GP-C 4'0"	kg lb	9750 20,950	5430 11,650	7520 15,200	4090 8750	5090 11,250	3440 7600

345C L – FIX ● Mass Boom ● 900 mm (36") Triple Grouser

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
2500 mm 8'2"	1905 mm HDR V-edge 5'4"	kg lb	—	—	21 250 46,050*	16 120 34,650	15 260* 33,000*	10 200 21,900	11 530* 24,900*	7030 15,100
3000 mm 9'10"	1905 mm HDR V-edge 5'4"	kg lb	—	—	21 360* 46,250*	16 220* 34,850*	15 030* 32,500*	10 190 21,900	11 310* 24,400*	6970* 14,900*

Stick	Bucket		9 m 30'0"		10.5 m 35'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side
2500 mm 8'2"	1905 mm HDR V-edge 5'4"	kg lb	—	—	—	—	6810* 15,000*	4040 8900
3000 mm 9'10"	1905 mm HDR V-edge 5'4"	kg lb	8840* 19,000*	4900 10,450	—	—	5100* 11,250*	3540 7800

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

- 345C L – VG
- 345C L – W-VG

U.S. Sourced

345C L – VG ● Reach Boom ● 900 mm (36") Triple Grouser

Stick	Bucket		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
3350 mm 11'0"	No Bucket 5'3" Pin Grabber Coupler	kg lb	7990* 18,200*	7990* 18,200*	21 360* 47,850*	21 360* 47,850*	16 980* 36,750*	14 410 31,000	13 140* 28,450*	10 320 22,200
3900 mm 12'10"	1219 mm 4'8" GP-C with Long Tips	kg lb	8770* 19,900*	8770* 19,900*	22 610* 48,900*	18 340 39,400	15 960* 34,500*	11 710 25,200	12 230* 26,450*	8280 17,800

Stick	Bucket		9 m 30'0"		10.5 m 35'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side
3350 mm 11'0"	No Bucket 5'3" Pin Grabber Coupler	kg lb	10 710* 23,200*	7850 16,900			7740* 17,050*	6470 14,250
3900 mm 12'10"	1219 mm 4'8" GP-C with Long Tips	kg lb	9890* 21,400*	6150 13,200	7890* 16,930*	4690 10,060	5260* 11,350*	4010 8850

345C L – W-VG ● Reach Boom ● 900 mm (36") Track Shoes

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
3350 mm 11'0"	No Bucket 5'3" Pin Grabber Coupler	kg lb	21 360* 47,850*	21 360* 47,850*	16 980* 36,750*	14 410 31,000	13 140* 28,450*	10 320 22,200	10 710* 23,200*	7850 16,900	6470* 14,250*	6470 14,250
3900 mm 12'10"	1219 mm 4'0" GP-C with Long Tips	kg lb	22 610* 48,900*	22 610* 48,900*	15 970* 34,550*	13 920 29,950	12 320* 26,450	9810 21,100	9890* 21,400*	7310 15,700	5160* 11,400*	4840 10,650

Belgium Sourced

345C L – VG ● Reach Boom ● 600 mm (24") Track Shoes

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2900 mm 9'6"	2.2 m ³ 3 yd ³	kg lb	17 590* 38,790	17 590* 38,790	15 300* 33,740	11 880 26,200	11 650* 25,690	8370 18,460	9240* 20,370	6190 13,650	5490* 12,110	4620 10,190
3350 mm 11'0"	2.0 m ³ 2.7 yd ³	kg lb	18 340* 40,440	18 340* 40,440	15 340* 33,830	12 080 26,640	11 660* 25,710	8510 18,770	9300* 20,510	6280 13,850	4690* 10,340	4350 9590

345C L – VG ● Mass Boom ● 600 mm (24") Track Shoes

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
2500 mm 9'2"	2.6 m ³ 3.5 yd ³	kg lb	20 280* 44,720	18 050 39,800	14 590* 32,170	11 360 25,050	11 000* 24,260	7860 17,330	8420* 18,570	5640 12,440	6520* 14,380	4630 10,210
3000 mm 9'10"	2.6 m ³ 3.5 yd ³	kg lb	20 450* 45,090	18 130 39,980	14 400* 31,750	11 340 25,070	10 800* 23,810	7790 17,180	8380* 17,480	5540 12,220	4860* 10,720	4090 9020

*Load limited by hydraulic capacity rather than tipping.

Japan Sourced

365B L Series II ● Heavy Lift ● Reach Boom
● 750 mm (30") Double Grousers

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
2840 mm 9'4"	VB2.9EX 6'9"	kg lb	—	—	25 350* 54,950*	17 350 37,300	19 800* 42,550	12 300 26,400	14 750 31,700	9200 19,750
3600 mm 11'10"	VB2.5EX 6'9"	kg lb	12 000* 28,050*	12 000* 28,050*	25 650* 55,550*	17 600 37,800	19 800* 42,850*	12 450 26,750	14 900 31,950	9300 20,000
4670 mm 15'4"	VB2.5EX 6'9"	kg lb	13 300* 30,950*	13 300* 30,950*	25 050* 54,150*	17 750 38,150	19 150* 41,350*	12 500 26,800	14 850 31,850	9250 19,850

Stick	Bucket		10.5 m 35'0"		12 m 40'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side
2840 mm 9'4"	VB2.9EX 6'9"	kg lb	11 500 25,300	7100 15,650	—	—	8550* 18,850*	6100 13,400
3600 mm 11'10"	VB2.5EX 6'9"	kg lb	11 550 24,800	7200 15,400	—	—	8050* 17,700*	5500 12,250
4670 mm 15'4"	VB2.5EX 6'9"	kg lb	11 450 24,550	7050 15,100	9050 18,200*	5450 11,600	5600* 12,350*	4550 10,000

365B L Series II ● Heavy Lift ● Mass Boom
● 750 mm (30") Double Grousers

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
2750 mm 8'5"	WB3.5VX 6'11"	kg lb	29 750* 69,400*	28 300 60,650	25 000* 54,100*	17 350 37,250	19 100* 41,200*	11 950 25,600	14 100* 31,050*	8600 19,000
3000 mm 9'10"	WB3.5VX 6'11"	kg lb	30 250* 70,450*	28 350 60,750	24 900* 53,750*	17 350 37,200	18 950* 40,850*	11 900 25,450	14 150 30,300	8500 18,200

Stick	Bucket		10.5 m 35'0"		12 m 40'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side
2750 mm 8'5"	WB3.5VX 6'11"	kg lb	—	—	—	—	7500* 16,550*	7250 15,950
3000 mm 9'10"	WB3.5VX 6'11"	kg lb	—	—	—	—	6250* 13,700*	6250* 13,700*

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

● 365C L

Belgium Sourced

365C L ● Heavy Lift ● 7.8 m (25'7") Reach Boom ● 750 mm (30") Double Grousers

Stick	Bucket	6 m 20'0"		7.5 m 25'0"		9 m 30'0"		10.5 m 35'0"		12 m 40'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2840 mm 9'4"	3.2 m ³ 4.2 yd ³	kg lb	24 360* 53,714	17 940 39,558	18 900* 41,675	12 620 27,827	15 070* 33,229	9360 20,639	11 610 25,600	7100 15,656	—	—	7820* 17,243	5920 13,054
3600 mm 11'10"	3.6 m ³ 4.71 yd ³	kg lb	24 540* 54,111	18 070 39,844	18 760* 41,366	12 650 27,893	14 930* 32,921	9320 20,551	11 550 25,468	7030 15,501	—	—	7170* 15,810	5200 11,466
4150 mm 13'7"	2.6 m ³ 3.4 yd ³	kg lb	24 710* 54,486	18 450 40,682	18 850* 41,564	12 960 28,577	15 070* 33,229	9600 21,168	11 820 26,063	7300 16,097	—	—	6290* 13,869	5030 11,091
4670 mm 15'4"	2.6 m ³ 3.4 yd ³	kg lb	24 340* 53,670	18 570 40,947	18 480* 40,748	13 000 28,665	14 780* 32,590	9590 21,146	11 780 25,975	7250 15,986	9270 20,440	5550 12,238	5160* 11,378	4520 9967

365C L ● Heavy Lift ● 6.6 m (21'8") Mass Boom ● 900 mm (36") Double Grousers

Stick	Bucket	4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2570 mm 8'5"	4.4 m ³ 5.8 yd ³	kg lb	29 800* 65,710	29 630 65,330	24 250* 53,470	18 180 40,090	18 400* 40,570	12 450 27,450	14 070* 31,020	8890 19,600	6620* 14,600	6620* 14,600
3000 mm 9'10"	4.0 m ³ 5.2 yd ³	kg lb	30 540* 67,340	29 770 65,640	24 200* 53,360	18 220 40,180	18 320* 40,400	12 450 27,450	14 280* 31,490	8880* 19,580	5520* 12,170	5520* 12,170

365C L ● Heavy Lift ● 7 m (23'0") Mass Boom ● 750 mm (30") Double Grousers

Stick	Bucket	4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	
2570 mm 8'5"	4.0 m ³ 5.2 yd ³	kg lb	21 240* 46,830	21 240* 46,830	23 810* 52,500	17 700 39,030	18 140* 40,000	12 190 26,880	14 120* 31,140	8760 19,320	6650* 14,670	6440 14,200
3000 mm 9'10"	3.8 m ³ 5.0 yd ³	kg lb	22 400* 49,390	22 400* 49,390	23 810* 52,500	17 750 39,140	18 050* 39,800	12 190 26,880	14 160* 31,220	8740 19,270	5570* 12,280	5570* 12,280

*Load limited by hydraulic capacity rather than tipping.

Japan Sourced

385B ● Heavy Lift ● Reach Boom ● 750 mm (30") Double Grousers

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
4400 mm 14'5"	HB2.1X 7'0"	kg lb	—	—	11 350* 27,000*	11 350* 27,000*	22 100 47,500	15 600 33,550	16 650 35,800	11 850 25,450
5500 mm 18'1"	HB1.6X 7'0"	kg lb	—	—	14 750* 34,500*	14 750* 34,500*	22 650 48,650	16 100 34,600	17 050 36,700	12 250 26,250

Stick	Bucket		10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
4400 mm 14'5"	HB2.1X 7'0"	kg lb	13 050 28,050	9250 19,850	10 500 22,450	7350 15,700	8500 18,200	5850 12,450	6950 15,350	4700 10,300
5500 mm 18'1"	HB1.6X 7'0"	kg lb	13 400 28,750	9550 20,500	10 750 23,050	7600 16,250	8750 18,700	6100 12,950	6300 13,900	4200 9250

385B ● Heavy Lift ● GP Boom ● 750 mm (30") Double Grousers

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
2920 mm 9'7"	JB3.5EX 7'4"	kg lb	—	—	26 950* 64,300*	23 650 50,800	23 200 49,850	16 600 35,700	17 250 37,050	12 400 26,600
3700 mm 12'2"	HB3.5EX 7'0"	kg lb	—	—	33 600* 75,150	24 950 53,600	24 250 52,100	17 650 37,950	18 150 38,950	13 300 28,500
4400 mm 14'5"	HB3.1X 7'0"	kg lb	31,100*	31,100*	35 150* 75,750	25 200 54,100	24 400 52,400	17 800 38,200	18 200 39,050	13 300 28,600
5500 mm 18'1"	HB2.5X 7'0"	kg lb	16 000* 36,850*	16 000* 36,850*	34 650* 74,850*	25 900 55,650	24 950 53,550	18 250 39,250	18 550 39,850	13 700 29,350

Stick	Bucket		10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
2920 mm 9'7"	JB3.5EX 7'4"	kg lb	13 350 28,600	9500 20,350	—	—	—	—	8900* 19,600*	7100 15,600
3700 mm 12'2"	HB3.5EX 7'0"	kg lb	14 150 30,350	10 300 22,100	—	—	—	—	8850* 19,500*	7150 15,750
4400 mm 14'5"	HB3.1X 7'0"	kg lb	14 150 30,300	10 300 22,050	11 250 24,050	8100 17,250	—	—	7200* 15,900*	6450 14,250
5500 mm 18'1"	HB2.5X 7'0"	kg lb	14 400 30,900	10 550 22,650	11 450 24,550	8300 17,750	8300* 18,300*	6600 14,500	5400* 11,850*	5400* 11,850*

385B ● Heavy Lift ● Mass Boom ● 750 mm (30") Double Grousers

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
2920 mm 9'7"	JB4.7EMX 7'4"	kg lb	22 100* 51,400*	22 100* 51,400*	34 500* 74,750*	25 150 54,000	24 200 52,000	17 550 37,650	17 850 38,300	12 950 27,750
3400 mm 11'2"	JB4.3EX 7'4"	kg lb	23 850* 55,250*	23 850* 55,250*	35 100* 75,950*	25 450 54,600	24 450 52,400	17 750 38,050	18 000 38,650	13 100 28,100

Stick	Bucket		10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
2920 mm 9'7"	JB4.7EMX 7'4"	kg lb	—	—	—	—	—	—	10 500* 21,350*	9100 20,000
3400 mm 11'2"	JB4.3EX 7'4"	kg lb	13 850 30,500	10 000 21,950	—	—	—	—	9850* 21,650*	8550 18,850

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level

● 385B L

Japan Sourced

385B L ● Heavy Lift ● Reach Boom ● 750 mm (30") Double Grousers

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
4400 mm 14'5"	HB2.1X 7'0"	kg lb	—	—	11 350* 27,000*	11 350* 27,000*	25 250* 54,650*	16 050 34,500	20 350* 43,800	12 200 26,200
5500 mm 18'1"	HB1.6X 7'0"	kg lb	—	—	12 800* 30,100*	12 800* 30,100*	25 300* 54,600*	16 600 35,750	20 200* 43,700*	12 600 27,050

Stick	Bucket		10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
4400 mm 14'5"	HB2.1X 7'0"	kg lb	15 950 34,300	9550 20,450	12 850 27,600	7600 16,200	10 500 22,550	6050 12,900	8700 19,100	4850 10,700
5500 mm 18'1"	HB1.6X 7'0"	kg lb	16 300 35,000	9850 21,100	13 100 28,100	7800 16,700	10 700 22,900	6250 13,300	5950* 13,100*	4250 9300

385B L ● Heavy Lift ● GP Boom ● 750 mm (30") Double Grousers

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
2920 mm 9'7"	JB3.5EX 7'4"	kg lb	—	—	27 400* 65,250*	24 600 52,900	26 500* 57,300*	17 350 37,300	21 300 45,750	13 050 28,000
3700 mm 12'2"	HB3.5EX 7'0"	kg lb	—	—	33 600* 75,900*	25 550 54,900	27 250* 58,950*	18 100 38,900	21 900 47,050	13 650 29,250
4400 mm 14'5"	HB3.1X 7'0"	kg lb	31,100*	31,100*	35 150* 76,100*	25 800 55,400	27 050* 58,450*	18 200 39,150	21 750* 47,000*	13 650 29,350
5500 mm 18'1"	HB2.5X 7'0"	kg lb	12 900* 29,850*	12 900* 29,850*	30 700* 66,300*	26 600 57,100	23 300* 50,350*	18 750 40,250	18 650* 40,300*	14 000 30,050

Stick	Bucket		10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
2920 mm 9'7"	JB3.5EX 7'4"	kg lb	16 550 35,550	10 100 21,650	—	—	—	—	9250* 20,350*	7650 16,900
3700 mm 12'2"	HB3.5EX 7'0"	kg lb	17 050 36,600	10 600 22,700	—	—	—	—	8850* 19,500*	7400 16,250
4400 mm 14'5"	HB3.1X 7'0"	kg lb	17 050 36,600	10 600 22,650	13 600 29,150	8350 17,800	—	—	7200* 15,900*	6700 14,700
5500 mm 18'1"	HB2.5X 7'0"	kg lb	15 450* 33,400*	10 800 23,150	13 100* 28,300*	8500 18,150	7550* 12,150*	6700 12,150*	3600* 7900*	3600* 7900*

385B L ● Heavy Lift ● Mass Boom ● 750 mm (30") Double Grousers

Stick	Bucket		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"	
			Front	Side	Front	Side	Front	Side	Front	Side
2920 mm 9'7"	JB4.7EMX 7'4"	kg lb	22 100* 51,400*	22 100* 51,400*	34 500* 74,750*	25 750 55,300	26 800* 57,900*	17 950 38,600	21 200* 45,700*	13 300 28,500
3400 mm 11'2"	JB4.3EX 7'4"	kg lb	23 850* 55,250*	23 850* 55,250*	35 100* 75,950*	26 050 55,900	27 100* 58,550*	18 150 39,000	21 600* 46,600*	13 450* 28,850

Stick	Bucket		10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side
2920 mm 9'7"	JB4.7EMX 7'4"	kg lb	—	—	—	—	—	—	10 500* 23,150*	9350 20,600
3400 mm 11'2"	JB4.3EX 7'4"	kg lb	15 300* 33,700*	10 250 22,600	—	—	—	—	9850* 21,650*	8800 19,400

*Load limited by hydraulic capacity rather than tipping.

Belgium Sourced

385C ● Heavy Lift ● 10 m (32'10") Reach Boom
● 650 mm (26") Track Shoes

Stick	Bucket	4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		
		Front	Side	Front	Side	Front	Side	Front	Side	
4400 mm 14'5"	2.6 m ³ 3.4 yd ³	kg lb	—	—	11 420* 25,180	11 420* 25,180	21 830 48,140	15 330 33,800	16 380 36,120	11 560 25,490
5500 mm 18'1"	2.0 m ³ 2.6 yd ³	kg lb	—	—	14 770* 32,570	14 770* 32,570	22 290 49,150	15 760 34,750	16 710 36,850	11 870 26,170

Stick	Bucket	10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	
4400 mm 14'5"	2.6 m ³ 3.4 yd ³	kg lb	12 770 28,160	8970 19,780	10 170 22,430	7030 15,500	8190 18,060	5530 12,190	6540 14,420	4280 9440
5500 mm 18'1"	2.0 m ³ 2.6 yd ³	kg lb	10 350 22,820	9190 20,260	8330 18,370	7200 15,880	6740 14,860	5660 12,480	5790 12,770	3720 8200

385C ● Heavy Lift ● 8.4 m (27'2") GP Boom
● 650 mm (26") Track Shoes

Stick	Bucket	4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		
		Front	Side	Front	Side	Front	Side	Front	Side	
3400 mm 11'2"	3.8 m ³ 5 yd ³	kg lb	—	—	29 120* 64,210	23 530 51,880	22 980 50,670	16 380 36,120	16 920 37,310	12 060 26,590
4400 mm 14'4"	3.5 m ³ 4.6 yd ³	kg lb	13 430* 29,610	13 430* 29,610	34 300* 756,30	24 980 55,080	24 150 53,250	17 540 38,680	17 900 39,470	13 040 28,750
5500 mm 18'0"	3.5 m ³ 4.6 yd ³	kg lb	15 780* 34,800	15 780* 34,800	33 500* 73,870	25 520 56,270	24 500 54,020	17 840 39,340	18 080 39,870	13 190 29,080

Stick	Bucket	10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	
3400 mm 11'2"	3.8 m ³ 5 yd ³	kg lb	12 910 28,470	9090 20,040	—	—	—	—	7340* 16,190	5910 13,030
4400 mm 14'4"	3.5 m ³ 4.6 yd ³	kg lb	13 800 30,430	9980 22,010	10 870 23,970	7730 18,050	—	—	6670* 14,710	6000 13,230
5500 mm 18'0"	3.5 m ³ 4.6 yd ³	kg lb	13 870 30,580	10 040 22,140	10 880 23,990	7740 17,070	8140* 17,950	5980 13,190	4620* 10,190	4620* 10,190

385C ● Heavy Lift ● 7.25 m (23'9") Mass Boom
● 650 mm (26") Track Shoes

Stick	Bucket	4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		
		Front	Side	Front	Side	Front	Side	Front	Side	
2920 mm 9'5"	5.2 m ³ 6.8 yd ³	kg lb	21 360* 47,100	21 360* 17,100	33 250* 73,320	24 610 54,270	23 620 52,080	16 920 37,310	17 160 37,840	12 240 26,990
3400 mm 11'2"	5.2 m ³ 6.8 yd ³	kg lb	22 830* 50,340	22 830* 50,340	33 560* 74,000	24 710 54,490	23 640 52,130	16 930 37,330	17 120 37,750	12 200 26,900

Stick	Bucket	10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	
2920 mm 9'5"	5.2 m ³ 6.8 yd ³	kg lb	—	—	—	—	—	—	8860* 19,540	7920 17,460
3400 mm 11'2"	5.2 m ³ 6.8 yd ³	kg lb	12 820 28,270	8960 19,760	—	—	—	—	8070* 17,790	7200 15,880

*Load limited by hydraulic capacity rather than tipping.

Excavators

Lifting Capacity At Ground Level ● 385C L

Belgium Sourced

385C L ● Heavy Lift ● 10 m (32'10") Reach Boom ● 750 mm (30") Track Shoes

Stick	Bucket	4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		
		Front	Side	Front	Side	Front	Side	Front	Side	
4400 mm 14'4"	2.6 m ³ 3.4 yd ³	kg lb	—	—	11 420* 25,180	11 420* 25,180	24 480* 53,980	15 940 35,150	19 660* 43,350	12 050 26,570
5500 mm 18'0"	2.0 m ³ 2.6 yd ³	kg lb	—	—	14 770* 32,570	14 770* 32,570	24 310* 53,600	16 370* 36,100	19 370* 42,710	12 360 27,250

Stick	Bucket	10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	
4400 mm 14'4"	2.6 m ³ 3.4 yd ³	kg lb	15 840 34,930	9370 20,660	12 680 27,960	7370 16,250	10 310 22,730	5820 12,830	8330 18,370	4540 10,010
5500 mm 18'0"	2.0 m ³ 2.6 yd ³	kg lb	15 950* 35,170	9590 21,150	12 860 28,360	7540 16,630	10 450 23,040	5960 13,140	6390* 14,090	3950 8710

385C L ● Heavy Lift ● 8.4 m (27'2") GP Boom ● 650 mm (26") Track Shoes

Stick	Bucket	4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		
		Front	Side	Front	Side	Front	Side	Front	Side	
3400 mm 11'2"	3.8 m ³ 5.0 yd ³	kg lb	—	—	29 120* 64,210	24 370 53,740	25 370* 56,600	17 000 37,490	12 540 27,650	12 540 27,650
4400 mm 14'5"	3.5 m ³ 4.6 yd ³	kg lb	13 430* 29,610	13 430* 29,610	34 300* 75,630	25 820 56,930	26 260* 57,900	18 150 40,020	21 010* 46,330	13 520 29,810
5500 mm 18'1"	3.5 m ³ 4.6 yd ³	kg lb	15 780* 34,800	15 780* 34,800	33 500* 75,630	26 360 58,120	25 400* 56,000	18 450 40,680	20 290* 44,740	13 670 30,140

Stick	Bucket	10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	
3400 mm 11'2"	3.8 m ³ 5.0 yd ³	kg lb	15 990 35,260	9490 20,930	—	—	—	—	7340* 16,190	6220 13,720
4400 mm 14'5"	3.5 m ³ 4.6 yd ³	kg lb	16 880 37,220	10 380 22,890	13 380 29,500	8070 17,790	—	—	6670* 14,710	6300 13,890
5500 mm 18'1"	3.5 m ³ 4.6 yd ³	kg lb	16 800* 37,040	10 440 23,020	13 400 29,550	8080 17,820	8140* 17,950	6270 13,830	4620* 10,190	4620* 10,190

385C L ● Heavy Lift ● 7.25 m (23'9") Mass Boom ● 750 mm (30") Track Shoes

Stick	Bucket	4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		
		Front	Side	Front	Side	Front	Side	Front	Side	
2920 mm 9'6"	5.2 m ³ 6.8 yd ³	kg lb	21 360* 47,100	21 360* 47,100	33 250* 73,320	25 450 56,120	25 570* 56,380	17 540 38,680	20 010* 44,120	12 730 28,070
3400 mm 11'2"	5.2 m ³ 6.8 yd ³	kg lb	22 830* 50,340	22 830* 50,340	33 560* 74,000	25 550 56,340	25 630* 56,510	17 540 38,680	20 140* 44,410	12 690 27,980

Stick	Bucket	10.5 m 35'0"		12 m 40'0"		13.5 m 45'0"		At Max. Reach		
		Front	Side	Front	Side	Front	Side	Front	Side	
2920 mm 9'6"	5.2 m ³ 6.8 yd ³	kg lb	—	—	—	—	—	—	8860* 19,540	8290 18,280
3400 mm 11'2"	5.2 m ³ 6.8 yd ³	kg lb	15 470* 34,110	9360 20,640	—	—	—	—	8070* 17,790	7550 16,650

*Load limited by hydraulic capacity rather than tipping.

Excavators

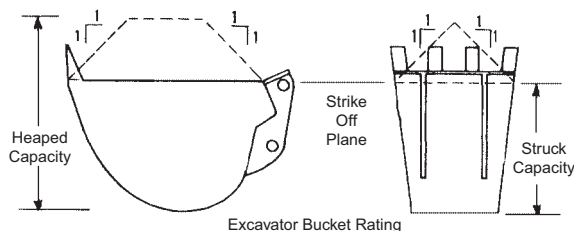
Bucket Capacity
● Definition
Curl and Crowd Forces

EXCAVATOR BUCKET CAPACITIES

Caterpillar rates excavator buckets to conform with both PCSA standard No. 3 and SAE standard J-296. Buckets are rated on both their struck and heaped capacities as follows:

Struck Capacity

Volume actually enclosed inside the outline of the sideplates and rear and front bucket enclosures without any consideration for any material supported or carried by the spillplate or bucket teeth.



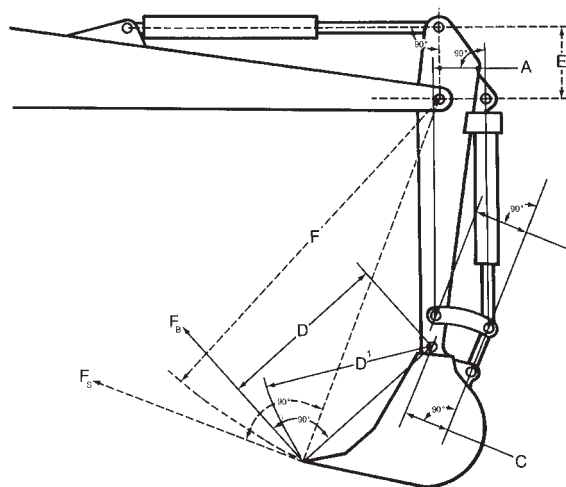
Heaped Capacity

Volume in the bucket under the strike off plane plus the volume of the heaped material above the strike off plane, having an angle of repose of 1:1 without any consideration for any material supported or carried by the spillplate or bucket teeth.

The Committee on European Construction Equipment (CECE) rates heaped bucket pay loads on a 2:1 angle of repose for material above the strike off plane.

CURL AND CROWD FORCES

Bucket penetration into a material is achieved by the bucket curling force (F_B) and stick crowd force (F_S). Rated digging forces are the digging forces that can be exerted at the outermost cutting point. These forces can be calculated by applying working relief hydraulic pressure to the cylinder(s) providing the digging force. The digging forces listed on next page conform with SAE Standard J1179 and PCSA Standard No. 3. The values may not be directly comparable to forces for machines rated by other methods than those described below.



$$F_B = \text{Radial tooth force due to bucket cylinder}$$

$$= \frac{\text{Bucket cylinder force}}{\text{Arm D length}} \left(\frac{\text{Arm A} \times \text{Arm C}}{\text{Arm B}} \right)$$

$$\text{Cylinder force} = (\text{Pressure}) \times (\text{End area of cylinder head})$$

$$\text{Arm D} = \text{Bucket tip radius}$$

Maximum radial tooth force due to bucket cylinder (bucket curling force) is the digging force generated by the bucket cylinder(s) and tangent to the arc of radius D^1 . The bucket shall be positioned to obtain maximum output moment from the bucket cylinder(s) and connecting linkages. When calculating, maximum F_B occurs when the factor — Arm A times Arm C divided by Arm B — becomes the maximum.

$$F_S = \text{Radial tooth force due to stick cylinder}$$

$$= \frac{(\text{Stick cylinder force}) \times (\text{Arm E length})}{(\text{Arm F length})}$$

$$\text{Arm F} = \text{Bucket tip radius} + \text{stick length}$$

Maximum radial tooth force due to stick cylinder (stick crowd force) is the digging force generated by the stick cylinder(s) and tangent to the arc of radius F. The stick shall be positioned to obtain the maximum output moment from the arm cylinder and the bucket positioned as described in the bucket force rating. When calculating, maximum F_S occurs when the axis in the stick cylinder working direction is at a right angle to the line connecting the stick cylinder pin and the boom nose pin.

Bucket Selection Considering Bucket Curl and Stick Crowd Forces

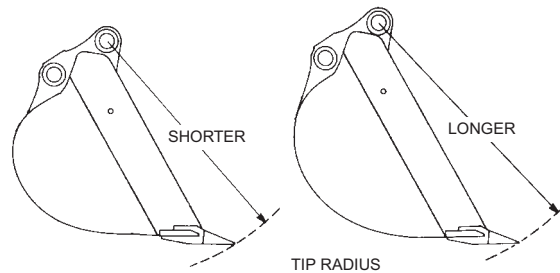
The combination of the excavator's stick crowd force and bucket curling force give this machine configuration more effective bucket penetration force per mm (inch) of bucket cutting edge than is available with other machine types such as wheel and track loaders.

As a result of high penetration force, an excavator bucket is comparatively easy to load. Also, the higher unit breakout forces allow the excavator's economic application range to be extended farther into the tougher soils (coral, caliche, shale, limestone) before blasting or ripping is required.

To take full advantage of an excavator's high penetration forces, buckets should be selected so they are well matched to soil conditions that are encountered. The two important things to consider are bucket width and bucket tip radius.

As a general rule, wide buckets are used in easily dug soil and narrow buckets in harder material. In hard rocky soils, tip radius also has to be considered in bucket selection. Because the shorter tip radius buckets provide more total bucket curling force than the long tip radius buckets, they are generally the easiest to load. A good rule of thumb when selecting a Caterpillar bucket for hard material is to choose the narrowest bucket that has a short tip radius.

Other factors such as trench bottom width specifications, manbox size, or the desire to conserve bedding material may also influence excavator bucket selection.



NOTE: See the following pages for listing of Caterpillar buckets by tip radius and cutting edge width.

Model	Source	Bucket Tip Radius		Bucket Curling Forces		Stick Crowd Forces							
						Short		Medium		Long		Extra Long	
		mm	ft	kN	lb	kN	lb	kN	lb	kN	lb	kN	lb
301.5	U.K.	500	1'8"	12.6	2830	—	—	8.9	2000	8	1790	—	—
301.5 CR	Japan	500	1'8"	14.4	3240	—	—	10.1	2270	8.8	1980	—	—
301.6	U.K.	500	1'8"	12.6	2830	—	—	—	—	8	1790	—	—
301.8	U.K.	500	1'8"	12.6	2830	—	—	8.9	2000	8	1790	—	—
302.5	U.K.	650	2'2"	22	4940	—	—	14	3140	12.1	2720	—	—
303 SR	Japan	695	2'3"	29.5	6630	—	—	16.2	3640	13.3	2990	—	—
303 CR	Japan	765	2'6"	26.2	5890	—	—	17	3820	15.5	3480	—	—
304 CR	Japan	833	2'9"	36.6	8220	—	—	23.9	5370	20.9	4700	—	—
305 SR	Japan	890	2'11"	40.1	9010	—	—	24.1	5420	21.7	4880	—	—
305 CR	Japan	833	2'9"	42	9440	—	—	27.6	6200	23.3	5240	—	—
307C	Japan	1070	3'6"	44	9830	—	—	35	7850	31	6900	—	—
307C SB	Japan	1070	3'6"	44	9830	—	—	35	7850	31	6900	—	—
308C SR	Japan	1070	3'6"	47.8	10,740	—	—	37.6	8450	—	—	—	—
308C CR	Japan	1070	3'6"	44	9820	—	—	35	7850	31	6980	—	—
311C U	Japan	1220	4'0"	80	18,000	—	—	58	13,000	50	11,000	—	—
312C, 312C L	Japan	1220	4'0"	84	18,880	70	15,730	63	14,160	57	12,810	—	—
312C, 312C L	France	1220	4'0"	84	18,880	71	15,970	63	14,160	57	12,810	—	—
313C SR	Japan	1220	4'0"	88	19,780	—	—	63	14,160	—	—	—	—
313C CR	Japan	1220	4'0"	94	21,120	—	—	64	14,380	57	12,810	—	—
314C CR, 314C LCR	Japan	1220	4'0"	80	18,800	—	—	63	14,100	56	12,600	—	—

*Information unavailable at time of printing.

Excavators

Curl and Crowd Forces

- 315C, 315C L ● 315C L
- 318C, 318C L, 318C N ● 318C L, 318C LN

315C, 315C L Japan Sourced

Boom		1-Piece Boom			
Stick		Short	Medium	Long	Extra Long
Bucket Tip Radius	mm ft	1340 4'5"	1340 4'5"	1340 4'5"	1340 4'5"
Bucket Curling Forces	kN lb	120 26,970	99 22,250	99 22,250	99 22,250
Stick Crowd Forces	kN lb	95 21,350	84 18,880	76 17,080	68 15,280

315C L France Sourced

Boom		1-Piece Boom			
Stick		Short	Medium	Long	Extra Long
Bucket Tip Radius	mm ft	1117 3'7"	1117 3'7"	1117 3'7"	1117 3'7"
Bucket Curling Forces	kN lb	102 22,930	90 20,230	82 18,430	74 16,630
Stick Crowd Forces	kN lb	98 22,030	80 17,980	69 15,510	62 13,930

318C, 318C L, 318C N France Sourced

Boom		1-Piece Boom			
Stick		Short	Medium	Long	Extra Long
Bucket Tip Radius	mm ft	1310 4'3"	1310 4'3"	1310 4'3"	1310 4'3"
Bucket Curling Forces	kN lb	133 29,890	130 29,220	111 24,950	112 25,170
Stick Crowd Forces	kN lb	124 27,870	106 23,830	91 20,450	81 18,210

318C L, 318C LN Japan Sourced

Boom		1-Piece Boom			
Stick		Short	Medium	Long	Extra Long
Bucket Tip Radius	mm ft	1420 4'8"	1420 4'8"	1420 4'8"	1420 4'8"
Bucket Curling Forces	kN lb	148 33,260	130 29,200	111 25,000	112 25,200
Stick Crowd Forces	kN lb	124 27,870	103 23,200	88 19,800	79 17,800

- M313C
- M315C
- M316C
- M318C
- M322C

Curl and Crowd Forces

Excavators

M313C

Boom		1-Piece/VA Boom			
Stick		2300 mm	7'5"	2600 mm	8'6"
Bucket Tip Radius	mm ft	1236 4'1"		1236 4'1"	
Bucket Curling Forces	kN lb	87 19,560		87 19,560	
Stick Crowd Forces	kN lb	62 13,940		57 12,810	

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M315C, M316C

Boom		1-Piece/VA Boom			
Stick		2400 mm	7'10"	2600 mm	8'6"
Bucket Tip Radius	mm ft	1405 4'7"		1405 4'7"	
Bucket Curling Forces	kN lb	93 20,900		93 20,900	
Stick Crowd Forces	kN lb	69 15,500		66 14,830	

M318C

Boom		1-Piece/VA Boom			
Stick		2500 mm	8'2"	2800 mm	9'2"
Bucket Tip Radius	mm ft	1405 4'7"		1405 4'7"	
Bucket Curling Forces	kN lb	118 26,530		118 26,530	
Stick Crowd Forces	kN lb	85 19,100		79 17,750	

M322C

Boom		1-Piece/VA Boom			
Stick		2500 mm	8'2"	2900 mm	9'6"
Bucket Tip Radius	mm ft	1511 4'11"		1511 4'11"	
Bucket Curling Forces	kN lb	131 29,450		131 29,450	
Stick Crowd Forces	kN lb	106 23,830		97 21,810	

Excavators

Curl and Crowd Forces

● 320C ● 320C L ● 320C U ● 320C LU

320C, 320C L for Asia, Pacific and Australia

Boom		Reach Boom			Mass Boom
Stick		Medium (R2.5B)	Long (R2.9B)	Extra Long (R3.9B)	Medium
Bucket Tip Radius	mm	1477	1477	1477	1477
	ft	4'10"	4'10"	4'10"	4'11"
Bucket Curling Forces	kN	131	131	125	160
	lb	29,400	29,400	28,000	35,900
Stick Crowd Forces	kN	113	100	83	125
	lb	25,300	22,400	18,600	28,000

320C, 320C L for North and South America

Boom		Reach Boom			Mass Boom
Stick		Medium (R2.5B)	Long (R2.9B)	Extra Long (R3.9B)	Medium
Bucket Tip Radius	mm	1564	1564	1564	1564
	ft	5'2"	5'2"	5'2"	5'2"
Bucket Curling Forces	kN	128	128	128	128
	lb	28,700	28,700	28,700	28,760
Stick Crowd Forces	kN	110	97	82	82
	lb	24,700	21,800	18,400	18,400

320C U, 320C LU for Asia, Pacific and Australia

Boom		Reach Boom		
Stick		Medium	Long	Extra Long
Bucket Tip Radius	mm	1477	1477	1477
	ft	4'10"	4'10"	4'10"
Bucket Curling Forces	kN	125	131	131
	lb	28,090	29,400	29,400
Stick Crowd Forces	kN	113	100	83
	lb	25,300	22,400	18,600

320C U, 320C LU for North and South America

Boom		Reach Boom		
Stick		Medium	Long	Extra Long
Bucket Tip Radius	mm	1564	1564	1564
	ft	5'2"	5'2"	5'2"
Bucket Curling Forces	kN	128	128	128
	lb	28,700	28,700	28,700
Stick Crowd Forces	kN	110	97	82
	lb	24,700	21,800	18,400

320C LU for Europe, Africa and Middle East

Boom		Reach Boom	
Stick		Medium	Long
Bucket Tip Radius	mm	1420	1420
	ft	4'8"	4'8"
Bucket Curling Forces	kN	132	132
	lb	29,700	29,700
Stick Crowd Forces	kN	113	99
	lb	25,400	22,200

**Belgium Sourced
320C, 320C L**

Boom		Reach Boom		
Stick		R1.9C	R2.5B	R2.9B
Bucket Tip Radius	mm ft	1550 5'1"	1420 4'8"	1420 4'8"
Bucket Curling Forces	kN lb	153 34,400	132 29,700	132 29,700
Stick Crowd Forces	kN lb	144 32,400	113 25,400	99 22,200
Boom		Mass Boom		
Stick		M1.9C	M2.4C	M2.9B
Bucket Tip Radius	mm ft	1550 5'1"	1550 5'1"	1420 4'8"
Bucket Curling Forces	kN lb	153 34,400	153 34,400	132 29,700
Stick Crowd Forces	kN lb	144 32,400	125 28,100	99 22,200
Boom		VA Boom		
Stick		M1.9C	M2.4C	M2.9B
Bucket Tip Radius	mm ft	1550 5'1"	1550 5'1"	1550 5'1"
Bucket Curling Forces	kN lb	153 34,400	153 34,400	132 29,700
Stick Crowd Forces	kN lb	144 32,400	125 28,100	99 22,200

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**Japan Sourced
321C LCR**

Boom		Reach Boom	
Stick		Long	
Bucket Tip Radius	mm ft	1490 4'11"	
Bucket Curling Forces	kN lb	125 28,000	
Stick Crowd Forces	kN lb	98 22,000	

**Europe, Africa and Middle East
321C LCR**

Boom		Reach Boom	
Stick		Long	
Bucket Tip Radius	mm ft	1420 4'8"	
Bucket Curling Forces	kN lb	132 29,700	
Stick Crowd Forces	kN lb	99 22,200	

Excavators

Curl and Crowd Forces

- 322C
- 322C L

Japan/U.S. Sourced 322C, 322C L

Boom		Reach Boom		
Stick		Medium	Long	Extra Long
Bucket Tip Radius	mm ft	1551 5'1"	1551 5'1"	1477 4'10"
Bucket Curling Forces	kN lb	151 33,930	151 33,930	131 29,440
Stick Crowd Forces	kN lb	136 30,560	116 26,070	104 23,370
Boom		Mass Boom		
Stick		Short	Medium	
Bucket Tip Radius	mm ft	1663 5'5"	1663 5'5"	
Bucket Curling Forces	kN lb	189 42,470	189 42,470	
Stick Crowd Forces	kN lb	151 33,930	133 29,890	

Belgium Sourced 322C

Boom		Reach Boom		
Stick		R2.0D	R2.5S	R2.95S
Bucket Tip Radius	mm ft	1530 5'0"	1430 5'6"	1430 5'6"
Bucket Curling Forces	kN lb	189 42,500	160 36,000	150 33,700
Stick Crowd Forces	kN lb	171 38,400	147 33,000	180 40,500
Boom		Mass Boom		
Stick		M2.0D	M2.5D	
Bucket Tip Radius	mm ft	1530 5'0"	1530 5'0"	
Bucket Curling Forces	kN lb	189 42,500	180 40,500	
Stick Crowd Forces	kN lb	171 38,400	153 34,400	
Boom		VA Boom		
Stick		M2.0D	M2.5D	
Bucket Tip Radius	mm ft	1530 5'0"	1530 5'0"	
Bucket Curling Forces	kN lb	188 42,300	179 40,200	
Stick Crowd Forces	kN lb	167 37,500	150 33,700	

**Belgium Sourced
325C**

Boom		Reach Boom			
Stick		R2.0D	R2.7C	R3.2C	R3.2C HD
Bucket Tip Radius	mm ft	1658 5'5"	1556 5'1"	1556 5'1"	1556 5'1"
Bucket Curling Forces	kN lb	192 43,200	156 35,100	150 33,700	150 33,700
Stick Crowd Forces	kN lb	182 40,900	147 33,000	133 29,900	133 29,900
Boom		Mass Boom			
Stick		M2.0D		M2.5D	
Bucket Tip Radius	mm ft	1658 5'5"		1658 5'5"	
Bucket Curling Forces	kN lb	192 43,200		184 41,400	
Stick Crowd Forces	kN lb	182 40,900		163 36,600	
Boom		VA Boom			
Stick		M2.0D		M2.5D	
Bucket Tip Radius	mm ft	1658 5'5"		1658 5'5"	
Bucket Curling Forces	kN lb	192 43,200		184 41,400	
Stick Crowd Forces	kN lb	182 40,900		163 36,600	

**Japan/U.S. Sourced
325C**

Boom		Reach Boom			
Stick		Short	Medium	Long	Extra Long
Bucket Tip Radius	mm ft	1660 5'5"	1487 4'11"	1487 4'11"	1488 4'11"
Bucket Curling Forces	kN lb	198 44,500	166 37,300	160 36,000	160 36,000
Stick Crowd Forces	kN lb	170 38,200	143 32,100	130 29,200	124 27,900
Boom		Mass Boom			
Stick		Medium			
Bucket Tip Radius	mm ft	1660 5'5"			
Bucket Curling Forces	kN lb	199 44,700			
Stick Crowd Forces	kN lb	147 33,000			

Excavators

Curl and Crowd Forces ● 330C

Japan/U.S. Sourced 330C

Boom		Reach Boom			
Stick		Short	Medium	Long	Extra Long
Bucket Tip Radius	mm ft	1845 6'0"	1660 5'5"	1660 5'5"	1660 5'5"
Bucket Curling Forces	kN lb	228 51,300	190 42,700	190 42,700	191 42,900
Stick Crowd Forces	kN lb	209 47,000	180 40,500	161 36,200	140 31,500
Boom		Mass Boom			
Stick		M2.6E			
Bucket Tip Radius	mm ft	1845 6'1"			
Bucket Curling Forces	kN lb	228 51,300			
Stick Crowd Forces	kN lb	180 40,500			

Belgium Sourced 330C

Boom		Reach Boom			
Stick		R2.2E	R2.8D	R3.3D	R3.9D
Bucket Tip Radius	mm ft	1800 5'9"	1660 5'5.3"	1660 5'5.3"	1660 5'5.3"
Bucket Curling Forces	kN lb	239 53,700	194 43,600	192 43,200	184 41,400
Stick Crowd Forces	kN lb	219 49,200	186 41,800	169 38,000	152 34,200
Boom		Mass Boom			
Stick		M2.15E		M2.6E	
Bucket Tip Radius	mm ft	1800 5'9"		1800 5'9"	
Bucket Curling Forces	kN lb	239 53,700		227 51,000	
Stick Crowd Forces	kN lb	219 49,200		196 44,100	

**Japan/U.S. Sourced
 345C L per SAE**

Boom		Reach Boom		
Stick		Short	Medium	Long
Bucket Tip Radius	mm	1725	1725	1725
	ft	5'8"	5'8"	5'8"
Bucket Curling Forces	kN	258	258	258
	lb	58,000	58,000	58,000
Stick Crowd Forces	kN	220	201	186
	lb	49,500	45,100	41,800
Boom		Mass Boom		
Stick		Short	Medium	
Bucket Tip Radius	mm	2050		2050
	ft	6'9"		6'9"
Bucket Curling Forces	kN	203		203
	lb	45,680		45,680
Stick Crowd Forces	kN	228		203
	lb	51,300		45,680

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**Japan Sourced
 345C**

Boom		Reach Boom		
Stick		Short	Medium	Long
Bucket Tip Radius	mm	1820	1820	1820
	ft	6'0"	6'0"	6'0"
Bucket Curling Forces	kN	234	234	234
	lb	52,580	52,580	52,580
Stick Crowd Forces	kN	216	197	183
	lb	48,540	44,270	41,120
Boom		Mass Boom		
Stick		Medium	Long	
Bucket Tip Radius	mm	2020		2020
	ft	6'8"		6'8"
Bucket Curling Forces	kN	263		263
	lb	59,100		59,100
Stick Crowd Forces	kN	230		204
	lb	51,690		45,840

Excavators

Curl and Crowd Forces

- 345C L – FIX
- 345C L – VG

Japan Sourced 345C L – FIX

Boom		Long Reach Boom		
Stick		Long		Extra Long
Bucket Tip Radius	mm	1820		1820
	ft	6'0"		6'0"
Bucket Curling Forces	kN	234		235
	lb	52,580		52,810
Stick Crowd Forces	kN	183		170
	lb	41,120		38,200
Boom		Reach Boom		
Stick		Short	Medium	Long
Bucket Tip Radius	mm	1820	1820	1820
	ft	6'0"	6'0"	6'0"
Bucket Curling Forces	kN	234	234	234
	lb	52,580	52,580	52,580
Stick Crowd Forces	kN	216	197	183
	lb	48,540	44,270	41,120
Boom		Mass Boom		
Stick		Medium		Long
Bucket Tip Radius	mm	2020		2020
	ft	6'8"		6'8"
Bucket Curling Forces	kN	263		263
	lb	59,100		59,100
Stick Crowd Forces	kN	230		204
	lb	51,690		45,840

345C L – VG

Boom		Long Reach Boom		
Stick		Long		Extra Long
Bucket Tip Radius	mm	1820		1820
	ft	6'0"		6'0"
Bucket Curling Forces	kN	234		235
	lb	52,580		52,810
Stick Crowd Forces	kN	183		170
	lb	41,120		38,200
Boom		Reach Boom		
Stick		Short	Medium	Long
Bucket Tip Radius	mm	1820	1820	1820
	ft	6'0"	6'0"	6'0"
Bucket Curling Forces	kN	234	234	234
	lb	52,580	52,580	52,580
Stick Crowd Forces	kN	216	197	183
	lb	48,540	44,270	41,120
Boom		Mass Boom		
Stick		Medium		Long
Bucket Tip Radius	mm	2020		2020
	ft	6'8"		6'8"
Bucket Curling Forces	kN	263		263
	lb	59,100		59,100
Stick Crowd Forces	kN	230		204
	lb	51,690		45,840

- 345C L
- 365B L Series II
- SAE/ISO

Excavators

Belgium Sourced 345C L per ISO

Boom		Reach Boom		Mass Boom	
Stick		R2.9TB	R3.35TB	M2.5UB	M3.0UB
Bucket Tip Radius	mm	1704	1704	1905	1905
	ft	5'7"	5'7"	6'3"	6'3"
Bucket Curling Forces	kN	249	239	273	258
	lb	56,030	53,780	61,430	58,050
Stick Crowd Force	kN	235	217	258	233
	lb	52,880	48,830	58,050	52,430

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Japan Sourced 365B L Series II per SAE

Boom		Reach Boom		
Stick		Short	Medium	Long
Bucket Tip Radius	mm	2060	2060	2060
	ft	6'9"	6'9"	6'9"
Bucket Curling Forces	kN	277	264	265
	lb	62,200	59,300	59,500
Stick Crowd Forces	kN	257	230	193
	lb	57,800	51,600	43,300

Boom		Mass Boom	
Stick		Short	Medium
Bucket Tip Radius	mm	2100	2100
	ft	6'11"	6'11"
Bucket Curling Forces	kN	330	330
	lb	74,100	74,100
Stick Crowd Forces	kN	277	254
	lb	62,300	57,100

Japan Sourced 365B L Series II per ISO

Boom		Reach Boom		
Stick		Short	Medium Short	Long
Bucket Tip Radius	mm	2060	2060	2060
	ft	6'9"	6'9"	6'9"
Bucket Curling Forces	kN	316	301	302
	lb	71,000	67,600	67,800
Stick Crowd Forces	kN	268	239	199
	lb	60,200	53,700	44,700

Boom		Mass Boom	
Stick		Short	Medium
Bucket Tip Radius	mm	2100	2100
	ft	6'11"	6'11"
Bucket Curling Forces	kN	383	384
	lb	86,000	86,200
Stick Crowd Forces	kN	290	265
	lb	65,100	59,500

Excavators

Curl and Crowd Forces

- 365C L
- 385B
- SAE/ISO

Belgium Sourced 365C L per ISO

Boom		7.80 m (25'7") Reach Boom			
Stick		R2.84VB	R3.6VB	R4.15VB	R4.67VB
Bucket Tip Radius	mm	1903	1862	1862	1862
	ft	6'2"	5'9"	5'9"	5'9"
Bucket Curling Forces	kN	295	284	271	264
	lb	66,380	63,900	60,980	59,400
Stick Crowd Forces	kN	287	265	243	229
	lb	64,580	59,630	54,680	51,530
Boom		6.6 m (21'8") Mass Boom		7 m (23'0") Mass Boom	
Stick		M2.57WB	M3.0WB	M2.57WB	M3.0WB
Bucket Radius at Cutting Edge	mm	2015	2015	2015	2015
	ft	6'6"	6'6"	6'6"	6'6"
Bucket Force	kN	332	321	332	321
	lb	74,700	72,230	74,700	72,230
Stick Force	kN	309	289	309	288
	lb	69,530	65,030	69,530	64,800

Japan Sourced 385B per SAE

Boom		Reach Boom			
Stick		Long		Extra Long	
Bucket Tip Radius	mm	2137		2137	
	ft	7'0"		7'0"	
Bucket Curling Forces	kN	305		305	
	lb	68,600		68,600	
Stick Crowd Forces	kN	256		218	
	lb	57,600		49,000	
Boom		General Purpose Boom			
Stick		Short	Medium Long	Long	Extra Long
Bucket Tip Radius	mm	2236	2145	2137	2137
	ft	7'4"	7'0"	7'0"	7'0"
Bucket Curling Forces	kN	389	317	305	305
	lb	87,500	71,300	68,600	68,600
Stick Crowd Forces	kN	321	287	256	218
	lb	72,200	64,500	57,600	49,000
Boom		Mass Boom			
Stick		Short		Medium	
Bucket Tip Radius	mm	2236		2236	
	ft	7'4"		7'4"	
Bucket Curling Forces	kN	402		389	
	lb	90,400		87,500	
Stick Crowd Forces	kN	321		298	
	lb	72,200		67,000	

**Japan Sourced
 385B per ISO**

Boom		Reach Boom			
Stick		Long		Extra Long	
Bucket Tip Radius	mm ft	2137 7'0"		2137 7'0"	
Bucket Curling Forces	kN lb	348 78,200		349 78,400	
Stick Crowd Forces	kN lb	264 59,300		224 50,300	
Boom		General Purpose Boom			
Stick		Short	Medium Long	Long	Extra Long
Bucket Tip Radius	mm ft	2236 7'4"	2145 7'0"	2137 7'0"	2137 7'0"
Bucket Curling Forces	kN lb	442 99,300	366 82,200	348 78,200	349 78,400
Stick Crowd Forces	kN lb	332 74,600	298 66,900	264 59,300	224 50,300
Boom		Mass Boom			
Stick		Short		Medium	
Bucket Tip Radius	mm ft	2235 7'4"		2236 7'4"	
Bucket Curling Forces	kN lb	456 102,400		442 99,300	
Stick Crowd Forces	kN lb	333 74,800		308 69,200	

Excavators

Curl and Crowd Forces

- 385C/385C L
- SAE

Belgium Sourced 385C/385C L per SAE

Boom		Reach Boom 10 m (32'10")		
Stick		R4.4HB		R5.5HB
Bucket Radius @ Cutting Edge	mm ft	1959 6'5"		1959 6'5"
Bucket Digging Force ISO	kN lb	335 75,380		316 71,100
Stick Digging Force ISO	kN lb	293 65,930		256 57,600
Boom		General Purpose Boom 8.4 m (27'2")		
Stick		G3.4JB	G4.4HB	G5.5HB
Bucket Radius @ Cutting Edge	mm ft	2175 7'2"	1959 6'5"	1959 6'5"
Bucket Digging Force ISO	kN lb	384 86,400	334 75,150	315 70,880
Stick Digging Force ISO	kN lb	342 76,950	293 65,930	257 57,830
Boom		Mass Boom 7.25 m (23'9")		
Stick		M2.92JB		M3.4JB
Bucket Radius @ Cutting Edge	mm ft	2233 7'4"		2233 7'4"
Bucket Digging Force ISO	kN lb	394 88,650		385 86,630
Stick Digging Force ISO	kN lb	362 81,450		344 77,400

Caterpillar offers a very comprehensive list of high strength steel buckets. High strength steel allows thinner components which helps keep the weight down, maintains durability and improves loadability. The wrong bucket can reduce production 30-40% or more. Caterpillar's in-depth knowledge of machine design, bucket design and application experience

allows offering **machine matched** packages that optimize performance.

Additional buckets may be available and the listed buckets may not be available in all sales areas. Contact your Caterpillar Dealer for your specific bucket needs.

Model	Bucket Type	Teeth	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth			
			mm	in	mm	in	L	yd ³	kg	lb		
301.5, 301.6, 301.8	Digging	0	230	9.0	440	17.0	18	0.023	25	55		
		3	230	9.0	500	20.0	18	0.023	29	64		
		0	300	12.0	440	17.0	22	0.029	27	60		
		3	300	12.0	500	20.0	22	0.029	31	68		
		0	400	16.0	440	17.0	33	0.043	31	68		
		3	400	16.0	500	20.0	33	0.043	35	77		
		0	457	18.0	440	17.0	40	0.052	34	75		
		3	457	18.0	500	20.0	40	0.052	38	84		
		0	500	20.0	440	17.0	45	0.059	36	79		
		4	500	20.0	500	20.0	45	0.059	41	90		
		0	600	24.0	440	17.0	56	0.073	40	88		
		4	600	24.0	500	20.0	56	0.073	45	99		
		301.5 CR	Digging	0	800	32.0	353	14.0	44	0.057	41	90
				0	1000	40.0	353	14.0	56	0.073	43	95
301.5 CR	Digging	2	300	12.0	501	20.0	30	0.040	28	62		
		3	400	16.0	501	20.0	40	0.050	34	75		
		3	450	18.0	501	20.0	44	0.060	36	79		
302.5	Digging	0	260	10.0	568	22.0	35	0.046	43	96		
		3	260	10.0	640	26.0	35	0.046	48	105		
		0	300	12.0	568	22.0	41	0.053	44	97		
		3	300	12.0	640	26.0	41	0.053	51	112		
		0	400	16.0	568	22.0	54	0.070	49	107		
		3	400	16.0	640	26.0	54	0.070	55	121		
		0	457	18.0	568	22.0	65	0.085	53	116		
		3	457	18.0	650	26.0	65	0.085	59	130		
		0	500	20.0	568	22.0	73	0.095	55	122		
		4	500	20.0	640	26.0	73	0.095	64	140		
		0	600	24.0	568	22.0	92	0.120	62	136		
		4	600	24.0	640	26.0	92	0.120	70	155		
		0	700	28.0	568	22.0	111	0.145	69	152		
		4	700	28.0	640	26.0	111	0.145	77	170		
		302.5	Ditching	0	800	32.0	482	19.0	80	0.105	82	178
				0	1000	40.0	482	19.0	102	0.133	78	172
0	1200			48.0	482	19.0	116	0.217	88	193		

Excavators | Bucket Specifications

Model	Bucket Type	Teeth	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd ³	kg	lb
303 SR	Digging	3	320	13.0	695	27.0	36	0.050	59	130
		3	400	16.0	695	27.0	65	0.090	64	141
		4	500	20.0	695	27.0	90	0.120	74	163
303 CR	Digging	0	300	12.0	682	29.0	49	0.0645	54	119
		3	300	12.0	765	30.0	49	0.0645	60	133
		0	400	16.0	682	29.0	65	0.0849	58	129
		3	400	16.0	765	30.0	65	0.0849	65	142
		0	500	20.0	682	29.0	89	0.1160	65	142
		4	500	20.0	765	30.0	89	0.1160	74	162
		0	600	24.0	682	29.0	113	0.1482	72	159
		4	600	24.0	765	30.0	113	0.1482	81	178
		0	650	26.0	682	29.0	126	0.1645	76	167
		4	650	26.0	765	30.0	126	0.1645	84	185
	Ditching	0	1000	40.0	510	20.0	111	0.1452	107	236
		0	1200	48.0	510	20.0	135	0.1766	101	222
		0	1400	55.0	510	20.0	159	0.2080	113	249
	304 CR, 305 CR	Digging	0	300	12.0	742	29.0	58	0.076	62
3			300	12.0	833	33.0	58	0.076	73	162
0			400	16.0	742	29.0	76	0.099	67	147
3			400	16.0	833	33.0	76	0.099	78	173
0			500	20.0	742	29.0	104	0.136	75	165
4			500	20.0	833	33.0	104	0.136	90	199
0			600	24.0	742	29.0	133	0.174	83	184
4			600	24.0	833	33.0	133	0.174	99	217
0			700	28.0	742	29.0	162	0.212	100	220
4			700	28.0	833	33.0	162	0.212	115	253
Ditching		0	1000	40.0	530	21.0	139	0.182	117	258
		0	1300	51.0	530	21.0	184	0.240	114	251
		0	1600	63.0	530	21.0	229	0.300	135	298
305 SR	Digging	2	360	14.0	890	35.0	51	0.070	81	179
		2	480	19.0	890	35.0	120	0.160	99	218
		4	680	27.0	890	35.0	220	0.290	112	247

Bucket Specifications | Excavators

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
M313C	Extreme Excavation	EAME, NACD	N/A	1200	47	0.72	0.94	1245	49	J250	6	478	1054
	Excavation	EAME, NACD	N/A	600	24	0.28	0.37	1245	49	J250	3	350	772
		EAME, NACD	N/A	750	30	0.38	0.50	1245	49	J250	4	349	769
		EAME, NACD	N/A	900	35	0.49	0.64	1245	49	J250	5	388	855
		EAME, NACD	N/A	1000	39	0.56	0.73	1245	49	J250	5	412	908
		EAME, NACD	N/A	1100	43	0.64	0.84	1245	49	J250	6	445	981
		EAME, NACD	N/A	1200	47	0.72	0.94	1245	49	J250	6	468	1032
M315C, M316C	Extreme Excavation	EAME, NACD	N/A	1200	47	0.94	1.23	1440	57	K080	5	676	1490
		EAME, NACD	N/A	1300	51	1.03	1.35	1440	57	K080	5	709	1563
	Excavation	EAME, NACD	N/A	600	24	0.38	0.50	1440	57	K080	3	443	977
		EAME, NACD	N/A	750	30	0.52	0.68	1440	57	K080	3	479	1056
		EAME, NACD	N/A	900	35	0.65	0.85	1440	57	K080	4	536	1182
		EAME, NACD	N/A	1000	39	0.75	0.98	1440	57	K080	4	570	1257
		EAME, NACD	N/A	1100	43	0.84	1.10	1440	57	K080	4	601	1325
		EAME, NACD	N/A	1200	47	0.94	1.23	1440	57	K080	5	642	1415
		EAME, NACD	N/A	1300	51	1.03	1.35	1440	57	K080	5	673	1484
		EAME, NACD	N/A	1400	55	1.13	1.48	1440	57	K080	5	705	1554
M318C	Extreme Excavation	EAME, NACD	B	1200	47	0.94	1.23	1445	57	K080	5	691	1523
		EAME, NACD	B	1300	51	1.03	1.35	1445	57	K080	5	724	1596
	Excavation	EAME, NACD	B	600	24	0.38	0.50	1445	57	K080	3	465	1025
		EAME, NACD	B	750	30	0.52	0.68	1445	57	K080	3	494	1089
		EAME, NACD	B	900	35	0.65	0.85	1445	57	K080	4	551	1215
		EAME, NACD	B	1000	39	0.75	0.98	1445	57	K080	4	585	1290
		EAME, NACD	B	1100	43	0.84	1.10	1445	57	K080	4	617	1360
		EAME, NACD	B	1200	47	0.94	1.23	1445	57	K080	5	657	1448
		EAME, NACD	B	1300	51	1.03	1.35	1445	57	K080	5	689	1519
		EAME, NACD	B	1400	55	1.13	1.48	1445	57	K080	5	723	1594
M322C	Extreme Excavation	EAME, NACD	B	750	30	0.59	0.77	1540	61	K090	3	600	1323
		EAME, NACD	B	1250	49	1.13	1.48	1540	61	K090	4	801	1766
		EAME, NACD	B	1300	51	1.18	1.54	1540	61	K090	5	831	1832
		EAME, NACD	B	1400	55	1.30	1.70	1540	61	K090	5	868	1914
	Excavation	EAME, NACD	B	600	24	0.44	0.58	1540	61	K080	3	585	1290
		EAME, NACD	B	750	30	0.59	0.77	1540	61	K080	3	577	1272
		EAME, NACD	B	1000	39	0.86	1.12	1540	61	K080	4	677	1493
		EAME, NACD	B	1200	47	1.08	1.41	1540	61	K080	5	757	1669
		EAME, NACD	B	1250	49	1.13	1.48	1540	61	K080	5	774	1706
		EAME, NACD	B	1300	51	1.19	1.56	1540	61	K080	5	792	1746
EAME, NACD	B	1400	55	1.30	1.70	1540	61	K080	5	827	1823		
EAME, NACD	B	1500	59	1.41	1.84	1540	61	K080	5	862	1900		

EAME — Europe, Africa and Middle East
NACD — North American Commercial Division

Excavators

Bucket Specifications

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
307C, 308C CR	General Purpose	NACD	N/A	330	13	0.12	0.16	1070	42	J225	3	142	313
		NACD	N/A	457	18	0.20	0.26	1070	42	J225	3	154	339
		NACD	N/A	609	24	0.30	0.39	1070	42	J225	4	181	398
		NACD	N/A	762	30	0.40	0.52	1070	42	J225	5	208	458
		NACD	N/A	914	36	0.48	0.63	1070	42	J225	6	230	508
	Heavy Duty	NACD	N/A	609	24	0.30	0.39	1070	42	J250	4	232	511
		NACD	N/A	762	30	0.40	0.52	1070	42	J250	5	268	590
	Excavation	EAME	N/A	336	13	0.09	0.12	1055	42	J225	3	160	353
		SCM/APD	307	380	14	0.14	0.18	1070	42	J225	3	Call Dealer	
		SCM/APD	307	480	18	0.18	0.24	1070	42	J225	3	Call Dealer	
		EAME	N/A	450	18	0.16	0.21	1055	42	J225	3	165	364
		SCM/APD	307	580	22	0.23	0.30	1070	42	J225	4	Call Dealer	
		SCM/APD	307	600	23	0.24	0.31	1070	42	J225	4	Call Dealer	
		EAME	N/A	600	24	0.23	0.30	1055	42	J225	4	195	430
		SCM/APD	307	696	27	0.28	0.37	1070	42	J225	4	Call Dealer	
EAME		N/A	750	30	0.30	0.39	1055	42	J225	5	222	489	
SCM/APD	307	820	32	0.34	0.44	1070	42	J225	5	215	475		
EAME	N/A	850	33	0.35	0.46	1055	42	J225	6	241	531		
313C SR	Excavation	—	—	600	24	0.32	0.42	1220	48	J250	—	309	680
		—	—	700	28	0.38	0.50	1220	48	J250	—	327	720
		—	—	825	32	0.45	0.59	1220	48	J250	—	352	780
313C CR	Excavation	—	—	600	24	0.32	0.42	1220	48	J250	—	309	680
		—	—	700	28	0.38	0.50	1220	48	J250	—	327	720
		—	—	825	32	0.45	0.59	1220	48	J250	—	352	780
		—	—	920	36	0.52	0.68	1220	48	J250	—	375	830
		—	—	1000	39	0.57	0.75	1220	48	J250	—	392	860
311C U, 312C, 314C CR	General Purpose	NACD	N/A	457	18	0.29	0.38	1220	48	J250	3	260	574
		NACD	N/A	609	24	0.39	0.51	1220	48	J250	4	306	675
		NACD	N/A	762	30	0.52	0.68	1220	48	J250	5	344	758
		NACD	N/A	914	36	0.68	0.89	1220	48	J250	6	386	851
		NACD	N/A	1066	42	0.82	1.10	1220	48	J250	6	428	943
		NACD	N/A	1219	48	0.97	1.27	1220	48	J250	7	465	1025
	Heavy Duty	NACD	N/A	609	24	0.39	0.51	1220	48	J300	3	346	763
		NACD	N/A	762	30	0.52	0.68	1220	48	J300	4	396	872
		NACD	N/A	914	36	0.68	0.89	1220	48	J300	5	448	987
		NACD	N/A	1066	42	0.82	1.10	1220	48	J300	5	489	1078
	Extreme Excavation	EAME	N/A	1200	47	0.72	0.94	1240	49	J250	6	463	1021

EAME — Europe, Africa and Middle East
NACD — North American Commercial Division
SCM — Shin Caterpillar Mitsubishi
APD — Asia Pacific Division

Bucket Specifications | Excavators

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
311C U, 312C, 314C CR (cont'd)	Excavation	SCM/APD	312	564	22	0.32	0.42	1220	48	J250	3	308	681
		EAME	N/A	600	24	0.28	0.37	1240	49	J250	3	316	697
		SCM/APD	312	664	26	0.38	0.50	1220	48	J250	4	326	720
		SCM/APD	312	785	30	0.45	0.59	1220	48	J250	5	352	776
		EAME	N/A	750	30	0.38	0.50	1240	49	J250	4	336	741
		SCM/APD	312	880	34	0.52	0.68	1220	48	J250	5	374	825
		EAME	N/A	900	35	0.49	0.64	1240	49	J250	5	375	827
		SCM/APD	312	964	37	0.57	0.75	1220	48	J250	5	392	864
		EAME	N/A	1000	39	0.56	0.73	1240	49	J250	5	397	875
		SCM/APD	312	1056	41	0.63	0.82	1220	48	J250	5	415	916
		EAME	N/A	1100	43	0.64	0.84	1240	49	J250	6	430	948
		EAME	N/A	1200	47	0.72	0.94	1240	49	J250	6	453	999
		Excavation for Demolition	SCM/APD	312	880	34	0.52	0.68	1220	48	J250	5	399
	SCM/APD	312	785	30	0.45	0.59	1220	48	J250	5	376	830	
315C	General Purpose	NACD	N/A	609	24	0.43	0.56	1340	53	K80	3	383	845
		NACD	N/A	762	30	0.60	0.78	1340	53	K80	4	434	956
		NACD	N/A	914	36	0.77	1.00	1340	53	K80	5	489	1077
		NACD	N/A	1066	42	0.95	1.24	1340	53	K80	5	534	1177
		NACD	N/A	1219	48	1.12	1.46	1340	53	K80	6	586	1293
	Heavy Duty	SCM/APD	315	508	20	0.32	0.42	1352	53	J300	3	364	803
		NACD	N/A	609	24	0.43	0.56	1340	53	K90	3	463	1021
		NACD	N/A	762	30	0.60	0.78	1340	53	K90	4	418	1143
		NACD	N/A	914	36	0.78	1.02	1340	53	K90	5	596	1315
		NACD	N/A	1066	42	0.95	1.24	1340	53	K90	5	653	1440
		NACD	N/A	1219	48	1.13	1.48	1340	53	K90	6	719	1585
	Excavation	EAME	N/A	600	24	0.38	0.50	1415	56	K080	3	450	992
		EAME	N/A	750	30	0.52	0.68	1415	56	K080	3	489	1078
		EAME	N/A	900	35	0.65	0.85	1415	56	K080	4	546	1204
		EAME	N/A	1000	39	0.75	0.98	1415	56	K080	4	580	1279
		EAME	N/A	1100	43	0.84	1.10	1415	56	K080	4	612	1349
		EAME	N/A	1200	47	0.94	1.23	1415	56	K080	5	652	1437
		EAME	N/A	1300	51	1.03	1.35	1415	56	K080	5	684	1508
		EAME	N/A	1400	55	1.13	1.48	1415	56	K080	5	715	1576
		SCM/APD	315	960	37	0.65	0.85	1352	53	J300	5	485	1069
		SCM/APD	315	1115	43	0.80	1.00	1352	53	J300	6	543	1197
	Extreme Excavation	EAME	N/A	1200	47	0.94	1.23	1415	56	K080	5	686	1512
		EAME	N/A	1300	51	1.03	1.35	1415	56	K080	5	719	1585

EAME — Europe, Africa and Middle East
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Excavators | Bucket Specifications

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
318C	Heavy Duty	NACD	B	609	24	0.52	0.68	1420	56	K90	3	598	1319
		NACD	B	762	30	0.71	0.93	1420	56	K90	4	663	1462
		NACD	B	914	36	0.92	1.20	1420	56	K90	5	721	1590
		NACD	B	1066	42	1.12	1.46	1421	56	K90	5	767	1690
		EAME	B	1200	47	0.94	1.23	1431	56	K080	5	691	1523
		NACD	B	1219	48	1.33	1.74	1422	56	K90	6	835	1840
		EAME	B	1300	51	1.03	1.35	1432	56	K080	5	724	1596
	Excavation	EAME	B	600	24	0.38	0.50	1423	56	K080	3	465	1025
		EAME	B	750	30	0.52	0.68	1424	56	K080	3	494	1089
		EAME	B	900	35	0.65	0.85	1425	56	K080	4	551	1215
		EAME	B	1000	39	0.75	0.98	1426	56	K080	4	585	1290
		EAME	B	1100	43	0.84	1.10	1427	56	K080	4	617	1360
		EAME	B	1200	47	0.94	1.23	1428	56	K080	5	657	1448
		EAME	B	1300	51	1.03	1.35	1429	56	K080	5	689	1519
		EAME	B	1400	55	1.13	1.48	1430	56	K080	5	723	1594
320C, 320C U, 321C CR	General Purpose	NACD	B	610	24	0.57	0.74	1433	56	K80	3	611	1347
		NACD	B	762	30	0.77	1.01	1436	56	K80	4	667	1471
		NACD	C	762	30	0.90	1.20	Call Dealer		K90	3	772	1698
		NACD	B	914	36	0.95	1.24	1439	56	K80	5	757	1669
		NACD	C	914	36	1.20	1.50	Call Dealer		K90	5	878	1932
		NACD	B	1067	42	1.17	1.53	1443	56	K80	5	812	1791
		NACD	C	1067	42	1.40	1.80	Call Dealer		K90	5	944	2076
		NACD	B	1219	48	1.39	1.82	1447	56	K80	6	895	1974
		NACD	C	1219	48	1.60	2.10	Call Dealer		K90	6	1039	2286
		NACD	B	1372	54	1.57	2.05	1451	56	K80	6	959	2114
		NACD	C	1372	54	1.80	2.40	Call Dealer		K90	7	1112	2448
	Heavy Duty	NACD	B	610	24	0.50	0.70	1434	56	K90	3	657	1444
		NACD	B	762	30	0.70	0.90	1437	56	K90	4	737	1622
		NACD	C	762	30	0.75	0.98	1640	65	K100	3	823	1812
		NACD	B	914	36	0.90	1.10	1440	56	K90	5	805	1779
		NACD	C	914	36	0.98	1.28	1640	65	K100	4	918	2020
		NACD	B	1067	42	1.00	1.40	1444	56	K90	5	866	1903
		NACD	C	1067	42	1.18	1.55	1640	65	K100	5	995	2189
		NACD	B	1219	48	1.20	1.60	1448	56	K90	6	963	2119
NACD	B	1219	48	1.20	1.60	1449	56	K90	6	936	2058		
NACD	C	1219	48	1.39	1.81	1640	65	K100	5	1065	2342		
NACD	B	1372	54	1.40	1.80	1452	56	K90	7	1025	2255		
NACD	B	1372	54	1.40	1.80	1453	56	K90	7	995	2189		
NACD	C	1372	54	1.59	2.08	1640	65	K100	6	1148	2527		
NACD	C	1524	60	1.80	2.35	1640	65	K100	7	1234	2715		
NACD	C	1676	66	2.01	2.63	1640	65	K100	7	1307	2876		

EAME — Europe, Africa and Middle East
 NACD — North American Commercial Division

Bucket Specifications | Excavators

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips		
				mm	in	m ³	yd ³	mm	in			kg	lb	
320C, 320C U, 321C CR (cont'd)	Heavy Duty Rock	NACD	B	610	24	0.50	0.70	1435	56	K90	3	708	1557	
		NACD	B	762	30	0.70	0.90	1438	56	K90	4	793	1744	
		NACD	C	762	30	0.75	0.98	1640	65	K100	3	895	1969	
		NACD	B	914	36	0.90	1.10	1442	56	K90	5	875	1925	
		NACD	C	914	36	0.98	1.26	1640	65	K100	4	1000	2200	
		NACD	B	1067	42	1.00	1.40	1446	56	K90	5	945	2080	
		NACD	C	1067	42	1.18	1.55	1640	65	K100	5	1087	2391	
		NACD	C	1219	48	1.39	1.81	1640	65	K100	5	1167	2567	
			NACD	C	1372	54	1.60	2.10	1549	61	K100	6	1155	2545
		Heavy Duty Power	NACD	B	914	36	0.80	1.10	1441	56	K90	5	796	1751
			NACD	B	1067	42	1.00	1.30	1445	56	K90	5	855	1881
			NACD	C	1067	42	1.20	1.50	1549	61	K100	5	991	2184
			NACD	B	1219	48	1.20	1.50	1450	56	K90	6	944	2077
			NACD	C	1219	48	1.40	1.80	1549	61	K100	5	1065	2348
		Extreme Excavation	EAME	B	750	30	0.59	0.77	1540	61	K090	3	600	1323
			EAME	C	750	30	0.67	0.88	1610	63	K100	3	695	1532
			EAME	C	1150	45	1.16	1.52	1610	63	K100	4	888	1958
			EAME	B	1250	49	1.13	1.48	1540	61	K090	4	801	1766
			EAME	B	1300	51	1.18	1.54	1540	61	K090	5	831	1832
			EAME	C	1350	53	1.42	1.86	1610	63	K100	4	976	2152
			EAME	B	1400	55	1.30	1.70	1540	61	K090	5	868	1914
			EAME	C	1450	57	1.55	2.03	1610	63	K100	5	1035	2282
			EAME	C	1500	59	1.61	2.11	1610	63	K100	5	1056	2328
			EAME	C	1600	63	1.74	2.28	1610	63	K100	5	1100	2425
		Excavation	EAME	B	600	24	0.44	0.58	Call Dealer		K080	3	585	1290
			EAME	C	600	24	0.49	0.64	1610	63	K090	3	626	1380
			EAME	B	750	30	0.59	0.77	1540	61	K080	3	577	1272
			EAME	C	750	30	0.67	0.88	1610	63	K090	3	668	1473
			SCM/APD	B	972	38	0.80	1.00	1490	59	J300	5	589	1299
			EAME	B	1000	39	0.86	1.12	1540	61	K080	4	677	1493
			SCM/APD	B	1092	42	0.90	1.20	1490	59	J300	5	625	1379
			SCM/APD	B	1152	45	1.00	1.30	1490	59	J300	6	651	1436
			EAME	B	1200	47	1.08	1.41	1540	61	K080	5	757	1669
			EAME	B	1250	49	1.13	1.48	1540	61	K080	5	774	1706
			EAME	C	1250	49	1.29	1.69	1610	63	K090	4	893	1969
			EAME	B	1300	51	1.19	1.56	1540	61	K080	5	792	1746
	EAME		C	1300	51	1.35	1.77	1610	63	K090	5	925	2039	
	EAME		C	1350	53	1.42	1.86	1610	63	K090	5	946	2086	
	SCM/APD		C	1375	54	1.10	1.40	1488	59	J350	6	824	1818	
	EAME		B	1400	55	1.30	1.70	1540	61	K080	5	827	1823	
	EAME		C	1400	55	1.48	1.94	1610	63	K090	5	967	2132	
	SCM/APD		C	1470	57	1.20	1.60	1488	59	J350	6	860	1896	
	EAME		B	1500	59	1.41	1.84	1540	61	K080	5	862	1900	
	EAME		C	1500	59	1.61	2.11	1610	63	K090	5	1010	2227	
	EAME	C	1600	63	1.74	2.28	1610	63	K090	5	1051	2317		

EAME — Europe, Africa and Middle East
 NACD — North American Commercial Division
 SCM — Shin Caterpillar Mitsubishi
 APD — Asia Pacific Division

Excavators | Bucket Specifications

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
320C, 320C U 321C CR (cont'd)	Excavation	SCM/APD	B	1252	49	0.90	1.20	1423	56	J300	6	675	1488
		SCM/APD	B	1362	53	1.00	1.30	1423	56	J300	6	700	1544
	Ditch Cleaning	NACD	B	1524	60	0.99	1.30	Call Dealer		B.O.E.	Call Dealer	703	1550
		NACD	B	1829	72	1.24	1.63	Call Dealer		B.O.E.	Call Dealer	816	1800
Excavation for Demolition	SCM/APD	B	986	38	0.80	1.00	1494	59	J350	5	706	1557	
	SCM/APD	B	1106	43	0.90	1.20	1544	61	J350	5	761	1678	
322C	General Purpose	NACD	S	610	24	0.50	0.60	Call Dealer		K90	3	707	1559
		NACD	S	610	24	0.50	0.60	Call Dealer		K90	3	707	1559
		NACD	S	762	30	0.60	0.80	Call Dealer		K90	3	750	1653
		NACD	D	762	30	0.85	1.12	1886	74	J460	3	942	2080
		NACD	S	914	36	0.80	1.10	Call Dealer		K90	5	879	1939
		NACD	D	914	36	1.14	1.50	1886	74	J460	3	1020	2250
		NACD	S	1067	42	1.00	1.30	Call Dealer		K90	5	954	2085
		NACD	D	1067	42	1.43	1.88	1886	74	J460	4	1115	2460
		NACD	S	1219	48	1.20	1.50	Call Dealer		K90	6	1042	2298
		NACD	D	1219	48	1.72	2.25	1886	74	J460	5	1143	2520
		NACD	S	1372	54	1.30	1.70	1640	65	K90	7	1117	2462
		NACD	D	1397	55	2.00	2.62	1886	74	J460	5	1188	2620
		NACD	D	1524	60	2.29	3.00	1886	74	J460	6	1397	3080
	NACD	D	1829	72	2.82	3.70	1886	74	J400	7	1655	3650	
	Heavy Duty	NACD	S	610	24	0.57	0.75	1640	65	K100	3	753	1661
		NACD	S	762	30	0.75	0.98	1640	65	K100	3	823	1814
		NACD	D	762	30	0.76	1.00	1764	69	J460	3	981	2163
		NACD	S	914	36	0.98	1.28	1640	65	K100	4	918	2024
		NACD	D	914	36	0.95	1.25	1764	69	J460	3	1084	2390
		NACD	D	914	36	0.95	1.25	1660	65	J460	3	1025	2260
		NACD	S	1067	42	1.18	1.55	1640	65	K100	5	995	2193
		NACD	D	1067	42	1.14	1.50	1764	69	J460	4	1197	2640
		NACD	S	1219	48	1.39	1.81	1640	65	K100	5	1065	2348
NACD		D	1219	48	1.43	1.88	1764	69	J460	5	1321	2913	
NACD	S	1372	54	1.59	2.08	1640	65	K100	6	1148	2531		
NACD	D	1397	55	1.62	2.12	1764	69	J460	5	1421	3134		
NACD	S	1524	60	1.80	2.35	1640	65	K100	7	1234	2721		
NACD	D	1524	60	1.91	2.50	1764	69	J460	6	1522	3356		
NACD	D	1676	66	2.10	2.75	1764	69	J460	6	1609	3548		
NACD	D	1829	72	2.29	3.00	1764	69	J460	7	1645	3628		

NACD — North American Commercial Division
 SCM — Shin Caterpillar Mitsubishi
 APD — Asia Pacific Division

Bucket Specifications | Excavators

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
322C (cont'd)	Heavy Duty Rock	NACD	S	762	30	0.75	0.98	1640	65	K100	3	894	1971
		NACD	D	762	30	0.76	1.00	1764	69	J460	3	1101	2429
		NACD	S	914	36	0.98	1.28	1640	65	K100	4	999	2202
		NACD	D	914	36	0.95	1.25	1764	69	J460	3	1207	2663
		NACD	S	1067	42	1.18	1.55	1640	65	K100	5	1086	2393
		NACD	D	1067	42	1.14	1.50	1764	69	J460	4	1338	2950
		NACD	D	1219	48	1.43	1.88	1764	69	J460	5	1480	3264
		NACD	D	1397	55	1.62	2.12	1764	69	J460	5	1583	3490
	Heavy Duty Power	NACD	S	1067	42	1.20	1.50	1549	61	K100	5	991	2184
		NACD	S	1219	48	1.40	1.80	1549	61	K100	5	1065	2348
		NACD	D	1219	48	1.43	1.88	1660	65	J460	5	1254	2765
		NACD	S	1372	54	1.60	2.10	1549	61	K100	6	1155	2545
		NACD	D	1372	54	1.62	2.12	1660	65	J460	5	1339	2954
		NACD	D	1524	60	1.91	2.50	1660	65	J460	6	1447	3192
	Extreme Excavation	EAME	D	1350	53	1.50	1.96	1660	65	J460	4	1296	2857
		EAME	S	1450	57	1.55	2.03	1610	63	K100	5	1035	2282
		EAME	D	1500	59	1.70	2.22	1660	65	J460	5	1403	3093
		EAME	D	1650	65	1.90	2.49	1660	65	J460	5	1571	3463
	Excavation	EAME	S	750	30	0.67	0.88	1610	63	K090	3	668	1473
		SCM/APD	S	1062	41	1.00	1.30	1551	61	J350	5	758	1672
		SCM/APD	B	1092	42	0.90	1.20	1490	59	J300	5	625	1379
		SCM/APD	S	1162	45	1.10	1.40	1551	61	J350	5	787	1735
		SCM/APD	S	1318	51	1.20	1.60	1551	61	J350	5	808	1782
		SCM/APD	D	1347	53	1.30	1.70	1661	65	J400	5	1022	2253
		EAME	S	1350	53	1.42	1.86	1610	63	K090	4	946	2086
		EAME	D	1350	53	1.50	1.96	1660	65	J400	4	1214	2676
		SCM/APD	D	1432	56	1.40	1.80	1661	65	J400	5	1071	2361
		EAME	D	1500	59	1.70	2.22	1660	65	J400	5	1324	2919
		SCM/APD	D	1502	59	1.50	2.00	1661	65	J400	5	1130	2491
		EAME	D	1650	65	1.90	2.49	1660	65	J400	5	1411	3111
		EAME	D	1800	71	2.20	2.88	1660	65	J400	6	1540	3395
		Rock	EAME	D	1000	39	1.00	1.31	1660	65	J460	3	1160
	EAME		D	1650	65	2.03	2.66	1660	65	J460	5	1632	3598
Ditch Cleaning	NACD	S	1524	60	0.99	1.30	Call Dealer		B.O.E.	Call Dealer	703	1550	
	NACD	S	1829	72	1.24	1.63	Call Dealer		B.O.E.	Call Dealer	816	1800	
Excavation for Demolition	SCM/APD	S	1253	49	1.10	1.40	1577	62	J400	5	920	2029	

EAME — Europe, Africa and Middle East
 NACD — North American Commercial Division
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 APD — Asia Pacific Division

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
325C	General Purpose	NACD	C	762	30	0.90	1.20	Call Dealer	K90	3	772	1698	
		NACD	D	762	30	0.85	1.12	1886	74	J460	3	942	2080
		NACD	C	914	36	1.20	1.50	Call Dealer	K90	5	878	1932	
		NACD	D	914	36	1.14	1.50	1886	74	J460	3	1020	2250
		NACD	C	1067	42	1.40	1.80	Call Dealer	K90	5	944	2076	
		NACD	D	1067	42	1.43	1.88	1886	74	J460	4	1115	2460
		NACD	C	1219	48	1.60	2.10	Call Dealer	K90	6	1039	2286	
		NACD	D	1219	48	1.72	2.25	1886	74	J460	5	1143	2520
		NACD	C	1372	54	1.80	2.40	Call Dealer	K90	7	1112	2448	
		NACD	D	1397	55	2.00	2.62	1886	74	J460	5	1188	2620
		NACD	D	1524	60	2.29	3.00	1886	74	J460	6	1397	3080
		NACD	D	1829	72	2.82	3.70	1886	74	J400	7	1655	3650
	Heavy Duty	NACD	C	762	30	0.75	0.98	1640	65	K100	3	823	1812
		NACD	D	762	30	0.76	1.00	1764	69	J460	3	981	2163
		NACD	C	914	36	0.98	1.28	1640	65	K100	4	918	2020
		NACD	D	914	36	0.95	1.25	1764	69	J460	3	1084	2390
		NACD	C	1067	42	1.18	1.55	1640	65	K100	5	995	2189
		NACD	D	1067	42	1.14	1.50	1764	69	J460	4	1197	2640
		NACD	C	1219	48	1.39	1.81	1640	65	K100	5	1065	2342
		NACD	D	1219	48	1.43	1.88	1764	69	J460	5	1321	2913
		NACD	C	1372	54	1.59	2.08	1640	65	K100	6	1148	2527
		NACD	D	1397	55	1.62	2.12	1764	69	J460	5	1421	3134
		NACD	C	1524	60	1.80	2.35	1640	65	K100	7	1234	2715
		NACD	D	1524	60	1.91	2.50	1764	69	J460	6	1522	3356
		NACD	C	1676	66	2.01	2.63	1640	65	K100	7	1307	2876
		NACD	D	1676	66	2.10	2.75	1764	69	J460	6	1609	3548
	NACD	D	1829	72	2.29	3.00	1764	69	J460	7	1645	3628	
	Heavy Duty Rock	NACD	C	762	30	0.75	0.98	1640	65	K100	3	895	1969
		NACD	D	762	30	0.76	1.00	1764	69	J460	3	1101	2429
		NACD	C	914	36	0.98	1.258	1640	65	K100	4	1000	2200
		NACD	D	914	36	0.95	1.25	1764	69	J460	3	1207	2663
		NACD	C	1067	42	1.18	1.55	1640	65	K100	5	1087	2391
		NACD	D	1067	42	1.14	1.50	1764	69	J460	4	1338	2950
		NACD	C	1219	48	1.39	1.81	1640	65	K100	5	1167	2567
		NACD	D	1219	48	1.43	1.88	1764	69	J460	5	1480	3264
		NACD	D	1397	55	1.62	2.12	1764	69	J460	5	1583	3490
Heavy Duty Power	NACD	D	914	36	0.95	1.25	1660	65	J460	3	1025	2260	
	NACD	C	1067	42	1.20	1.50	1549	61	K100	5	991	2184	
	NACD	C	1219	48	1.40	1.80	1549	61	K100	5	1065	2348	
	NACD	D	1219	48	1.43	1.88	1660	65	J460	5	1254	2765	
	NACD	C	1372	54	1.60	2.10	1549	61	K100	6	1155	2545	
	NACD	D	1372	54	1.62	2.12	1660	65	J460	5	1339	2954	
	NACD	D	1524	60	1.91	2.50	1660	65	J460	6	1447	3192	

NACD — North American Commercial Division

Bucket Specifications | Excavators

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
325C (cont'd)	Extreme Excavation	EAME	C	750	30	0.67	0.88	1610	63	K100	3	695	1532
		EAME	C	1150	45	1.16	1.52	1610	63	K100	4	888	1958
		EAME	C	1350	53	1.42	1.86	1610	63	K100	4	976	2152
		EAME	D	1350	53	1.50	1.96	1660	65	J460	4	1296	2857
		EAME	C	1450	57	1.55	2.03	1610	63	K100	5	1035	2282
		EAME	C	1500	59	1.61	2.11	1610	63	K100	5	1056	2328
		EAME	D	1500	59	1.70	2.22	1660	65	J460	5	1403	3093
		EAME	C	1600	63	1.74	2.28	1610	63	K100	5	1100	2425
		EAME	D	1650	65	1.90	2.49	1660	65	J460	5	1571	3463
	Excavation	EAME	C	600	24	0.49	0.64	1610	63	K090	3	626	1380
		EAME	C	750	30	0.67	0.88	1610	63	K090	3	668	1473
		SCM/APD	C	1080	42	0.80	1.00	1488	59	J350	5	745	1643
		EAME	C	1250	49	1.29	1.69	1610	63	K090	4	893	1969
		EAME	C	1300	51	1.35	1.77	1610	63	K090	5	925	2039
		EAME	D	1350	53	1.50	1.96	1660	65	J400	4	1214	2676
		EAME	C	1350	53	1.42	1.86	1610	63	K090	5	946	2086
		SCM/APD	C	1375	54	1.10	1.40	1488	59	J350	6	824	1818
		EAME	C	1400	55	1.48	1.94	1610	63	K090	5	967	2132
		SCM/APD	D	1432	56	1.40	1.80	1660	65	J400	5	1071	2361
		SCM/APD	C	1470	57	1.20	1.60	1488	59	J350	6	860	1896
		EAME	D	1500	59	1.70	2.22	1660	65	J400	5	1324	2919
		EAME	C	1500	59	1.61	2.11	1610	63	K090	5	1010	2227
		SCM/APD	D	1502	59	1.50	2.00	1660	65	J400	5	1130	2491
		EAME	C	1600	63	1.74	2.28	1610	63	K090	5	1051	2317
	EAME	D	1650	65	1.90	2.49	1660	65	J400	5	1411	3111	
	EAME	D	1800	71	2.20	2.88	1660	65	J400	6	1540	3395	
	Mass Excavation	SCM/APD	C	1443	56	1.30	1.70	1488	59	J350	6	892	1967
		SCM/APD	D	1522	59	1.60	2.10	1660	65	J400	6	1182	2606
		SCM/APD	C	1593	62	1.50	2.00	1488	59	J350	6	963	2124
	Ditch Cleaning	NACD	C	1676	66	1.14	1.50	Call Dealer		BOCE	Call Dealer	811	1790
		NACD	C	1829	72	1.23	1.62	Call Dealer		BOCE	Call Dealer	857	1890
	Rock	EAME	D	1000	39	1.00	1.31	1660	65	J460	3	1160	2557
		EAME	D	1650	65	2.03	2.66	1660	65	J460	5	1632	3598
Excavation for Demolition	SCM/APD	C	1465	57	1.30	1.70	1514	60	J400	6	993	2189	

EAME — Europe, Africa and Middle East
 SCM — Shin Caterpillar Mitsubishi
 APD — Asia Pacific Division

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
330C	General Purpose	NACD	D	762	30	0.85	1.12	1886	74	J460	3	942	2080
		NACD	D	914	36	1.14	1.50	1886	74	J460	3	1020	2250
		NACD	D	1067	42	1.43	1.88	1886	74	J460	4	1115	2460
		NACD	D	1219	48	1.72	2.25	1886	74	J460	5	1143	2520
		NACD	D	1397	55	2.00	2.62	1886	74	J460	5	1188	2620
		NACD	D	1524	60	2.29	3.00	1886	74	J460	6	1397	3080
		NACD	D	1829	72	2.82	3.70	1886	74	J400	7	1655	3650
	Heavy Duty	NACD	D	762	30	0.76	1.00	1764	69	J460	3	981	2163
		NACD	D	914	36	0.95	1.25	1764	69	J460	3	1084	2390
		NACD	D	1067	42	1.14	1.50	1764	69	J460	4	1197	2640
		NACD	D	1219	48	1.43	1.88	1764	69	J460	5	1321	2913
		NACD	D	1397	55	1.62	2.12	1764	69	J460	5	1421	3134
		NACD	D	1524	60	1.91	2.50	1764	69	J460	6	1522	3356
		NACD	D	1676	66	2.10	2.75	1764	69	J460	6	1609	3548
		NACD	E	1676	66	2.29	3.00	1870	74	J460	6	2140	4720
		NACD	D	1829	72	2.29	3.00	1764	69	J460	7	1645	3628
	NACD	E	1829	72	2.67	3.50	1870	74	J460	7	2263	4990	
	Heavy Duty Rock	NACD	D	762	30	0.76	1.00	1764	69	J460	3	1101	2429
		NACD	D	914	36	0.95	1.25	1764	69	J460	3	1207	2663
		NACD	D	1067	42	1.14	1.50	1764	69	J460	4	1338	2950
		NACD	D	1219	48	1.43	1.88	1764	69	J460	5	1480	3264
		NACD	D	1397	55	1.62	2.12	1764	69	J460	5	1583	3490
	Heavy Duty Power	NACD	D	914	36	0.95	1.25	1660	65	J460	3	1025	2260
		NACD	D	1219	48	1.43	1.88	1660	65	J460	5	1254	2765
		NACD	D	1372	54	1.62	2.12	1660	65	J460	5	1339	2954
		NACD	D	1524	60	1.91	2.50	1660	65	J460	6	1447	3192
	Extreme Excavation	EAME	E	750	30	0.68	0.89	1780	70	J460	3	1040	2293
		EAME	D	1350	53	1.50	1.96	1660	65	J460	4	1296	2857
		EAME	D	1500	59	1.70	2.22	1660	65	J460	5	1403	3093
		EAME	D	1650	65	1.90	2.49	1660	65	J460	5	1571	3463
		EAME	E	1700	67	2.20	2.88	1780	70	J460	5	1803	3975
	Excavation	SCM/APD	D	1347	53	1.30	1.70	1660	65	J400	5	1022	2253
		EAME	D	1350	53	1.50	1.96	1660	65	J400	4	1214	2676
		SCM/APD	D	1432	56	1.40	1.80	1660	65	J400	5	1071	2361
		SCM/APD	E	1479	58	1.70	2.20	1845	73	J460	5	1442	3179
		EAME	D	1500	59	1.70	2.22	1660	65	J400	5	1324	2919
		EAME	E	1500	59	1.90	2.49	1780	70	J460	4	1590	3505
		SCM/APD	D	1502	59	1.50	2.00	1660	65	J400	5	1130	2491
		SCM/APD	E	1608	63	1.90	2.50	1845	73	J460	5	1523	3357
EAME		D	1650	65	1.90	2.49	1660	65	J400	5	1411	3111	
EAME		E	1700	67	2.20	2.88	1780	70	J460	6	1764	3889	
EAME		D	1800	71	2.20	2.88	1660	65	J400	6	1540	3395	

EAME — Europe, Africa and Middle East
 NACD — North American Commercial Division
 SCM — Shin Caterpillar Mitsubishi
 APD — Asia Pacific Division

Bucket Specifications | Excavators

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips		
				mm	in	m ³	yd ³	mm	in			kg	lb	
330C (cont'd)	Excavation for Demolition	SCM/APD	D	1463	57	1.40	1.8	1703	67	J460	5	1317	2904	
		SCM/APD	D	1533	60	1.50	2.00	1703	67	J460	5	1384	3051	
	Mass Excavation	SCM/APD	D	1522	59	1.60	2.10	1660	65	J400	6	1182	2606	
		SCM/APD	D	1522	59	1.60	2.10	1660	65	J400	6	1182	2606	
		SCM/APD	D	1702	67	1.90	2.50	1660	65	J400	6	1262	2782	
		SCM/APD	E	1744	68	2.10	2.70	1845	73	J460	6	1608	3545	
	Rock	EAME	D	1000	39	1.00	1.31	1660	65	J460	3	1160	2557	
		EAME	E	1500	59	1.90	2.49	1780	70	J550	4	1690	3726	
		EAME	D	1650	65	2.03	2.66	1660	65	J460	5	1632	3598	
		EAME	E	1800	71	2.30	3.01	1870	74	J550	4	2315	5104	
	345C	General Purpose	NACD	F	762	30	0.95	1.25	2030	80	J460	3	1342	2960
			NACD	F	914	36	1.33	1.75	2030	80	J460	3	1498	3300
NACD			F	1067	42	1.62	2.12	2030	80	J460	4	1616	3560	
NACD			F	1219	48	1.81	2.38	2030	80	J400	5	1762	3880	
NACD			F	1219	48	1.91	2.50	2030	80	J460	5	1886	4150	
NACD			F	1372	54	2.29	3.00	2030	80	J460	5	2032	4480	
NACD			F	1575	62	2.67	3.50	2030	80	J460	6	2179	4800	
NACD			F	1727	68	3.05	4.00	2030	80	J460	7	2306	5080	
Heavy Duty		NACD	F	914	36	1.05	1.38	1870	74	J460	3	1532	3370	
		NACD	F	1067	42	1.33	1.75	1870	74	J460	4	1652	3640	
		NACD	F	1219	48	1.62	2.12	1870	74	J460	5	1792	3950	
		NACD	F	1372	54	1.91	2.50	1870	74	J460	5	1917	4220	
		NACD	F	1524	60	2.10	2.75	1870	74	J460	6	2064	4550	
		NACD	F	1676	66	2.29	3.00	1870	74	J460	6	2211	4870	
		NACD	F	1829	72	2.67	3.50	1870	74	J460	7	2335	5140	
Heavy Duty Rock		NACD	F	762	30	0.76	1.00	1870	74	J460	3	1471	3240	
		NACD	F	914	36	1.05	1.38	1870	74	J460	4	1636	3600	
		NACD	F	1067	42	1.33	1.75	1870	74	J460	4	1769	3900	
		NACD	F	1219	48	1.62	2.12	1870	74	J460	5	1920	4230	
		NACD	F	1372	54	1.91	2.50	1870	74	J460	5	2057	4530	
		NACD	F	1524	60	2.10	2.75	1870	74	J460	6	2224	4900	
		EAME	T	1570	62	2.20	2.88	1870	74	J550	4	2375	5230	
		NACD	F	1676	66	2.29	3.00	1870	74	J460	6	2512	5538	
Heavy Duty Power		NACD	F	914	36	1.12	1.45	1725	67	J550	3	1758	3870	
		NACD	F	1219	48	1.59	2.08	1725	67	J550	4	1907	4200	
		NACD	F	1372	54	1.85	2.43	1725	67	J550	4	2071	4560	

EAME — Europe, Africa and Middle East
NACD — North American Commercial Division
SCM — Shin Caterpillar Mitsubishi
APD — Asia Pacific Division

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
345C (cont'd)	Extreme Excavation	EAME	T	1350	53	1.8	2.35	1870	74	J460	4	2056	4533
		EAME	T	1450	57	2.0	2.62	1870	74	J460	4	2145	4729
		EAME	U	1450	57	2.0	2.62	1990	78	J550	4	2385	5258
		EAME	T	1570	62	2.2	2.88	1870	74	J460	4	2252	4965
		EAME	U	1570	62	2.6	3.40	1990	78	J550	4	2624	5785
		SCM/APD	T	1581	62	1.9	2.50	1862	73	J550	5	1800	3968
		SCM/APD	T	1646	64	2.0	2.60	1862	73	J550	5	1862	4105
		EAME	U	1670	66	2.8	3.66	1990	78	J550	4	2725	6008
		EAME	T	1700	67	2.8	3.66	1870	74	J460	5	2628	5794
		SCM/APD	T	1708	67	2.1	2.70	1862	73	J550	5	1891	4168
	EAME	U	1820	72	3.1	4.05	1990	78	J550	5	2911	6418	
	Extreme Service Excavation*	SCM/APD	T	1532	60	1.9	2.50	1862	73	J550	5	1855	4089
		SCM/APD	T	1597	62	2.0	2.60	1862	73	J550	5	1920	4232
		SCM/APD	T	1659	65	2.1	2.70	1862	73	J550	5	1952	4303
	Excavation	EAME	U	910	36	1.3	1.70	1990	78	J550	3	1904	4198
		EAME	T	1350	53	1.8	2.35	1870	74	J460	4	1909	4209
		EAME	T	1450	57	2.0	2.62	1870	74	J460	4	1993	4394
		EAME	T	1570	62	2.2	2.88	1870	74	J460	4	2094	4616
		SCM/APD	G	1616	63	2.2	2.90	1958	77	J550	5	2063	4550
		SCM/APD	U	1659	65	2.1	2.70	1866	73	J550	5	2020	4455
		SCM/APD	G	1731	68	2.4	3.10	1958	77	J550	5	2193	4836
		EAME	U	1750	69	3.5	4.58	1990	78	J550	4	2690	5930
	Excavation*	SCM/APD	T	1544	60	1.9	2.50	1832	72	J460	5	1659	3657
		SCM/APD	F	1554	61	2.0	2.60	1871	74	J460	6	1720	3791
		SCM/APD	U	1610	63	2.1	2.70	1866	73	J550	5	2089	4607
		SCM/APD	F	1699	66	2.2	2.90	1871	74	J460	6	1825	4023
	Mass Excavation	SCM/APD	G	1856	73	2.6	3.40	1958	77	J550	5	2325	5127
	Rock	EAME	T	1350	53	1.8	2.35	1870	74	J550	4	2318	5110
		EAME	U	1400	55	2.2	2.88	2020	80	J550	4	2606	5745
		EAME	T	1450	57	2.0	2.62	1870	74	J550	4	2413	5320
		EAME	T	1570	62	2.2	2.88	1870	74	J550	4	2543	5606
		EAME	U	1570	62	2.6	3.40	2020	80	J550	4	2780	6129
		EAME	U	1670	66	2.8	3.66	2020	80	J550	4	2914	6424
EAME		U	1820	72	3.1	4.05	2020	80	J550	4	3078	6786	
Trenching	SCM/APD	F	1225	48	1.6	2.10	1925	76	J460	4	2535	5589	
V-Type Excavation	SCM/APD	U	1725	67	2.1	2.70	1860	73	J550	6	2223	4902	
	SCM/APD	G	1740	68	2.2	2.90	1958	77	J550	6	2365	5215	
	SCM/APD	G	1870	74	2.4	3.10	2007	79	J550	6	2399	5289	
V-Type Excavation*	SCM/APD	U	1725	67	2.1	2.70	1862	73	J550	6	2225	4907	
	SCM/APD	G	1870	73	2.4	3.10	1972	78	J550	6	2470	5447	

*Denotes the use of the new, HEDC designed adapters, J460N/J550N/J600N.

EAME — Europe, Africa and Middle East

SCM — Shin Caterpillar Mitsubishi

APD — Asia Pacific Division

Bucket Specifications | Excavators

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips		
				mm	in	m ³	yd ³	mm	in			kg	lb	
345C (cont'd)	Excavation	SCM/APD	TB	1390	55	1600	2.09	1220	48	J460	4	1563	3450	
		SCM/APD	TB	1590	63	1900	2.49	1220	48	J460	5	1724	3800	
		SCM/APD	TB	1650	65	2000	2.62	1220	48	J460	5	1706	3760	
		SCM/APD	TB	1780	70	2200	2.88	1220	48	J460	6	1774	3910	
		SCM/APD	TB	1560	61	1900	2.49	1860	73	J550	5	2184	4810	
		SCM/APD	TB	1610	63	1900	2.49	1860	73	J550	5	2120	4670	
		SCM/APD	TB	1620	64	2000	2.62	1860	73	J550	5	2236	4930	
		SCM/APD	TB	1670	66	2000	2.62	1860	73	J550	5	2164	4770	
		SCM/APD	TB	1680	66	2100	2.75	1860	73	J550	5	2288	5040	
		SCM/APD	TB	1730	68	2100	2.75	1860	73	J550	5	2220	4890	
	V-Type Excavation	SCM/APD	UB	1540	61	2100	2.75	1960	77	J550	5	2453	5410	
		SCM/APD	UB	1640	65	2200	2.88	1960	77	J550	5	2431	5360	
		SCM/APD	UB	1710	67	2400	3.14	1960	77	J550	5	2655	5850	
	Excavation	SCM/APD	UB	1560	61	2100	2.75	1960	77	J550	5	2029	4470	
		SCM/APD	UB	1610	63	2200	2.88	1960	77	J550	5	2064	4550	
		SCM/APD	UB	1730	68	2400	3.14	1960	77	J550	5	2153	4750	
	Mass Excavation	SCM/APD	UB	1830	72	2600	3.40	1960	77	J550	5	2226	4910	
	365C	General Purpose	NACD	VB	1016	40	1.62	2.12	2150	85	J550	3	1909	4210
			NACD	VB	1524	60	2.77	3.63	2150	85	J550	5	2444	5390
NACD			VB	1905	75	3.82	5.00	2195	86	J550	6	2848	6280	
Heavy Duty		NACD	VB	1219	48	1.85	2.42	2060	81	J550	4	2086	4600	
		NACD	VB	1676	66	2.77	3.63	2060	81	J550	5	2590	5710	
		NACD	VB	1905	75	3.24	4.25	2060	81	J550	6	2862	6310	
Heavy Duty Rock		NACD	VB	1016	40	1.43	1.88	2060	81	J550	3	1964	4330	
		NACD	VB	1524	60	2.48	3.25	2060	81	J550	5	2599	5730	
		NACD	VB	1905	75	3.24	4.25	2060	81	J550	6	3039	6700	
Extreme Excavation		EAME	VB	1500	59	2.50	3.27	2120	83	J600	3	2767	6100	
		EAME	WB	1500	59	2.70	3.53	2210	87	J600	3	3310	7297	
		SCM/APD	VB	1679	66	2.50	3.20	2057	81	J550	5	2346	5174	
		EAME	VB	1800	71	3.20	4.19	2120	83	J600	4	3129	6898	
		EAME	WB	1850	73	3.60	4.71	2210	87	J600	4	3743	8252	
		SCM/APD	VB	1887	74	2.90	3.70	2057	81	J550	5	2577	5683	
		EAME	VB	1900	75	3.50	4.58	2120	83	J600	4	3260	7187	
		EAME	WB	2000	79	4.00	5.23	2210	87	J600	4	3930	8664	
		EAME	WB	2200	87	4.40	5.75	2210	87	J600	5	4186	9229	
EAME		WB	2320	91	4.80	6.28	2210	87	J600	5	4377	9650		
Extreme Service Excavation*		SCM/APD	VB	1530	60	2.30	3.00	2057	81	J550N	5	2290	5050	
		SCM/APD	VB	1630	64	2.50	3.20	2057	81	J550N	5	2365	5215	
		SCM/APD	VB	1734	68	2.70	3.50	2057	81	J550N	5	2459	5423	
		SCM/APD	VB	1744	68	2.70	3.50	2057	81	J550N	5	2731	6022	
	SCM/APD	VB	1838	72	2.90	3.70	2057	81	J550N	5	2596	5725		
	SCM/APD	VB	1848	72	2.90	3.70	2057	81	J550N	5	2884	6360		
	SCM/APD	WB	1930	75	3.20	4.10	2098	83	J600N	5	3030	6681		
SCM/APD	WB	2090	82	3.50	4.60	2098	83	J600N	5	3245	7155			

*Denotes the use of the new, HEDC designed adapters, J460N/J550N/J600N.

EAME — Europe, Africa and Middle East
 NACD — North American Commercial Division
 SCM — Shin Caterpillar Mitsubishi
 APD — Asia Pacific Division

Excavators

Bucket Specifications

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
365C (cont'd)	Excavation	EAME	VB	1500	59	2.50	3.27	2120	83	J550	4	2535	5589
		EAME	WB	1500	59	2.70	3.53	2210	87	J600	3	3244	7152
		EAME	VB	1800	71	3.20	4.19	2120	83	J550	4	2712	5979
		EAME	WB	1850	73	3.60	4.71	2210	87	J600	4	3660	8069
		EAME	VB	1900	75	3.50	4.58	2120	83	J550	4	2940	6482
		EAME	WB	2140	84	4.20	5.49	2210	87	J600	4	4003	8825
		EAME	WB	2250	89	4.60	6.02	2210	87	J600	5	4130	9105
		EAME	WB	2300	91	5.00	6.54	2210	87	J550	6	4102	9043
	EAME	WB	2450	96	5.30	6.93	2210	87	J550	6	4293	9464	
	Mass Excavation	SCM/APD	WB	1955	76	4.00	5.20	2242	88	J600	5	3312	7303
	Rock	EAME	VB	1500	59	2.50	3.27	2120	83	J600	3	2974	6557
		EAME	VB	1800	71	3.20	4.19	2120	83	J600	4	3032	6684
		EAME	WB	1850	73	3.60	4.71	2350	93	J600	4	4080	8995
		EAME	WB	2000	79	4.00	5.23	2350	93	J600	4	4288	9453
		EAME	WB	2200	87	4.40	5.75	2350	93	J600	5	4602	10,146
		EAME	WB	2380	94	4.80	6.28	2350	93	J600	5	4860	10,714
	Spade Heavy Duty Rock	NACD	WB	2007	79	4.01	5.25	2372	93	J600	4	4281	9440
	V-Type Excavation	SCM/APD	WB	2280	89	3.50	4.60	2098	83	J600	6	3760	8290
	VXN	SCM/APD	WB	2045	80	3.20	4.10	2101	83	J600N	4	3513	7746
		SCM/APD	WB	2280	89	3.50	4.60	2098	83	J600N	6	3777	8328
385B	General Purpose	NACD	HB	1067	42	2.10	2.75	2372	93	J600	3	2359	5201
		NACD	HB	1372	54	2.86	3.75	2372	93	J600	4	2758	6081
		NACD	HB	1676	66	3.74	4.90	2372	93	J600	4	3163	6975
		NACD	HB	1981	78	4.58	6.00	2372	93	J600	5	3496	7709
		NACD	JB	2261	89	5.54	7.25	2350	93	J700	6	5748	12,674
		NACD	JB	2388	94	5.92	7.75	2350	93	J700	6	5887	12,980
	Heavy Duty Rock	NACD	HB	1067	42	1.91	2.50	2288	90	J600	3	2548	5619
		NACD	HB	1372	54	2.67	3.50	2288	90	J600	4	3072	6773
		NACD	HB	1676	66	3.44	4.50	2288	90	J600	4	3362	7412
		NACD	HB	1981	78	4.20	5.50	2288	90	J600	5	3883	8562
		NACD	JB	2261	89	4.58	6.00	2240	88	J800	5	5453	12,022
		EAME	JB	2300	91	5.20	6.80	2550	100	J700	4	5410	11,927
	Extreme Service Mass Excavation	SCM/APD	JB	2209	86	4.70	6.10	2235	88	J600	6	3955	8720
	Extreme Excavation	EAME	JB	2580	102	6.00	7.85	2350	93	J600	6	5120	11,288
		SCM/APD	JB	1940	76	3.50	4.50	2235	88	J600	5	3701	8160
		SCM/APD	HB	2132	83	3.50	4.50	2145	84	J600	5	3046	6716
		EAME	JB	2230	88	5.00	6.54	2350	93	J600	5	4577	10,091
		EAME	JB	2290	90	5.20	6.80	2350	93	J600	5	4663	10,280
		SCM/APD	JB	2342	92	4.30	5.60	2235	88	J600	5	3662	8074
		EAME	HB	2380	94	4.60	6.02	2160	85	J600	5	4260	9392
EAME		JB	2440	96	5.60	7.32	2350	93	J600	5	4846	10,684	

EAME — Europe, Africa and Middle East
 NACD — North American Commercial Division
 SCM — Shin Caterpillar Mitsubishi
 APD — Asia Pacific Division

Bucket Specifications | Excavators

Model	Bucket Type	Available in:	Bucket Family	Bite Width Using Long Tips		Heaped Capacity		Tip Radius		G.E.T. Size	Tips	Bucket Weight w/o tips	
				mm	in	m ³	yd ³	mm	in			kg	lb
385B (cont'd)	Extreme Service Excavation*	SCM/APD	HB	2075	81	3.50	4.50	2145	84	J600N	5	3154	6954
		SCM/APD	HB	2090	82	3.50	4.50	2145	84	J600N	5	3548	7823
	Excavation	EAME	JB	2580	102	6.00	7.85	2350	93	J600	6	4568	10,071
		SCM/APD	HB	1192	46	1.60	2.10	2145	84	J600	3	1973	4351
		SCM/APD	HB	1462	57	2.10	2.70	2145	84	J600	4	2279	5025
		SCM/APD	HB	1662	65	2.50	3.20	2145	84	J600	4	2469	5444
		EAME	HB	1900	75	3.50	4.58	2160	85	J600	4	3424	7549
		SCM/APD	HB	1942	76	3.10	4.00	2145	84	J600	5	2784	6139
		EAME	HB	2140	84	4.00	5.23	2160	85	J600	4	3696	8148
		EAME	JB	2160	85	4.80	6.28	2350	93	J600	4	4205	9270
	EAME	JB	2440	96	5.60	7.32	2350	93	J600	5	4490	9899	
	Mass Excavation	SCM/APD	JB	2591	102	5.80	7.50	2235	88	J600	7	5002	11,028
	Rock	EAME	JB	2160	85	4.80	6.28	2500	98	J700	5	5026	11,080
		EAME	JB	2440	96	5.60	7.32	2550	100	J700	6	5588	12,319
		EAME	JB	2480	98	5.80	7.59	2550	100	J700	6	5650	12,456
	Spade Heavy Duty Rock	NACD	JB	2261	89	4.77	6.25	2377	94	J800	5	5645	12,447
	V-Type Excavation	SCM/APD	JB	2180	85	3.90	5.10	2271	89	J600	6	4107	9055
		SCM/APD	JB	2420	95	4.30	5.60	2271	89	J600	6	4371	9637
	V-Type Excavation*	SCM/APD	JB	2180	85	3.90	5.10	2271	89	J600N	6	4058	8947
		SCM/APD	JB	2420	95	4.30	5.60	2271	89	J600N	6	4430	9767

*Denotes the use of the new, HEDC designed adapters, J460N/J550N/J600N.
 EAME — Europe, Africa and Middle East
 NACD — North American Commercial Division
 SCM — Shin Caterpillar Mitsubishi
 APD — Asia Pacific Division

Excavators

Working Weights

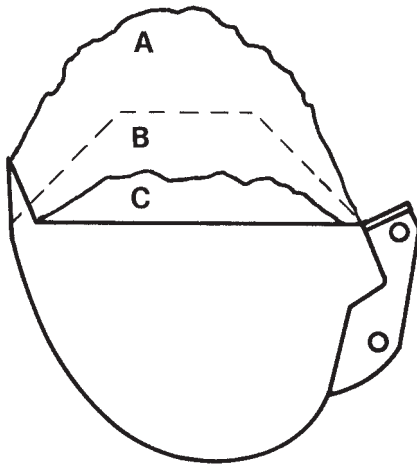
- Bucket Fill Factors
- Bucket & Payload

BUCKET PAYLOAD

An excavator's bucket payload (actual amount of material in the bucket on each digging cycle) is dependent on bucket size, shape, curl force, and certain soil characteristics, i.e., the fill factor for that soil. Fill factors for several types of material are listed below.

$$\text{Average Bucket Payload} = (\text{Heaped Bucket Capacity}) \times (\text{Bucket Fill Factor})$$

Material	Fill Factor Range (Percent of heaped bucket capacity)
Moist Loam or Sandy Clay	A — 100-110%
Sand and Gravel	B — 95-110%
Hard, Tough Clay	C — 80-90%
Rock — Well Blasted	60-75%
Rock — Poorly Blasted	40-50%



Working Weights — Bucket & Payload

The following tables give maximum “bucket plus payload” weights to assist in selecting the correct bucket for a specific application. These weights are based on actual job conditions. In better than average conditions the excavator may be able to achieve rated lift capacities listed in this section.

NOTE: Bucket sizes are suitable for a maximum material density of 1800 kg/m³ (3035 lb/yd³). Payloads shown are calculated at 1500 kg/m³ (2530 lb/yd³).

Working Weights
● Bucket & Payload

Excavators

Model	Boom	Stick Length		Working Weights† Buckets & Payload	
		m	ft	kg	lb
301.5 CR	Swing	0.93	3'0"	234	516
		1.13	3'8"	210	463
303 SR	Offset	1.20	3'11"	274	604
		1.60	5'3"	225	496
303 CR	Reach	1.26	4'2"	238	520
		1.56	5'1"	192	420
	Swing	—	—	249	550
		—	—	203	450
304 CR	Swing	1.38	4'6"	402	886
		1.78	5'10"	321	707
305 SR	Swing	1.62	5'4"	465	1024
		2.02	6'8"	399	879
305 CR	Reach	1.43	4'8"	453	1000
		1.83	6'0"	394	870
	Swing	—	—	513	1130
		—	—	464	1020
307C	Reach	1.67	5'6"	1153	2540
		2.21	7'3"	946	2090
308C SR	Offset	1.75	5'9"	1021	2251
308C CR	Reach	1.67	5'6"	1100	2430
		2.21	7'3"	899	1980
311C U	Reach	2.25	7'5"	1537	3390
		2.80	9'2"	1295	2850
312C	Reach	2.10	6'11"	1720	3790
		2.50	8'2"	1592	3510
		3.00	9'10"	1402	3090
		—	—	—	—
312C L	Reach	2.10	6'11"	1764	3890
		2.50	8'2"	1633	3600
		3.00	9'10"	1439	3170
313C SR	Parallel Offset	2.13	7'0"	2060	4540
		2.13	7'0"	1537	3390
313C CR	Reach	2.50	8'2"	1240	2730
		3.00	9'10"	1075	2370
314C CR		2.50	8'2"	1538	3390
		3.00	9'10"	1351	2980
314C LCR	Reach	2.50	8'2"	1560	3440
		3.00	9'10"	1372	3020
315C	Reach	1.85	6'1"	2089	4610
		2.25	7'5"	1970	4340
		2.60	8'6"	1864	4110
		3.10	10'2"	1675	3690
315C L	Reach	1.85	6'1"	2141	4720
		2.25	7'5"	2018	4450
		2.60	8'6"	1862	4110
		3.10	10'2"	1719	3790

†Working weights may vary depending on machine configuration and geographic location. Contact your Caterpillar Dealer for specific information.

Model	Boom	Stick Length		Working Weights† Buckets & Payload	
		m	ft	kg	lb
315C L*		1.85	6'1"	2160	4760
		2.25	7'5"	2060	4540
		2.60	8'6"	1890	4170
		3.10	10'2"	1700	3750
318C L		1.80	5'11"	2872	6330
		2.25	7'5"	2638	5820
		2.70	8'10"	2416	5330
		3.20	10'6"	2095	4620
318C LN		1.80	5'11"	2510	5530
		2.25	7'5"	2291	5050
		2.70	8'10"	2098	4630
		3.20	10'6"	1807	3980
318C*, 318C L*, 318C N*		1.80	5'11"	2510	5530
		2.25	7'5"	2291	5050
		2.70	8'10"	2098	4630
		3.20	10'6"	1807	3980
320C	Reach	1.90	6'3"	2550	5620
		2.50	8'2"	2430	5360
		2.90	9'6"	2240	4940
		3.90	12'10"	1770	3900
320C	Mass	2.40	7'10"	2640	5820
		2.92	9'7"	2460	5420
320C L	Reach	1.90	6'3"	3030	6680
		2.50	8'2"	2860	6310
		2.90	9'6"	2640	5820
		3.90	12'10"	2120	4670
320C L	Mass	2.40	7'10"	3120	6880
		2.92	9'7"	2990	6590
320C N	Reach	1.90	6'3"	2300	5070
		2.50	8'2"	2270	5000
		2.92	9'7"	2090	4610
		3.86	12'8"	1800	3970
320C N	Mass	2.40	7'10"	2350	5180
		2.92	9'7"	2410	5310
320C U	Reach	2.50	8'2"	2660	5860
		2.90	9'6"	2460	5420
		3.90	12'10"	1970	4340
		—	—	—	—
320C LU	Reach	2.50	8'2"	3110	6860
		2.90	9'6"	2890	6370
		3.90	12'10"	2340	5160

*France sourced.

†Working weights may vary depending on machine configuration and geographic location. Contact your Caterpillar Dealer for specific information.

Excavators

Working Weights ● Bucket & Payload

Model	Boom	Stick Length		Working Weights† Buckets & Payload	
		m	ft	kg	lb
321C LCR	Reach	2.90	9'6"	2730	6020
322C	Reach	2.50	8'2"	2960	6530
		2.95	9'8"	2730	6020
		3.60	11'10"	2420	5340
Mass	2.50	8'2"	3150	6940	
322C Belgium	Reach	2.50	8'2"	2910	6420
		2.95	9'8"	2690	5930
		3.60	11'10"	2320	5120
Mass	2.00	6'7"	3390	7480	
		2.50	8'2"	3030	6680
322C L	Reach	2.50	8'2"	3460	7630
		2.95	9'8"	3200	7050
		3.60	11'10"	2850	6280
Mass	2.50	8'2"	3770	8310	
322C L Belgium	Reach	2.50	8'2"	3410	7520
		2.95	9'8"	3160	6970
		3.60	11'10"	2760	6090
Mass	2.00	6'7"	4010	8840	
		2.50	8'2"	3630	8010
VA	2.00	6'7"	3750	8270	
		2.50	8'2"	3390	7470
322C N Belgium	Reach	2.50	8'2"	2610	5760
		2.95	9'8"	2410	5320
		3.60	11'10"	2070	4570
Mass	2.00	6'7"	3010	6640	
		2.50	8'2"	2690	5930
VA	2.00	6'7"	2830	6240	
		2.50	8'2"	2540	5600
322C LN Belgium	Reach	2.00	6'7"	3240	7140
		2.50	8'2"	3150	6940
		2.95	9'8"	2910	6420
		3.60	11'10"	2710	5970
Mass	2.00	6'7"	3850	8490	
		2.50	8'2"	3430	7560
VA	2.00	6'7"	3260	7190	
		2.50	8'2"	2950	6500
325C Japan	Reach	2.00	6'7"	3440	7580
		2.65	8'8"	3160	6970
		3.00	9'10"	2950	6500
		3.20	10'6"	2850	6290
Mass	2.50	8'2"	3660	8060	

†Working weights may vary depending on machine configuration and geographic location. Contact your Caterpillar Dealer for specific information.

Model	Boom	Stick Length		Working Weights† Buckets & Payload		
		m	ft	kg	lb	
325C Belgium	Reach	2.00	6'7"	3450	7610	
		2.65	8'8"	3140	6930	
		3.20	10'6"	2840	6270	
Mass	2.00	6'7"	4090	9020		
		2.50	8'2"	3650	8050	
VA	2.00	6'7"	3430	7560		
			2.50	8'2"	3130	6900
			3.20	10'6"	2820	6220
325C L Japan	Reach	2.00	6'7"	4320	9530	
		2.70	8'8"	3950	8700	
		3.00	9'10"	3720	8200	
		3.20	10'6"	3570	7870	
Mass	2.50	8'2"	4590	10,130		
325C L Belgium	Reach	2.00	6'7"	4060	8950	
		2.65	8'8"	3680	8120	
		3.20	10'6"	3360	7410	
Mass	2.00	6'7"	4810	10,610		
		2.50	8'2"	4290	9460	
VA	2.00	6'7"	4090	9020		
		2.50	8'2"	3740	8250	
		3.20	10'6"	3360	7410	
325C LN Belgium	Reach	2.00	6'7"	3530	7790	
		2.65	8'8"	3210	7080	
		3.20	10'6"	2910	6420	
Mass	2.00	6'7"	4180	9220		
		2.50	8'2"	3730	8230	
VA	2.00	6'7"	3490	7690		
		2.50	8'2"	3190	7030	
		3.20	10'6"	2870	6330	
330C Japan	Reach	2.15	7'1"	4562	10,060	
		2.80	9'2"	4150	9150	
		3.20	10'6"	3886	8570	
		3.90	12'10"	3335	7350	
Mass	2.55	8'4"	4506	9930		
330C Belgium	Reach	2.15	7'1"	4500	9920	
		2.80	9'2"	4000	8820	
		3.30	10'10"	3690	8140	
		3.90	12'10"	3250	7170	
Mass	2.15	7'1"	5030	11,090		
		2.55	8'4"	4440	9790	
330C L Japan	Reach	2.15	7'1"	4790	10,560	
		2.80	9'2"	4327	9540	
		3.20	10'6"	4075	8980	
		3.90	12'10"	3512	7740	
Mass	2.55	8'4"	4752	10,480		

†Working weights may vary depending on machine configuration and geographic location. Contact your Caterpillar Dealer for specific information.

Working Weights
● Bucket & Payload

Excavators

Model	Boom	Stick Length		Working Weights† Buckets & Payload	
		m	ft	kg	lb
330C L Belgium	Reach	2.15	7'1"	4700	10,360
		2.80	9'2"	4160	9170
		3.30	10'10"	3830	8440
		3.90	12'10"	3240	7540
	Mass	2.15	7'1"	5210	11,490
		2.55	8'4"	4640	10,230
330C LN Belgium	Reach	2.15	7'1"	4150	9150
		2.80	9'2"	3700	8160
		3.30	10'10"	3410	7520
		3.90	12'10"	3000	6610
	Mass	2.15	7'1"	4660	10,270
		2.55	8'4"	4100	9040
3.50		11'6"	3530	7780	
345B Series II – ES	Reach	2.90	9'6"	8417	18,560
		3.40	11'2"	7886	17,390
	Mass	2.50	8'2"	9636	21,240
		3.00	9'10"	8986	19,810
345C	Reach	2.90	9'6"	5440	11,990
		3.35	11'0"	5080	11,200
		3.90	12'10"	4760	10,490
	Mass	2.50	8'2"	6140	13,540
		3.00	9'10"	5700	12,570
345C L – FIX	Long Reach	3.90	12'10"	4250	9370
		4.30	14'1"	3940	8690
	Reach	2.90	9'6"	5550	12,240
		3.35	11'0"	5180	11,420
		3.90	12'10"	4850	10,690
	Mass	2.50	8'2"	6260	13,800
3.00		9'10"	5790	12,760	
345C L – VG	Long Reach	3.90	12'10"	4540	10,010
		4.30	14'1"	4880	10,760
	Reach	2.90	9'6"	6830	15,060
		3.35	11'0"	6930	15,280
		3.90	12'10"	6000	13,230
	Mass	2.50	8'2"	7550	16,640
3.00		9'10"	6790	14,970	
365B – ESUC	Reach	2.84	9'4"	11 313	24,940
		3.60	11'10"	10 290	22,690
		4.15	13'7"	9435	20,800
		4.67	15'4"	8642	19,050
	Mass 6.6 m (21'9")	2.57	8'5"	14 538	32,050
		3.00	9'10"	13 458	29,670
Mass 7 m (23'0")	2.57	8'5"	13 347	29,430	
	3.00	9'10"	12 385	27,300	
365B L Series II Japan	Reach	2.84	9'4"	8310	18,320
		3.60	11'10"	7560	16,670
		4.67	15'4"	6230	13,730
	Mass	2.57	8'5"	10 750	23,700
		3.00	9'10"	9910	21,850

†Working weights may vary depending on machine configuration and geographic location. Contact your Caterpillar Dealer for specific information.

Model	Boom	Stick Length		Working Weights† Buckets & Payload	
		m	ft	kg	lb
365C L Belgium	Reach	2.84	9'3"	9965	21,970
		3.60	11'8"	9026	19,900
		4.15	13'6"	8262	18,220
		4.67	15'3"	7544	16,640
	Mass 6.6 m (21'9")	2.57	8'4"	12 955	28,570
		3.00	9'8"	11 956	26,360
Mass 7 m (23'0")	2.57	8'4"	11 798	26,020	
	3.00	9'8"	10 907	24,050	
385B Japan	Reach	4.40	14'5"	6110	13,470
		5.50	18'1"	5230	11,530
	General Purpose	2.92	9'7"	10 100	22,270
		3.40	11'2"	—	—
		3.70	12'2"	9700	21,380
		4.40	14'5"	8840	19,490
Mass	2.92	9'7"	12 920	28,480	
	3.40	11'2"	12 110	26,700	
385B L Japan	Reach	4.40	14'5"	6320	13,930
		5.50	18'1"	5430	11,970
	General Purpose	2.92	9'7"	10 380	22,880
		3.40	11'2"	—	—
		3.70	12'2"	9960	21,960
		4.40	14'5"	9080	20,020
Mass	2.92	9'7"	13 250	29,210	
	3.40	11'2"	12 420	27,380	
385C Belgium	Reach	4.40	14'4"	6851	15,110
		5.50	18'0"	5917	13,050
	General Purpose	3.40	11'1"	10 359	22,840
		3.70	12'1"	10 018	22,090
		4.40	14'4"	9725	21,440
		5.50	18'0"	8412	18,550
Mass	2.92	9'6"	14 209	31,330	
	3.40	11'2"	13 257	29,230	
385C L Belgium	Reach	4.40	14'4"	7169	15,810
		5.50	18'0"	6209	13,690
	General Purpose	3.40	11'2"	10 755	23,720
		3.70	12'1"	10 411	22,960
		4.40	14'4"	10 089	22,250
		5.50	18'0"	8742	19,280
Mass	2.92	9'6"	14 309	31,550	
	3.40	11'2"	13 380	29,500	

†Working weights may vary depending on machine configuration and geographic location. Contact your Caterpillar Dealer for specific information.

Excavators

Long Reach — Japan, U.S. Sourced

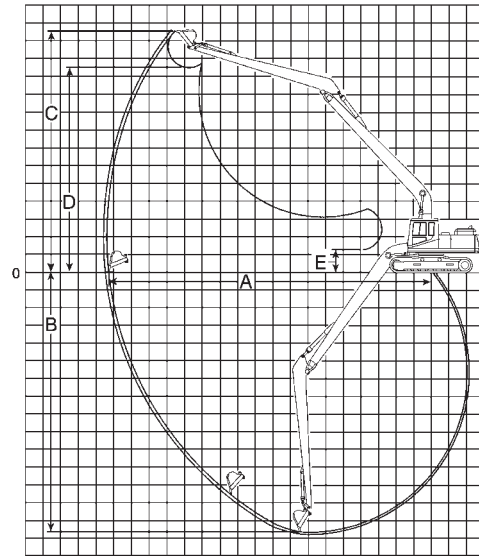
- Introduction
- Range Dimensions
- Bucket Information

INTRODUCTION

Long reach excavators are designed purposely for light duty digging that requires reach capability well above that of normal digging machines. To be able to have high enough digging forces together with an acceptable size bucket, the long reach excavators have a smaller digging envelope than the ditch cleaning machines. Long reach excavators are ideally suited for deep digging in gravel or sand pits then feeding directly into a hopper.

Caterpillar's long reach hydraulic excavators use purpose-built booms and sticks designed by Caterpillar for maximum performance and durability in light duty applications.

Long Reach Excavation Fronts include: boom, stick, linkage cylinders (boom, stick, and bucket), hydraulic lines, additional counterweight for stability over the side and heavy duty wide undercarriage. Dimensions include light excavation bucket.



Long Reach, Range Dimensions	312C L*		320C L	
	m	ft	m	ft
A Maximum Reach at Ground Level	12.54	41'2"	15.73	51'7"
B Maximum Digging Depth	9.80	32'2"	11.88	39'0"
C Maximum Cutting Height	11.00	36'1"	13.29	43'7"
D Maximum Dumping Height	9.01	29'7"	11.01	36'1"
E Minimum Loading Height	2.15	7'1"	1.97	6'6"

	322C L		325C L*		330C L*	
	m	ft	m	ft	m	ft
A Maximum Reach at Ground Level	18.43	60'6"	18.42	60'5"	20.94	68'8"
B Maximum Digging Depth	14.72	48'4"	14.75	48'5"	16.19	53'2"
C Maximum Cutting Height	14.23	46'8"	13.61	44'8"	16.52	54'2"
D Maximum Dumping Height	12.00	39'4"	11.42	37'6"	14.33	47'0"
E Minimum Loading Height	1.36	4'6"	1.16	3'10"	2.28	7'6"

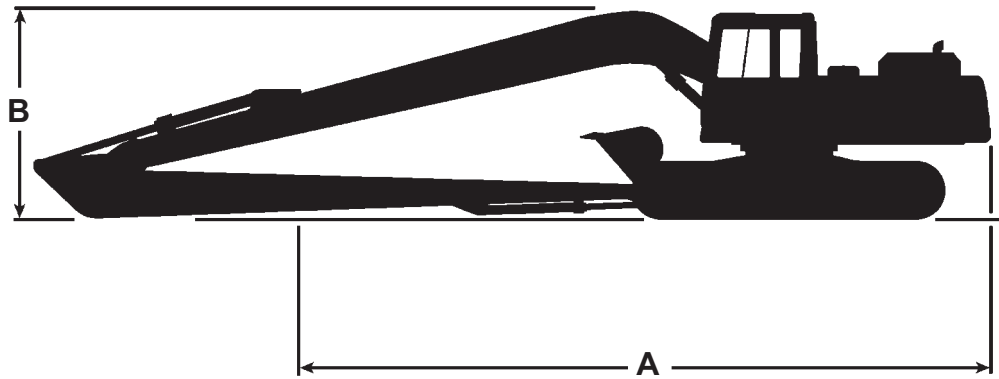
Long Reach, Bucket Information

Model	Bucket Type	Bucket Width		SAE Heaped Cap.		Bucket Weight		No. of Teeth	Bucket Curl Force		Stick Crowd Force	
		mm	ft	L	yd ³	kg	lb		kN	lb	kN	lb
312C*	General Purpose	610	2'0"	230	0.30	200	440	4	44	9900	37	8300
320C L	Excavation	810	2'8"	450	0.59	340	750	5	54	12,100	47	10,600
322C L	Excavation	810	2'8"	450	0.59	340	750	5	54	12,100	50	11,200
325C L*	Excavation	810	2'8"	450	0.59	340	750	5	54	12,100	50	11,200
330C L*	Excavation	810	2'8"	450	0.59	340	750	5	54	12,100	43	9700

*Custom product.

Long Reach — Japan, U.S. Sourced
 • Shipping Dimensions
 • Major Component Weights

Excavators



4

Long Reach, Shipping Dimensions	312C*		320C L	
	m	ft	m	ft
A Overall Length (Front Folded)	10.22	33'6"	12.66	41'6"
B Overall Height	2.80	9'2"	3.21	10'6"
C Overall Width	2.76	9'1"	3.01	9'11"

	322C L		325C L*		330C L*	
	m	ft	m	ft	m	ft
A Overall Length (Front Folded)	14.24	46'9"	14.38	47'2"	16.62	54'6"
B Overall Height	3.17	10'5"	3.25	10'8"	3.59	11'9"
C Overall Width	3.19	10'6"	3.19	10'6"	3.19	10'6"

Long Reach, Component Weights	312C*		320C L	
	kg	lb	kg	lb
Total Component Weight				
Includes additional over standard	2450	5400	4810	10,600
Long Reach Boom	1140	2510	2185	4820
Long Reach Stick	640	1410	1260	2780

	322C L*		325C L*		330C L*	
	kg	lb	kg	lb	kg	lb
Total Component Weight						
Includes additional over standard	6950	15,320	6500	14,330	7500	16,530
Long Reach Boom	3130	6900	3200	7055	4190	9240
Long Reach Stick	1570	3460	1570	3460	2130	4700

*Custom product.

Excavators

Long Reach Excavation — Belgium Sourced

- Introduction
- Range Dimensions
- Bucket Information

INTRODUCTION

Long Reach Excavation machines are designed specifically for jobs requiring longer reach than standard excavators, combined with digging capabilities.

The boom and the stick are purposely designed to perform digging operations with an acceptable bucket size.

The performances of the machine are attained through the use of bigger boom cylinders, heavy-duty wide undercarriage and significant additional counterweight. A heavy-duty upper-frame is also used in order to guarantee durability and resistance to the extra stresses generated by that demanding application.

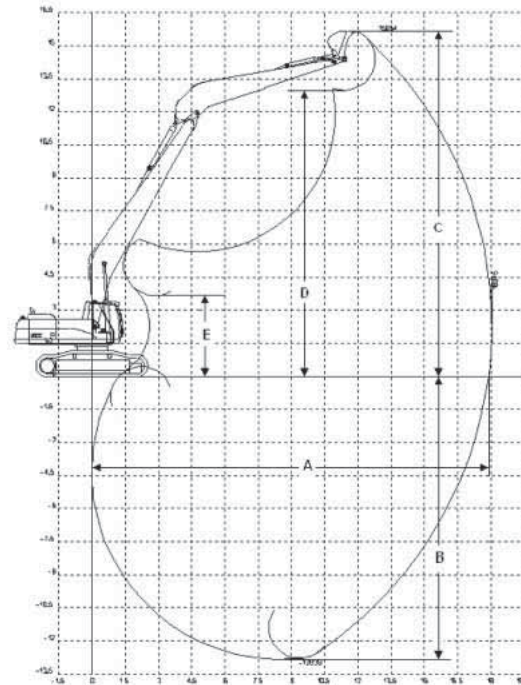
Long Reach Excavation machines are ideally suited for deep or long distance digging in sand or gravel pits, slope forming, cleaning of settling banks, river conservation and other work formerly reserved for draglines.

These excavators can of course feed directly into a hopper or load a truck that would stand by their side.

The boom and the stick are designed following Caterpillar's standards, in order to provide the maximum performance and durability in digging applications.

Long Reach Excavation Fronts include: boom, stick, linkage (boom, stick, and bucket cylinders), hydraulic lines and additional counterweight.

Dimensions include the bucket.



Long Reach Excavation, Range Dimensions	325C L* LRE	330C L* LRE
Undercarriage	Heavy Duty High Wide	Heavy Duty High Wide
Boom Length	9500 mm	10 660 mm
Stick Length	6000 mm	7100 mm
A Maximum Reach at Ground Level	15 890 mm	18 050 mm
B Maximum Digging Depth	11 350 mm	12 840 mm
C Maximum Cutting Height	13 560 mm	15 650 mm
D Maximum Loading Height	10 930 mm	12 980 mm
E Minimum Loading Height	3400 mm	3680 mm

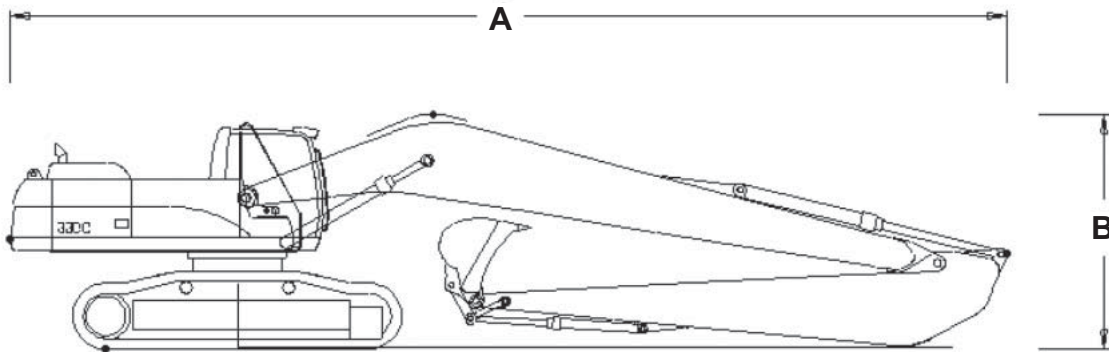
Long Reach Excavation, Range Dimensions	345C L* LRE Long**	365C LRE	385C LRE Long	385C L LRE Short
Undercarriage	Heavy Duty Wide	Long	Long	Long
Boom Length	11 500 mm	10 000 mm	12 500 mm	10 500 mm
Stick Length	8250 mm	5500 mm	9500 mm	5500 mm
A Maximum Reach	19 530 mm	17 200 mm	21 490 mm	18 100 mm
B Maximum Digging Depth	13 350 mm	11 590 mm	15 860 mm	11 300 mm
C Maximum Cutting Height	16 470 mm	15 610 mm	16 500 mm	16 250 mm
D Maximum Loading Height	13 810 mm	—	—	—
E Minimum Loading Height	3390 mm	—	—	—

*Custom Products, other shorter or longer versions can be made available on customer demand.

**Preliminary specifications.

Long Reach Excavation — Belgium Sourced
 ● Shipping Dimensions
 ● Major Component Dimensions and Weights

Excavators



**Long Reach Excavation,
Shipping Dimensions and Weight**

	325C L* LRE	330C L* LRE
Undercarriage	Heavy Duty High Wide	Heavy Duty High Wide
Shoes	800 mm	750 mm
Boom Length	9500 mm	10 660 mm
Stick Length	6000 mm	7100 mm
A Overall Length (Front Folded)	13 650 mm	15 350 mm
B Overall Height (Front Folded)	3570 mm	3620 mm
Overall Width	3720 mm	3670 mm
Operating Weight	32 300 kg	38 700 kg

**Long Reach Excavation,
Shipping Dimensions and Weight**

	345C L LRE Long***	365C L LRE	385C L LRE Short	385C L LRE Long
Undercarriage	Heavy Duty Wide	Long	Long	Long
Shoes	600 mm	750 mm	650 mm	650 mm
Boom Length	11 500 mm	10 000 mm	10 500 mm	12 500 mm
Stick Length	8250 mm	5500 mm	5500 mm	9500 mm
A Overall Length (Front Folded) Without Boom and Stick	16 230 mm 6340 mm	13 960 mm** —	16 450 mm —	18 800 mm —
B Overall Height (Front Folded)	3690 mm	3896 mm**	5780 mm	4310 mm
Overall Width				
Retracted	3820 mm	3500 mm	3400 mm	3400 mm
Extended	4320 mm	4000 mm	4160 mm	4160 mm
Operating Weight	51 340 kg	71 780 kg	84 900 kg	88 500 kg

*Custom Products, other shorter or longer versions can be made available on customer demand.
 **Without stick.
 ***Preliminary specifications.

Excavators

Long Reach Excavation — Belgium Sourced

- Lifting Capacity

Long Reach Excavation Lift Capacities at Ground Level

Lift Capacities at Ground Level	3 m		4.5 m		6 m		7.5 m		9 m		Maximum Reach Radius
	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	
325C L HDHW LRE kg	—	—	4290*	4290*	9080*	7340	6820*	5320	5410*	4040	15.45 m
330C L HDHW LRE kg	2040*	2040*	4510*	4510*	9590*	8600	7420*	6320	5870*	4870	17.61 m
345C L LRE Long kg	3180*	3180*	5920*	5920*	11 590*	11 590*	10 670*	10 640	8510*	8190	19.25 m
365C L LRE kg	—	—	—	—	8170*	8170*	14 470*	13 010	11 430*	9910	16.47 m
385C L LRE Short kg	—	—	—	—	—	—	21 350	13 210	16 970	14 740	17.24 m
385C L LRE Long kg	4630*	4630*	8160*	8160*	15 130*	15 130*	18 750*	18 130	14 890*	14 050	20.93 m

Lift Capacities at Ground Level	10.5 m		12 m		13.5 m		15 m		16.5 m		Maximum Reach Radius
	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	
325C L HDHW LRE kg	4330	3150	3470	2490	2820	1970	—	—	—	—	15.45 m
330C L HDHW LRE kg	4830*	3840	4080*	3080	3510*	2480	3060*	2000	2640	1600	17.61 m
345C L LRE Long kg	7020*	6490	5930*	5240	5090*	4280	4350	3510	3630	2880	19.25 m
365C L LRE kg	9340*	7760	7830*	6160	6660*	4930	5650*	3950	—	—	16.47 m
385C L LRE Short kg	13 960	11 690	11 790	9450	10 140	7720	8120	6350	—	—	17.24 m
385C L LRE Long kg	12 230*	11 210	10 290*	9100	8830*	7460	7670*	6150	6730*	5070	20.93 m

Lift Capacities at Ground Level	18 m		19.5 m		Max. Reach		Maximum Reach Radius
	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	
325C L HDHW LRE kg	—	—	—	—	1720*	1520	15.45 m
330C L HDHW LRE kg	—	—	—	—	1890*	1420	17.61 m
345C L LRE Long kg	2390*	2360	—	—	1440*	1440*	19.25 m
365C L LRE kg	—	—	—	—	4000*	3340	16.47 m
385C L LRE Short kg	—	—	—	—	3980	3980	17.24 m
385C L LRE Long kg	5940*	4170	4370*	3420	2870*	2870*	20.93 m

*Load limited by hydraulic capacity rather than tipping.

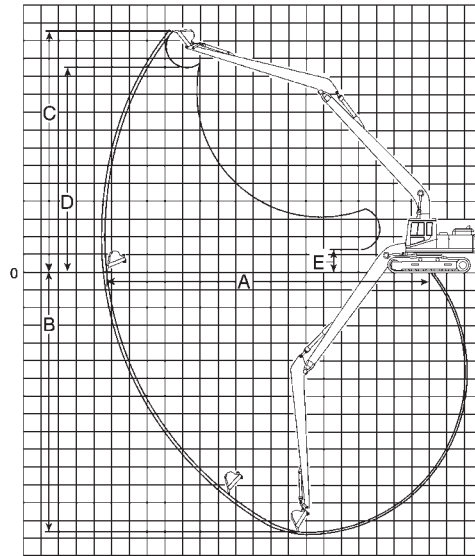
- Introduction
- Range Dimensions
- Bucket Information

INTRODUCTION

Super long reach excavators are designed specifically for those jobs requiring maximum reach well beyond the range of normal excavators. Those machines are designed to drag a small bucket at about 90 degrees over the side of the tracks towards the excavator; they are not suited for digging work. Caterpillar offers the Long Reach excavators for light digging applications with a much larger digging envelope than normal excavators. Super long reach excavators are suited for ditch cleaning, slope finishing, river conservation and other work formerly reserved to draglines.

Caterpillar's super long reach hydraulic excavators use purpose-built booms and sticks designed by Caterpillar for maximum performance and durability in dragging applications.

Super long reach fronts include: boom, stick, linkage cylinders (boom, stick, and bucket), hydraulic lines and additional counterweight for stability while working over the side. Dimensions include bucket.



Super Long Reach, Range Dimensions	312C L		315C L, 317B L*		320C L	
	m	ft	m	ft	m	ft
A Maximum Reach at Ground Level	12.54	41'2"	13.00	42'8"	15.60	51'2"
B Maximum Digging Depth	9.80	32'2"	10.10	33'2"	11.75	38'7"
C Maximum Cutting Height	10.96	35'11"	11.64	38'2"	13.24	43'5"
D Maximum Dumping Height	9.01	29'9"	9.58	31'5"	11.14	36'7"
E Minimum Loading Height	2.15	7'1"	2.55	8'4"	2.10	6'10"

	322C L		325C L*		330C L*	
	m	ft	m	ft	m	ft
A Maximum Reach at Ground Level	18.30	60'0"	18.29	60'0"	20.81	68'3"
B Maximum Digging Depth	14.59	47'11"	14.63	48'0"	16.07	52'9"
C Maximum Cutting Height	14.19	46'7"	13.58	44'7"	16.49	54'1"
D Maximum Dumping Height	12.13	39'10"	11.55	37'11"	14.46	47'5"
E Minimum Loading Height	1.49	4'11"	1.29	4'3"	2.41	8'0"

Super Long Reach, Bucket Information

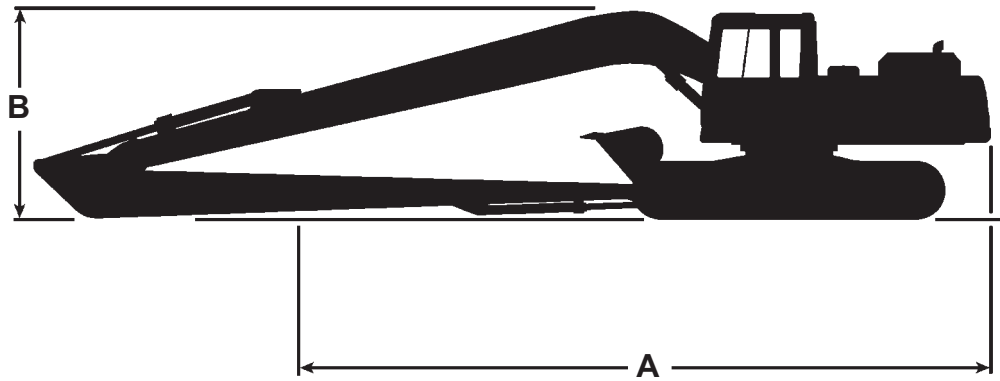
Model	Bucket Type	Bucket Width		SAE Heaped Cap.		Bucket Weight		No. of Teeth	Bucket Curl Force		Stick Crowd Force	
		mm	ft	L	yd ³	kg	lb		kN	lb	kN	lb
312C*	Ditch Cleaning	920	3'0"	480	0.63	230	510	4	44	9900	37	8300
320C L	Ditch Cleaning	1140	3'9"	600	0.78	290	640	0	60	13,500	46	10,300
322C L	Ditch Cleaning	1140	3'9"	600	0.78	290	640	0	61	13,700	51	11,500
325C L*	Ditch Cleaning	1140	3'9"	600	0.78	290	640	5	61	13,700	51	11,500
330C L*	Ditch Cleaning	1140	3'9"	600	0.78	290	640	5	61	13,700	43	9700

*Custom product.

Excavators

Super Long Reach — Japan, U.S. Sourced

- Shipping Dimensions
- Major Component Weights



Super Long Reach, Shipping Dimensions	312C*		315C L, 317B L*		320C L	
	m	ft	m	ft	m	ft
A Overall Length (Front Folded)	10.22	33'6"	11.23	36'10"	12.66	41'6"
B Overall Height	2.80	9'2"	2.92	9'7"	3.21	10'6"
C Overall Width	2.76	9'1"	2.75	9'0"	3.01	9'11"

	322C L		325C L*		330C L*	
	m	ft	m	ft	m	ft
A Overall Length (Front Folded)	14.24	46'9"	14.38	47'2"	16.62	54'6"
B Overall Height	3.17	10'5"	3.25	10'8"	3.59	11'9"
C Overall Width	3.19	10'6"	3.19	10'6"	3.19	10'6"

Super Long Reach, Component Weights	312C*		315C L, 317B L		320C L	
	kg	lb	kg	lb	kg	lb
Total Component Weight Includes additional over standard	2450	5400	3050	6725	4840	10,670
Long Reach Boom	1140	2510	1210	2670	2185	4820
Long Reach Stick	640	1410	780	1720	1260	2780

	322C L		325C L*		330C L*	
	kg	lb	kg	lb	kg	lb
Total Component Weight Includes additional over standard	6950	15,320	6500	14,330	7500	16,530
Long Reach Boom	3130	6900	3200	7055	4190	9240
Long Reach Stick	1570	3460	1570	3460	2130	4700

*Custom product.

- Introduction
- Range Dimensions
- Bucket Information

INTRODUCTION

Super long reach excavators are designed specifically for those jobs requiring maximum reach well beyond the range of normal excavators. Those machines are designed to drag a small bucket at about 90 degrees over the side of the tracks towards the excavator; they are not suited for digging work.

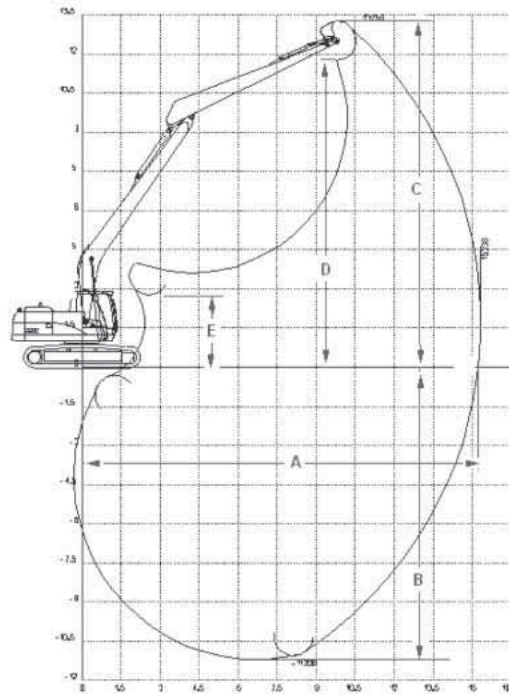
For long reach digging applications Caterpillar offers the **Long Reach Excavation** configuration, with a much larger digging envelope than normal excavators. Super long reach excavators are suited for ditch cleaning, slope finishing, river conservation and other cleaning and maintenance work.

Caterpillar’s super long reach hydraulic excavators use purpose-built booms and sticks designed by Caterpillar for maximum performance and durability in dragging applications.

Super long reach fronts include: boom, stick, linkage (boom, stick, and bucket cylinders), hydraulic lines and additional counterweight for improved stability.

Dimensions include ditch cleaning bucket.

As the super long reach excavators are not designed for digging, no bucket curl force or stick crowd force are provided.



Super Long Reach, Range Dimensions

	320C L*	325C L*
A Maximum Reach at Ground Level	15 245 mm	17 950 mm
B Maximum Digging Depth	11 210 mm	14 240 mm
C Maximum Cutting Height	13 250 mm	13 400 mm
D Maximum Dumping Height	11 745 mm	11 890 mm
E Minimum Loading Height	2560 mm	1636 mm

Super Long Reach, Bucket Information

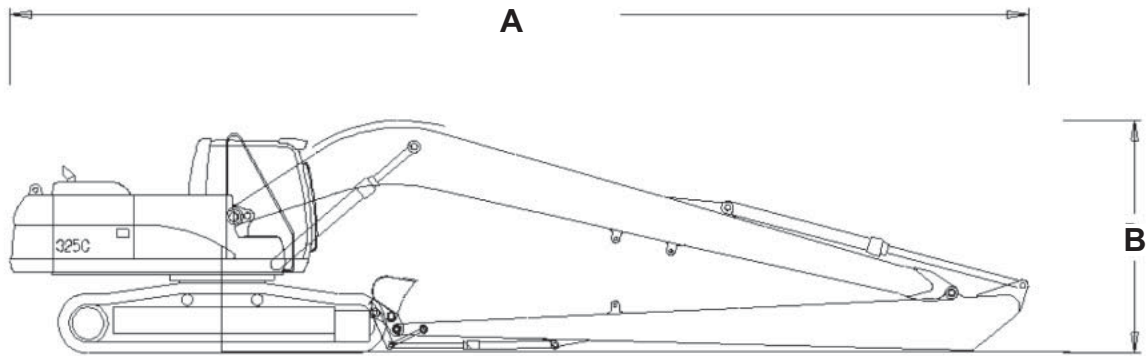
Model	Bucket Type	Bucket Width	Heaped Capacity	Bucket Weight	No. of Teeth
320C L*	Ditch Cleaning	1800 mm	600 L	460 kg	0
325C L*	Ditch Cleaning	1800 mm	600 L	460 kg	0

*Custom product.

Excavators

Super Long Reach — Belgium Sourced

- Shipping Dimensions
- Major Component Dimensions and Weights



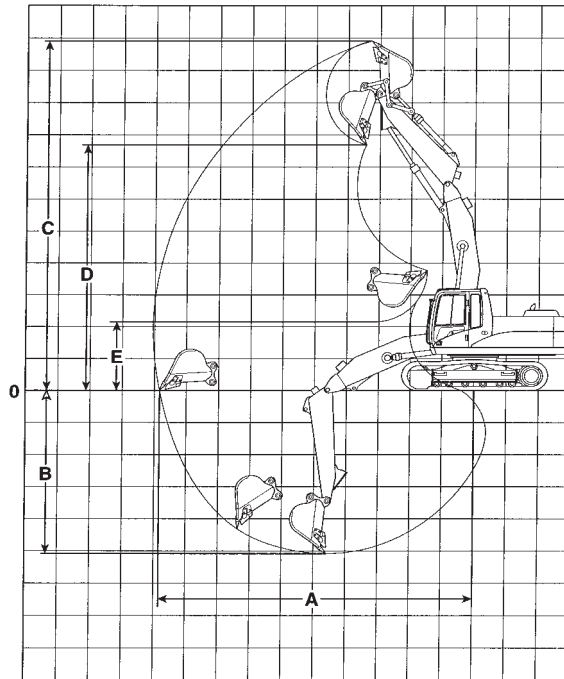
Super Long Reach, Shipping Dimensions	320C L* with 600 mm track shoes	325C L* with 800 mm track shoes
A Overall Length (Front Folded)	12.7 m	14.4 m
B Overall Height (Front Folded)	3.05 m	3.3 m
C Overall Width	2.98 m	3.39 m

Super Long Reach, Component Dimensions, Weights	320C L*	325C L*
Approximate Operating Weight with Boom, Stick, Linkage, Standard Shoes, Heavy Duty Counterweight, Operator, Full Fuel and without Bucket or any Optional Attachment	22 400 kg	29 700 kg
Super Long Reach Boom Length	8.85 m	10.2 m
Super Long Reach Boom Weight	2050 kg	2950 kg
Super Long Reach Stick Length	6.28 m	7.86 m
Super Long Reach Stick Weight	1150 kg	1530 kg

*Custom product.

Short Reach
 ● Range Dimensions
 ● Front Attachment Information

Excavators



Short Reach, Range Dimensions	314C CR*		320C L*		330C L*	
	m	ft	m	ft	m	ft
A Maximum Reach at Ground Level	6.54	21'5"	8.68	28'6"	8.88	29'2"
B Maximum Digging Depth	8.15	26'9"	9.96	32'8"	9.95	32'8"
C Maximum Cutting Height	2.22	7'3"	4.65	15'3"	3.76	12'4"
D Maximum Dumping Height	5.56	18'3"	7.05	23'2"	6.64	21'9"
E Minimum Loading Height	1.91	6'3"	1.95	6'5"	1.80	5'11"

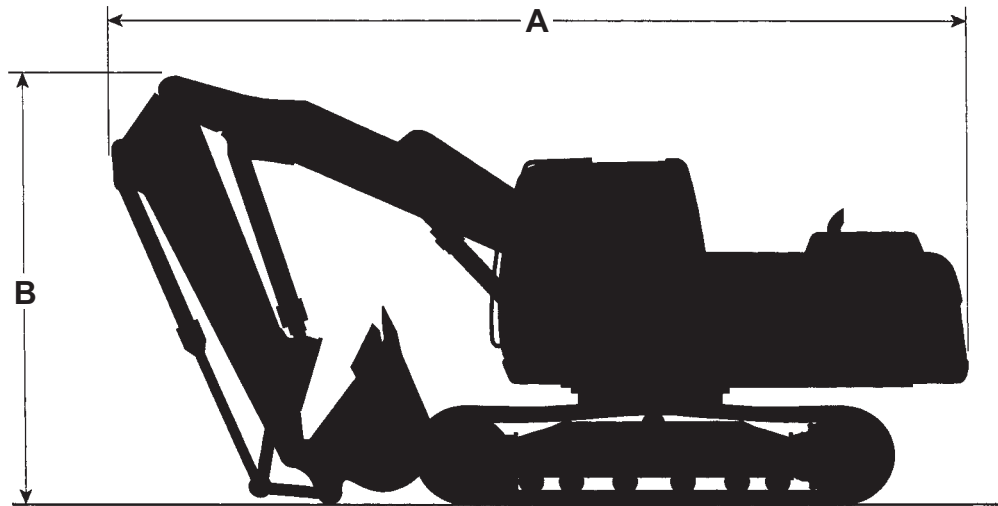
Short Reach, Front Attachment Information						
Model	Boom Length		Stick Length		Heaped Capacity	
	mm	ft	mm	ft	L	yd ³
314C CR*	3200	10'6"	2400	7'10"	500	0.7
320C L*	4250	13'11"	3200	10'6"	1100	1.4
330C L*	4350	14'3"	3200	10'6"	1400	1.83

*Custom product.

Excavators

Short Reach

- Shipping Dimensions
- Major Component Weights

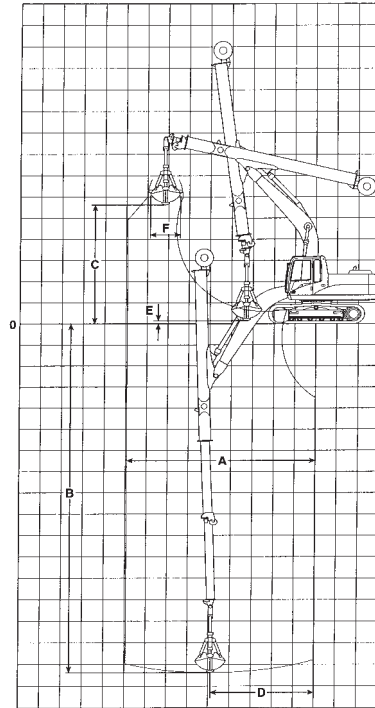


Short Reach, Shipping Dimensions	314C CR*		320C L*		330C L*	
	m	ft	m	ft	m	ft
A Overall Length (Front Folded)	5.35	17'7"	6.56	21'6"	8.27	27'2"
B Overall Height	2.73	8'11"	3.74	12'3"	3.87	12'8"
C Overall Width	2.49	8'2"	3.15	10'4"	3.35	11'0"

Short Reach, Component Weights	314C CR*		320C L*		330C L*	
	kg	lb	kg	lb	kg	lb
Total Component Weight Includes additional over standard	3350	7390	6500	14,300	6000	13,230
Short Reach Boom	1140	2510	2360	5200	2170	4780
Short Reach Stick	600	1320	1430	3150	1300	2870

*Custom product.

- Telescopic Stick
- Range Dimensions
- Front Attachment Information (Japan Sourced)



Telescopic Stick, Range Dimensions	320C L*		322C L*		325C L*		330C L*	
	m	ft	m	ft	m	ft	m	ft
A Maximum Operating Radius	9.50	31'2"	9.50	31'2"	9.50	31'2"	9.50	31'2"
B Maximum Digging Depth	20.89	68'6"	20.55	67'5"	20.89	68'6"	25.69	84'3"
C Maximum Dumping Height	5.29	17'4"	5.20	17'1"	5.29	17'4"	5.66	18'7"
D Reach at Maximum Digging Depth	4.57	15'0"	4.51	14'10"	4.57	15'0"	4.76	15'7"
E Reach at Maximum Dumping Height	7.09	23'3"	6.43	21'1"	7.09	23'3"	7.24	23'9"
F Bucket Width	5.70	18'8"	5.90	19'4"	6.15	20'2"	6.50	21'4"

Telescopic Stick, Front Attachment Information

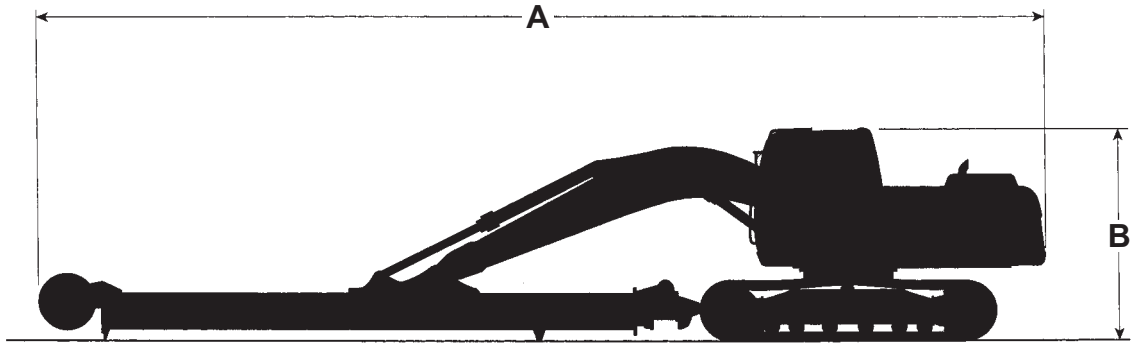
Model	Boom Length		Heaped Capacity	
	mm	ft	L	yd ³
320C L*	5700	18'8"	430	0.6
322C L*	5900	19'4"	520	0.7
325C L*	6150	20'2"	700	0.9
330C L*	6500	21'4"	1000	1.3

*Custom product.

Excavators

Telescopic Stick

- Shipping Dimensions
- Major Component Weights



Telescopic Stick, Shipping Dimensions	320C L*		322C L*		325C L*		330C L*	
	m	ft	m	ft	m	ft	m	ft
A Overall Length (Front Folded)	13.96	45'10"	14.39	47'3"	14.58	47'10"	10.13	33'3"
B Overall Height	2.93	9'7"	2.98	9'9"	3.09	10'2"	3.35	11'0"
C Overall Width	3.18	10'5"	3.39	11'1"	3.39	11'1"	3.34	10'11"

Telescopic Stick, Component Weights	320C L*		322C L*		325C L*		330C L*	
	kg	lb	kg	lb	kg	lb	kg	lb
Total Component Weight Includes additional over standard	1040	2290	1180	2600	6500	14,330	6000	13,230
Rated Boom	2050	4520	2480	5470	2750	6060	3830	8440
Telescopic Stick	3100	6830	3170	6990	3110	6860	5540	12,210
Telescopic Bucket	940	2070	1120	2470	1360	3000	1620	3570

*Custom product.

Features

The Ultra-high demolition machines, 325C L, 330C L UHD, 345C L UHD, 365C L UHD and 385C L UHD, are equipped with several features that are:

- **Integrated Tilttable Cab.** The C-Series tilt cabs are integrated into the upper-frame. The tilting mechanism of the cab is completely protected against debris, scrap, etc. The main advantage of this is that it does not increase the shipping height compared to the standard cab.
- **Boom Hook System.** The front parts are equipped with a reliable and safe hook system between the boom foot and boom nose. Compared to the traditional pin-mounted joint, the hook system significantly reduces the time needed to change between the Ultra-High front parts and the short retrofit configuration, or the long-reach excavation configuration. In principle, the boom hook system consists of a hook system to pick up the front parts and a mechanical expander pin to secure these front parts onto the boom foot. The absence of any hydraulic parts, as well as a full-length heavy-duty one-piece securing pin, ensures a safe and reliable operation.

- **Hydraulic Quick Disconnects or Ball Valves (new generation).** The hydraulic lines between boom foot and boom nose are fitted with hydraulic quick disconnects or Ball Valves (new generation) to even further reduce the time needed to change the front parts. Oil spillage and contamination is reduced through the flat-face design.

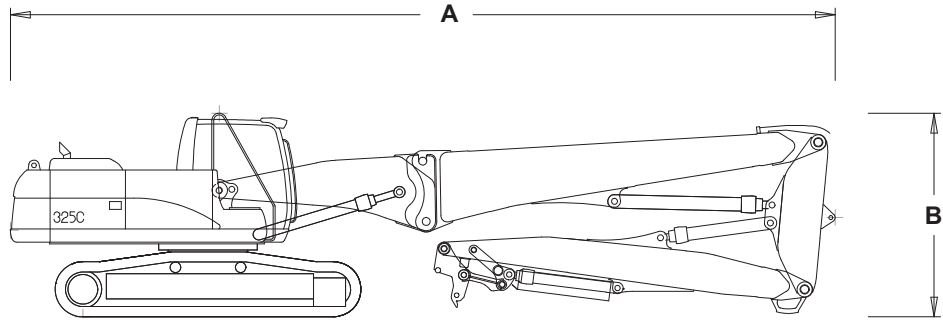
- **Dedicated Ultra-High Demolition Linkage.** Because Ultra-High Demolition applications require a different working envelope than standard applications, a purpose-designed linkage is standard on the Ultra-High Demolition front parts.

Besides providing an optimized working envelope, this linkage also greatly improves controllability in nearly every position.

Excavators

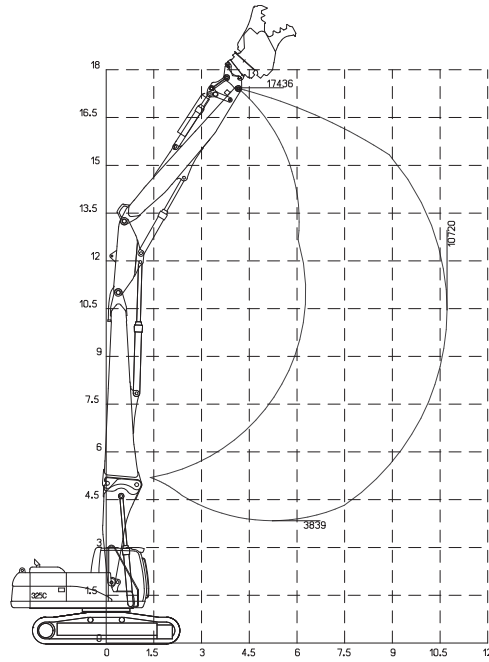
Ultra-High Demolition Arrangements — Belgium Sourced

- 325C L UHD Shipping Dimensions
- 325C L UHD Range Dimensions



325C L with UHD Front Parts

A Shipping Length	12 500 mm
B Shipping Height	2320 mm
Operating Weight	35.5 t



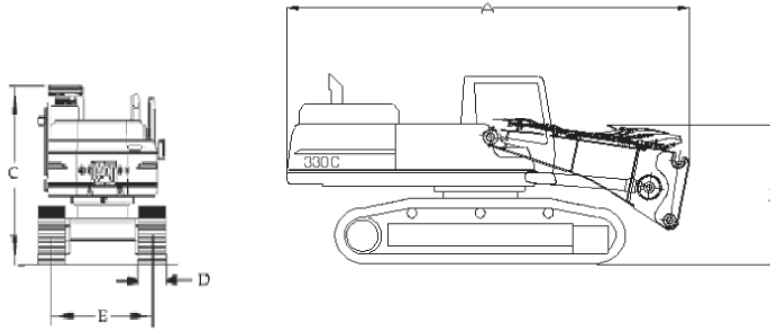
325C L with UHD Front Parts — Reaches

Maximum Allowable Angle from Vertical	20°
Maximum Pin Height	17 435 mm
Maximum Horizontal Reach	10 720 mm
Maximum Tool Weight Over the Front*	3000 kg
Operating Weight	35 500 kg

*Tool weight includes mounting bracket and quick coupler.

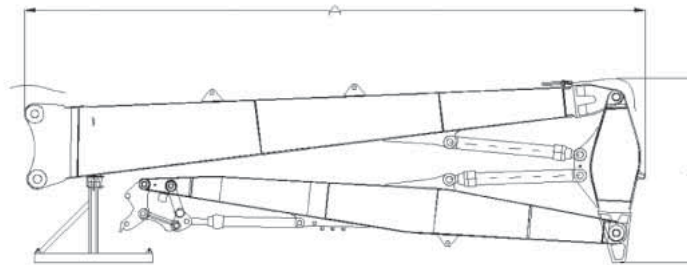
Ultra-High Demolition Arrangements — Belgium Sourced
 ● 330C L UHD Shipping Dimensions

Excavators



330C with Boom Foot	Undercarriages				
	L	LN	Hydraulic Variable Gauge	Heavy Duty High Wide	345C L
Shoes	600 mm	600 mm	600 mm	750 mm	750 mm
Length	6997 mm	6997 mm	6997 mm	6997 mm	6997 mm
Boom Height*	2093 mm	2093 mm	2100 mm	2358 mm	2300 mm
Height with Overhead Guard	3150 mm	3150 mm	3160 mm	3410 mm	3360 mm
Height without Overhead Guard	3280 mm	3280 mm	3290 mm	3540 mm	3490 mm
Shipping Width	3190 mm	2990 mm	2990 mm	3670 mm	3140 mm
Operating Weight	33 630 kg	33 000 kg	40 640 kg	35 070 kg	38 790 kg

*Hydraulic lines are included and boom cylinders are fully retracted.



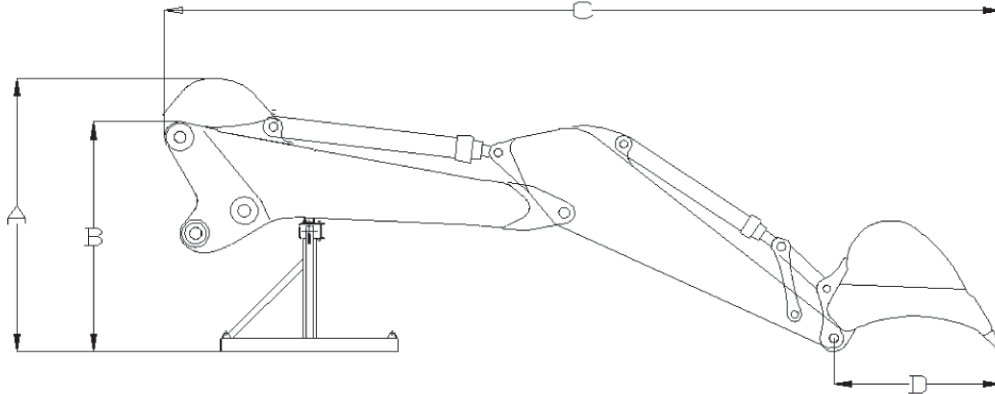
330C UHD Front Parts

Length	8177 mm
Height	2689 mm
Support Width	2400 mm
Support Weight	400 kg
Boom Nose Width	723 mm
Boom Nose Weight	3502 kg
Fore Boom Weight	904 kg
Stick Weight	1967 kg
Total Weight	8250 kg

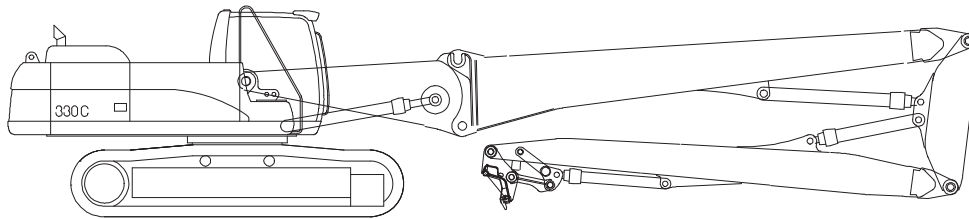
Excavators

Ultra-High Demolition Arrangements — Belgium Sourced

- 330C L UHD Shipping Dimensions



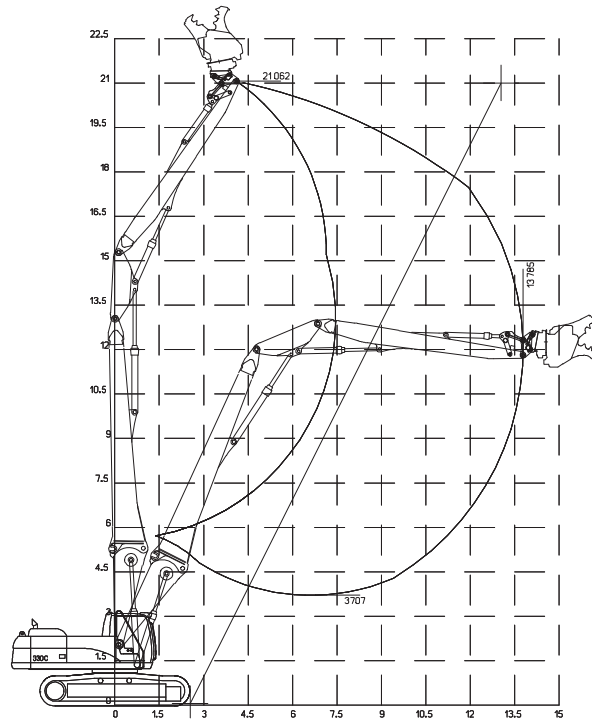
330C Retrofit Front Parts	Stick Length					
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm	7100 mm LRE retrofit
Height	2929 mm	2882 mm	2855 mm	2825 mm	2794 mm	3722 mm
Length	7908 mm	8472 mm	9212 mm	9647 mm	10 484 mm	8640 mm
Tip Radius	1800 mm	1660 mm	1660 mm	1660 mm	1555 mm	1402 mm
Boom Weight	2667 kg	2667 kg	2667 kg	2667 kg	2667 kg	3490 kg
Stick Weight	1126 kg	11 190 kg	1235 kg	1358 kg	1605 kg	1785 kg
Total Weight	7100 kg	6520 kg	6570 kg	6670 kg	6660 kg	7720 kg



330C with UHD Front Parts	Undercarriages				
	L	LN	Hydraulic Variable Gauge	Heavy Duty High Wide	345C L
Shoes	600 mm	600 mm	600 mm	750 mm	750 mm
Shipping Length	14 830 mm	14 830 mm	14 830 mm	14 830 mm	14 830 mm
Shipping Height	3100 mm	3100 mm	3100 mm	3100 mm	3100 mm
Shipping Width	3190 mm	2990 mm	2990 mm	3670 mm	3140 mm
Operating Weight	41 480 kg	40 850 kg	48 490 kg	42 920 kg	46 640 kg

Ultra-High Demolition Arrangements — Belgium Sourced
 ● 330C L UHD Range Dimensions

Excavators



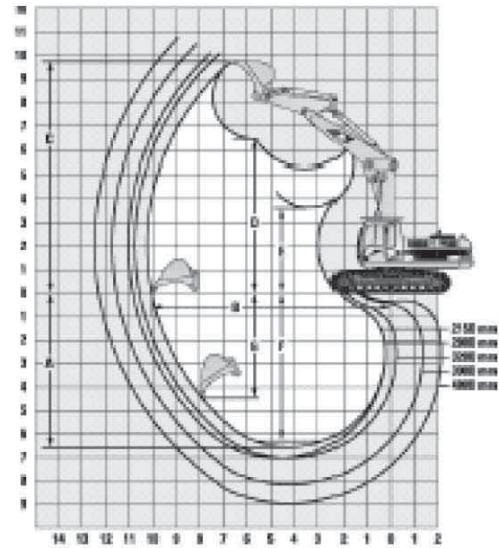
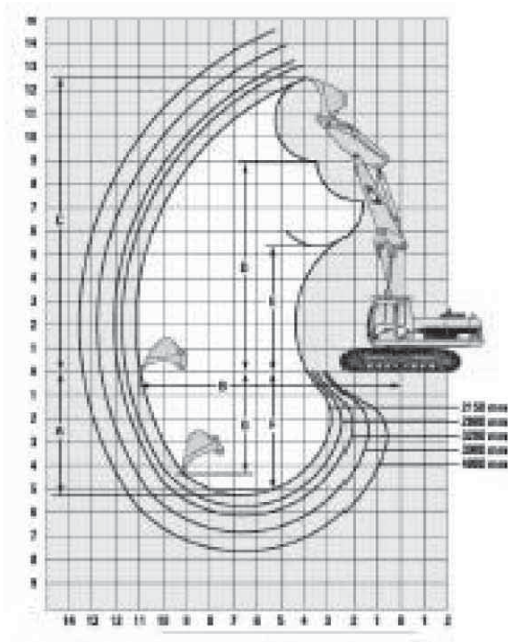
330C with UHD Front Parts — Reaches	330C L UHD	330C LN UHD	330C L HVG UHD	330C L HDHW UHD	330C UHD with 345C L chassis
Maximum Allowable Angle from Vertical	25°	25°	25°	25°	25°
Maximum Horizontal Reach	13 800 mm	13 800 mm	13 800 mm	13 800 mm	13 800 mm
Maximum Vertical Pin Height	21 100 mm	21 100 mm	21 100 mm	21 300 mm	21 300 mm
Maximum Tool Weight Over the Front*	3000 kg	3000 kg	3000 kg	3000 kg	3000 kg
Maximum Tool Weight Over the Side*	1900 kg	—	3000 kg	2400 kg	2700 kg

*Tool weight includes mounting bracket and quick coupler.

Excavators

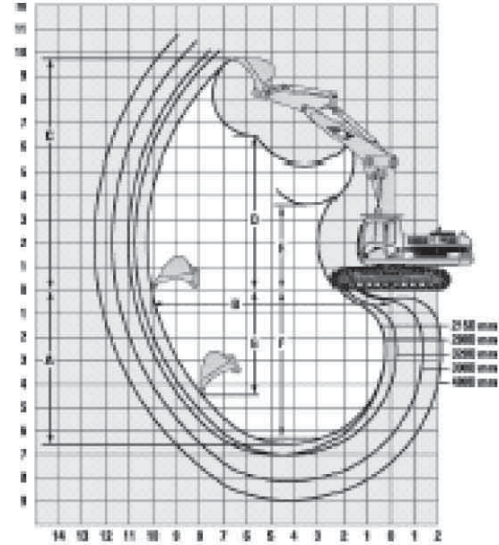
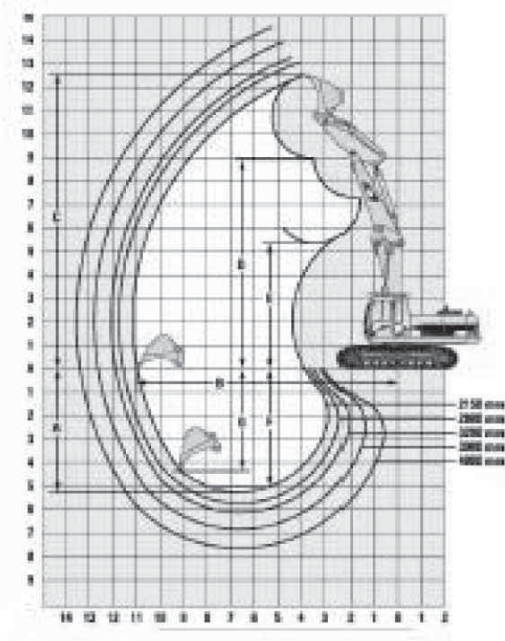
Ultra-High Demolition Arrangements — Belgium Sourced

- 330C L UHD Range Dimensions



330C L UHD Retrofit — Straight Position	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	5230 mm	5730 mm	6130 mm	6830 mm	7630 mm
B Maximum Reach at Ground Level	10 990 mm	11 560 mm	11 890 mm	12 620 mm	13 400 mm
C Maximum Cutting Height	12 540 mm	13 070 mm	13 280 mm	13 930 mm	14 560 mm
D Maximum Loading Height	8940 mm	9760 mm	9970 mm	10 620 mm	11 450 mm
E Minimum Loading Height	5380 mm	4920 mm	4410 mm	3780 mm	3030 mm

330C L UHD Retrofit — Bent Position	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	6550 mm	7050 mm	7450 mm	8150 mm	8950 mm
B Maximum Reach at Ground Level	10 000 mm	10 560 mm	10 850 mm	11 560 mm	12 310 mm
C Maximum Cutting Height	9720 mm	10 080 mm	10 040 mm	10 480 mm	10 740 mm
D Maximum Loading Height	6440 mm	7060 mm	7040 mm	7430 mm	7880 mm
E Minimum Loading Height	3630 mm	3120 mm	2720 mm	2020 mm	1220 mm



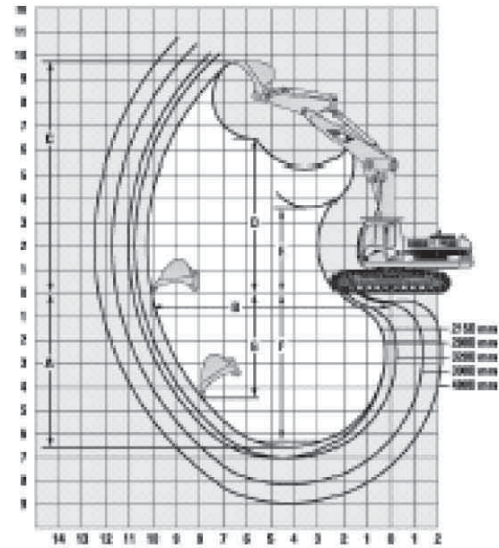
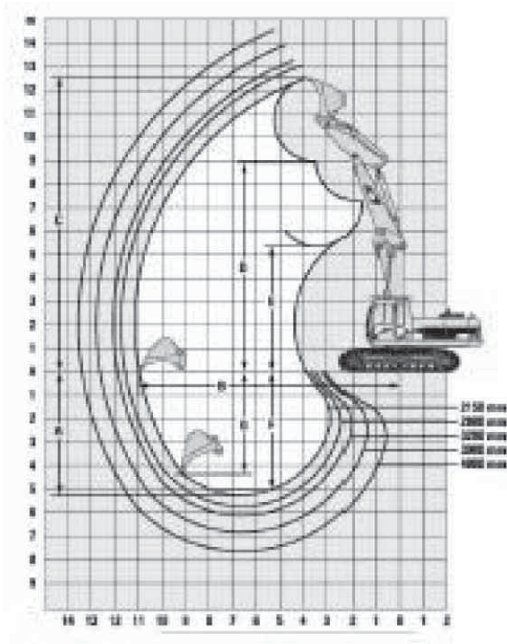
330C LN UHD Retrofit — Straight Position	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	5230 mm	5730 mm	6130 mm	6900 mm	7660 mm
B Maximum Reach at Ground Level	10 990 mm	11 560 mm	11 890 mm	12 680 mm	13 420 mm
C Maximum Cutting Height	12 540 mm	13 070 mm	13 280 mm	14 000 mm	14 580 mm
D Maximum Loading Height	8940 mm	9760 mm	9970 mm	10 550 mm	11 420 mm
E Minimum Loading Height	5380 mm	4920 mm	4410 mm	3710 mm	3000 mm

330C LN UHD Retrofit — Bent Position	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	6550 mm	7050 mm	7450 mm	8150 mm	8950 mm
B Maximum Reach at Ground Level	10 000 mm	10 560 mm	10 850 mm	11 560 mm	12 310 mm
C Maximum Cutting Height	9720 mm	10 080 mm	10 040 mm	10 480 mm	10 740 mm
D Maximum Loading Height	6440 mm	7060 mm	7040 mm	7430 mm	7880 mm
E Minimum Loading Height	3630 mm	3120 mm	2720 mm	2020 mm	1220 mm

Excavators

Ultra-High Demolition Arrangements — Belgium Sourced

- 330C L HVG UHD Range Dimensions



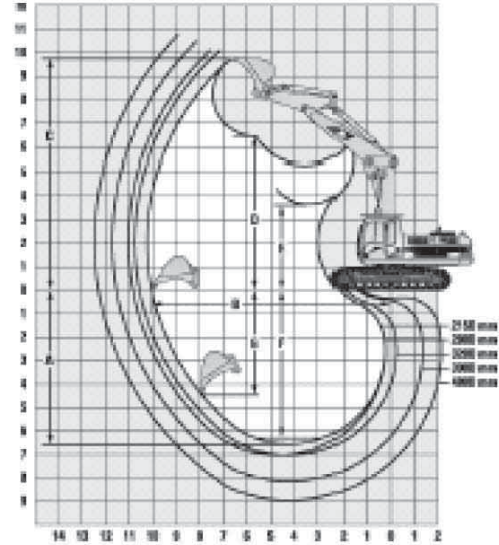
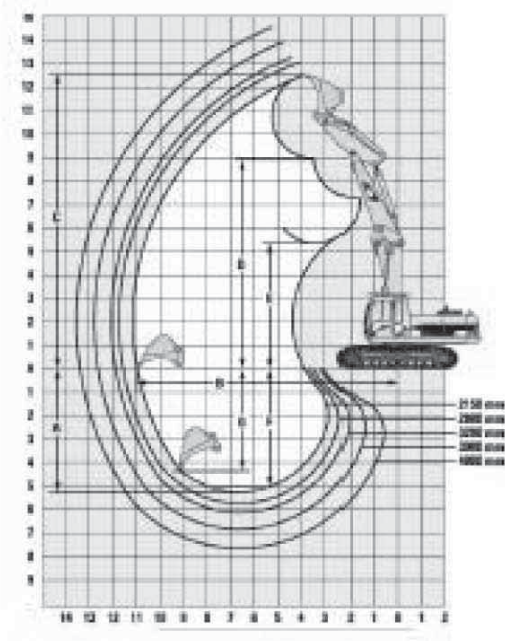
330C L HVG UHD Retrofit — Straight Position	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	5220 mm	5730 mm	6130 mm	6830 mm	7620 mm
B Maximum Reach at Ground Level	10 990 mm	11 550 mm	11 890 mm	12 610 mm	13 390 mm
C Maximum Cutting Height	12 550 mm	13 080 mm	13 290 mm	13 940 mm	14 570 mm
D Maximum Loading Height	8950 mm	9770 mm	9980 mm	10 630 mm	11 460 mm
E Minimum Loading Height	5390 mm	4930 mm	4420 mm	3780 mm	3040 mm

330C L HVG UHD Retrofit — Bent Position	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	6540 mm	7050 mm	7450 mm	8150 mm	8940 mm
B Maximum Reach at Ground Level	9990 mm	10 560 mm	10 850 mm	11 560 mm	12 310 mm
C Maximum Cutting Height	9730 mm	10 090 mm	10 040 mm	10 490 mm	10 750 mm
D Maximum Loading Height	6440 mm	7070 mm	7040 mm	7440 mm	7880 mm
E Minimum Loading Height	3640 mm	3130 mm	2730 mm	2030 mm	1230 mm

330C L HVG LRE Retrofit	Stick Length
	7100 mm
A Maximum Digging Depth	12 090 mm
B Maximum Reach at Ground Level	17 330 mm
C Maximum Cutting Height	15 770 mm
D Maximum Loading Height	13 040 mm
E Minimum Loading Height	2970 mm

Ultra-High Demolition Arrangements — Belgium Sourced
 ● 330C L HDHW UHD Range Dimensions

Excavators



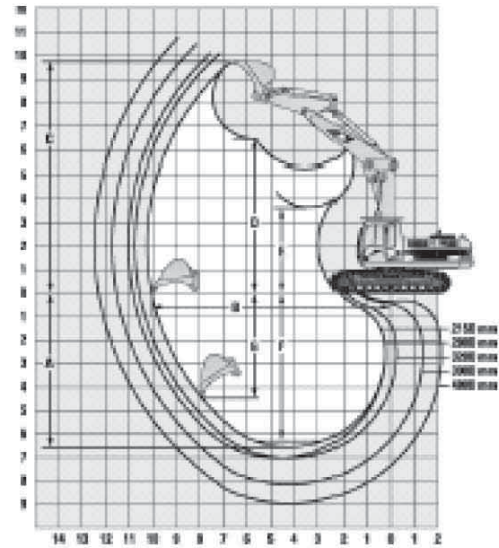
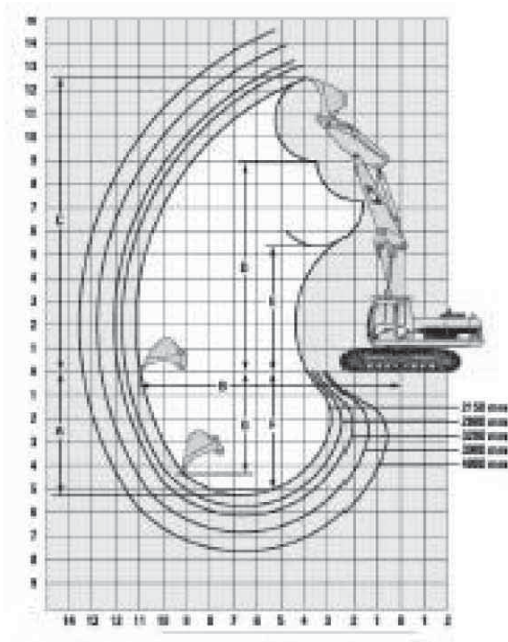
330C L HDHW UHD Retrofit — Straight Position	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	4970 mm	5480 mm	5880 mm	6590 mm	7370 mm
B Maximum Reach at Ground Level	10 940 mm	11 510 mm	11 840 mm	12 490 mm	13 350 mm
C Maximum Cutting Height	12 800 mm	13 300 mm	13 540 mm	14 210 mm	14 820 mm
D Maximum Loading Height	9200 mm	10 020 mm	10 230 mm	10 850 mm	11 710 mm
E Minimum Loading Height	5640 mm	5180 mm	4660 mm	4010 mm	3280 mm

330C L HDHW UHD Retrofit — Bent Position	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	6290 mm	6820 mm	7220 mm	7920 mm	8690 mm
B Maximum Reach at Ground Level	9940 mm	10 530 mm	10 820 mm	11 540 mm	12 260 mm
C Maximum Cutting Height	9980 mm	10 350 mm	10 300 mm	10 740 mm	11 000 mm
D Maximum Loading Height	6690 mm	7300 mm	7270 mm	7670 mm	8140 mm
E Minimum Loading Height	3890 mm	3360 mm	3960 mm	2260 mm	1490 mm

Excavators

Ultra-High Demolition Arrangements — Belgium Sourced

- 330C UHD Range Dimensions

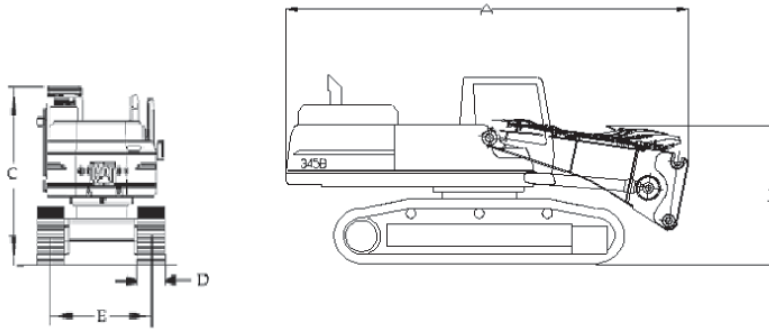


330C UHD Retrofit — Straight Position with 345C L Chassis	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	5020 mm	5530 mm	5930 mm	6630 mm	7430 mm
B Maximum Reach at Ground Level	10 950 mm	11 520 mm	11 850 mm	12 580 mm	13 360 mm
C Maximum Cutting Height	12 740 mm	13 280 mm	13 480 mm	14 140 mm	14 760 mm
D Maximum Loading Height	9150 mm	9970 mm	10 170 mm	10 820 mm	11 650 mm
E Minimum Loading Height	5590 mm	5130 mm	4610 mm	3980 mm	3230 mm

330C UHD Retrofit — Bent Position with 345C L Chassis	Stick Length				
	2150 mm	2800 mm	3200 mm	3900 mm	4800 mm
A Maximum Digging Depth	6340 mm	6850 mm	7250 mm	7950 mm	8750 mm
B Maximum Reach at Ground Level	9950 mm	10 520 mm	10 810 mm	11 530 mm	12 270 mm
C Maximum Cutting Height	9930 mm	10 290 mm	10 240 mm	10 680 mm	10 950 mm
D Maximum Loading Height	6640 mm	7260 mm	7240 mm	7640 mm	8090 mm
E Minimum Loading Height	3830 mm	3330 mm	2930 mm	2230 mm	1430 mm

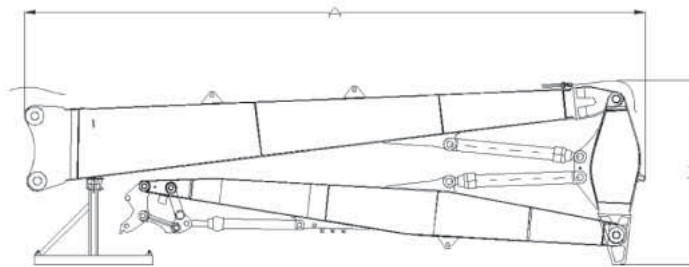
Ultra-High Demolition Arrangements — Belgium Sourced
 ● 345C L UHD Shipping Dimensions***

Excavators



345C L UHD Base Machine	Undercarriages	
	L	Hydraulic Variable Gauge
Shoes	600 mm	600 mm
Length	7423 mm	7423 mm
Boom Height*	2571 mm	2545 mm
Height with Overhead Guard	3685 mm	3659 mm
Height without Overhead Guard	3491 mm	3465 mm
Working Width	3490 mm	3611 mm
Shipping Width	2990 mm	3000 mm
Operating Weight	43 900 kg	50 700 kg

*Hydraulic lines are included and boom cylinders are fully retracted.



345C L UHD Front Parts

A Length	10 469 mm
B Height*	3118 mm
Support Width	2400 mm
Support Weight	396 kg
Boom Nose Width	725 mm
Approximate Boom Nose Weight*	5767 kg
Approximate Fore Boom Weight*	1582 kg
Approximate Stick Weight*	2106 kg
Total Weight**	11 600 kg

*Hydraulic lines are included.

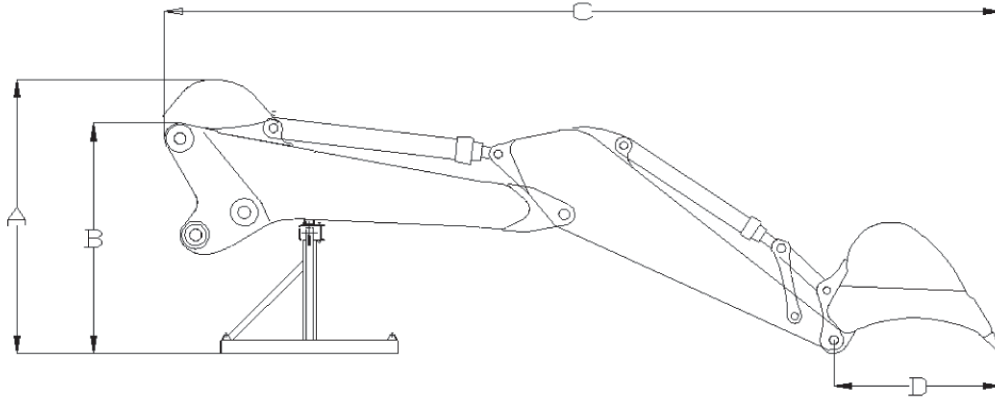
**Support, cylinders, hydraulic lines and quick coupler are included.

***Preliminary specifications.

Excavators

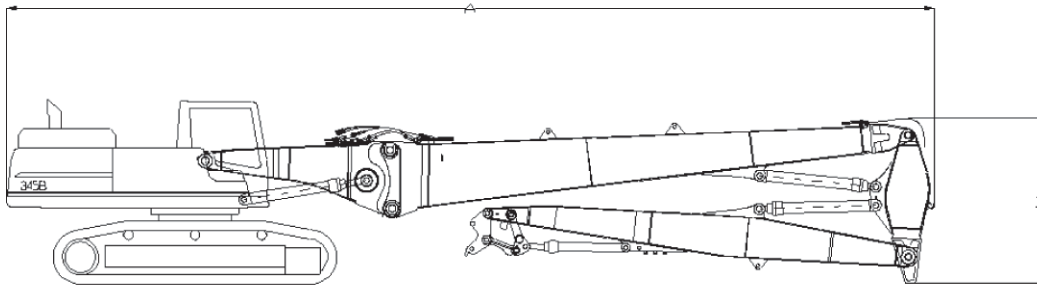
Ultra-High Demolition Arrangements — Belgium Sourced

- 345C L UHD Shipping Dimensions***



345C L UHD Retrofit Configuration	Stick Length			
	R2.9T	R3.4T	R4.0T	R4.8T
A Height*	3126 mm	3090 mm	3038 mm	2947 mm
B Height	2648 mm	2598 mm	2531 mm	2412 mm
C Length	8928 mm	9416 mm	10 104 mm	10 920 mm
D Tip Radius	1890 mm	1890 mm	1890 mm	1890 mm
Approximate Boom Weight*	3269 kg	3269 kg	3269 kg	3269 kg
Approximate Stick Weight*	1673 kg	1655 kg	1991 kg	2169 kg
Approximate Bucket Weight	1930 kg	1930 kg	1930 kg	1930 kg
Approximate Total Weight**	8740 kg	8720 kg	9050 kg	9230 kg

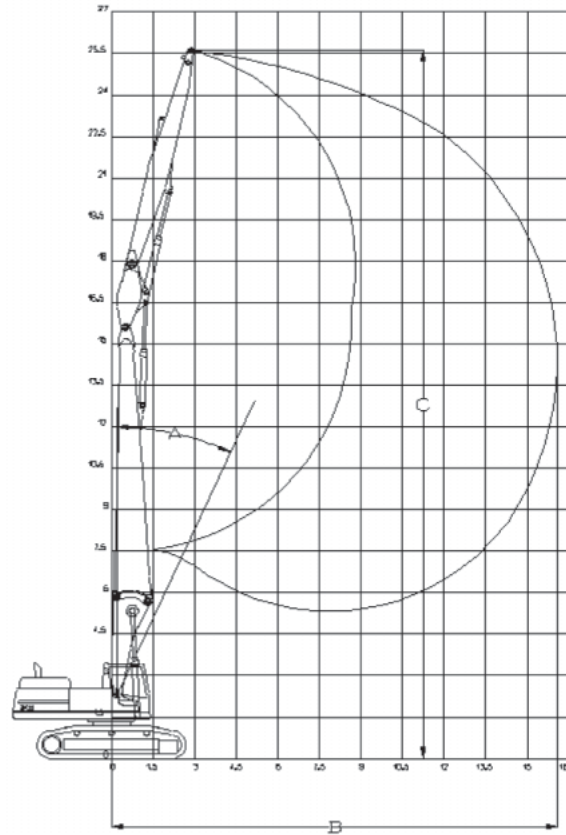
*Hydraulic lines are included.
 **Support, cylinders and hydraulic lines are included.
 ***Preliminary specifications.



345C L with UHD Front Parts	Undercarriages	
	L	Hydraulic Variable Gauge
Shoes	600 mm	600 mm
Shipping Length	17 730 mm	17 730 mm
Shipping Height	3410 mm	3410 mm
Shipping Width	2990 mm	3000 mm
Operating Weight	54 700 kg	61 500 kg

Ultra-High Demolition Arrangements — Belgium Sourced
 ● 345C L UHD Range Dimensions**

Excavators



345C L with UHD Front Parts — Reaches	345C L UHD	345C L HVG UHD
Maximum Allowable Angle from Vertical	25°	25°
Maximum Horizontal Reach	16 100 mm	16 100 mm
Maximum Vertical Pin Height	25 600 mm	25 600 mm
Maximum Tool Weight Over the Front*	3000 kg	3000 kg
Maximum Tool Weight Over the Side*	2000 kg	2700 kg

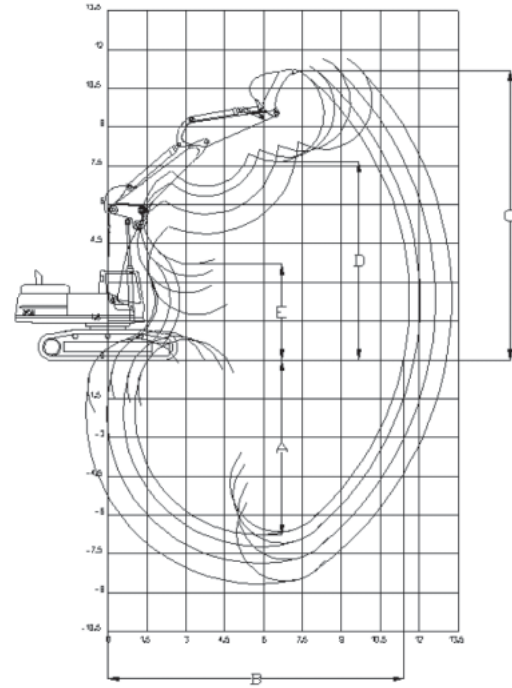
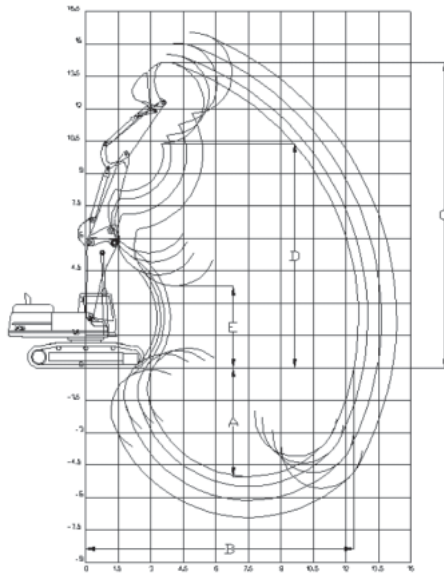
*Tool weight includes mounting bracket and quick coupler.

**Preliminary specifications.

Excavators

Ultra-High Demolition Arrangements — Belgium Sourced

- 345C L UHD Range Dimensions*



345C L UHD Retrofit — Straight Position	Stick Length			
	R2.9T	R3.4T	R4.0T	R4.8T
A Maximum Digging Depth	5056 mm	5506 mm	6156 mm	6956 mm
B Maximum Reach at Ground Level	12 363 mm	12 801 mm	13 436 mm	14 146 mm
C Maximum Cutting Height	14 134 mm	14 500 mm	15 023 mm	15 514 mm
D Maximum Loading Height	10 358 mm	10 725 mm	11 254 mm	11 739 mm
E Minimum Loading Height	5300 mm	4881 mm	4276 mm	3762 mm

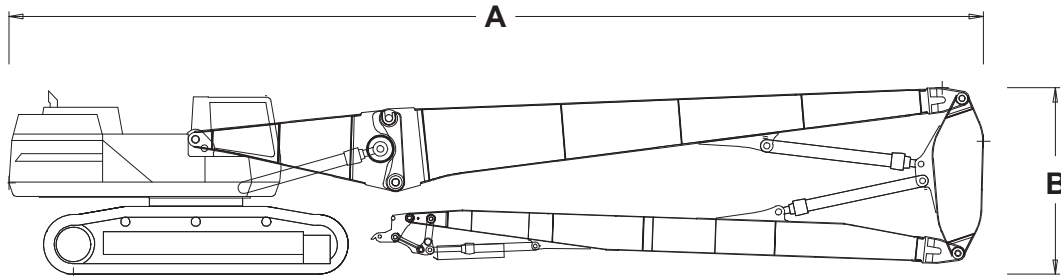
345C L UHD Retrofit — Bent Position	Stick Length			
	R2.9T	R3.4T	R4.0T	R4.8T
A Maximum Digging Depth	6779 mm	7229 mm	7879 mm	8679 mm
B Maximum Reach at Ground Level	11 401 mm	11 814 mm	12 415 mm	13 054 mm
C Maximum Cutting Height	11 153 mm	11 329 mm	11 621 mm	11 628 mm
D Maximum Loading Height	7632 mm	7805 mm	8055 mm	8106 mm
E Minimum Loading Height	3620 mm	3170 mm	2520 mm	1720 mm

*Preliminary specifications.

Ultra-High Demolition Arrangements — Belgium Sourced

- 365C L UHD Shipping Dimensions
- 365C L UHD Range Dimensions

Excavators

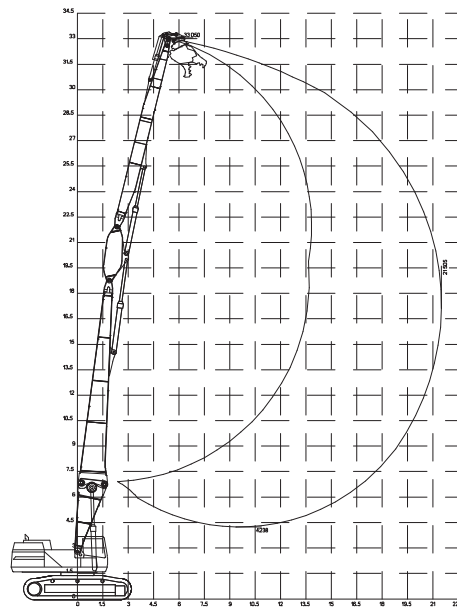


4

365C L with UHD Front Parts

With 385C L Undercarriage

A Shipping Length	20 400 mm
B Shipping Height	3910 mm
Operating Weight	85.7 t



365C L with UHD Front Parts — Reaches

With 385C L Undercarriage

Maximum Allowable Angle from Vertical	25°
Maximum Pin Height	33 050 mm
Maximum Horizontal Reach	21 505 mm
Maximum Tool Weight Over the Front*	3000 kg
Operating Weight	85 700 kg

*Tool weight includes mounting bracket and quick coupler.

Excavators

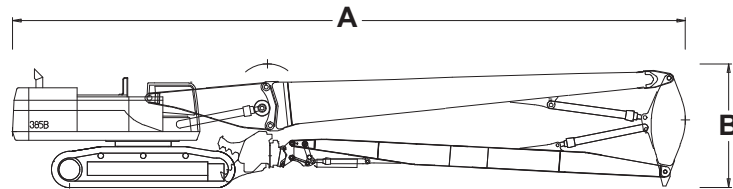
Ultra-High Demolition Arrangements — Belgium Sourced

- 385C L UHD Features
- 385C L UHD Shipping Dimensions

Features

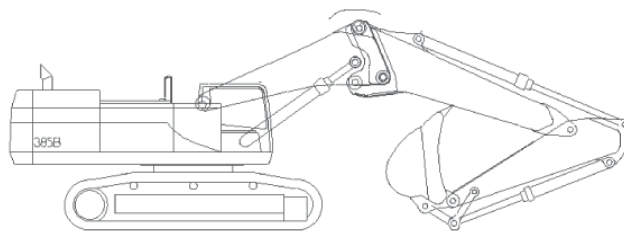
The 385C L UHD is available in three different versions:

- **Long Reach Demolition:** A 30-meter version that can work with a 5-ton work tool (including quick coupler and mounting bracket – center of gravity at maximum 1.5 m horizontally measured from stick nose).
- **Ultra-High Demolition:** A 36-meter version that can work with a 3-ton work tool (including quick coupler and mounting bracket – center of gravity at maximum 1.5 m horizontally measured from stick nose).
- **Ultra-High Demolition:** A 40-meter version, which works with a 2-ton work tool (including quick coupler and mounting bracket – center of gravity at maximum 1.5 m horizontally measured from stick nose).



385C L with UHD Front Parts	30 m version	36 m version	40 m version
A Shipping Length	21 750 mm*	23 375 mm	23 325 mm
B Shipping Height	4330 mm	4340 mm	8125 mm
Operating Weight	94 t	97 t	100 t

*With front parts extended (boom foot + LRD boom nose + stick).

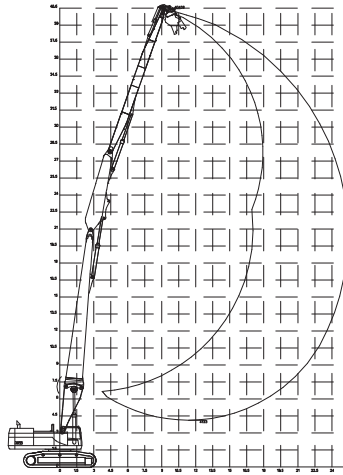


385C L with Retrofit Front Parts — Bent Position

	R3.4JB	R3.7HB	R4.4HB	R5.5HB
Shipping Length	16 160 mm	16 085 mm	16 010 mm	15 735 mm
Shipping Height	5470 mm	5370 mm	5588 mm	6065 mm
Operating Weight	91 235 kg	90 210 kg	90 410 kg	90 710 kg

Ultra-High Demolition Arrangements — Belgium Sourced
 ● 385C L UHD Range Dimensions

Excavators



385C L with UHD Front Parts — Reaches	30 m version	36 m version	40 m version
Maximum Allowable Angle from Vertical	25°	25°	15°
Maximum Pin Height	30.0 m	36.6 m	40.4 m
Maximum Horizontal Reach	18.3 m	24.1 m	25.4 m
Maximum Tool Weight Over the Front*	MP30	MP20	MP15
Operating Weight	94 t	97 t	100 t

*Maximum authorized tool weight over the front only; includes a dedicated quick coupler.

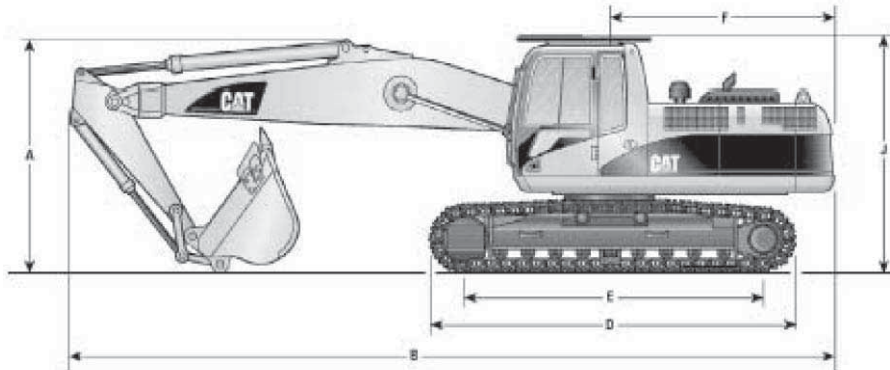
385C L UHD Retrofit — Straight Position	Stick Length			
	R3.4JB	R3.7HB	R4.4HB	R5.5HB
Maximum Digging Depth	4475 mm	4570 mm	5270 mm	6375 mm
Maximum Reach	15 810 mm	15 820 mm	16 490 mm	17 670 mm
Maximum Cutting Height	17 720 mm	17 530 mm	18 080 mm	19 240 mm

385C L UHD Retrofit — Bent Position	Stick Length			
	R3.4JB	R3.7HB	R4.4HB	R5.5HB
Maximum Digging Depth	6945 mm	7040 mm	7740 mm	8840 mm
Maximum Reach at Ground Level	13 700 mm	13 670 mm	14 350 mm	15 600 mm
Maximum Cutting Height	14 010 mm	13 480 mm	13 770 mm	14 700 mm

Excavators

Demolition Arrangements — Belgium Sourced

- Straight Boom
- Shipping Dimensions



Model	320C L/LN		320C S		322C L/LN		325C L/LN	
	stick	mm	stick	mm	stick	mm	stick	mm
A Shipping Height*	R1.9C R2.5B R2.9B R3.9B	3011 3011 3011 4057	R1.9C R2.5B R2.9B R3.9B	3087 3087 3087 4000	R2.0D R2.5S R2.95S R3.9B	3049 3049 3049 3871	R2.0D R2.65C R3.2C	3100 3100 3163
B Shipping Length*	R1.9C R2.5B R2.9B R3.9B	10 042 9710 9692 9371	R1.9C R2.5B R2.9B R3.9B	10 087 9719 9706 9410	R2.0D R2.5S R2.95S R3.9B	10 379 10 153 10 140 9911	R2.0D R2.65C R3.2C	10 838 10 645 10 611
C Shipping Width L LN S		2800 2980 2490		2500		3190 2990		3390 2990

Model	330C L/LN		345C		365C	
	stick	mm	stick	mm	stick	mm
A Shipping Height*	R2.15E R2.8D R3.2D R3.9D R4.8C	3213 3213 3213 3739 4963	R2.9T R3.4T R4.0T R4.8T	3514 3514 3691 5401	R2.8V R3.6V R4.7V	3896 4055 5122
B Shipping Length*	R2.15E R2.8D R3.2D R3.9D R4.8C	11 885 11 513 11 513 11 373 11 023	R2.9T R3.4T R4.0T R4.8T	12 104 12 013 11 954 11 600	R2.8V R3.6V R4.7V	13 785 13 612 13 404
C Shipping Width L LN		3340 2990		2990		3400

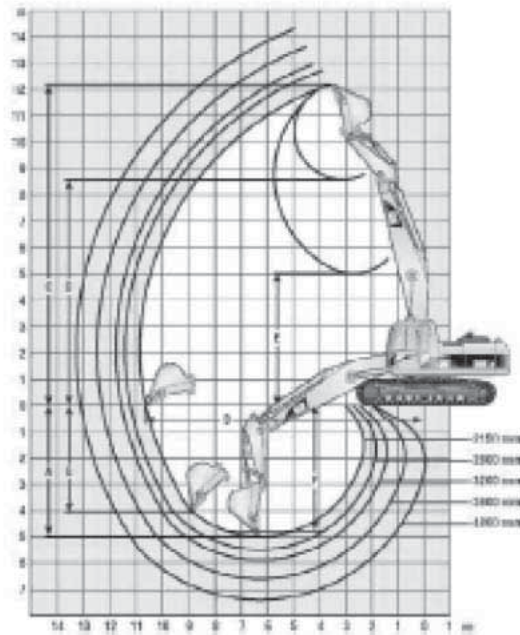
*With stick cylinder fully extended. For some configurations, retracting the stick cylinder will result in a lower shipping height but increased shipping length.

Demolition Arrangements — Belgium Sourced

- Straight Booms
- Range Dimensions

Excavators

4



		320C L*				322C L*				
Stick		R1.9C	R2.5B	R2.9B	R3.9B	R2.0D	R2.5S	R2.95S	R3.9B	
A	Maximum Digging Depth	mm	4160	4600	5020	5960	4240	4640	5090	5890
	Maximum Reach at Ground Level	mm	9350	9820	10 240	11 140	9670	10 050	10 490	11 260
	Maximum Cutting Height	mm	10 850	11 250	11 620	12 390	11 230	11 550	11 930	12 540
	Maximum Loading Height	mm	7690	8480	8900	9640	7900	8440	8810	9840
	Minimum Loading Height	mm	4690	4110	3620	2890	4620	4320	3730	3040
	Operating Weight	kg	22 015	21 150	21 760	21 760	25 300	24 880	24 830	24 900

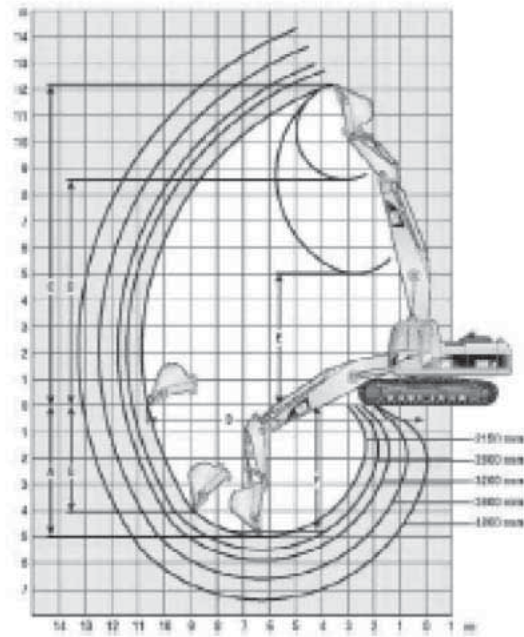
		325C L*				330C L*				
Stick		R2.0D	R2.65C	R3.2C	R2.15E	R2.8D	R3.2D	R3.9D	R4.8C	
A	Maximum Digging Depth	mm	4610	5160	5710	4970	5480	5880	6580	7400
	Maximum Reach at Ground Level	mm	9990	10 550	11 080	10 610	11 170	11 520	12 250	13 060
	Maximum Cutting Height	mm	11 440	11 950	12 370	12 220	12 760	12 990	13 660	14 340
	Maximum Loading Height	mm	8130	8840	9260	8600	9440	9680	10 340	11 160
	Minimum Loading Height	mm	4830	4230	3660	5040	4590	4060	3450	2700
	Operating Weight	kg	28 900	28 540	28 650	35 730	35 145	35 200	35 290	35 155

*For other configurations, please refer to specialogs (C, C LN and C S undercarriages, and heavy duty counterweight).

Excavators

Demolition Arrangements — Belgium Sourced

- Straight Booms
- Range Dimensions



		345C				365C				
Stick		R2.9T	R3.4T	R4.0T	R4.8T	R2.6WB	R2.8VB	R3.6VB	R4.15VB	R4.6VB
A Maximum Digging Depth	mm	5220	5670	6320	7120	5730	5890	6650	7195	7720
Maximum Reach at Ground Level	mm	11 820	12 260	12 900	13 610	13 000	12 960	13 650	13 540	14 740
Maximum Cutting Height	mm	13 580	13 940	14 470	14 960	14 680	14 910	15 410	15 850	16 360
Maximum Loading Height	mm	9800	10 170	10 690	11 190		10 730	11 200		12120
Minimum Loading Height	mm	4740	4320	3720	3210		5730	5140		4270
Operating Weight	kg	47 800	47 785	48 035	48 215	67 520	66 370	66 575	66 800	66 965

*For other configurations, please refer to specialogs (C, C LN and C S undercarriages, and heavy duty counterweight).

- Tracks vs. Wheels
- Stick/Bucket Combinations

**MACHINE SELECTION:
TRACKS VERSUS WHEELS**

Features:

- | Tracks | Wheels |
|--|---|
| <ul style="list-style-type: none"> ● Flotation ● Traction ● Maneuverability ● Severe underfoot ● Faster machine repositioning | <ul style="list-style-type: none"> ● Mobility and speed ● No pavement damage ● Better stability with outriggers or dozers ● Leveling machine with outriggers ● Dozing capability |

307–385

Unless the application calls for a lot of travel to, from, and around the job sites, a track-type excavator could be the better choice. Track-type excavators provide good traction and flotation in almost all kinds of underfoot conditions. Consistently good drawbar power provides excellent maneuverability. The tracked undercarriage also provides good overall stability. If the job calls for frequent machine repositioning, a track-type excavator will provide better operating efficiency — where raising and lowering outriggers would take extra time.

Wheels (M313C–M322C)

Looking for a highly versatile machine? A machine that can do more than mass excavation and trenching. Consider a Wheel Excavator.

A Wheel Excavator combines traditional excavator features such as 360° swing, long reach, deep digging depth, high loading height, high digging forces and high lift capacities, with the mobility of

a wheeled undercarriage. The rubber tires allow the excavator to travel paved roads, work in shopping malls, squares, parking lots and other paved areas without damaging the pavement. It's mobility allows fast independent travel between jobsites as well as on the jobsite giving you more job planning flexibility. The Wheel Excavator is the ideal tool for truck loading in tight quarters, undercutting concrete or asphalt, patching, shoulder work, curb and gutter repair, landscaping, spreading top soil, fine grading, laying pipe, placing manholes or ditch cleaning.

A Wheel Excavator is also an ideal machine in material handling. It can load or unload trucks and carry loads around the job site. Stabilizers and a dozer blade can be pinned to the undercarriage increasing the machines stability during lifting.

Equip the Wheel Excavator with dedicated special attachments such as cab riser, material handling stick and boom. Add the additional hydraulic circuit option and your ready for a complete range of special tools. Ditch cleaning bucket, clamshell, grapples, hammers to name a few.

Caterpillar Wheel Excavators offer a load independent, load-sensing, flow distribution hydraulic system that gives the operator absolute precision and control no matter what the application.

Machine weight is the key to selecting a Wheel Excavator. Following are some additional factors that need to be considered.

Choose the proper boom and stick for your reach, digging depth and lifting requirements. Stability can be greatly enhanced by adding outriggers and/or a dozer blade. Additional hydraulic circuits can be added depending on your application and stick end attachments.

Acceptable Bucket/Stick Combinations

The following charts identify the acceptable bucket and stick combinations for Caterpillar Wheel Excavators and are based on stability. Minimum stability occurs with the linkage oriented over the side and positioned as shown in the visual. Dozer and/or stabilizers (if equipped) are raised and the bucket contains a full load. The longest stick is shown that has acceptable stability for each bucket. That stability is 1.1 moment ratio or better. Once this stability factor is established, all shorter sticks are then acceptable with the listed bucket.



EXCAVATOR SHOE SELECTION

Undercarriage life can be extended by equipping the machine properly for the application.

Many excavators work on pavement or flat, soft ground and experience few undercarriage problems. But if those same machines (usually equipped with wide track pads) were placed in severe underfoot conditions, undercarriage destruction could occur very rapidly.

The rule, used for other track-type machines — *“Whenever possible use the narrowest shoes available”* — is even more valid for excavators.

The best general purpose track shoe is the triple grouser. It has a good section modulus and offers the best compromise between traction and minimum disturbance to paved surface.

The double grouser shoe has a better section modulus and is more aggressive than the triple grouser section. Single grouser shoes are offered for maximum traction. Some users like single grousers for added mobility in hilly terrain.

The following table lists ground pressures for various width shoes (reach boom, medium stick and bucket):

Model	Shoe Type	Shoe Width		Pressure	
		mm	in	kPa	psi
301.5	Rubber Belt	230	9	28.7	4.16
301.5 CR	Steel Double Grouser	230	9	27.0	3.90
	Rubber Belt	230	9	25.0	3.60
301.6	Steel Double Grouser	230	9	28.2	4.09
	Rubber Belt	230	9	27.2	3.94
301.8	Steel Double Grouser	230	9	28.8	4.17
	Rubber Belt	230	9	27.7	4.01
302.5	Steel Double Grouser	300	12	26.6	3.85
	Rubber Belt	300	12	25.6	3.71
303 SR	Steel Double Grouser	300	12	28.6	4.10
	Rubber Belt	300	12	27.6	4.00
303 CR	Steel Double Grouser	300	12	30.9	4.48
	Rubber Belt	300	12	29.9	4.33
304 CR	Steel Double Grouser	400	15	28.5	4.13
	Rubber Belt	400	15	25.0	3.63
305 CR	Steel Double Grouser	400	16	28.5	4.10
	Rubber	400	16	27.9	4.05
307C	Triple	450	18	30.0	4.35
	Triple	600	24	23.0	3.34
	Segment Rubber	450	18	31.0	4.50
307C SB	Triple	450	18	36.0	5.22
	Triple	600	24	27.0	3.92
	Segment Rubber	450	18	36.0	5.22

Model	Shoe Type	Shoe Width		Pressure	
		mm	in	kPa	psi
308 CR	Triple	450	18	32.4	4.70
	Triple	600	24	24.9	3.61
	Segment	450	18	32.6	4.73
311C U	Triple	500	20	41.0	5.95
	Triple	600	24	34.8	5.05
	Triple	700	28	30.4	4.41
	Triple	770	30	27.9	4.05
	Segment Rubber	500	20	41.4	6.00
312C	Triple	500	20	39.0	5.66
	Triple	600	24	33.0	4.97
	Triple	700	28	29.0	4.21
	Triple	770	30	27.8	4.00
	Segment Rubber	500	20	41.1	6.00
312C L	Triple	500	20	38.5	5.60
	Triple	600	24	31.0	4.50
	Triple	700	35	27.0	3.92
	Triple	770	30	25.0	3.63
313C SR	Triple	500	20	45.6	6.60
	Triple	600	24	38.7	5.60
	Triple	700	28	33.7	4.90
	Segment Rubber	500	20	45.5	6.60
313C CR	Triple	500	20	40.9	5.90
	Triple	600	24	34.7	5.00
	Triple	700	28	30.3	4.40
	Segment Rubber	500	20	41.0	5.90
314C CR	Triple	500	20	44.0	6.40
	Triple	600	24	37.0	5.40
	Triple	700	28	32.0	4.70
	Segment Rubber	500	20	44.0	6.40
314C LCR	Triple	500	20	41.0	5.90
	Triple	600	24	35.0	5.00
	Triple	700	28	30.0	4.40
315C	Triple	500	20	50.0	7.25
	Triple	600	24	42.0	6.10
	Triple	700	28	36.0	5.22
315C L	Triple	500	20	47.0	6.82
	Triple	600	24	42.0	5.66
	Triple	700	28	36.0	4.93
315C L*	Triple	500	20	52.0	7.54
	Triple	600	24	44.0	6.39
	Triple	700	28	38.0	5.51

*France sourced.

Model	Shoe Type	Shoe Width		Pressure	
		mm	in	kPa	psi
318C*	Triple	600	24	45.0	6.53
	Triple	700	28	43.0	6.23
	Triple	800	32	38.0	5.51
318C L	Triple*	500	20	53.0	7.69
	Triple*	600	24	45.0	6.53
	Triple	600	24	43.1	6.20
	Triple*	700	28	39.0	5.66
	Triple	700	28	37.6	5.50
	Triple*	800	32	35.0	5.08
	Triple	800	32	33.3	4.80
	Triple*	900	35	31.0	4.50
318C LN	Triple	500	20	50.9	7.40
	Triple	600	24	42.9	6.20
318C N*	Triple*	500	20	58.0	8.41
	Triple*	600	24	49.0	7.10
320C	Triple	600	24	46.1	6.70
	Triple	700	28	40.3	5.80
	Triple	800	32	35.6	5.20
320C L	Triple	600	24	47.5	6.90
	Triple	700	28	37.7	5.50
	Triple	800	32	33.1	4.80
	Triple	900	35	31.7	4.60
320C LN	Triple	500	20	57.0	8.26
	Triple	600	24	47.5	6.89
320C U	Triple	600	24	51.5	7.50
	Triple	700	28	44.6	6.50
	Triple	800	32	39.6	5.70
	Triple	900	35	31.7	4.60
320C LU	Triple	600	24	47.7	6.90
	Triple	700	28	41.5	6.00
	Triple	800	32	36.8	5.30
321C LCR	Triple	600	24	48.6	7.00
	Triple	700	28	42.4	6.10
	Triple	800	32	37.5	5.40
322C	Triple	600	24	50.6	7.30
	Triple	700	28	43.8	6.40
	Triple	800	32	38.8	5.60
322C L	Triple	600	24	47.2	6.80
	Triple	700	28	40.9	5.90
	Triple	800	32	36.2	5.20

*France sourced.

NOTE: Belgium sourced excavators have different ground pressures. See Technical Data Sheets.

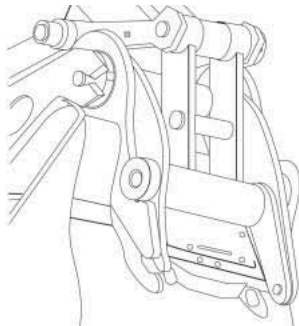
Model	Shoe Type	Shoe Width		Pressure	
		mm	in	kPa	psi
322C LN	Triple	600	24	46.3	6.72
	Triple	700	28	43.3	6.28
	Triple	800	32	37.9	5.50
325C	Triple	600	24	56.7	8.20
	Triple	700	28	49.2	7.10
	Triple	800	32	44.0	6.40
325C L	Triple	600	24	52.9	7.67
	Triple	700	28	45.9	6.66
	Triple	800	32	41.1	5.96
	Triple	900	35	38.3	5.60
325C LN	Triple	600	24	52.7	7.64
	Triple	700	28	50.4	7.31
	Triple	800	32	44.1	6.39
330C	Triple	600	24	68.8	10.00
	Triple	750	30	55.8	8.10
	Triple	850	33	50.3	7.30
330C L	Triple	600	24	63.9	9.30
	Triple	750	30	51.9	7.50
	Triple	850	33	46.8	6.80
330C LN	Triple	600	24	62.0	9.00
330C – ES	Triple	600	24	71.0	10.30
345B Series II – ES	Double	650	26	85.8	12.44
345C	Triple	600	24	81.2	11.80
	Triple	750	30	66.3	9.60
	Double	600	24	81.7	11.80
	Double	750	30	66.5	9.60
345C L – FIX	Triple	600	24	76.8	11.10
	Triple	750	30	62.5	9.10
	Triple	900	35	53.0	7.70
	Double	600	24	77.0	11.20
345C L – VG	Triple	600	24	85.2	12.40
	Triple	900	35	58.7	8.50
	Double	600	24	85.7	12.40
	Double	750	30	69.8	10.10
365B Series II – ES	Double	650	26	100.0	14.50
365C L	Double	650	26	96.6	14.00
	Double	750	30	84.5	12.30
	Double	900	35	71.5	10.40
385C	Double	650	26	121.2	17.60
	Double	750	30	106.0	15.40
385C L	Double	650	26	113.1	16.40
	Double	750	30	98.9	14.30
	Double	900	35	83.6	12.10

NOTE: Belgium sourced excavators have different ground pressures. See Technical Data Sheets.

QUICK COUPLER SYSTEMS

Quick couplers can greatly increase a machine's versatility and productivity. They make it much easier to switch attachments which can increase utilization. Quick couplers also encourage changing buckets when the application changes, rather than continue to use a less efficient bucket. Example: An application that is predominately dirt with occasional pockets or seams of rock. Without a quick coupler the owner may choose to live with a rock bucket but, rock buckets are normally smaller and heavier which reduces performance in a dirt application. A quick coupler allows the use of the rock bucket in the rock and a GP bucket in the dirt.

There are two types of quick couplers. The first is a dedicated type. A typical system substitutes hooks on the bucket for the pin-on hinges used with conventional buckets. The mating portion is pinned on the stick and bucket linkage. It slips into the hooks to secure the bucket or other attachment.



Dedicated
Hook-type

Advantages:

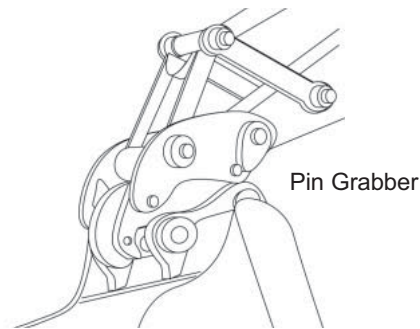
Bucket tip radius (distance from the bucket pivot point to the bucket tip) does not increase. Increased tip radius reduces curl and stick forces which can reduce the loadability of the bucket. The hook type coupler also does not add appreciable weight at the end of the stick. Keeping the tip radius and weight the same ensure no compromise in performance. The machine portion of the hook type coupler can be designed to allow more than one machine to use the same buckets.

Disadvantages:

The hook type system requires special buckets. Conventional pin-on buckets cannot be used. The ability to use buckets on more than one machine

requires careful application analysis. Larger machines generate forces that can destroy the wrong buckets. Smaller machines with the wrong bucket may develop loads in excess of the machine's capability. Even if the machine can handle the loads, the tip radius may be too large to allow the bucket to load properly. With the flexibility of a quick coupler comes the responsibility to make sure the bucket or other attachments are properly sized for each application.

The second type of quick coupler is the pin grabber type. This device pins on the stick and bucket linkage and grabs the bucket pins on standard pin-on buckets.



Pin Grabber

Advantages:

The advantage of the pin grabber is that it will pick up standard pin-on buckets. No need to purchase new attachments that will fit the system.

Disadvantages:

The pin grabber is mounted between the stick and the bucket which increases the tip radius. The amount of increase depends on the pin grabber's manufacturer. Increasing tip radius can compromise performance by decreasing bucket forces. The coupler also adds weight and reduces the payload capability.

Pin grabbers are required to mate up with existing bucket pins. Because different machines require different pin spreads and diameters, they offer very limited ability to match with buckets from other machines.

Both types of quick couplers offer two types of actuation. Mechanical ... which requires manual activity to release and engage the attachment. This process can take from one to five minutes depending on the coupler design. The other type is cab activated ... this type can usually allow an attachment change in 30 seconds or less.

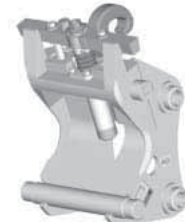
The Cat CW-series is available in a spindle and hydraulic version. A spindle version can easily be modified into a hydraulic version and vice versa.

Additional Benefit:

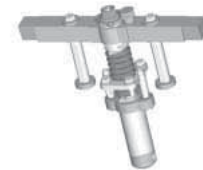
Hoisting hooks — To make the CW-series more versatile, hoisting hooks are available from 2 metric tons (2.2 tons) up to 20 metric tons (22 tons) capacity for maximum lifting capacity.



Hydraulic Version



Spindle Version



Specifications

		CW-05	CW-10	CW-20	CW-20S	CW-30	CW-30s			
Weight	kg	25	75	190	180	230	220			
	lb	55	165	419	397	507	485			
Dimensions	Width	mm	175	310	550	420	550	420		
		in	6.9	12.2	21.7	16.5	21.7	16.5		
Length	mm	200	300	475	475	475	475			
	in	7.9	11.8	18.7	18.7	18.7	18.7			
Hoisting-hook	metric ton	2	4	5/10	5/10	5/10	5/10			
	ton	2.2	4.4	5.5/11.0	5.5/11.0	5.5/11.0	5.5/11.0			
Excavator-class	metric ton	<3.5	3.5-10.5	7.5-15	7.5-15	15-25	15-25			
	ton	<3.9	3.9-11.6	8.3-16.5	8.3-16.5	16.5-27.6	16.5-27.6			
Spindle Version		X	X	X	X	X	X			
Hydraulic Version		X	X	X	X	X	X			
		CW-40	CW-40S	CW-45	CW-45S	CW-55	CW-55S	CW-70		
Weight	kg	240	230	440	400	760	580	1300		
	lb	529	507	970	882	1676	1279	2866		
Dimensions	Width	mm	550	420	690	550	830	560	840	
		in	21.7	16.5	27.2	21.7	32.7	22.0	33.1	
Length	mm	475	475	570	570	650	650	875		
	in	18.7	18.7	22.4	22.4	25.6	25.6	34.4		
Hoisting-hook	metric ton	5/10	5/10	14	14	20	20	20		
	ton	5.5/11.0	5.5/11.0	15.4	15.4	22.0	22.0	22.0		
Excavator-class	metric ton	20-30	20-30	25-40	25-40	35-65	35-65	65-90		
	ton	22.0-33.1	22.0-33.1	27.6-44.1	27.6-44.1	38.6-71.7	38.6-71.7	71.7-99.2		
Spindle Version		X	X	X	X	X	X	N/A		
Hydraulic Version		X	X	X	X	X	X	X		

CW-40 and CW-40S are not suitable for machine exceeding 27 metric tons (29.8 ton), which are used under heavy working conditions like rocky soils and demolition work, we highly recommend the usage of quick coupler CW-45(S).

Matching Guide

Machine	Linkage Family	Quick Coupler Model	
		Standard	Narrow
301.5		CW-05	N/A
301.6		CW-05	N/A
301.8		CW-05	N/A
302.5		CW-05	N/A
303CR		CW-05	N/A
303.5		CW-05	N/A
304CR		CW-10	N/A
304.5		CW-10	N/A
305CR		CW-10	N/A
307C		CW-10	N/A
312C		CW-20	CW-20S
315C		CW-30	CW-30S
318C		CW-30	CW-30S
320C	B, C	CW-40	CW-40S
322C	S	CW-40	CW-40S
322C**	D	CW-40	CW-40S
325C**	C	CW-40	CW-40S
325C	D	CW-45	CW-45S

Machine	Linkage Family	Quick Coupler Model	
		Standard	Narrow
330C	D	CW-45	CW-45S
330C	E	CW-45	CW-45S
345C	T, U	CW-55	CW-55S
365C	VB, WB	CW-70	N/A
385C	HJ, JB	CW-70	N/A
M313C		CW-20	CW-20S
M315C		CW-20	CW-20S
M316C		CW-20	CW-20S
M318C		CW-30	CW-30S
M322C		CW-40	CW-40S
330C UHD*	UHD linkage	CW-40	CW-40S
345C L UHD*	UHD linkage	CW-40	CW-40S
365C L UHD*	UHD linkage	CW-40	CW-40S
385C L UHD*	UHD linkage	CW-40	CW-40S

*Take note that UHD quick couplers have a special shape for optimal working range with Cat demolition work tools. Please contact your Caterpillar dealer for UHD couplers for non-current Cat machines.

**For operation under heavy working conditions, like rocky soils and demolition work, we highly recommend the usage of quick coupler CW-45(S).

Machine Linkage

		307	312	315	B	S	C	D	F/T	U/V/G
Pin diameters										
Front (stick)	mm	45	65	70	80	80	80	90	100	110
	in	1.8	2.6	2.8	3.1	3.1	3.1	3.5	3.9	4.3
Rear (link)	mm	45	65	70	80	80	80	90*	100**	90**
	in	1.8	2.6	2.8	3.1	3.1	3.1	3.5*	3.9**	3.5**
Pin spread range										
Minimum	mm	290	360	390	441	441	470	470	550	580
	in	11.4	14.2	15.4	17.4	17.4	18.5	18.5	21.7	22.8
Maximum	mm	312	420	463	516	516	520	520	600	640
	in	12.3	16.5	18.2	20.3	20.3	20.5	20.5	23.6	25.2
Face spread range										
Minimum	mm	178	220	277	306	306	347	380	420	495
	in	7.0	8.7	10.9	12.0	12.0	13.7	15.0	16.5	19.5
Maximum	mm	186	226	281	312	312	353	386	441	511
without shims	in	7.3	8.9	11.1	12.3	12.3	13.9	15.2	17.4	20.1
Maximum	mm	216	258	315	344	344	385	418	458	557
with shims	in	8.5	10.2	12.4	13.5	13.5	15.2	16.5	18.0	21.9
Other specifications										
Weight	kg	122	286	326	443	443	594	640	1035	1130
with pins	lb	269	631	719	977	977	1310	1411	2282	2491
Weight	kg	113	265	295	400	400	549	579	949	1025
without pins	lb	249	584	650	882	882	1210	1276	2092	2260
Pressure rating	bar	400	400	400	400	400	400	400	400	400
	psi	5802	5802	5802	5802	5802	5802	5802	5802	5802

*Requires (2) sleeves.

**Requires (3) sleeves.

RIPPING & LOADING IN QUARRIES

The “Rip & Load” concept includes a large mass excavator equipped with a hydraulic quick coupler, a rock bucket and a ripper tine. The ripper tine is used to disrupt the in-situ rock formation, after which same excavator switches to the bucket to load the rock. This system is used where economical, environmental or legal issues prevent or restrict the use of explosives. In these situations, depending on geology, ripping either reduces the amount of explosives necessary, or replaces explosives all together.

Advantages:

- Reduction or elimination of blasting costs.
- Reduced safety risks.
- Smaller environmental impact (less noise and vibrations).
- Less exposure to precipitation, resulting in less water damage.
- Less waste (up to 35% reduction).
- Less internal cracks, resulting in higher quality product.
- Work areas can be closer to existing infrastructures.
- Fewer machines and personnel.
- Increased versatility with quick coupler (different buckets, hammers).
- Lower Cost per Ton.

Rip and Load Hourly Production

(With Hydraulic Quick Coupler)

Model	Metric Tons/Hour	Short Tons/Hour
345C	150 - 300	165 - 330
365C	200 - 400	220 - 440
385C	300 - 500	330 - 550
5110B	400 - 600	440 - 660
5130B	600 - 800	660 - 880

4

Rippability

Refer to “Tip Selection”, “Estimating Ripping Production” and “Use of Seismic Velocity Charts” in the Track-type Tractors section. This information generally applies to usage of a ripper tine on the mass excavator.

Rippability Comparison between LHEX and LTTT

The excavator ripping technique is different from production ripping with a track-type tractor. The track-type tractor pulls the ripper(s) through the rock mass at a constant rate, whereas the excavator uses its stick- and curl forces to break material away from a horizontal or vertical face. Forward visibility in the excavator allows the operator to position the ripper tooth and attack geological discontinuities to assist the ripping process.

In ripping and loading, the ripper is typically used between 15% and 20% of the hour preparing the material. Tool change time, when using the hydraulic quick coupler, is insignificant with 2% to 6%. The remainder of the time is used for loading.

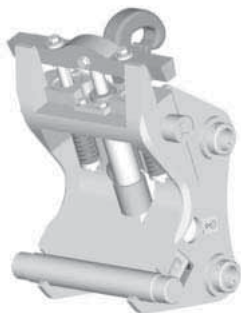
The ripping process improves bucket penetration which will increase service life of the bucket.

Caterpillar Hydraulic Quick Couplers for Mass Excavators

Source: Caterpillar Work Tools and Product Solutions — May not be available in all areas

(S) indicates narrow width version

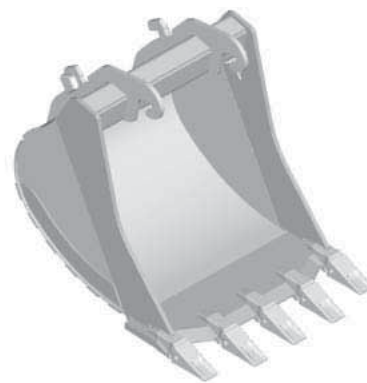
		CW-30 (S)	CW-40 (S)	CW-45 (S)	CW-55 (S)	CW-70
Width	mm	550 (420)	550 (420)	690 (550)	830 (560)	840
	in	21.7 (16.5)	21.7 (16.5)	27.2 (21.7)	32.7 (22.0)	33.1
Length	mm	475	475	570	650	875
	in	18.7	18.7	22.4	25.6	34.4
Models Available						
M – Mechanical		M	M	M	M	
S – Spindle		S	S	S	S	H
H – Hydraulic		H	H	H	H	
M318C						
320C		B linkage	C linkage			
322C			S linkage	D linkage		
M322C						
325C			C linkage	D linkage		
330C						
345C						
365C						
385C						



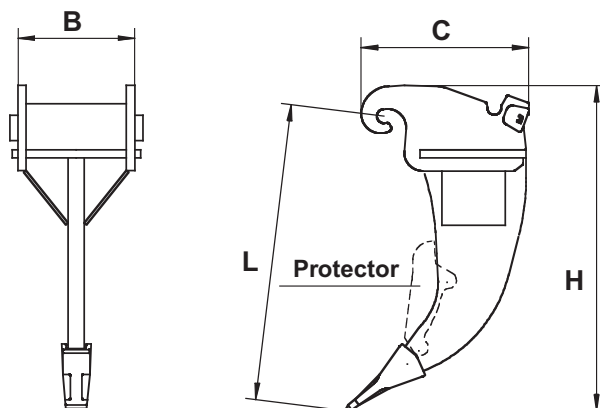
Cat CW-70 Quick Coupler



Cat TR-70 Ripper with QC



Cat Bucket with Quick Coupler Brackets



4

Specifications

		TR-20-N		TR-30-N		TR-40-N		TR-45-N		TR-55-N		TR-70-N
Hinge Plate		CA-20	CA-20S	CA-30	CA-30S	CA-40	CA-40S	CA-45	CA-45S	CA-55	CA-55S	CA-70
Weight*	kg	300	270	400	370	460	420	820	770	1200	1140	1760
	lb	661	595	882	816	1014	926	1808	1698	2646	2513	3880
Dimensions*												
B	mm	630	500	630	500	630	500	800	660	965	695	1000
	in	24.8	19.7	24.8	19.7	24.8	19.7	31.5	26.0	38.0	27.4	39.4
L	mm		940		1105		1270		1435		1600	1700
	in		37.0		43.5		50.0		56.5		63.0	66.9
C	mm		725		725		725		900		1050	1325
	in		28.5		28.5		28.5		35.4		41.3	52.2
H	mm		1150		1250		1400		1650		1800	1980
	in		45.3		49.2		55.1		65.0		70.9	78.0
Wear parts												
Tip size (family)		R300		R350		R450		R500		R500		R550
Shank-protector**		N/A		N/A		X		X		X		X
Excavator-class	metric ton	7.5-15		15-25		20-30		25-40		35-65		65-90
	ton	8.3-16.5		16.5-27.6		22.0-33.1		27.6-44.1		38.6-71.7		71.7-99.2

*Weight and dimensions include standard Quick-Coupler hinge plates and exclude shank-protector.

**Shank-protector is optional.

Caterpillar Ripper Tine for CW Hydraulic Quick Couplers

Source: Caterpillar Work Tools and Product Solutions — May not be available in all areas

	TR-30	TR-40	TR-45	TR-55	TR-70
318C					
320C					
322C					
325C					
330C					
345C					
365C					
385C					

Excavators

Summary of Major Attachments

● 301.5 ● 301.5 CR ● 301.6 ● 301.8 ● 302.5

EQUIPMENT FOR ...	301.5	301.5 CR	301.6	301.8	302.5
Undercarriage:					
Standard	●	—	●	—	●
Variable Width	—	●	—	●	—
Booms:					
Swing	●	●	●	●	●
Sticks:		mm			
Medium	●	1260	4'2"	—	●
Long	●	—	—	●	●
Long HD	—	1560	5'1"	—	—
Buckets (No. of)	14	3	14	14	17
Teeth:					
Long	●	●	●	●	●
Side Cutters:					
One-Piece Blade	●	●	●	●	●
Augers	●	—	●	●	●
Hydraulic Hammers	●	—	●	●	●
Shears	—	—	—	—	●
Crushers	—	—	—	—	●
Track Shoes:	Steel Double Grouser 230 mm (9") Rubber Belt 230 mm (9")	Double Grouser 230 mm (9") Rubber Belt 230 mm (9")	Steel Double Grouser 230 mm (9") Rubber Belt 230 mm (9")	Steel Double Grouser 230 mm (9") Rubber Belt 230 mm (9")	Steel Double Grouser 300 mm (12") Rubber Belt 300 mm (12")

NOTE: Number of buckets includes General Purpose, Trenching and Rock. Other types of buckets have not been included.
All attachments may not be available in all sales areas.

Summary of Major Attachments
 ● 303 SR ● 303 CR ● 304 CR

Excavators

EQUIPMENT FOR ...	303 SR		303 CR	304 CR	
Undercarriage: Standard	●		●	●	
Booms: Swing Parallel Offset	— ●		● ●	● —	
Sticks:	mm	ft		mm	ft
Medium	1260	4'2"	●	1380	4'6"
Long	—		●	—	
Long HD	1560	5'1"	—	1780	5'10"
Buckets (No. of)	3		13	13	
Teeth: Long	●		●	●	
Side Cutters: One-Piece Blade	●		●	●	
Track Shoes:	Double Grouser 300 mm (12") Rubber Belt 300 mm (12")		Steel Double Grouser 300 mm (12") Rubber 300 mm (12")	Triple Grouser 400 mm (16") Rubber Belt 400 mm (16")	

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NOTE: Number of buckets includes General Purpose, Trenching and Rock. Other types of buckets have not been included.
 All attachments may not be available in all sales areas.

Excavators

Summary of Major Attachments

● 305 SR ● 305 CR ● 307C ● 307B ● 307C SB

EQUIPMENT FOR ...	305 SR		305 CR	307C		307B		307C SB	
Undercarriage:									
Standard	●		●	●		●		●	
Booms:									
One-Piece Reach	—		—	●		●		—	
Swing	—		●	—		—		●	
Parallel Offset	●		—	●		●		—	
Variable Adjustable	—		—	—		●		—	
Sticks:	mm	ft		mm	ft	mm	ft	mm	ft
Short	—		—	—		1670	5'6"	—	
Medium	1620	5'4"	●	1670	5'6"	—		1670	5'6"
Long	—		●	2210	7'3"	2210	7'3"	2210	7'3"
Long HD	2020	6'8"	—	—		—		—	
Buckets (No. of)	3		13	4		3		4	
Teeth:									
Abrasion	—		—	—		—		●	
Abrasion — HD	—		—	—		—		●	
Long (G.P.)	●		●	●		●		●	
Long — HD	—		—	—		—		●	
Short	—		—	●		●		—	
Short (Rock)	—		—	—		—		●	
Penetration	—		—	—		—		●	
Wide (Spade)	—		—	—		—		●	
Sharp — Center	—		—	—		—		●	
Sharp — Corner	—		—	—		—		●	
Side Cutters:									
One-Piece Blade	●		●	●		●		●	
Hydraulic Hammers	—		—	—		●		—	
Track Shoes:	Triple Grouser 400 mm (16")		Triple Grouser 400 mm (16")	Triple Grouser 450, 600 mm (18", 24") Rubber Segments 450 mm (18")		Triple Grouser 450, 600 mm (18", 24") Rubber Segments 450 mm (18") Rubber Belt 450 mm (18")		Triple Grouser 450, 600 mm (18", 24") Rubber Segments 450 mm (18")	
	Rubber Belt 400 mm (16")		Rubber Belt 400 mm (16")						

NOTE: Number of buckets includes General Purpose, Trenching and Rock. Other types of buckets have not been included.
All attachments may not be available in all sales areas.

● 308C SR ● 308C CR ● 311C U ● 312C

Excavators

EQUIPMENT FOR ...	308C SR		308C CR		311C U		312C	
Undercarriage:								
Standard	●		●		●		●	
Booms:								
One-Piece Reach	—		●		●		●	
Parallel Offset	●		—		—		—	
Sticks:	mm	ft	mm	ft	mm	ft	mm	ft
Short	—		—		—		2100	6'11"
Medium	1750	5'9"	1670	5'6"	2250	7'5"	2500	8'2"
Long	—		2210	7'3"	2800	9'2"	3000	9'10"
Buckets (No. of)	5		5		5		5	
Teeth (J – GET):								
Abrasion — HD	—		—		●		●	
Long (G.P.)	●		●		●		●	
Long — HD	—		—		●		●	
Short	—		●		—		—	
Short (Rock)	—		—		●		●	
Penetration	—		—		●		●	
Wide (Spade)	—		—		●		●	
Sharp — Center	—		—		●		●	
Sharp — Corner	—		—		●		●	
Side Cutters:								
One-Piece Blade	●		●		●		●	
Hydraulic Hammers	—		—		—		—	
Track Shoes:	Triple Grouser 450 mm (18") Rubber Segments 450 mm (18")		Triple Grouser 450, 600 mm (18", 24") Rubber Segments 450 mm (18")		Triple Grouser 500, 600, 700, 770 mm (20", 24", 28", 30") Rubber Segments 500 mm (20")		Triple Grouser 500, 600, 700, 770 mm (20", 24", 28", 30") Rubber Segments 500 mm (20")	
Blade	—		—		●		●	

NOTE: Number of buckets includes General Purpose, Trenching and Rock. Other types of buckets have not been included.
All attachments may not be available in all sales areas.

Excavators

Summary of Major Attachments

- 312C ● 312C L ● 313C CR
- 313C SR ● 314C CR ● 314C LCR

EQUIPMENT FOR ...	312C L		312C* 312C L*		313C SR		313C CR		314C CR 314C LCR	
Undercarriage:										
Standard	—		●		●		●		●	
Long (L) — FIX	●		●		—		—		—	
Booms:										
One-Piece Reach	●		●		—		●		●	
Parallel Offset	—		—		●		—		—	
Sticks:	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
Short	2100	6'11"	2100	6'11"	—		—		—	
●	—	—	2500	8'2"	—		—		—	
●	—	—	3000	9'10"	—		—		—	
Medium	2500	8'2"	—		2130	7'0"	2500	8'2"	2500	8'2"
Long	3000	9'10"	—		—		3000	9'10"	3000	9'10"
Medium HD	—		—		—		2500	8'2"	—	
Booms:										
Two-Piece VA	—		●		—		—		—	
Sticks:										
Short	—		mm	ft	—		—		—	
●	—		2100	6'11"	—		—		—	
●	—		2500	8'2"	—		—		—	
●	—		3000	9'10"	—		—		—	
Buckets (No. of)	5		5		3		5		5	
Teeth:										
Abrasion — HD	●		●		●		●		●	
Long (G.P.)	●		●		●		●		●	
Long — HD	●		—		●		●		●	
Short (Rock)	●		●		●		●		●	
Penetration	●		●		●		●		●	
Wide (Spade)	●		●		●		●		●	
Sharp — Center	●		●		●		●		●	
Sharp — Corner	●		—		●		●		●	
Side Cutters:										
One-Piece Blade	●		●		●		●		●	
Track Shoes:										
	Triple Grouser 600, 700, 770 mm (24", 28", 30")		Triple Grouser 500, 600, 700, 770, 850, 900, 1400 mm (20", 24", 28", 30", 34", 35", 56") Rubber Pads 500 mm (20")		Triple Grouser 600, 700 mm (24", 28") Rubber Segments 500 mm (20")		Triple Grouser 600, 700 mm (24", 28") Rubber Segments 500 mm (20")		Triple Grouser 500, 600, 700 mm (20", 24", 28") Rubber Segments 500 mm (20")	
Blade	●		—		●		●		●	

*France sourced.

NOTE: Number of buckets includes General Purpose, Trenching and Rock. Other types of buckets have not been included.
All attachments may not be available in all sales areas.

Summary of Major Attachments
 ● 315C ● 315C L ● 318C
 ● 318C L ● 318C LN ● 318C N

Excavators

EQUIPMENT FOR ...	315C		315C L		315C* 315C L*		318C*, 318C L 318C LN, 318C N*	
Undercarriage:								
Standard	●		●		—		—	
Long (L) — FIX	—		—		●		●	
Narrow (N)	—		—		—		●*	
Long Narrow (LN)	—		—		—		●	
Extra Long (EL)	—		—		—		●	
Booms:								
One-Piece Reach	●		●		●		●	
Sticks:	mm	ft	mm	ft	mm	ft	mm	ft
Short	1850	6'0"	1850	6'0"	1850	6'1"	1800	5'11"
●	2250	7'5"	2250	7'5"	2250	7'5"	2250	7'5"
●	—		—		2600	8'6"	—	
Medium	2600	8'6"	2600	8'6"	—		2700	8'10"
Long	3100	10'2"	3100	10'2"	3100	10'2"	3200	10'6"
Booms:								
One-Piece Mass	—		—		●		—	
Two-Piece VA	—		—		—		●*	
Sticks:					mm	ft		
Short	—		—		1850	6'1"	—	
●	—		—		2250	7'5"	—	
●	—		—		2600	8'6"	—	
Long	—		—		3100	10'2"	—	
Buckets (No. of)	5		5		5		5	
Teeth (J – GET):								
Abrasion	—		—		—		●*	
Abrasion — HD	●		●		●		●	
Long (G.P.)	●		●		●		●	
Long — HD	●		●		—		●	
Short (Rock)	●		●		—		●	
Penetration	●		●		●		●	
Wide (Spade)	●		●		●		●	
Sharp	—		—		●		●*	
Sharp — Center	●		●		●		●	
Sharp — Corner	●		●		●*		●	
Teeth (K – GET):								
General Duty	●		●		—		●**	
Penetration	●		●		—		●**	
Penetration Plus	●		●		—		●**	
Wide	●		●		—		●**	
Extra Duty	●		●		—		●**	
Spike	●		●		—		●**	
Double Spike	●		●		—		●**	
Side Cutters:								
One-Piece Blade	●		●		—		●	
Track Shoes:	Triple Grouser 600, 700 mm (24", 28")		Triple Grouser 500, 700 mm (20", 28")		Triple Grouser 500, 600, 700 mm (20", 24", 28") Rubber Pads 500, 600 mm (20", 24")		Triple Grouser 500, 600*, 700, 800, 900* mm (20", 24"*, 28", 32", 35"*)	

*France sourced.

**318C L, 318C LN.

NOTE: Number of buckets includes General Purpose, Trenching and Rock. Other types of buckets have not been included.

All attachments may not be available in all sales areas.

Excavators

Summary of Major Attachments

- 320C ● 320C L/LN ● 320C U/LU ● 321C LCR
- 322C ● 322C L/LN ● 325C ● 325C L/LN

EQUIPMENT FOR ...	320C 320C L 320C LN	320C U 320C LU	321C LCR	322C 322C L 322C LN	325C 325C L 325C LN
Undercarriage:					
Standard	●	●*	—	●	●
Long (L) — FIX	●	—	●	●	●
Long Narrow (LN)	●	—	—	●	●
Booms:					
One-Piece Reach	●	●	●	●	●
One-Piece Reach — HD	●	●*	—	—	—
Sticks:	mm ft	mm ft	mm ft	mm ft	mm ft
Short	1900 6'3"	—	—	—	2000 6'7"
●	2500 8'2"	—	—	—	2650 & HD 8'8"
●	2900 9'6"	—	2900 9'6"	—	3000 9'10"
●	—	—	—	2000 6'7"	3200 & HD 10'6"
Medium	—	2500 8'2"	—	2500 8'2"	—
Long	3900 12'10"	2900 9'6"	—	2950 & HD 9'8"	—
Extra Long	—	3900 * 12'0"	—	3600 11'10"	—
Short — HD	2500 8'2"	—	—	—	—
● — HD	2900 9'6"	—	—	—	—
Medium — HD	—	2500 * 8'2"	—	—	—
Long — HD	—	2900 * 9'6"	—	—	—
Booms:					
One-Piece Mass	●	—	—	●	●
Two-Piece VA	●	—	—	●	●
Sticks:	mm ft			mm ft	mm ft
Short	1900 6'3"	—	—	2000 6'7"	—
●	2400 7'10"	—	—	—	2500 8'2"
●	2900 9'6"	—	—	—	3200 10'6"
Medium	—	—	—	2500 8'2"	—
Bucket Family	B, C	B	B	S, D	C, D
Buckets (No. of)	18	4	4	7	8
Teeth:					
Abrasion — HD	●	●	●	●	●
Long (G.P.)	●	●	●	●	●
Long — HD	●	●	●	●	●
Short (Rock)	●	●	●	●	●
Penetration	●	●	●	●	●
Wide (Spade)	●	●	●	●	●
Sharp — Center	●	●	●	●	●
Sharp — Corner	●	●	●	●	●
Side Cutters:					
One-Piece Blade	●	●	●	●	●
Side Bar Protector	—	●	●	●	—
Track Shoes:	Triple Grouser 600, 700, 800, 900 mm (24", 28", 31", 35") Double Grouser 600, 700 mm (24", 28")	Triple Grouser 600, 700*, 800, 900* mm (24", 28", 31", 35") Double Grouser* 600, 700 mm (24", 28")	Triple Grouser 600, 700*, 800 mm (24", 28", 32")	Triple Grouser 600, 700, 800, 900 mm (24", 28", 32", 35")	Triple Grouser 600, 700, 800 mm (24", 28", 32")
Quick Couplers	●	●	●	●	●
Grapples	●	●	●	●	●
Multi-Processors	●	●	●	●	●
Hammers	●	●	●	●	●

*Not available in Europe, Africa or Middle East.

NOTE: Number of buckets includes General Purpose, Trenching and Rock. Other types of buckets have not been included.
All attachments may not be available in all sales areas.

Summary of Major Attachments
 ● 330C ● 330C L/LN ● 345C
 ● 345C L ● 365C L ● 385C ● 385C L

Excavators

EQUIPMENT FOR ...	330C 330C L 330C LN		345C 345C L		365C L		385C 385C L	
Undercarriage:								
Standard	●		—		—		●	
Long (L) — VG	—		●		●		●	
Long (L) — FIX	●		●		—		—	
Long Narrow (LN)	●		—		—		—	
Extreme Service (ES)	—		●		●		—	
Long — HVG	—		●		—		—	
Booms:								
One-Piece Reach	●		●		●		●	
One-Piece Reach — HD	—		●		—		—	
One-Piece GP	—		—		—		●	
Sticks:	mm ft		mm ft		mm ft		mm ft	
Short	2150	7'1"	—	—	2840	9'2"	2920	9'5"
●	2800	& HD 9'2"	—	—	3600	11'8"	3400	11'2"
●	3200	10'10"	—	—	4150	13'8"	3700	12'1"
●	3900	& HD 12'10"	—	—	4670	15'4"	4400	14'4"
Short — HD	—	—	2900	9'5"	—	—	5500	18'1"
● — HD	—	—	3400	11'2"	—	—	—	—
Booms:								
One-Piece Mass	●		—		●		●	
One-Piece Mass — HD	—		●		—		—	
Sticks:	mm ft		mm ft		mm ft		mm ft	
Short	2150	7'1"	2500	8'2"	2570	8'5"	2920	9'5"
●	2550	8'4"	3000	9'8"	3000	9'8"	3400	11'2"
Bucket Family	D, E		TB, UB		VB, WB		HB, JB	
Buckets (No. of)	18		16		24		14	
Teeth:								
Abrasion — HD	●		●		—		—	
Long (G.P.)	●		●		●		●	
Long — HD	●		●		●		●	
Short (Rock)	●		●		●		●	
Penetration	●		●		●		●	
Penetration Plus	—		●		●		●	
Wide (Spade)	●		—		—		—	
Sharp — Center	●		—		—		—	
Sharp — Corner	●		—		—		—	
Side Cutters:								
One-Piece Blade	●		CWTS		—		—	
Track Shoes:	Triple Grouser 600, 750, 850 mm (24", 30", 32")		Double Grouser 600, 750 mm (24", 30") Triple Grouser 750, 900 mm (30", 35")		Double Grouser 650, 900 mm (26", 35")		Double Grouser 650, 750, 900 mm (26", 30", 35")	
Quick Couplers	●		●		●		●	
Grapples	●		CWTS		—		—	
Multi-Processors	●		CWTS		—		—	
Hammers	●		CWTS		—		—	

NOTE: Number of buckets includes General Purpose, Trenching and Rock. Other types of buckets have not been included.
 All attachments may not be available in all sales areas.

Excavators

Summary of Major Attachments

● M313C ● M315C ● M316C ● M318C ● M322C

EQUIPMENT FOR ...	M313C		M315C		M316C		M318C		M322C					
Undercarriage:														
Wheeled	●		●		●		●		●					
Booms:														
One-piece	●		●		●		●		●					
VA	●		●		●		●		●					
Backhoe Sticks:	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft				
Short	2000	6'7"	2100	6'11"	2100	6'11"	2200	7'3"	2200	7'3"				
Medium	2300	7'7"	2400	7'10"	2400	7'10"	2500	8'2"	2500	8'2"				
Long	2600	8'6"	2600	8'6"	2600	8'6"	2800	9'2"	2900	9'6"				
Buckets (No. of)	12		12		11		12		7					
Teeth:														
Abrasion	●		●		●		●		●					
Long (G.P.)	●		●		●		●		●					
Short (Rock)	●		●		●		●		●					
Penetration	●		●		●		●		●					
Wide	●		●		●		●		●					
Sharp	●		●		●		●		●					
Cab Riser:														
Fixed	●		●		●		●		●					
Hydraulic	—		—		—		—		—					
Tires:														
	10.00-20 16 PR	18R 19.5 XF	10.00-20 SR	600/40-22.5	10.00-20 16 PR	18R 19.5 XF	10.00-20 SR	600/40-22.5	11.00-20	10.00-20 16 PR	18R 19.5 XF	10.00-20 SR	600/40-22.5	11.00-20

Work Tools	M313C	M315C	M316C	M318C	M322C
Clamshell	●	●	●	●	●
Ditch Cleaning Bucket	●	●	●	●	●
Grapples	●	●	●	●	●
Hammer Installation Kit	●	●	●	●	●

Work Tools	301.5, 301.6, 301.8	302.5, 303.5, 304.5	307C, 307C SB	311C U, 312C L	315C, 315C L	318C, 318C L, 318C LN, 318C N	M313C, M315C	M316C, M318C, M322C	320C	322C	325C	330C	345C	355C	385C
Augers	X	X													
Brooms															
Quick Coupler	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Ditch Cleaning Bucket	X	X	X	X	X	X	X	X	X	X	X	X	X		
General Purpose Bucket	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rock Bucket*			X	X	X	X	X	X	X	X	X	X	X	X	X
Tilt Bucket			X	X	X	X	X	X	X	X	X	X			
Thumb	X	X	X	X	X	X	X	X	X	X	X	X	X		
Construction Grapple				X	X	X	X	X	X	X	X	X	X		
Contractor's Grapple						X	X	X	X	X	X	X	X		
Sorting & Demolition Grapple				X	X	X	X	X	X	X	X	X	X		
Mechanical Pulverizer					X	X	X	X	X	X	X	X	X	X	
Mechanical Shear					X	X	X	X	X	X	X	X	X		
Medium Grapple				X	X	X	X	X	X	X	X	X	X		
Trash Grapple				X	X	X	X	X	X	X	X	X	X		
Orange Peel Grapple				X	X	X	X	X	X	X	X	X	X		
Hydraulic Hammer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vibratory Plate Compactor		X	X	X	X	X	X	X	X	X	X	X			
Shear			X	X	X	X	X	X	X	X	X	X	X	X	X
Crusher					X	X	X	X	X	X	X	X	X	X	X
Pulverizer					X	X	X	X	X	X	X	X	X	X	X
Rock Drill									X						
Multi-Processor					X	X	X	X	X	X	X	X	X	X	X

*Europe, Africa and Middle East offers rock buckets for 322C and larger.
NOTE: Other attachments available upon request. Contact your Caterpillar Dealer.

CYCLE TIME ESTIMATING CHARTS

The digging cycle of the excavator is composed of four segments:

- 1. Load Bucket
- 2. Swing Loaded
- 3. Dump Bucket
- 4. Swing Empty

Total excavator cycle time is dependent on machine size (small machines can cycle faster than large machines) and job conditions. With excellent job conditions the excavator can cycle fast. As job conditions become more severe (tougher digging, deeper trench, more obstacles, etc.), the excavator slows down accordingly. As the soil gets harder to dig, it takes longer to fill the bucket. As the trench gets deeper and the spoil pile larger, the bucket has to travel farther and the upper structure has to swing farther on each digging cycle.

Spoil pile or truck location also affects cycle time. If a truck is located on the floor of the excavation beside material being moved, 10 to 17 second cycles are practical. The other extreme would be a truck or spoil pile located above the excavator 180° from the excavation.

In sewer construction work the operator may not be able to work at full speed because he has to dig around existing utilities, load the bucket inside a trench shield, or avoid people working in the area.

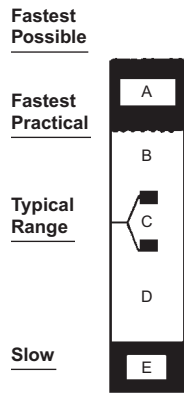
The Cycle Time Estimating Chart outlines the range of total cycle time that can be expected as job conditions range from excellent to severe. Many variables affect how fast the excavator is able to work. The chart defines the range of cycle times frequently experienced with a machine and provides a guide to what is an “easy” or a “hard” job. The estimator can then evaluate the conditions of his job and use the Cycle Time Estimating Chart to select the appropriate working range. A practical method of further calibrating the Cycle Time Estimating Chart is to observe excavators working in the field and correlate measured cycle times to job conditions, operator ability, etc.

The following table breaks down what experience has shown to be typical Caterpillar excavator cycle times with

- no obstruction in the right of way
- above average job conditions
- an operator of average ability and
- 60°-90° swing angle.

These times would decrease as job conditions or operator ability improved and would get slower as conditions become less favorable.

CYCLE TIME -vs- JOB CONDITION DESCRIPTION



KEY

- A — Excellent
- B — Above Average
- C — Average
- D — Below Average
- E — Severe

- Easy digging (unpacked earth, sand gravel, ditch cleaning, etc.). Digging to less than 40% of machine’s maximum depth capability. Swing angle less than 30°. Dump onto spoil pile or truck in excavation. No obstructions. Good operator.
- Medium digging (packed earth, tough dry clay, soil with less than 25% rock content). Depth to 50% of machine’s maximum capability. Swing angle to 60°. Large dump target. Few obstructions.
- Medium to hard digging (hard packed soil with up to 50% rock content). Depth to 70% of machine’s maximum capability. Swing angle to 90°. Loading trucks with truck spotted close to excavator.
- Hard digging (shot rock or tough soil with up to 75% rock content). Depth to 90% of machine’s maximum capability. Swing angle to 120°. Shored trench. Small dump target. Working over pipe crew.
- Toughest digging (sandstone, caliche, shale, certain limestones, hard frost). Over 90% of machine’s maximum depth capability. Swing over 120°. Loading bucket in man box. Dump into small target requiring maximum excavator reach. People and obstructions in the work area.

Cycle Time Estimating Chart

Model	307C	311C	312C, 312C L	315C, 315C L	318C, 318C L, 318C LN, 318C N	M312, M313C, M315C	M315 M316C	M318C	M322C
Bucket Size L (yd ³)	280 0.37	450 0.59	520 0.68	520 0.68	800 1.05	610 0.80	750 0.98	900 1.18	1050 1.37
Soil Type	← Packed Earth				Sand/Gravel →				
Digging Depth (m) (ft)	1.5 5	1.5 5	1.8 6	3.0 10	3.0 10	3.0 10	3.0 10	3.0 10	3.0 10
Load Bucket (min)	0.08	0.07	0.07	0.07	0.09	0.05	0.06	0.06	0.08
Swing Loaded (min)	0.05	0.06	0.06	0.08	0.09	0.05	0.05	0.06	0.06
Dump Bucket (min)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
Swing Empty (min)	0.06	0.05	0.05	0.06	0.07	0.04	0.04	0.05	0.05
Total Cycle Time (min)	0.22	0.21	0.21	0.24	0.28	0.17	0.18	0.20	0.23

4

Cycle Time Estimating Chart

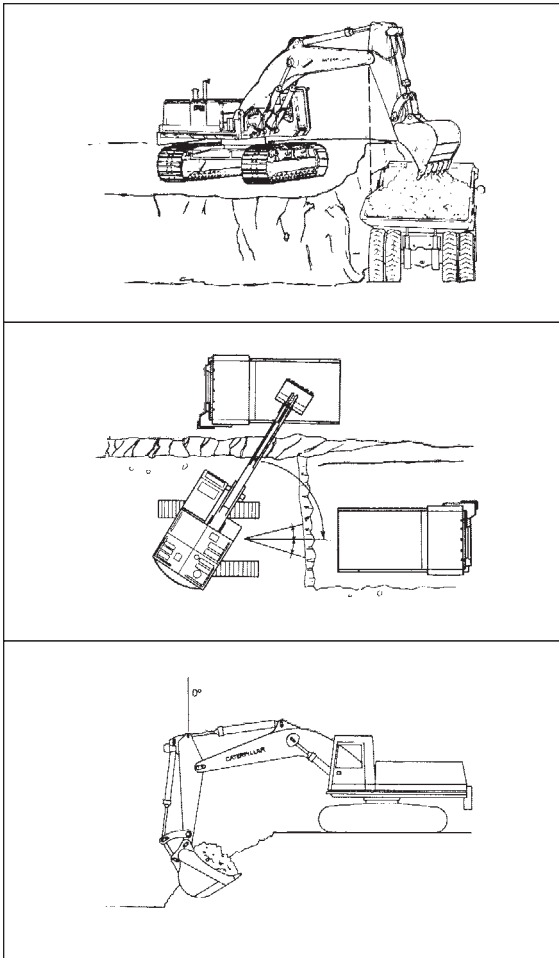
Model	320C	322C	325C	330C	345C	365C	385C
Bucket Size L (yd ³)	800 1.05	1000 1.31	1100 1.44	1400 1.83	2400 3.0	1900 2.5	3760 5.0
Soil Type	← Hard Clay				→		
Digging Depth (m) (ft)	2.3 8	3.2 10	3.2 10	3.4 11	4.0 13	4.2 14	5.6 18
Load Bucket (min)	0.09	0.09	0.09	0.09	0.13	0.10	0.19
Swing Loaded (min)	0.06	0.06	0.06	0.07	0.07	0.09	0.06
Dump Bucket (min)	0.03	0.04	0.04	0.04	0.02	0.04	0.03
Swing Empty (min)	0.05	0.06	0.06	0.07	0.06	0.07	0.07
Total Cycle Time (min)	0.23	0.25	0.25	0.27	0.28	0.30	0.35

Excavators | Cycle Time Estimating Charts

CYCLE TIME ESTIMATING CHART														
CYCLE TIME	MACHINE SIZE CLASS												CYCLE TIME	
	307C	311C	M313C 312C	M315C M316C 315C L	M318C 318C L	M322C 320C	322C	325C	330C	345C	365C	385C		
10 SEC.														0.17 min.
15														0.25 min.
20 SEC.														0.33 min.
25														0.42 min.
30 SEC.														0.50 min.
35														0.58 min.
40 SEC.														0.67 min.
45														0.75 min.
50 SEC.														0.83 min.
55														0.92 min.
60 SEC.														1.0 min.

Caterpillar 300 Series Mass Excavation booms and buckets coupled with the proper stick will help you move material faster and more efficiently in production excavation and loading applications. With the largest bucket, shortest stick and long undercarriage your excavator can often do the work of a larger machine. A longer stick and standard undercarriage make it ideal for loading on-highway trucks and general construction jobs.

MAXIMIZING PRODUCTION WITH A MASS EXCAVATOR



Ideal Bench Height and Truck Distance — For stable or consolidated materials, bench height should be about equal to stick length. For unstable materials it should be less. The most useful truck position is when the inside truck body rail is below the boomstick hinge pin.

Optimum Work Zone and Swing Angle — For maximum production, the work zone should be limited to 15° either side of machine center or about equal to undercarriage width. Trucks should be positioned as close as possible to machine centerline. Two alternatives shown here.

Best Distance from the Edge — The machine should be positioned so that the stick is vertical when the bucket reaches full load. If the unit is farther back, breakout force is reduced. If it is closer to the edge, undercutting may occur and time is wasted bringing the stick back out. Also, the operator should begin boom-up when the bucket is 75% of the way through the curl cycle. This should be as the stick nears the vertical position.

This example reflects the ideal situation. Not all points are usable on each job, but incorporation of as many of these points as possible will positively affect production.

SELECTING A MASS EXCAVATOR

Selecting a mass excavator model for optimum production requires matching the machine and bucket to the customer’s production requirements, material, and haulers. The following 6-Step selection process will help you to consider the key factors which will impact machine selection. Failure to consider these key elements in the selection process may result in choosing a machine that is too small to efficiently handle the desired bucket size or to meet the production requirement. Selecting a mass excavator which is too large may lead to excessive loader wait time, creating excessive “load shocks” into the hauler, and/or overloading the hauler capacity.

Step 1

Determine the material type and bucket fill factor

Refer to the bucket fill factors table.

Example:

Average Blasted Rock = 75 to 90%

Step 2

Estimate the Cycle Time

Refer to the cycle time estimating chart.

Example:

$\frac{365\text{B in Hard Rock Digging}}{\text{Shot Rock}} = .43 \text{ to } .52 \text{ minute}$

Step 3

Calculate the Effective Cycles per Hour

Divide the 60 minute hour by cycle time and adjust for availability and efficiencies.

Example:

<i>Cycle Time</i>	0.48 minute
$\frac{60 \text{ minute hour}}{\text{Cycle Time}}$	$\frac{60}{0.48} = 125$
<i>Operator Skill/Efficiency</i>	0.9 (90%)
<i>Machine Availability</i>	0.95 (95%)
<i>Gen Operational Efficiency</i>	0.83 (50 min/hr)
<i>Effective Cycles per Hour</i>	$125 \times .9 \times .95 \times .83 = 89$

Step 4

Calculate the Required Bucket Capacity

Divide hourly production requirement by effective cycles per hour, adjust for material density and fill factor.

Example (Metric):

<i>Hourly Production Required</i>	500 Tons/hour
<i>Effective cycles/hour</i>	89

$$\frac{\text{Hourly Production Required}}{\text{Effective cycles/hour}} = \text{Required Payload} \quad \frac{500}{89} = 5.6$$

<i>Material Density/Loose</i>	1.6 Ton/m ³
-------------------------------	------------------------

$$\frac{\text{Required Payload}}{\text{Material Density/Loose}} = \frac{\text{Bucket Payload}}{\text{Volume}} \quad \frac{5.6}{1.6} = 3.5 \text{ m}^3$$

<i>Fill Factor</i>	0.85 (85%)
--------------------	------------

$$\frac{\text{Bucket Payload}}{\text{Volume}} = \frac{\text{Nominal Bucket Size}}{\text{Fill Factor}} \quad \frac{3.5}{.85} = 4.1 \text{ m}^3$$

Example (English):

<i>Hourly Production Required</i>	550 tons/hour
<i>Effective cycles/hour</i>	89

$$\frac{\text{Hourly Production Required}}{\text{Effective cycles/hour}} = \text{Required Payload} \quad \frac{550 \times 2000}{89} = 12,360 \text{ lb}$$

<i>Material Density/Loose</i>	2700 lb/yd ³
-------------------------------	-------------------------

$$\frac{\text{Required Payload}}{\text{Material Density/Loose}} = \frac{\text{Bucket Payload}}{\text{Volume}} \quad \frac{12,360}{2700} = 4.6 \text{ yd}^3$$

<i>Fill Factor</i>	0.85 (85%)
--------------------	------------

$$\frac{\text{Bucket Payload}}{\text{Volume}} = \frac{\text{Nominal Bucket Size}}{\text{Fill Factor}} \quad \frac{4.6}{.85} = 5.4 \text{ yd}^3$$

Step 5

Select Mass Excavator for required bucket size

Refer to Performance Handbook to compare machine models and bucket ranges. Confirm bucket type, size, and maximum material density in Specalog for desired model.

Example:

Required bucket capacity approximately
 4.1 m³ (5.4 yd³)

345B L Series II ME bucket capacity
 to 3.5 m³ (4.6 yd³)

365B L Series II ME bucket capacity
 to 5.3 m³ (6.9 yd³)

385B L ME bucket capacity to 5.6 m³ (7.3 yd³)

Best Choice 365B Series II with 4.0 m³ (5.2 yd³)
 Rock Bucket rated to 1.8 Ton/m³ (3000 lb/yd³)
 material density in Specalog

Important: Re-calculate Steps 2 - 5 based on cycle times of model selected.

Step 6

Select Haulers

General rule for matching trucks is based on number of cycles to fill the truck.

ME: 4 to 6 passes

Front Shovels: 3 to 5 passes

Example (Metric):

<i>Bucket Selected</i>	4 m ³
<i>Volume in 5 passes</i>	$5 \times 4 \times .85 = 17 \text{ m}^3$
<i>Payload</i>	$17 \times 1.6 = 27.2 \text{ Tons}$
<i>Consider weight of Liners</i>	$27.2 + 2 = 29.2 \text{ Tons}$

Suitable Truck Match Options:

<i>735 with capacity</i>	19.2 m ³ /31.8 t
<i>769D with capacity</i>	24.2 m ³ /37.9 t

Example (English):

<i>Bucket Selected</i>	5.2 yd ³
<i>Volume in 5 passes</i>	$5 \times 5.2 \times .85 = 22.1 \text{ yd}^3$
<i>Payload</i>	$22.1 \times 2700 = 59,670 \text{ lb}$
<i>Consider weight of Liners</i>	$59,670 + 4400 \text{ lb} = 64,070 \text{ lb}$

Suitable Truck Match Options:

<i>735 with capacity</i>	25.1 yd ³ /70,000 lb
<i>769D with capacity</i>	31.7 yd ³ /83,570 lb

EARTHMOVING PRODUCTION

As with any other piece of material handling equipment, excavator earthmoving production is dependent on average bucket payload, average cycle time and job efficiency. If an estimator can accurately predict excavator cycle time and bucket payload, a machine's earthmoving production can be derived from the following formula.

$$\text{m}^3 \text{ (yd}^3\text{)}/60 \text{ min hr} = \text{Cycles}/60 \text{ min hr} \times \text{Avg. Bucket Payload in m}^3 \text{ (yd}^3\text{)}$$

$$\frac{\text{m}^3 \text{ (yd}^3\text{)}/60 \text{ min hr}}{60 \text{ min/hr}} = \frac{\text{Cycles}}{\text{Cycle Time} - \text{min}} \times \text{Avg. Bucket Payload in m}^3 \text{ (yd}^3\text{)}$$

$$\text{Avg. Bucket Payload} = \frac{\text{Heaped Bucket Capacity} \times \text{Bucket Fill Factor}}{\text{Job Efficiency Factor}}$$

$$\text{Actual m}^3 \text{ (yd}^3\text{)}/\text{hr} = \frac{\text{m}^3 \text{ (yd}^3\text{)}/60 \text{ min hr} \times \text{Job Efficiency Factor}}{\text{Job Efficiency Factor}}$$

The Production Estimating Tables (next page) will provide theoretical earthmoving production in cubic meters (yards) per hour if bucket size and cycle time can be estimated. The use of an average cycle time allows adjusting the estimated production for specific job sites and applications. For instance, estimating truck loading applications should include truck exchange times which extends the average cycle time and reduces production potential. The values in the table are based on a 60 minute work hour or 100% efficiency (a condition that is never achieved in reality). The estimator should apply a job efficiency factor to the figures in the table based on his judgment or knowledge of actual job conditions.

Areas outlined on the Production Estimating Table define the work ranges of excavators in the size classes of Caterpillar 307 through 5230 ME Excavators. The upper limit on each area corresponds to the "fastest practical" cycle time for the machines. The width of each area corresponds to the range of bucket payload sizes the machine can handle. An unshaded box has been provided in each machine area to provide a guide indicating that the upper limit of earthmoving production is being approached. When working beyond the values in the white area, the estimator should be certain that excellent job conditions will be encountered (easy digging, shallow trench, good operator, etc.).

The Production Estimating Table can also serve as a guide when selecting the proper size machine to do a job, as is shown in the following example.

Example problem (Metric)

Contractor has a job to move 15 300 Bm³ (19 100 Lm³ considering 25% swell factor) of wet sandy loam material in rear dump on-highway trucks which will be loaded by an excavator. Average face depth will be 2.4 m with 60-90 degree average swing angle. Ten days are available to do the work. Contractor plans to work 10 hrs/day and estimates a 50 min. work hour (83% job efficiency). He has two excavators that could be made available to do the work — a 320 with 1.0 m³ bucket or a 330 with 1.9 m³ bucket. Experience has shown that either machine can get its rated capacity in the sandy loam soil. Could this job be done with either machine or will the 330 have to be used?

Solution: The excavator must produce 1900 Lm³/Day (19 100 Lm³ ÷ 10 Days) which means the required average hourly rate will be 190 Lm³/60 Min. Hr. (1900 Lm³/Day ÷ 10 hrs/day). Further considering the 83% job efficiency, the excavator's capability will have to be 230 Lm³/50 min hr.

The production estimating table shows that the 320 with a 1.0 m³ bucket would have to achieve a 17.1 sec. average cycle time to produce the required 190 Lm³/60 min. hr. With job efficiency applied a 15.0 second average cycle time is required to produce the 230 Lm³/50 min. hr. The 330 with a 1.9 m³ bucket could obtain the same 60 min. hr. production level with a 35 second average cycle, or 30 second cycles to meet the 50 min. hr. production requirement. The cycle times estimating chart shows that the 320 would be working near its maximum capability to meet the production requirement, whereas, the 330 could handle the job easily. This information can then be weighed against what else is known about the job (reach requirements, job conditions, operator ability, etc.) to decide whether or not the larger machine is needed.

Example problem (English)

Substitute these English values in the preceding problem:

Job — 20,000 BCY (25,000 LCY considering 25% swell).

Average face depth — 8-12 ft

320 L with 1.25 yd³ bucket or 330 with 2.5 yd³ bucket.

Solution: The excavator must produce 2500 LCY/Day, which means the required average hourly rate will be 250 LCY/60 min hr. Further considering the 83% job efficiency the excavator's capability will have to be 300 LCY/50 min hr.

The same concluding comments regarding the Production Estimating Table apply here as in the Metric example.

Cubic Meters per 60 Minute Hour*

ESTIMATED CYCLE TIMES		ESTIMATED BUCKET PAYLOAD** — LOOSE CUBIC METERS																			ESTIMATED CYCLE TIMES		
Cycle Time		0.2	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	4.0	Cycles Per Min.	Cycles Per Hr.	
Seconds	Min.																						
10.0	0.17																					6.0	360
11.0	0.18																					5.5	330
12.0	0.20	60	90	150	210	270																5.0	300
13.3	0.22	54	81	135	189	243	297	351	405	459	513	567	621	675	729	783	837	891	945	1080	4.5	270	
15.0	0.25	48	72	120	168	216	264	312	360	408	456	504	552	600	648	696	744	792	840	960	4.0	240	
17.1	0.29	42	63	105	147	189	231	273	315	357	399	441	483	525	567	609	651	693	735	840	3.5	210	
20.0	0.33	36	54	90	126	162	198	234	270	306	342	378	414	450	486	522	558	544	630	720	3.0	180	
24.0	0.40	30	45	75	105	135	165	195	225	255	285	315	345	375	405	435	465	495	525	600	2.5	150	
30.0	0.50	24	36	60	84	108	132	156	180	204	228	252	276	300	324	348	372	396	420	480	2.0	120	
35.0	0.58	20	31	51	71	92	112	133	153	173	194	214	235	255	275	296	316	337	357	408	1.7	102	
40.0	0.67					81	99	177	135	153	171	189	207	225	243	261	279	297	315	360	1.5	90	
45.0	0.75									133	148	164	179	195	211	226	242	257	273	312	1.3	78	
50.0	0.83																				1.2	72	

Cubic Yards per 60 Minute Hour*

ESTIMATED CYCLE TIMES		ESTIMATED BUCKET PAYLOAD** — LOOSE CUBIC YARDS																			ESTIMATED CYCLE TIMES		
Cycle Time		0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.50	5.00	5.25	Cycles Per Min.	Cycles Per Hr.	
Seconds	Min.																						
10.0	0.17																					6.0	360
11.0	0.18																					5.5	330
12.0	0.20	75	150	225	300	375																5.0	300
13.3	0.22	67	135	202	270	337	404	472	540	607	675	742	810	877	945	1012	1080	1215	1350	1417	4.5	270	
15.0	0.25	60	120	180	240	300	360	420	480	540	600	660	720	780	840	900	960	1080	1200	1260	4.0	240	
17.1	0.29	52	105	157	210	262	315	367	420	472	525	577	630	682	735	787	840	945	1050	1102	3.5	210	
20.0	0.33	45	90	135	180	225	270	315	360	405	450	495	540	585	630	675	720	810	900	945	3.0	180	
24.0	0.40	37	75	112	150	187	225	262	300	337	375	412	450	487	525	562	600	675	750	787	2.5	150	
30.0	0.50	30	60	90	120	150	180	210	240	270	300	330	360	390	420	450	480	510	600	630	2.0	120	
35.0	0.58	36	51	77	102	128	154	180	205	231	256	282	308	333	360	385	410	462	513	535	1.7	102	
40.0	0.67					112	135	157	180	202	225	247	270	292	315	337	360	405	450	472	1.5	90	
45.0	0.75									180	200	220	240	260	280	300	320	360	400	409	1.3	78	
50.0	0.83																				1.2	72	

Job Efficiency Estimator

Work Time/Hour	Efficiency
60 Min	100%
55	91%
50	83%
45	75%
40	67%

*Actual hourly production = (60 min. hr. production) × (Job Efficiency Factor)
 **Estimated Bucket Payload = (Amount of Material in the Bucket)
 = (Heaped Bucket Capacity) × (Bucket Fill Factor)
 Unshaded area indicates average production.

Production Estimating Tables
 • Trenching Production

Excavators

Cubic Meters/Yards per 60 Minute Hour*

ESTIMATED CYCLE TIMES		ESTIMATED BUCKET PAYLOAD** — LOOSE CUBIC METERS/YARDS											ESTIMATED CYCLE TIMES	
Cycle Time		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	Cycles Per Min.	Cycles Per Hr.
Seconds	Min.													
15.0	0.25	1200	1440	1680	1920	2160	2400	2640	2880	3120	3360	3600	4.0	240
17.1	0.29	1050	1260	1470	1680	1890	2100	2310	2520	2730	2940	3150	3.5	210
20.0	0.33	900	1080	1260	1440	1620	1800	1980	2160	2340	2520	2700	3.0	180
24.0	0.40	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2.5	150
30.0	0.50	600	720	840	960	1080	1200	1320	1440	1560	1680	1800	2.0	120
35.0	0.58	510	612	714	816	918	1020	1122	1224	1326	1428	1530	1.7	102
40.0	0.67	450	540	630	720	810	900	990	1080	1170	1260	1350	1.5	90
45.0	0.75	390	468	546	624	702	780	858	936	1014	1092	1170	1.3	78
50.0	0.83	360	432	504	576	648	720	792	864	936	1008	1080	1.2	72
55.0	0.92	330	396	462	528	594	660	726	792	858	924	990	1.1	66
60.0	1.00	300	360	420	480	540	600	660	720	780	840	900	1.0	60

Cubic Meters/Yards per 60 Minute Hour*

ESTIMATED CYCLE TIMES		ESTIMATED BUCKET PAYLOAD** — LOOSE CUBIC METERS/YARDS										ESTIMATED CYCLE TIMES	
Cycle Time		16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	Cycles Per Min.	Cycles Per Hr.
Seconds	Min.												
15.0	0.25	3840	4080	4320	4560	4800	5040	5280	5520	5760	6000	4.0	240
17.1	0.29	3360	3570	3780	3990	4200	4410	4620	4830	5040	5250	3.5	210
20.0	0.33	2880	3060	3240	3420	3600	3780	3960	4140	4320	4500	3.0	180
24.0	0.40	2400	2550	2700	2850	3000	3150	3300	3450	3600	3750	2.5	150
30.0	0.50	1920	2040	2160	2280	2400	2520	2640	2760	2880	3000	2.0	120
35.0	0.58	1632	1734	1836	1938	2040	2142	2244	2346	2448	2550	1.7	102
40.0	0.67	1440	1530	1620	1710	1800	1890	1980	2070	2160	2250	1.5	90
45.0	0.75	1248	1326	1404	1482	1560	1638	1716	1794	1872	1950	1.3	78
50.0	0.83	1152	1224	1296	1368	1440	1512	1584	1656	1728	1800	1.2	72
55.0	0.92	1056	1122	1188	1254	1320	1386	1452	1518	1584	1650	1.1	66
60.0	1.00	960	1020	1080	1140	1200	1260	1320	1380	1440	1500	1.0	60

Job Efficiency Estimator

Work Time/Hour	Efficiency
60 Min	100%
55	91%
50	83%
45	75%
40	67%

*Actual hourly production = (60 min. hr. production) × (Job Efficiency Factor)

**Estimated Bucket Payload = (Amount of Material in the Bucket) = (Heaped Bucket Capacity) × (Bucket Fill Factor)

NOTE: For estimating truck loading production include approximately 0.7 minutes for truck exchange time.

EXCAVATOR TRENCHING PRODUCTION

When an excavator is used for trenching applications, a meaningful expression of work produced is the machine's trenching rate expressed in meters or lineal feet per hour or per day. Trenching rate depends on the earthmoving production of the excavator being used and the size of the trench being excavated. Earthmoving production converts to trenching production as follows:

$$\text{Lineal Meters of Trench per Hour} = \frac{\text{Cubic Meters Excavated per Hour}}{\text{Cubic Meters per Lineal Meter of Trench}}$$

$$\text{Lineal Meters of Trench per day} = (\text{Lineal Meters per Hour}) \times (\text{Trenching Hours per Day})$$

$$\text{Lineal Feet of Trench per Hour} = \frac{\text{Yd}^3 \text{ Excavated Per Hour}}{\text{Yd}^3 \text{ Per Lineal Foot of Trench}}$$

$$\text{Lineal Feet of Trench Per Day} = (\text{Lineal Ft Per Hour}) \times (\text{Trenching Hours Per Day})$$

For machines that work in trenching applications where they dig all of the time, the *Trenching Conversion Chart* provides easy conversion from m³ (yd³) per hour to m (lineal feet) per hour, if the excavating rate m³/hr (yd³/hr) and trench volume m³/m (yd³/ft) are known. The following examples demonstrate how the Trenching Conversion Chart can be used.

Example problem (Metric)

Contractor estimates that the 325 Excavator will produce 200 Lm³/hour. Trench survey shows that the trench contains 2.5 Lm³/meter. What trenching rate will the 325 produce?

Solution: Enter the horizontal axis of the Trenching Conversion Chart at 200 m³/Hour and move up to the 2.5 m³/m diagonal line. Then move left to the vertical axis of chart and read answer of 80 m/hour.

Example problem 2 (Metric)

Contractor knows he must produce 1000 meters of trench in every 10 hour work day. Survey shows that trench contains 1.5 Bm³ per lineal meter and soil swell factor is estimated at 30%. How much earthmoving production will the excavator have to provide in order to get the job done on time assuming a 50 min work hour? What Caterpillar excavator will provide needed production at 6 meter maximum depth in sandy loam soil?

Solution: Determine trenching requirement 1000 meters in 10 hrs = 100 m/h. Convert Bm³ to Lm³ (excavator handles Lm³) 1.5 Bm³/m × 1.30 = 2.0 Lm³/m. Enter vertical axis of trenching conversion chart at m/h and travel horizontally to diagonal line representing 2.0 m³/m. Next move down to horizontal axis and read answer to 200 Lm³/50 min hr. Convert 200 Lm³/50 min hr to Lm³/60 min hr = 200 = 241 Lm³/60 min hr.

Production estimating tables in this section show that 241 Lm³/60 min hr is within the capability of a 325 Excavator. Job should then be checked for reach and lifting requirements to make sure that the 325 could handle these aspects of the work.

Example problem (English)

Contractor estimates that a 325 Excavator will produce 250 LCY/Hour. Trench survey shows that the trench contains 2.5 LCY/Foot. What trenching rate will the 325 produce?

Solution: Enter the horizontal axis of the Trenching Conversion Chart at 250 yd³/hr. Then move to the vertical axis of chart and read answer of 100 ft/hr.

The Trenching Conversion Chart can also be used to determine the required excavating rate if the contractor can define his trenching production requirement and the trench volume per lineal foot.



Example problem 2 (English)

Contractor knows he must produce 1000 ft of trench in every 10 hr work day. Survey shows that trench contains 1.6 BCY per lineal ft and soil swell factor is estimated at 25%. How much earthmoving production will excavator have to provide in order to get the job done on time assuming 50 min work hour? What Caterpillar model will provide needed production at 8 ft depth in sandy loam soil?

Solution: Determine trenching requirement —
1000 ft in 10 Hrs. = 100 ft/hr
Convert BCY to LCY — $1.6 \text{ BCY/ft} \times 1.25 = 2.0 \text{ LCY/ft}$

Enter vertical axis of trenching conversion chart at 100 ft/hr and travel over to diagonal line representing 2.0 yd³/ft. Next move down to horizontal axis and read answer of 200 LCY/50 min hr.

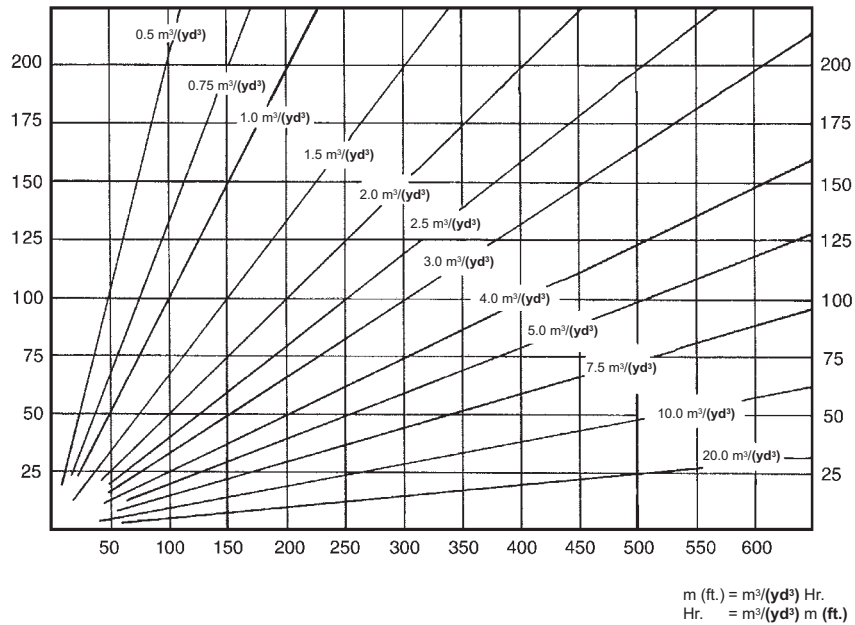
Convert 200 LCY/50 min hr to LCY/60 min hr = $\frac{200}{0.83} = 241 \text{ LCY/60 min hr}$

4

Production estimating tables in this section show that 241 LCY/60 min. hr. is within capability of a 325 Excavator. Job should then be checked for reach and lifting requirements to make sure that the 325 could handle these aspects of the work.



TRENCHING CONVERSION CHART — CUBIC METERS (yd³) PER HOUR TO METER (ft) PER HOUR



Values in m³/m or yd³/ft

If excavating rate has been calculated in Bm³/h use Bm³/m for Trench Volume/m.
 " " " " " " " " Lm³/h use Lm³/m for Trench Volume/m.
 " " " " " " " " BCY/Hr use BCY/ft for Trench Volume/ft.
 " " " " " " " " LCY/Hr use LCY/ft for Trench Volume/ft.

Estimating Bucket Size

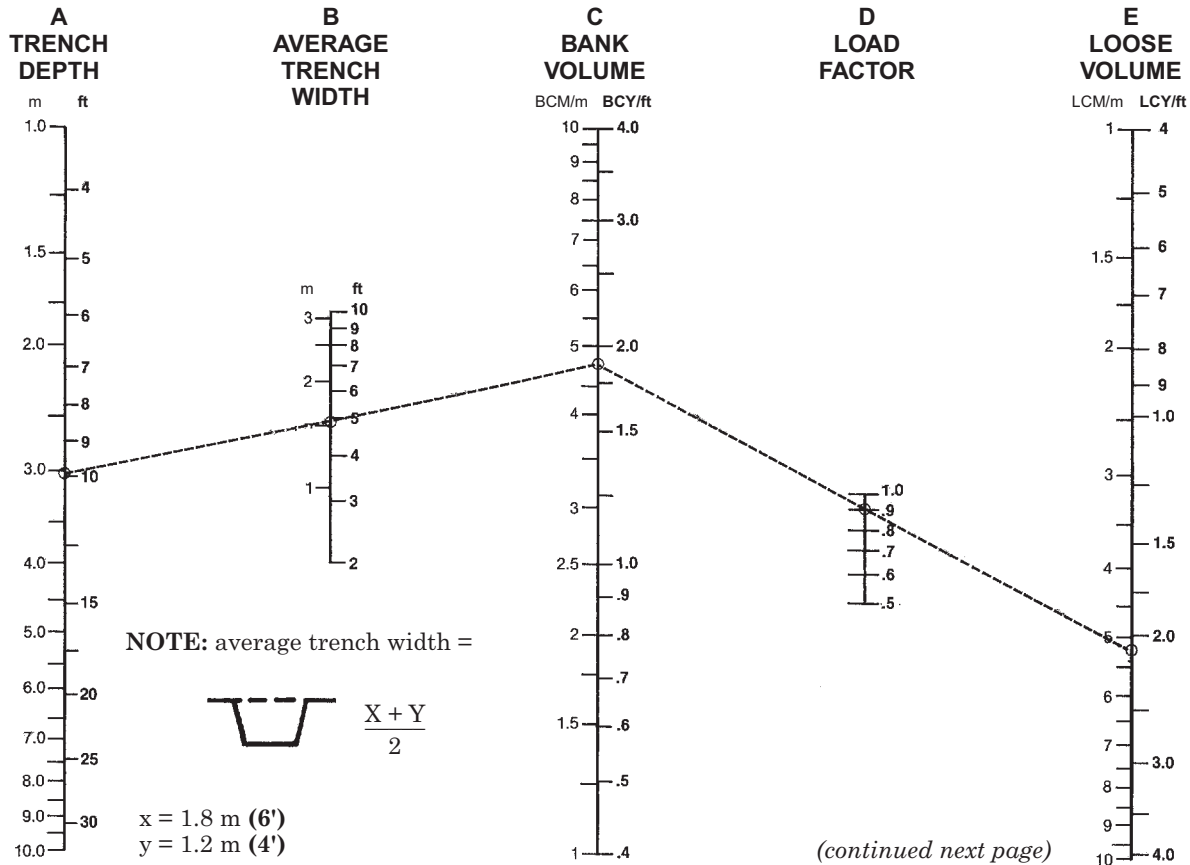
In addition to the trenching calculations on the previous pages, an alternative method of figuring trenching production is the nomograph. Shown on the following pages, this particular nomograph can be used for estimating bucket size when given trench dimensions and linear production rate. The nomograph is quicker and easier than the preceding example because it does not require as many calculations, yet the accuracy is about the same within the normal limits of input data.

Be careful when entering and reading data from the nomographs because some scales increase from bottom to top, while others are the reverse. Do not be overly concerned with the precision as affected by pencil line width or reading to the hundredth of a m³ (yd³). Remember that bucket fill factor, material density and cycle time are at best close estimates.

Example problem:

A sewer contractor owns a 325 with 2 piece boom and short stick. He wants to bid a contract for a 3.1 m (10') deep trench which measures 1.8 m (6') at the top and 1.2 m (4') at the bottom. He must dig 9 m/hr (30 ft/hr) to finish on time. The material is sand and gravel with a load factor of 0.90 and 100% bucket fill factor. He works 54 minutes per hour, half the time digging and half setting pipe. Cycle time is estimated at 23 seconds which includes a 90° swing angle.

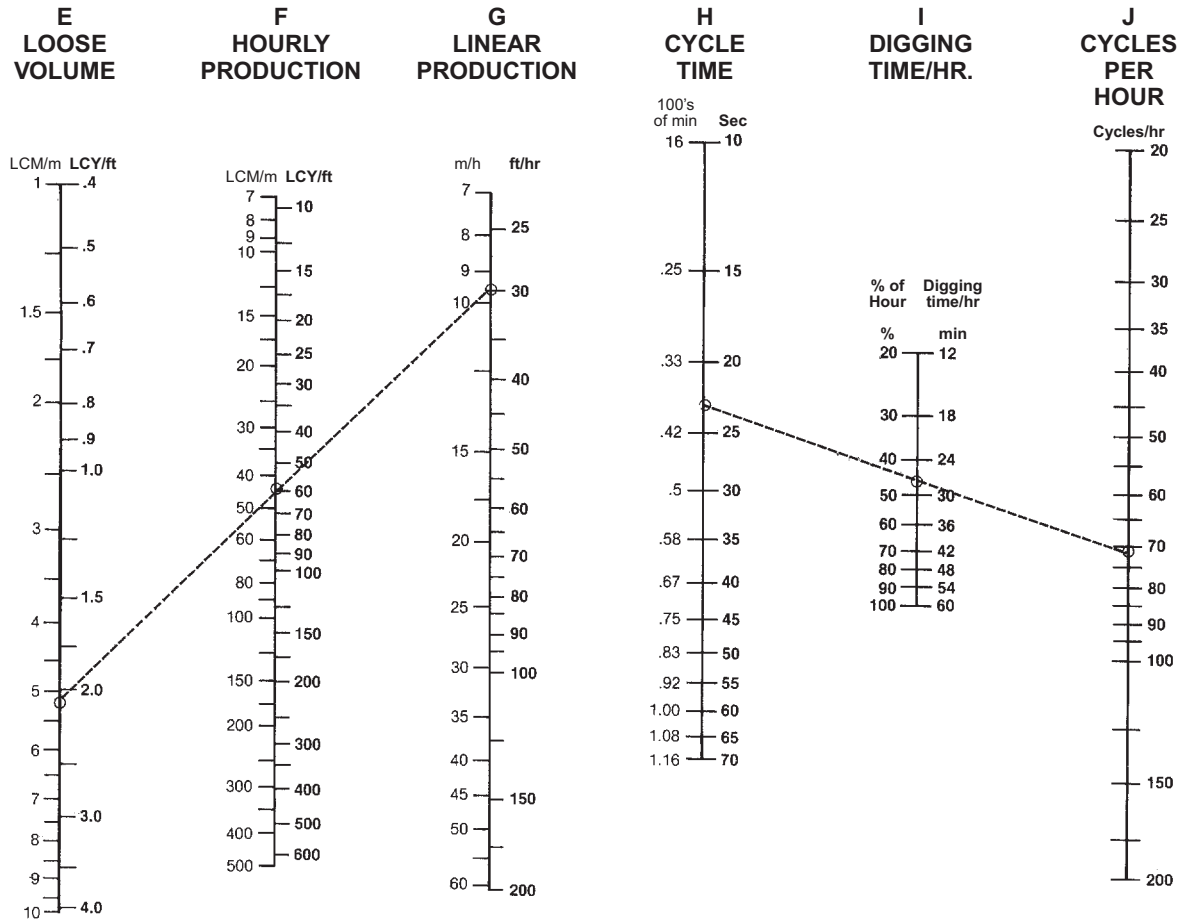
- 1) Enter trench depth 3.1 m (10') on scale A and average trench width 1.5 m (5') on scale B.
- 2) Connect A and B and extend to scale C for bank volume per m (ft).
- 3) Enter estimated load factor (0.90) on scale D.
- 4) Connect C & D and extend to scale E for loose volume per m (ft).



(get loose volume from scale E and enter on this page scale E)

- 5) Enter required linear production rate 9 m/h (30 t/hr) on scale G.
- 6) Connect E and G. Transfer hourly production rate from scale F to scale K (next page).

- 7) Estimate cycle time (23 sec) based on anticipated conditions and enter on scale H.
- 8) Estimate hourly digging time (27 min) and enter on scale I.
- 9) Connect H through I to scale J for cycles per hour.

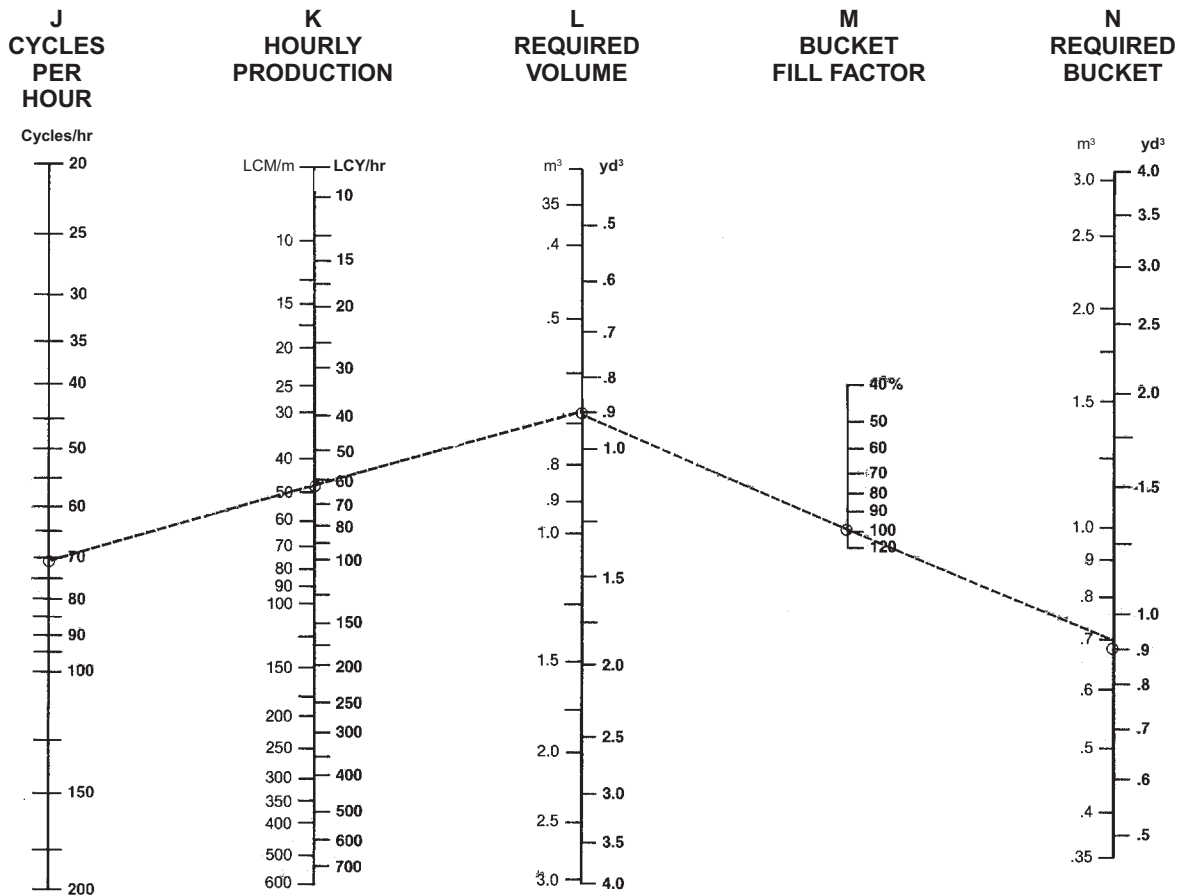


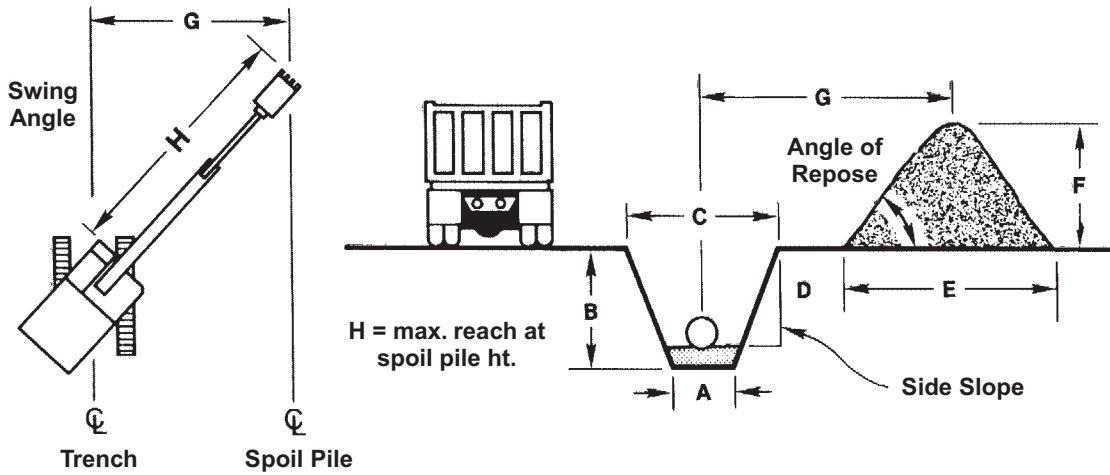
Excavators | Trenching Production

(get cycles per hour from scale J and enter on this page scale J)

- 10) Connect J through K to scale L for required volume per cycle.
- 11) Enter estimated bucket fill factor (100%) on scale M.
- 12) Connect L through M to scale N for required bucket size.

NOTE: Ensure bucket width does not exceed minimum trench width and also that weight of bucket and payload does not exceed machine working weight capacity (see lift capacity charts in this section).





Excavation Volumes Per Meter or Foot of Trench Length

Metric version

Bank m³/meter = (Trench end area m²) × (one m)
 Trench volume (Bm³/m) = ½ (A + C) × B
 Spoil pile volume (Lm³/m) = (Bm³/m) × (1.00 + % Swell)

English version

Bank yd³/foot = $\frac{(\text{Trench end area ft}^2) \times (\text{one ft})}{27}$

Trench volume (BCY/ft) = $\frac{\frac{1}{2} (A + C) \times B}{27}$

Spoil pile volume (LCY/ft) = (BCY/ft) × (1.00 + % Swell)

The following table provides a general guide to trench bottom width for various outside diameters of pipe.

Pipe Diameter		Trench Width		Pipe Diameter		Trench Width	
mm	ft/in	m	ft/in	mm	ft/in	m	ft/in
102	4"	0.49	1'7"	1524	5'0"	2.59	8'6"
152	6"	0.55	1'10"	1676	5'6"	2.80	9'2"
203	8"	0.61	2'0"	1829	6'0"	3.05	10'0"
254	10"	0.70	2'4"	1981	6'6"	3.26	10'8"
305	12"	0.76	2'6"	2134	7'0"	3.47	11'5"
381	15"	0.91	3'0"	2286	7'6"	3.69	12'1"
457	18"	1.03	3'5"	2438	8'0"	3.93	12'11"
533	1'9"	1.16	3'10"	2591	8'6"	4.15	13'7"
610	2'0"	1.25	4'1"	2743	9'0"	4.36	14'4"
686	2'3"	1.37	4'6"	2896	9'6"	4.54	14'11"
838	2'9"	1.58	5'2"	3048	10'0"	4.75	15'7"
914	3'0"	1.70	5'7"	3200	10'6"	4.99	16'5"
1067	3'6"	1.92	6'4"	3353	11'0"	5.21	17'1"
1219	4'0"	2.13	7'0"	3505	11'6"	5.43	17'10"
1372	4'6"	2.38	7'10"	3658	12'2"	5.64	18'6"

NOTE: Trench widths based on 1.25 Bc + 1.0 where Bc is the outside diameter of the pipe in feet.
 Table courtesy of American Concrete Pipe Association

Excavators

Trenching Production

- Trenching Rate With Pipesetting
- Pipesetting Example Problem

Trenching Production with Pipesetting

On many sewer construction jobs the excavator does more than just dig the trench. Other tasks include handling the shoring system, placing bedding material, and lowering the pipe. The normal work procedure is to open a section of trench and then stop and make a pipe installation before going on to dig the next section of trench. At that point the key to trenching production is the total amount of time required to install each section of pipe. Pipe installation time can be broken down as follows: Digging time + other time = Total pipe installation time

Total Pipe Installation Time	Pipe Installed Per Hour
60 min	1 Pipe/hr
30 min	2 Pipe/hr
15 min	4 Pipe/hr
10 min	6 Pipe/hr

Digging Time can be calculated once the trenching rate has been calculated using the methods described earlier in this section. Once Digging Time has been calculated, it can be added to an estimate of "Other Time" to determine Total Pipe Installation Time. "Other Time" can be estimated based on a contractor's judgment, experience, or actual measurement on a job. The following formula and table relate the trenching rate of the excavator to the time required to open a section of trench for pipe of various lengths.

$$\text{Digging Time (Min.)} = \frac{\text{Pipe Length (ft)}}{\text{Trenching Rate (ft/hr)}} \times 60 \text{ (Min/hr)}$$

Trenching Rate Ft. Per Hour	Time Required to Dig for Pipe of Various Lengths							
	8 ft Pipe		12 ft Pipe		16 ft Pipe		20 ft Pipe	
	Hours	Min.	Hours	Min.	Hours	Min.	Hours	Min.
20 ft/hr	0.400	24.00	0.600	36.00	0.800	48.00	1.000	60.00
40	0.200	12.00	0.300	18.00	0.400	24.00	0.500	30.00
60	0.130	8.00	0.200	12.00	0.260	16.00	0.333	20.00
80	0.100	6.00	0.150	9.00	0.200	12.00	0.250	15.00
100	0.080	4.80	0.120	7.20	0.160	9.60	0.200	12.00
120	0.060	4.00	0.100	6.00	0.120	7.20	0.167	10.00
140	0.057	3.43	0.086	5.14	0.114	6.86	0.143	8.57
160	0.050	3.00	0.075	4.50	0.100	6.00	0.125	7.50
180	0.044	2.66	0.067	4.00	0.089	5.33	0.111	6.67
200	0.040	2.40	0.060	3.60	0.080	4.80	0.100	6.00

This table can be used to show how an excavator that is capable of more trenching production will provide significant advantages even on jobs where the

machine does not dig all of the time. Consider 12,000' job with 12' sections of pipe (1000 pipe to be installed). Excavator "A" can work at 60 ft/hr while Excavator "B" is capable of producing 120 ft/hr. Table shows that Excavator "B" will only take 0.10 hr to do the same work. This means that over the course of installing the 1000 pipe the more productive machine will save 0.10 hr/pipe or 100 hours of working time.

Example problem (English)

The following example shows how trenching production can be calculated on a job where the excavator is also required to set pipe. This example is based on the assumption that the excavator's earthmoving rate and the pipe installation time have already been estimated by the contractor.

Problem: Contractor estimates that the 350 Excavator will be able to produce 500 LCY/60 min. hr. Survey shows that an average cross section trench contains 3.2 BCY/ft and swell factor for sandy clay soil is estimated at 25%. How much trenching production can a contractor expect; assuming it takes 10.0 min. to install each 20 ft length of pipe after trench has been opened. Also assume 83% job efficiency — 50 min. work hour and 8 work hours out of a 9 hour shift. (0.5 hours for lunch and two 15 minute breaks.)

Solution:

Convert trench volume to LCY/ft:

$$1.25 (3.2 \text{ BCY/ft}) = 4.0 \text{ LCY/ft}$$

Convert Earthmoving rate to Trenching rate:

$$\frac{500 \text{ LCY/hr}}{4.0 \text{ LCY/ft}} = 125 \text{ ft/hr}$$

Calculate digging time for each pipe:

$$\frac{20 \text{ ft/pipe}}{125 \text{ ft/hr}} = 0.16 \text{ hr/pipe} = 9.6 \text{ min}$$

Calculate pipe installation time:

$$\begin{aligned} \text{Digging time} &= 9.6 \text{ min} \\ \text{Other time} &= 10.0 \text{ min} \\ \text{Pipe Installation time} &= 19.6 \text{ min} \end{aligned}$$

Calculate pipe installations/hour:

$$\frac{60 \text{ min/hr}}{19.6 \text{ min/pipe}} = 3.06 \text{ pipe/hr}$$

Calculate max. pipe installations/day:

$$8 \text{ hrs} (3.06 \text{ pipe/hr}) = 24.48 \text{ pipe/day}$$

Actual pipe/day:

$$0.83 (24.48 \text{ pipe/day}) = 20.3 - 20 \text{ pipe/day}$$

Actual feet/day:

$$(20 \text{ pipe/day}) \times (20 \text{ ft/pipe}) = 400 \text{ ft/day}$$

Specifications

Front Shovels Belgium Sourced



MODEL	345B L Series II		365C L FS		385C FS	
Sourcing	Belgium		Belgium		Belgium	
Flywheel Horsepower	239 kW	320 hp	301 kW	404 hp	390 kW	523 hp
Operating Weight*	55 600 kg	122,600 lb	74 300 kg	163,800 lb	90 600 kg	199 740 lb
Bucket Capacity Range (heaped)	2.5 m ³	3.3 yd³	4.0 m ³	5.2 yd³	5.7 m ³	7.4 yd³
Engine Model	3176C ATAAC		C15 ACERT		C18 ACERT	
Rated Engine RPM	2000		1800		1800	
No. of Cylinders	6		6		6	
Bore	125 mm	4.9"	137 mm	5.4"	145 mm	5.7"
Stroke	140 mm	5.5"	171 mm	6.7"	183 mm	7.2"
Displacement	10.3 L	629 in³	15.2 L	927 in³	18.1 L	1105 in³
Max. Hydraulic Pump Output at Rated RPM	2 × 360 L/min	2 × 95 gpm	2 × 400 L/min	2 × 106 gpm	2 × 490 L/min	2 × 129 gpm
Relief Valve Settings:						
Implement Circuits	34 320 kPa	4976 psi	32 000 kPa	4640 psi	32 000 kPa	4640 psi
Swing	—		35 000 kPa	5075 psi	35 000 kPa	5075 psi
Travel Circuits	34 320 kPa	4976 psi	28 050 kPa	4068 psi	26 000 kPa	3770 psi
Pilot Circuits	4650 kPa	674 psi	4120 kPa	597 psi	4100 kPa	595 psi
Maximum Drawbar Pull	331 kN	74,475 lb	462 kN	103,950 lb	592 kN	133,200 lb
Maximum Travel Speed at Rated RPM	4.4 km/h	2.7 mph	Two Speed		Two Speed	
Low	—		2.5 km/h	1.6 mph	2.8 km/h	1.7 mph
High	—		3.9 km/h	2.4 mph	4.5 km/h	2.8 mph
Overall Track Length**	5.37 m	17'7"	5.86 m	19'2"	5.84 m	19'2"
Track Gauge	2.89 m	9'6"	2.75 m	9'0"	2.75 m	9'0"
Extended	—		3.25 m	10'8"	3.51 m	11'6"
Grouser Height	44 mm	1.7"	—		—	
Track Shoe Widths	600 mm	24"	650 mm	26"	650 mm	26"
Ground Contact Area with Standard Shoe	5.46 m ²	58.8 ft²	6.04 m ²	65.0 ft²	6.54 m ²	70.4 ft²
Ground Pressures	99 kPa	14.4 psi	110 kPa	16.0 psi	138 kPa	20.0 psi
Fuel Tank Refill Capacity	720 L	190 U.S. gal	800 L	211 U.S. gal	1240 L	328 U.S. gal
Hydraulic System (includes tank)	—		670 L	177 U.S. gal	995 L	263 U.S. gal
Hydraulic System	—		310 L	92 U.S. gal	810 L	214 U.S. gal

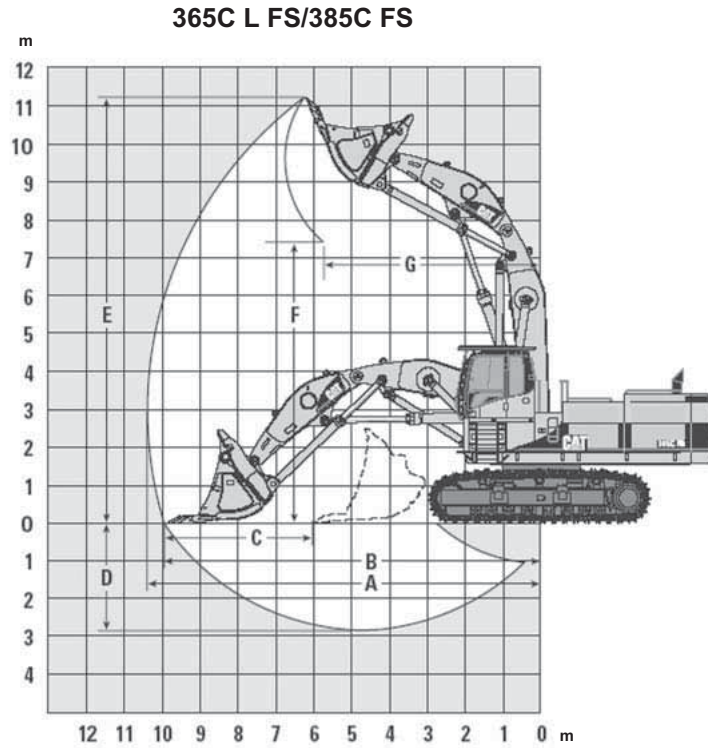
*Operating weights for 345B L Series II include coolant, lubricants, full fuel tank, standard shoes, bucket, and operator.

Operating weights for 365C L FS and 385C FS include counterweight and full fuel.

**Track length measured from center of idler to center of sprocket.

Front Shovels
Belgium Sourced

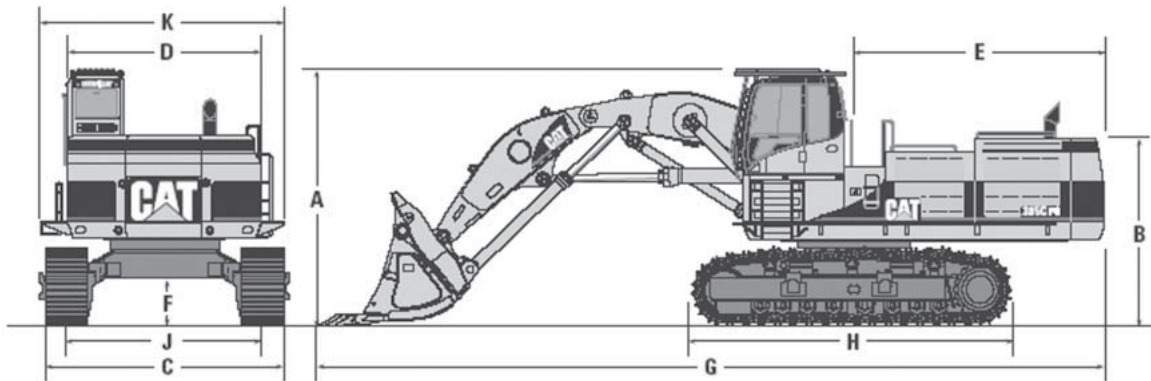
Digging Envelopes
● 365C L FS ● 385C FS



	365C L FS		385C FS	
Stick Length	3480 mm	11'5"	3480 mm	11'5"
Boom Length	4600 mm	15'1"	4600 mm	15'1"
Rock Bucket	4 m	13'1"	5.2 m	17'1"
A Maximum Reach	9470 mm	31'1"	10 350 mm	33'11"
B Maximum Reach at Ground Level	9120 mm	29'11"	9900 mm	32'6"
C Maximum Level Crowd Distance	3800 mm	12'6"	3920 mm	12'10"
D Maximum Digging Depth	2480 mm	8'2"	2840 mm	9'4"
E Maximum Digging Height	10 960 mm	35'11"	11 260 mm	36'11"
F Maximum Dump Height	7080 mm	23'3"	7430 mm	24'5"
G Reach at Maximum Dump Height	6260 mm	20'6"	5690 mm	18'8"
Bucket Breakout Force (ISO)	500 kN	112,500 lb	538 kN	121,050 lb
Stick Breakout Force (ISO)	369 kN	83,030 lb	429 kN	96,530 lb

General Dimensions
 • 365C L FS • 385C FS

Front Shovels
 Belgium Sourced



4

	365C L FS		385C FS	
Boom	4600 mm	15'1"	4600 mm	15'1"
Stick	3480 mm	11'5"	3480 mm	11'5"
A Boom Top Height	4310 mm	14'2"	4500 mm	14'9"
Cab Top Height with FOPS	4570 mm	15'0"	4660 mm	15'3"
Cab Top Height without FOPS	4380 mm	14'4"	4520 mm	14'10"
B Engine Hood Height without Handrail	3250 mm	10'8"	3460 mm	11'4"
C Overall Width				
650 mm (26") Shoes (retracted)	3400 mm	11'2"	3400 mm	11'2"
750 mm (30") Shoes (retracted)	3500 mm	11'6"	3500 mm	11'6"
650 mm (26") Shoes (extended)	3900 mm	12'10"	4160 mm	13'8"
750 mm (30") Shoes (extended)	4000 mm	13'1"	4260 mm	14'0"
D Upperstructure Width	3450 mm	11'4"	3470 mm	11'5"
E Tail swing Radius	4020 mm	13'2"	4590 mm	15'1"
F Minimum Ground Clearance	840 mm	2'9"	850 mm	2'9"
G Overall Length	13 260 mm	43'6"	14 250 mm	46'9"
H Track Length	5860 mm	19'3"	5840 mm	19'2"
J Track Gauge Width				
Extended Position	3250 mm	10'8"	3510 mm	11'6"
Retracted Position	2750 mm	9'0"	2750 mm	9'0"

Notes —

MATERIAL HANDLING ARRANGEMENTS

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(Scrap specifications and classifications can be found in the Institute of Scrap Iron and Steel Inc.'s "Handbook". The common unit measure for the scrap industry is the gross ton which is 2240 pounds. However, short tons, net tons and metric tons may also be used.)

The versatility of Caterpillar Excavators, plus their ability to be equipped in any number of ways, make them an effective, low cost way to handle scrap and other materials.

NOTE: Contact your Caterpillar Dealer for additional information on equipping Caterpillar Excavators for material handling.

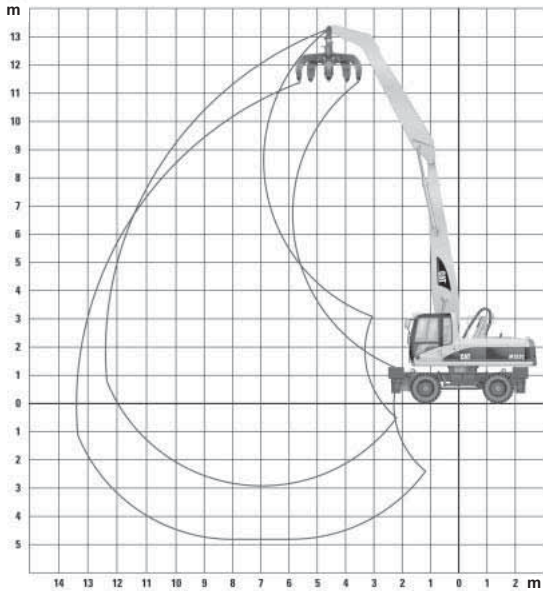
**Excavators —
Material Handling**

Range Dimensions

- M318C MH
- M322C MH

M318C MH/M322C MH Range Diagram

- Caterpillar Material Handling Boom and Stick



Model	M318C MH		M322C MH			
	m	ft	m	ft	m	ft
Boom	6.2	20'3"	6.8	22'3"	6.8	22'3"
Stick	4.9	16'1"	4.9	16'1"	5.9	19'4"
Maximum Horizontal Reach	11.0	36'1"	11.5	37'7"	12.5	41'0"
Maximum Vertical Pin Height	12.1	39'7"	12.5	41'0"	13.3	43'6"

Lifting Capacities

Equipped with Caterpillar material handling arrangement.

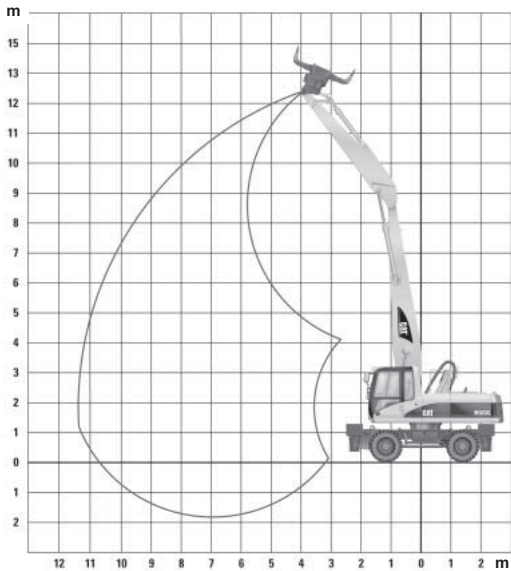
Capacities are measured at the bare stick tip.

Capacities are based on level machine equipped as follows:

- Total machine weight including base machine, material handling front, cab riser, heavy duty axles, two sets of outriggers, lubricants, full fuel tank and operator.
 M318C MH — 21 460-21 850 kg (47,310-48,170 lb)
 M322C MH — 24 430-24 690 kg (53,860-54,440 lb)

M318C MH/M322C MH Range Diagram
















- Caterpillar Material Handling Boom and Straight Stick



Model	M318C MH		M322C MH	
	m	ft	m	ft
Boom	6.2	20'3"	6.8	22'3"
Stick	4.2	13'8"	4.8	15'7"
Maximum Horizontal Reach	10.3	33'8"	11.4	37'4"
Maximum Vertical Pin Height	11.5	37'7"	12.4	40'7"














M318C MH

- 6.2 m (20'3") Straight MH Boom ● 4.9 m (16'1") MH Stick
- Front and Rear Stabilizers and Standard Tires ● All weights are in metric tons

Height**	Undercarriage configuration	3.0 m		4.5 m		6.0 m		7.5 m		9.0 m		10.5 m				m	
																	
10.5 m	All stabilizers up All stabilizers down					5.7 6.0*	4.3 6.0*										
9.0 m	All stabilizers up All stabilizers down					5.8 7.3*	4.4 7.3*	4.0 5.9*	3.1 5.9*								
7.5 m	All stabilizers up All stabilizers down					5.8 7.6*	4.4 7.6*	4.0 6.6*	3.1 6.2	3.0 5.1*	2.2 4.6				2.7 4.1*	2.1 4.1*	9.42
6.0 m	All stabilizers up All stabilizers down					5.7 7.8*	4.3 7.8*	4.0 6.7*	3.0 6.2	3.0 5.7	2.2 4.6				2.4 4.0*	1.8 3.8	10.18
4.5 m	All stabilizers up All stabilizers down			8.6 10.4*	6.4 10.4*	5.5 8.3*	4.1 8.3*	3.9 6.8*	2.9 6.1	2.9 5.6	2.2 4.5	2.3 4.4	1.7 3.6	2.2 4.0*	1.6 3.5	1.5 3.5	10.68
3.0 m	All stabilizers up All stabilizers down	16.0 17.3*	10.9 17.3*	8.0 11.5*	5.8 11.5*	5.2 8.7*	3.8 8.4	3.7 7.0*	2.8 5.9	2.8 5.5	2.1 4.5	2.2 4.3	1.6 3.5	2.1 4.1	1.5 3.3	10.95	
1.5 m	All stabilizers up All stabilizers down			7.4 12.1*	5.3 12.1*	4.9 8.9*	3.6 8.9*	3.6 7.0*	2.6 5.7	2.7 5.4	2.0 4.4	2.2 4.3	1.6 3.5				
0 m	All stabilizers up All stabilizers down	3.2* 3.2*	3.2* 3.2*	7.0 11.4*	4.9 11.4*	4.6 8.5*	3.3 7.8	3.4 6.6*	2.5 5.6	2.7 5.2*	1.9 4.3	2.1 3.7*	1.6 3.4				
-1.5 m	All stabilizers up All stabilizers down			6.8 8.9*	4.7 8.9*	4.5 7.4*	3.2 7.4*	3.3 5.8*	2.4 5.5	2.6 4.3*	1.9 4.2						

M318C MH Heavy Lift

- 6.2 m (20'3") Straight MH Boom ● 4.2 m (13'8") Straight MH Stick
- Front and Rear Stabilizers and Standard Tires ● All weights are in metric tons

Height**	Undercarriage configuration	3.0 m		4.5 m		6.0 m		7.5 m		9.0 m				m			
																	
10.5 m	All stabilizers up All stabilizers down			7.6* 7.6*	6.3 7.6*												
9.0 m	All stabilizers up All stabilizers down					5.4 7.5*	4.0 7.5*										
7.5 m	All stabilizers up All stabilizers down					5.4 7.7*	4.0 7.7*	3.7 6.5*	2.7 5.9					2.8 4.6*	2.1 4.6	8.64	
6.0 m	All stabilizers up All stabilizers down			8.5 9.9*	6.3 9.9*	5.3 7.9*	3.9 7.9*	3.6 6.6*	2.7 5.8	2.6 5.3	1.9 4.3	2.4 4.5*	1.7 3.9			9.46	
4.5 m	All stabilizers up All stabilizers down	13.5* 13.5*	11.4 13.5*	8.1 10.7*	5.9 10.7*	5.0 8.2*	3.7 8.2*	3.5 6.7*	2.6 5.7	2.6 5.3	1.8 4.2	2.1 4.4	1.5 3.5			10.00	
3.0 m	All stabilizers up All stabilizers down			7.4 11.6*	5.3 11.6*	4.8 8.5*	3.4 7.9	3.4 6.7*	2.4 5.5	2.4 5.2	2.5 4.1	1.8 4.2	2.0 3.3			10.28	
1.5 m	All stabilizers up All stabilizers down			6.8 11.6*	4.7 11.6*	4.5 8.5*	3.2 7.6	3.2 6.5*	2.3 5.4	2.4 5.1*	1.7 4.0						
0 m	All stabilizers up All stabilizers down			6.5 8.8*	4.4 8.8*	4.3 7.8*	3.0 7.4	3.1 6.0*	2.2 5.2	2.4 4.4*	1.6 4.0						

*Limited by hydraulic rather than tipping load.
**Height of stick pin.



Load Radius Over Front



Load Radius Over Side



Load at Maximum Reach


















The above loads are in compliance with hydraulic excavator lift capacity ratings standard ISO 10567. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity. Weight of all lifting accessories must be deducted from the above lifting capacities.

Excavators — Material Handling

Lifting Capacities ● M322C MH














M322C MH

- 6.8 m (22'3") Straight MH Boom ● 5.9 m (19'4") MH Stick
- 600 kg (1320 lb) Counterweight ● All weights are in metric tons

Height**	Undercarriage configuration	3.0 m		4.5 m		6.0 m		7.5 m		9.0 m		10.5 m		12.0 m				m	
																			
12.0 m	All stabilizers up All stabilizers down					6.9 6.9*	5.4 6.9*												
10.5 m	All stabilizers up All stabilizers down							5.0 6.8*	3.9 6.8*										
9.0 m	All stabilizers up All stabilizers down							5.0 7.0*	3.9 7.0*	3.7 6.2*	2.9 5.6								
7.5 m	All stabilizers up All stabilizers down							5.0 7.0*	3.9 7.0*	3.7 6.2*	2.9 5.6	2.8 5.2	2.2 4.3				2.5 4.1*	1.9 3.9	11.11
6.0 m	All stabilizers up All stabilizers down							4.9 7.2*	3.8 7.2*	3.7 6.3*	2.8 5.5	2.8 5.2	2.1 4.3				2.3 4.0*	1.7 3.5	11.76
4.5 m	All stabilizers up All stabilizers down					6.7 8.9*	5.2 8.9*	4.7 7.5*	3.7 7.2	3.5 6.4*	2.7 5.4	2.8 5.1	2.1 4.2	2.2 4.1	1.6 3.4		2.1 4.0*	1.6 3.3	12.20
3.0 m	All stabilizers up All stabilizers down			9.9 12.5*	7.4 12.5*	6.3 9.6*	4.8 9.6*	4.5 7.8*	3.4 7.0	3.4 6.4	2.6 5.2	2.7 5.0	2.0 4.1	2.2 4.1	1.6 3.4		2.0 3.9	1.5 3.2	12.43
1.5 m	All stabilizers up All stabilizers down			9.0 13.6*	6.6 13.6*	5.9 10.0*	4.4 9.5	4.3 7.9*	3.2 6.7	3.3 6.3	2.5 5.1	2.6 5.0	1.9 4.0	2.1 4.1	1.6 3.3				
0 m	All stabilizers up All stabilizers down	3.8* 3.8*	3.8* 3.8*	8.3 13.6*	5.9 13.6*	5.5 10.0*	4.1 9.1	4.1 7.8*	3.0 6.5*	3.1 6.1	2.3 5.0	2.5 4.9	1.9 4.0	2.1 3.7*	1.5 3.3				
-1.5 m	All stabilizers up All stabilizers down			7.9 9.7*	5.6 9.7*	5.3 9.2*	3.8 8.8	3.9 7.2*	2.9 6.3	3.0 5.7*	2.2 4.8	2.5 4.4*	1.8 3.9						

M322C MH Heavy Lift

- 6.8 m (22'3") Straight MH Boom ● 4.8 m (15'7") Straight MH Stick
- 600 kg (1320 lb) Counterweight ● All weights are in metric tons

Height**	Undercarriage configuration	4.5 m		6.0 m		7.5 m		9.0 m		10.5 m				m					
																			
10.5 m	All stabilizers up All stabilizers down			6.6 8.3*	5.0 8.3*														
9.0 m	All stabilizers up All stabilizers down			6.7 8.4*	5.2 8.4*	4.6 7.2*	3.5 7.1												
7.5 m	All stabilizers up All stabilizers down			6.7 8.5*	5.1 8.5*	4.6 7.2*	3.5 7.1	3.3 6.2*	2.5 5.2							2.8 4.9*	2.1 4.4		9.91
6.0 m	All stabilizers up All stabilizers down			6.5 8.8*	5.0 8.8*	4.5 7.4*	3.4 7.0	3.3 6.3*	2.5 5.1	2.5 4.8	1.8 3.9	2.4 4.7	1.8 3.8						10.64
4.5 m	All stabilizers up All stabilizers down	9.9 12.0*	7.3 12.0*	6.2 9.3*	4.7 9.3*	4.3 7.6*	3.3 6.8	3.2 6.2	2.4 5.0	2.5 4.8	1.8 3.9	2.2 4.4	1.6 3.5						11.12
3.0 m	All stabilizers up All stabilizers down	9.0 13.2*	6.6 13.2*	5.8 9.8*	4.3 9.4	4.1 7.7*	3.1 6.6	3.1 6.1	2.3 4.9	2.4 4.8	1.7 3.8	2.1 4.2	1.5 3.4						11.38
1.5 m	All stabilizers up All stabilizers down	8.2 13.5*	5.9 13.5*	5.4 9.9*	4.0 9.0	3.9 7.7*	2.9 6.3	3.0 6.0	2.2 4.8	2.3 4.7	1.7 3.8								
0 m	All stabilizers up All stabilizers down	7.7 9.0*	5.4 9.0*	5.1 9.3*	3.7 8.6	3.7 7.2*	2.7 6.1	2.7 5.6*	2.9 4.7	2.1 4.2*	2.3 3.7	1.6							
-1.5 m	All stabilizers up All stabilizers down			5.0 7.9*	3.5 7.9*	3.6 6.2*	2.6 6.0												

*Limited by hydraulic rather than tipping load.
**Height of stick pin.



Load Radius Over Front



Load Radius Over Side



Load at
Maximum Reach

The above loads are in compliance with hydraulic excavator lift capacity ratings standard ISO 10567. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity.
Weight of all lifting accessories must be deducted from the above lifting capacities.

Dimensions and Weights
 Range Dimensions
 ● M325C MH ● M325C L MH
 (Belgium Sourced)

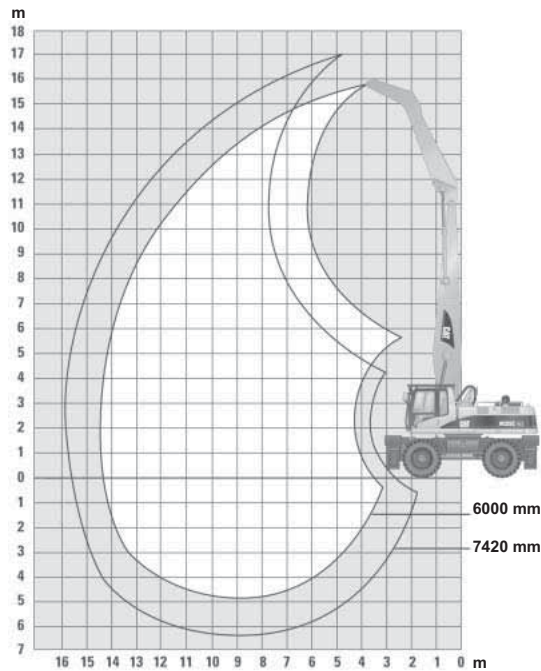
Excavators —
 Material Handling

Model	M325C MH		M325C L MH	
Horsepower (ISO 9249 Net)	128 kW/173 hp		140 kW/189 hp	
Undercarriage	Wheeled		Wheeled	
No. of Tires	4 dual		4 single	
Tire type	12.00-20		16.00-25	
Maximum Travel Speed	20 km/h		18 km/h	
Hydraulic Cab Riser — Raising	2.4 m		2.4 m	
Boom Length	8.85 m	8.85 m	8.85 m	8.85 m
Stick Length	6.00 m	7.42 m	6.00 m	7.42 m
Overall Weight	29.80 t	30.00 t	34.54 t	34.80 t
Maximum Horizontal Reach	14.33 m	15.65 m	14.33 m	15.65 m
Maximum Vertical Pin Height	15.98 m	17.14 m	16.60 m	17.80 m
Maximum Vertical Pin Depth	5.00 m	6.40 m	4.10 m	5.50 m
Transport Length with Boom and Stick	12.12 m	11.78 m	12.15 m	11.97 m
Transport Length with Boom	12.16 m	12.16 m	12.16 m	12.16 m
Transport Height with Boom and Stick	3.55 m	5.10 m	3.79 m	4.58 m
Transport Height with Boom*	3.55 m		3.78 m	
Transport Width	2.95 m		3.02 m	

*Maximum height is at the hydraulic cab riser system.

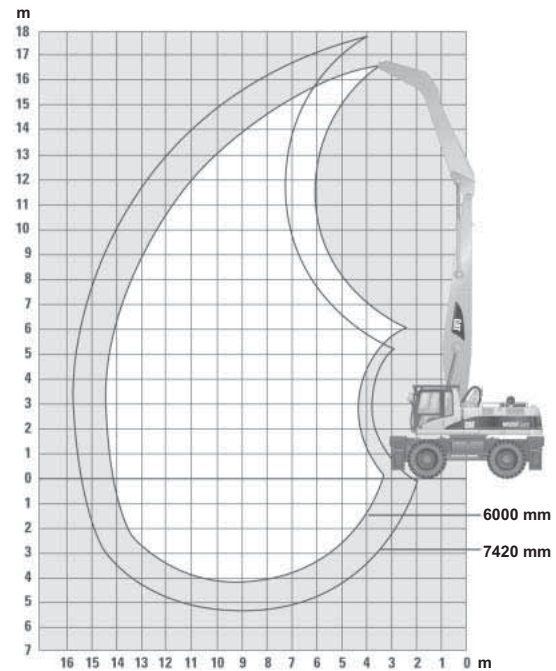
M325C MH Working Range

- Maximum Reach 14.3 m (46'11") or 15.6 m (51'2")



M325C L MH Working Range

- Maximum Reach 14.3 m (46'11") or 15.6 m (51'2")



**Excavators —
Material Handling**

Lifting Capacities
 ● M325C MH
 ● 8.85 m (29'0") Boom
 (Belgium Sourced)

M325C MH with 6.0 m (19'8") Stick — Stabilizers Down

Stabilizers Lowered	4.5 m		6.0 m		7.5 m		9.0 m		10.5 m		12.0 m		13.5 m	
	front	side	front	side	front	side	front	side	front	side	front	side	front	side
16.5 m														
15.0 m			5.90	5.90										
13.5 m			7.13	7.13	6.10	6.10	4.33	4.33						
12.0 m					7.11	7.11	6.06	6.06	4.18	4.18				
10.5 m					7.43	7.43	6.64	6.64	5.79	5.79				
9.0 m			8.73	8.73	7.57	7.57	6.71	6.71	6.03	6.03	5.08	4.97		
7.5 m			9.24	9.24	7.87	7.87	6.88	6.88	6.11	6.11	5.47	4.93		
6.0 m	12.71	12.71	9.99	9.99	8.29	8.29	7.10	7.10	6.22	6.01	5.50	4.86	4.65	4.00
4.5 m	14.43	14.43	10.82	10.82	8.72	8.72	7.33	7.33	6.32	5.84	5.51	4.76	4.79	3.95
3.0 m	7.81	7.81	11.45	11.45	9.05	9.05	7.49	7.13	6.36	5.67	5.48	4.65	4.69	3.89
1.5 m	3.92	3.92	11.56	11.56	9.12	8.97	7.49	6.88	6.30	5.51	5.36	4.54	4.49	3.83
0 m	3.74	3.74	8.82	8.82	8.84	8.67	7.27	6.68	6.08	5.38	5.10	4.46	4.15	3.79
-1.5 m	4.29	4.29	7.95	7.95	8.18	8.18	6.78	6.55	5.64	5.29	4.65	4.41	3.59	3.59
-3.0 m			8.12	8.12	7.13	7.13	5.97	5.97	4.94	4.94	3.93	3.93		
-4.5 m					5.69	5.69	4.82	4.82	3.90	3.90				

M325C MH with 7.42 m (24'4") Stick — Stabilizers Down

Stabilizers Lowered	3.0 m		4.5 m		6.0 m		7.5 m		9.0 m		10.5 m		12.0 m		13.5 m		15.0 m	
	front	side	front	side	front	side	front	side	front	side	front	side	front	side	front	side	front	side
16.5 m					4.93	4.93												
15.0 m							5.05	5.05	3.83	3.83								
13.5 m							5.72	5.72	4.98	4.98	3.82	3.82						
12.0 m									5.63	5.63	4.83	4.83	3.49	3.49				
10.5 m									6.03	6.03	5.52	5.52	4.51	4.51				
9.0 m							6.77	6.77	6.12	6.12	5.57	5.57	5.10	5.10	3.85	3.85		
7.5 m							7.08	7.08	6.31	6.31	5.68	5.68	5.15	5.06	4.64	4.12		
6.0 m					8.32	8.32	7.52	7.52	6.57	6.57	5.83	5.83	5.23	4.95	4.70	4.06	3.29	3.29
4.5 m			10.62	10.62	9.74	9.74	8.05	8.05	6.87	6.87	6.00	5.98	5.30	4.83	4.71	3.98	3.88	3.33
3.0 m			14.31	14.31	10.66	10.66	8.54	8.54	7.15	7.15	6.14	5.76	5.35	4.69	4.69	3.89	4.02	3.28
1.5 m			8.57	8.57	11.25	11.25	8.87	8.87	7.31	6.99	6.20	5.55	5.34	4.55	4.61	3.80	3.89	3.23
0 m	2.04	2.04	4.96	4.96	11.31	11.31	8.91	8.77	7.30	6.71	6.13	5.37	5.22	4.42	4.43	3.72	3.63	3.19
-1.5 m	2.57	2.57	4.56	4.56	9.32	9.32	8.60	8.46	7.06	6.50	5.90	5.23	4.96	4.33	4.12	3.66	3.19	3.16
-3.0 m	3.19	3.19	4.79	4.79	8.27	8.27	7.92	7.92	6.54	6.37	5.45	5.13	4.51	4.27	3.62	3.62		
-4.5 m			5.23	5.23	8.23	8.23	6.87	6.87	5.72	5.72	4.73	4.73	3.81	3.81	2.81	2.81		
-6.0 m							5.41	5.41	4.54	4.54	3.68	3.68						

Lifting Capacities
 ● M325C L MH
 ● 8.85 m (29'0") Boom
 (Belgium Sourced)

Excavators —
 Material Handling

M325C L MH with 6.0 m (19'8") Stick — Stabilizers Down

Stabilizers Lowered	3.0 m		4.5 m		6.0 m		7.5 m		9.0 m		10.5 m		12.0 m		13.5 m	
	front	side	front	side	front	side	front	side	front	side	front	side	front	side	front	side
15.0 m					7.45	7.45										
13.5 m					8.60	8.60	7.54	7.54	5.79	5.79						
12.0 m					9.26	9.26	8.57	8.57	7.47	7.47	5.52	5.52				
10.5 m					9.80	9.80	8.59	8.59	7.69	7.69	6.98	6.98	4.58	4.58		
9.0 m					10.17	10.17	8.81	8.81	7.81	7.81	7.01	7.01	6.34	6.34		
7.5 m			11.72	11.72	10.85	10.85	9.21	9.21	8.03	8.03	7.12	7.12	6.37	6.37	4.42	4.42
6.0 m	15.30	15.30	15.14	15.14	11.78	11.78	9.72	9.72	8.31	8.31	7.26	7.26	6.41	6.41	5.63	5.48
4.5 m			17.17	17.17	12.76	12.76	10.23	10.23	8.57	8.57	7.37	7.37	6.42	6.42	5.57	5.42
3.0 m			7.28	7.28	13.40	13.40	10.57	10.57	8.73	8.73	7.41	7.41	6.37	6.36	5.43	5.35
1.5 m			4.63	4.63	13.37	13.37	10.58	10.58	8.69	8.69	7.31	7.31	6.20	6.20	5.18	5.18
0 m			4.76	4.76	10.38	10.38	10.17	10.17	8.37	8.37	7.00	7.00	5.86	5.86	4.74	4.74
-1.5 m			5.53	5.53	9.76	9.76	9.30	9.30	7.73	7.73	6.43	6.43	5.28	5.28	4.00	4.00
-3.0 m					9.34	9.34	7.99	7.99	6.71	6.71	5.54	5.54	4.36	4.36		

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M325C L MH with 7.42 m (24'4") Stick — Stabilizers Down

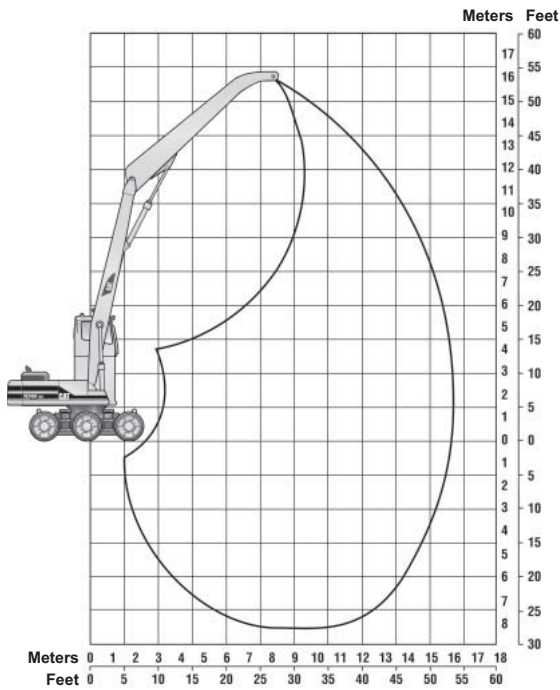
Stabilizers Lowered	3.0 m		4.5 m		6.0 m		7.5 m		9.0 m		10.5 m		12.0 m		13.5 m		15.0 m	
	front	side	front	side	front	side	front	side	front	side	front	side	front	side	front	side	front	side
16.5 m					6.20	6.20												
15.0 m							6.19	6.19	4.97	4.97								
13.5 m							6.87	6.87	6.09	6.09	4.86	4.86						
12.0 m							7.31	7.31	6.78	6.78	5.91	5.91	4.47	4.47				
10.5 m							7.64	7.64	6.97	6.97	6.40	6.40	5.55	5.55	3.61	3.61		
9.0 m							7.86	7.86	7.11	7.11	6.48	6.48	5.93	5.93	4.79	4.79		
7.5 m					8.69	8.69	8.27	8.27	7.36	7.36	6.62	6.62	6.00	6.00	5.45	5.45		
6.0 m					10.38	10.38	8.83	8.83	7.69	7.69	6.81	6.81	6.10	6.10	5.47	5.47	4.08	4.08
4.5 m			14.91	14.91	11.53	11.53	9.46	9.46	8.05	8.05	7.01	7.01	6.19	6.19	5.48	5.44	4.60	4.56
3.0 m			17.01	17.01	12.57	12.57	10.03	10.03	8.36	8.36	7.16	7.16	6.23	6.23	5.45	5.34	4.54	4.54
1.5 m			8.47	8.47	13.15	13.15	10.35	10.35	8.52	8.52	7.21	7.21	6.20	6.20	5.34	5.24	4.48	4.48
0 m	2.68	2.68	5.86	5.86	13.08	13.08	10.32	10.32	8.46	8.46	7.10	7.10	6.04	6.04	5.11	5.11	4.15	4.15
-1.5 m	3.38	3.38	5.66	5.66	10.95	10.95	9.88	9.88	8.12	8.12	6.78	6.78	5.70	5.70	4.71	4.71	3.58	3.58
-3.0 m			6.04	6.04	10.09	10.09	9.00	9.00	7.45	7.45	6.20	6.20	5.12	5.12	4.06	4.06		
-4.5 m					9.15	9.15	7.68	7.68	6.41	6.41	5.29	5.29	4.22	4.22				

**Excavators —
Material Handling**

- Range Dimensions
- W345B Series II MH
 - 16.5 m (54'0") Two-piece Front (U.S. Sourced)

Model	W345B Series II MH	
	m	ft
Maximum Horizontal Reach	16.5	54'0"
Maximum Height @ 9.75 m (32'0")	16.7	54'8"

W345B Series II MH Range Diagram




Lifting Capacities
 ● W345B Series II MH
 ● 16.5 m (54'0") Two-piece Front
 (U.S. Sourced)

Excavators —
 Material Handling

W345B Series II MH

Equipped with Cat Two-piece, 16.5 m (54'0") Front

		3.0 m (10.0 ft)		4.5 m (15.0 ft)		6.0 m (20.0 ft)		7.5 m (25.0 ft)		9.0 m (30.0 ft)		10.5 m (35.0 ft)		12.0 m (40.0 ft)		13.5 m (45.0 ft)		15.0 m (50.0 ft)				m ft			
Reach	Capacity	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb				
15.0 m 50.0 ft	kg lb																					*5500 *12,300	*5500 *12,300	10.8 34.4	
13.5 m 45.0 ft	kg lb																						*5200 *11,500	*5200 *11,500	12.3 39.8
12.0 m 40.0 ft	kg lb																						*5000 *11,100	*5000 *11,100	13.5 43.9
10.5 m 35.0 ft	kg lb																						*4900 *10,800	*4900 *10,800	14.4 47.1
9.0 m 30.0 ft	kg lb																						*4900 *10,800	*4900 *10,800	15.2 49.6
7.5 m 25.0 ft	kg lb																						*4900 *10,800	*4900 *10,800	15.7 51.4
6.0 m 20.0 ft	kg lb																						*5000 *11,000	*5000 *11,000	16.1 52.8
4.5 m 15.0 ft	kg lb																						*5100 *11,300	*5100 *11,300	16.3 53.6
3.0 m 10.0 ft	kg lb																						*5300 *11,800	*5300 *11,800	16.4 54.0
1.5 m 5.0 ft	kg lb																						*5600 *12,400	*5600 *12,400	16.4 53.9
0.0 m 0.0 ft	kg lb																						*5600 *12,300	*5600 *12,300	16.2 52.3
-1.5 m -5.0 ft	kg lb																						*5400 *11,900	*5400 *11,900	15.9 52.2
-3.0 m -10.0 ft	kg lb																						*5100 *11,200	*5100 *11,200	15.4 50.6
-4.5 m -15.0 ft	kg lb																						*4700 *10,400	*4700 *10,400	14.8 48.4
-6.0 m -20.0 ft	kg lb																						*4200 *9,200	*4200 *9,200	14.0 45.5
-7.5 m -25.0 ft	kg lb																								

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE J/ISO 10567 standard. Rated loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity.

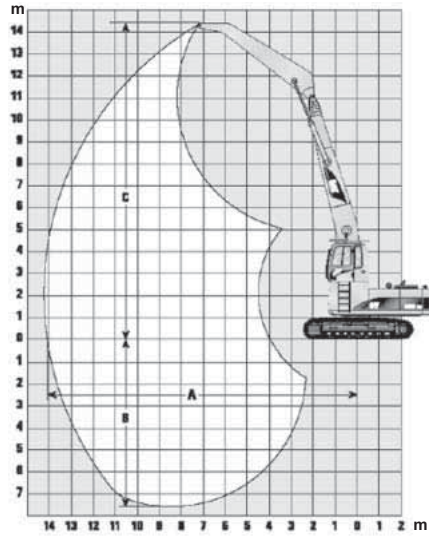


Excavators — Material Handling

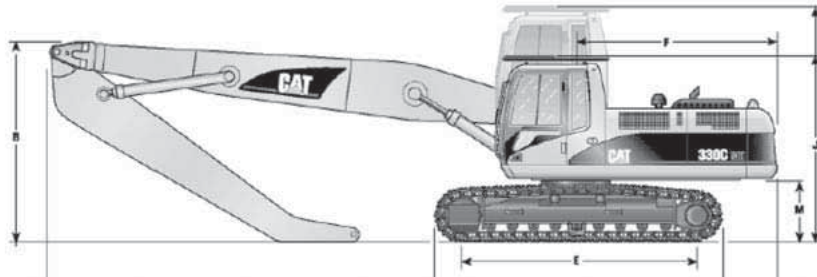
Range and Shipping Dimensions

- 320C MH (Belgium Sourced)
- 325C MH ● 330C MH ● 345B Series II MH
- 365B Series II MH (Belgium Sourced)

320C MH, 325C MH, 330C MH, 345B Series II MH, 365B Series II MH Range Diagram



320C MH, 325C MH Shipping Dimensions



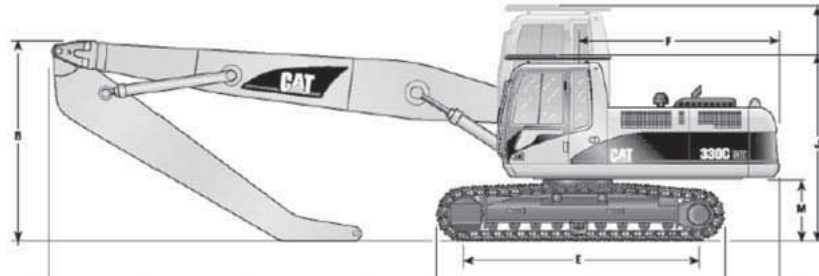
Model	320C MH		325C MH			
	Heavy Duty High Wide	Heavy Duty High Square	Heavy Duty High Wide	Heavy Duty High Square		
Boom	6.65 m	6.65 m	8.35 m	8.35 m	8.35 m	8.85 m
Stick	5.45 m	5.45 m	5.45 m	5.45 m	6.00 m	7.42 m
Weight	24.70 t	25.03 t	32.40 t	32.67 t	32.93 t	33.45 t
Transport Height*	3.47 m	3.45 m	3.55 m	3.52 m	3.44 m	6.72 m
Transport Length*	9.76 m	9.48 m	11.56 m	11.57 m	11.58 m	11.29 m
Transport Width	3.20 m	3.75 m	3.72 m	4.19 m	4.19 m	4.19 m
Maximum Reach	11.25 m	11.25 m	13.04 m	13.04 m	13.41 m	15.50 m
Maximum Pin Height	11.51 m	11.54 m	13.73 m	13.79 m	13.90 m	16.39 m
Maximum Pin Depth	6.22 m	6.19 m	6.40 m	6.35 m	6.89 m	7.05 m

*Stick can/must be removed for transport.

- Shipping Dimensions
- 330C MH
 - 345B Series II MH
 - 365B Series II MH (Belgium Sourced)

**Excavators —
Material Handling**

330C MH, 345B Series II MH, 365B Series II MH Shipping Dimensions



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Model	330C MH						345B Series II MH	365B Series II MH
	Heavy Duty High Wide	Heavy Duty High Square	345B L Series II	345B Series II HDHW	Heavy Duty High Square	345B Series II HDHW	Heavy Duty Wide	Square
Boom	9.10 m	9.10 m	9.10 m	9.10 m	9.20 m	9.20 m	9.77 m	10.90 m
Stick	6.00 m	6.00 m	6.00 m	6.00 m	7.6 m	7.6 m	7.80 m	8.60 m
Weight	38.77 t	38.02 t	42.48 t	44.00 t	39.00 t	39.00 t	51.35 t	74.14 t
Transport Height*	3.40 m	3.40 m	3.40 m	3.40 m	4.78 m	4.90 m	4.33 m	3.98 m
Transport Length*	3.39 m	3.45 m	3.34 m	3.35 m	12.67 m	12.61 m	3.48 m	14.89 m
Transport Width	3.67 m	4.35 m	2.99 m	3.82 m	4.35 m	3.82 m	3.82 m	4.75 m
Max Reach	14.09 m	14.09 m	14.09 m	14.09 m	15.89 m	15.89 m	16.45 m	18.90 m
Max Pin Height	14.43 m	14.16 m	14.36 m	14.37 m	16.90 m	16.90 m	16.36 m	19.23 m
Max Pin Depth	7.59 m	7.85 m	7.65 m	7.64 m	8.00 m	8.00 m	8.42 m	6.74 m

*Stick can/must be removed for transport.

Excavators — Material Handling

Lifting Capacities at Ground Level

- 320C MH (Belgium Sourced)
- 325C MH ● 330C MH ● 345B Series II MH
- 365B Series II MH (Belgium Sourced)

Lifting Capacities

Equipped with Caterpillar material handling arrangement.

Includes purpose built material handling boom and stick, wiring and connecting hydraulics, hydraulic cylinders. Capacities are measured at the bare stick tip, and are expressed in kg.

Capacities are based on level machine equipped as follows:

Total machine weight including base machine, material handling front, heavier counterweight, cab riser, wide gauge undercarriage, lubricants, standard track shoes, full fuel tank and operator.

Lifting Capacities at Ground Level

		3 m		4.5 m		6 m		7.5 m		Maximum Reach Radius
		Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	
320C HDHW MH 11.25 m	kg	8000*	8000*	9180*	8430	6680*	5600	5240*	4080	11.08 m
320C Square MH 11.25 m	kg			7980*	7980*	9180*	9180*	6690*	6690*	11.08 m
325C HDWH MH 13.04 m	kg			6780*	6780*	10 890*	8590	8350	6360	12.87 m
325C Square MH 13.04 m	kg			6780*	6780*	10 880*	10 520	8410	7690	12.86 m
325C Square MH 13.41 m	kg			7600*	7600*	10 670*	10 380	8290	7560	13.23 m
325C Square MH 15.50 m	kg			7480*	7480*	11 470	10 380	8300	7570	15.35 m
330C HDWH MH 14.09 m	kg			5470*	5470*	10 970*	10 400	10 910	7740	13.90 m
330C Square MH 14.09 m	kg			5460*	5460*	11 460*	11 460*	10 950	9940	13.94 m
330C + 345B chassis MH 14.09 m	kg			5460*	5460*	11 070*	11 070*	11 500*	8380	13.91 m
330C + 345B HDW chassis MH 14.09 m	kg			5460*	5460*	11 050*	11 050*	11 500*	11 500*	13.91 m
330C Square MH 15.89 m	kg	3190*	3190*	7050*	7050*	13 720*	13 480*	10 780*	9770	15.72 m
330C + 345B HDW chassis MH 15.89 m	kg	3160*	3160*	7160*	7160*	13 730*	13 730*	10 780*	10 780*	15.73 m
345B Series II HDW MH 16.45 m	kg	4720*	4720*	9100*	9100*	17 120*	17 120*	13 450*	12 690	16.29 m
365B Series II Square MH 18.90 m	kg			6930*	6930*	15 080*	15 080*	20 850*	20 850*	18.66 m
		9 m		10.5 m		12 m		13.5 m		Maximum Reach Radius
		Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	
320C HDHW MH 11.25 m	kg	4290*	3140	3550*	2490					11.08 m
320C Square MH 11.25 m	kg	5240*	5210	4290*	4000	3550*	3190			11.08 m
325C HDWH MH 13.04 m	kg	6480	4980	5240	4040	4360	3360			12.87 m
325C Square MH 13.04 m	kg	6530	5990	5280	4730	4390	4030			12.86 m
325C Square MH 13.41 m	kg	6410	5990	5160	4730	4270	3910			13.23 m
325C Square MH 15.50 m	kg	6410	5860	5140	4700	4230	3870	3480	3240	15.35 m
330C HDWH MH 14.09 m	kg	8470	6090	6850	4950	5700	4120	4840	3490	13.90 m
330C Square MH 14.09 m	kg	8490	7740	6870	6260	5700	5210	4840	4410	13.94 m
330C + 345B chassis MH 14.09 m	kg	9460*	6610	7990*	5380	6860*	4490	5880*	3820	13.91 m
330C + 345B HDW chassis MH 14.09 m	kg	9460*	9170	7990*	7440	6860*	6200	5880*	5280	13.91 m
330C Square MH 15.89 m	kg	8330	7550	6680	6050	5490	4970	4610	4160	15.72 m
330C + 345B HDW chassis MH 15.89 m	kg	8830*	8830*	7440*	7110	6370*	5860	5490*	4930	15.73 m
345B Series II HDW MH 16.45 m	kg	11 000*	9820	9260*	7890	7640	6500	6420	5450	16.29 m
365B Series II Square MH 18.90 m	kg	17 160*	17 160*	14 350	14 350	11 840	11 820	9970	9950	18.66 m

- Lifting Capacities at Ground Level
- 320C MH (Belgium Sourced)
 - 325C MH ● 330C MH ● 345B Series II MH
 - 365B Series II MH (Belgium Sourced)

**Excavators —
Material Handling**

Lifting Capacities at Ground Level

		15 m		16.5 m		18 m		Max. Reach		Maximum Reach Radius
		Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	Front Load	Side Load	
320C HDWH MH 11.25 m	kg							3270*	2290	11.08 m
320C Square MH 11.25 m	kg							3270*	2950	11.08 m
325C HDWH MH 13.04 m	kg							3960	3050	12.87 m
325C Square MH 13.04 m	kg							4000	3570	12.86 m
325C Square MH 13.41 m	kg							3710	3400	13.23 m
325C Square MH 15.50 m	kg	3030	2760					2930	2660	15.35 m
330C HDWH MH 14.09 m	kg							4640	3350	13.90 m
330C Square MH 14.09 m	kg							4620	4220	13.94 m
330C + 345B chassis MH 14.09 m	kg							4700*	3660	13.91 m
330C + 345B HDW chassis MH 14.09 m	kg							4700*	4700*	13.91 m
330C Square MH 15.89 m	kg	3920	3540					3650	3290	15.72 m
330C + 345B HDW chassis MH 15.89 m	kg	4660*	4210					4210*	3920	15.73 m
345B Series II HDW MH 16.45 m	kg	5480	4630					4830	4070	16.29 m
365B Series II Square MH 18.90 m	kg	8520	8500	7370	7350	6450	6420	6110	6090	18.66 m

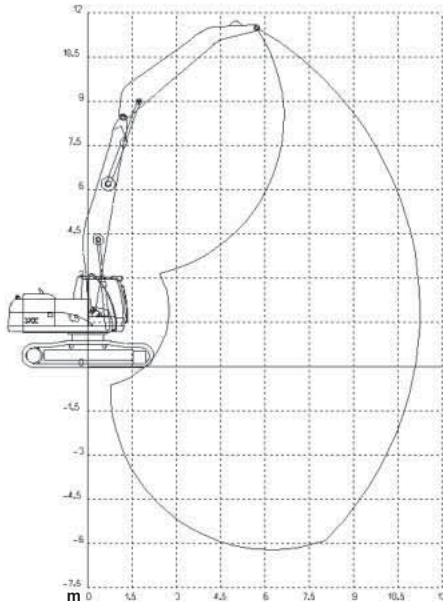
Excavators — Material Handling

Range Dimensions

- 320C MH (Belgium Sourced)
- 325C MH ● 330C MH

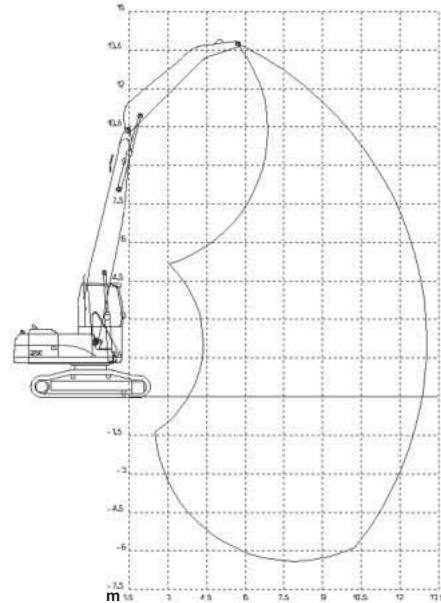
320C MH Range Diagram — Belgium Sourced

- Caterpillar Material Handling Boom and Stick



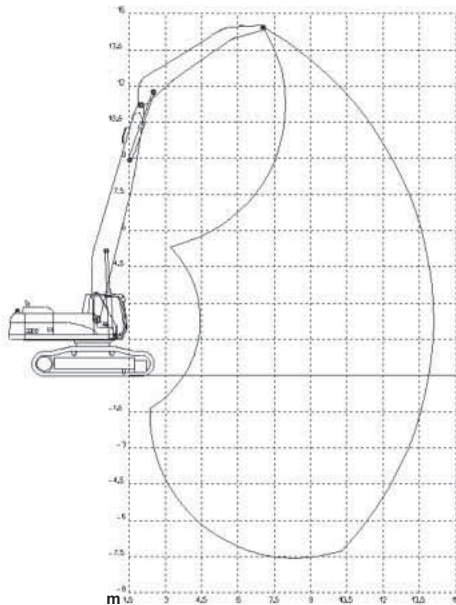
325C MH Range Diagram — U.S. Sourced

- Caterpillar Material Handling Boom and Stick



330C MH Range Diagram — U.S. Sourced

- Caterpillar Material Handling Boom and Stick



Model	320C MH*		325C MH	
	m	ft	m	ft
Maximum Horizontal Reach	11.25	36'11"	13.04	42'9"
Maximum Vertical Pin Height	11.51	37'9"	13.73	45'1"
Maximum Vertical Pin Depth	-6.22	-20'5"	-6.40	-21'0"

Model	330C MH	
	m	ft
Maximum Horizontal Reach	14.09	46'3"
Maximum Vertical Pin Height	14.43	47'4"
Maximum Vertical Pin Depth	-7.59	-24'11"

*Custom product.

NOTE: All Material Handling Arrangements require extra wide gage, reinforced upper frame and additional counter weight.

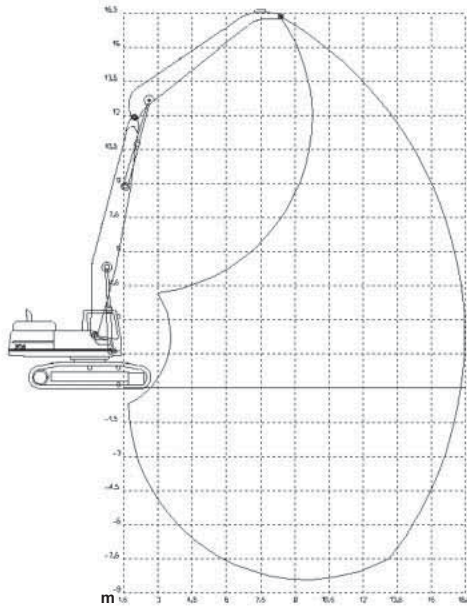
**Excavators —
Material Handling**

- Range Dimensions
 ● 345B Series II MH
 ● 365B L MH Short

- 365B L MH Long

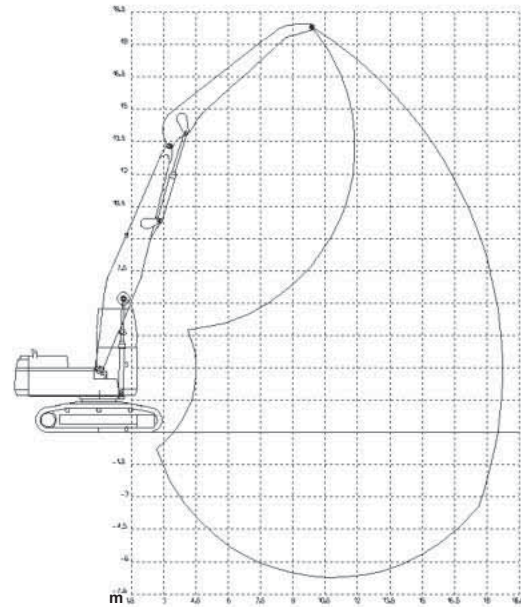
345B Series II MH Range Diagram — U.S. Sourced

- Caterpillar Material Handling Boom and Stick



365B L MH Long Range Diagram

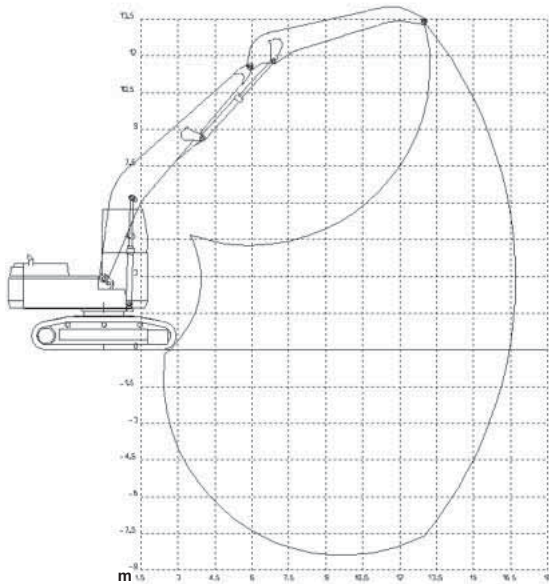
- Caterpillar Material Handling Boom and Stick



4

365B L MH Short Range Diagram

- Caterpillar Material Handling Boom and Stick



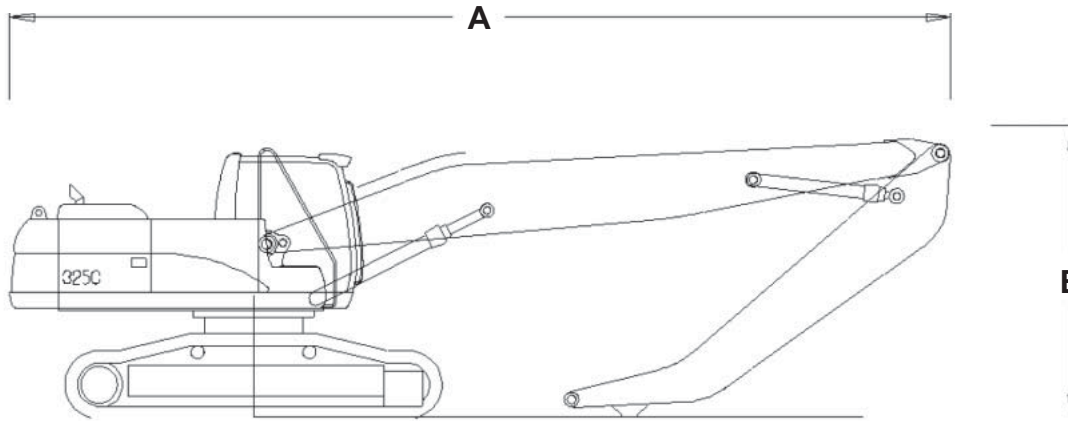
Model	345B Series II MH		365B L* Long	
	m	ft	m	ft
Maximum Horizontal Reach	16.45	54'0"	18.72	61'5"
Maximum Vertical Pin Height	16.36	53'8"	18.81	61'9"
Maximum Vertical Pin Depth	-8.42	-27'7"	-6.74	-22'1"

Model	365B L* Short	
	m	ft
Maximum Horizontal Reach	16.70	54'9"
Maximum Vertical Pin Height	13.41	44'0"
Maximum Vertical Pin Depth	-8.39	-27'6"

*Custom product.

**Excavators —
Material Handling**

- Shipping Dimensions
- Major Component Weights



Material Handling, Shipping Dimensions	320C L* with 600 mm (24") track shoes		325C L with 800 mm (31") track shoes		330C L with 750 mm (30") track shoes	
A Overall Length (Front Folded)	9.50 m	31'2"	11.60 m	38'1"	12.85 m	42'2"
B Overall Height (Front Folded)	3.55 m	11'8"	3.60 m	11'10"	3.60 m	11'10"
C Overall Width	3.19 m	10'6"	3.73 m	12'3"	3.67 m	12'0"
	345B Series II* with 600 mm (24") track shoes		365B L Long* with 750 mm (30") track shoes		365B L Short* with 750 mm (30") track shoes	
A Overall Length (Front Folded)	13.50 m	** 44'3"	14.90 m	** 48'11"	14.20 m	** 46'7"
B Overall Height (Front Folded)	3.47 m	**† 11'5"	4.00 m	*** 13'1"	4.00 m	*** 13'1"
	3.65 m	**†† 12'0"				
C Overall Width (Retracted) (Extended)	3.82 m	12'6"	4.75 m	15'7"	4.75 m	15'7"
	4.32 m	14'2"	5.25 m	17'3"	5.25 m	17'3"
Material Handling, Component Dimensions, Weights	320C L*		325C L		330C L	
Approximate Operating Weight with Standard Shoes, Counterweight, Operator, Full Fuel and without any Tool or Operating Attachment	25 000 kg	55,116 lb	32 400 kg	71,430 lb	38 300 kg	84,437 lb
Material Handling Boom Length	6650 mm	21'9"	8350 mm	27'5"	9100 mm	29'10"
Material Handling Boom Weight	1970 kg	4340 lb	2710 kg	5960 lb	3610 kg	7960 lb
Material Handling Stick Length	5450 mm	17'11"	5450 mm	17'11"	6000 mm	19'8"
Material Handling Stick Weight	1340 kg	2950 lb	1340 kg	2950 lb	1600 kg	3530 lb
	345B Series II		365B L Long*		365B L Short*	
Approximate Operating Weight with Standard Shoes, Counterweight, Operator, Full Fuel and without any Tool or Operating Attachment	50 900 kg	112,215 lb	74 000 kg	163,142 lb	73 200 kg	161,378 lb
Material Handling Boom Length	9770 mm	32'1"	10 900 mm	35'9"	10 500 mm	34'5"
Material Handling Boom Weight	4315 kg	9510 lb	7595 kg	16,750 lb	7200 kg	15,880 lb
Material Handling Stick Length	7800 mm	25'7"	8600 mm	28'3"	7300 mm	23'11"
Material Handling Stick Weight	2430 kg	5360 lb	4060 kg	8950 lb	3600 kg	7940 lb

*Custom product.
**Stick must be removed for transport.
***With cab tilted over the front.

†Without FOGS.
††With FOGS.

Lifting Capacities at Ground Level
 • 320C MH (Belgium Sourced)
 • 325C MH

Excavators —
 Material Handling

Capacities are based on level machine equipped as follows:

Equipped with Caterpillar material handling arrangement.

Includes purpose built material handling boom and stick, wiring and connecting hydraulics, hydraulic

cylinders, heavier counterweight, cab riser, wide gauge undercarriage, lubricants, standard track shoes, full fuel tank and operator.

Capacities are measured at the bare stick tip.

320C MH • HW Undercarriage • 6.65 m (21'10") Boom
• 5800 kg (12,790 lb) CWT • 600 mm (24") Track Shoes

Stick	Max. Reach Radius		3 m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		10.5 m 35'0"		Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
5.45 m 17'11"	11.08 m 36'4"	kg lb	8000* 17,600*	8000* 17,600*	9180* 20,200	8430 18,500	6680* 14,700*	5600 12,300	5240* 11,500*	4080 8900	4290* 9400*	3140 6900	3550* 7800*	2490 5400	3270* 7200*	2290 5000

325C MH • HW Undercarriage • 8.35 m (27'5") Boom
• 7700 kg (16,975 lb) CWT • 800 mm (31") Triple Grouser Track Shoes

Stick	Max. Reach Radius		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		10.5 m 35'0"		12 m 40'0"		Max. Reach	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
5.45 m 17'11"	12.87 m 42'3"	kg lb	6780* 14,900*	6780* 14,900*	10 890* 24,000*	8590 18,900	8350 18,400	6360 14,000	6480 14,200	4980 10,900	5240 11,500	4040 8900	4630 10,200	3360 7400	3960 8700	3050 6700

• 8.85 m (29'0") Boom • 2000 kg (4410 lb) Magnet • 2 Piece Front

Stick	Max. Reach Radius		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		10.5 m 35'0"	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
6 m 19'8"	13.98 m 45'10"	kg lb	5650* 12,900*	5650* 12,900*	11 290 24,300	10 290 22,100	8220 17,700	7540 16,200	6390 13,700	5880 12,600	5160 11,100	4750 10,200

Stick	Max. Reach Radius		12 m 40'0"		13.5 m 45'0"		Max. Reach	
			Front	Side	Front	Side	Front	Side
6 m 19'8"	13.98 m 45'10"	kg lb	4280 9200	3940 8500	3620 7800	3330 7100	3450 7600	3170 7000

⁽¹⁾ «ISO 10567» «SAE J1097»

*Capacity is limited by hydraulics rather than by a tipping load. The loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity. Weight of all lifting accessories must be subtracted from the lifting capacities.

**Excavators —
Material Handling**

Lifting Capacities at Ground Level
● 330C MH ● 345B Series II MH

330C MH ● HW Undercarriage ● 9.1 m (29'10") Boom
● 8450 kg (18,630 lb) CWT ● 750 mm (30") Triple Grouser Track Shoes

Stick	Max. Reach Radius		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		10.5 m 35'0"	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
6 m 19'8"	13.9 m 45'7"	kg lb	5470* 12,000*	5470* 12,000*	10 970* 24,100*	10 400 22,900	10 910 24,000	7740 17,000	8470 18,600	6090 13,400	6850 15,100	4950 10,800
Stick	Max. Reach Radius		12 m 40'0"		13.5 m 45'0"		Max. Reach					
			Front	Side	Front	Side	Front	Side				
6 m 19'8"	13.9 m 45'7"	kg lb	5700 12,500	4120 9000	4840 10,600	3490 7600	4640 10,200	3350 7300				

345B Series II MH ● HW Undercarriage ● 9.77 m (32'1") Boom
● 11 000 kg (24,250 lb) CWT ● 600 mm (24") Triple Grouser Track Shoes

Stick	Max. Reach Radius		3m 10'0"		4.5 m 15'0"		6 m 20'0"		7.5 m 25'0"		9 m 30'0"		10.5 m 35'0"	
			Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Front	Side
7.8 m 25'7"	16.29 m 53'5"	kg lb	4720* 10,400*	4720* 10,400*	9100* 20,000*	9100* 20,000*	17 120* 37,700*	17 120* 37,700*	13 450* 29,600*	12 690 27,900	11 000* 24,200*	9820 21,600	9260* 20,400*	7890 17,300
Stick	Max. Reach Radius		12 m 40'0"		13.5 m 45'0"		15 m 50'0"		Max. Reach					
			Front	Side	Front	Side	Front	Side	Front	Side				
7.8 m 25'7"	16.29 m 53'5"	kg lb	7640 16,800	6500 14,300	6420 14,100	5450 12,000	5480 12,000	4630 10,200	4830 10,600	4070 8900				

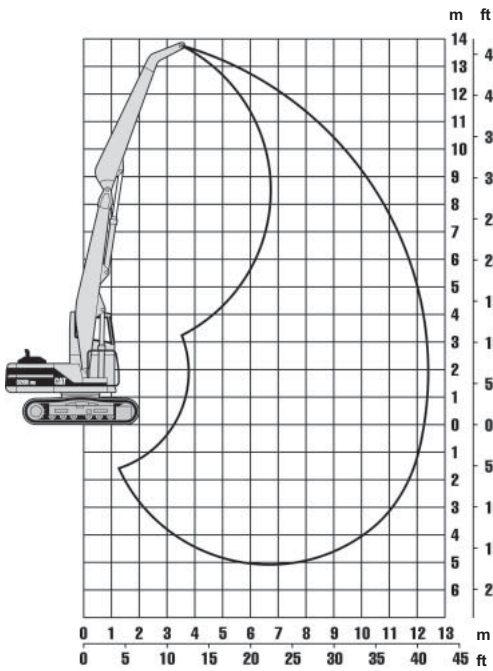
⁽¹⁾ «ISO 10567» «SAE J1097»

* Capacity is limited by hydraulics rather than by a tipping load. The loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity. Weight of all lifting accessories must be subtracted from the lifting capacities.

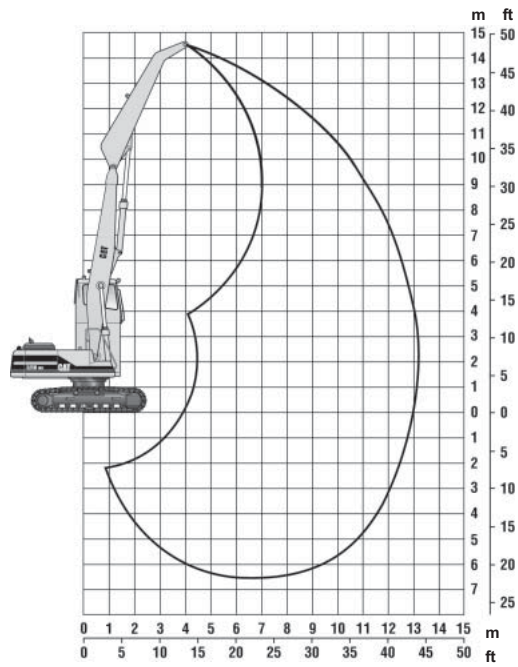
Model	320C MH		325C MH		330C MH		345B Series II MH		375 MH			
	m	ft	m	ft	m	ft	m	ft	m	ft		
MH Two-Piece Front	12.40	40'8"	13.40	43'11"	14.40	47'3"	16.50	54'0"	16.76	55'0"	20.73	68'0"
Max. Reach @ 1.5 m (5'0")	12.40	40'8"	13.40	43'11"	14.40	47'3"	16.50	54'0"	16.76	55'0"	20.73	68'0"
Max. Height	13.70	44'11"	14.80	48'7"	15.65	51'4"	16.20	53'2"	*		*	
Reach @ Max. Height	3.50	11'6"	3.90	12'11"	5.09	16'8"	8.40	27'6"	*		*	
Track Shoe	600 mm	24"	800 mm	31.5"	850 mm	33.5"	750 mm	30"	700 mm	30"	700 mm	30"

*Information unavailable at time of printing.

320C MH Range Diagram



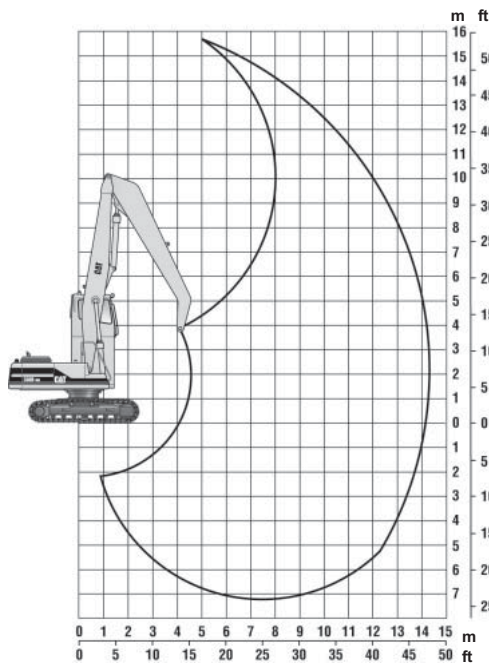
325C MH Range Diagram



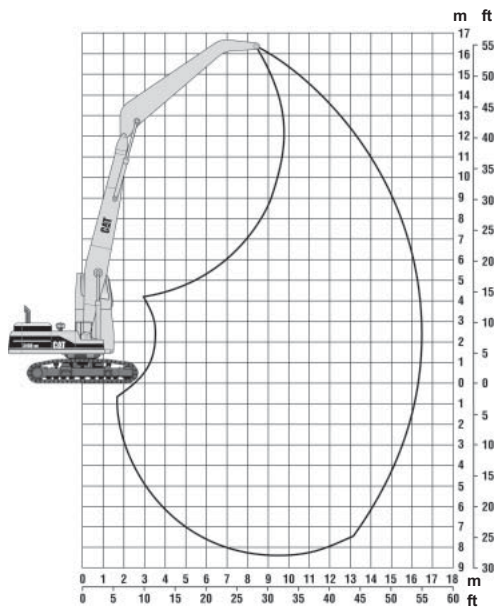
**Excavators —
Material Handling**

Range Dimensions
● 330C MH ● 345B MH

330C MH Range Diagram



345B MH Range Diagram



Lifting Capacities
● 320C MH (Japan Sourced)

Excavators —
Material Handling

320C MH

		1.5 m/5.0 ft		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		10.5 m/35.0 ft		12.0 m/40.0 ft				m ft
																				
10.5 m 35.0 ft	kg lb									*6000 *13,250	5500 11,700							*3900 *8650	*3900 *8650	8.96 28.84
9.0 m 30.0 ft	kg lb									*5800 *12,700	5550 11,900	*5350 *11,750	4100 8800					*3500 *7750	3250 7300	10.20 33.14
7.5 m 25.0 ft	kg lb									*5800 *12,650	5550 11,900	*5300 *11,600	4150 8850	4400 9400	3150 6750			*3300 *7250	2850 6300	11.11 36.23
6.0 m 20.0 ft	kg lb							*6700 *14,550	*6700 *14,550	*6000 *13,000	5450 11,700	*5400 *11,750	4050 8750	4400 9400	3150 6750			*3200 *7000	2600 5700	11.75 38.43
4.5 m 15.0 ft	kg lb							*7300 *15,850	*7300 *15,850	*6300 *13,700	5250 11,350	5500 11,850	3950 8500	4350 9300	3100 6650	3500 7700	2500 5450	*3150 *6900	2400 5300	12.17 39.88
3.0 m 10.0 ft	kg lb					*10 250 *22,200	*10 250 *22,200	*8050 *17,450	7050 15,150	*6700 *14,500	5050 10,850	5400 11,550	3850 8250	4250 9150	3050 6500	3450 7450	2450 5250	*3150 *6900	2300 5100	12.40 40.66
1.5 m 5.0 ft	kg lb					*11 700 *25,300	10 100 21,750	*8750 *18,900	6650 14,250	6850 14,700	4800 10,350	5250 11,250	3700 7950	4200 8950	2950 6350	3450 7350	2400 5150	*3200 *7050	2300 5000	12.44 40.81
Ground Line	kg lb					*12 250 *26,550	9400 20,250	*9000 *19,500	6250 13,500	6600 14,200	4600 9900	5100 10,950	3600 7700	4100 8800	2900 6200	3400 7300	2400 5100	*3200 *7000	2300 5050	12.30 40.34
-1.5 m -5.0 ft	kg lb	*1850 *4100	*1850 *4100	*3750 *8550	*3750 *8550	*9600 *22,300	9050 19,400	*8750 *18,900	6000 12,950	6450 13,850	4450 9600	5000 10,750	3500 7500	4050 8700	2850 6100			*2800 *6100	2400 5250	11.96 39.22
-3.0 m -10.0 ft	kg lb			*4900 *11,000	*4900 *11,000	*9400 *21,600	8900 19,100	*7800 *16,850	5900 12,700	*6150 *13,200	4350 9400	*4800 *10,250	3450 7400	*3500 *7250	2800 6050			*2900 *6400	2650 5850	11.03 36.05
-4.5 m -15.0 ft	kg lb							*6200 *13,250	5900 12,700	*4850 *10,300	4350 9400						*3700 *8400	3550 8000	8.84 28.37	

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on standard SAE J/ISO 10567. Rated loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity.



Load Point Height



Load Radius Over Front



Load Radius Over Side






















Load at Maximum Reach

Excavators — Material Handling

Lifting Capacities ● 345B Series II MH (U.S. Sourced)

345B Series II MH

Equipped with Cat Two-piece, 16.5 m (54'0") Front, 750 mm (30") triple grouser shoes.

		3.0 m (10.0 ft)		4.5 m (15.0 ft)		6.0 m (20.0 ft)		7.5 m (25.0 ft)		9.0 m (30.0 ft)		10.5 m (35.0 ft)		12.0 m (40.0 ft)		13.5 m (45.0 ft)		15.0 m (50.0 ft)				m ft		
																								
15.0 m 50.0 ft	kg lb									*15,100	*15,100										*5700	*5700	10.6 32.30	
13.5 m 45.0 ft	kg lb											*7400	*7400									*5300	*5300	11.84 38.15
12.0 m 40.0 ft	kg lb											*8300	*8300	*7100	*7100							*5000	*5000	13.13 42.60
10.5 m 35.0 ft	kg lb											*8300	*8300	*7700	*7700	*6300	*6300					*4900	*4900	14.15 46.08
9.0 m 30.0 ft	kg lb											*8400	*8400	*7700	*7700	*7200	*7200					*4900	*4900	14.94 48.80
7.5 m 25.0 ft	kg lb									*9600	*9600	*8600	*8600	*7900	*7900	*7200	7200	*6300	6000			*4900	*4900	15.55 50.88
6.0 m 20.0 ft	kg lb							*11,500	*11,500	*10,100	*10,100	*9000	*9000	*8100	*8100	*7300	7000	*6700	5900			*4900	*4900	15.99 52.39
4.5 m 15.0 ft	kg lb					*15,200	*15,200	*12,500	*12,500	*10,700	*10,700	*9300	*9300	*8300	8300	*7500	6900	6700	5800			*5100	*5100	16.28 53.39
3.0 m 10.0 ft	kg lb			*22,900	*22,900	*16,800	*16,800	*13,400	*13,400	*11,200	*11,200	*9700	*9700	*8500	8000	*7500	6700	6600	5700			*5300	4900	16.43 53.90
1.5 m 5.0 ft	kg lb			*14,100	*14,100	*18,000	*18,000	*14,100	*14,100	*11,600	*11,600	*9900	9400	*8600	7800	7500	6500	6500	5600			*5500	4800	16.44 53.94
0.0 m 0.0 ft	kg lb			*9300	*9300	*18,400	*18,400	*14,400	*14,400	*11,800	11,300	*10,000	9100	*8600	7500	7400	6400	6300	5500			*5600	4800	16.31 53.51
-1.5 m -5.0 ft	kg lb	*5500	*5500	*8500	*8500	*14,900	*14,900	*14,300	14,000	*11,700	10,900	*9900	8800	*8400	7300	7200	6200	*6200	5400			*5400	4900	16.04 52.60
-3.0 m -10.0 ft	kg lb	*14,300	*14,300	*8700	*8700	*13,300	*13,300	*13,600	*13,600	*11,200	10,600	*9500	8600	*8100	7200	*6800	6200	*5700	5300			*5200	5100	15.61 51.18
-4.5 m -15.0 ft	kg lb	*7100	*7100	*9200	*9200	*13,000	*13,000	*12,400	*12,400	*10,400	*10,400	*8800	8500	*7400	7100	*6200	6100	*4900	*4900					
-6.0 m -20.0 ft	kg lb			*9700	*9700	*12,600	*12,600	*10,700	*10,700	*9100	*9100	*7700	*7700	*6400	*6400	*5100	*5100							
-7.5 m -25.0 ft	kg lb					*9700	*9700	*8500	*8500	*7300	*7300	*6100	*6100	*4900	*4900									

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on standard SAE J1506. Rated loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity.



Load Point Height



Load Radius Over Front



Load Radius Over Side



Load at Maximum Reach

MAGNET SELECTION GUIDE

Caterpillar MH Model	Recommended Magnet Size (Diameter)					
	1219 mm (48")	1448 mm (57")	1676 mm (66")	1829 mm (72")	1981 mm (78")	2210 mm (87")
M318 MH	X					
320C MH	X					
M320 MH	X	X				
325B MH 13.4 m (43'11") Front		X				
M325B MH 15.2 m (50'10") Front		X				
M325B MH 13.4 m (43'11") Front		X	X			
300B MH			X			
W330B MH			X			
345B Series II MH				X		
W345B Series II MH				X		
365B MH 18.9 m (62'0") Front					X	
365B MH 16.9 m (55'6") Front					X	
375 MH 20.7 m (68'0") Front				X		
375 MH 16.8 m (55'0") Front						X

**INSTITUTE OF SCRAP RECYCLING
INDUSTRIES INC.**

**Scrap Specifications
Guidelines for Ferrous Scrap**

ISRI

Code Definition

200	<p>No. 1 heavy melting steel. Wrought iron and/or steel scrap 6.35 mm (¼ in) and over in thickness. Individual pieces not over 1524 × 610 mm (60 × 24 in) (charging box size) prepared in a manner to insure compact charging.</p>	209	<p>No. 2 bundles. Old black and galvanized steel sheet scrap, hydraulically compressed to charging box size and weighing not less than 34 kg (75 lb) per cubic foot. May not include tin or lead-coated material of vitreous enameled material.</p>
203	<p>No. 2 heavy melting steel. Wrought iron and steel scrap, black and galvanized, 3.18 mm (⅛ in) and over in thickness, charging box size to include material not suitable as No. 1 heavy melting steel. Prepared in a manner to insure compact charging.</p>	210	<p>Shredded Scrap. Homogeneous iron and steel scrap magnetically separated, originating from automobiles, unprepared No. 1 and No. 2 steel, miscellaneous baling and sheet scrap. Average density 23 kg (50 lb) per cubic foot.</p>
207	<p>No. 1 busheling. Clean steel scrap, not exceeding 305 mm (12 in) in any dimensions, including new factory busheling (for example, sheet clippings, stampings, etc.). May not include old auto body and fender stock. Free of metal coated, limed, vitreous enameled, and electrical sheet containing over 0.5 percent silicon.</p>	211	<p>Shredded Scrap. Homogeneous iron and steel scrap magnetically separated, originating from automobiles, unprepared No. 1 and No. 2 steel, miscellaneous baling and sheet scrap. Average density 34 kg (70 lb) per cubic foot.</p>
208	<p>No. 1 bundles. New black steel sheet scrap, clippings or skeleton scrap, compressed or hand banded, to charging box size, and weighing not less than 34 kg (75 lb) per cubic foot. (Hand bundles are tightly secured for handling with a magnet.) May include Stanley balls or mandrel wound bundles or skeleton reels, tightly secured. May include chemically detinned material. May not include old auto body or fender stock. Free of metal coated, limed, vitreous enameled, and electrical sheet containing over 0.5 percent silicon.</p>	219	<p>Machine shop turnings. Clean steel or wrought iron turnings, free of iron borings, nonferrous metals in a free state, scale, or excessive oil. May not include badly rusted or corroded stock.</p>
		231	<p>Plate and structural steel, 1.5 m (5 ft) and under. Cut structural and plate scrap, 1.5 m (5 ft) and under. Clean open hearth steel plates, structural shapes, crop ends, shearings, or broken steel tires. Dimensions not less than 6.35 mm (¼ in) thickness, not over 1.5 m (5 ft) in length and 457 mm (18 in) in width. Phosphorous or sulphur not over 0.05 percent.</p>
		234	<p>Punchings and plate scrap. Punchings or stampings, plate scrap, and bar crops containing not over 0.05 percent phosphorous or sulphur and not over 0.5 percent silicon, free from alloys. All materials cut 305 mm (12 in) and under, and with the exception of punchings or stampings, at least 3.18 mm (⅛ in) in thickness. Punchings or stampings under 152 mm (6 in) in diameter may be any gauge.</p>

Notes —

Notes —

BACKHOE LOADERS

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Features:

- **Center pivot backhoe** — 416D, 420D, 430D, 446D.
- **Side shift backhoe** — 424D, 428D, 432D, 442D.
- **Single-tilt loader** features divergent loader arms, a narrow loader tower and single bucket tilt cylinder for improved visibility.
- **Integrated toolcarrier (parallel lift) loader** offers maximum lift and breakout forces, divergent loader arms, and parallel lift for efficient loading and material handling.
 - **Hydraulic Quick Coupler** provides versatility and allows quick connection to selected work tools for the Cat family of integrated toolcarriers.
- **Excavator-style backhoe** provides enhanced visibility even with narrow buckets, ability to reach over obstacles, and faster, easier truck loading.
 - **Backhoe Quick Coupler** offerings include a convenient “pin grabber” and versatile “pin puller” for use with D-Series and competitive work tools.
- **Load-sensing hydraulic system** provides full hydraulic power to implements at all engine speeds, low fuel consumption, smooth control and low lever efforts. A dual-setting torque limiter automatically optimizes hydraulics.

Backhoe Loader Website for Dealers on Infocast offers latest, updated information. This comprehensive site contains all published and unpublished supporting materials for backhoe loaders in the North American Commercial Division.

<https://nacd.cat.com/infocast/frames/products/bcp/bhlit/>

- **Pilot operated backhoe controls** provide smooth, efficient operation and operator comfort. Not available on 416D, 424D, 428D.
- **Pilot operated stabilizer controls** standard on all models. Auto-up stabilizers are standard with the deluxe cab.
- **Cat 3054C engine** meets all U.S. Tier 2/EU Stage II emissions requirements. It delivers reliable power with low emissions while providing excellent fuel economy with an efficient fuel system. It has durable, gear-driven water pump, thermal starting aid, parts commonality and low cost per hour.
- **XT-ES hoses** combined with Caterpillar couplings and O-ring face seal fittings provide a dry, reliable machine.
- **Operator station features:** Air-suspension seat is standard on all models. Adjustable tilt steering is standard except on 416D and 424D. Rear, door and side windows can be fully opened for enhanced ventilation and cab roof is extended to help keep operator dry. Four-post Rollover Protective Structure (ROPS) for increased protection. Fully featured, a Deluxe Cab option will feature pilot operated joystick controls, state-of-the-art control panels with white-faced gauges mounted in a rotating vandal cover, pilot operated stabilizer controls with automatic hold upon lifting, and additional system monitoring including service indicators for engine air cleaner, water-in-fuel, and hydraulic filter.
- **High performance backhoe linkage** offers 205° of bucket rotation with one pin position and breakout forces increased up to 25% from previous models.
- **Diagonal Retention System (DRS)** standard on all factory installed buckets with weld-on tooth adapters, excluding the 446D. Bucket teeth are attached with diagonal pins rather than horizontal pins for easy exchange of bucket teeth. 446D buckets remain fitted with J225 size, horizontal fastener pins. All other buckets have bolt-on Uni-teeth.
- **Integrated lift eye** on backhoe linkage.
- **Cat Cushion Swing™** system smooths the swing function, improving the return-to-trench controllability.
- **E-Stick wear pads** are field replaceable and can be shimmed independently for reduced maintenance cost.
- **Anti-Drift valves** minimize drift of the boom, stick and E-stick cylinders during overnight storage and provide excellent controllability while lifting and placing objects. Not available on the 416D.
- **Ride Control** available as an option on all D-Series machines. The Ride-Control system smooths the ride under all job-site conditions.
- **4F/4R fully synchronized gear box** provides on-the-go shifting in all gears and on-the-go engagement of optional all wheel drive.
- **Auto-Shift transmission** is available as an option on D-Series and is standard on 446D for operator comfort and efficiency.
- **Brakes** are oil immersed, multi-disc, self adjusting, and wear surface is made of Kevlar for long service life. Hydraulic assist allows low pedal effort.
- **All Wheel Drive** is available as an option on all D-series machines. It improves mobility and loader performance in poor traction conditions and can be engaged at any time in any operating condition. Includes 4-wheel braking effect feature.
- **Sloping, flip-open hood** allows excellent visibility to the loader working area and tilts up for single location access to all daily service points.
- **Stackable counterweights** allow easy adjustment of machine weight distribution. Lockable tool and battery boxes.
- **Dry-type, radial seal air cleaner** with automatic, integrated dust ejector system provides efficient pre-separation. The two-stage air filter incorporates both air cleaner and pre-cleaner functions into a single unit mounted under the hood.
- **Finish Protected Components (FPC):** All D-Series are assembled with components already topcoat painted or plated. This process improves the appearance of the machine while enhancing the overall quality of every component by providing 100% protective coverage.

Specifications

Backhoe Loaders



MODEL	416D		420D/420D IT		424D	
Gross Flywheel Power						
SAE J1995	58 kW	78 hp	69 kW	93 hp	58 kW	78 hp
ISO 14396	57 kW	76 hp	69 kW	92 hp	57 kW	76 hp
Net Flywheel Power						
SAE J1349	55 kW*	74 hp*	66 kW	89 hp	55 kW	74 hp
ISO 9249	56 kW	75 hp	67 kW	90 hp	56 kW*	75 hp*
EEC 80/1269	56 kW	75 hp	67 kW	90 hp	56 kW*	75 hp*
Operating Weight	6900 kg	15,257 lb	7150 kg	15,772 lb	7502 kg	16,540 lb
Engine Model	3054C DINA		3054C DIT		3054C DINA	
Rated Engine RPM	2200		2200		2200	
No. of Cylinders	4		4		4	
Bore	105 mm	4.13 in	105 mm	4.13 in	105 mm	4.13 in
Stroke	127 mm	5 in	127 mm	5 in	127 mm	5 in
Displacement	4.4 L	268 in ³	4.4 L	268 in ³	4.4 L	268 in ³
Speeds Forward (Power Shuttle)	km/h	mph	km/h	mph	km/h	mph
1st	5.8	3.6	5.8	3.6	5.7	3.5
2nd	9.3	5.8	9.3	5.8	9.1	5.6
3rd	19.2	12.0	19.2	12.0	18.7	11.6
4th	32.8	20.4	32.8	20.4	31.8	19.7
Speeds Reverse (Power Shuttle)						
1st	5.8	3.6	5.8	3.6	5.7	3.5
2nd	9.3	5.8	9.3	5.8	9.1	5.6
3rd	19.2	12.0	19.2	12.0	18.7	11.6
4th	32.8	20.4	32.8	20.4	31.8	19.7
Speeds Forward (Auto-Shift)						
1st	—	—	5.7	3.5	—	—
2nd	—	—	9.2	5.7	—	—
3rd	—	—	12.3	7.6	—	—
4th	—	—	19.0	11.9	—	—
5th	—	—	32.0	20.0	—	—
Speeds Reverse (Auto-Shift)						
1st	—	—	5.7	3.5	—	—
2nd	—	—	12.3	7.6	—	—
3rd	—	—	23.0	14.5	—	—
Turning Circle Wall to Wall	10.7 m	35'0"	10.7 m	35'0"	10.7 m	35'0"
Tires						
2WD Bias Front	11L x 16, 12 PR		11L x 16, 12 PR		12.5/80 x 18, 10 PR	
2WD Bias Rear	19.5 x 24, 10 PR		19.5 x 24, 10 PR		16.9 x 28, 10 PR	
Tires						
AWD Bias Front	12.5/80 x 18, 10 PR		12.5/80 x 18, 10 PR		12.5/80 x 18, 10 PR	
AWD Bias Rear	19.5L x 24, 10 PR		19.5 x 24, 10 PR		16.9 x 28, 10 PR	
Tires						
AWD Bias Front	—		12.5/80 x 18, 10 PR		—	
AWD Bias Rear	—		21L x 24, 12 PR, R4		—	
Tires						
AWD Radial Front	340/80 x R18		340/80 x R18		340/80 x R18	
AWD Radial Rear	19.5 x 24		19.5 x 24		16.9 x R28	
Tires						
AWD Combination Front	340/80 x R18, Radial		340/80 x R18, Radial		—	
AWD Combination Rear	19.5 x 24, 10 PR, Bias		19.5 x 24, 10 PR, Bias		—	
Hydraulic System, closed center	LSPC		LSPC		LSPC	
Pump capacity	139 L/min @ 2200 rpm @ 20 700 kPa (37 gpm @ 2200 rpm @ 3000 psi)		163 L/min @ 2200 rpm @ 22 754 kPa (43 gpm @ 2200 rpm @ 3300 psi)		139 L/min @ 2200 rpm @ 207 bar (37 gpm @ 2200 rpm @ 3000 psi)	
Fuel Tank Capacity	128 L	34 U.S. gal	128 L	34 U.S. gal	128 L	34 U.S. gal

*With optional turbocharger: 416D — SAE J1995 — 60 kW (80 hp).
424D — ISO 9249, EEC 80/1269 — 61 kW (81 hp).

Backhoe Loaders

Specifications



MODEL	428D		430D/430D IT		432D	
Gross Flywheel Power						
SAE J1995	63 kW	85 hp	75 kW	101 hp	69 kW	93 hp
ISO 14396	62 kW	83 hp	75 kW	100 hp	69 kW	92 hp
Net Flywheel Power						
SAE J1349	60 kW	80 hp	72 kW	97 hp	66 kW	89 hp
ISO 9249	61 kW*	81 hp*	73 kW	98 hp	67 kW	90 hp
EEC 80/1269	61 kW*	81 hp*	73 kW	98 hp	67 kW	90 hp
Operating Weight	7738 kg	17,060 lb	7355 kg	16,217 lb	7809 kg	17,220 lb
Engine Model	3054C DIT		3054C DIT		3054C DIT	
Rated Engine RPM	2200		2200		2200	
No. of Cylinders	4		4		4	
Bore	105 mm	4.13 in	105 mm	4.13 in	105 mm	4.13 in
Stroke	127 mm	5 in	127 mm	5 in	127 mm	5 in
Displacement	4.4 L	268 in³	4.4 L	268 in³	4.4 L	268 in³
Speeds Forward (Power Shuttle)	km/h	mph	km/h	mph	km/h	mph
1st	5.7	3.5	6.0	3.7	5.7	3.5
2nd	9.1	5.6	9.6	6.0	9.1	5.6
3rd	18.7	11.6	19.9	12.4	18.7	11.6
4th	31.8	19.7	33.7	20.9	31.8	19.7
Speeds Reverse (Power Shuttle)						
1st	5.7	3.5	6.0	3.7	5.7	3.5
2nd	9.1	5.6	9.6	6.0	9.1	5.6
3rd	18.7	11.6	19.9	12.4	18.7	11.6
4th	31.8	19.7	33.7	20.9	31.8	19.7
Speeds Forward (Auto-Shift)						
1st	5.3	3.3	5.8	3.6	5.3	3.3
2nd	8.4	5.2	9.3	5.8	8.4	5.2
3rd	11.0	6.8	12.3	7.6	11.0	6.8
4th	17.5	10.8	19.0	11.9	17.5	10.8
5th	29.4	18.2	32.0	20.0	29.4	18.2
Speeds Reverse (Auto-Shift)						
1st	5.3	3.3	5.8	3.6	5.3	3.3
2nd	11.0	6.8	12.3	7.6	11.0	6.8
3rd	21.4	13.3	23.0	14.5	21.4	13.3
Turning Circle Wall to Wall	10.7 m	35'0"	10.8 m	35'5"	10.7 m	35'0"
Tires						
2WD Bias Front	—		11L x 16, 12 PR		—	
2WD Bias Rear	—		12.5/80 x 18, 10 PR		—	
Tires						
AWD Bias Front	12.5/80 x 18, 10 PR		12.5/80 x 18, 10 PR		12.5/80 x 18, 10 PR	
AWD Bias Rear	16.9 x 28, 10 PR		19.5 x 24, 10 PR		16.9 x 28, 10 PR	
Tires						
AWD Bias Front	—		12.5/80 x 18, 10 PR		—	
AWD Bias Rear	—		21L x 24, 12 PR, R4		—	
Tires						
AWD Radial Front	340/80 x R18		340/80 x R18		340/80 x R18	
AWD Radial Rear	16.9 x R28		19.5 x 24		16.9 x R28	
Tires						
AWD Combination Front	—		340/80 x R18, Radial		—	
AWD Combination Rear	—		19.5 x 24, 10 PR, Bias		—	
Hydraulic System, closed center	LSPC		LSPC		LSPC	
Pump capacity	163 L/min @ 2200 rpm @ 228 bar (43 gpm @ 2200 rpm @ 3300 psi)		163 L/min @ 2200 rpm @ 22 754 kPa (43 gpm @ 2200 rpm @ 3300 psi)		163 L/min @ 2200 rpm @ 228 bar (43 gpm @ 2200 rpm @ 3300 psi)	
Fuel Tank Capacity	128 L	34 U.S. gal	128 L	34 U.S. gal	128 L	34 U.S. gal

*With optional engine: 428D — ISO 9249, EEC 80/1269 — 73 kW (98 hp).

Specifications
● All Wheel Steer

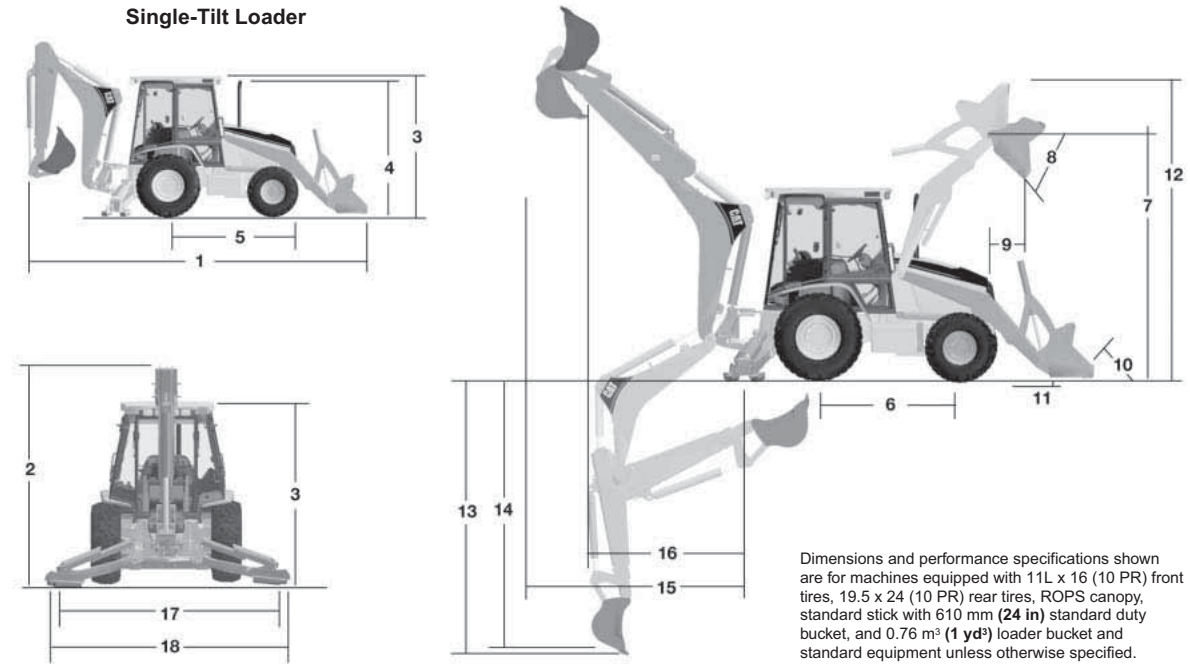
Backhoe Loaders



MODEL	442D		446D	
Gross Flywheel Power	—		82 kW	110 hp
Caterpillar	—		81 kW	109 hp
SAE J1349	75 kW	101 hp	—	—
ISO 14396	75 kW	100 hp	—	—
Net Flywheel Power	—		75 kW	101 hp
SAE J1349	72 kW	97 hp	76 kW	102 hp
ISO 9249	73 kW	98 hp	76 kW	102 hp
EEC 80/1269	73 kW	98 hp	—	—
Operating Weight	7809 kg	17,215 lb	8939 kg	19,666 lb
Engine Model	3054C DIT		3114 DIT	
Rated Engine RPM	2200		2200	
No. of Cylinders	4		4	
Bore	105 mm	4.13 in	105 mm	4.13 in
Stroke	127 mm	5 in	127 mm	5 in
Displacement	4.4 L	268 in ³	4.4 L	268 in ³
Speeds Forward (Power Shuttle)	km/h	mph	km/h	mph
1st	5.7	3.5	—	—
2nd	9.1	5.7	—	—
3rd	18.7	11.6	—	—
4th	31.8	19.8	—	—
Speeds Reverse (Power Shuttle)	—	—	—	—
1st	5.7	3.5	—	—
2nd	9.1	5.7	—	—
3rd	18.7	11.6	—	—
4th	31.8	19.8	—	—
Speeds Forward (Auto-Shift)	—	—	—	—
1st	5.3	3.3	5.6	3.5
2nd	8.4	5.2	8.9	5.5
3rd	11.0	6.8	11.6	7.2
4th	17.5	10.9	18.8	11.7
5th	29.4	18.3	31.5	19.6
Speeds Reverse (Auto-Shift)	—	—	—	—
1st	5.3	3.3	5.6	3.5
2nd	11.0	6.8	11.6	7.2
3rd	21.4	13.3	20.6	12.8
Turning Circle Wall to Wall	10.7 m	35'0"	11.4 m	37'3"
All Wheel Steer Wall to Wall	—		—	
Two Wheel Steer	10.8 m	35'5"	—	—
Circle Steer	10.4 m	34'1"	—	—
Independent Rear	9.5 m	31'2"	—	—
Tires, Single-Tilt, Front	—		14.5/75 x 16.1, 10 PR, F3	
Standard, 2WD	—		12.5 x 20, 10 PR, R4	
Standard, AWD	—		—	
Tires, Single-Tilt, Rear	—		21L x 24, 12 PR, R4	
Standard, 2WD/AWD	—		—	
Tire, Parallel Lift, Front	—		—	
Standard, AWD	12.5/80 x 18, 10 PR		—	
Standard, AWD	12.5/80 x 18, 10 PR		—	
Tires, Parallel Lift, Rear	—		—	
Standard, AWD/AWS	16.9 x 28, 12 PR		—	
Hydraulic System, closed center	LSPC		LSPC	
Pump capacity	163 L/min @ 2200 rpm @ 228 bar (43 gpm @ 2200 rpm @ 3300 psi)		178 L/min @ 2200 rpm @ 22 400 kPa (47 gpm @ 2200 rpm @ 3250 psi)	
Fuel Tank Capacity	128 L	34 U.S. gal	125 L	33 U.S. gal

Backhoe Loaders

Performance Data ● 416D



MACHINE DIMENSIONS	Single-Tilt Loader					
	General Purpose 0.76 m ³ (1 yd ³)		General Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 0.96 m ³ (1.25 yd ³)	
1) Overall transport length	6949 mm	22'10"	7019 mm	23'0"	6974 mm	22'11"
Overall length	6929 mm	22'9"	6999 mm	23'0"	6954 mm	22'10"
2) Overall transport height	3585 mm	11'9"	3585 mm	11'9"	3585 mm	11'9"
Overall width	2352 mm	7'9"	2352 mm	7'9"	2352 mm	7'9"
3) Height to top of cab/canopy	2770 mm	9'1"	2770 mm	9'1"	2770 mm	9'1"
4) Height to top of exhaust stack	2670 mm	8'9"	2670 mm	8'9"	2670 mm	8'9"
Ground clearance (minimum)	297 mm	12"	297 mm	12"	297 mm	12"
5) Rear axle centerline to front grill	2660 mm	8'9"	2660 mm	8'9"	2660 mm	8'9"
Front wheel tread gauge	1871 mm	6'2"	1871 mm	6'2"	1871 mm	6'2"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (2WD/AWD)	2100 mm	6'11"	2100 mm	6'11"	2100 mm	6'11"

LOADER BUCKET DIMENSIONS AND PERFORMANCE	Single-Tilt Loader					
	General Purpose 0.76 m ³ (1 yd ³)		General Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 0.96 m ³ (1.25 yd ³)	
Capacity (SAE) rated	0.76 m ³	1 yd³	0.96 m ³	1.25 yd³	0.96 m ³	1.25 yd³
Width	2262 mm	7'5"	2262 mm	7'5"	2262 mm	7'5"
Lift capacity at maximum height	2473 kg	5453 lb	2400 kg	5292 lb	2240 kg	4938 lb
Breakout force	40 kN	8980 lb	37.9 kN	8524 lb	37.5 kN	8429 lb
7) Maximum hinge pin height (2WD)	3266 mm	10'9"	3266 mm	10'9"	3266 mm	10'9"
(4WD)	3338 mm	10'11"	3338 mm	10'11"	3338 mm	10'11"
8) Dump angle at full height		43°		43°		43°
Dump height at maximum angle	2621 mm	8'7"	2544 mm	8'4"	2609 mm	8'7"
9) Dump reach at maximum angle	753 mm	2'6"	835 mm	2'9"	721 mm	2'4"
10) Maximum bucket rollback at ground level		40°		40°		40°
11) Digging depth	135 mm	5"	135 mm	5"	166 mm	6"
Maximum grading angle		110°		106°		110°
Width of dozer cutting edge		N/A		N/A	2406 mm	7'11"
12) Maximum operating height	3996 mm	13'1"	4146 mm	13'7"	4174 mm	13'8"
Jaw opening maximum		N/A		N/A	790 mm	2'7"
Weight (does not include teeth or forks)	308 kg	838 lb	428 kg	944 lb	659 kg	1453 lb

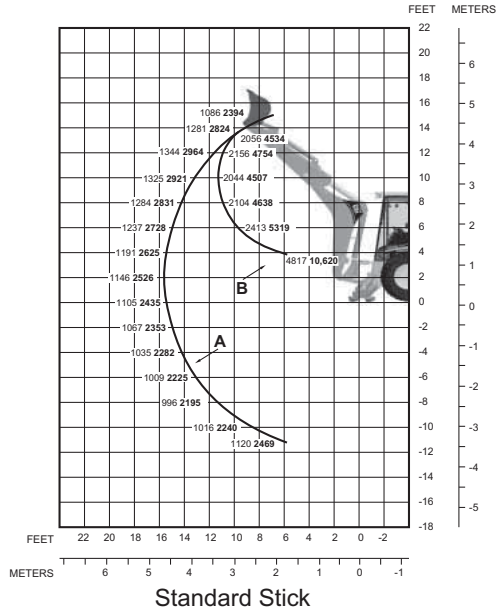
BACKHOE DIMENSIONS AND PERFORMANCE	Standard Stick		Extendible Stick Retracted		Extendible Stick Extended	
	13) Digging depth, SAE (maximum)	4390 mm	14'5"	4465 mm	14'8"	5510 mm
14) Digging depth, 610 mm (2'0") flat bottom	4362 mm	14'4"	4432 mm	14'7"	5474 mm	18'0"
Reach from rear axle centerline at ground line	6740 mm	22'1"	6795 mm	22'4"	7765 mm	25'6"
15) Reach from swing pivot at ground line	5650 mm	18'6"	5705 mm	18'9"	6675 mm	21'11"
Maximum operating height	5450 mm	17'11"	5470 mm	17'11"	6140 mm	20'2"
Loading height	3613 mm	11'10"	3630 mm	11'11"	4175 mm	13'8"
16) Loading reach	1732 mm	5'8"	1819 mm	6'0"	2736 mm	9'0"
Swing arc		180°		180°		180°
Bucket rotation		205°		205°		205°
17) Stabilizer spread, operating position (center of pad)	3219 mm	10'7"	3219 mm	10'7"	3219 mm	10'7"
18) Stabilizer spread, operating position (outside edge of pad)	3689 mm	12'1"	3689 mm	12'1"	3689 mm	12'1"
Stabilizer spread, transport position	2352 mm	7'9"	2352 mm	7'9"	2352 mm	7'9"
Bucket dig force	52 kN	11,702 lb	51.6 kN	11,599 lb	51.6 kN	11,599 lb
Stick dig force	34.9 kN	7841 lb	34.2 kN	7693 lb	25.2 kN	5661 lb

Backhoe Loaders

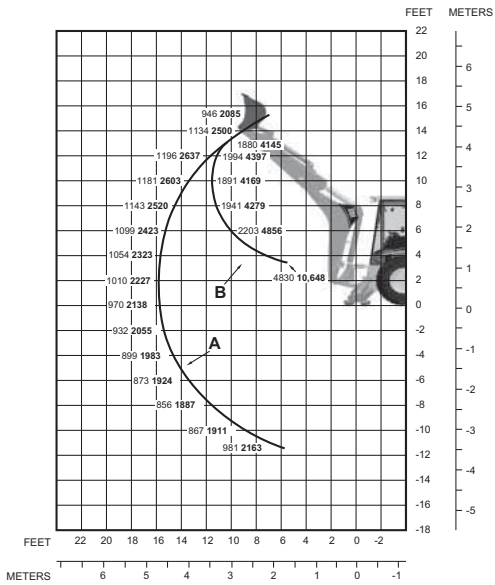
Lift Capacities ● 416D

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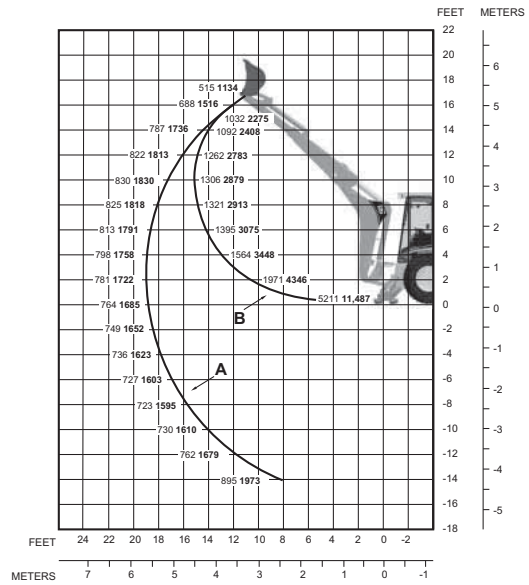
- A — Boom lift kg lb
- B — Stick lift kg lb



Standard Stick

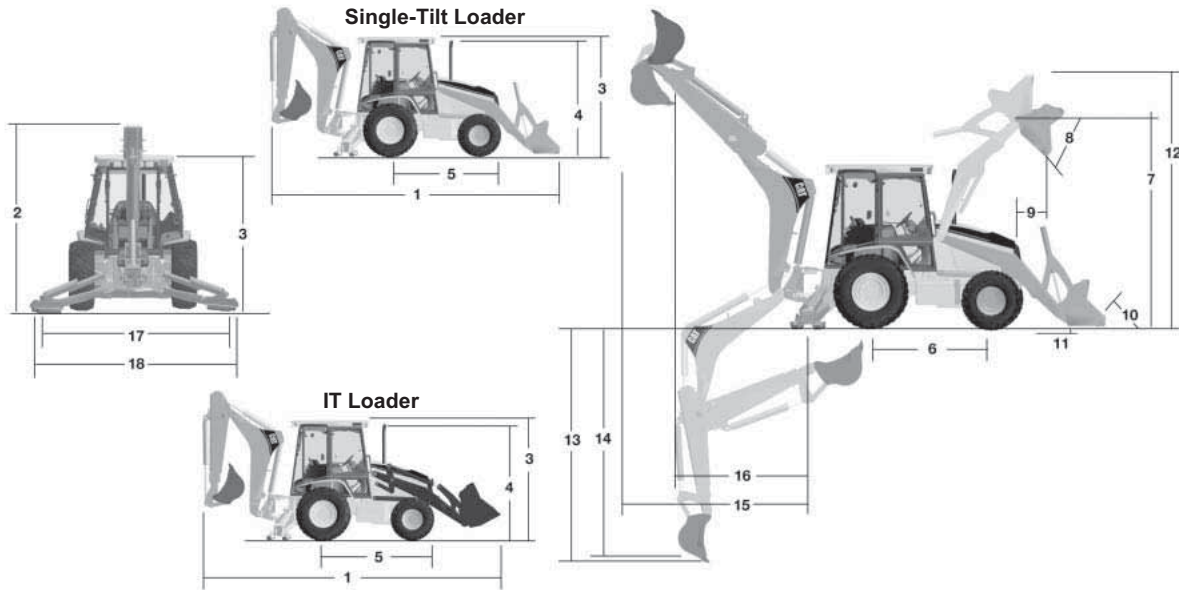


Extendible Stick —
Retracted



Extendible Stick —
Extended

Lift capacities are over-end values. Machine equipped with 2WD, OROPS, 0.76 m³ (1 yd³) general-purpose loader bucket, 610 mm (24 in) standard duty backhoe bucket and 355 kg (780 lb) counterweight. Extendible stick includes 567 kg (1250 lb) counterweight.



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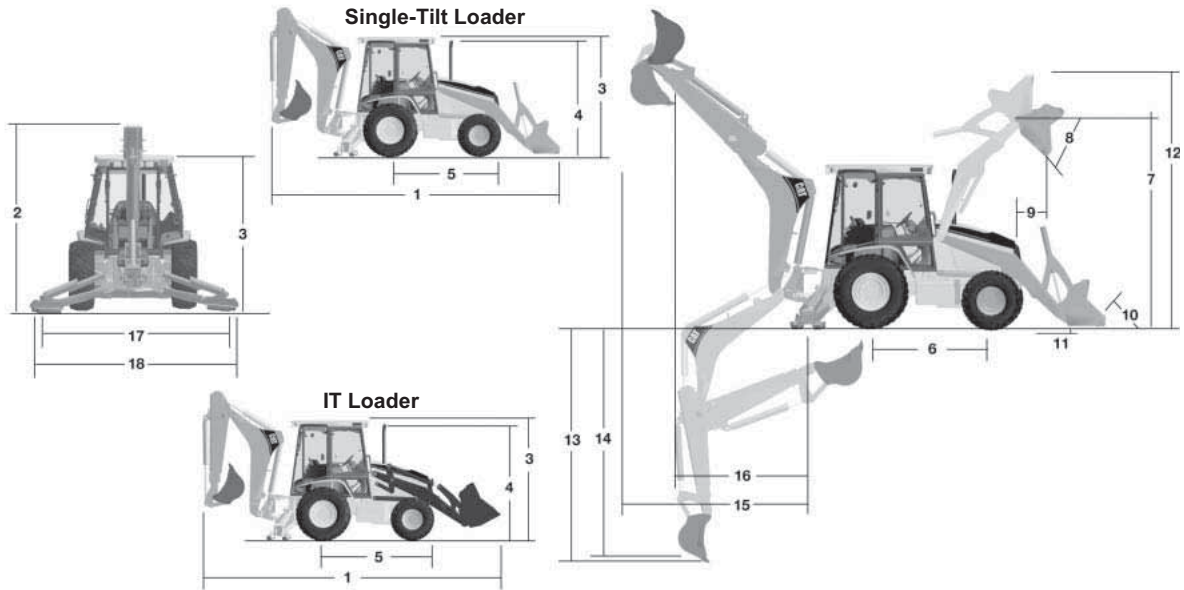
MACHINE DIMENSIONS	Single-Tilt Loader					
	General Purpose 0.96 m ³ (1.25 yd ³)		General Purpose 1 m ³ (1.31 yd ³)		General Purpose 1.07 m ³ (1.4 yd ³)	
1) Overall transport length	7019 mm	23'0"	6989 mm	22'11"	7052 mm	23'2"
Overall length	6999 mm	23'0"	6954 mm	22'10"	7015 mm	23'0"
2) Overall transport height	3585 mm	11'9"	3585 mm	11'9"	3585 mm	11'9"
Overall width	2352 mm	7'9"	2352 mm	7'9"	2352 mm	7'9"
3) Height to top of cab/canopy	2770 mm	9'1"	2770 mm	9'1"	2770 mm	9'1"
4) Height to top of exhaust stack	2670 mm	8'9"	2670 mm	8'9"	2670 mm	8'9"
Ground clearance (minimum)	297 mm	12"	297 mm	12"	297 mm	12"
5) Rear axle centerline to front grill	2660 mm	8'9"	2660 mm	8'9"	2660 mm	8'9"
Front wheel tread gauge	1871 mm	6'2"	1871 mm	6'2"	1871 mm	6'2"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (2WD/AWD)	2100 mm	6'11"	2100 mm	6'11"	2100 mm	6'11"

MACHINE DIMENSIONS	Single-Tilt Loader			
	Multi Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 1.03 m ³ (1.35 yd ³)	
1) Overall transport length	6974 mm	22'11"	6974 mm	22'11"
Overall length	6954 mm	22'10"	6954 mm	22'10"
2) Overall transport height	3585 mm	11'9"	3585 mm	11'9"
Overall width	2352 mm	7'9"	2352 mm	7'9"
3) Height to top of cab/canopy	2770 mm	9'1"	2770 mm	9'1"
4) Height to top of exhaust stack	2670 mm	8'9"	2670 mm	8'9"
Ground clearance (minimum)	297 mm	12"	297 mm	12"
5) Rear axle centerline to front grill	2660 mm	8'9"	2660 mm	8'9"
Front wheel tread gauge	1871 mm	6'2"	1871 mm	6'2"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (2WD/AWD)	2100 mm	6'11"	2100 mm	6'11"

Backhoe Loaders

Performance Data

● 420D/420D IT



MACHINE DIMENSIONS	IT Loader with Quick Coupler							
	General Purpose 0.96 m ³ (1.25 yd ³)		General Purpose 1 m ³ (1.31 yd ³)		Multi Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 1.03 m ³ (1.35 yd ³)	
1) Overall transport length	7064 mm	23'2"	7034 mm	23'1"	7014 mm	23'0"	7014 mm	23'0"
Overall length	7044 mm	23'1"	6998 mm	23'0"	6994 mm	22'11"	6994 mm	22'11"
2) Overall transport height	3585 mm	11'9"	3585 mm	11'9"	3585 mm	11'9"	3585 mm	11'9"
Overall width	2352 mm	7'9"	2352 mm	7'9"	2352 mm	7'9"	2352 mm	7'9"
3) Height to top of cab/canopy	2770 mm	9'1"	2770 mm	9'1"	2770 mm	9'1"	2770 mm	9'1"
4) Height to top of exhaust stack	2670 mm	8'9"	2670 mm	8'9"	2670 mm	8'9"	2670 mm	8'9"
Ground clearance (minimum)	297 mm	12"	297 mm	12"	297 mm	12"	297 mm	12"
5) Rear axle centerline to front grill	2660 mm	8'9"	2660 mm	8'9"	2660 mm	8'9"	2660 mm	8'9"
Front wheel tread gauge	1871 mm	6'2"	1871 mm	6'2"	1871 mm	6'2"	1871 mm	6'2"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (2WD/AWD)	2100 mm	6'11"	2100 mm	6'11"	2100 mm	6'11"	2100 mm	6'11"

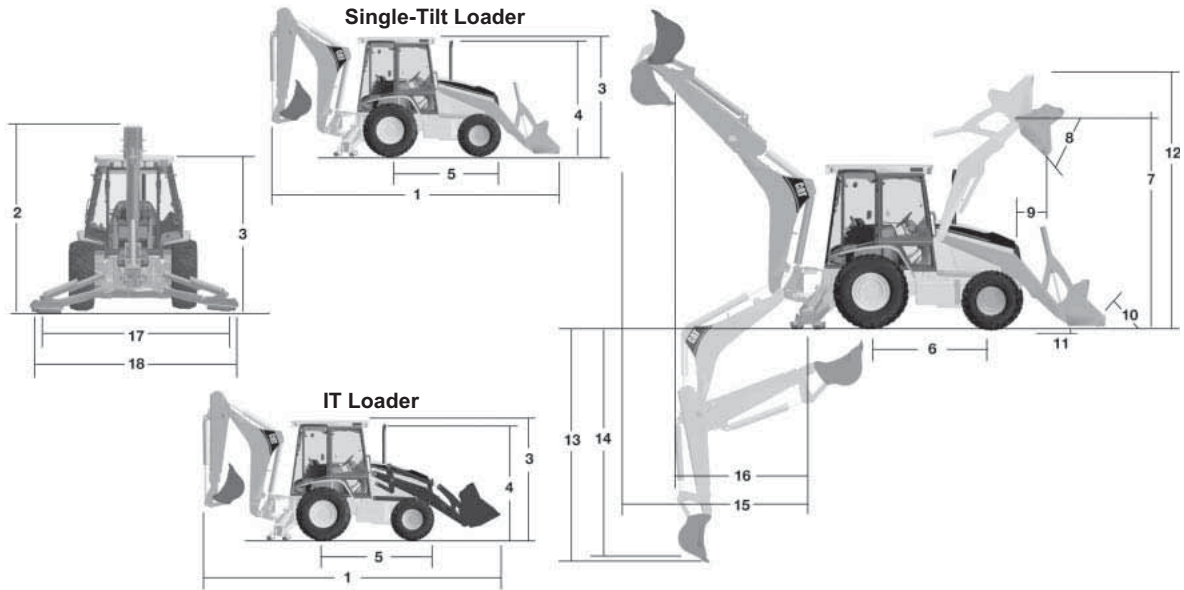
LOADER BUCKET DIMENSIONS AND PERFORMANCE	Single-Tilt Loader					
	General Purpose 0.96 m ³ (1.25 yd ³)		General Purpose 1 m ³ (1.31 yd ³)		General Purpose 1.07 m ³ (1.4 yd ³)	
Capacity (SAE) rated	0.96 m ³	1.25 yd³	1 m ³	1.31 yd³	1.07 m ³	1.4 yd³
Width	2262 mm	7'5"	2406 mm	7'11"	2262 mm	7'5"
Lift capacity at maximum height	2896 kg	6385 lb	2898 kg	6391 lb	2387 kg	6254 lb
Breakout force	45.1 kN	10,131 lb	45.7 kN	10,269 lb	44.6 kN	10,026 lb
7) Maximum hinge pin height (2WD)	3266 mm	10'9"	3266 mm	10'9"	3266 mm	10'9"
(4WD)	3338 mm	10'11"	3338 mm	10'11"	3338 mm	10'11"
8) Dump angle at full height		43°		43°		43°
Dump height at maximum angle	2544 mm	8'4"	2575 mm	8'5"	2521 mm	8'3"
9) Dump reach at maximum angle	835 mm	2'9"	802 mm	2'8"	801 mm	2'8"
10) Maximum bucket rollback at ground level		40°		40°		40°
11) Digging depth	135 mm	5"	135 mm	5"	174 mm	7"
Maximum grading angle		106°		107°		107°
Width of dozer cutting edge		N/A		N/A		N/A
12) Maximum operating height	4146 mm	13'7"	4146 mm	13'7"	4188 mm	13'9"
Jaw opening maximum		N/A		N/A		N/A
Weight (does not include teeth or forks)	431 kg	950 lb	445 kg	980 lb	438 kg	965 lb

LOADER BUCKET DIMENSIONS AND PERFORMANCE	Single-Tilt Loader			
	Multi Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 1.03 m ³ (1.35 yd ³)	
Capacity (SAE) rated	0.96 m ³	1.25 yd³	1.03 m ³	1.35 yd³
Width	2262 mm	7'5"	2406 mm	7'11"
Lift capacity at maximum height	2747 kg	6056 lb	2707 kg	5968 lb
Breakout force	44.9 kN	10,099 lb	44.6 kN	10,018 lb
7) Maximum hinge pin height (2WD)	3266 mm	10'9"	3266 mm	10'9"
(4WD)	3338 mm	10'11"	3338 mm	10'11"
8) Dump angle at full height		43°		43°
Dump height at maximum angle	2609 mm	8'7"	2609 mm	8'7"
9) Dump reach at maximum angle	721 mm	2'4"	721 mm	2'4"
10) Maximum bucket rollback at ground level		40°		40°
11) Digging depth	165 mm	6.5"	165 mm	6.5"
Maximum grading angle		110°		110°
Width of dozer cutting edge	2260 mm	7'5"	2260 mm	7'5"
12) Maximum operating height	4174 mm	13'8"	4174 mm	13'8"
Jaw opening maximum	790 mm	2'7"	790 mm	2'7"
Weight (does not include teeth or forks)	662 kg	1460 lb	685 kg	1510 lb

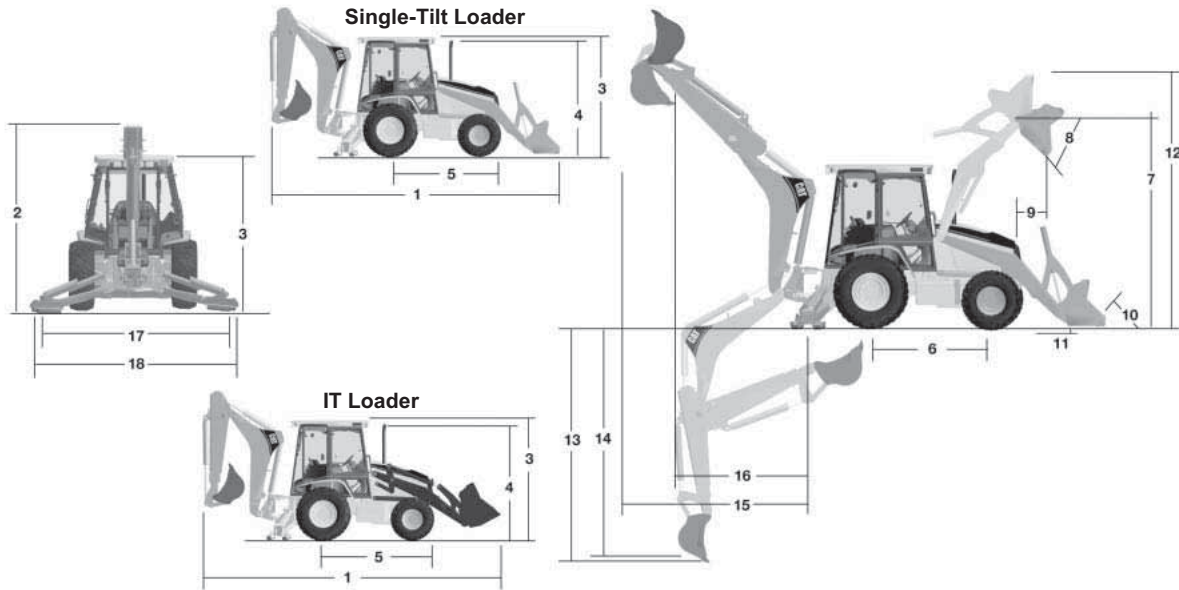
Backhoe Loaders

Performance Data

● 420D/420D IT



LOADER BUCKET DIMENSIONS AND PERFORMANCE	IT Loader with Quick Coupler							
	General Purpose 0.96 m ³ (1.25 yd ³)		General Purpose 1 m ³ (1.31 yd ³)		Multi Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 1.03 m ³ (1.35 yd ³)	
Capacity (SAE) rated	0.96 m ³	1.25 yd³	1 m ³	1.31 yd³	0.96 m ³	1.25 yd³	1.03 m ³	1.35 yd³
Width	2262 mm	7'5"	2406 mm	7'11"	2262 mm	7'5"	2406 mm	7'11"
Lift capacity at maximum height	3162 kg	6970 lb	3152 kg	6949 lb	2958 kg	6521 lb	2916 kg	6428 lb
Breakout force	47 kN	10,564 lb	47.3 kN	10,628 lb	48.5 kN	10,897 lb	48.3 kN	10,853 lb
7) Maximum hinge pin height (2WD)	3266 mm	10'9"	3266 mm	10'9"	3266 mm	10'9"	3266 mm	10'9"
(4WD)	3338 mm	10'11"	3338 mm	10'11"	3338 mm	10'11"	3338 mm	10'11"
8) Dump angle at full height	43°		43°		43°		43°	
Dump height at maximum angle	2462 mm	8'1"	2494 mm	8'2"	2531 mm	8'4"	2531 mm	8'4"
9) Dump reach at maximum angle	862 mm	2'10"	830 mm	2'9"	751 mm	2'6"	751 mm	2'6"
10) Maximum bucket rollback at ground level	40°		40°		40°		40°	
11) Digging depth	135 mm	5"	135 mm	5"	165 mm	6.5"	165 mm	6.5"
Maximum grading angle	107°		108°		111°		111°	
Width of dozer cutting edge	N/A		N/A		2406 mm	7'11"	2406 mm	7'11"
12) Maximum operating height	4204 mm	13'10"	4204 mm	13'10"	4223 mm	13'10"	4223 mm	13'10"
Jaw opening maximum	N/A		N/A		790 mm	2'7"	790 mm	2'7"
Weight (does not include teeth or forks)	431 kg	950 lb	445 kg	980 lb	662 kg	1460 lb	685 kg	1510 lb



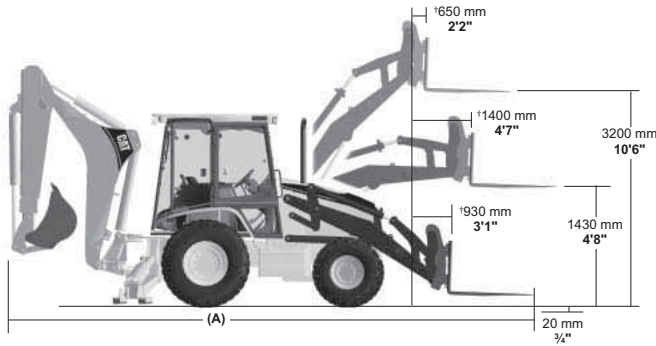
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BACKHOE DIMENSIONS AND PERFORMANCE	Standard Stick		Extendible Stick Retracted		Extendible Stick Extended	
	mm	ft/in	mm	ft/in	mm	ft/in
13) Digging depth, SAE (maximum)	4390 mm	14'5"	4465 mm	14'8"	5510 mm	18'1"
14) Digging depth, 610 mm (2'0") flat bottom	4362 mm	14'4"	4432 mm	14'7"	5474 mm	18'0"
Reach from rear axle centerline at ground line	6740 mm	22'1"	6795 mm	22'4"	7765 mm	25'6"
15) Reach from swing pivot at ground line	5650 mm	18'6"	5705 mm	18'9"	6675 mm	21'11"
Maximum operating height	5450 mm	17'11"	5470 mm	17'11"	6140 mm	20'2"
Loading height	3613 mm	11'10"	3630 mm	11'11"	4175 mm	13'8"
16) Loading reach	1732 mm	5'8"	1819 mm	6'0"	2736 mm	9'0"
Swing arc		180°		180°		180°
Bucket rotation		205°		205°		205°
17) Stabilizer spread, operating position (center of pad)	3219 mm	10'7"	3219 mm	10'7"	3219 mm	10'7"
18) Stabilizer spread, operating position (outside edge of pad)	3689 mm	12'1"	3689 mm	12'1"	3689 mm	12'1"
Stabilizer spread, transport position	2352 mm	7'9"	2352 mm	7'9"	2352 mm	7'9"
Bucket dig force	65.4 kN	14,712 lb	64.8 kN	14,586 lb	64.8 kN	14,586 lb
Stick dig force	38.2 kN	8593 lb	37.5 kN	8421 lb	27.5 kN	6188 lb

Backhoe Loaders

Performance Data ● 420D/420D IT

DIMENSIONS WITH FORKS/ MATERIAL-HANDLING ARM	Cat 420D IT Operating Specifications with Forks					
	1050 mm (3'5")		1200 mm (3'11")		1350 mm (4'5")	
Fork Tine Length						
Operating load (SAE J1197)	1885 kg*	4155 lb*	1808 kg*	3985 lb*	1737 kg*	3829 lb*
Operating load (CEN474-4)	2290 kg*	5049 lb*	2279 kg*	5025 lb*	2270 kg*	5003 lb*
Overall length (A)	7464 mm	24'6"	7614 mm	25'0"	7764 mm	25'6"
Load center	525 mm	1'9"	600 mm	2'0"	675 mm	2'3"



*Tip limited.

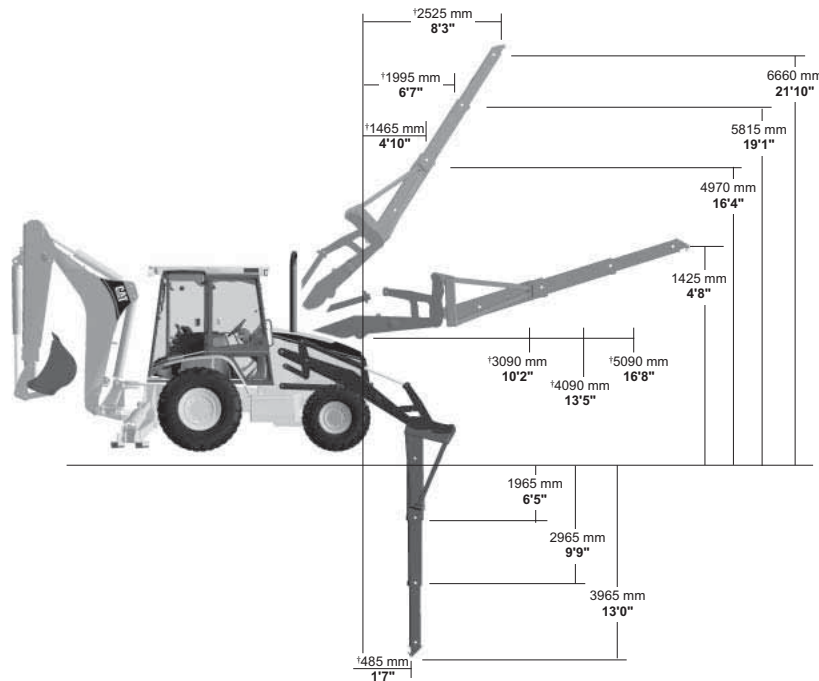
Specifications include lubricants, full fuel tank, ROPS cab, 80 kg (176 lb) operator, 355 kg (780 lb) counterweight, standard tires, standard stick, 610 mm (24 in) standard-duty bucket, 2WD.

Machine stability is affected by machine options and backhoe attachments.

All dimensions are approximate.

[†]Measured from nose of machine.

DIMENSIONS WITH FORKS/ MATERIAL-HANDLING ARM	Cat 420D IT Operating Specifications with Material-Handling Arm					
	Retracted		Mid-Position		Extended	
Material-Handling Arm Position						
Operating load (SAE J1197 and CEN474-4)	967 kg*	2131 lb*	612 kg*	1349 lb*	448 kg*	988 lb*
Overall length, maximum	8574 mm	28'2"	9574 mm	31'5"	10 574 mm	34'8"



*Hydraulic limited.

Specifications include lubricants, full fuel tank, ROPS cab, 80 kg (176 lb) operator, 355 kg (780 lb) counterweight, standard tires, standard stick, 610 mm (24 in) standard-duty bucket, 2WD.

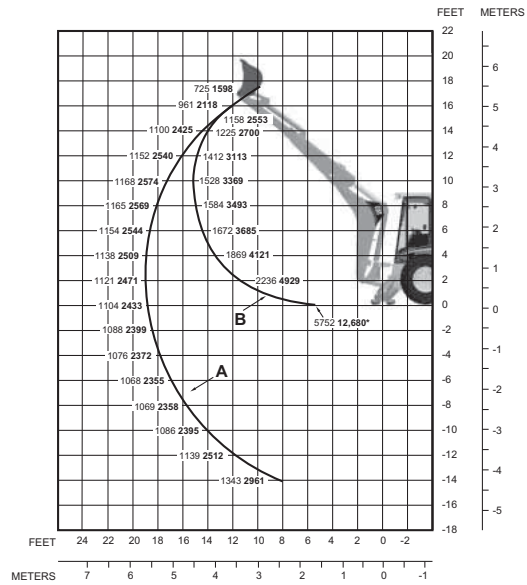
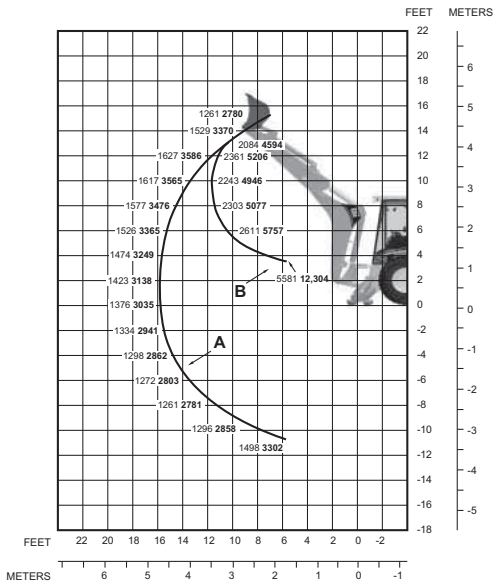
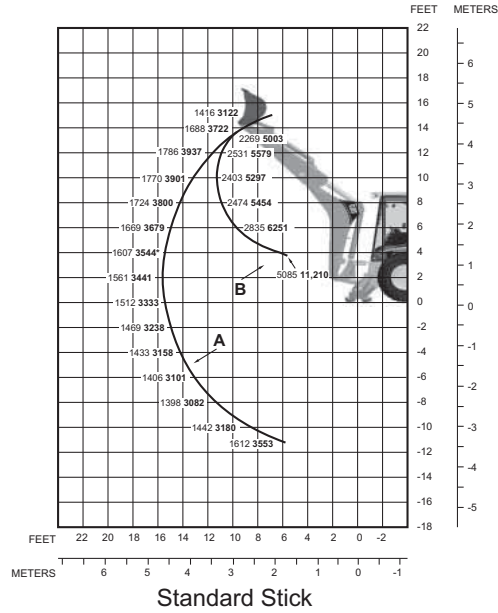
Machine stability is affected by machine options and backhoe attachments.

All dimensions are approximate.

[†]Measured from nose of machine.

KEY

- A — Boom lift kg lb
- B — Stick lift kg lb

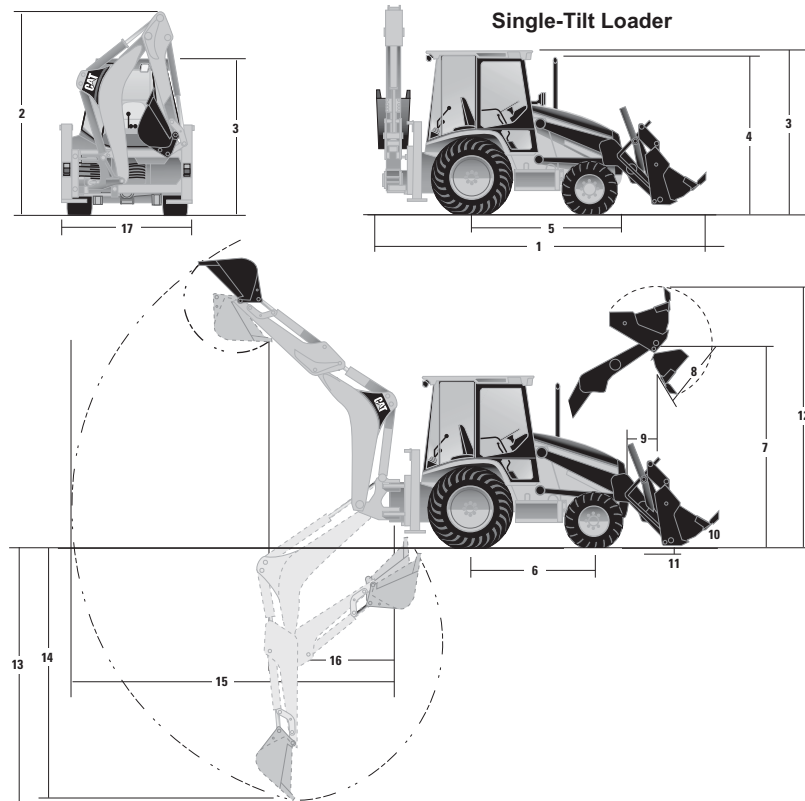


Lift capacities are over-end values. Machine equipped with 2WD, OROPS, 0.96 m³ (1.25 yd³) general-purpose bucket and 355 kg (780 lb) counterweight. Extendible stick includes 567 kg (1250 lb) counterweight.

*Indicates lift capacity is stability limited.

Backhoe Loaders

Performance Data ● 424D



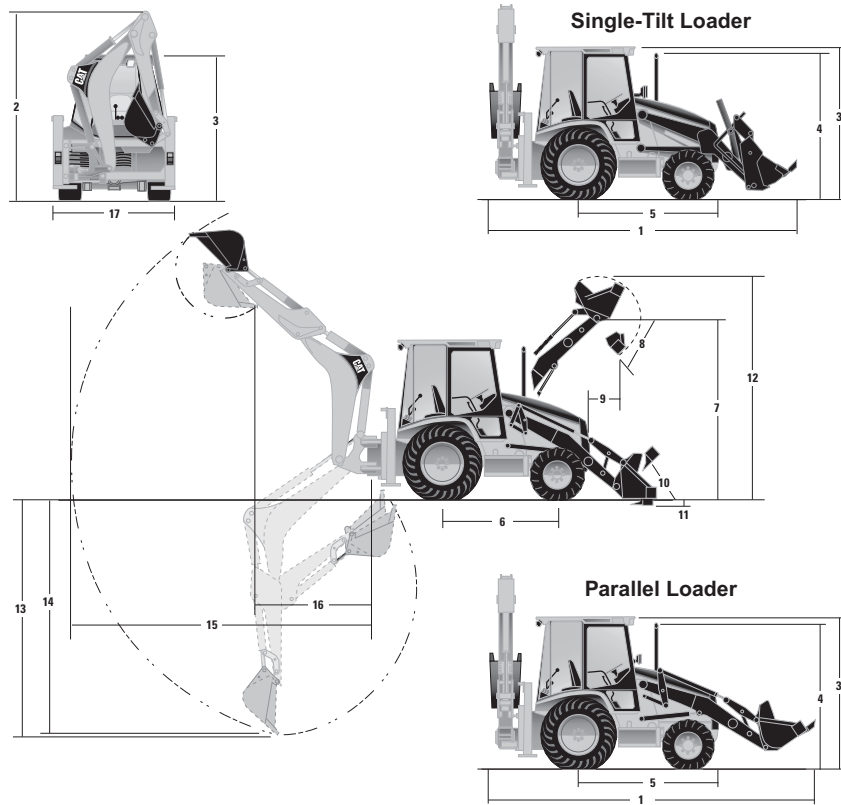
MACHINE DIMENSIONS	Single-Tilt Loader			
	General Purpose		Multi Purpose	
	mm	ft/in	mm	ft/in
1) Overall transport length	5760 mm	18'11"	5685 mm	18'8"
Overall length	5710 mm	18'9"	5650 mm	18'6"
2) Overall transport height	3740 mm	12'3"	3740 mm	12'3"
Overall width (Standard frame)	2396 mm	7'10"	2406 mm	7'11"
Overall width (Narrow frame)	2262 mm	7'5"	2262 mm	7'5"
3) Height to top of cab/canopy	2900 mm	9'6"	2900 mm	9'6"
4) Height to top of exhaust stack	2700 mm	8'10"	2700 mm	8'10"
Ground clearance (minimum)	320 mm	13"	320 mm	13"
5) Rear axle centerline to front grill	2613 mm	8'7"	2613 mm	8'7"
Front wheel tread gauge	1780 mm	5'10"	1780 mm	5'10"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (AWD)	2100 mm	6'11"	2100 mm	6'11"

LOADER BUCKET DIMENSIONS AND PERFORMANCE	Single-Tilt Loader (Narrow Bucket)				Single-Tilt Loader (Standard Bucket)			
	General Purpose		Multi Purpose		General Purpose		Multi Purpose	
Capacity (SAE) rated	0.96 m ³	1.25 yd³	0.96 m ³	1.25 yd³	1 m ³	1.31 yd³	0.96 m ³	1.25 yd³
Width	2262 mm	7'5"	2262 mm	7'5"	2396 mm	7'10"	2396 mm	7'10"
Lift capacity at maximum height	2454 kg	5410 lb	2292 kg	5050 lb	2416 kg	5320 lb	2256 kg	4970 lb
Breakout force	39.5 kN	8880 lb	38.6 kN	8680 lb	38.9 kN	8750 lb	38 kN	8550 lb
7) Maximum hinge pin height	3321 mm	10'11"	3321 mm	10'11"	3321 mm	10'11"	3321 mm	10'11"
8) Dump angle at full height	43°		43°		43°		43°	
Dump height at maximum angle	2633 mm	8'8"	2666 mm	8'9"	2633 mm	8'8"	2666 mm	8'9"
9) Dump reach at maximum angle	794 mm	2'7"	714 mm	2'4"	794 mm	2'7"	714 mm	2'4"
10) Maximum bucket rollback at ground level	39°		40°		39°		40°	
11) Digging depth	78 mm	3"	109 mm	4"	78 mm	3"	109 mm	4"
Maximum grading angle	109°		111°		109°		111°	
Width of dozer cutting edge	N/A		2396 mm	7'10"	N/A		2396 mm	7'10"
12) Maximum operating height	4201 mm	13'9"	4229 mm	13'10"	4201 mm	13'9"	4229 mm	13'10"
Jaw opening maximum	N/A		927 mm	3'0"	N/A		927 mm	3'0"
Weight (does not include teeth or forks)	432 kg	953 lb	611 kg	1347 lb	445 kg	981 lb	700 kg	1544 lb

BACKHOE DIMENSIONS AND PERFORMANCE	Standard Stick		Extendible Stick Retracted		Extendible Stick Extended	
	13) Digging depth, manufacturers maximum	4854 mm	15'11"	4916 mm	16'2"	5894 mm
14) Digging depth, 610 mm (2'0") flat bottom	4850 mm	15'11"	4855 mm	15'11"	5865 mm	19'3"
15) Reach from swing pivot at ground line	5637 mm	18'6"	5692 mm	18'8"	6664 mm	21'10"
Loading height	3712 mm	12'2"	3730 mm	12'3"	4274 mm	14'0"
16) Loading reach	1742 mm	5'9"	1829 mm	6'0"	2747 mm	9'0"
Swing arc	180°		180°		180°	
Bucket rotation	205°		205°		205°	
17) Stabilizer width (Standard frame)	2360 mm	7'9"	2360 mm	7'9"	2360 mm	7'9"
Stabilizer width (Narrow frame)	2196 mm	7'2"	2196 mm	7'2"	2196 mm	7'2"
Bucket dig force	52.1 kN	11,720 lb	51.6 kN	11,610 lb	51.6 kN	11,610 lb
Stick dig force	34.9 kN	7850 lb	34.2 kN	7690 lb	25.2 kN	5670 lb
Total side shift travel (Standard frame)	1260 mm	4'2"	1260 mm	4'2"	1260 mm	4'2"
Total side shift travel (Narrow frame)	1096 mm	3'7"	1096 mm	3'7"	1096 mm	3'7"

Backhoe Loaders

Performance Data ● 428D



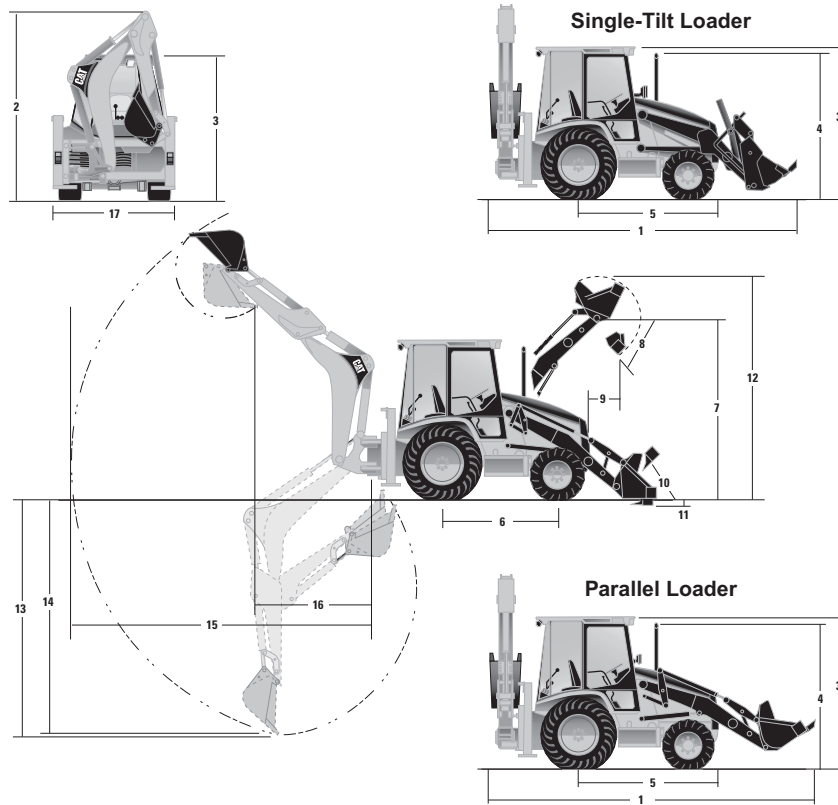
MACHINE DIMENSIONS	Parallel Loader				Single-Tilt Loader			
	General Purpose		Multi Purpose		General Purpose		Multi Purpose	
1) Overall transport length	5760 mm	18'11"	5685 mm	18'8"	5760 mm	18'11"	5685 mm	18'8"
Overall length	5710 mm	18'9"	5650 mm	18'6"	5710 mm	18'9"	5650 mm	18'6"
2) Overall transport height	3740 mm	12'3"	3740 mm	12'3"	3740 mm	12'3"	3740 mm	12'3"
Overall width (Standard frame)	2396 mm	7'10"	2406 mm	7'11"	2396 mm	7'10"	2406 mm	7'11"
Overall width (Narrow frame)	2262 mm	7'5"	2262 mm	7'5"	2262 mm	7'5"	2262 mm	7'5"
3) Height to top of cab/canopy	2900 mm	9'6"	2900 mm	9'6"	2900 mm	9'6"	2900 mm	9'6"
4) Height to top of exhaust stack	2700 mm	8'10"	2700 mm	8'10"	2700 mm	8'10"	2700 mm	8'10"
Ground clearance (minimum)	320 mm	13"	320 mm	13"	320 mm	13"	320 mm	13"
5) Rear axle centerline to front grill	2613 mm	8'7"	2613 mm	8'7"	2613 mm	8'7"	2613 mm	8'7"
Front wheel tread gauge	1780 mm	5'10"	1780 mm	5'10"	1780 mm	5'10"	1780 mm	5'10"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (AWD)	2100 mm	6'11"	2100 mm	6'11"	2100 mm	6'11"	2100 mm	6'11"

LOADER BUCKET DIMENSIONS AND PERFORMANCE	Parallel Loader (Narrow Bucket)				Single-Tilt Loader (Narrow Bucket)			
	General Purpose		Multi Purpose		General Purpose		Multi Purpose	
	Capacity (SAE) rated	0.96 m ³	1.25 yd³	0.96 m ³	1.25 yd³	0.96 m ³	1.25 yd³	0.96 m ³
Width	2262 mm	7'5"	2262 mm	7'5"	2262 mm	7'5"	2262 mm	7'5"
Lift capacity at maximum height	3468 kg	7646 lb	3232 kg	7125 lb	2997 kg	6607 lb	2806 kg	6186 lb
Breakout force	51 kN	11,465 lb	56.6 kN	12,725 lb	47 kN	10,570 lb	45.9 kN	10,320 lb
7) Maximum hinge pin height	3321 mm	10'11"	3321 mm	10'11"	3321 mm	10'11"	3321 mm	10'11"
8) Dump angle at full height	47°		47°		43°		43°	
Dump height at maximum angle	2613 mm	8'7"	2650 mm	8'8"	2633 mm	8'8"	2666 mm	8'9"
9) Dump reach at maximum angle	764 mm	2'6"	685 mm	2'3"	794 mm	2'7"	714 mm	2'4"
10) Maximum bucket rollback at ground level	40°		40°		39°		40°	
11) Digging depth	77 mm	3"	108 mm	4"	78 mm	3"	109 mm	4"
Maximum grading angle	111°		114°		109°		111°	
Width of dozer cutting edge	N/A		2406 mm	7'11"	N/A		2406 mm	7'11"
12) Maximum operating height	4201 mm	13'9"	4229 mm	13'10"	4201 mm	13'9"	4229 mm	13'10"
Jaw opening maximum	N/A		927 mm	3'0"	N/A		927 mm	3'0"
Weight (does not include teeth or forks)	426 kg	939 lb	547 kg	1206 lb	432 kg	952 lb	611 kg	1347 lb

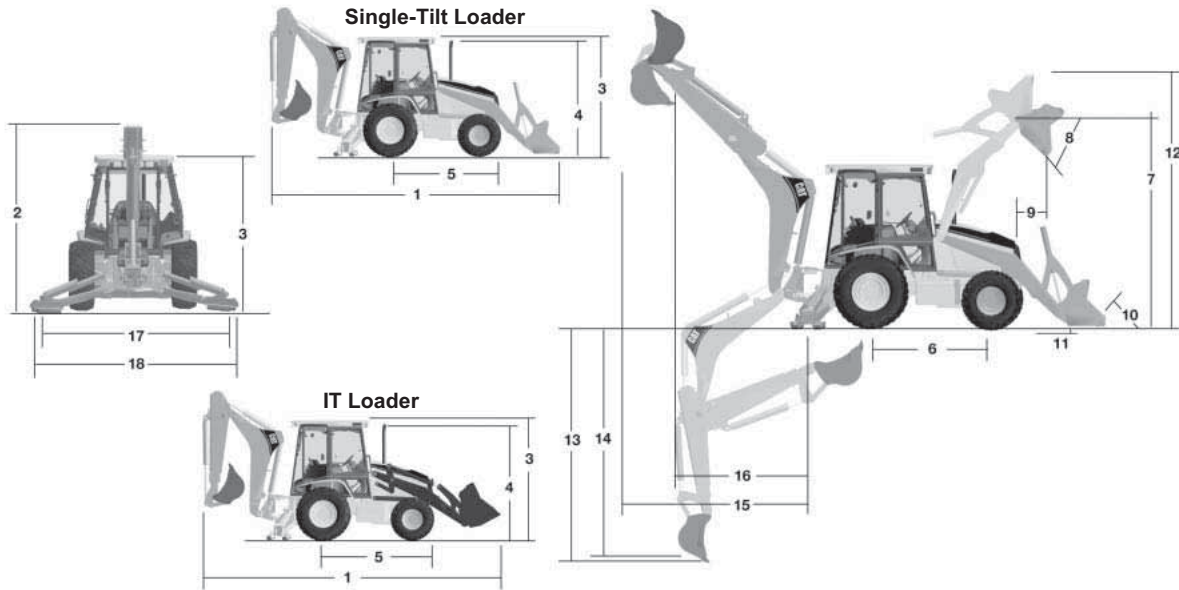
LOADER BUCKET DIMENSIONS AND PERFORMANCE	Parallel Loader (Standard Bucket)				Single-Tilt Loader (Standard Bucket)			
	General Purpose		Multi Purpose		General Purpose		Multi Purpose	
	Capacity (SAE) rated	1 m ³	1.31 yd³	1.03 m ³	1.35 yd³	1 m ³	1.31 yd³	1.03 m ³
Width	2396 mm	7'10"	2406 mm	7'11"	2396 mm	7'10"	2406 mm	7'11"
Lift capacity at maximum height	3388 kg	7470 lb	3152 kg	6950 lb	2917 kg	6432 lb	2726 kg	6010 lb
Breakout force	50.2 kN	11,290 lb	55.7 kN	12,530 lb	46.3 kN	10,418 lb	45.2 kN	10,170 lb
7) Maximum hinge pin height	3321 mm	10'11"	3321 mm	10'11"	3321 mm	10'11"	3321 mm	10'11"
8) Dump angle at full height	47°		47°		43°		43°	
Dump height at maximum angle	2613 mm	8'7"	2650 mm	8'8"	2633 mm	8'8"	2666 mm	8'9"
9) Dump reach at maximum angle	764 mm	2'6"	685 mm	2'3"	794 mm	2'7"	714 mm	2'4"
10) Maximum bucket rollback at ground level	40°		40°		39°		40°	
11) Digging depth	77 mm	3"	108 mm	4"	78 mm	3"	109 mm	4"
Maximum grading angle	111°		114°		109°		111°	
Width of dozer cutting edge	N/A		2406 mm	7'11"	N/A		2406 mm	7'11"
12) Maximum operating height	4201 mm	13'9"	4229 mm	13'10"	4201 mm	13'9"	4229 mm	13'10"
Jaw opening maximum	N/A		927 mm	3'0"	N/A		927 mm	3'0"
Weight (does not include teeth or forks)	445 kg	981 lb	685 kg	1510 lb	445 kg	981 lb	700 kg	1544 lb

Backhoe Loaders

Performance Data ● 428D



BACKHOE DIMENSIONS AND PERFORMANCE	Standard Stick		Extendible Stick Retracted		Extendible Stick Extended	
	13) Digging depth, manufacturers maximum	4854 mm	15'11"	4916 mm	16'2"	5894 mm
14) Digging depth, 610 mm (2'0") flat bottom	4850 mm	15'11"	4855 mm	15'11"	5865 mm	19'3"
15) Reach from swing pivot at ground line	5637 mm	18'6"	5692 mm	18'8"	6664 mm	21'10"
Loading height	3712 mm	12'2"	3730 mm	12'3"	4274 mm	14'0"
16) Loading reach	1742 mm	5'9"	1829 mm	6'0"	2747 mm	9'0"
Swing arc	180°		180°		180°	
Bucket rotation	205°		205°		205°	
17) Stabilizer width (Standard frame)	2360 mm	7'9"	2360 mm	7'9"	2360 mm	7'9"
Stabilizer width (Narrow frame)	2196 mm	7'2"	2196 mm	7'2"	2196 mm	7'2"
Bucket dig force	57.1 kN	12,840 lb	56.6 kN	12,730 lb	56.6 kN	12,730 lb
Stick dig force	38.2 kN	8590 lb	37.5 kN	8430 lb	27 kN	6070 lb
Total side shift travel (Standard frame)	1260 mm	4'2"	1260 mm	4'2"	1260 mm	4'2"
Total side shift travel (Narrow frame)	1096 mm	3'7"	1096 mm	3'7"	1096 mm	3'7"



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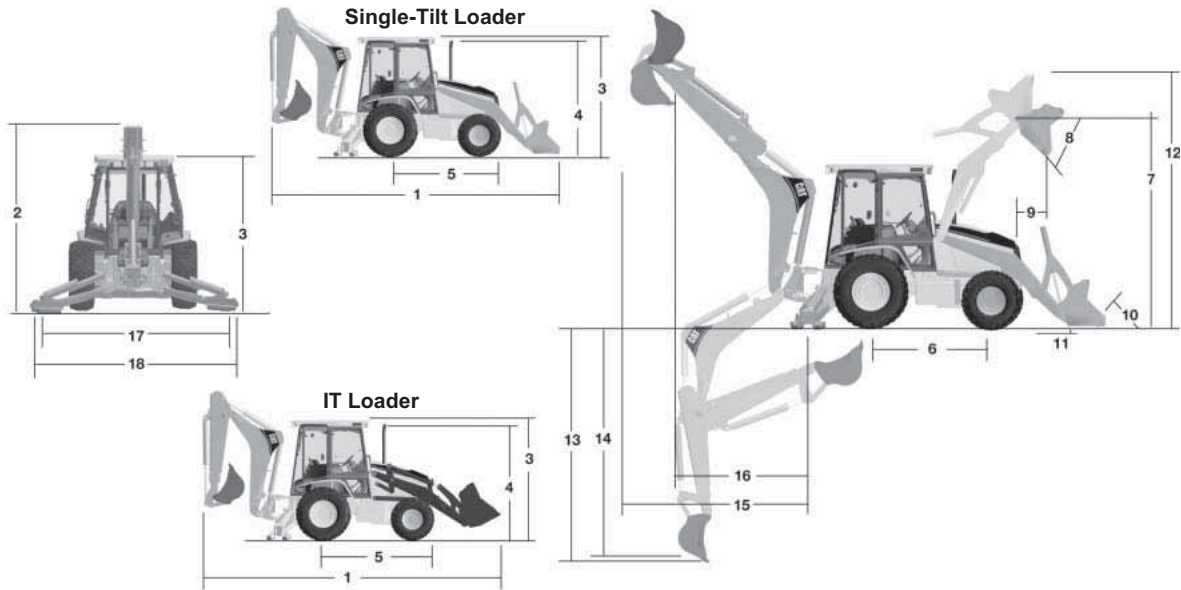
MACHINE DIMENSIONS	Single-Tilt Loader					
	General Purpose 1 m ³ (1.31 yd ³)		General Purpose 1.07 m ³ (1.4 yd ³)		General Purpose 1.15 m ³ (1.5 yd ³)	
1) Overall transport length	7289 mm	23'11"	7354 mm	24'2"	7354 mm	24'2"
Overall length	7279 mm	23'11"	7344 mm	24'1"	7344 mm	24'1"
2) Overall transport height	3770 mm	12'4"	3770 mm	12'4"	3770 mm	12'4"
Overall width	2406 mm	7'11"	2352 mm	7'9"	2406 mm	7'11"
3) Height to top of cab/canopy	2770 mm	9'1"	2770 mm	9'1"	2770 mm	9'1"
4) Height to top of exhaust stack	2670 mm	8'9"	2670 mm	8'9"	2670 mm	8'9"
Ground clearance (minimum)	297 mm	12"	297 mm	12"	297 mm	12"
5) Rear axle centerline to front grill	2660 mm	8'9"	2660 mm	8'9"	2660 mm	8'9"
Front wheel tread gauge	1871 mm	6'2"	1871 mm	6'2"	1871 mm	6'2"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (2WD/AWD)	2100 mm	6'11"	2100 mm	6'11"	2100 mm	6'11"

MACHINE DIMENSIONS	Single-Tilt Loader			
	Multi Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 1.03 m ³ (1.35 yd ³)	
1) Overall transport length	7274 mm	23'10"	7274 mm	23'10"
Overall length	7264 mm	23'10"	7264 mm	23'10"
2) Overall transport height	3770 mm	12'4"	3770 mm	12'4"
Overall width	2352 mm	7'9"	2406 mm	7'11"
3) Height to top of cab/canopy	2770 mm	9'1"	2770 mm	9'1"
4) Height to top of exhaust stack	2670 mm	8'9"	2670 mm	8'9"
Ground clearance (minimum)	297 mm	12"	297 mm	12"
5) Rear axle centerline to front grill	2660 mm	8'9"	2660 mm	8'9"
Front wheel tread gauge	1871 mm	6'2"	1871 mm	6'2"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (2WD/AWD)	2100 mm	6'11"	2100 mm	6'11"

Backhoe Loaders

Performance Data

● 430D/430D IT



MACHINE DIMENSIONS	IT Loader with Quick Coupler							
	General Purpose 1 m ³ (1.31 yd ³)		General Purpose 1.15 m ³ (1.5 yd ³)		Multi Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 1.03 m ³ (1.35 yd ³)	
1) Overall transport length	7334 mm	24'1"	7399 mm	24'3"	7314 mm	24'0"	7314 mm	24'0"
Overall length	7324 mm	24'0"	7389 mm	24'3"	7304 mm	23'11"	7304 mm	23'11"
2) Overall transport height	3770 mm	12'4"	3770 mm	12'4"	3770 mm	12'4"	3770 mm	12'4"
Overall width	2352 mm	7'9"	2352 mm	7'9"	2352 mm	7'9"	2352 mm	7'9"
3) Height to top of cab/canopy	2770 mm	9'1"	2770 mm	9'1"	2770 mm	9'1"	2770 mm	9'1"
4) Height to top of exhaust stack	2670 mm	8'9"	2670 mm	8'9"	2670 mm	8'9"	2670 mm	8'9"
Ground clearance (minimum)	297 mm	12"	297 mm	12"	297 mm	12"	297 mm	12"
5) Rear axle centerline to front grill	2660 mm	8'9"	2660 mm	8'9"	2660 mm	8'9"	2660 mm	8'9"
Front wheel tread gauge	1871 mm	6'2"	1871 mm	6'2"	1871 mm	6'2"	1871 mm	6'2"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (2WD/AWD)	2100 mm	6'11"	2100 mm	6'11"	2100 mm	6'11"	2100 mm	6'11"

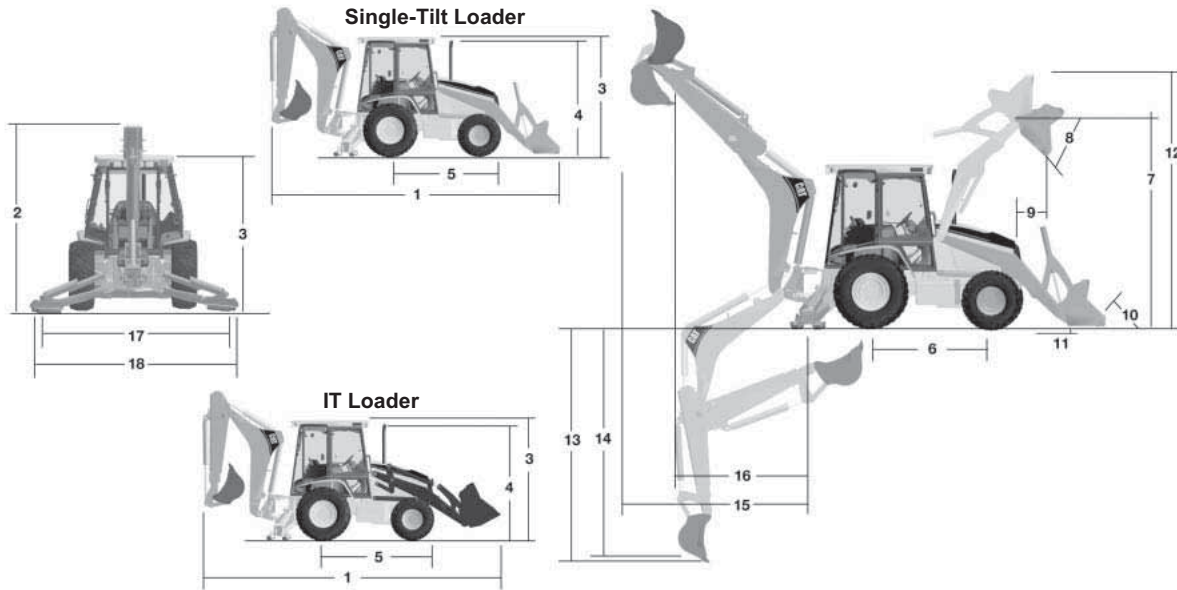
LOADER BUCKET DIMENSIONS AND PERFORMANCE	Single-Tilt Loader					
	General Purpose 1 m ³ (1.31 yd ³)		General Purpose 1.07 m ³ (1.4 yd ³)		General Purpose 1.15 m ³ (1.5 yd ³)	
Capacity (SAE) rated	1 m ³	1.31 yd³	1.07 m ³	1.4 yd³	1.15 m ³	1.5 yd³
Width	2406 mm	7'11"	2262 mm	7'5"	2406 mm	7'11"
Lift capacity at maximum height	2898 kg	6391 lb	2837 kg	6254 lb	2826 kg	6230 lb
Breakout force	45.7 kN	10,269 lb	44.6 kN	10,026 lb	44.5 kN	10,005 lb
7) Maximum hinge pin height (2WD)	3266 mm	10'9"	3266 mm	10'9"	3266 mm	10'9"
(4WD)	3338 mm	10'11"	3338 mm	10'11"	3338 mm	10'11"
8) Dump angle at full height		43°		43°		43°
Dump height at maximum angle	2575 mm	8'5"	2521 mm	8'3"	2521 mm	8'3"
9) Dump reach at maximum angle	802 mm	2'8"	801 mm	2'8"	801 mm	2'8"
10) Maximum bucket rollback at ground level		40°		40°		40°
11) Digging depth	135 mm	5"	174 mm	7"	174 mm	7"
Maximum grading angle		107°		107°		107°
Width of dozer cutting edge		N/A		N/A		N/A
12) Maximum operating height	4146 mm	13'7"	4188 mm	13'9"	4188 mm	13'9"
Jaw opening maximum		N/A		N/A		N/A
Weight (does not include teeth or forks)	445 kg	980 lb	438 kg	965 lb	458 kg	1010 lb

LOADER BUCKET DIMENSIONS AND PERFORMANCE	Single-Tilt Loader			
	Multi Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 1.03 m ³ (1.35 yd ³)	
Capacity (SAE) rated	0.96 m ³	1.25 yd³	1.03 m ³	1.35 yd³
Width	2262 mm	7'5"	2406 mm	7'11"
Lift capacity at maximum height	2747 kg	6056 lb	2707 kg	5968 lb
Breakout force	44.9 kN	10,099 lb	44.6 kN	10,018 lb
7) Maximum hinge pin height (2WD)	3266 mm	10'9"	3266 mm	10'9"
(4WD)	3338 mm	10'11"	3338 mm	10'11"
8) Dump angle at full height		43°		43°
Dump height at maximum angle	2609 mm	8'7"	2609 mm	8'7"
9) Dump reach at maximum angle	721 mm	2'4"	721 mm	2'4"
10) Maximum bucket rollback at ground level		40°		40°
11) Digging depth	165 mm	6.5"	165 mm	6.5"
Maximum grading angle		110°		110°
Width of dozer cutting edge	2260 mm	7'5"	2260 mm	7'5"
12) Maximum operating height	4174 mm	13'8"	4174 mm	13'8"
Jaw opening maximum	790 mm	2'7"	790 mm	2'7"
Weight (does not include teeth or forks)	662 kg	1460 lb	685 kg	1510 lb

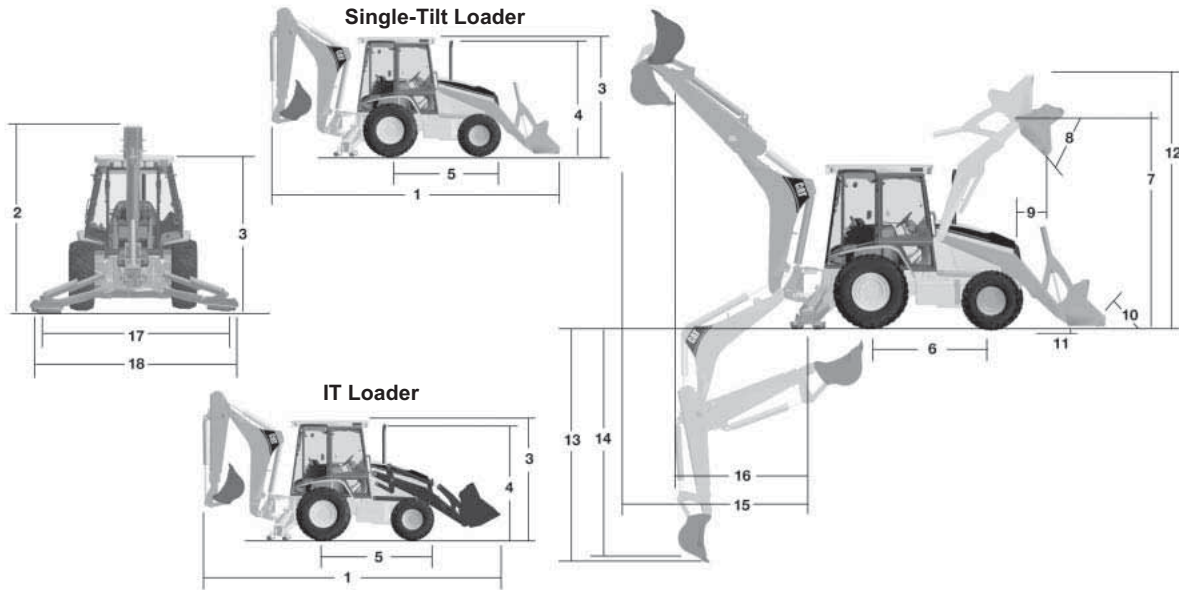
Backhoe Loaders

Performance Data

● 430D/430D IT



LOADER BUCKET DIMENSIONS AND PERFORMANCE	IT Loader with Quick Coupler							
	General Purpose 1 m ³ (1.31 yd ³)		General Purpose 1.15 m ³ (1.5 yd ³)		Multi Purpose 0.96 m ³ (1.25 yd ³)		Multi Purpose 1.03 m ³ (1.35 yd ³)	
Capacity (SAE) rated	1 m ³	1.31 yd³	1.15 m ³	1.5 yd³	0.96 m ³	1.25 yd³	1.03 m ³	1.35 yd³
Width	2406 mm	7'11"	2406 mm	7'11"	2262 mm	7'5"	2406 mm	7'11"
Lift capacity at maximum height	3152 kg	6949 lb	3098 kg	6829 lb	2958 kg	6521 lb	2916 kg	6428 lb
Breakout force	47.3 kN	10,628 lb	46.3 kN	10,410 lb	48.5 kN	10,897 lb	48.3 kN	10,853 lb
7) Maximum hinge pin height (2WD)	3266 mm	10'9"	3266 mm	10'9"	3266 mm	10'9"	3266 mm	10'9"
(4WD)	3338 mm	10'11"	3338 mm	10'11"	3338 mm	10'11"	3338 mm	10'11"
8) Dump angle at full height	43°		43°		43°		43°	
Dump height at maximum angle	2494 mm	8'2"	2440 mm	8'0"	2531 mm	8'4"	2531 mm	8'4"
9) Dump reach at maximum angle	830 mm	2'9"	827 mm	2'9"	751 mm	2'6"	751 mm	2'6"
10) Maximum bucket rollback at ground level	40°		40°		40°		40°	
11) Digging depth	135 mm	5"	174 mm	7"	165 mm	6.5"	165 mm	6.5"
Maximum grading angle	108°		108°		111°		111°	
Width of dozer cutting edge	N/A		N/A		2406 mm	7'11"	2406 mm	7'11"
12) Maximum operating height	4204 mm	13'10"	4250 mm	13'11"	4223 mm	13'10"	4223 mm	13'10"
Jaw opening maximum	N/A		N/A		790 mm	2'7"	790 mm	2'7"
Weight (does not include teeth or forks)	445 kg	980 lb	458 kg	1010 lb	662 kg	1460 lb	685 kg	1510 lb



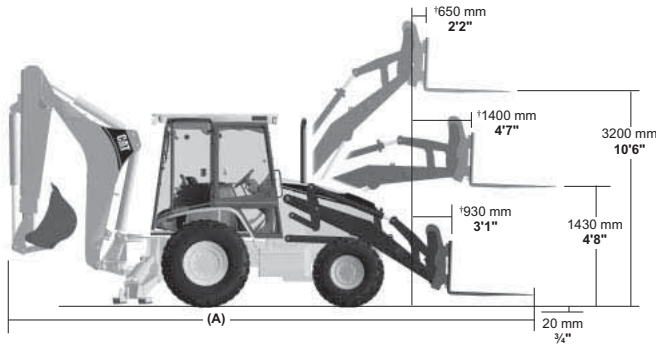
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BACKHOE DIMENSIONS AND PERFORMANCE	Standard Stick		Extendible Stick Retracted		Extendible Stick Extended	
	mm	ft/in	mm	ft/in	mm	ft/in
13) Digging depth, SAE (maximum)	4639 mm	15'3"	4870 mm	16'0"	6079 mm	19'11"
14) Digging depth, 610 mm (2'0") flat bottom	4624 mm	15'2"	4847 mm	15'11"	6051 mm	19'10"
Reach from rear axle centerline at ground line	7062 mm	23'2"	7263 mm	23'10"	8393 mm	27'6"
15) Reach from swing pivot at ground line	5972 mm	19'7"	6173 mm	20'3"	7303 mm	24'0"
Maximum operating height	5745 mm	18'10"	5884 mm	19'4"	6715 mm	22'0"
Loading height	3841 mm	12'7"	3940 mm	12'11"	4581 mm	15'0"
16) Loading reach	1823 mm	6'0"	2040 mm	6'8"	3076 mm	10'1"
Swing arc		180°		180°		180°
Bucket rotation		205°		205°		205°
17) Stabilizer spread, operating position (center of pad)	3219 mm	10'7"	3219 mm	10'7"	3219 mm	10'7"
18) Stabilizer spread, operating position (outside edge of pad)	3689 mm	12'1"	3689 mm	12'1"	3689 mm	12'1"
Stabilizer spread, transport position	2352 mm	7'9"	2352 mm	7'9"	2352 mm	7'9"
Bucket dig force	65.6 kN	14,732 lb	65 kN	14,602 lb	65 kN	14,602 lb
Stick dig force	42 kN	9448 lb	39.4 kN	8865 lb	28.6 kN	6430 lb

Backhoe Loaders

Performance Data ● 430D/430D IT

DIMENSIONS WITH FORKS/ MATERIAL-HANDLING ARM	Cat 430D IT Operating Specifications with Forks					
	1050 mm (3'5")		1200 mm (3'11")		1350 mm (4'5")	
Fork Tine Length						
Operating load (SAE J1197)	1961 kg*	4322 lb*	1890 kg*	4166 lb*	1816 kg*	4004 lb*
Operating load (CEN474-4)	2394 kg*	5277 lb*	2383 kg*	5254 lb*	2373 kg*	5232 lb*
Overall length (A)	7869 mm	25'10"	8019 mm	26'4"	8169 mm	26'10"
Load center	525 mm	1'9"	600 mm	2'0"	675 mm	2'3"



*Tip limited.

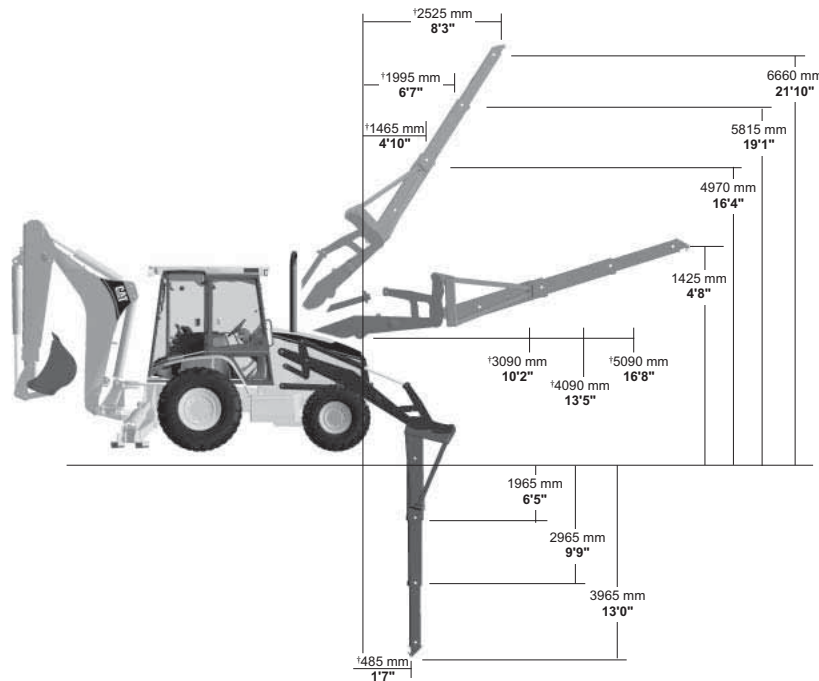
Specifications include lubricants, full fuel tank, ROPS cab, 80 kg (176 lb) operator, 460 kg (1010 lb) counterweight, standard tires, standard stick, 610 mm (24 in) heavy-duty bucket, 2WD.

Machine stability is affected by machine options and backhoe attachments.

All dimensions are approximate.

†Measured from nose of machine.

DIMENSIONS WITH FORKS/ MATERIAL-HANDLING ARM	Cat 430D IT Operating Specifications with Material-Handling Arm					
	Retracted		Mid-Position		Extended	
Material-Handling Arm Position						
Operating load (SAE J1197 and CEN474-4)	967 kg*	2131 lb*	612 kg*	1349 lb*	448 kg*	988 lb*
Overall length, maximum	8815 mm	28'11"	9815 mm	32'2"	10 815 mm	35'6"



*Hydraulic limited.

Specifications include lubricants, full fuel tank, ROPS cab, 80 kg (176 lb) operator, 358 kg (790 lb) counterweight, standard tires, standard stick, 610 mm (24 in) standard-duty bucket, 2WD.

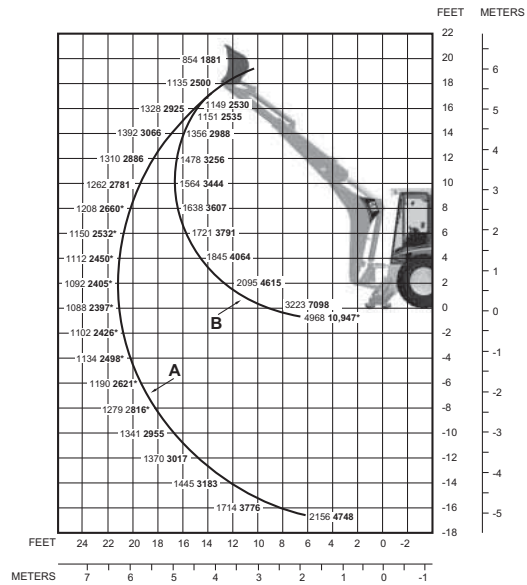
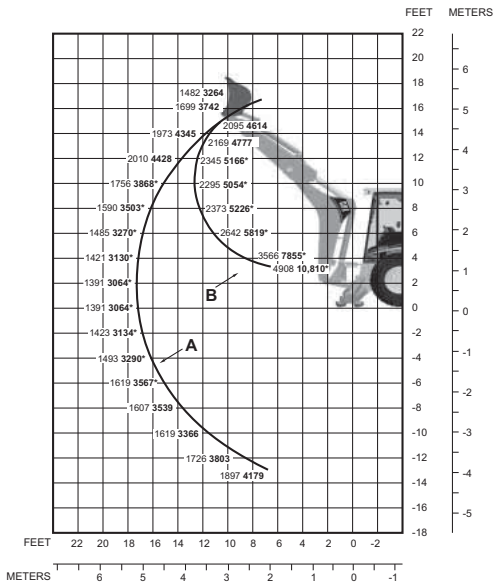
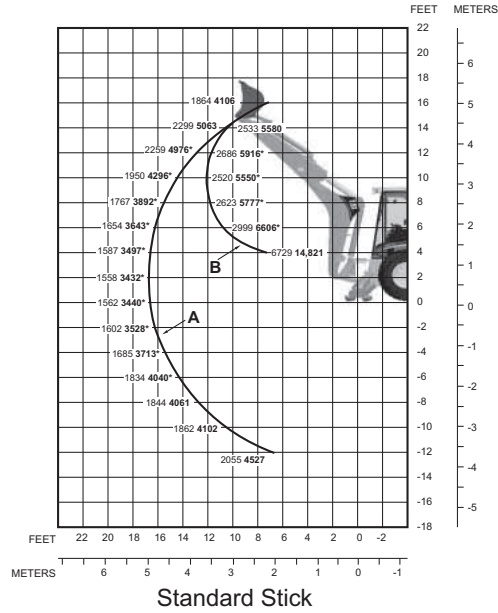
Machine stability is affected by machine options and backhoe attachments.

All dimensions are approximate.

†Measured from nose of machine.

KEY

- A — Boom lift kg lb
- B — Stick lift kg lb

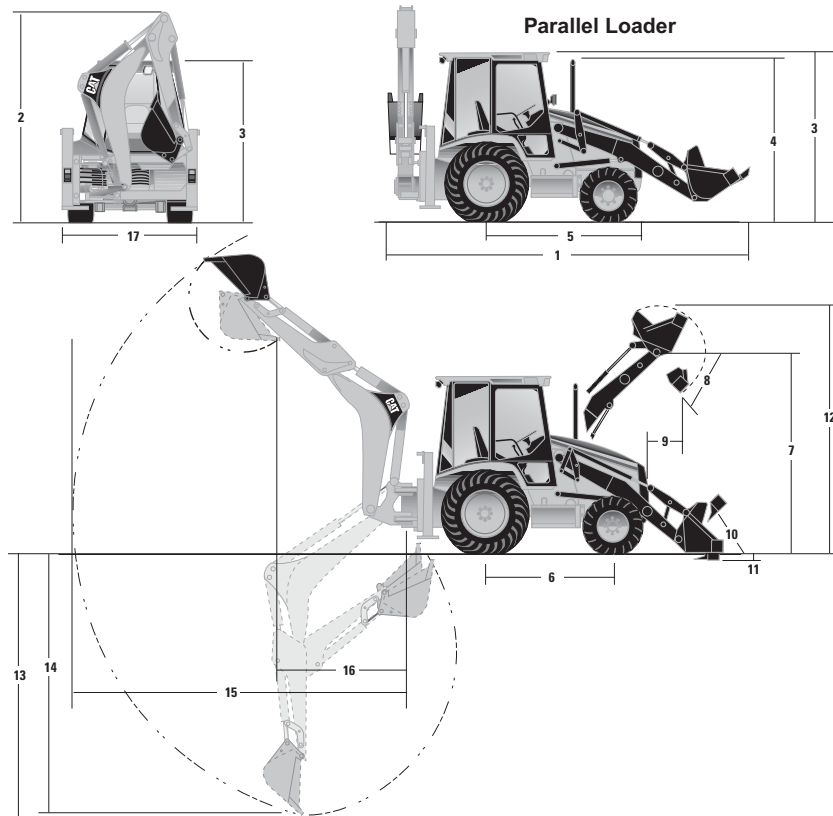


Lift capacities are over-end values. Machine equipped with 2WD, OROPS, 1 m³ (1.31 yd³) general-purpose loader bucket, 610 mm (24 in) heavy duty backhoe bucket and 460 kg (1010 lb) counterweight. Extendible stick includes 567 kg (1250 lb) counterweight.

*Indicates lift capacity is stability limited.

Backhoe Loaders

Performance Data ● 432D



MACHINE DIMENSIONS	Parallel Loader			
	General Purpose		Multi Purpose	
1) Overall transport length	5760 mm	18'11"	5685 mm	18'8"
Overall length	5710 mm	18'9"	5650 mm	18'6"
2) Overall transport height	3740 mm	12'3"	3740 mm	12'3"
Overall width	2396 mm	7'10"	2406 mm	7'11"
3) Height to top of cab/canopy	2900 mm	9'6"	2900 mm	9'6"
4) Height to top of exhaust stack	2700 mm	8'10"	2700 mm	8'10"
Ground clearance (minimum)	320 mm	13"	320 mm	13"
5) Rear axle centerline to front grill	2613 mm	8'7"	2613 mm	8'7"
Front wheel tread gauge	1780 mm	5'10"	1780 mm	5'10"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"
6) Wheelbase (AWD)	2100 mm	6'11"	2100 mm	6'11"

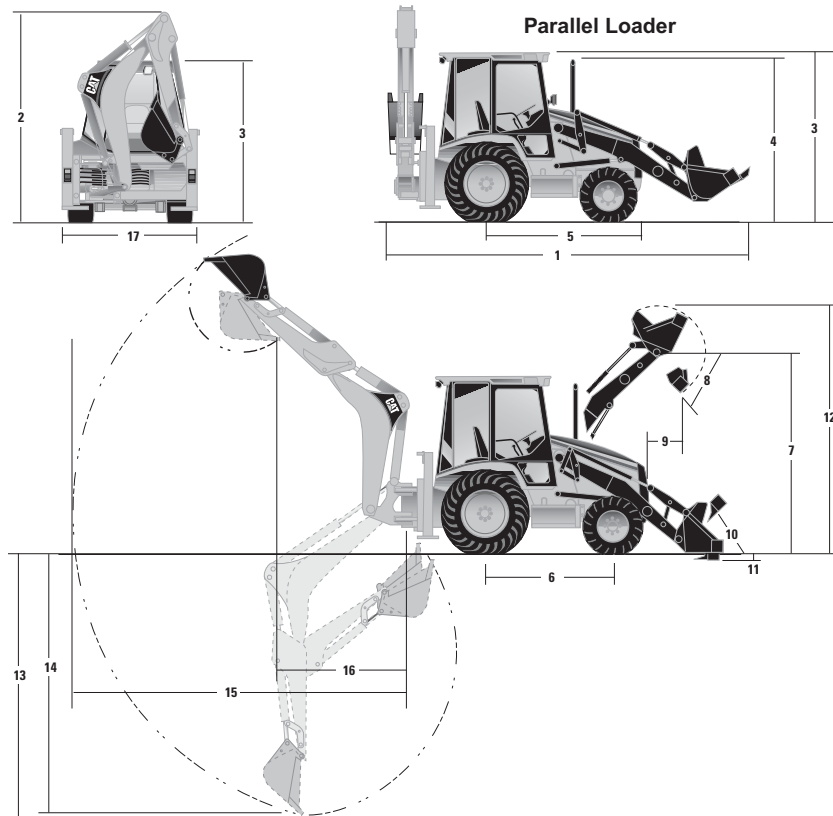
LOADER BUCKET DIMENSIONS AND PERFORMANCE	Parallel Loader			
	General Purpose		Multi Purpose	
	Capacity (SAE) rated	1 m ³	1.31 yd³	1.03 m ³
Width	2396 mm	7'10"	2406 mm	7'11"
Lift capacity at maximum height	3388 kg	7470 lb	3152 kg	6950 lb
Breakout force	50.2 kN	11,290 lb	55.7 kN	12,530 lb
7) Maximum hinge pin height	3321 mm	10'11"	3321 mm	10'11"
8) Dump angle at full height		47°		47°
Dump height at maximum angle	2613 mm	8'7"	2650 mm	8'8"
9) Dump reach at maximum angle	764 mm	2'6"	685 mm	2'3"
10) Maximum bucket rollback at ground level		40°		40°
11) Digging depth	77 mm	3"	108 mm	4"
Maximum grading angle		111°		114°
Width of dozer cutting edge		N/A	2406 mm	7'11"
12) Maximum operating height	4201 mm	13'9"	4229 mm	13'10"
Jaw opening maximum		N/A	927 mm	3'0"
Weight (does not include teeth or forks)	445 kg	981 lb	685 kg	1510 lb

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BACKHOE DIMENSIONS AND PERFORMANCE	Standard Stick		Extendible Stick Retracted		Extendible Stick Extended	
	13) Digging depth, manufacturers maximum	4854 mm	15'11"	4916 mm	16'2"	5894 mm
14) Digging depth, 610 mm (2'0") flat bottom	4850 mm	15'11"	4855 mm	15'11"	5865 mm	19'3"
15) Reach from swing pivot at ground line	5637 mm	18'6"	5692 mm	18'8"	6664 mm	21'10"
Loading height	3712 mm	12'2"	3730 mm	12'3"	4274 mm	14'0"
16) Loading reach	1742 mm	5'9"	1829 mm	6'0"	2747 mm	9'0"
Swing arc		180°		180°		180°
Bucket rotation		205°		205°		205°
17) Stabilizer width	2360 mm	7'9"	2360 mm	7'9"	2360 mm	7'9"
Bucket dig force	65.4 kN	14,710 lb	64.8 kN	14,580 lb	64.8 kN	14,580 lb
Stick dig force	38.2 kN	8590 lb	37.5 kN	8430 lb	27 kN	6070 lb
Total side shift travel	1260 mm	4'2"	1260 mm	4'2"	1260 mm	4'2"

Backhoe Loaders

Performance Data ● 442D



MACHINE DIMENSIONS	Parallel Loader			
	General Purpose		Multi Purpose	
1) Overall transport length	5760 mm	18'11"	5685 mm	18'8"
Overall length	5710 mm	18'9"	5650 mm	18'6"
2) Overall transport height	3740 mm	12'3"	3740 mm	12'3"
Overall width	2396 mm	7'10"	2406 mm	7'11"
3) Height to top of cab/canopy	2900 mm	9'6"	2900 mm	9'6"
4) Height to top of exhaust stack	2700 mm	8'10"	2700 mm	8'10"
Ground clearance (minimum)	320 mm	13"	320 mm	13"
5) Rear axle centerline to front grill	2613 mm	8'7"	2613 mm	8'7"
Front wheel tread gauge	1780 mm	5'10"	1780 mm	5'10"
Rear wheel tread gauge	1714 mm	5'8"	1714 mm	5'8"
Rear wheel tread gauge (AWS)	1890 mm	6'2"	1890 mm	6'2"
6) Wheelbase (AWD)	2100 mm	6'11"	2100 mm	6'11"

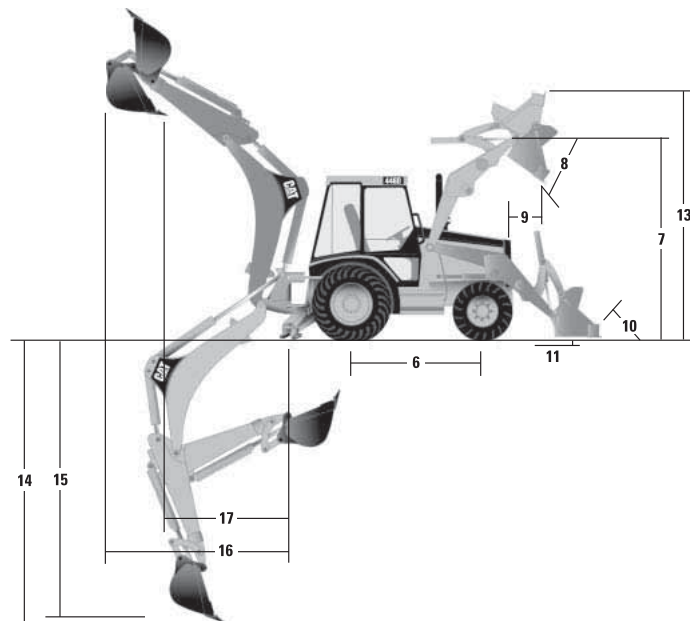
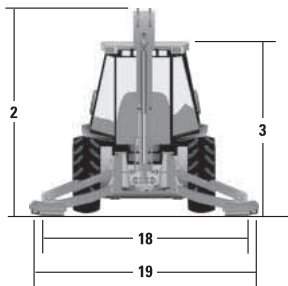
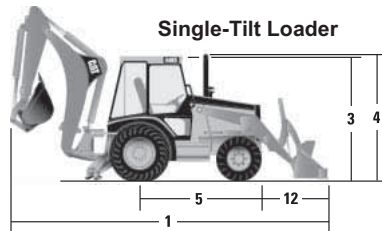
LOADER BUCKET DIMENSIONS AND PERFORMANCE	Parallel Loader			
	General Purpose		Multi Purpose	
Capacity (SAE) rated	1 m ³	1.31 yd³	1.03 m ³	1.35 yd³
Width	2396 mm	7'10"	2406 mm	7'11"
Lift capacity at maximum height	3388 kg	7470 lb	3152 kg	6950 lb
Breakout force	50.2 kN	11,290 lb	55.7 kN	12,530 lb
7) Maximum hinge pin height	3321 mm	10'11"	3321 mm	10'11"
8) Dump angle at full height		47°		47°
Dump height at maximum angle	2613 mm	8'7"	2650 mm	8'8"
9) Dump reach at maximum angle	764 mm	2'6"	685 mm	2'3"
10) Maximum bucket rollback at ground level		40°		40°
11) Digging depth	77 mm	3"	108 mm	4"
Maximum grading angle		111°		114°
Width of dozer cutting edge		N/A	2406 mm	7'11"
12) Maximum operating height	4201 mm	13'9"	4229 mm	13'10"
Jaw opening maximum		N/A	927 mm	3'0"
Weight (does not include teeth or forks)	445 kg	981 lb	685 kg	1510 lb

BACKHOE DIMENSIONS AND PERFORMANCE	Standard Stick		Extendible Stick Retracted		Extendible Stick Extended	
	13) Digging depth, manufacturers maximum	4854 mm	15'11"	4916 mm	16'2"	5894 mm
14) Digging depth, 610 mm (2'0") flat bottom	4850 mm	15'11"	4855 mm	15'11"	5865 mm	19'3"
15) Reach from swing pivot at ground line	5637 mm	18'6"	5692 mm	18'8"	6664 mm	21'10"
Loading height	3712 mm	12'2"	3730 mm	12'3"	4274 mm	14'0"
16) Loading reach	1742 mm	5'9"	1829 mm	6'0"	2747 mm	9'0"
Swing arc		180°		180°		180°
Bucket rotation		205°		205°		205°
17) Stabilizer width	2360 mm	7'9"	2360 mm	7'9"	2360 mm	7'9"
Bucket dig force	65.4 kN	14,710 lb	64.8 kN	14,580 lb	64.8 kN	14,580 lb
Stick dig force	38.2 kN	8590 lb	37.5 kN	8430 lb	27.5 kN	6070 lb
Total side shift travel	1260 mm	4'2"	1260 mm	4'2"	1260 mm	4'2"

Backhoe Loaders

Performance Data

● 446D



Dimensions and performance specifications shown are for machines equipped with 14.5/75-16.1 (10 PR) front tires, 21L-24 (12 PR) rear tires, ROPS canopy, standard stick with 610 mm (24 in) heavy-duty bucket, and 1.1 m³ (1.5 yd³) loader bucket and standard equipment unless otherwise specified.

MACHINE DIMENSIONS	Single-Tilt Loader					
	General Purpose 1.1 m ³ (1.5 yd ³)		General Purpose 1.3 m ³ (1.75 yd ³)		Multi Purpose 1.25 m ³ (1.63 yd ³)	
1) Overall transport length	7952 mm	26'1"	7990 mm	26'3"	7948 mm	26'1"
Overall length	7895 mm	25'11"	7955 mm	26'1"	7878 mm	25'10"
2) Overall transport height	4182 mm	13'9"	4182 mm	13'9"	4182 mm	13'9"
Overall width	2477 mm	8'2"	2477 mm	8'2"	2477 mm	8'2"
3) Height to top of cab/canopy	2899 mm	9'6"	2899 mm	9'6"	2899 mm	9'6"
4) Height to top of exhaust stack	2960 mm	9'9"	2960 mm	9'9"	2960 mm	9'9"
Ground clearance (minimum)	332 mm	13"	332 mm	13"	332 mm	13"
5) Rear axle centerline to front grill	2752 mm	9'0"	2752 mm	9'0"	2752 mm	9'0"
Front wheel tread gauge	1970 mm	6'6"	1970 mm	6'6"	1970 mm	6'6"
Rear wheel tread gauge	1800 mm	5'11"	1800 mm	5'11"	1800 mm	5'11"
6) Wheelbase (2WD/AWD)	2233 mm	7'4"	2233 mm	7'4"	2233 mm	7'4"

LOADER BUCKET DIMENSIONS AND PERFORMANCE	Single-Tilt Loader					
	General Purpose 1.1 m ³ (1.5 yd ³)		General Purpose 1.3 m ³ (1.75 yd ³)		Multi Purpose with Cutting Edge	
Capacity (SAE) rated	1.1 m ³	1.5 yd³	1.3 m ³	1.75 yd³	1.2 m ³	1.63 yd³
Width	2434 mm	8'0"	2434 mm	8'0"	2534 mm	8'4"
Lift capacity	4351 kg	9592 lb	4217 kg	9296 lb	4039 kg	8905 lb
Breakout	61.7 kN	13,868 lb	56.7 kN	12,744 lb	62.8 kN	14,105 lb
7) Maximum hinge pin height	3479 mm	11'5"	3479 mm	11'5"	3479 mm	11'5"
8) Dump angle at full height		45°		45°		45°
Dump height at maximum angle	2720 mm	8'11"	2678 mm	8'11"	2727 mm	8'11"
9) Dump reach at full height	855 mm	2'10"	897 mm	2'11"	820 mm	2'8"
10) Maximum bucket rollback at ground level		41°		41°		41°
11) Digging depth	153 mm	6"	153 mm	6"	172 mm	7"
Maximum grading angle		104°		104°		101°
Width of dozer cutting edge		N/A		N/A	2441 mm	8'0"
12) Grill to bucket cutting edge, carry position	1684 mm	6'6"	1723 mm	6'8"	1680 mm	6'6"
13) Maximum operating height	4405 mm	14'5"	4502 mm	14'9"	4406 mm	14'5"
Jaw opening maximum		N/A		N/A	1055 mm	3'5"
Weight	533 kg	1176 lb	579 kg	1278 lb	907 kg	2000 lb

5

BACKHOE DIMENSIONS AND PERFORMANCE	Standard Stick		Extendible Stick Retracted		Extendible Stick Extended	
14) Digging depth SAE (max)	5142 mm	16'10"	5207 mm	17'1"	6457 mm	21'2"
15) Digging depth 610 mm (2'0") flat bottom	5097 mm	16'8"	5175 mm	17'0"	6424 mm	21'1"
Reach from rear axle centerline at ground line	7867 mm	25'10"	7930 mm	26'0"	9121 mm	29'11"
16) Reach from swing pivot at ground line	6636 mm	21'9"	6697 mm	22'0"	7890 mm	25'11"
Maximum operating height	6524 mm	21'5"	6653 mm	21'10"	7536 mm	24'9"
Loading height	4392 mm	14'5"	4395 mm	14'5"	5068 mm	16'7"
17) Loading reach	2092 mm	6'10"	2004 mm	6'7"	3187 mm	10'5"
Swing arc		180°		180°		180°
Bucket rotation		190°		187°		187°
18) Stabilizer spread, operating position (center of pad)	3614 mm	11'10"	3614 mm	11'10"	3614 mm	11'10"
19) Stabilizer spread, operating position (outside edge of pad)	4084 mm	13'5"	4084 mm	13'5"	4084 mm	13'5"
Stabilizer spread, transport position	2477 mm	8'2"	2477 mm	8'2"	2477 mm	8'2"
Bucket dig force	75.4 kN	16,950 lb	72.95 kN	16,400 lb	72.95 kN	16,400 lb
Stick dig force	50.8 kN	11,430 lb	50.08 kN	11,260 lb	36.8 kN	8275 lb
Leveling angle (maximum slope on which machine will make a vertical cut)		13°		13°		13°

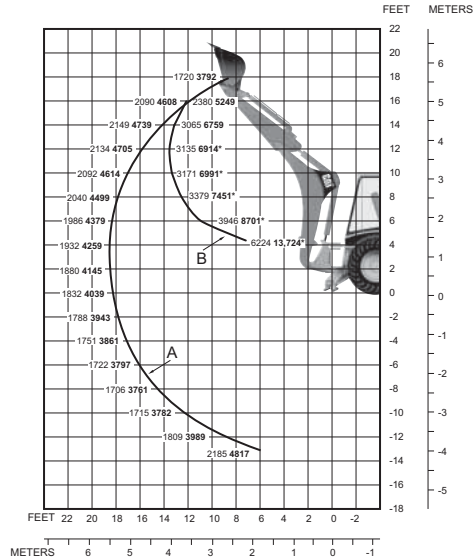
Backhoe Loaders

Lift Capacities ● 446D

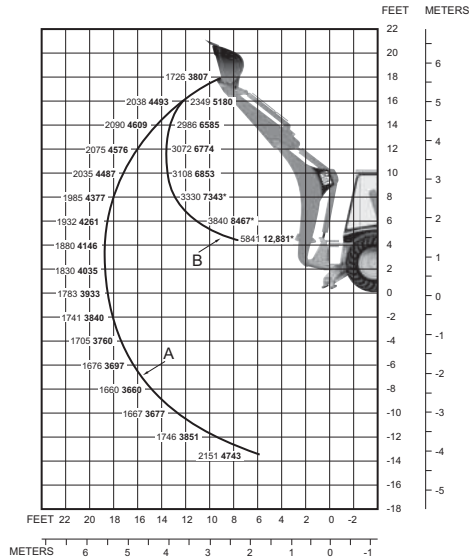
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A — Boom lift kg lb

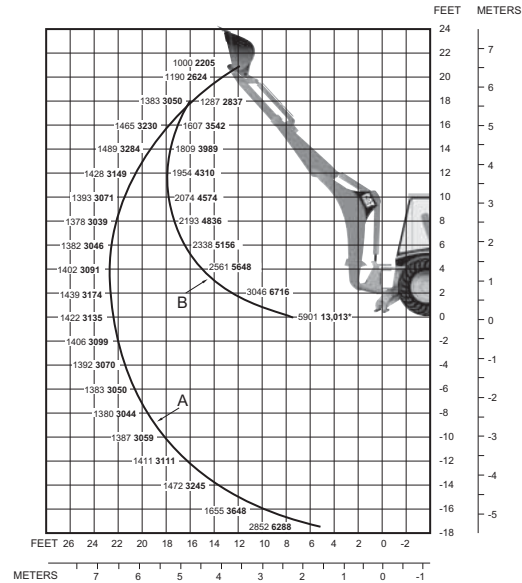
B — Stick lift kg lb



Standard Stick



Extendible Stick —
Retracted



Extendible Stick —
Extended

Lift capacities are over-end values per SAE J31; machine equipped with 2WD, OROPS, 1.15 m³ (1.5 yd³) general-purpose loader bucket, 610 mm (24 in) heavy duty backhoe bucket and 454 kg (1000 lb) counterweight. Extendible stick lift capacities include 682 kg (1500 lb) counterweight.

*Indicates lift capacity is stability limited.

Standard Duty Buckets (SD)
416D, 420D, 424D, 428D, 430D, 432D, 442D

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	78	2.8	97	213	3
457	18	118	4.2	115	253	4
610	24	175	6.2	132	290	5
762	30	233	8.2	147	323	5
914	36	292	10.3	165	363	6

Heavy Duty Buckets (HD)
416D, 420D, 424D, 428D, 430D, 432D, 442D

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	78	2.8	105	231	3
406	16	105	3.7	127	279	3
457	18	118	4.2	129	284	4
610	24	175	6.2	151	332	5
762	30	233	8.2	167	367	5
914	36	292	10.3	189	416	6

*Bolt-on teeth available.

Soil Excavation Buckets (SE)
416D, 420D, 424D, 428D, 430D, 432D, 442D

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
457	18	180	6.4	146	321	4
610	24	240	8.5	171	376	5
762	30	320	11.3	195	429	5
914	36	380	13.4	214	471	6

High Capacity Buckets (HC)
416D, 420D, 424D, 428D, 430D, 432D, 442D

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
457	18	180	6.4	146	321	4
610	24	240	8.5	171	376	5
762	30	320	11.3	195	429	5
914	36	380	13.4	214	471	6

Teeth Options: Diagonal retention system (DRS)
 Penetration Tooth (standard)
 Single sharp
 Twin sharp
 Wide
 Chisel
 Impact
 Long

Extreme Service Buckets (ES)
424D, 428D, 432D, 442D

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	64	2.2	106	233	3
457	18	96	3.4	132	291	4
610	24	142	5.2	152	335	4
762	30	189	6.2	177	390	6

Heavy Duty Buckets (HD)
446D

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
457	18	190	6.5	178	392	3
610	24	280	10.0	216	476	4
762	30	380	13.0	237	523	5
914	36	480	17.0	267	589	6

Extreme Service Buckets (ES)
446D

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
600	24	270	9.0	227	501	4
760	30	370	13.0	249	549	5

**Heavy Duty Rock Buckets
416D, 420D, 430D**

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	70	2.5	120	265	3
457	18	127	4.5	150	331	4
610	24	198	7.0	175	386	5
762	30	255	9.5	195	430	5
914	36	311	11.5	210	463	6

**Pin Lock Buckets, High Capacity
(North America)**

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	118	4.3	131	288	3
400	16	156	5.7	166	365	3
457	18	178	6.4	172	378	4
610	24	266	9.6	203	447	5
762	30	359	13.0	229	503	5
914	36	454	16.4	260	572	6

Coral Buckets

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	65	2.3	122	270	4
457	18	96	3.4	146	322	6
610	24	142	5.0	173	382	8
762	30	190	6.7	199	439	10

**Ditch Cleaning Buckets
(North America)**

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
1219	48	368	13.0	231	510	N/A
1372	54	425	15.0	252	555	N/A
1524	60	481	17.0	272	600	N/A

**Pin Lock Buckets, Heavy Duty
(North America)**

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	91	3.3	117	258	3
400	16	116	4.2	144	317	3
457	18	133	4.8	148	325	4
610	24	197	7.1	177	390	5
762	30	264	9.6	202	443	5
914	36	333	12.0	231	508	6

**Ditch Cleaning Buckets
(Europe, Africa, Middle East)**

Width		SAE Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
1200	48	200	7.8	123	271	N/A
1400	54	260	9.2	137	302	N/A
1500	60	290	10.2	145	320	N/A
1600	63	310	10.9	152	335	N/A
1800	70	350	12.4	166	366	N/A

Work tools for Caterpillar backhoe loaders are divided into two groups.
 For technical questions relating to all work tools inside the U.S.: (800) 282-5384.
 Europe, Africa, Middle East: 31 73 63 996 00.

- **Caterpillar Factory Work Tools:** Cat work tools installed on machines or shipped separately from Cat Distribution Services. Includes the most popular work tools such as buckets, forks and material-handling arms. *Order from Machine Orders Division.*

- **Caterpillar Work Tools America Asia Pacific (AAP):** Cat work tools specifically designed for the Cat backhoe loader by the Caterpillar Work Tool division. *Orders inside U.S.: (800) 255-2372. Outside U.S.: 00 1 (785) 456-2224.*

Loader Work Tools	Auxiliary Hydraulics required
<ol style="list-style-type: none"> 1. IT Angle Blade 2. IT Asphalt Cutter 3. IT Bale Spear 4. IT Broom: Angle and Pick-up 5. IT Bucket, General Purpose 6. IT Bucket, Multi-Purpose 7. IT Bucket, Side-Dump 8. IT Forks, Pallet 9. IT Material Handling Arm 10. IT Rake 11. Quick Coupler, IT Hydraulic 12. Single Tilt Bucket, General Purpose 13. Single Tilt Bucket, Multi-Purpose with or without Fold-Over Forks 14. Single Tilt Hydraulic Quick Coupler 	<p>Multi-Purpose Hydraulics included with IT not required not required</p> <p>Multi-Purpose Hydraulics included with IT; add electrical IT Aux Control harness not required</p> <p>Multi-Purpose Hydraulics included with IT Multi-Purpose Hydraulics included with IT not required not required not required</p> <p>equipped with Multi-Purpose Hydraulics not required</p> <p>Multi-Purpose Hydraulics includes coupling hydraulics only; can add Multi-Purpose Hydraulics</p>

Backhoe Work Tools	Auxiliary Hydraulics required
<ol style="list-style-type: none"> 1. Auger 2. Bucket, Cemetery 3. Bucket, Coral 4. Bucket, Ditch Cleaning 5. Bucket, Extreme Service 6. Bucket, Heavy Duty 7. Bucket, Heavy Duty Rock 8. Bucket, High Capacity 9. Bucket, Soil Excavation 10. Bucket, Standard Duty 11. Compactor, Vibratory Plate 12. Hammer, Hydraulic 13. Quick Coupler, Mechanical Pin Puller for Cat or Case tools 14. Quick Coupler, Mechanical Pin-Grabber 15. Quick Coupler, Mechanical Pin-Puller for Cat or Deere tools 16. Quick Coupler, Pin Lock 17. Quick Coupler, Side-Tilting Pin Lock 18. Ripper 19. Thumb, Hydraulic 20. Thumb, Mechanical 	<p>Combined Function Hydraulics not required not required not required not required not required not required not required not required not required</p> <p>One Way or Combined Function Hydraulics One Way or Combined Function Hydraulics not required not required not required</p> <p>Combined Function Hydraulics not required</p> <p>Combined Function Hydraulics not required</p>

Notes —

FOREST PRODUCTS

Current specifications and performance data of Forest Machines
are located at www.forestpro.com

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TK 701/TK 701 HD — Track Boom Features:

- **Cab contains unequaled visibility**, 3 emergency exits which exceeds requirements and an I-QAN system.
- **Fully proportional electronic controls** comes processor ready.
- **Excellent ground clearance.**
- **Optional squirt boom and dangle heads** are available.

TK 711/721/722/732 — ZTS Features:

- **Tier 2 emission standard engine** has 5% greater fuel efficiency than its predecessor, along with excellent power, serviceability and durability.
- **The most robust tilt mechanism** in the industry, the tilting models (TK 722/732) have a patented 3-cylinder tilt mechanism with simultaneous tilting forward and side-to-side.
- **Proven rugged undercarriage** designed for the toughest harvesting conditions ranging from wet bottomlands to steep rocky slopes.
- **Hydraulically actuated clam-shell service door** provides full access and reduces maintenance down time.
- **Comfortable, purpose built forestry cab** with heavy duty guarding meets FOPS/ROPS and WCB requirements.
- **Flexxaire fan** (attachment) allows the cooling fan to purge debris from the radiator area minimizing cooling system maintenance.
- **Hydraulic system** is easily interchangeable with felling and intermittent machine.

TK 741/751/752 — FTS Features:

- **Tier 2 emission standard engine** has greater fuel efficiency with its 1181 L (312 gallon) fuel capacity, along with excellent power, serviceability and durability.
- **The most robust tilt mechanism** in the industry, the tilting model (TK 752) has a patented 3-cylinder tilt mechanism with simultaneous tilting forward and side-to-side.
- **Proven rugged undercarriage** designed for the toughest harvesting conditions ranging from wet bottomlands to steep rocky slopes.
- **Hydraulically actuated dual service door** provides engine/hydraulic access direct from the cab.
- **Walk through service access** minimizes service time and down time costs.
- **Comfortable, purpose built forestry cab** with heavy duty guarding meets FOPS/ROPS and WCB requirements.
- **Hydraulic system** is easily interchangeable with felling and intermittent machine.

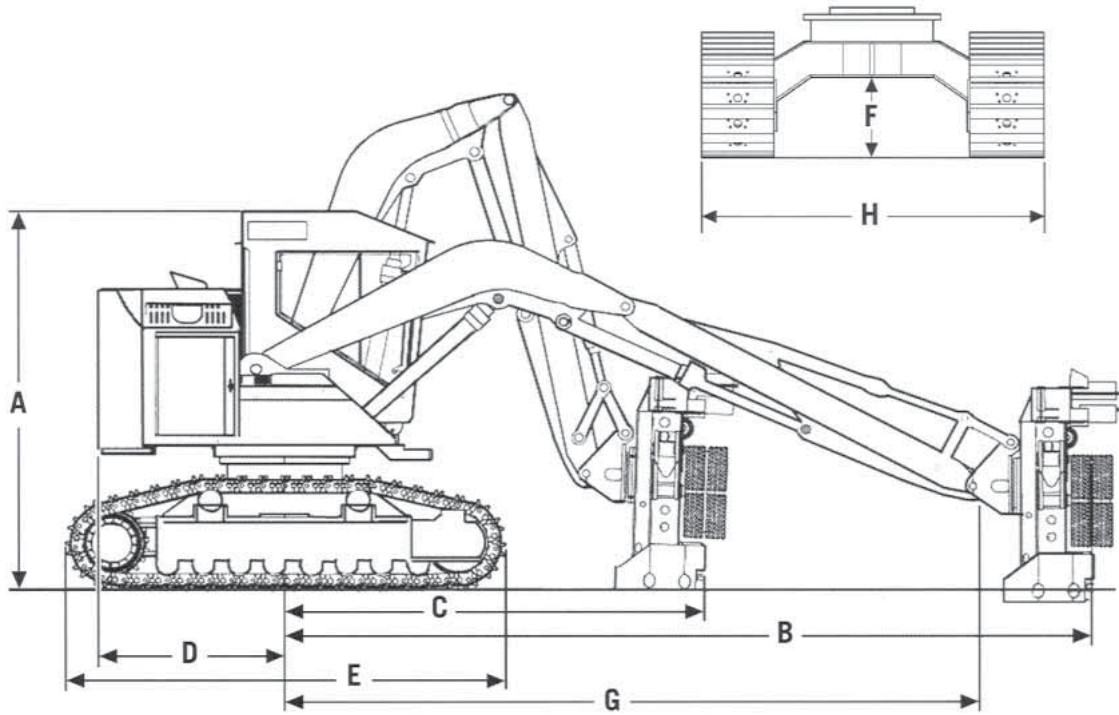
**Track Boom
MODEL**

	TK 701		TK 701 HD	
Gross Power	123 kW	165 hp	123 kW	165 hp
Operating Weight (without attachment)	15 875 kg	35,000 lb	18 144 kg	40,000 lb
Maximum Drawbar Pull	4771.4 kg-m	34,500 ft-lb	—	—
Maximum Reach	6.4 m	21'0"	7.1 m	23'3"
Minimum Reach	3.7 m	12'0"	3.7 m	12'0"
Tail Swing (over 560 mm/ 22" pads)	305 mm	12"	—	—
Tail Swing (over 610 mm/ 24" pads)	—	—	230 mm	9"
Fuel Capacity	0.378 L	100 U.S. gal	0.378 L	100 U.S. gal
Hydraulic System	34 475 kPa Variable Displacement	5000 psi Load Sense	34 475 kPa Variable Displacement	5000 psi Load Sense
Hydraulic Oil Flow	0.322 L/min	85 gpm	0.322 L/min	85 gpm
Hydraulic Oil Reservoir	0.230 L	60 U.S. gal	0.230 L	60 U.S. gal
General Dimensions:				
Height	3.33 m	10'11"	3.43 m	11'3"
Width (with 560 mm/ 22" pads)	2.59 m	8'6"	—	—
Width (with 610 mm/ 24" pads)	—	—	2.84 m	9'4"

**ZTS (Zero Tail Swing)
MODEL**

	TK 711		TK 721		TK 722		TK 732	
Rated Power @ 2100 RPM	170.0 kW	228 hp	181.2 kW	243 hp	181.2 kW	243 hp	196.1 kW	263 hp
Gross Power @ 1800 RPM	184.2 kW	247 hp	196.1 kW	263 hp	196.1 kW	263 hp	211.8 kW	284 hp
Operating Weight (without head)	23 790 kg	52,440 lb	26 050 kg	57,440 lb	30 410 kg	67,040 lb	31 450 kg	69,340 lb
Engine Model	Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2	
Displacement	8.8 L	537 in³	8.8 L	537 in³	8.8 L	537 in³	8.8 L	537 in³
Maximum Drawbar Pull	27 533 kg	60,700 lb	27 533 kg	60,700 lb	37 095 kg	81,780 lb	37 621 kg	82,940 lb
Maximum Reach (with head)	9.8 m	32'0"	9.8 m	32'0"	9.8 m	32'0"	9.8 m	32'0"
Lift @ Maximum Reach (without head)	3950 kg @ 9.8 m	8700 lb @ 32'0"	4540 kg @ 9.8 m	10,000 lb @ 32'0"	5490 kg @ 9.8 m	12,100 lb @ 32'0"	5490 kg @ 9.8 m	12,100 lb @ 32'0"
Track Gauge	2591 mm	102"	2591 mm	102"	2591- 2870 mm	102-113"	2591- 2870 mm	102-113"
Track Length	4572 mm	180"	4801 mm	189"	4801 mm	189"	4877 mm	192"
Fuel Capacity	530 L	140 U.S. gal	530 L	140 U.S. gal	530 L	140 U.S. gal	530 L	140 U.S. gal
Hydraulic System:								
Oil Fill Pump	Electric		Electric		Electric		Electric	
Variable Displacement Pump:								
Travel Circuit	170 cm ³	10.4 in³	170 cm ³	10.4 in³	170 cm ³	10.4 in³	170 cm ³	10.4 in³
Boom and Implement Functions	170 cm ³	10.4 in³	170 cm ³	10.4 in³	170 cm ³	10.4 in³	170 cm ³	10.4 in³
Saw Motor	55 cm ³	3.36 in³	55 cm ³	3.36 in³	55 cm ³	3.36 in³	55 cm ³	3.36 in³
General Dimensions:								
Ground Clearance	762 mm	30"	838 mm	33"	838 mm	33"	889 mm	35"
Width	3200 mm	126"	3200 mm	126"	3200- 3480 mm	126-137"	3302- 3581 mm	130-141"
Height	3251 mm	128"	3480 mm	137"	3835 mm	151"	3886 mm	153"

FTS (Full Tail Swing) MODEL	TK 741		TK 751		TK 752	
Rated Power @ 2100 RPM	195.4 kW	262 hp	210.3 kW	282 hp	210.3 kW	282 hp
Gross Power @ 1800 RPM	211.8 kW	284 hp	227.4 kW	305 hp	227.4 kW	305 hp
Engine Model	Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2	
Displacement	8.8 L	537 in³	8.8 L	537 in³	8.8 L	537 in³
Maximum Drawbar Pull	32 854 kg	72,430 lb	46 058 kg	101,540 lb	45 867 kg	101,120 lb
Maximum Reach (with head)	11.3 m	37'0"	11.3 m	37'0"	11.3 m	37'0"
Lift @ Maximum Reach (without head)	3860 kg @ 11.3 m	8500 lb @ 37'0"	4580 kg @ 11.3 m	10,100 lb @ 37'0"	5400 kg @ 11.3 m	11,900 lb @ 37'0"
Track Gauge	2591 mm	102"	2591-2870 mm	102-113"	2591-2870 mm	102-113"
Track Length	4801 mm	189"	4801 mm	189"	4877 mm	192"
Fuel Capacity	1181 L	312 U.S. gal	1181 L	312 U.S. gal	1181 L	312 U.S. gal
Hydraulic System:						
Oil Fill Pump	Electric		Electric		Electric	
Variable Displacement Pump:						
Track and Implement Functions	909.2 L/min	200 gpm	909.2 L/min	200 gpm	909.2 L/min	200 gpm
Saw Motor	136.4 L/min	30 gpm	136.4 L/min	30 gpm	136.4 L/min	30 gpm
General Dimensions:						
Ground Clearance	838 mm	33"	889 mm	35"	889 mm	35"
Width	3200 mm	126"	3302-3581 mm	130-141"	3302-3581 mm	130-141"
Height	3480 mm	137"	3531 mm	139"	3886 mm	153"



6

MODEL	TK 701		TK 701 HD	
A Height with Standard pads	3327 mm	10'11"	3429 mm	11'3"
B Maximum Reach with Fabtek FT18R Processor	6401 mm	21'0"	7087 mm	23'3"
C Minimum Reach with Fabtek FT18R Processor	3658 mm	12'0"	3658 mm	12'0"
D Swing Center to Rear of Counterweight	1645 mm	64.75"	1645 mm	64.75"
E Undercarriage Length	3632 mm	11'10"	3962 mm	13'0"
F Ground Clearance	610 mm	24"	660 mm	26"
G Reach to Stick Boom Pin	5359 mm	17'7"	6045 mm	19'10"
H Width*	2591 mm	8'6"	2845 mm	9'4"

*TK 701 with 560 mm (22") pads.
TK 701 HD with 610 mm (24") pads.

TK 711/721/722/732 — ZTS Features:

- **Tier 2 emission standard engine** has 5% greater fuel efficiency than its predecessor, along with excellent power, serviceability and durability.
- **A robust tilt mechanism**, the tilting models (TK 722/732) have a patented 3-cylinder tilt mechanism with simultaneous tilting forward and side-to-side.
- **Proven rugged undercarriage** designed for the toughest harvesting conditions ranging from wet bottomlands to steep rocky slopes.
- **Hydraulically actuated clam-shell service door** provides full service and reduces maintenance down time.
- **Comfortable, purpose built forestry cab** with heavy duty guarding meets FOPS/ROPS and WCB requirements.
- **Flexxaire fan** allows the cooling fan to purge debris from the radiator area minimizing cooling system maintenance.
- **Felling heads and processing heads** utilize high pressure hydraulics and proven components to meet your application requirements.

TK 741/751/752 — FTS Features:

- **Tier 2 emission standard engine** has greater fuel efficiency with its 1181 L (312 gallon) fuel capacity, along with excellent power, serviceability and durability.
- **The most robust tilt mechanism** in the industry, the tilting model (TK 752) have a patented 3-cylinder tilt mechanism with simultaneous tilting forward and side-to-side.
- **Proven rugged undercarriage** designed for the toughest harvesting conditions ranging from wet bottomlands to steep rocky slopes.
- **Hydraulically actuated dual service door** provides engine/hydraulic access direct from the cab.
- **Walk through service access** minimizes service time and down time costs.
- **Comfortable, purpose built forestry cab** with heavy duty guarding meets FOPS/ROPS and WCB requirements.
- **Hydraulic packages** can be included for operation with an intermittent saw and high speed disc saw.
- **9.4 m (38'0") harvester boom and hydraulic packages** available for dangle mount harvesting heads.

ZTS (Zero Tail Swing)

MODEL	TK 711		TK 721		TK 722		TK 732	
Rated Power @ 2100 RPM	170.0 kW	228 hp	181.2 kW	243 hp	181.2 kW	243 hp	196.1 kW	263 hp
Gross Power @ 1800 RPM	184.2 kW	247 hp	196.1 kW	263 hp	196.1 kW	263 hp	211.8 kW	284 hp
Operating Weight (without head)	24 362 kg	53,710 lb	27 084 kg	59,710 lb	29 806 kg	65,710 lb	31 620 kg	69,710 lb
Engine Model	Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2	
Displacement	8.8 L	537 in³	8.8 L	537 in³	8.8 L	537 in³	8.8 L	537 in³
Maximum Drawbar Pull	27 533 kg	60,700 lb	27 533 kg	60,700 lb	37 095 kg	81,780 lb	37 621 kg	82,940 lb
Maximum Reach (with head)	8.1 m	26'6"	8.1 m	26'6"	8.1 m	26'6"	8.1 m	26'6"
Lift @ Maximum Reach (without head)	7711 kg	17,000 lb @ 6.1 m @ 20'0"	7711 kg	17,000 lb @ 6.1 m @ 20'0"	7711 kg	17,000 lb @ 6.1 m @ 20'0"	7711 kg	17,000 lb @ 6.1 m @ 20'0"
Track Gauge	2591 mm	102"	2591 mm	102"	2591-2870 mm	102-113"	2591-2870 mm	102-113"
Track Length	4572 mm	180"	4801 mm	189"	4801 mm	189"	4877 mm	192"
Fuel Capacity	530 L	140 U.S. gal	530 L	140 U.S. gal	530 L	140 U.S. gal	530 L	140 U.S. gal
General Dimensions:								
Ground Clearance	762 mm	30"	838 mm	33"	838 mm	33"	889 mm	35"
Width	3200 mm	126"	3200 mm	126"	3200-3480 mm	126-137"	3302-3581 mm	130-141"
Height	3251 mm	128"	3480 mm	137"	3835 mm	151"	3886 mm	153"

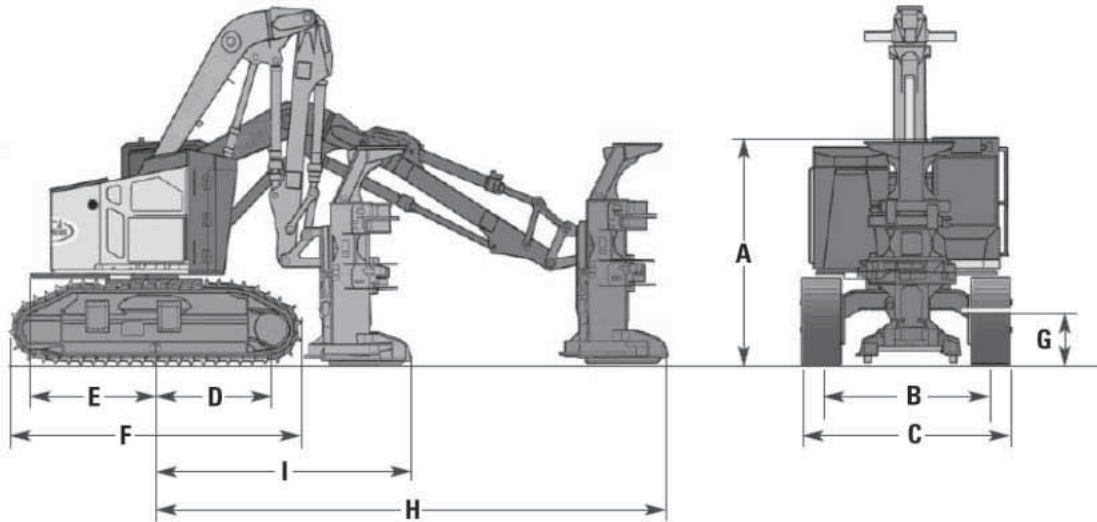
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FTS (Full Tail Swing)

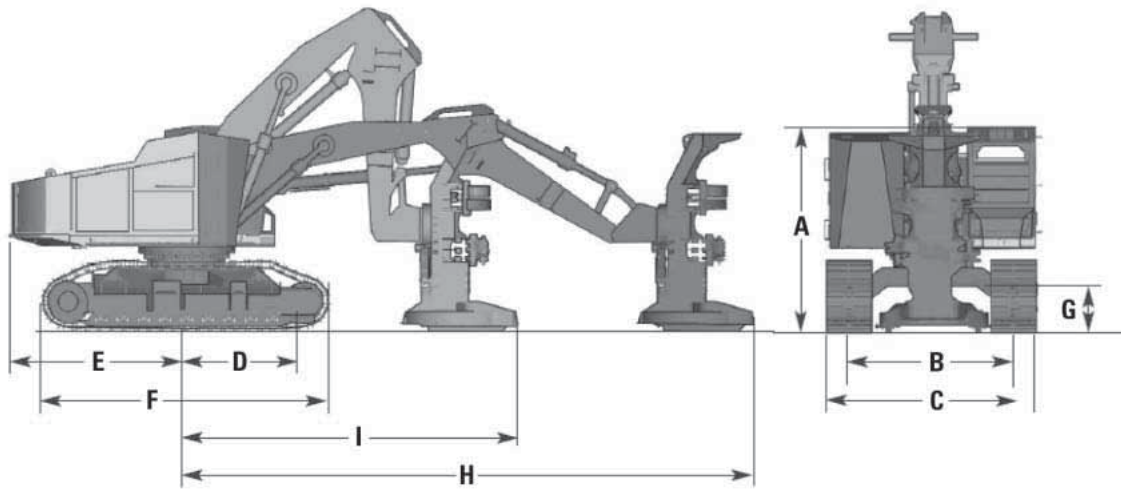
MODEL	TK 741		TK 751		TK 752	
Rated Power @ 2100 RPM	195.4 kW	262 hp	210.3 kW	282 hp	210.3 kW	282 hp
Gross Power @ 1800 RPM	211.8 kW	284 hp	227.4 kW	305 hp	227.4 kW	305 hp
Operating Weight (without head)	31 661 kg	69,800 lb	33 611 kg	74,100 lb	37 240 kg	82,100 lb
Engine Model	Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2		Cat C9 — EPA Tier 2	
Displacement	8.8 L	537 in³	8.8 L	537 in³	8.8 L	537 in³
Maximum Drawbar Pull	32 854 kg	72,430 lb	46 058 kg	101,540 lb	45 867 kg	101,120 lb
Maximum Reach (with head)	8.6 m	28'1"	8.6 m	28'1"	8.6 m	28'1"
Lift @ Maximum Reach (without head)	9072 kg	20,000 lb @ 6.5 m @ 21'7"	9072 kg	20,000 lb @ 6.5 m @ 21'7"	9072 kg	20,000 lb @ 6.5 m @ 21'7"
Track Gauge	2591 mm	102"	2591-2870 mm	102-113"	2591-2870 mm	102-113"
Track Length	4801 mm	189"	4801 mm	189"	4877 mm	192"
Fuel Capacity	1181 L	312 U.S. gal	1181 L	312 U.S. gal	1181 L	312 U.S. gal
General Dimensions:						
Ground Clearance	838 mm	33"	889 mm	35"	889 mm	35"
Width	3200 mm	126"	3302-3581 mm	130-141"	3302-3581 mm	130-141"
Height	3480 mm	137"	3531 mm	139"	3886 mm	153"

**Forest Products
Track Feller Bunchers**

Dimensions



	TK 711		TK 721		TK 722		TK 732	
A Height to Top of Cab	3251 mm	128"	3480 mm	137"	3835 mm	151"	3886 mm	153"
B Gauge	2591 mm	102"	2591 mm	102"	2591- 2870 mm	102-113"	2591- 2870 mm	102-113"
C Overall Width	3200 mm	126"	3200 mm	126"	3200- 3480 mm	126-137"	3302- 3581 mm	130-141"
D Swing Center to Idler Center	1778 mm	70"	1854 mm	73"	1854 mm	73"	1930 mm	76"
E Swing Center to Rear of Counterweight	1829 mm	72"	1905 mm	75"	1905 mm	75"	1905 mm	75"
F Track Length	4572 mm	180"	4801 mm	189"	4801 mm	189"	4877 mm	192"
G Ground Clearance	762 mm	30"	838 mm	33"	838 mm	33"	889 mm	35"
H Maximum Reach	8077 mm	318"	8077 mm	318"	7976 mm	314"	7976 mm	314"
I Minimum Radius with Head on Ground	3556 mm	140"	3556 mm	140"	3556 mm	140"	3556 mm	140"



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MODEL	TK 741		TK 751		TK 752	
A Height to Top of Cab	3480 mm	137"	2895 mm	139"	3886 mm	153"
B Gauge	2591 mm	102"	2591- 2870 mm	102-113"	2591- 2870 mm	102-113"
C Overall Width	3200 mm	126"	3302- 3581 mm	130-141"	3302- 3581 mm	130-141"
D Swing Center to Idler Center	1854 mm	73"	1930 mm	76"	1930 mm	76"
E Swing Center to Rear of Counterweight	2743 mm	108"	2743 mm	108"	2743 mm	108"
F Track Length	4801 mm	189"	4877 mm	192"	4877 mm	192"
G Ground Clearance	838 mm	33"	889 mm	35"	889 mm	35"
H Maximum Reach	8788 mm	346"	8788 mm	346"	8788 mm	346"
I Minimum Radius with Head on Ground	4826 mm	190"	4826 mm	190"	4826 mm	190"

TK 340/350/360 Features:

- **Long-life center joint**, and 90 degree steering articulation to maximize thinning productivity.
- **Standard with quarter-turn steering with adjustable tilt-telescoping steering column**; available with joystick steering as an option.
- **Saw attachments** are power and performance-matched to tractors.
- **New curved windshield and eyebrow skylight** provide industry leading unobstructed viewing of the tree bases and tops throughout full articulation.

MODEL	TK 340		TK 350		TK 360	
Gross Power @ 2200 RPM	130.5 kW	175 hp	149.1 kW	200 hp	167.8 kW	225 hp
Operating Weight (without attachment)	11 476 kg	25,300 lb	12 372 kg	27,275 lb	12 600 kg	27,775 lb
Engine Model	Cat 3126 DITA — EPA Tier 2		Cat 3126 DITA — EPA Tier 2		Cat 3126 DITA — EPA Tier 2	
Travel Speed (Low Range)*	0-8 km/h	0-5 mph	0-8 km/h	0-5 mph	0-8 km/h	0-5 mph
Travel Speed (High Range)*	0-23.5 km/h	0-14.6 mph	0-23.5 km/h	0-14.6 mph	0-24 km/h	0-14.9 mph
Hydraulic Capacity	204 L	54 U.S. gal	227 L	60 U.S. gal	227 L	60 U.S. gal
Fuel Capacity	272 L	72 U.S. gal	300 L	79 U.S. gal	300 L	79 U.S. gal
General Dimensions:						
Ground Clearance*	53 cm	21"	53 cm	21"	53 cm	21"
Articulation Angle, degrees		84°		90°		90°
Wheelbase	255 cm	101.5"	287 cm	113"	287 cm	113"
Width (standard gauge wheels)*	2.8 m	110"	2.95 m	116"	2.95 m	116"
Turning Radius (standard gauge wheels)*		—	5.0 m	16'6"	5.0 m	16'6"
Height*	3.2 m	10'6"	3.2 m	10'6"	3.2 m	10'6"

*With 28L × 26 Tires.

Wheel Feller Buncher Applications

MODEL	HF 202		HF 181		HF 201		HF 221		HF 222	
Accumulation Area	0.63 m ²	6.8 ft²	0.42 m ²	4.5 ft²	0.46 m ²	5.0 ft²	0.52 m ²	5.6 ft²	0.52 m ²	5.6 ft²
Maximum Cut	559 mm	22"	533 mm	21"	559 mm	22"	610 mm	24"	610 mm	24"
Width	1600 mm	63"	1575 mm	62"	1676 mm	66"	1797 mm	70.7"	1808 mm	71.2"
Height	2667 mm	105"	2667 mm	105"	3048 mm	120"	2997 mm	118"	2650 mm	104.3"
Weight	2713 kg	5981 lb	2518 kg	5546 lb	2855 kg	6289 lb	3046 kg	6709 lb	2904 kg	6402 lb

Track Feller Buncher Applications

MODEL	HF 181		HF 201		HF 221	
Accumulation Area	0.42 m ²	4.5 ft²	0.46 m ²	5.0 ft²	0.52 m ²	5.6 ft²
Maximum Cut	533 mm	21"	559 mm	22"	610 mm	24"
Width	1592 mm	62.7"	1690 mm	66.5"	1800 mm	70.9"
Height	2737 mm	107.8"	3064 mm	120.6"	3064 mm	120.6"
Weight — PLT*	2559 kg	5641 lb	2915 kg	6426 lb	3097 kg	6828 lb
Weight — FLT*	3049 kg	6722 lb	3405 kg	7507 lb	3587 kg	7908 lb

*Weight of head and tilt with lines.

Shear Applications

MODEL	HS 20	
Accumulation Area	0.56 m ²	6.0 ft²
Maximum Cut	508 mm	20"
Width	1651 mm	65"
Height	2438 mm	96"
Weight	2562 kg	5650 lb

525B/535B/545 Features:

- **Direct injection turbocharged and aftercooled proven Cat 3126 diesel engine** provides power, outstanding durability and reliability (**525B and 535B Models only**).
- **Direct injection turbocharged and aftercooled proven Cat 3306 diesel engine** provides power, outstanding durability and reliability (**545 Model only**).
- **Lock-up torque converter clutch**, an industry exclusive on Caterpillar Wheel Skidders, provides operating speed increases with improved power and fuel efficiencies.
- **5 speed forward powershift transmission** provides better match of engine power to skidding requirements with ease of operation.
- **Long wheelbases** on all of the Wheel Skidders provide stability with large grapple loads and uphill skidding.
- **Front axle cradle oscillation** helps improve machine stability with grapples and provides excellent ride for the operator.
- **Enclosed oil disk brakes**, sealed, adjustment free, and fade resistant.
- **Locking differentials** — selectable from the cab to improve traction and control wheel slippage.
- **Dual wheel** capable axles available.
- **Load sensing hydraulic system** — variable displacement pressure compensating hydraulic system provides reduced power requirements when there is not hydraulic demand, significantly reduced heat generation, and improving fuel efficiency.
- **Outstanding operator environment** — superior visibility, logical control placement, and significantly reduced hydraulic, steering, and transmission control efforts. **ROPS** structures meet OSHA regulations for rollover and falling objects.
- **Single lever** grapple control.
- **Easy servicing** — minimal daily requirements, grouped and accessible grease fittings, accessible hydraulic oil sight gauges, engine oil dipstick and fuel cap; access to components have been improved.
- **Single function arch and cable skidder options** available to meet various logging requirements (**525 models only**).
- **Dual function arch and cable skidder options** available to meet various logging requirements.

Specifications

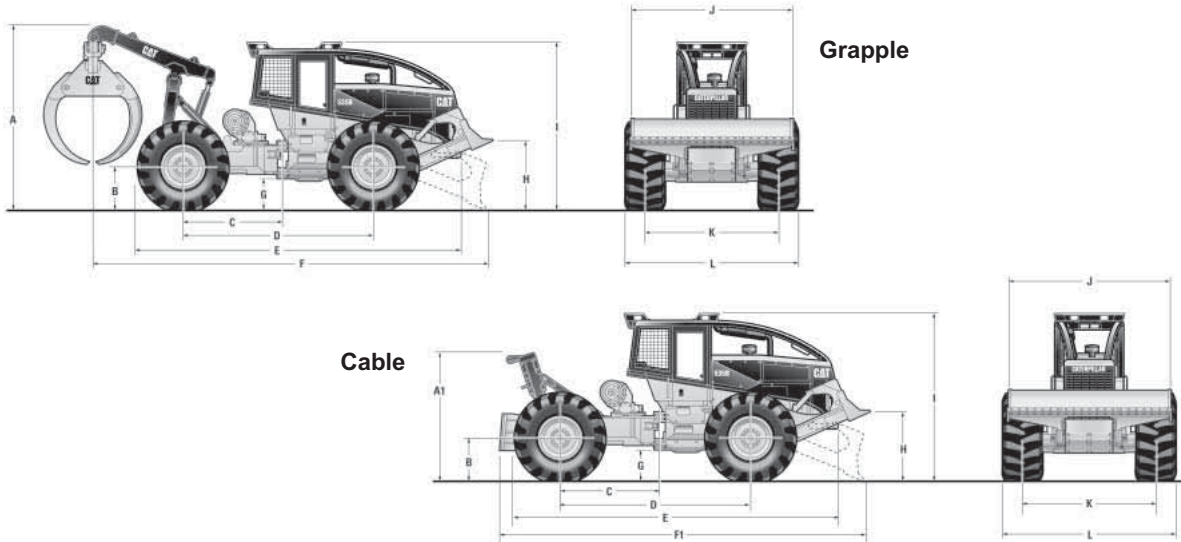
Forest Products Wheel Skidders



MODEL	525B		535B		545	
Net Flywheel Power	119 kW	160 hp	134 kW	180 hp	149 kW	200 hp
Operating Weight	18 325 kg	40,400 lb	19 006 kg	41,900 lb	20 230 kg	44,600 lb
Engine Model	3126 DITA		3126 DITA		3306 DITA	
Rated Engine RPM	2200		2200		2200	
Bore	110 mm	4.33"	110 mm	4.33"	120.7 mm	4.75"
Stroke	127 mm	5"	127 mm	5"	152.4 mm	6"
Displacement	7.24 L	442 in³	7.24 L	442 in³	10.5 L	638 in³
No. of Cylinders	6		6		6	
Speeds Forward:						
1st	6.36 km/h	3.95 mph	6.36 km/h	3.95 mph	6.4 km/h	4.0 mph
2nd	8.94 km/h	5.55 mph	8.94 km/h	5.55 mph	9.0 km/h	5.6 mph
3rd	10.87 km/h	6.75 mph	10.87 km/h	6.75 mph	10.9 km/h	6.8 mph
4th	15.28 km/h	9.49 mph	15.28 km/h	9.49 mph	15.3 km/h	9.5 mph
5th	27.53 km/h	17.10 mph	27.53 km/h	17.10 mph	27.5 km/h	17.1 mph
Speeds Reverse:						
1st	6.18 km/h	3.84 mph	6.18 km/h	3.84 mph	6.2 km/h	3.9 mph
2nd	10.46 km/h	6.50 mph	10.46 km/h	6.50 mph	10.5 km/h	6.5 mph
3rd	18.6 km/h	11.55 mph	18.6 km/h	11.55 mph	18.6 km/h	11.6 mph
Maximum Drawbar Pull	172 kN	38,730 lb	184 kN	41,350 lb	194.5 kN	43,763 lb
Oscillation, type	Front axle cradle		Front axle cradle		Front axle cradle	
Oscillation, degrees	±15°		±15°		±15°	
Tires, Standard Axle	24.5-32		30.5-32 (includes dual)		30.5-32 (includes dual)	
Wide Axle	30.5-32 (includes dual)		35.5-32		35.5/32	
Wide Axle	35.5-32 (includes dual)		—		—	
Turning Diameter (outside rear wheel)*	12 m	39'4"	12 m	39'4"	11.4 m	37'5"
Capacity:						
Fuel Tank	315 L	83.2 U.S. gal	315 L	83.2 U.S. gal	378 L	99.8 U.S. gal
Cooling System	50 L	13.2 U.S. gal	50 L	13.2 U.S. gal	56 L	14.8 U.S. gal
Hydraulic System — Tank	62.5 L	16.5 U.S. gal	62.5 L	16.5 U.S. gal	65 L	17 U.S. gal
Hydraulic System — Total	123 L	32.47 U.S. gal	123 L	32.47 U.S. gal	123 L	32.47 U.S. gal
General Dimensions:						
Length with Dozer at Ground	6.93 m	22'9"	6.93 m	22'9"	7.95 m	26'1"
Wheelbase	3.53 m	11'7"	3.53 m	11'7"	3.84 m	12'7"
Width over Tires*	3.39 m	11'1"	3.39 m	11'1"	3.39 m	11'1"
Height to Top of ROPS	3.23 m	10'7"	3.23 m	10'7"	3.37 m	11'1"
Height to Exhaust	2.38 m	7'10"	2.38 m	7'10"	2.38 m	7'10"
Ground Clearance*	582 mm	22.9"	582 mm	22.9"	605 mm	23.8"
Tread Width*	2.61 m	8'7"	2.61 m	8'7"	2.61 m	8'7"
Dozer Width*	2.68 m	8'9"	2.68 m	8'9"	3.14 m	10'4"

*With standard tires.

WINCH MODEL	525B — Grapple		525B — Cable		535B		545	
Maximum Line Pull — Bare Drum	221 kN	49,650 lb	179.3 kN	40,300 lb	208.6 kN	43,900 lb	201 kN	45,200 lb
Maximum Line Speed	74.7 m/min	245 fpm	92 m/min	302 fpm	98.7 m/min	324 fpm	110 m/min	360 fpm
Drum Capacity:								
19.0 mm (¾")	45 m	148'0"	45 m	148'0"	45 m	148'0"	45 m	148'0"
22.2 mm (7/8")	32 m	106'0"	32 m	106'0"	32 m	106'0"	32 m	106'0"
25.4 mm (1")	25 m	82'0"	25 m	82'0"	25 m	82'0"	25 m	82'0"
Drum Diameter	203 mm	8"	254 mm	10"	254 mm	10"	254 mm	10"



MODEL	525B	535B	545
A Ground Level to Center Line of Top Roller (Grapple):			
Dual Function	3419 mm * 134.6"	3419 mm * 134.6"	2988 mm 117.6"
Single Function	2893 mm * 113.9"	—	—
A1 Ground Level to Center Line of Top Roller (Cable)	2694 mm * 106.1"	2694 mm * 106.1"	2930 mm 115.3"
B Ground Level to Axle Center Line	724 mm * 28.5"	724 mm * 28.5"	866 mm * 34.1"
C Rear Axle Center Line to Pin	1798 mm 70.8"	1798 mm 70.8"	2003 mm 78.9"
D Wheelbase	3533 mm 139.1"	3533 mm 139.1"	3838 mm 151.1"
E Length without Dozer Arch	6195 mm 243.9"	6195 mm 243.9"	6626 mm 260.9"
F Overall Length (Grapple)			
Dual Function (Continuous Rotation)	6995 mm 275.4"	6995 mm 275.4"	7376 mm 290.4"
Dual Function, Extended Length (Continuous Rotation)	—	7021 mm 276.4"	—
Single Function (Continuous Rotation)	7097 mm 279.4"	—	—
F1 Overall Length (Cable)			
Non-Continuous Rotation	6945 mm 273.4"	6945 mm 273.4"	7075 mm 278.5"
G Ground Clearance	463 mm * 18.2"	463 mm * 18.2"	606 mm 23.9"
	Grapple and Cable	Grapple and Cable	Grapple
G1 Ground Clearance (Cable)	—	—	606 mm 23.8"
H Decking Blade Lift Height	1226 mm * 48.3"	1226 mm * 48.3"	2088 mm 82.2"
I Height to Top of Cab	3233 mm * 127.3"	3233 mm * 127.3"	3366 mm 132.5"
J Decking Blade Width	2678 mm 105.4"	2678 mm 105.4"	3138 mm 123.5"
K Tread Width	2260 mm 88.0"	2269 mm 88.0"	2610 mm 102.8"
L Overall Width	3385 mm 133.3"	3385 mm 133.3"	3442 mm 135.1"

*With 30.5 × 32 tires.

GRAPPLES

Grapples for Caterpillar Skidders are designed and built to Caterpillar specifications. All arches and grapples are factory installed and fully supported by Caterpillar. The following pages contain information on the available models, which are presented here to suggest a range of grapple possibilities. The specifications were supplied by the manufacturer and follow the SAE definitions listed below.

SAE specification definition

Reach (A, B, C, D) — The horizontal distance from the vertical center of the rear axle to the vertical center of the grapple fore and aft pivot.

- A) With the grapple in its highest farthest position
- B) With the grapple in its lowest farthest position
- C) With the grapple in its highest fully retracted position
- D) With the grapple in its lowest fully retracted position

Lift (E, F, G, H) — The vertical distance from the horizontal center of the rear axle to the horizontal center of the grapple fore and aft pivot.

- E) With the grapple in its highest farthest position
- F) With the grapple in its lowest farthest position
- G) With the grapple in its highest fully retracted position
- H) With the grapple in its lowest fully retracted position

Loaded Tire Radius (J) — Vertical distance from horizontal center of axle to horizontal reference plane.

Maximum Grapple Opening (K) — The horizontal distance between the tips of the grapple arms when grapple is fully open.

Area of Opening (L) — The available area with grapple in tips together position.

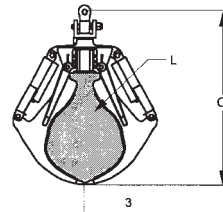
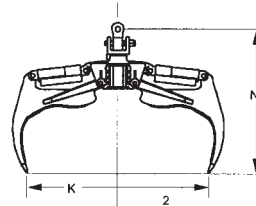
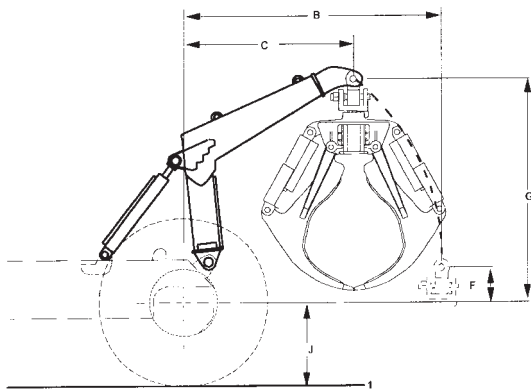
Minimum Log Size (M) — The smallest diameter which the grapple can close on.

Grapple Length (N, O, P) — The distance from the grapple fore and aft pivot to tips of grapple arms.

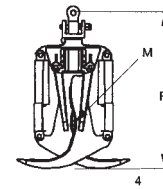
- N) With grapple fully open
- O) With grapple in tips together position
- P) With grapple fully closed

Single-function arch

- Versatile attachment suitable for selection or clear cut applications. Reach consists of one vertical arc and typical application is short cycles and/or larger diameter timber.



Sorting grapple is designed to pick up individual or several stems for quick cycles of 305 mm (12") or larger diameter trees.



KEY

- 1 — Horizontal Reference Plane
- 2 — Fully Open
- 3 — Tip to Tip
- 4 — Fully Closed

**360° Grapple
for 525B**

		A	B	C	D	E	F	G	H	J	K	M	N	O	P	L
2.54 m (100")	mm		2517.1	1662.2			342.9	2169.2		737	2540	76.2	1562.1	2197.1	1828.8	0.84 m ²
Sorting	in		99.1	65.4			13.5	85.4		29	100	3	61.5	86.5	72	9 ft ²

Standard Grapple

- Normal skidding
- Multipurpose applications
- Includes final harvest
- Heavier Wood
 - larger diameter stems
 - tall timber
 - high density wood

Thinning Special Grapple*

- Special skidding
- Thinning or lighter stems
- Does not include final harvest
- Lighter individual stems
 - smaller diameter stems
 - shorter timber
 - lower density wood
- For large number of smaller stems/load

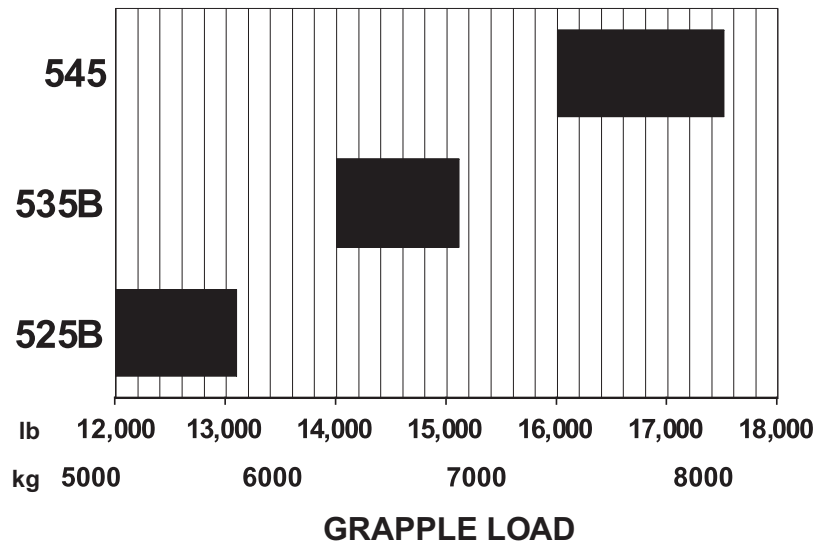
*Large stems can be skidded, but the grapple will not appear full and must not be filled to area capacity. See recommended load ranges for wheel skidders.

6

Determine proper grapple selection based on:

Log Size: Diameter, Length, Density, Load Weight
Site Conditions: Slope, Ground Conditions, Traction

**RECOMMENDED LOAD RANGES
FOR WHEEL SKIDDERS**



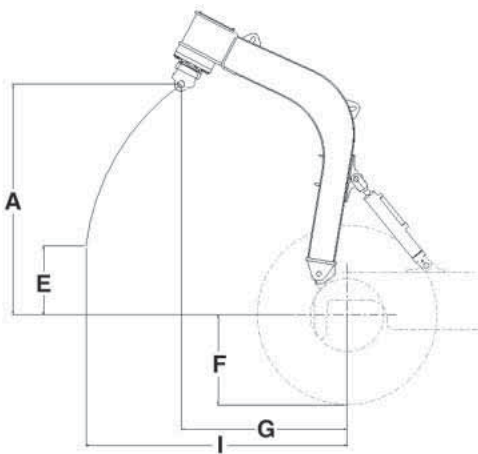
Performance on steeper grades limits recommended capacity capability for good performance, so select the next larger machine for tougher site conditions or skid less load per drag to keep speed up and maximize productivity.

Cat Continuous Rotate (CCR) Grapple

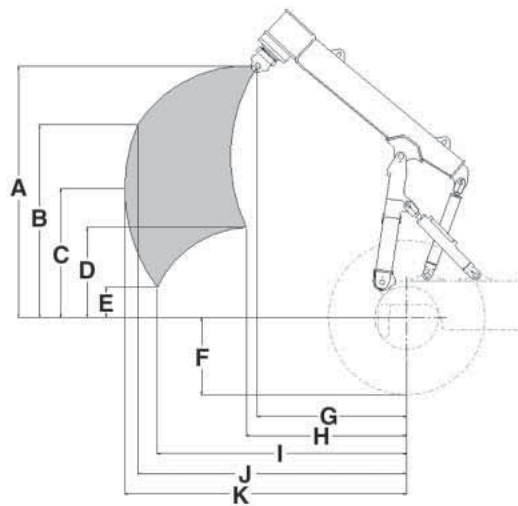
CCR Grapples for Cat 545, 535B and 525B Wheel Skidders are sourced out of LaGrange, GA for factory installation.

The CCR Grapple has an indexator rotator SR21 with high bearing capacity and improved motor torque. Caterpillar pins are used in the snubber, head and grapples frame. The following contains information on the available models, which are presented here to suggest a range of grapple possibilities.

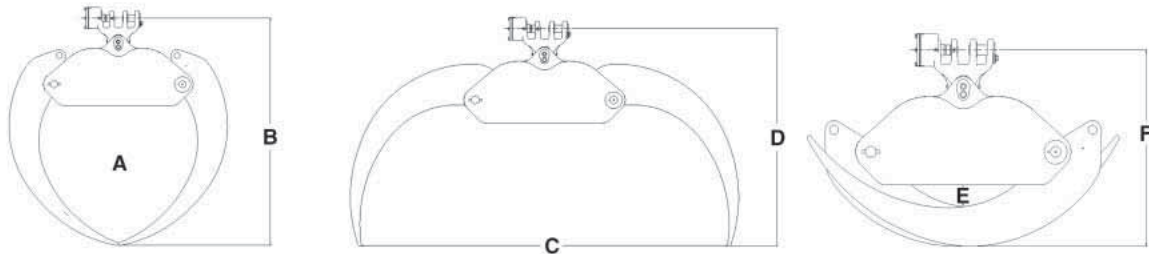
Single Function Frame Group



Dual Function Frame Group



MODEL	525B				535B	545		
	DF		SF					
A Lift highest, retracted	2623 mm	103"	2212 mm	87"	2847 mm	112"	2817 mm	111"
B Lift highest, farthest	1946 mm	77"	—	—	2193 mm	86"	2163 mm	85"
C Lift maximum reach	1336 mm	53"	—	—	1336 mm	53"	1443 mm	57"
D Lift lowest, retracted	752 mm	30"	—	—	764 mm	30"	1014 mm	40"
E Lift lowest, farthest	261 mm	10"	602 mm	24"	286 mm	11"	335 mm	13"
F Loaded tire radius (rolling radius of standard 30.5)	724 mm	28.5"	724 mm	28.5"	724 mm	28.5"	866 mm	34.1"
G Reach highest, retracted	1513 mm	60"	1630 mm	64"	1546 mm	61"	1653 mm	65"
H Reach lowest, retracted	1778 mm	70"	—	—	1666 mm	66"	1775 mm	70"
I Reach highest, farthest	2488 mm	98"	2521 mm	99"	2706 mm	107"	2762 mm	109"
J Reach lowest, farthest	2765 mm	109"	—	—	2824 mm	111"	2978 mm	117"
K Reach maximum	2880 mm	113"	—	—	3037 mm	120"	3121 mm	123"



**Continuous Rotate
 Grapples for 525B**

	A	B	C	D	E	F
1.16 m ² (12.5 ft ²) Bunching	1.16 m ² 12.5 ft ²	1982.6 mm 78"	3052.2 mm 120"	1716.2 mm 67.5"	137.1 mm 5.4"	1215.4 mm 47.8"
1.34 m ² (14.4 ft ²) Thinning	1.34 m ² 14.4 ft ²	2145.5 mm 84.4"	3124 mm 123"	1814.6 mm 71.4"	163.7 mm 6.4"	1282.9 mm 50.5"

**Continuous Rotate
 Grapples for 535B**

	A	B	C	D	E	F
1.34 m ² (14.4 ft ²) Bunching	1.34 m ² 14.4 ft ²	2145.5 mm 84.4"	3124 mm 123"	1814.6 mm 71.4"	163.7 mm 6.4"	1282.9 mm 50.5"
1.54 m ² (16.6 ft ²) Thinning	1.54 m ² 16.6 ft ²	2171 mm 85.48"	3251 mm 127"	1927.7 mm 75.89"	136 mm 5.35"	1217.8 mm 47.9"

**Continuous Rotate
 Grapples for 545**

	A	B	C	D	E	F
1.54 m ² (16.6 ft ²) Bunching	1.54 m ² 16.6 ft ²	2171 mm 85.48"	3251 mm 127"	1927.7 mm 75.89"	136 mm 5.35"	1217.8 mm 47.9"
1.78 m ² (19 ft ²) Thinning	1.78 m ² 19 ft ²	2277.5 mm 89.66"	3327 mm 131"	1902 mm 74.88"	232.7 mm 9.16"	1386 mm 54.56"

KEY

- A — Grapple capacity
- B — Tip to tip height
- C — Tong opening
- D — Maximum stem diameter
- E — Minimum stem diameter
- F — Fully closed height

Features 517 and 527:

- **Field proven Cat 3304 diesel engine** sets the industry standard for reliability and durability, delivering high horsepower for more drawbar pull, improved skidding performance and ease of operation.
- **Large, heavy duty torque converter**, reduces the tendency for track-to-ground slip, reduces the need for up and downshifting and protects power train components contributing to longer component life.
- **3 speed planetary powershift transmission** works best in high-pull applications and is well suited for large load and steep terrain skidding.
- **Heavy-duty track roller frame** extended to the rear significantly improves traction capability under heavy loads and uphill skidding applications.
- **Wide gauge and long track roller frames** provide outstanding sidehill stability.
- **Improved flotation** — More track on the ground distributes tractor weight and propulsion forces over a much larger area than conventional track skidders. This improves flotation capabilities, gradeability and significantly reduces soil impact.
- **Expanded track** options are available.
- **Load sensing hydraulic system** — Variable displacement pressure compensating hydraulic system provides reduced power requirements when there is not hydraulic demand, significantly reduced heat generation, and improving fuel efficiency.
- **Auto-grab feature** — provides constant grapple tong pressure without continuous hydraulic pump demand.
- **Superior component durability** — Final drives are raised above the work area, isolating the power train from ground impact shock and abrasive materials.
- **Excellent ground clearance** — no diagonal braces allow the skidder to pass over stumps and debris, reduces maneuvering for reduced cycle times and minimizes soil impact.
- **Smooth belly pans** — Less likely to hang up in mud and debris in soft ground or swamp logging applications.
- **Easy and comfortable operating environment** — ROPS/FOPS cab allows excellent front and rear viewing, and is pressurized for sound level reduction. The seat is angled and controls are easily reached to reduce operator fatigue and increase productivity.
- **Single lever** grapple control and blade control.
- **Less service time** — Major components are made as modules and most can be removed without removing others, and ground-level access provides convenient servicing to most filters and lube points.
- **Single-Function Arch and Swing Boom** configurations provide the versatility needed to match the skidder to a wide variety of skidding applications.

Specifications

Forest Products Track Skidders



MODEL	517 Cable		517 Grapple		527 Cable		527 Grapple	
Net Flywheel Power	89.5 kW	120 hp	89.5 kW	120 hp	112 kW	150 hp	112 kW	150 hp
Operating Weight*	17 330 kg	38,200 lb	18 364 kg	40,450 lb	17 236 kg	38,000 lb	21 380 kg	47,140 lb
Engine Model	3304 DITA		3304 DITA		3304 DITA		3304 DITA	
Rated Engine RPM	2200		2200		2200		2200	
Bore	120.65 mm	4.75"	120.65 mm	4.75"	120.65 mm	4.75"	120.65 mm	4.75"
Stroke	152.4 mm	6"	152.4 mm	6"	152.4 mm	6"	152.4 mm	6"
Displacement	7 L	425 in³	7 L	425 in³	7 L	425 in³	7 L	425 in³
No. of Cylinders	4		4		4		4	
Speeds Forward:								
1st	3.7 km/h	2.3 mph	3.7 km/h	2.3 mph	3.7 km/h	2.3 mph	3.7 km/h	2.3 mph
2nd	6.6 km/h	4.1 mph	6.6 km/h	4.1 mph	6.6 km/h	4.1 mph	6.6 km/h	4.1 mph
3rd	11.5 km/h	7.1 mph	11.5 km/h	7.1 mph	11.5 km/h	7.1 mph	11.5 km/h	7.1 mph
Speeds Reverse:								
1st	4.6 km/h	2.8 mph	4.6 km/h	2.8 mph	4.6 km/h	2.8 mph	4.6 km/h	2.8 mph
2nd	8.0 km/h	5.0 mph	8.0 km/h	5.0 mph	8.3 km/h	5.1 mph	8.3 km/h	5.1 mph
3rd	14.2 km/h	8.8 mph	14.2 km/h	8.8 mph	14.6 km/h	9.0 mph	14.6 km/h	9.0 mph
Track Roller Frame	7 or 8		7 or 8		7 or 8		7 or 8	
Width of Standard Track Shoe	660 mm	2'2"	660 mm	2'2"	560 mm	1'10"	560 mm	1'10"
Length of Track on Ground	2.91 m	9'7"	2.91 m	9'7"	2.85 m	9'4"	2.85 m	9'4"
Ground Contact Area (with Standard Shoe)	3.52 m ²	5458 in²	3.52 m ²	5458 in²	3.19 m ²	4940 in²	3.19 m ²	4940 in²
Track Gauge	2 m	6'7"	2 m	6'7"	2.16 m	7'1"	2.16 m	7'1"
Oscillation:								
Front Idlers at Gauge Line At Pivot Shaft	143.2 mm	5.64"	143.2 mm	5.64"	—	—	—	—
At Pivot Shaft	±2.8°		±2.8°		—	—	—	—
Winch:								
Line Pull, Maximum at Stall Bare Drum**	31 260 kg	68,780 lb	31 260 kg	68,780 lb	31 389 kg	69,200 lb	31 389 kg	69,200 lb
Line Speed at Rated Engine RPM, Bare Drum**	40.5 m/min	133 fpm	40.5 m/min	133 fpm	44 m/min	143 fpm	44 m/min	143 fpm
Winch Weight	1500 kg	3300 lb	1500 kg	3300 lb	1500 kg	3300 lb	1500 kg	3300 lb
Recommended Drum Capacity	122 m	400'0"	122 m	400'0"	122 m	400'0"	122 m	400'0"
Optional Drum Capacity	88 m	290'0"	88 m	290'0"	88 m	290'0"	88 m	290'0"
Recommended Cable Size	19 mm	0.75"	19 mm	0.75"	19 mm	0.75"	19 mm	0.75"
Optional Cable Size	22 mm	0.88"	22 mm	0.88"	22 mm	0.88"	22 mm	0.88"
Drum Diameter	254 mm	10"	254 mm	10"	254 mm	10"	254 mm	10"
General Dimensions:								
Height (To Top of ROPS)	2.48 m	8'1"	2.48 m	8'1"	3.30 m	10'10"	3.30 m	10'10"
Overall Length (with Blade)	4.97 m	16'4"	5.75 m	18'10"	4.94 m	16'3"	6.07 m	19'11"
Overall Length (without Blade)	4.10 m	13'5"	4.87 m	16'0"	4.35 m	14'3"	5.6 m	18'5"
Width (without Trunnion)	2.91 m	9'7"	2.91 m	9'7"	2.72 m	8'11"	2.72 m	8'11"
Ground Clearance	635 mm	2'1"	635 mm	2'1"	531.8 mm	20.9"	531.8 mm	20.9"
Capacity:								
Fuel Tank	260 L	69 U.S. gal	260 L	69 U.S. gal	256 L	67 U.S. gal	256 L	67 U.S. gal
Cooling System	38 L	10 U.S. gal	38 L	10 U.S. gal	—	—	—	—
Hydraulic Tank	29.5 L	7.8 U.S. gal	29.5 L	7.8 U.S. gal	—	—	—	—
PAT Blade Widths:								
Straight	2.74 m	9'0"	2.74 m	9'0"	3.35 m	11'0"	3.17 m	10'5"
Angle (25°)	2.48 m	8'1"	2.48 m	8'1"	3.10 m	10'2"	2.92 m	9'7"

*All models include coolant, lubricants, full fuel tank, and operator.

517 Cable includes enclosed cab and 4PAT blade.

517 Grapple includes enclosed cab, 4PAT blade, swing boom, and 0.74 m² (8 ft²) grapple.

527 Cable includes lubricants, coolant, ROPS canopy, 100% fuel, operator, 5A blade, open cab, and towing winch.

527 Grapple includes lubricants, coolant, ROPS canopy, 100% fuel, operator, 5P blade, track roller guard, 660 mm (2'2") tri-link track, swing grapple, 2.54 m (10'0") sorting head, and enclosed cab.

**With 22 mm (0.88") cable.

Forest Products Track Skidders

Shoe Selection and Ground Pressure

MODEL	517 (7-roller track frame)		517 (8-roller track frame)		527 (7-roller track frame)		527 (8-roller track frame)	
Number of Shoes (each side)	42		44		41		—	
Width of Shoes	560 mm	22"	—		560 mm	22"	—	
	610 mm	24"	—		610 mm	24"	—	
	660 mm	26"	660 mm	26"	660 mm	26"	660 mm	26"
	760 mm	30"	760 mm	30"	760 mm	30"	760 mm	30"
Length of Track on Ground	2710 mm	106.7"	2910 mm	114.6"	2846 mm	112"	3061 mm	121"
Track Gauge	2000 mm	78.7"	2000 mm	78.7"	2160 mm	85"	2160 mm	85"
Ground Contact Area with:								
560 mm (22") Shoes	3.03 m ²	4695 in²	—		3.19 m ²	4945 in²	3.43 m ²	5317 in²
610 mm (24") Shoes	3.30 m ²	5122 in²	—		3.47 m ²	5379 in²	3.73 m ²	5782 in²
660 mm (26") Tri-link	3.58 m ²	5548 in²	3.84 m ²	5959 in²	3.76 m ²	5828 in²	4.04 m ²	6262 in²
760 mm (30") Tri-link	4.13 m ²	6402 in²	4.44 m ²	6876 in²	4.33 m ²	6712 in²	4.65 m ²	7208 in²
Ground Pressure (Grapple):								
560 mm (22") Shoes	0.55 kg/cm ² *	7.83 psi	—		0.60 kg/cm ²	8.53 psi	—	
610 mm (24") Shoes	0.50 kg/cm ² *	7.22 psi	—		0.55 kg/cm ²	7.82 psi	—	
660 mm (26") Tri-link	0.50 kg/cm ² *	7.16 psi	0.48 kg/cm ²	6.79 psi	0.51 kg/cm ²	7.25 psi	—	
760 mm (30") Tri-link	0.44 kg/cm ² *	6.29 psi	0.42 kg/cm ²	5.96 psi	0.44 kg/cm ²	6.26 psi	—	
Ground Pressure (Cable):								
560 mm (22") Shoes	0.52 kg/cm ² **	7.35 psi	—		0.56 kg/cm ²	7.97 psi	—	
610 mm (24") Shoes	0.47 kg/cm ² **	6.64 psi	—		0.52 kg/cm ²	7.40 psi	—	
660 mm (26") Tri-link	0.47 kg/cm ² **	6.75 psi	0.45 kg/cm ²	6.41 psi	0.48 kg/cm ²	6.83 psi	—	
760 mm (30") Tri-link	0.42 kg/cm ² **	5.94 psi	0.40 kg/cm ²	5.64 psi	0.41 kg/cm ²	5.83 psi	—	

*Machine configured with enclosed cab, PAT blade, swing boom and 0.74 m² (8 ft²) sorting grapple.

**Machine configured with enclosed cab, PAT blade and winch.

**517
Grapple**
(Mechanical Retrieval
Device) — *Optional
attachment with
single function arch*

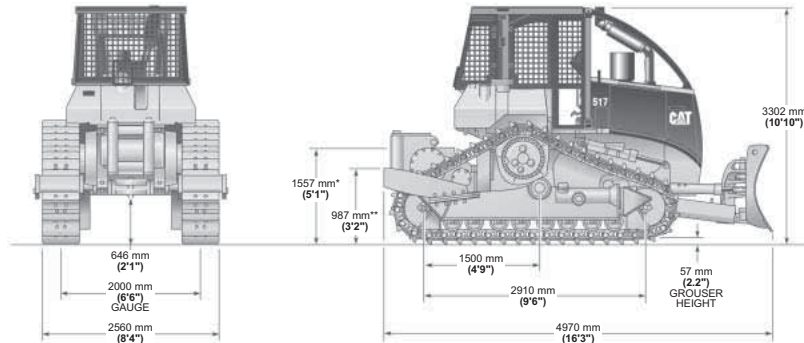
MODEL	517 Cable		527 Grapple		527 Cable			
Maximum Line Pull	18 660 kg * 41,050 lb	31 264 kg ** 68,782 lb	19 504 kg 43,000 lb	31 389 kg 69,200 lb	77 m/min * 253 fpm	40.5 m/min** 133 fpm	71.6 m/min 235 fpm	43.6 m/min 143 fpm
Drum Capacity:								
Recommended	46 m 151'0"	122 m 400'0"	91 m @ 16 mm 298'0" @ 0.62"	122 m 400'0"				
Optional	32 m 105'0"	88 m 290'0"	64 m @ 19 mm 210'0" @ 0.75"	—				
Cable Size:								
Recommended	16 mm 0.62"	19 mm 0.75"	16 mm 0.62"	19 mm 0.75"				
Optional	19 mm 0.75"	22 mm 0.88"	19 mm 0.75"	—				
Drum Diameter	178 mm 7.0"	254 mm 10.0"	191 mm 7.5"	254 mm 10.0"				
Drum Width	241 mm 9.5"	330 mm 13.0"	241 mm 9.5"	330 mm 13.0"				
Drive	Mechanical		Mechanical					
Weight	312 kg 686 lb	1500 kg 3300 lb	469 kg 1034 lb	1497 kg 3300 kg				

*With 16 mm (0.62") cable.

**With 22 mm (0.88") cable.

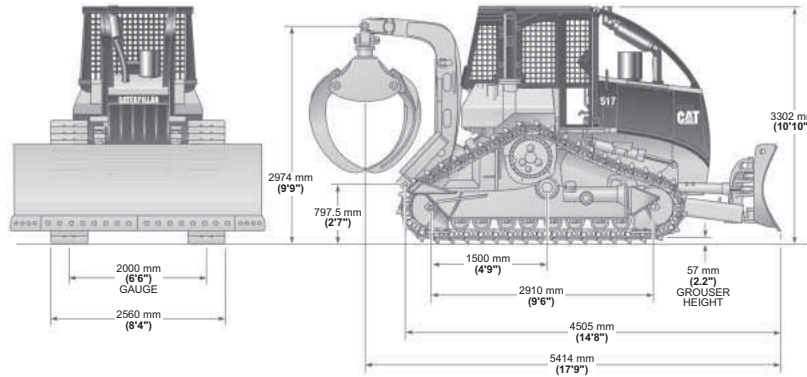
MACHINE DIMENSIONS (All dimensions are approximate.)

Cable:

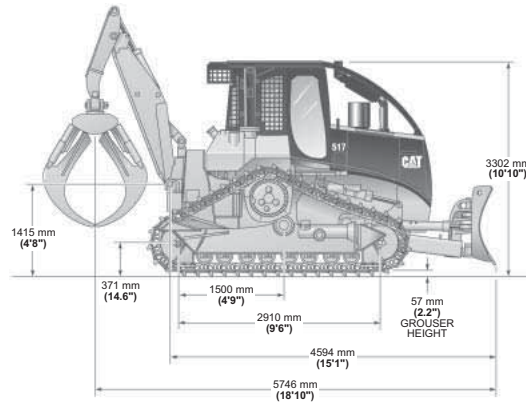


*Top of drum.
**Top of guard.

Fixed Grapple:

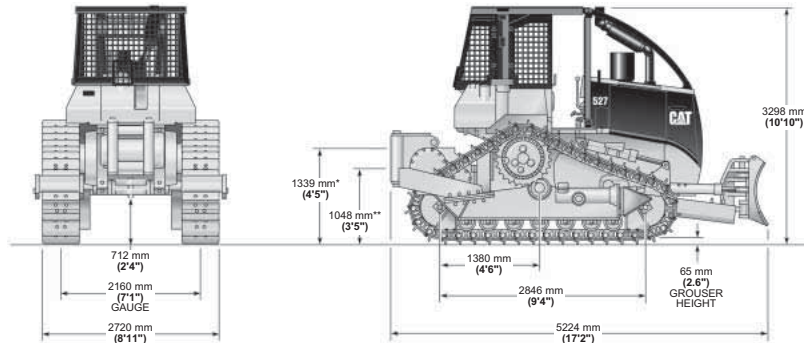


Swing Boom:



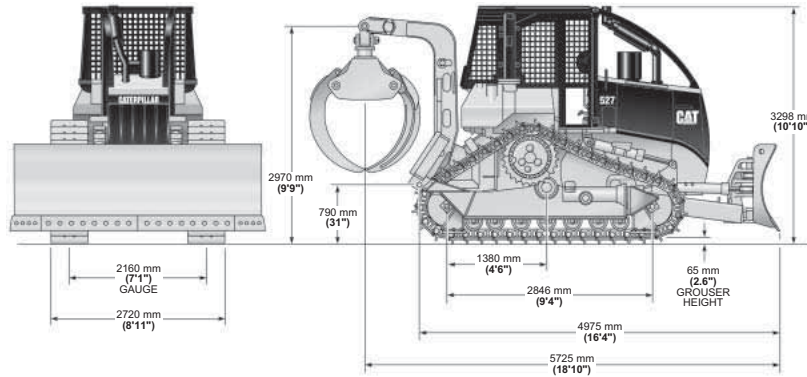
MACHINE DIMENSIONS (All dimensions are approximate.)

Cable:

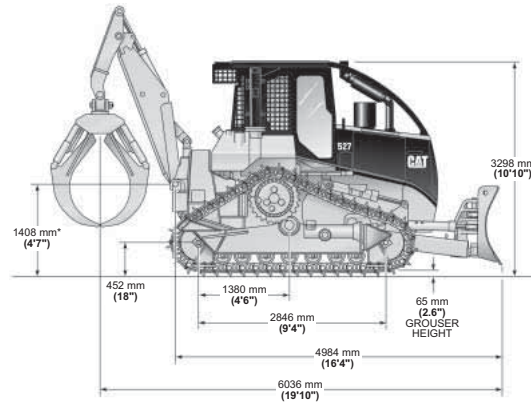


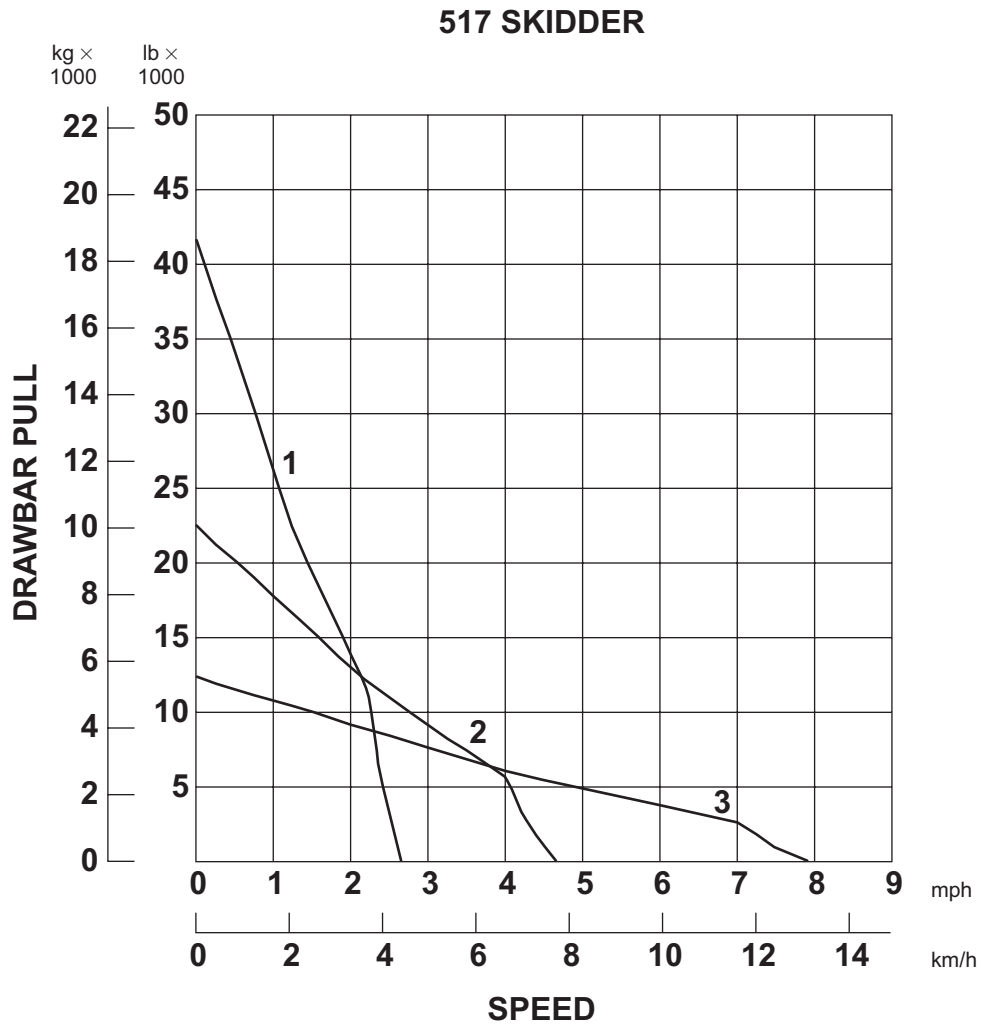
*Top of drum.
**Top of guard.

Fixed Grapple:



Swing Boom:

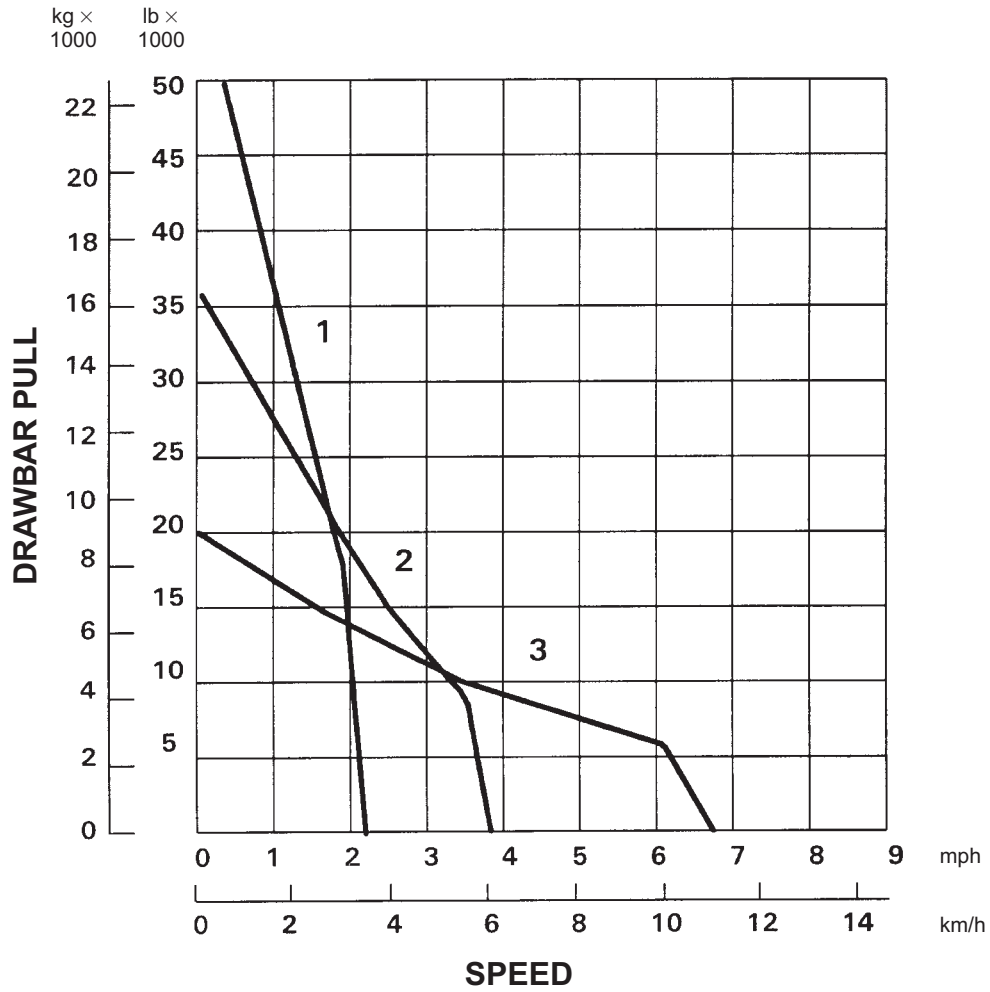




KEY
 1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear

NOTE: Usable pull will depend upon weight and traction of equipped tractor.

527 SKIDDER



6

- KEY**
- 1 — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear

NOTE: Usable pull will depend upon weight and traction of equipped tractor.

GRAPPLES

Fixed boom Grapples for Cat 517 and 527 Skidders are built and supplied by Caterpillar. Swing boom grapples are built to Caterpillar specifications. The following contains information on some of the available models, which are presented here to suggest a range of grapple possibilities.

Reach (A, B) — The horizontal distance from the vertical center of the rear idler to the vertical center of the grapple fore and aft pivot.

- A) With the grapple in its lowest fully extended position.
- B) With the grapple in its highest fully retracted position.

Lift (C, E) — The vertical distance from the ground to the center of the grapple fore and aft pivot.

- C) With the grapple in its lowest fully extended position.
- E) With the grapple in its highest fully retracted position.

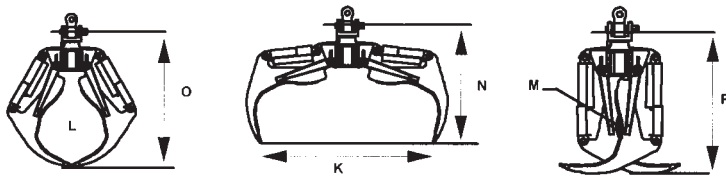
Maximum Grapple Opening (K) — The horizontal distance between the tips of the grapple arms when grapple is fully open.

Area of Opening (L) — The available area with grapple in tips together position.

Minimum Log Size (M) — The smallest diameter which the grapple can close.

Grapple Length (N, O, P) — The distance from the grapple fore and aft pivot to tips of grapple arms.

- N) With grapple fully open.
- O) With grapple in tips together position.
- P) With grapple fully closed.

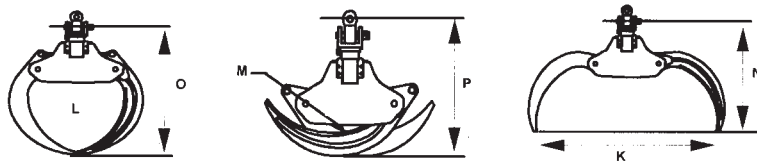


Sorting Grapple

- Used for 305 mm (12") or larger diameter trees.
- Designed to pick up individual or several stems for quick cycles.

Bunching Grapple

- Used for 305 mm (12") or smaller diameter trees.
- Designed to gather bundle of stems and maximize grapple loads.

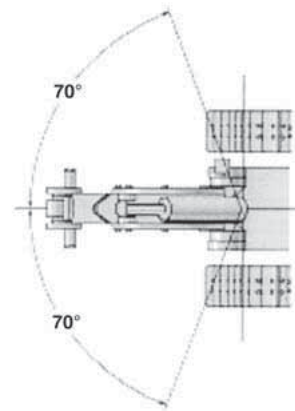
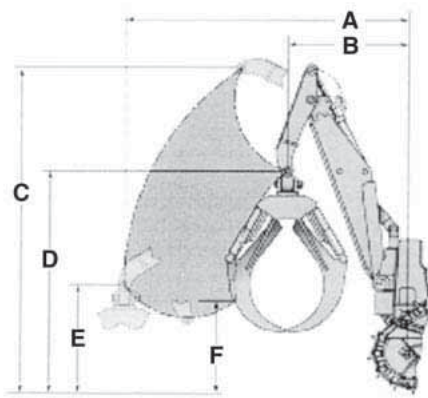


Grapples for 517		K	M	N	O	P	L
2.13 m (84") Sorting	mm	2130	76	1680	1980	1740	0.74 m ²
	in	84	3	66	78	68.5	8 ft ²
2.29 m (90") Bunching	mm	2290	102	1640	1920	1310	0.74 m ²
	in	90	4	64	75	51	8 ft ²
Grapples for 527		K	M	N	O	P	L
2.54 m (100") Sorting	mm	2540	76	1560	2040	1830	0.84 m ²
	in	100	3	61.5	80.5	72	9 ft ²
2.79 m (110") Bunching	mm	2794	76	1780	2020	1360	0.93 m ²
	in	110	3	70	79.5	53.5	10 ft ²

Swing-boom

- Ability to reach and lift over the side to collect scattered logs.
- Has decking and loading capability.
- Excellent reach to the rear and side for maximum skidder versatility.

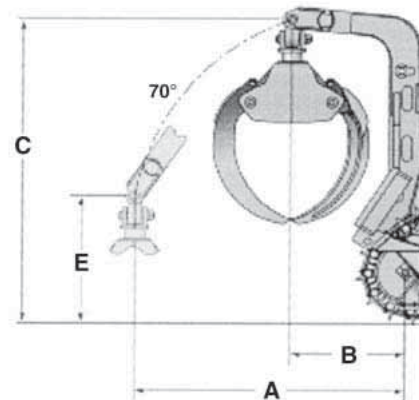
- Suitable for hard to reach timber on steep slopes, soft ground, or selection harvest and thinning.
- Reduces cycle times by reducing the amount of maneuvering of the skidder to reach logs.



Swing-boom		A	B	C	D	E	F
517	mm	3269	1241	4092	2800	1366	1166
	in	129	49	161	110	54	46
527	mm	3544	1515	4048	2792	1358	1158
	in	139	60	160	110	53	46

Single-function arch

- Versatile attachment suitable for selection and clear cut applications.
- Reach consists of one vertical arc.
- Typical application includes short cycles and/or larger diameter timber.



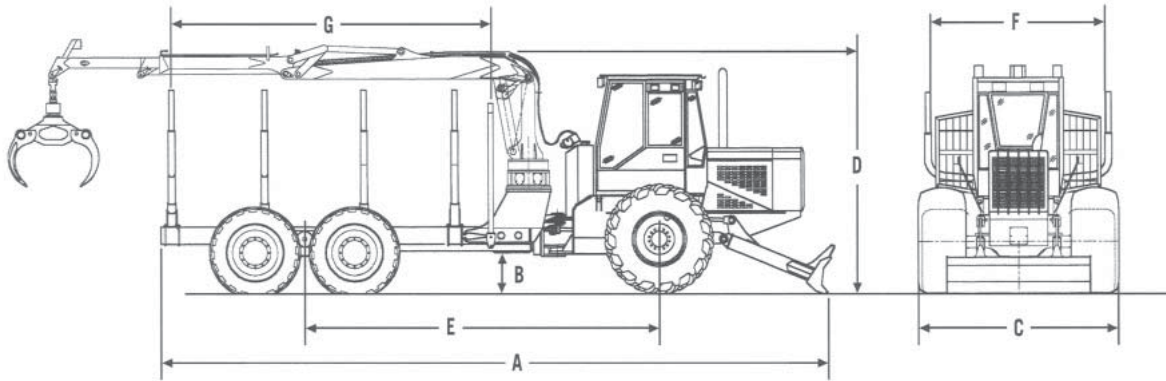
Single-function		A	B	C	D	E	F
517	mm	2465	909	2974	—	1000	—
	in	96	36	117	—	39	—
527	mm	2619	1105	2970	—	1231	—
	in	103	44	117	—	49	—

TK 434/434L/436/456/458 Features:

- **Large high visibility cab.**
- **Hydraulic tilt** gives complete under cab service access.
- **Extra heavy frame** with full 40 degree articulation for tight turning.
- **Rack and pinion 4 cylinder loader swing system** features fully proportional controls with high torque and high swing speed.
- **Boom geometry** is designed for maximum utility.
- **European style butt-bypass clam** built with high strength steel.

MODEL	TK 434 (4-wheel)		TK 434L (4-wheel)		TK 436 (6-wheel)	
Gross Power	93 kW	125 hp	93 kW	125 hp	93 kW	125 hp
Operating Weight	12 247 kg	27,000 lb	13 154 kg	29,000 lb	14 062 kg	31,000 lb
Engine Model	—		—		—	
Maximum Forward Speed	23.3 km/h	14.5 mph	23.3 km/h	14.5 mph	23.3 km/h	14.5 mph
Loader Reach	5.6 m	18'6"	5.6 m	18'6"	5.6 m	18'6"
Loader Reach (optional)	6.9 m	22'9"	—		—	
Load Capacity	7258 kg	16,000 lb	8165 kg	18,000 lb	10 866 kg	24,000 lb
Fuel Capacity	178 L	47 U.S. gal	178 L	47 U.S. gal	178 L	47 U.S. gal
Transmission	Powershift		Powershift		Powershift	
General Dimensions:						
Wheelbase	3823 mm	150.5"	5321 mm	209.5"	5283 mm	208"
Ground Clearance	559/584 mm	22"/23"	559/584 mm	22"/23"	559/584 mm	22"/23"

MODEL	TK 456 (6-wheel)		TK 458 (8-wheel)	
Gross Power	127 kW	170 hp	127 kW	170 hp
Operating Weight	16 330 kg	36,000 lb	17 237 kg	14,515 lb
Engine Model	—		—	
Maximum Forward Speed	23.3 km/h	14.5 mph	23.3 km/h	14.5 mph
Loader Reach	5.6 m	18'6"	5.6 m	18'6"
Load Capacity	13 608 kg	30,000 lb	14 515 kg	32,000 lb
Fuel Capacity	178 L	47 U.S. gal	178 L	47 U.S. gal
Transmission	Powershift		Powershift	
General Dimensions:				
Wheelbase	5283 mm	208"	5330 mm	210"
Ground Clearance	584/673 mm	23"/26.5"	584 mm	23"



6

MODEL	TK 434 (4-wheel)		TK 434L (4-wheel)		TK 436 (6-wheel)	
A Length with Blade Raised	7849 mm	309"	9880 mm	389"	9754 mm	384"
B Ground Clearance	549 mm	21.6"	549 mm	21.6"	579 mm	22.8"
C Width with Standard Tires	2642 mm	104"	3454 mm	136"	2642 mm	104"
D Transport Height	3454 mm	136"	3454 mm	136"	3454 mm	136"
E Wheelbase	3835 mm	151"	5385 mm	212"	5334 mm	210"
F Load Stake Width (Inside)	2362 mm	93"	2362 mm	93"	2362 mm	93"
G Length of Wood Bunk	2921 mm	115"	4877 mm	192"	4877 mm	192"

MODEL	TK 456 (6-wheel)		TK 458 (8-wheel)	
A Length with Blade Raised	10.21 m	402"	10.21 m	402"
Length with XL Frame	10.97 m	432"	10.97 m	432"
B Ground Clearance	579 mm	22.8"	579 mm	22.8"
C Width with Standard Tires	2997 mm	118"	3048 mm	120"
D Transport Height	3581 mm	141"	3581 mm	141"
E Wheelbase	5334 mm	210"	5334 mm	210"
Wheelbase with XL Frame	5715 mm	225"	5715 mm	225"
F Load Stake Width (Inside)	2591 mm	102"	2591 mm	102"
G Length of Wood Bunk	4877 mm	192"	4877 mm	192"
Length of Wood Bunk with XL Frame	5639 mm	222"	5639 mm	222"

Introduction

Caterpillar forestry machines are specifically designed for tough forest work. Each model uses purpose built booms, sticks and grapples designed by Caterpillar for maximum performance and durability.

The following information provides features, specifications, dimensions, working ranges and major component weights for the 320C FM, 322C FM, 325C FM and 330C FM.

Features

320C FM

- **Six-cylinder turbocharged Cat 3066 T engine with automatic engine speed control and proven hydraulics** provides power, low emissions, outstanding reliability, and maximizes fuel economy.
- **Various configurations** for demanding applications.
- **Rugged undercarriage design and proven structural components** provide outstanding durability.
- **Track roller frames** are robot-welded and pressed formed, pentagonal units to deliver exceptional strength and service life.
- **Undercarriage** — Two forestry options, standard gauge heavy-duty and high-wide/high drawbar, allow you to choose the right machine for your application. Both options absorb stresses and provide excellent stability.
- **Operator station** — Redesigned interior layout maximizes operator space, provides exceptional comfort and reduces operator fatigue.
- **Serviceability** — Longer service intervals and easier maintenance result in better machine availability and lower costs.

322C FM/325C FM

- **Six-cylinder turbocharged Cat 3126B ATAAC engine and hydraulics** provide exceptional power, efficiency and controllability unmatched in the industry for consistently high performance in all applications. Meets Tier 2 worldwide emissions requirements.

- **Attachments** — Heel-Boom Grapples and Cab Risers help increase operator effectiveness and increase production and reliability.
- **Rugged main frame design** is purpose-built for forest applications with reinforced carbody, rugged swing bearing, heavy doors and extra guarding.
- **Operator station** — Redesigned interior layout maximizes operator space and provides exceptional comfort. Roomy, quiet, automatically climate controlled cab has excellent sightlines to the work area.
- **Serviceability** — Simplified service and maintenance, and electronic diagnostics help save time, money and increase productivity.

330C FM

- **Cat C9 engine and hydraulics** provide exceptional power, efficiency and controllability unmatched in the industry for consistently high performance in all applications.
- **Attachments** — Factory installed Log Loader fronts and Cat Grapples; Road Builder excavator and Butt-n-Top fronts; AEM delimeter carrier options help meet diverse forest applications.
- **Reinforced carbody design** stands up to the most demanding forest applications, assuring outstanding durability and service life.
- **Undercarriage** — Heavy-duty link assemblies provide toughness and durability, maximizing undercarriage life and minimizing operating costs.
- **Guarding** — Purpose designed guarding helps extend service life, reduces downtime and helps protect your forestry machine investment.
- **Operator station** — Spacious, quiet, automatically climate controlled cab has excellent sightlines to the work area.
- **Serviceability** — Simplified service and maintenance, and electronic diagnostics help save time, money and increase productivity.

MODEL	320C FM		320C FM	
	SA Reach Boom and Stick		LL Heel Boom Under/Under	
Flywheel Power	103 kW	138 hp	103 kW	138 hp
Standard	HH 700 Processing Head		11.0 m (36'0") Reach	
Operating Weight	28 000 kg	61,600 lb	29 239 kg	64,300 lb
Swing Mechanism:				
Torque	61.8 kN-m	45,611 lb-ft	61.8 kN-m	45,611 lb-ft
Speed	11.5 RPM		11.5 RPM	
Engine Model	Cat 3066 T Diesel Engine		Cat 3066 T Diesel Engine	
Rated Engine RPM	1800		1800	
No. of Cylinders	6		6	
Bore	102 mm	4.02"	102 mm	4.02"
Stroke	130 mm	5.12"	130 mm	5.12"
Displacement	6.37 L	389 in ³	6.37 L	389 in ³
Hydraulic System:				
Main Implement System — Maximum Flow (2X)	205 L/min	54.2 gal/min	—	—
Relief Valve Settings:				
Implement Circuits	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Travel Circuits	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Swing Circuits	25 000 kPa	3635 psi	25 000 kPa	3635 psi
Pilot Circuits	4120 kPa	600 psi	4120 kPa	600 psi
Drive:				
Standard Gauge Drawbar Pull	196 kN	44,040 lb	196 kN	44,040 lb
Maximum Travel Speed	5.5 km/h	3.4 mph	5.5 km/h	3.4 mph
High — Wide/High Drawbar Pull	236 kN	53,100 lb	236 kN	53,100 lb
Track:				
Standard (double grouser)	700 mm	28"	700 mm	28"
Optional (double grouser)	600 mm	24"	600 mm	24"
Optional (triple grouser)	—	—	700 mm	28"
Optional (triple grouser)	800 mm	32"	—	—
Overall Track Length	4480 mm	14'8"	4480 mm	14'8"
Ground Contact Area with Standard Shoe	—	—	—	—
Ground Clearance	475 mm	18.7"	650 mm	25.6"
Track Gauge	2380 mm	7'10"	2590 mm	8'6"
Capacity:				
Fuel Tank	400 L	106 U.S. gal	400 L	106 U.S. gal
Cooling System	30 L	7.9 U.S. gal	30 L	7.9 U.S. gal
Hydraulic System — Tank	120 L	32 U.S. gal	120 L	32 U.S. gal
Hydraulic System — Total	240 L	63 U.S. gal	240 L	63 U.S. gal
Swing Drive	8 L	2.1 U.S. gal	8 L	2.1 U.S. gal

Forest Products
Track Forest Machines

Specifications
● **322C FM**

MODEL	322C FM General Forestry (HDLC)		322C FM General Forestry (HW)		322C FM Log Loader (U/U)		322C FM Log Loader (O/U)	
	Flywheel Power	125 kW	168 hp	125 kW	168 hp	125 kW	168 hp	125 kW
Operating Weight*								
without Bucket or Grapple	27 176 kg	59,923 lb	29 656 kg	65,391 lb	32 616 kg	71,918 lb	32 905 kg	72,555 lb
Operating Weight**								
without Bucket or Grapple	28 229 kg	62,245 lb	30 710 kg	67,716 lb	33 607 kg	74,103 lb	33 896 kg	74,741 lb
Swing Mechanism:								
Torque	73.4 kN·m	54,137 lb-ft	73.4 kN·m	54,137 lb-ft	73.4 kN·m	54,137 lb-ft	73.4 kN·m	54,137 lb-ft
Speed		10 RPM		10 RPM		10 RPM		10 RPM
Engine Model	Cat 3126B ATAAC		Cat 3126B ATAAC		Cat 3126B ATAAC		Cat 3126B ATAAC	
Rated Engine RPM	1800		1800		1800		1800	
No. of Cylinders	6		6		6		6	
Bore	110 mm	4.3"	110 mm	4.3"	110 mm	4.3"	110 mm	4.3"
Stroke	127 mm	5"	127 mm	5"	127 mm	5"	127 mm	5"
Displacement	7.2 L	439.4 in³	7.2 L	439.4 in³	7.2 L	439.4 in³	7.2 L	439.4 in³
Hydraulic System:								
Main Implement System — Maximum Flow (2X)	220 L/min	58.1 gal/min	220 L/min	58.1 gal/min	220 L/min	58.1 gal/min	220 L/min	58.1 gal/min
Relief Valve Settings:								
Implement Circuits	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Travel Circuits	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Swing Circuits	24 500 kPa	3553 psi	24 500 kPa	3553 psi	24 500 kPa	3553 psi	24 500 kPa	3553 psi
Pilot Circuits	3920 kPa	568.4 psi	3920 kPa	568.4 psi	3920 kPa	568.4 psi	3920 kPa	568.4 psi
Drive:								
Maximum Drawbar Pull	223 kN	50,112 lb	247 kN	55,508 lb	247 kN	55,508 lb	247 kN	55,508 lb
Maximum Travel Speed	5.5 km/h	3.4 mph	5.7 km/h	3.5 mph	5.7 km/h	3.5 mph	5.7 km/h	3.5 mph
Track:								
Standard (double grouser)	700 mm	27.5"	700 mm	27.5"	700 mm	27.5"	700 mm	27.5"
Optional (double grouser)	600 mm	23.6"	600 mm	23.6"	600 mm	23.6"	600 mm	23.6"
Optional (HD triple grouser)	800 mm	31.5"	800 mm	31.5"	800 mm	31.5"	800 mm	31.5"
Overall Track Length	4661 mm	15'4"	4695 mm	15'5"	4695 mm	15'5"	4695 mm	15'5"
Ground Contact Area with Standard Shoe	5.68 m ²	8808 in²	5.63 m ²	8720 in²	5.68 m ²	8720 in²	5.68 m ²	8720 in²
Ground Clearance	460 mm	18.1"	705 mm	27.8"	705 mm	27.8"	705 mm	27.8"
Track Gauge	2590 mm	8'6"	2921 mm	9'7"	2921 mm	9'7"	2921 mm	9'7"
Capacity:								
Fuel Tank	500 L	132 U.S. gal	500 L	132 U.S. gal	500 L	132 U.S. gal	500 L	132 U.S. gal
Cooling System	30 L	7.9 U.S. gal	30 L	7.9 U.S. gal	30 L	7.9 U.S. gal	30 L	7.9 U.S. gal
Hydraulic System — Tank	145 L	38 U.S. gal	145 L	38 U.S. gal	145 L	38 U.S. gal	145 L	38 U.S. gal
Hydraulic System — Total	245 L	64.7 U.S. gal	245 L	64.7 U.S. gal	245 L	64.7 U.S. gal	245 L	64.7 U.S. gal
Swing Drive	8 L	2.1 U.S. gal	8 L	2.1 U.S. gal	8 L	2.1 U.S. gal	8 L	2.1 U.S. gal

*Original FM Cab/Riser with external guarding.

**New FM Cab/Riser with integrated guarding (Available in July 2004).

MODEL	325C FM General Forestry (HDLC)		325C FM General Forestry (HW)		325C FM Log Loader (U/U)		325C FM Log Loader (O/U)	
	Flywheel Power	140 kW	188 hp	140 kW	188 hp	140 kW	188 hp	140 kW
Operating Weight*								
without Bucket or Grapple	31 449 kg	69,333 lb	32 495 kg	71,639 lb	37 096 kg	81,783 lb	37 671 kg	83,050 lb
Operating Weight**								
without Bucket or Grapple	31 942 kg	70,432 lb	33 078 kg	72,937 lb	37 644 kg	83,005 lb	38 219 kg	84,273 lb
Swing Mechanism:								
Torque	82.2 kN·m	60,628 lb-ft	82.2 kN·m	60,628 lb-ft	82.2 kN·m	60,628 lb-ft	82.2 kN·m	60,628 lb-ft
Speed		10.2 RPM		10.2 RPM		10.2 RPM		10.2 RPM
Engine Model	Cat 3126B ATAAC		Cat 3126B ATAAC		Cat 3126B ATAAC		Cat 3126B ATAAC	
Rated Engine RPM	1800		1800		1800		1800	
No. of cylinders	6		6		6		6	
Bore	110 mm	4.3"	110 mm	4.3"	110 mm	4.3"	110 mm	4.3"
Stroke	127 mm	5"	127 mm	5"	127 mm	5"	127 mm	5"
Displacement	7.2 L	439.4 in³	7.2 L	439.4 in³	7.2 L	439.4 in³	7.2 L	439.4 in³
Hydraulic System:								
Main Implement System — Maximum Flow (2X)	235 L/min	62 gal/min	235 L/min	62 gal/min	235 L/min	62 gal/min	235 L/min	62 gal/min
Relief Valve Settings:								
Implement Circuits	34 300 kPa	4975 psi	34 300 kPa	4975 psi	34 300 kPa	4975 psi	34 300 kPa	4975 psi
Travel Circuits	34 300 kPa	4975 psi	34 300 kPa	4975 psi	34 300 kPa	4975 psi	34 300 kPa	4975 psi
Swing Circuits	27 500 kPa	3988 psi	27 500 kPa	3988 psi	27 500 kPa	3988 psi	27 500 kPa	3988 psi
Pilot Circuits	4120 kPa	598 psi	4120 kPa	598 psi	4120 kPa	598 psi	4120 kPa	598 psi
Drive:								
Maximum Drawbar Pull	244 kN	54,853 lb	244 kN	54,853 lb	244 kN	54,853 lb	244 kN	54,853 lb
Maximum Travel Speed	5.3 km/h	3.3 mph	5.3 km/h	3.3 mph	5.3 km/h	3.3 mph	5.3 km/h	3.3 mph
Track:								
Standard (double grouser)	700 mm	27.5"	700 mm	27.5"	700 mm	27.5"	700 mm	27.5"
Optional (double grouser)		none		none		none		none
Optional (triple grouser)		none	700 mm	27.5"	700 mm	27.5"	700 mm	27.5"
Optional (HD triple grouser)	800 mm	31.5"		none		none		none
Overall Track Length	4700 mm	15'5"	4770 mm	15'7"	4770 mm	15'7"	4770 mm	15'7"
Ground Contact Area with Standard Shoe	5.63 m ²	8720 in²	5.72 m ²	8863 in²	5.72 m ²	8863 in²	5.72 m ²	8863 in²
Ground Clearance	510 mm	20.1"	722 mm	28.5"	722 mm	28.5"	722 mm	28.5"
Track Gauge	2590 mm	8'6"	2921 mm	9'7"	2921 mm	9'7"	2921 mm	9'7"
Capacity:								
Fuel Tank	500 L	132 U.S. gal	500 L	132 U.S. gal	500 L	132 U.S. gal	500 L	132 U.S. gal
Fuel Tank — Optional Auxiliary Right Front	410 L	108 U.S. gal	410 L	108 U.S. gal	410 L	108 U.S. gal	410 L	108 U.S. gal
Cooling System	30 L	7.9 U.S. gal	30 L	7.9 U.S. gal	30 L	7.9 U.S. gal	30 L	7.9 U.S. gal
Hydraulic System — Tank	145 L	38 U.S. gal	145 L	38 U.S. gal	145 L	38 U.S. gal	145 L	38 U.S. gal
Hydraulic System — Total	310 L	82 U.S. gal	310 L	82 U.S. gal	310 L	82 U.S. gal	310 L	82 U.S. gal
Swing Drive	10 L	2.6 U.S. gal	10 L	2.6 U.S. gal	10 L	2.6 U.S. gal	10 L	2.6 U.S. gal

*Original FM Cab/Riser with external guarding.

**New FM Cab/Riser with integrated guarding (Available in July 2004).

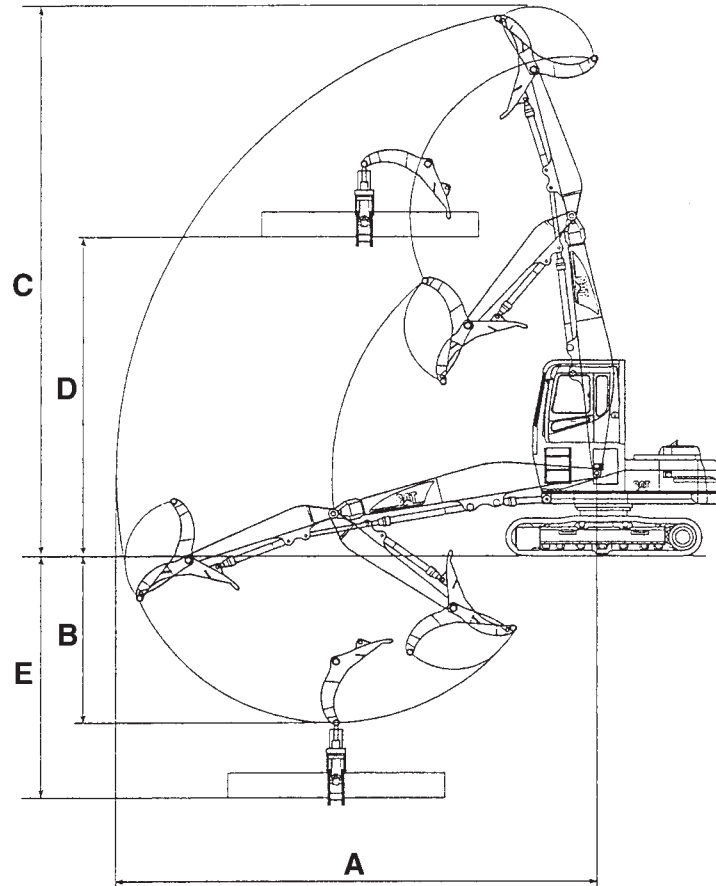
Forest Products
Track Forest Machines

Specifications
● **330C FM**

MODEL	330C FM General Forestry (HDLC)		330C FM General Forestry (HW)		330C FM Log Loader (U/U)		330C FM Log Loader (O/U)	
	Flywheel Power	184 kW	247 hp	184 kW	247 hp	184 kW	247 hp	184 kW
Operating Weight*								
without Bucket or Grapple	38 790 kg	85,517 lb	40 220 kg	88,669 lb	43 900 kg	96,782 lb	44 440 kg	97,973 lb
Operating Weight**								
without Bucket or Grapple	39 347 kg	86,760 lb	40 778 kg	89,915 lb	44 430 kg	97,968 lb	44 965 kg	99,148 lb
Swing Mechanism:								
Torque	108 kN·m	79,657 lb-ft	108 kN·m	79,657 lb-ft	108 kN·m	79,657 lb-ft	108 kN·m	79,657 lb-ft
Speed		10 RPM		10 RPM		10 RPM		10 RPM
Engine Model		Cat C9		Cat C9		Cat C9		Cat C9
Rated Engine RPM		1800		1800		1800		1800
No. of Cylinders		6		6		6		6
Bore	112 mm	4.41"	112 mm	4.41"	112 mm	4.41"	112 mm	4.41"
Stroke	149 mm	5.87"	149 mm	5.87"	149 mm	5.87"	149 mm	5.87"
Displacement	8.8 L	537 in³	8.8 L	537 in³	8.8 L	537 in³	8.8 L	537 in³
Hydraulic System:								
Main Implement System — Maximum Flow (2X)	280 L/min	74 gal/min	280 L/min	74 gal/min	280 L/min	74 gal/min	280 L/min	74 gal/min
Relief Valve Settings:								
Implement Circuits	34 300 kPa	4975 psi	34 300 kPa	4975 psi	34 300 kPa	4975 psi	34 300 kPa	4975 psi
Travel Circuits	34 300 kPa	4975 psi	34 300 kPa	4975 psi	34 300 kPa	4975 psi	34 300 kPa	4975 psi
Swing Circuits	27 900 kPa	4046 psi	27 900 kPa	4046 psi	27 900 kPa	4046 psi	27 900 kPa	4046 psi
Pilot Circuits	4120 kPa	598 psi	4120 kPa	598 psi	4120 kPa	598 psi	4120 kPa	598 psi
Drive:								
Maximum Drawbar Pull	294 kN	66,094 lb	336 kN	75,536 lb	336 kN	75,536 lb	336 kN	75,536 lb
Maximum Travel Speed	5 km/h	3.1 mph	4.5 km/h	2.8 mph	4.5 km/h	2.8 mph	4.5 km/h	2.8 mph
Track:								
Standard (double grouser)	700 mm	27.5"	700 mm	27.5"	700 mm	27.5"	700 mm	27.5"
Optional (double grouser)		none		none		none		none
Optional (triple grouser)		none	850 mm	33.5"	850 mm	33.5"	850 mm	33.5"
Optional (HD triple grouser)	850 mm	33.5"		none		none		none
Overall Track Length	5080 mm	16'8"	5070 mm	16'7"	5070 mm	16'7"	5070 mm	16'7"
Ground Contact Area with Standard Shoe	6.05 m ²	9370 in²	6.04 m ²	9352 in²	6.04 m ²	9352 in²	6.04 m ²	9352 in²
Ground Clearance	515 mm	20 in	744 mm	29 in	744 mm	29 in	744 mm	29 in
Track Gauge	2590 mm	8'6"	2920 mm	9'7"	2920 mm	9'7"	2920 mm	9'7"
Capacity:								
Fuel Tank	618 L	163 U.S. gal	618 L	163 U.S. gal	618 L	163 U.S. gal	618 L	163 U.S. gal
Fuel Tank — Optional Auxiliary Right Front	410 L	108 U.S. gal	410 L	108 U.S. gal	410 L	108 U.S. gal	410 L	108 U.S. gal
Cooling System	38 L	10 U.S. gal	38 L	10 U.S. gal	38 L	10 U.S. gal	38 L	10 U.S. gal
Hydraulic System — Tank	175 L	46 U.S. gal	175 L	46 U.S. gal	175 L	46 U.S. gal	175 L	46 U.S. gal
Hydraulic System — Total	410 L	108 U.S. gal	410 L	108 U.S. gal	410 L	108 U.S. gal	410 L	108 U.S. gal
Swing Drive	19 L	5 U.S. gal	19 L	5 U.S. gal	19 L	5 U.S. gal	19 L	5 U.S. gal

*Original FM Cab/Riser with external guarding.

**New FM Cab/Riser with integrated guarding (Available in July 2004).

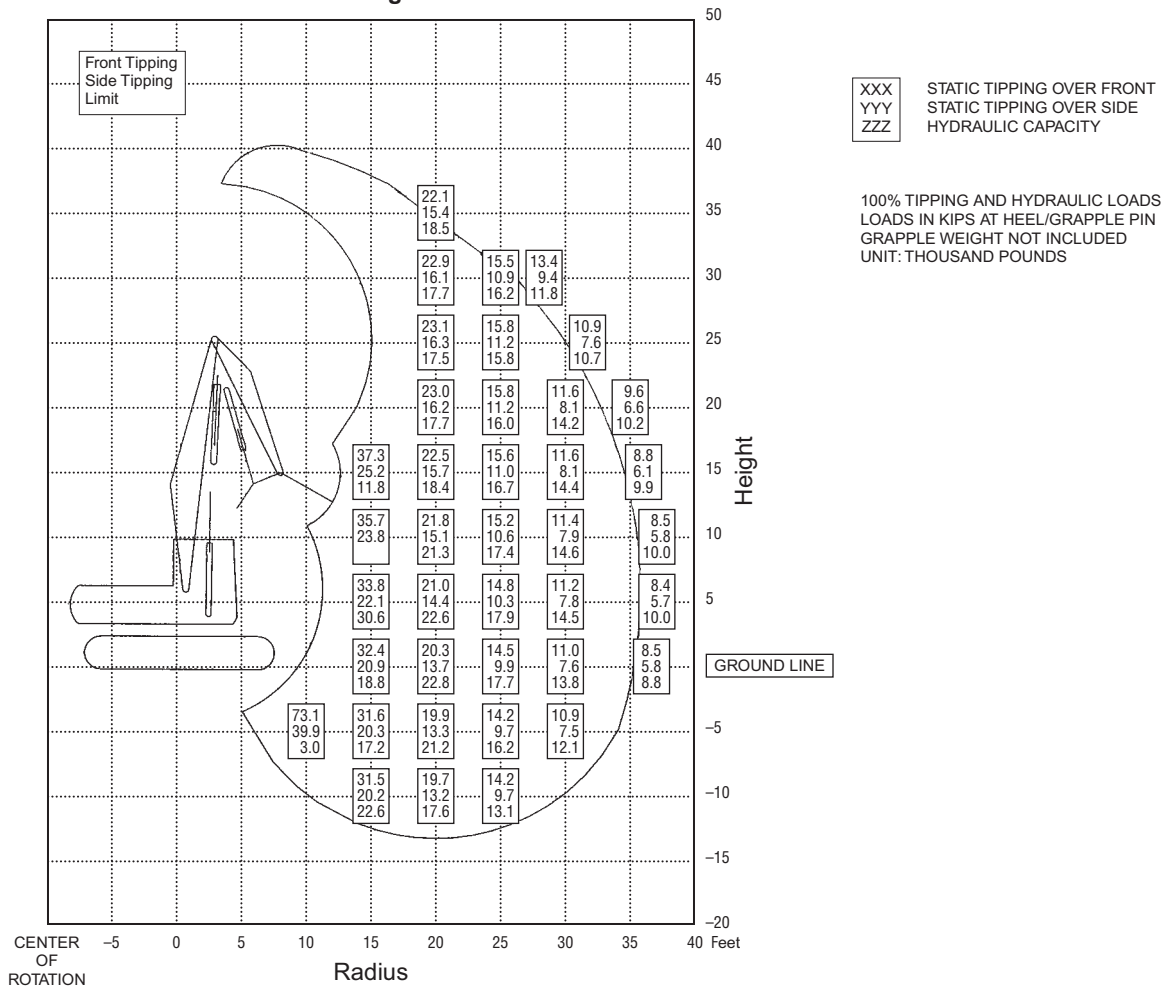


Working Envelope

	320C FM with High Wide Carbody		320C FM with Reinforced Carbody		322C FM Under/Under Log Loader		325C FM Under/Under Log Loader		330C FM Under/Under Log Loader	
	m	ft	m	ft	m	ft	m	ft	m	ft
A Max. Reach	10.98	36'0"	10.98	36'0"	11.66	38'4"	12.19	40'0"	13.3	43'1"
B Max. Depth	4	13'1"	4.17	13'8"	4.08	13'3"	4.39	14'3"	5.03	16'6"
C Max. Height	12.63	41'5"	12.46	40'10"	13.30	43'7"	14.18	46'6"	15.05	49'3"
D Max. Deck Height	7.37	24'2"	7.20	23'7"	*	*	*	*	*	*
E Max. Deck Depth	5.68	18'8"	5.85	19'2"	*	*	*	*	*	*

*Information unavailable at time of printing.

LIFT AND RANGE DIAGRAM
320C FM Log Loader

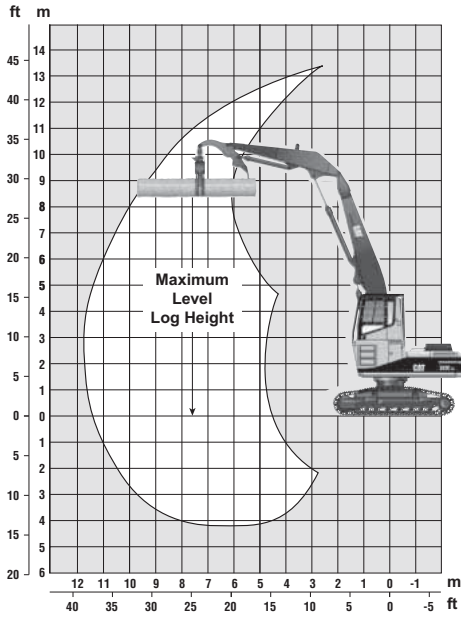


- Undercarriage — long
- Logging Front — Caterpillar 320C FM LL HB-36, 10.97 m (36'0") maximum reach
- Capacity, lbs., (thousands)
 - Top Number: Tipping over front
 - Middle Number: Tipping over side
 - Bottom Number: Hydraulic capacity

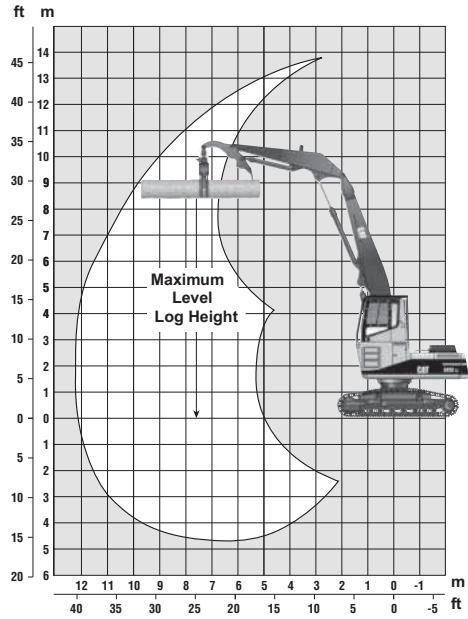
- All capacities are 100% stability and 100% hydraulic with no deration for friction (100% efficiency)
- Grapple weight is not included

Calculations, weights and machine specifications are subject to change at any time without notice.

**Heel Boom
 Under/Under**

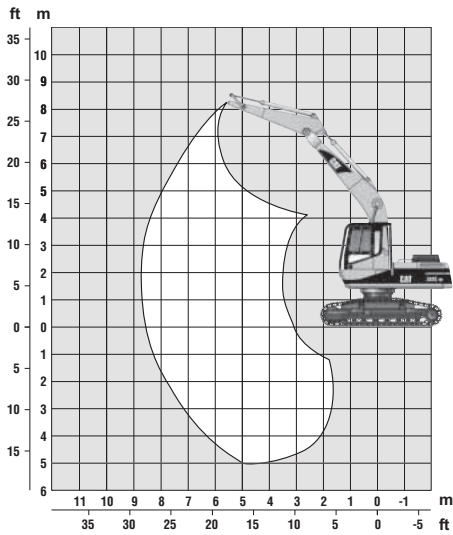


**Heel Boom
 Over/Under**

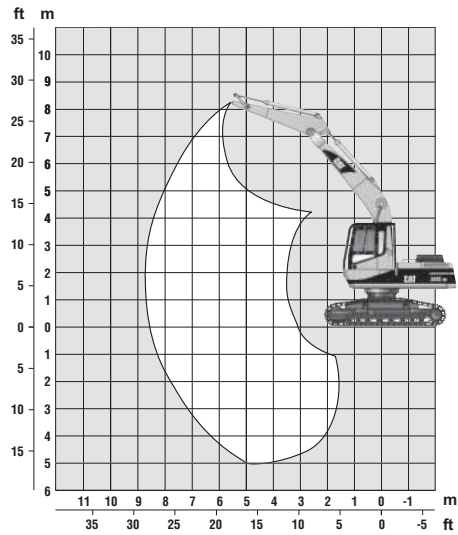


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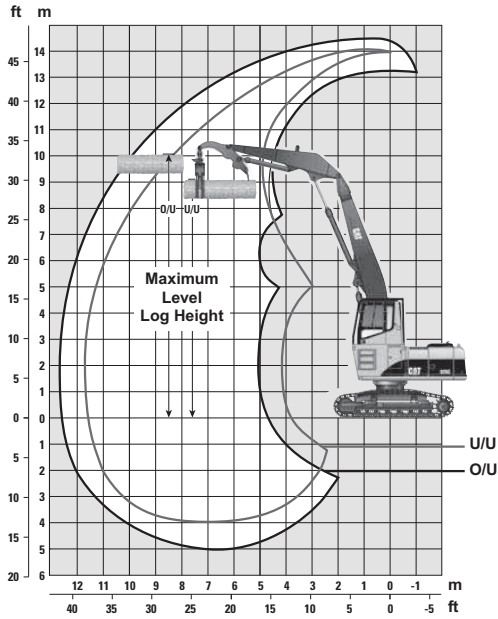
**General Forestry
 HD LC U/C, 5.9 m (19'4") Boom
 with 2.95S Stick**



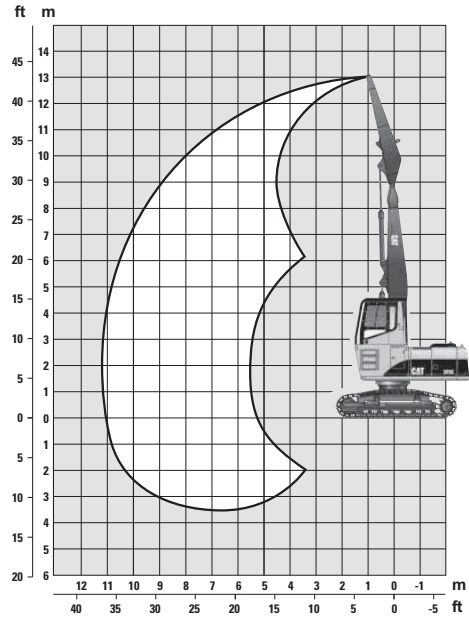
**General Forestry
 HW U/C, 5.9 m (19'4") Boom
 with 2.95S Stick**



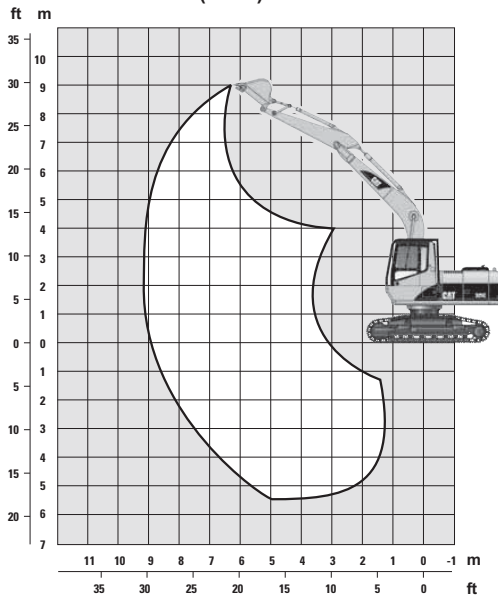
Heel Boom
Over/Under and Under/Under



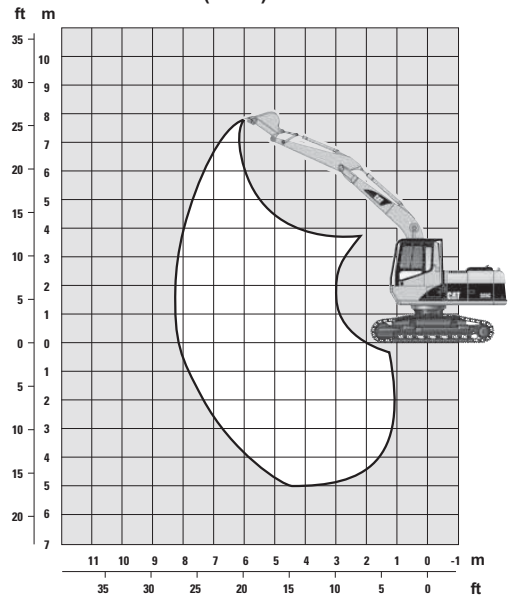
Butt-N-Top

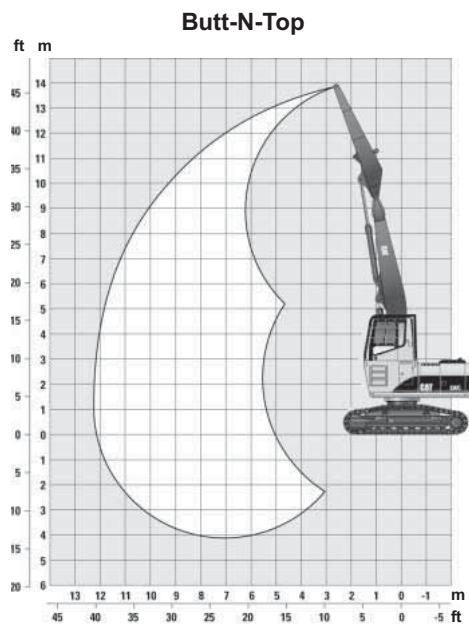
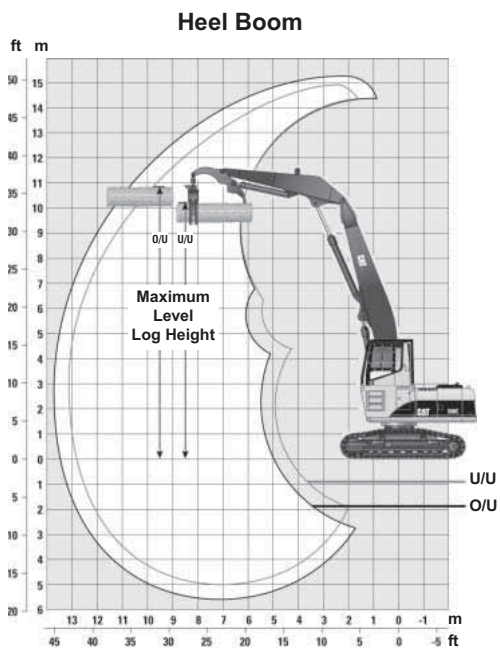


General Forestry
HD LC U/C, 6.5 m (20'2") Reach Boom
with 3.2 m (10'6") Reach Stick

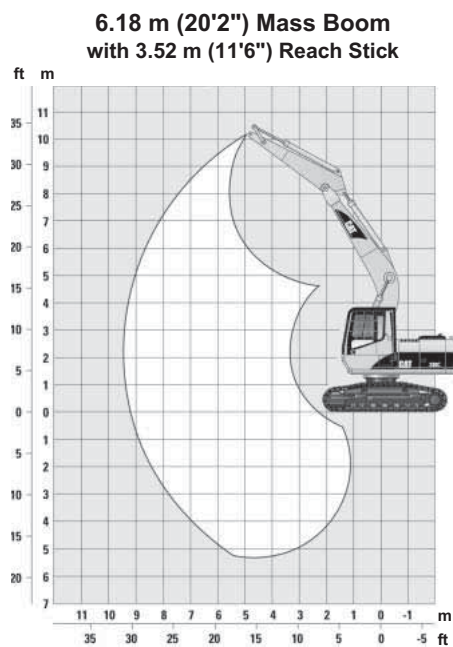
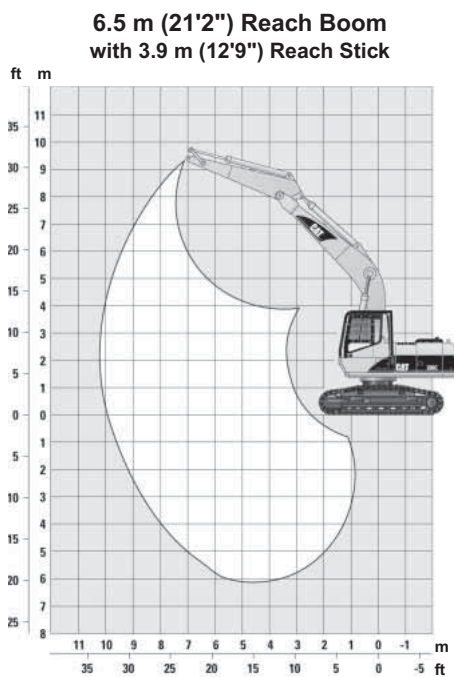


General Forestry
HD LC U/C, 5.5 m (18'2") Mass Boom
with 3.2 m (10'6") Reach Stick





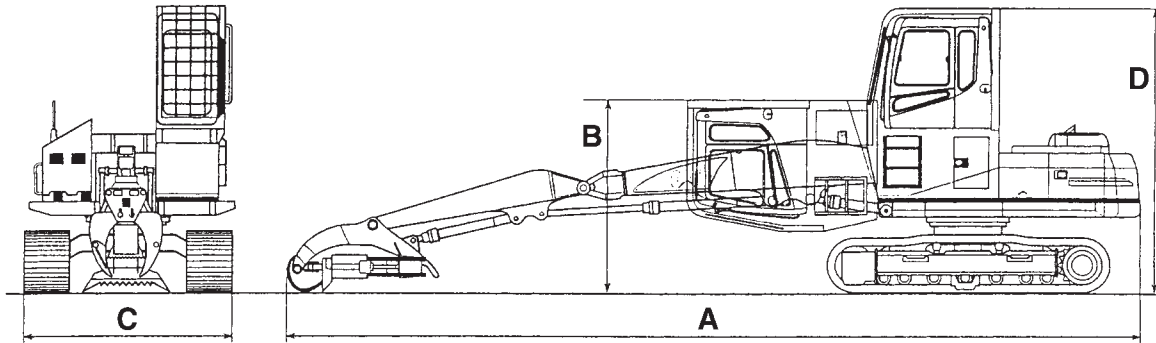
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— with adapter m-boom r-stick
— without adapter m-boom r-stick

Forest Products
Track Forest Machines

Shipping Dimensions
● 320C FM ● 322C FM ● 325C FM ● 330C FM



Shipping Dimensions

	320C FM w/high wide carbody 1.22 m (4'0") cab riser		320C FM w/high wide carbody 457 mm (18") cab riser		320C FM w/reinforced carbody 1.22 m (4'0") cab riser		320C FM w/reinforced carbody 457 mm (18") cab riser	
	m	ft	m	ft	m	ft	m	ft
A Overall Length	13.62	44'8"	13.62	44'8"	13.62	44'8"	13.62	44'8"
B Overall Height	3.11	10'3"	3.66	12'0"	2.94	9'8"	3.49	11'5"
C Overall Width	3.31	10'10"	3.31	10'10"	3.26	10'8"	3.26	10'8"
D Cab Height	4.55	14'11"	3.79	12'5"	4.38	14'5"	3.62	11'11"

	322C FM HD LC General Forestry		322C FM HW General Forestry		322C FM LL Under/Under		322C FM LL Over/Under	
	m	ft	m	ft	m	ft	m	ft
A Overall Length	9.96	32'8"	9.91	32'6"	14.10	46'3"	15.00	49'3"
B Overall Height	3.30	10'10"	3.57	11'8"	3.24	10'8"	3.24	10'8"
C Overall Width	3.29	10'10"	3.62	11'11"	3.62	11'11"	3.62	11'11"
D Cab Height	3.68	12'1"	3.96	13'0"	3.96	13'0"	3.96	13'0"

	325C FM HD LC General Forestry 457 mm (18") riser		325C FM HW General Forestry 457 mm (18") riser		325C FM LL Under/Under 1219 mm (4'0") riser		325C FM LL Over/Under 1219 mm (4'0") riser	
	m	ft	m	ft	m	ft	m	ft
A Overall Length	10.34	33'11"	10.29	33'9"	14.87	48'9"	15.75	51'8"
B Overall Height	3.35	11'0"	3.29	10'9"	3.26	10'8"	3.26	10'8"
C Overall Width	3.44	11'3"	3.62	11'11"	3.62	11'11"	3.62	11'11"
D Cab Height	3.74	12'3"	3.98	13'1"	4.74	15'7"	4.74	15'7"

	330C FM HD LC General Forestry 457 mm (18") riser		330C FM HW General Forestry 457 mm (18") riser		330C FM LL Under/Under 1219 mm (4'0") riser		330C FM LL Over/Under 1219 mm (4'0") riser	
	m	ft	m	ft	m	ft	m	ft
A Overall Length	11.19	36'9"	11.19	36'9"	16.67	54'8"	17.36	57'0"
B Overall Height	3.48	11'5"	3.38	11'1"	3.38	11'1"	3.38	11'1"
C Overall Width	3.52	11'6"	3.62	11'11"	3.62	11'11"	3.62	11'11"
D Cab Height	3.88	12'9"	4.10	13'6"	4.87	16'0"	4.87	16'0"

HD = Heavy Duty; LC = Long Undercarriage; HW = High Wide Undercarriage; LL = Log Loader

Forest Machine	320C FM		322C FM		325C FM		330C FM	
	kg	lb	kg	lb	kg	lb	kg	lb
Booms*								
Special Application (excavator reach boom)	2190	4840	2463	5430	2940	6482	3884	8563
Log Loader Boom	2610	5750	3566	7862	3684	8122	4639	10,227
Sticks** Special Application (excavator sticks)								
Special Application (excavator stick)	750	1650	1185	2612	1482	3267	1952	4303
Sticks for Log Loader Boom								
Log Loader Stick (Under/Under)	905	2000	1293	2851	1526	3364	1477	3256
Log Loader Stick (Over/Under)	N/A	N/A	1472	3245	1622	3576	1990	4387
Upperstructure (complete with counterweight)								
— 1.22 m (4'0") cab riser	7400	16,310	9556	21,067	9808	21,623	11 168	24,621
— 457 mm (18") cab riser	7180	15,830	9171	20,219	9415	20,757	10 817	23,847
Undercarriage (long carriage — LC)								
— 600 mm (2'0") double grouser shoe	N/A	N/A	10 040	22,134	11 652	25,688	N/A	N/A
— 700 mm (2'4") double grouser shoe	N/A	N/A	10 375	22,873	12 030	26,522	16 061	35,408
— 800 mm (2'7") triple grouser shoe	N/A	N/A	10 735	23,667	12 575	27,723	N/A	N/A
— 850 mm (2'10") triple grouser shoe	N/A	N/A	N/A	N/A	N/A	N/A	16 566	36,522
Undercarriage (high wide carbody — HW)								
— 600 mm (2'0") double grouser shoe	8850	19,510	12 470	27,492	N/A	N/A	N/A	N/A
— 700 mm (2'4") double grouser shoe	9175	20,230	12 848	28,325	13 070	28,814	17 486	38,550
— 800 mm (2'7") triple grouser shoe	9165	20,210	13 392	29,524	N/A	N/A	N/A	N/A
— 850 mm (2'10") triple grouser shoe	N/A	N/A	N/A	N/A	N/A	N/A	18 073	39,844
Undercarriage (reinforced carbody)								
— 600 mm (2'0") shoe	8390	18,500	N/A	N/A	N/A	N/A	N/A	N/A
— 700 mm (2'4") shoe	8710	19,200	N/A	N/A	N/A	N/A	N/A	N/A
— 800 mm (2'7") shoe	8700	19,180	N/A	N/A	N/A	N/A	N/A	N/A
Counterweight								
Standard	3865	8520	4369	9632	5619	12,388	6019	13,270
Heavy	5830	12,850	5149	11,352	7719	17,017	8319	18,340
GLL (log loading grapple)								
— GLL 52	2120	962	2120	962	2120	962	2120	962
— GLL 55	2127	965	2127	965	2127	965	2127	965
— GLL 60	2264	1027	2264	1027	2264	1027	2264	1027
GLS (shovel logging grapple)								
— GLS 55	1315	2800	1315	2800	1315	2800	N/A	N/A
— GLS 60	1406	3400	1406	3400	1406	3400	1406	3400
— GLS 63	N/A	N/A	1497	3500	1497	3500	1497	3500
— GLS 66	N/A	N/A	N/A	N/A	N/A	N/A	1676	3600

*Boom weights include boom, boom lines, boom cylinders and rod end pins, guard, lights, stick cylinder and head end pins.

**Stick weights include stick and stick lines.

322C FM HD LC

5.9 m (19'4") Reach Boom, R2.95S Stick, 700 mm (28") Track Shoes

Load Point Height		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		Load at Maximum Reach		
		Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft
7.5 m 25.0 ft	kg lb					6800* 15,100*	6800* 15,100*			6200* 13,700*	6200* 13,700*	6.40 20.63
6.0 m 20.0 ft	kg lb					6900* 15,000*	6900* 15,000*			5800* 12,900*	5800* 12,900*	7.49 24.41
4.5 m 15.0 ft	kg lb			8900* 19,200*	8900* 19,200*	7600* 16,500*	7600* 16,500*	7000* 15,300*	6800 14,500	5800* 12,800*	5800* 12,800*	8.17 26.73
3.0 m 10.0 ft	kg lb			11 400* 24,400*	11 400* 24,400*	8700* 18,900*	8700* 18,900*	7500* 16,300*	6600 14,100	6000* 13,200*	5400 12,000	8.53 27.96
1.5 m 5.0 ft	kg lb			13 500* 29,200*	13 100 28,100	9900* 21,300*	8700 18,700	8100* 17,500*	6400 13,700	6500* 14,200*	5200 11,500	8.61 28.26
†0.0 m †0.0 ft	kg lb			14 600* 31,500*	12 600 27,200	10 600* 22,900*	8400 18,100	8400* 18,300*	6200 13,400	7200* 15,900*	5300 11,700	8.42 27.64
-1.5 m -5.0 ft	kg lb	11 700* 26,600*	11 700* 26,600*	14 500* 31,400*	12 500 26,900	10 800* 23,300*	8300 17,900	8400* 18,100*	6200 13,300	7800* 17,200*	5700 12,600	7.95 26.05
-3.0 m -10.0 ft	kg lb	18 800* 40,600*	18 800* 40,600*	13 500* 29,100*	12 600 27,100	10 100* 21,700*	8300 18,000			8100* 17,800*	6700 14,800	7.13 23.28
-4.5 m -15.0 ft	kg lb	15 000* 33,000*	15 000* 33,000*	11 000* 24,200*	11 000* 24,200*					8200* 18,000*	8200* 18,000*	5.81 18.80

322C FM HW Undercarriage

5.9 m (19'4") Reach Boom, R2.95S Stick, 700 mm (28") Track Shoes

Load Point Height		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		Load at Maximum Reach		
		Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft
7.5 m 25.0 ft	kg lb					6700* 14,900*	6700* 14,900*			6100* 13,500*	6100* 13,500*	6.64 21.44
6.0 m 20.0 ft	kg lb					6900* 15,200*	6900* 15,200*	6500* 14,300*	6500* 14,300*	5800* 12,800*	5800* 12,800*	7.64 24.91
4.5 m 15.0 ft	kg lb			9300* 20,000*	9300* 20,000*	7800* 16,900*	7800* 16,900*	7100* 15,400*	7100* 15,400*	5800* 12,800*	5800* 12,800*	8.26 27.02
3.0 m 10.0 ft	kg lb			11 800* 25,400*	11 800* 25,400*	9000* 19,400*	9000* 19,400*	7600* 16,500*	7600* 16,500*	6100* 13,400*	6100* 13,400*	8.56 28.08
1.5 m 5.0 ft	kg lb			13 800* 29,800*	13 800* 29,800*	10 000* 21,700*	10 000* 21,700*	8100* 17,700*	7900 17,100	6600* 14,400*	6600 14,400*	8.60 28.21
†0.0 m †0.0 ft	kg lb	6900* 15,200*	6900* 15,200*	14 600* 31,700*	14 600* 31,700*	10 700* 23,100*	10 600 22,800	8500* 18,400*	7800 16,800	7400* 16,400*	6700 14,800	8.36 27.43
-1.5 m -5.0 ft	kg lb	12 900* 29,200*	12 900* 29,200*	14 400* 31,200*	14 400* 31,200*	10 700* 23,100*	10 500 22,600	8300* 17,900*	7800 16,700	7900* 17,300*	7300 16,200	7.83 25.65
-3.0 m -10.0 ft	kg lb	18 200* 39,500*	18 200* 39,500*	13 200* 28,400*	13 200* 28,400*	9900* 21,200*	9900* 21,200*			8100* 17,900*	8100* 17,900*	6.93 22.63
-4.5 m -15.0 ft	kg lb			10 300* 22,700*	10 300* 22,700*					8100* 17,800*	8100* 17,800*	5.49 17.73

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard J1097. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity.
†Ground line.

Lift Capacities
● 322C FM Log Loader

Forest Products
Track Forest Machines

322C FM Under/Under Heel Boom

11.6 m (38'0") Under/Under Heel Boom, HW Undercarriage, 700 mm (28") Track Shoes

Load Point Height	4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		10.5 m/35.0 ft		Load at Maximum Reach			
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft	
12.0 m 40.0 ft	kg lb	29,000*	29,000*											
10.5 m 35.0 ft	kg lb			10 000* 21,900*	10 000* 21,900*	8800* 19,400*	8700 18,300							
9.0 m 30.0 ft	kg lb			21,000*	21,000*	18,500*	18,500*	7500* 16,400*	6400 13,500					
7.5 m 25.0 ft	kg lb			9700* 21,200*	9700* 21,200*	8500* 18,400*	8500* 18,400*	7400* 16,100*	6600 14,000					
6.0 m 20.0 ft	kg lb			10 200* 22,100*	10 200* 22,100*	8700* 18,800*	8700* 18,800*	7500* 16,200*	6500 14,000	6300* 13,600*	4900 10,400	5800* 12,800*	4400 9800	10.96 35.85
4.5 m 15.0 ft	kg lb	11 300* 25,300*	11 300* 25,300*	11 000* 23,700*	11 000* 23,700*	9000* 19,500*	8700 18,600	7600* 16,400*	6400 13,700	6300* 13,600*	4900 10,400	5200* 11,500*	4100 9100	11.40 37.34
3.0 m 10.0 ft	kg lb			11 700* 25,300*	11 700* 25,300*	9300* 20,200*	8300 17,800	7600* 16,500*	6200 13,300	6200* 13,300*	4800 10,200	4600* 10,100*	4000 8700	11.62 38.11
1.5 m 5.0 ft	kg lb			12 100* 26,100*	11 100 23,900	9400* 20,300*	7900 17,100	7500* 16,200*	6000 12,900	5900* 12,600*	4700 10,100	3900* 8700*	3900* 8700*	11.64 38.20
†0.0 m †0.0 ft	kg lb	25,200*	25,200*	11 700* 25,300*	10 600 22,700	9000* 19,500*	7600 16,400	7100* 15,200*	5800 12,500	5300* 11,100*	4600 9900			
-1.5 m -5.0 ft	kg lb	11 700* 27,400*	11 700* 27,400*	10 400* 22,500*	10 300 22,100	8100* 17,400*	7500 16,000	6100* 13,000*	5700 12,300*	4000* 8000*	4000* 8000*			
-3.0 m -10.0 ft	kg lb	10 200* 21,900*	10 200* 21,900*	8200* 17,600*	8200* 17,600*	6300* 13,500*	6300* 13,500*	4400* 9200*	4400* 9200*					

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322C FM Over/Under Heel Boom

12.2 m (40'0") Over/Under Heel Boom, HW Undercarriage, 700 mm (28") Track Shoes

Load Point Height	4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		10.5 m/35.0 ft		Load at Maximum Reach			
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft	
12.0 m 40.0 ft	kg lb			10 200* 22,400*	10 200* 22,400*									
10.5 m 35.0 ft	kg lb					8300* 18,100*	8300* 18,100*							
9.0 m 30.0 ft	kg lb					8000* 17,400*	8000* 17,400*	7100* 15,500*	6600 13,900					
7.5 m 25.0 ft	kg lb					8000* 17,300*	8000* 17,300*	7100* 15,400*	6600 14,100	6200* 13,400*	4900 10,300			
6.0 m 20.0 ft	kg lb					8200* 17,800*	8200* 17,800*	7100* 15,500*	6500 13,900	6200* 13,400*	4900 10,400	5200* 11,500*	3900 8600	11.60 37.94
4.5 m 15.0 ft	kg lb			10 200* 22,200*	10 200* 22,200*	8500* 18,500*	8500* 18,600	7200* 15,700*	6300 13,600	6200* 13,300*	4800 10,200	4600* 10,300*	3600 8000	12.01 39.35
3.0 m 10.0 ft	kg lb	14 500* 32,000*	14 500* 32,000*	11 000* 23,900*	11 000* 23,900*	8900* 19,300*	8200 17,700	7300* 15,900*	6000 13,100	6100* 13,200*	4600 10,000	4100* 9100*	3500 7700	12.22 40.08
1.5 m 5.0 ft	kg lb	15 800* 34,800*	15 800* 34,800*	11 600* 25,100*	10 900 23,600	9000* 19,700*	7700* 16,700	7300* 15,900*	5800 12,500	5900* 12,700*	4500 9700	3500* 7700*	3500 7700	12.24 40.17
†0.0 m †0.0 ft	kg lb	15 700* 34,600*	15 700* 34,600*	11 500* 25,000*	10 200 22,200	8800* 19,200*	7300 15,900	7000* 15,200*	5600 12,000	5400* 11,600*	4400 9500			
-1.5 m -5.0 ft	kg lb	14 000* 30,900*	14 000* 30,900*	10 500* 22,900*	9800 21,200	8100* 17,600*	7100 15,300	6300* 13,500*	5400 11,700	4500* 9500*	4300 9300			
-3.0 m -10.0 ft	kg lb	11 100* 24,300*	11 100* 24,300*	8700* 18,900*	8700* 18,900*	6700* 14,500*	6700* 14,500*	4900* 10,500*	4900* 10,500*	2800* 6100*	2800* 6100*			

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard J1097. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity.

†Ground line.

325C FM HD LC

5.55 m (18'1") Mass Boom, 3.2 m (10'5") Stick, Heavy Counterweight, 700 mm (28") Double Grouser Track Shoes

Load Point Height	1.5 m/5.0 ft		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		Load at Maximum Reach				
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft		
7.5 m 25.0 ft	kg lb												7200* 16,000*	7200* 16,000*	6.16 19.84
6.0 m 20.0 ft	kg lb							19,400*	19,400*				6900* 15,200*	6900* 15,200*	7.26 23.64
4.5 m 15.0 ft	kg lb							9800* 21,200*	9800* 21,200*	8500* 17,800*	8500* 17,800*	7000* 15,300*	7000* 15,300*	7.39 25.94	
3.0 m 10.0 ft	kg lb			22 100* 47,100*	22 100* 47,100*	14 200* 30,500*	14 200* 30,500*	11 200* 24,200*	11 200* 24,200*	9700* 21,200*	9400 20,200	7300* 16,100*	7300* 16,100*	8.27 27.12	
1.5 m 5.0 ft	kg lb			8100* 19,300*	8100* 19,300*	17 100* 36,800*	17 100* 36,800*	12 600* 27,300*	12 400 26,800	10 400* 22,600*	9100 19,600	8000* 17,600*	7900 17,300	8.33 27.33	
†0.0 m †0.0 ft	kg lb			10 600* 24,100*	10 600* 24,100*	18 600* 40,200*	18 100 39,000	13 600* 29,500*	12 100 26,000	10 900* 23,500*	8900 19,200	9300* 20,400*	8100 17,700	8.11 26.59	
-1.5 m -5.0 ft	kg lb	9800* 21,900*	9800* 21,900*	16 200* 36,700*	16 200* 36,700*	18 700* 40,400*	17 900 38,500	13 800* 29,800*	11 900 25,700	10 700* 23,500*	8922 19,600	10 500* 23,200*	8700 19,300	7.58 24.83	
-3.0 m -10.0 ft	kg lb	16 100* 36,100*	16 100* 36,100*	24 400* 52,800*	24 400* 52,800*	17 200* 37,100*	17 200* 37,100*	12 700* 27,300*	11 900 25,700			11 100* 24,400*	10 400 23,000	6.68 21.79	
-4.5 m -15.0 ft	kg lb			18 700* 39,800*	18 700* 39,800*	13 400* 28,400*	13 400* 28,400*					11 300* 24,900*	11 300* 24,900*	5.20 16.75	

325C FM HD LC

6.15 m (20'0") Reach Boom, 3.2 m (10'5") Stick, Heavy Counterweight, 700 mm (28") Double Grouser Track Shoes

Load Point Height	1.5 m/5.0 ft		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		Load at Maximum Reach		
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft
7.5 m 25.0 ft	kg lb												5800* 12,900*	5800* 12,900*	7.29 23.59
6.0 m 20.0 ft	kg lb								8100* 17,400*	8100* 17,400*			5500* 12,200*	5500* 12,200*	8.23 26.86
4.5 m 15.0 ft	kg lb						9400* 20,400*	9400* 20,400*	8500* 18,600*	8000 17,100			5500* 12,100*	5500* 12,100*	8.83 28.89
3.0 m 10.0 ft	kg lb				14 500* 31,100*	14 500* 31,100*	11 000* 23,700*	10 600 22,900	9300* 20,200*	7700 16,500	6700* 14,800*	5800 12,800	5600* 12,400*	5600* 12,400*	9.14 29.95
1.5 m 5.0 ft	kg lb				17 200* 37,100*	15 200 32,600	12 400* 26,900*	10 100 21,800	10 100* 21,800*	7400 16,000	7700* 14,100*	5700 12,300	6000* 13,100*	5600 12,200	9.19 30.14
†0.0 m †0.0 ft	kg lb				18 500* 39,900*	14 700 31,500	13 400* 29,000*	9800 21,000	10 600* 23,000*	7200 15,500			6600* 14,500*	5700 12,400	8.99 29.48
-1.5 m -5.0 ft	kg lb	7200* 16,200*	7200* 16,200*	11 400* 25,800*	11 400* 25,800*	18 400* 39,800*	14 500 31,200	13 600* 29,500*	9600 20,700	10 700 23,000	7100 15,300		7600* 16,800*	6000 13,300	8.52 27.91
-3.0 m -10.0 ft	kg lb	13 000* 29,100*	13 000* 29,100*	18 400* 41,700*	18 400* 41,700*	17 200* 37,300*	14 600 31,400	13 000* 28,000*	9600 20,700	9900* 21,100*	7200 15,500		9400* 20,800*	6900 15,300	7.73 25.24
-4.5 m -15.0 ft	kg lb			19 800* 42,600*	19 800* 42,600*	14 600* 31,300*	14 600* 31,300*	10 800* 22,800*	9900 21,300				9500* 20,900*	8900 19,900	6.50 21.07

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on ISO 10567. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity over front and side.

†Ground line.

Lift Point is at the stick end pin.

Lift Capacities
● 325C FM General Forestry

Forest Products
Track Forest Machines

325C FM HW

5.55 m (18'1") Mass Boom, 3.2 m (10'5") Stick, Standard Counterweight, 700 mm (28") Double Grouser Track Shoes

Load Point Height	1.5 m/5.0 ft		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		Load at Maximum Reach			
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft	
7.5 m 25.0 ft	kg lb							16,700*	16,700*			7100* 15,700*	7100* 15,700*	6.37 20.56
6.0 m 20.0 ft	kg lb							8900* 19,500*	8900* 19,500*			6900* 15,100*	6900* 15,100*	7.39 24.09
4.5 m 15.0 ft	kg lb							9900* 21,600*	9900* 21,600*	8800* 18,500*	8800* 18,500*	7000* 15,400*	7000* 15,400*	8.00 26.19
3.0 m 10.0 ft	kg lb			18 100* 47,500*	18 100* 47,500*	14 700* 31,500*	14 700* 31,500*	11 400* 24,700*	11 400* 24,700*	9800* 21,300*	9300* 20,000	7400* 16,200*	7400* 16,200*	8.30 27.21
1.5 m 5.0 ft	kg lb			8100* 19,000*	8100* 19,000*	17 400* 37,500*	17 400* 37,500*	12 800* 27,700*	12 500* 26,800	10 500* 22,800*	9000* 19,500	8200* 17,900*	7800* 17,200	8.31 27.28
†0.0 m †0.0 ft	kg lb	10,100*	10,100*	11 300* 25,600*	11 300* 25,600*	18 700* 40,400*	18 500* 39,800	13 700* 29,600*	12 100* 26,000	10 900* 23,500*	8900* 19,100	9500* 20,900*	8100* 17,700	8.04 26.39
-1.5 m -5.0 ft	kg lb			17 300* 39,100*	17 300* 39,100*	18 500* 40,100*	18 300* 39,400	13 700* 29,600*	12 000* 25,700			10 600* 23,300*	8900* 19,600	7.46 24.45
-3.0 m -10.0 ft	kg lb	17 300* 38,700*	17 300* 38,700*	23 700* 51,200*	23 700* 51,200*	16 800* 36,200*	16 800* 36,200*	12 400* 26,500*	12 000* 25,900			11 100* 24,500*	10 800* 24,000	6.49 21.16
-4.5 m -15.0 ft	kg lb			17 300* 38,700*	17 300* 38,700*	12 400* 26,100*	12 400* 26,100*					11 300* 24,700*	11 300* 24,700*	4.88 15.66

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325C FM HW

5.55 m (18'1") Mass Boom, 3.2 m (10'5") Stick, Heavy Counterweight, 700 mm (28") Double Grouser Track Shoes

Load Point Height	1.5 m/5.0 ft		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		Load at Maximum Reach			
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft	
7.5 m 25.0 ft	kg lb							16,700*	16,700*			7100* 15,700*	7100* 15,700*	6.37 20.56
6.0 m 20.0 ft	kg lb							8900* 19,500*	8900* 19,500*			6900* 15,100*	6900* 15,100*	7.39 24.09
4.5 m 15.0 ft	kg lb							9900* 21,600*	9900* 21,600*	8800* 18,500*	8800* 18,500*	7000* 15,400*	7000* 15,400*	8.00 26.19
3.0 m 10.0 ft	kg lb			18 100* 47,500*	18 100* 47,500*	14 700* 31,500*	14 700* 31,500*	11 400* 24,700*	11 400* 24,700*	9800* 21,300*	9800* 21,300*	7400* 16,200*	7400* 16,200*	8.30 27.21
1.5 m 5.0 ft	kg lb			8100* 19,000*	8100* 19,000*	17 400* 37,500*	17 400* 37,500*	12 800* 27,700*	12 800* 27,700*	10 500* 22,800*	10 500* 22,700*	8200* 17,900*	8200* 17,900*	8.31 27.28
†0.0 m †0.0 ft	kg lb	10,100*	10,100*	11 300* 25,600*	11 300* 25,600*	18 700* 40,400*	18 700* 40,400*	13 700* 29,600*	13 700* 29,600*	10 900* 23,500*	10 400* 22,300	9500* 20,900*	9400* 20,800	8.04 26.39
-1.5 m -5.0 ft	kg lb			17 300* 39,100*	17 300* 39,100*	18 500* 40,100*	18 500* 40,100*	13 700* 29,600*	13 700* 29,600*			10 600* 23,300*	10 400* 22,900	7.46 24.45
-3.0 m -10.0 ft	kg lb	17 300* 38,700*	17 300* 38,700*	23 700* 51,200*	23 700* 51,200*	16 800* 36,200*	16 800* 36,200*	12 400* 26,500*	12 400* 26,500*			11 100* 24,500*	11 100* 24,500*	6.49 21.16
-4.5 m -15.0 ft	kg lb			17 300* 38,700*	17 300* 38,700*	12 400* 26,100*	12 400* 26,100*					11 300* 24,700*	11 300* 24,700*	4.88 15.66

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on ISO 10567. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity over front and side.

†Ground line.

Lift Point is at the stick end pin.

325C FM HW

6.15 m (20'0") Reach Boom, 3.2 m (10'5") Stick, Standard Counterweight, 700 mm (28") Double Grouser Track Shoes

Load Point Height	1.5 m/5.0 ft		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		Load at Maximum Reach				
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft		
7.5 m 25.0 ft	kg lb														5800* 12,800*	5800* 12,800*	7.47 24.20
6.0 m 20.0 ft	kg lb								8100* 17,700*	8100* 17,700*					5500* 12,200*	5500* 12,200*	8.35 27.25
4.5 m 15.0 ft	kg lb							9700* 20,900*	9700* 20,900*	8600* 18,800*	8600* 18,800*				5500* 12,100*	5500* 12,100*	8.90 29.12
3.0 m 10.0 ft	kg lb					15 000* 32,200*	15 000* 32,200*	11 200* 24,200*	11 200* 24,200*	9400* 20,400*	9200* 19,700*	7000* 12,700*	7000* 12,700*		5700* 12,500*	5700* 12,500*	9.16 30.04
1.5 m 5.0 ft	kg lb					17 500* 37,700*	17 500* 37,700*	12 600* 27,300*	12 200* 26,200*	10 200* 22,100*	8900* 19,200*	7700* 14,000*	6900* 14,000*		6100* 13,300*	6100* 13,300*	9.17 30.10
†0.0 m †0.0 ft	kg lb			6600* 15,200*	6600* 15,200*	18 500* 40,100*	18 100* 38,800*	13 500* 29,200*	11 900* 25,500*	10 700* 23,100*	8700* 18,700*				6700* 14,800*	6700* 14,800*	8.93 29.30
-1.5 m -5.0 ft	kg lb	8200* 18,200*	8200* 18,200*	12 400* 28,000*	12 400* 28,000*	18 300* 39,600*	18 000* 38,600*	13 600* 29,400*	11 700* 25,200*	10 700* 23,000*	8600* 18,600*				7800* 17,300*	7400* 16,400*	8.41 27.57
-3.0 m -10.0 ft	kg lb	14 000* 31,300*	14 000* 31,300*	19 800* 44,800*	19 800* 44,800*	16 900* 36,600*	16 900* 36,600*	12 800* 27,500*	11 800* 25,300*	9600* 8700*					9500* 20,800*	8600* 19,100*	7.56 24.71
-4.5 m -15.0 ft	kg lb			18 900* 40,500*	18 900* 40,500*	14 000* 29,800*	14 000* 29,800*	10 100* 21,200*	10 100* 21,200*						9400* 20,700*	9400* 20,700*	6.24 20.22

325C FM HW

6.15 m (20'0") Reach Boom, 3.2 m (10'5") Stick, Heavy Counterweight, 700 mm (28") Double Grouser Track Shoes

Load Point Height	1.5 m/5.0 ft		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		Load at Maximum Reach				
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft		
7.5 m 25.0 ft	kg lb														5800* 12,800*	5800* 12,800*	7.47 24.20
6.0 m 20.0 ft	kg lb								8100* 17,700*	8100* 17,700*					5500* 12,200*	5500* 12,200*	8.35 27.25
4.5 m 15.0 ft	kg lb							9700* 20,900*	9700* 20,900*	8600* 18,800*	8600* 18,800*				5500* 12,100*	5500* 12,100*	8.90 29.12
3.0 m 10.0 ft	kg lb					15 000* 32,200*	15 000* 32,200*	11 200* 24,200*	11 200* 24,200*	9400* 20,400*	9400* 20,400*	7000* 12,700*	7000* 12,700*		5700* 12,500*	5700* 12,500*	9.16 30.04
1.5 m 5.0 ft	kg lb					17 500* 37,700*	17 500* 37,700*	12 600* 27,300*	12 600* 27,300*	10 200* 22,100*	10 200* 22,100*	7700* 14,000*	7700* 14,000*		6100* 13,300*	6100* 13,300*	9.17 30.10
†0.0 m †0.0 ft	kg lb			6600* 15,200*	6600* 15,200*	18 500* 40,100*	18 500* 40,100*	13 500* 29,200*	13 500* 29,200*	10 700* 23,100*	10 200* 22,000*				6700* 14,800*	6700* 14,800*	8.93 29.30
-1.5 m -5.0 ft	kg lb	8200* 18,200*	8200* 18,200*	12 400* 28,000*	12 400* 28,000*	18 300* 39,600*	18 300* 39,600*	13 600* 29,400*	13 600* 29,400*	10 700* 23,000*	10 100* 21,800*				7800* 17,300*	7800* 17,300*	8.41 27.57
-3.0 m -10.0 ft	kg lb	14 000* 31,300*	14 000* 31,300*	19 800* 44,800*	19 800* 44,800*	16 900* 36,600*	16 900* 36,600*	12 800* 27,500*	12 800* 27,500*	9600* 8700*					9500* 20,800*	9500* 20,800*	7.56 24.71
-4.5 m -15.0 ft	kg lb			18 900* 40,500*	18 900* 40,500*	14 000* 29,800*	14 000* 29,800*	10 100* 21,200*	10 100* 21,200*						9400* 20,700*	9400* 20,700*	6.24 20.22

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on ISO 10567. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity over front and side.

†Ground line.

Lift Point is at the stick end pin.

- Lift Capacities
- 325C FM Log Loader
- HW Undercarriage

**Forest Products
Track Forest Machines**

325C FM LL

12.27 m (40'0") Under/Under Heel Boom, 700 mm (28") Double Grouser Track Shoes

Load Point Height		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		10.5 m/35.0 ft		12.0 m/40.0 ft		Load at Maximum Reach			
		Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m	ft
13.5 m 45.0 ft	kg lb	21 000*	21 000*														17 000*	17 000*	4.24 11.74
12.0 m 40.0 ft	kg lb			15 100*	15 100*	12 700*	12 700*										10 800*	10 800*	7.11 22.42
10.5 m 35.0 ft	kg lb					11 900*	11 900*	10 500*	10 500*								8900*	7900	8.85 28.51
9.0 m 30.0 ft	kg lb					11 600*	11 600*	10 300*	10 300*	9200*	8100						7900*	6400	10.07 32.72
7.5 m 25.0 ft	kg lb					11 900*	11 900*	10 400*	10 400*	9200*	8200	8000*	6100				7300*	5500	10.95 35.74
6.0 m 20.0 ft	kg lb			11 200*	11 200*	12 600*	12 600*	10 700*	10 700*	9300*	8100	8000*	6100				6800*	5000	11.57 37.86
4.5 m 15.0 ft	kg lb					13 600*	13 600*	11 200*	10 600	9500*	7900	8000*	6000				6200*	4700	11.97 39.22
3.0 m 10.0 ft	kg lb					14 600*	14 400	11 600*	10 200	9600*	7600	8000*	5900	6000*	4600		5500*	4500	12.17 39.90
1.5 m 5.0 ft	kg lb					15 100*	13 500	11 800*	9700	9500*	7300	7700*	5800	5400*	4600		4800*	4500	12.17 39.95
†0.0 m †0.0 ft	kg lb					14 800*	12 800	11 400*	9300	9100*	7100	7100*	5600				4000*	4000*	11.99 39.35
-1.5 m -5.0 ft	kg lb			9100*	9100*	13 300*	12 500	10 400*	9100	8100*	7000	5900*	5600						
-3.0 m -10.0 ft	kg lb			12 000*	12 000*	10 800*	10 800*	8500*	8500*	6300*	6300*								

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard 2417. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity over front and side.

†Ground line.

Lift Point is at the heel to grapple pin.

**Forest Products
Track Forest Machines**

Lift Capacities
● 325C FM Log Loader
● HW Undercarriage

325C FM LL

12.88 m (42'0") Over/Under Heel Boom, 3.2 m (10'5") Stick, Heavy Counterweight, 700 mm (28") Double Grouser Track Shoes

Load Point Height	3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		10.5 m/35.0 ft		12.0 m/40.0 ft		Load at Maximum Reach			
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m	ft
13.5 m 45.0 ft	kg lb			15 200* 36,000*	15 200* 36,000*											12 800* 30,300*	12 800* 30,300*	5.77 17.44
12.0 m 40.0 ft	kg lb					12 000* 26,300*	12 000* 26,300*	10 700* 23,600*	10 700* 23,600*							9200* 20,900*	9200* 20,900*	8.11 25.82
10.5 m 35.0 ft	kg lb					11 200* 24,400*	11 200* 24,400*	10 000* 21,800*	10 000* 21,800*	9100* 19,900	8100 17,200					7800* 17,400*	6900 15,600	9.67 31.24
9.0 m 30.0 ft	kg lb					10 900* 23,800*	10 900* 23,800*	9800* 21,300*	9800* 21,300*	8800* 19,200*	8300 17,800	7900* 16,500*	6100 12,800			7000* 15,500*	5700 12,700	10.80 35.12
7.5 m 25.0 ft	kg lb					11 100* 24,100*	11 100* 24,100*	9800* 21,400*	9800* 21,400*	8800* 19,100*	8300 17,800	7800* 17,000*	6200 13,300			6500* 14,300*	5000 11,000	11.62 37.95
6.0 m 20.0 ft	kg lb					11 700* 25,500*	11 700* 25,500*	10 200* 22,100*	10 200* 22,100*	8900* 19,400*	8100 17,500	7800* 17,000*	6100 13,200	6500 4700		6200* 13,700*	4500 10,000	12.21 39.95
4.5 m 15.0 ft	kg lb					12 700* 27,700*	12 700* 27,700*	10 700* 23,200*	10 700* 23,100*	9100* 19,900*	7900 17,000	7900* 17,100*	6000 12,900	6500 13,900	4700 10,000	5600* 12,500*	4200 9400	12.58 41.24
3.0 m 10.0 ft	kg lb					13 900* 30,100*	13 900* 30,100*	11 200* 24,300*	10 100 21,900	9300* 20,300*	7500 16,300	7900* 17,000*	5800 12,600	6400* 13,600*	4600 9900	5000* 11,100*	4100 9100	12.77 41.89
1.5 m 5.0 ft	kg lb					14 600* 31,800*	13 400 29,100	11 500* 25,000*	9500 20,700	9400* 20,300*	7200 15,600	7700* 16,600*	5600 12,200	6000* 12,700*	4500 9700	4400* 9600*	4100 9000	12.78 41.93
†0.0 m †0.0 ft	kg lb					14 600* 31,800*	12 600 27,400	11 300* 24,700*	9100 19,700	9100* 19,700*	6900 15,000	7200* 15,600*	5500 11,800	5200* 10,900*	4400 9600	3600* 7900*	3600* 7900*	12.61 41.37
-1.5 m -5.0 ft	kg lb			11 200* 20,900*	11 200* 20,900*	13 600* 29,600*	12 100 26,300	10 500* 22,900*	8800 19,000	8300* 17,900*	6700 14,600	6300* 13,500*	5400 11,600	3700* 6600*	3700* 6600*			
-3.0 m -10.0 ft	kg lb	6300* 11,500*	6300* 11,500*	12 800* 25,800*	12 800* 25,800*	11 500* 25,000*	11 500* 25,000*	9000* 19,400*	8600 18,700	6800* 14,700*	6600 14,400	4700* 9800*	4700* 9800*					
-4.5 m -15.0 ft	kg lb					8300* 17,900*	8300* 17,900*	6400* 13,800*	6400* 13,800*	4500* 9,900*	4500* 9,900*							

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard 2417. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity over front and side.

†Ground line.

Lift Point is at the heel of grapple pin.

- Lift Capacities
- 325C FM Log Loader
- HW Undercarriage

Forest Products Track Forest Machines

325C FM LL

11.34 m (37'0") Butt-N-Top, 700 mm (28") Double Grouser Track Shoes

Load Point Height		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		10.5 m/35.0 ft		Load at Maximum Reach		
		Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft
12.0 m 40.0 ft	kg lb	17 800* 39,800*	17 800* 39,800*									16 400* 38,400*	16 400* 38,400*	5.34 16.28
10.5 m 35.0 ft	kg lb	16 100* 35,300*	16 100* 35,300*	13 600* 29,900*	13 600* 29,900*	12 200* 27,400*	11 200					12 200* 27,400*	11 100 25,400	7.51 24.02
9.0 m 30.0 ft	kg lb	15 600* 34,100*	15 600* 34,100*	13 200* 28,900*	13 200* 28,900*	11 600* 25,300*	11 600 24,800					10 400* 23,100*	8500 19,200	8.92 28.91
7.5 m 25.0 ft	kg lb	16 100* 34,900*	16 100* 34,900*	13 400* 29,200*	13 400* 29,200*	11 600* 25,200*	11 600 24,900	10 200* 22,100*	8600 18,500			9200* 20,500*	7200 16,100	9.91 32.29
6.0 m 20.0 ft	kg lb	16 900* 37,600*	16 900* 37,600*	14 100* 30,500*	14 100* 30,500*	11 900* 25,700*	11 400 24,500	10 200* 22,100*	8600 18,400	8500*	6600	8400* 18,500*	6500 14,400	10.59 34.62
4.5 m 15.0 ft	kg lb			15 000* 32,400*	15 000* 32,400*	12 200* 26,500*	11 100 23,800	10 300* 22,300*	8400 18,100	8500*	6600	7600* 16,800*	6100 13,500	11.02 36.11
3.0 m 10.0 ft	kg lb			15 700* 34,000*	14 800 31,800	12 500* 27,100*	10 700 23,000	10 300* 22,200*	8200 17,700	8300*	6500	6800* 15,000*	5900 13,000	11.24 36.85
1.5 m 5.0 ft	kg lb			15 800* 34,200*	14 100 30,300	12 400* 26,800*	10 300 22,200	10 000* 21,500*	8000 17,300	7800*	6500	6000* 13,100*	5900 12,900	11.24 36.90
†0.0 m †0.0 ft	kg lb			14 800* 32,100*	13 700 29,400	11 600* 25,100*	10 100 21,700	9200* 19,700*	7900 17,000	6700* 13,900*	6400	4900* 10,900*	4900* 10,900*	11.05 36.25
-1.5 m -5.0 ft	kg lb	10 100* 23,600*	10 100* 23,600*	12 700* 27,500*	12 700* 27,500*	10 100* 21,700*	10 000 21,400	7700* 16,400*	7700* 16,400*					
-3.0 m -10.0 ft	kg lb			9500* 20,300*	9500* 20,300*	7500* 16,000*	7500* 16,000*							

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard 2417. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity over front and side.

†Ground line.
Lift Point is at the stick end.

**Forest Products
Track Forest Machines**

Lift Capacities
 ● 330C FM Log Loader
 ● HW Undercarriage

330C FM LL

13.19 m (43'0") Under/Under Heel Boom, 700 mm (28") Double Grouser Track Shoes

Load Point Height		3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		10.5 m/35.0 ft		12.0 m/40.0 ft		Load at Maximum Reach			
		Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m	ft
15.0 m 45.0 ft	kg lb	22 100*	22 100*														22 000*	22 000*	3.03
13.5 m 45.0 ft	kg lb					13 800*	13 800*										11 100*	11 100*	6.78
						28,900*	28,900*										25,800*	25,800*	21.00
12.0 m 40.0 ft	kg lb							12 700*	12 700*								8700*	8700*	8.82
								27,200*	27,200*								19,600*	19,600*	28.21
10.5 m 35.0 ft	kg lb							13 200*	13 200*	11 900*	10 800						7600*	7600*	10.24
								28,800*	28,800*	25,200*	22,900						16,900*	16,900*	33.15
9.0 m 30.0 ft	kg lb							13 100*	13 100*	11 900*	10 900	10 700*	8300				6900*	6900*	11.29
								28,600*	28,600*	26,000*	23,300	22,000*	17,600				15,300*	15,300*	36.75
7.5 m 25.0 ft	kg lb							13 200*	13 200*	12 000*	10 900	10 800*	8300	7200*	6400		6500*	6300	12.06
								29,200*	29,200*	26,200*	23,300	23,500*	17,800				14,400*	14,000	39.39
6.0 m 20.0 ft	kg lb					11 400*	11 400*	13 800*	13 800*	12 400*	10 700	10 900*	8300	8900	6500		6300*	5800	12.60
						25,400*	25,400*	30,500*	30,500*	26,800*	23,000	23,700*	17,700	19,000	13,800		13,800*	12,900	41.25
4.5 m 15.0 ft	kg lb					12 600*	12 600*	14 900*	13 900	12 800*	10 400	11 000	8100	8900	6500		6200*	5600	12.95
						28,000*	28,000*	32,200*	30,000	27,600*	22,400	23,700	17,400	19,000	13,800		13,600*	12,300	42.44
3.0 m 10.0 ft	kg lb					18 700*	18 700*	15 700*	13 400	13 100*	10 100	10 800	7900	8800	6400		6200*	5400	13.11
						40,800*	40,400	33,900*	28,800	28,400*	21,700	23,300	17,000	18,800	13,600		13,600*	12,000	43.02
1.5 m 5.0 ft	kg lb					20 500*	17 800	16 100*	12 800	13 200*	9800	10 600	7700	8700	6300		6200*	5400	13.10
						44,300*	38,200	34,900*	27,500	28,600*	21,000	22,800	16,600	18,600	13,400		13,700*	11,900	43.00
†0.0 m †0.0 ft	kg lb					20 400*	16 900	16 000*	12 300	12 900*	9500	10 500	7600	8000*	6200		5300*	5300*	12.92
						44,200*	36,400	34,500*	26,500	27,800*	20,400	22,400*	16,200	16,900*	13,300		11,600*	11,600*	42.39
-1.5 m -5.0 ft	kg lb			6800*	6800*	19 000*	16 400	15 000*	12 000	11 900*	9300	9400*	7400	6400*	6200				
				16,000*	16,000*	41,200*	35,300	32,300*	25,700	25,700*	19,900	19,900*	16,000	12,800*	12,800*				
-3.0 m -10.0 ft	kg lb	4200*	4200*	9300*	9300*	16 300*	16 200	12 900*	11 800	10 100*	9200	7400*	7400						
		9700*	9700*	21,400*	21,400*	35,100*	34,800	27,700*	25,400	21,600*	19,700	15,400*	15,400*						
-4.5 m -15.0 ft	kg lb					12 100*	12 100*	9700*	9700*	7200*	7200*								
						25,800*	25,800*	20,500*	20,500*	14,800*	14,800*								

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard 2417. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity over front and side.

†Ground line.

Lift Point is at the heel to grapple pin.

- Lift Capacities
- 330C FM Log Loader
- HW Undercarriage

**Forest Products
Track Forest Machines**

330C FM LL

13.8 m (45'0") Over/Under Heel Boom, 700 mm (28") Double Grouser Track Shoes

Load Point Height	3.0 m/10.0 ft		4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		10.5 m/35.0 ft		12.0 m/40.0 ft		13.5 m/45.0 ft		Load at Maximum Reach				
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m	ft	
15.0 m 50.0 ft	kg lb			15 600*	15 600*														13 900*	13 900*	5.06 14.42
13.5 m 45.0 ft	kg lb					29,000*	29,000*	10 900*	10 900*										9200*	9200*	7.88 24.81
12.0 m 40.0 ft	kg lb							12 100*	12 100*	10 300*	10 300*								7500*	7500*	9.69 31.14
10.5 m 35.0 ft	kg lb							12 000*	12 000*	11 400*	11 000	9100*	8100						6600*	6600*	11.00 35.67
9.0 m 30.0 ft	kg lb							25,800*	25,800*	24,600*	23,700	22,500*	17,800						6100*	6100*	11.98 39.04
7.5 m 25.0 ft	kg lb							11 400*	11 400*	11 400*	11 000	10 300*	8400	8900	6400				5800*	5600	12.71 41.53
6.0 m 20.0 ft	kg lb							11 600*	11 600*	11 800*	10 800	10 500*	8200	8900	6400				5600*	5200	13.23 43.30
4.5 m 15.0 ft	kg lb					9400*	9400*	12 700*	12 700*	12 200*	10 400	10 600*	8000	8800	6300	6200*	5000		5500*	4900	13.56 44.44
3.0 m 10.0 ft	kg lb					28,100*	28,100*	15 000*	13 400	12 600*	10 000	10 700	7800	8600	6200	7000	5000		5400*	4800	13.71 44.98
1.5 m 5.0 ft	kg lb					19 700*	17 700	15 600*	12 600	12 800*	9600	10 400	7500	8500	6000	6500*	4900		5500*	4800	13.70 44.97
†0.0 m †0.0 ft	kg lb					20 000*	16 600	15 600*	12 000	12 700*	9200	10 200	7300	8300*	5900	4900*	4900		4700*	4700*	13.53 44.39
-1.5 m -5.0 ft	kg lb					19 100*	15 800	14 900*	11 500	12 000*	8900	9600*	7100	7200*	5800						
-3.0 m -10.0 ft	kg lb	3700*	3700*	8700*	8700*	16 800*	15 500	13 300*	11 200	10 500*	8700	8000*	7000	5100*	5100*						
		8500*	8500*	20,300*	20,300*	36,300*	33,200	28,500*	24,200	22,500*	18,700	16,900*	15,100	9900*	9900*						
-4.5 m -15.0 ft	kg lb			11 500*	11 500*	13 200*	13 200*	10 500*	10 500*	8100*	8100*	5500*	5500*								
				26,500*	26,500*	28,300*	28,300*	22,400*	22,400*	16,900*	16,900*										

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard 2417. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity over front and side.

†Ground line.

Lift Point is at the heel to grapple pin.

**Forest Products
Track Forest Machines**

Lift Capacities
 ● 330C FM Log Loader
 ● HW Undercarriage

330C FM LL

12.27 m (40'0") Butt–N–Top, 700 mm (28") Double Grouser Track Shoes

Load Point Height	4.5 m/15.0 ft		6.0 m/20.0 ft		7.5 m/25.0 ft		9.0 m/30.0 ft		10.5 m/35.0 ft		12.0 m/40.0 ft		Load at Maximum Reach				
	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	Over Front	Over Side	m ft		
13.5 m 45.0 ft	kg lb	18 300* 18 300*													17 500* 42,600*	17 500* 42,600*	4.69 13.51
12.0 m 40.0 ft	kg lb			16 400* 35,400*	16 400* 35,400*										12 000* 27,300*	12 000* 27,300*	7.35 23.23
10.5 m 35.0 ft	kg lb			16 600* 36,400*	16 600* 36,400*	14 800* 32,500*	14 800* 31,900	10 200* 22,600*	10 200*						10 100* 22,600*	10 100* 22,600*	9.01 29.04
9.0 m 30.0 ft	kg lb			35,800* 35,800*	35,800* 35,800*	14 600* 31,800*	14 600* 31,800*	13 100* 28,600*	11 200* 24,000						9100* 20,200*	8900 19,900	10.19 33.10
7.5 m 25.0 ft	kg lb			15 900* 35,300*	15 900* 35,300*	14 800* 32,200*	14 800* 32,100	13 100* 28,500*	11 200* 24,000	11 600* 24,900*	8700 18,500				8500* 18,800*	7900 17,500	11.03 36.01
6.0 m 20.0 ft	kg lb			16 600* 36,700*	16 600* 36,700*	15 300* 33,200*	14 600* 31,500	13 300* 28,800*	11 000* 23,700	11 600* 24,900	8600 18,500				8200* 18,100*	7200 16,000	11.63 38.04
4.5 m 15.0 ft	kg lb			19 400* 41,900*	19 400* 41,900*	16 000* 34,600*	14 200* 30,500	13 500* 29,300*	10 800* 23,200	11 500* 24,700	8500 18,300	8100* 17,700*	6900 15,100		8100* 17,700*	6900 15,100	12.00 39.33
3.0 m 10.0 ft	kg lb			20 600* 44,500*	18 800* 40,500	16 500* 35,700*	13 600* 29,300	13 700* 29,600*	10 500* 22,600	11 300* 24,300	8400 18,000	8900* 17,700*	6800 14,700		8000* 17,700*	6700 14,700	12.18 39.95
1.5 m 5.0 ft	kg lb			21 000* 45,500*	17 900* 38,500	16 600* 35,800*	13 100* 28,200	13 500* 29,200*	10 200* 21,900	11 000* 23,700*	8200 17,700	8100* 16,100*	6800 14,700		7300* 16,100*	6700 14,700	12.17 39.93
†0.0 m †0.0 ft	kg lb			20 100* 43,600*	17 200* 37,100	15 900* 34,300*	12 700* 27,400	12 800* 27,500*	9900 21,400	10 100* 21,600*	8100 17,400				6200* 13,600*	6200* 13,600*	11.97 39.28
–1.5 m –5.0 ft	kg lb	8100* 18,900*	8100* 18,900*	17 900* 38,600*	16 900* 36,400	14 300* 30,800*	12 500* 26,900	11 300* 24,200*	9800 21,100	8400* 17,700*	8000 17,300						
–3.0 m –10.0 ft	kg lb	11 500* 26,500*	11 500* 26,500*	14 200* 30,600*	14 200* 30,600*	11 500* 24,600*	11 500* 24,600*	8800* 18,500*	8800* 18,500*								

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard 2417. Rated loads are at 100% of hydraulic lifting capacity or 100% of tipping capacity over front and side.

†Ground line.

Lift Point is at the stick end.

MODEL	345B Series II Shovel Logger		322C LGP (Low Ground Pressure)	
Rated Power	239 kW	321 hp	125 kW	168 hp
Operating Weight (without attachment)	58 060 kg	128,000 lb	33 135 kg	73,050 lb
Engine Model	Cat 3176 ATAAC		Cat 3126B ATAAC — Tier II	
Swing Torque	149 kN·m	110,260 lb-ft	73.4 kN·m	54,137 lb-ft
Drawbar Pull	453 kN	102,000 lb	247 kN	55,508 lb
Maximum Reach	15.3 m	50'0"	10.4 m	34'0"
Ground Clearance	900 mm	36"	800 mm	31"

**Forest Products
Trailer Mount
Knuckleboom Loaders**

**Features
Specifications**

TK 520/540/560/570/575 Features:

- **Advanced boom design technology** built tough with welded high-strength steel.
- **Booms** are engineered to withstand high production pull-through delimiting and loading.
- **Long reach booms** (up to 9.9 m/32'6") increase productivity.
- **Smooth and responsive joystick controls.**
- **Swing torque ratings** up to nearly 108 kN·m (80,000 ft·lb), combined with swing speeds up to 11 RPM.

- **Factory installed hydraulic packages** are available to meet various application needs.
- **Heavy-duty sub-frames** are engineered for high reliability.
- **Heavy duty off road axles** provide trouble free operation in the harsh woods environment.
- **Quiet, comfortable cabs** with excellent visibility.

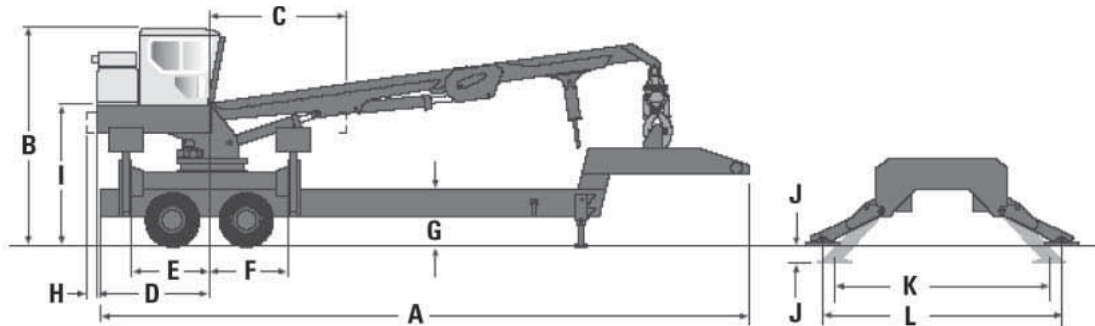
Loaders offered with a factory matched performance package — The “DS” package is a complete factory installed timber merchandising system consisting of a knuckleboom loader and grapple, trailer with trailer mounted delimeter and ground saw slasher.

MODEL	TK 520		TK 540*		TK 560*	
Gross Power	119 kW	160 hp	119 kW	160 hp	119 kW	160 hp
Engine	Cat 3056 DITA — EPA Tier 2		Cat 3056 DITA — EPA Tier 2		Cat 3056 DITA — EPA Tier 2	
Engine RPM	2100		2100		2100	
Operating Weight (with standard boom, less options, carrier & grapple)	8663 kg	19,099 lb	12 655 kg	27,900 lb	14 606 kg	32,200 lb
Hydraulic System:						
System Pressure	15 513 kPa	2250 psi	18 961 kPa	2750 psi	24 132 kPa	3500 psi
Swing Pressure	16 547 kPa	2400 psi	18 271 kPa	2650 psi	21 374 kPa	3100 psi
Swing Speed	8 RPM		8 RPM		11 RPM	
Capacity	132.5 L	35 U.S. gal	295.3 L	78 U.S. gal	302.8 L	80 U.S. gal
Fuel Capacity	268.8 L	71 U.S. gal	276.3 L	73 U.S. gal	276.3 L	73 U.S. gal
Counterweight	499.0 kg	1100 lb	1496.9 kg	3300 lb	635.0 kg	1400 lb
Tailswing (with counterweight)	2.59 m	102"	2.48 m	98"	2.53 m	99.5"
Maximum Reach	8.2 m	27'0"	8.8 m	29'0"	9.8 m	32'0"
Standard Knuckleboom	8.2 m	27'0"	8.8 m	29'0"	9.8 m	32'0"

MODEL	TK 570*		TK 575*	
Gross Power	119 kW	160 hp	119 kW	160 hp
Engine	Cat 3056 DITA — EPA Tier 2		Cat 3056 DITA — EPA Tier 2	
Engine RPM	2100		2100	
Operating Weight (with standard boom, less options, carrier & grapple)	15 422 kg	34,000 lb	15 422 kg	34,000 lb
Hydraulic System:				
System Pressure	17 237 kPa	2500 psi	17 237 kPa	2500 psi
Swing Pressure	17 237 kPa	2500 psi	24 132 kPa	3500 psi
Swing Speed	7 RPM		—	
Capacity	246.1 L	65 U.S. gal	246.1 L	65 U.S. gal
Fuel Capacity	336.9 L	89 U.S. gal	336.9 L	89 U.S. gal
Counterweight	1392.5 kg	3070 lb	1392.5 kg	3070 lb
Tailswing (with counterweight)	2.48 m	98"	2.48 m	98"
Maximum Reach	11 m	36'0"	11 m	36'0"
Standard Knuckleboom	11 m	36'0"	11 m	36'0"

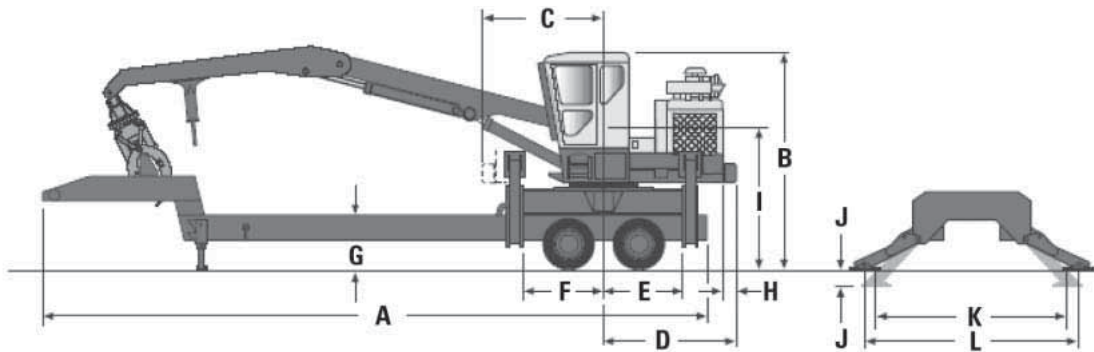
*Available with delimeter/slasher package.
NOTE: Optional booms available.

Basic Dimensions for TK 520, TK 540 and TK 560



6

Basic Dimensions for TK 570 and TK 575

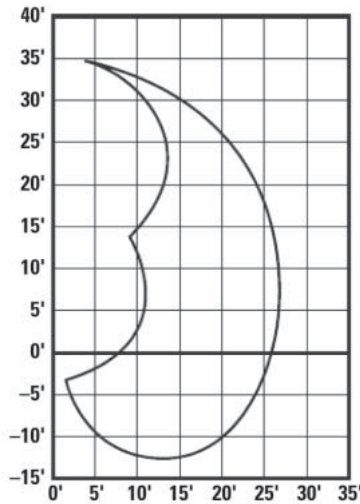


MODEL	TK 520		TK 540		TK 560		TK 570		TK 575	
A	1127.76 cm	444.00"	1219.20 cm	480.00"	1219.20 cm	480.00"	1219.20 cm	480.00"	1219.20 cm	480.00"
B	401.32 cm	158.00"	404.48 cm	159.25"	401.57 cm	158.10"	398.78 cm	157.00"	398.78 cm	157.00"
C	256.54 cm	101.00"	248.92 cm	98.00"	252.73 cm	99.50"	248.92 cm	98.00"	248.92 cm	98.00"
D	228.60 cm	90.00"	232.00 cm	91.34"	227.84 cm	89.70"	238.13 cm	93.75"	238.13 cm	93.75"
E	137.16 cm	54.00"	152.40 cm	60.00"	152.40 cm	60.00"	152.40 cm	60.00"	152.40 cm	60.00"
F	137.16 cm	54.00"	152.40 cm	60.00"	152.40 cm	60.00"	152.40 cm	60.00"	152.40 cm	60.00"
G	99.06 cm	39.00"	99.06 cm	39.00"	99.06 cm	39.00"	99.06 cm	39.00"	99.06 cm	39.00"
H	10.16 cm	4.00"	24.14 cm	9.50"	7.62 cm	3.00"	27.31 cm	10.75"	27.31 cm	10.75"
I	238.76 cm	94.00"	246.38 cm	97.00"	246.38 cm	97.00"	269.24 cm	106.00"	269.24 cm	106.00"
J	35.56 cm	14.00"	36.00 cm	14.18"	41.90 cm	16.50"	39.37 cm	15.50"	39.37 cm	15.50"
K	416.56 cm	164.00"	392.05 cm	154.35"	425.38 cm	167.47"	454.66 cm	179.00"	454.66 cm	179.00"
L	457.20 cm	180.00"	447.04 cm	176.00"	495.30 cm	195.70"	495.30 cm	195.00"	495.30 cm	195.00"

Forest Products Trailer Mount Knuckleboom Loaders

Lift and Range Diagram ● TK 520 Knuckleboom Loader

**TK 520 Knuckleboom Loader
8.2 m (27'0") Boom**



NOTES:

Do not attempt to lift or hold any load that is greater than the rated values over the end or side at their specified lift point and height. The weight of the grapple and all lifting accessories must be deducted from lift capacities shown.

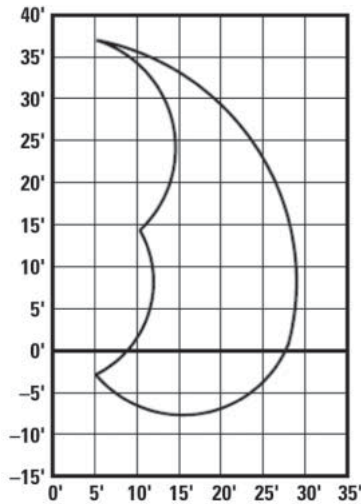
- The over end capacities and over side capacities do not exceed 87% of hydraulic limited capacity or 75% of stability limited capacity.
– Stability limited capacities are indicated with an asterisk (*).
- The lift point is located at the boom pivot point.
- Lift capacities are based on the machine standing on firm, uniform supporting surface. User must make allowances for job site conditions.
- Operator should be fully acquainted with the Operator's Manual and all safety instructions furnished by Blount, Inc. prior to operating the machine.
- Lift capacities are in compliance with SAE J2417, "Lift Capacity Calculation Method — Knuckleboom Log Loaders and Certain Forestry Equipment."

	3 m/10'0"		4.6 m/15'0"		6.1 m/20'0"		7.6 m/25'0"		Maximum Reach		
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	
9.1 m (30'0")			4574.6 3979.9 3979.9	10,085 8,774 8,774							100% Hydraulics Over End Over Side
7.6 m (25'0")			5208.7 4531.5 4531.5	11,483 9,990 9,990	4076.5 3543.1 3543.1	8,978 7,811 7,811					100% Hydraulics Over End Over Side
6.1 m (20'0")			5246.8 4564.6 4564.6	11,567 10,063 10,063	4611.3 4011.6 4011.6	10,166 8,844 8,844					100% Hydraulics Over End Over Side
4.6 m (15'0")			5673.2 4935.6 4935.6	12,507 10,881 10,881	4742.4 4125.9 4125.9	10,455 9,096 9,096	3954.5 3440.5 3215.1	8,718 7,585 7,088*	1850.2 1609.8 1609.8	4,079 3,549 3,549	100% Hydraulics Over End Over Side
3.0 m (10'0")			6305.5 5485.8 5485.8	13,901 12,094 12,094	5545.7 4824.9 4582.7	12,226 10,637 10,103*	3920.5 3410.6 3188.3	8,643 7,519 7,029*	1776.5 1545.9 1545.9	3,917 3,408 3,408	100% Hydraulics Over End Over Side
1.5 m (5'0")			8720.0 7586.5 7369.7	19,224* 16,725* 16,247*	6520.5 5672.7 4106.9	14,375 12,506 9,054*	4068.3 3539.4 3152.5	8,969 7,803 6,950*	1771.3 1540.9 1540.9	3,905 3,397 3,397	100% Hydraulics Over End Over Side
0 m (0'0")	4373.2 3804.8 3804.8	9,641 8,388 8,388	8341.2 7256.7 7186.4	18,389* 15,998* 15,843*	6061.9 5274.0 4395.4	13,364 11,627 9,690*	3553.0 3091.3 3091.3	7,833 6,815 6,815			100% Hydraulics Over End Over Side
-1.5 m (-5'0")	6371.3 5543.0 5543.0	14,046 12,220 12,220	6789.5 5906.8 5906.8	14,968 13,022 13,022	4688.8 4079.2 4079.2	10,337 8,993 8,993					100% Hydraulics Over End Over Side
-3.0 m (-10'0")	4980.1 4332.8 4332.8	10,979 9,552 9,552	3743.6 3256.8 3256.8	8,253 7,180 7,180	1100.0 957.1 957.1	2,425 2,110 2,110					100% Hydraulics Over End Over Side

Lift and Range Diagram
 ● TK 540 Knuckleboom Loader

Forest Products
 Trailer Mount
 Knuckleboom Loaders

TK 540 Knuckleboom Loader
 9.1 m (30'0") Boom



NOTES:

Do not attempt to lift or hold any load that is greater than the rated values over the end or side at their specified lift point and height. The weight of the grapple and all lifting accessories must be deducted from lift capacities shown.

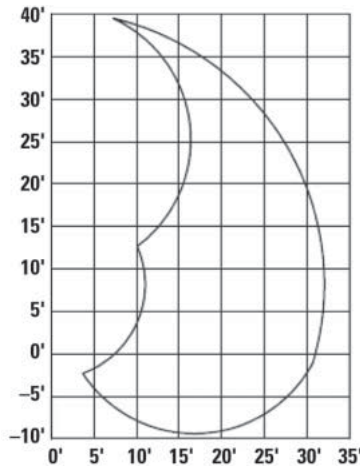
1. The over end capacities and over side capacities do not exceed 87% of hydraulic limited capacity or 75% of stability limited capacity.
 – Stability limited capacities are indicated with an asterisk (*).
2. The lift point is located at the boom pivot pin.
3. Lift capacities are based on the machine standing on firm, uniform supporting surface. User must make allowances for job site conditions.
4. Operator should be fully acquainted with the Operator's Manual and all safety instructions furnished by Blount, Inc. prior to operating the machine.
5. Lift capacities are in compliance with SAE J2417, "Lift Capacity Calculation Method — Knuckleboom Log Loaders and Certain Forestry Equipment."

	3 m/10'0"		4.6 m/15'0"		6.1 m/20'0"		7.6 m/25'0"		Maximum Reach		
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	
9.1 m (30'0")			5591.9 4864.8 4864.8	12,328 10,725 10,725							100% Hydraulics Over End Over Side
7.6 m (25'0")			5854.1 5093.1 5093.1	12,906 11,228 11,228	5136.6 4468.8 4468.8	11,324 9,852 9,852					100% Hydraulics Over End Over Side
6.1 m (20'0")			5896.7 5130.2 5130.2	13,000 11,310 11,310	5481.7 4769.2 4769.2	12,085 10,514 10,514	4159.5 3618.8 3618.8	9,170 7,978 7,978			100% Hydraulics Over End Over Side
4.6 m (15'0")			6384.8 5554.7 5554.7	14,076 12,246 12,246	5641.8 4908.4 4908.4	12,438 10,821 10,821	4650.8 4046.1 4046.1	10,253 8,920 8,920	2379.5 2070.2 2070.2	5,246 4,564 4,564	100% Hydraulics Over End Over Side
3.0 m (10'0")			7557.4 6574.8 6574.8	16,661 14,495 14,495	6542.2 5691.7 5691.7	14,423 12,548 12,548	5072.6 4413.1 4413.1	11,183 9,729 9,729	2344.2 2039.4 2039.4	5,168 4,496 4,496	100% Hydraulics Over End Over Side
1.5 m (5'0")			8857.8 7706.2 7706.2	19,528 16,989 16,989	6573.1 5718.5 5718.5	14,491 12,607 12,607	4963.7 4318.2 4318.2	10,943 9,520 9,520	2355.9 2049.8 2049.8	5,194 4,519 4,519	100% Hydraulics Over End Over Side
0 m (0'0")	6924.5 6024.2 6024.2	15,266 13,281 13,281	8425.6 7330.2 7330.2	18,575 16,160 16,160	6101.3 5308.1 5308.1	13,451 11,702 11,702	4259.8 3705.9 3705.9	9,391 8,170 8,170			100% Hydraulics Over End Over Side
-1.5 m (-5'0")	7980.1 6942.8 6942.8	17,593 15,306 15,306	6807.2 5922.2 5922.2	15,007 13,056 13,056	4782.3 4160.4 4160.4	10,543 9,172 9,172					100% Hydraulics Over End Over Side

Forest Products Trailer Mount Knuckleboom Loaders

Lift and Range Diagram ● TK 560 Knuckleboom Loader

**TK 560 Knuckleboom Loader
9.8 m (32'0") Boom**



NOTES:

Do not attempt to lift or hold any load that is greater than the rated values over the end or side at their specified lift point and height. The weight of the grapple and all lifting accessories must be deducted from lift capacities shown.

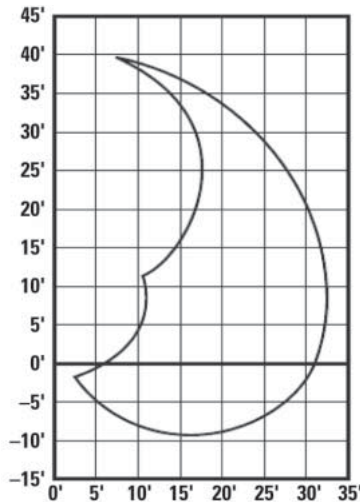
- The over end capacities and over side capacities do not exceed 87% of hydraulic limited capacity or 75% of stability limited capacity.
– Stability limited capacities are indicated with an asterisk (*).
- The lift point is located at the boom pivot pin.
- Lift capacities are based on the machine standing on firm, uniform supporting surface. User must make allowances for job site conditions.
- Operator should be fully acquainted with the Operator's Manual and all safety instructions furnished by Blount, Inc. prior to operating the machine.
- Lift capacities are in compliance with SAE J2417, "Lift Capacity Calculation Method — Knuckleboom Log Loaders and Certain Forestry Equipment."

	3 m/10'0"		4.6 m/15'0"		6.1 m/20'0"		7.6 m/25'0"		9.1 m/30'0"		Maximum Reach		
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	
10.6 m (35'0")			5687.1 4947.8 4947.8	12,538 10,908 10,908									100% Hydraulics Over End Over Side
9.1 m (30'0")					5398.7 4696.9 4696.9	11,902 10,355 10,355							100% Hydraulics Over End Over Side
7.6 m (25'0")					5630.9 4898.8 4898.8	12,414 10,800 10,800	4732.4 4117.3 4117.3	10,433 9,077 9,077					100% Hydraulics Over End Over Side
6.1 m (20'0")					5751.1 5003.6 5003.6	12,679 11,031 11,031	5133.3 4466.1 4466.1	11,317 9,846 9,846					100% Hydraulics Over End Over Side
4.6 m (15'0")			7265.2 6320.8 6320.8	16,017 13,935 13,935	6594.8 5737.5 5737.5	14,539 12,649 12,649	5594.2 4867.1 4867.1	12,333 10,730 10,730	4182.6 3638.7 3631.9	9,221 8,022 8,007*	2665.8 2319.2 2319.2	5,877 5,113 5,113	100% Hydraulics Over End Over Side
3.0 m (10'0")			9105.9 7921.9 7921.9	20,075 17,465 17,465	7195.8 6260.5 6260.5	15,864 13,802 13,802	5946.1 5173.6 5173.6	13,109 11,405 10,851*	4455.2 3875.9 3582.2	9,822 8,522 7,897	2691.2 2341.4 2341.4	5,933 5,162 5,162	100% Hydraulics Over End Over Side
1.5 m (5'0")			10 155.1 8800.2 8800.2	22,300 19,401 19,401	7591.8 6604.8 6604.8	16,737 14,561 14,561	6015.5 5233.5 4776.4	13,262 11,538 10,530*	4253.4 3700.5 3526.7	9,377 8,158 7,775*	2797.8 2433.9 2433.9	6,168 5,366 5,366	100% Hydraulics Over End Over Side
0 m (0'0")	8249.5 7177.2 7177.2	18,187 15,823 15,823	10 288.4 8950.8 8950.8	22,682 19,733 19,733	7553.7 6571.7 6571.7	16,653 14,488 14,488	5758.4 5009.9 4667.5	12,695 11,045 10,290*	3705.9 3224.2 3224.2	8,170 7,108 7,108			100% Hydraulics Over End Over Side
-1.5 m (-5'0")	8217.3 7149.1 7149.1	18,116 15,761 15,761	9281.9 8075.4 8075.4	20,463 17,803 17,803	6782.6 5900.8 5900.8	14,953 13,009 13,009	4870.2 4237.0 4237.0	10,737 9,341 9,341					100% Hydraulics Over End Over Side

Lift and Range Diagram ● TK 570 Knuckleboom Loader

Forest Products Trailer Mount Knuckleboom Loaders

**TK 570 Knuckleboom Loader
9.9 m (32'6") Boom**



NOTES:

Do not attempt to lift or hold any load that is greater than the rated values over the end or side at their specified lift point and height. The weight of the grapple and all lifting accessories must be deducted from lift capacities shown.

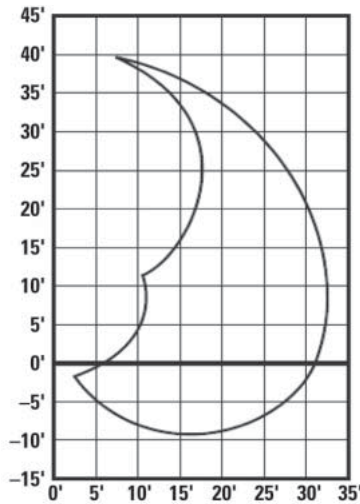
1. The over end capacities and over side capacities do not exceed 87% of hydraulic limited capacity or 75% of stability limited capacity.
– Stability limited capacities are indicated with an asterisk (*).
2. The lift point is located at the boom pivot pin.
3. Lift capacities are based on the machine standing on firm, uniform supporting surface. User must make allowances for job site conditions.
4. Operator should be fully acquainted with the Operator's Manual and all safety instructions furnished by Blount, Inc. prior to operating the machine.
5. Lift capacities are in compliance with SAE J2417, "Lift Capacity Calculation Method — Knuckleboom Log Loaders and Certain Forestry Equipment."

	3 m/10'0"		4.6 m/15'0"		6.1 m/20'0"		7.6 m/25'0"		9.1 m/30'0"		Maximum Reach		
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	
10.6 m (35'0")			5286.7 4599.5 4599.5	11,655 10,140 10,140									100% Hydraulics Over End Over Side
9.1 m (30'0")					4972.9 4326.4 4326.4	10,963 9,538 9,538							100% Hydraulics Over End Over Side
7.6 m (25'0")					5758.4 5010.0 5010.0	12,695 11,045 11,045	4410.8 3937.4 3937.4	9,724 8,460 8,460					100% Hydraulics Over End Over Side
6.1 m (20'0")					6363.5 5536.2 5536.2	14,029 12,205 12,205	5428.7 4722.9 4722.9	11,968 10,412 10,412	2767.9 2408.2 2408.2	6,102 5,309 5,309			100% Hydraulics Over End Over Side
4.6 m (15'0")			7299.3 6350.4 6350.4	16,092 14,000 14,000	6877.5 5983.4 5983.4	15,162 13,191 13,191	6073.2 5283.5 5283.5	13,389 11,648 11,648	3974.0 3457.3 3457.3	8,761 7,622 7,622	2324.2 2022.1 2022.1	5,124 4,458 4,458	100% Hydraulics Over End Over Side
3.0 m (10'0")			9814.5 8538.6 8538.6	21,637 18,824 18,824	8452.4 7353.8 7353.8	18,634 16,212 16,212	6934.2 6032.9 6032.9	15,287 13,300 13,300	4668.4 4061.5 4061.5	10,292 8,954 8,954	2366.0 2058.4 2058.4	5,216 4,538 4,538	100% Hydraulics Over End Over Side
1.5 m (5'0")	18 436.1 16 039.3 16 039.3	40,644 35,360 35,360	12 083.4 10 512.6 10 512.6	26,639 23,176 23,176	9112.8 7928.0 7928.0	20,090 17,478 17,478	7295.7 6347.2 6347.2	16,084 13,993 13,993	4947.4 4304.2 4304.2	10,907 9,489 9,489	2480.3 2157.8 2157.8	5,468 4,757 4,757	100% Hydraulics Over End Over Side
0 m (0'0")	10 192.8 8867.9 8867.9	22,471 19,550 19,550	12 622.8 10 981.6 10 981.6	27,828 24,210 24,210	9241.6 8040.1 8040.1	20,374 17,725 17,725	7086.8 6173.5 6173.5	15,644 13,610 13,610	4361.8 3794.8 3794.8	9,616 8,366 8,366			100% Hydraulics Over End Over Side
-1.5 m (-5'0")	9419.5 8194.7 8194.7	20,766 18,066 18,066	11 628.5 10 116.6 10 116.6	25,636 22,303 22,303	8447.8 7349.7 7349.7	18,624 16,203 16,203	6120.4 5324.8 5324.8	13,493 11,739 11,739					100% Hydraulics Over End Over Side

Forest Products Trailer Mount Knuckleboom Loaders

Lift and Range Diagram ● TK 575 Knuckleboom Loader

**TK 575 Knuckleboom Loader
9.9 m (32'6") Boom**



NOTES:

Do not attempt to lift or hold any load that is greater than the rated values over the end or side at their specified lift point and height. The weight of the grapple and all lifting accessories must be deducted from lift capacities shown.

- The over end capacities and over side capacities do not exceed 87% of hydraulic limited capacity or 75% of stability limited capacity.
– Stability limited capacities are indicated with an asterisk (*).
- The lift point is located at the boom pivot pin.
- Lift capacities are based on the machine standing on firm, uniform supporting surface. User must make allowances for job site conditions.
- Operator should be fully acquainted with the Operator's Manual and all safety instructions furnished by Blount, Inc. prior to operating the machine.
- Lift capacities are in compliance with SAE J2417, "Lift Capacity Calculation Method — Knuckleboom Log Loaders and Certain Forestry Equipment."

	3 m/10'0"		4.6 m/15'0"		6.1 m/20'0"		7.6 m/25'0"		9.1 m/30'0"		Maximum Reach		
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	
10.6 m (35'0")			6514.1 5667.3 5667.3	14,361 12,494 12,494									100% Hydraulics Over End Over Side
9.1 m (30'0")					6142.2 5343.8 5343.8	13,541 11,781 11,781							100% Hydraulics Over End Over Side
7.6 m (25'0")					6077.8 5287.6 5287.6	13,399 11,657 11,657	5470.4 4759.2 4759.2	12,060 10,492 10,492					100% Hydraulics Over End Over Side
6.1 m (20'0")					6246.1 5434.1 5434.1	13,770 11,980 11,980	5763.0 5013.6 5013.6	12,705 11,053 11,053	3497.7 3043.2 3043.2	7,711 6,709 6,709			100% Hydraulics Over End Over Side
4.6 m (15'0")			7689.4 6689.7 6689.7	16,952 14,748 14,748	7085.2 6164.0 6164.0	15,620 13,589 13,589	6041.0 5255.9 5255.9	13,318 11,587 11,587	4944.0 4306.9 4306.9	10,914 9,495 9,495	2967.0 2581.4 2581.4	6,541 5,691 5,691	100% Hydraulics Over End Over Side
3.0 m (10'0")			10 201.0 8874.7 8874.7	22,489 19,565 19,565	9232.1 8031.9 8031.9	20,353 17,707 17,707	7230.4 6290.5 6290.5	15,940 13,868 13,868	5247.7 4565.5 4565.5	11,569 10,065 10,065	3019.2 2626.8 2626.8	6,656 5,791 5,791	100% Hydraulics Over End Over Side
1.5 m (5'0")	21 356.8 18 580.4 18 580.4	47,083 40,962 40,962	14 054.3 12 227.2 12 227.2	30,984 26,956 26,956	10 646.4 9262.5 9262.5	23,471 20,420 20,420	8611.6 7452.6 6731.0	18,885 16,430 14,839*	5083.1 4428.0 4428.0	11,221 9,762 9,762	3164.3 2752.9 2752.9	6,976 6,069 6,069	100% Hydraulics Over End Over Side
0 m (0'0")	10 070.8 8761.7 8761.7	22,202 19,316 19,316	14 724.3 12 810.1 12 810.1	32,461 28,241 28,241	10 824.7 9417.6 9417.6	23,864 20,762 20,762	8356.2 7269.8 6630.3	18,422 16,027 14,617*	4487.0 3903.7 3903.7	9,892 8,606 8,606			100% Hydraulics Over End Over Side
-1.5 m (-5'0")	9314.2 8103.6 8103.6	20,534 17,865 17,865	13 622.5 11 851.7 11 851.7	30,032 26,128 26,128	9940.6 8648.3 8648.3	21,915 19,066 19,066	7256.7 6313.2 6313.2	15,998 13,918 13,918					100% Hydraulics Over End Over Side

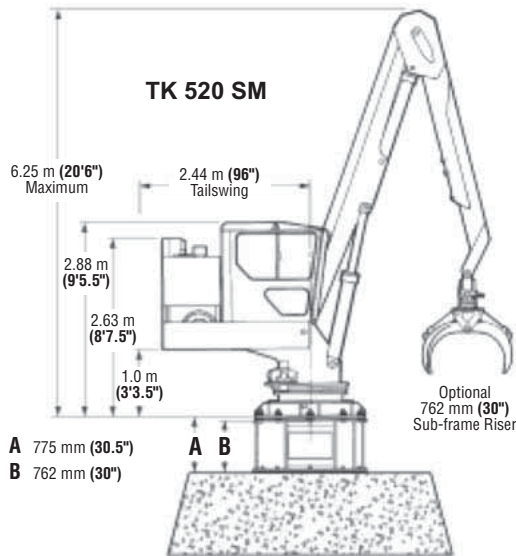
TK 520/570 Features:

- **Heavy-duty boom options** available for handling a variety of tree lengths.
- **Weatherproof electric service panels** include starters, controls, transformers, circuit breakers and fuse blocks.
- **Electric motors** are rated for severe duty.
- **Resilient Pad Mounting System** includes a set of special rubber isolators on each mounting fastener that absorbs stress in two directions.
- **Hydraulic pilot joystick controls and rocker swing pedal** are ergonomically designed for ease of operation and maximum loader control.

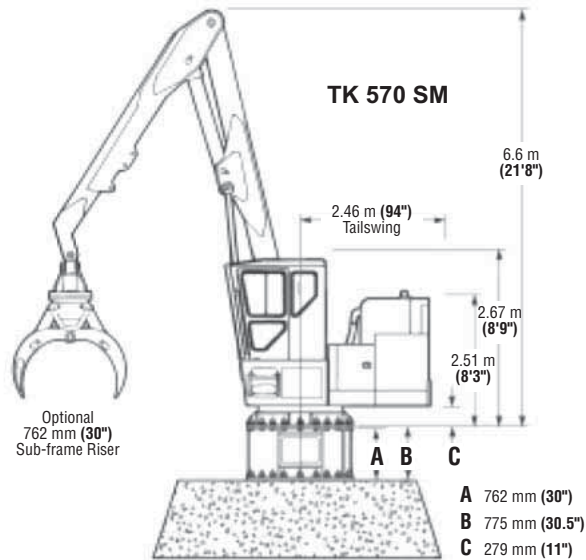
MODEL	TK 520 SM		TK 520 SM/EHC		TK 570 SM		TK 570 SM/EHC	
Electric Power Supply	460 V: 60 Hz 575 V: 60 Hz		460 V: 60 Hz		460 V: 60 Hz		460 V: 60 Hz	
Electric Motor @ 1800 RPM	55.9 kW	75 hp	55.9 kW	75 hp	74.5 kW	100 hp	74.5 kW	100 hp
Operating Weight	15 915 kg	35,086 lb	15 315 kg	33,763 lb	18 945 kg	41,766 lb	18 345 kg	40,443 lb
Hydraulic System:								
System Pressure	15 168 kPa	2200 psi	15 168 kPa	2200 psi	15 168 kPa	2200 psi	17 237 kPa	2500 psi
Swing Pressure	16 547 kPa	2400 psi	16 547 kPa	2400 psi	17 237 kPa	2500 psi	17 237 kPa	2500 psi
Swing Speed	8 RPM		8 RPM		7 RPM		7 RPM	
Maximum Reach	8.2 m	27'0"	8.2 m	27'0"	9.9 m	32'7"	9.9 m	32'7"
Standard Knuckleboom	8.2 m	27'0"	8.2 m	27'0"	9.9 m	32'7"	9.9 m	32'7"

Forest Products Stationary Mount Knuckleboom Loaders

Dimensions

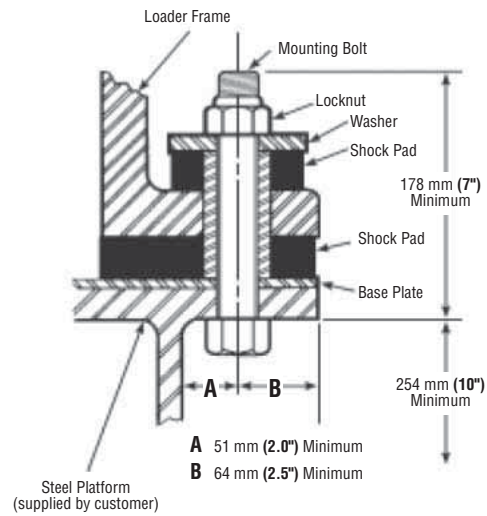


NOTE: Overall height dimension to 8.23 m (27'0") boom articulation point is taken with main boom cylinder fully extended. Add 762 mm (30") to this dimension for 9.14 m (30'0") knuckleboom.



NOTE: Overall height dimension to 9.14 m (30'0") boom articulation point is taken with main boom cylinder fully extended. Add 1067 mm (42") to this dimension for 10.97 m (36'0") knuckleboom.

Resilient Pad System

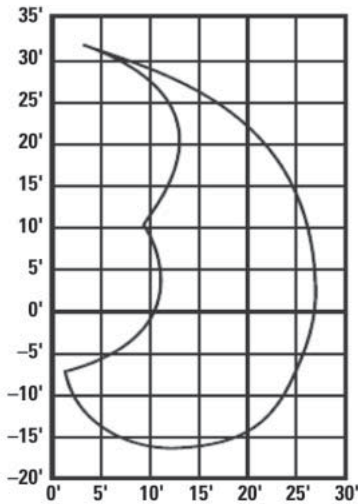


- Operator's cab is not present on EHC models.
- EHC models available with Remote Power Packs.
- Installations on concrete include "J" Bolts in lieu of Mounting Bolt.

Lift and Range Diagram
 ● TK 520 SM Knuckleboom Loader
 ● TK 520 SM/EHC Knuckleboom Loader

**Forest Products
 Stationary Mount
 Knuckleboom Loaders**

**TK 520 SM/TK 520 SM/EHC
 8.2 m (27'0") Boom**



NOTES:

Do not attempt to lift or hold any load that is greater than the rated values over the end or side at their specified lift point and height. The weight of the grapple and all lifting accessories must be deducted from lift capacities shown.

1. All figures shown in these charts represent rated lift capacities.
2. Capacities shown in *italic* are 100% of hydraulic capacity; other capacities shown are 87% of hydraulic capability.
3. The lift point is located at the boom/grapple pivot pin.
4. Manufacturer assumes no responsibility for the proper fit or structural integrity of the mounting pedestal and/or platform supplied by the customer.
5. Operator should be fully acquainted with the Operator's Manual and all safety instructions furnished prior to operating the machine.
6. Lift capacities are in compliance with SAE J2417, "Lift Capacity Calculation Method — Knuckleboom Log Loaders and Certain Forestry Equipment."

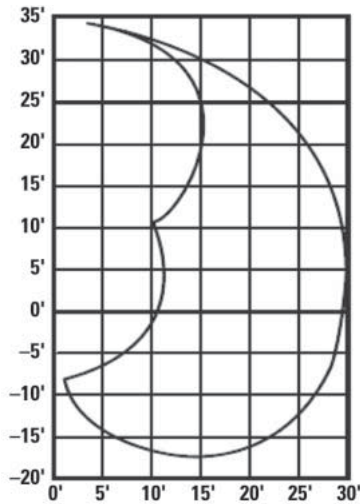
	1.5 m/5'0"		3 m/10'0"		4.6 m/15'0"		6.1 m/20'0"		7.6 m/25'0"	
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
7.6 m (25'0")					5021 4368	<i>11,060</i> <i>9,622</i>				
6.1 m (20'0")					5177 4504	<i>11,402</i> <i>9,920</i>	4486 3903	<i>9,882</i> <i>8,597</i>		
4.6 m (15'0")					5311 4620	<i>11,698</i> <i>10,177</i>	4634 4032	<i>10,207</i> <i>8,880</i>		
3.0 m (10'0")			3788 3295	<i>8,343</i> <i>7,258</i>	5854 5093	<i>12,894</i> <i>11,218</i>	4799 4175	<i>10,571</i> <i>9,197</i>	3962 3447	<i>8,728</i> <i>7,593</i>
1.5 m (5'0")					7229 6289	<i>15,923</i> <i>13,853</i>	5951 5177	<i>13,107</i> <i>11,403</i>	3890 3384	<i>8,568</i> <i>7,454</i>
0 m (0'0")					8730 6603	<i>19,229</i> <i>16,729</i>	6469 5628	<i>14,249</i> <i>12,397</i>	4061 3533	<i>8,946</i> <i>7,783</i>
-1.5 m (-5'0")			4764 4145	<i>10,494</i> <i>9,130</i>	8057 7010	<i>17,747</i> <i>15,440</i>	5811 5056	<i>12,800</i> <i>11,136</i>	3040 2645	<i>6,697</i> <i>5,826</i>
-3.0 m (-10'0")	3050 2654	<i>6,718</i> <i>5,845</i>	6276 5460	<i>13,824</i> <i>12,027</i>	6152 5353	<i>13,552</i> <i>11,790</i>	4083 3552	<i>8,993</i> <i>7,824</i>		
-4.6 m (-15'0")			3494 3040	<i>7,697</i> <i>6,696</i>	2564 2231	<i>5,648</i> <i>4,914</i>				

**Forest Products
Stationary Mount
Knuckleboom Loaders**

Lift and Range Diagram

- TK 520 SM Knuckleboom Loader
- TK 520 SM/EHC Knuckleboom Loader

**TK 520 SM/TK 520 SM/EHC
9.1 m (30'0") Boom**



NOTES:

Do not attempt to lift or hold any load that is greater than the rated values over the end or side at their specified lift point and height. The weight of the grapple and all lifting accessories must be deducted from lift capacities shown.

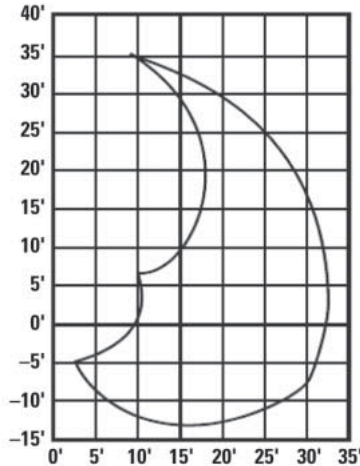
1. All figures shown in these charts represent rated lift capacities.
2. Capacities shown in *italic* are 100% of hydraulic capacity; other capacities shown are 87% of hydraulic capability.
3. The lift point is located at the boom/grapple pivot pin.
4. Manufacturer assumes no responsibility for the proper fit or structural integrity of the mounting pedestal and/or platform supplied by the customer.
5. Operator should be fully acquainted with the Operator's Manual and all safety instructions furnished prior to operating the machine.
6. Lift capacities are in compliance with SAE J2417, "Lift Capacity Calculation Method — Knuckleboom Log Loaders and Certain Forestry Equipment."

	1.5 m/5'0"		3 m/10'0"		4.6 m/15'0"		6.1 m/20'0"		7.6 m/25'0"		9.1 m/30'0"	
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
9.1 m (30'0")					4206 3659	9,264 8,060						
7.6 m (25'0")					4714 4101	10,384 9,034	3940 3428	8,679 7,551				
6.1 m (20'0")							4179 3636	9,206 8,009	3088 2687	6,802 5,918		
4.6 m (15'0")					4419 3845	9,734 8,469	4267 3712	9,398 8,176	3713 3230	8,178 7,115		
3.0 m (10'0")					4942 4300	10,886 9,471	4488 3904	9,885 8,600	3769 3279	8,301 7,222		
1.5 m (5'0")					6380 5551	14,053 12,226	5670 4933	12,490 10,866	4407 3834	9,707 8,445	1996 1737	4,397 3,825
0 m (0'0")					8448 7350	18,608 16,189	6299 5480	13,874 12,070	4873 4239	10,733 9,338		
-1.5 m (-5'0")			2892 2516	6,369 5,541	7983 6945	17,583 15,297	5894 5128	12,983 11,295	4320 3758	9,515 8,278		
-3.0 m (-10'0")	2039 1774	4,492 3,908	4532 3943	9,983 8,685	6538 5688	14,401 12,529	4775 4154	10,517 9,150	2937 2556	6,470 5,629		
-4.6 m (-15'0")			4942 4299	10,885 9,470	3981 3463	8,768 7,628	2518 2191	5,547 4,826				

Lift and Range Diagram
 ● TK 570 SM Knuckleboom Loader
 ● TK 570 SM/EHC Knuckleboom Loader

Forest Products
 Stationary Mount
 Knuckleboom Loaders

TK 570 SM/TK 570 SM/EHC
 9.9 m (32'6") Boom



NOTES:

Do not attempt to lift or hold any load that is greater than the rated values over the end or side at their specified lift point and height. The weight of the grapple and all lifting accessories must be deducted from lift capacities shown.

1. All figures shown in these charts represent rated lift capacities.
2. Capacities shown in italic are 100% of hydraulic capacity; other capacities shown are 87% of hydraulic capability.
3. The lift point is located at the boom/grapple pivot pin.
4. Manufacturer assumes no responsibility for the proper fit or structural integrity of the mounting pedestal and/or platform supplied by the customer.
5. Operator should be fully acquainted with the Operator's Manual and all safety instructions furnished prior to operating the machine.
6. Lift capacities are in compliance with SAE J2417, "Lift Capacity Calculation Method — Knuckleboom Log Loaders and Certain Forestry Equipment."

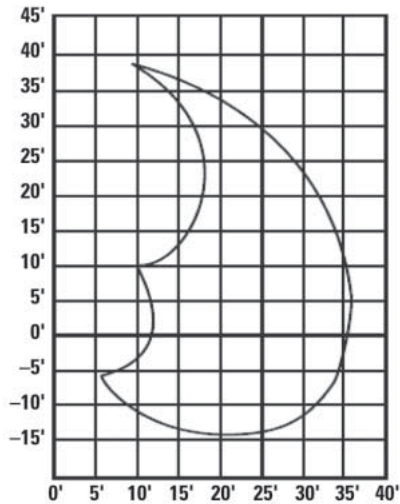
	1.5 m/5'0"		3 m/10'0"		4.6 m/15'0"		6.1 m/20'0"		7.6 m/25'0"		9.1 m/30'0"	
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
9.1 m (30'0")												
7.6 m (25'0")							5118 4453	11,274 9,808				
6.1 m (20'0")							5850 5089	12,885 11,210	4577 3982	10,082 8,771		
4.6 m (15'0")							6422 5587	14,145 12,306	5560 4837	12,247 10,655	2997 2607	6,601 5,743
3.0 m (10'0")					7558 6575	16,647 14,483	7002 6091	15,422 13,417	6115 5320	13,470 11,719	4093 3561	9,016 7,844
1.5 m (5'0")					10 730 9335	23,634 20,562	8567 7453	18,870 16,417	7127 6200	15,698 13,657	4740 4124	10,441 9,084
0 m (0'0")			18 803 16 359	41,417 36,033	12 247 10 654	26,975 23,468	9179 7985	20,217 17,589	7305 6355	16,090 13,998	4939 4297	10,878 9,464
-1.5 m (-5'0")	3712 3230	8,177 7,114	9850 8569	21,695 18,875	12 595 10 957	27,741 24,135	9205 8008	20,275 17,639	7026 6112	15,475 13,463		
-3.0 m (-10'0")			9507 8271	20,940 18,218	11 367 9889	25,037 21,782	8250 7178	18,172 15,810	5897 5131	12,990 11,301		

**Forest Products
Stationary Mount
Knuckleboom Loaders**

Lift and Range Diagram

- TK 570 SM Knuckleboom Loader
- TK 570 SM/EHC Knuckleboom Loader

**TK 570 SM/TK 570 SM/EHC
11.0 m (36'0") Boom**



NOTES:

Do not attempt to lift or hold any load that is greater than the rated values over the end or side at their specified lift point and height. The weight of the grapple and all lifting accessories must be deducted from lift capacities shown.

1. All figures shown in these charts represent rated lift capacities.
2. Capacities shown in *italic* are 100% of hydraulic capacity; other capacities shown are 87% of hydraulic capability.
3. The lift point is located at the boom/grapple pivot pin.
4. Manufacturer assumes no responsibility for the proper fit or structural integrity of the mounting pedestal and/or platform supplied by the customer.
5. Operator should be fully acquainted with the Operator's Manual and all safety instructions furnished prior to operating the machine.
6. Lift capacities are in compliance with SAE J2417, "Lift Capacity Calculation Method — Knuckleboom Log Loaders and Certain Forestry Equipment."

	3 m/10'0"		4.6 m/15'0"		6.1 m/20'0"		7.6 m/25'0"		9.1 m/30'0"		10.6 m/35'0"	
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
10.6 m (35'0")			<i>5110</i> 4446	<i>11,255</i> 9,792								
9.1 m (30'0")					4985 4337	<i>10,979</i> 9,552						
7.6 m (25'0")					5744 4998	<i>12,653</i> 11,008	4697 4086	<i>10,345</i> 9,000				
6.1 m (20'0")					6087 5295	<i>13,407</i> 11,664	5508 4792	<i>12,132</i> 10,555	3943 3430	<i>8,685</i> 7,556		
4.6 m (15'0")					6629 5767	<i>14,601</i> 12,703	5997 5218	<i>13,210</i> 11,493	5037 4382	<i>11,094</i> 9,652		
3.0 m (10'0")			8808 7663	<i>19,400</i> 16,878	7924 6894	<i>17,454</i> 15,185	6701 5830	<i>14,761</i> 12,842	5444 4737	<i>11,992</i> 10,433	2748 2391	<i>6,053</i> 5,266
1.5 m (5'0")			11 401 9919	<i>25,113</i> 21,848	8652 7527	<i>19,057</i> 16,580	7024 6111	<i>15,472</i> 13,461	5873 5109	<i>12,936</i> 11,254	3306 2877	<i>7,283</i> 6,336
0 m (0'0")			12 364 10 757	<i>27,233</i> 23,693	9096 7914	<i>20,036</i> 17,431	7171 6239	<i>15,795</i> 13,742	5804 5049	<i>12,784</i> 11,122	3200 2784	<i>7,048</i> 6,132
-1.5 m (-5'0")	4876 4242	<i>10,740</i> 9,344	12 156 10 575	<i>26,775</i> 23,294	8973 7806	<i>19,763</i> 17,194	6956 6051	<i>15,321</i> 13,329	5420 4716	<i>11,939</i> 10,387		
-3.0 m (-10'0")	5803 5049	<i>12,783</i> 11,121	10 713 9321	<i>23,598</i> 20,530	8081 7030	<i>17,799</i> 15,485	6170 5368	<i>13,591</i> 11,824	4454 3875	<i>9,810</i> 8,535		

Wheel Loaders Features:

- **Productive operator environment with excellent visibility.**
- **Automatic lift and bucket controls.**
- **Automatic powershift transmissions.**
- **Transmission neutralizer switch** (938G Series II and 980G Series II).
- **Computerized machine function monitoring.**
- **Integrated transmission controls and electro-hydraulic controls** (980G Series II).
- **Limited slip differentials.**
- **Brake wear indicator.**
- **Traction control system** (938G Series II).
- **Automatic Ride Control suspension system.**
- **Payload control system.**

Integrated Toolcarriers Features:

- **Integral quick coupler** for fast tool changes.
- **Wide range of tools** to meet various application needs.
- **Increased lift height and reach.**
- **Parallel lift** from ground level to maximum height.
- **Pressure compensating valves** (IT28G).
- **Positive carry position** for load stability and retention.
- **Third and fourth valves** available for multiple tool functions.
- **Work tool interchangeability** among specified models.
- **Excellent center visibility.**
- **Several factory installed quick-coupler work tools** are available on specified models.

MODEL	IT 62G Series II*		950G Series II**		966G Series II**		980H**	
Net Power	157 kW	210 hp	146 kW	196 hp	194 kW	260 hp	318 kW	237 hp
Operating Weight	18 316 kg	40,380 lb	19 223 kg	42,380 lb	25 394 kg	55,985 lb	32 685 kg	72,059 lb
Engine Model	3126B ATAAC		3126B ATAAC		3176C ATAAC		3406E ATAAC	
Full Turn Static Tipping Load	11 290 kg	24,890 lb	8686 kg	19,149 lb	12 354 kg	27,236 lb	17 563 kg	38,720 lb

*With Logging Forks.

**With Millyard Forks.

LOAD CAPACITY CURVES FOR WHEEL LOADERS AND INTEGRATED TOOLCARRIERS EQUIPPED WITH FORKS

Definitions:

Hydraulic Capacity: Weight that the hydraulic system will lift with the rear of the loader anchored and the load center of gravity midway on the fork tines. Hydraulic capacity is not increased by counterweighting.

Tipping Load: The loaded weight positioned as described above, which will lift the rear wheels off the ground with the machine in a static condition. Static tipping load curves for wheel loaders equipped with log or lumber forks are based on full machine articulation.

Tipping load capacities are affected by counterweight and distance of the load center of gravity from the front axle and degree of articulation. Fork center of gravity and fork weight can also affect tipping load.

Maximum Operating Load: Maximum operating load should be based on static tipping load ratings (tines level) and requires a firm, smooth, well-maintained operating area. Maximum operating loads can be affected by:

- Underfoot conditions.
- Position or height the load is carried.
- Fork position or attitude.
- Degree machine is articulated during maneuvering.



Example problem:

Wheel Loader Selection 966G vs 950G

Optimum millyard performance depends on efficient and proper use of wheel loaders performing unloading, sorting and decking applications. The following steps will aid in the proper wheel loader selection.

Step 1: Determine the basic mill requirements (job description).

EXAMPLE:

Logs arrive at the mill on trucks equipped with double bunk trailers. Logs are a variety of hardwoods, but white oak makes up the majority of wood received. The trucks must be off-loaded by a wheel loader equipped with log forks.

In addition to the off-loading, a primary loader requirement is to supply the mill with raw material in a load-and-carry operation. The loader must also sort logs by species, grade and size, and transport the excess logs from the unloading area to the storage decks.

- Maximum sawmill requirements — 544 metric tons/8 hr. day (600 U.S. tons).
- Maximum wood received — 30 truckloads/8 hr. day.
- Average number of logs per truckload — 20.
- Average log specifications:
 - length 4.9 m (16').
 - butt diameter 660 mm (26").
 - top diameter 430 mm (17").
- Maximum truck stake height — 3.98 m (13'1").
- Maximum haul distance (one way) from log storage deck to the mill — 153 m (500').
- Haul and return to mill in 2nd forward — 10% effective grade.
- Fixed times — load forks 0.7 min.
 - maneuver and dump 0.5 min.
 - truck unloading 1.0 min.
- Average log weight = 1180 kg/log (2600 lb/log)
Refer to Weights and Measure section of this handbook to obtain appropriate log volume and density information.

Step 2: Determine the basic machine options and capacities.

Refer to Capacity curves in the Performance Handbook under Logging and Forest Products section. For other fork configurations not listed contact the Forest Machinery Unit for performance curves. Also refer to attachment adaptability section for information needed for performance curves.

EXAMPLE:

Consider a 950G vs. 966G. Both are equipped with logging fork.

950G

Static Tipping Load	10 000 kg (22,000 lb)
Hydraulic Lift Capacity	11 600 kg (25,520 lb)
Maximum Operating Load	10 000 kg (22,000 lb)

966G

Static Tipping Load	13 500 kg (29,700 lb)
Hydraulic Lift Capacity	14 500 kg (31,900 lb)
Maximum Operating Load	13 500 kg (29,700 lb)

Step 3: Determine cycle times.

Refer to Production Travel Time Charts in the Wheel Loader section of the Performance Handbook.

EXAMPLE:
 (Supplying the mill)

Description	Time (950G)	Time (966G)
Haul and return	1.16 min	1.14 min
Load Forks*	0.7 min	0.7 min
Maneuver and dump*	0.5 min	0.5 min
TOTAL	2.36 min	2.34 min
Cycles/45-min hr =	19.06	19.23

Description	Time (950G)	Time (966G)
Truck unloading*	1.0 min	1.0 min
Load Forks*	0.7 min	0.7 min
Maneuver and dump*	0.5 min	0.5 min
TOTAL	2.2 min	2.2 min
Cycles/45-min hr =	20.45	20.45

*Fixed times which should be based on local experience.

Step 4: Calculate Production

EXAMPLE:

Mill requirements:

— 950G

$$\frac{544\ 320\ \text{kg}\ (1,200,000\ \text{lb})/8\ \text{hr/day}}{10\ 000\ \text{kg}\ (22,000\ \text{lb})/\text{loader\ cycle}} =$$

$$\frac{55\ \text{loader\ cycles}}{8\ \text{hr/day}}$$

$$\frac{55\ \text{loader\ cycles}/8\ \text{hr/day}}{19.06\ \text{cycles}/45\text{-min\ hr}} = \frac{2.88\ \text{hr/day}}{\text{required to supply mill}}$$

— 966G

$$\frac{544\ 320\ \text{kg}\ (1,200,000\ \text{lb})/8\ \text{hr/day}}{13\ 500\ \text{kg}\ (29,700\ \text{lb})/\text{loader\ cycle}} =$$

$$\frac{41\ \text{loader\ cycles}}{8\ \text{hr/day}}$$

$$\frac{41\ \text{loader\ cycles}/8\ \text{hr/day}}{19.23\ \text{cycles}/45\text{-min\ hr}} = \frac{2.13\ \text{hr/day}}{\text{required to supply mill}}$$

Off-Load Requirements:

— 950G

$$20\ \text{logs/truck} \times 30\ \text{truckloads/day} = 600\ \text{logs/day}$$

$$600\ \text{logs/day} \times 1180\ \text{kg}\ (2600\ \text{lb})/\text{log} = 707\ 616\ \text{kg/day}$$

or
1,560,000 lbs/day
Incoming Wood

$$\frac{707\ 616\ \text{kg}\ (1,560,000\ \text{lb})/8\ \text{hr/day}}{10\ 000\ \text{kg}\ (22,000\ \text{lb})/\text{loader\ cycle}} =$$

$$\frac{71\ \text{loader\ cycles}}{8\ \text{hr/day}}$$

$$\frac{71\ \text{loader\ cycles}/8\ \text{hr/day}}{29.45\ \text{cycles/hr}} = \frac{3.47\ \text{hr/day}}{\text{required to off-load wood}}$$

— 966G

$$20\ \text{logs/truck} \times 30\ \text{truckloads/day} = 600\ \text{logs/day}$$

$$600\ \text{logs/day} \times 1180\ \text{kg}\ (2600\ \text{lb})/\text{log} = 707\ 616\ \text{kg/day}$$

or
1,560,000 lbs/day
Incoming Wood

$$\frac{707\ 616\ \text{kg}\ (1,560,000\ \text{lb})/8\ \text{hr/day}}{13\ 500\ \text{kg}\ (29,700\ \text{lb})/\text{loader\ cycle}} =$$

$$\frac{53\ \text{loader\ cycles}}{8\ \text{hr/day}}$$

$$\frac{53\ \text{loader\ cycles}/8\ \text{hr/day}}{20.45\ \text{cycles/hr}} = \frac{2.59\ \text{hr/day}}{\text{required to off-load wood}}$$

Total Production Required:

— 950G = 2.88 hr/day to supply mill

3.47 hr/day to off-load

6.35 hr/day total time

— 966G = 2.13 hr/day to supply mill

2.59 hr/day to off-load wood

4.72 hr/day total time

Step 5: Determine Wheel Loader selection.

EXAMPLE:

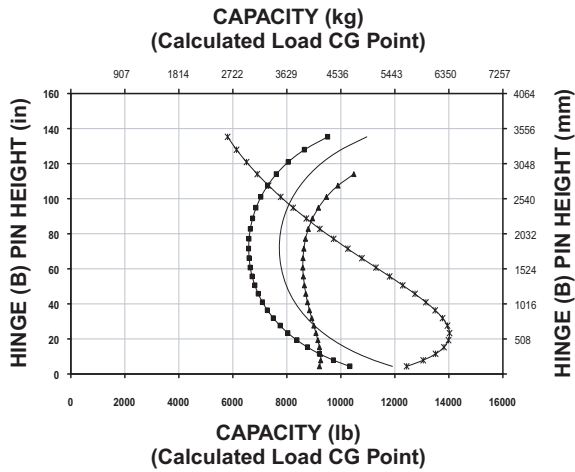
From the production study completed and assuming 100% efficiency it appears both machines are capable of handling the maximum daily production. The 950G and 966G will have 1.65 hrs/day and 3.28 hrs/day respectively to handle unscheduled activities such as sorting, storage and yard clean-up. However, after comparing the maximum hinge pin height for the two machines, the 950G is not capable of clearing the stakes with a load. This leaves the 966G as the machine to recommend, since it can handle all restrictions and production requirements.

**Forest Products
Wheel Loaders**

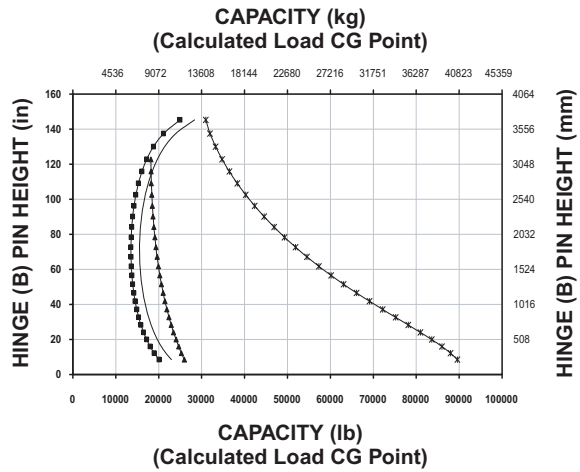
Load Capacity Curves

- 914G
- 924Gz

**914G with Pin-On
Caterpillar Lumber and Log Fork**



**924Gz with Pin-On
Caterpillar Lumber and Log Fork**



KEY

- Tipping Capacity with Machine Straight Fork Level
- Tipping Capacity with Machine Articulated Fork Level
- ▲ Hydraulic Lift Capacity with Fork Level
- * Hydraulic Tilt Capacity with Fork Level

Curves based on machine with full fuel tank, operator, 17.5R25 tires and 125-9289 lumber/log fork without top clamp. Fork weight is 616 kg (1358 lb). Total operating weight, 7464 kg (16,444 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar Dealer for additional fork data.

Curves based on machine with full fuel tank, operator, 17.5R25 tires and 141-6271 lumber/log fork without top clamp. Fork weight 760 kg (1676 lb). Total operating weight, 9650 kg (21,280 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar Dealer for additional fork data.

NOTE: Static tipping load and operating weight are based on machine configuration with standard tires, full fuel tank, coolant, lubricants, and operator.

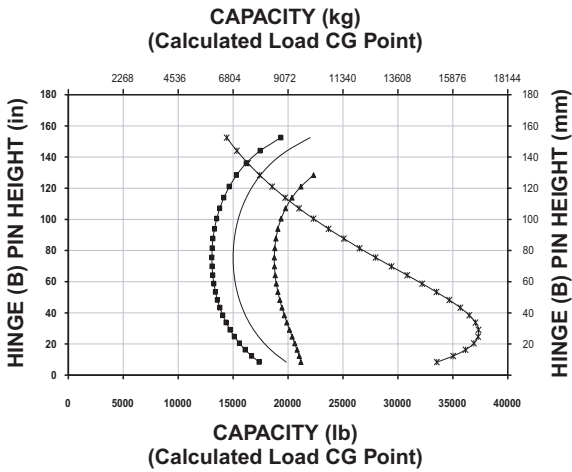
Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings.

The rated operating load for a machine with fork is: SAE J1197; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn tipping load on rough terrain: 80% of full turn tipping load on firm and level ground, or hydraulic structural limit.

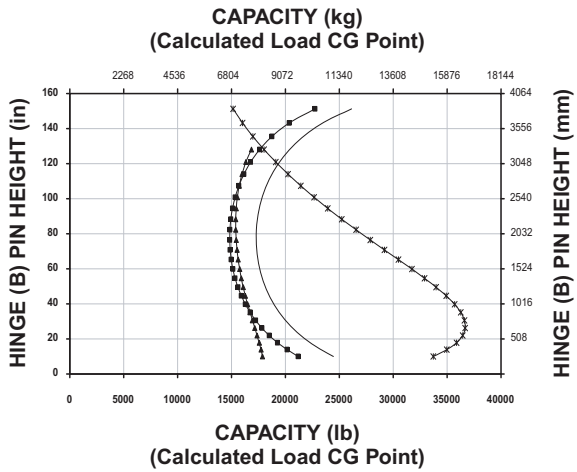
Load Capacity Curves
 ● 928G
 ● 938G Series II

Forest Products
 Wheel Loaders

928G with Pin-On
 Caterpillar Lumber and Log Fork



938G Series II with Pin-On
 Caterpillar Millyard Fork



KEY

- Tipping Capacity with Machine Straight Fork Level
- Tipping Capacity with Machine Articulated Fork Level
- ▲ Hydraulic Lift Capacity with Fork Level
- * Hydraulic Tilt Capacity with Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 20.5-25 tires, 250 kg (550 lb) counterweight, 141-6265 lumber/log fork. Total operating weight, 11 603 kg (25,561 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar Dealer for additional fork data.

Curves based on machine with full fuel tank, operator, ROPS cab, 20.5-25, 16 PR (L-2) tires, with 810 kg (1785 lb) rear tire ballast, 562 kg (1240 lb) counterweight, 119-8243 millyard fork with 1345 mm (4'5") tines, 1635 kg (3600 lb) combined weight. Total operating weight, 14 297 kg (31,520 lb).

NOTE: Static tipping load and operating weight are based on machine configuration with standard tires, full fuel tank, coolant, lubricants, and operator.

Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings.

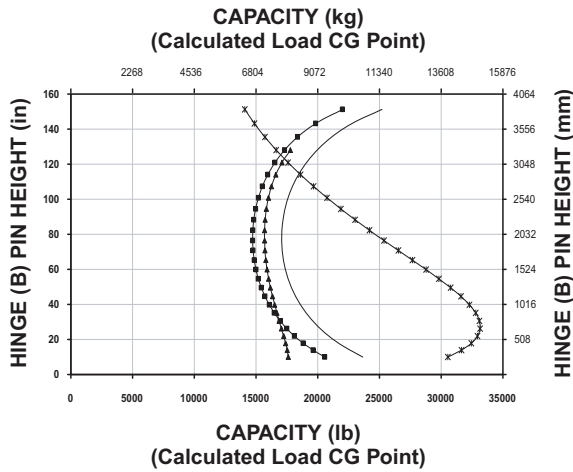
The rated operating load for a machine with fork is: SAE J1197; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn tipping load on rough terrain: 80% of full turn tipping load on firm and level ground, or hydraulic structural limit.

**Forest Products
Wheel Loaders**

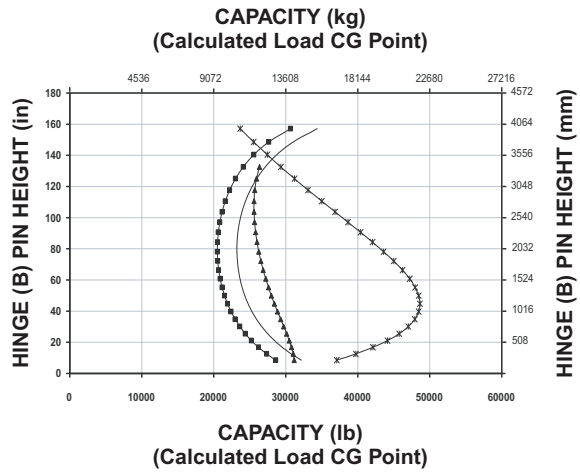
Load Capacity Curves

- 938G Series II
- 962G Series II

**938G Series II with Pin-On
Caterpillar Log and Lumber Fork**



**962G Series II with Pin-On
Caterpillar Logging Fork**



KEY

- Tipping Capacity with Machine Straight Fork Level
- Tipping Capacity with Machine Articulated Fork Level
- ▲ Hydraulic Lift Capacity with Fork Level
- * Hydraulic Tilt Capacity with Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 20.5-25, 16 PR (L-2) tires, and 562 kg (1240 lb) counterweight, with 810 kg (1785 lb) rear tire ballast, log and lumber fork with 1225 mm (4'0") tines, 1660 kg (3660 lb) total weight. Total operating weight, 14 332 kg (31,595 lb).

Curves and operating weight on chart are based on machine equipped with 23.5-25 XHA tires, 1747 kg (3852 lb) counterweight, full fuel tank, operator, 2159 kg (4760 lb) 157-3467 logging fork. Total operating weight, 18 840 kg (41,540 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar dealer for additional information.

NOTE: Static tipping load and operating weight are based on machine configuration with standard tires, full fuel tank, coolant, lubricants, and operator.

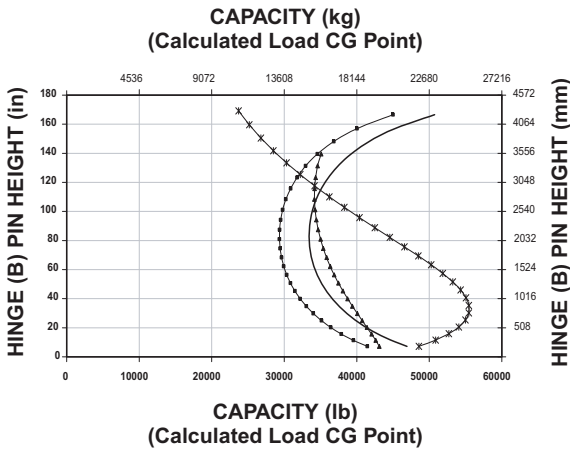
Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings.

The rated operating load for a machine with fork is: SAE J1197; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn tipping load on rough terrain: 80% of full turn tipping load on firm and level ground, or hydraulic structural limit.

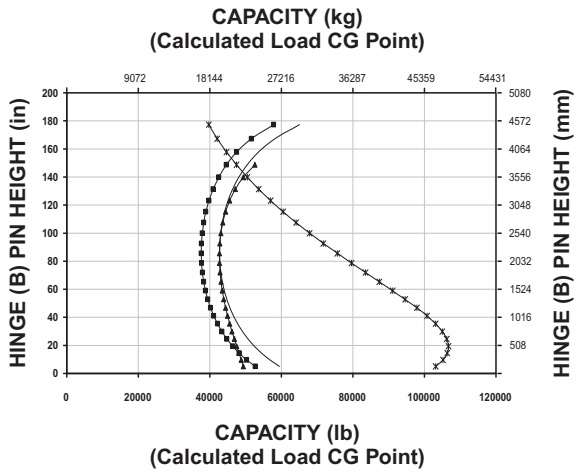
Load Capacity Curves
 ● 966G Series II
 ● 980G Series II

Forest Products
 Wheel Loaders

966G Series II with Pin-On
 Caterpillar Millyard Fork



980G Series II with Pin-On
 Caterpillar Millyard Fork



6

KEY

- Tipping Capacity with Machine Straight Fork Level
- Tipping Capacity with Machine Articulated Fork Level
- ▲ Hydraulic Lift Capacity with Fork Level
- * Hydraulic Tilt Capacity with Fork Level

Curves and operating weight on chart are based on machine equipped with 26.5R25 XHA tires, 1747 kg (3852 lb) counterweight, full fuel tank, operator, logging fork 143-7211. Total operating weight, 24 265 kg (53,500 lb).

Curves based on logging machine with full fuel tank, ROPS cab, 29.5-25, 22 PR (L-3) tires, with 1945 kg (4290 lb) ballast in rear tires, 3810 kg (8400 lb) counterweight, millyard fork weight of 1850 kg (4075 lb). Total operating weight, 32 680 kg (72,050 lb).

NOTE: Static tipping load and operating weight are based on machine configuration with standard tires, full fuel tank, coolant, lubricants, and operator.

Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings.

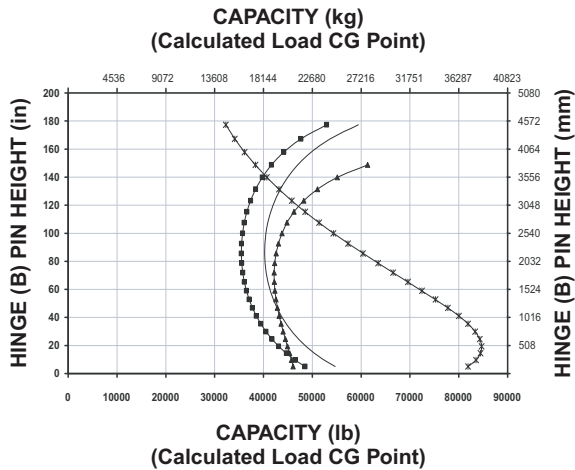
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**Forest Products
Wheel Loaders**

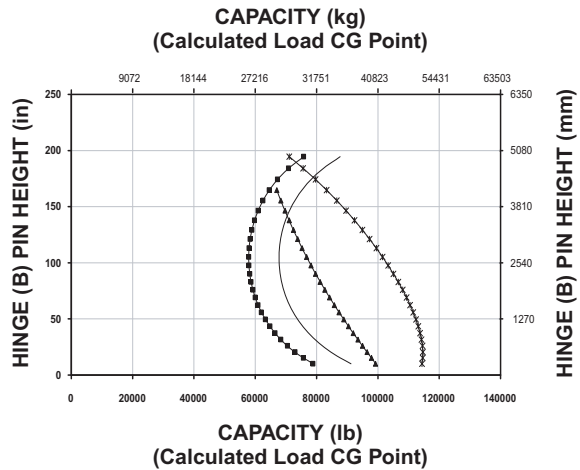
Load Capacity Curves

- 980G Series II
- 988G

**980G Series II with Pin-On
Caterpillar Logging Fork**



**988G with Quick Coupler and
Caterpillar Millyard Fork**



KEY

- Tipping Capacity with Machine Straight Fork Level
- Tipping Capacity with Machine Articulated Fork Level
- ▲ Hydraulic Lift Capacity with Fork Level
- * Hydraulic Tilt Capacity with Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 29.5-25, 22 PR (L-3) tires, with 2060 kg (4535 lb) ballast in rear tires, 3200 kg (7050 lb) counterweight, logging fork with 1830 mm (6'0") tines and top clamp with a combined weight of 3175 kg (7000 lb). Total operating weight, 34 010 kg (74,975 lb).

Curves based on machine with full fuel tank, operator, ROPS cab, 35/65-33 30 PR (L-4) tires. Standard 4455 kg (9825 lb) counterweight, 2690 kg (5930 lb) ballast in rear tires, 5196C2 millyard fork at 5480 kg (12,080 lb). Total operating weight, 52 765 kg (116,325 lb). Forks or other dimensions or weight will affect machine capacity.

NOTE: Static tipping load and operating weight are based on machine configuration with standard tires, full fuel tank, coolant, lubricants, and operator.

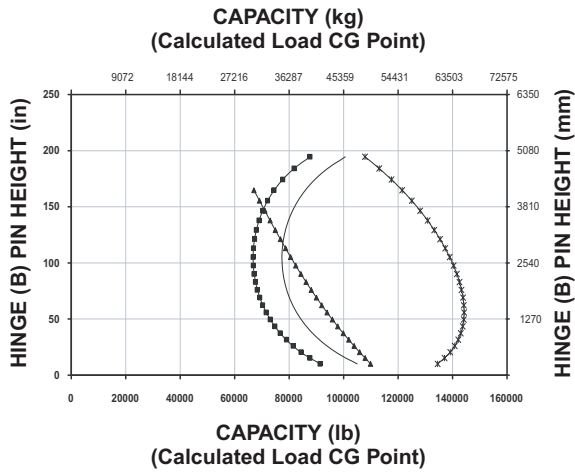
Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings.

The rated operating load for a machine with fork is: SAE J1197; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn tipping load on rough terrain: 80% of full turn tipping load on firm and level ground, or hydraulic structural limit.

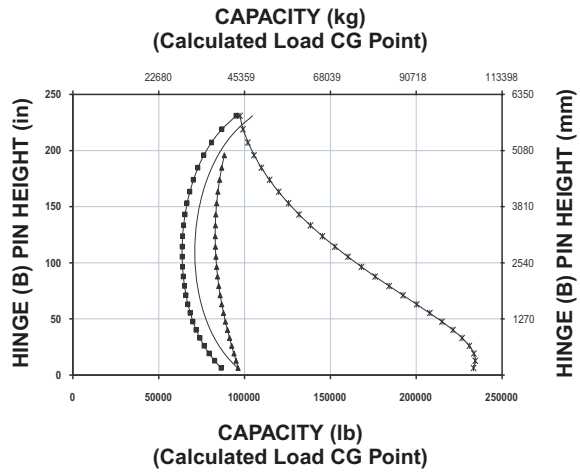
Load Capacity Curves
 ● 988G
 ● 990 Series II

Forest Products
 Wheel Loaders

988G with Pin-On
 Caterpillar Logging Fork



990 Series II with Pin-On
 Caterpillar Logging Fork



KEY

- Tipping Capacity with Machine Straight Fork Level
- Tipping Capacity with Machine Articulated Fork Level
- ▲- Hydraulic Lift Capacity with Fork Level
- *-* Hydraulic Tilt Capacity with Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 35/65-33 30 PR (L-4) tires. Standard log 4455 kg (9825 lb) counterweight, 2690 kg (5930 lb) ballast in rear tires, 8965C DTC log fork at 4490 kg (9900 lb). Total operating weight 51 775 kg (114,160 lb).

Curves based on machine with full fuel tank, operator, ROPS cab, 45/65x39 X-MINE D2 radial tires 4788 kg (10,555 lb) ballast in rear tires, 7845 kg (17,295 lb) logger counterweight, 114-3557.02 log fork with 2438 mm (8'0") tines and top clamp at 5896 kg (13,000 lb), 1292.1 mm (4'3") link. Total operating weight 87 705 kg (193,360 lb).

NOTE: Static tipping load and operating weight are based on machine configuration with standard tires, full fuel tank, coolant, lubricants, and operator.

Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings.

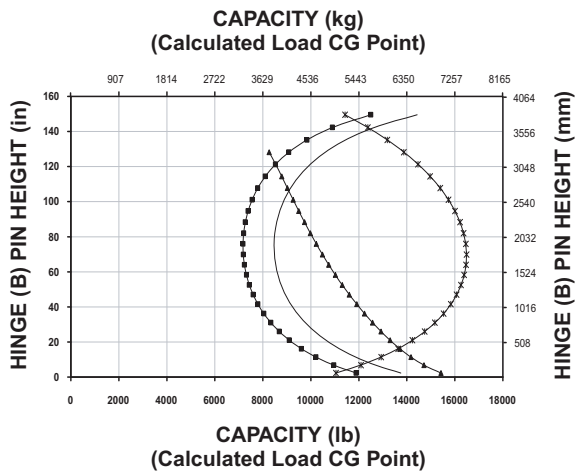
The rated operating load for a machine with fork is: SAE J1197; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn tipping load on rough terrain: 80% of full turn tipping load on firm and level ground, or hydraulic structural limit.

**Forest Products
Wheel Loaders and
Integrated Toolcarriers**

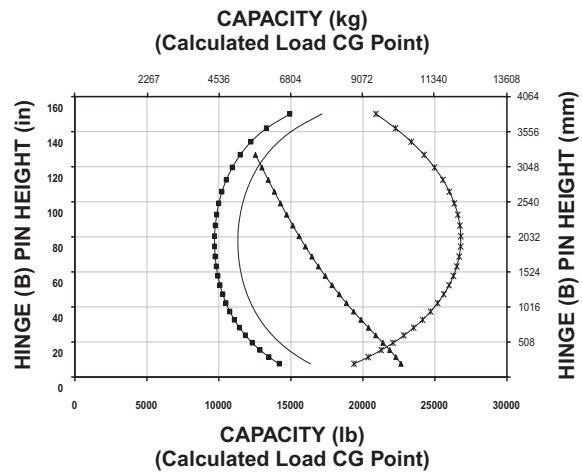
Load Capacity Curves

- IT14G
- 924G

**IT14G with Pin-On
Caterpillar Lumber and Log Fork**



**924G with Quick Coupler and
Caterpillar Lumber and Log Fork**



KEY

- Tipping Capacity with Machine Straight Fork Level
- Tipping Capacity with Machine Articulated Fork Level
- ▲ Hydraulic Lift Capacity with Fork Level
- * Hydraulic Tilt Capacity with Fork Level

Curves and operating weight are based on machine equipped with 17.5R25 tires, full fuel tank, 9816C2 lumber and log fork without top clamp. Fork weight is 803 kg (1770 lb). Total operating weight 8020 kg (17,668 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar Dealer for additional fork data.

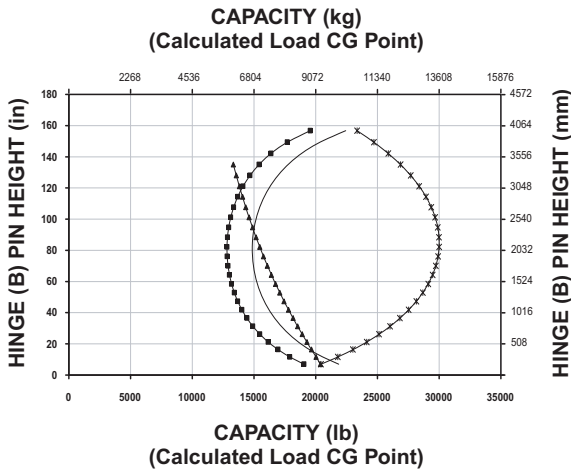
Curves and operating weight are based on machine equipped with 17.5R25 tires, full fuel tank, 180-8355 lumber and log fork without top clamp. Fork weight is 1160 kg (2558 lb). Total operating weight 10 424 kg (22,985 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar Dealer for additional fork data.

NOTE: Static tipping load and operating weight are based on machine configuration with standard tires, full fuel tank, coolant, lubricants, and operator.

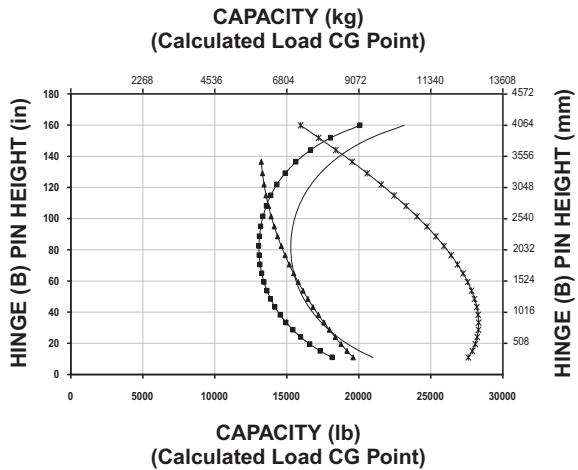
Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings.

The rated operating load for a machine with fork is: SAE J1197; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn tipping load on rough terrain; 80% of full turn tipping load on firm and level ground, or hydraulic structural limit.

IT28G with Pin-On
 Caterpillar Lumber and Log Fork



IT38G Series II with Pin-On
 Caterpillar Millyard Fork



KEY

- Tipping Capacity with Machine Straight Fork Level
- Tipping Capacity with Machine Articulated Fork Level
- ▲ Hydraulic Lift Capacity with Fork Level
- * Hydraulic Tilt Capacity with Fork Level

Curves and operating weight are based on machine equipped with 20.5-25 tires, 250 kg (550 lb) counterweight, full fuel tank, 80 kg (176 lb) operator, lumber and log fork. Fork weight 1325 kg (2919 lb). Total operating weight 11 908 kg (26,233 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar Dealer for additional fork data.

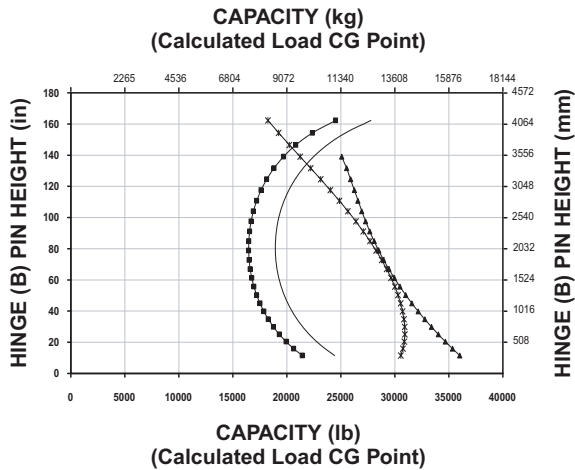
Curves based on machine with full fuel tank, operator, ROPS cab, 20.5-25, 16 PR (L-2) tires, with 810 kg (1785 lb) rear tire ballast, 760 kg (1675 lb) counterweight, millyard fork 103-8617 with 9753C2 coupler 1345 mm (4'5") tines, 1815 kg (4000 lb) combined weight. Total operating weight, 14 097 kg (31,080 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar Dealer for additional information.

NOTE: Static tipping load and operating weight are based on machine configuration with standard tires, full fuel tank, coolant, lubricants, and operator.

Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings.

The rated operating load for a machine with fork is: SAE J1197; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn tipping load on rough terrain: 80% of full turn tipping load on firm and level ground, or hydraulic structural limit.

**IT62G Series II with Pin-On
 Caterpillar Logger Grapple**



KEY

- Tipping Capacity with Machine Straight Fork Level
- Tipping Capacity with Machine Articulated Fork Level
- ▲ Hydraulic Lift Capacity with Fork Level
- * Hydraulic Tilt Capacity with Fork Level

Curves and operating weight are based on machine equipped with 23.5R25 XHA tires, full fuel tank, operator, 119-2302 logger grapple. Total operating weight 19 750 kg (43,530 lb).

NOTE: Static tipping load and operating weight are based on machine configuration with standard tires, full fuel tank, coolant, lubricants, and operator.

Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings.

The rated operating load for a machine with fork is: SAE J1197; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn tipping load on rough terrain: 80% of full turn tipping load on firm and level ground, or hydraulic structural limit.

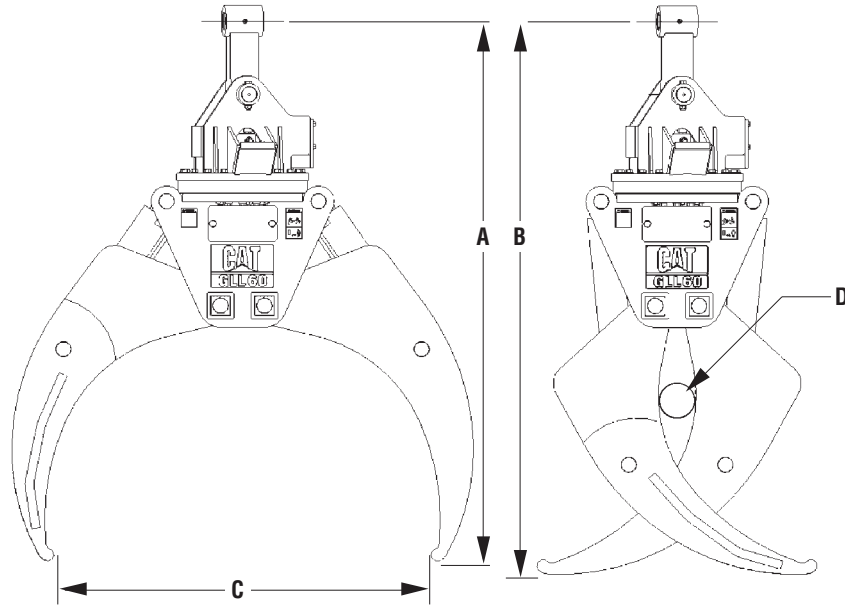
WORK TOOLS

Grapples for Heel Boom Log Loaders
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Features:

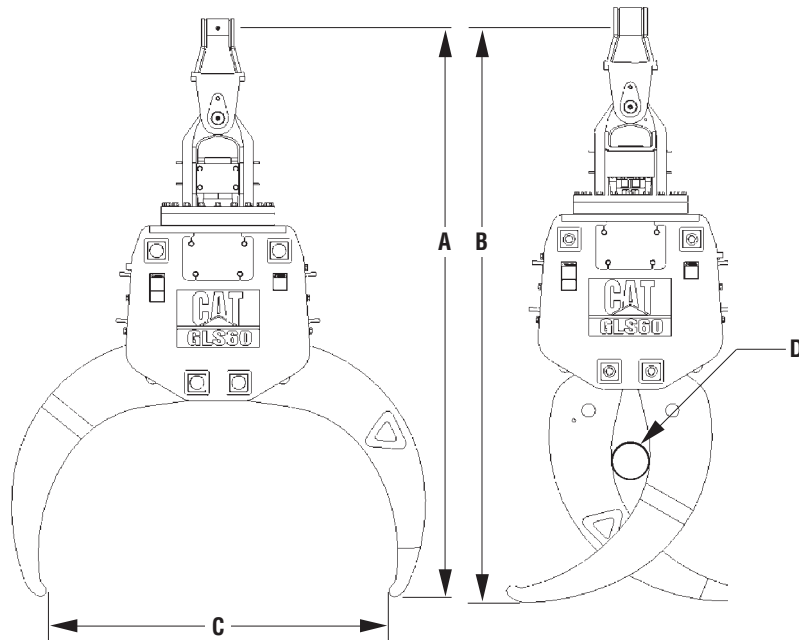
- **Full 360° continuous rotation.**
- **Paddle style tines** are made of abrasion resistant material.
- **Induction hardened** pins and bushings.

Dimensions for Log Loading Grapples



	GLL52 219-2366		GLL55 219-2364		GLL60 219-2365	
Weight	962 kg	2120 lb	965 kg	2127 lb	1027 kg	2264 lb
Width	610 mm	24"	610 mm	24"	610 mm	24"
A Height, Open	1956 mm	77"	2007 mm	79"	2108 mm	83"
B Height, Closed	2007 mm	79"	2057 mm	81"	2159 mm	85"
C Maximum Opening	1321 mm	52"	1397 mm	55"	1524 mm	60"
D Minimum Opening	133 mm	5.25"	127 mm	5"	152 mm	6"
Rotation, Continuous	360°		360°		360°	
Rotation Torque @ 11 031 kPa (1600 psi)	1461 N·m	1077 ft-lb	1461 N·m	1077 ft-lb	1461 N·m	1077 ft-lb

Dimensions for Shovel Loading Grapples



6

	GLS55 243-5481		GLS60 243-5482		GLS63 243-5483		GLS66 243-5484	
Weight	1315 kg	2800 lb	1406 kg	3400 lb	1497 kg	3500 lb	1542 kg	3600 lb
Width	552 mm	21.73"	552 mm	21.73"	552 mm	21.73"	552 mm	21.73"
A Height, Open	2512 mm	98.9"	2612 mm	102.8"	2712 mm	106.7"	2842 mm	111.8"
B Height, Closed	2619 mm	103.1"	2719 mm	107"	2819 mm	111"	2919 mm	115"
C Maximum Opening	1397 mm	55"	1524 mm	60"	1600 mm	63"	1676 mm	66"
D Minimum Opening	127 mm	5"	152 mm	6"	152 mm	6"	178 mm	7"
Rotation, Continuous	360°		360°		360°		360°	
Rotation Torque @ 11 031 kPa (1600 psi)	2494 N·m	1840 ft-lb	2494 N·m	1840 ft-lb	2494 N·m	1840 ft-lb	2494 N·m	1840 ft-lb

**Forest Products
Work Tools**

Logging Forks
● Features
● Specifications

Features:

Loader Fork

- Few work tool lines can match the range and utility of Cat Forks. Forks transform loaders into high performance material handling platforms capable of sorting, stacking and working wherever product, palletized material or lumber is at hand.

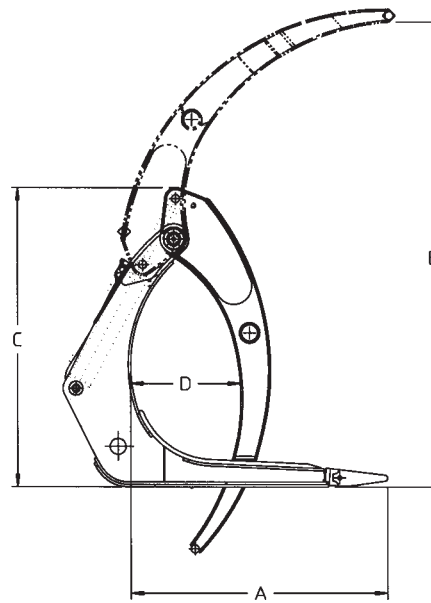
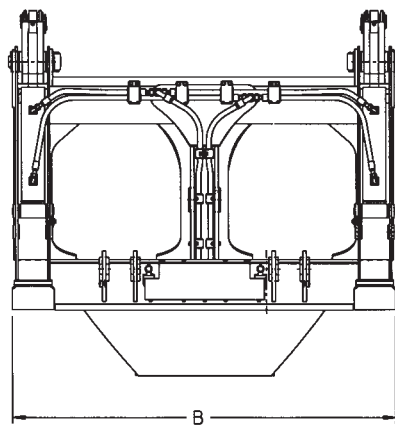
Millyard and Logging Forks

- Caterpillar Millyard and double top clamp forks are performance-matched to 966G Wheel Loaders for unmatched on-the-job performance. The design features of fork and loader complement each other to make the ideal total system solution for log handling applications. Both forks are ideally suited for heavy-duty applications: loading and unloading trucks, sorting, decking, and feeding the mill.

Log and Lumber Forks

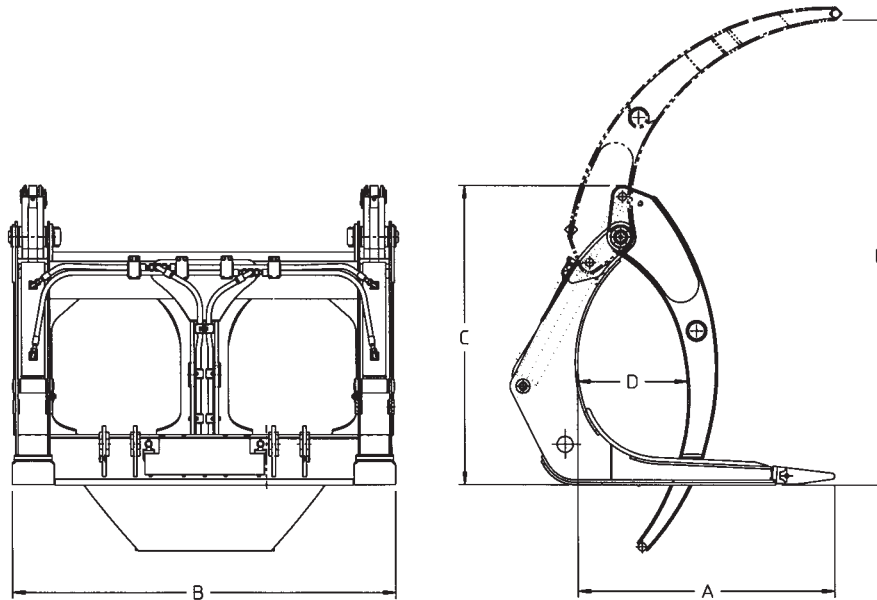
- Handle logs or finished lumber with equal ease. The top clamp holds loose loads securely, and the pallet-style forks make short palletized material. This versatility makes them suitable for a wide range of jobs including loading trucks, decking and sorting lumber or logs.

See www.forestpro.com for additional information on Fork Products.



MODEL	950G/962G	950G/962G	950G	IT28G	IT28G
Model	Double Top Clamp	Millyard Fork	Millyard Fork	Millyard Fork	Millyard Fork
Group Number	157-3467	157-3466	159-3816	141-6275	141-6266
Logging Arrangement	157-3467	157-3466	159-3816	141-6275	141-6266
Linkage Arrangement		(Pin-On)	(Coupler)	(Pin-On)	(Coupler)
A — Tine Length	1626 mm 5'4"	1620 mm 5'3"	1620 mm 5'4"	1219 mm 4'0"	1219 mm 4'0"
B — Overall Width	2261 mm 7'5"	2300 mm 7'7"	2300 mm 7'7"	1779 mm 5'10"	1778 mm 5'10"
C — Back Height	1895 mm 6'2.59"	1894 mm 6'3"	1894 mm 6'3"	1886 mm 6'2"	1886 mm 6'2"
D — Minimum Opening	1535 mm 5'0"	448 mm 17.64"	—	—	—
E — Maximum Clamp Opening	2520 mm 8'4"	2838 mm 9'4"	2838 mm 9'4"	2705 mm 8'10"	2705 mm 8'10"
Weight, Approximate	2200 kg 4860 lb	2310 kg 5100 lb	—	—	—

NOTE: Third valve required. Counterweight recommended.
Logging forks with millyard style clamps are available where logging application requires clamp to close between tines.
Contact your Caterpillar Dealer for more information.

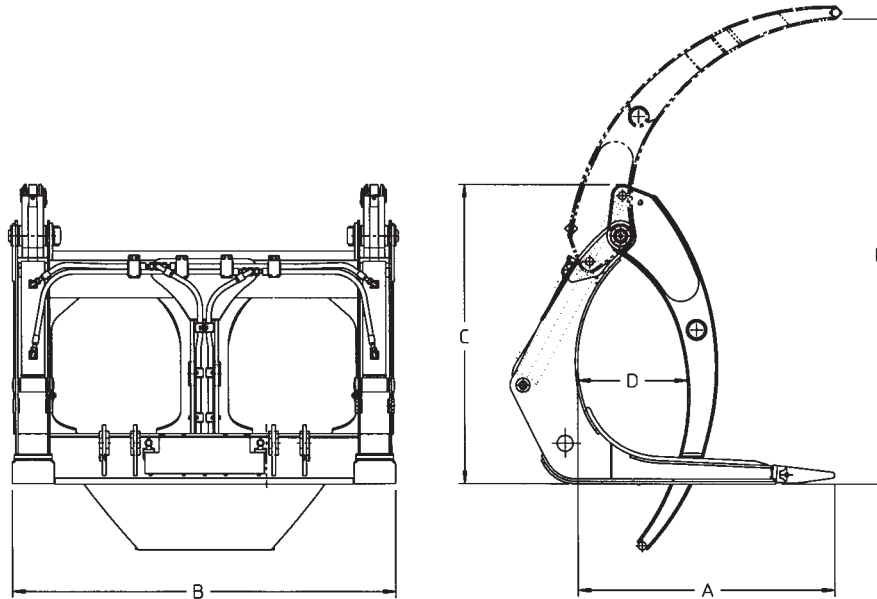


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MODEL	938G		IT38G		IT38G		IT62G		IT62G	
Model	Millyard Fork		Grapple Fork		Millyard Fork		Millyard		Double Top Clamp	
Group Number	119-8243		119-2301		125-2607		163-0193		163-0194	
Logging Arrangement	(Pin-On)		(Pin-On)		(Pin-On)		(Coupler)		(Coupler)	
Linkage Arrangement										
A — Tine Length	1372 mm	4'6"	1177 mm	3'10"	1372 mm	4'6"	1626 mm	5'4"	1620 mm	5'4"
B — Overall Width	2288 mm	7'6"	1810 mm	5'11"	2286 mm	7'6"	2261 mm	7'5"	2261 mm	7'5"
C — Back Height	1842 mm	6'1"	1905 mm	6'3"	1902 mm	6'3"	1872 mm	6'2"	1895 mm	6'3"
D — Minimum Opening	165 mm	6.5"	1057 mm	3'5"	165 mm	6.5"	448 mm	17.64"	1537 mm	5'1"
E — Maximum Clamp Opening	2794 mm	9'2"	2797 mm	9'2"	2845 mm	9'4"	2914 mm	9'7"	2565 mm	8'5"
Weight, Approximate	1633 kg	3600 lb	2085 kg	4600 lb	1555 kg	3430 lb	2179 kg	4800 lb	2221 kg	4892 lb

MODEL	IT62G		962G Series II		962G Series II		962G Series II	
Model	Log and Lumber with Top Clamp		Millyard Fork		Millyard Fork		Millyard Fork	
Group Number	114-3532		166-8578		198-7845		207-8505	
Logging Arrangement	(Coupler)		(Pin-On)		(Pin-On)		(Coupler)	
Linkage Arrangement								
A — Tine Length	1219 mm	4'0"	1626 mm	5'4"	1626 mm	5'4"	1626 mm	5'4"
B — Overall Width	2248 mm	7'5"	2456 mm	8'1"	2421 mm	7'11"	2421 mm	7'11"
C — Back Height	1726 mm	5'8"	—	—	—	—	—	—
D — Minimum Opening	1217 mm	4'0"	641 mm	25"	638 mm	25"	638 mm	25"
E — Maximum Clamp Opening	2798 mm	9'2"	2959 mm	9'8"	2948 mm	9'8"	2951 mm	9'8"
Weight, Approximate	863 kg	1900 lb	2615 kg	5765 lb	2600 kg	5800 lb	2585 kg	5700 lb

NOTE: Third valve required. Counterweight recommended.
Logging forks with millyard style clamps are available where logging application requires clamp to close between tines.
Contact your Caterpillar Dealer for more information.



MODEL	990 Series II		988G		988G		980G	
Model	Double Top Clamp		Double Top Clamp		Millyard Top Clamp		Double Top Clamp	
Group Number	114-3557		210-9208		222-7753		125-4135	
Logging Arrangement	(Pin-On)		(Pin-On)		(Coupler)			
Bucket Arrangement								
A — Tine Length	2438 mm	8'0"	2509 mm	8'3"	2509 mm	8'3"	1829 mm	6'0"
B — Overall Width	2762 mm	9'1"	2774 mm	9'1"	2774 mm	9'1"	2756 mm	9'2"
C — Back Height	3670 mm	12'0"	2783 mm	9'2"	—	—	1556 mm	5'1"
D — Minimum Opening	2498 mm	8'2"	—	—	982 mm	3'3"	1828 mm	5'11.95"
E — Maximum Clamp Opening	4529 mm	14'10"	3997 mm	13'1"	4036 mm	13'3"	2990 mm	9'9"
Weight, Approximate	4930 kg	10,870 lb	6696 kg	14,760 lb	6526 kg	14,390 lb	3175 kg	7000 lb

MODEL	980G		966G		966G		966G	
Model	Millyard Fork		Millyard		Logging		Log and Lumber W/TC	
Group Number	192-7656		166-8578		143-7211		143-7209	
Logging Arrangement								
Bucket Arrangement								
A — Tine Length	1830 mm	6'0"	1618 mm	5'4"	1618 mm	5'4"	1524 mm	5'0"
B — Overall Width	2800 mm	9'2"	2416 mm	7'11"	2416 mm	7'11"	2502 mm	8'3"
C — Back Height	—	—	1905 mm	6'3"	1897 mm	6'3"	1726 mm	5'8"
D — Minimum Opening	694 mm	2'3"	697 mm	2'3"	1603 mm	5'3"	1506 mm	4'11"
E — Maximum Clamp Opening	3073 mm	10'1"	2927 mm	9'7"	2563 mm	8'5"	2794 mm	9'2"
Weight, Approximate	2742 kg	5450 lb	2740 kg	6036 lb	2300 kg	5065 lb	1585 kg	3491 lb

NOTE: Third valve required. Counterweight recommended.
Logging forks with millyard style clamps are available where logging application requires clamp to close between tines.
Contact your Caterpillar Dealer for more information.

Features — Couplers

Horizontal Pin Lock Couplers

- Quick Couplers provide unmatched versatility to any loader. Hydraulic couplers allow the operator to change tools in seconds without leaving the cab. Any work tool backed by coupler hooks can be picked up; allowing the loader to fit whatever application is at hand.

Dedicated Wedge Lock Couplers

- The Caterpillar Dedicated Wedge Lock Coupler system quickly and positively engages a wide variety of work tools. Exchanging work tools is fast and easy, improving overall production and increasing machine versatility. Machine operators can change tools as the job demands in seconds.
- The Dedicated Coupler offers the flexibility of rapid work tool mounting without the loss of breakout force found in other coupler systems. The coupler duplicates the original machine linkage geometry and performance, for maximum breakout force with any bucket. Equipped with an integrated 50 mm (2") lifting-eye, the coupler can handle material without a bucket attached, maximizing available lifting power.

Pin Grabber Couplers

- The Caterpillar Hydraulic Pin Grabber Plus Coupler allows buckets and other standard work tools to be used without any modification. Exchanging work tools in seconds improves overall production and increases machine versatility. The Coupler is pinned on in place of the bucket with standard pins, and can be easily removed should the need arise to mount a tool directly to the stick.
- The Pin Grabber Plus Coupler offers new possibilities. Buckets can be turned around and used in front shovel mode for final trench clean up. An integral lift eye on the coupler body allows lifting without the weight of the bucket, increasing both machine capacity and visibility from the cab.

See www.forestpro.com for additional Coupler information.

Features — Buckets and Thumbs

Cat Bucket Thumbs for Hydraulic Excavators

- Multiply the performance of a Cat Excavator by adding a Cat Bucket Thumb. This highly versatile work tool acts in conjunction with the bucket to allow the excavator to grab irregularly shaped items and load loose materials and debris.

Mini Bucket Thumbs

- Caterpillar Bucket Thumbs are matched to Hydraulic Excavator Buckets for increased on-the-job performance. A thumb works with the bucket to grab, pick and sort debris, brush, trash and rock, opening up new production opportunities for your Cat Mini Excavator. Thumbs are an ideal complement to excavators working in demolition, land clearing, landscaping, material handling and construction jobs.

Clamshell Buckets

- Clamshell Buckets from Cat are the premier tools for cleanup, demolition, ground clearing and forestry work. Built of heavy T1 steel, these buckets are tough and durable for long service life in the most difficult applications. Clamshell buckets feature continuous 360° rotation, powered by a high-torque hydraulic motor.

See www.forestpro.com for additional Bucket and Thumb information.

**Forest Products
Work Tools**

Woodchip Dozers and Scoops

- Features
- Specifications

Features:

Buckets, U-blades, Bowldozers, Chip scoops

- The high-capacity, high-efficiency design of these tools makes them high-production workhorses. They are matched to specific machines and material densities for optimum performance. The extra capacity and load retention capabilities ensure maximum usage and productivity.

See www.forestpro.com for additional information on Woodchip dozers and scoops.

WHEEL TRACTOR MODEL	824G		834G	
Blade:				
Capacity	24 m ³	31.4 yd³	29.8 m ³	39 yd³
Length (cutting width)	4.78 m	15'7"	6.09 m	20'0"
Height	2.24 m	7'4"	2.24 m	7'4"
Wing angle		30°		30°
Weight, Installed (without hydraulics)				
BD (S) Dozer	3630 kg	8000 lb	4627 kg	9470 lb

WHEEL TRACTOR MODEL	814F		824G		834G	
Chip Scoop:						
Lift and Carrying Capacity	15.3 m ³	20 yd³	20.6 m ³	27 yd³	34.4 m ³	39.5 yd³
Dozing Capacity	30.4 m ³	40 yd³	41.3 m ³	54 yd³	49.4 m ³	65 yd³
Width	3.73 m	12'3"	4.03 m	13'3"	4.83 m	15'10"
Height	2.29 m	7'6"	2.79 m	9'2"	2.25 m	7'4"
Depth	2.46 m	8'1"	2.95 m	9'8"	3.02 m	9'11"
Weight	5390 kg	11,880 lb	11 420 kg	19,125 lb	11 105 kg	24,480 lb

NOTE: For specifications of Woodchip Dozers used on track-type tractors, see the Bulldozer section in this handbook.

Features — Rakes

Loader, Clearing and Clamp and Blade Rakes

- Rakes are durable, high-capacity tools that will increase production for land clearing, site cleanup and site preparation. Available in quick coupler and pin-on models, rakes pile brush, stack and carry debris and load trucks. Features include thick, fabricated teeth, a heavy-duty push bar and serrated tree pusher. A high brush rack retains the load, prevents back spillage and increases carrying capacity.

See www.forestpro.com and the Bulldozer section of the Performance Handbook for additional Rake information.

USE OF LOG VOLUME TABLES

The tabulated volumes on these pages were calculated with no taper in log diameter from base to top. Therefore each value listed in the table represents the volume of a true cylinder. In practice this may occur only in short sections of large diameter trees. To obtain the volume of solid wood logs, excluding bark:

1. Establish the base diameter of the log inside the bark and above the butt flare (extreme end taper).
2. Repeat the procedure for the top (small end) of log.
3. Enter log volume table at each of the two established diameters. Move horizontally to the vertical column closest to the length of the log being measured.
4. Establish the volume figures for each end of the log, add the two together and divide by two to obtain average log volume.

METRIC LOG VOLUMES (in Cubic Meters)

Log Diameter (cm)	LOG LENGTH (METERS)														
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
10	0.016	0.031	0.047	0.063	0.078	0.094	0.12	0.13	0.14	0.16	0.17	0.19	0.20	0.22	0.24
15	0.035	0.071	0.11	0.14	0.18	0.21	0.25	0.28	0.32	0.35	0.39	0.42	0.46	0.49	0.53
20	0.06	0.13	0.19	0.25	0.31	0.38	0.44	0.50	0.57	0.63	0.69	0.75	0.82	0.86	0.94
25	0.10	0.20	0.30	0.39	0.49	0.59	0.69	0.79	0.88	0.98	1.08	1.18	1.28	1.37	1.47
30	0.14	0.28	0.42	0.57	0.71	0.85	0.99	1.13	1.27	1.42	1.56	1.70	1.84	1.98	2.12
35	0.19	0.38	0.58	0.7	0.96	1.15	1.35	1.54	1.73	1.93	2.12	2.31	2.50	2.69	2.89
40	0.25	0.50	0.75	1.01	1.26	1.51	1.77	2.02	2.27	2.52	2.78	3.02	3.27	3.51	3.77
45	0.32	0.64	0.95	1.27	1.59	1.91	2.22	2.54	2.86	3.18	3.50	3.82	4.13	4.45	4.77
50	0.39	0.79	1.18	1.57	1.96	2.36	2.76	3.16	3.54	3.94	4.34	4.71	5.10	5.49	5.89
55	0.48	0.95	1.43	1.90	2.38	2.85	3.33	3.80	4.28	4.75	5.23	5.70	6.18	6.65	7.12
60	0.57	1.13	1.70	2.26	2.83	3.39	3.96	4.52	5.09	5.65	6.22	6.78	7.35	7.92	8.48
65	0.66	1.33	1.99	2.65	3.32	3.98	4.65	5.31	5.98	6.64	7.30	7.96	8.62	9.29	9.95
70	0.77	1.54	2.31	3.08	3.85	4.62	5.40	6.15	6.93	7.70	8.48	9.23	10.0	10.77	11.54
75	0.88	1.77	2.65	3.53	4.42	5.30	6.19	7.06	7.95	8.84	9.72	10.60	11.49	12.37	13.25
80	1.01	2.01	3.02	4.02	5.03	6.03	7.05	8.06	9.07	10.08	11.09	12.10	13.10	14.10	15.10
85	1.13	2.27	3.40	4.54	5.67	6.81	7.94	9.08	10.20	11.32	12.47	13.62	14.75	15.89	17.02
90	1.27	2.54	3.82	5.09	6.36	7.63	8.90	10.17	11.43	12.71	13.99	15.27	16.54	17.81	19.10
95	1.42	2.84	4.75	5.67	7.09	8.51	9.92	11.33	12.76	14.18	15.60	17.01	18.43	19.85	21.26
100	1.57	3.14	4.71	6.28	7.85	9.42	11.0	12.58	14.16	15.72	17.30	18.85	20.42	22.0	23.56
125	2.45	4.90	7.36	9.82	12.27	14.73	17.18	19.6	22.1	24.5	27.0	29.5	32.0	34.4	36.8
150	3.53	7.1	10.6	14.1	17.7	21.2	24.7	28.3	31.8	35.3	38.8	42.4	45.9	49.5	53.0
175	4.8	9.6	14.5	19.2	24.0	28.9	33.7	38.5	43.3	48.1	53.0	57.7	62.6	67.3	72.2
200	6.3	12.6	18.8	25.1	31.4	37.7	44.0	50.3	56.5	62.8	69.1	75.4	81.7	88.0	94.2

ENGLISH MEASURE LOG VOLUMES (in Cubic Feet)

Log Diameter (inches)	LOG LENGTH (FEET)																	
	8	12	16	20	24	28	32	36	40	44	48	52	56	60	70	80	90	100
4	0.7	1	1.4	1.7	2.1	2.4	2.8	3.1	3.5	3.8	4.2	4.5	4.9	5.2	6.1	7	7.8	8.7
6	1.6	2.4	3.1	3.9	4.7	5.5	6.3	7.1	7.8	8.6	9.4	10	11	12	13	16	18	20
8	2.8	4.2	5.6	7	8.4	9.8	11	13	14	15	17	18	19	21	24	28	31	35
10	4.4	6.5	8.7	11	13	15	17	20	22	24	26	28	31	33	38	44	49	55
12	6.3	9.4	13	16	19	22	25	28	31	35	38	41	44	47	55	63	71	79
14	8.5	13	17	21	26	30	34	39	43	47	51	56	60	64	74	86	96	101
16	11	17	22	28	34	39	45	50	56	61	67	73	78	84	98	112	126	140
18	14	21	28	35	42	49	57	64	71	78	85	92	99	106	124	141	159	177
20	17	26	35	44	52	61	70	79	87	96	105	113	122	131	153	175	196	218
22	21	32	42	53	63	74	85	95	106	116	127	137	148	158	185	211	238	264
24	25	38	50	63	75	88	101	113	126	138	151	163	176	189	220	251	283	314
26	29	44	59	74	89	103	118	133	147	162	177	192	207	221	258	295	332	369
28	34	51	68	86	103	120	137	154	171	188	205	222	240	256	299	342	385	428
30	39	59	79	98	118	137	157	177	196	216	236	255	275	295	344	393	442	491
32	45	67	89	118	134	156	179	201	223	246	268	290	313	335	391	447	503	559
34	50	76	101	126	151	177	202	227	252	277	303	328	353	378	441	504	567	631
36	57	85	113	141	170	198	226	255	282	311	339	368	396	424	495	566	637	707
38	63	95	126	158	189	220	252	284	315	347	378	410	441	473	551	630	709	788
40	70	105	140	175	210	244	279	314	349	384	419	454	489	524	611	698	785	873
50	109	164	218	273	327	382	436	491	545	600	645	709	764	818	955	1091	1227	1364
60	157	234	314	393	471	550	628	707	785	864	943	1021	1100	1178	1374	1571	1767	1964
70	214	321	428	535	642	748	855	962	1069	1176	1283	1389	1497	1604	1871	2138	2405	2673
80	279	420	559	698	838	977	1117	1257	1396	1536	1676	1815	1955	2095	2441	2293	3142	3491

WEIGHTS OF COMMERCIALY IMPORTANT WOODS

Species	kg/m ³ (Green)	lb/ft ³ (Green)
A. Temperate Zone*		
Alder, Red	737	46
Ash, White	769	48
Aspen	689	43
Baldcypress	817	51
Basswood	673	42
Beech	865	54
Birch, Paper	801	50
Yellow	929	58
Cedar, Alaska	577	36
Incense	721	45
Northern, White	449	28
Port-Orford	897	56
Western Red	433	27
Cherry, Black	721	45
Cottonwood, Eastern	785	49
Douglas Fir, (Coast)	881	55
(Inland Empire)	577	36
Elm, American	865	54
Fir, Alpine	449	28
Balsam	721	45
Nobel	481	30
Red	769	48
Silver	577	36
White	753	47
Gum, Black	721	45
Blue	1121	70
Red	801	50
Tupelo	897	56
Hemlock, Eastern	801	50
Western	961	60
Hickory, Pecan	993	62
True	1009	62
Larch, Western	769	48
Locust, Black	929	58
Magnolia, Cucumber	785	49

Species	kg/m ³ (Green)	lb/ft ³ (Green)
Maple, Big Leaf	753	47
Black	865	54
Red	801	50
Silver	721	45
Sugar	897	56
Oak, Black	1009	63
Chestnut	977	61
Red	1009	63
Red, Swamp	1073	67
Swamp Chestnut	1041	65
White	993	62
White, Swamp	1105	69
Pine, Jack	801	50
Loblolly	993	62
Lodgepole	625	39
Long Leaf	993	62
Norway (Red)	673	42
Short Leaf	993	62
Slash	993	62
Sugar	817	51
Western Yellow, (Ponderosa)	721	45
White (Western)	561	35
White (Eastern)	577	36
Poplar, Yellow	609	38
Redwood	801	50
Spruce, Black	513	32
Engleman	625	39
Red	545	34
Sitka	529	33
White	545	34
Sweetgum	801	50
Sycamore	833	52
Tamarack	753	47
Walnut, Black	929	58
Willow, Black	801	50

*NOTE: Weights taken from U.S. Dept. of Agriculture handbook No. 72, Wood Handbook.

Weights of Commercially Important Woods
 ● Southeast Asia
 ● West Africa

Forest Products
 Tables

Species	kg/m ³ (Green)	lb/ft ³ (Green)
B. Southeast Asia		
Apitong	961	60
Bintangor	865	54
Chumprak	929	58
Ebony	1746	109
Geronggang	721	45
Jelutong	641	40
Kapur (Borneo Camphorwood)	1073	67
Keruing	1121	70
Krabak	817	51
Kruen	1121	70
Lumbayau	929	58
Mahogany, Philippine		
(Red Luan)	753	47
(White Luan)	769	48
(Yellow Luan)	769	48
Mahoni	913	57
Alayan Kauri (Damar Minyak)	817	51
Melantai	705	44
Melapi	849	53
Mangkulang	929	58
Meranti Bakau	849	53
Meranti, Dark Red	753	47
White	769	48
Yellow	769	48
Mersawa	817	51
Nyato	897	56
Palosapis	817	51
Pulai	545	34
Ramin	1073	67
Rosewood (Sonokelina)	1314	82
Seraya, Dark Red	753	47
Yellow	769	48
White	769	48
Teak	1073	67

Species	kg/m ³ (Green)	lb/ft ³ (Green)
C. West Africa		
Abura	850	53.06
Ako	800	49.94
Azobe	1300	81.16
Aniegre (Mukali)	950	59.31
Bete	900	56.19
Bosse	900	56.19
Bubinga	1000	62.43
Dibetau	750	46.82
Douka (Makore)	950	59.31
Doussie	1200	74.91
Framire	850	53.06
Fromager	550	34.34
Ilomba	750	46.82
Iroko	1200	74.91
Kokrodua (Afromosia)	1000	62.43
Kosipo	900	56.19
Limba	750	46.82
Mahogany	750	46.82
Moabi	1100	68.67
Niangon	900	56.19
Okoume	650	40.57
Ozigo	900	56.19
Padouk	1000	62.43
Samba (Obeche)	650	40.58
Sapelli	900	56.19
Sipo	800	49.94
Tchitola	850	53.06
Tiaba	900	56.19
Tola	850	53.06

Forest Products Tables

Weights of Commercially Important Woods

- Australia
- New Zealand
- Papua New Guinea

Species	kg/m ³ (Green)	lb/ft ³ (Green)
D. Australia		
Ash Alpine	1041	65
Mountain	1009	63
Silvertop	1330	83
Black Butt	1121	70
Box Long Leaf	993	62
Yellow	1105	69
Black	1105	69
Brownbarrel	1073	67
Candle Bark	657	41
Gum Grey	1217	76
Manna	1121	70
Mountain	1169	73
Mountain Grey	1057	66
River Red	1137	71
Forest Red	1201	75
Southern Blue	1217	76
Spotted	1201	75
Sydney Blue	1153	72
Iron Bark Gray	1330	83
Narrowleaved	1330	83
Red	1330	83
Jarrah	1169	73
Karri	1169	73
Mahogany Red	1153	72
White	1282	80
Myrtle	1169	73
Peppermint	1120	70
Pine Radiata	865	54
Monerey	865	54
Celerytop	1057	66
Stringy Bark Brown	1233	77
Messmate	1169	73
Yellow	1217	76
White	1121	70
Tallowwood	1201	75
Wandoo	1282	80

Species	kg/m ³ (Green)	lb/ft ³ (Green)
E. New Zealand		
Exotic Softwoods		
Radiata Pine	1000	62
Douglas Fir	734	45
Corsican Pine	985	61
Redwood	1016	63
Larch	960	60
Indigenous Softwoods		
Mati	1120	70
Rimu	1130	70
Exotic Hardwoods		
Eucaliptus Botryoides	893	56
Eucaliptus Saligna	1200	75
Indigenous Hardwoods		
Beech — Silver	920	57
Beech — Red	1200	75
Tawa	1022	64
F. Papua New Guinea		
Pine, Hoop	520	32
Kauri	480	30
Klinki	510	31
Kwila	800	50
Erima	390	24
Taun	680	42
Walnut, PNG	560	35
Cedar, Pencil	720	50
Mersawa	650	40
Celtis, Hard	780	48
Rosewood, PNG	600	37
Beech, PNG	830	51
Oak, PNG	650	40
Ebony, PNG Black	1115	69
PNG White	720	50
Hardwood, Yellow	780	48
Hopea, Heavy	960	60
Light	710	44
Podocarp, Black	410	25
Terminalia, Brown	450	28

ESTIMATING NUMBER OF TREES PER HECTARE

Spacing (Meters)	Spacing (Meters)							
	1	2	3	4	5	6	7	8
1	10 000	5000	3333	2500	2000	1667	1428	1250
2	5000	2500	1667	1250	1000	834	714	625
3	3333	1667	1111	834	667	556	477	417
4	2500	1250	834	625	500	417	357	313
5	2000	1000	667	500	400	330	286	250
6	1667	834	556	417	333	278	238	208
7	1428	714	477	357	286	238	204	179
8	1250	625	417	313	250	208	179	156

ESTIMATING NUMBER OF TREES PER ACRE

Spacing (Feet)	Spacing (Feet)							
	5	6	7	8	9	10	11	12
5	1742	1452	1244	1089	968	871	792	726
6	1452	1210	1037	907	806	726	660	605
7	1244	1037	888	777	691	622	565	518
8	1089	907	777	680	605	544	495	453
9	968	806	691	605	537	484	440	403
10	871	726	622	544	484	435	396	363
11	792	660	565	495	440	396	360	330
12	726	605	518	453	403	363	330	302
13	671	558	478	418	372	335	304	279
14	622	518	444	390	346	311	283	259
15	580	484	415	363	323	290	264	242

COMPARISON OF LOG RULES • Board Foot Values
for 16-Foot Logs

Diameter at Small End, Inside Bark, Inches	International 1/4 Inch	Scribner	Scribner Decimal	Spaulding	Doyle
4	5	10	10	—	—
6	20	18	20	—	4
8	40	32	30	—	16
10	65	54	60	50	36
12	95	79	80	77	64
14	135	114	110	114	100
16	180	159	160	161	144
18	230	213	210	216	196
20	290	280	280	276	256
22	355	334	330	341	324
24	425	404	400	412	400
26	500	500	500	488	484
28	585	582	580	569	576
30	675	657	660	656	676
32	770	736	740	748	784
34	875	800	800	845	900
36	980	923	920	950	1024
38	1095	1068	1070	1064	1156
40	1220	1204	1200	1185	1296

UNIT OF MEASUREMENT DEFINITIONS

1 board foot	= 1/12 ft ³ of solid wood (1' × 1' × 1")
1000 board feet	= 83.33 ft ³ of solid wood
1 c. unit of wood	= 100 solid ft ³ = 1200 board feet = 2.83 ³
1 cord of wood	= 128 ft ³ of stacked logs = 3.62 m ³
1 unit of wood	= 200 ft ³ of loose chips = 5.66 m ³
1 cord of wood	= 0.85 units
1 Hoppus Ton	= 50 ft ³ (assumed) = 63.65 ft ³ (actual) = 600 board feet = 763.8 BF Brereton = 1.8 m ³ actual = 1.4 m ³ assumed
1 cubic meter	= 35.32 ft ³ = 424 board feet = 333 board feet Hoppus tons = 0.555 Hoppus Tons
1 MBF Brereton	= 2.36 m ³ = 785.4 board feet Hoppus
1 MBF Hoppus MBF	= 1273 board feet-Brereton = Thousand board feet
1 Super Foot	= 1 board foot
100 Super Feet	= 1000 board foot = 0.236 m ³
600 Super Feet	= 50 ft ³
1 lb/ft ³	= 16.0185 kg/m ³

CUBIC FEET OF SOLID WOOD PER CORD

Length of Sticks-Ft.	Diameter at Small End		
	1"-2.5"	2.5"-5.5"	Over 5.5"
2	65	84	91
4	64	82	89
8	59	77	84
12	54	71	78

RULE OF THUMB CONVERSIONS

1 c. unit of wood = 1.117 cords = 1.25 units of chips = 250 ft ³ of chips = 7.08 m ³
1 cord of wood = 85 ft ³ of solid wood = 1.06 units of chips = 2.41 m ³
1 unit of chips = 80 ft ³ of solid wood = 2.27 m ³
1 cord of wood = 500 board feet = 1.18 m ³
2000 pounds of chips = 500 pounds of pulp
1 cord = 212 ft ³ of chips = 6 m ³

PIPELAYERS

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Features:

- **Planetary power shift** transmission on all models.
- **Kick-out helps prevent boom bending** as boom approaches near-vertical.
- **Sealed and Lubricated Track.**
- **Simplified Controls**, two levers control all functions including raise, lower, quick-drop and power down, high and low range and speed adjustments.
- **Modular design of major components and accessory drive system** for simplified repair.
- **Separate, self-energizing brakes** for boom and hook winches.
- **Positive track pin retention** (583T and 589).
- **Hydraulic Drawworks** with two independently driven hydraulic motors for boom and hook winches.
- **Suspended Undercarriage** for improved ride and greater operator comfort (589).

Pipelayers | Specifications

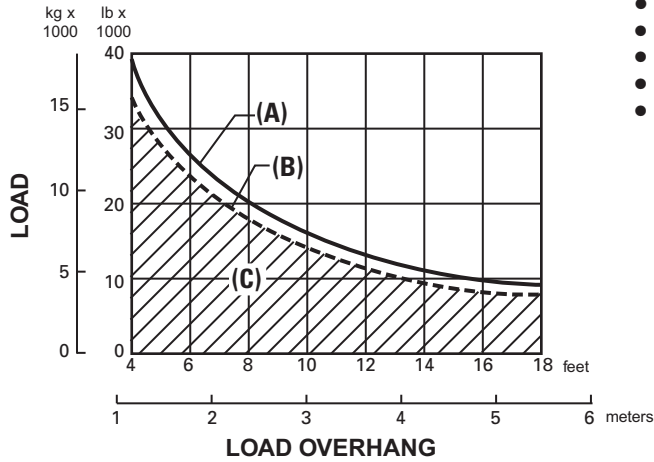


MODEL	561N		572R Series II		583T		589		
Flywheel Power	92 kW	123 hp	179 kW	240 hp	231 kW	310 hp	313 kW	420 hp	
Operating Weight (with full fuel tank and operator)	16 851 kg	37,150 lb	31 845 kg	70,206 lb	45 359 kg	100,000 lb	65 366 kg	151,212 lb	
Engine Model	3126B		3176C		C15 ACERT		3408 TA		
Rated Engine RPM	2100		2100		1850		1900		
No. of Cylinders	6		6		6		8		
Displacement	7.2 L	439 in³	10.3 L	629 in³	15.2 L	928 in³	18 L	1099 in³	
Lift Capacity at 1.22 m (4'0") Overhang	18 145 kg	40,000 lb	40 800 kg	90,000 lb	63 504 kg	140,000 lb	104 330 kg	230,000 lb	
Standard Boom Length	5.49 m	18'0"	6.1 m	20'0"	7.3 m	24'0"	8.8 m	28'10"	
Width of Standard Shoe	560 mm	22"	660 mm	26"	710 mm	28"	914 mm	36"	
Length of Track on Ground	2.604 m	8'7"	3.176 m	10'5"	3.587 m	11'9"	4.29 m	14'1"	
Ground Contact Area (with standard shoes)	2.93 m ²	4542 in²	4.19 m ²	6500 in²	5.10 m ²	7896 in²	6.96 m ²	12,148 in²	
Track Gauge	2 m	6'7"	2.235 m	7'4"	2.34 m	7'8"	2.9 m	9'6"	
Fuel Tank Refill Capacity	235 L	62 U.S. gal	479 L	127 U.S. gal	409 L	108 U.S. gal	776 L	205 U.S. gal	
GENERAL DIMENSIONS:									
Height to Top of Stack	3.04 m	10'0"	3.55 m	10'5"	3.43 m	11'3"	3.92 m	12'10"	
Height to Top of Counterweight	1.88 m	6'2"	2.9 m	9'6"	3.41 m	11'2"	2.92 m	9'6"	
Width, Weights Retracted	2.98 m	9'9"	3.66 m	12'0"	3.73 m	12'3"	4.63 m	15'2"	
Minimum Shipping Width (both side frames removed)	2.56 m	8'5"	2.895 m	9'6"	3.46 m	11'4"	3.81 m	12'6"	
Shipping Width (left frame removed)	2.89 m	9'6"	3.66 m	12'0"	3.64 m*	11'11"	—		
Overall Length	3.71 m	12'2"	4.74 m	15'6"	5.23 m	17'2"	5.94 m	19'6"	
Ground Clearance	422 mm	16.6"	416 mm	16.4"	537 mm	21.1"	625 mm	2'0.6"	
DRUMS and CABLES:									
Drum Capacity	Load	73 m	239'	80 m	263'	181 m	594'	152 m	500'
	Boom	49.4 m	162'	52 m	170'	181 m	594'	93 m	305'
Cable Diameter	Load	16 mm	0.62"	19 mm	0.75"	19 mm	0.75"	22 mm	0.88"
	Boom	16 mm	0.62"	19 mm	0.75"	19 mm	0.75"	22 mm	0.88"
Drum Diameter	Load	216 mm	8.5"	254 mm	10"	317 mm	12.5"	343 mm	13.5"
	Boom	245 mm	9.63"	224 mm	8.5"	317 mm	12.5"	343 mm	13.5"
Adjustable Counterweights		14 @		2 @		2 @		7 @	
		177 kg ea	390 lb ea	370 kg ea	815 lb ea	300 kg ea	662 lb ea	1315 kg ea	2900 lb ea
				7 @		5 @			
				479 kg ea	1055 lb ea	430 kg ea	948 lb ea		
						6 @			
						535 kg ea	1180 lb ea		
Total Weight Extendable		3270 kg	7210 lb	5073 kg	11,184 lb	9036 kg	19,920 lb	11 854 kg	26,130 lb
		LGP Option							
Operating Weight 610 mm (24")		17 029 kg	37,550 lb						
Shipping Width:									
Boom Removed		3.18 m	10'5"						
Counterweight Removed		3.09 m	10'2"						
Frame, Brackets, Winches Removed		2.76 m	9'1"						
Track Shoe Width		610 mm	24"						
		760 mm	30"						
Ground Contact Area:									
610 mm (24") Shoes		3.18 m ²	4929 in²						
760 mm (30") Shoes		3.96 m ²	6138 in²						

*Boom and counterweight only removed.

561N

LIFTING CAPACITY* 5.49 m (18'0") BOOM



***Specified Equipment:**

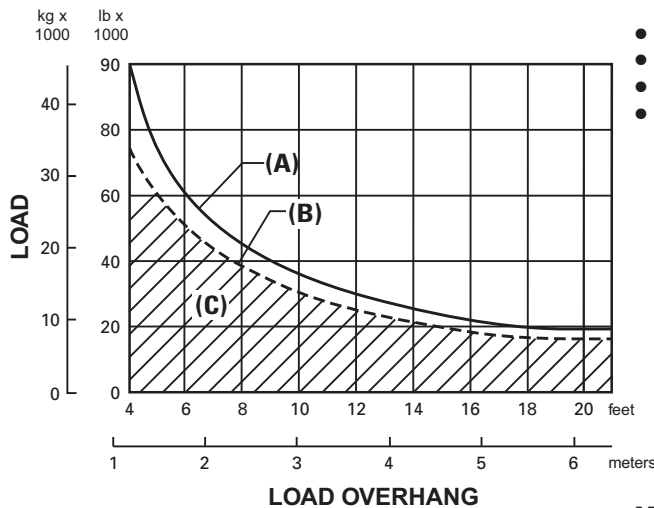
- 16 mm (5/8") diameter wire rope.
- 18 688 kph (41,200 lb) minimum breaking strength.
- 3 part load line.
- 3 part boom line.
- 3270 kg (7208 lb) counterweight extended.
- Total operating weight 16 850 kg (37,150 lb).

KEY

- A — Max lift capacity per ISO 8813
- B — Rated load per ANSI/ASME B30.14
- C — Working range per ANSI/ASME B30.14

572R Series II

LIFTING CAPACITY* 6.1 m or 7.3 m (20'0" or 24'0") BOOMS



***Specified Equipment:**

- 19 mm (3/4") dia. wire rope 261.66 kN (58,800 lb) minimum breaking strength.
- 4 part load line.
- 4 part boom line.
- 5073 kg (11,184 lb) of counterweights extended.
- Standard 6.1 m (20'0") Boom.

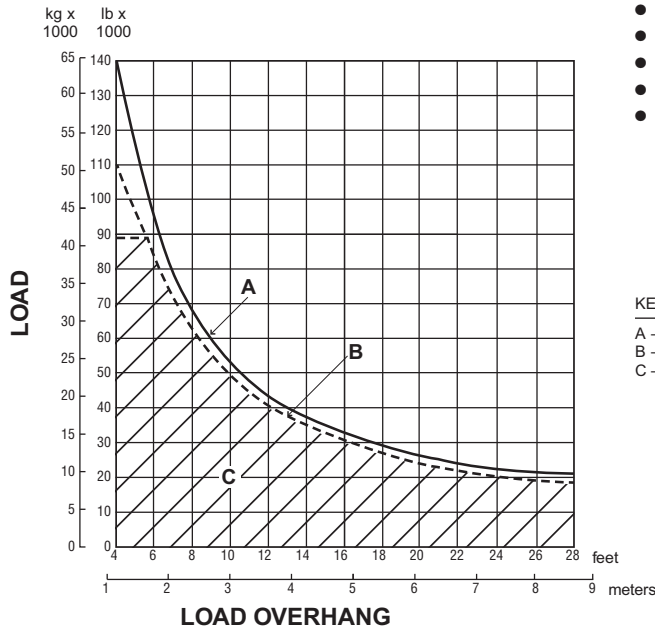
KEY

- A — Max lift capacity per ISO 8813
- B — Rated load per ANSI/ASME B30.14
- C — Working range per ANSI/ASME B30.14

NOTE: ISO stands for the International Standards Organization. ANSI stands for American National Standard Institute.

583T

LIFTING CAPACITY*
6.1 m, 7.3 m, 8.5 m (20'0", 24'0", 28'0") BOOMS



***Specified Equipment:**

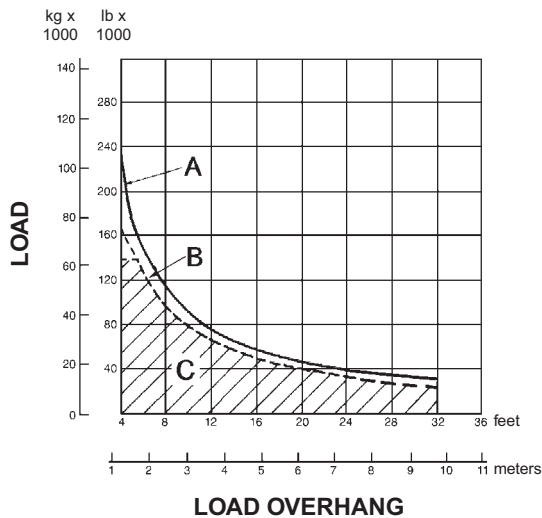
- 19 mm (3/4") diameter wire rope.
- 26 672 kg (58,800 lb) minimum breaking strength.
- 6 part load line.
- 5 part boom line.
- 9036 kg (19,920 lb) counterweight extended.
- boom 7.3 m (24 ft) standard.
- total operating weight 45 359 kg (100,000 lb).

KEY

- A — Max lift capacity per ISO 8813
- B — Rated load per ANSI/ASME B30.14
- C — Working range per ANSI/ASME B30.14

589

LIFTING CAPACITY*
8.53 m and 9.75 m (28'0" and 32'0") BOOMS



***Specified Equipment:**

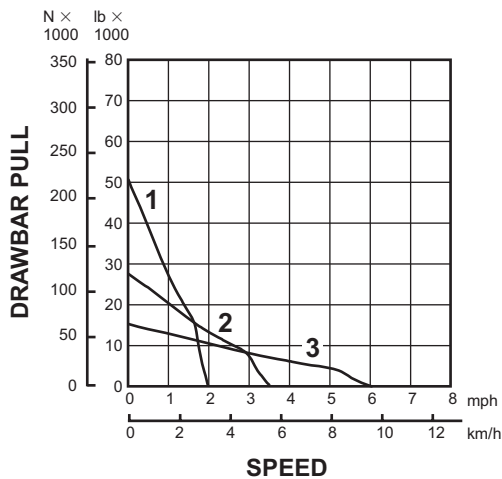
- Load: 22 mm (7/8") dia. wire rope 31 389 kg (69,200 lb) minimum breaking strength.
- Boom: 22 mm (7/8") dia. wire rope 31 389 kg (69,200 lb) minimum breaking strength.
- 8 part load line.
- 8 part boom line.
- 14 633 kg (32,260 lb) of counterweights extended.
- 8.53 m (28'0") Boom.

KEY

- A — Max lift capacity per ISO 8813
- B — Rated load per ANSI/ASME B30.14
- C — Working range per ANSI/ASME B30.14

NOTE: ISO stands for the International Standards Organization. ANSI stands for American National Standard Institute.

561N

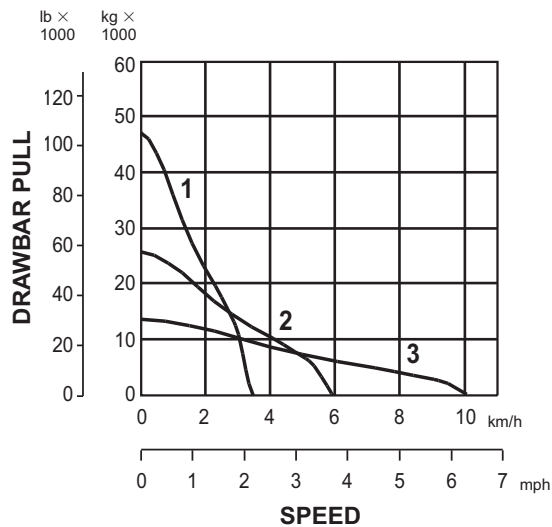


KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear

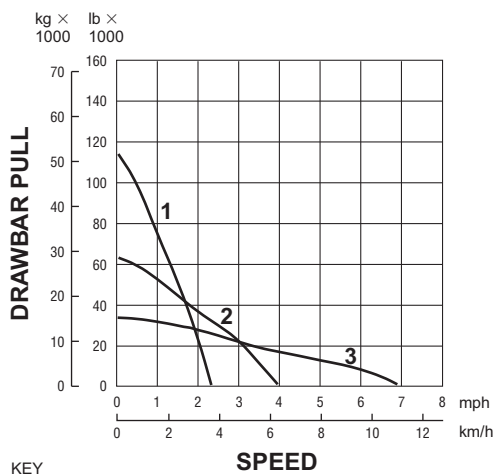
NOTE: Usable pull will depend upon weight and traction of equipped tractor.

572R Series II



7

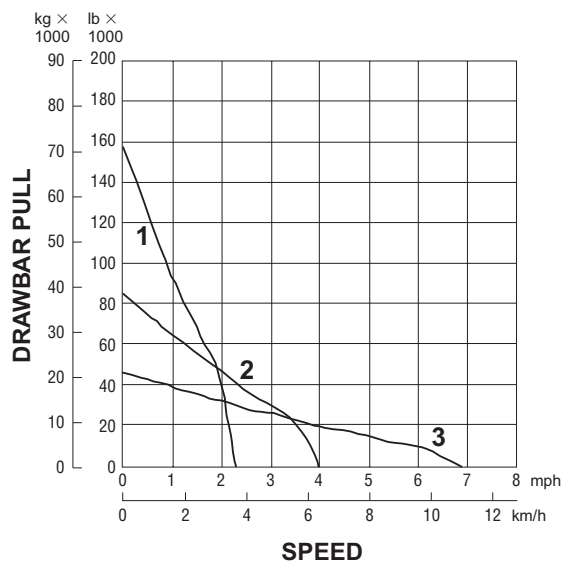
583T



KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear

589



MODEL	561N				572R Series II			
Travel	Forward		Reverse		Forward		Reverse	
Speeds (at rated RPM)	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1st Gear	3.1	1.9	3.8	2.3	3.5	2.3	4.8	3.0
2nd Gear	5.4	3.3	6.7	4.1	6.9	4.3	8.3	5.2
3rd Gear	9.1	5.6	11.3	6.9	11.1	6.9	14.2	8.8

MODEL	583T				589			
Travel	Forward		Reverse		Forward		Reverse	
Speeds (at rated RPM)	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1st Gear	3.5	2.3	4.7	2.9	3.5	2.2	4.3	2.7
2nd Gear	6.4	4.0	8.1	5.0	6.3	3.9	7.9	4.9
3rd Gear	10.8	6.8	13.8	8.6	10.9	6.8	13.7	8.5

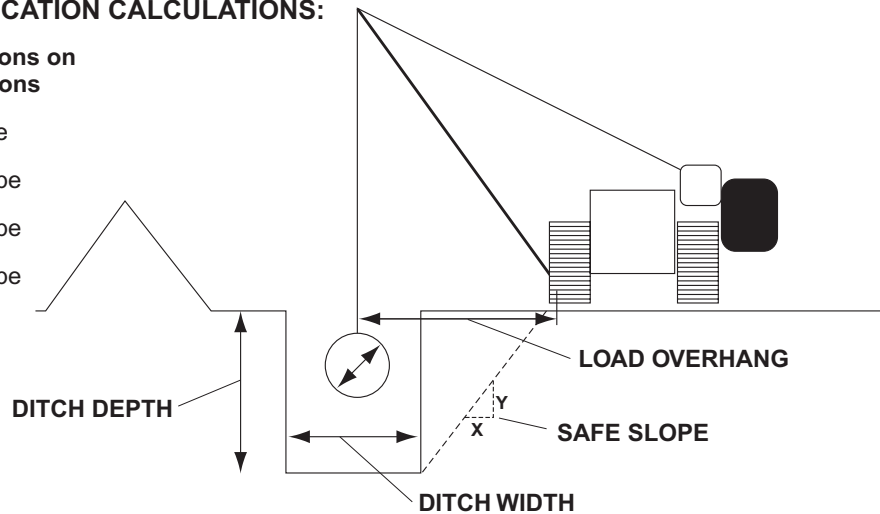
MODEL	561N		572R Series II	
Pipelayer Hook Speeds per minute, Bare drum at rated engine RPM	m/min	ft/min	m/min	ft/min
Low Raise & Lower	33.0	108	11.0	37
Hi Raise & Lower	69.5	228	22.0	72

MODEL	583T		589	
Pipelayer Hook Speeds per minute, Bare drum at rated engine RPM	m/min	ft/min	m/min	ft/min
Low Raise	7.5	24	5.8	19
High Raise	22.0	73	17.4	57
Lower (Powered)	30.0	98	23.5	77

PIPELAYER APPLICATION CALCULATIONS:

Typical pipelayer applications on flat, firm underfoot conditions

- 561N** laying 8" to 16" pipe
- 572R II** laying 16" to 24" pipe
- 583T** laying 24" to 36" pipe
- 589** laying 36" to 56" pipe



7

The chart above provides general information representing typical pipelayer applications. While the following scenario explores many of the variables involved in pipelaying it does not cover all the possible variables that must be considered by pipelaying contractors.

When sizing pipelayers for an application there are many considerations other than the machine's SAE rated lift capacity. These include but are not limited to:

- pipe diameter and weight per linear foot
- ditch width and depth
 - ditch width is typically $2 \times$ pipe diameter
 - ditch depth is typically $>2.5 \times$ pipe diameter
- distance from the ditch (safe slope) required by soil stability conditions
 - typically 2:1 (meaning the pipelayer must be $2 \times$ ditch depth from the ditch edge)

- acceptable distance between pipe lifting points while suspended (to prevent bending)
 - determined by the pipe's bending characteristics. If the lifting points are too far apart a pipe can sag enough due to its own weight that it will damage itself.
- the operating safety factor desired by the contractor
- the length of pipe that will need to be suspended while laying-in
 - determined by pipe bending characteristics, terrain, etc.
- ground conditions, road bed preparation

An important consideration is the necessary load overhang. This is the distance from the center of the pipe to the tractor's left track rail. The load overhang required for an application can be estimated by:

- load overhang = safe slope × ditch depth + (0.5 × ditch width)

The pipelayer's rated load capacity at a specific load overhang (per ANSI/ASME B30.14) can be found in the load capacity graphs in this section of the performance handbook. Once the load capacity is determined the maximum lift point spacing can be estimated by:

- max lift point spacing = $\frac{\text{load capacity at load overhang}}{\text{safety factor} \times \text{pipe weight per linear foot}}$

The maximum distance between pipe lift points (based on pipe bending characteristics) may be a shorter distance than the maximum spacing between lift points as calculated based on pipelayer load capacity. If this is the case, then in order to avoid damaging the pipe, the shorter distance should be considered to be the maximum distance between pipelayers.

As an example, consider a project involving 0.5" wall 24" diameter pipe which has a weight per linear foot of 125.5 lb and the soil has a safe slope of 2. Using the above formulas:

- the ditch depth would be 3 × 2 ft = 6 ft deep
- the ditch width would be 2 × 2 ft = 4 ft
- the load overhang would be 2 × 6 ft + (0.5 × 4 ft) = 14 ft

Using the 572R Series II's lift capacity chart we find that the 572R Series II has an ANSI rated load capacity of approximately 21,250 lb at a 14 ft load overhang.

When using rated load numbers it is important to understand that the lift capacity charts are based on SAE and ANSI test procedures that rate pipelayers on level, concrete surfaces. Working on softer underfoot conditions, working on slopes, (and other) can greatly reduce the pipelayer's load capacity.

If the contractor employs a safety factor of 2 then the maximum spacing between pipe lift points is:

$$\frac{21,250 \text{ lb}}{2 \times 125.5 \text{ lb/ft}} = 84.7 \text{ ft}$$

It is important to remember that this is the distance between the lift points, not the distance nose-to-tail between pipelayers. For this example, assume that 500 ft of pipe must be suspended during the laying-in process.

$$\frac{500 \text{ ft}}{84.7 \text{ ft per pipelayer}} = 5.9 \text{ which means that six pipelayers are needed}$$

The number of pipelayers required could also be determined by a second method:

$$\frac{\text{ft of pipe suspended} \times \text{pipe weight per ft}}{\text{rated load at overhang} \times \text{safety factor}}$$

In this case:

$$\frac{500 \text{ ft} \times 125.5 \text{ lb/ft} \times 2}{21,250 \text{ lb}} = 6.9 \text{ which again implies six pipelayers}$$

If, in this same example, soil conditions required a safe slope of 2.33 then the load overhang would have been 16 ft. At this load overhang the 572R Series II's rated load capacity is approximately 18,125 lb. Using the equations above, this results in 72.2 ft between lift points which means that seven 572R Series II pipelayers are now necessary. Using the second method:

$$\frac{500 \text{ ft} \times 125.5 \text{ lb/ft} \times 2}{18,125 \text{ lb}} = 6.9 \text{ again implying that seven 572R II pipelayers are needed}$$

Rather than adding another pipelayer, 583T's could be used. At a 16 ft load overhang the 583T has a rated load capacity of 29,400 lb. This translates to 117.1 ft between lift points. If the pipe's bending characteristics will allow this space between lift points, the job could be done with only five 583T's.

Notes —

Notes —

WHEEL TRACTOR-SCRAPERS

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Features:

- **VHP engines** that deliver 10% more horsepower in gears 3 through 8 in the 620, 630 and 650 series.
- **Controlled throttle shifting** improves power train life by reducing fuel injection rate just prior to shifting in the 620, 630 and 650 series.
- **(HEUI) Hydraulic Electronic Unit Injection and (EUI) Electronic Unit Injection** electronically maintains fuel settings as well as automatically derate for altitude and air filter restrictions.
- **Hydraulic retarder** protects engine from over speeding and extends brake life on grades in the 620, 630 and 650 series.
- **G Series implement valve** has been relocated to scraper for improved serviceability.
- **Electro-hydraulic implement controls** replaces cab pilot valve and associated lines in the G Series.

- **Single lever implement control** — bowl, apron, ejector, elevator, transmission hold, cushion hitch, and optional bail/auger are controlled by one lever in the G Series.
- **Simplified transmission control** on the G Series. Gear selection choices are 1, 2, and D. Operator can override transmission by manually selecting top gear.
- **G Series rear engines** can be started from the cab. Tachometer can monitor either front or rear engine.
- **G Series Scrapers EMS information** can be viewed in the cab by pressing a tractor/scraper switch. If EMS senses a fault in the scraper, it will automatically switch from tractor to scraper.
- **Eight speed semi-automatic power shift transmissions** used in the 620, 630, and 650 series.
- **Six speed power shift transmissions** used in the 610 series.
- **Differential lock** connects both tractor drive wheels in poor underfoot conditions for positive traction.
- **Cushion Hitch** on 620, 630, and 650 series (axle suspension on 615C Series II) absorbs haul road shocks, prevents loping as well as promotes operator comfort.

Tandem Powered:

- **Push-Pull arrangement** allows tandem engine scrapers to assist one another in loading. Recommended for high production applications.

Elevating:

- **Infinitely variable elevator speed** on 623G while the 613 and 615 have a two speed elevator.

Auger:

- **Factory installed attachment** provides self loading capability. Wide material appetite and conditions material which promotes compaction in the fill. Controls adjust while loading.

Wheel Tractor-Scrapers

Specifications ● Standard Scrapers



MODEL	621G		631G	
Flywheel Power	246/272 kW	330/365 hp	345/373 kW	462/500 hp
Approx. Operating Weight (Empty)◀	33 470 kg	73,789 lb	46 475 kg	102,460 lb
Scraper Capacity: Struck	12 m ³	15.7 yd³	18.3 m ³	24 yd³
Heaped	17 m ³	22 yd³	26 m ³	34 yd³
Rated Load	23 950 kg	52,800 lb	37 285 kg	82,200 lb
Weight Distribution — Empty:				
Drive		66%		65%
Rear		34%		35%
Weight Distribution — Loaded:				
Drive		53%		53%
Rear		47%		47%
Engine Model	C15 ACERT		C18 ACERT	
Rated Engine RPM	1800		1800	
Displacement	15.2 L	928 in³	18.1 L	1105 in³
Top Speed (Loaded)	51 km/h	32 mph	53 km/h	33 mph
180° Curb-to-Curb Turning Width	11.7 m	38'5"	12.2 m	40'1"
Tires — Tractor Drive	33.25R29**E2/E3		37.25R35**E2/E3	
Scraper	33.25R29**E2/E3		37.25R35**E2/E3	
Width of Cut	3.02 m	9'11"	3.51 m	11'6"
Maximum Depth of Cut	333 mm	13.1"	437 mm	17.2"
Maximum Depth of Spread	522 mm	20.6"	480 mm	18.9"
Fuel Tank Refill Capacity	606 L	160 U.S. gal	814 L	215 U.S. gal
GENERAL DIMENSIONS:				
Height to Top of Scraper	3.71 m	12'2"	4.29 m	14'1"
Wheelbase	7.72 m	25'4"	8.77 m	28'9"
Overall Length	12.93 m	42'5"	14.74 m	48'4"
Overall Width	3.47 m	11'4"	3.94 m	12'11"
Shipping Width (Draft Arm on Inside of Bowl)		—	3.64 m	11'11"
Scraper Tread	2.18 m	7'2"	2.46 m	8'1"
Tractor Tread	2.20 m	7'3"	2.46 m	8'1"

◀Operating weight includes standard machine, coolant, lubricants, full fuel tank, and operator.

Specifications
 • Tandem Powered
 • Push-Pull

Wheel Tractor-Scrapers



MODEL	627G		637G		657G	
Flywheel Power: Tractor	246/272 kW	330/365 hp	345/373 kW	462/500 hp	421/447 kW	564/600 hp
Scraper	178/198 kW	239/266 hp	198/211 kW	266/283 hp	306/337 kW	410/451 hp
Approx. Operating Weight (Empty)◀	37 848 kg	83,441 lb	52 047 kg	114,744 lb	67 854 kg	149,592 lb
Scraper Capacity: Struck	12 m ³	15.7 yd³	18.3 m ³	24 yd³	24.5 m ³	32 yd³
Heaped	17 m ³	22 yd³	26 m ³	34 yd³	33.6 m ³	44 yd³
Rated Load	23 950 kg	52,800 lb	37 285 kg	82,200 lb	47 175 kg	104,000 lb
Weight Distribution — Empty: Front		59%		59%		60%
Rear		41%		41%		40%
Weight Distribution — Loaded: Front		48%		49%		51%
Rear		52%		51%		49%
Engine Model: Tractor	C15 ACERT		C18 ACERT		C18 ACERT	
Scraper	C9 ACERT		C9 ACERT		C15 ACERT	
Rated Engine RPM: Tractor	1800		1800		1800	
Scraper	2000		2000		1800	
Displacement: Tractor	15.2 L	928 in³	18.1 L	1105 in³	18.1 L	1105 in³
Scraper	8.8 L	538 in³	8.8 L	538 in³	15.2 L	928 in³
Top Speed (Loaded)	51.3 km/h	32 mph	53 km/h	33 mph	53 km/h	33 mph
180° Curb-to-Curb Turning Width	11.7 m	38'5"	12.2 m	40'1"	14.2 m	46'7"
With ROPS Restriction	—		—		15.1 m 49'8"	
Tires — Tractor Drive	33.25R29**E2/E3		37.25R35**E2/E3		40.5/75R39	
Scraper	33.25R29**E2/E3		37.25R35**E2/E3		40.5/75R39	
Width of Cut	3.02 m	9'11"	3.51 m	11'6"	3.85 m	12'8"
Maximum Depth of Cut	333 mm	13.1"	437 mm	17"	440 mm	17.3"
Maximum Depth of Spread	522 mm	20.6"	480 mm	18.9"	660 mm	26"
Fuel Tank Refill Capacity: Tractor	—		—		—	
Scraper	1105 L	292 U.S. gal	1268 L	335 U.S. gal	1597 L	424 U.S. gal
GENERAL DIMENSIONS:						
Height to Top of Scraper	3.71 m	12'2"	4.29 m	14'1"	4.71 m	15'5"
Wheelbase	7.72 m	25'4"	8.77 m	28'9"	9.92 m	32'7"
Overall Length	12.93 m	42'5"	14.74 m	48'4"	16.2 m	53'1"
Overall Width	3.47 m	11'4"	3.94 m	12'11"	4.35 m	14'4"
Shipping Width (Draft Arm on Inside of Bowl)	—		3.64 m	11'11"	3.91 m	12'10"
Scraper Tread	2.18 m	7'2"	2.46 m	8'1"	2.81 m	9'3"
Tractor Tread	2.21 m	7'3"	2.46 m	8'1"	2.64 m	8'8"
PUSH-PULL GENERAL DIMENSIONS:						
Operating Weight (Empty)◀	39 372 kg	86,800 lb	53 562 kg	118,084 lb	71 634 kg	157,925 lb
Overall Length	15.2 m	49'7"	16.67 m	54'8"	18.01 m	59'1"
Weight Distribution — Empty: Front		59%		62%		60%
Rear		41%		38%		40%
Weight Distribution — Loaded: Front		49%		50%		51%
Rear		51%		50%		49%

◀ Operating weight includes standard machine, coolant, lubricants, full fuel tank, and operator.

Wheel Tractor-Scrapers

Specifications ● Elevating Scrapers



MODEL	613C Series II		615C Series II		623G	
Flywheel Power	131 kW	175 hp	197.5 kW	265 hp	246/272 kW	330/365 hp
Approx. Operating Weight (Empty)◀	15 264 kg	33,650 lb	25 605 kg	56,450 lb	36 830 kg	81,196 lb
Scraper Capacity: Struck	6.8 m ³	8.9 yd³	11 m ³	14 yd³	13.8 m ³	18 yd³
Heaped	8.4 m ³	11 yd³	13 m ³	17 yd³	17.6 m ³	23 yd³
Rated Load	11 975 kg	26,400 lb	18 506 kg	40,800 lb	24 950 kg	55,000 lb
Weight Distribution — Empty:						
Drive		63%		66%		63%
Rear		37%		34%		37%
Weight Distribution — Loaded:						
Drive		49%		51%		50%
Rear		51%		49%		50%
Engine Model	3116 DITA		3306 TA		C15 ACERT	
Rated Engine RPM	2300		2200		1800	
Displacement	6.6 L	403 in³	10.5 L	638 in³	15.2 L	928 in³
Top Speed (Loaded)	35.1 km/h	21.8 mph	44.4 km/h	27.6 mph	51.5 km/h	32 mph
180° Curb-to-Curb Turning Width	10.9 m	29'6"	10.8 m	35'6"	10.9 m	35'8"
Tires — Standard:						
Tractor	23.5R25*		29.5R25*		33.25R29**E2	
Scraper	23.5R25*		29.5R25*		33.25R29**E2	
Width of Cut	2.35 m	7'8.5"	2.89 m	9'6"	3.5 m	11'6"
Maximum Depth of Cut	160 mm	6.3"	413 mm	16"	330 mm	13"
Elevator Flight Spacing	406 mm	16"	413 mm	16"	520 mm	20"
Number of Flights		15		18		15
Maximum Floor Opening	1.14 m	3'9"	1.18 m	3'10"	1.53 m	5'0"
Maximum Depth of Spread	370 mm	14.6"	439 mm	17.3"	380 mm	15"
Fuel Tank Refill Capacity	250 L	66 U.S. gal	399 L	105 U.S. gal	606 L	160 U.S. gal
GENERAL DIMENSIONS:						
Height to Top of Scraper	3.01 m	9'10"	3.5 m	11'0"	3.68 m	12'1"
Wheelbase	6.26 m	20'6.5"	6.98 m	22'11"	7.98 m	26'2"
Overall Length	10.14 m	33'3"	11.6 m	38'1"	13.21 m	43'4"
Overall Width	2.44 m	8'0"	3.05 m	10'0"	3.55 m	11'8"
Scraper Tread	1.80 m	5'11"	2.1 m	6'9"	2.18 m	7'2"
Tractor Tread	1.80 m	5'11"	2.1 m	6'9"	2.20 m	7'3"

◀ Operating weight includes coolants, lubricants, ROPS canopy, full fuel tank and operator.

Specifications
 ● Standard Auger

Wheel Tractor-Scrapers



MODEL	621G		631G	
Flywheel Power: Tractor	246/272 kW	330/365 hp	345/373 kW	462/500 hp
Approx. Operating Weight (Empty)◀	37 163 kg	81,930 lb	50 515 kg	111,367 lb
Scraper Capacity (Heaped)	15.96 m ³	21 yd³	23.7 m ³	31 yd³
Rated Load	21 775 kg	48,000 lb	34 020 kg	75,000 lb
Approx. Operating Weight (Loaded)	58 938 kg	129,930 lb	84 535 kg	186,367 lb
AUGER ATTACHMENT:				
Auger Diameter	1320 mm	4'4"	1524 mm	5'0"
Auger RPM	Variable 55 to 35 RPM		Variable 55 to 35 RPM	
Auger Power	149 kW	200 hp	201 kW	270 hp
Hydraulic Flow	273 L/min	72 gpm	378 L/min	100 gpm
System Pressure	41 370 kPa	6000 psi	37 895 kPa	5500 psi
Auger Control	electronic		electronic	

◀Operating weight includes standard machine, coolant, lubricants, full fuel tank and operator.

The auger scraper is a self-loading system that offers an alternative to conventional, push-pull or elevating scrapers. An independent hydrostatic system powers the auger which is located near the center of the bowl. The rotating auger lifts and evenly distributes over 50% of the material that flows over the scraper cutting edge. This action reduces the cutting edge resistance allowing the wheel tractor-scraper to continue moving through the cut and quickly obtain full rated loads.

Advantages:

- Self-load in equal or less time
- Requires shorter cut distance
- Complete material ejection (angled ejector pushes material)
- Significantly reduces dust problems in dry material
- Increased tire life
- Broader material appetite
- Better material retention on haul road (closed apron instead of open elevator)

Wheel Tractor-Scrapers

Specifications

● Tandem Powered Auger



MODEL	627G		637G	
Flywheel Power: Tractor	246/272 kW	330/365 hp	345/373 kW	462/500 hp
Scraper	178/198 kW	239/266 hp	198/211 kW	266/283 hp
Approx. Operating Weight (Empty)◀	41 540 kg	91,581 lb	55 533 kg	122,431 lb
Scraper Capacity (Heaped)	15.96 m ³	21 yd³	23.7 m ³	31 yd³
Rated Load	21 775 kg	48,000 lb	34 020 kg	75,000 lb
Approx. Operating Weight (Loaded)	63 315 kg	139,581 lb	89 553 kg	197,431 lb
AUGER ATTACHMENT:				
Auger Diameter	1320 mm	4'4"	1524 mm	5'0"
Auger RPM	Variable 55 to 35 RPM		Variable 55 to 35 RPM	
Auger Power	149 kW	200 hp	201 kW	270 hp
Hydraulic Flow	273 L/min	72 gpm	378 L/min	100 gpm
System Pressure	41 370 kPa	6000 psi	37 923 kPa	5500 psi
Auger Control	electronic		electronic	

◀Operating weight includes standard machine, coolant, lubricants, full fuel tank and operator.

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- Significantly reduces dust problems in dry material
- Increased tire life
- Broader material appetite
- Better material retention on haul road (closed apron instead of open elevator)

MODEL TIRE SIZE	PLY RATING/ STAR RATING*	TYPE
613C Series II		
23.5R25◀	★	L-3
23.5-25	20	E-3
615C Series II		
29.5R25◀	★	L-3
29.5-25	28	E-3
26.5R25	★	L-3
26.5R25	★★	E-3
621G		
623G		
627G		
33.25R29◀	★★	E-3
33.25-29	32	E-3
29.5R29	★★	E-2
29.5-29	34	E-2

MODEL TIRE SIZE	PLY RATING/ STAR RATING*	TYPE
631G		
637G		
37.25R35◀	★★	E-3
37.25-35	42	E-3
657G		
40.5/75R39◀	★★	E-3

*Manufacturer uses star (★) rating system instead of ply rating.
 ◀No charge tire.

**USE OF RIMPULL-SPEED-
GRADEABILITY CURVES**

The following explanation applies to Rimpull-Speed-Gradeability curves for Wheel Tractor-Scrapers, Construction & Mining Trucks/Tractors and Articulated Trucks.

Maximum speed attainable, gear range and available rimpull can be determined from curves on the following pages when machine weight and total effective grade (or total resistance) are known.

Rimpull is the force (in kg, lb or kN) available between the tire and the ground to propel the machine (limited by traction).

Weight is defined as Gross Machine Weight (kg or lb) = Machine + Payload.

Total Effective Grade (or Total Resistance) is grade resistance plus rolling resistance expressed as percent grade.

Grade is measured or estimated.

Rolling resistance is estimated (see Tables section for typical values.)

10 kg/metric ton (20 lb/U.S. ton) = 1% adverse grade.

Example

With a 6% grade and a rolling resistance of 40 kg/metric ton (80 lb/U.S. ton), find total resistance.

Rolling resistance = 40 kg/t ÷ 10 = 4% Effective Grade

(English: 80 lb ÷ 20 = 4%)

Total resistance = 4% rolling + 6% grade = 10%

Altitude Derating

Rimpull force and speed must be derated for altitude similar to flywheel horsepower. The percentage loss in rimpull force approximately corresponds to the percentage loss in flywheel horsepower. See Tables Section for altitude derations.

Rimpull-Speed-Gradeability

To determine gradeability performance: Read from gross weight down to the % of total resistance. (Total resistance equals actual % grade *plus* 1% for each 10 kg/metric ton (20 lb./U.S. ton) of rolling resistance.) From this weight-resistance point, read horizontally to the curve with the highest obtainable speed range, then down to the maximum speed. Usable rimpull depends upon traction and weight on drive wheels.

Example problem:

A 631G with an estimated payload of 37 285 kg (82,200 lb) is operating on a total effective grade of 10%. Find the available rimpull and maximum attainable speed.

Empty weight payload = Gross Weight
 45 362 kg + 37 285 kg = 82 647 kg
 (100,006 lb + 82,200 lb = 182,206 lb)

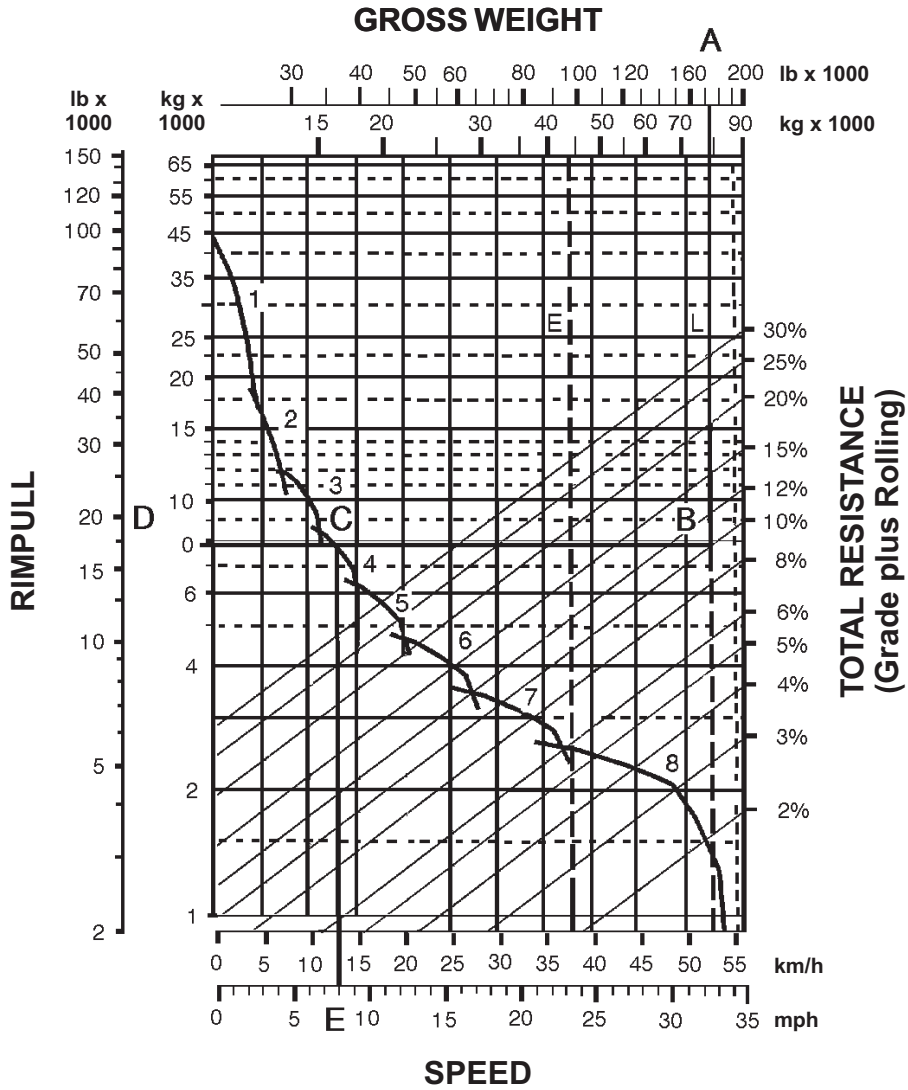
Solution: Using graph on the next page, read from 80 495 kg (177,460 lb) (point A) on top of gross weight scale down the line to the intersection of the 10% total resistance line (point B).

Go across horizontally from B to the Rimpull Scale on the left (point D). This gives the required rimpull: 7756 kg (17,100 lb).

Where the line cuts the speed curve (point C), read down vertically (point E) to obtain the maximum speed attainable for the 10% effective grade: 12.9 km/h (8 mph).

ANSWER: The machine will climb the 10% effective grade at a maximum speed of 12.9 km/h (8 mph) in 4th gear. Available rimpull is 7756 kg (17,100 lb).





8

KEY

- 1 — 1st Gear Torque Converter Drive
- 2 — 2nd Gear Torque Converter Drive
- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive
- 7 — 7th Gear Direct Drive
- 8 — 8th Gear Direct Drive

KEY

- A — Loaded 82 647 kg (182,206 lb)
- B — Intersection with 10% total resistance line
- C — Intersection with rimpull curve (4th gear)
- D — Required rimpull 7756 kg (17,100 lb)
- E — Speed 12.9 km/h (8 mph)

USE OF TRAVEL TIME CHARTS

The following explanation applies to travel time charts for Wheel Tractor-Scrapers, Construction & Mining Trucks and Articulated Trucks.

One-way travel time can be determined from graphs on the following pages when one-way travel distance and total resistance (expressed in percent) are known. 10 kg/metric ton (20 lb/U.S. ton) equals 1% equivalent grade.

If total resistance is negative (grade assistance greater than rolling resistance) machine may accelerate downhill requiring the use of retarder or brakes. Travel time charts *cannot* be used in these cases. Consult respective machine retarder curve to establish maximum safe downhill speed.

Two graphs are given for each hauling unit: one for the machine carrying its rated payload and one for the empty machine.

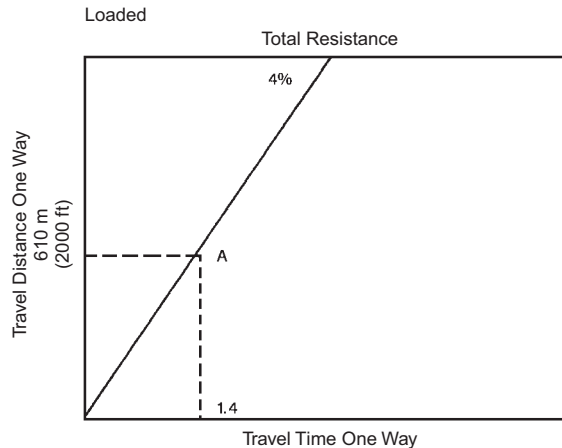
Travel times were derived using Caterpillar Machine Simulation Program and standard tire inputs. Travel times for machines equipped with (larger) optional tires vary slightly.

Example problem:

631G hauls its rated payload 37 285 kg — 22 bank cubic meters (82,200 lb — 29 bank cubic yards) on a 4% road for 610 m (2000 feet) and returns on a 0% road for 760 m (2500 feet). Find the cycle time.

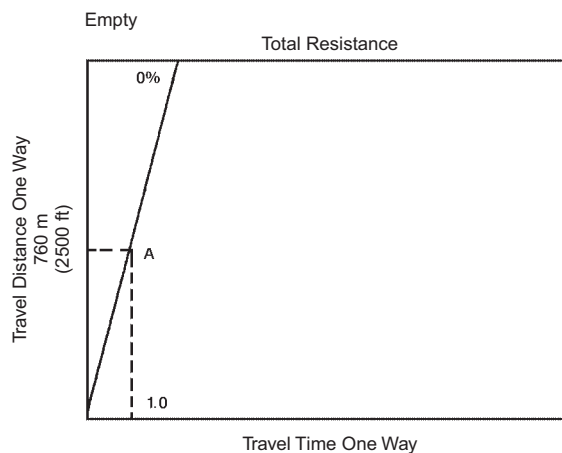
Haul —

Using the graph for the Loaded machine, read from the Travel Distance (one way) scale at 610 m (2000 feet) across to the 4% total resistance line (point A). From (point A) read down to the Travel Time (one way) scale to determine haul time = 1.4 minutes.



Return —

Using the graph for the Empty machine, read from the Travel Distance (one way) scale at 760 m (2500 feet) across to the 0% total resistance line (point A). From (point A) read down to the Travel Time (one way) scale to determine return time = 1 min.



Cycle Time —

$$= \text{load}^* + \text{haul} + \text{maneuver \& spread}^* + \text{return}$$

$$= 0.6 + 1.4 + 0.7 + 1.0$$

$$= 3.7 \text{ min.}$$

*For fixed time (load, maneuver and spread) see the table below.

When cycle time and payload are known, productivity can be calculated. For a more complex example see the Earthmoving Section.



TYPICAL FIXED TIMES FOR SCRAPERS
(Times may vary depending on job conditions)

Model	Loaded By	Load Time (Min.)	Maneuver and Spread or Maneuver and Dump (Min.)
613C Series II	Self	0.9	0.7
615C Series II	Self	0.9	0.7
623G	Self	0.9	0.7
621G	One D8R	0.5	0.7
627G	One D8R	0.5	0.6
621G	One D9R	0.4	0.7
627G	One D9R	0.4	0.6
627G/PP	Self	0.9*	0.6
631G	One D9R	0.6	0.7
637G	One D9R	0.6	0.6
631G	One D10R	0.5	0.7
637G	One D10R	0.5	0.6
637G/PP	Self	1.0*	0.6
657G	One D11R	0.6	0.6
657G	Push Pull	1.1*	0.6
	Self		
621G	Auger	0.9	0.7
627G	Auger	0.7	0.7
631G	Auger	0.9	0.7
637G	Auger	0.8	0.7

*Load time per pair, including transfer time.

NOTE: Empty Weights shown on the Wheel Tractor-Scraper charts includes ROPS Canopy. The travel times will remain within acceptable limits when applied to a non-ROPS equipped machine. When calculating TMPH loadings any additional weight must be considered in establishing mean tire loads.

USE OF RETARDER CURVES

The following explanation applies to retarder curves for Wheel Tractor-Scrapers and Articulated Trucks.

The speed that can be maintained (without use of service brake) when the machine is descending a grade with retarder fully on can be determined from the retarder curves in this section if gross machine weight and total effective grade are known.

Total Effective Grade (or Total Resistance) is grade assistance *minus* rolling resistance.

$$10 \text{ kg/metric ton (20 lb/U.S. ton)} = 1\% \text{ adverse grade.}$$

Example

15% favorable grade with 5% rolling resistance. Find Total Effective Grade.

$$\text{Total Effective Grade} = 15\% \text{ Grade Assistance} - 5\%$$

$$\text{Rolling Resistance} = 10\% \text{ Total Effective Grade Assistance.}$$

Example problem:

A 651E with an estimated payload of 47 175 kg (104,000 lb) descends a 10% total effective grade. Find constant speed and gear range with maximum retarder effort. Find travel time if the slope is 610 m (2000 ft) long.

$$\text{Empty Weight} + \text{Payload} = \text{Gross Weight}$$

$$= 60\,950 \text{ kg} + 47\,175 \text{ kg} = 108\,125 \text{ kg}$$

$$(134,370 \text{ lb} + 104,000 \text{ lb} = 238,370 \text{ lb})$$

Wheel Tractor-Scrapers

Retarder Curves

• Example

Solution: Using the retarder curve below, read from 108 125 kg (238,370 lb) (point A) on top of gross weight scale down the line to the intersection of the 10% effective grade line (point B).

Go across horizontally from point B to the intersection of the retarder curve (point C). Point C intersects at the 5 (5th gear) range.

Where point C intersects the retarder curve, read down vertically to point D on the bottom scale to obtain the constant speed: 21.7 km/h (13.5 mph).

ANSWER: The 651E will descend the slope at 21.7 km/h (13.5 mph) in 5th gear. Travel time is 1.68 minutes.

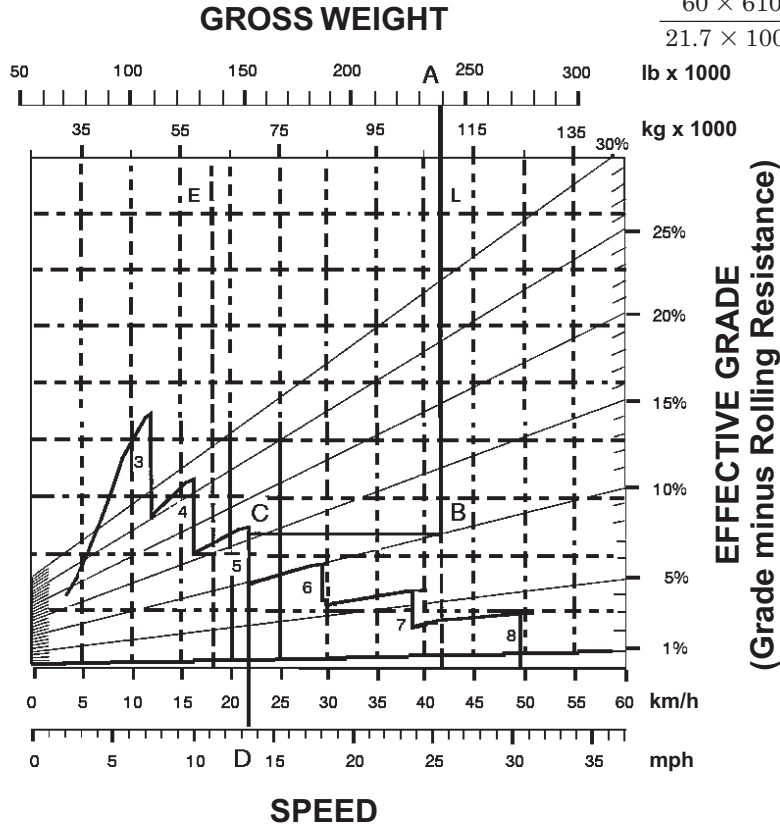
$$\frac{610 \text{ m}}{363 \text{ m/min}} = 1.68 \text{ min}$$

*(mph × 88 = F.P.M.)

$$\frac{2000 \text{ ft}}{13.5 \text{ mph} \times 88^*} = 1.68 \text{ min}$$

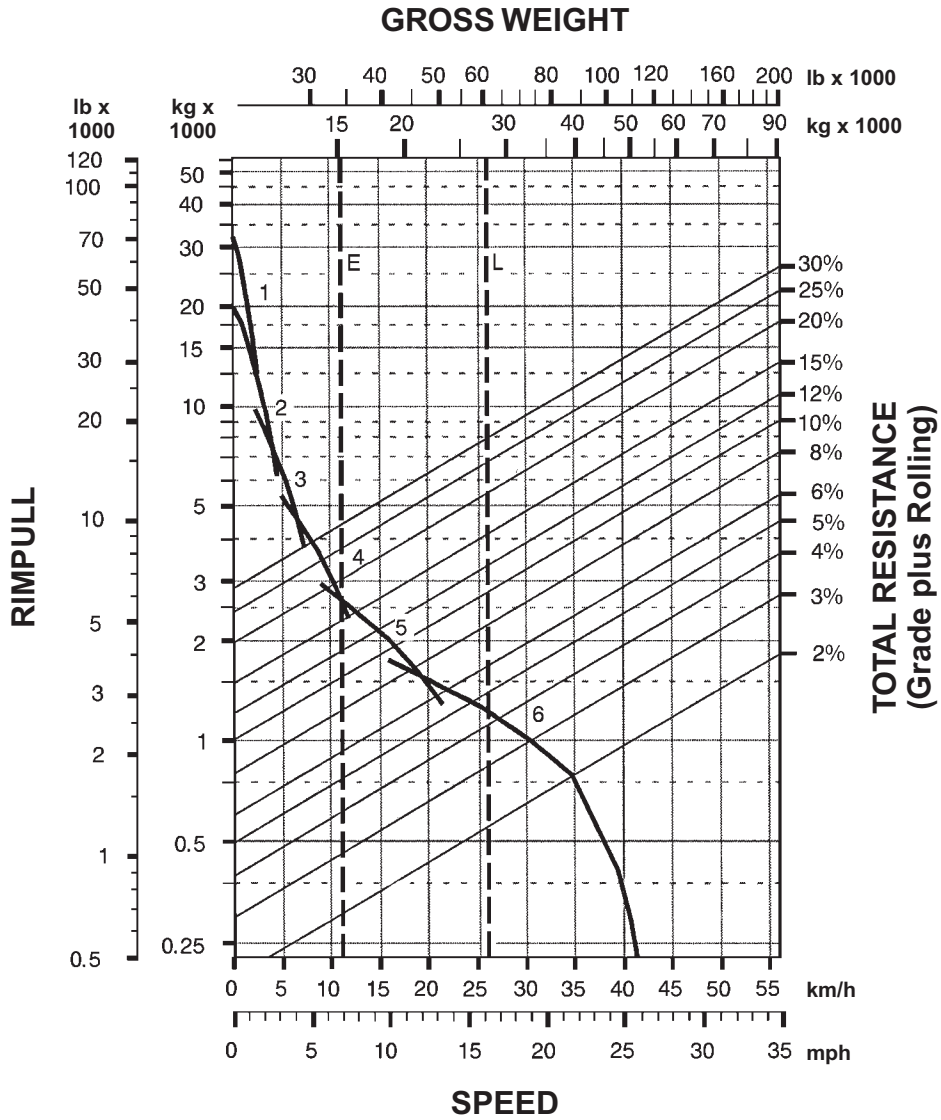
NOTE: The basic Distance-Speed-Time formula is $60 D \div S = T$ (or "60 D Street"), where 60 is minutes, D is distance, S is speed and T is time. In the above problem, $60 \times 610 \text{ m} \div 21.7 \text{ km/h} \times 1000 = T$.

$$\frac{60 \times 610}{21.7 \times 1000} = T = (1.68)$$



- KEY**
- 3 — 3rd Gear Direct Drive
 - 4 — 4th Gear Direct Drive
 - 5 — 5th Gear Direct Drive
 - 6 — 6th Gear Direct Drive
 - 7 — 7th Gear Direct Drive
 - 8 — 8th Gear Direct Drive

- KEY**
- A — Loaded 108 125 kg (238,370 lb)
 - B — Intersection with 10% effective grade line
 - C — Intersection with retarder curve (5th gear)
 - D — Constant speed 21.7 km/h (13.5 mph)



KEY

- 1 — 1st Gear Torque Converter Drive
- 2 — 2nd Gear Torque Converter Drive
- 3 — 3rd Gear Torque Converter Drive
- 4 — 4th Gear Torque Converter Drive
- 5 — 5th Gear Torque Converter Drive
- 6 — 6th Gear Torque Converter Drive

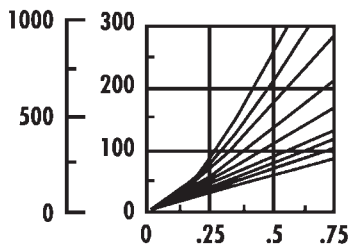
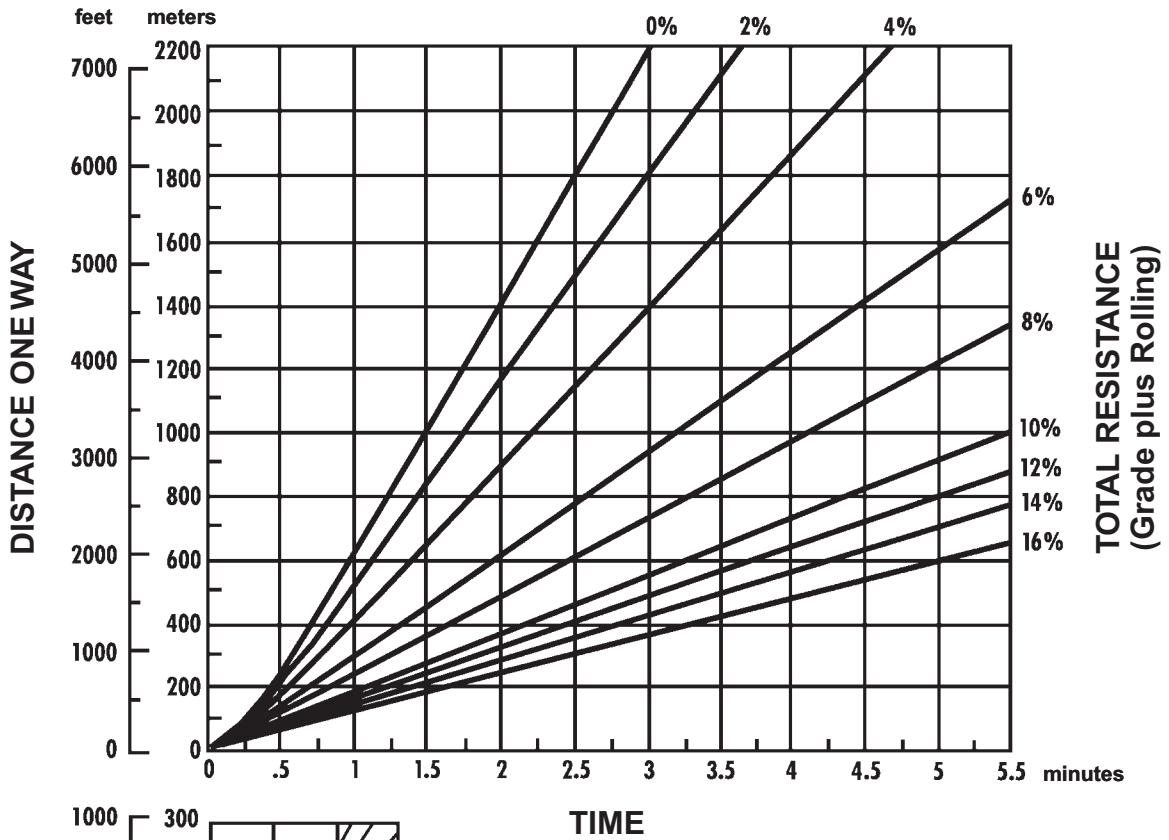
KEY

- E — Empty 14 970 kg (33,000 lb)
- L — Loaded 26 945 kg (59,400 lb)

Wheel Tractor-Scrapers

613C Series II Travel Time — Loaded
 ● 23.5R25 Tires

LOADED

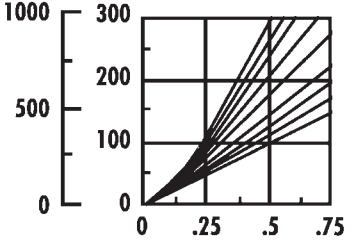
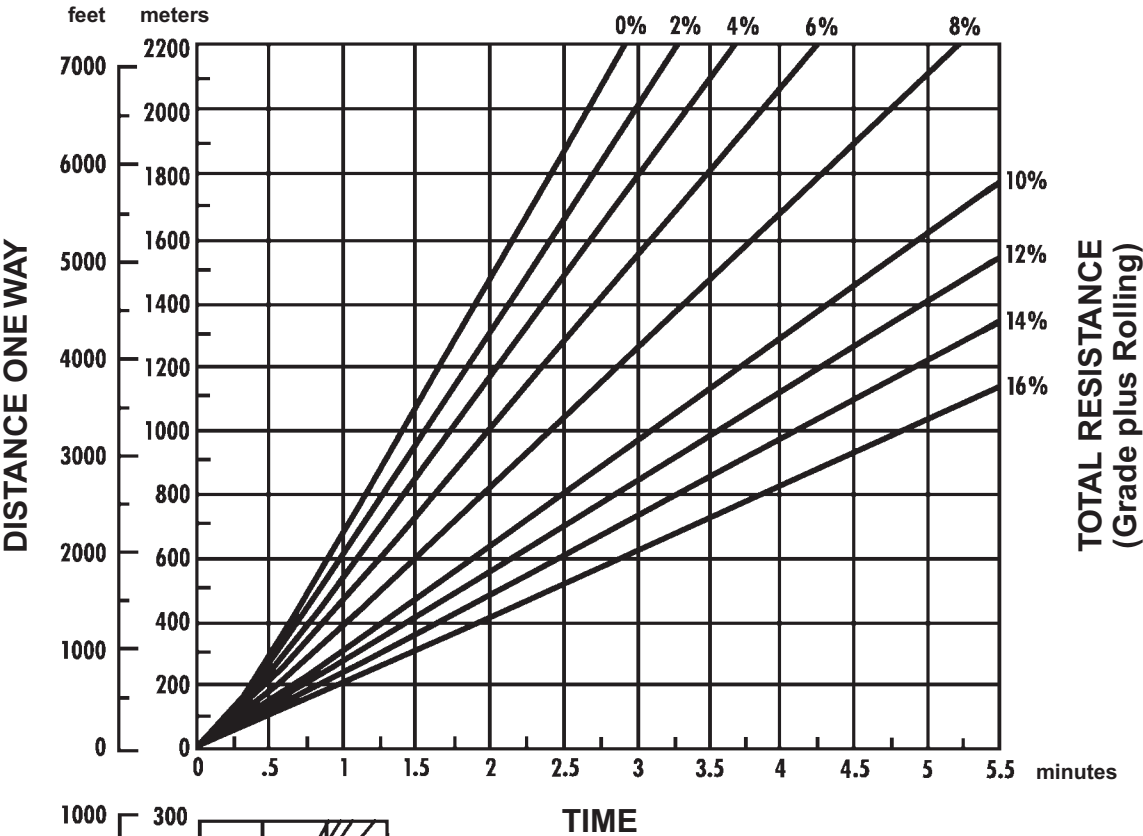


Empty weight: 14 970 kg (33,000 lb)
 Payload: 11 975 kg (26,400 lb)

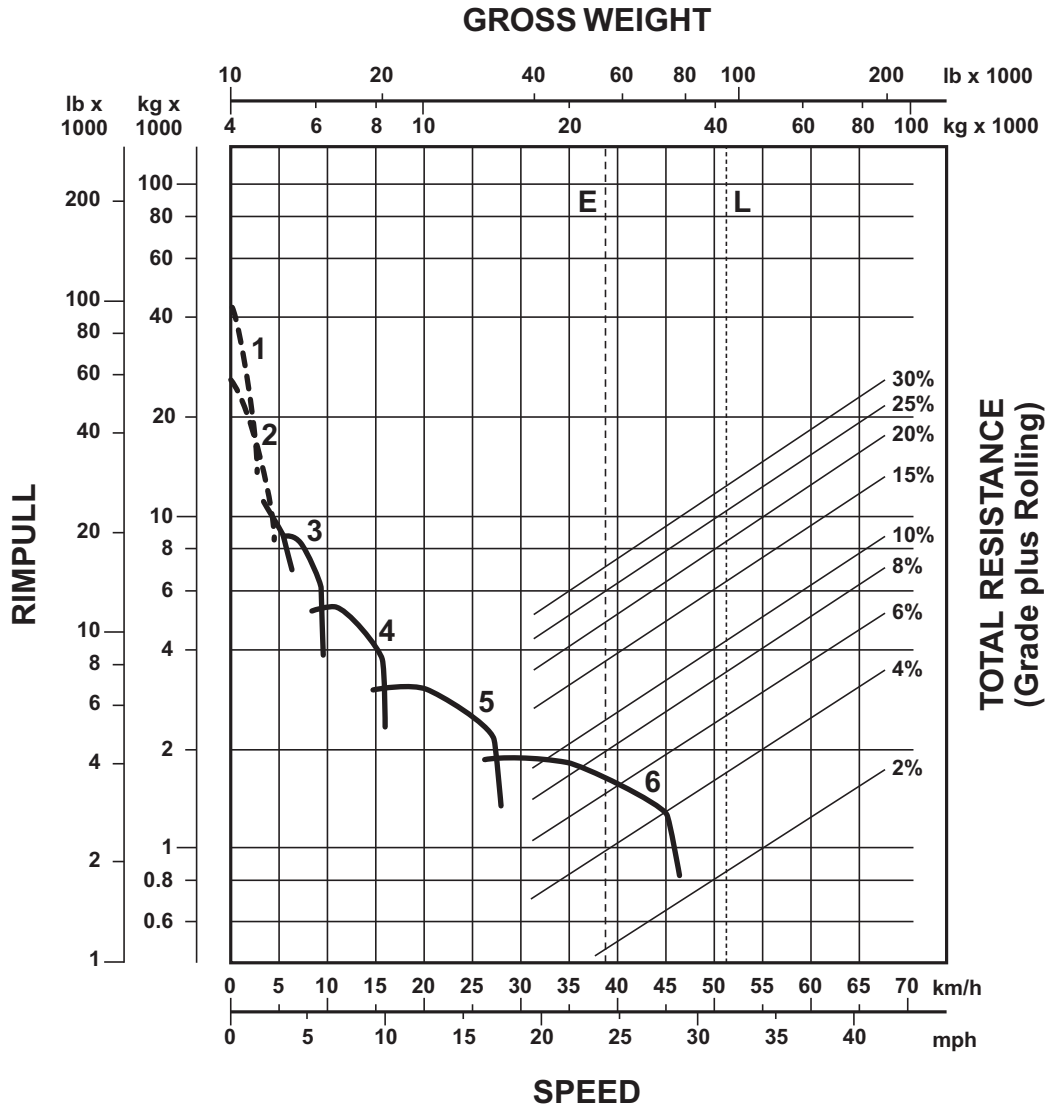
613C Series II Travel Time — Empty
 • 23.5R25 Tires

Wheel Tractor-Scrapers

EMPTY



Empty weight: 14 970 kg (33,000 lb)



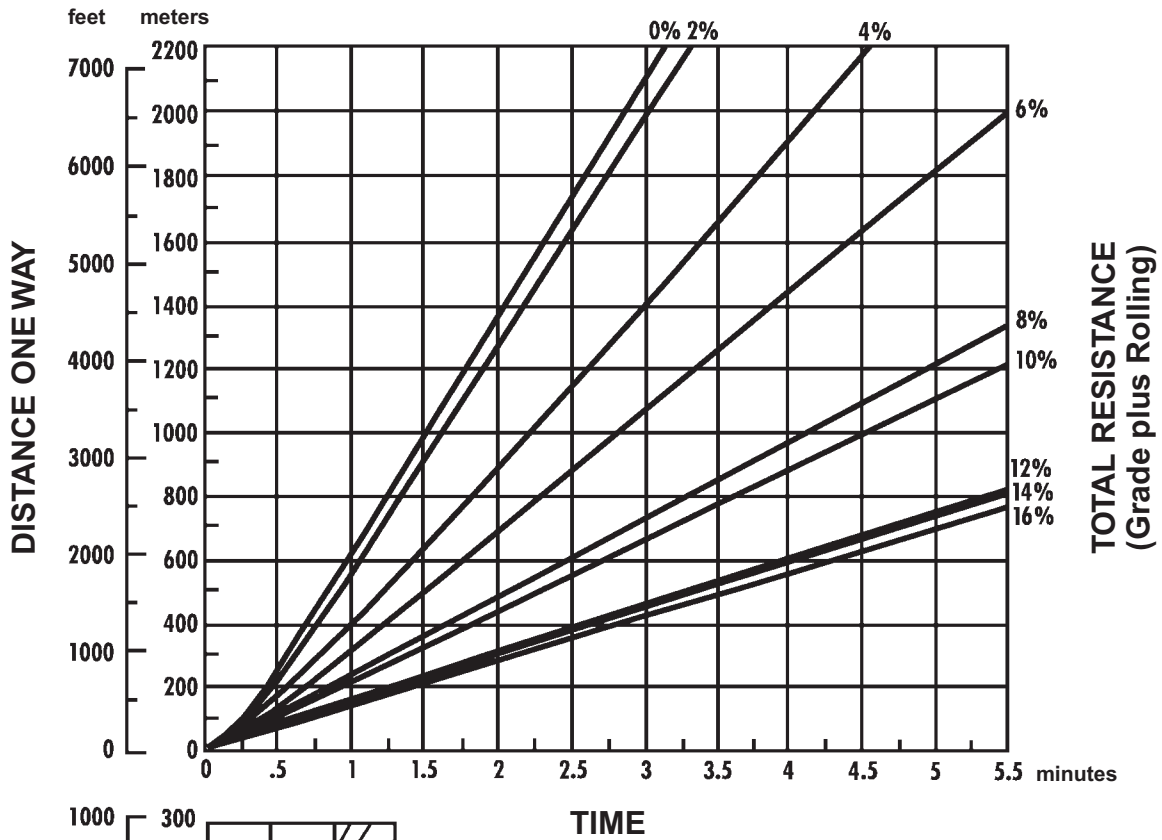
KEY

- 1 — 1st Gear Torque Converter Drive
- 2 — 2nd Gear Torque Converter Drive
- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive

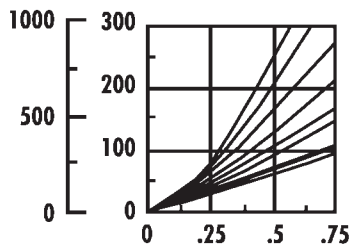
KEY

- E — Empty 25 605 kg (56,450 lb)
- L — Loaded 44 110 kg (97,250 lb)

LOADED



8

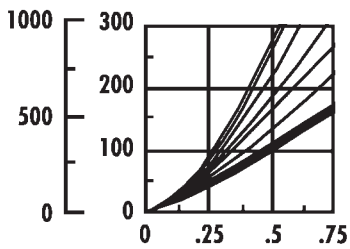
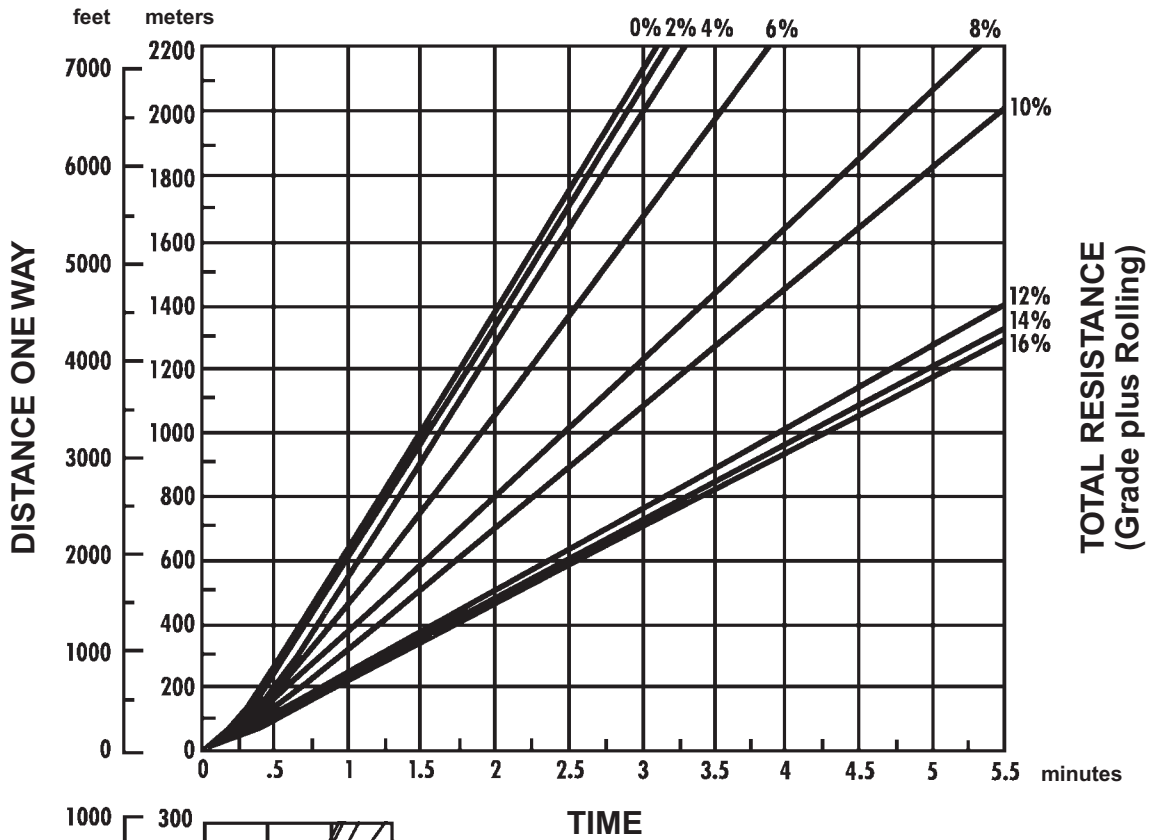


Empty weight: 25 605 kg (56,450 lb)
 Payload: 18 506 kg (40,800 lb)

Wheel Tractor-Scrapers

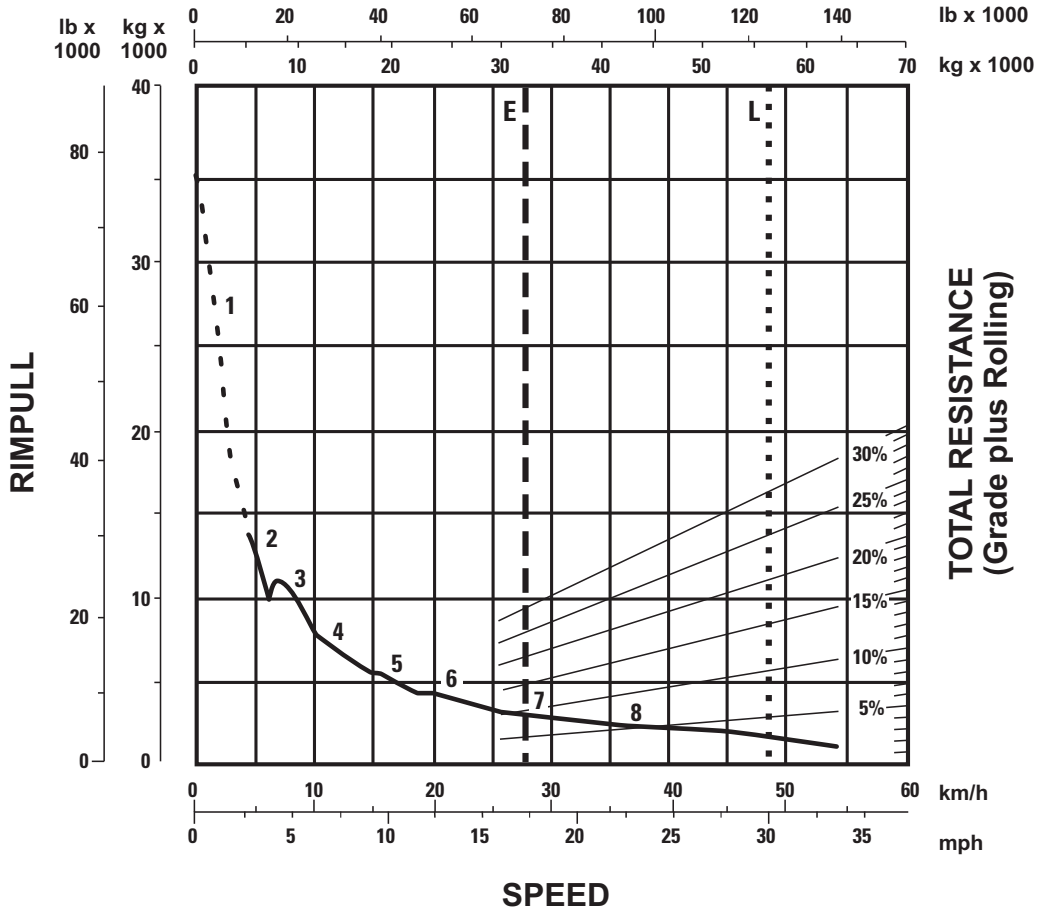
615C Series II Travel Time — Empty
 ● 29.5R25 Tires

EMPTY



Empty weight: 25 605 kg (56,450 lb)

**TIER 3
 STANDARD ARRANGEMENT*
 GROSS WEIGHT**



8

*at sea level

KEY

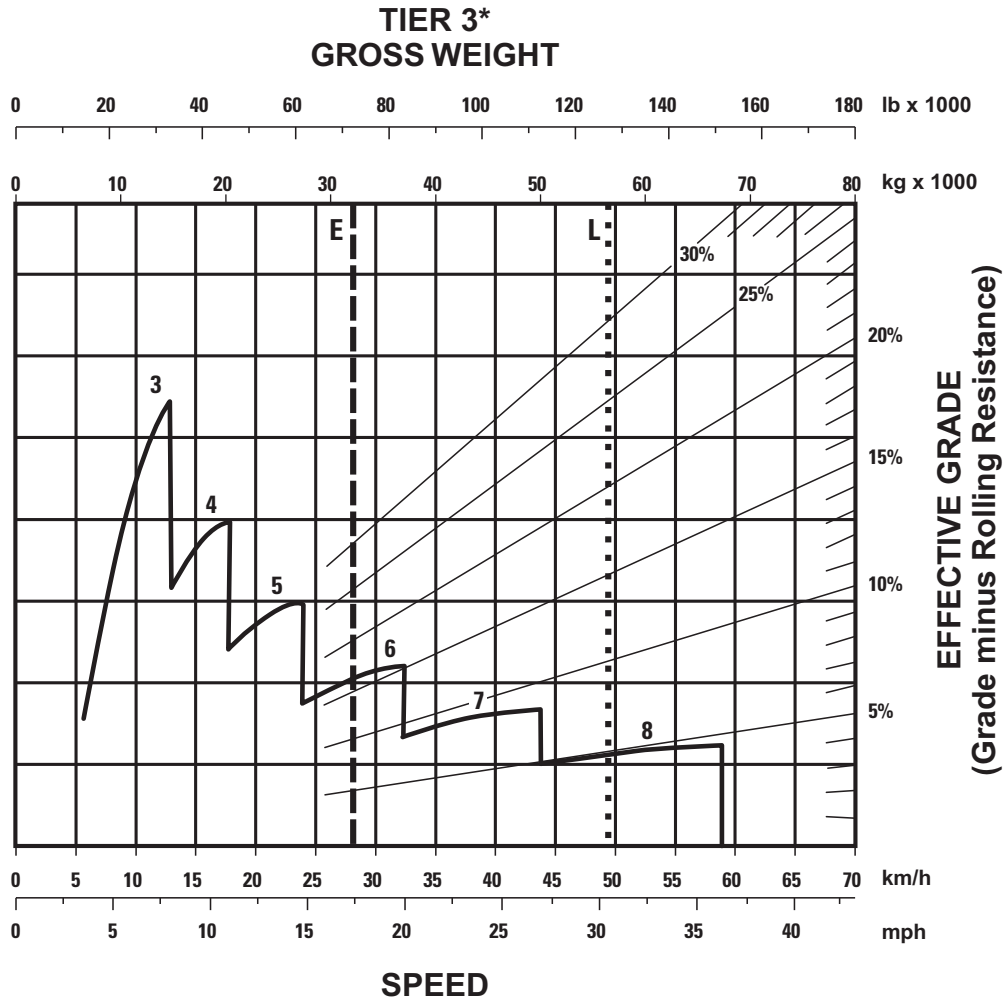
- 1 — 1st Gear Torque Converter Drive
- 2 — 2nd Gear Torque Converter Drive
- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive
- 7 — 7th Gear Direct Drive
- 8 — 8th Gear Direct Drive

KEY

- E — Empty 32 865 kg (72,455 lb)
- L — Loaded 57 420 kg (126,589 lb)

Wheel Tractor-Scrapers

621G Retarding
 ● 33.25R29 Tires



*at sea level

KEY

- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive
- 7 — 7th Gear Direct Drive
- 8 — 8th Gear Direct Drive

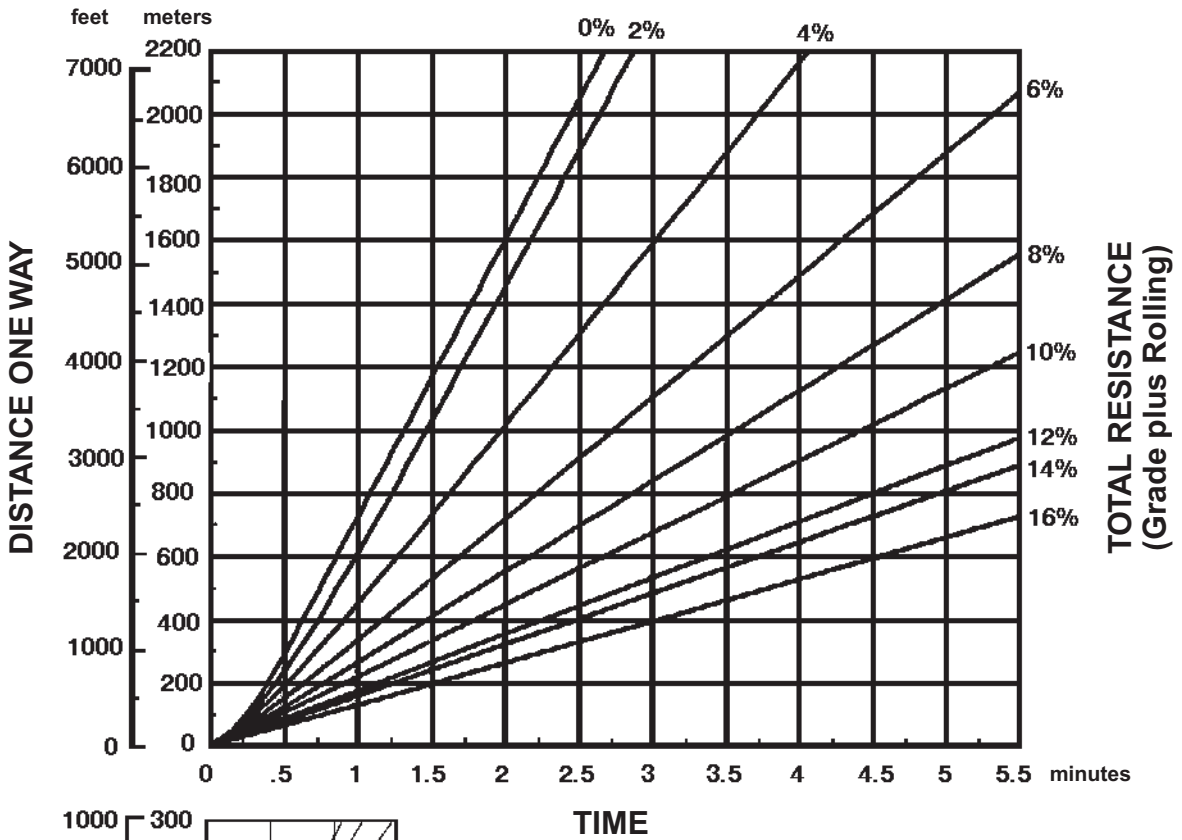
KEY

- E — Empty 32 865 kg (72,455 lb)
- L — Loaded 57 420 kg (126,589 lb)

621G Travel Time — Loaded
 • 33.25R29 Tires

Wheel Tractor-Scrapers

LOADED



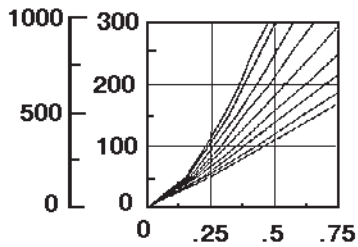
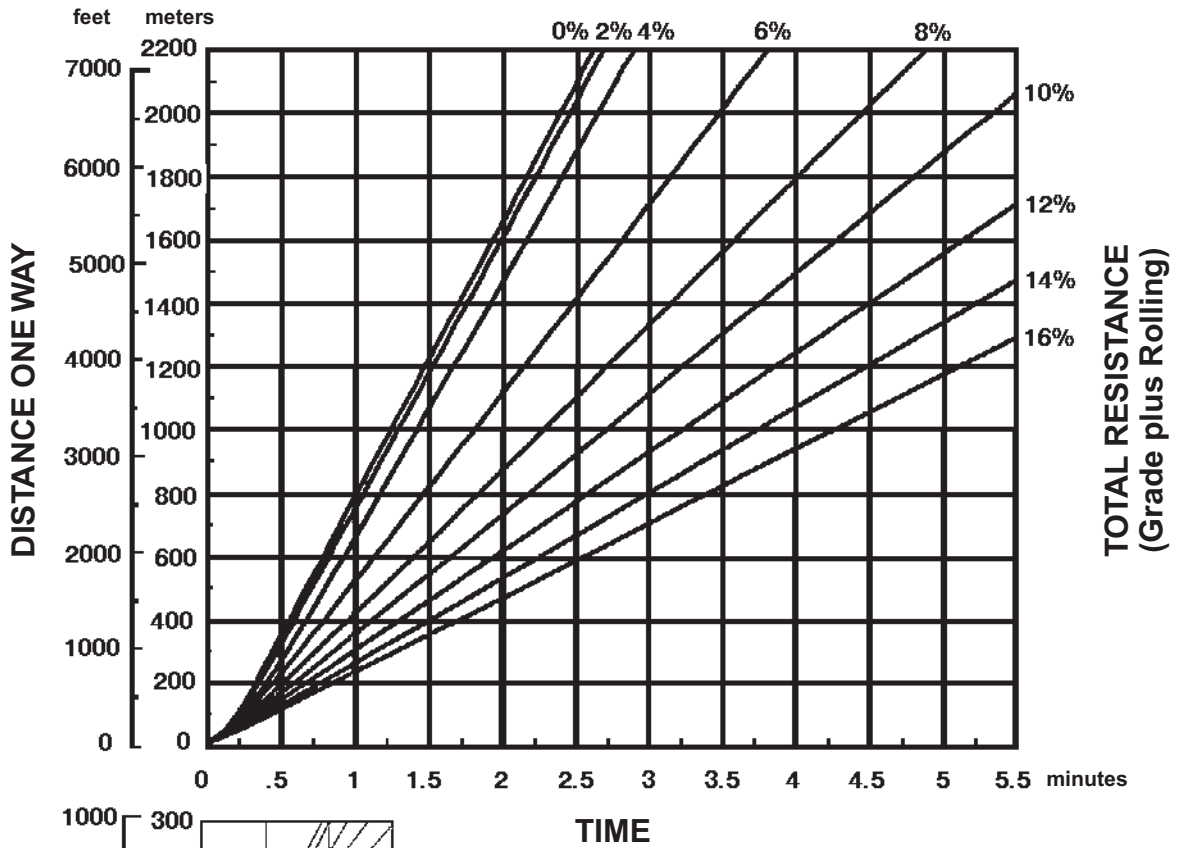
8

Empty weight: 32 563 kg (71,790 lb)
 Payload: 23 950 kg (52,800 lb)

Wheel Tractor-Scrapers

621G Travel Time — Empty
● 33.25R29 Tires

EMPTY

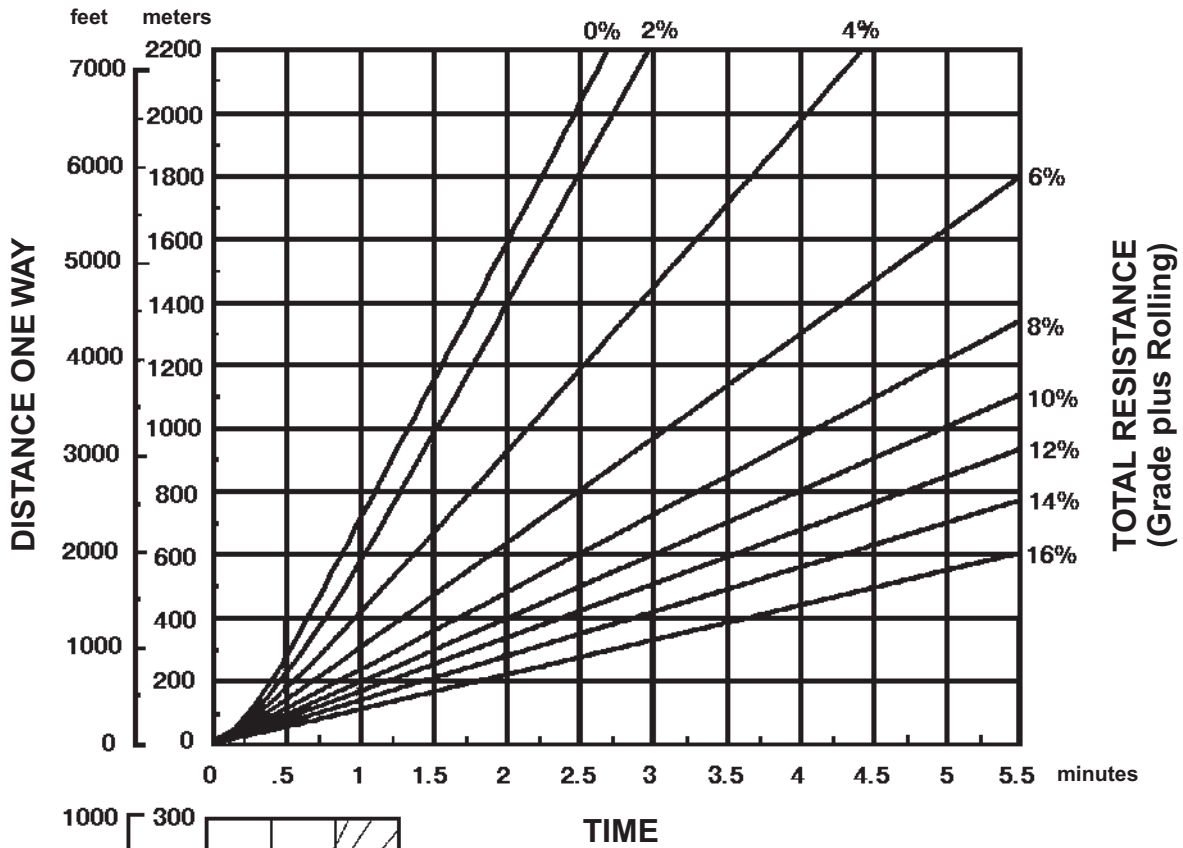


Empty weight: 32 563 kg (71,790 lb)

621G Auger Travel Time — Loaded
 • 33.25R29 Tires

Wheel Tractor-Scrapers

LOADED



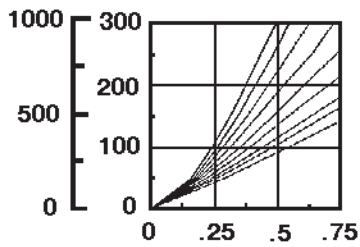
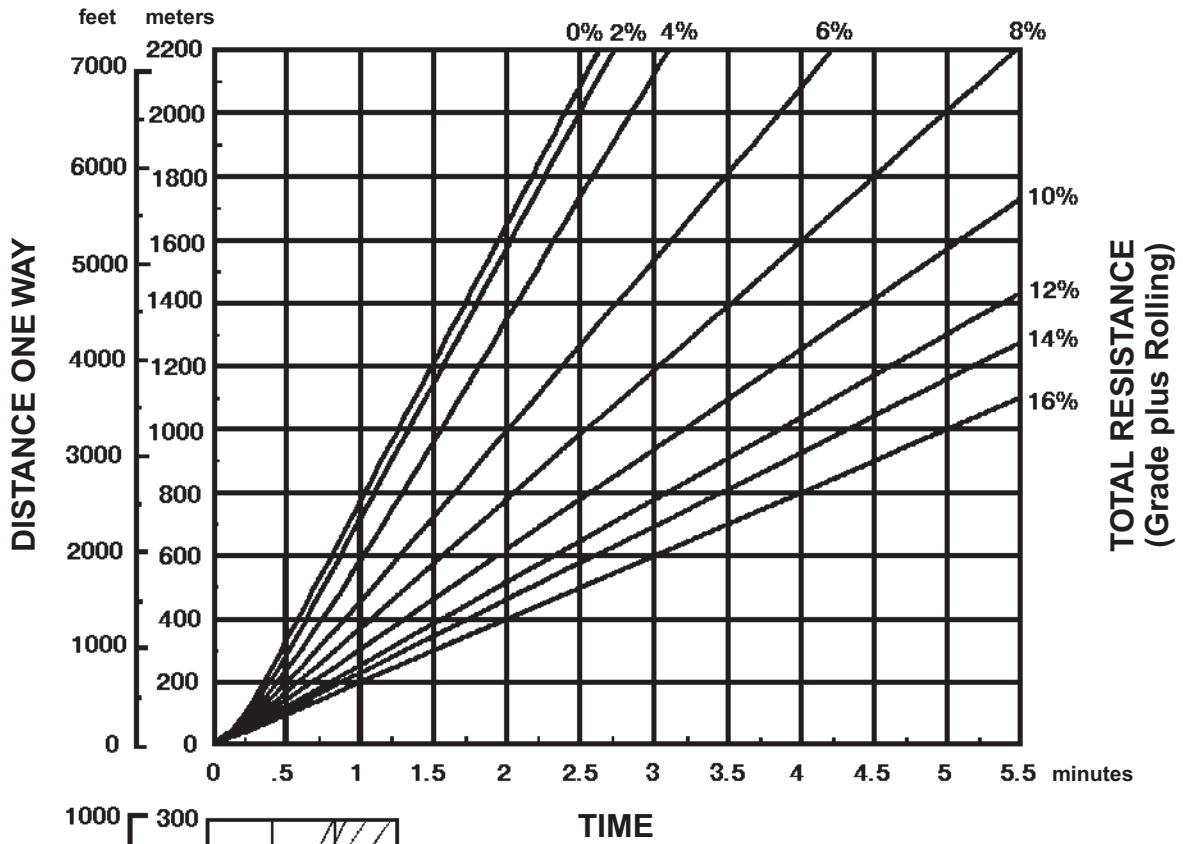
8

Empty weight: 36 780 kg (81,090 lb)
 Payload: 21 775 kg (48,000 lb)

Wheel Tractor-Scrapers

621G Auger Travel Time — Empty
 ● 33.25R29 Tires

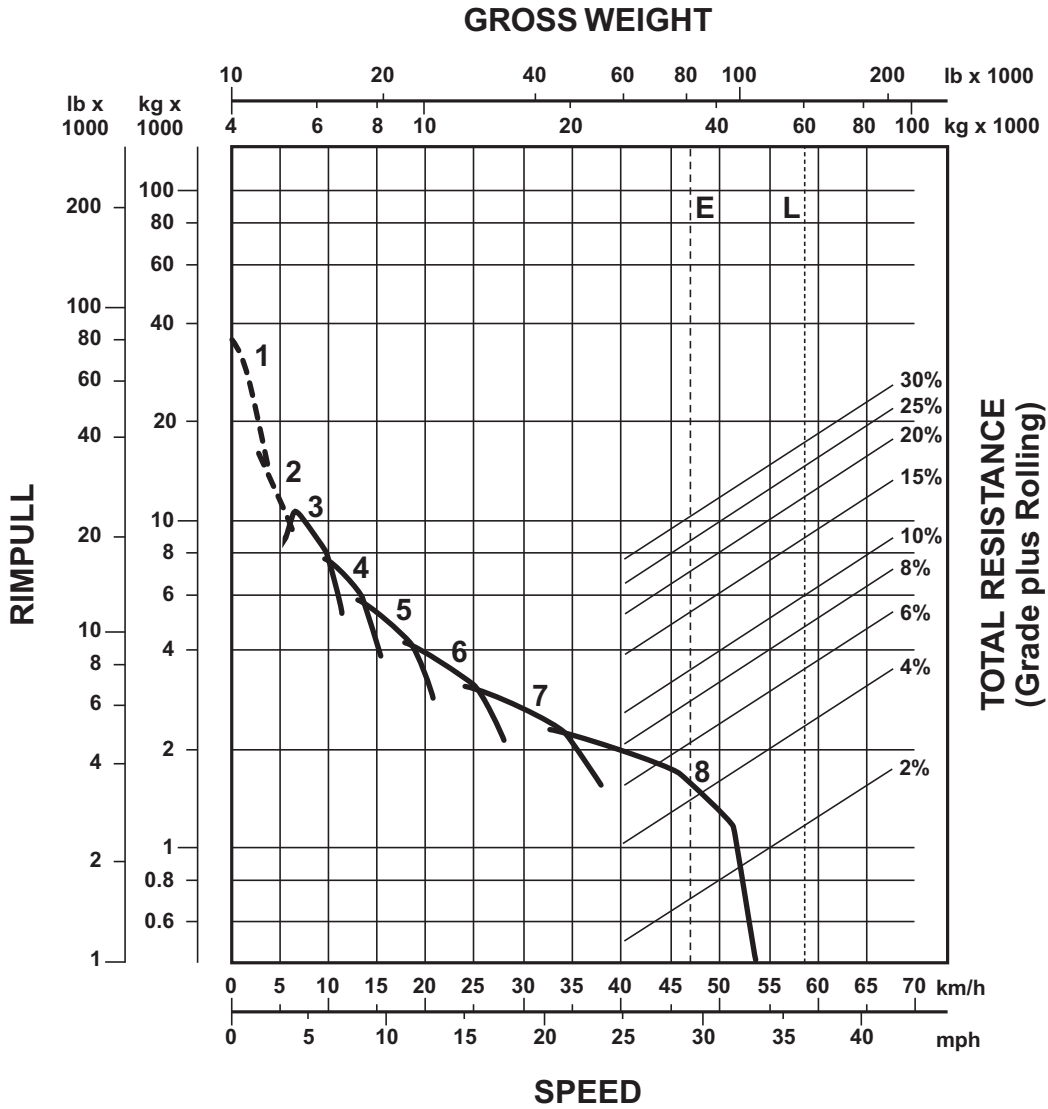
EMPTY



Empty weight: 36 780 kg (81,090 lb)

623G Rimpull-Speed-Gradeability
 ● 33.25R29 Tires

Wheel Tractor-Scrapers



KEY

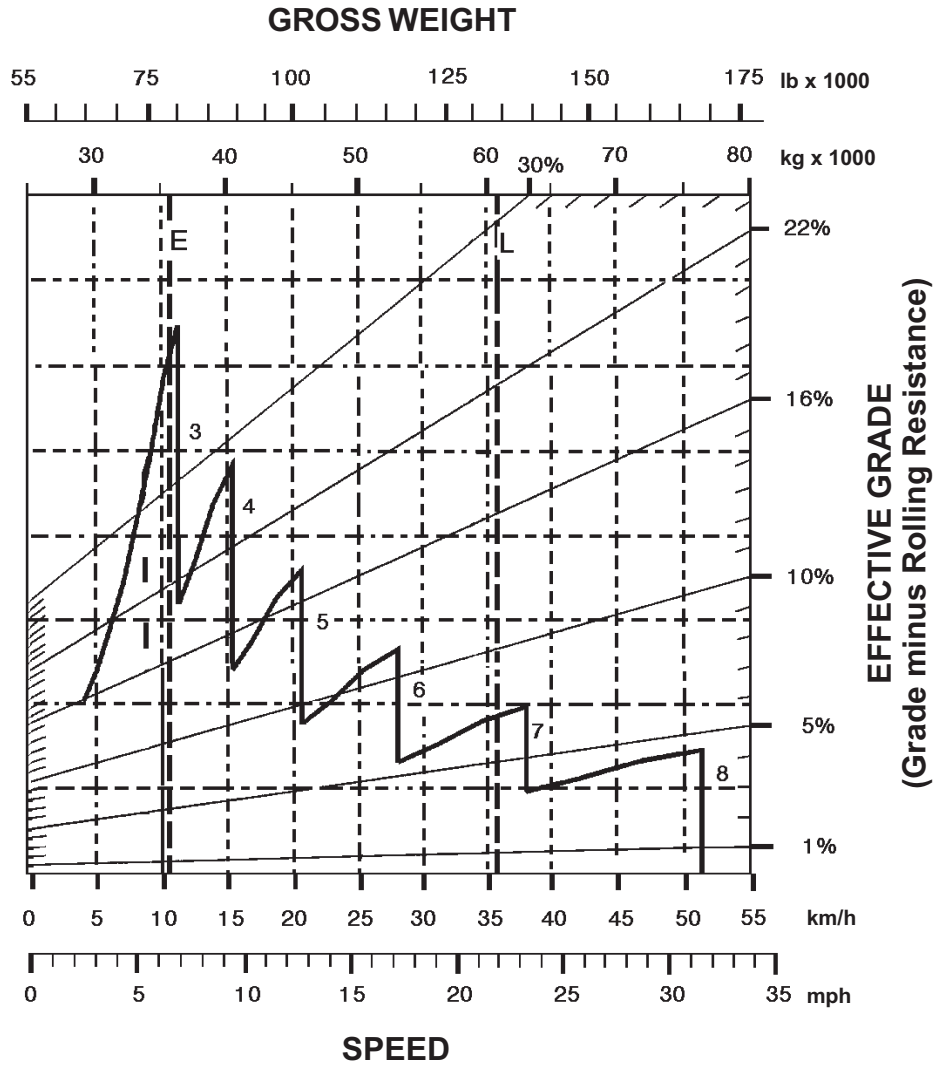
- 1 — 1st Gear Torque Converter Drive
- 2 — 2nd Gear Torque Converter Drive
- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive
- 7 — 7th Gear Direct Drive
- 8 — 8th Gear Direct Drive

KEY

- E — Empty 37 122 kg (81,840 lb)
- L — Loaded 62 070 kg (136,840 lb)

Wheel Tractor-Scrapers

623G Retarding
 ● 33.25R29 Tires



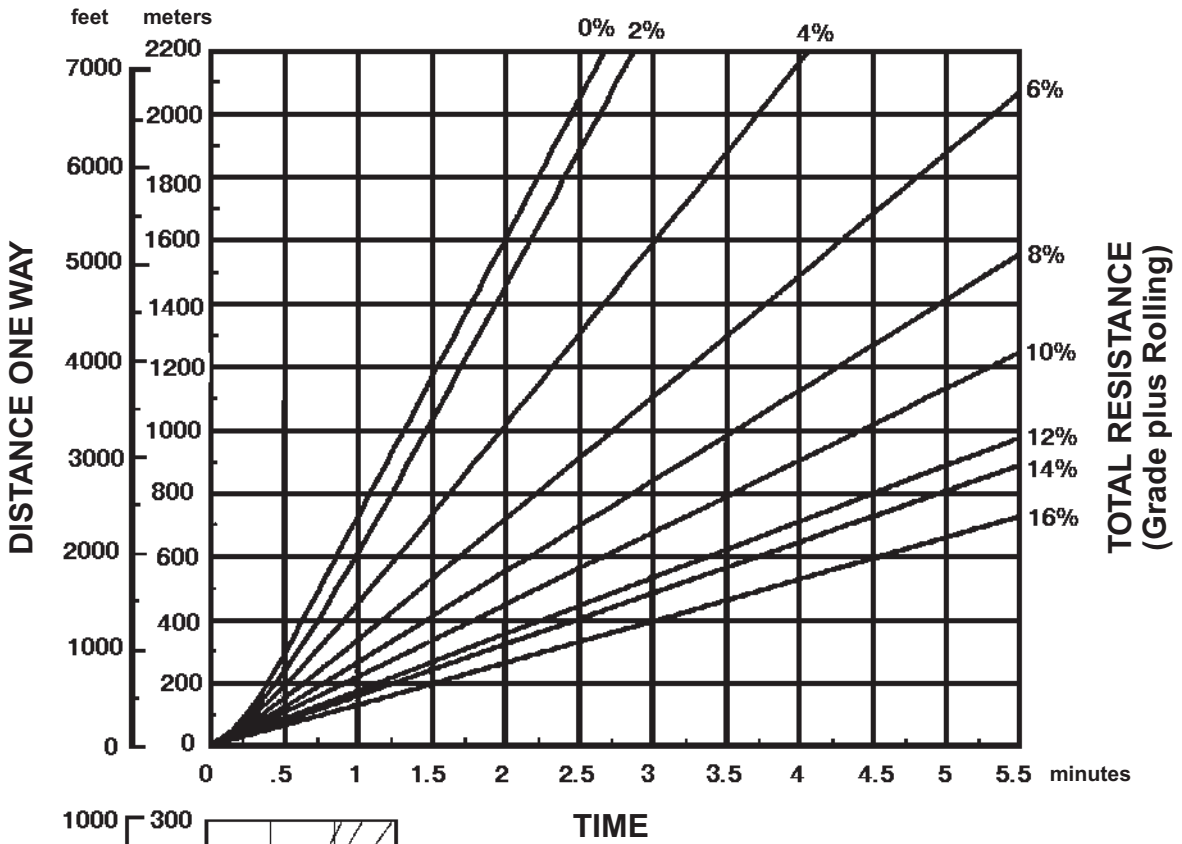
KEY
 3 — 3rd Gear Direct Drive
 4 — 4th Gear Direct Drive
 5 — 5th Gear Direct Drive
 6 — 6th Gear Direct Drive
 7 — 7th Gear Direct Drive
 8 — 8th Gear Direct Drive

KEY
 E — Empty 37 122 kg (81,840 lb)
 L — Loaded 62 070 kg (136,840 lb)

623G Travel Time — Loaded
 • 33.25R29 Tires

Wheel Tractor-Scrapers

LOADED



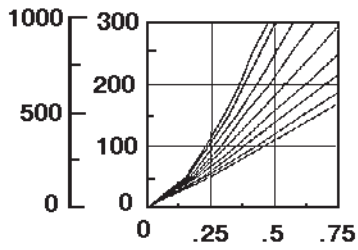
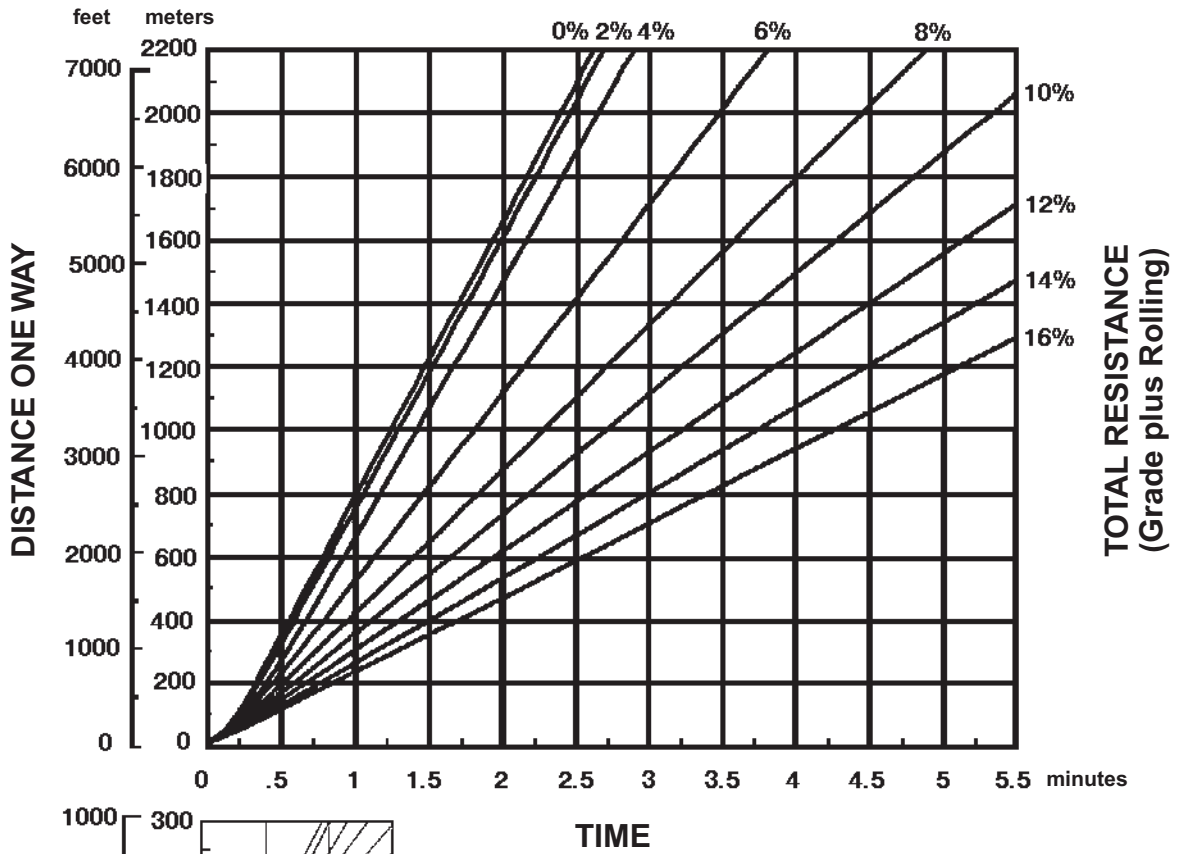
8

Empty weight: 37 122 kg (81,840 lb)
 Payload: 24 950 kg (55,000 lb)

Wheel Tractor-Scrapers

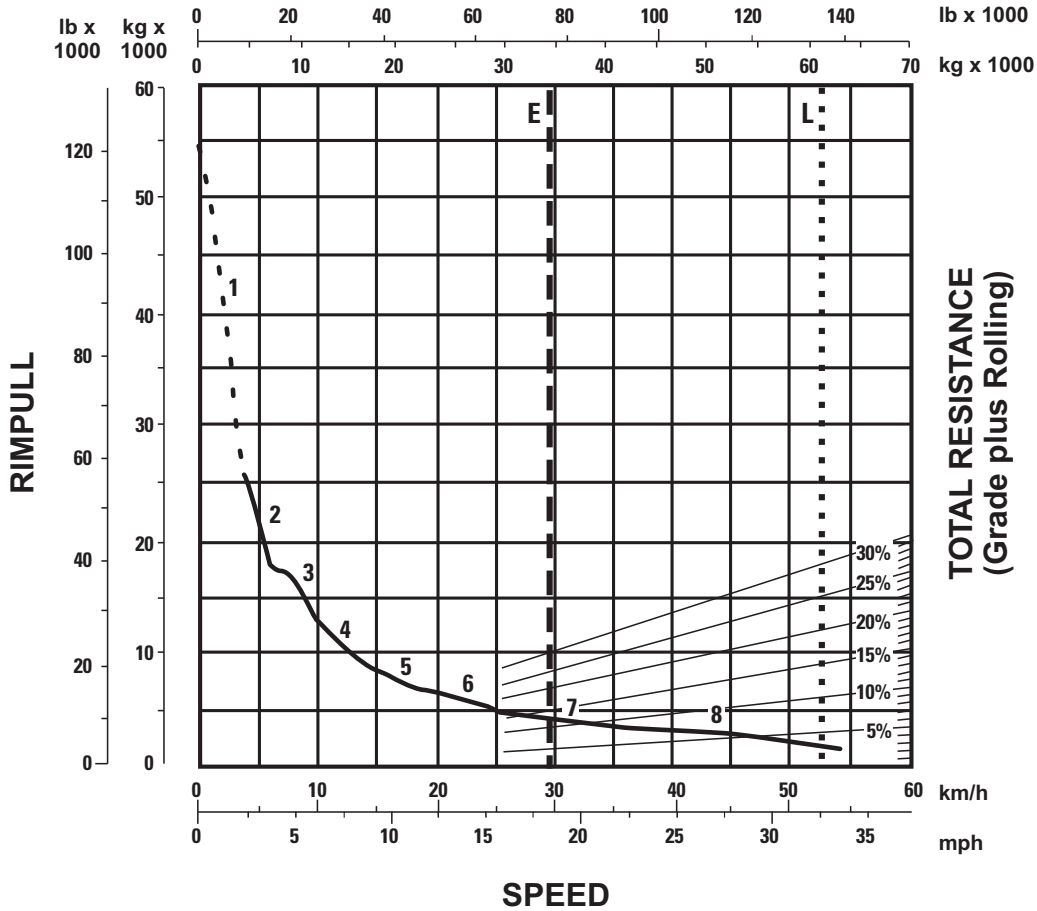
623G Travel Time — Empty
● 33.25R29 Tires

EMPTY



Empty weight: 37 122 kg (81,840 lb)

**TIER 3
 STANDARD ARRANGEMENT*
 GROSS WEIGHT**



8

*at sea level

KEY

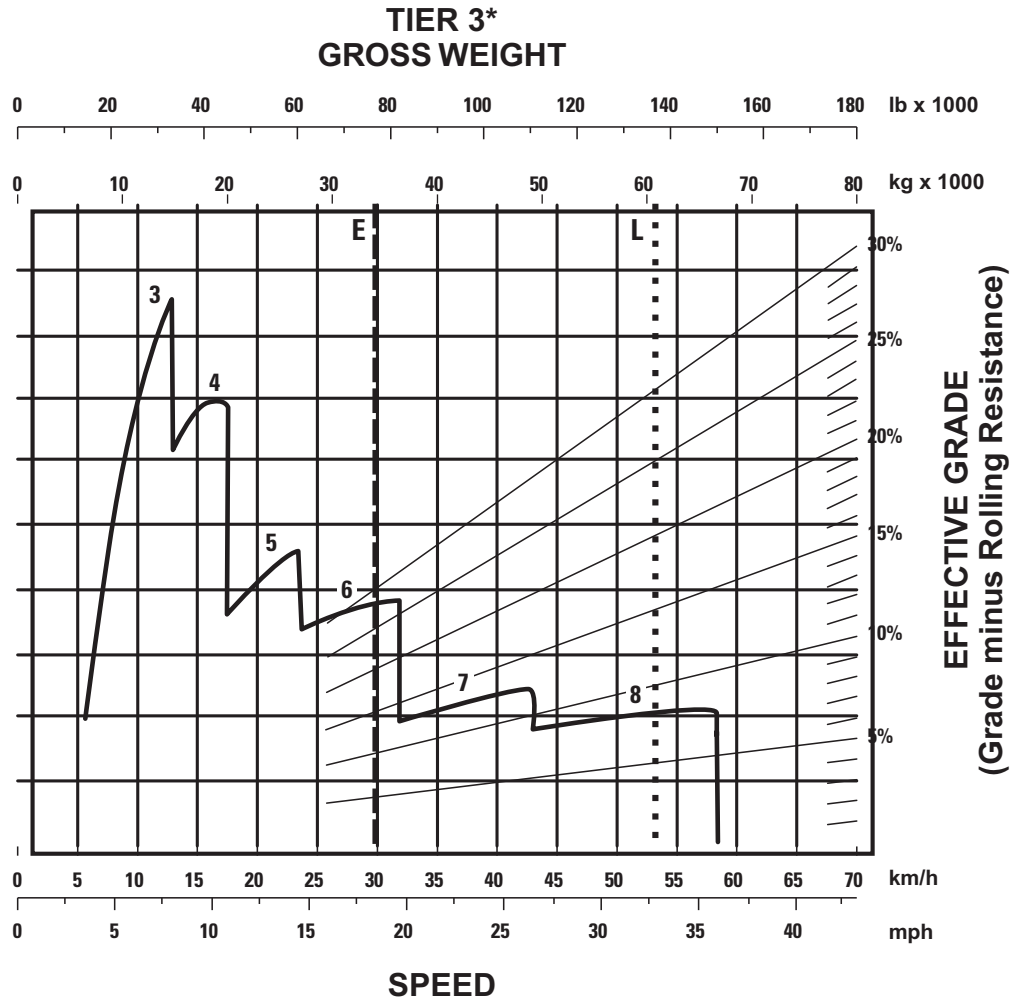
- 1 — 1st Gear Torque Converter Drive
- 2 — 2nd Gear Torque Converter Drive
- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive
- 7 — 7th Gear Direct Drive
- 8 — 8th Gear Direct Drive

KEY

- E — Empty 38 770 kg (85,473 lb)
- L — Loaded 63 332 kg (139,601 lb)

Wheel Tractor-Scrapers

627G Retarding
 ● 33.25R29 Tires



*at sea level

KEY

- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive
- 7 — 7th Gear Direct Drive
- 8 — 8th Gear Direct Drive

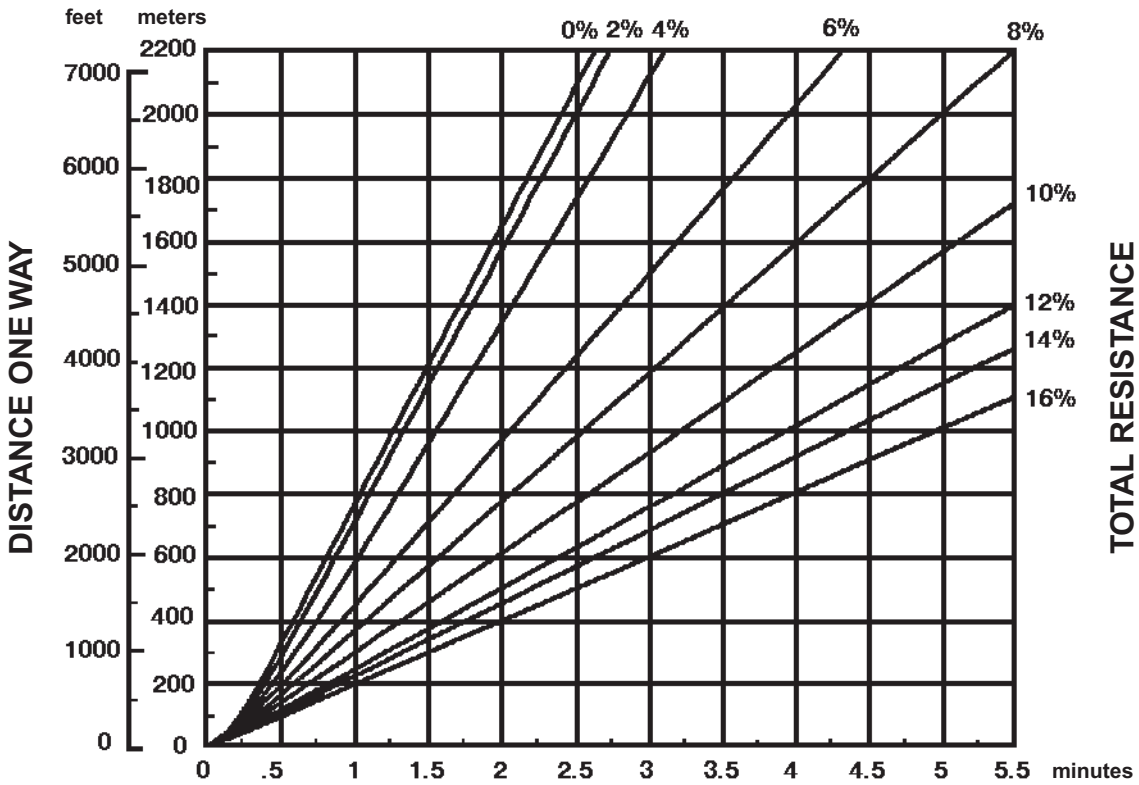
KEY

- E — Empty 38 770 kg (85,473 lb)
- L — Loaded 63 332 kg (139,601 lb)

627G Travel Time — Loaded
 • 33.25R29 Tires
 • Standard and Push-Pull

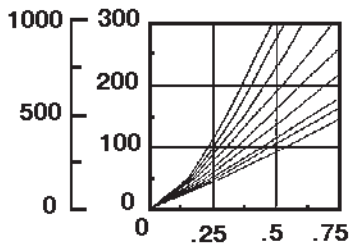
Wheel Tractor-Scrapers

LOADED



**TOTAL RESISTANCE
 (Grade plus Rolling)**

8



TIME

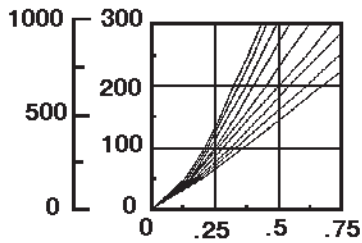
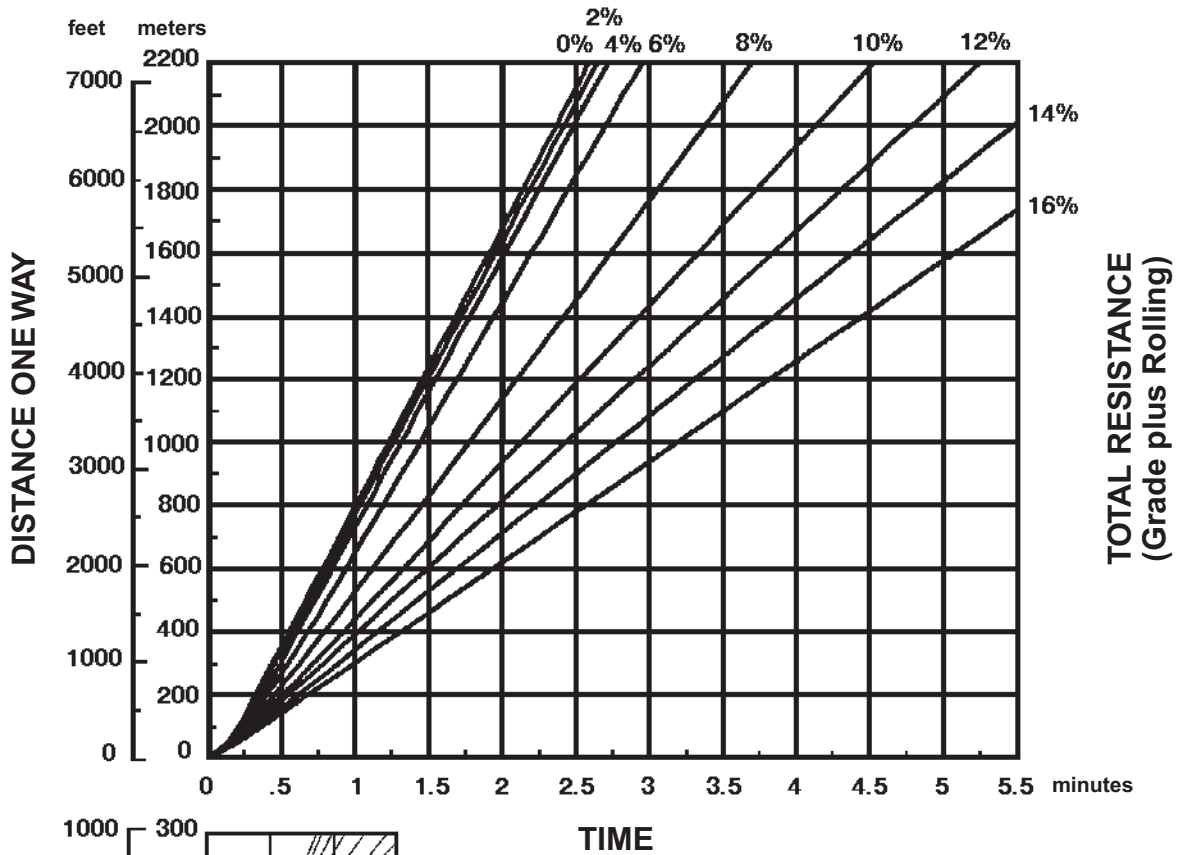
Empty weight: 37 545 kg (82,773 lb)
 Payload: 23 950 kg (52,800 lb)

Wheel Tractor-Scrapers

627G Travel Time — Empty

- 33.25R29 Tires
- Standard and Push-Pull

EMPTY

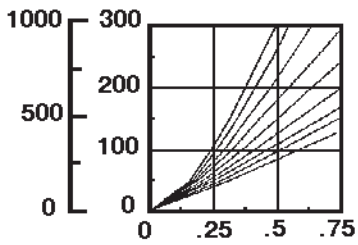
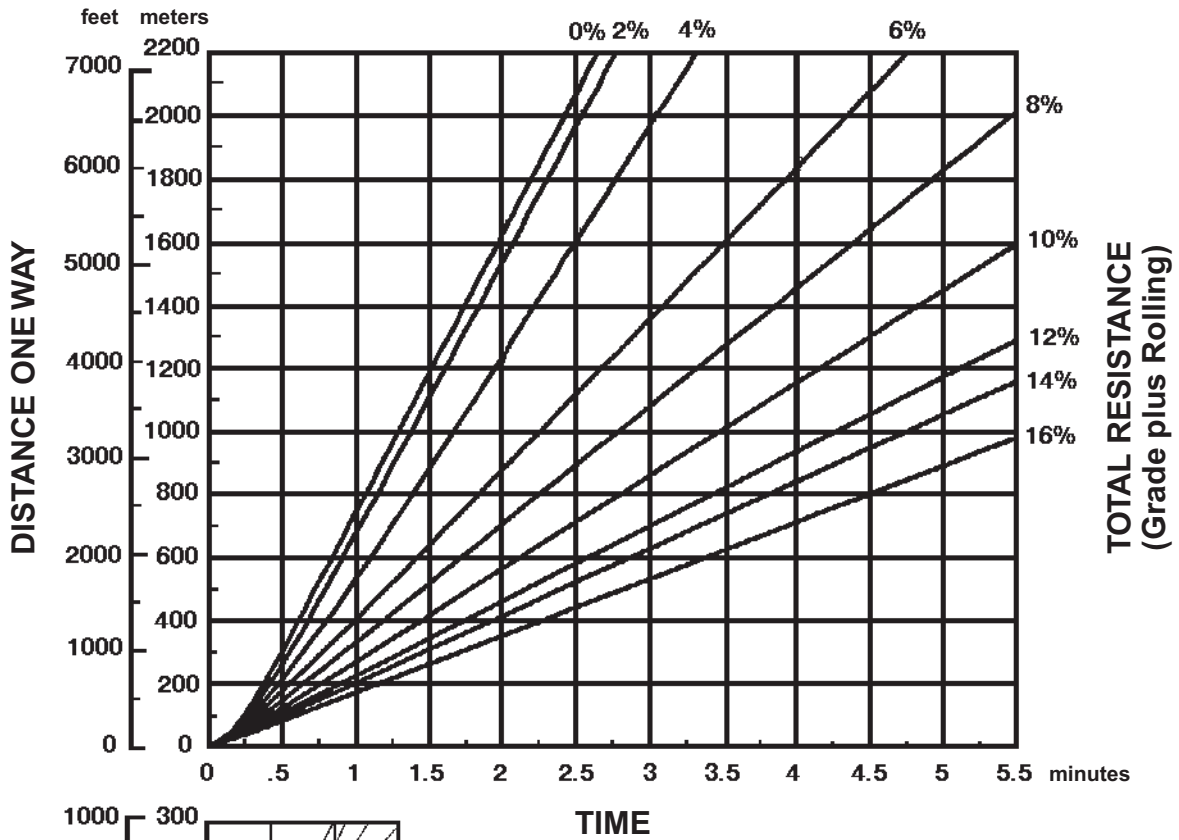


Empty weight: 37 545 kg (82,773 lb)

627G Auger Travel Time — Loaded
 • 33.25R29 Tires

Wheel Tractor-Scrapers

LOADED

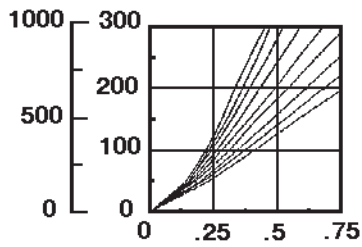
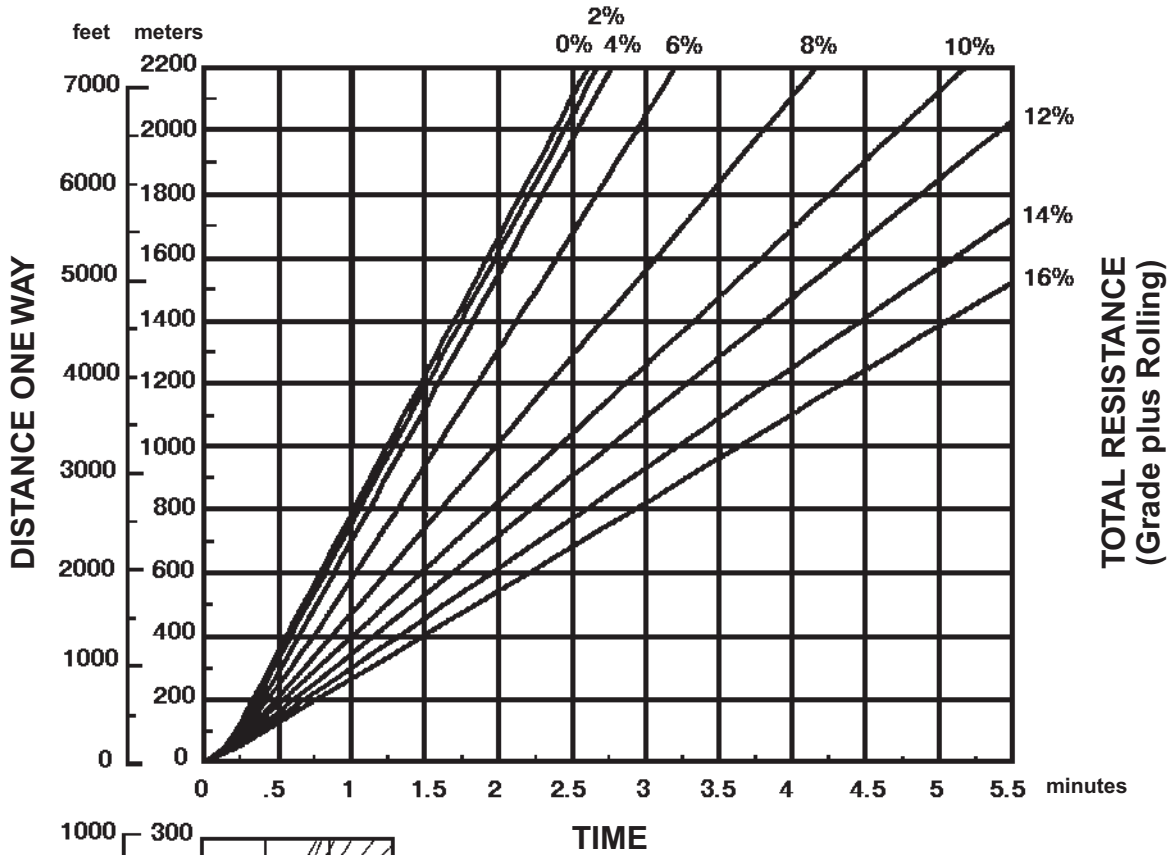


Empty weight: 41 635 kg (91,790 lb)
 Payload: 21 775 kg (48,000 lb)

Wheel Tractor-Scrapers

627G Auger Travel Time — Empty
 ● 33.25R29 Tires

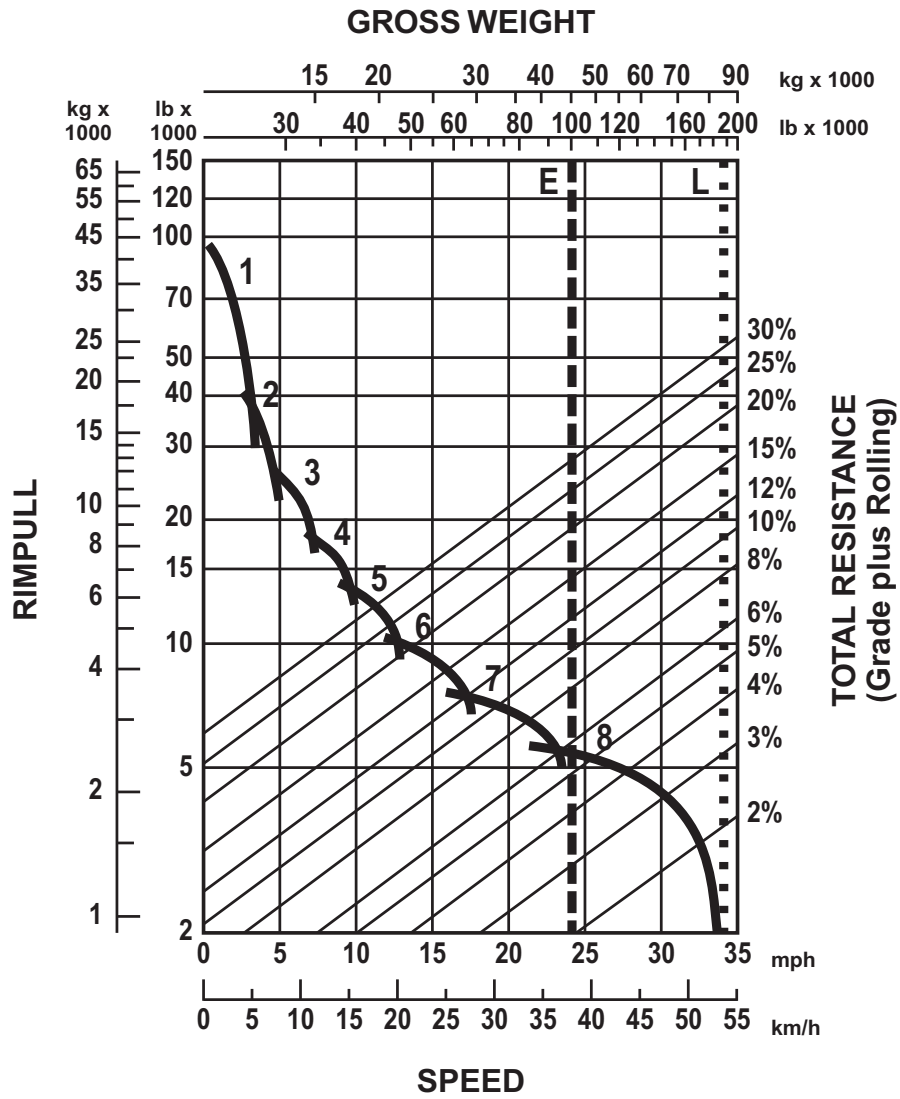
EMPTY



Empty weight: 41 635 kg (91,790 lb)

631G Rimpull-Speed-Gradeability
 • 37.25R35 Tires

Wheel Tractor-Scrapers



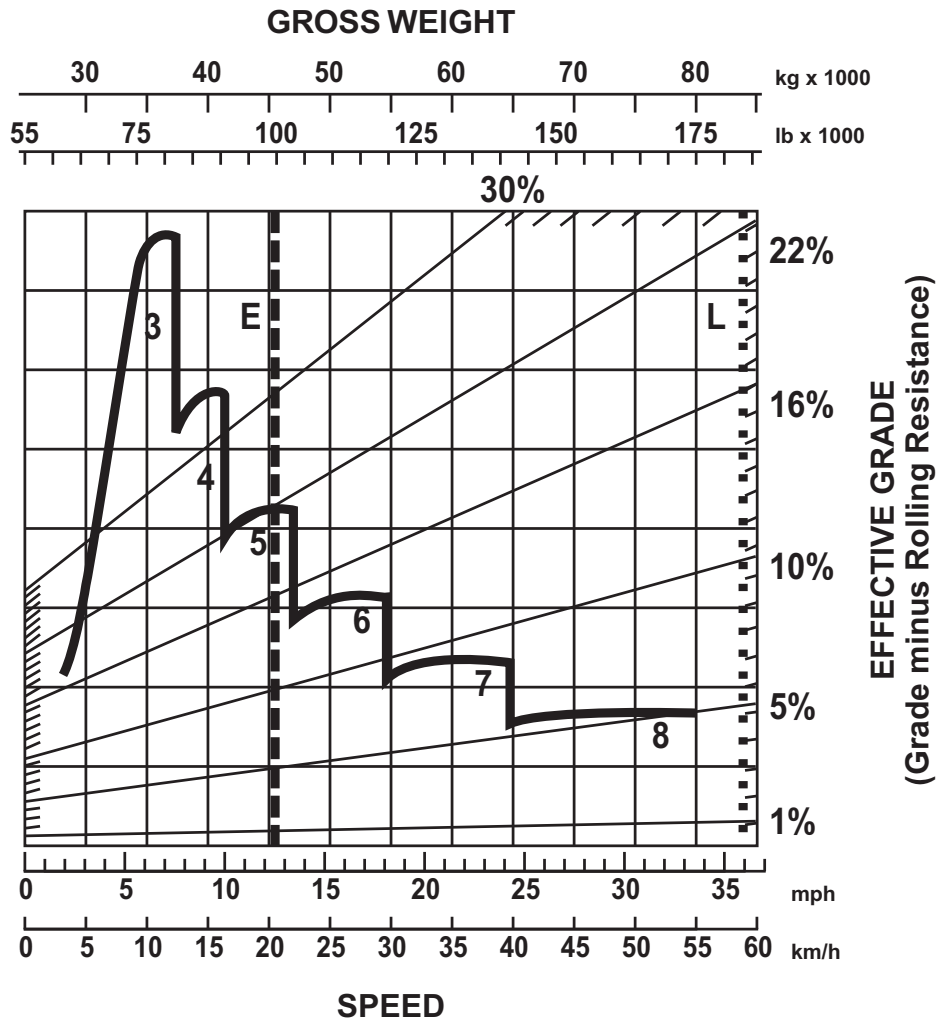
8

- KEY**
- 1 — 1st Gear Torque Converter Drive
 - 2 — 2nd Gear Torque Converter Drive
 - 3 — 3rd Gear Direct Drive
 - 4 — 4th Gear Direct Drive
 - 5 — 5th Gear Direct Drive
 - 6 — 6th Gear Direct Drive
 - 7 — 7th Gear Direct Drive
 - 8 — 8th Gear Direct Drive

- KEY**
- E — Empty 46 475 kg (102,460 lb)
 - L — Loaded 83 760 kg (184,660 lb)

Wheel Tractor-Scrapers

631G Retarding
 • 37.25R35 Tires



KEY

3 — 3rd Gear Direct Drive
 4 — 4th Gear Direct Drive
 5 — 5th Gear Direct Drive
 6 — 6th Gear Direct Drive
 7 — 7th Gear Direct Drive
 8 — 8th Gear Direct Drive

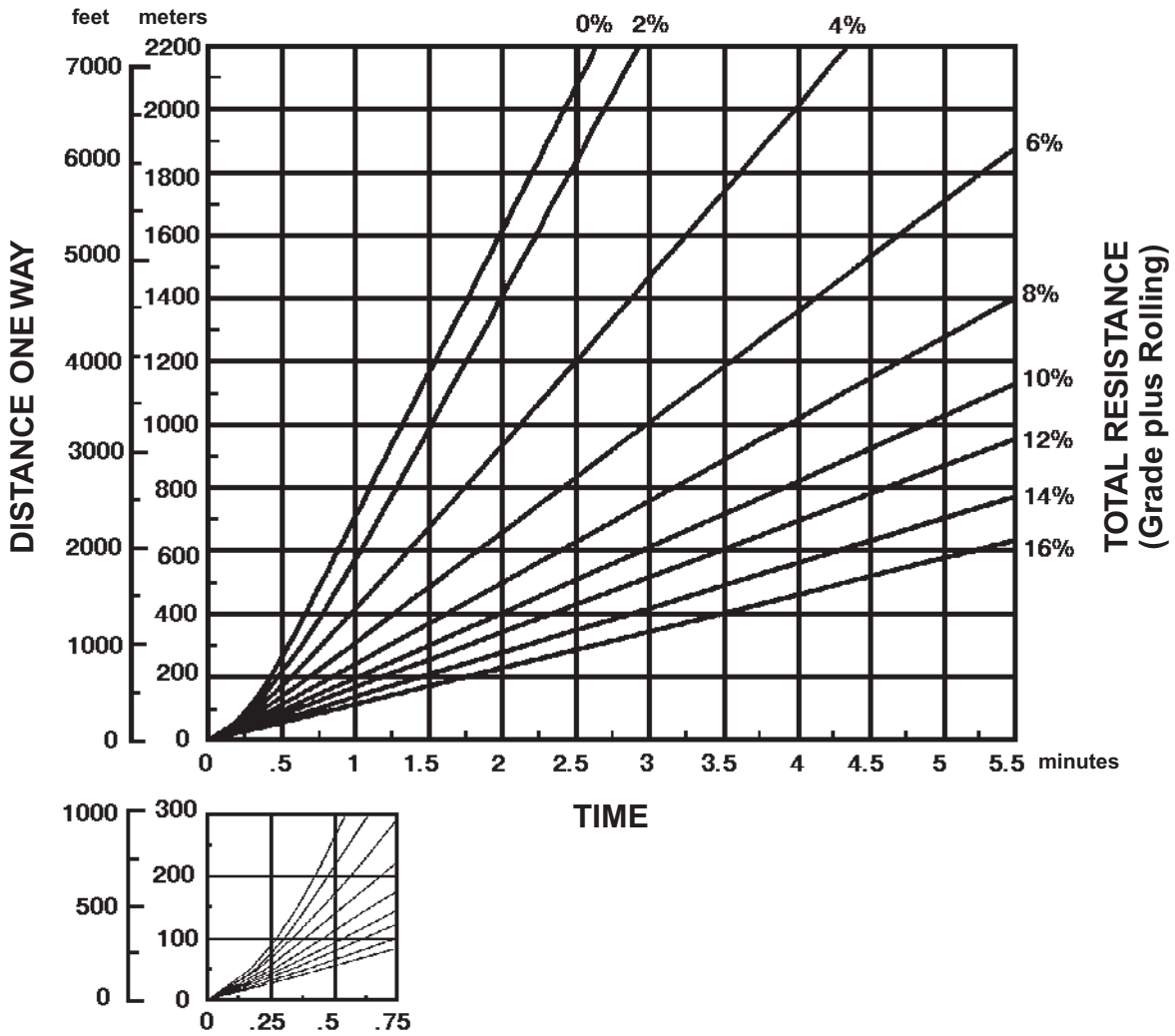
KEY

E — Empty 46 475 kg (102,460 lb)
 L — Loaded 83 760 kg (184,660 lb)

631G Travel Time — Loaded
 ● 37.25R35 Tires

Wheel Tractor-Scrapers

LOADED

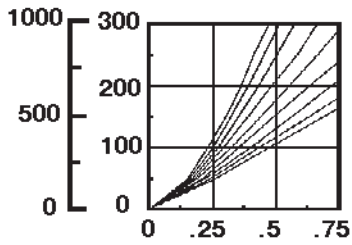
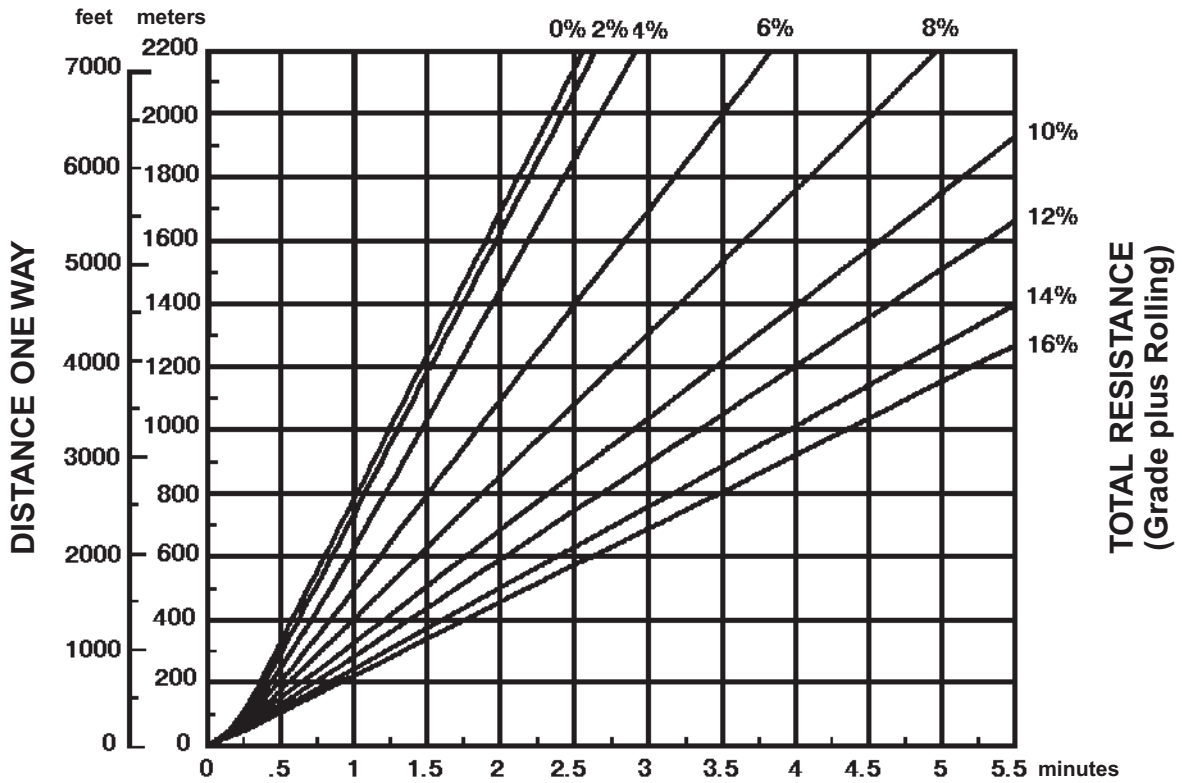


Empty weight: 45 362 kg (100,006 lb)
 Payload: 37 285 kg (82,200 lb)

Wheel Tractor-Scrapers

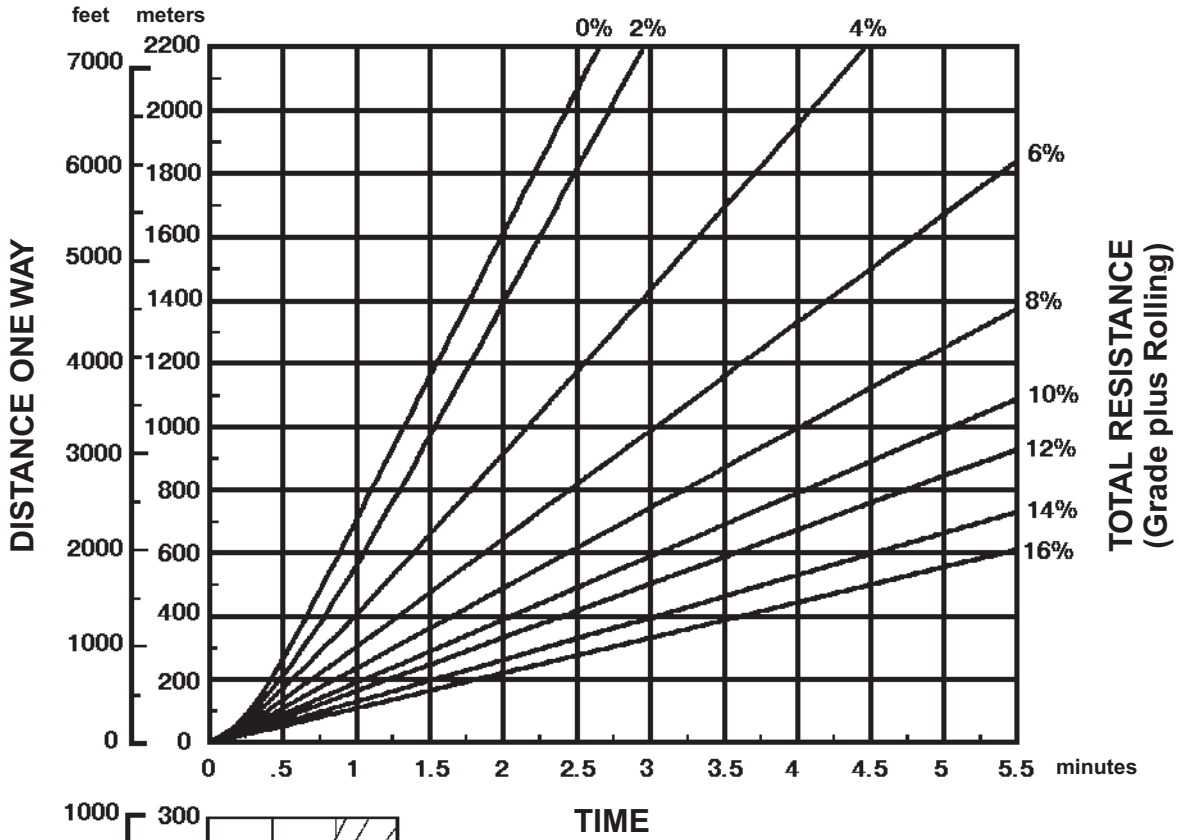
631G Travel Time — Empty
 ● 37.25R35 Tires

EMPTY



Empty weight: 45 362 kg (100,006 lb)

LOADED



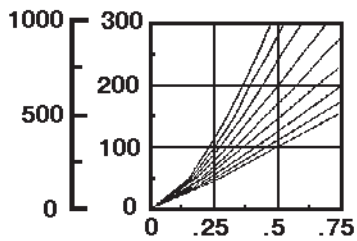
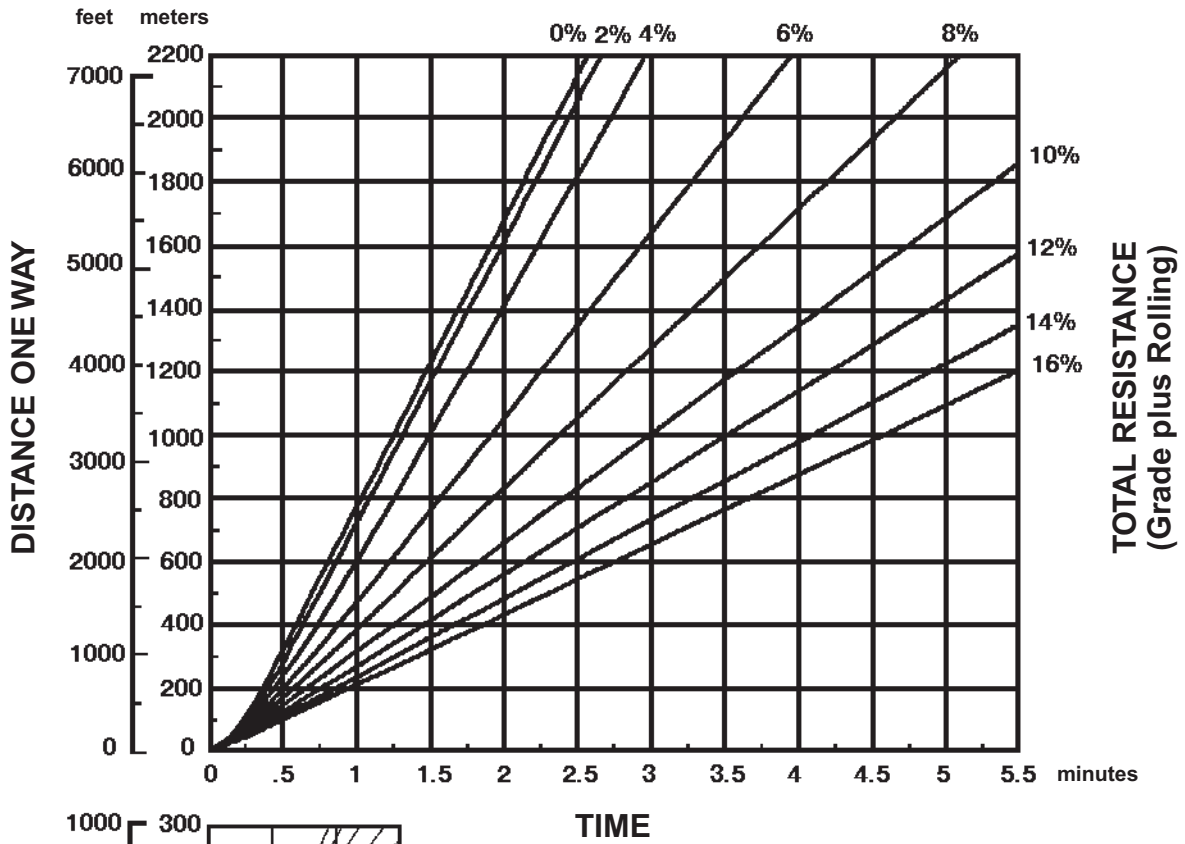
8

Empty weight: 50 100 kg (110,460 lb)
 Payload: 34 020 kg (75,000 lb)

Wheel Tractor-Scrapers

631G Auger Travel Time — Empty
 ● 37.25R35 Tires

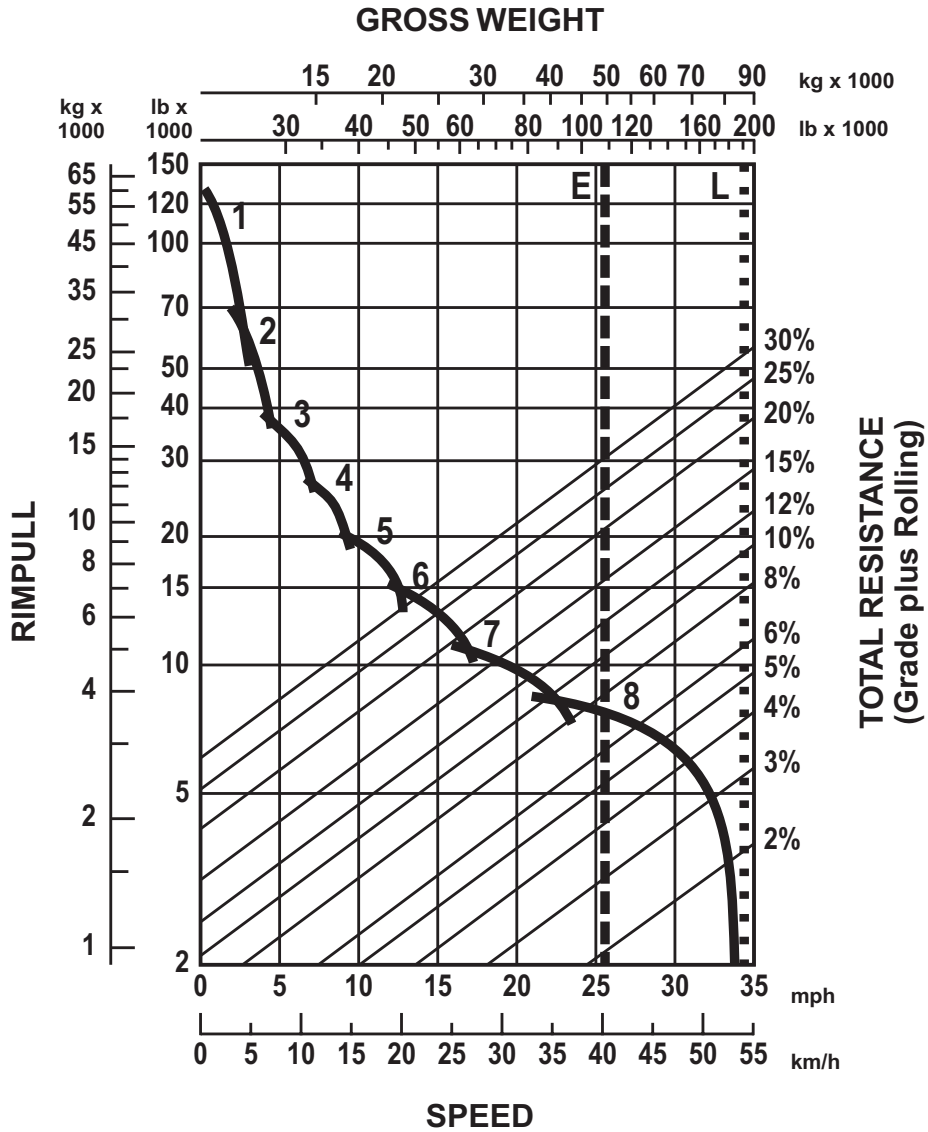
EMPTY



Empty weight: 50 100 kg (110,460 lb)

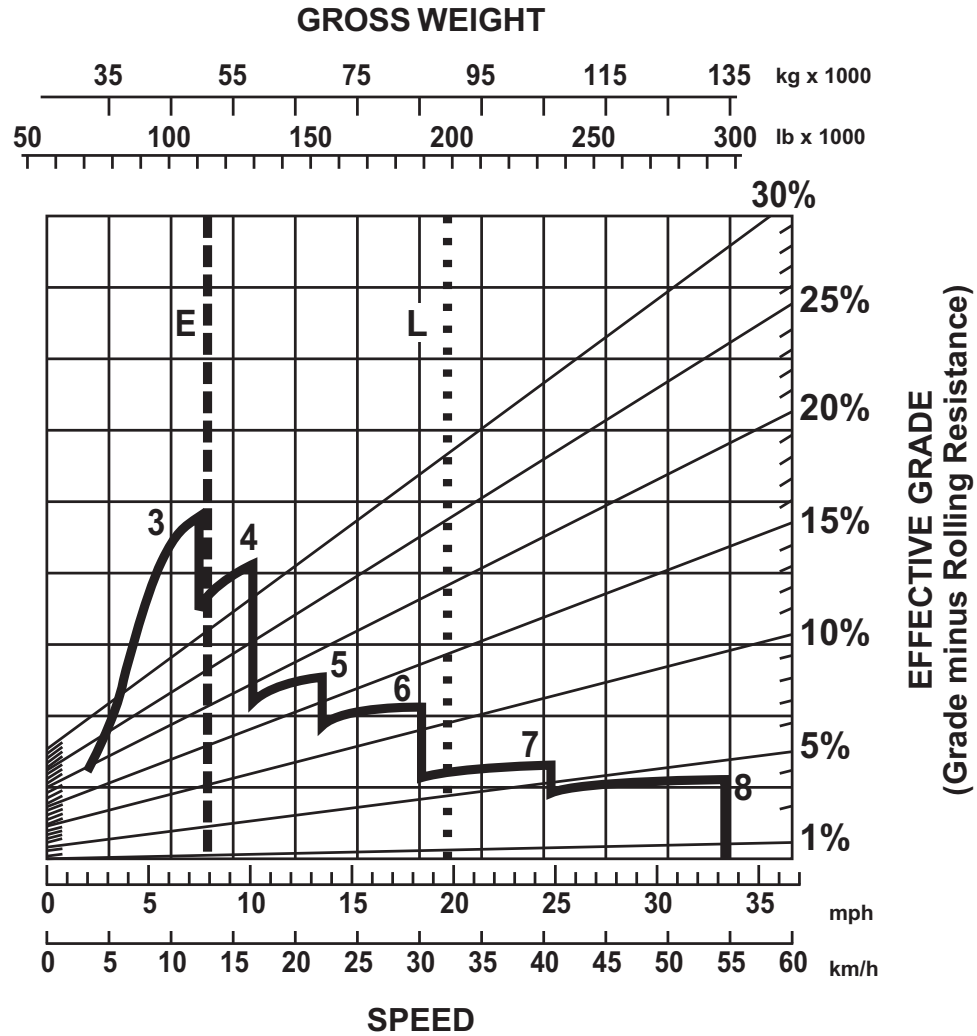
637G Rimpull-Speed-Gradeability
 • 37.25R35 Tires

Wheel Tractor-Scrapers



Wheel Tractor-Scrapers

637G Retarding
 • 37.25R35 Tires



KEY

- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive
- 7 — 7th Gear Direct Drive
- 8 — 8th Gear Direct Drive

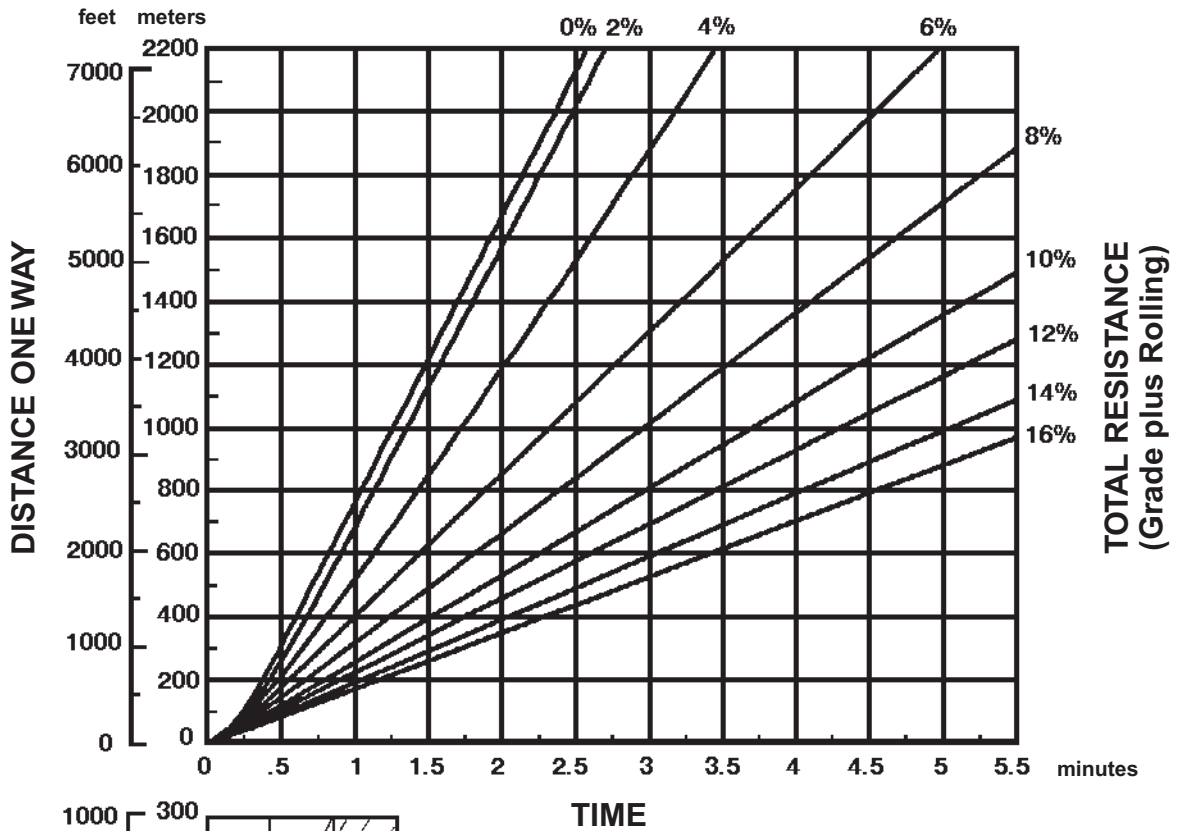
KEY

- E — Empty 52 047 kg (114,745 lb)
- L — Loaded 89 332 kg (196,944 lb)

637G Travel Time — Loaded
 • 37.25R35 Tires
 • Standard and Push-Pull

Wheel Tractor-Scrapers

LOADED



8

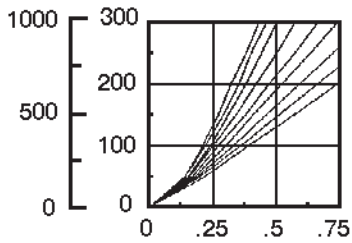
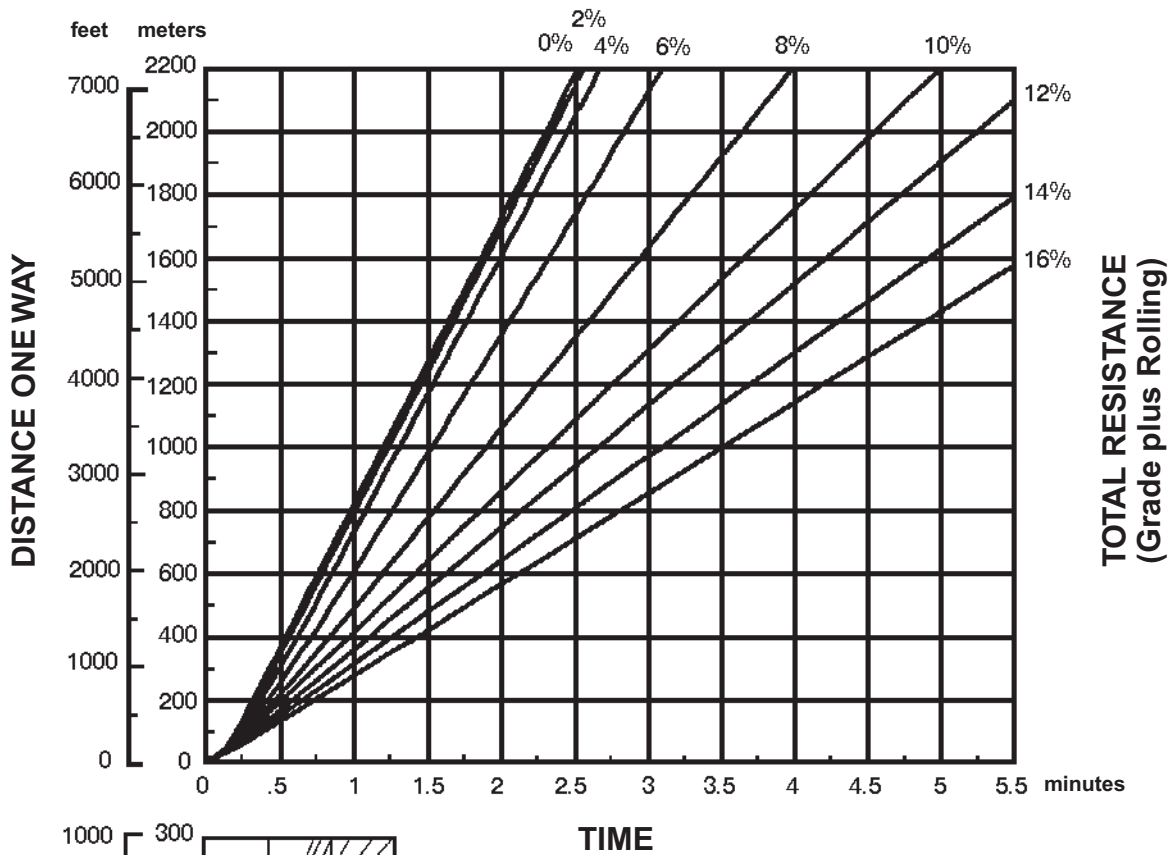
Empty weight: 51 147 kg (112,760 lb)
 Payload: 37 285 kg (82,200 lb)

Wheel Tractor-Scrapers

637G Travel Time — Empty

- 37.25R35 Tires
- Standard and Push-Pull

EMPTY

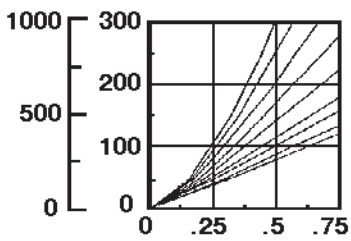
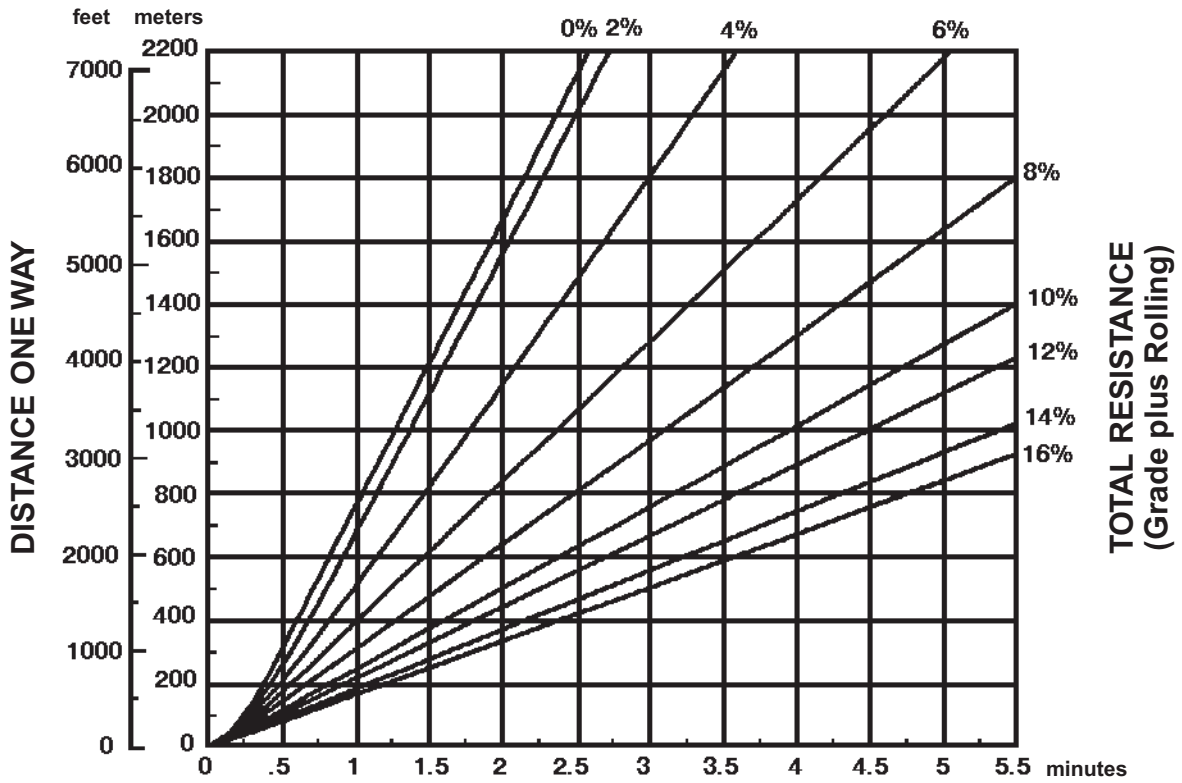


Empty weight: 51 147 kg (112,760 lb)

637G Auger Travel Time — Loaded
 • 37.25R35 Tires

Wheel Tractor-Scrapers

LOADED

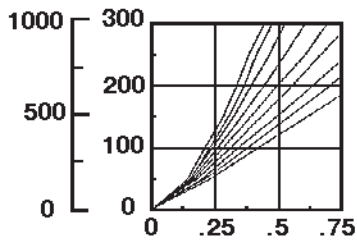
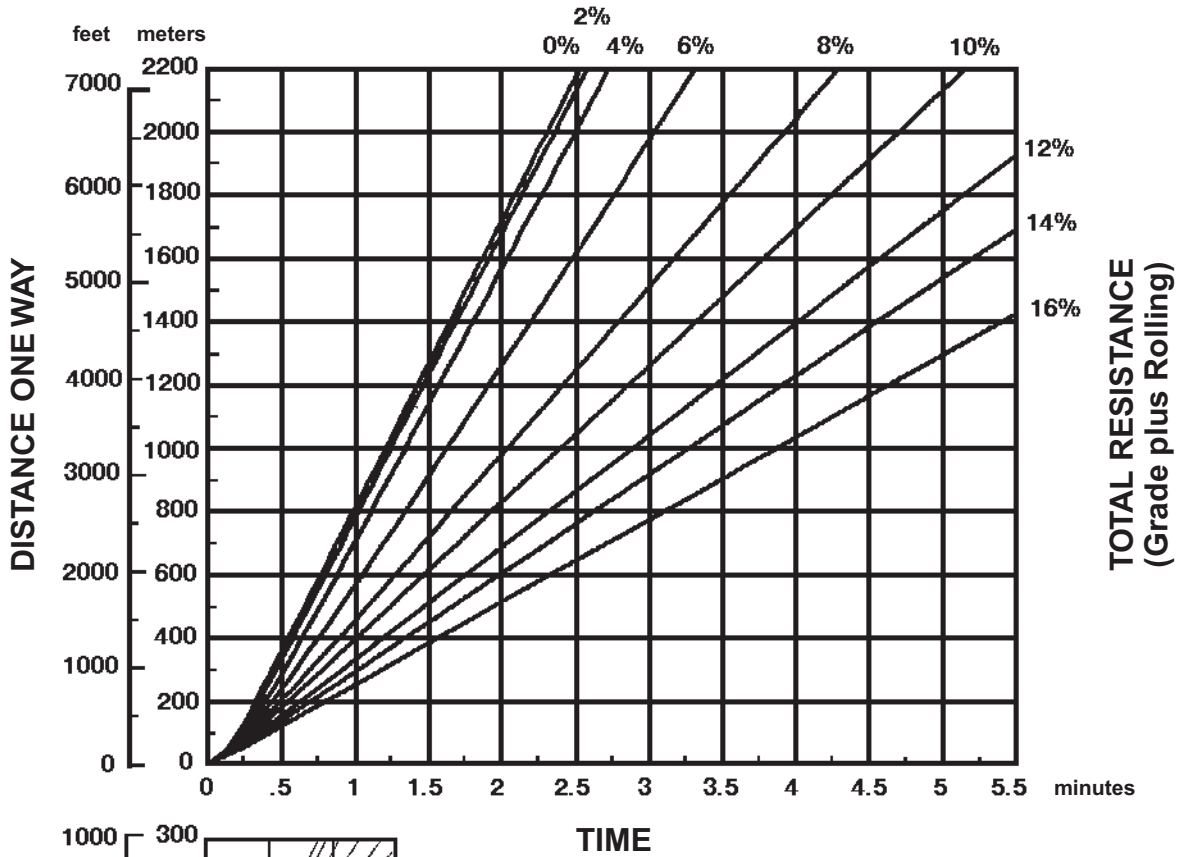


Empty weight: 55 675 kg (122,745 lb)
 Payload: 34 020 kg (75,000 lb)

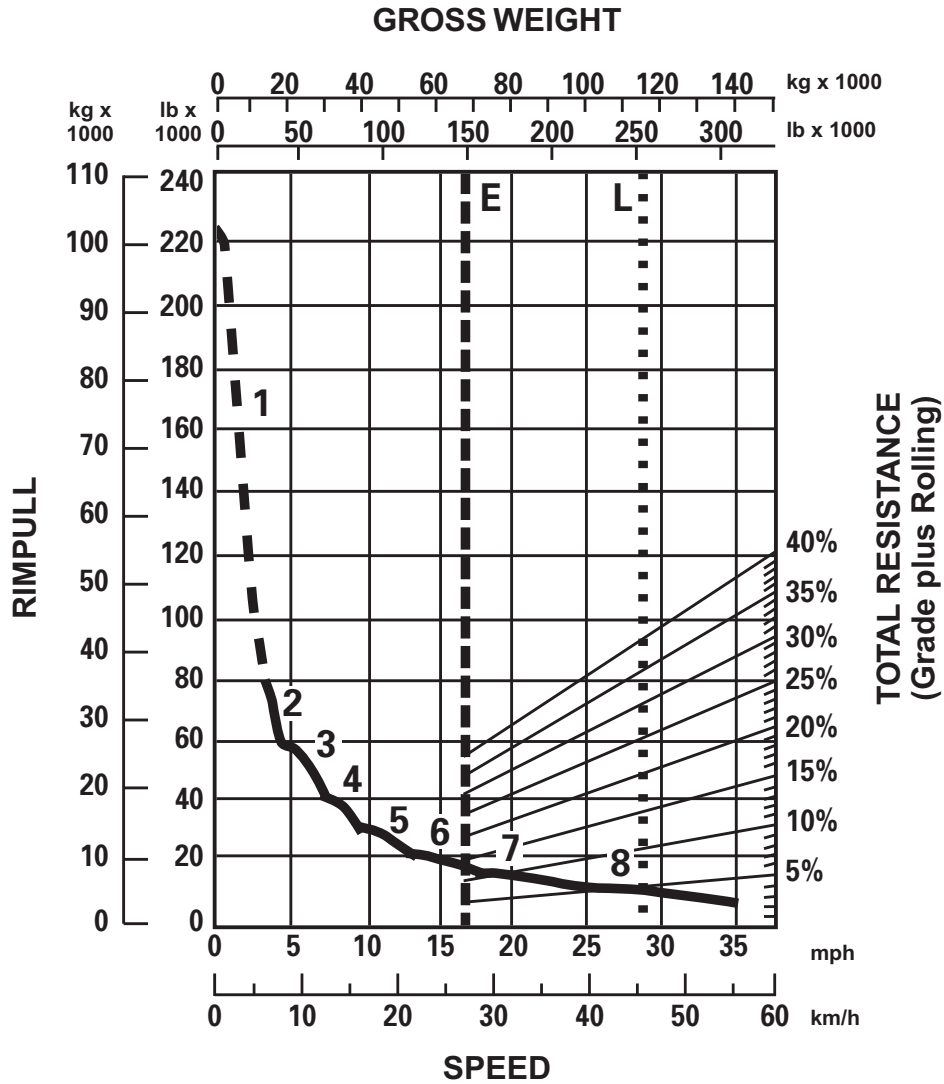
Wheel Tractor-Scrapers

637G Auger Travel Time — Empty
 ● 37.25R35 Tires

EMPTY



Empty weight: 55 675 kg (122,745 lb)



*at sea level

KEY

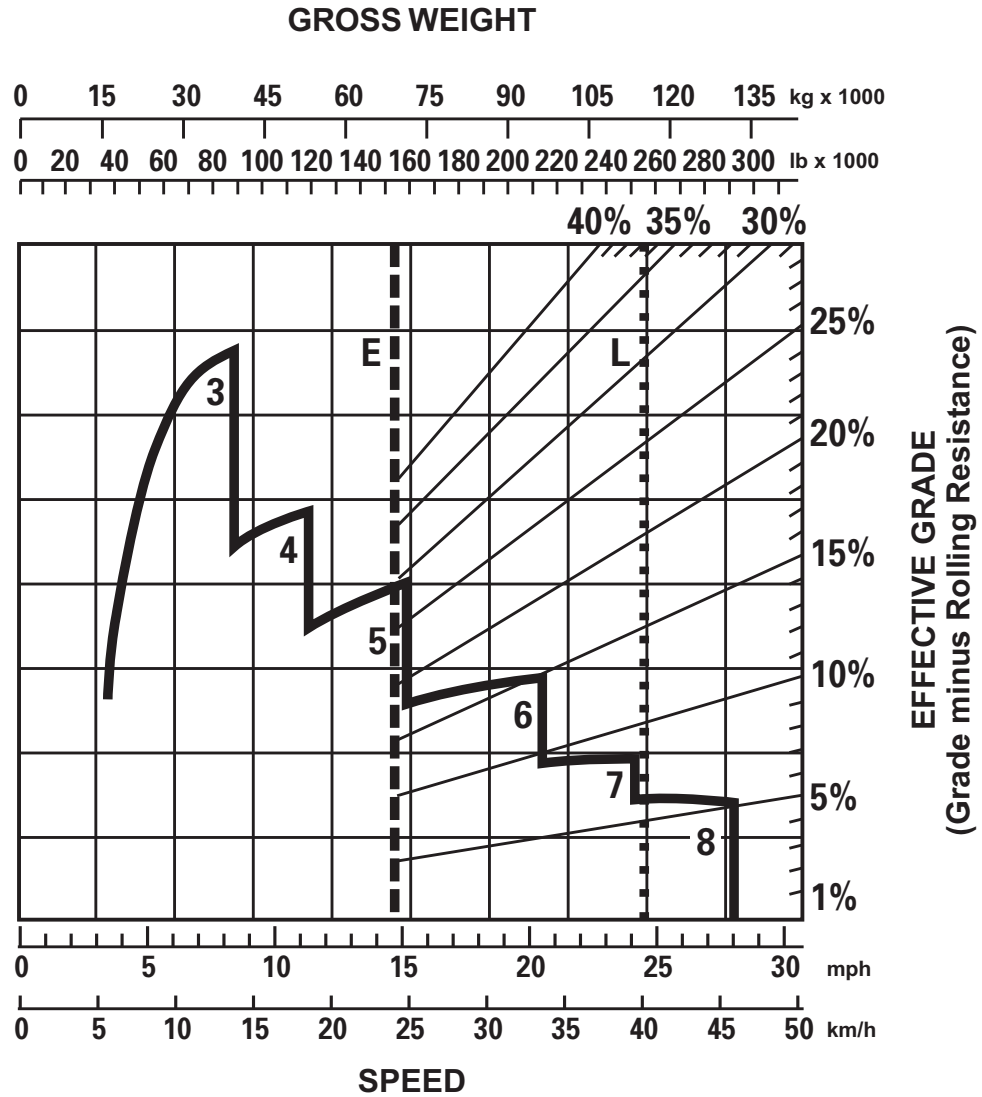
- 1 — 1st Gear Torque Converter Drive
- 2 — 2nd Gear Torque Converter Drive
- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive
- 7 — 7th Gear Direct Drive
- 8 — 8th Gear Direct Drive

KEY

- E — Empty 67 774 kg (149,417 lb)
- L — Loaded 114 949 kg (253,420 lb)

Wheel Tractor-Scrapers

657G Retarding
 • 37.25/R35 Tires



*at sea level

KEY

3 — 3rd Gear Direct Drive
 4 — 4th Gear Direct Drive
 5 — 5th Gear Direct Drive
 6 — 6th Gear Direct Drive
 7 — 7th Gear Direct Drive
 8 — 8th Gear Direct Drive

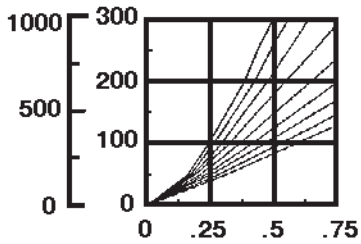
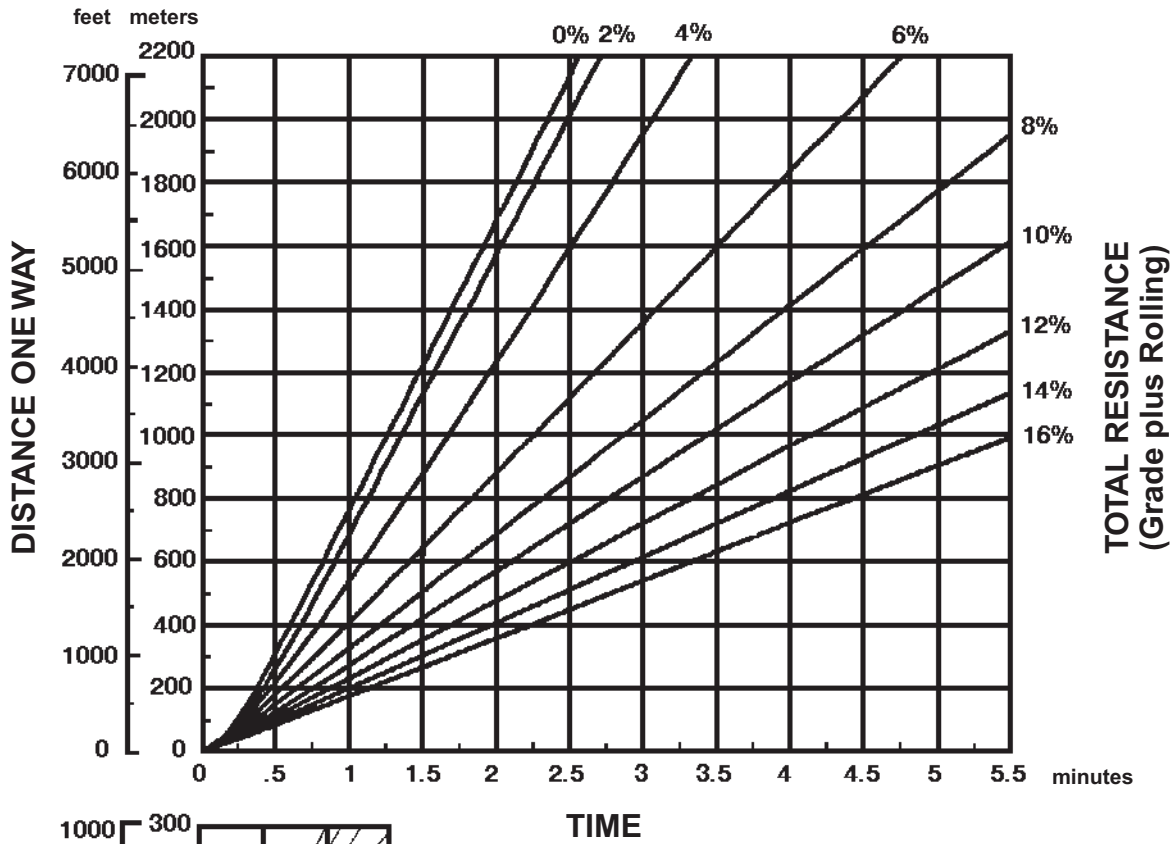
KEY

E — Empty 67 774 kg (149,417 lb)
 L — Loaded 114 949 kg (253,420 lb)

657G Travel Time — Loaded
 • 40.5/75R39 Tires
 • Standard and Push-Pull

Wheel Tractor-Scrapers

LOADED



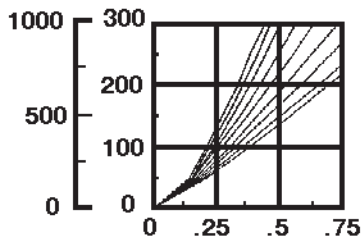
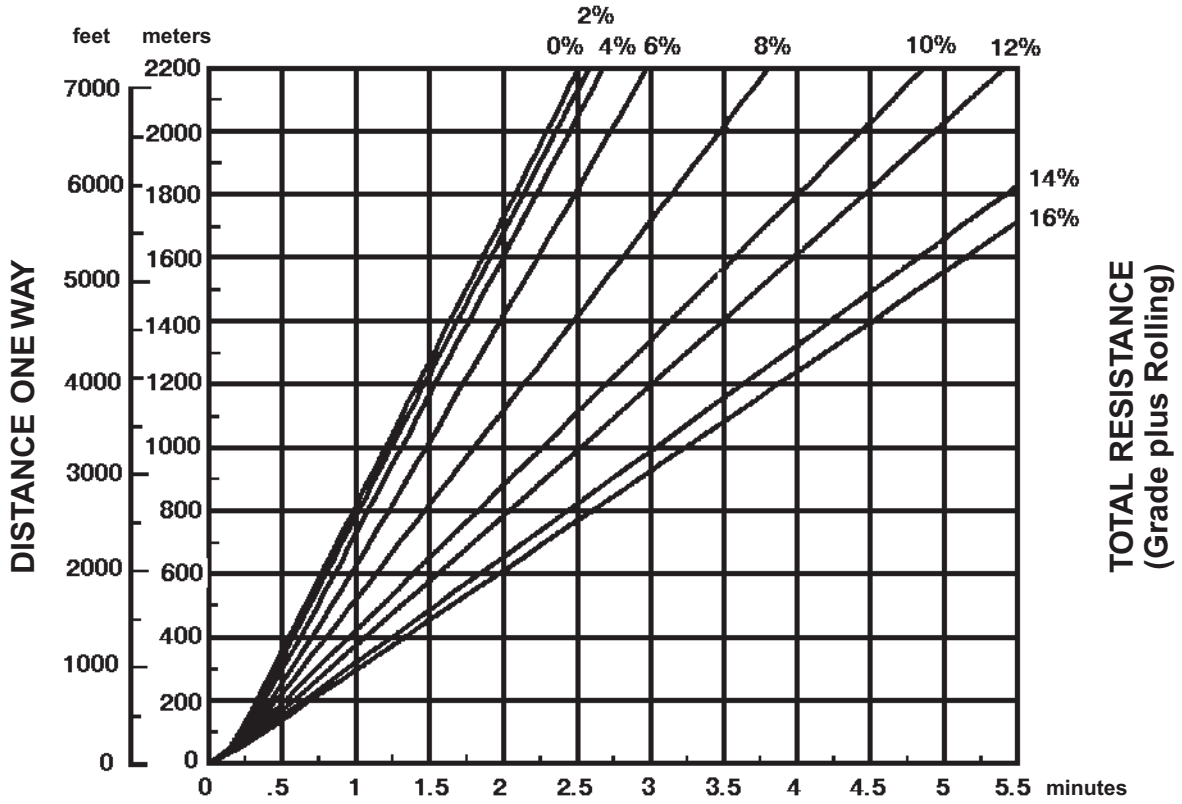
Empty weight: 69 080 kg (152,290 lb)
 Payload: 47 175 kg (104,000 lb)

Wheel Tractor-Scrapers

657G Travel Time — Empty

- 40.5/75R39 Tires
- Standard and Push-Pull

EMPTY



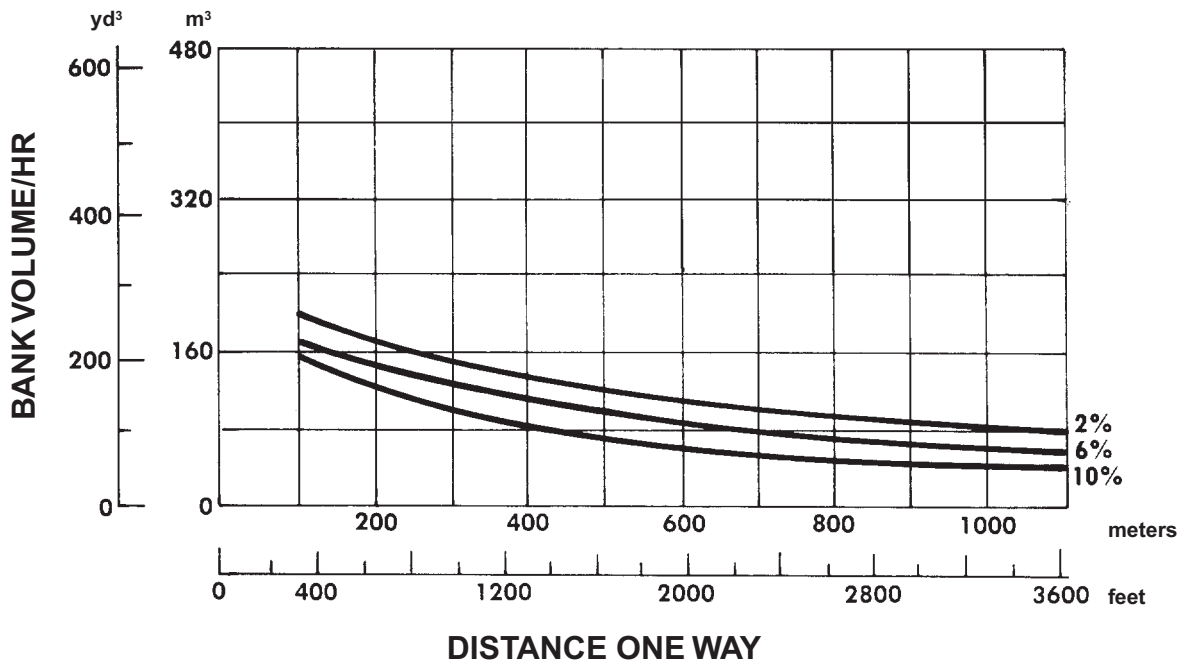
TIME

Empty weight: 69 080 kg (152,290 lb)

DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only. 100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 11 975 kg, 6.7 Bm³ (26,400 lb, 8.8 BCY).
- Empty weight: 14 970 kg (33,000 lb).
- Fixed time: 1.6 min.



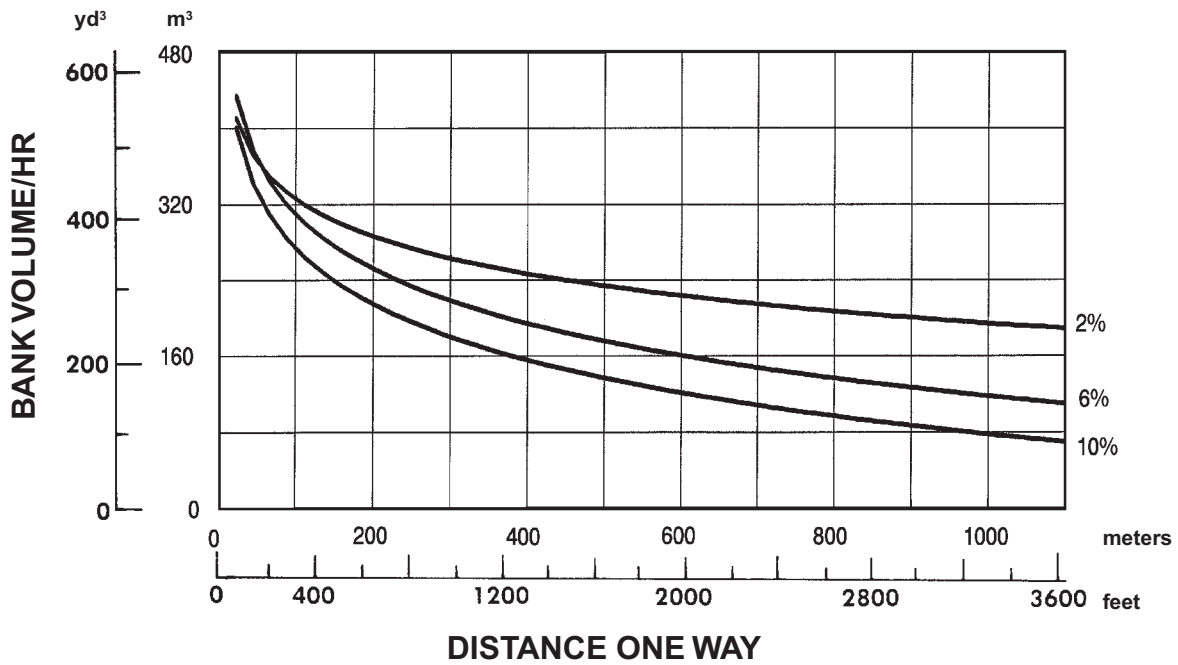
Wheel Tractor-Scrapers

615C Series II Bm³ (BCY)/hr
● 29.5R25 Tires

DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only. 100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 18 506 kg, 10.4 Bm³ (40,800 lb, 13.6 BCY).
- Empty weight: 25 600 kg (56,450 lb).
- Fixed time: 1.6 min.



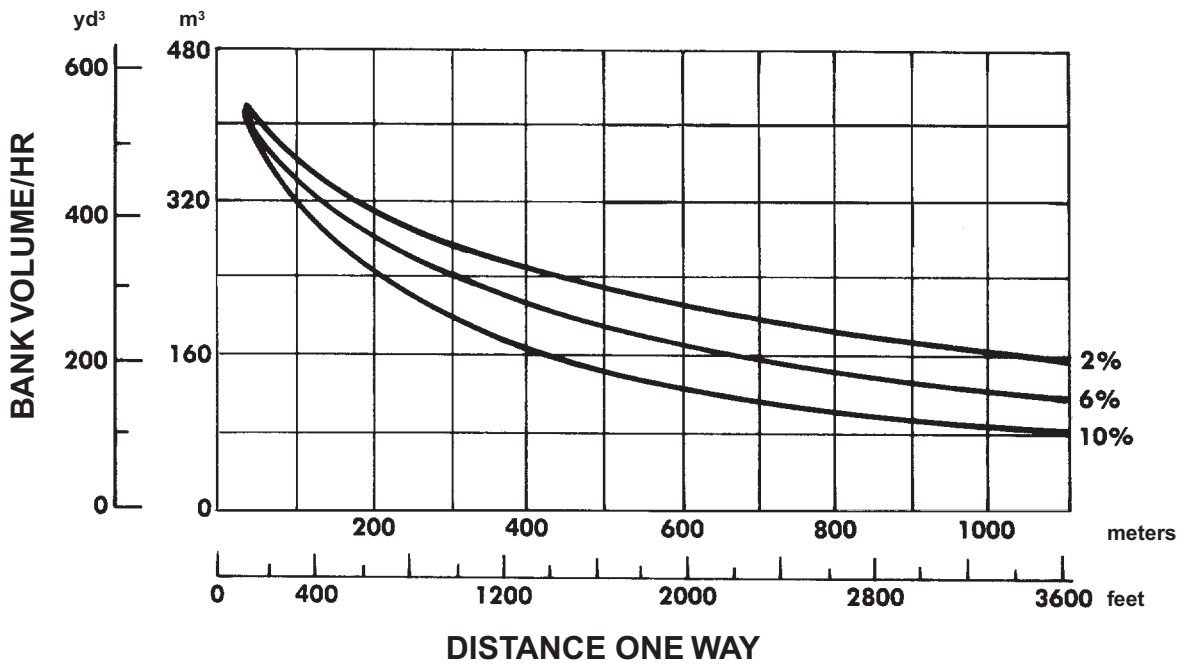
621G Bm³ (BCY)/hr
● 33.25R29 Tires

Wheel Tractor-Scrapers

DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only. 100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 23 950 kg, 13.5 Bm³ (52,800 lb, 17.6 BCY).
- Empty weight: 32 563 kg (71,790 lb).
- Fixed time: 1.2 min.



Wheel Tractor-Scrapers

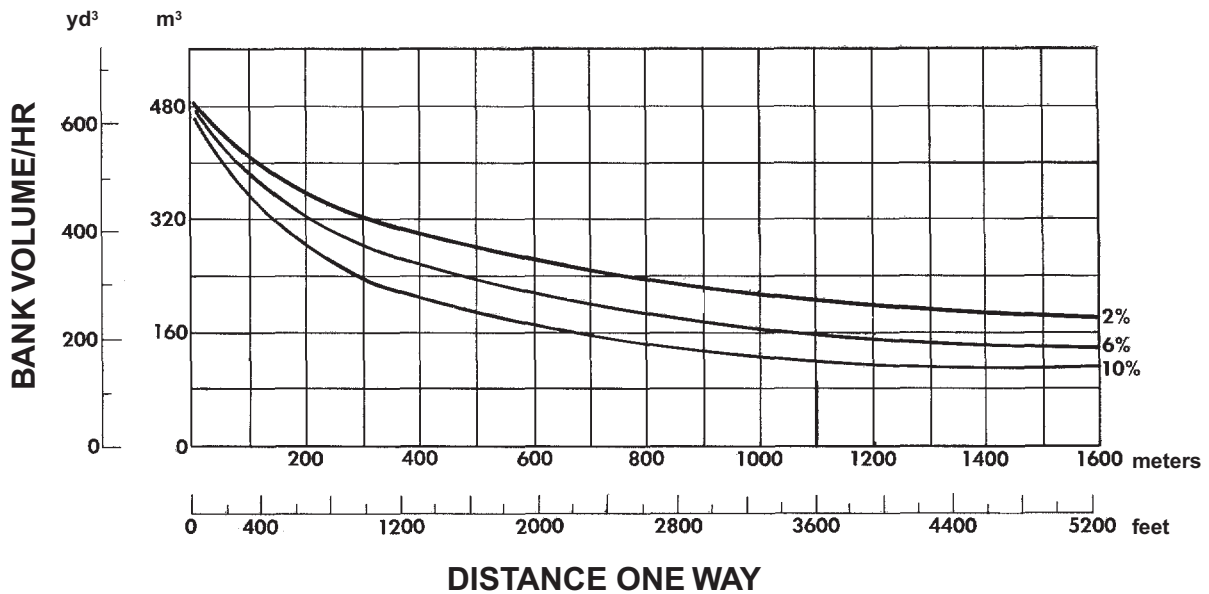
623G Bm³ (BCY)/hr
● 33.25R29 Tires

DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.

100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 24 950 kg, 14 Bm³ (55,000 lb, 18.3 BCY).
- Empty weight: 37 120 kg (81,840 lb).
- Fixed time: 1.6 min.



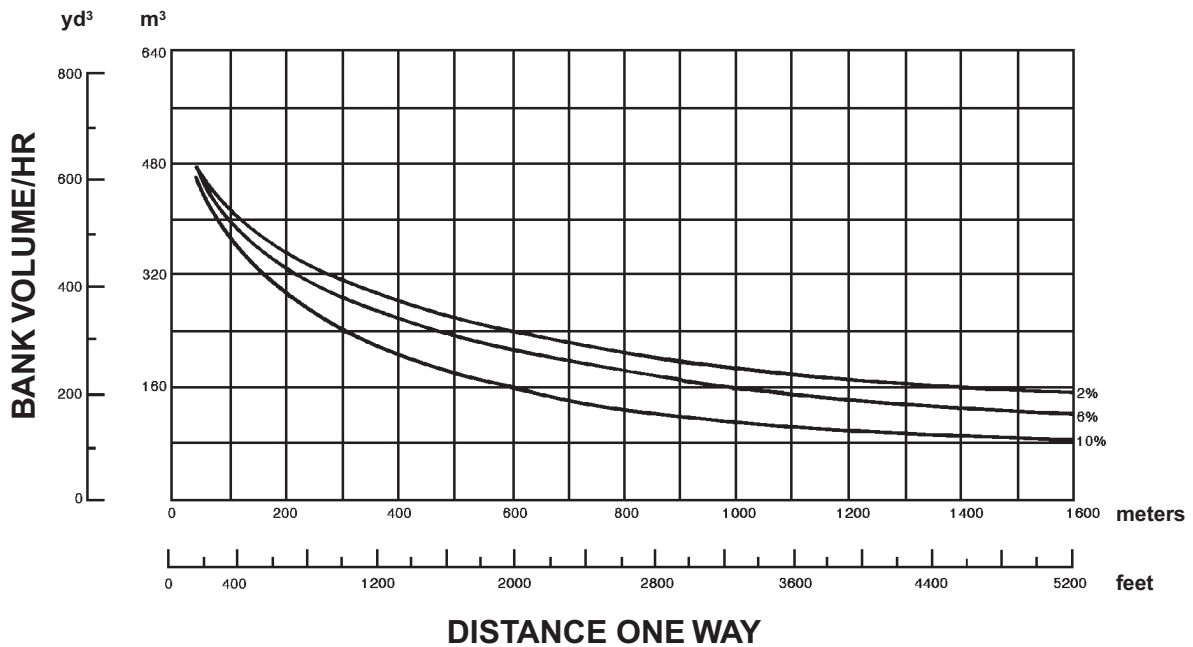
627G Bm³ (BCY)/hr
 ● 33.25R29 Tires

Wheel Tractor-Scrapers

DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only. 100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 23 950 kg, 13.5 Bm³ (52,800 lb, 17.6 BCY).
- Empty weight: 37 545 kg (82,773 lb).
- Fixed time: 1.2 min.



Wheel Tractor-Scrapers

627G Push-Pull Bm^3 (BCY)/hr
● 33.25R29 Tires

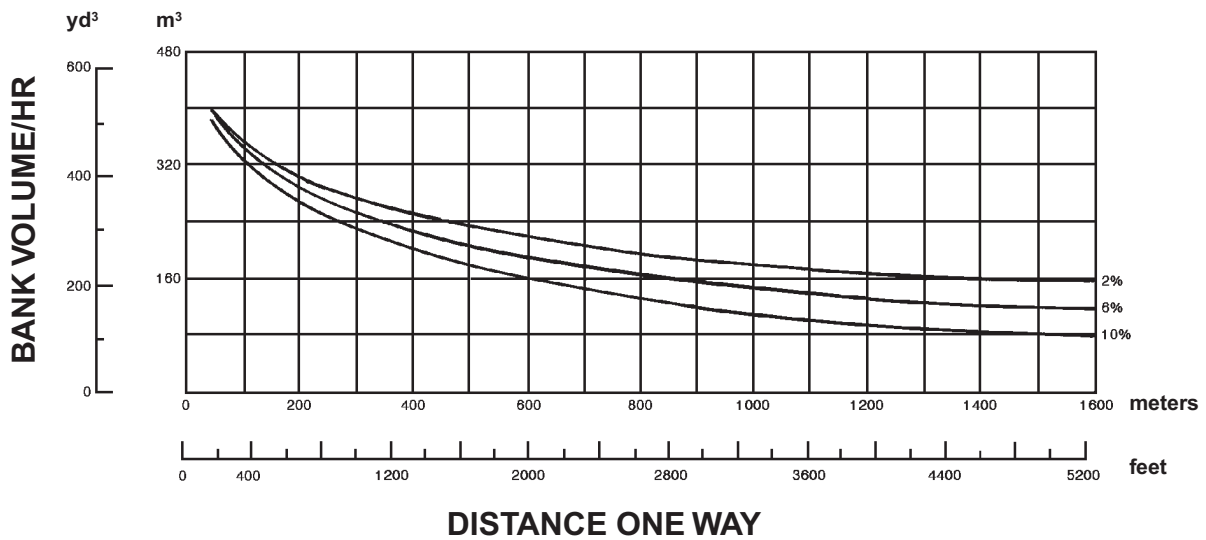
DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.

100% efficiency (60 min hour).

- Material: 1780 kg/m^3 (3000 lb/yd^3).
- Payload: $23\,950 \text{ kg}$, 13.5 Bm^3 ($52,800 \text{ lb}$, 17.6 BCY).
- Empty weight: $38\,581 \text{ kg}$ ($85,058 \text{ lb}$).
- Fixed time: 1.5 min. (includes loading both units and transfer time).

NOTE: Production estimates apply to one unit.
Double these figures for a push-pull pair.



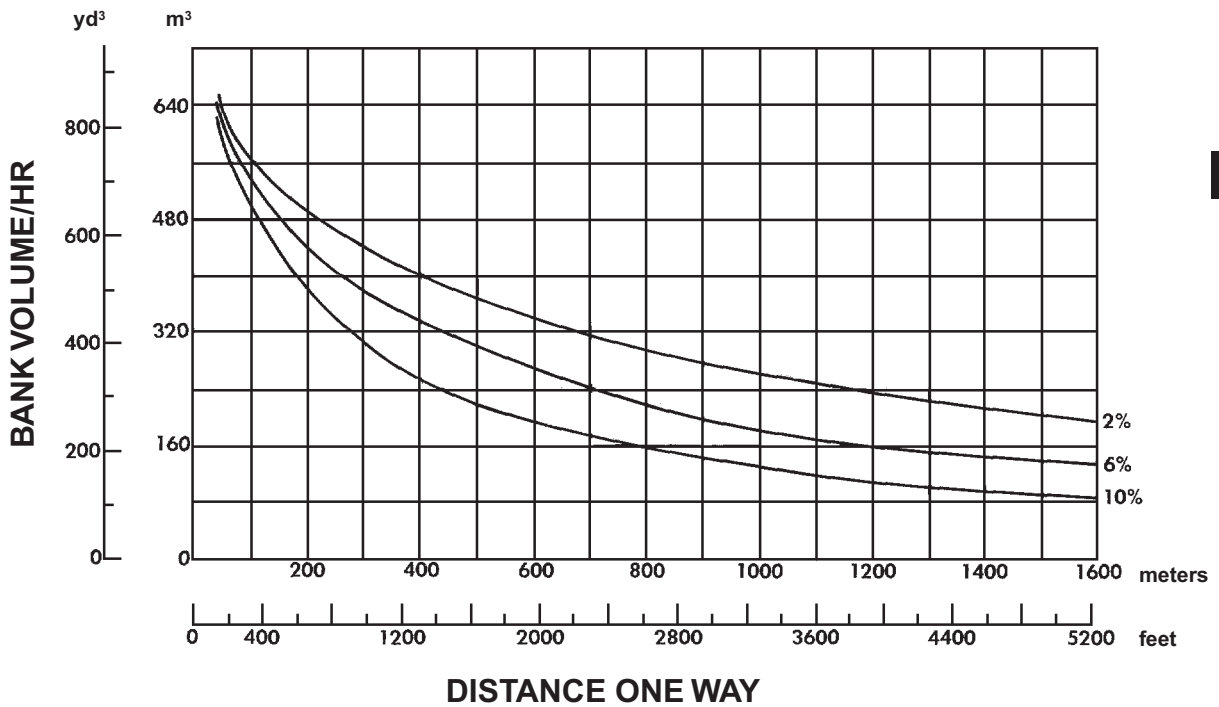
631G Bm³ (BCY)/hr
● 37.25R35 Tires

Wheel Tractor-Scrapers

DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only. 100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 37 285 kg, 20.9 Bm³ (82,200 lb, 27.4 BCY).
- Empty weight: 45 362 kg (100,006 lb).
- Fixed time: 1.3 min.



Wheel Tractor-Scrapers

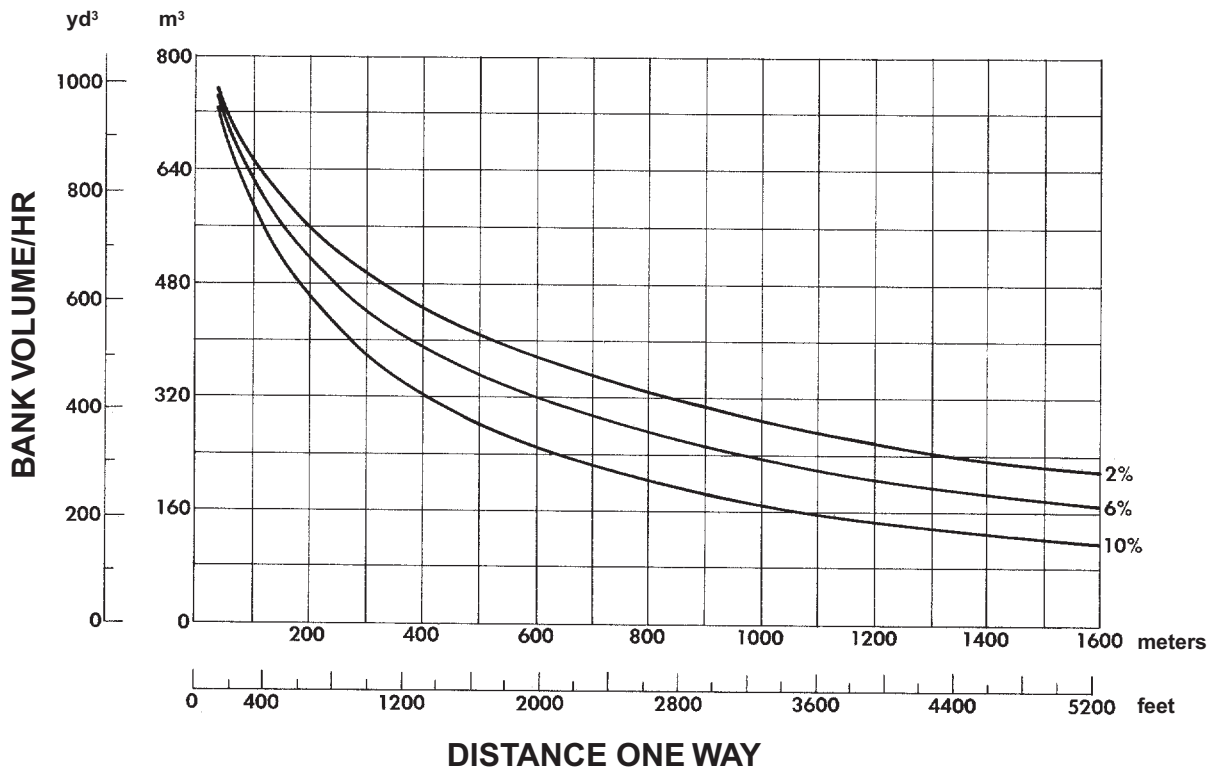
637G Bm³ (BCY)/hr
● 37.25R35 Tires

DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.

100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 37 285 kg, 20.9 Bm³ (82,200 lb, 27.4 BCY).
- Empty weight: 51 147 kg (112,760 lb).
- Fixed time: 1.1 min.

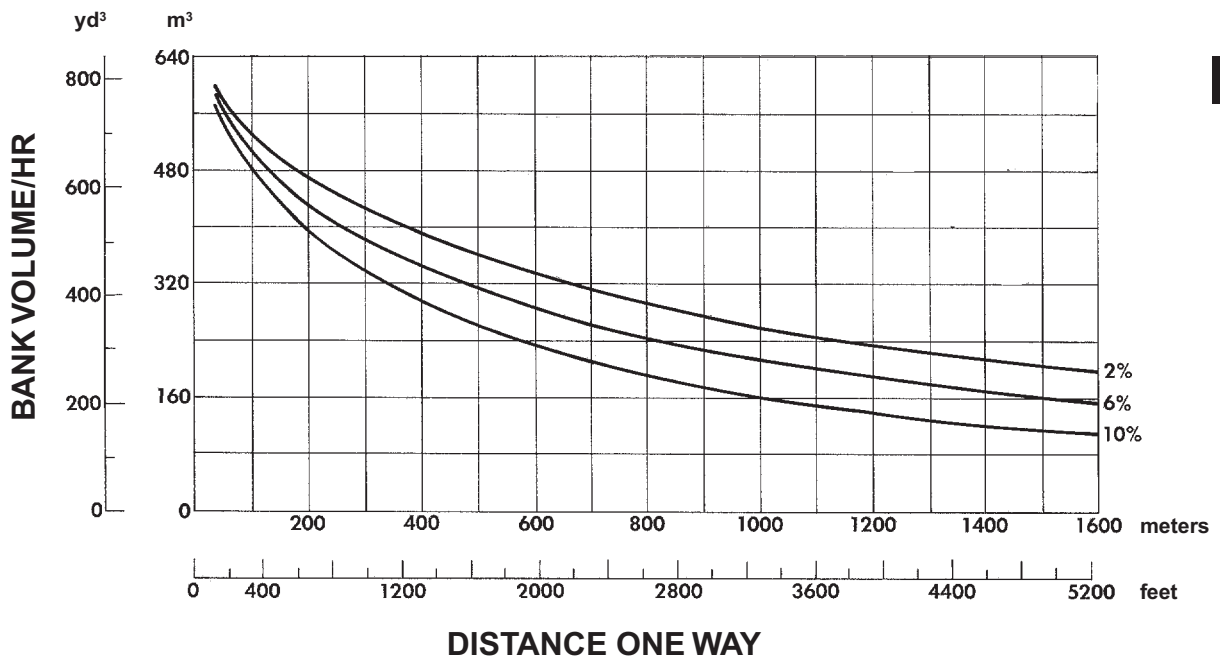


DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only. 100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 37 285 kg, 20.9 Bm³ (82,200 lb, 27.4 BCY).
- Empty weight: 52 662 kg (116,100 lb).
- Fixed time: 1.6 min. (includes loading both units and transfer time).

NOTE: Production estimates apply to one unit. Double these figures for a push-pull pair.



Wheel Tractor-Scrapers

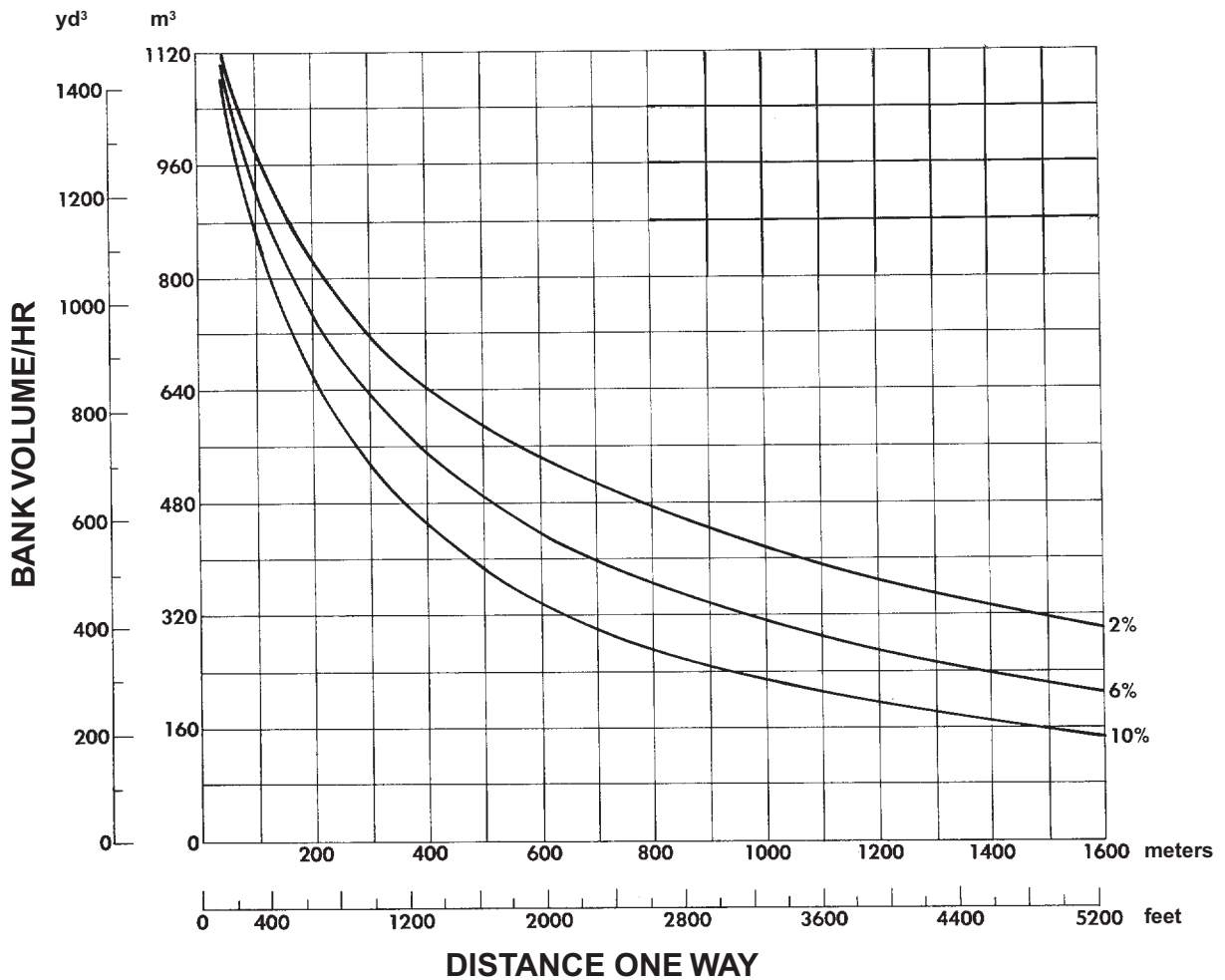
657G Bm³ (BCY)/hr
● 40.5/75R39 Tires

DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.

100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 47 175 kg, 26.5 Bm³ (104,000 lb, 34.6 BCY).
- Empty weight: 69 080 kg (152,290 lb).
- Fixed time: 1 min.

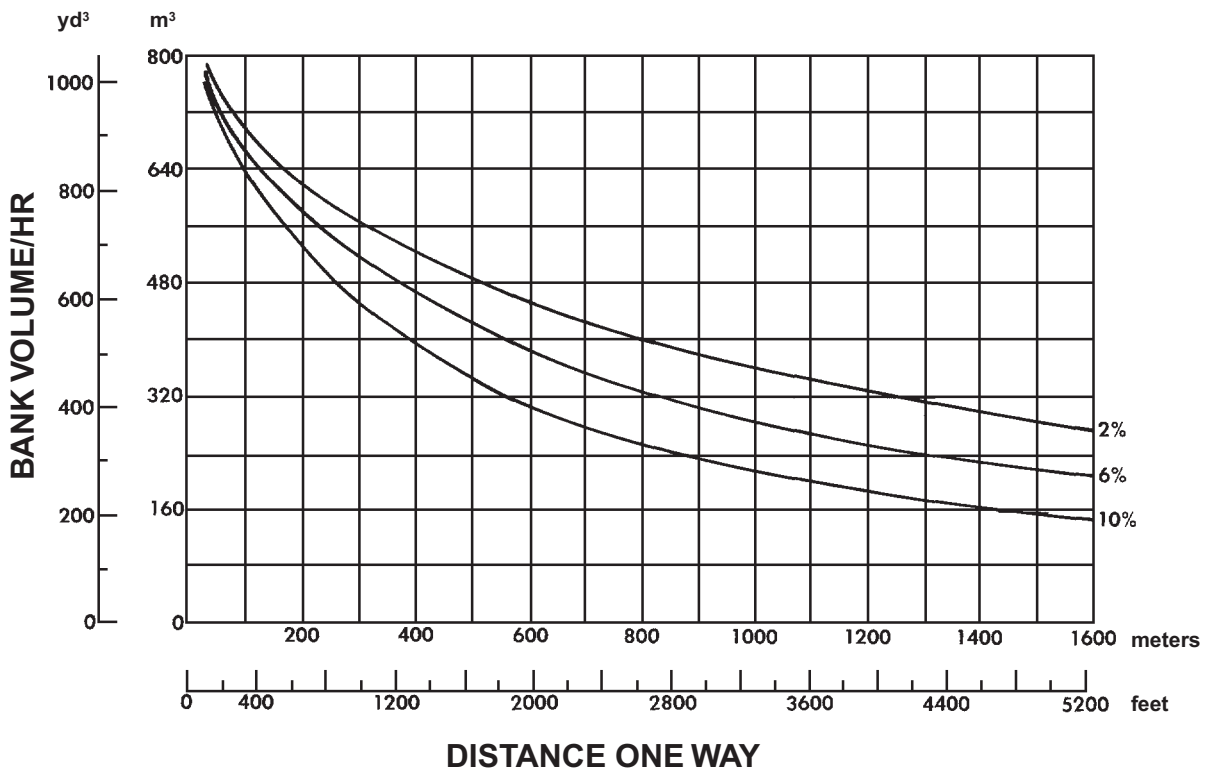


DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only. 100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 47 175 kg, 26.5 Bm³ (104,000 lb, 34.6 BCY).
- Empty weight: 72 860 kg (160,620 lb).
- Fixed time: 1.7 min. (includes loading both units and transfer time).

NOTE: Production estimates apply to one unit. Double these figures for a push-pull pair.



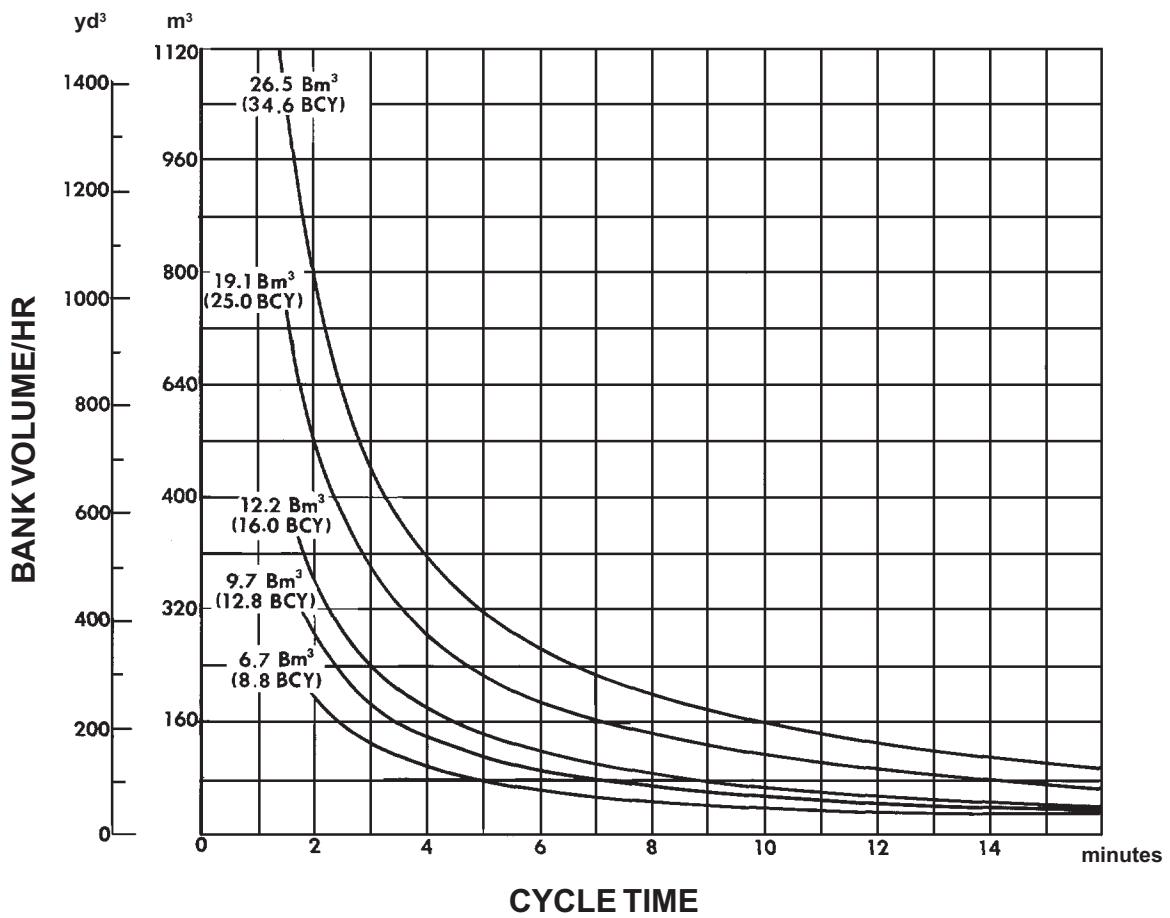
Wheel Tractor-Scrapers

- Bm³ (BCY)/hr
- All Models
- 100% Efficiency

HOURLY PRODUCTION vs. CYCLE TIME

VEHICLE CAPACITY:

- 613C Series II @ 6.7 Bm³/trip (8.8 BCY)
- 615C Series II @ 9.7 Bm³/trip (12.8 BCY)
- 621G, 623G, 627G @ 12.2 Bm³/trip (16 BCY)
- 631G, 637G @ 19.1 Bm³/trip (25 BCY)
- 657G @ 26.5 Bm³/trip (34.6 BCY)



CONSTRUCTION & MINING TRUCKS CONSTRUCTION & MINING TRACTORS

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Features:

- **Caterpillar Four-Stroke Diesel Engines** — Turbocharged, aftercooled, adjustment-free fuel system (direct injection).
- **Electronically-Controlled Automatic Transmission** — Speed sensing device automatically shifts transmission between 1st and gear selected by operator.
- **Truck Production Management System (TPMS) (option)** — Utilizes strut pressure sensors and an on-board microprocessor to determine payload weight, cycle segment times, delay times, actual clock time and date of each cycle.
- **Vital Information Management System (VIMS)** — Monitors all vital machine functions. Keeps operator informed of current machine operating conditions, helps reduce downtime and allows service personnel easy access to data for fast accurate diagnosis. VIMS includes the Truck Production Management System.
- **Electronic Unit Injection (EUI)** in the 776D through 797B and **Hydraulic Electronic Unit Injection (HEUI)** in the 769D through 775E — Electronically maintains fuel settings, provides automatic altitude and air filter restriction compensation, and features automatic variable timing, improved diagnostics and increased fuel efficiency.

- **Oil Cooled Disc Brakes** — Provide retarding, service, parking, and secondary braking in a single sealed, fade-resistant, maintenance-free unit. Standard on the 769D through 775E and optional on the 777D, front brakes are caliper disc and can be switched out of the service system when not needed but activate as part of the secondary system. Standard on the 777D through 797B, front brakes are oil-cooled disc, providing excellent control in slippery conditions.
- **Automatic Retarder Control (ARC) (option)** — Electronically controls braking on grade to maintain optimal engine RPM and oil cooling. ARC benefits include engine overspeed protection, ease of operation, faster downhill speeds, smoother ride and better control in slippery conditions, and fuel efficiency. Available on the 769D through 797B.
- **Traction Control System (TCS) (option)** — Electronically monitors and controls rear wheel slippage for greater traction and enhanced truck performance in poor underfoot conditions. If slippage exceeds a set limit, the oil-cooled disc brakes engage to slow the spinning wheel. Torque is then automatically transferred to the wheel with better traction. Available on the 769D through 797B.
- **Integrated Braking Control (IBC) (option)** — IBC combines Automatic Retarder Control (ARC) and Traction Control System (TCS) into one integrated brake control system for optimum efficiency, performance, and reliability. Available on the 769D through 797B.
- **Full Hydraulic Steering** — Functions with front suspension cylinders serving as kingpins.
- **Suspension Cylinders** — Four independent, self-contained, nitrogen/oil-pneumatic suspension cylinders absorb loading and road shocks. Wide spacing for stability.
- **Truck Bodies** — A wide variety are available to meet your specific needs. Dual slope, flat floor and Mine Specific Design (MSD) for selected models.
- **Integral Roll Over Protective Structure (ROPS)** — Integral Four-Post ROPS cab standard on all models. Resiliently mounted to the main frame to reduce vibration and sound, the integral ROPS structure is designed as an extension of the truck frame. The ROPS/FOPS structure provides “five sided protection” for the operator.
- **Separate Hydraulic Systems** — Prevent cross contamination.
- **Safety** — Caterpillar continues to be proactive in developing construction and mining trucks that meet or exceed safety standards. Safety is an integral part of the machine design and includes a twin double-acting cylinder steering system, slip-resistance surfaces, and low-level interior sound levels.

Tractor Features:

- **Yoke type hitch** oscillates four ways to reduce frame stresses. Rugged turn stops prevent excessive wagon rotation either direction.
- **Rear platform** functions as a power train guard and provides safe, stable work area. Fenders and mud flaps protect from material thrown by tires.

NOTE: Listed features may be standard on some models. Optional on others. Contact your Caterpillar Dealer for specific information.



MODEL	769D		769D		771D	
	Flat Floor		Dual Slope		Quarry Flat Floor	
Body Type						
Gross Machine Weight	71 400 kg	157,000 lb	71 400 kg	157,000 lb	75 700 kg	166,500 lb
Chassis Weight*	24 320 kg	53,506 lb	24 320 kg	53,506 lb	24 320 kg	53,506 lb
Body Weight	7800 kg	17,200 lb	7870 kg	17,350 lb	10 350 kg	23,000 lb
Payload without Liner	39 280 kg	86,294 lb	39 210 kg	86,144 lb	41 030 kg	89,994 lb
Standard Liner Weight	3300 kg	7280 lb	3200 kg	7000 lb	—	
Target Payload**	35 980 kg	79,094 lb	36 010 kg	79,144 lb	41 030 kg	89,994 lb
Capacity:						
Struck (SAE)	16.5 m ³	21.6 yd³	17 m ³	22.2 yd³	20.2 m ³	26.4 yd³
Heaped (2:1) (SAE)	24.2 m ³	31.7 yd³	24.2 m ³	31.7 yd³	27.5 m ³	36 yd³
Distribution Empty:						
Front	49.7%		49.8%		46.3%	
Rear	50.3%		50.2%		53.7%	
Distribution Loaded:						
Front	33.3%		33.3%		32.9%	
Rear	66.7%		66.7%		67.1%	
Engine Model	3408E TA		3408E TA		3408E TA	
Number of Cylinders	8		8		8	
Bore	137 mm	5.4"	137 mm	5.4"	137 mm	5.4"
Stroke	152 mm	6"	152 mm	6"	152 mm	6"
Displacement	18 L	1099 in³	18 L	1099 in³	18 L	1099 in³
Net Power	363 kW	487 hp	363 kW	487 hp	363 kW	487 hp
Gross Power	386 kW	518 hp	386 kW	518 hp	386 kW	518 hp
Standard Tires	18.00R33 (E-4)		18.00R33 (E-4)		18.00R33 (E-4)	
Machine Clearance Turning Circle	20.3 m	66'7"	20.3 m	66'7"	20.3 m	66'7"
Fuel Tank Refill Capacity	530 L	140 U.S. gal	530 L	140 U.S. gal	680 L	180 U.S. gal
Top Speed (Loaded)	77 km/h	48 mph	77 km/h	48 mph	57.3 km/h	35.6 mph
GENERAL DIMENSIONS (Empty):						
Height to Canopy Rock Guard Rail	4.08 m	13'4"	4.05 m	13'3"	4.45 m	14'6"
Wheelbase	3.70 m	12'2"	3.70 m	12'2"	3.71 m	12'2"
Overall Length (Operating)	8.26 m	27'1"	8.26 m	27'1"	8.44 m	27'7"
Overall Length (Shipping)	8.00 m	26'5"	8.00 m	26'5"	8.20 m	26'11"
Loading Height (Empty)	3.20 m	10'6"	3.10 m	10'4"	3.40 m	11'1"
Height at Full Dump	7.80 m	25'5"	7.70 m	25'4"	7.74 m	25'5"
Body Length (Target Length)	5.43 m	17'10"	5.28 m	17'4"	5.52 m	18'1"
Width (Operating)	5.01 m	16'8"	5.01 m	16'8"	5.01 m	16'8"
Width (Shipping)***	3.99 m	13'1"	3.91 m	12'10"	3.99 m	13'1"
Front Tire Tread	3.10 m	10'2"	3.10 m	10'2"	3.10 m	10'2"

*Weights include lubricants, coolants, 100% fuel and a debris allowance (4% of chassis).

**Refer to Caterpillar's 10/10/20 Payload Policy for Quarry & Construction Trucks.

***Disassembled.

Construction & Mining Trucks | Specifications



MODEL	773E		773E		775E		775E	
	Flat Floor		Dual Slope		Quarry Flat Floor		Flat Floor Lined	
Body Type	Flat Floor		Dual Slope		Quarry Flat Floor		Flat Floor Lined	
Gross Machine Weight	99 300 kg	219,000 lb	99 300 kg	219,000 lb	108 400 kg	239,000 lb	108 400 kg	239,000 lb
Chassis Weight*	31 930 kg	70,330 lb	31 930 kg	70,330 lb	32 140 kg	70,850 lb	32 140 kg	70,850 lb
Body Weight	9550 kg	21,050 lb	9210 kg	20,300 lb	13 070 kg	28,810 lb	9809 kg	31,640 lb
Payload without Liner	57 820 kg	127,620 lb	58 160 kg	128,370 lb	63 190 kg	139,340 lb	61 920 kg	136,510 lb
Standard Liner Weight	4000 kg	8800 lb	3900 kg	8600 lb	—	—	—	—
Target Payload**	53 820 kg	118,820 lb	54 260 kg	119,770 lb	63 190 kg	139,340 lb	61 920 kg	136,510 lb
Capacity:								
Struck (SAE)	26.6 m ³	34.8 yd³	26.6 m ³	34.8 yd³	31.4 m ³	41.1 yd³	31.2 m ³	40.8 yd³
Heaped (2:1) (SAE)	35.5 m ³	46.4 yd³	35.2 m ³	46 yd³	41.5 m ³	54.3 yd³	41.2 m ³	53.9 yd³
Distribution Empty:								
Front		47.3%		47.3%		44.3%		44.3%
Rear		52.7%		52.7%		55.7%		55.7%
Distribution Loaded:								
Front		33.3%		33.3%		31.2%		31.2%
Rear		66.7%		66.7%		68.8%		68.8%
Engine Model	3412E TA		3412E TA		3412E TA		3412E TA	
Number of Cylinders	12		12		12		12	
Bore	137 mm	5.4"	137 mm	5.4"	137 mm	5.4"	137 mm	5.4"
Stroke	152 mm	6"	152 mm	6"	152 mm	6"	152 mm	6"
Displacement	27 L	1649 in³	27 L	1649 in³	27 L	1649 in³	27 L	1649 in³
Net Power	501 kW	671 hp	501 kW	671 hp	544 kW	730 hp	544 kW	730 hp
Gross Power	530 kW	710 hp	530 kW	710 hp	567 kW	760 hp	567 kW	760 hp
Standard Tires	24.00R35 (E-4)		24.00R35 (E-4)		24.00R35 (E-4)		24.00R35 (E-4)	
Machine Clearance								
Turning Circle	23.8 m	78'9"	23.8 m	78'9"	23.8 m	78'9"	23.8 m	78'9"
Fuel Tank Refill Capacity	680 L	180 U.S. gal	700 L	185 U.S. gal	700 L	185 U.S. gal	700 L	185 U.S. gal
Top Speed (Loaded)	65.8 km/h	41.1 mph	65.8 km/h	41.1 mph	65.8 km/h	41.1 mph	65.8 km/h	41.1 mph
GENERAL DIMENSIONS (Empty):								
Height to Canopy Rock Guard Rail	4.45 m	14'6"	4.35 m	14'4"	4.34 m	14'2"	4.40 m	14'2"
Wheelbase	4.19 m	13'9"	4.19 m	13'9"	4.19 m	13'9"	4.19 m	13'9"
Overall Length (Operating)	9.72 m	31'9"	9.72 m	31'9"	9.48 m	30'10"	9.48 m	30'10"
Overall Length (Shipping)	9.20 m	30'2"	9.20 m	30'2"	9.21 m	30'3"	9.21 m	30'3"
Loading Height (Empty)	3.79 m	12'5"	3.77 m	12'5"	3.91 m	12'10"	3.91 m	12'10"
Height at Full Dump	8.82 m	28'11"	8.79 m	28'10"	8.80 m	28'11"	8.80 m	28'11"
Body Length (Target Length)	5.52 m	18'1"	5.52 m	18'1"	6.53 m	21'4"	6.51 m	21'5"
Width (Operating)	5.08 m	16'8"	5.08 m	16'8"	5.08 m	16'8"	5.08 m	16'8"
Width (Shipping)***	3.99 m	13'1"	3.99 m	13'1"	3.97 m	13'0"	3.97 m	13'0"
Front Tire Tread	3.28 m	10'9"	3.28 m	10'9"	3.28 m	10'9"	3.28 m	10'9"

*Weights include lubricants, coolants, 100% fuel and a debris allowance (4% of chassis).

**Refer to Caterpillar's 10/10/20 Payload Policy for Quarry & Construction Trucks.

***Disassembled.



MODEL	775E		777D		777D	
Body Type	Dual Slope		Flat Floor		Dual Slope	
Gross Machine Weight	108 400 kg	239,000 lb	163 293 kg	360,000 lb	163 293 kg	360,000 lb
Chassis Weight*	32 140 kg	70,850 lb	50 610 kg	111,575 lb	51 329 kg	113,160 lb
Body Weight	9710 kg	21,400 lb	16 687 kg	36,788 lb	15 778 kg	34,785 lb
Payload without Liner	66 550 kg	146,750 lb	95 996 kg	211,637 lb	96 186 kg	212,055 lb
Standard Liner Weight	4450 kg	9810 lb	5460 kg	12,040 lb	5461 kg	12,040 lb
Target Payload**	62 100 kg	136,940 lb	90 536 kg	199,597 lb	90 725 kg	200,015 lb
Capacity:						
Struck (SAE)	32.7 m ³	42.8 yd³	42 m ³	54.6 yd³	42.1 m ³	55 yd³
Heaped (2:1) (SAE)	41.2 m ³	53.9 yd³	60.2 m ³	78.6 yd³	60.1 m ³	78.6 yd³
Distribution Empty:						
Front		45.9%		41.75%		47%
Rear		54.1%		58.25%		53%
Distribution Loaded:						
Front		31.6%		33%		33%
Rear		68.4%		67%		67%
Engine Model	3412E		3508B EUI		3508B EUI	
Number of Cylinders	12		8		8	
Bore	137 mm	5.4"	170 mm	6.7"	170 mm	6.7"
Stroke	152 mm	6"	190 mm	7.5"	190 mm	7.5"
Displacement	27 L	1649 in³	34.5 L	2105 in³	34.5 L	2105 in³
Net Power	544 kW	730 hp	699 kW	938 hp	699 kW	938 hp
Gross Power	567 kW	760 hp	746 kW	1000 hp	746 kW	1000 hp
Standard Tires	24.00-R35 (E4)		27.00R49		27.00R49	
Machine Clearance Turning Circle	23.8 m	78'9"	28.4 m	83'0"	28.4 m	83'0"
Fuel Tank Refill Capacity	700 L	185 U.S. gal	1137 L	300 U.S. gal	1137 L	300 U.S. gal
Top Speed (Loaded)	65.8 km/h	41.1 mph	60.4 km/h	39.9 mph	60.4 km/h	39.9 mph
GENERAL DIMENSIONS (Empty):						
Height to Canopy Rock Guard Rail	4.40 m	14'2"	5.18 m	17'0"	4.91 m	16'1"
Wheelbase	4.19 m	13'9"	4.60 m	15'0"	4.60 m	15'0"
Overall Length (Operating)	9.48 m	30'10"	10.3 m	33'8"	10.3 m	33'8"
Overall Length (Shipping)	9.21 m	30'3"	9.78 m	32'1"	9.78 m	32'1"
Loading Height (Empty)	3.93 m	12'11"	4.57 m	15'0"	4.39 m	14'5"
Height at Full Dump	8.74 m	28'8"	10.0 m	33'1"	10.05 m	33'0"
Body Length (Target Length)	6.40 m	21'0"	6.79 m	22'3"	7.28 m	23'11"
Width (Operating)	5.08 m	16'8"	6.10 m	20'0"	6.10 m	20'0"
Width (Shipping)***	3.97 m	13'0"	3.51 m	11'5"	3.51 m	11'5"
Front Tire Tread	3.28 m	10'9"	4.17 m	13'8"	4.17 m	13'8"

*Weights include lubricants, coolants, 100% fuel and a debris allowance (4% of chassis).

**Refer to Caterpillar's 10/10/20 Payload Policy for Quarry & Construction Trucks.

***Disassembled.



MODEL	785C		789C	
Body Type	Dual Slope†		Dual Slope†	
Gross Machine Operating Weight**	249 475 kg	550,000 lb	317 515 kg	700,000 lb
Chassis Weight*	77 111 kg	170,000 lb	98 293 kg	216,700 lb
Debris (4% of Chassis Weight)	3084 kg	6800 lb	3900 kg	8600 lb
Body Weight without Liners	21 300 kg	46,958 lb	27 045 kg	59,625 lb
Full Liner	7639 kg	16,900 lb	9453 kg	20,840 lb
Standard Sideboards and Tail Extension	1769 kg	3900 lb	2068 kg	4560 lb
Target Payload**	140+ m tons	155+ tons	180+ m tons	198+ tons
Capacity:				
Heaped (2:1) (SAE) Base Body	78 m ³	102 yd³	105 m ³	137 yd³
Distribution Empty:				
Front		47%		46.9%
Rear		53%		53.1%
Distribution Loaded:				
Front		33%		33.6%
Rear		67%		66.4%
Engine Model	3512B EUI		3516B EUI	
Number of Cylinders	12		16	
Bore	170 mm	6.7"	170 mm	6.7"
Stroke	190 mm	7.5"	190 mm	7.5"
Displacement	51.8 L	3158 in³	67.4 L	4113 in³
Net Power	1005 kW	1348 hp	1335 kW	1790 hp
Gross Power	1082 kW	1450 hp	1417 kW	1900 hp
Standard Tires	33.00R51		37.00R57	
Machine Clearance Turning Circle	30.6 m	100'5"	30.2 m	99'2"
Fuel Tank Refill Capacity	1893 L	500 U.S. gal	3218 L	850 U.S. gal
Top Speed (Loaded)	54.1 km/h	33.6 mph	52.6 km/h	32.7 mph
GENERAL DIMENSIONS (Empty):				
Height to Canopy Rock Guard Rail	5.77 m	18'11"	6.15 m	20'2"
Wheelbase	5.18 m	17'0"	5.70 m	18'8"
Overall Length (Base Body)	11.02 m	36'2"	12.18 m	39'11"
Loading Height (Base Body)	4.97 m	16'4"	5.21 m	17'1"
Height at Full Dump	11.21 m	36'9"	11.90 m	39'1"
Body Length (Target Length)	7.65 m	25'1"	8.15 m	26'9"
Width (Operating)	6.64 m	21'4"	7.67 m	25'2"
Width (Shipping)***	3.91 m	12'10"	3.84 m	12'7"
Front Tire Tread	4.85 m	15'11"	5.43 m	17'10"

*Chassis Weight includes lubricants, coolants, and 100% fuel.

**Reference Caterpillar's 10/10/20 Payload Policy Revision #4 for information on gross machine operating weight and target payload.

***Disassembled.

†Data provided is for a representative body and liner package. Several dual slope, flat floor, and mine specific design (MSD) bodies and liner packages are available. All weights, capacities, and dimensions are dependent on the machine configuration (body type, attachments, tires, and optional equipment selected).

Specifications

Construction & Mining Trucks



MODEL	793D		797B	
	Dual Slope†		Flat Floor†	
Body Type				
Gross Machine Operating Weight**	383 739 kg	846,000 lb	623 690 kg	1,375,000 lb
Chassis Weight*	119 597 kg	263,666 lb	214 820 kg	473,600 lb
Debris (4% of Chassis Weight)	4784 kg	10,547 lb	8593 kg	18,944 lb
Body Weight without Liners	32 138 kg	70,832 lb	47 264 kg	104,200 lb
Full Liner	11 025 kg	24,306 lb	3992 kg	8800 lb
Standard Sideboards and Tail Extension	2336 kg	5151 lb	—	
Target Payload**	218+ m tons	240+ tons	345+ m tons	380+ tons
Capacity:				
Struck (SAE)	96 m ³	126 yd³	173 m ³	228 yd³
Heaped (2:1) (SAE)	129 m ³	169 yd³	220 m ³	290 yd³
Distribution Empty:				
Front	46.9%		43.5%	
Rear	53.1%		56.5%	
Distribution Loaded:				
Front	33.3%		33.3%	
Rear	66.7%		66.7%	
Engine Model	3516B EU1		3524B EU1	
Number of Cylinders	16		24	
Bore	170 mm	6.7"	170 mm	6.7"
Stroke	215 mm	8.5"	215 mm	8.5"
Displacement	78 L	4760 in³	117.1 L	7143 in³
Net Power	1743 kW	2337 hp	2513 kW	3370 hp
Gross Power	1801 kW	2415 hp	2648 kW	3550 hp
Standard Tires	40.00R57		59/80R63	
Machine Clearance Turning Circle	32.4 m	106'4"	42.1 m	138'3"
Fuel Tank Refill Capacity	4353 L	1150 U.S. gal	6814 L	1800 U.S. gal
Top Speed (Loaded)	54.2 km/h	33.7 mph	67.6 km/h	42 mph
GENERAL DIMENSIONS (Empty):				
Height to Canopy Rock Guard Rail	6.49 m	21'4"	7.58 m	24'11"
Wheelbase	5.91 m	19'5"	7.20 m	23'7"
Overall Length	12.86 m	42'3"	14.53 m	47'8"
Loading Height	5.87 m	19'4"	7.08 m	23'2"
Height at Full Dump	13.11 m	43'1"	15.29 m	50'2"
Body Length (Target Length)	12.86 m	42'3"	9.84 m	32'3"
Width (Operating)	8.28 m	27'10"	9.76 m	32'0"
Width (Shipping)***	3.81 m	12'6"	4.02 m	13'2"
Front Tire Tread	5.61 m	18'5"	6.51 m	21'4"

*Chassis Weight includes lubricants, coolants, and 100% fuel.

**Reference Caterpillar's 10/10/20 Payload Policy Revision #4 for information on gross machine operating weight and target payload.

***Disassembled.

†Data provided is for a representative body and liner package. Several dual slope, flat floor, and mine specific design (MSD) bodies and liner packages are available. All weights, capacities, and dimensions are dependent on the machine configuration (body type, attachments, tires, and optional equipment selected).

793D TRUCK WEIGHTS

Weights		Standard (MA1)	Additional Retarding (MA2)	Extra Top Speed (MA3)	Extra Life Wheel Stations (MA4)	High Altitude (MA5)
Total Empty Chassis Weight (Clean)	kg	115 922	117 909	117 871	117 864	118 521
	lb	255,565	259,944	259,860	259,846	261,295
Fuel at 100% Fill (4354 L/1150 U.S. gal tank)	kg	3675	3675	3675	3675	3675
	lb	8101	8101	8101	8101	8101
Chassis Weight with 100% Fuel	kg	119 597	121 584	121 546	121 539	122 196
	lb	263,666	268,045	267,961	267,947	269,396

Specifications

Construction & Mining Tractors



MODEL	776D		784C	
Net Power	699 kW	938 hp	1005 kW	1348 hp
Gross Power	746 kW	1000 hp	1082 kW	1450 hp
Operating Weight*	55 480 kg	122,311 lb	88 749 kg	195,658 lb
Engine Model	3508B EU1		3512B EU1	
No. Cylinders	8		12	
Bore	170 mm	6.7"	170 mm	6.7"
Stroke	190 mm	7.5"	190 mm	7.5"
Displacement	34.5 L	2105 in ³	51.8 L	3158 in ³
Standard Tires, Front & Dual Rear	27.00R49 (E-4)		36.00R51 (E-3)	
Machine Clearance Turning Circle	26.1 m	85'6"	33.8 m	110'11"
Fuel Tank Refill Capacity	1137 L	300 U.S. gal	3222 L	851 U.S. gal
GENERAL DIMENSIONS (Empty):				
Height to Top of Cab	4.57 m	15'0"	5468 mm	17'1"
Wheelbase	4.57 m	15'0"	5180 mm	17'0"
Overall Length	8.06 m	26'5.5"	9343 mm	30'8"
Ground Clearance	710 mm	2'4"	1027 mm	3'4"
Width, shipping (Disassembled)	3.51 m	11'6"	3810 mm	12'6"
Height to Yoke Seat	3.40 m	11'2"	4048 mm	13'4"
Rear axle to Hitch Pin	762 mm	2'6"	850 mm	2'9"
Front Tire Tread	4.17 m	13'8"	4935 mm	16'2"

*Operating weights include coolant, lubricants, hitch, full fuel tank and operator.

**Construction & Mining Trucks
Construction & Mining Tractors**

Tire Specifications

MODEL TIRE SIZE	PLY RATING/ STAR RATING*	TYPE	MODEL TIRE SIZE	PLY RATING/ STAR RATING*	TYPE
769D			789C		
18.00-33	32	E-4	37.00R57	★★	E-4
18.00R33	★★	E-3	797B		
18.00R33◀	★★	E-4	59/80R63	★★	E-4
21/90R33	★★	E-4	776D		
771D			27.00R49	★★	E-3
18.00R33◀	★★	E-4	27.00R49◀	★★	E-4
21/90R33	★★	E-4	784C		
773E			36.00R51	★★	E-3
24.00-35	36	E-4			
24.00-35	42	E-4			
24.00R35	★★	E-3			
24.00R35◀	★★	E-4			
775E					
24.00R35◀	★★	E-4			
24.00R35	★★	E-3			
24.00-35	42	E-4			
777D					
27.00R49	★★	E-3			
27.00R49◀	★★	E-4			
785C					
33.00R51	★★	E-3			
33.00R51	★★	E-4			

*Manufacturer uses star (★) rating system instead of ply rating.
◀No charge tire.

USE OF BRAKE PERFORMANCE CURVES

The speed that can be maintained when the machine is descending a grade with retarder applied can be determined from the retarder curves in this section when gross machine weight and total effective grade are known.

Select appropriate grade distance chart that covers total downhill haul; don't break haul into individual segments.

To determine brake performance: Read from gross weight down to the percent effective grade. (Effective grade equals actual % grade *minus* 1% for each 10 kg/metric ton (20 lb./U.S. ton) of rolling resistance.) From this weight-effective grade point, read horizontally to the curve with the highest obtainable speed range, then down to maximum descent speed brakes can safely handle without exceeding cooling capacity. When braking, engine RPM should be maintained at the highest possible level without overspeeding. If cooling oil overheats, reduce ground speed to allow transmission to shift to next lower speed range.

**USE OF RIMPULL-SPEED-
GRADEABILITY CURVES**

(See Wheel Tractor Scraper Section)

Total Effective Grade (or Total Resistance) is grade assistance *minus* rolling resistance.

10 kg/metric ton (20 lb./U.S. ton) = 1% adverse grade.

Example —

With a favorable grade of 20% and rolling resistance of 50 kg/metric ton (100 lb./U.S. ton), find Total Effective Grade.

$$\begin{aligned}
 (50 \text{ kg/metric ton}) &= 50 \div 10 = 5\% \text{ Effective Grade} \\
 &\text{(from Rolling Resistance)} \\
 100 \text{ lb/ton} &= 100 \div 20 = 5\% \text{ Effective Grade} \\
 20\% \text{ (grade)} - 5\% \text{ (resistance)} &= \\
 15\% \text{ Total Effective Grade} &
 \end{aligned}$$

TYPICAL FIXED TIMES FOR HAULING UNITS

Wait time, delays and operator efficiency all impact cycle time. Minimizing truck exchange time can have a significant effect on productivity.

Fixed time for hauling units include:

1. Truck load time (various with loading tool)
2. Truck maneuver in load area (Truck exchange) (Typically 0.6-0.8 min.)
3. Maneuver and dump time at dump point (Typically 1.0-1.2 min.)

Total cycle time is the combination of:

1. The above fixed time
2. Hauling time (Loaded)
3. Return time (Empty)

Example — assume load tool spots hauler with full bucket

	988F	5130B
cycle times	.60	.45
First pass (dump time)	.10 min.	.05 min.
2 passes (full cycle)	.70	.50
3 passes "	1.30	.95
4 passes "	1.90	1.40
5 passes "	2.50	1.85
6 passes "	3.10	2.30
7 passes "	3.70	2.75
8 passes "	4.30	3.20
9 passes "	4.90	3.65
10 passes "	5.40	4.10

NOTE: Other sizes of loading tools will have different cycle times. See Wheel Loader section for **average** cycle times for truck loading.

MECHANICAL POWER TRAIN EFFICIENCIES

In selling against electric drive trucks, power train efficiency is an important consideration. To better illustrate the advantages of mechanical drive performance, grade horsepower, power train efficiency, and retarding horsepower should be compared to electric drive trucks.

Grade horsepower can be calculated by the following formula:

Metric

$$\text{grade HP} = \frac{\text{GMW (kg)} \times \text{TR} \times \text{Speed (km/h)}}{273.75}$$

English

$$= \frac{\text{GMW (lb)} \times \text{TR} \times \text{Speed (mph)}}{375}$$

where TR (total resistance) = Rolling resistance + Grade resistance (expressed as a decimal)

English example

700,000 lb GMW, 2% rolling resistance, +8% actual grade at 8.2 mph would require 1530 HP

$$\frac{700,000 \times (.02 + .08) \times 8.2}{375} = 1530 \text{ HP}$$

Metric example

317 520 kg GMW, 2% rolling resistance, +8% actual grade at 13.2 km/h would require 1530 HP

$$\frac{317\ 520 \times (.02 + .08) \times 13.2}{273.75} = 1530 \text{ HP}$$

We then calculate power train efficiency by dividing grade horsepower by the gross horsepower produced by the engine. Most electric drive trucks run at constant maximum horsepower while under load. Mechanical drive trucks, however, lug the engine and may produce somewhat less than maximum horsepower. Engine power curves must be utilized to determine exact horsepower produced.

Example

$$\frac{1530 \text{ grade horsepower}}{1800 \text{ gross engine HP}} \times 100 = 85\% \text{ power train efficiency}$$

This exercise illustrates the effect of an efficient mechanical drive power train and should yield results in the 80-85% efficiency range. The same calculation for electric drive trucks would be lower (70-78% range) with a maximum efficiency of about 78% for the most common systems.

Likewise, retarding horsepower being consumed by the retarding system can be calculated by the following formula:

Metric

$$\text{retarding HP} = \frac{\text{GMW (kg)} \times \text{TR} \times \text{Speed (km/h)}}{273.75}$$

English

$$= \frac{\text{GMW (lb)} \times \text{TR} \times \text{Speed (mph)}}{375}$$

where TR (total resistance) = Rolling resistance + Grade resistance (expressed as a decimal)

English example

700,000 lb GMW, 2% rolling resistance, -8% actual grade at 14.7 mph would equate to -1646 HP

$$\frac{700,000 \times (.02 - .08) \times 14.7}{375} = 1646 \text{ HP}$$

Metric example

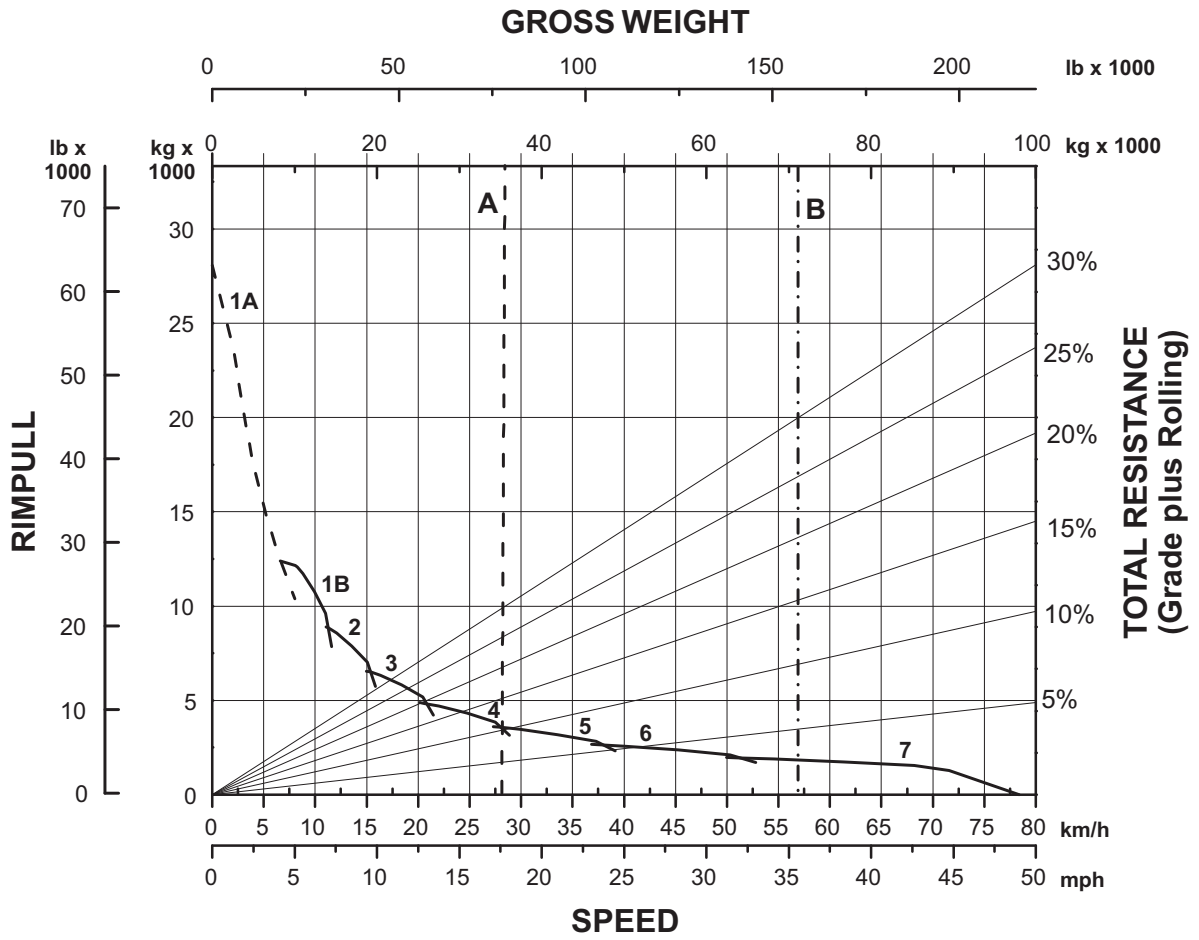
317 520 kg GMW, 2% rolling resistance, -8% actual grade at 23.6 km/h would equate to -1646 HP

$$\frac{317\ 520 \times (.02 - .08) \times 23.6}{273.75} = 1646 \text{ HP}$$

This formula is intended for use in determining horsepower being consumed in the field based on field measurements. It is not intended to indicate how fast trucks should be operated on grade. Only job conditions, proper operating procedure, and good judgement should determine safe operating speeds during retarder use.

769D Rimpull-Speed-Gradeability
 • 18.00R33 Tires

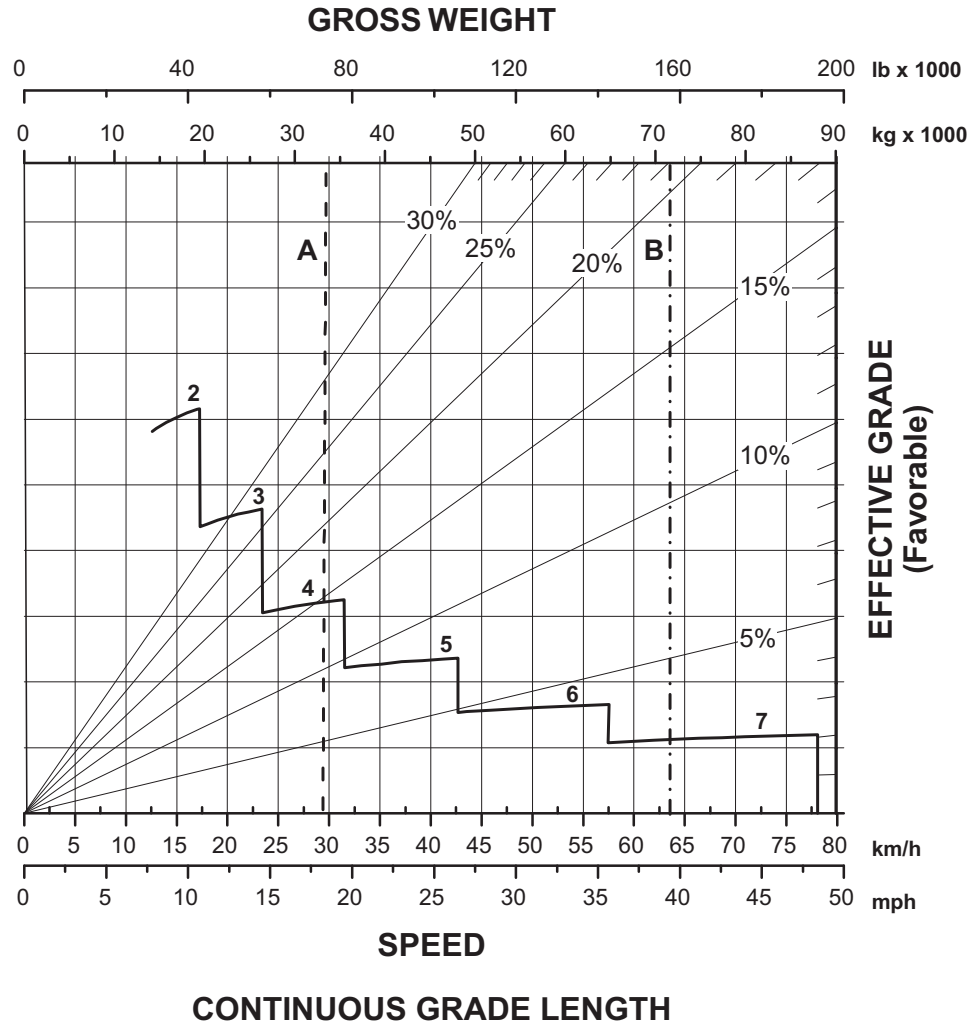
Construction & Mining Trucks



9

- KEY**
- 1A — 1st Gear (Torque Converter)
 - 1B — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear
 - 7 — 7th Gear

- KEY**
- A — Empty 33 545 kg (73,800 lb)
 - B — Max GMW 71 400 kg (157,000 lb)



KEY

2 — 2nd Gear
 3 — 3rd Gear
 4 — 4th Gear
 5 — 5th Gear
 6 — 6th Gear
 7 — 7th Gear

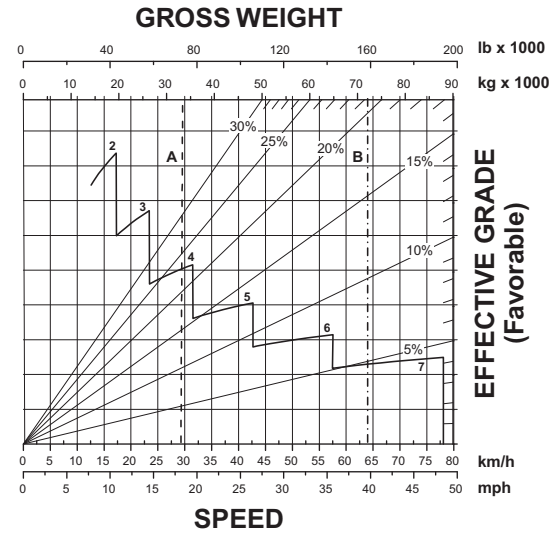
KEY

A — Empty 30 800 kg (67,800 lb)
 B — Max GMW 71 400 kg (157,000 lb)

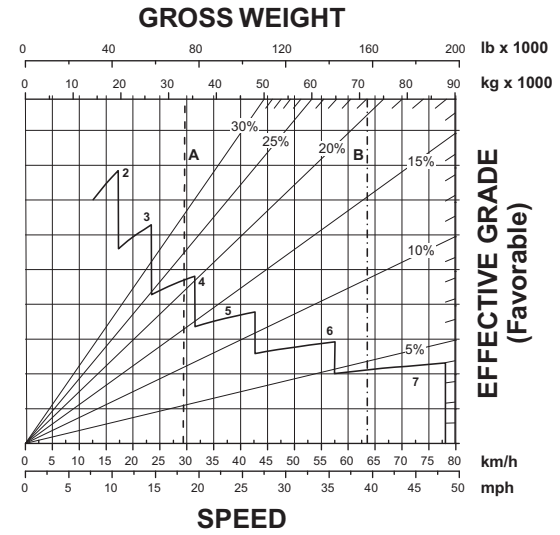
769D Brake Performance

- 450 m (1500 ft)
- 600 m (2000 ft)
- 900 m (3000 ft)
- 1500 m (5000 ft)

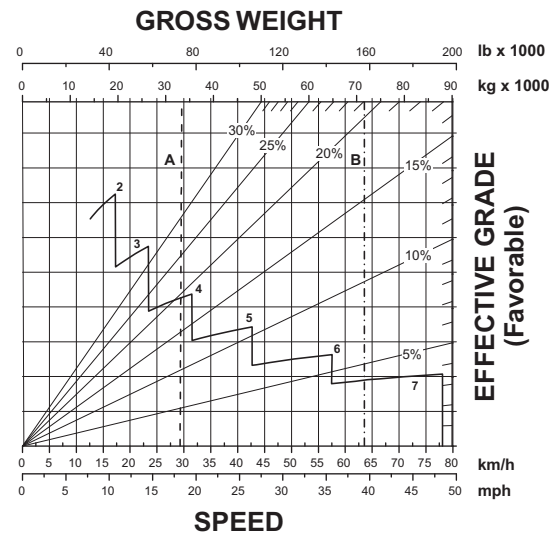
Construction & Mining Trucks



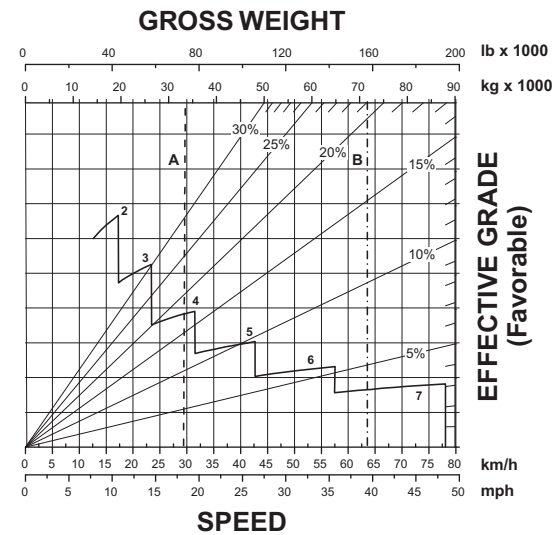
GRADE DISTANCE — 450 m (1500 ft)



GRADE DISTANCE — 600 m (2000 ft)



GRADE DISTANCE — 900 m (3000 ft)



GRADE DISTANCE — 1500 m (5000 ft)

KEY

- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

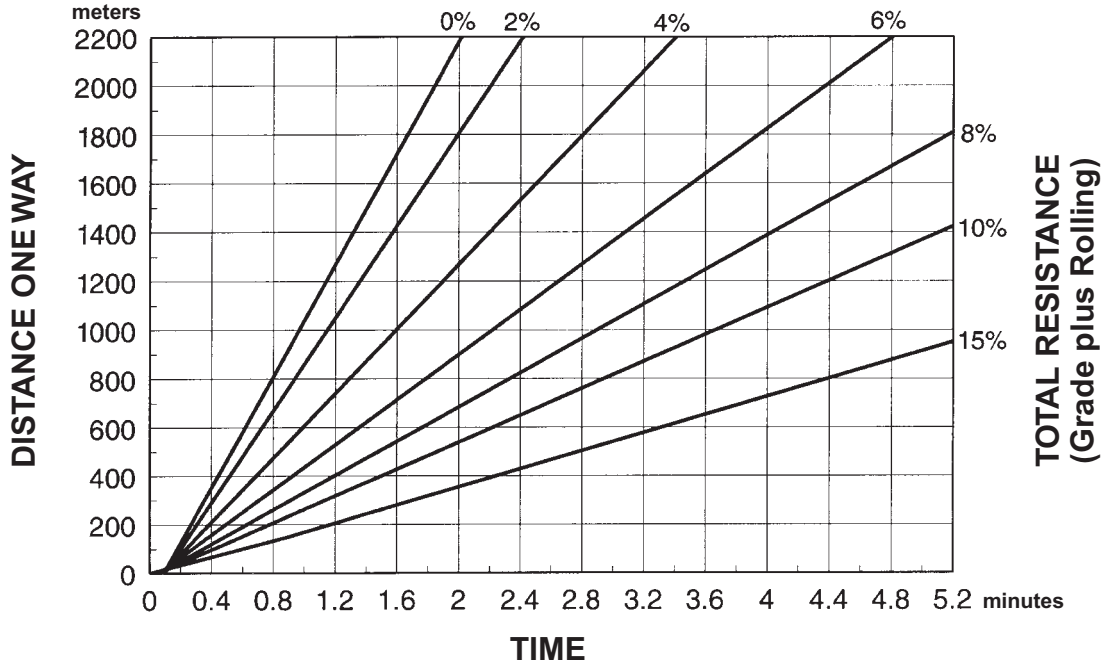
KEY

- A — Empty 30 800 kg (67,800 lb)
- B — Max GMW 71 400 kg (157,000 lb)

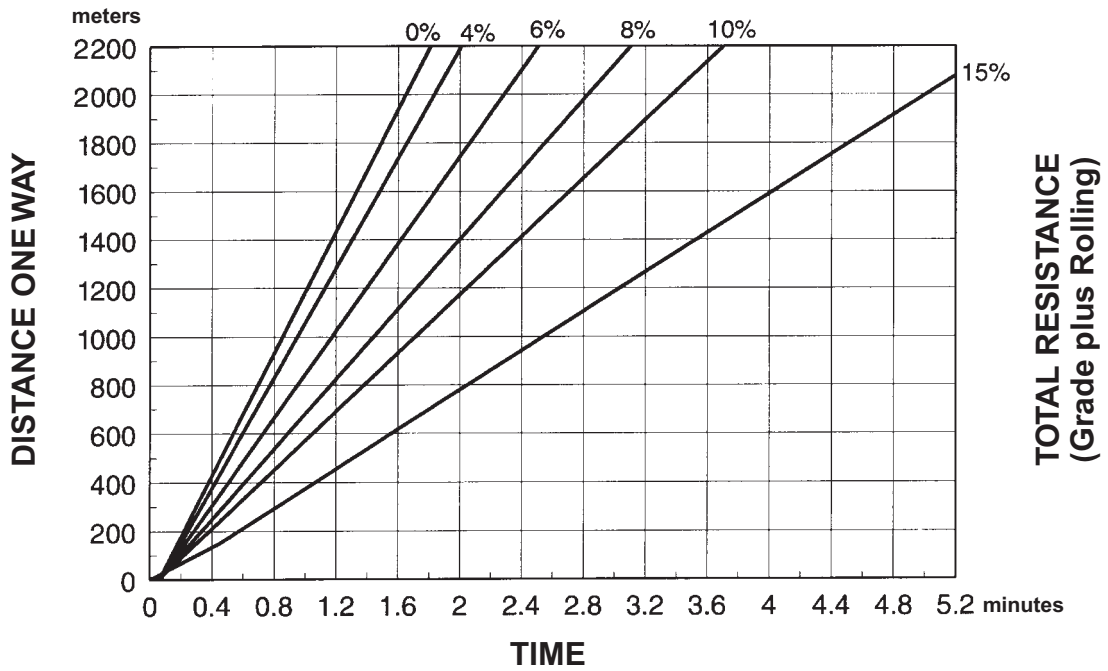
Construction & Mining Trucks

769D Travel Time
● 18.00R33 Tires

LOADED

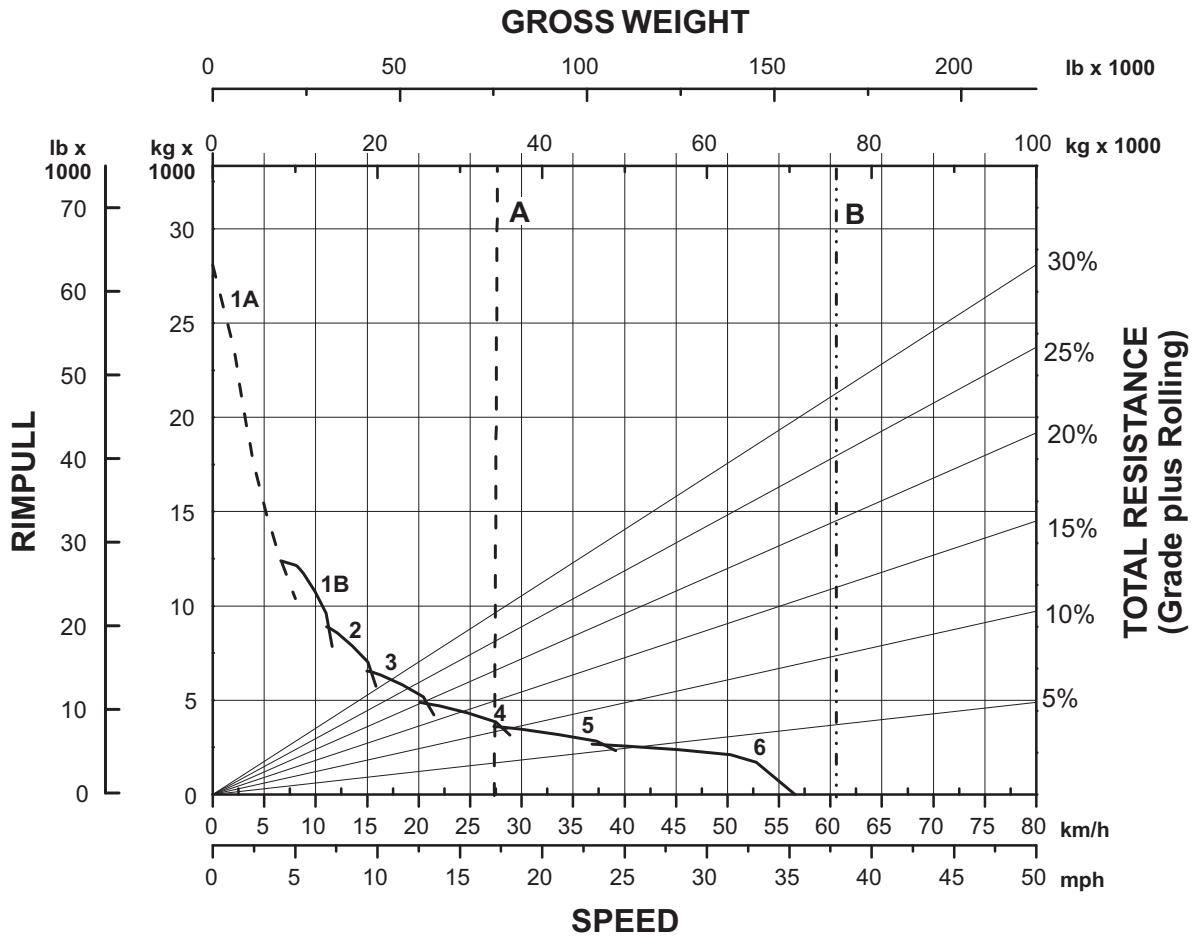


EMPTY



771D Rimpull-Speed-Gradeability
 • 18.00R33 Tires

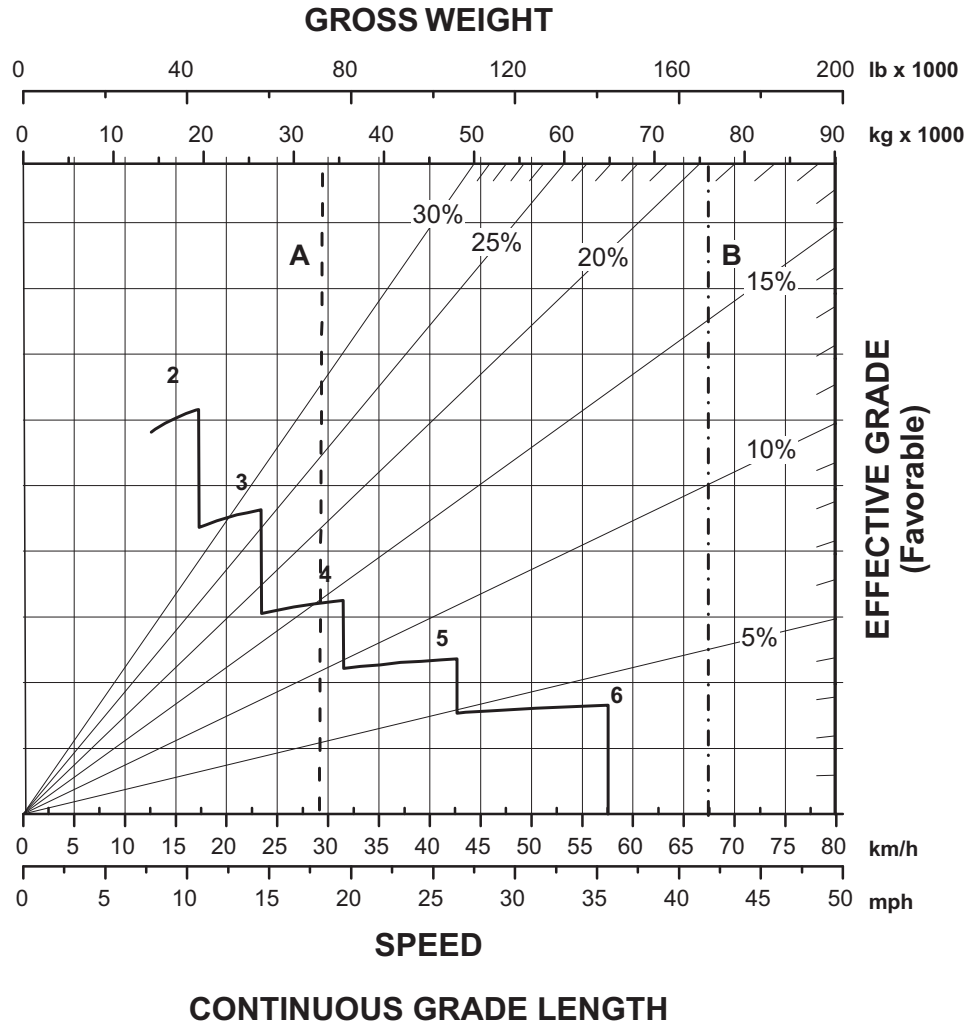
Construction & Mining Trucks



9

- KEY**
- 1A — 1st Gear (Torque Converter)
 - 1B — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear

- KEY**
- A — Empty 33 454 kg (73,600 lb)
 - B — Max GMW 75 700 kg (166,500 lb)



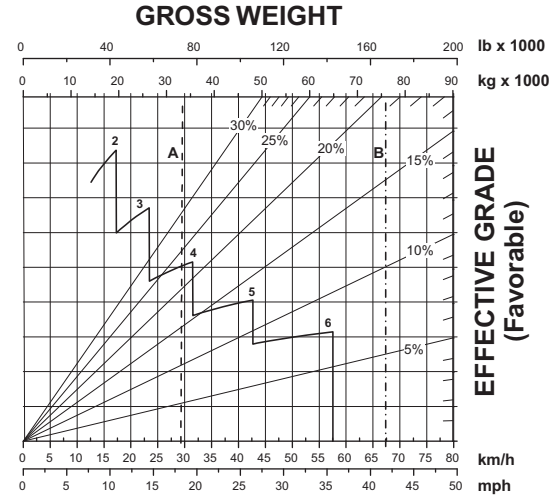
KEY
 2 — 2nd Gear
 3 — 3rd Gear
 4 — 4th Gear
 5 — 5th Gear
 6 — 6th Gear

KEY
 A — Empty 33 454 kg (73,600 lb)
 B — Max GMW 75 700 kg (166,500 lb)

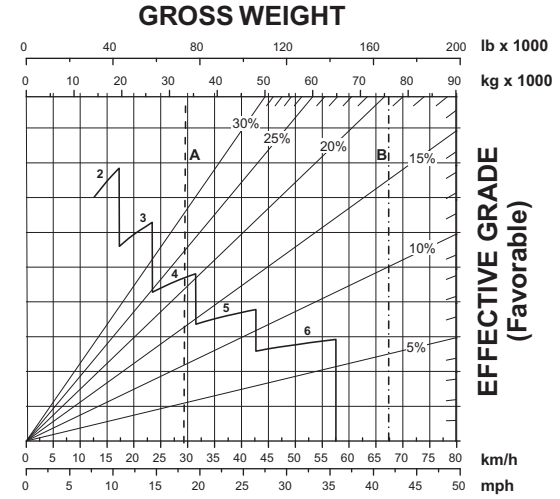
771D Brake Performance

- 450 m (1500 ft)
- 600 m (2000 ft)
- 900 m (3000 ft)
- 1500 m (5000 ft)

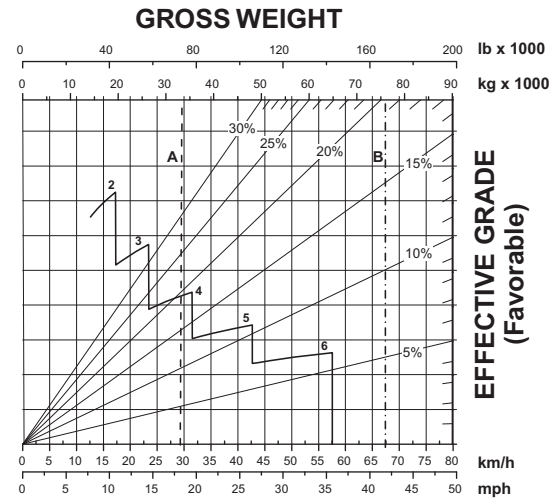
Construction & Mining Trucks



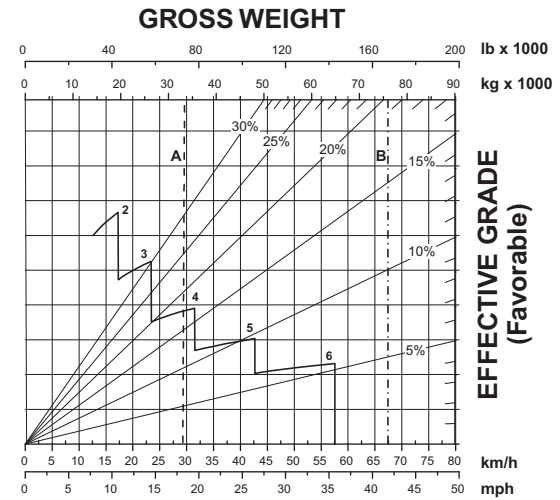
GRADE DISTANCE — 450 m (1500 ft)



GRADE DISTANCE — 600 m (2000 ft)



GRADE DISTANCE — 900 m (3000 ft)



GRADE DISTANCE — 1500 m (5000 ft)

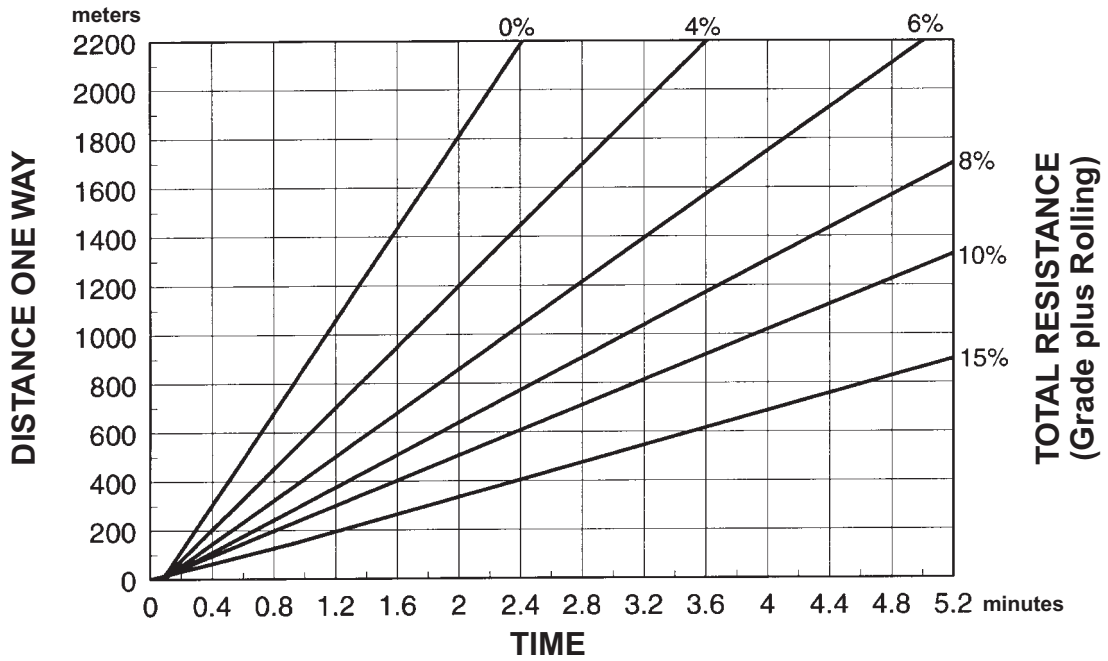
- KEY
- 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear

- KEY
- A — Empty 33 454 kg (73,600 lb)
 - B — Max GMW 75 700 kg (166,500 lb)

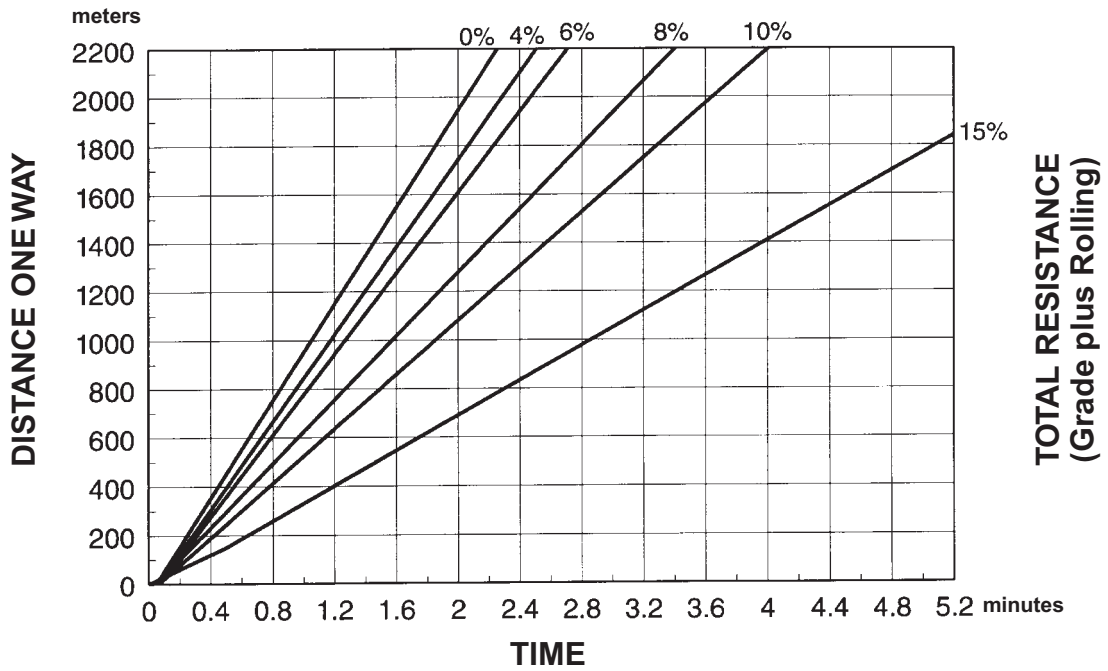
Construction & Mining Trucks

771D Travel Time
 ● 18.00R33 Tires

LOADED

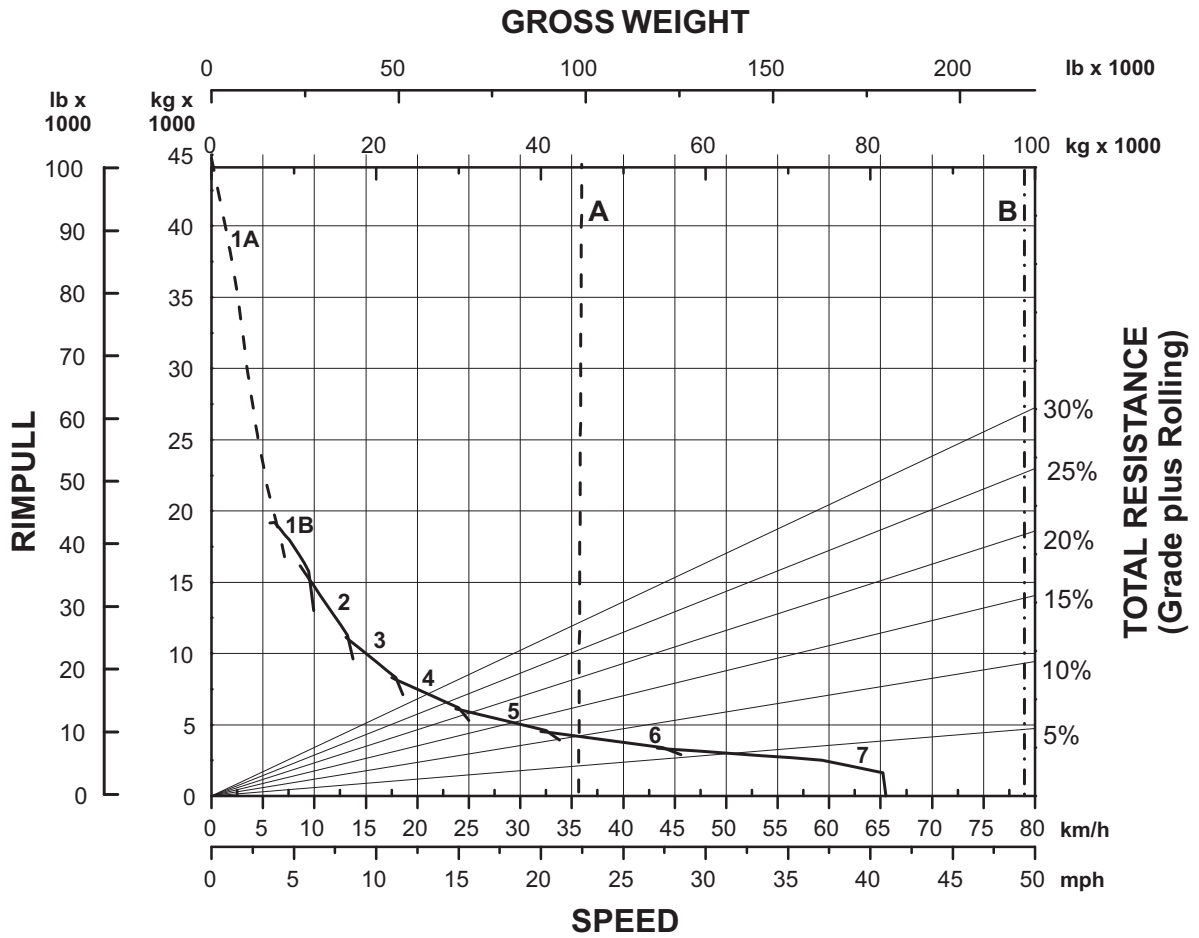


EMPTY



773E Rimpull-Speed-Gradeability
 • 24.00R35 Tires

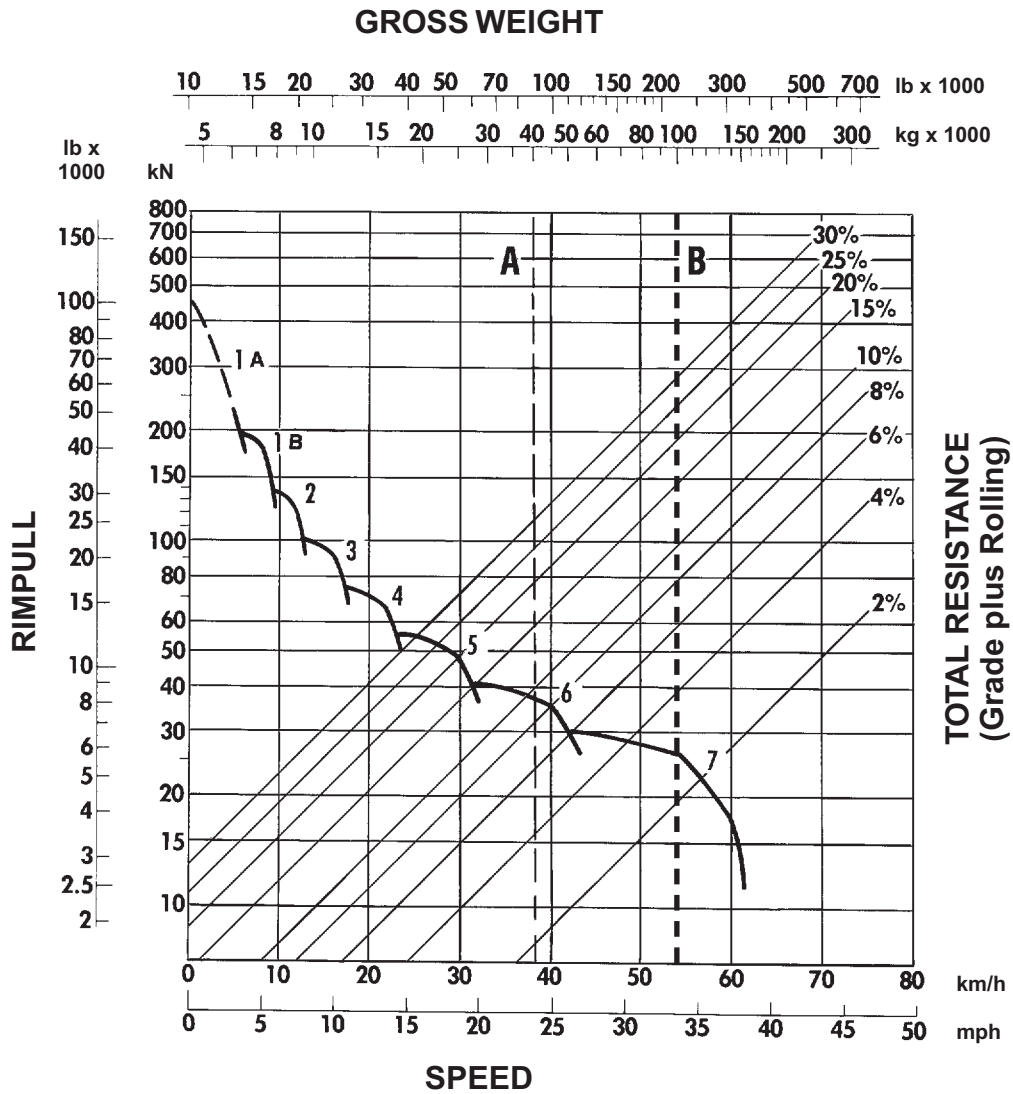
Construction & Mining Trucks

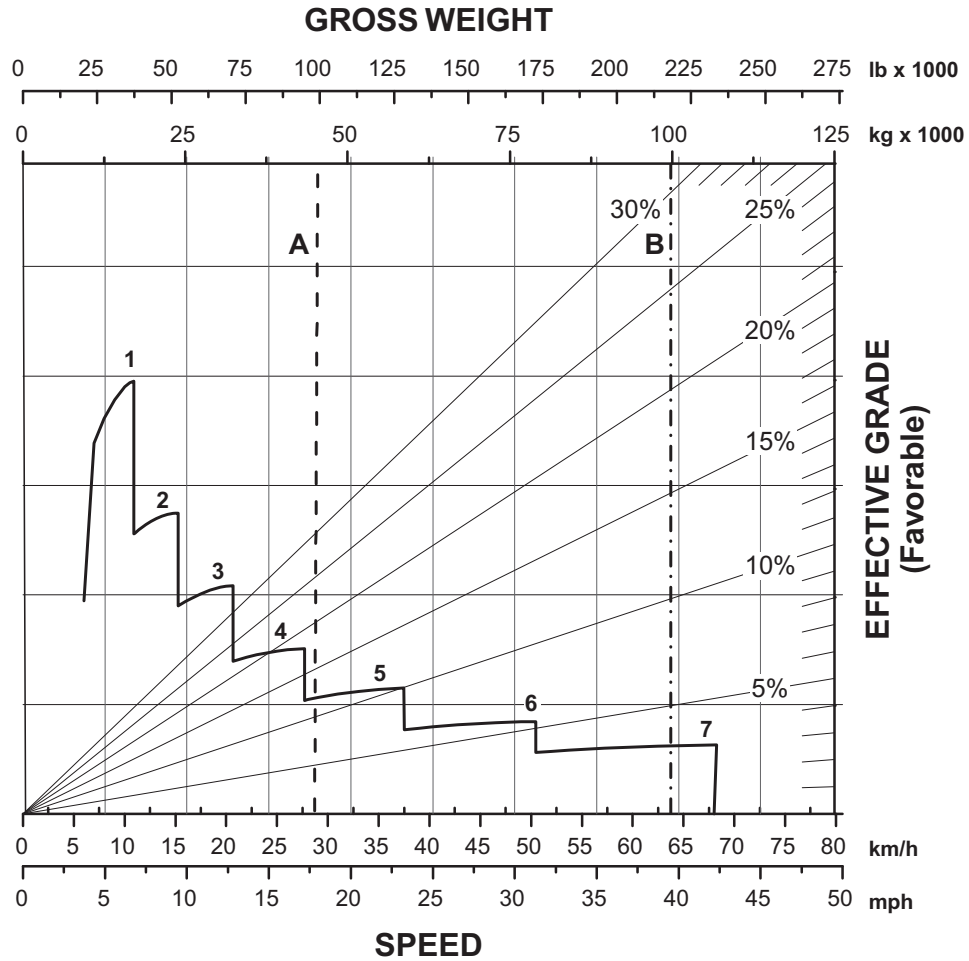


9

- KEY**
- 1A — 1st Gear (Torque Converter)
 - 1B — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear
 - 7 — 7th Gear

- KEY**
- A — Empty 40 188 kg (88,600 lb)
 - B — Max GMW 99 300 kg (219,000 lb)





9

KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

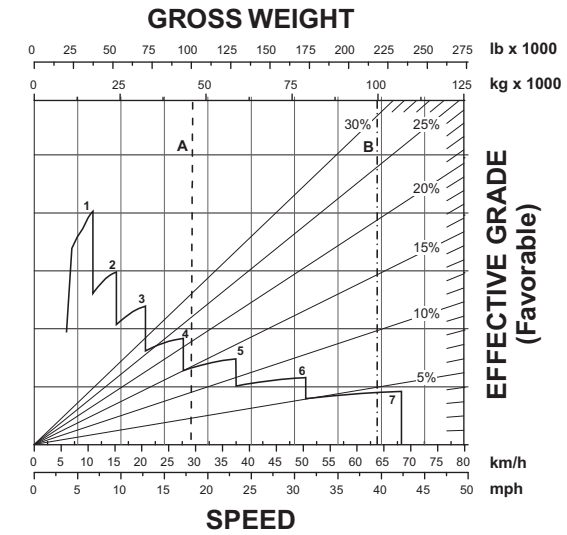
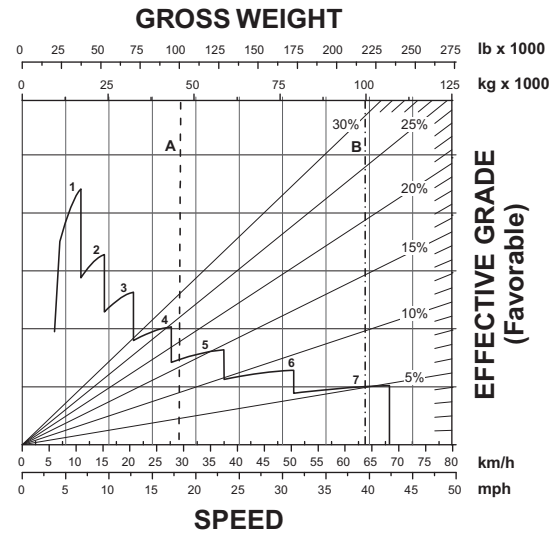
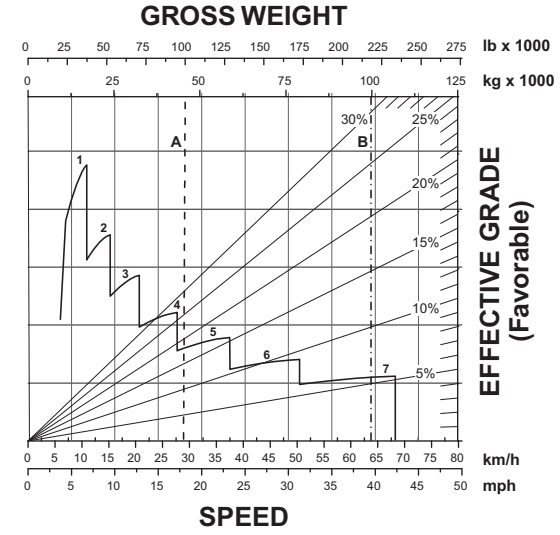
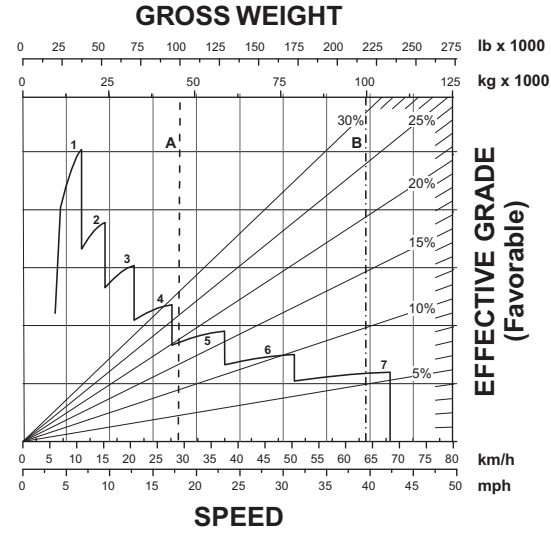
KEY

- A — Empty 40 188 kg (88,600 lb)
- B — Max GMW 99 300 kg (219,000 lb)

Construction & Mining Trucks

773E Brake Performance

- 450 m (1500 ft)
- 600 m (2000 ft)
- 900 m (3000 ft)
- 1500 m (5000 ft)



KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

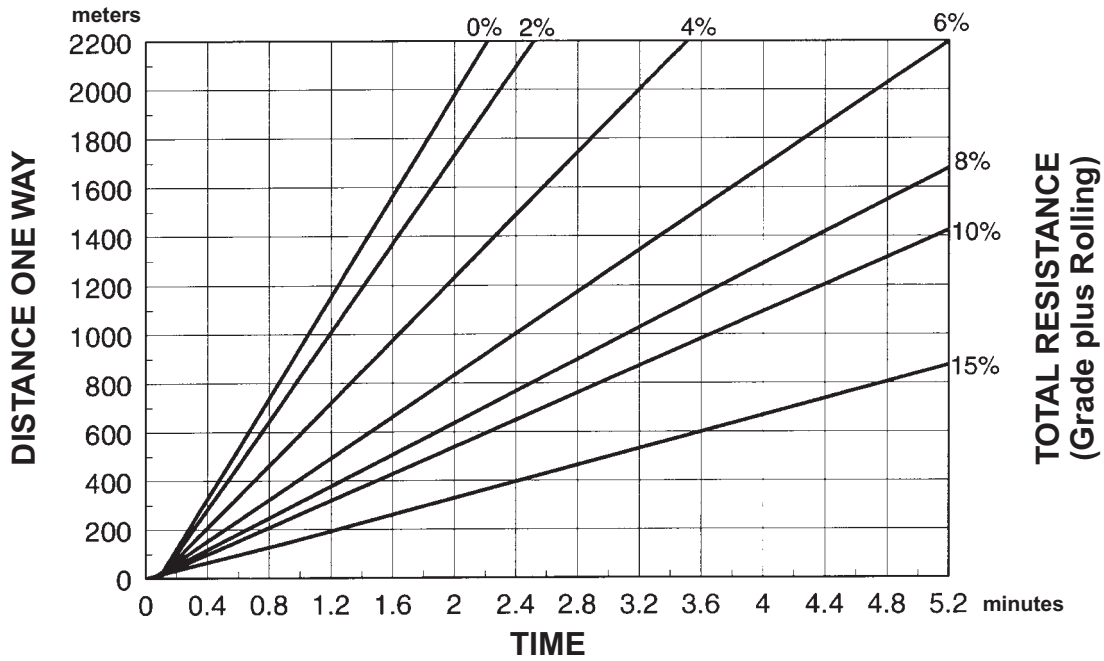
KEY

- A — Empty 40 188 kg (88,600 lb)
- B — Max GMW 99 300 kg (219,000 lb)

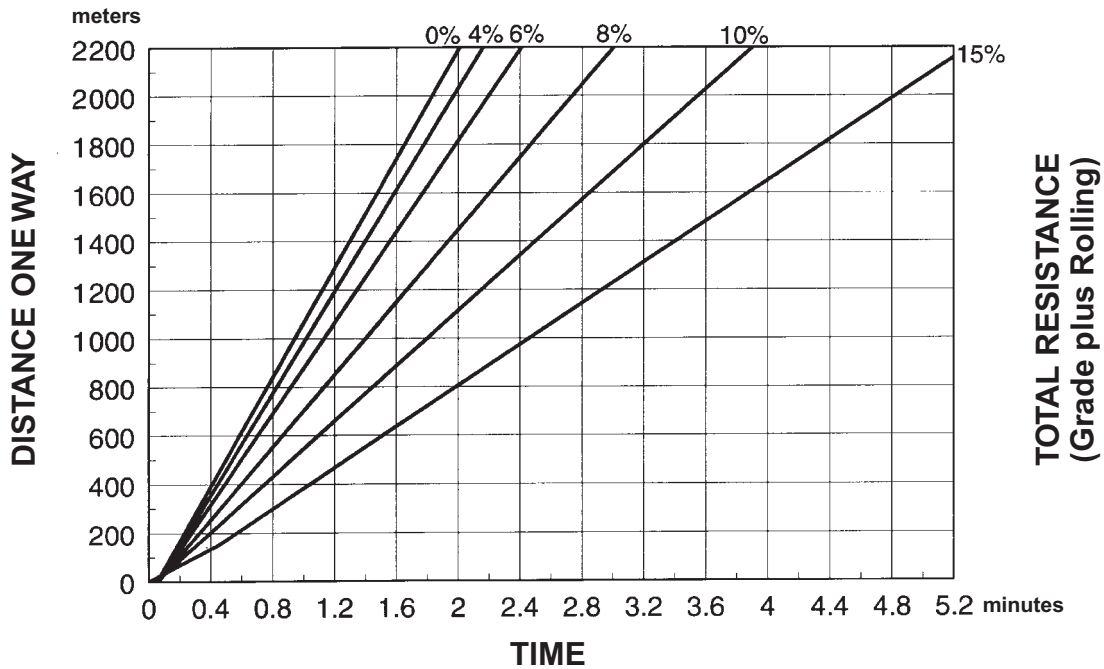
773E Travel Time
 ● 24.00R35 Tires

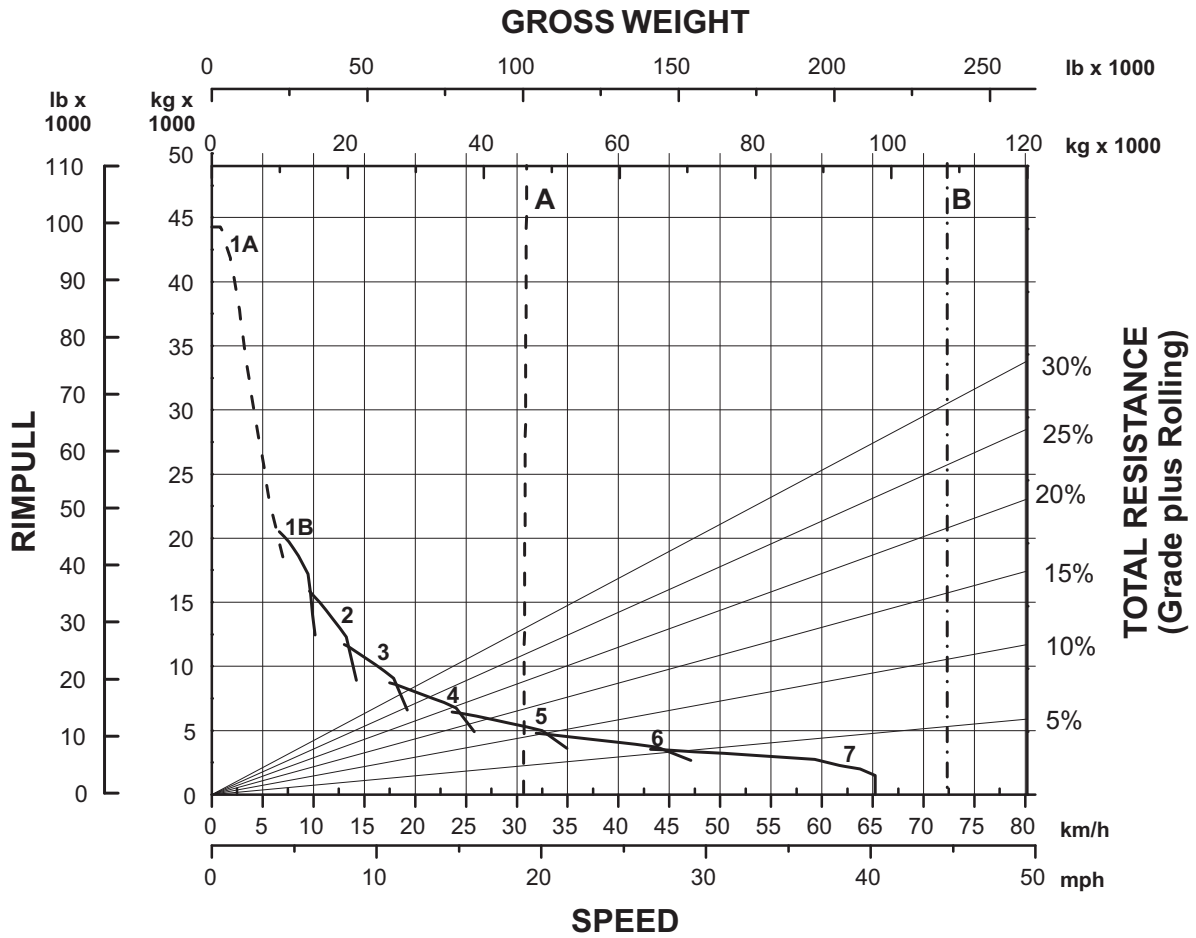
Construction & Mining Trucks

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EMPTY





KEY

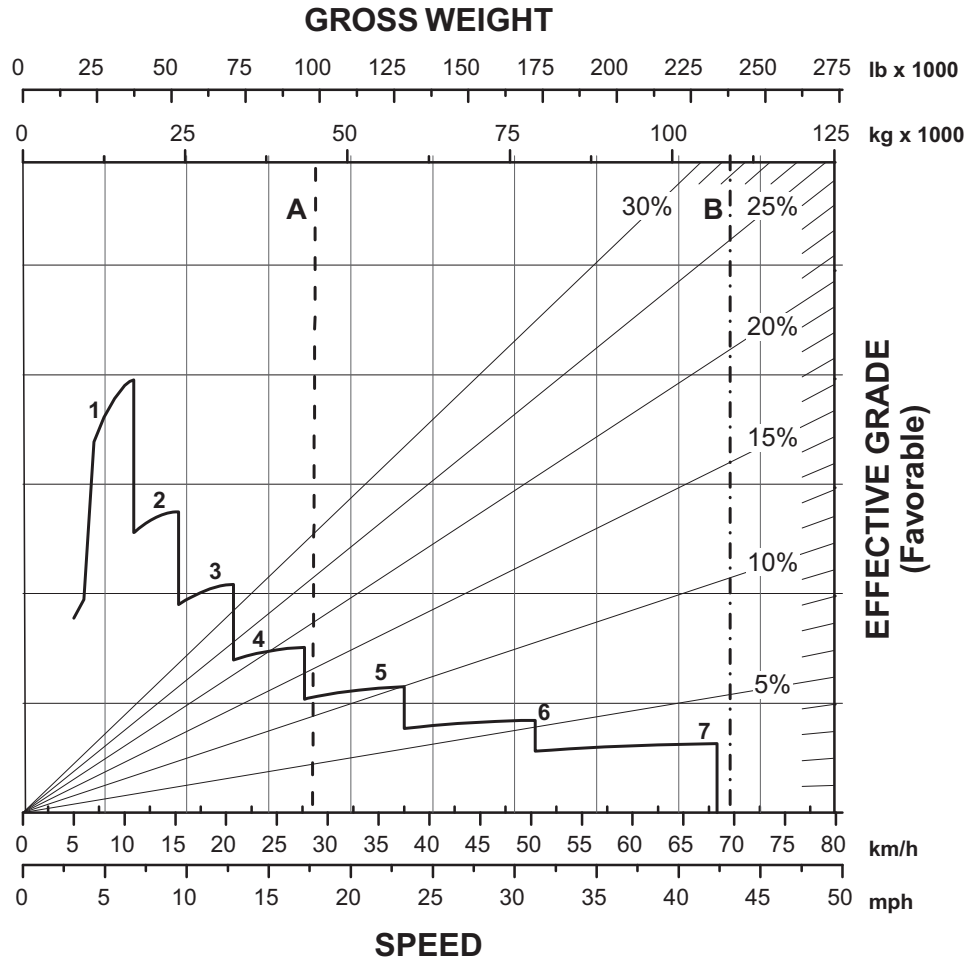
- 1A — 1st Gear (Torque Converter)
- 1B — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

KEY

- A — Empty 43 953 kg (96,900 lb)
- B — Max GMW 108 400 kg (239,000 lb)

775E Brake Performance
 • Continuous Grade Retarding

Construction & Mining Trucks



9

KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

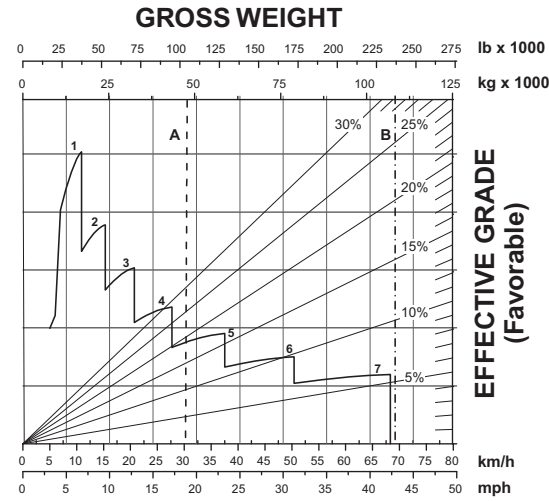
KEY

- A — Empty 43 953 kg (96,900 lb)
- B — Max GMW 108 400 kg (239,000 lb)

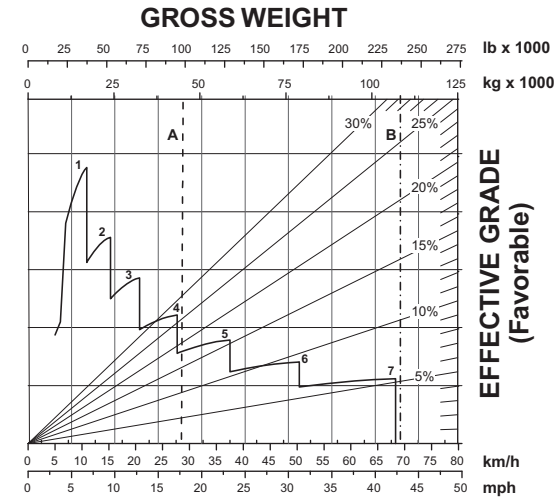
Construction & Mining Trucks

775E Brake Performance

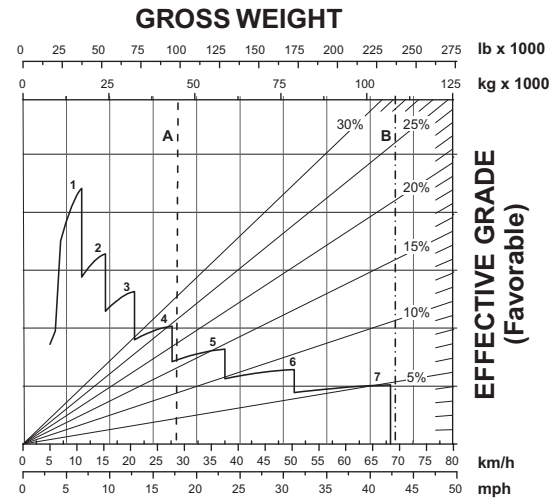
- 450 m (1500 ft)
- 600 m (2000 ft)
- 900 m (3000 ft)
- 1500 m (5000 ft)



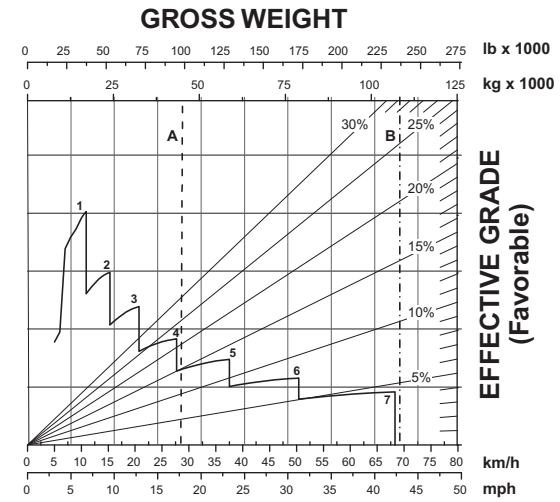
GRADE DISTANCE — 450 m (1500 ft)



GRADE DISTANCE — 600 m (2000 ft)



GRADE DISTANCE — 900 m (3000 ft)



GRADE DISTANCE — 1500 m (5000 ft)

KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

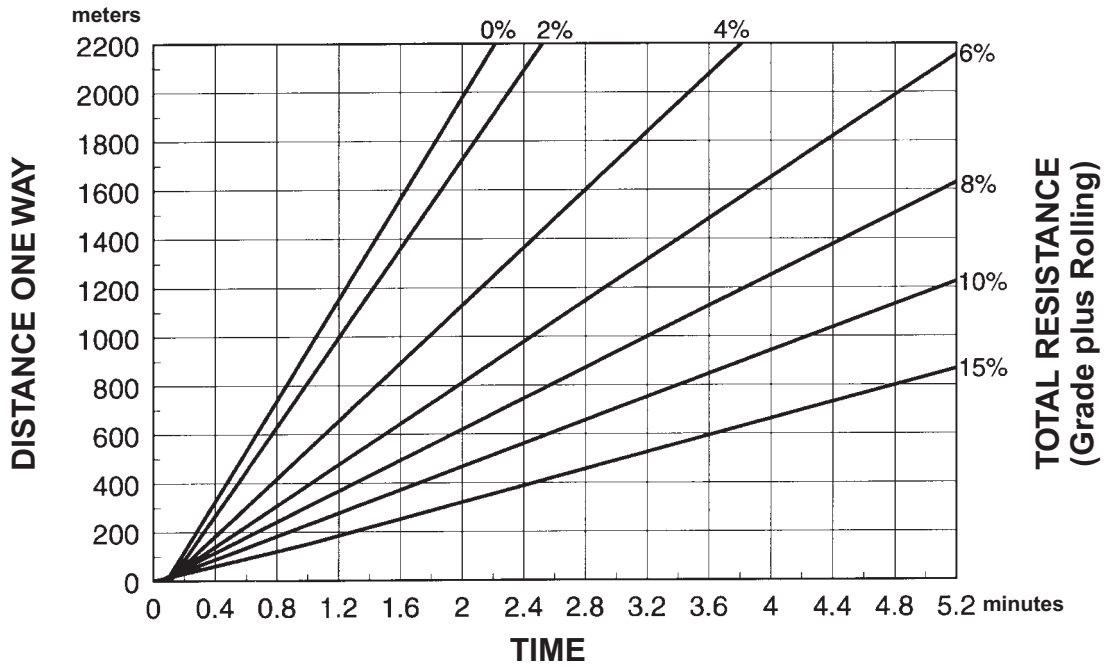
KEY

- A — Empty 43 953 kg (96,900 lb)
- B — Max GMW 108 400 kg (239,000 lb)

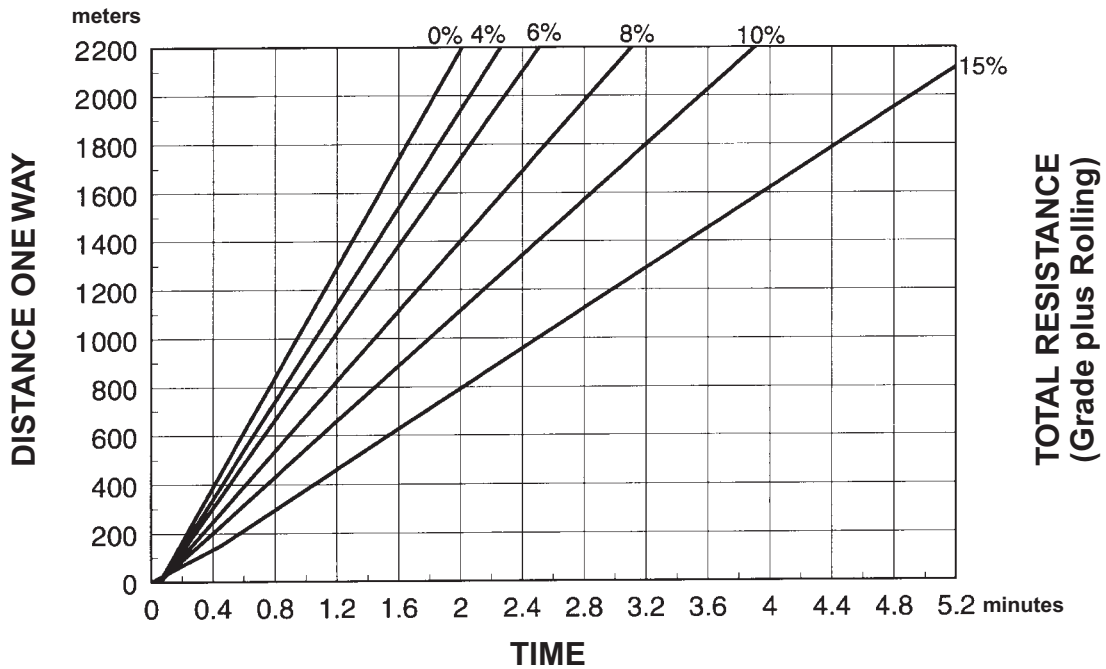
775E Travel Time
● 24.00R35 Tires

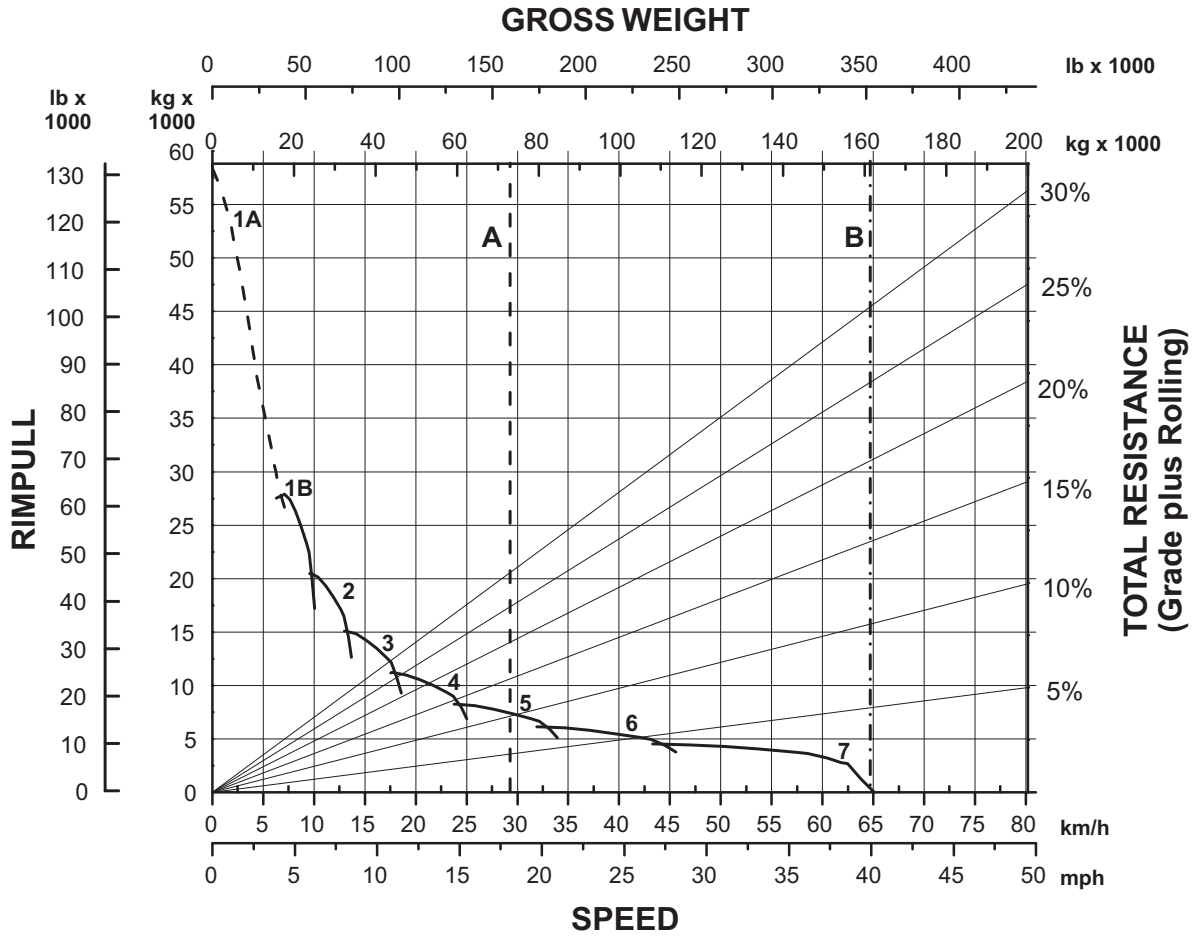
Construction & Mining Trucks

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EMPTY

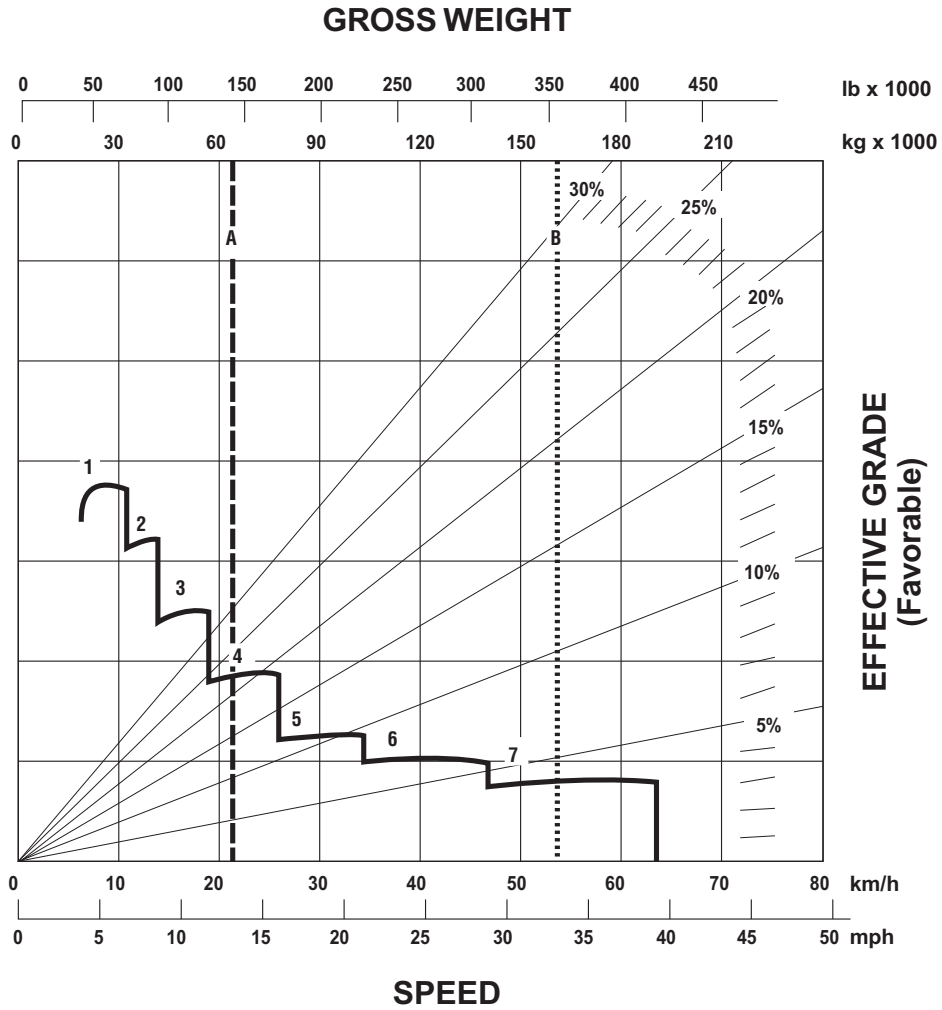




- KEY**
- 1A — 1st Gear (Torque Converter)
 - 1B — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear
 - 7 — 7th Gear

- KEY**
- A* — Empty 64 359 kg (141,889 lb)
 - B* — Max GMW 163 293 kg (360,000 lb)

*These two reference lines (A and B) apply only to 777D.



9

KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

KEY

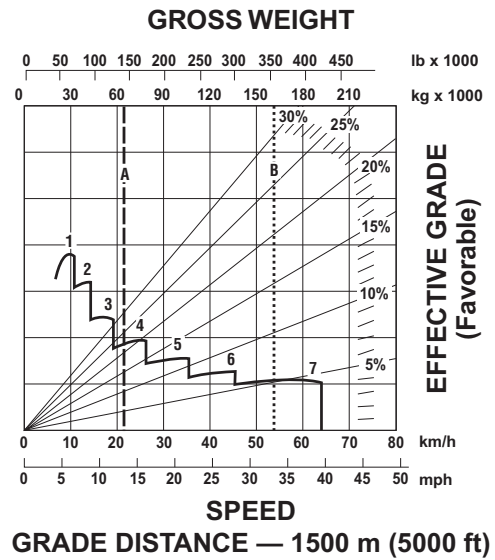
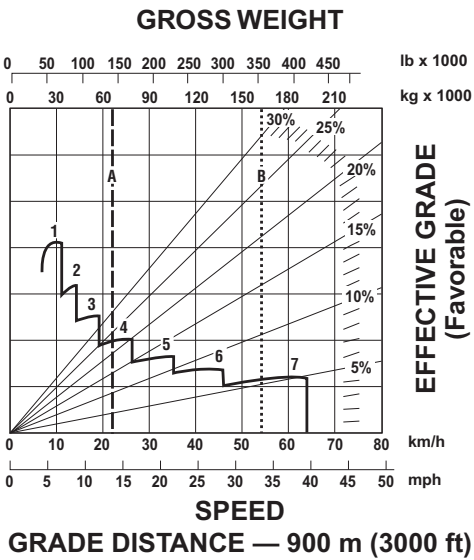
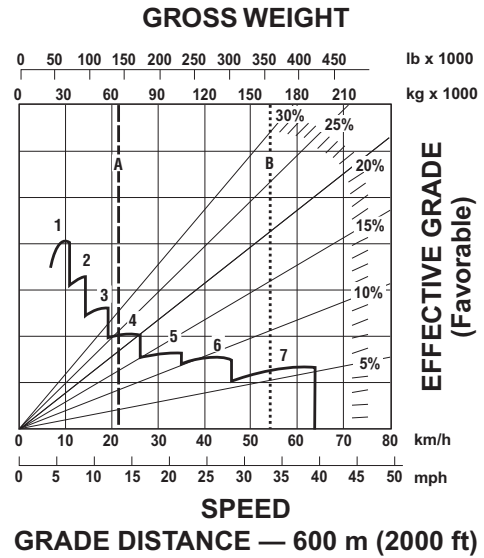
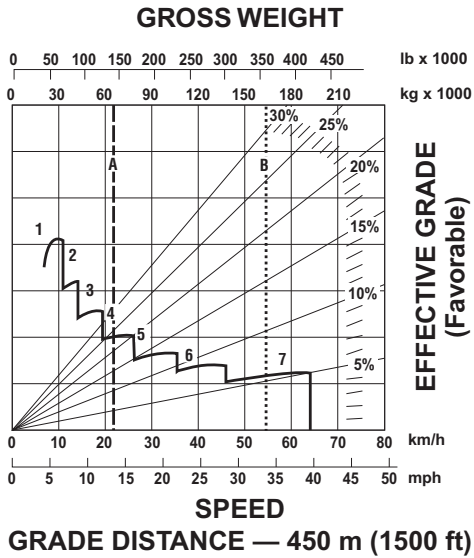
- A* — Empty 64 359 kg (141,889 lb)
- B* — Max GMW 161 028 kg (355,000 lb)

*These two reference lines (A and B) apply only to 777D. Brake performance for the 776D will vary depending on trailer brake capability.

**Construction & Mining Trucks
Construction & Mining Tractors**

776D, 777D Brake Performance

- 450 m (1500 ft)
- 600 m (2000 ft)
- 900 m (3000 ft)
- 1500 m (5000 ft)



KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

KEY

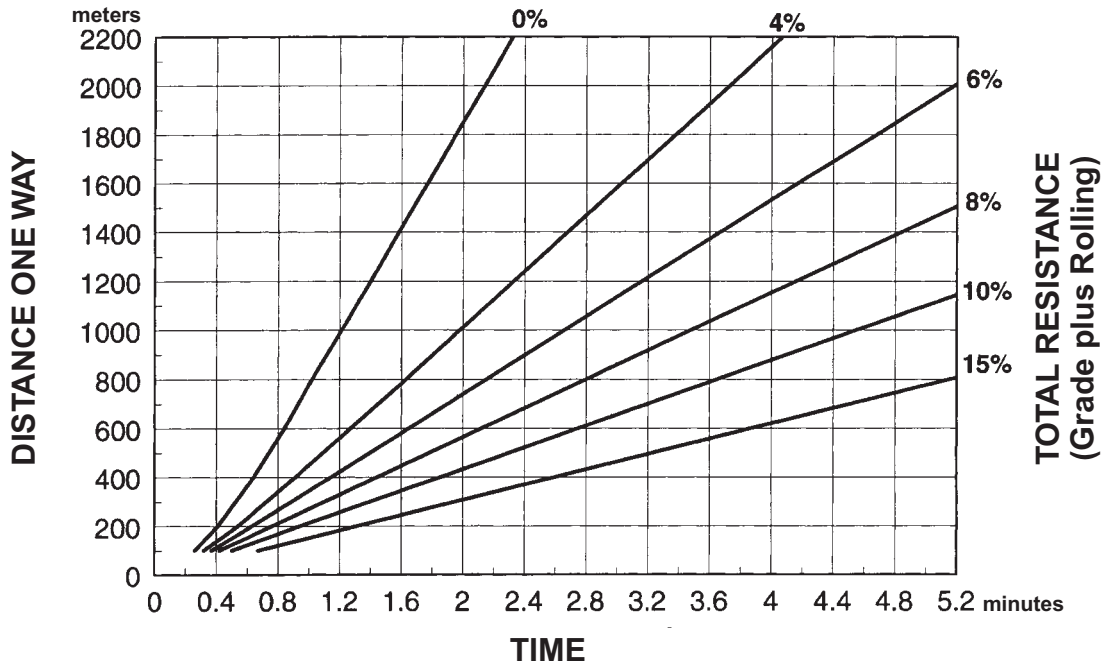
- A* — Empty 64 359 kg (141,889 lb)
- B* — Max GMW 161 028 kg (355,000 lb)

*These two reference lines (A and B) apply only to 777D. Brake performance for the 776D will vary depending on trailer brake capability.

777D Travel Time
● 27.00R49 Tires

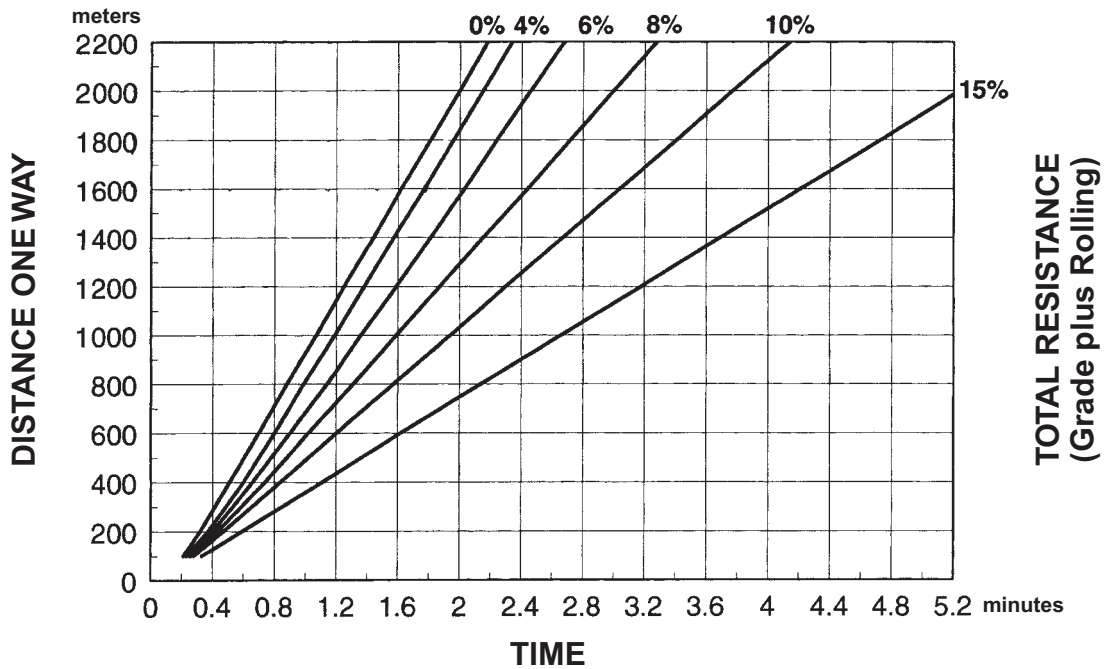
Construction & Mining Trucks

LOADED



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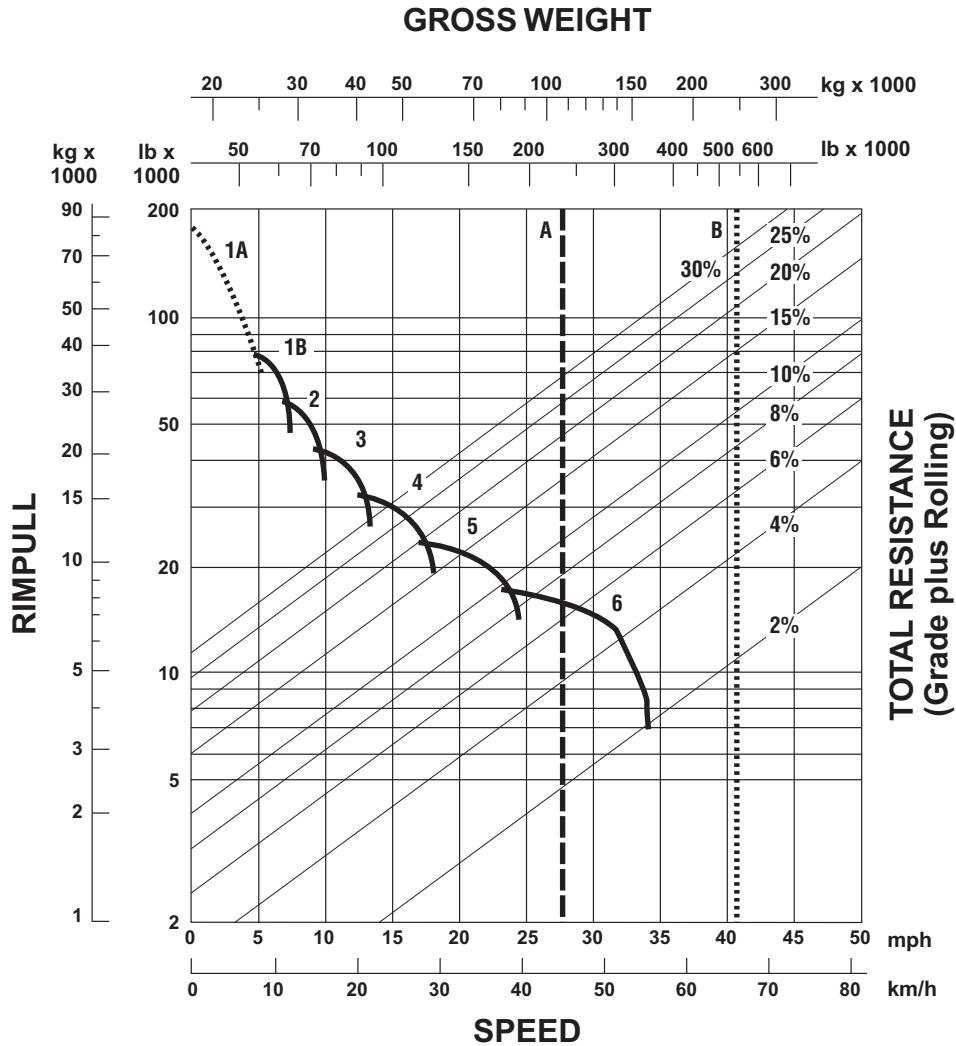
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**Construction & Mining Trucks
Construction & Mining Tractors**

784C, 785C Rimpull-Speed-Gradeability

- 33.00R51 Tires
- 1433 mm (4'8.4") Tire Radius



KEY

- 1A— 1st Gear (Torque Converter)
- 1B— 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

Maximum travel speeds

1900 rpm	Gear	km/h	MPH
Forward	1	12.1	7.5
	2	16.3	10.2
	3	22.2	13.8
	4	29.9	18.6
	5	40.6	25.2
	6	54.8	34.0
Reverse		11.0	6.8

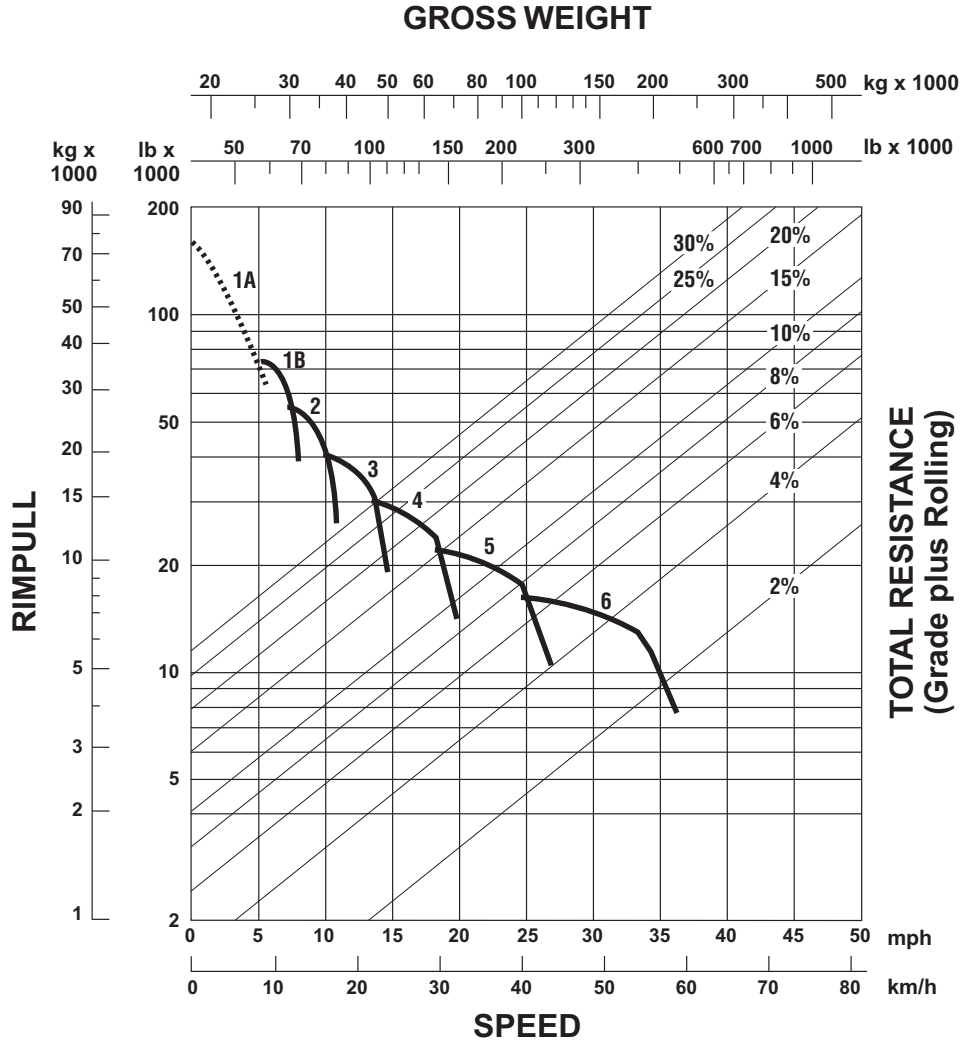
KEY

- A* — Est. Max Field Empty Weight 105 127 kg (231,767 lb)**
- B* — Max GMW 249 475 kg (550,000 lb)

*These two reference lines (A and B) apply only to 785C.
**Truck equipped with sideboards and liners.

784C Rimpull-Speed-Gradeability
 • 36.00R51 Tires
 • 1524 mm (5'0") Tire Radius

Construction & Mining Tractors



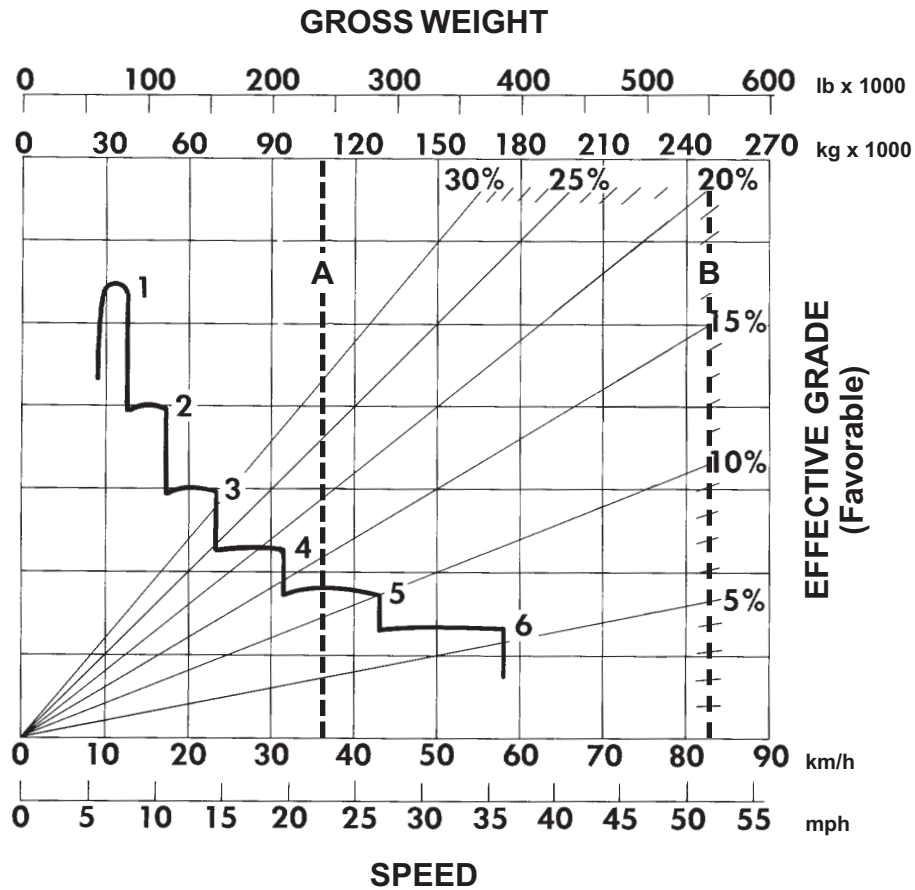
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KEY

- 1A— 1st Gear (Torque Converter)
- 1B— 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

Maximum travel speeds

1900 rpm	Gear	km/h	MPH
Forward	1	12.9	8.0
	2	17.4	10.8
	3	23.5	14.6
	4	31.9	19.8
	5	43.3	26.8
	6	58.4	36.2
Reverse		11.7	7.2



CONTINUOUS GRADE LENGTH

KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

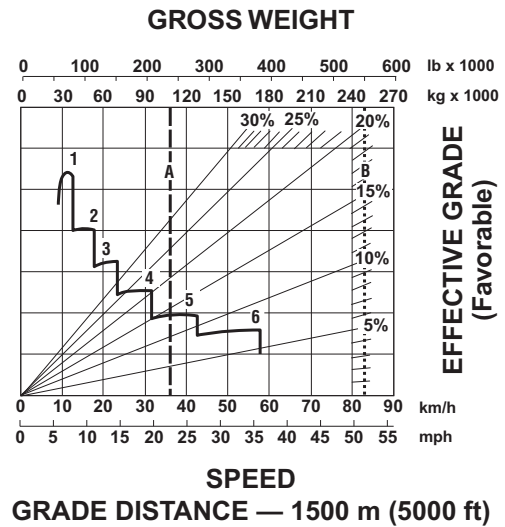
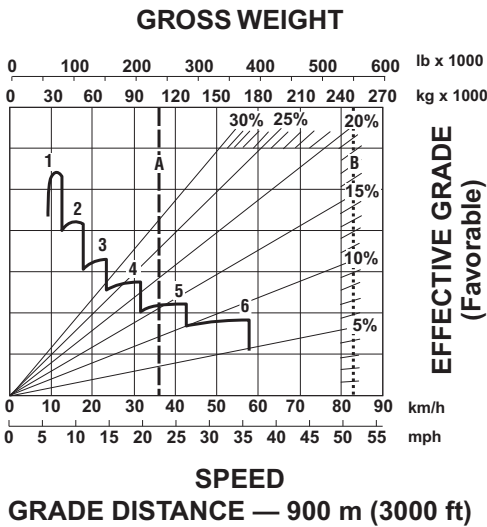
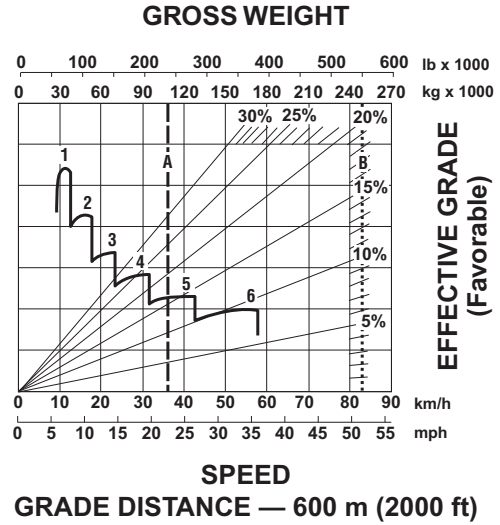
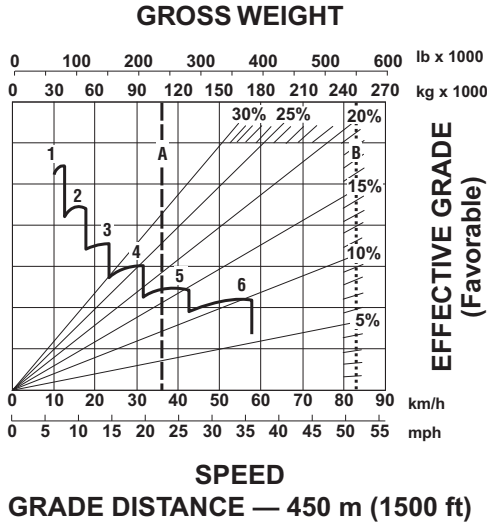
KEY

- A* — Est. Field Empty Weight 105 127 kg (231,767 lb)**
- B* — Max GMW 249 433 kg (550,000 lb)

*These two reference lines (A and B) apply only to 785C. Brake performance for 784C will vary depending on trailer brake capability.
**Truck equipped with sideboards and liners.

- 784C, 785C Brake Performance
- 450 m (1500 ft)
 - 600 m (2000 ft)
 - 900 m (3000 ft)
 - 1500 m (5000 ft)

Construction & Mining Trucks
Construction & Mining Tractors

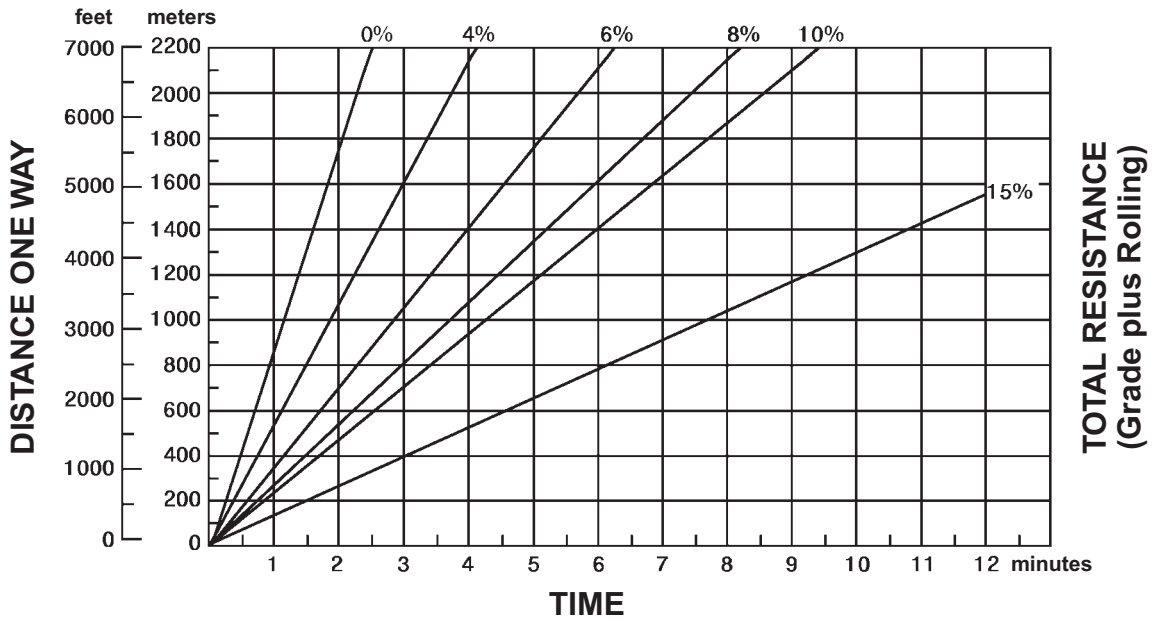


- KEY**
- 1 — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear

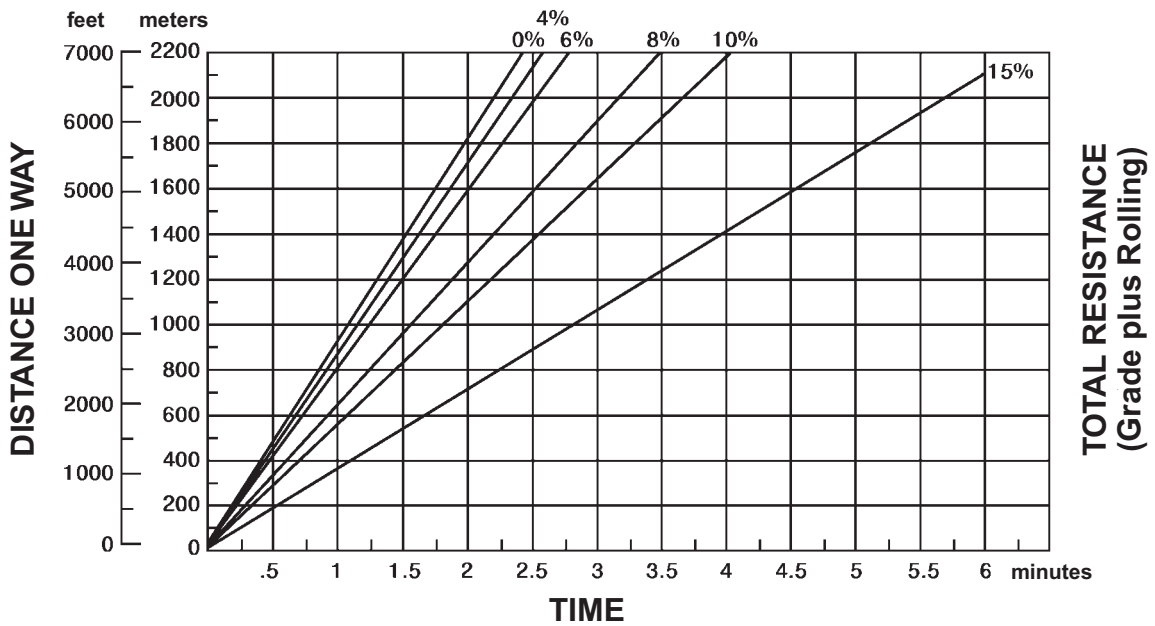
- KEY**
- A* — Est. Field Empty Weight 105 127 kg (231,767 lb)**
 - B* — Max GMW 249 433 kg (550,000 lb)

*These two reference lines (A and B) apply only to 785C. Brake performance for 784C will vary depending on trailer brake capability.
 **Truck equipped with sideboards and liners.

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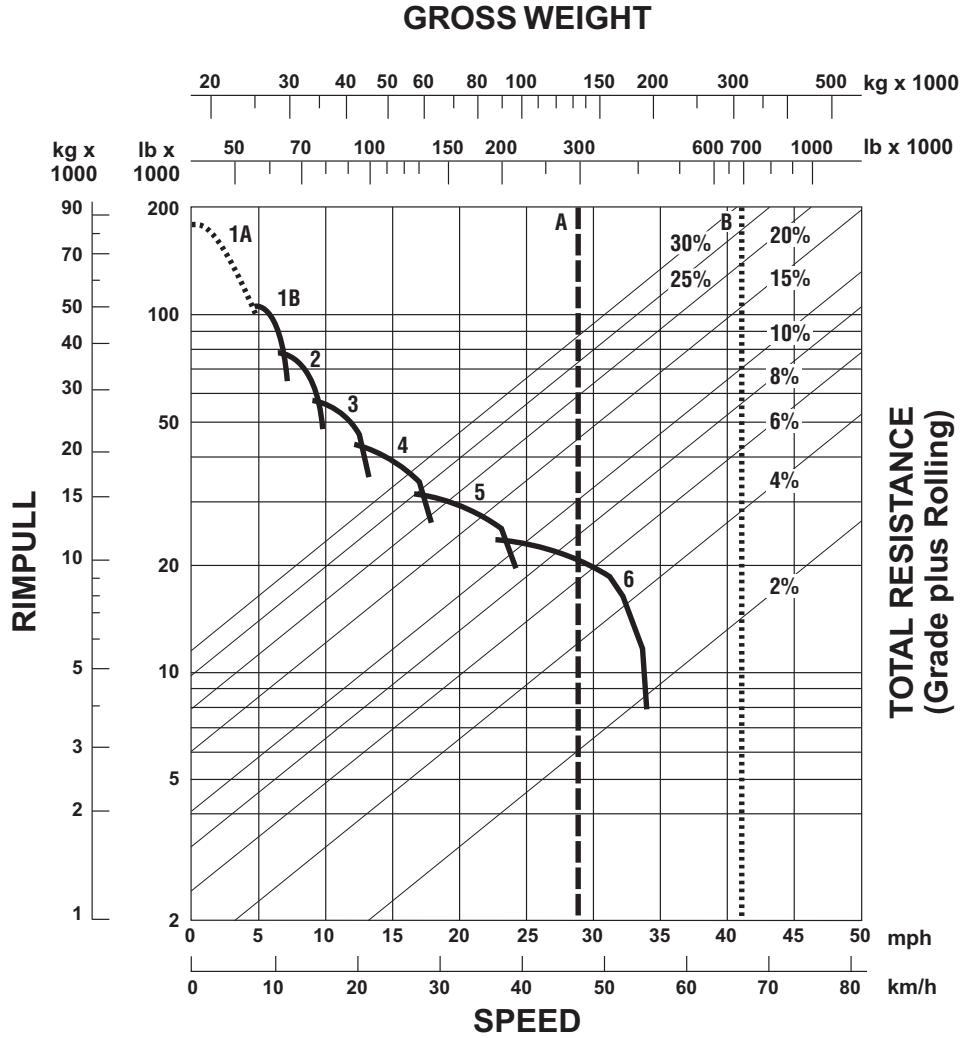


EMPTY



789C Rimpull-Speed-Gradeability
 • 37.00R57 Tires
 • 1593 mm (5'2.7") Tire Radius

Construction & Mining Trucks



9

KEY

- 1A — 1st Gear (Torque Converter)
- 1B — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

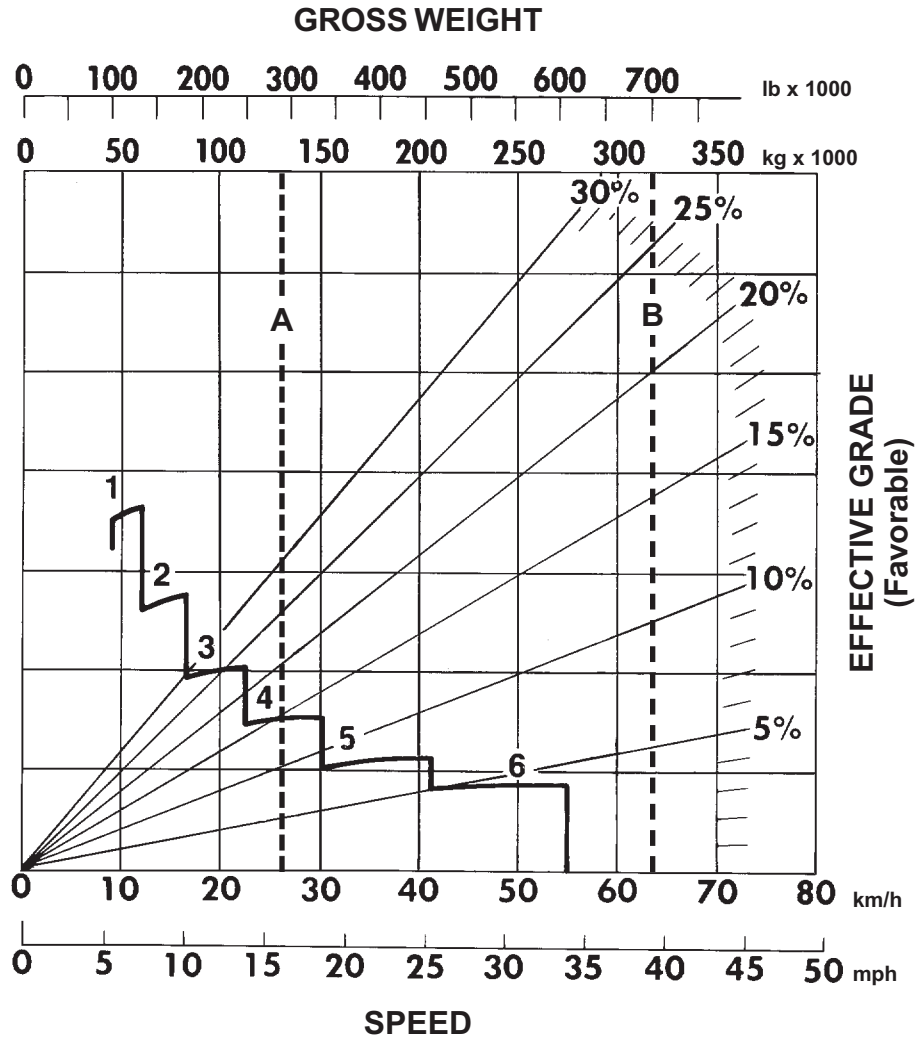
Maximum travel speeds

1900 rpm	Gear	km/h	MPH
Forward	1	12.0	7.5
	2	16.3	10.1
	3	22.0	13.7
	4	29.8	18.5
	5	40.4	25.0
	6	54.5	33.8
Reverse		10.9	6.8

KEY

- A — Est. Max Field Empty Weight 132 651 kg (292,447 lb)*
- B — Max GMW 317 460 kg (700,000 lb)

*Truck equipped with sideboards and liners.



CONTINUOUS GRADE LENGTH

KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

KEY

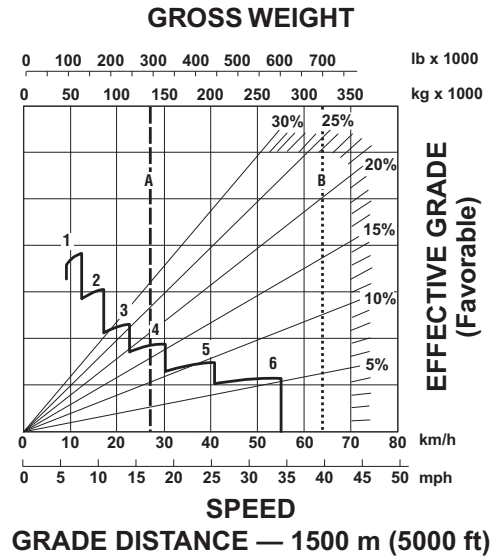
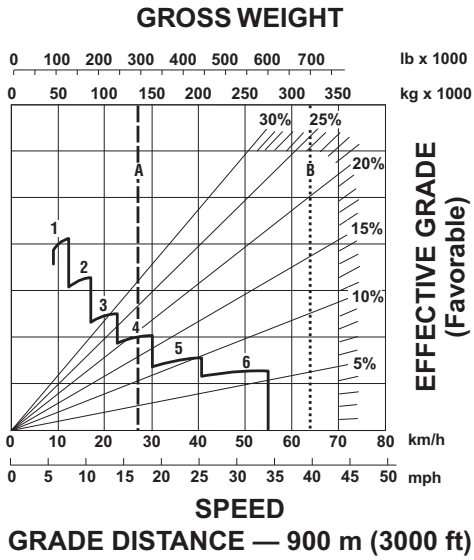
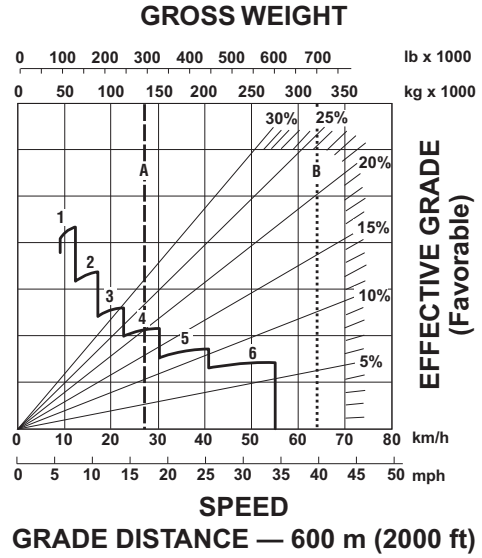
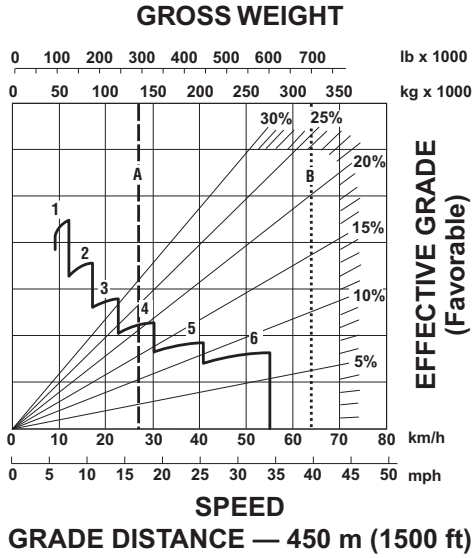
- A — Est. Field Empty Weight 132 651 kg (292,447 lb)*
- B — Max GMW 317 460 kg (700,000 lb)

*Truck equipped with sideboards and liners.

789C Brake Performance

- 450 m (1500 ft)
- 600 m (2000 ft)
- 900 m (3000 ft)
- 1500 m (5000 ft)

Construction & Mining Trucks



KEY

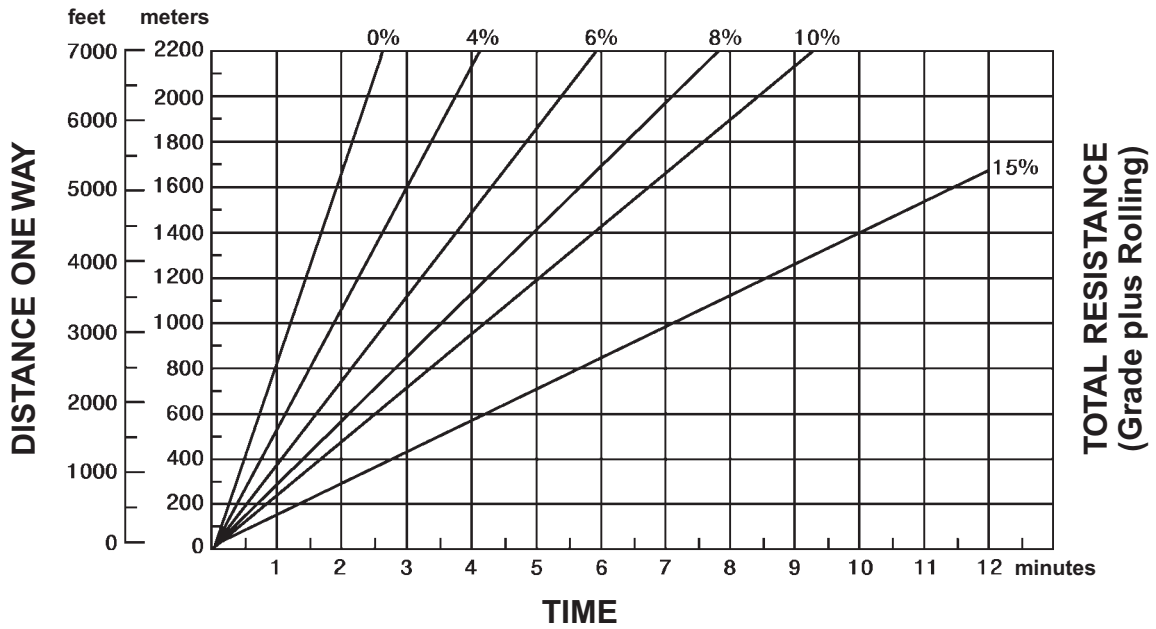
- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

KEY

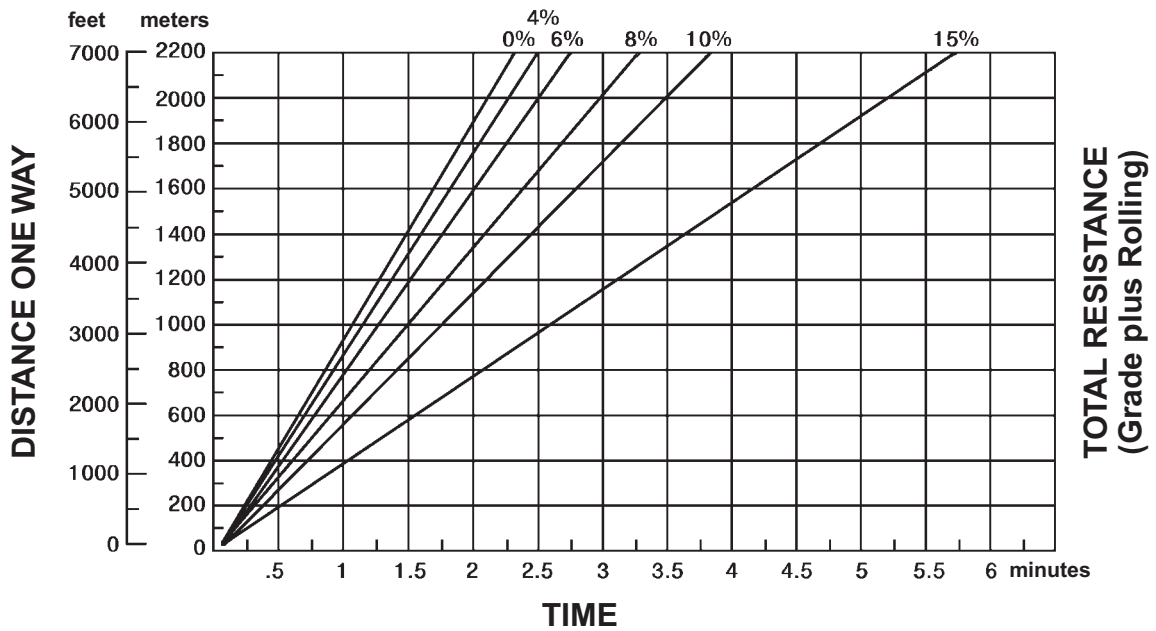
- A — Est. Field Empty Weight 132 651 kg (292,447 lb)*
- B — Max GMW 317 460 kg (700,000 lb)

*Truck equipped with sideboards and liners.

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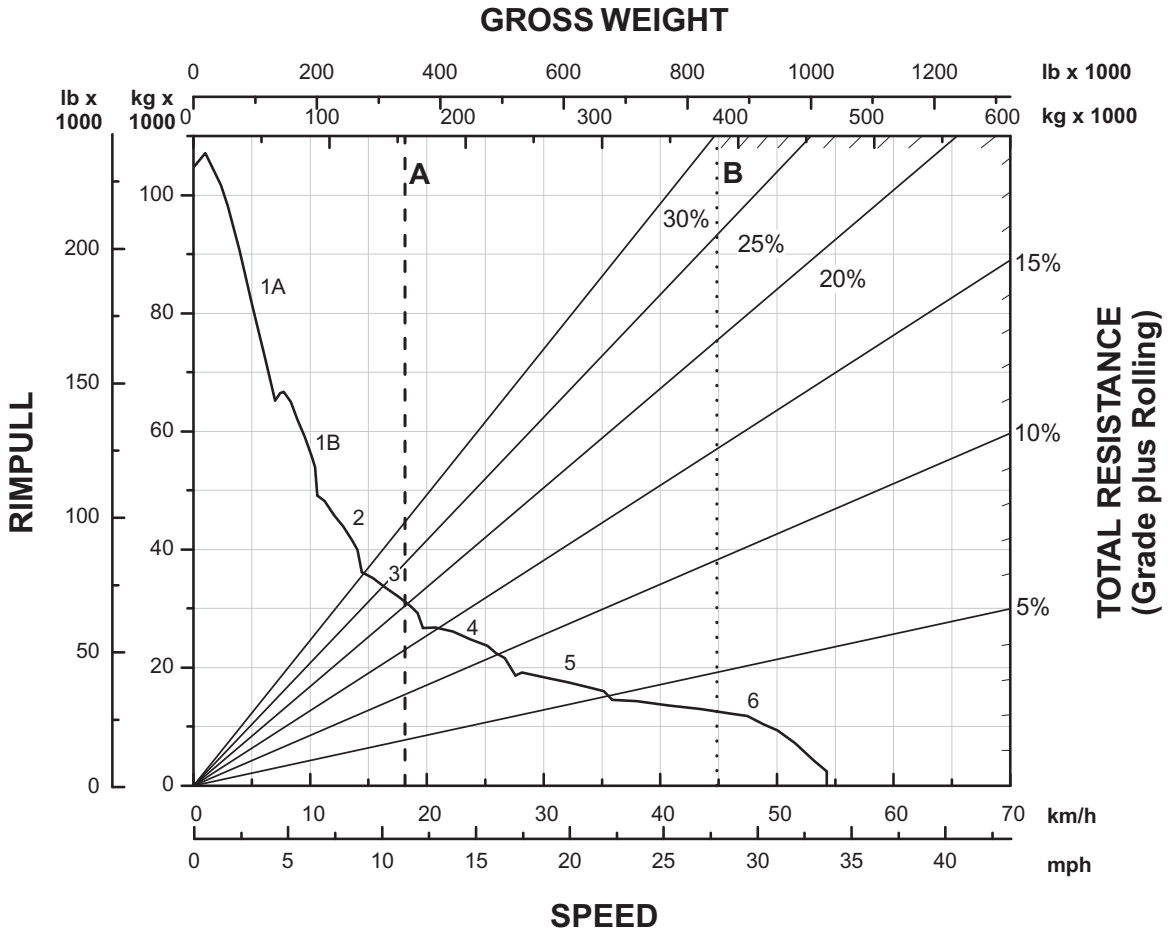


EMPTY



793D Rimpull-Speed-Gradeability
 ● Standard Arrangement**
 ● 40.00R57 Tires
 ● 1778 mm (5'10") Tire Radius

Construction & Mining Trucks



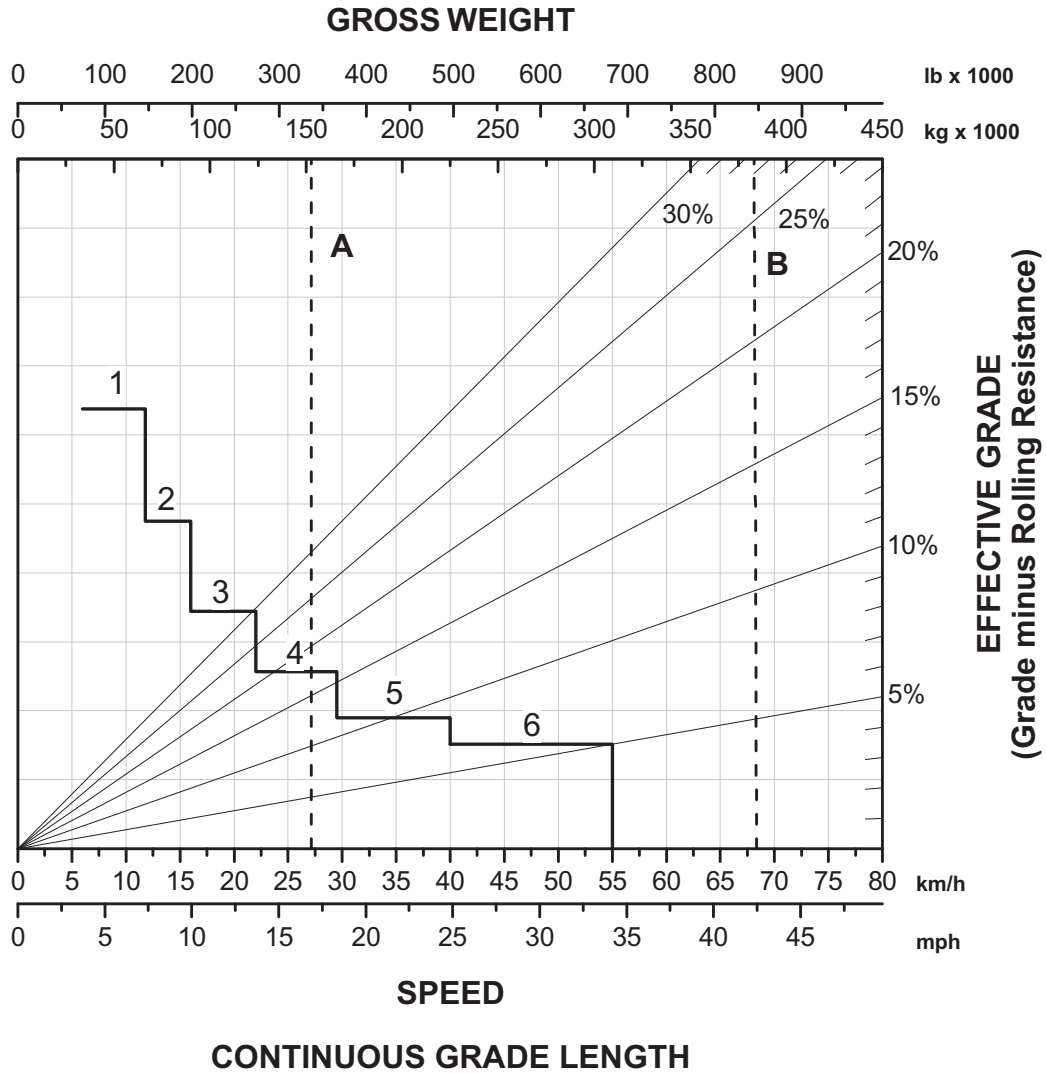
9

- KEY**
- 1A — 1st Gear (Torque Converter)
 - 1B — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear

- KEY**
- A — Est. Max Field Empty Weight 156 470 kg (344,960 lb)*
 - B — Max GMW 383 740 kg (846,000 lb)
- *Truck equipped with sideboards and liners.
 **At Sea Level.

Construction & Mining Trucks

- 793D Brake Performance**
- Standard Arrangement**
 - Continuous Grade Retarding



- KEY**
- 1 — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear

- KEY**
- A — Est. Field Empty Weight 156 470 kg (344,960 lb)*
 - B — Max GMW 383 740 kg (846,000 lb)

*Truck equipped with sideboards and liners.
**At Sea Level.

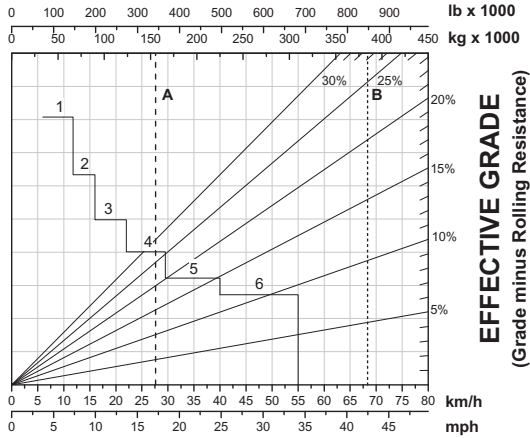
793D Brake Performance

● Standard Arrangement**

- 450 m (1500 ft)
- 600 m (2000 ft)
- 900 m (3000 ft)
- 1500 m (5000 ft)

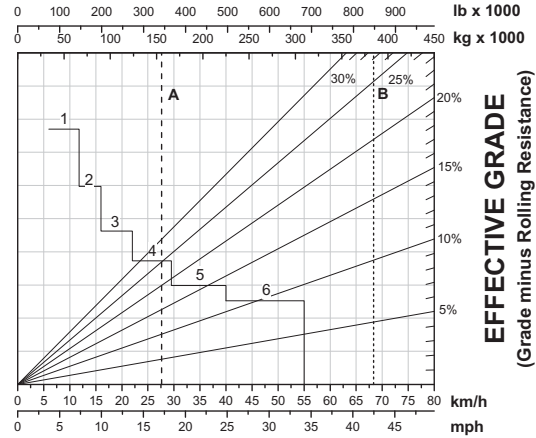
Construction & Mining Trucks

GROSS WEIGHT



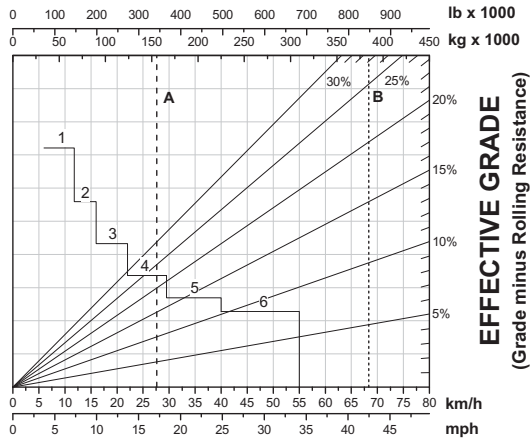
SPEED
GRADE DISTANCE — 450 m (1500 ft)

GROSS WEIGHT



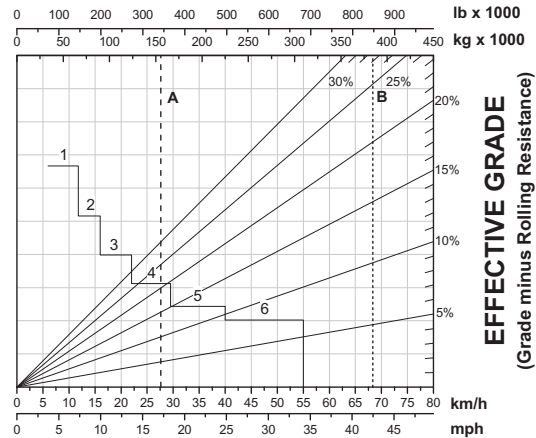
SPEED
GRADE DISTANCE — 600 m (2000 ft)

GROSS WEIGHT



SPEED
GRADE DISTANCE — 900 m (3000 ft)

GROSS WEIGHT



SPEED
GRADE DISTANCE — 1500 m (5000 ft)

KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

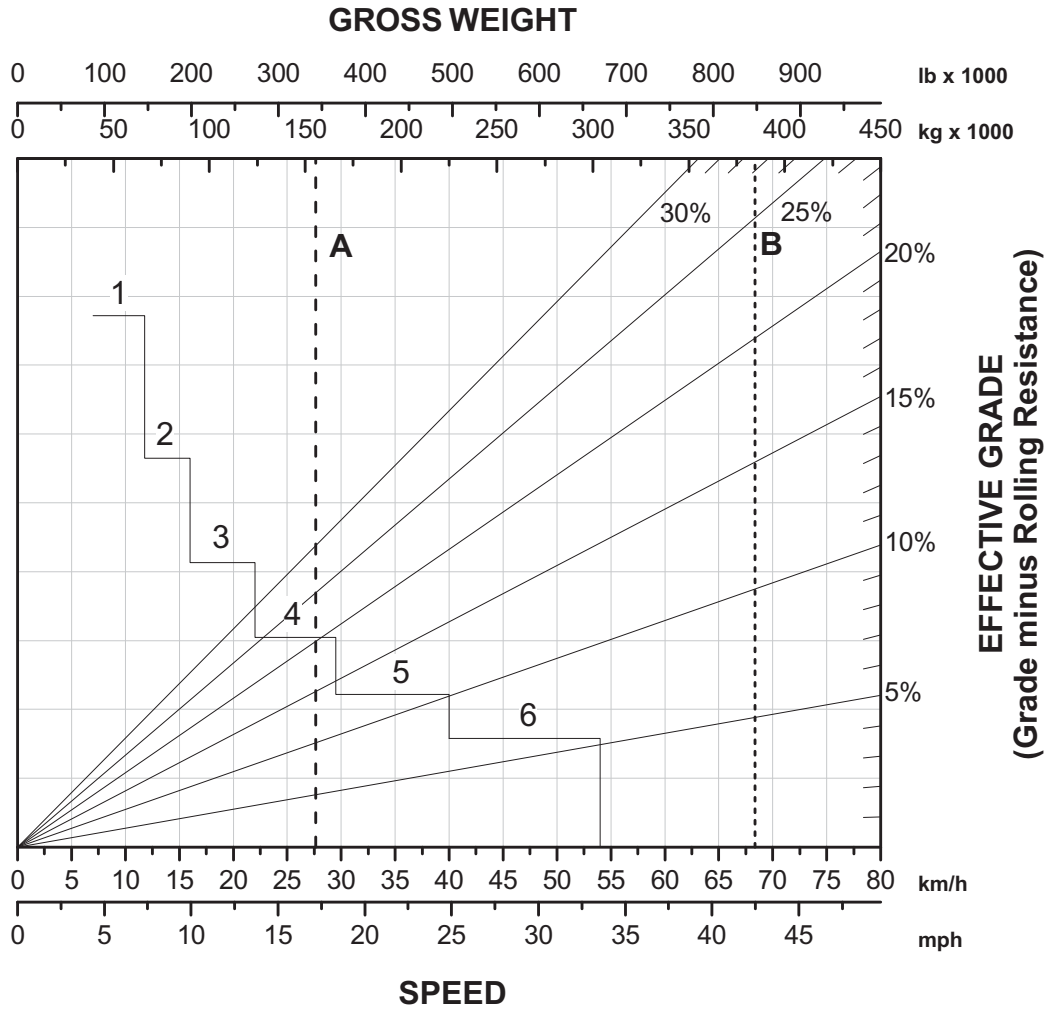
KEY

- A — Est. Field Empty Weight 156 470 kg (344,960 lb)*
- B — Max GMW 383 740 kg (846,000 lb)

*Truck equipped with sideboards and liners.
**At Sea Level.

Construction & Mining Trucks

- 793D Brake Performance**
- Additional Arrangement**
 - Continuous Grade Retarding



CONTINUOUS GRADE LENGTH

- KEY**
- 1 — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear

- KEY**
- A — Est. Field Empty Weight 156 470 kg (344,960 lb)*
 - B — Max GMW 383 740 kg (846,000 lb)

*Truck equipped with sideboards and liners.
 **At Sea Level.

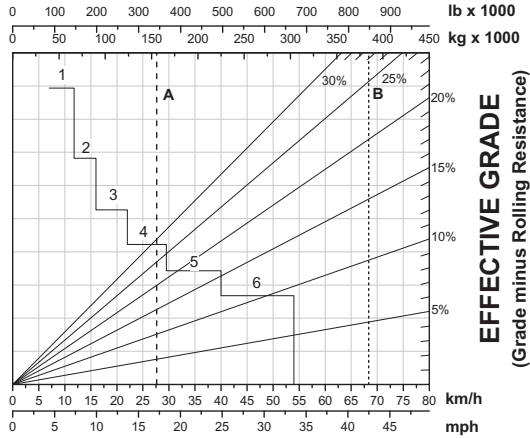
793D Brake Performance

• Additional Arrangement**

- 450 m (1500 ft)
- 600 m (2000 ft)
- 900 m (3000 ft)
- 1500 m (5000 ft)

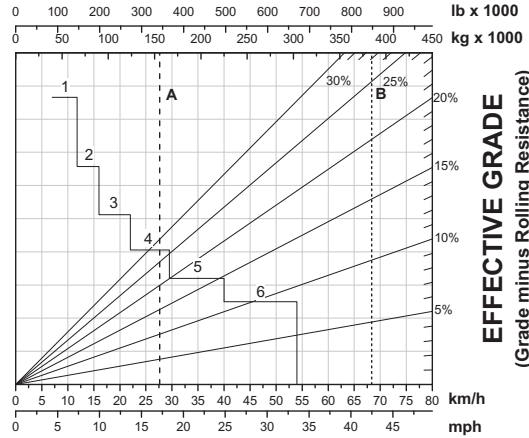
Construction & Mining Trucks

GROSS WEIGHT



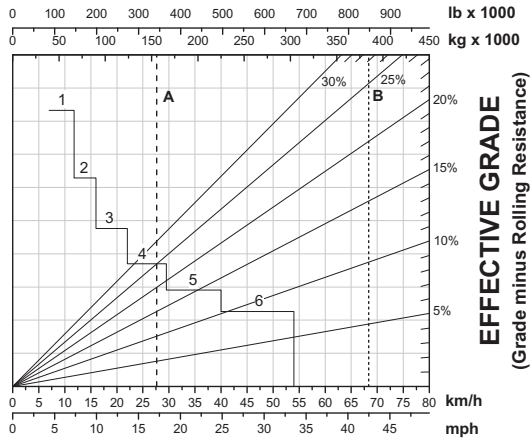
SPEED
GRADE DISTANCE — 450 m (1500 ft)

GROSS WEIGHT



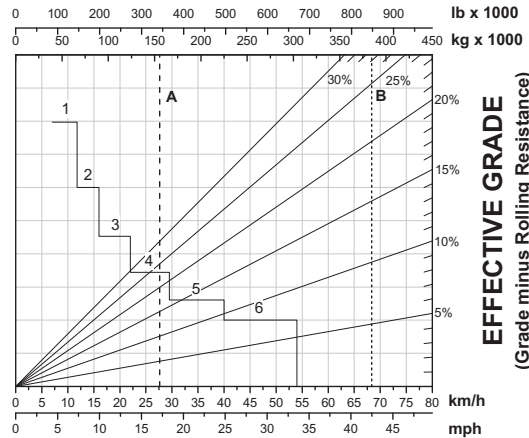
SPEED
GRADE DISTANCE — 600 m (2000 ft)

GROSS WEIGHT



SPEED
GRADE DISTANCE — 900 m (3000 ft)

GROSS WEIGHT



SPEED
GRADE DISTANCE — 1500 m (5000 ft)

KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

KEY

- A — Est. Field Empty Weight 156 470 kg (344,960 lb)*
- B — Max GMW 383 740 kg (846,000 lb)

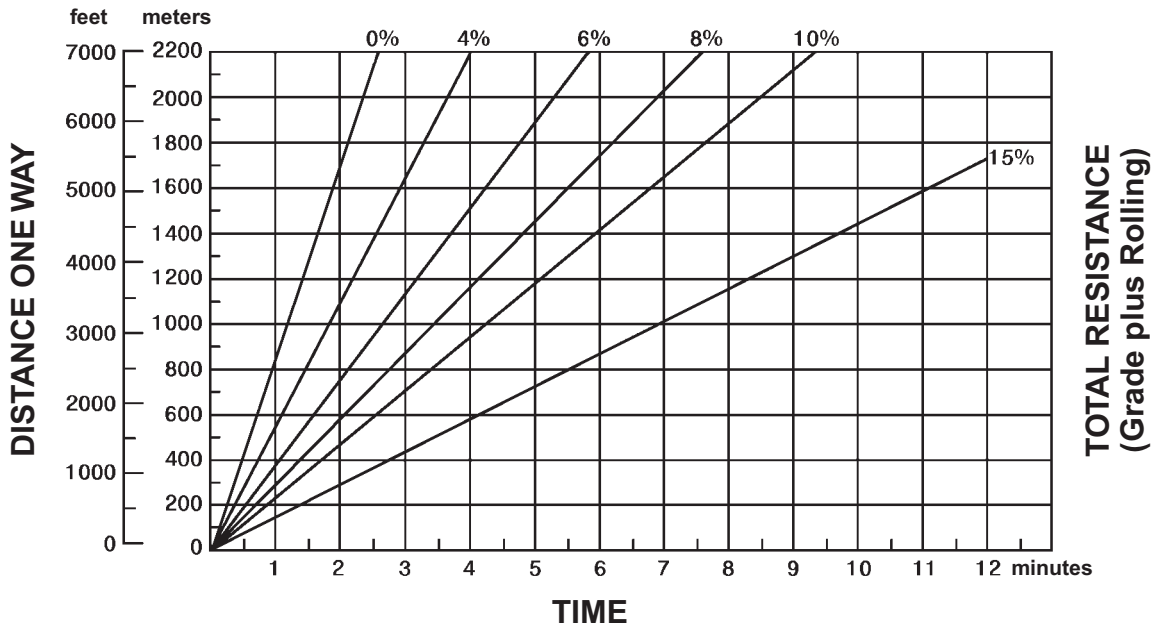
*Truck equipped with sideboards and liners.
**At Sea Level.

Construction & Mining Trucks

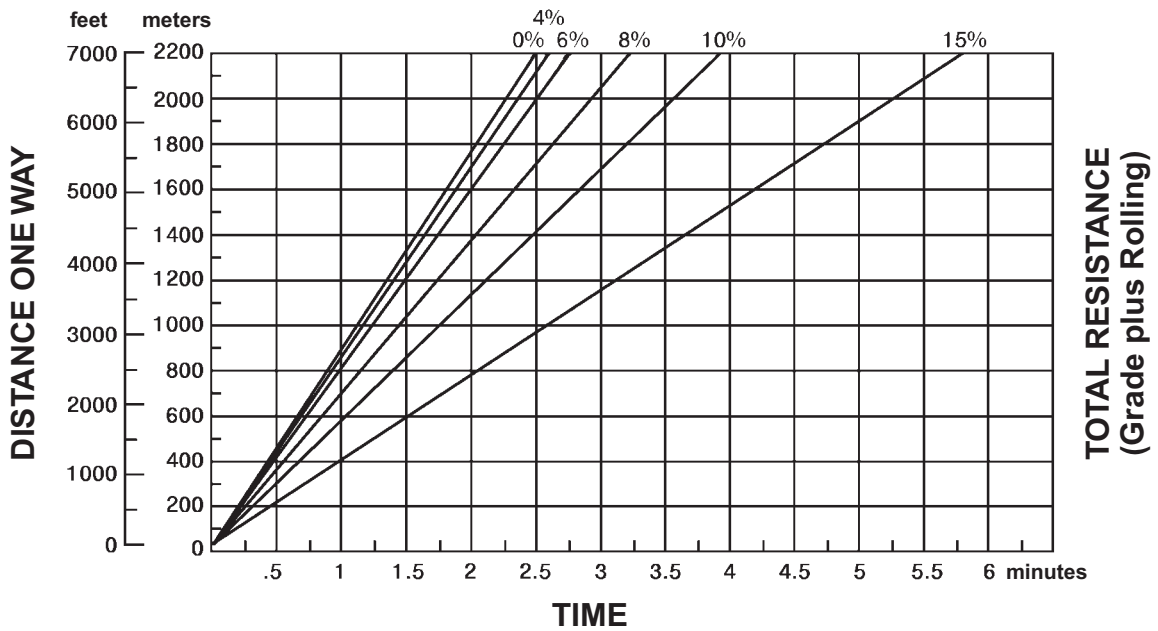
793D Travel Time

- Standard Arrangement
- 40.00R57 Tires

LOADED

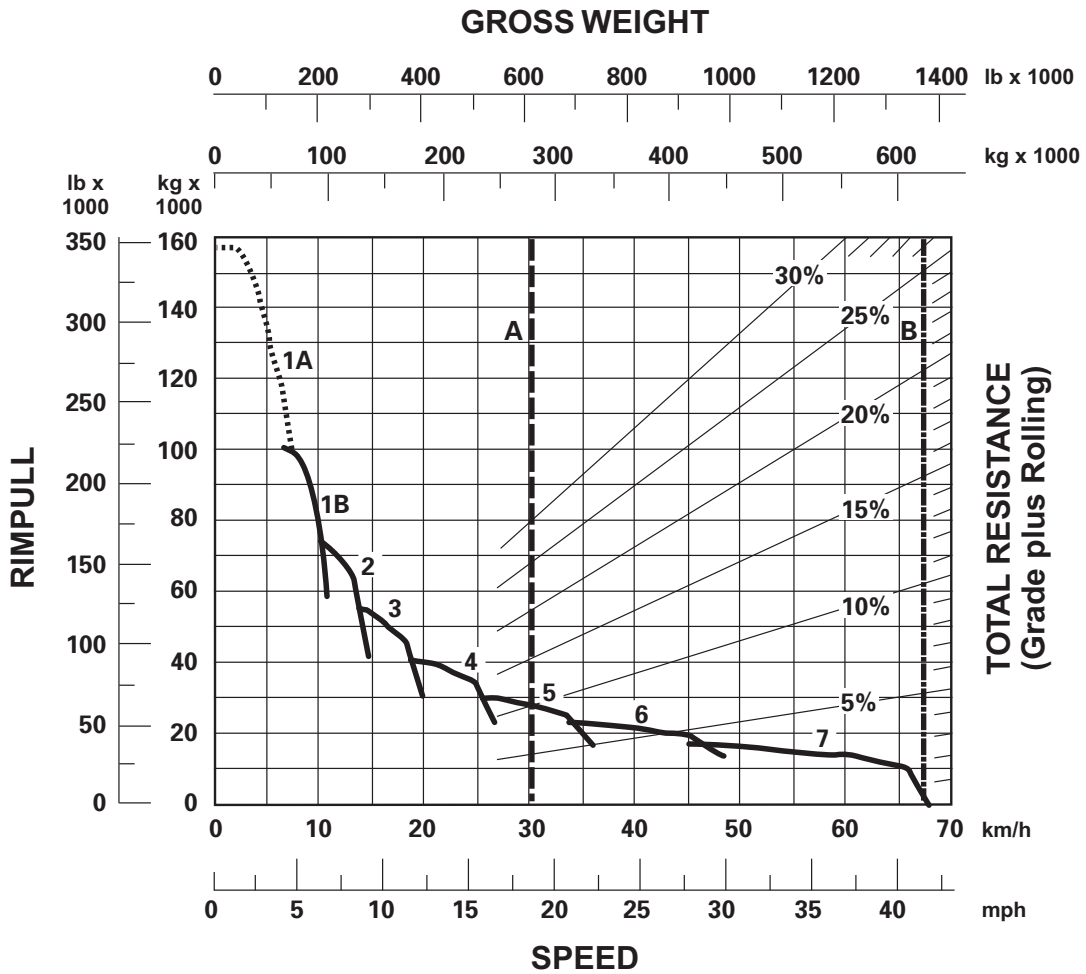


EMPTY



797B Rimpull-Speed-Gradeability
 ● Standard Arrangement*
 ● 59/80R63 Tires

Construction & Mining Trucks



9

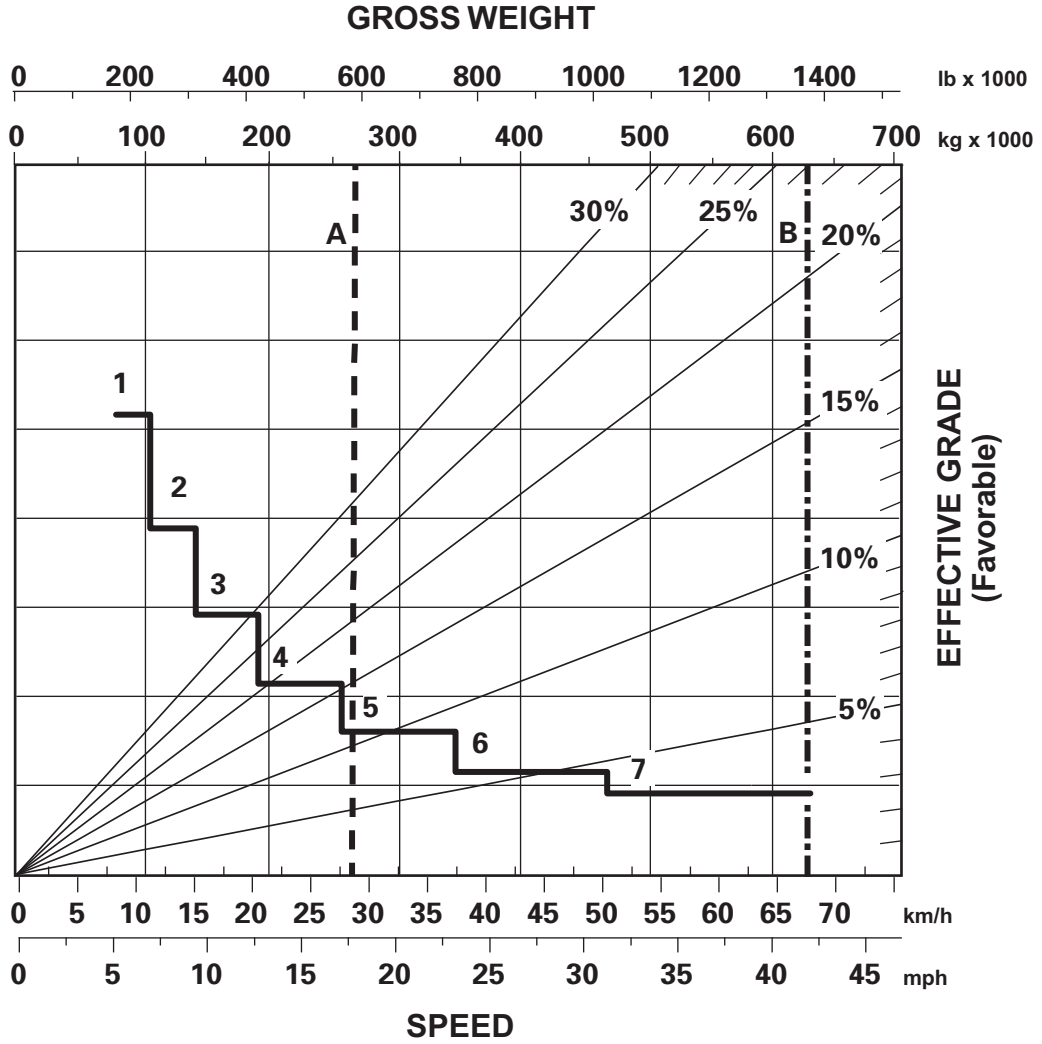
KEY

- 1A — 1st Gear (Torque Converter)
- 1B — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

KEY

- A — Est. Field Empty Weight 274 494 kg (605,159 lb)
- B — Max GMW 623 690 kg (1,375,000 lb)

*At Sea Level.



CONTINUOUS GRADE LENGTH

- KEY
- 1 — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear
 - 7 — 7th Gear

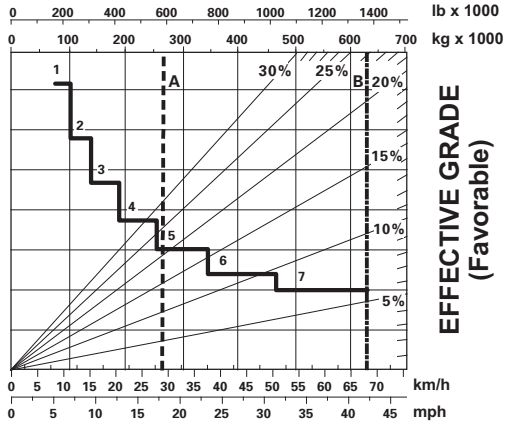
- KEY
- A — Est. Field Empty Weight 274 494 kg (605,159 lb)
 - B — Max GMW 623 690 kg (1,375,000 lb)

Construction & Mining Trucks

797B Brake Performance

- 450 m (1500 ft)
- 600 m (2000 ft)
- 900 m (3000 ft)
- 1500 m (5000 ft)

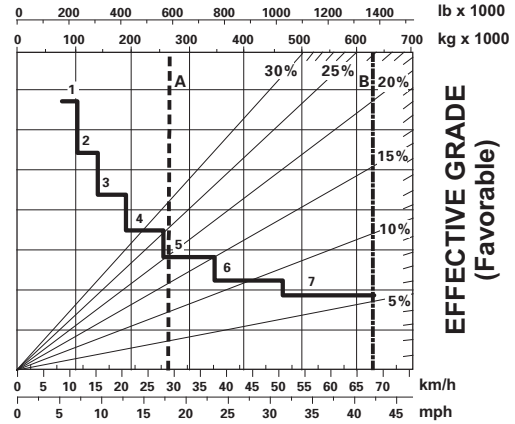
GROSS WEIGHT



SPEED

GRADE DISTANCE — 450 m (1500 ft)

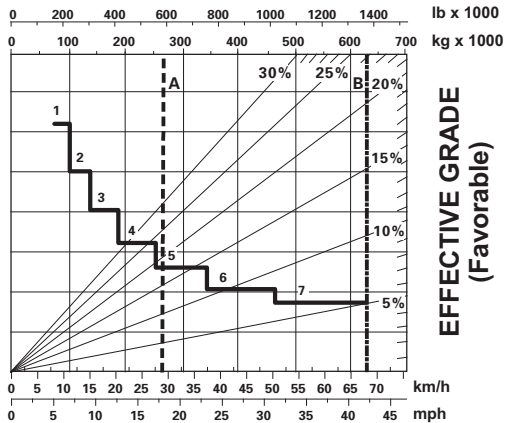
GROSS WEIGHT



SPEED

GRADE DISTANCE — 600 m (2000 ft)

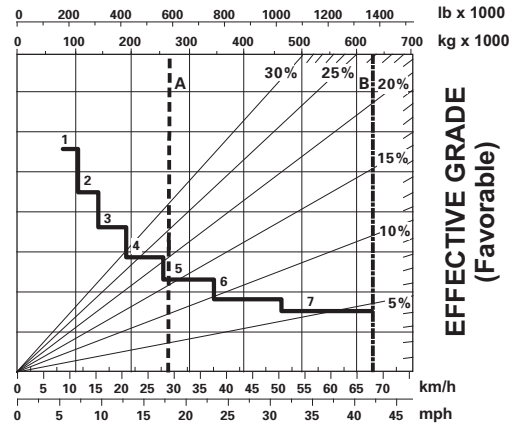
GROSS WEIGHT



SPEED

GRADE DISTANCE — 900 m (3000 ft)

GROSS WEIGHT



SPEED

GRADE DISTANCE — 1500 m (5000 ft)

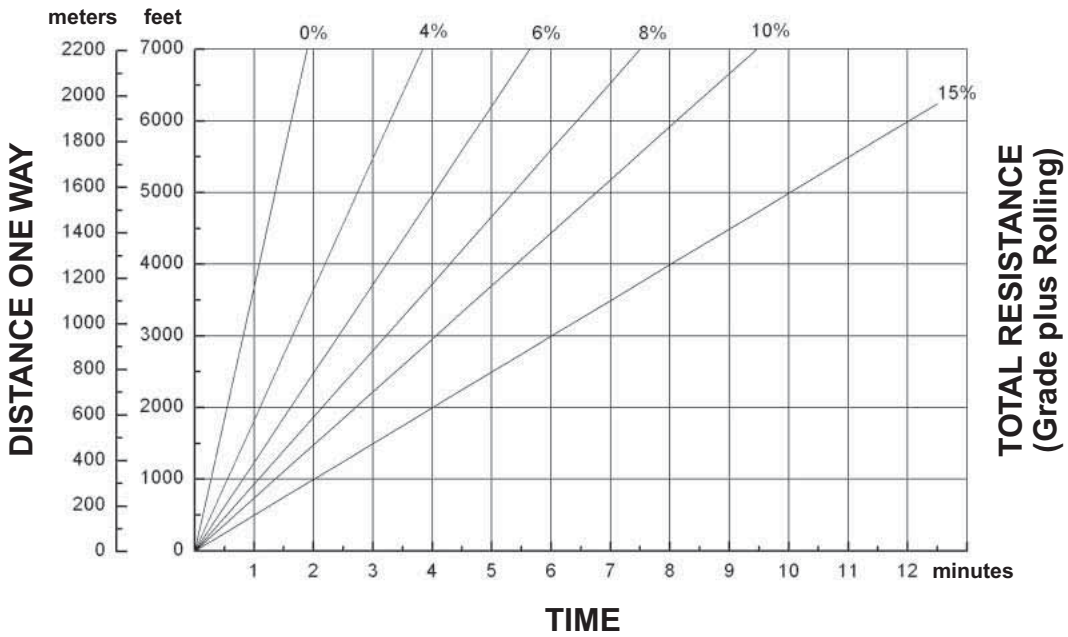
KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

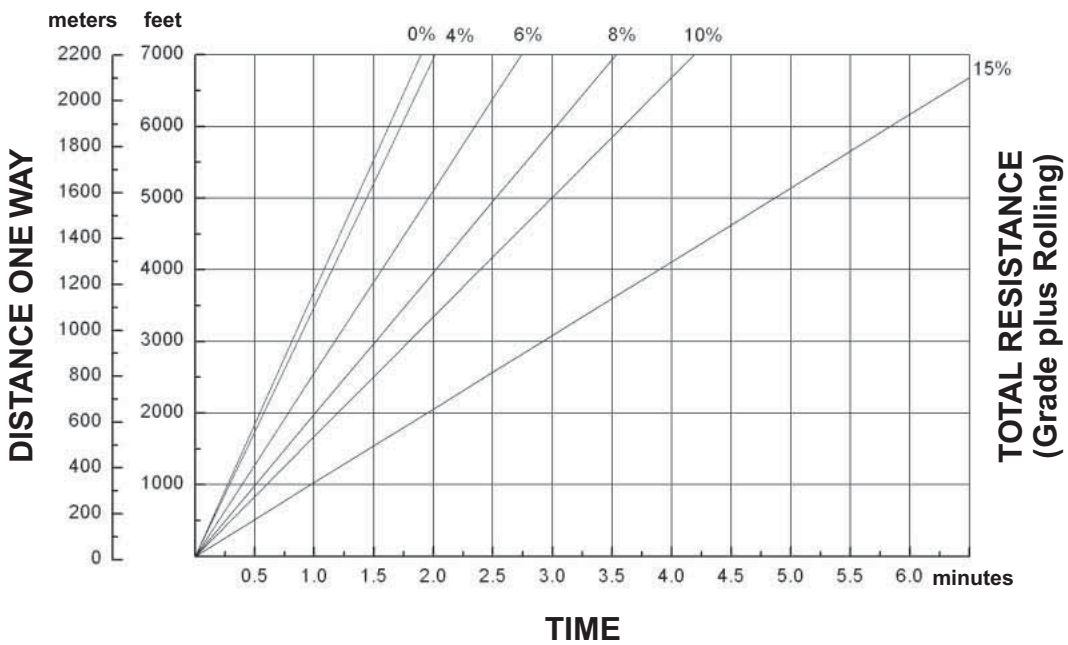
KEY

- A — Est. Field Empty Weight 274 494 kg (605,159 lb)
- B — Max GMW 623 690 kg (1,375,000 lb)

LOADED



EMPTY



ARTICULATED TRUCKS

CONTENTS

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Features:

- **Caterpillar engines with ACERT™ Technology** meet Tier 3/Stage III engine emission requirements through 2010. The three core elements of meeting these regulations are:
 - I) Electronics, Advanced Diesel Engine Management (ADEM A4);
 - II) Fuel delivery, Mechanical-activated Electronic Unit Injection (MEUI);
 - III) Air Management, Wastegate Turbocharging, Air to Air Aftercooling (ATAAC) with the proven technology of a crossflow cylinder head.
- **Caterpillar electronically controlled transmissions** ... Transmissions purpose built and designed for articulated trucks and their applications. Electronic controls provide complete integration with the engines for smooth shifting and efficient power delivery as well as offering advanced diagnostics and trouble shooting capabilities.

- **Articulating and fully oscillating hitch** ... Links front and rear frames for exceptional maneuverability and traction on uneven terrain while eliminating damaging twisting of the frames. Bolted hitch design allows optimum material choices for the cast hitch head and the hard-wearing tube. Bolted design allows easier rebuild and repair.
- **Three-point front suspension** ... Three-point front suspension with long-stroke, low-pressure suspension cylinders provide unparalleled ride quality for operator comfort and higher average haul speeds. Front and rear suspension together with the hitch provide for excellent traction in all conditions.
- **Wide, long and low dump body design** ... For excellent loadability and high fill factors, excellent machine stability and load retention as well as a good match for other Caterpillar loading systems. Diverging flow design also gives excellent material ejection.
- **Standard ROPS/FOPS, low sound level cab** ... Two man cab common across the range. Large cab with excellent all around visibility, ergonomic control layout and plentiful storage.
- **High capacity low pressure tires in single formation** ... For superior traction and flotation in poor underfoot conditions.



MODEL	725		730		730 Ejector	
Gross Power — SAE J1995	230 kW	309 hp	242 kW	325 hp	242 kW	325 hp
Net Power — SAE J1349	225 kW	301 hp	237 kW	317 hp	237 kW	317 hp
Net Power — ISO 9249	227 kW	304 hp	239 kW	321 hp	239 kW	321 hp
Net Power — EEC 80/1269	227 kW	304 hp	239 kW	321 hp	239 kW	321 hp
Operating Weight (Empty)*	22 260 kg	49,075 lb	22 850 kg	50,376 lb	25 550 kg	56,328 lb
Top Speed (Loaded)	56.8 km/h	35.3 mph	55.3 km/h	34.4 mph	55.3 km/h	34.4 mph
GMW — Gross Machine Weight	45 850 kg	101,082 lb	50 970 kg	112,370 lb	53 670 kg	118,322 lb
Distribution Empty:						
Front		58.5%		57.5%		54.7%
Center		21.7%		21.9%		23.3%
Rear		19.8%		20.6%		22.0%
Distribution Loaded:						
Front		32.7%		31.1%		27.7%
Center		34.1%		34.7%		36.5%
Rear		33.1%		34.2%		35.8%
Max. Capacity**	23.6 t	26 T	28.1 t	31 T	28.1 t	31 T
Struck (SAE)	11.1 m ³	14.5 yd³	13.1 m ³	17.1 yd³	13.5 m ³	17.7 yd³
Heaped (2:1) (SAE)	14.4 m ³	18.8 yd³	16.9 m ³	22.1 yd³	16.9 m ³	22.1 yd³
Engine Model	ACERT C11		ACERT C11		ACERT C11	
No. Cylinders	6		6		6	
Bore	130 mm	5.1"	130 mm	5.1"	130 mm	5.1"
Stroke	140 mm	5.5"	140 mm	5.5"	140 mm	5.5"
Displacement	11.15 L	680 in³	11.2 L	680 in³	11.2 L	680 in³
Tires, Front, Center, Rear	23.5R25 Radials		23.5R25 Radials		750/65 Radials	
Circular Clearance Diameter	15.2 m	49'9"	15.2 m	49'9"	15.4 m	50'5"
Fuel Tank Refill Capacity	360 L	95 U.S. gal	360 L	95 U.S. gal	360 L	95 U.S. gal
General Dimensions (Empty):						
Height to Cab Top	3.44 m	11'3"	3.44 m	11'3"	3.45 m	11'3"
Wheel Base (Front-Center of Bogie)	4.67 m	15'4"	4.67 m	15'4"	4.67 m	15'4"
Overall Length	9.92 m	32'5"	9.92 m	32'5"	9.73 m	31'9"
Loading Height (Empty)	2.76 m	9'1"	2.89 m	9'5"	3.05 m	10'0"
Height at Full Dump	6.41 m	21'1"	6.50 m	21'3"	—	
Body Length	5.78 m	19'0"	5.84 m	19'2"	5.35 m	17'6"
Width (Operating)	2.87 m	9'4"	2.90 m	9'5"	3.04 m	9'9"
Front Tire Tread	2.28 m	7'5"	2.28 m	7'5"	2.28 m	7'5"

*Includes coolant, lubricant and full fuel tank.

**Rating dependent on optional equipment. Maximum gross weight (empty weight plus payload) should not be exceeded.



MODEL	735		740		740 Ejector	
Gross Power — SAE J1995	304 kW	408 hp	341 kW	457 hp	341 kW	457 hp
Net Power — SAE J1349	287 kW	385 hp	325 kW	436 hp	325 kW	436 hp
Net Power — ISO 9249	290 kW	389 hp	327 kW	438 hp	327 kW	438 hp
Net Power — EEC 80/1269	290 kW	389 hp	327 kW	438 hp	327 kW	438 hp
Operating Weight (Empty)*	30 250 kg	66,690 lb	32 840 kg	72,400 lb	35 610 kg	78,507 lb
Top Speed (Loaded)	58.3 km/h	36.2 mph	54.7 km/h	34 mph	54.7 km/h	34 mph
GMW — Gross Machine Weight	62 950 kg	138,781 lb	70 840 kg	156,175 lb	73 610 kg	162,282 lb
Distribution Empty:						
Front		60%		59.1%		55.6%
Center		21.1%		21.5%		23.1%
Rear		18.9%		19.4%		21.3%
Distribution Loaded:						
Front		34.9%		34.3%		29.1%
Center		33.1%		33.3%		35.9%
Rear		32%		32.4%		35.0%
Max. Capacity**	32.7 t	36 T	38 t	42 T	38 t	42 T
Struck (SAE)	14.7 m ³	19.2 yd³	17.4 m ³	22.8 yd³	17.8 m ³	23.3 yd³
Heaped (2:1) (SAE)	24.4 m ³	31.9 yd³	22.9 m ³	30 yd³	23.1 m ³	30.2 yd³
Engine Model	ACERT C15		ACERT C15		ACERT C15	
No. Cylinders	6		6		6	
Bore	137 mm	5.4"	137 mm	5.4"	137 mm	5.4"
Stroke	171.5 mm	6.75"	171.5 mm	6.75"	171.5 mm	6.75"
Displacement	15.2 L	926 in³	15.2 L	926 in³	15.2 L	926 in³
Tires, Front, Center, Rear	26.5R25 Radials		29.5R25 Radials		29.5R25 Radials	
Circular Clearance Diameter	17.2 m	56'5"	17.2 m	56'4"	18.2 m	59'6"
Fuel Tank Refill Capacity	560 L	148 U.S. gal	560 L	148 U.S. gal	560 L	148 U.S. gal
General Dimensions (Empty):						
Height to Cab Top	3.7 m	12'1"	3.75 m	12'3"	3.75 m	12'3"
Wheel Base (Front-Center of Bogie)	5.23 m	17'2"	5.23 m	17'2"	5.58 m	18'3"
Overall Length	10.89 m	35'7"	10.89 m	35'7"	11.59 m	38'0"
Loading Height (Empty)	2.97 m	9'9"	3.18 m	10'4"	3.07 m	10'0"
Height at Full Dump	6.96 m	22'8"	7.07 m	23'2"	—	
Body Length	6.23 m	20'4"	6.27 m	20'6"	6.76 m	22'2"
Width (Operating)	3.35 m	11'0"	3.43 m	11'3"	3.5 m	11'5"
Front Tire Tread	2.69 m	8'8"	2.69 m	8'8"	2.69 m	8'8"

*Includes coolant, lubricant and full fuel tank.

**Rating dependent on optional equipment. Maximum gross weight (empty weight plus payload) should not be exceeded.

Use of Ground Pressure Charts

Articulated trucks are normally equipped with wide base radial tires, for improved flotation in poor underfoot conditions. Ground pressure is a function of tire deflection and is also affected by tire penetration. The charts in this section provide a means to estimate ground pressure for 0 and 76 mm (3") tire penetration, when gross vehicle weight, axle load distribution and tire inflation pressure are known. The ground pressure charts on the following pages are based on Michelin XADN tire characteristics. Results may differ for other tread patterns.

Tire load can be calculated by the following formula:

$$\text{Tire load} = \frac{\text{Heaviest Axle Load}}{2}$$

Example

Find the ground pressure generated by a 725 fully loaded with zero and 76 mm (3") tire penetration. The machine is equipped with standard Michelin 23.5R25 tires, inflated to the recommended pressure.

$$725 \text{ Tire Load} = \frac{43\,680 \text{ kg} \times 0.34}{2} = 7426 \text{ kg}$$

$$725 \text{ Tire Load} = \frac{96,300 \text{ lb} \times 0.34}{2} = 16,371 \text{ lb}$$

From the tire section in this book, inflation pressure for the 725 is 325 kPa = 3.25 bar (47 psi).

From the ground pressure chart for 23.5R25 tires, Ground pressure = 3.1 kg/cm² (44 psi) with zero tire penetration.

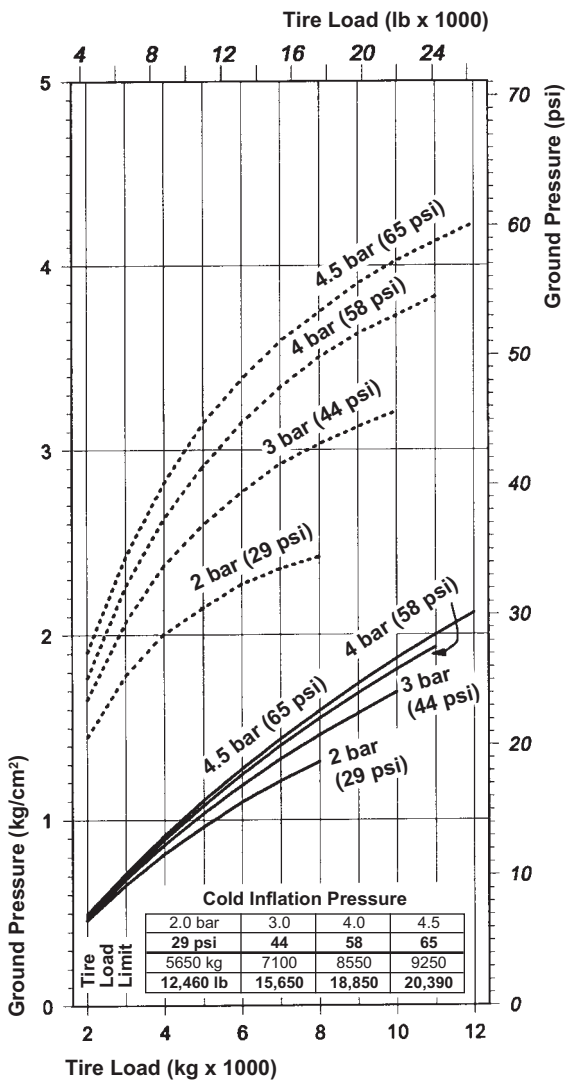
Ground pressure = 1.4 kg/cm² (21 psi) with 76 mm (3") tire penetration.

See the Wheel Tractor Scraper section for explanation on using:

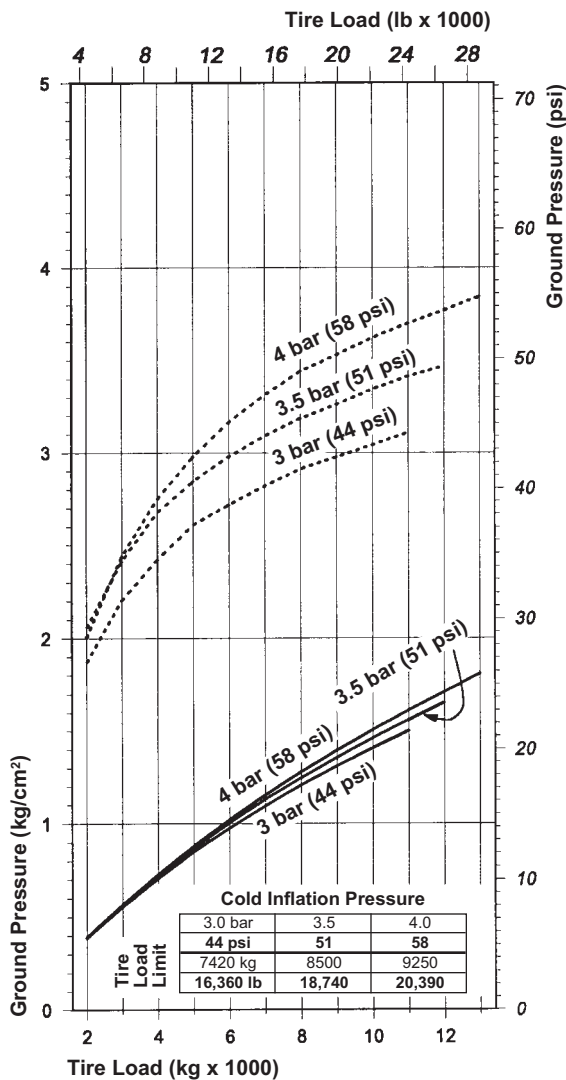
- Rimpull-Speed-Gradeability Curves
- Retarder Curves
- Travel Time Charts

See the Construction and Mining Trucks section for Hauling Unit Fixed Times.

23.5R25 Tires*



30/65R25 Tires*

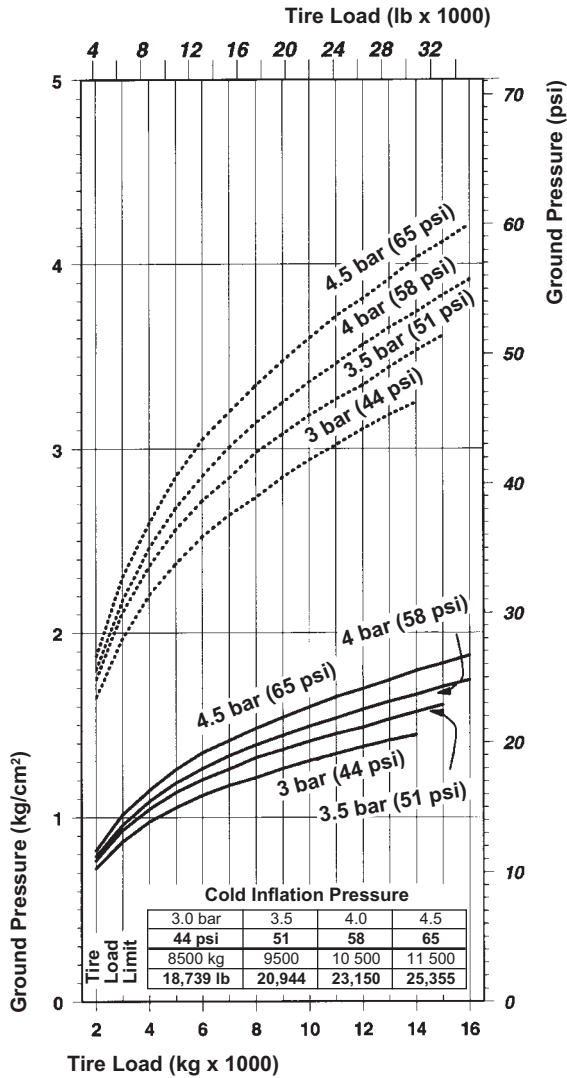


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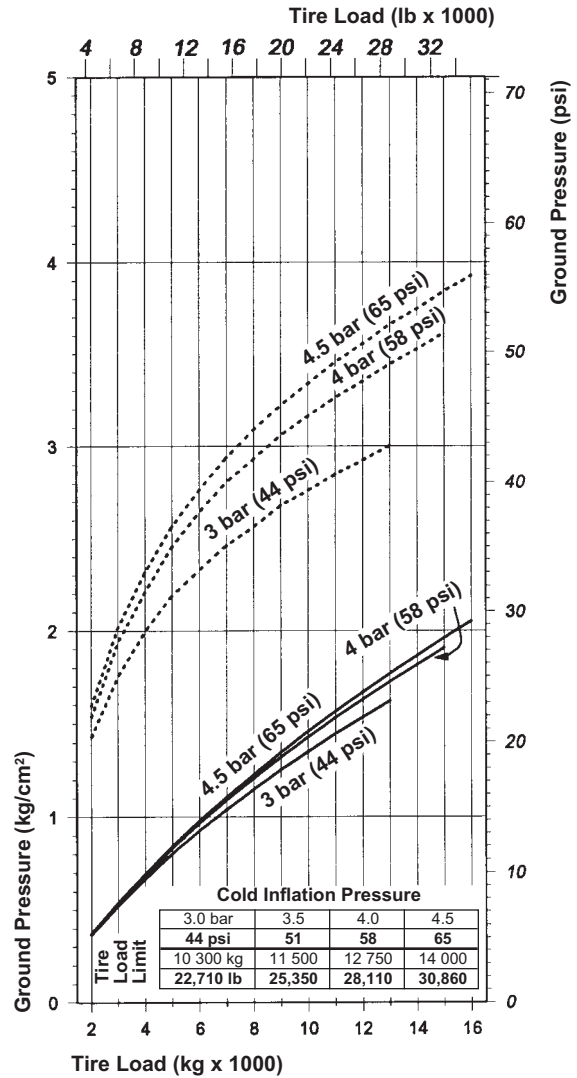
KEY
 ----- Zero Penetration (Flat Plate)
 _____ 76 mm (3") Penetration

*Charts based on Michelin XADN tire characteristics. Results may differ for other tread patterns and/or brands. Charts are to be used to calculate ground pressure. To determine the inflation as a function of load and conditions or when loads exceed tire load limit, contact your tire manufacturer representative.

26.5R25 Tires*



29.5R25 Tires*



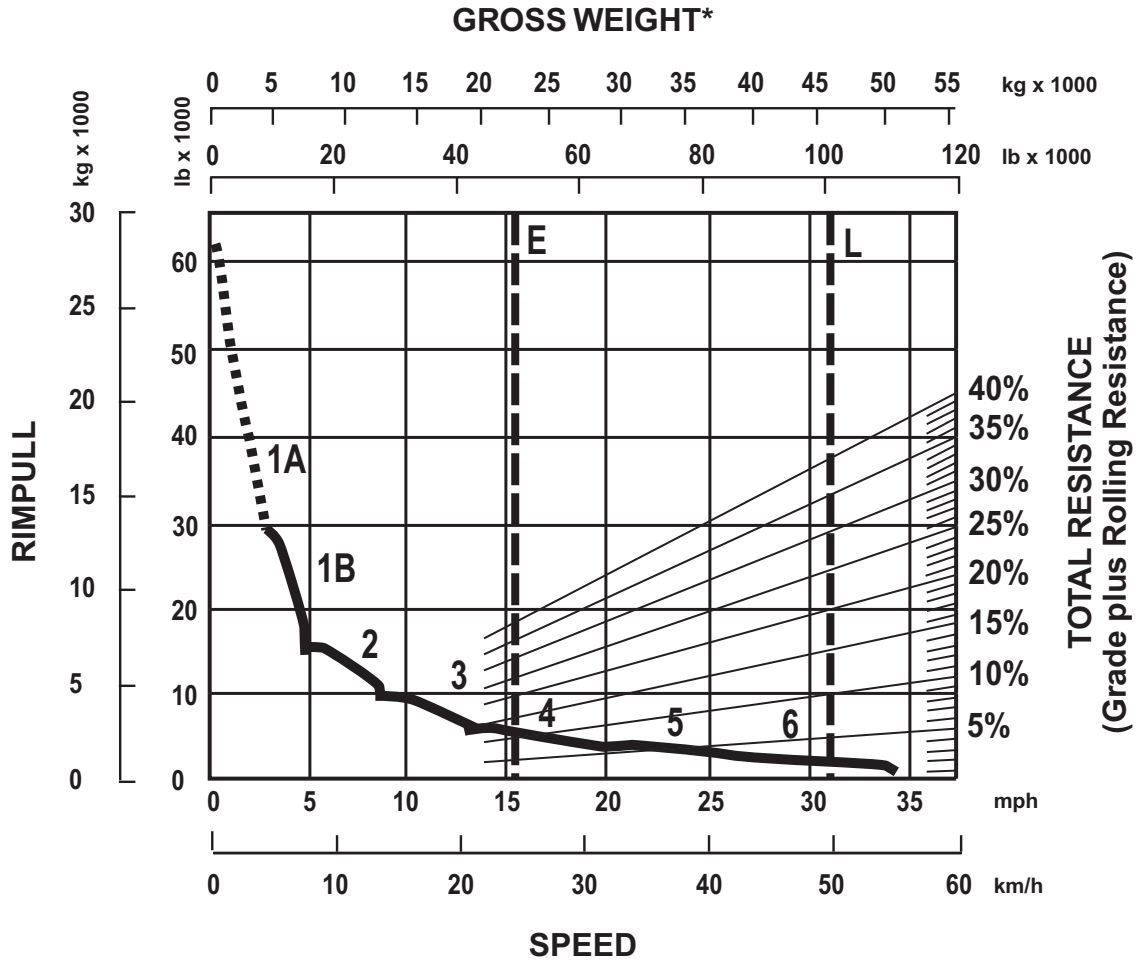
KEY

- Zero Penetration (Flat Plate)
- 76 mm (3") Penetration

*Charts based on Michelin XADN tire characteristics. Results may differ for other tread patterns and/or brands. Charts are to be used to calculate ground pressure. To determine the inflation as a function of load and conditions or when loads exceed tire load limit, contact your tire manufacturer representative.

725 Rimpull-Speed-Gradeability
 • 23.5R25 Tires

Articulated Trucks



10

KEY

- 1A — 1st Gear (Converter Drive)
- 1B — 1st Gear (Direct Drive)
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

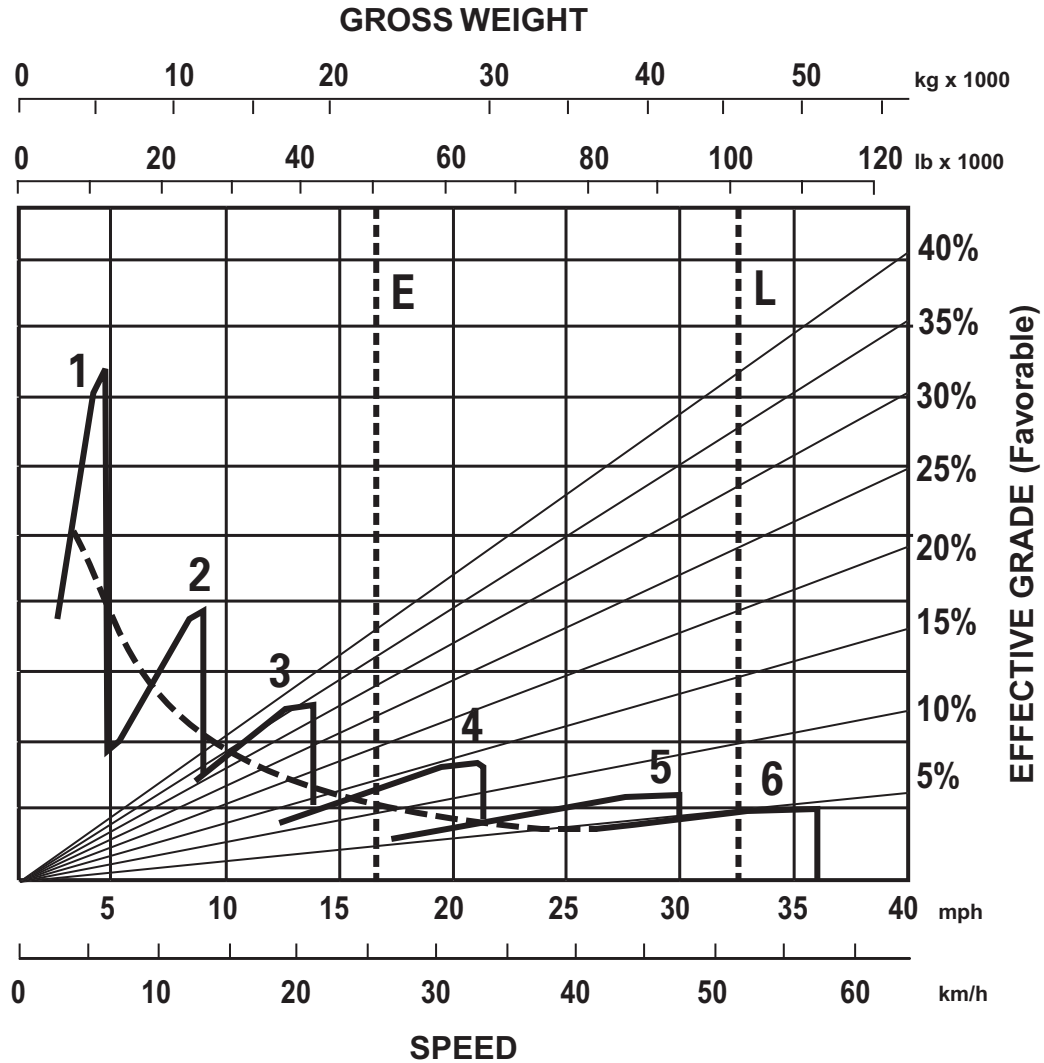
KEY

- E — Empty 22 260 kg (49,075 lb)
- L — Loaded 45 850 kg (101,082 lb)

*At sea level.

Articulated Trucks

725 Brake/Retarder Performance Curve
 ● 23.5R25 Tires



KEY

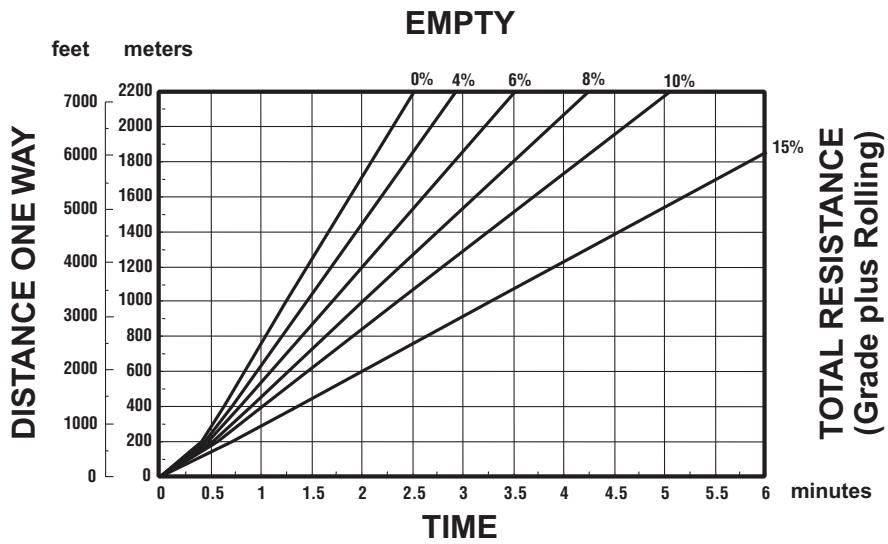
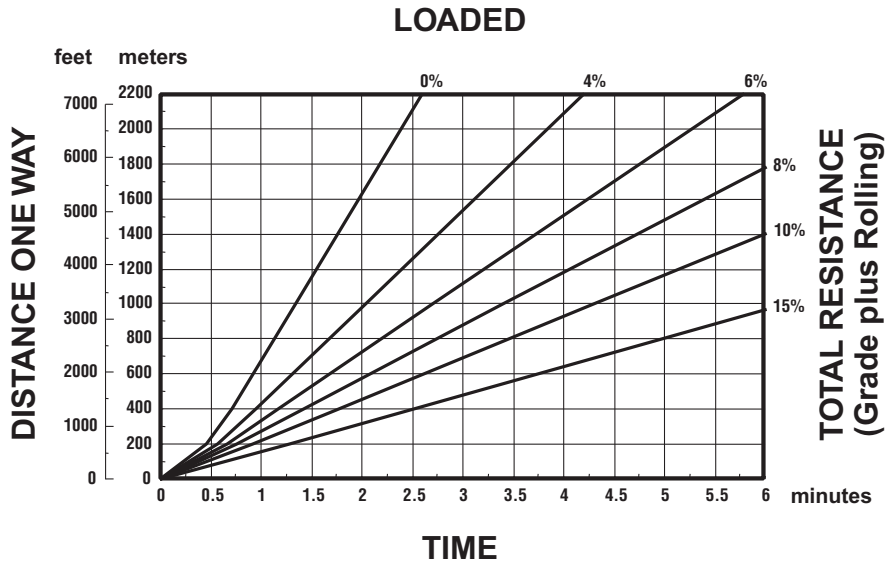
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- 2 — 2nd Gear
- 3 — 3rd Gear
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- 5 — 5th Gear
- 6 — 6th Gear

KEY

- E — Empty 22 260 kg (49,075 lb)
- L — Loaded 45 850 kg (101,082 lb)

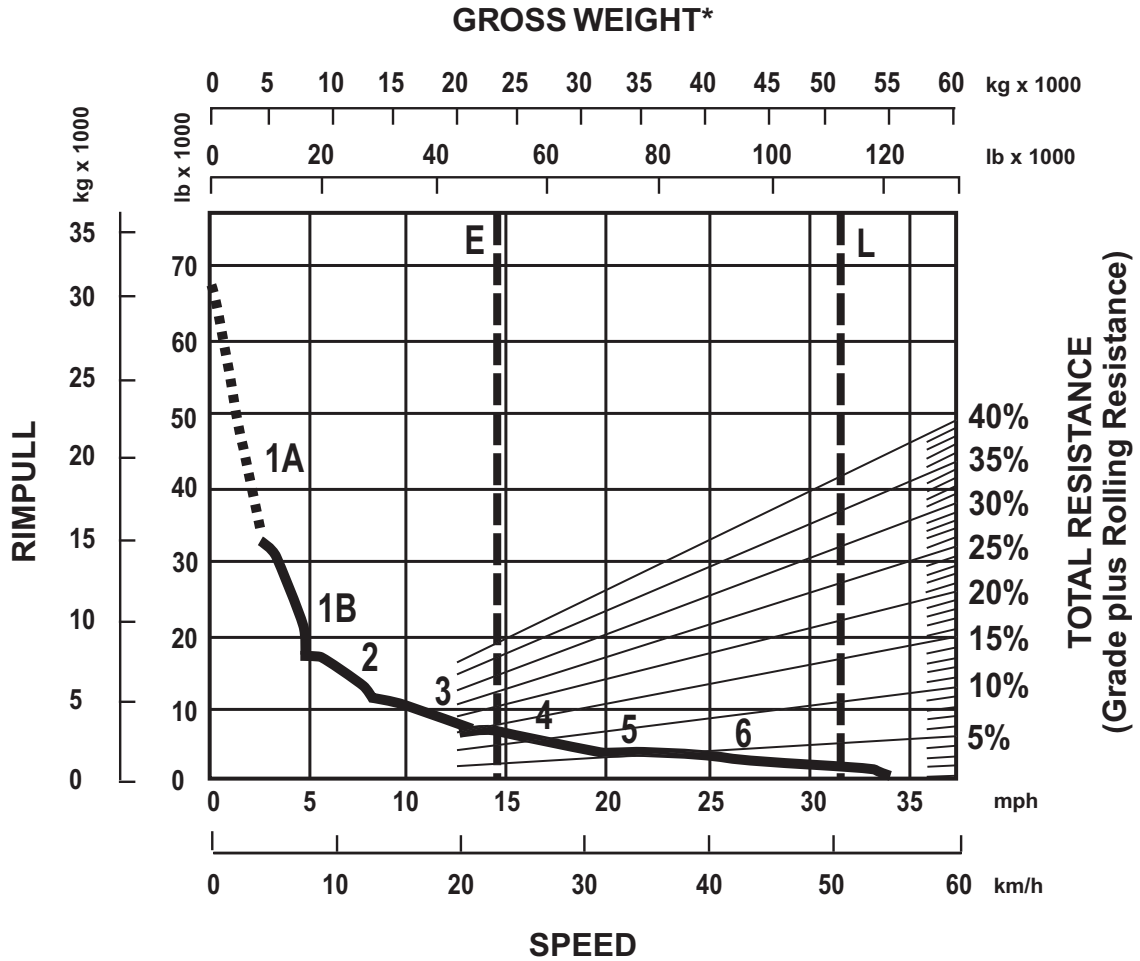
725 Travel Time — Loaded/Empty
 ● 23.5R25 Tires

Articulated Trucks



Articulated Trucks

730 Rimpull-Speed-Gradeability
 ● 23.5R25 Tires



KEY

- 1A — 1st Gear (Converter Drive)
- 1B — 1st Gear (Direct Drive)
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

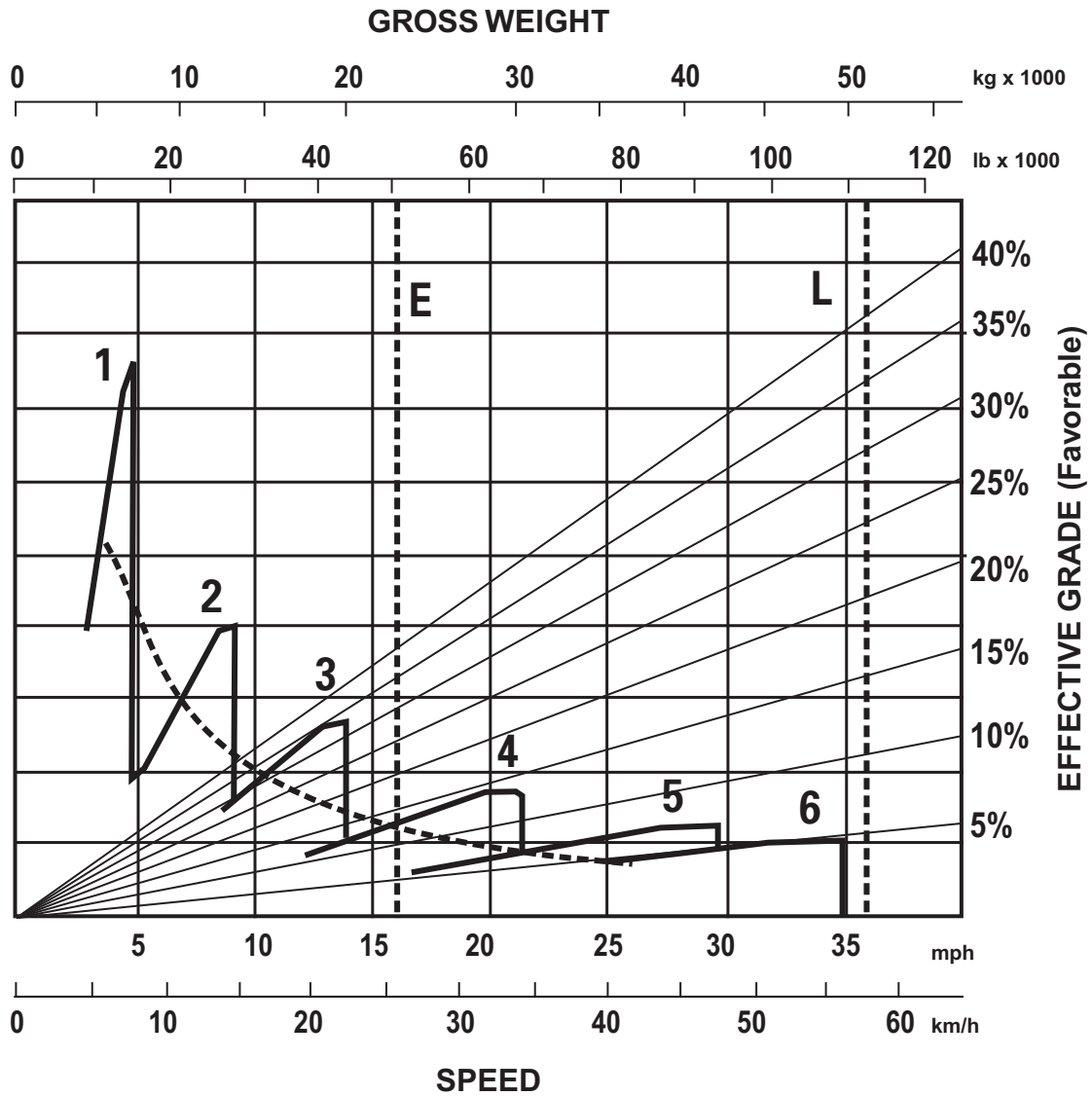
KEY

- E — Empty 22 850 kg (50,376 lb)
- L — Loaded 50 970 kg (112,370 lb)

*At sea level.

730 Brake/Retarder Performance Curve
 • 23.5R25 Tires

Articulated Trucks



10

KEY

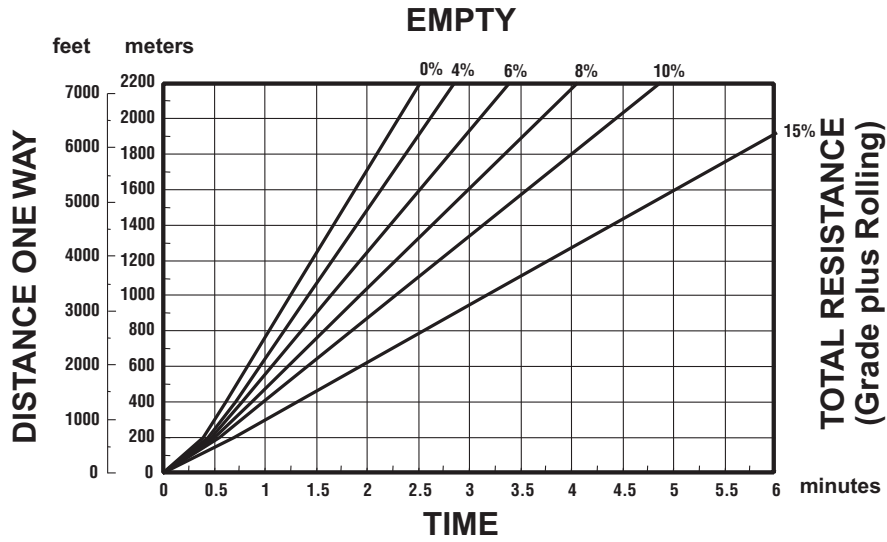
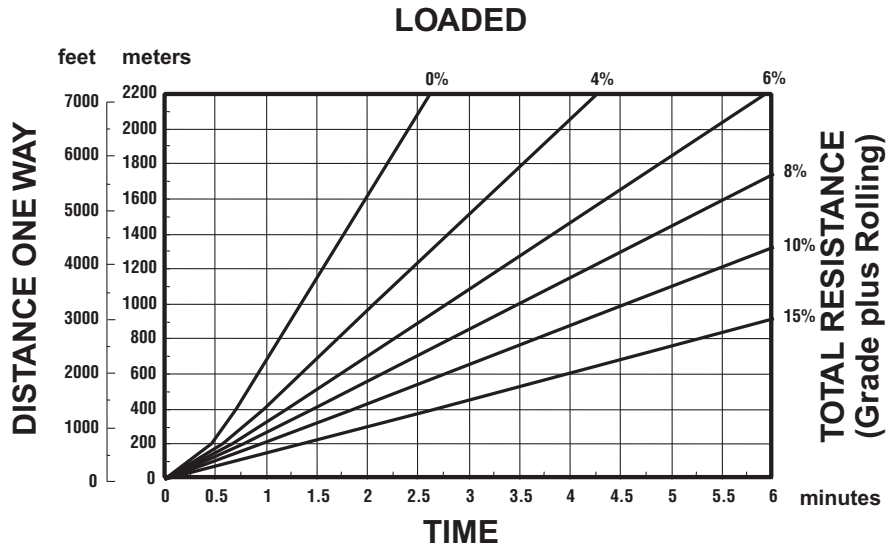
- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

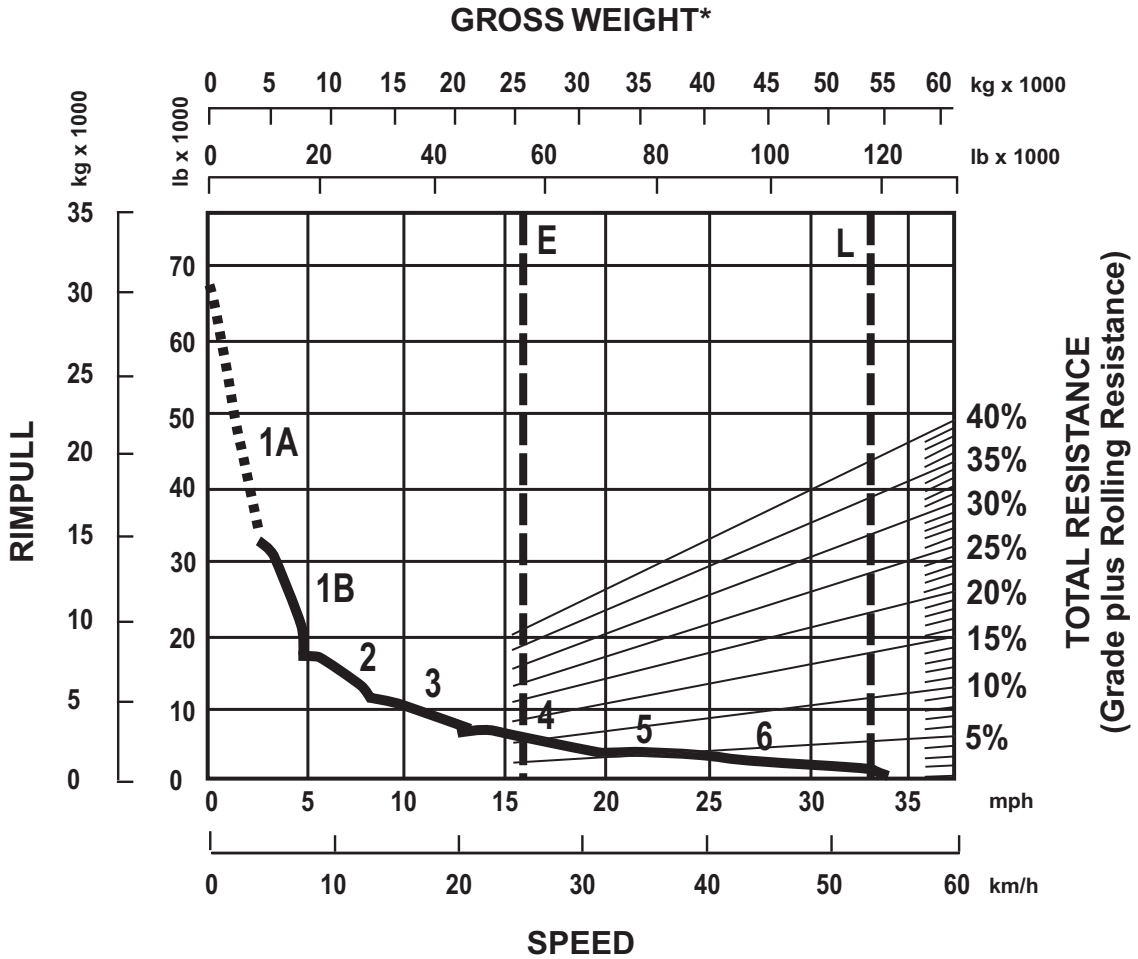
KEY

- E — Empty 22 850 kg (50,376 lb)
- L — Loaded 50 970 kg (112,370 lb)

Articulated Trucks

730 Travel Time — Loaded/Empty
 ● 23.5R25 Tires





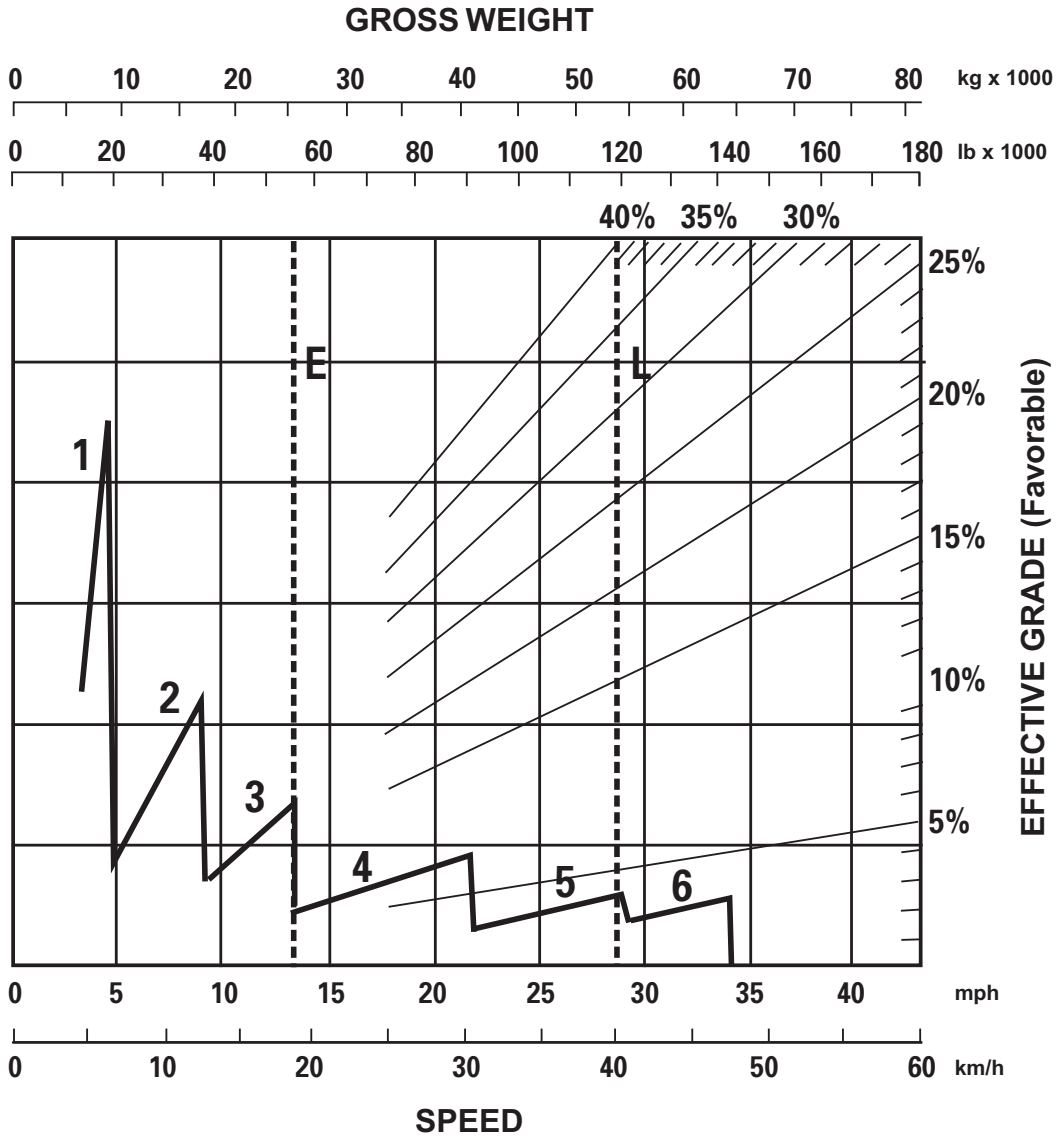
10

- KEY**
- 1A — 1st Gear (Converter Drive)
 - 1B — 1st Gear (Direct Drive)
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear

- KEY**
- E — Empty 25 550 kg (56,328 lb)
 - L — Loaded 53 670 kg (118,322 lb)
- *At sea level.

Articulated Trucks

730 Ejector Brake/Retarder Performance Curve
 • 750/65 Tires

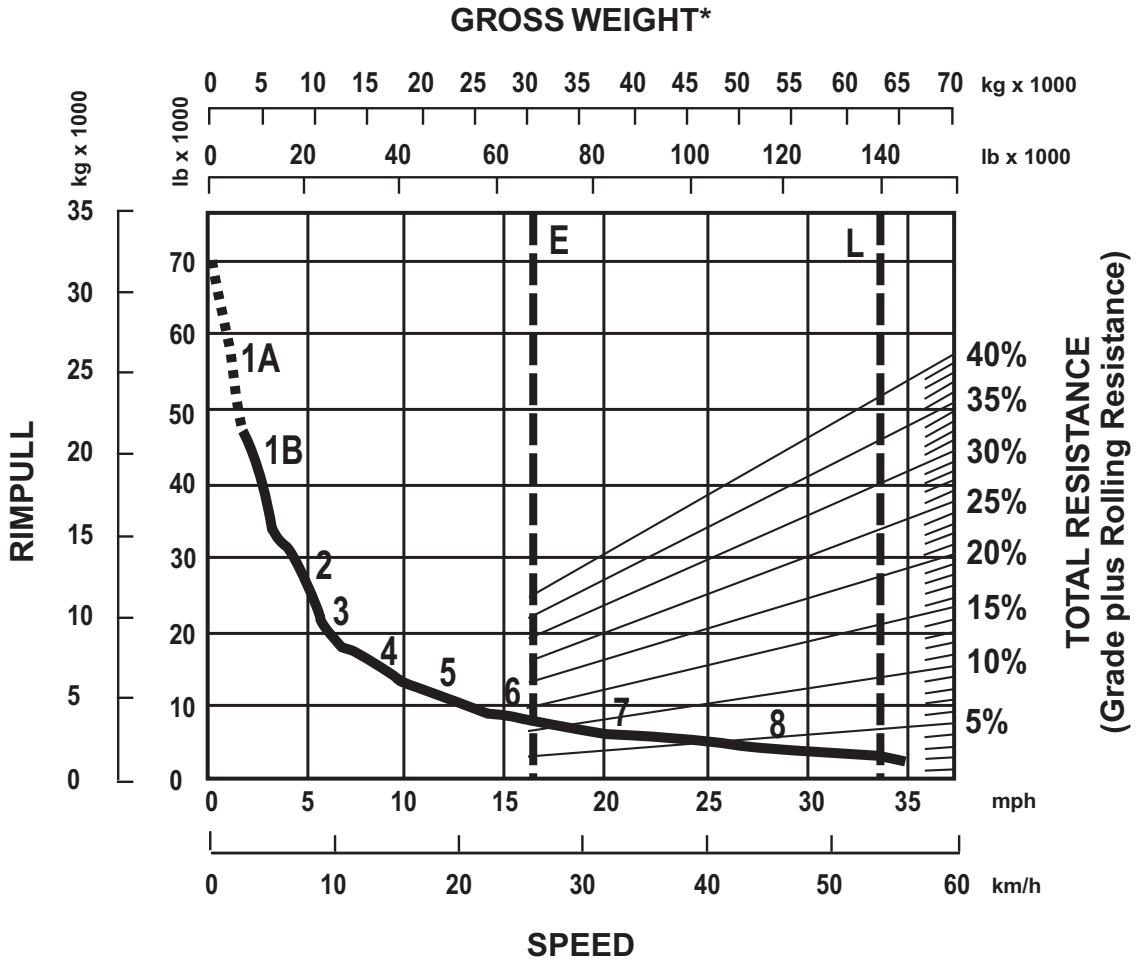


KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear

KEY

- E — Empty 25 550 kg (56,328 lb)
- L — Loaded 53 670 kg (118,322 lb)



10

KEY

- 1A — 1st Gear (Converter Drive)
- 1B — 1st Gear (Direct Drive)
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear
- 8 — 8th Gear

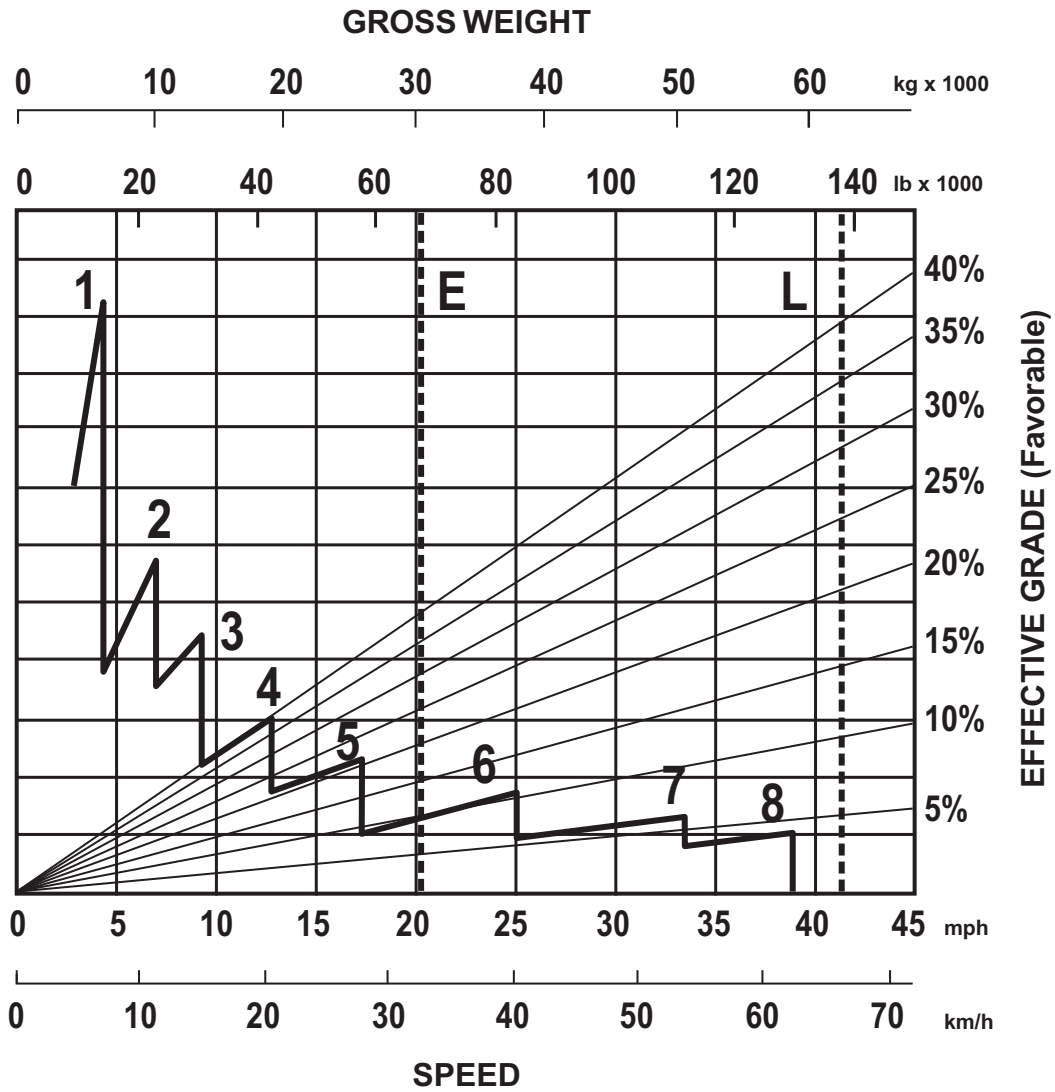
KEY

- E — Empty 30 250 kg (66,690 lb)
- L — Loaded 62 950 kg (138,780 lb)

*At sea level.

Articulated Trucks

735 Brake/Retarder Performance Curve
 • 26.5R25 Tires



KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear
- 8 — 8th Gear

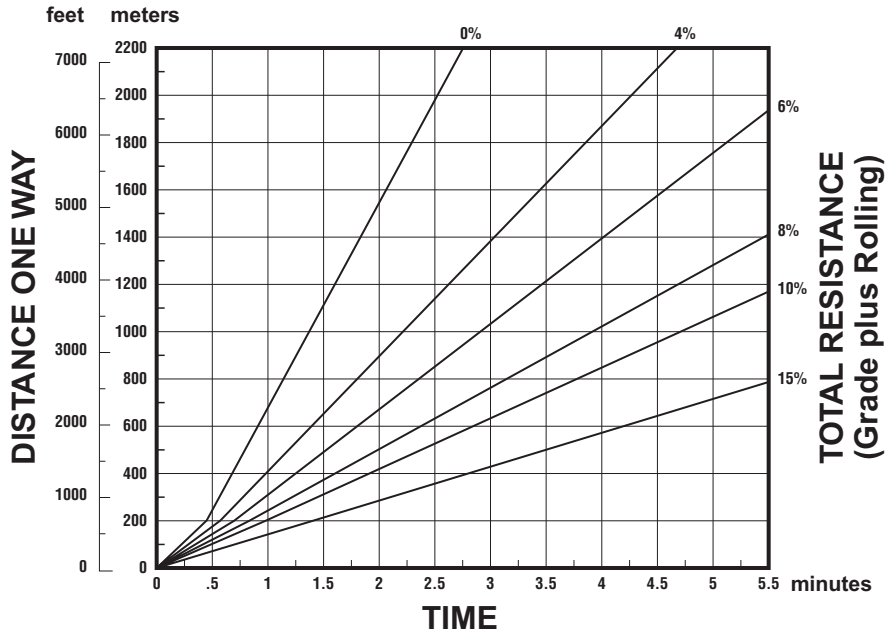
KEY

- E — Empty 30 250 kg (66,690 lb)
- L — Loaded 62 950 kg (138,780 lb)

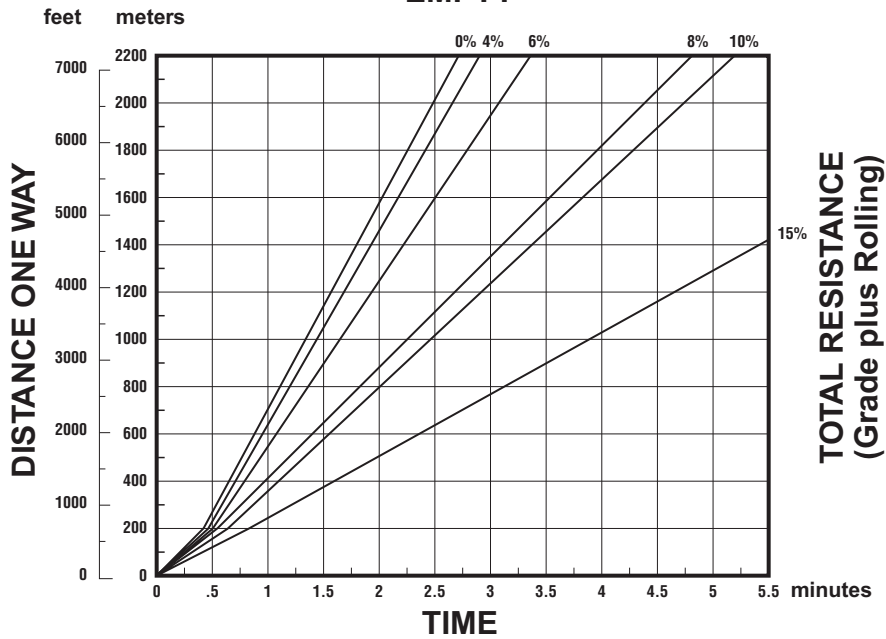
735 Travel Time — Loaded/Empty
 ● 26.5R25 Tires
 ● Preliminary Information

Articulated Trucks

LOADED

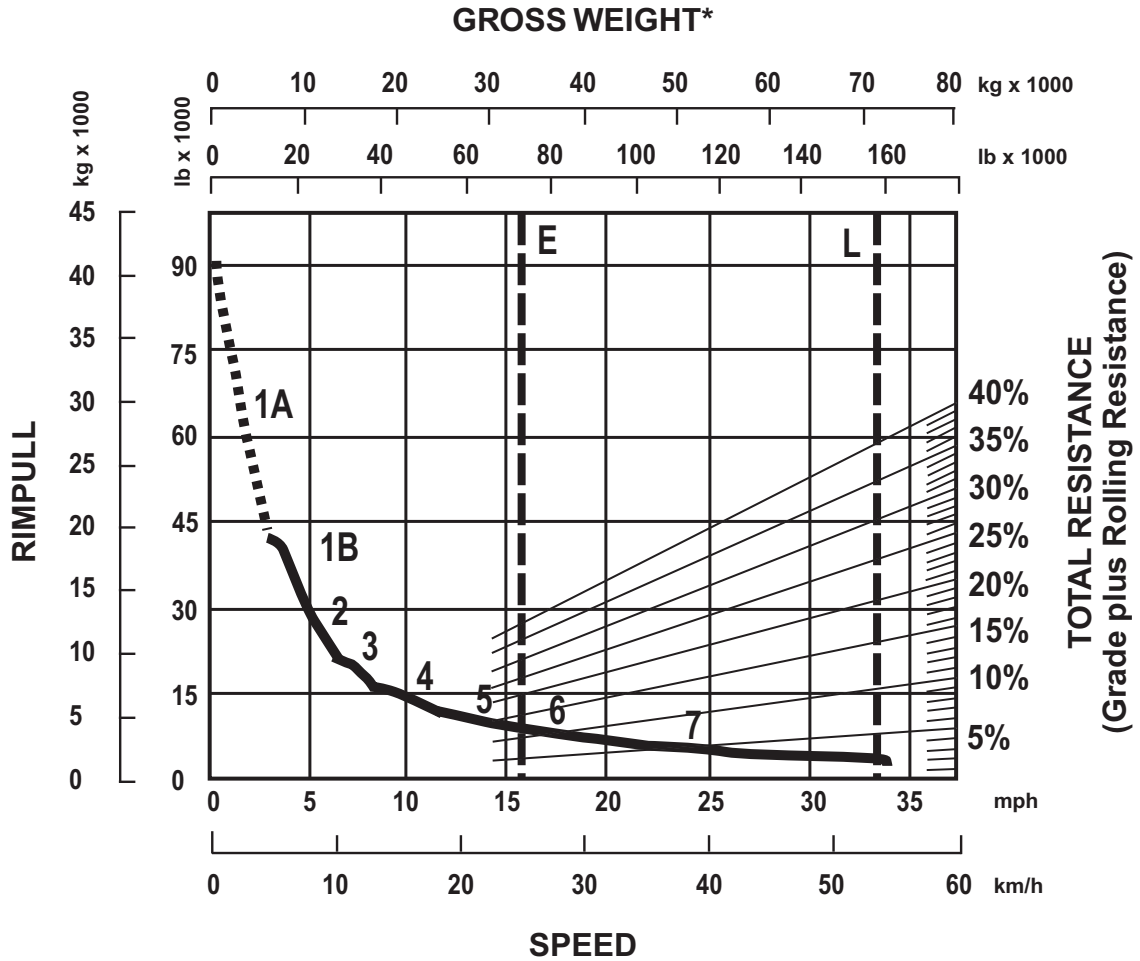


EMPTY



Articulated Trucks

740 Rimpull-Speed-Gradeability
 ● 29.5R25 Tires



KEY

- 1A — 1st Gear (Converter Drive)
- 1B — 1st Gear (Direct Drive)
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

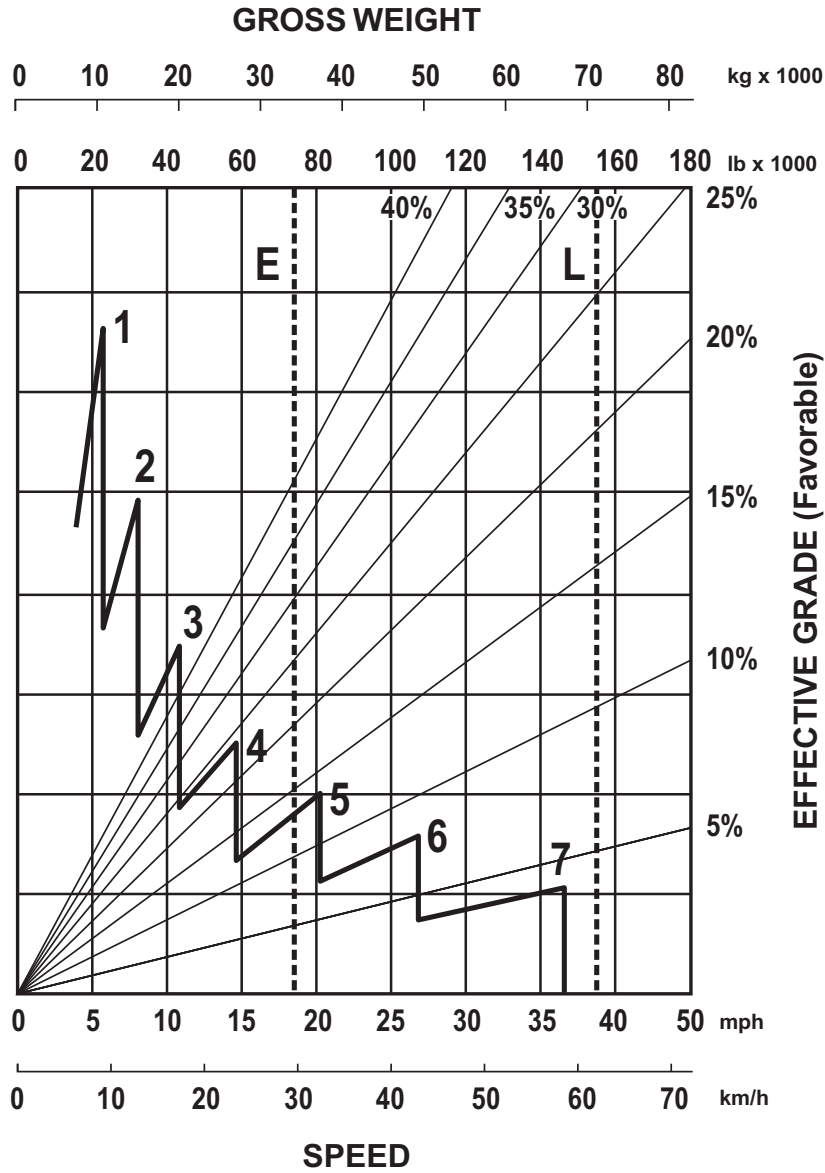
KEY

- E — Empty 32 840 kg (72,400 lb)
- L — Loaded 70 840 kg (156,175 lb)

*At sea level.

740 Brake/Retarder Performance Curve
 • 29.5R25 Tires

Articulated Trucks



10

KEY

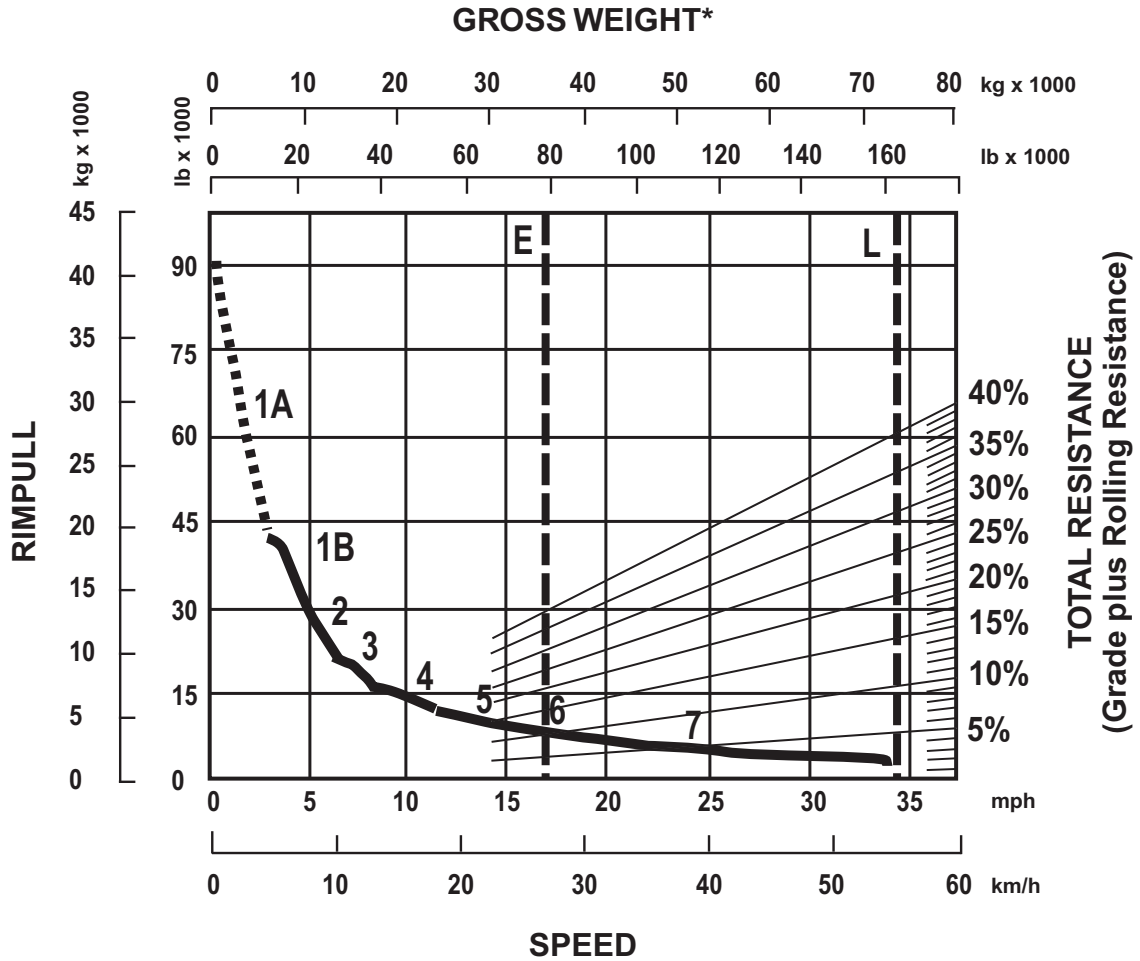
- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

KEY

- E — Empty 32 840 kg (72,400 lb)
- L — Loaded 70 840 kg (156,175 lb)

Articulated Trucks

740 Ejector Rimpull-Speed-Gradeability
 ● 29.5R25 Tires



KEY

- 1A — 1st Gear (Converter Drive)
- 1B — 1st Gear (Direct Drive)
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear
- 5 — 5th Gear
- 6 — 6th Gear
- 7 — 7th Gear

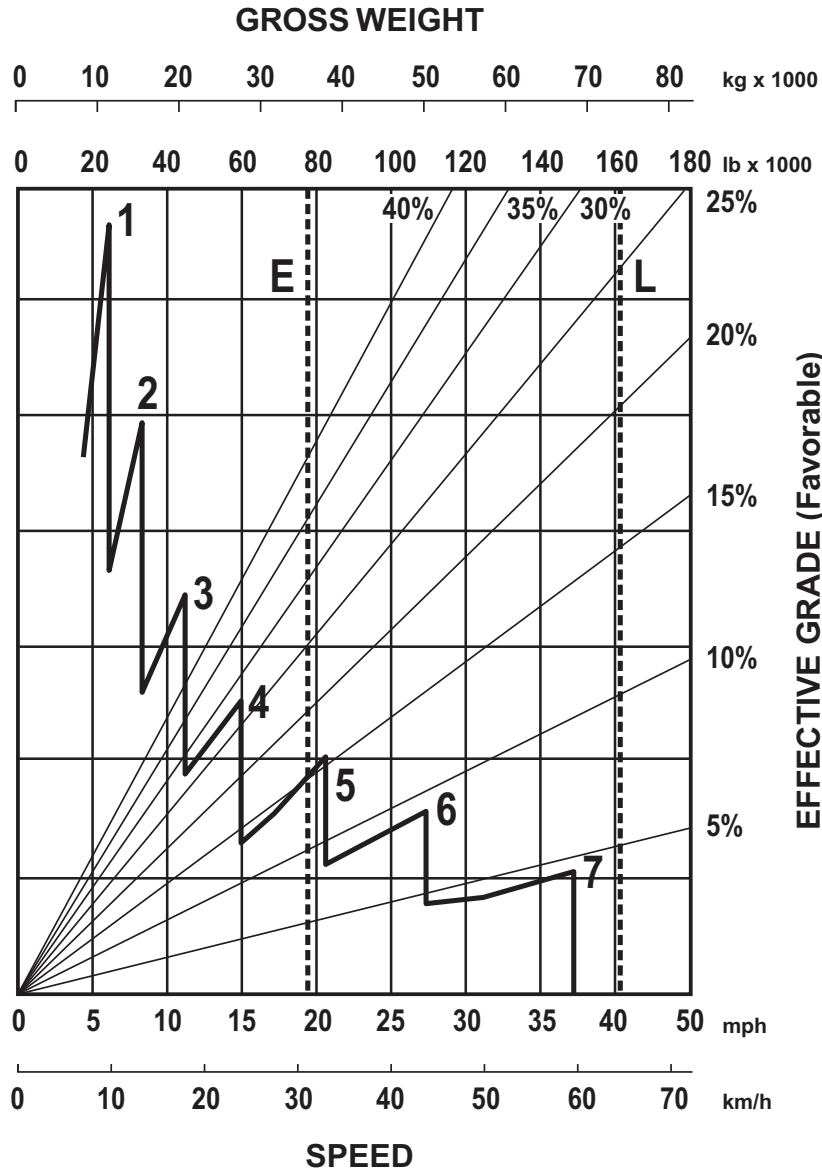
KEY

- E — Empty 35 610 kg (78,505 lb)
- L — Loaded 73 610 kg (162,280 lb)

*At sea level.

740 Ejector Brake/Retarder Performance Curve
 • 29.5R25 Tires

Articulated Trucks



10

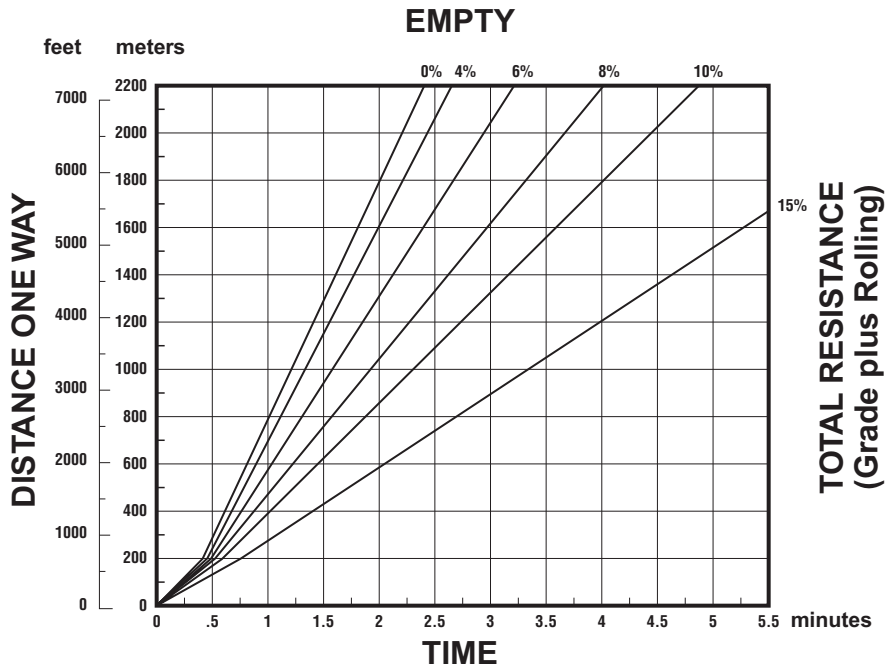
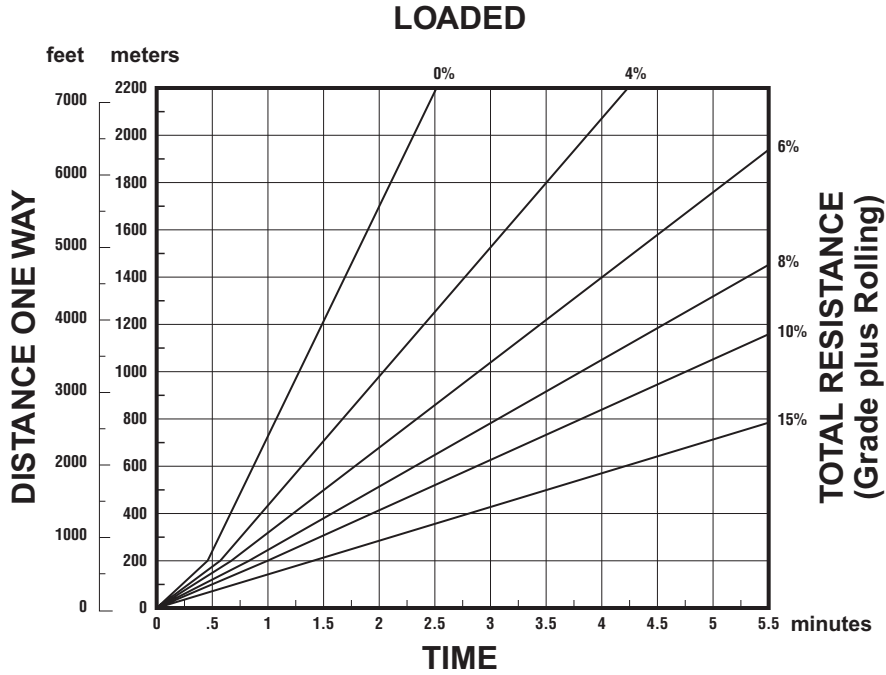
- KEY
- 1 — 1st Gear
 - 2 — 2nd Gear
 - 3 — 3rd Gear
 - 4 — 4th Gear
 - 5 — 5th Gear
 - 6 — 6th Gear
 - 7 — 7th Gear

- KEY
- E — Empty 35 610 kg (78,505 lb)
 - L — Loaded 73 610 kg (162,280 lb)

Articulated Trucks

740 Travel Time — Loaded/Empty

- 29.5R25 Tires
- Preliminary Information



WHEEL DOZERS SOIL COMPACTORS

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LANDFILL COMPACTORS (See Section 25)

WHEEL DOZERS

Features:

- **Reliable Cat power train:** four-stroke-cycle diesel with adjustment-free fuel system ... full power shift with single lever on-the-go shifting.
- **Articulated frame steering** with hinge point midway between front and rear axles ... short turning radius, long wheelbase ... rear and front wheels track at all times.
- **Machine balance** ... equal weight distribution on axles when blading.
- **All dozer functions**, including tip and tilt, hydraulically controlled from operator's seat.

Wheel Dozers | Specifications



MODEL	814F		824H		834H	
Flywheel Power	179 kW	240 hp	264 kW	354 hp	372 kW	498 hp
Operating Weight*	21 713 kg	47,877 lb	28 724 kg	63,325 lb	47 106 kg	103,849 lb
Engine Model	3176C ATAAC		C15 ACERT		C18 ACERT	
Rated Engine RPM	2100		1800		1800	
No. Cylinders	6		6		6	
Displacement	10.3 L	629 in³	15.2 L	928 in³	18.1 L	1104 in³
Speeds:						
Forward	4		4		4	
Reverse	4		4		3	
Top Speed Forward	30.9 km/h	19 mph	32.1 km/h	20 mph	38.5 km/h	23.9 mph
Turning Circle with Blade	16.5 m	54'0"	14.6 m	48'0"	17.6 m	57'9"
Standard Tire Size	23.5-25, 12 PR (L-2)		29.5R25 (L-3)		35/65-R33, 24 PR (L-4)	
Fuel Tank Refill Capacity	446 L	118 U.S. gal	672 L	178 U.S. gal	793 L	209 U.S. gal
GENERAL DIMENSIONS:						
Height (to top of ROPS)	3.3 m	10'8"	3.7 m	12'1"	4.09 m	13'5"
Height (stripped top)**	2.4 m	7'9"	2.6 m	8'5"	3.15 m	10'4"
Wheel Base	3.35 m	11'0"	3.7 m	12'1"	4.55 m	14'11"
Overall Length with Dozer	6.9 m	22'8"	8.2 m	27'0"	10.42 m	34'2"
Width (over standard tires)	2.8 m	9'2"	3.28 m	10'9"	3.47 m	11'5"
Ground Clearance	366 mm	14.4"	400 mm	15.7"	540 mm	21"
STRAIGHT BULLDOZER:						
Width	3.6 m	11'8"	4.51 m	14'8"	5.07 m	16'8"
Height	1.1 m	3'6"	1.23 m	4'0"	1.46 m	4'9"
Capacity	2.73 LCM	3.6 LCY	4.67 LCM	6.11 LCY	7.87 LCM***	10.3 LCY***
Ground Clearance Below Skid Shoe	718 mm	2'4"	955 mm	3'1.6"	1390 mm	4'7"
Depth of Cut	528 mm	20.8"	430 mm	16.9"	455 mm	17.9"
Tilt Adjustment	795 mm	2'6"	1.18 m	3'9"	1.48 m	4'10"
Tip Adjustment	15°		22.4°		21°	
Lift Speed	0.4 m/sec	1.3 ft/sec	0.46 m/sec	1.46 ft/sec	0.81 m/sec	2.66 ft/sec

*Operating Weight includes straight dozer, (U-blade on 834H) lubricants, coolant, ROPS cab, full fuel tank and operator. 75% CaCl₂ in all tires adds the following weight to each model: 814F — 2342 kg (**5164 lb**), 824H — 4296 kg (**9472 lb**), 834H — 5719 kg (**12,608 lb**).

**Height (stripped top) — without ROPS, exhaust, seat back or easily removed encumbrances.

***Capacity of 834H U-Blade is 11.16 LCM (**14.6 LCY**).

Specifications | Wheel Dozers



MODEL	844H		854G	
Flywheel Power	468 kW	627 hp	597 kW	800 hp
Operating Weight*	70 815 kg	156,120 lb	99 395 kg	219,128 lb
Engine Model	C27		3508B DITA	
Rated Engine RPM	2000		1750	
No. Cylinders	12		8	
Displacement	27.1 L	1666 in ³	34.5 L	2105 in ³
Speeds:				
Forward	3		3	
Reverse	3		3	
Top Speed Forward	21 km/h	13 mph	21.9 km/h	13.6 mph
Turning Circle with Blade	21.73 m	71'4"	23.4 m	76'9"
Standard Tire Size	45/65-R39, PR (L-4)		45/65-R45 (L-4)	
Fuel Tank Refill Capacity	1016 L	268 U.S. gal	1562 L	413 U.S. gal
GENERAL DIMENSIONS:				
Height (to top of ROPS)	5.023 m	16'6"	5.44 m	17'10"
Height (stripped top)**	3.8 m	12'6"	4.1 m	13'5"
Wheel Base	4.6 m	15'1"	5.89 m	19'4"
Overall Length with Dozer	10.94 m	35'9"	13.405 m	44'0"
Width (over standard tires)	4.37 m	14'4"	4.52 m	14'10"
Ground Clearance	431 mm	1'5"	475 mm	1'7"
SEMI-U DOZER:				
Width	5.278 m	17'4"	6.604 m	21'8"
Height	1.877 m	6'2"	2.124 m	6'11"
Capacity	16.1 m ³	21.1 yd ³	25.4 m ³	33.1 yd ³
Ground Clearance Below Skid Shoe	1372 mm	4'6"	1539 mm	5'1"
Depth of Cut	466 mm	18"	398 mm	16"
Tilt Adjustment	830 mm	2'9"	1165 mm	3'10"
Tip Adjustment		13°		15°
Lift Speed	0.353 m/sec	1.2 ft/sec	0.385 m/sec	1.3 ft/sec

*Operating Weight includes Semi-U, coolant, ROPS cab, full fuel tank and operator. If 75% CaCl₂ is added to all four tires, the weight increases by 11 112 kg (24,500 lb) on the 844H and 12 144 kg (26,770 lb) on the 854.

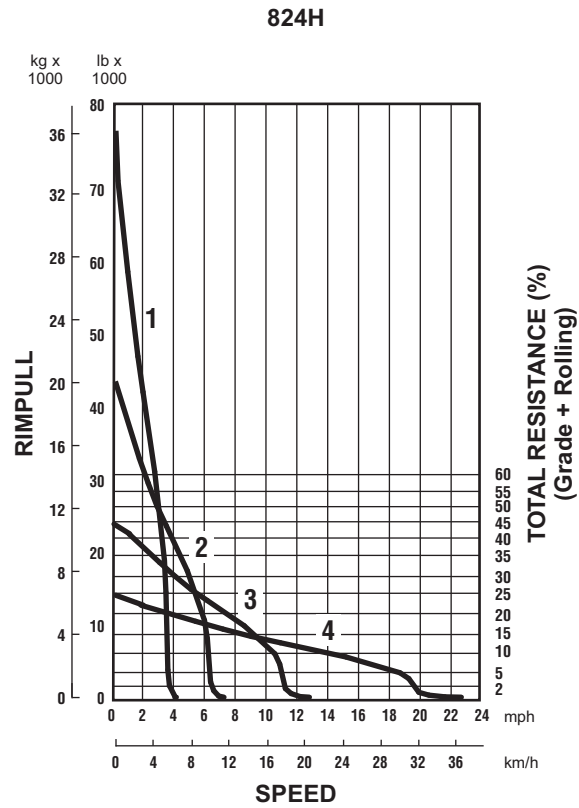
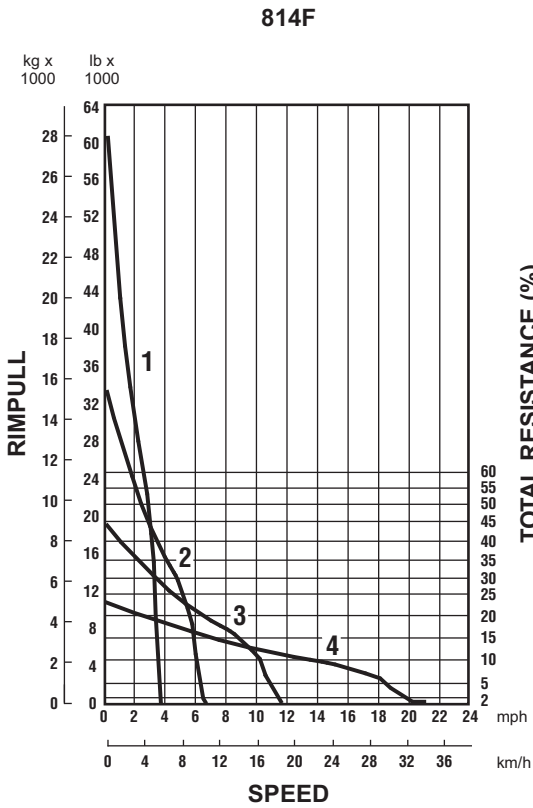
**Height (stripped top) — without ROPS, exhaust, seat back or easily removed encumbrances.

Wheel Dozers

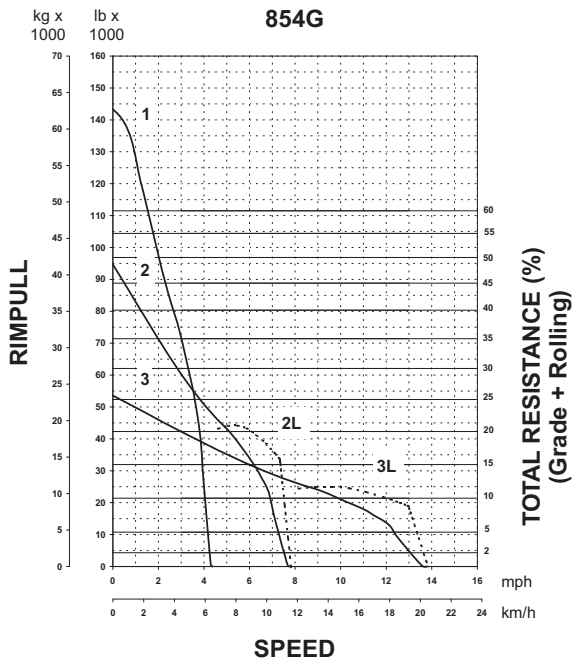
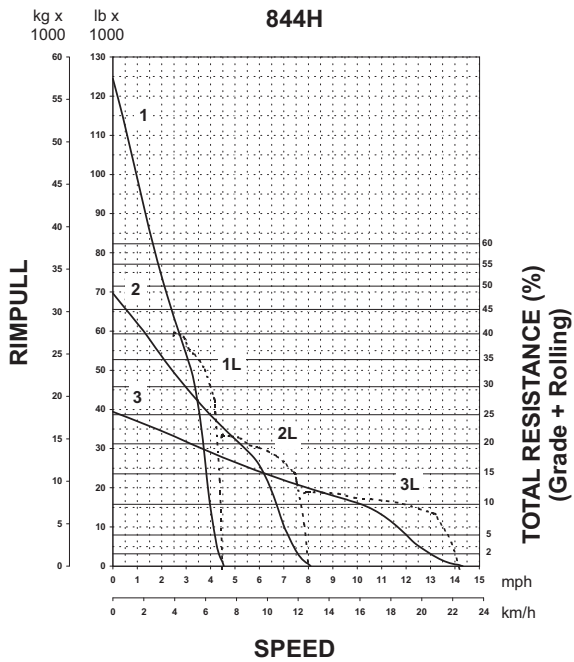
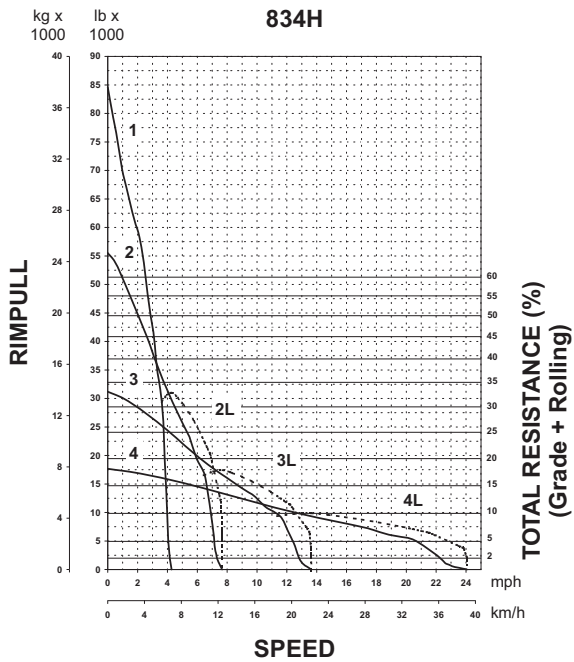
Travel Speeds Rimpull

MODEL	814F		824H		834H*		844H*		854G*	
FORWARD										
GEAR	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1	5.8	3.6	6.1	3.8	6.8	4.2	7.0	4.4	6.8	4.3
2	10.2	6.3	10.5	6.5	11.6	7.2	12.2	7.6	12.1	7.5
3	17.7	11.0	18.3	11.4	20.3	12.6	21.0	13.0	21.1	13.1
4	30.9	19.2	32.1	20.0	35.4	22.0	—	—	—	—
REVERSE										
GEAR	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1	6.6	4.1	6.9	4.3	6.8	4.2	7.7	4.6	7.6	4.7
2	11.5	7.1	12.0	7.5	12.2	7.6	13.4	8.4	13.4	8.3
3	20.2	12.5	20.8	13.0	21.4	13.3	23.0	14.3	23.2	14.4
4	35.1	21.8	36.6	22.7	—	—	—	—	—	—

*2% rolling resistance.



KEY
 1 - 1st Gear
 2 - 2nd Gear
 3 - 3rd Gear
 4 - 4th Gear



CONSIDERATIONS IN MACHINE SELECTION

The following factors should be considered when comparing wheels vs. tracks:

Traction

You can figure coefficient of traction, depending on underfoot conditions, from the Table Section in this book.

Wheels — up to 0.65 (in quarry pit with good floor)

Track — up to 0.90 (in soils permitting grouser penetration)

Usable Rimpull = Machine Weight × Coefficient of Traction

Speed

Wheels — travel speeds up to three times higher than track.

Maneuverability

Articulated steering and good visibility give wheel tractors high maneuverability.

Cost

See Owning and Operating Costs section. Tire vs. undercarriage costs can often be the deciding factor in selecting wheels or tracks.

Compaction

Ground Pressure:

Wheels — from 241 kPa (35 psi) to 310 kPa (45 psi)

Tracks — from 82 kPa (12 psi) to 97 kPa (14 psi)

Application

Utility ... mobility, maneuverability and good speed suit wheel tractors for yard and stockpile work and for clean-up around shovels. Lower maintenance costs may be realized in certain soils that can be highly abrasive to track-type undercarriages.

Coal pile ... recommend wheel tractors in this application when following conditions are present:

- Long push distances
- Need for good material spread
- High degree of compaction desired

Production Dozing ... a wheel tractor should be considered in the following conditions:

- Long push distances
- Loose soils, little or no rock
- Level or downhill work
- Good underfoot conditions

Pushloading Scrapers ... a wheel tractor should be considered in the following conditions:

- Thin scraper cut
- Good underfoot conditions — no rock
- Higher push speeds

Chip and Coal Scoops ... may adversely affect performance and/or reliability, particularly when adverse grades are encountered.

COUNTERWEIGHTS AND BALLAST

For each specific application, there is a correct machine weight for proper balancing of traction, flotation, mobility and response.

- Low machine weight may increase tire slipping and wear, but improves flotation, mobility and machine response.
- High machine weight increases traction, but decreases mobility and response.

The machine weight is optimum for the operating conditions when wheel slipping barely occurs in the gear being used. Weight distribution under operating conditions should then be approximately equal between the wheels to balance power to each axle.

Application

Lower machine weight is usually required for typical second gear applications, such as fill spreading, stockpiling, road maintenance, towing compactors and shovel cleanup.

Higher machine weight is usually required for such typical first gear applications as heavy dozing and pushloading.

Tire Ballast

A solution of calcium chloride and water is recommended for tire ballast. It has the advantage of low cost with simple quick adjustment to suit working conditions.

TIRE SELECTION & MAINTENANCE

Requirements of traction, flotation and tire life are met by a choice of tire size, tread design and inflation pressure.

Tire Width

For good conditions with little rolling resistance on surfaces where flotation is no problem, a narrower tire may be most economical. It may also be considered in muddy conditions in which the mud can be penetrated to reach firm earth underneath.

Where flotation problems and increased rolling resistance are encountered, wider tires are recommended. The greater contact area and shallower penetration increases flotation.

Tire Size

Larger optional tires will also improve flotation in soft conditions. With larger diameter, rimpull will be reduced which may be desirable to help control wheel spin.

Traction Tread (L-2) tire's penetration ability provides improved traction under some soil conditions.

Rock Tread (L-3) offers improved traction and a more cut resistant rubber compound than the L-2. It provides more rubber at the ground with the same footprint and reduces tire penetration under abrasive conditions. Recommended on any hard smooth surface such as rock, concrete or compacted earth.

Rock — Deep Tread (L-4) provides 50% more tread depth, thicker undertread and sidewall with increased tire life when compared to the L-3 tire. Recommended in rock conditions where sharp fragments cause high tire wear or sudden failures.

Rock — Extra Deep Tread (L-5) provides 150% more tread depth when compared to the L-3 tire. Intended for severe rock conditions with extreme penetration hazards.

Chains should be considered in severe applications where extra tread tires still give unsatisfactory life. Operating costs vary greatly depending on application, underfoot conditions, wheel spin and chain maintenance. Under normal rock operating conditions (short cycle, low average speed and minimum wheel spin) the maximum estimated chain life is about 2000 hours. Before installing chains, carefully weigh their overall economics against known tire costs. Chains are not recommended with new rock extra tread tires but can extend the life of a used tire. Always check clearance around tires before using chains.

Major applications where chains can be considered include:

- stripping rock or rocky soils
- clean-up work around rock loading shovels
- any application where underfoot conditions cause excessive tire wear.

Inflation Pressure

In average operating conditions the recommended inflation pressure prevents excessive deflection and minimizes tire rollover on side slopes.

Over-inflation

Reduces amount of tread contact with ground and provides less flotation. Over-inflation causes center of tread to wear faster and increases the chance of cuts and impact breaks.

Under-inflation

Can cause permanent tire damage in the form of flex breaks, radial cracks, and tread or ply separation. On jobs where wrinkling and bead rollover *are not* apparent, inflation pressure may be reduced to a minimum of:

Bias Ply — 170 kPa (25 psi) on 35/65-33
 170 kPa (25 psi) on 29.5-25
 170 kPa (25 psi) on 26.5-25
 170 kPa (25 psi) on 23.5-25

Radial — 310 kPa (45 psi) on 35/65-R33
 310 kPa (45 psi) on 29.5-R25
 205 kPa (30 psi) on 26.5-R25
 240 kPa (35 psi) on 23.5-R25

Reduced pressure will:

- Increase flotation and traction in sand.
- Improve envelopment characteristics to reduce sudden death failure on rock jobs.
- Provide better tread wear by reducing contact pressure between tire and ground.

Consult your tire manufacturer before changing tire pressures.

Wheel Dozers

Bulldozer ● Specifications

MODEL	814F		824H		834H	
Type	Straight		Straight		Straight	
Capacity**	2.66 m ³	3.5 yd³	4.67 m ³	6.11 yd³	8.04 m ³	10.51 yd³
Weight, Dozer*	3740 kg	8245 lb	5136 kg	11,323 lb	6880 kg	15,170 lb
General Dimensions (Tractor & Dozer)						
Length	6.9 m	22'6"	8.2 m	26'9"	10.42 m	34'2"
Width	3.6 m	11'8"	4.51 m	14'8"	5.07 m	16'7"
Blade:						
Width (including std. end bits)	3.6 m	11'8"	4.51 m	14'8"	5.07 m	16'7"
Height	1100 mm	3'6"	1229 mm	4'0"	1466 mm	4'9"
Max. Digging Depth	528 mm	20.8"	430 mm	16.9"	455 mm	17.9"
Ground Clearance @ Full Lift Under Skid Plate	718 mm	2'4"	955 mm	3'1.6"	1390 mm	4'7"
Tilt Adjust. from Horizontal	795 mm	2'6"	1180 mm	3'9"	1278 mm	4'2"
Total Tip Adjustment		15°		22.4°		20.5°

MODEL	834H		844H		854G	
Type	U-Blade		Semi-U		Semi-U	
Capacity**	11.2 m ³	14.6 yd³	15.9 m ³	20.7 yd³	25.5 m ³	33.4 yd³
Weight, Dozer*	8470 kg	18,670 lb	15 670 kg	34,520 lb	21 910 kg	48,270 lb
General Dimensions (Tractor & Dozer)						
Length	10.42 m	34'2"	10.94 m	35'9"	13.405 m	44'0"
Width	5.15 m	16'11"	5.42 m	17'8"	6.321 m	20'7"
Blade:						
Width (including std. end bits)	5.15 m	16'11"	5.42 m	17'8"	6.321 m	20'7"
Height	1437 mm	4'9"	1834 mm	5'9"	2179 mm	7'1"
Max. Digging Depth	442 mm	17.4"	466 mm	18.3"	398 mm	15.7"
Ground Clearance @ Full Lift Under Skid Plate	1118 mm	3'8"	1372 mm	4'6"	1539 mm	5'0.6"
Tilt Adjust. from Horizontal	1340 mm	4'5"	830 mm	2'8.7"	1165 mm	3'9.9"
Total Tip Adjustment		22°		13°		15°

*Total Bulldozer Arrangement.

**Blade capacities determined by SAE J1265.

COAL U-BLADE	814F		824H		834H	
Model: Replaces "S" Blade	184-4962		152-7046		168-8799	
Blade:						
Capacity	11 m ³	14 yd³	16.1 m ³	21 yd³	22.3 m ³	29 yd³
Length (Cutting Width)	4318 mm	14'2"	4801 mm	15'9"	5680 mm	18'7"
Height, wing section (tapered down)	1473 mm	4'10"	1803 mm	5'11"	1960 mm	6'5"
Wing Angle	25°		30°		30°	
Weight, Installed (Without Hydraulics)	1950 kg	4300 lb	3193 kg	7040 lb	5020 kg	11,300 lb

WOODCHIP U-BLADE	824H		834H	
Model: Replaces "S" Blade	153-6486		168-880	
Blade:				
Capacity	24 m ³	31 yd³	30.1 m ³	40 yd³
Length (Cutting Width)	4775 mm	15'8"	5700 mm	18'8"
Height, wing section	2261 mm	7'5"	2350 mm	7'8"
Wing Angle	30°		30°	
Weight	3515 kg	7750 lb	5155 kg	11,600 lb

COAL SCOOP WITH TILT	814F		834H	
Model:	123-8236		213-4480	
Scoop:				
Lift and Carrying Capacity	11.5 m ³	15 yd³	22.9 m ³	30 yd³
Dozing Capacity	19.1 m ³	25 yd³	45.8 m ³	60 yd³
Width	3734 mm	12'3"	4880 mm	15'11"
Height	1626 mm	5'4"	2382 mm	7'10"
Overall Length	7.3 m	24'0"	—	—
Weight	5216 kg	11,500 lb	9501 kg	20,949 lb
Dump Clearance	1041 mm	3'5"	1524 mm	5'0"

CHIP SCOOP WITH TILT	814F		824H		834H	
Model:	230-5890		147-6154		220-3648	
Scoop:						
Capacity/Lift & Carry	15.3 m ³	20 yd³	20.6 m ³	27 yd³	26.7 m ³	35 yd³
Capacity/Dozing	30.6 m ³	40 yd³	41.3 m ³	54 yd³	53.5 m ³	70 yd³
Width	3734 mm	12'3"	4039 mm	13'3"	4876 mm	16'0"
Height	2286 mm	7'6"	2489 mm	8'2"	2692 mm	8'10"
Weight	5390 kg	11,880 lb	11 420 kg	19,125 lb	9711 kg	21,410 lb

Notes —

SOIL COMPACTORS

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Features:

- **Dozing, filling and compacting versatility.**
- **High speed operation** with responsive Caterpillar diesel Engine, single-lever planetary power shift transmission, and all-wheel drive.
- **Articulated frame** makes maneuvering quick and easy. Long wheel base for stability.
- **Wheels with tamping foot design and chevron pattern** give traction, penetration and compaction needed for high production. Foot pattern reversed on trailing drums to prevent overprinting lead drums.
- **Rear drums track front** for double compactive effort. Drum spacing covers mid-axle strip on return pass.
- **Rear axle oscillation** keeps all drums on ground for traction and stability.
- **Cleaner bars** keep drums free of carry over earth regardless of rolling direction. Adjustable, replaceable.
- **Optional fill spreading dozer** has single lever control for raise, lower, hold and float. (Blade tilt optional.)

Soil Compactors

Specifications

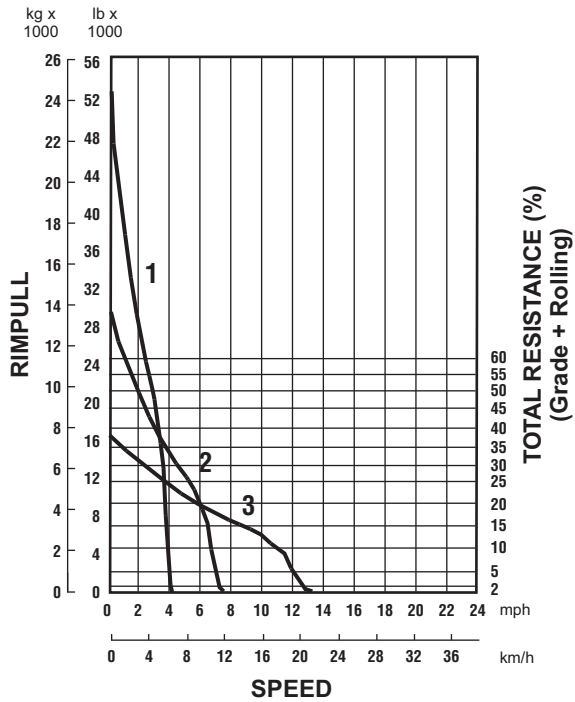


MODEL	815F		825H	
Flywheel Power	179 kW	240 hp	264 kW	354 hp
Operating Weight*	20 755 kg	45,765 lb	32 734 kg	72,164 lb
Engine Model	3176C ATAAC		C15 ACERT	
Rated Engine RPM	2100		1800	
No. Cylinders	6		6	
Displacement	10.3 L	629 in ³	15.1 L	928 in ³
Speeds:				
Forward	3		3	
Reverse	3		3	
Turning Radius — outside Corner of Blade	7.2 m	23'7"	7.4 m	24'0"
Fuel Tank Refill Capacity	446 L	117.8 U.S. gal	608 L	161 U.S. gal
TAMPING FOOT WHEELS:				
Each Drum Width	991 mm	3'3"	1125 mm	3'8"
Diameters, over feet	1.42 m	4'8"	1.68 m	5'5"
over drum	1.03 m	3'5"	1.29 m	4'3"
Feet per Wheel	60		65	
Feet per Row	12		13	
Rows of Feet	5		5	
Foot Length	191 mm	7.5"	188 mm	7.4"
End Area Per Foot	134 cm ²	20.8 in ²	192 cm ²	29.75 in ²
Width of Two Pass Coverage	4.2 m	13'9"	5.3 m	17'4"
GENERAL DIMENSIONS:				
Height (top of ROPS)	3.34 m	11'0"	3.74 m	12'3"
Height (stripped top)**	2.39 m	7'10"	2.65 m	8'8"
Wheel Base	3.35 m	11'0"	3.7 m	12'1"
Overall Length with Dozer	6.80 m	23'6"	8.38 m	27'6"
Width over Drums	3.24 m	10'8"	3.65 m	12'0"
Ground Clearance	390 mm	15.4"	596 mm	23"
STRAIGHT BULLDOZER:				
Width over End Bits	3.76 m	12'4"	4.62 m	15'1"
Height with Cutting Edge	860 mm	2'10"	1.03 m	3'4"

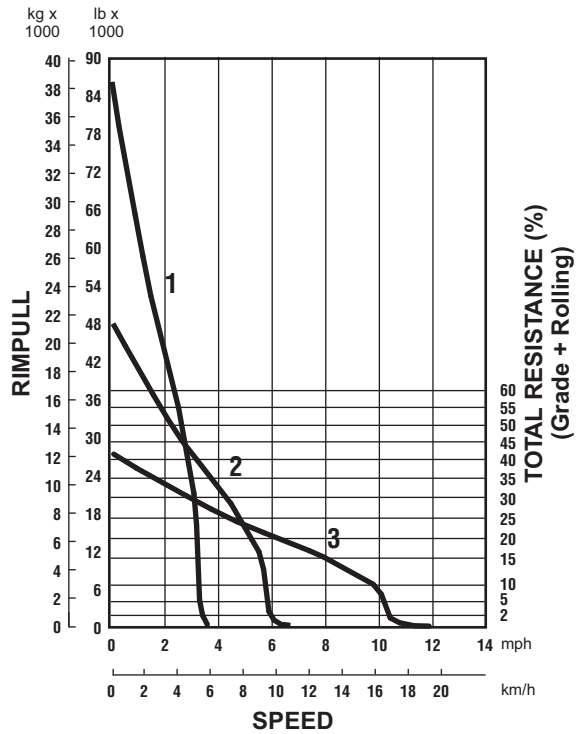
*Operating Weight includes coolant, lubricants, bulldozer, hydraulics, ROPS canopy, full fuel tank and operator.

**Height (stripped top) — without ROPS, exhaust, seat back or other easily removed encumbrances.

815F



825H



KEY
 1 - 1st Gear
 2 - 2nd Gear
 3 - 3rd Gear

COMPACTION FUNDAMENTALS

The following discussion applies to soil compaction only. For information on refuse compaction, see Waste Disposal section of this book.

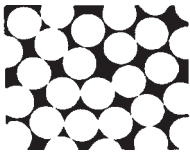
Definition

Compaction is the process of physically densifying or packing the soil ... resulting in increased weight per unit volume. It is generally accepted that the strength of a soil can be increased by densification. Three important factors affect compaction.

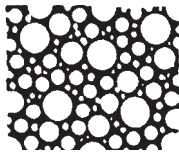
- Material gradation
- Moisture content
- Compactive effort

Material Gradation — refers to the distribution (% by weight) of the different particle sizes within a given soil sample. A sample is *well-graded* if it contains a good, even distribution of particle sizes. A sample composed of predominantly one size particle, is said to be *poorly-graded*. In terms of compaction, a well-graded soil will compact more easily than one that is poorly-graded. In well-graded material the smaller particles tend to fill the empty spaces between the larger particles, leaving fewer voids after compaction.

MATERIAL GRADATION



Poorly-graded



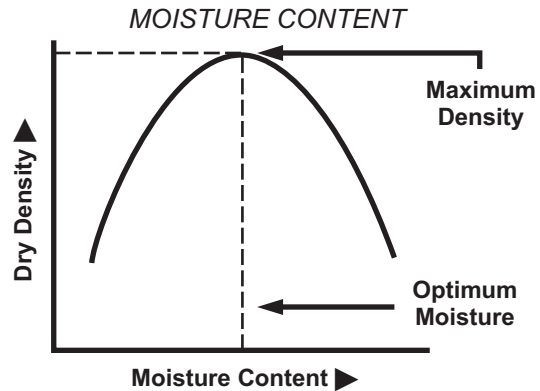
Well-graded

Moisture Content — or the amount of water present in a soil, is very important to compaction. Water lubricates soil particles thus helping them slide into the most dense position. Water also creates clay particle bonding, giving cohesive materials their sticky qualities.

OPTIMUM MOISTURE

Heavy clay	17.5%
Silty clay	15.0%
Sandy clay	13.0%
Sand	10.0%
Gravel, sand, clay mix (pit run)	7.0%

Experience has shown that it is very difficult, if not impossible, to achieve proper compaction in materials that are too dry or too wet. Soil experts have determined that in practically every soil there is an amount of water, called optimum moisture content, at which it is possible to obtain maximum density with a given amount of compactive effort. The curve below shows this relationship between dry density and moisture content. It is called a compaction curve, moisture-density curve or Proctor curve.



Compactive Effort — refers to the method employed by a compactor to impart energy into the soil to achieve compaction. Compactors are designed to use one or a combination of the following types of compactive effort.

- Static weight (or pressure)
- Kneading action (or manipulation)
- Impact (or sharp blow)
- Vibration (or shaking)

COMPACTOR TYPES

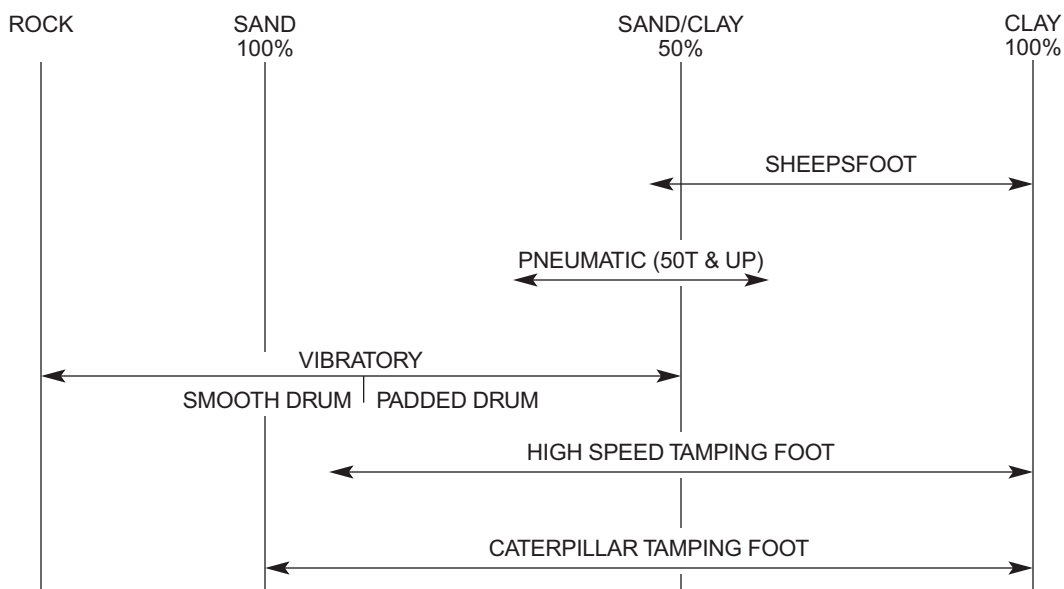
Compaction equipment can be grouped generally into the following classifications:

- sheepsfoot
- vibratory
- pneumatic
- high speed tamping foot
- chopper wheels (see Landfill Compactor section)

Combinations of these types are also available, such as a vibrating smooth steel drum.

For ease of comparison, the compactors have been placed on the Zones of Application Chart shown below. This chart contains a range of material moistures from 100% clay to 100% sand, plus a rock zone. Each type has been positioned in what is considered to be its most effective and economical zone of application. However, it is not uncommon to find them working out of their zones. Exact positioning of the zones can vary with differing material conditions.

RANGES OF SOIL TYPES FOR SOIL COMPACTION EQUIPMENT



COMPACTOR PRODUCTION

Compactor production is expressed in compacted cubic meters (Cm³) or compacted cubic yards (CCY) per hour. Material in its natural or bank state is measured in bank cubic meters or yards (Bm³ or BCY). When it is removed or placed in a fill, it is measured in loose cubic meters or yards (Lm³ or LCY).

When the loose material is worked into a compacted state, the relationship of *compacted material to bank material* is shown as the shrinkage factor (SF).

$$SF = \frac{\text{Compacted cubic meters (Cm}^3\text{)}}{\text{Bank cubic meters (Bm}^3\text{)}}$$

$$SF = \frac{\text{Compacted cubic yards (CCY)}}{\text{Bank cubic yards (BCY)}}$$

The construction industry has developed the following formula for use in estimating compactor production. This formula gives the material volume a given machine can compact in a 60-minute hour.

Metric Method

$$\text{Cm}^3 = \frac{W \times S \times L}{P}$$

W = Compacted width per pass, in meters. (For Caterpillar Compactors it is recommended that W = Twice the width of one wheel.)

S = Average speed, in kilometers per hour.

L = Compacted thickness of lift, in millimeters.

P = Number of machine passes to achieve compaction (**can only be determined by testing the compacted material density on-the-job**).

English Method

$$\text{CCY/hr} = \frac{W \times S \times L \times 16.3}{P}$$

W = Compacted width per pass, in feet. (For Caterpillar Compactors it is recommended that W = Twice the width of one wheel.)

S = Average speed, in miles per hour.

L = Compacted thickness of lift, in inches.

16.3 = Conversion constant, equals 5280 feet ÷ 12 inches ÷ 27 cubic feet

P = Number of machine passes to achieve compaction (**can only be determined by testing the compacted material density on-the-job**).

Example problem (Metric)

Determine production for an 815F operating under the following conditions:

$$P = 5, S = 10 \text{ km/h}, L = 100 \text{ mm}$$

Refer to 815F in the production table on the next page. Read down the first column until reaching section for 5 passes. Within this section in the second column, find the speed closest to 10 km/h. Read across this line to the 100 mm compacted lift. Read the production figure given.

Answer: 377 Cm³/h. (Since the machine's speed of 10 km/h is slightly faster than the 9.5 of the table, production may be interpolated slightly higher — say 395 Cm³/h.)

Example problem (English)

Determine production for an 825H operating under the following conditions:

$$P = 4, S = 8 \text{ mph}, L = 6 \text{ inches}$$

Refer to the production estimating table on the next page. This table contains estimates for the 815F and 825H Compactors using various speeds, lift thicknesses and number of passes. These figures were calculated using the formula discussed on this page. The figures represent 100% efficiency. W = Twice the width of one wheel.

In the 825H portion of this table, read down the first column until reaching the section for four passes. Within this section in the second column, find the line for 8 mph. Read across this line to the lift thickness column for 6 inches. Read the production figure given.

Answer: 1444 CCY/hr.



Production Table
 • Bulldozer Specifications

Soil Compactors

PRODUCTION TABLE

MODEL AND MACHINE PASSES*	AVERAGE SPEED		COMPACTED LIFT THICKNESS								
	km/h	mph	100 mm m ³ /h	4 in yd ³ /hr	150 mm m ³ /h	6 in yd ³ /hr	200 mm m ³ /h	8 in yd ³ /hr	250 mm m ³ /h	10 in yd ³ /hr	
815F	3	6.5	4	419	548	628	822	837	1095	—	
		9.5	6	628	822	942	1232	1256	1643	—	
	4	13.0	8	837	1095	1256	1643	1675	2191	—	
		6.5	4	314	411	471	616	628	822	—	
		9.5	6	471	616	706	924	942	1232	—	
	5	13.0	8	628	822	942	1232	1256	1643	—	
		6.5	4	251	329	377	493	502	657	—	
		9.5	6	377	493	565	739	754	986	—	
	6	13.0	8	502	657	754	986	1005	1314	—	
		6.5	4	286	274	314	411	419	548	—	
		9.5	6	314	411	471	616	628	822	—	
	825H	3	13.0	8	419	548	628	822	837	1095	—
6.5			4	488	642	731	962	975	1283	1219	1604
9.5			6	713	962	1069	1444	1425	1925	1781	2406
4		13.0	8	975	1283	1463	1925	1950	2566	2438	3208
		6.5	4	366	481	534	722	731	962	914	1203
		9.5	6	534	722	802	1083	1069	1444	1336	1804
5		13.0	8	731	962	1097	1444	1463	1925	1828	2406
		6.5	4	293	385	439	577	585	770	731	962
		9.5	6	428	577	641	866	855	1155	1069	1444
6		13.0	8	585	770	878	1155	1170	1540	1463	1925
		6.5	4	244	321	366	481	488	642	609	802
		9.5	6	356	481	534	722	713	962	891	1203
815F	3	13.0	8	488	642	731	962	975	1283	1219	1604
		6.5	4	488	642	731	962	975	1283	1219	1604
		9.5	6	488	642	731	962	975	1283	1219	1604
	4	13.0	8	488	642	731	962	975	1283	1219	1604
		6.5	4	488	642	731	962	975	1283	1219	1604
		9.5	6	488	642	731	962	975	1283	1219	1604
	5	13.0	8	488	642	731	962	975	1283	1219	1604
		6.5	4	488	642	731	962	975	1283	1219	1604
		9.5	6	488	642	731	962	975	1283	1219	1604
	6	13.0	8	488	642	731	962	975	1283	1219	1604
		6.5	4	488	642	731	962	975	1283	1219	1604
		9.5	6	488	642	731	962	975	1283	1219	1604

*The number of machine passes required is dependent on soil type, moisture content, desired compaction and machine weight.

MODEL	815F		825H	
Type	Fill Spreading		Fill Spreading	
Capacity**				
Earth	2.16 m ³	2.82 yd ³	3.79 m ³	4.95 yd ³
Refuse	—	—	—	—
Weight, Dozer*	1460 kg	3220 lb	2831 kg	6241 lb
General Dimensions: (Tractor & Dozer)				
Length	6.82 m	22'5"	8.24 m	27'5"
Width	3.76 m	12'4"	4.6 m	15'1"
Blade Dimensions:				
Width, End Bits	3.76 m	12'4"	4.6 m	15'1"
Height, Moldboard	860 mm	2'10"	1.03 m	3'4"
Height, Trash Rack	—	—	—	—
Max. Digging Depth	215 mm	8.5"	312 mm	12.3"
Ground Clearance @ Full Lift	814 mm	2'8"	932 mm	3'0.7"
Tilt Adjust. from Horizontal	328 mm	12.9"	797 mm	31.4"

*Total Bulldozer Arrangement.

**Blade capacities determined by SAE recommended practice J1265.

815F and 825H**Ground Contact Pressure/Soil Compactors**

815F Tip	Weight Front Axle 11 483.5 kg (20,670.3 lb) Ground Contact Pressure		Weight Rear Axle 9395.5 kg (25,263.7 lb) Ground Contact Pressure		Contact Area Four Wheels	
	kPa	psi	kPa	psi	cm²	in²
Tip Penetration						
25 mm (1.0 in)	4727.05	685.6	6989.35	706.7	425.81	66
50 mm (2.0 in)	1347.92	195.5	1827.94	215.7	1445.16	224
75 mm (3.0 in)	902.52	130.9	1094.20	156.8	2077.42	322
100 mm (4.0 in)	658.45	95.5	872.95	97.7	3064.51	475

825H Standard Tip	Weight Front Axle 14 919.98 kg (32,892.93 lb) Ground Contact Pressure		Weight Rear Axle 16 819.98 kg (37,081.71 lb) Ground Contact Pressure		Contact Area Four Wheels	
	kPa	psi	kPa	psi	cm²	in²
Tip Penetration						
12.7 mm (0.5 in)	7178.41	1041.14	8092.55	1173.73	407.65	63.19
25 mm (1.0 in)	2609.39	378.46	2941.72	426.66	1121.55	173.84
38 mm (1.5 in)	1411.35	204.70	1591.10	230.77	2073.54	321.40
50 mm (2.0 in)	704.99	102.25	794.76	115.27	4150.96	643.40
75 mm (3.0 in)	610.19	88.50	687.89	99.77	4795.60	743.32
100 mm (4.0 in)	421.68	61.16	475.39	68.95	6939.86	1075.68
125 mm (5.0 in)	382.52	55.48	431.27	62.55	1912.51	296.44
150 mm (6.0 in)	324.33	47.04	365.63	53.03	9022.18	1398.44
175 mm (7.0 in)	311.09	45.12	350.74	50.87	9405.66	1457.88
200 mm (8.0 in)	139.55	20.24	157.34	22.82	20 965.89	3249.72

825H Heavy Duty Tip	Weight Front Axle 14 919.98 kg (32,892.93 lb) Ground Contact Pressure		Weight Rear Axle 16 819.98 kg (37,081.71 lb) Ground Contact Pressure		Contact Area Four Wheels	
	kPa	psi	kPa	psi	cm²	in²
Tip Penetration						
12.7 mm (0.5 in)	7615.41	1104.52	8585.20	1245.18	96.07	14.89
25 mm (1.0 in)	6199.83	899.21	6989.35	1013.72	472.00	73.16
38 mm (1.5 in)	3614.20	524.19	1915.27	277.79	430.61	66.74
50 mm (2.0 in)	1621.44	235.17	1827.94	265.12	1804.64	279.72
75 mm (3.0 in)	970.64	140.78	1094.20	158.70	3014.96	467.32
100 mm (4.0 in)	774.28	112.30	872.95	126.61	3779.35	585.80
125 mm (5.0 in)	570.89	82.80	643.56	93.34	5126.18	794.56
150 mm (6.0 in)	443.13	64.27	499.59	72.46	6603.60	1023.56
175 mm (7.0 in)	417.06	60.49	470.22	68.20	7016.24	1087.52
200 mm (8.0 in)	389.07	56.43	438.64	63.62	7520.76	1165.72
225 mm (9.0 in)	381.07	55.27	429.61	62.31	7678.95	1190.24
250 mm (10.0 in)	128.59	18.65	145.00	21.03	22 753.76	3526.84

Notes —

Notes —

WHEEL LOADERS INTEGRATED TOOLCARRIERS

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WHEEL LOADERS

Features:

- **Caterpillar heavy duty diesel engine.**
- **Productive operator environment. Excellent visibility.**
- **Automatic lift and bucket controls.**
- **Adjustable suspension seat and steering column.**
- **Four wheel enclosed wet disc brakes.**
- **Automatic power shift transmissions.** Allows operator to select automatic or manual mode.
- **Hydrostatic drive on 906, 908 and 914G.**
- **Transmission neutralizer switch (924G, 924Gz, 928Gz, 930G, 938G Series II-980H).**
- **Computerized machine function monitoring.**
- **Command control steering** with integrated transmission controls and electro-hydraulic controls ... 950H-980H.
- **Lock up clutch on 990 and 994D (optional on 988G).**
- **Impeller clutch on 988G, 990, 992G and 994D.**
- **Tilting hood ... 938G Series II-980H.**
- **Brake wear indicator.**
- **Limited slip differentials.**
- **Traction control system ... 938G Series II.**
- **Automatic Ride Control suspension system.** Operator select "on", "off" or "automatic".
- **Payload control system.**

Listed features may be standard on some models, optional or unavailable on others. Contact your Caterpillar Dealer for specific information.





INTEGRATED TOOLCARRIERS

Features:

- **Integral quick coupler** for fast tool changes.
- **Wide range of tools** available to meet many jobs.
- **Increased lift height and reach** over conventional loaders.
- **Parallel lift** from ground level to maximum height.
- **High tilt force** throughout lift cycle provides exceptional load control.
- **Transmission neutralizer lockout switch** for low speed maneuverability is standard. (IT14G-IT62H)
- **Positive carry position** for load stability and retention.
- **Third and fourth valves available** for multiple tool functions.
- **Work tool interchangeability.** IT14G through 930G share the same tools. IT38G Series II and IT62H can share the same tools.
- **Excellent center visibility** to quick coupler and work tool.
- **Two position return** to work kickouts.
- **Several quick-coupler work tools** for IT38G Series II and IT62H are available from the factory and ship with the machine. Contact your Caterpillar Dealer for details.

Specifications

Wheel Loaders
Integrated Toolcarriers

				
MODEL	904B	906	908	914G/IT14G
Flywheel Power: Net	39 kW	51 kW	57 kW	72 kW
Gross	52 hp	68 hp	76 hp	96 hp
	41 kW	56 kW	63 kW	75 kW
	55 hp	75 hp	84 hp	101 hp
Engine Model	MHI S4Q2-T	Cat 3044C	Cat 3044C	Cat 3054C DIT
Rated Engine RPM	2600	2600	2200	2200
Bore	88 mm	94 mm	94 mm	100 mm
Stroke	3.46"	3.7"	3.7"	3.94"
	103 mm	120 mm	120 mm	127 mm
	4.06"	4.72"	4.72"	5"
No. Cylinders	4	4	4	4
Displacement	2.5 L	2.95 L	4 L	4 L
	153 in ³	180 in ³	243 in ³	243 in ³
Speeds Forward	km/h	km/h	km/h	km/h
	mph	mph	mph	mph
1st	7 Lo 4	7 Lo 4	7 Lo 4	9 Hi 5.6
2nd	20 Hi 12	20 Hi 12	20 Hi 12	35 Hi 22
3rd	—	—	—	—
4th	—	—	—	—
Speeds Reverse				
1st	7 Lo 4	7 Lo 4	7 Lo 4	9 Hi 5.6
2nd	20 Hi 12	20 Hi 12	20 Hi 12	35 Hi 22
3rd	—	—	—	—
4th	—	—	—	—
Hydraulic Cycle Time, Rated Load in Bucket:				Seconds
	Seconds	Seconds	Seconds	914G IT14G
Raise	4.5	4.5	4.5	5.6 6.9
Dump	0.8	1.5	2.4	2.1 2.5
Lower (Empty, Float Down)	3.2	3.2	3.2	3.2 3.1
Total	8.5	9.2	10.1	10.9 12.5
Tread Width	1.32 m	1.50 m	1.57 m	1.80 m
	4'4"	4'9"	5'1"	5'11"
Width Over Tires	1.7 m	1.84 m	1.97 m	2.26 m
	5'7"	6'0"	6'4"	7'5"
Ground Clearance	234 mm	420 mm	490 mm	456 mm
	9"	17"	19.2"	18"
Fuel Tank Capacity	83 L	74 L	80 L	150 L
	22 U.S. gal	19.6 U.S. gal	21.1 U.S. gal	39.6 U.S. gal
Hydraulic Tank Capacity	40 L	49 L	49 L	70 L
	10.5 U.S. gal	13 U.S. gal	13 U.S. gal	18.5 U.S. gal
Hydraulic System Capacity (includes tank)	51 L	66 L	66 L	100 L
	13 U.S. gal	17.5 U.S. gal	17.5 U.S. gal	26.4 U.S. gal

Wheel Loaders Integrated Toolcarriers

Specifications



MODEL	924Gz		924G Standard VersaLink Pin On/Hook On		924G High Lift VersaLink Pin On/Hook On	
Flywheel Power: Net	96 kW	129 hp	96 kW	129 hp	96 kW	129 hp
Max.	102 kW	137 hp	102 kW	137 hp	102 kW	137 hp
Engine Model	3056E DIT ATAAC		3056E DIT ATAAC		3056E DIT ATAAC	
Rated Engine RPM	2300		2300		2300	
Bore	100 mm	3.94"	100 mm	3.94"	100 mm	3.94"
Stroke	127 mm	5"	127 mm	5"	127 mm	5"
No. Cylinders	6		6		6	
Displacement	6 L	366 in³	6 L	366 in³	6 L	366 in³
Speeds Forward	km/h	mph	km/h	mph	km/h	mph
1st	6.7	4.2	6.7	4.2	6.7	4.2
2nd	12.2	7.6	12.2	7.6	12.2	7.6
3rd	21.8	13.5	21.8	13.5	21.8	13.5
4th	38.5	23.9	38.5	23.9	38.5	23.9
Speeds Reverse						
1st	6.7	4.2	6.7	4.2	6.7	4.2
2nd	12.2	7.6	12.2	7.6	12.2	7.6
3rd	21.8	13.5	21.8	13.5	21.8	13.5
Hydraulic Cycle Time, Rated Load in Bucket:	Seconds		Seconds		Seconds	
Raise	5.2		5.1		5.1	
Dump	1.1		1.4		1.4	
Lower (Empty, Float Down)	2.7		2.4		2.4	
Total	9.0		8.9		8.9	
Tread Width	1.88 m	6'2"	1.88 m	6'2"	1.88 m	6'2"
Width Over Tires	2.36 m	7'9"	2.36 m	7'9"	2.36 m	7'9"
Ground Clearance	370 mm	15"	370 mm	15"	370 mm	15"
Fuel Tank Capacity	225 L	59.4 U.S. gal	225 L	59.4 U.S. gal	225 L	59.4 U.S. gal
Hydraulic Tank Capacity	70 L	18.5 U.S. gal	70 L	18.5 U.S. gal	70 L	18.5 U.S. gal
Hydraulic System Capacity (includes tank)	125 L	33 U.S. gal	125 L	33 U.S. gal	125 L	33 U.S. gal



MODEL	928Gz		930G		938G Series II IT38G Series II	
Flywheel Power: Net	107 kW	143 hp	111 kW	149 hp	119 kW	160 hp
Max.	115 kW	155 hp	119 kW	159 hp	134 kW	180 hp
Engine Model	3056 DI ATAAC		3056E DIT ATAAC		3126B ATAAC	
Rated Engine RPM	2300		2300		2200	
Bore	100 mm	3.94"	100 mm	3.94"	110 mm	4.3"
Stroke	127 mm	5"	127 mm	5"	127 mm	5"
No. Cylinders	6		6		—	
Displacement	6 L	366 in ³	6 L	366 in ³	7.2 L	439 in ³
Speeds Forward	km/h	mph	km/h	mph	km/h	mph
1st	7.9	4.9	7.3	4.5	7.6	4.7
2nd	12.6	7.8	12.3	7.6	13.4	8.3
3rd	25.8	16.0	24.1	15.0	23.3	14.5
4th	37.7	23.4	38.3	23.8	38.8	24.1
Speeds Reverse						
1st	7.9	4.9	7.3	4.5	7.6	4.7
2nd	12.6	7.8	12.3	7.6	13.4	8.3
3rd	25.8	16.0	24.1	15.0	23.3	14.5
Hydraulic Cycle Time, Rated Load in Bucket:	Seconds		Seconds		Seconds	
Raise	6.1		5.0		938G II	IT38G II
Dump	1.2		1.7		6.0	5.8
Lower (Empty, Float Down)	2.8		2.8		1.4	2.0
Total	10.1		9.5		2.8	2.9
Tread Width	1.95 m	6'5"	1.95 m	6'5"	10.2	10.7
Width Over Tires	2.44 m	8'0"	2.41 m	7'11"	2.02 m	6'8"
Ground Clearance	408 mm	16"	421 mm	16"	2.6 m	8'6"
Fuel Tank Capacity	225 L	59.4 U.S. gal	225 L	59.4 U.S. gal	400 mm	16"
Hydraulic Tank Capacity	70 L	18.5 U.S. gal	70 L	18.5 U.S. gal	257 L	67.9 U.S. gal
Hydraulic System Capacity (includes tank)	125 L	33 U.S. gal	125 L	33 U.S. gal	76 L	20.1 U.S. gal
					90 L	23.8 U.S. gal

Wheel Loaders Integrated Toolcarriers

Specifications



MODEL	950H		962H IT62H		966H	
Flywheel Power: Net	146 kW	196 hp	157 kW	211 hp	195 kW	262 hp
Max.	146 kW	196 hp	157 kW	211 hp	195 kW	262 hp
Engine Model	C7 ATAAC		C7 ATAAC		C11 ATAAC	
Rated Engine RPM	1800		1800		1800	
Bore	110 mm	4.3"	110 mm	4.3"	130 mm	5.1"
Stroke	127 mm	5"	127 mm	5"	140 mm	5.5"
No. Cylinders	6		6		6	
Displacement	7.2 L	439 in ³	7.2 L	439 in ³	11.1 L	677 in ³
Speeds Forward	km/h	mph	km/h	mph	km/h	mph
1st	6.9	4.3	7.0	4.4	6.7	4.2
2nd	12.7	7.9	13.0	8.0	12.6	7.8
3rd	22.3	13.9	22.6	14.0	22.1	13.8
4th	37.0	23.0	38.0	23.6	37.4	23.4
Speeds Reverse						
1st	7.6	4.7	7.6	4.7	7.4	4.6
2nd	13.9	8.6	13.9	8.7	13.9	8.7
3rd	24.5	15.2	24.5	15.2	24.3	15.2
4th	40.0	24.9	40.0	24.9	37.4	23.4
Hydraulic Cycle Time, Rated Load in Bucket:	Seconds		Seconds		Seconds	
Raise	6.2		962H	IT62H	5.9	
Dump	1.3		1.3	2.1	1.6	
Lower (Empty, Float Down)	2.5		2.5	2.8	2.4	
Total	10.0		10.0	11.1	9.9	
Tread Width	2.14 m	7'0"	2.14 m	7'0"	2.23 m	7'4"
Width Over Tires	2.89 m	9'6"	2.89 m	9'6"	2.96 m	9'9"
Ground Clearance	412 mm	16"	412 mm	16"	565 mm	22"
Fuel Tank Capacity	314 L	83 U.S. gal	314 L	83 U.S. gal	410 L	108 U.S. gal
Hydraulic Tank Capacity	110 L	28.6 U.S. gal	110 L	28.6 U.S. gal	110 L	29 U.S. gal
Hydraulic System Capacity (includes tank)	186 L	48.4 U.S. gal	186 L	48.4 U.S. gal	200 L	52 U.S. gal

Specifications

Wheel Loaders
Integrated Toolcarriers



MODEL	972H		980H		988G	
Flywheel Power: Net	214 kW	287 hp	237 kW	318 hp	354 kW	475 hp
Max.	214 kW	287 hp	237 kW	318 hp	388 kW	520 hp
Rated Payload*	—		—		11.4 t	12.5 T
Gross Rated Bucket Payload*	—		—		16 300 kg	36,000 lb
Engine Model	C13 ATAAC		C15 ATAAC		3456 DITA ATAAC	
Rated Engine RPM	1800		1800		1900	
Bore	130 mm	5.1"	137 mm	5.4"	140 mm	5.5"
Stroke	157 mm	6.2"	171 mm	6.75"	171 mm	6.75"
No. Cylinders	6		6		6	
Displacement	12.5 L	763 in ³	15.2 L	928 in ³	15.8 L	964 in ³
Speeds Forward	km/h	mph	km/h	mph	km/h	mph
1st	7.2	4.5	6.6	4.1	6.8	4.2
2nd	12.6	7.8	11.8	7.4	11.9	7.4
3rd	21.4	13.3	20.7	12.9	20.7	12.8
4th	36.9	22.9	36.3	22.5	35.4	22.0
Speeds Reverse						
1st	8.2	5.1	7.6	4.7	7.7	4.8
2nd	14.2	8.8	13.5	8.4	13.5	8.4
3rd	24.3	15.1	23.7	14.7	23.5	14.6
4th	38.8	24.0	41.5	25.8	—	
Hydraulic Cycle Time, Rated Load in Bucket:	Seconds		Seconds		Seconds	
Raise	5.9		6.0		9.4	
Dump	2.1		2.0		2.4	
Lower (Empty, Float Down)	2.4		3.4		3.8	
Total	10.4		11.4		15.6	
Tread Width	2.23 m	7'4"	2.44 m	8'0"	2.59 m	8'6"
Width Over Tires	2.96 m	9'9"	3.25 m	10'8"	3.54 m	11'7"
Ground Clearance	565 mm	22"	442 mm	17.4"	549 mm	22"
Fuel Tank Capacity	410 L	108 U.S. gal	479 L	127 U.S. gal	725 L	191 U.S. gal
Hydraulic Tank Capacity	110 L	29 U.S. gal	125 L	33 U.S. gal	267 L	70 U.S. gal
Hydraulic System Capacity (includes tank)	200 L	52 U.S. gal	250 L	66 U.S. gal	470 L	124 U.S. gal

*Changes in bucket weight, including field installed wear iron, can impact rated payload. Consult your Caterpillar dealer for assistance in selecting and configuring the proper bucket for the application. Caterpillar's Large Wheel Loader Payload Policy is a guideline intended to maximize wheel loader structural and component life. Caterpillar's Payload Policy is that the "Gross Bucket plus Payload Capacity" is the MAXIMUM weight that should be carried on the end of the Lift Arm/Boom.

Wheel Loaders Integrated Toolcarriers

Specifications



MODEL	990 Series II		992G		994D	
Flywheel Power: Net	466 kW	625 hp	597 kW	800 hp	933 kW	1250 hp
Max.	503 kW	675 hp	—	—	—	—
Rated Payload*	15 t	16.5 T	21.7 t	24 T	34.5 t STD	38 T
					31.8 t H.L.	35 T
Gross Rated Bucket Payload*	23 100 kg	51,000 lb	33 100 kg	73,000 lb	55 800 kg STD	123,000 lb
					53 100 kg H.L.	117,000 lb
Engine Model	3412E DITA ATAAC		3508B DITA		3516B DITA	
Rated Engine RPM	2000		1750		1600	
Bore	137 mm	5.4"	170 mm	6.7"	170 mm	6.7"
Stroke	152 mm	6"	190 mm	7.5"	190 mm	7.5"
No. Cylinders	12		8		16	
Displacement	27 L	1649 in ³	34.5 L	2105 in ³	69 L	4210 in ³
Speeds Forward	km/h	mph	km/h	mph	km/h	mph
1st	7.0	4	6.6	4.1	7.3	4.6
2nd	12.1	7.5	11.5	7.1	12.9	8.0
3rd	20.8	13.0	19.9	12.4	22.6	14.1
Speeds Reverse						
1st	7.7	4.8	7.3	4.5	8.1	5.0
2nd	13.4	8.3	12.6	7.8	14.3	8.9
3rd	22.9	14.2	22.0	13.6	24.9	15.5
Hydraulic Cycle Time, Rated Load in Bucket:	Seconds		Seconds		Seconds	
Raise	9.2		9.12		12.5	
Dump	2.9		3.26		3.4	
Lower (Empty, Float Down)	3.8		3.47		4.0	
Total	15.9		15.85		19.9	
Tread Width	3.1 m	10'2"	3.3 m	10'10"	4.1 m	13'5"
Width Over Tires	4.1 m	13'5"	4.5 m	14'9"	5.45 m	17'11"
Ground Clearance	478 mm	18.8"	691 mm	27"	825 mm	32"
Fuel Tank Capacity	1125 L	297 U.S. gal	1610 L	425 U.S. gal	4641 L	1226 U.S. gal
Hydraulic Tank Capacity	174 L†	46 U.S. gal	—	—	—	—
Hydraulic System Capacity (includes tank)	435 L†	115 U.S. gal	—	—	—	—
Hydraulic Systems:						
Lift, Tilt, Fan	—	—	646 L	171 U.S. gal	723 L	191 U.S. gal
Tank Only	—	—	326 L	86 U.S. gal	656 L	173 U.S. gal
Steering and Brakes	—	—	231 L	61 U.S. gal	267 L	71 U.S. gal
Tank Only	—	—	159 L	42 U.S. gal	208 L	55 U.S. gal
Brake Cooling	—	—	—	—	42 L	11 U.S. gal
Tank Only	—	—	—	—	36 L	9.5 U.S. gal

*Changes in bucket weight, including field installed wear iron, can impact rated payload. Consult your Caterpillar dealer for assistance in selecting and configuring the proper bucket for the application. Caterpillar's Large Wheel Loader Payload Policy is a guideline intended to maximize wheel loader structural and component life. Caterpillar's Payload Policy is that the "Gross Bucket plus Payload Capacity" is the MAXIMUM weight that should be carried on the end of the Lift Arm/Boom.

†990 Series II has a separate hydraulic system for steering and engine cooling fan. System (including tank) 194 L (51 U.S. gal), tank only 132 L (35 U.S. gal).

Bucket Type	Ground Engaging Type	General Purpose					Multi-Purpose		
		Bare	Bolt-on Edges	Bolt-on Teeth	Weld-on Edges	Pin-on Tips	Bare	Bolt-on Edges	Bolt-on Teeth
Rated bucket capacity (\$)	m ³ yd ³	0.8 1.05	0.8 1.05	0.8 1.05	0.9 1.18	0.8 1.05	0.8 1.05	0.8 1.05	0.8 1.05
Struck capacity (\$)	m ³ yd ³	0.6 0.78	0.7 0.92	0.6 0.78	0.7 0.92	0.6 0.78	0.6 0.78	0.6 0.78	0.6 0.78
Bucket width	mm ft/in	1880 6'2"	1890 6'2"	1880 6'2"	1890 6'2"	1880 6'2"	1890 6'2"	1890 6'2"	1890 6'2"
Dump clearance at full lift and 43° discharge (\$)	mm ft/in	2425 7'11"	2391 7'11"	2425 7'11"	2356 7'9"	2425 7'11"	2425 7'11"	2391 7'10"	2425 7'11"
Reach at full lift and 43° discharge (\$)	mm ft/in	829 2'9"	842 2'9"	901 2'11"	879 2'11"	922 3'0"	829 2'9"	842 2'9"	904 3'0"
Reach at 43° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1070 3'6"	982 3'3"	1142 3'9"	1118 3'8"	1160 3'10"	1071 3'7"	1045 3'5"	1143 3'9"
Reach with lift arms horizontal and bucket level	mm ft/in	1912 6'3"	1945 6'5"	2014 6'7"	1995 6'6"	2040 6'8"	1912 6'3"	1945 6'5"	2014 6'7"
Digging depth (\$)	mm in	84 3.31	100 3.94	84 3.31	100 3.94	84 3.31	84 3.31	99 3.90	84 3.31
Overall length	mm ft/in	5310 17'5"	5355 17'7"	5412 17'9"	5405 17'9"	5437 17'10"	5309 17'5"	5354 17'7"	5411 17'9"
Overall height with bucket at full raise (\$)	mm ft/in	4170 13'8"	4170 13'8"	4170 13'8"	4170 13'8"	4170 13'8"	4205 13'10"	4205 13'10"	4205 13'10"
Loader clearance circle with bucket in carry position	m ft/in	8.33 27'4"	8.37 27'5"	8.33 27'4"	8.39 27'6"	8.33 27'4"	8.33 27'4"	8.36 27'5"	8.33 27'4"
Static tipping load, straight* (\$)	kg lb	3427 7550	3382 7450	3410 7510	3374 7430	3399 7490	3234 7130	3169 6980	3215 7080
Static tipping load, full turn* (\$)	kg lb	2962 6530	2917 6430	2944 6490	2909 6410	2934 6460	2765 6090	2702 5950	2746 6050
Breakout force (\$)	kN lb	45.4 10,210	43.2 9720	45.3 10,190	40.4 9090	45.2 10,170	44.5 10,010	42.3 9510	44.3 9960
Operating weight*	kg lb	5096 11,240	5131 11,310	5110 11,270	5138 11,330	5118 11,290	5343 11,780	5379 11,860	5357 11,810

*Static tipping load and operating weights shown are with implements, ROPS cab, 12.5-20 tires, full fuel tank, operator and 80 kg (176 lb) counterweight.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Limited slip rear axle	0	0	0	0
Enclosed ROPS (Comfort)	+ 2	+ 4	+ 1	+ 2
Enclosed ROPS (Deluxe)	+ 5	+ 11	+ 4	+ 9
Boom with load check valves	+ 12	+ 26	+ 2	+ 4
Third valve hydraulics	+ 11	+ 24	- 1	- 2
Counterweight (standard) removed	- 80	-176	-112	-247
Counterweight 150 kg (330 lb)	+ 150	+ 331	+ 151	+ 333
Wheel chock	+ 5	+ 11	+ 2	+ 4
Tool roll	+ 4	+ 9	+ 4	+ 9

Wheel Loaders Integrated Toolcarriers

Performance Data ● 906

Bucket Type	Ground Engaging Type	Multi-Purpose		High Dump			Side Dump		
		Weld-on Edges	Pin-on Tips	Bare	Bolt-on Edges	Bolt-on Teeth	Bare	Bolt-on Edges	Bolt-on Teeth
Rated bucket capacity (\$)	m ³ yd ³	0.8 1.05	0.8 1.05	0.7 0.92	0.7 0.92	0.7 0.92	0.7 0.92	0.7 0.92	0.7 0.92
Struck capacity (\$)	m ³ yd ³	0.7 0.92	0.6 0.78	0.6 0.78	0.6 0.78	0.6 0.78	0.5 0.65	0.6 0.78	0.5 0.65
Bucket width	mm ft/in	1890 6'2"	1890 6'2"	1887 6'2"	1887 6'2"	1887 6'2"	1880 6'2"	1880 6'2"	1880 6'2"
Dump clearance at full lift and 43° discharge (\$)	mm ft/in	2357 7'9"	2425 7'11"	2425 7'11"	2391 7'11"	2425 7'11"	2322 7'7"	2288 7'6"	2322 7'7"
Reach at full lift and 43° discharge (\$)	mm ft/in	879 2'11"	923 3'0"	829 2'9"	842 2'9"	904 3'0"	938 3'1"	951 3'1"	1013 3'4"
Reach at 43° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1061 3'6"	1161 3'10"	1070 3'6"	1039 3'5"	1082 3'7"	1087 3'7"	1067 3'6"	1091 3'7"
Reach with lift arms horizontal and bucket level	mm ft/in	1995 6'7"	2040 6'8"	1912 6'3"	1945 6'4"	2015 6'7"	2062 6'9"	2095 6'10"	2165 7'1"
Digging depth (\$)	mm in	99 3.90	84 3.31	84 3.31	100 3.94	84 3.31	84 3.31	100 3.94	84 3.31
Overall length	mm ft/in	5405 17'9"	5437 17'10"	5310 17'5"	5355 17'7"	5412 17'9"	5461 17'11"	5505 18'1"	5562 18'3"
Overall height with bucket at full raise (\$)	mm ft/in	4205 13'10"	4205 13'10"	4212 13'10"	4212 13'10"	4212 13'10"	4211 13'10"	4211 13'10"	4211 13'10"
Loader clearance circle with bucket in carry position	m ft/in	8.39 27'6"	8.33 27'4"	8.37 27'5"	8.40 27'7"	8.37 27'5"	8.41 27'7"	8.44 27'8"	8.41 27'7"
Static tipping load, straight* (\$)	kg lb	3147 6930	3205 7060	3252 7170	3188 7020	3234 7130	3038 6690	2979 6560	3020 6650
Static tipping load, full turn* (\$)	kg lb	2684 5910	2736 6030	2787 6140	2725 6000	2768 6100	2598 5720	2540 5600	2580 5680
Breakout force (\$)	kN lb	39.5 8880	44.2 9940	44.3 9960	42 9450	44.1 9920	36.3 8160	34.6 7780	36.1 8120
Operating weight*	kg lb	5380 11,860	5365 11,830	5279 11,640	5316 11,720	5294 11,670	5318 11,730	5355 11,810	5332 11,760

*Static tipping load and operating weights shown are with implements, ROPS cab, 12.5-20 tires, full fuel tank, operator and 80 kg (176 lb) counterweight.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Limited slip rear axle	0	0	0	0
Enclosed ROPS (Comfort)	+ 2	+ 4	+ 1	+ 2
Enclosed ROPS (Deluxe)	+ 5	+ 11	+ 4	+ 9
Boom with load check valves	+ 12	+ 26	+ 2	+ 4
Third valve hydraulics	+ 11	+ 24	- 1	- 2
Counterweight (standard) removed	- 80	-176	-112	-247
Counterweight 150 kg (330 lb)	+ 150	+ 331	+ 151	+ 333
Wheel chock	+ 5	+ 11	+ 2	+ 4
Tool roll	+ 4	+ 9	+ 4	+ 9

Bucket Type		Light Material		Stone Sieve			
		Bare	Bolt-on Edges	Bare	Bolt-on Edges	Bolt-on Teeth	
Ground Engaging Type	Rated bucket capacity (\$)	m ³	1.2	1.2	0.7	0.7	0.7
		yd ³	1.57	1.57	0.92	0.92	0.92
Struck capacity (\$)		m ³	1.0	1.0	0.5	0.6	0.5
		yd ³	1.31	1.31	0.65	0.78	0.65
Bucket width		mm	1950	1970	1880	1880	1880
		ft/in	6'5"	6'6"	6'2"	6'2"	6'2"
Dump clearance at full lift and 43° discharge (\$)		mm	2281	2247	2425	2391	2425
		ft/in	7'6"	7'4"	7'11"	7'10"	7'11"
Reach at full lift and 43° discharge (\$)		mm	982	995	829	842	903
		ft/in	3'3"	3'3"	2'9"	2'9"	3'0"
Reach at 43° discharge and 2130 mm (7'0") clearance (\$)		mm	1090	1068	1070	1054	1082
		ft/in	3'7"	3'6"	3'6"	3'5"	3'7"
Reach with lift arms horizontal and bucket level		mm	2122	2155	1912	1945	2014
		ft/in	7'0"	7'1"	6'3"	6'5"	6'7"
Digging depth (\$)		mm	84	100	84	100	84
		in	3.31	3.94	3.31	3.94	3.31
Overall length		mm	5520	5565	5310	5355	5412
		ft/in	18'1"	18'3"	17'5"	17'7"	17'9"
Overall height with bucket at full raise (\$)		mm	4314	4314	4037	4037	4037
		ft/in	14'2"	14'2"	13'3"	13'3"	13'3"
Loader clearance circle with bucket in carry position		m	8.51	8.56	8.33	8.36	8.33
		ft/in	27'11"	28'11"	27'4"	27'5"	27'4"
Static tipping load, straight* (\$)		kg	3327	3263	3353	3286	3335
		lb	7330	7190	7390	7240	7350
Static tipping load, full turn* (\$)		kg	2864	2802	2892	2828	2874
		lb	6310	6170	6370	6230	6330
Breakout force (\$)		kN	34.5	33	45.3	43	45.1
		lb	7760	7420	10,190	9670	10,140
Operating weight*		kg	5178	5216	5149	5188	5164
		lb	11,420	11,500	11,350	11,440	11,390

*Static tipping load and operating weights shown are with implements, ROPS cab, 12.5-20 tires, full fuel tank, operator and 80 kg (176 lb) counterweight.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Limited slip rear axle	0	0	0	0
Enclosed ROPS (Comfort)	+ 2	+ 4	+ 1	+ 2
Enclosed ROPS (Deluxe)	+ 5	+ 11	+ 4	+ 9
Boom with load check valves	+ 12	+ 26	+ 2	+ 4
Third valve hydraulics	+ 11	+ 24	- 1	- 2
Counterweight (standard) removed	- 80	-176	-112	-247
Counterweight 150 kg (330 lb)	+ 150	+ 331	+ 151	+ 333
Wheel chock	+ 5	+ 11	+ 2	+ 4
Tool roll	+ 4	+ 9	+ 4	+ 9

Wheel Loaders Integrated Toolcarriers

Performance Data ● 908

Bucket Type		General Purpose					Multi-Purpose			
		Bare	Bolt-on Edges	Bolt-on Teeth	Weld-on Edges	Pin-on Tips	Bare	Bolt-on Edges	Bolt-on Teeth	
Ground Engaging Type	Rated bucket capacity (\$)	m ³	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
		yd ³	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2
Struck capacity (\$)		m ³	0.805	0.833	0.805	0.877	0.805	0.717	0.741	0.717
		yd ³	1.04	1.083	1.047	1.14	1.047	0.932	0.963	0.932
Heaped capacity		m ³	0.998	1.034	0.998	1.083	0.998	0.908	0.940	0.908
		yd ³	1.297	1.344	1.297	1.408	1.297	1.18	1.222	1.18
Bucket width		mm	2060	2060	2060	2070	2060	2060	2060	2060
		ft/in	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"
Dump clearance at full lift and 43° discharge (\$)		mm	2645	2611	2645	2577	2645	2655	2621	2655
		ft/in	8'8"	8'7"	8'8"	8'5"	8'8"	8'9"	8'7"	8'9"
Reach at full lift and 43° discharge (\$)		mm	902	915	902	952	902	916	929	916
		ft/in	3'0"	3'0"	3'0"	3'1"	3'0"	3'0"	3'1"	3'0"
Reach at 43° discharge and 2130 mm (7'0") clearance (\$)		mm	1332	1324	1288	1338	1276	1354	1346	1310
		ft/in	4'4"	4'4"	4'3"	4'5"	4'2"	4'5"	4'5"	4'4"
Reach with lift arms horizontal and bucket level		mm	2047	2080	2047	2130	2047	2051	2083	2051
		ft/in	6'9"	6'10"	6'9"	7'0"	6'9"	6'9"	6'10"	6'9"
Digging depth (\$)		mm	88	104	88	104	88	70	86	70
		in	3.5	4.0	3.5	4.0	3.5	2.8	3.4	2.8
Overall length		mm	6012	6057	6012	6108	6012	6001	6047	6001
		ft/in	19'9"	19'10"	19'9"	20'0"	19'9"	19'8"	19'10"	19'8"
Overall height with bucket at full raise (\$)		mm	4506	4506	4506	4506	4506	4473	4473	4473
		ft/in	14'9"	14'9"	14'9"	14'9"	14'9"	14'8"	14'8"	14'8"
Loader clearance circle with bucket in carry position		m	8.98	9.02	8.98	9.04	8.98	8.98	9.01	8.98
		ft/in	29'6"	29'7"	29'6"	29'8"	29'6"	29'5"	29'7"	29'5"
Static tipping load, straight* (\$)		kg	4376	4307	4357	4278	4348	4226	4158	4207
		lb	9627	9475	9585	9412	9567	9297	9148	9255
Static tipping load, full turn* (\$)		kg	3759	3692	3740	3666	3730	3603	3538	3584
		lb	8270	8122	8228	8065	8206	7927	7784	7885
Breakout force (\$)		kN	57.9	55.2	57.7	51.8	57.6	56.9	54.2	56.7
		lb	13,028	12,420	12,983	11,655	12,960	12,803	12,195	12,758
Operating weight*		kg	6040	6081	6056	6087	6063	6255	6295	6270
		lb	13,290	13,380	13,320	13,390	13,050	13,760	13,850	13,790

*Static tipping load and operating weights shown are with implements, ROPS cab, 14.5-20 tires, full fuel tank, operator and 75 kg (165 lb) counterweight.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Limited slip rear axle	0	0	0	0
Enclosed ROPS (Comfort)	+ 2	+ 4	+ 1	+ 2
Enclosed ROPS (Deluxe)	+ 5	+ 11	+ 4	+ 9
Boom with load check valves	+ 12	+ 26	+ 2	+ 4
Third valve hydraulics	+ 11	+ 24	- 1	- 2
Counterweight (standard) removed	- 80	- 176	- 112	- 247
Counterweight 200 kg (440 lb)	+ 200	+ 441	+ 210	+ 463
Wheel chock	+ 5	+ 11	+ 2	+ 4
Tool roll	+ 4	+ 9	+ 4	+ 9

Bucket Type	Ground Engaging Type	Multi-Purpose		High Dump			Side Dump		
		Weld-on Edges	Pin-on Tips	Bare	Bolt-on Edges	Bolt-on Teeth	Bare	Bolt-on Edges	Bolt-on Teeth
Rated bucket capacity (\$)	m ³	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	yd ³	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Struck capacity (\$)	m ³	0.787	0.717	0.747	0.775	0.747	0.731	0.756	0.731
	yd ³	1.023	0.932	0.971	1.008	0.971	0.95	0.983	0.95
Heaped capacity	m ³	0.993	0.908	0.938	0.974	0.938	0.925	0.958	0.925
	yd ³	1.206	1.18	1.219	1.266	1.219	1.203	1.245	1.203
Bucket width	mm	2070	2060	2060	2060	2060	2060	2060	2060
	ft/in	6'9.5"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"	6'9"
Dump clearance at full lift and 43° discharge (\$)	mm	2586	2655	2603	2569	2603	2506	2472	2506
	ft/in	8'6"	8'9"	8'6"	8'5"	8'6"	8'3"	8'1"	8'3"
Reach at full lift and 43° discharge (\$)	mm	969	916	948	961	948	1053	1066	1053
	ft/in	3'2"	3'0"	3'1"	3'2"	3'1"	3'5"	3'6"	3'5"
Reach at 43° discharge and 2130 mm (7'0") clearance (\$)	mm	1363	1310	1353	1344	1307	1355	1381	1341
	ft/in	4'6"	4'4"	4'5"	4'5"	4'3"	4'5"	4'6"	4'5"
Reach with lift arms horizontal and bucket level	mm	2137	2051	2110	2142	2110	2253	2286	2253
	ft/in	7'0"	6'9"	6'11"	7'0"	6'11"	7'5"	7'6"	7'5"
Digging depth (\$)	mm	85	70	86	102	86	85	101	85
	in	3.3	2.8	3.4	4.0	3.4	3.3	4.0	3.3
Overall length	mm	6099	6001	6073	6119	6073	6216	6262	6216
	ft/in	20'0"	19'8"	19'11"	20'1"	19'11"	20'5"	20'7"	20'5"
Overall height with bucket at full raise (\$)	mm	4473	4473	4872	4872	4547	4547	4547	4547
	ft/in	14'8"	14'8"	16'0"	16'0"	14'11"	14'11"	14'11"	14'11"
Loader clearance circle with bucket in carry position	m	9.04	8.98	9.01	9.05	9.01	9.08	9.12	9.08
	ft/in	29'8"	29'5"	29'7"	29'8"	29'6"	29'9"	29'11"	29'9"
Static tipping load, straight* (\$)	kg	4127	4197	4132	4064	4114	3971	3870	3917
	lb	9079	9233	9090	8941	9051	8736	8514	8617
Static tipping load, full turn* (\$)	kg	3510	3575	3523	3457	3436	3385	3288	3331
	lb	7722	7865	7751	7605	7559	7447	7234	7328
Breakout force (\$)	kN	50.7	56.6	52.4	50.1	52.2	52.0	42.3	43.9
	lb	11,408	12,735	11,790	11,270	11,745	11,700	9517	9877
Operating weight*	kg	6301	6278	6231	6272	5227	6232	6310	6285
	lb	13,860	13,810	13,710	13,800	11,500	13,710	13,880	13,830

*Static tipping load and operating weights shown are with implements, ROPS cab, 14.5-20 tires, full fuel tank, operator and 75 kg (165 lb) counterweight.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Limited slip rear axle	0	0	0	0
Enclosed ROPS (Comfort)	+ 2	+ 4	+ 1	+ 2
Enclosed ROPS (Deluxe)	+ 5	+ 11	+ 4	+ 9
Boom with load check valves	+ 12	+ 26	+ 2	+ 4
Third valve hydraulics	+ 11	+ 24	- 1	- 2
Counterweight (standard) removed	- 80	- 176	- 112	- 247
Counterweight 200 kg (440 lb)	+ 200	+ 441	+ 210	+ 463
Wheel chock	+ 5	+ 11	+ 2	+ 4
Tool roll	+ 4	+ 9	+ 4	+ 9

Wheel Loaders Integrated Toolcarriers

Performance Data ● 908

Bucket Type		Light Material		Stone Sieve			
		Bare	Bolt-on Edges	Bare	Bolt-on Edges	Bolt-on Teeth	
Ground Engaging Type	Rated bucket capacity (\$)	m ³ yd ³	1.5 1.95	1.5 1.95	0.9 1.2	0.9 1.2	0.9 1.2
	Struck capacity (\$)	m ³ yd ³	1.235 1.606	1.261 1.639	0.718 0.933	0.749 0.974	0.718 0.933
Heaped capacity		m ³ yd ³	1.498 1.947	1.535 1.996	0.906 1.178	0.946 1.23	0.906 1.178
	Bucket width	mm ft/in	2060 6'9"	2060 6'9"	2060 6'9"	2060 6'9"	2060 6'9"
Dump clearance at full lift and 43° discharge (\$)		mm ft/in	2440 8'0"	2406 7'11"	2645 8'8"	2611 8'7"	2645 8'8"
	Reach at full lift and 43° discharge (\$)	mm ft/in	1120 3'8"	1133 3'9"	901 2'11"	914 3'0"	901 2'11"
Reach at 43° discharge and 2130 mm (7'0") clearance (\$)		mm ft/in	1410 4'8"	1397 4'7"	1332 4'4"	1324 4'4"	1288 4'3"
	Reach with lift arms horizontal and bucket level	mm ft/in	2347 7'8"	2379 7'10"	2047 6'9"	2080 6'10"	2047 6'9"
Digging depth (\$)		mm in	88 3.5	104 4.0	88 3.5	104 4.0	88 3.5
	Overall length	mm ft/in	6312 20'9"	6357 20'10"	6012 19'9"	6057 19'0"	6012 19'9"
Overall height with bucket at full raise (\$)		mm ft/in	4644 15'3"	4644 15'3"	4383 14'5"	4383 14'5"	4383 14'5"
	Loader clearance circle with bucket in carry position	m ft/in	9.13 29'11"	9.17 30'1"	8.98 29'6"	9.02 29'7"	8.98 29'6"
Static tipping load, straight* (\$)		kg lb	4197 9233	4129 9084	4303 9467	4232 9310	4285 9427
	Static tipping load, full turn* (\$)	kg lb	3588 7894	3523 7751	3688 8114	3620 7964	3670 8074
Breakout force (\$)		kN lb	40.6 9135	39.1 8798	57.7 12,983	55.0 12,375	57.5 12,938
	Operating weight*	kg lb	6144 13,520	6184 13,600	6109 13,440	6148 13,530	6123 13,470

*Static tipping load and operating weights shown are with implements, ROPS cab, 14.5-20 tires, full fuel tank, operator and 75 kg (165 lb) counterweight.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Limited slip rear axle	0	0	0	0
Enclosed ROPS (Comfort)	+ 2	+ 4	+ 1	+ 2
Enclosed ROPS (Deluxe)	+ 5	+ 11	+ 4	+ 9
Boom with load check valves	+ 12	+ 26	+ 2	+ 4
Third valve hydraulics	+ 11	+ 24	- 1	- 2
Counterweight (standard) removed	- 80	- 176	- 112	- 247
Counterweight 200 kg (440 lb)	+ 200	+ 441	+ 210	+ 463
Wheel chock	+ 5	+ 11	+ 2	+ 4
Tool roll	+ 4	+ 9	+ 4	+ 9

Bucket Type	Ground Engaging Type	General Purpose						Penetration	
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth		Flush Mounted Teeth	
Rated bucket capacity (\$)	m ³	1.3	1.4	1.3	1.4	1.2	1.3	1.3	1.4
	yd ³	1.7	1.8	1.7	1.8	1.6	1.7	1.7	1.8
Struck capacity (\$)	m ³	1.1	1.2	1.1	1.2	1.0	1.1	1.1	1.2
	yd ³	1.4	1.5	1.4	1.5	1.3	1.5	1.5	1.5
Bucket width	mm	2401	2401	2424	2424	2424	2424	2434	2434
	ft/in	7'10.5"	7'10.5"	7'11.4"	7'11.4"	7'11.4"	7'11.4"	7'11.8"	7'11.8"
Dump clearance at full lift and 45° discharge (\$)	mm	2658	2623	2658	2630	2714	2679	2679	2679
	ft/in	8'9"	8'7"	8'9"	8'7"	8'11"	8'10"	8'10"	8'10"
Reach at full lift and 45° discharge (\$)	mm	973	1008	966	1001	943	979	979	979
	ft/in	3'2"	3'4"	3'2"	3'3"	3'1"	3'3"	3'3"	3'3"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm	1330	1348	1282	1297	1259	1275	1287	1249
	ft/in	4'4"	4'5"	4'2"	4'3"	4'2"	4'2"	4'3"	4'1"
Reach with lift arms horizontal and bucket level	mm	1980	2030	1970	2020	1920	1970	1970	1970
	ft/in	6'6"	6'8"	6'6"	6'8"	6'4"	6'6"	6'6"	6'6"
Digging depth (\$)	mm	89	89	89	89	70	70	70	70
	in	3.5	3.5	3.5	3.5	2.8	2.8	2.8	2.8
Overall length	mm	6229	6279	6328	6378	6310	6360	6358	6438
	ft/in	20'5"	20'7"	20'9"	20'11"	20'8"	20'10"	20'10"	21'1"
Overall height with bucket at full raise (\$)	mm	4390	4442	4390	4442	4390	4442	4442	4442
	ft/in	14'5"	14'7"	14'5"	14'7"	14'5"	14'7"	14'7"	14'7"
Loader clearance circle with bucket in carry position	m	10.34	10.37	10.42	10.45	10.42	10.45	10.44	10.49
	ft/in	33'11"	34'0"	34'2"	34'4"	34'2"	34'4"	34'3"	34'5"
Static tipping load, straight* (\$)	kg	6098	6069	6059	6029	6169	6166	6183	6011
	lb	13,446	13,382	13,360	13,294	13,603	13,602	13,634	13,254
Static tipping load, full 40° turn* (\$)	kg	5323	5295	5284	5256	5415	5387	5404	5232
	lb	11,737	11,675	11,651	11,589	11,940	11,878	11,916	11,537
Breakout force (\$)	kg	6367	5971	6415	6010	6930	6469	6484	6374
	lb	14,007	13,136	14,113	13,222	15,246	14,232	14,265	14,055
Operating weight*	kg	7378	7391	7409	7422	7336	7349	7336	7500
	lb	16,262	16,297	16,337	16,366	16,176	16,205	16,176	16,538

*Static tipping load and operating weights shown include lubricants, full fuel tank, ROPS cab, 80 kg (176 lb) operator and 17.5-R25 (L2 equivalent) tires.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Air conditioner	+ 55	+ 121	+ 71	+ 156
Canopy, ROPS (less cab)	- 199	- 438	- 174	- 383
Counterweight, 150 kg (330 lb)	+ 152	+ 334	+ 287	+ 631
Ride control	+ 32	+ 70	+ 6	+ 13
Supplemental steering	+ 30	+ 66	+ 44	+ 97
Tires & rims, 15.5-25, 12 PR (L-2)	- 159	- 351	- 99	- 218
Tires & rims, 15.5-25, 12 PR (L-3)	- 78	- 172	- 48	- 106
Tires & rims, 15.5-R25, radial (L-2 equivalent)	- 84	- 185	- 52	- 114
Tires & rims, 15.5-R25, radial (L-3 equivalent)	- 36	- 79	- 23	- 51
Tires & rims, 17.5-25, 12 PR (L-2)	- 126	- 277	- 78	- 172
Tires & rims, 17.5-25, 12 PR (L-3)	+ 12	+ 26	+ 7	+ 15
Tires & rims, 17.5-R25, radial (L-3 equivalent)	+ 156	+ 343	+ 96	+ 211
Tires & rims, 17.5-R25, radial (L-2/L-3 equivalent)	+ 95	+ 209	+ 58	+ 128

Wheel Loaders Integrated Toolcarriers

Performance Data

- IT14G
- General Purpose Buckets

Bucket Type	General Purpose		
		Bolt-on Teeth	Corner Guard or Bolt-on Edge
Cutting Edge			
Heaped capacity	m ³	1.2	1.3
	yd ³	1.6	1.7
Struck capacity	m ³	1.0	1.1
	yd ³	1.3	1.4
Bucket width	mm	2424	2401
	ft/in	7'11.4"	7'10.5"
Dump clearance at full lift and 45° discharge	mm	2975	2920
	ft/in	9'9"	9'7"
Reach at 45° discharge and 2130 mm (7'0") clearance	mm	1351	1425
	ft/in	4'5"	4'8"
Reach at full lift and 45° discharge	mm	757	787
	ft/in	2'6"	2'7"
Reach with lift arms horizontal and bucket level	mm	2090	2150
	ft/in	6'10"	7'1"
Digging depth	mm	156	175
	in	6.1	6.9
Overall length	mm	6506	6424
	ft/in	21'4"	21'1"
Overall height with bucket at full raise	mm	4801	4801
	ft/in	15'9"	15'9"
Loader clearance circle with bucket in carry position	m	10.47	10.4
	ft/in	34'4"	34'1"
Static tipping load, straight**	kg	5637	5541
	lb	12,400	12,210
Static tipping load, full turn**	kg	4882	4792
	lb	10,760	10,560
Breakout force*	kN	82.9	77
	lb	18,640	17,340
Operating weight**	kg	7990	8032
	lb	17,620	17,770

*Breakout force is measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot in accordance with SAE J732 JUN92.

**Operating weight and static tipping load include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— IT14G includes high speed version, standard counterweight and 17.5-R25 tires.

Machine stability is affected by the tire size, tire ballast and attachments.

Performance Data

● IT14G

- Pallet Forks ● Material Handling Arm

Wheel Loaders
Integrated Toolcarriers

		Pallet Forks		
Fork tine length	mm ft/in	1050 3'5"	1200 3'11"	1350 4'5"
Ground to top of tine clearance	mm ft/in	3708 12'2"	3708 12'2"	3708 12'2"
Reach with lift arms horizontal and forks level	mm ft/in	1490 4'11"	1490 4'11"	1490 4'11"
Overall length	mm ft/in	6723 22'1"	6873 22'7"	7023 23'1"
Static tipping load, straight*	kg lb	4447 9800	4309 9500	4179 9200
Static tipping load, full turn*	kg lb	3853 8490	3734 8230	3620 7980
Operating weight* 4 forward, 3 reverse	kg lb	7898 17,400	7915 17,450	7928 17,480

*Static tipping load and operating weight include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— IT14G includes high speed version, standard counterweight and 17.5R25 tires.

Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with pallet fork is: SAE J1197 FEB91; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn static tipping load on rough terrain; 80% of full turn static tipping load on firm and level ground, or the hydraulic/structural limit.

		Material Handling Arm		
Handling Arm Position		Retracted	Mid-position	Extended
Operating load — full articulation	kg lb	1370 3021	1076 2373	888 1958
Static tipping load, straight*	kg lb	3158 6963	2484 5477	2051 4522
Static tipping load, full turn*	kg lb	2740 6042	2153 4747	1777 3918
Operating weight* 4 forward, 3 reverse	kg lb	7770 17,130	7770 17,130	7770 17,130

*Static tipping load and operating weight include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— IT14G includes high speed version, standard counterweight and 17.5-R25 tires.

Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with material handling arm is 50% of full turn static tipping load, or the hydraulic/structural limit.

Wheel Loaders Integrated Toolcarriers

Performance Data ● 924Gz

Bucket Type		General Purpose					
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth	
Ground Engaging Type							
Rated bucket capacity	m ³ yd ³	1.8 2.3	2.1 2.7	1.8 2.3	2.1 2.7	1.7 2.2	2.0 2.6
Struck capacity	m ³ yd ³	1.5 2.0	1.7 2.2	1.5 2.0	1.7 2.2	1.4 1.8	1.6 2.1
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2828 9'4"	2759 9'1"	2724 9'0"	2655 8'9"	2724 9'0"	2655 8'9"
Reach at full tilt and 45° discharge (\$)	mm ft/in	790 2'8"	859 2'10"	894 2'11"	962 3'2"	894 2'11"	962 3'2"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1318 4'4"	1347 4'6"	1360 4'6"	1385 4'7"	1360 4'6"	1385 4'7"
Reach with lift arms horizontal and bucket level	mm ft/in	2058 6'10"	2155 7'1"	2204 7'3"	2301 7'7"	2204 7'3"	2301 7'7"
Digging depth (\$)	mm in	42 1.7	50 2.0	42 1.7	50 2.0	17 0.7	25 1.0
Overall length	mm ft/in	6890 22'7"	6993 22'11"	7036 23'1"	7138 23'5"	7017 23'0"	7120 23'4"
Overall height with bucket at full raise (\$)	mm ft/in	4811 15'9"	4938 16'3"	4811 15'10"	4938 16'3"	4811 15'10"	4938 16'3"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	5609 18'5"	5638 18'6"	5670 18'8"	5700 18'9"	5670 18'8"	5700 18'9"
Static tipping load straight (\$)	kg lb	8702 19,184	8619 19,001	8534 18,814	8448 18,624	8696 19,171	8636 19,039
Static tipping load with 40° turn (\$)	kg lb	7642 16,847	7562 16,671	7473 16,475	7391 16,294	7628 16,816	7568 16,684
Breakout force (\$)	kg lb	9876 21,772	8902 19,625	9756 21,508	8782 19,361	10,660 23,501	9535 21,021
Operating weight	kg lb	10,846 23,912	10,899 24,029	10,981 24,210	10,944 24,128	10,896 24,022	10,949 24,139

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without Air conditioner	- 32	- 70	- 29	- 64
Canopy, ROPS (less cab)	- 199	- 439	- 182	- 402
Counterweight, 175 kg (385 lb) (removal)	- 175	- 386	- 300	- 662
Without Guard, crankcase	- 15	- 33	- 21	- 47
Without Guard, driveshaft	- 43	- 95	- 5	- 12
Without Guard, power train	- 52	- 114	- 51	- 113
Without Ride Control System	- 40	- 88	- 29	- 64
Without Secondary steering	- 37	- 81	- 33	- 73
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 652	- 1437	- 408	- 900
17.5-25, 12PR (L-3)	- 580	- 1279	- 363	- 801
17.5-25, Radial (L-2)	- 612	- 1349	- 383	- 845
17.5-25, Radial (L-3)	- 512	- 1129	- 320	- 706
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 528	- 1164	- 330	- 728
17.5-25, 12PR (L-3)	- 456	- 1005	- 285	- 629
17.5-25, Radial (L-2)	- 488	- 1076	- 305	- 673
17.5-25, Radial (L-3)	- 388	- 855	- 243	- 536
550/65 R25, Radial (L-2)	- 196	- 432	- 123	- 272
550/65 R25, Radial (L-3)	- 136	- 300	- 85	- 188
20.5-25, 12PR (L-2)	- 240	- 529	- 150	- 331
20.5-25, 12PR (L-3)	- 36	- 79	- 22	- 49
20.5 R25, Radial (L-2)	- 172	- 379	- 108	- 239
20.5 R25, Radial (L-3)	0	0	0	0

Performance Data
 ● 924G Standard VersaLink Pin On

Wheel Loaders
 Integrated Toolcarriers

Bucket Type		General Purpose						Waste/Ag	Woodchip
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth		Bolt-on Cutting Edge	Bolt-on Cutting Edge
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	1.8 2.3	2.1 2.7	1.8 2.3	2.1 2.7	1.7 2.2	2.0 2.6	2.8 3.6	5.0 6.5
Struck capacity	m ³ yd ³	1.5 2.0	1.7 2.2	1.5 2.0	1.7 2.2	1.4 1.8	1.6 2.1	2.3 3.0	4.1 5.4
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2550 8'4"	3392 11'2"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2918 9'7"	2849 9'5"	2814 9'3"	2745 9'1"	2814 9'3"	2745 9'1"	2713 8'11"	2586 8'6"
Reach at full tilt and 45° discharge (\$)	mm ft/in	885 2'11"	953 3'2"	988 3'3"	1056 3'6"	988 3'3"	1056 3'6"	1091 3'7"	1048 3'6"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1451 4'10"	1484 4'11"	1500 5'0"	1529 5'1"	1500 5'0"	1529 5'1"	1544 5'1"	1417 4'8"
Reach with lift arms horizontal and bucket level	mm ft/in	2155 7'1"	2252 7'5"	2301 7'7"	2398 7'11"	2301 7'7"	2398 7'11"	2441 8'1"	2529 8'4"
Digging depth (\$)	mm in	64 2.5	72 2.8	64 2.5	72 2.8	39 1.5	47 1.9	89 3.5	89 3.5
Overall length	mm ft/in	7028 23'1"	7132 23'5"	7094 23'4"	7278 23'11"	7154 23'6"	7257 23'10"	7339 24'1"	7423 24'5"
Overall height with bucket at full raise (\$)	mm ft/in	5088 16'9"	5200 17'1"	5088 16'9"	5200 17'1"	5088 16'9"	5200 17'1"	5322 17'6"	5569 18'4"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	5568 18'3"	5595 18'4"	5625 18'5"	5653 18'7"	5625 18'5"	5653 18'7"	5651 18'6"	6056 19'10"
Static tipping load straight (\$)	kg lb	8720 19,224	8647 19,063	8554 18,858	8419 18,561	8740 19,269	8585 18,927	8382 18,479	8045 17,736
Static tipping load with 40° turn (\$)	kg lb	7626 16,813	7557 16,660	7459 16,444	7330 16,160	7635 16,832	7495 16,524	7309 16,114	6974 15,375
Breakout force (\$)	kg lb	11 452 25,247	10 405 22,939	11 330 24,978	10 243 22,582	12 251 27,008	11 052 24,365	8757 19,305	8050 17,747
Operating weight	kg lb	11 213 24,721	11 241 24,783	11 349 25,021	11 423 25,184	11 263 24,831	11 291 24,893	11 357 25,039	11 695 25,784

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without Air conditioner	- 32	- 70	- 27	- 60
Canopy, ROPS (less cab)	- 199	- 439	- 166	- 366
Counterweight, 175 kg (385 lb) (removal)	- 175	- 386	- 273	- 602
Without Guard, crankcase	- 15	- 33	- 19	- 42
Without Guard, driveshaft	- 17	- 37	- 5	- 12
Without Guard, power train	- 52	- 114	- 47	- 104
Without Ride Control System	- 40	- 88	- 27	- 60
Without Secondary steering	- 37	- 81	- 31	- 69
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 652	- 1437	- 371	- 818
17.5-25, 12PR (L-3)	- 580	- 1279	- 330	- 728
17.5-25, Radial (L-2)	- 612	- 1349	- 348	- 768
17.5-25, Radial (L-3)	- 512	- 1129	- 292	- 644
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 528	- 1164	- 301	- 664
17.5-25, 12PR (L-3)	- 456	- 1005	- 260	- 574
17.5-25, Radial (L-2)	- 488	- 1076	- 278	- 613
17.5-25, Radial (L-3)	- 388	- 855	- 221	- 488
550/65 R25, Radial (L-2)	- 196	- 432	- 112	- 247
550/65 R25, Radial (L-3)	- 136	- 300	- 78	- 172
20.5-25, 12PR (L-2)	- 240	- 529	- 137	- 303
20.5-25, 12PR (L-3)	- 36	- 79	- 21	- 47
20.5 R25, Radial (L-2)	- 172	- 379	- 98	- 217
20.5 R25, Radial (L-3)	0	0	0	0

Wheel Loaders Integrated Toolcarriers

Performance Data ● 924G High Lift VersaLink Pin On

Bucket Type		General Purpose						Waste/Ag	Woodchip
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth		Bolt-on Cutting Edge	Bolt-on Cutting Edge
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	1.8 2.3	2.1 2.7	1.8 2.3	2.1 2.7	1.7 2.2	2.0 2.6	2.8 3.6	5.0 6.5
Struck capacity	m ³ yd ³	1.5 2.0	1.7 2.2	1.5 2.0	1.7 2.2	1.4 1.8	1.6 2.1	2.3 3.0	4.1 5.4
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2550 8'4"	3392 11'2"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3426 11'3"	3358 11'1"	3322 10'11"	3253 10'9"	3322 10'11"	3253 10'9"	3221 10'7"	3093 10'2"
Reach at full tilt and 45° discharge (\$)	mm ft/in	886 2'11"	954 3'2"	989 3'3"	1057 3'6"	989 3'3"	1057 3'6"	1093 3'7"	1049 3'5"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1876 6'2"	1914 6'3"	1933 6'4"	1968 6'5"	1933 6'4"	1968 6'5"	1987 6'6"	1875 6'2"
Reach with lift arms horizontal and bucket level	mm ft/in	2546 8'4"	2643 8'8"	2692 8'10"	2789 9'2"	2692 8'10"	2789 9'2"	2836 9'4"	2920 9'7"
Digging depth (\$)	mm in	74 2.9	82 3.2	74 2.9	82 3.2	49 1.9	57 2.2	99 3.9	99 3.9
Overall length	mm ft/in	7518 24'8"	7620 25'0"	7664 25'2"	7766 25'6"	7649 25'1"	7749 25'5"	7965 26'2"	7909 25'11"
Overall height with bucket at full raise (\$)	mm ft/in	5595 18'4"	5707 18'9"	5595 18'4"	5707 18'9"	5595 18'4"	5707 18'9"	5830 19'2"	6076 19'11"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	5801 19'0"	5831 19'2"	5862 19'3"	5892 19'4"	5862 19'3"	5892 19'4"	5892 19'4"	6285 20'7"
Static tipping load straight (\$)	kg lb	7107 15,668	7048 15,538	6946 15,313	6884 15,177	7103 15,660	6988 15,406	6827 15,051	6494 14,317
Static tipping load with 40° turn (\$)	kg lb	6188 13,642	6131 13,517	6026 13,285	5968 13,157	6176 13,616	6071 13,384	5923 13,058	5591 12,326
Breakout force (\$)	kg lb	11 445 25,232	10 396 22,919	11 332 24,982	10 282 22,668	12 268 27,046	11 064 24,392	8747 19,283	8050 17,747
Operating weight	kg lb	11 300 24,913	11 328 24,975	11 435 25,210	11 463 25,272	11 349 25,021	11 377 25,083	11 446 25,235	11 781 25,973

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without Air conditioner	- 32	- 70	- 27	- 60
Canopy, ROPS (less cab)	- 199	- 439	- 166	- 366
Counterweight, 175 kg (385 lb) (removal)	- 175	- 386	- 273	- 602
Without Guard, crankcase	- 15	- 33	- 19	- 42
Without Guard, driveshaft	- 17	- 37	- 5	- 12
Without Guard, power train	- 52	- 114	- 47	- 104
Without Ride Control System	- 40	- 88	- 27	- 60
Without Secondary steering	- 37	- 81	- 31	- 69
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 652	- 1437	- 371	- 818
17.5-25, 12PR (L-3)	- 580	- 1279	- 330	- 728
17.5-25, Radial (L-2)	- 612	- 1349	- 348	- 768
17.5-25, Radial (L-3)	- 512	- 1129	- 292	- 644
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 528	- 1164	- 301	- 664
17.5-25, 12PR (L-3)	- 456	- 1005	- 260	- 574
17.5-25, Radial (L-2)	- 488	- 1076	- 278	- 613
17.5-25, Radial (L-3)	- 388	- 855	- 221	- 488
550/65 R25, Radial (L-2)	- 196	- 432	- 112	- 247
550/65 R25, Radial (L-3)	- 136	- 300	- 78	- 172
20.5-25, 12PR (L-2)	- 240	- 529	- 137	- 303
20.5-25, 12PR (L-3)	- 36	- 79	- 21	- 47
20.5 R25, Radial (L-2)	- 172	- 379	- 98	- 217
20.5 R25, Radial (L-3)	0	0	0	0

Performance Data
 ● 924G Standard VersaLink Hook On

Wheel Loaders
 Integrated Toolcarriers

Bucket Type		General Purpose						Waste/Ag	Woodchip
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth		Bolt-on Cutting Edge	Bolt-on Cutting Edge
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	1.8 2.3	2.1 2.7	1.8 2.3	2.1 2.7	1.7 2.2	2.0 2.6	2.8 3.6	5.0 6.5
Struck capacity	m ³ yd ³	1.5 2.0	1.7 2.2	1.5 2.0	1.7 2.2	1.4 1.8	1.6 2.1	2.3 3.0	4.1 5.4
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2550 8'4"	3392 11'2"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2828 9'4"	2759 9'1"	2724 9'0"	2655 8'9"	2724 9'0"	2655 8'9"	2623 8'8"	2512 8'3"
Reach at full tilt and 45° discharge (\$)	mm ft/in	992 3'4"	1060 3'6"	1095 3'8"	1163 3'10"	1095 3'8"	1163 3'10"	1198 4'0"	1158 3'10"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1515 5'0"	1545 5'1"	1558 5'2"	1583 5'3"	1558 5'2"	1583 5'3"	1596 5'3"	1477 4'11"
Reach with lift arms horizontal and bucket level	mm ft/in	2295 7'7"	2392 7'11"	2441 8'1"	2538 8'4"	2441 8'1"	2538 8'4"	2585 8'6"	2659 8'9"
Digging depth (\$)	mm in	64 2.5	72 2.8	64 2.5	72 2.8	39 1.5	47 1.9	89 3.5	64 2.5
Overall length	mm ft/in	7168 23'7"	7272 23'11"	7168 23'7"	7418 24'5"	7291 24'0"	7397 24'4"	7479 24'7"	7531 24'9"
Overall height with bucket at full raise (\$)	mm ft/in	5178 16'11"	5288 17'5"	5178 17'0"	5288 17'5"	5178 17'0"	5288 17'5"	5410 17'9"	5671 18'8"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	5603 18'5"	5631 18'6"	5662 18'7"	5690 18'8"	5662 18'7"	5690 18'8"	5689 18'8"	6081 19'11"
Static tipping load straight (\$)	kg lb	8286 18,268	8195 18,067	8120 17,902	7969 17,569	8299 18,296	8134 17,932	7946 17,518	7682 16,936
Static tipping load with 40° turn (\$)	kg lb	7232 15,944	7144 15,750	7065 15,576	6919 15,254	7234 15,948	7083 15,615	6910 15,234	6708 14,789
Breakout force (\$)	kg lb	9956 21,949	9130 20,128	9835 21,682	8970 19,775	10,545 23,247	9617 21,201	7806 17,209	7222 15,921
Operating weight	kg lb	11,335 24,990	11,383 25,096	11,470 25,288	11,567 25,502	11,384 25,098	11,433 25,206	11,497 25,347	11,861 26,150

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without Air conditioner	- 32	- 70	- 27	- 60
Canopy, ROPS (less cab)	- 199	- 439	- 166	- 366
Counterweight, 175 kg (385 lb) (removal)	- 175	- 386	- 273	- 602
Without Guard, crankcase	- 15	- 33	- 19	- 42
Without Guard, driveshaft	- 17	- 37	- 5	- 12
Without Guard, power train	- 52	- 114	- 47	- 104
Without Ride Control System	- 40	- 88	- 27	- 60
Without Secondary steering	- 37	- 81	- 31	- 69
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 652	- 1437	- 371	- 818
17.5-25, 12PR (L-3)	- 580	- 1279	- 330	- 728
17.5-25, Radial (L-2)	- 612	- 1349	- 348	- 768
17.5-25, Radial (L-3)	- 512	- 1129	- 292	- 644
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 528	- 1164	- 301	- 664
17.5-25, 12PR (L-3)	- 456	- 1005	- 260	- 574
17.5-25, Radial (L-2)	- 488	- 1076	- 278	- 613
17.5-25, Radial (L-3)	- 388	- 855	- 221	- 488
550/65 R25, Radial (L-2)	- 196	- 432	- 112	- 247
550/65 R25, Radial (L-3)	- 136	- 300	- 78	- 172
20.5-25, 12PR (L-2)	- 240	- 529	- 137	- 303
20.5-25, 12PR (L-3)	- 36	- 79	- 21	- 47
20.5 R25, Radial (L-2)	- 172	- 379	- 98	- 217
20.5 R25, Radial (L-3)	0	0	0	0

Wheel Loaders Integrated Toolcarriers

Performance Data ● 924G High Lift VersaLink Hook On

Bucket Type		General Purpose						Waste/Ag	Woodchip
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth		Bolt-on Cutting Edge	Bolt-on Cutting Edge
Ground Engaging Type									
Rated bucket capacity	m ³ yd ³	1.8 2.3	2.1 2.7	1.8 2.3	2.1 2.7	1.7 2.2	2.0 2.6	2.8 3.6	5.0 6.5
Struck capacity	m ³ yd ³	1.5 2.0	1.7 2.2	1.5 2.0	1.7 2.2	1.4 1.8	1.6 2.1	2.3 3.0	4.1 5.4
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2550 8'4"	3392 11'2"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3335 11'0"	3266 10'9"	3231 10'8"	3162 10'5"	3231 10'8"	3162 10'5"	3130 10'4"	3019 9'11"
Reach at full tilt and 45° discharge (\$)	mm ft/in	993 3'3"	1061 3'6"	1096 3'7"	1165 3'10"	1096 3'7"	1165 3'10"	1199 3'11"	1158 3'10"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1946 6'5"	1981 6'6"	1999 6'7"	2031 6'8"	1999 6'7"	2031 6'8"	2048 6'9"	1944 6'5"
Reach with lift arms horizontal and bucket level	mm ft/in	2686 8'10"	2783 9'2"	2832 9'3"	2929 9'7"	2832 9'3"	2929 9'7"	2976 9'9"	3049 10'0"
Digging depth (\$)	mm in	75 3.0	83 3.3	75 3.0	83 3.3	50 2.0	58 2.3	100 3.9	75 3.0
Overall length	mm ft/in	7659 25'2"	7761 25'6"	7805 25'7"	7907 25'11"	7787 25'7"	7890 25'11"	7965 26'2"	8022 26'4"
Overall height with bucket at full raise (\$)	mm ft/in	5684 18'8"	5794 19'0"	5684 18'8"	5794 19'0"	5684 18'8"	5794 19'0"	5917 19'5"	6178 20'3"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	5840 19'2"	5870 19'3"	5902 19'4"	5933 19'6"	5902 19'4"	5933 19'6"	5934 19'6"	6311 20'8"
Static tipping load straight (\$)	kg lb	6717 14,809	6638 14,634	6556 14,454	6475 14,275	6708 14,789	6578 14,502	6428 14,171	6139 13,534
Static tipping load with 40° turn (\$)	kg lb	5880 12,963	5803 12,793	5718 12,606	5640 12,434	5863 12,926	5743 12,661	5605 12,357	5309 11,704
Breakout force (\$)	kg lb	9956 21,949	9130 20,128	9842 21,698	9014 19,872	10,565 23,291	9635 21,241	7802 17,200	7241 15,963
Operating weight	kg lb	11,421 25,180	11,470 25,288	11,556 25,477	11,602 25,579	11,471 25,290	11,520 25,398	11,583 25,537	11,947 26,339

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without Air conditioner	- 32	- 70	- 27	- 60
Canopy, ROPS (less cab)	- 199	- 439	- 166	- 366
Counterweight, 175 kg (385 lb) (removal)	- 175	- 386	- 273	- 602
Without Guard, crankcase	- 15	- 33	- 19	- 42
Without Guard, driveshaft	- 17	- 37	- 5	- 12
Without Guard, power train	- 52	- 114	- 47	- 104
Without Ride Control System	- 40	- 88	- 27	- 60
Without Secondary steering	- 37	- 81	- 31	- 69
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 652	- 1437	- 371	- 818
17.5-25, 12PR (L-3)	- 580	- 1279	- 330	- 728
17.5-25, Radial (L-2)	- 612	- 1349	- 348	- 768
17.5-25, Radial (L-3)	- 512	- 1129	- 292	- 644
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 528	- 1164	- 301	- 664
17.5-25, 12PR (L-3)	- 456	- 1005	- 260	- 574
17.5-25, Radial (L-2)	- 488	- 1076	- 278	- 613
17.5-25, Radial (L-3)	- 388	- 855	- 221	- 488
550/65 R25, Radial (L-2)	- 196	- 432	- 112	- 247
550/65 R25, Radial (L-3)	- 136	- 300	- 78	- 172
20.5-25, 12PR (L-2)	- 240	- 529	- 137	- 303
20.5-25, 12PR (L-3)	- 36	- 79	- 21	- 47
20.5 R25, Radial (L-2)	- 172	- 379	- 98	- 217
20.5 R25, Radial (L-3)	0	0	0	0

- Performance Data
- 924G Standard VersaLink Hook On
 - Pallet Forks ● Material Handling Arm

Wheel Loaders Integrated Toolcarriers

		Pallet Forks	
Fork tine length	mm ft/in	1200 3'11"	1350 4'5"
Ground to top of tine clearance	mm ft/in	3637 11'11"	3652 13'0"
Reach with lift arms horizontal and forks level	mm ft/in	1561 5'1"	1576 5'2"
Overall length	mm ft/in	7607 25'0"	7772 25'6"
Static tipping load with level arms and forks, straight*	kg lb	6209 13,689	5960 13,140
Static tipping load with level arms and forks, full 40° turn*	kg lb	5438 11,989	5213 11,493
Operating weight	kg lb	11 042 24,344	11 102 24,476

*Static tipping load includes lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— 924G includes 17.5-25, 12 PR (L-2) tires.

Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with pallet fork is: SAE J1197 FEB91; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn static tipping load on rough terrain; 80% of full turn static tipping load on firm and level ground, or the hydraulic/structural limit.

Handling Arm Position		Material Handling Arm		
		Retracted	Mid-position	Extended
Operating load	kg lb	1965 4332	1558 3434	1278 2816
Static tipping load, straight*	kg lb	4505 9932	3571 7873	2948 6499
Static tipping load, full 40° turn*	kg lb	3930 8664	3115 6867	2555 5633
Operating weight*	kg lb	11 000 24,251	11 000 24,251	11 000 24,251

*Static tipping load and operating weight include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— 924G includes 17.5-25, 12 PR (L-2) tires.

Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with material handling arm is 50% of full turn static tipping load, or the hydraulic/structural limit.

Wheel Loaders Integrated Toolcarriers

Performance Data

- 924G High Lift VersaLink Hook On
- Pallet Forks ● Material Handling Arm

		Pallet Forks	
Fork tine length	mm ft/in	1200 3'11"	1350 4'5"
Ground to top of tine clearance	mm ft/in	4144 13'7"	4155 13'8"
Reach with lift arms horizontal and forks level	mm ft/in	1952 6'5"	1967 6'6"
Overall length	mm ft/in	8104 26'7"	8269 27'2"
Static tipping load with level arms and forks, straight*	kg lb	6209 13,689	5960 13,140
Static tipping load with level arms and forks, full 40° turn*	kg lb	5438 11,989	5213 11,493
Operating weight	kg lb	11 042 24,344	11 102 24,476

*Static tipping load includes lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— 924G includes 17.5-25, 12 PR (L-2) tires.

Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with pallet fork is: SAE J1197 FEB91; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn static tipping load on rough terrain; 80% of full turn static tipping load on firm and level ground, or the hydraulic/structural limit.

Handling Arm Position		Material Handling Arm		
		Retracted	Mid-position	Extended
Operating load	kg lb	1718 3786	1387 3057	1164 2566
Static tipping load, straight*	kg lb	3967 8746	3205 7066	2692 5935
Static tipping load, full 40° turn*	kg lb	3435 7573	2773 6113	2328 5132
Operating weight*	kg lb	11 086 24,441	11 086 24,441	11 086 24,441

*Static tipping load and operating weight include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— 924G includes 17.5-25, 12 PR (L-2) tires.

Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with material handling arm is 50% of full turn static tipping load, or the hydraulic/structural limit.

Bucket Type		General Purpose						Penetration	
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments*		Bolt-on Teeth*		Flush Mounted Teeth*	
Rated bucket capacity (\$)	m ³	2.0	2.3	2.0	2.3	1.9	2.2	2.1	
	yd ³	2.6	3.0	2.6	3.0	2.5	2.9	2.75	
Struck capacity (\$)	m ³	1.7	1.9	1.7	1.9	1.6	1.8	1.8	
	yd ³	2.25	2.5	2.25	2.5	2.1	2.3	2.3	
Bucket width	mm	2549	2549	2549	2549	2549	2549	2594	
	ft/in	8'4"	8'4"	8'4"	8'4"	8'4"	8'4"	8'6"	
Dump clearance at full lift and 45° discharge*** (\$)	mm	2879	2842	2766	2730	2766	2729	2748	
	ft/in	9'5"	9'4"	9'1"	8'11"	9'1"	8'11"	9'0"	
Reach at full lift and 45° discharge (\$)	mm	927	964	1021	1058	1021	1058	1074	
	ft/in	3'0"	3'2"	3'4"	3'6"	3'4"	3'6"	3'6"	
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm	1455	1474	1492	1509	1492	1509	1535	
	ft/in	4'9"	4'10"	4'11"	4'11"	4'11"	4'11"	5'0"	
Reach with arms horizontal and bucket level	mm	2253	2305	2399	2451	2399	2451	2449	
	ft/in	7'5"	7'7"	7'10"	8'0"	7'10"	8'0"	8'0"	
Digging depth (\$)	mm	86	86	99	99	99	99	74	
	in	3.4	3.4	3.9	3.9	3.9	3.9	2.9	
Overall length	mm	7252	7304	7398	7450	7378	7430	7429	
	ft/in	23'10"	24'0"	24'3"	24'5"	24'2"	24'5"	24'5"	
Overall height with bucket at full raise (\$)	mm	4971	5070	4971	5070	4971	5070	5057	
	ft/in	16'4"	16'8"	16'4"	16'8"	16'4"	16'8"	16'7"	
Loader clearance circle with bucket in carry position	m	11.56	11.59	11.69	11.72	11.69	11.72	11.70	
	ft/in	38'0"	38'0"	38'4"	38'6"	38'4"	38'6"	38'4"	
Static tipping load, straight* (\$)	kg	9400	9243	9231	9078	9319	9252	9243	
	lb	20,723	20,377	20,351	20,014	20,545	20,397	20,377	
Static tipping load, full 40° turn* (\$)	kg	8173	8030	8003	7862	8094	8030	8021	
	lb	18,018	17,703	17,644	17,333	17,844	17,703	17,683	
Breakout force** (\$)	kg	11 723	11 095	11 590	10 961	12 604	11 880	11 947	
	lb	25,849	24,464	25,556	24,169	27,792	26,195	26,343	
Operating weight*	kg	11 786	11 836	11 920	11 970	11 835	11 885	11 907	
	lb	25,984	26,094	26,279	26,389	26,092	26,202	26,250	
Shipping weight	kg	11 540	11 590	11 674	11 724	11 589	11 639	11 661	
	lb	25,441	25,552	25,737	25,847	25,549	25,660	25,708	

*Static tipping load and operating weight are based on standard machine configuration with 20.5-25, 12 PR (L-2) tires, full fuel tank, coolant, lubricants, operator and optional counterweight.

**Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

***Dump clearance, reach and overall length dimensions for bucket equipped with teeth reflect actual dimensions. SAE J732 JUN92 allows dimensions for buckets with teeth to reflect the dimension using the cutting edge. Caterpillar Inc. uses actual equipped bucket dimensions.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Air conditioner	+ 48	+106	+ 56	+ 123
Canopy, ROPS (less cab)	-198	-437	-182	- 401
Counterweight, 290 kg (639 lb) (removal)	-290	-639	-483	-1065
Crankcase guard	+ 17	+ 37	+ 24	+ 53
Power train guard	+ 58	+128	+ 56	+ 123
Ride Control System	+ 41	+ 90	+ 20	+ 44
Secondary steering	+ 42	+ 93	+ 57	+ 126
Tires & 1-piece rims, 17.5-25, 12PR (L-2)	-421	-928	-262	- 578
Tires & 1-piece rims, 17.5-25, 12PR (L-3)	-342	-354	-213	- 470
Tires & 1-piece rims, 17.5-25, 12PR (L-2/L-3)	-279	-615	-174	- 384
Tires & 1-piece rims, 17.5-R25, radial (L-2)	-374	-825	-232	- 512
Tires & 1-piece rims, 17.5-R25, radial (L-3)	-218	-481	-136	- 300
Tires & 3-piece rims, 17.5-25, 12PR (L-2)	-289	-367	-180	- 370
Tires & 3-piece rims, 17.5-25, 12PR (L-3)	-217	-478	-147	- 324
Tires & 3-piece rims, 17.5-25, 12PR (L-2/L-3)	-173	-381	-108	- 238
Tires & 3-piece rims, 17.5-R25, radial (L-2)	-249	-549	-155	- 342
Tires & 3-piece rims, 17.5-R25, radial (L-3)	-149	-329	- 93	- 205
Tires & 3-piece rims, 20.5-25, 12PR (L-3)	+144	+318	+ 90	+ 198
Tires & 3-piece rims, 20.5-25, 12PR (L-2/L-3)	+188	+415	+122	+ 269
Tires & 3-piece rims, 20.5-R25, radial (L-2)	+ 68	+150	+ 42	+ 93
Tires & 3-piece rims, 20.5-R25, radial (L-3)	+240	+529	+148	+ 326
Tires & 3-piece rims, 550/65-R25, radial (L-2)	+ 44	+ 97	+ 28	+ 62
Tires & 3-piece rims, 550/65-R25, radial (L-3)	+104	+229	+ 65	+ 143

Wheel Loaders Integrated Toolcarriers

Performance Data ● 930G Standard VersaLink Pin On

Bucket Type		General Purpose					
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth	
Ground Engaging Type							
Rated bucket capacity	m ³ yd ³	2.3 3.0	2.5 3.2	2.3 3.0	2.5 3.2	2.1 2.7	2.3 3.0
Struck capacity	m ³ yd ³	1.9 2.5	2.1 2.7	1.9 2.5	2.1 2.7	1.8 2.4	2.0 2.6
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2917 9'7"	2871 9'5"	2804 9'2"	2758 9'1"	2804 9'2"	2758 9'1"
Reach at full tilt and 45° discharge (\$)	mm ft/in	925 3'0"	971 3'2"	1019 3'4"	1065 3'6"	1019 3'4"	1065 3'6"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1542 5'1"	1564 5'2"	1574 5'2"	1593 5'3"	1574 5'2"	1593 5'3"
Reach with lift arms horizontal and bucket level	mm ft/in	2458 8'1"	2523 8'3"	2604 8'7"	2669 8'9"	2604 8'7"	2669 8'9"
Digging depth (\$)	mm in	147 5.8	147 5.8	160 6.3	160 6.3	160 6.3	160 6.3
Overall length	mm ft/in	7327 24'0"	7392 24'3"	7473 24'6"	7538 24'9"	7453 24'5"	7518 24'8"
Overall height with bucket at full raise (\$)	mm ft/in	5276 17'4"	5343 17'6"	5276 17'4"	5343 17'6"	5276 17'4"	5343 17'6"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	11 561 37'11"	11 595 38'0"	11 679 38'4"	11 714 38'5"	11 679 38'4"	11 714 38'5"
Static tipping load straight (\$)	kg lb	9794 21,592	9698 21,381	9626 21,222	9529 21,008	9732 21,455	9637 21,246
Static tipping load with 40° turn (\$)	kg lb	8527 18,799	8438 18,603	8359 18,429	8269 18,230	8466 18,664	8376 18,466
Breakout force (\$) — SAME	kg lb	14 567 32,115	13 757 30,329	14 432 31,817	13 622 30,032	15 430 34,018	14 519 32,009
Operating weight	kg lb	12 985 28,627	13 026 28,718	13 121 28,927	13 162 29,017	13 035 28,737	13 076 28,828

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without air conditioner	- 37	- 82	- 59	- 130
Canopy, ROPS (less cab)	- 218	- 481	- 149	- 328
Counterweight, 175 kg (385 lb) (removal)	- 470	- 1036	- 658	- 1451
Without Guard, crankcase	- 16	- 35	- 20	- 44
Without Guard, driveshaft	- 17	- 37	- 12	- 26
Without Guard, power train	- 58	- 128	- 49	- 108
Without Ride Control System	- 45	- 99	- 24	- 53
Without Secondary steering	- 17	- 37	- 20	- 44
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 868	- 1914	- 486	- 1071
17.5-25, 12PR (L-3)	- 796	- 1755	- 446	- 983
17.5-25, Radial (L-2)	- 828	- 1825	- 464	- 1023
17.5-25, Radial (L-3)	- 728	- 1605	- 408	- 899
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 744	- 1640	- 417	- 919
17.5-25, 12PR (L-3)	- 672	- 1482	- 376	- 829
17.5-25, Radial (L-2)	- 704	- 1552	- 394	- 869
17.5-25, Radial (L-3)	- 604	- 1332	- 338	- 745
20.5-25, 12PR (L-2)	- 456	- 1005	- 255	- 562
20.5-25, 12PR (L-3)	- 252	- 556	- 141	- 311
20.5 R25, Radial (L-2)	- 388	- 855	- 217	- 478
20.5 R25, Radial (L-3)	- 216	- 476	- 121	- 267
600/65R25, Radial (L-3) Michelin	- 212	- 476	- 119	- 262
600/65R25, Radial (L-3) Goodyear	0	0	0	0

Performance Data
 ● 930G Standard VersaLink Pin On

Wheel Loaders
 Integrated Toolcarriers

Bucket Type		High Density General Purpose						Light Material	Woodchip
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth		Bolt-on Cutting Edge	Bolt-on Cutting Edge
Rated bucket capacity	m ³ yd ³	2.1 2.7	2.3 3.0	2.1 2.7	2.3 3.0	2.0 2.6	2.1 2.7	2.8 3.6	5.0 6.5
Struck capacity	m ³ yd ³	1.7 2.2	2.0 2.6	1.7 2.2	1.8 2.4	1.6 2.1	1.9 2.5	2.3 3.0	4.1 5.3
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2550 8'4"	3392 11'2"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3027 9'11"	2992 9'10"	2923 9'7"	2888 9'6"	2923 9'7"	2888 9'6"	2891 9'6"	2777 9'1"
Reach at full tilt and 45° discharge (\$)	mm ft/in	966 3'2"	1007 3'4"	1069 3'6"	1110 3'8"	1069 3'6"	1110 3'8"	1104 3'7"	1071 3'6"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1637 5'4"	1661 5'5"	1689 5'6"	1712 5'7"	1689 5'6"	1712 5'7"	1707 5'7"	1611 5'3"
Reach with lift arms horizontal and bucket level	mm ft/in	2385 7'10"	2438 8'0"	2531 8'4"	2584 8'6"	2531 8'4"	2584 8'6"	2578 8'5"	2660 8'9"
Digging depth (\$)	mm in	142 5.6	147 5.8	155 6.1	160 6.3	155 6.1	160 6.3	159 6.3	142 5.6
Overall length	mm ft/in	7250 23'9"	7307 24'0"	7396 24'3"	7453 24'5"	7375 24'2"	7433 24'5"	7456 24'6"	7525 24'8"
Overall height with bucket at full raise (\$)	mm ft/in	5222 17'2"	5230 17'2"	5222 17'2"	5230 17'2"	5222 17'2"	5230 17'2"	5304 17'5"	5630 18'6"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	11 520 37'10"	11 550 37'11"	11 637 38'2"	11 668 38'3"	11 637 38'2"	11 668 38'3"	11 631 38'2"	12 430 40'9"
Static tipping load straight (\$)	kg lb	10 079 22,221	10 019 22,088	9911 21,850	9850 21,716	10 018 22,086	9957 21,952	9800 21,605	9891 21,806
Static tipping load with 40° turn (\$)	kg lb	8793 19,385	8739 19,266	8625 19,015	8570 18,894	8732 19,251	8677 19,130	8532 18,810	8579 18,914
Breakout force (\$) — SAME	kg lb	15 634 34,467	14 884 32,814	15 499 34,170	14 750 32,518	16 636 36,676	15 785 34,800	13 199 29,099	12 232 26,967
Operating weight	kg lb	12 862 28,356	12 866 28,365	12 998 28,656	13 002 28,665	12 912 28,466	12 916 28,475	12 984 28,625	13 232 29,172

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without air conditioner	- 37	- 82	- 59	- 130
Canopy, ROPS (less cab)	-218	- 481	- 149	- 328
Counterweight, 175 kg (385 lb) (removal)	-470	-1036	-658	-1451
Without Guard, crankcase	- 16	- 35	- 20	- 44
Without Guard, driveshaft	- 17	- 37	- 12	- 26
Without Guard, power train	- 58	- 128	- 49	- 108
Without Ride Control System	- 45	- 99	- 24	- 53
Without Secondary steering	- 17	- 37	- 20	- 44
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	-868	-1914	-486	-1071
17.5-25, 12PR (L-3)	-796	-1755	-446	-983
17.5-25, Radial (L-2)	-828	-1825	-464	-1023
17.5-25, Radial (L-3)	-728	-1605	-408	-899
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	-744	-1640	-417	-919
17.5-25, 12PR (L-3)	-672	-1482	-376	-829
17.5-25, Radial (L-2)	-704	-1552	-394	-869
17.5-25, Radial (L-3)	-604	-1332	-338	-745
20.5-25, 12PR (L-2)	-456	-1005	-255	-562
20.5-25, 12PR (L-3)	-252	-556	-141	-311
20.5 R25, Radial (L-2)	-388	-855	-217	-478
20.5 R25, Radial (L-3)	-216	-476	-121	-267
600/65R25, Radial (L-3) Michelin	-212	-476	-119	-262
600/65R25, Radial (L-3) Goodyear	0	0	0	0

Wheel Loaders Integrated Toolcarriers

Performance Data ● 930G High Lift VersaLink Pin On

Bucket Type		General Purpose					
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth	
Ground Engaging Type							
Rated bucket capacity	m ³ yd ³	2.3 3.0	2.5 3.2	2.3 3.0	2.5 3.2	2.1 2.7	2.3 3.0
Struck capacity	m ³ yd ³	1.9 2.5	2.1 2.7	1.9 2.5	2.1 2.7	1.8 2.4	2.0 2.6
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3417 11'3"	3371 11'1"	3304 10'10"	3258 10'8"	3304 10'10"	3258 10'8"
Reach at full tilt and 45° discharge (\$)	mm ft/in	925 3'0"	971 3'2"	1019 3'4"	1065 3'6"	1019 3'4"	1065 3'6"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1978 6'6"	2004 6'7"	2020 6'8"	2043 6'8"	2020 6'8"	2043 6'8"
Reach with lift arms horizontal and bucket level	mm ft/in	2852 9'4"	2917 9'7"	2998 9'10"	3063 10'1"	2998 9'10"	3063 10'1"
Digging depth (\$)	mm in	162 6.4	162 6.4	175 6.9	175 6.9	175 6.9	175 6.9
Overall length	mm ft/in	7813 25'8"	7878 25'10"	7959 26'1"	8024 26'4"	7943 26'1"	8008 26'3"
Overall height with bucket at full raise (\$)	mm ft/in	5768 18'11"	5836 19'2"	5768 18'11"	5836 19'2"	5768 18'11"	2836 19'2"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	12 037 39'6"	12 074 39'7"	12 161 39'11"	12 198 40'0"	12 161 39'11"	12 198 40'0"
Static tipping load straight (\$)	kg lb	7862 17,333	7778 17,148	7700 16,976	7615 16,788	7803 17,203	7718 17,015
Static tipping load with 40° turn (\$)	kg lb	6809 15,011	6730 14,837	6647 14,654	6567 14,478	6750 14,881	6671 14,707
Breakout force (\$) — SAME	kg lb	15 619 34,434	14 754 32,527	15 484 34,137	14 620 32,232	16 568 36,526	15 594 34,379
Operating weight	kg lb	13 130 28,947	13 171 29,037	13 266 29,247	13 307 29,337	13 180 29,057	13 221 29,147

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without air conditioner	- 37	- 82	- 59	- 130
Canopy, ROPS (less cab)	-218	- 481	- 149	- 328
Counterweight, 175 kg (385 lb) (removal)	-470	-1036	-658	-1451
Without Guard, crankcase	- 16	- 35	- 20	- 44
Without Guard, driveshaft	- 17	- 37	- 12	- 26
Without Guard, power train	- 58	- 128	- 49	- 108
Without Ride Control System	- 45	- 99	- 24	- 53
Without Secondary steering	- 17	- 37	- 20	- 44
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	-868	-1914	-486	-1071
17.5-25, 12PR (L-3)	-796	-1755	-446	-983
17.5-25, Radial (L-2)	-828	-1825	-464	-1023
17.5-25, Radial (L-3)	-728	-1605	-408	-899
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	-744	-1640	-417	-919
17.5-25, 12PR (L-3)	-672	-1482	-376	-829
17.5-25, Radial (L-2)	-704	-1552	-394	-869
17.5-25, Radial (L-3)	-604	-1332	-338	-745
20.5-25, 12PR (L-2)	-456	-1005	-255	-562
20.5-25, 12PR (L-3)	-252	-556	-141	-311
20.5 R25, Radial (L-2)	-388	-855	-217	-478
20.5 R25, Radial (L-3)	-216	-476	-121	-267
600/65R25, Radial (L-3) Michelin	-212	-476	-119	-262
600/65R25, Radial (L-3) Goodyear	0	0	0	0

Bucket Type		High Density General Purpose						Light Material	Woodchip
		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth		Bolt-on Cutting Edge	Bolt-on Cutting Edge
Rated bucket capacity	m ³ yd ³	2.1 2.7	2.3 3.0	2.1 2.7	2.3 3.0	2.0 2.6	2.1 2.7	2.8 3.6	5.0 6.5
Struck capacity	m ³ yd ³	1.7 2.2	2.0 2.6	1.7 2.2	1.8 2.4	1.6 2.1	1.9 2.5	2.3 3.0	4.1 5.3
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2550 8'4"	3392 11'2"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3527 11'7"	3492 11'5"	3423 11'3"	3388 11'1"	3423 11'3"	3388 11'1"	3391 11'2"	3277 10'9"
Reach at full tilt and 45° discharge (\$)	mm ft/in	965 3'2"	1006 3'4"	1068 3'6"	1110 3'8"	1068 3'6"	1110 3'8"	1103 3'7"	1071 3'6"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	2065 6'9"	2092 6'10"	2125 7'0"	2151 7'1"	2125 7'0"	2151 7'1"	2145 7'0"	2059 6'9"
Reach with lift arms horizontal and bucket level	mm ft/in	2779 9'1"	2832 9'3"	2925 9'7"	2978 9'9"	2925 9'7"	2978 9'9"	2971 9'9"	3054 10'0"
Digging depth (\$)	mm in	157 6.2	162 6.4	170 6.7	175 6.9	170 6.7	175 6.9	174 6.9	157 6.2
Overall length	mm ft/in	7737 25'5"	7793 25'7"	7883 25'10"	7939 26'1"	7866 25'10"	7923 26'0"	7940 26'1"	8012 26'3"
Overall height with bucket at full raise (\$)	mm ft/in	5712 18'9"	5719 18'9"	5712 18'9"	5719 18'9"	5712 18'9"	5719 18'9"	5796 19'0"	6111 20'1"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	11 992 39'4"	12 026 39'5"	12 115 39'9"	12 149 39'10"	12 115 39'9"	12 149 39'10"	12 113 39'9"	12 884 42'3"
Static tipping load straight (\$)	kg lb	8102 17,862	8055 17,758	7940 17,505	7892 17,399	8043 17,732	7996 17,628	7852 17,311	7800 17,196
Static tipping load with 40° turn (\$)	kg lb	7035 15,510	6993 15,417	6873 15,152	6830 15,058	6976 15,380	6934 15,287	6800 14,992	6722 14,820
Breakout force (\$) — SAME	kg lb	16 759 36,947	15 955 35,175	16 625 36,652	15 820 34,877	17 858 39,370	16 944 37,355	14 146 31,187	13 133 28,953
Operating weight	kg lb	13 007 28,676	13 011 28,684	13 143 28,976	13 147 28,984	13 057 28,786	13 061 28,795	13 129 28,945	13 377 29,491

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without air conditioner	- 37	- 82	- 59	- 130
Canopy, ROPS (less cab)	- 218	- 481	- 149	- 328
Counterweight, 175 kg (385 lb) (removal)	- 470	- 1036	- 658	- 1451
Without Guard, crankcase	- 16	- 35	- 20	- 44
Without Guard, driveshaft	- 17	- 37	- 12	- 26
Without Guard, power train	- 58	- 128	- 49	- 108
Without Ride Control System	- 45	- 99	- 24	- 53
Without Secondary steering	- 17	- 37	- 20	- 44
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 868	- 1914	- 486	- 1071
17.5-25, 12PR (L-3)	- 796	- 1755	- 446	- 983
17.5-25, Radial (L-2)	- 828	- 1825	- 464	- 1023
17.5-25, Radial (L-3)	- 728	- 1605	- 408	- 899
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 744	- 1640	- 417	- 919
17.5-25, 12PR (L-3)	- 672	- 1482	- 376	- 829
17.5-25, Radial (L-2)	- 704	- 1552	- 394	- 869
17.5-25, Radial (L-3)	- 604	- 1332	- 338	- 745
20.5-25, 12PR (L-2)	- 456	- 1005	- 255	- 562
20.5-25, 12PR (L-3)	- 252	- 556	- 141	- 311
20.5 R25, Radial (L-2)	- 388	- 855	- 217	- 478
20.5 R25, Radial (L-3)	- 216	- 476	- 121	- 267
600/65R25, Radial (L-3) Michelin	- 212	- 476	- 119	- 262
600/65R25, Radial (L-3) Goodyear	0	0	0	0

Wheel Loaders Integrated Toolcarriers

Performance Data ● 930G Standard VersaLink Hook On Using Quick Coupler

Bucket Type		General Purpose								
		Bolt-on Cutting Edges			Bolt-on Teeth & Segments			Bolt-on Teeth		
Ground Engaging Type										
Rated bucket capacity	m ³ yd ³	2.1 2.7	2.3 3.0	2.5 3.2	2.1 2.7	2.3 3.0	2.5 3.2	1.9 2.4	2.1 2.7	2.3 3.0
Struck capacity	m ³ yd ³	1.7 2.2	1.9 2.5	2.1 2.7	1.7 2.2	1.9 2.5	2.1 2.7	1.6 2.1	1.8 2.4	2.0 2.6
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2843 9'4"	2783 9'2"	2737 9'0"	2731 9'0"	2670 8'9"	2624 8'7"	2731 9'0"	2670 8'9"	2624 8'7"
Reach at full tilt and 45° discharge (\$)	mm ft/in	936 3'1"	997 3'3"	1042 3'5"	1030 3'5"	1091 3'7"	1137 3'9"	1030 3'5"	1091 3'7"	1137 3'9"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1514 5'0"	1539 5'1"	1557 5'1"	1541 5'1"	1563 5'2"	1578 5'2"	1541 5'1"	1563 5'2"	1578 5'2"
Reach with lift arms horizontal and bucket level	mm ft/in	2518 8'3"	2603 8'6"	2668 8'9"	2664 8'9"	2749 9'0"	2814 9'3"	2664 8'9"	2749 9'0"	2814 9'3"
Digging depth (\$)	mm in	191 7.5	191 7.5	191 7.5	204 8.0	204 8.0	204 8.0	204 8.0	204 8.0	204 8.0
Overall length	mm ft/in	7422 24'4"	7507 24'8"	7572 24'10"	7568 24'10"	7653 25'1"	7718 25'4"	7548 24'9"	7633 25'1"	7698 25'3"
Overall height with bucket at full raise (\$)	mm ft/in	5307 17'5"	5386 17'8"	5420 17'9"	5307 17'5"	5386 17'8"	5420 17'9"	5307 17'5"	5386 17'8"	5420 17'9"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	11 652 38'3"	11 695 38'4"	11 729 38'6"	11 768 38'7"	11 813 38'9"	11 849 38'10"	11 768 38'7"	11 813 38'9"	11 849 38'10"
Static tipping load straight (\$)	kg lb	9228 20,344	9109 20,082	9022 19,890	9063 19,981	8943 19,716	8854 19,520	9168 20,212	9048 19,948	8961 19,756
Static tipping load with 40° turn (\$)	kg lb	8015 17,670	7904 17,425	7822 17,245	7851 17,309	7738 17,059	7655 16,876	7955 17,538	7843 17,291	7761 17,110
Breakout force (\$) — SAME	kg lb	13 822 30,472	12 867 28,367	12 218 26,936	13 687 30,175	12 732 28,069	12 083 26,639	14 595 32,177	13 529 29,826	12 809 28,239
Operating weight	kg lb	13 130 28,947	13 190 29,079	13 231 29,170	13 266 29,247	13 326 29,379	13 367 29,469	13 180 29,057	13 240 29,189	13 281 29,280

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without air conditioner	- 37	- 82	- 59	- 130
Canopy, ROPS (less cab)	- 218	- 481	- 149	- 328
Counterweight, 175 kg (385 lb) (removal)	- 470	- 1036	- 658	- 1451
Without Guard, crankcase	- 16	- 35	- 20	- 44
Without Guard, driveshaft	- 17	- 37	- 12	- 26
Without Guard, power train	- 58	- 128	- 49	- 108
Without Ride Control System	- 45	- 99	- 24	- 53
Without Secondary steering	- 17	- 37	- 20	- 44
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 868	- 1914	- 486	- 1071
17.5-25, 12PR (L-3)	- 796	- 1755	- 446	- 983
17.5-25, Radial (L-2)	- 828	- 1825	- 464	- 1023
17.5-25, Radial (L-3)	- 728	- 1605	- 408	- 899
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 744	- 1640	- 417	- 919
17.5-25, 12PR (L-3)	- 672	- 1482	- 376	- 829
17.5-25, Radial (L-2)	- 704	- 1552	- 394	- 869
17.5-25, Radial (L-3)	- 604	- 1332	- 338	- 745
20.5-25, 12PR (L-2)	- 456	- 1005	- 255	- 562
20.5-25, 12PR (L-3)	- 252	- 556	- 141	- 311
20.5 R25, Radial (L-2)	- 388	- 855	- 217	- 478
20.5 R25, Radial (L-3)	- 216	- 476	- 121	- 267
600/65R25, Radial (L-3) Michelin	- 212	- 476	- 119	- 262
600/65R25, Radial (L-3) Goodyear	0	0	0	0

Performance Data
 ● 930G Standard VersaLink Hook On
 Using Quick Coupler

Wheel Loaders
 Integrated Toolcarriers

Bucket Type		High Density General Purpose						Light Material	Woodchip
Ground Engaging Type		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth		Bolt-on Cutting Edge	Bolt-on Cutting Edge
Rated bucket capacity	m ³ yd ³	2.1 2.7	2.3 3.0	2.1 2.7	2.3 3.0	2.0 2.6	2.1 2.7	2.8 3.6	5.0 6.5
Struck capacity	m ³ yd ³	1.7 2.2	1.9 2.5	1.7 2.2	1.9 2.5	1.6 2.1	1.8 2.4	2.3 3.0	4.1 5.3
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2550 8'4"	3392 11'2"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2936 9'8"	2902 9'6"	2832 9'3"	2798 9'2"	2832 9'3"	2798 9'2"	2891 9'6"	2777 9'1"
Reach at full tilt and 45° discharge (\$)	mm ft/in	1073 3'6"	1114 3'8"	1176 3'10"	1218 4'0"	1176 3'10"	1218 4'0"	1104 3'7"	1071 3'6"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1700 5'7"	1723 5'8"	1747 5'9"	1769 5'10"	1747 5'9"	1769 5'10"	1707 5'7"	1611 5'3"
Reach with lift arms horizontal and bucket level	mm ft/in	2526 8'3"	2578 8'5"	2672 8'9"	2724 8'11"	2672 8'9"	2724 8'11"	2578 8'5"	2660 8'9"
Digging depth (\$)	mm in	142 5.6	147 5.8	155 6.1	160 6.3	155 6.1	160 6.3	159 6.3	142 5.6
Overall length	mm ft/in	7390 24'3"	7447 24'5"	7536 24'9"	7593 24'11"	7516 24'8"	7573 24'10"	7456 24'6"	7525 24'8"
Overall height with bucket at full raise (\$)	mm ft/in	5344 17'6"	5351 17'7"	5344 17'6"	5351 17'7"	5344 17'6"	5351 17'7"	5304 17'5"	5630 18'6"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	11 621 38'2"	11 652 38'3"	11 738 38'6"	11 769 38'7"	11 738 38'6"	11 769 38'7"	11 631 38'2"	12 430 40'9"
Static tipping load straight (\$)	kg lb	9588 21,138	9495 20,933	9422 20,772	9327 20,563	9528 21,006	9433 20,796	9800 21,605	9891 21,806
Static tipping load with 40° turn (\$)	kg lb	8344 18,395	8256 18,201	8178 18,029	8089 17,833	8284 18,263	8195 18,067	8532 18,810	8579 18,914
Breakout force (\$) — SAME	kg lb	13 753 30,320	13 148 28,987	13 618 30,023	13 014 28,691	14 507 31,983	13 838 30,508	13 199 29,099	12 232 26,967
Operating weight	kg lb	13 027 28,720	13 082 28,841	13 163 29,020	13 218 29,141	13 077 28,830	13 132 28,951	12 984 28,625	13 232 29,172

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without air conditioner	- 37	- 82	- 59	- 130
Canopy, ROPS (less cab)	- 218	- 481	- 149	- 328
Counterweight, 175 kg (385 lb) (removal)	- 470	- 1036	- 658	- 1451
Without Guard, crankcase	- 16	- 35	- 20	- 44
Without Guard, driveshaft	- 17	- 37	- 12	- 26
Without Guard, power train	- 58	- 128	- 49	- 108
Without Ride Control System	- 45	- 99	- 24	- 53
Without Secondary steering	- 17	- 37	- 20	- 44
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 868	- 1914	- 486	- 1071
17.5-25, 12PR (L-3)	- 796	- 1755	- 446	- 983
17.5-25, Radial (L-2)	- 828	- 1825	- 464	- 1023
17.5-25, Radial (L-3)	- 728	- 1605	- 408	- 899
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 744	- 1640	- 417	- 919
17.5-25, 12PR (L-3)	- 672	- 1482	- 376	- 829
17.5-25, Radial (L-2)	- 704	- 1552	- 394	- 869
17.5-25, Radial (L-3)	- 604	- 1332	- 338	- 745
20.5-25, 12PR (L-2)	- 456	- 1005	- 255	- 562
20.5-25, 12PR (L-3)	- 252	- 556	- 141	- 311
20.5 R25, Radial (L-2)	- 388	- 855	- 217	- 478
20.5 R25, Radial (L-3)	- 216	- 476	- 121	- 267
600/65R25, Radial (L-3) Michelin	- 212	- 476	- 119	- 262
600/65R25, Radial (L-3) Goodyear	0	0	0	0

Wheel Loaders Integrated Toolcarriers

Performance Data ● 930G High Lift VersaLink Hook On Using Quick Coupler

Bucket Type	General Purpose									
	Ground Engaging Type	Bolt-on Cutting Edges			Bolt-on Teeth & Segments			Bolt-on Teeth		
Rated bucket capacity	m ³ yd ³	2.1 2.7	2.3 3.0	2.5 3.2	2.1 2.7	2.3 3.0	2.5 3.2	1.9 2.4	2.1 2.7	2.3 3.0
Struck capacity	m ³ yd ³	1.7 2.2	1.9 2.5	2.1 2.7	1.7 2.2	1.9 2.5	2.1 2.7	1.6 2.1	1.8 2.4	2.0 2.6
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3343 11'0"	3283 10'9"	3237 10'7"	3231 10'7"	3170 10'5"	3125 10'3"	3231 10'7"	3170 10'5"	3125 10'3"
Reach at full tilt and 45° discharge (\$)	mm ft/in	936 3'1"	996 3'3"	1042 3'5"	1030 3'5"	1090 3'7"	1136 3'9"	1030 3'5"	1090 3'7"	1136 3'9"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	1956 6'5"	1987 6'6"	2010 6'7"	1994 6'7"	2022 6'8"	2043 6'8"	1994 6'7"	2022 6'8"	2043 6'8"
Reach with lift arms horizontal and bucket level	mm ft/in	2912 9'7"	2997 9'10"	3062 10'1"	3058 10'0"	3143 10'4"	3208 10'6"	3058 10'0"	3143 10'4"	3208 10'6"
Digging depth (\$)	mm in	206 8.1	206 8.1	206 8.1	219 8.6	219 8.6	219 8.6	219 8.6	219 8.6	219 8.6
Overall length	mm ft/in	7901 25'11"	7986 26'2"	8051 26'5"	8047 26'5"	8132 26'8"	8197 26'11"	8032 26'4"	8117 26'8"	8182 26'10"
Overall height with bucket at full raise (\$)	mm ft/in	5803 19'0"	5882 19'4"	5915 19'5"	5803 19'0"	5882 19'4"	5915 19'5"	5803 19'0"	5882 19'4"	5915 19'5"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	12 126 39'9"	12 173 39'11"	12 209 40'1"	12 248 40'2"	12 296 40'4"	12 333 40'6"	12 248 40'2"	12 296 40'4"	12 333 40'6"
Static tipping load straight (\$)	kg lb	7425 16,369	7305 16,105	7238 15,957	7266 16,019	7156 15,776	7077 15,602	7367 16,242	7258 16,001	7179 15,827
Static tipping load with 40° turn (\$)	kg lb	6412 14,136	6290 13,867	6236 13,748	6253 13,786	6149 13,556	6074 13,391	6354 14,008	6251 13,781	6177 13,618
Breakout force (\$) — SAME	kg lb	14 798 32,624	13 780 30,380	13 088 28,854	14 663 32,327	13 645 30,082	12 953 28,557	15 646 34,494	14 509 31,987	13 740 30,292
Operating weight	kg lb	13 275 29,267	13 335 29,399	13 376 29,489	13 410 29,564	13 470 29,696	13 511 29,787	13 325 29,377	13 385 29,509	13 426 29,599

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without air conditioner	- 37	- 82	- 59	- 130
Canopy, ROPS (less cab)	- 218	- 481	- 149	- 328
Counterweight, 175 kg (385 lb) (removal)	- 470	- 1036	- 658	- 1451
Without Guard, crankcase	- 16	- 35	- 20	- 44
Without Guard, driveshaft	- 17	- 37	- 12	- 26
Without Guard, power train	- 58	- 128	- 49	- 108
Without Ride Control System	- 45	- 99	- 24	- 53
Without Secondary steering	- 17	- 37	- 20	- 44
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 868	- 1914	- 486	- 1071
17.5-25, 12PR (L-3)	- 796	- 1755	- 446	- 983
17.5-25, Radial (L-2)	- 828	- 1825	- 464	- 1023
17.5-25, Radial (L-3)	- 728	- 1605	- 408	- 899
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 744	- 1640	- 417	- 919
17.5-25, 12PR (L-3)	- 672	- 1482	- 376	- 829
17.5-25, Radial (L-2)	- 704	- 1552	- 394	- 869
17.5-25, Radial (L-3)	- 604	- 1332	- 338	- 745
20.5-25, 12PR (L-2)	- 456	- 1005	- 255	- 562
20.5-25, 12PR (L-3)	- 252	- 556	- 141	- 311
20.5 R25, Radial (L-2)	- 388	- 855	- 217	- 478
20.5 R25, Radial (L-3)	- 216	- 476	- 121	- 267
600/65R25, Radial (L-3) Michelin	- 212	- 476	- 119	- 262
600/65R25, Radial (L-3) Goodyear	0	0	0	0

Performance Data
 ● 930G High Lift VersaLink Hook On
 Using Quick Coupler

Wheel Loaders
 Integrated Toolcarriers

Bucket Type		High Density General Purpose						Ejector	Woodchip
Ground Engaging Type		Bolt-on Cutting Edges		Bolt-on Teeth & Segments		Bolt-on Teeth		Bolt-on Cutting Edge	Bolt-on Cutting Edge
Rated bucket capacity	m ³ yd ³	2.1 2.7	2.3 3.0	2.1 2.7	2.3 3.0	2.0 2.6	2.1 2.7	3.1 4.0	5.0 6.5
Struck capacity	m ³ yd ³	1.7 2.2	1.9 2.5	1.7 2.2	1.9 2.5	1.6 2.1	1.8 2.4	2.6 3.4	4.1 5.3
Bucket width	mm ft/in	2550 8'4"	2550 8'4"	2585 8'6"	2585 8'6"	2585 8'6"	2585 8'6"	2550 8'4"	3392 11'2"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3436 11'3"	3402 11'2"	3332 10'11"	3298 10'10"	3332 10'11"	3298 10'10"	3238 10'7"	3171 10'5"
Reach at full tilt and 45° discharge (\$)	mm ft/in	1073 3'6"	1114 3'8"	1176 3'10"	1217 4'0"	1176 3'10"	1217 4'0"	980 3'3"	1188 3'11"
Reach at 45° discharge and 2130 mm (7'0") clearance (\$)	mm ft/in	2135 7'0"	2161 7'1"	2191 7'2"	2215 7'3"	2191 7'2"	2215 7'3"	1948 6'5"	2121 7'0"
Reach with lift arms horizontal and bucket level	mm ft/in	2919 9'7"	2972 9'9"	3065 10'1"	3118 10'3"	3065 10'1"	3118 10'3"	3017 9'11"	3212 10'6"
Digging depth (\$)	mm in	157 6.2	162 6.4	170 6.7	175 6.9	170 6.7	175 6.9	249 9.8	149 5.9
Overall length	mm ft/in	7877 25'10"	7933 26'0"	8023 26'4"	8079 26'6"	8007 26'3"	8063 26'5"	8033 26'4"	8165 26'9"
Overall height with bucket at full raise (\$)	mm ft/in	5835 19'2"	5843 19'2"	5835 19'2"	5843 19'2"	5835 19'2"	5843 19'2"	6238 20'6"	6252 20'6"
Loader clearance radius with bucket in carry position (\$)	mm ft/in	12 089 39'8"	12 122 39'9"	12 211 40'1"	12 244 40'2"	12 211 40'1"	12 244 40'2"	12 202 40'0"	12 974 42'7"
Static tipping load straight (\$)	kg lb	7696 16,967	7612 16,782	7535 16,612	7450 16,425	7637 16,837	7553 16,652	7219 15,915	7121 15,699
Static tipping load with 40° turn (\$)	kg lb	6662 14,687	6582 14,511	6501 14,332	6420 14,154	6603 14,557	6523 14,381	6200 13,669	6101 13,450
Breakout force (\$) — SAME	kg lb	14 751 32,521	14 103 31,092	14 617 32,225	13 969 30,797	15 583 34,355	14 865 32,772	13 427 29,602	11 464 25,274
Operating weight	kg lb	13 172 29,039	13 227 29,161	13 307 29,337	13 362 29,458	13 222 29,150	13 277 29,271	13 586 29,952	13 616 30,018

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Without air conditioner	- 37	- 82	- 59	- 130
Canopy, ROPS (less cab)	- 218	- 481	- 149	- 328
Counterweight, 175 kg (385 lb) (removal)	- 470	- 1036	- 658	- 1451
Without Guard, crankcase	- 16	- 35	- 20	- 44
Without Guard, driveshaft	- 17	- 37	- 12	- 26
Without Guard, power train	- 58	- 128	- 49	- 108
Without Ride Control System	- 45	- 99	- 24	- 53
Without Secondary steering	- 17	- 37	- 20	- 44
Tires, 1-piece rims				
17.5-25, 12PR (L-2)	- 868	- 1914	- 486	- 1071
17.5-25, 12PR (L-3)	- 796	- 1755	- 446	- 983
17.5-25, Radial (L-2)	- 828	- 1825	- 464	- 1023
17.5-25, Radial (L-3)	- 728	- 1605	- 408	- 899
Tires, 3-piece rims				
17.5-25, 12PR (L-2)	- 744	- 1640	- 417	- 919
17.5-25, 12PR (L-3)	- 672	- 1482	- 376	- 829
17.5-25, Radial (L-2)	- 704	- 1552	- 394	- 869
17.5-25, Radial (L-3)	- 604	- 1332	- 338	- 745
20.5-25, 12PR (L-2)	- 456	- 1005	- 255	- 562
20.5-25, 12PR (L-3)	- 252	- 556	- 141	- 311
20.5 R25, Radial (L-2)	- 388	- 855	- 217	- 478
20.5 R25, Radial (L-3)	- 216	- 476	- 121	- 267
600/65R25, Radial (L-3) Michelin	- 212	- 476	- 119	- 262
600/65R25, Radial (L-3) Goodyear	0	0	0	0

Wheel Loaders Integrated Toolcarriers

Performance Data

- 930G
- Pallet Forks ● Material Handling Arm

		Pallet Forks		
Fork tine length	mm ft/in	1200 4'0"	1350 4'3"	1524 5'0"
Ground to top of the tine clearance	mm ft/in	3899 12'10"	3913 12'10"	3899 12'10"
Reach with lift arms horizontal and forks level	mm ft/in	1695 5'7"	1705 5'7"	1695 5'7"
Overall length	mm ft/in	7653 25'1"	7814 25'8"	7977 26'3"
Static tipping load with level arms and forks, straight*	kg lb	7334 16,169	6962 15,349	6746 14,872
Static tipping load with level arms and forks, full 40° turn*	kg lb	6416 14,145	6083 13,411	5891 12,987
Operating weight*	kg lb	12 596 27,770	12 664 27,919	12 686 27,968

*Static tipping and operating weights shown are for 930G with cab with air conditioning, optional counterweight, limited slip axles, heavy-duty rear brakes, additional guarding, sound suppression, work tool, 80 kg (176 lb) operator and 600/65 R25 GP-3D tires. Tipping load is defined by SAE J732 JUN92.

NOTE: The rated operating load for a machine with pallet fork is: SAE J1197 FEB91; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn static tipping load on rough terrain; 80% of full turn static tipping load on firm and level ground, or the hydraulic/structural limit.

		Standard VersaLink		
		Material Handling Arm		
Handling Arm Position		Retracted	Mid-position	Extended
Operating load	kg lb	2363 5210	1890 4166	1576 3473
Static tipping load, straight*	kg lb	5407 11,920	4327 9539	3609 7957
Static tipping load, full 40° turn*	kg lb	4726 10,419	3779 8331	3151 6947
Operating weight*	kg lb	12 562 27,695	12 562 27,695	12 562 27,695

		High Lift VersaLink		
		Material Handling Arm		
Handling Arm Position		Retracted	Mid-position	Extended
Operating load	kg lb	2097 4622	1705 3759	1439 3171
Static tipping load, straight*	kg lb	4814 10,613	3919 8640	3308 7293
Static tipping load, full 40° turn*	kg lb	4193 9244	3410 7518	2877 6343
Operating weight*	kg lb	12 707 28,014	12 707 28,014	12 707 28,014

**Static Tipping Load and Operating Weight include lubricants, full fuel tank, ROPS cab, and 80 kg (176 lb) operator. Machine stability and operating weight are affected by tire size, tire ballast, and other attachments.

NOTE: The rated operating load for a machine with material handling arm is 50% of full turn static tipping load or the hydraulic/structural limit.

Performance Data
● 938G Series II

Wheel Loaders
Integrated Toolcarriers

Bucket Type		General Purpose									High Lift Arrangement****	
		Bolt-on Edges	Bolt-on Adapters & Segments	Bolt-on Adapters	Bolt-on Edges	Bolt-on Adapters & Segments	Bolt-on Adapters	Bolt-on Edges	Bolt-on Adapters & Segments	Bolt-on Adapters		
Ground Engaging Type	Rated bucket capacity	m ³ yd ³	2.8 3.65	2.8 3.65	2.7 3.5	2.5 3.25	2.5 3.25	2.3 3.0	2.3 3.0	2.3 3.0	2.1 2.75	— —
	Struck capacity	m ³ yd ³	2.41 3.15	2.41 3.15	2.04 2.67	2.11 2.76	2.11 2.76	2.01 2.63	1.97 2.58	1.97 2.58	1.87 2.45	— —
	Bucket width	mm ft/in	2706 8'11"	2777 9'1"	2777 9'1"	2706 8'11"	2777 9'1"	2777 9'1"	2706 8'11"	2777 9'1"	2777 9'1"	— —
	Dump clearance at full lift and 45° discharge**	mm ft/in	2771 9'1"	2664 8'9"	2664 8'9"	2849 9'4"	2743 9'0"	2743 9'0"	2890 9'6"	2786 9'2"	2786 9'2"	+423 +17"
	Reach at full lift and 45° discharge**	mm ft/in	1068 3'6"	1170 3'10"	1170 3'10"	1010 3'4"	1114 3'8"	1114 3'8"	984 3'3"	1089 3'7"	1089 3'7"	+121 +5"
	Reach with lift arms horizontal and bucket level	mm ft/in	2330 7'8"	2447 8'0"	2447 8'0"	2230 7'4"	2377 7'10"	2377 7'10"	2180 7'2"	2327 7'8"	2327 7'8"	+390 +15"
	Digging depth	mm in	50 1.9	50 1.9	25 0.9	50 1.9	50 1.9	25 0.9	50 1.9	50 1.9	25 0.9	+58 +2
	Overall length**	mm ft/in	7331 24'0"	7489 24'6"	7489 24'6"	7231 23'9"	7389 24'3"	7389 24'3"	7181 23'7"	7339 24'0"	7339 24'0"	+490 +19"
	Overall height with bucket at full raise	mm ft/in	5284 17'4"	5284 17'4"	5284 17'4"	5188 17'0"	5188 17'0"	5188 17'0"	5140 16'10"	5140 16'10"	5140 16'10"	+423 +17"
	Loader clearance circle with bucket in carry position	m ft/in	12.00 39'5"	12.16 39'11"	12.16 39'11"	11.95 39'3"	12.10 39'9"	12.10 39'9"	11.93 39'2"	12.08 39'8"	12.08 39'8"	+520 +20"
	Static tipping load, straight*	kg lb	10 657 23,494	10 527 23,208	10 727 23,648	10 809 23,829	10 679 23,543	10 884 23,995	10 883 23,992	10 753 23,706	10 782 23,770	-2916 -6429
	Static tipping load, full 40° turn*	kg lb	9470 20,877	9340 20,591	9530 21,010	9613 21,193	9483 20,906	9678 21,336	9683 21,347	9552 21,058	9591 21,144	-2643 -5829
	Breakout force***	kN lb	109.4 24,594	108.6 24,414	116.3 26,145	119.9 26,955	119.0 26,752	128.2 28,821	125.9 28,303	124.9 28,079	134.4 30,214	-5.3 -1191
	Operating weight*	kg lb	13 452 29,656	13 560 29,894	13 467 29,689	13 381 29,500	13 489 29,738	13 396 29,533	13 348 29,427	13 456 29,665	13 363 29,460	+347 +765

*Static tipping load and operating weight shown are based on standard machine configuration with sound-suppression cab and ROPS, 20.5-R25 XTLA 1★(L-2) tires, full fuel tank, coolant, lubricants and operator.

**Dump clearance, reach and overall length dimensions for bucket equipped with teeth reflect actual dimensions. SAE J732C JUN92 allows dimensions for bucket with teeth to reflect the dimension using the cutting edge. Caterpillar Inc. uses actual equipped bucket dimensions.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

****All buckets shown can be used on the high lift arrangement. High lift column shows changes in specifications from standard lift to high lift. Add or subtract as indicated to or from specifications given for appropriate bucket to calculate high lift specifications.

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
20.5-25, 12 PR (L-2)	- 60	-132	- 44	- 97
20.5-25, 12 PR (L-3)	- 86	-190	+ 64	+141
20.5-R25, XTLA (L-2)	—	—	—	—
20.5-R25, GP-2B (L-2/L-3)	+127	+280	+ 98	+216
20.5-R25, XHA (L-3)	-170	-375	+129	+284

Wheel Loaders Integrated Toolcarriers

Performance Data ● 938G Series II

Bucket Type	Material Handling						High Lift Arrangement***	
	Bolt-on Edges	Bolt-on Adapters & Segments	Bolt-on Adapters	Bolt-on Edges	Bolt-on Adapters & Segments	Bolt-on Adapters		
Ground Engaging Type								
Rated bucket capacity	m ³ yd ³	2.8 3.65	2.8 3.65	2.7 3.5	2.5 3.2	2.5 3.25	2.3 3.0	— —
Struck capacity	m ³ yd ³	2.42 3.17	2.42 3.17	2.32 3.04	2.13 2.79	2.13 2.79	2.03 2.66	— —
Bucket width	mm ft/in	2706 8'11"	2777 9'1"	2777 9'1"	2706 8'11"	2777 9'1"	2777 9'1"	— —
Dump clearance at full lift and 45° discharge**	mm ft/in	2721 8'11"	2607 8'7"	2607 8'7"	2791 9'2"	2678 8'9"	2678 8'9"	+423 +17"
Reach at full lift and 45° discharge**	mm ft/in	992 3'3"	1086 3'7"	1086 3'7"	922 3'0"	1016 3'4"	1016 3'4"	+121 +5"
Reach with lift arms horizontal and bucket level	mm ft/in	2330 7'8"	2477 8'2"	2477 8'2"	2230 7'4"	2377 7'10"	2377 7'10"	+390 +15"
Digging depth	mm in	50 1.9	50 1.9	25 0.9	50 1.9	50 1.9	25 0.9	+58 +2
Overall length**	mm ft/in	7331 24'0"	7489 24'6"	7489 24'6"	7231 24'0"	7389 24'6"	7389 24'6"	+490 +19"
Overall height with bucket at full raise	mm ft/in	5272 17'4"	5272 17'4"	5272 17'4"	5176 17'0"	5176 17'0"	5176 17'0"	+423 +17"
Loader clearance circle with bucket in carry position	m ft/in	12.00 39'5"	12.16 39'11"	12.16 39'11"	11.95 39'3"	12.10 39'9"	12.10 39'9"	+520 +20"
Static tipping load, straight*	kg lb	10 586 23,338	10 456 23,051	10 653 23,485	10 757 23,715	10 629 23,432	10 827 23,869	-2916 -6429
Static tipping load, full 40° turn*	kg lb	9408 20,741	9278 20,454	9464 20,864	9569 21,096	9441 20,813	9629 21,228	-2643 -5829
Breakout force***	kN lb	109.5 24,617	108.7 24,437	116.4 26,168	119.9 26,955	119.1 26,775	128.3 28,843	-5.3 -1191
Operating weight*	kg lb	13 437 29,623	13 545 29,861	13 452 29,656	13 370 29,475	13 478 29,713	13 385 29,508	+347 +765

*Static tipping load and operating weight shown are based on standard machine configuration with sound-suppression cab and ROPS, 20.5-R25 XTLA 1★(L-2) tires, full fuel tank, coolant, lubricants and operator.

**Dump clearance, reach and overall length dimensions for bucket equipped with teeth reflect actual dimensions. SAE J732C JUN92 allows dimensions for bucket with teeth to reflect the dimension using the cutting edge. Caterpillar Inc. uses actual equipped bucket dimensions.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

****All buckets shown can be used on the high lift arrangement. High lift column shows changes in specifications from standard lift to high lift. Add or subtract as indicated to or from specifications given for appropriate bucket to calculate high lift specifications.

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
20.5-25, 12 PR (L-2)	- 60	-132	- 44	- 97
20.5-25, 12 PR (L-3)	- 86	-190	+ 64	+141
20.5-R25, XTLA (L-2)	—	—	—	—
20.5-R25, GP-2B (L-2/L-3)	+127	+280	+ 98	+216
20.5-R25, XHA (L-3)	-170	-375	+129	+284

Performance Data
 ● IT38G Series II
 ● Material Handling

Wheel Loaders
 Integrated Toolcarriers

Bucket Type		Material Handling	
Cutting Edge		Bolt-on Teeth	Corner Guard or Bolt-on Edge
Heaped capacity	m ³	2.5	2.3
	yd ³	3.3	3.0
Struck capacity	m ³	2.0	1.89
	yd ³	2.7	2.5
Bucket width	mm	2708	2708
	ft/in	8'11"	8'11"
Dump clearance at full lift and 45° discharge	mm	2933	2933
	ft/in	9'7"	9'7"
Reach at full lift and 45° discharge	mm	1065	1065
	ft/in	3'6"	3'6"
Reach with lift arms horizontal and bucket level	mm	2515	2515
	ft/in	8'3"	8'3"
Digging depth	mm	27	27
	in	1.0	1.0
Overall length	mm	7486	7486
	ft/in	24'7"	24'7"
Overall height with bucket at full raise	mm	5369	5256
	ft/in	17'7"	17'3"
Loader clearance circle with bucket in carry position	m	12.18	12.18
	ft/in	39'11"	39'11"
Static tipping load, straight**	kg	8629	8783
	lb	19,024	19,363
Static tipping load, full turn**	kg	7218	7376
	lb	15,913	16,261
Breakout force*	kN	118.9	120.1
	lb	26,730	27,000
Operating weight** 4 forward, 3 reverse	kg	13 691	13 555
	lb	30,183	29,884

*Breakout force is measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot in accordance with SAE J732 JUN92.

**Operating weight and static tipping load include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— IT38G Series II includes 20.5-R25, XTLA (L-2) tires.

Machine stability is affected by the tire size, tire ballast and attachments.

Wheel Loaders Integrated Toolcarriers

Performance Data

- IT38G Series II
- Pallet Forks ● Material Handling Arm

		Pallet Forks
Fork tine length	mm ft/in	1220 4'0"
Ground to top of tine clearance	mm ft/in	3719 12'2"
Reach with lift arms horizontal and forks level	mm ft/in	2881 9'6"
Overall length	mm ft/in	7940 26'1"
Static tipping load, straight*	kg lb	7385 16,281
Static tipping load, full turn*	kg lb	6262 13,805
Operating weight* 4 forward, 3 reverse	kg lb	13 242 29,194

*Static tipping load and operating weight include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— IT38G Series II includes 20.5-R25, XTLA (L-2) tires.

Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with pallet fork is: SAE J1197 FEB91; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn static tipping load on rough terrain; 80% of full turn static tipping load on firm and level ground, or the hydraulic/structural limit.

Handling Arm Position		Material Handling Arm		
		Retracted	Mid-position	Extended
Static tipping load, straight*	kg lb	5036 11,102	4281 9438	3719 8199
Static tipping load, full turn*	kg lb	4295 9469	3651 8049	3171 6991
Operating weight* 4 forward, 4 reverse	kg lb	13 061 28,795	13 061 28,795	13 061 28,795

*Static tipping load and operating weight include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— IT38G Series II includes 20.5-R25, XTLA (L-2) tires.

Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with material handling arm is 50% of full turn static tipping load, or the hydraulic/structural limit.

Bucket Type		General Purpose									High Lift Arrangement****
		Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	
Ground Engaging Type											
Rated bucket capacity (\$)	m ³ yd ³	3.1 4.0	3.1 4.0	2.9 3.8	2.9 3.8	2.9 3.8	2.7 3.5	2.7 3.5	2.7 3.5	2.5 3.27	— —
Struck capacity (\$)	m ³ yd ³	2.65 3.46	2.65 3.46	2.5 3.25	2.45 3.2	2.45 3.2	2.3 3.01	2.26 2.95	2.26 2.95	2.11 2.76	— —
Bucket width (\$)	mm ft/in	2927 9'7"	2994 9'10"	2994 9'10"	2427 9'7"	2994 9'10"	2994 9'10"	2927 9'7"	2994 9'10"	2994 9'10"	— —
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2922 9'7"	2819 9'2"	2819 9'2"	2926 9'7"	2824 9'4"	2824 9'4"	2974 9'10"	2873 9'5"	2873 9'5"	+498 +19.6"
Reach at full lift and 45° discharge (\$)	mm ft/in	1202 3'11"	1300 4'4"	1300 4'4"	1215 4'0"	1315 4'4"	1315 4'4"	1182 3'11"	1282 4'2"	1282 4'2"	+3 +0.1"
Reach with lift arms horizontal and bucket level	mm ft/in	2488 8'2"	2630 8'8"	2630 8'8"	2493 8'2"	2635 8'8"	2635 8'8"	2433 8'0"	2575 8'5"	2575 8'5"	+366 +14.4"
Digging depth (\$)	mm in	92 3.6	92 3.6	62 2.4	92 3.6	92 3.6	62 2.4	92 3.6	92 3.6	62 2.4	-10 -0.4
Overall length (\$)	mm ft/in	7988 26'2"	8141 26'9"	8141 26'9"	7993 26'3"	8146 26'9"	8146 26'9"	7933 26'0"	8086 26'6"	8086 26'6"	+456 +17.9"
Overall height with bucket at full raise (\$)	mm ft/in	5443 17'11"	5443 17'11"	5443 17'11"	5386 17'8"	5386 17'8"	5386 17'8"	5329 17'6"	5329 17'6"	5329 17'6"	+498 +19.6"
Loader clearance circle with bucket in carry position (\$)	m ft/in	14.03 46'0"	14.18 46'6"	14.18 46'6"	14.03 46'0"	14.18 46'6"	14.18 46'6"	14.0 45'11"	14.15 46'6"	14.15 46'6"	+409 +16.1"
Static tipping load, straight** (\$)	kg lb	12 464 27,483	12 351 27,234	12 639 27,869	12 581 27,741	12 468 27,492	12 760 28,136	12 700 28,004	12 587 27,754	12 883 28,407	-2094 -4617
Static tipping load, full 40° turn** (\$)	kg lb	10 915 24,068	10 802 23,818	11 073 24,416	11 024 24,308	10 911 24,059	11 186 24,665	11 136 24,555	11 024 24,308	11 302 24,921	-1949 -4298
Breakout force*** (\$)	kN lb	154.2 34,695	153.5 34,538	168.7 37,958	154.2 34,695	153.6 34,560	168.7 37,958	163.2 36,720	162.6 36,585	179.4 40,365	-6.3 -1418
Operating weight** (\$)	kg lb	18 338 40,435	18 445 40,671	18 288 40,325	18 286 40,321	18 393 40,557	18 236 40,210	18 232 40,202	18 339 40,437	18 182 40,091	+1268 +2796

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 23.5-R25, XHA (L-3) tires, air conditioning, crankcase guard, power train guard, full fuel tank, lubricants and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

****All buckets shown can be used on the high lift arrangement. High lift column shows changes in specifications from standard lift to high lift. Add or subtract as indicated to or from specifications given for appropriate bucket to calculate high lift specifications.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Static Tipping Load — Straight	
	kg	lb	kg	lb
23.5-25, 12 PR (L-2)	-408	-899	-300	-661
23.5-25, 16 PR (L-3)	-236	-520	-174	-384
23.5-R25, XHA (L-2) standard	—	—	—	—
23.5-R25, XTLA (L-2) steel radial	-100	-220	-63	-139
23.5-R25, GP-2B (L-2/3) steel radial	-76	-168	-60	-132

Wheel Loaders Integrated Toolcarriers

Performance Data ● 950H

Bucket Type	Ground Engaging Type	Material Handling			Quick Coupler			Rock		High Lift Arrangement****
		Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Bottom Strap Teeth	
Rated bucket capacity (\$)	m ³ yd ³	3.5 4.5	3.5 4.5	3.3 4.32	3.1 4.05	3.1 4.05	2.9 3.8	2.9 3.75	2.9 3.75	— —
Struck capacity (\$)	m ³ yd ³	3.0 3.9	3.0 3.9	2.84 3.71	2.7 3.53	2.7 3.53	2.5 3.27	2.45 3.18	2.44 3.16	— —
Bucket width (\$)	mm ft/in	2927 9'7"	2994 9'10"	2994 9'10"	2896 9'6"	2896 9'6"	2896 9'6"	2984 9'10"	2969 9'9"	— —
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2800 9'1"	2690 8'10"	2690 8'10"	2784 9'1"	2680 8'10"	2680 8'10"	2871 9'5"	2712 8'11"	+498 +19.6"
Reach at full lift and 45° discharge (\$)	mm ft/in	1194 3'11"	1284 4'2"	1284 4'2"	1357 4'6"	1456 4'10"	1456 4'10"	1297 4'2"	1425 4'8"	+3 +0.1"
Reach with lift arms horizontal and bucket level	mm ft/in	2588 8'6"	2730 8'11"	2730 8'11"	2697 8'10"	2839 9'4"	2839 9'4"	2588 8'6"	2789 9'2"	+366 +14.4"
Digging depth (\$)	mm in	92 3.6	92 3.6	62 2.4	92 3.6	92 3.6	62 2.4	92 3.6	62 2.4	-10 -0.4
Overall length (\$)	mm ft/in	8068 26'5"	8221 26'11"	8221 26'11"	8176 26'9"	8330 27'4"	8330 27'4"	8068 26'5"	8068 26'5"	+456 +17.9"
Overall height with bucket at full raise (\$)	mm ft/in	5482 18'0"	5482 18'0"	5482 18'0"	5398 17'8"	5398 17'8"	5398 17'8"	5391 17'8"	5391 17'8"	+498 +19.6"
Loader clearance circle with bucket in carry position (\$)	m ft/in	14.08 46'2"	14.23 46'8"	14.23 46'8"	14.11 46'4"	14.2 46'8"	14.2 46'8"	14.14 46'4"	14.26 46'10"	+409 +16.1"
Static tipping load, straight** (\$)	kg lb	12 590 27,761	12 611 27,807	12 767 28,151	11 927 26,299	11 820 26,063	12 104 26,689	12 472 27,501	12 609 27,803	-2094 -4617
Static tipping load, full 40° turn** (\$)	kg lb	11 027 24,315	11 031 24,323	11 187 24,667	10 428 22,994	10 321 22,758	10 586 23,342	10 894 24,021	11 027 24,315	-1949 -4298
Breakout force*** (\$)	kN lb	141.4 31,815	140.7 31,685	153.6 34,560	131.7 29,633	131.8 29,655	141.4 31,815	141.2 31,770	148.9 33,503	-6.3 -1418
Operating weight** (\$)	kg lb	18 309 40,371	18 416 40,607	18 259 40,261	18 589 40,989	18 697 41,227	18 540 40,881	18 540 40,881	18 457 40,698	+1268 +2796

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 23.5-R25, XHA (L-3) tires, air conditioning, crankcase guard, power train guard, full fuel tank, lubricants and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

****All buckets shown can be used on the high lift arrangement. High lift column shows changes in specifications from standard lift to high lift. Add or subtract as indicated to or from specifications given for appropriate bucket to calculate high lift specifications.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Static Tipping Load — Straight	
	kg	lb	kg	lb
23.5-25, 12 PR (L-2)	-408	-899	-300	-661
23.5-25, 16 PR (L-3)	-236	-520	-174	-384
23.5-R25, XHA (L-2) standard	—	—	—	—
23.5-R25, XTLA (L-2) steel radial	-100	-220	- 63	-139
23.5-R25, GP-2B (L-2/3) steel radial	- 76	-168	- 60	-132

Bucket Type	General Purpose									
		Bolt-on Edges	Teeth & Seg-ments*	Teeth*	Bolt-on Edges	Teeth & Seg-ments*	Teeth*	Bolt-on Edges	Teeth & Seg-ments*	Teeth*
Ground Engaging Type										
Rated bucket capacity (\$)	m ³ yd ³	3.3 4.32	3.3 4.32	3.1 4.0	3.1 4.0	3.1 4.0	2.9 3.8	2.9 3.8	2.9 3.8	2.7 3.5
Struck capacity (\$)	m ³ yd ³	2.82 3.69	2.82 3.69	2.66 3.48	2.66 3.46	2.66 3.46	2.5 3.25	2.45 3.2	2.45 3.2	2.3 3.01
Bucket width (\$)	mm ft/in	2927 9'7"	2994 9'10"	2994 9'10"	2927 9'7"	2994 9'10"	2994 9'10"	2927 9'7"	2994 9'10"	2994 9'10"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2917 9'7"	2814 9'3"	2814 9'3"	2922 9'7"	2819 9'2"	2819 9'2"	2926 9'7"	2824 9'4"	2824 9'4"
Reach at full lift and 45° discharge (\$)	mm ft/in	1195 3'11"	1292 4'3"	1292 4'3"	1202 3'11"	1300 4'4"	1300 4'4"	1215 4'0"	1315 4'4"	1315 4'4"
Reach with lift arms horizontal and bucket level	mm ft/in	2488 8'2"	2630 8'8"	2630 8'8"	2488 8'2"	2630 8'8"	2630 8'8"	2493 8'2"	2635 8'8"	2635 8'8"
Digging depth (\$)	mm in	92 3.6	92 3.6	62 2.4	92 3.6	92 3.6	62 2.4	92 3.6	92 3.6	62 2.4
Overall length (\$)	mm ft/in	8010 26'3"	8163 26'9"	8163 26'9"	8010 26'3"	8163 26'9"	8163 26'9"	8015 26'4"	8168 26'10"	8168 26'10"
Overall height with bucket at full raise (\$)	mm ft/in	5491 18'0"	5491 18'0"	5491 18'0"	5443 17'10"	5443 17'10"	5443 17'10"	5386 17'8"	5386 17'8"	5386 17'8"
Loader clearance circle with bucket in carry position (\$)	m ft/in	14.03 46'0"	14.18 46'6"	14.18 46'6"	14.03 46'0"	14.18 46'6"	14.18 46'6"	14.03 46'0"	14.18 46'6"	14.18 46'6"
Static tipping load, straight** (\$)	kg lb	13 892 30,632	13 779 30,383	14 078 31,042	14 009 30,890	13 895 30,638	14 201 31,313	14 131 31,159	14 018 30,901	14 328 31,593
Static tipping load, full 40° turn** (\$)	kg lb	12 103 26,687	11 989 26,436	12 270 27,055	12 213 26,930	12 099 26,678	12 385 27,309	12 328 27,183	12 215 26,934	12 504 27,571
Breakout force*** (\$)	kN lb	153.4 34,515	152.6 34,335	167.8 37,755	154.2 34,695	153.5 34,538	168.7 37,958	154.2 34,695	153.6 34,560	168.7 37,958
Operating weight** (\$)	kg lb	19 327 42,616	19 434 42,852	19 277 42,506	19 262 42,473	19 369 42,709	19 212 42,362	19 210 42,358	19 317 42,594	19 160 42,248

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 23.5-R25, XHA (L-3) tires, air conditioning, crankcase guard, power train guard, full fuel tank, lubricants and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Static Tipping Load — Straight	
	kg	lb	kg	lb
23.5-25, 16 PR (L-2)	-408	-899	-300	-661
23.5-25, 16 PR (L-3)	-236	-520	-174	-384
23.5-R25, XHA (L-3) standard	—	—	—	—
23.5-R25, XTLA (L-2) steel radial	-100	-220	- 63	-139
23.5-R25, GP-2B (L-2/3) steel radial	- 76	-160	- 60	-132

Wheel Loaders Integrated Toolcarriers

Performance Data ● 962H

Bucket Type		Material Handling						
		Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	
Ground Engaging Type	Rated bucket capacity (\$)	m ³ yd ³	3.8 4.97	3.8 4.97	3.6 4.71	3.5 4.5	3.5 4.5	3.3 4.25
	Struck capacity (\$)	m ³ yd ³	3.27 4.28	3.27 4.28	3.1 4.0	3.0 3.92	3.0 3.92	2.84 3.71
Bucket width (\$)		mm ft/in	2927 9'7"	2994 9'10"	2994 9'10"	2927 9'7"	2994 9'10"	2994 9'10"
	Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2747 9'0"	2637 8'8"	2637 8'8"	2800 9'2"	2690 8'10"	2690 8'10"
Reach at full lift and 45° discharge (\$)		mm ft/in	1247 4'1"	1337 4'5"	1337 4'5"	1194 3'11"	1284 4'3"	1284 4'3"
	Reach with lift arms horizontal and bucket level	mm ft/in	2663 8'9"	2805 9'2"	2805 9'2"	2588 8'6"	2730 8'11"	2730 8'11"
Digging depth (\$)		mm in	92 3.6	92 3.6	62 2.4	92 3.6	92 3.6	62 2.4
	Overall length (\$)	mm ft/in	8185 26'10"	8338 27'4"	8338 27'4"	8110 26'7"	8263 27'1"	8263 27'1"
Overall height with bucket at full raise (\$)		mm ft/in	5551 18'3"	5551 18'3"	5551 18'3"	5482 18'0"	5482 18'0"	5482 18'0"
	Loader clearance circle with bucket in carry position (\$)	m ft/in	14.12 46'4"	14.27 46'10"	14.27 46'10"	14.08 46'3"	14.23 46'8"	14.23 46'8"
Static tipping load, straight** (\$)		kg lb	13 984 30,835	13 869 30,581	14 168 31,240	14 148 31,196	14 186 31,280	14 342 31,624
	Static tipping load, full 40° turn** (\$)	kg lb	12 184 26,866	12 069 26,612	12 349 27,230	12 336 27,201	12 355 27,243	12 511 27,587
Breakout force*** (\$)		kN lb	132.8 29,880	132.1 29,723	143.6 32,310	141.4 31,815	140.7 31,658	153.6 34,560
	Operating weight** (\$)	kg lb	19 248 42,552	19 405 42,788	19 248 42,442	19 233 42,409	19 340 42,645	19 183 42,299

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 23.5-R25, XHA (L-3) tires, air conditioning, crankcase guard, power train guard, full fuel tank, lubricants and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Static Tipping Load — Straight	
	kg	lb	kg	lb
23.5-25, 16 PR (L-2)	-408	-899	-300	-661
23.5-25, 16 PR (L-3)	-236	-520	-174	-384
23.5-R25, XHA (L-3) standard	—	—	—	—
23.5-R25, XTLA (L-2) steel radial	-100	-220	- 63	-139
23.5-R25, GP-2B (L-2/3) steel radial	- 76	-168	- 60	-132

Bucket Type		Material Handling			Mid-Lift Delta	Rock		High-Lift Delta
		Bolt-on Edges	Teeth & Segments*	Teeth*		Bolt-on Edges	Bottom Strap Teeth	
Ground Engaging Type								
Rated bucket capacity (\$)	m ³ yd ³	3.3 4.32	3.3 4.32	3.1 4.05	— —	3.1 4.05	3.1 4.05	— —
Struck capacity (\$)	m ³ yd ³	2.83 3.7	2.83 3.7	2.67 3.49	— —	2.72 3.56	2.71 3.54	— —
Bucket width (\$)	mm ft/in	2927 9'7"	2994 9'10"	2994 9'10"	— —	2984 9'10"	2969 9'9"	— —
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	2835 9'4"	2725 8'11"	2725 8'11"	+190 +7.5"	2806 9'2"	23645 8'8"	+498 +19.6"
Reach at full lift and 45° discharge (\$)	mm ft/in	1158 3'10"	1249 4'1"	1249 4'1"	-51 -2"	1340 4'5"	1466 4'10"	+3 +0.1"
Reach with lift arms horizontal and bucket level	mm ft/in	2538 8'4"	2680 8'9"	2680 8'9"	+100 +3.9"	2668 8'9"	2869 9'5"	+366 +14.4"
Digging depth (\$)	mm in	92 3.6	92 3.6	62 2.4	+0 +0	92 3.6	62 2.4	-10 -0.4
Overall length (\$)	mm ft/in	8060 26'5"	8213 26'11"	8213 26'11"	+127 +5"	8190 26'10"	8422 27'8"	+454 +17.9"
Overall height with bucket at full raise (\$)	mm ft/in	5436 17'10"	5436 17'10"	5436 17'10"	+190 +7.5"	5472 17'11"	5472 17'11"	+498 +19.6"
Loader clearance circle with bucket in carry position (\$)	m ft/in	14.06 46'1"	14.2 46'7"	14.2 46'7"	+0.12 +4.6"	14.18 46'6"	14.3 46'11"	+0.42 +1'4"
Static tipping load, straight** (\$)	kg lb	14 259 31,441	14 144 31,188	14 457 31,878	-770 -1698	12 813 28,253	12 965 28,588	-3776 -8326
Static tipping load, full 40° turn** (\$)	kg lb	12 440 27,430	12 325 27,177	12 618 27,823	-691 -1524	11 074 24,418	11 222 24,745	-3376 -7444
Breakout force*** (\$)	kN lb	147.8 33,255	147.1 33,098	161.2 36,270	+0.8 +180	130.8 29,430	137.4 30,915	-5.8 -1305
Operating weight** (\$)	kg lb	19 191 42,316	19 298 42,552	19 141 42,206	+132 +291	19 952 43,994	19 869 43,811	+533 +1175

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 23.5-R25, XHA (L-3) tires, air conditioning, crankcase guard, power train guard, full fuel tank, lubricants and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Change in Operating Weight		Change in Static Tipping Load — Straight	
	kg	lb	kg	lb
23.5-25, 16 PR (L-2)	-408	-899	-300	-661
23.5-25, 16 PR (L-3)	-236	-520	-174	-384
23.5-R25, XHA (L-3) standard	—	—	—	—
23.5-R25, XTLA (L-2) steel radial	-100	-220	- 63	-139
23.5-R25, GP-2B (L-2/3) steel radial	- 76	-168	- 60	-132

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Performance Data

- IT62H
- Material Handling Buckets

Bucket Type		Material Handling	
Cutting Edge		Bolt-on Teeth	Corner Guard or Bolt-on Edge
Heaped capacity	m ³	3.3	3.3
	yd ³	4.25	4.25
Struck capacity	m ³	2.6	2.6
	yd ³	3.4	3.4
Bucket width	mm	2885	2925
	ft/in	9'6"	9'7"
Dump clearance at full lift and 45° discharge	mm	2840	2810
	ft/in	9'4"	9'3"
Reach at 45° discharge and 2130 mm (7'0") clearance	mm	1750	1780
	ft/in	5'9"	5'10"
Reach at full lift and 45° discharge	mm	1227	1275
	ft/in	4'0"	4'2"
Reach with lift arms horizontal and bucket level	mm	2767	2820
	ft/in	9'1"	9'3"
Digging depth	mm	71	90
	in	3.0	3.5
Overall length	mm	8498	8310
	ft/in	27'11"	27'3"
Overall height with bucket at full raise	mm	5579	5485
	ft/in	18'4"	18'0"
Loader clearance circle with bucket in carry position	m	14.17	13.41
	ft/in	46'6"	44'0"
Static tipping load, straight**	kg	12 692	12 960
	lb	27,986	28,580
Static tipping load, full turn**	kg	10 689	11 220
	lb	23,569	24,750
Breakout force*	kN	159.1	125.5
	lb	35,798	28,210
Operating weight** 4 forward, 4 reverse	kg	18 556	18 310
	lb	40,909	40,380

*Breakout force is measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot in accordance with SAE J732 JUN92.

**Operating weight and static tipping load include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— IT62H includes 23.5-R25, XHA (L-3) tires, air conditioning, crankcase guard, power train guard and material handling bucket. Machine stability is affected by the tire size, tire ballast and attachments.

Performance Data

● IT62H

- Pallet Forks ● Material Handling Arm

Wheel Loaders
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		Pallet Forks
Fork tine length	mm ft/in	1524 5'0"
Ground to top of tine clearance	mm ft/in	3748 12'4"
Reach with lift arms horizontal and forks level	mm ft/in	3472 11'5"
Overall length	mm ft/in	9260 30'5"
Static tipping load, straight*	kg lb	9363 20,642
Static tipping load, full turn*	kg lb	7938 17,500
Operating weight* 4 forward, 4 reverse	kg lb	18 312 40,371

*Static tipping load and operating weight include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— IT62H includes 23.5-R25, XHA (L-3) tires, air conditioning, crankcase and power train guards.
Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with pallet fork is: SAE J1197 FEB91; 50% of full turn static tipping load, or hydraulic/structural limit. CEN 474-3: 60% of full turn static tipping load on rough terrain; 80% of full turn static tipping load on firm and level ground, or the hydraulic/structural limit.

Handling Arm Position		Material Handling Arm		
		Retracted	Mid-position	Extended
Static tipping load, straight*	kg lb	7329 16,180	6291 13,872	5505 13,139
Static tipping load, full turn*	kg lb	6275 13,836	5387 11,878	4715 10,397
Operating weight* 4 forward, 4 reverse	kg lb	17 777 39,192	17 777 39,192	17 777 39,192

*Static tipping load and operating weight include lubricants, full fuel tank, ROPS cab and 80 kg (176 lb) operator.

— IT62H includes 23.5-R25, XHA (L-3) tires, air conditioning, crankcase and power train guards.
Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

NOTE: The rated operating load for a machine with material handling arm is 50% of full turn static tipping load, or the hydraulic/structural limit.

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Performance Data ● 966H

Bucket Type		General Purpose									High Lift Arrangement****
		Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	
Ground Engaging Type											
Rated bucket capacity (\$)	m ³ yd ³	4.0 5.25	4.0 5.25	3.8 5.0	3.8 5.0	3.8 5.0	3.65 4.75	3.65 4.75	3.65 4.75	3.5 4.5	— —
Struck capacity (\$)	m ³ yd ³	3.43 4.46	3.43 4.46	3.28 4.27	3.27 4.25	3.27 4.25	3.12 4.06	3.1 4.04	3.1 4.04	2.96 3.85	— —
Bucket width (\$)	mm ft/in	3059 10'0"	3145 10'4"	3145 10'4"	3059 10'0"	3145 10'4"	3145 10'4"	3059 10'0"	3145 10'4"	3145 10'4"	— —
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3086 10'1"	2934 9'8"	2934 9'8"	3119 10'3"	2968 9'9"	2968 9'9"	3154 10'4"	3005 9'10"	3005 9'10"	+780 +2'7"
Reach at full lift and 45° discharge (\$)	mm ft/in	1294 4'3"	1434 4'8"	1434 4'8"	1270 4'2"	1411 4'8"	1411 4'8"	1247 4'1"	1389 4'7"	1389 4'7"	-16 -0'1"
Reach with lift arms horizontal and bucket level	mm ft/in	2707 8'11"	2912 9'7"	2912 9'7"	2665 8'9"	2870 9'5"	2870 9'5"	2622 8'7"	2827 9'3"	2827 9'3"	+404 +1'4"
Digging depth (\$)	mm in	108 4.3	108 4.3	78 3.1	108 4.3	108 4.3	78 3.1	108 4.3	105 4.3	78 4.32	+0 +0
Overall length (\$)	mm ft/in	8855 29'1"	9080 29'9"	9080 49'9"	8813 28'11"	9038 29'8"	9038 29'8"	8770 28'9"	8995 24'6"	8995 29'6"	+328 +1'1"
Overall height with bucket at full raise (\$)	mm ft/in	5853 19'2"	5853 19'2"	5853 19'2"	5814 19'1"	5814 19'1"	5814 19'1"	5775 18'11"	5775 18'11"	5775 18'11"	+549 +1'10"
Loader clearance circle with bucket in carry position (\$)	m ft/in	14.57 47'10"	14.78 48'6"	14.78 48'6"	14.55 47'9"	14.76 48'5"	14.76 48'5"	14.57 47'8"	14.73 47'8"	14.73 47'8"	+124 +0'5"
Static tipping load, straight** (\$)	kg lb	17 382 38,327	17 196 37,917	17 655 38,929	17 425 38,532	17 290 38,124	17 649 38,916	17 585 38,775	17 401 38,369	17 763 39,167	+177 +390
Static tipping load, full 40° turn** (\$)	kg lb	15 472 34,116	15 286 33,706	15 626 34,455	15 560 34,310	15 375 33,902	15 717 34,656	15 665 34,541	15 480 34,133	15 824 34,892	-3 -7
Breakout force*** (\$)	kN lb	188 42,299	186.4 41,930	200.2 45,038	194.5 43,765	192.9 43,394	207.6 46,702	201.8 45,408	200.2 45,035	215.9 48,568	-12.7 -2858
Operating weight** (\$)	kg lb	23 622 52,087	23 762 52,395	23 610 52,060	23 588 52,012	23 728 52,320	23 576 51,985	23 532 51,888	23 672 52,197	23 520 51,862	+1746 +3850

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 26.5-R25, XHA (L-4) tires, power train guard, roading fenders, full fuel tank, coolant, lubricants, air conditioning, ride control and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

****All buckets shown can be used on the high lift arrangement. High lift column shows changes in specifications from standard lift to high lift. Add or subtract as indicated to or from specifications given for appropriate bucket to calculate high lift specifications.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Width over tires		Change in vertical dimensions		Change in operating weight		Change in static tipping load	
	mm	in	mm	in	kg	lb	kg	lb
26.5R25 GP2B GY L2 radial	3012	119	-20	-0.8	- 82	- 181	- 67	- 148
26.5R25 VMT BS L3 radial	3015	119	-30	-1.2	+ 48	+ 106	- 45	- 99
26.5R25 RT3B GY L3 radial	3017	119	-20	-0.8	- 24	- 53	- 24	- 53
26.5R25 XHA MX L3 radial	3017	119	-20	-0.8	- 34	- 75	- 31	- 68
26.5R25 VSDL BS L5 radial	2956	116	0	0.0	+1214	+2677	+906	+1998
750/65R25 MX L3 radial low profile	3076	121	-20	-0.8	- 262	- 578	- 52	- 115
26.5-25 20 PR SRG FS L3 bias	2992	118	-44	-1.7	- 358	- 789	-492	-1085
26.5-25 20 PR SHRL GY L3 bias	2974	117	-20	-0.8	+ 7	+ 15	-158	- 348
26.5-25 SRG DT FS LDL4 bias	3002	118	0	0.0	0	0	0	0

NOTE: Tread width for 26.5-25 is 2230 mm (7'4").

Bucket Type	Ground Engaging Type	Material Handling						Rock		Heavy Duty Rock	High Lift Arrangement****
		Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments	Teeth & Segments	
Rated bucket capacity (\$)	m ³ yd ³	4.0 5.25	4.0 5.25	3.8 5.0	3.8 5.0	3.8 5.0	3.6 4.75	3.5 4.5	3.5 4.5	3.5 4.5	— —
Struck capacity (\$)	m ³ yd ³	3.46 4.5	3.46 4.5	3.31 4.3	3.22 4.18	3.22 4.18	3.0 4.0	3.0 3.9	3.0 3.9	3.0 3.9	— —
Bucket width (\$)	mm ft/in	3220 10'6"	3306 10'10"	3306 10'10"	3220 10'6"	3306 10'10"	3306 10'10"	3283 10'9"	3270 10'9"	3270 10'9"	— —
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3041 10'0"	2878 9'5"	2878 9'5"	3083 10'1"	2920 9'7"	2930 9'7"	3114 10'3"	2777 9'1"	2777 9'1"	+780 +2'7"
Reach at full lift and 45° discharge (\$)	mm ft/in	1170 3'10"	1297 4'3"	1297 4'3"	1127 3'8"	1254 4'1"	1254 4'1"	1423 4'8"	1346 4'5"	1346 4'5"	-16 -0'1"
Reach with lift arms horizontal and bucket level	mm ft/in	2672 8'9"	2877 9'5"	2877 9'5"	2612 8'7"	2817 9'3"	2817 9'3"	2769 9'1"	2983 9'9"	2983 9'9"	+404 +1'4"
Digging depth (\$)	mm in	108 4.3	108 4.3	78 3.1	108 4.3	108 4.3	78 3.1	113 4.5	108 4.3	108 4.3	+0 +0
Overall length (\$)	mm ft/in	8820 28'11"	9045 29'8"	9045 29'8"	8760 28'9"	8985 29'6"	8985 29'6"	8921 29'3"	9180 30'1"	9180 30'1"	+328 +1'1"
Overall height with bucket at full raise (\$)	mm ft/in	5803 19'0"	5803 19'0"	5803 19'0"	5748 18'10"	5748 18'10"	5748 18'10"	5736 18'10"	5736 18'10"	6063 19'11"	+549 +1'10"
Loader clearance circle with bucket in carry position (\$)	m ft/in	14.7 48'3"	14.91 48'11"	14.91 48'11"	14.67 48'2"	14.88 48'10"	14.88 48'10"	14.81 48'7"	14.94 49'0"	14.94 49'0"	+124 +0'5"
Static tipping load, straight** (\$)	kg lb	17 186 37,895	16 974 37,428	17 366 38,292	17 336 38,226	17 124 37,748	17 519 38,629	17 380 38,323	17 244 38,023	17 122 37,754	+177 +390
Static tipping load, full 40° turn** (\$)	kg lb	15 289 33,712	15 077 33,245	15 452 34,072	15 431 34,025	15 220 33,560	15 598 34,394	15 439 34,043	15 303 33,743	15 180 33,472	-3 -7
Breakout force*** (\$)	kN lb	192.4 43,406	191.1 43,007	205.9 46,325	203.1 45,688	201.3 45,285	217.4 48,917	178.5 40,151	176.5 39,720	175.7 39,542	-12.7 -2858
Operating weight** (\$)	kg lb	23 694 52,245	23 861 52,614	23 670 52,192	23 623 52,089	23 790 52,457	23 599 52,036	23 867 52,627	23 969 52,852	24 129 53,204	+1746 +3850

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 26.5-R25, XHA (L-4) tires, power train guard, loading fenders, full fuel tank, coolant, lubricants, air conditioning, ride control and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

****All buckets shown can be used on the high lift arrangement. High lift column shows changes in specifications from standard lift to high lift. Add or subtract as indicated to or from specifications given for appropriate bucket to calculate high lift specifications.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Width over tires		Change in vertical dimensions		Change in operating weight		Change in static tipping load	
	mm	in	mm	in	kg	lb	kg	lb
26.5R25 GP2B GY L2 radial	3012	119	-20	-0.8	- 82	- 181	- 67	- 148
26.5R25 VMT BS L3 radial	3015	119	-30	-1.2	+ 48	+ 106	- 45	- 99
26.5R25 RT3B GY L3 radial	3017	119	-20	-0.8	- 24	- 53	- 24	- 53
26.5R25 XHA MX L3 radial	3017	119	-20	-0.8	- 34	- 75	- 31	- 68
26.5R25 VSDL BS L5 radial	2956	116	0	0.0	+1214	+2677	+906	+1998
750/65R25 MX L3 radial low profile	3076	121	-20	-0.8	- 262	- 578	- 52	- 115
26.5-25 20 PR SRG FS L3 bias	2992	118	-44	-1.7	- 358	- 789	-492	-1085
26.5-25 20 PR SHRL GY L3 bias	2974	117	-20	-0.8	+ 7	+ 15	-158	- 348
26.5-25 SRG DT FS LDL4 bias	3002	118	0	0.0	0	0	0	0

NOTE: Tread width for 26.5-25 is 2230 mm (7'4").

Wheel Loaders Integrated Toolcarriers

Performance Data ● 972H

Bucket Type		General Purpose						
		Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	
Ground Engaging Type	Rated bucket capacity (\$)	m ³	4.7	4.7	4.5	4.25	4.25	4.0
		yd ³	6.0	6.0	5.75	5.5	5.5	5.25
Struck capacity (\$)		m ³	3.95	3.95	3.8	3.62	3.62	3.43
		yd ³	5.14	5.14	4.94	4.7	4.7	4.46
Bucket width (\$)		mm	3220	3306	3306	3220	3306	3306
		ft/in	10'6"	10'10"	10'10"	10'6"	10'10"	10'10"
Dump clearance at full lift and 45° discharge (\$)		mm	3252	3100	3100	3309	3157	3157
		ft/in	10'8"	10'2"	10'2"	10'10"	10'4"	10'4"
Reach at full lift and 45° discharge (\$)		mm	1291	1431	1431	1246	1386	1386
		ft/in	4'3"	4'8"	4'8"	4'1"	4'7"	4'7"
Reach with lift arms horizontal and bucket level		mm	2904	3109	3109	2832	3037	3037
		ft/in	9'6"	10'2"	10'2"	9'3"	10'0"	10'0"
Digging depth (\$)		mm	97	97	67	88	88	58
		in	3.8	3.8	2.6	3.4	3.4	2.3
Overall length (\$)		mm	9144	9368	9368	9065	9289	9289
		ft/in	30'0"	30'9"	30'9"	29'9"	30'6"	30'6"
Overall height with bucket at full raise (\$)		mm	6015	6015	6015	6075	6075	6075
		ft/in	19'9"	19'9"	19'9"	19'11"	19'11"	19'11"
Loader clearance circle with bucket in carry position (\$)		m	14.92	15.13	15.13	14.87	15.08	15.08
		ft/in	48'11"	49'8"	49'8"	48'9"	49'6"	49'6"
Static tipping load, straight** (\$)		kg	19 067	18 854	19 258	19 009	18 796	19 191
		lb	42,043	41,573	42,464	41,915	41,445	42,316
Static tipping load, full 40° turn** (\$)		kg	16 903	16 691	17 076	16 817	16 604	16 981
		lb	37,271	36,804	37,653	37,081	36,612	37,443
Breakout force*** (\$)		kN	229.9	228.6	244.5	241.6	240.1	257.7
		lb	51,724	51,432	55,006	54,364	54,027	57,992
Operating weight** (\$)		kg	25 148	25 315	25 124	25 512	25 679	25 488
		lb	55,451	55,820	55,398	56,254	56,622	56,201

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 26.5-R25, XHA (L-4) tires, power train guard, roading fenders, full fuel tank, coolant, lubricants, air conditioning, ride control and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Width over tires		Change in vertical dimensions		Change in operating weight		Change in static tipping load	
	mm	in	mm	in	kg	lb	kg	lb
26.5R25 GP2B GY L2 radial	3012	119	-20	-0.8	- 82	- 181	- 57	- 126
26.5R25 VMT BS L3 radial	3015	119	-30	-1.2	+ 48	+ 106	- 41	- 90
26.5R25 RT3B GY L3 radial	3017	119	-20	-0.8	- 24	- 53	- 16	- 35
26.5R25 XHA MX L3 radial	3017	119	-20	-0.8	- 34	- 75	- 24	- 53
26.5R25 VSDL BS L5 radial	2956	116	0	0.0	+1214	+ 2677	+847	+ 1868
750/65R25 MX L3 radial low profile	3076	121	-20	-0.8	- 262	- 578	- 64	- 141
26.5-25 20 PR SRG FS L3 bias	2992	118	-44	-1.7	- 358	- 789	-478	- 1054
26.5-25 20 PR SHRL GY L3 bias	2974	117	-20	-0.8	+ 7	+ 15	-131	- 289
26.5-25 SRG DT FS LDL4 bias	3002	118	0	0.0	0	0	0	0

NOTE: Tread width for 26.5-25 is 2230 mm (7'4").

Bucket Type		Material Handling						
		Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	
Ground Engaging Type	Rated bucket capacity (\$)	m ³ yd ³	4.7 6.0	4.7 6.0	4.5 5.25	4.25 5.5	4.25 5.5	4.0 5.25
	Struck capacity (\$)	m ³ yd ³	4.03 5.24	4.03 5.24	3.88 5.04	3.66 4.76	3.66 4.76	3.51 4.56
Bucket width (\$)		mm ft/in	3220 10'6"	3306 10'10"	3306 10'10"	3220 10'6"	3306 10'10"	3306 10'10"
	Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3164 10'5"	3001 9'10"	3001 9'10"	3228 10'7"	3065 10'1"	3065 10'1"
Reach at full lift and 45° discharge (\$)		mm ft/in	1221 4'0"	1348 4'5"	1348 4'5"	1157 3'10"	1284 4'3"	1284 4'3"
	Reach with lift arms horizontal and bucket level	mm ft/in	2937 9'8"	3142 10'4"	3142 10'4"	2847 9'4"	3052 10'0"	3052 10'0"
Digging depth (\$)		mm in	88 3.4	88 3.4	58 2.3	88 3.4	88 3.4	58 2.3
	Overall length (\$)	mm ft/in	9170 30'1"	9394 30'10"	9394 30'10"	9080 29'9"	9304 30'6"	9304 30'6"
Overall height with bucket at full raise (\$)		mm ft/in	6155 20'2"	6155 20'2"	6155 20'2"	6071 19'11"	6071 19'11"	6071 19'11"
	Loader clearance circle with bucket in carry position (\$)	m ft/in	14.923 49'0"	15.14 49'8"	15.14 49'8"	14.88 48'10"	15.09 49'6"	15.09 49'6"
Static tipping load, straight** (\$)		kg lb	18 430 40,638	18 216 40,166	18 611 41,037	18 076 41,181	18 467 40,720	18 862 41,591
	Static tipping load, full 40° turn** (\$)	kg lb	16 283 35,904	16 069 35,432	16 446 36,263	16 515 36,416	16 306 35,955	16 684 36,788
Breakout force*** (\$)		kN lb	222.5 50,071	221 49,735	236.3 53,162	238.6 53,684	237.1 53,348	254.3 57,226
	Operating weight** (\$)	kg lb	25 870 56,602	25 837 56,971	25 646 56,549	25 559 56,358	25 726 56,726	25 535 56,305

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 26.5-R25, XHA (L-4) tires, power train guard, roading fenders, full fuel tank, coolant, lubricants, air conditioning, ride control and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Width over tires		Change in vertical dimensions		Change in operating weight		Change in static tipping load	
	mm	in	mm	in	kg	lb	kg	lb
26.5R25 GP2B GY L2 radial	3012	119	-20	-0.8	- 82	- 181	- 57	- 126
26.5R25 VMT BS L3 radial	3015	119	-30	-1.2	+ 48	+ 106	- 41	- 90
26.5R25 RT3B GY L3 radial	3017	119	-20	-0.8	- 24	- 53	- 16	- 35
26.5R25 XHA MX L3 radial	3017	119	-20	-0.8	- 34	- 75	- 24	- 53
26.5R25 VSDL BS L5 radial	2956	116	0	0.0	+1214	+2677	+847	+1868
750/65R25 MX L3 radial low profile	3076	121	-20	-0.8	- 262	- 578	- 64	- 141
26.5-25 20 PR SRG FS L3 bias	2992	118	-44	-1.7	- 358	- 789	-478	-1054
26.5-25 20 PR SHRL GY L3 bias	2974	117	-20	-0.8	+ 7	+ 15	-131	- 289
26.5-25 SRG DT FS LDL4 bias	3002	118	0	0.0	0	0	0	0

NOTE: Tread width for 26.5-25 is 2230 mm (7'4").

Wheel Loaders Integrated Toolcarriers

Performance Data ● 972H

Bucket Type		Rock		Heavy Duty Rock		High Lift Arrangement	
		Teeth & Segments*	Teeth & Segments*	Teeth & Segments*	Teeth & Segments*		
Ground Engaging Type	Rated bucket capacity (\$)	m ³	4.0	3.5	4.0	3.5	—
		yd ³	5.25	4.5	5.25	4.5	—
Struck capacity (\$)		m ³	3.45	2.96	3.45	2.96	—
		yd ³	4.49	3.85	4.49	3.85	—
Bucket width (\$)		mm	3270	3270	3270	3270	—
		ft/in	10'9"	10'9"	10'9"	10'9"	—
Dump clearance at full lift and 45° discharge (\$)		mm	3054	2949	3054	2999	+336
		ft/in	10'0"	9'10"	10'0"	9'10"	+1'1"
Reach at full lift and 45° discharge (\$)		mm	1552	1298	1552	1298	+23
		ft/in	5'1"	4'3"	5'1"	4'3"	+0'1"
Reach with lift arms horizontal and bucket level		mm	3218	3108	3218	3108	+309
		ft/in	10'7"	10'2"	10'7"	10'2"	+1'0"
Digging depth (\$)		mm	58	88	88	88	+0
		in	2.3	3.5	3.5	3.5	+0
Overall length (\$)		mm	9497	9387	9497	9387	+335
		ft/in	31'2"	30'10"	31'2"	30'10"	+1'1"
Overall height with bucket at full raise (\$)		mm	6067	5959	6228	6285	+336
		ft/in	19'11"	19'7"	20'5"	20'7"	+1'1"
Loader clearance circle with bucket in carry position (\$)		m	15.17	15.1	15.17	15.1	+320
		ft/in	49'9"	49'7"	49'9"	49'7"	+1'1"
Static tipping load, straight** (\$)		kg	18 618	18 873	18 483	18 746	-1802
		lb	41,053	41,615	40,755	41,335	-3973
Static tipping load, full 40° turn** (\$)		kg	16 415	16 657	16 281	16 531	-1643
		lb	36,195	36,729	35,900	36,451	-3623
Breakout force*** (\$)		kN	224.4	228.8	214.1	228	-7
		lb	50,482	51,477	48,177	51,299	-1654
Operating weight** (\$)		kg	25 901	25 783	26 075	25 943	+74
		lb	57,112	56,852	57,495	57,204	+163

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 26.5-R25, XHA (L-4) tires, power train guard, roading fenders, full fuel tank, coolant, lubricants, air conditioning, ride control and operator.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader rating, denoted in the text by (\$).

	Width over tires		Change in vertical dimensions		Change in operating weight		Change in static tipping load	
	mm	in	mm	in	kg	lb	kg	lb
26.5R25 GP2B GY L2 radial	3012	119	-20	-0.8	- 82	- 181	- 57	- 126
26.5R25 VMT BS L3 radial	3015	119	-30	-1.2	+ 48	+ 106	- 41	- 90
26.5R25 RT3B GY L3 radial	3017	119	-20	-0.8	- 24	- 53	- 16	- 35
26.5R25 XHA MX L3 radial	3017	119	-20	-0.8	- 34	- 75	- 24	- 53
26.5R25 VSDL BS L5 radial	2956	116	0	0.0	+1214	+ 2677	+847	+ 1868
750/65R25 MX L3 radial low profile	3076	121	-20	-0.8	- 262	- 578	- 64	- 141
26.5-25 20 PR SRG FS L3 bias	2992	118	-44	-1.7	- 358	- 789	-478	- 1054
26.5-25 20 PR SHRL GY L3 bias	2974	117	-20	-0.8	+ 7	+ 15	-131	- 289
26.5-25 SRG DT FS LDL4 bias	3002	118	0	0.0	0	0	0	0

NOTE: Tread width for 26.5-25 is 2230 mm (7'4").

Bucket Type		General Purpose						
		Teeth	Teeth & Segments	Bolt-on Edges	Flush-mounted Teeth with Tips	Teeth	Teeth & Segments	Bolt-on Edges
Ground Engaging Type								
Rated bucket capacity (\$)	m ³	4.2	4.5	4.6	5.4	4.7	4.9	5.0
	yd ³	5.5	5.75	6.0	7.0	6.0	6.25	6.5
Struck capacity (\$)	m ³	3.66	3.81	3.87	4.61	4.03	4.19	4.25
	yd ³	4.78	4.98	5.06	6.03	5.27	5.48	5.56
Bucket width (\$)	mm	3533	3533	3447	3513	3533	3533	3447
	ft/in	11'7"	11'7"	11'4"	11'6"	11'7"	11'7"	11'4"
Dump clearance at full lift and 45° discharge (\$)	mm	3305	3305	3458	3138	3229	3229	3385
	ft/in	10'10"	10'10"	11'4"	10'4"	10'7"	10'7"	11'1"
Reach at full lift and 45° discharge (\$)	mm	1554	1554	1407	1739	1601	1601	1457
	ft/in	5'1"	5'1"	4'7"	5'8"	5'3"	5'3"	4'9"
Reach with lift arms horizontal and bucket level (\$)	mm	3000	3000	2790	3260	3090	3090	2880
	ft/in	9'10"	9'10"	9'2"	10'8"	10'2"	10'2"	9'5"
Digging depth (\$)	mm	90	125	125	91	90	125	125
	in	3.5	4.9	4.9	3.6	3.5	4.9	4.9
Overall length (\$)	mm	9480	9480	9248	9700	9570	9570	9338
	ft/in	31'1"	31'1"	30'4"	31'10"	31'5"	31'5"	30'8"
Overall height with bucket at full raise (\$)	mm	6141	6141	6141	6216	6217	6217	6217
	ft/in	20'2"	20'2"	20'2"	20'5"	20'5"	20'5"	20'5"
Loader clearance circle with bucket in carry position (\$)	mm	15 925	15 925	15 716	16 006	15 972	15 972	15 762
	ft/in	52'3"	52'3"	51'7"	52'6"	52'5"	52'5"	51'9"
Static tipping load, straight*	kg	22 767	22 310	22 341	22 174	22 417	22 063	22 093
	lb	50,201	49,194	49,262	48,894	49,429	48,649	48,715
Static tipping load, full 37° turn	kg	20 380	20 034	20 069	19 742	20 439	19 801	19 836
	lb	44,938	44,175	44,252	43,531	45,068	43,661	43,738
Breakout force** (\$)	kN	273	251	252	227	252	233	234
	lb	61,425	56,475	56,700	51,075	56,700	52,425	52,650
Operating weight* (\$)	kg	30 156	30 334	30 261	30 351	30 253	30 432	30 359
	lb	66,494	66,886	66,726	66,924	66,708	67,103	66,942

*Static tipping loads and operating weights shown are based on standard machine configuration with 29.5R25, L-3 Michelin tires, full fuel tank, coolant, lubricants and operator.
**Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732C.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers, including SAE Standards J732C governing loader ratings, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
29.5-25, 22 PR (L-3) Goodyear	-297	- 655	-206	- 454
29.5-25, 22 PR (L-4) Goodyear	+330	+ 728	+411	+ 906
29.5-25, 22 PR (L-5) Goodyear	+942	+2077	+943	+2079
29.5-R25, 1-Star (L-2/L-3) Goodyear	- 91	- 200	+129	+ 284
29.5-R25, 1-Star (L-5) Michelin	+836	+1843	+587	+1294
29.5-R25, 1-Star (L-3) Michelin (standard)	0	0	0	0

Wheel Loaders Integrated Toolcarriers

Performance Data ● 980H

Bucket Type		General Purpose								
		Teeth	Teeth & Seg-ments	Bolt-on Edges	Teeth	Teeth & Seg-ments	Bolt-on Edges	Teeth	Teeth & Seg-ments	Bolt-on Edges
Ground Engaging Type										
Rated bucket capacity (\$)	m ³ yd ³	5.0 6.5	5.3 6.75	5.4 7.0	5.4 7.0	5.6 7.25	5.7 7.5	5.73 7.5	6.0 7.75	6.12 8.0
Struck capacity (\$)	m ³ yd ³	4.38 5.73	4.55 5.95	4.61 6.03	4.68 6.12	4.85 6.34	4.92 6.44	4.85 6.34	5.1 6.67	5.2 6.8
Bucket width (\$)	mm ft/in	3533 11'7"	3533 11'7"	3447 11'4"	3533 11'7"	3533 11'7"	3447 11'4"	3533 11'7"	3533 11'7"	3447 11'4"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3165 10'5"	3165 10'5"	3322 10'11"	3124 10'3"	3124 10'3"	3272 10'9"	3075 10'1"	3075 10'1"	3238 10'7"
Reach at full lift and 45° discharge (\$)	mm ft/in	1647 5'5"	1647 5'5"	1505 4'11"	1675 5'6"	1675 5'6"	1534 5'0"	1729 5'8"	1729 5'8"	1594 5'3"
Reach with lift arms horizontal and bucket level (\$)	mm ft/in	3170 10'5"	3170 10'5"	2960 9'9"	3220 10'7"	3220 10'7"	3010 9'11"	3292 10'10"	3292 10'10"	3083 10'1"
Digging depth (\$)	mm in	90 3.5	125 4.9	125 4.9	90 3.5	125 4.9	125 4.9	99 3.9	125 4.9	125 4.9
Overall length (\$)	mm ft/in	9650 31'8"	9650 31'8"	9418 30'11"	9700 31'10"	9700 31'10"	9468 31'1"	9778 32'1"	9778 32'1"	9540 31'4"
Overall height with bucket at full raise (\$)	mm ft/in	6287 20'8"	6287 20'8"	6287 20'8"	6360 20'10"	6360 20'10"	6360 20'10"	6451 21'2"	6451 21'2"	6451 21'2"
Loader clearance circle with bucket in carry position (\$)	mm ft/in	16 015 52'7"	16 015 52'7"	15 803 51'10"	16 041 52'8"	16 041 52'8"	15 829 51'11"	16 087 52'9"	16 087 52'9"	15 868 52'1"
Static tipping load, straight (\$)	kg lb	22 201 48,953	21 848 48,175	21 880 48,245	22 052 48,625	21 711 47,873	21 735 47,926	23 328 51,438	22 939 50,581	22 971 50,651
Static tipping load, full 37° turn (\$)	kg lb	19 933 43,952	19 598 43,214	19 634 43,293	19 952 43,994	19 467 42,925	19 496 42,989	20 860 45,996	20 493 45,187	20 532 45,273
Breakout force** (\$)	kN lb	236 53,100	219 49,275	220 49,500	227 51,075	211 47,475	212 47,700	213 47,925	198 44,550	199 44,775
Operating weight* (\$)	kg lb	30 343 66,906	30 522 67,301	30 448 67,138	30 415 67,065	30 593 67,458	30 519 67,294	31 287 68,988	31 462 69,374	31 370 69,171

*Static tipping loads and operating weights shown are based on standard machine configuration with 29.5R25, L-3 Michelin tires, full fuel tank, coolant, lubricants and operator.
**Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732C.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers, including SAE Standards J732C governing loader ratings, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
29.5-25, 22 PR (L-3) Goodyear	-297	- 655	-206	- 454
29.5-25, 22 PR (L-4) Goodyear	+330	+ 728	+411	+ 906
29.5-25, 22 PR (L-5) Goodyear	+942	+2077	+943	+2079
29.5-R25, 1-Star (L-2/L-3) Goodyear	- 91	- 200	+129	+ 284
29.5-R25, 1-Star (L-5) Michelin	+836	+1843	+587	+1294
29.5-R25, 1-Star (L-3) Michelin (standard)	0	0	0	0

Bucket Type		Heavy Duty General Purpose			Material Handling			Rock		
		Teeth	Teeth & Seg- ments	Bolt-on Edges	Teeth	Teeth & Seg- ments	Bolt-on Edges	Teeth	Teeth & Seg- ments	Bolt-on Edges
Ground Engaging Type										
Rated bucket capacity (\$)	m ³ yd ³	5.4 7.0	5.6 7.25	5.7 7.5	5.5 7.25	5.7 7.5	5.9 7.75	4.2 5.49	4.5 5.89	4.5 5.89
Struck capacity (\$)	m ³ yd ³	4.68 6.12	4.85 6.34	4.92 6.44	4.7 6.15	4.8 6.28	5.0 6.54	3.53 4.61	3.73 4.88	3.73 4.88
Bucket width (\$)	mm ft/in	3533 11'7"	3533 11'7"	3447 11'4"	3533 11'7"	3533 11'7"	3447 11'4"	3504 11'6"	3504 11'6"	3504 11'6"
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	3142 10'4"	3142 10'4"	3296 10'10"	2943 9'8"	2943 9'8"	3110 10'2"	3183 10'5"	3183 10'5"	3184 10'5"
Reach at full lift and 45° discharge (\$)	mm ft/in	1693 5'7"	1693 5'7"	1547 5'1"	1610 5'3"	1610 5'3"	1478 4'10"	1792 5'11"	1792 5'11"	1792 5'11"
Reach with lift arms horizontal and bucket level (\$)	mm ft/in	3220 10'7"	3220 10'7"	3009 9'10"	3320 10'11"	3320 10'11"	3109 10'2"	3258 10'8"	3258 10'8"	3258 10'8"
Digging depth (\$)	mm in	78 3.1	118 4.6	118 4.6	111 4.4	191 7.5	151 5.9	90 3.5	125 4.9	125 4.9
Overall length (\$)	mm ft/in	9691 31'10"	9691 31'10"	9461 31'0"	9816 32'2"	9816 32'2"	9586 31'5"	9725 31'11"	9725 31'11"	9725 31'11"
Overall height with bucket at full raise (\$)	mm ft/in	6287 20'8"	6287 20'8"	6287 20'8"	6382 20'11"	6382 20'11"	6382 20'11"	6383 20'11"	6383 20'11"	6383 20'11"
Loader clearance circle with bucket in carry position (\$)	mm ft/in	16 033 52'7"	16 033 52'7"	15 823 51'11"	16 111 52'10"	16 111 52'10"	15 901 52'2"	16 023 52'7"	16 023 52'7"	16 023 52'7"
Static tipping load, straight (\$)	kg lb	21 299 46,964	20 951 46,197	21 098 46,521	20 960 46,217	20 612 45,449	20 648 45,529	21 939 48,375	21 345 47,066	21 602 47,632
Static tipping load, full 37° turn (\$)	kg lb	19 031 41,963	18 700 41,234	18 852 41,569	18 733 41,306	18 416 40,607	18 458 40,700	19 669 43,370	19 094 42,102	19 332 42,627
Breakout force** (\$)	kN lb	225 50,625	209 47,025	210 47,250	207 46,575	182 40,950	194 43,650	223 50,175	205 46,125	205 46,125
Operating weight* (\$)	kg lb	31 154 68,695	31 330 69,083	31 148 68,681	30 868 68,064	31 044 68,452	30 953 68,251	30 494 67,239	30 776 67,861	30 745 67,793

*Static tipping loads and operating weights shown are based on standard machine configuration with 29.5R25, L-3 Michelin tires, full fuel tank, coolant, lubricants and operator.
**Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732C.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers, including SAE Standards J732C governing loader ratings, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
29.5-25, 22 PR (L-3) Goodyear	-297	- 655	-206	- 454
29.5-25, 22 PR (L-4) Goodyear	+330	+ 728	+411	+ 906
29.5-25, 22 PR (L-5) Goodyear	+942	+2077	+943	+2079
29.5-R25, 1-Star (L-2/L-3) Goodyear	- 91	- 200	+129	+ 284
29.5-R25, 1-Star (L-5) Michelin	+836	+1843	+587	+1294
29.5-R25, 1-Star (L-3) Michelin (standard)	0	0	0	0

Wheel Loaders Integrated Toolcarriers

Performance Data ● 980H

Bucket Type		Rock — Spade		HD Quarry	Waste	Coal	High Lift Change in Specs
		Bolt-on Edges	Bolt-on Edges	Teeth & Segments	Bolt-on Edges	Bolt-on Edges	
Rated bucket capacity (\$)	m ³	4.5	4.8	4.5	10.5	8.0	—
	yd ³	5.89	6.28	5.89	13.73	10.46	—
Struck capacity (\$)	m ³	3.7	4.0	3.79	9.4	7.2	—
	yd ³	4.84	5.23	4.96	12.29	9.42	—
Bucket width (\$)	mm	3516	3670	3500	3886	3607	—
	ft/in	11'6"	12'0"	11'6"	12'9"	11'10"	—
Dump clearance at full lift and 45° discharge (\$)	mm	3351	3719	3167	2903	2933	+221
	ft/in	11'0"	12'2"	10'5"	9'6"	9'7"	+9"
Reach at full lift and 45° discharge (\$)	mm	1591	1994	1821	1686	1662	+2.8
	ft/in	5'3"	6'7"	6'0"	5'6"	5'5"	+0.1"
Reach with lift arms horizontal and bucket level (\$)	mm	2997	3097	3291	3402	3364	+160
	ft/in	9'10"	10'2"	10'10"	11'2"	11'0"	+6"
Digging depth (\$)	mm	125	385	117	151	146	-2
	in	4.9	15.2	4.6	5.9	5.7	-0.08
Overall length (\$)	mm	9455	9035	9755	9879	9837	+199
	ft/in	31'0"	29'8"	32'0"	32'5"	32'3"	+8"
Overall height with bucket at full raise (\$)	mm	6377	6377	6383	6994	6526	+221
	ft/in	20'11"	20'11"	20'11"	22'11"	21'5"	+9"
Loader clearance circle with bucket in carry position (\$)	mm	15 886	15 678	16 034	16 458	16 180	+168
	ft/in	52'1"	51'5"	52'7"	54'0"	53'1"	+7"
Static tipping load, straight*	kg	22 015	21 349	20 658	20 805	20 574	-1774
	lb	48,543	47,075	45,551	45,875	45,366	-3912
Static tipping load, full 37° turn	kg	19 728	19 094	18 413	18 516	18 398	-1620
	lb	43,500	42,102	40,601	40,828	40,568	-3572
Breakout force** (\$)	kN	213	194	203	160	163	+3.5
	lb	47,925	43,650	45,675	36,000	36,675	+787.5
Operating weight* (\$)	kg	30 565	30 830	31 389	31 599	30 975	+129
	lb	67,396	67,980	69,213	69,676	68,300	+284

*Static tipping loads and operating weights shown are based on standard machine configuration with 29.5R25, L-3 Michelin tires, full fuel tank, coolant, lubricants and operator.

**Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732C.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers, including SAE Standards J732C governing loader ratings, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
29.5-25, 22 PR (L-3) Goodyear	-297	- 655	-206	- 454
29.5-25, 22 PR (L-4) Goodyear	+330	+ 728	+411	+ 906
29.5-25, 22 PR (L-5) Goodyear	+942	+2077	+943	+2079
29.5-R25, 1-Star (L-2/L-3) Goodyear	- 91	- 200	+129	+ 284
29.5-R25, 1-Star (L-5) Michelin	+836	+1843	+587	+1294
29.5-R25, 1-Star (L-3) Michelin (standard)	0	0	0	0

Performance Data
● 988G

Wheel Loaders
Integrated Toolcarriers

		Straight Rock Teeth & Segments	Spade Rock Teeth & Segments	Spade Rock Teeth & Segments	Wide Spade Rock Teeth & Segments	General Purpose BOCE	HD Quarry Teeth & Segments	HD Abrasion Teeth & Segments
Heaped capacity	m ³ yd ³	6.3 8.2	6.4 8.33	6.6 8.7	6.9 9.0	7.0 9.2	6.4 8.33	6.4 8.33
Struck capacity (\$)	m ³ yd ³	5.2 6.8	5.3 6.9	5.5 7.2	5.7 7.5	5.9 7.7	5.3 6.9	5.3 6.9
Operating load at rated capacity	kg lb	11 340 25,000	11 340 25,000	11 340 25,000	11 340 25,000	11 340 25,000	11 340 25,000	11 340 25,000
Bucket width (\$)	mm ft/in	3800 12'6"	3800 12'6"	3900 12'10"	3980 13'1"	3729 12'3"	3800 12'6"	3926 12'11"
Dump clearance at full lift and 45° discharge (\$)	With teeth	4198 ft/in 13'9"	3971 ft/in 13'0"	3971 ft/in 13'0"	3971 ft/in 13'0"	N/A N/A	3949 ft/in 12'11"	3941 ft/in 12'11"
	Bare	4451 ft/in 14'7"	4246 ft/in 13'11"	4249 ft/in 13'11"	4249 ft/in 13'11"	4304 ft/in 14'1"	4253 ft/in 13'11"	4245 ft/in 13'11"
Reach at full lift and 45° discharge (\$)	With teeth	1886 ft/in 6'2"	2113 ft/in 6'11"	2113 ft/in 6'11"	2113 ft/in 6'11"	N/A N/A	2136 ft/in 7'0"	2144 ft/in 7'0"
	Bare	1698 ft/in 5'7"	1622 ft/in 5'4"	1662 ft/in 5'5"	1656 ft/in 5'5"	1846 ft/in 6'1"	1626 ft/in 5'4"	1623 ft/in 5'4"
Reach with lift arms horizontal and bucket level	With teeth	4173 ft/in 13'8"	4494 ft/in 14'9"	4494 ft/in 14'9"	4494 ft/in 14'9"	N/A N/A	4526 ft/in 14'10"	4537 ft/in 14'11"
	Bare	3861 ft/in 12'8"	3752 ft/in 12'4"	3810 ft/in 12'6"	3801 ft/in 12'6"	4070 ft/in 13'4"	3759 ft/in 12'4"	3755 ft/in 12'4"
Digging depth (\$)	mm in	171 6.7"	171 6.7"	171 6.7"	171 6.7"	171 6.7"	191 7.5"	171 6.7"
Overall length (\$)	With teeth	12 240 ft/in 40'2"	12 527 ft/in 41'1"	12 530 ft/in 41'1"	12 530 ft/in 41'1"	N/A N/A	12 594 ft/in 41'4"	12 656 ft/in 41'6"
	Bare	11 895 ft/in 39'0"	12 185 ft/in 40'0"	12 182 ft/in 40'0"	12 182 ft/in 40'0"	12 105 ft/in 39'9"	12 173 ft/in 39'9"	12 187 ft/in 40'0"
Overall height with bucket at full raise (\$)	mm ft/in	8131 26'8"	8131 26'8"	8131 26'8"	8131 26'8"	7909 25'11"	8131 26'8"	8131 26'8"
Loader clearance circle with bucket in carry position (\$)	With teeth	17 556 ft/in 57'7"	17 531 ft/in 57'6"	17 602 ft/in 57'9"	17 684 ft/in 58'0"	N/A N/A	17 599 ft/in 57'9"	17 646 ft/in 57'11"
	Bare	17 392 ft/in 57'1"	17 335 ft/in 56'10"	17 454 ft/in 57'3"	17 520 ft/in 57'6"	17 406 ft/in 57'1"	17 393 ft/in 57'1"	17 448 ft/in 57'3"
Static tipping load, straight† (\$)	kg lb	33 458 73,762	32 810 72,334	32 831 72,380	32 666 72,016	33 109 72,993	31 305 69,016	31 258 68,912
Static tipping load, 35° turn† (\$)	kg lb	29 074 64,097	28 710 63,294	28 669 63,204	28 695 63,261	29 029 63,997	27 396 60,397	27 346 60,287
Static tipping load, 40° turn† (\$)	kg lb	28 022 61,777	27 661 60,981	27 621 60,893	27 646 60,948	27 989 61,705	26 348 58,087	26 298 57,977
Static tipping load, full 43° turn† (\$)	kg lb	28 060 61,862	27 473 60,568	27 484 60,592	27 319 60,228	27 810 61,310	25 968 57,250	25 911 57,124
Breakout force†† (\$)	kN lb	515.4 115,867	436.4 98,107	437.2 98,286	436.4 98,107	463.3 104,154	415.2 93,341	400.0 89,924
Operating weight†	kg lb	49 671 109,506	49 886 109,980	49 921 110,557	50 079 110,405	49 418 108,948	51 245 112,976	51 333 113,170
Rack angle at maximum lift	degrees	65	65	65	65	65	65	65

†Static tipping load and operating weight are based on standard machine configuration with 35/65-33, 36 PR (L-4) tires, full fuel tank, coolant, lubricants and operator.
††Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings, denoted in the text by (\$).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Remove cab only	-1327	-2926	- 476	-1049
35/65-33, 42 PR (L-5) tires	+ 847	+1867	+ 491	+1082
35/65 R33, (L-5) equivalent tires	+ 824	+1817	+ 478	+1054

Wheel Loaders Integrated Toolcarriers

Performance Data ● 990 Series II

Bucket Type		Standard						
		Spade HDLT	Spade BOCE	Spade HDLT & BOS	Spade HDLT & BOS	High Abrasion	HD Quarry	
Bucket Part Number		8R5596	8R5599	155-4601	155-4603	202-7399	210-0247	
Rated capacity	m ³	8.4	8.6	8.6	9.2	8.6	8.6	
	yd ³	11.0	11.25	11.25	12.0	11.25	11.25	
Operating load at rated capacity	kg	15 000	15 000	15 000	15 000	15 000	15 000	
	lb	33,069	33,069	33,069	33,069	33,069	33,069	
Heaped capacity	m ³	8.4	8.6	8.6	9.2	8.6	8.6	
	yd ³	11.0	11.25	11.25	12.0	11.25	11.25	
Struck capacity	m ³	6.9	7.3	7.3	7.8	7.3	7.3	
	yd ³	9.0	9.5	9.5	10.2	9.5	9.5	
Bucket width	mm	4450	4450	4450	4610	4574	4450	
	ft/in	14'7"	14'7"	14'7"	15'2"	15'0"	14'7"	
Clearance at full lift, 45° dump	SAE	mm	4333	4192	4221	4165	4168	4170
		ft/in	14'3"	13'9"	13'10"	13'8"	13'8"	13'8"
	Tooth tip	mm	4027	N/A	4024	3968	4018	4023
		ft/in	13'3"	N/A	13'2"	13'0"	13'2"	13'2"
Reach at full lift, 45° dump	SAE	mm	1698	1740	1756	1799	1790	1746
		ft/in	5'7"	5'9"	5'9"	5'11"	5'10"	5'9"
	Tooth tip	mm	2223	N/A	2218	2274	2221	2220
		ft/in	7'4"	N/A	7'3"	7'6"	7'3"	7'3"
Reach at 45° dump and 2130 mm (7'0") height	SAE	mm	2672	2750	2729	2759	2762	2718
		ft/in	8'9"	9'9"	8'11"	9'1"	9'1"	8'11"
	Tooth tip	mm	3196	N/A	3192	3234	3192	3193
		ft/in	10'6"	N/A	10'6"	10'7"	10'6"	10'6"
Reach at level arm and level bucket	SAE	mm	3416	3516	3538	3599	3586	3544
		ft/in	11'2"	11'6"	11'7"	11'10"	11'9"	11'8"
	Tooth tip	mm	4202	N/A	4202	4280	4208	4204
		ft/in	13'9"	N/A	13'9"	14'1"	13'10"	13'10"
Digging depth — bucket level	mm	107	148	148	148	148	168	
	in	4.0	6.0	6.0	6.0	6.0	7.0	
Overall length	Edge	mm	12 341	12 534	12 492	12 572	12 568	12 560
		ft/in	40'6"	41'1"	41'0"	41'3"	41'3"	41'2"
	Tooth tip	mm	12 730	N/A	12 761	12 839	12 767	12 778
		ft/in	41'9"	N/A	41'10"	42'1"	41'11"	41'11"
Overall height	mm	8091	8091	8091	8091	8091	8091	
	ft/in	26'7"	26'7"	26'7"	26'7"	26'7"	26'7"	
Clearance circle at carry	Edge	mm	20 224	20 527	20 224	20 290	20 258	20 227
		ft/in	66'4"	67'4"	66'4"	66'7"	66'6"	66'4"
	Tooth tip	mm	20 674	N/A	20 674	20 740	20 708	20 677
		ft/in	67'10"	N/A	67'10"	68'1"	67'11"	67'10"
Full dump at maximum lift	degrees	45	45	45	45	45	45	
Tipping load (at operating weight)	Straight	kg	43 997	43 242	42 873	42 392	41 347	43 516
		lb	96,996	95,331	94,518	93,457	91,154	95,935
	35° Articulated	kg	39 785	39 085	38 709	38 243	37 203	39 364
		lb	87,710	86,167	85,338	84,311	82,018	86,782
Breakout force	kN	655	602	610	584	581	598	
	kg	66 760	61 430	62 210	59 509	59 271	61 006	
	lb	147,179	135,429	137,148	131,194	130,669	134,494	
Operating weight	kg	76 484	76 628	76 965	77 236	78 160	76 144	
	lb	168,617	168,934	169,677	170,274	172,312	167,867	
Weight distribution	Front	kg	42 881	43 136	43 764	44 245	45 785	42 466
		lb	94,535	95,098	96,482	97,543	100,938	93,621
	Rear	kg	33 603	33 492	33 201	32 991	32 375	33 678
		lb	74,081	73,836	73,195	72,732	71,374	74,247
Shipping weight	kg	75 462	75 606	75 943	76 214	77 138	75 122	
	lb	166,364	166,681	167,424	168,021	170,058	165,614	

HDLT = Heavy Duty Lug Teeth
BOCE = Bolt-on Cutting Edge
HDLT & BOS = Heavy Duty Lug Teeth and Bolt-on Segments
HD = Heavy Duty

Performance Data
● 990 Series II

Wheel Loaders
Integrated Toolcarriers

Bucket Type		High Lift					
		Spade HDLT	Spade BOCE	Spade HDLT & BOS	High Abrasion	HD Quarry	
Bucket Part Number		8R5596	8R5599	155-4601	202-7399	210-0247	
Rated capacity	m ³	8.4	8.6	8.6	8.6	8.6	
	yd ³	11.0	11.25	11.25	11.25	11.25	
Operating load at rated capacity	kg	15 000	15 000	15 000	15 000	15 000	
	lb	33,069	33,069	33,069	33,069	33,069	
Heaped capacity	m ³	8.4	8.6	8.6	8.6	8.6	
	yd ³	11.0	11.25	11.25	11.25	11.25	
Struck capacity	m ³	6.9	7.3	7.3	7.3	7.3	
	yd ³	9.0	9.5	9.5	9.5	9.5	
Bucket width	mm	4450	4450	4450	4574	4450	
	ft/in	14'7"	14'7"	14'7"	15'0"	14'7"	
Clearance at full lift, 45° dump	SAE	mm	4899	4758	4787	4734	4736
		ft/in	16'1"	15'7"	15'8"	15'6"	15'6"
	Tooth tip	mm	4593	N/A	4590	4584	4589
		ft/in	15'1"	N/A	15'1"	15'0"	15'1"
Reach at full lift, 45° dump	SAE	mm	1991	2033	2049	2083	2039
		ft/in	6'6"	6'8"	6'9"	6'10"	6'8"
	Tooth tip	mm	2516	N/A	2511	2514	2513
		ft/in	8'3"	N/A	8'3"	8'3"	8'3"
Reach at 45° dump and 2130 mm (7'0") height	SAE	mm	3286	3359	3343	3376	3333
		ft/in	10'9"	11'0"	11'0"	11'1"	10'11"
	Tooth tip	mm	3810	N/A	3806	3806	3807
		ft/in	12'6"	N/A	12'6"	12'6"	12'6"
Reach at level arm and level bucket	SAE	mm	4016	4116	4138	4186	4144
		ft/in	13'2"	13'6"	13'7"	13'9"	13'7"
	Tooth tip	mm	4802	N/A	4802	4808	4804
		ft/in	15'9"	N/A	15'9"	15'9"	15'9"
Digging depth — bucket level	mm	150	191	191	191	211	
	in	6.0	8.0	8.0	8.0	8.0	
Overall length	Edge	mm	13 080	13 273	13 231	13 307	13 299
		ft/in	42'11"	43'7"	43'5"	43'8"	43'8"
	Tooth tip	mm	13 469	N/A	13 500	13 506	13 517
		ft/in	41'11"	N/A	44'3"	44'4"	44'4"
Overall height	mm	8658	8658	8658	8658	8658	
	ft/in	28'5"	28'5"	28'5"	28'5"	28'5"	
Clearance circle at carry	Edge	mm	20 893	21 171	20 893	20 929	20 897
		ft/in	68'7"	69'6"	69'7"	68'8"	68'7"
	Tooth tip	mm	21 343	N/A	21 343	21 379	21 347
		ft/in	70'0"	N/A	70'0"	70'2"	70'0"
Full dump at maximum lift	degrees	50	50	50	50	50	
Tipping load (at operating weight)	Straight	kg	40 533	39 902	39 530	38 076	40 212
		lb	89,359	87,968	87,148	83,942	88,651
	35° Articulated	kg	36 227	35 644	35 267	33 831	35 959
		lb	79,866	78,581	77,750	74,584	79,275
Breakout force	kN	617	569	576	548	565	
	kg	62 947	57 977	58 694	55 891	57 611	
	lb	138,773	127,816	129,397	123,217	127,009	
Operating weight	kg	80 671	80 814	81 152	82 347	80 331	
	lb	177,847	178,163	178,908	181,542	177,098	
Weight distribution	Front	kg	44 177	44 456	45 141	47 366	43 705
		lb	97,393	98,008	99,518	104,423	96,352
	Rear	kg	36 494	36 358	36 011	34 981	36 626
		lb	80,455	80,155	79,390	77,119	80,746
Shipping weight	kg	79 649	79 792	80 130	81 325	79 309	
	lb	175,594	175,909	176,655	179,289	174,845	

HDLT = Heavy Duty Lug Teeth
BOCE = Bolt-on Cutting Edge
HDLT & BOS = Heavy Duty Lug Teeth and Bolt-on Segments
HD = Heavy Duty

Wheel Loaders Integrated Toolcarriers

Performance Data ● 992G

		Standard Spade Edge		Large Standard Spade Edge		Heavy Duty Quarry		High Abrasion		
		Teeth & Segments		Teeth & Segments		Teeth & Segments		Teeth		
		Std.	Hi-Lift	Std.	Hi-Lift	Std.	Hi-Lift	Std.	Hi-Lift	
Rock Buckets										
Rated bucket capacity (\$)	m ³ yd ³	11.5 15.0	11.5 15.0	12.2 16.0	12.2 16.0	11.5 15.0	11.5 15.0	11.5 15.0	11.5 15.0	
Struck capacity (\$)	m ³ yd ³	9.45 12.36	9.45 12.36	10.1 13.2	10.1 13.2	9.45 12.4	9.45 12.4	9.45 12.36	9.45 12.36	
Bucket width (\$)	mm ft/in	4824 15'10"	4824 15'10"	4824 15'10"	4824 15'10"	4824 15'10"	4824 15'10"	4840 15'11"	4840 15'11"	
Dump clearance at full lift and 45° discharge (\$)	With teeth	mm ft/in	4626 15'2"	5250 17'3"	4626 15'2"	5250 17'3"	4557 14'11"	5182 17'0"	4602 15'1"	5227 17'2"
	Bare	mm ft/in	4993 16'5"	5607 18'5"	4993 16'5"	5607 18'5"	4993 16'5"	5607 18'5"	4993 16'5"	5607 18'5"
Reach at full lift and 45° discharge (\$)	With teeth	mm ft/in	2315 7'7"	2304 7'7"	2315 7'7"	2304 7'7"	2364 7'9"	2354 7'9"	2391 7'10"	2381 7'10"
	Bare	mm ft/in	1732 5'8"	1720 5'8"	1732 5'8"	1720 5'8"	1732 5'8"	1720 5'8"	1732 5'8"	1720 5'8"
Reach with boom – horizontal and bucket level	With teeth	mm ft/in	5110 16'9"	5590 18'4"	5110 16'9"	5590 18'4"	5192 17'0"	5673 18'7"	5181 17'0"	5661 18'7"
	Bare	mm ft/in	4177 13'8"	4657 15'3"	4177 13'8"	4657 15'3"	4177 13'8"	4657 15'3"	4177 13'8"	4657 15'3"
Digging depth (\$)	mm in	165 6	161 6	165 6	161 6	180 7	177 7	155 6	152 6	
Overall length (\$)	With teeth	mm ft/in	15 585 51'2"	16 175 53'1"	15 585 51'2"	16 175 53'1"	15 604 51'2"	16 194 53'2"	15 636 51'4"	16 226 53'3"
	Bare	mm ft/in	15 143 49'8"	15 733 51'7"	15 143 49'8"	15 733 51'7"	15 143 49'8"	15 733 51'7"	15 143 49'8"	15 733 51'7"
Overall height with bucket at full raise (\$)	mm ft/in	9415 30'11"	10 035 32'11"	9415 30'11"	10 035 32'11"	9415 30'11"	10 035 32'11"	9415 30'11"	10 035 32'11"	
Loader clearance circle with bucket in carry position (\$)	With teeth	m ft/in	22.27 73'1"	22.88 75'1"	22.27 73'1"	22.88 75'1"	22.27 73'1"	22.88 75'1"	22.31 73'2"	22.92 75'2"
	Bare	m ft/in	21.88 71'9"	22.46 73'8"	21.88 71'9"	22.46 73'8"	21.88 71'9"	22.46 73'8"	21.94 72'	22.51 73'10"
Static tipping load, straight†	kg lb	60 292 132,921	58 693 129,396	60 091 132,478	58 488 128,944	59 226 130,571	57 552 126,880	58 164 128,230	56 620 124,826	
	kg lb	52 541 115,833	50 720 111,818	52 303 115,308	50 477 111,283	51 424 113,370	49 534 109,204	50 442 111,205	48 673 107,306	
Static tipping load, full 40° turn†	kg lb	51 392 113,300	49 538 109,213	51 149 112,764	49 289 108,664	50 267 110,820	48 346 106,585	49 297 108,681	47 494 104,706	
	kN lb	615 138,360	602 135,421	612 137,692	599 134,753	595 133,783	583 130,957	591 132,804	578 129,921	
Operating weight† (\$)	kg lb	94 927 209,278	98 596 217,367	95 447 210,424	99 116 218,513	96 304 212,314	99 973 220,403	96 607 212,982	100 277 221,073	

†Static tipping load and operating weight shown are based on standard machine configuration with 45/65-45, 46 PR (L-5) tires, full fuel tank, coolant, lubricants and operator.

‡Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings, denoted in the text by (\$). Dimensions are also measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

	Change in Operating Weight				Change in Articulated Static Tipping Load			
	Standard (for four tires)				Standard		High Lift	
	kg	lb	kg	lb	kg	lb	kg	lb
45/65-45, 46 ply L-5 Firestone	0	0	0	0	0	0	0	0
45/65-45, 46 ply L-5 General	+ 427	+ 940	+ 284	+ 625	+256	+ 564		
45/65-45, 46 ply L-5 Goodyear	- 162	- 356	- 108	- 238	- 97	- 214		
45/65 R45 1-Star L-4 (XLDD1) Michelin	-1942	-4272	-1290	-2838	-882	-1942		
45/65 R45 1-Star L-5 (XLDD2) Michelin	- 681	-1500	- 452	- 994	-409	- 900		
45/65 R45 1-Star L-5 (XMINED2) Michelin	+ 752	+1656	+ 523	+1151	+451	+ 994		
45/65-45, 50PR L-5 Firestone	- 278	- 612	- 167	- 367	-167	- 367		
45/65-45, 50PR L-5 Firestone	+ 441	+ 972	+ 265	+ 583	+265	+ 583		

Performance Data
 ● 994D with 5650 mm (18'6") Bucket

Wheel Loaders
 Integrated Toolcarriers

		Spade Edge Rock Buckets With Teeth and Segment			Spade Edge Rock Buckets With MAA		High Lift	50/80-57 Tires
Rated bucket capacity (\$)	m ³ yd ³	15.0 19.5	17.0 22.5	19.0 24.5	17.0 22.5	19.0 24.5	Same Same	Same Same
Struck capacity (\$)	m ³ yd ³	12.8 15.5	14.0 18.0	15.0 20.0	14.0 18.0	15.0 20.0	Same Same	Same Same
Bucket width (\$)	mm ft/in	5650 18'6"	5650 18'6"	5650 18'6"	5740 18'10"	5740 18'10"	Same Same	Same Same
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	5799 19'0"	5698 18'8"	5592 18'4"	5607 18'5"	5502 18'1"	+339 +1'1"	-180 -7"
Reach at full lift and 45° discharge (\$)	mm ft/in	2055 6'9"	2157 7'1"	2263 7'5"	2246 7'4"	2351 7'9"	+562 +1'10"	+180 +7"
Reach with lift arms horizontal and bucket level	mm ft/in	4912 16'1"	5056 16'7"	5206 17'1"	5183 17'0"	5333 17'6"	+640 +2'2"	+180 +7"
Digging depth (\$)	mm in	68 3.0	68 3.0	68 3.0	68 3.0	68 3.0	+14 +0.5	+180 +7"
Overall length (\$)	mm ft/in	16 621 54'6"	16 659 54'8"	16 809 55'2"	16 892 55'5"	17 042 55'11"	+780 +2'3"	+120 +5"
Overall height with bucket at full raise (\$)	mm ft/in	10 786 35'5"	10 916 35'10"	10 996 36'1"	11 036 36'2"	11 174 36'8"	+340 +1'1"	-180 -7"
Loader clearance circle with bucket in carry position (\$)	m ft/in	25.14 82'6"	25.36 83'2"	25.44 83'6"	25.56 83'10"	25.78 84'8"	+299 +1'0"	+64 +3"
Static tipping load, straight** (\$)	kg lb	126 758 279,453	125 829 277,405	124 764 275,057	125 278 276,190	124 495 274,464	†0.82 †0.82	†1.02 †1.02
Static tipping load, full 40° turn** (\$)	kg lb	107 095 236,104	106 166 234,056	105 101 231,708	105 615 232,841	104 832 231,115	†0.80 †0.80	†1.02 †1.02
Breakout force*** (\$)	kN lb	1057 237,825	950 213,750	886 199,350	961 216,225	923 207,675	†0.96 †0.96	†1.00 †1.00
Operating weight** (\$)	kg lb	189 343 417,429	190 229 419,383	191 244 421,620	190 754 420,580	191 500 422,185	+2553 +5630	-4681 -10,320

*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 53.5/85-57 tires, full fuel tank, coolant and lubricants.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

†Factor multiplied by standard arrangement data to get high lift arrangement value.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings, denoted in the text by (\$).

Wheel Loaders Integrated Toolcarriers

Performance Data ● 994D with 6220 mm (20'5") Bucket

		Spade Edge Rock Buckets With Teeth and Segment		Straight Edge Coal Bucket	Spade Edge Rock Buckets With MAA		High Lift	50/80-57 Tires
Rated bucket capacity (\$)	m ³ yd ³	18.0 23.5	19.0 25.0	31.0 41.0	18.0 23.5	19.0 25.0	Same Same	Same Same
Struck capacity (\$)	m ³ yd ³	14.0 18.0	15.0 19.5	26.0 34.0	14.0 18.0	15.0 19.5	Same Same	Same Same
Bucket width (\$)	mm ft/in	6220 20'5"	6220 20'5"	6220 20'5"	6300 20'8"	6300 20'8"	Same Same	Same Same
Dump clearance at full lift and 45° discharge (\$)	mm ft/in	5698 18'8"	5592 18'4"	5610 18'5"	5608 18'5"	5502 18'1"	+339 +1'1"	-180 -7"
Reach at full lift and 45° discharge (\$)	mm ft/in	2157 7'1"	2263 7'5"	2243 7'4"	2246 7'4"	2352 7'9"	+562 +1'10"	+180 +7"
Reach with lift arms horizontal and bucket level	mm ft/in	5056 16'7"	5206 17'1"	5177 17'0"	5183 17'0"	5333 17'6"	+640 +2'2"	+180 +7"
Digging depth (\$)	mm in	68 3.0	68 3.0	68 3.0	68 3.0	68 3.0	+14 +0.5	+180 +7"
Overall length (\$)	mm ft/in	16 659 54'8"	16 809 55'2"	16 888 55'5"	16 892 55'5"	17 042 55'11"	+780 +2'3"	+120 +5"
Overall height with bucket at full raise (\$)	mm ft/in	10 919 35'10"	11 011 36'2"	11 032 36'2"	11 036 36'2"	11 174 36'8"	+340 +1'1"	-180 -7"
Loader clearance circle with bucket in carry position (\$)	m ft/in	25.36 83'2"	25.44 83'6"	26.36 86'6"	25.56 83'10"	25.78 84'8"	+299 +1'0"	+64 +3"
Static tipping load, straight** (\$)	kg lb	124 561 274,610	123 877 273,162	123 448 272,156	123 753 272,828	123 298 271,825	†0.82 †0.82	†1.02 †1.02
Static tipping load, full 40° turn** (\$)	kg lb	104 898 231,260	104 214 229,752	103 785 228,807	104 090 229,479	103 635 228,876	†0.80 †0.80	†1.02 †1.02
Breakout force*** (\$)	kN lb	944 212,400	877 197,325	959 215,775	958 215,550	913 205,425	†0.96 †0.96	†1.00 †1.00
Operating weight** (\$)	kg lb	191 437 422,046	192 089 423,483	192 498 424,385	192 207 423,743	192 641 424,700	+2553 +5630	-4681 -10,320

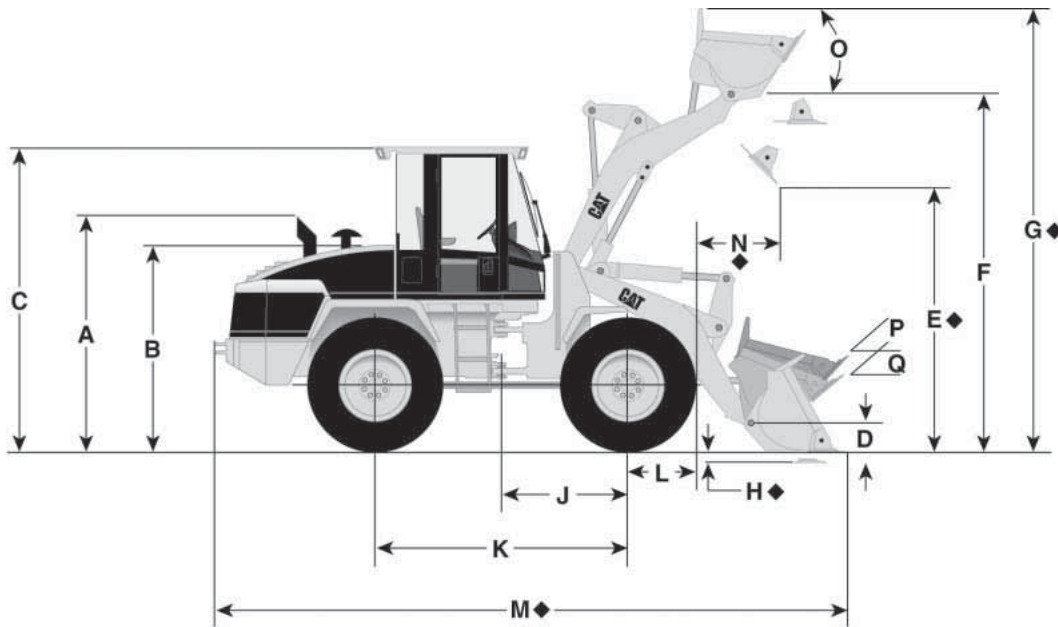
*Dimensions are measured to the tip of the bucket teeth to provide accurate clearance data. SAE Standards specifies the cutting edge.

**Static tipping load and operating weight shown are based on standard machine configuration with 53.5/85-57 tires, full fuel tank, coolant and lubricants.

***Measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point in accordance with SAE J732 JUN92.

†Factor multiplied by standard arrangement data to get high lift arrangement value.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers (SAE). SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings, denoted in the text by (\$).



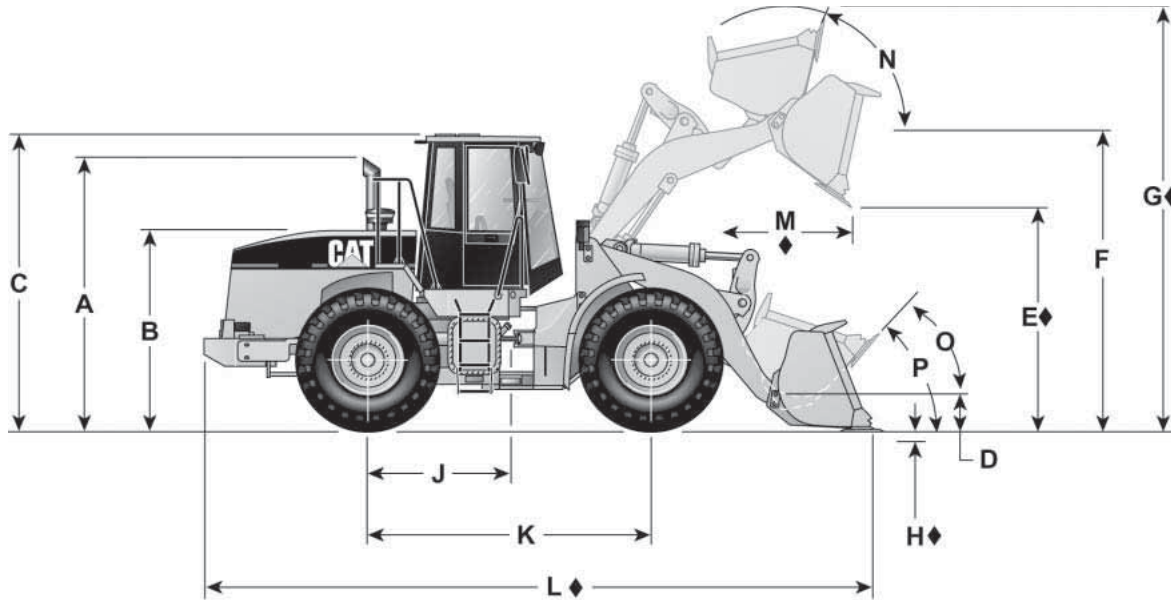
Dimensions shown represent standard machine with General Purpose bucket (bolt-on cutting edge) and standard tires.

◆ Varies with Bucket Size and/or Bucket Configuration — Refer to Performance Data

MODEL	906 General Purpose Bolt-on Edges		908 General Purpose Bolt-on Edges		914G General Purpose Bolt-on Edges	
	0.8 m ³	1.05 yd ³	1 m ³	1.3 yd ³	1.3 m ³	1.7 yd ³
A Height to top of stack	2.72 m	8'11"	2.71 m	8'7"	2.26 m	7'5"
B Height to top of engine compartment	1.82 m	6'0"	1.95 m	6'5"	2.08 m	6'10"
C Height to top of ROPS	2.68 m	8'10"	2.77 m	9'1"	3.1 m	10'2"
D Hinge pin height at carry position	416 mm	16"	297 mm	12"	374 mm	15"
◆ E Dump clearance at full lift and 45° discharge angle	2.38 m	7'10"	2.60 m	8'5"	2.66 m	8'9"
F Hinge pin height at full lift	3.13 m	10'3"	3.39 m	11'1"	3.44 m	11'3"
◆ G Maximum overall height	4.17 m	13'8"	4.50 m	14'10"	4.39 m	14'5"
◆ H Maximum digging depth	100 mm	3.9"	104 mm	4"	89 mm	3.5"
J Machine center point to axle	1 m	3'3"	1.1 m	3'7"	1.3 m	4'3"
K Wheel base	2 m	6'7"	2.2 m	7'3"	2.6 m	8'6"
L Free radius of tire	508 mm	18.7"	543 mm	21"	670 mm	26"
◆ M Maximum overall length	5.34 m	17'5"	6.06 m	19'11"	6.23 m	20'5"
◆ N Reach at full lift	824 mm	2'8"	915 mm	3'0"	973 mm	3'2"
O Maximum rollback at maximum lift	63°		63°		60°	
P Maximum rollback at carry height	53°		56°		46°	
Q Maximum rollback at ground	43°		47°		41°	
Ground clearance (std. tires)	317 mm	12.5"	334 mm	13.1"	456 mm	18"
Tread width (std. tires)	1.5 m	4'9"	1.58 m	5'2"	1.8 m	5'10.9"
Width over tires (std. tires)	1.84 m	6'0"	1.97 m	6'6"	2.26 m	7'4.9"
Tires used for measurements	12.5-20		14.5-20		17.5-R25 (L-2)	

**Wheel Loaders
Integrated Toolcarriers**

Machine Dimensions
● 924Gz–924G



Dimensions shown represent standard machine with bucket, bolt-on cutting edge, and standard tires.

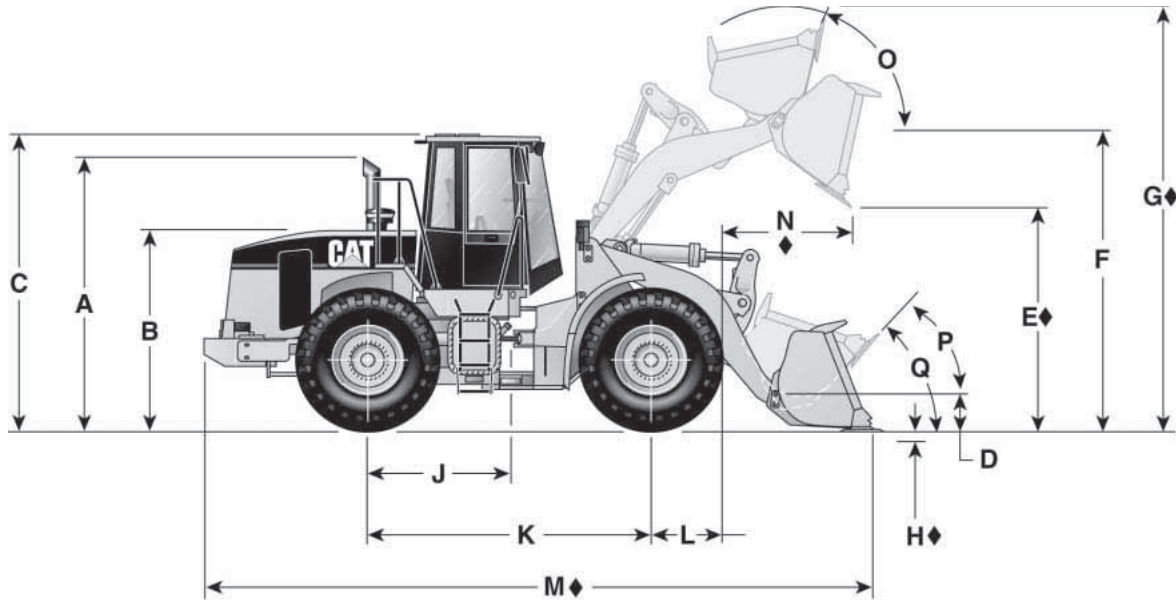
◆ Varies with Bucket Size and/or Bucket Configuration — Refer to Performance Data.

MODEL	924Gz*		924G* Standard VersaLink Pin On		924G* High Lift VersaLink Pin On	
	1.8 m ³	2.3 yd ³	2.1 m ³	2.7 yd ³	2.1 m ³	2.7 yd ³
A Height to top of exhaust stack	3211 mm	10'7"	3211 mm	10'7"	3210 mm	10'7"
B Height to top of hood	2219 mm	7'4"	2219 mm	7'4"	2218 mm	7'4"
C Height to top of ROPS/FOPS	3228 mm	10'8"	3227 mm	10'8"	3226 mm	10'8"
D Carry height	435 mm	17"	435 mm	17"	592 mm	23"
◆ E Dump clearance at maximum lift and 45° dump	2828 mm	9'4"	2828 mm	9'4"	3335 mm	10'11"
F Bucket pin height at maximum lift	3759 mm	12'3"	3881 mm	12'8"	4387 mm	14'5"
◆ G Overall height — bucket raised	4811 mm	15'10"	5178 mm	16'11"	5684 mm	18'8"
◆ H Digging depth	42 mm	1.7"	64 mm	2.5"	75 mm	3"
J Center line of front axle to hitch	1400 mm	4'7"	1400 mm	4'7"	1400 mm	4'7"
K Wheel base length	2800 mm	9'2"	2800 mm	9'2"	2800 mm	9'2"
◆ L Maximum overall length	7030 mm	23'1"	7168 mm	23'6"	7659 mm	25'2"
◆ M Reach at maximum lift and 45° dump	790 mm	2'7"	992 mm	3'3"	993 mm	3'4"
N Rack back angle at maximum lift		58°		58°		62°
O Rack back angle at carry		48°		51°		54°
P Rack back angle at ground		44°		50°		50°
Height to center of axle	692 mm	2'4"	692 mm	2'4"	692 mm	2'4"
Ground clearance	438 mm	17"	436 mm	17"	435 mm	17"
Length — rear axle to bumper	1918 mm	6'4"	1923 mm	6'4"	1923 mm	6'4"
Bucket clearance at maximum lift and level	3434 mm	11'4"	3556 mm	11'8"	4063 mm	13'4"
Dump angle at maximum lift		45°		45°		45°
Tires used for measurements		20.5R25 (L-3)		20.5R25 (L-3)		20.5R25 (L-3)

*Loose Material buckets with bolt-on edges.

Machine Dimensions
● 928Gz–938G Series II

Wheel Loaders
Integrated Toolcarriers



Dimensions shown represent standard machine with bucket, bolt-on cutting edge, and standard tires.

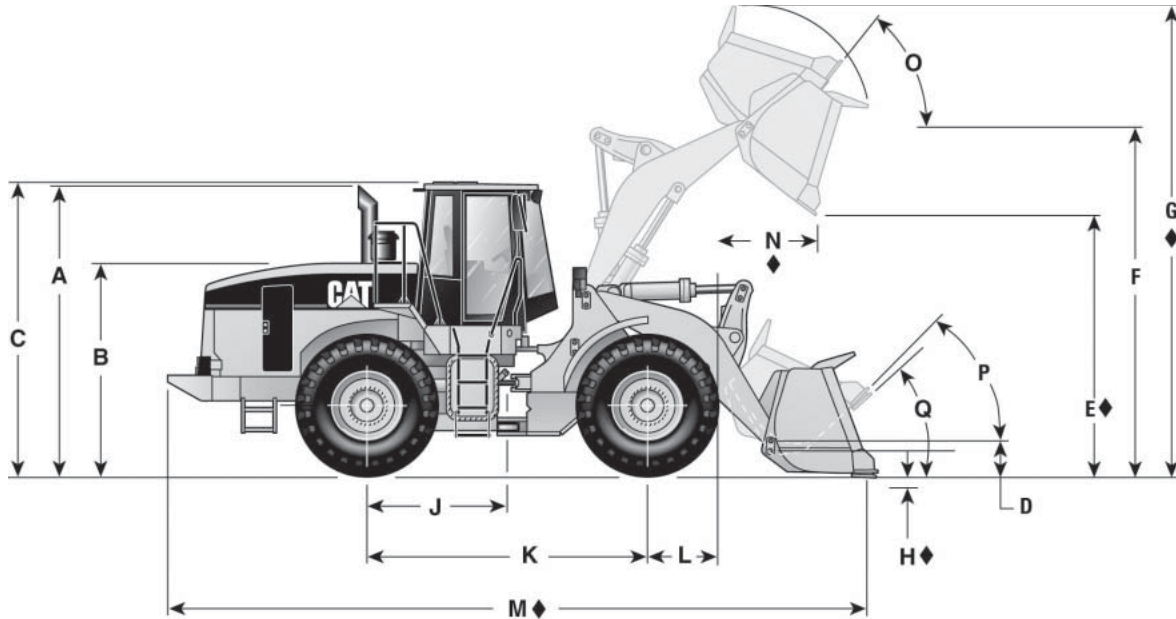
◆ Varies with Bucket Size and/or Bucket Configuration — Refer to Performance Data.

MODEL	928Gz General Purpose Bolt-on Edges 2.3 m ³ 3.0 yd ³		930G* Standard VersaLink Pin On 2.1 m ³ 2.7 yd ³		930G* High Lift VersaLink Pin On 2.1 m ³ 2.7 yd ³		938G Series II General Purpose Bolt-on Edges 2.5 m ³ 3.25 yd ³	
	A Height to top of stack	3.19 m	10'6"	3.22 m	10'6"	3.22 m	10'6"	3.23 m
B Height to top of engine compartment	2.20 m	7'3"	2.24 m	7'4"	2.24 m	7'4"	2.36 m	7'9"
C Height to top of ROPS	3.27 m	10'8"	3.29 m	10'9"	3.29 m	10'9"	3.3 m	10'10"
D Hinge pin height at carry position	449 mm	18"	428 mm	16"	577 mm	22"	539 mm	21"
◆E Dump clearance at full lift and 45° discharge angle	2.84 m	9'4"	2.94 m	9'8"	3.44 m	11'3"	2.85 m	9'4"
F Hinge pin height at full lift	3.87 m	12'8"	4.07 m	13'4"	4.56 m	14'11"	3.84 m	12'7"
◆G Maximum overall height	5.07 m	16'8"	5.34 m	17'6"	5.84 m	19'2"	5.19 m	17'0"
◆H Maximum digging depth	86 mm	3.4"	142 mm	5.6"	157 mm	6.2"	50 mm	1.9"
J Machine center point to axle	1.45 m	4'9"	1.45 m	4'9"	1.45 m	4'9"	1.51 m	4'11"
K Wheel base	2.90 m	9'6"	2.90 m	9'6"	2.90 m	9'6"	3.02 m	9'11"
L Radius of wheel	685 mm	27"	695 mm	27"	695 mm	27"	750 mm	30"
◆M Maximum overall length	7.30 m	24'0"	7.39 m	24'3"	7.88 m	25'10"	7.23 m	23'8"
◆N Reach at full lift	964 mm	3'2"	1073 mm	3'6"	1073 mm	3'6"	1010 mm	3'4"
O Maximum rollback at maximum lift	58°		60°		62°		65°	
P Maximum rollback at carry height	48°		53°		57°		50°	
Q Maximum rollback at ground	44°		51°		52°		44°	
Ground clearance (std. tires)	408 mm	16"	421 mm	16"	421 mm	16"	399 mm	16"
Tread width (std. tires)	1.95 m	6'5"					2.02 m	6'8"
Width over tires (std. tires)	2.56 m	8'5"					2.60 m	8'6"
Length — rear axle to bumper	—		1816 mm	5'11"	1816 mm	5'11"	—	
Bucket clearance at maximum lift and level	—		3726 mm	12'3"	4226 mm	13'10"	—	
Dump angle at maximum lift	—		45°		45°		—	
Tires used for measurements	20.5-25 (L-2)		600/65R25 GP 3D		600/65R25 GP 3D		20.5-R25 (L-2)	

*Loose material buckets with bolt-on edges.

Wheel Loaders Integrated Toolcarriers

Machine Dimensions ● 950H–972H



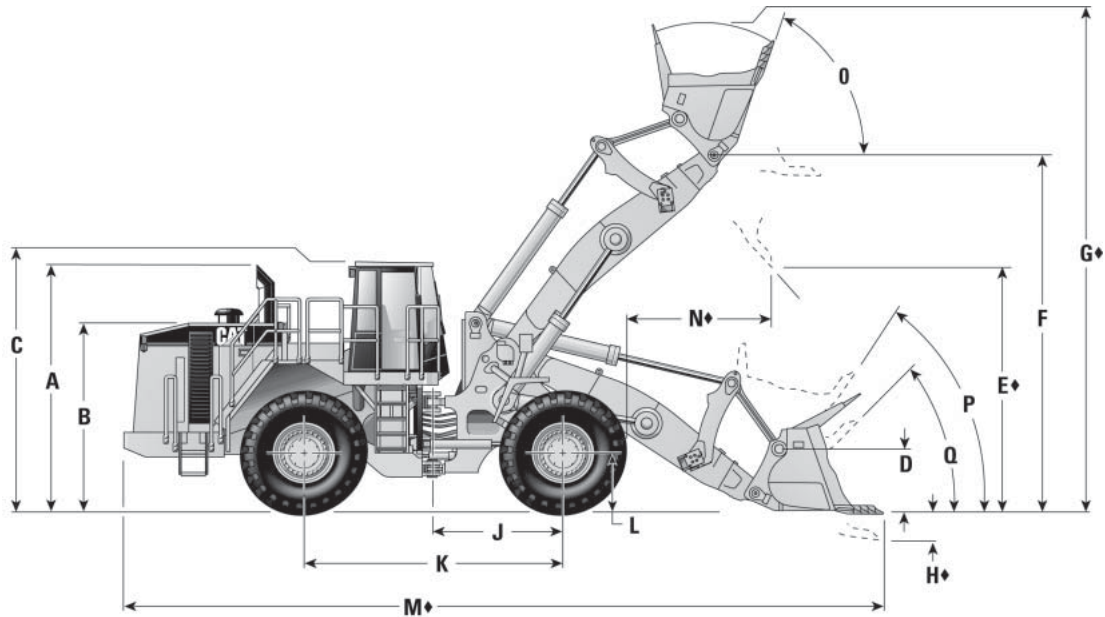
Dimensions shown represent standard machine with bucket, bolt-on cutting edge, and standard tires.

◆ Varies with Bucket Size and/or Bucket Configuration — Refer to Performance Data.

MODEL	950H General Purpose Bolt-on Edges 3.1 m ³ 4 yd ³		962H General Purpose Bolt-on Edges 3.5 m ³ 4.5 yd ³		966H General Purpose Bolt-on Edges 3.8 m ³ 5 yd ³		972H General Purpose Bolt-on Edges 4.3 m ³ 5.5 yd ³	
	A Height to top of exhaust pipe	3.37 m	11'1"	3.37 m	11'1"	3.55 m	11'8"	3.56 m
B Height to top of engine compartment	2.46 m	8'1"	2.46 m	8'1"	2.68 m	8'9"	2.68 m	8'9"
C Height to top of ROPS	3.45 m	11'4"	3.45 m	11'4"	3.60 m	11'10"	3.61 m	11'10"
D Hinge pin height at carry position	455 mm	18"	455 mm	18"	507 mm	20"	507 mm	20"
◆E Dump clearance at full lift and 45° discharge angle	2.92 m	9'7"	2.81 m	9'2"	3.12 m	10'3"	3.31 m	10'10"
F Hinge pin height at full lift	3.99 m	13'1"	3.99 m	13'1"	4.24 m	13'11"	4.47 m	14'8"
◆G Maximum overall height	5.44 m	17'11"	5.38 m	17'8"	5.73 m	18'10"	6.07 m	19'11"
◆H Maximum digging depth	92 mm	3.6"	92 mm	3.6"	110 mm	4"	88 mm	3"
J Machine center point to axle	1.68 m	5'6"	1.68 m	5'6"	1.72 m	5'8"	1.73 m	5'8"
K Wheel base	3.35 m	11'0"	3.35 m	11'0"	3.45 m	11'4"	3.45 m	11'4"
L Radius of wheel	835 mm	33"	835 mm	33"	903 mm	36"	903 mm	36"
◆M Maximum overall length	7.99 m	26'2"	8.17 m	26'9"	8.81 m	28'11"	9.07 m	29'9"
◆N Reach at full lift	1202 mm	3'11"	1308 mm	4'2"	1270 mm	4'2"	1246 mm	4'1"
O Maximum rollback at maximum lift	59°		59°		61°		55°	
P Maximum rollback at carry height	45°		45°		47°		47°	
Q Maximum rollback at ground	39°		39°		42°		41°	
Ground clearance (std. tires)	412 mm	16"	412 mm	16"	496 mm	20"	496 mm	20"
Tread width (std. tires)	2.14 m	7'0"	2.14 m	7'0"	2.23 m	7'4"	2.23 m	7'4"
Width over tires (std. tires)	2.89 m	9'6"	2.89 m	9'6"	2.97 m	9'9"	2.97 m	9'9"
Tires used for measurements	23.5-R25, XHA (L-3)		23.5-R25, XHA (L-3)		26.5-R25, SRG (L-4)		26.5-R25, SRG (L-4)	

Machine Dimensions
● 980H-988G

Wheel Loaders
Integrated Toolcarriers



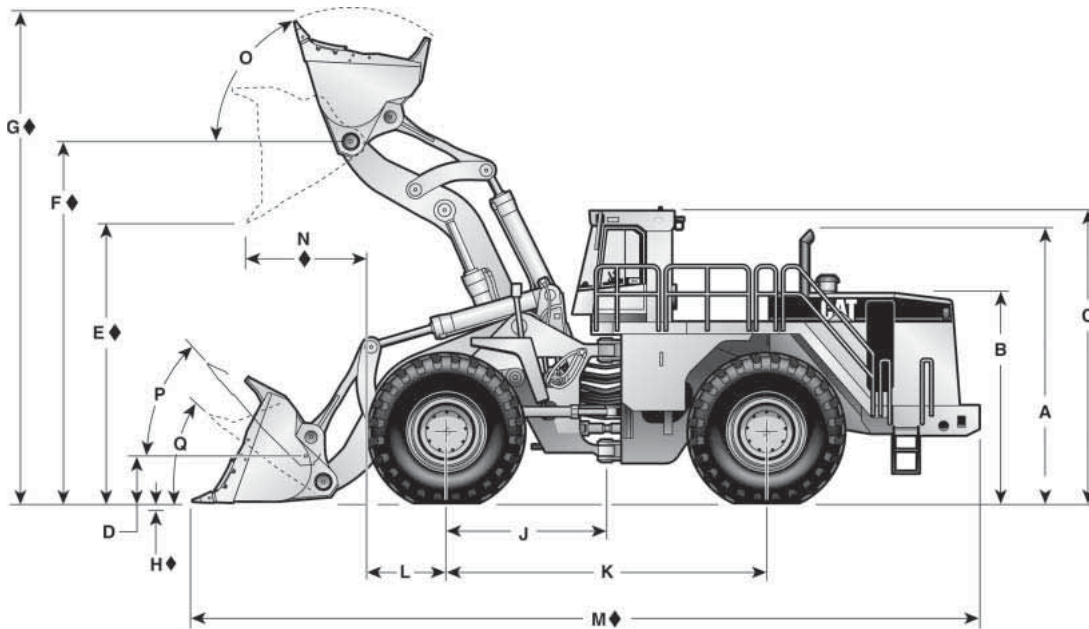
Dimensions shown represent standard machine with spade edge rock bucket and standard tires.

◆ Varies with Bucket Size and/or Bucket Configuration — Refer to Performance Data.

MODEL	980H General Purpose Bolt-on Edges		980H General Purpose High Lift Bolt-on Edges		988G Spade Edge Rock With Teeth & Segments		988G Spade Edge Rock With Teeth & Segments	
	5.7 m³	7.5 yd³	5.7 m³	7.5 yd³	6.4 m³	8.33 yd³	6.9 m³	9.0 yd³
A Height to top of stack	3.73 m	12'3"	3.39 m	11'1"	4.11 m	13'6"	4.11 m	13'6"
B Height to top of engine compartment	2.73 m	9'0"	2.33 m	7'8"	3.16 m	10'4"	3.16 m	10'4"
C Height to top of ROPS	3.79 m	12'5"	3.75 m	12'4"	4.13 m	13'7"	4.13 m	13'7"
D Hinge pin height at carry position	453 mm	18"	453 mm	18"	926 mm	3'0"	926 mm	3'0"
◆E Dump clearance at full lift and 45° discharge angle	3.27 m	10'9"	3.49 m	11'6"	3.96 m	13'0"	3.96 m	13'0"
F Hinge pin height at full lift	4.50 m	14'9"	4.73 m	15'6"	5.85 m	19'2"	5.85 m	19'2"
◆G Maximum overall height	6.36 m	20'10"	6.43 m	21'1"	8.31 m	27'3"	8.31 m	27'3"
◆H Maximum digging depth	125 mm	5"	138 mm	5"	131 mm	5"	131 mm	5"
J Machine center point to axle	1.85 m	6'1"	1.85 m	6'1"	2.28 m	7'6"	2.28 m	7'6"
K Wheel base	3.70 m	12'2"	3.70 m	12'2"	4.55 m	14'11"	4.55 m	14'11"
L Radius of wheel	867 mm	2'10"	928 mm	3'1"	978 mm	3'3"	978 mm	3'3"
◆M Maximum overall length	9.47 m	31'1"	9.68 m	31'9"	12.52 m	41'1"	12.52 m	41'1"
◆N Reach at full lift	1.53 m	5'0"	1.54 m	5'1"	2.11 m	6'11"	2.11 m	6'11"
Full dump at maximum lift	—	—	—	—	49°	49°	49°	49°
O Maximum rollback at maximum lift	61°	61°	61°	61°	65°	65°	65°	65°
P Maximum rollback at carry height	46°	46°	46°	46°	55.5°	55.5°	55.5°	55.5°
Q Maximum rollback at ground	36°	36°	36°	36°	45.7°	45.7°	45.7°	45.7°
Ground clearance (std. tires)	442 mm	17.4"	467 mm	18"	549 mm	20"	549 mm	20"
Tread width (std. tires)	2.44 m	8'0"	2.44 m	8'0"	2.59 m	8'6"	2.59 m	8'6"
Width over tires (std. tires)	3.25 m	10'8"	3.25 m	10'8"	3.47 m	11'5"	3.47 m	11'5"
Tires used for measurements	29.5-R25 (L-3)		29.5-R25 (L-3)		35/65-33 (L-4)		35/65-33 (L-4)	

**Wheel Loaders
Integrated Toolcarriers**

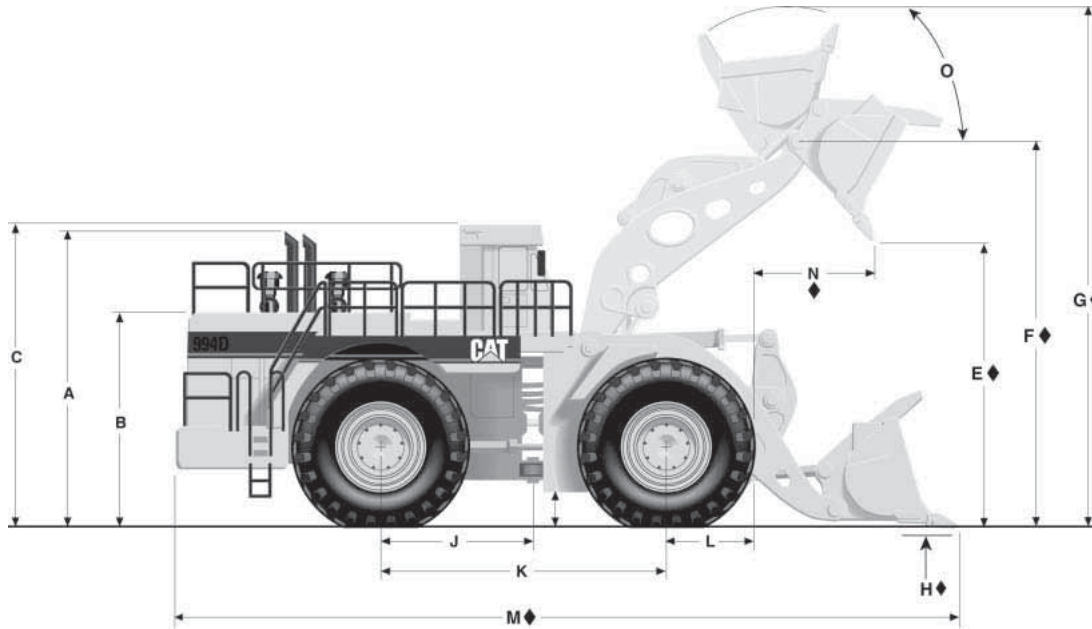
Machine Dimensions
● 990 Series II–992G



Dimensions shown represent standard machine with spade edge rock bucket and standard tires.

◆ Varies with Bucket Size and/or Bucket Configuration — Refer to Performance Data

MODEL	990 Series II Spade Edge Rock With Teeth		990 Series II High Lift Spade Edge Rock With Teeth		992G Spade Edge Rock With Teeth		992G High Lift Spade Edge Rock With Teeth	
	8.6 m ³	11.2 yd ³	8.6 m ³	11.2 yd ³	11.5 m ³	15 yd ³	11.5 m ³	15 yd ³
A Height to top of stack	4.76 m	15'7"	4.76 m	15'7"	5.23 m	17'2"	5.23 m	17'2"
B Height to top of engine compartment	3.55 m	11'8"	3.55 m	11'8"	4.0 m	13'1"	4.0 m	13'1"
C Height to top of ROPS	5.11 m	16'9"	5.11 m	16'9"	5.61 m	18'5"	5.61 m	18'5"
D Hinge pin height at carry position	816 mm	2'8"	862 mm	2'10"	1054 mm	3'5"	1218 mm	4'0"
◆ E Dump clearance at full lift and 45° discharge angle	4.22 m	13'10"	4.59 m	15'1"	4.63 m	15'3"	5.25 m	17'3"
◆ F Hinge pin height at full lift	5.87 m	19'3"	6.43 m	21'1"	6.94 m	22'9"	7.55 m	24'10"
◆ G Maximum overall height	8.09 m	26'7"	8.66 m	28'5"	9.41 m	30'11"	10.03 m	32'11"
◆ H Maximum digging depth	148 mm	6"	191 mm	8"	140 mm	5.5"	144 mm	5.7"
J Machine center point to axle	2.3 m	7'7"	2.3 m	7'7"	2.94 m	9'8"	2.94 m	9'8"
K Wheel base	4.6 m	15'1"	4.6 m	15'1"	5.89 m	19'4"	5.89 m	19'4"
L Radius of wheel	1.18 m	3'11"	1.18 m	3'11"	1.37 m	4'6"	1.37 m	4'6"
◆ M Maximum overall length	12.8 m	42'0"	13.5 m	44'3"	15.58 m	49'8"	16.17 m	53'1"
◆ N Reach at full lift	2.22 m	7'3"	2.51 m	8'3"	2.3 m	7'7"	2.29 m	7'7"
O Maximum rollback at maximum lift	63.8°		60.6°		65°		65°	
P Maximum rollback at carry height	48.4°		47.4°		50.7°		50°	
Q Maximum rollback at ground	39.1°		38.9°		41.6°		40.7°	
Ground clearance (std. tires)	478 mm	18.8"	478 mm	18.8"	691 mm	27.2"	691 mm	27.2"
Tread width (std. tires)	3.05 m	10'0"	3.05 m	10'0"	3.30 m	10'10"	3.30 m	10'10"
Width over tires (std. tires)	4.16 m	13'3"	4.16 m	13'3"	4.50 m	14'9"	4.49 m	14'9"
Tires used for measurements	41.25/70-39 (L-5)		41.25/70-39 (L-5)		45/65-45 (L-5)		45/65-45 (L-5)	



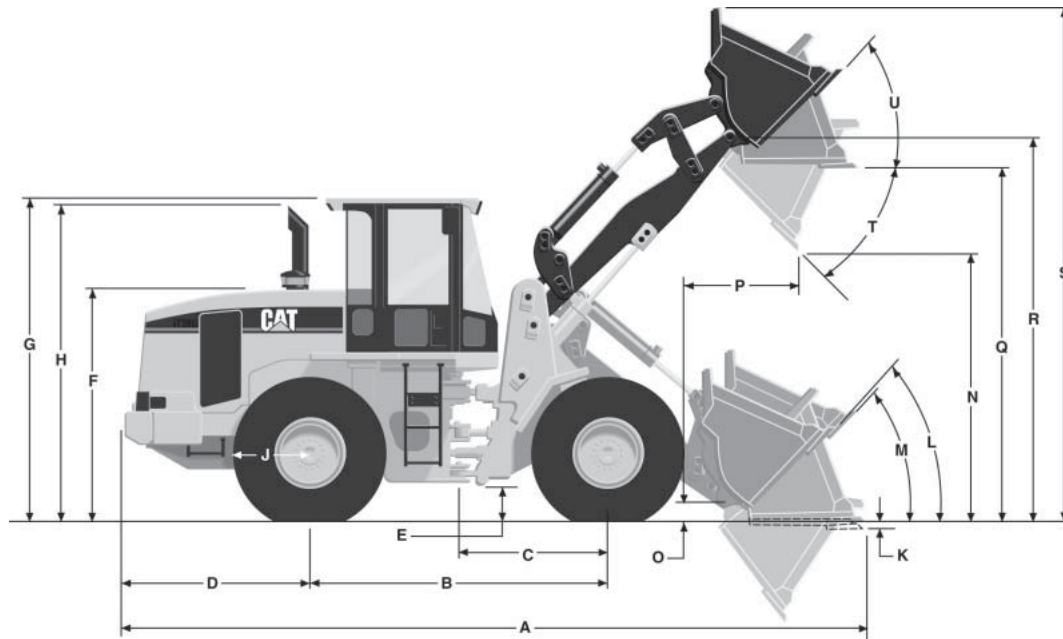
Dimensions shown represent standard machine with spade edge rock bucket and standard tires.

◆ Varies with Bucket Size and/or Bucket Configuration — Refer to Performance Data

MODEL	994D 5650 mm (18'6") Spade Edge Bucket With Teeth And Segments 17 m ³ 22.5 yd ³		994D High Lift 5650 mm (18'6") Spade Edge Bucket With Teeth And Segments 17 m ³ 22.5 yd ³		994D 5650 mm (18'6") Spade Edge Bucket With Teeth And Segments 19 m ³ 24.5 yd ³		994D High Lift 5650 mm (18'6") Spade Edge Bucket With Teeth And Segments 19 m ³ 24.5 yd ³	
	A Height to top of stack	6.76 m	22'2"	6.76 m	22'2"	6.91 m	22'8"	6.91 m
B Height to top of engine compartment	4.61 m	15'1"	4.61 m	15'1"	4.76 m	15'7"	4.76 m	15'7"
C Height to top of ROPS	6.56 m	21'6"	6.56 m	21'6"	6.71 m	22'0"	6.71 m	22'0"
D Hinge pin height at carry position	1030 mm	3'5"	1258 mm	4'2"	1030 mm	3'5"	1258 mm	4'2"
◆ E Dump clearance at full lift and 45° discharge angle	5.51 m	18'1"	5.85 m	19'2"	5.58 m	18'4"	5.92 m	19'5"
◆ F Hinge pin height at full lift	7.98 m	26'2"	8.32 m	27'3"	8.16 m	26'9"	8.50 m	27'11"
◆ G Maximum overall height	10.75 m	35'3"	11.09 m	36'5"	11.02 m	36'2"	11.36 m	37'3"
◆ H Maximum digging depth	248 mm	9"	262 mm	10"	68 mm	3"	82 mm	3"
J Machine center point to axle	3.20 m	10'6"	3.20 m	10'6"	3.20 m	10'6"	3.20 m	10'6"
K Wheel base	6.40 m	21'0"	6.40 m	21'0"	6.40 m	21'0"	6.40 m	21'0"
L Radius of wheel	1.80 m	5'11"	1.80 m	5'11"	2.00 m	6'7"	2.00 m	6'7"
◆ M Maximum overall length	16.84 m	55'3"	17.61 m	57'9"	16.86 m	55'4"	17.64 m	57'11"
◆ N Reach at full lift	2.31 m	7'7"	2.87 m	9'5"	2.26 m	7'5"	2.82 m	9'2"
O Maximum rollback at maximum lift	64°		64°		64°		64°	
P Maximum rollback at carry height	53°		58°		53°		58°	
Q Maximum rollback at ground	40°		40°		40°		40°	
Ground clearance (std. tires)	650 mm	2'2"	650 mm	2'2"	830 mm	2'9"	830 mm	2'9"
Tread width (std. tires)	4.0 m	13'1"	4.0 m	13'1"	4.1 m	13'5"	4.1 m	13'5"
Width over tires (std. tires)	5.3 m	17'5"	5.3 m	17'5"	5.5 m	18'1"	5.5 m	18'1"
Tires used for measurements	50/80-57 (L-4)		50/80-57 (L-4)		53.5/85-57 (L-5)		53.5/85-57 (L-5)	

Wheel Loaders Integrated Toolcarriers

Machine Dimensions ● with General Purpose Buckets and Bolt-on Cutting Edge



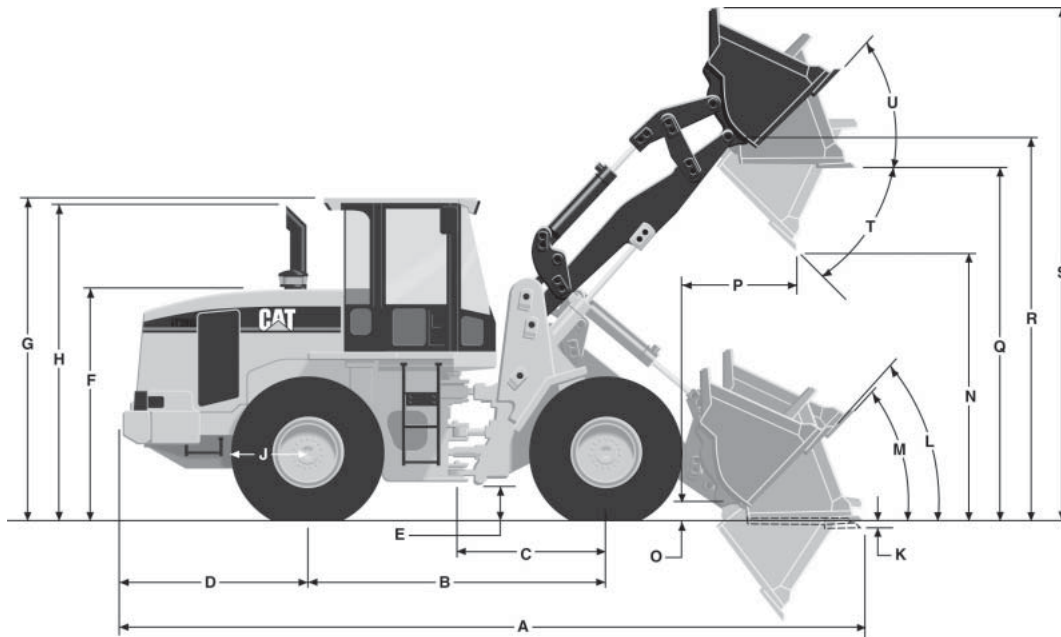
MODEL	IT14G		924G* Standard		924G* High Lift	
Bucket	1.3 m ³	1.7 yd ³	1.8 m ³	2.3 yd ³	1.8 m ³	2.3 yd ³
A Maximum overall length	6424 mm	21'1"	7168 mm	23'6"	7659 mm	25'2"
B Wheel base	2600 mm	8'6"	2800 mm	9'2"	2800 mm	9'3"
C Machine center point to front axle	1300 mm	4'3"	1400 mm	4'7"	1400 mm	4'8"
D Rear axle to counterweight	1658 mm	5'5"	1923 mm	6'4"	1923 mm	6'4"
E Ground clearance	456 mm	18"	436 mm	17"	435 mm	17"
F Height to top of engine compartment	2080 mm	6'10"	2219 mm	7'4"	2218 mm	7'4"
G Height to top of ROPS	3100 mm	10'2"	3227 mm	10'8"	3226 mm	10'8"
H Height to top of stack	2255 mm	7'5"	3211 mm	10'7"	3210 mm	10'7"
J Tire radius (empty machine)	620 mm	2'0"	—	—	—	—
K Maximum digging depth (bucket level)	175 mm	6.9"	64 mm	2.5"	75 mm	3"
L Maximum rollback at carry height	54°		51°		54°	
M Maximum rollback at ground	49°		50°		50°	
N Dump clearance at full lift and 45° discharge angle	2920 mm	9'7"	2828 mm	9'4"	3335 mm	10'11"
O Hinge pin height at carry position	374 mm	15"	435 mm	17"	592 mm	23"
P Reach at full lift and 45° dump	787 mm	2'7"	992 mm	3'3"	993 mm	3'4"
Q Clearance level bucket at full height	3565 mm	11'8"	3556 mm	11'8"	4063 mm	13'4"
R Maximum hinge pin height	3798 mm	12'6"	3881 mm	12'8"	4387 mm	14'5"
S Maximum overall height	4801 mm	15'9"	5178 mm	16'11"	5684 mm	18'8"
T Full dump at maximum lift	48°		45°		45°	
U Maximum roll back at maximum lift	57°		58°		62°	
Height to center of axle	—		692 mm	2'4"	692 mm	2'4"
Tires	17.5R25		20.5R25 (L-3)		20.5R25 (L-3)	

*VersaLink/Hook On.

- with General Purpose Buckets and Bolt-on Cutting Edge

Machine Dimensions

Wheel Loaders Integrated Toolcarriers

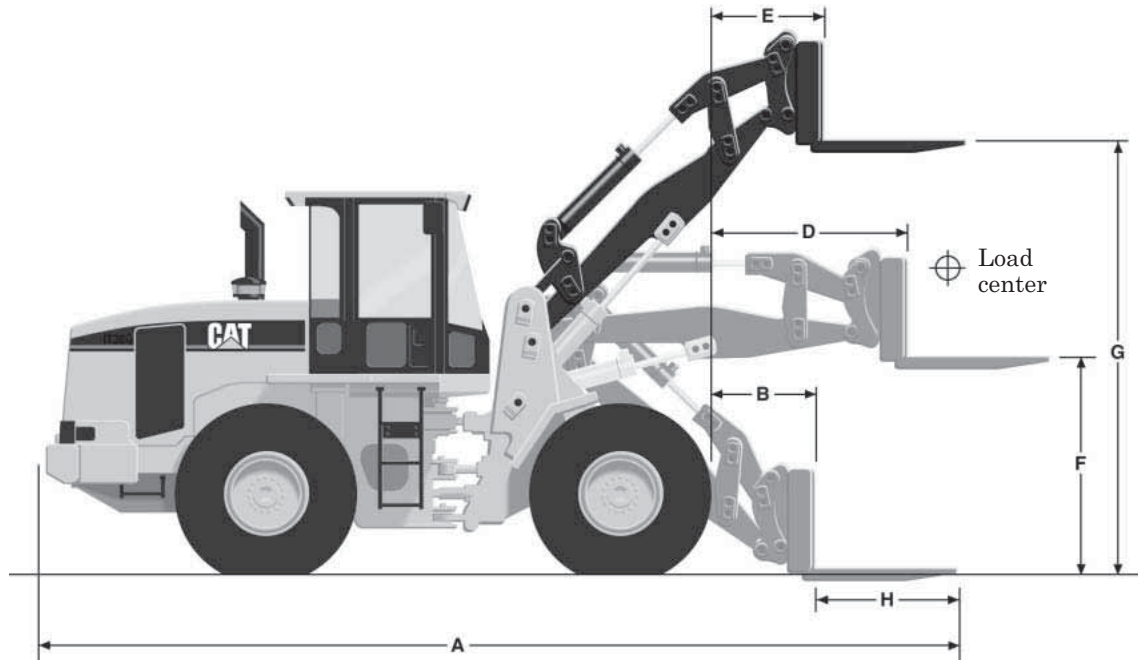


MODEL	930G* Standard		930G* High Lift		IT38G Series II		IT62H	
Bucket	2.1 m ³	2.7 yd ³	2.1 m ³	2.7 yd ³	2.5 m ³	3.25 yd ³	3.25 m ³	4.25 yd ³
A Maximum overall length	7390 mm	24'3"	7877 mm	25'10"	7487 mm	24'7"	8498 mm	27'11"
B Wheel base	2900 mm	9'6"	2900 mm	9'6"	3020 mm	9'11"	3350 mm	11'0"
C Machine center point to front axle	1450 mm	4'9"	1450 mm	4'9"	1510 mm	4'11"	1675 mm	5'6"
D Rear axle to counterweight	1816 mm	5'11"	1816 mm	5'11"	1857 mm	6'1"	2094 mm	6'10"
E Ground clearance	421 mm	16"	421 mm	16"	399 mm	16"	412 mm	16"
F Height to top of engine compartment	2244 mm	7'4"	2244 mm	7'4"	2359 mm	7'9"	2282 mm	7'6"
G Height to top of ROPS	3288 mm	10'9"	3288 mm	10'9"	3300 mm	10'10"	3401 mm	11'2"
H Height to top of stack	3215 mm	10'6"	3215 mm	10'6"	3227 mm	10'7"	3149 mm	10'4"
J Tire radius (empty machine)	—	—	—	—	750 mm	2'6"	835 mm	2'9"
K Maximum digging depth (bucket level)	142 mm	5.6"	157 mm	6.2"	27 mm	1"	71 mm	3"
L Maximum rollback at carry height	53°	53°	57°	57°	46°	46°	52°	52°
M Maximum rollback at ground	51°	51°	52°	52°	48°	48°	44°	44°
N Dump clearance at full lift and 45° discharge angle	2936 mm	9'8"	3436 mm	11'3"	2933 mm	9'7"	2840 mm	9'4"
O Hinge pin height at carry position	428 mm	16"	577 mm	22"	304 mm	12"	314 mm	12"
P Reach at full lift and 45° dump	1073 mm	3'6"	1073 mm	3'6"	1065 mm	3'6"	1227 mm	4'0"
Q Clearance level bucket at full height	3726 mm	12'3"	4226 mm	13'10"	3757 mm	12'4"	3759 mm	12'4"
R Maximum hinge pin height	4069 mm	13'4"	4559 mm	14'11"	4061 mm	13'4"	4123 mm	13'6"
S Maximum overall height	5344 mm	17'6"	5835 mm	19'2"	5369 mm	17'7"	5579 mm	18'4"
T Full dump at maximum lift	45°	45°	45°	45°	42°	42°	49°	49°
U Maximum roll back at maximum lift	60°	60°	62°	62°	45°	45°	58°	58°
Height to center axle	695 mm	2'3"	695 mm	2'3"	—	—	—	—
Tires	600/65R25 GP 3D		600/65R25 GP 3D		20.5R25		23.5R25	

*VersaLink/Hook On.

**Wheel Loaders
Integrated Toolcarriers**

Machine Dimensions
● with Pallet Forks

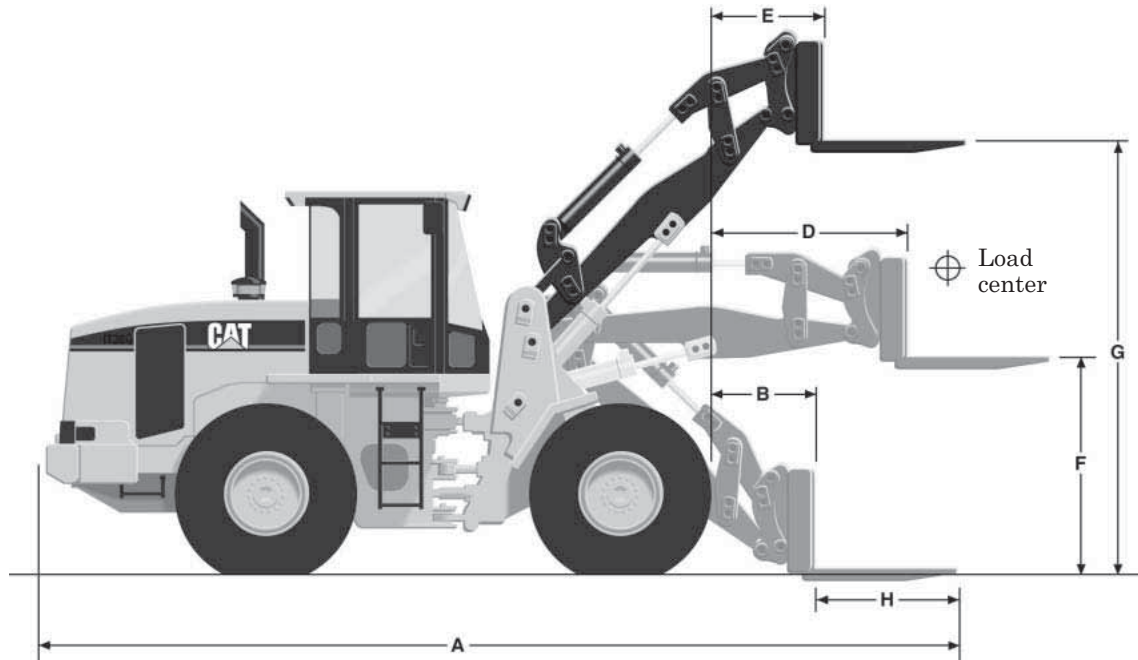


MODEL	IT14G		924G* Standard		924G* High Lift	
Rated operating load						
Per SAE J1197	1870 kg	4123 lb	2719 kg	5994 lb	2325 kg	5125 lb
Per CEN 474-3 rough terrain	2244 kg	4948 lb	3263 kg	7193 lb	2789 kg	6150 lb
Per CEN 474-3 firm level ground	2992 kg	6597 lb	4350 kg	9591 lb	3719 kg	8199 lb
A Maximum overall length	6873 mm	22'7"	7606 mm	25'0"	8104 mm	26'7"
B Reach with forks at ground level	745 mm	2'5"	1007 mm	3'4"	1503 mm	4'11"
C Load center	600 mm	24"	600 mm	24"	600 mm	24"
D Reach with arms horizontal and forks level	1490 mm	4'11"	1636 mm	5'4"	2027 mm	6'8"
E Reach with fork at maximum height	586 mm	1'11"	762 mm	2'6"	763 mm	2'6"
F Arms horizontal and forks level	1808 mm	5'11"	1790 mm	5'10"	1790 mm	5'10"
G Ground to top of tine at maximum height	3708 mm	12'2"	3637 mm	11'11"	4144 mm	13'7"
H Fork tine length	1200 mm	3'11"	1200 mm	3'11"	1201 mm	3'11"
Tires	17.5R25		20.5R25 (L-3)		20.5R25 (L-3)	

*VersaLink/Hook On

Machine Dimensions
● with Pallet Forks

Wheel Loaders
Integrated Toolcarriers



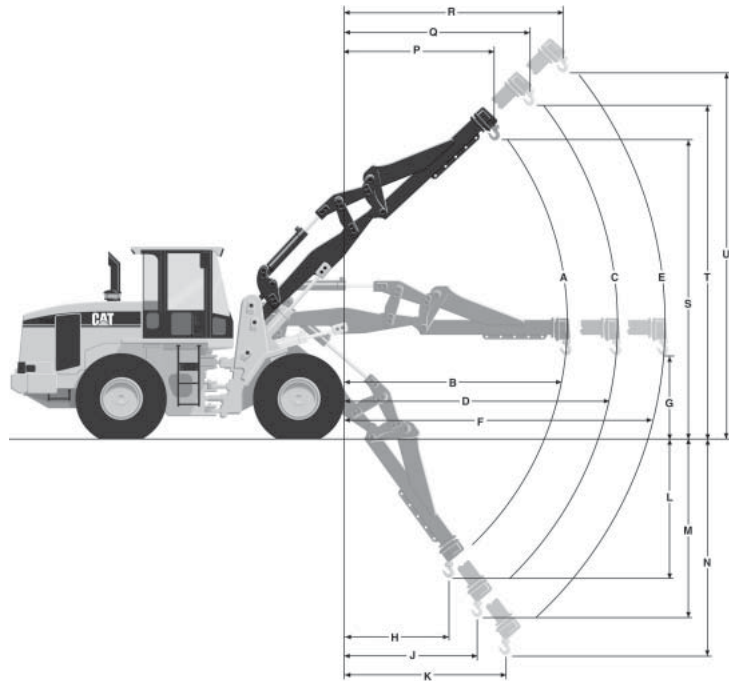
MODEL	930G* Standard		930G* High Lift		IT38G Series II		IT62H	
Static tipping load with arms horizontal and forks level								
Straight	—	—	—	—	7385 kg	16,281 lb	9363 kg	20,637 lb
Articulated	—	—	—	—	6262 kg	13,805 lb	7938 kg	17,496 lb
Rated operating load								
Per SAE J1197	3208 kg	7072 lb	2761 kg	6087 lb	—	—	—	—
Per CEN 474-3 rough terrain	3850 kg	8487 lb	3313 kg	7304 lb	—	—	—	—
Per CEN 474-3 firm level ground	5133 kg	11,316 lb	4418 kg	9739 lb	—	—	—	—
A Maximum overall length	7653 mm	25'1"	8161 mm	26'9"	7940 mm	26'1"	9260 mm	30'4"
B Reach with forks at ground level	987 mm	3'3"	1495 mm	4'11"	1093 mm	3'7"	1454 mm	4'9"
C Load center	600 mm	24"	600 mm	24"	610 mm	24"	762 mm	30"
D Reach with arms horizontal and forks level	1695 mm	5'7"	2088 mm	6'10"	1662 mm	5'6"	1948 mm	6'5"
E Reach with fork at maximum height	774 mm	2'6"	774 mm	2'6"	805 mm	2'8"	1090 mm	3'7"
F Reach at end of forks with arms horizontal and forks level	1871 mm	6'2"	1871 mm	6'2"	2881 mm	9'6"	3472 mm	11'5"
G Ground to top of tine at maximum height	3899 mm	12'10"	4399 mm	14'5"	3719 mm	12'2"	3748 mm	12'3"
H Fork tine length	1200 mm	3'11"	1200 mm	3'11"	1220 mm	4'0"	1524 mm	5'0"
Tires	600/65R25 GP 3D		600/65R25 GP 3D		20.5R25		23.5R25	

*VersaLink/Hook On.

Wheel Loaders Integrated Toolcarriers

Machine Dimensions ● with Material Handling Arm

For IT14G and 924G machines equipped with 15.5-25 L-2 tires subtract 39 mm (1.5") from lift height — add 39 mm (1.5") for below ground measurements — add 42 mm (1.7") for all reach measurements.

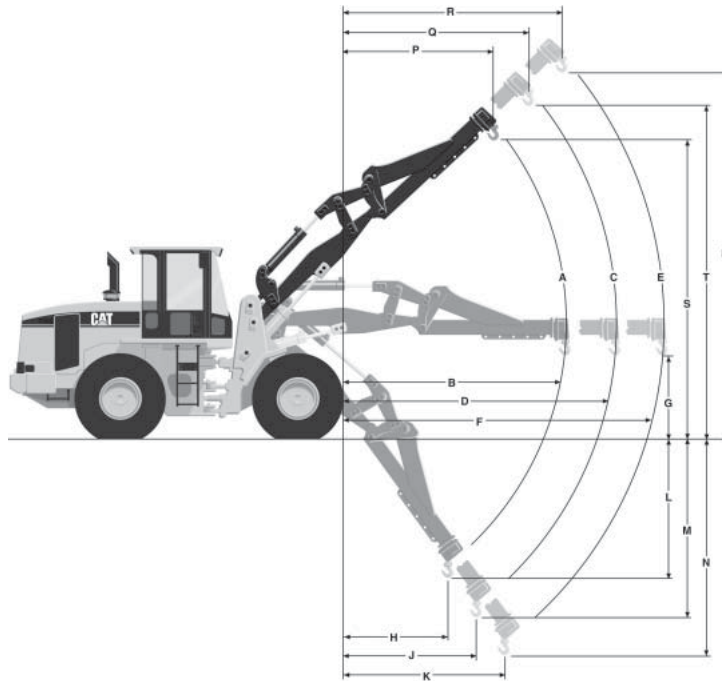


MODEL	IT14G		924G* Standard		924G* High Lift	
A Operating load (retracted) @ full articulation	1370 kg	3021 lb	1965 kg	4332 lb	1718 kg	3786 lb
B Reach horizontal (retracted)	3179 mm	10'5"	3221 mm	10'7"	3612 mm	11'11"
C Operating load (mid-position) @ full articulation	1076 kg	2373 lb	1558 kg	3434 lb	1387 kg	3057 lb
D Reach horizontal (mid-position)	4178 mm	13'8"	4220 mm	13'10"	4610 mm	15'1"
E Operating load (extended) @ full articulation	888 kg	1958 lb	1278 kg	2816 lb	1164 kg	2566 lb
F Reach horizontal (extended)	5178 mm	17'0"	5220 mm	17'1"	5611 mm	18'4"
G Clearance horizontal	1585 mm	5'2"	1602 mm	5'3"	1603 mm	5'3"
H Reach full down (retracted)	1514 mm	4'11"	858 mm	2'9"	1631 mm	5'4"
J Reach full down (mid-position)	2116 mm	6'11"	1166 mm	3'9"	2058 mm	6'9"
K Reach full down (extended)	2719 mm	8'11"	1475 mm	4'10"	2485 mm	8'1"
L Clearance full down (retracted)	1874 mm	6'2"	2138 mm	7'0"	2063 mm	6'9"
M Clearance full down (mid-position)	2670 mm	8'9"	3088 mm	10'1"	2967 mm	9'8"
N Clearance full down (extended)	3468 mm	11'5"	4039 mm	13'3"	3871 mm	12'8"
P Reach at maximum height (retracted)	1402 mm	4'7"	2355 mm	7'9"	2077 mm	6'10"
Q Reach at maximum height (mid-position)	1962 mm	6'5"	1881 mm	6'3"	1670 mm	5'6"
R Reach at maximum height (extended)	2522 mm	8'2"	1407 mm	4'8"	1264 mm	4'2"
S Clearance at maximum height (retracted)	5185 mm	17'0"	7197 mm	23'8"	7853 mm	25'10"
T Clearance at maximum height (mid-position)	6012 mm	19'9"	6317 mm	20'8"	6940 mm	22'9"
U Clearance at maximum height (extended)	6840 mm	22'5"	5438 mm	17'10"	6027 mm	19'9"
Tires	17.5R25		20.5R25 (L-3)		20.5R25 (L-3)	

*VersaLink/Hook On.

Machine Dimensions
 ● with Material Handling Arm

Wheel Loaders
 Integrated Toolcarriers



MODEL	930G* Standard		930G* High Lift		IT38G Series II		IT62H**	
A Rated operating load (retracted) @ full articulation	2363 kg	5210 lb	2097 kg	4622 lb	4295 kg	9469 lb	6275 kg	13,831 lb
B Reach horizontal (retracted)	3354 mm	11'0"	3748 mm	12'4"	3809 mm	12'6"	3961 mm	13'0"
C Rated operating load (mid-position) @ full articulation	1890 kg	4166 lb	1705 kg	3759 lb	3651 kg	8049 lb	5387 kg	11,874 lb
D Reach horizontal (mid-position)	4353 mm	14'3"	4747 mm	15'7"	4609 mm	15'1"	4761 mm	15'7"
E Rated operating load (extended) @ full articulation	1576 kg	3473 lb	1439 kg	3171 lb	3171 kg	6991 lb	4715 kg	10,392 lb
F Reach horizontal (extended)	5353 mm	17'7"	5747 mm	18'10"	5409 mm	17'9"	5561 mm	18'3"
G Clearance horizontal	1886 mm	6'2"	1886 mm	6'2"	1409 mm	4'7"	1828 mm	6'0"
H Reach full down (retracted)	1137 mm	3'9"	1866 mm	6'1"	1885 mm	6'2"	2187 mm	7'2"
J Reach full down (mid-position)	1512 mm	5'0"	2343 mm	8'0"	2356 mm	7'9"	2688 mm	8'10"
K Reach full down (extended)	1886 mm	6'2"	2820 mm	9'3"	2826 mm	9'3"	3190 mm	10'6"
L Clearance full down (retracted)	1877 mm	6'2"	1803 mm	6'0"	2391 mm	7'10"	1915 mm	6'3"
M Clearance full down (mid-position)	2803 mm	9'2"	2681 mm	8'10"	3038 mm	10'0"	2539 mm	8'4"
N Clearance full down (extended)	3730 mm	12'3"	3560 mm	11'8"	3686 mm	12'0"	3163 mm	10'5"
P Reach at maximum height (retracted)	1341 mm	4'5"	1285 mm	4'3"	2354 mm	7'9"	2068 mm	6'9"
Q Reach at maximum height (mid-position)	1778 mm	5'10"	1696 mm	5'7"	2920 mm	9'7"	2495 mm	8'2"
R Reach at maximum height (extended)	2217 mm	7'0"	2107 mm	6'11"	3487 mm	11'5"	2921 mm	9'7"
S Clearance at maximum height (retracted)	5949 mm	19'6"	6480 mm	21'3"	5282 mm	17'4"	6234 mm	20'5"
T Clearance at maximum height (mid-position)	6847 mm	22'6"	7391 mm	24'3"	5847 mm	19'2"	6910 mm	22'8"
U Clearance at maximum height (extended)	7746 mm	25'5"	8303 mm	27'3"	6412 mm	21'0"	7587 mm	24'11"
Tires	600/65R25 GP 3D		600/65R25 GP 3D		20.5R25		23.5R25	

*VersaLink/Hook On.
 **All dimensions are to lift eye.

SPECIFICATION DEFINITIONS FOR FRONT END LOADERS

Caterpillar wheel and track loader specifications conform to Society of Automotive Engineers (SAE) definitions as expressed in standards J732 (JUN92), as follows:

Description of Specification Machine

On wheel loaders the tire inflation pressure at which specifications are taken must be described in addition to the current written basic machine description. On track loaders the type of grouser must be specified.

Hydraulic Cycle Times

- a. "Raise Time" — Time in seconds required to raise the bucket from level position on the ground.
- b. "Lower Time" — Time in seconds required to lower the empty bucket from the full height to a level position on the ground.
- c. "Dump Time" — Time in seconds required to move the bucket at maximum height from the maximum rollback position to full dump position while dumping the SAE loose material operating load.

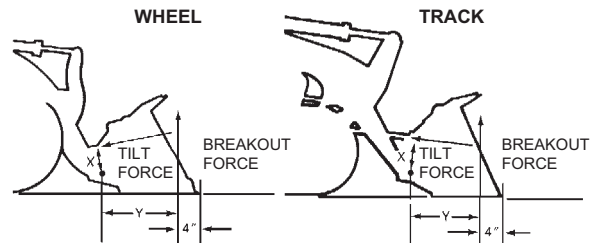
Breakout Force

"Breakout force," pounds (and kilonewtons or kilograms) — the maximum sustained vertical upward force exerted 100 mm (4") behind the tip of the bucket cutting edge and achieved through the ability to lift and/or rollback about the specified pivot point under the following conditions:

- a. Loader on a hard level surface with transmission in neutral.
- b. All brakes released.
- c. Unit at standard operating weight — rear of loader not tied down.
- d. Bottom of cutting edge parallel to and not more than 20 mm (0.75") above or below the ground line.

- e. When bucket circuit is used the pivot point must be specified as the bucket hinge pin, and the unit blocked under the bucket hinge pin pivot point in order to minimize linkage movement.
- f. When the lift circuit is used, the pivot point must be specified as the lift arm hinge pin. Wheel loaders shall have front axle blocked to eliminate change in position of pivot pins due to tire deflection.
- g. If both circuits are used simultaneously, the dominating pivot point listed in (e) or (f) must be specified.
- h. If the circuit used causes the rear of the vehicle to leave the ground, then the vertical force value required to raise the rear of the vehicle is the breakout force.
- i. For irregular shaped buckets, the tip of the bucket cutting edge referred to above shall mean the farther forward point of the cutting edge.

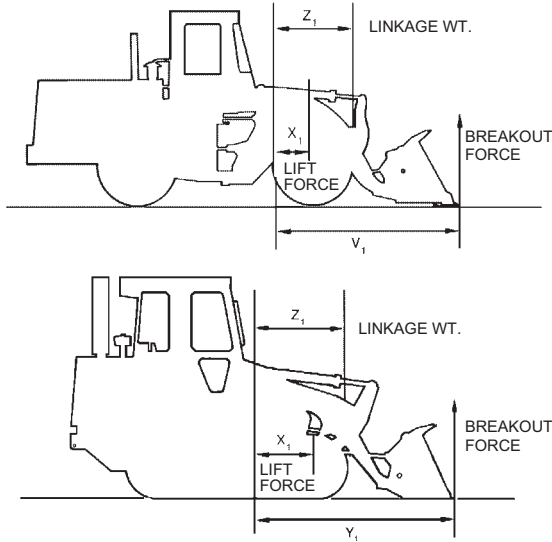
The following are illustrations used (according to provisions of SAE J732 JUN92) to measure Caterpillar Loader breakout forces.



- a. Breakout force resulting from rackback:
 $(\text{Tilt Force}) \times (\text{Dist. "X"}) = (\text{"Y" Dist.}) \times (\text{Breakout Force})$

$$\frac{(\text{Tilt Force}) \times (\text{Dist. "X"})}{\text{"Y" Dist.}} = \text{Breakout Force}$$

b. Breakout force resulting from bucket lift:



$$\begin{aligned}
 (\text{Lift Force}) \times (\text{Dist. "X}_1\text{")} &= (\text{"Y}_1\text{ Dist.}) \times (\text{Breakout Force}) \\
 &+ (\text{Linkage Wt.}) \times (\text{Dist. "Z}_1\text{")} \\
 &+ (\text{Breakout Force}) \times (\text{Linkage Mechanical Advantage "V}_1\text{")} \\
 &\text{or} \\
 \text{Breakout Force} &= \frac{(\text{Lift Force}) \times (\text{Dist. "X}_1\text{") - (\text{Linkage Wt.}) \times (\text{Dist. "Z}_1\text{")}}{(\text{Dist. "Y}_1\text{") + (\text{Dist. "V}_1\text{")} \times (\text{Linkage Mech. Advantage})}
 \end{aligned}$$

Static Tipping Load

The minimum weight at center of gravity of "SAE Rated" load in bucket which will rotate rear of machine to a point where, on track loaders, front rollers are clear of the track and on wheel loaders, rear wheels are clear of the ground under the following conditions:

- Loader on hard level surface and stationary.
- Unit at standard operating weight.
- Bucket at maximum rollback position.
- Load at maximum forward position during raising cycle.
- For articulated wheel loaders, the test will be run both with frame straight (straight static tipping load) and fully turned to a specific angle (full turn static tipping load).
- Unit with standard equipment as described in specifications unless otherwise noted under the heading.

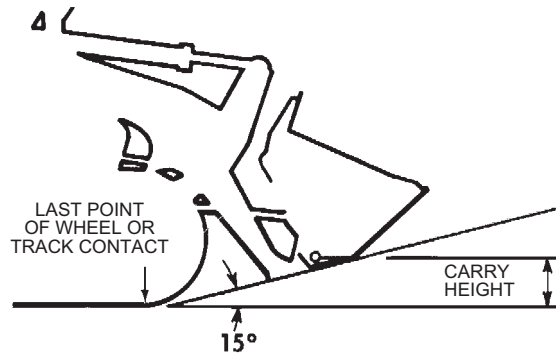
Operating Load

In order to comply with SAE standard J818 MAY87, the operating load of Wheel Loaders should not exceed 50% of the full turn Static Tipping load of the machine when equipped with attachments needed for the job. (For track loaders, operating load should not exceed 35% of the Static Tipping load rating.) See "Performance Data" of each machine in this handbook for increases to static tipping load by adding cab, counterweights, ripper-scarifier, etc.

The SAE operating load is not an indication of a wheel loader's rated payload. It takes into consideration only hydraulic lift and tipping capacity. There is no regard to structural and/or component lives, and for wheel loaders is measured on hard, moderately smooth and level operating surfaces.

Carry Position

SAE defines carry positions as: "The vertical distance from the ground to the center line of the bucket hinge pin, with the angle of approach at 15°." The sketch below illustrates this definition:



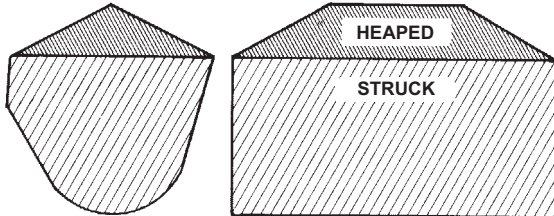
Loader Clearance Circle

SAE J732 JUN92 states that "minimum turning radius (over tire)" and "loader clearance circle" should be given for wheel loaders. Both are given on Caterpillar specification sheets, including loader clearance circles for all available buckets for each machine.

Digging Depth

J732 JUN92 specifies digging depth as "the vertical distance in mm (inches) from the ground line to the bottom of the bucket cutting edge at the lowest position with the bucket cutting edge horizontal."

SAE BUCKET RATING



SAE Bucket Capacities

Struck capacity is that volume contained in a bucket after a load is leveled by drawing a straight edge resting on the cutting edge and the back of the bucket.

Heaped capacity is a struck capacity plus that additional material that would heap on the struck load at a 2:1 angle of repose with the struck line parallel to the ground.

SAE J742 (FEB85) specifies that the addition of any auxiliary spill guard to protect against spillage which might injure the operator will not be included in bucket capacity ratings. Buckets with irregular shaped cutting edges (vee edge) the strike plane should be drawn at one-third the distance of the protruding portion of the cutting edge. Caterpillar rock buckets are built with integral see-through rock guards. Caterpillar light material buckets come standard with bolt-on edges. These features which add to actual bucket capacity are included in published ratings.

Dump Height

SAE J732 JUN92 specifies that dump height is the vertical distance from the ground to the lowest point of the cutting edge with the bucket hinge pin at maximum height and the bucket at a 45° dump angle. Dump angle is the angle in degrees that the longest flat section of the inside bottom of the bucket will rotate below horizontal.

SELECTING A MACHINE

Steps in selecting the proper size loader:

1. Determine production required or desired.
2. Determine loader cycle time and cycles per hour.
A machine size must be assumed to select a basic cycle time.

3. Determine required payload per cycle in loose cubic yards and pounds (meters and kilograms).
4. Determine bucket size needed.
5. Make machine selection using bucket size and payload as criteria to meet production requirements.
6. Compare the loader cycle time used in calculations to the cycle time of the machine selected. If there is a difference, rework the process beginning at step 2.

1. Production Required

The production required of a wheel or track loader should be slightly greater than the production capability of the other critical units in the earth or material moving system. For example, if a hopper can handle 300 tons per hour, a loader capable of slightly more than 300 tons should be used. Required production should be carefully calculated so the proper machine and bucket selections are made.

2. Loader Cycle Times

When hauling loose granular material on a hard smooth operating surface, a .45-.55 minute basic cycle time is considered reasonable for Caterpillar articulated loaders with a competent operator. This includes load, dump, four reversals of direction, full cycle of hydraulics and minimum travel.

Material type, pile height, and other factors may improve or reduce production, and should be added to or subtracted from the basic cycle time when applicable.

When hauls are involved, obtain the haul and return portion of the cycle from the estimated travel chart (this section). Add the haul and return times to the estimated basic cycle time to obtain total cycle time.

CYCLE TIME FACTORS

A basic cycle time (Load, Dump, Maneuver) of .45-.55 minutes is average for an articulated loader [the basic cycle for large loaders, 3 m³ (4 yd³) and up, can be slightly longer], but variations can be anticipated in the field. The following values for many variable elements are based on normal operations. Adding or subtracting any of the variable times will give the total basic cycle time.

	<i>Minutes added (+) or Subtracted (-) From Basic Cycle</i>
<i>Machine</i>	
— Material handler	-.05
<i>Materials</i>	
— Mixed.	+.02
— Up to 3 mm (1/8 in).	+.02
— 3 mm (1/8 in) to 20 mm (3/4 in).	-.02
— 20 mm (3/4 in) to 150 mm (6 in)00
— 150 mm (6 in) and over.	+.03 and Up
— Bank or broken	+.04 and Up
<i>Pile</i>	
— Conveyor or Dozer piled 3 m (10 ft) and up00
— Conveyor or Dozer piled 3 m (10 ft) or less	+.01
— Dumped by truck	+.02
<i>Miscellaneous</i>	
— Common ownership of trucks and loaders	Up to -.04
— Independently owned trucks	Up to +.04
— Constant operation.	Up to -.04
— Inconsistent operation	Up to +.04
— Small target	Up to +.04
— Fragile target	Up to +.05

Using actual job conditions and the above factors, total cycle time can be estimated. Convert total cycle time to cycles per hour.

$$\text{Cycles per hour at 100\% Efficiency} = \frac{60 \text{ min}}{\text{Total Cycle Time in Minutes}}$$

Job efficiency is an important factor in machine selection. Efficiency is the actual number of minutes worked during an hour. Job efficiency accounts for bathroom breaks and other work interruptions.

$$\begin{array}{l} \text{Cycles per hour} \\ \text{at 50 minutes} \\ \text{per hour} \\ \text{(83\% efficiency)} \end{array} = \begin{array}{l} \text{Cycles per hour} \\ \text{at 100\%} \\ \text{efficiency} \end{array} \times \frac{\begin{array}{l} 50 \text{ min} \\ \text{actual work} \\ \text{time} \end{array}}{60 \text{ min hour}}$$

TRUCK LOADING

Average loader cycle times

914G-962H	0.45-0.50 min
966H-980H	0.50-0.55 min
988G-990	0.55-0.60 min
992G-994D	0.60-0.70 min

3. Required Payload Per Cycle

Required payload per cycle is determined by dividing required hourly production by the number of cycles per hour.

4. Bucket Selection

After required payload per cycle has been calculated, the payload should be divided by the loose cubic yard (meter) material weight to determine number of loose cubic yards (meters) required per cycle.

The bulk of material handled does not weigh 1800 kg/m³ (3000 lb/yd³), so a reasonable knowledge of material weight is necessary for accurate production estimates. The Tables Section has average weight for certain materials when actual weights are not known.

The percentage of rated capacity a bucket carries in various materials is estimated below. The bucket size required to handle the required volume per cycle is found with the aid of the percentage of rated bucket capacity called "Bucket Fill Factor."

The bucket size needed is determined by dividing loose cubic meters (or yards) required per cycle by the bucket fill factor.

$$\text{Bucket size} = \frac{\text{Volume Required/Cycle}}{\text{Bucket Fill Factor}}$$

BUCKET FILL FACTORS

The following indicates the approximate amounts of material as a percent of rated bucket capacity which will actually be delivered per bucket per cycle. This is known as "Bucket Fill Factor."

Loose Material	Fill factor
Mixed moist aggregates.	95-100%
Uniform aggregates up to 3 mm (1/8 in).	95-100
3 mm (1/8 in) to 9 mm (3/8 in).	90-95
12 mm (1/2 in) to 20 mm (3/4 in).	85-90
24 mm (1.0 in) and over.	85-90

Wheel Loaders Integrated Toolcarriers

Machine Selection

- Bucket Fill Factors
- Example Problem

Blasted Rock

Well blasted	80-95%
Average.	75-90
Poor.	60-75

Other

Rock dirt mixtures	100-120%
Moist loam	100-110
Soil, boulders, roots	80-100
Cemented materials.	85-95

NOTE: Fill factors on wheel loaders are affected by bucket penetration, breakout force, rackback angle, bucket profile and ground engaging tools such as bucket teeth or bolt-on replaceable cutting edges.

Example:

12 mm (1/2 in) material and 3 m³ (4 yd³) bucket.
 $.90 \times 3 \text{ m}^3 = 2.75 \text{ Loose m}^3 \text{ delivered per cycle.}$
 $.90 \times 4 \text{ yd}^3 = 3.6 \text{ Loose yd}^3 \text{ delivered per cycle.}$

NOTE: Check the static tipping load on the specific machine to determine if bucket load is in fact a safe operating load.

Bucket Selection

$$\text{Tons Required/Cycle} = \frac{\text{Tons Required/Hour}}{\text{Cycles/Hour}}$$

$$\frac{\text{Kg (Pounds)}}{\text{Required/Cycle}} = \frac{\text{Tons Required/Cycle}}{\times 907 \text{ kg (2000 lb)}}$$

$$\text{Volume Required/Cycle} = \frac{\text{kg (Pounds) Cycle}}{\text{Material Weight}} \\ \text{kg/m}^3 \text{ (lb/yd}^3\text{)}$$

Always select a machine with a greater capacity than the calculated required operating capacity. For most applications, payload above recommended and excessive counterweight can hinder machine performance and reduce dynamic stability and machine life.

For optimum performance in fast cycling situations such as truck loading, operating loads should not exceed the recommended capacity. To provide extra stability, calcium chloride (CaCl₂) ballast may be desired when operating at recommended operating load, see SAE Loader rating pages in this section. For specific stability data and optional tire sizes, see the "Performance Data" pages in this section.

When selecting special application buckets, such as multi-purpose and side dump the additional bucket weight must be deducted from recommended capacity.

Specific circumstances may involve other conditions which would also affect loader capacity. Because of the greatly varied applications and conditions, your Caterpillar dealer should be contacted for guidance.

Example problem:

JOB CONDITIONS

Application	Truck loading
Production Required	450 metric ton (496 Tons) per hour
Material	9 mm (3/8") gravel in 6 m (20 ft) high stockpile
Density	1660 kg/m ³ (2800 lb/yd ³)

Trucks are 6-9 m³ (8-12 yd³) capacity and are owned by three contractors. Loading is constant. Hard level surface for loader maneuvering.

1. **PRODUCTION REQUIRED:** Given
2. **CYCLE TIME:** Assume loader size between 914G and 962H for initial choice of basic cycle. (Refer to Cycle Time Factors in this section)

Independent trucks	.04 min
Basic Cycle	.50 min
Material	-.02 min
Independent trucks	+.04 min
Constant operation	-.02 min
Total Cycle	.50 min

NOTE: Load and carry times not required in total cycle.

$$\text{Cycles/hr at 83\% efficiency} = 120 \text{ cycles/hr} \times \frac{50 \text{ min actual work time}}{60 \text{ min per hr}} = 100 \text{ cycles/hr}$$

3. **VOLUME REQUIRED PER CYCLE** (Density in tons)

Density in this example was given. When not given, refer to Tables Section to obtain an estimated density for the material being handled.

$$\text{Metric: } \frac{1660 \text{ kg/m}^3}{1000 \text{ kg/ton}} = 1.66 \text{ ton/m}^3$$

$$\text{English: } \frac{2800 \text{ lb/yd}^3}{2000 \text{ lb/ton}} = 1.4 \text{ tons/yd}^3$$

Production Rate Required

$$\text{Metric: } \frac{450 \text{ tons/hr}}{1.66 \text{ tons/m}^3} = 271 \text{ m}^3/\text{hr}$$

$$\text{English: } \frac{496 \text{ tons/hr}}{1.4 \text{ tons/yd}^3} = 354 \text{ yd}^3/\text{hr}$$

Volume Required per Cycle

$$\text{Metric: } \frac{271 \text{ m}^3/\text{hr}}{100 \text{ cycles/hr}} = 2.71 \text{ m}^3/\text{cycle}$$

$$\text{English: } \frac{354 \text{ yd}^3/\text{hr}}{100 \text{ cycles/hr}} = 3.54 \text{ yd}^3/\text{cycle}$$

4. *DETERMINE BUCKET SIZE*

BUCKET FILL FACTOR

The volume of material required per cycle has been determined. Because of varying material fill factors, buckets do not always carry their rated load, a larger capacity bucket may be needed to carry the volume required. For fill factors, refer to Bucket Fill Factor Chart in this section.

Rated Bucket Capacity Required (Heaped)

$$\frac{2.71 \text{ m}^3/\text{cycle}}{.95 \text{ fill factor}} = 2.85 \text{ m}^3$$

$$\frac{3.54 \text{ yd}^3/\text{cycle}}{.95 \text{ fill factor}} = 3.73 \text{ yd}^3$$

A 2.9 m³ (3.75 yd³) bucket would provide the required capacity.

5. *MACHINE SELECTION*

The bucket size required and material density lead to the choice of a 950H with a 2.9 m³ (3.75 yd³) General Purpose Bucket (see bucket selection guide pages which follow.)

Finally, SAE payload criteria must be satisfied as follows:

The required operating capacity must not exceed one-half of the full turn static tipping load of the loader as equipped with a specific bucket.

The required operating capacity of the machine is determined by the volume the machine will carry per load times the density.

$$2.9 \text{ m}^3 \times 1660 \text{ kg/m}^3 = 4814 \text{ kg}$$

$$(3.75 \text{ yd}^3 \times 2800 \text{ lb/yd}^3 = 10,500 \text{ lb})$$

One half of full turn static tipping load for the 950H with a 2.9 m³ (3.75 yd³) General Purpose Bucket is 5410 kg (11,925 lb). SAE criteria is satisfied.



An Alternative Method of Machine Selection

Another method of selecting the right Wheel Loader and bucket to meet production requirements is by use of the nomographs on the following pages. The method is quicker and easier than the preceding example because it does not require as many calculations, yet the accuracy is about the same within the normal limits of input data.

Be careful when entering and reading data from the nomographs because some scales increase from bottom to top, while others are the reverse. Do not be overly concerned with the precision as affected by pencil line width or reading to the hundredth of a m³ (yd³). Remember that bucket fill factor, material density and cycle time are at best close estimates.

Example problem:

A Wheel Loader must produce 230 m³ (300 yd³) per hour in a truck loading application. Estimated cycle time is .6 minutes, working 45 minutes per hour. Bucket fill factor is 95% and material density is 1780 kg/m³ (3000 lb/yd³).

Determine bucket size and machine model.

Solution:

At full efficiency, the Wheel Loader will cycle 100 times per hour. Since only an average of 45 minutes are available, only 75 cycles will be completed.

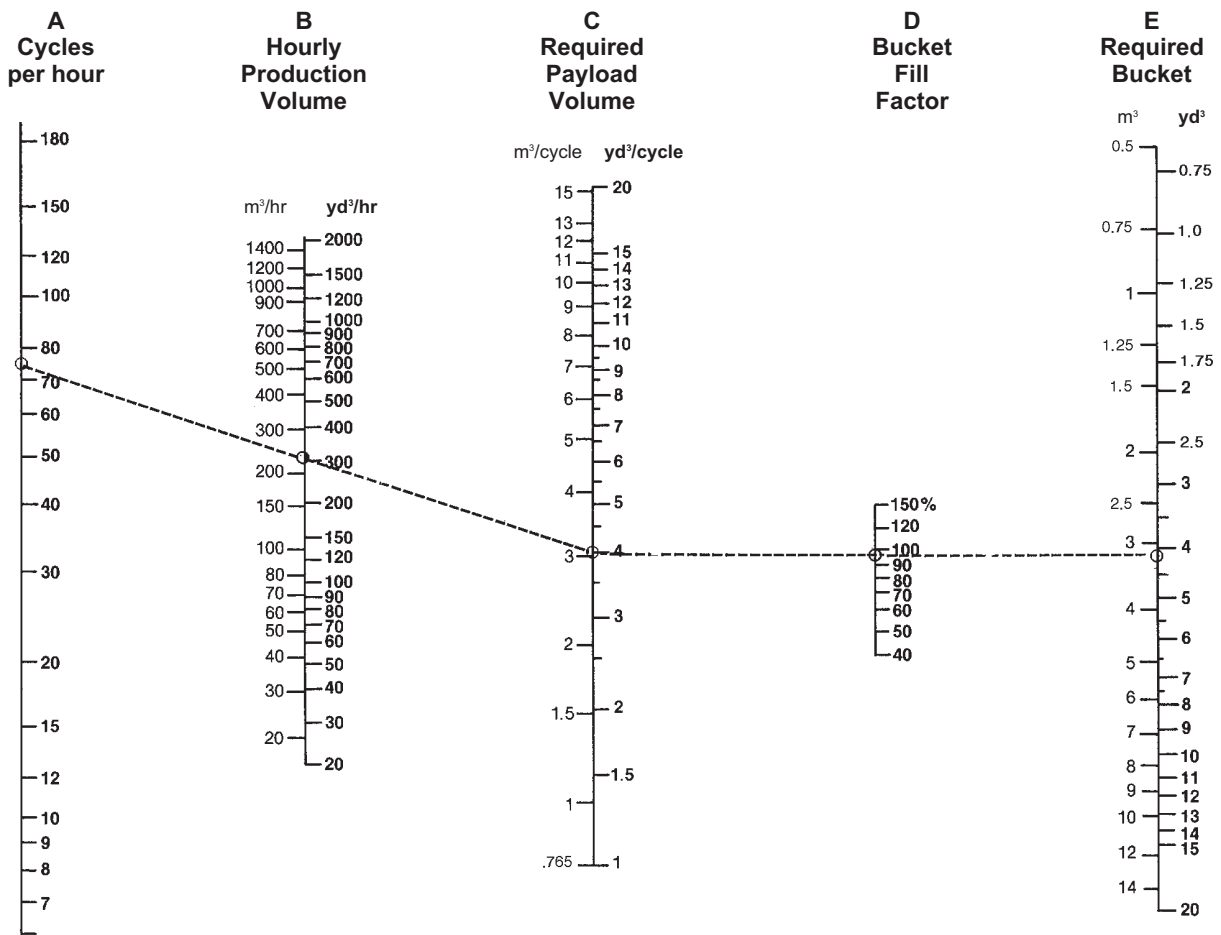
Starting on Scale A at 75 cycles per hour draw a straight line intersecting 230 m³/hr (300 yd³/hr) on Scale B and extending it on to Scale C giving 3 m³/cycle (4 yd³/cycle) required payload. Follow solution steps 1-10.

Wheel Loaders Integrated Toolcarriers

Production and Machine Selection Nomograph

● To find payload weight and tons per hour

1. Enter required hourly production on Scale B
230 m³/hr (300 yd³/hr).
2. Enter cycles per hour on Scale A (60 ÷ .6 = 100
× .75 = 75 cycles/hr).
3. Connect A through B to C. This shows a required
payload of 3 m³ (4 yd³) per cycle.
4. Enter estimated bucket fill factor on Scale D
(0.95).
5. Connect C through Scale D to E for required bucket
size 3 m³ (4 yd³).
6. Transfer cycles per hour Scale A and required
payload Scale C to the following page.



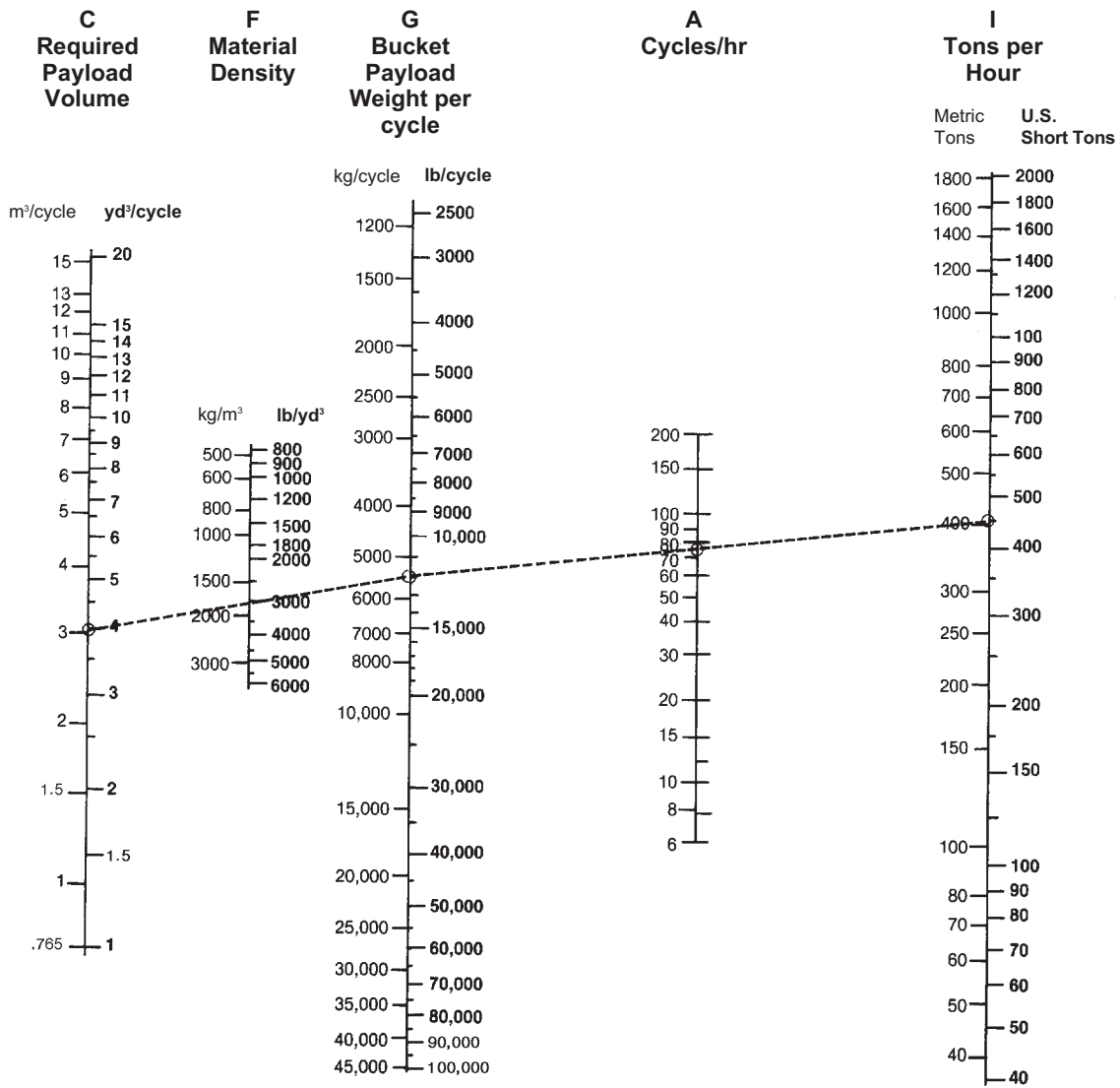
Production and Machine Selection Nomograph
 ● To find required bucket payload and bucket size

Wheel Loaders
Integrated Toolcarriers

- Enter material density on Scale F 1780 kg/m³ (3000 lb/yd³).
- Connect C through Scale F to Scale G to give payload weight per cycle 5300 kg (11,500 lb).
- Compare Scale G quantity 5300 kg (11,500 lb) with recommended machine working range listed on the following bucket selection pages.

Operating capacity for the 950H with 3.1 m³ (4 yd³) bucket is dependent on material density and bucket capacity (see bucket selection pages that follow).

- For hourly tonnage, draw a straight line from Scale G through Scale A to Scale I 400 metric tons (450 U.S. tons).

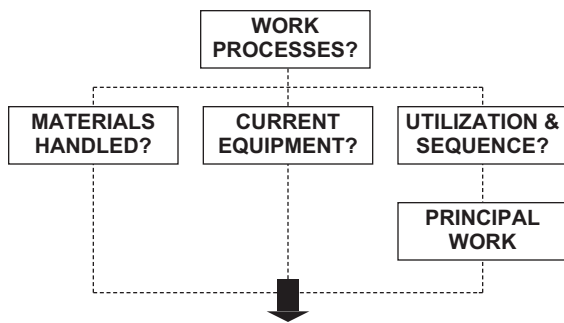


MACHINE/ATTACHMENT SELECTION

The Integrated Toolcarrier’s versatility and the wide range of attachments makes the “single machine fleet” concept highly attractive to an increasing number of users.

A Job Analysis helps identify applications, work requirements, material handling parameters and the current working method. Thoroughly research each element in the following chart, the gathered information will help select the proper Integrated Toolcarrier System.

JOB ANALYSIS METHOD



- **APPROPRIATE INTEGRATED TOOLCARRIER MODEL SIZE**
- **NECESSARY ATTACHMENTS**

Work Processes:

The first step in the job analysis is to identify all work processes from start to finish. Key questions outlined below will begin to indicate the required attachments and potential Integrated Toolcarrier applications.

- What kinds of work are performed: (e.g., dozing, loading, stacking, digging, sweeping, handling special materials, etc.)
 - ... in site preparation?
 - ... below ground level?
 - ... at ground level?
 - ... above ground level?
 - ... in landscaping?
 - ... in maintenance equipment yard?
 - etc.
- What work is done manually that could be done with an Integrated Toolcarrier?
- What are the work conditions?:
 - ... underfoot?
 - ... grades?
 - ... tight quarters?
 - ... time restraints?
 - ... climate?
 - etc.

Materials Handled:

Examining the materials handled will assist in determining necessary attachments. Sizes and weights of material(s) handled will indicate the appropriate Integrated Toolcarrier model by defining lift and reach requirements. Concentrate on the material flow at the job site — the point of origin as well as the final destination for the various materials will undoubtedly have material handling requirements.

- What kinds of materials are handled (e.g. snow, earth, bricks, chemicals, pipe, logs, etc.)
- What form are the materials handled in: bulk? palletized?
- How much does each weigh?
- What are the dimensions of each?
- What are the... movement parameters:
 - ... dozed what distance?
 - ... load and carried what distance?
 - ... lifted how high?
 - ... placed below ground level?
 - ... placed what distance from machine?

Current Equipment:

If determining material weight is not possible, much information can be determined from looking at the current equipment fleet. This will suggest required performance capabilities such as lifting capacity.

- Machines currently doing the work (e.g. wheel loaders, lift trucks, sweepers, light capacity cranes, snow plows, etc.)?
- What special (maximum) capabilities does each machine have (production, lift height, load capacity, width/height dimensions, reach, turning radius, travel speed, etc.)?
- To what extent are each machine's maximum capabilities used?
- What are owning/operating costs of each?

Utilization & Sequence:

Utilization implies how often the current machines are used and what will be the utilization factors for the Integrated Toolcarrier with each individual attachment. Sequence implies what order these tasks are accomplished in and if two or more machines operate at the same time. This portion of the job analysis should assist in comparing economies of various systems. Other important considerations may be the number of operators needed, storage space, reduced maintenance requirements, etc.

- How often (what percent) is each machine used?
- How often and when does it sit idle?
- How often and when do two or more machines work at the same time?
- Can the operation be changed to permit single machine operation?

Principal Work:

Utilization and sequence will indicate the principal work the Integrated Toolcarrier will do, further assisting in attachment and model sizing and selection. The basic machine/tool package should be able to handle the toughest, most frequently performed jobs for the primary application. Secondary tools can have a little more "give and take" in their performance capabilities than the primary tool.

- What work can be accomplished by an Integrated Toolcarrier?
- What work will take up the majority of Integrated Toolcarrier time?
- What work will use the maximum static tipping capabilities of the Integrated Toolcarrier?
- What high cost (owning and operating) and/or low utilization machines can be replaced by an Integrated Toolcarrier?

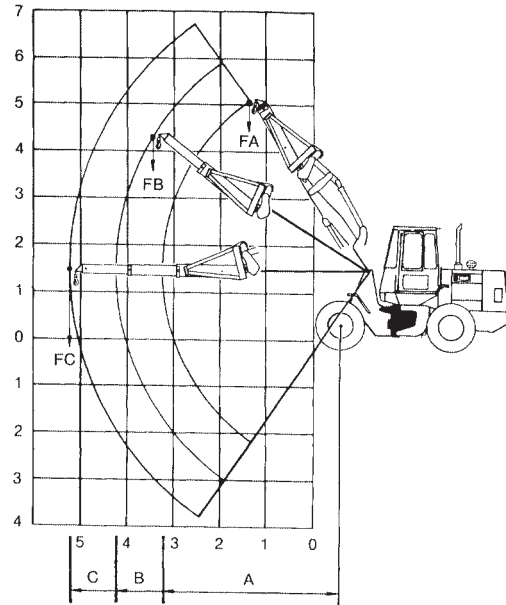
Additional Tips for Tool Sizing and Selection

Tool selection will principally concern hydraulic power requirements and static tipping load considerations. The standard tools offered by Caterpillar can be used on any Integrated Toolcarrier machine with little difficulty. However, tools such as the hydraulic broom, claws, blades and asphalt cutter will require additional consideration before proposing a system to the customer.

Rated Loads

The Caterpillar tools have recommended load limits for each machine in standard configuration. These rated loads are determined by structural limitations on the tool and/or hydraulic and stability criteria established for each machine. The IT14G through 930G share common attachment points and can share attachments. The IT38G Series II and IT62H can share the same attachments.

Shown below are examples of the ratings for each Caterpillar tool. Refer to the Operation and Maintenance Manual for the rated operating load for that tool on a specific machine model.



Material Handling Arm

Part No. 9V1795

Table indicates rated load at standard vehicle configuration. See operator's manual to determine rated load for vehicle configuration being used.

Model	Load Radius								Rated Load			
	A		FA		B		FB		C		FC	
	m	ft	kg	lb	m	ft	kg	lb	m	ft	kg	lb
IT14G	3.85	12.6	1292	2842	4.85	15.9	1015	2233	5.85	19.2	837	1841
924G Standard	3.97	13.0	1790	3938	4.97	16.3	1419	3122	5.97	19.6	1178	2592
924G High Lift	4.36	14.3	1576	3474	5.36	17.6	1272	2804	6.36	20.9	1068	2355
930G Standard	3.35	11.0	2363	5216	4.35	14.25	1890	4166	5.35	17.58	1576	3474
930G High Lift	3.75	12.33	2097	4622	4.75	15.58	1705	3759	5.75	18.83	1439	3171
IT38G Series II	4.57	15.0	4098	9016	5.37	17.7	3457	7605	6.17	20.3	2983	6563
IT62H	4.81	15.8	6170	13,590	5.61	18.4	5251	11,565	6.41	21.0	4576	10,080

Fork Rating

Table indicates rated pallet fork load at standard machine configuration, 600 mm (24") load center, 1200 mm (3'11") fork on IT14G-930G and 1220 mm (4'0") fork on IT38G Series II-IT62H, see operator manual to determine rated load for vehicle configuration being used.

Model	kg	lb	Model	kg	lb
IT14G	1870	4123	930G Standard	3208	7072
924G Standard	2462	5416	930G High Lift	2761	6087
924G High Lift	2098	4616	IT38G II	3109	6855
			IT62H	3877	8548

Bucket Rating

Bucket capacity, SAE J742 FEB85 (nominally heaped)

Table indicates rated load at vehicle configuration noted by the asterisks. See operator manual to determine rated load for vehicle configuration being used.

1.4 m³ (1.75 yd³) with Bolt-on Cutting Edge

IT14G* 2273 kg **5000 lb**

1.8 m³ (2.35 yd³) with Bolt-on Cutting Edge

924G Standard** 3253 kg **7156 lb**

924G High Lift 2629 kg **5795 lb**

2.0 m³ (2.6 yd³) with Bolt-on Cutting Edge

924G Standard** 3204 kg **7063 lb**

924G High Lift** 2591 kg **5712 lb**

2.1 m³ (2.75 yd³) with Bolt-on Cutting Edge

930G Standard** 4172 kg **9198 lb**

930G High Lift** 4397 kg **9694 lb**

2.3 m³ (3.0 yd³) with Bolt-on Cutting Edge

IT38G Series II† 3815 kg **8410 lb**

930G Standard** 4128 kg **9101 lb**

930G High Lift** 4370 kg **9634 lb**

2.5 m³ (3.25 yd³) with Bolt-on Cutting Edge

IT38G Series II† 3810 kg **8400 lb**

930G Standard** 3911 kg **8622 lb**

930G High Lift** 4219 kg **9301 lb**

3.1 m³ (4.0 yd³) with Bolt-on Cutting Edge

IT62H†† 5644 kg **12,440 lb**

3.3 m³ (4.25 yd³) with Bolt-on Cutting Edge

IT62H†† 5613 kg **12,370 lb**

*Specifications shown are for high-speed version IT14G and include lubricants, full fuel tank, ROPS cab, 80 kg (176 lb) operator, standard 250 kg (550 lb) counterweight and 17.5-R25 (L-2 equivalent) tires.

**Specifications shown include lubricants, full fuel tank, ROPS cab, 80 kg (176 lb) operator and 17.5 x 25, 12 PR (L-2) tires.

†Std. machine with sound suppressed cab, ROPS, 20.5-R25, XTLA (L-2) tires, full fuel tank, coolant, lubricants and operator.

††Std. machine with 23.5-R25, XHA (L-3) tires, air conditioning, crank case and power train guards, full fuel tank, coolant, lubricants and operator.

The charts explain each machine's maximum payload. The maximum material density would be determined by dividing the payload by the bucket capacity. If the actual material density exceeds the recommended material density, the process should be repeated to select the properly sized bucket.

A similar procedure would be used with the forks and material handling arm to determine maximum recommended lifting capacity and/or required IT model size.

Pallet Fork

The pallet fork will fulfill many material handling needs. A modified Class 3 fork carriage provides visibility to the tines for precision pallet work. This carriage with non-standard spacing accepts many Class 3 lift truck attachments.

Pallet fork rated operating loads are based on the following:

SAE J1197 FEB91: 50% of the full turn static tipping load or the hydraulic/structural limitations.

CEN 474-3 (European standard): 60% of the full static tipping load on rough terrain or the hydraulic/structural limitations. 80% of the full turn static tipping load on firm, level ground or the structural/hydraulic limitation. Other local, regional or international guidelines may also apply.

If operation is on rough ground these criteria may need modification. In this instance, the size and rating of existing equipment should be considered.

Sizing for pallet work generally consists of answering the following questions.

1. What are the average loaded pallet dimensions?
2. Lift Capacity — what capacity is required to lift and move the average pallet load? The maximum pallet load?
3. Lift Height — can the machine reach the top level of the standard pallet stack? What are the maximum reach, lift and height requirements?
4. Maneuverability — can the machine work around the current aisle configuration? In the stacking aisles? Main aisles? Intersecting aisles? Are 90° turns required in any aisle for material placement?
5. Length — what tine length is required to fit the commonly used pallets? (1219 mm [4'0"] tines are standard length for most palletized material.)
6. Any machine height restrictions?
7. Any special fork configurations required?

Lift capacity, lift height, aisle configuration and tine length are the most important considerations in recommending a pallet handling machine.

Example problem:

The following example applies the job analysis method to a work situation.

Sewer & Water Contractor

Sets water lines (152 mm-610 mm [6 in-24 in] iron pipe), sanitary sewer lines (152 mm-457 mm [6 in-18 in] PVC) and storm sewer lines (610 mm-1067 mm [24 in-42 in] concrete pipe) primarily in urban areas ... often-times across or down existing streets.

Materials

- Loam/Clay: 1600 kg/m³ (2700 lb/yd³) loose density Bedding (Gravel): 1900 kg/m³ (3200 lb/yd³) loose density
- Water Pipe: 610 mm (24 in) push-on joint ductile iron, 6.1 m (20 ft) sections, 1309 kg (2885 lb) 215 kg/m (144.3 lb/ft) × 6.1 m (20 ft) See trenching pages in the Excavator backhoe section.
- Storm Sewer: 1067 mm (42 in), Wall B, concrete pipe, 1.5 m (5 ft) sections, 1556 kg (3430 lb) 1021 kg/m (686 lb/ft × 5 ft) See trenching pages in the Excavator backhoe section.

- Manhole Boxes: 1361 kg (3000 lb)

WHAT INTEGRATED TOOLCARRIER MODEL SHOULD BE RECOMMENDED?

WHICH ATTACHMENTS?

Work Processes	Integrated Toolcarrier Attachment Possibilities
Bundled PVC and individual concrete/iron pipe-loaded/unloaded (yardsite) and strung along trench	Forks/Material Handling Arm
Unload, handle, set manhole boxes	Material Handling Arm
Excess excavated material truck loaded	Bucket
Bedding material handled/placed	Bucket
Trench backfilled	Bucket/Blade
Trench compaction	Compactor Wheel
Rough and finish grading	Bucket/Blade
Street cleanup	Bucket/Broom
Pavement removal	Rebar Snips/Asphalt Cutter

Current Equipment

	Utilization
Cat 225	.90%
Champ CB607 lift truck, 3175 kg (7000 lb) capacity	.15%
Deere 444 with 1.1 m ³ (1.5 yd ³) G.P. bucket	.60%
Rosco D-50 sweeper	.one half hour/day
Rammax 1361 kg (3000 lb) self-propelled trench compactor	.25%

Machine sizing

1350 mm (53 in) Forks

Operating Load at Full Turn*

Model	kg	lb
IT14G	1810	5991
924G	2361	5194
930G Standard	2946	6495
930G High Lift	2550	5622
Water pipes: 1309 kg (2885 lb)		IT14G ... 1 pipe — no problem 924G ... 1 pipe — no problem 930G ... 1 pipe — no problem
Storm sewer pipes: 1556 kg (3430 lb)		IT14G ... 1 pipe — no problem 924G ... 1 pipe — no problem 930G ... 1 pipe — no problem

*Note that the most conservative operating load (SAE J1197 FEB91) is used here. The rated operating load for some competitive machines with pallet forks will be based upon European standard CEN 474-3, **assuming operation on firm and level ground** (i.e. using 80% of full turn static tipping load).

Material Handling Arm (MHA)

The rated load for the MHA is 50% of the full turn static tipping load in each position or hydraulic or structural limitations. Manually extendable telescopic sections enable maximum lifting capacity at the full retracted position, and maximum lift height and reach in the fully extended position.

Operating Load at Full Turn

Model	Retracted	Mid	Extended
IT14G	1370 kg 3021 lb	1076 kg 2373 lb	888 kg 1958 lb
924G Standard Hook On	1790 kg 3938 lb	1419 kg 3122 lb	1178 kg 2592 lb
924G High Lift Hook On	1576 kg 3467 lb	1272 kg 2798 lb	1068 kg 2350 lb
930G Standard Hook On	2363 kg 5216 lb	1890 kg 4166 lb	1576 kg 3474 lb
930G High Lift Hook On	2097 kg 4622 lb	1705 kg 3759 lb	1439 kg 3171 lb

Storm sewer pipes:
1556 kg (3430 lb)

Manhole boxes:
1361 kg (3000 lb)

IT14G ... no
924G ... yes in retracted
930G ... yes in retracted and mid
IT14G ... no
924G ... yes in retracted and mid
930G ... yes in retracted, mid and extended

Buckets

All general purpose buckets are interchangeable on 924G-930G due to common attachment points on the quick couplers. Bucket selection will depend on the material density in your application. Offering multiple sized buckets allows the user the flexibility to closely match material density and bucket size with machine capability. Equipping a machine with too large a bucket will result in unacceptable stability — too small a bucket may provide inadequate tire coverage.

Bucket 1900 kg/m³ (3200 lb/yd³) ... 100% fill factor

Model	Bucket	Payload	50% Full Turn Static Tipping
924G*	1.8 m ³	3420 kg	3253 kg
Hook On	2.3 yd³	7524 lb	7156 lb
	2.1 m ³	3990 kg	3210 kg
	2.7 yd³	8778 lb	7062 lb
930G* Hook On	2.1 m ³	4386 kg	4172 kg
	2.7 yd³	9669 lb	9198 lb
	2.3 m ³	5131 kg	4128 kg
	3.0 yd³	11,312 lb	9101 lb
IT38G Series II	2.3 m ³	3856 kg	3850 kg
	3.0 yd³	8500 lb	8488 lb

NOTE: Metric numbers are a product of conversion.
*924G and 930G equipped with 17.5 × 25 tires.

Machine/Attachment Recommendation

930G — The greater static tipping load capabilities allow it to do a greater portion of the contractor's total work processes. With the following attachments, the 930G could replace part or all of the specialty units, such as the wheel loader, rough terrain lift truck, street sweeper, and/or the trench compactor.

2.1 m³ (2.75 yd³), 2.3 m³ (3.0 yd³), or 2.5 m³ (3.25 yd³)

General Purpose Bucket

1350 mm (53 in) forks (handles all pipes)

Material Handling Arm — (handles pipe sizes under 1067 mm (42 in) concrete and manhole boxes ... 225 would have to set 1219 mm (48 in) and larger concrete pipe

Broom

Optional Attachments to Consider:

24-LH compactor wheel

Rebar snips

Asphalt cutter

Wheel Loaders Integrated Toolcarriers

Bucket Selection ● 906-924G

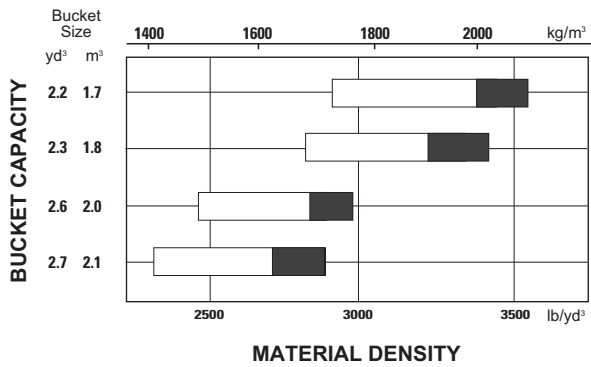
906

Bucket Type	Rated Capacity		Maximum Material Density	
	m ³	yd ³	kg/m ³	lb/yd ³
General Purpose	0.8	1.05	1850	3120
Light Material	1.2	1.57	1200	2020
Stone Sieve	0.7	0.92	2000	3370
Multi-Purpose	0.7	0.92	1730	2920
Side Dump	0.7	0.92	1850	3120
High Dump	0.7	0.92	2000	3370

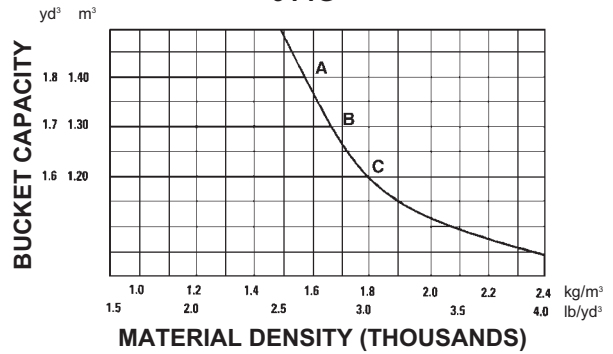
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Bucket Type	Rated Capacity		Maximum Material Density	
	m ³	yd ³	kg/m ³	lb/yd ³
General Purpose	1.0	1.30	1830	3100
Light Material	1.5	1.95	1170	1990
Stone Sieve	0.9	1.20	2010	3320
Multi-Purpose	0.9	1.20	1950	3220
Side Dump	0.9	1.20	1820	3010
High Dump	0.9	1.20	1900	3170

924Gz Pin On



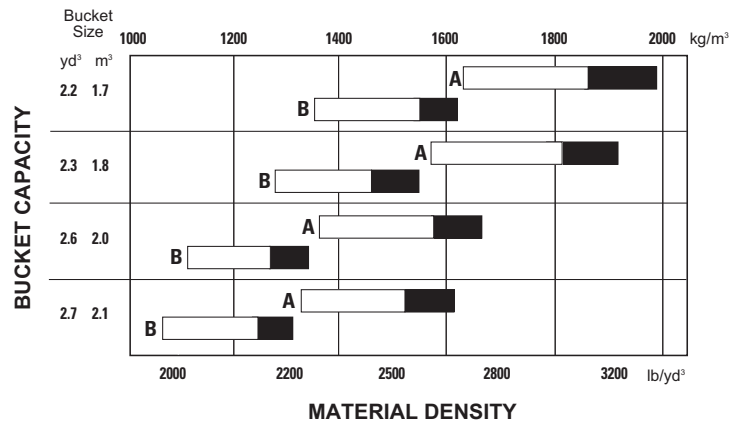
914G



KEY

- A — 1.4 m³ (1.8 yd³) General Purpose Bucket, bolt-on edge
1.4 m³ (1.8 yd³) General Purpose Bucket, bolt-on teeth and segments
- B — 1.3 m³ (1.7 yd³) General Purpose Bucket, bolt-on edge
1.3 m³ (1.7 yd³) General Purpose Bucket, bolt-on teeth and segments
1.3 m³ (1.7 yd³) General Bucket, bolt-on teeth
1.3 m³ (1.7 yd³) General Purpose Bucket, flush mounted teeth
- C — 1.2 m³ (1.6 yd³) General Purpose Bucket, bolt-on teeth

924G Hook On



KEY

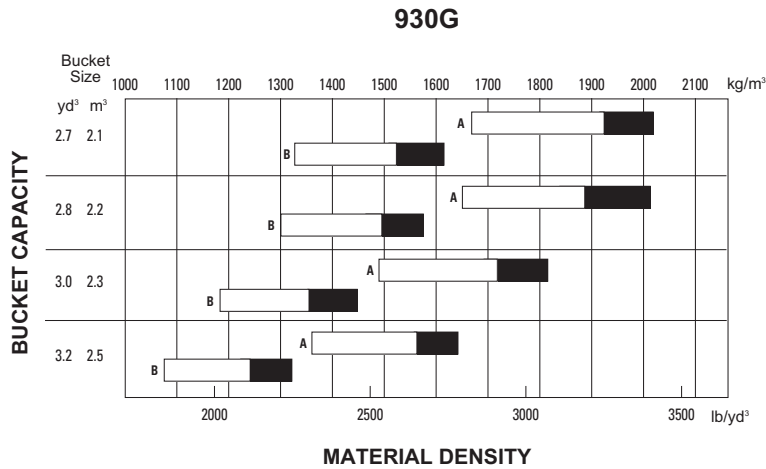
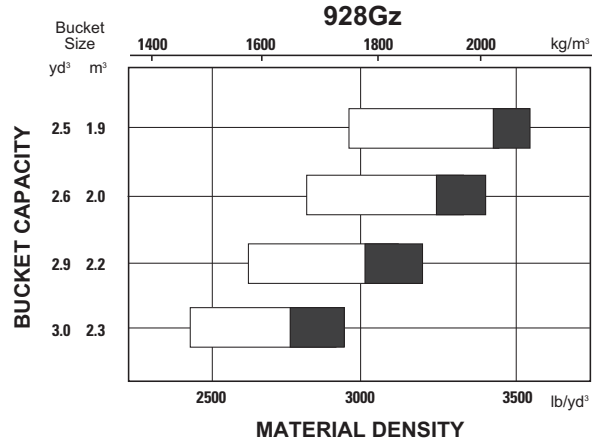
- A — Standard VersaLink
- B — High Lift

% = Bucket Fill Factor

115% 100% 95%

● Bucket Selection
● 928Gz–938G Series II

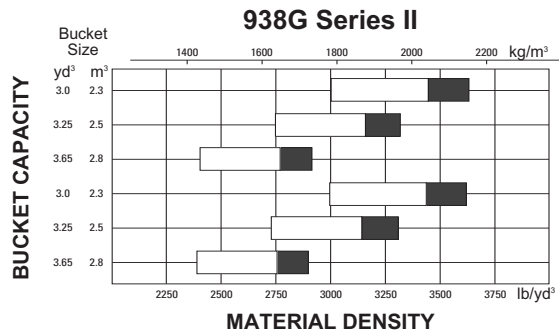
Wheel Loaders
Integrated Toolcarriers



12

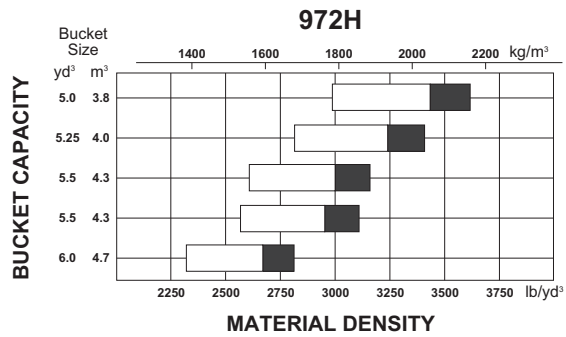
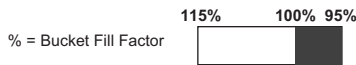
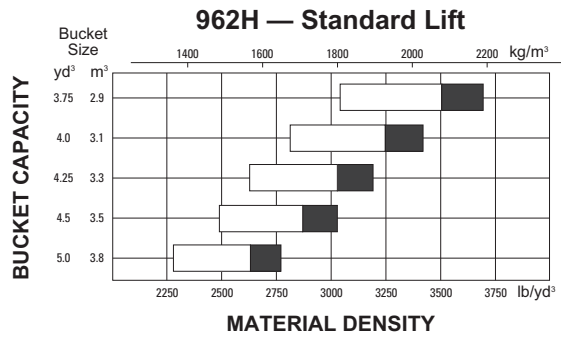
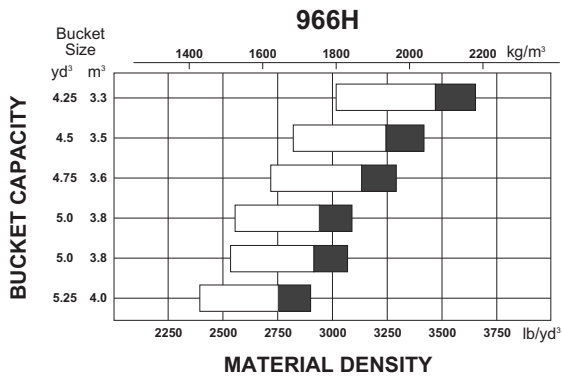
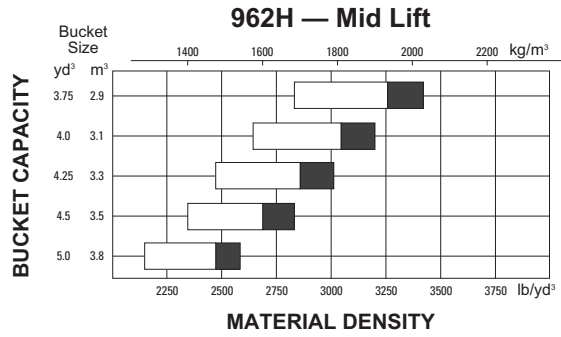
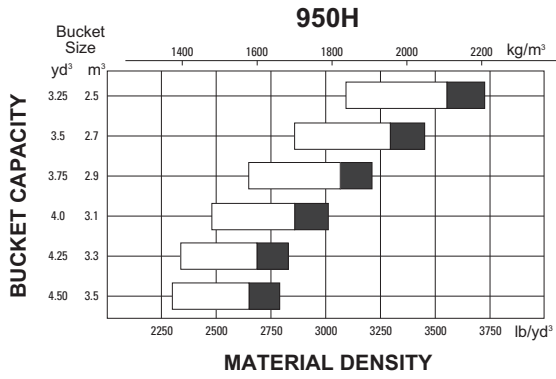
KEY
A — Standard VersaLink
B — High Lift

% = Bucket Fill Factor



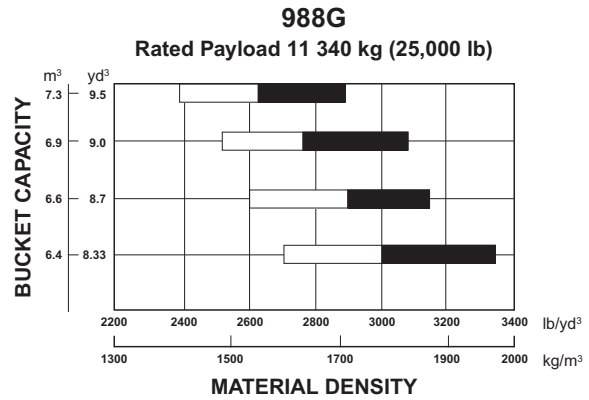
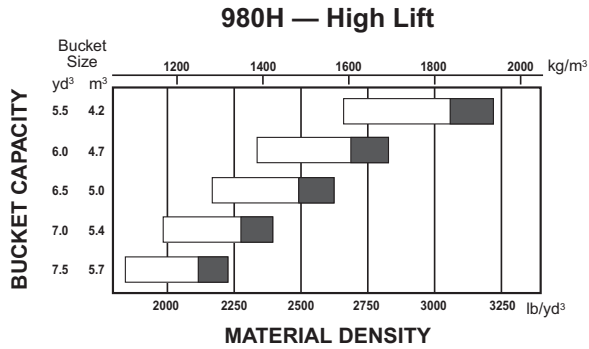
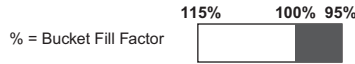
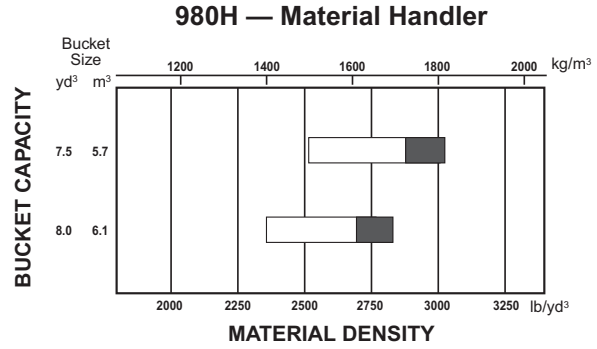
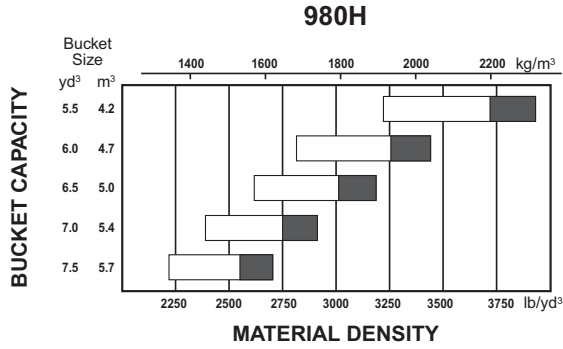
**Wheel Loaders
Integrated Toolcarriers**

**Bucket Selection
● 950H-972H**

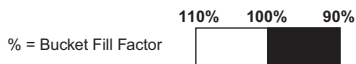
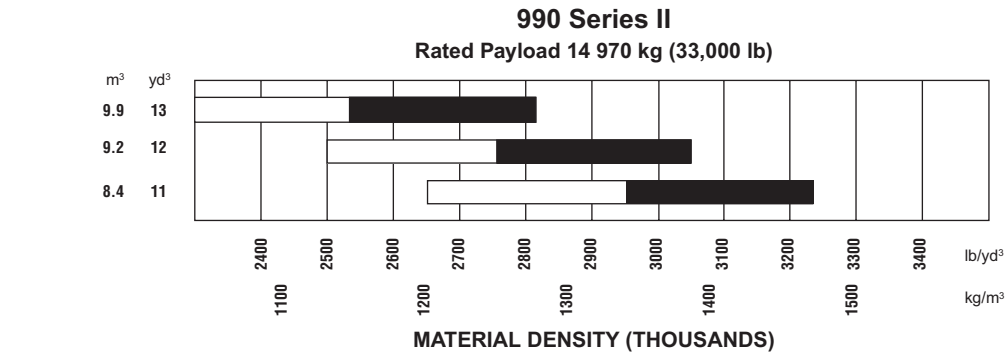


Bucket Selection
● 980H-990 Series II

Wheel Loaders
Integrated Toolcarriers

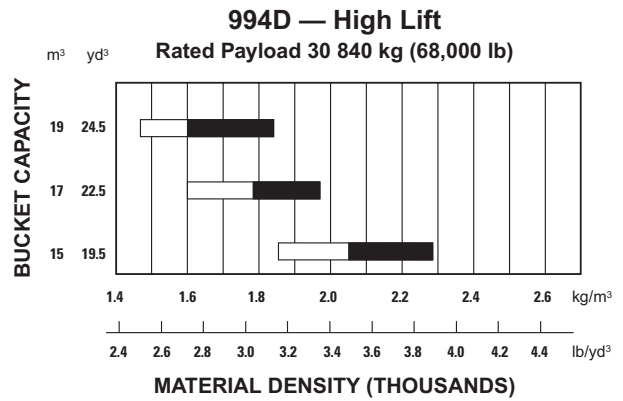
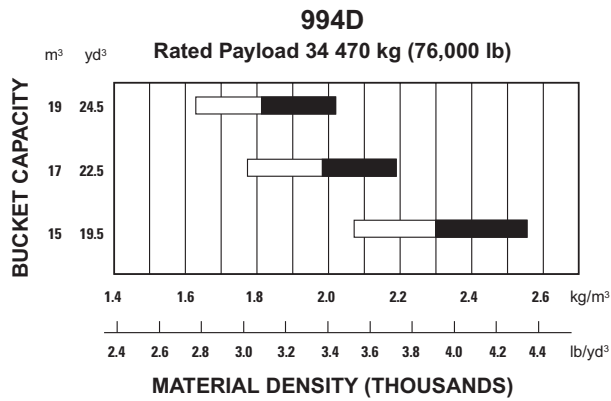
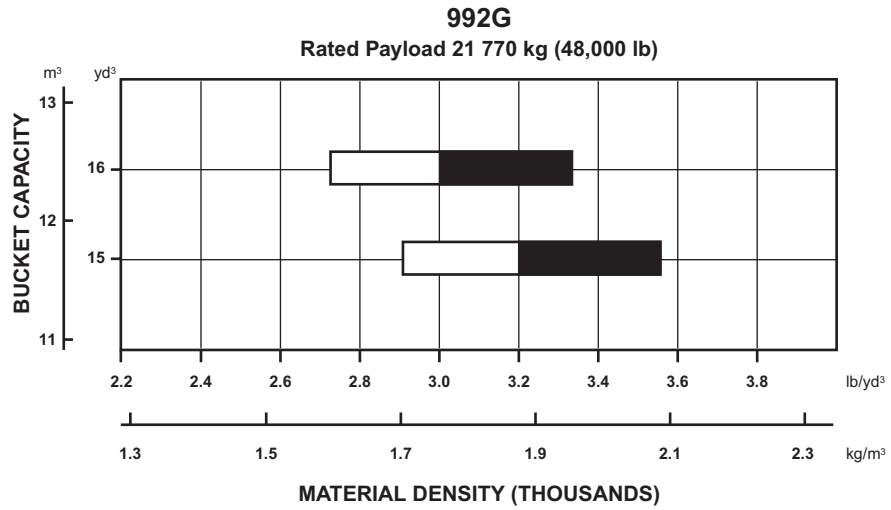


NOTE: Percentages represent bucket fill factors.

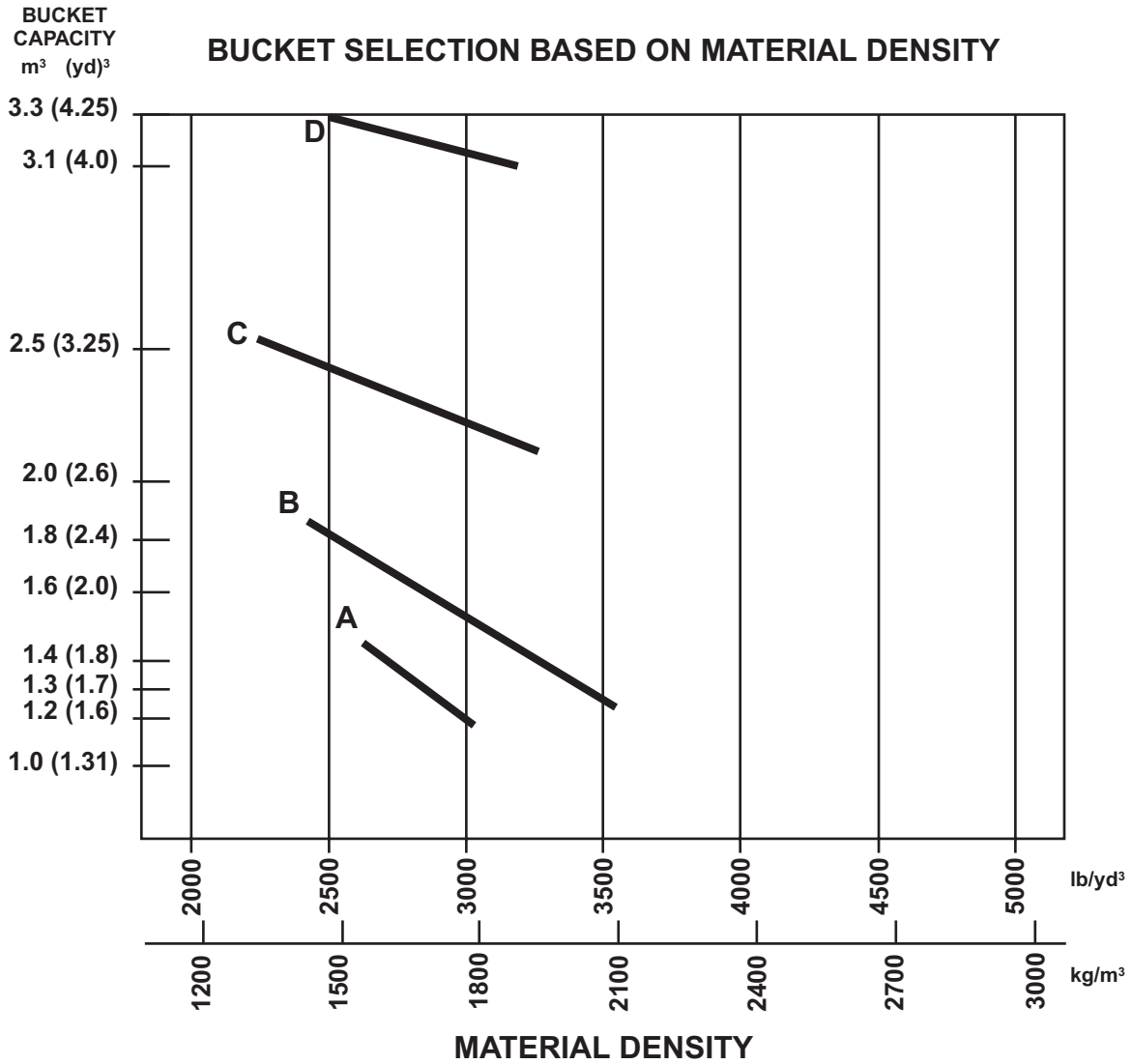


**Wheel Loaders
Integrated Toolcarriers**

Bucket Selection
 ● 992G ● 994D ● 994D — High Lift



% = Bucket Fill Factor 110% 100% 95% Standard



NOTE: Machines equipped same as those on Performance Data pages.

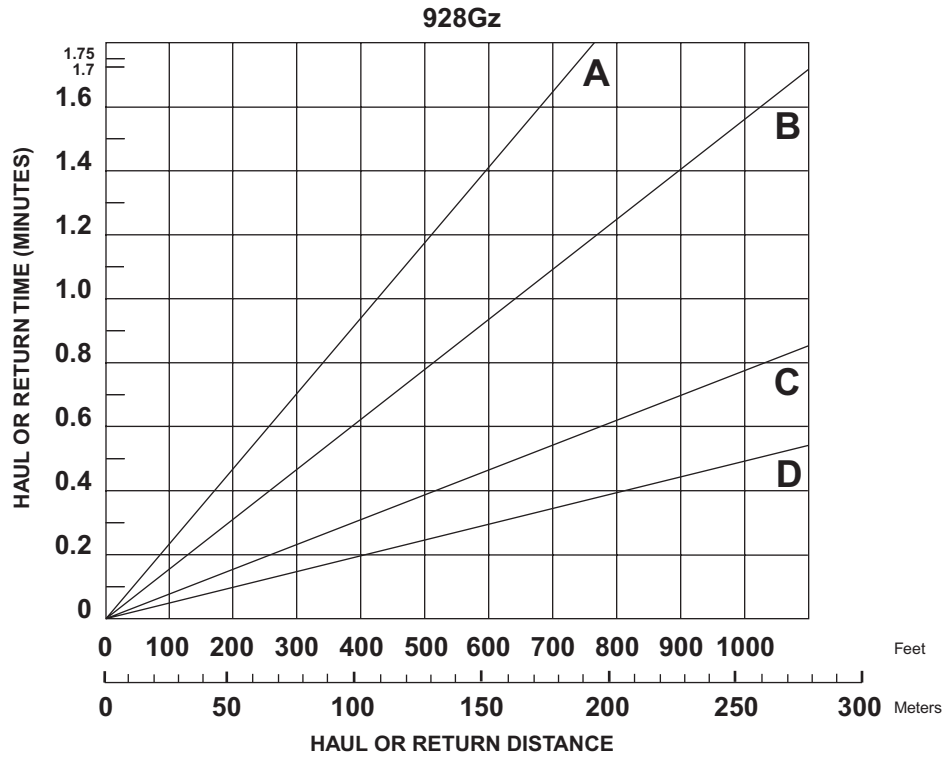
KEY

- A — IT14G
- B — 924Gz
- C — IT38G Series II
- D — IT62H

**Wheel Loaders
Integrated Toolcarriers**

Estimated Haul or Return Time Charts

- 928Gz
- 20.5-25 Tires



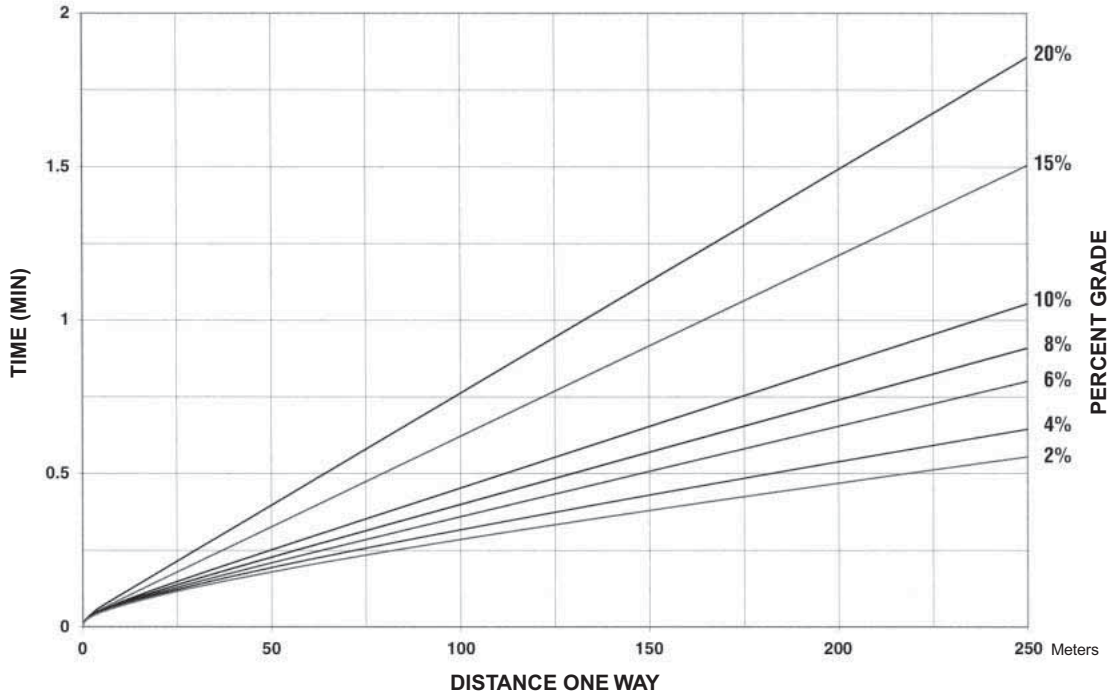
- KEY**
- A — 1st Forward and Reverse Speed
 - B — 2nd Forward and Reverse Speed
 - C — 3rd Forward and Reverse Speed
 - D — 4th Forward Speed

NOTE: Loader maneuver, load and dump time must be added to travel time. 4th gear curve not indicated; primarily used for transporting machine.

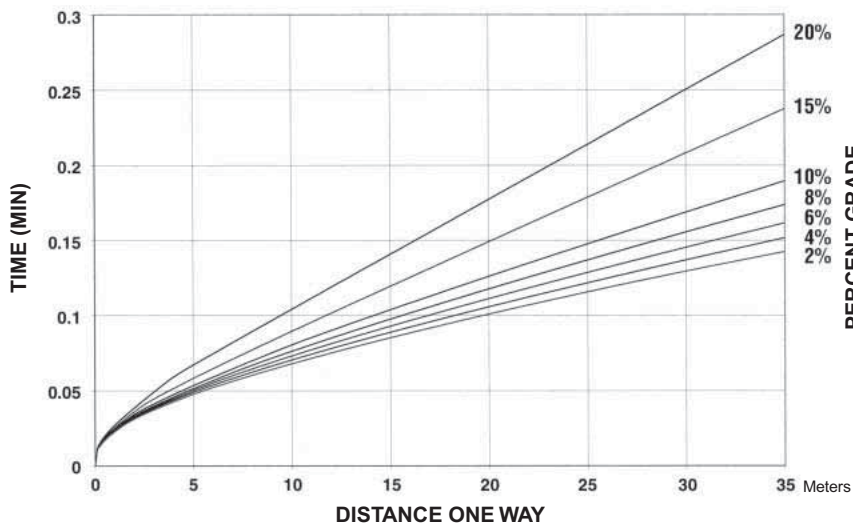
Travel Time — Loaded
 ● 938G Series II
 ● 20.5R-25 Tires

**Wheel Loaders
 Integrated Toolcarriers**

938G SERIES II TRAVEL TIME — LOADED



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.

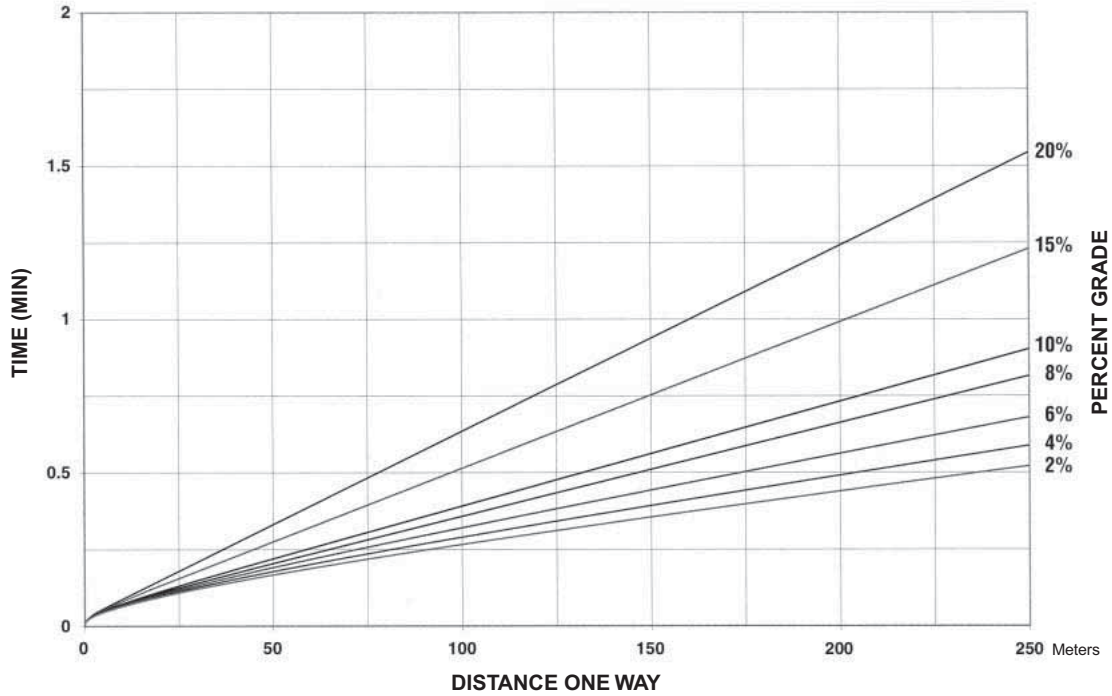


In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

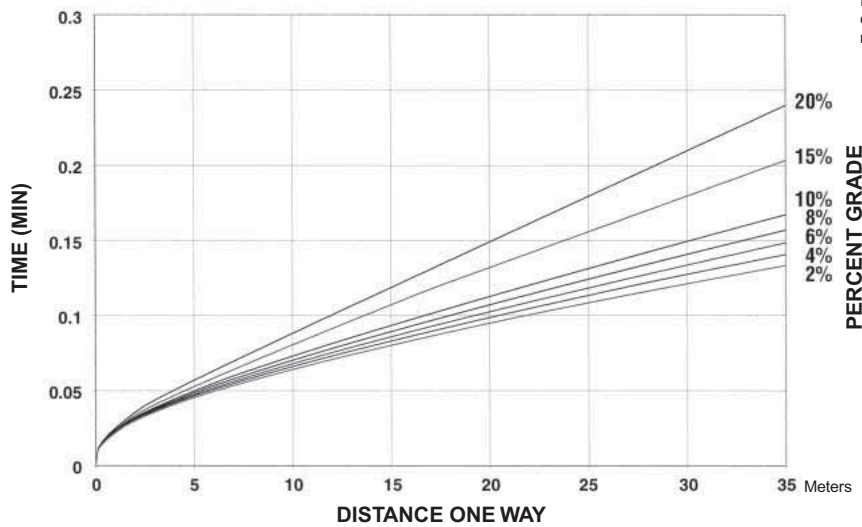
**Wheel Loaders
Integrated Toolcarriers**

- Travel Time — Empty
- 938G Series II
 - 20.5R-25 Tires

938G SERIES II TRAVEL TIME — EMPTY



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.

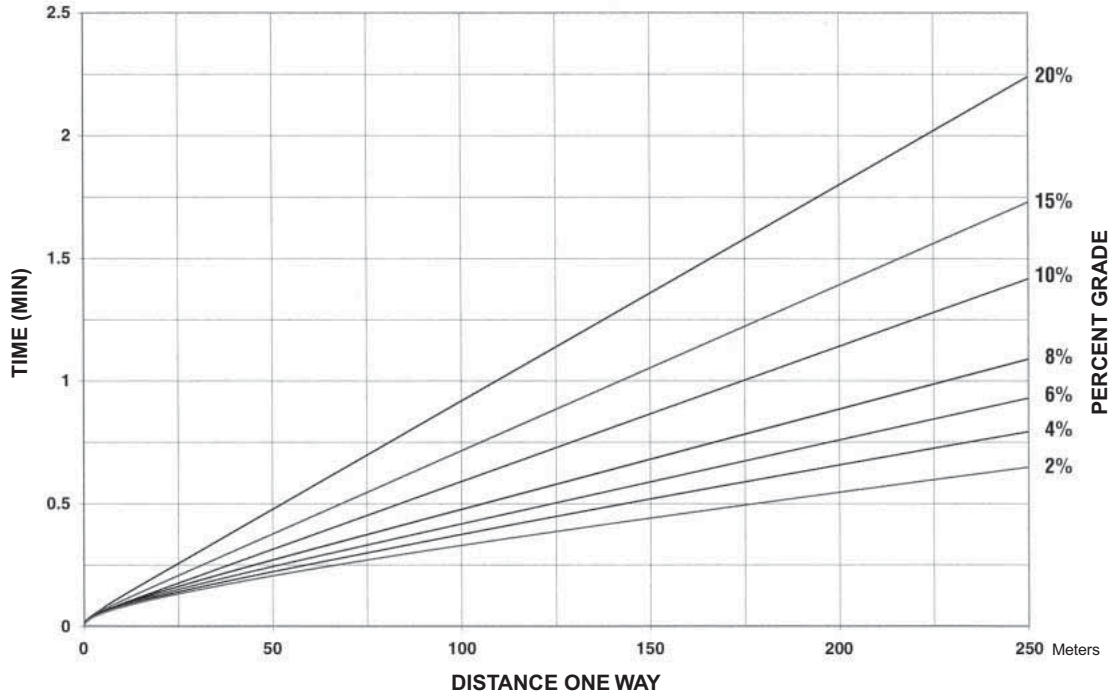


In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

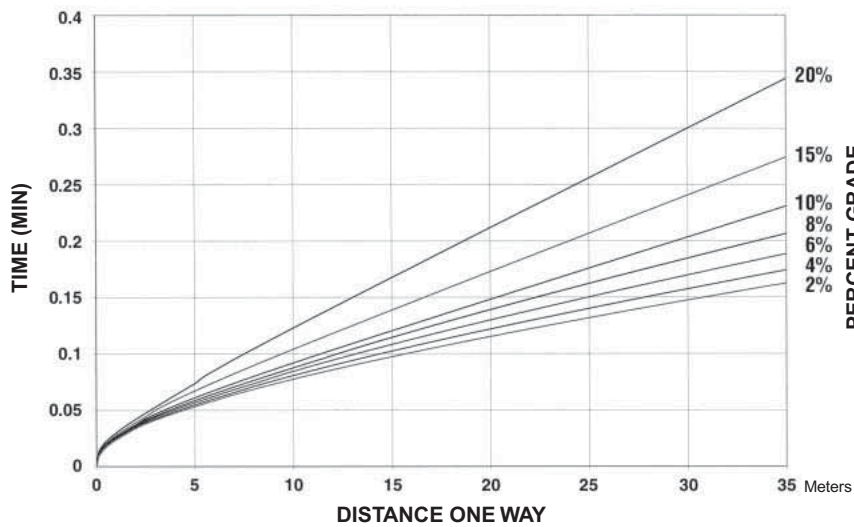
Travel Time — Loaded
 ● 950H
 ● 23.50-R25 Tires

**Wheel Loaders
 Integrated Toolcarriers**

950H TRAVEL TIME — LOADED



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.



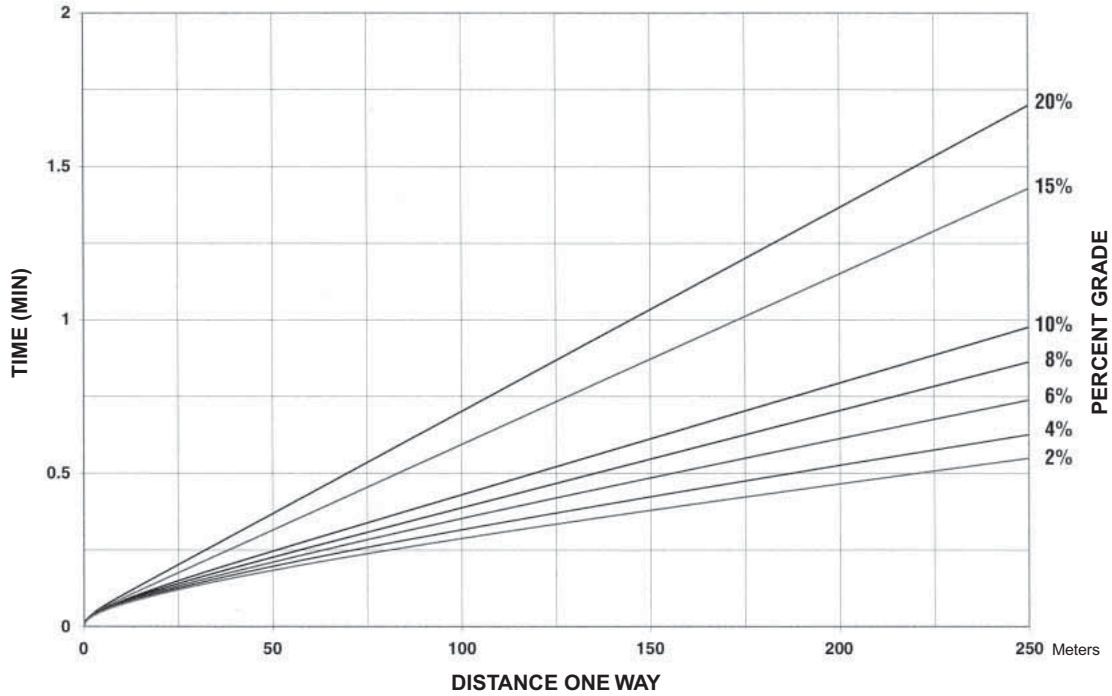
In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

**Wheel Loaders
Integrated Toolcarriers**

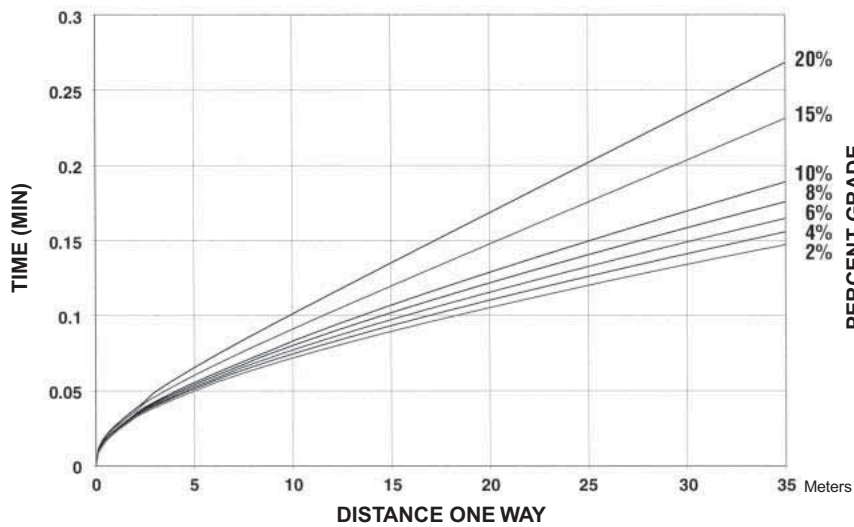
Travel Time — Empty

- 950H
- 23.50-R25 Tires

950H TRAVEL TIME — EMPTY



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.

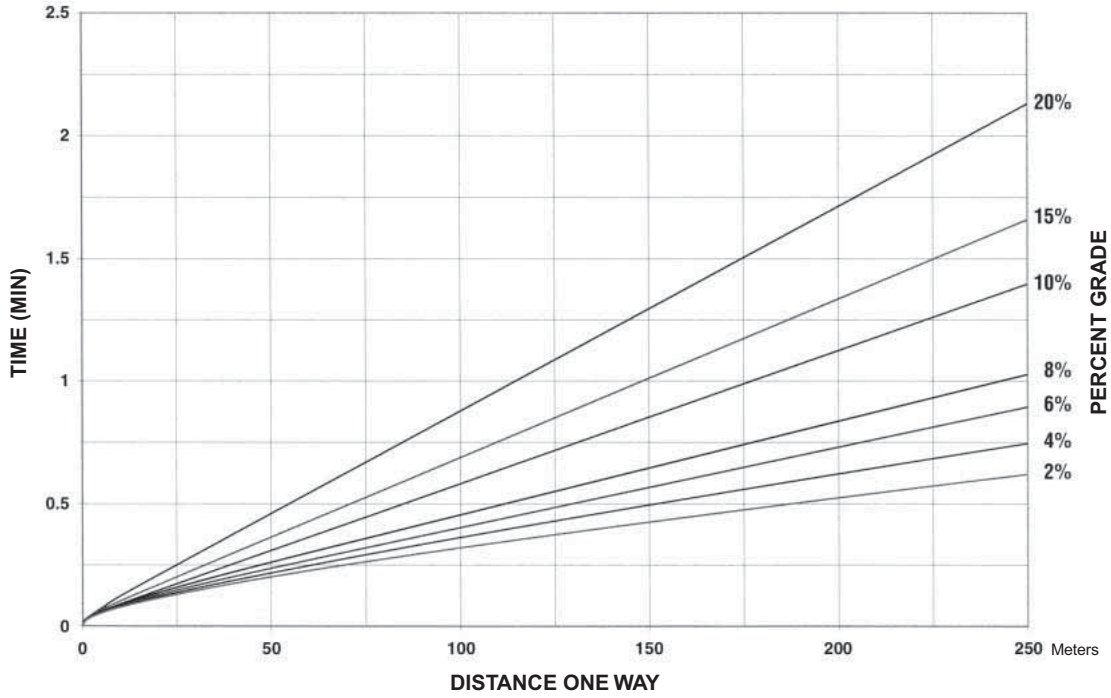


In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

Travel Time — Loaded
 ● 962H
 ● 23.5-R25 Tires

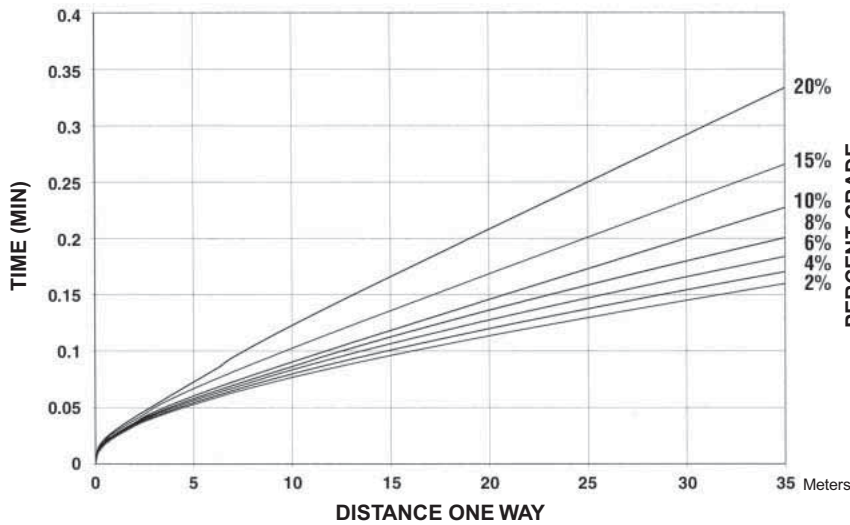
**Wheel Loaders
 Integrated Toolcarriers**

962H TRAVEL TIME — LOADED



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

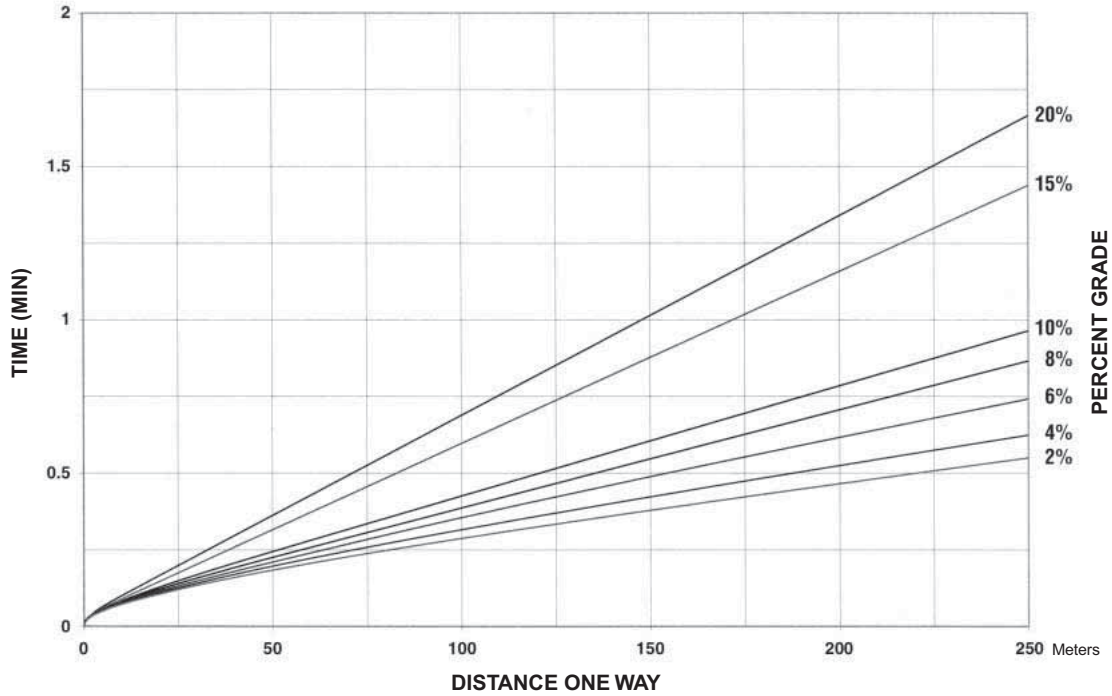


**Wheel Loaders
Integrated Toolcarriers**

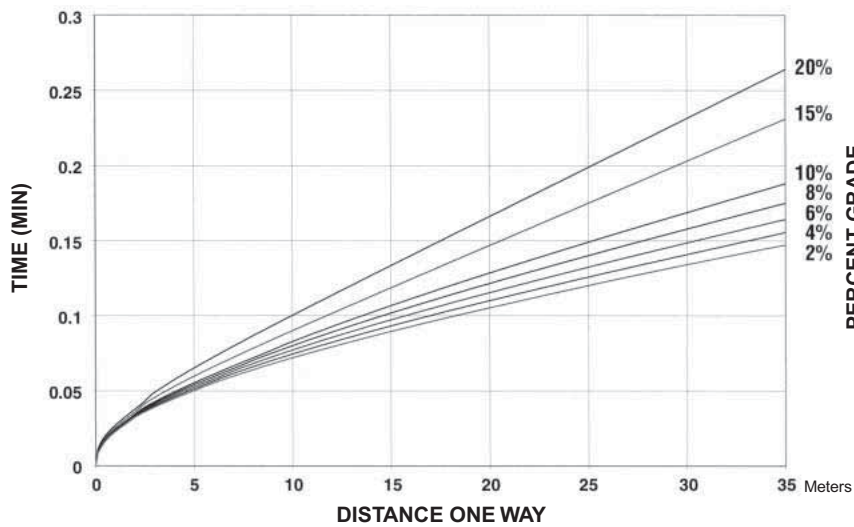
Travel Time — Empty

- 962H
- 23.5-R25 Tires

962H TRAVEL TIME — EMPTY



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.

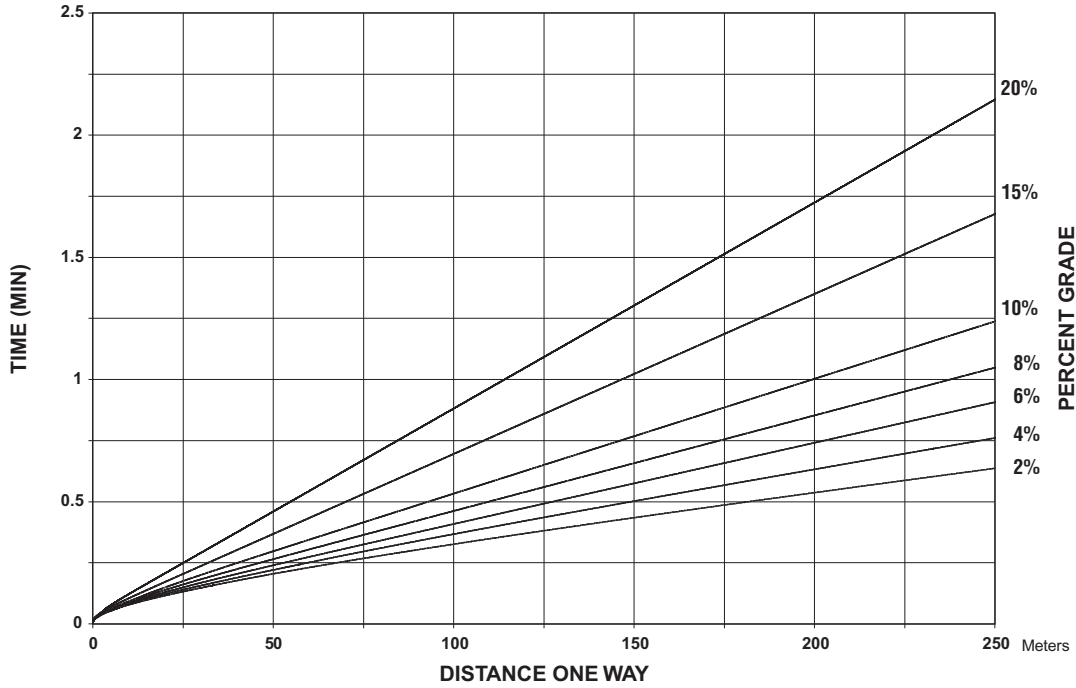


In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

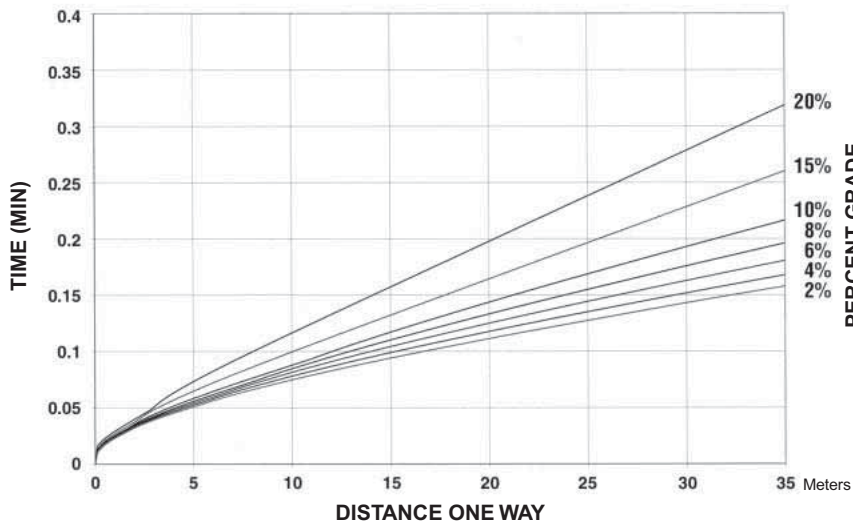
Travel Time — Loaded
 ● 966H
 ● 26.5-25 Tires

**Wheel Loaders
 Integrated Toolcarriers**

966H TRAVEL TIME — LOADED



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.



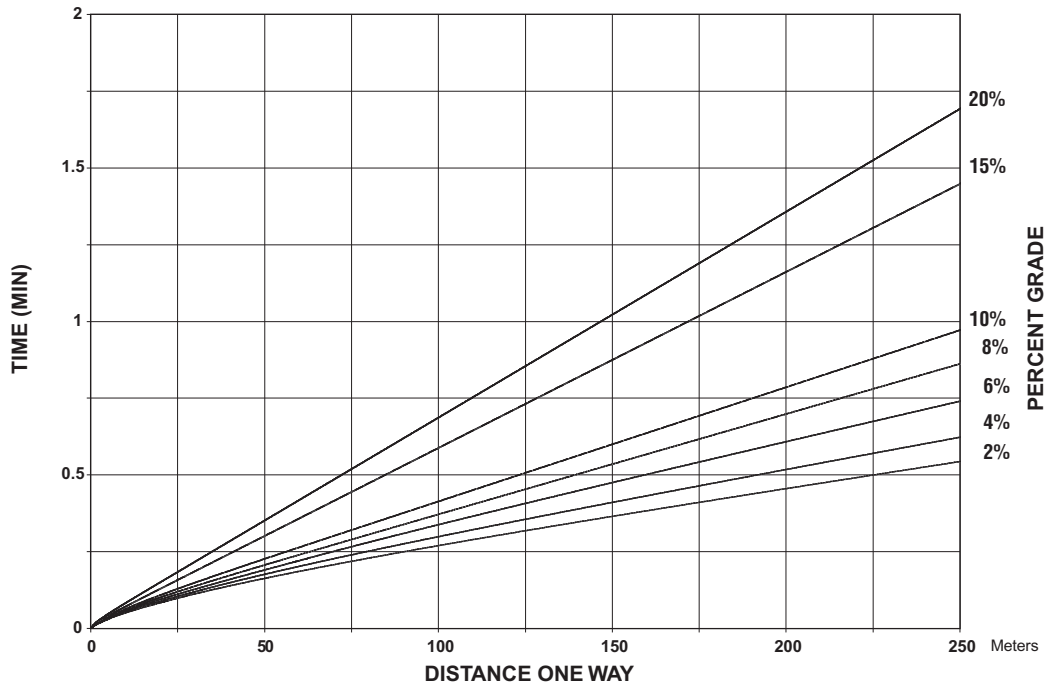
In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

**Wheel Loaders
Integrated Toolcarriers**

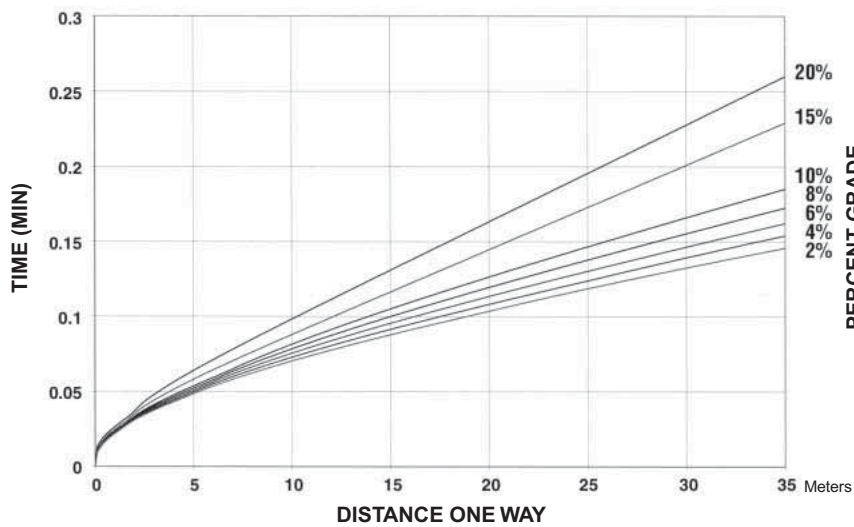
Travel Time — Empty

- 966H
- 26.5-25 Tires

966H TRAVEL TIME — EMPTY



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.

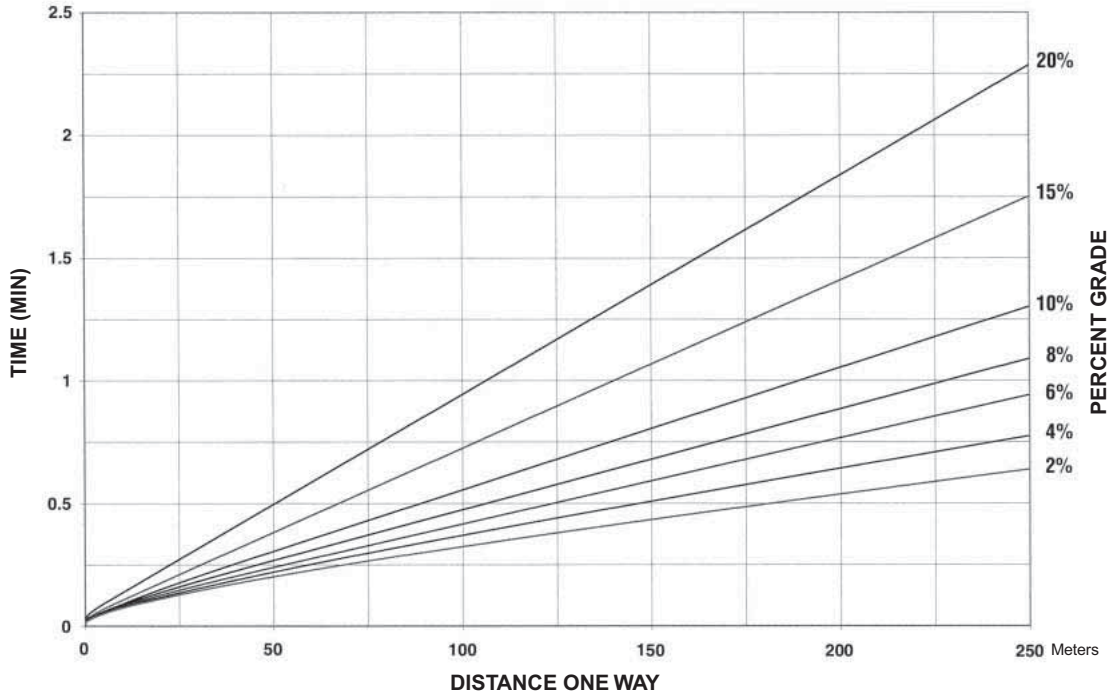


In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

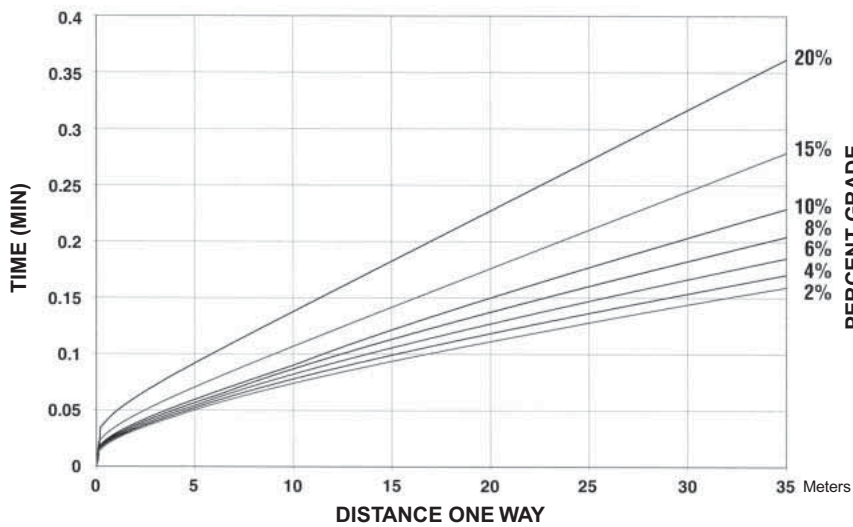
Travel Time — Loaded
 ● 972H
 ● 26.5-25 Tires

**Wheel Loaders
 Integrated Toolcarriers**

972H TRAVEL TIME — LOADED



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.



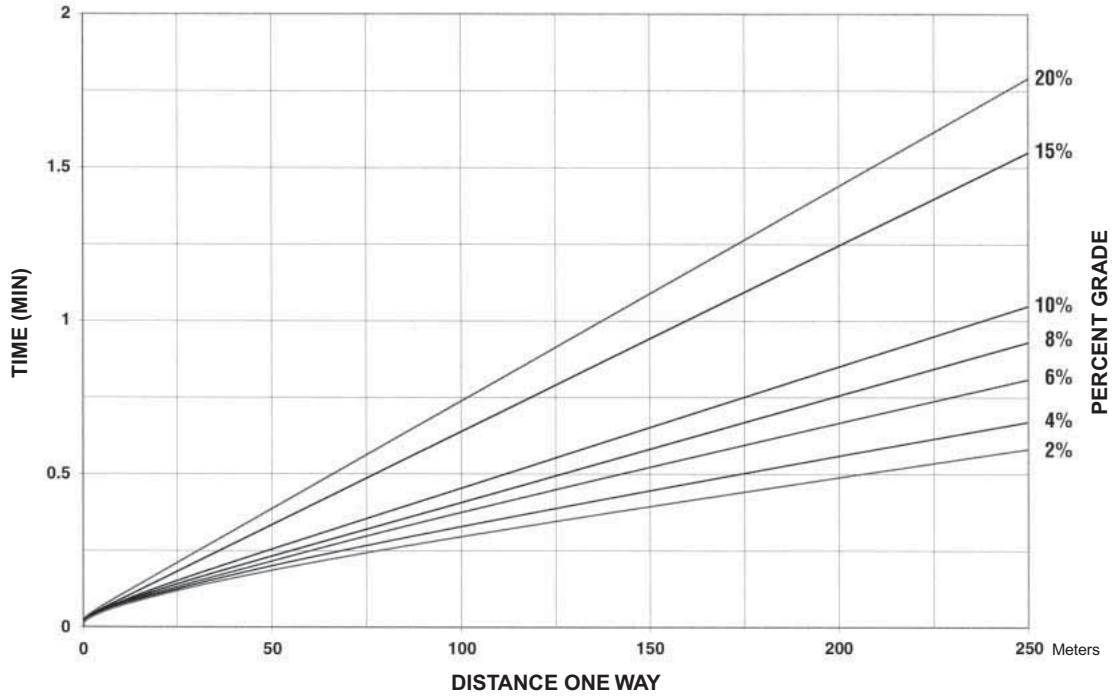
In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

**Wheel Loaders
Integrated Toolcarriers**

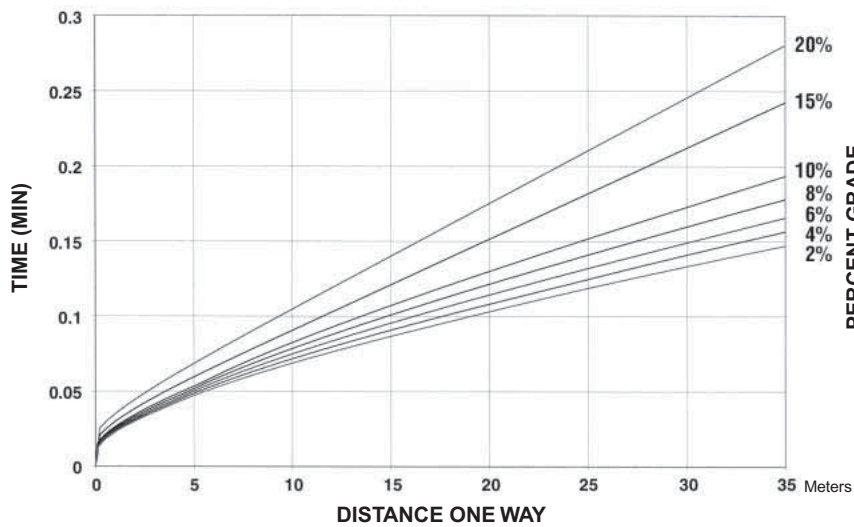
Travel Time — Empty

- 972H
- 26.5-25 Tires

972H TRAVEL TIME — EMPTY



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.

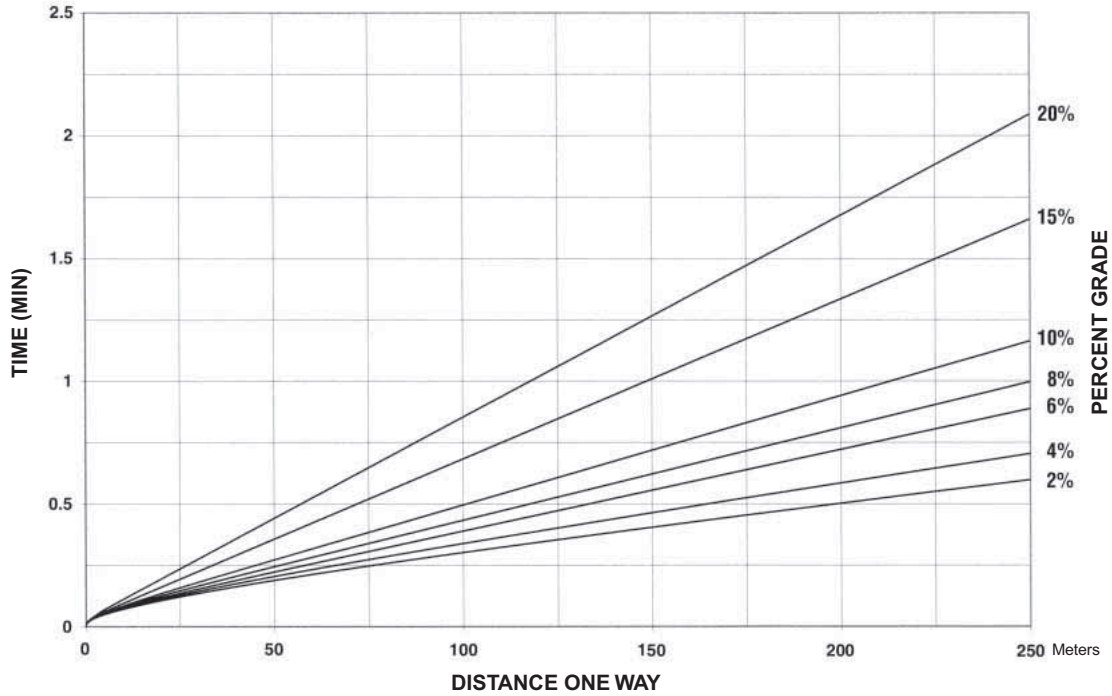


In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

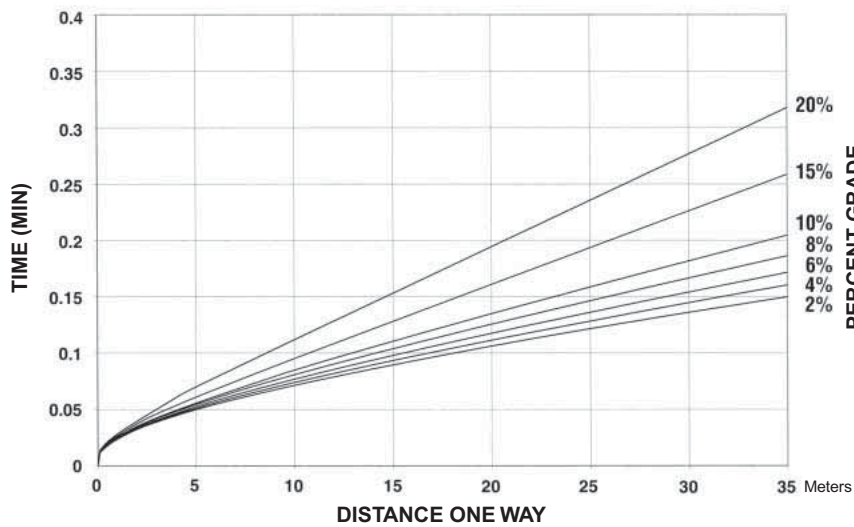
Travel Time — Loaded
 ● 980H
 ● 29.5R25 Tires

Wheel Loaders
 Integrated Toolcarriers

980H TRAVEL TIME — LOADED



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.



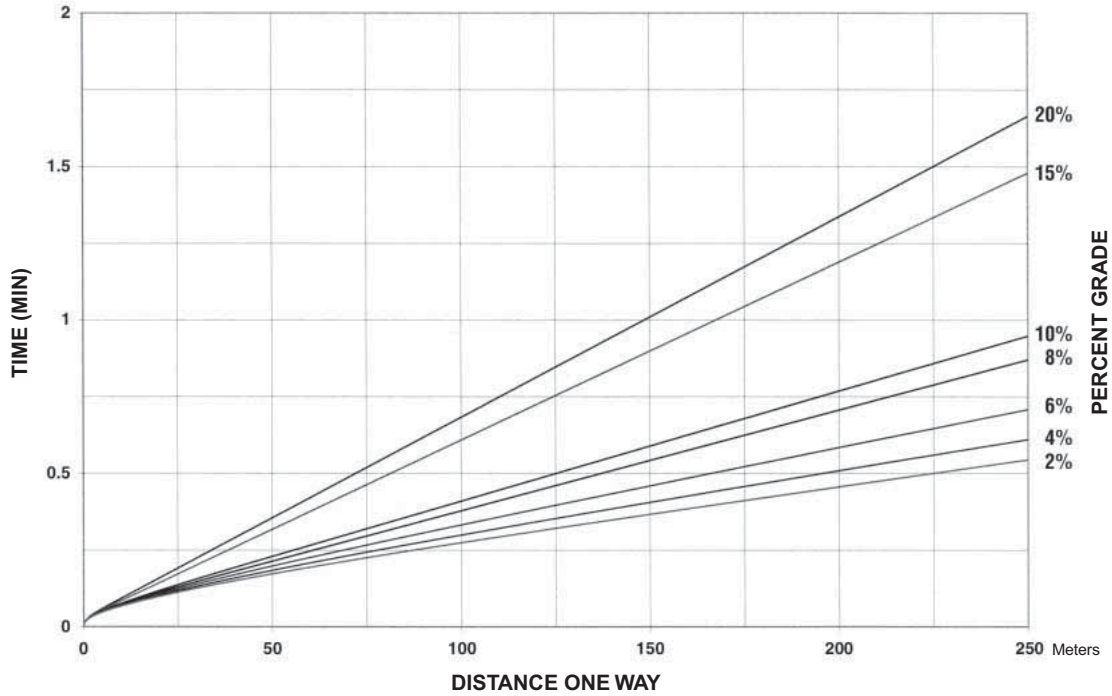
In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

**Wheel Loaders
Integrated Toolcarriers**

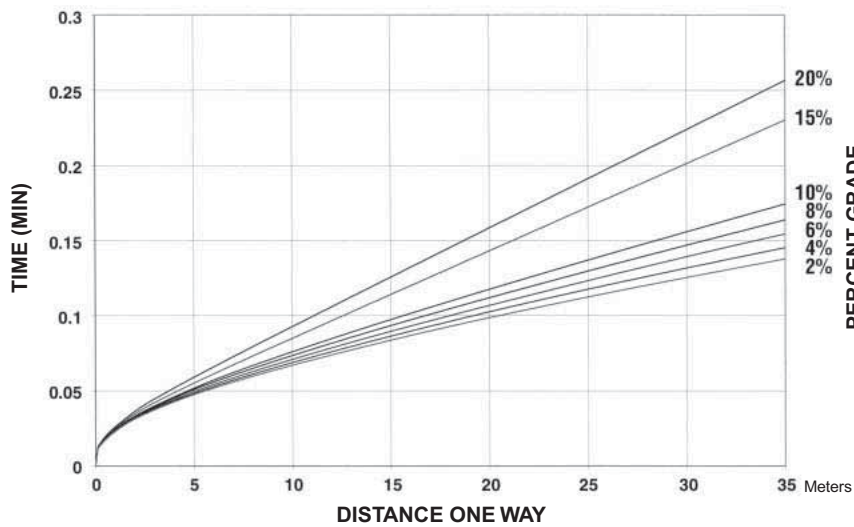
Travel Time — Empty

- 980H
- 29.5R25 Tires

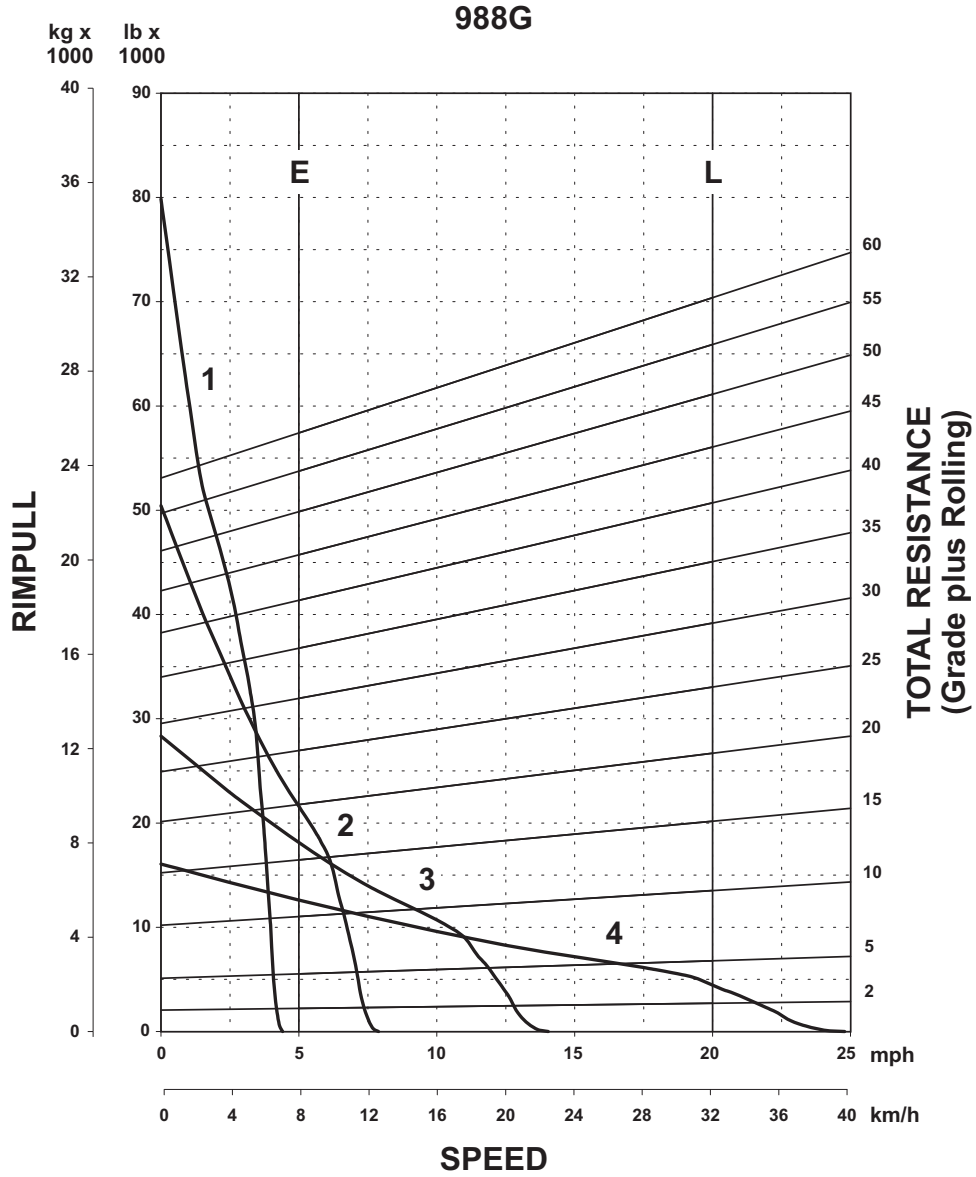
980H TRAVEL TIME — EMPTY



Travel times assume maximum governor pedal depression and automatic shifting for any VSC setting.

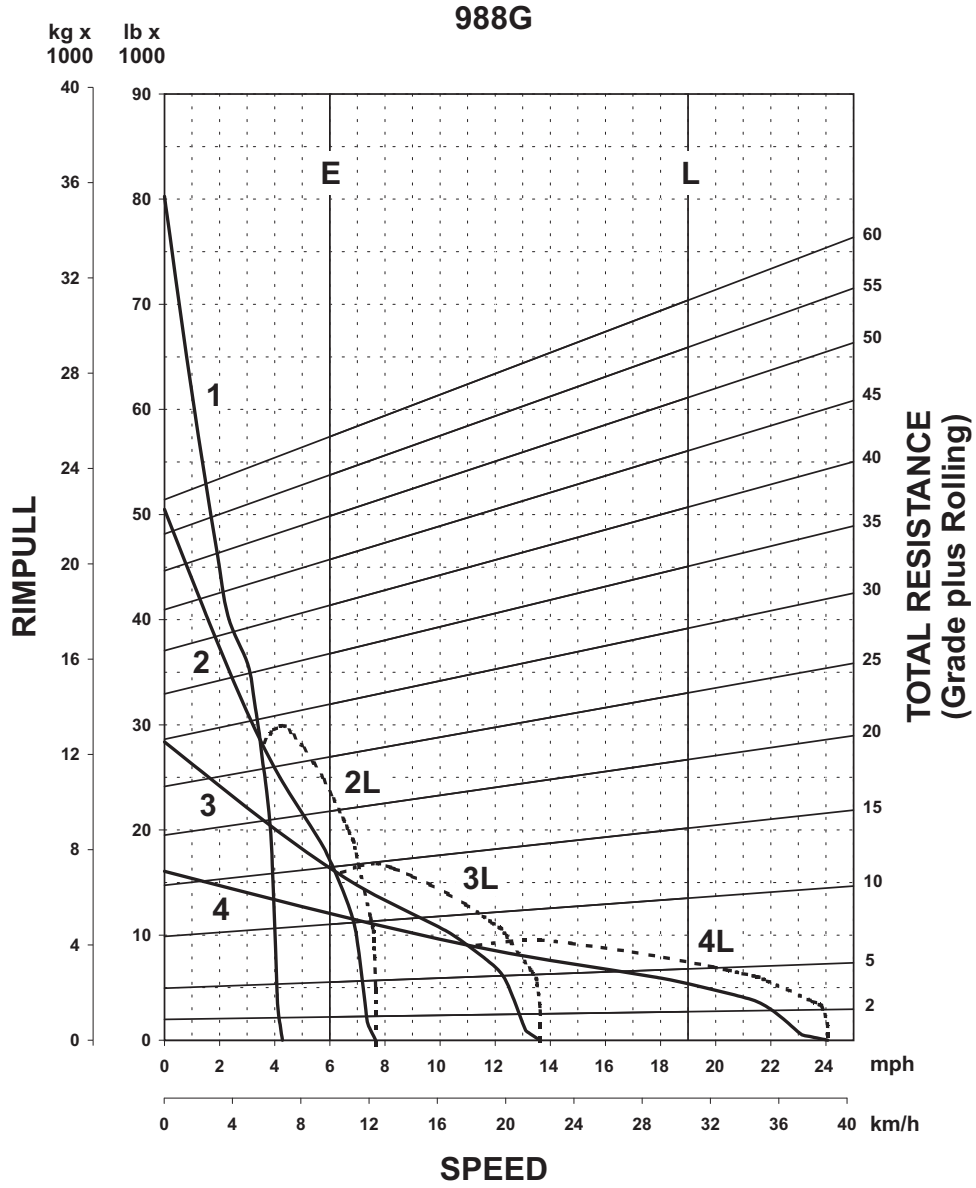


In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.



KEY
 1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear
 4 — 4th Gear

KEY
 E — Empty 50 183 kg (110,634 lb)
 L — Loaded 61 523 kg (135,634 lb)
 Calculated Pull: Idle Hydraulics
 Curves Assume NO SLIP Conditions



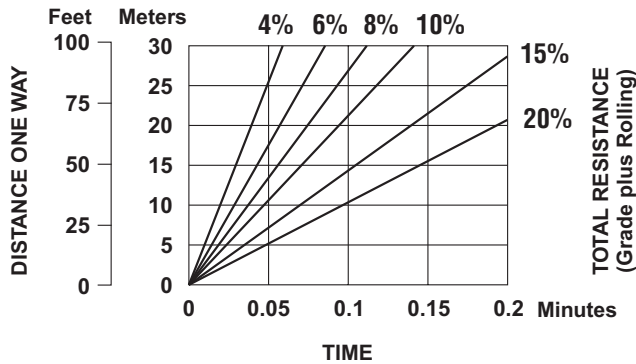
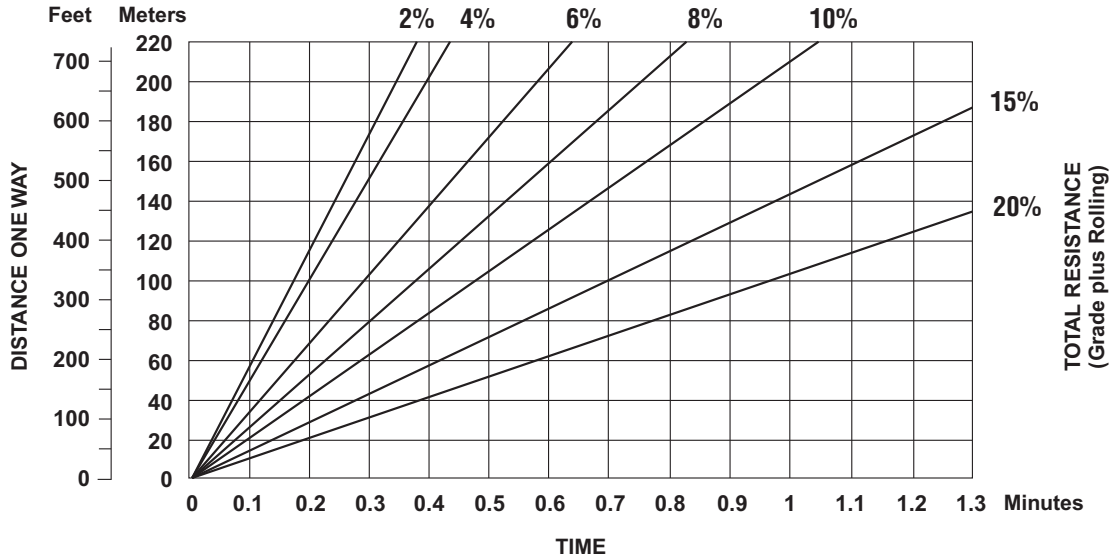
KEY
 1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear
 4 — 4th Gear

KEY
 E — Empty 50 183 kg (110,634 lb)
 L — Loaded 61 523 kg (135,634 lb)
 Calculated Pull: Idle Hydraulics
 Curves Assume NO SLIP Conditions

Travel Time — Loaded
 ● 988G — No Lock-Up
 ● 35/65-33 Tires

**Wheel Loaders
 Integrated Toolcarriers**

988G TRAVEL TIME — LOADED



NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% and 20% TR.

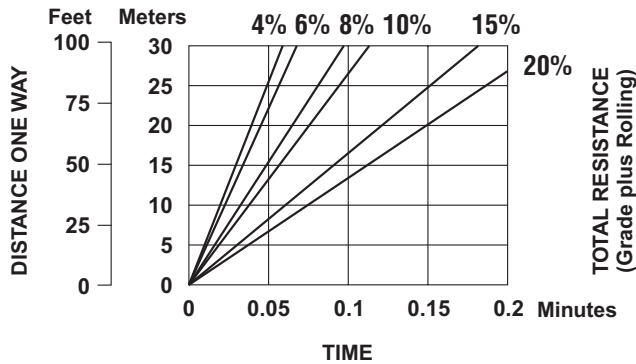
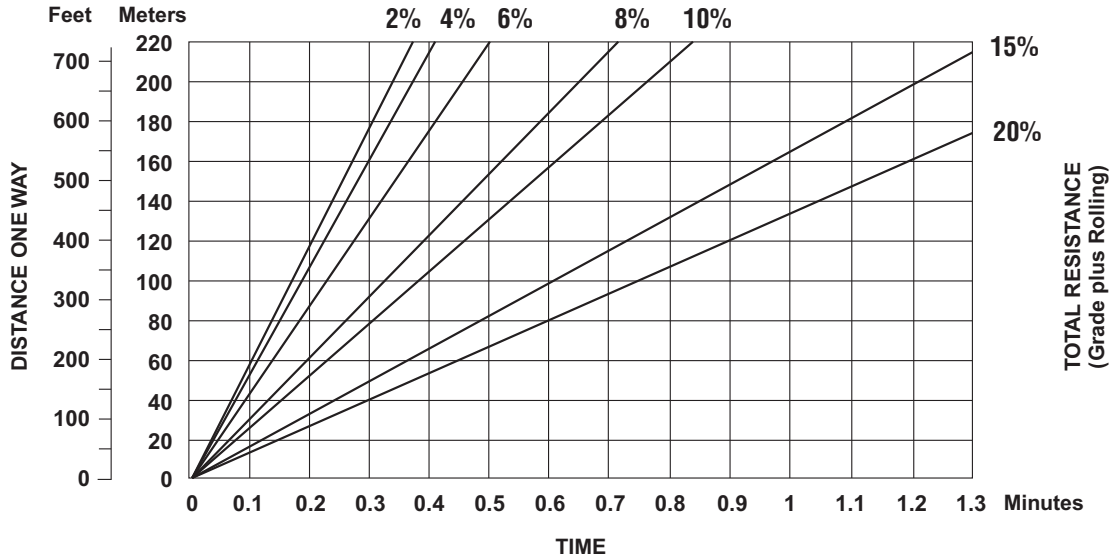
In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

Lock-Up Clutch torque converter is available as an attachment. Contact your Caterpillar Dealer for additional information.

**Wheel Loaders
Integrated Toolcarriers**

- Travel Time — Empty
- 988G — No Lock-Up
 - 35/65-33 Tires

988G TRAVEL TIME — EMPTY



NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-8% TR, 3rd gear for 10% TR, 2nd gear for 15% and 20% TR.

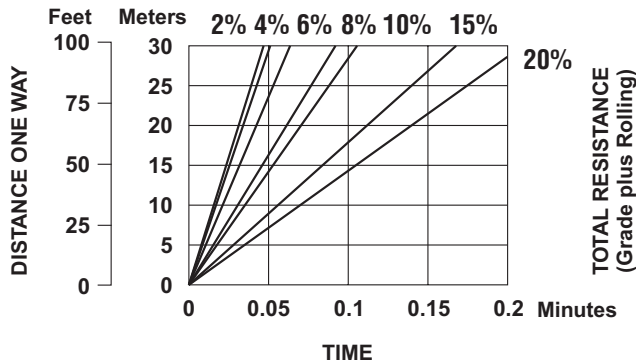
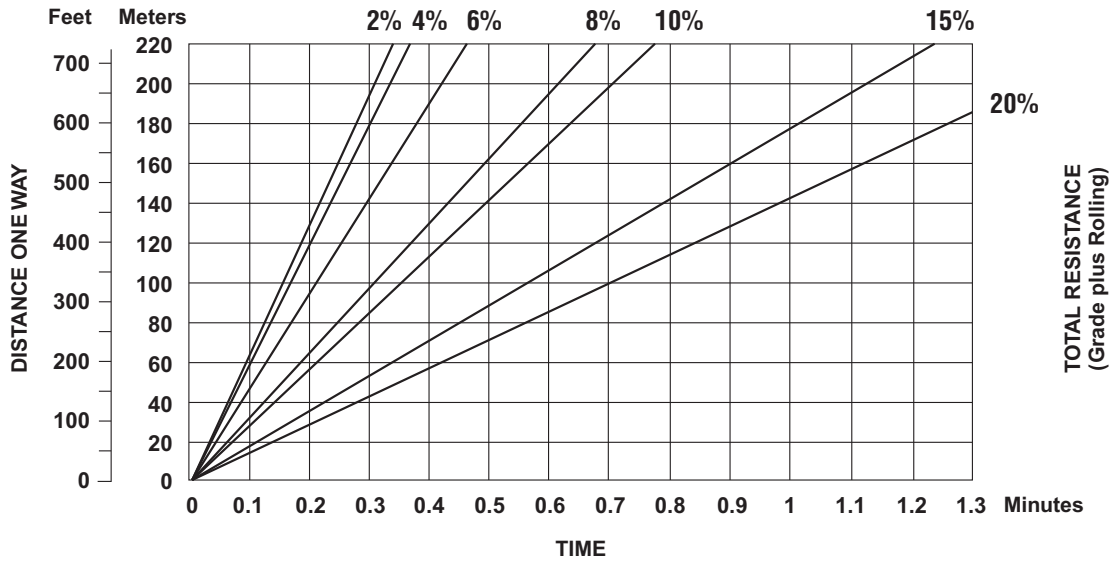
In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

Lock-Up Clutch torque converter is available as an attachment. Contact your Caterpillar Dealer for additional information.

- Travel Time — Loaded
- 988G — Lock-Up Clutch
- 35/65-33 Tires

**Wheel Loaders
Integrated Toolcarriers**

988G TRAVEL TIME — LOADED



NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% and 20% TR.

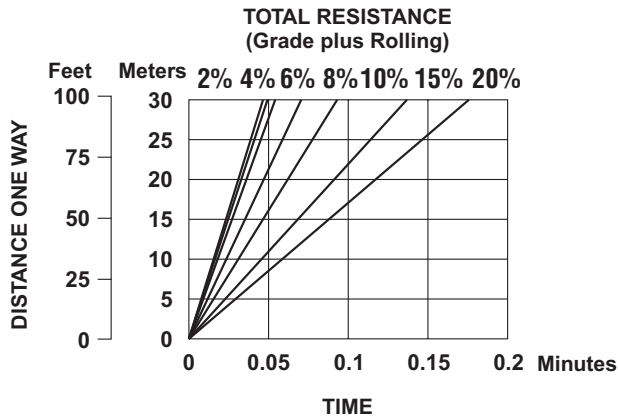
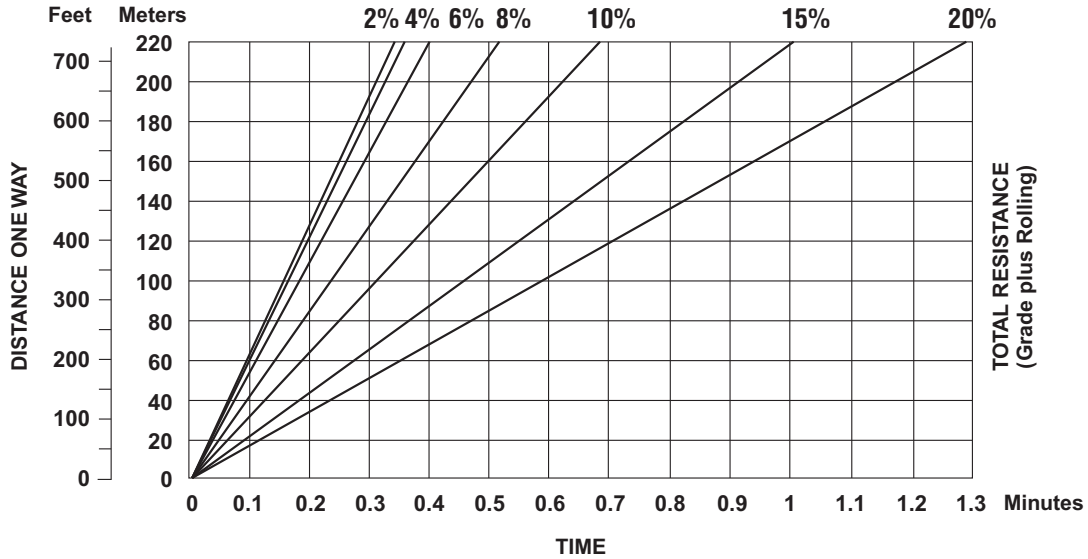
In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

Lock-Up Clutch torque converter is available as an attachment. Contact your Caterpillar Dealer for additional information.

**Wheel Loaders
Integrated Toolcarriers**

- Travel Time — Empty
- 988G — Lock-Up Clutch
 - 35/65-33 Tires

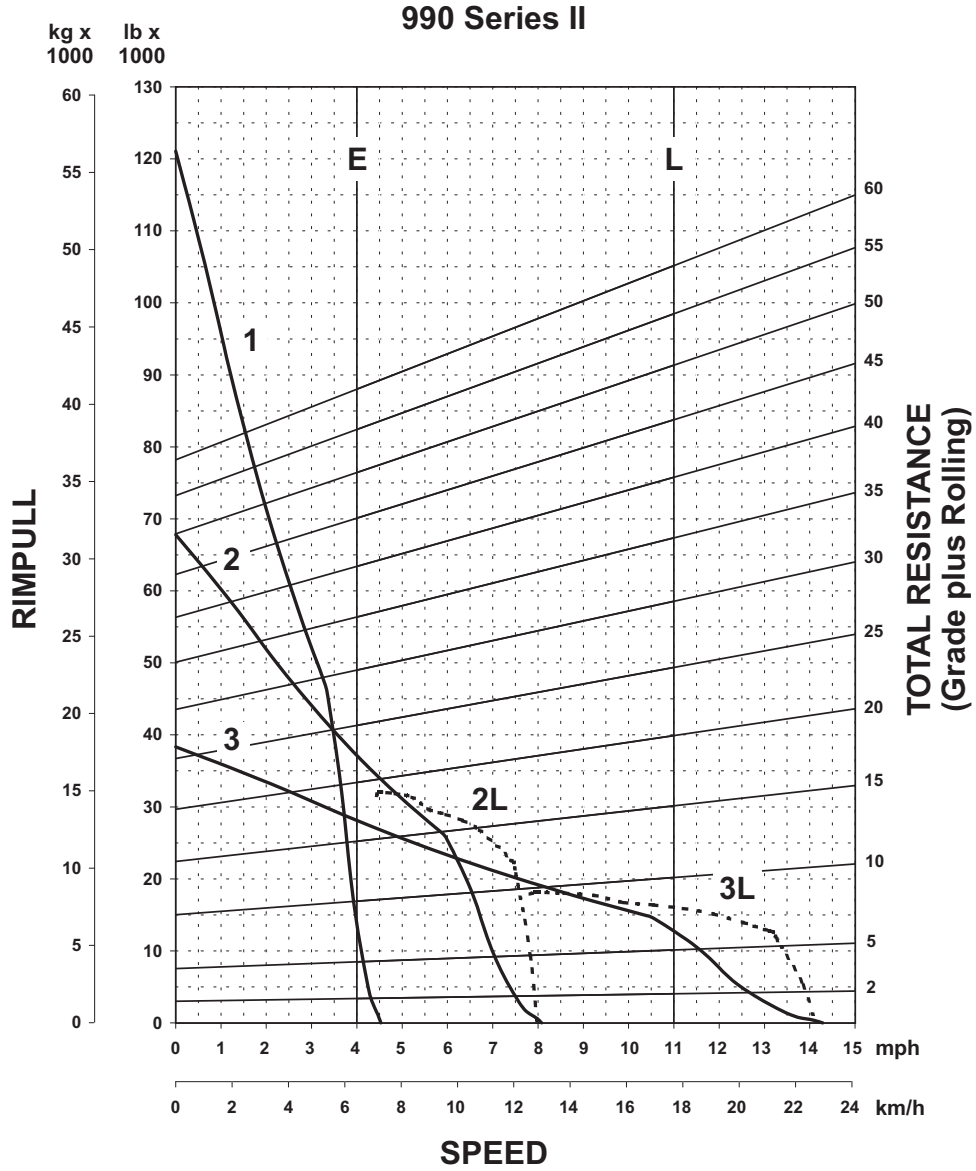
988G TRAVEL TIME — EMPTY



NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-8% TR, 3rd gear for 10%-15% TR, 2nd gear for 20% TR.

In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

Lock-Up Clutch torque converter is available as an attachment. Contact your Caterpillar Dealer for additional information.



KEY
 1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear

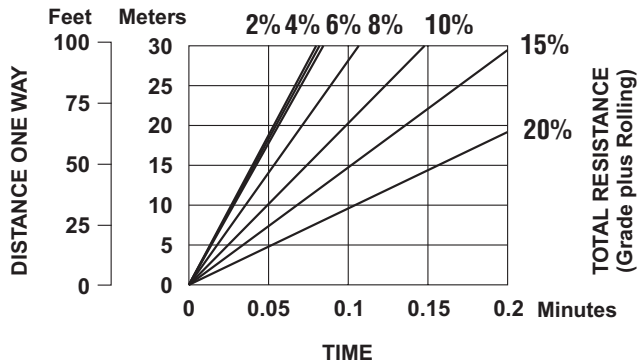
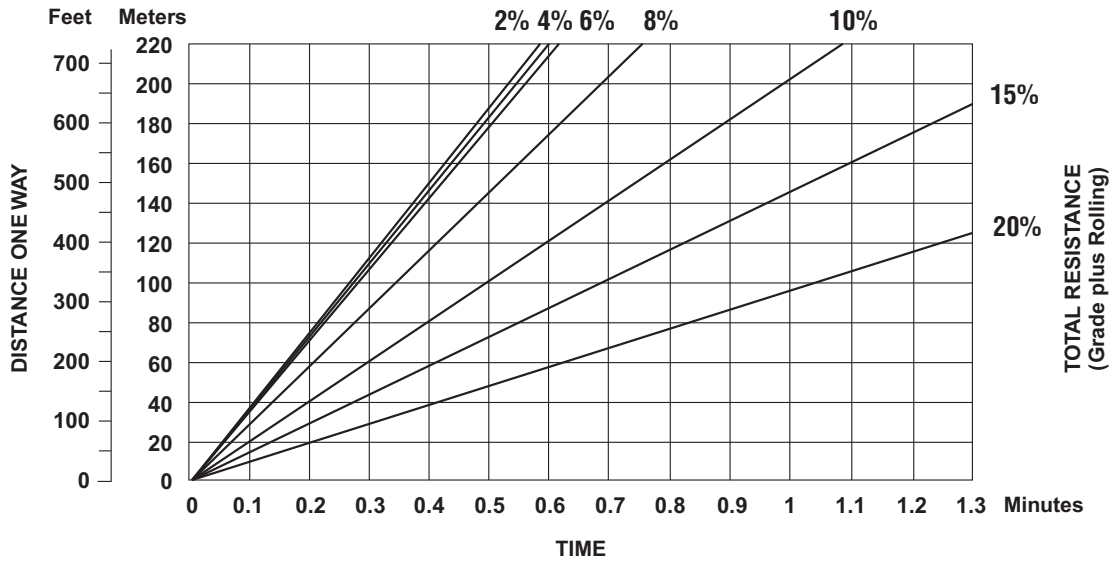
KEY
 E — Empty 76 965 kg (169,677 lb)
 L — Loaded 91 934 kg (202,677 lb)

Calculated Pull: Idle Hydraulics
 Curves Assume NO SLIP Conditions

**Wheel Loaders
Integrated Toolcarriers**

Travel Time — Loaded
 ● 990 Series II
 ● 41.25/70-39 Tires

990 SERIES II TRAVEL TIME — LOADED



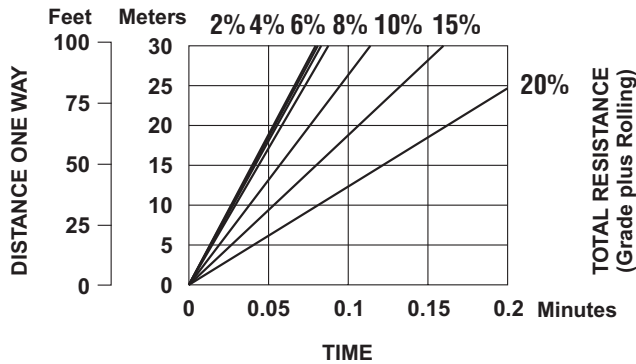
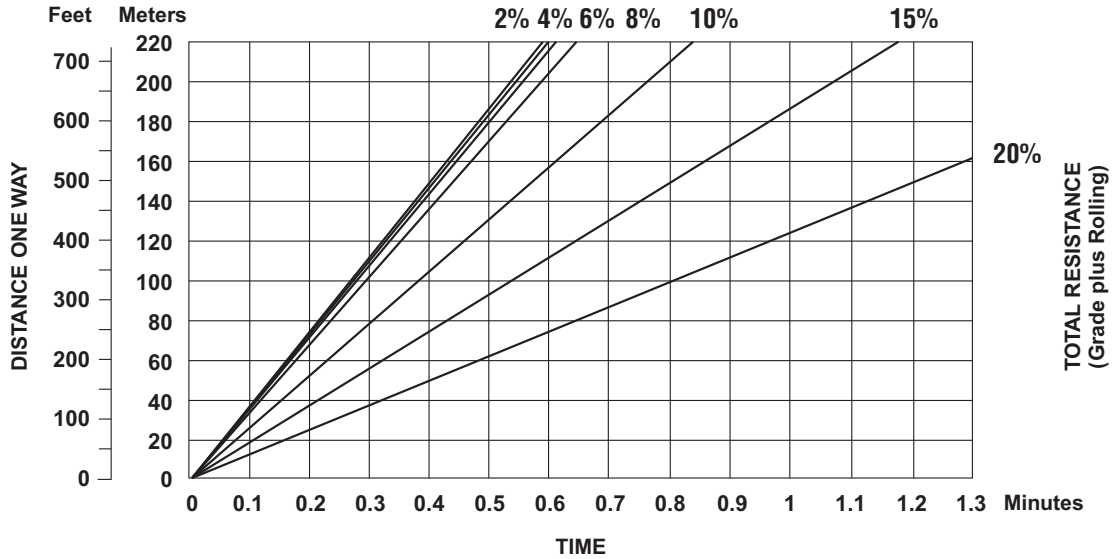
NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-8% TR, 2nd gear for 10%-20% TR.

In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

Travel Time — Empty
 ● 990 Series II
 ● 41.25/70-39 Tires

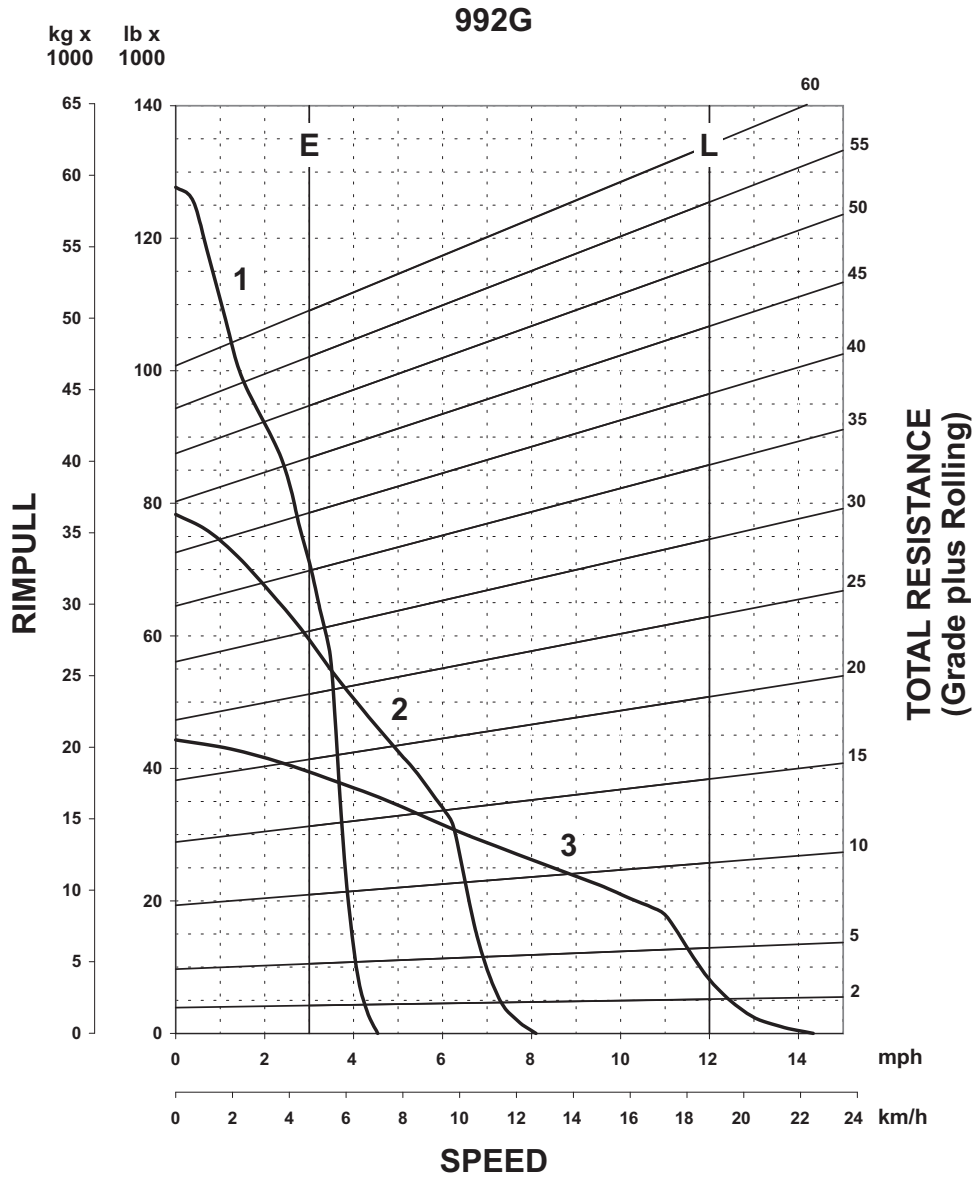
Wheel Loaders
 Integrated Toolcarriers

990 SERIES II TRAVEL TIME — EMPTY



NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-10% TR, 2nd gear for 15% and 20% TR.

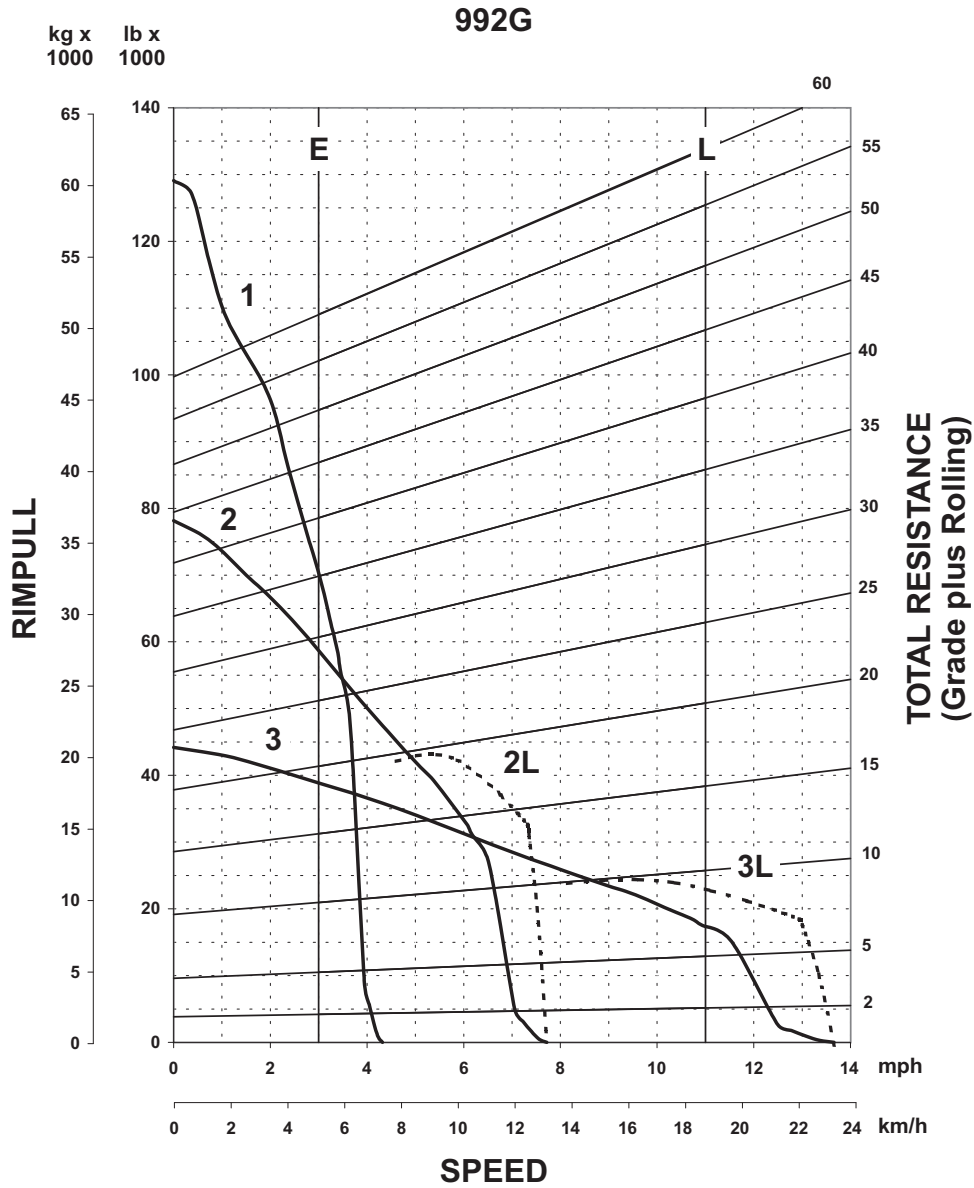
In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.



KEY
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear

KEY
E — Empty 92 797 kg (204,580 lb)
L — Loaded 114 570 kg (252,580 lb)

Calculated Pull: Idle Hydraulics
Curves Assume NO SLIP Conditions



KEY
 1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear

KEY
 E — Empty 92 797 kg (204,580 lb)
 L — Loaded 114 570 kg (252,580 lb)

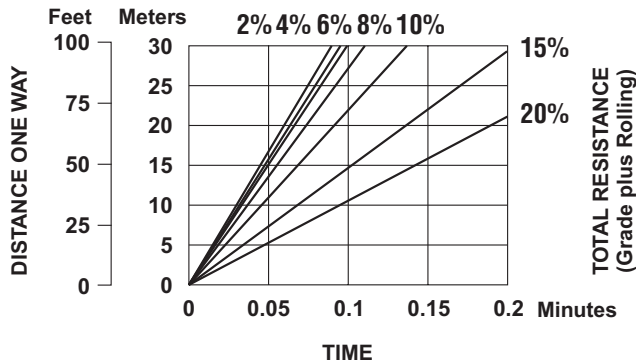
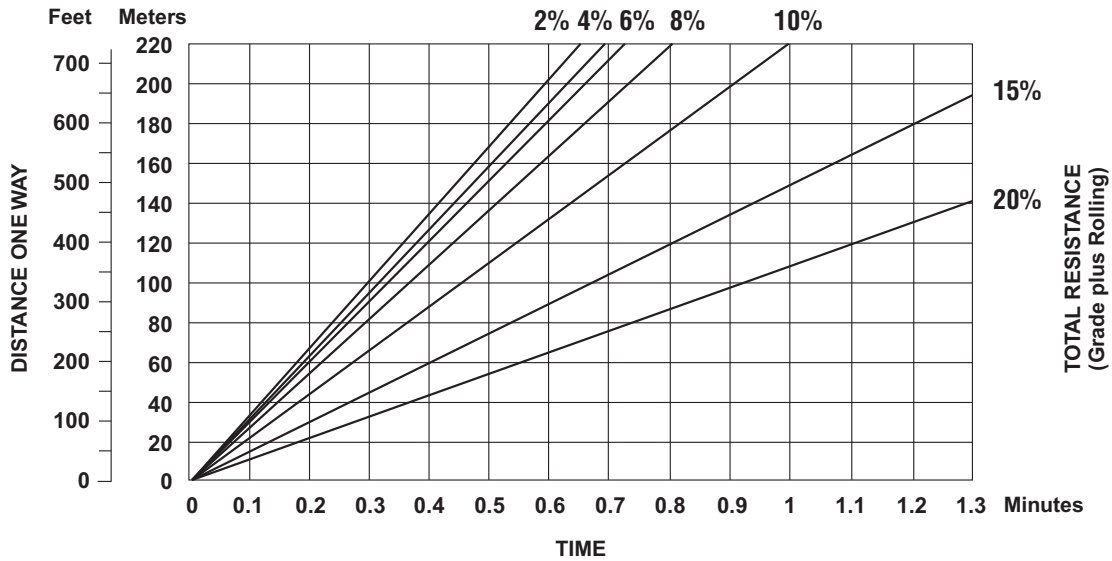
Calculated Pull: Idle Hydraulics
 Curves Assume NO SLIP Conditions

**Wheel Loaders
Integrated Toolcarriers**

Travel Time — Loaded

- 992G
- 45/65-45 Tires

992G TRAVEL TIME — LOADED



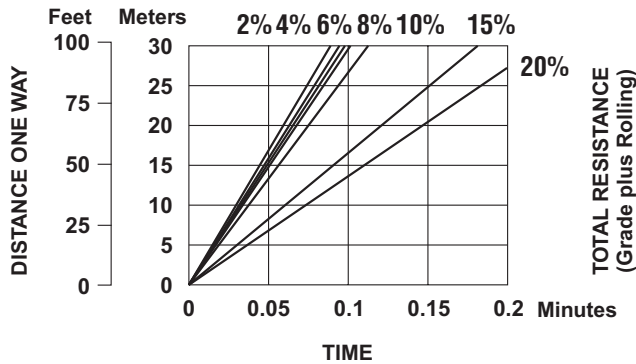
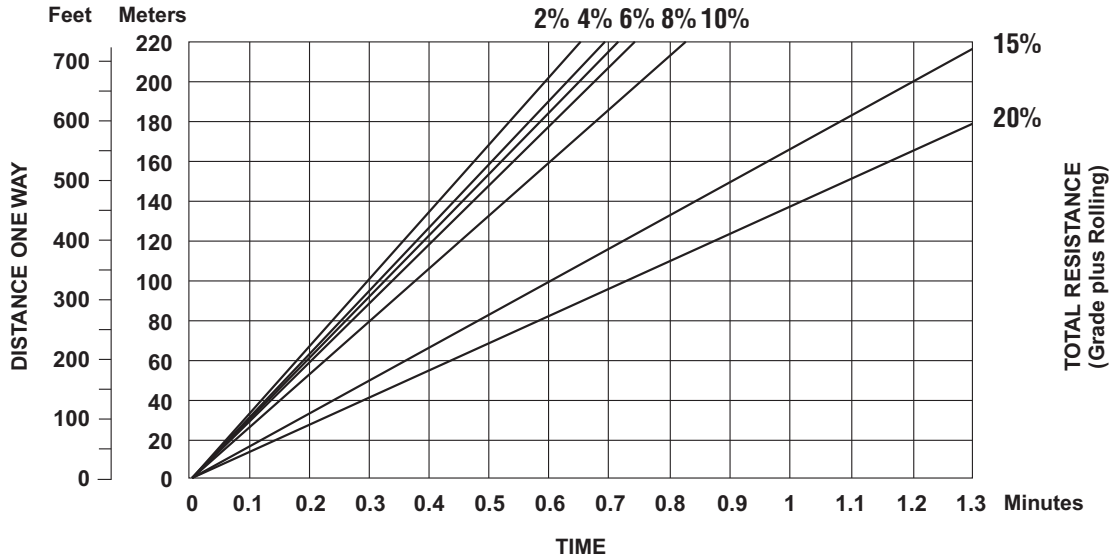
NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-10% TR, 2nd gear for 15% and 20% TR.

In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

Travel Time — Empty
 ● 992G
 ● 45/65-45 Tires

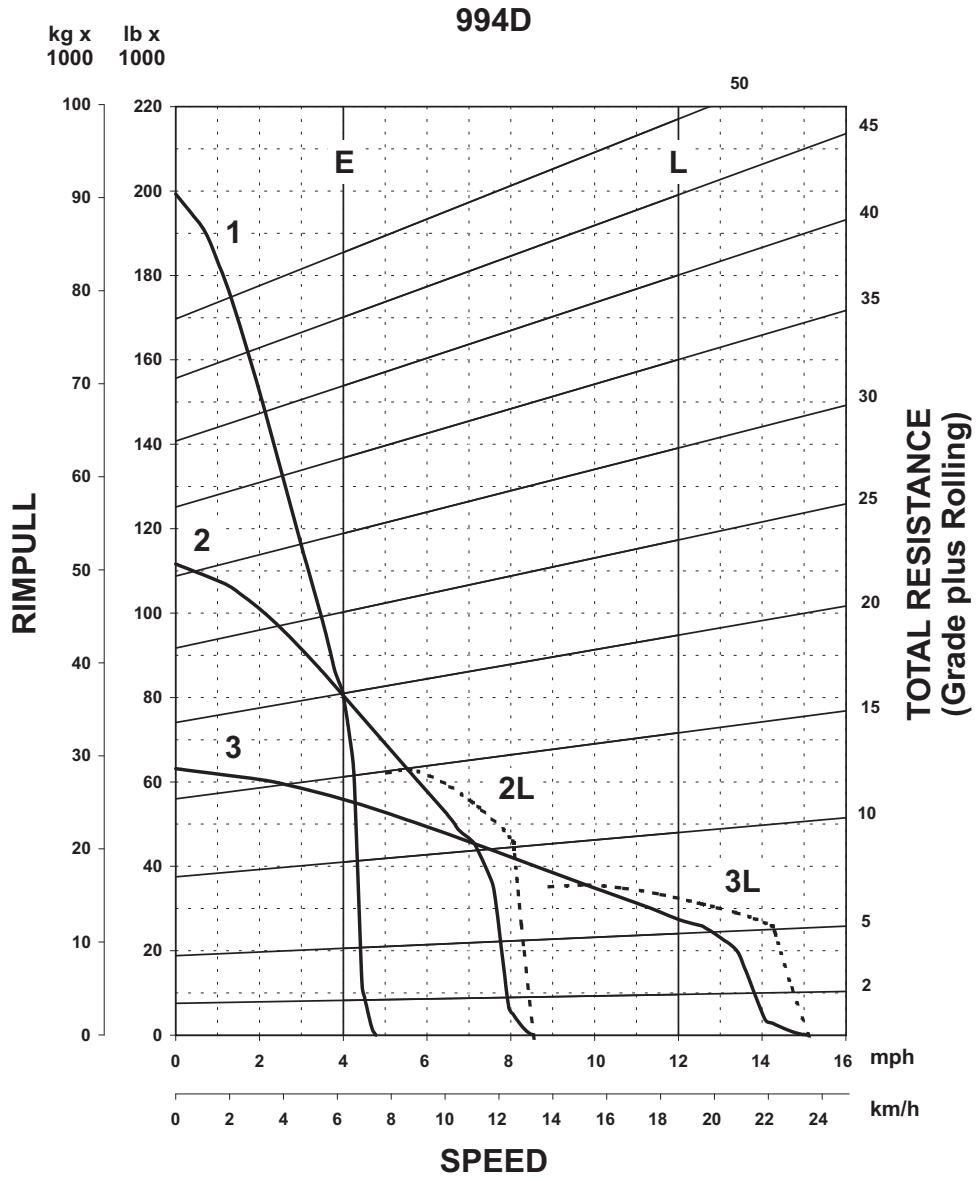
**Wheel Loaders
 Integrated Toolcarriers**

992G TRAVEL TIME — EMPTY



NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-10% TR, 2nd gear for 15% and 20% TR.

In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.



KEY
 1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear

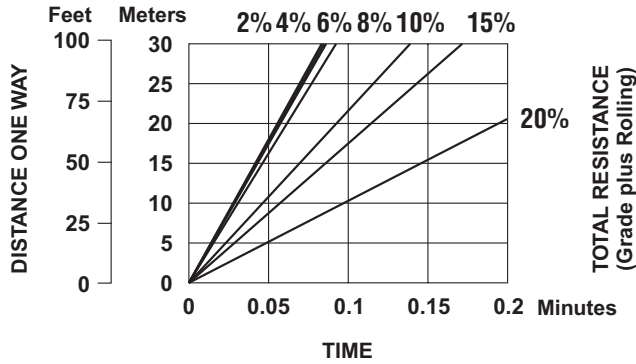
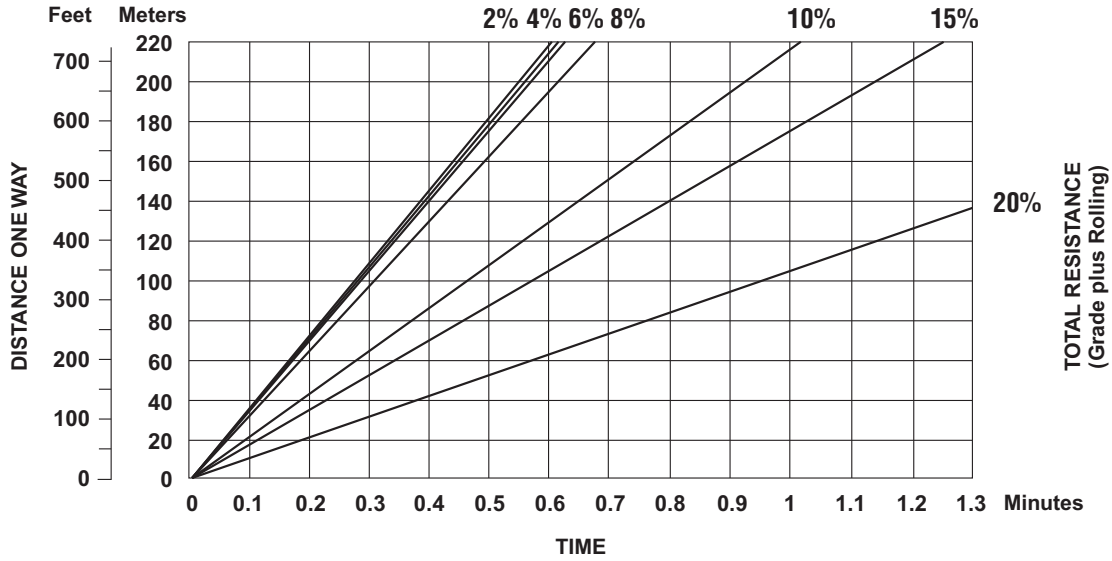
KEY
 E — Empty 189 345 kg (417,429 lb)
 L — Loaded 223 819 kg (493,429 lb)

Calculated Pull: Idle Hydraulics
 Curves Assume NO SLIP Conditions

Travel Time — Loaded
 ● 994D
 ● 50/80-57 Tires

**Wheel Loaders
 Integrated Toolcarriers**

994D TRAVEL TIME — LOADED



NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-10% TR, 2nd gear for 15% and 20% TR.

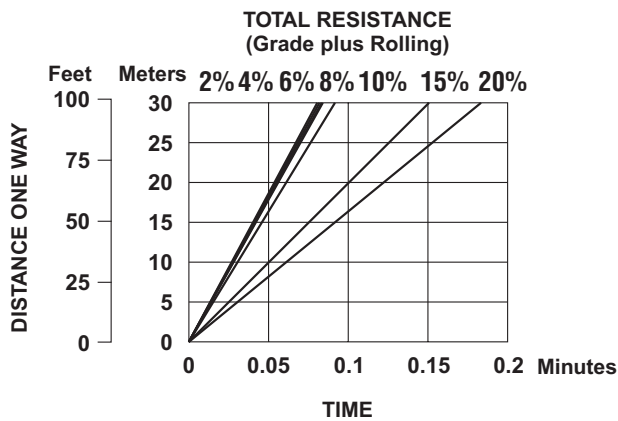
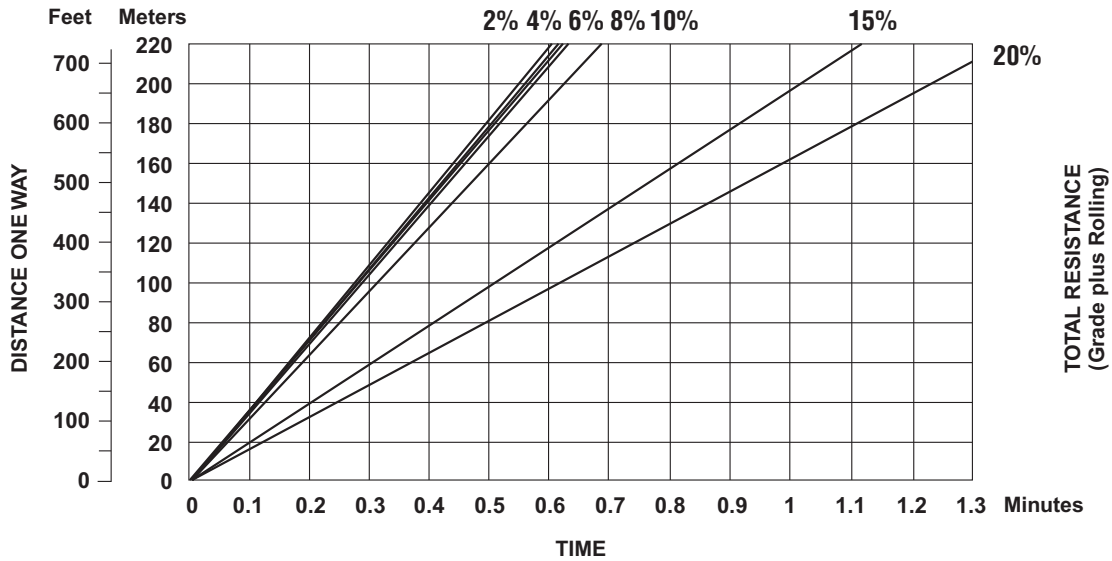
In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

**Wheel Loaders
Integrated Toolcarriers**

Travel Time — Empty

- 994D
- 50/80-57 Tires

994D TRAVEL TIME — EMPTY



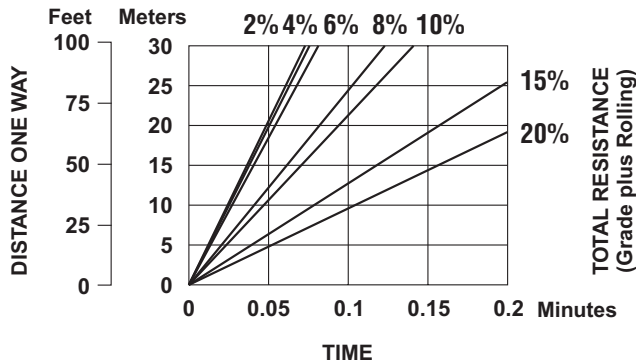
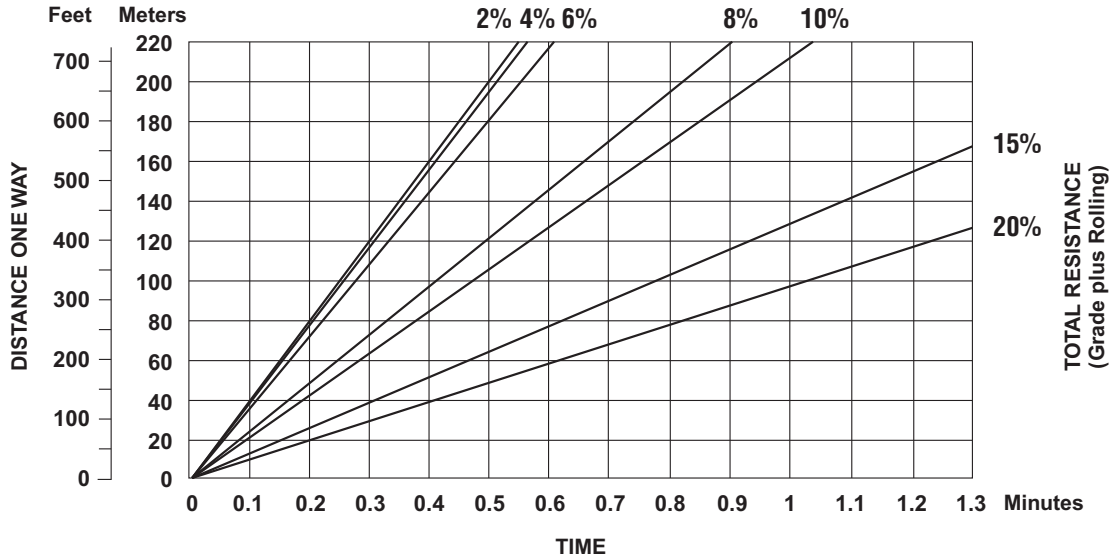
NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-10% TR, 2nd gear for 15% and 20% TR.

In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

Travel Time — Loaded
 ● 994D Steady State
 ● 50/80-57 Tires

Wheel Loaders
 Integrated Toolcarriers

994D TRAVEL TIME — LOADED



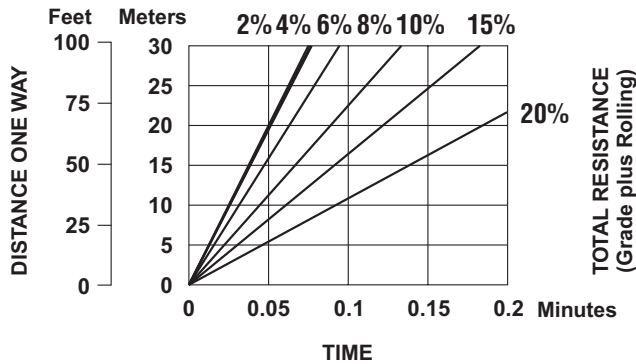
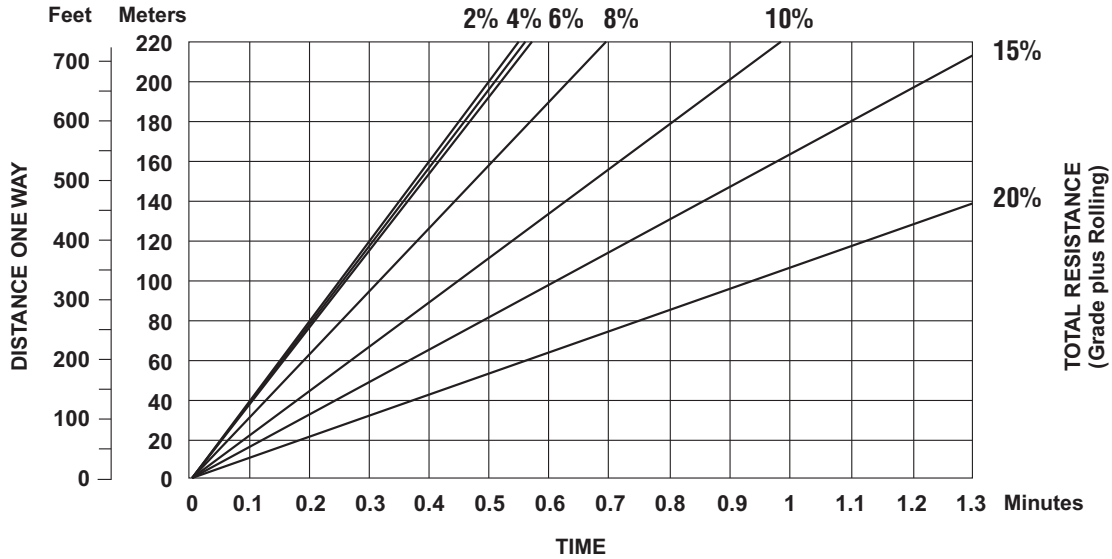
NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-8% TR, 2nd gear for 10% and 15% TR, 1st gear for 20% TR.

In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

**Wheel Loaders
Integrated Toolcarriers**

Travel Time — Empty
 ● 994D Steady State
 ● 50/80-57 Tires

994D TRAVEL TIME — EMPTY



NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-10% TR, 2nd gear for 15% TR, 1st gear for 20% TR.

In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

Production Estimating Table
 ● m³ or yd³/60 min. hour

Wheel Loaders
 Integrated Toolcarriers

Bucket Size (m ³ or yd ³)		1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	
Cycle Time	Cycles Per Hr	Unshaded area indicates average production.																			
	0.35	171																			
0.40	150	150	225	330	375	450	525														
0.45	133	135	200	268	332	400	466	530	600	665	730	800	865								
0.50	120	120	180	240	300	360	420	480	540	600	660	720	780	840	900	960	1003	1080	1140	1200	
0.55	109	109	164	218	272	328	382	436	490	545	600	655	705	765	820	870	925	980	1008	1090	
0.60	100	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
0.65	92	92	138	184	230	276	322	368	416	460	505	555	600	645	690	735	780	830	875	920	
0.70	86							342	386	430	474	515	560	600	645	690	730	775	815	860	
0.75	80													560	600	640	680	720	760	800	

Bucket Size (m ³ or yd ³)		11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
Cycle Time	Cycles Per Hr	Unshaded area indicates average production.															
	0.35	171															
0.40	150																
0.45	133																
0.50	120	1320	1440														
0.55	109	1200	1310	1420	1520	1635	1740	1850	1960	2070	2180	2285	2395	2505	2615	2725	2830
0.60	100	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600
0.65	92	1010	1105	1195	1285	1380	1470	1560	1655	1745	1840	1930	2020	2115	2205	2300	2390
0.70	86	945	1030	1120	1200	1290	1375	1460	1545	1630	1720	1805	1890	1975	2060	2150	2235
0.75	80	880	960	1040	1120	1200	1280	1360	1440	1520	1600	1680	1760	1840	1920	2000	2080
0.80	75			975	1050	1125	1200	1275	1350	1425	1500	1575	1650	1725	1800	1875	1950

Job Efficiency Worktime/Hr	Efficiency Factor	Bucket Load Factor Bucket Size × 1.00
60 Min Hr	100%	
55	91%	.95
50	83%	.90
45	75%	.85
40	69%	.80
—	—	.75

**Wheel Loaders
Integrated Toolcarriers**

Production Estimating Table
 ● 60 min hour ● Shot Rock
 ● Metric Tons

Metric Tons ● 1600 kg Lm³ (1.6 t) density

Bucket Size m ³		1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
Cycle Time	Cycles Per Hr	Unshaded area indicates average production.																	
0.40	150	240	360	480	600	720													
0.45	133	213	319	426	532	638	745	851	958	1064	1170								
0.50	120	192	288	384	480	576	672	768	864	960	1056	1152	1248	1344	1440	1536	1632	1730	1825
0.55	109	174	262	349	436	523	610	698	785	872	959	1046	1134	1221	1308	1395	1482	1570	1655
0.60	100	160	240	320	400	480	560	640	720	800	880	960	1040	1120	1200	1280	1360	1440	1520
0.65	92	147	221	294	368	442	515	589	662	736	810	883	957	1030	1104	1178	1251	1325	1400
0.70	86						482	550	619	688	757	826	894	963	1032	1101	1170	1238	1310
0.75	80											768	832	896	960	1024	1088	1150	1215
Bucket Payload Metric (Tons)		1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.4	15.2

Bucket Size m ³		10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
Cycle Time	Cycles Per Hr	Unshaded area indicates average production.										
0.40	150											
0.45	133											
0.50	120											
0.55	109	1744	1918	2092	2267	2441	2616	2790	2964	3139	3313	3488
0.60	100	1600	1760	1920	2080	2240	2400	2560	2720	2880	3040	3200
0.65	92	1472	1619	1766	1913	2060	2208	2355	2502	2649	2796	2944
0.70	86	1376	1513	1651	1788	1926	2064	2201	2339	2476	2614	2752
0.75	80	1280	1408	1536	1664	1792	1920	2048	2176	2304	2432	2560
0.80	75	1200	1320	1440	1560	1680	1800	1920	2040	2160	2280	2400
Bucket Payload Metric (Tons)		16.0	17.6	19.2	20.8	22.4	24.0	25.6	27.2	28.8	30.4	32.0

Production Estimating Table
 ● Shot Rock ● 60 min hour
 ● U.S. Tons

Wheel Loaders
 Integrated Toolcarriers

U.S. Tons ● 2700 lb/LCY (1.35 T) density

Bucket Size yd ³	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	
Cycle Time	Cycles Per Hr																			
	Unshaded area indicates average production.																			
0.40	150	203	330	420	510	615	705	810												
0.45	133	180	293	360	454	545	625	720	810	905	985	1080	1170							
0.50	120	162	254	324	408	492	565	650	730	815	890	970	1060	1140	1200	1300	1380	1470	1540	1620
0.55	109	147	240	294	370	448	515	590	665	740	805	885	960	1030	1090	1180	1250	1330	1400	1740
0.60	100	135	220	270	340	410	470	540	610	680	740	810	880	950	1000	1080	1150	1220	1280	1350
0.65	92	124	200	250	314	380	435	500	560	625	680	750	810	875	920	985	1060	1120	1180	1250
0.70	86								525	585	635	695	755	815	860	930	990	1050	1100	1160
0.75	80													760	800	865	920	975	1030	1080
Bucket Payload (Tons)	1.35	2.2	2.7	3.4	4.1	4.7	5.4	6.1	6.8	7.4	8.1	8.8	9.5	10.0	10.8	11.5	12.2	12.8	13.5	

Bucket Size yd ³	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	
Cycle Time	Cycles Per Hr																
	Unshaded area indicates average production.																
0.40	150																
0.45	133																
0.50	120	1782	1945														
0.55	109	1620	1765	1905	2060	2200	2350	2495	2645	2790	2940	3080	3235	3375	3530	3670	3825
0.60	100	1485	1620	1750	1890	2020	2160	2290	2430	2560	2700	2830	2970	3100	3240	3370	3510
0.65	92	1365	1490	1610	1735	1855	1985	2105	2235	2355	2480	2600	2730	2850	2980	3100	3225
0.70	86	1275	1390	1505	1625	1735	1855	1965	2085	2200	2320	2430	2550	2665	2785	2895	3015
0.75	80	1190	1295	1400	1510	1615	1725	1830	1940	2045	2160	2260	2375	2480	2590	2695	2805
0.80	75			1310	1415	1515	1620	1715	1820	1920	2025	2120	2225	2325	2430	2525	2630
Bucket Payload (Tons)	14.9	16.4	17.5	18.9	20.2	21.6	22.9	24.3	25.6	27.0	28.3	29.7	31.0	32.4	33.7	35.1	

Wheel Loaders Integrated Toolcarriers

Work Tools ● Wheel Loaders

Work Tools	994D	992G	990 Series II	988G	980H	972H	966H	962H	950H	938G Series II	928Gz	924Gz	914G	908	906	904B
Quick coupler		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
General purpose bucket		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Coal bucket	X	X	X	X	X	X	X	X	X	X	X	X	X			
Woodchip bucket				X	X	X	X	X	X	X	X	X	X			
Refuse bucket					X	X	X	X	X	X	X	X				
Material handling bucket			X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sand & gravel bucket					X	X	X	X	X							
Rock bucket	X	X	X	X	X	X	X	X	X							
Slag bucket		X		X	X											
Bonus bucket				X	X											
Multi-purpose bucket						X	X	X	X	X	X	X	X	X		X
Side dump bucket						X	X	X	X	X	X	X	X	X	X	
Bucket with top clamp					X	X	X	X	X	X	X	X	X			
Material handling arm					X	X	X	X	X	X	X	X	X			X
Pallet fork		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Millyard fork					X	X	X	X	X	X	X	X				
Log/lumber fork						X	X	X	X	X	X	X				
Logging fork			X	X	X	X	X	X	X							
Core fork						X	X	X	X		X					
V-plow								X	X	X	X	X	X			
Manual reverse plow						X	X	X	X	X	X	X	X			
Hydraulic reverse plow						X	X	X	X	X	X	X	X			
Loader rake						X	X	X	X	X	X	X	X			
Hydraulic angle broom								X	X	X	X*	X*	X	X	X	X
Block handling bucket				X	X											
Block handling fork				X	X											
Breaker tine				X	X											
Boom clearing rake				X	X											
Stone seive bucket										X				X	X	
High dump bucket						X	X	X	X	X	X	X	X	X	X	
Pickup sweeper												X*	X*	X	X	X

*Requires IT compatible quick coupler.

NOTE: List is not all-inclusive. Contact your Caterpillar Dealer for special attachment needs.

BUCKETS

General Purpose — for most material types with choice of cutting edges and teeth.

Loose Material — designed for snow, woodchips, hay, coal, etc. Add independently controlled top clamp for materials like hay, brush, silage or compost.

Multi-purpose — versatile ... loads, strips top-soil, bulldozes, clamps pipe, cleans up debris, plus many other tasks.

High dump or “roll-out” — for extended dump height of light materials.

Side dump — dump forward or to the left ... ideal in close quarters or to reduce turning time.

Grading — long, flat floor and straight edge for finish work in housing developments, concrete pours, landscaping and light dozing.

FORKS

Log or lumber forks — with optional clamps, single, double or full-width.

Wide frame forks — adjustable for control of long pipes, culverts, etc.

Stinger fork — with long single shaft to penetrate salvage autos or round hay bales.

Utility pallet forks — for a variety of tasks, with three different tine sizes.

Pulpwood — choice of single or double top clamp for positive control of material.

Sorting — designed for durability and efficiency in stacking operations.

BLADES

Angling dozer — choice of manual or hydraulic angling 25° left or right.

Straight blade — for spreading, leveling and other utility dozing.

One-way snow blade — economical snow clearing with minimal machine effort.

V-plow — excellent for breaking up large drifts or high speed clearing operations.

Material Handling arm — carries and places pipe, prefabricated building panels and handles bulky, nonpalletized material ... two telescopic sections extend for three position operation.

AND MORE ...

Rotary broom — for street cleanup, snow removal, jobsite clean-up, clearing runways ... angles left or right 30°.

Asphalt cutter — aids repair work on roads, pavements, water and sewer mains ... cuts clean to 125 mm (5").

Hooks — for attachment to dumpsters, bins, troughs, etc., to permit quick, easy, instant movement from place to place.

These products are available through your Caterpillar dealer.

Work Tools

Work Tools	IT62G II	IT38G II	930G	924G	IT14G
Bucket with Top Clamp	X	X	X	X	X
Multi-Purpose Bucket	X	X	X	X	X
Side Dump Bucket	X	X	X	X	X
High Dump Bucket	X	X	X	X	X
MH Bucket	X	X	X	X	X
Clean-up Bucket	X				
Pallet Fork	X	X	X	X	X
Log/Lumber Fork	X	X	X	X	X
Core Fork			X	X	X
Straight Blade			X	X	X
Manual Angle Blade	X	X	X	X	X
Hydraulic Angle Blade			X	X	X
Manual Reversible Plow	X	X	X	X	X
Hydr. Reversible Plow	X	X	X	X	X
V-Plow			X	X	X
One Way Plow			X	X	X
Asphalt Cutter			X	X	X
Hydraulic Angle Broom	X	X	X	X	X
Pick-up Broom			X	X	X
Hydraulic Hammers			X	X	X
Loader Rake	X	X	X	X	X
Woodchip	X	X	X	X	X
Refuse	X	X	X	X	X
Millyard Fork	X	X			
Logging Fork	X	X			
Grapple	X	X			

This list not all inclusive. Contact your Caterpillar dealer for special attachment needs.

Notes —

TRACK LOADERS

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Features of 939C:

- **Hydrostatic drive train** offers infinitely variable speeds, fast acceleration, dynamic hydrostatic braking, superior maneuverability and excellent controllability.

Features of 953C-973C:

- **Rear engine location** provides natural stability as a “working” counterweight, excellent visibility and good weight to horsepower ratio.
- **Electronic hydrostatic drive train with pedal steering** offers independent control of each track. Power turns, counterrotation infinitely variable speeds, and fast acceleration for increased maneuverability and production.

- **Variable displacement pump and motors** provide excellent efficiency and controllability.
- **Z-bar linkage** provides increased breakout force, fewer grease points and fast dump speed.
- **Special arrangements** including Wide Gauge, Waste Handling, Shiphold, Tunneling and Steel Mill (963C, 973C), Anti-Corrosion Package are available to tailor the machine to specific applications.
- **C-series cab and controls** offer a high level of operator comfort. Low sound level, large interior volume, two large storage compartments, fully adjustable armrests, ergonomic control, standard air conditioning and air suspension seat, adjustable steering pedal, Cat contour seat, and excellent visibility.
- **Computerized Monitoring System (CMS)** provides operator with gauges and other information, alerts of occurring or impending problems, registers fault codes and acts as an extended diagnostic system.
- **Pilot operated hydraulic controls** offer low lever forces for precise, consistent bucket control and reduces operator fatigue.
- **Implement power requirements** have priority over track requirements automatically ... full implement power available for maximum breakout force and simultaneous lift and dump capability results in fast loading and cycle times.
- **Oscillating track roller frames** decrease ground shock, increase machine stability and improve traction.
- **K System** is a Cat exclusive which allows ease of installation and removal. New adaptors provide better performance and offer a longer lasting life than J series (+30%).

Features common to all models:

- **Unmatched versatility** — excavates, loads, dozes, grades, clears, strips, backfills in all underfoot conditions including those that could damage tires.
- **Sound-suppressed, air-pressurized, resiliently mounted ROPS cab** for superior working environment.
- **SystemOne®** is a Cat exclusive that matches the customer requirements of longevity and reliability and enables the owner to get higher profitability and a better return on investment. This revolutionary undercarriage significantly reduces the Owning & Operating costs and has been totally redesigned.
- **Sealed loader linkage** extends lubrication intervals and reduces maintenance time.
- **Automatic bucket controls** let bucket rise to pre-set dumping height and return to pre-set digging angle for fast cycle time.
- **General Purpose and Multi-Purpose** buckets, quick couplers and many other work tools are available to increase versatility.
- **Radial rippers** are Multishank with wide beam coverage for utility ripping close to walls, footings and embankments. Five shanks available for 939C. Three shanks for 953C, 963C and 973C.
- **Product Link System®** reports machine location and hours and consequently makes the maintenance easier and reduces the downtime.
- **Cat Machine Security System®** allows better machine protection by preventing theft. A microchip is embedded in the key to provide more security.



MODEL	939C		953C		963C		973C	
Flywheel Power	67.1 kW	90 hp	95 kW	128 hp	118 kW	158 hp	172 kW	230 hp
Operating Weight*†	9480 kg	20,900 lb	15 145 kg	33,389 lb	19 589 kg	43,096 lb	26 731 kg	58,941 lb
Engine Model	3046 T		3126B ATAAC		3126B ATAAC		C9	
Rated Engine RPM	2400		2000		2000		2000	
Bore	94 mm	3.7"	110 mm	4.33"	110 mm	4.33"	112 mm	4.41"
Stroke	120 mm	4.7"	127 mm	5"	127 mm	5"	149 mm	5.87"
No. Cylinders	6		6		6		6	
Displacement	5 L	305 in³	7.2 L	439 in³	7.2 L	439 in³	8.8 L	537 in³
Speeds Forward/Reverse	0-9 km/h	0-5.6 mph	km/h	mph	km/h	mph	km/h	mph
1st	—	—	0-10	0-6.2	0-10	0-6.2	0-10	0-6.2
2nd	—	—	Infinitely Variable		Infinitely Variable		Infinitely Variable	
3rd	—	—	Variable		Variable		Variable	
Hydraulic Cycle Time, Bucket Empty, in Seconds:								
Raise	5.6		6.9		6.6		6.7	
Dump	2.4		1.3		1.3		1.5	
Lower (Empty, Float Down)	2.9		2.6		2.1		2.9	
Total	10.9		—		—		—	
Track Rollers (Each Side)	6		6		6		7	
Width of Standard Track Shoe	406 mm	16"	500 mm	20"	550 mm	21.6"	500 mm	19.7"
Length of Track on Ground†	2140 mm	84.4"	2345 mm	92.4"	2438 mm	97"	2930 mm	115"
Ground Contact Area (with Standard Shoes)†	1.74 m ²	2700 in²	2.3 m ²	3565 in²	2.7 m ²	4184 in²	2.93 m ²	4542 in²
Ground Pressure†	53.7 kPa	7.8 psi	65.8 kPa	9.5 psi	72.4 kPa	10.5 psi	91.2 kPa	13.2 psi
Ground Clearance	369 mm	14.5"	400 mm	15.7"	396.5 mm	15.6"	457 mm	17.9"
Track Gauge	1550 mm	61"	1800 mm	71"	1850 mm	72.8"	2080 mm	82"
Width without Bucket (with Standard Shoes)	1960 mm	77"	2300 mm	10.5"	2400 mm	94.5"	2580 mm	102"
Fuel Tank Refill Capacity	157 L	41.4 U.S. gal	233.5 L	62 U.S. gal	315 L	83.2 U.S. gal	430 L	113 U.S. gal
Hydraulic System Refill Capacity	56.8 L	15 U.S. gal	67 L	17.7 U.S. gal	68.1 L	18 U.S. gal	60 L	15.85 U.S. gal

*939C weights include basic machine (General Arrangement Number), lubricants, coolants, full fuel tank, operator, general purpose bucket and bucket teeth and OROPS. 953C, 963C and 973C include GP bucket with bolt-on adapters, long tips and segments.

†SystemOne Undercarriage Changes (953C, 963C, 973C)

With the introduction of New SystemOne Undercarriage, mentioned data may change. Specific conception or various modification in dimension affect the weight, the length and therefore the ground pressure. These differences don't have to be taken into account as long as they show a minimal change: ±1% ±0,2% and depend on the undercarriage configuration and the use.

BUCKET	General Purpose		Multi-Purpose	
Capacity, Rated (Nominal Heaped)	1.15 m ³	1.5 yd³	1.15 m ³	1.5 yd³
Struck	0.95 m ³	1.25 yd³	0.95 m ³	1.25 yd³
Bucket Width*	2160 mm	7'1"	2160 mm	7'1"
Dump Clearance at Full Lift and 45° Discharge	2667 mm	8'9"	2604 mm	8'6.5"
Maximum Reach at Full Lift and 45° Discharge	866 mm	2'10.1"	877 mm	2'10.5"
Digging Depth	127 mm	5"	165 mm	6.5"
Overall Length	4359 mm	14'3.6"	4359 mm	14'4"
Overall Height	4384 mm	14'4.6"	4384 mm	14'4.6"
Static Tipping Load	6607 kg	14,560 lb	6396 kg	14,100 lb
Breakout Force**	89.9 kN	20,200 lb	92 kN	20,690 lb
Operating Weight***	9484 kg	20,910 lb	10 030 kg	22,110 lb

*Bolt-on teeth increase bucket width by 42 mm (1.65"). Bolt-on cutting edge increases bucket width by 10 mm (0.39").

**Breakout force is measured 102 mm (4") behind tip of cutting edge with bucket hinge pin as pivot point.

***Operating weight includes coolant, lubricants, full fuel tank, bottom guards (STD), bucket teeth, ROPS canopy and operator. 454 kg (1000 lb) rear counterweight is also removed while using Multi-Purpose bucket.

Machine stability can be affected by the addition of other attachments. Add or subtract the following to/from machine operating weight and static tipping load:

	Change in Operating Weight		Change in Static Tipping Load	
	kg	lb	kg	lb
Cab, ROPS	+204	+450	+266	+586
Bucket teeth (long) & segments	+118	+260	-150	-330
Air Conditioner	+ 77	+170	+ 88	+194
Ripper with 3 teeth (includes removal of 295 kg (650 lb) rear counterweight)	+ 17	+ 37	+ 49	+108
Rear counterweight (per plate)	+115	+255	+203	+448

Performance Data
● 953C General Purpose Buckets

Track Loaders

BUCKET	General Purpose Bare		General Purpose Bolt-on Adapters, Long Teeth & Segments		General Purpose Bolt-on Cutting Edge		General Purpose Flush Weld-on Adapters & Long Teeth	
	Capacity, Rated (Nominal Heaped) Struck	1.75 m ³	2.29 yd³	1.85 m ³	2.42 yd³	1.85 m ³	2.42 yd³	1.75 m ³
Cutting Edge, Type	Straight		Straight		Straight		—	
Bucket Width◀	2380 mm	93.7"	2432 mm	95.7"	2397 mm	94.4"	2438 mm	96"
Teeth	None		8, bolt-on plus replaceable tips		None		8, bolt-on plus replaceable tips	
Dump Clearance @ Full Lift and 45° Discharge	2903 mm	114.3"	2749 mm	108.2"	2857 mm	112.5"	2748 mm	108.2"
Reach at 45° Discharge Angle 2133 mm (7'0") Clearance	1518 mm	59.8"	1607 mm	63.3"	1529 mm	60.2"	1633 mm	64.3"
Reach @ Full Lift and 45° Discharge	974 mm	38.3"	1162 mm	45.7"	1030 mm	40.6"	1165 mm	45.9"
Digging Depth	96 mm	3.78"	131 mm	5.16"	121 mm	4.76"	96 mm	3.78"
Ground Clearance from Face of Shoes	400 mm	15.7"	400 mm	15.7"	400 mm	15.7"	400 mm	15.7"
Overall Machine Width without Bucket (with Standard Track) 500 mm (20")	2300 mm	90.5"	2300 mm	90.5"	2300 mm	90.5"	2300 mm	90.5"
Overall Machine Width without Bucket (with Narrow Track) 380 mm (15")	2060 mm	81.1"	2060 mm	81.1"	2060 mm	81.1"	2060 mm	81.1"
Overall Length	5879 mm	231.5"	6122 mm	241"	5951 mm	243.3"	6125 mm	241.1"
Overall Height	4871 mm	191.8"	4871 mm	191.8"	4871 mm	191.8"	4871 mm	191.8"
Static Tipping Load	10 689 kg	23,565 lb	10 395 kg	22,917 lb	10 492 kg	23,131 lb	10 556 kg	23,272 lb
Breakout Force*	136.3 kN	30,641 lb	122.7 kN	27,584 lb	123.5 kN	27,764 lb	138.1 kN	31,046 lb
Operating Weight**	14 921 kg	32,895 lb	15 145 kg	33,389 lb	15 071 kg	33,226 lb	15 022 kg	33,118 lb

* Breakout force is measured 100 mm (3.94") behind tip of cutting edge with bucket hinge pin as pivot point.
 ** Operating weight includes coolant, lubricants, full fuel tank, ROPS cab, bucket, and 75 kg (165 lb) operator.
 ◀ Bolt-on teeth increase bucket width by 52 mm (2"). Bolt-on cutting edge increases bucket width by 17 mm (0.67").

Machine stability can be affected by the addition of other attachments. Add or subtract the following to/from machine operating weight and static tipping load:

	Change in Operating Weight		Change in Static Tipping Load for General Purpose Bucket	
	kg	lb	kg	lb
ROPS canopy only (cab removed)	-350	-771	-332	-732
Ripper (includes ripper, rear lines, and third valves)	+376	+829	+655	+1444
Air conditioner	Standard		Standard	
Wide track shoes, 500 mm (20") double grouser	-290	-639	-183	-403
Rear bumper (removal)	-207	-456	-423	-932

Track Loaders

Performance Data

● 953C Multi-Purpose Buckets

BUCKET	Multi-Purpose Bare		Multi-Purpose Bolt-on Adapters, Long Tips & Segments		Multi-Purpose Bolt-on Cutting Edge	
Capacity, Rated (Nominal Heaped)	1.5 m ³	1.96 yd³	1.6 m ³	2.09 yd³	1.6 m ³	2.09 yd³
Struck	1.25 m ³	1.63 yd³	1.35 m ³	1.76 yd³	1.35 m ³	1.76 yd³
Cutting Edge, Type	Straight		Straight		Straight	
Bucket Width◀	2378 mm	93.6"	2536 mm	99.8"	2378 mm	93.6"
Teeth	None		8, bolt-on plus replaceable tips		None	
Dump Clearance @ Full Lift and 45° Discharge	2728 mm	107.4"	2556 mm	100.6"	2677 mm	105.4"
Reach at 45° Discharge Angle 2133 mm (7'0") Clearance	1404 mm	55.3"	—		—	
Reach @ Full Lift and 45° Discharge	949 mm	37.36"	1121 mm	44.13"	1000 mm	39.36"
Digging Depth	147 mm	5.78"	181 mm	7.12"	171 mm	6.73"
Overall Length	6036 mm	237.63"	6279 mm	247.51"	6108 mm	240.47"
Overall Height	4862 mm	210.4"	5344 mm	210.4"	5344 mm	210.4"
Static Tipping Load	10 354 kg	22,826 lb	9992 kg	22,028 lb	10 218 kg	22,526 lb
Breakout Force*	107.1 kN	24,098 lb	97.4 kN	21,915 lb	97.9 kN	21,825 lb
Operating Weight**	15 374 kg	33,893 lb	15 651 kg	34,504 lb	15 492 kg	34,153 lb

* Breakout force is measured 100 mm (3.94") behind tip of cutting edge with bucket hinge pin as pivot point.
 ** Operating weight includes coolant, lubricants, full fuel tank, ROPS cab, General Purpose bucket, and 80 kg (176 lb) operator.
 ▶ Bolt-on teeth increase bucket width by 52 mm (2"). Bolt-on cutting edge increases bucket width by 17 mm (0.67").

Machine stability can be affected by the addition of other attachments.

	Change in Operating Weight		Change in Static Tipping Load for General Purpose Bucket	
	kg	lb	kg	lb
ROPS canopy only (cab removed)	-350	-771	-332	- 732
Ripper (includes ripper, rear lines, and third valves)	+376	+829	+655	+1444
Air conditioner	Standard		Standard	
Wide track shoes, 500 mm (20") double grouser	-290	-639	-183	- 403
Rear bumper (removal)	-207	-456	-423	- 932

Performance Data
● 963C General Purpose Buckets

Track Loaders

BUCKET	General Purpose Bare		General Purpose Bolt-on Cutting Edge		General Purpose Flush Weld-on Adapters & Long Tips		General Purpose Bolt-on Adapters, Long Tips & Segments	
Capacity, Rated (Nominal Heaped)	2.3 m ³	3.0 yd ³	2.45 m ³	3.2 yd ³	2.45 m ³	3.2 yd ³	2.3 m ³	3.0 yd ³
Struck	2.0 m ³	2.6 yd ³	2.14 m ³	2.8 yd ³	2.14 m ³	2.8 yd ³	2.0 m ³	2.6 yd ³
Cutting Edge, Type	Straight		Straight		—		Straight	
Bucket Width*	2498 mm	98.3"	2550 mm	100.3"	2539 mm	99.9"	2583 mm	101.7"
Teeth	None		None		8, weld-on plus replaceable tips		8, weld-on plus replaceable tips	
Dump Clearance @ Full Lift and 45° Discharge	3148 mm	124"	2936 mm	116"	3060 mm	120"	2948 mm	116"
Reach at 45° Discharge Angle 2133 mm (7'0") Clearance	1786 mm	70.3"	1966 mm	77.4"	1840 mm	72.4"	2010 mm	79"
Reach @ Full Lift and 45° Discharge	1161 mm	45"	1341 mm	52"	1215 mm	48"	1385 mm	55"
Digging Depth	87.2 mm	3"	142 mm	6"	122.2 mm	5"	87.2 mm	3"
Ground Clearance from Face of Shoes	396.5 mm	15.6"	396.5 mm	15.6"	396.5 mm	15.6"	396.5 mm	15.6"
Overall Machine Width without Bucket (with Standard Track) 500 mm (20")	2400 mm	94.5"	2400 mm	94.5"	2400 mm	94.5"	2400 mm	94.5"
Overall Machine Width without Bucket (with Narrow Track) 450 mm (18")	2200 mm	86.6"	2200 mm	86.6"	2200 mm	86.6"	2200 mm	86.6"
Overall Length	6350 mm	250"	6625 mm	261"	6448 mm	254"	6657 mm	262"
Overall Height	5319 mm	209"	5319 mm	209"	5319 mm	209"	5319 mm	209"
Static Tipping Load	14 080 kg	30,976 lb	13 596 kg	29,911 lb	13 774 kg	30,303 lb	13 982 kg	30,760 lb
Breakout Force**	191.7 kN	43,133 lb	172.6 kN	38,835 lb	173.4 kN	39,015 lb	186.7 kN	42,008 lb
Operating Weight***	19 253 kg	42,327 lb	19 589 kg	42,096 lb	19 473 kg	42,841 lb	19 354 kg	42,579 lb

*With bolt-on cutting edge add 17 mm (0.67"), with bolt-on teeth add 52 mm (2"), for flush weld-on teeth add 75 mm (3").
 **Breakout force is measured 100 mm (3.94") behind tip of cutting edge with bucket hinge pin as pivot point.
 ***Operating weight includes coolant, lubricants, full fuel tank, ROPS cab, bucket, and 75 kg (165 lb) operator.

Machine stability can be affected by the addition of other attachments. Add or subtract the following to/from machine operating weight and static tipping load:

	Change in Operating Weight		Change in Static Tipping Load for General Purpose Bucket	
	kg	lb	kg	lb
ROPS canopy only (cab removed)	-350	- 772	- 418	- 922
Ripper (includes ripper, rear lines, and third valves)	+215	+ 474	+ 339	+ 747
Rear bumper (removal)	-582	-1283	-1291	-2846

Track Loaders

Performance Data

● 963C Multi-Purpose Buckets

BUCKET	Multi-Purpose Bare		Multi-Purpose Bolt-on Segments & Long Teeth		Multi-Purpose Bolt-on Cutting Edge	
Capacity, Rated (Nominal Heaped)	1.9 m ³	2.5 yd³	2.0 m ³	2.6 yd³	2.0 m ³	2.6 yd³
Struck	1.58 m ³	2.1 yd³	1.72 m ³	2.2 yd³	1.72 m ³	2.2 yd³
Cutting Edge, Type	Straight		Straight		Straight	
Bucket Width*	2482 mm	97.7"	2573 mm	101.3"	2498 mm	98.3"
Teeth	None		8, bolt-on plus replaceable tips		None	
Dump Clearance @ Full Lift and 45° Discharge	2977 mm	117"	2780 mm	109"	2881 mm	113"
Reach at 45° Discharge Angle 2133 mm (7'0") Clearance	1592 mm	62.7"	1725 mm	68"	1638 mm	64.5"
Reach @ Full Lift and 45° Discharge	1045 mm	41"	1178 mm	46"	1091 mm	43"
Digging Depth	165 mm	7"	204 mm	8"	195 mm	8"
Ground Clearance from Face of Shoes	396.5 mm	15.6"	396.5 mm	15.6"	396.5 mm	15.6"
Overall Machine Width without Bucket (with Standard Track) 500 mm (20")	2400 mm	94.5"	2400 mm	94.5"	2400 mm	94.5"
Overall Machine Width without Bucket (with Narrow Track) 380 mm (15")	2200 mm	86.6"	2200 mm	86.6"	2200 mm	86.6"
Overall Length	6450 mm	264"	6551 mm	258"	6685 mm	263"
Overall Height	5353 mm	211"	5353 mm	211"	5353 mm	211"
Static Tipping Load	12 880 kg	28,396 lb	12 572 kg	27,716 lb	12 600 kg	27,778 lb
Breakout Force**	178.6 kN	40,185 lb	167.6 kN	37,710 lb	176.5 kN	39,713 lb
Operating Weight***	19 227 kg	42,388 lb	19 495 kg	42,979 lb	19 427 kg	42,829 lb

*With bolt-on cutting edge add 17 mm (0.67"), for bolt-on teeth add 52 mm (2").

**Breakout force is measured 100 mm (3.94") behind tip of cutting edge with bucket hinge pin as pivot point.

***Operating weight includes coolant, lubricants, full fuel tank, ROPS cab, bucket, and 75 kg (165 lb) operator.

Machine stability can be affected by the addition of other attachments.

Performance Data
● 973C General Purpose Buckets

Track Loaders

BUCKET	General Purpose Bare		General Purpose Bolt-on Adapters, Long Tips & Segments		General Purpose Bolt-on Cutting Edge		Rock Weld-on Flush Adapters & Tips	
	m ³	yd ³	m ³	yd ³	m ³	yd ³	m ³	yd ³
Capacity, Rated (Nominal Heaped) Struck	2.8	3.66	3.2	4.19	3.2	4.19	2.8	3.66
Cutting Edge, Type	Straight		Straight		Straight		Spade	
Bucket Width◀	2845 mm	112"	2845 mm	112"	2845 mm	112"	2705 mm	107"
Teeth	None		8, bolt-on plus replacement tips		None		8, weld-on plus replacement tips	
Dump Clearance @ Full Lift and 45° Discharge	3358 mm	132"	3154 mm	124"	3281 mm	129"	3032 mm	119"
Reach @ 45° Discharge Angle, 2133 mm (7'0") Clearance	1992 mm	78"	2096 mm	82"	2031 mm	80"	2009 mm	79"
Reach @ Full Lift and 45° Discharge	1313 mm	51"	1482 mm	58"	1357 mm	53"	1451 mm	57"
Digging Depth	92 mm	3.6"	143 mm	5.6"	122 mm	4.8"	92 mm	3.6"
Ground Clearance from Face of Shoes	457 mm	17.9"	457 mm	17.9"	457 mm	17.9"	457 mm	17.9"
Overall Machine Width without Bucket (with Standard Track)	2580 mm	102"	2580 mm	102"	2580 mm	102"	2580 mm	102"
Overall Machine Width without Bucket (with Wide Track)	2930 mm	115.8"	2930 mm	115.8"	2930 mm	115.8"	2930 mm	115.8"
Overall Length	7092 mm	279"	7362 mm	290"	7175 mm	282"	7541 mm	297"
Overall Height	5692 mm	224"	5692 mm	224"	5692 mm	224"	5742 mm	226"
Static Tipping Load	20 249 kg	44,649 lb	19 747 kg	43,542 lb	19 908 kg	43,897 lb	20 010 kg	44,122 lb
Breakout Force*	213.3 kN	47,992 lb	194.5 kN	43,762 lb	195.7 kN	44,032 lb	181.3 kN	40,792 lb
Operating Weight**	26 373 kg	58,153 lb	26 731 kg	58,941 lb	26 616 kg	58,688 lb	26 602 kg	58,657 lb

* Breakout force is measured 100 mm (3.94") behind tip of cutting edge with bucket hinge pin as pivot point.

** Operating weight includes lubricants, full fuel tank, ROPS cab, General Purpose bucket, and 80 kg (176 lb) operator.

◀ Bolt-on teeth increase bucket width by 63.8 mm (2.5"). Bolt-on cutting edge increases bucket width by 19 mm (0.74").

Machine stability can be affected by the addition of other attachments. Add or subtract the following to/from machine operating weight and static tipping load:

	Change in Operating Weight		Change in Static Tipping Load	
	kg	lb	kg	lb
Ripper (includes 3 shanks and rear hydraulic arrangement)	+616	+1359	+ 208	+ 458.6
Rear bumper (removal)	-582	-1283	-1339	-2952.5

Track Loaders

Performance Data

● 973C Multi-Purpose Buckets

BUCKET	Multi-Purpose Bare		Multi-Purpose Bolt-on Adapters, Long Tips & Segments & Long Teeth		Multi-Purpose Bolt-on Cutting Edge		Steel Mill Arrangement Slag Bucket	
Capacity, Rated (Nominal Heaped)	2.6 m ³	3.4 yd³	2.9 m ³	3.79 yd³	2.9 m ³	3.79 yd³	2.5 m ³	3.25 yd³
Struck	2.19 m ³	2.86 yd³	2.56 m ³	3.35 yd³	2.56 m ³	3.35 yd³	2.03 m ³	2.65 yd³
Cutting Edge, Type	Straight		Straight		Straight		Straight	
Bucket Width◀	2710 mm	106.7"	2762 mm	108.7"	2710 mm	106.7"	2714 mm	106.8"
Teeth	None		8, bolt-on plus replacement tips		None		8, weld-on plus replacement tips	
Dump Clearance @ Full Lift and 45° Discharge	3049 mm	120"	2828 mm	111.3"	2966 mm	116"	2986 mm	117.5"
Reach @ 45° Discharge Angle, 2133 mm (7'0") Clearance	1832 mm	72.1"	1936 mm	76.22"	1871 mm	73.6"	1784 mm	70.2"
Reach @ Full Lift and 45° Discharge	1261 mm	49.6"	1403 mm	55.3"	1293 mm	50.9"	1237 mm	48.7"
Digging Depth	200 mm	7.9"	254 mm	10"	230 mm	9.05"	118 mm	4.6"
Overall Length	7333 mm	288.7"	7591 mm	298.9"	7415 mm	291.9"	7600 mm	299.2"
Overall Height	5801 mm	228.4"	5801 mm	228.4"	5801 mm	228.4"	5825 mm	229.3"
Static Tipping Load	18 662 kg	41,142 lb	18 253 kg	40,240 lb	18 309 kg	40,364 lb	18 470 kg	40,720 lb
Breakout Force*	173.9 kN	39,127 lb	159.7 kN	35,932 lb	161.1 kN	36,247 lb	203 kN	45,760 lb
Operating Weight**	27 965 kg	61,652 lb	28 237 kg	62,251 lb	28 222 kg	62,218 lb	29 560 kg	65,180 lb

* Breakout force is measured 100 mm (3.94") behind tip of cutting edge with bucket hinge pin as pivot point.

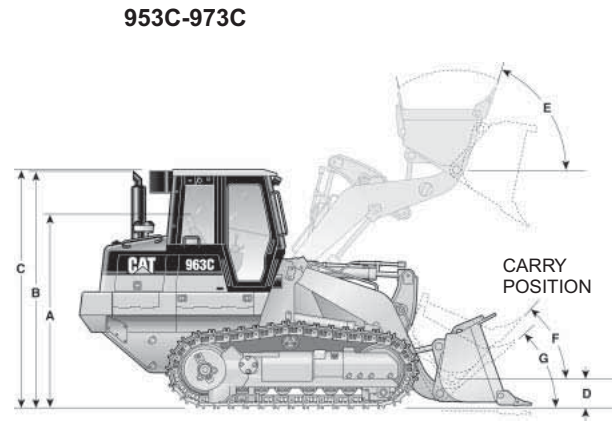
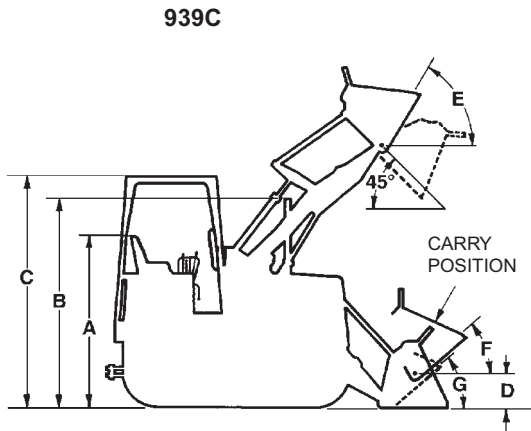
** Operating weight includes lubricants, full fuel tank, ROPS cab, General Purpose bucket, and 80 kg (176 lb) operator.

◀ Bolt-on teeth increase bucket width by 63.8 mm (2.5"). Bolt-on cutting edge increases bucket width by 19 mm (0.74").

Machine stability can be affected by the addition of other attachments.

Machine Dimensions
 ● With General Purpose Bucket

Track Loaders

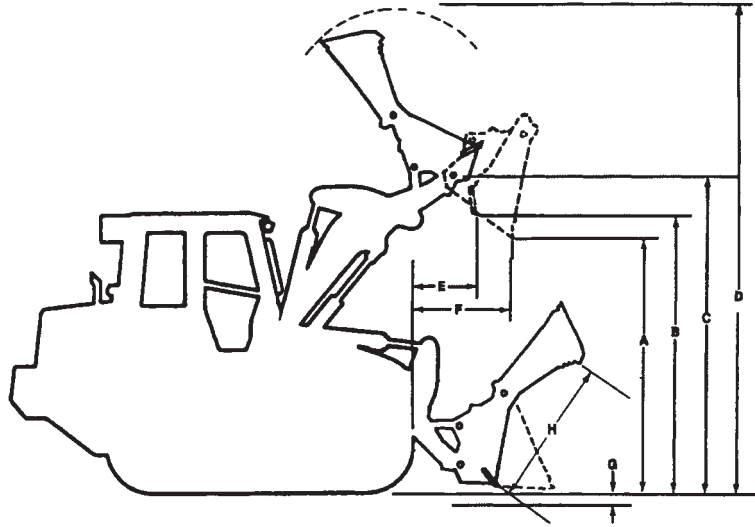


	939C		953C	
A Height to Top of Seat	2000 mm	79"	2614 mm	102.91"
B Height to Top of Stack	2810 mm	110"	2654 mm	104.48"
C Height to Top of ROPS	2760 mm	108"	3150 mm	124.01"
D Hinge Pin Height at Carry Position	414 mm	16.3"	422 mm	16.61"
E Rollback at Maximum Lift		67.7°		56°
F Rollback at Carry Height		51.2°		48°
G Rollback at Ground Level		42.6°		41°
Grading Angle (Bare Edge)		—		74°
Width without Bucket (standard track)	1960 mm	77"	2300 mm	90.55"
(optional track)	2010 mm	79"	2060 mm	81.10"
Weight of General Purpose Bucket with Teeth & Segments		—	1175 kg	2591 lb
	963C		973C	
A Height to Top of Seat	2843 mm	111.92"	2970 mm	116.92"
B Height to Top of Stack	2768 mm	108.97"	2989 mm	117.67"
C Height to Top of ROPS	3390 mm	133.46"	3500 mm	137.79"
D Hinge Pin Height at Carry Position	474 mm	18.66"	505 mm	19.58"
E Rollback at Maximum Lift		59°		59°
F Rollback at Carry Height		51°		50°
G Rollback at Ground Level		43°		42°
Grading Angle (Bare Edge)		68°		69°
Width without Bucket (standard track)	2400 mm	94.48"	2580 mm	101.57"
(optional track)	2300 mm	90.55"	2930 mm	115.35"
Weight of General Purpose Bucket with Teeth & Segments	1610 kg	3550 lb	2103 kg	4638 lb

Track Loaders

Machine Dimensions

- With Multi-Purpose Bucket



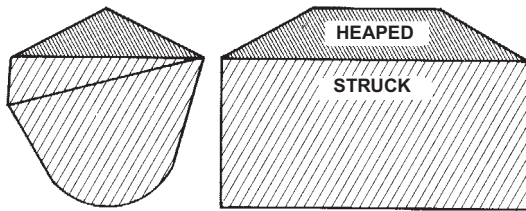
	939C		953C	
A Forward Dump Clearance*	2680 mm	106"	2556 mm	100.62"
B Bottom Dump Clearance*	3050 mm	120"	3066 mm	120.70"
C Hinge Pin Height*	3320 mm	131"	3585 mm	141.14"
D Overall Height	4680 mm	184"	3150 mm	124.01"
E Bottom Dump Reach	453 mm	18"	579 mm	22.79"
F Forward Dump Reach*	776 mm	31"	1121 mm	44.13"
G Digging Depth	127 mm	5"	181 mm	7.12"
H Bucket Opening	930 mm	36"	1140 mm	44.88"
Reach at 2133 mm (7'0") Height*	1200 mm	47"	1440 mm	56.69"
Tilt Back at Ground Level		43°		42°
Closure Force, Clamp to Cutting Edge	56.8 kN	12,780 lb	71.8 kN	16,134 lb
Weight of Bucket with Teeth, Segments and Additional Hydraulics	1005 kg	2216 lb	1640 kg	3616 lb

	963C		973C	
A Forward Dump Clearance*	2780 mm	109.44"	2830 mm	111.41"
B Bottom Dump Clearance*	3437 mm	135.56"	3660 mm	144.09"
C Hinge Pin Height*	3930 mm	154.72"	4240 mm	166.92"
D Overall Height	3390 mm	133.46"	5800 mm	228.34"
E Bottom Dump Reach	604 mm	23.77"	693 mm	27.28"
F Forward Dump Reach*	1178 mm	46.37"	1403 mm	55.23"
G Digging Depth	204 mm	8.03"	254 mm	9.99"
H Bucket Opening	1260 mm	49.60"	1380 mm	54.33"
Reach at 2133 mm (7'0") Height*	1725 mm	67.91"	1936 mm	76.22"
Tilt Back at Ground Level		46°		45°
Closure Force, Clamp to Cutting Edge	72.3 kN	16,250 lb	89 kN	20,000 lb
Weight of Bucket with Teeth, Segments and Additional Hydraulics	2128 kg	4690 lb	3198 kg	7052 lb

*45° Discharge and full lift.
Operator may prefer to tip bucket forward when bottom dumping.

TRACK LOADER	939C		953C		963C		973C	
Ripper-Scarifier Type	Radial		Radial		Radial		Radial	
Dimensions:								
Ripper Shank								
Maximum Penetration Depth	205 mm	8.1"	290 mm	11.4"	295 mm	11.61"	428 mm	16.85"
Maximum Reach at Ground Line	627 mm	24.7"	1097 mm	43.18"	1160 mm	45.66"	1295 mm	51"
Maximum Ground Clearance under Tip (shank pinned in bottom hole)	593 mm	23.3"	507 mm	20"	595 mm	23.42"	670 mm	26.37"
Maximum Ramp Angle, Ripper Up (shank pinned in bottom hole)	33.5°		18°		17°		20°	
Shank Section	36 × 76 mm 1.4" × 3"		50 × 109 mm 2.0" × 4.3" (Curved)		58 × 139 mm 2.3" × 5.5" (Curved)		74 × 175 mm 2.9" × 6.9" (Curved)	
Ripper Beam								
Overall Width	1580 mm	62"	1952 mm	76.85"	1951 mm	76.81"	2200 mm	86.61"
Height	130 mm	5.1"	165 mm	6.49"	165 mm	6.49"	165 mm	6.49"
Length	140 mm	5.5"	211 mm	8.30"	211 mm	8.30"	254 mm	9.99"
Number of Pockets	5		3		3		3	
Pocket Spacing	356 mm	14"	900 mm	35.43"	895 mm	35.23"	1000 mm	39.36"
Shank Gauge	1420 mm	56"	1800 mm	70.86"	1790 mm	70.47"	2000 mm	78.73"
Track Clearance with Standard Shoe	139 mm	5.5"	N/A		N/A		N/A	
Installed Weights:								
Ripper with Standard Shanks	250 kg	550 lb	519 kg	1144 lb	712 kg	1569 lb	1196 kg	2636 lb
Each Additional Shank	11 kg	24 lb	3 shanks std.		3 shanks std.		3 shanks std.	
Ripper Forces*								
Penetration Force	2687 kg	5924 lb	4707 kg	10,377 lb	6385 kg	14,076 lb	8820 kg	19,444 lb
Pryout Force	5265 kg	11,610 lb	10 388 kg	22,901 lb	13 897 kg	30,637 lb	17 450 kg	38,470 lb

*These values may vary slightly with different vehicle configurations.

SAE BUCKET RATING**SAE Bucket Capacities**

Struck capacity is that volume contained in a bucket after a load is leveled by drawing a straight edge resting on the cutting edge and the back of the bucket.

Heaped capacity is a struck capacity *plus* that additional material that would heap on the struck load at a 2:1 angle of repose with the struck line parallel to the ground.

SAE J742 (Oct. 79) specifies that the addition of any auxiliary spill guard to protect against spillage of material which might injure the operator will not be included in bucket capacity ratings. Buckets with irregular shaped cutting edges (vee edge) the strike plane should be drawn at one-third the distance of the protruding portion of the cutting edge. Caterpillar rock buckets are built with integral see-through rock guards. Caterpillar light material buckets come standard with bolt-on edges. These features which add to actual bucket capacity are included in published ratings.

Dump Height

SAE J732 JUN92 specifies that dump height is the vertical distance from the ground to the lowest point of the cutting edge with the bucket hinge pin at maximum height and the bucket at a 45° dump angle. Dump angle is the angle in degrees that the longest flat section of the inside bottom of the bucket will rotate below horizontal.

Static Tipping Load

The minimum weight at center of gravity of "SAE Rated" load in bucket which will rotate rear of machine to a point where, on track loaders, front rollers are clear of the track under the following conditions:

- a. Loader on hard level surface and stationary.
- b. Unit at standard operating weight.
- c. Bucket at maximum rollback position.

- d. Load at maximum forward position during raising cycle.
- e. Unit with standard equipment as described in specifications unless otherwise noted under the heading.

Operating Load

In order to comply with SAE standard J818 MAY87, the operating load for track loaders should not exceed 35% of the Static Tipping load rating. See "Performance Data" of each machine in this handbook for increases to static tipping load by adding cab, counterweights, ripper-scarifier, etc.

SELECTING A MACHINE**Steps in selecting the proper size loader:**

1. Determine production required or desired.
2. Determine loader cycle time and cycles per hour. A machine size must be assumed to select a basic cycle time.
3. Determine required payload per cycle in loose cubic yards and pounds (meters and kilograms).
4. Determine bucket size needed.
5. Make machine selection using bucket size and payload as criteria to meet production requirements.
6. Compare the loader cycle time used in calculations to the cycle time of the machine selected. If there is a difference, rework the process beginning at step 2.

1. Production Required

The production required of a track loader should be slightly greater than the production capability of the other critical units in the earth or material moving system. For example, if a hopper can handle 300 tons per hour, a loader capable of slightly more than 300 tons should be used. Required production should be carefully calculated so the proper machine and bucket selections are made.

2. Loader Cycle Times

Material type, pile height, and other factors may improve or reduce production, and should be added to or subtracted from the basic cycle time when applicable.

When hauls are involved, obtain haul and return portions of the cycle from the estimated travel chart (this section). Add the haul and return times to the estimated basic cycle time to obtain total cycle time.

CYCLE TIME FACTORS

A basic cycle time (Load, Dump, Maneuver) of 0.25-0.35 minutes is average for a track loader [the basic cycle for large track loaders, 2 m³ (2.6 yd³) and up, can be slightly longer], but variations can be authenticated in the field. The following values for many variable elements are based on normal operations. Adding or subtracting any of the variable times will give the total basic cycle time.

Estimating Cycle Time

Cycle time of a track loader needs to be determined to find loads per hour. Total cycle time includes the following segments:

Load Time + Maneuver Time + Travel Time + Dump Time

Load Time —

Material	Minutes
Uniform aggregates	0.03-0.05
Moist mixed aggregates	0.03-0.06
Moist loam	0.03-0.07
Soil, boulders, roots	0.04-0.20
Cemented materials	0.05-0.20

Maneuver Time — includes basic travel, four changes of direction and turning time, and will be about 0.20 minutes with a competent operator.

Travel Time — in a load and carry operation is comprised of haul and return times which can be determined by the travel charts in this section.

Dump Time — is dictated by the size and strength of the dump target and varies from 0.00 to 0.10 minutes. Typical dump times into highway trucks are from 0.04 to 0.07 minutes.

NOTE: When comparing hydrostatic track loaders with former power shift models (using the production estimating method) two factors must be considered: (1) The hydrostatic track loaders on the average outcycle power shift models by up to 10 percent due to faster machine speed and easier operation. (2) Larger, rear engine hydrostatic track loaders incorporate Z-bar linkage, which provides substantially better bucket fill factors. The degree to which each factor affects estimated production should be left to the user's judgment depending on the particular job application and conditions.

Example: Moist loam is being excavated from a bank and loaded into trucks.

	Minutes
Load — moist loam	0.05
Maneuver Time	0.20
Travel — none required	0.00
Dump	0.05
Total Cycle	0.30 min. or 200 cycles per 60 min. hour

*Minutes added (+)
or Subtracted (-)
From Basic Cycle*

Materials

- Mixed+0.02
- Up to 3 mm (1/8 in)+0.02
- 3 mm (1/8 in) to 20 mm (3/4 in)-0.02
- 20 mm (3/4 in) to 150 mm (6 in) 0.00
- 150 mm (6 in) and over+0.03 and Up
- Bank or broken+0.04 and Up

Pile

- Conveyor or Dozer piled 3 m (10 ft) and up 0.00
- Conveyor or Dozer piled 3 m (10 ft) or less+0.01
- Dumped by truck+0.02

Miscellaneous

- Common ownership of trucks and loadersUp to -0.04
- Independently owned trucksUp to +0.04
- Constant operationUp to -0.04
- Inconsistent operationUp to +0.04
- Small targetUp to +0.04
- Fragile targetUp to +0.05

Using actual job conditions and the above factors, total cycle time can be estimated. Convert total cycle time to cycles per hour.

$$\text{Cycles per hour at 100\% Efficiency} = \frac{60 \text{ Min}}{\text{Total Cycle Time in Minutes}}$$

Job efficiency is an important factor in machine selection. Efficiency is the actual number of minutes worked during an hour. Job efficiency accounts for operator breaks, and other work interruptions. See "Efficiency Considerations" page 13-16.

Track Loaders

- Bucket Fill Factors
 - Recommended Operating Capacities
- Loader Production

Bucket Fill Factors

The following indicates the approximate amounts of material as a percent of rated bucket capacity which will actually be delivered per bucket per cycle. This is known as “Bucket Fill Factor.”

Loose Material	Fill Factor
Mixed Moist Aggregates	95-110%
Uniform Aggregates	
up to 3 mm (1/8 in)	95-110
3 mm-9 mm (1/8 in-3/8 in)	90-110
12 mm-20 mm (1/2 in-3/4 in)	90-110
24 mm and over (1 in)	90-110
Blasted Rock	
Well	80-95%
Average	75-90
Poor	60-75
Other	
Rock Dirt Mixtures	100-120%
Moist Loam	100-120
Soil, Boulders, Roots	80-100
Cemented Materials	85-100

Fill factors on track loaders are affected by bucket penetration, breakout force, rackback angle, bucket profile and ground engaging tools such as bucket teeth and segments or bolt-on replaceable cutting edges.

GENERAL PURPOSE BUCKET W/TEETH & SEGMENTS MAXIMUM OPERATING CAPACITIES

MODEL	GENERAL PURPOSE BUCKET SIZE		MAXIMUM OPERATING CAPACITY	
	m ³	yd ³	kg	lb
939C	1.15	1.5	2040	4500
953C	1.85	2.4	3340	7370
963C	2.45	3.2	4550	10,030
973C	3.2	4.2	6750	14,870

LOADER PRODUCTION

Loader production equals quantity of material the bucket carries per load × number of bucket loads per hour.

Estimating Bucket Load

The quantity of material in a loader bucket is estimated by two methods, depending on whether the material being loaded is in a loose or bank state.

1. When the material is loose, as in stockpile loading, the bucket load is estimated in loose meters (or cubic yards) by a Bucket Fill Factor (see Tables Section or chart following this discussion). The quantity of material is determined as follows:
 Rated Bucket Capacity × Bucket Fill Factor =
 Bucket Payload in Loose m³ (yd³)

For example, a 973 with a 3.2 m³ (4.2 yd³) General Purpose bucket loading moist loam material will carry:

$$3.2 \text{ m}^3 \times 1.15 = 3.68 \text{ loose cubic meters}$$

$$(4.2 \text{ yd}^3 \times 1.15 = 4.83 \text{ loose cubic yards})$$

Once the potential bucket load has been determined, check the static tipping load ratings on the specific machine to determine if bucket load is in fact a safe operating load. (*Safe operating load as defined by SAE for track loaders should not exceed 35% of static tipping load.*)

Productivity in many applications is measured in tons. See Tables Section for material densities if conversion to tons is desired.

2. When material is in the bank state, as in excavation, productivity is measured in bank meters (cubic yards). Bucket load in Bm³ (BCY) is estimated by applying one of the load factors from the Tables section to convert the excavated material in the bucket from Bm³ (BCY) to Lm³ (LCY) to allow for the digging and carrying characteristics of the material. The quantity of excavated material a bucket carries is then determined as follows:

Rated Bucket Capacity × Load Factor × Bucket Fill Factor = Bucket Payload in Bm³ (BCY)

Example: a 953C with a 1.85 m³ (2.4 yd³) General Purpose bucket loading wet loam earth from bank:

$$1.85 \text{ m}^3 \times 0.79 \times 1.15 = 1.68 \text{ Bm}^3$$

$$(2.4 \text{ yd}^3 \times 0.79 \times 1.15 = 2.18 \text{ BCY})$$

Estimating Production

- Machine and job considerations include:
- Machine model and bucket size
 - Material type, particle size, density and load factor (see Tables Section)
 - Bucket fill factor
 - Haul distance
 - Underfoot conditions
 - Altitude
 - Dump target size, height, and type

Example:

Conditions —	
Machine	953C
Bucket size	1.85 m ³ (2.4 yd ³)
Material	Moist Loam
Bucket fill factor	1.15
Haul length	30 m (100 ft)
Dump target	Pile
Travel in forward speed	
Cycle Time Minutes	
Load time	0.15
Maneuver time	0.20
Travel time (from curves)	0.40
Dump time	0.05
Total	0.80

Loads Per Hour —

$$\frac{60 \text{ min/hr}}{0.90 \text{ min/cycle}} = 75 \text{ cycles per hour}$$

@ 100% efficiency

Load Per Cycle —

$$1.85 \text{ m}^3 \times 1.15 \text{ BFF} = 2.13 \text{ Lm}^3 \times 0.81 \text{ LF}$$

$$= 1.72 \text{ Bm}^3$$

$$(2.4 \text{ yd}^3 \times 1.15 \text{ BFF} = 2.76 \text{ LCY} \times 0.81 \text{ LF}$$

$$= 2.24 \text{ BCY})$$

Hourly Production —

$$1.72 \text{ Bm}^3 \times 75 \text{ cycles/h} = 129 \text{ Bm}^3/\text{h}$$

$$(2.24 \text{ BCY} \times 75 \text{ cycles/hr} = 168 \text{ BCY/hr})$$

More accurate production estimates can be made by recording actual machine cycle times in the same or similar application. Then visually verify the approximate bucket fill factor.

Efficiency Considerations

Loader capacity should always be matched to peak production requirements of the job. Actual “on-the-job” loader productivity will be influenced by factors such as operator skill, personal delays, job layout and other delays. Experience and knowledge of local conditions will be the best indicators of actual job efficiency.

Operation	Working Hour	Efficiency Factor
Day	50 min/Hr	0.83

An Alternative Machine Selection Method

Another method of selecting the right Track Loader and bucket to meet production requirements is by use of the nomographs on the following pages. The method is quicker and easier than the preceding example because it does not require as many calculations, yet the accuracy is about the same within the normal limits of input data.

Be careful when entering and reading data from the nomographs because some scales increase from bottom to top, while others are the reverse. Do not be overly concerned with the precision as affected by pencil line width or reading to the hundredth of a m³ (yd³). Remember that bucket fill factor, material density, and cycle time are at best close estimates.

Example problem

A track loader must produce 200 Lm³ (262 LCY) per hour. Estimated cycle time is 0.5 minutes, working 50 minutes per hour. Bucket fill factor is 110% and the material density is 1600 kg/Lm³ (2700 lb/LCY).

Determine bucket size, machine model and hourly production in tons and yards.

Solution

At full efficiency, it will cycle 120 times per hour. Since only an average 50 minutes are available, only 100 cycles will be completed per hour.

Starting on Scale A at 100 cycles per hour draw a straight line intersecting 200 m³/hr (262 yd³/hr) on Scale B and continuing the line on to Scale C giving 2.0 m³ (2.62 yd³) required payload.

Follow steps 1 through 7 on the next two pages.

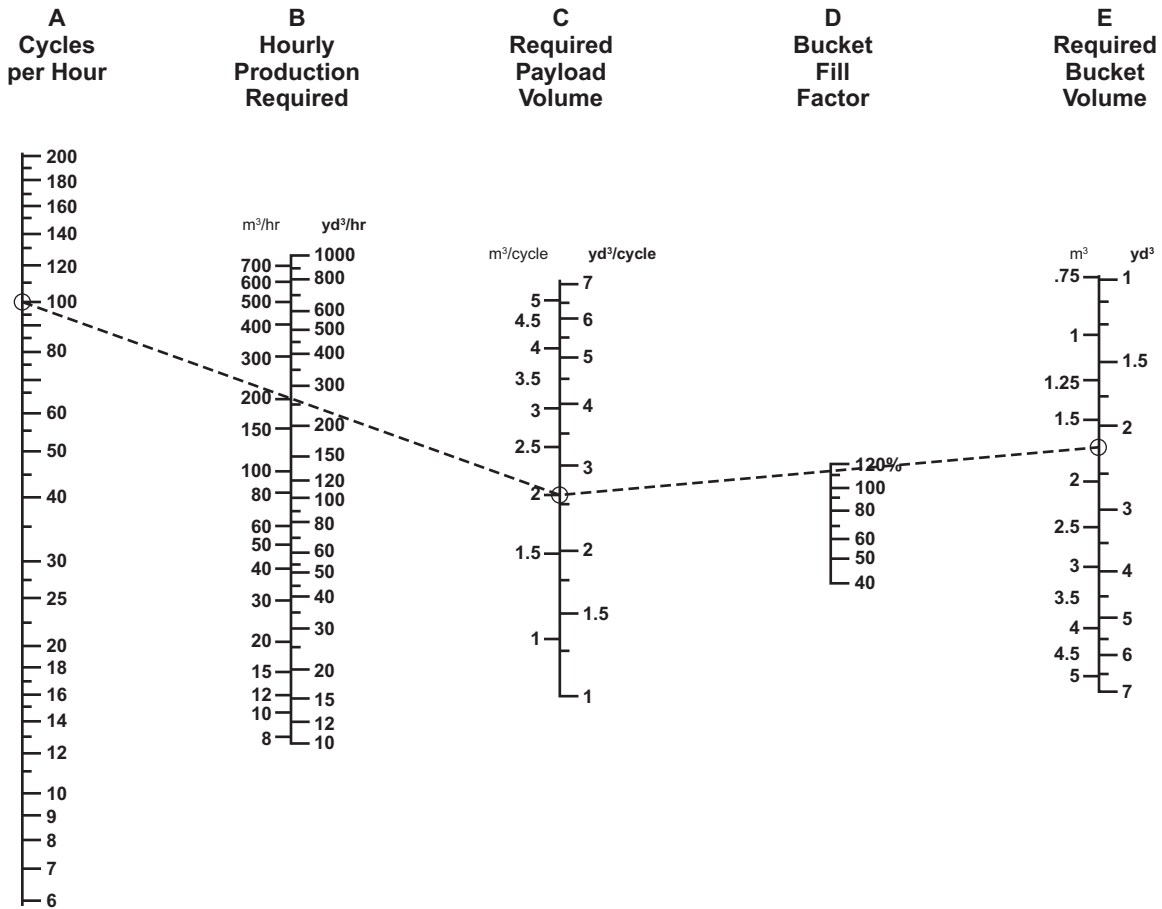


Track Loaders

Production and Machine Selection Nomograph

- To find required bucket payload and bucket size

- 1) Enter Scale A cycles per hour (100) and B hourly production 200 m³/hr (262 yd³/hr).
- 2) Connect A and B and extend to C to find required payload 2.0 m³ (2.62 yd³).
- 3) Connect C to bucket fill factor on Scale D (110%) and extend to E to find required bucket size 1.8 m³ (2.35 yd³).
- 4) Transfer Scale A and C readings to nomograph on following page.



Production and Machine Selection Nomograph

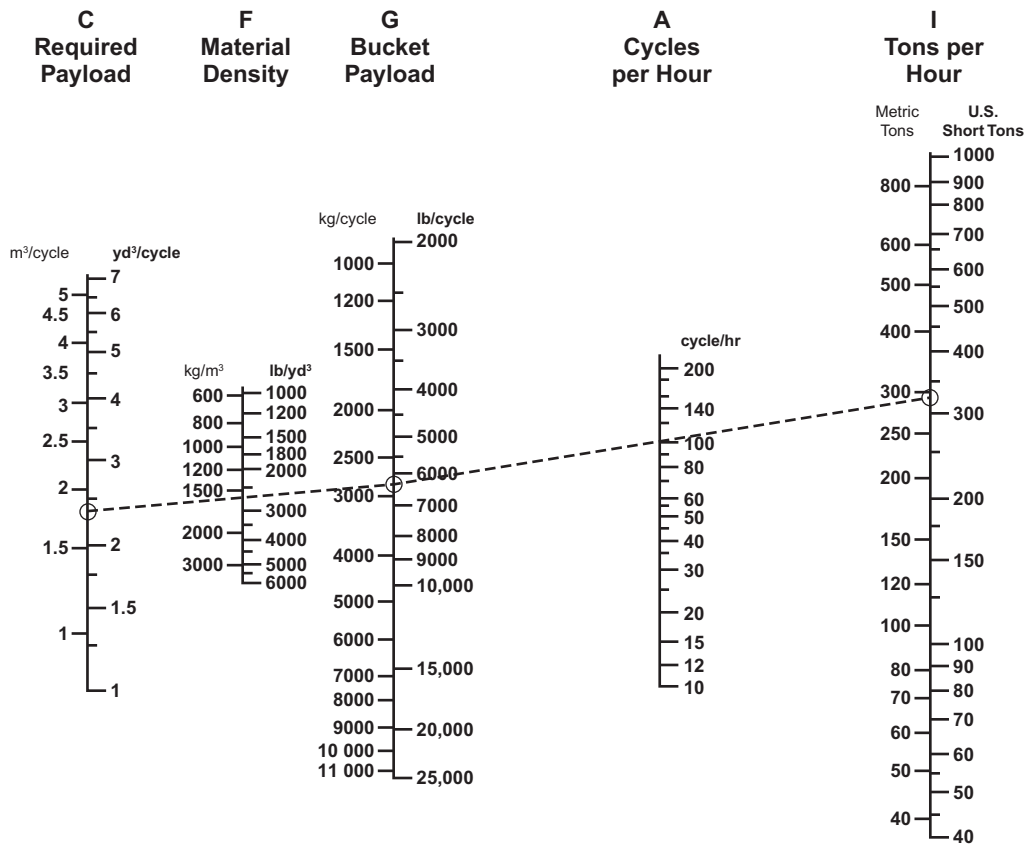
Track Loaders

- To find payload weight for stability and output in tons per hour

- 5) Connect C 1.8 m³ (2.35 yd³) to F 1600 kg/m³ (2700 lb/yd³) and extend to G to find payload weight 2880 kg (6345 lb).
- 6) Compare G bucket payload weight 2880 kg (6345 lb) with maximum operating capacities table in this section to see if the 1.85 m³ (2.4 yd³) bucket can handle the desired payload. Table indicates the

953C with a 1.85 m³ (2.4 yd³) bucket equipped with bolt-on cutting edge or teeth and segments has a greater operating capacity of 3343 kg (7370 lb), therefore stability is okay.

- 7) Extend Scale G reading 2880 kg (6345 lb) through Scale A (100) to Scale I to find tons per hour 288 metric ton/hr (317 U.S. ton/hr).



TRAVEL TIME CHARTS

Conditions:

- No grades.
- Speeds loaded and empty essentially the same.
- Bucket position constant during travel.
- Travel encountered in maneuver time portion of cycle not included.
- Acceleration time accounted for in maneuver time.

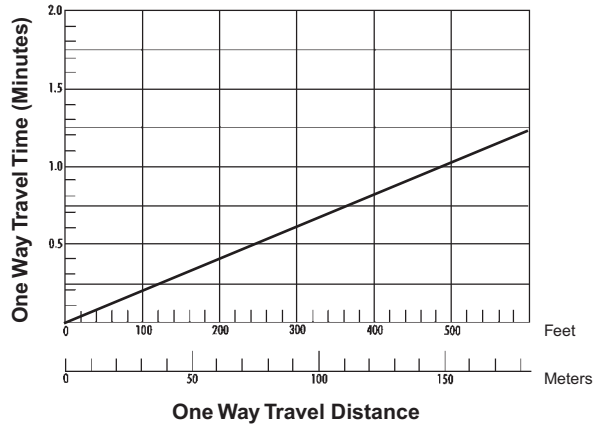
Travel Time (in minutes) =

$$\text{Metric} - \frac{\text{number of meters traveled}}{\text{speed (in km/h)} \times 16.67}$$

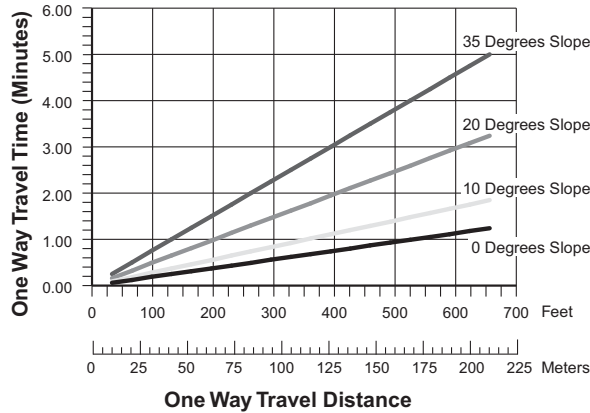
$$\text{English} - \frac{\text{number of feet traveled}}{\text{speed (in mph)} \times 88}$$

Hydrostatic top speed both forward and reverse 10 km/h (6.2 mph).

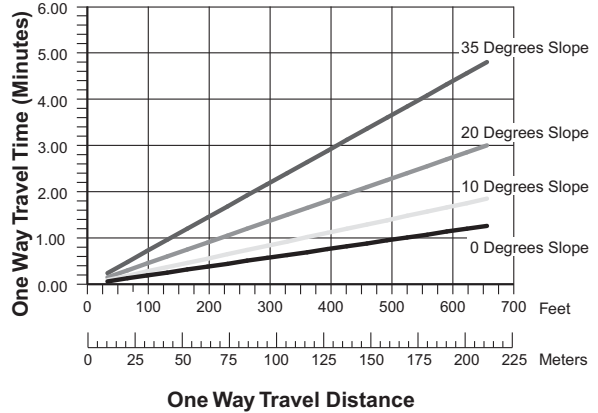
939C



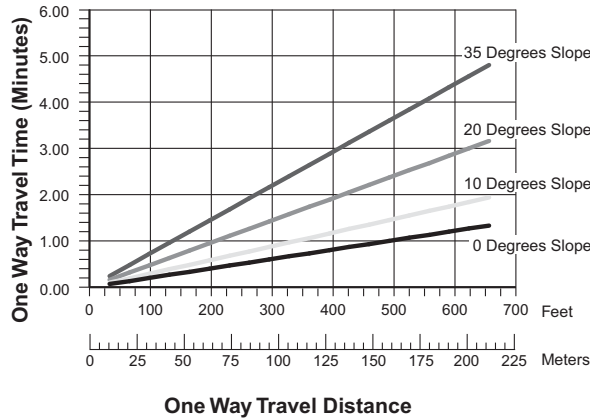
953C



963C



973C



TRAVEL TIME CHARTS

Conditions:

- No grades.
- Speeds loaded and empty essentially the same.
- Bucket position constant during travel.
- Travel encountered in maneuver portion of cycle not included.
- Acceleration time accounted for in maneuver time.

Travel Time (in minutes) =

$$Metric - \frac{\text{number of meters traveled}}{\text{speed (in km/h)} \times 16.67}$$

$$English - \frac{\text{number of feet traveled}}{\text{speed (in mph)} \times 88}$$

KEY

- 953C — Hydrostatic top speed both forward and reverse 10 km/h (6.2 mph)
- 963C — Hydrostatic top speed both forward and reverse 10 km/h (6.2 mph)
- 973C — Hydrostatic top speed both forward and reverse 10 km/h (6.2 mph)

Track Loaders

Production Estimating Table

- m³ or yd³/60 min. hour
- Estimated bucket payload in bank m³ or yd³

Bucket Size (m ³ or yd ³)		1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Cycle Time Hundredths of a minute	Cycles Per Hr	Unshaded area indicates average work range								
		0.25	240	240	360	480	600	720	840	960
0.30	200	200	300	400	500	600	700	800		
0.35	171	171	257	342	428	513	599	684	769	
0.40	150	150	225	300	375	450	525	600	675	750
0.45	133	133	200	268	332	400	466	530	600	665
0.50	120	120	180	240	300	360	420	480	540	600
0.55	109	109	164	218	272	328	382	436	490	545
0.60	100	100	150	200	250	300	350	400	450	600
0.65	92	92	138	184	230	276	322	368	416	460

Work Tools	973C	963C	953C	939C*
Quick coupler	X	X	X	X
General purpose (GP) bucket	X	X	X	X
GP bucket with trash rack	X	X	X	
MP bucket with trash rack	X	X	X	
Landfill bucket	X	X	X	
Landfill Multi-purpose	X	X	X	
Multi-purpose (MP) bucket	X	X	X	X
Trim blade	X	X	X	
Slag bucket	X			
Forks (for QC or bucket)	X	X	X	
Material handling arm	X	X	X	
Loader rake	X	X	X	X

*This list is not all-inclusive. Contact your Caterpillar Dealer for specific attachment needs.

SHOE OPTIONS



① **Double Grouser Shoes**



② **Trapezoidal Center Hole Shoes**



③ **Single Grouser Shoes**



④ **Chopper Shoes**

- **Extreme service shoes** are available which have more hardened wear material for longer wear life and higher impact applications.

- **Wider shoes** are also available to reduce ground pressure in soft underfoot conditions.

Other shoe options are available. Consult a Caterpillar Dealer for more information.

Notes —

TELESCOPIC HANDLERS

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Tire Selection	14-22
Work Tools	14-24
Compatibility	14-27

Features:

- **Intuitive control layout** enables efficient and comfortable operation.
- **Electronic machine information display** communicates essential technical data (fuel gauge, temperature gauge, hydraulic oil and water temperature gauge, service hour meter, LCD speedometer, gear indicator and transmission temperature gauge).
- **Joystick configuration** supports the use of work tools requiring more than one hydraulic service.
- **Hydraulic system** enables the use of work tools requiring both intermittent and continuous auxiliary hydraulic flows.
- **Caterpillar's Integrated Management System** ensures the engine, transmission and hydraulic systems operate with maximum efficiency, control and productivity.
- **Load sensing variable displacement pumps** allow full hydraulic power at low revs, with three simultaneous hydraulic functions being achieved by a flow sharing hydraulic valve.
- **Range of lift heights and load capacities** from 2200 kg (4800 lb) to 5000 kg (11,000 lb) capacity and 5.2 m (17'0") to 17 m (55'7") lift height.
- **B-Series Telehandlers offer extended reach** to easily enable material to be placed over onsite obstacles.

- **Three steering modes and tight turning circles** offered by B-Series Telehandlers allow simplified movement onsite and therefore increased productivity.
- **High torque rise engines**, including electronic Tier 2 compliant engines, offer a range of power (74.5 kW/99 hp to 92 kW/123 hp) options, allowing the machine to be configured to a wide variety of applications while maintaining a high level of efficiency and excellent performance. Engines are integrated into the electronic system, providing simple diagnostic data through Electronic Technician and Product Link.
- **Transmission reaches across the machine**, reducing componentry, maintenance and operating costs. A variety of options are available, depending on which engine option has been selected.
- **25% increased braking area** is provided on the front axle with no disconnect between the front and rear axles, therefore providing four wheel braking.
- **IT Quick Couplers** (both mechanical and hydraulic) provide excellent work tool compatibility, including the use of IT tools compatible with other products (for example Backhoe Loaders and Small Wheel Loaders).
- **Three auxiliary hydraulic options** are available: one auxiliary hydraulic service, two auxiliary hydraulic services and continuous hydraulic flow. These options allow maximum work tool utilization.
- **Common interface** on both the mechanical and hydraulic quick couplers result in one range of work tools and carriages for all machines.
- **Daily maintenance** consists of only a walk-around inspection, all major components and service points are located at ground level, providing excellent ease of service.
- **Sealed bearings** require no daily or weekly greasing on engine oil, filter changes and routine lubrication are only required every 500 hours.
- **Reduced filters and extended service intervals** provide the lowest owning and operating costs in the industry (approximately \$0.55/hour vs. \$1.00/hr for our competitors).
- **Machine Security System (MSS)** offers protection of machine against theft by disabling machine through the ECM. Keys still compatible with machines not fitted with MSS.

Specifications

Telescopic Handlers



MODEL	TH210		TH215		TH220B	
Flywheel Power (Gross)	60 kW	80 hp	60 kW	80 hp	74.5 kW	99.9 hp
Operating Weight	5000 kg	11,023 lb	5500 kg	12,100 lb	6700 kg	14,800 lb
Engine Model	CAT 3054B DI		CAT 3054B DI		CAT 3054E	
Rated Engine RPM	2300		2300		2200	
No. of Cylinders	4		4		4	
Bore	103 mm	4.05 in	103 mm	4.05 in	105 mm	4 in
Stroke	127 mm	5 in	127 mm	5 in	127 mm	5 in
Displacement	4.23 L	258 in ³	4.23 L	258 in ³	4.4 L	269 in ³
Speeds Forward:	km/h	mph	km/h	mph	km/h	mph
1st	32	20	32	20	6	4
2nd	—	—	—	—	12	7.5
3rd	—	—	—	—	20	12.5
4th	—	—	—	—	32	20
5th	—	—	—	—	40	25
Speeds Reverse:						
1st	32	20	32	20	6	4
2nd	—	—	—	—	12	7.5
3rd	—	—	—	—	20	12.5
Turning Circle Radius						
Over Tires	2.90 m	9'10"	3.15 m	10'4"	3.34 m	10'11"
Over Forks	3.85 m	12'7"	4.37 m	14'4"	4.44 m	14'7"
Over Bucket	3.67 m	12'1"	4.36 m	14'4"	—	—
Track	3.07 m	10'1"	3.40 m	11'2"	—	—
Aisle Width						
Over Forks	7.28 m	23'10"	7.98 m	26'2"	7.96 m	26'1"
Over Bucket @ carry	7.34 m	24'1"	7.87 m	25'9"	—	—
Tires	10.5-20 MPT		12.5-20 MPT		15.5-25 SGL-2A	
Service Refill Cap:						
Fuel Tank @ 90% fill	77.4 L	20.4 U.S. gal	77.4 L	20.4 U.S. gal	90 L	23.8 U.S. gal
Hydraulic Tank	55 L	14.5 U.S. gal	55 L	14.5 U.S. gal	59 L	15.6 U.S. gal
Hydraulic System	80 L	21.1 U.S. gal	80 L	21.1 U.S. gal	100 L	26.4 U.S. gal
Additional Fuel Tank	—	—	—	—	50 L	13 U.S. gal

Telescopic Handlers | Specifications



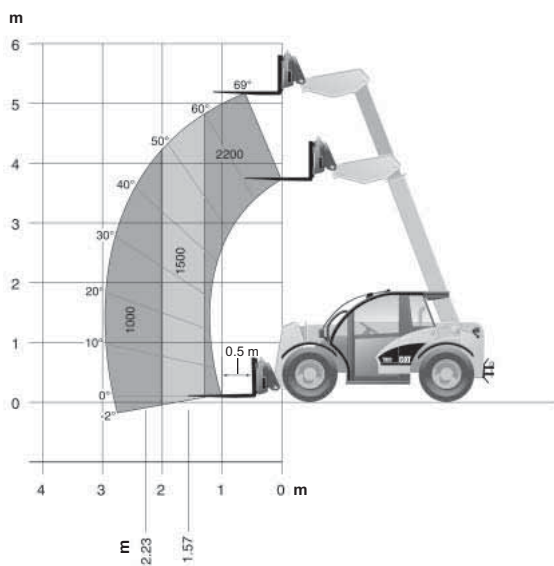
MODEL	TH330B		TH340B		TH350B	
Flywheel Power (Gross)	74.5 kW	99.9 hp	74.5 kW	99.9 hp	74.5 kW	99.9 hp
Operating Weight	7200 kg	15,900 lb	7700 kg	17,000 lb	8480 kg	18,100 lb
Engine Model	CAT 3054E		CAT 3054E		CAT 3054E	
Rated Engine RPM	2200		2200		2200	
No. of Cylinders	4		4		4	
Bore	105 mm	4 in	105 mm	4 in	105 mm	4 in
Stroke	127 mm	5 in	127 mm	5 in	127 mm	5 in
Displacement	4.4 L	269 in³	4.4 L	269 in³	4.4 L	269 in³
Speeds Forward:	km/h	mph	km/h	mph	km/h	mph
1st	6	4	6	4	6	4
2nd	12	7.5	12	7.5	12	7.5
3rd	20	12.5	20	12.5	20	12.5
4th	32	20	32	20	32	20
5th	40	25	—	—	—	—
Speeds Reverse:						
1st	6	4	6	4	6	4
2nd	12	7.5	12	7.5	12	7.5
3rd	20	12.5	20	12.5	20	12.5
Turning Circle Radius						
Over Tires	3.60 m	11'10"	3.42 m	11'2"	3.70 m	12'2"
Over Forks	4.53 m	14'10"	4.70 m	15'5"	5.00 m	16'5"
Aisle Width						
Over Forks	8.27 m	27'2"	8.45 m	27'9"	8.55 m	28'1"
Tires	13-24		13-24		13-24	
Service Refill Cap:						
Fuel Tank @ 90% fill	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal
Hydraulic Tank	59 L	15.6 U.S. gal	65 L	17.2 U.S. gal	65 L	17.2 U.S. gal
Hydraulic System	103 L	27.2 U.S. gal	117 L	30.9 U.S. gal	124 L	32.8 U.S. gal
Additional Fuel Tank	50 L	13 U.S. gal	—	—	—	—

Specifications | Telescopic Handlers



MODEL	TH360B		TH460B		TH560B		TH580B	
Flywheel Power (Gross)	74.5 kW	99.9 hp	74.5 kW	99.9 hp	74.5 kW	99.9 hp	74.5 kW	99.9 hp
Operating Weight	10 010 kg	21,600 lb	10 500 kg	21,600 lb	12 000 kg	26,500 lb	13 670 kg	30,100 lb
Engine Model	CAT 3054E		CAT 3054E		CAT 3054E		CAT 3054E	
Rated Engine RPM	2200		2200		2200		2200	
No. of Cylinders	4		4		4		4	
Bore	105 mm	4 in	105 mm	4 in	105 mm	4 in	105 mm	4 in
Stroke	127 mm	5 in	127 mm	5 in	127 mm	5 in	127 mm	5 in
Displacement	4.4 L	269 in³	4.4 L	269 in³	4.4 L	269 in³	4.4 L	269 in³
Speeds Forward:	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1st	6	4	6	4	6	4	6	4
2nd	12	7.5	12	7.5	12	7.5	12	7.5
3rd	20	12.5	20	12.5	20	12.5	20	12.5
4th	32	20	32	20	32	20	32	20
Speeds Reverse:								
1st	6	4	6	4	6	4	6	4
2nd	12	7.5	12	7.5	12	7.5	12	7.5
3rd	20	12.5	20	12.5	20	12.5	20	12.5
Turning Circle Radius								
Over Tires	3.81 m	12'6"	3.50 m	11'6"	3.80 m	12'6"	4.02 m	13'2"
Over Forks	5.40 m	17'9"	5.45 m	17'11"	5.45 m	17'11"	5.45 m	17'11"
Aisle Width								
Over Forks	9.30 m	30'6"	9.25 m	30'4"	9.32 m	30'7"	9.47 m	31'0"
Tires	13-24		14-24 12 PR		14-24 12 PR		14-24 16 PR	
Service Refill Cap:								
Fuel Tank @ 90% fill	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal
Hydraulic Tank	65 L	17.2 U.S. gal	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal	90 L	23.8 U.S. gal
Hydraulic System	140 L	37 U.S. gal	175 L	46.2 U.S. gal	175 L	46.2 U.S. gal	175 L	46.2 U.S. gal

TH210
Non-U.S. Version

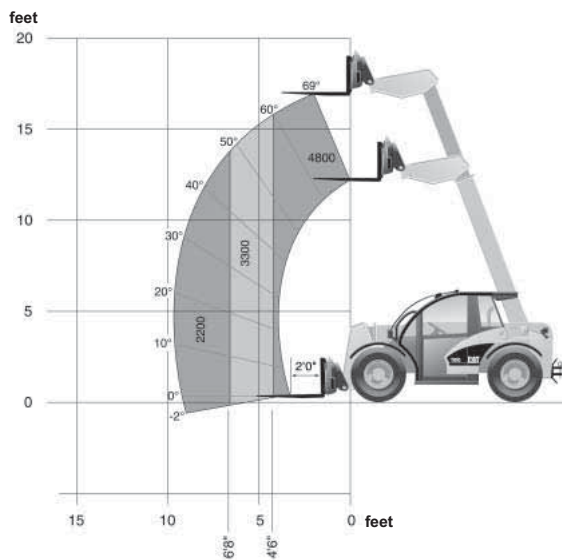


Numbers in chart measured in kilograms.

Maximum lift capacity	2200 kg	4840 lb
Maximum lift height	5.13 m	17'0"
Load at maximum height	2200 kg	4840 lb
Maximum forward reach	2.8 m	9'2"
Load at maximum reach	1000 kg	2200 lb

Load Chart generated with load center of 500 mm from fork face.

TH210
North American Version

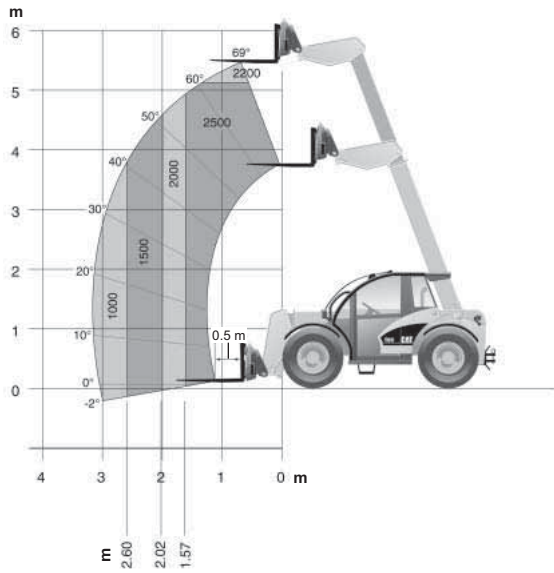


Numbers in chart measured in pounds.

Maximum lift capacity	2180 kg	4800 lb
Maximum lift height	5.13 m	17'0"
Load at maximum height	2180 kg	4800 lb
Maximum forward reach	2.8 m	9'2"
Load at maximum reach	1000 kg	2200 lb

Load Chart generated with load center of 24" from fork face.

TH215
Non-U.S. Version

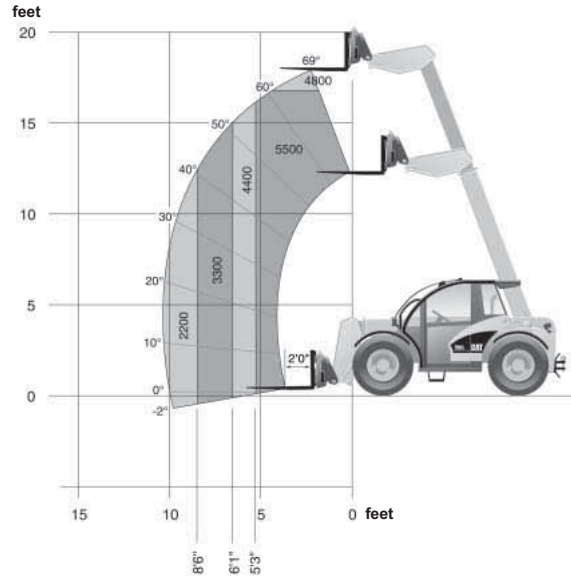


Numbers in chart measured in kilograms.

Maximum lift capacity	2500 kg	5500 lb
Maximum lift height	5.54 m	18'2"
Load at maximum height	2200 kg	4840 lb
Maximum forward reach	3.1 m	10'2"
Load at maximum reach	1000 kg	2200 lb

Load Chart generated with load center of 500 mm from fork face.

TH215
North American Version



Numbers in chart measured in pounds.

Maximum lift capacity	2500 kg	5500 lb
Maximum lift height	5.54 m	18'2"
Load at maximum height	2180 kg	4800 lb
Maximum forward reach	3.1 m	10'2"
Load at maximum reach	1000 kg	2200 lb

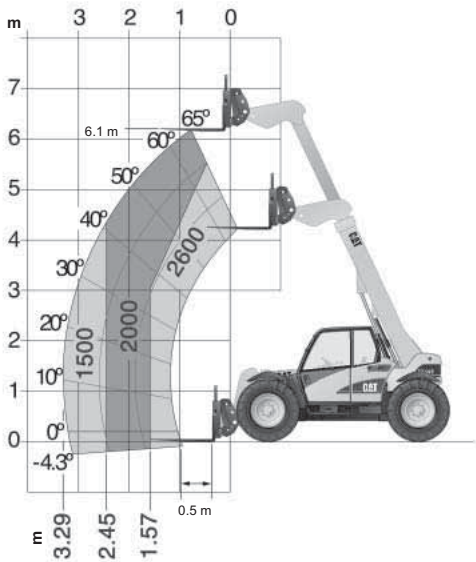
Load Chart generated with load center of 24" from fork face.

Telescopic Handlers

Performance Data

- Standard Forks and Carriage

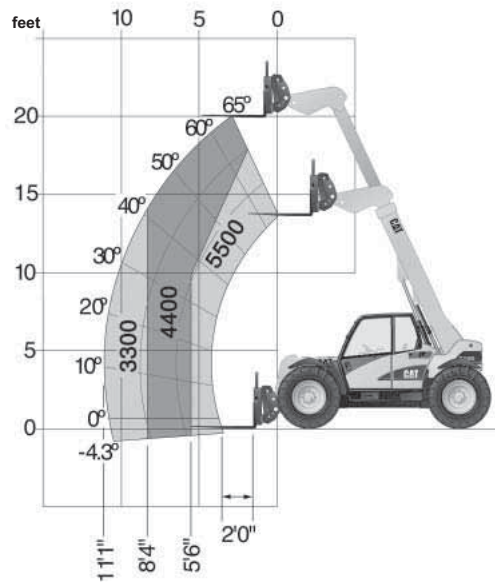
TH220B
Non-U.S. Version



Numbers in chart measured in kilograms.

Maximum lift capacity	2600 kg	5730 lb
Maximum lift height	6.1 m	20'0"
Load at maximum height	2000 kg	4400 lb
Maximum forward reach	3.3 m	10'7"
Load at maximum reach	1500 kg	3300 lb

TH220B
North American Version

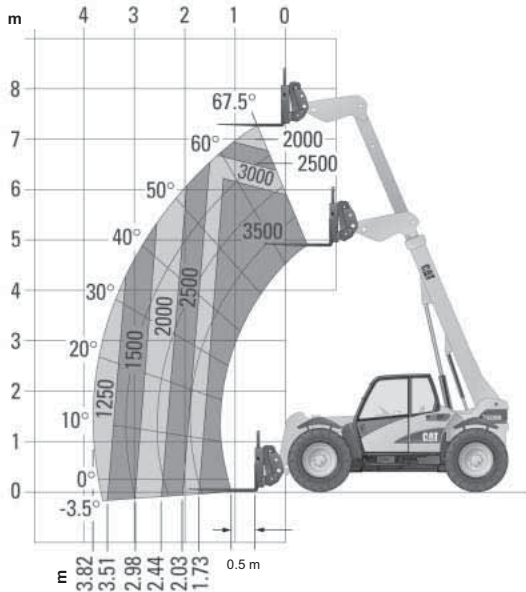


Numbers in chart measured in pounds.

Maximum lift capacity	2500 kg	5500 lb
Maximum lift height	6.1 m	20'0"
Load at maximum height	2000 kg	4400 lb
Maximum forward reach	3.2 m	10'6"
Load at maximum reach	1500 kg	3300 lb

TH330B

Non-U.S. Version

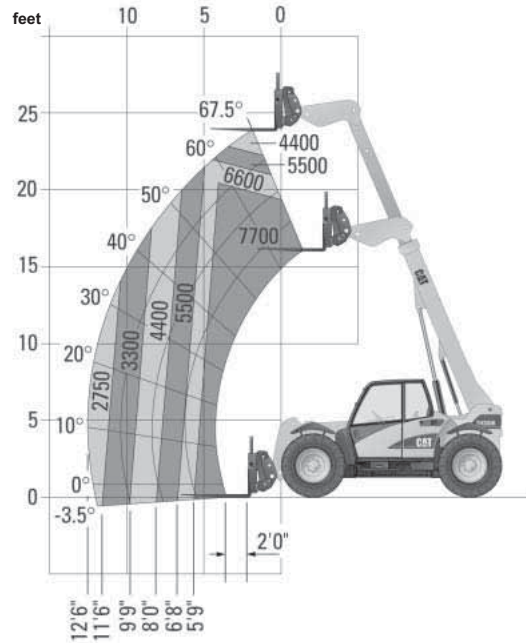


Numbers in chart measured in kilograms.

Maximum lift capacity	3500 kg	7700 lb
Maximum lift height	7.2 m	24'0"
Load at maximum height	2000 kg	4400 lb
Maximum forward reach	3.8 m	12'6"
Load at maximum reach	1250 kg	2750 lb

TH330B

North American Version



Numbers in chart measured in pounds.

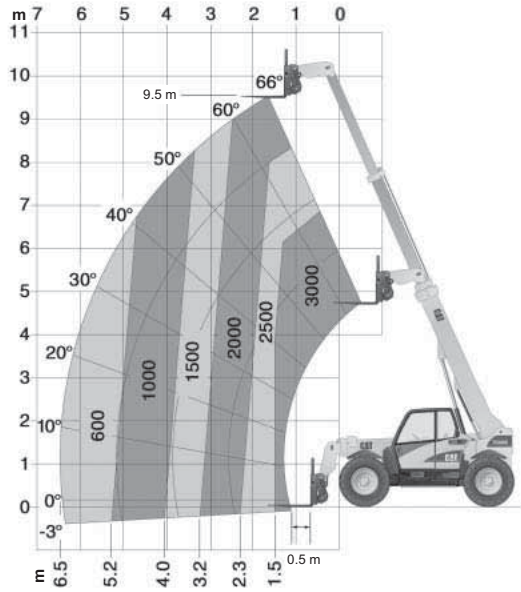
Maximum lift capacity	3200 kg	7000 lb
Maximum lift height	7.2 m	24'0"
Load at maximum height	2000 kg	4400 lb
Maximum forward reach	3.8 m	12'6"
Load at maximum reach	1250 kg	2750 lb

Telescopic Handlers

Performance Data

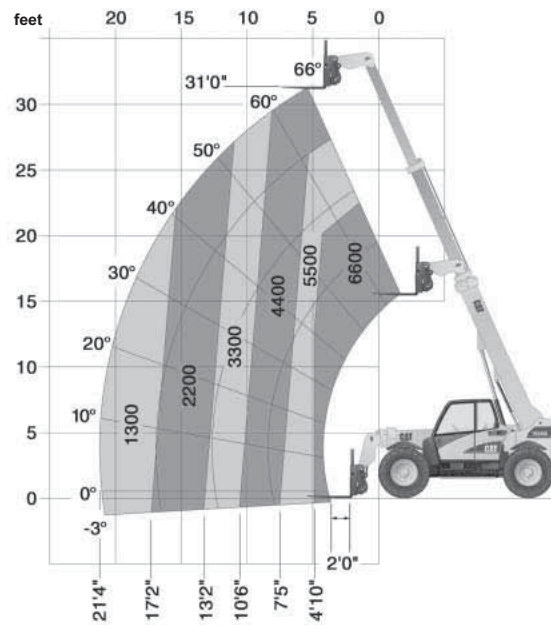
- Standard Forks and Carriage

TH340B
Non-U.S. Version



Numbers in chart measured in kilograms.

TH340B
North American Version

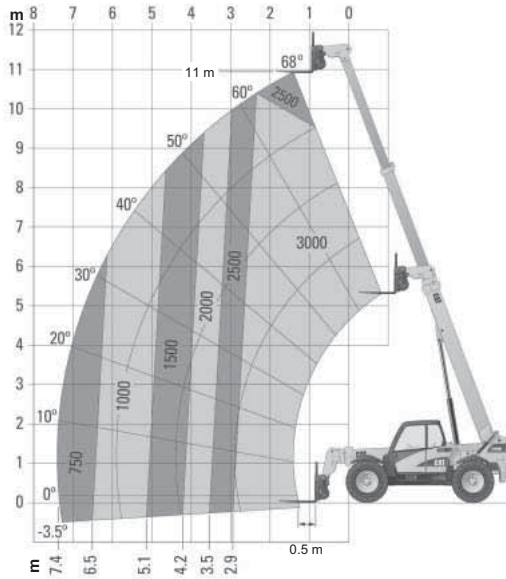


Numbers in chart measured in pounds.

Maximum lift capacity	3000 kg	6600 lb
Maximum lift height	9 m	29'6"
Load at maximum height	1500 kg	3300 lb
Maximum forward reach	6.5 m	21'4"
Load at maximum reach	600 kg	1320 lb

Maximum lift capacity	3000 kg	6600 lb
Maximum lift height	9 m	29'6"
Load at maximum height	1500 kg	3300 lb
Maximum forward reach	6.5 m	21'4"
Load at maximum reach	600 kg	1320 lb

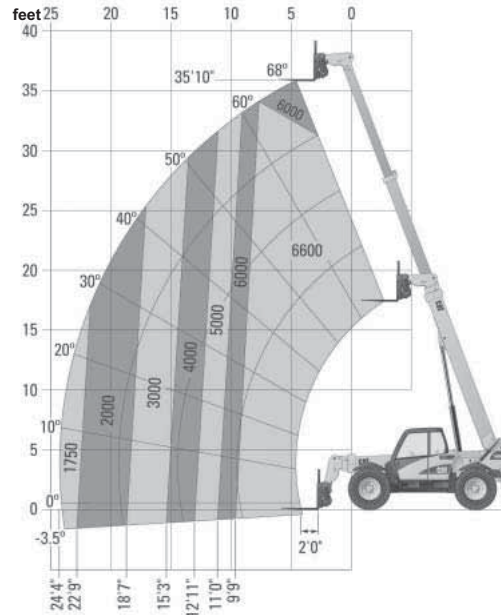
TH350B
Non-U.S. Version



Numbers in chart measured in kilograms.

Maximum lift capacity	3000 kg	6600 lb
Maximum lift height	11 m	36'0"
Load at maximum height	2500 kg	6000 lb
Maximum forward reach	7.4 m	24'0"
Load at maximum reach	795 kg	1750 lb

TH350B
North American Version



Numbers in chart measured in pounds.

Maximum lift capacity	3000 kg	6600 lb
Maximum lift height	11 m	36'0"
Load at maximum height	2500 kg	6000 lb
Maximum forward reach	7.4 m	24'0"
Load at maximum reach	795 kg	1750 lb

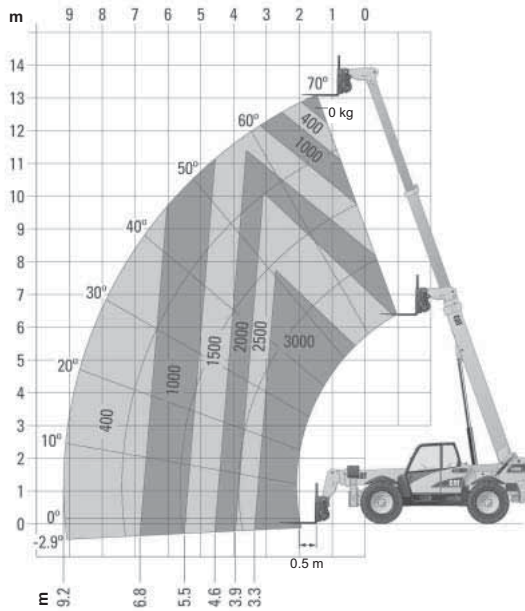
Telescopic Handlers

Performance Data

- Standard Forks and Carriage
- Non-U.S. Version

TH360B

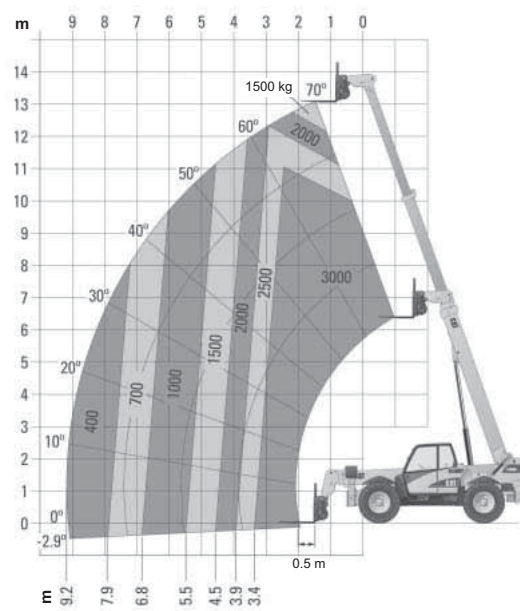
Stabilizers Up Fixed Frame



Numbers in chart measured in kilograms.

TH360B

Stabilizers Up Frame Leveler



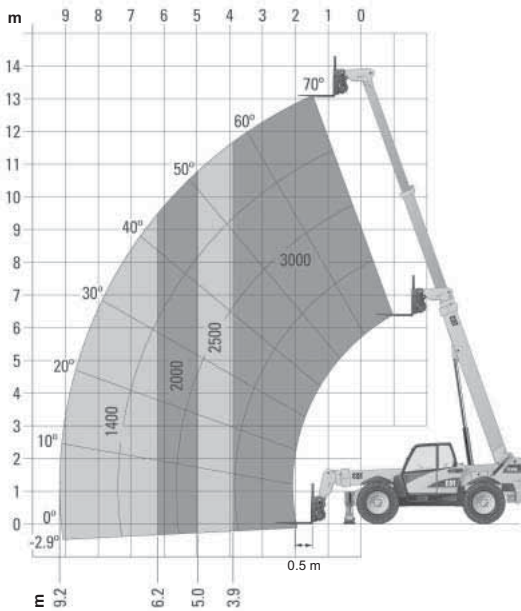
Numbers in chart measured in kilograms.

Maximum lift capacity	3000 kg	6600 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	2000 kg	4400 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	400 kg	880 lb

Maximum lift capacity	3000 kg	6600 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	2000 kg	4400 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	400 kg	880 lb

TH360B

**Stabilizers Down
 Non-U.S. Version**

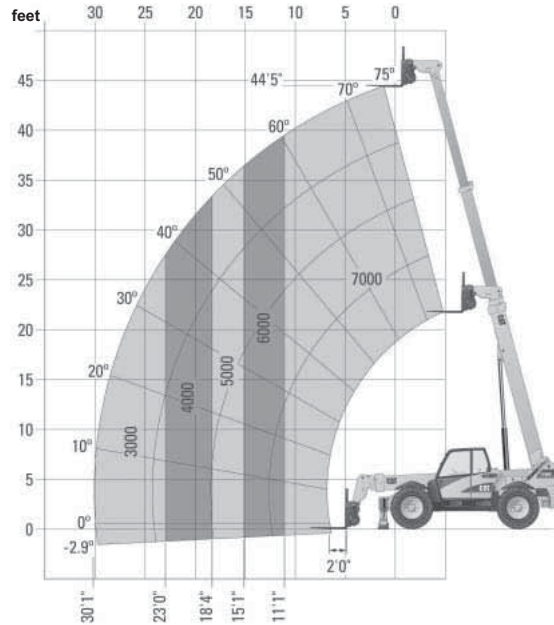


Numbers in chart measured in kilograms.

Maximum lift capacity	3000 kg	6600 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	3000 kg	6600 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	1400 kg	3100 lb

TH360B

**Stabilizers Down
 North American Version**



Numbers in chart measured in pounds.

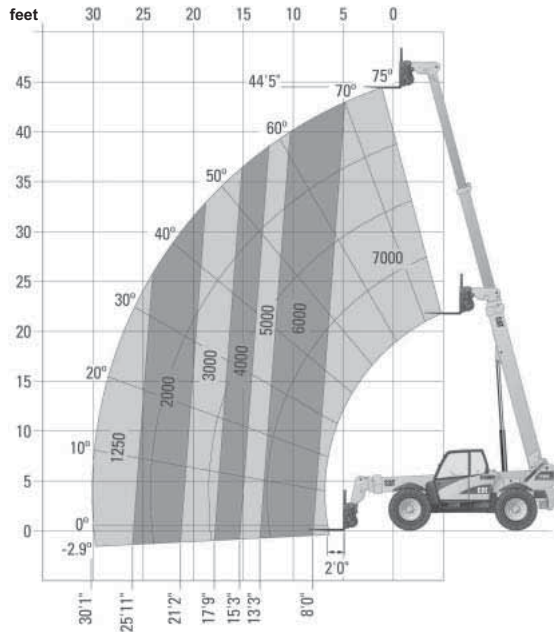
Maximum lift capacity	3100 kg	7000 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	3100 kg	7000 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	1400 kg	3000 lb

Telescopic Handlers

Performance Data

- Standard Forks and Carriage
- North American Version

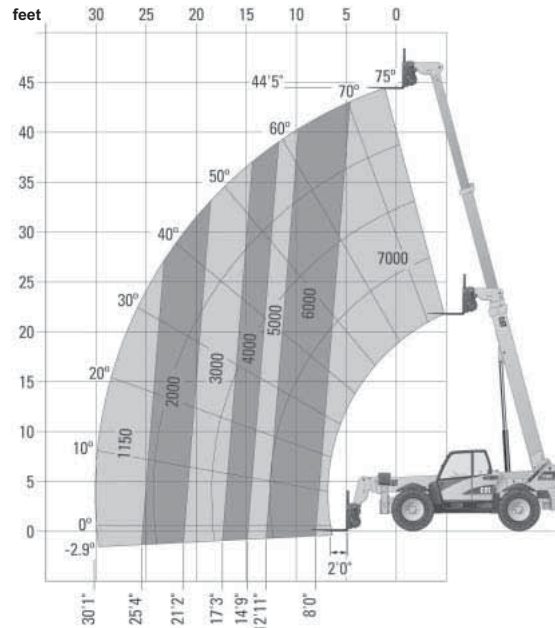
TH360B
No Stabilizers



Numbers in chart measured in pounds.

Maximum lift capacity	3100 kg	7000 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	3100 kg	7000 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	550 kg	1250 lb

TH360B
Stabilizers Up



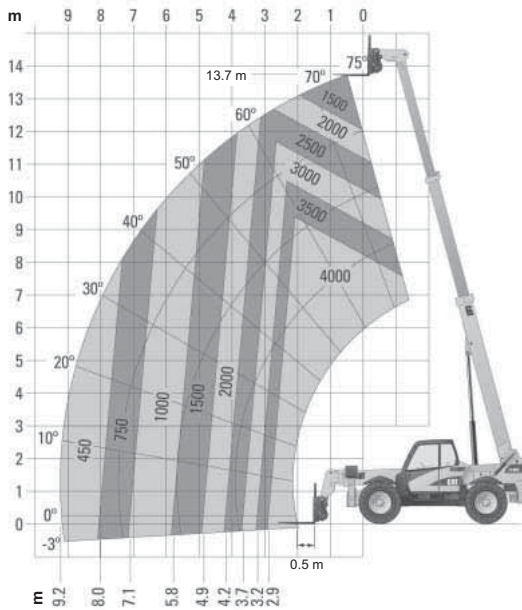
Numbers in chart measured in pounds.

Maximum lift capacity	3100 kg	7000 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	3100 kg	7000 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	500 kg	1150 lb

- Performance Data
- Standard Forks and Carriage
- Non-U.S. Version

Telescopic Handlers

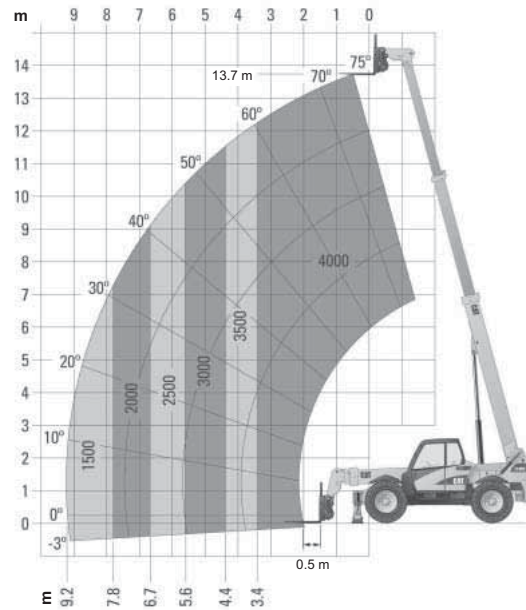
TH460B
Stabilizers Up



Numbers in chart measured in kilograms.

Maximum lift capacity	4000 kg	8800 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	1500 kg	3300 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	450 kg	1000 lb

TH460B
Stabilizers Down



Numbers in chart measured in kilograms.

Maximum lift capacity	4000 kg	8800 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	4000 kg	8800 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	1500 kg	3300 lb

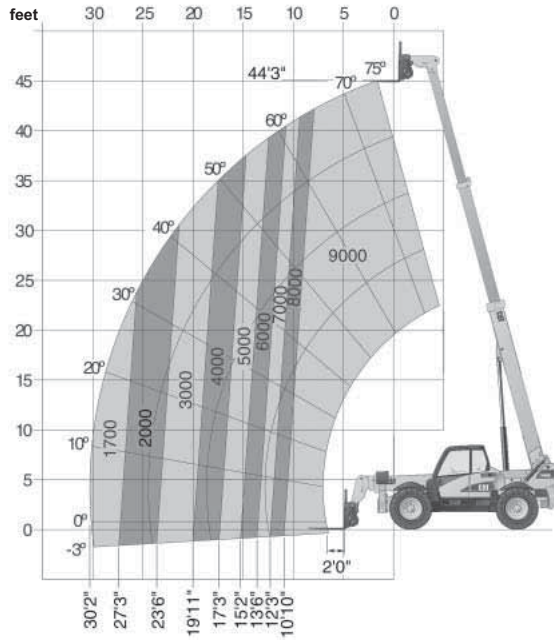
Telescopic Handlers

Performance Data

- Standard Forks and Carriage
- North American Version

TH460B

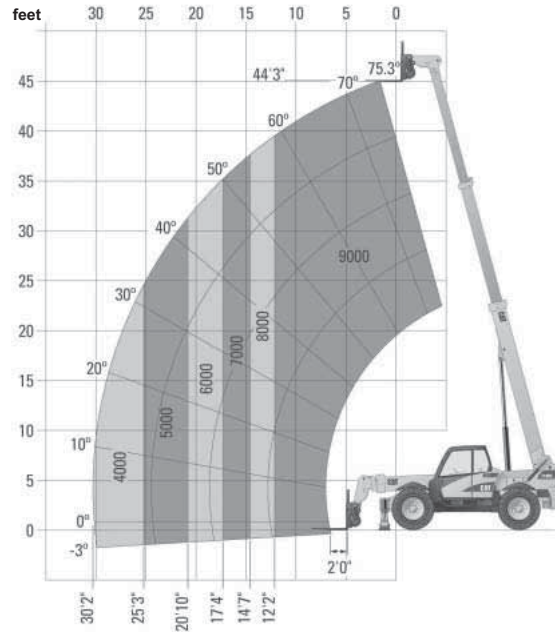
Stabilizers Up



Numbers in chart measured in pounds.

TH460B

Stabilizers Down



Numbers in chart measured in pounds.

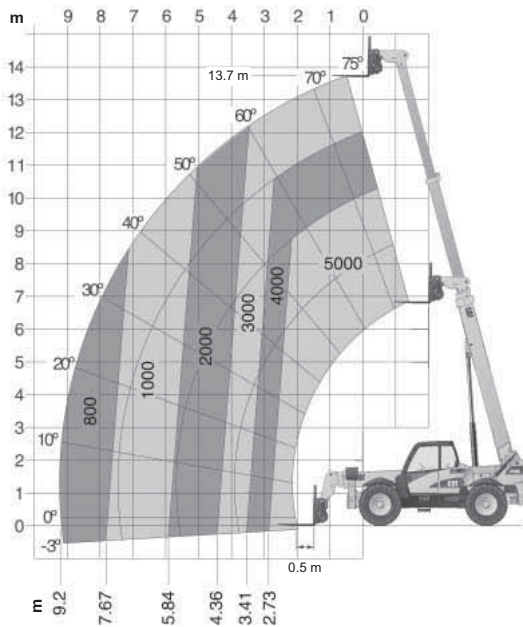
Maximum lift capacity	4000 kg	8800 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	4086 kg	8800 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	771 kg	1700 lb

Maximum lift capacity	4000 kg	8800 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	4086 kg	8800 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	1816 kg	4000 lb

- Performance Data
- Standard Forks and Carriage
- Non-U.S. Version

Telescopic Handlers

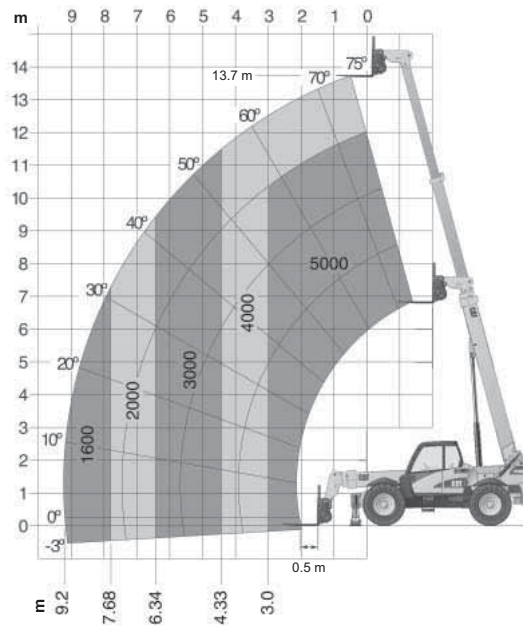
TH560B
Stabilizers Up



Numbers in chart measured in kilograms.

Maximum lift capacity	5000 kg	11,000 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	3000 kg	6600 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	800 kg	1760 lb

TH560B
Stabilizers Down



Numbers in chart measured in kilograms.

Maximum lift capacity	5000 kg	11,000 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	4000 kg	8800 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	1600 kg	3500 lb

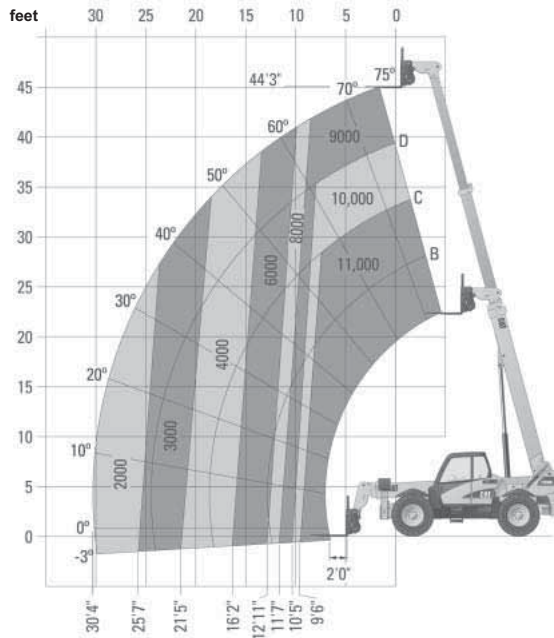
Telescopic Handlers

Performance Data

- Standard Forks and Carriage
- North American Version

TH560B

Stabilizers Up

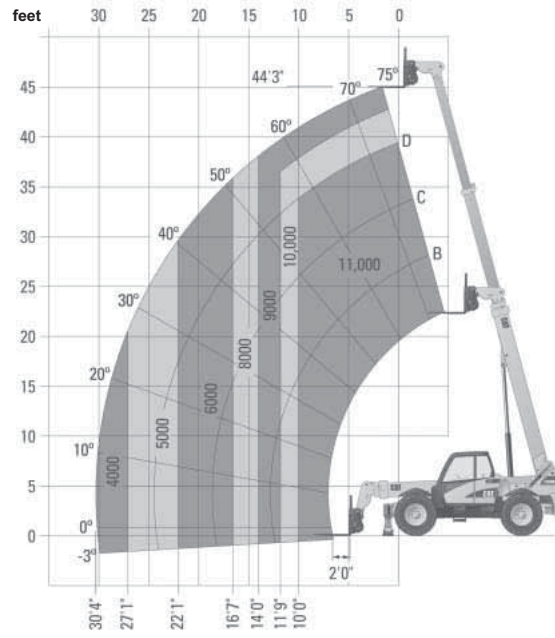


Numbers in chart measured in pounds.

Maximum lift capacity	5000 kg	11,000 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	2724 kg	6000 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	900 kg	2000 lb

TH560B

Stabilizers Down



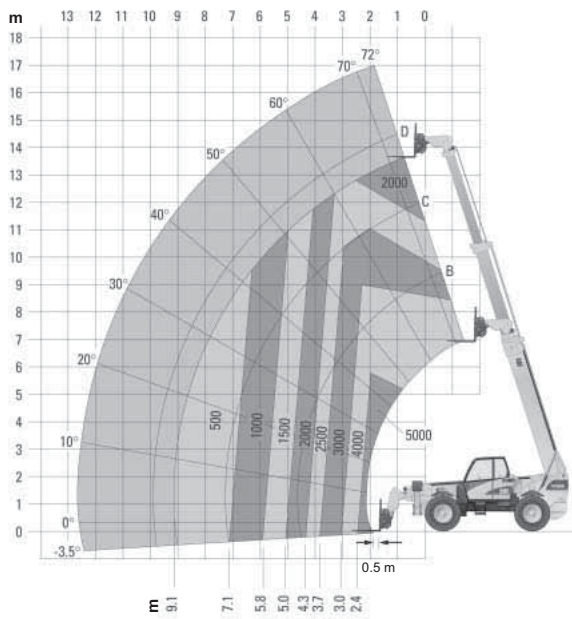
Numbers in chart measured in pounds.

Maximum lift capacity	5000 kg	11,000 lb
Maximum lift height	13.5 m	44'4"
Load at maximum height	3630 kg	8000 lb
Maximum forward reach	9.2 m	30'0"
Load at maximum reach	1800 kg	4000 lb

- Performance Data
- Standard Forks and Carriage
- Non-U.S. Version

Telescopic Handlers

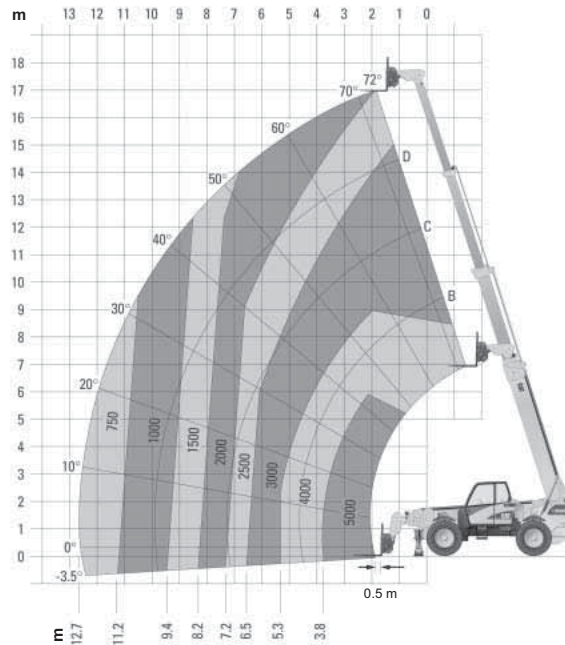
TH580B
Stabilizers Up



Numbers in chart measured in kilograms.

Maximum lift capacity	5000 kg	11,000 lb
Maximum lift height	17.0 m	56'0"
Load at maximum height	3000 kg	4400 lb
Maximum forward reach	12.7 m	42'0"
Load at maximum reach	500 kg	1100 lb

TH580B
Stabilizers Down



Numbers in chart measured in kilograms.

Maximum lift capacity	5000 kg	11,000 lb
Maximum lift height	17.0 m	56'0"
Load at maximum height	2500 kg	5500 lb
Maximum forward reach	12.7 m	42'0"
Load at maximum reach	750 kg	1650 lb

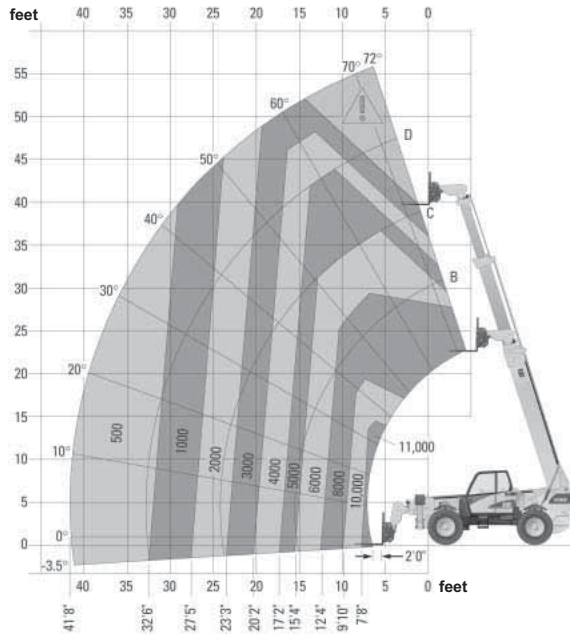
Telescopic Handlers

Performance Data

- Standard Forks and Carriage
- North American Version

TH580B

Stabilizers Up

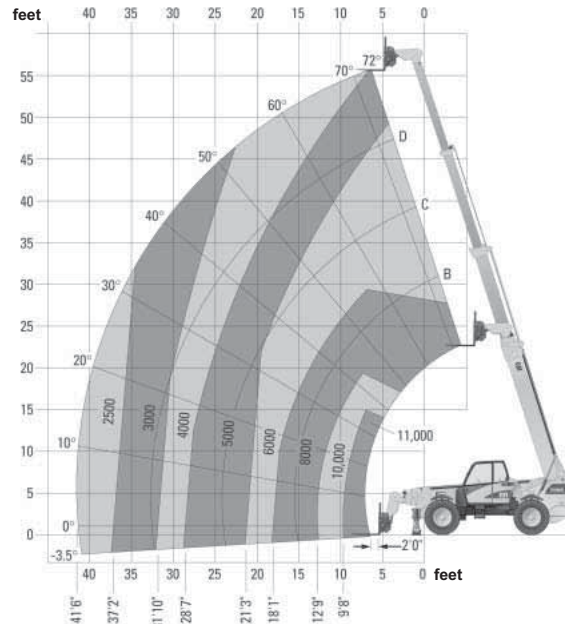


Numbers in chart measured in pounds.

Maximum lift capacity	5000 kg	11,000 lb
Maximum lift height	17.0 m	56'0"
Load at maximum height	2000 kg	4400 lb
Maximum forward reach	12.7 m	42'0"
Load at maximum reach	226 kg	500 lb

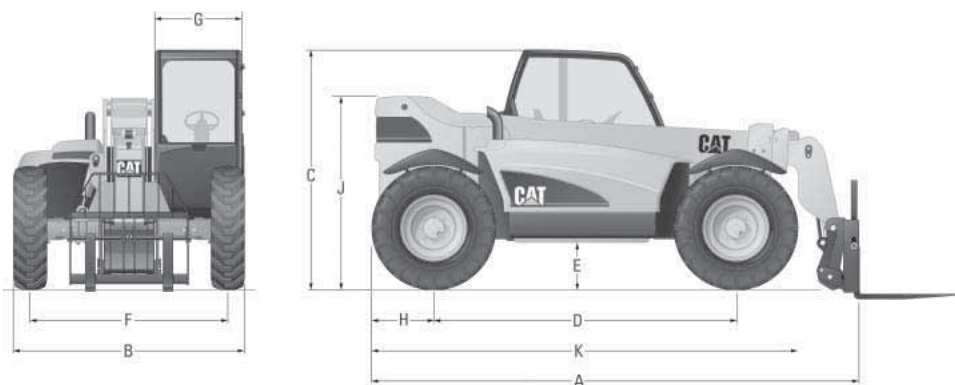
TH580B

Stabilizers Down



Numbers in chart measured in pounds.

Maximum lift capacity	5000 kg	11,000 lb
Maximum lift height	17.0 m	56'0"
Load at maximum height	2500 kg	5500 lb
Maximum forward reach	12.7 m	42'0"
Load at maximum reach	1133 kg	2500 lb



Dimensions (approx.)

Model	TH210		TH215		TH220B		TH330B		TH340B	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A) Length to fork face	4000	13'2"	4200	13'9"	4740	15'7"	4960	16'3"	4950	16'3"
B) Width	1800	5'11"	1900	6'3"	2350	7'9"	2390	7'11"	2433	8'0"
C) Height	1960	6'5"	2130	7'0"	2250	7'5"	2270	7'5"	2583	8'5"
D) Wheel base	2300	7'6"	2300	7'6"	2950	9'8"	3050	10'0"	3050	10'0"
E) Ground clearance	320	12"	400	16"	425	17"	425	17"	498	20"
F) Wheel track	1464	4'10"	1564	5'2"	1897	6'3"	1897	6'3"	2088	6'10"
G) Cab width (inside)	845	2'9"	845	2'9"	900	2'11"	900	2'11"	900	2'11"
H)	800	2'7"	800	2'7"	630	2'1"	630	2'1"	635	2'1"
J)	1290	4'3"	1365	4'6"	1735	5'8"	1800	5'11"	1938	6'4"
K)	3700	12'2"	3700	12'2"	4210	13'10"	4310	14'2"	4320	14'2"

Model	TH350B		TH360B		TH460B		TH560B		TH580B	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A) Length to fork face	5300	17'5"	6485	21'3"	6550	21'6"	6550	21'6"	6622	21'9"
B) Width	2433	8'0"	2433	8'0"	2515	8'3"	2550	8'4"	2545	8'4"
C) Height	2594	8'6"	2594	8'6"	2530	8'4"	2590	8'6"	2715	8'11"
D) Wheel base	3050	10'0"	3200	10'6"	3250	10'8"	3250	10'8"	3250	10'8"
E) Ground clearance	510	20"	505	20"	505	20"	505	20"	521	20"
F) Wheel track	2090	6'10"	2090	6'10"	2150	7'1"	2184	7'2"	2150	7'0"
G) Cab width (inside)	900	2'11"	900	2'11"	900	2'11"	900	2'11"	900	2'11"
H)	1010	3'4"	1170	3'10"	1200	3'11"	1200	3'11"	1328	4'4"
J)	1950	6'5"	1950	6'5"	2070	6'9"	2070	6'9"	2182	7'2"
K)	4700	15'5"	5010	16'5"	5135	16'10"	5135	16'10"	5246	17'3"

Telescopic Handlers | Tire Selection

Tire Selection

Non-U.S. Models		
Model	Tire Size	Tire Type
TH210	Goodyear 10.5/20* Goodyear 12.5/20 Michelin 10.5/80 R20 Michelin 12.5/80 R20	
TH215	Goodyear 12.5/20 — Rear Hydrofill* Michelin 335/80 R20 — Rear Hydrofill Michelin 375/75 R20 — Rear Hydrofill	
TH220B	Goodyear SGL 15.5-25 SGL-2A* Michelin XM27 (17.5LR24) Mitas 15.5/80-24 16PR	Construction Agricultural Construction
TH330B	Goodyear SGL 15.5/25 SGL Michelin 15.5 25 XHA Mitas 15.5/80-24 16PR Michelin 440/70 R24 XM37 19.5LR24 Michelin 500/70 R24XM37 19.5LR24	Construction Construction Construction Agricultural Agricultural
TH340B	Goodyear 15.5-25 SGL Michelin 17.5LR 24 XM27 Michelin 15.5 R25 XHA Mitas 15.5/80-24 16PR	Construction Agricultural Construction Construction

*Standard tire.

Non-U.S. Models		
Model	Tire Size	Tire Type
TH350B	Goodyear 15.5-25 SGL Michelin 15.5 R25 XHA Mitas 15.5/80-24 16PR	Construction Construction Construction
TH360B	Goodyear 15.5-25 SGL Michelin 15.5 R25 XHA Mitas 15.5/80-24 16PR	Construction Construction Construction
TH460B	Mitas 14.00-24 16PR* Goodyear 14.00-24 SGG 2A TL	Construction Construction
TH560B	Mitas 14.00-24 16PR* Goodyear SGG-2A 16PR	Construction Construction
TH580B	Mitas 14.00-24 16PR* Goodyear 14.00-24 SGG-2A 16PR	Construction Construction

*Standard tire.

Tire Selection

North American Models		
Model	Tire Size	Tire Type
TH210	Goodyear 10.5/20 MPT*	Construction
	Goodyear 12.5/20 MPT	Construction
	Michelin 10.5/80 R20	Agricultural
	Michelin 12.5/80 R20	Agricultural
TH215	Goodyear 12.5/20*	Agricultural
	Michelin 335/80 R20	Construction
	Michelin 375/75 R20	Construction
TH220B	Goodyear SGL 15.5-25 SGL-2A*	Construction
	Goodyear SGL 15.5-25 SGL-2A (T&S)	Construction
	Michelin XM27 (17.5LR24)	Agricultural
	Goodyear 15.5-25 SGL-2A Foam	Construction
TH330B	Cat 13.00-24 12 PR*	Construction
	Cat 13.00-24 12 PR* (Foam)	Construction
	Goodyear 13.00-24 SGG	Construction
	Cat 15.5-25	Construction
	Cat 15.5-25 (Foam)	Construction
	Cat 13-24 (T&S)	Construction
	Goodyear 15.5-25 SGL	Construction
	Cat 15.5-25 (T&S)	Construction
	Michelin 15.5R25 XHA	Construction
	Michelin 500/70R24 XM37 (19.5LR24)	Agricultural
	Michelin 440/70R24 XM37	Agricultural

*Standard tire.

North American Models		
Model	Tire Size	Tire Type
TH350	Cat 13.00-24*	Construction
	Cat 13.00-24* (T&S)	Construction
	Goodyear 13.00-24 SGG	Construction
	Goodyear 15.5 SGL	Construction
	Michelin 15.5 R25 XHA	Construction
	Cat 13-24 Foam	Construction
TH360B	Cat 13.00-24*	Construction
	Goodyear 13.00-24 SGG	Construction
	Cat 15.5-25	Construction
	Cat 13.00-24* (T&S)	Construction
	Michelin 15.5 25 XHA	Construction
	Cat 15.5-25 (T&S)	Construction
	Cat 13.00-24 Foam	Construction
Cat 15.5-25 Foam	Construction	
TH460B	Cat 14.00-24*	Construction
	Goodyear 14.00-24 SGG 2A TL	Construction
	Cat 14.00-24 (T&S)	Construction
	Cat 14.00-24 Foam	Construction
TH560B	Cat 14.00-24 16 PR*	Construction
	Cat 14.00-24 16 PR* (T&S)	Construction
	Goodyear SGG-2A 16 PR	Construction
	Cat 14.00-24 16 Foam	Construction
TH580B	Cat 14-24 16 PR*	Construction
	Cat 14-24 16 PR (T&S)	Construction
	Cat 14-24 16 Foam	Construction
	Goodyear 14.00-24 SGG2A	Construction

*Standard tire.

All carriages are bar type with load backrest to support bulky loads.
Widespread carriages provide added stability for lifting larger loads.
Standard and widespread carriages are also available in rotating mode.

Carriage Type

Model	Standard	Standard — Framers	Rotate	Rotate — Framers	Side Shift
TH210					
Capacity	2220 kg 4850 lb				
Weight w/1070 mm (42") fork	195 kg 430 lb				
Width	1400 mm 4'7"				
Height	535 mm 1'9"				
Max. fork spread	1330 mm 4'4"				
Floating fork movement	—				
Rotation	—				
TH215					
Capacity	2500 kg 5510 lb				
Weight w/1070 mm (42") fork	195 kg 430 lb				
Width	1400 mm 4'7"				
Height	535 mm 1'9"				
Max. fork spread	1330 mm 4'4"				
Floating fork movement	—				
Rotation	—				
TH220B through TH460B					
Weight w/1220 mm (48") fork	272 kg 600 lb	336 kg 740 lb	408 kg 900 lb	492 kg 1084 lb	422 kg 930 lb
Width	1224 mm 4'0"	1880 mm 6'2"	1224 mm 4'0"	1880 mm 6'2"	1230 mm 4'0"
Height	1039 mm 3'5"	1039 mm 3'5"	1216 mm 4'0"	1216 mm 4'0"	1135 mm 3'8"
Max. fork spread	1200 mm 3'11"	1856 mm 6'1"	1200 mm 3'11"	1856 mm 6'1"	1200 mm 3'11"
Floating fork movement	70 mm 3"	70 mm 3"	70 mm 3"	70 mm 3"	70 mm 3"
Rotation	—	—	11.5°	11.5°	—
TH560B					
Weight w/1220 mm (48") fork	303 kg 600 lb	336 kg 740 lb	408 kg 900 lb	492 kg 1084 lb	422 kg 930 lb
Width	1224 mm 4'0"	1880 mm 6'2"	1224 mm 4'0"	1880 mm 6'2"	1230 mm 4'0"
Height	1039 mm 3'5"	1039 mm 3'5"	1216 mm 4'0"	1216 mm 4'0"	1135 mm 3'8"
Max. fork spread	1200 mm 3'11"	1856 mm 6'1"	1200 mm 3'11"	1856 mm 6'1"	1200 mm 3'11"
Floating fork movement	70 mm 3"	70 mm 3"	70 mm 3"	70 mm 3"	70 mm 3"
Rotation	—	—	11.5°	11.5°	—
TH580B					
Weight w/1220 mm (48") fork	303 kg 600 lb	336 kg 740 lb	408 kg 900 lb	492 kg 1084 lb	422 kg 930 lb
Width	1224 mm 4'0"	1880 mm 6'2"	1224 mm 4'0"	1880 mm 6'2"	1230 mm 4'0"
Height	1039 mm 3'5"	1039 mm 3'5"	1216 mm 4'0"	1216 mm 4'0"	1135 mm 3'8"
Max. fork spread	1200 mm 3'11"	1856 mm 6'1"	1200 mm 3'11"	1856 mm 6'1"	1200 mm 3'11"
Floating fork movement	70 mm 3"	70 mm 3"	70 mm 3"	70 mm 3"	70 mm 3"
Rotation	—	—	11.5°	11.5°	—
Capacities:					
TH220B	2600 kg 5700 lb	2450 kg 5400 lb	2400 kg 5290 lb	2300 kg 5070 lb	2300 kg 5070 lb
TH330B	3500 kg 7700 lb	3400 kg 7450 lb	3350 kg 7380 lb	3250 kg 7160 lb	3250 kg 7160 lb
TH340B	3000 kg 6600 lb	2930 kg 6400 lb	2880 kg 6350 lb	2800 kg 6170 lb	2800 kg 6170 lb
TH350B	3000 kg 6600 lb	2830 kg 6240 lb	2780 kg 6120 lb	2700 kg 5950 lb	2700 kg 5950 lb
TH360B	3000 kg 6600 lb	2830 kg 6240 lb	2780 kg 6120 lb	2780 kg 6120 lb	2690 kg 5930 lb
TH460B	4000 kg 8800 lb	3930 kg 8650 lb	3860 kg 8110 lb	3780 kg 8330 lb	3780 kg 8330 lb
TH560B	5000 kg 11,000 lb	4850 kg 10,690 lb	4800 kg 10,580 lb	4700 kg 10,360 lb	4700 kg 10,360 lb
TH580B	5000 kg 11,000 lb	4900 kg 10,800 lb	4700 kg 10,360 lb	4600 kg 10,140 lb	4600 kg 10,140 lb

*Unavailable at time of printing.

All carriages are bar type with load backrest to support bulky loads.
Widespread carriages provide added stability for lifting larger loads.
Standard and widespread carriages are also available in rotating mode.

Fork Type		Pallet		Block			
Model	Forks/Set	Size		Model	Forks/Set	Size	
TH210	2	50 x 100 x 1097 mm	2" x 4" x 43"	TH210	4	50 x 50 x 1220 mm	2" x 2" x 48"
	2	50 x 100 x 1220 mm	2" x 4" x 48"		6	50 x 50 x 1220 mm	2" x 2" x 48"
TH215	2	50 x 100 x 1220 mm	2" x 4" x 48"	TH215	4	50 x 50 x 1220 mm	2" x 2" x 48"
TH220B	2	50 x 125 x 1220 mm	2" x 5" x 48"	TH220B	6	50 x 50 x 1220 mm	2" x 2" x 48"

Work Tools

Truss Boom			HD Manure Fork		
Length	4000 mm	13'0"	Capacity	1.9 m ³	2.5 yd³
Weight	200 kg	441 lb	Width	2290 mm	7'6"
Capacity	500 kg	1100 lb	Weight	560 kg	1234 lb
Lifting Hook			Tine length	1060 mm	3'6"
Weight	98 kg	216 lb	No. of tines	9	
Capacity	5000 kg	11,020 lb	HD Manure Fork + Grab		
Self Tipping Hopper			Capacity	1.9 m ³	2.5 yd³
Weight	360 kg	793 lb	Width	2290 mm	7'6"
Capacity	1.2 m ³	1.56 yd³	Weight	750 kg	1653 lb
Width	1118 mm	3'8"	Tine length	1060 mm	3'6"
1.0 m³ (1.3 yd³) GP Bucket			No. of tines	9	
Capacity	1.0 m ³	1.3 yd³	HD Manure Fork, Grab + Pusher		
Width	2406 mm	7'11"	Capacity	1.7 m ³	2.26 yd³
Weight	544 kg	1200 lb	Width	2290 mm	7'6"
1.0 m³ (1.3 yd³) MP Bucket			Weight	978 kg	2155 lb
Capacity	1.0 m ³	1.3 yd³	Tine length	1060 mm	3'6"
Width	2406 mm	7'11"	No. of tines	9	
Weight	740 kg	1631 lb	Std. Duty Manure Fork + Grab		
1.5 m³ (2 yd³) Rehandling Bucket			Capacity	1.8 m ³	2.34 yd³
Capacity	1.5 m ³	2 yd³	Width	2290 mm	7'6"
Width	2406 mm	7'11"	Weight	560 kg	1234 lb
Weight	548 kg	1208 lb	Tine length	1060 mm	3'6"
LM Bucket			No. of tines	9	
2.0 m³ (2.6 yd³)			Grapple Multi Bucket		
Capacity	2.0 m ³	2.6 yd³	Capacity	0.85 m ³	1.1 yd³
Width	2500 mm	8'2"	Width	2330 mm	7'8"
Weight	566 kg	1248 lb	Weight	765 kg	1686 lb
2.5 m³ (3.25 yd³)			Bale Handler		
Capacity	2.5 m ³	3.25 yd³	Width	1220 mm	4'0"
Width	2500 mm	8'2"	Weight	411 kg	906 lb
Weight	628 kg	1384 lb	Tine length	600 mm	2'0"
3.0 m³ (3.9 yd³)			No. of tines	10	
Capacity	3.0 m ³	3.9 yd³			
Width	2700 mm	8'10"			
Weight	705 kg	1553 lb			

	TH220B	TH330B	TH340B	TH350B	TH360B	TH460B	TH560B	TH580B
Truss Jib	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lifting Hook	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Self Tipping Hopper	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.0 m ³ (1.3 yd ³) GP Bucket	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.0 m ³ (1.3 yd ³) MP Bucket	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Rehandling Bucket 1.5 m ³ (2 yd ³)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Light Material Bucket:								
2.0 m ³ (2.6 yd ³)	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
2.5 m ³ (3.25 yd ³)	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
3.0 m ³ (3.9 yd ³)	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
HD Manure Fork	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
HD Manure Fork + Grab	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
HD Manure Fork + Grab + Pusher	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
LD Manure Fork + Grab	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
Grapple Multi Bucket	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A
Bale Handler	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
Standard Carriage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Standard Carriage — (Framers)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rotate Carriage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rotate Carriage — (Framers)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sideshift Carriage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pick-up Broom	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Material Handling Arm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Pallet Fork — 60 mm (2.4") diameter:								
1070 mm (42") long	Yes	Yes	Yes	Yes	Yes	N/A	N/A	N/A
1220 mm (48") long	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1525 mm (60") long	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Extended shank	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block Fork — 60 mm (2.4") diameter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes —

PAVING PRODUCTS

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Cold Planer Features:

- **Cat Diesel Engines** with large piston displacement and individual adjustment-free fuel pumps and valves.
- **Up-cutting mandrels** provide cutting efficiency and improved bit life.
- **Grade and slope system** produces ± 3 mm (0.125 in) tolerance.
- **Non-contact sensors** speed set-up on PM-565B.
- **Short turning radii** for productivity and jobsite flexibility.
- **Front-discharge conveyor on PM-565B** facilitates haul unit movement in congested urban applications.
- **Optimum weight-to-horsepower balance** for delivering maximum available horsepower to the cutter.
- **Computerized Monitoring System (CMS)** provides three warning levels for abnormal operating conditions on PM-565B.
- **Load control system** on PM-565B keeps machine operating at peak efficiency.
- **Variable width cutter** available for PM-565B.
- **Water spray system** for dust control and bit cooling.

Cold Planers | Specifications



MODEL	PM-565B	
Gross Power	466 kW	625 hp
Operating Weight	38 595 kg	85,100 lb
Engine Model	3408E TA (HEUI)	
Rated Engine RPM	2100	
No. of Cylinders	8	
Bore	137 mm	5.4"
Stroke	152 mm	6"
Displacement	18 L	1099 in ³
Drive Systems: Rotor	Mechanical	
Ground	Hydrostatic with 4 track design	
Discharge Conveyor Width	914 mm	3'0"
Width of Standard Track Shoe	348 mm	13.7"
Track Length on Ground	2045 mm	6'8.5"
Ground Contact Area (w/std. shoe)	0.43 m ²	672 in ²
Operating Dimensions:		
Height	5040 mm	16'6"
Width	2790 mm	9'2"
Length	15.1 m	49'5"
Standard Mandrel (Width of Cut)	2100 mm	6'11"
No. of Teeth	170	
Depth of Cut (max.)	305 mm	12"
Speeds: Operating (max.)	0-40 m/min	0-132 fpm
Speeds: Travel (max.)	0-6 km/h	0-3.7 mph
Inside Turning Radius: Right	4674 mm	15'4"
Grade Control	Standard Non Contact Electric Over Hydraulic	
Slope Control	Standard	
Fuel Capacity	946 L	250 U.S. gal
Water Capacity	3787 L	1000 U.S. gal

Speed		Cutter/Drum Width — m ² /min (yd ² /min)															
		1220 mm 4'0"		1900 mm 6'3"		2010 mm 6'7"		2100 mm 6'11"		2210 mm 7'3"		3050 mm 10'0"		3500 mm 11'6"		3810 mm 12'6"	
		m ²	yd ²	m ²	yd ²	m ²	yd ²	m ²	yd ²	m ²	yd ²	m ²	yd ²	m ²	yd ²	m ²	yd ²
3.0	10	3.7	4.4	5.8	6.9	6.1	7.3	6.4	7.7	6.7	8.0	9.3	11.1	10.7	12.8	11.6	13.9
4.6	15	5.6	6.6	8.7	10.4	9.3	11.0	9.7	11.5	10.0	12.1	13.9	16.7	16.1	19.2	17.4	20.8
6.1	20	7.5	8.8	11.6	13.9	12.3	14.6	12.8	15.4	13.4	16.1	18.6	22.2	21.4	25.5	23.3	27.8
7.6	25	9.3	11.1	14.5	17.4	15.4	18.3	16.1	19.2	16.7	20.1	23.2	27.8	26.8	31.9	29.1	34.7
9.1	30	11.1	13.3	17.4	20.8	18.4	22.0	19.2	23.1	20.1	24.2	27.9	33.3	32.1	38.3	34.9	41.7
10.7	35	13.1	15.5	20.3	24.3	21.6	25.6	22.6	26.9	23.4	28.2	32.5	38.9	37.5	44.7	40.7	48.6
12.2	40	15.0	17.8	23.2	27.8	24.6	29.3	25.7	30.7	26.8	32.2	37.1	44.4	42.8	51.1	46.5	55.5
13.7	45	16.8	20.0	26.1	31.2	27.7	33.0	28.9	34.6	30.1	36.2	41.8	50.0	48.2	57.5	52.3	62.5
15.2	50	18.7	22.2	29.0	34.7	30.7	36.6	32.1	38.4	33.5	40.3	46.4	55.5	53.5	63.9	58.1	69.4
16.8	55	20.6	24.4	31.9	38.2	33.9	40.2	35.4	42.3	36.8	44.3	51.1	61.1	58.9	70.3	63.9	76.4
18.3	60	22.5	26.7	34.9	41.7	37.0	43.9	38.7	46.1	40.1	48.3	55.7	66.7	64.2	76.7	69.8	83.3

Speed		Cutter/Drum Width — metric tons/min (U.S. tons/min)															
		1220 mm 4'0"		1900 mm 6'3"		2010 mm 6'7"		2100 mm 6'11"		2210 mm 7'3"		3050 mm 10'0"		3500 mm 11'6"		3810 mm 12'6"	
		Metric tons	U.S. tons	Metric tons	U.S. tons	Metric tons	U.S. tons	Metric tons	U.S. tons	Metric tons	U.S. tons	Metric tons	U.S. tons	Metric tons	U.S. tons	Metric tons	U.S. tons
3.0	10	0.23	0.26	0.36	0.40	0.38	0.42	0.41	0.44	0.44	0.46	0.58	0.64	0.67	0.74	0.73	0.80
4.6	15	0.35	0.38	0.54	0.60	0.57	0.63	0.61	0.66	0.66	0.69	0.87	0.96	1.00	1.10	1.09	1.20
6.1	20	0.46	0.51	0.72	0.80	0.76	0.84	0.82	0.88	0.88	0.92	1.16	1.28	1.34	1.47	1.46	1.79
7.6	25	0.58	0.64	0.91	1.00	0.94	1.04	1.02	1.10	1.10	1.15	1.45	1.60	1.67	1.83	1.82	1.99
9.1	30	0.69	0.77	1.09	1.20	1.14	1.26	1.23	1.33	1.32	1.39	1.74	1.91	2.01	2.20	2.19	2.40
10.7	35	0.81	0.89	1.27	1.40	1.34	1.47	1.44	1.55	1.54	1.62	2.03	2.24	2.34	2.57	2.56	2.79
12.2	40	0.92	1.02	1.45	1.60	1.53	1.68	1.65	1.76	1.76	1.85	2.32	2.55	2.68	2.94	2.92	3.19
13.7	45	1.04	1.15	1.63	1.80	1.71	1.88	1.84	1.99	1.98	2.08	2.61	2.87	3.01	3.31	2.28	3.59
15.2	50	1.16	1.28	1.81	2.00	1.91	2.10	2.05	2.21	2.20	2.32	2.90	3.19	3.35	3.67	3.65	3.99
16.8	55	1.27	1.41	1.99	2.20	2.09	2.31	2.25	2.43	2.42	2.55	3.19	3.51	3.68	4.04	4.01	4.39
18.3	60	1.39	1.53	2.18	2.40	2.28	2.51	2.46	2.65	2.64	2.78	3.48	3.83	4.02	4.41	4.38	4.79

NOTE: Above figures are based on a one-inch depth of cut. For greater depths of cut, multiply the production rate by cutting depth. Based on asphalt density of 68 kg/m³ (115 lb/yd³), one inch thick.

MACHINE SELECTION

Prime considerations in selecting the proper cold planer model are:

- specifics of work to be done
- type of projects generally done by the contractor
 - City/Urban or Highway/Airport
- desired production capacities

Cold Planer Characteristics (Highway/Airport)

Highway/Airport work requires high-volume cold planers. The PM-565B and other high horsepower half-lane cold planers are being used more on Highway/Airport projects. Users like to have one machine that can work successfully on high production jobs then switch to city/urban applications. The PM-565B has proven to be a true cross-over cold planer.

Cold Planer Characteristics (City/Urban)

The PM-565B is a four-track, front discharge model. Front discharge cold planers make traffic control easier in congested quarters. The trucks travel forward in the same direction as the cold planer. The trucks move in and out of traffic faster increasing production.

COLD PLANING FUNDAMENTALS**Definition**

Cold planing is automatically controlled cold milling to restore the pavement surface to a specified grade and slope; remove bumps, ruts, and other imperfections; and leave a textured surface which can be opened immediately to traffic or overlaid with new pavement materials.

Production and Tooth Wear

Because pavement materials vary, so do production and tooth wear. While predicting the exact production rate and tooth wear on a particular job is difficult, general guidelines are available.

Production depends on the milling rate (the speed at which the cold planer moves forward). The machine's forward speed is determined, primarily, by aggregate type, asphalt bond strength and depth of cut. When milling asphalt pavement, the cold planer's teeth essentially are breaking the bond between asphalt-coated aggregate, not actually fracturing the aggregate itself. A pavement made with a mix containing a high percentage of fine aggregate and a high asphalt content is more difficult to mill than a pavement with a high percentage of coarse aggregate.

A dense or fine mix usually requires more power at the cutting drum, limiting the cold planer's forward speed. Decreased speed lowers production, and the tough bond between the small aggregate particles causes increased cutting-tooth wear. Lower production and higher tooth wear result in increased unit costs.

Cutting depth affects power demand at the drum and helps determine the cold planer's forward speed. However, production increases, to a point, as the depth of cut increases. For example, changing from a 25 mm (1 in) cut to a 51 mm (2 in) cut slows the machine only slightly but doubles the amount of material produced.

As the cut increases beyond the machine's peak-production depth, the reduced forward speed begins to offset the production gains of the deeper cut. For example, production at a 152 mm (6 in) cutting depth and slow speed may be no greater than cutting at a 76 mm (3 in) depth and a much faster speed.

Low Density Asphalt

Depth		PM-565B	
mm	in	mpm	fpm
51	2	40	130
101	4	32	105
127	5	21	70
178	7	12	40
254	10	6	20
305	12	5	15

High Density Asphalt

Depth		PM-565B	
mm	in	mpm	fpm
51	2	32	105
101	4	26	85
127	5	18	60
178	7	9	30
254	10	5	15
305	12	4	12

As long as the cold planer maintains a productive forward speed, deeper cuts will yield greater production and tend to lower tooth cost. Tooth wear does not increase in direct proportion to production when the machine is working in an efficient range.

Tooth wear at various depths for a given material is affected by how long the tooth remains in the cut. Because the teeth are mounted on a circular drum, each tooth cuts through the pavement in an arc. The tooth arc at a 102 mm (4 in) cutting depth, however, is not four times longer than at a 25 mm (1 in) cutting depth, even though production may be four times greater. The cutting arc at 102 mm (4 in) is approximately twice as long as that at 25 mm (1 in).

The peak cutting depth for a particular cold planer on a specific job is best determined by examining production, and subsequent costs, of a single deep cut versus multiple passes at a shallow depth.

TYPES OF CUTTING ROTORS

Weld on Holders

The holders that retain the cutting bits are welded to the rotor flight. Best used in applications that have little or no obstacles imbedded in the pavement.

Bolt on Holders

The holders are bolted to a spacer block that is welded to the rotor flight. No welding is required to replace holders that are broken by obstacles embedded in the pavement.

APPLICATIONS

Although new applications for cold planers are being discovered, most work can be classified in seven general categories:

Leveling and Bonding

This application removes a layer of pavement to eliminate potholes, ruts, bumps and other surface imperfections. The cold planer leaves a level, textured surface ideal for bonding to a new, thin overlay of asphalt or concrete. The surface has an interlocking texture with double the bonding area of a conventional smooth pavement. The textured surface and overlay form a monolithic bond, eliminating the shear plane that causes pavement layers to move and separate. Thinner overlays can be used, making the technique more economical than traditional overlay methods.

Surface Refinishing

Rough pavement can also be cold planed to specified grade and slope, providing a new riding surface without adding new paving materials. This application is particularly useful when base and sub-base are in good shape, or when several layers have been added to the roadway over the years. Roads can be cold planed during cold, wet months and reopened immediately. New overlays can be added whenever weather permits. This lengthens the practical working season for many contractors. The cold planer can also be used to correct expansion joint faults and pavement cracks.

Surface Repair

This category generally requires deeper cutting than leveling. It consists of removing isolated distressed pavement sections down to subbase, if necessary, prior to adding new overlay materials. Since the cutter mandrel on Caterpillar cold planers cuts forward and upward, there's no damaging impact to the underlying base.

Pavement Removal

Pavement buildup is a problem that plagues most older streets, roads and highways. As overlays are added, curbs and drains are buried — creating drainage problems. Overhead clearances are dangerously reduced ... and additional weight is added to overpasses and bridges. Cold planing is an economical method of curing all these problems.

Surface Texturing

Serious accidents increase when pavement becomes slick from wear. The textured surface produced by cold planing is highly skid-resistant and has dramatically reduced hydroplaning characteristics.

Pavement Mining

Cold milling has made it practical to actually "mine" deteriorated pavement materials from existing roads and streets. The cold planer produces an ideally-sized asphalt or concrete material which can be recycled in a variety of ways. Depending on type, age and condition of pavement, the largest cold planer can reclaim up to 900 tons of material per hour.

COLD PLANER USE BY PROJECT TYPE

Applications	Highway/Airport	City/Urban
Planing (Milling)	<ul style="list-style-type: none"> ● To establish grade and slope. ● Remove excess pavement. 	<ul style="list-style-type: none"> ● To establish proper grade and slope. ● To establish new grade and slope.
Partial Removal	<ul style="list-style-type: none"> ● For use with hot mix recycle. ● Remove pavement irregularities. ● Texture for skid resistance. 	<ul style="list-style-type: none"> ● To correct drainage and curb reveal. ● To lower elevation at overpass. ● For use with hot recycle. ● Eliminate leveling course.
Full Depth Removal	<ul style="list-style-type: none"> ● Total rebuild. RAP used for base or hot recycle. ● Cold recycle. This requires additional surface treatment. 	<ul style="list-style-type: none"> ● Total rebuild. RAP used for base or hot recycle. ● Cold recycle. Requires additional surface treatment.
Texturing	<ul style="list-style-type: none"> ● For skid resistance and improved bond when overlay is applied. 	<ul style="list-style-type: none"> ● For skid resistance and improved bond when overlay is applied.
Leveling		<ul style="list-style-type: none"> ● At intersections to remove bumps, shoving and improve drainage.
Special	<ul style="list-style-type: none"> ● Joint and crack repair. ● Cut rumble grooves on shoulders of bridge approaches. 	<ul style="list-style-type: none"> ● Intersection defect repair. ● Pothole repair. ● Railroad crossing repair. ● Tight radius profiling around manhole covers, etc. ● Pavement adjustments (transitions from existing pavements to new overlays).

RM-250C:

The RM-250C is a medium duty reclaimer/mixer that can perform either full depth reclamation or soil stabilization. It uses a cutting mandrel to pulverize and mix asphaltic pavement and base materials. The machine is utilized to mechanically stabilize deteriorated asphalt structures and complete reclamation with the addition of asphaltic emulsions or other binding agents. The RM-250C can be equipped with attachments that accurately inject liquid additives directly into the mixing hood. Optional rotors can be installed to convert the RM-250C into a soil stabilizer. The internally mounted breaker bar aids in material sizing.

RM-350B:

The RM-350B is a heavy-duty reclaimer/mixer, that can perform either full depth reclamation, or soil stabilization. Rotor options allow the RM-350B to perform the pulverization of asphalt pavement, or the mixing of stabilizing agents with soils to produce a strong base material.

The RM-350B features microprocessor control of major machine systems, including propel speed, rotor depth, and steering modes.

RM-250C Features:

- **Maximum Production** ... rotor driven by Cat turbocharged Diesel Engine through mechanical drive system.
- **Highly Efficient** ... load-sensing propel system helps prevent overloading while allowing continuous work near rated horsepower.
- **Extremely Versatile** ... interchangeable rotors provide both reclamation and stabilization capabilities.
- **Consistent Blending** ... automatic depth control, mid-mounted mixing chamber and multi-speed rotor drive combine for optimum blending and increased production.

RM-350B Features:

- **Maximum Production** ... mechanical rotor drive, with deep cutting and mixing capability, via Cat turbocharged Diesel Engine and Cat three-speed transmission.
- **Efficient Operation** ... Cat Electronic Control Module provides microprocessor control of major machine systems.
- **Highly Maneuverable** ... four steering modes with automatic rear wheel alignment simplify work in congested areas.
- **Versatility** ... choice of three rotors for full depth reclamation or soil stabilization.
- **Reliability** ... field proven Cat components maximize machine availability.

Reclaimer/ Soil Stabilizers

Specifications Optional Equipment



MODEL	RM-250C			RM-350B		
Gross Power	250 kW	335 hp		373 kW	500 hp	
Operating Weight	16 780 kg	37,000 lb		24 040 kg	53,000 lb	
Engine Model	3406C DITA			3406C DITA		
Rated Engine RPM	2100			2100		
No. Cylinders	6			6		
Bore	137 mm	5.4"		137 mm	5.4"	
Stroke	165 mm	6.5"		165 mm	6.5"	
Displacement	14.6 L	893 in ³		14.6 L	893 in ³	
Drive Systems: Rotor	3 speed Mechanical			3 speed Mechanical		
Ground	4 speed Hydrostatic			4 speed Hydrostatic		
Operating Dimensions: Height	3220 mm	10'7"		3404 mm	11'2"	
Width	2921 mm	9'7"		2997 mm	9'10"	
Length	8780 mm	28'10"		9980 mm	32'9"	
Width of Cut	2438 mm	8'0"		2438 mm	8'0"	
Depth of Cut (Max.)	381 mm	15"		508 mm	20"	
Rotor Speed	Trans	Drive	Speed	Trans	Drive	Speed
	Low	Low	124 rpm	Low	Low	115 rpm
	Low	High	168 rpm	Low	High	160 rpm
	High	Low	284 rpm	High	Low	215 rpm
Minimum Turning Radius:						
Standard	5.5 m	18'0"		6.1 m	20'0"	
Travel Speed (Max.)	20 km/h	12 mph		16.8 km/h	10.5 mph	
Standard Tires: Front	23.5 × 25–16 ply Lug Type L-2			23.5 × 25–16 ply Lug Type SSG L-2		
Rear	15.5 × 25–8 ply Lug Type L-2			23.1 × 26–12 ply Traction Type R1		
Fuel Capacity	416 L	110 U.S. gal		779 L	206 U.S. gal	
Cooling System	61 L	16 U.S. gal		61 L	16 U.S. gal	
Crankcase	34 L	9 U.S. gal		34 L	9 U.S. gal	

OPTIONAL EQUIPMENT — RM-250C

- Roll Over Protective Structure (ROPS).
- Foot per minute indicator (available in metric).
- Working light package.
- Cab with heater, defroster and air conditioner.
- Liquid additive system (English or Metric).
- Water spray system with in-line flow meter.
- Rear wheel power.
- Sound suppression package.
- Torque limiter.
- Mirror package.
- Various rotor options.
- Road light package.
- Counterweight system.
- Front tires — 23.5 × 25–16 ply.
- Rear tires — 28 × 26 × 10 ply.

OPTIONAL EQUIPMENT — RM-350B

- Roll Over Protective Structure (ROPS).
- Working light package.
- Roading light package.
- Deluxe cab.
- Liquid additive system.
- Water spray system.
- Mirror package.
- Various rotor options.
- Friction torque limiter.
- High flotation front tires.
- Hydraulically operated front door.
- Warning beacon.

Rotor Options for RM-250C

Rotor	Maximum Depth of Work		No. of Bits/Tools	Direction of Cut	Stabilization	Reclamation
Breakaway Holder Rotor	330 mm	13"	188	Up		X
Quick Change	381 mm	15"	58	Up	X	
Combination	381 mm	15"	108	Up	X	X

Rotor Options for RM-350B

Rotor	Maximum Depth of Work		No. of Bits/Tools	Direction of Cut	Stabilization	Reclamation
Breakaway Reclamation	381 mm	15"	188	Up		X
Quick Change	508 mm	20"	58	Up	X	
Universal	406 mm	16"	200	Up	X	X

Other rotors available by custom order.

Rotor Options:

- **Breakaway Rotors** are designed to pulverize asphalt layers. They can also be used in stabilization in sandy type material. Holders are bolt on for easy replacement.
- **Quick Change Rotors** are designed for soil stabilization only and work well in cohesive type soils.
- **Universal Rotor** can be used for either reclamation or stabilization by changing rotor bits from bullet to spade type.

PRODUCTION ESTIMATING

The maximum cutting depth is 381 mm (15 in) for the RM-250C and 457 mm (18 in) for the RM-350B. The RM-250C can mix up to 457 mm (18 in). In addition, the cutting width of their rotors is 2.4 m (8 ft). The following formulas allow you to determine the production in square yards (yd²)/minute or cubic yards (yd³)/minute.

Production in square yards (yd²) per minute

$$\text{yd}^2/\text{min} = \frac{\text{FPM of travel speed}}{1.125}$$

$$\frac{9 \text{ ft}^2/\text{yd}^2}{8 \text{ ft Cutting width}} = 1.125 \text{ (This is a constant value for an eight foot wide rotor)}$$

Gallons of additive (for units with pump and metering additive system)

$$\frac{\text{GPM}}{\text{yd}^2/\text{min}} = \text{gal}/\text{yd}^2$$

Or, if required additive amounts are known, you can determine necessary travel speed as shown:

$$\frac{\text{GPM}}{\text{gal}/\text{yd}^2} = \text{yd}^2/\text{min}; \text{yd}^2/\text{min} \times 1.125 = \text{ft}/\text{min}$$

Production in Cubic Yards (yd³) per minute

$$\frac{\text{FPM of travel speed}}{1.125} \times \frac{\text{Cutting or mixing depth in inches}}{36} = \frac{\text{yd}^3}{\text{min}}$$

Production in Tons per Minute

$$\text{yd}^3/\text{min} \times \frac{\text{Wt. of Material per yd in lbs}}{2000 \text{ lb}/\text{ton}} = \text{tons}/\text{min}$$

Abbreviations

FPM = Feet Per Minute
GPM = Gallons Per Minute

WEIGHT OF MATERIALS

Material	LOOSE		IN-PLACE		
	kg/m ³	lbs/yd ³	kg/m ³	lbs/yd ³	
Clay	— Dry	1480	2500	1840	3100
	— Wet	1660	2800	2080	3500
Clay and Gravel	— Dry	1420	2400	1660	2800
	— Wet	1540	2600	1840	3100
Sand and Gravel	— Dry	1720	2900	1930	3250
	— Wet	2020	3400	2220	3750
Sand	— Dry	1420	2400	1600	2700
	— Damp	1690	2850	1900	3200
	— Wet	1840	3100	2080	3500
Earth	— Dry Packed	1510	2550	1900	3200
	— Wet Excavated	1600	2700	2020	3400
	— Top Soil	950	1600	1360	2300
	— Loam	1250	2100	1540	2600
Bituminous Concrete	— Windrowed Chunks (25% Voids)	1740	2925		
	— Compacted			2310	3900

STABILIZATION/RECLAMATION PRODUCTION

The following charts list production in square meters per minute, square yards per minute, cubic meters per minute, and cubic yards per minute. The information is based on various travel speeds and cutting depths for the Caterpillar RM-350B, RM-250C and SS-250B equipped with a 2438 mm (8 ft) cutting rotor.

PRODUCTION RATES																		
Travel Speed m/min	m ² / min	m ³ /Minute																
		Cutting Depth — mm																
		100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500
3	7.3	0.73	0.9	1.1	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.6	2.7	2.9	3.1	3.3	3.5	3.7
6	14.6	1.46	1.8	2.2	2.6	2.9	3.3	3.7	4.0	4.4	4.8	5.1	5.5	5.9	6.2	6.6	6.9	7.3
9	21.9	2.2	2.7	3.3	3.8	4.4	4.9	5.5	6.0	6.6	7.1	7.7	8.2	8.8	9.3	9.9	10.4	11.0
12	29.3	2.9	3.7	4.4	5.1	5.9	6.6	7.3	8.0	8.8	9.5	10.2	11.0	11.7	12.4	13.2	13.9	14.6
15	36.6	3.6	4.6	5.5	6.4	7.3	8.2	9.1	10.0	11.0	11.9	12.8	13.7	14.6	15.5	16.5	17.4	18.3
18	43.9	4.4	5.5	6.6	7.7	8.8	9.9	11.0	12.1	13.2	14.3	15.4	16.5	17.6	18.7	19.7	20.8	21.9
21	51.2	5.1	6.4	7.7	9.0	10.2	11.5	12.8	14.1	15.4	16.6	17.9	19.2	20.5	21.8	23.0	24.3	25.6
24	58.5	5.9	7.3	8.8	10.2	11.7	13.2	14.6	16.1	17.6	19.0	20.5	21.9	23.4	24.9	26.3	27.8	29.3
27	65.8	6.6	8.2	9.9	11.5	13.2	14.8	16.4	18.1	19.7	21.4	23.0	24.7	26.3	28.0	29.6	31.3	32.9

PRODUCTION RATES																		
Travel Speed ft/min	yd ² / min	yd ³ /Minute																
		Cutting Depth — inches																
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
10	8.9	0.98	1.2	1.5	1.7	2.0	2.2	2.5	2.7	3.0	3.2	3.5	3.7	4.0	4.2	4.5	4.7	4.9
20	17.8	1.96	2.5	3.0	3.4	4.0	4.4	4.9	5.5	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9
30	26.7	2.9	3.7	4.5	5.2	5.9	6.7	7.4	8.2	8.9	9.6	10.4	11.1	11.9	12.6	13.4	14.0	14.8
40	35.6	3.9	4.9	5.9	6.9	7.9	8.9	9.9	10.9	11.9	12.8	13.9	14.8	15.8	16.8	17.8	18.7	19.8
50	44.5	4.9	6.2	7.4	8.6	9.9	11.1	12.4	13.6	14.8	16.0	17.3	18.5	19.8	21.0	22.3	23.4	24.7
60	53.4	5.9	7.4	8.9	10.3	11.9	13.3	14.8	16.4	17.8	19.2	20.8	22.2	23.7	25.2	26.7	28.1	29.7
70	62.3	6.8	8.6	10.4	12.0	13.8	15.6	17.3	19.1	20.8	22.4	24.3	25.9	27.7	29.5	31.2	32.8	34.6
80	71.2	7.8	9.9	11.9	13.7	15.8	17.8	19.8	21.8	23.7	25.6	27.7	29.6	31.6	33.7	35.6	37.5	39.6
90	80.1	8.8	11.1	13.4	15.5	17.8	20.0	22.4	24.5	26.7	28.8	31.2	33.3	35.6	37.9	40.1	42.1	44.5

Features:

- **Variable width screeds or fixed width screeds** available for AP-650B, AP-655C, AP-800C, AP-900B, AP-1000B, AP-1050B and AP-1055B.
- **Single sliding operator's station** can be positioned on either side of paver for excellent visibility.
- **Hydrostatic pumps** provide infinitely variable speed ranges.
- **Direct hydrostatic drives** eliminate gear boxes, differentials, final drive chains etc.
- **Self-dumping hydraulic hoppers** are heavy-duty and high capacity.
- **Soldered and molded** electrical connections.
- **Feeder system** designed to eliminate power segregation and manual hand work.
- **Self diagnostics** on propel and feeder systems.



MODEL	AP-800C		AP-900B		AP-1000B	
Gross Power	80 kW	107 hp	114 kW	153 hp	130 kW	174 hp
Rated Engine RPM	2200		2200		2200	
No. Cylinders	4		6		6	
Displacement	4 L	243 in ³	6.6 L	403 in ³	6.6 L	403 in ³
Engine Model	3054 DIT		3116 T		3116 TA	
Operating Weight:						
Tractor	12 115 kg	26,700 lb	14 445 kg	31,850 lb	15 490 kg	34,150 lb
Pavemaster B Screed	1460 kg	3230 lb	—	—	—	—
2.4 m (8')	1745 kg	3850 lb	1745 kg	3850 lb	1745 kg	3850 lb
3.0 m (10')	3085 kg	6800 lb	—	—	—	—
Extend-A-Mat B Screed	3085 kg	6800 lb	—	—	—	—
2.4 m (8')	3355 kg	7400 lb	3355 kg	7400 lb	3355 kg	7400 lb
3.0 m (10')	3355 kg	7400 lb	3355 kg	7400 lb	3355 kg	7400 lb
Extend-A-Mat B (wide plates)	—	—	—	—	3855 kg	8500 lb
3.0 m (10')	—	—	—	—	—	—
AS2251 Screed	3214 kg	7070 lb	—	—	—	—
2.5 m (8'2")	—	—	3555 kg	7840 lb	3555 kg	7840 lb
AS2301 Screed	—	—	—	—	—	—
3.05 m (10')	—	—	—	—	—	—
Speeds: Paving	0-76 m/min	0-250 ft/min	0-122 m/min	0-400 ft/min	0-114 m/min	0-374 ft/min
Travel	0-19 km/h	0-12 mph	0-16 km/h	0-10 mph	0-23.5 km/h	0-14.5 mph
Maximum theoretical capacity	1747 (t)/hr	1925 TPH	1929 (t)/hr	1750 TPH	2177 (t)/hr	2400 TPH
Tires:						
Front (4)	13 × 22 Solid Rubber		16 × 22 Solid Rubber		16 × 22 Solid Rubber	
Rear (2)	16.00 × 24		18.00 × 25-16 PR sand rib		18.00 × 25-16 PR sand rib	
Dimensions:						
Operating Width	2.4 m (8') Screed	3269 mm	10'9"	—	—	—
3.0 m (10') Screed	3327 mm	10'11"	3327 mm	10'11"	3327 mm	10'11"
Shipping Width*	2.4 m (8') Screed	2438 mm	8'0"	—	—	—
3.0 m (10') Screed	3048 mm	10'0"	3048 mm	10'0"	3048 mm	10'0"
Height (less exhaust)	2620 mm	8'7"	2769 mm	9'1"	2769 mm	9'1"
Length (Extend-A-Mat B, push roller)	6477 mm	21'3"	6783 mm	22'3"	6783 mm	22'3"
Turning Radius	2896 mm	9'6"	2896 mm	9'6"	2900 mm	9'6"
Wheelbase	2336 mm	7'8"	2540 mm	8'4"	2540 mm	8'4"
Hopper Capacity	5.5 m ³	195 ft ³	6.1 m ³	215 ft ³	6.1 m ³	215 ft ³
Auger Diameter	406 mm	16"	406 mm	16"	406 mm	16"
Paving Widths:						
2.4 m (8') Pavemaster B Screed						
Minimum w/cutoff shoes	1828 mm	6'0"	—	—	—	—
Maximum w/extensions	6096 mm	20'0"	—	—	—	—
3.0 m (10') Pavemaster B Screed						
Minimum w/cutoff shoes	2438 mm	8'0"	2438 mm	8'0"	2438 mm	8'0"
Maximum w/extensions	9140 mm	30'0"	9140 mm	30'0"	9147 mm	30'0"
2.4 m (8') Extend-A-Mat B Screed						
Minimum w/cutoff shoes	1828 mm	6'0"	—	—	—	—
Maximum w/extensions	6100 mm	20'2"	—	—	—	—
3.0 m (10') Extend-A-Mat B Screed						
Minimum w/cutoff shoes	2438 mm	8'0"	2438 mm	8'0"	2438 mm	8'0"
Maximum w/extensions	7290 mm	24'2"	7290 mm	24'2"	7290 mm	24'2"
2.5 m (8'2") AS2251 Screed						
Minimum w/cutoff shoes	1900 mm	6'2"	—	—	—	—
Maximum w/extensions	6100 mm	20'5"	—	—	—	—
3.05 m (10') AS2301 Screed						
Minimum w/cutoff shoes	—	—	2440 mm	8'0"	2440 mm	8'0"
Maximum w/extensions	—	—	7320 mm	24'0"	7320 mm	24'0"
Service Refill Capacities:						
Cooling system	19 L	5 U.S. gal	37 L	9.8 U.S. gal	37 L	9.78 U.S. gal
Fuel tank	189 L	50 U.S. gal	265 L	70 U.S. gal	265 L	70 U.S. gal
Hydraulic oil tank	189 L	50 U.S. gal	189 L	50 U.S. gal	189 L	50 U.S. gal

*Transport width — hoppers raised without end gates.

Specifications | Asphalt Pavers



MODEL	AP-650B		AP-655C		AP-1050B		AP-1055B	
Gross Power	90 kW	121 hp	130 kW	174 hp	130 kW	174 hp	130 kW	174 hp
Rated Engine RPM	2200		2200		2200		2200	
No. Cylinders	4		6		6		6	
Displacement	4 L	243 in ³	5.98 L	365 in ³	6.6 L	403 in ³	6.6 L	403 in ³
Engine Model	3054 TA		3056E ATAAC		3116 TA		3116 TA	
Operating Weight:								
Tractor	13 200 kg	29,150 lb	15 420 kg	34,000 lb	16 015 kg	35,300 lb	16 556 kg	36,500 lb
Pavemaster B Screed	1460 kg	3230 lb	1460 kg	3230 lb	—	—	—	—
Extend-A-Mat B Screed	3085 kg	6800 lb	3085 kg	6800 lb	1745 kg	3850 lb	1655 kg	3650 lb
Extend-A-Mat B (wide plates)	—	—	—	—	3355 kg	7400 lb	3355 kg	7400 lb
AS2251 Screed	3214 kg	7070 lb	3214 kg	7070 lb	3855 kg	8500 lb	3855 kg	8500 lb
AS2301 Screed	—	—	—	—	3555 kg	7840 lb	3555 kg	7840 lb
Speeds: Paving: 1st	0-67 m/min	0-220 ft/min	2-75 m/min	6.6-246 ft/min	0-60.1 m/min	0-200 ft/min	0-61 m/min	0-200 ft/min
Travel: 2nd	8 km/h	5 mph	0-13.6 km/h	0-8.5 mph	8 km/h	5 mph	16 km/h	10 mph
Maximum theoretical capacity	1300 (t)/hr	1435 TPH	—	—	2177 (t)/hr	2400 TPH	2177 (t)/hr	2400 TPH
Tracks Assemblies:								
Width	356 mm	14"	406 mm	16"	356 mm	14"	457 mm	18"
Length on Ground	2249 mm	7'5"	3020 mm	9'11"	3048 mm	10'0"	3020 mm	9'11"
Total Number of Track Pads	92 Total – 46/side		—		100 Total – 50/side		Belt	
Dimensions:								
Operating Width	3269 mm	10'9"	3400 mm †	10'11"	—	—	—	—
Shipping Width*	2494 mm	8'2"	2440 mm †	8'0"	3327 mm	10'11"	3327 mm	10'11"
Height (less exhaust)	2623 mm	8'7"	2960 mm	9'9"	3048 mm	10'0"	3048 mm	10'0"
Length (Screed**, Osc. pushroller)	5613 mm	18'5"	6800 mm	22'4"	2769 mm	9'1"	2769 mm	9'1"
Turning Radius***	914 mm	3'0"	304 mm	1'0"	6096 mm	20'0"	6579 mm	21'7"
Hopper Capacity	5 m ³	177 ft ³	6.1 m ³	215 ft ³	914 mm	3'0"	914 mm	3'0"
Auger Diameter	406 mm	16"	406 mm	16"	6.1 m ³	215 ft ³	6.1 m ³	215 ft ³
Paving Widths:								
2.4 m (8') Pavemaster B Screed								
Minimum w/cutoff shoes	1828 mm	6'0"	1828 mm	6'0"	—	—	—	—
Maximum w/extensions	6096 mm	20'0"	6096 mm	20'0"	—	—	—	—
3.0 m (10') Pavemaster B Screed								
Minimum w/cutoff shoes	—	—	—	—	2438 mm	8'0"	2438 mm	8'0"
Maximum w/extensions	—	—	—	—	9144 mm	30'0"	9144 mm	30'0"
2.4 m (8') Extend-A-Mat B Screed								
Minimum w/cutoff shoes	1828 mm	6'0"	1828 mm	6'0"	—	—	—	—
Maximum w/extensions	6100 mm	20'2"	6100 mm	20'2"	—	—	—	—
3.0 m (10') Extend-A-Mat B Screed								
Minimum w/cutoff shoes	—	—	—	—	2438 mm	8'0"	2438 mm	8'0"
Maximum w/extensions	—	—	—	—	7366 mm	24'2"	7366 mm	24'2"
2.5 m (8'2") AS2251 Screed								
Minimum w/cutoff shoes	1900 mm	6'2"	1900 mm	6'2"	—	—	—	—
Maximum w/extensions	6100 mm	20'5"	6100 mm	20'5"	—	—	—	—
3.05 m (10') AS2301 Screed								
Minimum w/cutoff shoes	—	—	—	—	2440 mm	8'0"	2440 mm	8'0"
Maximum w/extensions	—	—	—	—	7320 mm	24'0"	7320 mm	24'0"
Service Refill Capacities:								
Cooling system	31.5 L	8.3 U.S. gal	30.3 L	8 U.S. gal	31.5 L	8.3 U.S. gal	31.5 L	8.3 U.S. gal
Fuel tank	227 L	60 U.S. gal	416 L	110 U.S. gal	284 L	75 U.S. gal	284 L	75 U.S. gal
Hydraulic oil tank	189 L	50 U.S. gal	151.4 L	40 U.S. gal	151.4 L	40 U.S. gal	151.4 L	40 U.S. gal

*Transport width hopper folded, no end gates.

**Pavemaster B on AP-1050B, Extend-A-Mat B on AP-1055B.

***Counter-rotates within own track length.

†With 8-16 Extend-A-Mat B Screed.

Features:

- **Variable width screeds** or Pavemaster B fixed screeds available for all Barber-Greene paver models.
- **Designed With the Crew In Mind ...** for simplified, more efficient operation and unmatched access to operational controls and service areas.
- **Simplified Drive System ...** variable pump/motor propel system that covers all machine speed ranges required to increase paver productivity.
- **Material Handling System ...** fully hydrostatic drive provides smooth efficient operation with the capability to handle today's varied paving requirements.
- **Complete Range of Models ...** both rubber tired and crawler mounted pavers to meet any paving requirement.
- **Dependable Operation ...** job proven Barber-Greene design and engineering for mile after mile performance.
- **Service Accessibility ...** swing-out panels and decks provide generous access.
- **Complete Customer Support ...** unmatched in the paving industry.

Specifications
 ● Barber-Greene
 ● Rubber Tired Models

Asphalt Pavers



MODEL	BG-230		BG-240C	
Gross Power	80 kW	107 hp	114 kW	153 hp
Rated Engine RPM	2200		2200	
No. Cylinders	4		6	
Displacement	4 L	243 in ³	6.6 L	403 in ³
Engine Model	3054 DIT		3116 T	
Operating Weight:				
Tractor	12 111 kg	26,700 lb	14 445 kg	31,850 lb
Pavemaster B Screed	2.4 m (8')	1460 kg 3230 lb	—	—
	3.0 m (10')	1745 kg 3850 lb	1792 kg	3950 lb
Extend-A-Mat B	2.4 m (8')	3085 kg 6800 lb	—	—
	3.0 m (10')	—	3402 kg	7500 lb
Extend-A-Mat B (wide plates)	3.0 m (10')	—	—	—
AS2251 Screed	2.5 m (8'2")	3214 kg 7070 lb	—	—
AS2301 Screed	3.05 m (10')	—	3555 kg	7840 lb
Speeds: Paving	0-76 m/min	0-250 fpm	0-122 m/min	0-400 fpm
Travel	0-19 km/h	0-12 mph	0-16 km/h	0-10 mph
Maximum theoretical capacity	1801 (t)/hr	1773 TPH	2134 (t)/hr	2100 TPH
Tires:				
Front (4) (Solid Rubber)	13 × 22		16 × 22 Solid Rubber	
Rear (2)	16.00 × 24 sand rib		18.00 × 25-16 PR sand rib	
Dimensions:				
Operating Width	2.4 m (8') Screed	3269 mm 10'9"	—	—
	3.0 m (10') Screed	3327 mm 10'11"	3327 mm	10'11"
Shipping Width*	2.4 m (8') Screed	2438 mm 8'0"	—	—
	3.0 m (10') Screed	3048 mm 10'0"	3048 mm	10'0"
Height (less exhaust)		2600 mm 8'6.5"	2769 mm	9'1"
Length (Extend-A-Mat B, pushroller)		6508 mm 21'3.25"	6783 mm	22'3"
Turning Radius		2896 mm 9'6"	2900 mm	9'6"
Wheelbase		2336 mm 7'8"	2540 mm	8'4"
Hopper Capacity		5.5 m ³ 195 ft ³	6.1 m ³	215 ft ³
Auger Diameter		406 mm 16"	406 mm	16"
Paving Widths:				
2.4 m (8') Pavemaster B Screed				
Minimum w/cutoff shoes	1828 mm	6'0"	—	—
Maximum w/extensions	6096 mm	20'0"	—	—
3.0 m (10') Pavemaster B Screed				
Minimum w/cutoff shoes	2438 mm	8'0"	2438 mm	8'0"
Maximum w/extensions	7315 mm	24'0"	7315 mm	24'0"
2.4 m (8') Extend-A-Mat B Screed				
Minimum w/cutoff shoes	1828 mm	6'0"	—	—
Maximum w/extensions	4724 mm	15'6"	—	—
3.0 m (10') Extend-A-Mat B Screed				
Minimum w/cutoff shoes	2438 mm	8'0"	2438 mm	8'0"
Maximum w/extensions	6147 mm	20'2"	7290 mm	24'2"
2.5 m (8'2") AS2251 Screed				
Minimum w/cutoff shoes	1900 mm	6'2"	—	—
Maximum w/extensions	6100 mm	20'5"	—	—
3.05 m (10') AS2301 Screed				
Minimum w/cutoff shoes	—	—	2440 mm	8'0"
Maximum w/extensions	—	—	7320 mm	24'0"
Service Refill Capacities:				
Cooling system	19 L	5 U.S. gal	37 L	9.78 U.S. gal
Fuel tank	189 L	50 U.S. gal	265 L	70 U.S. gal
Hydraulic oil tank	189 L	50 U.S. gal	189 L	50 U.S. gal

*Shipping width with hoppers raised and without end gates.

Asphalt Pavers

Specifications

- Barber-Greene
- Rubber Tired Models



MODEL

BG-260C

Gross Power		130 kW	174 hp
Rated Engine RPM		2200	
No. Cylinders		6	
Displacement		6.6 L	403 in ³
Engine Model		3116 TA	
Operating Weight:			
Tractor		15 490 kg	34,150 lb
Pavemaster B Screed	3.0 m (10')	1656 kg	3650 lb
Extend-A-Mat B	3.0 m (10')	3448 kg	7600 lb
Extend-A-Mat B (wide plates)	3.0 m (10')	4209 kg	9270 lb
AS2301 Screed	3.05 m (10')	3556 kg	7840 lb
Speeds: Paving		0-114 m/min	0-374 fpm
Travel		0-23.5 km/h	0-14.5 mph
Maximum theoretical capacity		2177 (t)/hr	2400 TPH
Tires:			
Front (4) (Solid Rubber)		16 × 22 Solid Rubber	
Rear (2)		18.00 × 25-16 ply sand rib	
Dimensions:			
Operating Width	2.4 m (8') Screed	—	—
	3.0 m (10') Screed	3327 mm	10'11"
Shipping Width*	2.4 m (8') Screed	—	—
	3.0 m (10') Screed	3048 mm	10'0"
Height (less exhaust)		2769 mm	9'1"
Length (Extend-A-Mat B, pushroller)		6783 mm	22'3"
Turning Radius		2900 mm	9'6"
Wheelbase		2540 mm	8'4"
Hopper Capacity		6.1 m ³	215 ft³
Auger Diameter		406 mm	16"
Paving Widths:			
3.0 m (10') Pavemaster B Screed			
Minimum w/cutoff shoes		2438 mm	8'0"
Maximum w/extensions		9144 mm	30'0"
3.0 m (10') Extend-A-Mat B Screed			
Minimum w/cutoff shoes		2438 mm	8'0"
Maximum w/extensions		7290 mm	24'2"
3.05 m (10') AS2301 Screed			
Minimum w/cutoff shoes		2440 mm	8'0"
Maximum w/extensions		7320 mm	24'0"
Service Refill Capacities:			
Cooling system		37 L	9.78 U.S. gal
Fuel tank		265 L	70 U.S. gal
Hydraulic oil tank		189 L	50 U.S. gal

*Shipping width with hoppers raised and without end gates.

- Specifications
- Barber-Greene
- Track Models

Asphalt Pavers



MODEL	BG-225C		BG-245C		BG-2455C	
Gross Power	90 kW	121 hp	130 kW	174 hp	130 kW	174 hp
Rated Engine RPM	2200		2200		2200	
No. Cylinders	4		6		6	
Displacement	4 L	243 in ³	6.6 L	403 in ³	6.6 L	403 in ³
Engine Model	3054 TA		3116 TA		3116 TA	
Operating Weight:						
Tractor	13 222 kg	29,150 lb	16 015 kg	35,300 lb	16 555 kg	36,500 lb
Pavemaster B Screed	2.4 m (8')	1639 kg	—	—	—	—
	3.0 m (10')	—	1633 kg	3600 lb	1656 kg	3650 lb
Extend-A-Mat B	2.4 m (8')	3085 kg	—	—	—	—
	3.0 m (10')	—	3266 kg	7200 lb	3448 kg	7600 lb
Extend-A-Mat B (wide plates)	3.0 m (10')	—	3855 kg	8500 lb	3855 kg	8500 lb
AS2251 Screed	2.5 m (8'2")	3214 kg	—	—	—	—
AS2301 Screed	3.05 m (10')	—	3555 kg	7840 lb	3555 kg	7840 lb
Speeds: Paving	0-67 m/min	0-220 fpm	0-60.1 m/min	0-200 fpm	0-61 m/min	0-200 fpm
Travel	0-8 km/h	0-5 mph	0-8 km/h	0-5 mph	0-16 km/h	0-10 mph
Maximum theoretical capacity	1300 (t)/hr	1435 TPH	2177 (t)/hr	2400 TPH	2177 (t)/hr	2400 TPH
Track Assemblies:						
Width	356 mm	14"	356 mm	14"	457 mm	18"
Length on Ground	2244 mm	7'5"	3048 mm	10'0"	3020 mm	9'11"
Total Number of Track Pads	92		100		—	
Dimensions:						
Operating Width***	2.4 m (8') Screed	3269 mm	10'9"	—	—	—
	3.0 m (10') Screed	—	—	3327 mm	10'11"	3327 mm
Shipping Width*	2.4 m (8') Screed	2494 mm	8'2"	—	—	—
	3.0 m (10') Screed	—	—	3048 mm	10'0"	3048 mm
Height (less exhaust)	2623 mm	8'7"	2769 mm	9'1"	2769 mm	9'1"
Length (Extend-A-Mat B Screed, pushroller)	6095 mm	20'0"	6579 mm	21'7"	6579 mm	21'7"
Turning Radius**	914 mm	3'0"	914 mm	3'0"	914 mm	3'0"
Hopper Capacity	5 m ³	177 ft ³	6.1 m ³	215 ft ³	6.1 m ³	215 ft ³
Auger Diameter	406 mm	16"	446 mm	16"	406 mm	16"
Paving Widths:						
2.4 m (8') Pavemaster B Screed						
Minimum w/cutoff shoes	1828 mm	6'0"	—	—	—	—
Maximum w/extensions	6096 mm	20'0"	—	—	—	—
3.0 m (10') Pavemaster B Screed						
Minimum w/cutoff shoes	—	—	2438 mm	8'0"	2438 mm	8'0"
Maximum w/extensions	—	—	9144 mm	30'0"	9144 mm	30'0"
2.4 m (8') Extend-A-Mat B Screed						
Minimum w/cutoff shoes	1828 mm	6'0"	—	—	—	—
Maximum w/extensions	6100 mm	20'2"	—	—	—	—
3.0 m (10') Extend-A-Mat B Screed						
Minimum w/cutoff shoes	—	—	2438 mm	8'0"	2438 mm	8'0"
Maximum w/extensions	—	—	7366 mm	24'2"	7366 mm	24'2"
2.5 m (8'2") AS2251 Screed						
Minimum w/cutoff shoes	1900 mm	6'2"	—	—	—	—
Maximum w/extensions	6100 mm	20'5"	—	—	—	—
3.05 m (10') AS2301 Screed						
Minimum w/cutoff shoes	—	—	2440 mm	8'0"	2440 mm	8'0"
Maximum w/extensions	—	—	7320 mm	24'0"	7320 mm	24'0"
Service Refill Capacities:						
Cooling system	31.5 L	8.3 U.S. gal	31.5 L	8.3 U.S. gal	31.5 L	8.3 U.S. gal
Fuel tank	227 L	60 U.S. gal	284 L	75 U.S. gal	284 L	75 U.S. gal
Hydraulic oil tank	189 L	50 U.S. gal	151.4 L	40 U.S. gal	151.4 L	40 U.S. gal

*Shipping width with hoppers raised and without end gates.

**Counter rotates within own track length.

***Extend-a-mat Screed.

ASPHALT PAVING CHARTS

These charts will assist you when trying to match plant output with paving speeds. Keep in mind when using these charts, it will be at 100% efficiency. If you know efficiency, multiply T.P. hour × efficiency. (Example: 75% efficiency at 300 T.P.H. – 300 × 0.75 = 225 T.P.H.)

Production in tons/hr with 1" compacted mat

Speed	Paving Widths						
fpm	6'0"	7'0"	8'0"	9'0"	10'0"	11'0"	12'0"
10	22	26	29	33	37	40	44
20	44	51	58	66	73	80	88
30	66	77	87	99	110	120	131
40	88	102	116	131	146	161	175
50	110	129	145	164	183	201	219

Production in tons/hr with 2" compacted mat

Speed	Paving Widths						
fpm	6'0"	7'0"	8'0"	9'0"	10'0"	11'0"	12'0"
10	44	52	58	66	74	80	88
20	88	176	116	132	146	160	176
30	132	154	174	198	220	240	262
40	176	204	232	262	292	322	350
50	220	258	290	328	366	402	438

Production in tons/hr with 3" compacted mat

Speed	Paving Widths						
fpm	6'0"	7'0"	8'0"	9'0"	10'0"	11'0"	12'0"
10	66	78	87	99	111	120	132
20	132	153	174	198	219	240	284
30	198	231	261	297	330	360	393
40	264	306	348	393	438	483	525
50	330	387	435	492	549	603	657

Production in tons/hr with 4" compacted mat

Speed	Paving Widths						
fpm	6'0"	7'0"	8'0"	9'0"	10'0"	11'0"	12'0"
10	88	104	116	132	148	160	176
20	176	204	232	264	292	320	352
30	264	308	348	396	440	480	524
40	352	408	464	524	584	644	700
50	440	516	580	656	732	804	876

Slope Conversion Table

Percent	Inches per foot	Inches per 12 foot	Percent	Inches per foot	Inches per 12 foot
0.17%		¼	5.21%	⅝	7½
0.35%		½	5.38%		7¾
0.52%	⅛	¾	5.56%		8
0.70%		1	5.73%	1⅛	8¼
0.87%		1¼	5.90%		8½
1.04%	⅜	1½	6.08%		8¾
1.22%		1¾	6.25%	¾	9
1.39%		2	6.42%		9¼
1.56%	⅜	2¼	6.60%		9½
1.74%		2½	6.77%	1⅜	9¾
1.91%		2¾	6.94%		10
2.08%	¼	3	7.12%		10¼
2.26%		3¼	7.29%	⅞	10½
2.43%		3½	7.47%		10¾
2.60%	⅝	3¾	7.64%		11
2.78%		4	7.81%	1⅝	11¼
2.95%		4¼	7.99%		11½
3.13%	⅜	4½	8.16%		11¾
3.30%		4¾	8.33%	1	12
3.47%		5	8.51%		12¼
3.65%	⅞	5¼	8.68%		12½
3.82%		5½	8.85%	1⅞	12¾
3.99%		5¾	9.03%		13
4.17%	½	6	9.20%		13¼
4.34%		6¼	9.38%	1⅞	13½
4.51%		6½	9.55%		13¾
4.69%	⅞	6¾	9.72%		14
4.86%		7	9.90%	1⅞	14¼
5.04%		7¼	10.07%		14½

Formula:

$$\text{Percent} = \frac{\text{Inches per foot} \times 100}{12}$$

Inches in decimals of a foot

⅛ = .0052	1 = .0833
⅜ = .0078	2 = .1667
⅝ = .0104	3 = .2500
⅞ = .0156	4 = .3333
¼ = .0208	5 = .4167
⅜ = .0260	6 = .5000
½ = .0313	7 = .5833
⅝ = .0417	8 = .6667
⅞ = .0521	9 = .7500
¾ = .0625	10 = .8333
⅞ = .0729	11 = .9167

Features:

- **Attaches easily to most pavers.**
- **Allows for continuous paving operations.**
- **High capacity conveyor** with 1905 mm (75") discharge height provides full power hopper loading.
- **Foot shaft combining augers** provide a wide throat for pick up off-center and extra wide windrows.
- **Wide throat** allows machine to pickup windrows from bottom dump trailers, end dump trailers or trucks.
- **Height adjustable scraper** mounted behind combining augers maintains a clean path for paver.
- **Three point suspension** allows machine to closely follow road contours.



MODEL	BG-650	
Flywheel Power	80 kW	107 hp
Engine RPM	2200	
Operating Weight	7984 kg	17,600 lb
Engine	3054 DIT	
Displacement	4 L	243 in ³
General Dimensions:		
Operating height	2946 mm	9'8"
Shipping height	2946 mm	9'8"
Length	4267 mm	14'0"
Conveyor:		
Maximum theoretical capacity	1829 (t)/hr	1800 TPH
Discharge height	1905 mm	6'2"
Width (Throat)	2997 mm	9'10"
Width (Slat)	1473 mm	4'10"
Lift	203 mm	8"
Tires:		
Front (2)	7 × 22 Solid Rubber	
Rear (2)	8.25 × 15	
Service Refill Capacities:		
Fuel	151.4 L	40 U.S. gal

General Compactor Features:

- **Routine maintenance** simplified by grouped service points and easy access to service areas.
- **Operator stations** designed for maximum comfort, easy control, and optimal visibility.
- **Direct hydrostatic drive to front (drums or wheels) and rear (drums or wheels)** provides dependable, responsive, propulsion effort and maximum gradeability. (Does not include pneumatic tire compactors.)

Vibratory Compactor Features:**Single Drum**

- **Hydraulic flow divider valve (CS/CP-323C) or dual pump system** delivers positive tractive effort to both drum and rear wheels, regardless of underfooting. This increases the machine's ability to maneuver in a wide variety of soil types and conditions and improves gross gradeability.
- **Limited slip high traction differential** is standard on all units (except CS/CP-533E) for best traction of rear tires.
- **Optional heavy-duty front-mounted blade** with reversible cutting edge is available to allow backfilling and leveling during compaction.
- **ROPS (Roll Over Protective Structure)** standard on all units. Enclosed cabs with EROPS rating available as an option (except for CS/CP-323C).
- **Adjustable jaw-type cleaner bar** keeps drums clean between pads during forward and reverse movement.

Double Drum and Combi

- **Vibration automatically ceases before machine comes to a stop (CB-434D and larger)** to help produce a smooth, flawless mat surface.
- **Close side clearances** allow compactors to work close to curbs, walls and other obstructions.

- **Large, rust-proof water tanks and pressure spray system** provide hours of reliable operation between fill-ups.
- **Emulsion system** available for combi compactor rear tires to prevent materials sticking to tires.
- **ROPS (Roll Over Protective Structure)** available on all models. Enclosed cabs with EROPS rating available on some models.

Pneumatic Tire Compactor Features:

- **All wheel oscillation.** Front and rear tires provide even wheel loads regardless of evenness underfoot. PF models have front oscillation only.
- **High drive propel system (PS-150C, PS-360B).** Completely hydrostatic with drive motors and brakes located in mainframe away from contamination and damage.
- **Ballast compartments** are easily accessible for quick loading and are located to provide balanced wheel/weight ratio.
- **Single-lever hand control** of forward and reverse movement makes smooth rolling easy.
- **Adjustable wheel suspension (PF/PS-300B)** adjusts ride to terrain and helps minimize bridging over gaps in base. PF models have rear suspension only.
- **Heavy-duty 3-speed powershift transmission (PF/PS-300B)** provides forward or reverse propelling.
- **Steer wheels swivel individually (PF/PS-300B)** preventing scuffing of material during turns, similar to automotive style steering.
- **Optional on-the-run tire inflation device** allows changing tire pressure during compaction.

NOTE: All models and options are not available in all markets.

Vibratory Compactors

Specifications

- Single Drum, Smooth



MODEL	CS-323C ¹		CS-423E ^{2,3}		CS-433E ^{1,2,3}	
Gross Power	62 kW	83 hp	62 kW	83 hp	75 kW	100 hp
Rated Engine RPM	2200		2200		2200	
No. Cylinders	4		4		4	
Displacement	4.4 L	269 in ³	4.4 L	269 in ³	4.4 L	269 in ³
Engine Model	3054C		3054C		3054C	
Speeds	1 forward/1 reverse		2 forward/2 reverse		2 forward/2 reverse	
Max. Speed (For./Rev.)	8.9 km/h	5.5 mph	11.5 km/h	7.1 mph	11.5 km/h	7.1 mph
Working Speed	8.9 km/h	5.5 mph	5.5 km/h	3.4 mph	5.5 km/h	3.4 mph
Operating Weight ⁴	4390 kg	9680 lb	6745 kg	14,875 lb	6745 kg	14,875 lb
Shipping Weight	4311 kg	9505 lb	6515 kg	14,370 lb	6515 kg	14,370 lb
Drive	Drum/Rear Wheel		Drum/Rear Wheel		Drum/Rear Wheel	
Steering:						
Inside radius	2625 mm	8'7"	3050 mm	10'0"	3050 mm	10'0"
Outside radius	3895 mm	12'9"	4730 mm	15'6"	4730 mm	15'6"
Steering angle	±38°		±37°		±37°	
Vibratory System:						
Ecc. Weight Drive	Hydraulic		Hydraulic		Hydraulic	
Frequency	35 Hz	2100 vpm	31.9 Hz	1915 vpm	31.9 Hz	1915 vpm
Amplitude	1		2		2	
High amplitude	1.30 mm	0.05"	1.67 mm	0.066"	1.67 mm	0.066"
Low amplitude	—	—	0.84 mm	0.033"	0.84 mm	0.033"
Centrifugal Force						
Maximum	66.8 kN	15,000 lb	133.5 kN	30,000 lb	133.5 kN	30,000 lb
Minimum	—	—	66.8 kN	15,000 lb	66.8 kN	15,000 lb
General Dimensions:						
Overall width w/blade	1575 mm	5'2"	—	—	2100 mm	6'11"
Overall width w/o blade	1393 mm	4'6"	1800 mm	5'11"	1800 mm	5'11"
Drum width	1270 mm	4'2"	1680 mm	5'6"	1680 mm	5'6"
Drum diameter	1016 mm	3'4"	1220 mm	4'0"	1220 mm	4'0"
Tires	11.2 × 24-6 ply		14.9 × 24-6 ply		14.9 × 24-6 ply	
Overall height	2514 mm	8'2"	2930 mm	9'7"	2930 mm	9'7"
Wheel to drum	2240 mm	7'4"	2600 mm	8'6"	2600 mm	8'6"
Overall length	4095 mm	13'5"	4960 mm	16'3"	4960 mm	16'3"
Curb clearance	335 mm	13.2"	375 mm	14.8"	375 mm	14.8"
Service Refill Capacities:						
Fuel tank	144 L	38 U.S. gal	153 L	40.4 U.S. gal	153 L	40.4 U.S. gal
Crankcase	7.6 L	2 U.S. gal	6.8 L	1.8 U.S. gal	6.8 L	1.8 U.S. gal
Hydraulic fluid	49.2 L	13 U.S. gal	60 L	16 U.S. gal	60 L	16 U.S. gal

¹Leveling blade available.

²Padded shell kit available.

³Variable frequency vibration available, 23.3-31.9 Hz (1400-1915 vpm).

⁴With ROPS/FOPS canopy.

Specifications
 • Single Drum, Smooth

Vibratory Compactors



MODEL	CS-533E ²		CS-563E ^{1,2,3}		CS-573E ^{1,2,3}	
Gross Power	97 kW	103 hp	112 kW	150 hp	112 kW	150 hp
Rated Engine RPM	2200		2200		2200	
No. Cylinders	4		6		6	
Displacement	4.4 L	269 in ³	5.98 L	365 in ³	5.98 L	365 in ³
Engine Model	3054C		3056E		3056E	
Speeds	2 forward/2 reverse		2 forward/2 reverse		2 forward/2 reverse	
Max. Speed (For./Rev.)	12 km/h	7.5 mph	11.4 km/h	7 mph	11.4 km/h	7 mph
Working Speed	8 km/h	4.9 mph	—	—	—	—
Operating Weight	10 840 kg	23,900 lb	11 120 kg	24,520 lb	13 570 kg	29,922 lb
Shipping Weight	10 265 kg	22,635 lb	—	—	—	—
Drive	Drum/Rear Wheel		Drum/Rear Wheel		Drum/Rear Wheel	
Steering:						
Inside radius	3680 mm	12'1"	3680 mm	12'1"	3680 mm	12'1"
Outside radius	5810 mm	19'1"	5810 mm	19'1"	5810 mm	19'1"
Steering angle	±34°		±34°		±34°	
Vibratory System:						
Ecc. Weight Drive	Hydraulic		Hydraulic		Hydraulic	
Frequency	31 Hz	1860 vpm	31.9 Hz	1914 vpm	31.9 Hz	1914 vpm
Amplitude	2		2		2	
High amplitude	1.80 mm	0.071"	1.70 mm	0.067"	1.70 mm	0.067"
Low amplitude	0.85 mm	0.033"	0.85 mm	0.033"	0.85 mm	0.033"
Centrifugal Force						
Maximum	234 kN	52,600 lb	266 kN	60,000 lb	266 kN	60,000 lb
Minimum	133 kN	30,000 lb	133 kN	30,000 lb	133 kN	30,000 lb
General Dimensions:						
Overall width w/blade	2430 mm	8'0"	2500 mm	8'2"	2500 mm	8'2"
Overall width w/o blade	2286 mm	7'6"	2290 mm	7'6"	2370 mm	7'9"
Drum width	2130 mm	7'0"	2130 mm	7'0"	2130 mm	7'0"
Drum diameter	1534 mm	5'0"	1524 mm	5'0"	1524 mm	5'0"
Tires	23.1 × 26–8 ply		23.1 × 26–8 ply		23.1 × 26–8 ply	
Overall height	3060 mm	10'1"	3060 mm	10'1"	3060 mm	10'1"
Wheel to drum	2900 mm	9'6"	2900 mm	9'6"	2900 mm	9'6"
Overall length	5510 mm	18'1"	5760 mm	18'11"	5830 mm	19'2"
Curb clearance	521 mm	20.5"	497 mm	19.6"	497 mm	19.6"
Service Refill Capacities:						
Fuel tank	180 L	47 U.S. gal	330 L	87 U.S. gal	330 L	87 U.S. gal
Crankcase	9 L	2.4 U.S. gal	12.1 L	3.2 U.S. gal	12.1 L	3.2 U.S. gal
Hydraulic fluid	60 L	16 U.S. gal	64 L	16.9 U.S. gal	64 L	16.9 U.S. gal

¹Leveling blade available.

²Padded shell kit available.

³Variable frequency vibration available, 23.3-31.9 Hz (1400-1915 vpm) for CS-563E.

Vibratory Compactors

Specifications

● Single Drum, Smooth



MODEL	CS-583E ¹		CS-663E ¹		CS-683E ¹	
Gross Power	112 kW	150 hp	129 kW	173 hp	129 kW	173 hp
Rated Engine RPM	2200		2200		2200	
No. Cylinders	6		6		6	
Displacement	5.98 L	365 in ³	5.98 L	365 in ³	5.98 L	365 in ³
Engine Model	3056E		3056E		3056E	
Speeds	2 forward/2 reverse		2 forward/2 reverse		2 forward/2 reverse	
Max. Speed (For./Rev.)	11.4 km/h	7 mph	11.3 km/h	7 mph	11.3 km/h	7 mph
Working Speed	—	—	5.7 km/h	3.5 mph	6 km/h	3.7 mph
Operating Weight ²	15 100 kg	33,296 lb	16 700 kg	36,820 lb	18 500 kg	40,785 lb
Shipping Weight	—	—	16 400 kg	36,200 lb	18 200 kg	40,170 lb
Drive	Drum/Rear Wheel		Drum/Rear Wheel		Drum/Rear Wheel	
Steering:						
Inside radius	3680 mm	12'1"	3680 mm	12'1"	3680 mm	12'1"
Outside radius	5810 mm	19'1"	5810 mm	19'1"	5810 mm	19'1"
Steering angle	±34°		±34°		±34°	
Vibratory System:						
Ecc. Weight Drive	Hydraulic		Hydraulic		Hydraulic	
Frequency	30 Hz	1800 vpm	30 Hz	1800 vpm	30 Hz	1800 vpm
Amplitude	2		2		2	
High amplitude	1.8 mm	0.071"	1.8 mm	0.070"	1.8 mm	0.070"
Low amplitude	0.9 mm	0.035"	0.9 mm	0.035"	0.9 mm	0.035"
Centrifugal Force						
Maximum	332 kN	74,600 lb	332 kN	74,600 lb	332 kN	74,600 lb
Minimum	166 kN	37,300 lb	166 kN	37,300 lb	166 kN	37,300 lb
General Dimensions:						
Overall width w/blade	—	—	—	—	—	—
Overall width w/o blade	2370 mm	7'9"	2370 mm	7'9"	2460 mm	8'1"
Drum width	2130 mm	7'0"	2130 mm	7'0"	2130 mm	7'0"
Drum diameter	1524 mm	5'0"	1520 mm	5'0"	1520 mm	5'0"
Tires	23.1 × 26-8 ply		23.1 × 26-12 ply		23.1 × 26-12 ply	
Overall height	3060 mm	10'1"	3020 mm	9'11"	3020 mm	9'11"
Wheel to drum	2900 mm	9'6"	2900 mm	9'6"	2900 mm	9'6"
Overall length	5830 mm	19'2"	6000 mm	19'8"	6000 mm	19'8"
Curb clearance	497 mm	19.6"	495 mm	19.5"	495 mm	19.5"
Service Refill Capacities:						
Fuel tank	330 L	87 U.S. gal	330 L	87 U.S. gal	330 L	87 U.S. gal
Crankcase	12.1 L	3.2 U.S. gal	12.1 L	3.2 U.S. gal	12.1 L	3.2 U.S. gal
Hydraulic fluid	64 L	16.9 U.S. gal	64 L	16.9 U.S. gal	64 L	16.9 U.S. gal

¹Variable frequency vibration available, 23.3-30 Hz (1400-1800 vpm).

²With ROPS/FOPS canopy.

Specifications
● Single Drum, Padded

Vibratory Compactors



MODEL	CP-323C ¹		CP-433E ^{1,2}		CP-533E	
Gross Power	62 kW	83 hp	75 kW	100 hp	97 kW	130 hp
Rated Engine RPM	2200		2200		2200	
No. Cylinders	4		4		4	
Displacement	4.4 L	269 in ³	4.4 L	269 in ³	4.4 L	269 in ³
Engine Model	3054C		3054C		3054C	
Speeds	1 forward/1 reverse		2 forward/2 reverse		2 forward/2 reverse	
Max. Speed (For./Rev.)	8.9 km/h	5.5 mph	11.5 km/h	7.1 mph	12 km/h	7.5 mph
Working Speed	8.9 km/h	5.5 mph	5.5 km/h	3.4 mph	8 km/h	4.9 mph
Operating Weight ³	4620 kg	10,190 lb	7145 kg	15,750 lb	11 320 kg	24,960 lb
Shipping Weight	4600 kg	10,125 lb	6915 kg	15,245 lb	11 100 kg	24,475 lb
Drive	Drum/Rear Wheel		Drum/Rear Wheel		Drum/Rear Wheel	
Steering:						
Inside radius	2625 mm	8'7"	3050 mm	10'0"	3680 mm	12'1"
Outside radius	3895 mm	12'2"	4730 mm	15'6"	5810 mm	19'1"
Steering angle	±38°		±37°		±34°	
Vibratory System:						
Ecc. Weight Drive	Hydraulic		Hydraulic		Hydraulic	
Frequency	35 Hz	2100 vpm	31.9 Hz	1914 vpm	31.9 Hz	1914 vpm
Amplitude	1		2		2	
High amplitude	1.30 mm	0.05"	1.55 mm	0.061"	1.70 mm	0.067"
Low amplitude	—	—	0.78 mm	0.031"	0.85 mm	0.033"
Centrifugal Force						
Maximum	66.8 kN	15,000 lb	133.5 kN	30,000 lb	266 kN	60,000 lb
Minimum	—	—	66.8 kN	15,000 lb	133 kN	30,000 lb
General Dimensions:						
Overall width w/blade	1575 mm	5'2"	2100 mm	6'11"	—	—
Overall width w/o blade	1393 mm	4'6"	1800 mm	5'11"	2286 mm	7'6"
Drum width	1270 mm	4'2"	1680 mm	5'6"	2130 mm	7'0"
Drum diameter over pads	1016 mm	3'4"	1227 mm	4'0"	1549 mm	5'1"
Tires	11.2 × 24–8 ply		14.9 × 24–8 ply		23.1 × 26–8 ply	
Overall height	2514 mm	8'2"	2930 mm	9'7"	3070 mm	10'1"
Wheel to drum	2240 mm	7'4"	2600 mm	8'6"	2900 mm	9'6"
Overall length	4095 mm	13'5"	4960 mm	16'3"	5510 mm	18'1"
Curb clearance	347 mm	13"	375 mm	15"	521 mm	20.5"
Service Refill Capacities:						
Fuel tank	144 L	38 U.S. gal	153 L	40.4 U.S. gal	200 L	53 U.S. gal
Crankcase	6.8 L	1.8 U.S. gal	6.8 L	1.8 U.S. gal	9 L	2.4 U.S. gal
Hydraulic fluid	49.2 L	13 U.S. gal	60 L	16 U.S. gal	60 L	16 U.S. gal

¹Leveling blade available.

²Variable frequency vibration available, 23.3-31.9 Hz (1400-1915 vpm).

³With ROPS/FOPS canopy.

Vibratory Compactors

Specifications ● Single Drum, Padded



MODEL	CP-563E ^{1,2}		CP-573E ^{1,2}		CP-583E ²		CP-663E ²	
Gross Power	112 kW	150 hp	112 kW	150 hp	112 kW	150 hp	129 kW	173 hp
Rated Engine RPM	2200		2200		2200		2200	
No. Cylinders	6		6		6		6	
Displacement	5.98 L	365 in ³	5.98 L	365 in ³	5.98 L	365 in ³	5.98 L	365 in ³
Engine Model	3056E		3056E		3056E		3056E	
Speeds	2 forward/2 reverse		2 forward/2 reverse		2 forward/2 reverse		2 forward/2 reverse	
Max. Speed (For./Rev.)	11.4 km/h	7 mph	11.6 km/h	7.2 mph	11.6 km/h	7.2 mph	11.4 km/h	7.1 mph
Working Speed	—	—	—	—	—	—	5.7 km/h	3.5 mph
Operating Weight	11 555 kg	25,479 lb	13 750 kg	30,319 lb	15 235 kg	33,593 lb	16 500 kg	36,375 lb
Shipping Weight	—	—	—	—	—	—	16 200 kg	35,760 lb
Drive	Drum/Rear Wheel		Drum/Rear Wheel		Drum/Rear Wheel		Drum/Rear Wheel	
Gradeability	—		—		—		>50%	
Steering:	—		—		—		—	
Inside radius	3680 mm	12'1"	3680 mm	12'1"	3680 mm	12'1"	3680 mm	12'1"
Outside radius	5810 mm	19'1"	5810 mm	19'1"	5810 mm	19'1"	5810 mm	19'1"
Steering angle	±34°		±34°		±34°		±34°	
Vibratory System:	—		—		—		—	
Ecc. Weight Drive	Hydraulic		Hydraulic		Hydraulic		Hydraulic	
Frequency	31.9 Hz	1914 vpm	31.9 Hz	1914 vpm	30 Hz	1800 vpm	30 Hz	1800 vpm
Amplitude	2		2		2		2	
High amplitude	1.70 mm	0.067"	1.70 mm	0.067"	1.8 mm	0.071"	1.8 mm	0.070"
Low amplitude	0.85 mm	0.033"	0.85 mm	0.033"	0.9 mm	0.035"	0.9 mm	0.035"
Centrifugal Force	—		—		—		—	
Maximum	266 kN	60,000 lb	266 kN	60,000 lb	332 kN	74,600 lb	332 kN	74,600 lb
Minimum	133 kN	30,000 lb	133 kN	30,000 lb	166 kN	37,300 lb	166 kN	37,300 lb
General Dimensions:	—		—		—		—	
Overall width w/blade	2500 mm	8'2"	2500 mm	8'2"	—	—	—	—
Overall width w/o blade	2290 mm	7'6"	2370 mm	7'9"	2370 mm	7'9"	2370 mm	7'9"
Drum width	2130 mm	7'0"	2130 mm	7'0"	2130 mm	7'0"	2130 mm	7'0"
Drum diameter over pads	1549 mm	5'1"	1549 mm	5'1"	1549 mm	5'1"	1549 mm	5'1"
Tires	23.1 × 26-8 ply		23.1 × 26-8 ply		23.1 × 26-8 ply		23.1 × 26-12 ply	
Overall height	3070 mm	10'1"	3070 mm	10'1"	3070 mm	10'1"	3100 mm	10'2"
Wheel to drum	2900 mm	9'6"	2900 mm	9'6"	2900 mm	9'6"	2900 mm	9'6"
Overall length	5760 mm	18'11"	5830 mm	19'2"	5830 mm	19'2"	6000 mm	19'8"
Curb clearance	505 mm	19.9"	505 mm	19.9"	505 mm	19.9"	503 mm	19.8"
Service Refill Capacities:	—		—		—		—	
Fuel tank	330 L	87 U.S. gal	330 L	87 U.S. gal	330 L	87 U.S. gal	330 L	87 U.S. gal
Crankcase	12.1 L	3.2 U.S. gal	12.1 L	3.2 U.S. gal	12.1 L	3.2 U.S. gal	12.1 L	3.2 U.S. gal
Hydraulic fluid	64 L	16.9 U.S. gal	64 L	16.9 U.S. gal	64 L	16.9 U.S. gal	64 L	16.9 U.S. gal

¹Leveling blade available.

²Variable frequency vibration available, 23.3-31.9 Hz (1400-1915 vpm) for CP-563E and CP-573E, 23.3-30 Hz (1400-1800 vpm) for CP-663E and CP-583E.

Specifications
 • Double Drum and Combi

Vibratory Compactors



MODEL	CB-214E		CB-224E		CB-225E	
Gross Power	24.4 kW	32.7 hp	24.4 kW	32.7 hp	24.4 kW	32.7 hp
Rated Engine RPM	2800		2800		2800	
No. Cylinders	3		3		3	
Displacement	1496 cm ³	91 in ³	1496 cm ³	91 in ³	1496 cm ³	91 in ³
Engine Model	3013C		3013C		3013C	
Speeds	Single		Single		Single	
Max. Speed (For./Rev.)	10 km/h	6 mph	10 km/h	6 mph	10 km/h	6 mph
Working Speed	6.5 km/h	4 mph	6.5 km/h	4 mph	6.5 km/h	4 mph
Operating Weight	2450 kg	5400 lb	2630 kg	5800 lb	2300 kg	5070 lb
Shipping Weight	2297 kg	5060 lb	2477 kg	5456 lb	2147 kg	4729 lb
Drive	Hydraulic		Hydraulic		Hydraulic	
Steering:						
Inside radius	2510 mm	8'3"	2410 mm	7'11"	2410 mm	7'11"
Outside radius	3510 mm	11'6"	3610 mm	11'10"	3610 mm	11'10"
Steering angle	±32°		±32°		±32°	
Vibratory System:						
Ecc. Weight Drive	Hydraulic		Hydraulic		Hydraulic	
Frequency (Max.)	63 Hz	3780 vpm	63 Hz	3780 vpm	63 Hz	3780 vpm
Amplitude	1		1		1	
High Amplitude	0.5 mm	0.02"	0.5 mm	0.02"	0.5 mm	0.02"
Centrifugal Force						
High Amplitude	27.6 kN	6075 lb	31.4 kN	6975 lb	31.4 kN	6975 lb
General Dimensions:						
Overall width	1100 mm	3'7"	1300 mm	4'3"	1300 mm	4'3"
Drum width	1000 mm	3'3"	1200 mm	3'11"	1200 mm	3'11"
Drum diameter	700 mm	2'3.6"	700 mm	2'3.6"	700 mm	2'3.6"
Tires	—		—		8.5/190-15k (6 ply)	
Overall height (ROPS)	2585 mm	8'6"	2585 mm	8'6"	2585 mm	8'6"
Wheelbase	1730 mm	5'8"	1730 mm	5'8"	1730 mm	5'8"
Overall length	2430 mm	8'0"	2430 mm	8'0"	2430 mm	8'0"
Curb clearance	530 mm	21"	530 mm	21"	530 mm	21"
Ground clearance	250 mm	10"	250 mm	10"	250 mm	10"
Service Refill Capacities:						
Fuel tank	46.5 L	12.3 U.S. gal	46.5 L	12.3 U.S. gal	46.5 L	12.3 U.S. gal
Crankcase	6 L	1.6 U.S. gal	6 L	1.6 U.S. gal	6 L	1.6 U.S. gal
Hydraulic tank	26 L	6.9 U.S. gal	26 L	6.9 U.S. gal	26 L	6.9 U.S. gal
Sprinkler water	150 L	39 U.S. gal	150 L	39 U.S. gal	150 L	39 U.S. gal

Vibratory Compactors

Specifications

● Double Drum and Combi



MODEL	CB-334E		CB-335E		CB-434D	
Gross Power	37.3 kW	50 hp	37.3 kW	50 hp	62 kW	83 hp
Rated Engine RPM	2800		2800		2200	
No. Cylinders	4		4		4	
Displacement	2.2 L	135 in ³	2.2 L	135 in ³	4.4 L	269 in ³
Engine Model	3024C		3024C		3054C	
Speeds	1 forward/1 reverse		1 forward/1 reverse		1 forward/1 reverse	
Max. Speed (For./Rev.)	11.5 km/h	7.1 mph	11.5 km/h	7.1 mph	11.3 km/h	7 mph
Working Speed	0-11.5 km/h	0-7.1 mph	0-11.5 km/h	0-7.1 mph	0-11.3 km/h	0-7 mph
Operating Weight	3960 kg	8730 lb	3670 kg	8091 lb	7400 kg	16,280 lb
Shipping Weight	3963 kg	8732 lb	3673 kg	8092 lb	6840 kg	15,050 lb
Drive	Hydraulic		Hydraulic		Hydraulic	
Steering:						
Inside radius	3000 mm	9'10"	3000 mm	9'10"	3500 mm	11'6"
Outside radius	4300 mm	14'1"	4300 mm	14'1"	5000 mm	16'5"
Steering angle	±35°		±35°		±35°	
Vibratory System:						
Ecc. Weight Drive	Hydraulic		Hydraulic		Hydraulic	
Frequency (Max.)	69 Hz	4140 vpm	69 Hz	4140 vpm	53 Hz	3200 vpm
Amplitude	1		1		5	
High Amplitude	0.37 mm	0.01"	0.37 mm	0.01"	0.68 mm	0.027"
Low Amplitude	—	—	—	—	0.25 mm	0.010"
Centrifugal Force						
High Amplitude	32.3 kN	7267 lb	32.3 kN	7267 lb	78 kN	17,551 lb
Low Amplitude	—	—	—	—	29 kN	6525 lb
General Dimensions:						
Overall width	1390 mm	4'7"	1390 mm	4'7"	1670 mm	5'6"
Drum width	1300 mm	4'3"	1300 mm	4'3"	1500 mm	4'11"
Drum diameter	800 mm	31"	800 mm	31"	1100 mm	3'7.5"
Tires	—		7.5 × 16 (6 ply)		—	
Overall height (ROPS)	2550 mm	8'4"	2550 mm	8'4"	3010 mm	9'11"
Wheelbase	2321 mm	7'7"	2321 mm	7'7"	3100 mm	10'2"
Overall length	3120 mm	10'3"	3120 mm	10'3"	4200 mm	13'9"
Curb clearance	599 mm	23.5"	599 mm	23.5"	720 mm	28"
Ground clearance	280 mm	11"	280 mm	11"	255 mm	10"
Service Refill Capacities:						
Fuel tank	48 L	12.7 U.S. gal	48 L	12.7 U.S. gal	132 L	35 U.S. gal
Crankcase	7.1 L	1.9 U.S. gal	7.1 L	1.9 U.S. gal	9 L	2.4 U.S. gal
Hydraulic tank	35 L	9.3 U.S. gal	35 L	9.3 U.S. gal	50 L	13.2 U.S. gal
Sprinkler water	300 L	79 U.S. gal	300 L	79 U.S. gal	800 L	211 U.S. gal

Specifications
• Double Drum and Combi

Vibratory Compactors



MODEL	CB-534D ^{1,2,3}		CB-534D XW ¹		CB-634D ¹	
Gross Power	97 kW	130 hp	97 kW	130 hp	108 kW	145 hp
Rated Engine RPM	2200		2200		2200	
No. Cylinders	4		4		6	
Displacement	4.4 L	269 in ³	4.4 L	269 in ³	6.6 L	403 in ³
Engine Model	3054C		3054C		3116 T	
Speeds	—		—		2 forward/2 reverse	
Max. Speed (For./Rev.)	0-13 km/h	0-8 mph	0-13 km/h	0-8 mph	12.2 km/h	7.6 mph
Working Speed	0-13 km/h	0-8 mph	0-13 km/h	0-8 mph	12.2 km/h	7.6 mph
Operating Weight	10 000 kg	22,050 lb	11 300 kg	24,917 lb	12 800 kg	28,160 lb
Shipping Weight	9370 kg	20,660 lb	10 670 kg	23,527 lb	11 911 kg	26,260 lb
Drive	Hydraulic		Hydraulic		Hydraulic	
Steering:						
Inside radius	4150 mm	13'7"	4000 mm	13'1"	4318 mm	14'2"
Outside radius	5850 mm	19'2"	6000 mm	19'8"	6655 mm	21'10"
Steering angle	±40°		±40°		±32°	
Vibratory System:						
Ecc. Weight Drive	Hydraulic direct, auto reversing		Hydraulic direct, auto reversing		Hydraulic	
Frequency (Max.)	42 Hz	2520 vpm	42 Hz	2520 vpm	44 Hz	2640 vpm
Amplitude	5		5		5	
High Amplitude	1.05 mm	0.041"	0.86 mm	0.034"	1.04 mm	0.041"
Low Amplitude	0.33 mm	0.013"	0.26 mm	0.010"	0.36 mm	0.015"
Centrifugal Force						
High Amplitude	112 kN	25,208 lb	112 kN	25,208 lb	159 kN	35,745 lb
Low Amplitude	35 kN	7922 lb	35 kN	7922 lb	58 kN	13,039 lb
General Dimensions:						
Overall width	1883 mm	6'2"	2183 mm	7'2"	2311 mm	7'7"
Drum width	1700 mm	5'7"	2000 mm	6'7"	2130 mm	7'0"
Drum diameter	1300 mm	4'3"	1300 mm	4'3"	1300 mm	4'3"
Overall height (ROPS)	3050 mm	10'0"	3050 mm	10'0"	3113 mm	10'3"
Wheelbase	3640 mm	11'11"	3640 mm	11'11"	3150 mm	10'4"
Overall length	4940 mm	16'2"	4940 mm	16'2"	4953 mm	16'3"
Curb clearance	870 mm	34.5"	870 mm	34.5"	394 mm	15.15"
Ground clearance	306 mm	12"	306 mm	12"	416 mm	16"
Service Refill Capacities:						
Fuel tank	219 L	58 U.S. gal	219 L	58 U.S. gal	250 L	66 U.S. gal
Crankcase	9 L	2.4 U.S. gal	9 L	2.4 U.S. gal	17 L	4.5 U.S. gal
Hydraulic tank	60 L	15.8 U.S. gal	60 L	15.8 U.S. gal	60 L	15 U.S. gal
Sprinkler water	1100 L	290 U.S. gal	1100 L	290 U.S. gal	1200 L	317 U.S. gal

¹2-amplitude vibratory system configuration available; for the CB-534D and CB-534D XW, 0.56 mm (0.022 in) in low and 1.09 mm (0.043 in) in high setting; for the CB-634D, 0.46 mm (0.018 in) in low and 0.91 mm (0.036 in) in high setting.

²High frequency vibratory system configuration available with 53 Hz (3200 vpm).

³Split drum configuration available.

Pneumatic Tire Compactors

Specifications



MODEL	PS-150C ¹		PS-360B ²		PF-300B/PS-300B ²	
Gross Power	75 kW	100 hp	78 kW	105 hp	74 kW	99 hp
Rated Engine RPM	2200		2200		2200	
No. Cylinders	4		4		4	
Displacement	4.4 L	269 in ³	4 L	243 in ³	4 L	243 in ³
Engine Model	3054C		3054 T		3054 T	
Speeds	2 forward/2 reverse		2 forward/2 reverse		3 forward/3 reverse	
Max. Speed (For./Rev.)	25.6 km/h	15.9 mph	18 km/h	11 mph	19 km/h	11.8 mph
Working Speed	11 km/h	6.8 mph	8 km/h	5 mph	12.7 km/h	7.9 mph
Wheel Configuration	5 front/4 rear		3 front/4 rear		3 front/4 rear	
Tires	8.50/90 × 15–6 ply		14/70 × 20–12 ply		13/80 × 20 × 20	
Operating Weight Empty (no ballast)	4885 kg	10,775 lb	8500 kg	18,740 lb	14 000 kg	30,860 lb
Operating Weight Full (max. ballast)	12 940 kg	28,535 lb	25 000 kg	55,115 lb	23 050 kg	50,820 lb
Maximum Weight per Wheel	1440 kg	3180 lb	3570 kg	7870 lb	3300 kg	7260 lb
Shipping Weight	4885 kg	10,775 lb	8320 kg	18,345 lb	14 000 kg	30,860 lb
Drive	Hydraulic		Hydraulic		Mechanical	
Steering:						
Inside radius	4648 mm	15'3"	3470 mm	11'5"	5800 mm	19'0"
Outside radius	6453 mm	21'2"	6700 mm	22'0"	7700 mm	25'3"
General Dimensions:						
Overall width	1740 mm	5'8"	2150 mm	7'1"	1960 mm	6'5"
Rolling width	1740 mm	5'8"	2275 mm	7'6"	1920 mm	6'5"
Tire width	191 mm	7.5"	368 mm	14.5"	300 mm	11.8"
Tire overlap	13 mm	0.5"	58 mm	2.25"	30 mm	1.2"
Overall height (ROPS)	3000 mm	9'10"	3200 mm	10'6"	3000 mm	9'10"
Wheelbase	3340 mm	10'11"	3650 mm	12'0"	4030 mm	13'3"
Overall length	4290 mm	14'1"	4930 mm	16'2"	5300 mm	17'5"
Ground clearance	267 mm	10.5"	252 mm	10"	250 mm	10"
Service Refill Capacities:						
Fuel tank	173 L	45.6 U.S. gal	200 L	52.8 U.S. gal	215 L	56.8 U.S. gal
Crankcase	7.3 L	1.9 U.S. gal	7.3 L	1.9 U.S. gal	7 L	1.8 U.S. gal
Hydraulic fluid	54.9 L	14.5 U.S. gal	90 L	23.7 U.S. gal	10 L	2.6 U.S. gal
Sprinkler water	394 L	104 U.S. gal	394 L	104 U.S. gal	460 L	121 U.S. gal

¹11-wheel configuration available.

²Steel ballast available.

- Specifications
- Pneumatic Tires
- Ballast Configurations

Pneumatic Tire Compactors

Pneumatic Tires — Bias Ply and Radial

Model	Tire Size	Ply Rating	Tire Inflation Pressure			
			Minimum Pressure		Maximum Pressure	
			kPa	psi	kPa	psi
PS-150C	8.5 × 15	6	275	40	350	50
	7.5 × 15	12	345	50	760	110
	7.5 × 15	14	345	50	860	125
	7.5R15	Radial	296	43	480	70
PF-300B & PS-300B	13/80R20(E20)	Radial	300	44	1000	145
	14/80R20(F20)	Radial	250	36	1000	145
PS-360B	14/70 - 20	12	240	35	450	65
		20	345	50	460	110

Ballast Configurations

Model	Load	Ballast Configuration					
		Empty	Water Only	Steel Only	Wet Sand Only	Steel & Water	Steel & Wet Sand
PS-150C	Wheel Load	539 kg 1197 lb	968 kg 2134 lb	*	1438 kg 3171 lb	*	*
	Machine Weight	4885 kg 10,775 lb	8710 kg 19,205 lb	*	12 940 kg 28,535 lb	*	*
PS-150C (11-wheel)	Wheel Load	450 kg 993 lb	798 kg 1760 lb	*	1183 kg 2608 lb	*	*
	Machine Weight	4955 kg 10,925 lb	8780 kg 19,355 lb	*	13 010 kg 28,685 lb	*	*
PF-300B & PS-300B	Wheel Load	2000 kg 4409 lb	*	3300 kg 7275 lb	*	*	*
	Machine Weight	14 000 kg 30,860 lb	*	23 100 kg 50,900 lb	*	*	*
PS-360B	Wheel Load	1215 kg 2675 lb	1930 kg 4250 lb	2285 kg 15,090 lb	2645 kg 5830 lb	2855 kg 6300 lb	3570 kg 7870 lb
	Machine Weight	8500 kg 18,740 lb	13 500 kg 29,760 lb	15 995 kg 35,265 lb	18 500 kg 40,785 lb	20 000 kg 44,090 lb	25 000 kg 55,115 lb

*Configuration not available.

Maximum Ground Pressures

Model	Ply Rating	Empty	Water Only	Steel Only	Wet Sand Only	Steel & Water	Steel & Wet Sand
PS-150C	6	469 kPa 68 psi	689 kPa 100 psi	* *	655 kPa 95 psi	* *	* *
	12	469 kPa 68 psi	724 kPa 105 psi	* *	758 kPa 110 psi	* *	* *
	14	469 kPa 68 psi	1041 kPa 151 psi	* *	972 kPa 141 psi	* *	* *
PS-300B	Radial (Smooth)	689 kPa 100 psi	* *	951 kPa 138 psi	* *	* *	* *
	Radial (Threaded)	745 kPa 108 psi	* *	** **	* *	* *	* *
PS-360B	12	655 kPa 95 psi	620 kPa 90 psi	676 kPa 98 psi	662 kPa 96 psi	710 kPa 103 psi	703 kPa 102 psi
	20	896 kPa 130 psi	862 kPa 125 psi	965 kPa 140 psi	917 kPa 133 psi	979 kPa 142 psi	931 kPa 135 psi

*Configuration not available.

**Data not available.

Notes:

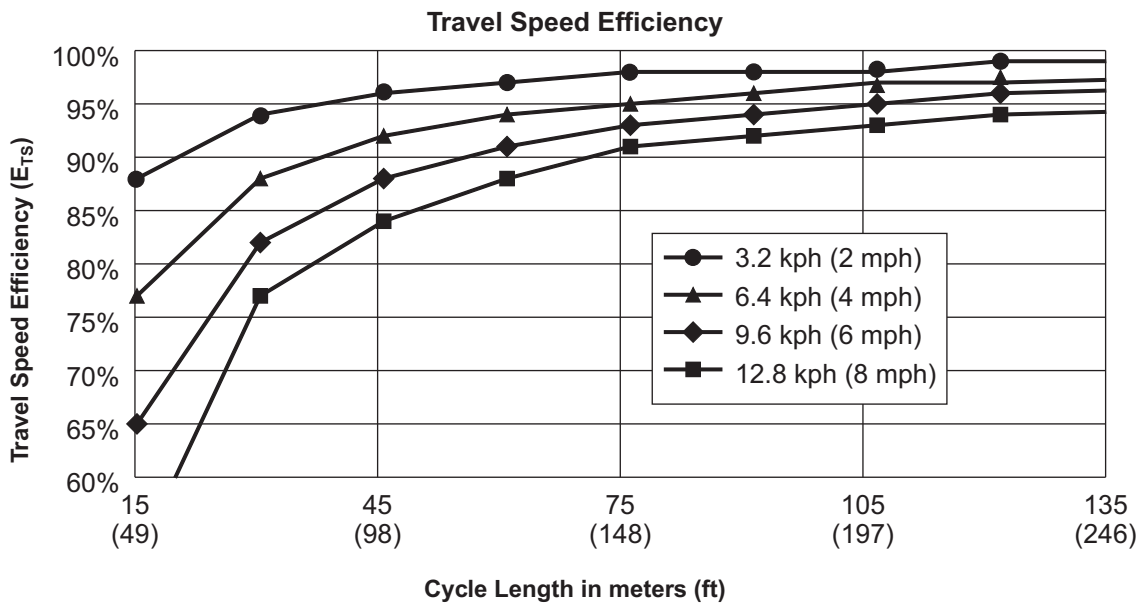
1. Each tire type has a unique pressure distribution which varies with both tire inflation pressure and wheel load. The distribution of pressure along both transverse and longitudinal profiles is rarely uniform.
2. The measurements in this table represent the peak pressures measured in a transverse profile at each of the ballast conditions at maximum tire inflation pressure.
3. For most applications, it can be assumed that normal operation of the pneumatic compactor will result in the ground being subjected to pressures near the maximum during at least one machine pass.

The tables in this section give production estimates for the following assumed conditions:

Nominal machine travel speed: 6.4 kph (4.0 mph)
 Overlap of rolling width: 15.2 cm (6.0 inches)

Table values give **representative** production rates for three common construction conditions: trenches, roads, and wide areas (> 15 m, or 50 ft).

Model	Drum Width		Lift Thickness		Passes Required	Production Estimates			
	cm	in	cm	in			3.7 m (12 ft) Trench	9.15 m (30 ft) Road Base	Wide Areas
CS-323C	127	50	10.2	4	6	m ³ /hr yds ³ /hr	80 104	111 145	122 159
CS-423E, CS-433E	167.6	66	10.2	4	4	m ³ /hr yds ³ /hr	159 209	249 326	249 326
CS-533E, CS-563E	213.4	84	15.2	6	6	m ³ /hr yds ³ /hr	239 313	299 391	324 424
CS-573E	213.4	84	15.2	6	5	m ³ /hr yds ³ /hr	— —	373 489	405 530
CS-583E	213.4	84	15.2	6	4	m ³ /hr yds ³ /hr	— —	448 587	486 636
CS-663E	213.4	84	15.2	12	6	m ³ /hr yds ³ /hr	— —	598 782	648 848
CS-683E	213.4	84	15.2	12	4	m ³ /hr yds ³ /hr	— —	896 1174	972 1272
CP-323C	127	50	15.2	6	6	m ³ /hr yds ³ /hr	120 156	133 174	183 239
CP-433E	167.6	66	15.2	6	6	m ³ /hr yds ³ /hr	159 209	199 261	249 326
CP-533E, CP-563E	213.4	84	30.5	12	6	m ³ /hr yds ³ /hr	478 626	478 626	647 847
CP-663E	213.4	84	30.5	12	6	m ³ /hr yds ³ /hr	— —	598 782	648 848



Adjusting the Production Estimate

If the assumed conditions are not close to the actual construction conditions, the production estimates should be corrected. The production estimate from the table can be adjusted for ‘actual’ construction conditions by applying adjustment factors:

$$Q \text{ (actual)} = Q \text{ (assumed)} \times F_s \times F_t \times F_p$$

Where: Q (actual) = adjusted productivity

Q (assumed) = productivity from table based on assumed conditions

F_s = adjustment for machine speed

F_t = adjustment for layer thickness

F_p = adjustment for no. of passes

The adjustment factors are determined by comparing the ‘actual’ conditions to the ‘assumed’ ones:

$$F_s = \text{actual speed/assumed speed}$$

$$F_t = \text{actual thickness/assumed thickness}$$

$$F_p = \text{assumed passes/actual passes}$$

Metric example

Actual Conditions — An 9.15-meter (full road width) base aggregate job is being completed with a compacted thickness of 15 cm. A CS-433E is being used, operating at 4.0 kph, and making 6 passes to achieve the desired compaction. The roller is overlapping its passes 6 inches.

For a 9.15-meter road base the table gives a CS-433E productivity of 249 m³/hr. Since the speed, thickness, and passes are *different* from the assumed conditions, we should adjust this estimate:

	Assumed	Actual
Speed	6.4 kph	4.0 kph
Thickness	10.2 cm	15 cm
Passes	4 passes	6 passes

$$F_s = 4.0 \text{ kph}/6.4 \text{ kph} = 0.6$$

$$F_t = 15 \text{ cm}/10.2 \text{ cm} = 1.5$$

$$F_p = 4 \text{ passes}/6 \text{ passes} = 0.7$$

The estimated production is adjusted using these factors:

$$Q \text{ (actual)} = 249 \text{ m}^3/\text{hr} \times 0.6 \times 1.7 \times 0.7 = 178 \text{ m}^3/\text{hr} \text{ (233 yds}^3/\text{hr)}$$

English example

Actual Conditions — An wide area commercial site development job is being compacted in lifts of 8 inches. A CP-563E is being used, operating at 4.0 mph, and making 4 passes to achieve the target density.

First, the table gives a CP-563E productivity of 847 yds³/hr. Since lift thickness and passes required are *different* from the assumed conditions, we should adjust this estimate:

	Assumed	Actual
Speed	4.0 mph	4.0 mph
Thickness	12 inches	8 inches
Passes	6 passes	4 passes

$$F_s = \text{no correction necessary}$$

$$F_t = 8 \text{ inches}/12 \text{ inches} = 0.7$$

$$F_p = 6 \text{ passes}/4 \text{ passes} = 1.5$$

The estimated production is adjusted using these factors:

$$Q \text{ (actual)} = 847 \text{ yds}^3/\text{hr} \times 0.7 \times 1.5 = 890 \text{ yds}^3/\text{hr} \text{ (680 m}^3/\text{hr)}$$

Notes on Productivity:

- For jobs that are relatively narrow, especially road construction jobs, it is important to understand that certain widths of construction will be more productive than others for a given compactor. A productive construction width will make the most use of each side by side pass required by the compactor in order to cover the width.
- Production estimates should be adjusted further if the length of the compaction cycles are shorter than 75 m (250 ft). Refer to the Travel Speed Efficiency chart to determine efficiency E_{TS}. For example, a compactor traveling at 6.4 kph (4 mph) operating at cycle lengths of 150 ft has an E_{TS} of 0.91. Multiply Q (actual) by E_{TS}.

The table in this section gives production estimates for the following assumed conditions:

Compacted Layer Thickness	51 mm	2 in
Max. Propelling Speed	5.6 kph	2.8 mph
Passes per Machine Width	2	
Compacted Material Density	2486 kg/cm ³	155 pcf
Overlap of Rolling Width	152 mm	6 in
Overhang at Lane Edge	76 mm	3 in
Cycle Time (2 passes)	120 seconds	

Table values give **representative** production rates for common construction widths. If the actual width falls between two assumed widths, use the higher number to estimate production. Minor adjustments can normally be made in the rolling method to reach this higher production: reduce overlap or overhang, increase speed, or increase the cycle time.

Model	Units	PAVING WIDTH						
		1.8 m 6 ft	2.4 m 8 ft	3.0 m 10 ft	3.7 m 12 ft	4.3 m 14 ft	4.9 m 16 ft	5.5 m 18 ft
CB-214E	Tonnes/hr tons/hr	138.4 152.5	184.5 203.4	179.4 197.7	176.1 194.1	173.9 191.6	198.7 219.0	193.7 213.6
CB-224E & CB-225E	Tonnes/hr tons/hr	193.7 213.6	184.5 203.4	230.6 254.2	215.3 237.3	205.5 226.5	234.8 258.9	223.5 246.4
CB-334E & CB-335E	Tonnes/hr tons/hr	193.7 213.6	184.5 203.4	230.6 254.2	215.3 237.3	251.1 276.8	234.8 258.9	264.2 291.2
CB-434D	Tonnes/hr tons/hr	193.7 213.6	258.3 284.7	230.6 254.2	276.8 305.1	251.1 276.8	287.0 316.4	264.2 291.2
CB-534D	Tonnes/hr tons/hr	193.7 213.6	258.3 284.7	322.9 355.9	276.8 305.1	322.9 355.9	287.0 316.4	322.9 355.9
CB-634D	Tonnes/hr tons/hr	322.9 355.9	258.3 284.7	322.9 355.9	387.5 427.1	322.9 355.9	369.0 406.8	415.1 457.6

Example

Actual Conditions — A 3.7 m (12 ft) lane is being paved with a compacted asphalt thickness of 10 cm (4 in). A CB-534D is being used, operating at 5.5 kph (3.4 mph), and making 4 passes to achieve the target density. The roller is overlapping its passes 15 cm (6 in) and is overhanging the edges by 7.5 cm (3 in).

First, the table gives a CB-534D productivity of 276.8 Tonnes/hr (305.1 tons/hr) for a 3.7 m (12 ft) paving width. Since the actual speed, thickness, and passes are *different* from the assumed conditions, the estimate should be adjusted:

$$F_s = 5.5 \text{ kph (3.4 mph)} / 4.5 \text{ kph (2.8 mph)} = 1.2$$

$$F_t = 10 \text{ cm (4 in)} / 5 \text{ cm (2 in)} = 2.0$$

$$F_p = 2 \text{ passes} / 4 \text{ passes} = 0.5$$

The actual, or adjusted, production estimate can then be determined from the following:

$$Q \text{ (actual)} = 276.8 \text{ Tonnes/hr (305.1 tons/hr)} \times 1.2 \times 2.0 \times 0.5 = 332.1 \text{ Tonnes/hr (366.1 tons/hr)}$$

Notes on Productivity:

- Higher speed usually results in lower density achieved per pass.
- Productivity on uphill slopes may be reduced.
- Tabulated production estimates assume that 1 pass is used for re-positioning the machine at the beginning of the next run.

	Assumed		Actual	
Speed	4.5 kph	2.8 mph	5.5 kph	3.4 mph
Thickness	5 cm	2 in	10 cm	4 in
Passes	2 passes		4 passes	

The tables in this section give production estimates for the following assumed conditions:

	Hot Mix Asphalt		Soil and Aggregate		Cold In-Place Recycled Asphalt	
Compacted Layer Thickness	51 mm	2 in	152 mm	6 in	203 mm	8 in
Max. Propelling Speed	8 kph	5 mph	8 kph	5 mph	4.8 kph	3 mph
Passes per Machine Width	4		4		6	
Compacted Material Density	2486 kg/cm ²	155 lb/ft²	2085 kg/cm ²	130 lb/ft²	2246 kg/cm ²	140 lb/ft²
Overlap of Rolling Width	152 mm	6 in	152 mm	6 in	152 mm	6 in
Overhang at Lane Edge	76 mm	3 in	76 mm	3 in	76 mm	3 in
Cycle Time (2 passes)	120 seconds		120 seconds		120 seconds	

Table values give **representative** production rates for common construction widths. If the actual width falls between two assumed widths, use the higher number to estimate production. Minor adjustments can normally be made in the rolling method to reach this higher production: reduce overlap or overhang, increase speed, or increase the cycle time.

Hot Mix Asphalt		PAVING WIDTH						
Model	Units	1.8 m 6 ft	2.4 m 8 ft	3.0 m 10 ft	3.7 m 12 ft	4.3 m 14 ft	4.9 m 16 ft	5.5 m 18 ft
PS-150C	Tonnes/hr tons/hr	195.2 215.1	260.2 286.8	325.3 358.6	270.2 297.9	315.3 347.5	275.5 303.7	310.0 341.7
PF-300B & PS-300B	Tonnes/hr tons/hr	195.2 215.1	260.2 286.8	325.3 358.6	270.2 297.9	315.3 347.5	360.3 397.2	310.0 341.7
PS-360B	Tonnes/hr tons/hr	351.3 387.2	260.2 286.8	325.3 358.6	390.3 430.3	455.4 502.0	360.3 397.2	405.3 446.8

Soil and Aggregate		1.8 m	2.4 m	3.0 m	3.7 m	4.3 m	4.9 m	5.5 m
PS-150C	Tonnes/hr tons/hr	490.1 540.2	653.4 720.3	816.8 900.4	678.6 748.0	791.7 872.7	691.9 762.7	778.4 858.0
PF-300B & PS-300B	Tonnes/hr tons/hr	490.1 540.2	653.4 720.3	816.8 900.4	678.6 748.0	791.7 872.7	904.8 997.3	778.4 858.0
PS-360B	Tonnes/hr tons/hr	882.2 972.4	653.4 720.3	816.8 900.4	980.2 1080.4	1143.5 1260.5	904.8 997.3	1017.9 1122.0

Cold In-Place Recycled Asphalt		1.8 m	2.4 m	3.0 m	3.7 m	4.3 m	4.9 m	5.5 m
PS-150C	Tonnes/hr tons/hr	288.0 317.5	384.0 423.3	480.0 529.2	394.1 434.5	459.8 506.9	399.4 440.3	449.3 495.3
PF-300B & PS-300B	Tonnes/hr tons/hr	288.0 317.5	384.0 423.3	480.0 529.2	394.1 434.5	459.8 506.9	525.5 579.3	449.3 495.3
PS-360B	Tonnes/hr tons/hr	534.9 589.6	384.0 423.3	480.0 529.2	576.1 635.0	672.1 740.8	525.5 579.3	591.2 651.7

Example

Actual Conditions — An 7.3 m (23'11") (full road width) base aggregate job is being completed with a compacted thickness of 200 mm (8 in). A PS-150C is being used, operating at 6.5 kph (4 mph), and making 6 passes achieve the desired compaction. The roller is overlapping its passes 152 mm (6 in).

First, the table does not show production for 7.3 m (23'11") so use the greatest width on the table: 5.5 m (18'1"). The table gives a PS-150C productivity of 778.4 Tonnes/hr (858.0 tons/hr) for this paving width. We can expect that the actual productivity for 7.3 m (23'11") will be slightly higher than that. Since the speed, thickness, and passes are *different* from the assumed conditions, we should adjust this estimate:

	Assumed		Actual	
Speed	8 kph	5 mph	6.5 kph	4 mph
Thickness	152 mm	6 in	200 mm	8 in
Passes	4 passes		6 passes	

$$F_s = 6.5 \text{ kph} / 8 \text{ kph} \text{ (4 mph/5 mph)} = 0.8$$

$$F_t = 200 \text{ mm} / 152 \text{ mm} \text{ (8 in/6 in)} = 1.3$$

$$F_p = 4 \text{ passes} / 6 \text{ passes} = 0.7$$

The estimated production is adjusted using these factors:

$$Q \text{ (actual)} = 778.4 \text{ Tonnes/hr (858.0 tons/hr)} \times \\ 0.8 \times 1.3 \times 0.7 = 567 \text{ Tonnes/hr} \\ \text{(625 ton/hr)}$$

Notes on Productivity:

- Ballast weight and tire pressure can significantly affect performance of a pneumatic tire compactor. Refer to machine specifications to choose the best configuration.
- Productivity on uphill grades and very thick layers (>127 mm, or 5 in) may be reduced due to a necessary reduction in speed.
- The 11-tire configuration for the PS-150C is designed only for chip-and-seal applications. It is not recommended in other applications.

Notes —

UNDERGROUND MINING EQUIPMENT

Loaders and Haulers for Hard Rock Mining

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Features, all models:

- Rugged design for underground application.
- Engineered for productivity, reliability, safety and machine rebuildability.
- Extensive use of steel castings and forgings.
- Caterpillar heavy duty diesel engines and power trains.
- Computerized machine function monitoring.
- Four wheel enclosed wet disc brakes.
- Remote control options on loaders.
- Payload control system option on loaders.
- Ride control system optional on loaders.
- Fully enclosed air conditioned operator stations available.
- Operator Stations are ROPS/FOPS certified.

Product Line:

- Five models of Load-Haul-Dump (LHD) machines, with rated bucket payloads ranging from 6800 kg (14,991 lb) to 20 000 kg (44,100 lb).
- Three models of articulated dump trucks, with payload capacities of 30 000 kg (66,140 lb) to 55 000 kg (121,247 lb).
- Three models of articulated ejector trucks, with payload capacities of 27 000 kg (59,500 lb) to 47 000 kg (103,700 lb).



MODEL	R1300G II		R1600G	
Bucket Size Minimum	2.4 m ³	3.1 yd³	4.2 m ³	5.5 yd³
Bucket Size Maximum	3.4 m ³	4.4 yd³	5.9 m ³	7.7 yd³
Tramming Capacity	6800 kg	14,991 lb	10 200 kg	22,490 lb
Length	8714 mm	28'7"	9710 mm	31'10"
Width Bucket	2200 mm	7'2"	2600 mm	8'6"
Width over Tires	1900 mm	6'2"	2400 mm	7'10"
Height	2120 mm	6'11"	2400 mm	7'10"
Operating Weight	20 950 kg	46,187 lb	29 800 kg	65,710 lb
Engine Power	136 kW	182 hp	201 kW	270 hp
Engine Model	C6.6 ACERT		3176C EUI ATAAC	
Tire Size	17.5x25 20 Ply L5 STMS		18x25 28 Ply STMS	
Outer Turning Radius	5741 mm	18'10"	6638 mm	21'9"
Inner Turning Radius	2914 mm	9'7"	3291 mm	10'7"
Articulation Angle	±42.5°		±42.5°	
Oscillation Angle	±10°		±10°	
Bucket Raise Time	5.2 Sec.		7.6 Sec.	
Bucket Lower Time	2.2 Sec.		1.6 Sec.	
Bucket Tip Time	1.8 Sec.		2 Sec.	
Bucket Total Time	9.1 Sec.		11.2 Sec.	
Travel Speeds	km/h	mph	km/h	mph
Forward 1	5.2	3.2	5.2	3.2
2	9.9	6.2	9.2	5.7
3	17.8	11.1	16.4	10.2
4	31.3	19.4	28.6	17.8
Reverse 1	4.7	2.9	5.8	3.6
2	9.0	5.6	10.5	6.5
3	16.2	10.1	18.5	11.5
4	28.4	17.6	31.8	19.8
Maximum Bucket Pin Height	2918 mm	9'7"	3752 mm	12'4"
Maximum Bucket Dump Angle	43°		45°	
Break Out Force SAE	12 020 kg	26,505 lb	19 500 kg	43,000 lb
Static Tipping (Load)	20 575 kg	45,360 lb	33 350 kg	73,537 lb
Service Brake	Spring Applied Fluid Released (SAFR™) fully enclosed wet disc brakes at all wheels. Front and rear circuits.		Spring Applied Fluid Released (SAFR™) fully enclosed wet disc brakes at all wheels. Front and rear circuits.	
Park Brake	Spring Applied Fluid Released (SAFR™) fully enclosed wet disc brakes at all wheels. Front and rear circuits.		Spring Applied Fluid Released (SAFR™) fully enclosed wet disc brakes at all wheels. Front and rear circuits.	
Fuel Capacity	295 L	78 U.S. gal	400 L	106 U.S. gal

Load-Haul-Dump
• Specifications

Underground
Mining



MODEL	R1700G		R2900G		R2900G XTRA	
Bucket Size Minimum	4.6 m ³	6 yd ³	6.4 m ³	8.4 yd ³	8.2 m ³	10.6 yd ³
Bucket Size Maximum	8.8 m ³	11.4 yd ³	8.9 m ³	11.6 yd ³	11.6 m ³	15.2 yd ³
Tramming Capacity	14 000 kg	30,870 lb	17 200 kg	37,926 lb	20 000 kg	44,092 lb
Length	10 600 mm	34'9"	10 949 mm	35'11"	11 083 mm	37'10"
Width Bucket	2872 mm	9'7"	3054 mm	10'0"	3472 mm	11'5"
Width over Tires	2650 mm	8'8"	2898 mm	9'5"	3142 mm	10'3"
Height	2557 mm	8'5"	2886 mm	9'5"	2988 mm	9'8"
Operating Weight	38 500 kg	84,880 lb	50 209 kg	110,711 lb	56 000 kg	123,459 lb
Engine Power	231 kW	310 hp	323/335 kW	443/449 hp	306 kW	410 hp
Engine Model	3176C EUI ATAAC		C15 ACERT		C15 ACERT	
Tire Size	26.5x25 32 Ply L5 STMS		29.5x29 34 Ply STMS		35/65 R33	
Outer Turning Radius	6878 mm	22'7"	7323 mm	24'0"	7511 mm	24'6"
Inner Turning Radius	3229 mm	10'7"	3383 mm	11'1"	3289 mm	10'10"
Articulation Angle	±44°		±42.5°		±42.5°	
Oscillation Angle	±8°		±8°		±8°	
Bucket Raise Time	6.8 Sec.		6.7 Sec.		6.7 Sec.	
Bucket Lower Time	2.4 Sec.		2.4 Sec.		2.4 Sec.	
Bucket Tip Time	2.9 Sec.		2.8 Sec.		2.8 Sec.	
Bucket Total Time	12.1 Sec.		11.9 Sec.		11.9 Sec.	
Travel Speeds	km/h	mph	km/h	mph	km/h	mph
Forward 1	5.1	3.2	5.0	3.1	5.0	3.1
2	9.0	5.6	8.8	5.5	8.8	5.5
3	15.8	9.8	15.2	9.4	15.2	9.4
4	27.1	16.8	25.3	15.7	25.3	15.7
Reverse 1	5.9	3.6	6.2	3.8	6.2	3.8
2	10.3	6.4	10.9	6.8	10.9	6.8
3	17.9	11.1	18.6	11.6	18.6	11.6
4	30.7	19.1	26.4	16.4	26.4	16.4
Maximum Bucket Pin Height	4098 mm	13'5"	4539 mm	14'9"	4547 mm	14'9"
Maximum Bucket Dump Angle	46°		46°		46°	
Break Out Force SAE	22 531 kg	49,672 lb	27 800 kg	61,288 lb	25 100 kg	55,340 lb
Static Tipping (Load)	37 338 kg	82,316 lb	32 630 kg	71,937 lb	45 782 kg	100,940 lb
Service Brake	Spring Applied Fluid Released (SAFR™) fully enclosed wet disc brakes at all wheels. Front and rear circuits.		Spring Applied Fluid Released (SAFR™) fully enclosed wet disc brakes at all wheels. Front and rear circuits.		Spring Applied Fluid Released (SAFR™) fully enclosed wet disc brakes at all wheels. Front and rear circuits.	
Park Brake	SAFR™ Inboard spring applied fluid released, enclosed wet disc @ all wheels. Front and rear circuits.		Spring applied fluid released, wet discs all wheel ends.		Spring applied fluid released, wet discs all wheel ends.	
Fuel Capacity	570 L	151 U.S. gal	895 L	236 U.S. gal	895 L	236 U.S. gal
Dump Clearance	2484 mm	8'1"	2868 mm	9'5"	2726 mm	8'11"

NOTE: R1700G and R2900G XTRA: For Load, Haul, Carry only @ rated load. Not truck loading @ rated load.

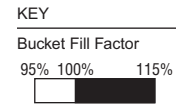
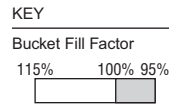
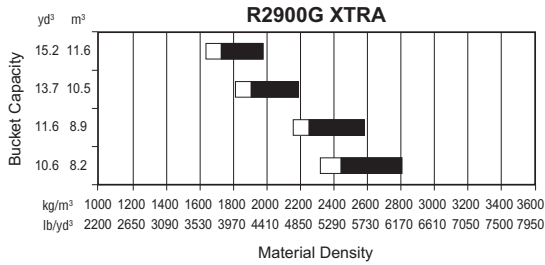
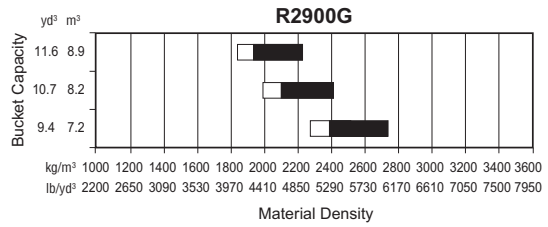
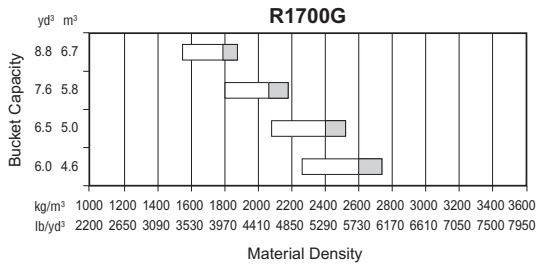
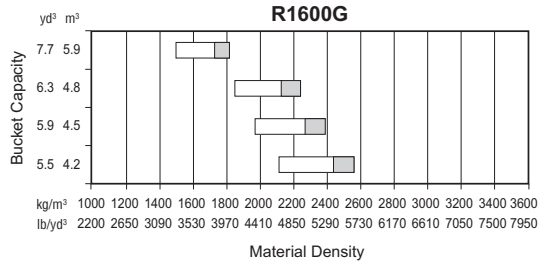
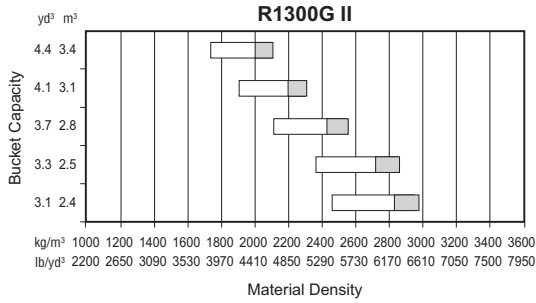
Model	R1300G II		R1600G		R1700G	
Rated payload	6800 kg	14,991 lb	10 200 kg	22,490 lb	14 000 kg	30,870 lb
Bucket capacity	3.1 m ³	4.1 yd³	4.8 m ³	6.3 yd³	5.7 m ³	7.5 yd³
Overall width	2071 mm	6'10"	2600 mm	8'7"	2818 mm	9'3"
Overall height	2120 mm	6'11"	2400 mm	7'10"	2557 mm	8'5"
Length (tramming)	8714 mm	28'7"	9710 mm	31'10"	10 595 mm	34'9"
Operating weight	20 950 kg	46,187 lb	29 800 kg	65,710 lb	38 500 kg	84,890 lb
Loaded weight	27 750 kg	61,178 lb	40 000 kg	88,200 lb	51 000 kg	112,460 lb
Ground clearance	328 mm	12.9"	342 mm	13.5"	400 mm	15.7"
Axle oscillation	±10°		±10°		±8°	

Model	R2900G		R2900G XTRA	
Rated payload	17 200 kg	37,930 lb	20 000 kg	44,092 lb
Bucket capacity	7.2 m ³	9.4 yd³	8.9 m ³	11.6 yd³
Overall width	3010 mm	9'11"	3200 mm	10'6"
Overall height	2886 mm	9'6"	2988 mm	9'8"
Length (tramming)	10 949 mm	35'11"	11 083 mm	36'4"
Operating weight	48 850 kg	107,710 lb	56 000 kg	123,459 lb
Loaded weight	66 050 kg	145,640 lb	76 000 kg	167,551 lb
Ground clearance	465 mm	18.3"	466 mm	18.4"
Axle oscillation	±8°		±8°	

Model	Bucket Type	SAE Capacity	
		m³	yd³
R1300G II	Standard	2.4	3.1
	Standard	2.8	3.7
	Standard	3.1	4.1
	Standard	3.4	4.4
	Ejector	2.5	3.3
R1600G	Standard	4.2	5.5
	Standard	4.8	6.3
	Standard	5.9	7.7
	High Penetration	4.2	5.5
	High Penetration	4.8	6.3
	High Penetration Ejector	5.9	7.7
R1700G	Standard	4.6	6.0
	Standard	5.0	6.5
	Standard	5.7	7.5
	Standard	6.6	8.6
	Standard	7.4	9.7
	High Penetration	5.0	6.5
	High Penetration	5.7	7.5
	High Penetration	6.6	8.6
	High Penetration	7.3	9.6
	Light Material	8.8	11.4
	R2900G and R2900G XTRA	Standard	6.4
Standard		7.1	9.3
Standard		8.1	10.6
Standard		8.8	11.5
Standard		11.5	15.0
High Penetration		6.4	8.4
High Penetration		7.2	9.4
High Penetration		8.2	10.7
High Penetration		8.9	11.6
Light Material		10.5	13.7
Light Material		11.6	15.2

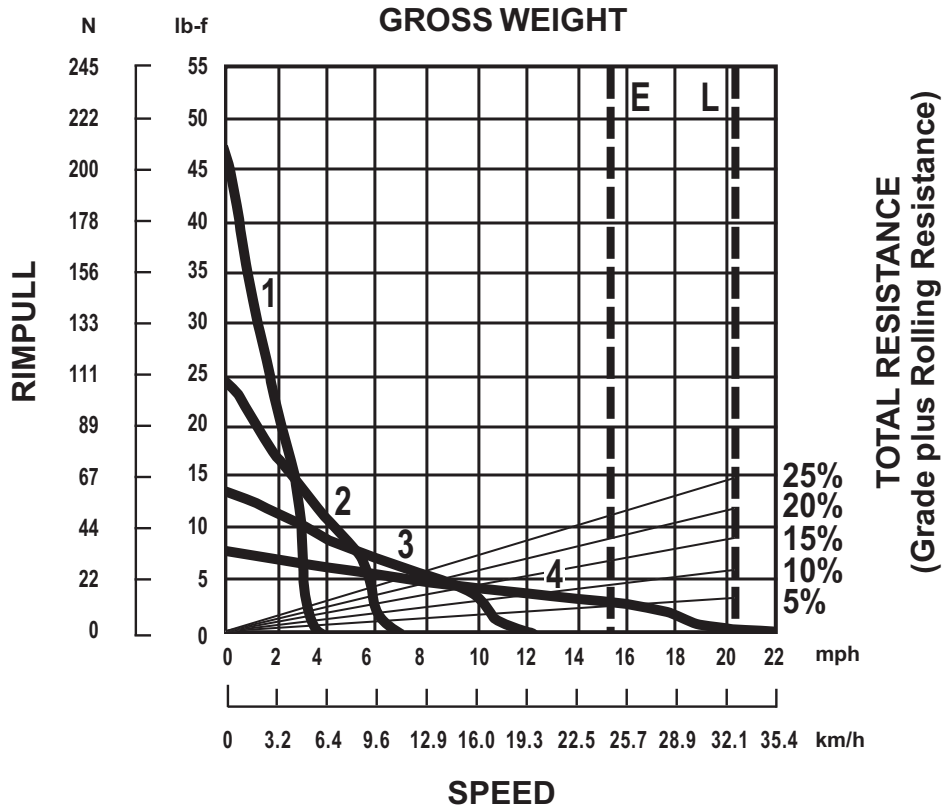
- Bucket Selection
- Turning Dimensions

Underground Mining



Turning Dimensions

Model	R1300G II	R1600G	R1700G	R2900G	R2900G XTRA
Turn radius (outside)	5741 mm 18'10"	6638 mm 21'9"	6878 mm 22'7"	7323 mm 24'0"	7511 mm 24'8"
Turn radius (inside)	2914 mm 9'7"	3291 mm 10'10"	3229 mm 10'7"	3383 mm 11'1"	3289 mm 10'8"
Articulation angle	±42.5°	±42.5°	±44°	±42.5°	±42.5°

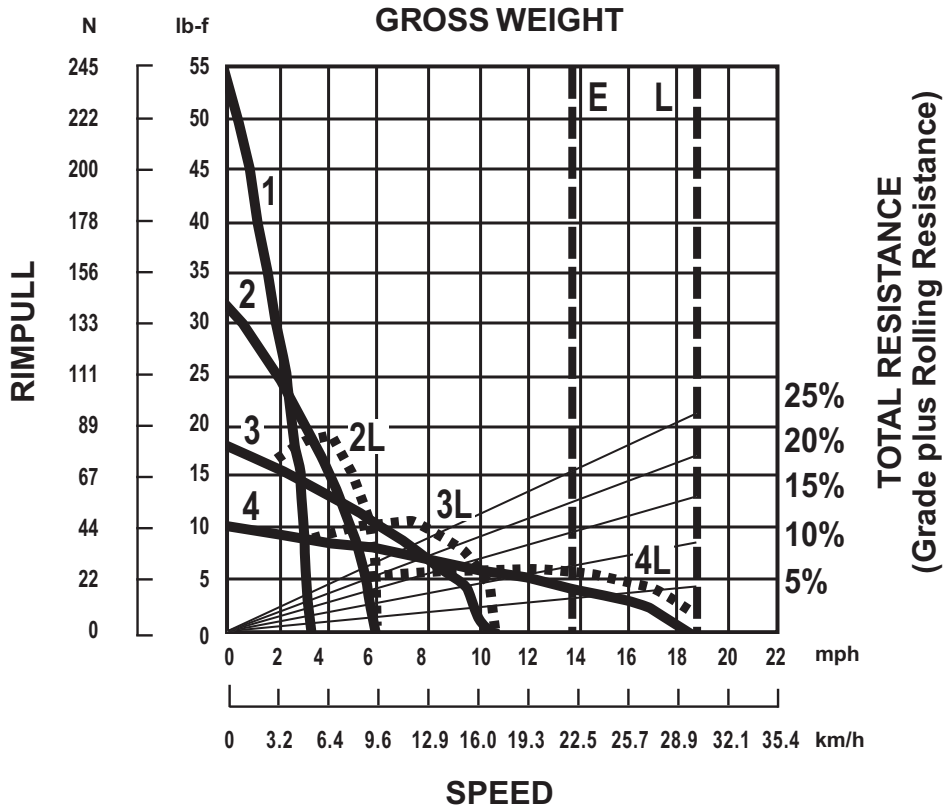


KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear

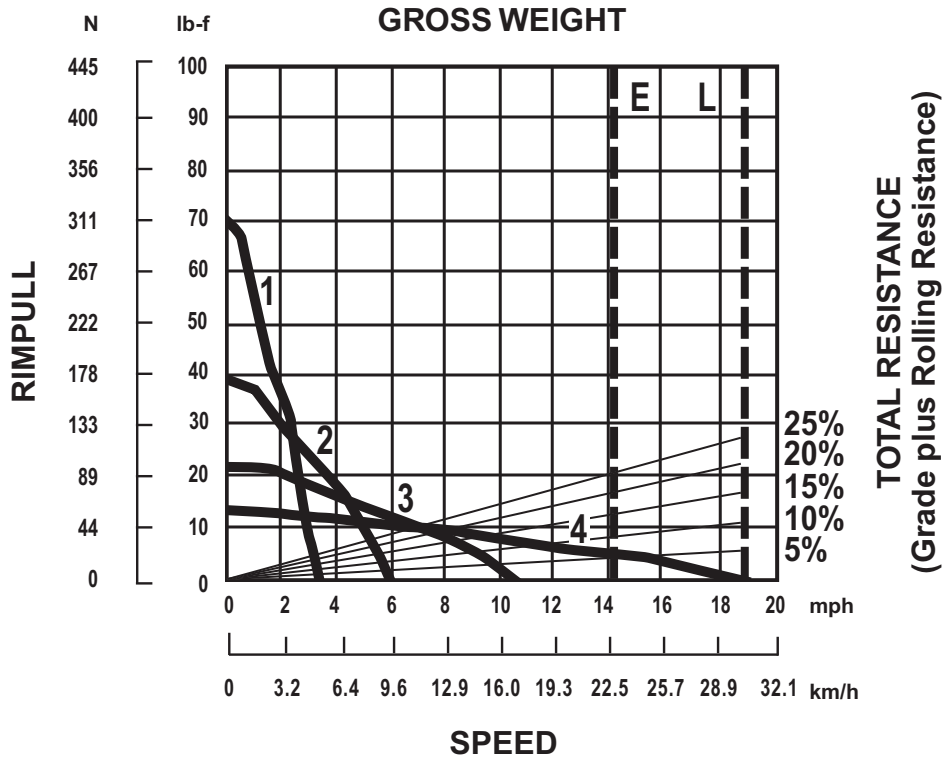
KEY

- E — Empty 20 950 kg (46,187 lb)
- L — Loaded 27 750 kg (61,178 lb)



KEY
 1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear
 4 — 4th Gear

KEY
 E — Empty 29 800 kg (65,698lb)
 L — Loaded 40 000 kg (88,185 lb)

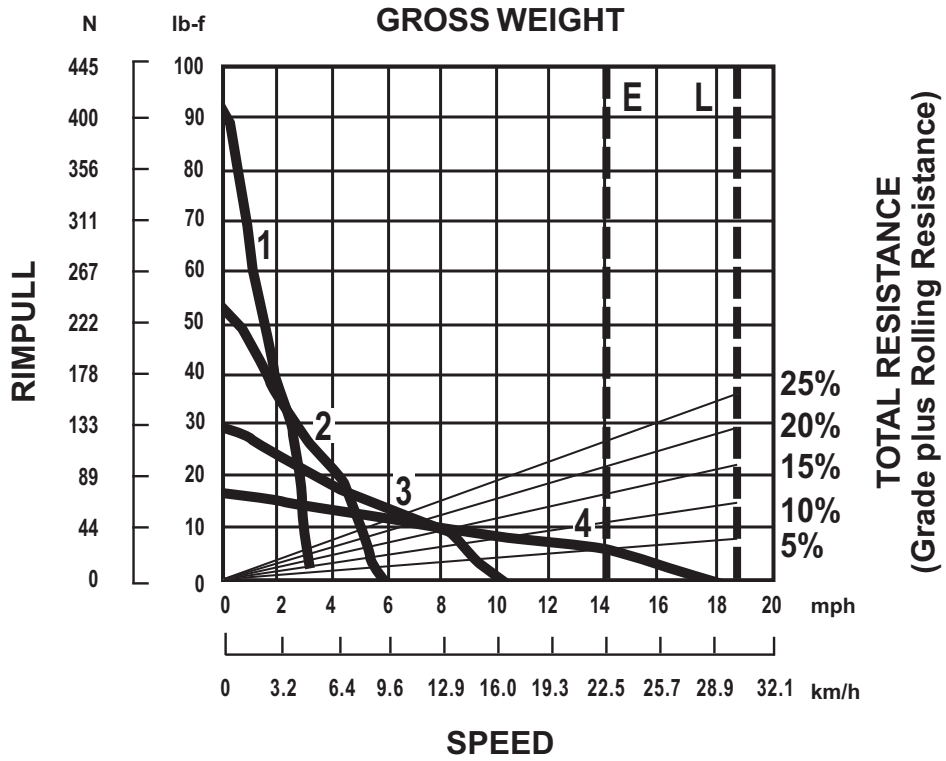


KEY

- 1 — 1st Gear
- 2 — 2nd Gear
- 3 — 3rd Gear
- 4 — 4th Gear

KEY

- E — Empty 38 500 kg (84,878 lb)
- L — Loaded 51 000 kg (112,436 lb)

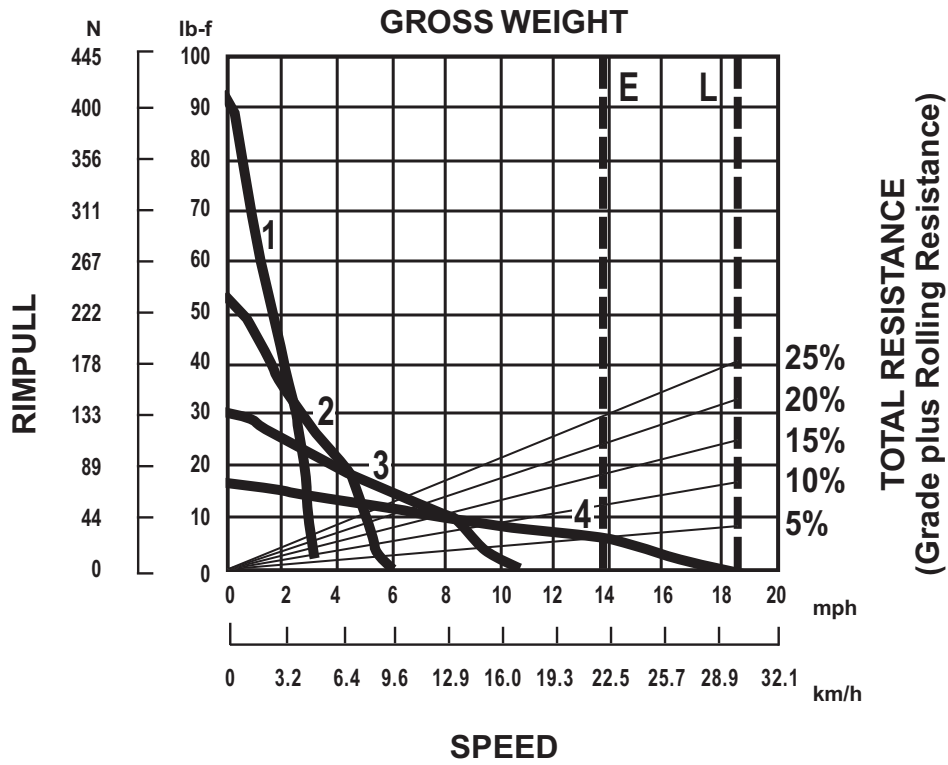


KEY

1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear
 4 — 4th Gear

KEY

E — Empty 50 209 kg (110,711 lb)
 L — Loaded 67 409 kg (148,637 lb)



KEY

1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear
 4 — 4th Gear

KEY

E — Empty 55 575 kg (122,522 lb)
 L — Loaded 75 575 kg (166,614 lb)

Articulated Trucks
• Specifications

Underground
Mining



MODEL	AD30		AD45B		AD55	
Engine Power	298 kW	400 hp	439 kW	589 hp	485 kW	650 hp
Engine Model	C15		C18		C18	
Tare Weight	30 000 kg	66,150 lb	40 500 kg	89,287 lb	47 000 kg	103,617 lb
Max. Capacity (Dump)	60 000 kg	132,300 lb	45 000 kg	99,208 lb	55 000 kg	121,254 lb
Capacity M3 (SAE) 2:1 Heaped	14.4 m ³	18.8 yd³	21.3 m ³	27.9 yd³	26.9 m ³	35.2 yd³
Distribution Loaded Front	47.1%		45%		48%	
Distribution Loaded Rear	52.9%		55%		52%	
Turning Radius (Standard Dump Body)	8571 mm	28'1"	9291 mm	30'6"	9171 mm	32'1"
Height	2600 mm	8'6"	3053 mm	10'0"	3202 mm	10'6"
Length	10 160 mm	33'4"	11 190 mm	36'9"	11 547 mm	37'11"
Loading Height	2385 mm	7'10"	2925 mm	9'7"	3045 mm	10'0"
Width	2690 mm	8'10"	3000 mm	9'10"	3346 mm	11'0"
Oscillation Angle	±10°		±10°		±10°	
Articulation Angle	±42.5°		±42.5°		±42.5°	
Tray Height Raised (Dump)	5602 mm	18'5"	6357 mm	20'10"	7001 mm	23'0"
Dump Time	10 Sec.		10 Sec.		11.5 Sec.	
Travel Speeds	km/h	mph	km/h	mph	km/h	mph
Forward 1	5.5	3.4	7.7	4.8	8.1	5.0
2	9.9	6.1	10.5	6.5	11.2	6.9
3	17.6	10.9	14.3	8.9	15.1	9.4
4	31.0	19.3	19.2	11.9	20.3	12.6
5	—	—	26.1	16.2	27.6	17.1
6	—	—	35.2	21.8	37.2	23.1
7	—	—	47.7	29.6	50.4	31.3
8	—	—	—	—	—	—
Reverse 1	6.8	4.3	7.4	4.6	7.9	4.9
2	—	—	10.1	6.3	10.7	6.6
Tire Size	26.5-R25		29.5x29 2 ★★ Radials		5/65-R33 ★★ Radials	
Service Brake	Caterpillar oil cooled hyd. applied wet disc all wheels.		Caterpillar oil cooled hyd. applied wet disc all wheels.		Caterpillar oil cooled hyd. applied wet disc all wheels.	
Park Brake	Spring applied hyd. released all wheels.		Spring applied hyd. released all wheels.		Spring applied hyd. released all wheels.	
Fuel Capacity	500 L	132.1 U.S. gal	674 L	202 U.S. gal	960 L	253 U.S. gal

Articulated Trucks

Model	AD30		AD45B		AD55	
Heaped capacity*	14.4 m ³	18.8 yd³	21.3 m ³	27.9 yd³	26.9 m ³	35.2 yd³
Overall width	2650 mm	8'6"	3000 mm	9'10"	3346 mm	10'9"
Overall height	2600 mm	8'5"	2960 mm	9'9"	3202 mm	10'6"
Overall length	10 160 mm	33'4"	10 660 mm	35'0"	11 547 mm	37'8"
Empty weight	30 000 kg	66,140 lb	40 500 kg	89,303 lb	47 000 kg	103,617 lb
Loaded weight	60 000 kg	132,280 lb	85 500 kg	188,528 lb	102 000 kg	226,871 lb
Ground clearance	400 mm	15.7"	452 mm	17.8"	391 mm	15.4"
Frame oscillation	±10°		±12°		±10°	

*2:1 per SAE.

Body Selection

Model	SAE Body Capacity	
AD30 Dump	11.3 m ³	14.8 yd³
	14.4 m ³	18.8 yd³
	16.8 m ³	22.0 yd³
	17.5 m ³	22.8 yd³
AD30 Ejector	15.2 m ³	19.8 yd³
AD45 Dump	21.3 m ³	27.9 yd³
	25.1 m ³	32.8 yd³
AD45 Ejector	22.9 m ³	30.0 yd³
AD55	26.9 m ³	35.2 yd³
	33.8 m ³	44.2 yd³
	36.6 m ³	47.9 yd³
AD55 Ejector	26.9 m ³	35.2 yd³

Turning Dimensions

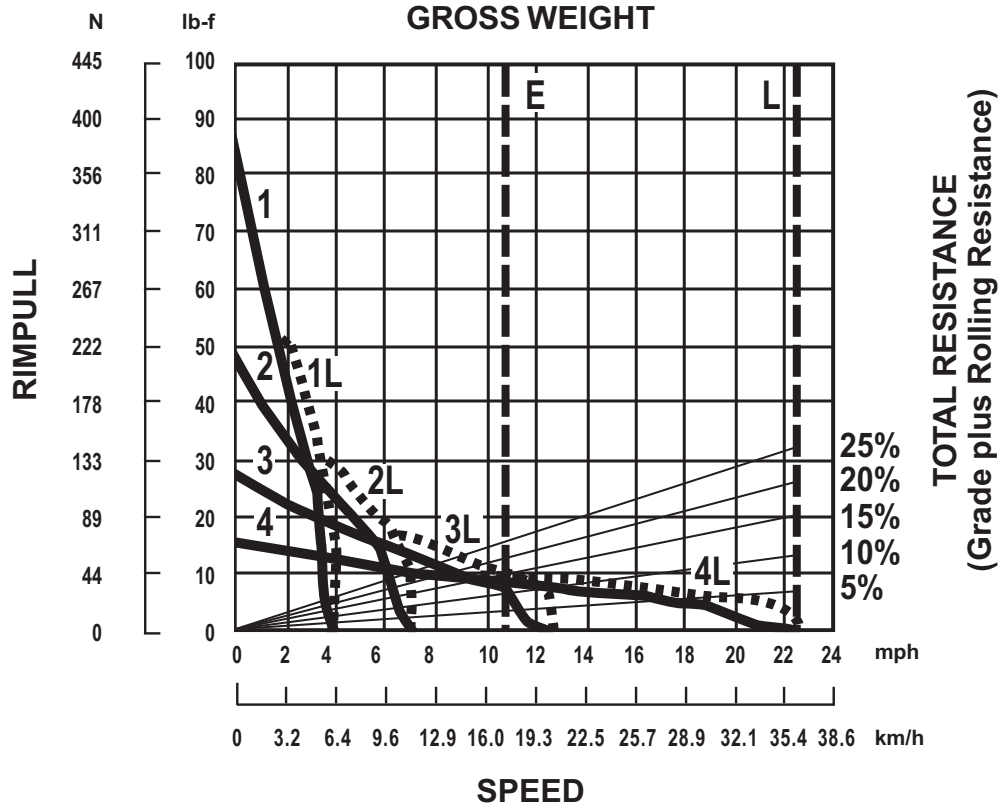
Articulated Trucks

Model	AD30		AD45B		AD55*	
Turn radius (outside)	8571 mm	28'1"	9291 mm	30'6"	9885 mm	32'5"
Turn radius (inside)	5030 mm	16'5"	5310 mm	17'5"	5540 mm	18'2"
Articulation angle	±42.5°		±42.5°		±42.5°	

*Standard dump body.

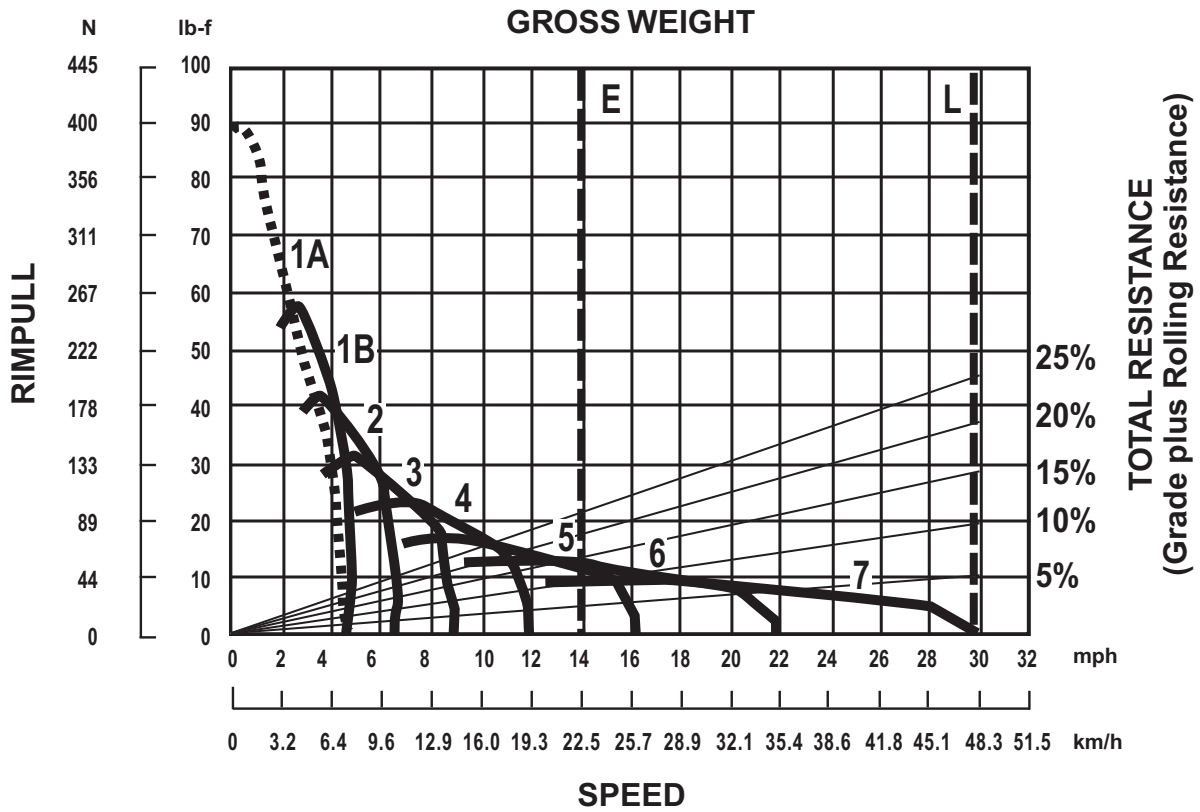
Ejector

Model	AD30		AD45B		AD55	
Turn radius (outside)	8571 mm	28'1"	9589 mm	31'4"	9171 mm	32'1"
Turn radius (inside)	4935 mm	16'2"	5448 mm	17'10"	5540 mm	18'2"
Articulation angle	±42.5°		±42.5°		±42.5°	



KEY
 1 — 1st Gear
 2 — 2nd Gear
 3 — 3rd Gear
 4 — 4th Gear

KEY
 E — Empty 28 870 kg (63,647 lb)
 L — Loaded 60 000 kg (132,277 lb)

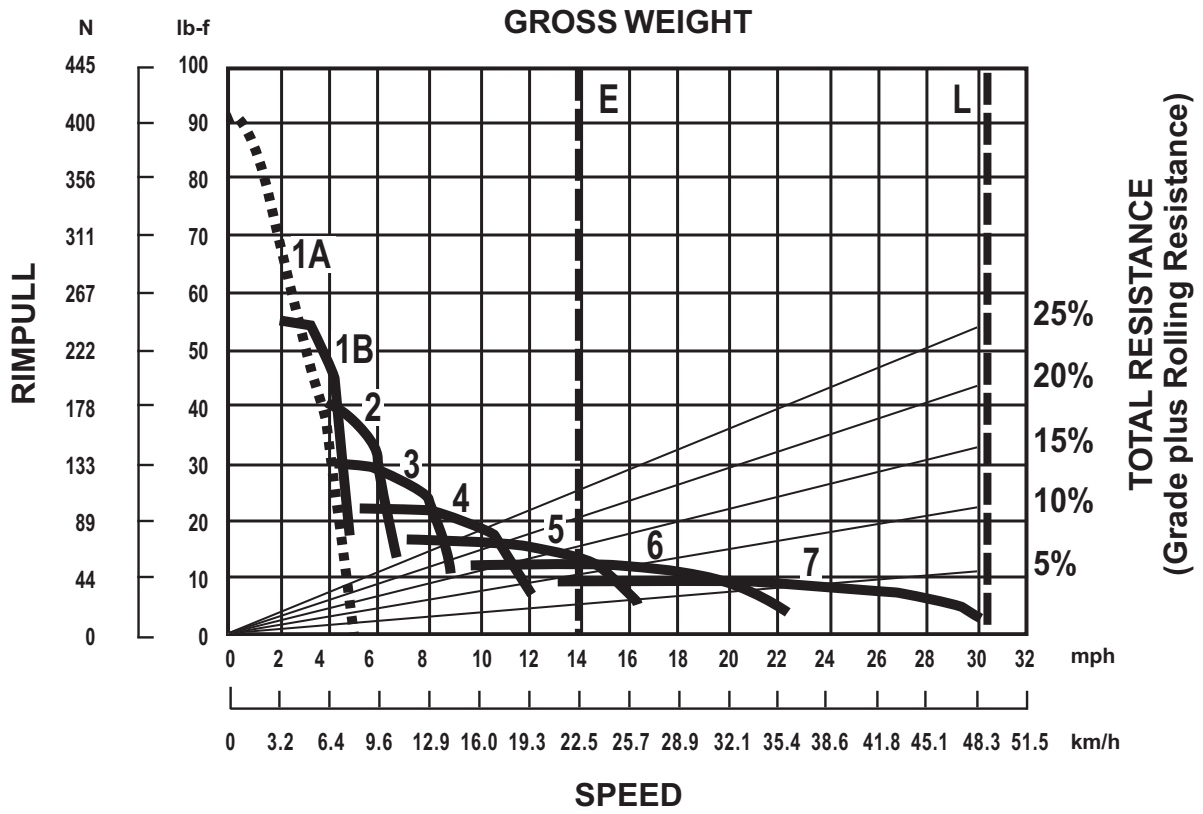


KEY

- 1A — 1st Gear Torque Converter Drive
- 1B — 1st Gear Direct Drive
- 2 — 2nd Gear Direct Drive
- 3 — 3rd Gear Direct Drive
- 4 — 4th Gear Direct Drive
- 5 — 5th Gear Direct Drive
- 6 — 6th Gear Direct Drive
- 7 — 7th Gear Direct Drive

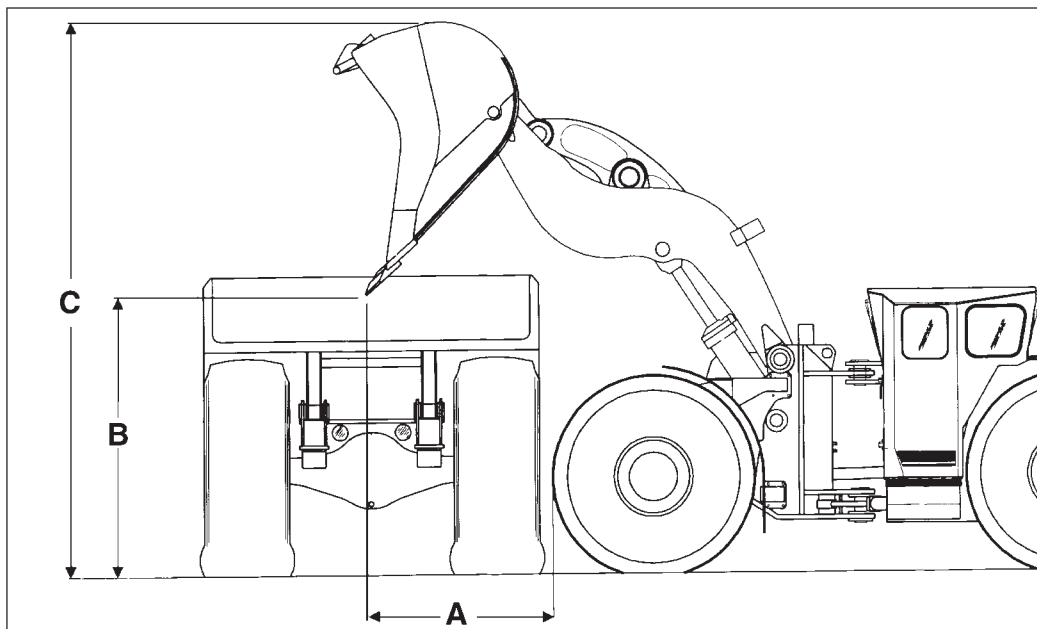
KEY

- E — Empty 40 000 kg (88,185 lb)
- L — Loaded 85 000 kg (187,393 lb)



- KEY**
- 1A — 1st Gear Torque Converter Drive
 - 1B — 1st Gear Direct Drive
 - 2 — 2nd Gear Direct Drive
 - 3 — 3rd Gear Direct Drive
 - 4 — 4th Gear Direct Drive
 - 5 — 5th Gear Direct Drive
 - 6 — 6th Gear Direct Drive
 - 7 — 7th Gear Direct Drive

- KEY**
- E — Empty 47 000 kg (103,617 lb)
 - L — Loaded 102 000 kg (224,871 lb)



Loader	Target	A		B		C	
R1300G		1667 mm	5'6"	1621 mm	5'4"	3529 mm	11'8"
R1600G	AD30	1408 mm	4'6"	2207 mm	7'3"	4497 mm	14'9"
R1700G	AE40 Series II	1652 mm	5'5"	2490 mm	8'2"	4903 mm	16'1"
R1700G	AD55	1665 mm	5'6"	2470 mm	8'1"	4900 mm	16'1"
R1700G	69D	1652 mm	5'5"	2490 mm	8'2"	4903 mm	16'1"
R2900G	AD45	1652 mm	5'5"	2871 mm	9'5"	5427 mm	17'10"
R2900G	AD55	1652 mm	5'5"	2871 mm	9'5"	5427 mm	17'10"
R2900G	69D	1787 mm	5'10"	2874 mm	9'5"	5429 mm	17'10"

NOTE: 12.5 t (14 T) and 17.9 t (20 T) ratings for the R1700G and R2900G XTRA (respectfully) are for load and carry applications. Maximum capacity for truck loading application should be R1700G @ 11.2 t (12.5 T) and R2900G @ 15.4 t (17.2 T).

Notes —

Notes —

HYDROMECHANICAL WORK TOOLS

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HYDRAULIC HAMMERS**H45-H100 Hammer Features:**

- **Low Pressure Accumulator** provides the energy for the piston power stroke.
- **Custom Side Plates** designed for Caterpillar carrier geometry. Protects power cell. Allows for complete folding of the boom on side-shift backhoes.
- **High Pressure Accumulator** dampens pressure peaks and pulsation, thus protecting carrier hydraulic system. Recovers rebound energy in hard material for greater impact power.
- **Distributor** has high oil volume for ultra high blow frequency.
- **Pressure Adjusting Valve** assures that all blows are delivered at a constant blow energy.
- **Long Heavy Piston** delivers maximum impact energy and minimizes recoil forces to carrier.
- **Long Front End** ensures proper piston — tool alignment.
- **Slip Fit Thrust Ring** dissipates harmful shock loads in abusive applications and is rotatable for additional life.
- **Slip Fit Upper Tool Bushing** is rotatable for additional life and provides positive tool alignment.
- **Slip Fit Lower Tool Bushing** provides positive tool alignment, is field replaceable and rotatable. Grease retention grooves provide extended lubrication and wear indication.
- **Sound suppressed** versions available for all models.

D-Series Small Hammer Features:

- **One Piece Body** results in reduced hammer components, which minimizes service time required.
- **Tubular Accumulator** eliminates accumulator retention screws, which improves hammer efficiency while simplifying maintenance.
- **Distributor** provides high oil volume for greater blow frequency.
- **Pressure Adjusting Valve (PAV)** assures that all blows are delivered at a constant blow energy.
- **Long Heavy Piston** delivers maximum impact energy and minimizes recoil forces to carrier.
- **Replaceable Piston Sleeve** reduces the cost to repair in event of catastrophic failure, simplifies serviceability.
- **Shock Isolation** feature significantly reduces shock loads transferred to the machine during hammer operation, improve operator comfort and extend life of critical machine components.
- **Round Tool Retaining Pin with Locking Mechanism** means no loose parts when changing tool.
- **Single Piece Upper & Lower Tool Bushing with Integral Tool Stop** simplifies product maintenance by allowing field replacement of all tool wear components.
- **Dust Seal** helps prevent foreign material from entering the housing, which reduces the wear on the power cell and other major components.
- **Tool** is heat treated for longer life, ideally matched to piston for greater transfer of stress waves.

H115 s-H180 s Hammer Features:

- **Shock Mount** isolates forces to protect the carrier.
- **Integrally Mounted Accumulator** dampens pressure peaks inside the hammer to protect the carrier hydraulic system, assist the piston in the power stroke, and allows checking/replacing nitrogen without removing the hammer.
- **Pressure Control Valve** allows hammer to strike with maximum fixed energy per blow.
- **Main Valve** directs the firing cycle and blocks the return port to protect the carrier hydraulics from pressure peaks.
- **Check Valve** maintains oil pressure in the accumulator when hammer is repositioned. This helps improve breaking efficiency (reduced waiting time).
- **Tie Rods** are heat torqued for easier tightening without torsion stresses.
- **Long Heavy Piston** minimizes recoil forces to protect hammer components and carrier structures.
- **Slip Fit Thrust Ring** dissipates shock loads in abusive applications and is rotatable for longer life.
- **Plastic Wear Plates** on all four sides guide the power cell within the housing.
- **Blank Fire Protection** aided by auto-shutoff stops operation when no material is present to be broken. It increases hammer reliability and durability by eliminating high stress resulting from blank firing. (Available on H140D s and H160D s.)
- **Slip Fit Upper Tool Bushing** is rotatable for longer life and is replaceable. Guides the tool to optimize in-line piston/tool contact.
- **Slip Fit Sealed Lower Tool Bushing** provides positive tool alignment, is field replaceable and rotatable. It has grease retention grooves for extended lubrication and wear indication.
- **Sound Suppression** consists of housing dampening material, plugs and covers.
- **Autolube** available for all hammers.












Hammer Applications:

- **Sewer and Water** — The hammer can be used on pockets of rock that slow down production. Also good for breaking up old concrete pipes, manholes, etc.
- **Road Construction** — An essential tool during improvements and upgrading. The hammer works well on removing existing curbs, traffic islands, ramps, or sections of concrete. With correct tool, it can cut asphalt.
- **Bridge Renewal** — Hammers are used to remove old bridge surfaces, railing supports, abutments, retaining walls, etc.
- **Demolition** — The hammer-equipped excavator is often a key helper in industrial demolition. It can break up fallen wall and floor sections as well as foundations, or other brick and concrete structures.
- **Mining and Aggregate** — Hammers can break oversized material to avoid secondary blasting, and size riprap. Hammers can be installed near crushers to prepare material for crushing.
- **Trenching/Primary Excavation** — In soft or layered materials, the hydraulic hammer with amoil or chisel point is an effective tool in excavation.
- **Direct Quarrying** — In many types of limestone, direct quarrying with hydraulic hammers can prove cost effective, especially where blasting is prohibited or restricted.










A hammer need not be full time attachment for these applications. It can be replaced by a bucket in a short time, allowing the machine to be used for digging, loading, lifting, or other tasks.

Consult your Caterpillar dealer for advice on correct sizing, installation and tool selection.

NOTE: Internal components of hammers are machined to close tolerances and require clean oil with full lubricating properties. When operating in high ambient temperatures or extreme temperature applications (e.g. foundries), higher viscosities are recommended to extend hammer life and improve performance. Hammers tend to shear multigrade mineral oil so that oil viscosity decreases. Contamination, water in oil, and decreased viscosity lead to earlier oil deterioration and the need for more frequent oil changes than normally recommended for the excavator. Extra care should be taken to avoid the entry of dust or dirt when installing or removing a hammer in the field.

Standard Tools			Special Tools											
Chisel	Moil	Blunt	Spade*	Compacting Plate			Hard Rock Chisel		Soft Rock Chisel		Pyramidal	Super Blunt		
C	M	B	S	CP			HRC		SRC		P	SB		
														
			H45 H45 s	H55D s	H63 H63 s	H70 H70 s	H90C H90C s	H100 H100 s	H115 s	H120C s	H130 s	H140D s	H160D s	H180 s
1. Roadbuilding/Construction														
Breaking of road surface			S	S	S	S	C	C	C	C	SRC,C	SRC,C	SRC,C	SRC,C
Breaking uneven bedrock to lay a road								M,C	M,C	M,C	C,SRC, HRC	C,SRC, HRC	C,SRC, HRC	C,SRC, HRC
Primary Breaking to prepare road bed												C,SOC, HRC	C,SOC, HRC	C,SOC, HRC
Asphalt cutting to shape or area			S	S	S	S	S	S,C						
Trench excavation for drainage						C	C	M,C						
Demolition of bridges								M,C	M,C	M,C	C,SRC, HRC	C,M,B	C,M,B	C,M,B
Heavily reinforced bridge pillars												B,SB	B,SB	B,SB
Compacting soils			CP	CP	CP	CP								
Making holes (for traffic signs, lamp posts)							M	M						
Breaking of frozen ground				C,S	C,S	C,S	C,S	C,M	P,C	P,C	P,SRC, C	P,SRC, C	P,SRC, C	P,SRC, C
2. Demolition/housing development														
Demolition of concrete walls, roofs, floors			C,M	C,M	C,M	C,M	C,M	C,M	C,M,P	C,M,P	C,M,P SRC	C,M,P SRC	C,SRC, P	C,SRC, P
Demolition of light, reinforced concrete foundation [<0.5 m (19.7")]			C,M	C,M	C,M	C,M	C,M	C,M	P	P	P,SRC			
Brick walls			C,M	C,M	C,M	C,M	C,M	C,M	C,M	C,M	C,SRC, HRC	C,SRC, HRC		
Rock trenches for mains/water supply/utilities							C,M	C,M	C,M	C,M	C,SRC, HRC			
Rock excavation for foundation								C,M	C,M	C,M	C,SRC, HRC	C,SRC, HRC	C,SRC, HRC	C,SRC, HRC
Mass excavation of rock for industrial building bases											C,SRC, HRC	C,SRC, HRC	C,SRC, HRC	C,SRC, HRC
Massive reinforced concrete foundations												P,SRC	P,SRC	P,SRC
Breaking of hard ground (not rock)							C,M	C,M	C,M	C,M	C,SRC	C,SRC		
Separating rebar from concrete (for recycling)						C,M	C,M	C,M	C,M	C,M	C,SRC	C,SRC	C,SRC	C,SRC

*Available as parallel or transverse.

Standard Tools			Special Tools											
Chisel	Moil	Blunt	Spade*	Compacting Plate			Hard Rock Chisel	Soft Rock Chisel	Pyramidal	Super Blunt				
C	M	B	S	CP			HRC	SRC	P	SB				
														
			H45 H45 s	H55D s	H63 H63 s	H70 H70 s	H90C H90C s	H100 H100 s	H115 s	H120C s	H130 s	H140D s	H160D s	H180 s
3. Quarrying/open cast mining														
Secondary breaking of blasted rock														
									B	B	B,SB	B,SB	B,SB	B
Primary breaking of rock														
									C,M	C,M	C,SRC, HRC	C,SRC, HRC	C,SRC, HRC	C,SRC, HRC
Breaking oversizes on a crusher/feeder														
					M	M	B	B	B	B	B,SB	B,SB		
Breaking of oversizes on grizzly or feed chute														
						M	B	B	B	B	B,SB	B,SB		
Breaking of oversizes after blasting														
						M	B	B	B	B	B,SB	B,SB	B,SB	B,SB
4. Underground applications														
Trenching in tunnels														
										C,M	C,SRC, HRC	C,SRC, HRC	C,SRC, HRC	C,SRC, HRC
Scaling in tunnel roofs and walls														
					C	C	C							
5. Metallurgical applications														
Breaking of slag in casting ladles														
				C,M	C,M	C,M	C,M	C,M	M,C					
Breaking of slag in converter openings														
								C,M	M,C	M,C	M,C			
Cleaning of castings														
									M,C					
Breaking of massive steel slag														
													B,SB, HRC	B,SB, HRC
Breaking of aluminum electrolyze slag														
													B,HRC	B,HRC
Breaking of refractory linings in furnaces														
							C,M	C,M						
6. Other applications														
Rock breaking where blasting is restricted														
												C,SRC, HRC	C,SRC, HRC	C,SRC, HRC
Demolition under water														
	C,M	C,M	C,M	C,M	C,M	C,M	C,M	C,M	C,M,P	C,M,P	C,M,P	C,M,P, SRC	C,SRC, P	C,SRC, P
Rock breaking under water														
												C,SRC, HRC	C,SRC, HRC	C,SRC, HRC

*Available as parallel or transverse.

Model	H45/H45 s		H55D s		H63/H63 s	
Working weight ¹	130/140 kg	286/308 lb	199 kg	438 lb	300/315 kg	660/693 lb
Impact frequency ²	830-2500 bpm		1022-2300 bpm		420-2000 bpm	
Hammer operating pressure ³	14 000 kPa	2031 psi	17 000 kPa	2465 psi	14 000 kPa	2031 psi
Carrier relief pressure ⁴	21 000 kPa	3045 psi	23 000 kPa	3335 psi	21 000 kPa	3045 psi
Acceptable oil flow	20-50 L/min	5-13 gpm	40-85 L/min	11-22 gpm	30-100 L/min	8-26 gpm
Maximum back pressure	3000 kPa	435 psi	2000 kPa	290 psi	3000 kPa	435 psi
Line size (minimum)						
ID pressure	12 mm	0.5"	15 mm	0.62"	19 mm	0.75"
ID return	12 mm	0.5"	15 mm	0.62"	19 mm	0.75"
Energy class	271 J	200 ft-lb	678 J	500 ft-lb	678 J	500 ft-lb
Carrier weight class	1.3-3.2 t	2860-7840 lb	2.5-4.5 t	5500-9900 lb	3-6.5 t	6600-14,300 lb

Model	H70/H70 s		H90C/H90C s		H100/H100 s	
Working weight ¹	425/430 kg	935/946 lb	590/600 kg	1298/1320 lb	820/830 kg	1804/1826 lb
Impact frequency ²	600-1850 bpm		500-1450 bpm		430-1300 bpm	
Hammer operating pressure ³	14 000 kPa	2031 psi	13 500 kPa	1960 psi	14 500 kPa	2100 psi
Carrier relief pressure ⁴	21 000 kPa	3045 psi	21 000 kPa	3045 psi	21 000 kPa	3045 psi
Acceptable oil flow	50-150 L/min	13-39 gpm	60-150 L/min	16-39 gpm	60-120 L/min	16-31 gpm
Maximum back pressure	3000 kPa	435 psi	2000 kPa	290 psi	1000 kPa	145 psi
Line size (minimum)						
ID pressure	25 mm	1"	25 mm	1"	25 mm	1"
ID return	25 mm	1"	25 mm	1"	25 mm	1"
Energy class	1017 J	750 ft-lb	1356 J	1000 ft-lb	2034 J	1500 ft-lb
Carrier weight class	5-8 t	11,000-17,600 lb	6-12 t	13,200-26,400 lb	8-14 t	17,600-30,800 lb

¹ Includes power cell, side plates/housing, average mounting bracket, where required, and standard tool.

² Approximate value, actual impact frequency depends on oil flow, oil viscosity, temperature, and hardness of material to be broken.

³ Approximate value, operating pressure depends on oil flow, oil viscosity, temperature, material to be broken, and back pressure. Operating pressure is the result of correct low pressure adjustment.

⁴ Approximate value, exact value depends on installation parameters.

Oil temperature working range for all models: -20° C to +80° C (-4° F to +176° F).

Oil viscosity at operating oil temperature: 15 to 1000 cSt.

Model	H115 s		H120C s		H130 s	
Working weight ¹	1000 kg	2200 lb	1300 kg	2870 lb	1700 kg	3740 lb
Impact frequency ²	370-800 bpm		350-620 bpm		320-600 bpm	
Hammer operating pressure ³	14 000 kPa	2031 psi	14 000 kPa	2031 psi	14 000 kPa	2031 psi
Carrier relief pressure ⁴	21 000 kPa	3045 psi	21 000 kPa	3045 psi	21 000 kPa	3045 psi
Acceptable oil flow	70-130 L/min	18-34 gpm	100-170 L/min	26-45 gpm	120-220 L/min	31-57 gpm
Maximum back pressure	1000 kPa	145 psi	1000 kPa	145 psi	1000 kPa	145 psi
Line size (minimum)						
ID pressure	25 mm	1"	25 mm	1"	25 mm	1"
ID return	25 mm	1"	25 mm	1"	32 mm	1.25"
Energy class	3390 J	2500 ft-lb	4067 J	3000 ft-lb	4745 J	3500 ft-lb
Carrier weight class	12-20 t	26,400-44,000 lb	17-26 t	37,400-57,200 lb	19-32 t	41,800-70,400 lb

Model	H140D s		H160D s		H180 s	
Working weight ¹	2350 kg	5170 lb	3150 kg	6946 lb	3800 kg	8360 lb
Impact frequency ²	350-600 bpm		380-560 bpm		370-520 bpm	
Hammer operating pressure ³	16 000 kPa	2321 psi	16 000 kPa	2321 psi	16 000 kPa	2321 psi
Carrier relief pressure ⁴	21 000 kPa	3045 psi	21 000 kPa	3045 psi	21 000 kPa	3045 psi
Acceptable oil flow	160-230 L/min	42-60 gpm	220-310 L/min	58-82 gpm	220-300 L/min	57-78 gpm
Maximum back pressure	1000 kPa	145 psi	1000 kPa	145 psi	1000 kPa	145 psi
Line size (minimum)						
ID pressure	25 mm	1"	25 mm	1"	32 mm	1.25"
ID return	32 mm	1.25"	32 mm	1.25"	36 mm	1.42"
Energy class	6779 J	5000 ft-lb	10 168 J	7500 ft-lb	14 913 J	11,000 ft-lb
Carrier weight class	25-40 t	55,000-88,000 lb	32-55 t	70,400-121,000 lb	40-75 t	132,000-166,000 lb

¹ Includes power cell, side plates/housing, average mounting bracket, where required, and standard tool.

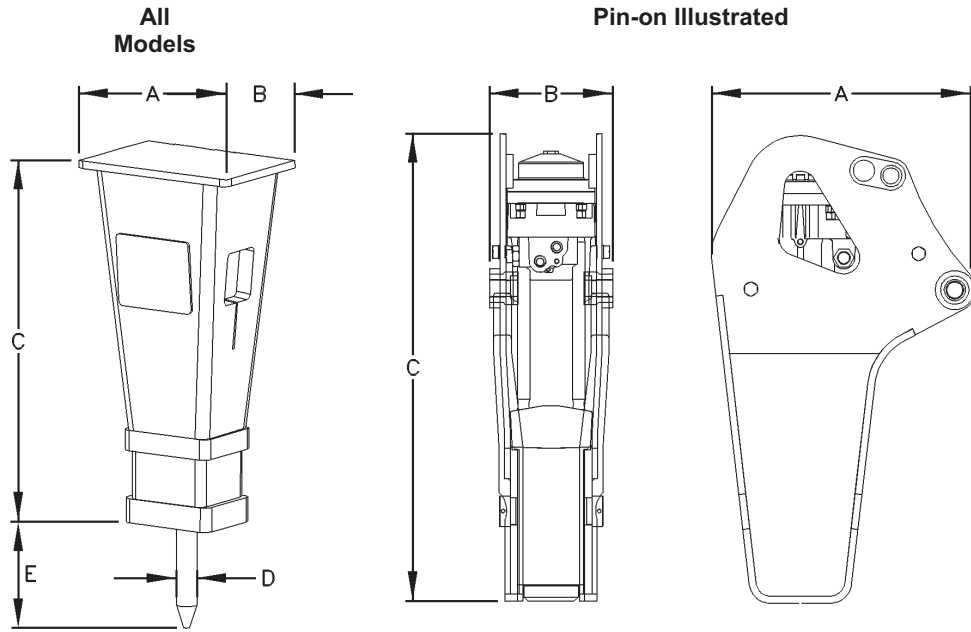
² Approximate value, actual impact frequency depends on oil flow, oil viscosity, temperature, and hardness of material to be broken.

³ Approximate value, operating pressure depends on oil flow, oil viscosity, temperature, material to be broken, and back pressure. Operating pressure is the result of correct low pressure adjustment.

⁴ Approximate value, exact value depends on installation parameters.

Oil temperature working range for all models: -20° C to +80° C (-4° F to +176° F).

Oil viscosity at operating oil temperature: 15 to 1000 cSt.



Model	A		B		C		D		E	
	mm	in	mm	in	mm	in	mm	in	mm	in
H180 s	730	28.7	730	28.7	2478	97.4	170	6.7	532	20.9
H160D s	730	28.7	730	28.7	2369	93.3	160	6.3	589	23.2
H140D s	585	23.0	540	21.3	2167	85.3	140	5.5	454	17.9
H130 s	585	23.0	540	21.3	1885	74.1	130	5.1	397	15.6
H120C s	585	23.0	540	21.3	1783	70.1	115	4.5	357	14.1
H115 s	585	23.0	540	21.3	1625	63.9	106	4.2	390	15.4
H100	585	23.0	540	21.3	1397	54.9	95	3.7	459	18.1
H100 s	585	23.0	540	21.3	1394	54.8	95	3.7	459	18.1
H100 (pin-on)	633	24.9	426	16.7	1526	60.0	95	3.7	459	18.1
H90C	510	20.1	380	15.0	1286	50.6	84	3.3	417	16.4
H90C s	520	20.5	400	15.7	1294	50.9	84	3.3	417	16.4
H90C (pin-on)	749	29.4	348	13.7	1325	52.1	84	3.3	417	16.4
H70	470	18.5	380	15.0	1134	44.6	70	2.8	402	15.8
H70 s	520	20.5	400	15.7	1150	45.3	70	2.8	390	15.3
H70 (pin-on)	690	27.1	348	13.7	1228	48.3	70	2.8	355	14.0
H70 s (pin-on)	797	31.3	348	13.7	1201	47.2	70	2.8	355	14.0
H63	470	18.5	380	15.0	1025	40.4	63	2.5	364	14.3
H63 s	440	17.3	380	15.0	1025	40.4	63	2.5	364	14.3
H55D s	429	16.9	300	11.8	997	39.3	56	2.2	299	11.8
H45	340	13.4	280	11.0	775	30.5	45	1.8	262	10.3
H45 s	440	17.3	280	11.0	775	30.5	45	1.8	249	9.8

Principles of Selection

Key to the successful sale of a hammer is proper hammer selection.

Background Information

Collection of background information is the first step. The following information will assist in being sure the customer receives the correct hammer and that he has a positive hammer experience. The following issues should be examined.....

1. If any, what brand and model hammer was previously used and how did the hammer perform?
2. What % of time will the hammer be used on the machine?
3. Will the hammer be used in primary breaking or secondary breaking? (mainly an issue for large hammers)
4. What machine will the hammer be used on and what are the hydraulic flow and pressures of this machine?
5. What is the type of material to be broken and production required from the hammer? (best to obtain this from the end user but a table is available at the end of this section)

Hammer Selection Process

1. Using Cat carrier matching matrix on next page identify 2 or 3 possible hammers for your application (for competitive carriers use carrier weight class as reference).
2. Compare machine/carrier flow and pressures to those of the hammer candidates to validate compatibility. Eliminate hammers outside carrier specs.

3. Compare previous hammer energy rating and weight to candidate hammers..... if contractor had problems or marginal production with previous hammer consider a slightly larger hammer (note: only use CIMA energy rating and not a generic size class).
4. If hammer is to be used in primary breaking consider larger of hammer candidates.
5. Check productivity guidance tables at the back of this section. Identify hammer most compatible with requirements.
6. Determine if the application requires special hammer modifications, i.e. steel mill, underwater, tunneling, etc.

Other Issues

Once the hammer has been chosen, other elements need to be considered to have a successful hammer experience.

1. Select the correct hammer tool for the application (see tool application chart in this section).
2. Check to be sure the correct hammer bracket and hoses are specified. Be sure correct carrier oil is specified for hammer use (particularly important in high ambient areas).
3. Consider supplemental carrier cooling in areas of high ambient temperature.

Actual operating pressure and back pressure MUST be checked when the hammer is fitted to the carrier (just as important if the hammer goes on a competitive carrier or is installed by the contractor at his shop).

Hydraulic Hammers

Selection

Model		H45/H45 s	H55D s	H63/H63 s	H70/H70 s	H90C/H90C s	H100/H100 s	H115 s	H120C s	H130 s	H140D s	H160D s	H180 s
Minimum Carrier	kg lb	1300 2860	2500 5500	3000 6600	5000 11,000	6000 13,200	8000 17,600	12 000 26,400	17 000 37,400	19 000 41,800	25 000 55,000	32 000 70,400	40 000 88,200
Maximum Carrier	kg lb	3200 7040	4500 9900	6500 14,300	8000 17,600	12 000 26,400	14 000 30,800	20 000 44,000	26 000 57,200	32 000 70,400	40 000 88,000	55 000 121,000	75 000 165,000
Mini Excavators													
301.6C/301.8C		●											
302.5C		●	●										
303C CR/303.5C CR			●	●#									
304C CR				●									
305C CR				●									
Skid Steer Loaders*													
216B/226B/232B		●**	●	●									
236B/242B/246B/248B			●	●									
252B/262B/268B			●	●									
Multi Terrain Loaders													
247B/257B/267B/277B/287B			●	●									
Backhoe Loaders													
416D				●	●	●							
420D/422E/428E					●	●							
430D/432E/434E					●	●							
442E/444E					●	●							
446D						●	●						
Hydraulic Excavators													
307C/307C SB					●	●							
308C CR/308C SR						●							
311C U						●	●						
312C						●	●	●					
313C CR/313C SR/314C CR							●	●	●				
315C							●	●	●				
318C								●	●				
319C								●	●				
M313C							●	●					
M315C/M316C							●	●	●				
M318C/M322C								●	●	●			
320D								●	●	●			
320D RR									●	●			
321C CR/321D CR/323D									●	●			
324D/325D									●	●	●		
328D CR									●	●	●		
330D									●	●	●	●	
345C											●	●	●
365C													●

Installation of add-on optional, counterweight to machine is required.

*SSL with BH30 or BH30w match hammers to SSL models as per above.

**Special configuration — only applicable when machine is fitted with backhoe attachment BH27.

Caterpillar recommends the use of a suitable shield/guard system to assure the operator has adequate protection form.

These matches are for general reference purposes for Cat machines only. When special boom and quick coupler arrangements are in use, these matches may not apply. When matching hammers to competitive carriers, selection should be made by carrier weight. Refer to the carrier weight range at the top of the table in order to determine the correct match.

Productivity
● m³/8 hr – yd³/8 hr

Hydraulic
Hammers

Hammer Models	Non-Reinforced Concrete		Reinforced Concrete		Sedimentary Rock		Volcanic Rock	
H45/H45 s	8-18 m ³	10-23 yd³	—	—	—	—	—	—
H55D s	14-23 m ³	18-30 yd³	—	—	—	—	—	—
H63/H63 s	34-69 m ³	45-90 yd³	—	—	—	—	—	—
H70/H70 s	65-107 m ³	85-140 yd³	19-46 m ³	25-60 yd³	—	—	—	—
H90C/H90C s	69-122 m ³	90-160 yd³	38-61 m ³	50-80 yd³	—	—	—	—
H100/H100 s	96-214 m ³	125-280 yd³	99-134 m ³	130-175 yd³	84-191 m ³	110-250 yd³	42-99 m ³	55-130 yd³
H115 s	115-287 m ³	150-375 yd³	107-184 m ³	140-240 yd³	126-229 m ³	165-300 yd³	57-115 m ³	75-150 yd³
H120C s	153-344 m ³	200-450 yd³	122-229 m ³	160-300 yd³	153-260 m ³	200-340 yd³	84-153 m ³	110-200 yd³
H130 s	210-375 m ³	275-490 yd³	153-268 m ³	200-350 yd³	191-306 m ³	250-400 yd³	103-210 m ³	135-275 yd³
H140D s	—	—	191-497 m ³	250-650 yd³	229-535 m ³	300-700 yd³	115-268 m ³	150-350 yd³
H160D s	—	—	229-650 m ³	300-850 yd³	268-688 m ³	350-900 yd³	153-459 m ³	200-600 yd³
H180 s	—	—	268-1183 m ³	350-1550 yd³	306-1223 m ³	400-1600 yd³	191-688 m ³	250-900 yd³

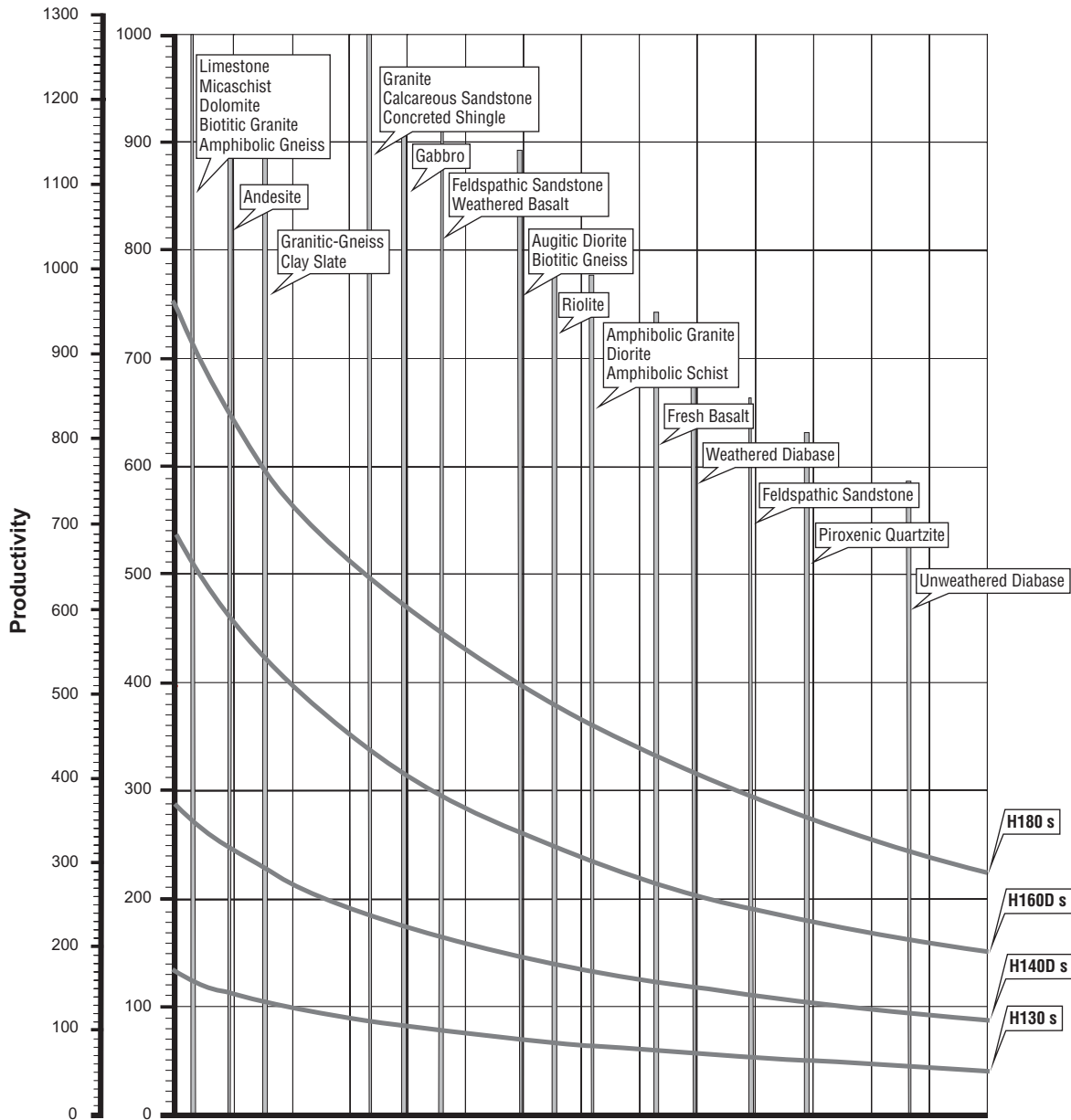
Production rates listed are based on 8-hr shift

The above figures are for general estimation purposes only and must not be used to guarantee any production figure to the customer. The actual working results may vary according to the quality and structure of the material to be broken, required degree of material size reduction, installation, condition of the carrier, conditions at the worksite, haulage of the broken material, skills of the operator etc.

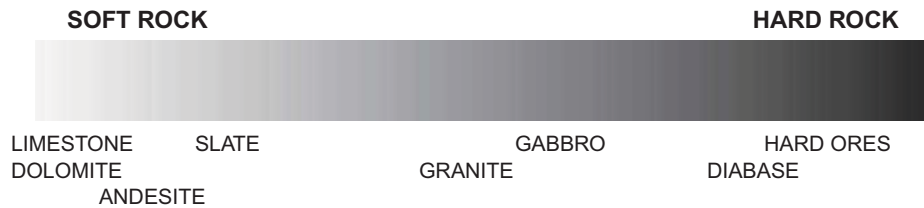
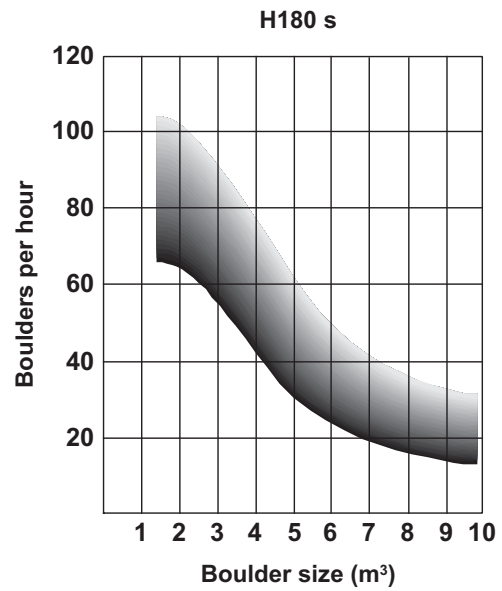
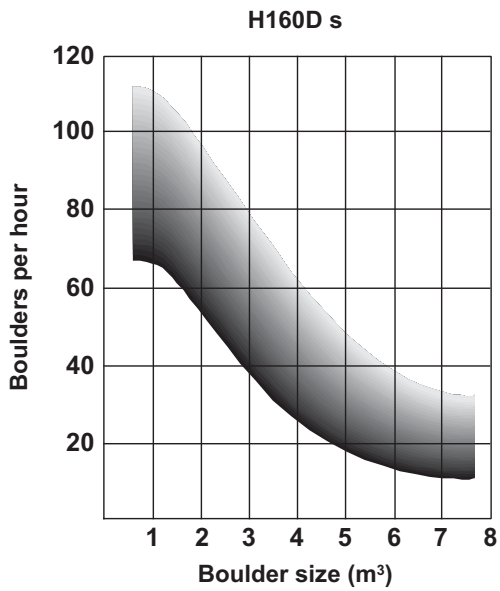
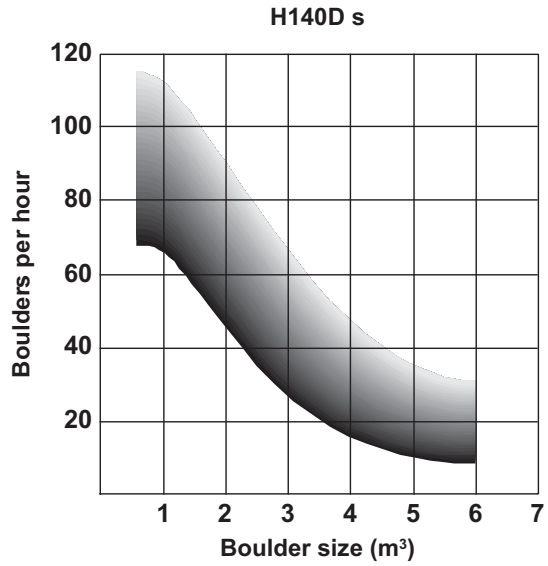
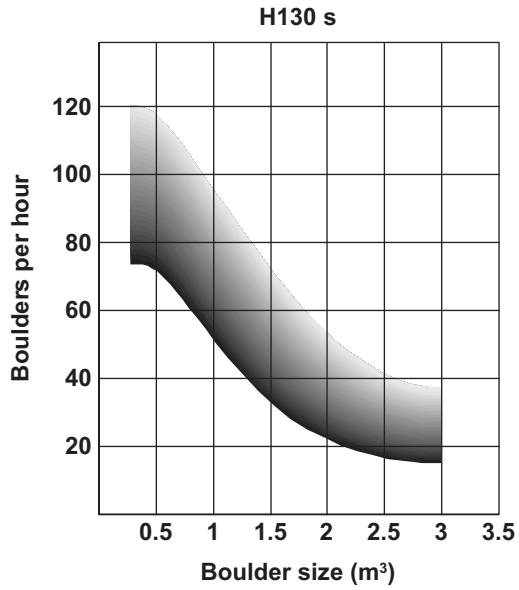
Hydraulic Hammers

Productivity
 ● Primary breaking (m³/8 hr – yd³/8 hr)

The figures are for comparison and evaluation purposes only. Results will vary depending on operator, carrier and job conditions.



Bedding thickness 100-200 cm (40-80") or closely spaced vertical fractures



Mobile Scrap and Demolition Shears

Features Applications Shearing Capability Table

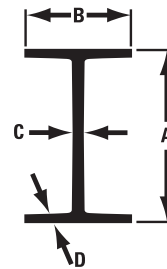
MOBILE SCRAP AND DEMOLITION SHEARS

Features:

- 360 degree left and right rotation.
- High force to weight ratio.
- Long wearing alloy steel blades.
- Cutting edges mounted on the side of the shear jaws and are visible to the operator.
- Shears can be mounted on boom or stick.
- Robust rotation system with up to two hydraulic motors on largest shears.

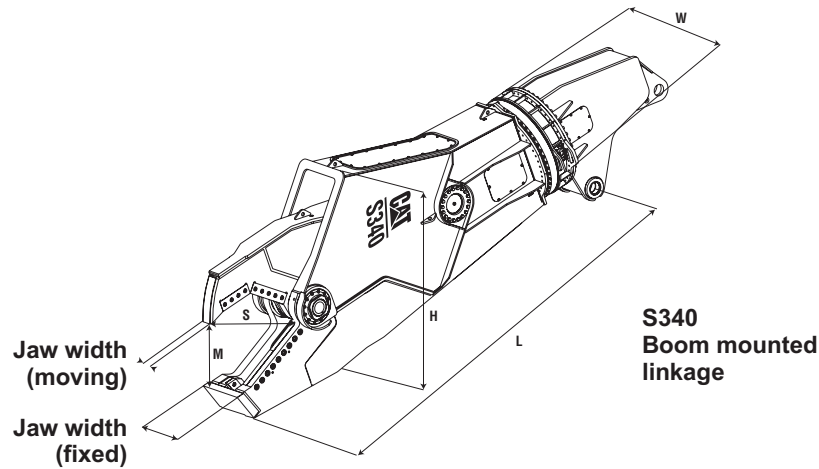
Applications:

The Cat Mobile Scrap and Demolition Shears are widely used for demolishing steel structures, cutting up cars, trucks, farm machinery, railroad cars, large rubber tires, reinforced concrete structures, cables and scrap in general.



Model	S305		S320		S325		S340		S365		S390	
Narrow I-beams (IPE)	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
A Height	200	7.87	330	13.0	450	17.71	550	21.65	600	23.62	600	23.62
B Flange width	100	3.94	160	6.30	190	7.48	210	8.27	220	8.66	220	8.66
C Web thickness	5.6	0.22	7.5	0.30	9.4	0.37	11.2	0.44	12	0.47	12	0.47
D Flange thickness	8.5	0.33	11.5	0.45	14.6	0.57	17.2	0.68	19	0.75	19	0.75
Wide I-beams (HE-A)												
A Height	114	4.49	210	8.27	270	10.63	330	12.99	440	17.32	490	19.29
B Flange width	120	4.72	220	8.66	280	11.02	300	11.81	300	11.81	300	11.81
C Web thickness	5	0.20	7	0.28	8	0.31	9.5	0.37	11.5	0.45	12	0.47
D Flange thickness	8	0.31	11	0.43	13	0.51	16.5	0.65	21	0.83	23	0.91
Bar — round	45	1.77	75	2.95	90	3.54	100	3.94	110	4.33	130	5.12
Bar — square	40	1.57	70	2.76	80	3.15	90	3.54	100	3.94	100	3.94

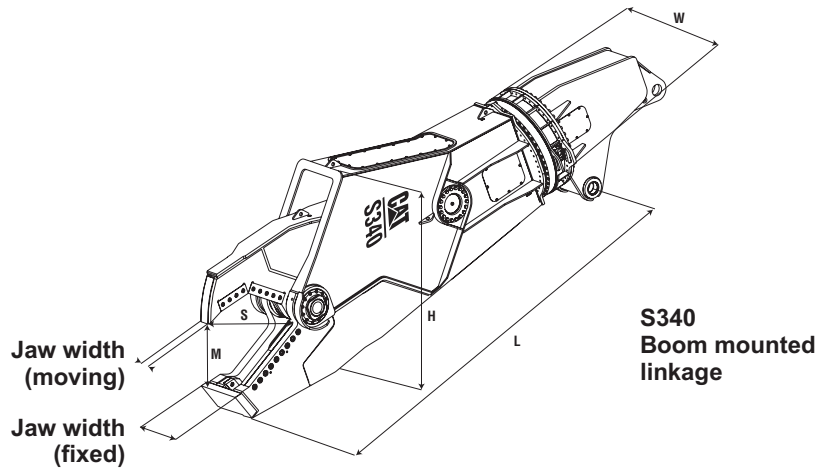
The above profiles provide an approximation of shear cutting capabilities. The exact cutting dimensions depend on excavator operation pressure, the conditions of the shear knives and jaws and the steel's tensile strength (370 MPa).



Specifications (All dimensions and weights are approximate.)

Model	S305		S320		S325	
Weight* total	580 kg	1280 lb	2150 kg	4740 lb	3000 kg	6615 lb
Dimensions:						
L Length	1886 mm	6'2"	3044 mm	10'0"	3453 mm	11'4"
H Height	660 mm	26"	1183 mm	47"	1374 mm	54"
W Width	390 mm	15"	800 mm	31"	800 mm	31"
Jaw width (fixed)	230 mm	9"	335 mm	13"	375 mm	15"
Jaw width (moving)	60 mm	2.4"	90 mm	3.5"	100 mm	3.9"
M Jaw opening	240 mm	9.4"	390 mm	15.3"	490 mm	19"
S Jaw depth	290 mm	11.4"	440 mm	17"	570 mm	22"
Shear forces:						
Tip	400 kN	90,000 lb	900 kN	202,500 lb	1250 kN	281,250 lb
Primary blade center	900 kN	202,500 lb	2200 kN	495,000 lb	3200 kN	720,000 lb
At throat	1750 kN	393,750 lb	3800 kN	855,000 lb	5900 kN	1,327,500 lb
Hydraulic for cutting:						
Maximum operating pressure	25 000 kPa	3625 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi
Recommended flow	60 L/min	15.9 gpm	150 L/min	39.6 gpm	200 L/min	52.8 gpm
Return flow (during opening)	100 L/min	26.4 gpm	240 L/min	63.4 gpm	300 L/min	79.3 gpm
Time open		3.5 sec		4 sec		5 sec
Time close		2.5 sec		3 sec		3 sec
Connector — size		1³/₁₆ ORFS		1³/₁₆ ORFS		1³/₁₆ ORFS
Hydraulic for rotating:						
Maximum operating pressure	10 000 kPa	1450 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi
Recommended flow	20 L/min	5.3 gpm	40 L/min	10.6 gpm	40 L/min	10.6 gpm
Connector — size		1³/₁₆ ORFS		1³/₁₆ ORFS		1³/₁₆ ORFS
Excavator size; Stick mounted:						
Minimum	5000 kg	11,025 lb	15 000 kg	33,075 lb	20 000 kg	44,100 lb
Maximum	7500 kg	16,538 lb	25 000 kg	55,125 lb	35 000 kg	77,175 lb
Excavator size; Boom mounted:						
Minimum	3000 kg	6615 lb	10 000 kg	22,050 lb	15 000 kg	33,075 lb
Maximum	6000 kg	13,230 lb	15 000 kg	33,075 lb	25 000 kg	55,125 lb

*Weight includes mounting bracket (stick).



Specifications (All dimensions and weights are approximate.)

Model	S340		S365		S390	
Weight* total	4250 kg	9370 lb	6500 kg	14,330 lb	9700 kg	21,390 lb
Dimensions:						
L Length	3900 mm	12'10"	4617 mm	15'2"	5348 mm	17'7"
H Height	1506 mm	59"	1810 mm	71"	2117 mm	83"
W Width	1010 mm	40"	1180 mm	46"	1400 mm	55"
Jaw width (fixed)	440 mm	17"	510 mm	20"	620 mm	24"
Jaw width (moving)	120 mm	4.7"	150 mm	5.9"	180 mm	7.1"
M Jaw opening	580 mm	23"	740 mm	29"	860 mm	34"
S Jaw depth	680 mm	27"	830 mm	33"	1020 mm	40"
Shear forces:						
Tip	1550 kN	348,750 lb	1950 kN	438,750 lb	2500 kN	562,500 lb
Primary blade center	3800 kN	855,000 lb	4800 kN	1,080,000 lb	6050 kN	1,361,250 lb
At throat	7300 kN	1,642,500 lb	9850 kN	2,216,250 lb	12 600 kN	2,835,000 lb
Hydraulic for cutting:						
Maximum operating pressure	35 000 kPa	5075 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi
Recommended flow	300 L/min	79.3 gpm	400 L/min	105.7 gpm	800 L/min	211 gpm
Return flow (during opening)	510 L/min	134.7 gpm	680 L/min	180 gpm	1520 L/min	402 gpm
Time open		4.5 sec		5.5 sec		4 sec
Time close		3.5 sec		4 sec		3 sec
Connector — size		1¹/₁₆ ORFS		1¹/₄ SAE		1¹/₂ SAE
Hydraulic for rotating:						
Maximum operating pressure	14 000 kPa	2030 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi
Recommended flow	40 L/min	10.6 gpm	80 L/min	21.1 gpm	80 L/min	21.1 gpm
Connector — size		1¹/₁₆ ORFS		1¹/₁₆ ORFS		1¹/₁₆ ORFS
Excavator size; Stick mounted:						
Minimum	30 000 kg	66,150 lb	40 000 kg	88,200 lb	65 000 kg	143,325 lb
Maximum	45 000 kg	99,225 lb	65 000 kg	143,325 lb	90 000 kg	198,450 lb
Excavator size; Boom mounted:						
Minimum	20 000 kg	44,100 lb	30 000 kg	66,150 lb	40 000 kg	88,200 lb
Maximum	35 000 kg	77,175 lb	45 000 kg	99,225 lb	65 000 kg	143,325 lb

*Weight includes mounting bracket (stick).

Matching Guide

Mobile Scrap and Demolition Shears

Model	Skid Steer Loader
S305	236
	246
	248

Stick Mounted/Reach Boom

Mobile Scrap and Demolition Shears

Model	Cat Excavator	Stick Range	
		m	ft
S305	307C, 308C	1.67-2.21	5'6"-7'3"
S320	318C L	1.8-2.7	5'11"-8'10"
	320B L		
	320C L	1.9-2.5	6'3"-8'2"
	320C L*	2.92	9'7"
	322C L	2.5-2.95	8'2"-9'8"
	325C L	3.2	10'6"
	M318**	1.8	5'11"
S325	M320**	1.9	6'3"
	322C L*	2.5-2.95	8'2"-9'8"
	325C L	2.0-2.65	6'7"-8'8"
	325C L*	3.3	10'10"
S340	330C L	2.15-3.9	7'1"-12'10"
	330C L*	2.15	7'1"
S340	345B II L	2.9-3.35	9'6"-11'0"
	345B II L	2.9-3.35	9'6"-11'0"
S365	365B II L	2.8-3.6	9'2"-11'10"
	385B	3.3-5.5	10'10"-18'1"

*Working only over front.

**Two sets stabilizer down, four points stabilizers down or one set stabilizers down, dozer down.

Reach Boom Mounted

Mobile Scrap and Demolition Shears

Model	Cat Excavator
S320	311C
	312C L
	314C
	M312C**
	M315C**
	M316C**
	M318C**
S325	315C
	318C
	320C
	322C
	M313C**
	M315C**
	M316C**
M318C**	
S340	M322C**
	322C L
	325C L
S340	330C L
	330C L
S365	345B II L
	345B II L
S390	365B II L
	385B

*Working only over front.

**Two sets stabilizer down, four points stabilizers down or one set stabilizers down, dozer down.

CONCRETE CRUSHERS

Features:

- Two powerful hydraulic cylinders protected from damage by the unique static rod design.
- Each crushing arm has two cutters and two crushing teeth.
- Replaceable cutters and teeth are bolted and tack welded to the jaw.
- Rebar cutters have four cutting edges.
- Large diameter slewing ring powered by a hydraulic motor constitutes a rugged and fast 360 degree rotation system.

Applications:

Primary demolition where productivity is crucial, reinforced concrete structures with thick walls and large diameter columns. Also used on bridge decks, parking garages, support columns and abutments with a thickness of up to five feet.

Matching Guide

Stick Mounted/Reach Boom

Crusher Model	Cat Excavator	Stick Range	
		m	ft
CR20	320B	1.9-3.9	6'3"-12'10"
	322B	2.0-3.6	6'7"-11'10"
CR28	325B	2.0-3.2	6'7"-10'6"
	330B	2.15-3.9	7'1"-12'10"
	345B	4.8	15'9"
	350	4.8	15'9"
CR35	345B	2.9-3.9	9'6"-12'10"
	350	3.1-4.05	10'2"-13'3"
CR50	375	2.9-5.5	9'6"-18'1"
	375*	2.9-5.5	9'6"-18'1"

*GP Boom.

Specifications (All dimensions are approximate.)

Model	CR20		CR28		CR35		CR50	
Approximate service weight excluding mounting bracket	2300 kg	5080 lb	3100 kg	6850 lb	4200 kg	9300 lb	7000 kg	15,450 lb
Length excluding mounting bracket	2110 mm	83"	2320 mm	91.3"	2510 mm	98.8"	3440 mm	135.4"
Jaw opening (maximum)	720 mm	28.3"	915 mm	36"	1190 mm	46.8"	1600 mm	63"
Jaw depth	630 mm	24.8"	750 mm	29.5"	830 mm	32.6"	880 mm	34.6"
Maximum crushing force:								
Tip	719 kN	81 st	784 kN	88 st	833 kN	93.6 st	1628 kN	183 st
Middle tooth	882 kN	99 st	1088 kN	122 st	1128 kN	127 st	2100 kN	236 st
Maximum shearing force cutting center	2795 kN	314 st	3080 kN	346 st	4787 kN	538 st	6857 kN	770 st
Maximum oil flow:								
Hydraulic cylinder	180 L/min	48 gpm	350 L/min	93 gpm	350 L/min	93 gpm	579 L/min	153 gpm
Cycle time*		7.3 sec		4.8 sec		6.2 sec		10.8 sec
Rotation	20 L/min	5 gpm	20 L/min	5 gpm	20 L/min	5 gpm	20 L/min	5 gpm
Maximum working pressure:								
Hydraulic cylinder	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi	34 300 kPa	4980 psi
Rotation	17 200 kPa	2465 psi	17 200 kPa	2465 psi	17 200 kPa	2465 psi	17 200 kPa	2465 psi
Hydraulic rotation continuous		360°		360°		360°		360°
Approximate base machine operating weight	20 000 kg	44,000 lb	28 000 kg	62,000 lb	35 000 kg	77,000 lb	50 000 kg	110,000 lb

*Cycle time may vary due to machine configuration and operating conditions.

Multi-Processors

Features
Applications
Matching Guide
Jaw Types

MULTI-PROCESSORS

Features:

- **Wide selection** of interchangeable jaws.
- **Lifting eye placement** and adjustable stop bolts allow quick jaw changes.
- **Single, large diameter** cross mounted cylinder provides exceptional cutting and crushing force.
- **Jaws are manufactured** of high quality tool steel with outstanding tensile strength.
- **Non impact** tools that work at a relatively low noise level.

Applications:

The Cat Multi-Processors can be used to accomplish most tasks on a demolition job. One common housing with a wide selection of interchangeable jaws allows the tool to cut, crush or pulverize the toughest of materials. Highly reinforced concrete, structural steel beams, pipes, cable, steel plate and storage tanks.

Matching Guide

Stick Mounted/Reach Boom

Multi-Processors Model	Cat Excavator	Stick Range	
		m	ft
MP15	320C L	1.9-3.9	6'3"-12'10"
	322C L	2.5-3.6	8'2"-11'10"
MP20	322C L	2.5-3.6	8'2"-11'10"
	325C L	2.7-3.2	8'8"-10'6"
	330C L	2.2-3.9	7'1"-12'10"
MP30	330C L	3.3	10'10"
	345B II L – V*	3.4-3.9	11'0"-12'10"
	345B II L – F**	3.4-4.8	11'0"-15'9"
MP40	365B II L	2.8-4.7	9'4"-15'4"
	375 L	2.9-5.5	9'6"-18'1"
	375 L***	4.4-5.5	14'5"-18'1"

Boom Mounted

Multi-Processors Model	Cat Excavator
MP20	320C L
MP30	332C L 325C L
MP40	330C L

NOTES:

Matching guide for all Multi-processor and Jaw configurations.
Tank Shear Jaws are not available for MP15 and MP40.
Primary Pulverizer Jaws are not available for MP40.

*Variable undercarriage.

**Fixed undercarriage.

***GP boom.

CATERPILLAR MULTI-PROCESSOR INTERCHANGEABLE JAWS

Concrete Cutter Jaws (CC)

- For precise demolition/cutting of heavily reinforced concrete structures.
- Cuts structural steel and pipe.
- Equipped with replaceable concrete crusher teeth and reversible steel cutting knives.

Shear Jaws (S)

- For demolition of steel structures.
- Cuts angle and channel iron, beams, pipe, rebar, cable and tires.
- Knives are reversible.

Tank Shear Jaws (TS)

- Quickly cuts steel plate on barges, railway cars, grain, water, oil, and fuel tanks. Dual knives on the moving and static jaws produce smooth, straight edges.
- All knives are reversible.
- Available for MP20 only.

Crusher Jaws (CR)

- For demolition of moderately reinforced concrete structures. Capable of crushing concrete and cutting rebar.
- Replaceable crusher teeth and reversible knives.

Primary Pulverizer Jaws (PP)

- Combines capability to demolish and recycle moderately reinforced concrete structures. Pulverizes concrete, cuts rebar and separates rebar from concrete.

- Replaceable crusher teeth and reversible knives.

Secondary Pulverizer Jaws (PS)

- Recycles demolished concrete by pulverizing concrete, separating concrete and rebar, and cutting rebar as needed.

All jaw sets can be interchanged quickly with the lifting eyes and the adjustable stop-bolts on jaws and body.

Specifications (All dimensions are approximate.)

Model	MP15		MP20		MP30		MP40	
Weight total — housing, jaw and bracket	1800 kg	3970 lb	2600 kg	5730 lb	3600 kg	7935 lb	5800 kg	12,785 lb
Weight of the jaw	650 kg	1430 lb	1000 kg	2205 lb	1300 kg	2865 lb	2200 kg	4850 lb
Dimensions:								
Length	2200 mm	86.6"	2400 mm	94.5"	2800 mm	110.2"	3500 mm	137.8"
Height	1510 mm	59.4"	1750 mm	68.8"	1980 mm	78"	2340 mm	92.1"
Width	800 mm	31.5"	800 mm	31.5"	1010 mm	39.8"	1180 mm	46.5"
Jaw width (fixed)	300 mm	11.8"	360 mm	14.2"	380 mm	15"	460 mm	18.1"
Jaw width (moving)	100 mm	3.9"	130 mm	5.1"	130 mm	5.1"	160 mm	6.3"
Jaw opening	670 mm	26.4"	820 mm	32.2"	975 mm	38.4"	1280 mm	50.4"
Jaw depth	670 mm	26.4"	790 mm	31.1"	890 mm	35"	1100 mm	43.3"
Cutter length	400 mm	15.8"	460 mm	18.1"	520 mm	20.5"	600 mm	23.6"
Maximum crushing/shear force:								
Tooth — jaw tip	700 kN	79 st	950 kN	107 st	1250 kN	140 st	1500 kN	168 st
Front cutter tip	1000 kN	112 st	1400 kN	157 st	1850 kN	208 st	2200 kN	247 st
Primary blade center	2200 kN	247 st	3000 kN	337 st	4100 kN	460 st	4400 kN	494 st
Maximum oil flow:								
Hydraulic cylinder	150 L/min	40 gpm	200 L/min	53 gpm	300 L/min	79 gpm	400 L/min	106 gpm
Cycle time (open, close, open)	5 sec		6 sec		6.5 sec		7.5 sec	
Rotation	40 L/min	11 gpm	40 L/min	11 gpm	40 L/min	11 gpm	80 L/min	22 gpm
Maximum working pressure:								
Hydraulic cylinder	35 000 kPa	5075 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi
Rotation	14 000 kPa	2030 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi

Specifications (All dimensions are approximate.)

Model	MP15		MP20		MP30		MP40	
Weight total — housing, jaw and bracket	1800 kg	3970 lb	2600 kg	5730 lb	3600 kg	7935 lb	5800 kg	12,785 lb
Weight of the jaw	650 kg	1430 lb	1000 kg	2205 lb	1300 kg	2865 lb	2200 kg	4850 lb
Dimensions:								
Length	2100 mm	82.7"	2250 mm	88.6"	2700 mm	106.3"	3400 mm	133.9"
Height	1310 mm	51.6"	1510 mm	59.4"	1680 mm	66.1"	1980 mm	78"
Width	800 mm	31.5"	800 mm	31.5"	1010 mm	39.8"	1180 mm	46.5"
Jaw width (fixed)	300 mm	11.8"	320 mm	12.6"	370 mm	14.6"	460 mm	18.1"
Jaw width (moving)	80 mm	3.1"	100 mm	3.9"	120 mm	4.7"	150 mm	5.9"
Jaw opening	350 mm	13.8"	420 mm	16.5"	470 mm	18.5"	630 mm	24.8"
Jaw depth	480 mm	18.9"	580 mm	22.8"	710 mm	28"	880 mm	34.6"
Cutter length	400 mm	15.7"	520 mm	20.5"	600 mm	23.6"	760 mm	29.9"
Maximum shear force:								
At tip	900 kN	101 st	1200 kN	135 st	1600 kN	180 st	1900 kN	213 st
Primary blade center	2100 kN	236 st	2900 kN	326 st	3750 kN	421 st	4750 kN	534 st
At throat	4200 kN	472 st	5800 kN	652 st	7100 kN	798 st	8950 kN	1006 st
Maximum oil flow:								
Hydraulic cylinder	150 L/min	40 gpm	200 L/min	53 gpm	300 L/min	79 gpm	400 L/min	106 gpm
Cycle time (open, close, open)	5 sec		6 sec		6.5 sec		7.5 sec	
Rotation	40 L/min	11 gpm	40 L/min	11 gpm	40 L/min	11 gpm	80 L/min	22 gpm
Maximum working pressure:								
Hydraulic cylinder	35 000 kPa	5075 psi	35 000 kPa	5075 psi	—	—	—	—
Rotation	14 000 kPa	2030 psi	14 000 kPa	2030 psi	—	—	—	—

Specifications (All dimensions are approximate.)

Model	MP20		MP30	
Weight total — housing, jaw and bracket	2600 kg	5730 lb	3700 kg	8155 lb
Weight of the jaw	1000 kg	2205 lb	1400 kg	3085 lb
Dimensions:				
Length	2400 mm	94.5"	2800 mm	110.2"
Height	1750 mm	68.9"	2100 mm	82.7"
Width	800 mm	31.5"	1180 mm	46.5"
Jaw width (fixed)	290 mm	11.4"	340 mm	13.4"
Jaw width (moving)	120 mm	4.7"	150 mm	5.9"
Jaw opening	440 mm	17.3"	510 mm	20.1"
Jaw depth	460 mm	18.1"	580 mm	22.8"
Cutter length	460 mm	18.1"	580 mm	22.8"
Maximum shear force:				
At tip	1400 kN	157 st	1900 kN	213 st
At jaw center	2200 kN	247 st	4000 kN	449 st
At throat	4400 kN	494 st	6350 kN	714 st
Cutting capacity plate steel	25 mm	1"	30 mm	1.2"
Maximum oil flow:				
Hydraulic cylinder	200 L/min	53 gpm	300 L/min	79 gpm
Cycle time (open, close, open)		6 sec		6.5 sec
Rotation	40 L/min	11 gpm	40 L/min	11 gpm
Maximum working pressure:				
Hydraulic cylinder	35 000 kPa	5075 psi	35 000 kPa	5075 psi
Rotation	14 000 kPa	2030 psi	14 000 kPa	2030 psi

Specifications (All dimensions are approximate.)

Model	MP15		MP20		MP30		MP40	
Weight total — housing, jaw and bracket	1800 kg	3970 lb	2600 kg	5730 lb	3600 kg	7935 lb	5800 kg	12,785 lb
Weight of the jaw	650 kg	1430 lb	1000 kg	2205 lb	1300 kg	2865 lb	2200 kg	4850 lb
Dimensions:								
Length	2200 mm	86.6"	2350 mm	92.5"	2770 mm	102"	3500 mm	137.8"
Height	1510 mm	59.4"	1750 mm	68.9"	1980 mm	78"	2380 mm	93.7"
Width	800 mm	31.5"	800 mm	31.5"	1010 mm	39.8"	1180 mm	46.5"
Jaw width (fixed)	300 mm	11.8"	360 mm	14.2"	380 mm	15"	460 mm	18.1"
Jaw width (moving)	100 mm	3.9"	130 mm	5.1"	130 mm	5.1"	160 mm	6.3"
Jaw opening	710 mm	28"	850 mm	33.5"	1050 mm	41.3"	1320 mm	52"
Jaw depth	700 mm	27.6"	770 mm	30.3"	920 mm	36.2"	1100 mm	43.3"
Cutter length	200 mm	7.9"	260 mm	10.2"	260 mm	10.2"	250 mm	9.8"
Maximum crushing/shear force:								
Tooth — jaw tip	700 kN	79 st	950 kN	107 st	1250 kN	140 st	1500 kN	168 st
At 2 nd tooth	950 kN	107 st	1350 kN	152 st	1750 kN	197 st	2200 kN	247 st
Primary blade center	2100 kN	236 st	2900 kN	326 st	3800 kN	427 st	4650 kN	523 st
Maximum oil flow:								
Hydraulic cylinder	150 L/min	40 gpm	200 L/min	53 gpm	300 L/min	79 gpm	400 L/min	106 gpm
Cycle time (open, close, open)		5 sec		6 sec		6.5 sec		7.5 sec
Rotation	40 L/min	11 gpm	40 L/min	11 gpm	40 L/min	11 gpm	80 L/min	22 gpm
Maximum working pressure:								
Hydraulic cylinder	35 000 kPa	5075 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi
Rotation	14 000 kPa	2030 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi

Specifications (All dimensions are approximate.)

Model	MP15		MP20		MP30	
Weight total — housing, jaw and bracket	1900 kg	4190 lb	2750 kg	6065 lb	3700 kg	8155 lb
Weight of the jaw	750 kg	1655 lb	1150 kg	2535 lb	1400 kg	3085 lb
Dimensions:						
Length	2220 mm	87.4"	2325 mm	91.5"	2800 mm	110.2"
Height	1590 mm	62.6"	1775 mm	69.9"	1980 mm	78"
Width	800 mm	31.5"	800 mm	31.5"	1010 mm	39.8"
Jaw width (fixed)	480 mm	18.9"	540 mm	21.3"	610 mm	24"
Jaw width (moving)	280 mm	11"	340 mm	13.4"	370 mm	14.6"
Jaw opening	700 mm	27.6"	800 mm	31.5"	960 mm	37.8"
Jaw depth	700 mm	27.6"	800 mm	31.5"	940 mm	37"
Cutter length	200 mm	7.9"	200 mm	7.9"	250 mm	9.8"
Maximum crushing/shear force:						
Tooth — jaw tip	650 kN	73 st	950 kN	107 st	1250 kN	140 st
At 2 nd tooth	900 kN	101 st	1300 kN	146 st	1550 kN	174 st
Primary blade center	2100 kN	236 st	2750 kN	309 st	3950 kN	444 st
Maximum oil flow:						
Hydraulic cylinder	150 L/min	40 gpm	200 L/min	53 gpm	300 L/min	79 gpm
Cycle time (open, close, open)		5 sec		6 sec		6.5 sec
Rotation	40 L/min	11 gpm	40 L/min	11 gpm	40 L/min	11 gpm
Maximum working pressure:						
Hydraulic cylinder	35 000 kPa	5075 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi
Rotation	14 000 kPa	2030 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi

Specifications (All dimensions are approximate.)

Model	MP15		MP20		MP30		MP40	
Weight total — housing, jaw and bracket	1850 kg	4080 lb	2650 kg	5840 lb	3650 kg	8045 lb	6000 kg	13,230 lb
Weight of the jaw	700 kg	1545 lb	1050 kg	2315 lb	1350 kg	2975 lb	2400 kg	5290 lb
Dimensions:								
Length	2250 mm	88.6"	2450 mm	96.5"	2950 mm	116.1"	3650 mm	143.7"
Height	1650 mm	65"	1900 mm	74.8"	2200 mm	86.6"	2550 mm	100.4"
Width	800 mm	31.5"	800 mm	31.5"	1010 mm	39.8"	1180 mm	46.5"
Jaw width (fixed)	440 mm	17.3"	500 mm	19.7"	580 mm	22.8"	700 mm	27.6"
Jaw width (moving)	310 mm	12.2"	360 mm	14.2"	420 mm	16.5"	480 mm	18.9"
Jaw opening	730 mm	28.7"	890 mm	35"	1100 mm	43.3"	1400 mm	55.1"
Jaw depth	670 mm	26.4"	800 mm	31.5"	970 mm	38.2"	1170 mm	46"
Cutter length	200 mm	7.9"	200 mm	7.9"	200 mm	7.9"	—	—
Maximum crushing/shear force:								
Tooth — jaw tip	750 kN	84 st	1000 kN	112 st	1200 kN	135 st	1500 kN	168 st
At 2 nd tooth	1000 kN	112 st	1300 kN	146 st	1550 kN	174 st	1900 kN	213 st
Primary blade center	2200 kN	247 st	3000 kN	337 st	4800 kN	539 st	5500 kN	618 st
Maximum oil flow:								
Hydraulic cylinder	150 L/min	40 gpm	200 L/min	53 gpm	300 L/min	79 gpm	400 L/min	106 gpm
Cycle time (open, close, open)	5 sec		6 sec		6.5 sec		7.5 sec	
Rotation	40 L/min	11 gpm	40 L/min	11 gpm	40 L/min	11 gpm	80 L/min	22 gpm
Maximum working pressure:								
Hydraulic cylinder	35 000 kPa	5075 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi
Rotation	14 000 kPa	2030 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi

Cutting Capacity

Model	MP15		MP20		MP30		MP40	
Narrow I-beams:								
Height	300 mm	11.8"	400 mm	15.7"	500 mm	19.7"	600 mm	23.6"
Flange width	150 mm	5.9"	180 mm	7.1"	200 mm	7.9"	600 mm	8.7"
Flange thickness	10.7 mm	0.42"	13.5 mm	0.53"	16 mm	0.63"	19 mm	0.75"
Web thickness	7.1 mm	0.28"	8.6 mm	0.34"	10.2 mm	0.4"	12 mm	0.47"
Wide I-beams:								
Height	190 mm	7.5"	250 mm	9.8"	310 mm	12.2"	390 mm	15.4"
Flange width	200 mm	7.9"	260 mm	10.2"	300 mm	11.8"	300 mm	11.8"
Flange thickness	10 mm	0.39"	12.5 mm	0.49"	15.5 mm	0.61"	19 mm	0.75"
Web thickness	6.5 mm	0.26"	7.5 mm	0.3"	9 mm	0.35"	11 mm	0.43"
Solid-round	65 mm	2.6"	80 mm	3.3"	90 mm	3.5"	100 mm	3.9"
Solid-square	60 mm	2.4"	70 mm	2.8"	80 mm	3.1"	90 mm	3.5"

The above profiles provide an indication of the shear's cutting capability. The exact cutting dimensions depend on excavator size, the conditions of the cutters and jaws and the tensile strength of the steel.

Sorting and Demolition Grapples North America

Features Matching Guide Specifications

Features:

- 360 degree slewing ring.
- Fully protected cylinders.
- Horizontal, weld-on steel bars reinforced vertical ribs.
- Bolt-on replaceable wear plates (optional).

Matching Guide

Stick Mounted/Reach Boom

Sorting Grapple Model	Cat Excavator	Stick Range	
		m	ft
G315	322C L	2.5-3.6	8'2"-11'10"
	325C L	2.7-3.2	8'10"-10'6"
G320	325C L	2.7-3.2	8'10"-10'6"
	330C L	3.3-3.9	10'10"-12'10"
G330	330C L	3.3-3.9	10'10"-12'10"
	345B II L – V*	3.4-3.9	11'2"-12'10"
	345B II L – F**	3.4-4.8	11'2"-15'9"
	365B II L	2.8-4.7	9'4"-15'4"

*Variable undercarriage.

**Fixed undercarriage.

Specifications (All dimensions are approximate.)

Model	G315		G320		G330	
Weight*	1840 kg	4057 lb	2060 kg	4542 lb	2680 kg	5909 lb
Capacity	800 L	1.04 yd³	900 L	1.17 yd³	1000 L	1.3 yd³
Dimensions:						
Length (grapple closed)	1505 mm	59"	1505 mm	59"	1515 mm	60"
Length (grapple open)	2265 mm	89"	2265 mm	89"	2270 mm	89"
Width	1115 mm	44"	1394 mm	55"	1480 mm	58"
Height (grapple closed)	1850 mm	72.8"	1850 mm	72.8"	1915 mm	75.4"
Height (grapple open)	1690 mm	66.5"	1690 mm	66.5"	1775 mm	69.1"
Closing force	60 kN	6.7 ton	60 kN	6.7 ton	60 kN	6.7 ton
Maximum oil flow:						
Hydraulic cylinder	100 L/min	26.4 gpm	100 L/min	26.4 gpm	100 L/min	26.4 gpm
Rotation	40 L/min	10.6 gpm	40 L/min	10.6 gpm	40 L/min	10.6 gpm
Maximum working pressure:						
Hydraulic cylinder	35 000 kPa	5075 psi	35 000 kPa	5075 psi	35 000 kPa	5075 psi
Rotation	14 000 kPa	2030 psi	14 000 kPa	2030 psi	14 000 kPa	2030 psi

*Including mounting bracket.

Features:

- Maintenance free rotator. 360 degrees rotation.
- One fully protected cylinder.
- Standard drill pattern for bolt-on mounting brackets.
- Hydraulic connections positioned at the sides for optimal hydraulic lines protection.
- Standard bolt-on cutting edges.
- High quality bushings with lubrication grooves, hardened pins and dust seals.
- Large inspection covers.
- Two shell types available: Demolition and Recycling.

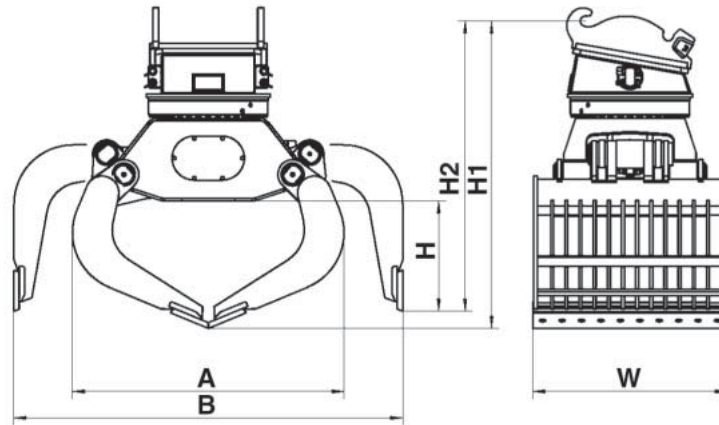
Specifications (All dimensions and weights are approximate.)

Model	G310B-R		G310B-D		G315B-R	
Recommended carrier weight	10-16 mt	11-17.6 st	10-16 mt	11-17.6 st	15-22 mt	16.5-24.3 st
Capacity	400 L	0.52 yd³	375 L	0.49 yd³	600 L	0.78 yd³
Operating weight*	980 kg	2160 lb	990 kg	2185 lb	1320 kg	2910 lb
Closing force	37 kN	8318 lb	37 kN	8318 lb	54 kN	12,140 lb
Maximum pressure open/close	350 bar	5076 psi	350 bar	5076 psi	350 bar	5076 psi
Optimal flow open/close	60 L/min	15.9 gpm	60 L/min	15.9 gpm	90 L/min	23.8 gpm
Maximum pressure rotation	320 bar	4641 psi	320 bar	4641 psi	320 bar	4641 psi
Optimal flow rotation	25 L/min	6.6 gpm	25 L/min	6.6 gpm	25 L/min	6.6 gpm
Model	G315B-D		G320B-R		G320B-D	
Recommended carrier weight	15-22 mt	16.5-24.3 st	20-29 mt	22-32 st	20-29 mt	22-32 st
Capacity	550 L	0.72 yd³	800 L	1.05 yd³	750 L	1.11 yd³
Operating weight*	1330 kg	2930 lb	1860 kg	4100 lb	1870 kg	4125 lb
Closing force	54 kN	12,140 lb	68 kN	15,287 lb	68 kN	15,287 lb
Maximum pressure open/close	350 bar	5076 psi	350 bar	5076 psi	350 bar	5076 psi
Optimal flow open/close	90 L/min	23.8 gpm	120 L/min	31.7 gpm	120 L/min	31.7 gpm
Maximum pressure rotation	320 bar	4641 psi	320 bar	4641 psi	320 bar	4641 psi
Optimal flow rotation	25 L/min	6.6 gpm	25 L/min	6.6 gpm	25 L/min	6.6 gpm

*Including bolt-on mounting bracket.

Multi-Grapples
Europe, Africa,
Middle East

Specifications
 • **Dimensions**



Dimensions (All dimensions are approximate.)

Model	G310B-R		G310B-D		G315B-R	
W Width	850 mm	33"	850 mm	33"	1000 mm	39"
A Width closed	1225 mm	48"	1245 mm	49"	1360 mm	54"
B Width opened	1800 mm	71"	1800 mm	71"	2000 mm	79"
H Height	520 mm	20"	520 mm	20"	570 mm	22"
H1 Height closed*	1435 mm	56"	1435 mm	56"	1540 mm	61"
H2 Height opened*	1345 mm	53"	1345 mm	53"	1445 mm	57"
Model	G315B-D		G320B-R		G320B-D	
W Width	1000 mm	39"	1100 mm	44"	1100 mm	44"
A Width closed	1375 mm	54"	1505 mm	59"	1540 mm	61"
B Width opened	2000 mm	79"	2200 mm	87"	2200 mm	87"
H Height	570 mm	22"	625 mm	25"	625 mm	25"
H1 Height closed*	1540 mm	61"	1695 mm	67"	1695 mm	67"
H2 Height opened*	1445 mm	57"	1600 mm	63"	1600 mm	63"

*Including bolt-on mounting bracket for CW quick coupler.

Work Tools Matching Guide

Choosing the proper Multi-Grapple can increase productivity and lower your cost per ton.

	Stick		Without Quick Coupler						With Quick Coupler					
			Grapples						Grapples					
			G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R	G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R
312C 500 mm (20") shoes	2100	83												
	2500	98												
	3000	118												
312C L 600 mm (24") shoes	2100	83												
	2500	98												
	3000	118												
315C L 500 mm (20") shoes	1850	73												
	2250	89												
	2600	102												
315C L 600 mm (24") shoes	1850	73												
	2250	89												
	2600	102												
315C L 700 mm (28") shoes	1850	73												
	2250	89												
	2600	102												
318C 600 mm (24") shoes	1800	71												
	2250	89												
	2700	106												
318C 700 mm (28") shoes	1800	71												
	2250	89												
	2700	106												
318C N 500 mm (20") shoes	1800	71												
	2250	89												
	2700	106												
318C L 600 mm (24") shoes	1800	71												
	2250	89												
	2700	106												
318C L 800 mm (32") shoes	1800	71												
	2250	89												
	2700	106												
	3200	126												

Not available
 Working Range Full 360°
 Working Range only Front

Work Tools Matching Guide

Choosing the proper Multi-Grapple can increase productivity and lower your cost per ton.

	Stick		Without Quick Coupler						With Quick Coupler					
			Grapples						Grapples					
			G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R	G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R
320C Reach boom	1900	75												
	2500	98												
	2920	115												
320C ME boom	1900	75												
	2400	94												
	2920	115												
320C VA boom	1900	75												
	2400	94												
	2920	115												
320C L Reach boom	1900	75												
	2500	98												
	2920	115												
320C L ME boom	1900	75												
	2400	94												
	2920	115												
320C L VA boom	1900	75												
	2400	94												
	2920	115												
320C LN Reach boom	1900	75												
	2500	98												
	2920	115												
320C LN ME boom	1900	75												
	2400	94												
	2920	115												
320C LN VA boom	1900	75												
	2400	94												
	2920	115												
320C S Reach boom	1900	75												
	2400	94												
	2920	115												
320C S ME boom	1900	75												
	2400	94												
	2920	115												
320C S VA boom	1900	75												
	2400	94												
	2920	115												
320C LU Reach boom	2500	98												
	2920	115												

Not available
 Working Range Full 360°
 Working Range only Front

Work Tools Matching Guide

Choosing the proper Multi-Grapple can increase productivity and lower your cost per ton.

	Stick		Without Quick Coupler						With Quick Coupler					
			Grapples						Grapples					
			G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R	G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R
322C L Reach boom	2000	79												
	2500	98												
	2950	116												
	HD 2950	116												
322C L ME boom	2000	79												
	2500	98												
322C L VA boom	2000	79												
	2500	98												
322C LN Reach boom	2000	79												
	2500	98												
	2950	116												
	HD 2950	116												
322C LN ME boom	2000	79												
	2500	98												
322C LN VA boom	2000	79												
	2500	98												
325C L Reach boom	2000	79												
	2650	104												
	3200	126												
	HD 3200	126												
325C L ME boom	2000	79												
	2500	98												
325C L VA boom	2000	79												
	2500	98												
325C LN Reach boom	2000	79												
	2650	104												
	3200	126												
	HD 3200	126												
325C LN ME boom	2000	79												
	2500	98												
325C LN VA boom	2000	79												
	2500	98												

Not available
 Working Range Full 360°
 Working Range only Front

HD Heavy Duty

Work Tools Matching Guide

Choosing the proper Multi-Grapple can increase productivity and lower your cost per ton.

		Stick		Without Quick Coupler						With Quick Coupler						
				Grapples						Grapples						
				G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R	G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R	
M313C 1 piece boom	DL	2000	79													
		2300	91													
		2600	102													
M313C VA boom	DL	2000	79													
		2300	91													
		2600	102													
M313C 1 piece boom	SSL	2000	79													
		2300	91													
		2600	102													
M313C VA boom	SSL	2000	79													
		2300	91													
		2600	102													
M313C 1 piece boom	SDL	2000	79													
		2300	91													
		2600	102													
M313C VA boom	SDL	2000	79													
		2300	91													
		2600	102													
M315C 1 piece boom	DL	2100	83													
		2400	94													
		2600	102													
M315C VA boom	DL	2100	83													
		2400	94													
		2600	102													
M315C 1 piece boom	SSL	2100	83													
		2400	94													
		2600	102													
M315C VA boom	SSL	2100	83													
		2400	94													
		2600	102													
M315C 1 piece boom	SDL	2100	83													
		2400	94													
		2600	102													
M315C VA boom	SDL	2100	83													
		2400	94													
		2600	102													

Not available
 Working Range Full 360°
 Working Range only Front

DL Dozer lowered
SSL 2 sets of stabilizer lowered
SDL Dozer and stabilizer lowered

Work Tools Matching Guide

Choosing the proper Multi-Grapple can increase productivity and lower your cost per ton.

		Stick		Without Quick Coupler						With Quick Coupler						
				Grapples						Grapples						
				G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R	G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R	
M316C 1 piece boom	DL	2100	83													
		2400	94													
		2600	102													
M316C VA boom	DL	2100	83													
		2400	94													
		2600	102													
M316C 1 piece boom	SSL	2100	83													
		2400	94													
		2600	102													
M316C VA boom	SSL	2100	83													
		2400	94													
		2600	102													
M316C 1 piece boom	SDL	2100	83													
		2400	94													
		2600	102													
M316C VA boom	SDL	2100	83													
		2400	94													
		2600	102													
M318C 1 piece boom	DL	2200	87													
		2500	98													
		2800	110													
M318C VA boom	DL	2200	87													
		2500	98													
		2800	110													
M318C 1 piece boom	SSL	2200	87													
		2500	98													
		2800	110													
M318C VA boom	SSL	2200	87													
		2500	98													
		2800	110													
M318C 1 piece boom	SDL	2200	87													
		2500	98													
		2800	110													
M318C VA boom	SDL	2200	87													
		2500	98													
		2800	110													

Not available
 Working Range Full 360°
 Working Range only Front

DL Dozer lowered
SSL 2 sets of stabilizer lowered
SDL Dozer and stabilizer lowered

**Multi-Grapples
Europe, Africa,
Middle East**

Matching Guide

Work Tools Matching Guide

Choosing the proper Multi-Grapple can increase productivity and lower your cost per ton.

		Stick		Without Quick Coupler						With Quick Coupler					
				Grapples						Grapples					
				G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R	G310B-D	G315B-D	G320B-D	G310B-R	G315B-R	G320B-R
M322C 1 piece boom	DL	2200	87												
		2500	98												
		2900	114												
M322C VA boom	DL	2200	87												
		2500	98												
		2900	114												
M322C 1 piece boom	SSL	2200	87												
		2500	98												
		2900	114												
M322C VA boom	SSL	2200	87												
		2500	98												
		2900	114												
M322C 1 piece boom	SDL	2200	87												
		2500	98												
		2900	114												
M322C VA boom	SDL	2200	87												
		2500	98												
		2900	114												

Not available
 Working Range Full 360°
 Working Range only Front

DL Dozer lowered
SSL 2 sets of stabilizer lowered
SDL Dozer and stabilizer lowered

Special Applications — Ultra High Demolition (UHD)

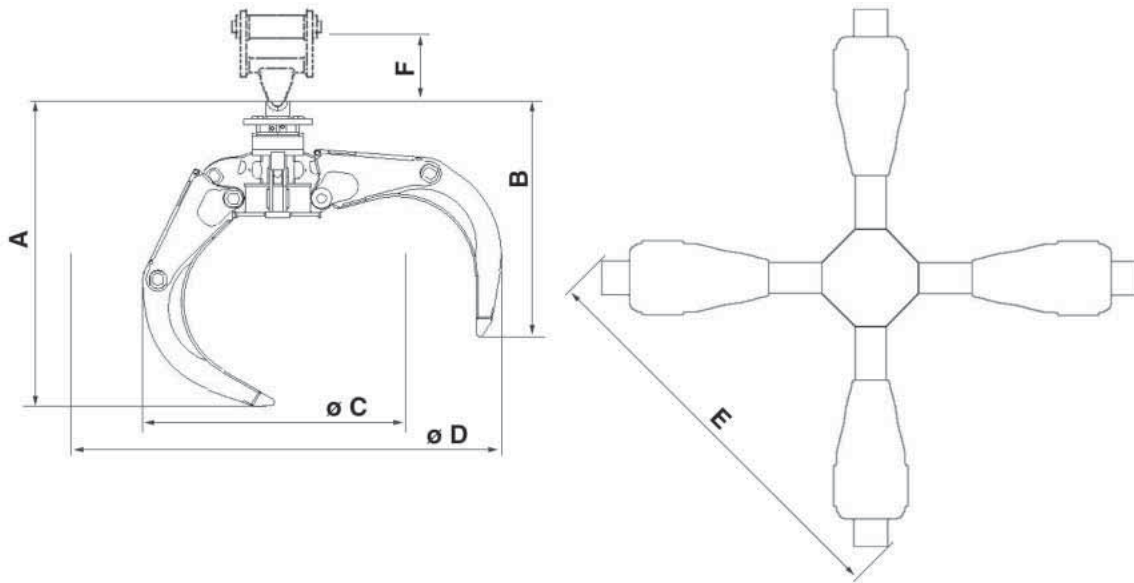
Undercarriage		Without Quick Coupler		With Quick Coupler	
		G320	G320B-D	G320	G320B-D
330C L	Standard				
	VG				
	Long Narrow				
	345B II				
	HW				
345B L II	VG				
365B L II	Standard				
5090B L	Standard				

Not available
 Working Range Full 360°
 Working Range only Front

VG Variable Gauge
HW High Wide

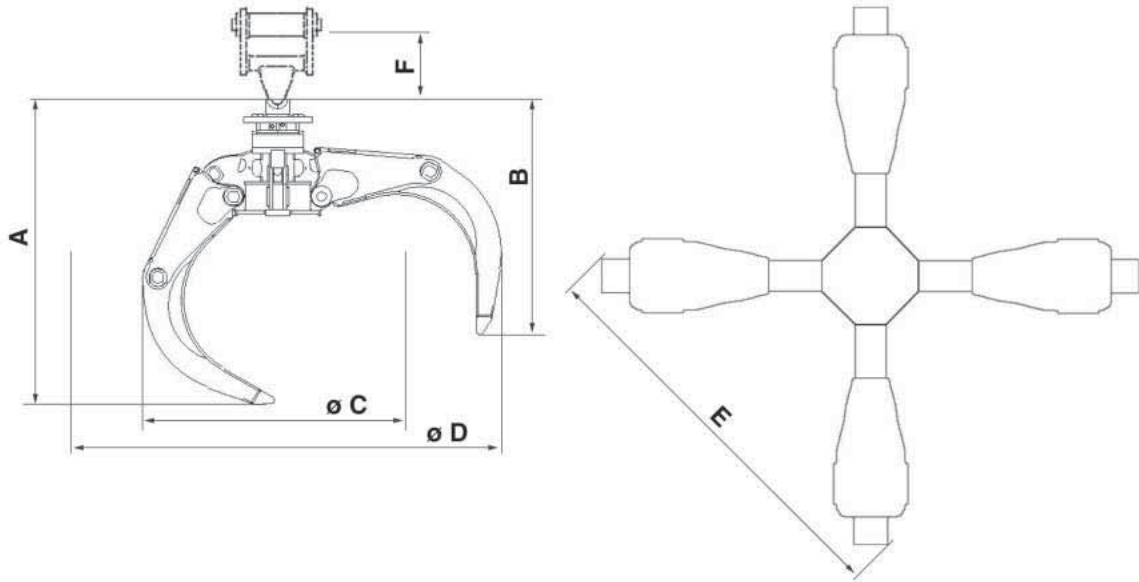
Features:

- Continuous, bi-directional 360° hydraulic rotation.
- Heavy-duty, fully protected cylinders.
- Tines constructed of high-strength wear-resistant steel.



Specifications

Model	GSH15		GSH15		GSH15	
Part number	212-3871		231-0193		231-0203	
Industry capacity class	0.6 m ³	0.75 yd ³	0.6 m ³	0.75 yd ³	0.8 m ³	1 yd ³
Weight	1220 kg	2690 lb	1326 kg	2923 lb	1367 kg	3013 lb
Maximum opening	2122 mm	83.5"	2122 mm	83.5"	2346 mm	92.4"
Rotation	360°		360°		360°	
Dimensions:						
A	1734 mm	68.3"	1816 mm	71.5"	1945 mm	76.6"
B	1378 mm	54.3"	1460 mm	57.5"	1525 mm	60.0"
C	1542 mm	60.7"	1542 mm	60.7"	1558 mm	61.3"
D	2415 mm	95.1"	2415 mm	95.1"	2640 mm	103.9"
E	1810 mm	71.3"	1810 mm	71.3"	1970 mm	77.6"
F	508 mm	20.0"	508 mm	20.0"	508 mm	20.0"
Open/close:						
Maximum pressure	350 bar	5075 psi	350 bar	5075 psi	350 bar	5075 psi
Maximum flow	113.6 L/min	30 gpm	113.6 L/min	30 gpm	113.6 L/min	30 gpm
Rotation:						
Minimum pressure	138 bar	2000 psi	138 bar	2000 psi	138 bar	2000 psi
Maximum pressure	207 bar	3000 psi	207 bar	3000 psi	207 bar	3000 psi
Maximum flow	49.2 L/min	13 gpm	49.2 L/min	13 gpm	49.2 L/min	13 gpm



Specifications

Model	GSH20		GSH22		GSH22	
Part number	231-0959		212-3869		207-2193	
Industry capacity class	1 m ³	1.25 yd ³	1.1 m ³	1.5 yd ³	1.5 m ³	2 yd ³
Weight	1490 kg	3285 lb	2280 kg	5026 lb	2300 kg	5070 lb
Maximum opening	2552 mm	100.5"	2537 mm	99.9"	2673 mm	105.2"
Rotation	360°		360°		360°	
Dimensions:						
A	1971 mm	77.6"	2201 mm	86.7"	2283 mm	89.9"
B	1548 mm	60.9"	1857 mm	73.1"	1905 mm	75.0"
C	1664 mm	65.5"	2053 mm	80.0"	2050 mm	80.7"
D	2863 mm	112.7"	2932 mm	115.4"	3049 mm	120.0"
E	2108 mm	83.0"	2225 mm	87.5"	2308 mm	90.9"
F	508 mm	20.0"	508 mm	20.0"	508 mm	20.0"
Open/close:						
Maximum pressure	350 bar	5075 psi	350 bar	5075 psi	350 bar	5075 psi
Maximum flow	113.6 L/min	30 gpm	265 L/min	70 gpm	265 L/min	70 gpm
Rotation:						
Minimum pressure	138 bar	2000 psi	138 bar	2000 psi	138 bar	2000 psi
Maximum pressure	207 bar	3000 psi	207 bar	3000 psi	207 bar	3000 psi
Maximum flow	49.2 L/min	13 gpm	49.2 L/min	13 gpm	49.2 L/min	13 gpm

Matching Guide

	GSH15*	GSH15*	GSH15*	GSH20	GSH22	GSH22
Part number	212-3871	231-0193	231-0203	231-0959	212-3869	207-2193
M318 MH with 10.7 m (35'0") front	✓					
M320B MH with 12.5 m (41'0") front	✓					
M325B MH with 15.5 m (51'0") front		✓	✓	✓		
M325B MH with 13.4 m (44'0") front		✓	✓	✓		
320C MH	✓					
325C MH with 15.5 m (51'0") front	✓					
325B MH with 13.4 m (44'0") front		✓	✓	✓		
330B MH with 14.3 m (47'0") front				✓		
330C MH with 15.8 m (52'0") front				✓		
345B II MH					✓	✓
W345B II MH					✓	✓

*GSH15 Grapple — The GSH15 grapple is available in 3 different versions: Grapple part numbers 212-3871 and 231-0193 are each 0.57 m³ (0.75 yd³) grapples. The housing on the 231-0193 is heavier and incorporates a stronger rotator for mounting on larger, more powerful Material Handlers which can handle the greater weight of the grapple. The third configuration, part number 231-0203, is identical to the 231-0193 except for the increased capacity and slightly greater weight.

Denotes preferred match by WLED, Aurora. Optimal match depends on material density.

Factory Installations Available

The following grapples are available for factory installation and include crosshead and connector lines:

Grapple	Part #	Installed on
GSH22 1.8 m (2 yd)	226-5070	345B MH/ W345B MH
GSH15 0.9 m (1 yd)	226-5075	M325B MH
GSH20 1.1 m (1.25 yd)	229-3098	M325B MH
GSH20 1.1 m (1.25 yd)	229-3099	330C MH
GSH15 0.7 m (0.75 yd)	226-5074	325C MH

Field Installation

To field-install these grapples on Material Handlers, crossheads and connector lines are required, as shown in the following table.

Machine	Crosshead	Connector Line
M318 MH	215-7013	218-2750
M320 MH	215-7013	218-2750
M325B MH/M325C MH	212-3872	215-7790
320B MH/320C MH	215-7014	215-7790
325B MH/325C MH	212-3872	215-7790
330B MH/330C MH	215-7015	215-7790
345B MH/W345B MH	207-2194	215-7790

Orange Peel Grapples Europe, Africa, Middle East

Features Selection Guide

Features:

- Suitable for a wide range of applications.
- Maximum component protection; lower operating cost.
- Low profile.
- High stability.
- Protected hydraulics.
- Connection lines protection guard.
- Tines constructed of high-strength wear resistant steel.
- Continuous, bi-directional 360° hydraulic rotator.
- Pressure limiting valve for opening and closing.
- Heavy-duty, cushioned cylinders with swing bearings on both sides.
- Maintenance covers for easy access to all maintenance points.
- Weld-on replaceable tips.
- High commonality of parts between 5 and 4 tine configurations.
- Hardened steel-alloy pins.
- High closing force.
- Excellent material penetration.
- Superior lifting capacity.

Selection by Application

Caterpillar Orange Peel Grapples give you the flexibility to match the machine to your application.

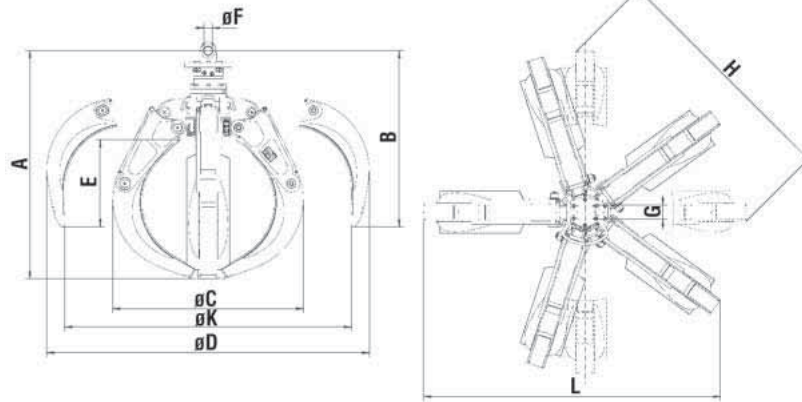
		4 Tines			5 Tines		
		O	S	C	O	S	C
Handling Scrap, Iron and Steel	Small-sized pieces (shredded)	Not Recommended	Good	Very good	Not Recommended	Good	Very good
	Large-sized pieces up to 1000 x 1000 mm (steel scrap, wrought iron, white goods, motor blocks)	Very good	Good	Not Recommended	Very good	Good	Not Recommended
	Heavy/long-sized pieces (I-beams, pipes, plates)	Very good	Good	Not Recommended	Very good	Good	Not Recommended
	Car bodies	Very good	Good	Not Recommended	Very good	Good	Not Recommended
Handling nonferrous Scrap metals	Small-sized pieces (beverage cans, electric devices)	Very good	Good	Not Recommended	Very good	Good	Not Recommended
	Large-sized pieces (car radiators, batteries)	Very good	Good	Not Recommended	Very good	Good	Not Recommended
	Wires and cables (copper, lead)	Very good	Good	Not Recommended	Very good	Good	Not Recommended
Other nonferrous materials	Waste	Very good	Good	Not Recommended	Very good	Good	Not Recommended
	Rocks, concrete blocks	Very good	Good	Not Recommended	Very good	Good	Not Recommended

Very good
 Good
 Not Recommended

O Open
S Semi-closed
C Closed

Specifications

Orange Peel Grapples
Europe, Africa,
Middle East



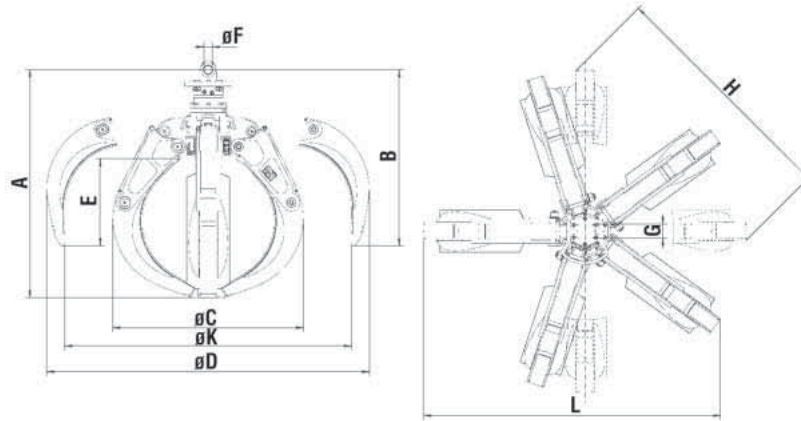
Specifications (All dimensions and weights are approximate.)

Model	GSH9		GSH9	
	300		400	
Type				
Recommended carrier weight				
Excavator	9-15 mt	9.9-16.5 st	9-15 mt	9.9-16.5 st
Material Handler	9-18 mt	9.9-19.8 st	9-18 mt	9.9-19.8 st
Capacity	300 L	79.3 gal	400 L	105.7 gal
5 Tines				
Operating weight*				
open	680 kg	1499 lb	700 kg	1543 lb
semi-closed	720 kg	1587 lb	750 kg	1653 lb
closed	740 kg	1631 lb	820 kg	1808 lb
4 Tines				
Operating weight				
open	580 kg	1279 lb	600 kg	1323 lb
semi-closed	610 kg	1345 lb	640 kg	1411 lb
closed	630 kg	1389 lb	700 kg	1543 lb
Maximum lifting capacity	3 mt	3.3 st	3 mt	3.3 st
Maximum closing force	21 kN	4721 lb	20 kN	4496 lb
Dimension				
A	1375 mm	54.1"	1470 mm	57.9"
B	1110 mm	43.7"	1155 mm	45.5"
C	1320 mm	52.0"	1320 mm	52.0"
D	2000 mm	78.7"	2145 mm	84.4"
E	555 mm	21.9"	600 mm	23.6"
F	50 mm	2.0"	50 mm	2.0"
G	85 mm	3.3"	85 mm	3.3"
H	1510 mm	59.4"	1620 mm	63.8"
K	1776 mm	46.3"	1935 mm	76.2"
L	1850 mm	72.8"	1985 mm	78.1"
Hydraulic open/close				
Maximum pressure	350 bar	5076 psi	350 bar	5076 psi
Optimum flow	50-75 L/min	13.2-19.8 gpm	50-75 L/min	13.2-19.8 gpm
Hydraulic rotation				
Maximum pressure	320 bar	4641 psi	320 bar	4641 psi
Optimum flow	20-40 L/min	5.3-10.6 gpm	20-40 L/min	5.3-10.6 gpm

*Operating weight includes hydraulic rotator and excludes machine link.

Orange Peel Grapples
Europe, Africa,
Middle East

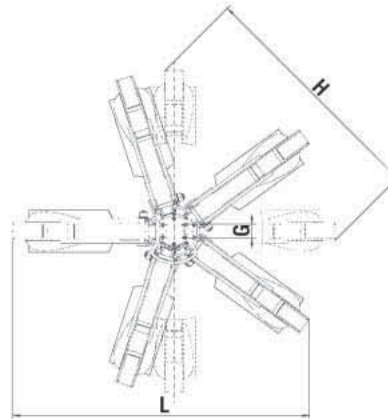
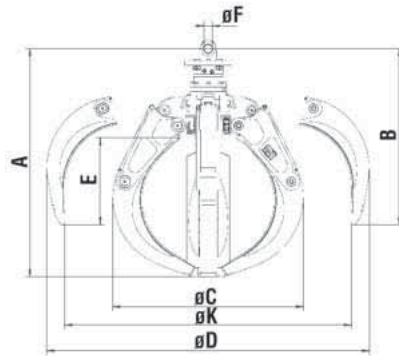
Specifications



Specifications (All dimensions and weights are approximate.)

Model	GSH15		GSH15		GSH15		GSH15	
	400		500		600		800	
Type								
Recommended carrier weight								
Excavator	15-21 mt	16.5-23.1 st	15-21 mt	16.5-23.1 st	15-21 mt	16.5-23.1 st	15-21 mt	16.5-23.1 st
Material Handler	18-25 mt	19.8-27.6 st	18-25 mt	19.8-27.6 st	18-25 mt	19.8-27.6 st	18-25 mt	19.8-27.6 st
Capacity	400 L	105.7 gal	500 L	132.1 gal	600 L	158.5 gal	800 L	211.3 gal
5 Tines								
Operating weight*								
open	1390 kg	3064 lb	1410 kg	3109 lb	1430 kg	3153 lb	1530 kg	3373 lb
semi-closed	1450 kg	3197 lb	1490 kg	3285 lb	1520 kg	3351 lb	1610 kg	3549 lb
closed	1530 kg	3373 lb	1560 kg	3439 lb	1610 kg	3549 lb	1720 kg	3792 lb
4 Tines								
Operating weight								
open	1180 kg	2601 lb	1200 kg	2646 lb	1215 kg	2679 lb	1300 kg	2866 lb
semi-closed	1230 kg	2712 lb	1270 kg	2800 lb	1290 kg	2844 lb	1370 kg	3020 lb
closed	1300 kg	2866 lb	1325 kg	2921 lb	1370 kg	3020 lb	1460 kg	3219 lb
Maximum lifting capacity	4 mt	4.4 st	4 mt	4.4 st	4 mt	4.4 st	4 mt	4.4 st
Maximum closing force	33 kN	7419 lb	27 kN	6070 lb	26 kN	5845 lb	23 kN	5171 lb
Dimension								
A	1650 mm	65.0"	1670 mm	65.7"	1740 mm	68.5"	1870 mm	73.6"
B	1335 mm	52.6"	1355 mm	53.3"	1380 mm	54.3"	1445 mm	56.9"
C	1542 mm	60.7"	1542 mm	60.7"	1542 mm	60.7"	1558 mm	61.3"
D	2259 mm	88.9"	2323 mm	91.5"	2415 mm	95.1"	2640 mm	103.9"
E	604 mm	23.8"	604 mm	23.8"	650 mm	25.6"	715 mm	28.1"
F	70 mm	2.8"	70 mm	2.8"	70 mm	2.8"	70 mm	2.8"
G	114 mm	4.5"	114 mm	4.5"	114 mm	4.5"	114 mm	4.5"
H	1700 mm	66.9"	1745 mm	68.7"	1810 mm	71.3"	1970 mm	77.6"
K	1965 mm	77.4"	2033 mm	80.0"	2121 mm	83.5"	2345 mm	92.3"
L	2090 mm	82.3"	2140 mm	84.3"	2230 mm	87.8"	2430 mm	95.7"
Hydraulic open/close								
Maximum pressure	350 bar	5076 psi	350 bar	5076 psi	350 bar	5076 psi	350 bar	5076 psi
Optimum flow	75- 100 L/min	19.8- 26.4 gpm	75- 100 L/min	19.8- 26.4 gpm	75- 100 L/min	19.8- 26.4 gpm	75- 100 L/min	19.8- 26.4 gpm
Hydraulic rotation								
Maximum pressure	320 bar	4641 psi	320 bar	4641 psi	320 bar	4641 psi	320 bar	4641 psi
Optimum flow	20- 40 L/min	5.3- 10.6 gpm	20- 40 L/min	5.3- 10.6 gpm	20- 40 L/min	5.3- 10.6 gpm	20- 40 L/min	5.3- 10.6 gpm

*Operating weight includes hydraulic rotator and excludes machine link.



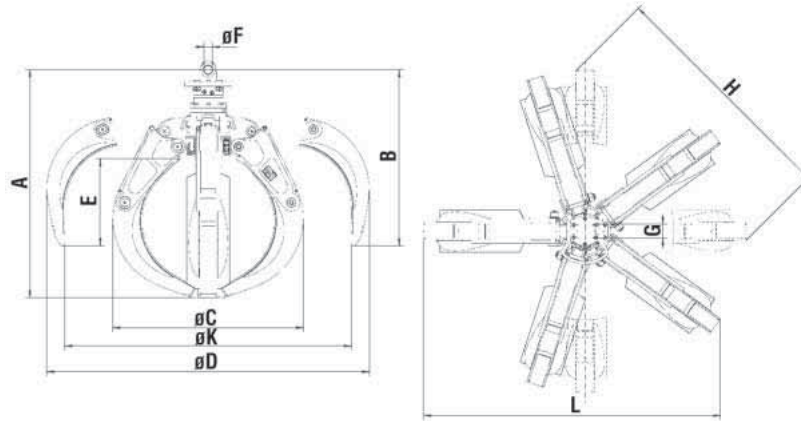
Specifications (All dimensions and weights are approximate.)

Model	GSH20		GSH20		GSH20	
Type	600		800		1000	
Recommended carrier weight						
Excavator	20-30 mt	22-33.1 st	20-30 mt	22-33.1 st	20-30 mt	22-33.1 st
Material Handler	25-45 mt	27.6-49.6 st	25-45 mt	27.6-49.6 st	25-45 mt	27.6-49.6 st
Capacity	600 L	158.5 gal	800 L	211.3 gal	1000 L	264.2 gal
5 Tines						
Operating weight*						
open	1795 kg	3957 lb	1825 kg	4023 lb	1870 kg	4123 lb
semi-closed	1875 kg	4134 lb	1925 kg	4244 lb	1980 kg	4365 lb
closed	1950 kg	4299 lb	2030 kg	4475 lb	2120 kg	4674 lb
4 Tines						
Operating weight						
open	1500 kg	3307 lb	1530 kg	3373 lb	1560 kg	3439 lb
semi-closed	1560 kg	3439 lb	1615 kg	3560 lb	1655 kg	3649 lb
closed	1690 kg	3726 lb	1785 kg	3935 lb	1875 kg	4134 lb
Maximum lifting capacity	8 mt	8.8 st	8 mt	8.8 st	8 mt	8.8 st
Maximum closing force	46 kN	10,341 lb	40 kN	8992 lb	36 kN	8093 lb
Dimension						
A	1845 mm	72.6"	1945 mm	76.6"	2035 mm	80.1"
B	1515 mm	59.6"	1565 mm	61.6"	1610 mm	63.4"
C	1730 mm	68.1"	1730 mm	68.1"	1730 mm	68.1"
D	2545 mm	100.2"	2700 mm	106.3"	2885 mm	113.6"
E	688 mm	27.1"	738 mm	29.1"	783 mm	30.8"
F	70 mm	2.8"	70 mm	2.8"	70 mm	2.8"
G	114 mm	4.5"	114 mm	4.5"	114 mm	4.5"
H	1915 mm	75.4"	2025 mm	79.7"	2135 mm	84.1"
K	2065 mm	81.3"	2305 mm	90.7"	2555 mm	100.6"
L	2350 mm	92.5"	2490 mm	98.0"	2630 mm	103.5"
Hydraulic open/close						
Maximum pressure	350 bar	5076 psi	350 bar	5076 psi	350 bar	5076 psi
Optimum flow	100-150 L/min	26.4-39.6 gpm	100-150 L/min	26.4-39.6 gpm	100-150 L/min	26.4-39.6 gpm
Hydraulic rotation						
Maximum pressure	320 bar	4641 psi	320 bar	4641 psi	320 bar	4641 psi
Optimum flow	20-40 L/min	5.3-10.6 gpm	20-40 L/min	5.3-10.6 gpm	20-40 L/min	5.3-10.6 gpm

*Operating weight includes hydraulic rotator and excludes machine link.

Orange Peel Grapples
Europe, Africa,
Middle East

Specifications



Specifications (All dimensions and weights are approximate.)

Model	GSH22		GSH22		GSH22		GSH22	
	600		800		1000		1250	
Type								
Recommended carrier weight								
Excavator	22-50 mt	24.3-55.1 st	22-50 mt	24.3-55.1 st	22-50 mt	24.3-55.1 st	22-50 mt	24.3-55.1 st
Material Handler	35-60 mt	38.6-66.1 st	35-60 mt	38.6-66.1 st	35-60 mt	38.6-66.1 st	35-60 mt	38.6-66.1 st
Capacity	600 L	158.5 gal	800 L	211.3 gal	1000 L	264.2 gal	1250 L	330.2 gal
5 Tines								
Operating weight*								
open	2460 kg	5423 lb	2540 kg	5600 lb	2560 kg	5644 lb	2600 kg	5732 lb
semi-closed	2600 kg	5732 lb	2680 kg	5908 lb	2720 kg	5997 lb	2770 kg	6107 lb
closed	2760 kg	6085 lb	2825 kg	6228 lb	2880 kg	6349 lb	2950 kg	6504 lb
4 Tines								
Operating weight								
open	2160 kg	4762 lb	2230 kg	4916 lb	2250 kg	4960 lb	2290 kg	5049 lb
semi-closed	2210 kg	4872 lb	2280 kg	5027 lb	2310 kg	5093 lb	2360 kg	5203 lb
closed	2350 kg	5181 lb	2400 kg	5291 lb	2450 kg	5401 lb	2510 kg	5534 lb
Maximum lifting capacity	8 mt	8.8 st	8 mt	8.8 st	8 mt	8.8 st	8 mt	8.8 st
Maximum closing force	59 kN	13,264 lb	55 kN	12,364 lb	51 kN	11,465 lb	50 kN	11,240 lb
Dimension								
A	1990 mm	78.3"	2120 mm	83.5"	2200 mm	86.6"	2270 mm	89.4"
B	1735 mm	63.3"	1810 mm	71.3"	1850 mm	72.8"	1890 mm	74.4"
C	1840 mm	72.4"	1840 mm	72.4"	1840 mm	72.4"	1840 mm	72.4"
D	2640 mm	103.9"	2840 mm	111.8"	2950 mm	116.1"	3065 mm	120.7"
E	785 mm	30.9"	860 mm	33.9"	900 mm	35.4"	940 mm	37.0"
F	70 mm	2.8"	70 mm	2.8"	70 mm	2.8"	70 mm	2.8"
G	114 mm	4.5"	114 mm	4.5"	114 mm	4.5"	114 mm	4.5"
H	2020 mm	79.5"	2160 mm	85.0"	2240 mm	88.2"	2320 mm	91.3"
K	2201 mm	86.7"	2412 mm	95.0"	2537 mm	99.9"	2650 mm	104.3"
L	2450 mm	96.5"	2630 mm	103.5"	2730 mm	107.5"	2835 mm	111.6"
Hydraulic open/close								
Maximum pressure	350 bar	5076 psi	350 bar	5076 psi	350 bar	5076 psi	350 bar	5076 psi
Optimum flow	150-200 L/min	39.6-52.8 gpm	150-200 L/min	39.6-52.8 gpm	150-200 L/min	39.6-52.8 gpm	150-200 L/min	39.6-52.8 gpm
Hydraulic rotation								
Maximum pressure	320 bar	4641 psi	320 bar	4641 psi	320 bar	4641 psi	320 bar	4641 psi
Optimum flow	20-40 L/min	5.3-10.6 gpm	20-40 L/min	5.3-10.6 gpm	20-40 L/min	5.3-10.6 gpm	20-40 L/min	5.3-10.6 gpm

*Operating weight includes hydraulic rotator and excludes machine link.

Work Tools Matching Guide

Choosing the proper Orange Peel Grapple can increase productivity and lower your cost per ton.

	Stick		5 Tines						4 Tines					
			GSH9		GSH15				GSH9		GSH15			
			300	400	400	500	600	800	300	400	400	500	600	800
312C 500 mm (20") shoes	2100	83												
	2500	98												
	3000	118												
312C L 600 mm (24") shoes	2100	83												
	2500	98												
	3000	118												
315C L 500 mm (20") shoes	1850	73												
	2250	89												
	2600	102												
	3100	122												
315C L 600 mm (24") shoes	1850	73												
	2250	89												
	2600	102												
	3100	122												
315C L 700 mm (28") shoes	1850	73												
	2250	89												
	2600	102												
	3100	122												
318C 600 mm (24") shoes	1800	71												
	2250	89												
	2700	106												
	3200	126												
318C 700 mm (28") shoes	1800	71												
	2250	89												
	2700	106												
	3200	126												
318C N 500 mm (20") shoes	1800	71												
	2250	89												
	2700	106												
	3200	126												
318C L 600 mm (24") shoes	1800	71												
	2250	89												
	2700	106												
	3200	126												
318C L 800 mm (32") shoes	1800	71												
	2250	89												
	2700	106												
	3200	126												

Not available
 Maximum Material density 1800 kg/m³ (112 lb/ft³)
 Maximum Material density 1200 kg/m³ (75 lb/ft³)

**Orange Peel Grapples
Europe, Africa,
Middle East**

Matching Guide

Work Tools Matching Guide

Choosing the proper Orange Peel Grapple can increase productivity and lower your cost per ton.

	Stick		5 Tines							4 Tines						
			GSH15				GSH20			GSH15				GSH20		
			400	500	600	800	600	800	1000	400	500	600	800	600	800	1000
	mm	in														
320C Reach boom	1900	75														
	2500	98														
	2920	115														
320C ME boom	1900	75														
	2400	94														
	2920	115														
320C Straight boom	1900	75														
	2500	98														
	2900	114														
	3900	154														
320C VA boom	1900	75														
	2400	94														
	2920	115														
320C L Reach boom	1900	75														
	2500	98														
	2920	115														
320C L ME boom	1900	75														
	2400	94														
	2920	115														
320C L Straight boom	1900	75														
	2500	98														
	2900	114														
	3900	154														
320C L VA boom	1900	75														
	2400	94														
	2920	115														
320C LN Reach boom	1900	75														
	2500	98														
	2920	115														
320C LN ME boom	1900	75														
	2400	94														
	2920	115														
320C LN Straight boom	1900	75														
	2500	98														
	2900	114														
	3900	154														
320C LN VA boom	1900	75														
	2400	94														
	2920	115														

Not available

Maximum Material density 1800 kg/m³ (112 lb/ft³)

Maximum Material density 1200 kg/m³ (75 lb/ft³)

Work Tools Matching Guide

Choosing the proper Orange Peel Grapple can increase productivity and lower your cost per ton.

			5 Tines							4 Tines										
			GSH15				GSH20			GSH15				GSH20						
			400	500	600	800	600	800	1000	400	500	600	800	600	800	1000				
Stick																				
		mm	in																	
320C S Reach boom		1900	75																	
		2400	94																	
		2920	115																	
320C S ME boom		1900	75																	
		2400	94																	
		2920	115																	
320C S Straight boom		1900	75																	
		2500	98																	
		2900	114																	
		3900	154																	
320C S VA boom		1900	75																	
		2400	94																	
		2920	115																	
320C LU		2500	98																	
		2920	115																	

			5 Tines							4 Tines										
			GSH20				GSH22			GSH20				GSH22						
			600	800	1000	600	800	1000	1250	600	800	1000	600	800	1000	1250				
Stick																				
		mm	in																	
322C L Reach boom		2000	79																	
		2500	98																	
		2950	116																	
HD		2950	116																	
322C L ME boom		2000	79																	
		2500	98																	
322C L VA boom		2000	79																	
		2500	98																	
322C LN Reach boom		2000	79																	
		2500	98																	
		2950	116																	
HD		2950	116																	
322C LN ME boom		2000	79																	
		2500	98																	
322C LN VA boom		2000	79																	
		2500	98																	

Not available
 Maximum Material density 1800 kg/m³ (112 lb/ft³)
 Maximum Material density 1200 kg/m³ (75 lb/ft³)

HD Heavy Duty

Orange Peel Grapples
Europe, Africa,
Middle East

Matching Guide

Work Tools Matching Guide

Choosing the proper Orange Peel Grapple can increase productivity and lower your cost per ton.

	Stick		5 Tines								4 Tines					
			GSH20			GSH22					GSH20			GSH22		
			600	800	1000	600	800	1000	1250	600	800	1000	600	800	1000	1250
	mm	in														
325C L Reach boom	2000	79														
	2650	104														
	3200	126														
HD	3200	126														
325C L ME boom	2000	79														
	2500	98														
325C L Straight boom	2000	79														
	2650	104														
	3200	126														
325C L Straight boom HDCWT	2000	79														
	2650	104														
	3200	126														
325C L VA boom	2000	79														
	2500	98														
325C LN Reach boom	2000	79														
	2650	104														
	3200	126														
HD	3200	126														
325C LN ME boom	2000	79														
	2500	98														
325C LN Straight boom	2000	79														
	2650	104														
	3200	126														
325C LN Straight boom HDCWT	2000	79														
	2650	104														
	3200	126														
325C LN VA boom	2000	79														
	2500	98														

Not available
 Maximum Material density 1800 kg/m³ (112 lb/ft³)
 Maximum Material density 1200 kg/m³ (75 lb/ft³)

HD Heavy Duty

Work Tools Matching Guide

Choosing the proper Orange Peel Grapple can increase productivity and lower your cost per ton.

	Stick		5 Tines				4 Tines			
			GSH22				GSH22			
	mm	in	600	800	1000	1250	600	800	1000	1250
330C L Reach boom	2150	85								
	2800	110								
	3200	126								
	3900	154								
330C L ME boom	2150	85								
	2550	100								
330C L Straight boom	2150	85								
	2800	110								
	3200	126								
	3900	154								
330C L Straight boom HDCWT	2150	85								
	2800	110								
	3200	126								
	4800	189								
330C LN Reach boom	2150	85								
	2800	110								
	3200	126								
	3900	154								
330C LN ME boom	2150	85								
	2550	100								
330C LN Straight boom	2150	85								
	2800	110								
	3200	126								
	3900	154								
330C LN Straight boom HDCWT	2150	85								
	2800	110								
	3200	126								
	4800	189								
330C LN Reach boom 345B II undercarriage	2150	85								
	2800	110								
	3200	126								
	3900	154								
330C LN ME boom 345B II undercarriage	2150	85								
	2550	100								
	3500	138								
	2150	85								
330C LN Straight boom 345B II undercarriage	2800	110								
	3200	126								
	3900	154								
	4800	189								

Not available
 Maximum Material density 1800 kg/m³ (112 lb/ft³)
 Maximum Material density 1200 kg/m³ (75 lb/ft³)

Special Applications — Material Handler

		Boom				Stick				5 Tines									
										GSH15				GSH20			GSH22		
										400	500	600	800	600	800	1000	600	800	1000
Undercarriage	mm	in	mm	in															
320C MH	HDHW	6650	262	5450	215														
	Square	6650	262	5450	215														
325C MH	HDHW	8350	329	5450	215														
	Square	8350	329	5450	215														
330C MH	HDHW	9100	358	6000	236														
	Square	9100	358	6000	236														
	345B II Standard	9100	358	6000	236														
	345B II HDW	9100	358	6000	236														
345B II MH	HDW	9770	385	7800	307														
M318C MH	MH	6400	252	4900	193														
	Standard	6400	252	4900	193														
M322C MH	MH	6800	268	4900	193														
	MH	6800	268	5900	232														
	Standard	6800	268	4900	193														
	Standard	6800	268	5900	232														

		Boom				Stick				4 Tines									
										GSH15				GSH20			GSH22		
										400	500	600	800	600	800	1000	600	800	1000
Undercarriage	mm	in	mm	in															
320C MH	HDHW	6650	262	5450	215														
	Square	6650	262	5450	215														
325C MH	HDHW	8350	329	5450	215														
	Square	8350	329	5450	215														
330C MH	HDHW	9100	358	6000	236														
	Square	9100	358	6000	236														
	345B II Standard	9100	358	6000	236														
	345B II HDW	9100	358	6000	236														
345B II MH	HDW	9770	385	7800	307														
M318C MH	MH	6400	252	4900	193														
	Standard	6400	252	4900	193														
M322C MH	MH	6800	268	4900	193														
	MH	6800	268	5900	232														
	Standard	6800	268	4900	193														
	Standard	6800	268	5900	232														

Not available
 Maximum Material density 1800 kg/m³ (112 lb/ft³)
 Maximum Material density 1200 kg/m³ (75 lb/ft³)

Work Tools Matching Guide

Choosing the proper Orange Peel Grapple can increase productivity and lower your cost per ton.

			5 Tines						4 Tines						
			GSH9		GSH15				GSH9		GSH15				
			300	400	400	500	600	800	300	400	400	500	600	800	
Stick															
		mm	in												
M313C 1 piece boom	DL	2000	79	■	■					■	■				
		2300	91	■	■					■	■				
		2600	102	■	■					■	■				
M313C VA boom	DL	2000	79	■	■					■	■				
		2300	91	■	■					■	■				
		2600	102	■	■					■	■				
M313C 1 piece boom	SSL	2000	79	■	■					■	■				
		2300	91	■	■					■	■				
		2600	102	■	■					■	■				
M313C VA boom	SSL	2000	79	■	■					■	■				
		2300	91	■	■					■	■				
		2600	102	■	■					■	■				
M313C 1 piece boom	SDL	2000	79	■	■					■	■				
		2300	91	■	■					■	■				
		2600	102	■	■					■	■				
M313C VA boom	SDL	2000	79	■	■					■	■				
		2300	91	■	■					■	■				
		2600	102	■	■					■	■				
M315C 1 piece boom	DL	2100	83									■			
		2400	94									■			
		2600	102									■			
M315C VA boom	DL	2100	83									■			
		2400	94									■			
		2600	102									■			
M315C 1 piece boom	SSL	2100	83			■	■					■	■		
		2400	94			■	■					■	■		
		2600	102			■	■					■	■		
M315C VA boom	SSL	2100	83			■	■					■	■		
		2400	94			■	■					■	■		
		2600	102			■	■					■	■		
M315C 1 piece boom	SDL	2100	83			■	■					■	■		
		2400	94			■	■					■	■		
		2600	102			■	■					■	■		
M315C VA boom	SDL	2100	83			■	■					■	■		
		2400	94			■	■					■	■		
		2600	102			■	■					■	■		

□ Not available ■ Maximum Material density 1800 kg/m³ (112 lb/ft³) □ Maximum Material density 1200 kg/m³ (75 lb/ft³)

DL Dozer lowered
SSL 2 sets of stabilizer lowered
SDL Dozer and stabilizer lowered

Orange Peel Grapples
Europe, Africa,
Middle East

Matching Guide

Work Tools Matching Guide

Choosing the proper Orange Peel Grapple can increase productivity and lower your cost per ton.

			5 Tines						4 Tines								
			GSH9		GSH15				GSH9		GSH15						
			300	400	400	500	600	800	300	400	400	500	600	800			
Stick																	
		mm	in														
M316C 1 piece boom	DL	2100	83														
		2400	94														
		2600	102														
M316C VA boom	DL	2100	83														
		2400	94														
		2600	102														
M316C 1 piece boom	SSL	2100	83														
		2400	94														
		2600	102														
M316C VA boom	SSL	2100	83														
		2400	94														
		2600	102														
M316C 1 piece boom	SDL	2100	83														
		2400	94														
		2600	102														
M316C VA boom	SDL	2100	83														
		2400	94														
		2600	102														

Not available
 Maximum Material density 1800 kg/m³ (112 lb/ft³)
 Maximum Material density 1200 kg/m³ (75 lb/ft³)

DL Dozer lowered
SSL 2 sets of stabilizer lowered
SDL Dozer and stabilizer lowered

Work Tools Matching Guide

Choosing the proper Orange Peel Grapple can increase productivity and lower your cost per ton.

			5 Tines							4 Tines							
			GSH15				GSH20			GSH15				GSH20			
			Stick		400	500	600	800	600	800	1000	400	500	600	800	600	800
		mm	in														
M318C 1 piece boom	DL	2200	87														
		2500	98														
		2800	110														
M318C VA boom	DL	2200	87														
		2500	98														
		2800	110														
M318C 1 piece boom	SSL	2200	87														
		2500	98														
		2800	110														
M318C VA boom	SSL	2200	87														
		2500	98														
		2800	110														
M318C 1 piece boom	SDL	2200	87														
		2500	98														
		2800	110														
M318C VA boom	SDL	2200	87														
		2500	98														
		2800	110														
M322C 1 piece boom	DL	2200	87														
		2500	98														
		2900	114														
M322C VA boom	DL	2200	87														
		2500	98														
		2900	114														
M322C 1 piece boom	SSL	2200	87														
		2500	98														
		2900	114														
M322C VA boom	SSL	2200	87														
		2500	98														
		2900	114														
M322C 1 piece boom	SDL	2200	87														
		2500	98														
		2900	114														
M322C VA boom	SDL	2200	87														
		2500	98														
		2900	114														

Not available
 Maximum Material density 1800 kg/m³ (112 lb/ft³)
 Maximum Material density 1200 kg/m³ (75 lb/ft³)

DL Dozer lowered
SSL 2 sets of stabilizer lowered
SDL Dozer and stabilizer lowered

Notes —

ENGINES

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	TYPE	NO. OF MODELS	RANGE
	INDUSTRIAL		
	Diesel	30	15 to 4920 kW 20 to 6600 hp EPA Certified
	Gaseous Fueled	12	71 to 3509 kW 95 to 4705 hp EPA Certified
	GENERATOR SETS		50 Hz-kV•A w/fan Prime-205 to 2275 Standby-225 to 2500
	Diesel High Speed	15	60 Hz-ekW w/fan Prime-210 to 1825 Standby-230 to 2250 +17 Models CM Product Medium Speed
	Diesel Medium Speed		50 Hz-kV•A w/o fan 1360 to 17 460 60 Hz-kW w/o fan 980 to 13 970
	Gaseous Fueled	15	50 Hz-kV•A w/o fan Continuous-106 to 7400 60 Hz-kW w/o fan Continuous-100 to 5900
	OLYMPIAN GENERATOR SETS*		50 Hz-kV•A Prime-6 to 200 Standby-8 to 220 60 Hz-kW Prime-6 to 180 Standby-8 to 200
	Diesel		
	Gaseous Fueled		50 Hz-kV•A Prime-6 to 90 Standby-12 to 100 60 Hz-kW Prime-6 to 90 Standby-12 to 100
	MARINE		
	Propulsion	17	63 to 7200 kW 85 to 9655 hp
	Generator Sets	12	50 Hz kV•A 63 to 6500 Prime 60 Hz-kW 65 to 4840 Prime
	TRUCK		
	Diesel	5	142 to 410 kW 190 to 550 hp EPA certified and compliant

*Olympian Generator Sets are manufactured exclusively for Caterpillar dealers.

DESIGN DATA**Diesel Engines**

Bearings — Precision-type steel-backed aluminum alloy with lead-tin overlay copper bonded to bearing surface. High load carrying ability and exceptional fatigue strength.

Block — Cast from high tensile strength grey iron. Internal ribbing provides added strength.

Cooling — Built-in, gear driven centrifugal pump (belt driven for 3116 and 3208) circulates jacket water through engine at all times. Water temperature is thermostatically controlled. Heat exchangers and radiators are available.

Crankshaft — Forged steel, dynamically balanced, heat treated and superfinished.

Cylinder Liners — Internal surface induction hardened (1.7 L, 3300, 3400, 3500 and 3600 Families) for excellent wear life. Full-length watercooled for efficient heat transfer.

Fuel System — Adjustment free for reduced engine maintenance, individual fuel injection pumps have built-in calibration — no adjustment required after fuel nozzle replacement (1.7 L, 1.9 L, 3406E, 3456, 3500 and 3600 families have unit injectors). 3126, 3408E and 3412E use the Caterpillar Hydraulic Electronic Fuel Injection (HEUI) system.

Governor — Hydra-mechanical (Woodward 3161 on 3500 and 3600 Families) for reliability, good response and smooth, stable load changes. Electronically controlled engines use Caterpillar proprietary software and hardware.

Lubrication — Positive displacement gear pump maintains continuous flow of lubricant under pressure to all moving parts. Full-flow filtration is provided by replaceable cellulose filters. Watercooled oil cooler maintains proper oil temperature.

Pistons — Three-ring design (two-ring on 3208) reduces friction, provides excellent oil control, and increases engine efficiency.

Starting — Electric and air starting systems are offered for most models.

Valves — Hardened steel alloy. Valves rotate 3° each time they lift to seat in a new position and allow even heat distribution (except for 3116).

Gaseous Fueled Engines

Combustion System — The piston design and compression ratios available provide the ability to utilize a wide variety of gaseous fuels as well as provide low emission output (below 2.0 grams/bhp-hr NO_x).

Fuel System — Heavy-duty, industrial-type carburetors designed to maintain optimum air-fuel ratio at all loads and speeds.

Ignition System — Caterpillar Gaseous Fueled Engines employ a low tension magneto, together with an ignition transformer (one at each cylinder), to provide up to 34 kV to spark plugs. The Cat Electronic Ignition system is also available on certain engines.

RATING EXPLANATIONS

All engine ratings listed include such standard accessories as air cleaner and fuel, lube, and jacket water pumps. Power required for auxiliaries such as cooling fans, air compressors, charging alternators, special pumps, etc., must be deducted to arrive at the net power available to drive the load (except as noted). Other ratings are available for specific application and customer requirements, i.e., locomotive, oil field, fire pump, irrigation, etc. Consult your Caterpillar Dealer.

Rating Conditions

Performance is based on SAE J1995 standard conditions of 100 kPa (29.61 in Hg) and 25° C (77° F). Performance also applies at ISO 3046/1 (except for Spark Ignited Engines), DIN 6271 and BS 5514 standard conditions of 100 kPa (29.61 in Hg), 27° C (81° F) and 60% relative humidity.

Fuel consumption is based on fuel oil having an LHV of 42 780 kJ/kg (18,390 Btu/lb) and weighing 838.9 g/liter (7.001 lb/U.S. gal). All ratings are based on distillate fuel.

Altitude and Temperature Capabilities

Industrial Diesel Engines — Most intermittent and continuous ratings are applicable to at least 1320 m (5000 ft) elevation without derating. Consult factory for specific applications.

Gaseous Fueled Engines — Ratings for turbocharged and aftercooled engines are generally applicable to 1500 m (5000 ft). Naturally aspirated engines are applicable to 150 m (500 ft).

Diesel Truck Engines — Refer to specification sheets for altitude capability of individual truck engine ratings.

Basic Specifications

Model	Displacement		Config	Bore x Stroke		Fuel System	Power Range								
	L	Cu in		mm	in		Marine		Diesel Industrial		On-Highway Truck*		Elec. Power Gen.	Oil/Gas	Rail Power
							kW	hp	kW	hp	kW	hp			
3003	1	61	I3	75x72	2.95x2.83	PC			15.1-17.5	20.3-23.5					
3011C	1.1	69	I3	77x81	3.0x3.2	PC			18.4-19.5	24.7-26.1					
3013	1.5	92	I3	84x90	3.31x3.54	PC			23.5	31.5					
3013C	1.5	92	I3	84x90	3.31x3.54	PC			20.7-25.1	27.8-33.7					
C16	1.5	91	I4	77x81	3.0x3.2	PC			26.5	35.5					
3024C	2.2	134	I4	84x100	3.31x3.94	PC			31-44.7	41.6-60					
3034	3	183	I4	97x100	3.82x3.94		47-60	63-80							
3044C	3.3	201	I4	94x120	3.7x4.74	Mech			47-60	63.3-80.5					
3054	4	243	I4	100x127	3.937x5.0	Mech	80	108	50-91	67-122					
3054B	4.2	258	I4	103x127	4.06x5.0	Mech	64	86	57-64	76.5-86					
3054C	4.4	269	I4	105x127	4.1x5.0	Mech			50-95	67-127					
3054E	4.4	269	I4	105x127	4.1x5.0	Elect			80-104	107-140					
3056	6	365	I6	100x127	3.9x5.0	Mech	93-153	125-205	76-134.5	120-180					
3056E	6	366	I6	100x127	3.9x5.0	Elect			85-129.5	114-180					
3126	7.2	439	I6	110x127	4.33x5.0	MUI	261-313	350-420	160-194	215-260					
3126B	7.24	442	I6	110x127	4.33x5.0	HEUI	186-336	250-450	131-224	175-300					
C7	7.2	442	I4	110x127	4.33x5.0		339	455							
C9	8.8	537	I6	112x149	4.41x5.87	HEUI	375	503	205-261	275-350					
C10	10.3	629	I6	125x140	4.9x5.5	EUI			231-317	310-425	227-250	305-335			
3196	12	732	I6	130x150	5.1x5.9		254-402	340-660							
C12	12	732	I6	130x150	5.1x5.9	EUI	254-522	340-700	276-373	370-500	265-377	355-505			
3406	14.6	893	I6	137x165	5.4x6.5				199-392	267-525					
3406C	14.6	893	I6	137x165	5.4x6.5		186-433	250-580							
3406E	14.6	893	I6	137x165	5.4x6.5		336-597	450-800							
C15	14.6	893	I6	137x165	5.4x6.5	EUI			317-429	425-575	324-384	435-515			
C16	15.8	964	I6	140x171	5.5x6.75	EUI			373-492	500-660					
3408	18	1099	V8	137x152	5.4x6.0				238-399	319-535					
3408C	18	1099	V6	137x152	5.4x6.0		300-403	402-540							
C18	18.1	1106	I6	145x183	5.7x7.2		338-746	453-1000							
3412	27	1649	V12	137x152	5.4x6.0				317-716	425-960					
3412C	27	1649	V12	137x152	5.4x6.0		375-746	503-1000							
3412E	27	1649	V12	137x152	5.4x6.0	HEUI	317-1044	425-1400	317-783	425-1050					
C30	30	1831	V12	145x152	5.7x6.0		1119-1156	1500-1550							
3412D	32.1	1959	V12	145x162	5.7x6.4		404-651	542-872							
C32	32.1	1959	V12	145x162	5.7x6.4		1044-1232	1400-1652							
3508	34.5	2105	V8	170x190	6.7x7.5	MUI	526-858	705-1150	507-746	680-1000					
3508B	34.5	2105	V8	170x190	6.7x7.5	EUI	578-1119	775-1500	746-820	1000-1100					
3512	51.8	3158	V12	170x190	6.7x7.5	MUI	900-1305	1207-1750	761-1119	1020-1500					
3512B	51.8	3158	V12	170x190	6.7x7.5	EUI	820-1678	1100-2250	1119-1231	1500-1650					
3512 HD	58.6	3576	V12	170x215	6.7x8.5	MUI	1118-1500	1500-2012							
3516	69	4210	V16	170x190	6.7x7.5	MUI	1195-1641	1603-2200	1011-1492	1355-2000					
3516B	69	4210	V16	170x190	6.7x7.5	EUI	1231-2238	1650-3000	1492-1641	2000-2200					
3516 HD	78	4766	V16	170x215	6.7x8.5	EUI	1398-2000	1875-2682							
3606	111	6773	I6	280x300	11x11.8	MUI	1730-2030	2320-2722	1350-1850	1680-2481					
3608	148	9031	I8	280x300	11x11.8	MUI	2300-2710	3084-3634	1800-2460	2414-3300					
3612	222	13,546	V12	280x300	11x11.8	MUI	3460-4060	4640-5444	2700-3700	3621-4962					
3616	296	18,062	V16	280x300	11x11.8	MUI	4600-5420	6169-7268	3600-4920	4828-5310					
3616/3618 (fcvr)	296/333	18,062/20,286	V16/V18	280x300	11x11.8		5650/7200	7577/9652							

Mech — Mechanical pump and line
MUI — Mechanical Unit Injection
EUI — Electronic Unit Injection
*See Truck Listing for EURO2 Ratings.

HEUI — Hydraulic Electronic Unit Injection
PC — Precombustion Chamber
Elect — Electronic
fcvr — fast commercial vessel rating

See our listings for Generator Sets and Power Modules for complete information.

See our listings for Oil and Gas Engines for complete information.

See our listings for Railway Power for complete information.

Engines | Basic Specifications

Basic Specifications

Model	Displacement		Config	Bore x Stroke		Fuel System	Electrical Power Generation	
	L	Cu in		mm	in		60 Hz	50 Hz
6M 20	57	3478	I6	200x300	7.9x11.8	UP	980 ekW	1363 kVA
8M 20	75	4577	I8	200x300	7.9x11.8	UP	1300 ekW	1825 kVA
9M 20	85	5187	I9	200x300	7.9x11.8	UP	1470 ekW	2050 kVA
6M 25	123	7506	I6	255x400	10x15.75	UP	1730 ekW	2225 kVA
8M 25	163	9947	I8	255x400	10x15.75	UP	2230 ekW	2875 kVA
9M 25	184	11,228	I9	255x400	10x15.75	UP	2500 ekW	3238 kVA
6M 32C	232	14,158	I6	320x480	12.6x18.9	UP	2765 ekW	3456 kVA
8M 32C	309	18,856	I8	320x480	12.6x18.9	UP	3725 ekW	4656 kVA
9M 32C	347	21,175	I9	320x480	12.6x18.9	UP	4190 ekW	5238 kVA
12M 32C	405	24,715	V12	320x420	12.6x16.5	UP	5590 ekW	6988 kVA
16M 32C	541	33,014	V16	320x420	12.6x16.5	UP	7450 ekW	9313 kVA
6M 43	531	32,404	I6	430x610	16.93x24	UP	5240 ekW	6550 kVA
7M 43	620	37,835	I7	430x610	16.93x24	UP	6110 ekW	7638 kVA
8M 43	709	43,266	I8	430x610	16.93x24	UP	6980 ekW	8725 kVA
9M 43	797	48,636	I9	430x610	16.93x24	UP	7860 ekW	9825 kVA
12M 43	1063	64,868	V12	430x610	16.93x24	UP	10 475 ekW	13 094 kVA
16M 43*	1417	86,471	V16	430x610	16.93x24	UP	13 970 ekW	17 463 kVA

All ratings at 0.8 pf.
 *Contact for availability.
 UP — Unit Pump

On-Highway Engine Ratings
 ● 3126 ● C10
 ● C12 ● C15

Engines

On-Highway Engine Ratings

3126E Ratings

Advertised hp	Maximum hp	Peak Torque	Advertised Speed
190	207	520	2500
210 AT	216	520	2500
210	210	520	2500
210	210	605	2500
230	230	660	2400
250	250	660	2400
250	250	800	2400
275	275	800	2400
275	275	860	2400
300	300	800	2400
300	300	860	2400
330*	330	860	2400

*Firetruck and RV Rating.

C10 Ratings

Advertised hp	Maximum hp	Peak Torque	Advertised Speed
305	315	1050	2100
335	350	1250	2100

C12 Ratings

Advertised hp	Maximum hp	Peak Torque	Advertised Speed
335	420	1550	2100
355	370	1350	2100
380	395	1450	2100
410	425	1450	2100
410	425	1550	2100
430	445	1550	2100
430	445	1650	2100
355/410	415	1350/1450	2100
380/430	445	1450/1550	2100
380/430	445	1450/1650	2100
425*	425	1550	2100
455*	455	1550	2100
505**	505	1550	2100

*Firetruck and RV.

**RV Only.

C15 Ratings

Advertised hp	Maximum hp	Peak Torque	Advertised Speed
435	450	1500	2100
435	450	1550	2100†
435	450	1650	2100†
475	490	1650	2100†
500	515	1650	2100***
435/500	515	1550/1650	2100
435/500	515	1550/1650	2100*
475	490	1750	2100†
500	515	1850	2100†
525	525	1850	2100†
515	515	1650	2100**

*Oil Well Service.

**RV Only.

***Field Rerate Only.

†Brakesaver Available.

Engines

On-Highway Engine with ACERT® Technology Ratings

- C7 ● C9 ● C11
- C13 ● C15

On-Highway Engine with ACERT® Technology Ratings

C7 Ratings

Advertised hp	Maximum hp	Peak Torque	Governed Speed	Torque Rise %
190	207	520	2500	27
210	210	520	2500	45
210	210	605	2500	23
230	230	540	2500	12
230	230	660	2400	37
250	250	660	2400	26
250	250	800	2400	52
275*	275	800	2400	39
275*	275	860	2400	49
300*	300	800	2400	27
300*	300	860	2400	37
330	330	860	2400	19
350**	350	860	2400	12

*Specialty rating also available.

**RV Rating.

C9 Ratings

Advertised hp	Maximum hp	Peak Torque	Governed Speed	Torque Rise %
285*	285	900	2100	26
330*	330	1150	2100	39
335	350	1050	2100	25
350	350	1100	2100	26
400**	400	1100	2100	10

*Transit Bus.

**RV Only.

C11 Ratings

Advertised hp	Maximum hp	Peak Torque	Governed Speed	Torque Rise %
305	315	1050	2100	37
335*	350	1250	2100	49
350	365	1350	2100	54
370	385	1350	2100	46

*Air inlet shutoff options available.

C13 Ratings

Advertised hp	Maximum hp	Peak Torque	Governed Speed	Torque Rise %
335	420	1550	2100	85
380	395	1450	2100	52
410	425	1450	2100	41
410*	425	1550	2100	51
410	425	1450/1650	2100	41/61
430	445	1550	2100	31
430*	445	1650	2100	53
430	445	1550/1750	2100	44/63
470**	485	1550	2100	32
525**	525	1650	2100	25
410***	425	1450/1550	2100	41/51

*Air inlet shutoff options available.

**Firetruck and RV Only.

***Oil Well Service (OWS).

C15 Ratings

Advertised hp	Maximum hp	Peak Torque	Governed Speed	Torque Rise %
435	450	1550	2100	18
435	450	1650	2100	26
435	450	1550/1750	2100	42/61
475*	490	1650	2100	15
475*	490	1850	2100	56
475	490	1650/1850	2100	39/56
500*	515	1850	2100	23
550*	550	1850	2100	34
435/500**	515	1550/1650	2100	18/24
500***	515	1850	2100	23
500***	550	1850	2100	34

*BrakeSaver will be an option.

**Oil Well Service (OWS).

***PSO Field uprate to 2300 rpm.

Off-Highway Engine Ratings

- C7 ● C9 ● C11
- C13 ● C15

Engines

Off-Highway Engine Ratings

C7 Ratings

Advertised hp	Maximum hp	Peak Torque	Advertised Speed
190	207	520	2500
210 AT	216	520	2500
210	210	520	2500
210	210	605	2500
230	230	540	2400
230	230	660	2400
250	250	660	2400
250	250	800	2400
275	275	800	2400
275	275	860	2400
300	300	800	2400
300	300	860	2400
330	330	860	2400

C9 Ratings

Advertised hp	Maximum hp	Peak Torque	Advertised Speed
275	275	860	2100
330	330	1150	2100
335	350	1050	2100
350	350	1100	2100
400	400	1100	2100

C11 Ratings

Advertised hp	Maximum hp	Peak Torque	Advertised Speed
305	315	1050	2100
335	350	1250	2100
350	365	1350	2100

C13 Ratings

Advertised hp	Maximum hp	Peak Torque	Advertised Speed
335	420	1550	2100
410	425	1450	2100
410	425	1550	2100
430	445	1550	2100
430	445	1650	2100
470	485	1550	2100
525	525	1650	2100
410	425	1450/1550	2100

C15 Ratings

Advertised hp	Maximum hp	Peak Torque	Advertised Speed
435	450	1550	2100
435	450	1650	2100
475	490	1650	2100
475	490	1850	2100
500	515	1850	2100
550	550	1850	2100
435/500	515	1550/1650	2100
500	515	1650	2100
500	515	1850	2100
550	550	1850	2100

Olympian Generator Sets
Outside North America

Model	rpm	Standby	Prime	rpm	Standby	Prime
		60 Hz (ekW)			50 Hz (kVA)	
3-Phase Output*						
GEK8-1	1500	8	7	—	—	—
GEKH8-1	3000	8	6.4	—	—	—
GEK10-1	1500	10	9	—	—	—
GEKH12-1	3000	12	9.6	—	—	—
GEP13.5-2	1800	13	12	1500	13.8	12.5
GEP18-2	1800	17	15.5	1500	18	16.5
GEP22-2	1800	20	18	1500	22	20
GEPH22-2	3000	—	—	—	22	—
GEP30	1800	27.2	24	1500	30	27
GEPH30-2	3000	—	—	—	30	—
GEPH35-2	3000	—	—	—	35	—
GEP44-3	1800	40	36	1500	44	40
GEP50-3	1800	46.4	40	1500	50	45
GEP65-3	1800	60	55	1500	65	60
GEP83-3	1800	75	68	1500	82.5	75
GEP100	1800	96	88	1500	100	90
GEP110	1800	100	90.4	1500	110	100
GEP150	1800	132	120	1500	150	135
GEH175	1800	148	135.2	1500	175	160
GEH188	1800	150.4	—	—	—	—
GEH220	1800	200	180	1500	220	200
GEH250	—	—	—	1500	250	230
GEH275	—	—	—	1500	275	250

*All ratings at 0.8 pf.

Rating Definitions:

Standby — (for GEL 3000/3600 rpm models and GEP models with suffix "E"): These ratings are applicable for supplying continuous power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The alternators on these models are peak continuous rated (as defined in ISO 8523-3) at 25° C (77° F).

Prime — (for GEL 1500/1800 rpm models and all other GEP models): These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and GEP models can supply 10% overload power for 1 hour in 12 hours.

**Olympian Generator Sets
Outside North America**

Model	rpm	Standby	Prime	rpm	Standby	Prime
		60 Hz (ekW)			50 Hz (kVA)	
Single Phase Output*						
GEK6SP-1	1800	—	—	1500	6	5.5
GEKH6SP-1	3000	—	—	3000	6	—
GEK8SP-1	1800	—	—	1500	8	7
GEKH9SP-1	1800	—	—	3000	9	—
GEP11SP-2	1800	13	12	1500	11	10
GEP14SP-2	1800	17	15.5	1500	14	13
GEP16SP-2	1800	20	18	1500	16.5	15
GEPH17SP	3600	—	—	3000	17.5	—
GEP20SP-1	1800	25	22.5	1500	20	18
GEP23SP-1	1800	27	24.5	1500	23	21
GEPH24SP	3600	—	—	3000	24	—
GEPH28SP	3600	—	—	3000	28	—
GEP30SP-3	1800	35	31.5	1500	30	27
GEP35SP-3	1800	40	36	1500	35	32
GEP40SP-3	1800	44	40	1500	40	36
GEP50SP-3	1800	55	50	1500	49.5	45
GEP62SP-3	1800	70	64	1500	62	56
GEP80SP-1	1800	94	85	1500	80	72
GEP88SP-1	1800	100	90	1500	88	80
GEP105SP-1	1800	113	100	1500	105	96

*All ratings at 1.0 pf.

Rating Definitions:

Standby — (for GEL 3000/3600 rpm models and GEP models with suffix "E"): These ratings are applicable for supplying continuous power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The alternators on these models are peak continuous rated (as defined in ISO 8523-3) at 25° C (77° F).

Prime — (for GEL 1500/1800 rpm models and all other GEP models): These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and GEP models can supply 10% overload power for 1 hour in 12 hours.

Engines

- Olympian Generator Sets
 - North America
 - Diesel Power Module Rating

Olympian Generator Sets

North America

Model	rpm	Standby	Prime
		60 Hz (ekW)	60 Hz (ekW)
3-Phase Output*			
D13P2	1800	13	12
D18P2	1800	18	16.4
D20P1	1800	20	18.2
D20P2	1800	20	18.2
D20P4	1800	20	18
D25P1	1800	25	22.8
D25P2	1800	25	22.8
D30P3	1800	30	27
D30P4	1800	28	25.4
D40P3	1800	40	36
D40P2	1800	40	36
D50P3	1800	50	45
D50P2	1800	50	45
D60P3	1800	60	54.5
D60P2	1800	60	54.5
D75P3	1800	75	68
D80P4	1800	80	72
D90P1	1800	90	82.4
D100P1	1800	100	90
D100P4	1800	100	90
D125P1	1800	125	114
D125P2	1800	125	114
D150P1	1800	150	—
D150P6	1800	150	135
D200P4	1800	200	180

*Ratings at 277/480 volts, 0.8 pf and 30° C (86° F).

Rating Definitions:

Standby — Applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The generators on models D20L2, D20L2S, D20P1-D200P4 and D20P1S-D100P2S are peak rated (as defined in ISO 8528-3).

Prime — These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and this model can supply 10 percent overload power for 1 hour in 12 hours.

Model	rpm	Standby	Prime
		60 Hz (ekW)	60 Hz (ekW)
Single Phase Output*			
D13P2S	1800	13	11.8
D17P2S	1800	17	16
D20P1S	1800	20	18
D20P2S	1800	20	18
D20P4S	1800	20	18
D25P1S	1800	25	22.5
D25P2S	1800	25	22.5
D30P3S	1800	30	27
D30P2S	1800	30	27
D40P3S	1800	40	36
D40P2S	1800	40	36
D50P3S	1800	50	45
D50P2S	1800	50	45
D60P3S	1800	60	54
D60P4S	1800	60	54
D75P1S	1800	75	67.5
D75P4S	1800	75	67.5
D90P1S	1800	90	82.4
D90P4S	1800	90	82
D100P1S	1800	100	90
D100P4S	1800	100	90

*Ratings at 120/240 volts, 1.0 pf and 30° C (86° F).

Diesel Power Module Rating

Power Module Model	60 Hz	
	1800 rpm	
	Standby ekW	Prime ekW
XQ20	20	18
XQ30	28	25.4
XQ60	60	54
XQ80	80	70
XQ100	100	90
XQ200	200	180

Olympian Generator Sets
 ● Gas Ratings
 ● Outside North America Gas Ratings

Engines

Olympian Generator Sets
 Gas Ratings

Model	rpm	Standby* 60 Hz — ekW		Prime** 60 Hz — ekW	
		LP	Natural	LP	Natural
3-Phase Output					
G12U3	1800	12	12	11	11
G15U3	1800	15	15	13.5	13.2
G20UH3	3600	20	20	—	—
G20F3	1800	20	20	18.2	18
G25UH3	3600	25	25	—	—
G25F3	1800	25	22.6	23	19.2
G30F3	1800	30	30	27	27
G40F3	1800	40	40	36	36
G50F3	1800	50	45	42.5	37.5
G60F3	1800	60	60	55	55
G80F3	1800	80	75	68	63.5
G100F3	1800	—	100	—	85
G125G1	1800	—	125	—	114

*Ratings at 0.8 pf and 43° C (110° F).

**Ratings at 1.0 pf and 32° C (90° F).

Model	rpm	Standby* 60 Hz — ekW		Prime** 60 Hz — ekW	
		LP	Natural	LP	Natural
Single Phase Output					
G10U3S	1800	10	10	9	9
G15U3S	1800	15	15	13.5	13
G17.5UH3S	3600	17.5	17.5	—	—
G20F3S	1800	20	20	18	18
G25UH3S	3600	25	25	—	—
G25F3S	1800	25	21	22.5	18
G30F3S	1800	30	30	27	27
G35F3S	1800	35	35	31.5	31.5
G45F3S	1800	45	42.5	40	36
G55F3S	1800	55	55	50	50
G75F3S	1800	75	70	64	60
G100F3S	1800	—	100	—	85

*Ratings at 0.8 pf and 43° C (110° F).

**Ratings at 1.0 pf and 32° C (90° F).

Outside North America Gas Ratings

Model	rpm	Standby		Prime		rpm	Standby		Prime	
		60 Hz — ekW					50 Hz — kVA			
		LP	Natural	LP	Natural		LP	Natural	LP	Natural
3-Phase Output										
GEUG16-1	1800	16	15	13.5	13.5	1500	16.5	15	14	12.5
GEFG25-1	1800	25	25	22.5	21.2	1500	25	22	22	19
GEUHG30-1	3600	25	25	—	—	3000	30	30	—	—
Single Phase Output										
GEUG13S-1	1800	16	15	13.5	13	1500	13	11.8	11	10
GEFG20S-1	1800	25	23	22	20	1500	20	17.5	17	14.8
GEUHG24S-1	3600	25	25	—	—	3000	24	24	—	—

Rating Definitions:

Standby — These ratings are applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. Natural gas ratings have been established on natural gas with net calorific value of approximately 36.8 mJ/m³ (988 Btu/ft³).

Prime — These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and this model can supply 10 percent overload power for 1 hour in 12 hours.

Engines

Cat Generator Sets

- Gas Ratings
- Gas Power Module Rating

Cat Generator Sets

Gas Ratings

		60 Hz	
		1800 rpm	
Gen Set Model		Standby kW	Continuous kW
G3306	NA	—	100
G3306	TA ³	—	135
G3306	TA ¹	—	150
G3406	NA	150	150
G3406	TA ^{3,4}	245	190
G3406	TA ³	260	210
G3406	TA	275	225
G3412	NA	—	250
G3408	TA ³	310	255
G3408	TA ¹	340	280
G3412	TA ^{3,4}	350	350
G3412	TA ^{3,4}	375	375
G3412	TA ³	450	—
G3412C	LE ^{3,4}	450	375
G3412	TA ³	480	395
G3412	TA ¹	—	425
G3516	LE ³	1040	—
G3516	LE ³	1040	—
G3516B	LE ³	—	1300
G3516B	LE ¹	—	1400
G3520C	LE ^{1,3}	—	2055
		1200 rpm	
G3512	NA	—	365
G3508	LE ³	—	375
G3508	LE ¹	—	400
G3512	TA ³	—	555
G3512	LE ³	—	570
G3512	TA ¹	—	570
G3512	LE ¹	—	600
G3516	TA ³	—	750
G3516	LE ³	—	770
G3516	TA ¹	—	770
G3516	LE ¹	—	820
G3520C	LE ^{1,3}	—	1600
		900 rpm	
G3606	LE ^{3,5}	—	1145
G3606	LE ^{1,5}	—	1220
G3608	LE ^{3,5}	—	1525
G3608	LE ^{1,5}	—	1625
G3612	LE ^{3,5}	—	2335
G3612	LE ^{1,5}	—	2615
G3616	LE ^{3,5}	—	3105
G3616	LE ^{1,5}	—	3480
		720 rpm	
G16CM34	TA	—	5900

Gas Power Module Rating

		60 Hz	
		1800 rpm	
Power Module Model		Continuous kW	
XQ1250G ³		1250	

LE — Low Emission
 NA — Naturally Aspirated
 TA — Turbocharged-Aftercooled

kW — Electrical Kilowatts = kVA × 0.8 pf
 kVA — Generator output

Gas Ratings

		50 Hz	
		1500 rpm	
		Continuous	
Gen Set Model		kVA	(kW)
G3306	NA	106	(85)
G3306	TA ³	138	(110)
G3306	TA ¹	156	(125)
G3406	NA	156	(125)
G3408	NA	194	(155)
G3406	TA ^{3,4}	200	(160)
G3406	TA ³	219	(175)
G3406	TA ¹	231	(185)
G3412	NA	281	(225)
G3408	TA ¹	288	(230)
G3412	TA ^{3,4}	350	(280)
G3412	TA ³	406	(325)
G3412	TA ¹	444	(355)
G3412	TA ^{3,4}	450	(360)
G3412C	LE ^{3,4}	450	(360)
G3508	LE ³	600	(480)
G3508	LE ¹	638	(510)
G3512	LE ³	906	(725)
G3512	LE ¹	963	(770)
G3516	LE ³	1219	(975)
G3516	LE ¹	1288	(1030)
G3516B	LE ³	1356	(1055)
G3516B	LE ^{3,5}	1380	(1105)
G3516B	LE ^{1,5}	1431	(1141)
G3516B	LE ^{1,3}	1456	(1165)
G3520C	LE ^{1,3}	2438	(1950)
G3520C	LE ^{1,3,5}	2500	(2000)
		1000 rpm	
G3606	LE ^{3,5}	1588	(1270)
G3606	LE ^{1,5}	1694	(1355)
G3608	LE ^{3,5}	2119	(1695)
G3608	LE ^{1,5}	2256	(1805)
G3612	LE ^{3,5}	3219	(2575)
G3612	LE ^{2,5}	3406	(2725)
G3612	LE ^{1,5}	3625	(2900)
G3616	LE ^{3,5}	4281	(3425)
G3616	LE ^{2,5}	4538	(3630)
G3616	LE ^{1,5}	4825	(3860)
		750 rpm	
G16CM34	TA	7375	(5900)

All ratings at 0.8 pf and without fan (G3406 NA includes fan and radiator).
¹32° C (90° F). ⁴Ratings at 0.8 pf with fan.
²45° C (113° F). ⁵Rating excluding engine-driven auxiliary water pump.
³54° C (130° F).

Rating Definitions:

Standby — These ratings are applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. Natural gas ratings have been established on natural gas with net calorific Low Heat Value (LHV) of approximately 36.2 mJ/m³ (920 Btu/ft³).

Continuous — Output available without varying load for an unlimited time. Continuous power in accordance with ISO 8528, ISO 3046/1, AS2789, DIN6271, and BS5514. Natural gas ratings have been established on natural gas with net calorific Low Heat Value (LHV) of approximately 36.2 mJ/m³ (920 Btu/ft³).

Cat Generator Sets
Medium Speed Ratings

Model	514 rpm	600 rpm	720 rpm	900 rpm	500 rpm	600 rpm	750 rpm	1000 rpm
	60 Hz (ekW)	60 Hz (ekW)	60 Hz (ekW)	60 Hz (ekW)	50 Hz (ekW)	50 Hz (ekW)	50 Hz (ekW)	50 Hz (ekW)
6CM20	—	—	—	980	—	—	—	1094
8CM20	—	—	—	1300	—	—	—	1460
9CM20	—	—	—	1470	—	—	—	1640
6CM25	—	—	1730	—	—	—	1780	—
8CM25	—	—	2230	—	—	—	2300	—
9CM25	—	—	2500	—	—	—	2590	—
6CM32	—	2765	—	—	—	2765	—	—
8CM32	—	3725	—	—	—	3725	—	—
9CM32	—	4190	—	—	—	4190	—	—
12CM32C	—	—	5590	—	—	—	5590	—
16CM32C	—	—	7450	—	—	—	7450	—
6CM43	5240	—	—	—	5240	—	—	—
7CM43	6110	—	—	—	6110	—	—	—
8CM43	6980	—	—	—	6980	—	—	—
9CM43	7860	—	—	—	7860	—	—	—
12CM43	10 475	—	—	—	10 475	—	—	—
16CM43*	13 970	—	—	—	13 970	—	—	—
G16CM34	—	—	5900	—	—	—	5900	—

*Contact for availability.
 ekW — Electrical Kilowatts = kVA × 0.8 pf

Cat Generator Sets
Diesel and Power Module Ratings

		60 Hz		
		1800 rpm		
Gen Set Model		Standby ekW	Prime ekW	Continuous ekW
3306	TA	230	210	—
3306	ATAAC	250	225	—
3406	TA	300	275	—
3406	TA	350	320	—
3406	TA	400	365	—
3456	ATAAC	300	275	—
3456	ATAAC	350	320	—
3456	ATAAC	400	365	—
3456	ATAAC	450	410	—
3456	ATAAC	500	455	—
3412	TTA	550	500	—
3412	TTA	600	545	—
3412	TTA	650	591	—
3412	TTA	700	635	—
3412	STA	750	680	—
3412	STA	800	725	—
3508	TA	900	820	660
3508B	TA	1000	910	832
3512	TA	1100	1000	890
3512	TA	1250	1135	1010
3512B	TA	1250	1135	1030
3512B	TA	1400	1275	1230
3512B	TA	1500	1360	—
3516	TA	1750	1600	1450
3516B	TA	1750	1600	1450
3516B	TA	2000	1825	1640
3516B	TA	2250	—	—
		1200 rpm		
3508	TA	—	425	400
3508B	TA	—	600	520
3512	TA	—	1000	870
3512B	TA	—	1015	890
3516	TA	—	1250	1100
3516B	TA	—	1285	1145
3516B	HD	—	1450	1325
		900 rpm		
6CM20	TA	—	—	980
8CM20	TA	—	—	1300
9CM20	TA	—	—	1470
3606	TA	2000	1820	1650
3608	TA	2660	2420	2200
3612	TA	4000	3640	3300
3616	TA	5320	4840	4400

		60 Hz		
		720 rpm		
Gen Set Model		Standby ekW	Prime ekW	Continuous ekW
3606	TA	1680	1525	1375
6CM25	TA	—	—	1730
3608	TA	2220	2020	1830
8CM25	TA	—	—	2230
9CM25	TA	—	—	2500
3612	TA	3360	3050	2750
3616	TA	4440	4040	3660
12CM32	TA	—	—	5590
16CM32	TA	—	—	7450
		600 rpm		
6CM32		—	—	2765
8CM32		—	—	3725
9CM32		—	—	4190
		514 rpm		
6CM43	TA	—	—	5420
7CM43	TA	—	—	6110
8CM43	TA	—	—	6980
9CM43	TA	—	—	7860
12CM43	TA	—	—	10 475
16CM43*	TA	—	—	13 970

*Contact for availability.

T — Turbocharged
 TA — Turbocharged-Aftercooled
 TTA — Twin Turbocharged-Aftercooled
 STA — Series-Turbo Aftercooled

ATAAC — Air-To-Air Aftercooled
 HD — High Displacement
 ekW — Generator output at 0.8 pf

Rating Definitions:

Standby — Output available with varying load for the duration of the interruption of the normal source power. Standby power in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046/1, AS2789, DIN6271, and BS5514.

Prime — Output available with varying load for an unlimited time. Prime power in accordance with ISO 8528. 10% overload power in accordance with ISO 3046/1, AS2789, DIN6271, and BS5514 available on request.

Continuous — Output available without varying load for an unlimited time. Continuous power in accordance with ISO 8528, ISO 3046/1, AS2789, DIN6271, and BS5514.

Ratings are based on SAE J1995 standard conditions. These ratings also apply at ISO 3046/1, DIN6271, and BS5514 standard conditions.

Fuel Rates are based on fuel oil of 35° API (16° C or 60° F) gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lb/U.S. gal).

Cat Generator Sets
Diesel and Power Module Ratings

Gen Set Model		50 Hz		
		1500 rpm		
		Standby kVA	Prime kVA	Continuous kVA
3306	ATAAC	275	250	—
3306	ATAAC	300	275	—
3406	T	300	275	—
3406	TA	350	320	—
3406	TA	400	365	—
3456	ATAAC	300	275	—
3456	ATAAC	350	320	—
3456	ATAAC	400	365	—
3456	ATAAC	450	410	—
3456	ATAAC	500	455	—
3412	TT	550	500	—
3412	TTA	650	600	—
3412	TTA	700	635	—
3412	STA	750	680	—
3412	STA	800	725	—
3412	STA	900	810	—
3508	TA	1000	910	812
3508B	TA	1100	1000	906
3512	TA	1250	1150	1000
3512	TA	1400	1275	1206
3512B	TA	1500	1360	1320
3512B	TA	1600	1500	—
3512B	HD	1750	1600	1500
3512B	HD TA	1875	1700	—
3516	TA	2000	1825	1600
3516B	TA	2250	2000	1750
3516B	HD TA	2500	2275	2000
		1000 rpm		
		Standby kVA	Prime kVA	Continuous kVA
6CM20		—	—	1363
8CM20		—	—	1825
9CM20		—	—	2025
3508	TA	—	500	488
3508B	TA	—	738	638
3512	TA	—	1050	969
3512B	TA	—	1100	1013
3516	TA	—	1400	1225
3516B	TA	—	1475	1288
3606	TA	2688	2425	2200
3608	TA	3575	3250	2938
3612	TA	5375	4850	4400
3616	TA	7150	6500	5875

Gen Set Model		50 Hz		
		750 rpm		
		Standby kVA	Prime kVA	Continuous kVA
3606	TA	2163	1963	1775
6CM25		—	—	2225
8CM25		—	—	2875
3608	TA	2863	2600	2363
9CM25		—	—	3238
3612	TA	4325	3925	3550
3616	TA	5725	5200	4725
12CM32		—	—	6988
16CM32		—	—	9313
		600 rpm		
		Standby kVA	Prime kVA	Continuous kVA
6CM32		—	—	3456
8CM32		—	—	4656
9CM32		—	—	5238
		500 rpm		
		Standby kVA	Prime kVA	Continuous kVA
6CM43		—	—	6550
7CM43		—	—	7638
8CM43		—	—	8725
9CM43		—	—	9825
12CM43		—	—	13 094
16CM43*		—	—	17 463

*Contact for availability.

T — Turbocharged
 TA — Turbocharged-Aftercooled
 TTA — Twin Turbocharged-Aftercooled
 STA — Series-Turbo Aftercooled

ATAAC — Air-To-Air Aftercooled
 HD — High Displacement
 kVA — Generator output
 ekW — Generator output at 0.8 pf

Rating Definitions:

Standby — Output available with varying load for the duration of the interruption of the normal source power. Standby power in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046/1, AS2789, DIN6271, and BS5514.

Prime — Output available with varying load for an unlimited time. Prime power in accordance with ISO 8528. 10% overload power in accordance with ISO 3046/1, AS2789, DIN6271, and BS5514 available on request.

Continuous — Output available without varying load for an unlimited time. Continuous power in accordance with ISO 8528, ISO 3046/1, AS2789, DIN6271, and BS5514.

Ratings are based on SAE J1995 standard conditions. These ratings also apply at ISO 3046/1, DIN6271, and BS5514 standard conditions.

Fuel Rates are based on fuel oil of 35° API (16° C or 60° F) gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lb/U.S. gal).

Engines

- Cat Marine Engines
- Propulsion Ratings
 - Generator Ratings

Cat Marine Engines

Propulsion Ratings

Engine Model	bkW Rating Range	bhp Rating Range
3618 DITA	7200	9655
3616 fcvr	5650	7577
3616 DITA	4600-5420	6169-7268
3612 DITA	3460-4060	4640-5444
3608 DITA	2300-2710	3084-3634
3606 DITA	1730-2030	2320-2722
3516B HP DITA SW	1790-2238	2400-3000
3516B HD DITA SC	1398-2000	1875-2682
3516B DITA SC	1231-1641	1650-2200
3512B HP DITA SW	1342-1678	1800-2250
3512B HD DITA SC	1119-1380	1500-1850
3512B DITA SC	820-1231	1100-1650
3508B HP DITA SW	895-1119	1200-1500
3508B DITA SC	578-820	775-1100
3508 DITA JW**	526-858	705-1150
3512 DITA JW**	900-1305	1207-1750
3516 DITA JW**	1195-1641	1603-2200
C32 DITTA	1044-1232	1400-1652
C30 DITTA	1119-1156	1500-1550
3412E DITTA	559-1044	750-1400
3412E DITTA (fast craft)	559-895	750-1200
3412E DITA	317-537	425-720
3412D DITTA	404-651	542-872
3412C DITTA	615-746	825-1000
3412C DITA	375-570	503-764
3408C DITA	300-403	402-540
C18 DITTA	653-746	875-1000
C18 DITA	338-532	453-714
3406E DITA	336-597	450-800
3406C DITA	186-433	250-580
C12 DITA	253-522	340-700
3196 DITA	253-492	340-660
C9 DITA	375	503
C7 DITA	339	455
3126 DITA	261-313	350-420
3126B DITA	186-336	250-450
3056 DITA	138-153	185-205
3056 DINA*	93	125
3054 DIT	80	108
3054B DINA	64	86
3034 DIT	60	80
3034 DINA	47	63

*Approval not required under 130 bkW (174 bhp).

**Non IMO compliant.

fcvr — fast commercial vessel rating

Generator Ratings

Engine Model	50 Hz ekW @ rpm	60 Hz ekW @ rpm
3616 DITA	4700/5200 @ 1000	4400/4840 @ 900
3612 DITA	3520/3880 @ 1000	3300/3640 @ 900
3608 DITA	2350/2600 @ 1000	2200/2420 @ 900
3606 DITA	1760/1940 @ 1000	1650/1820 @ 900
3516B DITA	1460/1600 @ 1500	1825 @ 1800
3516B DITA	1180 @ 1000	1285 @ 1200
3512B DITA	965/1200 @ 1500	1070/1360 @ 1800
3512B DITA	880 @ 1000	1030 @ 1200
3508B DITA	630/800 @ 1500	715/910 @ 1800
3508B DITA	590 @ 1000	600 @ 1200
3412C DITA	350-500 @ 1500	400-590 @ 1800
3408C DITA	280 @ 1500	370 @ 1800
C18 DITA	275-450 @ 1500	340-425 @ 1800
C18 DITTA	—	500-550 @ 1800
3406C DITA	200-245 @ 1500	250-320 @ 1800
C9 DITA	150-200 @ 1500	175-250 @ 1800
3056 DIT	84 @ 1500	99 @ 1800
3054 DIT	60 @ 1500	72 @ 1800
3054 DINA	32-34 @ 1500	37-40 @ 1800
C2.2 DINA	17.5/18 @ 1500	21/21.5 @ 1800
C1.5 DINA	11/12 @ 1500	14.5/13.5 @ 1800

*Approval not required under 130 bkW (174 bhp).

For more information on IMO regulations and compliance contact:

- IMO headquarters for "Annex VI of MARPOL 73/78..."
London, phone: 011-44 (0) 171-735-7611
- EPA paper "Frequently Asked Questions about MARPOL 73/78..." download from web site: epa.gov/oms/marine.htm
or call Michigan: (734) 214-4822
- ABS guide "Notes on Prevention of Air Pollution from Ships,"
Texas, phone: (281) 877-6306, fax: (281) 877-5801,
e-mail: jpatterson@eagle.org

For additional information on Cat Marine Power,
see our new marine site: www.cat-marine.com

Cat Marine Engines
Auxiliary Ratings

Engine Model		bkW/bhp			
3616	DITA	4600-5420/6169-7268			
3612	DITA	3460-4060/4640-5444			
3608	DITA	2300-2710/3084-3634			
3606	DITA	1730-2030/2320-2722			
Engine Model		50 Hz 1500 rpm bkW/bhp	50 Hz 1000 rpm bkW/bhp	60 Hz 1800 rpm bkW/bhp	60 Hz 1200 rpm bkW/bhp
3516B	DITA	1566-1717/ 2100-2303	1287/ 1726	1901/ 2549	1383/ 1855
3512B	DITA	1020-1257/ 1368-1686	933/ 1251	1125-1424/ 1509-1910	1102/ 1478
3508B	DITA	673-856/ 903-1148	649/ 870	760-968/ 1019-1298	682/ 915
3516	DITA	1355/ 1817	1100/ 1475	1511/ 2026	1230/ 1650
3512	DITA	1020/ 1368	860/ 1153	1125/ 1509	955/ 1281
3508	DITA	673/ 903	446/ 598	760/ 1019	599/ 804
3412C	DITA	431-534/ 578-716	—	450-620/ 603-831	—
3408C	DITA	340/ 456	—	410/ 550	—
3406C	DITA	229-260/ 307-349	—	277-345/ 371-462	—
C18	DITTA	—	—	547-601/ 733-806	—
C18	DITA	301-492/ 404-660	—	372-465/ 499-624	—
C9	DITA	162-215/ 217-288	—	189-269/ 253-361	—

*Approval not required under 130 bkW (174 bhp).

**For more information on
IMO regulations and compliance contact:**

- IMO headquarters for "Annex VI of MARPOL 73/78..."
London, phone: 011-44 (0) 171-735-7611
- EPA paper "Frequently Asked Questions about MARPOL
73/78..." download from web site: epa.gov/oms/marine.htm
or call Michigan: (734) 214-4822
- ABS guide "Notes on Prevention of Air Pollution from Ships,"
Texas, phone: (281) 877-6306, fax: (281) 877-5801,
e-mail: jpatterson@eagle.org

**For additional information on Cat Marine Power,
see our new marine site: www.cat-marine.com**

Cat Industrial Diesel Applications

Model	Type	"IND A"			"IND B"			"IND C"			"IND D"			"IND E"		
		bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm
3003	NA	—	—	—	—	—	—	15.1	20.3	2800	—	—	—	—	—	—
		—	—	—	—	—	—	17.5	23.5	3600	—	—	—	—	—	—
3011C	NA	—	—	—	—	—	—	18.4	24.7	2800	—	—	—	—	—	—
		—	—	—	—	—	—	19.5	26.1	3000	—	—	—	—	—	—
3013	NA	—	—	—	—	—	—	23.5	31.5	2800	—	—	—	—	—	—
3013C	NA	—	—	—	—	—	—	20.7	27.8	2200	—	—	—	—	—	—
		—	—	—	—	—	—	22.3	29.9	2400	—	—	—	—	—	—
		—	—	—	—	—	—	23.4	31.4	2600	—	—	—	—	—	—
		—	—	—	—	—	—	24.4	32.7	2800	—	—	—	—	—	—
		—	—	—	—	—	—	25.1	33.7	3000	—	—	—	—	—	—
C1.6		—	—	—	—	—	—	26.5	35.5	3000	—	—	—	—	—	—
3024C	NA	—	—	—	—	—	—	31	41.6	2200	—	—	—	—	—	—
		—	—	—	—	—	—	34.1	45.7	2400	—	—	—	—	—	—
		—	—	—	—	—	—	35.7	47.9	2600	—	—	—	—	—	—
		—	—	—	—	—	—	37.3	50	2800	—	—	—	—	—	—
		—	—	—	—	—	—	38	51	3000	—	—	—	—	—	—

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Rating Definitions:

NOTE: Application examples are for reference only. For an exact determination of the appropriate rating, contact the factory or your local Caterpillar Dealer.

Rating Conditions:

All ratings are based on SAE J1349 standard ambient conditions of 100 kPa (**29.6 in Hg**), 30% relative humidity and 25° C (**77° F**). Ratings also apply at AS1501, BS5514, DIN6271 and ISO 3046/1 standard conditions.

Power is based on API gravity of 35 at 15° C (**60° F**), fuel having an LHV of 42 780 kJ/kg (**18,390 Btu/lb**) used at 29° C (**84° F**) with a density of 838.9 g/L (**7.001 lb/U.S. gal**). Ratings are the total output capability of the engine equipped with standard accessories: lube oil, fuel oil and jacket water pumps.

A Rating (Continuous):

- For heavy-duty services when engine is operated at rated load and speed up to 100% of the time without interruption or load cycling.
- Time at full load up to 100% of the duty cycle.
- Typical application examples include pipeline pumping.

B Rating:

- For service where power and/or speed are cyclic.
 - Time at full load not to exceed 80% of the duty cycle.
 - Typical application examples include irrigation where normal pump demand is 85% of engine rating, oil field mechanical pumping/drilling, stationary/plant air compressors.
- C Rating (Intermittent):**
- For service where power and/or speed are cyclic. Horsepower and speed capability of the engine can be utilized for one uninterrupted hour followed by one hour of operation at or below the A rating.
 - Time at full load not to exceed 50% of the duty cycle.
 - Typical application examples include agriculture tractors, off-highway truck, fire pumps, blast hole drills, rock crushers, kill pumps, oil field hoisting, and workover rigs.

D Rating:

- For service where rated power is required for periodic overloads. The maximum horsepower and speed capability of the engine can be utilized for a maximum of 30 uninterrupted minutes followed by one hour at the C rating.

- Time at full load not to exceed 10% of the duty cycle.
- Typical application examples include offshore cranes, runway snow blowers, water well drills, portable air compressors, cementers and fire pump certification power.

E Rating:

- For service where rated power is required for a short time for initial starting or sudden overload. For emergency service where standard power is unavailable. Horsepower and speed capability of the engine can be utilized for a maximum of 15 uninterrupted minutes followed by one hour at the C rating or duration of emergency.
- Time at full load not to exceed 5% of the duty cycle.
- Typical application examples include standby centrifugal water pumps, oil field well servicing crash trucks and gas turbine starters.

NA — Naturally Aspirated

T — Turbocharged

TA — Turbocharged-Aftercooled

ATAAC — Air-to-Air Aftercooled

DI — Direct Injection

PC — Precombustion Chamber
(Indirect Injection)

hp — Horsepower

kW — Metric equivalent of horsepower

Cat Industrial Diesel Applications

Model	Type	"IND A"			"IND B"			"IND C"			"IND D"			"IND E"		
		bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm
3024C	T	—	—	—	—	—	—	44.7	60	2800	—	—	—	—	—	—
3044C	NA	—	—	—	—	—	—	47	63.3	2600	—	—	—	—	—	—
3044C	T	—	—	—	—	—	—	60	80.5	2600	—	—	—	—	—	—
3054	NA	—	—	—	—	—	—	50	67	2000	—	—	—	—	—	—
		—	—	—	—	—	—	52	70	2200	—	—	—	—	—	—
3054	T	—	—	—	—	—	—	68.5	92	2200	—	—	—	—	—	—
		—	—	—	—	—	—	69	92.5	2100	—	—	—	—	—	—
		—	—	—	—	—	—	74.5	100	2200	—	—	—	—	—	—
		—	—	—	—	—	—	78	104	2100	—	—	—	—	—	—
		—	—	—	—	—	—	79.5	106	2200	—	—	—	—	—	—
		—	—	—	—	—	—	80.5	108	2400	—	—	—	—	—	—
3054	TA	—	—	—	—	—	—	84.5	113	2100	—	—	—	—	—	—
		—	—	—	—	—	—	85.5	114.5	2200	—	—	—	—	—	—
		—	—	—	—	—	—	91	122	2200	—	—	—	—	—	—
3054B	NA	—	—	—	—	—	—	57	76.5	2000	—	—	—	—	—	—
		—	—	—	—	—	—	58.5	78.5	2100	—	—	—	—	—	—
		—	—	—	—	—	—	60	80.5	2200	—	—	—	—	—	—
		—	—	—	—	—	—	63	84.5	2300	—	—	—	—	—	—
3054C	NA	—	—	—	—	—	—	64	86	2400	—	—	—	—	—	—
		—	—	—	—	—	—	50	67	2200	—	—	—	—	—	—
		—	—	—	—	—	—	54	72	2200	—	—	—	—	—	—
		—	—	—	—	—	—	62	83	2400	—	—	—	—	—	—
3054C	T	—	—	—	—	—	—	60	80	2200	—	—	—	—	—	—
		—	—	—	—	—	—	64.5	86	2200	—	—	—	—	—	—
		—	—	—	—	—	—	72.5	97	2200	—	—	—	—	—	—
		—	—	—	—	—	—	72.5	97	2400	—	—	—	—	—	—
3054C	TA	—	—	—	—	—	—	78.5	105	2400	—	—	—	—	—	—
		—	—	—	—	—	—	83.5	112	2200	—	—	—	—	—	—
		—	—	—	—	—	—	87	117	2200	—	—	—	—	—	—
		—	—	—	—	—	—	95	127	2200	—	—	—	—	—	—
3054E	TA	—	—	—	—	—	—	80	107	2200	—	—	—	—	—	—
		—	—	—	—	—	—	87	116	2200	—	—	—	—	—	—
		—	—	—	—	—	—	95	127	2200	—	—	—	—	—	—
		—	—	—	—	—	—	104	140	2200	—	—	—	—	—	—
3056	NA	—	—	—	—	—	—	76	102	2000	—	—	—	—	—	—
		—	—	—	—	—	—	76.5	103	2000	—	—	—	—	—	—
		—	—	—	—	—	—	78	105	2100	—	—	—	—	—	—
		—	—	—	—	—	—	79	106	2200	—	—	—	—	—	—
		—	—	—	—	—	—	80.5	108	2200	—	—	—	—	—	—
		—	—	—	—	—	—	84.5	113	2400	—	—	—	—	—	—
—	—	—	—	—	—	85.5	114.5	2500	—	—	—	—	—	—		

EPA Certified

Cat Industrial Diesel Applications

Model	Type	"IND A"			"IND B"			"IND C"			"IND D"			"IND E"		
		bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm
3056	T	—	—	—	—	—	—	85	114	2300	—	—	—	—	—	—
		—	—	—	—	—	—	86.5	116	2200	—	—	—	—	—	—
		—	—	—	—	—	—	87	117	2000	—	—	—	—	—	—
		—	—	—	—	—	—	87.5	118	2100	—	—	—	—	—	—
		—	—	—	—	—	—	103.5	139	2200	—	—	—	—	—	—
		—	—	—	—	—	—	107	143.5	2300	—	—	—	—	—	—
		—	—	—	—	—	—	110.5	148	2400	—	—	—	—	—	—
		—	—	—	—	—	—	112	150	2500	—	—	—	—	—	—
		—	—	—	—	—	—	113	151.5	2200	—	—	—	—	—	—
		—	—	—	—	—	—	113.5	152	2300	—	—	—	—	—	—
3056	TA	—	—	—	—	—	—	119.5	160	2200	—	—	—	—	—	—
		—	—	—	—	—	—	123	165	2000	—	—	—	—	—	—
		—	—	—	—	—	—	123	165	2100	—	—	—	—	—	—
		—	—	—	—	—	—	128	172	2200	—	—	—	—	—	—
		—	—	—	—	—	—	131	176	2300	—	—	—	—	—	—
		—	—	—	—	—	—	133.5	179	2400	—	—	—	—	—	—
3056C/E	TA	—	—	—	—	—	—	85	114	2200	—	—	—	—	—	—
		—	—	—	—	—	—	95	127	2200	—	—	—	—	—	—
		—	—	—	—	—	—	97	130	2200	—	—	—	—	—	—
		—	—	—	—	—	—	98.5	132	2000	—	—	—	—	—	—
		—	—	—	—	—	—	98.5	132	2500	—	—	—	—	—	—
		—	—	—	—	—	—	106	142	2200	—	—	—	—	—	—
		—	—	—	—	—	—	106	142	2300	—	—	—	—	—	—
		—	—	—	—	—	—	108	145	2000	—	—	—	—	—	—
		—	—	—	—	—	—	112	150	2200	—	—	—	—	—	—
		—	—	—	—	—	—	112	150	2500	—	—	—	—	—	—
		—	—	—	—	—	—	118.5	159	2200	—	—	—	—	—	—
		—	—	—	—	—	—	120	168	2200	—	—	—	—	—	—
		—	—	—	—	—	—	127	170	2000	—	—	—	—	—	—
		—	—	—	—	—	—	129	173	2000	—	—	—	—	—	—
		—	—	—	—	—	—	129	173	2200	—	—	—	—	—	—
—	—	—	—	—	—	129.5	174	2300	—	—	—	—	—	—		
—	—	—	—	—	—	129.5	174	2500	—	—	—	—	—	—		
—	—	—	—	—	—	129.5	180	2200	—	—	—	—	—	—		

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Cat Industrial Diesel Applications

Model Type	"IND A"			"IND B"			"IND C"			"IND D"			"IND E"		
	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm
3126 TA	160	215	2200	172	230	2200	179	240	2200	186	250	2200	190	255	2200
	164	220	2400	172	230	2400	179	240	2400	190	255	2400	194	260	2400
	—	—	—	—	—	—	186	250	2500	186	250	2500	186	250	2500
	—	—	—	—	—	—	194	260	2600	194	260	2600	194	260	2600
3126B ATAAC*	131	175	2200-2500	149	200	1800-2100	187	250	1800-2100	—	—	—	—	—	—
	149	200	2200-2500	168	225	2200-2500	187	250	2200-2500	—	—	—	—	—	—
	—	—	—	—	—	—	205	275	2100-2400	—	—	—	—	—	—
	—	—	—	—	—	—	224	300	2100-2400	—	—	—	—	—	—
C9 ATAAC*	205	275	1800-2200	224	300	1800-2200	250	335	1800-2200	—	—	—	—	—	—
	—	—	—	—	—	—	261	350	1800-2200	—	—	—	—	—	—
C9 AG ATAAC*	—	—	—	—	—	—	205	275	2200	—	—	—	—	—	—
	—	—	—	—	—	—	224	300	2200	—	—	—	—	—	—
	—	—	—	—	—	—	242	325	2200	—	—	—	—	—	—
C10 ATAAC*	231	310	1800-2100	250	335	1800-2100	272	365	1800-2100	291	390	1800-2100	317	425	1800-2100
	—	—	—	—	—	—	242	325	1800-2100	—	—	—	—	—	—
	—	—	—	—	—	—	727	365	1800-2100	—	—	—	—	—	—
C10 AG ATAAC*	—	—	—	—	—	—	272	365	2100	—	—	—	—	—	—
	—	—	—	—	—	—	298	400	2100	—	—	—	—	—	—
C12 ATAAC*	276	370	1800-2100	298	400	1800-2100	317	425	1800-2100	339	455	1800-2100	373	500	1800-2100
C12 AG ATAAC*	—	—	—	—	—	—	317	425	2100	—	—	—	—	—	—
3406 T	201	270	1800	224	300	2000	242	325	2100	—	—	—	—	—	—
3406 TA	199	267	1300	—	—	—	199	267	1300	283	380	2100	291	390	2100
	205	275	1800	242	325	2000	269	360	2100	—	—	—	—	—	—
	242	325	1800	242	325	2000	242	325	1800	313	420	2100	336	450	2100
	—	—	—	—	—	—	242	325	2100	—	—	—	—	—	—
	242	325	1800	276	370	2000	298	400	2100	—	—	—	—	—	—
	257	345	1800	254	340	2000	250	335	2100	358	480	2100	373	500	2100
	—	—	—	—	—	—	257	345	1800	—	—	—	—	—	—
—	—	—	—	—	—	269	360	1800	—	—	—	—	—	—	

EPA Certified

*3126B, C9, C10, C12, C15 and C16 ratings meet Tier 2, Stage II emissions requirements. Tier 2 refers to EPA (U.S.) standards. Stage II refers to European standards.

Cat Industrial Diesel Applications

Model Type	"IND A"			"IND B"			"IND C"			"IND D"			"IND E"		
	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm
3406 TA (cont.)	268	360	1800	268	360	2000	269	360	2100	283	380	2100	291	390	2100
	—	—	—	—	—	—	280	375	2000	298	400	2100	324	435	2100
	—	—	—	—	—	—	280	375	2100	—	—	—	—	—	—
	—	—	—	—	—	—	298	400	1800	—	—	—	—	—	—
	—	—	—	—	—	—	298	400	2000	—	—	—	—	—	—
	280	375	1800	291	390	2000	298	400	2100	—	—	—	—	—	—
	—	—	—	—	—	—	321	430	2100	324	435	2100	362	485	2100
	—	—	—	—	—	—	328	440	1800	—	—	—	—	—	—
	—	—	—	—	—	—	328	440	1900	—	—	—	—	—	—
	—	—	—	—	—	—	328	440	2000	366	490	2100	—	—	—
	287	385	1800	328	440	2000	343	460	2100	—	—	—	—	—	—
	313	420	1800	328	440	2000	343	460	2100	373	500	2100	384	515	2100
	C15 ATAAC*	317	425	1800-2100	336	450	1800-2100	354	475	1800-2100	384	515	2100	392	525
—		—	—	—	—	—	392	525	1800-2100	354	475	1800-2100	354	475	1800-2100
—		—	—	—	—	—	373	500	1800-2100	421	565	1800-2100	429	575	1800-2100
—		—	—	—	—	—	373	500	1800-2100	—	—	—	—	—	—
C15 AG ATAAC*	—	—	—	—	—	391	525	2100	—	—	—	—	—	—	
C16 ATAAC*	373	500	1800-2100	410	550	1800-2100	447	600	1800-2100	469	630	1800-2100	492	660	1800-2100
	—	—	—	—	—	—	448	600	2100	—	—	—	—	—	—
C16 AG ATAAC*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
3408 T	242	325	1800	272	365	2000	317	425	2100	339	455	2100	358	480	2100
3408 TA	238	319	1200	—	—	—	261	350	1200	—	—	—	—	—	—
	347	465	1800	366	490	2000	377	505	2100	392	525	2100	399	535	2100
	347	465	1800	366	490	2000	377	505	2100	392	525	2100	399	535	2100
3412 T	354	475	1800	384	515	2000	429	575	2100	522	700	2100	552	740	2100
	373	500	1800	410	550	2000	485	650	2100	503	675	2100	522	700	2100
3412 TA	317	425	1200	—	—	—	399	535	1300	—	—	—	—	—	—
	533	715	1800	552	740	2000	559	750	2100	656	880	2100	716	960	2100
	418	560	1800	—	—	—	559	750	2100	656	880	2100	716	960	2100
3412 TTA	533	715	1800	541	725	2000	559	750	2100	—	—	—	—	—	
3412E TA	—	—	—	317	425	1200	—	—	—	—	—	—	—	—	—
	—	—	—	373	500	1200	429	575	1300	—	—	—	—	—	—
	373	500	1800	447	600	2000	485	650	2100	—	—	—	—	—	—
	433	580	1800	507	680	2000	522	700	2100	—	—	—	—	—	—
	—	—	—	466	625	1400	—	—	—	—	—	—	—	—	—
3412E TTA	548	735	1800	560	750	2000	560	750	2100	—	—	—	—	—	—
	—	—	—	—	—	—	567	760	2100	—	—	—	—	—	—
	—	—	—	—	—	—	626	860	2100	739	990	2100	783	1050	2100
	—	—	—	—	—	—	642	840	1800	—	—	—	—	—	—
3412E ATAAC*	485	650	2100	—	—	—	485	650	2100	—	—	—	—	—	—
	522	700	2100	—	—	—	522	700	2100	—	—	—	—	—	—

EPA Certified

*3126B, C9, C10, C12, C15 and C16 ratings meet Tier 2, Stage II emissions requirements. Tier 2 refers to EPA (U.S.) standards. Stage II refers to European standards.

Cat Industrial Diesel Applications

Model	Type	"IND A"			"IND B"			"IND C"			"IND D"			"IND E"		
		bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm	bkW	bhp	rpm
3508	TA	507	680	1200	—	—	—	612	820	1300	—	—	—	—	—	—
		578	775	1800	—	—	—	634	850	1800	—	—	—	—	—	—
		638	855	1800	697	935	1800	746	1000	1800	—	—	—	—	—	—
3508B	TA	746	1000	1800	783	1050	1800	820	1100	1800	—	—	—	—	—	—
3512	TA	761	1020	1200	—	—	—	858	1150	1300	—	—	—	—	—	—
		877	1175	1800	—	—	—	1007	1350	1800	—	—	—	—	—	—
		955	1280	1800	1048	1405	1800	1119	1500	1800	—	—	—	—	—	—
3512B	TA	1119	1500	1800	1175	1575	1800	1231	1650	1800	—	—	—	—	—	—
3516	TA	1011	1355	1200	—	—	—	1242	1665	1300	—	—	—	—	—	—
		1156	1550	1800	—	—	—	1268	1700	1800	—	—	—	—	—	—
		1275	1710	1800	1391	1865	1800	1492	2000	1800	—	—	—	—	—	—
3516B	TA	1492	2000	1800	1566	2100	1800	1641	2200	1800	—	—	—	—	—	—
3606	TA	1490	1998	750	—	—	—	—	—	—	—	—	—	—	—	—
		1560	2092	800	—	—	—	—	—	—	—	—	—	—	—	—
		1730	2319	900	—	—	—	—	—	—	—	—	—	—	—	—
		1850	2481	1000	—	—	—	—	—	—	—	—	—	—	—	—
		1350	1810	750	—	—	—	—	—	—	—	—	—	—	—	—
		1355	1817	825	—	—	—	—	—	—	—	—	—	—	—	—
		1570	2105	900	—	—	—	—	—	—	—	—	—	—	—	—
		1680	2253	1000	—	—	—	—	—	—	—	—	—	—	—	—
3608	TA	1980	2655	750	—	—	—	—	—	—	—	—	—	—	—	—
		2080	2787	800	—	—	—	—	—	—	—	—	—	—	—	—
		2300	3080	900	—	—	—	—	—	—	—	—	—	—	—	—
		2460	3300	1000	—	—	—	—	—	—	—	—	—	—	—	—
		1800	2414	750	—	—	—	—	—	—	—	—	—	—	—	—
		1800	2414	825	—	—	—	—	—	—	—	—	—	—	—	—
		2090	2803	900	—	—	—	—	—	—	—	—	—	—	—	—
		2240	3004	1000	—	—	—	—	—	—	—	—	—	—	—	—
3612	TA	2980	3996	750	—	—	—	—	—	—	—	—	—	—	—	—
		3120	4184	800	—	—	—	—	—	—	—	—	—	—	—	—
		3460	4640	900	—	—	—	—	—	—	—	—	—	—	—	—
		3700	4962	1000	—	—	—	—	—	—	—	—	—	—	—	—
		2700	3621	750	—	—	—	—	—	—	—	—	—	—	—	—
		2710	3634	825	—	—	—	—	—	—	—	—	—	—	—	—
		3140	4211	900	—	—	—	—	—	—	—	—	—	—	—	—
		3360	4506	1000	—	—	—	—	—	—	—	—	—	—	—	—
3616	TA	3960	5310	750	—	—	—	—	—	—	—	—	—	—	—	—
		4160	5579	800	—	—	—	—	—	—	—	—	—	—	—	—
		4600	6169	900	—	—	—	—	—	—	—	—	—	—	—	—
		4920	6598	1000	—	—	—	—	—	—	—	—	—	—	—	—
		3600	4828	750	—	—	—	—	—	—	—	—	—	—	—	—
		3600	4828	825	—	—	—	—	—	—	—	—	—	—	—	—
		4180	5605	900	—	—	—	—	—	—	—	—	—	—	—	—
		4480	6008	1000	—	—	—	—	—	—	—	—	—	—	—	—

EPA Certified

Engines

Cat Industrial Diesel Applications

- Cat Diesel Engines for Fire Pump Packages
- Cat Underground Mining MSHA Certification List

Cat Industrial Diesel Applications

Cat Diesel Engines for Fire Pump Packages

Model	No. of Cyl	1460 rpm		1750 rpm		1900 rpm		2100 rpm		2200 rpm		2300 rpm	
		bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp
3406 T	I6	183	247	218	292	233	312	246	330	—	—	261	350
3406 T	I6	242	325	276	370	280	375	280	375	—	—	—	—
3406 TA	I6	224	300	313	420	317	425	321	430	—	—	339	455
3406 TA	I6	—	—	343	460	343	460	360	483	—	—	—	—
3508 TA	V8	709	950	794	1065	—	—	—	—	—	—	—	—
3512 TA	V12	1067	1430	1193	1600	—	—	—	—	—	—	—	—
3516 TA	V16	1417	1900	1480	1985	—	—	—	—	—	—	—	—

Model	No. of Cyl	1750 rpm		2100 rpm		2300 rpm		2400 rpm		2800 rpm		3000 rpm	
		bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp
3126 TA	I6	145	195	175	235	186	250	190	255	201	270	149	200

T — Turbocharged
TA — Turbocharged-Aftercooled

Rating Definition:

Standby: Fire pump engine ratings represent the output which may be utilized to drive stationary fire pumps where the pumping equipment has been sized according to ULI and FM procedures.

Cat Underground Mining MSHA Certification List

Engines for Underground Non-Gassy Mines and Tunnels and in Areas of Underground Coal Mines
Where "Non-Permissible" Equipment is Allowed
(MSHA, Part 7, Category B)

Model	Type	bkW	bhp	rpm	Vent Rate		Particulate Index		MSHA Cert. No.
					cfm	cfm/hp	cfm	cfm/hp	
3176C	ATAAC ^{1,3}	201	270	2100	11,500	42.6	7,500	27.8	7E-B012-0
		231	310	2100	13,500	43.5	7,500	24.2	7E-B012-0
		250	335	2100	15,000	44.8	8,000	23.9	7E-B012-0
3406E	ATAAC ¹	269	360	2100	17,000	47.2	14,000	36.9	7E-B018-0
		298	400	2100	18,500	46.3	13,000	32.5	7E-B018-0
		317	425	2100	20,000	47.1	12,000	28.2	7E-B018-0
		336	450	2100	21,000	46.7	12,000	26.7	7E-B018-0
		354	476	2100	22,000	46.3	13,000	27.4	7E-B018-0
		366	490	2100	22,000	44.9	10,500	21.4	7E-B012-0
		373	500	2100	24,000	48.0	12,500	25.0	7E-B012-0

¹ Electronically controlled/governed.

² Mechanically governed.

³ Also approved to CANMET/SCA (Cert. No. 1099).

ATAAC — Air-to-Air Aftercooled

Cat Oil and Gas Engines
Gas Industrial Ratings

Model	720 rpm		750 rpm		900 rpm		1000 rpm		1200 rpm		1400 rpm		1800 rpm	
	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp
G3304 NA	—	—	—	—	35	47	—	55	48	65	56	75	71	95
G3306 NA	—	—	—	—	—	—	60	81	72	97	84	113	108	145
G3306 TA	—	—	—	—	—	—	—	—	105	141	164	170	157	211
G3306 TA ²	—	—	—	—	—	—	82	110	97	130	118	158	151	203
G3306 TA ¹	—	—	—	—	—	—	—	—	110	147	127	171	164	220
G3406 NA	—	—	—	—	—	—	93	125	112	150	130	175	—	—
G3406 TA ¹	—	—	—	—	—	—	—	—	—	—	212	284	272	365
G3406 TA ²	—	—	—	—	—	—	—	—	162	217	189	253	242	325
G3406 TA ¹	—	—	—	—	—	—	149	200	179	240	169	227	218	292
G3408 NA	—	—	—	—	—	—	106	142	127	170	148	198	190	255
G3408 TA ²	—	—	—	—	—	—	165	221	198	266	232	311	298	400
G3408 TA ¹	—	—	—	—	—	—	176	236	211	283	235	315	302	405
G3408 TA ^{1,3}	—	—	—	—	—	—	—	—	—	—	261	350	336	450
G3408 TA ^{2,3}	—	—	—	—	—	—	—	—	—	—	246	331	317	425
G3412 TA ²	—	—	—	—	—	—	—	—	—	—	348	467	447	600
G3412 TA ¹	—	—	—	—	—	—	—	—	—	—	377	506	452	607
G3412 TA ^{2,3}	—	—	—	—	—	—	—	—	—	—	369	495	475	637
G3508 TA ^{2,3}	—	—	—	—	—	—	—	—	402	540	469	630	—	—
G3512 NA	—	—	—	—	—	—	326	438	391	525	—	—	—	—
G3512 TA ²	—	—	—	—	—	—	491	658	589	790	—	—	—	—
G3512 TA ^{2,3}	—	—	—	—	—	—	503	675	604	810	704	945	—	—
G3512 TA ^{2,3}	—	—	—	—	481	645	534	717	642	860	—	—	—	—
G3516 TA ²	—	—	—	—	587	788	652	875	782	1050	—	—	—	—
G3516 TA ^{2,3}	—	—	—	—	—	—	673	904	808	1084	943	1265	—	—
G3516 TA ^{2,3}	—	—	—	—	—	—	713	957	856	1149	1000	1340	—	—
G3520B ^{2,3}	—	—	—	—	—	—	—	—	—	—	1249	1675	—	—
G3606 TA ^{2,3}	—	—	—	—	1193	1600	1324	1775	—	—	—	—	—	—
G3606 TA ^{1,3}	—	—	—	—	1271	1705	1413	1895	—	—	—	—	—	—
G3608 TA ^{2,3}	—	—	—	—	1591	2133	1767	2370	—	—	—	—	—	—
G3608 TA ^{1,3}	—	—	—	—	1693	2270	1879	2520	—	—	—	—	—	—
G3612 TA ^{2,3}	—	—	—	—	2383	3195	2647	3550	—	—	—	—	—	—
G3612 TA ^{1,3}	—	—	—	—	2539	3405	2822	3785	—	—	—	—	—	—
G3616 TA ^{2,3}	—	—	—	—	3178	4261	3551	4735	—	—	—	—	—	—
G3616 TA ^{1,3}	—	—	—	—	3389	4545	3762	5045	—	—	—	—	—	—
G16CM34 TA	6100	8180	6100	8180	—	—	—	—	—	—	—	—	—	—

¹ 32° C (90° F) water to aftercooler.

² 54° C (130° F) water to aftercooler.

³ Low Emissions.

NA — Naturally Aspirated

T — Turbocharged

TA — Turbocharged-Aftercooled

bhp — Brake horsepower

bkW — Metric equivalent of brake horsepower

Rating Definition:

Continuous: Output available without varying load for an unlimited time. Continuous power in accordance with ISO 8528, ISO 3046/1, AS2789, DIN6271, and BS5514.

Engines

Cat Oil and Gas Engines

- Offshore Power Module Ratings
- Land Rig Power Module Ratings

Cat Oil and Gas Engines

Offshore Power Module Ratings

Model	L with Base		W of Base		H with Base		Approximate Weight with Base	
	m	ft	mm	in	mm	in	kg	lb
3512B	5.44	17'10"	1790	71	2225	90	13 970	30,800
3512B HD	5.44	17'10"	1790	71	2225	90	14 515	32,000
3516B	6.10	20'0"	1790	71	2225	90	16 740	36,900
3516B HD	6.40	21'0"	1790	71	2225	90	17 236	38,000
3606	7.39	24'3"	1905	75	3250	128	37 194	82,000
3608	9.91	32'6"	1905	75	3250	128	44 452	98,000
3612	9.45	31'0"	2085	82	3300	130	55 340	122,000
3616	10.06	33'0"	2085	82	3300	130	65 317	144,000
12CM32	11.05	36'2"	2800	110	5357	211	121 000	266,200
16CM32	12.40	40'8"	2800	110	5357	211	148 000	325,600

Land Rig Power Module Ratings

Model	L Bases Available*	W of Base		Radiator Height with Base		Approximate Weight with Base	
	7.85 m (25'9")	mm	in	mm	in	kg	lb
3508	X	2390	94	2896	114	13 155	29,000
3508B	X	2390	94	2896	114	13 155	29,000
3512	X	2390	94	2896	114	15 875	35,000
3512B	X	2390	94	2896	114	15 875	35,000
3512B HD	X	2390	94	2896	114	16 798	37,000
3516	X	2390	94	2896	114	18 600	41,000
3516B	X	2390	94	2896	114	18 600	41,000

*9.37 m (30'9") and 12.4 m (40'9") bases also available.

Cat Oil and Gas Engines

● Electric Drive Engine Ratings for SCR and DC Powered Rigs

Engines

Cat Oil and Gas Engines

Electric Drive Engine Ratings for SCR and DC Powered Rigs

Model	No. Cyl.	60 Hz								50 Hz					
		720 rpm		900 rpm		1200 rpm		1800 rpm		750 rpm		1000 rpm		1500 rpm	
		bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp
C16	I-6	—	—	—	—	—	—	410	550¹	—	—	—	—	—	—
3412E	V-12	—	—	—	—	—	—	577	760¹	—	—	—	—	—	—
3412E	V-12	—	—	—	—	354	475¹	—	—	—	—	—	—	—	—
3508	V-8	—	—	—	—	641	860¹	—	—	—	—	—	—	—	—
3508B	V-8	—	—	—	—	682	915¹	—	—	—	—	—	—	880	1180
3512	V-12	—	—	—	—	709	950¹	—	—	—	—	—	—	1090	1462
3512	V-12	—	—	—	—	1070	1435¹	—	—	—	—	—	—	—	—
3512B	V-12	—	—	—	—	1101	1476³	—	—	—	—	—	—	1310	1757
3516	V-16	—	—	—	—	1345	1804¹	—	—	—	—	—	—	—	—
3516B	V-16	—	—	—	—	1384	1855³	—	—	—	—	—	—	—	—
3516B HD	V-16	—	—	—	—	1604	2150³	—	—	—	—	—	—	—	—
3606	I-6	1565	2100²	1880	2520²	—	—	—	—	1645	2210²	2010	2700²	—	—
3608	I-8	2085	2800²	2533	3395²	—	—	—	—	2155	2890²	2700	3630²	—	—
3612	V-12	3130	4200²	3802	5096²	—	—	—	—	3285	4410²	4025	5400²	—	—
3616	V-16	4180	5600²	4604	6172²	—	—	—	—	4315	5790²	5415	7260²	—	—
12CM32	V-12	5760	7724	—	—	—	—	—	—	5760	7724²	—	—	—	—
16CM32	V-16	7680	10,300	—	—	—	—	—	—	7680	10,300²	—	—	—	—

¹ EPA certified.

² IMO certified.

³ EPA and IMO certified.

bhp — Brake horsepower

bkW — Metric equivalent of brake horsepower

Requires Separate Circuit Aftercooling (SCAC), without fan power, when emissions compliant.

Engines

Cat Oil and Gas Engines

- Mechanical Drill Rig Ratings
- Fracturing/Acidizing/Cementing Ratings

Cat Oil and Gas Engines

Mechanical Drill Rig Ratings

Model	Pumping and Drilling Ratings (B Level)				
	No. Cyl.	1400 rpm		1200 rpm	
		bkW	bhp	bkW	bhp
3412E***	V-12	466	625	—	—
3508**	V-8	—	—	567	760
3508B*	V-8	—	—	567	760
3508B*	V-8	—	—	671	900
3512B	V-12	—	—	783	1050
3512B	V-12	—	—	1044	1400
3516**	V-16	—	—	1044	1400
3516**	V-16	—	—	1230	1649

*2002 U.S. EPA and IMO certified, Separate Circuit Aftercooling (SCAC), without fan.

**Not U.S. EPA and IMO certified, Jacket Water Aftercooling (JWAC), without fan.

***2002 U.S. EPA and IMO certified, Air to Air Aftercooled (ATAAC), without fan.

bhp — Brake horsepower

bkW — Metric equivalent of brake horsepower

Fracturing/Acidizing/Cementing Ratings

Model	Dry Manifolds (E Level)			2002 EPA, Carb & EU 97/68/EC
	bkW	bhp	rpm	
C10	317	425	2100	X
C12	373	500	2100	X
C15	428	575	2100	X
C16	492	660	2100	X
3408E	560	750	2100	X
3412E*	595	750	2100	X
3412E	783	—	2100	X
3412 STA	933	1250	2100	X
3508B	820	1100	1800	X
3512B*	1492	2000	1900	X
3512B	1604	2150	1900	X
3512B	1679	2250	1900	X
3516B	2163	2900	1900	—

Water Cooled Manifolds (E Level)

Model	bkW	bhp	rpm	2002 EPA and IMO
C10*	272	365	2100	X
C15*	373	500	2100	X
3126**	172	230	2600	X
3406*	365	490	2100	X
3412E*	642	860	2100	X
3412E	780	1050	2100	X
Zone 2				2001 EPA and IMO
C15	373	500	2100	X
3412E	642	860	2100	X

*D Rating Level — cementing.

**C Rating Level.

STA — Series Turbocharged-Aftercooled

bhp — Brake horsepower

bkW — Metric equivalent of brake horsepower

E Rating Level — fracturing.

Rating Definition:

The horsepower and speed capability of the engine which can be used to power high pressure well servicing equipment.

NOTE: For a transmission match, consult your transmission supplier.

- Cat Railway Power
- Locomotive Traction Engine Ratings
 - Maintenance of Way Machinery Engine Ratings
 - Auxiliary Electric (Head End) Power Engine Ratings

Cat Railway Power

Locomotive Traction Engine Ratings

Model	Rated Speed	Low Rating		High Rating	
	rpm	kW	hp	kW	hp
C9	1800-2200	205	275	249	335
C10	1800-2100	231	310	307	425
C12	1800-2100	276	370	373	500
3406E	1800-2100	201	270	410	550
C15	1800-2100	317	425	429	575
3456	1800-2100	317	425	492	660
C16	1800-2100	326	500	492	660
3412	1200-1800	317	425	783	1050
3508	1200-1800	500	675	970	1300
3512	1200-1800	746	1000	1700	2280
3516	1200-1800	1200	1600	2300	3085
3606	750-1000	1640	2200	2030	2720
3608	750-1000	2180	2925	2710	3635
3612	750-1000	3280	4400	4060	5445
3616	750-1000	4360	5850	5420	7270

Auxiliary Electric (Head End) Power Engine Ratings

Model	50 Hz Prime	60 Hz Prime
3406	275 kVA	320 ekW
3406	320 kVA	365 ekW
3406	365 kVA	—
3456	275 kVA	275 ekW
3456	320 kVA	320 ekW
3456	365 kVA	365 ekW
3456	410 kVA	410 ekW
3456	455 kVA	455 ekW
3412	455 kVA	455 ekW
3412	500 kVA	500 ekW
3412	545 kVA	545 ekW
3412	600 kVA	635 ekW
3412	635 kVA	680 ekW
3412	680 kVA	725 ekW
3412	725 kVA	—

50 Hz @ 1500 rpm.
60 Hz @ 1800 rpm.

Maintenance of Way Machinery Engine Ratings

Model	Rated Speed	Low Rating		High Rating	
	rpm	kW	hp	kW	hp
3003/3013	2800-3600	15	20	25	34
C1.6	2800-3000	26.5	35.5	26.5	35.5
3024C	2200-3000	31	42	45	60
3044C	2600	47	63	60	80.5
3054C/E	2000-2400	50	67	91	142
3056E	2000-2500	76	102	135	180
3116/3126B	1800-2600	86	115	205	275
C9	1800-2200	205	275	261	350
C10	1800-2100	231	310	272	365
C12	1800-2100	276	370	373	500
3406	1800-2100	183	247	392	525
C15	1800-2100	317	425	429	575
C16	1800-2100	373	500	492	660
3412/3412E	1800-2100	354	475	716	960
3508	1200-1800	507	680	746	1000
3512	1200-1800	761	1020	1119	1500
3516	1200-1800	1011	1355	1492	2000

NOTE: All ratings include emission-regulated and non-regulated engines.

Notes —

FORMER MODELS



TRACK-TYPE TRACTORS

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
D2	4U	47-58	43/38	3258 (7175)	1.02 (3'4") 1.42 (4'8")	2.74 (9'0") 1.57 (5'2")	DD	3609 (7950)	2588 (5700)	2061 (4540)	1634 (3600)	1067 (2350)	
D2	4U	47-58	42/35	3258 (7175)	1.02 (3'4") 1.57 (5'2")	2.74 (9'0") 1.57 (5'2")	DD	3609 (7950)	2588 (5700)	2061 (4540)	1634 (3600)	1067 (2350)	
D2	5U	57-58	38/32	3119 (5870)	1.27 (4'2") 1.42 (4'8")	2.74 (9'0") 1.57 (5'2")	DD	3033 (6680)	2483 (5420)	2007 (4420)	1703 (3570)	1035 (2280)	
D2	5U	57-58	43/38	3373 (7430)	1.27 (4'2") 1.67 (5'6")	2.74 (9'0") 1.57 (5'2")	DD	3609 (7950)	2588 (5700)	2061 (4540)	1634 (3600)	1067 (2250)	
D3	79U	72-79	62/—	4812 (10,610)	1.42 (4'8") 1.78 (5'10")	2.77 (9'1") 1.70 (5'7")	PS		3.1 (1.9)	5.6 (3.5)	11.3 (7.0)		
D3 LGP	6N	72-79	62/—	5410 (11,925)	1.65 (5'5") 2.29 (7'6")	2.97 (9'10") 1.70 (5'7")	PS		3.1 (1.9)	5.6 (3.5)	11.3 (7.0)		
D3B	23Y	79-87	65	6719 (14,812)	1.42 (4'8") 1.78 (5'10")	2.77 (9'1") 2.67 (8'9")	PS		3.1 (1.9)	5.6 (3.5)	11.4 (7.1)		
D3B	27Y	79-87	65	6877 (15,160)	1.42 (4'8") 1.78 (5'10")	2.77 (9'1") 2.67 (8'9")	PS		3.1 (1.9)	5.9 (3.7)	10.6 (6.6)		
D3B LGP	24Y	79-87	65	7479 (16,488)	1.65 (5'5") 2.29 (7'6")	2.99 (9'10") 2.67 (8'9")	PS		3.1 (1.9)	5.6 (3.5)	11.4 (7.1)		
D3B LGP	28Y	79-87	65	7637 (16,836)	1.65 (5'5") 2.29 (7'6")	2.99 (9'10") 2.67 (8'9")	PS		3.1 (1.9)	5.9 (3.7)	10.7 (6.7)		
D3B	3YC	85-87	65	6719 (14,812)	1.42 (4'8") 1.78 (5'10")	2.77 (9'1") 2.67 (8'9")	DD	5593 (12,330)	3993 (8802)	2694 (5940)	1830 (4034)	1326 (2925)	
D3B LGP	5MC	85-87	65	7479 (16,488)	1.65 (5'5") 2.29 (7'6")	2.99 (9'10") 2.67 (8'9")	DD	5595 (12,330)	3993 (8802)	2694 (5940)	1830 (4034)	1326 (2925)	

NOTE: Power Shift models show speeds only, not drawbar pull.
NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
D3C	5KG	87-90	67	7084 (15,618)	1.42 (4'8") 1.79 (5'10.6")	2.8 (9'4") 2.66 (8'8.9")	PS	3.1 (1.9)	5.9 (3.7)	10.8 (6.7)			
D3C Series II		90-93	70	7001 (15,435)	1.42 (4'8") 1.79 (5'11")		PS	3.1 (1.9)	5.9 (3.7)	10.8 (6.7)			
D3C Series III		93-01	70	7110 (15,650)	1.45 (4'9") 1.85 (6'1")	3.98 (13'1") 2.73 (8'11")	HYS		0-9.0 (0-5.6)				
D3C XL Series II		91-93	70	7242 (15,965)	1.42 (4'8") 1.83 (6'0")		PS	3.1 (1.9)	5.9 (3.7)	10.8 (6.7)			
D3C XL Series III		93-01	70	7304 (16,100)	1.45 (4'9") 1.85 (6'1")	3.98 (13'1") 2.73 (8'11")	HYS		0-9.0 (0-5.6)				
D3C LGP	1PJ	87-90	67	7788 (17,170)	1.65 (5'4") 2.29 (7'6")	3.0 (9'10.1") 2.66 (8'8.9")	PS	3.1 (1.9)	5.9 (3.7)	10.8 (6.7)			
D3C LGP Series II		90-93	70	7788 (17,170)	1.65 (5'5") 2.29 (7'6")		PS	3.1 (1.9)	5.9 (3.7)	10.8 (6.7)			
D3C LGP Series III		93-01	70	7710 (17,000)	1.68 (5'6") 2.31 (7'7")	3.95 (13'0") 2.73 (8'11")	HYS		0-9.0 (0-5.6)				
D4	6U	47-59	48/43	4629 (10,195)	1.12 (3'8") 1.58 (5'2")	3.07 (11'0") 1.54 (5'1")	DD	4531 (9980)	3496 (7700)	2656 (5850)	2089 (4600)	1339 (2950)	
D4	6U	47-59	60/48	4847 (10,675)	1.12 (3'8") 1.58 (5'2")	3.16 (10'5") 1.54 (5'1")	DD	4858 (10,700)	3496 (7700)	2724 (6000)	2093 (4610)	1326 (2920)	
D4	6U	47-59	63/50	4844 (10,675)	1.12 (3'8") 1.58 (5'2")	3.18 (10'5") 1.76 (5'10")	DD	4858 (10,700)	3528 (7770)	2724 (6000)	2093 (4610)	1326 (2920)	
D4	7U	47-59	63/50	5067 (10,970)	1.52 (5'0") 1.98 (6'6")	3.16 (10'5") 1.76 (5'10")	DD	4858 (10,700)	3528 (7770)	2724 (6000)	2093 (4610)	1326 (2920)	
D4B	2XF	87	75	7450 (16,420)	1.42 (4'8") 1.78 (5'10")	2.78 (9'1") 2.67 (8'9")	PS	3.2 (2.0)	6.0 (3.7)	11.1 (6.9)			

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
D4B LGP	1SG	87	75	7800 (17,200)	1.65 (5'5") 2.29 (7'6")	2.99 (9'10") 2.67 (8'9")	PS	3.2 (2.0)	6.0 (3.7)	11.1 (6.9)			
D4C	39A	59-63	65/52	5064 (11,155)	1.12 (3'8") 1.58 (5'2")	3.05 (10'1") 1.76 (5'10")	DD	4858 (10,700)	3528 (7770)	2724 (6000)	2093 (4610)	1321 (2910)	
D4C	40A	59-63	65/52	4881 (10,750)	1.52 (5'0") 1.98 (6'6")	3.05 (10'1") 1.76 (5'10")	DD	4858 (10,700)	3528 (7770)	2724 (6000)	2093 (4610)	1321 (2910)	
D4C	1RJ	87-90	78	7581 (16,714)	1.42 (4'7") 1.83 (6'0")	3.00 (9'10.1") 2.66 (8'8.9")	PS						
D4C Series II		90-93	80	7557 (16,660)	1.42 (4'8") 1.83 (6'5")		PS						
D4C Series III		93-01	80	7330 (16,150)	1.50 (4'11") 1.91 (6'3")	3.99 (13'1") 2.73 (8'11")	HYS			0-9.0 (0-5.6)			
D4C XL Series III		93-01	80	7520 (16,570)	1.50 (4'11") 1.96 (6'5")	3.99 (13'1") 2.73 (8'11")	HYS			0-9.0 (0-5.6)			
D4C LGP	2CJ	87-90	78	7905 (17,427)	1.65 (5'4") 2.29 (7'6")	3.00 (9'10.1") 2.66 (8'8.9")	PS						
D4C LGP Series II		90-93	80	7905 (17,427)	1.65 (5'5") 2.29 (7'6")		PS	3.2 (2.0)	5.9 (3.7)	11.1 (6.9)			
D4C LGP Series III		93-01	80	7790 (17,160)	1.68 (5'6") 2.31 (7'6")	3.99 (13'1") 2.73 (8'11")	HYS			0-9.0 (0-5.6)			
D4D	78A	63-68	65/52	5900 (13,000)	1.52 (5'0") 1.98 (6'6")	3.35 (11'0") 2.41 (7'11")	DD	5300 (11,690)	3700 (8160)	2560 (5640)	1880 (4150)	1350 (2980)	
D4D	22C	67-68	65/—	5900 (13,100)	1.52 (5'0") 1.98 (6'6")	3.38 (11'1") 2.41 (7'11")	PS						
D4D	82J	63	—/65	7910 (17,440)	1.52 (5'0") 1.98 (6'6")	3.38 (11'1") 2.67 (8'9")	DD	6150 (13,550)	4150 (9140)	2820 (6210)	2030 (4480)	1420 (3120)	

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NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D4D	83J	67-71	—/65	8270 (18,240)	1.52 (5'0") 1.98 (6'6")	3.38 (11'1") 2.67 (8'9")	PS	3.2 (2.0)	5.7 (3.6)	9.3 (5.8)				
D4D	83J	72-77	—/75	5900 (13,100)	1.52 (5'0") 1.98 (6'6")	3.38 (11'1") 2.67 (8'9")	DD	6150 (13,550)	4150 (9140)	2820 (6210)	2030 (4480)	1420 (3120)		
D4E	27X	77-84	80/—	9013 (19,820)	1.52 (5'0") 2.44 (8'0")	3.86 (12'8") 2.72 (8'11")	DD	6495 (14,320)	4425 (9756)	3018 (6654)	2172 (4788)	1509 (3327)		
D4E	28X	77-84	80/—	9090 (20,040)	1.52 (5'0") 2.44 (8'0")	3.86 (12'8") 2.72 (8'11")	PS							
D4H (JPN)	8PB*	85-89	90/—	9975 (21,991)	1.67 (5'6") 2.13 (7'0")	3.422 (11'3") 2.933 (9'8")	PS							
D4H (JPN)	2AC*	85-89	90/—	10 111 (22,291)	1.67 (5'6") 2.13 (7'0")	3.422 (11'3") 2.933 (9'8")	DD	7618 (16,798)	5843 (12,884)	4333 (9554)	3207 (7071)	2335 (5149)	1640 (3617)	
D4H (JPN)	8PB*	89-90	95/—	10 105 (22,277)	1.67 (5'6") 2.13 (7'0")	3.422 (11'3") 2.933 (9'8")	PS							
D4H (JPN)	8PB	91-96	95/—	11 019 (24,242)	1.67 (5'6") 2.13 (7'0")	3.44 (11'3") 2.939 (9'8")	PS							
D4H (JPN)	2AC*	89-90	95/—	10 231 (22,555)	1.67 (5'6") 2.13 (7'0")	3.422 (11'3") 2.933 (9'8")	DD	7454 (16,434)	5715 (12,599)	4235 (9336)	3132 (6904)	2277 (5020)	1597 (3520)	
D4H (JPN)	2AC	91-96	95/—	11 019 (24,242)	1.67 (5'6") 2.13 (7'0")	3.44 (11'3") 2.939 (9'8")	DD	7454 (16,434)	5715 (12,599)	4235 (9336)	3132 (6904)	2227 (5020)	1597 (3520)	
D4H LGP (JPN)	9DB*	85-89	90/—	11 245 (24,790)	2.00 (6'7") 2.76 (9'1")	3.693 (10'4") 2.986 (9'10")	PS							
D4H LGP (JPN)	3AC*	85-89	90/—	11 381 (25,090)	2.00 (6'7") 2.76 (9'1")	3.693 (10'4") 2.986 (9'10")	DD	7618 (16,798)	5843 (12,884)	4333 (9554)	3207 (7071)	2335 (5149)	1640 (3617)	
D4H LGP (JPN)	9DB*	89-90	95/—	11 350 (25,022)	2.00 (6'7") 2.76 (9'1")	3.693 (10'4") 2.986 (9'10")	PS							

*D4H models prior to Series II. Product identification number prefix still in use for current product.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D4H LGP (JPN)	9DB	91-96	105/—	12 440 (27,368)	2.00 (6'7") 2.76 (9'1")	3.718 (12'2") 3.04 (10'0")	PS	3.4 (2.1)	6.0 (3.7)	10.2 (6.4)				
D4H LGP (JPN)	3AC*	89-90	95/—	11 476 (25,300)	2.00 (6'7") 2.76 (9'1")	3.693 (10'4") 2.986 (9'10")	DD	7454 (16,434)	5715 (12,599)	4235 (9336)	3132 (6904)	2277 (5020)	1597 (3520)	
D4H LGP (JPN)	9GJ	92-96	105/—	12 440 (27,368)	2.00 (6'7") 2.76 (9'1")	3.718 (12'2") 3.04 (10'0")	PS	3.4 (2.1)	6.0 (3.7)	10.2 (6.4)				
D4H XL (JPN)	8PS	92-96	105/—	11 786 (25,929)	1.77 (5'10") 2.28 (7'6")	3.446 (11'4") 2.99 (9'10")	PS	3.4 (2.1)	6.0 (3.7)	10.2 (6.4)				
D5	81H	67-67	93/75	8300 (18,200)	1.52 (5'0") 2.02 (6'8")	3.89 (12'9") 2.00 (8'7")	DD	7870 (17,330)	4910 (10,820)	3330 (7320)	2230 (4920)	1440 (3170)		
D5	82H	67-67	93/75	8400 (18,600)	1.88 (6'2") 2.38 (7'10")	3.89 (12'9") 2.00 (8'7")	DD	7870 (17,330)	4910 (10,820)	3330 (7320)	2230 (4920)	1440 (3170)		
D5	83H	67-67	93/—	8500 (18,800)	1.52 (5'0") 2.02 (6'8")	3.89 (12'9") 2.64 (8'8")	PS	2.7 (1.7)	4.2 (2.6)	5.8 (3.6)	8.0 (5.0)	11.1 (6.9)		
D5	84H	67-67	93/—	8700 (19,200)	1.88 (6'2") 2.38 (7'10")	3.89 (12'9") 2.64 (8'8")	PS	3.6 (2.2)	6.1 (3.8)	10.1 (6.3)				
D5	98J	67-77	105	11 290 (24,400)	1.52 (5'0") 2.02 (6'8")	3.89 (12'9") 2.74 (9'0")	DD	8770 (19,340)	5500 (12,130)	3750 (8270)	2540 (5610)	1660 (3660)	9.0 (5.6)	
D5	93J	67-77	105	11 290 (24,400)	1.52 (5'0") 2.02 (6'8")	3.89 (12'9") 2.74 (9'0")	DD	8770 (19,340)	5500 (12,130)	3750 (8270)	2540 (5610)	1660 (3660)		
D5	94J	66-77	105	11 390 (25,100)	1.88 (6'2") 2.38 (7'10")	3.89 (12'9") 2.74 (9'0")	DD	8770 (19,340)	5500 (12,130)	3750 (8270)	2540 (5610)	1660 (3660)		
D5	95J	66-77	105	11 290 (24,900)	1.52 (5'0") 2.02 (6'8")	3.89 (12'9") 2.74 (9'0")	PS	2.7 (1.7)	4.2 (2.6)	5.8 (3.6)	8.0 (5.0)	11.1 (6.9)		
D5	96J	66-77	105	11 600 (25,600)	1.88 (6'2") 2.38 (7'10")	3.89 (12'9") 2.74 (9'0")	PS	2.7 (1.7)	4.2 (2.6)	5.8 (3.6)	8.0 (5.0)	11.1 (6.9)		

*D4H models prior to Series II. Product identification number prefix still in use for current product.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
D5B	25X	77-84	105/—	11 619 (25,615)	1.88 (6'2") 3.15 (10'4")	4.60 (15'1") 2.77 (9'1")	PS	3.5 (2.2)	6.1 (3.8)	10.1 (6.3)			
D5B	23X	77-82	105/—	11 283 (24,875)	1.88 (6'2") 3.15 (10'4")	4.60 (15'1") 2.77 (9'1")	DD	8060 (17,770)	5030 (11,100)	3410 (7520)	2290 (5060)	1480 (3260)	
D5C		91-93	90	8460 (18,650)	1.54 (5'1") 2.01 (6'7")		PS	3.5 (2.2)	6.3 (3.9)	10.0 (6.2)			
D5C Series III		93-01	90	8490 (18,710)	1.55 (5'1") 2.00 (6'7")	4.07 (13'4") 2.74 (9'0")	HYS		0-9.0 (0-5.6)				
D5C XL Series III		93-01	90	8820 (19,450)	1.55 (5'1") 2.06 (6'9")	4.32 (14'2") 2.74 (9'0")	HYS		0-9.0 (0-5.6)				
D5C LGP		91-93	90	8987 (19,800)	1.72 (5'8") 2.38 (7'10")		PS	3.5 (2.2)	6.3 (3.9)	10.0 (6.2)			
D5C LGP Series III		93-01	90	8970 (19,780)	1.73 (5'8") 2.39 (7'10")	4.07 (13'4") 2.74 (9'0")	HYS		0-9.0 (0-5.6)				
D5E		-99	105	11 700 (25,800)	1.52 (5'0")	3.88 (12'8")	DD	8770 (19,340)	5500 (12,130)	3750 (8270)	2450 (5600)	1660 (3660)	
D5H (FR)	8RC*	85-90	120/—	12 144 (26,772)	1.8 (5'11") 2.21 (7'3")	3.6 (11'10") 2.93 (9'7")	PS	— (2.1)	— (3.7)	— (6.2)			
D5H (FR)	8RC	91-96	120/—	13 250 (29,200)	1.8 (5'11") 2.31 (7'7")	3.6 (11'10") 3.0 (9'10")	DD	3.3 (2.1)	5.9 (3.7)	10.0 (6.2)			
D5H (FR)	7NC*	85-90	120/—	12 212 (26,922)	1.8 (5'11") 2.21 (7'3")	3.6 (11'10") 2.93 (9'7")	DD	9140 (20,150)	7005 (15,440)	5190 (11,440)	3835 (8450)	2785 (6140)	1950 (4300)
D5H (FR)	7NC	91-96	120/—	13 250 (29,200)	1.8 (5'11") 2.31 (7'7")	3.6 (11'10") 3.0 (9'10")	DD	9140 (20,150)	7005 (15,440)	5190 (11,440)	3835 (8450)	2785 (6140)	1950 (4300)
D5H LGP (FR)	1DD*	86-90	120/—	14 685 (32,380)	2.16 (7'1") 3.02 (9'11")	4.129 (13'7") 3.069 (10'1")	PS	3.3 (2.1)	5.9 (3.7)	10.0 (6.2)			

*D5H models prior to Series II. Product identification number prefix still in use for current product.

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NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D5H LGP (FR)	1DD	91-96	130/—	16 200 (35,700)	2.16 (7'1") 3.02 (9'11")	4.133 (13'7") 3.135 (10'3")	PS	3.3 (2.1)	5.9 (3.7)	10.0 (6.2)				
D5H LGP (FR)	9HC*	85-90	120/—	14 878 (32,800)	2.16 (7'1") 3.02 (9'11")	4.129 (13'7") 3.069 (10'1")	DD	9140 (20,150)	7005 (15,440)	5190 (11,440)	3835 (8450)	2785 (6140)	1950 (4300)	
D5H LGP (FR)	9HC	91-96	130/—	16 200 (35,700)	2.16 (7'1") 3.02 (9'11")	4.133 (13'7") 3.135 (10'3")	DD	10 061 (22,181)	7725 (17,031)	5738 (12,650)	4256 (9384)	3109 (6855)	2195 (4840)	
D5H (JPN)	3MD*	86-90	120/—	12 144 (26,772)	1.8 (5'11") 2.21 (7'3")	3.6 (11'10") 2.93 (9'7")	PS	3.3 (2.1)	5.9 (3.7)	10.0 (6.2)				
D5H (JPN)	3MD	91-96	120/—	13 250 (29,200)	1.8 (5'11") 2.31 (7'7")	3.6 (11'10") 3.0 (9'10")	PS	3.3 (2.1)	5.9 (3.7)	10.0 (6.2)				
D5H (JPN)	1YD*	86-90	120/—	12 212 (26,922)	1.8 (5'11") 2.21 (7'3")	3.6 (11'10") 2.93 (9'7")	DD	9140 (20,150)	7005 (15,440)	5190 (11,440)	3835 (8450)	2785 (6140)	1950 (4300)	
D5H (JPN)	1YD*	91-96	120/—	13 250 (29,200)	1.8 (5'11") 2.31 (7'7")	3.6 (11'10") 3.0 (9'10")	DD	9140 (20,150)	7005 (15,440)	5190 (11,440)	3835 (8450)	2785 (6140)	1950 (4300)	
D5H LGP (JPN)	4KD*	86-90	120/—	14 685 (32,380)	2.16 (7'1") 3.02 (9'11")	4.129 (13'7") 3.069 (10'1")	PS	3.3 (2.1)	5.9 (3.6)	10.0 (6.2)				
D5H LGP (JPN)	4KD	91-96	130/—	16 200 (35,700)	2.16 (7'1") 3.02 (9'11")	4.133 (13'7") 3.135 (10'3")	PS	3.3 (2.1)	5.9 (3.7)	10.0 (6.2)				
D5H LGP (JPN)	2SD*	86-90	120/—	14 878 (32,800)	2.16 (7'1") 3.02 (9'11")	4.129 (13'7") 3.069 (10'1")	DD	9140 (20,150)	7005 (15,440)	5190 (11,440)	3835 (8450)	2785 (6140)	1950 (4300)	
D5H LGP (JPN)	2SD	91-96	130/—	16 200 (35,700)	2.16 (7'1") 3.02 (9'11")	4.133 (13'7") 3.135 (10'3")	DD	10 061 (22,181)	7725 (17,031)	5738 (12,650)	4256 (9384)	3109 (6855)	2195 (4840)	
D5H XL (FR)	8RJ	92-96	130/—	13 900 (30,600)	1.89 (6'2") 2.49 (8'2")	3.606 (11'10") 3.08 (9'11")	PS	3.3 (2.1)	5.9 (3.7)	10.0 (6.2)				

*D5H models prior to Series II. Product identification number prefix still in use for current product.
NOTE: Power Shift models show speeds only, not drawbar pull.
NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
D5M XL (FR)	4BR	96-02	82/110	12 250 (27,006)	1.77	3.544	PS	22 347	12 166	6745			
					(5'10")	(11'8")		(49,264)	(26,821)	(14,870)			
					2.33*	3.002**		3.27	5.81	9.93			
D5M XL (FR)	6GN	96-02	82/110	12 250 (27,006)	(7'8")*	(9'10")**	PS	(2.03)	(3.61)	(6.17)			
					1.77	3.544		22 347	12 166	6745			
					(5'10")	(11'8")		(49,264)	(26,821)	(14,870)			
D5M LGP (FR)	3DR	96-02	82/110	13 100 (28,880)	2.00	3.72	PS	22 347	12 166	6745			
					(6'7")	(12'2")		(49,264)	(26,821)	(14,870)			
					2.76*	3.046**		3.27	5.81	9.93			
D5M LGP (FR)	3CR	96-02	82/110	13 100 (28,880)	(9'1")*	(10'0")**	PS	(2.03)	(3.61)	(6.17)			
					2.00	3.72		22 347	12 166	6745			
					(6'7")	(12'2")		(49,264)	(26,821)	(14,870)			
D6	4R	47-59	85	8042 (17,730)	1.88	3.75	DD	8618	5534	3837	2617	1842	
					(6'2")	(12'4")		(19,000)	(12,200)	(8460)	(5770)	(4060)	
					1.52	1.91		2.7	4.2	5.8	8.0	10.6	
D6	9U	47-59	93/75	8153 (17,975)	(5'0")	(6'3")	DD	(1.7)	(2.6)	(3.6)	(5.0)	(6.6)	
					1.88	3.75		8618	5534	3837	2617	1842	
					(6'2")	(12'4")		(19,000)	(12,200)	(8460)	(5770)	(4060)	
D6B	37A	59-67	93/75	8130 (17,930)	1.52	3.85	DD	12 050	8020	5300	3360	2030	
					(5'0")	(6'3")		(1.7)	(2.6)	(3.6)	(5.0)	(6.6)	
					2.02	1.91		2.7	4.2	5.8	8.0	10.6	
D6B	44A	59-67	93/75	8300 (18,300)	(6'8")	(6'3")	DD	(1.7)	(2.6)	(3.6)	(5.0)	(6.6)	
					1.88	3.85		7820	4940	3220	2120	1450	
					(6'2")	(12'9")		(16,240)	(10,900)	(7090)	(4670)	(3190)	
D6C	74A	63-67	120	10 400 (23,000)	2.38	1.91	DD	2.7	4.2	6.0	8.4	10.9	
					(7'10")	(6'3")		(1.7)	(2.6)	(3.7)	(5.2)	(6.8)	
					1.88	3.95		12 050	8020	5300	3360	2030	
D6C	76A	63-67	120	10 700 (23,500)	(6'2")	(13'0")	PS	(26,540)	(17,670)	(11,690)	(7400)	(4470)	
					2.38	1.92		2.4	3.4	4.8	6.8	9.5	
					(7'9")	(6'4")		(1.5)	(2.1)	(3.0)	(4.2)	(5.9)	
D6C	10K	67-76	140	13 880 (30,600)	1.88	3.73	PS						
					(6'2")	(12'3")							
					2.38	2.87		4.0	6.9	10.8			
D6 LGP	69U	72-77	140	17 010 (37,500)	(7'9")	(9'5")	PS	(2.5)	(4.3)	(6.7)			
					2.11	3.94							
					(6'11")	(12'11")							
					3.02	2.97							
					(9'11")	(9'9")							

*Width without blade and with standard shoes.

**Height with ROPS cab.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
D6C	99J	67-76	140	14 243 (31,400)	1.88 (6'2") 2.38 (7'9")	3.73 (12'3") 2.87 (9'5")	DD	11 500 (25,360)	7750 (17,090)	5180 (11,420)	3350 (7380)	2090 (4610)	
D6C LGP	69U	72-77	140	13 835 (30,500)	2.11 (6'11") 3.02 (9'11")	2.97 (9'9") 3.94 (12'11")	PS						
D6D	3X	77-86	140	14 290 (31,500)	1.88 (6'2") 2.36 (7'9")	3.73 (12'3") 3.06 (10'0")	DD	11 500 (25,360)	7750 (17,090)	5180 (11,420)	3350 (7380)	2090 (4610)	
D6D	4X	77-86	140	14 290 (31,500)	1.88 (6'2")	3.73 (12'3")	PS	4.0 (2.5)	6.9 (4.3)	10.8 (6.7)			
D6D LGP	6X	77-86	140	17 370 (38,300)	2.1 (6'11") 3.02 (9'11")	3.94 (12'1") 3.06 (10'0")	PS	4.0 (2.5)	6.9 (4.3)	10.8 (6.7)			
D6H	4RC*	85-90	165/—	16 950 (37,367)	1.88 (6'2") 2.64 (8'8")	4.069 (13'4") 3.114 (10'3")	PS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)			
D6H	8KB	85-88	165/—	16 954 (37,377)	1.88 (6'2") 2.64 (8'8")	4.069 (13'4") 3.114 (10'3")	DD	12 500 (27,560)	9520 (20,990)	7140 (15,740)	5440 (11,990)	4010 (8840)	2820 (6220)
D6H	3ZF*	88-90	165/—	17 055 (37,599)	1.88 (6'2") 2.64 (8'8")	4.069 (13'4") 3.114 (10'3")	PS/DS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)			
D6H LGP	6FC*	87-90	165/—	19 555 (43,111)	2.225 (7'4") 3.43 (11'3")	4.493 (14'9") 3.164 (10'5")	PS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)			
D6H LGP	3YG*	88-90	165/—	19 527 (43,049)	2.225 (7'4") 3.43 (11'3")	4.493 (14'9") 3.164 (10'5")	PS/DS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)			
D6H (JPN)	2KD*	86-90	165/—	16 950 (37,367)	1.88 (6'2") 2.64 (8'8")	4.069 (13'4") 3.114 (10'3")	PS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)			
D6H (DS)	32F (E. Peoria) 4YF (Sagami) 6CF (Grenoble)	92-96	123/165	18 111 (39,928)	1.88 (6'2") 3.36 (11'0")	4.07 (13'4") 3.12 (10'3")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)			

*D6H models prior to Series II. Product identification number prefix still in use for current product.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D6H (CB)	4RC	92-96	123/165	17 997 (39,676)	1.88	4.07	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
	(E. Peoria) 2KD				3.36	3.12								
	(Sagami) 4LG (Grenoble)				(11'0")	(10'3")								
D6H XL (DS)	9KJ	92-96	130/175	19 080 (42,063)	1.88	4.07	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
	(E. Peoria) 8SK				3.36	3.12								
	(Sagami) 9LK (Grenoble)				(11'0")	(10'3")								
D6H XL (CB)	8ZJ	92-96	130/175	18 966 (41,811)	1.88	4.07	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
	(E. Peoria) 9RK				3.36	3.12								
	(Sagami) 8KK (Grenoble)				(11'0")	(10'3")								
D6H XR (DS)	6CK	92-96	130/175	18 799 (41,444)	1.88	4.22	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
	(E. Peoria) 2TL				3.36	3.12								
	(Sagami) 1YL (Grenoble)				(11'0")	(10'3")								
D6H XR (CB)	5KK	92-96	130/175	18 799 (41,444)	1.88	4.22	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
	(E. Peoria) 7ZK				3.36	3.12								
	(Sagami) 2BL (Grenoble)				(11'0")	(10'3")								
D6H LGP (DS)	3YG	92-96	134/180	20 486 (45,163)	2.24	4.49	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
	(E. Peoria) 4GG				4.0	3.17								
	(Sagami) 5HF (Grenoble)				(13'1")	(10'5")								
D6H LGP (CB)	6FC	92-96	134/180	20 486 (45,163)	2.24	4.49	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
	(E. Peoria) 1KD				4.0	3.17								
	(Sagami) 2TG (Grenoble)				(13'1")	(10'5")								
D6H (JPN)	3ED*	86-92	165/—	16 954 (37,377)	1.88	4.069	DD	12 500	9520	7140	5440	4010	2820	
					(6'2")	(13'4")		(27,560)	(20,990)	(15,740)	(11,990)	(8840)	(6220)	
					2.64	3.114		2.7	3.5	4.6	5.8	7.6	10.0	
D6H (JPN)	4YF*	88-90	165/—	17 055 (37,599)	1.88	4.069	PS/DS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)				
					(6'2")	(13'4")								
					2.64	3.114								
					(8'8")	(10'3")								

*D6H models prior to Series II. Product identification number prefix still in use for current product.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D6H LGP (JPN)	1KD*	86-90	165/—	19 555 (43,111)	2.225 (7'4") 3.43 (11'3")	4.493 (14'9") 3.164 (10'5")	PS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)				
D6H LGP (JPN)	8FC*	86-90	165/—	19 676 (43,380)	2.225 (7'4") 3.43 (11'3")	4.485 (14'9") 3.164 (10'5")	DD	12 500 (27,560)	9520 (20,990)	7140 (15,740)	5440 (11,990)	4010 (8840)	2820 (6220)	
D6H LGP (JPN)	4GG*	88-90	165/—	19 527 (43,049)	2.225 (7'4") 3.43 (11'3")	4.493 (14'9") 3.164 (10'5")	PS/DS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)				
D6H (FR)	4LG*	87-90	165/—	16 950 (37,367)	1.88 (6'2") 2.64 (8'8")	4.069 (13'4") 3.114 (10'3")	PS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)				
D6H (FR)	1FJ*	88-90	165/—	16 954 (37,377)	1.88 (6'2") 2.64 (8'8")	4.069 (13'4") 3.114 (10'3")	DD	12 500 (27,560)	9520 (20,990)	7140 (15,740)	5440 (11,990)	4010 (8840)	2820 (6220)	
D6H (FR)	6CF*	88-90	165/—	17 055 (37,599)	1.88 (6'2") 2.64 (8'8")	4.069 (13'4") 3.114 (10'3")	PS/DS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)				
D6H LGP (FR)	2TG*	87-90	165/—	19 555 (43,111)	2.225 (7'4") 3.43 (11'3")	4.493 (14'9") 3.164 (10'5")	PS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)				
D6H LGP (FR)	5HF*	88-90	165/—	19 527 (43,049)	2.225 (7'4") 3.43 (11'3")	4.493 (14'9") 3.164 (10'5")	PS/DS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)				
D6H (SCOT)	7PC	86-87	165/—	16 950 (37,367)	1.88 (6'2") 2.64 (8'8")	4.069 (13'4") 3.114 (10'3")	PS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)				
D6H LGP (SCOT)	8YC	86-87	165/—	19 555 (43,111)	2.225 (7'4") 3.43 (11'3")	4.493 (14'9") 3.164 (10'5")	PS	3.8 (2.4)	6.5 (4.0)	11.3 (7.0)				
D6R STD CB (US)	2YN	95-02	165/—	18 100 (40,000)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)				
D6R STD CB (BRAZIL)	9ZS	97-02	165/—	18 100 (40,000)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)				

*D6H models prior to Series II. Product identification number prefix still in use for current product.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
D6R STD CB (FRANCE)	2HM	96-01	165/—	18 100 (40,000)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)			
D6R STD CB (JAPAN)	6FR	96-02	165/—	18 100 (40,000)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)			
D6R STD DS (US)	3ZN	95-02	165/—	18 300 (40,400)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)			
D6R STD DS (BRAZIL)	1RW	97-02	165/—	18 300 (40,400)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)			
D6R STD DS (FRANCE)	4FM	96-01	165/—	18 300 (40,400)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)			
D6R STD DS (JAPAN)	5PR	97-02	165/—	18 300 (40,400)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)			
D6R XL CB (US)	4MN	96-02	175/—	19 000 (41,900)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)			
D6R XL CB (BRAZIL)	6MR	97-02	175/—	19 000 (41,900)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)			
D6R XL CB (FRANCE)	4JR	96-01	175/—	19 000 (41,900)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)			
D6R XL CB (JAPAN)	4WR	97-02	175/—	19 000 (41,900)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)			
D6R XL DS (US)	5LN	95-02	175/—	19 200 (42,300)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)			
D6R XL DS (BRAZIL)	7GR	96-02	175/—	19 200 (42,300)	1.88 (6'2") 2.64 (8'8")	4.08 (13'4") 3.20 (10'6")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)			

NOTE: Power Shift models show speeds only, not drawbar pull.
NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D6R XL DS (FRANCE)	9BM	96-01	175/—	19 200 (42,300)	1.88 (6'2")	4.08 (13'4")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)				
					2.64 (8'8")	3.20 (10'6")								
D6R XL DS (JAPAN)	5RR	97-02	175/—	19 200 (42,300)	1.88 (6'2")	4.08 (13'4")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)				
					2.64 (8'8")	3.20 (10'6")								
D6R XR CB (US)	6JN	95-02	175/—	18 780 (41,400)	1.88 (6'2")	4.22 (13'10")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)				
					2.64 (8'8")	3.19 (10'5")								
D6R XR CB (FRANCE)	8XN	97-01	175/—	18 780 (41,400)	1.88 (6'2")	4.22 (13'10")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)				
					2.64 (8'8")	3.19 (10'5")								
D6R XR CB (JAPAN)	6HR	97-02	175/—	18 780 (41,400)	1.88 (6'2")	4.22 (13'10")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)				
					2.64 (8'8")	3.19 (10'5")								
D6R XR DS (US)	7KN	95-02	175/—	18 910 (41,700)	1.88 (6'2")	4.22 (13'10")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)				
					2.64 (8'8")	3.19 (10'5")								
D6R XR DS (FRANCE)	9MN	97-01	175/—	18 910 (41,700)	1.88 (6'2")	4.22 (13'10")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)				
					2.64 (8'8")	3.19 (10'5")								
D6R XR DS (JAPAN)	7DR	97-02	175/—	18 910 (41,700)	1.88 (6'2")	4.22 (13'10")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)				
					2.64 (8'8")	3.19 (10'5")								
D6R LGP CB (US)	8LN	95-02	185/—	20 500 (45,200)	2.23 (7'3")	4.24 (13'11")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)				
					3.43 (11'3")	3.19 (10'5")								
D6R LGP CB (FRANCE)	4HN	97-01	185/—	20 500 (45,200)	2.23 (7'3")	4.24 (13'11")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)				
					3.43 (11'3")	3.19 (10'5")								
D6R LGP CB (JAPAN)	7AR	97-01	185/—	20 500 (45,200)	2.23 (7'3")	4.24 (13'11")	PS	4.0 (2.5)	7.1 (4.4)	12.4 (7.7)				
					3.43 (11'3")	3.19 (10'5")								
D6R LGP DS (US)	9PN	95-02	185/—	20 680 (45,600)	2.23 (7'3")	4.24 (13'11")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)				
					3.43 (11'3")	3.19 (10'5")								

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D6R LGP DS (FRANCE)	8TM	96-01	185/—	20 680 (45,600)	2.23 (7'3")	4.24 (13'11")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)				
					3.43 (11'3")	3.19 (10'5")								
D6R LGP DS (JAPAN)	4TR	96-02	185/—	20 680 (45,600)	2.23 (7'3")	4.24 (13'11")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.6)				
					3.43 (11'3")	3.19 (10'5")								
D6R LGP DD (JAPAN)	6GR	95-02	185/—	20 680 (45,600)	2.23 (7'3")	4.24 (13'11")	PS	3.4 (2.1)	5.9 (3.7)	10.4 (6.5)				
					3.43 (11'3")	3.19 (10'5")								
D6M XL (FR)	9ZM	96-02	104/140	15 530 (34,240)	1.89 (6'2")	3.74 (12'3")	PS	30 493 (67,222)	16 643 (36,689)	9211 (20,306)				
					2.49* (8'2")*	3.08** (10'1")**					3.4 (2.1)	6.0 (3.7)	10.3 (6.4)	
D6M XL (FR)	3WN	96-02	104/140	15 530 (34,240)	1.89 (6'2")	3.74 (12'3")	PS	30 493 (67,222)	16 643 (36,689)	9211 (20,306)				
					2.49* (8'2")*	3.08** (10'1")**					3.4 (2.1)	6.0 (3.7)	10.3 (6.4)	
D6M LGP (FR)	2RN	96-02	104/140	16 930 (37,320)	2.16 (7'1")	4.146 (13'7")	PS	30 493 (67,222)	16 643 (36,689)	9211 (20,306)				
					3.02* (9'11")*	3.194** (10'6")**					3.4 (2.1)	6.0 (3.7)	10.3 (6.4)	
D6M LGP (FR)	4JN	96-02	104/140	16 930 (37,320)	2.16 (7'1")	4.146 (13'7")	PS	30 493 (67,222)	16 643 (36,689)	9211 (20,306)				
					3.02* (9'11")*	3.194** (10'6")**					3.4 (2.1)	6.0 (3.7)	10.3 (6.4)	
D6R SII STD CB (FTC) (US)	AEM	02-05	123/165	17 826 (39,300)	1.88 (6'2")	3.86 (12'8")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)				
					2.64 (8'8")	3.2 (10'6")								
D6R SII STD CB (FTC) (BRAZIL)	BRJ	02-06	123/165	17 826 (39,300)	1.88 (6'2")	3.86 (12'8")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)				
					2.64 (8'8")	3.2 (10'6")								
D6R SII STD CB (FTC) (FRANCE)	BLE	01-05	123/165	17 826 (39,300)	1.88 (6'2")	3.86 (12'8")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)				
					2.64 (8'8")	3.2 (10'6")								
D6R SII STD CB (FTC) (JAPAN)	BMK	01-06	123/165	17 826 (39,300)	1.88 (6'2")	3.86 (12'8")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)				
					2.64 (8'8")	3.2 (10'6")								
D6R SII STD DS (US)	AFM	01-05	123/165	18 099 (39,900)	1.88 (6'2")	3.86 (12'8")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
					2.64 (8'8")	3.2 (10'6")								

*Width without blade and with standard shoes.

**Height with ROPS cab.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
D6R SII STD DS (BRAZIL)	BPM	03-06	123/165	18 099 (39,900)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)			
D6R SII STD DS (FRANCE)	BLT	02-05	123/165	18 099 (39,900)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)			
D6R SII STD DS (JAPAN)	BNL	01-06	123/165	18 099 (39,900)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)			
D6R SII XL CB (FTC) (US)	AGM	00-05	138/185	18 711 (41,250)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)			
D6R SII XL CB (FTC) (BRAZIL)	CAD	02-06	138/185	18 711 (41,250)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)			
D6R SII XL CB (FTC) (FRANCE)	BMJ	02-05	138/185	18 711 (41,250)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)			
D6R SII XL CB (FTC) (JAPAN)	BPS	01-06	138/185	18 711 (41,250)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)			
D6R SII XL DS (US)	AAX	00-05	138/185	18 847 (41,550)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)			
D6R SII XL DS (BRAZIL)	FDT	02-06	138/185	18 847 (41,550)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)			
D6R SII XL DS (FRANCE)	BMJ	01-05	138/185	18 847 (41,550)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)			
D6R SII XL DS (JAPAN)	BRZ	01-06	138/185	18 847 (41,550)	1.88 (6'2") 2.64 (8'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)			
D6R SII XW DS (US)	AEP	2001	138/185	19 550 (43,100)	2.03 (6'8") 2.95 (9'8")	3.86 (12'8") 3.2 (10'6")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)			

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D6R SII XW DS (FRANCE)	DAE	02-05	138/185	19 550 (43,100)	2.03 (6'8")	3.86 (12'8")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
					2.95 (9'8")	3.2 (10'6")								
D6R SII XW DS (JAPAN)	BRE	01-06	138/185	19 550 (43,100)	2.03 (6'8")	3.86 (12'8")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
					2.95 (9'8")	3.2 (10'6")								
D6R SII LGP CB (FTC) (US)	ACJ	01-05	138/185	20 865 (46,000)	2.23 (7'3")	4.24 (13'11")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)				
					3.43 (11'3")	3.25 (10'8")								
D6R SII LGP CB (FTC) (JAPAN)	BPP	01-06	138/185	20 865 (46,000)	2.23 (7'3")	4.24 (13'11")	PS	3.8 (2.4)	6.6 (4.1)	11.5 (7.2)				
					3.43 (11'3")	3.25 (10'8")								
D6R SII LGP DS (US)	ADE	00-05	138/185	21 047 (46,400)	2.23 (7'3")	4.24 (13'11")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
					3.43 (11'3")	3.25 (10'8")								
D6R SII LGP DS (FRANCE)	BNC	01-05	138/185	21 047 (46,400)	2.23 (7'3")	4.24 (13'11")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
					3.43 (11'3")	3.25 (10'8")								
D6R SII LGP DS (JAPAN)	BPZ	01-06	138/185	21 047 (46,400)	2.23 (7'3")	4.24 (13'11")	PS	3.8 (2.3)	6.6 (4.1)	11.4 (7.1)				
					3.43 (11'3")	3.25 (10'8")								
D7	3T	54-55	108/90	11 770 (25,925)	1.88 (6'2")	4.27 (14'0")	DD							
D7C	17A	55-59	128/102	11 954 (26,355)	1.88 (6'2")	4.26 (14'0")	DD	11 759 (25,900)	8045 (17,720)	4521 (11,960)	3428 (7550)	2397 (5280)		
					2.64 (8'1")	2.06 (6'10")							2.4 (1.5)	3.5 (2.2)
D7D	17A	59-61	140/112	12 056 (26,555)	1.88 (6'2")	4.26 (14'0")	DD	12 300 (27,100)	8600 (18,900)	5700 (12,550)	3650 (8080)	2600 (5720)		
					2.64 (8'1")	2.06 (6'10")							2.4 (1.5)	3.5 (2.2)
D7E	47A	61-68	160/128	14 787 (32,590)	1.98 (6'6")	4.47 (14'8")	DD	14 741 (32,500)	10 296 (22,700)	6803 (15,000)	4259 (9390)	3070 (6770)		
					2.56 (8'5")	2.30 (7'7")							2.4 (1.5)	3.5 (2.2)
D7E	48A	61-66	160/128	14 787 (32,590)	1.98 (6'6")	4.47 (14'8")	PS	3.3 (2.1)	5.7 (3.6)	9.3 (5.8)				
					2.56 (8'5")	2.30 (7'7")								

NOTE: Power Shift models show speeds only, not drawbar pull.
 NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D7E	47A	66-69	180/144	15 200 (33,500)	1.98 (6'6") 2.56 (8'5")	4.47 (14'8") 2.18 (7'2")	DD	17 140 (37,750)	11 350 (25,000)	7420 (16,340)	4540 (9990)	3180 (7010)		
D7E	48A	66-69	180	15 500 (34,000)	1.98 (6'6") 2.56 (8'5")	4.47 (14'8") 2.18 (7'2")	PS		3.7 (2.3)	6.4 (4.0)	10.1 (6.3)			
D7F	94N	69-74	180	14 700 (32,400)	1.98 (6'6") 2.56 (8'5")	4.15 (13'8") 2.26 (7'5")	PS		3.5 (2.2)	6.3 (3.9)	9.5 (5.9)			
D7F	93N	69-74	180	14 700 (32,400)	1.98 (6'6") 2.56 (8'5")	4.15 (13'8") 2.26 (7'5")	DD	17 100 (37,600)	11 350 (25,000)	7450 (16,400)	4580 (10,000)	3240 (7140)		
D7G	92V	77-86	200	20 090 (44,300)	1.98 (6'6") 2.62 (8'7")	4.19 (13'9") 3.35 (11'0")	PS		3.7 (2.3)	6.4 (4.0)	10.0 (6.2)			
D7G	91V	77-86	200	20 090 (44,300)	1.98 (6'6") 2.62 (8'7")	4.19 (13'9") 3.35 (11'0")	DD	17 690 (39,010)	11 730 (25,860)	7680 (16,940)	4700 (10,370)	3320 (7320)		
D7G LGP	72W	77-86	200	22 630 (52,100)	2.18 (7'2") 3.3 (10'11")	4.22 (13'9") 3.28 (10'9")	PS		3.7 (2.3)	6.4 (4.0)	10.0 (6.2)			
D7H (CB)	79Z (E. Peoria) 4AB (Sagami)	92-96	171/230	24 778 (54,635)	1.98 (6'6") 3.9 (12'10")	4.74 (15'6") 3.5 (11'6")	PS		3.5 (2.2)	6.2 (3.8)	10.6 (6.6)			
D7H (DS)	5BF (E. Peoria) 2RG (Sagami)	92-96	171/230	25 077 (55,295)	1.98 (6'6") 3.9 (12'10")	4.74 (15'6") 3.5 (11'6")	PS		3.5 (2.2)	6.2 (3.8)	10.6 (6.6)			
D7H LGP (CB)	80Z (E. Peoria) 5WB (Sagami)	92-96	171/230	27 065 (59,678)	2.24 (7'4") 4.50 (14'9")	4.74 (15'6") 3.58 (11'9")	PS		3.5 (2.2)	6.2 (3.8)	10.6 (6.6)			
D7H LGP (DS)	4FG (E. Peoria) 3XG (Sagami)	92-96	171/230	27 065 (59,678)	2.24 (7'4") 4.50 (14'9")	4.74 (15'6") 3.58 (11'9")	PS		3.5 (2.2)	6.2 (3.8)	10.6 (6.6)			
D7H XR (CB)	79Z (E. Peoria) 4AB (Sagami)	92-96	171/230	25 193 (55,551)	1.98 (6'6") 3.9 (12'10")	4.74 (15'6") 3.5 (11'6")	PS		3.5 (2.2)	6.2 (3.8)	10.6 (6.6)			

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)							
								1st	2nd	3rd	4th	5th	6th		
D7H XR (DS)	5BF (E. Peoria) 2RG (Sagami)	92-96	171/230	25 492 (56,211)	1.98 (6'6") 3.9 (12'10")	4.74 (15'6") 3.5 (11'6")	PS	3.5 (2.2)	6.2 (3.8)	10.6 (6.6)					
D7H	77Z	85-86	215	19 680 (43,380)	1.98 (6'6") 2.54 (8'5")	4.73 (15'6")	DD	16 834 (37,113)	12 861 (28,353)	9703 (21,390)	7436 (16,394)	5522 (12,173)	3940 (8686)		
D7H (US)	79Z*	85-90	215/—	23 647 (52,134)	1.981 (6'6") 2.869 (9'5")	4.619 (15'2") 3.421 (11'3")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.4)					
D7H (US)	77Z	85-90	215/—	23 570 (51,960)	1.981 (6'6") 2.869 (9'5")	4.619 (15'2") 3.421 (11'3")	DD	16 834 (37,113)	12 861 (28,353)	9703 (21,390)	7436 (16,394)	5522 (12,173)	3940 (8686)		
D7H (US)	5BF*	88-90	215/—	24 351 (53,683)	1.981 (6'6") 2.871 (9'5")	4.624 (15'2") 3.429 (11'3")	PS/DS	3.7 (2.3)	6.4 (4.0)	11.1 (6.9)					
D7R STD (US)	2HR	95-01	171 (230)	27 413 (60,436)	2.0 (6'6")	6.04 (19'9")	PS/FTC	3.5 (2.3)	6.4 (4.0)	10.8 (6.8)					
D7R STD	3ZR	96-02	171 (230)	27 413 (60,436)	2.0 (6'6")	6.04 (19'9")	PS/FTC	3.5 (2.3)	6.4 (4.0)	10.8 (6.8)					
D7R XR (US)	2EN	95-01	171 (230)	27 776 (61,236)	2.0 (6'6")	6.04 (19'9")	PS/DS	3.5 (2.3)	6.4 (4.0)	10.8 (6.8)					
D7R XR	5MR	97-02	171 (230)	27 776 (61,236)	2.0 (6'6")	6.04 (19'9")	PS/DS	3.5 (2.3)	6.4 (4.0)	10.8 (6.8)					
D7H LGP (US)	80Z*	85-90	215/—	25 237 (55,638)	2.235 (7'4") 3.371 (11'1")	4.619 (15'2") 3.503 (11'6")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.4)					
D7R LGP	4SR	96-02	179 (240)	29 500 (65,036)	2.24 (7'4")	5.8 (19'0")	PS/FTC	3.5 (2.3)	6.4 (4.0)	10.8 (6.8)					

*D7H models prior to Series II. Product identification number prefix still in use for current product.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D7H LGP (US)	4FG*	87-90	230/—	25 894 (57,086)	2.235 (7'4") 3.377 (11'1")	4.624 (15'2") 3.505 (11'6")	PS/DS	3.7 (2.3)	6.4 (4.0)	11.1 (6.9)				
D7R LGP (US)	3DN	95-01	179 (240)	30 605 (67,472)	2.24 (7'4")	5.8 (19'0")	PS/DS	3.5 (2.3)	6.4 (4.0)	10.8 (6.8)				
D7R LGP (US)	9HM	95-01	179 (240)	29 500 (65,036)	2.24 (7'4")	5.8 (19'0")	PS/FTC	3.5 (2.3)	6.4 (4.0)	10.8 (6.8)				
D7H (JPN)	4AB*	86-90	215/—	23 647 (52,134)	1.981 (6'6") 2.869 (9'5")	4.619 (15'2") 3.421 (11'3")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.4)				
D7H (JPN)	2SB*	86-91	215/—	23 570 (51,960)	1.981 (6'6") 2.869 (9'5")	4.619 (15'2") 3.421 (11'3")	DD	16 834 (37,113)	12 861 (28,353)	9703 (21,390)	7436 (16,394)	5522 (12,173)	3940 (8686)	
D7H (JPN)	2RG*	88-90	215/—	24 351 (53,683)	1.981 (6'6") 2.871 (9'5")	4.624 (15'2") 3.429 (11'3")	PS/DS	3.7 (2.3)	6.4 (4.0)	11.1 (6.9)				
D7R LGP (JPN)	6ER	96-02	179 (240)	30 605 (67,472)	2.24 (7'4")	5.8 (19'0")	PS/DS	3.5 (2.3)	6.4 (4.0)	10.8 (6.8)				
D7H LGP (JPN)	5WB*	86-90	215/—	25 237 (55,638)	2.235 (7'4") 3.371 (11'1")	4.619 (15'2") 3.503 (11'6")	PS	3.9 (2.4)	6.8 (4.2)	11.9 (7.4)				
D7H LGP (JPN)	82Z*	86-91	215/—	25 445 (56,096)	2.235 (7'4") 3.371 (11'1")	4.619 (15'2") 3.503 (11'6")	DD	16 834 (37,113)	12 861 (28,353)	9703 (21,390)	7436 (16,394)	5522 (12,173)	3940 (8686)	
D7H LGP (JPN)	3XG*	88-90	230/—	25 894 (57,086)	2.235 (7'4") 3.377 (11'1")	4.624 (15'2") 3.505 (11'6")	PS/DS	3.7 (2.3)	6.4 (4.0)	11.1 (6.9)				

*D7H models prior to Series II. Product identification number prefix still in use for current product.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models

Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						Remarks
								1st	2nd	3rd	4th	5th	6th	
D8	1H	35-41	110/95	14 790 (32,600)	1.98 (6'6") 2.64 (8'8")	4.64 (15'3") 2.28 (7'6")	*	9680 (21,350)	6870 (15,150)	5720 (12,610)	4800 (10,590)	3860 (8520)	2740 (6050)	RD-8 with 192 cm (78") gauge
D8	8R	41-45	131/113	15 490 (34,160)	1.98 (6'6") 2.64 (8'8")	4.64 (15'3") 1.85 (6'1")	**	13 060 (28,800)	9750 (21,500)	7940 (17,500)	6800 (15,000)	5620 (12,400)	3990 (8800)	
D8	2U	45-53	148/130	16 470 (36,310)	1.98 (6'6") 2.64 (8'8")	4.85 (15'10") 2.18 (7'2")	DD	13 560 (29,900)	9840 (21,700)	7120 (15,700)	5400 (11,900)	3900 (8600)		HP increase, DD transmission
D8	13A	53-55	185/150	16 866 (37,150)	1.98 (6'6") 2.64 (8'8")	4.88 (16'1") 2.18 (7'2")	DD	20 358 (44,840)	12 939 (28,500)	8926 (19,660)	6955 (15,320)	4935 (10,870)		
D8D, G	15A	55-57	191/155	16 310 (35,925)	1.98 (6'6") 2.58 (8'6")	5.23 (17'2") 2.23 (7'8")	TC							
D8E, F	14A	55-57	191/155 Belt	17 734 (39,060)	1.98 (6'6") 2.64 (8'8")	4.88 (16'1") 2.26 (7'6")	DD	20 439 (45,020)	16 135 (35,540)	10 964 (24,150)	7373 (16,240)	4953 (10,910)		
D8H	35A	59-61	235	20 924 (46,032)	2.13 (7'0") 2.87 (9'1")	5.20 (17'1") 2.39 (7'10")	TC							
D8H	36A	58-66	235/185	21 400 (47,180)	2.13 (7'0") 2.87 (9'1")	5.20 (17'1") 2.39 (7'10")	DD	19 958 (44,400)	15 648 (34,500)	10 931 (24,100)	8051 (17,750)	5869 (13,000)	3832 (8450)	
D8H	46A	58-74	270	21 863 (48,210)	2.13 (7'0") 2.87 (9'1")	5.20 (17'1") 2.39 (7'10")	PS							
D8K	76V	74-82	300	31 980 (69,300)†	2.13 (7'0") 3.05 (10'0")	5.26 (17'3") 2.44 (8'0")	DD	25 400 (56,000)	18 930 (41,740)	12 990 (28,640)	9370 (20,650)	6610 (14,580)	4090 (9010)	Turbocharged, Sealed and Lubricated Track
D8K	77V	74-82	300	31 430 (70,500)*	2.13 (7'0") 3.05 (10'0")	5.26 (17'3") 2.44 (8'0")	PS							
D8L	53Y 7JC 7YB	82-86 84-90 85-92	335	37 305 (82,243)	2.2 (7'3") 2.84 (9'4")	4.95 (16'2") 3.79 (12'5")	PS							
D8L SA	4FB	84-87	400/325	36 650 (80,820)	2.54 (8'4") 3.11 (10'3")		DD	31 679 (69,840)	23 115 (50,960)	17 196 (37,910)	12 388 (27,310)	9154 (20,180)	6428 (14,170)	

* Power transmitted through dry tape flywheel clutch to selective type hinge speed gear set.

** Power transmitted through flexible and over center engagement, dry flywheel clutch with metallic friction surfaces. Selective type change speed gear set.

† Approximate operating weight. Includes lubricants, coolant, full fuel tank, hydraulic control, 8S Bulldozer, ROPS canopy and operator.

All other weights listed in this column are shipping weights.

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						
								1st	2nd	3rd	4th	5th	6th	
D8N	9TC 5TJ	87-92	285	37 462	2.08	4.95	PS	3.5 (2.2)	6.2 (3.9)	10.8 (6.7)				
		92-95	285	(82,590)	(6'10")	(16'3")								
D8R Series II (US)	6YZ	00-04	310	37 830 (83,400)	2.08	6.91	PS	3.4 (2.1)	6.0 (3.7)	10.6 (6.6)				
					(6'10")	(22'8")								
D8R Series II (BRAZIL)	AKA	2000	231/310	37 830 (83,400)	2.08	6.91	PS	3.4 (2.1)	6.0 (3.7)	10.6 (6.6)				
					(6'10")	(22'8")								
D9D	18A	55-56	286/230	25 772 (56,765)	2.29	5.46	DD	27 631 (60,860)	21 207 (46,710)	15 423 (33,970)	10 706 (23,580)	7658 (16,670)	4958 (10,920)	
					3.03	2.67								2.6
D9D	18A	56-59	320/260	26 125 (57,543)	2.29	5.46	DD	28 603 (63,000)	23 835 (52,500)	16 617 (36,600)	12 167 (26,800)	9171 (20,200)	6106 (13,450)	
					3.03	2.67								
D9D	19A	55-56	286/230	25 729 (56,670)	2.29	5.46	TC	6.6 (4.1)	9.0 (5.6)	12.6 (7.8)				
					3.03	2.67					(7'6")	(17'11")		
D9D	19A	56-59	320/260	26 238 (57,990)	2.29	5.46	TC	6.6 (4.1)	9.5 (5.9)	13.0 (8.1)				
					3.03	2.68					(7'6")	(17'11")		
D9E	50A	59-60	335	27 016 (59,506)	2.29	5.50	TC	6.8 (4.2)	9.7 (6.0)	13.2 (8.2)				
					3.03	2.70					(7'6")	(18'1")		
D9D	34A	59-61	335	27 167 (59,837)	2.29	5.50	PS	4.2 (2.6)	7.2 (4.5)	11.2 (7.0)				
					3.03	2.70					(7'6")	(18'1")		
D9E	49A	59-60	335/268	26 957 (59,375)	2.29	5.50	DD	2.7 (1.7)	3.5 (2.2)	4.8 (3.0)	6.4 (4.0)	8.2 (5.1)	11.4 (7.1)	
					3.03	2.70								(7'6")
D9G	66A	61-74	385	31 072 (68,500)	2.29	5.50	PS	3.9 (2.4)	6.8 (4.2)	10.5 (6.5)				
					3.10	2.10					(7'6")	(18'1")		
D9R (CB) (US)	ACL	00-04	410	49 147 (108,350)	2.25	6.84	PS	3.8 (2.4)	6.8 (4.2)	11.9 (7.4)				
					3.30	3.99					(7'5")	(22'5")		
D9R (DS) (US)	ABK	00-04	410	49 510 (109,150)	2.25	6.84	PS	3.8 (2.4)	6.8 (4.2)	11.9 (7.4)				
					3.30	3.99					(7'5")	(22'5")		

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models | Track-Type Tractors

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						Remarks
								1st	2nd	3rd	4th	5th	6th	
S × S D9G	29N	69-74	770	86 200* (190,000)	5.8*	8.0◄	PS	3.9 (2.4)	6.8 (4.2)	10.0 (6.2)	L.H. of S × S D9G			
	7.3**				2.8◄◄	R.H. of S × S D9G								
Dual D9G	90J	69-74	770	79 470* (175,200)	2.3*	12.9◄	PS	3.9 (2.4)	6.8 (4.2)	10.5 (6.5)	Front of Dual D9G			
	3.3**				3.1◄◄	Rear of Dual D9G								
S × S D9H	99V	74-77	820	83 400* (183,900)	5.8*	9.0◄	PS	4.0 (2.5)	6.9 (4.3)	10.8 (6.7)	L.H. of S × S D9H			
	7.3**				2.9◄◄	R.H. of S × S D9H								
Dual D9H	97V	74-80	820	81 100* (178,800)	2.3*	12.9◄	PS	4.0 (2.5)	6.9 (4.3)	10.8 (6.7)	Front of Dual D9H			
	3.3**				3.1◄◄	Rear of Dual D9H								
D9H	90V	74-81	410	32 840 (72,400)	2.3*	5.6 (18'5")	PS	4.0 (2.5)	6.9 (4.3)	10.8 (6.7)	Standard Model			
					3.0	2.7◄◄								
D9L	14Y	80-87	460	52 055 (114,656)	2.5	5.32 (17'5")	PS	3.9 (2.4)	7.2 (4.5)	12.4 (7.7)				
					3.11	4.41 (14'6")								
D9N	1JD	86-94	370	42 816 (96,196)	2.55	5.17 (16'11.5")	PS	3.9 (2.4)	6.9 (4.3)	12.1 (7.5)				
	6XJ	93-95			2.43	3.91 (9'7")								
D10	84W	78-86	700	88 245 (194,140)	2.9	5.92 (19'8")	PS	3.9 (2.4)	6.8 (4.2)	11.6 (7.2)	Width 2.2 m (7'0")			
	76X										3.65	4.63◄◄	2.9 m (9'6") gauge 1.9 x 2.7 m (6'4" × 8'10") gauge Width 3.45 m (11'4")	
D10N	2YD	87-93	520	66 400 (147,405)	2.55	5.89 (18'4")	PS	4.0 (2.5)	7.1 (4.4)	12.5 (7.7)				
	3SK	93-96			3.30	4.45 (14'7")								
D10R	AKT	01-04	580	65 400 (144,200)	2.55	9.16 (30'0")	PS	4.0 (2.5)	7.1 (4.4)	12.5 (7.7)				
					3.74	4.27 (14'0")								

* Gauge of both tractors combined.

** Width to outside of dozer blade.

* Approximate weight of both machines plus Bulldozer, hydraulic controls, coolant and 5% fuel. (D10, D11N, D11R includes SS ripper)

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

◄ Length including dozer blade.

◄◄ Overall height excluding stack and canopy.

Track-Type Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Gauge m (ft) and Width m (ft)	Length m (ft) and Height m (ft)	Transmission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)						Remarks	
								1st	2nd	3rd	4th	5th	6th		
D11N	74Z	86-93	770	95 900 (211,000)	2.90 (9'6")	6.16 (20'3")	PS								
	4HK	93-96		97 450 (214,850)	3.65 (12'0")	4.65 (15'3")		3.9 (2.4)	6.8 (4.4)	11.6 (7.2)					
D11R	8ZR	96-97	770	98 413 (216,963)	2.90 (9'6")	6.16 (20'3")	PS	3.9 (2.4)	6.8 (4.4)	11.6 (7.2)					
					3.65 (12'0")	4.65 (15'3")									
D11R	7PZ	1997	634/850	104 590 (230,100)	2.90 (9'6")	10.83 (35'6")	PS								
					4.37 (14'4")	4.66 (15'3")		3.9 (2.4)	6.8 (4.2)	11.8 (7.3)					
D11R CD	AAF	1997	634/850	104 590 (230,100)	2.90 (9'6")	10.50 (34'5")	PS								
					4.37 (14'4")	4.66 (15'3")		3.9 (2.4)	6.8 (4.2)	11.8 (7.3)					

NOTE: Power Shift models show speeds only, not drawbar pull.

NOTE: Track-Type Tractor weights do not include blades until 1967.

Former Models

Track-Type Tractors

- Made Outside U.S.A.

TRACK-TYPE TRACTORS MANUFACTURED OUTSIDE U.S.A.

Source	Model	Product Ident. No. Prefix	Years Built	Horsepower Flywheel/ Drawbar	Transmission	Gauge m (ft)
U.K.	D4C	24A	60-64	63/50	DD	1.52 (5'0")
	D4D	88A	64-67	65/52	DD	1.52 (5'0")
	D6C	82A	64-68	120/93	DD	1.88 (6'2")
	D6C	83A	64-68	120/—	PS	1.88 (6'2")
	D6C	46J	71-77	140/—	DD	1.88 (6'2")
	D6C	47J	71-77	140/—	PS	1.88 (6'2")
	D8H	52A	59-61	235/—	PS	2.13 (7'0")
	D8H	22A	59-66	235/185	DD	2.13 (7'0")
	D8H	68A	60-66	235/—	PS	2.13 (7'0")
	D8K	66V	74-82	300/—	PS	2.13 (7'0")
Brazil	D4D	97F	69-78	75/—	DD	1.52 (5'0")
	D4D	74U	71-78	75/—	PS	1.52 (5'0")
	D6C	24U	71-77	120/93	PS	1.88 (6'2")
	D6C	23U	73-77	120/93	DD	1.88 (6'2")
	D6D	74W	77-92	140/—	DD	1.88 (6'2")
	D6D	75W	77-92	140/—	PS	1.88 (6'2")
	D6D	9FK	92-96	140/—	PS	1.88 (6'2")
	D6E	2MJ	92-96	155/—	PS	1.88 (6'2")
	D6D	19B	85-91	140/—	PS	1.88 (6'2")
	D6M XL	5WR	96-02	104/140	PS	1.89 (6'2")
	D6M XL	6LR	96-02	104/140	PS	1.89 (6'2")
	D8L	7JC	84-90	335/—	PS	2.2 (7'3")
	D8L	7YB	85-92	335/—	PS	2.2 (7'3")
	D8N	7TK	93-95	285/—	PS	2.08 (6'10")
	D8R	9EM	95-	305/—		
D8R Series II	AKA	00-04	310	PS	2.08 (6'10")	
D8R Series II	AKA	00-04	310	PS	3.05 (10'0")	
Australia	D4	29A	59-61	63/50	DD	1.12 (3'8")
	D4	30A	59-60	63/50	DD	1.52 (5'0")
	D4C	54A	60-62	63/52	DD	1.12 (3'8")
	D4C	55A	60-62	65/52	DD	1.52 (5'0")
	D4D	85A	63-68	65/52	DD	1.52 (5'0")
	D5	51H	68-68	93/75	DD	1.88 (6'2")
	D5	52H	68-69	93/—	PS	1.88 (6'2")
	D6	31A	58-60	93/75	DD	1.52 (5'0")
	D6	32A	58-60	93/75	DD	1.18 (6'2")
	D6B	56A	60-66	90/73	DD	1.52 (5'0")
	D6B	57A	60-68	90/73	DD	1.88 (6'2")
	D6C	71A	63-68	120/93	DD	1.88 (6'2")
	D6C	73A	63-68	120/—	PS	1.88 (6'2")
	D6C	55J	69-72	125/—	DD	1.88 (6'2")
	D6C	56J	69-72	125/—	PS	1.88 (6'2")

TRACK-TYPE TRACTORS MANUFACTURED OUTSIDE U.S.A. (cont'd)

Source	Model	Product Ident. No. Prefix	Years Built	Horsepower Flywheel/ Drawbar	Transmission	Gauge m (ft)
France	D4C	69A	61-63	63/50	DD	1.52 (5'0")
	D4D	86A	63-68	65/52	DD	1.52 (5'0")
	D4D LGP	18J	66-68	65/52	DD	1.79 (5'10")
	D4D	58J	67-68	65/—	PS	1.52 (5'0")
	D4E	68X	78-86	80/—	DD	1.52 (5'0")
	D4E	69X	78-85	80/—	PS	1.52 (5'0")
	D4E LGP	71X	78-85	80/—	DD	1.77 (5'10")
	D4E LGP	72X	78-86	80/—	PS	1.77 (5'10")
	D5	62J	69-77	105/—	DD	1.88 (6'2")
	D5	63J	69-77	105/—	PS	1.88 (6'2")
	D5 LGP	6R	70-77	105/—	PS	2.06 (6'9")
	D5 LGP	12R	70-77	105/—	DD	2.06 (6'9")
	D5B	43X	77-85	105/—	DD	1.88 (6'2")
	D5B	44X	77-86	105/—	PS	1.88 (6'2")
	D5B LGP	45X	77-86	105/—	DD	2.06 (6'9")
	D5B LGP	46X	77-86	105/—	PS	2.06 (6'9")
	D5B	8MB	84-86	105/—	PS	1.52 (5'0")
	D5H	8RC	85-96	120/—	PS	1.80 (5'11")
	D5H LGP	1DD	86-96	130/—	PS	2.16 (7'1")
	D5H XL	8RJ	86-96	130/—	PS	1.89 (6'2")
	D5H	7NC	85-96	120/—	DD	1.80 (5'11")
	D5H LGP	9HC	85-96	130/—	DD	2.16 (7'1")
	D5M XL	4BR	96-02	82/110	PS	1.77 (5'10")
	D5M XL	6GN	96-02	82/110	PS	1.77 (5'10")
	D5M LGP	3DR	96-02	82/110	PS	2.00 (6'7")
	D5M LGP	3CR	96-02	82/110	PS	2.00 (6'7")
	D6M XL	9ZM	96-02	104/140	PS	1.89 (6'2")
D6M XL	3WN	96-02	104/140	PS	1.89 (6'2")	
D6M LGP	2RN	96-02	104/140	PS	2.16 (7'1")	
D6M LGP	4JN	96-02	104/140	PS	2.16 (7'1")	
Scotland	D6D	19X	78-86	140/—	DD	1.88 (6'2")
	D6D	20X	78-86	140/—	PS	1.88 (6'2")
	D6D	01Y	79-87	125/—	PS	1.88 (6'2")
Glasgow	D6H	7PC	86-87	165/—	PS	1.88 (6'2")
	D6H LGP	8YC	86-87	165/—	PS	2.23 (7'4")
Japan	D3	79U	73-79	62/—	PS	1.42 (4'8")
	D3	82U	73-78	62/—	PS	1.42 (4'8")
	D3 LGP	6N	73-79	62/—	PS	1.65 (5'5")
	D3 LGP	83U	73-79	62/—	PS	1.65 (5'5")
	D3B	23Y	79-87	65/—	PS	1.42 (4'8")
	D3B LGP	24Y	79-87	65/—	PS	1.65 (5'5")
	D3B	27Y	79-87	65/—	PS	1.42 (4'8")
	D3B LGP	28Y	79-87	65/—	PS	1.65 (5'5")
	D3B	3YC	85-87	65/—	DD	1.42 (4'8")
	D3B LGP	5MC	85-87	65/—	DD	1.65 (5'5")
	D3C	5KG	87-90	67/—	PS	1.42 (4'7")
	D3C Series II	7JG/4HJ	90-93	70/—	PS	1.42 (4'7")
	D3C LGP	1PJ	87-90	67/—	PS	1.65 (5'4")
	D3C LGP Series II	8GD/5CJ	90-93	70/—	PS	1.65 (5'4")

Former Models

Track-Type Tractors
 ● Made Outside U.S.A.

TRACK-TYPE TRACTORS MANUFACTURED OUTSIDE U.S.A. (cont'd)

Source	Model	Product Ident. No. Prefix	Years Built	Horsepower Flywheel/ Drawbar	Transmission	Gauge m (ft)
Japan (cont'd)	D4D LGP	67A	65-68	65/52	DD	1.79 (5'10")
	D4D	91A	65-68	65/52	DD	1.52 (5'0")
	D4E	50X	77-86	80/—	DD	1.52 (5'0")
	D4E	51X	77-86	80/—	PS	1.52 (5'0")
	D4E LGP	52X	77-86	80/—	DD	1.77 (5'10")
	D4C	1RJ	87-90	78/—	PS	1.42 (4'7")
	D4C Series II	7KG	90-93	80/—	PS	1.42 (4'7")
	D4C LGP	2CJ	87-90	78/—	PS	1.65 (5'4")
	D4C LGP Series II	98G	90-93	80/—	PS	1.65 (5'4")
	D4H	8PB	85-96	90/95	PS	1.67 (5'5")
	D4H LGP	9DB	85-96	105/—	PS	2.0 (6'7")
	D4H	2AC	85-92	90/95	DD	1.67 (5'5")
	D4H LGP	3AC	85-90	90/95	DD	2.0 (6'7")
	D4H XL	8PJ	92-96	105/—	PS	1.77 (5'10")
	D4H LGP	9GJ	92-96	105/—	PS	2.0 (6'7")
	D4H LGP	4NK	92-93	105/—	DD	2.0 (6'7")
	D5	37J	67-68	93/75	DD	1.88 (6'2")
	D5 LGP	98A	67-68	93/75	DD	2.06 (6'9")
	D5	67J	68-77	105/—	DD	1.88 (6'2")
	D5	97J	71-76	105/—	PS	1.88 (6'2")
	D5 LGP	68J	68-77	105/—	DD	2.06 (6'9")
	D5B	47X	77-86	105/—	DD	1.88 (6'2")
	D5B	48X	77-86	105/—	PS	1.88 (6'2")
	D5B LGP	49X	77-86	105/—	DD	2.06 (6'9")
	D5C	6PJ	91-93	90/—	PS	1.54 (5'1")
	D5C LGP	3MK	91-93	90/—	PS	1.72 (5'8")
	D5H	3MD	86-96	120/—	PS	1.80 (5'11")
	D5H LGP	4KD	86-96	130/—	PS	2.16 (7'1")
	D5H	1YD	86-96	120/—	DD	1.80 (5'11")
	D5H LGP	2SD	86-96	130/—	DD	2.16 (7'1")
	D5M XL	4JS	96-	82/110	PS	1.77 (5'10")
	D5M XL	5ES	96-02	82/110	PS	1.77 (5'10")
	D5M LGP	5FS	96-	82/110	PS	2.00 (6'7")
	D5M LGP	6AS	96-02	82/110	PS	2.00 (6'7")
	D5M LGP	7LR	97-02	78/105	DDPS	2.00 (6'7")
	D6B	37H	66-67	93/75	DD	1.88 (6'2")
	D6B LGP	38H	66-67	93/75	DD	2.06 (6'9")
	D6C	41A	66-68	120/93	DD	1.88 (6'2")
	D6C	96A	66-68	120/93	PS	1.88 (6'2")
	D6C	26K	68-77	125/—	DD	1.88 (6'2")
	D6C	69C	68-77	125/—	PS	1.88 (6'2")
	D6C LGP	90B	71-77	140/—	DD	2.11 (6'11")
	D6D LGP LS	6HC	86-96	160/—	DD	1.88 (6'2")
	D6D	31X	86-98	140/—	PS	1.88 (6'2")
	D6D	30X	85-96	140/—	DD	1.88 (6'2")
	D6D PTNR	5YB	88-96	160/—	PS	1.88 (6'2")
	D6M XL	2YS	96-	104/140	PS	1.89 (6'2")
	D6M XL	4HS	96-02	104/140	PS	1.89 (6'2")
	D6M LGP	4GS	96-	104/140	PS	2.16 (7'1")
	D6M LGP	5NR	96-02	104/140	PS	2.16 (7'1")
	D7H	25B	85-92	215/—	DD	1.98 (6'6")
						2.54 (8'5")
	D7H LGP	82Z	85-92	215/—	DD	2.23 (7'4")
						3.15 (10'4")



AGRICULTURAL TRACTORS

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Height m (ft) Gauge m (ft)	Drawbar Pull kg (lb)* and Forward Speed km/h (mph)							
						1st	2nd	3rd	4th	5th	6th	7th	8th
						Challenger 35	8DN	94-98	175/150	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47* (60")*	8604 (18,968)	8499 (18,737)
Challenger 35	8RD	99-01	175/150	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47 (60")	8604 (18,968)	8499 (18,737)	8314 (18,329)	7851 (17,307)	7161 (15,787)	6694 (14,757)	5949 (13,116)	5147 (11,348)
Challenger 35	ADK	99-01	175/150	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 2.03 (80")	8604 (18,968)	8499 (18,737)	8314 (18,329)	7851 (17,307)	7161 (15,787)	6694 (14,757)	5949 (13,116)	5147 (11,348)
Challenger MT735		01-02	235/185	10 977 - 20 400 (24,200 - 45,000)	3.37 (11'1")	12 680 (27,900)	12 680 (27,900)	12 680 (27,900)	10 890 (23,950)	9130 (20,090)	8105 (17,830)	7187 (15,810)	6388 (14,050)
Challenger 45	1DR	94-98	200/170	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47* (60")*	8675 (19,125)	8675 (19,125)	8675 (19,125)	8255 (18,199)	7710 (16,997)	7318 (16,134)	6757 (14,897)	5891 (12,987)
Challenger 45	ABF	99-01	200/170	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47 (60")	8675 (19,125)	8675 (19,125)	8675 (19,125)	8255 (18,199)	7710 (16,997)	7318 (16,134)	6757 (14,897)	5891 (12,987)
Challenger 45	3BK	99-01	200/170	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 2.03 (80")	8675 (19,125)	8675 (19,125)	8675 (19,125)	8255 (18,199)	7710 (16,997)	7318 (16,134)	6757 (14,897)	5891 (12,987)
Challenger MT745		01-02	255/205	10 977 - 20 400 (24,200 - 45,000)	3.37 (11'1")	12 680 (27,900)	12 680 (27,900)	12 680 (27,900)	11 828 (26,020)	9920 (21,820)	8806 (19,370)	7808 (17,180)	6941 (15,270)
Challenger 55	7DM	96-98	225/191	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47* (60")*	8675 (19,125)	8675 (19,125)	8675 (19,125)	8675 (19,125)	8255 (18,200)	7802 (17,200)	7188 (15,848)	6593 (14,535)
Challenger 55	AEN	99-01	225/191	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 2.03 (80")	8675 (19,125)	8675 (19,125)	8675 (19,125)	8675 (19,125)	8255 (18,200)	7802 (17,200)	7188 (15,848)	6593 (14,535)
Challenger 55	6NN	99-01	225/191	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47 (60")	8675 (19,125)	8675 (19,125)	8675 (19,125)	8675 (19,125)	8255 (18,200)	7802 (17,200)	7188 (15,848)	6593 (14,535)
Challenger MT755		01-02	290/235	10 097 - 20 400 (24,200 - 45,000)	3.37 (11'1")	12 682 (27,900)	12 682 (27,900)	12 682 (27,900)	12 682 (27,900)	11 302 (24,865)	10 032 (22,070)	8896 (19,570)	7908 (17,397)
Challenger MT765		01-02	306/255	10 977 - 20 411 (24,200 - 45,000)	3.37 (11'1")	12 682 (27,900)	12 682 (27,900)	12 682 (27,900)	12 682 (27,900)	11 894 (26,168)	10 558 (23,228)	9362 (20,597)	8322 (18,308)

*Base gauge (no spacers) of 1.47 m (60") available on 8DN1-849, 1DR1-1699, 7DM1-849. Base gauges (no spacers) of 1.47 m (60") and 2.03 m (80") available on 8DN850-Up, 1DR1700-Up, and 7DM850-Up.

Former Models

Agricultural Tractors

Agricultural Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Height m (ft) Gauge m (ft)	Drawbar Pull kg (lb)* and Forward Speed km/h (mph)							
						9th	10th	11th	12th	13th	14th	15th	16th
						Challenger 35	8DN	94-98	175/150	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47* (60")*	4436 (9779)	3740 (8244)
Challenger 35	8RD	99-01	175/150	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47 (60")	4436 (9779)	3740 (8244)	3171 (6991)	2601 (5735)	2154 (4749)	1771 (3904)	1449 (3194)	1196 (2637)
Challenger 35	ADK	99-01	175/150	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 2.03 (80")	4436 (9779)	3740 (8244)	3171 (6991)	2601 (5735)	2154 (4749)	1771 (3904)	1449 (3194)	1196 (2637)
Challenger MT735		01-02	235/185	10 977 - 20 400 (24,200 - 45,000)	3.37 (11'1")	5678 (12,490)	5047 (11,100)	4476 (9850)	3974 (8742)	3339 (7346)	2628 (5782)	2077 (4568)	1635 (3598)
Challenger 45	1DR	94-98	200/170	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47* (60")*	5063 (11,162)	4170 (9193)	3547 (7821)	2920 (6438)	2427 (5351)	2003 (4416)	1646 (3629)	1365 (3010)
Challenger 45	ABF	99-01	200/170	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47 (60")	5063 (11,162)	4170 (9193)	3547 (7821)	2920 (6438)	2427 (5351)	2003 (4416)	1646 (3629)	1365 (3010)
Challenger 45	3BK	99-01	200/170	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 2.03 (80")	5063 (11,162)	4170 (9193)	3547 (7821)	2920 (6438)	2427 (5351)	2003 (4416)	1646 (3629)	1365 (3010)
Challenger MT745		01-02	255/205	10 977 - 20 400 (24,200 - 45,000)	3.37 (11'1")	6169 (13,573)	5484 (12,065)	4864 (10,700)	4317 (9498)	3628 (7981)	2856 (6282)	2256 (4963)	1777 (3909)
Challenger 55	7DM	96-98	225/191	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47* (60")*	5663 (12,484)	4676 (10,310)	3990 (8796)	3295 (7264)	2747 (6056)	2275 (5015)	1876 (4135)	1562 (3443)
Challenger 55	AEN	99-01	225/191	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 2.03 (80")	5663 (12,484)	4676 (10,310)	3990 (8796)	3295 (7264)	2747 (6056)	2275 (5015)	1876 (4135)	1562 (3443)
Challenger 55	6NN	99-01	225/191	9838 - 12 133 (21,690 - 26,750)	3.05 (10'0") 1.47 (60")	5663 (12,484)	4676 (10,310)	3990 (8796)	3295 (7264)	2747 (6056)	2275 (5015)	1876 (4135)	1562 (3443)
Challenger MT755		01-02	290/235	10 097 - 20 400 (24,200 - 45,000)	3.37 (11'1")	7029 (15,464)	6248 (13,745)	5541 (12,190)	4919 (10,821)	4133 (9093)	3253 (7157)	2570 (5655)	2024 (4454)
Challenger MT765		01-02	306/255	10 977 - 20 411 (24,200 - 45,000)	3.37 (11'1")	7397 (16,274)	6575 (14,466)	5831 (12,829)	5176 (11,388)	4350 (9569)	3424 (7533)	2705 (5951)	2130 (4687)

*Base gauge (no spacers) of 1.47 m (60") available on 8DN1-849, 1DR1-1699, 7DM1-849. Base gauges (no spacers) of 1.47 m (60") and 2.03 m (80") available on 8DN850-Up, 1DR1700-Up, and 7DM850-Up.

Agricultural Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Height m (ft) Gauge m (ft)	Drawbar Pull kg (lb)* and Forward Speed km/h (mph)									
						1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
						Challenger 65	7YC	86-90	270/200	14 061 (31,000)	3.24 (10'8") 2.15 (7'1")	14 825 (32,684)	10 393 (22,912)	8880 (19,577)	7701 (16,978)
Challenger 65B	7YC	91-92	285/225	14 060 (31,000)	3.24 (10'8") 2.15 (7'1")	14 893 (32,914)	11 074 (24,413)	9492 (20,926)	8252 (18,193)	7138 (15,737)	6109 (13,467)	5294 (11,672)	4545 (10,019)	3057 (6740)	1851 (4080)
Challenger 65C	2ZJ	93-95	285/225	14 330 (31,530)	3.24 (10'8") 2.29 (7'5")	12 587 (27,750)	9574 (21,106)	8186 (18,046)	7156 (15,775)	6147 (13,551)	5230 (11,530)	4497 (9914)	3855 (8498)	2701 (5955)	1637 (3610)
Challenger 65D	2ZJ	95-97	300	14 909 (32,875)	3.24 (10'8") 2.29 (7'5")	12 689 (27,975)	10 706 (23,603)	9161 (20,197)	7934 (17,492)	6837 (15,072)	5843 (12,881)	5005 (11,034)	4256 (9382)	3119 (6875)	2030 (4475)
Challenger 65E		97-02	310/277	15 186 (33,480)	3.4 (11'2")	15 098 (33,284)	10 808 (23,827)	9265 (20,425)	8096 (17,849)	6964 (15,352)	6017 (13,265)	5247 (11,567)	4469 (9853)	3396 (7488)	2279 (5025)
Challenger 70C	2YL	93-95	1st Gear 215/154 2nd & up 285/225	16 201 (35,685)	3.24 (10'8") 2.29 (7'5")	12 621 (27,825)	9574 (21,106)	8186 (18,046)	7156 (15,775)	6147 (13,551)	5230 (11,530)	4497 (9914)	3855 (8498)	2701 (5955)	1637 (3610)
Challenger 75	4CJ	91-92	325/256	14 060 (31,000)	3.24 (10'8") 2.15 (7'1")	15 391 (33,931)	12 371 (27,273)	10 753 (23,706)	9382 (20,684)	8073 (17,797)	6923 (15,263)	6017 (13,264)	5162 (11,379)	3588 (7910)	2181 (4830)
Challenger 75C	4KK	92-97	325/268	15 158 (33,419)	3.24 (10'8") 2.29 (7'5")	12 689 (27,975)	10 761 (23,724)	9329 (20,567)	8106 (17,871)	6932 (15,282)	5944 (13,105)	5095 (11,232)	4380 (9657)	3075 (6780)	1878 (4140)
Challenger 75D	5AR	96-97	330	14 878 (32,800)	3.24 (10'8") 2.29 (7'5")	12 884 (28,406)	12 562 (27,693)	10 919 (24,071)	9526 (21,003)	8197 (18,071)	7030 (15,498)	6109 (13,468)	5241 (11,554)	3643 (8031)	2225 (4904)
Challenger 75E		97-02	340/301	15 186 (33,480)	3.4 (11'2") 2.29 (7'6")	15 174 (33,452)	11 696 (25,785)	9402 (20,728)	8155 (17,979)	7015 (15,466)	6412 (14,135)	5543 (12,221)	4798 (10,578)	3502 (7722)	2447 (5395)
Challenger 85C	9TK	92-97	1-2 Gears 325/216 3-10 Gears 355/272	15 186 (33,480)	3.24 (10'8") 2.29 (7'5")	12 689 (27,975)	11 596 (25,565)	9544 (21,042)	8302 (18,304)	7089 (15,629)	6406 (14,122)	5490 (12,104)	4720 (10,406)	3146 (6935)	2024 (4461)
Challenger 85D	4GR	96-97	Gears 1-2 330 3-5 360 6-10 370	15 286 (33,700)	3.24 (10'8") 2.29 (7'5")	15 529 (34,234)	10 684 (23,553)	9599 (21,162)	8247 (18,181)	7175 (15,819)	6590 (14,528)	5705 (12,578)	4887 (10,774)	3825 (8432)	2461 (5425)
Challenger 85E		97-02	375/339	15 413 (33,980)	3.4 (11'2") 2.29 (7'6")	15 454 (34,070)	11 576 (25,520)	10 566 (23,294)	9177 (20,232)	7997 (17,629)	7268 (16,022)	6323 (13,940)	5417 (11,942)	3954 (8718)	2763 (6090)

*Drawbar pull figures for SA and SR models are max. at lug.

NOTE: Drawbar pull figures for the Challenger 65 is at max. power as found in University of Nebraska Tractor Test no. 1268. This test was performed on concrete. Therefore, usable drawbar pull may be less depending upon soil conditions.

Former Models | Agricultural Tractors

Agricultural Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight kg (lb)	Height m (ft) Gauge m (ft)	Drawbar Pull kg (lb)* and Forward Speed km/h (mph)									
						1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Challenger 95E		97-02	410/375	15 413 (33,980)	3.4 (11'2")	15 968	11 506	10 505	10 085	8729	7903	6865	5901	4308	3010
					2.29 (7'6")	(35,202)	(25,366)	(23,159)	(22,234)	(19,244)	(17,423)	(15,134)	(13,009)	(9497)	(6635)
D3B SA	2PC	85-87	101	6650 (14,670)	2.71 (8'11")	7634	6226	5306	4531	3888					
						(16,830)	(13,725)	(11,700)	(9990)	(8573)					
D3C SA	7JF	87-92	101	7202 (15,846)	2.71 (8'11")	5552	4521	3827	3235	2755					
					1.52 (5'0")	(12,250)	(9960)	(8450)	(7130)	(6070)					
D4D SA	20J	66-68	—/68	6750 (14,900)	2.44 (8'0")	4590	3928	3098	2631	2232					
					1.52 (5'0")	(10,120)	(8660)	(6830)	(5800)	(4920)					
D4D SA	84J	66	—/68	6470 (14,270)	2.67 (8'9")	4880	4170	3310	2840	2420					
					1.52 (5'0")	(10,750)	(9200)	(7300)	(6260)	(5330)					
D4E SA	7PB 2CB	84-89 84-91	97	7600 (16,760)	2.71 (8'11")	5901	5148	5831	5002	4433					
						(13,102)	(11,349)	(12,859)	(11,027)	(9773)					
D4E SA	29X	77-84	—/74	7585 (16,722)	2.72 (8'11")	5802	4986	4007	3814	2896					
					1.52 (5'0")	(12,791)	(10,993)	(8835)	(8408)	(6384)					
D4E SR		84-99	125/—	9400 (20,730)	1.93 (6'4")	5450	3744	5068	4408	3832					
					1.52 (5'0")	(12,010)	(8250)	(11,170)	(9715)	(8450)					
D5 SA	21J	67-67	—/90	9300 (20,400)	2.64 (8'8")	6620	5160	3990	3080	2290					
					1.88 (6'2")	(14,580)	(11,360)	(8740)	(6790)	(5030)					
D5 SA	98J	67-77	—/90	9660 (21,300)	2.95 (9'8")	6120	5180	4110	3640	2950	2250				
					1.88 (6'2")	(13,500)	(11,410)	(9950)	(7620)	(6500)	(4970)				
D5B SA	26X	77-84	—/90		2.77 (9'1")	6409	5384	4323	3688	3180	2486				
					1.88 (6'2")	(14,130)	(11,870)	(9530)	(8130)	(7010)	(5480)				
D5B SA	22X	77-82	105/—	11 283 (24,875)	2.77 (9'1")	8060	5030	3410	2290	1480					
					1.52 (5'0")	(17,770)	(11,100)	(7520)	(5060)	(3260)					
D5B SA	24X	77-84	105/—	11 619 (25,615)	2.77 (9'1")	3.5	6.1	10.1							
					1.52 (5'0")	(1.7)	(2.6)	(3.6)	(5.0)	(6.9)					

*Drawbar pull figures for SA and SR models are max. at lug.

NOTE: Drawbar pull figures for the Challenger 65 is at max. power as found in University of Nebraska Tractor Test no. 1268.

This test was performed on concrete. Therefore, usable drawbar pull may be less depending upon soil conditions.

Agricultural Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power FW/ Drawbar	Approx. Machine Weight (kg (lb))	Height m (ft) Gauge m (ft)	Drawbar Pull kg (lb)* and Forward Speed km/h (mph)													
						1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th				
D6C SA	17R	70-76	140	13 064 (28,800)	2.67 (8'9")	850 (18,750)	6970 (15,370)	5880 (12,780)	4810 (10,610)	4080 (9000)	3190 (7030)								
						4.0 (2.5)	4.8 (3.0)	5.6 (3.5)	6.4 (4.0)	7.4 (4.6)	8.8 (5.5)								
D6D SR	7XF	89-91	140	15 200 (33,500)	2.87 (9'5")	14 358 (31,645)	12 429 (27,394)	11 721 (25,833)	7067 (15,576)	6096 (13,436)	4931 (10,868)								
						2.0 (1.2)	2.9 (1.8)	4.1 (2.5)	6.5 (4.0)	7.4 (4.6)	8.9 (5.5)								
D6D SA 123-161 kW (165-215 HP)	38C	83-91	165	14 500 (32,000)	2.87 (9'5")	10 098 (22,243)	8510 (18,744)	9210 (20,287)	7789 (17,156)	6732 (14,828)	5456 (12,017)								
						4.5 (2.8)	5.3 (3.3)	6.1 (3.8)	7.1 (4.4)	8.2 (5.1)	9.8 (6.1)								
D6D SA 123-179 kW (165-240 HP)	19B	83-91	165	14 500 (32,000)	2.87 (9'5")	10 098 (22,243)	8510 (18,744)	7181 (15,817)	8732 (19,234)	7560 (16,651)	6144 (13,532)								
						4.5 (2.8)	5.3 (3.3)	6.1 (3.8)	7.1 (4.4)	8.2 (5.1)	9.8 (6.1)								
D6E SR	8FJ	91-96	155/216 121/170	14 960 (32,987)	2.03 (6'8") 1.88 (6'2")	11 308 (24,878)	7771 (17,097)	8130 (17,887)	6866 (15,105)	5926 (13,037)	3135 (6987)								
						3.0 (1.9)	4.3 (2.7)	5.8 (2.6)	6.8 (4.3)	7.7 (4.8)	9.3 (5.8)								
Ag 6 Generation One	05X	77-86	165/240	14 787 (32,600)	3.43 (11'3")	10 034 (22,120)	8455 (18,639)	7134 (15,727)	9041 (19,931)	7830 (17,268)									
						4.5 (2.8)	5.3 (3.3)	6.1 (3.8)	7.1 (4.4)	8.2 (5.1)									
Ag 6 Generation Two	05X	77-86	200/240	14 787 (32,600)	3.48 (11'5")	12 407 (27,353)	10 482 (23,110)	10 667 (23,514)	9091 (19,931)	7830 (17,263)									
						4.5 (2.8)	5.3 (3.3)	6.1 (3.8)	7.1 (4.4)	8.2 (5.1)									
D7G SA std. trans.	35N	80-86	250	18 462 (40,700)	3.2 (10'6")	19 101 (42,110)	13 622 (30,030)	11 358 (25,040)	10 015 (22,080)	8627 (19,020)	7584 (16,720)								
						3.5 (2.2)	4.8 (3.0)	5.6 (3.5)	6.4 (4.0)	7.2 (4.5)	8.2 (5.1)								
D7G SA std. trans. 168-186 kW (225-250 HP)		77-86	250	18 462 (40,700)	3.2 (10'6")	16 990 (37,424)	12 090 (26,631)	11 358 (25,040)	10 015 (22,080)	8627 (19,020)	7584 (16,720)								
						3.5 (2.2)	4.8 (3.0)	5.6 (3.5)	6.4 (4.0)	7.2 (4.5)	8.2 (5.1)								
D8L SA		84-87	400	36 650 (80,820)	3.87 (12'8") 2.2 (7'3")	40 252 (88,740)	39 466 (64,960)	22 013 (48,530)	15 953 (35,170)	11 880 (26,190)	8446 (18,620)								
						2.9 (1.8)	3.9 (2.4)	5.0 (3.1)	6.8 (4.2)	8.9 (5.5)	11.9 (7.4)								

*Drawbar pull figures for SA and SR models are max. at lug.

NOTE: Drawbar pull figures for the Challenger 65 is at max. power as found in University of Nebraska Tractor Test no. 1268.

This test was performed on concrete. Therefore, usable drawbar pull may be less depending upon soil conditions.



MOTOR GRADERS

Model	Product Ident. No. Prefix	Years Built	Horsepower, Rated	Approx. Ship Wt. kg (lb)	Wheel-base m (ft)	Length m (ft)	Width m (ft)	Mold-board Length m (ft)	Turning Radius m (ft)	Controls	Maximum Speed km/h (mph)	
											Forward	Rev.
212TD	79C	54-57	50	6030 (13,290)	5.03 (16'6")	6.68 (21'11")	2.07 (6'10")	3.05 (10'0")	11.10 (36'5")	Mech.	18.1 (11.2)	4.2 (2.6)
112	3U	47-59	70	8770 (19,330)	5.72 (18'9")	7.59 (24'11")	2.39 (7'10")	3.66 (12'0")	10.87 (35'8")	Mech.	25.7 (16.0)	6.4 (4.0)
112	81C	55-59	75	9435 (20,805)	5.72 (18'9")	7.59 (24'11")	2.39 (7'10")	3.66 (12'0")	10.74 (35'3")	Mech.	25.7 (16.0)	6.4 (4.0)
112E	68E(U.S.) 91G(U.S.)	59-64 64-68	85	9500 (20,900)	5.72 (18'9")	7.62 (25'0")	2.36 (7'9")	3.66 (12'0")	10.74 (35'3")	Mech.	29.3 (18.2)	9.3 (5.8)
112F	82F(U.S.) 46D(U.S.) 74H(U.S.) 89J(U.S.) 80J(AUSTL)	60-64 64-68 67-68 68-74 69-84	100	9800 (21,600)	5.72 (18'9")	7.82 (25'8")	2.36 (7'9")	3.66 (12'0")	10.70 (35'3")	Mech.	29.9 (18.6)	9.7 (6.0)
120	89G(U.S.)	64-67	115	10 480 (23,100)	5.71 (18'9")	7.62 (25'0")	2.36 (7'9")	3.66 (12'0")	10.74 (35'3")	Mech.	32.2 (20.0)	10.3 (6.4)
120	14K(U.S.)	67-69	125	10 600 (23,500)	5.71 (18'9")	7.80 (25'8")	2.36 (7'9")	3.66 (12'0")	10.74 (35'3")	Mech.	32.2 (20.0)	41.5 (25.8)
120	10R(U.S.)	69-74	125	10 700 (23,700)	5.85 (19'2")	7.95 (26'1")	2.36 (7'9")	3.66 (12'0")	10.90 (35'9")	Mech.	32.2 (20.0)	6.6 (4.1)
120	13U(U.S.)	71-74	125	11 000 (24,300)	5.85 (19'2")	7.95 (26'1")	2.36 (7'9")	3.66 (12'0")	10.90 (35'9")	Mech.	32.2 (20.0)	6.6 (4.1)
120B	64U(BRAZ)	72-89	125	12 000 (26,460)	5.85 (19'2")	7.92 (26'0")	2.36 (7'9")	3.66 (12'0")	10.90 (35'9")	Mech.	35.4 (22.0)	23.8 (14.8)
120G	87V(U.S.) 4HD(BRAZ) 11W(AUSTL) 82V(CAN)	73-95 86-95 75-95 74-80	125	12 859 (28,350)	5.69 (18'8")	7.92 (26'0")	2.45 (8'0")	3.66 (12'0")	6.7 (22'0")	Hyd.	40.9 (25.4)	40.9 (25.4)
120H	4MK(U.S.) 6NM(U.S.) 9YR(BRAZ) 2AN(AUSTL) 3GR(S.AFRICA)	95-02	125/140	12 520 (27,600)	5.86 (19'3")	8.26 (27'1")	2.44 (7'11")	3.66 (12'0")	7.2 (23'8")	Hyd.	42.6 (26.5)	33.7 (20.9)
130G	74V(U.S.) 12W(AUSTL)	73-95 75-89	135	13 050 (28,770)	5.92 (19'5")	8.30 (27'3")	2.45 (8'0")	3.66 (12'0")	7.3 (24'0")	Hyd.	39.4 (24.5)	39.4 (24.5)
135H	3YK(U.S.)	95-02	135/155	12 950 (28,550)	5.86 (19'3")	8.26 (27'1")	2.44 (7'11")	3.66 (12'0")	7.2 (23'8")	Hyd.	41.9 (26.0)	33.1 (20.6)
12	6M(U.S.)	39-42	66	9440 (20,820)	5.72 (18'9")	7.62 (25'0")	2.39 (7'10")	3.66 (12'0")	10.87 (35'8")	Mech.	24.5 (15.2)	6.1 (3.8)
12	9K(U.S.)	38-45	70	9590 (21,140)	5.72 (18'9")	7.62 (25'0")	2.39 (7'10")	3.66 (12'0")	10.87 (35'8")	Mech.	24.5 (15.2)	6.1 (3.8)
12	7T(U.S.)	45-47	75	9750 (21,500)	5.72 (18'9")	7.62 (25'0")	2.39 (7'10")	3.66 (12'0")	10.87 (35'8")	Mech.	24.5 (15.2)	6.1 (3.8)
12	8T(U.S.) 94C(AUSTL)	47-55 55-58	100	10 100 (22,375)	5.72 (18'9")	7.62 (25'0")	2.39 (7'10")	3.66 (12'0")	10.87 (35'8")	Mech.	31.1 (19.3)	6.6 (4.1)
12	70D-71D(U.S.) 80C(U.S.) 38E(AUSTL)	57-59 55-67 58-60	115	10 200 (22,410)	5.72 (18'9")	7.62 (25'0")	2.37 (7'10")	3.66 (12'0")	10.87 (35'8")	Mech.	31.1 (19.3)	10.1 (6.3)
12E	99E(U.S.) 21F(AUSTL) 17K(AUSTL)	59-65 60-68 68-75	115	11 100 (24,400)	5.72 (18'9")	8.03 (26'4")	2.36 (7'9")	3.66 (12'0")	10.90 (35'9")	Mech.	32.0 (19.9)	22.2 (13.8)
12F	73G(U.S.)	65-67	115	12 973 (28,600)	6.0 (19'8")	8.20 (26'10")	2.36 (7'9")	3.66 (12'0")	11.40 (37'5")	Hyd. Mech.	32.0 (19.9)	22.2 (13.8)

Motor Graders (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horsepower, Rated	Approx. Ship Wt. kg (lb)	Wheel-base m (ft)	Length m (ft)	Width m (ft)	Mold-board Length m (ft)	Turning Radius m (ft)	Controls	Maximum Speed km/h (mph)	
											Forward	Rev.
12F	89H(U.S.) 13K(U.S.)	69-73 67-73	125	12 973 (28,600)	6.00 (19'8")	8.20 (26'10")	2.36 (7'9")	3.65 (12'0")	11.40 (37'5")	Hyd. Mech.	34.3 (21.3)	41.5 (25.8)
12G	61M(U.S.) 3PL(BRAZ) 3WC(AUSTL)	73-95 93-95 85-95	135	13 554 (29,860)	5.92 (19'5")	8.30 (27'3")	2.45 (8'0")	3.66 (12'0")	7.30 (24'0")	Hyd.	39.4 (24.5)	39.4 (24.5)
12H	4XM(U.S.) 2LR(U.S.) 8MN(BRAZ) 2GS(BRAZ) 2WR(AUSTL)	95-02	140	14 247 (31,410)	6.10 (20'0")	8.57 (28'1")	2.44 (7'11")	3.66 (12'0")	7.40 (24'3")	Hyd.	39.7 (24.7)	31.3 (19.5)
140	14U(U.S.) 11R(U.S.) 55F(AUSTL) 24R(CAN)	71-74 70-74 71-75 71-74	150	13 109 (28,900)	5.84 (19'2")	7.95 (26'1")	2.44 (8'0")	3.66 (12'0")	10.97 (36'0")	Mech.	38.8 (24.1)	47.0 (29.2)
140B	61S(BRAZ)	81-87	150	13 620 (30,003)	6.14 (20'2")	8.07 (26'6")	2.39 (7'10")	3.96 (13'0")	11.60 (38'0")	Mech.	37.6 (23.4)	25.6 (15.9)
140G	72V(U.S.) 5MD(BRAZ) 13W(AUSTL) 81V(CAN)	73-95 87-95 75-95 74-80	150	14 102 (31,090)	5.92 (19'5")	8.33 (27'4")	2.45 (8'0")	3.66 (12'0")	7.30 (24'0")	Hyd.	41.0 (25.5)	41.0 (25.5)
140G AWD	72V(U.S.)	73-95	150	14 914 (32,880)	5.92 (19'5")	8.33 (27'4")	2.45 (8'0")	3.66 (12'0")	7.30 (24'0")	Hyd.	41.0 (25.5)	41.0 (25.5)
140H	22K(U.S.) 8KM(U.S.) 9TN(BRAZ) 3AS(BRAZ) 9ZN(AUSTL)	95-02	165/185	14 724 (32,460)	6.10 (20'0")	8.60 (28'3")	2.46 (8'1")	3.66 (12'0")	7.40 (24'3")	Hyd.	41.1 (25.5)	32.4 (20.2)
143H	1AL(U.S.)	95-02	165/185	15 023 (33,120)	6.10 (20'0")	8.60 (28'3")	2.46 (8'1")	3.66 (12'0")	7.40 (24'3")	Hyd.	41.1 (25.5)	32.4 (20.2)
14B	78E(U.S.) 64C(U.S.)	59-59 59-69	150	13 300 (29,280)	5.84 (19'2")	8.03 (26'4")	2.44 (8'0")	3.66 (12'0")	10.97 (36'0")	Mech.	34.8 (21.6)	11.3 (7.0)
14C	35F(U.S.)	59-61	150	12 973 (28,600)	5.84 (19'2")	8.03 (26'4")	2.44 (8'0")	3.66 (12'0")	10.97 (36'0")	Mech.	34.8 (21.6)	11.3 (7.0)
14D	96F(U.S.)	61-65	150	13 700 (30,300)	6.15 (20'2")	8.33 (27'4")	2.44 (8'0")	3.96 (13'0")	11.58 (38'0")	Mech.	34.1 (21.2)	23.5 (14.6)
14E	99G(U.S.)	65-68	150	13 699 (30,200)	6.15 (20'2")	8.33 (27'4")	2.44 (8'0")	3.96 (13'0")	11.58 (38'0")	Hyd. Mech.	36.4 (22.6)	24.9 (15.5)
14E	12K(U.S.) 72G(U.S.)	67-73 69-73	150	14 300 (31,600)	6.10 (20'2")	8.30 (27'4")	2.44 (8'0")	3.96 (13'0")	11.60 (38'0")	Hyd. Mech.	39.1 (24.3)	47.3 (29.4)
14G	96U(U.S.)	73-95	200	20 688 (45,610)	6.45 (21'2")	9.21 (30'3")	2.83 (9'3")	4.27 (14'0")	7.90 (25'11")	Hyd.	43.0 (26.8)	50.1 (31.1)
14H	7WJ(U.S.)	95-02	215	18 784 (41,410)	6.45 (21'2")	9.21 (30'2")	2.70 (8'10")	4.27 (14'0")	7.90 (25'11")	Hyd.	42.7 (26.5)	47.3 (29.4)
160H	9EJ(U.S.) 6WM(U.S.) 3GM(BRAZ) 2HS(BRAZ)	95-02	180/200	15 586 (34,360)	6.10 (20'0")	8.60 (28'3")	2.46 (8'1")	4.27 (14'0")	7.40 (24'3")	Hyd.	40.7 (25.3)	32.1 (20.0)
163H	5AK(U.S.)	95-02	180/200	16 538 (36,460)	6.10 (20'0")	8.60 (28'3")	2.46 (8'1")	4.27 (14'0")	7.40 (24'3")	Hyd.	40.7 (25.3)	32.1 (20.0)
16	49G(U.S.)	63-73	225	22 499 (49,600)	6.86 (22'6")	9.50 (31'2")	3.00 (9'10")	4.27 (14'0")	13.56 (44'6")	Hyd. Mech.	49.7 (30.9)	49.7 (30.9)
16G	93U(U.S.)	73-95	275	27 284 (60,150)	6.96 (22'10")	9.99 (32'8")	3.08 (10'1")	4.88 (16'0")	8.20 (27'0")	Hyd.	43.6 (27.1)	43.6 (27.1)
16H	6ZJ(U.S.)	95-02	275	24 748 (54,560)	6.96 (22'10")	9.99 (32'9")	2.99 (9'10")	4.88 (16'0")	8.20 (27'0")	Hyd.	44.5 (27.7)	42.3 (26.3)



HYDRAULIC EXCAVATORS (Track)

Model	Product Ident. No. Prefix COSA (US)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Track Gauge m (ft)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)
205 LC	(3HC) (4DC)	84-89	Deutz-67 Perkins-71	13 135 (28,957)	1.895 (6'2.5")	3.00 (9'10")	7.30 (23'11")	2.40 (7'10")	8.17 (26'10")	3290 (7300)
205B	5ZF	90-92	80	12 900 (28,443)	1.895 (6'2.5")	2.976 (9'9")	7.67 (25'2")	2.495 (8'2")	8.9 (29'2")	3740 (8250)
211 LC	(4EC) (5CC)	84-89	Deutz-84 Perkins-94	15 540 (34,260)	2.08 (6'9.9")	3.02 (9'11")	8.01 (26'3")	2.49 (8'2")	9.88 (32'5")	4240 (9340)
213 LC	3ZC	83-87	102	17 300 (38,140)	2.08 (6'10")	3.08 (10'1")	8.34 (27'4")	2.49 (8'2")	10.30 (33'9.5")	5127 (11,305)
215	(96L) (57Z) (14Z)	76-80 79-84	85 90	17 450 (38,480)	1.92 (6'4")	3.10 (10'1")	8.94 (29'4")	2.47 (8'0")	9.25 (30'4")	5090 (11,200)
215 SA	(57Y) (14Z)	82-84	90	19 440 (42,860)	2.18 (7'2")	3.22 (10'6")	8.94 (29'4")	2.73 (8'11")	9.23 (30'3")	5130 (11,300)
215B LC	(9YB)	84-87	105	18 510 (40,806)	1.92 (6'4")	3.10 (10'2")	8.94 (29'4")	2.44 (8'0")	9.25 (30'4")	5760 (12,700)
215C LC	(4HG)	87-89	115	19 570 (43,150)	1.92 (6'4")	3.1 (10'2")	8.94 (29'4")	2.42 (7'11")	9.29 (30'6")	7070 (15,200)
215D LC	(9TF)	89-92	125	19 900 (43,900)	1.92 (6'4")	3.2 (10'6")	9.0 (24'6")	2.44 (8'0")	9.23 (30'3")	6830 (14,700)
219	(5CF)	87-89	130	21 120 (46,550)	2.18 (7'2")	3.12 (10'3")	8.94 (29'4")	2.73 (8'11")	10.39 (34'1")	7080 (15,300)
219D	(5XG)	89-92	140	21 600 (47,500)	2.18 (7'2")	3.12 (10'3")	9.41 (30'10")	2.73 (8'11")	9.75 (32'0")	7670 (16,500)
219 LC	(5CF)	87-89	130	22 020 (48,550)	2.18 (7'2")	3.12 (10'3")	8.94 (29'4")	2.73 (8'11")	10.39 (34'1")	7080 (15,300)
219D LC	(5XG)	89-92	140	22 400 (49,300)	2.18 (7'2")	3.12 (10'3")	9.41 (30'10")	2.73 (8'11")	9.75 (32'0")	7670 (16,500)
225 LC	(51U)	72-86	135	23 900 (52,700)	2.64 (8'8")	3.17 (10'5")	9.83 (32'3")	2.99 (9'10")	9.58 (31'5")	7300 (15,600)
225 SA	(51U)	77-86	135	27 125 (59,800)	2.64 (8'8")	3.17 (10'5")	9.83 (32'3")	3.35 (11'0")	9.55 (31'4")	7340 (15,700)
225B	(2ZD) (3YD)	86-89 87-89	145	24 960 (55,030)	2.44 (8'0")	3.17 (10'5")	9.83 (32'3")	2.99 (9'10")	10.16 (33'4")	11 040 (26,100)
225D	(6RG)	89-91	150	25 400 (55,900)	2.44 (8'0")	3.23 (10'7")	9.94 (32'7")	2.99 (9'10")	10.13 (33'3")	—
225B LC	(2ZD) (3YD)	86-89 87-89	145	26 140 (58,230)	2.44 (8'0")	3.17 (10'5")	9.83 (32'3")	2.99 (9'10")	10.16 (33'4")	11 040 (26,100)
225D LC	(2SJ)	89-91	165	26 700 (58,900)	2.44 (8'0")	3.23 (10'7")	9.94 (32'7")	2.99 (9'10")	10.13 (33'3")	12 450 (26,900)
229	(1GF) (1AF)	86-89 86-89	145	29 140 (64,830)	2.64 (8'8")	3.38 (11'1")	9.83 (32'3")	3.45 (11'4")	10.11 (33'2")	—
229 LC Custom 180	(1GF)	86-89	180	33 540 (73,940)	2.64 (8'8")	3.38 (11'1")	11.02 (36'2")	3.45 (11'4")	11.35 (37'3")	7940 (17,100)
229D	(2LJ)	89-91	157	31 700 (69,900)	2.64 (8'8")	3.52 (11'7")	10.9 (35'9")	3.25 (10'8")	10.76 (35'4")	8300 (18,300)

*When shipped with medium stick and bucket curled under.

**Maximum reach at ground level, one-piece boom, longest stick.

***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick.

Hydraulic Excavators (cont'd)

Model	Product Ident. No. Prefix COSA (US)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Track Gauge m (ft)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)
231D		90-92	200	34 300 (75,600)	2.64 (8'8")	3.45 (11'4")	10.83 (35'6")	3.45 (11'4")	11.20 (36'9")	15 300 (33,000)
231D LC		90-92	200	35 500 (78,100)	2.64 (8'8")	3.45 (11'4")	10.83 (35'6")	3.45 (11'4")	11.20 (36'9")	15 300 (33,000)
235	(32K) (64R)	73-86	195	39 320 (86,700)	2.69 (8'10")	3.40 (11'2")	11.27 (37'0")	3.45 (11'4")	11.23 (36'10")	7050 (17,300)
235B	(7WC) (9PC)	86-88	215	40 960 (89,700)	2.69 (8'10")	3.40 (11'2")	11.27 (37'0")	3.45 (11'4")	11.23 (36'10")	9934 (21,900)
235C	(4DG) (5AF) (2PG) (3WG)	88-92	250	42 140 (92,800)	2.69 (8'10")	3.50 (11'4")	11.50 (37'7")	3.45 (11'4")	12.00 (39'5")	14 720 (35,000)
235D	(8KJ) (8TJ)	92-93	250	46 270 (103,780)	2.69 (8'10")	3.50 (11'5")	11.50 (37'7")	3.45 (11'4")	12.00 (39'5")	14 840 (35,200)
235D LC	(8KJ) (8TJ)	92-93	250	49 270 (108,620)	3.30 (10'10")	3.60 (11'9")	11.60 (38'1")	3.79 (12'5")	11.97 (39'3")	15 070 (35,700)
245	(82X) (84X)	74-88	325	65 745 (144,941)	3.24 (10'7")	4.62 (15'2")	13.18 (43'3")	3.71 (12'2")	14.02 (46'0")	14 930 (32,920)
245B	6MF 1SJ	88-92	360	65 200 (143,500)	3.24 (10'7")	4.78 (15'8")	13.13 (43'1")	3.61 (11'10")	14.02 (46'0")	—
245D	(4LK) (7ZJ)	92-93	385	68 420 (150,520)	3.24 (10'7")	5.46 (17'11")	12.82 (42'0")	3.61 (11'10")	13.84 (45'9")	14 640† (31,600)
E70	3BG 3CG	87-89	52	6500 (14,300)	1.65 (5'5")	2.59 (8'6")	6.02 (19'9")	2.25 (7'5")	6.67 (21'10")	1300 (2750)
E70B	7YF(JPN) 5TG(OSJ) 6AK(OSJ)	89-94 89-94 92-94	54	6760 (14,900)	1.75 (5'9")	2.56 (8'5")	6.09 (20'0")	2.32 (7'7")	6.72 (22'1")	1315 (2900)
E110	3FG 3GG	87-89 87-89	74	10 700 (23,600)	1.9 (6'3")	2.73 (8'11")	7.345 (24'0")	2.5 (8'2")	7.93 (26'0")	2700 (5750)
E110B	9HF(OSJ) 8MF(JPN) 5GK(OSJ)	90-92 90-92 90-92	79	11 600 (25,600)	1.99 (6'6")	2.70 (8'10")	7.25 (23'9")	2.495 (8'2")	8.10 (26'7")	3350 (7200)
E120	1LF(OSJ) 1MF(JPN)	87-89 87-89	84	12 200 (26,800)	1.99 (6'6")	2.775 (9'1")	7.66 (25'1")	2.490 (8'2")	8.58 (28'2")	3850 (8300)
E120B	7NF(OSJ) 6JF(JPN) 4XK(OSJ)	90-92 90-92 90-92	84	12 680 (28,200)	1.99 (6'6")	2.70 (8'10")	7.62 (25'10")	2.495 (8'2")	8.74 (28'8")	4310 (9250)
E140	1PF(JPN) 1NF(OSJ)	87-94	89	13 970 (30,800)	1.99 (6'6")	2.89 (9'6")	8.29 (27'6")	2.55 (8'4")	5.49 (18'0")	4380 (9650)
E200B	6KF(OSJ) 4SG(JPN)	87-91 87-91	118	18 800 (41,400)	2.20 (7'3")	2.97 (9'9")	9.48 (31'1")	2.83 (9'4")	10.63 (34'10")	8100 (17,350)
EL200B	7DF(OSJ) 5EG(JPN)	87-91 87-91	118	20 100 (44,300)	2.38 (7'10")	2.97 (9'9")	9.48 (31'1")	3.18 (10'5")	10.63 (34'10")	8150 (17,600)
E240	1FG(OSJ) 2HF(JPN)	87-89 87-89	148	23 000 (50,700)	2.39 (7'10")	3.02 (9'11")	9.73 (31'11")	3.19 (10'6")	10.6 (34'9")	9800 (21,600)
E240B	8SF(OSJ) 9PF(JPN)	89-92	148	23 000 (50,700)	2.39 (7'10")	3.02 (9'11")	9.73 (31'11")	3.19 (10'6")	10.6 (34'9")	9800 (21,600)
E240C	2RL(OSJ) 8MK(JPN)	92-93	148	23 000 (50,700)	2.39 (7'10")	3.02 (9'11")	9.73 (31'11")	3.19 (10'6")	10.6 (34'9")	9800 (21,600)

*When shipped with medium stick and bucket curled under.

**Maximum reach at ground level, one-piece boom, longest stick.

***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick.

†@ 7.5 m (25'0") over front, one-piece boom, longest stick.

Former Models

Hydraulic Excavators

Hydraulic Excavators (cont'd)

Model	Product Ident. No. Prefix COSA (US)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Track Gauge m (ft)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)
EL240	4JF(OSJ)	87-89	148	23 600	2.58	3.02	9.73	3.38	10.6	11 300
	4MF(JPN)	87-89		(52,000)	(8'6")	(9'11")	(31'11")	(11'1")	(34'9")	(24,300)
EL240B	5WG(OSJ)	89-92	148	23 600	2.58	3.02	9.73	3.38	10.6	10 320
	6MG(JPN)			(52,000)	(8'6")	(9'11")	(31'11")	(11'1")	(34'9")	(22,750)
EL240C	9PK(OSJ)	92-93	148	23 600	2.58	3.02	9.73	3.38	10.6	10 320
	9NK(JPN)			(52,000)	(8'6")	(9'11")	(31'11")	(11'1")	(34'9")	(22,750)
E300	2CF(OSJ)	87-89	187	30 500	2.6	3.22	10.94	3.4	11.84	12 550
	1KG(JPN)	87-89		(67,300)	(8'6")	(10'7")	(35'11")	(11'2")	(38'9")	(27,650)
E300B	1WJ(OSJ)	90-91	206	30 200	2.6	3.22	10.94	3.4	11.84	12 450
	2HJ(JPN)	90-91		(66,580)	(8'6")	(10'7")	(35'11")	(11'2")	(38'9")	(26,850)
EL300	4NF(OSJ)	87-89	187	31 600	2.6	3.22	10.94	3.4	11.84	12 550
	4SF(JPN)	87-89		(69,700)	(8'6")	(10'7")	(35'11")	(11'2")	(38'9")	(27,650)
EL300B	3FJ(OSJ)	90-91	206	31 200	2.6	3.22	10.94	3.4	11.84	12 450
	1GK(JPN)	90-91		(68,780)	(8'6")	(10'7")	(35'11")	(11'2")	(38'9")	(26,850)
E450	3HG(OSJ)	87-93	276	46 000	2.89	3.49	11.96	3.15	13.08	10 900
	3JG(JPN)	87-93		(101,430)	(9'6")	(11'5")	(39'3")	(10'4")	(42'11")	(23,500)
E650	3KG(OSJ)	87-92	375	62 600	3.25	4.84	14.0	3.49	13.33	15 850
	3LG(JPN)	87-92		(138,000)	(10'8")	(15'11")	(45'11")	(11'5")	(43'9")	(34,000)
307	2WM	94-98	54	7600	1.75	2.61	6.3	2.4	6.38	2450
				(16,760)	(5'9")	(8'7")	(20'8")	(7'11")	(20'11")	(5400)
	2PM(OSJ)	94-98	54	6740	1.75	2.63	6.08	2.28	6.72	1350
				(14,860)	(5'9")	(8'8")	(19'11")	(7'6")	(22'1")	(3000)
	9ZL(JPN)	94-97	54	6650	1.75	2.63	6.08	2.28	6.72	1350
				(14,660)	(5'9")	(8'8")	(19'11")	(7'6")	(22'1")	(3000)
307B	5CW(OSJ)	98-00	54	6960	1.75	2.63	6.08	2.28	6.72	1350
				(15,340)	(5'9")	(8'8")	(19'11")	(7'6")	(22'1")	(3000)
	4RW(JPN)	97-00	54	6500	1.75	2.64	6.08	2.28	6.72	1350
				(14,330)	(5'9")	(8'8")	(19'11")	(7'6")	(22'1")	(3000)
307B SB	AFB	99-	40/54	7500	1.75	2.9	6.75	2.28	7.01	1410
				(16,530)	(5'9")	(9'6")	(22'2")	(7'6")	(23'0")	(3100)
	6KZ(OSJ)	98-01	40/54	8040	1.75	2.64	6.73	2.28	7.42	1500
	7DZ(JPN)			(17,730)	(5'9")	(8'8")	(22'1")	(7'6")	(24'4")	(3300)
307C	(BCM)	00-	54	7210	1.75	2.78	6.07	2.29	6.85	947
				(15,900)	(5'9")	(9'1")	(19'11")	(7'6")	(22'6")	(2100)
	BAJ	00-	54	6450	1.75	2.63	6.07	2.29	6.34	1052
				(14,220)	(5'9")	(8'8")	(19'11")	(7'6")	(20'10")	(2300)
307C SB	(BNE)	00-	54	8390	1.75	2.63	6.79	2.29	7.55	822
				(18,500)	(5'9")	(8'8")	(22'3")	(7'6")	(24'9")	(1800)
308B CR	3YS(JPN)	99-02	54	7650	1.85	2.61	5.77	2.3	6.9	1600
				(16,870)	(6'1")	(8'7")	(18'11")	(7'7")	(22'8")	(3500)
308C CR	(KCX)	02-	54	8040	1.87	2.61	5.83	2.47	6.9	947
				(17,730)	(6'2")	(8'7")	(19'2")	(8'1")	(22'8")	(2100)
	CPE	01-	54	7390	1.87	2.61	5.83	2.32	6.39	1135
				(16,290)	(6'2")	(8'7")	(19'2")	(7'7")	(21'0")	(2500)

*When shipped with medium stick and bucket curled under.

**Maximum reach at ground level, one-piece boom, longest stick.

***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick.

Hydraulic Excavators (cont'd)

Model	Product Ident. No. Prefix COSA (US)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Track Gauge m (ft)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)
311	9LJ(OSJ)	93-96	79	11 100 (24,470)	1.99 (6'6")	2.76 (9'1")	7.25 (23'9")	2.49 (8'2")	8.1 (26'7")	3100 (6800)
	5PK(JPN)	93-96	79	11 050 (24,360)	1.99 (6'6")	2.76 (9'1")	7.25 (23'9")	2.49 (8'2")	8.10 (26'7")	3100 (6800)
311B	2LS(blade) (OSJ)	96-01	79	11 890 (26,210)	1.99 (6'6")	2.76 (9'1")	7.25 (23'9")	2.495 (8'2")	8.1 (26'7")	3080 (6800)
	2MS(blade) (JPN)	96-01	79	11 900 (26,230)	1.99 (6'6")	2.76 (9'1")	7.25 (23'9")	2.5 (8'2")	8.1 (26'7")	3100 (6800)
	8GR(OSJ)	96-01	79	11 130 (24,540)	1.99 (6'6")	2.76 (9'1")	7.25 (23'9")	2.495 (8'2")	8.1 (26'7")	3120 (6900)
	8HR(JPN)	96-01	79	11 200 (24,690)	1.99 (6'6")	2.76 (9'1")	7.25 (23'9")	2.49 (8'2")	8.1 (26'7")	3100 (6800)
311C U	(CKE)	01-	79	11 980 (26,410)	1.99 (6'6")	2.77 (9'1")	6.92 (22'8")	2.49 (8'2")	8.225 (27'0")	1295 (2900)
	CLK	01-03	79	11 500 (25,350)	1.99 (6'6")	2.765 (9'1")	6.88 (22'7")	2.49 (8'2")	7.7 (25'3")	1453 (3200)
312	6BL	93-97	84	12 600 (27,780)	1.99 (6'6")	2.76 (9'1")	7.6 (24'11")	2.49 (8'2")	8.63 (28'4")	4200 (9300)
	6GK(OSJ)	93-96	84	12 000 (26,460)	1.99 (6'6")	2.76 (9'1")	7.6 (24'11")	2.49 (8'2")	8.63 (28'4")	4050 (8900)
	7DK(JPN)	93-96	84	12 000 (26,460)	1.99 (6'6")	2.76 (9'1")	7.6 (24'11")	2.49 (8'2")	8.63 (28'4")	4050 (8900)
312B	6SW	98-01	84	13 000 (28,660)	1.99 (6'6")	2.91 (9'7")	7.59 (24'11")	2.49 (8'2")	8.3 (27'3")	4590 (10,110)
	9GR(OSJ)	98-01	84	12 440 (27,430)	1.99 (6'6")	2.76 (9'1")	7.595 (24'11")	2.495 (8'2")	8.625 (28'4")	4170 (9200)
	9HR(JPN)	98-00	84	12 150 (26,790)	1.99 (6'6")	2.76 (9'1")	7.595 (24'11")	2.49 (8'2")	8.625 (28'4")	4050 (8900)
	9NW(blade)	98-01	66/88	13 785 (30,390)	1.99 (6'6")	2.91 (9'7")	7.59 (24'11")	2.49 (8'2")	8.3 (27'3")	4940 (10,900)
	2NS(blade) (OSJ)	98-01	66/88	13 200 (29,100)	1.99 (6'6")	2.76 (9'1")	7.595 (24'11")	2.495 (8'2")	8.625 (28'4")	4230 (9300)
	3ES(blade) (JPN)	98-00	84	12 900 (28,440)	1.99 (6'6")	2.76 (9'1")	7.595 (24'11")	2.49 (8'2")	8.625 (28'4")	4200 (9300)
	9FS	97-01	84	13 270 (29,260)	1.99 (6'6")	2.91 (9'7")	7.59 (24'11")	2.59 (8'6")	8.3 (27'3")	5000 (11,000)
312B L	8JR(OSJ)	98-01	66/88	12 940 (28,530)	1.99 (6'6")	2.76 (9'1")	7.595 (24'11")	2.59 (8'6")	8.625 (28'4")	4930 (10,900)
	2KW(blade)	97-01	84	14 055 (30,990)	1.99 (6'6")	2.91 (9'7")	7.59 (24'11")	2.59 (8'6")	8.3 (27'3")	5050 (11,100)
	3FS(blade) (OSJ)	98-01	66/88	13 720 (30,250)	1.99 (6'6")	2.76 (9'1")	7.595 (24'11")	2.59 (8'6")	8.625 (28'4")	4920 (10,800)
312C	BNN(FDS)	01-02	90	12 860 (28,350)	1.99 (6'6")	2.76 (9'1")	7.57 (24'10")	2.59 (8'6")	8.74 (28'8")	1402 (3100)
	CAE	00-	90	12 200 (26,900)	1.99 (6'6")	2.75 (9'0")	7.57 (24'10")	2.49 (8'2")	8.3 (27'3")	1448 (3200)
	BNN	01-	71/96	13 000 (28,665)	1.99 (6'6")	2.91 (9'6")	7.59 (24'11")	2.49 (8'2")	8.3 (27'3")	4350 (10,120)

*When shipped with medium stick and bucket curled under.

**Maximum reach at ground level, one-piece boom, longest stick.

***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick.

Former Models

Hydraulic Excavators

Hydraulic Excavators (cont'd)

Model	Product Ident. No. Prefix COSA (US)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Track Gauge m (ft)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)
312C L	CBT(CBA)	01-02	90	13 140 (28,970)	1.99 (6'6")	2.76 (9'1")	7.57 (24'10")	2.59 (8'6")	8.74 (28'8")	1439 (3200)
	CBT	01-	71/96	13 270 (29,260)	1.99 (6'6")	2.91 (9'6")	7.59 (24'11")	2.59 (8'6")	8.3 (27'3")	5040 (11,025)
313B CR	BAS(OSJ)	00-02	89	13 225 (29,160)	1.99 (6'6")	2.82 (9'3")	7.17 (23'6")	2.49 (8'2")	8.55 (28'1")	3900 (8600)
	AEX(JPN)	99-02	89	12 750 (28,110)	1.99 (6'6")	2.82 (9'3")	7.17 (23'6")	2.49 (8'2")	8.24 (27'0")	3900 (8600)
314C CR	(KJA)	02-02	90	14 610 (32,210)	1.99 (6'6")	2.81 (9'3")	7.28 (23'11")	2.59 (8'6")	8.765 (28'9")	1351 (3000)
	KHB	01-	90	13 500 (29,760)	1.99 (6'6")	2.81 (9'3")	7.28 (23'11")	2.49 (8'2")	8.32 (27'4")	1527 (3400)
314C LCR	(PCA)	02-02	90	14 810 (32,650)	1.99 (6'6")	2.73 (9'0")	7.41 (24'4")	2.59 (8'6")	8.765 (28'9")	1372 (3000)
315	3ZM	95-98	99	15 920 (35,100)	1.99 (6'6")	2.88 (9'5")	8.5 (27'11")	2.49 (8'2")	8.21 (26'11")	5300 (11,700)
	4YM(OSJ)	94-97	99	16 330 (36,000)	1.99 (6'6")	2.88 (9'5")	8.5 (27'11")	2.49 (8'2")	9.14 (30'0")	5290 (11,700)
	6XM(JPN)	94-97	99	15 330 (33,800)	1.99 (6'6")	2.88 (9'5")	8.5 (27'11")	2.49 (8'2")	9.14 (30'0")	—
315 L	6YM(OSJ)	94-97	99	15 920 (35,100)	1.99 (6'6")	2.88 (9'5")	8.5 (27'11")	2.59 (8'6")	8.74 (28'8")	6320 (13,900)
315B	1SW(OSJ)	97-01	99	16 300 (35,940)	1.99 (6'6")	2.88 (9'5")	8.5 (27'11")	2.49 (8'2")	9.14 (30'0")	5500 (12,100)
	2DW(JPN)	97-01	99	15 850 (34,940)	1.99 (6'6")	2.88 (9'5")	8.5 (27'11")	2.49 (8'2")	9.14 (30'0")	—
315B L	5SW	98-	99	16 700 (36,820)	1.995 (6'7")	3.0 (9'10")	8.41 (27'7")	2.49 (8'2")	9.02 (29'7")	6720 (14,800)
	3AW(OSJ) 7RZ(forest) (OSJ)	97-01	80/107	16 700 (36,820)	1.99 (6'6")	2.88 (9'5")	8.47 (27'10")	2.59 (8'6")	9.14 (30'0")	6600 (14,600)
315C	(CFB)	01-02	110	16 400 (36,160)	1.99 (6'6")	2.99 (9'10")	8.52 (27'11")	2.59 (8'6")	9.29 (30'6")	1675 (3700)
	CFL	01-	110	16 000 (35,270)	1.99 (6'6")	2.95 (9'8")	8.52 (27'11")	2.49 (8'2")	8.9 (29'2")	1840 (4100)
315C L	(PCA)	01-02	110	16 750 (36,930)	1.99 (6'6")	2.99 (9'10")	8.52 (27'11")	2.59 (8'6")	9.29 (30'6")	1719 (3800)
	ANF	03	83/111	16 770 (36,970)	1.99 (6'6")	2.76 (9'0")	8.39 (27'6")	2.49 (8'2")	9.09 (29'9")	7110 (15,675)
317	4MM	95-98	99	17 260 (38,050)	2.15 (7'1")	2.88 (9'5")	8.5 (27'11")	2.75 (9'0")	8.62 (28'3")	4210 (9300)
317B L	9WW	98-	81/109	17 300 (38,146)	2.2 (7'3")	3.04 (9'10")	8.41 (27'6")	2.8 (9'2")	9.1 (29'8")	7100 (15,655)
317 N	9SR	96-98	99	17 220 (37,960)	1.99 (6'6")	2.88 (9'5")	8.5 (27'11")	2.75 (9'0")	8.62 (28'3")	6450 (14,200)
317B LN	6DZ	98-	81/110	17 300 (38,146)	1.995 (6'5")	3.04 (9'10")	8.41 (27'6")	2.49 (8'2")	9.1 (29'8")	7100 (15,655)

*When shipped with medium stick and bucket curled under.

**Maximum reach at ground level, one-piece boom, longest stick.

***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick.

Hydraulic Excavators (cont'd)

Model	Product Ident. No. Prefix COSA (US)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Track Gauge m (ft)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)
318B L	9WW	98-	86/115	17 700 (39,020)	2.2 (7'3")	3.02 (9'11")	8.67 (28'5")	2.8 (9'2")	8.94 (29'4")	8440 (18,600)
	3LR(OSJ)	99-02	86/115	18 390 (40,540)	2.2 (7'3")	3.05 (10'0")	8.72 (28'7")	2.8 (9'2")	9.77 (32'0")	7650 (16,900)
	ADC	99-	86/115	18 500 (40,792)	2.2 (7'3")	3.04 (9'10")	8.69 (28'6")	2.8 (9'2")	9.6 (31'6")	7600 (16,760)
	(3LR)	01-02	86/115	18 360 (40,480)	2.2 (7'3")	2.83 (9'3")	8.69 (28'6")	2.8 (9'2")	9.78 (32'1")	2200 (4900)
318B LN	6DZ	98-	86/115	17 160 (37,830)	1.995 (6'7")	3.02 (9'11")	8.67 (28'5")	2.495 (8'2")	8.94 (29'4")	7590 (16,700)
	7KZ(OSJ)	99-02	86/115	18 260 (40,260)	2.2 (7'3")	3.05 (10'0")	8.72 (28'7")	2.59 (8'6")	9.77 (32'1")	7600 (16,800)
	AEJ	99-	86/115	18 500 (40,792)	1.995 (6'7")	3.04 (9'10")	8.69 (28'6")	2.49 (8'2")	9.6 (31'6")	7580 (16,710)
	(7KZ)	01-02	86/115	17 990 (39,660)	1.995 (6'7")	3.05 (10'0")	8.72 (28'7")	2.49 (8'2")	9.78 (32'1")	2200 (4900)
318C	BTG	03	94/127	19 560 (43,120)	2.2 (7'2")	2.9 (9'9")	8.9 (29'2")	2.8 (9'2")	9.66 (31'8")	7850 (17,305)
318C L	DAH	03	94/127	20 160 (44,445)	2.2 (7'2")	2.9 (9'9")	8.9 (29'2")	2.8 (9'2")	9.66 (31'8")	8950 (19,730)
318C N	FAA	03	94/127	19 280 (42,505)	1.99 (6'6")	2.9 (9'9")	8.9 (29'2")	2.49 (8'2")	9.66 (31'8")	7730 (17,040)
320	7WK(OSJ)	91-96	128	19 120 (42,150)	2.2 (7'3")	2.93 (9'7")	9.37 (30'9")	2.8 (9'2")	10.63 (34'9")	6200 (13,700)
	2DL(OSJ)									
	8LG(OSJ)									
	7GJ(JPN)									
	3XM(JPN)									
4ZJ(GOS)										
320 L	1TL(OSJ)	91-96	128	20 370 (44,910)	2.38 (7'10")	2.93 (9'7")	9.37 (30'9")	3.18 (10'5")	10.63 (34'9")	8150 (17,600)
	9KK(OSJ)									
	8HJ(JPN)									
	4JM(JPN)									
320 N	1XM(OSJ)	94-96	128	20 050 (44,150)	1.90 (6'6")	2.93 (9'7")	9.37 (30'9")	2.59 (8'6")	10.63 (34'9")	8150 (17,600)
	9WG(GOS)									
320 S	6KM									
320B	3MR	96-00	128	19 400 (42,770)	2.2 (7'2.6")	3.01 (9'10.5")	9.46 (31'4")	2.8 (9'2.2")	10.77 (35'4")	8600 (19,000)
	5BR									
320B L	1XS									
	4MR	96-00	128	20 720 (45,680)	2.38 (7'9.7")	3.01 (9'10.5")	9.46 (31'4")	3.18 (10'5.2")	10.77 (35'4")	9200 (20,300)
6CR										
320B N	7JR									
	4NR	96-00	128	19 930 (43,940)	2.2 (7'2.6")	3.01 (9'10.5")	9.46 (31'4")	2.5 (8'2.4")	10.77 (35'4")	9100 (20,100)
2AS										
320B LN	3YZ	96-00	128							

*When shipped with medium stick and bucket curled under.

**Maximum reach at ground level, one-piece boom, longest stick.

***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick.

Former Models

Hydraulic Excavators

Hydraulic Excavators (cont'd)

Model	Product Ident. No. Prefix COSA (US)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Track Gauge m (ft)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)
321B CR	AKG(JPN)	98-01	128	19 400 (42,770)	2.2 (7'3")	3.1 (10'2")	8.6 (28'3")	2.98 (9'9")	9.68 (31'9")	8250 (18,200)
321B LCR	9CZ(JPN)	98-01	128	22 500 (49,600)	2.38 (7'10")	3.1 (10'2")	8.8 (28'11")	2.98 (9'9")	9.68 (31'9")	10 300 (22,700)
	KGA(OSJ)	02-02	128	23 100 (50,930)	2.38 (7'10")	3.1 (10'2")	8.8 (28'11")	2.98 (9'9")	9.68 (31'9")	10 300 (22,700)
322*	7WL(OSJ)	93-96	153	22 650 (50,000)	2.39 (7'10")	3.12 (10'3")	9.95 (32'8")	2.99 (9'10")	10.47 (34'4")	10 400 (22,500)
	7WL(JPN)			22 760 (50,180)	2.39 (7'10")	3.28 (10'9")	10.0 (32'10")	2.99 (9'10")	10.47 (34'4")	10 650 (23,500)
322B	8MR	96-01	153	22 760 (50,180)	2.39 (7'10")	3.28 (10'9")	10.0 (32'10")	2.99 (9'10")	10.47 (34'4")	10 650 (23,500)
	3NR	96-00	153	23 950 (52,800)	2.59 (8'6")	3.12 (10'3")	9.95 (32'8")	3.39 (11'1")	10.47 (34'4")	10 400 (22,500)
322 L*	8CL(OSJ)	93-96	153	23 950 (52,800)	2.59 (8'6")	3.12 (10'3")	9.95 (32'8")	3.39 (11'1")	10.47 (34'4")	10 400 (22,500)
	8CL(JPN)			23 990 (52,890)	2.59 (8'6")	3.28 (10'9")	10.0 (32'10")	3.39 (11'1")	10.47 (34'4")	11 600 (25,600)
322B L	8NR	96-01	153	23 990 (52,890)	2.59 (8'6")	3.28 (10'9")	10.0 (32'10")	3.39 (11'1")	10.47 (34'4")	11 600 (25,600)
	5CR	96-00	153	25 520 (56,270)	2.39 (7'10")	3.24 (10'8")	10.27 (33'8")	2.99 (9'10")	11.50 (37'7")	11 100 (24,000)
325*	5WK(OSJ)	91-95	168	25 520 (56,270)	2.39 (7'10")	3.24 (10'8")	10.27 (33'8")	2.99 (9'10")	11.50 (37'7")	11 100 (24,000)
	8NL(OSJ)			25 520 (56,270)	2.39 (7'10")	3.24 (10'8")	10.27 (33'8")	2.99 (9'10")	11.50 (37'7")	11 000 (24,000)
325 L*	8JG(JPN)	91-95	168	27 010 (59,560)	2.59 (8'6")	3.24 (10'8")	10.27 (33'8")	3.39 (11'1")	11.50 (37'7")	11 650 (25,150)
	5WK(JPN)			27 010 (59,560)	2.59 (8'6")	3.24 (10'8")	10.27 (33'8")	3.39 (11'1")	11.50 (37'7")	11 650 (25,150)
325 L*	6KK(OSJ)	91-95	168	27 010 (59,560)	2.59 (8'6")	3.24 (10'8")	10.27 (33'8")	3.39 (11'1")	11.50 (37'7")	11 650 (25,150)
	9KL(OSJ)			27 010 (59,560)	2.59 (8'6")	3.24 (10'8")	10.27 (33'8")	3.39 (11'1")	11.50 (37'7")	11 650 (25,150)
325 L*	7CJ(JPN)	91-95	168	27 010 (59,560)	2.59 (8'6")	3.24 (10'8")	10.27 (33'8")	3.39 (11'1")	11.50 (37'7")	11 650 (25,150)
	6KK(JPN)			27 010 (59,560)	2.59 (8'6")	3.24 (10'8")	10.27 (33'8")	3.39 (11'1")	11.50 (37'7")	11 650 (25,150)
325B L	6DN(GOS)	96-01	168	28 890 (63,690)	2.59 (8'6")	3.21 (10'6")	10.35 (33'11")	3.39 (11'1")	10.57 (34'8")	15 460 (34,080)
325B LN	8FN(GOS)	96-01	168	27 670 (61,000)	2.39 (7'10")	3.21 (10'6")	10.35 (33'11")	2.99 (9'10")	10.57 (34'8")	15 030 (33,140)
330*	9PJ(OSJ)	92-95	222	32 130 (70,830)	2.59 (8'6")	3.29 (10'10")	11.01 (36'2")	3.19 (10'6")	12.37 (40'6")	15 550 (33,650)
	8RL(OSJ)			32 130 (70,830)	2.59 (8'6")	3.29 (10'10")	11.01 (36'2")	3.19 (10'6")	12.37 (40'6")	15 550 (33,650)
	9NG(JPN)			32 130 (70,830)	2.59 (8'6")	3.29 (10'10")	11.01 (36'2")	3.19 (10'6")	12.37 (40'6")	15 550 (33,650)
330 L*	9PJ(JPN)	92-95	222	33 510 (73,880)	2.59 (8'6")	3.29 (10'10")	11.01 (36'2")	3.34 (10'11")	12.37 (40'6")	14 600 (31,500)
	6SK(OSJ)			33 510 (73,880)	2.59 (8'6")	3.29 (10'10")	11.01 (36'2")	3.34 (10'11")	12.37 (40'6")	14 600 (31,500)
	9ML(OSJ)			33 510 (73,880)	2.59 (8'6")	3.29 (10'10")	11.01 (36'2")	3.34 (10'11")	12.37 (40'6")	14 600 (31,500)
330 L*	6WJ(JPN)	92-95	222	33 510 (73,880)	2.59 (8'6")	3.29 (10'10")	11.01 (36'2")	3.34 (10'11")	12.37 (40'6")	14 600 (31,500)
	6SK(JPN)			33 510 (73,880)	2.59 (8'6")	3.29 (10'10")	11.01 (36'2")	3.34 (10'11")	12.37 (40'6")	14 600 (31,500)
330B L	3YR(GOS)	96-01	222	34 020 (75,000)	2.59 (8'6")	3.56 (11'8")	11.06 (36'3")	3.34 (10'11")	11.62 (38'1")	17 070 (37,630)
330B LN	5LR(GOS)	96-01	222	33 860 (74,650)	2.39 (7'10")	3.56 (11'8")	11.06 (36'3")	2.99 (9'10")	11.62 (38'1")	17 070 (37,630)
345B	4SS	97-00	290	44 050 (97,100)	2.74 (9'0")	3.76 (12'4")	11.79 (33'8")	3.49 (11'5")	13.0 (42'8")	20 850 (45,000)
345B L	7KS(GOS)	98-00	290	47 665 (105,080)	2.39 (7'10")	3.68 (12'1")	11.74 (38'6")	2.99 (9'10")	12.97 (42'6")	21 000 (46,300)
	2SW(GOS)			48 960 (107,960)	2.39 (7'10")	3.87 (12'8")	11.46 (37'7")	2.99 (9'10")	11.69 (38'4")	19 250 (42,450)
345B L	CCC(VG)	01-05	321	48 960 (107,960)	2.39 (7'10")	3.87 (12'8")	11.46 (37'7")	2.99 (9'10")	11.69 (38'4")	19 250 (42,450)
Series II	FEE(FG) DET (MH)									

*When shipped with medium stick and bucket curled under.

**Maximum reach at ground level, one-piece boom, longest stick.

***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick (6.1 m (20'0") over front for 375/375 L).

Hydraulic Excavators (cont'd)

Model	Product Ident. No. Prefix COSA (US)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Track Gauge m (ft)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)
350	7RK	93-99	286	48 040 (105,910)	2.55 (8'4.4")	3.75 (12'3.6")	12.2 (40'.3")	3.2 (10'6")	13.45 (44'1.5")	17 750 (39,100)
	2ZL	93-99	286	50 094 (110,210)	2.55 (8'4.4")	3.75 (12'4")	12.2 (40'0")	3.3 (10'10")	13.49 (44'3")	17 750 (39,100)
350 L	9DK	93-99	286	49 010 (108,050)	2.55 (8'4.4")	3.75 (12'3.6")	12.2 (40'.3")	3.3 (10'9.9")	13.45 (44'1.5")	17 750 (39,100)
	3ML	93-99	286	51 126 (112,450)	2.55 (8'4.4")	3.75 (12'4")	12.2 (40'0")	3.3 (10'10")	13.49 (44'3")	17 600 (40,900)
365B L	9PZ(GOS)	99-02	385	66 245 (146,050)	2.75 (9'0")	4.57 (15'0")	12.17 (39'11")	3.50 (11'6")	14.04 (46'1")	29 200 (64,370)
365B L Series II	JMB(EAME) DER(NACD) PEG(FS) SDL(MH)	02-04	404	70 250 (154,900)	2.75 (9'0")	4.7 (15'5")	12.54 (41'2")	3.42 (11'3")	14.09 (16'3")	13 040 (28,750)
375	8WJ	92-01	428	81 190 (178,800)	2.75 (9'0")	5.24 (17'2")	14.3 (46'11")	3.5 (11'6")	15.96 (52'4")	30 300 (65,600)
	6NK(GOS)	92-02	428	79 807 (175,940)	2.75 (9'0")	5.24 (17'2")	13.14 (43'1")	3.48 (11'5")	15.67 (51'5")	23 620 (52,070)
375 L	1JM	93-01	428	82 380 (181,500)	2.94 (9'7")	5.24 (17'2")	14.3 (46'11")	3.84 (12'7")	15.96 (52'4")	29 550 (64,400)
	9WL(GOS)	92-02	428	80 700 (177,910)	2.75 (9'0")	5.24 (17'2")	14.29 (46'11")	3.48 (11'5")	15.67 (51'5")	23 620 (52,070)
385B L	FDL(EAME) RCD(NACD) CLS(EAME) MYA(NACD)	01-04	513	89 130 (196,530)	2.75 (9'0")	5.16 (16'11")	14.6 (47'11")	3.73 (12'3")	15.61 (51'2")	13 810 (30,450)

*When shipped with medium stick and bucket curled under.

**Maximum reach at ground level, one-piece boom, longest stick.

***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick (6.1 m (20'0") over front for 375/375 L).



HYDRAULIC EXCAVATORS (Wheel)

Model	Product Ident. No. Prefix (USA)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)	Standard Tire Size
206	(2RC) (3GC)	84-89	Deutz-67 Perkins-71	12 185 (26,863)	3.11 (10'2")	7.38 (24'2.5")	2.40 (7'10")	8.14 (26'9")	3360 (7400)	Dual 9.00-20 12PR
212	(3JC) (5DC)	84-89	Deutz-84 Perkins-94	13 700 (30,423)	3.15 (10'4")	8.00 (26'3")	2.49 (8'2")	9.86 (32'4")	3850 (8490)	Dual 10.00-20 12PR
212B	(3PJ)	90-95	110	14 000 (30,870)	3.04 (10'0")	8.28 (27'2")	2.49 (8'2")	9.48 (31'1")	3900 (8600)	Dual 10.00-20 12PR
214	(9MB) (1KB)	84-89	Deutz-101 Perkins-102	15 600 (34,175)	3.06 (10'0")	8.28 (27'2")	2.49 (8'2")			Dual 10.00-20 12PR
214B	4CF	87-94	110	18 700 (41,230)	3.06 (10'0")	8.28 (27'2")	2.49 (8'2")	10.41 (34'2")	4200 (9260)	Dual 10.00-20 12PR
214B FT	9NF	87-94	135	18 700 (41,230)	3.06 (10'0")	8.28 (27'2")	2.49 (8'2")	10.41 (34'2")	4200 (9260)	Dual 10.00-20 12PR
224	(2JC) (5TC)	84-89	Deutz-143 Perkins-124	19 000 (41,890)	3.42 (11'3")	8.98 (29'6")	2.49 (8'2")	10.61 (34'10")	4800 (10,600)	Dual 10.00-20 12PR

*When shipped with medium stick and bucket curled under.
 **Maximum reach at ground level, one-piece boom, longest stick.
 ***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick.

Model	Product Ident. No. Prefix (USA)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)	Standard Tire Size
M312	6TL	96-02	114	13 425 (29,602)	3.07 (10'1")	8.62 (28'3")	2.5 (8'2")	8.9 (29'2")	4300 (9482)	10-20.00 14PR
M315	7ML	95-02	117	15 570 (34,332)	3.08 (10'1")	8.84 (29'0")	2.5 (8'2")	9.26 (30'5")	5100 (11,246)	10-20.00 14PR
M318	8AL	95-02	131	17 870 (39,403)	3.1 (10'2")	8.97 (29'5")	2.6 (8'6")	10.55 (34'7")	6400 (14,112)	10-20.00 14PR
M318 MH	6ES	98-02	133	20 300 (44,762)	3.37 (11'1")	8.89 (29'2")	2.69 (8'10")	10.5 (34'5")	4600 (10,143)	11-20.00
	8SS	98-02	133	20 300 (44,762)	3.37 (11'1")	8.89 (29'2")	2.69 (8'10")	10.5 (34'5")	4600 (10,143)	11-20.00
M320	6WL	97-02	131	20 200 (44,541)	3.21 (10'6")	9.55 (31'4")	2.75 (9'0")	11.18 (36'8")	7500 (16,538)	11-20.00 14PR
M320 MH	9PS	98-02	133	22 300 (49,172)	3.35 (11'0")	9.92 (32'7")	2.69 (8'10")	11.6 (38'1")	6600 (14,553)	11-20.00

*When shipped with medium stick and bucket curled under, one-piece boom.
 **Maximum reach at ground level, one-piece boom, longest stick.
 ***Lift capacity at 4.6 m (15'0") over front, rear dozer up, one-piece boom, longest stick.



5000 SERIES EXCAVATORS AND FRONT SHOVELS

Model	Product Ident. No. Prefix COSA (US)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Track Gauge m (ft)	Height* m (ft)	Length* m (ft)	Width m (ft)	Max. Reach** m (ft)	Lift Capacity*** kg (lb)
5080	6XK(GOS)	94-02	428	83 800 (184,750)	2.75 (9'0")	4.73 (15'6")	13.76 (45'2")	3.48 (11'5")	9.76 (32'0")	—
5090B	CLD(EAME) SJY(NACD)	01-04	512	87 500 (192,940)	3.51 (11'6")	4.63 (15'2")	14.26 (46'9")	3.47 (11'5")	10.35 (33'11")	—

*When shipped with medium stick and bucket curled under.

**Maximum reach at ground level, one-piece boom, longest stick.

***Lift capacity at 4.6 m (15'0") over front, one-piece boom, longest stick.

Model	Product Ident. No. Prefix (USA)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Rated* Capacity m ³ (yd ³)	Breakout Force kN (lb)	Crowd Force kN (lb)	Track Gauge m (ft)	Max. Reach* m (ft)	Max. Load Height m (ft)	Max. Digging Depth m (ft)
5110B ME	AAA	00-03	696	127 000 (280,000)	7.6 (9.9)	501 (112,600)	439 (98,800)	4.1 (13.4')	13.9 (45.7')	8.6 (28.0')	7.9 (25.9')
5110B L	AAK	02-03	696	129 000 (284,000)	4.6 (6.0)	463 (104,175)	377 (84,825)	4.1 (13.4')	16.39 (53.8')	10.06 (33.0')	10.51 (34.5')
5130 ME	5ZL	92-97	755	180 000 (397,000)	10.0 (13.0)	615 (138,400)	624 (140,300)	4.72 (15'6")	14.9 (48'11")	9.1 (29'10")	8.4 (27'7")
5130 FS	5ZL	92-97	755	179 000 (395,000)	10.5 (13.7)	715 (161,000)	770 (173,000)	4.72 (15'6")	12.4 (40'8")	9.1 (29'10")	—
5130B ME	4CS	97-03	800	182,000 (401,000)	10.5 (13.7)	672 (151,100)	624 (140,300)	4.72 (15.5')	14.9 (48.9')	9.1 (29.8')	8.4 (27.6')
5130B FS	4CS	97-03	800	181,000 (399,000)	11.0 (14.5)	715 (161,000)	770 (173,000)	4.72 (15.5')	12.4 (40.7')	9.1 (29.8')	—
5230 ME	7LL	94-00	1470	316 600 (698,000)	16.0 (21.0)	873 (196,260)	874 (196,480)	5.2 (17'0")	17.7 (58'0")	9.8 (32'2")	9.4 (30'10")
5230 FS	7LL	94-00	1470	318,422 (702,000)	17.0 (22.2)	1125 (253,000)	1250 (281,000)	5.2 (17'0")	14.8 (48'7")	10.3 (33'10")	—
5230B ME	4HZ	01-04	1550	328,100 (723,400)	16.0 (21.0)	855 (192,083)	885 (198,848)	5.196 (17.0')	17.8 (58.4')	9.8 (32.0')	9.5 (31.3')
5230B FS	4HZ	01-04	1550	327,000 (721,000)	17.0 (22.2)	1162 (261,145)	1145 (257,324)	5.196 (17.0')	14.9 (48.8')	10.4 (34.1')	—

*Standard boom and stick.

Former Models

Logging and Forest Product Machines Skidders



LOGGING AND FOREST PRODUCT MACHINES

Model	Product Ident. No. Prefix	Years Built	Flywheel Power kW (hp)	Overall Track Length m (ft)	Overall Length m (ft)	Overall Width m (ft)	Operating Weight kg (lb)
320B Stroke Delimber			96 (128)		11.96 (39'3")	3.66 (12'0")	30 390 (67,000)
FB221	8XD	1986	147 (197)	4.47 (14'8")	9.78 (32'1")	3.20 (10'6")	28 180 (62,000)
FB227	10W	1983-93	100/134 (135/180)	4.55 (14'11")	11.88 (39'0")	3.35 (11'0")	31 769 (69,892)
DL221	8YD	1987	98 (132)	4.47 (14'8")	—	—	22 816 (50,300)
LL216	8JD	1986	95 (128)	—	10.70 to 11.23 (35'1" to 36'10")	2.64 (8'8")	17 577 (38,750)
LL228	8MD	1986	131 (176)	—	9.7 to 11.6 (32'0" to 38'0")	2.62 (8'7")	30 391 (67,000)
LL231	8PD	1986	175 (235)	5.03 (16'6")	10.6 to 11.6 (35'0" to 38'0")	3.56 (11'8")	39 146 (86,300)
320B LL	6LS/9JS	96-01	96 (128)	4.48 (14'8")	—	3.29 (10'10")	28 610 (63,100)
322B LL	1YS	96-02	114 (153)	4.66 (15'3")	—	3.72 (12'3")	32 970 (72,686)
325B LL	2JR	96-01	124 (166)	4.66 (15'3")	—	3.62 (11'11")	36 916 (81,400)
330B LL	6DR	96-02	160 (214)	5.02 (16'6")	—	3.62 (11'11")	44 172 (97,400)



WHEEL SKIDDERS

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower kW (hp)	Operating Weight kg (lb)	Ground Clearance mm (in)	Wheel Base m (ft/in)
508 Cable	9NC	87-89	71 (95)	7770 (17,130)	521 (20.5")	2.8 (9'2")
508 Grapple	2HD	87-89	71 (95)	8766 (19,308)	521 (20.5")	2.8 (9'2")
518 FB	8ZC	86-89	96 (130)	11 612 (25,600)	587 (23.1")	3.25 (10'8")
518 PS Cable	50S	71-83	90 (120)	7718 (17,000)	505.4 (19.8976")	2895.6 (9'6")
518 PS Grapple	55U	1-80/81-83	90/97 (120/130)	9307 (20,500)	505.4 (19.8976")	2895.6 (9'6")
518 Cable	94U	3-84/85-92	90/97 (120/130)	9988 (22,000)	470 (18.5039")	3251 (10'8.4")
518 Grapple	95U	81-90	97 (130)	11 259 (24,800)	470 (18.5039")	3251 (10'8.4")
518 Series II Cable	94U	91-92	dual 97/108 (130/145)	10 260 (22,600)	470 (18.5039")	3251 (10'8.4")
518 Series II Grapple	95U	91-92	dual 97/108 (130/145)	12 031 (26,500)	470 (18.5039")	3251 (10'8.4")
518C Cable	1CL	93-95	115 (154)	11 528 (25,391)	450.7 (17.74406")	3251 (10'8.4")
518C Grapple	9HJ	93-95	115 (154)	12 587 (27,725)	463.4 (18.24406")	3251 (10'8.4")



TRACK SKIDDERS

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower kW (hp)	Operating Weight kg (lb)	Gauge m (ft/in)
D4 TSK Series II	8ZF	90-92	78 (105)	12 909 (28,400)	2.00 (6'6")
D4 TSK Series III	7PK	92-96	78 (105)	14 000 (30,900)	2.00 (6'6")
D5H TSK Series II	7EG	92-96	97 (130)	18 800 (41,360)	2.16 (7'11")



BACKHOE LOADERS

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower kW (hp)	Operating Weight kg (lb)	Digging Depth mm (ft/in)	GP Bucket Capacity m³ (yd³)	MP Bucket Capacity m³ (yd³)
416	5PC	85-90	46 (62)	6156 (13,574)	4420 (14'6")	0.76 (1.0)	0.76 (1.0)
416 Series II	5PC	90-92	46 (62)	6217 (13,708)	4420 (14'6")	0.76 (1.0)	0.76 (1.0)
416B	8ZK(8SG)	92-95	59 (79)	6227 (13,700)	4420 (14'6")	0.76 (1.0)	0.96 (1.25)
416C	4ZN(5YN)	96-00	56 (75)	6330 (13,957)	4420 (14'6")	0.76 (1.0)	0.96 (1.25)
416C (IT)	1WR(1XR)	96-00	56 (75)	6666 (14,698)	4420 (14'6")	0.96 (1.25)	0.96 (1.25)
426	7BC	86-90	52 (70)	6549 (14,626)	4720 (15'6")	0.96 (1.25)	0.76 (1.0)
426 Series II	7BC	90-92	52 (70)	7315 (15,126)	4720 (15'6")	0.96 (1.25)	0.76 (1.0)
426B	6KL(5YJ)	92-95	59 (79)	6790 (14,970)	4720 (15'6")	0.96 (1.25)	1.04 (1.35)
426C	6XN(7WN)	96-98	60 (80)	7051 (15,548)	4721 (15'6")	0.96 (1.25)	0.96 (1.25)
426C	6XN3616 and up (7WN939 and up)	99-00	63 (85)	7051 (15,548)	4721 (15'6")	0.96 (1.25)	0.96 (1.25)
(AWS) 426C	1CR(1ER)	96-98	60 (80)	7051 (15,548)	4721 (15'6")	0.96 (1.25)	0.96 (1.25)
(AWS) 426C	1CR864 and up (1ER864 and up)	99-00	63 (85)	7051 (15,548)	4721 (15'6")	0.96 (1.25)	0.96 (1.25)
426C (IT)	1YR(1ZR)	96-98	60 (80)	7387 (16,289)	4721 (15'6")	0.96 (1.25)	0.96 (1.25)
426C (IT)	1YR1517 and up (1ZR926 and up)	99-00	63 (85)	7387 (16,289)	4721 (15'6")	0.96 (1.25)	0.96 (1.25)
(AWS) 426C (IT)	1MR(1NR)	96-98	60 (80)	7387 (16,289)	4721 (15'6")	0.96 (1.25)	0.96 (1.25)
(AWS) 426C (IT)	1MR956 and up (1NR954 and up)	99-00	63 (85)	7387 (16,289)	4721 (15'6")	0.96 (1.25)	0.96 (1.25)
428	6TC	86-90	52 (70)	6963 (15,350)	4790 (15'9")	1.0 (1.38)	0.92 (1.2)
428 Series II	6TC	90-92	52 (70)	7143 (15,750)	4750 (15'7")	1.0 (1.375)	0.92 (1.2)
428B	7EJ	92-95	60 (80)	7254 (15,992)	4810 (15'9")	1.0 (1.3)	0.92 (1.2)

Former Models | Backhoe Loaders

Backhoe Loaders (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower kW (hp)	Operating Weight kg (lb)	Digging Depth mm (ft/in)	GP Bucket Capacity m ³ (yd ³)	MP Bucket Capacity m ³ (yd ³)
428C	8RN	96-00	56 (75)	7279 (16,047)	4811 (15'9")	1.0 (1.31)	1.03 (1.35)
428C (IT)	2CR	96-00	56 (75)	7615 (16,788)	4811 (15'9")	1.0 (1.31)	1.03 (1.35)
436	5KF	88-90	57 (77)	6831 (15,062)	4960 (16'3")	1.0 (1.38)	0.76 (1.0)
436 Series II	5KF	90-92	57 (77)	6878 (15,166)	4950 (16'3")	1.0 (1.375)	0.76 (1.0)
436B	7FL(6MJ)	92-95	63 (84)	6857 (15,086)	4950 (16'3")	1.0 (1.38)	1.04 (1.35)
436C	8TN(9JN)	96-98	63 (85)	7118 (15,694)	4953 (16'3")	1.0 (1.31)	0.96 (1.25)
436C	8TN925 and up (9JN884 and up)	99-00	70 (93)	7118 (15,694)	4953 (16'3")	1.0 (1.31)	0.96 (1.25)
(AWS) 436C	1FR(1GR)	96-98	63 (85)	7118 (15,694)	4953 (16'3")	1.0 (1.31)	0.96 (1.25)
(AWS) 436C	1FR1416 and up (1GR916 and up)	99-00	70 (93)	7118 (15,694)	4953 (16'3")	1.0 (1.31)	0.96 (1.25)
436C (IT)	2AR(2BR)	96-98	63 (85)	7454 (16,435)	4953 (16'3")	1.0 (1.31)	0.96 (1.25)
436C (IT)	2AR1604 and up (2BR911 and up)	99-00	70 (93)	7454 (16,435)	4953 (16'3")	1.0 (1.31)	0.96 (1.25)
(AWS) 436C (IT)	1PR(1RR)	96-98	63 (85)	7454 (16,435)	4953 (16'3")	1.0 (1.31)	0.96 (1.25)
(AWS) 436C (IT)	1PR1599 and up (1RR998 and up)	99-00	70 (93)	7454 (16,435)	4953 (16'3")	1.0 (1.31)	0.96 (1.25)
438	3DJ	88-90	63 (84)	7900 (17,420)	4810 (15'9")	1.0 (1.38)	0.92 (1.2)
438 Series II	3DJ	90-92	57 (77)	7364 (16,237)	4810 (15'9")	1.0 (1.375)	0.92 (1.2)
438B	3KK	92-95	62.7 (84)	8331 (18,367)	4870 (16'0")	1.0 (1.3)	0.92 (1.2)
438C	9KN	96-98	63 (85)	7384 (16,279)	4873 (16'0")	1.0 (1.31)	1.03 (1.35)
438C	9KN1061 and up	99-00	70 (93)	7384 (16,279)	4873 (16'0")	1.0 (1.31)	1.03 (1.35)
(AWS) 438C	1JR	96-98	63 (85)	7384 (16,279)	4873 (16'0")	1.0 (1.31)	1.03 (1.35)
(AWS) 438C	1JR1107 and up	99-00	70 (93)	7384 (16,279)	4873 (16'0")	1.0 (1.31)	1.03 (1.35)
438C (IT)	2DR	96-98	63 (85)	7720 (17,020)	4873 (16'0")	1.0 (1.31)	1.03 (1.35)
438C (IT)	2DR2717 and up	99-00	70 (93)	7720 (17,020)	4873 (16'0")	1.0 (1.31)	1.03 (1.35)
(AWS) 438C (IT)	1TR	96-98	63 (85)	7720 (17,020)	4873 (16'0")	1.0 (1.31)	1.03 (1.35)
(AWS) 438C (IT)	1TR1284 and up	99-00	70 (93)	7720 (17,020)	4873 (16'0")	1.0 (1.31)	1.03 (1.35)
446	6XF	89-95	71 (95)	8892 (19,603)	5220 (17'2")	1.1 (1.5)	1.10 (1.5)
446B			76 (102)	8890 (19,600)	5220 (17'2")	1.1 (1.5)	1.05 (1.375)



PIPELAYERS

Model	Tractor Product Ident. No. Prefix	Years Built	Engine HP	Approx. Weight kg (lb)	Counter-weight kg (lb)	Max. Lift Capacity 1.2 m (4'0") Overhang kg (lb)	Speed Range km/h (mph)		Ground Clearance mm (in)	Ground Contact m ² (sq. in.)
							Forward	Reverse		
MD6	9U39C	52-57	93	12 375 (27,820)	1590 (3500)	12 035 (26,530)	2.7—10.6 (1.7—6.6)	3.2—10.0 (2.0—6.2)	321 (13")	1.77 (2744)
561B	62A	59-66	90	14 560 (32,100)	2270 (5000)	17 500 (38,800)	2.7—10.6 (1.7—6.6)	1.8—9.9 (2.0—6.2)	267 (11")	2.02 (3130)
561B	62A	66-67	93	14 350 (31,637)	2270 (5000)	17 600 (38,800)	2.7—10.9 (1.7—6.8)	3.4—10.3 (2.1—6.4)	267 (11")	2.02 (3130)
561C	85H	66-67	93	14 700 (32,500)	2450 (5400)	18 000 (40,000)	2.7—11.1 (1.7—6.9)	3.4—10.1 (2.1—6.3)	395 (16")	2.02 (3130)
561C	92J	67-77	105	14 700 (32,500)	2450 (5400)	18 100 (40,000)	2.7—11.1 (1.7—6.9)	3.4—10.1 (2.1—6.3)	395 (16")	2.02 (3130)
561D	54X	78-89	105	15 800 (35,000)	2990 (6600)	18 100 (40,000)	3.5—10.1 (2.2—6.3)	4.2—12.2 (2.6—7.6)	395 (16")	2.02 (3130)
561H	6NL	93-97	105	15 700 (34,600)	2128 (4690)	18 100 (40,000)	3.4—10.2 (2.1—6.4)	4.1—12.4 (2.6—7.7)	363 (14.3")	2.67 (4120)
561M		01	110	16 240 (35,800)	3260 (7200)	18 100 (40,000)	3.3—9.9 (2.0—6.2)	4.0—12.1 (2.5—7.5)	438 (17.2")	2.67 (4120)
561M CB* (US)	1KW	97-02	110	16 240 (35,800)						
571E PS	64A	61-67	160	22 680 (50,000)	2360 (5200)	27 490 (60,600)	3.7—10.3 (2.3—6.4)	4.3—12.1 (2.7—7.5)	400 (16")	3.04 (4710)
571E PS	64A	66-72	180	23 100 (51,000)	2360 (5200)	27 500 (60,600)	3.7—10.1 (2.3—6.3)	4.3—11.9 (2.7—7.4)	400 (16")	3.04 (4710)
571F	95N	72-74	180	22 800 (50,300)	4350 (9600)	27 500 (60,600)	3.5—9.7 (2.2—6.0)	4.2—11.4 (2.6—7.1)	400 (16")	3.04 (4710)
571G	916W 52D(JPN)	75-81 87-96	200 200	23 040 (50,800)	4350 (9600)	27 500 (60,600)	3.7—10.0 (2.3—6.2)	4.5—11.9 (2.8—7.9)	399 (15.7")	3.04 (4710)
MD7	17A	51-57	140	16 200 (35,815)	3400 (7500)	24 585 (54,200)	2.4—9.5 (1.5—5.9)	2.9—8.7 (1.8—5.4)	394 (16")	3.12 (4840)
572C	21A	57-61	128	26 200 (57,820)	4720 (10,405)	39 000 (86,000)	3.2—7.7 (2.0—4.8)	3.9—6.1 (2.4—3.8)	483 (19")	3.30 (5109)
572D	21A	59	140	26 500 (58,520)	4940 (10,900)	39 000 (86,000)	4.2—9.7 (2.6—6.0)	4.8—7.7 (3.0—4.8)	483 (19")	3.30 (5109)
572E PS	65A	61-69	180	28 000 (62,000)	6000 (13,000)	40 800 (90,000)	3.7—10.1 (2.3—6.3)	4.3—11.9 (2.7—7.4)	480 (19")	3.45 (5345)
572F PS	96N	70-74	180	27 600 (61,000)	6440 (14,200)	40 800 (90,000)	3.5—9.7 (2.2—6.0)	4.2—11.4 (2.6—7.1)	480 (19")	3.45 (5345)
572G	40U	75-86	200	27 800 (61,300)	6400 (14,200)	40 800 (90,000)	3.7—10.0 (2.3—6.2)	4.5—11.9 (2.8—7.4)	480 (19")	3.45 (5345)
572G	8PC	84-89	200	27 800 (61,300)	6400 (14,200)	40 800 (90,000)	3.7—10.0 (2.3—6.2)	4.5—11.9 (2.8—7.4)	480 (19")	3.45 (5345)
572R	2HZ	98-04	230	30 110 (66,250)	5055 (11,150)	40 825 (90,000)	3.5—11.1 (2.3—6.9)	4.8—14.2 (3.0—8.8)	414 (16.3")	4.19 (6500)

*Gauge 2.0 m (6'7"), Width 3.19 m (10'5"), Length 3.73 m (12'3"), Height 3.12 m (10'3"), PS Transmission.
 Forward Speed: 1st gear 3.27 km/h (2.03 mph)
 2nd gear 5.81 km/h (3.61 mph)
 3rd gear 9.93 km/h (6.17 mph)

Former Models

Pipelayers Wheel Tractor-Scrapers

Pipelayers (cont'd)

Model	Tractor Product Ident. No. Prefix	Years Built	Engine HP	Approx. Weight kg (lb)	Counterweight kg (lb)	Max. Lift Capacity 1.2 m (4'0") Overhang kg (lb)	Speed Range km/h (mph)		Ground Clearance mm (in)	Ground Contact m ² (sq. in.)
							Forward	Reverse		
578	8HB	89-97	300	46 580 (102,690)	11 777 (25,963)	70 307 (155,000)	3.8—10.8 (2.35—6.7)	4.7—13.8 (2.9—8.6)	452 (17.8")	5.17 (8020)
583C	16A	55-58	190	35 440 (78,132)	8470 (18,676)	58 970 (130,000)	3.9—8.7 (2.4—5.4)	3.9—8.7 (2.4—5.4)	533 (21")	4.24 (6580)
583H TC	38A	59-60	235	38 000 (83,840)	9030 (19,900)	62 140 (137,000)	4.5—10.3 (2.8—6.4)	4.5—10.3 (2.8—6.4)	537 (22")	4.66 (7220)
583H PS	61A	60-74	191	35 600 (78,500)	8470 (18,676)	58 970 (130,000)	3.9—8.7 (2.4—5.4)	3.9—8.7 (2.4—5.4)	533 (21")	4.55 (7050)
583H PS	61A	60-67	225	38 200 (84,270)	9000 (19,900)	62 140 (137,000)	4.1—11.1 (2.5—6.9)	4.6—12.8 (8.9—8.0)	537 (22")	4.66 (7220)
583H PS	61A	61	235	38 900 (85,720)	10 400 (22,880)	62 140 (137,000)	3.9—10.1 (2.4—6.3)	4.8—12.6 (3.0—7.8)	537 (22")	4.66 (7220)
583H	61A	74	270	40 600 (89,500)	10 300 (22,700)	63 500 (140,000)	3.9—10.5 (2.4—6.5)	4.8—13.0 (3.0—8.1)	533 (21")	4.65 (7220)
583K	78V	74-89	300	40 960 (90,300)	7840 (17,290)	63 500 (140,000)	4.0—10.9 (2.5—6.8)	5.0—13.5 (3.1—8.4)	530 (21")	4.65 (7220)
583R	2XS	98-05	228 (305)	44 748 (98,650)	9036 (19,920)	63 504 (140,000)	3.5—10.8 (2.3—6.8)	4.7—3.8 (2.9—8.6)	537 (21.1")	5.10 (7896)
594	62H	74	385	55 400 (122,000)	12 600 (27,800)	90 700 (200,000)	3.9—10.5 (2.4—6.5)	4.8—12.7 (3.0—7.9)	640 (25")	5.72 (8865)
594H	96V	74-82	410	56 065 (123,600)	12 555 (27,680)	90 700 (200,000)	4.0—10.8 (2.5—6.7)	5.0—13.2 (3.1—8.2)	630 (25")	6.48 (10,050)



WHEEL TRACTOR-SCRAPERS

Model	Product Ident. No. Prefix	Years Built	Horsepower Max/ Rated	Capacity Struck/ Heaped m ³ (yd ³)	Approx. Shipping Weight kg (lb)	Dimensions m (ft)				Tire Size (Standard) & ply rating Tractor & Scraper	Approx. % Weight on Drivers Loaded/ Empty	Turning Circle m (ft)
						Length	Width	Height	Width of Tread			
DW10 Tractor	1N	41-46	100*	—	6550 (14,350)	4.57 (15'0")	2.24 (7'4")	1.93 (6'4")	1.73 (5'8")	10.0 × 20-12 18.0 × 24-16	—	—
DW10 Tractor	6V	46-47	100*	—	6850 (15,100)	4.57 (15'0")	2.24 (7'4")	1.93 (6'4")	1.73 (5'8")	10.0 × 20-12 18.0 × 24-16	—	—
DW10 Tractor	1V	47-53	115*	—	7540 (16,610)	4.70 (15'5")	2.34 (7'8")	1.93 (6'4")	1.79 (5'10")	12.0 × 20-14 21.0 × 25-20	—	—
DW10 & No. 10 Scraper	1V 3C	47-51	115*	6.7/8.4 (8.7/11)	15 980 (35,240)	11.23 (37'0")	3.02 (9'11")	2.69 (8'10")	1.88 (6'2")	12.0 × 20-14 21.0 × 25-20	39/44	7.92 (26'0")
DW10 & No. 10 Scraper	1V 19C	52-53	115*	5.3/6.9 (7/9)	15 130 (33,365)	10.72 (35'2")	2.87 (9'5")	2.36 (7'9")	1.80 (5'11")	12.0 × 20-14 21.0 × 25-20 Scraper — 16.0 × 21-20	42/46	11.23 (37'0")

*Maximum HP only available.

Wheel Tractor-Scrapers (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power Max/ Rated	Capacity Struck/ Heaped m ³ (yd ³)	Approx. Shipping Weight kg (lb)	Dimensions m (ft)				Tire Size (Standard) & ply rating Tractor & Scraper	Approx. % Weight on Drivers Loaded/ Empty	Turning Circle m (ft)
						Length	Width	Height	Width of Tread			
DW15 & No. 10 Scraper	45C 19C	54-55	/150	5.3/6.9 (7/9)	15 960 (35,180)	11.10 (36'5")	2.87 (9'5")	2.36 (7'9")	1.80 (5'11")	12.0 × 20-14 21.0 × 25-20 16.0 × 21-20	42/46	10.36 (34'0")
DW15 & No. 15 Scraper	45C 4W	54-55	/150	7.7/9.2 (10/12)	9400 (20,720)	11.84 (38'10")	3.18 (10'5")	2.69 (8'10")	1.93 (6'4")	12.0 × 20-14 21.0 × 25-20	40/42	11.23 (37'0")
DW15 Tractor	45C	54-55	/150	—	9510 (20,960)	5.08 (16'8")	2.39 (7'10")	2.69 (8'10")	1.98 (6'6")	12.0 × 20-14 21.0 × 25-20	—	—
DW15C & No. 15 Scraper	59C or 70C	55-57	186/*	7.7/9.5 (10/12.5)	19 220 (42,370)	11.84 (38'10")	3.18 (10'5")	2.69 (8'10")	1.98 (6'6")	12.0 × 12-14 21.0 × 25-20	40/42	10.36 (34'0")
DW15E & No. 428 Scraper	75D or 76D	57-59	200/172	10/14 (13/18)	20 280 (44,711)	12.22 (40'1")	3.30 (10'10")	3.05 (10'0")	1.98 (6'6")	12.0 × 20-14 26.5 × 25-20	37/41	—
DW15F & No. 428 Scraper	75D or 76D	58-59	200/172	10/14 (13/18)	20 280 (44,711)	12.22 (40'1")	3.30 (10'10")	3.05 (10'0")	1.98 (6'6")	12.0 × 20-14 26.5 × 25-20	37/41	—
DW20 & No. 20 Scraper	21C 11C	51-55	225/*	14/7.6 (18/23)	12 750 (28,100)	13.23 (43'5")	3.53 (11'7")	3.10 (10'2")	2.29 (7'6")	24.0 × 29-4	37/41	11.23 (37'0")
DW20 Tractor (For W20 Wagon)	6W	51-55	225/*	—	11 620 (25,610)	5.39 (17'8")	2.79 (9'2")	2.41 (7'11")	2.18 (7'2")	14.0 × 24-16 24.0 × 29-24	—	—
DW20E & No. 456 Scraper	57C 67C	55-57	300/*	14/19 (18/25)	26 040 (57,400)	13.36 (43'10")	3.58 (11'9")	3.45 (11'4")	2.24 (7'4")	14.0 × 24-16 29.5 × 29-22	34/42	11.58 (38'0")
DW20F & No. 456 Scraper	87E 88E	58-60	320/*	14/19 (18/25)	26 870 (59,240)	13.36 (43'10")	3.58 (11'9")	3.45 (11'4")	2.24 (7'4")	14.0 × 24-16 29.5 × 29-22	38/42	11.58 (38'0")
DW20G & No. 456 Scraper	87E 88E	58-60	345/*	15/21 (19.5/27)	27 200 (59,960)	13.36 (43'10")	3.58 (11'9")	3.45 (11'4")	2.24 (7'4")	14.0 × 24-16 29.5 × 29-28	38/42	11.58 (38'0")
DW20G & No. 482 Scraper	87E 88E	58-60	345/*	18.5/26 (24/34)	31 070 (68,500)	14.05 (46'1")	3.91 (12'10")	3.81 (12'6")	2.39 (7'10")	14.0 × 24-16 29.5 × 29-28	37/40	11.58 (38'0")
DW21 & No. 21 Scraper	8W 8	51-55	225/*	11.5/15 (15/20)	24 790 (54,650)	12.37 (40'7")	3.53 (11'7")	3.28 (10'9")	2.13 (7'0")	24.0 × 29-24	—	10.67 (35'0")
DW21C & No. 470 Scraper	58C 69C	55-58	300/*	14/19 (18/25)	26 610 (58,670)	12.67 (41'7")	3.58 (11'9")	3.35 (11'0")	2.24 (7'4")	29.5 × 29-22	52/67	11.00 (36'0")
DW21D & No. 470 Scraper	85E 86E	58-58	320/*	14/19 (18/25)	26 310 (58,010)	12.78 (41'11")	3.58 (11'9")	3.35 (11'0")	2.24 (7'4")	29.5 × 29-22	52/67	11.00 (36'0")
DW21G & No. 470 Scraper	85E 86E	58-60	345/*	14.9/20.6 (19.5/27)	27 210 (59,980)	12.78 (41'11")	3.58 (11'9")	3.48 (11'5")	2.24 (7'4")	29.5 × 29-28	52/67	11.00 (36'0")
611	6SZ	99-03	265	11 (15)	23 900 (52,640)	12.02 (39'5")	3.27 (10'9")	3.24 (10'8")	2.06 (6'9")	29.5R25	66/51	10.2 (33'5")
613A	71M	69-76	/150	8.4 (11)	13 334 (29,395)	9.67 (31'9")	2.44 (8'0")	2.85 (9'4.5")	1.89 (6'2.5")	18.0 × 25-12	49/63	9.04 (29'8")
613B	38W	76-84	/150	8.4 (11)	14 155 (31,210)	9.78 (32'1")	2.44 (8'0")	2.85 (9'4.5")	1.89 (6'2.5")	18.0 × 25-12	49/64	8.94 (29'4")
613C		84-93	175	8.4 (11)	14 670 (32,340)	10.0 (32'9")	2.44 (8'0")	3.06 (10'0")	1.89 (6'2.5")	18.00-25, 16 PR (E-2)	49/63	8.9 (29'4")
615	46Z	81-87	/250	12.23 (16)	23 400 (51,590)	11.6 (38'1")	3.048 (10'0")	3.590 (11'8")	2.21 (7'3")	26.5-25, 26 PR (E-2)	53/65	9.63 (31'7")
615C		87-93	265	12.23 (16)	23 860 (52,600)	11.6 (38'1")	3.048 (10'0")	3.59 (11'9")	2.21 (7'3")	26.5-25, 26 PR (E-2)	53/79	9.63 (31'7")

*Maximum HP only available.

Former Models

Wheel Tractor-Scrapers

Wheel Tractor-Scrapers (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power Max/ Rated	Capacity Struck/ Heaped m ³ (yd ³)	Approx. Shipping Weight kg (lb)	Dimensions m (ft)				Tire Size (Standard) & ply rating Tractor & Scraper	Approx. % Weight on Drivers Loaded/ Empty	Turning Circle m (ft)
						Length	Width	Height	Width of Tread			
619B DD	89E	59-60	/225									
	DD											
	90E											
619C PS	61F	60-66	280/250	10.8/14 (14/18)	21 550 (47,500)	11.05 (36'3")	3.30 (10'11")	3.76 (12'2")	2.00 (6'7")	26.5 × 29-22	55/69	9.14 (30'0")
	DD											
619*	43F	64-65	/250	15.3/12.6 (20/16.5)	27 400 (60,390)	11.89 (40'0")	3.60 (11'10")	3.45 (11'4")	2.30 (7'7")	26.5 × 29-26	53/65.8	10.20 (33'6")
621	43H	65-72	/300	10.7/15.3 (14/20)	28 400 (62,600)	12.00 (39'5")	3.60 (11'10")	3.45 (11'4")	2.19 (7'3")	29.5 × 29-22	53/68	11.50 (37'8")
621	23H	65-74	/300	10.7/15.3 (14/20)	24 900 (55,000)	11.60 (38'1")	3.50 (11'7")	3.40 (11'2")	2.10 (6'10")	29.5 × 29-22	53/68	13.00 (42'6")
621B	45P	73-86	/330	10.7/15.3 (14/20)	30 205 (66,590)	12.7 (41'7")	3.45 (11'4")	3.63 (11'11")	2.21 (7'3")	29.5-29, 28 PR (E-3)	53/68	11.10 (36'6")
621E	6AB	86-93	/330	10.7/15.3 (14/20)	30 480 (67,195)	12.93 (42'5")	3.47 (11'4")	3.71 (12'2")	2.21 (7'3")	33.25-29, 26 PR (E-3)	53/68	10.9 (35'8")
	2PD											
621F	4SK	93-00	330	10.7/15.3 (14/20)	32 090 (70,740)	12.93 (42'5")	3.47 (11'4")	3.71 (12'2")	2.21 (7'3")	33.25-29 ★★ (E-2/E-3)	53/68	10.2 (33'5")
621G	ALP	00-03	330/365	10.7/15.3 (14/20)	32 250 (71,090)	12.93 (42'5")	3.47 (11'4")	3.71 (12'2")	2.20 (7'3")	33.25R29	68/53	11.7 (38'5")
621G	CEN	03-05	330/365	12/17 (15.7/22)	32 563 (71,790)	12.93 (42'5")	3.47 (11'4")	3.71 (12'2")	2.20 (7'3")	33.25R29	68/53	11.7 (38'5")
623	52U	72-74	/300	16.8 (22)	29 900 (66,000)	11.90 (39'0")	3.50 (11'7")	3.70 (12'1")	2.20 (7'3")	29.5 × 29-28	53/68	13.70 (44'11")
623B	46P	73-86	/330	16.8 (22)	32 546 (71,750)	12.5 (41'1")	3.55 (11'8")	3.81 (12'6")	2.18 (7'2")	29.5-29, 28 PR (E-2)	53/68	8.90 (29'4")
623E	6CB	86-89	/330	16.8 (22)	33 317 (73,450)	12.61 (41'4")	3.55 (11'8")	3.81 (12'6")	2.21 (7'3")	29.5-29, 34 PR (E-2)	52/65	10.9 (35'9")
623E	6YF	89-93	/365	13.8/17.6 (18/23)	35 290 (77,800)	12.61 (41'4")	3.55 (11'8")	3.94 (12'11")	2.18 (7'2")	29.5R25	51/66	10.9 (35'8")
623F	6BK	93-98	365	13.8/17.6 (18/23)	35 305 (77,830)	12.61 (41'4")	3.55 (11'8")	3.94 (12'11")	2.18 (7'2")	29.5-29, 34 PR (E-2)	51/66	10.9 (35'8")
623F Series II	5EW	98-00	365	13.8/17.6 (18/23)	37 122 (81,840)	13.28 (43'7")	3.55 (11'8")	3.55 (11'8")	2.21 (7'3")	33.25-R29 ★★ (E-2)	50/64	8.6 (28'5")
623G	ARW	00-02	330/365	13.8/17.6 (18/23)	37 120 (81,840)	13.21 (43'4")	3.55 (11'8")	3.68 (12'1")	2.2 (7'3")	33.25R29	64/50	10.9 (35'8")
623G	CES	03-05	330/365	13.8/17.6 (18/23)	37 120 (81,840)	13.21 (43'4")	3.55 (11'8")	3.68 (12'1")	2.2 (7'3")	33.25R29	64/50	10.9 (35'8")

*Johnson Manufacturing Company built the J619 Elevating Scraper for Caterpillar in 1964.

Wheel Tractor-Scrapers (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power Max/ Rated	Capacity Struck/ Heaped m ³ (yd ³)	Approx. Shipping Weight kg (lb)	Dimensions m (ft)				Tire Size (Standard) & ply rating Tractor & Scraper	Approx. % Weight on Drivers Loaded/ Empty	Turning Circle m (ft)
						Length	Width	Height	Width of Tread			
627	54K	68-74	T/225 S/225	10.7/15.3 (14/20)	29 900 (66,000)	12.00 (36'9")	3.50 (11'7")	3.60 (11'8")	2.20 (7'3")	29.5 × 29-28	47/56	13.30 (43'9")
627B	14S	73-86	T/225 S/225	10.7/15.3 (14/20)	34 610 (76,300)	13.3 (43'9")	3.45 (11'4")	3.63 (11'11")	2.18 (7'2")	29.5-29, 28 PR (E-3)	49/58	11.10 (36'6")
627E	6EB	86-90	T/225 S/225	10.7/15.3 (14/20)	34 670 (76,435)	12.89 (42'3")	3.47 (11'4")	3.71 (12'2")	2.21 (7'3") 2.18 (7'2")	33.25-29, 26 PR (E-3)	48/59	10.90 (35'9")
627E	7CG	90-93	T/330 S/225	10.7/15.3 (14/20)	35 160 (77,500)	12.93 (42'5")	3.47 (11'4")	3.71 (12'2")	2.21 (7'3")	33.25-29, 26 PR (E-3)	48/59	10.9 (35'8")
627F Series II	1DL	93-00	T/330 S/225	10.7/15.3 (14/20)	37 060 (81,640)	12.9 (42'5")	3.47 (11'4")	3.71 (12'2")	2.21 (7'3")	33.25-R29 ★★ (E-2/E-3)	49/60	10.9 (35'9")
627B/PP	15S	73-86	T/225 S/225	10.7/15.3 (14/20)	35 660 (78,620)	14.91 (48'11")	3.45 (11'4")	3.63 (11'11")	2.18 (7'2")	29.5-29, 28 PR (E-3)	51/60	11.1 (36'6")
627E/PP	6GB	86-89	T/225 S/225	10.7/15.3 (14/20)	36 130 (79,655)	12.89 (42'3")	3.47 (11'4")	3.71 (12'2")	2.21 (7'3") 2.18 (7'2")	33.25-29, 26 PR (E-3)	49/60	10.90 (35'9")
627E/PP	7CG	90-93	T/330 S/225	10.7/15.3 (14/20)	36 620 (80,735)	15.2 (49'7")	3.47 (11'4")	3.71 (12'2")	2.21 (7'3")	33.25-29, 26 PR (E-3)	49/60	10.9 (35'8")
627F/PP Series II	1DL	93-00	T/330 S/225	10.7/15.3 (14/20)	38 103 (84,000)	15.2 (49'7")	3.47 (11'4")	3.71 (12'2")	2.21 (7'3")	33.25-R29 ★★ (E-2/E-3)	50/60	10.9 (35'9")
627G/PP	AXF	00-02	T/330/365 S/225	10.7/15.3 (14/20)	38 140 (84,075)	15.2 (49'7")	3.47 (11'4")	3.71 (12'2")	2.20 (7'3")	33.25R29	60/49	11.7 (38'5")
627G/PP	CEX	02-05	T/330/365 S/225/249	12/17 (15.7/22)	39 186 (86,390)	15.2 (49'7")	3.47 (11'4")	3.71 (12'2")	2.20 (7'3")	33.25R29	60/49	11.7 (38'5")
630A & 482C Scraper	52F	60-62	420/335	21/27 (27/35)	35 830 (79,000)	14.63 (48'0")	3.91 (12'10")	4.01 (13'2")	2.39 (7'10")	16.0 × 25-16 29.5 × 35-28 33.5 × 33-26 Scraper	37/42	11.89 (39'0")
630A	52F	60-62	420/335	16/21.4 (21/28)	31 430 (69,300)	13.82 (45'4")	3.58 (11'9")	3.73 (12'3")	2.21 (7'3")	16.0 × 25-16 29.5 × 35-28	39/45	11.89 (39'0")
630B	14G	62-63	420/335	16/23 (21/30)	33 520 (73,900)	14.12 (46'4")	3.81 (12'6")	3.71 (12'2")	2.41 (7'11")	16.0-25, 16 29.5-35, 28	38/42	13.36 (43'10")
630B	14G	63-66	400/360	16/23 (21/30)	33 570 (74,000)	14.30 (46'11")	3.81 (12'6")	3.94 (12'11")	2.41 (7'11")	16.0-25, 16 29.5-35, 34	37/42	13.36 (43'10")
630B	10G	62-69	400	16/23 (21/30)	35 750 (78,800)	14.35 (47'1")	3.81 (12'6")	3.94 (12'11")	2.40 (7'10")	16.0-25, 16 29.5-35, 34	38/44	13.36 (43'10")

Former Models

Wheel Tractor-Scrapers

Wheel Tractor-Scrapers (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power Max/ Rated	Capacity Struck/ Heaped m ³ (yd ³)	Approx. Shipping Weight kg (lb)	Dimensions m (ft)				Tire Size (Standard) & ply rating Tractor & Scraper	Approx. % Weight on Drivers Loaded/ Empty	Turning Circle m (ft)
						Length	Width	Height	Width of Tread			
631A	51F	60-62	420/335	16/21.4 (21/28)	30 250 (66,700)	12.88 (42'3")	3.58 (11'9")	3.56 (11'8")	2.21 (7'3")	29.5-35, 28	54/69	11.00 (36'0")
631B	13G	62-62	420/335	16/23 (21/30)	31 620 (69,700)	13.05 (42'10")	3.81 (12'6")	3.45 (11'5")	2.39 (7'10")	29.5-35, 28	51/67	11.31 (37'5")
631B	13G	62-66	420/360	16/23 (21/30)	31 840 (70,200)	13.29 (43'7")	3.81 (12'6")	3.63 (11'11")	2.41 (7'11")	29.5-35, 34	52/67	11.31 (37'5")
631C	67M	69-75	/415	16/23 (21/30)	36 350 (80,150)	13.54 (44'5")	3.45 (11'4")	3.91 (12'10")	2.39 (7'10")	29.5-35, 34	52/67	11.45 (37'7")
631D	24W	75-85	473/450	16/23.7 (21/31)	42 370 (93,410)	14.25 (46'9")	3.96 (13'0")	4.17 (13'8")	2.46 (8'1")	33.25-35, 38 PR (E-3)	52/68	12.2 (40'1")
631E	1AB	85-91	473/450	16.1/23.7 (21/31)	43 365 (95,600)	14.28 (46'10")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25-35, 30	53/67	12.2 (40'1")
631E Series II	1AB	91-01	473/450	16.1/23.7 (21/31)	44 210 (97,460)	14.56 (47'9")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25R35	53/67	12.2 (40'1")
631G	AWK	00-02	450/485	16.1/23.7 (21/31)	46 475 (102,460)	14.56 (47'9")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25R35	67/53	12.2 (40'1")
631G	CLR	03-05	450/485	18.3/26 (24/34)	46 475 (102,460)	14.56 (47'9")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25R35	67/53	12.2 (40'1")
632	14G	62-63	420/335	21.4/29 (28/38)	37 650 (83,000)	15.21 (49'11")	4.04 (13'3")	4.00 (13'1")	2.44 (8'0")	16.0-25, 16 29.5-35, 34	37/41	13.36 (43'10")
632	14G	63-66	420/360	21.4/29 (28/38)	39 420 (86,910)	15.30 (50'2")	4.04 (13'3")	4.00 (13'1")	2.44 (8'0")	16.0-25, 16 29.5-35, 34	37/41	13.36 (43'10")
633C	66M	69-75	/415	24.5 (32)	41 750 (92,050)	13.36 (43'10")	3.45 (11'4")	3.96 (13'0")	2.39 (7'10")	33.2-35, 32	52/66	11.78 (38'8")
633D	25W	75-85	450	17.7/23 (23/34)	47 570 (104,870)	14.40 (47'3")	3.96 (13'0")	4.24 (13'11")	2.46 (8'1")	33.25-35, 38 PR (E-3)	51/66	12.4 (40'7")
633E	1AB	92-96	475	17.7/23 (23/34)	50 800 (112,000)	14.40 (47'3")	3.96 (13'0")	4.24 (13'11")	2.46 (8'1")	37.25R35	51/64	13.15 (43'2")
633E Series II	2PS	96-00	490	17.7/23 (23/34)	51 100 (112,670)	14.8 (48'7")	3.96 (13'0")	4.24 (13'11")	2.46 (8'1")	37.25R35	51/64	13.15 (43'2")
637	65M	70-75	T/415 S/225	16/23 (21/30)	41 300 (91,050)	13.65 (44'9.5")	3.45 (11'4")	3.93 (12'11")	2.39 (7'10")	33.25-35, 32	49/60	11.68 (38'4")
637/PP	79P	70-75	T/415 S/225	16/23 (21/30)	43 700 (96,350)	15.82 (51'11")	3.45 (11'4")	3.93 (12'11")	2.39 (7'10")	33.25-35, 32	51/63	11.68 (38'4")
637D	26W	75-85	T/450 S/250	16/23 (21/31)	46 987 (103,590)	14.8 (48'8")	3.96 (13'0")	4.17 (13'8")	2.46 (8'1")	33.25-35, 38 PR (E-3)	50/61	12.2 (40'1")
637D/PP	27W	75-85	T/450 S/250	16/23 (21/31)	48 531 (106,990)	14.8 (48'8")	3.96 (13'0")	4.17 (13'8")	2.46 (8'1")	33.25-35, 38 PR (E-3)	50/61	12.2 (40'1")
637E	1FB	85-91	T/450 S/250	16/23 (21/31)	49 940 (110,100)	14.28 (46'10")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25-35, 30	49/59	12.2 (40'1")
637E Series II	1FB	91-01	T/450 S/250	16/23 (21/31)	50 990 (112,320)	14.56 (47'9")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25R35	49/59	12.2 (40'1")
637E/PP	1FB	85-91	T/450 S/250	16/23 (21/31)	51 485 (113,500)	15.88 (52'1")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25-35, 30	50/60	12.2 (40'1")
637E Series II/PP	1FB	91-01	T/450 S/250	16/23 (21/31)	52 385 (115,490)	16.49 (54'1")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25R35	50/60	12.2 (40'1")
637G/PP	AXT	00-02	T/450/485 S/249	16.1/23.7 (21/31)	53 590 (118,150)	16.49 (54'1")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25R35	61/50	12.2 (40'1")
637G/PP	CEH	02-05	T/450/485 S/249/274	18.3/26 (24/34)	53 562 (118,084)	16.49 (54'1")	3.94 (12'11")	4.29 (14'1")	2.46 (8'1")	37.25R35	61/50	12.2 (40'1")

Wheel Tractor-Scrapers (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power Max/ Rated	Capacity Struck/ Heaped m ³ (yd ³)	Approx. Shipping Weight kg (lb)	Dimensions m (ft)				Tire Size (Standard) & ply rating Tractor & Scraper	Approx. % Weight on Drivers Loaded/ Empty	Turning Circle m (ft)
						Length	Width	Height	Width of Tread			
639D	99X	79-84	T/450 S/250	26 (34)	55 030 (121,318)	14.53 (47'8")	3.96 (13'0")	4.06 (13'4")	2.46 (8'1")	37.25-35, 42 37.25-35, 42	51/59	12.4 (40'7")
641	64F	62-65	560/450	21.4/29 (28/38)	43 200 (95,300)	14.73 (48'4")	4.04 (13'3")	4.00 (13'1")	2.44 (8'0")	33.5-39, 38	52/67	12.68 (41'7")
641B	65K	69-81	/550	21.4/29 (28/38)	53 070 (117,000)	14.96 (49'1")	4.04 (13'3")	4.24 (13'11")	2.55 (8'4")	37.5-39, 36	54/69	13.00 (42'9")
650	63F	62-64	560/450	24.5/33.6 (32/44)	45 130 (99,500)	16.31 (53'6")	4.24 (13'11")	4.01 (13'2")	2.54 (8'4")S	18.0-25, 20 33.5-39, 32 37.5-39, 36	37/41	13.87 (45'6")
650B	22G	62-72	/550	24.5/33.6 (32/44)	46 100 (101,700)	17.00 (55'10")	3.80 (12'6")	4.30 (14'1")	2.65 (8'9")S	18.0-25, 20 37.5-39, 28 37.5-30, 36	40/46	14.00 (46'0")
651	33G	62-68	560/450	24.5/33.6 (32/44)	43 730 (96,400)	14.93 (49'0")	4.24 (13'11")	4.01 (13'2")	2.54 (8'4")	37.5-39, 36	51/65	13.29 (43'7")
651B	67K	69-84	/550	24.5/33.6 (32/44)	56 340 (124,200)	15.34 (51'4")	4.32 (14'2")	4.29 (14'1")	2.72 (8'11")S	37.5-39, 36 37.5-39, 36	52/67	13.5 (44'2")
651E	89Z	82-96	550	24.5/33.6 (32/44)	59 420 (131,000)	16.13 (52'11")	4.37 (14'4")	4.7 (15'5")	2.64 (8'8")	37.5R39	69/54	14.5 (47'7")
651E	4YR	96-06	550/605	24.5/33.6 (32/44)	61 126 (134,760)	16.18 (53'1")	4.37 (14'4")	4.7 (15'5")	2.64 (8'8")	40.5/75R39	66/47	15.1 (49'8")
657	31G	62-68	T/450 S/335	24.5/33.6 (32/44)	56 550 (124,700)	15.39 (50'6")	4.24 (13'11")	4.09 (13'5")	2.62 (8'7")	37.5-39, 44	48/55	13.29 (43'7")
657	46M	68-69	T/500 S/400	24.5/33.6 (32/44)	56 820 (125,155)	15.39 (50'6")	4.24 (13'11")	4.09 (13'5")	2.67 (8'8")	37.5-39, 44	48/55	14.57 (47'10")
657B	68K	69-84	T/550 S/400	24.5/33.6 (32/44)	63 100 (139,100)	15.7 (51'8")	4.32 (14'2")	4.21 (13'10")	2.67 (8'9")S	37.5-39, 44 37.5-39, 44	49/57	13.7 (45'1")
657E	90Z	82-95	T/550 S/400	24.5/33.6 (32/44)	68 720 (151,500)	17 (55'10")	4.37 (14'4")	4.7 (15'5")	2.64 (8'8")	37.5R39	61/50	14.5 (47'7")
657E	6TR	96-06	T/550/605 S/400/440	24.5/33.6 (32/44)	69 078 (152,290)	16.2 (53'1")	4.37 (14'4")	4.7 (15'5")	2.64 (8'8")	40.5/75R39	60/51	15.1 (49'8")
657E/PP	91Z	82-95	T/550 S/400	24.5/33.6 (32/44)	72 120 (159,000)	18.01 (59'1")	4.37 (14'4")	4.7 (15'5")	2.64 (8'8")	37.5R39	61/52	14.5 (47'7")
657E/PP	5YR	96-06	T/550/605 S/400/440	24.5/33.6 (32/44)	72 857 (160,623)	18.01 (59'1")	4.37 (14'4")	4.7 (15'5")	2.64 (8'8")	40.5/75R39	60/51	15.1 (49'8")
660	90F	62-64	560/450	30.6/41.3 (40/54)	49 130 (108,300)	17.04 (55'11")	4.24 (13'11")	4.37 (14'4")	2.59 (8'6")	18.0 × 25-20 37.5 × 39-28 37.5 × 51-36 Scraper—	37/40	13.87 (45'6")
660B	58K	70-78	/550	30.6/41.3 (40/54)	59 875 (132,000)	17.27 (56'8")	3.81 (14'2")	4.37 (14'4")		18.0 × 25-20 37.5 × 39-28	40/45	14.00 (46'0")
666	77F	63-69	T/450 S/335	30.6/41.3 (40/54)	56 700 (125,000)	17.04 (55'11")	4.24 (13'11")	4.37 (14'4")	2.59 (8'6")	18.0 × 25-20 37.5 × 39-28 37.5 × 51-36 Scraper—	35/34	13.87 (45'6")
666	64H	67-69	T/500 S/400	30.6/41.3 (40/54)	58 800 (129,645)	17.27 (56'8")	4.24 (13'11")	4.37 (14'4")	2.59 (8'6")	18.0 × 25-20 37.5 × 39-28 37.5 × 51-51 Scraper—	36/35	13.87 (45'6")
666B	66K	69-78	T/550 S/400	30.6/41.3 (40/54)	67 630 (149,500)	17.27 (56'8")	4.31 (14'4")	4.37 (14'4")	2.59 (8'9")	18.0 × 25-20 37.5 × 39-28	37/42	14.00 (46'0")



TRACTOR-TOWED SCRAPERS

Model	Product Ident. No. Prefix	Years Built	Capacity Struck/ Heaped m ³ (yd ³)	Weight kg (lb)	Width m (ft)	Length m (ft)	Height m (ft)	Width of Cut m (ft)
40	1W	49-59	2.8/3.4 (3.6/4.5)	3348 (7380)	2.27 (7'6")	6.40 (21'0")	1.68 (5'6")	1.82 (6'0")
60	1D	47-53	4.6/6.1 (6.0/8.0)	5579 (12,300)	2.65 (8'9")	8.43 (27'8")	2.36 (7'9")	2.13 (7'0")
60	2W	52-72	5.4/7.0 (7.0/9.0)	6100 (13,500)	2.85 (9'5")	8.52 (28'3")	2.36 (7'9")	2.40 (7'11")
70	8C	46-53	6.7/8.4 (8.7/11.0)	8527 (18,800)	3.02 (10'0")	9.50 (31'2")	2.56 (8'5")	2.43 (8'0")
70	3W	51-57	7.8/9.9 (10.2/13.0)	9140 (20,150)	3.16 (10'5")	9.53 (31'4")	2.61 (8'7")	2.59 (8'6")
80	2D	46-52	10.3/13.8 (13.5/18.0)	11 793 (26,000)	3.38 (11'2")	10.82 (35'6")	2.92 (9'7")	2.74 (9'0")
80	5W	50-56	11.5/15.3 (15.0/20.0)	13 533 (29,836)	3.50 (11'6")	10.92 (35'0")	3.09 (10'2")	2.89 (9'6")
90	9V	51-55	16.2/20.6 (21.2/27.0)	17 208 (37,937)	3.65 (12'0")	12.19 (40'0")	3.20 (10'6")	3.04 (10'0")
435C	45D	56-61	9.9/13.8 (13.0/18.0)	10 659 (23,500)	3.28 (10'10")	10.16 (33'4")	3.01 (9'11")	2.84 (9'4")
435D	45D	59-61	11.5/14.5 (15.0/19.0)	11 521 (25,400)	3.29 (10'10")	10.16 (33'4")	3.01 (9'11")	2.84 (9'4")
435E	85F	61-72	9.2/13.0 (12.0/17.0)	10 400 (22,900)	3.29 (10'10")	10.06 (33'1")	3.07 (10'1")	2.84 (9'4")
435F	45D	62-72	10.7/13.8 (14.0/18.0)	11 300 (24,900)	3.29 (10'10")	10.06 (33'1")	3.02 (9'11")	2.84 (9'4")
435G	27G	63-73	9.2/13.0 (12.0/17.0)	10 400 (22,900)	3.27 (10'9")	10.08 (33'1")	2.97 (9'9")	2.84 (9'4")
463	62C	55-60	13.8/29.1 (18.0/25.0)	14 061 (31,000)	3.58 (11'9")	11.58 (38'0")	3.39 (11'2")	3.15 (10'4")
463C	62C	59-60	16.8/21.4 (22.0/28.0)	15 785 (34,800)	3.58 (11'9")	11.58 (38'0")	3.39 (11'2")	3.15 (10'4")
463E	86F	60-71	13.8/20.0 (18.0/26.0)	15 600 (34,400)	3.58 (11'9")	11.65 (38'3")	3.28 (10'10")	3.15 (10'4")
463F	62C	63-71	16.0/21.4 (21.0/28.0)	15 700 (34,600)	3.58 (11'9")	11.65 (38'3")	3.28 (10'10")	3.15 (10'4")
463G	28G	63-71	13.8/20.0 (18.0/26.0)	13 200 (29,200)	3.58 (11'9")	11.52 (37'10")	3.14 (10'4")	3.15 (10'4")
491	98C	56-64	20.6/26.0 (27.0/34.0)	16 964 (37,400)	3.65 (12'0")	12.13 (39'10")	3.96 (13'0")	3.16 (10'5")
491B	9A	61-63	20.6/26.8 (27.0/35.0)	20 902 (46,060)	3.91 (12'10")	12.49 (41'0")	3.96 (13'0")	3.30 (10'10")
491C	47E	63-70	20.6/26.8 (27.0/35.0)	21 600 (47,500)	3.91 (12'10")	12.64 (41'6")	3.96 (13'0")	3.30 (10'10")



CONSTRUCTION & MINING TRUCKS/TRACTORS

Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horsepower)	Capacity Metric Tons (U.S. Tons)	Approx. Weight kg (lb)	Dimensions m (ft)						Tire Size
						Width	Length	Height	Loading Height	Dumping Height (55°)	Turning Circle	
768B	79S	71-78	309 (415)	—	22 000 (48,500)	3.61 (11'10")	6.55 (21'6")	3.48 (11'5")	—	—	18.0 (59'1")	18.00 × 33—24 PR
768C	02X	78-95	336 (450)	—	24 624 (54,285)	4.70 (15'5")	8.00 (26'3")	3.56 (11'8")	—	—	18.5 (60'8")	18.00R33 E-4
769	99F	62-67	298 (400)	31.8 (35.0)	25 365 (55,870)	3.63 (11'11")	7.64 (25'1")	4.05 (13'4")	3.07 (10'1")	7.18 (26'7")	16.5 (54'5")	18.00 × 25—32 PR
769B	99F	67-78	309 (415)	32.0 (35.0)	28 000 (61,800)	3.64 (11'11.5")	7.85 (25'9")	3.89 (12'9")	3.15 (10'4")	7.24 (23'9")	18.0 (59'1")	18.00 × 25—32 PR E-3
769C	01X	78-95	336 (450)	36.9 (40.6)	30 675 (67,855)	4.70 (15'5")	8.00 (26'3")	3.85 (12'8")	3.24 (10'7")	7.68 (25'2")	18.5 (60'8")	18.00R33 E-4
771C	3BJ	92-95	336 (450)	40.0 (44.0)	34 170 (75,345)	4.74 (15'7")	8.20 (26'11")	4.00 (13'1")	3.30 (10'10")	7.68 (25'2")	18.5 (60'8")	18.00R33 E-4
772	80S	71-78	447 (600)	—	32 100 (70,800)	4.06 (13'4")	7.11 (23'4")	3.68 (12'1")	—	—	22.1 (72'6")	24.00 × 35—36 PR
772B	64W	78-95	485 (650)	—	32 909 (72,550)	4.86 (15'11")	9.12 (29'11")	4.52 (14'10")	—	—	23.5 (77'0")	24.00R35 E-4
773	63G	70-78	447 (600)	45.4 (50.0)	37 800 (83,360)	4.06 (13'4")	8.71 (28'7")	4.27 (14'0")	3.61 (11'10")	8.36 (27'5")	22.1 (72'6")	21.00 × 35—32 PR E-3
773B	63W	78-95	485 (650)	54.3 (59.8)	38 321 (84,500)	4.86 (15'11")	9.12 (29'11")	4.31 (14'2")	3.77 (12'5")	8.72 (28'7")	23.5 (77'0")	24.00R35 E-4
775B	7XJ	92-95	485 (650)	59.5 (65.5)	42 324 (93,325)	4.91 (16'2")	9.33 (30'7")	4.31 (14'2")	3.86 (12'8")	8.72 (28'8")	23.5 (77'7")	24.00R35 E-4
776	14H	75-84	649 (870)	—	49 686 (109,540)	3.51 (11'6")	8.06 (26'5.5")	3.40 (11'2")	—	—	26.8 (88'0")	27.00 × 49—36 PR E-3
776B	6JC	84-92	649 (870)	—	49 896 (110,000)	3.51 (11'6")	8.06 (26'6")	3.40 (11'2")	—	—	25.8 (84'6")	27.00 × 49—36 PR E-3
776C	2TK	92-96	649 (870)	—	49 896 (110,000)	3.51 (11'6")	8.06 (26'5.5")	4.55 (14'11")	—	—	25.8 (84'6")	27.00R49

Construction & Mining Trucks/Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horsepower)	Capacity Metric Tons (U.S. Tons)	Approx. Weight kg (lb)	Dimensions m (ft)						Tire Size
						Width	Length	Height	Loading Height	Dumping Height (55°)	Turning Circle	
777	84A	74-84	649 (870)	77.1 (85.0)	58 886 (129,820)	5.463 (17'11")	9.78 (32'1")	4.90 (16'1")	4.14 (13'7")	9.29 (30'6")	26.8 (88'0")	24.00 × 49—42 PR E-3
777B	4YC	84-92	649 (870)	86.2 (95.0)	60 055 (132,422)	5.463 (17'11")	9.79 (32'1")	4.97 (16'4")	4.17 (13'8")	9.42 (30'11")	25.8 (84'6")	24.00 × 49—48 PR E-3
777C	4XJ	92-96	649 (870)	86.2 (95.0)	61 790 (136,227)	5.463 (17'11")	9.79 (32'1")	4.97 (16'4")	4.17 (13'8")	9.42 (30'11")	25.8 (84'6")	27.00R49
784B	5RK	93-98	962 (1290)	— (—)	89 280 (196,825)	6.74 (22'2")	9.34 (30'8")	5.47 (17'1")	— (—)	— (—)	33.5 (109'10")	36.00R51 E-3
785	8GB	85-92	962 (1290)	136.0 (150.0)	96 353 (212,458)	6.64 (21'9")	11.02 (36'2")	5.77 (18'11")	4.98 (16'4")	11.20 (36'9")	30.5 (100'4")	33.00 × 51
785B	6HK	92-98	962 (1290)	136.0 (150.0)	96 353 (212,458)	6.64 (21'9")	11.02 (36'2")	5.77 (18'11")	4.98 (16'4")	11.20 (36'9")	30.2 (99'2")	33.00R51
789	9ZC	86-92	1272 (1705)	177.0 (195.0)	121 922 (268,837)	7.67 (25'2")	12.18 (39'11")	6.15 (20'2")	5.21 (17'1")	11.91 (39'1")	30.2 (99'2")	37.00R57
789B	7EK	92-98	1272 (1705)	177.0 (195.0)	121 922 (268,837)	7.67 (25'2")	12.18 (39'11")	6.15 (20'2")	5.21 (17'1")	11.91 (39'1")	30.2 (99'2")	37.00R57
793	3SJ	90-92	1534 (2057)	218.0 (240.0)	143 564 (323,709)	7.60 (24'11")	12.86 (42'3")	6.43 (21'1")	5.86 (19'3")	13.21 (43'4")	30.2 (99'2")	40.00-57
793B	1HL	92-96	1534 (2057)	218.0 (240.0)	143 564 (323,709)	7.60 (24'11")	12.86 (42'3")	6.43 (21'1")	5.86 (19'3")	13.21 (43'4")	30.2 (99'2")	40.00R57
793C	4AR, 4GZ, ATY	96-04	1615 (2166)	218.0 (240)	383 739 (846,000)	7.41 (24'4")	12.87 (42'3")	6.43 (21'1")	5.86 (19'3")	13.21 (43'4")	32.4 (106'4")	40.00R57
797	5YW	98-02	2395 (3211)	326.0 (360.0)	557 820 (1,230,000)	9.14 (30'0")	14.63 (48'0")	7.24 (27'6")	7.05 (26'10")	14.94 (49'0")	32.86 (104'10")	55/80R63



ARTICULATED TRUCKS

Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horsepower)	Capacity Metric Tons (U.S. Tons)	Approx. Weight kg (lb)	Dimensions m (ft)						Tire Size
						Width	Length	Height	Loading Height	Dumping Height (55°)	Turning Circle	
D20D	9MG	92-94	134 (180)	18.0 (20.0)	15 000 (33,070)	2.75 (9'0")	8.43 (27'8")	3.30 (10'10")	2.40 (7'11")	5.00 (16'5")	7.25 (24'0")	23.5R25
D22	*	80-82	175 (235)	20.0 (22.0)	17 700 (39,000)	3.00 (9'10")	7.85 (25'9")	3.09 (10'2")	2.44 (8'0")	5.03 (16'6")	7.87 (25'10")	26.5R25
D25	*	80	175 (235)	22.7 (25.0)	17 300 (38,000)	3.00 (9'10")	7.85 (25'9")	3.09 (10'2")	2.44 (8'0")	5.03 (16'6")	7.87 (25'10")	26.5R25
D25B	*	80-83	190 (255)	22.7 (25.0)	17 900 (39,400)	3.00 (9'10")	7.99 (26'2")	3.25 (10'8")	2.44 (8'0")	5.03 (16'6")	7.87 (25'10")	26.5R25
D25C	9YC	85-89	194 (260)	22.7 (25.0)	19 233 (42,400)	3.00 (9'10")	8.73 (28'8")	3.27 (10'9")	2.56 (8'5")	5.28 (17'4")	16.14 (52'11")	26.5R25
D25D	1HK	89-01	194 (260)	22.7 (25.0)	19 450 (42,880)	3.00 (9'10")	8.79 (28'10")	3.34 (10'11")	2.63 (8'8")	5.19 (17'0")	7.95 (26'1")	26.5R25
D30C	7ZC	85-89	194 (260)	27.2 (30.0)	21 320 (47,000)	3.30 (10'10")	8.86 (29'1")	3.33 (10'11")	2.85 (9'4")	5.46 (17'11")	16.33 (53'7")	29.5R25
D30D	3AJ	89-01	213 (285)	27.2 (30.0)	21 690 (47,320)	3.30 (10'10")	8.89 (29'2")	3.40 (11'2")	2.83 (9'3")	5.46 (17'11")	8.20 (26'11")	29.5R25
D35	*	81-83	190 (255)	31.8 (35.0)	20 000 (44,000)	3.27 (10'9")	8.44 (27'8")	3.25 (10'8")	2.91 (9'7")	5.46 (17'11")	7.87 (25'10")	26.5R25 33.25R29
D35C	2GD	85-89	194 (260)	31.8 (35.0)	23 860 (52,600)	3.50 (11'6")	9.44 (31'0")	3.34 (10'11")	2.93 (9'7")	5.32 (17'5")	16.00 (52'5")	Front 29.5R25 Rear 33.5R29
D35 HP	3FD	85-89	287 (385)	31.8 (35.0)	24 950 (55,000)	3.50 (11'6")	9.80 (32'2")	3.51 (11'6")	2.93 (9'7")	5.32 (17'5")	15.78 (51'9")	Front 29.5R25 Rear 33.5R29
D40D	2JJ	89-94	287 (385)	36.3 (40.0)	28 027 (61,800)	3.48 (11'5")	9.76 (32'0")	3.56 (11'8")	3.20 (10'7")	6.00 (19'8")	7.90 (25'11")	Front 29.5R25 Rear 33.25R29
D44	*	81-86	336 (450)	40.0 (44.0)	28 000 (61,600)	3.66 (12'0")	10.05 (33'0")	3.86 (12'8")	2.90 (9'6")	6.35 (20'10")	9.96 (32'8")	33.25R29
D44B	4LD	86-87	343 (460)	40.0 (44.0)	32 296 (71,200)	3.73 (12'3")	10.05 (33'0")	3.98 (13'1")	2.98 (9'9")	6.40 (21'0")	9.08 (29'9")	33.25R29
D250	*	75-78	175 (235)	25.0 (27.5)	18 500 (40,700)	2.66 (8'9")	8.82 (29'0")	3.04 (10'0")	2.61 (8'7")	6.22 (20'5")	7.67 (25'2")	23.5R25
D250B	5WD	85-91	163 (218)	22.7 (25.0)	17 963 (39,600)	2.50 (8'2.5")	9.60 (31'8.5")	3.18 (10'5")	2.55 (8'4.5")	6.23 (20'5")	7.65 (25'1")	20.5R25
D250D	6NG	92-94	160 (214)	22.8 (25.0)	17 300 (38,150)	2.50 (8'2")	9.60 (31'6")	3.21 (10'7")	2.59 (8'6")	6.22 (20'5")	7.61 (25'0")	20.5R25
D250E	5TN	95-98	194 (260)	22.7 (25.0)	20 135 (44,397)	2.74 (9'0")	9.94 (32'7")	3.35 (11'0")	2.7 (8'10")	6.2 (20'4")	7.44 (24'5")	23.5R25
D250E Series II	4PS	98-00	201 (270)	22.7 (25.0)	21 600 (47,628)	2.88 (9'5")	10.0 (32'10")	3.35 (11'0")	2.75 (9'0")	6.39 (20'11")	7.44 (24'5")	23.5R25
D275	*	78-80	175 (235)	25.0 (27.5)	18 700 (41,000)	2.66 (8'9")	8.82 (29'0")	3.17 (10'7")	2.61 (8'7")	6.22 (20'5")	7.75 (25'3")	23.5R25
D275B	*	80-82	190 (255)	25.0 (27.5)	19 200 (42,400)	2.66 (8'9")	8.96 (29'5")	3.21 (10'7")	2.61 (8'7")	6.22 (20'5")	7.75 (25'5")	23.5R25

*Information not available — DJB models.

Former Models

Articulated Trucks

Articulated Trucks (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horsepower)	Capacity Metric Tons (U.S. Tons)	Approx. Weight kg (lb)	Dimensions m (ft)						Tire Size
						Width	Length	Height	Loading Height	Dumping Height (55°)	Turning Circle	
D300	*	76-78	190 (255)	30.0 (33.0)	19 500 (42,900)	2.80 (9'2")	8.82 (29'0")	3.04 (10'0")	2.68 (8'10")	6.22 (20'5")	7.67 (25'2")	23.5R25
D300B	4SD	85-91	194 (260)	27.2 (30.0)	19 800 (43,520)	2.50 (8'2.5")	9.60 (31'8.5")	3.18 (10'5")	2.55 (8'4.5")	6.23 (20'5")	7.76 (25'6")	23.5R25
D300D	5MG	92-95	213 (285)	27.2 (30.0)	20 680 (45,600)	2.88 (9'6")	9.87 (32'5")	3.28 (10'9")	2.66 (8'9")	6.42 (21'1")	7.76 (25'5")	23.5R25
D300E	7FN	95-98	212 (285)	27.2 (30.0)	21 940 (48,369)	2.89 (9'6")	9.94 (32'7")	3.35 (11'0")	2.85 (9'4")	6.26 (20'6")	7.6 (24'10")	23.5R25
D300E Series II	5KS	98-00	212 (285)	27.2 (30.0)	22 793 (50,235)	2.91 (9'7")	10.0 (32'10")	3.35 (11'0")	2.89 (9'6")	6.44 (21'2")	7.6 (24'10")	23.5R25
D330	*	78-80	190 (255)	30.0 (33.0)	20 000 (43,000)	2.80 (9'2")	8.82 (28'11")	3.17 (10'5")	2.68 (8'9")	6.22 (20'5")	7.80 (25'7")	23.5R25
D330B	*	80-83	190 (255)	30.0 (33.0)	20 200 (44,400)	2.76 (9'1")	9.08 (29'9")	3.25 (10'8")	2.68 (8'9")	6.33 (20'9")	7.92 (26'0")	23.5R25
D350	*	78-80	190 (255)	31.8 (35.0)	21 000 (46,000)	3.00 (9'10")	8.95 (29'4")	3.21 (10'7")	2.82 (9'3")	6.35 (20'10")	7.95 (26'1")	26.5R25
D350B	*	80-83	190 (255)	31.8 (35.0)	21 400 (47,200)	3.00 (9'10")	9.09 (29'10")	3.25 (10'8")	2.85 (9'4")	6.40 (21'0")	7.95 (26'1")	26.5R25
D350C	8XC	85-89	194 (260)	31.8 (35.0)	23 315 (51,400)	3.00 (9'10")	9.93 (32'7")	3.27 (10'9")	2.91 (9'6")	6.52 (21'5")	16.16 (53'0")	26.5R25
D350D	9RF	89-94	213 (285)	31.8 (35.0)	24 595 (54,221)	3.00 (9'10")	9.95 (32'7")	3.34 (11'0")	2.93 (9'7")	6.52 (21'5")	16.06 (52'8")	26.5R25
D350E	9LR	96-99	253 (340)	31.7 (35.0)	27 871 (61,455)	3.26 (10'8")	10.38 (34'1")	3.51 (11'6")	2.94 (9'8")	6.6 (21'8")	8.21 (26'11")	26.5R25
D350E Series II	2XW	99-01	265 (355)	31.8 (35.0)	30 190 (66,560)	3.26 (10'8")	10.65 (35'1")	3.51 (11'6")	2.92 (9'7")	6.83 (20'5")	8.45 (27'8")	26.5R25
D400	IMD	85-89	287 (385)	36.3 (40.0)	25 765 (56,800)	3.00 (9'10")	10.42 (34'2")	3.45 (11'4")	3.00 (9'10")	6.53 (21'5")	16.07 (52'9")	26.5R25
D400D	8TF	89-95	287 (385)	36.3 (40.0)	28 027 (61,800)	3.30 (10'8")	10.62 (34'10")	3.56 (11'8")	2.98 (9'9")	6.60 (21'8")	8.26 (27'2")	29.5R25
D400E	2YR	96-99	302 (405)	36.3 (40.0)	29 263 (64,495)	3.3 (10'10")	10.52 (34'6")	3.58 (11'9")	3.07 (10'1")	6.58 (21'7")	8.26 (27'1")	29.5R25
D400E Series II	8PS	99-01	302 (405)	36.3 (40.0)	31 650 (69,760)	3.43 (11'2")	10.65 (35'1")	3.58 (11'9")	3.10 (10'2")	6.92 (23'0")	8.45 (27'8")	29.5R25
D400E II Ejector	APF	99-01	302 (405)	36.3 (40.0)	32 840 (72,380)	3.5 (11'6")	11.0 (36'1")	3.58 (11'9")	3.07 (10'1")	N/A	8.45 (27'8")	29.5R25
D550	*	78-86	336 (450)	50.0 (55.0)	37 800 (83,400)	3.66 (12'0")	11.35 (37'3")	3.86 (12'8")	3.30 (10'10")	7.83 (25'8")	9.65 (31'8")	33.25R29
D550B	8SD	86-87	343 (460)	50.0 (55.0)	40 370 (89,000)	3.72 (12'2.5")	11.74 (38'6")	3.97 (13'0")	3.22 (10'6")	8.28 (27'2")	8.73 (28'8")	33.25R29

*Information not available — DJB models.



WHEEL DOZERS

Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horsepower)	Approx. Oper. Wt. kg (lb)	Length (Dozer on ground)			Ground Clearance mm (in)	Transmission	Maximum Speeds		
					m (ft)	Tread m (ft)	Wheelbase m (ft)			Fwd. km/h (mph)	Rev. km/h (mph)	
814B	90P	70-81	127 (170)	18 780 (41,400)	6.49 (21'3")	2.16 (7'1")	3.10 (10'2")	356 (14")	PS 4F-4R	32.7 (20.3)	39.3 (24.4)	*
814B	16Z	81-95	161 (216)	20 927 (46,137)	6.82 (22'5")			459 (18")	PS 4F-4R	29.9 (18.6)	34.1 (21.2)	*
814F	9DM	96-02	164 (220)	22 780 (50,115)		2.2 (7'3")	3.35 (11'0")	448 (18")	PS 4F-4R	29.9 (18.6)	34.1 (21.2)	
824	29G	63-65	224 (300)	31 700 (70,000)	7.04 (23'1")	2.37 (7'10")	3.35 (11'8")	470 (18.2")	PS 3F-3R	34.1 (21.2)	34.1 (21.2)	
824B	36H	65-78	224 (300)	33 330 (73,480)	7.40 (24'3.5")	2.32 (7'7.5")	3.55 (11'8")	490 (19.4")	PS 3F-3R	29.8 (18.5)	29.8 (18.5)	
824C	85X	78-95	235 (315)	30 380 (66,975)	7.69 (25'2")	2.36 (7'7.5")	3.53 (11'7")	477 (18.8")	PS 4F-4R	33.2 (20.6)	37.8 (23.5)	
824G	4SN	96-02	235 (315)	26 620 (58,697)	8.02 (26'4")	2.44 (8'0")	3.7 (12'2")	383 (15")	PS 4F-4R	33 (20.4)	37.8 (23.5)	
824G II	AXB	03-04	253 (339)	28 724 (63,325)	8.02 (26'4")	2.44 (8'0")	3.7 (12'2")	383 (15")	PS 4F-4R	32.1 (20)	36.6 (22.7)	
834	43E	63-74 96-00	298 (400)	40 300 (88,800)	7.75 (25'5")	2.54 (8'4")	3.80 (12'6")	510 (20.0")	PS 3F-3R	32.8 (20.4)	35.7 (22.2)	
834B	7BR	74-00	336 (450)	46 350 (102,200)	8.72 (28'7")		3.81 (12'6")	466 (18")	PS 4F-4R	34.1 (21.2)	41.8 (25.9)	
834G	6GZ	98-01	359 (481)	44 680 (98,500)	10.4 (34'2")	2.59 (8'6")	4.55 (14'11")	541 (21")	PS 4F-3R	38.5 (23.9)	23.0 (14.3)	**
834G	BPC	02-04	359 (481)	47 106 (103,849)	10.4 (34'2")	2.59 (8'6")	4.55 (14'11")	541 (21")	PS 4F-3R	38.5 (23.9)	23.0 (14.3)	**
844	2KZ	98-01	466 (625)	69 230 (152,620)	10.9 (35'9")	3.1 (10'0")	4.6 (15'1")	552 (22")	PS 3F-3R	22.5 (14.0)	25.0 (15.5)	***
854G	1JW	97-99	597 (800)	99 400 (219,125)	13.4 (44'0")	3.3 (10'10")	5.89 (19'3")	691 (27")	PS 3F-3R	20.5 (12.7)	22.7 (14.1)	****
854G	AMP	00-04	597 (800)	99 400 (219,125)	13.4 (44'0")	3.3 (10'10")	5.39 (19'3")	691 (27")	PS 3F-3R	20.5 (12.7)	22.7 (14.1)	****

*Turbocharged, Articulated Steering.

**Move to "G" Series.

***New model from Tiger (590).

****New model from Tiger (790).



COMPACTORS

Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horsepower)	Approx. Oper. Wt. kg (lb)	Drum Width m (ft)	Articulated Steering Angle, Maximum	Transmission	Maximum Speeds Fwd. km/h (mph)	Rev. km/h (mph)	
815	91P	70-81	127 (170)	17 300 (38,200)	0.97 (3'2")	44° Either Side	Power Shift 4F-4R	30.1 (18.7)	35.7 (22.2)	*
815B	17Z	81-95	161 (216)	20 035 (44,175)	0.98 (3'2")	45° Either Side	Power Shift 4F-4R	37.5 (23.3)	42.9 (26.6)	*
815F	1GN	96-02	164 (220)	20 952 (46,096)	0.98 (3'2")	36° Either Side	Power Shift 4F-4R	37.6 (23.3)	43.0 (26.7)	
816	57U	72-81	127 (170)	18 550 (40,900)	1.02 (3'4")	44° Either Side	Power Shift 4F-4R	30.1 (18.6)	35.7 (22.4)	**
816B	15Z	81-95	161 (216)	20 628 (45,477)	1.02 (3'4")		Power Shift 4F-4R	35.3 (22.0)	40.4 (25.1)	**
816F	5FN	96-02	164 (220)	20 879 (45,934)	1.02 (3'4")	42° Either Side	Power Shift 4F-4R	36.3 (22.5)	41.4 (25.7)	
825B	43N	70-78	224 (300)	30 075 (66,300)	1.13 (3'8")	44° Either Side	Power Shift	29.8 (18.5)	29.8 (18.5)	
825C	86X	78-96	231 (310)	32 400 (71,432)	1.13 (3'8")	42° Either Side	Power Shift 4F-4R	29.8 (18.5)	33.9 (21.1)	
825G	6RN	96-02	235 (315)	31 740 (69,828)	1.13 (3'8")	42° Either Side	Power Shift 3F-3R	15.6 (9.7)	17.2 (10.7)	
825GII	AXB	03-04	253 (339)	32 734 (72,164)	1.13 (3' 8")	42° Either Side	Power Shift 3F-3R	15.6 (9.7)	17.2 (10.7)	
826C	87X	78-95	235 (315)	34 920 (76,990)	1.20 (3'11")	42° Either Side	Power Shift 4F-4R	32.5 (20.2)	37.2 (23.1)	
826G	7LN	96-02	235 (315)	33 350 (73,537)	1.2 (3'11")	42° Either Side	Power Shift 2F-2R	11.2 (6.9)	13.5 (8.4)	
835	44N	70-74	298 (400)	35 900 (79,100)	1.22 (4'0")	44° Either Side	Power Shift 3F-3R	32.2 (20.0)	34.8 (21.6)	
836	3RL 7FR	93-95 95-98	336 (450)	45 450 (100,000)	1.4 (4'7")	35° Either Side	Power Shift 2F-2R	11.3 (7.0)	14.0 (8.7)	*
836G	7MZ	98-01	351 (471)	53 680 118,348	1.4 (4'7")	35° Either Side	Power Shift 2F-2R	6.0 (3.7)	10.2 (6.3)	

*Turbocharged, Articulated Steering.

**Turbocharged, ROPS Cab, Sleeve Metering Fuel System.



WHEEL LOADERS

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower	Approx. Shipping Wt. kg (lb)	Rated Capacity m ³ (yd ³)	Breakout Force kg (lb)	Width Over Tires m (ft)	Ground Clearance mm (in)	Max. Reach at max. height mm (ft)	Dump Clearance at max. height m (ft)	Maximum Speeds km/h (mph)		Remarks
											Fwd.	Rev.	
910	80V	73-79	65	6100 (13,400)	1.0 (1.25)	4530 (10,000)	2.07 (6'10")	405 (16")	860 (2'10")	2.46 (8'1")	24.1 (15.0)	10.6 (6.6)	
910	40Y	79-89	65	6658 (14,679)	1.0 (1.25)	5838 (12,870)	2.07 (6'10")	405 (16")	930 (3'0.6")	2.40 (7'10")	23.9 (14.8)	10.6 (6.6)	
910	41Y	79-89	65	6658 (14,679)	1.0 (1.25)	5838 (12,870)	2.07 (6'10")	405 (16")	930 (3'0.6")	2.40 (7'10")	23.5 (14.6)	24.9 (15.5)	
910E	1SF	89-92	78	7298 (16,062)	1.3 (1.7)	6503 (14,339)	2.15 (7'0")	343 (13.5")	1000 (3'3.4")	2.57 (8'5")	34.0 (21.1)	22.4 (13.9)	3114 Engine Z Bar Linkage
910F	1SF	92-95	80	7009 (15,452)	1.3 (1.7)	6443 (14,207)	2.15 (7'0")	370 (14.6")	981 (3'3")	2.60 (8'6")	34.0 (21.1)	22.4 (13.9)	3114 Engine Z Bar Linkage
916	2XB	86-92	85	8554 (18,857)	1.4 (1.75)	9124 (20,115)	2.33 (7'8")	322 (12.7")	926 (3'0.5")	2.65 (8'9")	24.8 (15.4)	25.0 (15.5)	3204 Engine Z Bar Linkage
918F	3TJ	92-94	98	8973 (19,785)	1.5 (2.0)	9795 (21,598)	2.33 (9'1.6")	318 (13")	802 (2'8")	2.78 (9'1")	37.0 (23.0)	24.5 (15.2)	3114 Engine Z Bar Linkage
920	62K	69-84	80	8440 (18,600)	1.2 (1.5)	7901 (17,419)	2.16 (7'1")	335 (13")	740 (2'5")	2.77 (9'1")	43.8 (27.2)	23.2 (14.4)	
922A	59A	60-62	80	7350 (16,200)	0.93 (1.25)	6850 (15,100)	2.12 (7'0")	368 (15")	655 (2'2")	2.60 (8'7")	30.4 (18.9)	32.8 (20.4)	
922B	88J	62-68	80	7670 (16,900)	1.15 (1.50)	9000 (19,900)	2.25 (7'5")	390 (16")	680 (2'3")	2.60 (8'7")	33.6 (20.9)	42.9 (26.7)	
924F	5NN	94-99	105	9025 (19,900)	1.7 (2.25)	9553 (21,067)	2.33 (7'6")	318 (12.5")	855 (2'8")	2.70 (8'10")	38.2 (23.6)	23.6 (14.8)	
926	94Z	84-87	105	8800 (19,400)	1.21 (1.75)	5070 (11,179)	2.33 (7'8")	341 (13.5")	924 (3'0")	2.67 (8'9")	30.3 (18.8)	32.3 (20.0)	
926E	94Z	87-92	110	9432 (20,794)	1.7 (2.25)	10 044 (22,143)	2.33 (7'8")	341 (13.5")	1003 (3'3.5")	2.75 (9'0")	34.2 (21.2)	36.8 (22.9)	3204 Engine Z Bar Linkage
928F	2XL	93-96	120	10 870 (23,920)	2.1 (2.75)	10 090 (22,200)	2.43 (8'0")	318 (13")	956 (3'2")	2.74 (9'0")	36.5 (22.6)	21.1 (13.1)	3116 Engine Z Bar Linkage
930	41K	68-85	100	9660 (21,300)	1.7 (2.25)	7900 (17,410)	2.39 (7'10")	348 (13.7")	1350 (3'9")	2.79 (9'2")	44.2 (27.5)	23.3 (14.5)	3304 Engine Z Bar Linkage
936	33Z	83-87	125	11 884 (26,200)	2.1 (2.75)	12 514 (28,708)	2.56 (8'4.5")	329 (13")	1055 (3'0")	2.80 (9'2")	34.4 (21.4)	38.4 (23.9)	
936E	33Z	87-92	135	12 300 (27,000)	2.3 (3.00)	12 920 (28,483)	2.56 (8'5")	379 (14.9")	1026 (2'11")	2.87 (9'2")	40.6 (25.2)	45.3 (28.2)	
936F	8AJ	92-94	140	12 300 (27,060)	2.3 (3.00)	12 920 (28,483)	2.58 (8'5")	379 (14.9")	997 (3'3")	2.84 (9'4")	42.3 (26.3)	46.7 (29.6)	3304 Engine Box Frame

Wheel Loaders (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel Horse-power	Approx. Shipping Wt. kg (lb)	Rated Capacity m ³ (yd ³)	Breakout Force kg (lb)	Width Over Tires m (ft)	Ground Clearance mm (in)	Max. Reach at max. height mm (ft)	Dump Clearance at max. height m (ft)	Maximum Speeds km/h (mph)		Remarks
											Fwd.	Rev.	
938F		94-97	140	13 030 (28,730)	2.5 (3.25)	12 330 (27,180)	2.61 (8'7")	400 (16")	1004 (3'4")	2.85 (9'4")	37.9 (23.6)	22.0 (13.7)	3116 Engine Wet Disc Brakes Z Bar Linkage
938G	4YS	97-02	160	12 962 (28,578)	2.8 (3.65)	11 227 (24,770)	2.60 (8'6")	400 (16")	1055 (3'6")	2.72 (8'11")	39.4 (24.5)	23.4 (14.5)	
944	87J	59-68	100	10 100 (22,000)	1.53 (2.0)	9800 (21,700)	2.40 (7'10")	450 (18")	905 (3'0")	2.96 (9'9")	38.5 (23.9)	46.6 (28.9)	
950	81J	68-81	130	12 930 (28,500)	1.53 (2.07)	10 320 (22,760)	2.41 (7'11")	381 (15")	740 (2'5")	2.82 (9'3")	35.9 (22.3)	42.5 (26.4)	Articulated Steering, 4 Wheel Drive
950B	22Z	81-87	155	14 650 (32,300)	2.9 (3.75)	15 680 (35,895)	2.67 (5'9")	427 (16.8")	1125 (3'8")	2.95 (9'8")	36.4 (22.6)	39.4 (24.5)	Z Bar Linkage
950E	22Z	87-91	160	15 856 (34,883)	3.1 (4.0)	13 586 (29,925)	2.76 (9'0")	400 (15.7")	1160 (3'10")	2.85 (9'4")	36.2 (22.4)	39.9 (24.7)	23.5-25 Std. Tires
950F	7ZF	90-92	170	16 086 (35,463)	3.1 (4.0)	14 954 (32,974)	2.76 (9'0")	474 (18.7")	1160 (3'10")	2.85 (9'4")	39.3 (24.4)	43.0 (26.7)	3116 Engine Wet Disc Brakes
950F	5SK	93-98	170	16 880 (37,220)	3.1 (4.0)	14 960 (32,980)	2.76 (9'0")	460 (18.1")	1180 (3'10")	2.83 (9'3")	38.7 (24.0)	42.7 (26.5)	Integral ROPS Electronic Shift
950G	3JW 4BS	98-02	183	16 904 (37,266)	3.5 (4.5)	14 888 (32,810)	2.89 (9'6")	400 (16")	1270 (4'2")	2.89 (9'6")	37.0 (23.0)	40.7 (25.3)	
960F	9ZJ	94-98	200	18 070 (39,840)	3.5 (4.5)	14 500 (31,970)	2.77 (9'1")	454 (17.9")	1030 (3'5")	2.92 (9'6")	39.4 (24.5)	43.2 (26.8)	Material Handler
962G	4PW 5AS	98-02	200	17 941 (39,553)	3.8 (5.0)	14 480 (31,950)	2.90 (9'8")	400 (16")	1250 (4'2")	2.77 (9'2")	37.0 (23.0)	40.7 (25.3)	
966A	33A	60-63	140	13 060 (28,800)	2.10 (2.75)	13 470 (29,700)	2.70 (8'10")	450 (18")	900 (3'0")	2.95 (9'8")	43.0 (26.7)	51.5 (32.3)	
966B	75A	63-68	150	14 300 (31,500)	2.29 (3.0)	14 000 (31,000)	2.70 (8'10")	400 (16")	900 (3'0")	2.95 (9'8")	38.5 (23.9)	46.3 (28.8)	
966C	76J	68-81	170	16 730 (36,890)	3.1 (4.0)	11 600 (25,578)	2.77 (9'1")	400 (15.7")	1420 (4'8")	2.95 (9'8")	38.0 (23.6)	45.1 (28.0)	3306 Engine
966D	99Y	80-87	200	19 730 (43,500)	3.3 (4.25)	20 972 (48,150)	2.86 (9'4.8")	451 (17.8")	1230 (4'0")	3.14 (10'3.5")	34.3 (21.3)	38.1 (23.7)	3306 Engine Z Bar Linkage
966E	99Y	87-90	216	20 324 (44,767)	3.8 (5.0)	18 939 (41,715)	2.94 (9'8")	476 (18.7")	1290 (4'3")	2.97 (9'9")	38.2 (23.7)	43.6 (27.0)	26.5-25 Std. Tires
966F	4YG	90-93	220	20 466 (45,119)	3.8 (5.0)	20 493 (45,187)	2.94 (9'8")	476 (18.7")	1280 (4'2")	2.98 (9'9")	37.6 (23.4)	42.6 (26.4)	Wet Disc Brakes
966F	1SL	93-98	220	21 290 (46,950)	3.8 (5.0)	20 490 (45,180)	2.94 (9'8")	476 (18.7")	1277 (4'2")	2.98 (9'9")	38.8 (24.1)	43.9 (27.3)	Integral ROPS Electronic Shift
966G	3SW 3ZS	98-02	235	22 068 (48,651)	4.0 (5.25)	19 986 (44,120)	2.97 (9'9")	565 (22")	1295 (4'3")	3.1 (10'2")	37.1 (23.1)	42.2 (26.2)	
970F	7SK	93-98	250	23 690 (52,240)	4.7 (6.0)	16 510 (36,400)	2.94 (9'8")	482 (19")	1357 (4'5")	3.22 (10'6")	37.3 (23.2)	42.7 (26.5)	Material Handler New Model

Wheel Loaders (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel Horse-power	Approx. Shipping Wt. kg (lb)	Rated Capacity m ³ (yd ³)	Breakout Force kg (lb)	Width Over Tires m (ft)	Ground Clearance mm (in)	Max. Reach at max. height mm (ft)	Dump Clearance at max. height m (ft)	Maximum Speeds km/h (mph)		Remarks
											Fwd.	Rev.	
972G	4WW 7LS	98-02	265	24 468 (53,942)	4.7 (6.0)	21 618 (47,580)	2.97 (9'9")	565 (22")	1255 (4'1")	3.15 (10'4")	37.0 (22.9)	41.9 (26.0)	
980	42H	66-70	235	20 000 (44,000)	3.06 (4.0)	18 860 (41,570)	2.87 (9'5")	399 (16")	1190 (3'11")	3.07 (10'1")	42.0 (26.1)	26.7 (16.6)	
980B	89P	70-78	260	23 360 (51,500)	3.44-4.21 (4.5-5.5)	15 900 (35,100)	3.11 (10'2")	— (—)	1120 (3'8")	3.20 (10'6")	43.0 (26.7)	27.4 (17.0)	
980C	63X	79-91	270	27 559 (60,755)	5.2 (6.75)	23 188 (51,121)	3.15 (10'4")	417 (16.4")	1480 (4'10")	3.19 (10'6")	34.6 (21.5)	39.6 (24.5)	Dual Z Bar Linkage
980F	8CJ	91-92	275	27 580 (60,800)	5.3 (7.0)	23 188 (51,121)	3.15 (10'4")	469 (18.5")	1500 (4'11")	3.16 (10'5")	37.4 (23.2)	42.8 (26.6)	Electronic Shift
980F	Series II	92-95											
980G	2KR	95-01	300	29 480 (65,000)	5.4 (7.0)	23 760 (52,390)	3.25 (10'8")	467 (18.4")	1540 (5'1")	3.27 (10'8")	37.4 (23.2)	42.8 (26.6)	
988	87A	63-76	325	35 800 (79,000)	4.6-5.4 (6.0-7.0)	21 380 (47,130)	3.20 (10'7")	570 (22.5")	1450 (4'9")	3.33 (10'11")	30.6 (19.0)	30.6 (19.0)	
988B	50W	76-93	375	43 365 (95,600)	5.4-6.3 (7.0-8.25)	36 330 (80,100)	3.52 (11'7")	474 (18")	2150 (7'1")	3.19 (10'5")	36.2 (22.5)	41.4 (25.7)	3408 Engine Z Bar Linkage
988F	8YG	93-95	400	43 540 (95,900)	5.4-6.1 (7.0-8.0)	37 363 (82,371)	3.52 (11'7")	496 (19")	1830 (6'0")	3.21 (10'6")	35.1 (21.8)	23.5 (14.6)	Bucket/HP increase STIC Steer
988F	2ZR	95-00	475	45 678 (100,492)	6.1-6.9 (8.0-9.0)	37 400 (82,282)	3.52 (11'7")	496 (17")	1611 (5'3")	3.22 (10'7")	35.1 (21.8)	23.5 (14.6)	3048E HEUI Engine Axle Shaft Brakes
988G	2TW	01	475	50 040 (110,320)	6.3-7.0 (8.2-9.2)	46 950 (103,500)	3.47 (11'5")	549 (21.6")	2.1 (6'11")	4.0 (13'1")	38.7 (24.0)	22.3 (13.8)	6 Bar Linkage "G" Series
990	7HK	93-95	610	72 910 (160,600)	8.6 (11.2)	59 776 (131,784)	4.13 (13'6")	552 (21.7")	2070 (6'10")	3.99 (13'1")	22.5 (14.0)	25.0 (15.5)	ICTC & New Model
990	4FR	96-01	625	72 200 (159,170)	8.4-9.2 (11-12)	63 100 (138,800)	4.0 (13'1")	490 (19.3")	1.99 (6'6")	4.05 (13'3")	22.5 (14.0)	25.0 (15.5)	HEUI Engine
990	Series II												
992	25K	68-73	550	47 670 (105,100)	7.65 (10.0)	36 900 (81,360)	3.93 (12'11")	530 (21")	2820 (8'3")	4.52 (14'10")	35.6 (22.1)	38.5 (23.8)	
992B	25K	73-77	550	64 320 (141,800)	7.65 (10.0)	29 330 (64,660)	— (—)	— (—)	1930 (6'4")	4.34 (14'3")	40.2 (25.0)	43.6 (27.1)	
992C	97X	77-81	690	85 640 (188,800)	9.6 (12.5)	66 240 (146,030)	4.55 (14'11")	533 (21")	2310 (7'7")	4.17 (13'8")	21.1 (13.1)	23.3 (14.5)	3412 PCT Engine Z Bar Linkage
992C	49Z	81-92	690	88 430 (194,950)	10.4 (13.5)	66 285 (146,132)	4.50 (14'9")	544 (21")	2310 (7'7")	4.17 (13'8")	21.0 (13.0)	22.9 (14.2)	3412 DIT Engine
992D	7MJ	92-97	710	88 690 (195,125)	10.7 (14.0)	62 670 (137,870)	4.50 (14'9")	544 (21")	2300 (7'7")	4.17 (13'8")	21.0 (13.0)	22.9 (14.2)	
992G	7HR	98-00	800	91 540 (201,810)	11.5-12.3 (15-16)	62 650 (137,840)	4.5 (14'9")	691 (27.2")	2.3 (7'7")	4.6 (15'3")	20.2 (12.5)	22.7 (14.1)	6 Bar Linkage "G" Series
994	9YF	90-98	1250	177 000 (390,300)	10.3 (13.4)	103 420 (228,000)	5.20 (17'1")	662 (26")	2692 (8'10")	6.20 (20'4")	24.7 (15.0)	26.6 (16.5)	



TRACK LOADERS

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Rated Capacity m ³ (yd ³)	Dimensions			Remarks
						Length** m (ft)	Width m (ft)	Height m (ft)	
931	78U	72-79	62	6940 (15,300)	0.77 (1.0)	2.74 (9'0")	1.78 (5'10")	1.96 (6'5")	
931 LGP	10N	75-79	62	7498 (16,530)	1.15 (1.5)	2.74 (9'0")	2.29 (7'6")	1.98 (6'6")	
931B	29Y	79-88	65	7362 (16,230)	0.8 (1.0)	4.13 (13'9")	1.84 (6'0.5")	2.68 (8'10")	
931B LGP	30Y	79-88	65	8089 (17,834)	0.8 (1.0)	3.84 (12'7")	2.41 (7'11")	2.68 (8'10")	
931C	2BJ1 7HF		67	7595 (16,743)	0.77 (1.0)	2.74 (9'0")	1.78 (5'10")	2.68 (8'10")	
931C LGP	6RF1 8AF		67	8170 (18,012)	0.77 (1.0)	2.74 (9'0")	1.78 (5'10")	2.68 (8'10")	
931C Series II	9AG 6AJ	90-93	70	8047 (17,742)	0.83 (1.08)	4.14 (13'1")	1.97 (6'5")	2.68 (8'10")	
933C	11A	55-58	50	7030 (15,500)	0.77 (1.0)	4.22 (13'10")	1.77 (5'10")	1.91 (6'4")	Integral loader
933E	11A	58-65	50	7640 (16,850)	0.77 (1.0)	4.22 (13'10")	1.77 (5'10")	1.40 (6'3")	Integral loader
933G	42A	65-68	60	7900 (17,500)	0.86 (1.125)	4.31 (14'2")	1.77 (5'10")	2.15 (7'1")	Patented Sealed Track
935B	30F	87-88	75	7899 (17,414)	1.0 (1.25)	4.19 (13'9")	1.96 (6'5")	2.68 (8'10")	
935C	8CF		78	8205 (18,089)	1.0 (1.3)	4.19 (13'9")	1.96 (6'5")	2.68 (8'10")	
935C Series II	SDJ	90-93	80	8759 (19,311)	1.0 (1.3)	4.37 (14'4")	1.97 (6'5")	2.68 (8'10")	
941	80H	68-72	70	8900 (19,700)	0.96 (1.25)	4.50 (14'10")	1.86 (6'1")	2.75 (9'0")*	Electric Start
941B	80H	68-81	80	11 294 (24,900)	1.15 (1.5)	4.50 (14'10")	1.98 (6'6")	2.75 (9'0")*	HP Increase, Hydraulic Track Adjusters
943	31Y	80-85	80	11 750 (25,900)	1.15 (1.5)	5.426 (17'10")	2.21 (8'7")	3.02 (9'11")	Hydrostatic drive
943	19Z	80-92	80	11 750 (25,900)	1.15 (1.5)	5.426 (17'10")	2.21 (8'7")	3.02 (9'11")	Hydrostatic drive made in France
951B	79H	67-71	85	10 025 (22,100)	1.14 (1.5)	4.70 (15'6")	1.98 (6'6")	2.75 (9'0")*	Pedal Steering
951C	86J	71-81	95	12 338 (27,200)	1.34 (1.75)	4.77 (15'8")	1.98 (6'6")	2.75 (9'0")*	HP Increase, Sealed & Lubricated Track
953	5Z	81-85	110	14 050 (31,000)	1.5 (2.0)	5.87 (19'3")	2.38 (7'10")	3.08 (10'1")	Hydrostatic drive
953	20Z	81-92	110	14 050 (31,000)	1.5 (2.0)	5.87 (19'3")	2.38 (7'10")	3.08 (10'1")	Hydrostatic drive

*Height to top of stack. Others to top of seat back.

**Overall length to tip of smallest General Purpose bucket.

Track Loaders (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Rated Capacity m ³ (yd ³)	Dimensions			Remarks
						Length** m (ft)	Width m (ft)	Height m (ft)	
953	76Y	81-85	110	13 800 (30,500)	1.5 (2.0)	5.87 (19'3")	2.38 (7'10")	3.08 (10'1")	Hydrostatic drive
953	77Y	81-85	110	13 800 (30,500)	1.5 (2.0)	5.87 (19'3")	2.38 (7'10")	3.08 (10'1")	Hydrostatic drive
953B	5MK	92-96	120	14 400 (31,800)	1.75 (2.25)	4.23 (13'4")	2.38 (7'10")	3.08 (10'1")	Hydrostatic drive
HT4	7U	50-55	54	2607 (5748)	0.96 (1.25)	4.32 (14'2")	2.03 (6'8")	1.83 (6'0")	Integral loader
955C	12A	55-60	70	9590 (21,145)	1.15 (1.5)	4.60 (15'2")	2.03 (6'8")	2.08 (6'11")	
955E	12A	58-60	70	10 160 (22,400)	1.15 (1.5)	4.60 (15'2")	2.03 (6'8")	2.09 (6'11")	Improved undercarriage
955H	60A	60-66	100	11 320 (24,950)	1.34 (1.75)	4.79 (15'9")	1.90 (6'3")	2.65 (8'8")*	Power shift, Turbo, oil cooled brakes
955K	61H	66-71	115	12 700 (28,000)	1.34 (1.75)	5.00 (16'6")	2.06 (6'9")	2.80 (9'3")*	Horsepower and bucket capacity increase
955L	85J	71-75	130	15 330 (33,800)	1.53 (2.0)	5.30 (16'1")	2.18 (7'2")	2.95 (9'8")*	ROPS Cab, Sealed & Lubricated Track
955L	13X	75-81	130	15 853 (34,950)	1.72 (2.25)	5.26 (17'3")	2.18 (7'2")	2.95 (9'8")	
963	6Z	81-85	150	18 250 (40,250)	2.0 (2.6)	6.35 (20'10")	2.50 (8'2")	3.30 (10'10")	Hydrostatic drive
963	11Z	81-85	150	18 370 (40,490)	2.0 (2.6)	6.35 (20'10")	2.50 (8'2")	3.30 (10'10")	Hydrostatic drive
963	18Z	82-86	150	18 250 (40,250)	2.0 (2.6)	6.35 (20'10")	2.50 (8'2")	3.30 (10'10")	Hydrostatic drive made in France
963	21Z	82-95	150	18 370 (40,490)	2.0 (2.6)	6.35 (20'10")	2.50 (8'2")	3.30 (10'10")	Hydrostatic drive made in France
963B	9BL	95-99	160	19 620 (43,270)	2.45 (3.2)	6.60 (21'8")	2.50 (8'2")	3.31 (10'10")	3116 engine
973	86G	81-00	210	25 040 (55,200)	3.2 (4.2)	7.12 (23'4")	2.85 (9'4")	3.42 (11'3")	
No. 6	10A	53-55	80	13 229 (29,165)	1.5 (2.0)	4.90 (16'1")	2.44 (8'1")	2.11 (6'11")	Improved undercarriage Power shift, Turbo, oil cooled brakes Walk-through compartment, longer roller frame Horsepower and bucket capacity increase
977D	20A	55-60	100	14 430 (31,795)	1.72 (2.25)	5.19 (18'0")	2.44 (8'0")	2.22 (7'4")	
977E	20A	58-60	100	15 850 (34,910)	1.72 (2.25)	5.19 (18'0")	2.44 (8'0")	2.29 (7'7")	
977H	53A	60-66	150	17 000 (37,500)	1.90 (2.5)	5.28 (17'4")	2.44 (8'0")	2.29 (7'7")	
977K	46H	66-78	170	19 100 (42,000)	1.90 (2.5)	5.50 (18'0")	2.38 (7'10")	3.05 (10'0")*	
977L	14X	78-82	190	21 780 (48,010)	2.10 (2.75)	5.59 (18'4")	2.38 (7'10")	3.32 (10'11")*	
983	38K	69-78	275	34 460 (75,980)	3.82 (5.0)	6.78 (22'3")	2.90 (9'6")	2.79 (11'10")*	
983B	58X	78-82	275	35 620 (78,530)	3.82 (5.0)	6.78 (22'3")	2.90 (9'6")	3.68 (12'1")*	DI engine

*Height to top of stack. Others to top of seat back.

**Overall length to tip of smallest General Purpose bucket.

Former Models

Integrated Toolcarriers Telehandlers



INTEGRATED TOOLCARRIERS

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Rated Capacity m ³ (yd ³)	Breakout Force kg (lb)	Width Over Tires m (ft)	Ground Clearance mm (in)	Max. Reach at Max. Height mm (in)	Dump Clearance at Max. Height m (ft)	Maximum Speeds	
											km/h	(mph)
IT12	2YC	84-89	65	7393 (16,299)	1.0 (1.25)	7193 (15,858)	2.3 (7'8")	405 (15.9")	873 (34")	2.84 (9'4")	23.6 (14.6)	24.9 (15.4)
IT12B	1KF	89-93	78	7950 (17,530)	1.2 (1.6)	6160 (13,583)	2.15 (7'1")	343 (13.5")	958 (37.7")	2.69 (8'10")	34 (21.1)	22.4 (13.9)
IT12F	1KF	93-95	80	7893 (17,401)	1.3 (1.7)	6479 (14,247)	2.15 (7'1")	365 (1'2")	917 (3'1")	2.74 (8'11.8")	34 (21.1)	22.4 (13.9)
IT14B	3NJ	89-93	85	8333 (18,374)	1.2 (1.6)	7525 (16,593)	2.15 (7'1")	344 (13.6")	958 (37.7")	2.70 (8'11")	37.3 (23.2)	24.4 (15.2)
IT14F	4EL	93-95	85	7999 (17,635)	1.3 (1.7)	7170 (15,808)	2.15 (7'1")	365 (1'2")	918 (3'1")	2.74 (9'0")	37.3 (23.2)	24.4 (15.2)
IT18	9NB	84-86	85	8660 (19,092)	1.2 (1.5)	9105 (20,108)	2.4 (7'10")	285 (11.2")	990 (39")	2.84 (9'4")	25 (15.5)	25 (15.5)
IT18B	4ZD	86-92	95	9770 (21,540)	1.3 (1.75)	10 500 (21,350)	2.28 (7'6")	324 (12.8")	993 (39")	2.89 (9'6")	26.4 (16.4)	27.7 (17.2)
IT18F	6ZF	92-94	105	9959 (21,960)	1.6 (2.0)	8880 (19,580)	2.33 (7'8")	321 (1'1")	1089 (3'7")	2.75 (9'0")	37 (23)	24.5 (15.2)
IT24F	4NN	94-99	105	9989 (20,022)	1.7 (2.5)	8782 (19,361)	2.33 (7'6")	321 (12.6")	1088 (3'6")	2.75 (9'0")	38.0 (23.6)	23.4 (14.8)
IT28	2KC	84-86	105	9560 (21,076)	1.5 (2.0)	9505 (20,955)	2.4 (7'10")	285 (11.2")	1044 (41")	2.82 (9'3")	30.8 (18.8)	32.3 (20.0)
IT28B	1HF	86-93	110	10 580 (23,325)	1.7 (2.25)	10 456 (23,050)	2.32 (7'7")	324 (12.8")	1091 (43")	2.73 (8'11")	34.4 (21.4)	37.2 (23.1)
IT28F	3CL	93-96	125	11 430 (25,200)	2.0 (2.6)	9840 (21,700)	2.43 (8'0")	317 (12")	1093 (43")	2.72 (8'11")	35.4 (21.9)	21.4 (13.5)
IT28G	DBT	02-04	146	12 640 (27,860)	2.0 (2.6)	10 631 (23,437)	2.54 (8'4")	407 (16")	958 (38")	2.97 (9'9")	37.7 (23.4)	25.8 (16)
950F CT	5SK	94-98	170	16 600 (36,580)	3.1 (4.0)	13 590 (29,950)	2.87 (9'5")	460 (18")	1714 (68")	2.845 (9'4")	38.7 (24.0)	42.7 (26.5)



TELEHANDLERS

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower kW (hp)	Operating Weight kg (lb)	Engine	Maximum Lift Height m (ft/in)	Maximum Reach m (ft/in)	Maximum Lift Capacity kg (lb)
TH62	4TM	00-02	72 (105)	6840 (15,080)	3054T	7.6 (25'0")	4.2 (13'9")	2725 (6000)
TH63	5WM	00-02	72 (105)	9260 (20,420)	3054T	12.5 (41'0")	8.1 (26'7")	3000 (6615)
TH82	3JN	00-02	72 (105)	7470 (16,470)	3054T	7.6 (25'0")	4.2 (13'9")	3635 (8000)
TH83	3RN	00-02	72 (105)	10 000 (22,050)	3054T	12.5 (41'0")	8.2 (27'0")	3635 (8000)
TH103	3PN	00-02	72 (105)	12 500 (27,500)	3054T	13.5 (44'0")	8.8 (28'9")	4536 (10,000)



PAVING PRODUCTS — COLD PLANERS

Model	Product Ident. No. Prefix	Years Built	kW Flywheel (Horsepower)	Approximate Operating Weight kg (lb)	General Dimensions (Shipping)		
					Height mm (ft)	Length mm (ft)	Width mm (ft)
PR-75		85-92	52 (77)	5900 (13,000)	2690 (8'10")	3050 (10'0")	2130 (7'0")
PR-105		85-92	67 (90)	7711 (17,000)	2921 (9'7")	3581 (11'9")	2515 (8'3")
PR-275	6RC	—	201 (270)	17 237 (38,000)	2896 (9'6")	5740 (18'10")	2438 (8'0")
PR-450		85-92	336 (450)	28 308 (58,000)	4270 (14'0")	13 280 (43'8")	2870 (9'5")
PR-450C		92-97	336 (450)	28 308 (58,000)	3810 (12'6")	13 200 (43'6")	2490 (8'2")
PR-750B		85-92	559 (750)	42 638 (94,000)	3734 (12'3")	16 500 (54'0")	3575 (11'9")
PR-1000			Cutter 559 (750) Track 186 (250)	46 780 (103,130)	3810 (12'6")	16 590 (54'5")	4877 (16'0")
PM-465	5ZS	97-03	353 (473)	14 333 (31,600)	2820 (9'3")	13 716 (45'0")	2489 (8'2")



PAVING PRODUCTS — RECLAIMERS & STABILIZERS

Model	Product Ident. No. Prefix	Years Built	kW Flywheel (Horsepower)	Approximate Operating Weight kg (lb)	General Dimensions (Shipping)		
					Height mm (ft)	Length mm (ft)	Width mm (ft)
SS-250	6DD	85-96	250 (335)	13 300 (29,300)	3220 (10'7")	8780 (28'10")	2900 (9'7")
SS-250B	5GR	96-01	250 (335)	14 340 (31,600)	2600 (8'6")	8560 (28'1")	2900 (9'6")
RR-250	6ED	85-96	250 (335)	17 876 (39,300)	3220 (10'7")	8780 (28'10")	2900 (9'7")
RR-250B	3RR	96-01	250 (335)	19 260 (42,470)	2600 (8'6")	8560 (28'1")	2900 (9'6")
RM-350	5FK	92-97	321 (430)	21 440 (47,200)	3404 (11'2")	9577 (31'5")	2997 (9'10")
SM-350	1RM	92-97	321 (430)	18 440 (40,600)	3404 (11'2")	9577 (31'5")	2997 (9'10")

Former Models

Paving Products
● Drum Mix Asphalt Plants



PAVING PRODUCTS — UNITIZED VENTURI-MIXERS & UNITIZED DRUM-MIXERS

Drum Dimensions			Performance		
Model	Diameter mm (ft)	Length m (ft)	Gross Volume m ³ (ft ³)	Production Range/hr. metric tons (tons)	Air Flow m ³ /min (ft ³ /min)
UVM-500	1829/1524 (6'0"/5'0")	7.9 (26'0")	14.17 (500)	68-109 (75-120)	300-481 (10,600-17,000)
UDM-600	1829 (6'0")	6.7 (22'0")	17.00 (600)	82 (89)	354.25 (12,500)
UDM-900	2134/1829 (7'0"/6'0")	9.1 (30'0")	25.48 (900)	68-227 (75-250)	311-793 (11,000-28,000)
UVM-1000	2134 (7'0")	9.754 (32'0")	28.34 (1000)	82-272 (90-300)	425-1076 (15,000-38,000)
UVM-1400	2286 (7'6")	10.973 (36'0")	39.64 (1400)	100-358 (110-395)	481-1274 (17,000-45,000)
UVM-1700	2591 (8'6")	11.582 (38'0")	48.14 (1700)	122-480 (135-450)	651-1614 (23,000-57,000)



PAVING PRODUCTS — PORTABLE VENTURI-MIXERS

Drum Dimensions			Performance		
Model	Diameter mm (ft)	Length m (ft)	Gross Volume m ³ (ft ³)	Production Range/hr. metric tons (tons)	Air Flow m ³ /min (ft ³ /min)
PVM-1100	2134 (7'0")	10.97 (36'0")	31.15 (1100)	82-295 (90-325)	425-1133 (15,000-40,000)
PVM-1500	2286 (7'6")	12.19 (40'0")	42.48 (1500)	100-363 (110-400)	510-1274 (18,000-45,000)
PVM-2000	2591 (8'6")	12.80 (42'0")	56.64 (2000)	122-454 (135-500)	680-1699 (24,000-60,000)
PVM-2500	2896 (9'6")	12.80 (42'0")	70.79 (2500)	136-499 (150-550)	793-2110 (28,000-74,500)
PVM-2900	3048 (10'0")	13.41 (44'0")	82.12 (2900)	168-553 (185-610)	906-2265 (32,000-80,000)
PVM-3300	3200 (10'6")	13.41 (44'0")	93.45 (3300)	181-612 (200-675)	991-2464 (35,000-87,000)

- Paving Products
- Stationary Venturi-Mixers
- SlipForm Pavers

Former Models



PAVING PRODUCTS — STATIONARY VENTURI-MIXERS

Drum Dimensions			Performance		
Model	Diameter mm (ft)	Length m (ft)	Gross Volume m ³ (ft ³)	Production Range/hr. metric tons (tons)	Air Flow m ³ /min (ft ³ /min)
SVM-1100	2134 (7'0")	10.97 (36'0")	31.15 (1100)	82-295 (90-325)	425-1133 (15,000-40,000)
SVM-1500	2286 (7'6")	12.19 (40'0")	42.48 (1500)	100-363 (110-400)	510-1274 (18,000-45,000)
SVM-2000	2591 (8'6")	12.80 (42'0")	56.64 (2000)	122-454 (135-500)	680-1699 (24,000-60,000)
SVM-2500	2896 (9'6")	12.80 (42'0")	70.79 (2500)	136-499 (150-550)	793-2110 (28,000-74,500)
SVM-2900	3048 (10'0")	13.41 (44'0")	82.12 (2900)	168-553 (185-610)	906-2265 (32,000-80,000)
SVM-3600	3200 (10'6")	14.63 (48'0")	101.94 (3600)	190-623 (210-685)	1020-2565 (36,000-90,000)



PAVING PRODUCTS — SLIPFORM PAVERS

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Standard Paving Width m (ft)	Shipping Dimensions (Min.)			Remarks
						Length m (ft)	Width m (ft)	Height m (ft)	
SF-175	5ZC	—	142	9072 (20,000)	2.1 (7'0")	6.6 (21'6")	2.4 (8'0")	2.8 (9'4")	
SF-250	6XC	—	208	24 494 (54,000)	3.6 (12'0")	3.0 (10'0")	3.7 (12'0")		
SF-250B	—	—	250	27 216 (60,000)	3.7-7.3 (12'0"-24'0")	1.5 (5'0")	3.66 (12'0")	3.20 (10'6")	
SF-350	—	—	290	40 824 (90,000)	3.6-7.3 (12'0"-24'0")	1.04 (3'5")	3.0 (10'0")	2.9 (9'8")	
SF-450	7GC	73-83	400	43 546* (96,000) 53 525** (118,000)	3.66-7.62 (12'0"-25'0")	9.35 (30'8")	3.05 (10'0")	2.90 (9'6")	
SF-500	8DC	—	400	52 164 (115,000)	7.6 (25'0")	8.9 (29'2½")	3.0 (10'0")	3.0*** (10'2")	
SF-550	5PD	—	400	52 164 (115,000)	5.5-8.5 (18'0"-28'0")	7.0 (23'0")	3.7 (12'0")	2.9 (9'8")	

*Weight of 7.62 m (25'0") machine.
 **Weight of 11.58 m (38'0") machine.
 ***Machine legs and track shipped separately.

Former Models

Paving Products

- Placer-Spreader-Trimmer ● Belt Placer
- Tube Finisher ● Texturing/Curing
- Trimmer-Reclaimer



PAVING PRODUCTS — PLACER-SPREADER-TRIMMER, BELT PLACER

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower	Approximate Operating Weight kg (lb)	General Dimensions		
					Height m (ft)	Length m (ft)	Width m (ft)
PST-300	8EC	—	250	38 193 (84,200)	2.64 (8'8")	10.57 (34'8")	9.02 (29'7")
BP-100	1EF	—	102	11 340 (22,000)	3.27 (10'9")	2.49 (8'2")	2.49 (8'2")



PAVING PRODUCTS — TUBE FINISHER, TEXTURING/CURING

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower	Approximate Operating Weight kg (lb)	General Dimensions (Shipping)		
					Height mm (ft)	Length mm (ft)	Width mm (ft)
TF-250	6YC	—	52	5897 (13,000)	2489 (8'2")	8484 (27'10")	2438 (8'0")
TC-250	7HC	—	56	5897 (13,000)	2489 (8'2")	8484 (27'10")	2438 (8'0")



PAVING PRODUCTS — TRIMMER-RECLAIMER

Model	Product Ident. No. Prefix	Years Built	Flywheel Horsepower	Approximate Operating Weight kg (lb)	General Dimensions (Shipping)		
					Height mm (ft)	Length m (ft)	Width mm (ft)
TR-225B	6WC	—	250	21 319 (47,000)	3200 (10'6")	13.9 (45'9.5")	2896 (9'6")
TR-500	8CC	—	375	46 267 (102,000)	3099 (10'2")	8.9 (29'2¾")	3048 (10'0")



PAVING PRODUCTS — ASPHALT PAVERS & WINDROW ELEVATORS

Model	Product Ident. No. Prefix	Years Built	Flywheel kW (hp)	Approx. Op. Weight kg (lb)	Drive	Screed Width mm (ft)	Hopper Capacity m³ (ft³)	Maximum Op. Speed m/min (ft/min)
AP-200	2NK	86-01	26 (35)	4080 (9000)	Track	2743 (9'0")	5.4 t (6 T)	53.6 (176)
AP-200	6AD	85-91	26 (35)	4080 (9000)	Track	2743 (9'0")	5.4 (6)	0-54 (0-177)
AP-800	1BF	86-89	76 (102)	11 903 (26,350)	Wheel	2438 (8'0")	5.8 (206)	95 (312)
AB-800B	1BF	89-93	76 (102)	11 903 (26,350)	Wheel	2438 (8'0")	5.8 (206)	95 (312)
AP-1050	1JG	89-96	116 (155)	14 878 (32,800)	Track	3048 (10'0")	6.2 (215)	57 (186)
AP-1200	2JD	85-89	108 (145)	13 608 (30,000)	Wheel	3048 (10'0")	6.2 (220)	21.4 (13.3)
WE601B	TEC	85-91	78 (102)	3856 (8500)	N/A	1524 (5'0")	N/A	N/A
BG-200A	N/A	89-91	35 (47)	6750 (14,900)	Wheel	1803 (5'11")	3.26 (116)	56 (180)
BG-210	N/A	90-91	79 (106)	10 192 (22,500)	Wheel	2438 (8'0")	4.76 (170)	84 (275)
BG-210B	N/A	91-01	80 (107)	11 793 (26,000)	Wheel	2438 (8'0")	4.8 (170)	0-21.7 (0-13.5)
BG-220	N/A	84-87	58 (78)	9752 (21,500)	Wheel	2438 (8'0")	3.7 (130)	88 (289)
BG-220B	4ZM	91-94	80 (108)	12 483 (27,525)	Wheel	2438 (8'0")	4.3 (155)	88 (289)
BG-225	N/A	84-87	58 (78)	11 339 (25,000)	Track	2438 (8'0")	3.7 (130)	58 (188)
BG-225B	N/A		118 (158)	16 400 (36,200)	Track	2438 (8'0")	4.3 (155)	57 (189)
BG-240	N/A	85-86	72 (96)	13 154 (29,000)	Wheel	3048 (10'0")	3.7 (130)	81 (265)
BG-240B	7RL	87-99	86 (115)	15 200 (33,500)	Wheel	3048 (10'0")	6.5 (230)	81 (265)

Former Models

Paving Products

- Asphalt Pavers
- Windrow Elevators

Paving Products — Asphalt Pavers & Windrow Elevators (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel kW (hp)	Approx. Op. Weight kg (lb)	Drive	Screed Width mm (ft)	Hopper Capacity m ³ (ft ³)	Maximum Op. Speed m/min (ft/min)
BG-245	N/A	85-87	72 (96)	14 514 (32,000)	Track	3048 (10'0")	5.8 (206)	58 (189)
BG-245B	3XL	87-96	116 (155)	16 080 (35,450)	Track	3048 (10'0")	5.8 (206)	55 (182)
BG-260	N/A	85-87	106 (142)	14 514 (32,000)	Wheel	3048 (10'0")	5.8 (206)	77 (253)
BG-260B	N/A		116 (155)	14 740 (32,500)	Wheel	3048 (10'0")	5.8 (206)	90 (296)
BG-265	N/A	85-87	106 (142)	16 782 (37,000)	Track	3048 (10'0")	5.8 (206)	50 (164)
BG-265B	7XK	87-98	145 (195)	18 380 (40,570)	Track	3048 (10'0")	5.8 (206)	50 (164)
BG-270B	N/A		145 (195)	15 510 (34,200)	Wheel	3048 (10'0")	6.5 (230)	90 (296)
BG-610	N/A	85	58 (78)	4394 (9700)	N/A	1524 (5'0")	N/A	N/A
BG-610A	N/A	86-90	58 (78)	4911 (10,840)	N/A	1524 (5'0")	N/A	N/A
BG-710	N/A		111 (149)	13 380 (29,500)	Wheel	3048 (10'0")	10.0 (80)	98 (320)
BG-730	N/A	87-02	114 (153)	14 061 (31,000)	Wheel	3048 (10'0")	10.0 (80)	0-24.1 (0-15.0)
BG-750	N/A	87-97	116 (155)	17 010 (37,500)	Wheel	4270 (14'0")	10.0 (80)	0-24.1 (0-15.0)
MTP-1260	N/A	86-90	58 (78)	4911 (10,840)	N/A	3048 (10'0")	7.7 (275)	58 (189)
MTP-1265	N/A	88-91	167 (224)	25 368 (56,000)	N/A	3048 (10'0")	11.2 (400)	50 (164)



PAVING PRODUCTS — SINGLE DRUM VIBRATORY COMPACTORS

Model	Product Ident. No. Prefix	Years Built	Flywheel kW (hp)	Approx. Op. Weight kg (lb)	Drive	Drum Width mm (in)	Centrifugal Force kg (lb)	Maximum Op. Speed km/h (mph)
CS-323	1TM	85-95	57 (77)	4173 (9200)	Wheel/ Drum	1219 (48")	5760 (12,700)	0-10.9 (0-6.8)
CP-323	6JD	85-95	57 (77)	4218 (9300)	Wheel/ Drum	1219 (48")	5760 (12,700)	0-10.9 (0-6.8)
CS-431	6MD	85-87	52 (70)	6110 (13,480)	Wheel	1680 (66")	7260 (16,000)	21 (13)
CS-431B	1XF	88-94	76.5 (102)	6312 (13,915)	Wheel	1680 (66")	11 235 (24,746)	12.8 (8.0)
CS-431C	9XL	94-01	78 (105)	6509 (14,349)	Wheel/ Drum	1680 (66")	13 609 (30,000)	12.8 (8.0)
CS-433	6ND	85-87	60 (80)	6720 (14,820)	Wheel/ Drum	1524 (60")	7260 (16,000)	10 (6)
CP-433	6NP	85-87	60 (80)	6750 (14,870)	Wheel/ Drum	1524 (60")	7260 (16,000)	10 (6)
CS-433B	4FK	88-94	76.5 (102)	6448 (14,215)	Wheel/ Drum	1680 (66")	11 235 (24,746)	12.8 (8.0)
CS-433C	3TM	94-01	78 (105)	6773 (14,931)	Wheel/ Drum	1680 (66")	13 609 (30,000)	12.8 (8.0)
CP-433B	1MG	88-94	76.5 (102)	6668 (15,225)	Wheel/ Drum	1680 (66")	11 235 (24,746)	12.8 (8.0)
CP-433C	2JM	94-01	78 (105)	7075 (15,597)	Wheel/ Drum	1680 (66")	13 609 (30,000)	12.8 (8.0)
CS-531	3WM	93-95	108 (145)	9310 (20,500)	Wheel	2134 (84")	22 680 (50,000)	12.8 (8.0)
CS-531C	5ZN	95-00	108 (145)	9300 (20,450)	Wheel	2134 (84")	24 091 (53,000)	12.8 (8.0)
CS-531D	3AZ 4MZ AGH	98-99 99-04 01-03	108 (145)	9650 (21,230)	Rear Wheel	2130 (84")	27 124 (60,000)	12.7 (7.8)
CS-533	3BL	93-95	108 (145)	10 110 (22,500)	Wheel/ Drum	2134 (84")	22 680 (50,000)	12.8 (8.0)
CS-533C	2WN	95-00	108 (145)	9500 (20,900)	Wheel/ Drum	2134 (84")	24 091 (53,000)	12.8 (8.0)
CS-533D	AET 5CZ	00-03 00-04	108 (145)	9960 (21,912)	Drum/ Rear Wheel	2130 (84")	27 124 (60,000)	12.7 (7.8)
CP-533	3ZL	93-95	108 (145)	11 470 (25,250)	Wheel/ Drum	2134 (84")	22 680 (50,000)	12.8 (8.0)
CP-533C	3XN	95-00	108 (145)	10 180 (22,400)	Wheel/ Drum	2134 (84")	24 091 (53,000)	12.8 (8.0)
CP-533D	6AZ AFC	01-04 00-03	108 (145)	10 240 (22,528)	Drum/ Rear Wheel	2130 (84")	27 124 (60,000)	13.2 (8.1)

Former Models

Paving Products

● **Single Drum Vibratory Compactors**

Paving Products — Single Drum Vibratory Compactors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel kW (hp)	Approx. Op. Weight kg (lb)	Drive	Drum Width mm (in)	Centrifugal Force kg (lb)	Maximum Op. Speed km/h (mph)
CS-551	6ZD 8AD	85-89	115 (155)	10 428 (22,990)	Wheel	2130 (84")	18 150 (40,000)	12.1 (7.5)
CS-553	7AD	85-89	115 (155)	10 782 (23,770)	Wheel/ Drum	2130 (84")	18 150 (40,000)	10.5 (6.5)
CP-553	7BD	85-89	115 (155)	12 247 (27,000)	Wheel/ Drum	2130 (84")	22 680 (50,000)	10.5 (6.5)
CS-563	8XF	89-95	108 (145)	11 130 (24,500)	Wheel/ Drum	2134 (84")	22 680 (50,000)	12.8 (8.0)
CS-563C	4KN	95-00	108 (145)	11 215 (24,700)	Wheel/ Drum	2134 (84")	24 091 (53,000)	12.8 (8.0)
CS-563D	9MW	98-02	108 (145)	10 875 (23,975)	Wheel/ Drum	2130 (84")	27 216 (60,000)	12.7 (7.8)
CP-563	1YJ	89-95	108 (145)	11 580 (25,800)	Wheel/ Drum	2134 (84")	22 680 (50,000)	12.8 (8.0)
CP-563C	5JN	95-00	108 (145)	11 670 (25,700)	Wheel/ Drum	2134 (84")	24 091 (53,000)	12.8 (8.0)
CP-563D	9ZW	98-02	108 (145)	11 275 (24,856)	Wheel/ Drum	2130 (84")	27 216 (60,000)	13.2 (8.1)
CS-573C	6LN	95-00	108 (145)	13 800 (30,360)	Wheel/ Drum	2134 (84")	24 091 (53,000)	12.8 (8.0)
CS-573D	CMK	00-02	108 (145)	12 180 (29,060)	Wheel/ Drum	2130 (84")	27 216 (60,000)	12.7 (7.8)
CS-583	8YJ	91-95	108 (145)	15 040 (33,090)	Wheel/ Drum	2134 (84")	22 680 (50,000)	12.8 (8.0)
CS-583C	7MN	95-00	108 (145)	15 230 (33,500)	Wheel/ Drum	2134 (84")	24 091 (53,000)	12.8 (8.0)
CS-583D	2CZ	98-02	108 (145)	14 850 (32,740)	Wheel/ Drum	2130 (84")	31 751 (70,000)	12.7 (7.8)
CS-643	7FD	85-87	100 (134)	14 900 (32,855)	Wheel/ Drum	2200 (86")	16 800 (37,044)	15.5 (9.6)
CP-643	7GD	85-87	100 (134)	16 300 (35,942)	Wheel/ Drum	2200 (86")	12 600 (27,783)	15.5 (9.6)
CS-653	7HD	85-91	100 (134)	17 100 (37,690)	Wheel/ Drum	2200 (86")	22 230 (48,995)	15.5 (9.6)
CP-653	7JD	85-91	100 (134)	18 500 (40,774)	Wheel/ Drum	2200 (86")	22 230 (48,995)	15.5 (9.6)
TSF-54	7KD	85-88	26 (35)	2131 (4700)	Towed	1370 (54")	6810 (15,000)	Towed
TSM-54	7LD	86-88	26 (35)	2160 (4760)	Towed	1370 (54")	6810 (15,000)	Towed



PAVING PRODUCTS — DOUBLE DRUM, COMBI AND PNEUMATIC TIRE COMPACTORS

Model	Product Ident. No. Prefix	Years Built	Flywheel kW (hp)	Approx. Op. Weight kg (lb)	Drive	Drum Width mm (in)	Centrifugal Force kg (lb)	Maximum Op. Speed km/h (mph)
CB-214	6FD	85-88	24 (33)	2300 (5070)	Drum (2)	1000 (39.4")	2041 (4500)	10.6 (6.6)
CB-214B	6LF	88-93	24 (33)	2300 (5072)	Drum (2)	990 (39")	2018 (4450)	10.4 (6.5)
CB-214C	6LF	93-00	25 (33)	2320 (5115)	Drum (2)	1000 (39.4")	2592 (5715)	10.5 (6.5)
CB-214D	1TZ	99-03	23.5 (31.5)	2430 (5355)	Hydraulic	1000 (39.4")	2590 (5710)	10 (6.2)
CB-224	6GD	85-88	24 (33)	2450 (5400)	Drum (2)	1200 (47.2")	2450 (5400)	10.6 (6.6)
CB-224B	6LF	88-93	24 (33)	2450 (5402)	Drum (2)	1199 (47.2")	2449 (5400)	10.4 (6.5)
CB-224C	6LF	93-00	25 (33)	2420 (5335)	Drum (2)	1200 (47.2")	2920 (6570)	10.5 (6.5)
CB-224D	8RZ	99-03	23.5 (31.5)	2610 (5750)	Hydraulic	1200 (47.2")	3039 (6700)	10 (6.2)
CB-225D	9FZ	99-03	23.5 (31.5)	2390 (5270)	Hydraulic	1200 (47.2")	3039 (6700)	10 (6.2)
CB-314	6HD	85-89	41 (55)	3357 (7400)	Drum	1120 (44")	2770 (6100)	8 (5)
CB-334D	3JZ 4CZ DCZ	98-03 98-02 02-04	32 (43)	3850 (8490)	Hydraulic	1300 (51")	3263 (7250)	11 (7)
CB-335D	5PZ BBW D4E	98-03 00-03 02-03	32 (43)	3620 (7980)	Hydraulic	1300 (51")	3263 (7250)	11 (7)
CB-414	6KD	85-89	52 (70)	5780 (12,750)	Drum	1397 (55")	6350 (14,000)	13.7 (8.5)
CB-424	6LD	85-89	54 (73.5)	6220 (13,710)	Drum (2)	1397 (55")	4485 (9885)	11.0 (6.8)
CB-434	3TF	89-94	60 (80)	6610 (14,540)	Drum (2)	1422 (56")	7620 (16,800)	11.6 (7.2)
CB-434B	6AL	94-95	60 (80)	6577 (14,500)	Drums	1422 (56")	7620 (16,800)	0-11.6 (0-7.2)
CB-434C	4DN	95-03	52 (70)	6485 (14,300)	Hydraulic	1422 (56")	7620 (16,800)	11.6 (7.2)
CB-514	6YD	85-88	68 (91)	9730 (21,450)	Drum (2)	1730 (68")	9073 (20,000)	11 (7)

Former Models

Paving Products

● Double Drum, Combi and Pneumatic Tire Compactors

Paving Products — Double Drum, Combi and Pneumatic Tire Compactors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel kW (hp)	Approx. Op. Weight kg (lb)	Drive	Drum Width mm (in)	Centrifugal Force kg (lb)	Maximum Op. Speed km/h (mph)
CB-521	6RD	85-87	61 (82)	8800 (19,404)	Wheel	1700 (67")	5300 (11,687)	15 (9.3)
CB-522	6SD	85-87	45 (62)	10 100 (22,271)	Drum (2)	1700 (67")	10 350 (22,822)	8 (5)
CB-523	6TD	85-87	61 (82)	8800 (19,404)	Wheel/ Drum	1700 (67")	5300 (11,687)	13 (8)
CB-524	6WD	85-87	61 (82)	9500 (20,948)	Drum (2)	1700 (67")	10 350 (22,822)	11 (6.8)
CB-534	6EG2YF	87-93	93 (125)	9117 (20,100)	Drum (2)	1700 (67")	11 800 (26,019)	11.2 (7)
CB-534B	4JL	93-95	80 (107)	9117 (20,100)	Drums	1676 (66")	12 043 (26,550)	0-11.3 (0-7.0)
CB-534C	5HN	95-02	75 (100)	9195 (20,270)	Drums	1700 (67")	11 975 (26,400)	11.3 (7.0)
CB-544	8FM	94-01	60 (80)	10 700 (23,593)	Drums	1700 (67")	8850 (19,510)	8.9 (5.5)
CB-545	2FS	96-01	60 (80)	9410 (20,750)	Wheel/ Drum	1700 (67")	8850 (19,510)	8.9 (5.5)
CB-614	7CD	85-93	115 (155)	11 340 (25,000)	Drum (2)	1980 (78")	9525 (21,000)	11.2 (7)
CB-634	5CL	94-95	108 (145)		Drums	2134 (84")	12 043 (26,550)	0-9.2 (0-5.7)
CB-634C	3BR	95-01	108 (145)	11 680 (25,750)	Drums	2134 (84")	12 043 (26,550)	12.2 (7.6)
PF-200		85-92	49 (66)	7000 (15,430)	Wheel Pneumatic	1700 (67")	N/A	24 (14.9)
PS-110	7MD	85-96	57 (77)	12 500 (27,550)	Wheel Pneumatic	2134 (84")	N/A	38.6 (24)
PS-130	7ND	85-96	57 (77)	12 500 (27,550)	Wheel Pneumatic	1700 (67")	N/A	38.6 (24)
PS-150	7PD	85-96	57 (77)	15 050 (37,300)	Wheel Pneumatic	1700 (67")	N/A	38.6 (24)
PS-150B	3XR	95-04	52 (70)	12 940 (28,535)	Hydraulic	1743 (69")	N/A	25.6 (15.9)
PS-180	7PD	85-96	57 (77)	16 950 (37,000)	Wheel Pneumatic	1727 (68")	N/A	38.6 (24)
PS-200B	5JR	95-04	78 (105)	13 010 (28,685)	Hydraulic	1743 (69")	N/A	19.3 (12)
PS-300	7TD	85-95	77	21 000	Wheel	1900	N/A	26.5
PF-300	7WD	85-95	(102)	(46,200)	Pneumatic	(75")		(16.4)



UNDERGROUND MINING

LHD Model	Product Ident. No. Prefix (USA)	Years Built	Flywheel Power kW (hp)	Approx. Operating Weight kg (lb)	Max. Capacity kg (lb)	Length m (ft)	Height m (ft)	Bucket Width mm (ft)	Breakout Force kg (lb)	Maximum Speeds km/h (mph)	
										Forward	Reverse
R1300	6QW1-	N/A	123 (165)	20 150 (44,430)	6500 (14,330)	8.66 (28'5")	2.00 (6'7")	2000 (6'7")	12 020 (26,500)	26.1 (16.2)	23.8 (14.6)
R1500	N/A	N/A	178 (239)	25 100 (55,360)	9000 (19,850)	9.19 (30'2")	2.30 (7'7")	2480 (8'2")	18 460 (40,700)	30.4 (18.9)	33.0 (20.5)
R1600	9XP1-	N/A	201 (270)	29 800 (65,710)	10 200 (22,490)	9.71 (31'10")	2.40 (7'10")	2600 (8'6")	19 280 (42,510)	30.6 (19.0)	34.0 (21.1)
R1700 Series II	N/A	N/A	231 (310)	34 500 (76,100)	12 000 (26,460)	10.42 (34'2")	2.53 (8'4")	2820 (9'3")	23 430 (51,660)	29.3 (18.2)	33.3 (20.7)
R1700G SUPA 14	N/A	N/A	231 (310)	39 250 (86,530)	14 000 (30,870)	10.60 (34'9")	2.557 (8'5")	2818 (9'3")	22 550 (49,720)	27.1 (16.8)	30.7 (19.1)
R2800	N/A	N/A	231 (310)	42 660 (94,070)	16 200 (35,720)	10.70 (35'1")	2.68 (8'10")	3000 (9'10")	26 540 (68,530)	29.3 (18.2)	33.3 (20.7)
R2900	5TW1-	N/A	269 (361)	48 850 (107,710)	17 200 (37,930)	10.97 (36'0")	2.888 (9'6")	3100 (10'2")	28 600 (63,060)	26.7 (16.6)	32.5 (20.2)
R2900 SUPA 20	5TW1-	N/A	269 (361)	53 100 (117,090)	20 000 (44,100)	11.09 (36'4")	2.888 (9'6")	3400 (11'2")	25 100 (55 340)	26.7 (16.6)	32.5 (20.2)
Articulated Trucks											
AD40 Series II	N/A	N/A	380 (510)	38 100 (84,000)	40 000 (88,200)	10.66 (35'0")	2.70 (8'10")	3000 (9'10")		48.1 (29.9)	10.6 (6.6)
AE40 Series II	N/A	N/A	380 (510)	41 800 (92,170)	40 000 (88,200)	11.265 (37'0")	2.89 (9'6")	3200 (10'5")		41.7 (25.9)	9.6 (6.0)
Rigid Frame Trucks											
69D Dump	9XS1-	N/A	380 (510)	30 100 (66,371)	38 000 (83,790)	8.127 (26'8")	3.442 (11'4")	3665 (12'0")		76.6 (47.6)	76.6 (47.6)
69D Ejector	9XS1-	N/A	380 (510)	34 700 (78,514)	36 200 (79,821)	7.83 (25'8")	3.442 (11'4")	3665 (12'0")		13.5 (8.4)	13.5 (8.4)

Notes —

ESTIMATING OWNING & OPERATING COSTS

Owning & Operating (O&O) Baseline Cost Estimate Solutions

The O&O web site provides information related to O&O baseline cost estimate development for both commercial engine products and machines. Approved O&O baseline cost estimate ranges for machines, and links related to O&O baseline cost development are also available. **NOTE:** Access to the web sites indicated below is restricted to Caterpillar and Caterpillar dealer personnel.

For information about O&O costs, enter the appropriate link for your location.

For Asia Pacific Division (APD): <http://apdnet.cat.com>

Select "Product Support," "Equipment Management Solutions," "Owning and Operating Costs."

For Corporate Global Mining (CGM): <http://catminer.cat.com>

Select "Maintenance & Service," "Equipment Management Solutions," "Owning and Operating Costs."

For Europe, Africa, Middle East (EAME): (O&O link not supported).

For Latin America Commercial Division (LACD): <http://lacd.cat.com>

Select "Product Support," "Equipment Management Solutions," "Owning and Operating Costs."

For North American Commercial Division (NACD): <https://nacd.cat.com/infocast/frames/home>

Select "Product Support Service Fulfillment (Parts and Service)," "Equipment Management Solutions," "Owning and Operating Cost Information," "Link to O&O Baseline Cost Estimate Solutions."

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General

Machine users must balance productivity and costs to achieve optimum performance ... that is, achieve the desired production at the lowest possible cost. The approach most often used to measure machine performance is this simple equation:

$$\frac{\text{Lowest Possible Hourly Costs}}{\text{Highest Possible Hourly Productivity}} = \frac{\text{Top Machine Performance}}{\text{Performance}}$$

Most sections of this Handbook deal with the productivity of Caterpillar machines. This section considers the cost aspect of performance.

Hourly Owning and Operating Costs for a given machine can vary widely because they are influenced by many factors: the type of work the machine does, the ownership period, local prices of fuel and labor, the repair and maintenance costs, shipping costs from the factory, interest rates, etc. No attempt is made in this handbook to provide precise hourly costs for each model. Users must be able to estimate with a reasonable degree of accuracy what a machine will cost per hour to own and operate in a given application and locality. Therefore, this section provides a suggested method of estimating hourly owning and operating costs. When this method is coupled with local conditions and dealer input, it will result in reasonable estimates.

The method suggested follows several basic principles:

- Repair and Planned Maintenance cost per hour are developed jointly by the customer and local Caterpillar Dealer.
- In the examples, labor is assumed @ \$60.00 per hour, fuel @ \$1.25 per gallon. For reliable estimates, these costs must always be obtained locally.
- Because of different standards of comparison, what may seem a high application to one machine owner may appear only medium to another.
- Unless otherwise specified, the word "hour" when used in this section means clock or operating hours, not Service Meter Units.

Owning & Operating Costs | Estimating Form

HOURLY OWNING AND OPERATING COST ESTIMATE

DATE _____

Estimate #1 Estimate #2

A—Machine Designation _____
 B—Estimated Ownership Period (Years) _____
 C—Estimated Usage (Hours/Year) _____
 D—Ownership Usage (Total Hours)(B × C) _____

OWNING COSTS

1. a. Delivered Price, to the Customer (including attachments) _____
 b. Less Tire Replacement Cost if desired _____
 c. Delivered Price Less Tires _____

2. Less Residual Value at Replacement (____%) _____ (____%) _____
 (See subsection 2A on back)

3. a. Net Value to be recovered through work _____
 (line 1c less line 2)

b. Cost Per Hour:
 $\frac{\text{Net Value}}{\text{Total Hours}}$ (1) _____ (2) _____

4. Interest Costs $\frac{N + 1}{2N} \times \text{Del. Price} \times \frac{\text{Simple Int.}}{\% \text{ Rate}}$
 N = No. Yrs. _____ Hours/Year = _____
 (1) $\frac{+ 1}{+ 1} \times \text{_____} \times \text{_____} \%$ (2) $\frac{+ 1}{+ 1} \times \text{_____} \times \text{_____} \%$
 _____ = _____ = _____
 _____ Hours/Yr. _____ Hours/Yr.

5. Insurance $\frac{N + 1}{2N} \times \text{Del. Price} \times \frac{\text{Insurance}}{\% \text{ Rate}}$
 N = No. Yrs. _____ Hours/Year = _____
 (1) $\frac{+ 1}{+ 1} \times \text{_____} \times \text{_____} \%$ (2) $\frac{+ 1}{+ 1} \times \text{_____} \times \text{_____} \%$
 _____ = _____ = _____
 _____ Hours/Yr. _____ Hours/Yr.

(Optional method when Insurance cost per year is known)

Ins. \$ _____ Per Yr. ÷ _____ Hours/Yr. =

CATERPILLAR FORM NO. 01-085419-01 (52.00)

Estimate #1

Estimate #2

6. Property Tax $\frac{N + 1}{2N} \times \text{Del. Price} \times \text{Tax Rate \%}$
 N = No. Yrs. $\frac{\text{Hours/Year}}{\text{Hours/Year}} =$
 (1) $\frac{+ 1}{\text{Hours/Yr.}} \times \text{_____} \times \text{_____ \%}$ (2) $\frac{+ 1}{\text{Hours/Yr.}} \times \text{_____} \times \text{_____ \%}$
 $\text{_____} = \text{_____} =$

(Optional method when Property Tax cost per year is known)

Property Tax \$ _____ Per Yr. \div _____ Hours/Yr. =

7. TOTAL HOURLY OWNING COST
 (add lines 3b, 4, 5 and 6)

OPERATING COSTS

8. Fuel: Unit Price \times Consumption
 (1) _____ \times _____ = _____
 (2) _____ \times _____ = _____

9. Planned Maintenance (PM)-Lube Oils, Filters, Grease, Labor:
 (contact your local Caterpillar Dealer)

10. a. Tires: Replacement Cost \div Life in Hours
 $\frac{\text{Cost}}{\text{Life}}$ (1) _____ (2) _____

b. Undercarriage
 (Impact + Abrasiveness + Z Factor) \times Basic Factor
 (1) (_____ + _____ + _____) = _____ \times _____ = _____
 (2) (_____ + _____ + _____) = $\frac{\text{_____}}{\text{(Total)}} \times \frac{\text{_____}}{\text{(Factor)}} =$

11. Repair Cost (Per Hour)
 (contact your local Caterpillar Dealer)

12. Special Wear Items: Cost \div Life
 (See subsection 12A on back)

13. TOTAL OPERATING COSTS
 (add lines 8, 9, 10a (or 10b), 11 and 12)

14. MACHINE OWNING PLUS OPERATING
 (add lines 7 and 13)

15. OPERATOR'S HOURLY WAGE (include fringes)

16. TOTAL OWNING AND OPERATING COST

SUBSECTION 2A: Residual Value at Replacement

Gross Selling Price (est. #1) (___%) _____ (est. #2) (___%) _____

Less: a. Commission _____

b. Make-ready costs _____

c. Inflation during _____

ownership period* _____

Net Residual Value _____ (___%) _____ (___%) of original
(Enter on line 2) delivered price

*When used equipment auction prices are used to estimate residual value, the effect of inflation during the ownership period should be removed to show in constant value what part of the asset must be recovered through work.

**SUBSECTION 12A: Special Items
(cutting edges, ground engaging tools, bucket teeth, etc.)**

(1)	Cost	Life	Cost/Hour	(2)
1.	_____ ÷	_____ =	_____	1. _____ ÷ _____ = _____
2.	_____ ÷	_____ =	_____	2. _____ ÷ _____ = _____
3.	_____ ÷	_____ =	_____	3. _____ ÷ _____ = _____
4.	_____ ÷	_____ =	_____	4. _____ ÷ _____ = _____
5.	_____ ÷	_____ =	_____	5. _____ ÷ _____ = _____
6.	_____ ÷	_____ =	_____	6. _____ ÷ _____ = _____
		Total (1)	_____	(2) _____

(Enter total on line 12)

1-7

ESTIMATING OWNING COSTS*(Line Items 1 through 7)*

To protect their equipment investment and be able to replace it, the machine owner must recover over the ownership period an amount equal to the loss in resale value plus the other costs of owning the equipment including interest, insurance and taxes.

The machine owner, for accounting purposes, estimates resale value loss in advance, and recovers his original equipment investment by establishing depreciation schedules according to the various uses of the equipment. Proper financial and tax assistance is highly recommended when establishing depreciation schedules.

Considering today's economic conditions worldwide and the trend toward larger, more expensive equipment, many users choose to keep these units on the job well after they have been fully depreciated for tax purposes. On the other hand, tax incentives in many areas may favor trading a machine well before that occurs.

The ownership period in years, the hours per year, and the total number of hours on a machine, are significant factors in determining O&O costs. Additionally, since the ownership period and machine hours can vary widely for different customers for a given model, it is not practical to calculate O&O costs using an assumed ownership period. The customer must provide that information for each situation.

These same factors will be used to develop the Repair costs and Planned Maintenance costs by your local Caterpillar Dealer.

The machine depreciation method suggested in this handbook is not based on or related to any tax considerations, but rather is a simple straight line write-off based solely on the number of years and hours the owner expects to use during the ownership period.

Accordingly, it is imperative that careful consideration be given the selection of depreciation periods, and that for owning and operating cost calculations they be based on actual ownership periods and hours on the machine rather than tax write-off life.

Typical Application Descriptions

The following tables show typical descriptions for work performed by each product family for three different application levels. It is only a guide and can be used along with the fuel and tire charts to help determine fuel and tire cost factors. Additionally, many times the ownership period and the number of hours per year a machine is used, is related to application.

- ① Delivered Price To Customer
- ② Residual Value at Replacement

1

DELIVERED PRICE TO CUSTOMER

(Line Item 1a, b and c)

Delivered price should include all costs of putting a machine on the user's job including transportation and any applicable sales taxes.

On rubber tired machines, tires are considered a wear item and covered as an operating expense. Accordingly, some users may wish to deduct tire costs from the delivered price particularly for larger machines.

2

RESIDUAL VALUE AT REPLACEMENT

(Line Item 2 and Subsection 2A)

Any piece of earthmoving machinery will have some residual value at trade-in. While many owners prefer to depreciate their equipment to zero value, others recognize the residual resale or trade-in value. This is at the estimator's option, but as in the discussion of depreciation, today's higher equipment costs almost dictate that resale value be considered in determining the net depreciable investment. And if machines are traded early for tax incentive purposes, resale value becomes even more significant.

For many owners, potential resale or trade-in value is a key factor in their purchasing decisions, since this is a means of reducing the investment they must recover through depreciation charges. The high resale value of Caterpillar built machines can reduce hourly depreciation charges, lower total hourly owning costs and improve the owner's competitive position.

When resale or trade-in value is used in estimating hourly owning and operating costs, local conditions must be considered, as used equipment values vary widely around the world. However, in any given used equipment business, factors which have greatest influence on resale or trade-in value are: age of machine (years), the number of hours on the machine at the time of sale or trade, the type of jobs and operating conditions in which it worked, and the physical condition of the machine. Your local Cat Dealer is your best source for determining current used equipment values.

Subsection 2A can be used to calculate the estimated residual value. If recent auction prices for used machines are used as a guide, then the value (or percentage) should be adjusted downward to remove the effect of inflation. Governmental indices on construction equipment costs or Dealer price records can be used to calculate the amount of inflation for the appropriate useful life. Another way to estimate residual value is comparing the current used machine value to the current new machine price provided major product changes haven't occurred.

③ Value to be Recovered Through Work

④ Interest

⑤ Insurance

⑥ Taxes

Owning & Operating Costs

③ **VALUE TO BE RECOVERED THROUGH WORK**

(Line Item 3a and b)

The delivered price less the estimated residual value results in the value to be recovered through work, divided by the total usage hours, gives the hourly cost to protect the asset's value.

④ **INTEREST**

(Line Item 4)

Many owners charge interest as part of hourly owning and operating costs, others consider it as general overhead in their overall operation. When charged to specific machines, interest is usually based on the owner's average annual investment in the unit.

Interest is considered to be the cost of using capital. The interest on capital used to purchase a machine must be considered, whether the machine is purchased outright or financed.

If the machine will be used for N years (where N is the number of years of use), calculate the average annual investment during the use period and apply the interest rate and expected annual usage:

$$\frac{\left[\frac{N + 1}{2N} \times \text{Delivered Price} \right] \times \text{Simple Interest \% rate}}{\text{hours/year}}$$

5-6 **INSURANCE AND TAXES**

(Line Items 5 and 6)

Insurance cost and property taxes can be calculated in one of two ways. If the specific annual cost is known, this figure should be divided by the estimated usage (hours/years) and used. However, when the specific interest and tax costs for each machine are not known, the following formulas can be applied:

$$\frac{\frac{\text{Insurance}}{N = \text{No. Years}} \times \left[\frac{N + 1}{2N} \times \text{Delivered Price} \right] \times \text{Insurance rate \%}}{\text{hours/year}}$$

$$\frac{\frac{\text{Property Tax}}{N = \text{No. Years}} \times \left[\frac{N + 1}{2N} \times \text{Delivered Price} \right] \times \text{Tax rate \%}}{\text{hours/year}}$$

8-13

ESTIMATING OPERATING COSTS*(Line Items 8 through 13)*

8

FUEL CONSUMPTION*(Line Item 8)*

Actual fuel consumption should be measured in the field. However, if no opportunity exists to do this, consumption can be estimated when the machine application is known.

Application determines engine load factor which in turn controls engine fuel consumption. An engine continuously producing full rated horsepower is operating at a load factor of 1.0. Earthmoving machines may reach a 1.0 load factor intermittently, but seldom operate at this level for extended periods of time. Periods spent at idle, dozer and pusher travel in reverse, haul units traveling empty, close maneuvering at part throttle and operating downhill are examples of conditions which reduce load factor.

The following tables provide hourly fuel consumption estimates at various load factors for Caterpillar built machines. Since machine uses vary, application guides are also provided to aid in estimating load factor.

To estimate hourly fuel cost, select the load factor based on application and find hourly consumption. Then:

$$\text{Hourly consumption} \times \text{Local Unit Price of Fuel} = \text{Hourly Fuel Cost}$$

When using these tables, keep in mind the many variables which can affect fuel consumption. Two operators of different temperament or attitude operating identical machines side by side in the same material can have as much as 10-12% difference in their consumption rates. However, the ranges shown should be applicable across a wide spectrum of conditions. Your Caterpillar dealer representative can help select the most reasonable estimate for your specific situation; we suggest you call on him.

Keep in mind also that a fuel consumption study measured over a short period of operation will give higher fuel consumption than shown here because: (1) the study will be at 100% efficiency, without breaks or idle time, and (2) the operators will know they're "under the gun" to produce and look good. On the other hand, these tables allow for "normal" inefficiencies in the working cycle and will more closely relate to "normal" day to day operation.

FUEL CONSUMPTION TABLES & LOAD FACTOR GUIDES

TRACK-TYPE TRACTORS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
D3G	9.0-11.0	2.5-3.0	11.0-13.0	3.0-3.5	13.0-15.0	3.5-4.0
D4G	9.0-11.0	2.5-3.0	11.0-13.0	3.0-3.5	13.0-15.0	3.5-4.0
D5G	11.0-13.0	3.0-3.5	13.0-15.0	3.5-4.0	15.0-17.0	4.0-4.5
D5N	6.5-11.5	1.5-3.5	11.5-16.0	3.5-4.5	13.75-18.5	3.75-5.0
D6N	12.0-16.5	3.0-4.5	13.75-21.5	4.0-5.5	18.5-26.5	5.0-7.0
D6G	12.0-17.0	3.5-4.5	17.0-22.0	4.5-6.0	22.0-27.5	6.0-7.5
D6R Series II	13.5-21.0	3.5-5.5	19.0-27.0	5.0-7.5	25.0-33.5	6.5-9.0
D7G	16.0-22.5	4.5-6.0	22.5-29.0	6.0-8.0	29.0-35.5	8.0-9.5
D7R Series II	17.0-24.5	4.5-6.5	24.5-31.5	6.5-8.5	31.5-39.0	8.5-10.5
D8R/D8R Series II	22.5-32.0	6.0-8.5	32.0-41.5	8.5-11.0	41.5-51.0	11.0-13.5
D8T	23.5-33.7	6.2-8.9	33.7-44.0	8.9-11.6	44.0-53.8	11.6-14.2
D9R	32.0-46.0	8.5-12.5	46.0-59.5	12.5-16.0	59.5-73.0	16.0-19.5
D10R	40.5-58.0	11.0-15.5	58.0-75.0	15.5-20.0	75.0-92.5	20.0-24.5
D11R	61.0-87.0	16.5-23.0	87.0-113.0	23.0-30.0	113.0-139.5	30.0-37.0

*D7G fuel consumption data is based on a precombustion chamber equipped engine. Fuel consumption for a direct injection equipped D7G should be approximately 10% less.

Typical Application Description

(relative to work application)

Low Pulling scrapers, most agricultural drawbar, stockpile, coal pile applications. No impact. Intermittent full throttle operation.

Medium Production dozing in clays, sands, gravels. Push loading scrapers, borrow pit ripping, most land clearing applications. Medium impact conditions. Production landfill work.

High Heavy rock ripping. Push loading and dozing in hard rock. Working on rock surfaces. Continuous high impact conditions.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%

Medium 50%-65%

High 65%-80%

MOTOR GRADERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
120H*	9.0-13.0	2.5-3.5	13.0-17.0	3.5-4.5	15.0-19.0	4.0-5.0
135H*	9.0-13.0	2.5-3.5	13.0-17.0	3.5-4.5	17.0-21.0	4.5-5.5
12H	9.0-13.0	2.5-3.5	13.0-19.0	3.5-5.0	19.0-23.0	5.0-6.0
140H*	9.0-15.0	2.5-4.0	15.0-19.0	4.0-5.0	19.0-25.0	5.0-6.5
143H**	9.0-15.0	2.5-4.0	15.0-21.0	4.0-5.5	21.0-26.0	5.5-7.0
160H*	13.0-19.0	3.5-5.0	17.0-25.0	4.5-6.5	25.0-30.0	6.5-8.0
163H**	13.0-19.0	3.5-5.0	19.0-25.0	5.0-6.5	25.0-30.0	6.5-8.0
14H	13.0-21.0	3.5-5.5	21.0-26.0	5.5-7.0	26.0-32.0	7.0-8.5
16H	17.0-25.0	4.5-6.5	25.0-32.0	6.5-8.5	32.0-40.0	8.5-10.5
24H	32.0-45.0	8.5-12.0	45.0-61.0	12.0-16.0	61.0-74.0	16.0-19.5

*Multiply consumption by 1.10 when equipped with Variable Horsepower or Engine Power Management.

**Multiply consumption by 1.15 when operating in All Wheel Drive.

Typical Application Description

(relative to work application)

Low Light road maintenance. Finish grading. Plant & road mix work. Large amounts of traveling. Light snow plowing.

Medium Haul road maintenance. Average road maintenance, road mix work, scarifying. Road construction, ditching, loose fill spreading. Land forming, land leveling & elevating grader use. Medium to heavy snow removal.

High Heavy maintenance of hard packed roads with embedded rock. Heavy fill spreading, base material spreading & ditching. Ripping/scarifying of asphalt or concrete. Continuous high load factor. High impact. Heavy snow plowing.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%

Medium 50%-65%

High 65%-80%

SKID STEER LOADERS & MULTI TERRAIN LOADERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
216B	2.28-3.98	0.60-1.05	3.98-6.26	1.05-1.65	6.26-7.97	1.65-2.11
226B	2.78-4.86	0.73-1.29	4.86-7.64	1.29-2.02	7.64-9.73	2.02-2.57
232B	2.28-3.98	0.60-1.05	3.98-6.26	1.05-1.65	6.26-7.97	1.65-2.11
236B	3.10-5.43	0.82-1.43	5.43-8.53	1.43-2.25	8.53-10.85	2.25-2.87
242B	2.78-4.86	0.73-1.29	4.86-7.64	1.29-2.02	7.64-9.73	2.02-2.57
246B	3.45-6.04	0.91-1.60	6.04-9.50	1.60-2.51	9.50-12.09	2.51-3.19
248B	3.45-6.04	0.91-1.60	6.04-9.50	1.60-2.51	9.50-12.09	2.51-3.19
252B	3.10-5.43	0.82-1.43	5.43-8.53	1.43-2.25	8.53-10.85	2.25-2.87
262B	3.45-6.04	0.91-1.60	6.04-9.50	1.60-2.51	9.50-12.09	2.51-3.19
247B	2.78-4.86	0.73-1.29	4.86-7.64	1.29-2.02	7.64-9.73	2.02-2.57
257B	2.78-4.86	0.73-1.29	4.86-7.64	1.29-2.02	7.64-9.73	2.02-2.57
267B	3.10-5.43	0.82-1.43	5.43-8.53	1.43-2.25	8.53-10.85	2.25-2.87
277B	3.45-6.04	0.91-1.60	6.04-9.50	1.60-2.51	9.50-12.09	2.51-3.19
287B	3.45-6.04	0.91-1.60	6.04-9.50	1.60-2.51	9.50-12.09	2.51-3.19

Typical Application Description

(relative to work application)

Low Light utility, construction, nursery and landscaping applications. Load & carry of free flowing, low density materials on firm, smooth surfaces for short distances with minimal grades. Light snow removal.

Medium Industrial and construction job site applications. Loading from bank or load & carry of low to medium density materials on normal surfaces with low to medium rolling resistance & slight adverse grades. Occasional use of various attachments under normal loading conditions.

High Continuous industrial, construction and batch plant applications. Loading from tight banks or load and carry of high density materials on rough or very soft surfaces with high rolling resistance & adverse grades. Maximum use of high flow attachments under high loading conditions.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%

Medium 50%-65%

High 65%-80%

Owning & Operating Costs

⑧ Hourly Fuel Consumption Tables

- Articulated Trucks (Underground)
- Load Haul Dump Units (LHD'S) (Underground)

ARTICULATED TRUCKS (Underground)

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
AD30	27.0-38.0	7.1-10.0	38.0-45.0	10.0-11.9	45.0-56.0	11.9-14.8
AD45B	35.0-45.0	9.2-11.9	45.0-55.0	11.9-114.5	55.0-65.0	14.5-17.2
AD55	35.0-42.0	9.2-11.1	42.0-57.0	11.1-15.0	57.0-70.0	15.0-18.5

Typical Application Description

(relative to work application)

- Low** Continuous operation at <80% of maximum recommended gross weight. Short to medium haul distances: 300-1000 m (**990-3300 feet**). Well maintained, level haul roads. Considerable amount of idling. Very few tray impacts. Low load factor.
- Medium** Intermittent operation at less than maximum recommended gross weight. Medium to longer haul distances: 1000-5000 m (**3300-16,000 feet**). Varying haul road conditions with some adverse grades. Occasional tray impacts. Medium load factor.
- High** Continuous operation at maximum recommended gross weight. Long haul distances: >5000 m (**>16,000 feet**). Poor haul road conditions with adverse/steep grades. Frequent tray impacts. High load factor.

Load Factor Guide

(average engine load factor based on application description for each range)

- Low 20%-40%
- Medium 40%-60%
- High 60%-80%

LOAD HAUL DUMP UNITS (LHD'S) (Underground)

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
R1300G	11.3-15.1	3.0-4.0	15.1-18.9	4.0-5.0	18.9-30.2	5.0-6.0
R1600G	15.1-22.7	4.0-6.0	22.7-28.3	6.0-7.5	28.3-39.7	7.5-10.5
R1700G	22.7-26.4	6.0-7.0	26.4-34.0	7.0-9.0	34.0-45.4	9.0-12.0
R2900G	30.2-37.8	8.0-10.0	37.8-45.4	10.0-12.0	45.4-56.7	12.0-15.0
R2900G XTRA	33.0-40.0	8.7-10.5	40.0-47.0	10.5-12.4	47.0-59.0	12.4-15.6

Typical Application Description

(relative to work application)

- Low** Dig & carry operation from stockpiles to ground level transfer station. Low density, free flowing ore & waste. Excellent draw point floor surfaces. Short haul distances: 25-100 m (**80-330 feet**). Level roads with good surface conditions. Low load factor.
- Medium** Intermittent development/production loading into trucks/transfer station. Good digging with well shot, low to medium density ore & waste. Average draw point floor surfaces. Medium haul distances: 100-200 m (**330-660 feet**). Poor road surfaces with slightly adverse grades. Medium load factor.
- High** Continuous production loading of trucks at or near maximum load height. Difficult digging. Loading haul trucks. Rough draw point surfaces. Long haul distances: 200-300 m (**660-990 feet**). Poor haul roads with adverse grades. High load factor.

Load Factor Guide

(average engine load factor based on application description for each range)

- Low 20%-40%
- Medium 40%-60%
- High 60%-80%

EXCAVATORS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
301.5	2.1-2.5	0.55-0.66	2.5-2.9	0.66-0.77	2.9-3.3	0.77-0.87
301.6	2.1-2.5	0.55-0.66	2.5-2.9	0.66-0.77	2.9-3.3	0.77-0.87
301.8	2.1-2.5	0.55-0.66	2.5-2.9	0.66-0.77	2.9-3.3	0.77-0.87
302.5	2.7-3.3	0.71-0.87	3.3-3.8	0.87-1.0	3.8-4.4	1.0-1.16
303 CR/SR	3.4-4.0	0.89-1.07	4.0-4.7	1.07-1.24	4.7-5.4	1.2-1.42
304 CR	4.0-4.8	1.06-1.28	4.8-5.6	1.28-1.49	5.6-6.4	1.49-1.7
305 CR/SR	4.7-5.7	1.24-1.49	5.7-6.6	1.49-1.74	6.6-7.5	1.74-1.99
307C	3.0-5.0	1.0-1.25	5.0-8.0	1.25-2.0	7.0-10.0	1.75-2.5
308C CR/SR	3.0-5.0	1.0-1.5	5.0-8.0	1.5-2.0	7.0-10.0	2.0-2.5
311C	4.0-6.0	1.0-1.5	6.0-9.0	1.5-2.25	9.0-12.0	2.25-3.5
312C	4.0-6.0	1.0-1.5	6.0-9.0	1.5-2.25	10.0-13.0	2.25-3.5
313C CR/SR	4.0-6.0	1.0-1.5	6.0-9.0	1.5-2.5	10.0-13.0	2.5-3.5
314C	4.0-6.0	1.0-1.5	6.0-9.0	1.5-2.5	10.0-13.0	2.5-3.5
315C	5.0-9.0	1.25-2.25	9.0-13.0	2.25-3.5	13.0-15.0	3.5-4.0
318C	8.0-12.0	2.0-3.5	12.0-14.0	3.5-3.75	15.0-19.0	4.0-5.0
319C	8.0-12.0	2.0-3.5	12.0-14.0	3.5-3.75	15.0-19.0	4.0-5.0
M313C	6.6-10.1	1.7-2.68	10.1-14.3	2.68-3.78	14.3-16.7	3.78-4.41
M315C	7.48-11.21	1.98-2.96	11.21-15.57	2.96-4.11	15.6-18.1	4.11-4.77
M316C	8.3-12.5	2.2-3.3	12.5-17.3	3.3-4.6	17.3-20.1	4.6-5.3
M318C	9.75-14.25	2.58-3.77	14.25-18.75	3.77-4.96	18.75-21.76	4.96-5.75
M322C	10.41-15.7	2.75-4.15	15.7-20.83	4.15-5.5	20.83-24.0	5.5-6.35
M325C MH*	12.9-15.9	3.4-4.2	20.8-23.8	5.5-6.3	23.8-27.6	6.3-7.3
M325C L MH*	14.0-19.0	3.7-5.0	23.0-27.0	6.1-7.1	27.0-32.0	7.1-8.5
W330B MH*	19.0-24.0	5.0-6.3	29.0-33.0	7.7-8.7	34.0-39.0	9.0-10.3
W345B MH*	25.0-30.0	6.6-7.9	38.0-42.0	10.0-11.1	45.0-50.0	11.9-13.2
320C	10.0-14.0	2.6-3.7	17.0-20.0	4.5-5.3	20.0-23.0	5.3-6.1
322C	12.0-16.0	3.2-4.2	20.0-23.0	5.3-6.1	23.0-27.0	6.1-7.1
325C	14.0-19.0	3.7-5.0	23.0-27.0	6.1-7.1	27.0-32.0	7.1-8.5
330C	19.0-24.0	5.0-6.3	29.0-33.0	7.7-8.7	34.0-39.0	9.0-10.3
345B Series II	25.0-30.0	6.6-7.9	38.0-42.0	10.0-11.1	45.0-50.0	11.9-13.2
365B Series II	33.0-38.0	8.7-10.0	50.0-55.0	11.9-14.5	60.0-67.0	15.9-17.7
385B	43.0-48.0	11.4-12.7	62.0-68.0	16.4-18.0	71.0-78.0	18.8-20.6
5090B	43.0-48.0	11.4-12.7	62.0-68.0	16.4-18.0	71.0-78.0	18.8-20.6
5110B	69.0-74.0	18.0-19.0	84.0-89.0	22.0-24.0	103.0-108.0	27.0-28.0
5130B	91.0-95.0	24.0-25.0	110.0-114.0	29.0-30.0	129.0-132.0	34.0-35.0
5230B	163.0-193.0	43.0-51.0	193.0-204.0	51.0-54.0	208.0-227.0	55.0-60.0

*If the application of these machines is to be used for scrap handling, the LOW hourly fuel consumption rate would typically apply.
NOTE: Fuel consumption rates for 320C through 385B include machine at idle per load factor definition.

Mini HEX

Typical Application Description

(relative to work application)

- Low Mostly shallow depth urban utility construction where excavator sets pipe & digs in sandy loam or free flowing, low density material. Little traveling & little or no impact.
- Medium Most residential pipeline & cabling applications. Continuous mass excavation & trenching in natural bed clay soils. Some traveling & steady, full throttle operation.
- High Continuous trenching or truck loading in rock or shot rock soils. Most pipeline applications in hard rocky material. Large amount of travel over rough ground. Constant high load factor & high impact.

Load Factor Guide

(average engine load factor based on application description for each range)

- Low 20%-30%
- Medium 30%-40%
- High 40%-50%

300 Series

Typical Application Description

(relative to work application)

- Low Mostly shallow depth urban utility construction where excavator sets pipe & digs less than 50% of the daily work schedule. Sandy loam, free flowing, low density material. Most scrap handling applications. Little traveling & little or no impact.
- Medium Most residential sewer applications. Continuous mass excavation & trenching in natural bed clay soils. Digging 60-85% of the daily work schedule. Most log loading applications. Some traveling & steady, full throttle operation.
- High Continuous trenching or truck loading in rock or shot rock soils. Most pipeline applications in hard rocky material. Digging 90-95% of the daily work schedule. Large amount of travel over rough ground. Working on rock floor with constant high load factor & high impact.

Load Factor Guide

(average engine load factor based on application description for each range)

- Low 20%-30%
- Medium 30%-40%
- High 40%-50%

M-Series

Typical Application Description

(relative to work application)

- Low Urban utility construction application in sandy loam, low density material. Digging less than 50% of the daily work schedule. Rehandling & scrap handling applications.
- Medium Residential sewer applications in natural bed clay. Continuous digging in sandy clay/gravel. Digging 60-85% of the daily work schedule. Site development & lumber yard applications. Most logging applications.
- High Pipeline applications in hard rocky material. Continuous digging in rock/natural bed clay. Digging 90-95% of the daily work schedule. High impact, using hammer, working in forests & quarries.

Load Factor Guide

(average engine load factor based on application description for each range)

- Low 20%-30%
- Medium 30%-40%
- High 40%-50%

⑧ Hourly Fuel Consumption Tables
 ● Front Shovels
 ● Pipelayers

Owning & Operating Costs

FRONT SHOVELS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
5080	—	—	58.0-65.0	15.0-17.2	66.0-74.0	17.0-19.6
5090	43.0-48.0	11.4-12.7	62.0-68.0	16.4-18.0	71.0-78.0	18.8-20.6
5130B	91.0-95.0	24.0-25.0	110.0-114.0	29.0-30.0	129.0-132.0	34.0-35.0
5230B	163.0-193.0	43.0-51.0	193.0-204.0	51.0-54.0	208.0-227.0	55.0-60.0

Typical Application Description

(relative to work application)

Low Continuous loading in loose banks or stockpile. Light, easy work with, considerable idling. Good underfoot conditions.

Medium Continuous loading in well-shot rock or fairly tight bank. Steady cycling with frequent periods of idle. Good underfoot conditions; dry floor, little impact or sliding on undercarriage. Minimal travel time (3%-6%).

High Continuous loading in poorly-shot rock, virgin or lightly-blasted tight banks. Steady cycling in hard to dig material. Adverse underfoot conditions; rough floors, high impact and/or sliding on undercarriage.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 20%-30%

Medium 30%-40%

High 40%-50%

PIPELAYERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
561M	4.0-7.0	1.0-2.0	7.5-11.0	2.0-3.0	9.5-13.0	2.5-3.5
572R	17.0-24.5	4.5-6.5	24.5-31.5	6.5-8.5	31.5-39.0	8.5-10.5
583R	9.5-13.0	2.5-3.5	16.5-20.0	4.5-5.5	22.5-26.0	6.5-7.5
589	17.0-21.0	4.5-5.5	26.0-30.0	7.0-8.0	34.0-40.0	9.0-10.5

Typical Application Description

(relative to work application)

Low Little or no use in mud, water or on rock. Use on level, regular surfaces.

Medium Typical pipelayer use in operating conditions ranging from very good to severe.

High Continuous use in deep mud or water or on rock surfaces.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%

Medium 50%-65%

High 65%-80%

WHEEL TRACTOR-SCRAPERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
613C	15.0-19.0	4.0-5.0	21.0-25.0	5.5-6.5	27.5-34.0	7.25-9.0
615C	23.0-26.0	6.0-7.0	30.0-36.0	8.0-9.5	42.0-47.5	11.0-12.5
621G	27.0-32.0	7.0-8.5	38.0-44.0	10.0-11.5	49.0-57.0	13.0-15.0
623G	30.0-36.0	8.0-9.5	40.0-46.0	10.5-12.0	53.0-59.0	14.0-15.5
627G	45.5-51.0	12.5-13.5	64.0-76.0	17.0-18.5	85.0-89.5	22.5-23.5
631G	40.0-45.0	10.5-12.0	53.0-59.0	14.0-15.5	72.0-78.0	19.0-20.5
637G	64.0-70.0	17.0-18.5	87.0-93.0	23.0-24.5	113.5-121.0	30.0-32.0
651E	47.0-57.0	12.5-15.0	66.0-76.0	17.5-20.0	87.0-95.0	23.0-25.0
657E	87.0-98.0	23.0-26.0	116.0-125.5	30.5-33.0	153.0-163.0	40.5-43.0

Typical Application Description

(relative to work application)

Low Level or favorable grades on good haul roads & low rolling resistance. Easy-loading materials, partial loads. No impact. Average use, but with considerable idling.

Medium Adverse & favorable grades with varying loading & haul road conditions. Long & short hauls, near full. Some impact. Typical road building use.

High Rough haul roads. Loading heavy clay, continuous high total resistance conditions with steady cycling. Overloading. High impact conditions, such as loading ripped rock.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%

Medium 50%-65%

High 65%-80%

⑧ Hourly Fuel Consumption Tables
 ● Backhoe Loaders
 ● Forest Products

Owning & Operating Costs

BACKHOE LOADERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
416D (NA)	6.4-8.3	1.7-2.2	8.3-10.2	2.2-2.7	10.2-12.1	2.7-3.2
416D (T)	7.6-9.5	2.0-2.5	9.5-11.4	2.5-3.0	11.4-13.2	3.0-3.5
420D	8.1-10.0	2.2-2.7	10.0-11.9	2.7-3.2	11.9-14.2	3.2-3.8
424D (NA)	6.4-8.3	1.7-2.2	8.3-10.2	2.2-2.7	10.2-12.1	2.7-3.2
428D	7.6-9.5	2.0-2.5	9.5-11.4	2.5-3.0	11.4-13.2	3.0-3.5
430D	8.9-11.2	2.4-3.0	11.2-13.1	3.0-3.5	13.1-15.3	3.5-4.1
432D	8.1-10.0	2.2-2.7	10.0-11.9	2.7-3.2	11.9-14.2	3.2-3.8
438D	8.9-11.2	2.4-3.0	11.2-13.1	3.0-3.5	13.1-15.3	3.5-4.1
442D	8.9-11.2	2.4-3.0	11.2-13.1	3.0-3.5	13.1-15.3	3.5-4.1
446B	10.6-12.9	2.8-3.4	12.9-15.1	3.4-4.0	15.1-17.4	4.0-4.6

NA = Naturally Aspirated
 T = Turbocharged

Typical Application Description

(relative to work application)

Low Light duty utility applications with intermittent cycles in light to medium soil. Trenching depths less than 1.83 m (**6 feet**).

Medium General utility applications with regular cycles in medium to heavy soil. Dig depths to 3.05 m (**10 feet**). Occasional use of constant flow implements.

High Production applications or digging in rock. Dig depths over 3.05 m (**10 feet**). Long cycle times or regular use of constant flow implements.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 20%-30%

Medium 30%-40%

High 40%-50%

FOREST PRODUCTS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
320C FM	23.0-24.0	6.0-6.5	24.0-26.0	6.5-7.0	25.0-27.0	7.0-7.5
322C LL	25.0-28.0	6.5-7.5	26.0-29.0	7.0-7.5	27.0-30.0	7.5-8.0
325C LL	26.0-29.0	7.0-7.5	27.0-30.0	7.0-8.0	29.0-32.0	7.5-8.5
330C LL	36.0-40.0	9.5-10.5	37.0-41.0	10.0-11.0	38.0-42.0	10.0-11.0
517	5.7-13.2	1.5-3.5	13.2-18.9	3.5-5.0	15.0-22.7	4.0-6.0
527	13.2-18.9	3.5-5.0	18.9-23.6	5.0-6.25	23.6-32.2	6.25-8.5
525B	10.4-15.1	2.75-4.0	15.1-20.8	4.0-5.5	20.8-32.2	5.5-8.5
535B	10.4-15.1	2.75-4.0	15.1-22.7	4.0-6.0	22.7-34.0	6.0-9.0
545	10.4-15.1	2.75-4.0	15.1-24.6	4.0-6.5	24.6-37.8	6.5-10.0
539	26.0-29.0	6.87-7.66	27.0-30.0	7.13-7.93	29.0-32.0	7.66-8.45
550	*	*	*	*	*	*
570	*	*	*	*	*	*
580	*	*	*	*	*	*
554	*	*	*	*	*	*
574	*	*	*	*	*	*

*Insufficient data.

Wheel Skidders

Typical Application Description

(relative to work application)

- Low Intermittent skidding for short distances, no decking. Good underfoot conditions; dry floor, few if any stumps, flat/level terrain with low skidding resistance.
- Medium Continuous turning, steady skidding for medium distances with moderate decking. Good underfoot conditions; dry floor with few stumps, gradual rolling/moderate terrain with medium skidding resistance.
- High Continuous turning, steady skidding for long distances with frequent decking. Poor underfoot conditions; wet floor, numerous stumps, steep terrain with high skidding resistance.

Load Factor Guide — 517

- Low Skidding loads less than **4536 kg (10,000 lb)** in flat terrain (0-8% grade) with low skidding resistance.
- Medium Skidding loads up to **4536 kg (10,000 lb)** in moderate terrain (8-30% grade) with medium skidding resistance.
- High Skidding loads over **4536 kg (10,000 lb)** in steep terrain (over 30% grade) with high skidding resistance.

Load Factor Guide — 525B

- Low Skidding loads less than 4500 kg (**10,000 lb**) in flat terrain (0-5% grade) with low skidding resistance.
- Medium Skidding loads up to 6800 kg (**15,000 lb**) in moderate terrain (5-10% grade) with average skidding resistance.
- High Skidding loads over 6800 kg (**15,000 lb**) in steep terrain (over 10% grade) with high skidding resistance.

Load Factor Guide — 527

- Low Skidding loads less than **6360 kg (14,000 lb)** in flat terrain (0-8% grade) with low skidding resistance.
- Medium Skidding loads up to 6360 kg (**14,000 lb**) in moderate terrain (8-30% grade) with medium skidding resistance.
- High Skidding loads over 6360 kg (**14,000 lb**) in steep terrain (over 30% grade) with high skidding resistance.

Feller Bunchers

Typical Application Description

(relative to work application)

- Low Continuous felling & stacking in good underfoot conditions. Flat ground, uniform trees below 305 mm (**12 inches**).
- Medium Continuous cycling in good underfoot conditions. Rolling terrain, some trees up to 508 mm (**20 inches**) or some hardwoods.
- High Continuous cycling in steep terrain over stumps or fallen trees. Most trees 508 mm (**20 inches**) or larger hardwoods.

Load Factor Guide

(average engine load factor based on application description for each range)

- Low 20%-30%
- Medium 30%-40%
- High 40%-50%

OFF HIGHWAY TRUCKS & TRACTORS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
769D	20.8-30.3	5.5-8.0	30.3-40.0	8.0-10.5	40.0-68.0	10.5-14.0
771D	22.7-32.2	6.0-8.5	32.2-41.6	8.5-11.0	41.6-55.0	11.0-14.5
773E	24.5-36.0	6.5-9.5	36.0-53.0	9.5-14.0	53.0-68.0	14.0-18.0
775E	30.3-41.6	8.0-11.0	41.6-56.8	11.0-15.0	56.8-73.8	15.0-19.5
776D	53.0-73.8	14.0-19.5	73.8-96.5	19.5-25.5	96.5-117.3	25.5-31.0
777D	36.0-53.0	9.5-14.0	53.0-73.8	14.0-19.5	73.8-96.5	19.5-25.5
784C	53.0-79.5	14.0-21.0	79.5-109.8	21.0-29.0	100.8-145.7	29.0-38.5
785C	72.5-83.0	19.0-22.0	91.0-96.0	24.0-24.5	101.0-109.0	27.0-29.0
789C	96.5-110.5	25.5-29.0	121.0-128.0	32.0-34.0	134.5-145.0	36.0-38.5
793C (Standard Displacement)	122.5-140.0	32.5-37.0	153.5-162.0	40.5-43.0	171.0-184.0	45.0-48.5
793C (High Displacement)	116.5-133.0	31.0-35.0	145.5-154.0	38.5-40.5	162.0-174.5	43.0-46.0
797	172.5-197.0	45.5-52.0	215.0-228.0	57.0-60.5	240.0-259.0	63.5-68.5

NOTE: Load factors above 50% may be experienced in many applications.

Typical Application Description

(relative to work application)

Low Continuous operation at an average gross weight less than recommended. Excellent haul roads. No overloading, low load factor.

Medium Continuous operation at an average gross weight approaching recommended. Minimal overloading, good haul roads, moderate load factor.

High Continuous operation at or above maximum recommended gross weight. Overloading, poor haul roads, high load factor.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%

Medium 50%-65%

High 65%-80%

ARTICULATED TRUCKS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
725	10.6-14.8	2.8-3.9	14.8-20.8	3.9-5.5	20.8-30.1	5.5-8.0
730 Ejector	12.3-17.1	3.3-4.5	17.1-24.5	4.5-6.4	24.2-34.9	6.4-9.2
730	11.7-16.3	3.1-4.3	16.3-23.0	4.3-6.1	23.0-33.2	6.1-8.8
735	16.6-23.1	4.4-6.1	23.1-32.4	6.1-8.6	32.4-46.8	8.6-12.4
740	16.7-23.2	4.4-6.1	23.2-32.6	6.1-8.6	32.6-47.1	8.6-12.5
740 Ejector	17.5-24.4	4.6-6.4	24.4-34.2	6.4-8.6	34.2-49.5	9.0-13.1

Typical Application Description

(relative to work application)

Low Earthmoving & stockpile use with well matched loading equipment, free flowing material. Large amount of idling, short to medium haul distances on well-maintained level haul roads. Minimum total resistance, few impact loads.

Medium Typical use in road-building, dam construction, open-pit mining, etc. Normal load & haul times, varying haul road conditions with some adverse grades. Some impact loads.

High Poorly-matched loading equipment with continuous overloading. Long haul time and continuous use on very poorly maintained haul roads with frequent adverse grades. High rolling resistance, poor traction, high impact loads.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 20%-30%

Medium 30%-40%

High 40%-50%

TELEHANDLERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
TH210	5.1-6.8	1.3-1.8	8.5-10.1	2.2-2.6	11.8-13.5	3.1-3.5
TH215	5.1-6.8	1.3-1.8	8.5-10.1	2.2-2.6	11.8-13.5	3.1-3.5
TH220B (59-74 kW/80-99 hp)	5.0-7.0	1.3-1.8	10.0-14.0	2.6-3.7	13.0-17.0	3.4-4.5
TH220B (92 kW/123 hp)	5.0-8.0	1.3-2.1	10.0-16.0	2.6-4.2	13.0-20.0	3.4-5.3
TH330B (59-74 kW/80-99 hp)	5.0-7.0	1.3-1.8	10.0-14.0	2.6-3.7	13.0-17.0	3.4-4.5
TH330B (92 kW/123 hp)	5.0-8.0	1.3-2.1	10.0-16.0	2.6-4.2	13.0-20.0	3.4-5.3
TH340B	5.0-7.0	1.3-1.8	10.0-14.0	2.6-3.7	13.0-17.0	3.4-4.5
TH350B	5.0-7.0	1.3-1.8	10.0-14.0	2.6-3.7	13.0-17.0	3.4-4.5
TH355B	5.0-7.0	1.3-1.8	10.0-14.0	2.6-3.7	13.0-17.0	3.4-4.5
TH360B	5.0-7.0	1.3-1.8	10.0-14.0	2.6-3.7	13.0-17.0	3.4-4.5
TH460B	5.0-7.0	1.3-1.8	10.0-14.0	2.6-3.7	13.0-17.0	3.4-4.5
TH560B (59-74 kW/80-99 hp)	5.0-9.0	1.3-2.4	10.0-15.0	2.6-4.0	13.0-17.5	3.4-4.6
TH560B (92 kW/123 hp)	5.0-9.0	1.3-2.4	10.0-17.0	2.6-4.5	13.0-21.0	3.4-5.5
TH580B	5.0-6.0	1.3-1.6	9.0-10.7	2.4-2.8	16.0-18.3	4.2-4.8

Typical Application Description

(relative to work application)

Low Light to moderate, intermittent, utility applications with frequent periods of idling and limited travel.

Medium General construction applications with moderate amounts of travel.

High Continuous production applications with near capacity loading and extended lifts.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 20%-30%

Medium 30%-40%

High 40%-50%

WHEEL DOZERS/SOIL COMPACTORS/LANDFILL COMPACTORS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
814F	21.0-25.0	5.5-6.5	26.0-30.0	7.0-8.0	36.0-40.0	9.5-10.5
815F	26.0-30.0	7.0-8.0	36.0-42.0	9.5-11.0	44.0-47.0	11.5-12.5
816F	26.0-30.0	7.0-8.0	36.0-42.0	9.5-11.0	44.0-47.0	11.5-12.5
824H	28.9-33.8	7.9-8.9	39.8-45.8	10.5-12.1	53.7-59.7	14.2-15.8
825H	37.8-43.8	10.0-11.6	53.7-67.3	14.2-17.8	63.7-69.7	16.8-18.4
826H	34.0-35.8	8.4-9.4	39.8-43.8	10.5-11.6	47.8-51.7	12.6-13.6
834H	34.6-43.4	9.1-11.4	48.2-52.2	12.7-13.8	67.6-74.0	17.8-19.5
836H	39.8-43.8	10.5-11.6	47.8-51.7	12.6-14.0	55.7-59.7	14.7-18.0
844	42.0-50.0	11.0-13.0	54.0-62.0	14.0-16.0	65.0-73.0	17.0-19.0
854G	53.0-61.0	14.0-16.0	68.0-76.0	18.0-20.0	83.0-91.0	22.0-24.0

Wheel Dozers

Typical Application Description

(relative to work application)

Low Light utility & stockpile work. Pulling compactors. Dozing loose fill. Considerable idling or travel with no load & no impact.

Medium Production dozing, push loading in clays, sands, silts, loose gravels. Shovel clean-up. Normal compaction.

High Heavy production dozing in rock. Push-loading in rocky, bouldery borrow pits. Heavy landfill compactor work. High impact conditions.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%

Medium 50%-65%

High 65%-80%

Soil Compactors/Landfill Compactors

Typical Application Description

(relative to work application)

Low No dozing or very light spreading on a flat or downhill surface. Machine has support equipment dozing and spreading trash while compactor simply travels over flat surface multiple times.

Medium Compactor primary use is compacting already spread material. Compactor assists in dozing and spreading during peak periods of day and possibly working slopes of no steeper than a 4:1.

High Compactor is possibly only machine for operation. Machine will doze and spread material alone and then compact it with multiple passes working on steep slopes and possibly uphill.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%

Medium 50%-65%

High 65%-80%

COMPACTION EQUIPMENT

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
CP-323C	8.0-13.0	2.0-3.5	11.0-15.0	3.0-4.0	11.0-19.0	3.0-5.0
CS-323C	8.0-13.0	2.0-3.5	11.0-15.0	3.0-4.0	11.0-19.0	3.0-5.0
CS-423E	11.0-13.0	3.0-3.5	11.0-17.0	3.0-4.5	13.0-19.0	3.5-5.0
CS-431C	8.0-11.0	2.0-3.0	11.0-13.0	3.0-3.5	11.0-15.0	3.0-4.0
CP-433E	11.0-13.0	3.0-3.5	11.0-17.0	3.0-4.5	13.0-19.0	3.5-5.0
CS-433E	11.0-13.0	3.0-3.5	11.0-17.0	3.0-4.5	13.0-19.0	3.5-5.0
CS-531D	11.0-13.0	3.0-3.4	12.0-14.0	3.2-3.7	13.0-16.0	3.4-4.2
CP-533E	10.0-12.0	2.64-3.17	11.0-13.0	2.9-3.4	12.0-15.0	3.2-4.0
CS-533E	10.0-12.0	2.64-3.17	11.0-13.0	2.9-3.4	12.0-15.0	3.2-4.0
CP-563E	12.0-14.0	3.2-3.7	14.0-17.0	3.7-4.5	17.0-20.0	4.5-5.3
CS-563E	12.0-14.0	3.2-3.7	14.0-17.0	3.7-4.5	17.0-20.0	4.5-5.3
CP-573E	12.0-15.0	3.2-4.0	14.0-18.0	3.7-4.8	17.0-21.0	4.5-5.6
CS-573E	12.0-15.0	3.2-4.0	14.0-18.0	3.7-4.8	17.0-21.0	4.5-5.6
CS-583E	15.0-17.0	4.0-4.5	17.0-19.0	4.5-5.0	19.0-23.0	5.0-6.0
CP-663E	15.0-17.0	4.0-4.5	17.0-19.0	4.5-5.0	21.0-22.5	5.5-6.0
CS-663E	15.0-17.0	4.0-4.5	17.0-19.0	4.5-5.0	21.0-22.5	5.5-6.0
CS-683E	17.0-19.0	4.5-5.0	19.0-21.0	5.0-5.5	22.5-24.5	6.0-6.5
CB-214D	2.0-3.0	0.5-1.0	2.5-3.5	0.5-1.0	3.0-4.0	1.0-1.5
CB-224D	2.0-4.0	0.5-1.0	3.0-4.0	0.5-1.0	3.5-4.5	1.0-1.5
CB-225D	2.0-3.0	0.5-1.0	2.5-3.5	0.5-1.0	3.0-4.0	1.0-1.5
CB-334E	3.8-5.7	1.0-1.5	5.7-7.0	1.5-1.8	7.0-10.0	1.8-2.6
CB-335E	3.5-5.5	0.9-1.4	5.5-6.5	1.4-1.7	6.5-9.0	1.7-2.4
CB-434C	11.0-13.0	3.0-3.5	13.0-17.0	3.5-4.5	17.0-19.0	4.5-5.0
CB-534D	5.7-7.6	1.5-2.0	7.6-11.4	2.0-3.0	11.4-15.2	3.0-4.0
CB-634C	13.0	3.5-4.0	15.0-19.0	4.0-5.0	19.0-21.0	5.0-5.5
PS-150C	8.0-11.0	2.0-3.0	11.0-13.0	3.0-3.5	13.0-15.0	3.5-4.0
PS-200B	11.0	3.0	11.0-13.0	3.0-3.5	13.0-15.0	3.5-4.0
PF-300C	13.0	3.5	15.0-17.0	4.0-4.5	17.0-23.0	4.5-6.0
PS-300C	13.0	3.5	15.0-17.0	4.0-4.5	17.0-23.0	4.5-6.0
PS-360C	17.4-9.8	1.9-2.6	9.8-12.4	2.6-3.3	12.4-14.5	3.3-4.6

Typical Application Description

(relative to work application)

Low Asphalt mix, 51-100 mm (2-4 inch) lifts.

Medium Granular soil, 100-305 mm (4-12 inch) lifts.

High Heavy cohesive soil, 305 mm (12 inch) lifts or more.

Load Factor Guide

(average engine load factor based on application description for each range)

Low Vibration 30%-50%

Medium Vibration 50%-80%

High Vibration 80%-100%

ASPHALT PAVERS

Model	Low		Medium		High	
	liter *	U.S. gal *	liter *	U.S. gal *	liter *	U.S. gal *
AP-200B						
AP-650B	20.8-24.6	5.5-6.5	24.6-28.4	6.5-7.5	32.3-36.0	8.5-9.5
AP-655C	20.8-24.6	5.5-6.5	24.6-28.4	6.5-7.5	32.3-36.0	8.5-9.5
AP-800D	20.8-24.6	5.5-6.5	24.6-28.4	6.5-7.5	32.2-36.0	8.5-9.5
AP-900B	22.5-26.5	6.0-7.0	26.5-30.0	7.0-8.0	34.0-38.0	9.0-10.0
AP-1000B	22.5-26.5	6.0-7.0	26.5-30.0	7.0-8.0	34.0-38.0	9.0-10.0
AP-1050B	19.0-22.5	5.0-6.0	26.5-30.0	7.0-8.0	34.0-38.0	9.0-10.0
AP-1055B	22.5-26.5	6.0-7.0	34.0-38.0	9.0-10.0	41.5-45.5	11.0-12.0
BG-225C	20.8-24.6	5.5-6.5	24.6-28.4	6.5-7.5	32.3-36.0	8.5-9.5
BG-2255C	20.8-24.6	5.5-6.5	24.6-28.4	6.5-7.5	32.3-36.0	8.5-9.5
BG-230D	20.8-24.6	5.5-6.5	24.6-28.4	6.5-7.5	32.2-36.0	8.5-9.5
BG-240C	22.5-26.5	6.0-7.0	26.5-30.0	7.0-8.0	34.0-38.0	9.0-10.0
BG-260C	22.5-26.5	6.0-7.0	26.5-30.0	7.0-8.0	34.0-38.0	9.0-10.0
BG-245C	19.0-22.5	5.0-6.0	26.5-30.0	7.0-8.0	34.0-38.0	9.0-10.0
BG-2455C	22.5-26.5	6.0-7.0	34.0-38.0	9.0-10.0	41.5-45.5	11.0-12.0

*Insufficient data.

Typical Application Description

(relative to work application)

Low Narrow width paving, low production.

Medium 3-4 m (10-12 feet) width, 50-75 mm (2-3 inch) lift.

High Wide width, deep lift paving.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 20%-30%

Medium 30%-40%

High 40%-50%

⑧ Hourly Fuel Consumption Tables
 ● Cold Planers
 ● Road Reclaimers/Soil Stabilizers

Owning & Operating Costs

COLD PLANERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
PM-201	45.5-60.6	12.0-16.0	60.6-83.4	16.0-22.0	83.4-106.1	22.0-28.0
PM-465	37.0-45.0	10.0-12.0	45.0-57.0	12.0-15.0	60.0-76.0	16.0-20.0
PM-565B	37.0-53.0	10.0-14.0	53.0-68.0	14.0-18.0	72.0-87.0	19.0-23.0

Typical Application Description

(relative to work application)

Low 50 mm (**2 inches**) or less cutting depth, 80% load cycle.

Medium 100 mm (**4 inches**) cutting depth.

High Steady, full depth.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%

Medium 50%-65%

High 65%-80%

ROAD RECLAIMERS/SOIL STABILIZERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
RM-250C	26.5-34.1	7.0-9.0	34.1-41.6	9.0-11.0	41.6-53.0	11.0-14.0
RM-300	26.5-34.1	7.0-9.0	34.1-41.6	9.0-11.0	41.6-53.0	11.0-14.0
RM-350B	53.1-68.2	14.0-18.0	68.2-83.4	18.0-22.0	83.4-94.8	22.0-25.0

Typical Application Description

(relative to work application)

Low 150 mm (**6 inches**) soil/100 mm (**4 inches**) asphalt.

Medium 305 mm (**12 inches**) soil/150 mm (**6 inches**) asphalt.

High 457 mm (**18 inches**) soil/305 mm (**12 inches**) asphalt.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-60%

Medium 60%-80%

High 80%-90%

Owning & Operating Costs

⑧ Hourly Fuel Consumption Tables

- Track Loaders
- Wheel Loaders & Integrated Toolcarriers

TRACK LOADERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
933C	9.0-11.0	2.5-3.0	11.0-13.0	3.0-3.5	13.0-15.0	3.5-4.0
939C	11.0-13.0	3.0-3.5	13.0-15.0	3.5-4.0	15.0-17.0	4.0-4.5
953C	11.0-16.0	3.0-4.0	16.0-21.0	4.0-5.5	21.0-26.0	5.5-7.0
963C	13.0-17.0	3.5-4.5	19.0-23.0	5.0-6.0	23.0-28.0	6.0-7.5
973C	26.4-33.5	6.9-8.8	33.5-40.7	8.8-10.7	40.7-47.9	10.7-12.6

Typical Application Description

(relative to work application)

Low Site clearing of small vegetation, stripping top soil, carrying to stockpile. Backfilling & grading. Intermittent truck loading from stockpile. Free flowing, low density materials with standard bucket. Large amounts of idling. No impact.

Medium Bank excavation, bank or stockpile loading. Intermittent ripping, basement digging of natural bed clays, sands, silts, gravels. Load & carry. Steady full throttle operation.

High Loading shot rock, cobbles, glacial till, caliche. Continuous work on rock surfaces. Continuous excavating & loading from bank. High density materials in standard bucket. Land clearing & steel mill work. Large amount of ripping in tight, rocky materials. High impact conditions.

Load Factor Guide

(average engine load factor based on application description for each range)

Low 35%-50%
 Medium 50%-65%
 High 65%-80%

WHEEL LOADERS & INTEGRATED TOOLCARRIERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
902	3.0	0.79	4.0-5.0	1.05-1.32	6.0-7.0	1.59-1.85
906	4.0	1.06	5.0-7.0	1.32-1.85	7.0-9.0	1.85-2.38
908	5.0	1.32	7.0-9.0	1.85-2.38	11.0-12.0	2.91-3.17
914G, IT14G	5.0-6.5	1.0-2.0	8.0-10.5	2.0-2.5	11.5-13.0	3.0-3.5
924G	5.5-7.5	1.5-2.0	9.5-12.0	2.5-3.0	13.0-15.0	3.5-4.0
928G, IT28G	7.5-11.0	2.0-3.0	11.0-15.0	3.0-4.0	15.0-19.0	4.0-5.0
938G, IT38G	9.0-12.5	2.0-3.0	13.0-17.0	3.5-4.5	18.0-22.0	4.5-5.5
950G Series II	9.5-12.5	2.5-3.5	14.5-18.0	3.5-4.5	19.5-24.0	5.0-6.5
962G/IT62G Series II	10.0-13.5	2.6-3.6	15.0-18.5	4.0-4.9	20.0-24.5	5.3-6.5
966G Series II	14.5-18.0	3.75-4.75	19.5-23.75	5.0-6.5	27.0-32.0	7.0-8.5
972G Series II	16.0-19.5	4.0-5.0	21.0-25.5	5.5-7.0	30.0-35.0	7.5-9.5
980H	19.5-22.0	5.2-5.8	25.5-30.5	6.7-8.1	35.5-40.0	9.4-10.6
988H	34.2-43.0	8.8-11.0	45.3-50.7	12.2-13.2	65.1-70.6	17.1-18.8
990	46.0-54.0	12.0-14.0	61.5-69.0	16.0-18.0	81.0-88.5	21.0-23.0
992G	58.0-66.0	15.0-17.5	83.0-91.0	22.0-24.0	116.0-125.0	30.5-33.0
994D	102.0-109.5	27.0-29.0	129.0-144.0	34.0-38.0	163.0-178.0	43.0-47.0

Compact Wheel Loaders

Typical Application Description

(relative to work application)

- Low Light industrial or construction site duties. Moving light loads with bucket or pallet forks. Not continuous duty, considerable idle time. Machine could be working on average 2 hours or less per day.
- Medium Intermittent aggregate truck loading from stockpile, hopper charging or load & carry on firm, smooth surfaces for short distances with minimal grades. Free flowing, low density materials. Light utility, industrial & construction applications. Light snowplowing.
- High Continuous truck loading from stockpile & hopper charging. Loading from bank or load & carry on normal surfaces with low to medium rolling resistance & slight adverse grades. Low to medium density materials in properly sized bucket. Assumes normal travel distances associated with high productivity stockpile load-out & batch plant applications.

Load Factor Guide

(average engine load factor based on application description for each range)

- Low 35%-50%
- Medium 50%-65%
- High 65%-80%

Small, Medium & Large Wheel Loaders & Integrated Toolcarriers

Typical Application Description

(relative to work application)

- Low Intermittent aggregate truck loading from stockpile, hopper charging or load & carry on firm, smooth surfaces for short distances with minimal grades. Free flowing, low density materials. Light utility, industrial & construction applications. Light snowplowing. Most logging applications where there is considerable idling.
- Medium Continuous truck loading from stockpile & hopper charging. Loading from bank or load & carry on normal surfaces with low to medium rolling resistance & slight adverse grades. Low to medium density materials in properly sized bucket. Assumes normal travel distances associated with high productivity stockpile load-out & batch plant applications.
- High Loading shot rock (large loaders) from a face. Steady loading from very tight banks. Continuous work on rough or very soft surfaces with high rolling resistance. Load & carry in hard digging material with longer travel distances on poor surfaces with adverse grades. Handling high density materials with counterweighted machine.

Load Factor Guide

(average engine load factor based on application description for each range)

- Low 35%-50%
- Medium 50%-65%
- High 65%-80%

Owning & Operating Costs

- ⑨ Planned Maintenance Costs
 - Lube Oils, Filters, Grease, Labor

9

PLANNED MAINTENANCE (PM) LUBE OILS, FILTERS, GREASE, LABOR

Planned Maintenance (PM) costs should be developed by the Caterpillar Dealer, with customer input for the specific application.

PM costs include the parts and labor at the intervals specified in the Operation and Maintenance Manuals provided for each machine. PM costs for each machine may vary slightly depending upon factors required or specified by the customer. See your local Caterpillar dealer to develop the specific PM cost per hour estimate for your machine and application.

10a TIRES

(Line Item 10a)

Tire costs are an important part of the hourly cost of any wheel machine. Tire costs are also one of the most difficult to predict with many variables. The best estimate for tire costs are obtained when tire life estimates are based upon actual customer experience, and are used with prices the machine owner actually pays for the replacement tires.

For cases in which tire experience is not available, use the following tire life estimator curves.

Tire Life Estimators

- Curves do not allow for additional life from recapping. They assume new tires run to destruction, but this is not necessarily recommended.
- Based on standard machine tires. Optional tires will shift these curves either up or down.
- Sudden failure (blow out) due to exceeding Ton-MPH (tkm/h) limitations is not considered. Nor are premature failures due to puncture.
- Application Descriptions/Zones:

Low/Zone A: almost all tires actually wear through the tread from abrasion.

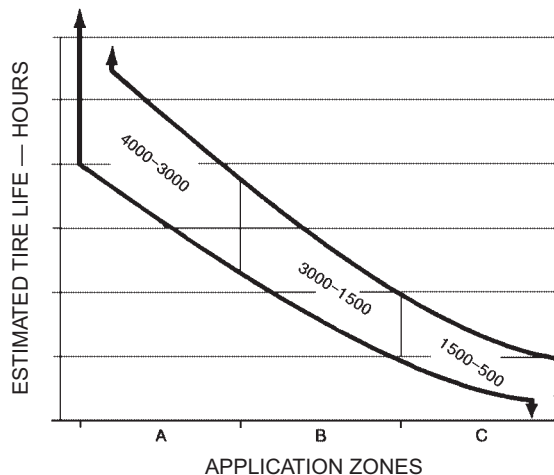
Medium/Zone B: tires wear out normally but others fail prematurely due to rock cuts, impacts and non-repairable punctures.

High/Zone C: few, if any, tires wear through the tread due to non-repairable damages, usually from rock cuts, impacts and continuous overloading.

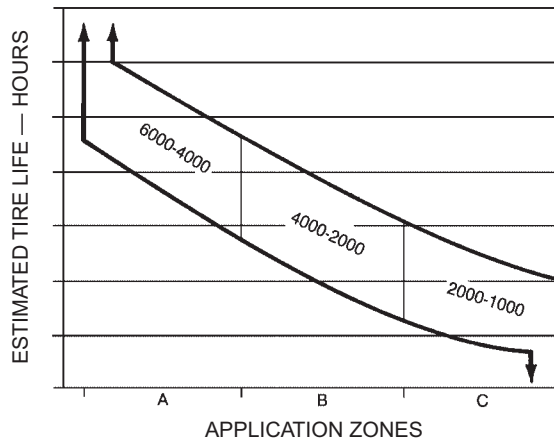
NOTE: Tire life can often be increased by using extra tread and extra deep tread tires.

NOTE: Premature failure could occur at any time due to puncture.

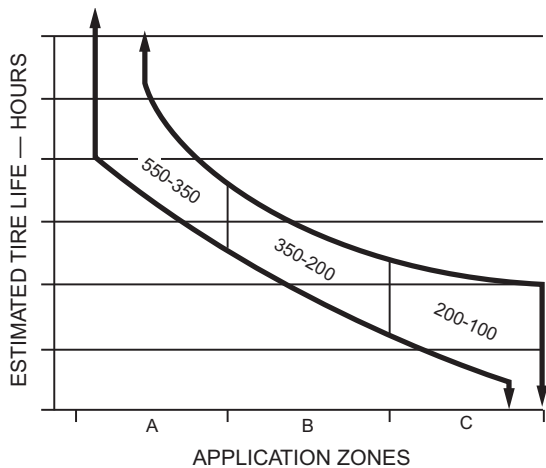
MOTOR GRADERS



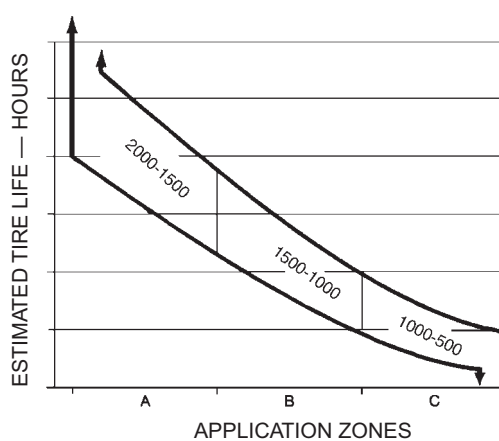
SKIDDERS



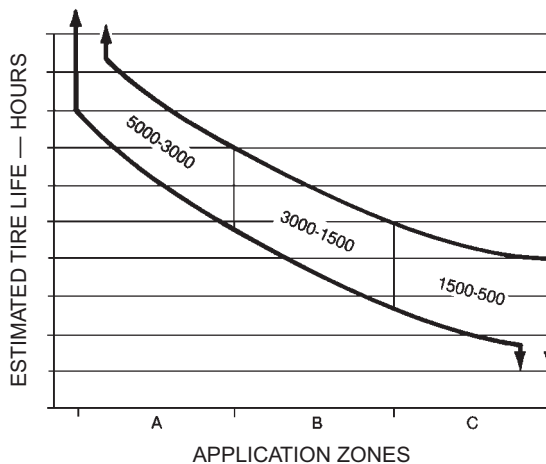
SKID STEER LOADERS



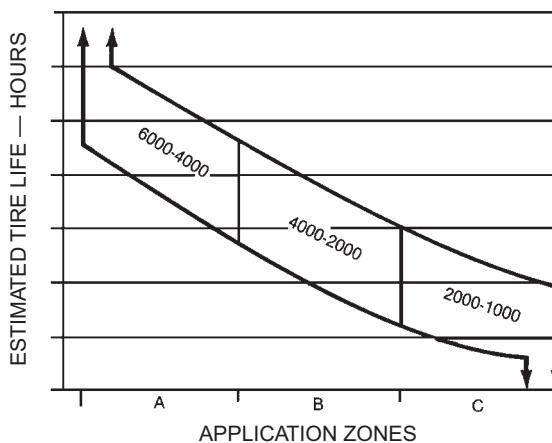
LOAD HAUL DUMP UNITS



WHEEL TRACTOR-SCRAPERS



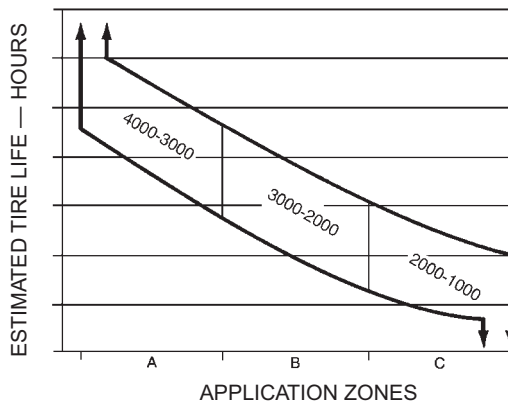
CONSTRUCTION & MINING TRUCKS



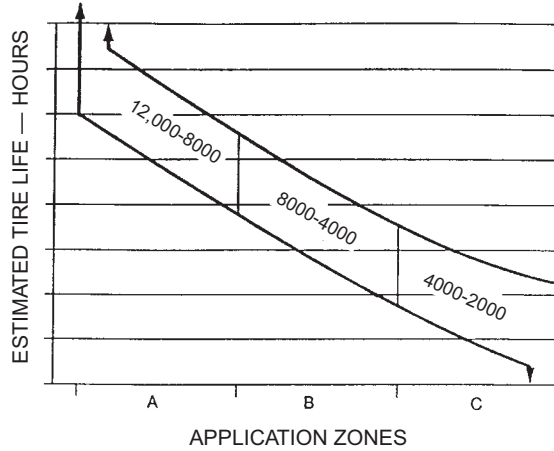
Key:

- Zone A — Almost all tires actually wear through the tread due to abrasion.
- Zone B — Some tires wear out normally while others fail prematurely due to rock cuts, impacts and non-repairable punctures.
- Zone C — Few, if any, tires wear through the tread because of non-repairable damages, usually from rock cuts, impacts or continuous overloading.

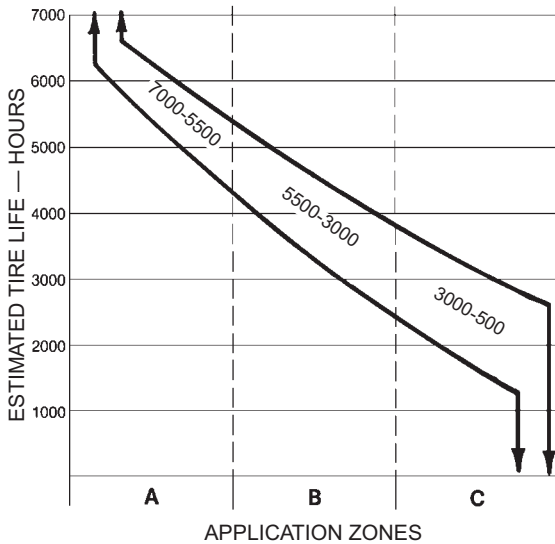
UNDERGROUND TRUCKS



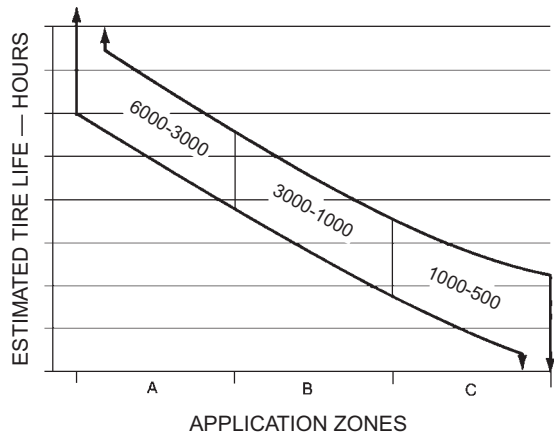
TRACTORS/WAGONS



ARTICULATED TRUCKS



**WHEEL TRACTORS
WHEEL LOADERS**



Key:

- Zone A — Almost all tires actually wear through the tread due to abrasion.
- Zone B — Some tires wear out normally, others fail prematurely due to rock cuts, impacts, and non-repairable punctures.
- Zone C — Few, if any, tires wear through the tread because of non-repairable damages, usually from rock cuts, impacts, or continuous overloading.

Application Tire Life	Tires Cost Per Hour — Basic Factors		
	Zone A 8000-5000	Zone B 5000-2500	Zone C 2500-500
Model 990 II 992G 994D	\$20-\$40	\$30-\$80	\$60-\$400

GOODYEAR LIFE ESTIMATING SYSTEM

As an additional assist in estimating *hauling unit* tire life, Goodyear Tire and Rubber Co. has furnished the following information which is included here with their permission. READ THE PREAMBLE CAREFULLY.

“... at present, there is no completely accurate, fool-proof method of forecasting tire life. Tire engineers have many theoretical methods ... but these generally are so involved and time consuming that they are impractical for field use.

“However, the tire industry has made many surveys of tire performance and arrived at a system which can give rough *estimates* of tire life. Studies done by the major tire companies and by at least two major equipment manufacturers are in close agreement.

“The table [which follows] shows how to apply this system ...”

ESTIMATED TIRE SERVICE LIFE OF HAULING UNITS (Trucks & Scrapers)

No.	Condition	Factor
I	Maintenance	
	Excellent	1.090
	Average	0.981
	Poor	0.763
II	Speeds (Maximum)	
	16 km/h ~ 10 mph	1.090
	32 km/h ~ 20 mph	0.872
	48 km/h ~ 30 mph	0.763
III	Surface Conditions	
	Soft Earth — No Rock	1.090
	Soft Earth — Some Rock	0.981
	Well Maintained — Gravel Road	0.981
	Poorly Maintained — Gravel Road	0.763
	Blasted — Sharp Rock	0.654
IV	Wheel Positions	
	Trailing	1.090
	Front	0.981
	Driver (Rear Dump)	0.872
	(Bottom Dump)	0.763
	(Self Propelled Scraper)	0.654

No.	Condition	Factor
V	Loads (See No. VIII note)	
	T&RA/ETRTO* Recommended Loading	1.090
	20% Overload	0.872
	40% Overload	0.545
VI	Curves	
	None	1.090
	Medium	0.981
	Severe	0.872
VII	Grades (Drive Tires Only)	
	Level	1.090
	5% Max.	0.981
	15% Max.	0.763
VIII	Other Miscellaneous Combinations (See note below)	
	None	1.090
	Medium	0.981
	Severe	0.872

Condition VIII is to be used when overloading is present in combination with one or more of the primary conditions of maintenance, speeds, surface conditions and curves. The combination of severe levels in these conditions, together with an overload, will create a new and more serious condition which will contribute to early tire failure to a larger extent than will the individual factors of each condition.

*Tire and Rim Association/European Tire and Rim Technical Organization.

Type of Tire	Base Average Life		
	Hours	km	Miles
E-3 Std. Bias Tread	2510	40 400	25,100
E-4 Bias Xtra Tread	3510	56 500	35,100
E-4 Radial Xtra Tread	4200	67 600	42,000

Using Base Hours (or Miles), multiply by the appropriate factor for *each* condition to obtain approximate estimated hours (or miles) as the final product.

Example: An off-highway truck equipped with E-4 drive tires running on a well maintained haul road having easy curves and minimum grades and receiving “average” tire maintenance attention but being 20% overloaded:

Condition: I II III IV V VI VII VIII
 Factor: 0.981 × 0.872 × 0.981 × 0.872 × 0.872 × 0.981 × 0.981 × 0.981
 × 3510 base hours = 2114 hours (say 2100 hours)

As can be seen, this system requires the careful application of strictly subjective judgments, and can be expected to result in conservative estimates. Keep in mind, however, **that the system is offered only as an aid in estimating and not as a rigid set of rules.**

On the other hand, if tire life on a given job is considered less than satisfactory, an analysis of these factors may point to conditions which can be improved to the betterment of tire life.

Replacement tire prices should always be obtained from local tire company sources.

Since tires are considered a wear item in this method of estimating owning and operating costs, total tire replacement cost is deducted from machine delivered price to arrive at a net figure for depreciation purposes. Outlay for tires is then included as an item in operating costs:

$$\text{Hourly Tire Cost} = \frac{\text{Replacement Cost of Tires}}{\text{Estimating Tire Life in Hours}}$$

Recapping can sometimes lower hourly tire cost. Considerations are availability of molds, local recapping costs, and experience with recap life.

10b UNDERCARRIAGE
(Line Item 10b)

Undercarriage expense can be a major portion of the operating costs for track-type machines, and these costs can vary *independently* of basic machine costs. That is, the undercarriage can be employed in an extremely abrasive, high-wear environment while the basic machine may be in an essentially easy application, and vice-versa. For that reason, it is recommended that the hourly cost of undercarriage be calculated separately as a wear item rather than being included in the repair costs for the basic machine.

Three primary conditions affect probable life-expectancy of track-type undercarriage:

- 1. Impact.** The most measurable effect of impact is structural — that is bending, chipping, cracking, spalling, roll-over, etc., and problems with hardware and pin and bushing retention.

Impact ratings:

High — Non-penetrable hard surfaces with 150 mm (6") or higher bumps.

Moderate — Partially penetrable surfaces and bumps of 75-150 mm (3-6") height.

Low — Completely penetrable surfaces (which provide full shoe plate support) with few bumps.

- 2. Abrasiveness.** The tendency of the underfoot materials to grind away the wear surfaces of track components.

Abrasiveness ratings:

High — Saturated wet soils containing a high proportion of hard, angular or sharp sand or rock particles.

Moderate — Slightly or intermittently damp soils containing a low proportion of hard, angular or sharp particles.

Low — Dry soils or rock containing a low proportion of hard, angular or sharp sand or rock chip particles.

Impact and abrasiveness in combination can accelerate wear rates beyond their individual effects when considered alone, thus further reducing component life. This should be taken into account in determining impact and abrasiveness ratings or, if preferred, the combination can be included in selecting the "Z" factor.

- 3. "Z" factor.** Represents the combined effect on component life of the many intangible environmental, operational and maintenance considerations on a given job.

Environment and Terrain. Earth which may not be abrasive itself can pack in sprocket teeth, causing mis-match and high stress as the teeth engage the bushings. Corrosive chemicals in the materials being moved or in the natural soil can affect wear rates, while moisture and temperature can exaggerate the effect. Temperature alone can play its own role — hot slag and hard-frozen soils being but the extremes. Constant sidehill work can increase wear on the sides of components.

Operation. Some operator practices tend to increase track wear and cost if not controlled on the job. Such practices include high-speed operation, particularly in reverse; tight turns or constant corrections in direction; and stalling the tractor under load forcing the tracks to slip.

Maintenance. Good maintenance — proper track tension, daily cleaning when working in sticky materials, etc. — combined with periodic wear measurement and timely attention to recommended services (CTS) can extend component life and lower costs by minimizing the effects of these and other adverse conditions.

While impact and abrasion should not be too difficult to judge, selection of the proper “Z” factor will require careful analysis of job conditions such as weather, tendency for soil packing, side-hill loading, corrosive environment, etc.; operational factors such as high-speed reverse, amount of travel, tight turns, track slippage under overload, etc.; and maintenance considerations such as proper tensioning, use of Custom Track Service, etc.

Selection of the “Z” multiplier is strictly a matter of judgement and common sense, but its effect on cost can be the difference between profit on a controlled job and heavy loss where control is allowed to slip. To assist in arriving at an appropriate value for the “Z” factor, consider that proper maintenance — or the lack thereof — will represent about 50% of its effect, environment and terrain 30%, and operator practices 20%. For large excavators the amount of travel is the critical part of the “Z” factor. A good operator working under good field conditions can be counterbalanced by poor maintenance practices to yield a fairly high “Z” factor. On the other hand, close attention to maintenance, tension and alignment can more than offset a bad underfoot condition resulting in severe sprocket packing, and lead to selection of a moderate to low “Z” factor. Obviously, flexibility in selection of a “Z” factor has been built into the system, and use of this flexibility is encouraged. Further, a considerable measure of control can be maintained over the “Z” factor, and any reduction of its effects is money in the bank. Your Caterpillar Dealer CTS man can be invaluable in this endeavor as well as helping you establish a comprehensive undercarriage cost control program.

Estimating Undercarriage Cost

The guide below gives a basic factor for the various track-type machines and a series of conditions multipliers to modify the basic cost according to the anticipated impact, abrasive and miscellaneous (“Z”) conditions under which the unit will be operating.

- Step 1. Select machine and its corresponding basic factor.
- Step 2. Determine range for impact, abrasiveness and “Z” conditions.
- Step 3. Add selected conditions multipliers and apply sum to basic factor.

The result will be the estimated hourly cost for undercarriage in that application.

Undercarriage Basic Factors			
Model	Basic Factor		
5230B	20.1		
D11R	18.0		
5130B	15.9		
D10R	13.3		
5110B	11.7		
D9R	10.6		
D8R & D8R Series II	9.0		
973, 589, D7R Series II LGP	10.1		
D7R Series II, 963C, 583R, D6R Series II LGP, D7R XR Series II	8.5		
385B, 5090B	6.8		
D6R Series II, 953C, 572R, D6M LGP, 527	6.6		
365B Series II	6.5		
345B Series II	5.6		
D5N LGP, D6 SR, D6N XL, 517	5.3		
330C	4.7		
D3G (All), D4G (All), D5G (All), 933 (All), 939, 561M	3.9		
325C	3.6		
314C, 315C, 317C, 318B L, 322C	3.2		
320C	2.7		
307B, 308C, 311C, 312C	2.3		
Conditions Multipliers			
	Impact	Abrasiveness	“Z”
High	0.3	0.4	1.0
Moderate	0.2	0.2	0.5
Low	0.1	0.1	0.2

Example: D10R in high impact, non-abrasive material with a moderate “Z” factor.

$$\begin{aligned}
 \text{D10R Basic Factor} &= 13.3 \\
 \text{Multipliers:} \quad & \text{I} = 0.3 \\
 & \text{A} = 0.1 \\
 & \text{Z} = 0.5
 \end{aligned}$$

$$\text{U.C. cost} = 13.3 (0.3 + 0.1 + 0.5) = \mathbf{\$11.97/\text{hour}}$$

- NOTE:** 1. Conditions Multipliers may be selected in any combination. Thus, a multiplier of 0.4 (all low-range multipliers) represents the best of the best, while 1.7 (all high range multipliers) would be the worst of the worst conditions.
2. The hourly undercarriage cost estimate resulting from this method will be made up of *approximately* 70% parts cost and 30% labor charges. The cost of undercarriage components is based on published U.S. Consumers List Prices and may be adjusted as needed for import duties, exchange rates, etc. outside the United States. Labor has been figured at \$60.00 (U.S.) per shop hour.
 3. For further information and guidance, refer to the current issue of the Caterpillar Custom Track Service Handbook.
 4. This formula for estimating undercarriage cost should not be used for tractors working in stockpile coal handling applications. Undercarriage costs are nominal in stockpile coal handling, and using this formula will result in estimating cost substantially above actual costs.

11

REPAIR COSTS

(Line Item 11)

Repair cost per hour should be developed by the Caterpillar Dealer, with customer input for the specific machine application and requirements.

As with PM cost per hour, repair costs are significantly affected by the specific application and situation. Several important variables must be provided by the customer and the local Caterpillar Dealer. This will enable a calculated cost per hour that is specific to the machine conditions and customer needs.

Machine applications, operating conditions, ownership periods, component life, and maintenance attention determine repair costs. In any specific application, actual cost experience on similar machines and applications provides the best basis for establishing the hourly repair cost.

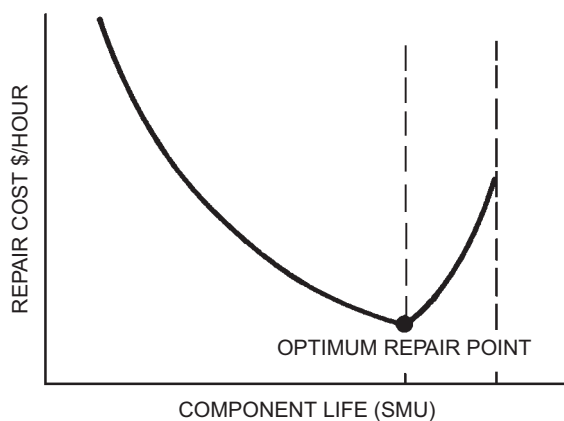
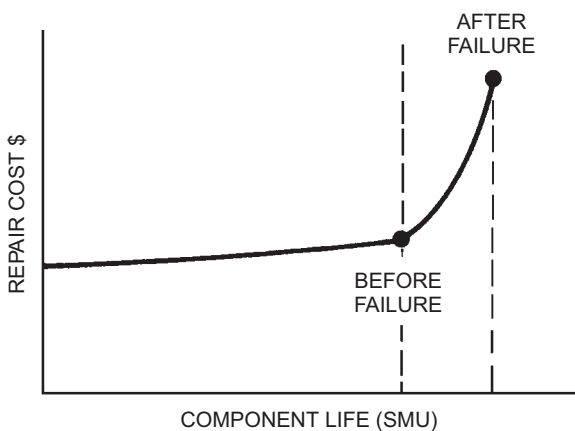
Repairs and component lives are normally the largest single item in operating costs and include all parts and direct labor (except operator's wages) chargeable to the machine. Shop overhead can be absorbed in general overhead or charged to machines as a percent of direct labor cost, whichever is the owner's normal practice.

Hourly repair costs for a single machine normally follow an upward staircase pattern since major outlays for repairs usually come in spurts. However, when broad averages are considered, the staircase becomes a smooth, upward curve. Since this hourly repair cost curve starts low and gradually rises over time, hourly operating costs must be adjusted upward as the unit ages. Alternatively an average repair cost can be used which provides a straight line graph. Most owners prefer the average method, and it is the one suggested here.

Since repair costs are low initially and rise gradually, averaging them produces extra funds at first which are reserved to cover future higher costs.

Your Caterpillar dealer has the ability to make more accurate repair cost estimates and we suggest you use their experience and expertise if you need help in estimating operating costs.

As stated, repair costs are affected by application, operating conditions, ownership period, maintenance, and age of the equipment. The most significant effects on cost will be those factors affecting major component life. A second significant factor is whether the repair is performed before or after catastrophic failure. Repair before a major component fails can be one-third of an after failure repair with only a moderate sacrifice in life (see graphs). Oil analysis and other diagnostic tools, maintenance inspections and indicators, and operator notes are vital to determine the optimum repair point and thereby achieving lower hourly repair costs. Maintenance practices are significant because they affect component longevity and the percentage of scheduled, before failure repairs.



12 Special Wear Items
 15 Operator's Hourly Wage
Owning & Operating Examples
 • Track-Type Tractor

Owning & Operating Costs

12

SPECIAL WEAR ITEMS

(Line Item 12 and Subsection 12A)

All costs for high-wear items such as cutting edges, ripper tips, bucket teeth, body liners, router bits, etc., and welding costs on booms and sticks should be included here. These costs will vary widely depending on applications, materials and operating techniques. Consult your Caterpillar Dealer Parts Department for estimated life under your job conditions.

15

OPERATOR'S HOURLY WAGE

(Line Item 15)

This item should be based on local wage scales and should include the hourly cost of fringe benefits.

EXAMPLES OF FIGURING OWNING AND OPERATING COSTS

(The following two examples are for illustrative purposes only. The intent is to show how the worksheets could be filled out. The PM and Repair costs should be developed by your local Caterpillar Dealer.)

Example I: ESTIMATING HOURLY OWNING AND OPERATING COSTS OF A TRACK-TYPE TRACTOR

Assume a power shift track-type tractor with straight bulldozer, hydraulic control, tilt cylinder and three-shank ripper, is purchased by a contractor for \$135,000, delivered price at job site.

Application will be production dozing of bank gravel. Minimal ripping will be required to loosen material.

In the following calculations, refer as necessary to the source material already reviewed.

OWNING COSTS —

To Determine Residual Value at Replacement

Enter delivered price, \$135,000, in space (A). (See example form at end of this discussion.) Since the machine being considered is a track-type tractor, no tires are involved. This particular owner's experience is that at trade-in time, the tractor will be worth approximately 35% of its original value. This \$47,250 trade-in value is entered in space (B) leaving a net of \$87,750 to be recovered through work.

Enter the net value to be recovered through work in space (C).

Indicated ownership period is 7 years with annual usage of 1200 hours per year or 8400 hours of total ownership usage.

Divide the Net Value from space (C), \$87,750, by Ownership Usage, 8400 hours, and enter result \$10.45 in space (D).

Interest, Insurance, Taxes

In this example, local rates are assumed as follows:

Interest	16%
Insurance	1%
Taxes	1%
	18%

Using the following formula:

$N = 7:$

$$\frac{\left[\frac{7 + 1}{2 \times 7} \times \$135,000 \right] \times 0.16}{1200} = \$10.29$$

Enter \$10.29 in space (E).

Insurance and property taxes can also be calculated using the same formula as shown for the interest cost, and entering them on lines 5 and 6.

Items 3b, 4, 5 and 6 can now be added and the result, \$22.02 entered in space (H) Total Hourly Owning Costs.

OPERATING COSTS —

Fuel

See fuel consumption tables. The intended application, production dozing, indicates a medium load factor. Assume that the estimated fuel consumption from the table is 17 liter/hr (4.5 U.S. gal/hr.). Cost of fuel in this locality is \$0.34/liter (\$1.25/U.S. gal.).

Consumption	Unit Cost	Total
17 liter/hr	× \$0.34 liter	= \$5.78
4.5 gal/hr	× \$1.25 gal.	= \$5.63

Enter this figure in space (I).

Planned Maintenance (PM) Cost per Hour

Use PM cost per hour estimate developed by your local Caterpillar Dealer. (For this example assume cost per hour is \$2.30) Enter this figure in space (J) on line 9.

Tires

Since this example considers a track-type tractor, space (K) is left blank.

Undercarriage

Our estimating reference gives an undercarriage cost Basic Factor of 6.6 for this tractor. It is anticipated that with some ripping on the job, impact loading of track components will be medium, indicating an “I” multiplier of 0.2. The gravel-sand mix in the bank, being dry, should be only moderately abrasive for an “A” multiplier of 0.2. In analyzing the miscellaneous conditions: there is enough clay in the bank to produce some packing of the sprockets; the operator is careful, but is forced into some tight turns because of space limitations; there is good drainage in the pit; track tension is checked weekly; and all track-type equipment on the job is enrolled in the Custom Track Service program. Accordingly, the “Z” multiplier is judged to be somewhat greater than low level — 0.3 in this case.

It should be noted that in applying particularly the “Z” factor, rather wide flexibility is provided and was used in the above example. Such flexibility is intended and its use encouraged.

Then:

$$\text{Cost per hour} = \text{Basic Factor} \times (\text{I} + \text{A} + \text{Z})$$

$$\text{Basic Factor} = 6.6$$

$$\text{Conditions Multipliers: I} = 0.2$$

$$\text{A} = 0.2$$

$$\text{Z} = 0.3$$

$$\text{Cost per hour } 6.6 (0.2 + 0.2 + 0.3) = \$4.62 \text{ which is entered in space (L).}$$

Repair Cost per Hour

Use the Repair cost per hour estimate developed by your local Caterpillar Dealer. (For this example assume cost per hour is \$6.12) Enter this figure in space (M) on line 11.

Special Items

Assuming the tractor is equipped with a three-shank ripper and an “S” dozer, allowance must be made for ripper tips, shank protectors, and dozer cutting edges.

Assume your knowledge of the operation indicates the ripper will be used only about 20% of total tractor operating time. Estimated tip life while in use is 30 hours. Therefore, tips will be replaced:

$$\frac{30 \text{ Hours}}{0.20} = \text{each } 150 \text{ hours of tractor operation}$$

Shank protector life is estimated at three times tip life or 450 hours of tractor operation.

Cutting edge life is estimated to be 500 hours.

Using local prices for these items, hourly costs are estimated as follows:

$$\text{Tips: } \frac{3 @ \$35.00 \text{ ea.}}{150 \text{ hr.}} = \$0.70 \text{ per hour}$$

$$\text{Shank Protectors: } \frac{3 @ \$55.00 \text{ ea.}}{450 \text{ hr.}} = \$0.37 \text{ per hour}$$

$$\text{Cutting Edges: } \frac{\$125 \text{ per set}}{500 \text{ hr.}} = \$0.25 \text{ per hour}$$

The total of these, \$1.32; is entered in space (N).

Items 8, 9, 10b, 11 and 12 can now be added and the result, \$19.99, is entered in space (O), Total Hourly Operating Costs.

Operator’s Hourly Wage

Assume this is \$25.00 including fringe benefits. This figure is entered in space (P).

Total Owning Costs, Total Operating Costs and Operator’s Hourly Wage are now added together and the result, \$67.01, is entered in space (Q). The itemized estimate of Hourly Owning and Operating Costs is now complete.

Example II: ESTIMATING HOURLY OWNING AND OPERATING COSTS OF A WHEELED VEHICLE

With only a few simple changes, owning and operating costs for a wheeled vehicle are calculated using the same format as that used for the Track-Type Tractor. Only the differences will be explained as we look at example calculations for a wheel loader.

OWNING COSTS —

To Determine Residual Value at Replacement

Enter delivered price in space (A). The cost of tires is deducted since they will be treated as a wear item. For purposes of illustration, the Wheel Loader is estimated to have a potential 48% trade-in value (B) at the end of the 5 year/7500 hour ownership usage, leaving a net value to be recovered through work of \$34,320 (C).

Interest, Insurance, Taxes

Refer to the formulas using the same rates as before and 1500 operating hours per year. The result \$4.22 is applied to the interest cost (E).

Insurance and property taxes can also be calculated using the same formula as shown for the interest cost.

The sum of lines 3b, 4, 5 and 6 gives the total hourly owning cost, line 7.

OPERATING COSTS —

Fuel

See the fuel consumption tables and apply the actual cost of purchasing fuel in the project area (I).

Planned Maintenance (PM) Cost per Hour

Use PM cost per hour estimate developed by your local Caterpillar Dealer. (For this example assume cost per hour is \$2.10.) Enter this figure in space (J) on line 9.

Tires

Use the tire replacement cost and the best estimate of tire life based on experience and anticipated job conditions.

Repair Cost per Hour

Use the Repair cost per hour estimate developed by your local Caterpillar Dealer. (For this example assume cost per hour is \$3.39.) Enter this figure in space (M) on line 11.

Special Items

Ground engaging tools, welding, etc. are covered here. Use current costs for cutting edges and similar items. Use your best estimate of the hours of life which can be expected from them based on previous experience in like materials. Enter the total on line 12.

The total of lines 8 through 13 represents hourly operating costs.

Operator's Hourly Wage

To give a true picture of operator cost, include fringe benefits as well as direct hourly wages (line 15).

TOTAL O&O

The total of lines 7, 13 and 15 is the total hourly owning and operating cost of the machine. Keep in mind that this is an estimate and can change radically from project to project. For the greatest accuracy, the hourly cost reflected in actual on-the-job cost records should be used.

HOURLY OWNING AND OPERATING COST ESTIMATE

DATE _____

	Estimate #1	Estimate #2
A—Machine Designation	Track-type Tractor	Wheel Loader
B—Estimated Ownership Period (Years)	7	5
C—Estimated Usage (Hours/Year)	1200	1500
D—Ownership Usage (Total Hours)(B × C)	8400	7500
OWNING COSTS	(1)	(2)
1. a. Delivered Price, to the customer (including attachments)	135,000 (A)	70,000
b. Less Tire Replacement Cost if desired	N/A	4000
c. Delivered Price Less Tires	135,000	66,000
2. Less Residual Value at Replacement	(35 %) 47,250 (B)	(48 %) 31,680
(See subsection 2A on back)		
3. a. Net Value to be recovered through work	87,750 (C)	34,320
(line 1c less line 2)		
b. Cost Per Hour:		
Net Value (1) 87,750 (2) 34,320	10.45 (D)	4.58
Total Hours 8400 7500		
4. Interest Costs $\frac{N + 1}{2N} \times \text{Del. Price} \times \frac{\text{Simple Int.}}{\% \text{ Rate}}$ =		
N = No. Yrs. Hours/Year		
(1) $\frac{7 + 1}{14} \times \frac{135,000}{1200} \times 16\%$ (2) $\frac{5 + 1}{10} \times \frac{66,000}{1500} \times 16\%$	10.29 (E)	4.22
_____ = _____ =		
1200 Hours/Yr. 1500 Hours/Yr.		
5. Insurance $\frac{N + 1}{2N} \times \text{Del. Price} \times \frac{\text{Insurance}}{\% \text{ Rate}}$ =		
N = No. Yrs. Hours/Year		
(1) $\frac{7 + 1}{14} \times \frac{135,000}{1200} \times 1\%$ (2) $\frac{5 + 1}{10} \times \frac{66,000}{1500} \times 1\%$	0.64 (F)	0.26
_____ = _____ =		
1200 Hours/Yr. 1500 Hours/Yr.		
(Optional method when Insurance cost per year is known)		
Ins. \$ _____ Per Yr. ÷ _____ Hours/Yr. =		

Estimating form continues next page

Owning & Operating Examples I & II
 • Estimating Form

Owning & Operating Costs

	Estimate #1	Estimate #2
6. Property Tax		
$N = \text{No. Yrs.} \quad \frac{N + 1}{2N} \times \text{Del. Price} \times \text{Tax Rate \%} =$ $\frac{\text{Hours/Year}}{\text{Hours/Year}}$		
$(1) \frac{7 + 1}{14} \times \frac{135,000}{1200} \times \frac{1}{100} \% \quad (2) \frac{5 + 1}{10} \times \frac{66,000}{1500} \times \frac{1}{100} \% =$	0.64 (G)	0.26
(Optional method when Property Tax cost per year is known) Property Tax \$ _____ Per Yr. ÷ _____ Hours/Yr. =		
7. TOTAL HOURLY OWNING COST (add lines 3b, 4, 5 and 6)	22.02 (H)	9.32
OPERATING COSTS		
8. Fuel:		
$(1) \frac{\text{Unit Price} \times \text{Consumption}}{\text{Unit Price}} =$	5.63 (I)	2.50
$(2) \frac{1.25 \times 4.50}{1.25} =$		
9. Planned Maintenance (PM)-Lube Oils, Filters, Grease, Labor: (contact your local Caterpillar Dealer)	2.30 (J)	2.10
10. a. Tires: Replacement Cost ÷ Life in Hours		
$\frac{\text{Cost}}{\text{Life}} \quad (1) \frac{\text{N/A}}{\text{3500}} \quad (2) \frac{4000}{3500} \dots\dots\dots$	(K)	1.14
b. Undercarriage (Impact + Abrasiveness + Z Factor) × Basic Factor		
$(1) (0.2 + 0.2 + 0.3) = 0.7 \times 6.6 =$	4.62 (L)	
$(2) (\text{ } + \text{ } + \text{ }) = \frac{\text{ }}{(\text{Total})} \times \frac{\text{ }}{(\text{Factor})} =$		
11. Repair Cost (Per Hour) (contact your local Caterpillar Dealer)	6.12 (M)	3.39
12. Special Wear Items: Cost ÷ Life	1.32 (N)	0.60
(See subsection 12A on back)		
13. TOTAL OPERATING COSTS (add lines 8, 9, 10a (or 10b), 11 and 12)	19.99 (O)	9.73
14. MACHINE OWNING PLUS OPERATING (add lines 7 and 13)	42.01	19.05
15. OPERATOR'S HOURLY WAGE (include fringes)	25.00 (P)	25.00
16. TOTAL OWNING AND OPERATING COST	67.01(Q)	44.05

SUBSECTION 2A: Residual Value at Replacement

Gross Selling Price	(est. #1) (___%)	_____	(est. #2) (___%)	_____
Less: a. Commission		_____		_____
b. Make-ready costs		_____		_____
c. Inflation during ownership period*		_____		_____
Net Residual Value		<u>47,250</u>	(35%)	<u>31,680</u> (48%) of original delivered price
(Enter on line 2)				

*When used equipment auction prices are used to estimate residual value, the effect of inflation during the ownership period should be removed to show in constant value what part of the asset must be recovered through work.

SUBSECTION 12A: Special Items (cutting edges, ground engaging tools, bucket teeth, etc.)

(1)	Cost	Life	Cost/Hour	(2)
1.	<u>105</u>	÷ <u>150</u>	= <u>0.70</u>	1. <u>120</u> ÷ <u>200</u> = <u>0.60</u>
2.	<u>165</u>	÷ <u>450</u>	= <u>0.37</u>	2. _____ ÷ _____ = _____
3.	<u>125</u>	÷ <u>500</u>	= <u>0.25</u>	3. _____ ÷ _____ = _____
4.	_____	÷ _____	= _____	4. _____ ÷ _____ = _____
5.	_____	÷ _____	= _____	5. _____ ÷ _____ = _____
6.	_____	÷ _____	= _____	6. _____ ÷ _____ = _____
			Total (1) <u>1.32</u>	(2) <u>0.60</u>

(Enter total on line 12)

Notes —

Notes —

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SELECTION, APPLICATION, MAINTENANCE

Proper tire selection, application and maintenance continue to be the most important factors in earthmoving economics. Wheel tractors, loaders, scrapers, trucks, motor graders, etc. are earthmoving equipment whose productivity and payload unit cost may depend more on tire performance than any other factor.

Off-the-road tires must operate under a wide variety of conditions ranging from dry “potato dirt” through wet severe shot rock. Speed conditions vary from less than 1 mph average to 72 kmh (45 mph). Gradients may vary from 75% favorable to 30% adverse. Climatic conditions, operator skills, maintenance practices, etc. all may have a profound effect on tire life and unit costs.

Although one specific tire construction may be acceptable in a variety of applications, no one tire can meet all requirements on any one machine and perhaps not even one job. The many differences in tire requirements on earthmoving machines have resulted in a wide variety of tread and carcass designs being made available. The optimum tire selection for a specific machine on a given job should be a joint decision between the user and tire supplier. Several tire manufacturers have technical and application representatives in the field for proper guidance in tire selection.

When job conditions change, it may be desirable to select a different tire configuration to meet the new requirements.

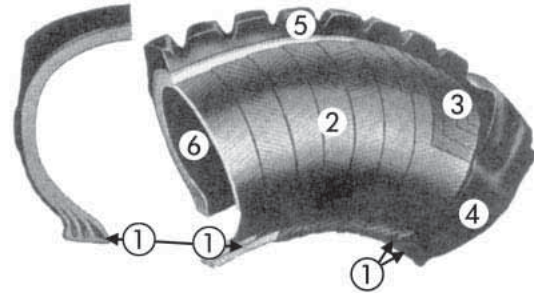
TIRE CONSTRUCTION

The pneumatic tire is essentially a flexible pressure vessel utilizing structural members (nylon, steel cable, etc.) to contain the hoop tension resulting from the inflation pressure. Rubber is utilized as a protective coating and sealant over the structural members and makes up the tread pattern which provides the wearing medium at the ground interface. The following brief explanation of the various tire constructions will assist you in selecting tires for your specific application.

Two distinct tire constructions approved on all Caterpillar machines are the BIAS PLY and RADIAL PLY tires. The following is a brief explanation of the principal features of these two constructions.

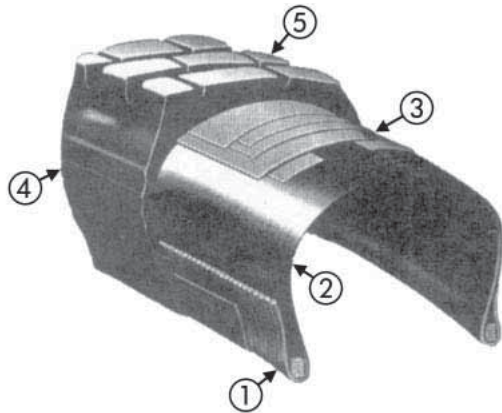
Bias Ply

1. *Beads* — The tire beads consist of steel wire-bundles (3 or 4 in larger tires) which are forced laterally by tire inflation pressure to wedge the tire firmly on the rim's tapered bead seat. The nylon plies tie into the bead bundles. The forces inherent in the tire are transmitted from the rim through the bead bundles into the nylon.
2. *Body plies* — Layers of rubber-cushioned nylon cord comprise the tire carcass. Alternating plies of cord cross the tread centerline at an angle (bias). The term "ply rating" is an index of tire strength and not the actual number of tire plies.

**Bias Ply Construction**

3. *Breakers or tread plies* — These, if used, are confined to the tire's tread area and are intended to improve carcass strength and provide additional protection to the body plies. Some "work" tires employ steel breakers or belts to further protect the carcass.
4. *Sidewalls* — These are the protective rubber layers covering the body plies in the sidewall.
5. *Tread* — The wearing part of the tire which contacts the ground. It transmits the machine weight to the ground and provides traction and flotation.
6. *Inner liner* — This is the sealing medium which retains the air and, combined with the "O" ring seal and rim base, eliminates the need for inner tubes and flaps.
7. *Tubes and flaps (not shown)* — Required if the tire is not of tubeless construction with an inner liner.
8. *Undertread* — Protective rubber cushion lying between tread and body ply.

Radial Ply



Radial Ply Construction

1. *Beads* — A single bead bundle of steel cables or steel strip (spiraled like a clock spring) comprise the bead at each rim interface.
2. *Radial carcass* — This consists of a single layer or ply of steel cables laid archwise (on the radian) bead to bead.
3. *Belts* — Several layers or plies of steel cable form the belts which underlie the tread area around the tire circumference. The cable in each belt crosses the tread centerline at an angle with the angle being reversed from the preceding belt.
4. *Sidewalls*.
5. *Tread*.
6. *Undertread* — Protective rubber cushion lying between tread and steel belts.

TIRE TYPES

Off-the-road tires are classified by application in one of the following three categories:

1. *Transport tire* — For earthmoving machines that transport material such as trucks and wheel tractors.
2. *Work tire* — Normally applied to slow moving earthmoving machines such as graders and loaders.
3. *Load and carry* — Wheel loaders engaged in transporting as well as digging.

TIRE SIZE NOMENCLATURE

Tire size nomenclature is derived from the approximate cross section width and rim diameter with various systems being available:

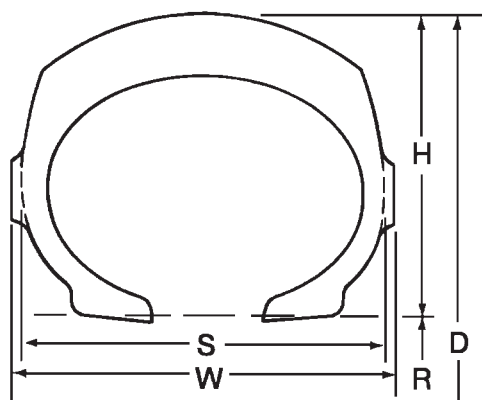
1. A wide base tire, for example, is designated as a 29.5-35 with the approximate cross section width being the first number (inches) and the rim diameter the second number (inches). Industry standards permit this tire's width to be a maximum of 824 mm (32.45") in service.
2. A standard base tire, for example, is designated as a 24.00-35 with the approximate cross section width being the first number (inches) and the rim diameter the second number (inches). Industry standards permit this tire width to be a maximum 718 mm (28.27") in service.
3. A low profile tire, for example, is designated as a 40/65-39 (formerly 65/40-39 or 40-39) with the approximate cross section width being the first (40) number (inches) and the rim diameter the third (39) number (inches). The second number (65 actually is 0.65) is the aspect ratio (section height divided by section width).

If designated 40/65 R39, then the R denotes radial construction.

The wide base tire has an aspect ratio of approximately 0.83 and the standard base 0.95. The "low profile tire" has an aspect ratio of 0.65.

When comparing a wide base tire to a standard base tire, it must be remembered a larger first number on a wide base tire with the same rim diameter does not mean the wide base is larger in overall diameter. For example, the 18.00-25 standard base tire is larger in diameter than the 20.5-25 wide base. It is comparable in overall diameter to the 23.5-25 wide base.

Tires | Off-Highway Tire Identification Codes



Tire cross-section

- D = Tire Overall Diameter
- R = Nominal Rim Diameter
- H = Tire Section Height
- S = Tire Section Width
- W = Tire Width (includes ornamental ribs)
- $\frac{H}{S}$ = Aspect Ratio

CODE IDENTIFICATION FOR OFF-HIGHWAY TIRES

The tire industry has adopted a code identification system to be used for off-the-road tires. This identification system will reduce the confusion caused by the trade names for each type of tire offered by each tire manufacturer. The industry code identification is divided into six main categories by types of service as follows:

- C** — Compactor Service
- E** — Earthmover Service
- G** — Grader Service
- L** — Loader & Dozer Service
- LS** — Log-Skidder Service
- ML** — Mining & Logging Service

The sub-categories are designated by numerals, as follows:

Code Identification		% Tread Depth
Compactor		
C-1	Smooth	100
C-2	Grooved	100
Earthmover		
E-1	Rib	100
E-2	Traction	100
E-3	Rock	100
E-4	Rock Deep Tread	150
E-7	Flotation	80
Grader		
G-1	Rib	100
G-2	Traction	100
G-3	Rock	100
G-4	Rock Deep Tread	150
Loader & Dozer		
L-2	Traction	100
L-3	Rock	100
L-4	Rock Deep Tread	150
L-5	Rock Extra Deep Tread	250
L-3S	Smooth	100
L-4S	Smooth Deep Tread	150
L-5S	Smooth Extra Deep Tread	250
L-5/L-5S	Half Tread Extra Deep	250
Mining & Logging		
ML-1	Rib	100
ML-2	Traction	100
ML-3	Rock	100
ML-4	Rock Deep Tread	150
Log-Skidders		
LS-1	Regular Tread	100
LS-2	Intermediate Tread	125
LS-3	Deep Tread	150
HF-4	Extra Deep Tread	250

NOTE: On some Michelin tires the designation R or T may follow the TRA code to designate rock or traction type tire.

Tire and Rim Assoc. Code	Tread Type	FIRESTONE	CONTINENTAL GENERAL	GOODYEAR	BRIDGESTONE	MICHELIN
Compactor						
C-1	Smooth Compactor	Plain Roller		Smooth Compactor	Road Roller	X LISSE X LC
C-2	Grooved Compactor			All Weather Compactor	Alligator 2	
Earthmover						
E-1	Rib	Rib Excavator	Rock Rib LCM	Hard Rock RIB		XRIB
E-2	Traction	Super Ground Grip	All Duty DTL TL100	Earthmover Sure Grip Sure Grip Lug	Fast Grip, G-Lug VKT, VFT, VGT, VHB, VSB, VHS	XV, XL, XMP, XH, XS, XR
E-3	Rock	Rock Grip Excavator Super Rock Grip E67	ND LCM CM 100 SL 100 XG-3 LCM EA3	Hard Rock Lug Hard Rock Lug-8 Super Hard Rock Lug Super Hard Rock Lug-8 HRL-3B GP-2B RL-2+ RL-3J RL-3 RL-2F RL-3+ RT-3A	R-Lug, W-Lug E-Lug, VE Block V-LUG 2, VMT, VEL, VRL, VLT	XK, XR XMS XH XADN XAD65-1 XZH XADT XTS
E-4	Rock Deep Tread	Super Rock Grip Deep Tread Rock Master Deep Tread Power Lug Deep Tread	ND Super LCM Super LCM CM 150 XG-4 DTH4	HRL-4B RL-4 RL-4J RL-4H/4H II RL-4J II RL-4A RL-4B GP-4B GP-4D	R-Lug S, E-Lug S E-Lug S2 VELS, VRLS VMTS, VALS VZTS, VMTP VLTS	XDT, XDR XKDI XRS XADT
E-5	Rock Extra Deep Tread	Super Deep Tread				
E-7	Flotation	All Non-Skid EM Sand Champion Sand & Highway	Super Sand Flotation	SRB-7A	Alligator, VSJ Sand Clipper 2 S-Lug	XS XRIB
Grader						
G-1	Rib	Rib Road Builder		RBG-IA	Rib Grader	
G-2	Traction	Super Ground Grip Road Builder	Loader Grader Loader Grader II TG2 TGL2	SGG-2A AS-3A SG-2B	Fast Grip, G-Lug VKT, VSW, VUT	XTL, XMPS, X SNOPLUS, XGLA2, XR
G-3	Rock	Rock Grip Road Builder	ND LCM Grader	RKG-3A	R-Lug	XH, XHAD XRDN, XLDD L3
G-4	Rock Deep Tread	Super Rock Grip Deep Tread Road Builder		SGG-4B	R-Lug 5	XRD1, XLDD1 XLD SUPER L3
G-5	Rock Extra Deep Tread					XLDD2

Tires | Manufacturer's Designation

Tire and Rim Assoc. Code	Tread Type	FIRESTONE	CONTINENTAL GENERAL	GOODYEAR	BRIDGESTONE	MICHELIN
Log-Skidder						
LS-1	Regular		Tree Logger Armor			
LS-2	Intermediate	Forestry Special	Timber Skid II		Timber Grip S Fast Grip	
LS-3	Deep	Champion Spade Grip Logger				
HF-4			Timber Skid Flotation			
Loader & Dozer						
L-2	Traction	Super Ground Grip LD	Loader Grader II LD Loader Grader LD All Duty TGL2	Sure Grip Loader Sure Grip Lug D&L SGL E/L-2A RL-2+ RL-2F	Fast Grip, VKT V-Grip, VSW, VUT S-Lug G-Lug	XTL, XGL 2 XF, XM27, XM47 X SNOPLUS XMPS, XR
L-3	Rock	Super Rock Grip LD	LD ND LCM LD 100 LDR3	Super Hard Rock Loader Super Hard Rock Lug D&L Super Hard Rock Lug 8-D&L HRL E/L-3A GP-2B RL-2+	R-Lug, VMT V-Lug 2, VLT	XRDN, XHA XHF, XK, XR XLD L3 XZSL
L-4	Rock Deep Tread	Super Rock Grip Deep Tread LD	LD-150 CRB LD-150 Belted	Super Hard Rock Lug Xtra Tred D&L Nylosteel NRL D/L-4A Belted HRL D/L 4G RL-4K GP-4B	R-Lug S, VALS N-Lug, VCH R-Lug S2 VLTS VSNT	XLDD1, XKD1 XLD SUPER L3
L-5	Rock Extra Deep Tread	Super Deep Tread LD GSR	LD-250 CRB LD-250 Belted	Super Xtra Tred D&L Nylosteel NRL D/L-5A Belted RL-5K	D-Lug M-Lug S VSDL VSDT	XLDD2 XMINE D2
L-3S	Smooth Tread	Plain Tread LD				
L-4S	Smooth Deep Tread	Plain Tread LD		SMO D/L-4A	Smooth Tread M	
L-5S	Smooth Extra Deep Tread	Plain Tread LD	LD-250 Super Smooth CRB LD-250 Super Smooth Belted	SMO D/L-5A	Smooth Tread MS VSMS	XSMD 2
L-5/L-5S	Half Smooth	Half Tread LD	LD-250 Haf Trac CRB LD-250 Haf Trac Belted		D-Lug 2	

RADIAL TIRE IDENTIFICATION

Code Identification for Michelin Tires

All Michelin earthmover tires are radial construction, designated by the “X” marking. They contain a single steel radial ply with a series of steel belts placed around the tire’s circumference which reinforce and stabilize the tread.

Following are the tread designs currently available from Michelin with the different internal constructions depending on the application.

- Type A4** Highly resistant to cutting, hacking and abrasion.
- Type A** Highly resistant to cutting, hacking and abrasion for use at average speeds higher than type A4.
- Type B4** A compromise between resistance to abrasion and heat generation for less aggressive surfaces (from 49”).
- Type B** Designed for low heat generation on long runs and in intensive service conditions.
- Type C4** Engineered to cope with high-speed travel on long hauls.
- Type C** Specially designed to cope with the highest-speed hauls.

The current combinations of tread patterns, construction, and tread depths offered, and primary TRA codes are:

Tread Design	Type A4	Type A	Type B	Type C	Primary TRA Codes
XH	—	x	—	x	G3, E2, E3
XF	—	x	—	—	L2
XMP	—	—	—	—	E2
XMPS	—	—	—	—	G2
XTL	—	x	—	—	L2, G2
XGLA2	—	x	—	—	L2, G2
XG	—	—	—	x	E2
XV	—	—	—	x	E2
XLDD1	—	x	—	—	L4
XLDD2	—	x	—	—	L5
XK	—	—	x	—	E3
XRDN	—	x	x	—	L3, E3
XR1	—	x	—	—	L4
XK1	x	x	x	—	E4
XMINED2	—	x	—	—	L5
XSMD2	—	x	—	—	L5S
XLISSE	—	—	—	—	C1
XMS	—	x	x	—	E3
XTS	—	—	x	—	E3

Tread Design	Type A4	Type A	Type B	Primary Type C	TRA Codes
XR	—	—	x	—	E3, G3
XADN	—	—	x	—	E3
XADT	—	—	x	—	E4
X SNOPLUS	—	—	—	—	L2, G2
XDT, XDR	x	—	x	x	E4 (T)
XRIB	—	x	—	—	E1
XAD65-1	—	—	x	—	E3/E4
XLD L3	—	x	—	—	L3/L4
XRS	—	—	x	—	E4 (R)

Since Michelin radial tires contain a single steel casing ply, they utilize the industry method of designating radial tire strength in terms of “stars.” Their system consists of a one star, two star, and three star rating as an indication of the tire’s carrying capacity. The one star is the lightest construction, generally used on work and slow moving transport machines. Two star tires are used on most medium and high speed transport machines. Three star construction provides the greatest carrying capacity for a given size and is only available in small standard base tires.

This combination of tread designs and types of construction provides a range of radial tires which cover most earthmoving applications. We recommend that in applying steel radial tires to your machines you provide all site condition data to the tire manufacturer. Obtain his recommendations as to which tire will provide the most economical operation.

Code Identification for Goodyear Radial Tires

All Goodyear steel radial earthmover tires have been designated *Unisteel* followed by a three or four digit alpha-numeric code that identifies the particular tread. The currently active codes are:

RL-2+	E 2/3 and L 2/3		
RL-2F	E2 and L2	RL-4H/HII	E4
RL-3	E3	RL-4J	E4
RL-3+	E3	RL-4JII	E4
RL-3J	E3 and L3	GP-2B	E3
RT-3A	E3		
RL-4	E4		L3
RL-4A	E4	SG-2B	G2
RL-4B	E4	RL-4K	L4
GP-4B	E4	GP-4B	L4
GP-4D	E4	RL-5K	L5

Tires

Radial Tire Identification ● Bridgestone Ton-Miles Per Hour Rating System

The RL stands for Rock Lug and indicates that the upper sidewall has rock protection. The number in the code corresponds to the tire industry identification system (2-traction, 3-rock, etc). The fourth digit, if any, is used to designate tread design differences for the same basic tread type (F-directional tread).

The carcass strength is indicated by a star rating system instead of the ply rating system. These symbols indicate the recommended inflation for a particular tire load.

Following the star rating code is Goodyear's Custom Compound and Construction code. For a tire designated "2S" the 2 indicates a heat resistant compound and the S indicates standard construction and an H indicates heavy duty construction. The higher the number the greater the abrasion and cut resistance with a corresponding lower T-km/h (TON-mph) rating.

Code Identification for Bridgestone Radial Tires

The Bridgestone steel radial earthmover has been designated as V-Steel. The current nomenclature is:

V-Steel Ultra Traction	(VUT)	G2/L2
V-Steel K-Traction	(VKT)	E2/L2/G2
V-Steel F-Traction	(VFT)	E2
V-Steel L-Traction	(VLT)	E3/L3
V-Steel M-Traction	(VMT)	E3/L3
V-Steel G-Traction	(VGT)	E2/E3
V-Steel M-Traction S	(VMTS)	E4
V-Steel R-Lug	(VRL)	E3
V-Steel R-Lug S	(VRLS)	E4
V-Steel A-Lug S	(VALS)	E4/L4
V-Steel H-Block	(VHB)	E2
V-Steel E-Lug	(VEL)	E3
V-Steel E-Lug S	(VELS)	E4
V-Steel D-Lug	(VSDL)	L5
V-Steel Smooth Tread MS	(VSMS)	L5S
V-Steel Snow Wedge	(VSW)	L2/G2
V-Steel Container Handler	(VCH)	L4
V-Steel Jamal	(VSJ)	E7
V-Steel Z-Traction S	(VZTS)	E4
V-Steel M-Traction Premium	(VMTP)	E4
V-Steel L-Traction S	(VLTS)	E4/L4
V-Steel N-Traction	(VSNT)	L4
V-Steel D-Traction	(VSDT)	L5
V-Steel Rock Deep Premium	(VRDP)	E4

Bridgestone has multiple tread compounds, with the three most commonly used being: type 1A = standard, type 2A = cut resistant and type 3A = heat resistant. The carcass strength, i.e., load carrying capacity of tire is indicated by star rating system; 1-star, 2-star and 3-star. All Bridgestone radial tires conform to the international tire standard of TRA and ETRTO.

TON-MILES PER HOUR

Tire selection and machine operating practices have, in some cases, become the critical factors in the over-all success of earthmoving ventures. One of the most serious problems occur when tires are operated at temperatures above their capabilities. Separation and related failures occur. To help you avoid temperature related failures, Caterpillar has been instrumental in developing the *Ton-Miles Per Hour*, (Ton-MPH) method of rating tires.

Heat and Tire Failure

Tire manufacturing requires heat in the vulcanizing process converting crude rubber and additives into a homogeneous compound. The heat required is typically above 132°C (270°F).

A tire also generates heat as it rolls and flexes. Heat generated faster than it can be radiated into the atmosphere gradually builds within the tire and reaches maximum level at the outermost ply or belt.

Over time, enough heat can develop from over-flexing to actually reverse the vulcanizing process or "revert" the rubber causing ply separation and tire failure. Only a brief time at reversion temperature initiates the failure. Experience shows that few pure heat separation cases occur. Most so-called heat separations are in tires operating below the reversion level.

As a tire's operating temperature increases the rubber and textiles within significantly lose strength. The tire becomes more susceptible to failures from cornering, braking, impact, cut through, fatigue and heat separation. If operating tires at higher temperatures is absolutely necessary, it is essential the machines be operated to reduce the probability of premature tire failure. No hard cornering without super-elevation, no panic braking, etc.

The Ton-MPH formula was developed to predict tire temperature buildup. The system is a method of rating tires in proportion to the amount of work they can do from a temperature standpoint. It utilizes the product of *load* × *speed* to derive an index of the tire temperature buildup. Maximum tire level-off temperatures of 107°C (225°F) for fabric cord tires and 93°C (200°F) for steel wire tires are the limits Caterpillar recommends. Even at these temperatures, failures may be initiated by overstressing the tires.

It is possible by using a needle type pyrometer to measure temperature at any desired point within the tire carcass. However, the instrumentation and the technique does not lend itself to general field use. The greatest difficulty is locating the thickest (therefore the hottest) tread bar in any given tire using giant calipers. The tire must then be drilled along the centerline of this bar from shoulder to shoulder at 52 mm (2") intervals. These 3.18 mm (1/8") diameter holes extend down through the tread and undertread to the topmost reinforcement. This procedure is fully described under SAE Recommended practice J1015.

The Ton-MPH rating system as given in this SAE specification is approved by most tire manufacturers. Michelin, in addition to providing Ton-MPH ratings has developed their own speed/load carrying rating system and we recommend that Michelin be consulted where high tire temperatures are a concern.

Heat generation in a specific tire at recommended pressure depends on three factors:

- the weight the tire is carrying (flex per revolution),
- the speed the tire is traveling over the ground (flexures over a period of time), and
- the air temperature surrounding the tire (ambient temperature) and road surface temperature.

Once a tire manufacturer has determined a tire's temperature characteristics and expressed them in Ton-MPH, the above listed specific job conditions can be used to determine any tire's maximum work capacity. These conditions provide on site ability to predict and avoid costly tire separations.

Ton-Mile-Per-Hour Rating System

The tire TMPH can be matched to the site TMPH as well as compared with TMPH values of different makes and types of tires.

TMPH Job Rate

Average Tire Load × Average Speed for the shift

Average Tire Load

$$\frac{\text{"Empty" tire load} + \text{"loaded" tire load}}{2}$$

Average Speed

$$\frac{\text{Round trip distance in miles} \times \text{number of trips}}{\text{Total Hours (in the shift)}}$$

For excessive haul length (20 miles or more) consult your tire representative for modification to the TMPH value.

To use in the metric system, change miles to kilometers and use metric tons.

It should be noted that prolonged operation at high carcass temperatures can fatigue the nylon at the flex points in the sidewalls.

The following are the most recent Ton-MPH ratings as made available by Goodyear, Michelin and Bridgestone, and are subject to change on their part at any time. Other tire manufacturers' Ton-MPH ratings will be included in future handbook editions when and if made available. For latest Ton-MPH ratings, consult specific tire manufacturer at time of machine and/or tire purchase.

Load-and-Carry T-km/h (Ton-MPH)

The wheel loader, when used in load-and-carry applications, may encounter temperature problems similar to those normally associated only with tires on scrapers, trucks and wagons. **Do not place the vehicle in load-and-carry applications without first consulting the tire manufacturer, or obtaining T-km/h (Ton-MPH) ratings and pressure recommendations from the tire manufacturer.**

Conventional and Radial Steel Cord Tire Options

Tire options now provide types to operate in conditions ranging from rock and abrasive materials, to jobs with high speed hauls in good materials.

The best tire type can be different for the drive tires than for other tires on the same machine. T-km/h (Ton-MPH) should be calculated for all tires.

Tire Drive-Away Recommendations

Heat separation can be a problem during machine delivery and moving machines from one job to another. Whenever roading earthmoving machines, *check your supplier for the tire manufacturer's recommended speed limitations on the specific tires involved.*

Some tire manufacturers also recommend that vehicles equipped with extra tread depth or special compounded tires should not be roaded without their specific approval. Our tests support this recommendation, especially for L-3, L-4, E-4 and L-5 tires.

Tires

T-km/h (Ton-MPH) Rating

- Goodyear Bias Ply Conventional Sizes

**T-km/h (Ton-MPH) RATINGS
AT 38° C (100° F) AMBIENT TEMPERATURE
For Haul Lengths of 32 km (20 Miles) or Less One Way**

Because of the variance between specific tires it is recommended that at the time of purchase you check with your tire supplier for the manufacturer's specific T-km/h (Ton-MPH) ratings for the tires purchased.

GOODYEAR BIAS PLY CONSTRUCTION CONVENTIONAL SIZES

Industry Code	E-1		E-2	E-3		E-4			E-7
	Hard Rock Rib HRR-1A		Sure Grip Lug SGL-2A	Hard Rock Lug HRL-3A Hard Rock Lug-8 HRL-3B		Hard Rock Lug XT HRL-4A Hard Rock Lug XT-8 HRL-4B			Sand Rib SRB-7A
Custom Code	2S	4S	4S	2S	4S	2S	4S	6S	4S
16.00-25 T-km/h Ton-MPH	182 125	131 90			102 70	131 90	95 65		
18.00-25 T-km/h Ton-MPH			146 100	182 125	131 90		117 80		234 160
18.00-33 T-km/h Ton-MPH				219 150	161 110		146 100	124 85	
21.00-25 T-km/h Ton-MPH									270 185
24.00-35 T-km/h Ton-MPH					255 175		234 160	204 140	
27.00-49 T-km/h Ton-MPH						460 315	328 225	277 190	
36.00-51 T-km/h Ton-MPH						679 465	489 335		628 430

**T-km/h (Ton-MPH) RATINGS
 AT 38° C (100° F) AMBIENT TEMPERATURE
 For Haul Lengths of 32 km (20 Miles) or Less One Way**

GOODYEAR BIAS PLY CONSTRUCTION WIDE BASE SIZES

Industry Code	E-2	E-3			E-7	
Tread Design	Sure Grip Lug SGL E/L 2A	Super Hard Rock Lug HRL E/L 3A	Super Hard Lug 8 HRL-3B	HRL-3F	Sand Rib SRB-7A	
Custom Code	4S	2S	4S	4S	3S	4S
20.5-25 T-km/h Ton-MPH	109 75		95 65			
23.5-25 T-km/h Ton-MPH	131 90		102 70			
26.5-25 T-km/h Ton-MPH	153 105		131 90			
29.5-25 T-km/h Ton-MPH	182 125		168 115			248 170
29.5-29 T-km/h Ton-MPH	197 135	255 175	182 125	190 130		
29.5-35 T-km/h Ton-MPH			212 145	234 160		
33.25-29 T-km/h Ton-MPH				204 140		
33.25-35 T-km/h Ton-MPH				248 170	234 160	
33.5-33 T-km/h Ton-MPH				248 170	234 160	
37.25-35 T-km/h Ton-MPH				321 220	307 210	
37.5-33 T-km/h Ton-MPH			299 205	321 220	307 210	
37.5-39 T-km/h Ton-MPH				350 240	328 225	

Tires

T-km/h (Ton-MPH) Rating
 ● Bridgestone Conventional Size

**T-km/h (Ton-MPH) RATINGS
 AT 38° C (100° F) AMBIENT TEMPERATURE
 For Haul Lengths of 32 km (20 Miles) or Less One Way
 Maximum Speed Not to Exceed 48 km (30 Miles) per Hour**

Because of the variance between specific tires it is recommended that at the time of purchase you check with your tire supplier for the manufacturer's specific T-km/h (Ton-MPH) ratings for the tires purchased.

BRIDGESTONE BIAS CONVENTIONAL SIZES

Industry Code	E-3			E-4			E-4		
	RL			RLS			ELS/ELS2		
Custom Code	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
12.00-24/25 T-km/h Ton-MPH	66 45								
14.00-24/25 T-km/h Ton-MPH	109 75								
16.00-24/25 T-km/h Ton-MPH	139 95			111 76					
18.00-25 T-km/h Ton-MPH	173 119		263 180	153 105			153 105		
18.00-33 T-km/h Ton-MPH	190 130	212 145		161 110	182 125		161 110	182 125	
21.00-35 T-km/h Ton-MPH		270 185		204 140	226 155	321 220	204 140		
24.00-35 T-km/h Ton-MPH	291 199	328 225		234 160	277 190	394 270			
24.00-49 T-km/h Ton-MPH		431 295		292 200	343 235	482 330			
27.00-49 T-km/h Ton-MPH				336 230	406 278	547 375			

T-km/h (Ton-MPH) Rating
 ● Bridgestone Wide Base Size

Tires

**T-km/h (Ton-MPH) RATINGS
 AT 38° C (100° F) AMBIENT TEMPERATURE**

**For Haul Lengths of 32 km (20 Miles) or Less One Way
 Maximum Speed Not to Exceed 48 km (30 Miles) per Hour**

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BRIDGESTONE BIAS WIDE BASE SIZES

Industry Code	E-2			E-3			E-4		
Tread Design	FG			RL/VL2			RLS		
Custom Code	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
15.5-25 T-km/h Ton-MPH				51 35					
17.5-25 T-km/h Ton-MPH				58 40					
20.5-25 T-km/h Ton-MPH				80 55		111 76	51 35		
23.5-25 T-km/h Ton-MPH				107 73		149 102	66 45		
26.5-25 T-km/h Ton-MPH				132 90		183 125	80 55		
29.5-25 T-km/h Ton-MPH				150 103		220 151	88 60		
29.5-29 T-km/h Ton-MPH				204 140			139 95		
29.5-35 T-km/h Ton-MPH				255 175					
33.25-35 T-km/h Ton-MPH					292 200				
37.25-39 T-km/h Ton-MPH					358 245	467 320			
37.5-39 T-km/h Ton-MPH				325 223	372 255	489 335			

Tires

T-km/h (Ton-MPH) Rating
 ● Goodyear Radial Ply — Conventional Sizes

**T-km/h (Ton-MPH) RATINGS
 AT 38° C (100° F) AMBIENT TEMPERATURE
 For Haul Lengths of 32 km (20 Miles) or Less One Way**

GOODYEAR RADIAL PLY CONSTRUCTION CONVENTIONAL SIZES

Industry Code	E-2		E-2/E-3		E-3		E-4					
	RL-2F		GP-2B		RL-3+		RL-4H RL-4HII			RL-4J RL-4JII		
Custom Code	2S	4S	2S	4S	2S	4S	2S	4S	6S	2S	4S	6S
14.00R25											124	95
	T-km/h										85	65
	Ton-MPH											
16.00R25	190	146	220		168	124						
	130	100	150		115	85						
	Ton-MPH											
18.00R25	248	190			226	168				190	146	
	170	130			155	115				130	100	
	Ton-MPH											
18.00R33	292	219			263	197				226	175	131
	200	150			180	135				155	120	90
	Ton-MPH											
24.00R35					438	335				394	299	234
	300				300	230				270	205	160
	Ton-MPH											
27.00R49			730	562	628	474	547	423	328	547	423	328
	500	385	430	325	430	325	327	290	225	375	290	225
	Ton-MPH											
33.00R51							715	540	321			
	490						490	370	220			
	Ton-MPH											
36.00R51							788	598	358	788	598	358
	540	410	245	540	410	245	540	410	245	540	410	245
	Ton-MPH											
37.00R57							1022	781	460	1095	730	490
	700	535	315	750	500	335	700	535	315	750	500	335
	Ton-MPH											
40.00R57							1145	875	518			
	785	600	355				785	600	355			
	Ton-MPH											

T-km/h (Ton-MPH) Rating
 ● Goodyear Radial Ply — Wide Base Sizes

Tires

**T-km/h (Ton-MPH) RATINGS
 AT 38° C (100° F) AMBIENT TEMPERATURE
 For Haul Lengths of 32 km (20 Miles) or Less One Way**

GOODYEAR RADIAL PLY CONSTRUCTION WIDE BASE SIZES

Industry Code	E-2						E-3		
	TL-3B	RL-2+		RL-2F		GP-2B	RL-3	RL-3F	RL-3J
Tread Design									
Custom Code	2S	2S	4S	2S	4S	4S	4S	4S	4S
15.5R25 T-km/h Ton-MPH				146 100	109 75				
17.5R25 T-km/h Ton-MPH	190 130	146 100	109 75			151 105			124 85
20.5R25 T-km/h Ton-MPH		175 120	131 90			168 115			146 100
23.5R25 T-km/h Ton-MPH		197 135	146 100			197 135			160 110
26.5R25 T-km/h Ton-MPH		226 155	168 115			226 155			
26.5R29 T-km/h Ton-MPH									
29.5R25 T-km/h Ton-MPH		270 185	204 140			270 185			
29.5R29 T-km/h Ton-MPH		306 210	233 160	379 260	284 195		270 185		
33.25R35 T-km/h Ton-MPH				474 325	357 245				335 230
37.25R35 T-km/h Ton-MPH				547 375	416 285				379 260
37.5R39 T-km/h Ton-MPH				613 420	460 315				430 295
40.5/75R39 T-km/h Ton-MPH						445 305			
22/65R25 T-km/h Ton-MPH	284 195								
25/65R25 T-km/h Ton-MPH			182 125					182 125	
30/65R25 T-km/h Ton-MPH			160 110						

Tires

T-km/h (Ton-MPH) Rating
 ● Bridgestone Radial Ply

**T-km/h (Ton-MPH) RATINGS
 AT 38° C (100° F) AMBIENT TEMPERATURE**

**For Haul Lengths of 32 km (20 Miles) or Less One Way
 Maximum Speed Not to Exceed 48 km (30 Miles) per Hour**

BRIDGESTONE RADIAL PLY

Industry Code		E-4			E-4			E-4			E-4			E-4		
Tread Design		VMTS			VMTP			VRLS			VELS			VZTS		
Custom Code		E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
14.00R24/25	T-km/h Ton-MPH	91 62	119 82	136 93				85 58	112 77	128 88						
16.00R25	T-km/h Ton-MPH	123 84	157 108	179 123				112 77	146 100	168 115						
18.00R25	T-km/h Ton-MPH	169 116	209 143	244 167							144 99	179 123	209 143			
18.00R33	T-km/h Ton-MPH	199 136	246 168	287 197	185 127	229 157	267 183				170 116	211 145	246 168			
21.00R35	T-km/h Ton-MPH	265 182	328 225	383 262	237 162	293 201	342 234				227 155	281 192	328 225			
24.00R35	T-km/h Ton-MPH	338 232	418 286	489 335	314 215	388 266	453 310	314 215	388 266	453 310						
24.00R49	T-km/h Ton-MPH	398 273	492 337	575 394	361 247	446 305	522 358	341 234	421 288	492 337						
27.00R49	T-km/h Ton-MPH	486 333	600 411	702 481	440 301	544 372	636 436	415 284	513 351	600 411						
33.00R51	T-km/h Ton-MPH	660 452	802 549	953 653	591 405	700 479	855 586	558 382	679 465	807 553						
36.00R51	T-km/h Ton-MPH							642 440	781 535	927 635					845 579	
37.00R57	T-km/h Ton-MPH							694 475	845 579	1003 687				694 475		1003 687
40.00R57	T-km/h Ton-MPH										773 529	940 644	1117 765	773 529	940 644	1117 765
46/90R57	T-km/h Ton-MPH										796 545	963 663	1105 788			
59/80R63	T-km/h Ton-MPH							Consult Bridgestone								

NOTE: For cycle lengths of 5 km (3 miles) or less (round trip), multiply the T-km/h (Ton-MPH) value in this table by 1.12.
 Additional tread compounds are available to meet specific T-km/h (Ton-MPH).

**T-km/h (Ton-MPH) RATINGS
 AT 38° C (100° F) AMBIENT TEMPERATURE
 For Haul Lengths of 32 km (20 Miles) or Less One Way
 Maximum Speed Not to Exceed 48 km (30 Miles) per Hour**

BRIDGESTONE RADIAL PLY

Industry Code	Tread Design	E-2/E-3			E-3			E-3		
		VKT/VFT			VRL/VEL			VMT		
Custom Code		E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
14.00R24/25	T-km/h	106	141	159						
	Ton-MPH	73	97	109						
16.00R24/25	T-km/h	134	179	202						
	Ton-MPH	92	123	138						
18.00R25	T-km/h	193	239	280	181	224	262			
	Ton-MPH	132	164	192	124	153	179			
18.00R33	T-km/h	227	281	328	213	263	307			
	Ton-MPH	155	192	225	146	180	210			
21.00R35	T-km/h	302	374	437	284	351	410			
	Ton-MPH	207	256	299	195	240	281			
24.00R35	T-km/h	386	477	558	362	448	524			
	Ton-MPH	264	327	382	248	307	359			
27.00R49	T-km/h	557	688	804	521	644	753			
	Ton-MPH	382	471	551	357	441	516			
33.00R51	T-km/h							837	1018	1209
	Ton-MPH							573	697	828
36.00R51	T-km/h							974	1185	1407
	Ton-MPH							667	812	964
40.00R57	T-km/h							1204	1463	1739
	Ton-MPH							825	1002	1191

NOTE: For cycle lengths of 5 km (3 miles) or less (round trip), multiply the T-km/h (Ton-MPH) value in this table by 1.12.
 Additional tread compounds are available to meet specific T-km/h (Ton-MPH).

Tires

T-km/h (Ton-MPH) Rating
 ● Bridgestone Radial Ply

**T-km/h (Ton-MPH) RATINGS
 AT 38° C (100° F) AMBIENT TEMPERATURE
 For Haul Lengths of 32 km (20 Miles) or Less One Way
 Maximum Speed Not to Exceed 48 km (30 Miles) per Hour**

BRIDGESTONE RADIAL PLY

Industry Code		E-2			E-2/E-3			E-3			E-4			E-4		
Tread Design		VKT			VMT/VLT			VRL			VALS			VLTS		
Custom Code		E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
17.5R25	T-km/h Ton-MPH	95 65			90 62	144 99										
20.5R25	T-km/h Ton-MPH	160 110	206 141		149 102	194 133					114 78			126 86		
23.5R25	T-km/h Ton-MPH	205 140	263 180		190 130	248 170					146 100			161 110		
26.5R25	T-km/h Ton-MPH	257 176	312 214		220 151	293 201					165 113			186 127		
29.5R25	T-km/h Ton-MPH	310 212	376 258		266 182	354 242	399 273							225 154		
29.5R29	T-km/h Ton-MPH	330 226	401 275								212 145	257 174				
33.25R29	T-km/h Ton-MPH	407 279	494 338					319 218	435 298							
29.5R35	T-km/h Ton-MPH							279 191	380 260							
33.25R35	T-km/h Ton-MPH	441 302						346 237	472 323							
37.25R35	T-km/h Ton-MPH	530 363	644 441	720 493				413 283	563 386							
37.5R39	T-km/h Ton-MPH		696 477													
40.5/75R39	T-km/h Ton-MPH							495 339	675 462	765 524						
25/65R25	T-km/h Ton-MPH	162 111														
30/65R25	T-km/h Ton-MPH				225 154											

NOTE: For cycle lengths of 5 km (3 miles) or less (round trip), multiply the T-km/h (Ton-MPH) value in this table by 1.12. Additional tread compounds are available to meet specific T-km/h (Ton-MPH).

**T-km/h (Ton-MPH) RATINGS
 AT 38° C (100° F) AMBIENT TEMPERATURE
 For Haul Cycles Less than 5 km (3 Miles) Round Trip***

MICHELIN RADIAL PLY CONSTRUCTION STANDARD BASE TIRES

Industry Code	E-2	E-3		E-4								
		XV	XR	XK	X Quarry	XDT			XDR			
Tread Design												
Type	C	B	B		A4	A	B	A4	A	B4	B	
18.00R33 T-km/h Ton-MPH	436 299	305 209	279 191	105 72	157 108	192 132	262 179					
24.00R35 T-km/h Ton-MPH	740 507	518 355	474 325	207 142	266 182	326 223	444 304					
27.00R49 T-km/h Ton-MPH	1090 747	763 523	698 478		392 269	480 329	654 448		392 269	480 329	567 388	
33.00R51 T-km/h Ton-MPH					558 382		929 637		496 340	620 425	744 510	
36.00R51 T-km/h Ton-MPH		1295 887	1184 811						592 406	740 507	888 608	
37.00R57 T-km/h Ton-MPH									678 464	848 581	1018 697	
40.00R57 T-km/h Ton-MPH									768 526	960 658	1152 789	
44/80R57 T-km/h Ton-MPH								Consult Michelin				
59/80R63 T-km/h Ton-MPH								Consult Michelin				

*Consult Michelin for T-km/h (Ton-MPH) ratings for haul cycles greater than 5 km (3 m).
 NOTE: Additional tread compounds are available to meet specific T-km/h (Ton-MPH).

Tires

- T-km/h (Ton-MPH) Rating
- ISO Load Index Speed Symbol
- Michelin Radial Ply — Wide Base Sizes

**T-km/h (Ton-MPH) RATINGS
AT 38° C (100° F) AMBIENT TEMPERATURE**

For Haul Cycles Less than 5 km (3 Miles) Round Trip*

MICHELIN RADIAL PLY CONSTRUCTION WIDE BASE SIZES

Industry Code		E-3			E-4
Tread Design		XR	XTS	XMS	XRS
Type		B		B	B
29.5R29	T-km/h Ton-MPH	420 288	348 239		
33.25R29	T-km/h Ton-MPH	518 355	429 294		
37.25R35	T-km/h Ton-MPH	661 453	548 375		415 284
37.5R39	T-km/h Ton-MPH	721 494			
40.5/75R39	T-km/h Ton-MPH			766 525	

*Consult Michelin for T-km/h (Ton-MPH) ratings on haul cycles greater than 5 km (3 m).

**ISO Load Index Speed Symbol
AT 38° C (100° F) AMBIENT TEMPERATURE**

For Haul Lengths Greater than 5 km (3 Miles) Round Trip

MICHELIN RADIAL PLY CONSTRUCTION WIDE BASE SIZES

Industry Code	E-3	E-3 (DT)	E-3
Tread Design	XADN	XADT	XAD65-1
Type			
20.5R25	177B	177B	
23.5R25	185B	185B	
26.5R25	193B*	193B	
29.5R25	200B*	200B	
660/65R25 Super E3			186B
750/65R25 Super E3			190B
810/65R25 Super E3			196B

*E speed option available via special field request.

TIRE AND RIM ASSOCIATION RATINGS

While the T-km/h (Ton-MPH) Rating System provides a method to determine the tire’s work capacity, Tire and Rim Association Ratings provide a guide for evaluating a tire’s structural capacity. These two rating systems should be used in conjunction to evaluate tire performance.

TIRE SELECTION

Selecting the optimum tire for a given application is particularly critical for earthmoving. The machines have the capability to outperform the tires and, unless proper practices are observed, very costly premature tire failures can occur. Job conditions vary greatly throughout the world, as well as within any given job site, and selecting the optimum tire requires careful consideration of all factors involved. In general, the tire manufacturer should be consulted before making the selection for any given application. In some cases, the tire manufacturer can fabricate tires specifically tailored for a given job site.

For those applications where wear is extremely slow, especially as a result of only occasional operation throughout the year, the cheapest lightweight tire needs to be given strong consideration.

As job conditions become severe, the following factors should be evaluated in selecting a tire:

Transport or Load-and-carry —

- T-km/h (Ton-MPH) (primary consideration)
- Minimum approved ply rating or greater
- Largest optional size
- Thickest tread commensurate with T-km/h (Ton-MPH)
- Largest practical bar to gap ratio
- Most cut resistant tread commensurate with T-km/h (Ton-MPH)
- Belted construction

Grader —

- Tire load rating suitable for maximum equipped machine weight (See Tire Load Worksheet)
- Application specific tire (snow, construction, road maintenance, mining, general purpose, all season)
- Bias or radial based on initial cost, puncture resistance, rolling resistance, life to retread/repair

Tire Load Worksheet (Motor Graders)

A. Total machine operating weight:
 Base operating weight 1a _____
 Attachments #1 _____
 #2 _____
 #3 _____
 (Sum of #1-3) 2a _____
 Total machine operating weight
 (Sum of 1a & 2a) 3a _____

B. Load on rear of machine
 _____ (0.7) x _____ (3a) = _____ 1b

C. Load per tandem tire
 _____ (1b) / _____ 4 = _____ 1c

D. Load on front of machine
 _____ 0.3 x _____ (3a) = _____ 1d

E. Load per front tire
 _____ (1d) / _____ 2 = _____ 1e

F. Controlling tire load
 the greater of 1c or 1e _____ 1f

G. Tire load rating _____ 1g

Tire acceptability check:
 Tire load < tire load rating
 _____ 1f < _____ 1g

Loader or Dozer —

- Minimum approved ply rating or greater
- Largest optional size
- Thickest tread
- Thickest available undertread
- Buttressed shoulder
- Most cut resistant tread
- Largest practical bar to gap ratio
- Belted construction
- Lowest aspect ratio

All tires should be operated at the tire manufacturer’s recommended inflation pressure for a given application. Inflation pressure should be checked every working day with an accurate Bourden-tube type gauge. This gauge should be checked against a known standard such as a dead weight tester at least once a month.

Excess loads may result from factors such as varying material density, field modifications to equipment, mud accumulation, load transfer, etc. Only under these conditions may the actual in service tire load exceed the rated machine load. When excess loads are encountered, cold inflation pressures **must** be increased to compensate for higher loads. Increase tire inflation pressure 2% for each 1% increase in load.

	Maximum Excess Load	Pressure
Bias Ply	15%	30%
Radial Ply	7%	14%

The above loads will result in reduced tire performance and must be approved by the tire manufacturer.

The use of chains is difficult to justify except under a few conditions. Chains are very costly and heavy, and require more maintenance than most operations can provide. On some models sufficient clearance does not exist for chains with all tire combinations. Extensive modifications may be required if chains are needed for the job.

Foam filling tires is normally not recommended due to high cost and lack of local filling facilities. Its use should be confined to loader and dozer applications where penetrations occur almost daily. If foam is used be sure to adhere to recommended equivalent pressures of nitrogen and use highest available ply rating. Consult tire manufacturer for specific warranty concerns.

TIRE SELECTION GUIDE

Material	Road or Ground Condition	Treads	
		Wheel Tractor-Scrapers	Wheel Tractors or Wheel Loaders
Silt and clay, No rock, High moisture content.	Good varying to poor. High rolling resistance.	Traction Type (E-2).	Traction type (L-2).
Silt and clay, Some rock, Variable moisture content.	Good varying to poor.	Rock-type (E-3) best unless traction is a problem — then use traction tires (E-2). Rock-type offers more resistance to cutting.	Rock-type (L-3, L-4 or L-5) best unless traction is a problem — then use traction (L-2) tires. Rock-type offers more resistance to cutting.
Silty or clayey gravel and sand, Low moisture content.	Excellent to good. Firm surface.	Rock-type (E-3) offers better wear.	Rock-type (L-3, L-4 or L-5) offers better wear.
Silty or clayey gravel and sand, High moisture content.	Poor, rutted, pot holes.	Rock-type (E-3).	Rock-type (L-3, L-4 or L-5).
Blasted rock.	Hard surface, rough.	Rock-type (E-3 or L-3 and L-4 if possible).	Rock-type (L-5 or L-5S).
Sand Very low silt or clay content.	Good to fair surface.	Rock-type (E-3 or L-3S and L-4S if possible) with low pressure. Creates minimum soil disturbance resulting improved flotation.	Rock-type (L-3 or L-3S) with low pressure. Creates minimum soil disturbance resulting in improved flotation.

TIRE SUPPLIER RECOMMENDED COLD INFLATION PRESSURES

The following tables present Caterpillar and the *tire suppliers'* recommended cold inflation pressures for tires on Caterpillar machines. An asterisk (*) indicates the standard tire size and ply rating.

The inflation pressure is based on a ready-to-work vehicle weight, rated payload, and average operating conditions. **Pressures for each application may need to be varied from those shown and should always be obtained from your tire supplier.**

Pressures for all tires apply to rib, traction, rock, deep tread, and super deep tread tires.

NOTE: Caterpillar now recommends using dry nitrogen (N₂) gas for both tire inflation and pressure adjustments on all current and past production machines.

EXCAVATORS — Bias Ply

For complete tire data and inflation pressures, see the Excavator section in this handbook.

SKIDDERS — Bias Ply

Model	Tire Size	Ply Rating	Pressure			
			Front		Rear	
525B	24.5L-32	16	kPa	psi	kPa	psi
	30.5L-32	16	240	35	240	35
535B	30.5L-32	16	210	30	210	30
	35.5L-32	16	207	30	207	30
545	30.5L-32	16	210	30	210	30
	35.5L-32	16	207	30	207	30

FORWARDERS & HARVESTERS — Bias Ply

Model	Tire Size	Ply Rating	Pressure			
			Front		Rear	
554	600/50-22.5*	16	kPa	psi	kPa	psi
	700/45-22.5*	16	241	35	310	45
574	600/55-26.5**	16, 20	310	45	414	60
	700/50-26.5**	16, 20	276	40	380	55
550	600/65-34	14	241	35	241	35
	700/55-34	14	241	35	241	35
570	600/65-34	14	241	35	241	35
	700/55-34	14	241	35	241	35
580	600/55-26.5	16, 20	310	45	—	—
	700/50-26.5	16, 20	275	40	—	—
	600/65-34	14	—	—	241	35
	700/55-34	14	—	—	241	35

*Recommended pressure when using tracks is 380 kPa (55 psi) on front and rear.
**Recommended pressure when using tracks is 480 kPa (70 psi) on front and rear.

Tires | Standard Cold Inflation Pressures

MOTOR GRADERS — Bias Ply

Model	Tire Size	Ply Rating	Pressure			
			Front		Rear	
			kPa	psi	kPa	psi
120H	13.00-24TG*	10*, 12	241	35	241	35
	14.00-24TG	10, 12	241	35	241	35
	15.5-25	10, 12	241	35	241	35
	17.5-25	12	241	35	241	35
135H	13.00-24TG*	10*, 12	241	35	241	35
	14.00-24TG	10, 12	241	35	241	35
	15.5-25	12	276	40	276	40
	17.5-25	12	241	35	241	35
12H	13.00-24TG*	12	310	45	310	45
	14.00-24TG	10, 12	241	35	241	35
	15.5-25	12	241	35	241	35
	17.5-25	12	276	40	276	40
140H	14.00-24TG*	10*, 12	241	35	241	35
	17.5-25	12	241	35	241	35

*Standard tire and ply rating. Refer to Tire Load Worksheet to determine proper ply rating.

MOTOR GRADERS — Bias Ply (continued)

Model	Tire Size	Ply Rating	Pressure			
			Front		Rear	
			kPa	psi	kPa	psi
143H	14.00-24TG*	10*, 12	241	35	241	35
	17.5-25	12	241	35	241	35
160H	14.00-24TG*	10, 12*	241	35	241	35
	17.5-25	12	241	35	241	35
163H	14.00-24TG*	12	241	35	241	35
	17.5-25	12	241	35	241	35
14H	16.00-24TG*	16	310	45	310	45
	20.5-25	16	241	35	241	35
16H	18.00-25*	16	241	35	241	35
	23.5-25	16	241	35	241	35

*Standard tire and ply rating. Refer to Tire Load Worksheet to determine proper ply rating.

MOTOR GRADERS — Michelin, Goodyear and Bridgestone/Firestone Radial Ply

Model	Tire Size	Strength Rating	Michelin Pressure				Goodyear Pressure				Bridgestone Pressure			
			Front		Rear		Front		Rear		Front		Rear	
			kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi
120H	13.00R24TG	★	241	35	241	35	310	45	310	45	310	45	310	45
	14.00R24TG	★	207	30	207	30	310	45	310	45	310	45	310	45
	15.5R25	★	207	30	207	30	310	45	310	45	310	45	310	45
135H	13.00R24TG	★	207	30	276	40	310	45	310	45	310	45	310	45
	14.00R24TG	★	207	30	207	30	310	45	310	45	310	45	310	45
	15.5R25	★	207	30	207	30	310	45	310	45	310	45	310	45
12H	13.00R24TG	★	207	30	310	45	310	45	310	45	310	45	310	45
	14.00R24TG	★	207	30	241	35	310	45	310	45	310	45	310	45
	15.5R25	★	207	30	241	35	310	45	310	45	310	45	310	45
140H	14.00R24TG	★	207	30	241	35	310	45	310	45	310	45	310	45
	17.5R25	★	207	30	207	30	310	45	310	45	310	45	310	45
143H	14.00R24TG	★	207	30	241	35	310	45	310	45	310	45	310	45
	17.5R25	★	207	30	207	30	310	45	310	45	310	45	310	45
160H	14.00R24TG	★	207	30	241	35	310	45	310	45	310	45	310	45
	17.5R25	★	207	30	207	30	310	45	310	45	310	45	310	45
163H	14.00R24TG	★	207	30	276	40	310	45	310	45	310	45	310	45
	17.5R25	★	207	30	207	30	310	45	310	45	310	45	310	45
14H	16.00R24TG	★	207	30	241	35	310	45	310	45	310	45	310	45
	20.5R25	★	207	30	207	30	310	45	310	45	310	45	310	45
16H	18.00R25	★	207	30	207	30	310	45	310	45	310	45	310	45
	23.5R25	★	207	30	207	30	310	45	310	45	310	45	310	45
24H	29.5R29	★	—	—	—	—	—	—	—	—	310	45	310	45
	29.5R29	★★	207	30	276	40	310	45	310	45	310	45	310	45

BACKHOE LOADERS (Front)

Tire Size	Ply/Star Rating	Pressure	
		kPa	psi
11Lx16 F3	12	448	65
14.5/75x16.1 F3	10	276	40
12.5/80-18 I3 SG LUG	10	373	54
12.5x20 R4	10	345	50
340/80R18 IT510, IT530	★	345	50
335/80R18 XM27 139	★	345	50
15-19.5 SSSG	12	414	60

BACKHOE LOADERS (Rear)

Tire Size	Ply/Star Rating	Pressure	
		kPa	psi
16.9x24 R4	10	207	30
19.5x24 IT525	10	207	30
19.5LR24 IT510	★	276	40
16.9x28 R4	10	207	30
	12	276	40
16.9R28 IT510, IT530	★	276	40
16.9R28 XM27	★	276	40
18.4/15x26 R4	12	241	35
18.4/15R26 XM27	★	276	40
21Lx24 IT525	12	241	35

PAVING PRODUCTS — Bias Ply and Radial

Pneumatic Tires

Model	Tire Size	Ply Rating	Tire Inflation Pressure ^{1,2}			
			Front		Rear	
			kPa	psi	kPa	psi
CB-225D	9.5/65 — 15	6	—	—	325	47
CB-335D	7.5 x 16	6	—	—	550	80
CB-535B	17/80R24 (R24)	Radial	—	—	1000	145
CB-545	13/80R20 (E20)	Radial	—	—	1000	145
CS-323C	11.2 x 24	6	—	—	138	20
CS-423E	14.9 x 24	6	—	—	138	20
CS-433E	14.9 x 24	6	—	—	138	20
CS-533E	23.1 x 26	8	—	—	138	20
CS-563E	23.1 x 26	8	—	—	138	20
CS-573E	23.1 x 26	8, 12	—	—	138	20
CS-583E	23.1 x 26	8, 12	—	—	138	20
CS-663E	23.1 x 26	12	—	—	138	20
CS-683E	23.1 x 26	12	—	—	138	20
CP-323C	11.2 x 24	6	—	—	138	20
CP-433E	14.9 x 24	6	—	—	138	20
CP-533E	23.1 x 26	8	—	—	138	20
CP-563E	23.1 x 26	8	—	—	138	20
CP-663E	23.1 x 26	12	—	—	138	20
PS-150B	8.5 x 15	6	414	60	414	60
	7.5 x 15	12	758	110	758	110
	7.5 x 15	14	896	130	896	130
	7.50R15	Radial	480	70	480	70
PS-200B	7.5 x 15	12	758	110	758	110
	7.5 x 15	14	896	130	896	130
	7.50R15	Radial	480	70	480	70
PF-290B	14/70 — 20	12	448	65	448	65
PF-300B & PS-300B	13/80R20 (E20)	Radial	1000	145	1000	145
	14/80R20 (F20)	Radial	1000	145	1000	145
PS-360B	14/70 — 20	12	448	65	448	65
		20	758	110	758	110
PS-500	17/80R24 (R24)	Radial	1000	145	1000	145
RM-250C	23.5-25	16	323	45	—	—
	15.5-25	8	—	—	207	30
RM-350B	23.5-25	16	414	60	—	—
	23.1-26	12	—	—	172	25
AP-800C	16.00-24	12	—	—	345	50
AP-900	18.00-25	16	—	—	345	50
AP-1000B	18.00-25	16	—	—	379	55

¹Inflation pressures are maximum rated pressures.
²Pressure varies with application for Pneumatic Tire Compactors (PS and PF series).

Tires | Standard Cold Inflation Pressures

WHEEL TRACTORS — Bias Ply

Model	Tire Size	Ply Rating or Strength Index	Pressure			
			Front		Rear	
			kPa	psi	kPa	psi
814F	23.5-25*	12	207	30	207	30
	26.5-25	14	172	25	172	25
824G	29.5-25*	22	241	35	241	35
834G	35/65-33*	24	241	35	241	35
		30	480	70	480	70
844	41.25/70-39	34	510	75	510	75
		42	510	75	510	75
854G	45/65-45	46	540	80	540	80

*Standard tire, ply rating, and inflation pressures.

WHEEL TRACTORS — Radial Ply

Model	Tire Size	Ply Rating or Strength Index	Pressure			
			Front		Rear	
			kPa	psi	kPa	psi
814F	23.5R25	★	276	40	276	40
	26.5R25	★	241	35	241	35
824G	29.5R25	★	345	50	345	50
834G	35/65R33	★	345	50	345	50
844	45/65R39*	★	483	70	483	70
	40.5/75R39	★	483	70	483	70
854G	45/65R45*	★	448	65	448	65

*Standard tire, ply rating, and inflation pressures.

WHEEL TRACTOR-SCRAPERS — Bias Ply

Model	Tire Size	Ply Rating	Pressure			
			Front		Rear	
			kPa	psi	kPa	psi
613C Series II	23.5-25	20	310	45	310	45
			310	45	310	45
611, 615C Series II	29.5-25	28	345	50	310	45
		34	448	65	379	55
621G	33.25-29	26	379	55	310	45
	29.5-29	34	414	60	310	45
	29.5-35	28	379	55	276	40
623G	33.25-29	26	379	55	310	45
	29.5-29	34	448	65	345	50
	29.5-35	28	414	60	310	45
627G	33.25-29	26	379	55	310	45
	29.5-29	34	414	60	448	65
	29.5-35	34	345	50	379	55
631G	37.25-35	42	414	60	379	55
637G	37.25-35	42	414	60	379	55

ARTICULATED TRUCK — Radial Ply

Model	Tire Size	Ply Rating	Pressure					
			Front		Center	Rear		
			kPa	psi	kPa	psi	kPa	psi
725	20.5R25	★ ★	379	55	448	65	448	65
	23.5R25	★ ★	310	45	379	55	379	55
730	23.5R25	★ ★	345	50	345	50	345	50
	30/65R25	★ ★	276	40	345	50	345	50
735	26.5R25	★ ★	379	55	345	50	345	50
	29.5R25	★ ★	310	45	310	45	310	45
740	26.5R25	★ ★	414	60	448	65	448	65
	29.5R25	★ ★	345	50	345	50	345	50

WHEEL TRACTOR-SCRAPERS — Radial Ply

Model	Tire Size	Strength Index	Pressure											
			Michelin				Goodyear				Bridgestone			
			Front		Rear		Front		Rear		Front		Rear	
		kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	
613C Series II	18.00R25	★	379	55	414	60	414	60	448	65	448	65	448	65
	23.5R25	★	276	40	276	40	345	50	345	50	379	55	379	55
611, 615C Series II	26.5R25	★★	379	55	379	55	483	70	483	70	483	70	483	70
	29.5R25	★	310	45	310	45	379	55	379	55	379	55	379	55
621G	29.5R29	★★	414	60	379	55	483	70	379	55	483	70	379	55
	29.5R35	★★	—	—	—	—	448	65	379	55	448	65	379	55
	33.25R29	★★	379	55	310	45	414	60	345	50	414	60	345	50
623G	29.5R29	★★	483	70	483	70	517	75	414	60	517	75	414	60
	29.5R35	★★	—	—	—	—	448	65	414	60	414	60	345	50
	33.25R29	★★	414	60	414	60	414	60	345	50	—	—	—	—
627G	29.5R29	★★	414	60	448	65	517	75	517	75	517	75	517	75
	29.5R35	★★	—	—	—	—	414	60	414	60	483	70	483	70
	33.25R29	★★	379	55	379	55	379	55	379	55	379	55	379	55
631G	37.25R35	★★	517	75	414	60	517	75	414	60	517	75	414	60
637G	37.25R35	★★	517	75	517	75	517	75	517	75	517	75	517	75
651E	37.5R39	★★	655	95	483	70	620	90	517	75	620	90	552	80
	40.5/75R39	★★	517	75	448	65	517	75	448	65	517	75	448	65
657E	37.5R39	★★	*	*	*	*	689	100	689	100	689	100	689	100
	40.5/75R39	★★	586	85	517	75	552	80	552	80	552	80	552	80

*Contact Michelin.

CONSTRUCTION & MINING TRUCKS & TRACTORS — Radial Ply

Model	Tire Size	Strength Index	Pressure											
			Michelin				Goodyear				Bridgestone			
			Front		Rear		Front		Rear		Front		Rear	
		kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	
769D	18.00R33*	★★	689	100	689	100	724	105	724	105	689	100	689	100
771D	18.00R33*	★★	620	90	620	90	800	116	800	116	800	116	800	116
773E	24.00R35*	★★	552	80	552	80	552	80	552	80	585	85	585	85
775E	24.00R35*	★★	552	80	552	80	620	90	620	90	655	95	655	95
776D	27.00R49*	★★	655	95	655	95	586	85	586	85	620	90	620	90
777D	27.00R49*	★★	655	95	655	95	655	95	655	95	689	100	689	100
784B	36.00R51*	★★	758	110	758	110	689	100	689	100	689	100	689	100
785C	33.00R51*	★★	724	105	724	105	689	100	689	100	689	100	689	100
789C	37.00R57*	★★	620	90	620	90	689	100	689	100	689	100	689	100
793C	40.00R57*	★★	Consult Michelin				689	100	689	100	704	102	704	102
	44/80R57	★★	Consult Michelin				—	—	—	—	—	—	—	—
	46/90R57	★★	—				—	—	—	—	704	102	704	102
797B	59/80R63	★★	Consult Michelin				—	—	—	—	Consult Bridgestone			

*Standard tire and ply rating.

Tires

Standard Cold Inflation Pressures Bias and Bias Belted

- Wheel Loaders ● Skid Steer Loaders
- Log Loaders ● Integrated Toolcarriers

WHEEL LOADERS — Bias and Bias Belted

Model	Tire Size	Ply Rating or Strength Index	Pressure			
			Front		Rear	
			kPa	psi	kPa	psi
902	12.5-18	10	241	35	172	25
906	12.5-20	10	241	35	172	25
908	14.5-20	10	276	40	241	35
914G	15.5-25	12	276	40	172	25
	15.5-25	12	241	35	172	25
924G	17.5-25	12	310	45	207	30
	20.5-25	12	241	35	172	25
928G	17.5-25	12	345	50	241	35
	20.5-25	12	241	35	172	25
938G	20.5-25	12	345	50	241	35
950G	23.5-25	16	414	60	241	35
962G	23.5-25	16	414	60	241	35
966G	26.5-25	20	448	65	241	35
972G	26.5-25	20	448	65	241	35
980G	29.5-25	22	414	60	241	35
988G	35/65-33	36	510	75	410	60
		42	585	85	480	70
990 Series II	41.25/70-39	42	510	75	410	60
992G	45/65-45	46	510	75	410	60
		50	585	85	450	65
		58	650	95	480	70
994D	49.5/85-57 52/80-57 53.5/85-57	84	689	100	585	85
		68	689	100	585	85
		76	689	100	585	85

LOG LOADERS — Bias and Bias Belted

Model	Tire Size	Ply Rating	Inflation Pressure			
			Front		Rear	
			kPa	psi	kPa	psi
IT14G	15.5-25	12	310	45	207	30
	17.5-25	12	276	40	172	25
924G Versalink	17.5-25	12	310	45	241	35
	20.5-25	12	276	40	207	30
IT28G	20.5-25	12	276	40	207	30
938G	20.5-25	12	448	65	241	35
950G	23.5-25	16	414	60	241	35
966G	26.5-25	20	448	65	241	35
	23.5-25	24	586	85	241	35
980G	29.5-25	28	552	80	241	35
988G	35/65-33	36	552	80	276	40
	35/65-33	42	552	80	276	40

INTEGRATED TOOLCARRIERS — Bias and Bias Belted

Model	Tire Size	Ply Rating	Inflation Pressure			
			Front		Rear	
			kPa	psi	kPa	psi
IT14G	15.5-25	12	310	45	207	30
	17.5-25	12	241	35	172	25
924G Versalink	17.5-25	12	310	45	207	30
	20.5-25	12	241	35	172	25
IT28G	17.5-25	12	345	50	241	35
	20.5-25	12	241	35	172	25
IT38G	20.5-25	12	345	50	241	35
	20.5-25	16	483	70	241	35

SKID STEER LOADERS

Model	Tire Size	Pressure			
		Goodyear		Galaxy	
		kPa	psi	kPa	psi
216	7.00-15	379	55	—	—
	10-16.5	241	35	345	50
	31x15.50-15	172	25	—	—
226	10-16.5	241	35	345	50
	31x15.50-15	172	25	—	—
228	10-16.5	241	35	345	50
	31x15.50-15	172	25	—	—
236	8.25-15	345	50	—	—
	12-16.5	241	35	310	45
	31x15.50-15	172	25	—	—
246	12-16.5	241	35	310	45
	31x15.50-15	172	25	—	—
248	12-16.5	241	35	310	45
	31x15.50-15	172	25	—	—

Standard Cold Inflation Pressures
Radial, Bias and Bias Belted
● Telehandlers

Tires

TELEHANDLERS — Radial, Bias and Bias Belted

Model	Tire Size	Make	Tire Type	Strength Index	Inflation Pressures			
					Front		Rear	
					kPa	psi	kPa	psi
TH210	XM37 10.5/R20	Michelin	Agricultural		350	51	350	51
	XM37 12.5/80R20	Michelin	Agricultural		350	51	350	51
	10.5-20 MPT	Goodyear	Construction		375	54	375	54
	12.5-20 MPT	Goodyear	Construction		350	51	350	51
TH215	XM37 12.5/80R20	Michelin	Agricultural		350	51	350	51
	XZSL 375/75R20	Michelin	Construction		350	51	350	51
	12.5-20 MPT	Goodyear	Construction		350	51	350	51
TH220B	15.5 - 25 SGL-2A (T&S)	Goodyear	Construction		N/A	N/A	N/A	N/A
	17.5 LR 24 XM27	Michelin	Agricultural		310	45	310	45
	460/70R24 IND IT520 (17.5R24)	Goodyear	Agricultural		250	36	250	36
	15.5 - 25 SGL-2A	Goodyear	Construction	12	250	36	250	36
TH330B	13 - 24 CAT Brand	Caterpillar	Construction	12	450	65	450	65
	13 - 24 CAT Brand (T&S)	Caterpillar	Construction		N/A	N/A	N/A	N/A
	13 - 24 SGG-2A TL	Goodyear	Construction	12	370	54	370	54
	13 - 24 TG-02	Mitas	Construction	12	300	44	300	44
	13 - 24 TG-02 (T&S)	Mitas	Construction		N/A	N/A	N/A	N/A
	15.5 - 25 CAT Brand	Caterpillar	Construction	12	400	58	400	58
	15.5 - 25 CAT Brand (T&S)	Caterpillar	Construction		N/A	N/A	N/A	N/A
	15.5 - 25 SGL-2A	Goodyear	Construction	12	250	36	250	36
	15.5 - 25 EM20	Mitas	Construction	12	400	58	400	58
	15.5 - 25 EM20 (T&S)	Mitas	Construction		N/A	N/A	N/A	N/A
	15.5 R25 XHA	Michelin	Construction	★	400	58	400	58
	15.5 R25 XTLA	Michelin	Construction	★	400	58	400	58
	15.5/80 - 24 12PR	Goodyear	Agricultural	12	410	60	410	60
	460/70R24 IND IT520 (17.5R24)	Goodyear	Agricultural		270	40	270	40
	495/70R24 XM27 (19.5LR24)	Michelin	Agricultural		310	45	310	45
	TH340B	13 - 24 CAT Brand	Caterpillar	Construction	12	450	65	450
13 - 24 CAT Brand (T&S)		Caterpillar	Construction		450	65	450	65
13 - 24 SGG-2A TL		Goodyear	Construction	12	330	48	330	48
13 - 24 SGG-2A TL (T&S)		Goodyear	Construction		330	48	330	48
13 - 24 TG-02		Mitas	Construction	12	300	44	300	44
13 - 24 TG-02 (T&S)		Mitas	Construction		N/A	N/A	N/A	N/A
15.5 - 25 CAT Brand		Caterpillar	Construction	12	400	58	400	58
15.5 - 25 CAT Brand (T&S)		Caterpillar	Construction		400	58	400	58
15.5 - 25 SGL-2A		Goodyear	Construction	12	290	42	290	42
15.5 - 25 EM20		Mitas	Construction		400	58	400	58
15.5 - 25 EM20 (T&S)		Mitas	Construction		400	58	400	58
15.5 R25 XHA		Michelin	Construction	★	400	58	400	58
15.5 R25 XTLA		Michelin	Construction	★	400	58	400	58
15.5 R25 XTLA (T&S)		Michelin	Construction	★	400	58	400	58
15.5/80 - 24 12PR		Goodyear	Agricultural	12	410	60	410	60
17.5 LR 24 XM27		Michelin	Agricultural		310	45	310	45
460/70R24 IND IT520 (17.5R24)		Goodyear	Agricultural		260	38	260	38

Tires

Standard Cold Inflation Pressures Radial, Bias and Bias Belted

- Telehandlers

TELEHANDLERS — Radial, Bias and Bias Belted

Model	Tire Size	Make	Tire Type	Strength Index	Inflation Pressures			
					Front		Rear	
					kPa	psi	kPa	psi
TH350B	13 - 24 CAT Brand	Caterpillar	Construction	12	450	65	450	65
	13 - 24 CAT Brand (T&S)	Caterpillar	Construction		450	65	450	65
	13 - 24 SGG-2A TL	Goodyear	Construction		350	51	350	51
	13 - 24 TG-02	Mitas	Construction	12	300	44	300	44
	13 - 24 TG-02 (T&S)	Mitas	Construction		N/A	N/A	N/A	N/A
	15.5 - 25 SGL-2A	Goodyear	Construction	12	350	51	350	51
	15.5 R25 XHA	Michelin	Construction	★	450	65	450	65
	15.5 R25 XTLA	Michelin	Construction	★	450	65	450	65
	15.5/80 - 24 12PR	Goodyear	Agricultural	12	410	60	410	60
TH355B	15.5 - 25 SGL-2A	Goodyear	Construction	12	350	51	350	51
TH360B	13 - 24 CAT Brand	Caterpillar	Construction		450	65	450	65
	13 - 24 CAT Brand (T&S)	Caterpillar	Construction		450	65	450	65
	13 - 24 SGG-2A TL	Goodyear	Construction	12	440	64	440	64
	13 - 24 TG-02	Mitas	Construction	12	300	44	300	44
	15.5 - 25 CAT Brand	Caterpillar	Construction	12	400	58	400	58
	15.5 - 25 CAT Brand (T&S)	Caterpillar	Construction		400	58	400	58
	15.5 - 25 SGL-2A	Goodyear	Construction	12	400	58	400	58
	15.5 - 25 EM20	Mitas	Construction		400	58	400	58
	15.5 R25 XHA	Michelin	Construction	★	450	65	450	65
	15.5 R25 XTLA	Michelin	Construction	★	450	65	450	65
	15.5/80 - 24 12PR	Goodyear	Agricultural	12	410	60	410	60
TH460B	14 - 24 12PR CAT Brand	Caterpillar	Construction	12	425	62	425	62
	14 - 24 12PR CAT Brand (T&S)	Caterpillar	Construction		425	62	425	62
	14 - 24 16PR TG-02	Mitas	Construction	16	425	62	425	62
	14 - 24 16PR TG-02 (T&S)	Mitas	Construction		N/A	N/A	N/A	N/A
	14 - 24 SGG-2A 12PR	Goodyear	Construction	12	425	62	425	62
	400/70R24 IT530 (16R24)	Goodyear	Construction		550	73	550	73
TH560B	14 - 24 16PR CAT Brand	Caterpillar	Construction	16	550	80	550	80
	14 - 24 16PR CAT Brand (T&S)	Caterpillar	Construction		550	80	550	80
	14 - 24 16PR TG-02	Mitas	Construction	16	425	62	425	62
	14 - 24 16PR TG-02 (T&S)	Mitas	Construction		N/A	N/A	N/A	N/A
	14 - 24 SGG-2A 16PR	Goodyear	Construction	16	525	76	525	76
	14 - 24 SGG-2A 16PR (T&S)	Goodyear	Construction		525	76	525	76

WHEEL LOADERS — Radial Ply

Model	Tire Size	Strength Index	Pressure										
			Michelin				Dunlop						
			Front		Rear		Front		Rear				
		kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi		
902	335/80R18 XM27	★	304	44	221	32	—	—	—	—	—	—	—
	335/80R18 SPT9	★	—	—	—	—	276	40	172	25	—	—	—
906	365/80R20 SPT9	★	—	—	—	—	276	40	172	25	—	—	—
	375/75R20 XM27	★	276	40	193	28	—	—	—	—	—	—	—
	405/70R20 SPT9	★	—	—	—	—	241	35	172	25	—	—	—
908	425/75R20 XM27	★	276	40	193	28	—	—	—	—	—	—	—
	405/70R20 SPT9	★	—	—	—	—	276	40	207	30	—	—	—

Model	Tire Size	Strength Index	Pressure											
			Michelin				Goodyear				Bridgestone			
			Front		Rear		Front		Rear		Front	Rear		
		kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	
914G	15.5R25	★	310	45	172	25	—	—	—	—	414	60	276	40
	17.5R25	★	276	40	172	25	414	60	310	45	414	60	276	40
924G	17.5R25	★	276	40	172	25	414	60	310	45	414	60	276	40
	555/70R25	★	276	40	172	25	—	—	—	—	—	—	—	—
	20.5R25	★	241	35	172	25	414	60	310	45	414	60	276	40
928G	17.5R25	★	379	55	172	25	414	60	310	45	414	60	276	40
	555/70R25	★	310	45	172	25	—	—	—	—	—	—	—	—
	20.5R25	★	310	45	172	25	414	60	310	45	414	60	276	40
938G	20.5R25	★	310	45	172	25	276	40	241	35	276	40	207	30
	550/65R25	★	310	45	172	25	276	40	241	35	276	40	207	30
950G	23.5R25	★	241	35	172	25	310	45	207	30	310	45	207	30
	650/65R25	★	241	35	172	25	310	45	207	30	310	45	207	30
962G	23.5R25	★	276	40	172	25	345	50	207	30	345	50	207	30
	650/65R25	★	276	40	172	25	345	50	207	30	345	50	207	30
966G	26.5R25	★	310	45	172	25	345	50	207	30	345	50	276	40
	755/65R25	★	310	45	172	25	345	50	207	30	345	50	276	40
972G	26.5R25	★	345	50	172	25	414	50	276	40	345	50	276	40
	755/65R25	★	345	50	172	25	414	50	276	40	345	50	276	40
980G	26.5R25	★	—	—	—	—	448	65	310	45	414	60	276	40
	29.5R25	★	379	55	207	30	345	50	207	30	345	50	276	40
988G	35/65R33	★	586	85	276	40	483	70	345	50	540	80	345	50
	875/65R33	★ ★	—	—	—	—	655	95	448	65	—	—	—	—
990 Series II	45/65R39	★	483	70	276	40	—	—	—	—	580	85	414	60
	40.5/75R39	★	—	—	—	—	483	70	345	50	—	—	—	—
992G	45/65R45	★	552	80	276	40	586	85	448	65	580	85	414	60
	45/65R45	★ ★	—	—	—	—	—	—	—	—	685	95	414	60
994D	55/80R57	★	Contact Michelin				—	—	—	—	—	—	—	—

Tires

Standard Cold Inflation Pressures
Radial Ply

- Log Loaders
- Integrated Toolcarriers

LOG LOADERS — Radial Ply

Model	Tire Size	Strength Index	Pressure											
			Michelin				Goodyear				Bridgestone			
			Front		Rear		Front		Rear		Front		Rear	
		kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	
IT14G	15.5R25	★	310	45	207	30	—	—	—	—	345	50	276	40
	17.5R25	★	241	35	172	25	414	60	310	45	345	50	276	40
924G Versalink	17.5R25	★	379	55	172	25	414	60	310	45	345	50	276	40
	555/70R25	★	241	35	172	25	—	—	—	—	—	—	—	—
	20.5R25	★	241	35	172	25	414	60	310	45	345	50	276	40
IT28G	555/70R25	★	310	45	172	25	—	—	—	—	—	—	—	—
	20.5R25	★	310	45	172	25	414	60	310	45	345	50	276	40
938G	20.5R25	★	310	45	172	25	345	50	276	40	345	50	276	40
	550/65R25	★	310	45	172	25	345	50	276	40	345	50	276	40
950G	23.5R25	★	241	35	207	30	414	60	276	40	345	50	276	40
	650/65R25	★	241	35	207	30	414	60	276	40	345	50	276	40
966G	26.5R25	★	310	45	207	30	414	60	276	40	414	60	276	40
	755/65R25	★	310	45	207	30	414	60	276	40	414	60	276	40
980G	29.5R25	★	379	55	207	30	483	70	276	40	448	65	276	40
988G	35/65R33	★	586	85	276	40	655	95	310	45	552	80	345	50
	35/65R33	★★	—	—	—	—	655	95	310	45	—	—	—	—

INTEGRATED TOOLCARRIERS — Radial Ply

Model	Tire Size	Strength Index	Pressure											
			Michelin				Goodyear				Bridgestone			
			Front		Rear		Front		Rear		Front		Rear	
		kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi	
IT14G	15.5R25	★	241	35	172	25	—	—	—	—	345	50	276	40
	17.5R25	★	207	30	172	25	414	60	310	45	345	50	276	40
924G Versalink	17.5R25	★	345	50	172	25	414	60	310	45	345	50	276	40
	555/70R25	★	207	30	172	25	—	—	—	—	—	—	—	—
	20.5R25	★	241	35	172	25	414	60	310	45	345	50	276	40
IT28G	17.5R25	★	379	55	172	25	414	60	310	45	345	50	276	40
	555/70R25	★	207	30	172	25	—	—	—	—	—	—	—	—
	20.5R25	★	207	30	172	25	414	60	310	45	345	50	276	40
IT38G	20.5R25	★	241	35	172	25	345	50	241	35	345	50	276	40
	550/65R25	★	241	35	172	25	345	50	241	35	345	50	276	40

Standard Cold Inflation Pressures
Bias and Bias Belted/Bias and Radial Ply
● Underground Mining

Tires

UNDERGROUND MINING — Bias and Bias Belted

LOAD – HAUL – DUMP			Ply Rating	Bridgestone			
Model	Wheel Size	Tire Size		Front*		Rear*	
				kPa	psi	kPa	psi
R1300	14.0×25	17.5×25	20	680	100	580	85
R1600	13.0×25	18.0×25	28	680	100	414	60
R1700G & R1700G SUPA14	22.0×25	26.5×25	32	580	85	414	60
R2900 & R2900 SUPA 20	25.0×25	29.5×29	34	640	94	414	60

ARTICULATED TRUCKS

AD45	25.0×29	29.5×29	40	640	94	640	94
AD55	28.0×33	35/65R33	—	—	—	—	—
AE40 Series II	29.5×29	29.5×R29	40	620	90	620	90

RIGID TRUCKS

69D Dump	13.0×33	18.0×R33	36	640	94	640	94
69D Ejector	13.0×33	18.0×R33	40	620	91	620	91
73D	15.0×35	21.0×R35	42	700	102	700	102

*For standard loading applications.

NOTE: When tramming cycles exceed 150 m (500 ft) contact tire supplier.

UNDERGROUND MINING — Bias and Radial Ply

LOAD – HAUL – DUMP			Ply Rating	Bridgestone Bias			
Model	Wheel Size	Tire Size		Front*		Rear*	
				kPa	psi	kPa	psi
R1300G	14.0×25	17.5×25	20	685	100	580	85
R1600G	13.0×25	18.0×25	28	685	100	410	60
R1700G	22.0×25	26.5×25	36	580	85	410	60
R2900G	25.0×29	29.5×29	34	615	90	410	60
R2900G Xtra	28.0×33	35/65×33	—	—	—	—	—

			Ply Rating	Bridgestone Radial			
Model	Wheel Size	Tire Size		Front*		Rear*	
				kPa	psi	kPa	psi
R1300G	14.0×25	17.5×25	★ ★	685	102	580	85
R1600G	13.0×25	18.0×25	★ ★	685	100	410	60
R1700G	22.0×25	26.5×25	★ ★	580	85	410	60
R2900G	25.0×29	29.5×29	★ ★	640	94	410	60
R2900G Xtra	28.0×33	35/65×33	★ ★	640	94	410	60

ARTICULATED TRUCKS

AD30	22.0×25	26.5R25	★ ★	540	80	615	90
AD45	25.0×29	29.5×R29	★ ★	650	95	650	95
AD55	28.0×33	35/65R33	★ ★	640	94	640	94

*For standard loading applications.

NOTE: When tramming cycles exceed 150 m (500 ft) contact tire supplier.

NOTE: The operating inflation pressure is based on the weight of the ready-to-work machine without attachments, at rated payload and in average operating conditions. The tire pressure for each application may vary. The tire pressure should always be obtained from your tire dealer.

Tires

Liquid Ballasting* Table
 ● 75% Fillage**

	BIAS PLY TIRES						RADIAL PLY TIRES					
	Weight Increase Per Tire		Mixing Proportions				Weight Increase Per Tire		Mixing Proportions			
			CaCl ^{***}		Water				CaCl ^{***}		Water	
	kg	lb	kg	lb	liter	gal	kg	lb	kg	lb	liter	gal
13.00-24TG	188	414	55	122	132	35	185	407	57	125	128	34
14.00-24TG	215	475	63	140	151	40	256	565	79	173	179	47
15.5-25	192	423	56	125	136	36	224	493	69	151	155	41
16.00-24TG	333	735	98	217	234	62	355	783	109	240	246	65
17.5-25	262	577	77	170	185	49	311	686	95	210	216	57
18.00-25	454	1002	134	296	322	85	502	1107	154	340	348	92
18.4-34	417	919	123	272	295	78	—	—	—	—	—	—
20.5-25	405	892	119	263	284	75	448	987	137	303	310	82
23.1-26	522	1151	154	340	367	97	—	—	—	—	—	—
23.5-25	585	1291	173	382	412	109	633	1396	194	428	439	116
24.5-32	703	1549	207	458	496	131	—	—	—	—	—	—
26.5-25	758	1671	224	494	533	141	841	1853	258	568	583	154
26.5-29	752	1658	222	490	530	140	928	2045	284	627	644	170
28L-26	709	1563	209	462	500	132	—	—	—	—	—	—
29.5-25	970	2139	286	632	685	181	1073	2368	328	723	745	197
29.5-29	1050	2315	310	684	738	195	1190	2623	365	804	825	218
29.5-35	1159	2556	344	758	821	217	1286	2835	394	869	892	236
30.5L-32	874	1928	258	570	617	163	—	—	—	—	—	—
33.25-35	1485	3275	439	968	1048	277	1592	3508	487	1074	1105	292
37.25-35	1712	3775	505	1115	1211	320	2128	4692	653	1439	1476	390
38-39	1870	4123	552	1218	1317	348	—	—	—	—	—	—
35/65-33	1339	2953	396	873	942	249	1430	3152	438	967	992	262
40/65-39	2077	4580	614	1353	1465	387	2194	4836	673	1483	1522	402
41.25/70-39	1897	4183	561	1236	1336	353	—	—	—	—	—	—
45/65-45	2548	5617	753	1659	1794	474	—	—	—	—	—	—

*Ballast weight for bias ply tires from Goodyear data, radial ply weights from Michelin data. Contact your tire supplier for additional information. Under abnormal tire wear conditions, ballasting of rear tires may be desirable. Ballasting of front tires also should only be done where extremely rapid tire wear rates are encountered. Excessive weight will reduce machine performance.

**Fillage beyond 75% of tire enclosed volume is not recommended. With liquid ballasting, inflation pressure must be checked at least once per day.

***1.6 kg (3½ lb) Calcium Chloride per gallon water. Solution weighs 4.6 kg (10.15 lb) per gallon.

NOTE: When liquid ballasting telehandler tires, consult Telehandler's Operation and Maintenance Manual for requirements. Total machine mass including all attachments in operating condition, all reservoirs at full capacity and ballasted tires must not exceed certification mass listed on the ROPS certification label.

MINING AND EARTHMOVING

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INTRODUCTION

This section explains the earthmoving principles used to determine machine productivity. It shows how to calculate production on-the-job or estimate production off-the-job.

Machine performance is usually measured on an hourly basis in terms of machine productivity and machine owning and operating cost. Optimum machine performance can be expressed as follows:

$$\text{Lowest cost per ton} = \frac{\text{Lowest Possible Hourly Costs}}{\text{Highest Possible Hourly Productivity}}$$

ELEMENTS OF PRODUCTION

Production is the hourly rate at which material is moved. Production can be expressed in various units:

- Metric
- Bank Cubic Meters — BCM — bank m³
 - Loose Cubic Meters — LCM — loose m³
 - Compacted Cubic Meters — CCM — compacted m³
 - Tonnes

- English
- Bank Cubic Yards — BCY — bank yd³
 - Loose Cubic Yards — LCY — loose yd³
 - Compacted Cubic Yards — CCY — compacted yd³
 - Tons

For most earthmoving and material handling applications, production is calculated by multiplying the quantity of material (load) moved per cycle by the number of cycles per hour.

$$\text{Production} = \text{Load/cycle} \times \text{cycles/hour}$$

The load can be determined by

- 1) load weighing with scales
- 2) load estimating based on machine rating
- 3) surveyed volume divided by load count
- 4) machine payload measurement system

Generally, earthmoving and overburden removal for coal mines are calculated by volume (bank cubic meters or bank cubic yards). Metal mines and aggregate producers usually work in weight (tons or tonnes).

Volume Measure — Material volume is defined according to its state in the earthmoving process. The three measures of volume are:

- BCM (BCY) — one cubic meter (yard) of material as it lies in the natural bank state.
- LCM (LCY) — one cubic meter (yard) of material which has been disturbed and has swelled as a result of movement.
- CCM (CCY) — one cubic meter (yard) of material which has been compacted and has become more dense as a result of compaction.

In order to estimate production, the relationships between bank measure, loose measure, and compacted measure must be known.

Swell — Swell is the percentage of original volume (cubic meters or cubic yards) that a material increases when it is removed from the natural state. When excavated, the material breaks up into different size particles that do not fit together, causing air pockets or voids to reduce the weight per volume. For example to hold the same weight of one cubic unit of bank material it takes 30% more volume (1.3 times) after excavation. (Swell is 30%.)

$$1 + \text{Swell} = \frac{\text{Loose cubic volume for a given weight}}{\text{Bank cubic volume for the same given weight}}$$

$$\text{Bank} = \frac{\text{Loose}}{(1 + \text{Swell})}$$

$$\text{Loose} = \text{Bank} \times (1 + \text{Swell})$$

Example Problem:

If a material swells 20%, how many loose cubic meters (loose cubic yards) will it take to move 1000 bank cubic meters (1308 bank cubic yards)?

$$\begin{aligned} \text{Loose} &= \text{Bank} \times (1 + \text{Swell}) = \\ &1000 \text{ BCM} \times (1 + 0.2) = 1200 \text{ LCM} \\ &1308 \text{ BCY} \times (1 + 0.2) = 1570 \text{ LCY} \end{aligned}$$

How many bank cubic meters (yards) were moved if a total of 1000 loose cubic meters (1308 yards) have been moved? Swell is 25%.

$$\begin{aligned} \text{Bank} &= \text{Loose} \div (1 + \text{Swell}) = \\ &1000 \text{ LCM} \div (1 + 0.25) = 800 \text{ BCM} \\ &1308 \text{ LCY} \div (1 + 0.25) = 1046 \text{ BCY} \end{aligned}$$

Load Factor — Assume one bank cubic yard of material weighs 3000 lb. Because of material characteristics, this bank cubic yard swells 30% to 1.3 loose cubic yards when loaded, with no change in weight. If this 1.0 bank cubic yard or 1.3 loose cubic yards is compacted, its volume may be reduced to 0.8 compacted cubic yard, and the weight is still 3000 lb.

Instead of dividing by 1 + Swell to determine bank volume, the loose volume can be multiplied by the load factor.

If the percent of material swell is known, the load factor (L.F.) may be obtained by using the following relationship:

$$\text{L.F.} = \frac{100\%}{100\% + \% \text{ swell}}$$

Load factors for various materials are listed in the Tables Section of this handbook.

To estimate the machine payload in bank cubic yards, the volume in loose cubic yards is multiplied by the load factor:

$$\text{Load (BCY)} = \text{Load (LCY)} \times \text{L.F.}$$

The ratio between compacted measure and bank measure is called shrinkage factor (S.F.):

$$\text{S.F.} = \frac{\text{Compacted cubic yards (CCY)}}{\text{Bank cubic yards (BCY)}}$$

Shrinkage factor is either estimated or obtained from job plans or specifications which show the conversion from compacted measure to bank measure. Shrinkage factor should not be confused with percentage compaction (used for specifying embankment density, such as Modified Proctor or California Bearing Ratio [CBR]).

Material Density — Density is the weight per unit volume of a material. Materials have various densities depending on particle size, moisture content and variations in the material. The denser the material the more weight there is per unit of equal volume. Density estimates are provided in the Tables Section of this handbook.

$$\text{Density} = \frac{\text{Weight}}{\text{Volume}} = \frac{\text{kg (lb)}}{\text{m}^3 (\text{yd}^3)}$$

$$\text{Weight} = \text{Volume} \times \text{Density}$$

A given material's density changes between bank and loose. One cubic unit of loose material has less weight than one cubic unit of bank material due to air pockets and voids. To correct between bank and loose use the following equations.

$$1 + \text{Swell} = \frac{\text{kg/BCM}}{\text{kg/LCM}} \text{ or } \frac{\text{lb/BCY}}{\text{lb/LCY}}$$

$$\text{lb/LCY} = \frac{\text{lb/BCY}}{(1 + \text{Swell})}$$

$$\text{lb/BCY} = \text{lb/LCY} \times (1 + \text{Swell})$$

Fill Factor — The percentage of an available volume in a body, bucket, or bowl that is actually used is expressed as the fill factor. A fill factor of 87% for a hauler body means that 13% of the rated volume is not being used to carry material. Buckets often have fill factors over 100%.

Example Problem:

A 14 cubic yard (heaped 2:1) bucket has a 105% fill factor when operating in a shot sandstone (4125 lb/BCY and a 35% swell).

- a) What is the loose density of the material?
 - b) What is the usable volume of the bucket?
 - c) What is the bucket payload per pass in BCY?
 - d) What is the bucket payload per pass in tons?
- a) $\text{lb/LCY} = \text{lb/BCY} \div (1 + \text{Swell}) = 4125 \div (1.35) = 3056 \text{ lb/LCY}$
- b) $\text{LCY} = \text{rated LCY} \times \text{fill factor} = 14 \times 1.05 = 14.7 \text{ LCY}$
- c) $\text{lb/pass} = \text{volume} \times \text{density lb/LCY} = 14.7 \times 3056 = 44,923 \text{ lb}$
 $\text{BCY/pass} = \text{weight} \div \text{density lb/BCY} = 44,923 \div 4125 = 10.9 \text{ BCY}$
 or bucket LCY from part b $\div (1 + \text{Swell}) = 14.7 \div 1.35 = 10.9 \text{ BCY}$
- d) $\text{tons/pass} = \text{lb} \div 2000 \text{ lb/ton} = 44,923 \div 2000 = 22.5 \text{ tons}$

Example Problem:

Construct a 10,000 compacted cubic yard (CCY) bridge approach of dry clay with a shrinkage factor (S.F.) of 0.80. Haul unit is rated 14 loose cubic yards struck and 20 loose cubic yards heaped.

- a) How many bank yards are needed?
- b) How many loads are required?

- a) $\text{BCY} = \frac{\text{CCY}}{\text{S.F.}} = \frac{10,000}{0.80} = 12,500 \text{ BCY}$
 - b) $\text{Load (BCY)} = \text{Capacity (LCY)} \times \text{Load factor (L.F.)} = 20 \times 0.81 = 16.2 \text{ BCY/Load}$
 (L.F. of 0.81 from Tables)
- Number of loads required = $\frac{12,500 \text{ BCY}}{16.2 \text{ BCY/Load}} = 772 \text{ Loads}$



Soil Density Tests — There are a number of acceptable methods that can be used to determine soil density. Some that are currently in use are:

- Nuclear density moisture gauge
- Sand cone method
- Oil method
- Balloon method
- Cylinder method

All these except the nuclear method use the following procedure:

1. Remove a soil sample from bank state.
2. Determine the volume of the hole.
3. Weigh the soil sample.
4. Calculate the bank density kg/BCM (lb/BCY).

The nuclear density moisture gauge is one of the most modern instruments for measuring soil density and moisture. A common radiation channel emits either neutrons or gamma rays into the soil. In determining soil density, the number of gamma rays absorbed and back scattered by soil particles is *indirectly* proportional to the soil density. When measuring moisture content, the number of moderated neutrons reflected back to the detector after colliding with hydrogen particles in the soil is *directly* proportional to the soil's moisture content.

All these methods are satisfactory and will provide accurate densities when performed correctly. Several repetitions are necessary to obtain an average.

NOTE: Several newer methods have been successfully applied, along with weigh scales to determine volume and loose density of material moved in hauler bodies. These measurements include photogrammatic and laser scanning technologies.

- Load Weighing
- Time Studies
- Example (English)

FIGURING PRODUCTION ON-THE-JOB

Load Weighing — The most accurate method of determining the actual load carried is by weighing. This is normally done by weighing the haul unit one wheel or axle at a time with portable scales. Any scales of adequate capacity and accuracy can be used. While weighing, the machine should be level to reduce error caused by weight transfer. Enough loads should be weighed to provide a good average. Machine weight is the sum of the individual wheel or axle weights.

The weight of the load can be determined using the empty and loaded weight of the unit.

Weight of

$$\text{load} = \text{gross machine weight} - \text{empty weight}$$

To determine the bank cubic measure carried by a machine, the load weight is divided by the bank-state density of the material being hauled.

$$\text{BCY} = \frac{\text{Weight of load}}{\text{Bank density}}$$

Times Studies — To estimate production, the number of complete trips a unit makes per hour must be determined. First obtain the unit's cycle time with the help of a stop watch. Time several complete cycles to arrive at an average cycle time. By allowing the watch to run continuously, different segments such as load time, wait time, etc. can be recorded for each cycle. Knowing the individual time segments affords a good opportunity to evaluate the balance of the spread and job efficiency. The following is an example of a scraper load time study form. Numbers in the white columns are stop watch readings; numbers in the shaded columns are calculated:

Total Cycle Times (less delays)	Arrive Cut	Wait Time	Begin Load	Load Time	End Load	Begin Delay	Delay Time	End Delay
	0.00	0.30	0.30	0.60	0.90			
3.50	3.50	0.30	3.80	0.65	4.45			
4.00	7.50	0.35	7.85	0.70	8.55	9.95	1.00	10.95
4.00	12.50	0.42	12.92	0.68	13.60			

NOTE: All numbers are in minutes

This may be easily extended to include other segments of the cycle such as haul time, dump time, etc. Haul roads may be further segmented to more accurately define performance, including measured speed traps. Similar forms can be made for pushers, loaders, dozers, etc. *Wait Time* is the time a unit must wait for another unit so that the two can function together (haul unit waiting for pusher). *Delay*

Time is any time, other than wait time, when a machine is not performing in the work cycle (scraper waiting to cross railroad track).

To determine trips-per-hour at 100% efficiency, divide 60 minutes by the average cycle time less all wait and delay time. Cycle time may or may not include wait and/or delay time. Therefore, it is possible to figure different kinds of production: measured production, production without wait or delay, maximum production, etc. For example:

Actual Production: includes all wait and delay time.

Normal Production (without delays): includes wait time that is considered normal, but no delay time.

Maximum Production: to figure maximum (or optimum) production, both wait time and delay time are eliminated. The cycle time may be further altered by using an optimum load time.

Example (English)

A job study of a Wheel Tractor-Scraper might yield the following information:

- Average wait time = 0.28 minute
- Average load time = 0.65
- Average delay time = 0.25
- Average haul time = 4.26
- Average dump time = 0.50
- Average return time = 2.09
- Average total cycle = 8.03 minutes
- Less wait & delay time = 0.53
- Average cycle 100% eff. = 7.50 minutes

Weight of haul unit empty — 48,650 lb

Weights of haul unit loaded —

Weighing unit #1 — 93,420 lb

Weighing unit #2 — 89,770 lb

Weighing unit #3 — 88,760 lb

271,950 lb;

average = 90,650 lb

1. Average load weight = 90,650 lb - 48,650 lb = 42,000 lb
2. Bank density = 3125 lb/BCY
3. Load = $\frac{\text{Weight of load}}{\text{Bank density}}$

$$= \frac{42,000 \text{ lb}}{3125 \text{ lb/BCY}} = 13.4 \text{ BCY}$$
4. Cycles/hr = $\frac{60 \text{ min/hr}}{\text{Cycle time}} = \frac{60 \text{ min/hr}}{7.50 \text{ min/cycle}} = 80 \text{ cycles/hr}$
5. Production = Load/cycle × cycles/hr
 (less delays) = 13.4 BCY/cycle × 8.0 cycles/hr
 = 107.2 BCY/hr

Example (Metric)

A job study of a Wheel Tractor-Scraper might yield the following information:

- Average wait time = 0.28 minute
- Average load time = 0.65
- Average delay time = 0.25
- Average haul time = 4.26
- Average dump time = 0.50
- Average return time = 2.09
- Average total cycle = 8.03 minutes
- Less wait & delay time = 0.53
- Average cycle 100% eff. = 7.50 minutes

Weight of haul unit empty — 22 070 kg

Weights of haul unit loaded —

- Weighing unit #1 — 42 375 kg
- Weighing unit #2 — 40 720 kg
- Weighing unit #3 — 40 260 kg

$$\begin{array}{r} 123\ 355\ \text{kg;} \\ \text{average} = 41\ 120\ \text{kg} \end{array}$$

1. Average load weight = 41 120 kg – 22 070 kg = 19 050 kg
2. Bank density = 1854 kg/BCM
3. Load = $\frac{\text{Weight of load}}{\text{Bank density}}$
 $= \frac{19\ 050\ \text{kg}}{1854\ \text{kg/BCM}} = 10.3\ \text{BCM}$
4. Cycles/hr = $\frac{60\ \text{min/hr}}{\text{Cycle time}} = \frac{60\ \text{min/hr}}{7.50\ \text{min/cycle}} = 80\ \text{cycles/hr}$
5. Production = Load/cycle × cycles/hr
 (less delays) = 10.3 BCM/cycle × 8.0 cycles/hr
 = 82 BCM/hr



NOTE: The Caterpillar Cycle Timer Program software uses laptop computers in place of stop-watches, organizes the data, and allows study results to be printed.

ESTIMATING PRODUCTION OFF-THE-JOB

It is often necessary to estimate production of earthmoving machines which will be selected for a job. As a guide, the remainder of the section is devoted to discussions of various factors that may affect production. Some of the figures have been rounded for easier calculation.

Rolling Resistance (RR) is a measure of the force that must be overcome to roll or pull a wheel over the ground. It is affected by ground conditions and load — the deeper a wheel sinks into the ground, the higher the rolling resistance. Internal friction and tire flexing also contribute to rolling resistance. Experience has shown that minimum resistance is 1%-1.5% (see Typical Rolling Resistance Factors in Tables section) of the gross machine weight (on tires). A 2% base resistance is quite often used for estimating. Resistance due to tire penetration is approximately 1.5% of the gross machine weight for each inch of tire penetration (0.6% for each cm of tire penetration). Thus rolling resistance can be calculated using these relationships in the following manner:

$$\begin{array}{l} \text{RR} = 2\% \text{ of GMW} + 0.6\% \text{ of GMW per cm tire} \\ \text{penetration} \\ \text{RR} = 2\% \text{ of GMW} + 1.5\% \text{ of GMW per inch tire} \\ \text{penetration} \end{array}$$

It's *not* necessary for the tires to actually penetrate the road surface for rolling resistance to increase above the minimum. If the road surface flexes under load, the effect is nearly the same — the tire is always running “uphill”. Only on very hard, smooth surfaces with a well compacted base will the rolling resistance approach the minimum.

When actual penetration takes place, some variation in rolling resistance can be noted with various inflation pressures and tread patterns.

NOTE: When figuring “pull” requirements for track-type tractors, rolling resistance applies only to the trailed unit's *weight on wheels*. Since tracktype tractors utilize steel wheels moving on steel “roads”, a tractor's rolling resistance is relatively constant and is accounted for in the Drawbar Pull rating.

- Grade Resistance
- Total Resistance
- Traction

Grade Resistance is a measure of the force that must be overcome to move a machine over unfavorable grades (uphill). Grade assistance is a measure of the force that assists machine movement on favorable grades (downhill).

Grades are generally measured in percent slope, which is the ratio between vertical rise or fall and the horizontal distance in which the rise or fall occurs. For example, a 1% grade is equivalent to a 1 m (ft) rise or fall for every 100 m (ft) of horizontal distance; a rise of 4.6 m (15 ft) in 53.3 m (175 ft) equals an 8.6% grade.

$$\frac{4.6 \text{ m (rise)}}{53.3 \text{ m (horizontal distance)}} = 8.6\% \text{ grade}$$

$$\frac{15 \text{ ft (rise)}}{175 \text{ ft (horizontal distance)}} = 8.6\% \text{ grade}$$

Uphill grades are normally referred to as adverse grades and downhill grades as favorable grades. Grade resistance is usually expressed as a positive (+) percentage and grade assistance is expressed as a negative (-) percentage.

It has been found that for each 1% increment of adverse grade an additional 10 kg (20 lb) of resistance must be overcome for each metric (U.S.) ton of machine weight. This relationship is the basis for determining the Grade Resistance Factor which is expressed in kg/metric ton (lb/U.S. ton):

$$\text{Grade Resistance Factor} = 10 \text{ kg/m ton} \times \% \text{ grade}$$

$$= 20 \text{ lb/U.S. ton} \times \% \text{ grade}$$

Grade resistance (assistance) is then obtained by multiplying the Grade Resistance Factor by the machine weight (GMW) in metric (U.S.) tons.

$$\text{Grade Resistance} = \text{GR Factor} \times \text{GMW in metric (U.S.) tons}$$

Grade resistance may also be calculated using percentage of gross weight. This method is based on the relationship that grade resistance is approximately equal to 1% of the gross machine weight for 1% of grade.

$$\text{Grade Resistance} = 1\% \text{ of GMW} \times \% \text{ grade}$$

Grade resistance (assistance) affects both wheel and track-type machines.

Total Resistance is the combined effect of rolling resistance (wheel vehicles) and grade resistance. It can be computed by summing the values of rolling resistance and grade resistance to give a resistance in kilogram (pounds) force.

$$\text{Total Resistance} = \text{Rolling Resistance} + \text{Grade Resistance}$$

Total resistance can also be represented as consisting completely of grade resistance expressed in percent grade. In other words, the rolling resistance component is viewed as a corresponding quantity of additional adverse grade resistance. Using this approach, total resistance can then be considered in terms of percent grade.

This can be done by converting the contribution of rolling resistance into a corresponding percentage of grade resistance. Since 1% of adverse grade offers a resistance of 10 kg (20 lb) for each metric or (U.S.) ton of machine weight, then each 10 kg (20 lb) of resistance per ton of machine weight can be represented as an additional 1% of adverse grade. Rolling resistance in percent grade and grade resistance in percent grade can then be summed to give Total Resistance in percent or Effective Grade. The following formulas are useful in arriving at Effective Grade.

$$\text{Rolling Resistance (\%)} = 2\% + 0.6\% \text{ per cm tire penetration}$$

$$= 2\% + 1.5\% \text{ per inch tire penetration}$$

$$\text{Grade Resistance (\%)} = \% \text{ grade}$$

$$\text{Effective Grade (\%)} = \text{RR (\%)} + \text{GR (\%)}$$

Effective grade is a useful concept when working with Rimpull-Speed-Gradeability curves, Retarder curves, Brake Performance curves, and Travel Time curves.

Traction — is the driving force developed by a wheel or track as it acts upon a surface. It is expressed as usable Drawbar Pull or Rimpull. The following factors affect traction: weight on the driving wheel or tracks, gripping action of the wheel or track, and ground conditions. The coefficient of traction (for any roadway) is the ratio of the maximum pull developed by the machine to the total weight on the drivers.

$$\text{Coeff. of traction} = \frac{\text{Pull}}{\text{weight on drivers}}$$

Therefore, to find the usable pull for a given machine:

$$\text{Usable pull} = \text{Coeff. of traction} \times \text{weight on drivers}$$

Example: Track-Type Tractor

What usable drawbar pull (DBP) can a 26 800 kg (59,100 lb) Track-type Tractor exert while working on firm earth? on loose earth? (See table section for coefficient of traction.)

Answer:
 Firm earth — Usable DBP =
 $0.90 \times 26\,800\text{ kg} = 24\,120\text{ kg}$
 $(0.90 \times 59,100\text{ lb} = 53,190\text{ lb})$

Loose earth — Usable DBP =
 $0.60 \times 26\,800\text{ kg} = 16\,080\text{ kg}$
 $(0.60 \times 59,100\text{ lb} = 35,460\text{ lb})$

If a load required 21 800 kg (48,000 lb) pull to move it, this tractor could move the load on firm earth. However, if the earth were loose, the tracks would spin.

NOTE: D8R through D11R Tractors may attain higher coefficients of traction due to their suspended undercarriage.

Example: Wheel Tractor-Scraper

What usable rimpull can a 621F size machine exert while working on firm earth? on loose earth? The total loaded weight distribution of this unit is:

Drive unit	Scraper unit
wheels: 23 600 kg	wheels: 21 800 kg
(52,000 lb)	(48,000 lb)

Remember, use weight on drivers only.

Answer:
 Firm earth — $0.55 \times 23\,600\text{ kg} = 12\,980\text{ kg}$
 $(0.55 \times 52,000\text{ lb} = 28,600\text{ lb})$
 Loose earth — $0.45 \times 23\,600\text{ kg} = 10\,620\text{ kg}$
 $(0.45 \times 52,000\text{ lb} = 23,400\text{ lb})$

On firm earth this unit can exert up to 12 980 kg (28,600 lb) rimpull without excessive slipping. However, on loose earth the drivers would slip if more than 10 620 kg (23,400 lb) rimpull were developed.



Altitude — Specification sheets show how much pull a machine can produce for a given gear and speed when the engine is operating at rated horsepower. When a standard machine is operated in high altitudes, the engine may require derating to maintain normal engine life. This engine derating will produce less drawbar pull or rimpull.

The Tables Section gives the altitude derating in percent of flywheel horsepower for current machines. It should be noted that some turbocharged engines can operate up to 4570 m (15,000 ft) before they require derating. Most machines are engineered to operate up to 1500-2290 m (5000-7500 ft) before they require derating.

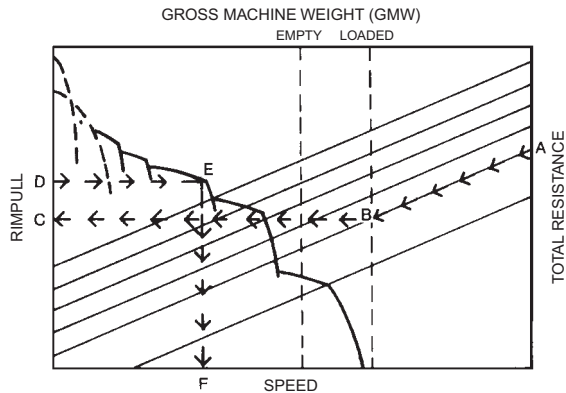
The horsepower derating due to altitude must be considered in any job estimating. The amount of

power deration will be reflected in the machine's gradeability and in the load, travel, and dump and load times (unless loading is independent of the machine itself). Altitude may also reduce retarding performance. Consult a Caterpillar representative to determine if derating is applicable. Fuel grade (heat content) can have a similar effect of derating engine performance.

The example job problem that follows indicates one method of accounting for altitude derating: by increasing the appropriate components of the total cycle time by a percentage equal to the percent of horsepower derating due to altitude. (i.e., if the travel time of a hauling unit is determined to be 1.00 minute at full HP, the time for the same machine derated to 90% of full HP will be 1.10 min.) This is an approximate method that yields reasonably accurate estimates up to 3000 m (10,000 feet) elevation.

Travel time for hauling units derated more than 10% should be calculated as follows using Rimpull-Speed-Gradeability charts.

- 1) Determine total resistance (grade plus rolling) in percent.



- 2) Beginning at point A on the chart follow the total resistance line diagonally to its intersection, B, with the vertical line corresponding to the appropriate gross machine weight. (Rated loaded and empty GMW lines are shown dotted.)

- 3) Using a straight-edge, establish a horizontal line to the left from point B to point C on the rimpull scale.

- 4) Divide the value of point C as read on the rimpull scale by the percent of total horsepower available after altitude derating from the Tables Section. This yields rimpull value D higher than point C.

Mining and Earthmoving

Estimating Production Off-the-Job

- Job Efficiency
- Example Problem (English)

5) Establish a horizontal line right from point D. The farthest right intersection of this line with a curved speed range line is point E.

6) A vertical line down from point E determines point F on the speed scale.

7) Multiply speed in kmh by 16.7 (mph by 88) to obtain speed in m/min (ft/min). Travel time in minutes for a given distance in feet is determined by the formula:

$$\text{Time (min)} = \frac{\text{Distance in m (ft)}}{\text{Speed in m/min (ft/min)}}$$

The *Travel Time Graphs* in sections on Wheel Tractor-Scrapers and Construction & Mining Trucks can be used as an alternative method of calculating haul and/or return times.

The following example provides a method to manually estimate production and cost. Today, computer programs, such as Caterpillar's Fleet Production and Cost Analysis (FPC), provide a much faster and more accurate means to obtain those application results.

Example problem (English)

A contractor is planning to put the following spread on a dam job. What is the estimated production and cost/BCY?

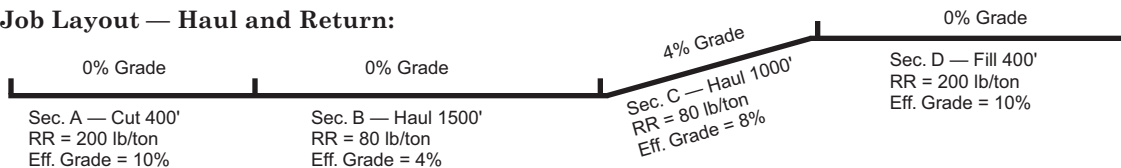
Equipment:

- 11 — 631G Wheel Tractor-Scrapers
- 2 — D9T Tractors with C-dozer
- 2 — 12H Motor Graders
- 1 — 825G Tamping Foot Compactor

Material:

- Description — Sandy clay; damp, natural bed
- Bank Density — 3000 lb/BCY
- Load Factor — 0.80
- Shrinkage Factor — 0.85
- Traction Factor — 0.50
- Altitude — 7500 ft

Job Layout — Haul and Return:



Total Effective Grade = RR (%) ± GR (%)

Sec. A: Total Effective Grade = 10% + 0% = 10%

Sec. B: Total Effective Grade = 4% + 0% = 4%

Sec. C: Total Effective Grade = 4% + 4% = 8%

Sec. D: Total Effective Grade = 10% + 0% = 10%

Job Efficiency is one of the most complex elements of estimating production since it is influenced by factors such as operator skill, minor repairs and adjustments, personnel delays, and delays caused by job layout. An approximation of efficiency, if no job data is available, is given below.

Operation	Working Hour	Efficiency Factor
Day	50 min/hr	0.83
Night	45 min/hr	0.75

These factors do not account for delays due to weather or machine downtime for maintenance and repairs. You must account for such factors based on experience and local conditions.

1. Estimate Payload:

Est. load (LCY) × L.F. × Bank Density = payload
 31 LCY × 0.80 × 3000 lb/BCY = 74,400 lb payload

2. Establish Machine Weight:

Empty Wt. — 102,460 lb or 51.27 tons
 Wt. of Load — 74,400 lb or 37.2 tons
 Total (GMW) — 176,860 lb or 88.4 tons

3. Calculate Usable Pull (traction limitation):

Loaded: (weight on driving wheels = 54%) (GMW)

Traction Factor × Wt. on driving wheels =
 0.50 × 176,860 lb × 54% = 47,628 lb

Empty: (weight on driving wheels = 69%) (GMW)

Traction Factor × Wt. on driving wheels =
 0.50 × 102,460 lb × 69% = 35,394 lb

4. Derate for Altitude:

Check power available at 7500 ft from altitude deration table in the Tables Section.

631G — 100% 12H — 83%
 D9T — 100% 825G — 100%

Then adjust if necessary:

Load Time — controlled by D9T, at 100% power, no change.

Travel, Maneuver and Spread time — 631G, no change.

5. Compare Total Resistance to Tractive Effort on haul:

Grade Resistance —

$$GR = \text{lb/ton} \times \text{tons} \times \text{adverse grade in percent}$$

$$\text{Sec. C:} = 20 \text{ lb/ton} \times 88.4 \text{ tons} \times 4\% \text{ grade} = 7072 \text{ lb}$$

Rolling Resistance —

$$RR = \text{RR Factor (lb/ton)} \times \text{GMW (tons)}$$

$$\text{Sec. A:} = 200 \text{ lb/ton} \times 88.4 \text{ tons} = 17,686 \text{ lb}$$

$$\text{Sec. B:} = 80 \text{ lb/ton} \times 88.4 \text{ tons} = 7072 \text{ lb}$$

$$\text{Sec. C:} = 80 \text{ lb/ton} \times 88.4 \text{ tons} = 14,144 \text{ lb}$$

$$\text{Sec. D:} = 200 \text{ lb/ton} \times 88.4 \text{ tons} = 17,686 \text{ lb}$$

Total Resistance —

$$TR = RR + GR$$

$$\text{Sec. A:} = 17,686 \text{ lb} + 0 = 17,686 \text{ lb}$$

$$\text{Sec. B:} = 7072 \text{ lb} + 0 = 7072 \text{ lb}$$

$$\text{Sec. C:} = 7072 \text{ lb} + 6496 \text{ lb} = 14,144 \text{ lb}$$

$$\text{Sec. D:} = 17,686 \text{ lb} + 0 = 17,686 \text{ lb}$$

Check usable pounds pull against maximum pounds pull required to move the 631G.

Pull usable ... 47,628 lb loaded

Pull required ... 17,686 lb maximum total resistance

Estimate travel time for haul from 631G (loaded) travel time curve; read travel time from distance and effective grade.

Travel time (from curves):

$$\text{Sec. A: } 0.60 \text{ min}$$

$$\text{Sec. B: } 1.00$$

$$\text{Sec. C: } 1.20$$

$$\text{Sec. D: } 0.60$$

$$\underline{\hspace{1.5cm}} \\ 3.40 \text{ min}$$

NOTE: This is an estimate only; it *does not account for all the acceleration and deceleration time*, therefore it is not as accurate as the information obtained from a computer program.

6. Compare Total Resistance to Tractive Effort on return:

Grade Assistance —

$$GA = 20 \text{ lb/ton} \times \text{tons} \times \text{negative grade in percent}$$

$$\text{Sec. C:} = 20 \text{ lb/ton} \times 51.2 \text{ tons} \times 4\% \text{ grade} = 4096 \text{ lb}$$

Rolling Resistance —

$$RR = \text{RR Factor} \times \text{Empty Wt (tons)}$$

$$\text{Sec. D:} = 200 \text{ lb/ton} \times 51.2 \text{ tons} = 10,240 \text{ lb}$$

$$\text{Sec. C:} = 80 \text{ lb/ton} \times 51.2 \text{ tons} = 4091 \text{ lb}$$

$$\text{Sec. B:} = 80 \text{ lb/ton} \times 51.2 \text{ tons} = 4091 \text{ lb}$$

$$\text{Sec. A:} = 200 \text{ lb/ton} \times 51.2 \text{ tons} = 10,240 \text{ lb}$$

Total Resistance —

$$TR = RR - GA$$

$$\text{Sec. D:} = 10,240 \text{ lb} - 0 = 10,240 \text{ lb}$$

$$\text{Sec. C:} = 4096 \text{ lb} - 4096 \text{ lb} = 0$$

$$\text{Sec. B:} = 4096 \text{ lb} - 0 = 4096 \text{ lb}$$

$$\text{Sec. A:} = 10,240 \text{ lb} - 0 = 10,240 \text{ lb}$$

Check usable pounds pull against maximum pounds pull required to move the 631G.

Pounds pull usable ... 35,349 lb empty

Pounds pull required ... 10,240 lb

Estimate travel time for return from 631G empty travel time curve.

Travel time (from curves):

$$\text{Sec. D: } 0.40 \text{ min}$$

$$\text{Sec. C: } 0.55$$

$$\text{Sec. B: } 0.80$$

$$\text{Sec. A: } 0.40$$

$$\underline{\hspace{1.5cm}} \\ 2.15 \text{ min}$$

7. Estimate Cycle Time:

$$\text{Total Travel Time (Haul plus Return)} = 5.55 \text{ min}$$

$$\text{Adjusted for altitude: } 100\% \times 5.55 \text{ min} = 5.55 \text{ min}$$

$$\text{Load Time} \hspace{10em} 0.7 \text{ min}$$

$$\text{Maneuver and Spread Time} \hspace{8em} 0.7 \text{ min}$$

$$\text{Total Cycle Time} \hspace{10em} \underline{6.95 \text{ min}}$$

8. Check pusher-scraper combinations:

Pusher cycle time consists of load, boost, return and maneuver time. Where actual job data is not available, the following may be used.

$$\text{Boost time} = 0.10 \text{ minute}$$

$$\text{Return time} = 40\% \text{ of load time}$$

$$\text{Maneuver time} = 0.15 \text{ minute}$$

$$\text{Pusher cycle time} = 140\% \text{ of load time} + 0.25 \text{ minute}$$

$$\text{Pusher cycle time} = 140\% \text{ of } 0.7 \text{ min} + 0.25 \text{ minute}$$

$$= 0.98 + 0.25 = 1.23 \text{ minute}$$

Scraper cycle time divided by pusher cycle time indicates the number of scrapers which can be handled by each pusher.

$$\frac{6.95 \text{ min}}{1.23 \text{ min}} = 5.65$$

Mining and Earthmoving

Estimating Production Off-the-Job

- Example Problem (English)
- Example Problem (Metric)

Each push tractor is capable of handling five plus scrapers. Therefore the two pushers can adequately serve the eleven scrapers.

9. Estimate Production:

$$\begin{aligned} \text{Cycles/hour} &= 60 \text{ min} \div \text{Total cycle time} \\ &= 60 \text{ min/hr} \div 6.95 \text{ min/cycle} \\ &= 8.6 \text{ cycles/hr} \end{aligned}$$

$$\begin{aligned} \text{Estimated load} &= \text{Heaped capacity} \times \text{L.F.} \\ &= 31 \text{ LCY} \times 0.80 \\ &= 24.8 \text{ BCY} \end{aligned}$$

$$\begin{aligned} \text{Hourly unit production} &= \text{Est. load} \times \text{cycles/hr} \\ &= 24.8 \text{ BCY} \times 8.6 \text{ cycles/hr} \\ &= 213 \text{ BCY/hr} \end{aligned}$$

$$\begin{aligned} \text{Adjusted production} &= \text{Efficiency factor} \times \text{hourly production} \\ &= 0.83 \text{ (50 min hour)} \times 213 \text{ BCY} \\ &= 177 \text{ BCY/hr} \end{aligned}$$

$$\begin{aligned} \text{Hourly fleet production} &= \text{Unit production} \times \text{No. of units} \\ &= 177 \text{ BCY/hr} \times 11 \\ &= 1947 \text{ BCY/hr} \end{aligned}$$

10. Estimate Compaction:

$$\begin{aligned} \text{Compaction requirement} &= \text{S.F.} \times \text{hourly fleet production} \\ &= 0.85 \times 1947 \text{ BCY/hr} \\ &= 1655 \text{ CCY/hr} \end{aligned}$$

Compaction capability (given the following):

$$\begin{array}{ll} \text{Compacting width, 7.4 ft} & \text{(W)} \\ \text{Average compacting speed, 6 mph} & \text{(S)} \\ \text{Compacted lift thickness, 7 in} & \text{(L)} \\ \text{No. of passes required, 3} & \text{(P)} \end{array}$$

$$\begin{aligned} \text{825G production} &= \\ \text{CCY/hr} &= \frac{W \times S \times L \times 16.3}{P} \quad \text{(conversion constant)} \\ &= \frac{7.4 \times 6 \times 7 \times 16.3}{3} \\ &= 1688 \text{ CCY/hr} \end{aligned}$$

Given the compaction requirement of 1655 CCY/hr, the 825G is an adequate compactor match-up for the rest of the fleet. However, any change to job layout that would increase fleet production would upset this balance.

11. Estimate Total Hourly Cost:

631G	@ \$65.00/hr × 11 units	\$715.00
D9T	@ 75.00/hr × 2 units	150.00
12H	@ 15.00/hr × 2 units	30.00
825G	@ 40.00/hr × 1 unit	40.00
Operators	@ 20.00/hr × 16 men	320.00

Total Hourly Owning and Operating Cost \$1,255.00

12. Calculate Performance:

$$\begin{aligned} \text{Cost per BCY} &= \frac{\text{Total cost/hr}}{\text{Production/hr}} \\ &= \frac{\$1,255.00}{1947 \text{ BCY/hr}} \\ &= 64¢ \text{ BCY} \end{aligned}$$

NOTE: Ton-MPH calculations should be made to judge the ability of the tractor-scraper tires to operate safely under these conditions.

13. Other Considerations:

If other equipment such as rippers, water wagons, discs or other miscellaneous machines are needed for the particular operation, then these machines must also be included in the cost per BCY.



Example problem (Metric)

A contractor is planning to put the following spread on a dam job. What is the estimated production and cost/BCM?

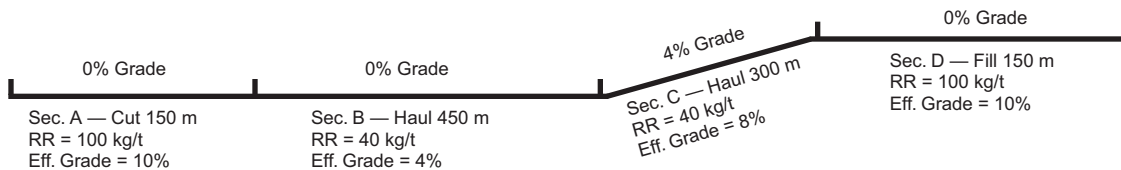
Equipment:

- 11 — 631G Wheel Tractor-Scrapers
- 2 — D9T Tractors with C-dozers
- 2 — 12H Motor Graders
- 1 — 825G Tamping Foot Compactor

Material:

- Description — Sandy clay; damp, natural bed
- Bank Density — 1770 kg/BCM
- Load Factor — 0.80
- Shrinkage Factor — 0.85
- Traction Factor — 0.50
- Altitude — 2300 meters

Job Layout — Haul and Return:



Total Effective Grade = RR (%) ± GR (%)

Sec. A: Total Effective Grade = 10% + 0% = 10%

Sec. B: Total Effective Grade = 4% + 0% = 4%

Sec. C: Total Effective Grade = 4% + 4% = 8%

Sec. D: Total Effective Grade = 10% + 0% = 10%

1. Estimate Payload:

Est. load (LCM) × L.F. × Bank Density = payload
 24 LCM × 0.80 × 1770 kg/BCM = 34 000 kg payload

2. Machine Weight:

Empty Wt. — 46 475 kg or 46.48 metric tons
 Wt. of Load — 34 000 kg or 34 metric tons
 Total (GMW) — 80 475 kg or 80.48 metric tons

3. Calculate Usable Pull (traction limitation):

Loaded: (weight on driving wheels = 54%) (GMW)

Traction Factor × Wt. on driving wheels =
 0.50 × 80 475 kg × 54% = 21 728 kg

Empty: (weight on driving wheels = 69%) (GMW)

Traction Factor × Wt. on driving wheels =
 0.50 × 46 475 kg × 69% = 16 034 kg

4. Derate for Altitude:

Check power available at 2300 m from altitude deration table in the Tables Section.

631G — 100% 12H — 83%
 D9T — 100% 825G — 100%

Then adjust if necessary:

Load Time — controlled by D9T, at 100% power, no change.

Travel, Maneuver and Spread time — 631G, no change.

5. Compare Total Resistance to Tractive Effort on haul:

Grade Resistance —

GR = 10 kg/metric ton × tons × adverse grade in percent

Sec. C: = 10 kg/metric ton × 80.48 metric tons × 4% grade = 3219 kg

Rolling Resistance —

RR = RR Factor (kg/mton) × GMW (metric tons)

Sec. A: = 100 kg/metric ton × 80.48 metric tons = 8048 kg

Sec. B: = 40 kg/metric ton × 80.48 metric tons = 3219 kg

Sec. C: = 40 kg/metric ton × 80.48 metric tons = 3219 kg

Sec. D: = 100 kg/metric ton × 80.48 metric tons = 8048 kg

Total Resistance —

TR = RR + GR

Sec. A: = 8048 kg + 0 = 8048 kg

Sec. B: = 3219 kg + 0 = 3219 kg

Sec. C: = 3219 kg + 3219 kg = 6438 kg

Sec. D: = 8048 kg + 0 = 8048 kg

Check usable kilogram force against maximum kilogram force required to move the 631G.

Force usable ... 21 728 kg loaded

Force required ... 8048 kg maximum total resistance

Estimate travel time for haul from 631G (loaded) travel time curve; read travel time from distance and effective grade.

Travel time (from curves):

Sec. A: 0.60 min

Sec. B: 1.00

Sec. C: 1.20

Sec. D: 0.60

3.40 min

NOTE: This is an estimate only; it does not account for all the acceleration and deceleration time, therefore it is not as accurate as the information obtained from a computer program.

6. Compare Total Resistance to Tractive Effort on return:

Grade Assistance —

GA = 10 kg/mton × metric tons × negative grade in percent

Sec. C: = 10 kg/metric ton × 46.48 metric tons × 4% grade = 1859 kg

Rolling Resistance —

RR = RR Factor × Empty Wt.

Sec. D: = 100 kg/metric ton × 46.48 metric tons
 = 4648 kg

Sec. C: = 40 kg/metric ton × 46.48 metric tons
 = 1859 kg

Sec. B: = 40 kg/metric ton × 46.48 metric tons
 = 1859 kg

Sec. A: = 100 kg/metric ton × 46.48 metric tons
 = 4648 kg

Total Resistance —

TR = RR + GA

Sec. D: = 4648 kg + 0 = 4648 kg

Sec. C: = 1859 kg + 0 = 1859 kg

Sec. B: = 1859 kg + 0 = 1859 kg

Sec. A: = 4648 kg + 0 = 4648 kg

Check usable kilogram force against maximum force required to move the 631G.

Kilogram force usable ... 16 034 kg empty

Kilogram force required ... 4645 kg

Estimate travel time for return from 631G empty travel time curve.

Travel time (from curves):

Sec. D: 0.40 min

Sec. C: 0.55

Sec. B: 0.80

Sec. A: 0.40

2.15 min

7. Estimate Cycle Time:

Total Travel Time (Haul plus Return) = 5.55 min

Adjusted for altitude: 100% × 5.55 min = 5.55 min

Load Time 0.7 min

Maneuver and Spread Time 0.7 min

Total Cycle Time 6.95 min

8. Check pusher-scraper combinations:

Pusher cycle time consists of load, boost, return and maneuver time. Where actual job data is not available, the following may be used.

Boost time = 0.10 minute

Return time = 40% of load time

Maneuver time = 0.15 minute

Pusher cycle time = 140% of load time + 0.25 minute

Pusher cycle time = 140% of 0.7 min + 0.25 minute
 = 0.98 + 0.25 = 1.23 minute

Scraper cycle time divided by pusher cycle time indicates the number of scrapers which can be handled by each pusher.

$$\frac{6.95 \text{ min}}{1.23 \text{ min}} = 5.65$$

Each push tractor is capable of handling five plus scrapers. Therefore the two pushers can adequately serve the eleven scrapers.

9. Estimate Production:

Cycles/hour = 60 min ÷ Total cycle time
 = 60 min/hr ÷ 6.95 min/cycle
 = 8.6 cycles/hr

Estimated load = Heaped capacity × L.F.
 = 24 LCM × 0.80
 = 19.2 BCM

Hourly unit production = Est. load × cycles/hr
 = 19.2 BCM × 8.6 cycles/hr
 = 165 BCM

Adjusted production = Efficiency factor × hourly production
 = 0.83 (50 min hour) × 165 BCM
 = 137 BCM/hour

Hourly fleet production = Unit production × No. of units
 = 137 BCM/hr × 11 units
 = 1507 BCM/hr

10. Estimate Compaction:

Compaction requirement = S.F. × hourly fleet production
 = 0.85 × 1507 BCM/hr
 = 1280 CCM/hr

Compaction capability (given the following):

Compacting width, 2.26 m (W)

Average compacting speed, 9.6 km/h (S)

Compacted lift thickness, 18 cm (L)

No. of passes required, 3 (P)

825G production =

$$\text{CCM/hr} = \frac{W \times S \times L \times 10}{P} \text{ (conversion factor)}$$

$$= \frac{2.26 \times 9.6 \times 18 \times 10}{3}$$

$$= 1302$$

Given the compaction requirement of 1280 CCM/h, the 825G is an adequate compactor match-up for the rest of the fleet. However, any change to job layout that would increase fleet production would upset this balance.

Estimating Production Off-the-Job
 • Example Problem (Metric)
 Systems
 • Economic Haul Distances

Mining and Earthmoving

11. Estimate Total Hourly Cost:

631G	@ \$65.00/hr × 11 units	\$715.00
D9T	@ 75.00/hr × 2 units	150.00
12H	@ 15.00/hr × 2 units	30.00
825G	@ 40.00/hr × 1 unit	40.00
Operators	@ 20.00/hr × 16 men	320.00
		\$1,255.00

Total Hourly Owning and Operating Cost \$1,255.00

12. Calculate Performance:

$$\begin{aligned} \text{Cost per BCM} &= \frac{\text{Total cost/hr}}{\text{Production/hr}} \\ &= \frac{\$1,255.00}{1507 \text{ BCM/hr}} \\ &= 83¢/\text{BCM} \end{aligned}$$

NOTE: Ton-km/h calculations should be made to judge the ability of the tractor-scraper tires to operate safely under these conditions.

13. Other Considerations:

If other equipment such as rippers, water wagons, discs or other miscellaneous machines are needed for the particular operation, then these machines must also be included in the cost per BCM.

SOFTWARE NOTE: The Caterpillar DOZSIM program can provide a valuable tool for production dozing applications. Motor Grader Calculator can be used to determine the number of graders required to maintain haul roads, given a set of site parameters.

SYSTEMS

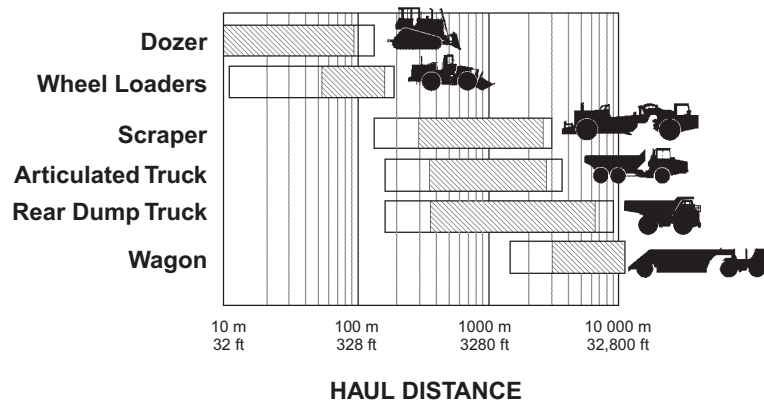
Caterpillar offers a variety of machines for different applications and jobs. Many of these separate machines function together in mining and earthmoving systems.

- Bulldozing with track-type tractors
- Load-and-Carry with wheel loaders
- Scrapers self-loading with elevator, auger, or push-pull configurations, or push-loaded by track-type tractors
- Articulated trucks loaded by excavators, track loaders or wheel loaders
- Off-highway trucks loaded by shovels, excavators or wheel loaders

Economic Haul Distances — Mobile equipment systems for construction or mining jobs operate in generalized economic application zones. These zones vary by machine with distance, underfoot conditions, grades, material type, production rate and operator skill. Of these factors, distance provides the best initial basis for system selection. The following table provides general rules of thumb for systems application based on distance. These haul ranges will vary by application.



GENERAL HAUL DISTANCES FOR MOBILE SYSTEMS



PRODUCTION ESTIMATING

Loading Match — Loading tools have a production range that varies with material, bucket configuration, target size, operator skill and load area conditions. The loader/truck matches given in the following table are with the typical number of passes and production range.

Your Cat Dealer can provide advice and estimates based on your specific conditions.

FUEL CONSUMPTION AND PRODUCTIVITY

Fuel efficiency is the term used to relate fuel consumption and machine productivity. It is expressed in units of material moved per volume of fuel consumed. Common units are cubic meters or tonnes per liter of fuel (cubic yards or tons/gal). Determining fuel efficiency requires measuring both fuel consumption and production.

Measuring fuel consumption involves tapping into the vehicle’s fuel supply system — without contaminating the fuel. The amount of fuel consumed during operation is then measured on a weight or volumetric basis and correlated with the amount of work the machine has done. Caterpillar machines equipped with Vital Information Management System (VIMS) can record fuel consumed with relative accuracy, given the engine is performing close to specifications.

**Caterpillar Earthmoving and Mining Systems
 Production/50 Min. Hr.**

Tonnes	Tons	Loading Tool	Passes	Target
2270/2450	2500/2700	994D HL	7	793C
2450/2700	2700/3000	994D	5	789C
2270/2450	2500/2700	994D HL	6	789C
2450/2700	2700/3000	994D	4	785C
1450/1600	1600/1800	992G	6	785C
1540/1720	1700/1900	992G	4	777D
1180/1360	1300/1500	990	3	773D
800/1000	880/1100	988G	3	769D
730/910	800/1000	988F	3	769D
2720/2900	3000/3200	5230 ME	7	793C
2540/2720	2800/3000	5230 FS	8	793C
2630/2810	2900/3100	5230 ME	6	789C
2450/2630	2700/2900	5230 FS	6	789C
2540/2720	2800/3000	5230 ME	5	785C
2360/2540	2600/2800	5230 FS	5	785C
1900/2100	2100/2300	5130B ME	7	785C
1700/1900	1700/2100	5130B FS	7	785C
1800/2000	2000/2200	5130B ME	5	777D
1540/1810	1700/2000	5130B FS	5	777D
910/1090	1000/1200	375 ME	7	773D
730/820	800/1000	5080 FS	7	773D
730/910	800/1000	375 ME	5	769D
630/820	700/900	5080 FS	5	769D

**Caterpillar Aggregate Systems
 Production/50 Min. Hr.**

Tonnes	Tons	Loading Tool	Passes	Target
1540/1720	1700/1900	992G	4	777D
1450/1630	1600/1800	992G	3	775D
1090/1270	1200/1400	990	4	775D
910/1180	1000/1300	990	3	773D
700/900	770/990	988G	5	773D
630/900	700/900	988F HL	5	773D
800/1000	880/1100	988G	4	771D
730/910	800/1000	988F	4	771D
540/730	600/800	980F HL	6	771D
700/900	770/990	988G	3	769D
630/820	700/900	988F	3	769D
450/630	500/700	980F HL	5	769D
1500/1800	1700/2000	5130B FS	5	777D
1270/1450	1400/1600	5130B FS	4	775D
1180/1360	1300/1500	5130B FS	3	773D
630/900	700/900	5080 FS	7	773D
730/910	800/1000	5080 FS	5	771D
630/820	700/900	5080 FS	4	769D

FORMULAS AND RULES OF THUMB

$$\begin{aligned} \text{Production, hourly} &= \text{Load (BCM)/cycle} \times \text{cycles/hr} \\ &= \text{Load (BCY)/cycle} \times \text{cycles/hr} \end{aligned}$$

$$\text{Load Factor (L.F.)} = \frac{100\%}{100\% + \% \text{ swell}}$$

$$\begin{aligned} \text{Load (bank measure)} &= \text{Loose cubic meters (LCM)} \times \text{L.F.} \\ &= \text{Loose cubic yards (LCY)} \times \text{L.F.} \end{aligned}$$

$$\text{Shrinkage Factor (S.F.)} = \frac{\text{Compacted cubic meters (or yards)}}{\text{Bank cubic meters (or yards)}}$$

$$\text{Density} = \text{Weight/Unit Volume}$$

$$\text{Load (bank measure)} = \frac{\text{Weight of load}}{\text{Bank density}}$$

$$\begin{aligned} \text{Rolling Resistance Factor} &= 20 \text{ kg/t} + (6 \text{ kg/t/cm} \times \text{cm}) \\ &= 40 \text{ lb/ton} + (30 \text{ lb/ton/inch} \times \text{inches}) \end{aligned}$$

$$\begin{aligned} \text{Rolling Resistance} &= \text{RR Factor (kg/t)} \times \text{GMW (tons)} \\ &= \text{RR Factor (lb/ton)} \times \text{GMW (tons)} \end{aligned}$$

$$\begin{aligned} \text{Rolling Resistance (general estimation)} &= 2\% \text{ of GMW} + 0.6\% \text{ of GMW per cm tire penetration} \\ &= 2\% \text{ of GMW} + 1.5\% \text{ of GMW per inch tire penetration} \end{aligned}$$

$$\% \text{ Grade} = \frac{\text{vertical change in elevation (rise)}}{\text{corresponding horizontal distance (run)}}$$

$$\begin{aligned} \text{Grade Resistance Factor} &= 10 \text{ kg/m ton} \times \% \text{ grade} \\ &= 20 \text{ lb/ton} \times \% \text{ grade} \end{aligned}$$

$$\begin{aligned} \text{Grade Resistance} &= \text{GR Factor (kg/t)} \times \text{GMW (tons)} \\ &= \text{GR Factor (lb/ton)} \times \text{GMW (tons)} \end{aligned}$$

$$\text{Grade Resistance} = 1\% \text{ of GMW} \times \% \text{ grade}$$

$$\begin{aligned} \text{Total Resistance} &= \text{Rolling Resistance (kg or lb)} + \text{Grade Resistance (kg or lb)} \end{aligned}$$

$$\text{Total Effective Grade (\%)} = \text{RR (\%)} + \text{GR (\%)}$$

$$\begin{aligned} \text{Usable pull (traction limitation)} &= \text{Coeff. of traction} \times \text{weight on drivers} \\ &= \text{Coeff. of traction} \times (\text{Total weight} \times \% \text{ on drivers}) \end{aligned}$$

$$\begin{aligned} \text{Pull required} &= \text{Rolling Resistance} + \text{Grade Resistance} \\ &= \text{Total Resistance} \end{aligned}$$

$$\text{Total Cycle Time} = \text{Fixed time} + \text{Variable time}$$

Fixed time: See respective machine production section.

$$\text{Variable time} = \text{Total haul time} + \text{Total return time}$$

$$\begin{aligned} \text{Travel Time} &= \frac{\text{Distance (m)}}{\text{Speed (m/min)}} \\ &= \frac{\text{Distance (ft)}}{\text{Speed (fpm)}} \end{aligned}$$

$$\text{Cycles per hour} = \frac{60 \text{ min/hr}}{\text{Total cycle time (min/cycle)}}$$

$$\text{Adjusted production} = \text{Hourly production} \times \text{Efficiency factor}$$

$$\text{No. of units required} = \frac{\text{Hourly production required}}{\text{Unit hourly production}}$$

$$\text{No. of scrapers a pusher will load} = \frac{\text{Scraper cycle time}}{\text{Pusher cycle time}}$$

$$\text{Pusher cycle time (min)} = 1.40 \text{ Load time (min)} + 0.25 \text{ min}$$

$$\text{Grade Horsepower} = \frac{\text{GMW (kg)} \times \text{Total Effective Grade} \times \text{Speed (km/h)}}{273.75}$$

$$= \frac{\text{GMW (lb)} \times \text{Total Effective Grade} \times \text{Speed (mph)}}{375}$$

Notes —

STOCKPILE COAL HANDLING

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INTRODUCTION

Efficient methods have been developed for handling and storing coal with mobile equipment. Generally, a power plant or other industrial facility which uses coal, meets its daily requirements with incoming coal shipments and will maintain an emergency stockpile or deadpile. The deadpile is designed to meet the burn requirements during any interruption of coal shipments. Interruptions may include inclement weather, carrier strikes, scheduling problems, etc.

The deadpile will contain approximately a 90 day supply of coal and is constructed by thoroughly compacting lifts, or layers, of coal approximately 15 cm (6 in) thick. Thorough compaction of the entire stockpile, including the sides, eliminates air spaces, reducing the possibility of spontaneous combustion.

Reclaiming the deadpiled coal is critical when incoming shipments are not able to satisfy the burn requirements. Four basic types of mobile equipment are available for stockpiling and reclaiming coal — track-type tractors, wheel tractors, wheel loaders, and wheel tractor-scrappers. Each type has its own specific advantages. The equipment selected must be able to meet the maximum hourly burn rate.

MACHINE SELECTION

Track-Type Tractors

Track-type tractors continue to be the most widely used machines for coal handling operations. Equipped with a U-shaped coal dozer, they are suitable for meeting high production requirements over dozing distances of less than 152 m (500 ft). Their

tractive capabilities and gradeability permit them to operate on the sides of the stockpile and surge pile which often prove inaccessible to other types of equipment. They can also remove snow and frost penetrated coal from the stockpile surface so that rubber-tired equipment can work efficiently.

Wheel Tractors

These machines, with their long wheel base, low center of gravity, and articulated design, offer good stability and maneuverability. They have the ability to travel at a higher speed than the track-type tractor, moving easily from one area of operation to another, and provide greater compactive effort with fewer passes. They are capable of performing some utility functions. However, their coefficient of traction is less than that of track-type tractors. The most efficient dozing distance for the wheel tractor is usually less than 152 m (500 ft).

Coal scoops are also available for wheel tractors and may improve production under certain operating conditions.

Wheel Loaders

As dozing and hauling distances increase, wheel loaders are able to effectively move coal in load-and-carry operations. Since coal is a relatively light material, the loaders should be equipped with larger buckets sized for coal density. Versatility and mobility allow them to perform a variety of tasks, both on and off the stockpile. They can load trucks or railcars, dig out bottom ash and boiler slag from the ash storage areas, and move railcars within the vicinity of the power plant. Generally wheel loaders are more efficient than track or wheel tractors at distances of 122 m (400 ft) or more.

Coal Scrapers

Tandem powered coal scrapers are generally used when large volumes and long haul distances [over 152 m (500 ft)] are involved. They are able to effectively self-load coal, and have the advantage of being able to provide both high speed and large capacity; in addition, scrapers provide the greatest compactive effort. Coal scrapers are even more effective when top loading systems and drive-over reclaiming hoppers are used.

HOW TO EQUIP

Counterweighting

While larger blades or buckets allow for greater production, counterweighting is often necessary to improve the machine's balance and handling capability. For track-type tractors, a rear counterweight is recommended. Wheel machines use various methods to add weight. For example, scoop dozers use front counterweights, and wheel machines often use tire ballast. Below is a weight comparison of the Caterpillar standard U-blade to the Coal Dozer, along with the recommended counterweight for D11R, D10T, D9T, D8T, and 834H.

**COAL STOCKPILE BLADE WEIGHT COMPARISON/
COUNTERWEIGHTING**

Model	U-Blade		Coal Dozer/ Scoop		Counterweight	
	kg	lb	kg	lb	kg	lb
D11R	11 608	25,590	11 340	25,000	4989	11,000
D10T	6188	13,643	6440	14,200	2928	6456
D9T	4179	9214	4490	9900	3142	6926
D8T	2825	6228	3200	7050	2749	6060
834H	2994	6600	3630	8000	75% CaCl ₂ in all tires —	
*834H with Scoop			8700	19,180	5360	11,816

Weights include blade or scoop only. The change in machine weight is determined by adding or subtracting the difference between the two blades. Counterweight or ballast may also need to be considered.

Track Shoe Width

Track shoes are an important consideration since shoe width determines tractive capability and compaction. Depending on the coal being stockpiled, the utility company will often have a strong preference concerning track shoe width. Basically, utilities stockpiling low rank or sub-bituminous rank lignite coal usually prefer the standard shoe width for maximum compactive effort to reduce the possibility of spontaneous combustion.

Utilities burning medium or high rank bituminous coals are not as concerned with spontaneous combustion and sometimes prefer a wider shoe that allows increased tractive capability on loose or less densely compacted coal stockpiles.

Tires

Many utility companies have established a tire preference for wheel machines. Normally a radial tire allows for the maximum tire print in the stockpile surface providing the best traction.

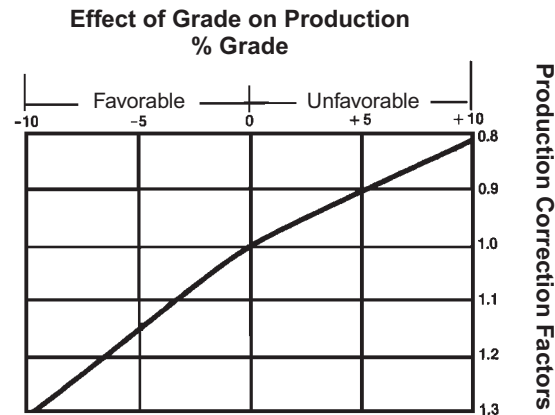
Tire pressure may be of equal importance to tire selection. Tests with hydro-inflated (liquid ballasting) tires indicate that inflation pressure of approximately 275 kPa (40 psi) improves machine performance over higher inflation pressure. Lower than 275 kPa (40 psi) is not recommended for hydro-inflated tires. (For more hydro-inflation information see the Tire section.)

Other

The 834H's performance may be improved in the varying underfoot conditions of a coal stockpile with the use of a Detroit NoSPIN differential. This differential provides added tractive capability on all coal piles, particularly loose coal.

PRODUCTION FACTORS

1. *The effect of grade* — dozer production will increase 3% for each 1% of favorable grade and decrease 2% for each 1% of adverse grade up to grades of 10%. The graph below exemplifies this point.



As a rule of thumb, track-type tractors can negotiate grades of about 60% in loose coal. Wheel tractor dozers can negotiate grades up to 25% on fairly well compacted coal.

2. *Slot dozing*, which consists of dozing repeatedly in the same tracks, will increase production. The deeper the slot, the greater the increase in production. Obviously this will disrupt the surface of the pile; however it does provide maximum production.

Slot Condition	Slot Depth	Increase in Production
Slight	60 cm ~ 2 ft	10%
Consistent	60 cm-1.5 m ~ 2-5 ft	25%
Very Consistent	Over 1.5 m ~ Over 5 ft	30% +

3. *Relative traction* — machines will provide greater-tractive effort as the compaction beneath them increases.

Condition	Machine	Coefficient of Traction
Well Compacted Coal	Track-type	*0.75-0.80
	Wheel	0.40-0.50
Loose Coal	Track-type	*0.60
	Wheel	0.30-0.40

*D11R, D10T, D9T and D8T will often achieve a higher coefficient of traction due to their suspended undercarriage.

4. *Rolling Resistance* of rubber tired equipment will decrease as the compaction of the coal beneath the machines increases. Here are total rolling resistances on various surfaces.

	kg/Metric Ton	lb/U.S. Ton
● Main travel area from loading area to stockpile traveled and maintained.	29	65
● Travel over the compacted deadpile.	36	80
● Travel over thin lifts of uncompacted coal on the deadpile.	54	120
● Travel on loose piles under stacking conveyor or on a windrow.	90-136	200-300

5. *The degree of compaction required* — for medium and high rank bituminous coal, track-type tractors will normally provide ample compaction to prevent fires. For low rank coals, such as sub-bituminous and lignite, rubber tired machines, pneumatic compactors or sealing may be required to prevent fires. The following table illustrates the compaction that is possible if the coal is spread in thin lifts and the machine makes a sufficient number of passes over the entire lift surface.

Machine	kg/m ³	lb/ft ³	lb/yd ³
Track-type Tractors	960-1160	60-72	1620-1950
Wheel Tractors	1040-1200	65-75	1750-2030
Wheel Loaders	1040-1250	65-78	1750-2110
Wheel Tractor-Scrapers	1100-1280	68-80	1840-2160

ESTIMATING HOURLY PRODUCTION

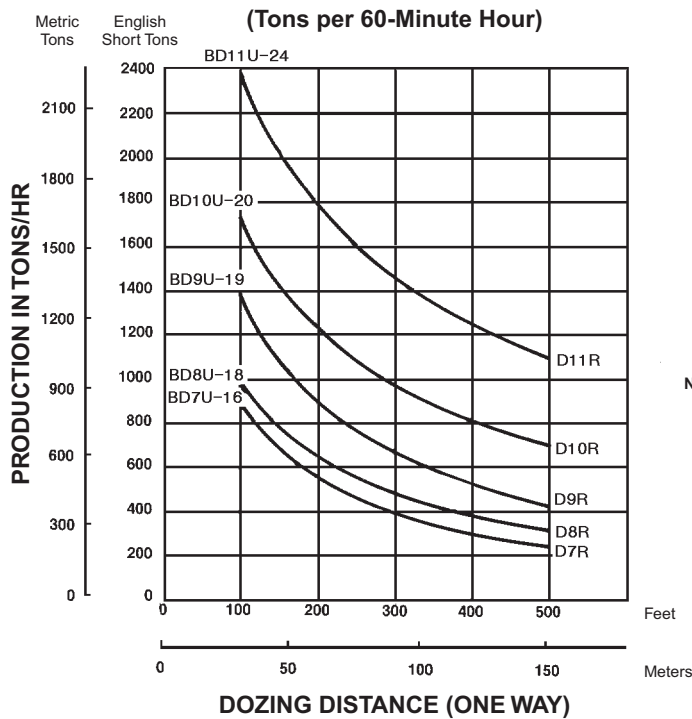
The following graphs may be used for estimating the hourly production of machines handling mixed bituminous coal. The graphs are based on 100% machine efficiency under normal job conditions and average operator; they do not take into account adverse grades, downtime, wait time, poor traction, etc. These production estimates should be evaluated in light of individual job conditions and efficiency. Moreover, a job efficiency correction factor should be applied to the production estimate shown when using these graphs.

To estimate travel times for a specific machine refer to the performance graphs or charts in the appropriate model section of this book.

NOTE: Capacities and production curves on the next pages are based on bituminous coal with a density of 890 kg/m³ or 1500 lb/yd³ or 55 lb/ft³. For sub-bituminous coal with a density of 800 kg/m³ or 1350 lb/yd³ or 50 lb/ft³ multiply tonnage figure by 0.90. For lignite with an average density of 710 kg/m³ or 1200 lb/yd³ or 45 lb/ft³ multiply tonnage figure by 0.80.

Track-Type Tractors Estimated Production with U-Blade (Coal Dozer)

- Factors:**
- Mixed Bituminous Coal
 - Storage and Reclamation
 - 0% Grade
 - 0.80 Coefficient of Traction



NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Tractor	U-Blade			Blade Capacities			
	Model	m	ft	Metric tons	U.S. tons	m ³	yd ³
D11R	BD11U-24	7.32	24'	66.7	73.5	74.9	98.0
D10T	BD10U-20	6.10	20'	40.85	45.0	45.9	60.0
D9T	BD9U-19	5.79	19'	32.6	35.9	37.0	48.0
D8T	BD8U-18	5.49	18'	19.0	21.0	21.4	28.0
D7R	BD7U-16	4.88	16'	14.28	15.75	16.05	21.0
D6R	BD6U	4.27	14'	8.84	9.75	9.9	13.0

Refer to Track-Type Tractor/Bulldozer section for additional special attachment specifications.

Estimated Hourly Production
● Wheel Tractors

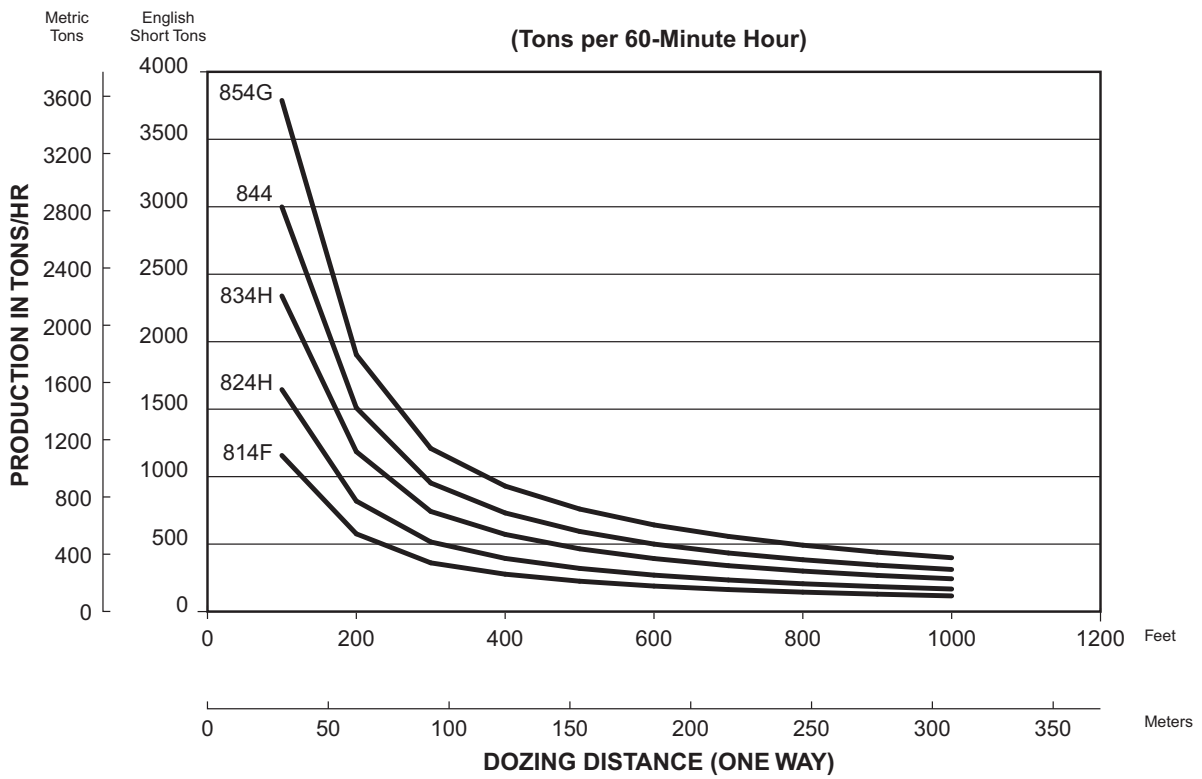
Stockpile Coal Handling

Wheel Tractors Estimated Production
with U-Blade (Coal Dozer)

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Factors:

- Mixed Bituminous Coal
- Storage and Reclamation
- 0% Grade
- 0.80 Coefficient of Traction



Tractor	U-Blade			Blade Capacities			
	Model	m	ft	Metric tons	U.S. tons	m ³	yd ³
854G*							
844*							
834H	BD834U-20	6.17	20'3"	18.8	20.8	22.0	29
824H	BD824U-15	4.79	15'9"	14.2	15.7	16.1	21
814F	BD814U-14	4.32	14'2"	9.4	10.3	11.0	14

*Information unavailable at time of printing.

NOTE: Blade capacities in tons figured using weight of coal at 890 kg/m³ (1500 lb/yd³).

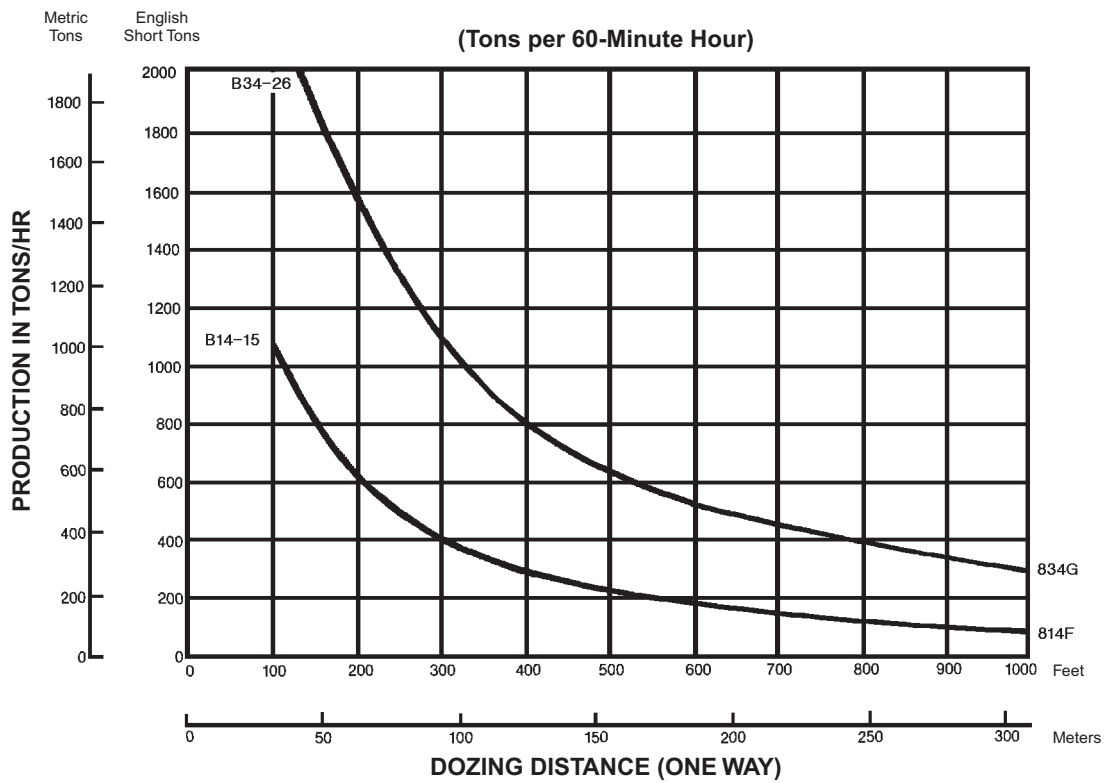
Refer to Track-Type Tractor/Bulldozer section for additional special attachment specifications.

Stockpile Coal Handling

Estimated Hourly Production ● Wheel Tractors

Wheel Tractors Estimated Production with Coal Scoop

- Factors:**
- Mixed Bituminous Coal
 - Storage and Reclamation
 - 0% Grade
 - 0.80 Coefficient of Traction



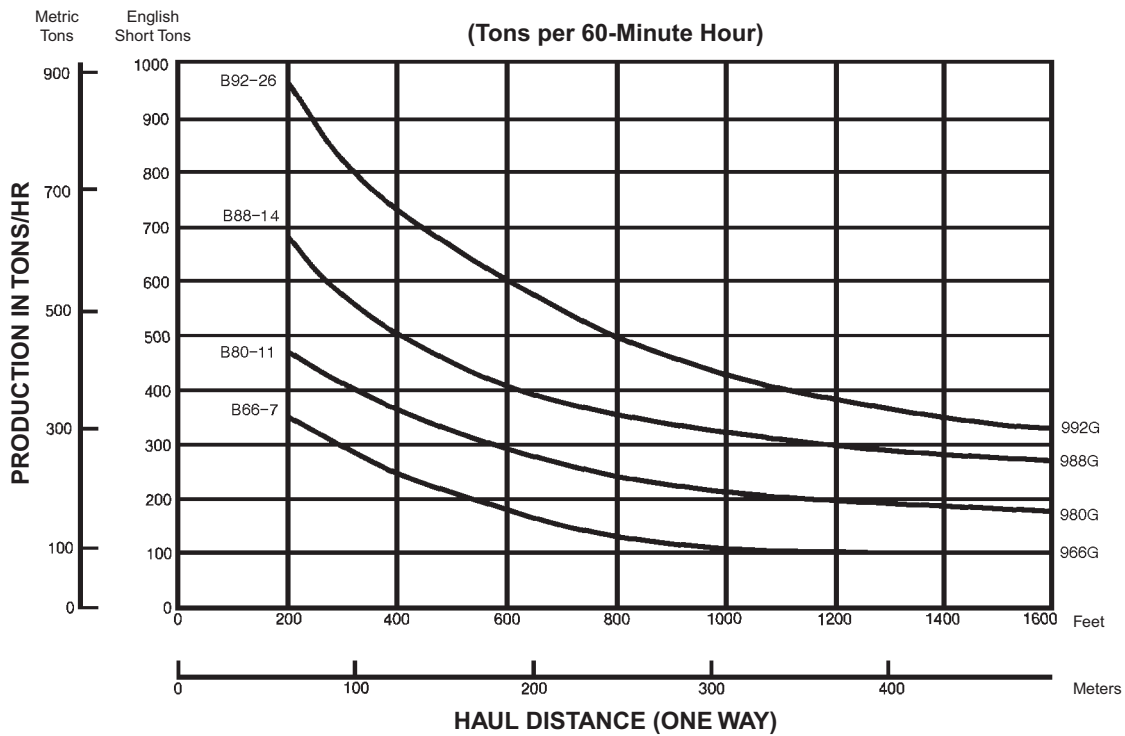
Tractor	Coal Scoop		Scoop Capacities (Lift and Carry)				Doze Capacities				
	Model	m	ft	Metric tons	U.S. tons	m ³	yd ³	Metric tons	U.S. tons	m ³	yd ³
834H	B34-26	5.3	17'4"	18.3	20.2	19.9	26	37.5	41.25	37.5	49
814F	B14-15	3.7	12'3"	8.2	9.0	11.5	15	16.3	18.0	19.1	25

Refer to Track-Type Tractor/Bulldozer section for additional special attachment specifications.

Wheel Loaders Estimated Production
with Coal Bucket

Factors:

- Mixed Bituminous Coal
- Storage and Reclamation
- 0% Grade
- 0.80 Coefficient of Traction

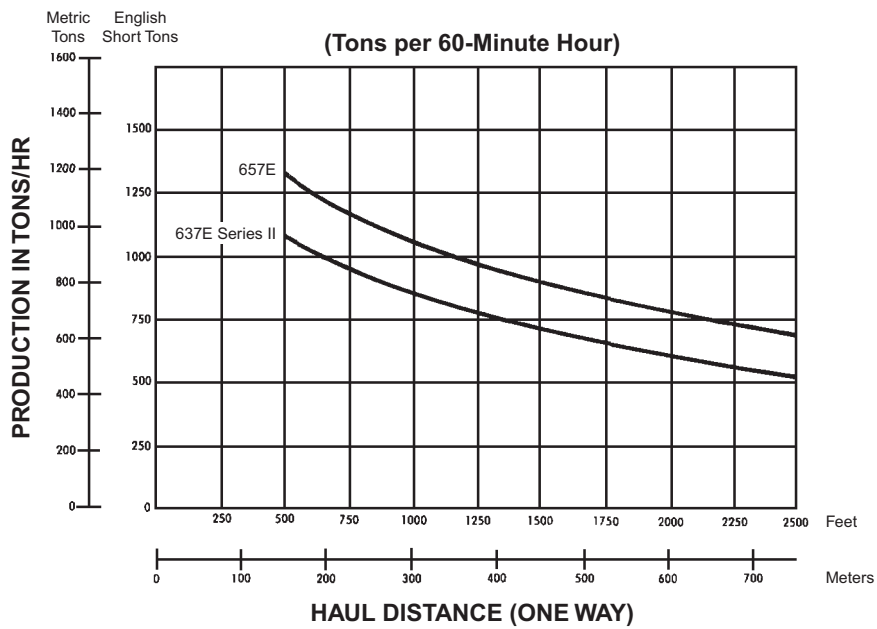


Loader	Coal Bucket	Bucket Capacities			
	Model	Metric tons	U.S. tons	m ³	yd ³
992G	B92-25	17.0	18.8	19.3	25.25
988G	B88-14	9.4	10.4	10.3	13.50
980G	B80-11	7.3	8.1	8.2	10.75
966G	B66-7	4.8	5.3	5.5	7.25

NOTE: Bucket capacities include bottom cutting edge in tons figured using weight of coal at 890 kg/m³ (1500 lb/yd³).

Wheel Tractor-Scrapers Estimated Production

- Factors:**
- Mixed Bituminous Coal
 - Storage and Reclamation
 - 0% Grade
 - 0.50 Coefficient of Traction



Coal Scraper	Bowl Capacities									
	Metric tons	U.S. tons	Struck		1:1		2:1		3:1	
			m ³	yd ³	m ³	yd ³	m ³	yd ³	m ³	yd ³
657E	49.9	55	45	59	56	73	50	65	47	62
637E Series II	34.5	38	31	41	38	50	34	45	37	44

Average fixed time to load, maneuver and dump:
 657E — 1.12 min.
 637E Series II — 1.10 min.

NOTE:

- The 657E Coal Scraper is 1049 mm (41.3") longer and bowl sides and apron are 1080 mm (42.5") higher than its earthmoving counterpart.
- The 637E Series II Coal Scraper is 762 mm (30") longer and bowl sides, apron and ejector are 915 mm (36") higher than its earthmoving counterpart.
- The rimpull, travel times, and retarder performance for the coal scrapers are the same as for the standard machines. See Wheel Tractor-Scrapers section for charts and graphs.

Example Problem

A coal-fired utility company has a coal requirement of approximately 315 metric tons (350 tons) per hour. Specify the coal handling machine that will satisfy this demand.

Conditions:

- Lignite Coal 710 kg/m³ (1200 lb/yd³)
- 90 m (300 ft) push distance
- 5% adverse grade
- 50 minute hour operation efficiency

Solution:

Calculate the D9T's production equipped with the BD9U-19 Coal U-Blade by using the D9T production curve. Start at 90 m (300 ft) and read up to the D9T production line, then over to the left to determine its maximum hourly production of 612 metric tons (675 tons).

Since the graphs are based on a 890 kg/m³ (1500 lb/yd³) coal density, this production figure has to be adjusted to reflect lignite coal:

Coal density correction factor = $710/890$ ($1200/1500$) = 0.8.

Obtain the production correction factor for the 5% adverse grade from the chart: 0.9.

The correction factor for the 50 minute hour is $50/60 = 0.83$.

Now calculate the adjusted D9T hourly production using the correction factors:

$$\begin{aligned} \text{Metric} & 612 \times .8 \times .9 \times .83 = 366 \text{ tons/hour} \\ \text{English} & 675 \times .8 \times .9 \times .83 = 403 \text{ tons/hour} \end{aligned}$$

The D9T falls in the required production range. For short periods of peak power capacity, production could be increased by slot dozing.

Production for the D10T, 824G and 834H can be calculated using the same method.

D10T

$$\begin{aligned} \text{Metric} & 850 \times .8 \times .9 \times .83 = 508 \text{ tons/hour} \\ \text{English} & 935 \times .8 \times .9 \times .83 = 559 \text{ tons/hour} \end{aligned}$$

824G

$$\begin{aligned} \text{Metric} & 400 \times .8 \times .9 \times .83 = 239 \text{ tons/hour} \\ \text{English} & 440 \times .8 \times .9 \times .83 = 263 \text{ tons/hour} \end{aligned}$$

834H

$$\begin{aligned} \text{Metric} & 689 \times .8 \times .9 \times .83 = 412 \text{ tons/hour} \\ \text{English} & 760 \times .8 \times .9 \times .83 = 454 \text{ tons/hour} \end{aligned}$$

Therefore, the D9T or 834H could most economically satisfy the production requirements.

Notes —

LAND CLEARING

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Land clearing must be treated more as an art than a science because production rates and methods vary greatly from one area to another. This section deals with the many variables in clearing and includes methods, equipment and procedures to determine productivity rates.

VARIABLES AFFECTING CLEARING OPERATIONS

Vegetative Growth — Factors affecting production and therefore cost, include the number of trees, size of trees, wood density, root systems, vines and undergrowth. These factors can be estimated by a “tree-count” as discussed under “Job Survey.”

End Use of Land — Since different end uses require different degrees of clearing (i.e. highways, dams, tree crops, row crops, etc.), this is one of the most important factors to consider in choosing the proper clearing method and equipment.

Soil Conditions or Bearing Capacity — Factors affecting clearing operations include topsoil depth, soil type, moisture content, and the presence of rocks and stones.

Topography — Grade and terrain factors such as steep slopes, ditches, swampy areas, boulders and even ant hills greatly affect the normal operation of some equipment.

Rainfall and Climate — Usually all phases of land clearing from cutting to burning are concerned to some degree with temperature changes and the amount of rainfall during the clearing operation.

Job Specifications — Specifications dictate the degree of clearing to be done, area size, completion dates, method of debris disposal, soil conservation and other factors which affect method and equipment selection.

JOB SURVEYS

Knowledge of rainfall and climate, end use of the land, and job specifications can be obtained from records, surveys, engineering studies, and written specifications. You should personally review the land to be cleared to gain other necessary and valuable information.

The survey should include a study of general topography and soil conditions. Note such problem factors as hills, rocks, or swamps which would significantly affect production or which would require special treatment.

Cruise the area to be cleared and determine the acreage of each vegetative type (i.e. upland woods, low timberlands, swamps). Make at least three tree counts at random for each vegetation type. To conduct these counts, randomly locate two points 100 meters (328 feet) apart. Count and measure vegetative growth along a straight line between these points for a width of about 5 meters (16 feet) on both sides. This gives the population of 1/10 hectare (1/4 acre).

1. Density of vegetation less than 30 cm (12 in) diameter
 - Dense — 1480 trees/hectare or more (600 trees/acre)
 - Medium — 990-1480 trees/hectare (400-600 trees/acre)
 - Light — less than 990 trees/hectare (400 trees/acre)
2. Presence of hardwoods expressed in percent
3. Presence of heavy vines
4. Average number of trees per hectare (2.47 acres) in each of the following ground level diameter size ranges:
 - Less than 30 cm (1 ft)
 - 31 cm-60 cm (1-2 ft)
 - 61 cm-90 cm (2-3 ft)
 - 91 cm-120 cm (3-4 ft)
 - 121 cm-180 cm (4-6 ft)
5. Sum of diameter of all trees per hectare (2.47 acres) above 180 cm (6 ft) in diameter at ground level.

CLEARING METHODS AND EQUIPMENT

Methods for Initial Felling — There are several methods indicating the degree of clearing for initial felling and several types of equipment for use with each method. Equipment use in different size vegetation and different size areas is summarized in the table on the next page. This information should serve only as a rough guideline in selecting equipment. The economical land area for each type of equipment will vary with the capital cost of equipment and moving cost. It is also affected by whether there are alternate uses for equipment such as using tractors for other construction work or tillage.

Land Clearing Machines — Job size, severity of job such as tree size, and time limit to complete will influence machine selection. Some machines, such as the D6R, D7R and D8R are more suited for this type work than others, but imagination and resourcefulness can allow the use of other types of machines in specific applications. For example, loaders are used more today in raking and piling operations than ever before.

Operator Protection and Machine Guarding — Daily production has been estimated to increase 20% when cab guards are used. Cabs designed specifically for clearing are available from Rome and other auxiliary equipment manufacturers.

The radiator, engine, and underside of the tractor must be well protected. Perforated hoods, screens, crankcase guards and hydraulic cylinder guards are generally recommended.

Generally speaking, lower cost clearing can be done with larger tractors if the amount of clearing involved is sufficient to merit the initial investment in the bigger machine. Because most clearing work requires frequent direction changes, a power shift transmission should be standard equipment. The direct drive transmission tractor is recommended when the tractor is used principally in constant drawbar work such as chaining or pulling a disc harrow. In most applications, a winch should also be considered on one of every three tractors in a fleet.

EQUIPMENT SELECTION TABLE

	UPROOTING	CUTTING AT OR ABOVE GROUND LEVEL	KNOCKING TO THE GROUND	INCORPORATING INTO THE SOIL
LIGHT CLEARING — Vegetation up to 5 cm (2 in) diameter				
Small areas 4 hectares (10 acres)	Bulldozer blade	Wheel-mounted circular saws	Bulldozer blade	Moldboard plows, disc plows, disc harrows
Medium areas 40 hectares (100 acres)	Bulldozer blade	Heavy duty sickle mowers [up to 3.7 cm (1½ in) diameter] tractor-mounted circular saws, suspended rotary mowers	Bulldozer blade, rotary mowers; flail-type rotary cutters; rolling brush cutters	Moldboard plows; disc plows, disc harrows
Large areas 400 hectares (1000 acres)	Bulldozer blade, root rake, grubber, root plow, anchor chain drawn between two crawler tractors; rails	—	Rolling brush cutter; flail-type cutter; anchor chain drawn between two crawler tractors; rails	Undercutter with disc; moldboard plows; disc plows; disc harrows
INTERMEDIATE CLEARING — Vegetation 5 to 20 cm (2 to 8 in) diameter				
Small areas 4 hectares (10 acres)	Bulldozer blade	Wheel-mounted circular saws	Bulldozer blade	Heavy-duty disc plow; disc harrow
Medium areas 40 hectares (100 acres)	Bulldozer blade	Tractor-mounted circular saws, single scissor type tree shears	Bulldozer blade, rolling brush cutter [up to 12 cm (5 in) diameter], rotary mower [up to 10 cm (4 in) diameter]	Heavy-duty disc plow; disc harrow
Large areas 400 hectares (1000 acres)	Shearing blade, angling (tilted) bulldozer blade, rakes, anchor chain drawn between two crawler tractors, root plow	Shearing blade (angling or V-type)	Bulldozer blade, flail-type rotary cutter, anchor chain	Bulldozer blade with duty harrow
LARGE CLEARING — Vegetation 20 cm (8 in) diameter or larger				
Small areas 4 hectares (10 acres)	Bulldozer blade	—	Bulldozer blade	—
Medium areas 40 hectares (100 acres)	Shearing blade, angling (tilted), knockdown beam, rakes, tree stumper	Shearing blade (angling or V-type), tree shear [up to 70 cm (26 in) softwood; 35 cm (14 in) hardwood], shearing blade — power saw combination	Bulldozer blade	—
Large areas 400 hectares (1000 acres)	Shearing blade, angling (tilted), tree pusher, rakes, tree stumper, anchor chain with ball drawn between two crawler tractors	Shearing blade (angling or V-type), shearing blade — power saw combination	Anchor chain with ball drawn between two crawler tractors. [Use dozer blade for trees over 18 cm (7 in).]	—

NOTE: The most economical size area for each type of equipment will vary with the relative cost of capital equipment versus labor. It is also affected by whether there are alternate uses for equipment such as using tractors for tillage.

PRODUCTION ESTIMATING

GENERAL — CONSTANT SPEED OPERATIONS

Production is the hourly clearing rate usually expressed in hectares or acres.

For many land clearing operations, production is calculated by multiplying the tractor speed by the width of cut and converting to hectares or acres per hour.

Metric system:

The base formula is:

$$\frac{\text{Width of cut (meters)} \times \text{speed (km/h)}}{10} = \text{hectares/h}$$

When an efficiency of 82.5% is used, the formula becomes:

$$\frac{\text{Width of cut (m)} \times \text{speed (km/h)} \times .825}{10} = \text{hectares/h}$$

English measure:

$$\frac{\text{Width of cut (ft)} \times \text{speed (mph)}}{43,560 \text{ (ft}^2\text{)}} = \text{acres/hr}$$

The American Society of Agricultural Engineers formula for estimating hourly production of a constant speed operation is based on 82.5% efficiency. With this efficiency, the formula becomes:

$$\frac{\text{Width of cut (ft)} \times \text{speed (mph)} \times .825}{43,560 \text{ (ft}^2\text{)}} = \text{acres/hr}$$

Width of cut is the effective working width of the equipment and may not be the same as its rated width. Working width should be measured on the job but can be estimated when necessary.

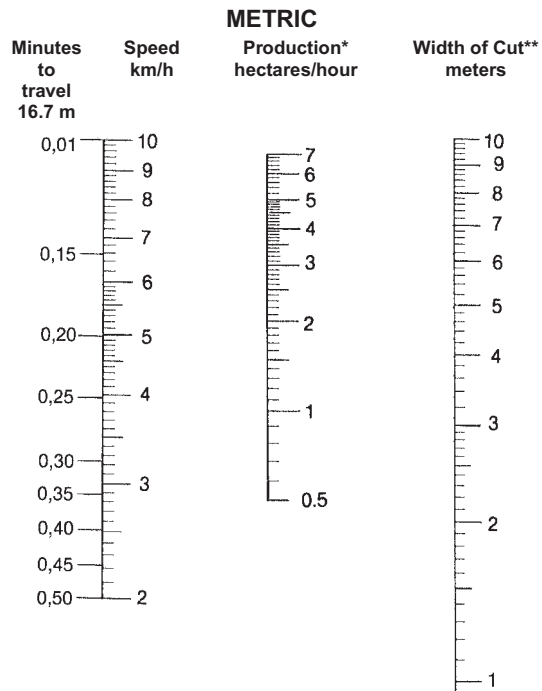
The actual machine speed can be determined by measuring the amount of time to travel a given distance. When using the metric system, the time to travel 16.7 meters or a multiple thereof, can be converted into kilometers per hour.

$$\frac{1.0}{\text{(Time in min. to travel 16.7 meters)}} = \text{speed (km/h)}$$

Since 88 ft/min. equals one mph, the lapsed time to travel 88 ft, or a multiple of 88 ft, can easily be converted into miles per hour.

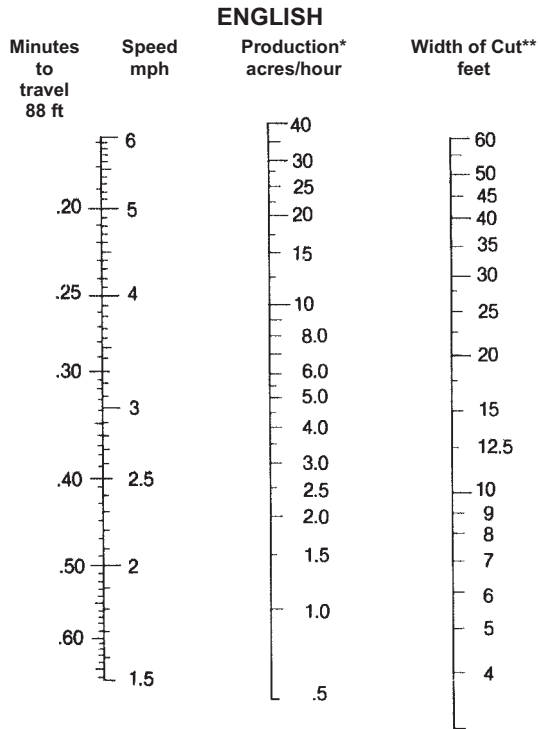
$$\frac{1.0}{\text{(Time in min. to travel 88 ft)}} = \text{speed (mph)}$$

The following nomographs in both the Metric and English systems convert speed and width of cut directly into acres or hectares per hour at 82.5% efficiency without the need for calculations.



*Based on 82.5% efficiency.

**When width of cut exceeds 10 meters, use a multiple of the width of cut and increase production proportionately.



*Based on 82.5% efficiency.
**When width of cut exceeds 60 feet, use a multiple of the width of cut and increase production proportionately.

CUTTING PRODUCTION ESTIMATING

Most land clearing operations such as bulldozing, cutting, grubbing, raking and piling are not performed at constant speed. Because off-the-job production is difficult to estimate for these operations, Rome Industries has developed formulas for estimating cutting and piling time. These formulas take into consideration variable prime mover speeds through a factor, "B", the base time for each tractor to cover one hectare (2.47 acres) of light material.

To estimate **tractor cutting time per hectare** (2.47 acres) on a specific land clearing job, apply the factors shown in the following table, together with data obtained from the job survey, in the formula:

$$T = X [A(B) + M_1N_1 + M_2N_2 + M_3N_3 + M_4N_4 + DF]$$

where

- T = Time per hectare (2.47 acres) in minutes
- X = Hardwood or density factor affecting total time

- A = Density or vine presence factor affecting base time
 - B = Base time for each tractor per hectare (2.47 acres)
 - M = Minutes per tree in each diameter range
 - N = Number of trees per hectare (2.47 acres) in each diameter range obtained from field survey
 - D = Sum of diameter in 30 cm (1 ft) increments of all trees per hectare (2.47 acres) above 180 cm (6 ft) in diameter at ground level obtained from field survey
 - F = Minutes per 30 cm (1 ft) of diameter for trees above 180 cm (6 ft) in diameter.
- Hardwoods affect over-all or total time as follows:
 75-100% hardwoods: Add 30% to total time (X = 1.3)
 25-75% hardwoods: No change (X = 1.0)
 0-25% hardwoods: Subtract 30% from total time (X = 0.7)

Production Factors for Felling with Rome K/G Blades

Tractor	Base Minutes per hectare (2.47 acres) "B"	Diameter Range				Dia. above 180 cm per 30 cm (6' per foot) "F"
		30-60 cm (1-2 ft) "M ₁ "	60-90 cm (2-3 ft) "M ₂ "	90-120 cm (3-4 ft) "M ₃ "	120-180 cm (4-6 ft) "M ₄ "	
165 hp	85	0.7	3.4	6.8	—	—
230 hp	58	0.5	1.7	3.3	10.2	3.3
305 hp	45	0.2	1.3	2.2	6.0	1.8
405 hp	39	0.1	0.4	1.3	3.0	1.0

Explanation of columns in table:

Tractor — Based on current model tractors (power shift when applicable) working on reasonably level terrain (below 10% grade) with good footing, no stones, average mixture of soft and hard woods. Tractor is in proper operating condition, blade is sharp, and properly adjusted.

Base Minutes — The base figures represent the number of minutes required for each tractor to cover a hectare (2.47 acres) of light material where no trees require splitting or other individual treatment. Time required is affected by the density of material less than 30 cm (1 ft) in diameter and the presence of vines.

- a. dense — 1480 trees/hectare (600 or more trees/acre): Add 100% to base time (A = 2.0)
- b. medium — 990-1480 trees/hectare (400-600 trees/acre): No change (A = 1.0)
- c. light — less than 990 trees/hectare (400 trees/acre): Subtract 30% from total time (A = 0.7)

- Cutting
- Piling

Presence of heavy vines: Add 100% to base time (A=2.0). Very heavy vines add 300% to base time. (A=3.0)

Dia. Range — M_1 represents minutes required to cut trees from 31-60 cm (1-2 ft) in diameter at ground level.

M_2 same for trees 61-90 cm (2-3 ft) diameter.

M_3 same for trees 91-120 cm (3-4 ft) diameter.

M_4 same for trees 121-180 cm (4-6 ft) diameter.

For *Dia. above 180 cm (6 ft)* — The figures in this column represent size the number of minutes required per 30 cm (1 ft) of diameter for each tractor to cut trees above 180 cm (6 ft) in diameter. Thus, to fell a 240 cm (8 ft) diameter tree would require 8×1.8 or approximately 14.4 minutes with a D8R.

Example problem:

Calculate the felling production of a D8R with K/G Blade in these conditions: reasonably level terrain, firm ground, well drained, 85% hardwoods with heavy vines and the following average tree count per hectare (2.47 acre):

Diameter Range	Less than 30 cm (1 ft) "B"	31-60 cm (1-2 ft) "N ₁ "	61-90 cm (2-3 ft) "N ₂ "	91-120 cm (3-4 ft) "N ₃ "	121-180 cm (4-6 ft) "N ₄ "	Sum Dia's Above 180 cm (6 ft) "D"
Number of Trees	1100	35	6	6	4	488 cm (16 ft)

Solution:

$$T = X [A(B)+M_1N_1+M_2N_2+M_3N_3+M_4N_4+DF]$$

$$T = 1.3 [2.0 (45)+0.2 (35)+1.3 (6)+2.2 (6)+6 (4)+16 (1.8)]$$

$$= 1.3 (90+7+7.8+13.2+24+28.8)$$

$$= 1.3 (170.8)$$

$$= 222 \text{ minutes/hectare (90 min/acre)}$$



Where the job requires grubbing trees and stumps greater than 30 cm (1 ft) in diameter at the same time the trees are sheared, use the same basic procedure as defined above including the variables for the presence of hardwoods. After time per hectare (acre) in minutes has been determined, increase the over-all or total time by 25%.

Where the job requires re-entering the area (after all trees have been sheared) to remove stumps with a tilted shearing blade or stump, increase the total time by 50%.

PILING PRODUCTION ESTIMATING

A procedure has also been developed for estimating piling production for a tractor equipped with a K/G blade or rake.

To estimate tractor hours per hectare (acre) on a specific land clearing job, apply the factors shown in the following table with data obtained from the job survey, in the formula:

$$T = B+M_1N_1+M_2N_2+M_3N_3+M_4N_4+DF$$

where

T = Time per hectare (2.47 acre) in minutes.

B = Base time for each tractor per hectare (2.47 acre).

M = Minutes per tree in each diameter range.

N = Number of trees per hectare (2.47 acre) in each diameter range obtained from field cruise.

D = Sum of diameter in 30 cm (1 ft) increments of all trees per hectare (2.47 acre) above 180 cm (6 ft) in diameter at ground level obtained from field cruise.

F = Minutes per 30 cm (1 ft) of diameter for trees above 180 cm (6 ft) in diameter.

Production Factors for Piling in Windrows*

Tractor	Base Minutes per hectare (2.47 acres) "B"	Diameter Range				Dia. above 180 cm per 30 cm (6' per foot) "F"
		30-60 cm (1-2 ft) "M ₁ "	60-90 cm (2-3 ft) "M ₂ "	90-120 cm (3-4 ft) "M ₃ "	120-180 cm (4-6 ft) "M ₄ "	
165 hp	157	0.5	1.0	4.2	—	—
230 hp	125	0.4	0.7	2.5	5.0	—
305 hp	111	0.1	0.5	1.8	3.6	0.9
405 hp	97	0.08	0.1	1.2	2.1	0.3

*May be used with most types of raking tools and angled shearing blade. Windrows to be spaced approximately 61 meters (200 feet) apart.

Explanation of columns in table:

Tractor — Production with tractor working alone based on current model tractors (power shift when applicable) working on reasonably level (below 10% grade) terrain with good footing, no stones, average mixture of soft and hard woods. The tractor is in proper operating condition. Decrease total time by 25-50% depending on the number and size of trees when using three or more tractors in combination.

Base Minutes — The base figures represent the number of minutes required for each tractor to cover a hectare (2.47 acres) of light material.

Dia. Range — M_1 represents minutes required to pile trees from 31-60 cm (1-2 ft) diameter at ground level.

M_2 same for trees 61-90 cm (2-3 ft) diameter.

M_3 same for trees 91-120 cm (3-4 ft) diameter.

M_4 same for trees 121-180 cm (4-6 ft) diameter.

For Dia. above 180 cm (6 ft) — The figures in this column represent for each tractor size the number of minutes required per 30 cm (1 ft) of diameter to pile trees above 180 cm (6 ft) in diameter. Thus, to pile a 240 cm (8 ft) diameter tree would require 8×0.9 or approximately 7.2 minutes with a D8R tractor.

Where the job requires piling of grubbed trees and stumps greater than 30 cm (1 ft) in diameter, use the same basic procedure defined above and then increase over-all or total time by 25%.

In dense small diameter brush with few or no large trees, or when cutting is vine entangled, reduce the base time by 30%.

Example problem:

Calculate the windrow piling production of a D7R Series II with Rake in level terrain, no grubbing, and average mixture of hardwoods and softwoods where the average tree count per hectare (2.47 acres) is:

Diameter Range	Less than 30 cm (1 ft) "B"	31-60 cm (1-2 ft) "N ₁ "	61-90 cm (2-3 ft) "N ₂ "	91-120 cm (3-4 ft) "N ₃ "	121-180 cm (4-6 ft) "N ₄ "	Sum Dia's Above 180 cm (6 ft) "D"
Number of Trees	1100	35	6	6	2	0

Solution:

$$\begin{aligned}
 T &= B + M_1 N_1 + M_2 N_2 + M_3 N_3 + M_4 N_4 + DF \\
 &= 125 + 0.4 (35) + 0.6 (6) + 2.5 (6) + 5.0 (2) + [DF=0] \\
 &= 42.6 \\
 &= 177.6 \text{ minutes/hectare (72 min/acre)}
 \end{aligned}$$



To find the number of machines required for each operation, use the formula:

$$\text{Hr/hectare (acre)} \times \text{number of hectares (acres)} = \text{number of machines needed}^*$$

*Average machine production for all operation in hr/hectare (acre).

To cost estimate each method or phase of operation, use this calculation:

$$\text{Owning and Operating cost/hr} \times \text{hr/hectare (acre)} \times \text{number of hectares (acres)} = \text{cost}$$

Because of the many variables that increase or decrease production, these formulas should be considered only as guidelines in arriving at a rough production estimate. This estimate should be tempered by personal judgment based on past experience and personal knowledge of the area.

BLADE RAKES

Tractor Model and Dozer		D6R Series III			D7R Series II		
		6A	6S	6SLGP	7A	7S	7SLGP
Raking Width	m	3.3	2.62	3.3	3.72	3.18	3.66
	ft	10'10"	8'6"	10'10"	12'3"	10'5"	12'
Opening at Tooth Tips	mm	356	305	310	381	381	381
	in	14"	12"	12.22"	15"	15"	15"
Tooth Penetration	mm	432	457	406	559	559	559
	ft/in	17"	18"	16"	1'10"	1'10"	1'10"
Total Weight	kg	718	675	825	1144	1100	1119
	lb	1585	1490	1820	2525	2420	2470

RAKES FOR WHEEL LOADERS

Wheel Loader Model and Rake type		914G II Loader Rake	924G II Loader Rake	928G II Loader Rake	938G II Loader Rake	950G II/962G II Loader Rake	966G II/972G II Loader Rake
Raking Width	mm	2210	2486	2837	2845	3048	3353
	ft	7'3"	8'2"	9'4"	9'4"	10'0"	11'0"
Tooth Penetration	mm	762	653	914	914	965	1143
	ft	2'6"	2'2"	3'0"	3'0"	3'2"	3'9"
Opening at Tooth Tips	mm	318	310	349	298	298	330
	in	12.75"	12.2"	13.8"	11.75"	11.75"	13"
Rake Weight	kg	770	2282	1420	1450	1590	2210
	lb	1700	1035	3130	3200	3500	4880

RAKES FOR TRACK LOADERS

Track Loader Model and Rake type		953C Loader Rake	963C Loader Rake
Raking Width	mm	2845	2388
	ft	9'4"	7'10"
Tooth Penetration	mm	635	635
	ft	2'1"	2'1"
Opening at Tooth Tips	mm	298	330
	in	11.75"	13"
Rake Weight	kg	1450	1450
	lb	3200	3200

This listing is not all-inclusive. Contact your Caterpillar Dealer for special attachment needs.

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Notes —

WASTE HANDLING

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INTRODUCTION

An increasing volume of refuse is generated by every person, commercial entity and household day after day ... 365 days a year. Disposal of this waste is a major problem worldwide. Increased governmental legislation designed to protect the environment and rising transportation and land acquisition costs have made waste disposal a significant user of earthmoving and specialty mobile equipment.

TRANSFER STATIONS

TRANSFER STATIONS, MRF'S, (MATERIAL RECOVERY FACILITIES) SORTING STATIONS, RECYCLING STATIONS

Changing attitudes in waste applications

The growth in transfer stations has increased as the amount of material that is being recycled or otherwise diverted from landfill disposal has increased. As a result transfer stations, MRF's, (material recovery facilities), sorting stations and recycling stations, are becoming a more important part of the waste stream. As the number of disposal sites continues to decline and/or move further away from city centers, the number of transfer stations must increase to accommodate and redirect waste to the appropriate disposal facilities.

Primary role

- Transfer stations, are designed to consolidate the loads of several delivery vehicles into long-haul transfer trailer or rail haul units. On average 2–5 inbound loads for transfer trailers and 5 or more for rail haul units can be consolidated into one outbound load. As a result transfer stations offer cost savings over direct haul to the landfill.
- MRF's, Sorting Stations, and Recycling Stations are designed to divert recyclable materials from the waste stream. Depending whether the material is pre-sorted, co-mingled, or MSW (municipal solid waste), the goal is to divert recyclable material for re-consumption and lower the amount of waste placed into the landfill thereby extending the landfills natural life.
- Safety is a major concern in today's Waste Industry Transfer Stations, Sorting Stations, MRF's, and Recycling Stations, all help reduce primary road and landfill traffic, by helping reduce smaller waste trucks and public traffic, leading to improved safety for everyone.

Types of transfer stations

The two most popular styles of transfer stations in North America are top loading and compaction. While there are many different types of transfer stations, most operate out of these two designs.

Top loading systems are the most common and simplest to operate. Five types of top loading arrangements include direct loading, full separation, half-separation, floor loading, and surge pit. Depending on the type of transfer station, wheel loaders, track loaders, track-type tractors, compactors, and excavators, can be utilized alone or together in systems providing quick efficient waste handling.

Compaction transfer stations provide hydraulic compaction either prior to, or during the loading of the hauling vehicle. It is important to note this type of transfer station can utilize all of the same design features of the platform design except for the direct load and half-separation designs.

**Material Recovery Facility (MRF's),
Sorting Stations, and Recycling Stations**

A well-coordinated recycling program can reduce volume going to the landfill by up to 50% or more. The types of facility designs that sort recyclables out of the waste stream are:

1. *Recycling Facility* — Recyclables are separated at the source prior to being loaded into the haul vehicle. At the recycling station, the materials are unloaded, stored, sold and shipped to be remanufactured or recycled.
2. *Clean MRF's* — A "clean" MRF accepts source-separated recyclable material from residential and commercial sources delivered in separate collection vehicles.
3. *"Dirty" MRF* — A dirty MRF accepts mixed waste that later may be sorted for recycling; or source-separated waste that is delivered in the same collection vehicle (i.e. blue bag systems)
4. *Sorting Stations* — some transfer stations are designed for some waste diversion and recycling from mixed waste streams, and are normally described as 'sorting' stations.

**Typical Applications for Transfer Stations,
Recycling Centers, MRF's, and Sorting Stations**

There is a wide range of variability in transfer station applications and operations. Therefore, depending on facility size, amount of material handled, type of transfer station, etc., a wide variety of machines could be utilized.

Typically, residential and commercial waste trucks deposit the waste onto a tipping platform. A wheel loader then stockpiles it, loads it into the transfer trailers/rail units or moves it onto a conveyor or belt line for recycling. Some transfer stations utilize a hydraulic excavator to help sort, top off, and compact the material into the transfer trailer/rail units.

Material densification is a method that is increasingly becoming more popular within transfer stations throughout the U.S. Densification of material prior to load-out helps maximize the allowable weight carried by each haul unit. Common machines used for material densification are, track-type tractors and track loaders. These machines are normally equipped with waste densification shoes. Compactors can be used for densification and are normally aided by a combination of either wheel loaders and/or excavators.

For transfer stations, recycling stations, MRF's and sorting stations, a vast amount of support equipment is utilized. These range from, skid steer loaders, backhoe loaders, compact equipment, telehandlers, IT's, and small/medium wheel loaders.

EQUIPMENT SELECTION

As in the landfill application, the largest single cost for daily operation in transfer stations, etc., is purchasing, operating, and maintaining the equipment. Undersized, inadequate or unreliable equipment results in higher maintenance and repair costs and improper operations.

Equipment in transfer stations and related applications perform these functions.

1. **Stockpiling the waste** once it is dumped onto the tip platform or in the surge pit. Machines used could be wheel loaders, track loaders, or track-type tractors, or any combination of these.
2. **Loading the waste** into the transfer trailers or rail cars. Material is either pushed, loaded and carried, or grappled into the transport vehicles. Wheel loaders, track loaders, track-type tractors, excavators, or any combination of these can be utilized.
3. **Support equipment** for all the different styles of transfer stations, recycling stations, sorting stations, and MRF's is a must. IT wheel loaders equipped with brooms, forks, specialty buckets, etc. can increase production and efficiency of the tip floors and load out areas. Skid steers, backhoe loaders, telehandlers and small compact equipment, with couplers and versatile attachments, can perform many necessary duties from clean up to load out.
4. **Material densification** is accomplished by continuous running over the waste, turning the waste over, and 'working' the waste. This type of operation compacts and shreds the waste allowing for less volume but higher weights in on road or rail haul transfer vehicles. Compactors, track-type tractors, and track-type loaders, equipped with wheels or undercarriages specifically designed to densify the waste, are normally utilized in this type of application.

Machine Selection Factors

As in landfill applications, selecting the type, size, quantity, and combination of machines required in transfer stations and other sorting applications is determined by the following parameters.

1. Amount and type of waste to be handled daily — (daily tonnage) — again, machines should be spec'd towards peak times.
2. Type and size of the facility — top loading/compaction and the various floor arrangements possible.
3. Facility/load out dynamics
 - a. floor size — dimensions of the tip area, load out area, surge pit
 - b. ceiling height
 - c. haul unit specifications for load out
 - d. traffic patterns
4. Densification/compaction requirements for necessary load out tonnage's.
5. Supplemental tasks performed during the total workday.
6. Budget
7. Growth

Track-Type Tractors

Track-type tractors are designed and guarded to accommodate all waste applications. Used primarily to aid spreading and compaction on landfills, track-type tractors offer another alternative for densification and waste movement in large transfer stations. Most track-type tractors are used in surge pit style transfer stations. In this application, waste can be dumped on a second level below the main tipping floor. The track-type tractor then works the waste, spreading, densifying, and loading haul vehicles for the trip to the landfill. This design is used when maximum volume reduction is required and/or when peak rate of waste exceeds the available floor space.

Waste Handling Transfer Stations

Equipment Selection

- Track Loaders
- Landfill Compactors
- Wheel Loaders

Track Loaders

Track loaders are designed and guarded for many different types of waste applications. Because of its versatility, the track loader can perform several different functions within the transfer station. The machine's weight compacts the waste reducing volume and increasing density. This allows haul vehicles to obtain the maximum weight permissible for road or rail. They can either work alone, or in tandem with wheel loaders or excavators to load the haul vehicles. Equipping track loaders with multi-purpose buckets increases their versatility in allowing the operator to selectively grapple items for sorting and disposal.

Landfill Compactors

Landfill compactors are specialized pieces of equipment primarily designed for spreading and compacting large volumes of waste in a landfill environment. However, in some instances around the world where transfer stations have a large enough working area and densification of the waste is an operational goal, Landfill compactors are being utilized.

Landfill compactors offer two major advantages.

1. They are already configured and guarded to work in a waste environment.
2. They are capable of achieving superior compaction levels as compared to other mobile equipment.

Although Landfill compactors are not typically viewed as a primary piece of transfer station equipment, they are occasionally being used and may offer an alternative solution to a transfer station operator. Please consider maximum density, weight needed in the hauler, tip floor size and possible contact by the compactor.

Wheel Loaders

Wheel loaders are often one of the primary tools used in transfer stations to load and separate refuse. Almost all styles of transfer stations will utilize a wheel loader either on their tip floor, load out area, or as a support piece of equipment. Wheel loaders perform a variety of tasks such as, stockpiling of waste on the tip floor, feeding belts for the sorting line, top loading haul vehicles either same level, half separated, or full separation, and clean up around the facility. These machines are normally equipped with a wide variety of buckets, attachments, and tires. A good knowledge of the facility, its waste stream, and its imitating factors is needed for proper machine selection.

Depending on the size and design of the facility, amount and type of waste stream, and type of job the machine needs to perform, there are several models available for machine selection. Waste Handling Packages are offered on our large to medium wheel loader line and limited waste handling guarding packages are offered on our smaller wheel loaders.

Care should be taken in sizing your equipment for your peak periods, and your peak and support needs.

- **Compact wheel loaders (902–908)** — Normally utilized in small tonnage recycling stations, and support machines where maneuverability in cramped areas is needed.
- **Small wheel loaders (914G–928G)** — Used for maneuverability in stockpiling, sorting, and loading of types of material in transfer, recycling, and sorting stations. Also used as support and backup machines in larger applications.
- **Medium — large wheel loaders (938G–988G)** — Utilized for waste movement on tip floors and load out areas, the size, weight to horsepower ratios, and many options make these machines the work horse of the recycling, transfer, and sorting stations.
- **IT's or Integrated ToolCarriers (IT14G–IT62G)** — IT machines offer maneuverability and versatility in many different recycling, transfer, and sorting station applications. A wide variety of main and support attachments can be utilized daily for many different jobs to be performed around these facilities.

**Caterpillar Transfer Station/Waste Application Wheel Loader Guidelines
 Operating Recommendations**

Tons Per Day	0-100	100-350	350-500	500-1000	1000-1500	1500-2000	2000-2500	2500-3000	3000+
Waste Transfer Station	924-IT28	924-IT28 ^a	928-938	950/966 ^c	966/980 ^d	966/980 ^d	966/980 ^{d,e}	980 ^e	980 ^e
C and D Transfer Station	928-950 ^b	950/966 ^d	950/966	966/980	966/980	966/980 ^d	966/980 ^e	980 ^e	980 ^e
Clean M.R.F./Recycling*	902-IT28	914-924 ^a	928-IT28	928-938	938 ^e	950 ^e	950 ^e	966-980 ^e	966-980 ^e
Dirty M.R.F./ Sorting Station*	924-IT28	924-IT28 ^a	924-938 ^c	924-938 ^e	938-966 ^e	966-980 ^e	966-980 ^e	980 ^e	980 ^e
C and D M.R.F.	928-966	966 ^d	966	980/988	980/988 ^d	980/988 ^e	980/988 ^e	980/988 ^e	988 ^e

*M.R.F. (Material Recovery Facility) — Clean and dirty.
 Clean M.R.F./Recycling — source separated material — no damaging material involved.
 Dirty M.R.F./Sorting Station — non-separated material — has to be sorted — could involve moving damaging material.

C & D = Construction and Demolition
 a = Multiple wheel loaders recommended (contact your local Caterpillar Dealership for recommendations)
 b = Depends on type and density of C & D material+
 c = Waste stream mixture may require multiple wheel loaders
 d = Operating hours may require additional machines
 e = Multiple machines required

Additional Considerations

All facilities are different and require special considerations when ordering and specifying equipment. Types of attachments/buckets and operating hours will dictate type of equipment and size necessary.



Hydraulic Excavators

Hydraulic excavators are often found in recycling, transfer, and sorting stations as a primary tool for loading transfer trailers, railcars, waste compaction and for presorting material being loaded onto the sorting conveyors. The main advantages of an excavator in this role are its fast cycle times, its ability to maneuver within confined spaces, and the versatility of the many work tools with which a hydraulic excavator can be equipped. Certain tools are ideal when sorting or separating refuse is necessary, while others can be used for simple, high-production loading and compaction.

When sizing an excavator, it is important to take into account the daily tonnage of an operation as well as facility constraints, such as ceiling height and floor size. While no official “waste handling arrangement” is currently available for excavators, Caterpillar has configured excavators for many heavy-duty applications and all of the components that would ideally suit a machine to a transfer station application are available.

Wheeled hydraulic excavators add the benefits of greater speed for moving about the transfer station and therefore can be positioned to work in virtually any area of the transfer station within minutes.

They can also be equipped with an optional 4' fixed or 6'6" hydraulic cab riser for improved capability to see down in the “hole” when loading through the floor or seeing into trailers positioned at the same ground level as the wheeled excavator.

LANDFILLS

The most commonly accepted way to dispose of refuse is to bury it in a landfill. A landfill protects the environment by disposing solid waste on land in an engineered cell. Building a cell involves spreading the waste in thin layers, compacting it to the smallest practical volume, covering it with soil by the end of each working day, and compacting the cover material. Proper equipment selection and operating technique can maximize refuse and cover compaction and extend the operational landfill life.

LANDFILL METHODS

There are three basic landfill methods:

In the *area* method, waste is usually deposited at the toe of the previously compacted cell and then spread and compacted. This method is attractive for landfills receiving over 450 metric tons (500 tons) of refuse per day because it reduces truck unloading congestion. Cover material is normally handled by articulated trucks or wheel tractor-scrappers from nearby borrow sites.

The *trench* method is normally found at smaller landfills where the ground water table is deep. A trench is excavated and refuse is deposited and compacted within it. Excavated material becomes the cover material. Since the trench working face is narrow, truck congestion can occur. This method is usually attractive to landfills receiving under 450 metric tons (500 tons) of refuse per day.

The *ramp* method combines the characteristics of both area and trench designs. Refuse is dumped, spread and compacted on existing slopes and covered with material excavated directly in front of the working face. The excavated area becomes part of the next cell. This is a good way for a landfill to begin operation with a minimum of equipment expenditures.

EQUIPMENT SELECTION

A landfill's largest single cost for daily operation is purchasing, operating and maintaining the mobile equipment. Undersized, inadequate or unreliable equipment results in breakdowns, higher operating costs and improper landfill operation.

Landfill equipment performs three distinct functions:

1. Waste handling and compaction equipment dispose of the waste. Track-type tractors, track loaders, and landfill compactors are the primary machines.
2. Cover material handling machines provide daily cover requirements. If supplying cover material is a machine's sole function at a landfill, it can be selected on the basis of normal earthmoving considerations, such as material characteristics, distance to borrow areas, volume to be transported, and other basic earthmoving principles, i.e., maximizing earth movement in the least amount of time at the lowest cost per yard.
3. Support equipment includes motor graders, backhoe loaders, hydraulic excavators, water trucks, air compressors, service vehicles, water pumps, generators and any other necessary equipment.

Track-Type Tractors

The track-type tractor is the most popular and versatile machine on a landfill. They not only spread and compact refuse and cover material, they also prepare the site, rip cover material, build haul roads, knock down trees, remove stumps, and work in virtually all weather conditions. They are well-suited for all three landfill methods (area, ramp, and trench).

The crawler tractor can achieve compaction densities of 475 to 590 kg/m³ (800-1000 lb/yd³). Maximum compaction is achieved when it works on a 3:1 slope, permitting the grousers to rip and tear while pushing and compacting waste up-slope. Economic limit of cover or waste movement by a track-type tractor is normally under 90 m (300 ft).

- Track Loaders
- Wheel Loaders
- Landfill Compactors
- Wheel Tractor-Scrapers
- Articulated Trucks

Track Loaders

Track loaders are highly versatile allowing them to perform many applications. Small landfills under 135 metric tons (150 tons) per day generally utilize a minimum amount of equipment. Track loaders can serve both the waste handling and cover material functions.

The track loader is an ideal machine for the trench method. Since the bucket does not extend outside the tracks, it can obtain full compaction to the trench walls. Rippers can be attached to handle frozen cover material. Compaction densities are similar to or slightly higher than the track-type tractor — 475 to 590 kg/m³ (800-1000 lb/yd³). Many people believe track loaders equipped with single grouser shoes provide maximum demolition and compaction densities. Loading the bucket during compaction passes increases weight helping achieve higher densities.

Equipping track loaders with multi-purpose buckets increases their versatility in single machine applications, allowing the operator to selectively grapple items out of the working face.

Landfill Compactors

Landfill compactors are specialized pieces of equipment effective in spreading and compacting large volumes of waste. Compactors offer higher operational speeds than track machines. This is the recommended machine if more than one spreading and compaction machine is needed and waste does not have to be pushed more than 90 m (300 ft).

Landfill compactors over 20 410 kg (45,000 lb) operating weight achieve the highest compaction levels — from 710 to 950 kg/m³ (1200-1600 lb/yd³).

Landfill compactors normally operate on slopes no steeper than 4:1 due to reduced compaction and operational safety. Compactors should not be used to excavate cover material.

Wheel Loaders

Although not recommended as a waste handling and compaction machine, wheel loaders are used by those communities sharing a single machine which travels from landfill to landfill. Versatility and mobility are the primary wheel loader advantages. In landfills over 272 metric tons (300 tons) per day, wheel loaders will sometimes be used to perform general clean-up tasks.

Wheel loaders can achieve compaction densities of 530 to 650 kg/m³ (900-1100 lb/yd³). A disadvantage of wheel loaders is that they can leave ruts in the refuse, requiring extra cover material.

Wheel Tractor-Scrapers

A scraper can be used to excavate trenches for site preparation, but usually performs a cover operation at a landfill and is most economical at distances over 185 m (600 ft). A scraper should be selected as if it were performing a typical earthmoving job.

Preferably, the scraper unloads the cover material close to the working face, either at the base or top. The cover material is then spread by the machine(s) working on the refuse. This reduces the possibility of tire damage from driving over the refuse. Foam filled tires are not recommended for scrapers due to the high travel speeds. Since excavating and transporting cover material is a major expense at a landfill, scrapers with work alone capability have been the most popular.

Articulated Trucks

Articulated trucks are versatile, highly maneuverable, all-weather haulers that can negotiate poor underfoot conditions and tight spaces normally found in landfills. In combination with a variety of loading tools, articulated trucks typically work in site preparation, cell construction, hauling cover material, and are economically effective at haul distances ranging from 0.1 km-5 km (600 ft-3 miles). In dump configuration, cover material can be dumped close to the face and spread by other machines. In ejector configuration, articulated trucks provide on-the-go dumping and can operate in soft material and on side-slopes that would not be suitable for machines in dump configuration. In addition, Cat articulated trucks are available in a range of container handler and refuse body configurations for specialized landfill applications.

Machine Selection Factors

Selecting the type, size, quantity, and combination of machines required to spread, compact, and cover varying daily refuse volumes is determined by the following parameters:

1. Amount and type of waste to be handled (daily tonnage)
 2. Amount and type of soil cover to be handled
 3. Distance cover material to be transported
 4. Weather conditions
 5. Compaction requirements
 6. Landfill method utilized
 7. Supplemental tasks
 8. Budget
 9. Growth
- A. *Daily tonnage and type of waste* — Amount of waste produced by a community is the major variable in selecting the appropriate size machine. The chart serves as a guideline in sizing a landfill machine. For example, if a community generates approximately 180 metric tons (200 tons) of refuse per day, a D6 or 963 and a 816 Landfill Compactor should be considered.

WASTE EQUIPMENT SELECTION BASED UPON POPULATION AND DAILY REFUSE TONNAGE

Population	Metric Tons/Day	U.S. Tons/Day	Machine(s) Required
0-20,000	0-45	0-50	D3 or 933
20,000-60,000	45-136	50-150	D4 or 939 and an 816
60,000-100,000	136-226	150-250	D5 or D6 or 953 and 816
100,000-140,000	226-317	250-350	D6 or D7 or 963 and 816
140,000-200,000	317-453	350-500	D7 or D8 or 973 and 816
200,000-300,000	453-680	500-750	D8 or D9 and 826
300,000-more	680-more	750-more	D9, D10 and 836/variety of support equipment

NOTE: Daily tonnage figures are based on 2.26 kg (5 lb) of residential refuse per person per day. The amount of waste/person/day can vary depending on the community and should be adjusted to the individual community.

Type of waste to be handled will strongly influence machine selection. The major solid waste components for a community should be identified and the proper machine chosen based on the type of waste and the compaction desired. For example, if the site receives a high proportion of noncompactible heavy industrial waste (rocks, bricks, concrete, reinforcing rod, etc.) a compactor might not achieve normal compaction densities and the pushing and tractive ability of a track-type tractor may be needed. However, a small track-type tractor has more difficulty compacting bulk waste such as washing machines and telephone poles than a landfill compactor.

Waste varies from location to location, even within a community; however, the following figures are representative in the U.S.:

Characterization of Domestic — Household Waste	
Component	Percent by Weight
Paper	42
Food	16
Glass	14
Metal	12
Plastics	5
Wood	5
Rubber and Leather	4
Textiles	2

NOTE: Moisture content can have a significant effect on weight characteristics. Field tests have indicated moisture content can vary from 10-80% during dry and wet seasons.

B. Amount and type of cover material to be handled

— Although landfill size and type will vary, a rule of thumb for estimating needed cover material is one cubic meter (cubic yard) of cover material for every four cubic meters (or cubic yards) of in-place compacted waste. That is, about 20-25% of a landfill's volume consists of soil used for cover (including daily and final covering). On smaller landfills, the percentage of soil could be as high as 50% to meet reasonable cover requirements.

It is important to remember that cover material also occupies landfill space reducing the volume available for refuse. For example a landfill with 1 900 000 m³ (2,500,000 yd³) of *total volume* would provide for disposing of 1 520 000 m³ (2,000,000 yd³) of refuse and allow 380 000 m³ (500,000 yd³) of cover material. This example considers one cubic yard of cover for every 4 cubic yards of in place compacted waste.

The type of cover material can also be important. If the material is sandy or highly abrasive, a rubber tired wheel loader or scraper might be considered rather than a track-type unit.

C. Distance cover material is to be transported will have a large effect on cover equipment selection. The following economic limits or guidelines are recommended for cover material movement. The quantity of material to be moved and the time available must be considered when using these guidelines.

Track-type tractor	0-90 m	(0-300 ft)
Track loader	0-152 m	(0-500 ft)
Wheel loader	0-185 m	(0-600 ft)
Wheel tractor-scraper	over 185 m	(over 600 ft)
Articulated trucks	over 185 m	(over 600 ft)

D. Weather conditions — when working in inclement weather, the tractive capability of a track-type machine may be necessary for poor underfoot conditions or to rip frozen cover material.

E. Compaction requirements — are becoming critical as extended landfill life is sought. If high density is desired, then a compactor may be necessary.

The following pages contain features, specifications and work tools for Caterpillar's Waste Handling machines. Additional information regarding drawbar pull/rimpull Vs groundspeed, controls, ground pressures, production estimating for these machines as well as specifications and performance information for Wheel Tractor Scrapers and Articulated Trucks can be found in their respective Performance Handbook sections.

REFUSE DENSITIES

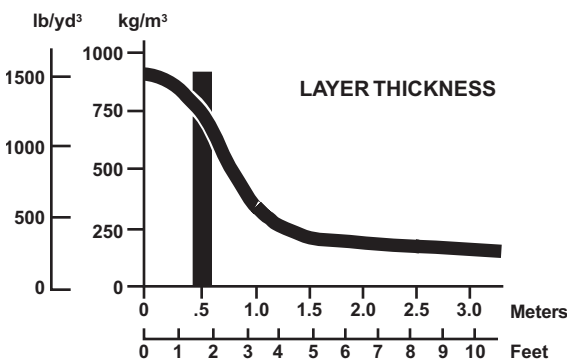
Generally, loose residential and commercial refuse weighs 150-180 kg/m³ (250-300 lb/yd³). A refuse collection vehicle will increase this density to 237-415 kg/m³ (400-700 lb/yd³). In-place landfill density can vary from 355-890 kg/m³ (600-1500 lb/yd³), depending on the compactive effort applied to the refuse. Landfill sites that accept a high percentage of demolition waste can have densities up to 1485 kg/m³ (2500 lb/yd³). Cover material will generally raise fill densities 60-120 kg/m³ (100-200 lb/yd³) over the figures given above.

	Weight of Refuse	
	kg/m ³	lb/yd ³
Loose Refuse:	150-180	250-300
Packer Truck:	237-415	400-700
Fill Density:	355-890	600-1500
Refuse and Cover:	415-1009	700-1700

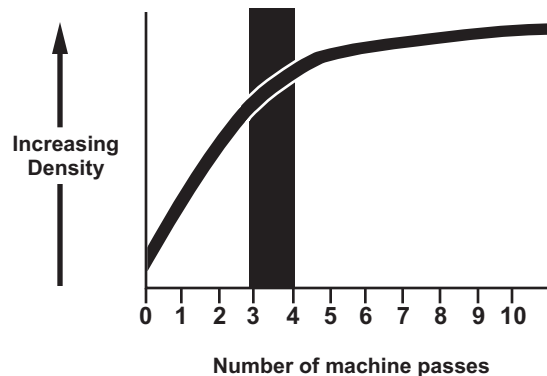
FACTORS GOVERNING COMPACTION

Assuming equal machine weight, regardless of the type of machine, the following factors (1-4) affect compaction:

1. Refuse Layer Thickness — The depth of each compacted layer is perhaps the single most important controllable factor influencing density. To obtain maximum density, waste should be spread and compacted in layers **not exceeding a depth of 610 mm (2 ft)**. Thicker layers will reduce the density that a machine can develop in a given number of passes. (Density figures shown do not include cover material.)



2. Number of passes made over the refuse also affects density. Regardless of the type of machine used, the unit should make 3-4 passes to achieve optimum density. The following graph illustrates that more than four passes result in little additional compactive effort. The added expense of additional passes is not justified by the incremental increase in density.



3. Slope — Maximum compactive effort by a track-type unit is achieved by working the waste on a slope of 3:1. Track-type machines achieve higher densities by grinding and shredding the refuse into smaller pieces as they climb a slope.

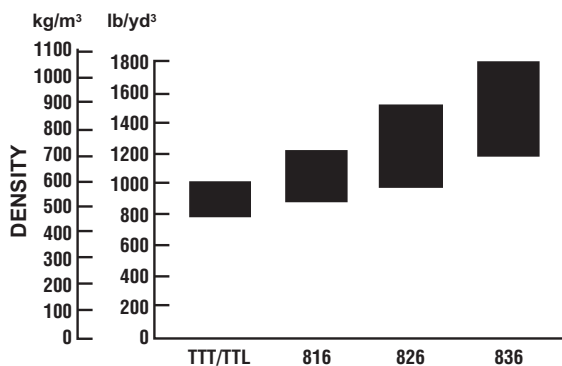
Just the opposite is true for landfill compactors, the flatter the slope the better. This is because the weight of the landfill compactor is more efficiently utilized and concentrated when working on a flat surface. Landfill compactors that are used on slight slopes achieve a higher compaction density due to shearing stress that aids shredding and better blending of material.

4. Moisture Content — has been shown to have a significant effect on compacted density. It is believed that water tends to weaken the bridging characteristics of refuse, particularly paper such as large pieces of cardboard, etc., thereby allowing tighter consolidation. The water may also act as a lubricant — much as it does for soils. A minimum amount of moisture can increase refuse compaction density by 10%.

The optimum moisture content for maximum compaction of household refuse appears to be around 50% by weight. Field tests show actual moisture contents varying from 10-80% during dry and wet seasons. Although higher moisture content can provide higher in-place densities, the chance of leachate formation also increases.

COMPACTION COMPARISON ESTIMATE

The following graph may be used as a rule of thumb for the compactive ranges of various types of landfill machines if proper operating technique is employed.



EXAMPLE OF INCREASED COMPACTION ON POTENTIAL LANDFILL LIFE

Landfill refuse capacity	1 530 000 m ³ (2,000,000 yd³)	
Operating days	260	
Daily volume	365 metric tons (400 tons)	
Yearly volume	94 328 metric tons (104,000 tons)	
Compaction	Landfill Life	Gain
590 kg/m ³ 1000 lb/yd³	9.6 years	0
710 kg/m ³ 1200 lb/yd³	11.5 years	1.9 years
830 kg/m ³ 1400 lb/yd³	13.4 years	3.8 years
950 kg/m ³ 1600 lb/yd³	15.3 years	5.7 years
1070 kg/m ³ 1800 lb/yd³	17.2 years	7.6 years

In this example, each 120 kg (200 lb) increase in refuse density results in an additional 1.9 years of landfill life. Also this example is exclusive of cover requirements.

COMPACTOR PRODUCTION GUIDELINES

Model	Tons/Day		Tons/Hr	
	Metric	U.S.	Metric	U.S.
836H	1016	1000	127	125
826H	813	800	102	100
816F	508	500	63.5	62.5

All models are pushing refuse 61 m (200 ft) spreading and making 3 to 4 passes to compact. A pass is defined as: A machine traveling over the refuse one time in one direction on flat level ground. Adverse (uphill) or favorable (downhill) grades will effect the above production figures.

25

- F. *Landfill method utilized* — impacts the equipment needed. The area method, which is generally suited for flat or gradual sloping surfaces will get maximum compaction effort with a compactor. The trench method may require a track loader due to its excavating and tractive capabilities.
- G. *Supplemental tasks* — should be reviewed before selecting a landfill machine. Will the machine be required for site clearing, maintaining access roads, excavating, etc.? Auxiliary duties may require additional machine capability and/or attachments. If versatility is the key consideration, a track-type machine again becomes the logical choice.
- H. *Budget* — Smaller landfill operations with limited budgets may have to consider single machine versatility ahead of specialized machines or multiple units.
- I. *Growth* — Future increases in refuse volume must be considered to properly size machines.

LANDFILL ESTIMATING

Example Problem #1

A professional engineer has developed a small, rural landfill master plan. The local legislative regulatory agency has approved the plan and site.

Assume:

Topography: flat

Land availability:

area has several suitable sites at nominal price

Population served: 30,000

Projected population in 3 years: 40,000

Current daily refuse volume: ?

Type of refuse: mostly household, some commercial

Operation: propose 8 hours/day, 5½ days/week

Present equipment: none — new site

What would your comments and recommendations be on the following:?

- Probable amount of refuse generated daily?
- Type of machine for the proposed SLF?
- Size of machine for the proposed SLF?

Solution

- At three year projected population — 2.26 kg/day (5 lb/day) per person \times 40,000 people = 90.4 metric tons (100 tons) daily.
- Track loader — excavating ability, single machine application based on tonnage requirements.
- 953C handle current refuse, and has extra capacity for future growth. Small compactor if additional compaction is required.

Example Problem #2

Existing landfill has been in operation for several years.

Assume:

Type of operation: area fill

Cover material: suitable material within 90 m (300 ft)

Current daily refuse volume: 500 metric tons (550 tons)

Anticipated daily refuse volume in 3 years: 680 metric tons (750 tons)

Type of refuse: household, commercial, large amount of brush and building demolition debris

Land availability: limited, very expensive

Available Refuse Volume: $3\,249\,125 \text{ m}^3$ ($4,250,000 \text{ yd}^3$)

Operation: 8 hours/days, 5½ days/week

Present equipment: D8 (3 years old)

What would your comments and recommendations be on the following:

- What range of in-place densities could be expected using a track-type tractor; a Cat steel wheeled landfill compactor?
- What effect does machine selection have on site life?
- What are the advantages and limitations of steel wheeled landfill compactors?
- What are the advantages and limitations of track-type units?
- How many machines should be used on the site?
- What type should they be?
- What size should they be?

Solution

- a. The Track-Type Tractor will achieve 475 to 595 kg/m³ (800 to 1000 lb/yd³) in-place density. The Cat steel wheeled landfill compactor will achieve 595 to 830 kg/m³ (1000 to 1400 lb/yd³) in-place density.
- b. There are 3 249 125 m³ (4,250,000 yd³) available. 500 metric tons (550 tons) per day is how many m³ (yd³)? Assume a minimum density of 475 kg/m³ (800 lb/yd³).

$$500 \text{ metric tons/day} \times \frac{1000 \text{ kg/metric ton}}{475 \text{ kg/m}^3} = 1052 \text{ m}^3/\text{day}$$

$$550 \text{ tons/day} \times \frac{2000 \text{ lb/ton}}{800 \text{ lb/yd}^3} = 1375 \text{ yd}^3/\text{day}$$

$$5.5 \text{ days/week} \times 52 \text{ weeks/year} = 286 \text{ days/year}$$

$$\text{Yearly volume: } 1052 \times 286 = 300\,872 \text{ m}^3$$

$$1375 \times 286 = 393,250 \text{ yd}^3$$

Landfill life at this density:

$$\frac{3\,250\,000 \text{ m}^3}{300\,872 \text{ m}^3/\text{year}} = \frac{4,250,000 \text{ yd}^3}{393,250 \text{ yd}^3/\text{year}} = 10.8 \text{ years}$$

Similar calculations are performed to generate the following tables.

500 METRIC TONS/DAY (550 TONS/DAY)		
Density		Landfill Life (years)
kg/m ³	lb/yd ³	
475	800	10.8
595	1000	13.5
715	1200	16.2
835	1400	18.9
950	1600	21.6

680 METRIC TONS/DAY (750 TONS/DAY)		
Density		Landfill Life (years)
kg/m ³	lb/yd ³	
475	800	7.9
595	1000	9.9
715	1200	11.9
835	1400	13.9
950	1600	15.9

From the tables we determine that a track-type tractor, at 500 metric tons per day (550 tons/day), will provide 13.5 landfill life years at 595 kg/m³ (1000 lb/yd³). Compaction will extend that life 5.4 years to 18.9 years at 835 kg/m³ (1400 lb/yd³).

Proper compaction techniques are necessary to achieve the higher refuse densities and increase landfill life.

- c. Advantages: Provides highest compaction densities extending landfill life.
 Limitations: Specialty unit designed to spread and compact — does not excavate virgin material economically, but can handle stockpile cover material.
- d. Advantages: most versatile unit, well suited to site preparation, finishing and access road construction and maintenance; all weather machines with excellent tractive ability.
 Limitation: compaction — cannot achieve the in-place refuse densities of the specialized landfill compactors.
- e. Minimum of two. Additional equipment would depend on supplemental tasks.
- f. Track-type tractor — for earthmoving and refuse spreading work; steel wheeled compactor-quantity of refuse and land cost would justify.
- g. D8 — keeping existing unit; D9 — when new tractor is necessary; 826H — with large amount of demolition debris and brush and projected increase in tonnage would justify 826H over 816F.

NOTE: Ballasting the wheels on Caterpillar Landfill Compactors to increase machine weight and achieve higher compaction densities is not recommended. Landfills are high rimpull applications. Ballasting the wheels will significantly increase machine weight but decrease overall performance when traveling on the fill. Also, wheels are not necessarily air tight or leak proof.





Caterpillar Waste Handling Track-Type Tractor modifications are purpose built and installed at the original manufacturing facility prior to shipment.

Features:

- **Hinged heavy duty radiator doors** are guarded to prevent excessive trash build-up. Quick release handles allow easy access for cleaning.
- **Final drive, pivot shaft, and idler seal guarding** helps prevent wire, cable and similar material from winding around components and damaging seals.
- **Striker bars for front, rear and ripper** (all optional) keep trash from damaging fenders, fuel and hydraulic tanks or other sheet metal. (Not available for the D6R Series III WHA.)
- **Lighting protection.** Front lights are mounted on top of bulldozer lift cylinders. Rear lights are ROPS mounted.
- **AMOCs Waste Handling Arrangement radiator** with 6 fins/inch. (Optional on D6R Series III through D10T.)
- **Flexxaire fan** is mandatory option for D6R Series III through D8R Series II.
- **Elevated sprocket** removes final drives from wear environment and eliminates impact loading for extended power train life.
- **Sheet metal guarding** near track and on dozer tilt hoses.
- **Fuel tank guards** keep trash from damaging fuel and hydraulic tanks or other sheet metal.
- **Clamshell guards** — a non-rotating guard installed over the final drives to help prevent wire wrap. Guards include inspection plates.
- **Reversible hydraulic demand fan** recommended for D8T, D9T, D10T.
- **Heavy duty steps and grab handles** resist damage from landfill debris.
- **Trapezoidal-shaped center hole track shoes (optional)** help keep track clean during machine operation.
- **Blade trash racks (optional)** prevent blade spill-over and damage to cylinders or radiator guard.
- **95 amp ducted alternator available on D6R Series III, D7R, D8T, D9T, D10T** insures adequate current is available to maintain battery and operate accessories.
- **Elevated prescreener** to remove engine air inlet from debris environment. Larger surface area to resist plugging. Turbine precleaner is optional. (Not available for the D6R Series III WHA.)
- **Cat turbine precleaner optimax dual-stage precleaner** removes large particulates from incoming air before they reach the air filter, helps extend filter life. (Optional on D6R Series III through D10T.)
- **ROPS mounted air conditioning** helps prevent condenser core plugging. Provides full utilization of jacket water cooling system by avoiding additional heat load from radiator mounted condenser.
- **Laminated thermal shields** cover the exhaust stack inside the engine compartment, hot-side of the turbocharger, and the exhaust manifold. These shields reduce surface temperatures well below the flash point of most common combustibles encountered. (Optional on D6R Series III through D8. Standard on D9T, D10T.)
- **Chassis Guards.**
- **Sealed belly guards.**
- **Perforated engine enclosures** standard on D10R and required attachments on D6R Series III through D9R. This configuration is unavailable when Sound Suppression is ordered.
- **Carrier rollers** not recommended.

Specifications

Waste Handling
Track-Type Tractors

MODEL	 D6R Series III WHA		 D6R XL Series III WHA		 D6R XW Series III WHA		 D6R LGP Series III WHA	
Flywheel Power	138 kW	185 hp	149 kW	200 hp	149 kW	200 hp	149 kW	200 hp
Operating Weight (Power Shift Differential Steer)* SU Blade	18 326 kg	40,400 lb	20 081 kg	44,270 lb	20 672 kg	45,573 lb	21 716 kg	47,874 lb
Engine Model	C9 ACERT		C9 ACERT		C9 ACERT		C9 ACERT	
Rated Engine RPM	1850		1850		1850		1850	
No. of Cylinders	6		6		6		6	
Bore	112 mm	4.4"	112 mm	4.4"	112 mm	4.4"	112 mm	4.4"
Stroke	149 mm	5.9"	149 mm	5.9"	149 mm	5.9"	149 mm	5.9"
Displacement	8.8 L	537 in ³	8.8 L	537 in ³	8.8 L	537 in ³	8.8 L	537 in ³
Track Rollers (Each Side)	6		7		7		8	
Width of Standard Track Shoe: VPAT	560 mm	1'10"	560 mm	1'10"	760 mm	2'6"	915 mm	3'0"
Length of Track on Ground	2.67 m	8'9"	2.87 m	9'5"	2.87 m	9'5"	3.28 m	10'9"
Ground Contact Area (with Std. Shoe) VPAT	2.98 m ²	4620 in ²	3.22 m ²	4972 in ²	4.36 m ²	6780 in ²	5.99 m ²	9288 in ²
Track Gauge VPAT	1.88 m	6'2"	1.88 m	6'2"	2.03 m	6'8"	2.29 m	7'6"
GENERAL DIMENSIONS:								
Height (Stripped Top)**	2.38 m	7'10"	2.38 m	7'10"	2.38 m	7'10"	2.43 m	8'0"
Height (To Top of ROPS Canopy)	3.20 m	10'6"	3.20 m	10'6"	3.20 m	10'6"	3.25 m	10'8"
Height (To Top of ROPS Cab)	3.19 m	10'5"	3.20 m	10'6"	3.20 m	10'6"	3.25 m	10'8"
Overall Length (without Blade)	3.86 m	12'8"	3.86 m	12'8"	3.86 m	12'8"	4.25 m	13'11"
with S Blade	4.90 m	16'1"	—	—	—	—	5.47 m	17'11"
with SU Blade	5.10 m	16'9"	5.33 m	17'6"	5.33 m	17'6"	—	—
with VPAT Blade	—	—	5.27 m	17'4"	5.27 m	17'4"	5.97 m	19'7"
with Angle Blade	5.01 m	16'5"	5.21 m	17'1"	5.21 m	17'1"	—	—
Overall Length (VPAT)	—	—	3.86 m	12'8"	3.86 m	12'8"	4.25 m	13'11"
with S Blade	—	—	—	—	—	—	5.47 m	17'11"
with SU Blade	—	—	5.33 m	17'6"	5.33 m	17'6"	—	—
with VPAT Blade	—	—	5.27 m	17'4"	5.27 m	17'4"	5.97 m	19'7"
with Angle Blade	—	—	5.21 m	17'1"	5.21 m	17'1"	—	—
Width (Over Trunnion)	2.64 m	8'8"	2.64 m	8'8"	2.95 m	9'8"	3.43 m	8'8"
Width (without Trunnion — Std. Track)	2.44 m	8'0"	2.44 m	8'0"	2.74 m	9'0"	3.15 m	10'4"
Ground Clearance	383 mm	1'3"	383 mm	1'3"	383 mm	1'3"	433 mm	1'5"
Blade Types and Widths:								
Straight	3.36 m	11'0"	—	—	—	—	4.06 m	13'4"
Angle Straight	4.17 m	13'8"	4.17 m	13'8"	4.20 m	13'9"	—	—
Full 25° Angle	3.78 m	12'5"	3.78 m	12'5"	3.81 m	12'6"	—	—
Semi-U	3.26 m	10'8"	3.26 m	10'8"	3.56 m	11'8"	—	—
VPAT (Variable pitch, angle, and tilt) straight	—	—	3.88 m	12'9"	4.16 m	13'8"	4.16 m	13'8"
VPAT Full 25° Angle	—	—	3.55 m	11'8"	3.81 m	12'6"	3.81 m	12'6"
Fuel Tank Refill Capacity	382 L	101 U.S. gal	382 L	101 U.S. gal	382 L	101 U.S. gal	382 L	101 U.S. gal

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* Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluid, straight dozer with tilt, horn, back-up alarm, retrieval hitch and front pull hook.

** Height (stripped top) — without ROPS canopy, exhaust, pre-cleaner, seat back or other easily removed encumbrances.

Waste Handling Track-Type Tractors

Specifications



MODEL	D7R Series II WHA		D7R XR Series II WHA		D7R LGP Series II WHA		D8R WHA	
	Flywheel Power	179 kW	240 hp	179 kW	240 hp	179 kW	240 hp	228 kW
Operating Weight:*								
Power Shift Clutch Brake (FTC)	27 920 kg	61,500 lb	28 497 kg	62,770 lb	30 062 kg	66,216 lb	—	
Power Shift Differential Steer	28 108 kg	61,912 lb	28 764 kg	63,357 lb	30 328 kg	66,802 lb	37 630 kg	82,880 lb
Engine Model	3176C SCAC		3176C SCAC		3176C SCAC		3406E TA	
Rated Engine RPM	2100		2100		2100		2100	
No. of Cylinders	6		6		6		6	
Bore	125 mm	4.92"	125 mm	4.92"	125 mm	4.92"	137 mm	5.4"
Stroke	140 mm	5.5"	140 mm	5.5"	140 mm	5.5"	165 mm	6.5"
Displacement	10.3 L	629 in³	10.3 L	629 in³	10.3 L	629 in³	14.6 L	893 in³
Track Rollers (Each Side)	7		8		7		8	
ERF†	—		—		9		—	
Width of Standard Track Shoe	560 mm	1'10"	610 mm	2'0"	914 mm	3'0"	560 mm	1'10"
Length of Track on Ground	2.89 m	9'5"	3.05 m	10'0"	3.16 m	10'5"	3.21 m	10'6"
Ground Contact Area (w/Std. Shoe)	3.22 m ²	4996 in²	3.72 m ²	5768 in²	5.78 m ²	8960 in²	3.57 m ²	5544 in²
Track Gauge	1.98 m	6'6"	1.98 m	6'6"	2.24 m	7'4"	2.08 m	6'10"
GENERAL DIMENSIONS:								
Height (Stripped Top)**	2.56 m	8'5"	2.56 m	8'5"	2.74 m	9'0"	2.67 m	8'9"
Height (To Top of ROPS Canopy)	3.53 m	11'7"	3.53 m	11'7"	3.52 m	11'6"	3.51 m	11'6"
Height (To Top of ROPS Cab)	3.43 m	11'2"	3.43 m	11'2"	3.58 m	11'9"	3.45 m	11'3"
Overall Length (with SU Blade)***	—		—		—		6.91 m	22'8"
(without Blade)	—		—		—		4.93 m	16'2"
Overall Length (with S Blade)	5.69 m	18'8"	5.81 m	19'1"	5.78 m	19'0"	—	
(without Blade)	4.67 m	15'4"	4.67 m	15'4"	4.67 m	15'4"	—	
Width (Over Trunnion)	2.87 m	9'5"	2.87 m	9'5"	3.37 m	11'1"	3.05 m	10'0"
Width (without Trunnion — Std. Shoe)	2.54 m	8'4"	2.59 m	8'6"	3.15 m	10'4"	2.70 m	8'8"
Ground Clearance	414 mm	16.3"	414 mm	16.3"	496 mm	1'7.5"	606 mm	1'11"
Blade Types and Widths:								
Straight	3.52 m	11'7"	3.32 m	11'7"	4.55 m	14'11"	—	
Angle Straight	4.50 m	14'9"	4.50 m	14'9"	—		4.99 m	16'4"
Full 25° Angle	4.12 m	13'6"	4.12 m	13'6"	—		4.52 m	14'10"
Universal	3.98 m	13'1"	3.98 m	13'1"	—		4.26 m	14'0"
Semi-U	3.69 m	12'2"	3.69 m	12'2"	—		3.94 m	12'11"
Fuel Tank Refill Capacity	479 L	127 U.S. gal	479 L	127 U.S. gal	479 L	127 U.S. gal	625 L	165 U.S. gal

FTC — Fingertip clutch/brake control

* Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluid, straight dozer with tilt, horn, back-up alarm, retrieval hitch and front pull hook.

— D8R equipped with track guides, ROPS/FOPS cab, single shank ripper and SU blade.

** Height (stripped top) — without ROPS canopy, exhaust, seat back or other easily removed encumbrances.

*** Includes drawbar.

† ERF — Extended Track Roller Frame. Extends frame 366 mm (14.4"), adds 3 track sections and 2 rollers/side.

Specifications

Waste Handling Track-Type Tractors



MODEL	D8T WHA		D9T WHA		D10T WHA	
Flywheel Power	231 kW	310 hp	306 kW	410 hp	433 kW	580 hp
Operating Weight*	—		—		65 764 kg	144,986 lb
Power Shift Differential Steer	38 660 kg	85,150 lb	49 567 kg	109,180 lb	—	
Engine Model	C15 ACERT		C18 ACERT		C27 ACERT	
Rated Engine RPM	1850		1800		1800	
No. of Cylinders	6		8		12	
Bore	137 mm	5.4"	145 mm	5.7"	137 mm	5.4"
Stroke	172 mm	6.75"	183 mm	7.2"	152 mm	6"
Displacement	15.2 L	928 in ³	18.1 L	1106 in ³	27 L	1649 in ³
Track Rollers (Each Side)	8		8		8	
Width of Standard Track Shoe	560 mm	1'10"	610 mm	2'0"	610 mm	2'0"
Length of Track on Ground	3.21 m	10'6"	3.47 m	11'5"	3.88 m	12'9"
Ground Contact Area (w/Std. Shoe)	3.58 m ²	5544 in ²	4.24 m ²	6569 in ²	4.74 m ²	7347 in ²
Track Gauge	2.08 m	6'10"	2.25 m	7'5"	2.55 m	8'4"
GENERAL DIMENSIONS:						
Height (Stripped Top)**	2.67 m	8'9"	3.00 m	9'10"	3.22 m	10'7"
Height (To Top of ROPS Canopy)	3.46 m	11'4"	3.99 m	13'1"	4.34 m	14'3"
Height (To Top of ROPS Cab)	3.46 m	11'4"	3.82 m	12'6"	4.07 m	13'4"
Overall Length (with Blade & Ripper)	—		—		9.26 m	30'5"
(without Blade & Ripper)	—		—		5.33 m	17'6"
Overall Length (with SU Blade)***	6.09 m	20'0"	6.63 m	21'10"	7.50 m	24'8"
(without Blade)	4.64 m	15'2"	4.91 m	16'1"	5.33 m	17'6"
Width (Over Trunnion)	3.05 m	10'0"	3.30 m	10'10"	3.72 m	12'2"
Width (without Trunnion — Std. Shoe)	2.64 m	8'8"	2.87 m	9'5"	3.16 m	10'4"
Ground Clearance	618 mm	2'0"	596 mm	1'11"■	615 mm	2'0"
Blade Types and Widths:						
Angle Straight	4.99 m	16'4"	—		—	
Full 25° Angle	4.52 m	14'10"	—		—	
Universal	4.26 m	14'0"	4.65 m	15'3"	5.26 m	17'3"
Semi-U	3.94 m	12'11"	4.31 m	14'2"	—	
Fuel Tank Refill Capacity	643 L	170 U.S. gal	889 L	235 U.S. gal	1109 L	293 U.S. gal

* Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, semi universal blade with tilt, back-up alarm, seat belts, lights, rigid drawbar and front towing device.

— D8T and D9T equipped with track guides, ROPS/FOPS cab, single shank ripper and SU blade.

— D10T includes 10 SU blade single shank ripper and ROPS cab.

** Height (stripped top) — without ROPS canopy, exhaust, seat back or other easily removed encumbrances.

*** Includes drawbar.

■ SAE J1234.

Waste Handling Track-Type Tractors

Blade Specifications

MODEL	D6R Series III, D6R XL Series III & D6R LGP Series III			
	6SU		6SU XL	
Type	Semi Universal		Semi Universal	
Blade Capacities w/Trash Rack*	11.2 m ³	14.3 yd ³	11.2 m ³	14.3 yd ³
Weight, Shipping** (Dozer)	3026 kg	6657 lb	3026 kg	6657 lb
Tractor & Dozer Dimensions:				
A Length (Blade Straight)	5.31 m	17'5"	5.55 m	18'2"
Blade Dimensions:				
B Width (including std. end bits)	3.26 m	10'8"	3.26 m	10'8"
C Height	2019 mm	6'7"	2019 mm	6'7"
D Max. Digging Depth	473 mm	18.6"	459 mm	18.1"
E Ground Clearance @ Full Lift	1104 mm	3'7.5"	1195 mm	3'11.1"
F Manual Tilt	670 mm	2'2.4"	670 mm	2'2.4"
G Max. Pitch		+5.3°–4.8°		+5.3°–4.8°
H Max. Hydraulic Tilt	743 mm	2'5.3"	743 mm	2'5.3"
J Hydraulic Tilt (Manual Brace Centered)	408 mm	16.1"	408 mm	16.1"

* Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

MODEL	D6R Series III, D6R XL Series III & D6R LGP Series III			
	6S LGP		6SU XW	
Type	Straight		Semi Universal	
Blade Capacities*	9.4 m ³	12.3 yd ³	11.2 m ³	14.3 yd ³
Weight, Shipping** (Dozer)	2840 kg	6262 lb	3026 kg	6657 lb
Tractor & Dozer Dimensions:				
A Length (Blade Straight)	5.71 m	18'9"	—	—
Blade Dimensions:				
B Width (including std. end bits)	4.04 m	13'3"	3.56 m	11'8"
C Height	1101 mm	3'7.3"	2019 mm	6'7"
D Max. Digging Depth	655 mm	2'1.2"	459 mm	18.1"
E Ground Clearance @ Full Lift	1083 mm	3'6.6"	1195 mm	3'11"
F Manual Tilt	632 mm	2'0.9"	670 mm	2'2.4"
G Max. Pitch		+5.3°–4.8°		+5.3°–4.8°
H Max. Hydraulic Tilt	701 mm	2'3.6"	743 mm	2'5.3"
J Hydraulic Tilt (Manual Brace Centered)	385 mm	15.2"	743 mm	2'5.3"

* Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

MODEL	D7R Series II & D7R LGP Series II			
	7S		7SU	
Type	Straight		Semi Universal	
Blade Capacities*	10.9 m ³	14.2 yd ³	14.0 m ³	18.4 yd ³
Weight, Shipping** (Dozer)	4028 kg	8861 lb	4083 kg	8982 lb
Tractor & Dozer Dimensions:				
A Length (Blade Straight)	5.81 m	19'1"	6.03 m	19'9"
Blade Dimensions:				
B Width (including std. end bits)	3.90 m	12'10"	3.69 m	12'1"
C Height	1971 mm	6'6"	2133 mm	7'0"
D Max. Digging Depth	527 mm	1'8.7"	527 mm	1'8.7"
E Ground Clearance @ Full Lift	1145 mm	3'9.1"	1145 mm	3'9.1"
G Max. Pitch Adjustment		+3.1°–3.9°		+3.1°–3.9°
H Max. Hydraulic Tilt	845 mm	2'9.3"	799 mm	2'7.4"
J Hydraulic Tilt (Manual Brace Centered)	501 mm	1'7.7"	474 mm	18.6"

* Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

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MODEL	D7R Series II & D7R LGP Series II			
	7U		7S LGP	
Type	Universal		Straight	
Blade Capacities*	16.8 m ³	22 yd ³	12.3 m ³	16.1 yd ³
Weight, Shipping** (Dozer)	4402 kg	9684 lb	4113 kg	9061 lb
Tractor & Dozer Dimensions:				
A Length (Blade Straight)	6.27 m	20'7"	5.81 m	19'1"
Blade Dimensions:				
B Width (including std. end bits)	3.98 m	13'1"	4.50 m	14'9"
C Height	2162 mm	7'1"	1971 mm	6'6"
D Max. Digging Depth	527 mm	1'8.7"	668 mm	2'2.3"
E Ground Clearance @ Full Lift	1145 mm	3'9.1"	1153 mm	3'9.4"
G Max. Pitch Adjustment		+3.1°–3.9°		+3.0°–3.9°
H Max. Hydraulic Tilt	861 mm	2'9.9"	686 mm	2'3"
J Hydraulic Tilt (Manual Brace Centered)	511 mm	1'8.1"	426 mm	16.8"

* Blade capacities as determined by SAE J1265.

Notice that the capacity of the U-blade is the volume carried by a straight blade of the same dimensions plus the volume included in the "cup" of the U-blade. It is intended for **relative comparisons of dozer sizes**, and not for predicting capacities or productivities in actual field conditions.

** Shipping Weight — Total Bulldozer Arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

Waste Handling Track-Type Tractors

Blade Specifications

MODEL	D8T WHA					
	8SU		8U		8SU LGP	
Type						
Blade Capacities*	20 m ³	26.1 yd³	24.8 m ³	32.4 yd³	21.1 m ³	27.6 yd³
Dozer Weight**	5466 kg	12,025 lb	6313 kg	13,888 lb	5624 kg	12,400 lb
Tractor & Dozer Dimensions						
Length Blade Straight	6.39 m	21'0"	6.79 m	22'3"	6.39 m	21'0"
Blade Dimensions						
Width including std. end bits	3.94 m	12'11"	4.26 m	14'0"	4.52 m	14'10"
Height	2464 mm	8'1"	2515 mm	8'3"	2465 mm	8'1"
Maximum Dig Depth	582 mm	1'10.9"	582 mm	1'10.9"	582 mm	1'10.9"
Ground Clearance at full raise	1231 mm	4'0.5"	1231 mm	4'0.5"	1231 mm	4'1"
Maximum Hydraulic Tilt	951 mm	3'1.4"	1028 mm	3'4.5"	—	

MODEL	D9T WHA				D10T WHA	
	9SU		9U		10U	
Type						
Blade Capacities*	28.8 m ³	37.6 yd³	33.5 m ³	43.8 yd³	48.9 m ³	63.9 yd³
Dozer Weight**	6964 kg	15,353 lb	8059 kg	17,751 lb	—	
Tractor & Dozer Dimensions						
Length Blade Straight	6.84 m	22'5"	7.18 m	23'7"	8.01 m	26'3"
Blade Dimensions						
Width including std. end bits	4.31 m	14'2"	4.65 m	15'3"	5.26 m	17'3"
Height	2845 mm	9'4"	2845 mm	9'4"	3174 mm	10'5"
Maximum Dig Depth	606 mm	1'11.9"	606 mm	1'11.9"	679 mm	2'2.5"
Ground Clearance at full raise	1422 mm	4'8"	1422 mm	4'8"	1497 mm	4'10.9"
Maximum Hydraulic Tilt	940 mm	3'1"	1014 mm	3'3.9"	1074 mm	3'6.3"

*Blade capacities, weights and heights include 762 mm (2'6") trash rack on D8T blades, 914 mm (3'0") trash rack on D9T blades, and 1067 mm (3'6") trash rack on D10T blades.
 **Total bulldozer arrangement includes blade with trash rack, pusharms, braces, cylinders, lines, trunnions and lift cylinder mountings.

Features:

- **Unmatched versatility** — excavates, loads, carries, covers, dozes, spreads, compacts, shreds, sorts, grapples — a true all purpose machine. Performs well as a one-machine fleet, a support machine or an all-around backup unit.
- **Demolition applications** — The Waste Handling Arrangement (963C and 973C Waste Demolition Specials) can also be used in demolition or demolition transfer stations when properly equipped with the extra guarding required for this severe environment.
- **Special guard package** protects the final drive seals, pivot shafts and idlers from debris that can wrap around and damage these components.
- **Cat Turbine Precleaner** with prescreener to prevent airborne debris from clogging engine air intake.
- **Additional heavy duty guarding** helps protect sheet metal and machine components from damage in waste handling applications.
- **Improved serviceability** — swing open doors, guards and air coolers give quick access for cleaning debris and servicing.
- **Hinged, heavy duty radiator guard** with quick release “T” handles allows for easy access to clean the radiator.
- **Debris Barrier Package** protects machine from material entering engine and other compartments.
- **Lamp guard group** protects front and rear lamps with bolt on grids.
- **Optional rear striker bars** keep trash from climbing the track and damaging fenders.
- **Optional final drive abrasion guards** are available in two-piece or four-piece sections to protect the final drive case from premature wear from abrasion or gouging.
- **Optional single grouser, trapezoidal-shaped center hole track shoes** provide maximum traction. The center holes allow sprocket to punch out dirt and debris, best choice for landfill applications.
- **Optional chopper shoe track** uses cast shoes with extreme service single and diagonal grousers that chop and shred material as the machine moves and turns. Very effective for waste or demolition stations.
- **Flexxaire engine cooling fan** (optional on 973C) manually or automatically changes direction to purge accumulated debris from the radiator.
- **SystemOne®** is a Cat exclusive that matches the customer requirements of longevity and reliability and enables the owner to get higher profitability and a better return on investment. This revolutionary undercarriage significantly reduces the Owning & Operating costs and has been totally redesigned. This feature offers a dramatic increase in reliability for this most demanding application.
- **Cab and Operator Comfort** — Standard air suspension seat, air conditioning, adjustable steering pedals, storage area, and excellent visibility enable the operator to be more comfortable in this application for better profitability.

Waste Handling Track Loaders

Specifications



MODEL	953C WHA		963C WHA		973C WHA	
Flywheel Power	95 kW	128 hp	118 kW	158 hp	172 kW	230 hp
Operating Weight*	15 847 kg	34,936 lb	20 639 kg	45,501 lb	27 803 kg	61,295 lb
Engine Model	3126B ATAAC		3126B ATAAC		C9	
Rated Engine RPM	2000		2000		2000	
Bore	110 mm	4.33"	110 mm	4.33"	112 mm	4.41"
Stroke	127 mm	5"	127 mm	5"	149 mm	5.87"
No. Cylinders	6		6		6	
Displacement	7.2 L	439 in³	7.2 L	439 in³	8.8 L	537 in³
Speeds, Forward/Reverse:						
1st	10 km/h	6.2 mph	10 km/h	6.2 mph	10 km/h	6.2 mph
2nd	Infinitely		Infinitely		Infinitely	
3rd	Variable		Variable		Variable	
Hydraulic Cycle Time, Bucket Empty, in Seconds:						
Raise	6.9		6.6		6.7	
Dump	1.3		1.3		1.5	
Lower (Empty Float Down)	2.6		2.1		2.9	
Track Rollers (Each Side)	6		6		7	
Width of Standard Track Shoes	500 mm	20"	550 mm	21.6"	500 mm	19.7"
Length of Track on Ground	2345 mm	92.4"	2438 mm	97"	2930 mm	115"
Ground Contact Area (with Standard Shoes)	2.3 m ²	3565 in²	2.7 m ²	4184 in²	2.93 m ²	4542 in²
Ground Pressure	67.6 kPa	9.8 psi	75 kPa	10.87 psi	93.1 kPa	13.5 psi
Ground Clearance	400 mm	15.7"	396.5 mm	15.6"	457 mm	17.9"
Track Gauge	1800 mm	71"	1850 mm	72.8"	2080 mm	82"
Width without Bucket	2300 mm	10.5"	2400 mm	94.5"	2580 mm	102"
Fuel Tank Refill Capacity	233.5 L	62 U.S. gal	315 L	83.2 U.S. gal	430 L	113 U.S. gal
Hydraulic System Refill Capacity	104 L	27.5 U.S. gal	140 L	37 U.S. gal	159 L	42 U.S. gal

*Includes GP landfill bucket with bolt-on adapters, long tips and segments.

See Wheel Loader section of this book for summary of S.A.E. Guidelines for Loader Specifications, to which Caterpillar adheres.

**MULTI-PURPOSE
 LANDFILL BUCKETS**

Machine Model	953C*		963C*		973C*	
Bucket Model	B53-3ML 264-3281		B63-4ML 264-3277		B73-6ML 271-7028	
Capacity, rated (Refuse)	2 m ³	2.62 yd³	2.7 m ³	3.5 yd³	4.1 m ³	5.36 yd³
Capacity, rated (Earth)	1.53 m ³	2 yd³	1.9 m ³	2.5 yd³	2.68 m ³	3.5 yd³
Width	2378 mm	93.62"	2482 mm	97.71"	2710 mm	106.69"
Height	1677 mm	66.02"	1856 mm	73.07"	1945 mm	76.57"
Depth	1433 mm	56.41"	1537 mm	60.51"	1608 mm	63.30"
Teeth — Optional	8		8		8	
Clearance @ 45° dump	2738 mm	9'0"	2870 mm	9'5"	3121 mm	10'3"
Reach @ 45° dump	806 mm	2'8"	1013 mm	3'4"	1220 mm	4'0"
Digging Depth	229 mm	9"	203 mm	8"	211 mm	8.3"
Weight (approx.)	1508 kg	3483 lb	2026 kg	4466 lb	2965 kg	6536 lb

*Standard GP or MP buckets with added trash rack also available.

Features:

- **Choice of PLUS TIPS or Chopper Blades ...**
PLUS TIPS are standard on 816F, 826H and 836H. Chopper blades alternate in a staggered-chevron design for maximum coverage and density.
- **Cat designed and manufactured power train** ... for optimum match, performance and efficiency. Responsive Cat diesel Engine. Single-lever planetary power shift. All-wheel drive.
- **Center-point articulation** ... excellent maneuverability. Front and rear drums track, so material is chopped and compacted twice each pass.
- **Protective guarding** ... helps keep trash from damaging machine components.
- **Caterpillar landfill blades** spread refuse and cover material ... built strong to handle the wide range of refuse encountered in landfills.
- **Operator comfort and convenience** ... sound suppressed cab with pressurized and filtered air circulation system. Adjustable suspension seat. Electronic Monitoring System and gauge package is standard. Optional air conditioner available.
- **Striker bars** ... standard on 816F, 826H and 836H, prevents refuse from being carried over the rear wheels.
- **Smooth wheel option** ... If our tip selection does not meet your needs, consider our Caterpillar smooth steel wheel. We test and build a Caterpillar system. Engineers who work together with our power train, structures and manufacturing engineers design and manufacture our wheels in the same facility in which the machines are designed and built. This ensures the entire system is complemented by each component. If you alter components, you could compromise a system that was designed and tested for peak performance. If a wheel is produced that does not meet our design specifications and does not balance the load over our final drives, it could reduce the life of the bearing substantially and wear out other components creating unnecessary downtime. This also allows our standard axle guard system to work with the components for which it was designed.

Specifications
● Rimpull

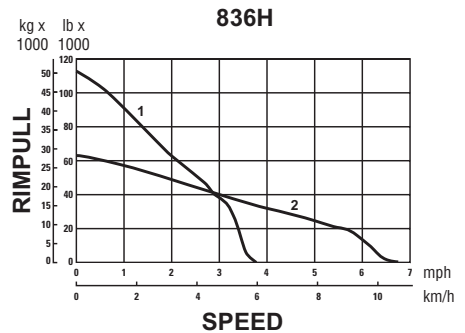
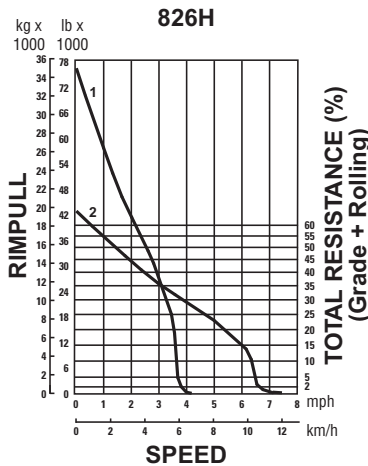
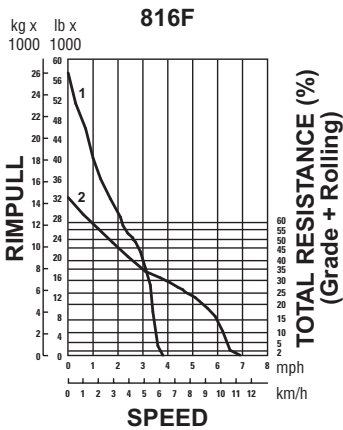
Waste Handling
Landfill Compactors



MODEL	816F		826H		836H	
Flywheel Power	190 kW	240 hp	253 kW	340 hp	358 kW	480 hp
Operating Weight*	23 946 kg	52,793 lb	36 967 kg	81,498 lb	53 682 kg	113,348 lb
Engine Model	3176 DITA		3406E DITA		3456 DITA	
Rated Engine RPM	2100		2000		1900	
No. Cylinders	6		6		6	
Displacement	10.3 L	628 in ³	14.6 L	893 in ³	15.8 L	966 in ³
Speeds:						
Forward	2		2		2	
Reverse	2		2		2	
Turning Radius with Straight Blade						
Inside Blade Corner	3.5 m	11'6"	3.2 m	10'6"	4.3 m	14'11"
Outside Blade Corner	6.7 m	21'9"	7.3 m	23'9"	9.0 m	29'6"
Fuel Tank Refill Capacity	464 L	122.6 U.S. gal	640 L	169.1 U.S. gal	795 L	210 U.S. gal
WHEELS:	PLUS TIP		PLUS TIP		PLUS TIP	
Each Drum Width	1.02 m	3'4"	1.2 m	3'11"	1.4 m	4'7"
Diameters, over Tips	1.7 m	5'10"	1.9 m	6'6"	2.0 m	6'9"
Drum only	1.3 m	4'3"	1.53 m	5'0"	1.62 m	5'8"
Tips per Wheel	20		25		35	
Tip Height	158 mm	6.5"	158 mm	6.5"	158 mm	6.5"
Chopper Blades per Wheel	20		24		28	
Blade Height	152 mm	6"	158 mm	6"	158 mm	6"
Width of Two Pass Coverage	4.5 m	14'9"	4.78 m	15'8"	5.67 m	18'7"
GENERAL DIMENSIONS:						
Height (Overall)	3.8 m	12'8"	4.2 m	13'7"	4.5 m	14'9"
Height (Top of Cab)	3.4 m	11'3"	3.8 m	12'8"	4.1 m	13'6"
Wheel Base	3.35 m	11'0"	3.7 m	12'2"	4.55 m	14'11"
Overall Length with Dozer	7.85 m	25'7"	8.27 m	27'2"	10.18 m	33'5"
Width over Drums	3.33 m	10'11"	3.8 m	12'8"	4.18 m	14'1"
Ground Clearance	456 mm	1'5"	489 mm	1'6"	697 mm	2'3"
LANDFILL BULLDOZER:						
Width	3.65 m	12'0"	4.5 m	14'9"	5.19 m	17'0"
Height**	1.91 m	6'3"	1.91 m	6'3"	2.22 m	7'3"

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*Operating Weight includes coolant, full hydraulics, full fuel tank, all heaviest options and 82 kg (180 lb) operator.
**Height (stripped top) — without ROPS cab, exhaust, seat back or other easily removed encumbrances.



KEY
1 — 1st Gear
2 — 2nd Gear

**Waste Handling
Landfill Compactors**

Blade Specifications

MODEL	816F		826H		836H	
Type	Landfill Spreading		Landfill Spreading		147-4425 Straight	
Capacity**						
Earth	2.9 m ³	3.79 yd³	3.68 m ³	4.81 yd³	5 m ³	6.66 yd³
Refuse	10.48 m ³	13.70 yd³	12.74 m ³	16.66 yd³	19.8 m ³	25.9 yd³
Weight, Dozer*	2107 kg	4645 lb	2739 kg	6038 lb	3400 kg	7650 lb
General Dimensions: (Tractor & Dozer)						
Length	7.79 m	25'7"	8.38 m	27'6"	10.18 m	33'4"
Width	3.65 m	12'0"	4.5 m	14'9"	5.19 m	17'0"
Blade Dimensions:						
Width, End Bits	3.65 m	12'0"	4.5 m	14'9"	5.19 m	17'0"
Height, Trash Rack	1915 mm	6'3"	1935 mm	6'4"	2220 mm	7'3"

*Total Bulldozer Arrangement.

**Blade capacities determined by SAE recommended practice J1265.

U-BLADE	816F		826H		836H	
Model:	7Q-8239		263-6869		260-2015	
Blade:						
Capacity (Refuse)	12 m ³	16 yd³	17 m ³	22 yd³	25 m ³	33 yd³
Length (Cutting Width)	3658 mm	12'0"	4369 mm	14'4"	5182 mm	17'0"
Height	1702 mm	5'7"	2007 mm	6'7"	2210 mm	7'3"
Weight, Installed (without Hydraulics)	1633 kg	3600 lb	2994 kg	6600 lb	4309 kg	9500 lb

SEMI-U BLADE	816F		826H		836H	
Model:	213-4473		N/A		N/A	
Blade:						
Capacity (Refuse)	9 m ³	12 yd³				
Length (Cutting Width)	3785 mm	12'5"				
Height	1626 mm	5'4"				
Weight, Installed (without Hydraulics)	2068 kg	4560 lb				

W-BLADE	816F		826H	
Model:	156-8316		135-7326	
Replaces "S" Blade				
Blade:				
Capacity (Refuse)	12 m ³	16 yd³	17 m ³	22 yd³
(Dirt)	7.11 m ³	9 yd³	—	—
Length (Cutting Width)	3658 mm	12'0"	4420 mm	14'6"
Moldboard Height	1854 mm	6'1"	2057 mm	6'9"
Weight, Installed (without Hydraulics)	2068 kg	4560 lb	2994 kg	6600 lb

TILT STRAIGHT BLADE	816F		826H	
Model:	136-7893		136-7892	
Blade:				
Capacity (Refuse)	11 m ³	14 yd³	13 m ³	17 yd³
Length (Cutting Width)	3658 mm	12'0"	4369 mm	14'4"
Weight, Installed	2323 kg	4900 lb	3529 kg	7780 lb

Features:

Caterpillar Waste Handling Wheel Loaders are equipped with the features and protection required in a demanding waste handling environment. These Caterpillar designed and built machines feature the following advantages:

- **Exceptional productivity** with fast cycle times for maximum production day-in day-out whether dozing, loading, stacking, or load and carry.
- **Protected work environment** enhances operator comfort, convenience and productivity.
- **Modified front frames** — (Standard on the 980H WHA) provide large cutouts that allows debris to fall out rather than packing and also provide easy access if cleaning is necessary.
- **Standard front drive guard and axle seal guards** (except 980H) protect from wire, string, strapping and other debris from wrapping and causing damage.
- **Front light guards** protect the lights from debris falling over the bucket spill plate.
- **Hinged crankcase and power train guards** help protect the engine and power train. The hinged design provides easy access for cleaning. (Powered guards available on some models.)
- **Standard waste application cooling system.** The improved, trash-resistant, multi-row module (IMRM) radiator, hood and engine enclosures work as a system to keep the radiator and engine compartment free of debris.
- **Trash resistant IMRM radiator** has six fins per inch (25.4 mm) and in-line tubes that resist plugging by allowing debris to pass through the core.
- **Hinged radiator prescreener** (966H & 972H) eliminates debris larger than what the radiator core will pass.
- **Hinged grill** (966H & 972H) allows access to hydraulic oil cooler and air conditioning condenser, which swing out for easy cleaning.

Recommended Waste Handling Options

- **Powered crankcase and power train guards** raise and lower at the flip of a switch allowing fast, easy and frequent cleanings.
- **High lift arrangement** increases bucket hinge pin height offering increased stacking and stock-piling capability. A critical feature when incoming volumes exceed conveyor capacity or floor space.
- **Traction control system (TCS)** option for 938G/IT38G provides maximum traction in slippery conditions. TCS electronically senses and limits wheel slip at each wheel independently.
- **Limited-slip differential** limits tire slip on both front and rear axles. Increases traction and reduces tire wear and scuffing in wet or dry conditions. Provides an alternative to the No SPIN differential which is not recommended due to increased tire wear, turning interference and poor tracking on dry surfaces.
- **Tire options:**
 - L-5 bias hard rock lug
 - L-5 slick
 - RL-5K Goodyear radials
 - XMINE Michelin radials (varies by model)
 - Foam-filled
- **Hitch guards** help protect components in hitch area from damage.
- **Reversing radiator fan** is hydraulically driven and can be reversed by a switch in the operator station or automatically by timer. Reduces need for cooling system cleaning and improves cooling capability.
- **Other guarding and options** are available. Contact your Caterpillar Dealer for information.

Work Tools

- **Refuse bucket** has excellent dozing and stock-piling capability. Large spill plate helps protect the machine from debris falling over the top of the bucket. Available in pin-on or quick coupler configurations.
- **Pallet forks** are ideal for handling refuse destined for further recycling or stacking refuse in landfills for covering.

- **Multi-purpose bucket** has the capability to clamp and sort large objects, doze cover material or other light dozing chores.
- **Quick coupler** increases versatility by allowing a single machine to utilize a wide variety of work tools in a host of applications.



MODEL	924Gz WHA		924G WHA		928G WHA IT28G WHA	
Flywheel Power	90 kW	121 hp	90 kW	121 hp	98 kW	131 hp
Peak Power	98 kW	132 hp	98 kW	132 hp	111 kW	149 hp
Engine Model	3056 DITAAC		3056 DITAAC		3056 DITAAC	
Rated Engine RPM	2300		2300		2300	
Bore	100 mm	3.94"	100 mm	3.94"	100 mm	3.94"
Stroke	127 mm	5"	127 mm	5"	127 mm	5"
No. Cylinders	6		6		6	
Displacement	6 L	366 in ³	6 L	366 in ³	6 L	366 in ³
Speeds Forward	km/h	mph	km/h	mph	km/h	mph
1st	6.6	4.1	6.6	4.1	7.9	4.9
2nd	12.0	7.5	12.0	7.5	12.6	7.8
3rd	21.3	13.2	21.3	13.2	25.8	16.0
4th	38.0	23.6	38.0	23.6	37.7	23.4
Speeds Reverse						
1st	6.6	4.1	6.6	4.1	7.9	4.9
2nd	12.0	7.5	12.0	7.5	12.6	7.8
3rd	21.3	13.2	21.3	13.2	25.8	16.0
Hydraulic Cycle Time*					Seconds	
Rated Load in Bucket:	Seconds		Seconds		928G	IT28G
Raise	5.2		5.2		6.0	6.0
Dump	1.1		1.6		1.2	2.0
Lower (empty, float down)	3.0		2.7		3.0	3.0
Total	9.3		9.5		10.2	11.0
Tread Width**	1.88 m	6'2"	1.88 m	6'2"	1.95 m	6'5"
Width Over Tires**	2.36 m	7'9"	2.36 m	7'9"	2.56 m	8'5"
Ground Clearance**	370 mm	15"	370 mm	15"	408 mm	16"
Fuel Tank Capacity	225 L	59.4 U.S. gal	225 L	59.4 U.S. gal	225 L	59.4 U.S. gal
Hydraulic Tank Capacity	70 L	18.5 U.S. gal	70 L	18.5 U.S. gal	70 L	18.5 U.S. gal
Hinge Pin Height:						
Full Lift Std.	3.69 m	12'1"	3.81 m	12'6"	3.87 m	928G 12'8"
					3.98 m	IT28G 13'1"
High Lift	—		4.32 m	14'2"	—	
Operating weight up to:	10 155 kg	22,388 lb	11 255 kg	24,813 lb	12 277 kg	928G 27,066 lb
					12 909 kg	IT28G 28,459 lb

*With standard lift arms.

**With standard tires.

Specifications

Waste Handling Wheel Loaders



MODEL	938G WHA IT38G WHA		950G WHA		962G WHA IT62G WHA	
Flywheel Power	119 kW	160 hp	134 kW	180 hp	149 kW	200 hp
Peak Power	128 kW	172 hp	147 kW	197 hp	154 kW	207 hp
Engine Model	3126 DITA		3126 DITA		3126 DITA	
Rated Engine RPM	2200		2200		2200	
Bore	110 mm	4.3"	110 mm	4.3"	110 mm	4.3"
Stroke	127 mm	5"	127 mm	5"	127 mm	5"
No. Cylinders	6		6		6	
Displacement	7.2 L	439 in³	7.2 L	439 in³	7.2 L	439 in³
Speeds Forward	km/h	mph	km/h	mph	km/h	mph
1st	7.6	4.7	6.9	4.3	6.9	4.3
2nd	13.9	8.6	12.7	7.9	12.7	7.9
3rd	23.9	14.8	22.3	13.9	22.3	13.9
4th	39.2	24.3	37.0	23.0	37.0	23.0
Speeds Reverse						
1st	7.6	4.7	7.6	4.7	7.6	4.7
2nd	13.9	8.6	13.9	8.7	13.9	8.7
3rd	39.2	24.3	24.5	15.3	24.5	15.3
4th	—		40.5	25.3	40.5	25.3
Hydraulic Cycle Time*						
Rated Load in Bucket:	Seconds		Seconds		Seconds	
Raise	6.0		6.3		6.3	
Dump	1.4		2.2		2.2	
Lower (empty, float down)	2.8		2.2		2.2	
Total	10.2		10.7		10.7	
Tread Width**	2.02 m	6'8"	2.14 m	7'0"	2.14 m	7'0"
Width Over Tires**	2.60 m	8'6"	2.89 m	9'6"	2.89 m	9'6"
Ground Clearance**	400 mm	16"	400 mm	16"	400 mm	16"
Fuel Tank Capacity	254 L	67 U.S. gal	295 L	78 U.S. gal	295 L	78 U.S. gal
Hydraulic Tank Capacity	90 L	23.8 U.S. gal	153 L	40.4 U.S. gal	88 L	23.2 U.S. gal
Hinge Pin Height:						
Full Lift Std.	3.85 m	12'7"	3.98 m	13'1"	4.17 m	13'8"
High Lift w/L-5 tires	4.20 m	13'9"	4.54 m	14'11"	—	
Operating weight up to:	15 290 kg	33,720 lb	21 430 kg	47,260 lb	19 070 kg	42,050 lb

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*With standard lift arms.

**With standard tires.

Waste Handling Wheel Loaders

Specifications



MODEL	966H WHA		972H WHA		980H WHA	
Flywheel Power	195 kW	262 hp	214 kW	287 hp	237 kW	318 hp
Peak Power	195 kW	262 hp	214 kW	287 hp	237 kW	318 hp
Engine Model	3306 ATAAC		C13 ATAAC		C15	
Rated Engine RPM	2150		1800		1800	
Bore	130 mm	5.1"	130 mm	5.1"	137 mm	5.4"
Stroke	140 mm	5.5"	157 mm	6.2"	171 mm	6.75"
No. Cylinders	6		6		6	
Displacement	11.1 L	677 in³	12.5 L	763 in³	15.2 L	928 in³
Speeds Forward	km/h	mph	km/h	mph	km/h	mph
1st	6.3	3.9	6.8	4.2	6.6	4.1
2nd	12.2	7.5	12.1	7.5	11.8	7.4
3rd	21.2	13.1	21.2	13.0	20.7	12.9
4th	35.6	22.1	35.7	22.0	36.3	22.5
Speeds Reverse						
1st	6.9	4.3	7.7	4.8	7.6	4.7
2nd	13.3	8.3	13.8	8.6	13.5	8.4
3rd	23.7	14.7	24.2	15.0	23.7	14.7
4th	35.6	22.1	37.5	23.3	41.5	25.8
Hydraulic Cycle Time*						
Rated Load in Bucket:	Seconds		Seconds		Seconds	
Raise	5.9		5.9		6.0	
Dump	1.6		2.1		2.0	
Lower (empty, float down)	2.4		2.4		3.4	
Total	9.9		10.4		11.4	
Tread Width**	2.23 m	7'4"	2.23 m	7'4"	2.44 m	8'0"
Width Over Tires**	2.97 m	9'9"	2.96 m	9'9"	3.25 m	10'8"
Ground Clearance**	430 mm	17"	430 mm	17"	442 mm	17.4"
Fuel Tank Capacity	410 L	108.3 U.S. gal	410 L	108 U.S. gal	479 L	127 U.S. gal
Hydraulic Tank Capacity	110 L	29 U.S. gal	110 L	29 U.S. gal	125 L	33 U.S. gal
Hinge Pin Height:						
Full Lift Std.	4.23 m	13'10"	4.44 m	14'7"	4.51 m	14'9"
High Lift w/L-5 tires	4.83 m	15'10"	4.88 m	16'1"	4.78 m	15'8"
Operating weight up to:	29 457 kg	64,923 lb	26 607 kg	58,642 lb	30 905 kg	68,133 lb

*With standard lift arms.

**With standard tires.

INFORMATION PRODUCTS AND SOLUTIONS

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INTRODUCTION

Having decision-ready information about equipment location, health and productivity is essential to any profitable operation. As pressure mounts to make operations more effective and efficient at all levels — machines, job sites and operations offices — our customers are seeking help in coordinating machines, applications, operators, productivity, maintenance and risk — no matter what type of work they do.

Caterpillar, in conjunction with our worldwide dealer network, has responded to this need with several information and technology-based offerings. These offerings are grouped into 3 main categories: Control and Guidance Technologies, Site Production Systems and Asset Monitoring and Management.

Control and Guidance Technologies are described as technologies which provide guidance instructions to a machine and/or control the movement of the “working” component of a machine (i.e. the blade or bucket), or the machine itself. Offerings in this category are:

- AccuGrade® Grade Control System
- CAES
- Aquila® Drill Systems
- Aquila® Dragline Systems

Site Production Systems are delivered as software and expertise to improve the efficiency and effectiveness of a job or site. This offering also includes the associated onboard hardware and radio infrastructure.

- MineStar® Fleet Commander
- MineStar Machine and Material Tracking

Asset Monitoring and Management are a set of products and services which provide data and information about multiple aspects of equipment, such as machine location, hours and health, to help customers more effectively manage down-time, plan maintenance and deter theft. Offerings in this category are:

- Product Link
- EquipmentManager
- Machine Security System
- MineStar Health

This section outlines some of these innovative products and solutions available today.

PRODUCT	APPLICATIONS	MACHINES
Product Link™ System	On-board machine hardware that gathers and wirelessly transmits data to EquipmentManager on the Dealer StoreFront.	Entire fleet (Cat® and other)
EquipmentManager	User fleet management StoreFront application that allows users to remotely monitor and manage their equipment using data from Product Link. Data includes SMU, machine location, machine health and repair/PM information.	Entire fleet (Cat® and other)
MSS (Machine Security System)	Special keys control access to machine starting. Deters theft or unauthorized use of machines.	Entire fleet (Cat® and other)
Pocket Tec™ Software	Works with your Personal Digital Assistant (PDA) to program machines to accept Machine Security System special keys and monitor or save engine functions. Working together the Pocket Tec and PDA allows you to add, delete or change which keys control access, and change which days or hours a machine may be started.	Owner/Operator or Entire fleet (Cat® and other)
AccuGrade® GPS Grade Control	Complex contours, bulk earthworks, design files. Add machine-mounted components to AccuGrade Ready Option (ARO) for Global Positioning System (GPS)-based grade control. Tolerances of ±30 mm (1.18 in).	D3G-D9T Track-type Tractors, 12H-16H Motor Graders, and selected models of hydraulic excavators available with the "Indicate only" function
AccuGrade Laser Grade Control	Finish grading. Use indoors or outdoors. Tolerances as tight as ± 4 to 6 mm (0.16 to 0.24 in) depending on material. Use with integrated on-board AccuGrade Ready Option (ARO).	D3G-D7R Track-type Tractors, 12H-16H Motor Graders
AccuGrade Sonic Grade Control	Sonic sensor controls blade elevation referenced off stringline or curb. Another configuration to use with the ARO.	12H-16H Motor Graders
AccuGrade Cross Slope Grade Control	Stand-alone grade control on an ARO machine. Ideal for crowned roads and shoulders. Automatic system to control one end of motor grader blade to correlate with manually controlled slope of the other end.	12H-16H Motor Graders
AccuGrade ATS Grade Control	Automatic Tracking System. Grade control for high precision 3D applications using automatic total station for positioning. Each machine requires a dedicated system.	12H-16H Motor Graders
CAES ^{basic} (Computer Aided Earthmoving System)	Surface Control and Machine Guidance. Uses high precision GPS and on-board computer to improve machine productivity.	Track-type tractors, wheel dozers, wheel tractor-scrapers, wheel loaders, shovels and surveyor truck
CAES ^{Ultra}	Surface Control, Machine Guidance, Ore Control and Landfill Compaction. Uses high precision GPS plus on- and off-board computers to maximize machine productivity, ore extraction or landfill airspace.	Track-type tractors, landfill compactors, wheel dozers, wheel tractor-scrapers, wheel loaders, shovels, and excavators
Aquila® Drill	Monitors drill performance and provides strata recognition. Uses GPS for precision guidance.	Blast hole drills
Aquila® Dragline	Monitor performance and improve machine productivity. Uses high precision GPS and on-board computing.	Draglines
MineStar® Integrated Systems	Integrated Fleet Management system.	Entire mining fleet
MineStar® Health System	Provides performance and machine health data/ reports.	Mining machines equipped with VIMS® (Vital Information Management System)

PRODUCT LINK™ SYSTEM

For more information see www.cat.com/pl

Product Link provides two-way information flow between machine on-board systems and your computer through Dealer StoreFront and EquipmentManager. Cat® Product Link enables the use of EquipmentManager to keep you in touch with your machines. Product Link transmits important data such as machine location, hours and health information wirelessly via satellite technology.

PL121SR is a satellite transmitter/receiver installed on the machine to provide machine operating hours and location. It will also automatically send alerts when machines operate beyond owner-defined time and location limits. PL321SR provides machine operating hours and location as well as health, fuel and performance information.

This quick reference will help you determine which Product Link model will provide the information you need to effectively and efficiently manage your equipment. Please refer to the EquipmentManager chapter for additional information.

EquipmentManager Information		Product Link Solutions	
Equipment Manager Watch Levels	Feature	PL121SR	PL321SR
Asset Watch	Machine Location	X	X
	Machine Location Mapping	X	X
	Machine Location History	X	X
	Non-reporting Machine Identification	X	X
	Machine Hour Reading	X	X
	Machine Hour History	X	X
	Time and Geo-Fencing	X	X
Maintenance Watch	Planned Preventive Maintenance (PM) History	X	X
	PM Notes	X	X
	Next PM Due (Date & Hour Based)	X	X
	PM Alerts	X	X
	PM Checklist	X	X
	PM Parts List	X	X
	Customized PM Checklist	X	X
	PM and Repair Planner	X	X
	On-Line Parts Ordering	X	X
	Manage Major Repairs	X	X
	Repair History	X	X
	PM or Repair Request for Quote	X	X
Health Watch	Event and Diagnostic Codes		X
	Event and Diagnostic Code Troubleshooting Procedures		X
	Event and Diagnostic Code Alerts		X
	Event and Diagnostic Code History		X
	Fuel Level		X
	Fuel Used		X
	Fuel Level Alert		X
	Fuel Used History and Graphic Display		X
	Refueling Information		X
	Fuel Level History		X
	Refueling History		X
4 Digital Switch Channels		X	

EQUIPMENTMANAGER

For more information see www.cat.com/em

EquipmentManager simplifies fleet management by providing valuable machine information in order to increase machinery use and manage the entire operation more efficiently. EquipmentManager is the software on the Dealer Storefront internet website used to review data transmitted from the machine's on-board Product Link hardware. With Product Link hardware installed on a machine, customers may subscribe to EquipmentManager from their Cat dealer. Refer to the Product Link Chapter for more information on the on-board hardware required to transmit data to EquipmentManager.

EquipmentManager has three levels of machine status — red (requires immediate action), yellow (requires monitoring), and green (normal). Customers access the information shown below from the Dealer StoreFront website. They may search and categorize information by alert level, their own selected groupings of equipment, machine ID, make or model. They can also set custom preferences for how information is viewed. Alerts may be emailed or sent to a pager, cell phone or other device. Customers may choose from the following information “Watch” levels of service.

Asset Watch:

- Machine Location
- Machine Location Mapping
- Machine Location History
- Non-reporting Machine Identification
- Machine Hour Reading
- Machine Hour History
- Time and Geo-Fencing
- Time and Geo-Fence Alerts

Maintenance Watch:

- Planned Preventive Maintenance (PM) History
- PM Notes
- Next PM Due (Date & Hour Based)
- PM Alerts
- PM Checklist
- PM Parts List
- Customized PM Checklist
- PM and Repair Planner
- On-Line Parts Ordering
- Manage Major Repairs
- Repair History
- PM or Repair Request for Quote

Health Watch:

- Event and Diagnostic Codes
- Event and Diagnostic Code Troubleshooting Procedures
- Event and Diagnostic Code Alerts
- Event and Diagnostic Code History
- Fuel Level
- Fuel Used
- Fuel Level Alert
- Fuel Used History and Graphic Display
- Fuel Level History
- Refueling History
- 4 Digital Switch Channels

Machine Management Options:

By Exception — These exceptions include the following:

- Time-fencing and geographical fencing alerts
- Maintenance due
- Major repair due
- Diagnostic events
- Diagnostic code alerts
- Fuel level alert

Information is displayed by machine, along with descriptions of what caused the alert, and the ability to obtain further information about it. You can search and categorize information by alert level, group, equipment ID, make and model. Equipment-Manager can also send text-message alerts in the form of email (such as a PM is due) to pager or cell phone.

By Machine-specific information — Equipment-Manager also provides a search function that lets you search for specific information by machine. You can perform a search by group, equipment ID, make and model. Or you can conduct an advanced search, (for example you might search for all machines within 100 miles of a given location that have PMs due next week). After initiating either search, you receive results in an Event Summary report.

NOTE: Health Watch information is dependent upon the machine model, year of production and Product Link model installed. Machines with electronic engines and transmission equipped with Product Link model 321SR normally can provide this information.

MACHINE SECURITY SYSTEM (MSS)

Manage Access to Your Machines

For more information see www.cat.com/mss

This system is designed by Caterpillar. It disables the starting system when either a standard key or unauthorized MSS key is inserted. Only an MSS key with your unique code will allow the machine to start. The MSS electronic control module checks the key being inserted against your pre-approved list of authorized keys. MSS is integrated into the electronics, so it can't be bypassed to start your equipment. It is virtually impossible to defeat.

MSS programmable features can be tailored to your needs.

- Limit operators to selected machines.
- Control which hours and days equipment may be started (Guard against unauthorized “weekend use” of equipment).
- Control access by untrained operators or unauthorized personnel, reducing injury risk.
- Programmable for active and inactive periods, such as disarming the system during regular work hours when a standard key can be used, and then reverting to an MSS key after hours.
- MSS can be programmed so a key will expire on a certain date and no longer start the machine.
- MSS can be programmed so that one key can operate any machine in your fleet. A machine can be programmed to accept up to 255 unique MSS keys.

Availability

- May be installed in the field on Cat® machines and other brands of equipment.
- Available from the factory for many models.
- Works on both 12- and 24-volt systems.

POCKET TEC™ SOFTWARE

Program MSS Keys

For more information see www.cat.com/pt

You control which keys can be programmed to start a machine with your Personal Data Assistant (PDA) and Caterpillar's Pocket Tec™ software (both purchased separately). Use them to add, delete or change keys to allow or prevent access, and change which days or hours the machine may be started. Different editions of Pocket Tec™ software offer specialized information depending on your application. In addition to the MSS edition, Driver Edition is designed for an Owner/Operator or a driver in a fleet operation. It monitors truck engine functions and driving style. Fleet Edition is designed to manage a fleet of trucks and save the engine information to a PC.

ACCUGRADE® GPS, SONIC, CROSS SLOPE AND ATS GRADE CONTROL PRODUCTS

Meet Your Production Needs

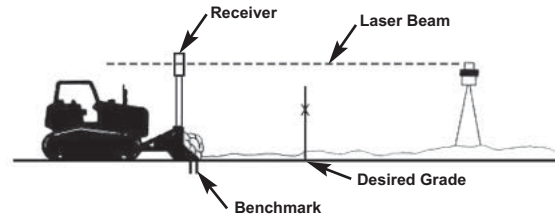
For more information see www.CatAccuGrade.com

The AccuGrade Ready Option is designed into the machines. The backbone of AccuGrade systems, it includes harnesses, controls, valves, and a Controller Area Network (CAN) architecture to support laser, sonic, cross slope, Automatic Tracking System (ATS), and GPS based grade control systems. Simply change sensors, receivers, and displays to change the grade control system the machine uses. The AccuGrade GPS Grade Control System is a high technology machine control and guidance system that allows operators to grade with increased accuracy, without the need for survey stakes. Off-board, site infrastructure is required to transmit high precision GPS signals to the machines. Digital design data, in-cab operator guidance features and automatic blade controls help the operator achieve grade faster, meaning higher productivity, lower operating costs, and greater profitability. AccuGrade GPS will grade to a digital design for complex contours and bulk earthworks. AccuGrade sonic and cross slope functionality make fine grading with a motor grader easier and more accurate. Choose ATS Grade control for motor graders in high precision 3D applications. It uses an automatic total station for positioning. Each motor grader using ATS must have its own ATS unit.

AccuGrade grade control systems offer these advantages and cost savings:

- Increase productivity by up to 50%
- Reduce guesswork and costly rework by moving material correctly the first time
- Reduce survey costs up to 90%
- Increase material utilization
- Reduce operating costs
- Reduce labor requirements and costs
- Reduce need for staking, string lines, and grade checkers
- Extend the work day
- Finish jobs faster

ACCUGRADE LASER GRADE CONTROL Manage Fine Grading Tolerances for Maximum Profit



The AccuGrade Laser Grade Control System is designed for a wide range of construction earthwork applications requiring tight tolerances and high production rates. Field-proven and versatile, the dual laser system is ideal for fine grading of sites with flat, single or dual slope surfaces, such as industrial, commercial and residential building sites. An AccuGrade laser grade control system consists of the AccuGrade Ready Option on the machine, laser masts and receivers, the cab control display, plus a laser transmitter. AccuGrade can be used indoors or outdoors and several machines can work off a single laser transmitter. Depending on the material, AccuGrade laser grade control can work to a finish grade accuracy of ± 4 to 6 mm (0.16 to 0.24 in).

Conventional Staking Method Costs vs. Laser Grade Control System Savings

The AccuGrade Laser Grade Control System provides process control for the fine grading operation, affecting costs not typically associated with the machine. Some of the cost areas controlled by the system can be analyzed with an example:

Example Job Site Specifications (Metric)

- Pad Size: 3716 m²
- Metric Tons of Base Material: 1376 metric tons
- Cost of Base Material Metric Ton: \$7.26
- Cost of Concrete per Cubic Meter: \$57.34
- Grade Stakes: \$6 per stake
- Grade Checker Daily cost: \$100
- Laborer Daily cost: \$75
- Daily cost of owning and operating Dozer: \$536
- Daily cost of owning and operating Compactor: \$250
- Daily cost of owning and operating Loader: \$350



Example Job Site Specifications (English)

- Pad Size: 40,000 ft²
- Tons of Base Material: 1517 tons
- Cost of Base Material Ton: \$8.00
- Cost of Concrete per Cubic Yard: \$75
- Grade Stakes: \$6 per stake
- Grade Checker Daily cost: \$100
- Laborer Daily cost: \$75
- Daily cost of owning and operating Dozer: \$536
- Daily cost of owning and operating Compactor: \$250
- Daily cost of owning and operating Loader: \$350

Conventional Staking Method Costs (Metric)

- Conventional Production per Day: 1394 m²
- Days to Fine Grade: 2.7
- Standard Grading Tolerance: ± 19.1 mm
- Material Base Costs: \$12,133
- Material Overage Costs (10% of base material): \$1213
- Grade Stakes Costs (85 stakes with 7.62 m spacing): \$510
- Material Costs (Concrete 152.4 mm specified + 19.1 mm tolerance): \$62,500
- Grade Checker Costs (3-4 men per machine): \$267
- Labor Cost (3.25 men): \$650
- Dozer Costs (2.7 days): \$1429
- Compactor Costs (1 day): \$250
- Loader Costs (2.7 days): \$940
- Conventional Cost Estimate: \$79,892**



Conventional Staking Method Costs (English)

- Conventional Production per Day: 15,000 ft²
- Days to Fine Grade: 2.7
- Standard Grading Tolerance: ± 0.75 in
- Material Base Costs: \$12,133
- Material Overage Costs (10% of base material): \$1213
- Grade Stakes Costs (85 stakes with 25 ft spacing): \$510
- Material Costs (Concrete 6.0 in specified + 0.75 in tolerance): \$62,500
- Grade Checker Costs (3-4 men per machine): \$267
- Labor Cost (3.25 men): \$650
- Dozer Costs (2.7 days): \$1429
- Compactor Costs (1 day): \$250
- Loader Costs (2.7 days): \$940
- Conventional Cost Estimate: \$79,892**

Laser Grade Control System Savings (Metric)

Laser Grade Production per Day: 2787 m²
(double production)
Days to Fine Grade: 1.3
Laser Grading Tolerance (12.7 mm improvement):
± 6.4 mm
Grade Stake Savings (3 vs. 85 stakes): \$492
Material Savings (60% Material Overage
Saved): \$728
Concrete Savings (12.7 mm saved due to tighter
tolerance): \$4630
Grade Checker Savings (not needed): \$200
Labor Savings (1 vs. 3.25) \$550
Dozer Costs Savings (1.3 vs. 2.7 days): \$715
Loader Costs Savings (1.3 vs. 2.7 days): \$470
**Savings Resulting from Laser Grade
Control System: \$7768**



Laser Grade Control System Savings (English)

Laser Grade Production per Day: 30,000 ft²
(double production)
Days to Fine Grade: 1.3
Laser Grading Tolerance (0.5 in improvement):
± 0.25 in
Grade Stake Savings (3 vs. 85 stakes): \$492
Material Savings (60% Material Overage
Saved): \$728
Concrete Savings (0.5 in saved due to tighter
tolerance): \$4630
Grade Checker Savings (not needed): \$200
Labor Savings (1 vs. 3.25) \$550
Dozer Costs Savings (1.3 vs. 2.7 days): \$715
Loader Costs Savings (1.3 vs. 2.7 days): \$470
**Savings Resulting from Laser Grade
Control System: \$7768**

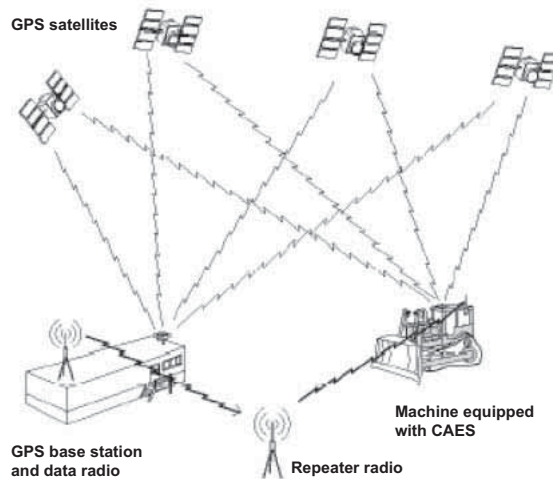
CAES (COMPUTER AIDED EARTHMOVING SYSTEM)

The Right Material in the Right Place for Maximum Machine Productivity

For more information see www.catcaes.com

Caterpillar CAES_{basic} and CAES_{ultra} (Computer Aided Earthmoving System) combine computer and wireless technology, and high precision GPS to help customers maximize machine productivity and job efficiency. Traditionally, an engineer working in the office creates a site plan on a computer. This information is then transferred to paper, and the surveyor goes out and stakes the area to identify elevation, grade, slope, or material type. Once the machine operator has completed the job, the surveyor resurveys the area and updates the office plan. This process is labor intensive and is prone to a check, rework, recheck approach. CAES revolutionizes this process. Its high precision GPS system allows the machines to act as surveyors. Changes to a digital terrain model (the engineering design file) are recorded as they occur. The engineer can work with the updated design and modify it further without stopping the machine. It also provides machine operators and site managers information to eliminate rework, reduce field surveying and more accurately complete the earthmoving plan. CAES uses high precision GPS (centimeter-level accuracy) which is achieved through a correction factor called a CMR (Compact Measuring Record). The Real Time Kinematic (RTK) is the standard for how quickly these corrections are made and displayed. Fast and accurate positioning is the key to these high performance products.

Figure 1. Overview of the System



Parts of a High Precision GPS System (required for CAES and AccuGrade GPS systems)

- GPS satellites and technology (owned and operated by the United States Government) no cost for use of signals.
- To get high precision signals a base station needs to be set at a surveyed point on the work site. This base station compares its known location with its received location to produce a correction factor (CMR).
- A radio network relays the CMR to the machine equipped with CAES.

To Equip a Machine with CAES Requires:

- An antenna to receive the signals from the satellites.
- A radio to receive the CMR from the base station.
- A receiver to compute the location of the vehicle.
- A display to compare the present location to the desired location contained in the design files stored in the display.

CAES*basic*

Entry Level Grade and Slope Guidance System

The CAES*basic* file conversion software stores design files on a flash card that is loaded into the display on the machine. The color display gives the operator real time site plan information and tracks the machine's position against the grade and slope requirements of the plan.

Features and Benefits

- Real time GPS positioning to cut and fill of the site plan, reducing errors and re-work.
- Color coded readout with centimeter level accuracy, improving grade and slope control.
- Records machine position information that can be translated off-board to determine machine productivity and update site plans.
- Proximity warning option provides the operator reference to hazards that should be avoided.
- Machine operator can enter flat plane and slope designs, increasing machine productivity and utilization.

CAES*Sultra* AND AQUILA® DRILL OFFICE SOFTWARE

CAES*Sultra* has more extensive office software that integrates planning and design operations. Engineers can transmit designs to the machine's on-board computer, which show the machine location relative to the design area, current surface, final design surface, and material map (for loading machines). These software packages allow you to create customized reports on productivity data, cycle times, volume and material type. They are powerful enough to allow the engineering process to change. Here's how.

CAES*Sultra*

Get More Life from Your Landfill

CAES*Sultra* helps the landfill industry conserve air-space. For a landfill compactor, each time the wheel travels over a surface, the CAES*Sultra* screen changes color to acknowledge the compaction pass. CAES*Sultra* indicates finished areas. The operator achieves maximum effective compaction, by making only the necessary number of passes. Track-type tractors in landfills benefit from CAES*Sultra* because it indicates lift thickness of cover material and trash.

Additionally, CAES permits the recording of site-specific storage areas such as hazardous waste, medical, industrial, organic, and other materials which require special handling or a record of their placement. All of this information is monitored and managed in the landfill office with CAES*Sultra* Office Software.

CAES*Sultra* — Ore Control for Loading Tools

CAES*Sultra* moves the material identification file and survey system into the machine, eliminating the need for survey stakes or pin flags. A touch screen monitor displays the location of pit boundaries, material type, bench height, and design grade, eliminating operator guesswork. With material types and locations displayed, ore identification and recovery are optimized.

AQUILA® DRILL

Production, Strata Recognition and GPS Guidance

Aquila Drill Systems are designed for installation on electric and hydraulic rotary blasthole drills. They assist with production and performance monitoring, strata recognition and GPS guidance. Typically provided as field retrofit to machines already operating at mine sites, the Aquila systems use on-board computing integrated with sensors to monitor critical machine performance characteristics. System modules help the operator and site managers enhance drill performance and improve the drilling and blasting operation. The Aquila products use a GPS and radio infrastructure common to CAES.

The **Production** module offers a graphical user interface to provide the operator with immediate feedback on drilling productivity and performance. The product minimizes operator input by an array of sensing hardware to detect:

- the end of hole
- reaching target depth
- recognition of steel changes

The **Strata Recognition** module analyzes the monitored drilling variables in real-time, determining variability in the hole geology. The different strata horizons are presented on the display. The system provides useful and concise information from the start of drilling — not large amounts of raw data that typify traditional drill monitoring systems. A Blastability Index (BI) is determined by the Strata Module and approximates the in-situ hardness of the ground. The hole-loading requirements and ore grindability predictions are then based on measured rock hardness enabling improved blending and optimized mill throughput rates.

Combining the **Production** module with the **Strata Recognition** module logs:

- bit rotary speed
- penetration rate
- depth
- rotary torque or pressure
- pulldown pressure
- bailing air pressure

Drilling practice, efficiency and productivity can then be analyzed and assessed.

The **GPS Guidance** module adds high precision GPS to help precisely position a drill on a blast pattern without the need for surveying or staking. The Guidance module uses a moving map display that shows the 3D (Northing, Easting and Elevation) of the drill and drill bit relative to the designed position of the blastholes. Once the drill is positioned and leveled over a hole, the system automatically determines collar elevation and then calculates the designed target depth. GPS Guidance improves the drill's production and utilization, and the operator's ability to drill to the plan. This leads to better rock fragmentation for easier loading. Since holes are drilled to the correct elevation leading to a flatter post-blast surface, the result is smoother pit floors. This helps eliminate rework, enhances the mobile equipment's performance and reduces its wear and tear.

AQUILA® DRAGLINE

Precision Tub Placement

The Aquila Dragline product combines on-board computing and high precision GPS with the machine's Programmable Logic Controller (PLC) for data acquisition. On-board productivity reports summarize progress of the shift. GPS-driven 3D plan and section views of both the dragline and cut guide the operator in excavation and spoil placement. The system eliminates the need for survey support to ensure proper tub placement and optimal range. The results are reduced rehandling, precise recording of each dig and dump location, and load weight for each cycle.

Centimeter level GPS enhances positioning of the dragline tub to assure the machine digs to plan. Hoist, drag and swing position data is used with GPS positioning to create section views of the bench and cut profile. A graphical display shows the dragline body, boom, hoist and drag ropes and bucket position in real-time as the machine operates. These machine features are displayed as an animated overlay on top of a design file. The design files are customizable and consist of any design features relevant, i.e. toe and crest locations, tub center-line target positions, key cut, dig limits, no swing areas, avoidance zones, final design limits, target dig depths, etc.

MINESTAR®

Integrated Mining Information System

MineStar features machine health, productivity, machine and material tracking, and an advanced truck assignment program. When integrated with CAESultra and Aquila Drill Systems, this solution has the capability of linking machines in the field to MineStar office systems and to other information systems used on the mine.

Users can select from six MineStar component systems and install any number and mix of systems to accommodate specific operations and appetite for technology application.

- **MineStar FleetCommander** — Schedules and assigns trucks; maximizes production and shovel utilization and minimizes truck wait time; designed to handle small, medium and large fleets.
- **MineStar Production** — Provides constant productivity information from trucks and loading tools to increase efficiency of mining operations.
- **MineStar Health** — Acquires machine and fleet health in real time over a wireless network from VIMS and reports to a service center or production database for improved maintenance operations.
- **MineStar Material Tracking** — Monitors material movement and type, alerts operators and planners of mis-routes to ensure material is moved to the proper location.
- **MineStar Machine Tracking** — Monitors machine location for the entire fleet; incorporates playback function to analyze dump movement and haul road congestion.
- **MineStar Business Enterprise** — Integrates mining functions such as mine planning, real time production and machine health, financial and human resource information to mining company Enterprise Systems.

MINESTAR® MACHINE HEALTH

Optimize Maintenance and Production

Service personnel can assess machine maintenance and repair needs easier and more accurately than ever before — from miles away. MineStar Machine Health constantly and simultaneously records information on all critical machine systems, fleet-wide. It may also be integrated into a production database for expanded analysis. And, data is available in real-time or historical database. Most powerful when linked with VIMS, MineStar Machine Health provides wireless or wired transfer of this critical data to the service center for processing and review. This product can be upgraded to the full MineStar solution.

Expansive data gathering

MineStar Machine Health tracks information collected by VIMS and includes:

- fluid and pressure levels
- system voltage
- component failure
- wear rate
- overloading
- load/dump/travel/delay times

Reduced Operating Costs

Information can be reviewed for an individual machine, or by equipment condition, class, or fleet. Key Performance Indicators can be custom configured for display. Mine personnel can extend component life, better prioritize and schedule maintenance.

Improved Productivity

Trend, histogram, cumulative, event, production, and performance data help mine managers make well-informed decisions to improve production. In-cab alerts and alarms are visible to the mine office, to help identify recurring problems.

TABLES

SWELL — VOIDS — LOAD FACTORS

SWELL (%)	VOIDS (%)	LOAD FACTOR
5	4.8	.952
10	9.1	.909
15	13.0	.870
20	16.7	.833
25	20.0	.800
30	23.1	.769
35	25.9	.741
40	28.6	.714
45	31.0	.690
50	33.3	.667
55	35.5	.645
60	37.5	.625
65	39.4	.606
70	41.2	.588
75	42.9	.571
80	44.4	.556
85	45.9	.541
90	47.4	.526
95	48.7	.513
100	50.0	.500

BUCKET FILL FACTORS

Material	Fill Factor
Loose Material	
Mixed Moist Aggregates	95-100%
Uniform Aggregates up to 3 mm (1/8")	95-100
3 mm-9 mm (1/8"-3/8")	90-95
12 mm-20 mm (1/2"-3/4")	85-90
24 mm (1") and over	85-90
Blasted Rock	
Well Blasted	80-95%
Average Blasted	75-90
Poorly Blasted	60-75
Other	
Rock Dirt Mixtures	100-120%
Moist Loam	100-110
Soil, Boulders, Roots	80-100
Cemented Materials	85-95

NOTE: Loader bucket fill factors are affected by bucket penetration, breakout force, rackback angle, bucket profile and ground engaging tools such as bucket teeth or bolt-on replaceable cutting edges.

NOTE: For bucket fill factors for hydraulic excavators, see bucket payloads in the hydraulic excavator section.

TYPICAL ROLLING RESISTANCE FACTORS

Various tire sizes and inflation pressures will greatly reduce or increase the rolling resistance. The values in this table are approximate, particularly for the track and track + tire machines. These values can be used for estimating purposes when specific performance information on particular equipment and given soil conditions is not available. See Mining and Earthmoving Section for more detail.

UNDERFOOTING	ROLLING RESISTANCE, PERCENT*			
	Tires Bias	Tires Radial	Track **	Track +Tires
A very hard, smooth roadway, concrete, cold asphalt or dirt surface, no penetration or flexing	1.5%*	1.2%	0%	1.0%
A hard, smooth, stabilized surfaced roadway without penetration under load, watered, maintained	2.0%	1.7%	0%	1.2%
A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered	3.0%	2.5%	0%	1.8%
A dirt roadway, rutted or flexing under load, little maintenance, no water, 25 mm (1") tire penetration or flexing	4.0%	4.0%	0%	2.4%
A dirt roadway, rutted or flexing under load, little maintenance, no water, 50 mm (2") tire penetration or flexing	5.0%	5.0%	0%	3.0%
Rutted dirt roadway, soft under travel, no maintenance, no stabilization, 100 mm (4") tire penetration or flexing	8.0%	8.0%	0%	4.8%
Loose sand or gravel	10.0%	10.0%	2%	7.0%
Rutted dirt roadway, soft under travel, no maintenance, no stabilization, 200 mm (8") tire penetration and flexing	14.0%	14.0%	5%	10.0%
Very soft, muddy, rutted roadway, 300 mm (12") tire penetration, no flexing	20.0%	20.0%	8%	15.0%

*Percent of combined machine weight.

**Assumes drag load has been subtracted to give Drawbar Pull for good to moderate conditions. Some resistance added for very soft conditions.

ANGLE OF REPOSE OF VARIOUS MATERIALS

MATERIAL	ANGLE BETWEEN HORIZONTAL AND SLOPE OF HEAPED PILE	
	Ratio	Degrees
Coal, industrial	1.4:1—1.3:1	35-38
Common earth, Dry	2.8:1—1.0:1	20-45
Moist	2.1:1—1.0:1	25-45
Wet	2.1:1—1.7:1	25-30
Gravel, Round to angular	1.7:1—0.9:1	30-50
Sand & clay	2.8:1—1.4:1	20-35
Sand, Dry	2.8:1—1.7:1	20-30
Moist	1.8:1—1.0:1	30-45
Wet	2.8:1—1.0:1	20-45

Tables

ROUND REINFORCED CONCRETE PIPE APPROXIMATE WEIGHT PER FOOT

INSIDE DIAMETER		WEIGHT PER FT.	
mm	ft/in	kg	lb
305	12"	42	93
380	15"	58	127
460	18"	76	168
530	1'9"	97	214
610	2'0"	120	265
685	2'3"	146	322
760	2'6"	174	384
840	2'9"	205	452
915	3'0"	238	524
1070	3'6"	311	686
1220	4'0"	393	867
1370	4'6"	485	1069
1525	5'0"	588	1295
1675	5'6"	699	1542
1830	6'0"	821	1811
1980	6'6"	952	2100
2135	7'0"	1093	2409
2285	7'6"	1242	2740
2440	8'0"	1402	3090
2590	8'6"	1578	3480
2740	9'0"	1753	3865

NOTE: Table courtesy of American Concrete Pipe Assn.

COEFFICIENT OF TRACTION FACTORS

MATERIAL	TRACTION FACTORS	
	Rubber Tires	Tracks
Concrete	.90	.45
Clay loam, dry	.55	.90
Clay loam, wet	.45	.70
Rutted clay loam	.40	.70
Dry sand	.20	.30
Wet sand	.40	.50
Quarry pit	.65	.55
Gravel road (loose not hard)	.36	.50
Packed snow	.20	.27
Ice	.12	.12
Semi-skeleton shoes		
Firm earth	.55	.90
Loose earth	.45	.60
Coal, stockpiled	.45	.60

NOTE: The elevated sprocket design Track-type Tractors (D11T, D10R, D9R and D8R), with their suspended undercarriage, provide up to 15% more efficient tractive effort than rigid tracked Track-type Tractors.

SPEED CONVERSION

km/h Equivalents in m/min				MPH Equivalents in FPM			
km/h	m/min	km/h	m/min	mph	fpm	mph	fpm
1	16.7	21	350.0	1	88	21	1848
2	33.3	22	366.7	2	176	22	1936
3	50.0	23	383.3	3	264	23	2024
4	66.7	24	400.0	4	352	24	2112
5	83.3	25	416.7	5	440	25	2200
6	100.0	26	433.3	6	528	26	2288
7	116.7	27	450.0	7	616	27	2376
8	133.3	28	466.7	8	704	28	2464
9	150.0	29	483.3	9	792	29	2552
10	166.7	30	500.0	10	880	30	2640
11	183.3	31	516.7	11	968	31	2728
12	200.0	32	533.3	12	1056	32	2816
13	216.7	33	550.0	13	1144	33	2904
14	233.3	34	566.7	14	1232	34	2992
15	250.0	35	583.3	15	1320	35	3080
16	266.7	36	600.0	16	1408	36	3168
17	283.3	37	616.7	17	1496	37	3256
18	300.0	38	633.3	18	1584	38	3344
19	316.7	39	650.0	19	1672	39	3432
20	333.3	40	666.7	20	1760	40	3520

NOTE: Since 1 km/h equals 16.7 m/min (1000 ÷ 60), to interpolate add 1.67 m/min for each 0.1 km/h.

NOTE: Since 1 mph equals 88 fpm (5280 ÷ 60), to interpolate add 8.8 fpm for every 0.1 mph.

1 mph = 26.9 m/min.

BEARING POWERS

MATERIAL	BEARING POWER			
	Bar	lb/in ²	Metric t/m ²	U.S. tons/ft ²
Rock (semi-shattered)	4.8	70	50	5
Rock (solid)	24.1	350	240	24
Clay, dry	3.8	55	40	4
medium dry	1.9	27	20	2
soft	1.0	14	10	1
Gravel, cemented	7.6	110	80	8
Sand, compact dry	3.8	55	40	4
clean dry	1.9	27	20	2
Quicksand & alluvial soil	0.5	7	5	0.5

AGRICULTURAL COMMODITIES CONVERSION FACTORS

	lb	kg	Metric Ton
1 Bushel of Corn*	56	25.40	0.02540
1 Bushel of Soybean*	60	27.22	0.02721
1 Bushel of Oats*	32	14.51	0.01451
1 Bushel of Wheat*	60	27.22	0.02721
1 Bale of Cotton	478	216.81	0.21681

1 metric ton of Corn	39.37 Bushels*
1 metric ton of Soybean	36.75 Bushels*
1 metric ton of Oats	68.92 Bushels*
1 metric ton of Wheat	36.75 Bushels*
1 metric ton of Cotton	4.61 Bales

*Bushel is a volume measurement, 1 Bushel = 35.24 liters = 9.31 U.S. Gallons. In the agricultural mercantile exchange, the Bushel is widely used for grains as weight. For the above weights, the market assumes a standard density for each type of grain.

**CURVE SUPERELEVATION
IN PERCENT GRADE, TO PROVIDE NO LATERAL TIRE FORCE**

Negotiating curves can generate high lateral tire forces. These forces contribute to high tire wear and ply separation. Superelevating the curve helps eliminate these forces. The amount of superelevation depends on the curve's radius and the speed at which it is negotiated.

The following table is a guide for providing the superelevation necessary to eliminate lateral forces.

Superelevated turns present a danger when slippery. For this reason, curves superelevated over 10% should be used with caution. Unless the proper speed is maintained, matching the elevation of the curve, a vehicle may slide off of the lower edge of the roadway. Superelevated curves should be maintained in good tractive conditions.

TURN RADIUS		Speed	Speed	Speed	Speed	Speed	Speed	Speed	Speed
m	ft	16 km/h 10 mph	24 km/h 15 mph	32 km/h 20 mph	40 km/h 25 mph	48 km/h 30 mph	56 km/h 35 mph	64 km/h 40 mph	72 km/h 45 mph
15.2	50	13%	30%	—	—	—	—	—	—
30.5	100	7%	15%	27%	—	—	—	—	—
45.7	150	4%	10%	18%	28%	—	—	—	—
61.0	200	3%	8%	13%	21%	30%	—	—	—
91.5	300	2%	5%	9%	14%	20%	27%	—	—
152.4	500	1%	3%	5%	8%	12%	16%	21%	27%
213.4	700	1%	2%	4%	6%	9%	12%	15%	19%
304.9	1000	1%	2%	3%	4%	6%	8%	11%	14%

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**MAXIMUM SPEED ON CURVES FOR VARIOUS SUPERELEVATION GRADES
WITH A 0.20 LATERAL COEFFICIENT OF TRACTION**

Another approach to superelevated curves is to determine the safe speed for negotiating a turn at a certain lateral tire force. In general, a 20% lateral coefficient of traction is safe for all but slippery conditions. The following table shows maximum speed with various superelevations to maintain a 0.20 lateral coefficient of traction.

TURN RADIUS		Flat Curve		5% Super-elevation		10% Super-elevation	
m	ft	km/h	mph	km/h	mph	km/h	mph
7.6	25	14	9	16	10	17	11
15.2	50	20	12	22	14	24	15
30.5	100	28	17	31	19	34	21
45.7	150	34	21	38	24	42	26
61.0	200	39	24	44	27	48	30
91.5	300	48	30	54	34	59	37
152	500	62	39	70	43	76	47
213	700	74	46	—	—	—	—

A transition "spiral" may be necessary at higher speeds when entering or departing from a superelevated turn.

Tables

WEIGHT* OF MATERIALS	LOOSE		BANK		LOAD FACTORS
	kg/m ³	lb/yd ³	kg/m ³	lb/yd ³	
Basalt	1960	3300	2970	5000	.67
Bauxite, Kaolin	1420	2400	1900	3200	.75
Caliche	1250	2100	2260	3800	.55
Carnotite, uranium ore	1630	2750	2200	3700	.74
Cinders	560	950	860	1450	.66
Clay — Natural bed	1660	2800	2020	3400	.82
Dry	1480	2500	1840	3100	.81
Wet	1660	2800	2080	3500	.80
Clay & gravel — Dry	1420	2400	1660	2800	.85
Wet	1540	2600	1840	3100	.85
Coal — Anthracite, Raw	1190	2000	1600	2700	.74
Washed	1100	1850			.74
Ash, Bituminous Coal	530-650	900-1100	590-890	1000-1500	.93
Bituminous, Raw	950	1600	1280	2150	.74
Washed	830	1400			.74
Decomposed rock —					
75% Rock, 25% Earth	1960	3300	2790	4700	.70
50% Rock, 50% Earth	1720	2900	2280	3850	.75
25% Rock, 75% Earth	1570	2650	1960	3300	.80
Earth — Dry packed	1510	2550	1900	3200	.80
Wet excavated	1600	2700	2020	3400	.79
Loam	1250	2100	1540	2600	.81
Granite — Broken	1660	2800	2730	4600	.61
Gravel — Pitrun	1930	3250	2170	3650	.89
Dry	1510	2550	1690	2850	.89
Dry 6-50 mm (1/4"-2")	1690	2850	1900	3200	.89
Wet 6-50 mm (1/4"-2")	2020	3400	2260	3800	.89
Gypsum — Broken	1810	3050	3170	5350	.57
Crushed	1600	2700	2790	4700	.57
Hematite, iron ore, high grade	1810-2450	4000-5400	2130-2900	4700-6400	.85
Limestone — Broken	1540	2600	2610	4400	.59
Crushed	1540	2600	—	—	—
Magnetite, iron ore	2790	4700	3260	5500	.85
Pyrite, iron ore	2580	4350	3030	5100	.85
Sand — Dry, loose	1420	2400	1600	2700	.89
Damp	1690	2850	1900	3200	.89
Wet	1840	3100	2080	3500	.89
Sand & clay — Loose	1600	2700	2020	3400	.79
Compacted	2400	4050			
Sand & gravel — Dry	1720	2900	1930	3250	.89
Wet	2020	3400	2230	3750	.91
Sandstone	1510	2550	2520	4250	.60
Shale	1250	2100	1660	2800	.75
Slag — Broken	1750	2950	2940	4950	.60
Snow — Dry	130	220			
Wet	520	860			
Stone — Crushed	1600	2700	2670	4500	.60
Taconite	1630-1900	3600-4200	2360-2700	5200-6100	.58
Top Soil	950	1600	1370	2300	.70
Taprock — Broken	1750	2950	2610	4400	.67
Wood Chips**	—	—	—	—	—

*Varies with moisture content, grain size, degree of compaction, etc. Tests must be made to determine exact material characteristics.

**Weights of commercially important wood species can be found in the last pages of the Logging & Forest Products section. To obtain wood weights use the following equations: lb/yd³ = (lb/ft³) × .4 × 27
kg/m³ = (kg/m³) × .4

ALTITUDE DERATION

PERCENT FLYWHEEL HORSEPOWER
AVAILABLE AT SPECIFIED ALTITUDES

MODEL	0-760 m (0-2500')	760-1500 m (2500-5000')	1500-2300 m (5000-7500')	2300-3000 m (7500-10,000')	3000-3800 m (10,000-12,500')	3800-4600 m (12,500-15,000')
D3G XL	100	100	100	100	96	88
D3G LGP	100	100	100	100	96	88
D4G XL	100	100	100	97	88	81
D4G LGP	100	100	100	97	88	81
D5G XL	100	100	100	100	**	**
D5G LGP	100	100	100	100	**	**
D5N XL & LGP	100	100	100	100	100	100
D6N XL & LGP	100	100	100	100	100	100
D6G	100	100	100	100	94	87
D6R Series III (All)	100	100	100	100	92	84
D7G	100*	100*	100*	94	86	80
D7R Series II (All)	100	100	100	100	100	96
D8R	100	100	100	93	85	77
D8T	100	100	100	100	100	93
D9R	100	100	100	93	85	77
D9T	100	100	100	100	100	93
D10T	100	100	100	100	97	89
D11T/D11T CD	100	100	100	93	85	77
120H STD	100	100	100	100	100	100
120H Global	100	100	100	100	96	93
135H STD	100	100	100	100	100	98
135H Global	100	100	100	100	96	93
12H STD	100	89	83	77	71	65
12H Global	100	100	100	100	96	93
140H STD	100	100	100	100	97	89
140H Global	100	100	100	100	96	93
143H Global	100	100	100	100	96	93
160H STD	100	100	100	97	89	82
160H Global	100	100	100	100	96	93
163H Global	100	100	100	100	98	96
14H Global	100	100	100	100	98	96
16H Global	100	100	100	100	98	96
24H Global	100	100	100	100	93	85

*Refer to "Captive Vehicle Engine Fuel Specifications" microfiche at your local dealer.

**Information not available at time of printing.

Tables

ALTITUDE DERATION (Continued)

MODEL	0-760 m (0-2500')	760-1500 m (2500-5000')	1500-2300 m (5000-7500')	2300-3000 m (7500-10,000')	3000-3800 m (10,000-12,500')	3800-4600 m (12,500-15,000')
216B	100	90	81	75	62	50
226B	100	90	81	75	62	50
232B	*	*	*	*	*	*
236B	100	90	81	75	62	50
242B	*	*	*	*	*	*
246B	100	97	95	92	86	82
248B	*	*	*	*	*	*
252B	*	*	*	*	*	*
262B	*	*	*	*	*	*
268B	*	*	*	*	*	*
247B	*	*	*	*	*	*
257B	*	*	*	*	*	*
267B	*	*	*	*	*	*
277B	*	*	*	*	*	*
287B	*	*	*	*	*	*
301.5	95	89	81	71	N/A	N/A
301.6	95	89	81	71	N/A	N/A
301.8	95	89	81	71	N/A	N/A
302.5	95	89	81	71	N/A	N/A
303 SR/CR	93	85	78	N/A	N/A	N/A
304 CR	94	87	80	N/A	N/A	N/A
305 SR/CR	96	91	86	N/A	N/A	N/A
307C (4M40)	100	100	*	*	*	*
308C SR/CR	100	100	*	*	*	*
311C U	100	100	100	83	78	73
312C/312C L (3064 T)	100	100	100	83	78	73
312C/312C L (3054 T)	100	100	100	*	N/A	N/A
313C SR/CR	100	100	100	83	78	73
314C CR/314C LCR	100	100	100	83	78	73
315C/315C L (3046 T)	100	100	100	83	78	73
315C L (3054E T)	99	98	96	94	89	85
318C/318C L/318C LN/318C N	100	100	100	83	78	73
M313C	100	97	95	91	N/A	N/A
M315C	100	97	95	91	N/A	N/A
M316C	*	*	*	*	*	*
M318C	100	100	97	95	N/A	N/A
M322C	100	100	97	95	N/A	N/A

*Information not available at time of printing.

ALTITUDE DERATION (Continued)

MODEL	0-760 m (0-2500')	760-1500 m (2500-5000')	1500-2300 m (5000-7500')	2300-3000 m (7500-10,000')	3000-3800 m (10,000-12,500')	3800-4600 m (12,500-15,000')
320C/320C U	100	100	90	87	83	*
320C L/320C LU	100	100	90	87	83	*
320C N	100	100	90	87	83	*
320C FM	100	100	90	87	83	*
321C LCR	100	100	90	87	83	*
322C	100	100	100	100	100	97
322C L	100	100	100	100	100	97
322C LN	100	100	100	100	100	97
322C FM	100	100	100	100	100	97
325C	100	100	100	100	100	100
325C L	100	100	100	100	100	100
325C LN	100	100	100	100	100	100
325C FM	100	100	100	100	100	100
330C	100	100	100	100	100	100
330C L	100	100	100	100	100	100
330C LN	100	100	100	100	100	100
330C FM	100	100	100	100	100	100
345B Series II	100	100	100	100	93	93
345C L	97	100	97	97	97	82
365B L Series II	100	100	100	86	86	86
365C L	100	100	100	100	95	88
385B/385B L	100	100	100	93	85	78
385C/385C L	100	100	100	100	100	97
385C FS	100	100	100	100	100	97
5090B	100	100	100	93	86	78
5110B	100	100	100	100	93	85
5130B◀	100	100	100	100	93	86
5230B◀	100	100	100	100	93	86
416D/424D (NA)	95	89	81	71	N/A	N/A
416D/424D (Turbo)	99	97	95	91	N/A	N/A
420D/420D IT	99	97	95	91	N/A	N/A
428D	99	97	95	91	N/A	N/A
430D/430D IT	99	97	95	91	N/A	N/A
432D	99	97	95	91	N/A	N/A
442D	99	97	95	91	N/A	N/A
446D (Turbo)	100	100	97	91	N/A	N/A
Forest Products:						
525B	*	*	*	*	*	*
535B	*	*	*	*	*	*
545	*	*	*	*	*	*
517	100	100	100	99	95	87
527	100	100	100	100	99	91
320C FM	*	*	*	*	*	*
322C FM	*	*	*	*	*	*
325C FM	*	*	*	*	*	*
330C FM	*	*	*	*	*	*

*Information not available at time of printing.
 ◀EUI engine — Automatic altitude deration.

Tables

ALTITUDE DERATION (Continued)*

MODEL	0-760 m (0-2500')	760-1500 m (2500-5000')	1500-2300 m (5000-7500')	2300-3000 m (7500-10,000')	3000-3800 m (10,000-12,500')	3800-4600 m (12,500-15,000')
561M	100	100	100	94	86	80
572R Series II	100*	100*	100*	94	86	80
583R	100	100	100	100	94	87
589	100	100	94	87	80	73
621G◄	100	100	100	100	97	90
631G◄	100	100	100	100	97	90
627G Tractor◄	100	100	100	100	97	90
Scraper◄	100*	100*	100*	92	85	79*
637G Tractor◄	100	100	100	100	97	90
Scraper◄	100*	100*	100	95	87	80
657G Tractor◄	100	100	100	94	88	81
Scraper◄	100	100	100	95	90	84
613C Series II	100	100	100	100	95	87
615C Series II	100*	100*	95	88	81	74
623G◄	100	100	100	100	97	90
769D◄	100	100	100	93	88	82
771D◄	100	100	100	93	88	82
773D◄	100	100	100	100	93	85
775D◄	100	100	100	100	93	85
777D◄	100	100	100	100	93	87
785C*◄	100	100	100	93	86	80
789C*◄	100	100	100	93	86	80
793C*◄	100	100	100	100	100	93
776D◄	100	100	100	100	93	87
784C◄	100	100	100	93	86	80
725	100	100	100	100	100	95
730	100	100	100	100	100	95
735	100	100	100	100	99	91
740	100	100	100	100	99	91
814F	100*	100*	100	100	97	94
824G Series II	100	100	100	97	89	82
834G	100	100	100	95	85	75
844	100	100	100	100	92	85
854G	100	100	100	100	93	87
815B	100*	100*	100	100	97	94
825G Series II	100	100	100	97	89	82
816F	100	100	100	100	97	94
826G Series II	100	100	100	97	89	82
836G	100	100	100	95	85	75

*Refer to "Captive Vehicle Engine Fuel Specifications" microfiche at your local dealer.

**Information not available at time of printing.

◄EUI engine — Automatic altitude deration.

ALTITUDE DERATION (Continued)*

MODEL	0-760 m (0-2500')	760-1500 m (2500-5000')	1500-2300 m (5000-7500')	2300-3000 m (7500-10,000')	3000-3800 m (10,000-12,500')	3800-4600 m (12,500-15,000')
902	95	89	81	71	N/A	N/A
906	95	89	81	71	N/A	N/A
908	99	97	95	91	N/A	N/A
914G/IT14G	99	97	95	91	N/A	N/A
924G/924G Hook On	100	100	100	100	97	89
928Gz	100	100	100	100	92	85
930G	100	100	100	100	92	85
938G/IT38G	100	100	100	100	100	97
950H	100	100	100	100	100	100
962H/IT62H	100	100	100	100	100	90
966H	100	100	100	100	100	100
972H	100	100	100	100	100	100
980H	100	100	100	100	100	100
988G	100	100	100	95	85	75
990 Series II	100	100	100	100	92	85
992G	100	100	100	100	93	87
994D	100	100	100	100	**	**
939C	100	100	100	100	*	*
953C	100	100	100	100	100	100
963C	100	100	100	100	100	100
973C	100	100	100	100	100	98
TH210	95	89	81	71	N/A	N/A
TH215	95	89	81	71	N/A	N/A
TH220B	99	97	95	91	N/A	N/A
TH330B	99	97	95	91	N/A	N/A
TH340B	99	97	95	91	N/A	N/A
TH350B	99	97	95	91	N/A	N/A
TH360B	99	97	95	91	N/A	N/A
TH460B	99	97	95	91	N/A	N/A
TH560B	99	97	95	91	N/A	N/A
TH580B	99	97	95	91	N/A	N/A
PM-565B	100	100	100	*	*	*
RM-250C	100	100	100	100	100	100
RM-350B	100	100	100	*	*	*
AP-800C	99	97	95	91	N/A	N/A
AP-900B	*	*	*	*	*	*
AP-1000B	100	100	100-97	97-93	93-89	89-83
AP-650B	100	100	100	97-93	93-89	89-83
AP-655C	100	100	100	100	*	*
AP-1050B	100	100	100-97	97-93	93-89	89-83
AP-1055B	100	100	100-97	97-93	93-89	89-83

*Information not available at time of printing.

**Automatically derates 3%/300 m (1000 ft) above 3000 m (10,000 ft).

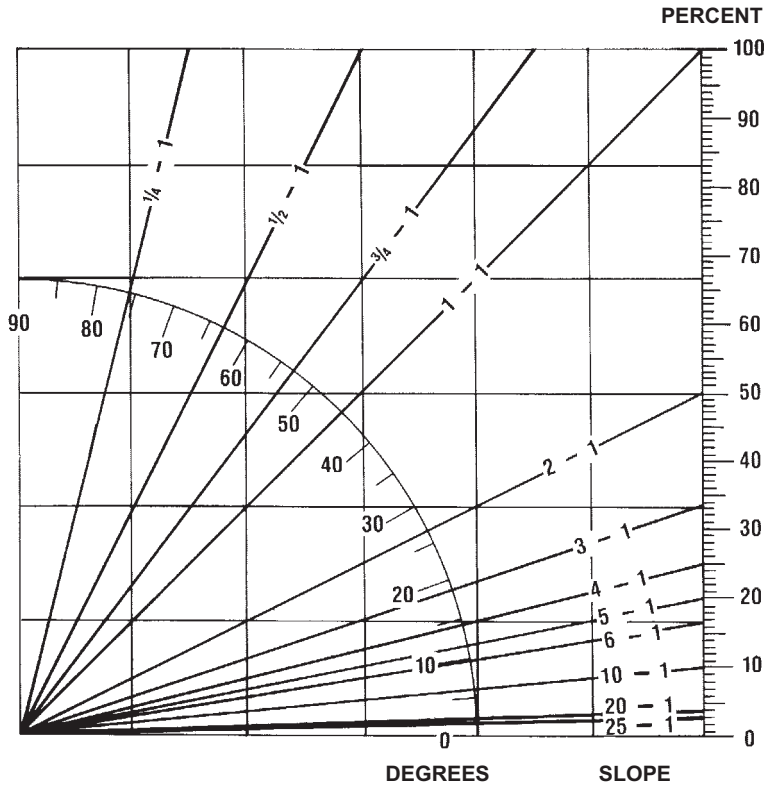
Tables

ALTITUDE DERATION (Continued)

MODEL	0-760 m (0-2500')	760-1500 m (2500-5000')	1500-2300 m (5000-7500')	2300-3000 m (7500-10,000')	3000-3800 m (10,000-12,500')	3800-4600 m (12,500-15,000')
BG-230	99	97	95	91	N/A	N/A
BG-240C	100	100	100-97	97-93	93-89	89-83
BG-260C	100	100	100-97	97-93	93-89	89-83
BG-225C	99	97	95	91	N/A	N/A
BG-245C	100	100	100-97	97-93	93-89	89-83
BG-2455C	100	100	100-97	97-93	93-89	89-83
BG-650	99	97	95	91	N/A	N/A
CS-323C	95	89	81	71	N/A	N/A
CS-423E	100	100-93	93-85	85-77	77-64	64-53
CS-433E	100	100	100	99-96	96-91	91-85
CS-533E	100	100	100-97	97-93	93-89	89-83
CS-563E	100	100	100	100	100	100
CS-573E	100	100	100	100	100	100
CS-583E	100	100	100	100	100	100
CS-663E	100	100	100	100	*	*
CS-683E	100-99	99-97	97-95	95-93	93-89	89-83
CP-323C	100	100-90	90-83	83-73	73-62	62-52
CP-433E	100	100	100-99	99-96	96-91	91-85
CP-533E	100	100	100-97	97-93	93-89	100
CP-563E	100	100	100	100	100	89-83
CP-573E	100	100	100	100	100	100
CP-583E	100	100	100	100	100	100
CP-663E	100	100	100	100	*	*
CB-214E	95	90	82	72	62	51
CB-224E/CB-225E	95	90	82	72	62	51
CB-334E	95	90	82	72	62	51
CB-335E	95	90	82	72	62	51
CB-434D	95	89	81	71	N/A	N/A
CB-534D/CB-534D XW	100	100	100	100	100	100
CB-634D	100	100	100-97	97-93	93-89	89-83
PS-150C	95	89	81	71	N/A	N/A
PS-360B	99	97	95	91	N/A	N/A
PF-300B	99	97	95	91	N/A	N/A
PS-300B	99	97	95	91	N/A	N/A
R1300G	*	*	*	*	*	*
R1600G	*	*	*	*	*	*
R1700G	*	*	*	*	*	*
R2900G	*	*	*	*	*	*
AE40 Series II	*	*	*	*	*	*
AD30	*	*	*	*	*	*
AD45	*	*	*	*	*	*
AD55	*	*	*	*	*	*

*Information not available at time of printing.

**GRADE COMPARISON CHART
DEGREES — PERCENT — SLOPE**



**GRADE IN DEGREES
AND PERCENTS**

DEGREES	PERCENT
1	1.8
2	3.5
3	5.2
4	7.0
5	8.8
6	10.5
7	12.3
8	14.0
9	15.8
10	17.6
11	19.4
12	21.3
13	23.1
14	24.9
15	26.8
16	28.7
17	30.6
18	32.5
19	34.4
20	36.4
21	38.4
22	40.4
23	42.4
24	44.5
25	46.6
26	48.8
27	51.0
28	53.2
29	55.4
30	57.7
31	60.0
32	62.5
33	64.9
34	67.4
35	70.0
36	72.7
37	75.4
38	78.1
39	81.0
40	83.9
41	86.9
42	90.0
43	93.3
44	96.6
45	100.0

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Tables

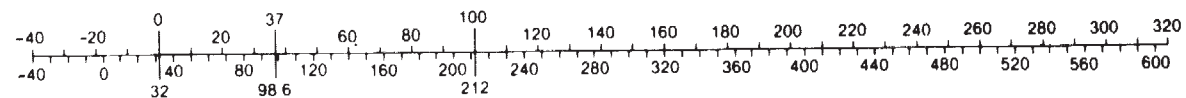
CONVERSION FACTORS

Multiply Metric Unit	By	To Obtain English Unit	Multiply English Unit	By	To Obtain Metric Unit
kilometer (km)	.6214	mile	mile, statute (m)	1.609	kilometer
meter (m)	1.0936	yard	yard (yd)	.9144	meter
meter (m)	3.28	foot	foot (ft)	.3048	meter
centimeter (cm)	.0328	foot	inch (in)	25.4	millimeter
millimeter (mm)	.03937	inch	sq mile (mile ²)	2.590	sq kilometer
sq kilometer (km ²)	.3861	square mile	acre	.4047	hectare
hectare (ha)	2.471	acre	sq foot (ft ²)	.0929	sq meter
sq meter (m ²)	10.764	square foot	sq inch (in ²)	.000645	sq meter
sq meter (m ²)	1550	square inch	cu yard (yd ³)	.7645	cu meter
sq centimeter (cm ²)	.1550	square inch	cu inch (in ³)	16.387	cu centimeter
cu centimeter (cm ³)	.061	cubic inch	cu foot (ft ³)	.0283	cu meter
cu meter (m ³)	1.308	cubic yard	cu inch (in ³)	.0164	liter
liter (L)	61.02	cubic inch	cubic yard (yd ³)	764.55	liter
liter (L)	.001308	cubic yard	mph	1.61	km/h
km/h	.621	mph	Ton — mph	1.459	tkm/h
liter (L)	.2642	U.S. gallon	U.S. gallon (US Gal)	3.785	liter
liter (L)	.22	Imperial gallon	U.S. gallon	.833	Imperial gallon
metric ton (t)	.984	long ton	long ton (lg ton)	1.016	metric ton
metric ton (t)	1.102	short ton	short ton (sh ton)	.907	metric ton
kilogram (kg)	2.205	pound, avdp.	pound (lb)	.4536	kilogram
gram (g or gr)	.0353	ounce, avdp.	ounce (oz)	28.35	gram
kilonewton (kN)	225	pound (force)	pound (lb) (force)	.00445	kilonewton
newton (N)	.225	pound (force)	pound (lb) (force)	4.45	newton
cu centimeter (cm ³)	.0338	fluid ounce	fluid oz (fl oz)	29.57	cu centimeter
kilograms/cu meter	1.686	pounds/cu yd	lb/cu ft (lb/ft ³)	16.018	kg/cu meter
kilograms/cu meter	.062	pounds/cu ft	lb/cu yd (lb/yd ³)	.5933	kg/cu meter
kilograms/sq cm (kg/cm ²)	14.225	pounds/sq in	pounds/sq. in.	.0703	kilogram/sq cm
kilocalorie (kcal)	3.968	Btu	psi	.0689	bar
kilogram-meter (kg•m)	7.233	foot-pound	psi	6.89	kilopascal
meter-kilogram (m•kg)	7.233	pound-foot	Btu	.2520	kilogram-calorie
metric horsepower (CV)	.9863	hp	foot-pound (ft-lb)	.1383	kilogram-meter
kilowatt (kW)	1.341	hp	horsepower (hp)	1.014	metric horsepower
kilopascal (kPa)	.145	psi	horsepower (hp)	.7457	kilowatt
bar	14.5	psi	pounds/cu yd	.0005928	tons/m ³
tons/m ³	1692	pounds/cu yd	pounds (No. 2 diesel fuel)	.1413	U.S. gallon
decaliter	.283	bushel	bushel	3.524	decaliter

NOTE: Some of the above factors have been rounded for convenience. For exact conversion factors please consult International System of Units (SI) table.

Temperature conversion

Degree C



Degree F

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1.8$$

$$^{\circ}\text{F} = (\text{C} \times 1.8) + 32$$

Tables

METRIC UNIT EQUIVALENTS

1 km	=	1000 m
1 m	=	100 cm
1 cm	=	10 mm
1 km ²	=	100 ha
1 ha	=	10,000 m ²
1 m ²	=	10,000 cm ²
1 cm ²	=	100 mm ²
1 m ³	=	1000 liters
1 liter	=	1000 cm ³
1 metric ton	=	1000 kg
1 quintal	=	100 kg
1 N	=	0.10197 kg•m/s ²
1 kg	=	1000 g
1 g	=	1000 mg
1 bar	=	14.504 psi
1 cal	=	427 kg•m
	=	0.0016 cv•h
	=	0.00116 kw•h
torque unit		
1 CV	=	75 kg•m/s
1 kg/cm ²	=	0.97 atmosph.

ENGLISH UNIT EQUIVALENTS

1 mile	=	1760 yd
1 yd	=	3 ft
1 ft	=	12 in
1 sq mile	=	640 acres
1 acre	=	43,560 sq ft
1 sq ft	=	144 sq in
1 cu ft	=	7.48 gal liq
1 gal	=	231 cu in
	=	4 quarts liq
1 quart	=	32 fl oz
1 fl oz	=	1.80 cu in
1 sh ton	=	2000 lb
1 lg ton	=	2240 lb
1 lb	=	16 oz, avdp
1 Btu	=	778 ft lb
	=	0.000393 hph
	=	0.000293 kwh
1 mechanical hp	=	550 ft-lb/sec
1 atmosph.	=	14.7 lb/in ²

POWER UNIT EQUIVALENTS

kW	=	Kilowatt
hp	=	Mechanical Horsepower
CV	=	Cheval Vapeur (Steam Horsepower)
		French Designation For Metric Horsepower
PS	=	Pferdestärke (Horsepower)
		German Designation For Metric Horsepower
1 hp	=	1.014 CV = 1.014 PS
	=	0.7457 kW
1 PS	=	1 CV = 0.986 hp
	=	0.7355 kW
1 kW	=	1.341 hp
	=	1.36 CV
	=	1.36 PS

Tables

Machine Model	Engine Model	Machine Model	Engine Model	Machine Model	Engine Model
Track-Type Tractors		Excavators		Backhoe Loaders	
D3G XL/LGP	3046 T	301.5	3003	416D	3054C
D4G XL/LGP	3046 T	301.5 CR	L3E*	420D/420D IT	3054C T
D5G XL/LGP	3046 T	301.6	3003	424D	3054C
D5N XL/LGP	3126B T	301.8	3003	428D	3054C T
D6N XL/LGP	3126B T	302.5	3013	430D/430D IT	3054C T
D6G	3306 T	303 SR/CR	S3L2	432D	3054C T
D6R Series III (All)	C9 ACERT	304 CR	S4L2*	442D	3054CT
D7G	3306 T	305 SR/CR	K4N	446D	3114 T
D7R Series II (All)	3176C SCAC	307C/307C SB	Mitsubishi 4M40EI	Forest Products	
D8R/D8R LGP	3406E TA	308C CR	Mitsubishi 4M40EI	320C FM	3066T
D8T/D8T LGP	C15 ACERT	308C SR	K4N	322C FM	3126B ATAAC
D9R	3408E TA	311C U	3064 T	325C FM	3126B ATAAC
D9T	C18 ACERT	312C/312C L	3064 T**	330C FM	C9
D10T	C27 ACERT	312C/312C L	3064 T**	Wheel Skidders	
D11T/D11T CD	3508B TA	313C SR/CR	3064 T	525B	3126 TA
Motor Graders		314C CR/LCR	3064 T	535B	3126 TA
120H STD	3116 TA	315C/315C L	3046 T*	545	3306 TA
120H Global	3126B ATAAC	315C L	3054E ATAAC**	Track Skidders	
135H STD	3116 TA	318C/318C L/		517	3304 TA
135H Global	3126B ATAAC	318C LN/318C N	3066T	527	3304 TA
12H STD	3306	M313C	3054E ATAAC	Pipelayers	
12H Global	C-9 ATAAC	M315C	3054E ATAAC	561N	3126B T
140H STD	3306 T	M316C	3056E ATAAC	572R Series II	3176C T
140H Global	3176C ATAAC	M318C	3056E ATAAC	583R	3406C TA
143H Global	3176C ATAAC	M322C	3056E ATAAC	589	3408 TA
160H STD	3306 T	320C/320C L/		Wheel Tractor-Scrapers	
160H Global	3176C ATAAC	320C LN/320C S	3066 ATAAC	613C Series II	3116 TA
163H Global	3176C ATAAC	321C LCR	3066 ATAAC	615C Series II	3306 TA
14H Global	3176C ATAAC	322C/322C L	3126 TA	623G	C15 ACERT
16H Global	3196 ATAAC	325C L/325C LN	3126B ATAAC	621G	C15 ACERT
24H	3412E TA	330C/330C L/330C LN	C-9 ATAAC	631G	C18 ACERT
Skid Steer Loaders		345B L Series II	3176C ATAAC	627G Tractor	C15 ACERT
216B	3024C	345C L	C13 ACERT	627G Scraper	C9 ACERT
226B	3024C T	365B L Series II	3196 ATAAC	637G Tractor	C18 ACERT
232B	3024C	365C L	C15 ACERT	637G Scraper	C9 ACERT
236B	3044C T	385B/385B L	3456 ATAAC	657G Tractor	C18 ACERT
242B	3024C T	385C/385C L	C18 ACERT	657G Scraper	C15 ACERT
246B	3044C T	5110B	3412B HEUI		
248B	3044C T	5130B	3508B (EUI) TA		
252B	3044C T	5230B	3516B (EUI) TA		
262B	3044C T	Front Shovels			
268B	3044C T	385C FS	C18 ACERT		
247B	3024C T	5090B	3456 ATAAC		
257B	3024C T	5130B	3508 (EUI) TA		
267B	3044C T	5230B	3516B (EUI) TA		
277B	3044C T				
287B	3044C T				

*Japan Sourced.

**France Sourced.

Tables

Machine Model	Engine Model	Machine Model	Engine Model	Machine Model	Engine Model
Construction & Mining Trucks		Track Loaders		Compactors	
769D	3408E TA	939C	3046 T	Single Drum, Smooth	
771D	3408E TA	953C	3126B T	CS-323C	3054C
773E	3412E TA	963C	3126B T	CS-423E	3054C
775E	3412E TA	973C	C9 ATAAC	CS-433E	3054C T
777D	3508B (EUI) TA	Telehandlers		CS-533E	3054C T
785C	3512B (EUI) TA	TH210	3054B	CS-563E	3056E ATAAC
789C	3516B (EUI) TA	TH215	3054B	CS-573E	3056E ATAAC
793C	3516B (EUI) TA	TH220B	3054E	CS-583E	3056E ATAAC
797B	3524B (EUI) TA	TH330B	3054E	CS-663E	3056E ATAAC
Construction & Mining Tractors		TH340B	3054E	Single Drum, Padded	
776D	3508B (EUI) TA	TH350B	3054 T	CP-323C	3054C
784C	3512B (EUI) TA	TH360B	3054 T	CP-433E	3054C T
Articulated Trucks		TH460B	3054 T	CP-533E	3054C T
725	3176C ATAAC	TH560B	3054E T	CP-563E	3056E ATAAC
730	3196C ATAAC	Paving Products		CP-573E	3056E ATAAC
735	3406E ATAAC	Cold Planers		CP-583E	3056E ATAAC
740	3406E ATAAC	PM-565B	3408E TA	CP-663E	3056E ATAAC
Wheel Dozers		Reclaimer/Soil Stabilizers		Double Drum and Combi	
814F	3176C ATAAC	RM-250C	3406C TA	CB-214E	3013C
824G Series II	3406E ATAAC	RM-350B	3406C TA	CB-224E	3013C
834G	3456 TA	Asphalt Pavers		CB-225E	3013C
844	3412E ATAAC	AP-800C	3054 T	CB-334E	3024C
854G	3508B TA	AP-900B	3116 T	CB-335E	3024C
Soil Compactors		AP-1000B	3116 TA	CB-434D	3054C
815F	3176C ATAAC	AP-650B	3054 TA	CB-534D/CB-534D XW	3054C
825G Series II	3406E ATAAC	AP-655C	3056E ATAAC	CB-634D	3116 T
Landfill Compactors		AP-1050B	3116 TA	Pneumatic Tire-Asphalt	
816F	3176 TA	AP-1055B	3116 TA	PS-150C	3054C
826G Series II	3406E TA	BG-230	3054 T	PS-360B	3054 T
836G	3456 TA	BG-240C	3116 T	PF-300B	3054 T
Wheel Loaders/Integrated Toolcarriers		BG-260C	3116 TA	PS-300B	3054 T
902	3024	BG-225C	3054 TA	Underground Mining	
906	3034	BG-245C	3116 TA	R1300G	3306 TA
908	3054 T	BG-2455C	3116 TA	R1600G	3176C ATAAC
914G/IT14G	3054 T	Windrow Elevators		R1700G	3176C ATAAC
924G/924Gz	3056E DIT ATAAC	BG-650	3054 T	R2900G/R2900G XTRA	3406E ATAAC
928Gz	3056E DIT ATAAC	Windrow Elevators		AD30	3406E ATAAC
930G	3056E DIT ATAAC	Windrow Elevators		AD45	3408E TA
938G/IT38G	3126B ATAAC	Windrow Elevators		AD55	C18
950H	C7 ATAAC	Windrow Elevators			
962H/IT62H	C7 ATAAC	Windrow Elevators			
966H	C11 ATAAC	Windrow Elevators			
972H	C13 ATAAC	Windrow Elevators			
980H	C15 ATAAC	Windrow Elevators			
988G	3456E ATAAC	Windrow Elevators			
990 Series II	3412E ATAAC	Windrow Elevators			
992G	3508B TA	Windrow Elevators			
994D	3516B TA	Windrow Elevators			

Tables

Engine Model and (Cylinders)	Machine	Aspiration	Fuel Injection System	Bore × Stroke		Displacement	
				mm	in	L	in ³
3003 (3)	301.5, 301.6, 301.8	NA	DI	75 × 72	2.95 × 2.83	0.95	58.2
L3E	301.5 CR	NA	DI	76 × 70	3.0 × 3.0	0.95	58.1
S3L2	303 SR/CR	NA	DI	78 × 92	3.0 × 4.0	1.3	79
3013C (3)	302.5, CB-214E, CB-224E, CB-225E	NA	DI	75 × 72	2.95 × 3.54	1.50	91.3
S4L2	304 CR	NA	DI	78 × 92	3.0 × 4.0	1.76	107
3014 (4)		NA	DI	75 × 72	2.95 × 3.54	2.0	122
3024C (4)	CB-334E, CB-335E, 902, 216B, 232B	NA	DI	84 × 100	3.31 × 3.94	2.22	135
	226B, 242B, 247B, 257B	T					
K4N	305 SR/CR, 308C SR	NA	DI	90 × 90	4.0 × 4.0	2.3	140
Mitsubishi 4M40E1 (4)	307C, 307C SB, 308C CR	NA	DI	95 × 100	3.7 × 3.94	2.84	173
3034 (4)	906	NA	DI	97 × 100	3.32 × 3.94	2.95	180
3044C	268B, 267B, 277B, 287B, 236B, 246B, 248B, 252B, 262B	T	DI	94 × 120	3.7 × 4.7	3.3	201
3054E (I-4)	416D, 424D, CB-434D, CS-323C, CS-423E, CP-323C, TH210, TH215, PS-150C, TH220B, TH330B, TH340B	NA	DI	100 × 127	3.94 × 5.0	4.0	243
	(416D), 420D, 420D IT, (424D), 428D, 430D, 430D IT, 432D, 442D, AP-800C, BG-230, BG-650, 908, 914G, IT14G, PS-360B, PF-300B, PS-300B, CS-433E, CP-433E, CB-534C, TH350B, TH360B, TH460B, TH560B	T (optional)					
	M313C, M315C, AP-650B, 315C L**, BG-225C	TA					
3064 (I-4)	311C U, 312C, 314C CR/LCR, 313C SR/CR, 312C L**	T	DI	105 × 127	4.1 × 5.0	4.4	268
3114 (I-4)	446D	T	DI	105 × 127	4.13 × 5.0	4.4	268
3046 (I-6)		NA	DI	94 × 120	3.7 × 4.7	5.0	305
	D3G XL, D3G LGP, D4G XL, CS-533E, D4G LGP, D5G XL, D5G LGP, CP-533E, 315C/315C L*, 939C	T	DI				

*Japan sourced.

**France sourced.

DI — Direct Injection
T — Turbocharged

TA — Turbocharged and Aftercooled
NA — Naturally Aspirated

NOTE: Materials and specifications subject to change without notice. Component commonality of Cat Engines for all applications does not imply complete interchangeability. Contact your Caterpillar Dealer for specific information.

Tables

Engine Model and (Cylinders)	Machine	Aspiration	Fuel Injection System	Bore × Stroke		Displacement	
				mm	in	L	in ³
3056 (I-6)	924G, 924G Hook On, CS-563E, CS-573E, CS-583E, CS-663E, AP-655C, CS-683E, CP-563E, CP-573E, CP-583E, CP-663E, M316C, M318C, M322C, 928Gz, 930G	ATAAC	DI	100 × 127	3.94 × 5.0	6.0	365
3066 (I-6)	318C (All)*, 320C, 320C L, 320C LN, 320C S, 321C LCR	T	DI	102 × 130	4.0 × 5.1	6.4	391
3116 (I-6)	CB-634D, BG-240C, AP-900B	T	DI	105 × 127	4.13 × 5.0	6.6	402
	613C Series II, BG-260C, BG-245C, AP-1050B, AP-1055B, 120H STD, 135H STD, BG-2455C, AP-1000B	TA	DI				
3304 (I-4)	527, 517	TA	DI	121 × 152	4.75 × 6.0	7.0	425
3126 (I-6)	D5N, D6N, 561N, 953C, 963C	T	DI	110 × 127	4.33 × 5.0	7.2	442
	322C, 322C L, 525B, 535B	TA					
	962H, IT62H, 938G, IT38G, 950H, 120H Global, 135H Global, 325C, 325C L, 325C LN	ATAAC					
C9 ACERT (I-6)	12H Global, D6R Series III (All), 330C, 330C L, 330C LN, 627G Sc., 637G Sc., 973C	TA	DI	112 × 149	4.4 × 5.9	8.8	537
3176 (I-6)	14H Global, 140H Global, 572R Series II, 143H Global, 160H Global, 163H Global, R1700G, R1600G, 345B L Series II, D7R Series II (All), 725, 814F, 815F, 816F, 966H	ATAAC	DI	125 × 140	4.92 × 5.5	10.2	629

*France sourced.

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T — Turbocharged

TA — Turbocharged and Aftercooled

ATAAC — Air/Air Aftercooled

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Tables

Engine Model and (Cylinders)	Machine	Aspiration	Fuel Injection System	Bore × Stroke		Displacement	
				mm	in	L	in ³
3306 (I-6)	12H STD, D6G, 140H STD, 160H STD	T	DI	121 × 152	4.75 × 6.0	10.5	638
	R1300G, 615C Series II, 545, D7G	ATAAC	DI				
3196 (I-6)	730, 365B L Series II, 16H Global, 972H	ATAAC	DI	130 × 150	5.1 × 5.9	12.0	732
3406 (I-6)	RM-250C, RM-350B, 583R, D8R, D8R LGP	TA	DI	137 × 165	5.4 × 6.5	14.6	893
	826G Series II, 825G Series II, 824G Series II, R2900G, 735, 740, 980H, AD30	ATAAC	DI				
C15 ACERT (I-6)	D8T, D8T LGP, 621G, 623G, 627G Tr., 657G Sc.	TA	DI	137 × 172	5.4 × 6.75	15.2	928
3456 (I-6)	988G, 834G, 836G, 385B, 385B L, 5090B	ATAAC	DI	140 × 171	5.5 × 6.75	15.8	966
3408 (V-8)	D9R, 589, 771D, 769D, PM-565B, AD45	TA	DI	137 × 152	5.4 × 6.0	18.0	1099
		ATAAC					
C18 (I-6)	AD55	TA	DI	145 × 185	5.7 × 7.3	18.1	1104
C18 ACERT	D9T, 631G, 637G Tr., 651E, 657G Tr.	TA	DI	145 × 185	5.7 × 7.3	18.1	1104
C27 ACERT (V-12)	D10T	TA	DI	137 × 152	5.4 × 6.0	27.0	1648
3412 (V-12)	D10R, 773E, 775E, 24H, 5110B	TA	DI	137 × 152	5.4 × 6.0	27.0	1649
	990 Series II, 844	ATAAC	DI				
3508 (V-8)	D11T, 777D, 776D, 5130B, 992G, 854G	TA	DI	170 × 190	6.7 × 7.5	34.5	2105
3512 (V-12)	785C, 784C	TA	DI	170 × 190	6.7 × 7.5	51.8	3158
3516 (V-16)	789C, 793C, 994D, 5230B	TA	DI	170 × 190	6.7 × 7.5	69.1	4211
3524 (V-24)	797B	TA	DI	170 × 215	6.7 × 8.5	117.0	7130

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ATAAC — Air/Air Aftercooled

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