Caterpillar Performance Handbook

Edition 29

CATERPILLAR®

CONTENTS

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 rollover 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.

THE CATERPILLAR PRODUCT LINE

TRACK-TYPE TRACTORS

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

◀Brazilian Domestic Only

***Waste Handling Arrangements (WHA)**
available for sanitary landfill applications
**Also available with hydrostatic power train.

D3C Series III**
D3C XL Series III**
D3C LGP Series III**

D4C Series III**
D4C XL Series III**
D4C LGP Series III**

D5C Series III**
D5C XL Series III**
D5C LGP Series III**

D5M XL
D5M LGP

D5E◀

D6M XL
D6M LGP

D6G

D6R*
D6R XL
D6R XR
D6R LGP

D7G

D7R*
D7R XR
D7R LGP

D8R*
D8R LGP

D9R*

D10R*

D11R

AGRICULTURAL EQUIPMENT

*Variable Horsepower arrangements available
(SR) Super Rural

D4E SR*

D6G SR*

Challenger 35

Challenger 45

Challenger 55

Challenger 65E

Challenger 75E

Challenger 85E*

Challenger 95E

LEXION 460/465

LEXION 480/485

MOTOR GRADERS

*All Wheel Drive

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

120H
120H NA
120H ES

135H
135H NA

12H
12H NA
12H ES

140H
140H NA
140H ES

143H NA*

160H
160H NA
160H ES

163H NA*

14H

16H

24H

HYDRAULIC EXCAVATORS

Operating Weight 6700 to 316 600 kg (14,770 to 698,000 lb)

Track Models

301.5

307B
307B SB

311B

312B
312B L

315B
315B L

318B L
318B LN

320B
320B L
320B N
320B LN
320B S

322B
322B L
322B LN

325B
325B L
325B LN

330B
330B L
330B LN

345B
345B L – FIX
345B L – VG

350
350 L

375
375 L

5130B

5230

Front Shovels

Operating Weight 83 800 to 318 500 kg (184,600 to 702,000 lb)

5080

5130B

5230

Wheel Models

M312

M315

M318

M320

BACKHOE LOADERS

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

416C

426C

428C

436C

438C

446B

WHEEL SKIDDERS

Flywheel power 104 to 145 kW (140 to 195 hp)

515

525

528B

TRACK SKIDDERS

Flywheel power 89 to 112 kW (120 to 150 hp)

517 Cable

517 Grapple

527 Cable

527 Grapple

PIPELAYERS

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

561M

572R

583R

589

WHEEL TRACTOR-SCRAPERS

*Available in auger scraper version

Standard Models

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

621F*

631E Series II*

651E*

Tandem Powered Scrapers

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

627F*

637E Series II*

657E*

Elevating Scrapers

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

613C Series II

615C Series II

623F

633E Series II

Push-Pull Scrapers

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

627F

637E Series II

657E

CONSTRUCTION & MINING TRUCKS/TRACTORS

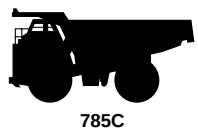
Construction & Mining Trucks

Capacity 36.8 to 218 metric ton — 40.6 to 240 U.S. tons

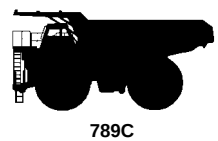
769D
771D Quarry Truck

773D
775D Quarry Truck

777D



785C

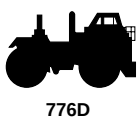


789C

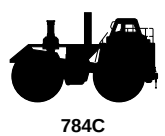
793C

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)

D25D

D30D

D250E Series II

D300E Series II

D350E

D400E

WHEEL TRACTORS

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

814F

824G

834B

844

854G

LANDFILL COMPACTORS

Flywheel power 164 to 353 kW (220 to 473 hp)

816F

826G

836

SOIL COMPACTORS

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

815F

825G

WHEEL LOADERS

Bucket Capacity (Heaped) 1.2 to 30 m³ (1.6 to 40 yd³)

* High lift arrangement available.

902

906

914G

924F

928G

938G*

950G

962G

966F Series II*

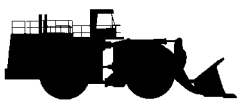
970F

980G*

988F Series II*

990 Series II

992G



994*

TRACK LOADERS

Bucket Capacity (Heaped)** 1.0 to 3.6 m³ (1.3 to 4.2 yd³)

*Wide track arrangements available.
**General Purpose Bucket.

933C*

939C

953C*

963B*

973*

INTEGRATED TOOLCARRIERS

Bucket Capacity (Heaped)* 1.3 to 3.1 m³ (1.7 to 4.0 yd³)

*General Purpose Bucket.

IT14G

IT24F

IT28G

IT38G

IT62G

TELESCOPIC HANDLERS

TH62

TH63

TH82

TH83

TH103

PAVING PRODUCTS

Cold Planers

Cutting widths 1905 & 2100 mm (6'3" & 6'11")
Flywheel Power 343 & 466 kW (460 & 625 hp)

PM-465

PM-565B

Reclaimer Mixers/Stabilizer Mixers

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

RR-250B

SS-250B

RM-350B

Windrow Elevators

Operating weight 5897 kg (13,000 lb)

BG-650

Asphalt Pavers

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

AP-200B

AP-800C

AP-1000B

AP-650B

AP-1050B

AP-1055B

BG-210B

BG-230

BG-240B

BG-260C

BG-225C

BG-245C

BG-265B

BG-2455C

Road Wideners

Laydown width to 3048 mm (to 10'0")

BG-730

PAVING PRODUCTS (Continued)

Smooth Drum Vibratory Soil Compactors

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

CS-323C

CS-431C

CS-433C

CS-531C

CS-533C

CS-563C

CS-573C

CS-583C

Padded Drum Vibratory Soil Compactors

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

CP-323C

CP-433C

CP-533C

CP-563C

Dual Drum Vibratory Asphalt Compactors

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

CB-214C

CB-224C

CB-434C

CB-534C

CB-634C

CB-214C

CB-224C

CB-434B

CB-534C

CB-544

Pneumatic Tire Asphalt Compactors

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

PS-150B

PS-200B

PS-360B

PF-300B PS-300B

PS-500

Combination Vibratory Compactor

Drum Width 1700 mm (5'7")

CB-535B

CB-545

UNDERGROUND MINING (ELPHINSTONE)

Load-Haul-Dump

Bucket sizes 2.4-8.8 m^3 (3-12 yd^3)

R1300

R1600

R1700 Series II

R2900

Articulated Trucks

AD40 Series II

AE40 Series II

40 t (44 T) capacity

Rigid Frame Trucks

69D Dump

38 t (42 T)

69D Ejector

36.2 t (40 T)

73D

52.2 t (58 T)

ENGINES

Application configurations include: On and off highway trucks, stationary and mobile industrial, marine, electrical power generation and petroleum. Spark-ignited (SI) available as noted. Generator set kW shown is 60 Hertz.

1.1 L Family
- 104 to 224 kW (140 to 300 hp) Diesel Engine

3200 Family
- 93 to 317 kW (125 to 425 hp) Diesel Engine
- 160 to 200 kW Diesel Generator Sets

3500 Family
- 448 to 1641 kW (600 to 2200 hp) Diesel Engine
- 715 to 2000 kW Diesel Generator Sets
- 392 to 858 kW (525 to 1150 hp) SI Engine
- 360 to 800 kW SI Generator Sets

3300 Family
- 64 to 265 kW (85 to 355 hp) Diesel Engine
- 65 to 250 kW Diesel Generator Sets
- 62 to 164 kW (83 to 220 hp) SI Engine
- 85 to 150 kW SI Generator Sets

3400 Family
- 186 to 746 kW (250 to 1000 hp) Diesel Engine
- 210 to 800 kW Diesel Generator Sets
- 336 kW (450 hp) SI Engine
- 270 to 470 kW SI Generator Sets

3600 Family
- 1560 to 5420 kW (2090 to 7270 hp) Diesel Engine
- 1375 to 4910 kW Diesel Generator Sets

TRACK-TYPE TRACTORS
WASTE HANDLING TRACK-TYPE TRACTORS
Hydraulic Controls
Bulldozers
Rippers & Winches
Towed Scrapers

CONTENTS

TRACK-TYPE TRACTORS

Features:

- **Cat Diesel Engines** provide power, high torque rise, reliability and performance you can depend on.
- **Hydraulic Electronic Unit Injection** on D9R and D10R increases fuel efficiency, reduces smoke, improves cold starting and enhances diagnostic capabilities.
- **Electronic Unit Injection (EUI)** on D11R. 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 all models except the D8R. Improves reliability and component life. Oil disc brakes on D5M XL and up. Oil cooled contracting band type used on D3C Series III, D4C Series III and D5C Series III power shift models.
- **Finger Tip Controls (FTC)** of transmission, steering clutches and brakes available on D5M, D6M, D6R, D7R, D10R and D11R.
- **Differential steering** allows infinitely variable turning radius. Standard on the D8R and optional on the D6R, D7R and D9R, allows the tractor to make a "power turn" keeping both tracks working for more traction and higher performance.
- **Hydrostatic Power Train System** available on D3C Series III thru D5C Series III allows full 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 D5M XL, D6M XL and D9R. Combined pedal steering standard on the D3C Series III, D4C Series III and D5C Series III. Optional combined hand lever clutch and brake for D3C Series III, D4C Series III and D5C Series III.
- **Standard Tractors** designed for heavy dozing and general grading.
- **XL Tractors** offer higher horsepower and longer roller frames for increased finish grading capability, flotation and productivity. Wider gauge available on D6R XL through Caterpillar Custom Products.
- **Sealed and Lubricated Track** reduces pin and bushing wear for lower undercarriage repair costs. Heavy duty track chain available on D5M, D6M, D6R and D7R improves wear life and reduces pin/bore stretching and cracking.
- **Elevated sprockets** on D5M 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, D9R, D10R and D11R reduces shock transmitted to tractor.
- **Solid mounted undercarriage** standard on D3C Series III through D7R and optional on the D8R provides stable platform for low impact, high abrasion applications like finish grading and stockpiling.
- **Accessible modular design** on D5M XL and up greatly reduces drive train removal and installation time resulting in reduced repair costs.
- **Tag link** on D7R and up; L-shaped push arms on D6M through D6R. Both designs allow closer mounting of dozer blades. This reduces total tractor length, improves maneuverability, balance, blade penetration and pryout.




MODEL	D3C Series III		D3C Series III Hystat		D3C XL Series III		D3C XL Series III Hystat	
Flywheel Power	52 kW	**70 hp**	52 kW	**70 hp**	52 kW	**70 hp**	52 kW	**70 hp**
Operating Weight*								
(Power Shift)	7039 kg	**15,518 lb**	7112 kg	**15,680 lb**	7231 kg	**15,941 lb**	7304 kg	**16,103 lb**
Engine Model		**3046**		**3046**		**3046**		**3046**
Rated Engine RPM		**2400**		**2400**		**2400**		**2400**
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	5.0 L	**305 in³**	5.0 L	**305 in³**	5.0 L	**305 in³**	5.0 L	**305 in³**
Track Rollers (Each Side)		**5**		**5**		**6**		**6**
Width of Standard Track Shoe	406 mm	**16"**	406 mm	**16"**	406 mm	**16"**	406 mm	**16"**
Length of Track on Ground	1899 mm	**6'2.8"**	1899 mm	**6'2.8"**	2055 mm	**6'8.9"**	2055 mm	**6'8.9"**
Ground Contact Area (W/Std. Shoe)	1.55 m²	**2390 in²**	1.55 m²	**2390 in²**	1.67 m²	**2586 in²**	1.67 m²	**2586 in²**
Track Gauge	1422 mm	**4'8"**	1448 mm	**4'9"**	1448 mm	**4'9"**	1448 mm	**4'9"**
GENERAL DIMENSIONS:								
Height (Stripped Top)**	1.70 m	**5'7"**	1.70 m	**5'7"**	1.70 m	**5'7"**	1.70 m	**5'7"**
Height (To Top of ROPS)	2.66 m	**8'9"**	2.73 m	**8'11"**	2.66 m	**8'9"**	2.73 m	**8'11"**
Overall Length (With P Blade)	3.77 m	**12'5"**	3.98 m	**13'1"**	4.02 m	**13'2"**	3.98 m	**13'1"**
(Without Blade)	2.93 m	**9'7"**	2.96 m	**9'8"**	2.98 m	**9'9"**	2.96 m	**9'8"**
Width (Over Trunnion)		—		—		—		—
Width (W/O Trunnion — Std. Shoe)	1.83 m	**6'0"**	1.85 m	**6'1"**	1.83 m	**6'0"**	1.85 m	**6'1"**
Ground Clearance	322 mm	**12.7"**	374 mm	**14.7"**	374 mm	**14.7"**	374 mm	**14.7"**
Blade Types and Widths:								
Straight		—		—		—		—
Angle		—		—		—		—
Angle Straight		—		—		—		—
Universal		—		—		—		—
Semi-U		—		—		—		—
"P" Straight	2.55 m	**8'4"**	2.55 m	**8'4"**	2.55 m	**8'4"**	2.55 m	**8'4"**
Angled	2.31 m	**7'6"**	2.31 m	**7'6"**	2.31 m	**7'6"**	2.31 m	**7'6"**
Fuel Tank Refill Capacity	122 L	**32.2 U.S. gal**	165 L	**43.6 U.S. gal**	165 L	**43.6 U.S. gal**	165 L	**43.6 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.

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




MODEL	D3C LGP Series III		D3C LGP Series III Hystat		D4C Series III		D4C Series III Hystat	
Flywheel Power	52 kW	**70 hp**	52 kW	**70 hp**	60 kW	**80 hp**	60 kW	**80 hp**
Operating Weight*								
(Power Shift)	7640 kg	**16,842 lb**	7713 kg	**17,004 lb**	7266 kg	**16,019 lb**	7326 kg	**16,150 lb**
Engine Model		**3046**		**3046**		**3046**		**3046**
Rated Engine RPM		**2400**		**2400**		**2400**		**2400**
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	5.0 L	**305 in³**	5.0 L	**305 in³**	5.0 L	**305 in³**	5.0 L	**305 in³**
Track Rollers (Each Side)		**6**		**6**		**6**		**6**
Width of Standard Track Shoe	635 mm	**2'1"**	635 mm	**2'1"**	406 mm	**16"**	406 mm	**16"**
Length of Track on Ground	2055 mm	**6'8.9"**	2055 mm	**6'8.9"**	2055 mm	**6'8.9"**	2055 mm	**6'8.9"**
Ground Contact Area (W/Std. Shoe)	2.61 m²	**4045 in²**	2.61 m²	**4045 in²**	1.67 m²	**2586 in²**	1.67 m²	**2586 in²**
Track Gauge	1676 mm	**5'6"**	1676 mm	**5'6"**	1499 mm	**4'11"**	1499 mm	**4'11"**
GENERAL DIMENSIONS:								
Height (Stripped Top)**	1.70 m	**5'7"**	1.70 m	**5'7"**	1.75 m	**5'9"**	1.75 m	**5'9"**
Height (To Top of ROPS)	2.66 m	**8'9"**	2.73 m	**8'11"**	2.73 m	**8'11"**	2.73 m	**8'11"**
Overall Length (With P Blade)	3.99 m	**13'1"**	3.95 m	**13'0"**	3.99 m	**13'1"**	3.99 m	**13'1"**
(Without Blade)	2.98 m	**9'9"**	2.96 m	**9'8"**	2.96 m	**9'8"**	2.96 m	**9'8"**
Width (Over Trunnion)		—		—		—		—
Width (W/O Trunnion — Std. Shoe)	2.29 m	**7'6"**	2.31 m	**7'7"**	1.91 m	**6'3"**	1.91 m	**6'3"**
Ground Clearance	374 mm	**14.7"**	374 mm	**14.7"**	374 mm	**14.7"**	374 mm	**14.7"**
Blade Types and Widths:								
Straight	2.80 m	**9'2"**		—		—		—
Angle		—		—		—		—
Angle Straight		—		—		—		—
Universal		—		—		—		—
Semi-U		—		—		—		—
"P" Straight	3.19 m	**10'6"**	3.19 m	**10'6"**	2.74 m	**9'0"**	2.74 m	**9'0"**
Angled	2.90 m	**9'5"**	2.90 m	**9'5"**	2.49 m	**8'2"**	2.49 m	**8'2"**
Fuel Tank Refill Capacity	165 L	**43.6 U.S. gal**	165 L	**43.6 U.S. gal**	157 L	**41.4 U.S. gal**	157 L	**41.4 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.




MODEL	D4C XL Series III		D4C XL Series III Hystat		D4C LGP Series III		D4C LGP Series III Hystat	
Flywheel Power	60 kW	**80 hp**	60 kW	**80 hp**	60 kW	**80 hp**	60 kW	**80 hp**
Operating Weight*								
(Power Shift)	7458 kg	**16,442 lb**	7518 kg	**16,573 lb**	7726 kg	**17,032 lb**	7785 kg	**17,163 lb**
Engine Model		**3046**		**3046**		**3046**		**3046**
Rated Engine RPM		**2400**		**2400**		**2400**		**2400**
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	5.0 L	**305 in³**	5.0 L	**305 in³**	5.0 L	**305 in³**	5.0 L	**305 in³**
Track Rollers (Each Side)		**7**		**7**		**6**		**6**
Width of Standard Track Shoe	457 mm	**18"**	457 mm	**18"**	635 mm	**2'1"**	635 mm	**2'1"**
Length of Track on Ground	2210 mm	**7'3"**	2210 mm	**7'3"**	2055 mm	**6'8.9"**	2055 mm	**6'8.9"**
Ground Contact Area (W/Std. Shoe)	2.02 m²	**3131 in²**	2.02 m²	**3131 in²**	2.61 m²	**4045 in²**	2.61 m²	**4045 in²**
Track Gauge	1499 mm	**4'11"**	1499 mm	**4'11"**	1676 mm	**5'6"**	1676 mm	**5'6"**
GENERAL DIMENSIONS:								
Height (Stripped Top)**	1.75 m	**5'9"**	1.75 m	**5'9"**	1.75 m	**5'9"**	1.75 m	**5'9"**
Height (To Top of ROPS)	2.73 m	**8'11"**	2.73 m	**8'11"**	2.73 m	**9'0"**	2.73 m	**8'11"**
Overall Length (With P Blade)	3.99 m	**13'1"**	3.99 m	**13'1"**	3.99 m	**13'1"**	3.99 m	**13'1"**
(Without Blade)	3.04 m	**10'0"**	3.04 m	**10'0"**	2.96 m	**9'8"**	2.96 m	**9'8"**
Width (Over Trunnion)		—		—		—		—
Width (W/O Trunnion — Std. Shoe)	1.96 m	**6'5"**	1.96 m	**6'5"**	2.31 m	**7'6"**	2.31 mm	**7'6"**
Ground Clearance	374 mm	**14.7"**	374 mm	**14.7"**	374 mm	**14.7"**	374 mm	**14.7"**
Blade Types and Widths:								
Straight		—		—		—		—
Angle		—		—		—		—
Angle Straight		—		—		—		—
Universal		—		—		—		—
Semi-U		—		—		—		—
"P" Straight	2.74 m	**9'0"**	2.74 m	**9'0"**	3.34 m	**10'11"**	3.34 m	**10'11"**
Angled	2.49 m	**8'2"**	2.49 m	**8'2"**	3.03 m	**9'11"**	3.03 m	**9'11"**
Fuel Tank Refill Capacity	157 L	**41.4 U.S. gal**	157 L	**41.4 U.S. gal**	157 L	**41.4 U.S. gal**	157 L	**41.4 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.




MODEL	D5C Series III		D5C Series III Hystat		D5C XL Series III		D5C XL Series III Hystat	
Flywheel Power: Power Shift	67.1 kW	**90 hp**	67.1 kW	**90 hp**	67.1 kW	**90 hp**	67.1 kW	**90 hp**
Operating Weight*								
(Power Shift)	8428 kg	**18,580 lb**	8487 kg	**18,711 lb**	8762 kg	**19,316 lb**	8821 kg	**19,447 lb**
Engine Model		**3046**		**3046**		**3046**		**3046**
Rated Engine RPM		**2400**		**2400**		**2400**		**2400**
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	5.0 L	**305 in³**	5.0 L	**305 in³**	5.0 L	**305 in³**	5.0 L	**305 in³**
Track Rollers (Each Side)		**6**		**6**		**7**		**7**
Width of Standard Track Shoe	457 mm	**18"**	457 mm	**18"**	508 mm	**1'8"**	508 mm	**1'8"**
Length of Track on Ground	2145 mm	**7'0"**	2145 mm	**7'0.4"**	2320 mm	**7'7"**	2316 mm	**7'7.2"**
Ground Contact Area (W/Std. Shoe)	1.96 m²	**3039 in²**	1.96 m²	**3039 in²**	2.35 m²	**3547 in²**	2.35 m²	**3547 in²**
Track Gauge	1549 mm	**5'1"**	1549 mm	**5'1"**	1549 mm	**5'1"**	1549 mm	**5'1"**
GENERAL DIMENSIONS:								
Height (Stripped Top)**	1.75 m	**5'9"**	1.75 m	**5'9"**	1.75 m	**5'9"**	1.75 m	**5'9"**
Height (To Top of ROPS)	2.74 m	**9'0"**	2.74 m	**9'0"**	2.74 m	**9'0"**	2.74 m	**9'0"**
Overall Length (With P Blade)***	4.07 m	**13'4"**	4.07 m	**13'4"**	4.32 m	**14'2"**	4.32 m	**14'2"**
(Without Blade)	3.00 m	**9'10"**	3.00 m	**9'10"**	3.18 m	**10'5"**	3.18 m	**10'5"**
Width (W/O Trunnion — Std. Shoe)	2.00 m	**6'7"**	2.00 m	**6'7"**	2.06 m	**6'9"**	2.06 m	**6'9"**
Ground Clearance	384 mm	**15.1"**	384 mm	**15.1"**	384 mm	**15.1"**	384 mm	**15.1"**
Blade Types and Widths:								
Straight		—		—		—		—
Angle		—		—		—		—
"P" Straight	2.75 m	**9'0"**	2.75 m	**9'0"**	2.69 m	**8'10"**	2.69 m	**8'10"**
Angled	2.50 m	**8'2"**	2.50 m	**8'2"**	2.50 m	**8'2"**	2.50 m	**8'2"**
Fuel Tank Refill Capacity	157 L	**41.4 U.S. gal**	157 L	**41.4 U.S. gal**	157 L	**41.4 U.S. gal**	157 L	**41.4 U.S. gal**

*Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, P blade, rigid drawbar, front towing device, standard service crankcase guards, engine enclosures and suspension seat.

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

***D5M XL, D5M LGP with UPAT blade.




MODEL	D5C LGP Series III		D5C LGP Series III Hystat		D5M XL		D5M LGP	
Flywheel Power: Power Shift	67.1 kW	**90 hp**	67.1 kW	**90 hp**	82 kW	**110 hp**	82 kW	**110 hp**
Direct Drive		—		—		—	78 kW	**105 hp**
Operating Weight:* Power Shift	8913 kg	**19,649 lb**	8972 kg	**19,780 lb**	11 700 kg	**25,800 lb**	12 600 kg	**27,800 lb**
Direct Drive		—		—		—	12 050 kg	**26,600 lb**
Engine Model		**3046**		**3046**		**3116T**		**3116T**
Rated Engine RPM		**2400**		**2400**		**2100**		**2100**
No. of Cylinders		**6**		**6**		**6**		**6**
Bore	94 mm	**3.7"**	94 mm	**3.7"**	105 mm	**4.1"**	105 mm	**4.1"**
Stroke	120 mm	**4.7"**	120 mm	**4.7"**	127 mm	**5"**	127 mm	**5"**
Displacement	5.0 L	**305 in³**	5.0 L	**305 in³**	6.6 L	**403 in³**	6.6 L	**403 in³**
Track Rollers (Each Side)		**6**		**6**		**7**		**7**
Width of Standard Track Shoe	660 mm	**2'2"**	660 mm	**2'2"**	560 mm	**1'10"**	760 mm	**2'6"**
Length of Track on Ground	2145 mm	**7'0.4"**	2145 mm	**7'0.4"**	2390 mm	**7'10"**	2600 mm	**8'7"**
Ground Contact Area (W/Std. Shoe)	2.83 m²	**4389 in²**	2.83 m²	**4389 in²**	2.67 m²	**4144 in²**	3.96 m²	**6133 in²**
Track Gauge	1727 mm	**5'8"**	1727 mm	**5'8"**	1770 mm	**5'10"**	2000 mm	**6'7"**
GENERAL DIMENSIONS:								
Height (Stripped Top)**	1.75 m	**5'9"**	1.75 m	**5'9"**	2.22 m	**7'3"**	2.26 m	**7'5"**
Height (To Top of ROPS Canopy)	2.74 m	**9'0"**	2.74 m	**9'0"**	3.00 m	**9'10"**	3.04 m	**10'0"**
Height (To Top of ROPS Cab)		—		—	3.00 m	**9'10"**	3.05 m	**10'0"**
Overall Length (With P Blade)***	4.07 m	**13'4"**	4.07 m	**13'4"**	4.56 m	**14'11"**	5.13 m	**16'10"**
(Without Blade)	3.00 m	**9'10"**	3.00 m	**9'10"**	3.54 m	**11'8"**	3.73 m	**12'3"**
Width (W/O Trunnion — Std. Shoe)	2.38 m	**7'10"**	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"**	385 mm	**15.2"**	437 mm	**17.2"**
Blade Types and Widths:								
Straight		—		—		—		—
Angle		—		—		—		—
"P" Straight	3.30 m	**10'10"**	3.30 m	**10'10"**		—		—
Angled	3.00 m	**9'10"**	3.00 m	**9'10"**		—		—
UPAT		—		—	3.08 m	**10'1"**	3.36 m	**11'0"**
Fuel Tank Refill Capacity	157 L	**41.4 U.S. gal**	157 L	**41.4 U.S. gal**	218 L	**57.5 U.S. gal**	218 L	**57.5 U.S. gal**

*Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, P blade, rigid drawbar, front towing device, standard service crankcase guards, engine enclosures and suspension seat.

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

***D5M XL, D5M LGP with UPAT blade.




MODEL	D5E▶		D6M XL		D6M LGP		D6G	
Flywheel Power: Power Shift	78 kW	**105 hp**	104 kW	**140 hp**	104 kW	**140 hp**	116 kW	**155 hp**
Operating Weight:* Power Shift		—	15 050 kg	**33,200 lb**	16 500 kg	**36,400 lb**	15 432 kg	**34,028 lb**
Direct Drive	11 702 kg	**25,800 lb**		—		—		—
Engine Model		**3306**		**3116T**		**3116T**		**3306T**
Rated Engine RPM: Power Shift		—		**2200**		**2200**		**1900**
Direct Drive		**1750**		—		—		—
No. of Cylinders		**6**		**6**		**6**		**6**
Bore	121 mm	**4.75"**	105 mm	**4.1"**	105 mm	**4.1"**	121 mm	**4.75"**
Stroke	152 mm	**6"**	127 mm	**5"**	127 mm	**5"**	152 mm	**6"**
Displacement	10.5 L	**638 in³**	6.6 L	**403 in³**	6.6 L	**403 in³**	10.5 L	**638 in³**
Track Rollers (Each Side)		**6**		**7**		**8**		**7**
Width of Standard Track Shoe	457 mm	**18"**	600 mm	**2'0"**	860 mm	**2'10"**	508 mm	**1'8"**
Length of Track on Ground	2.21 m	**7'3"**	2.55 m	**8'4"**	3.08 m	**10'1"**	2.67 m	**8'9"**
Ground Contact Area (W/Std. Shoe)	2.05 m²	**3154 in²**	3.06 m²	**4743 in²**	5.30 m²	**8217 in²**	2.72 m²	**4216 in²**
Track Gauge	1.52 m	**5'0"**	1.89 m	**6'2"**	2.16 m	**7'1"**	1.88 m	**6'2"**
GENERAL DIMENSIONS:								
Height (Stripped Top)**	1.90 m	**6'6"**	2.30 m	**7'6.5"**	2.41 m	**7'11"**	2.10 m	**6'11"**
Height (To Top of ROPS Canopy)		—	3.02 m	**9'11"**	3.14 m	**10'4"**		—
Height (To Top of ROPS)	2.95 m	**9'8"**		—		—	3.20 m	**10'5"**
Height (To Top of Cab ROPS)		—	3.08 m	**10'1"**	3.19 m	**10'6"**		—
Overall Length (With P Blade)***		—	4.80 m	**15'9"**	5.37 m	**17'8"**		—
(Without Blade)		—	3.74 m	**12'3"**	4.15 m	**13'7"**		—
Overall Length (With S Blade)		—	4.92 m	**16'2"**		—	5.00 m	**16'4"**
(Without Blade)	3.88 m	**12'8"**	3.74 m	**12'3"**	4.15 m	**13'7"**	3.94 m	**12'9"**
Width (Over Trunnion)		—	3.19 m	**10'6"**		—		—
Width (W/O Trunnion — Std. Shoe)	2.03 m	**6'8"**	2.49 m	**8'2"**	3.02 m	**9'11"**	2.39 m	**7'10"**
Ground Clearance	277 mm	**10.9"**	424 mm	**16.7"**	538 mm	**1'9.2"**	310 mm	**12.2"**
Blade Types and Widths:								
Straight		—		—		—	3.20 m	**10'6"**
Angle	3.34 m	**10'11"**		—		—	3.90 m	**12'9"**
Semi-U		—	3.17 m	**10'6"**		—	3.20 m	**10'6"**
"P" Straight		—		—		—		—
Power Angle & Tilt		—	3.27 m†	**10'9"**	4.08 m†	**13'5"**		—
Fuel Tank Refill Capacity	295 L	**78 U.S. gal**	311 L	**82.2 U.S. gal**	311 L	**82.2 U.S. gal**	300 L	**80 U.S. gal**

* Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, straight dozer with tilt (UPAT on D5M LGP and D6M) rigid drawbar, front towing device, engine enclosures and suspension seat.
** Height (stripped top) — without ROPS canopy, exhaust, pre-cleaner, seat back or other easily removed encumbrances.
*** UPAT blade on D5M LGP and D6M.
† SU blade on D6M.
▶ Brazilian Domestic only.




MODEL	D6R		D6R XL		D6R XL (IG)▶		D6R XR	
Flywheel Power	123 kW	**165 hp**	130 kW	**175 hp**	138 kW	**185 hp**	130 kW	**175 hp**
Operating Weight:*								
Power Shift	18 000 kg	**39,700 lb**	19 000 kg	**41,900 lb**	19 780 kg	**43,600 lb**	18 780 kg	**41,400 lb**
Direct Drive	18 053 kg**	**39,800 lb**		—		—		—
Power Shift Differential Steer	18 200 kg	**40,000 lb**	19 200 kg	**42,300 lb**	19 960 kg	**44,000 lb**	18 910 kg	**41,700 lb**
Engine Model	**3306T**		**3306T**		**3306T**		**3306T**	
Rated Engine RPM	**1900**		**1900**		**1900**		**1900**	
No. of Cylinders	**6**		**6**		**6**		**6**	
Bore	121 mm	**4.75"**	121 mm	**4.75"**	121 mm	**4.75"**	121 mm	**4.75"**
Stroke	152 mm	**6"**	152 mm	**6"**	152 mm	**6"**	152 mm	**6"**
Displacement	10.5 L	**638 in³**	10.5 L	**638 in³**	10.5 L	**638 in³**	10.5 L	**638 in³**
Track Rollers (Each Side)	**6**		**7**		**7**		**7**	
Width of Standard Track Shoe	560 mm	**1'10"**	560 mm	**1'10"**	762 mm	**2'6"**	560 mm	**1'10"**
Length of Track on Ground	2.61 m	**8'7"**	2.82 m	**9'3"**	2.82 m	**9'3"**	2.75 m	**9'0"**
Ground Contact Area (W/Std. Shoe)	2.92 m²	**4523 in²**	3.16 m²	**4888 in²**	4.3 m²	**6661 in²**	3.08 m²	**4771 in²**
Track Gauge	1.88 m	**6'2"**	1.88 m	**6'2"**	2.03 m	**6'8"**	1.88 m	**6'2"**
GENERAL DIMENSIONS:								
Height (Stripped Top)***	2.38 m	**7'5"**	2.38 m	**7'5"**	2.38 m	**7'5"**	2.38 m	**7'5"**
Height (To Top of ROPS)	3.19 m	**10'5"**	3.19 m	**10'5"**	3.19 m	**10'5"**	3.19 m	**10'5"**
Height (To Top of Cab ROPS)	3.19 m	**10'5"**	3.19 m	**10'5"**	3.19 m	**10'5"**	3.19 m	**10'5"**
Height (To Top of ROPS Canopy)		—		—		—		—
Overall Length (With S Blade)	5.11 m	**16'9"**		—		—	5.26 m	**17'3"**
(Without Blade)	4.08 m	**13'4"**	4.08 m	**13'4"**		—	4.22 m	**13'10"**
Width (Over Trunnion)	2.64 m	**8'8"**	2.64 m	**8'8"**	2.95 m	**9'8"**	2.64 m	**8'8"**
Width (W/O Trunnion — Std. Shoe)	2.44 m	**8'0"**	2.44 m	**8'0"**	2.74 m	**9'0"**	2.44 m	**8'0"**
Ground Clearance	383 mm	**14.8"**	383 mm	**14.8"**	383 mm	**14.8"**	383 mm	**14.8"**
Blade Types and Widths:								
Straight	3.35 m	**11'0"**		—		—	3.36 m	**11'0"**
Angle		—		—		—		—
Angle Straight	4.16 m	**13'7.8"**	4.16 m	**13'8"**		—	4.16 m	**13'8"**
Full Angle	3.78 m	**12'4.7"**	3.78 m	**12'5"**		—	3.78 m	**12'5"**
Universal		—		—		—		—
Semi-U	3.26 m	**10'8"**	3.26 m	**10'8"**	3.56 m	**11'8"**	3.26 m	**10'8"**
Fuel Tank Refill Capacity	383 L	**101 U.S. gal**	383 L	**101 U.S. gal**	383 L	**101 U.S. gal**	383 L	**101 U.S. gal**

*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.

**Japan only.

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

▶Intermediate Gauge offered as custom product.




MODEL	D6R LGP		D7G		D7R		D7R XR	
Flywheel Power	138 kW	**185 hp**	149 kW	**200 hp**	171 kW	**230 hp**	171 kW	**230 hp**
Operating Weight:*								
Power Shift	20 500 kg	**45,200 lb**	20 094 kg	**44,300 lb**	24 778 kg	**54,600 lb**	25 193 kg	**55,600 lb**
Direct Drive		—	20 502 kg	**45,200 lb**		—		—
Power Shift Differential Steer	20 680 kg	**45,600 lb**		—	25 077 kg	**55,300 lb**	25 492 kg	**56,200 lb**
Engine Model		**3306T**		**3306T**		**3306T**		**3306T**
Rated Engine RPM		**1900**		**2000**		**2100**		**2100**
No. of Cylinders		**6**		**6**		**6**		**6**
Bore	121 mm	**4.75"**	121 mm	**4.75"**	121 mm	**4.75"**	121 mm	**4.75"**
Stroke	152 mm	**6"**	152 mm	**6"**	152 mm	**6"**	152 mm	**6"**
Displacement	10.5 L	**638 in³**	10.5 L	**638 in³**	10.5 L	**638 in³**	10.5 L	**638 in³**
Track Rollers (Each Side)		**8**		**6**		**7**		**8**
Width of Standard Track Shoe	915 mm	**3'0"**	508 mm	**1'8"**	560 mm	**1'10"**	610 mm	**2'0"**
Length of Track on Ground	3.25 m	**10'8"**	2.72 m	**8'11"**	2.89 m	**9'6"**	3.05 m	**10'0"**
Ground Contact Area (W/Std. Shoe)	5.93 m²	**9254 in²**	2.76 m²	**4280 in²**	3.24 m²	**5016 in²**	3.72 m²	**5760 in²**
Track Gauge	2.23 m	**7'3"**	1.98 m	**6'6"**	1.98 m	**6'6"**	1.98 m	**6'6"**
GENERAL DIMENSIONS:								
Height (Stripped Top)**	2.43 m	**7'7"**	2.27 m	**7'5"**	2.56 m	**8'5"**	2.56 m	**8'5"**
Height (To Top of ROPS)	3.24 m	**10'5"**	3.20 m	**10'6"**	3.35 m	**10'11"**	3.35 m	**10'11"**
Height (To Top of Cab ROPS)	3.24 m	**10'5"**		—	3.43 m	**11'2"**	3.43 m	**11'2"**
Height (To Top of ROPS Canopy)	3.24 m	**10'5"**		—		—		—
Overall Length (With S Blade)		—	5.28 m	**17'4"**	5.69 m	**18'8"**	5.81 mm	**19'1"**
(Without Blade)		—	4.19 m	**13'9"**	4.67 m	**15'4"**	4.67 m	**15'4"**
Width (Over Trunnion)	3.43 m	**11'3"**		—	2.87 m	**9'5"**	2.87 m	**9'5"**
Width (W/O Trunnion — Std. Shoe)	3.14 m	**10'3.6"**	2.55 m	**8'5"**	2.54 m	**8'4"**	2.59 m	**8'6"**
Ground Clearance	433 mm	**17"**	347 mm	**13.7"**	416 mm	**16.4"**	416 mm	**16.4"**
Blade Types and Widths:								
Straight	3.99 m	**13'1"**	3.66 m	**12'0"**	3.52 m	**11'7"**	3.32 m	**11'7"**
Angle		—	4.27 m	**14'0"**	4.50 m	**14'9"**	4.50 m	**14'9"**
Angle Straight		—		—		—		—
Full Angle		—		—		—		—
Universal		—		—	3.98 m	**13'1"**	3.98 m	**13'1"**
Semi-U		—		—	3.69 m	**12'2"**	3.69 m	**12'2"**
Fuel Tank Refill Capacity	383 L	**101 U.S. gal**	435 L	**115 U.S. gal**	479 L	**127 U.S. gal**	479 L	**127 U.S. gal**

*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.
— D7G includes end track guiding guards.
**Height (stripped top) — without ROPS canopy, exhaust, seat back or other easily removed encumbrances.




MODEL	D7R LGP		D8R		D8R LGP		D9R	
Flywheel Power	179 kW	**240 hp**	228 kW	**305 hp**	228 kW	**305 hp**	302 kW	**405 hp**
Operating Weight:*								
Power Shift	27 065 kg	**59,700 lb**		—		—	47 910 kg	**105,630 lb**
Power Shift Differential Steer	27 364 kg	**60,300 lb**	37 580 kg	**82,850 lb**	33 730 kg	**74,360 lb**	48 310 kg	**106,500 lb**
Engine Model		**3306T**		**3406CTA**		**3406CTA**		**3408ETA**
Rated Engine RPM		**2100**		**2100**		**2100**		**1900**
No. of Cylinders		**6**		**6**		**6**		**8**
Bore	121 mm	**4.75"**	137 mm	**5.4"**	137 mm	**5.4"**	137 mm	**5.4"**
Stroke	152 mm	**6"**	165 mm	**6.5"**	165 mm	**6.5"**	152 mm	**6"**
Displacement	10.5 L	**638 in³**	14.6 L	**893 in³**	14.6 L	**893 in³**	18 L	**1099 in³**
Track Rollers (Each Side)		**7**		**8**		**8**		**8**
Width of Standard Track Shoe	914 mm	**3'0"**	560 mm	**1'10"**	965 mm	**3'2"**	610 mm	**2'0"**
Length of Track on Ground	3.16 m	**10'5"**	3.21 m	**10'6"**	3.20 m	**10'6"**	3.47 m	**11'5"**
Ground Contact Area (W/Std. Shoe)	5.78 m²	**8960 in²**	3.57 m²	**5544 in²**	6.2 m²	**9576 in²**	4.24 m²	**6569 in²**
Track Gauge	2.24 m	**7'4"**	2.08 m	**6'10"**	2.34 m	**7'8"**	2.25 m	**7'5"**
GENERAL DIMENSIONS:								
Height (Stripped Top)**	2.74 m	**9'0"**	2.67 m	**8'9"**	2.67 m	**8'9"**	3.00 m	**9'10"**
Height (To Top of ROPS)	3.43 m	**11'3"**	3.51 m	**11'6"**	3.51 m	**11'6"**	3.99 m	**13'1"**
Height (To Top of ROPS Canopy)	3.52 m	**11'6"**	3.51 m	**11'6"**	3.51 m	**11'6"**	3.99 m	**13'1"**
Height (To Top of Cab ROPS)	3.58 m	**11'9"**	3.45 m	**11'3"**	3.45 m	**11'3"**		—
Overall Length (With SU Blade)***		—	6.39 m	**21'0"**	6.39 m	**21'0"**	6.84 m	**22'5"**
(Without Blade)		—	4.93 m	**16'2"**	4.93 m	**16'2"**	5.18 m	**17'0"**
Overall Length (With S Blade)	5.78 m	**19'0"**		—		—		—
(Without Blade)	4.67 m	**15'4"**		—		—		—
Width (Over Trunnions)	3.37 m	**11'1"**	3.05 m	**10'0"**	3.55 m	**11'7"**	3.30 m	**10'10"**
Width (W/O Trunnions — Std. Shoe)	3.15 m	**10'4"**	2.7 m	**8'8"**		—	2.93 m	**9'8"**
Width (With Standard Shoe)		—		—	3.37 m	**10'10"**		—
Ground Clearance	496 mm	**1'7.5"**	606 mm	**1'11"**	574 mm	**1'10.6"**	591 mm	**1'11"■**
Blade Types and Widths:								
Straight	4.50 m	**14'9"**		—		—		—
Angle Straight		—	4.99 m	**16'4"**		—		—
Universal		—	4.26 m	**14'0"**	3.94 m	**12'11"**	4.65 m	**15'3"**
Semi-U		—	3.94 m	**12'11"**	4.52 m	**14'10"**	4.32 m	**14'2"**
Fuel Tank Refill Capacity	479 L	**127 U.S. gal**	625 L	**165 U.S. gal**	625 L	**165 U.S. gal**	818 L	**216 U.S. gal**

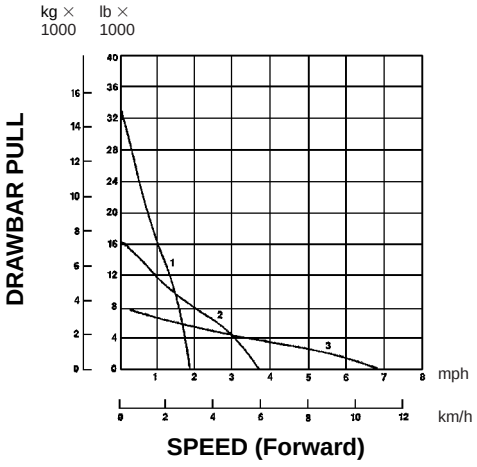
*Operating Weight includes ROPS canopy, operator, lubricants, coolant, full fuel tank, hydraulic controls and fluids, semi universal blade with tilt, back-up alarm, seat belts, lights, rigid drawbar and front towing device.
— D8R and D9R equipped with track guides, ROPS/FOPS cab, single shank ripper and SU blade.
**Height (stripped top) — without ROPS canopy, exhaust, seat back or other easily removed encumbrances.
***Includes drawbar.
■ SAE J1234



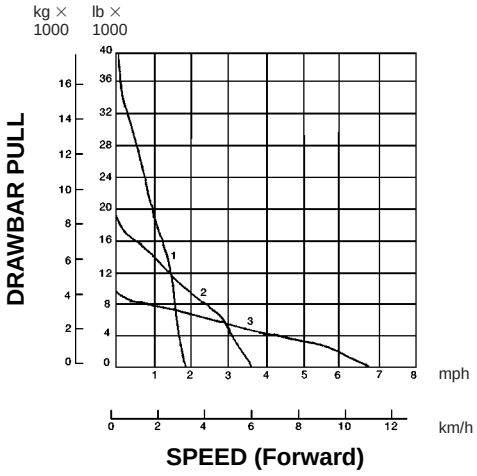
MODEL	D10R		D11R		D11R C.D.	
Flywheel Power	425 kW	**570 hp**	634 kW	**850 hp**	634 kW	**850 hp**
Operating Weight*	66 090 kg	**145,690 lb**	102 287 kg	**225,500 lb**	111 590 kg	**246,000 lb**
Engine Model		**3412TA**		**3508BTA**		**3508BTA**
Rated Engine RPM		**1900**		**1800**		**1800**
No. of Cylinders		**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**
Track Rollers (Each Side)		**8**		**8**		**8**
Width of Standard Track Shoe	610 mm	**2'0"**	710 mm	**2'4"**	914 mm	**3'0"**
Length of Track on Ground	3.88 m	**12'9"**	4.44 m	**14'7"**	4.44 m	**14'7"**
Ground Contact Area (W/Std. Shoe)	4.7 m²	**7326 in²**	6.31 m²	**9781 in²**	8.11 m²	**12,276 in²**
Track Gauge	2.55 m	**8'4"**	2.89 m	**9'6"**	2.89 m	**9'6"**
GENERAL DIMENSIONS:						
Height (Stripped Top)**	3.267 m	**10'6"**	3.61 m	**11'10"**	3.61 m	**11'10"**
Height (To Top of ROPS Canopy)		—		—		—
Height (To Top of ROPS)	4.36 m	**14'3"**	4.66 m	**15'3"**	4.66 m	**15'3"**
Overall Length (With SU Blade)	7.50 m	**24'7"**	8.38 m	**27'6"**	8.34 m	**26'8"**
(Without Blade)	5.33 m	**17'6"**	6.16 m	**20'3"**	6.16 m	**20'3"**
Width (Over Trunnions)	3.72 m	**12'2"**	4.37 m	**14'4"**	4.37 m	**14'4"**
Width (W/O Trunnions — Std. Shoe)	3.16 m	**10'4"**	3.60 m	**11'10"**	3.60 m	**11'10"**
Ground Clearance	615 mm	**2'0.2"■**	623 mm	**2'0.5"■**	623 mm	**2'0.5"■**
Blade Types and Widths:						
Straight		—		—	6.71 m	**22'0"**
Angle Straight/Angled		—		—		—
Universal	5.26 m	**17'3"**	6.35 m	**20'10"**		—
Semi-U	4.86 m	**15'11"**	5.60 m	**18'4"**		—
"P" Straight/Angled		—		—		—
Fuel Tank Refill Capacity	1109 L	**293 U.S. gal**	1471 L	**388 U.S. gal**	1471 L	**388 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.
— D10R includes single shank ripper and ROPS cab.
— D11R includes 11U Dual Tilt Bulldozer, single shank ripper with pin puller, ROPS cab, fast fuel fill and engine doors.
— D11R C.D. 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

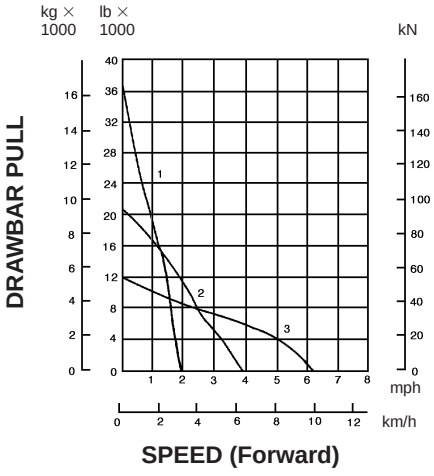
D3C Series III
D3C XL Series III
D3C LGP Series III



D4C Series III
D4C XL Series III
D4C LGP Series III



D5C Series III
D5C XL Series III
D5C LGP Series III

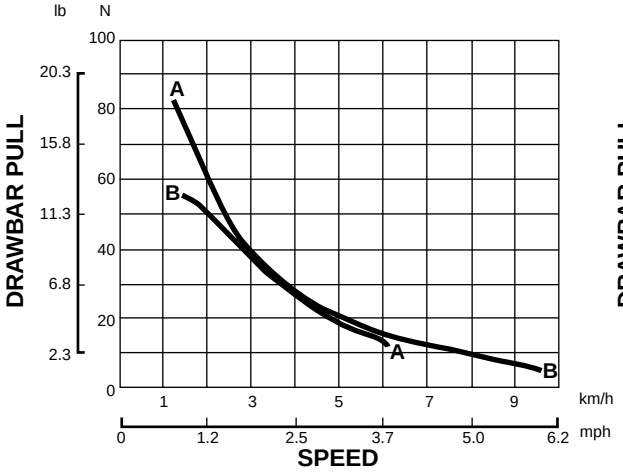


KEY

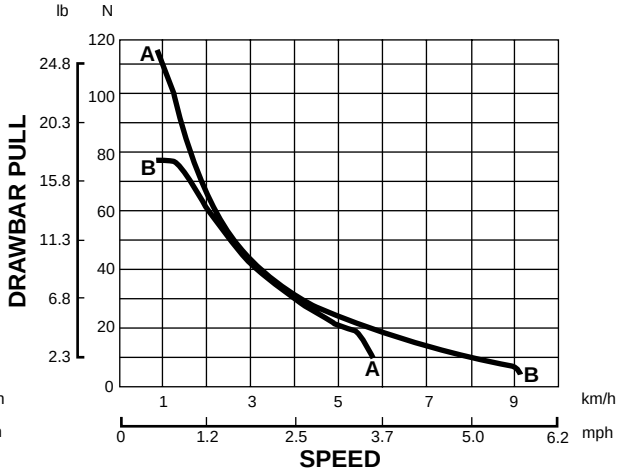
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear

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

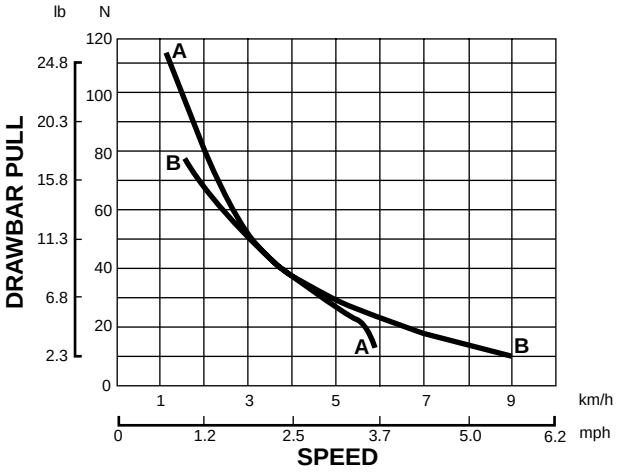
D3C Series III
D3C XL Series III
D3C LGP Series III



D4C Series III
D4C XL Series III
D4C LGP Series III



D5C Series III
D5C XL Series III
D5C LGP Series III

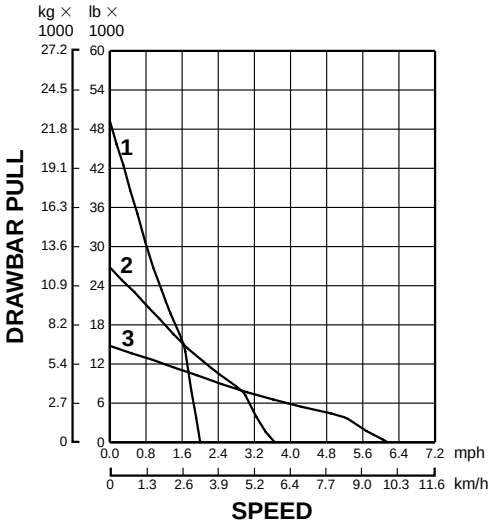


KEY

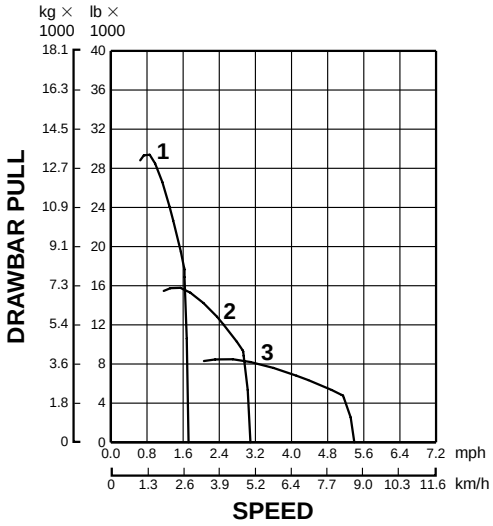
A — Lo Speed
B — Hi Speed

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

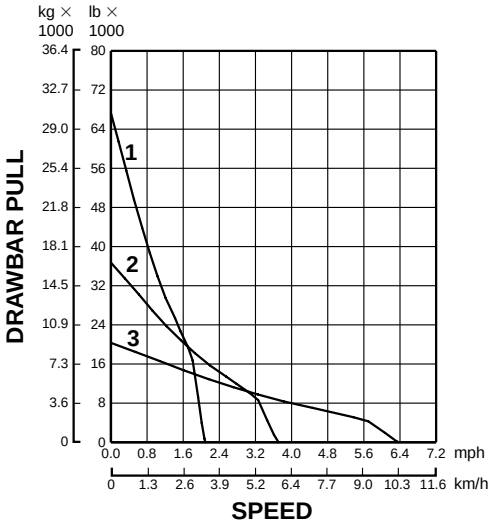
D5M XL
D5M LGP



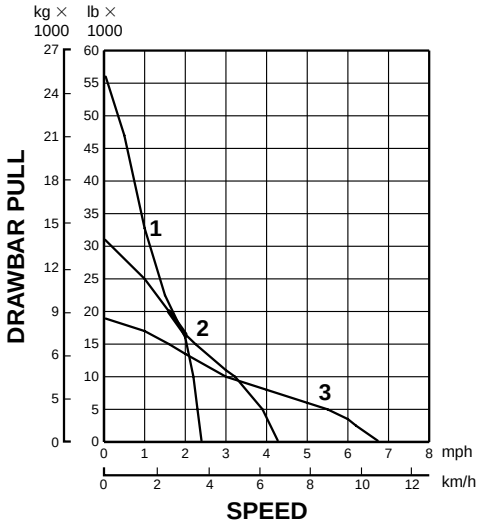
D5M LGP PSDD



D6M XL
D6M LGP



D6G

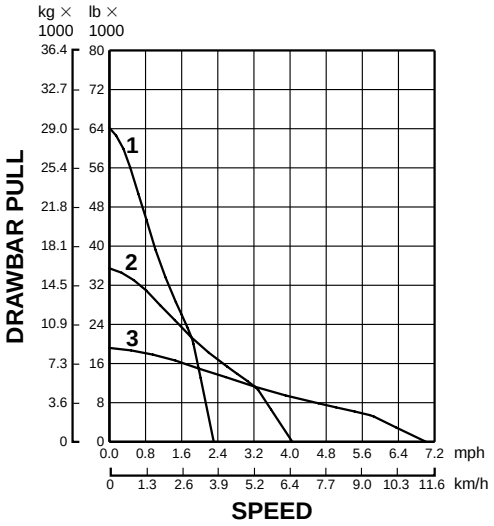


KEY

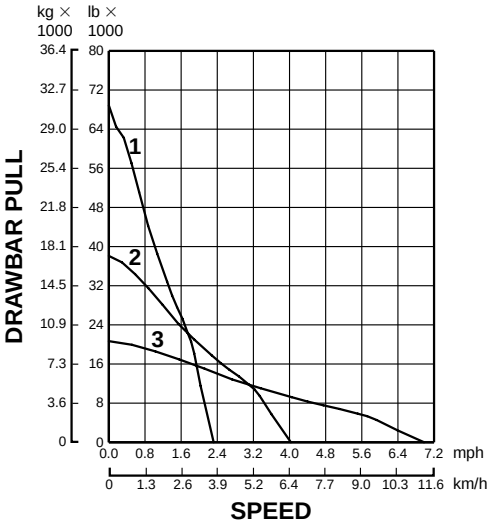
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear

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

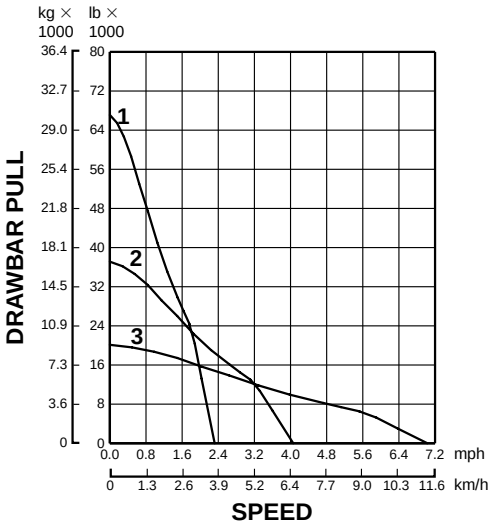
D6R Standard
Steering Clutches & Brakes (FTC)



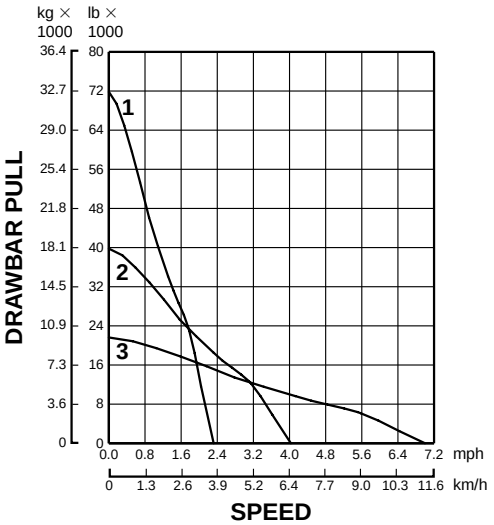
D6R Standard
Differential Steering



D6R XL/XR/IG
Steering Clutches & Brakes (FTC)



D6R XL/XR/IG
Differential Steering

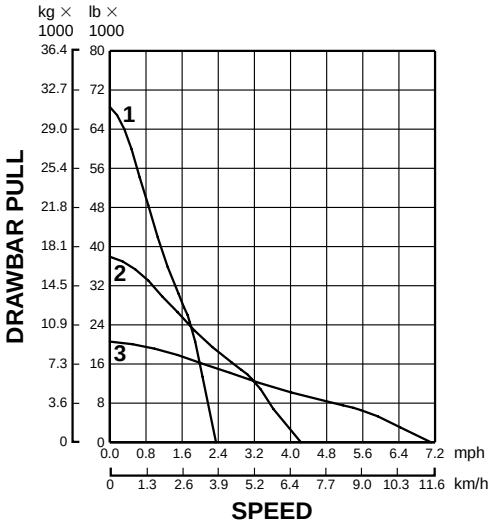


KEY

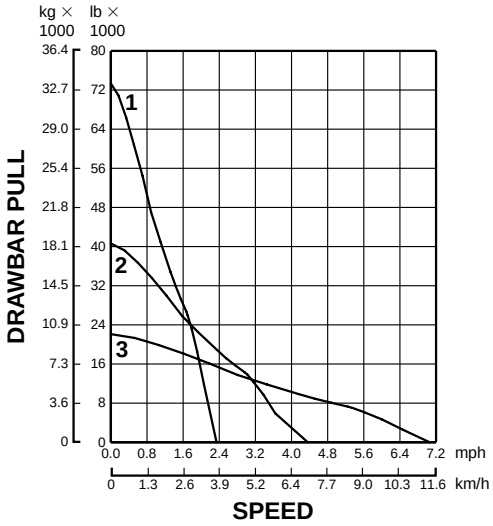
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear

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

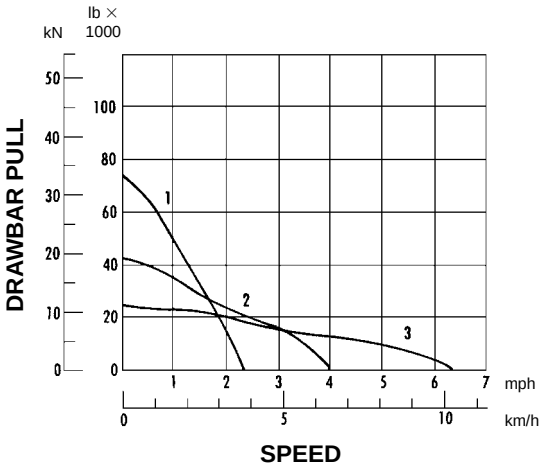
D6R LGP
Steering Clutches & Brakes (FTC)



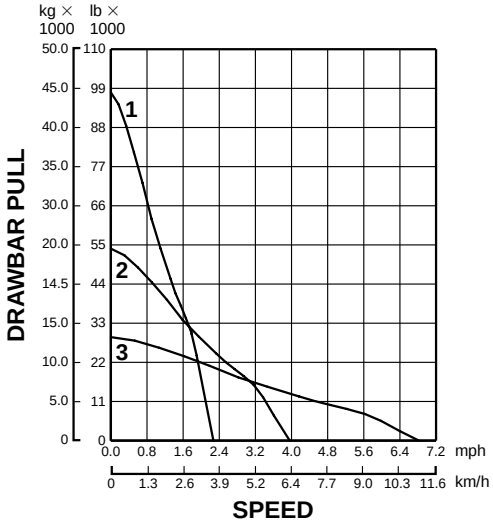
D6R LGP
Differential Steering



D7G



D7R Standard/XR/LGP (FTC)

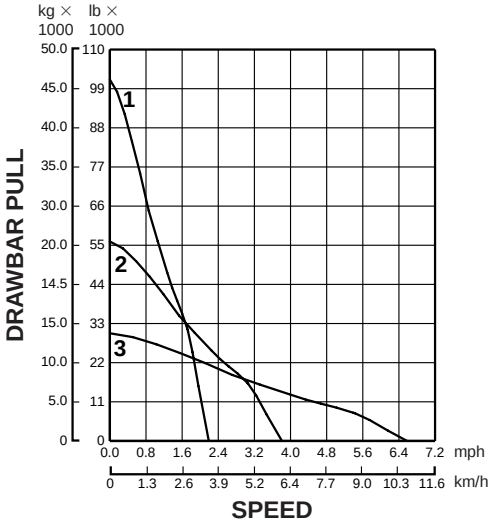


KEY

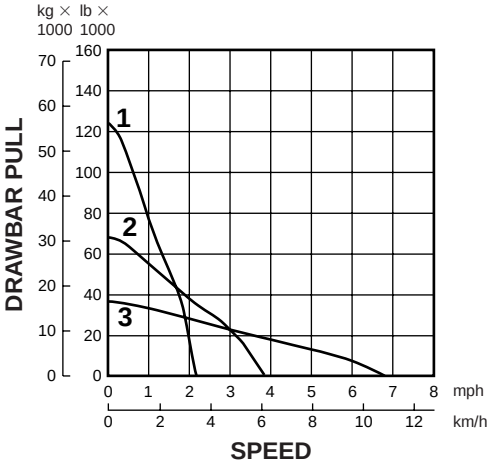
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear

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

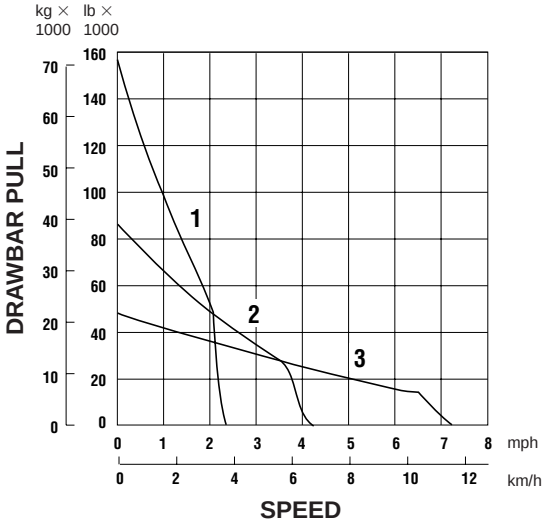
D7R Standard/XR/LGP Differential Steering



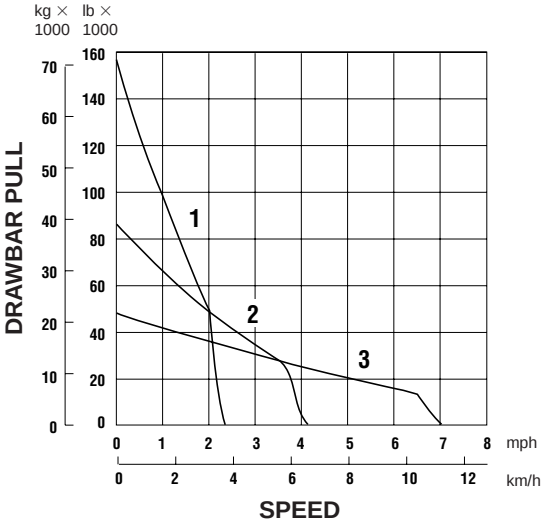
D8R
D8R LGP



D9R Power Shift with Steering Clutches & Brakes



D9R Differential Steering

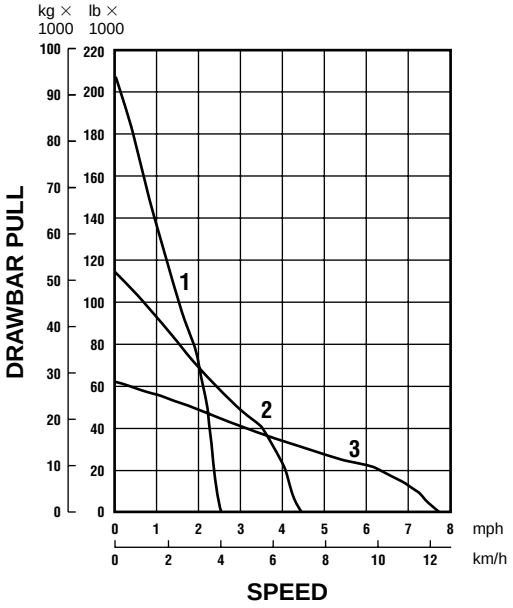


KEY

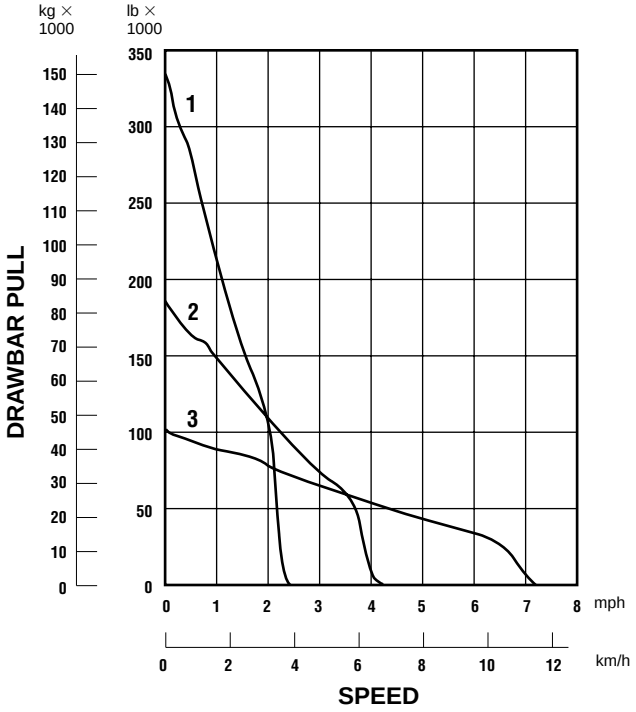
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear

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

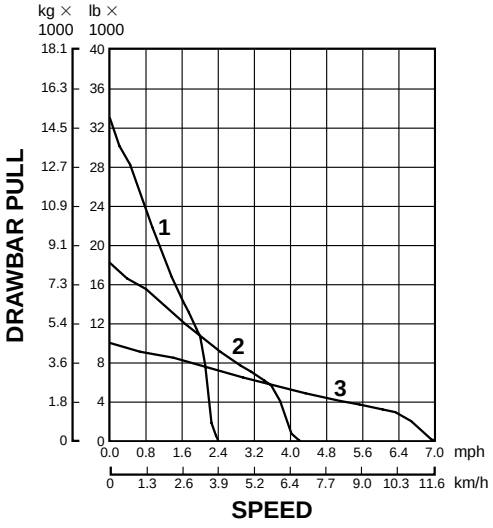
D10R



D11R



D11R C.D.



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	D3C Series III All Models		D4C Series III All Models		D5C Series III All Models		D5M XL		D5M LGP		D5M LGP* PS DD		D6M XL	
FORWARD	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1	3.1	**1.9**	3.2	**2.0**	3.5	**2.2**	3.1	**1.9**	3.1	**1.9**	2.8	**1.7**	3.4	**2.1**
2	5.9	**3.7**	5.9	**3.7**	6.3	**3.9**	5.6	**3.5**	5.6	**3.5**	5.0	**3.1**	6.0	**3.7**
3	10.8	**6.7**	11.1	**6.9**	10.0	**6.2**	9.7	**6.1**	9.7	**6.1**	8.7	**5.4**	10.2	**6.4**
REVERSE														
1	3.2	**2.0**	3.4	**2.1**	4.2	**2.6**	4.0	**2.5**	4.0	**2.5**			4.2	**2.6**
2	6.3	**3.9**	6.4	**4.0**	7.6	**4.7**	7.1	**4.4**	7.1	**4.4**	**		7.5	**4.6**
3	11.4	**7.1**	11.9	**7.4**	11.9	**7.4**	12.1	**7.5**	12.1	**7.5**			12.8	**7.9**
HYDROSTATIC FORWARD/ REVERSE	0-9.0	**0-5.6**	0-9.0	**0-5.6**	0-9.0	**0-5.6**	—	—	—	—	—	—	—	—

POWER SHIFT MODEL	D6M LGP		D6E		D6R (FTC) All Models		Differential Steer D6R All Models		D7G		D7R (FTC) All Models		Differential Steer D7R All Models	
FORWARD	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1	3.4	**2.1**	4.0	**2.5**	4.0	**2.5**	3.9	**2.4**	3.7	**2.3**	3.7	**2.3**	3.7	**2.3**
2	6.0	**3.7**	6.9	**4.3**	7.1	**4.4**	6.8	**4.2**	6.6	**4.1**	6.9	**4.3**	6.9	**4.3**
3	10.2	**6.4**	10.8	**6.7**	12.4	**7.7**	11.9	**7.6**	10.0	**6.2**	11.1	**6.9**	11.1	**6.9**
REVERSE														
1	4.2	**2.6**	4.8	**3.0**	5.2	**3.2**	4.8	**3.0**	4.5	**2.8**	4.8	**3.0**	4.8	**3.0**
2	7.5	**4.6**	8.4	**5.2**	9.0	**5.6**	8.7	**5.4**	7.9	**4.9**	8.3	**5.2**	8.3	**5.2**
3	12.8	**7.9**	12.9	**8.0**	16.1	**10.0**	15.3	**9.5**	12.2	**7.6**	14.2	**8.8**	14.2	**8.8**

POWER SHIFT MODEL	D8R D8R LGP		D9R		D10R		D11R		D11R C.D.	
FORWARD	km/h	mph	km/h	mph	km/h	mph	km/h	mph	km/h	mph
1	3.5	**2.2**	3.9	**2.4**	4.0	**2.5**	3.9	**2.4**	3.9	**2.4**
2	6.2	**3.9**	6.8	**4.2**	7.1	**4.4**	6.8	**4.2**	6.8	**4.2**
3	10.8	**6.7**	11.8	**7.3**	12.5	**7.7**	11.8	**7.3**	11.7	**7.3**
REVERSE										
1	4.7	**2.9**	4.8	**3.0**	5.0	**3.1**	4.7	**2.9**	4.7	**2.9**
2	8.1	**5.0**	8.4	**5.2**	8.9	**5.5**	8.2	**5.1**	8.2	**5.1**
3	13.9	**8.6**	14.7	**9.1**	15.6	**9.7**	14.0	**8.7**	14.0	**8.7**

*Power Shift direct drive transmission available for Japan domestic market only.
**Not available at time of printing.

TRAVEL SPEED

DIRECT DRIVE MODEL	D5E Std. Trans.		D6R Std. Trans.	
FORWARD	**km/h**	**mph**	**km/h**	**mph**
1	2.7	**1.7**	2.7	**1.7**
2	4.2	**2.6**	3.5	**2.2**
3	5.8	**3.6**	4.6	**2.9**
4	8.0	**5.0**	5.8	**3.6**
5	11.1	**6.9**	7.6	**4.7**
6	—		10.0	**6.2**
REVERSE				
1	3.4	**2.1**	3.3	**2.1**
2	5.3	**3.3**	4.3	**2.7**
3	7.4	**4.6**	5.6	**3.5**
4	10.1	**6.3**	7.1	**4.4**
5	—		9.2	**5.7**
6	—		12.2	**7.6**

DRAWBAR PULL FORWARD*

	At Rated RPM			At Rated RPM		
FORWARD	**kN**	**kg**	**lb**	**kN**	**kg**	**lb**
1	86.1	8770	**19,340**	122.5	12 500	**27,530**
2	54.0	5500	**12,130**	93.2	9520	**20,960**
3	36.8	3750	**8270**	70.0	7140	**15,740**
4	24.9	2540	**5600**	53.3	5440	**11,990**
5	16.3	1660	**3660**	39.3	4010	**8830**
6	—			27.6	2820	**6210**
	Max. at Lug			**Max. at Lug**		
1	109.2	11 130	**24,540**	159.0	16 220	**35,750**
2	69.1	7040	**15,525**	121.6	12 410	**27,340**
3	47.6	4850	**10,695**	91.9	9370	**20,650**
4	32.9	3350	**7385**	70.5	7200	**15,860**
5	22.1	2250	**4960**	52.5	5360	**11,810**
6	—			37.6	3840	**8460**

*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.

NOTE: For Variable Horsepower Tractor Information, see the Agricultural Tractor section in this handbook.

TRAVEL SPEED

DIRECT DRIVE MODEL	D6R LGP Std. Trans.		D7G Std. Trans.		D7G Opt. Trans.	
FORWARD	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**
1	2.7	**1.7**	2.6	**1.6**	3.5	**2.2**
2	3.5	**2.2**	3.7	**2.3**	4.8	**3.0**
3	4.6	**2.9**	5.3	**3.3**	5.6	**3.5**
4	5.8	**3.6**	7.9	**4.9**	6.4	**4.0**
5	7.6	**4.7**	10.3	**6.4**	7.2	**4.5**
6	10.0	**6.2**	—		8.2	**5.1**
REVERSE						
1	3.3	**2.1**	3.1	**1.9**	4.0	**2.5**
2	4.3	**2.7**	4.3	**2.7**	5.6	**3.5**
3	5.6	**3.5**	6.3	**3.9**	6.8	**4.2**
4	7.1	**4.4**	9.3	**5.8**	7.6	**4.7**
5	9.2	**5.7**	—		—	
6	12.2	**7.6**	—		—	

DRAWBAR PULL FORWARD*

	At Rated RPM			At Rated RPM			At Rated RPM		
FORWARD	**kN**	**kg**	**lb**	**kN**	**kg**	**lb**	**kN**	**kg**	**lb**
1	126.9	12 930	**28,520**	163.0	16 610	**36,630**	118.4	12 560	**27,680**
2	96.7	9850	**21,730**	109.9	11 200	**24,690**	83.5	8700	**19,190**
3	72.7	7410	**16,330**	73.4	7480	**16,500**	69.1	7110	**15,680**
4	55.4	5650	**12,460**	46.9	4780	**10,540**	60.5	6170	**13,600**
5	40.9	4170	**9190**	34.5	3510	**7750**	51.7	5190	**11,450**
6	28.8	2940	**6480**	—			45.1	4460	**9840**
	Max. at Lug			**Max. at Lug**			**Max. at Lug**		
1	168.8	17 200	**37,930**	209.8	21 390	**47,150**	153.0	16 080	**35,440**
2	129.2	13 170	**29,030**	142.2	14 500	**31,960**	108.7	11 260	**24,830**
3	97.7	9960	**21,960**	95.9	9770	**21,550**	90.4	9270	**20,440**
4	95.1	7660	**16,880**	62.1	6330	**13,950**	79.5	8040	**17,840**
5	56.1	5710	**12,600**	46.3	4710	**10,400**	68.3	6870	**15,150**
6	40.3	4100	**9050**	—			59.9	5960	**13,130**

*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.

NOTE: For Variable Horsepower Tractor Information, see the Agricultural Tractor section in this handbook.

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	m²	in²	kPa	psi
D3C Series III	406	**16**	1.54	**2390**	44.7	**6.49**
D3C Hystat	406	**16**	1.54	**2390**	45.2	**6.56**
D3C XL Series III	406	**16**	1.67	**2586**	42.5	**6.16**
D3C XL Hystat	406	**16**	1.67	**2586**	42.9	**6.23**
D3C LGP Series III	635	**25**	2.61	**4045**	28.7	**4.16**
D3C LGP Hystat	635	**25**	2.61	**4045**	29.0	**4.20**
D4C Series III	406	**16**	1.67	**2586**	42.7	**6.19**
D4C Hystat	406	**16**	1.67	**2586**	43.0	**6.25**
D4C XL Series III	457	**18**	2.02	**3131**	36.2	**5.25**
D4C XL Hystat	457	**18**	2.02	**3131**	36.5	**5.29**
D4C LGP Series III	635	**25**	2.61	**4045**	29.0	**4.21**
D4C LGP Hystat	635	**25**	2.61	**4045**	29.2	**4.24**
D5C Series III	457	**18**	1.96	**3039**	42.1	**6.11**
D5C Hystat	457	**18**	1.96	**3039**	42.4	**6.16**
D5C XL Series III	508	**20**	2.35	**3547**	36.5	**5.30**
D5C XL Hystat	508	**20**	2.35	**3547**	36.7	**5.33**
D5C LGP Series III	660	**26**	2.83	**4389**	30.8	**4.48**
D5C LGP Hystat	660	**26**	2.83	**4389**	31.1	**4.51**
D5M XL ◀	510	**20**	2.44	**3775**	48	**6.83**
	560	**22**	2.67	**4146**	44	**6.22**
D5M LGP	610	**24**	3.18	**4922**	40	**5.64**
◀	760	**30**	3.96	**6133**	32	**4.53**
	770	**30**	4.01	**6213**	31	**4.47**
D5E	406	**16**	1.77	**2745**	62	**9.00**
◀	457	**18**	1.99	**3085**	55	**7.98**
D6M XL	560	**22**	2.89	**4427**	52	**7.49**
◀	600	**24**	3.06	**4743**	48	**6.99**
D6M LGP	710	**28**	4.38	**6783**	37	**5.36**
◀	860	**34**	5.30	**8217**	31	**4.43**
	865	**34**	5.33	**8264**	30	**4.40**
D6G	457	**18**	2.43	**3766**	60	**8.70**
◀	508	**20**	2.71	**4200**	54	**7.83**
	560	**22**	2.98	**4619**	49	**7.10**
	610	**24**	3.25	**5040**	45	**6.54**
D6R ◀	560	**22**	2.92	**4518**	61	**8.82**
	610	**24**	3.18	**4930**	56	**8.14**

◀ Standard Shoe.

MODEL	SHOE WIDTH		CONTACT AREA		GROUND PRESSURE	
	mm	in	m²	in²	kPa	psi
D6R XL ◀	560	**22**	3.16	**4888**	60	**8.60**
	610	**24**	3.44	**5332**	55	**7.93**
D6R XL (IG)	762	**30**	4.30	**6696**	44	**6.50**
D6R XR ◀	560	**22**	3.08	**4770**	60	**8.68**
	610	**24**	3.36	**5203**	56	**8.01**
D6R LGP	760	**30**	4.93	**7662**	41	**5.80**
◀	915	**36**	5.93	**9194**	35	**4.94**
	1000	**39**	6.49	**9961**	32	**4.55**
D7G ◀	508	**20**	2.76	**4280**	73	**10.60**
◀	559	**22**	3.04	**4708**	66	**9.60**
	610	**24**	3.31	**5136**	60	**8.80**
D7R	510	**20**	2.94	**4560**	82	**11.71**
◀	560	**22**	3.24	**5016**	75	**10.69**
	610	**24**	3.53	**5472**	69	**9.87**
	660	**26**	3.82	**5928**	64	**9.17**
D7R XR	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	760	**30**	4.80	**7504**	54	**7.74**
	915	**36**	5.82	**9029**	46	**6.55**
D8R ◀	560	**22**	3.59	**5565**	101.1	**14.67**
	610	**24**	3.91	**6062**	92.8	**13.47**
	660	**26**	4.23	**6559**	85.9	**12.47**
	710	**28**	4.55	**7056**	79.7	**11.57**
D8R LGP	965	**38**	6.20	**9576**	58.6	**8.50**
D9R	560	**22**	3.86	**6009**	121.1	**17.58**
◀	610	**24**	4.24	**6569**	110.8	**16.08**
	685	**27**	4.74	**7374**	98.7	**14.32**
	760	**30**	5.26	**8194**	88.8	**12.89**
D10R ◀	610	**24**	4.73	**7326**	136.4	**19.79**
	710	**28**	5.50	**8527**	117.1	**17.00**
	860	**31.5**	6.66	**10,328**	96.7	**14.04**
D11R ◀	710	**28**	6.31	**9781**	158.8	**23.05**
	810	**32**	7.20	**11,159**	139.2	**20.21**
	915	**36**	8.13	**12,605**	123.2	**17.89**

◀ 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	D3C Series III	D4C Series III	D5C Series III	D5M	D5E & D6M
Percent Grade or Degrees Slope	100 45	100 45	100 45	100 45	100 45

Tractor	D6G & D6R	D7G & D7R	D8R	D9R	D10R	D11R/ D11R C.D.
Percent Grade or Degrees Slope	100 45	100 45*	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.

WASTE HANDLING TRACK-TYPE TRACTORS

CONTENTS

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.
- **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 thru D9R).
- **Flexxaire fan** is recommended option for D6R thru D9R.
- **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.
- **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 spillover and damage to cylinders or radiator guard.
- **75 amp alternator available on D6R, D7R, D8R, D9R, 100 amp on D10R** 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.
- **ROPS mounted air conditioning (optional on D8R and D9R)** helps prevent condensor core plugging. Provides full utilization of jacket water cooling system by avoiding additional heat load from radiator mounted condensor.
- **Chassis Guards.**
- **Sealed belly guards** on D10R.
- **Perforated engine enclosures** standard on D10R and required attachments on D6R thru D9R.
- **Carrier rollers** not recommended.

MODEL	D6R WHA		D7R WHA	
Flywheel Power	123 kW	**165 hp**	171 kW	**230 hp**
Operating Weight (PS)*	20 600 kg	**45,370 lb**	27 920 kg	**61,500 lb**
Engine Model	**3306**		**3306**	
Rated Engine RPM	**1800**		**2100**	
No. of Cylinders	**6**		**6**	
Bore	121 mm	**4.75"**	121 mm	**4.75"**
Stroke	152 mm	**6"**	152 mm	**6"**
Displacement	10.5 L	**638 in³**	10.5 L	**638 in³**
Track Rollers (Each Side)	**6**		**7**	
Width of Standard Track Shoe	560 mm	**1'10"**	560 mm	**1'10"**
Length of Track on Ground	2.62 m	**8'7.5"**	2.88 m	**9'5"**
Ground Contact Area (W/Std. Shoe)	2.94 m²	**4564 in²**	3.22 m²	**4996 in²**
Track Gauge	1.88 m	**6'2"**	1.98 m	**6'5"**
GENERAL DIMENSIONS:				
Height (Stripped Top)**	2.26 m	**7'5"**	2.56 m	**8'5"**
Height (To Top of Cab ROPS)	3.12 m	**10'3"**	3.50 m	**11'6"**
Overall Length (S Blade)	5.11 m	**16'9"**	5.82 m	**19'1"**
(W/O Blade)	—		—	
Width (Over Trunnion)	2.64 m	**8'8"**	2.87 m	**9'5"**
(W/O Trunnion)	—		2.54 m	**8'4"**
Ground Clearance	376 mm	**14.8"**	414 mm	**16"**
Blade Types and Widths:				
Straight	3.35 m	**11'0"**	3.90 m	**12'10"**
Semi-Universal	3.26 m	**10'8"**	3.69 m	**12'1"**
Universal	—		3.98 m	**13'0"**
Fuel Tank Refill Capacity	383 L	**101 U.S. gal**	488 L	**129 U.S. gal**

*D6R Operating Weight includes lubricants, coolant, full fuel tank, hydraulic controls, 6SU/tilt, 610 mm **(2'0")** trash rack, 560 mm **(1'10")** shoes, ROPS canopy, engine enclosure, extreme service crankcase guard, fuel tank guard, hydraulic cooler, prescreener, six lights, hinged HD radiator guard, lower radiator guarding, final drive seal guards, idler seal guards, engine compartment guarding, tilt cylinder guards. WHA also available for D6R XL, XR, XL (IG) and LGP models.
D7R Operating Weight includes lubricants, coolant, full fuel tank, hydraulic controls, 7SU/tilt, 610 mm **(2'0")** trash rack, 560 mm **(1'10")** shoes, ROPS canopy, engine enclosure, extreme service crankcase guard, fuel tank guard, hydraulic cooler, prescreener, six lights, hinged HD radiator guard, lower radiator guarding, final drive seal guards, idler seal guards, engine compartment guarding, tilt cylinder guards. WHA also available for D7R XR and D7R LGP.

Height with ROPS canopy, exhaust pipe, seat or all easily removed encumbrances. Add 71.1 mm **(2.8") for grouser tips on D7R.



MODEL	D8R WHA		D9R WHA		D10R WHA	
Flywheel Power	228 kW	**305 hp**	302 kW	**405 hp**	425 kW	**570 hp**
Operating Weight (PS)*	37 594 kg	**82,880 lb**	47 913 kg	**105, 630 lb**	65 764 kg	**144,986 lb**
Engine Model	**3406C**		**3408E**		**3412**	
Rated Engine RPM	**2100**		**1900**		**1900**	
No. of Cylinders	**6**		**8**		**12**	
Bore	137 mm	**5.4"**	137 mm	**5.4"**	137 mm	**5.4"**
Stroke	165 mm	**6.5"**	152 mm	**6"**	152 mm	**6"**
Displacement	14.6 L	**893 in^3**	18 L	**1099 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	**10'6.5"**	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**	4.70 m^2	**7326 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"**	3.27 m	**10'9"**
Height (To Top of Cab ROPS)	3.51 m	**11'6"**	3.99 m	**13'1"**	4.36 m	**14'3"**
Overall Length (Blade)	6.39 m	**21'0"**	6.84 m	**22'5"**	7.76 m	**25'5"**
(W/O Blade)	4.88 m	**16'2"**	5.18 m	**17'0"**	5.59 m	**18'4"**
Width (Over Trunnion)	3.05 m	**10'0"**	3.30 m	**10'10"**	3.72 m	**12'2"**
(W/O Trunnion)	2.70 m	**8'8"**	2.93 m	**9'8"**	3.16 m	**10'4"**
Ground Clearance	585 mm	**1'11"**	585 mm	**1'11"**	615 mm	**2'0.2"**
Blade Types and Widths:						
Semi-Universal	3.94 m	**12'11"**	4.31 m	**14'2"**		—
Universal	4.26 m	**14'0"**	4.66 m	**15'3.4"**	5.26 m	**17'3"**
Fuel Tank Refill Capacity	625 L	**165 U.S. gal**	818 L	**216 U.S. gal**	1109 L	**293 U.S. gal**

*Operating Weight includes lubricants, coolant, full fuel tank, hydraulic controls, and ROPS — FOPS canopy. Also included are special radiator core and ejector fan, drawbar, engine enclosures, fuel tank guard, extreme service crankcase guard, HD hinged radiator guard, higher prescreener, front & rear striker bars and operator.
— D8R 8S blade with 762 mm **(2'6")** trash rack and 660 mm **(2'2")** track shoes
— D9R 9SU blade with 914 mm **(3'0")** trash rack and 685 mm **(2'3")** track shoes
— D10R 10SU blade with 1107 mm **(3'8")** trash rack and 610 mm **(2'0")** track shoes.
**Height with ROPS canopy, exhaust pipe, seat or all easily removed encumbrances.

MODEL	D6R WHA			
Type	6S		6SU	
Blade Capacities*	8.6 m^3	**11.2 yd^3**	11.2 m^3	**14.6 yd^3**
Dozer Weight**	2881 kg	**6338 lb**	3026 kg	**6657 lb**
Tractor & Dozer Dimensions				
Length Blade Straight	5.11 m	**16'9"**	5.30 m	**17'5"**
Length Blade Angled		—		—
Width Blade Angled		—		—
Width C Frame Only		—		—
Blade Dimensions				
Width including std. end bits	3355 mm	**11'0"**	3262 mm	**10'8"**
Height	1866 mm	**6'1"**	2019 mm	**6'7"**
Maximum Dig Depth	473 mm	**18.6"**	473 mm	**18.6"**
Ground Clearance at full raise	1104 mm	**3'7.5"**	1104 mm	**3'7.5"**
Maximum Manual Tilt		—		—
Maximum Pitch		—		—
Maximum Hydraulic Tilt	765 mm	**2'6.1"**	744 mm	**2'5.3"**
Blade Angle		—		—

MODEL	D7R WHA					
Type	7S		7SU		7U	
Blade Capacities*	10.9 m^3	**14.2 yd^3**	14.0 m^3	**18.4 yd^3**	16.8 m^3	**22.0 yd^3**
Dozer Weight**	4028 kg	**8861 lb**	4083 kg	**8982 lb**	4402 kg	**9684 lb**
Tractor & Dozer Dimensions						
Length Blade Straight	5813 mm	**19'1"**	6036 mm	**19'10"**	6278 mm	**20'7"**
Length Blade Angled		—		—		—
Width Blade Angled		—		—		—
Width C Frame Only		—		—		—
Blade Dimensions						
Width including std. end bits	3904 mm	**12'10"**	3690 mm	**12'1"**	3980 mm	**13'1"**
Height	1971 mm	**6'6"**	2133 mm	**7'0"**	2162 mm	**7'1"**
Maximum Dig Depth	527 mm	**1'8.7"**	527 mm	**1'8.7"**	527 mm	**1'8.7"**
Ground Clearance at full raise	1145 mm	**3'9.1"**	1145 mm	**3'9.1"**	1145 mm	**3'9.1"**
Maximum Manual Tilt		—		—		—
Maximum Pitch		—		—		—
Maximum Hydraulic Tilt	845 mm	**2'9.3"**	861 mm	**2'9.9"**	799 mm	**2'7.5"**
Blade Angle		—		—		—

*Blade capacities, weights and heights include 610 mm **(2'0")** trash rack on D6R blades and D7R blades.
**Total bulldozer arrangement includes blade with trash rack, pusharms, braces, cylinders, lines, trunnions and lift cylinder mountings.

MODEL	D8R WHA			
Type	8SU		8U	
Blade Capacities*	20.0 m^3	**26.1 yd^3**	24.8 m^3	**32.4 yd^3**
Dozer Weight**	5466 kg	**12,025 lb**	6313 kg	**13,888 lb**
Tractor & Dozer Dimensions				
Length Blade Straight	6.39 m	**21'0"**	6.79 m	**22'3"**
Length Blade Angled		—		—
Width Blade Angled		—		—
Width C Frame Only		—		—
Blade Dimensions				
Width including std. end bits	3942 mm	**12'11"**	4262 mm	**14'0"**
Height	2464 mm	**8'1"**	2515 mm	**8'3"**
Maximum Dig Depth	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"**
Maximum Manual Tilt		—		—
Maximum Pitch		—		—
Maximum Hydraulic Tilt	951 mm	**3'1.4"**	1028 mm	**3'4.5"**
Blade Angle		—		—

MODEL	D9R WHA				D10R WHA	
Type	9SU		9U		10U	
Blade Capacities*	28.8 m^3	**37.6 yd^3**	33.5 m^3	**43.8 yd^3**	48.9 m^3	**63.9 yd^3**
Dozer Weight**	6964 kg	**15,353 lb**	7662 kg	**16,891 lb**	—	
Tractor & Dozer Dimensions						
Length Blade Straight	6.84 m	**22'5"**	7.18 m	**23'7"**	8.01 m	**26'3"**
Length Blade Angled		—		—		—
Width Blade Angled		—		—		—
Width C Frame Only		—		—		—
Blade Dimensions						
Width including std. end bits	4314 mm	**14'2"**	4645 mm	**15'3"**	5260 mm	**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 Manual Tilt		—		—		—
Maximum Pitch		—		—		—
Maximum Hydraulic Tilt	940 mm	**3'1"**	1014 mm	**3'3.9"**	1074 mm	**3'6.3"**
Blade Angle		—		—		—

*Blade capacities, weights and heights include 762 mm **(2'6")** trash rack on D8R blades, 914 mm **(3'0")** trash rack on D9R blades, and 1067 mm **(3'6")** trash rack on D10R blades.
**Total bulldozer arrangement includes blade with trash rack, pusharms, braces, cylinders, lines, trunnions and lift cylinder mountings.

HYDRAULIC CONTROLS

CONTENTS

Features:

- **Designed and built for specific vehicle applications.** Valves and components sized for exacting quality and performance.
- **Job requirements matched** through various arrangements.
- **Pressure compensated control valves** for ease of operation on D6R thru D9R. Pilot operated on D10R and D11R tractors except for dozer lift which is pressure compensated and manually operated.
- **Full flow filters*...** all oil completely filtered.
- **Dual tilt** — standard on D11R, optional on D9R and D10R.

*Exception — D8R 2-pump

MODEL	D3C Series III and Hystat	D4C Series III and Hystat	D5C Series III and Hystat
Mounting Point	**Fender**	**Fender**	**Fender**
Number of Valves	**3 or 4**	**3 or 4**	**3 or 4**
Flow at 6890 kPa **(1000 psi)**	66.6 L/min **17.6 gpm @ 2400 RPM**	66.6 L/min **17.6 gpm @ 2400 RPM**	66.6 L/min **17.6 gpm @ 2400 RPM**
Tank Capacity (Oil)	57 L **15 U.S. gal**	57 L **15 U.S. gal**	57 L **15 U.S. gal**
Lift Relief Valve Setting	17 241 kPa **2500 psi**	17 241 kPa **2500 psi**	17 241 kPa **2500 psi**
Weight Installed (Four Valves)	16 kg **36 lb***	16 kg **36 lb***	16 kg **36 lb***

MODEL	D5M	D6M
Mounting Point	**Right Rear Fender**	**Right Rear Fender**
Number of Valves	**3 or 4**	**3 or 4**
Flow at 6890 kPa **(1000 psi)**	95 L/min **25 gpm @ 2200 RPM**	119 L/min **31.5 gpm @ 2200 RPM**
Tank Capacity (Oil)	32 L **8.5 U.S. gal**	29 L **7.5 U.S. gal**
Lift Relief Valve Setting XL & LGP	20 700 kPa **3000 psi**	24 800 kPa **3600 psi**
Weight Installed	216 kg **440 lb (Four Valves)**	295 kg **650 lb (Four Valves)**

MODEL	D6G	D6R	D6R (Differential Steer)
Mounting Point	**Dash**	**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)**	167 L/min **44 gpm @ 1900 RPM**	193 L/min **51 gpm @ 1900 RPM**	196 L/min **51.8 gpm @ 2000 RPM**
Tank Capacity (Oil)	49 L **13 U.S. gal**	47.3 L **12.5 U.S. gal**	45.4 L **12 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 (Four Valves)**	311 kg **686 lb (Two Valves)**

MODEL	D7G (173B)	D7R	D7R (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 **60 gpm @ 2080 RPM**	175 L/min **46.2 gpm @ 2100 RPM (ENG.)**	275 L/min **72.7 gpm @ 2100 RPM (ENG.)**
Tank Capacity (Oil)	91 L **24 U.S. gal**	66.2 L **17.5 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)**	273.2 kg **602.5 lb (Two Valves)**

*Hydraulic tank not included.
NOTE: Weight installed, two valves, includes pump, tank with filters, valves, lines, linkage, oil cooler and control levers. D3C Series II weight does not include hydraulic tank.

MODEL	D8R	D9R	D10R
Mounting Point	**Under Operators Platform**	**Under Operators Platform**	**Under Operators Platform**
Number of Valves	**3** **Ripper◀ Requires optional electronic diverter**	**4** **+ Dual Tilt (Attach.) Radiator Guard**	**2** **At Rear Under Fuel Tank 2◀ + Dual Tilt (Attach.) Radiator Guard**
Flow at 6890 kPa **(1000 psi)**	239 L/min **63 gpm** **@ 2100 RPM**	235 L/min **62.1 gpm** **@ 1900 RPM**	408 L/min **107.8 gpm** **@ 1900 RPM**
Tank Capacity (Oil)	72 L **19 U.S. gal**	77.2 L **20.4 U.S. gal**	108 L **28.6 U.S. gal**
Lift Relief Valve Setting	24 100 kPa **3500 psi**	26 200 kPa **3800 psi**	18 616 kPa **2700 psi**
Weight Installed (Two Valves)	**Included in Std. Tractor**	**Included in Std. Tractor**	**Included in Std. Tractor**

MODEL	D11R	D11R C.D.
Mounting Point	**Under Operators Platform**	**Under Operators Platform**
Number of Valves	**2** **At Rear Under Seat 2◀ + Dual Tilt (Attach.) Radiator Guard**	**2** **At Rear Under Seat 2◀ Dual Tilt Standard Quick Dump Valve Standard Both on Radiator Guard**
Flow at 6890 kPa **(1000 psi)**	620 L/min **164 gpm** **@ 1890 RPM**	620 L/min **164 gpm** **@ 1890 RPM**
Tank Capacity (Oil)	205 L **54 U.S. gal**	205 L **54 U.S. gal**
Lift Relief Valve Setting	22 750 kPa **3300 psi**	24 115 kPa **3500 psi**
Weight Installed (Two Valves)	**Included in Std. Tractor**	**Included in Std. Tractor**

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

BULLDOZERS

CONTENTS

Features:

- **Straight Bulldozers** — adjustable pitch angle controls blade penetration.
- **Power Angle and Tilt blades** for D3C Series III, D4C Series III and D5C Series III. D5M and D6M are designed for finish grading, backfilling ditches, cutting V ditches, windrowing, fill spreading, landscaping, medium duty land clearing and heavy dozing.
- **Variable cutting edge Power Angle and Tilt (VPAT)** — blade is available on the D5M and D6M. 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.

Summary
Blade Options for Caterpillar Built Machines

	CATERPILLAR BLADES							SPECIAL ATTACHMENTS												
MODEL	S	U	SU	A	FS	LFS	P	RC	WC	CL	HU	LF	TW	CU	CPB	CB	VR	WCB	CS	WCS	W
D3C Series III							●						●								
D4C Series III							●						●								
D3C LGP Series III							●						●								
D4C LGP Series III							●						●								
D4E SR				●									●								
D5C Series III							●						●								
D5C LGP Series III							●						●								
D5M XL							●						●								
D5M LGP							●						●								
D5E				●									●								
D6M XL			●				●						●								
D6M LGP							●						●								
D6R	●		●	●			●		●	●	●	●	●				●				
D6R XL			●	●									●								
D6R LGP	●								●	●		●	●								
D6R IG			●	●									●								
D6G	●			●						●		●	●				●				
D7R	●	●	●	●					●	●	●	●	●				●				
D7R LGP	●											●	●				●				
D7G	●	●		●					●	●	●	●	●	●	●		●				
D8R		●	●	●				●	●	●	●	●		●	●	●	●				
D8R LGP																					
D9R		●	●						●	●		●		●	●		●	●			
D10R		●	●					●	●	●				●	●	●	●				
D11R		●	●					●		●							●				
814F	●								●	●	●								●	●	
815F					●																
816F						●						●									●
824G	●								●	●	●								●	●	
825G					●																
826G						●						●									●
834B	●	●							●	●									●	●	
836												●									●

CATERPILLAR SUPPLIED
- S — Straight
- U — Universal
- SU — Semi-Universal
- A — Angling
- FS — Fill Spreading
- LFS — Landfill Spreading
- P — Power Angle Tilt

SPECIAL ATTACHMENTS 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 Caterpillar Attachment Products and Services.

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.

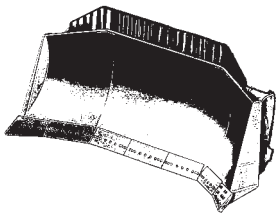
The effect of freezing depends on the moisture content. When frozen, the material's bond strengthens as moisture content increases and temperature decreases. However, freezing a completely dry material does not change its characteristics.

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.

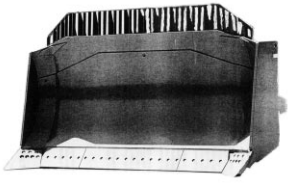
Tractor Limitations

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

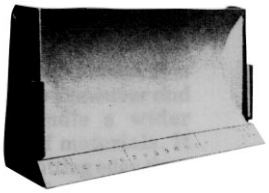


"U" — Universal blade — the large wings on this blade include one end bit and at least one section of cutting edge which make it efficient for moving big loads over long distances as in land reclamation, stockpile work, charging hoppers and trapping for loaders. As this blade has a lower kW/meter (HP/foot) 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 cylinder(s), it has some of the versatility of the S-blade. Tilt cylinder(s) improve its ability to ditch, pry out, and level. This extends its use to many utility tasks.



"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.

General Purpose Dozing Tools

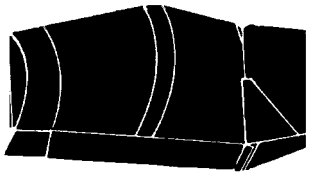


"S" — The Straight blade provides excellent versatility. Since it is physically smaller than the SU or U-blade, it is easier to maneuver and can handle a wider range of materials. It has a higher kW/meter (HP/foot) of cutting edge than the SU or U-blade; consequently, the "S" is more aggressive in penetrating and obtaining a blade load. A tilt cylinder increases both the productivity and versatility of this dozer. With a high kW/Lm^3 (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.

Balderson "VR Blades" (Variable Radius)



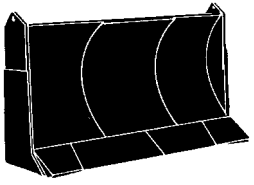
The Balderson Variable Radius Semi-U-Blade combines the benefits of a semi-U-blade such as "cutting" ability and ground penetration with U-blade characteristics of better load retention and less side spill. This is achieved with the variable radius moldboard. The variable radius moldboard causes dirt 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, site development, or general construction.

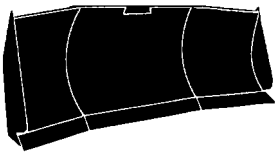
Special Application Dozing Tools

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.

"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.



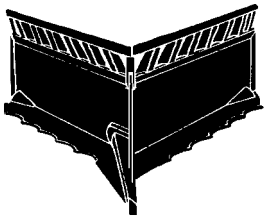
"C" — The Balderson Cushion blade is used for on-the-go push-loading. Rubber cushions allow the dozer to absorb the impact of contacting a scraper push block. When not push-loading, the dozer can be used for cut maintenance and other general dozing jobs. The narrow width of the C-blade increases machine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



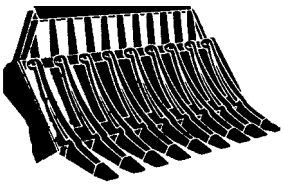
"U-Blades" — Balderson offers a variety of U-blades for use in a wide range of applications. They provide high volume movement of light non-cohesive materials such as coal and woodchips. Heavier U-blades are also offered for production dozing and reclamation work.

"Landfill" — Caterpillar and Balderson offer versions of the landfill or fill spreading dozer. Designed to handle refuse and cover material. Open trash screen on top of blade allows good visibility and protects radiator. Curved moldboard keeps cover material rolling evenly.

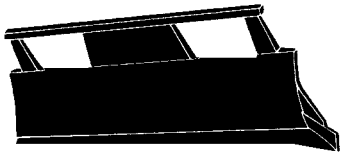
"Two-Way Dozer" — Designed for use inside ship holds to move cargo such as grain, salt, iron ore, coal and chips. These blades can scrape material off walls and doze to center of hold. They can doze material forward or pull material.



"V-Tree Cutter" — Rimco and Rome offer this clearing blade for shearing trees, stumps and brush at ground level. A sharp angle or "V", formed by two cutting blades, utilizes tractor weight and horsepower through the centerline of the cutter. Utilization of tractor force allows most growth to be cut at a steady pace and cast to the sides.

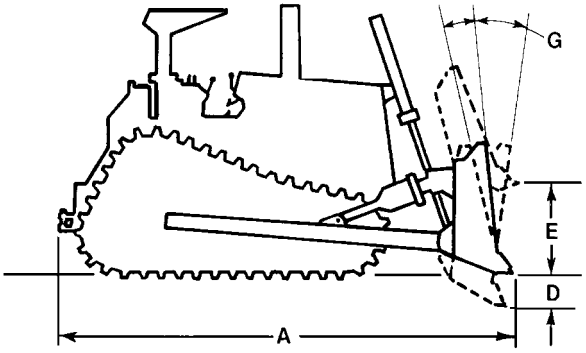


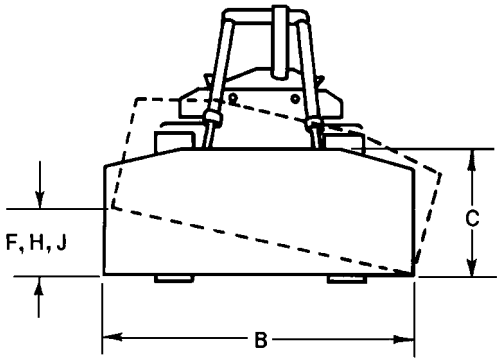
"Rakes" — Balderson, Rimco and Rome offer a variety of rakes for use in land clearing applications. They handle vegetation up to tree size, and offer good soil penetration for removal of small stumps, rocks and roots. In most cases rake tines are replaceable.



"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. Weldco-Beales offers a blade of similar design called the One-Way Brush Cutter.

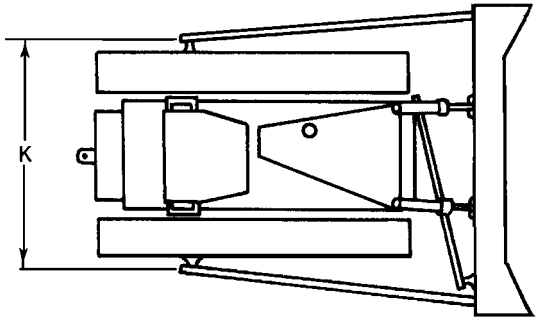
General Dimensions Key
- Tractor and Blade
- SAE Blade Capacity Definition





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 Pusharm Trunnion Width (to Ball Centers)



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

$Vs = 0.8\ WH^2$.

$Vu = Vs + ZH\ (W-Z)\ \tan X$.

Where: Vs = Capacity of straight or angling blade.
Vu = 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
- D3C Series III — All Models & Hydrostatics
- D4C Series III — All Models & Hydrostatics
- D5C Series III — All Models & Hydrostatics

MODEL	D3C Series III, D3C LGP Series III & Hydrostatic					
	3P		3P Hystat		3P LGP	
Type	Power Angling and Tilt		Power Angling and Tilt		Power Angling and Tilt	
Blade Capacities*	1.26 m^3	**1.64 yd^3**	1.26 m^3	**1.64 yd^3**	1.31 m^3	**1.70 yd^3**
Weight Shipping** (Dozer)	1126 kg	**2482 lb**	1126 kg	**2482 lb**	1213 kg	**2674 lb**
Tractor & Dozer Dimensions:						
A Length (Blade Straight)	3.86 m	**12'8"**	3.98 m	**13'1"**	3.95 m	**13'0"**
Length (Blade Angled)	4.26 m	**14'0"**	4.26 m	**14'0"**	4.63 m	**15'2"**
Width (Blade Angled)	2.31 m	**7'7"**	2.31 m	**7'7"**	2.90 m	**9'6"**
Width (with C-Frame only)	—		—		—	
Blade Dimensions:	(inside mounted)		(inside mounted)		(inside mounted)	
B Width (including std. end bits)	2.55 m	**8'4"**	2.55 m	**8'4"**	3.19 m	**10'6"**
C Height	836 mm	**2'8.9"**	836 mm	**2'8.9"**	746 mm	**2'5.4"**
D Max. Digging Depth	410 mm	**16.2"**	418 mm	**16.5"**	398 mm	**15.7"**
E Ground Clearance @ Full Lift	773 mm	**2'6.4"**	761 mm	**2'6"**	761 mm	**2'6"**
G Pitch Adjustment	50°–55°		50°–55°		50°–55°	
J Hydraulic Tilt	356 mm	**14"**	356 mm	**14"**	490 mm	**1'7.3"**
Blade Angle	25°		25°		25°	

MODEL	D4C Series III, D4C LGP Series III & Hydrostatic D5C Series III, D5C LGP Series III & Hydrostatic							
	4P		4P LGP		5P		5P LGP	
Type	Power Angling and Tilt		Power Angling and Tilt		Power Angling and Tilt		Power Angling and Tilt	
Blade Capacities*	1.68 m^3	**2.18 yd^3**	1.70 m^3	**2.21 yd^3**	1.93 m^3	**2.51 yd^3**	2.06 m^3	**2.70 yd^3**
Weight Shipping** (Dozer)	1202 kg	**2650 lb**	1284 kg	**2831 lb**	1355 kg	**2987 lb**	1376 kg	**3027 lb**
Tractor & Dozer Dimensions:								
A Length (Blade Straight)	3.99 m	**13'1"**	3.99 m	**13'1"**	4.07 m	**13'4"**	4.07 m	**13'4"**
Length (Blade Angled)	4.42 m	**14'6"**	4.54 m	**14'11"**	4.51 m	**14'10"**	4.631 m	**15'2"**
Width (Blade Angled)	2.49 m	**8'2"**	3.03 m	**9'11"**	2.50 m	**8'2"**	3.00 m	**9'10"**
Width (with C-Frame only)	—		—		—		—	
Blade Dimensions:	(inside mounted)		(inside mounted)		(inside mounted)		(inside mounted)	
B Width (including std. end bits)	2.70 m	**10'10"**	3.34 m	**10'11"**	2.75 m	**9'0"**	3.30 m	**10'10"**
C Height	928 mm	**3'0.5"**	837 mm	**2'9"**	999 mm	**3'3.3"**	929 mm	**3'0.6"**
D Max. Digging Depth	448 mm	**17.6"**	443 mm	**17.4"**	479 mm	**18.9"**	452 mm	**17.8"**
E Ground Clearance @ Full Lift	775 mm	**2'6.5"**	775 mm	**2'6.5"**	809 mm	**2'7.9"**	835 mm	**2'8.9"**
G Pitch Adjustment	50°–55°		50°–55°		50°–55°		50°–55°	
J Hydraulic Tilt	406 mm	**16"**	495 mm	**1'7.5"**	412 mm	**16.2"**	490 mm	**1'7.3"**
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.

Blade Specifications
- D5M XL
- D5M LGP
- D6M XL
- D6M LGP

MODEL	D5M XL 5P		D5M LGP 5P LGP		D6M XL 6SU		D6M XL 6P	
Type	**Power Angling and Tilt**		**Power Angling and Tilt**		**Semi-U**			
Blade Capacities*	2.59 m^3	**3.39 yd^3**	2.03 m^3	**2.66 yd^3**	4.28 m^3	**5.60 yd^3**	3.18 m^3	**4.14 yd^3**
Weight, Shipping** (Dozer)	1932 kg	**4250 lb**	2000 kg	**4400 lb**	2427 kg	**5351 lb**	2372 kg	**5229 lb**
Tractor & Dozer Dimensions:								
A Length (Blade Straight)	4.56 m	**14'8"**	5.13 m	**16'10"**	4.92 m	**16'2"**	4.80 m	**15'9"**
Length (Blade Angled)	5.24 m	**16'10"**	5.80 m	**19'0"**	—		5.44 m	**17'10"**
Width (Blade Angled)	2.79 m	**9'2"**	3.04 m	**10'0"**	—		2.96 m	**9'9"**
Width (with C-Frame only)	—		—		—		—	
Blade Dimensions:	**(inside mounted)**		**(inside mounted)**		**(outside mounted)**		**(inside mounted)**	
B Width (including std. end bits)	3.08 m	**10'1"**	3.36 m	**11'0"**	3.14 m	**10'4"**	3.27 m	**10'9"**
C Height	1109 mm	**3'7.6"**	910 mm	**2'11.8"**	1244 mm	**4'1"**	1195 mm	**3'11"**
D Max. Digging Depth	441 mm	**17.4"**	491 mm	**1'7.3"**	520 mm	**1'8.5"**	444 mm	**17.5"**
E Ground Clearance @ Full Lift	916 mm	**3'0.1"**	923 mm	**3'0.3"**	983 mm	**3'2.7"**	925 mm	**3'0.4"**
G Max. Pitch	**+2°–6°**		**+2°–6°**		**±5°**		**+2°–6°**	
H Max. Hydraulic Tilt	—		—		665 mm	**2'2.2"**	—	
J Hydraulic Tilt	460 mm	**18.1"**	491 mm	**1'7.3"**	372 mm	**14.6"**	497 mm	**1'7.6"**
Blade Angle	**25°**		**25°**		—		**25°**	

*Blade capacities as determined by SAEJ1265.
**Shipping Weight — Total bulldozer arrangement includes: Blade, push arms or C-frame, braces, cylinders, lines, trunnions and lift cylinder mountings.

MODEL	D6M LGP LGP	
Type	**Power Angling and Tilt**	
Blade Capacities*	3.16 m^3	**4.11 yd^3**
Weight, Shipping** (Dozer)	2819 kg	**6215 lb**
Tractor & Dozer Dimensions:		
A Length (Blade Straight)	5.39 m	**17'8"**
Length (Blade Angled)	6.20 m	**20'4"**
Width (Blade Angled)	3.70 m	**12'2"**
Width (with C-Frame only)	—	
Blade Dimensions:	**(inside mounted)**	
B Width (including std. end bits)	4.08 m	**13'5"**
C Height	1025 mm	**3'4.4"**
D Max. Digging Depth	433 mm	**17.0"**
E Ground Clearance @ Full Lift	1024 mm	**3'4.3"**
G Max. Pitch	**+2°–6°**	
H Max. Hydraulic Tilt	—	
J Hydraulic Tilt	598 mm	**1'11.5"**
Blade Angle	**25°**	

*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, D6R XL & D6R LGP					
	6A		6A Heavy Duty		6A XL	
Type	Angling		Angling		Angling	
Blade Capacities*	3.18 m^3	**4.16 yd^3**	3.93 m^3	**5.14 yd^3**	3.93 m^3	**5.14 yd^3**
Weight, Shipping** (Dozer)	2727 kg	**5999 lb**	3218 kg	**7079 lb**	3109 kg	**6839 lb**
Tractor & Dozer Dimensions:						
A Length (Blade Straight)	5.22 m	**17'1"**	5.22 m	**17'1"**	5.43 m	**17'10"**
Length (Blade Angled)	6.05 m	**19'10"**	6.05 m	**19'10"**	6.26 m	**20'6"**
Width (Blade Angled)	3.78 m	**12'5"**	3.78 m	**12'5"**	3.78 m	**12'5"**
Width (with C-Frame only)	2.91 m	**9'7"**	2.91 m	**9'7"**	2.98 m	**9'10"**
Blade Dimensions:						
B Width (including std. end bits)	4.16 m	**13'8"**	4.16 m	**13'8"**	4.16 m	**13'8"**
C Height	1033 mm	**3'4.7"**	1155 mm	**3'9.5"**	1155 mm	**3'9.5"**
D Max. Digging Depth	506 mm	**1'7.9"**	506 mm	**1'7.9"**	524 mm	**1'8.6"**
E Ground Clearance @ Full Lift	1141 mm	**3'8.9"**	1141 mm	**3'8.9"**	1205 mm	**3'11.4"**
F Manual Tilt	408 mm	**16.1"**	408 mm	**16.1"**	408 mm	**16.1"**
G Max. Pitch	—		—		—	
H Max. Hydraulic Tilt	408 mm	**16.1"◀**	408 mm	**16.1"◀**	408 mm	**16.1"**
Blade Angle	**25°**		**25°**		**25°**	
J Hydraulic Tilt (Manual Brace Centered)	—		—		—	

MODEL	D6R, D6R XL & D6R LGP					
	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°–4.8°**		**+5.3°–4.8°**		**+5.3°–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.
◀Attachment includes two cylinders.

MODEL	D6R, D6R XL & D6R LGP					
	6S LGP		6A (IG)		6SU (IG)	
Type	Straight		Angling		Semi Universal	
Blade Capacities*	3.70 m^3	**4.83 yd^3**	4.3 m^3	**5.63 yd^3**	5.62 m^3	**7.4 yd^3**
Weight, Shipping** (Dozer)	2801 kg	**6162 lb**	3260 kg	**7180 lb**	2950 kg	**6500 lb**
Tractor & Dozer Dimensions:						
A Length (Blade Straight)	5.71 m	**18'9"**	—		—	
Blade Dimensions:						
B Width (including std. end bits)	3.99 m	**13'1"**	4.20 m	**13'9"**	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°–4.8°**		**+5.3°–4.8°**		**+5.3°–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 & D7R LGP									
	7A		7S		7SU		7U		7S LGP	
Type	Angling		Straight		Semi Universal		Universal		Straight	
Blade Capacities*	3.89 m^3	**5.08 yd^3**	5.16 m^3	**6.75 yd^3**	6.86 m^3	**8.98 yd^3**	8.34 m^3	**10.91 yd^3**	5.89 m^3	**7.7 yd^3**
Weight, Shipping** (Dozer)	3527 kg	**7750 lb**	3500 kg	**7716 lb**	3593 kg	**7904 lb**	3920 kg	**8624 lb**	3732 kg	**8210 lb**
General Dimensions (Tractor & Dozer)										
A Length (Blade Straight)	6.10 m	**20'0"**	5.81 m	**19'1"**	6.03 m	**19'9"**	6.27 m	**20'7"**	5.81 m	**19'1"**
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"**	3.98 m	**13'1"**	4.50 m	**14'9"**
C Height	1111 mm	**3'7.7"**	1363 mm	**4'5.7"**	1524 mm	**5'0"**	1553 mm	**5'1.1"**	1343 mm	**4'4.9"**
D Max. Digging Depth	669 mm	**2'2.3"**	527 mm	**1'8.7"**	527 mm	**1'8.7"**	527 mm	**1'8.7"**	668 mm	**2'2.3"**
E Ground Clearance @ Full Lift	1115 mm	**3'7.9"**	1145 mm	**3'9.1"**	1145 mm	**3'9.1"**	1145 mm	**3'9.1"**	1153 mm	**3'9.4"**
F Manual Tilt	466 mm	**18.3"**	—		—		—		—	
G Max. Pitch Adjustment	—		**+3.1°–3.9°**		**+3.1°–3.9°**		**+3.1°–3.9°**		**+3.0°–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"**	861 mm	**2'9.9"**	686 mm	**2'3"**
J Hydraulic Tilt (Manual Brace Centered)	—		501 mm	**1'7.7"**	474 mm	**18.6"**	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.
◀Attachment includes two cylinders.

	D8R						D9R			
MODEL	**8A**		**8SU**		**8U**		**9SU**		**9U**	
Type	**Angling**		**Semi-U**		**Universal**		**Semi-U**		**Universal**	
Blade Capacities*	4.66 m^3	**6.09 yd^3**	8.68 m^3	**11.4 yd^3**	11.70 m^3	**15.3 yd^3**	13.5 m^3	**17.7 yd^3**	16.4 m^3	**21.4 yd^3**
Weight, Shipping** (Dozer)	5459 kg	**12,009 lb**	4930 kg	**10,846 lb**	5495 kg	**12,089 lb**	6543 kg	**14,425 lb**	7134 kg	**15,727 lb**
General Dimensions (Tractor & Dozer)										
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"**	582 mm	**1'10.9"**	582 mm	**1'10.9"**	606 mm	**1'11.9"**	606 mm	**1'11.9"**
E Ground Clearance @ Full Lift	1308 mm	**4'3.5"**	1231 mm	**4'0.5"**	1231 mm	**4'0.5"**	1422 mm	**4'8"**	1422 mm	**4'8"**
G Max. Pitch Adjustment	—		**+3.0°–2.9°**		**+3.0°–2.9°**		**+3.4°–2.9°**		**+3.4°–2.9°**	
Blade Angle (either side)	**25°**		—		—		—		—	
H Max. Hydraulic Tilt	729 mm	**2'4.7"◀**	951 mm	**3'1.4"**	1028 mm	**3'4.5"**	940 mm	**3'1"**	1014 mm	**3'3.9"**
J Hydraulic Tilt (Manual Brace Centered)	—		650 mm	**2'1.6"**	703 mm	**2'3.7"**	570 mm	**1'10.4"**	616 mm	**2'0.3"**
K Pusharm 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.	—		—		—		**+4.8°–5.2°**		**+4.8°–4.9°**	
H Dual Max. Hyd. Tilt	—		—		—		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.

	D10R				D11R					
MODEL	**10SU**		**10U**		**11SU**		**11U**		**11 C.D.**	
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 kg	**22,550 lb**	10 784 kg	**23,775 lb**	14 813 kg	**32,658 lb**	17 296 kg	**38,131 lb**	21 678 kg	**47,800 lb**
Abrasion Dozer	11 069 kg	**24,403 lb**	12 413 kg	**27,366 lb**	16 192 kg	**35,698 lb**	18 823 kg	**41,498 lb**	—	
General Dimensions (Tractor & Dozer)										
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°–2.3°**		**+1.7°–2.3°**		**+2.1°–2.2°**		**+2.1°–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 Pusharm 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°–7.6°** or		**+7.5°–7.6°** or		—	
G Dual Pitch Adj.	**+5.2°–5.5°**		**+5.2°–5.5°**		**+0°–13°**		**+0°–13°**		—	
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.

MODEL	D4E SR 4A		D5E 5A	
Type	Angling		Angling	
Blade Capacities	1.28 m^3	**1.65 yd^3**	1.95 m^3	**2.55 yd^3**
Weight, Shipping* (Dozer)	1395 kg	**3075 lb**	1543 kg	**3402 lb**
General Dimensions (Tractor & Dozer)				
A Length (Blade Straight)	3.87 m	**12'9"**	4.60 m	**15'1"**
Length (Blade Angled)	4.50 m	**14'9"**	5.26 m	**17'3"**
Width (Blade Angled)	2.84 m	**9'4"**	2.95 m	**9'8"**
Width (with C-frame only)	2.39 m	**7'10"**	2.36 m	**7'9"**
Blade Dimensions:				
B Width (including std. end bits)	3.12 m	**10'3"**	3.41 m	**11'2"**
C Height	706 mm	**2'3.8"**	859 mm	**2'9.8"**
D Max. Digging Depth	371 mm	**14.6"**	457 mm	**18"**
E Ground Clearance @ Full Lift	811 mm	**2'7.9"**	937 mm	**3'0.9"**
F Manual Tilt	475 mm	**18.7"**	338 mm	**13.3"**
G Max. Pitch Adjustment	—		—	
Blade Angle (either side)	**25°**		**25°**	
H Max. Hydraulic Tilt	330 mm	**13"**	—	
J Hydraulic Tilt (Manual Brace Centered)	—		—	

MODEL	D6G 6A		D6G 6S		D6G 6SU▶	
Type	Angling		Straight		Semi-U	
Blade Capacities	2.40 m^3	**3.14 yd^3**	3.07 m^3	**4.02 yd^3**	3.80 m^3	**4.96 yd^3**
Weight, Shipping* (Dozer)	2325 kg	**5126 lb**	1998 kg	**4405 lb**	2460 kg	**5423 lb**
General Dimensions (Tractor & Dozer)						
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	605 mm	**1'11.8"**	474 mm	**18.7"**	472 mm	**18.6"**
E Ground Clearance @Full Lift	945 mm	**3'1.2"**	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.

	D7G			
MODEL	**7A**		**7S**	
Type	**Angling**		**Straight**	
Blade Capacities*	2.9 m^3	**3.8 yd^3**	4.2 m^3	**5.5 yd^3**
Weight, Shipping** (Dozer)	3227 kg	**7115 lb**	3475 kg	**7660 lb**
General Dimensions (Tractor & Dozer)				
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 Blade Angle (either side)	— **25°**		**+5.2°–3.0°** —	
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:

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

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/Lm^3 (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**

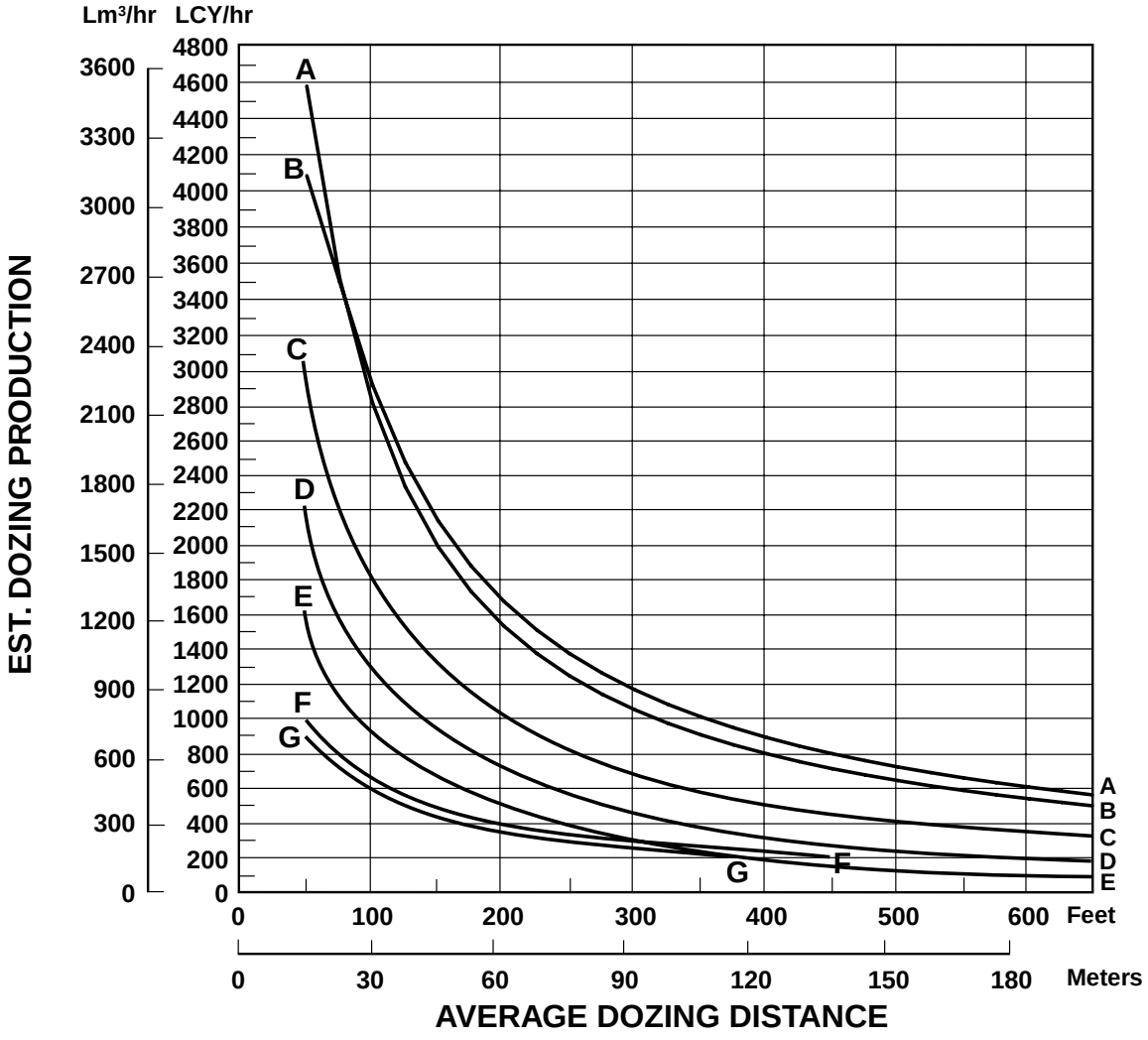
To obtain estimated production in bank cubic meters or bank cubic yards, appropriate load factor from the Tables section should be applied to the corrected production as calculated above.

$$\text{Production } \begin{matrix}\text{Bm}^3/\text{hr} \\ (\text{BCY/h})\end{matrix} = \begin{matrix}\text{Lm}^3/\text{hr} \times \text{LF} \\ (\text{LCY/h}) \times \text{LF}\end{matrix}$$

*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 D11R

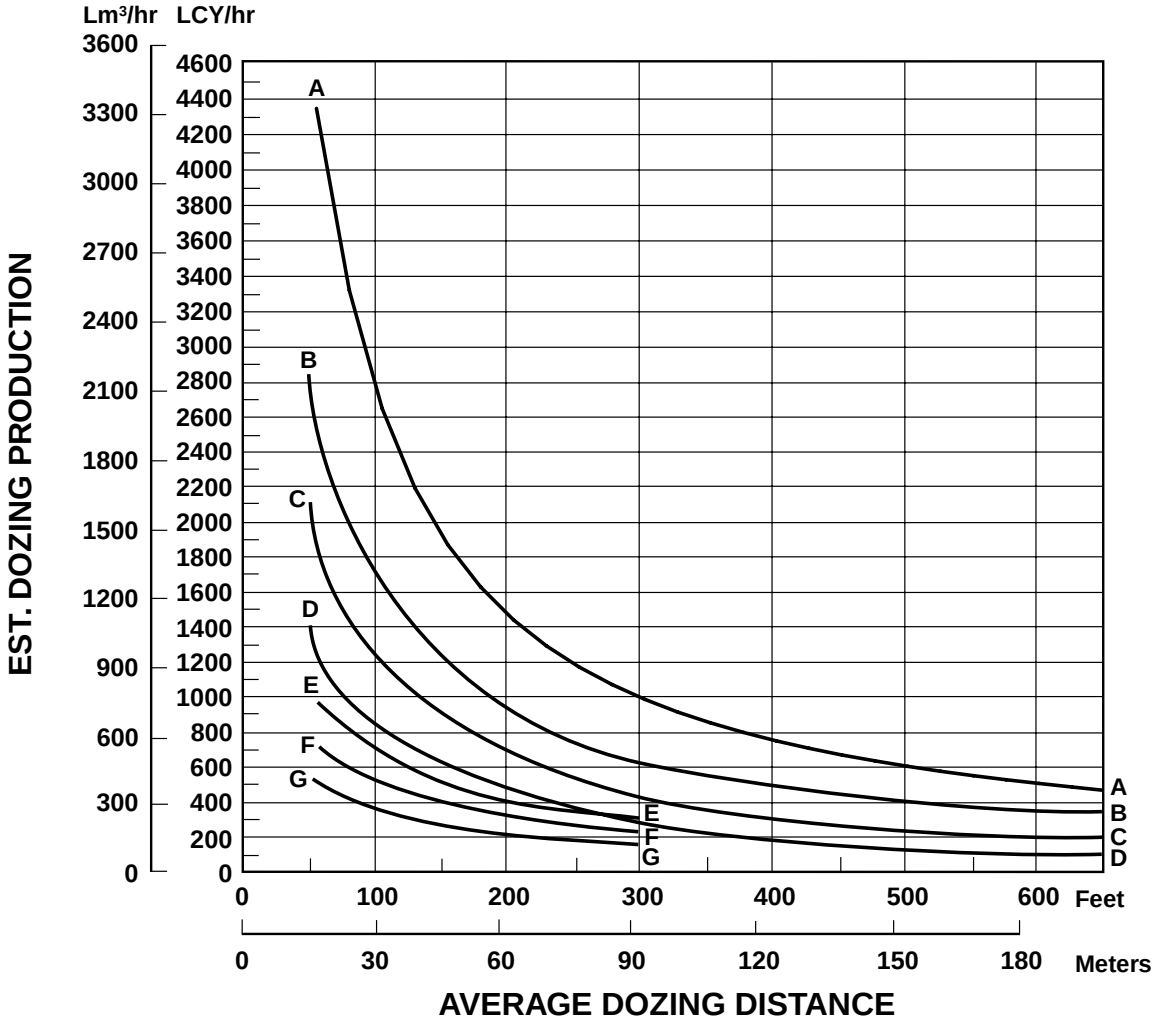


KEY

A — D11R-11U
B — D11R C.D.
C — D10R-10U
D — D9R-9U
E — D8R-8U
F — D7R-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.

ESTIMATED DOZING PRODUCTION ● Semi-Universal Blades ● D6M through D11R

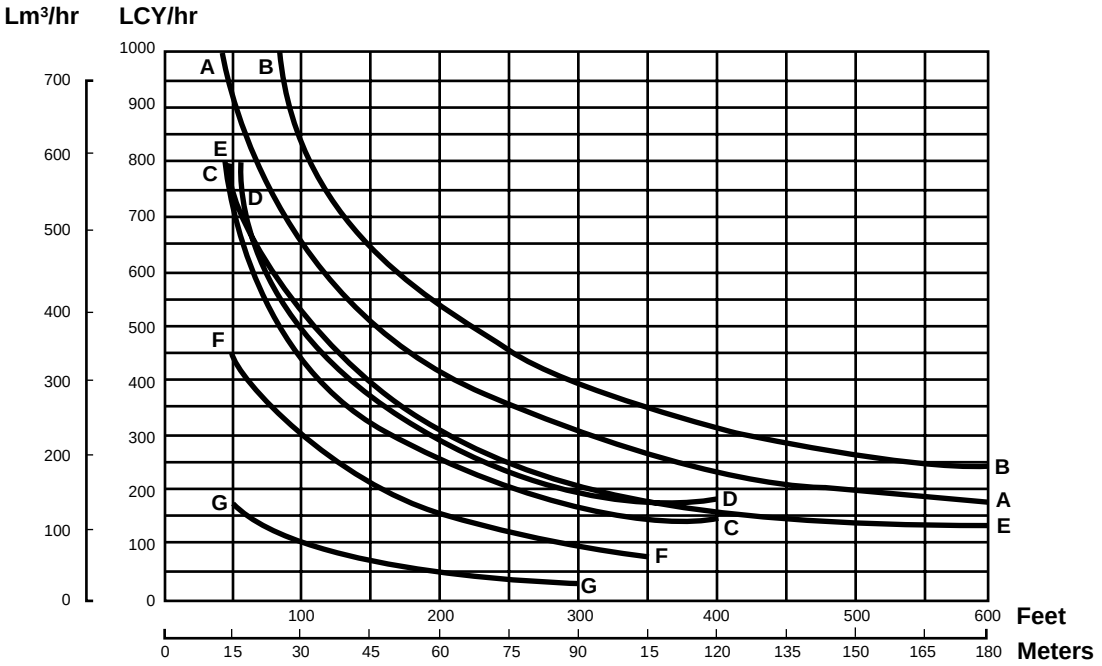


KEY

A — D11R-11SU
B — D10R-10SU
C — D9R-9SU
D — D8R-8SU
E — D7R-7SU
F — D6R-6SU
G — D6M-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 ● D3, D6, D7, 814, 824, 834



AVERAGE DOZING DISTANCE

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors on the next page.
*The 3S represented is for the D3C LGP Series II.

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-7S
E — 814-S
F — D6R-6S
G — D3C LGP

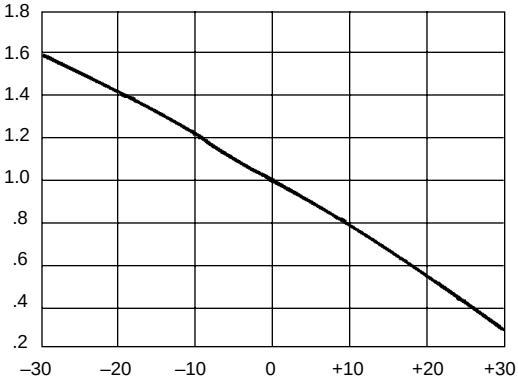
JOB CONDITION CORRECTION FACTORS

	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	—
cable controlled blade	0.60	—
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 D8R/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 LCY/hr) (0.80) (1.30) (1.20) (0.75) (0.83) (0.87)
= 405.5 LCY/hr

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

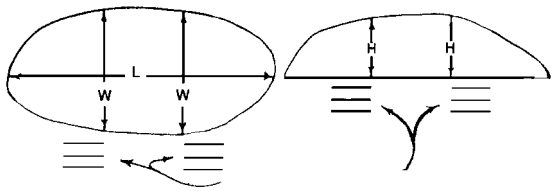
= 458 Lm³/h × Factors
= 309.6 Lm³/h

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 × (HWL)
      (4) Load (Bm^3 or BCY) = Lm^3 or LCY × LF
   d. Combine the calculated blade load with time study to figure production.

SPECIAL ATTACHMENTS

BALDERSON VARIABLE RADIUS (VR) SEMI-U BLADES

	D6R		D7R		D8R	
Capacity	5.81 m^3	**7.6 yd^3**	7.84 m^3	**10.25 yd^3**	11.28 m^3	**14.75 yd^3**
Width	3349 mm	**11'0"**	3861 mm	**12'8"**	4521 mm	**14'10"**
Height	1473 mm	**4'10"**	1626 mm	**5'4"**	1778 mm	**5'10"**
Weight	1360 kg	**3000 lb**	1860 kg	**4100 lb**	2995 kg	**6600 lb**

BALDERSON LANDFILL BLADES

	D6R		D7R		D8R		D9R	
Capacity	12.5 m^3	**16.4 yd^3**	18.1 m^3	**23.7 yd^3**	24.4 m^3	**32 yd^3**	38.5 m^3	**50.3 yd^3**
Width	3886 mm	**12'9"**	4267 mm	**14'0"**	4928 mm	**16'2"**	5442 mm	**17'10"**
Height	1796 mm	**5'10.7"**	2184 mm	**7'2"**	2286 mm	**7'6"**	2178 mm	**7'1.75"**
Weight	1450 kg	**3200 lb**	2567 kg	**5660 lb**	3310 kg	**7300 lb**	4900 kg	**10,800 lb**

This list is not all inclusive. Contact Balderson for special attachment needs.

BALDERSON COAL U-BLADES	D6R		D7R		D8R		D9R	
Capacity	9.7 m^3	**12.63 yd^3**	16.1 m^3	**21.0 yd^3**	21.4 m^3	**28 yd^3**	35.8 m^3	**46.8 yd^3**
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"**	1980 mm	**6'6"**	2540 mm	**8'4"**
Weight	1495 kg	**3300 lb**	2405 kg	**5300 lb**	3200 kg	**7050 lb**	5080 kg	**11,200 lb**

BALDERSON COAL U-BLADES	D10R		D11R	
Capacity	45.9 m^3	**60 yd^3**	74.9 m^3	**98.0 yd^3**
Width	6191 mm	**20'1"**	7416 mm	**24'4"**
Height	2794 mm	**9'2"**	3530 mm	**11'7"**
Weight	6330 kg	**14,400 lb**	11 340 kg	**25,000 lb**

BALDERSON WOODCHIP DOZERS	D6M		D6R		D7R		D8R		D9R		D10R	
Capacity	11.5 m^3	**15 yd^3**	15.3 m^3	**20 yd^3**	20.3 m^3	**26.6 yd^3**	28.3 m^3	**37 yd^3**	45.9 m^3	**60.0 yd^3**	72.6 m^3	**95 yd^3**
Width	3657 mm	**12'0"**	4267 mm	**14'0"**	4826 mm	**15'10"**	5486 mm	**18'0"**	5486 mm	**18'0"**	6401 mm	**21'0"**
Height	1829 mm	**6'0"**	1880 mm	**6'2"**	2083 mm	**6'10"**	2337 mm	**7'8"**	3086 mm	**10'1.5"**	3480 mm	**11'5"**
Weight	1542 kg	**3400 lb**	1905 kg	**4200 lb**	2765 kg	**6100 lb**	2925 kg	**6450 lb**	4900 kg	**10,800 lb**	8165 kg	**18,000 lb**

BALDERSON RECLAMATION U-BLADES	D8R		D9R	D10R		D11R	
Capacity	16.4 m^3	**21.5 yd^3**		30.6 m^3	**40 yd^3**	45.9 m^3	**60.0 yd^3**
Width	4877 mm	**16'0"**	*	5791 mm	**19'0"**	7010 mm	**23'0"**
Height	1880 mm	**6'2"**		2413 mm	**7'11"**	2590 mm	**8'6"**
Weight	3810 kg	**8400 lb**		6575 kg	**14,500 lb**	9525 kg	**21,000 lb**

BALDERSON CUSHION DOZERS	D8R		D9R		D10R		D11R
Width	2889 mm	**9'5.75"**	3048 mm	**10'0"**	3499 mm	**11'5.75"**	
Height	1499 mm	**4'11"**	1575 mm	**5'2"**	1753 mm	**5'9"**	*
Weight	3185 kg	**7020 lb**	4275 kg	**9420 lb**	6115 kg	**13,480 lb**	
Balderson Rear Cushion Push Block	*		2175 kg	**4800 lb**	3105 kg	**6850 lb**	*

*Available upon request.
This list is not all inclusive. Contact Caterpillar Attachment Products and Services.

RIPPERS

CONTENTS

Features:

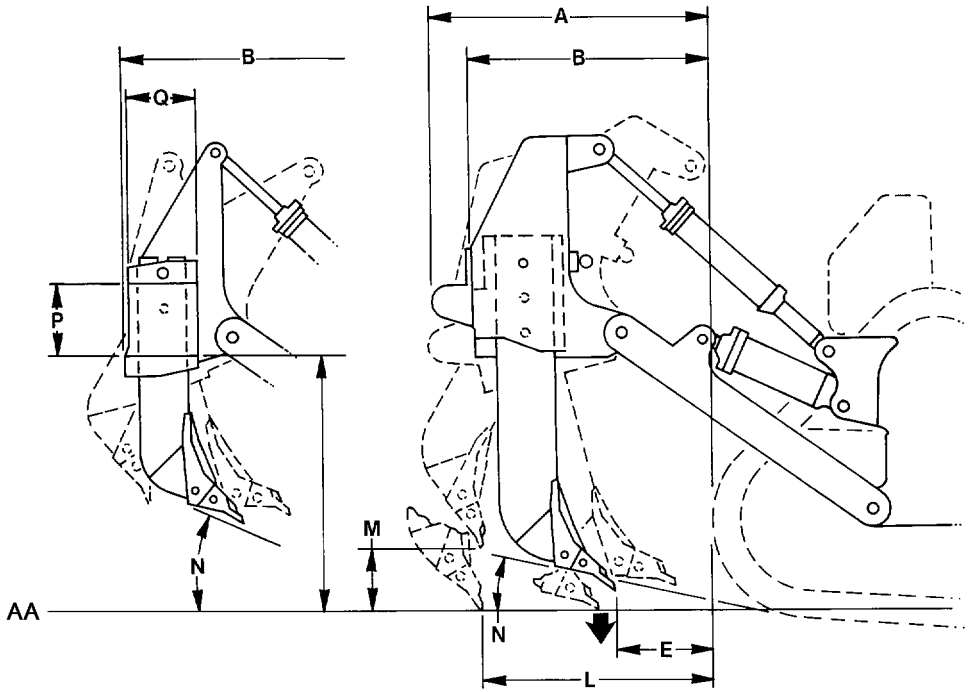
- **Parallelogram linkage with hydraulically variable pitch** on D8R, D9R, D10R and D11R. Operator can adjust angle of ripper tip to the material for penetration at all ripping depths to increase production.
- **Fixed Parallelogram linkage design** used on D5E, D6M, D6G, D6R, D7G, D6R XR, D6R XL, D7R and D7R XR. 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. Five shanks available on the D3C Series III, D4C Series III, D5C Series III. Three shanks available for the D5M.
- **Adjustable Single shank** arrangements available for D8R, D9R, D10R and D11R for tough ripping applications and deep ripping requirements.
- **Hydraulically Variable Pitch Multishank** arrangements available in all ripper models, including D8R, D9R, D10R and D11R 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

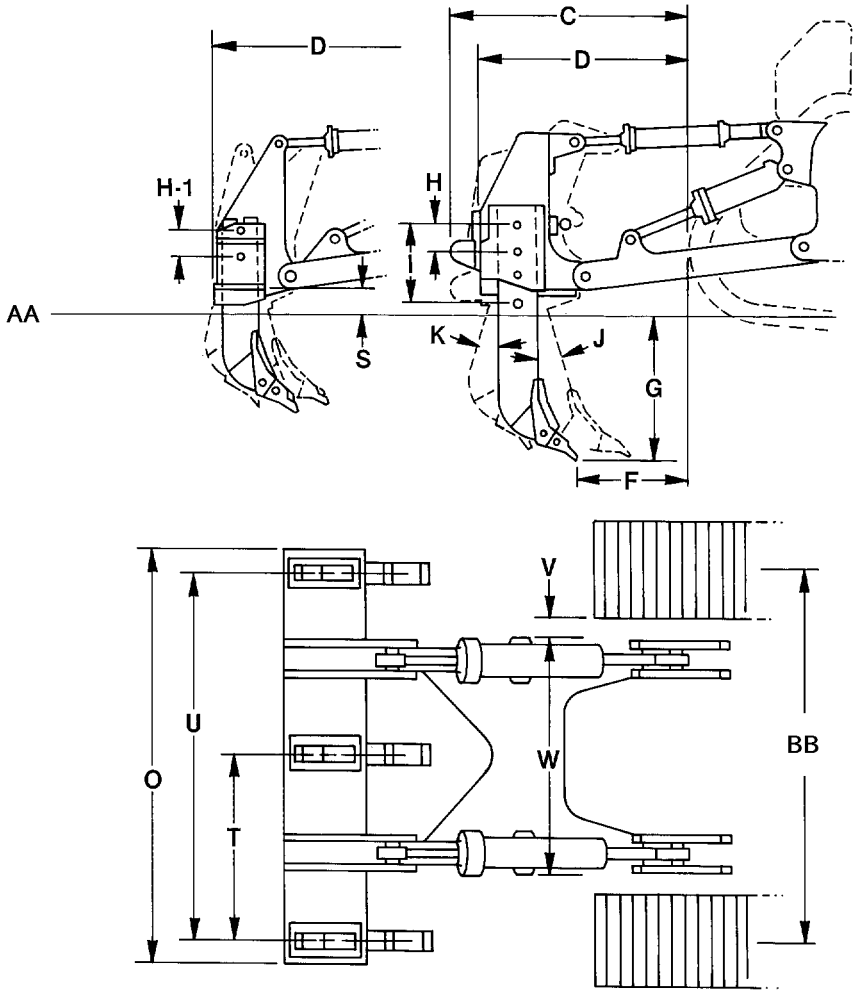


NOTE: Letters correspond to ripper specifications on pages that follow.

KEY

AA — Ground Line

Adjustable Parallelogram Ripper



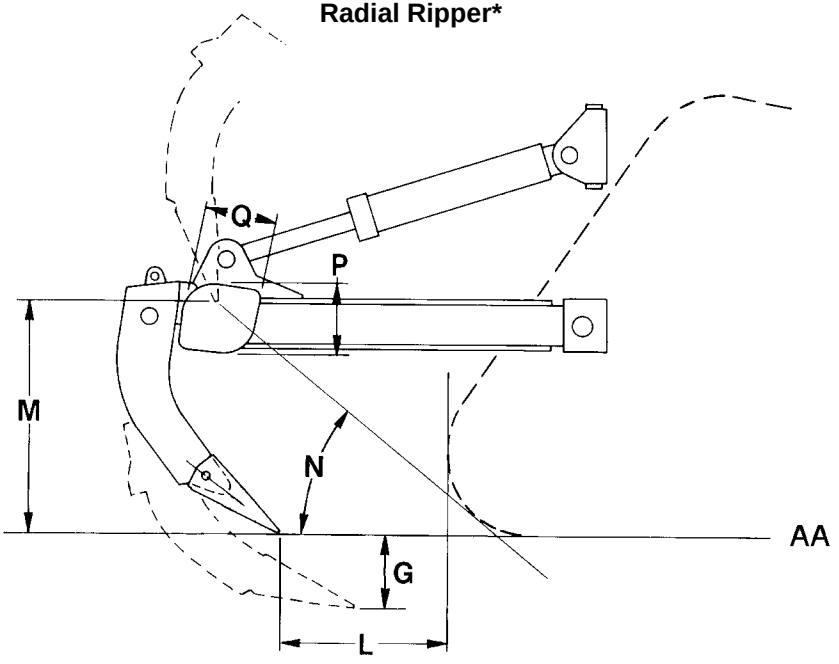
NOTE: Letters correspond to ripper specifications on pages that follow.

KEY

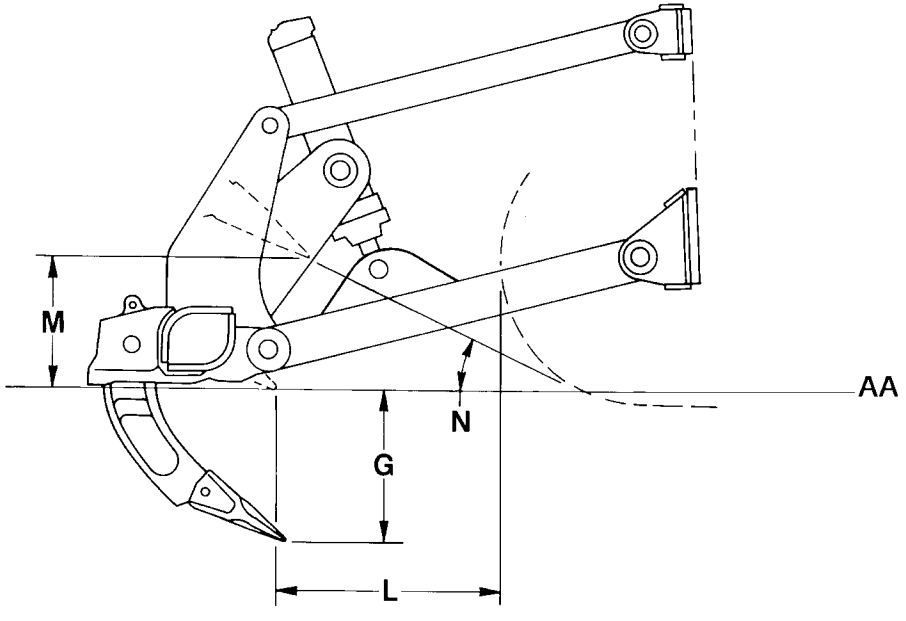
AA — Ground Line
BB — Track Gauge

Specification Diagrams
- Radial Ripper
- Fixed Parallelogram Ripper

Radial Ripper*



Fixed Parallelogram Ripper



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

KEY

AA — Ground Line
* — Tip Standard

TRACTOR/RIPPER	D3C Series III & Hydrostatic		D4C Series III & Hydrostatic		D5C Series III & Hydrostatic		D5M XL**	
Ripper Type	**Radial**		**Radial**		**Radial**		**Radial**	
Dimensions:								
Ripper Shank								
G Maximum digging depth	284 mm	**11.2"**	231 mm	**9.1"**	220 mm	**8.7"**	350 mm	**13.8"**
L Maximum reach at ground line	702 mm	**2'3.6"**	543 mm	**1'9.4"**	527 mm	**1'8.7"**	668 mm	**2'2.3"**
M Maximum ground clearance under tip (shank pinned in bottom hole)	513 mm	**1'8.2"**	567 mm	**1'10.3"**	577 mm	**1'10.7"**	482 mm	**1'7"**
N Maximum ramp angle, ripper up (shank pinned in bottom hole)	**25°**		**30.5°**		**31°**		**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	1.58 m	**5'2"**	1.58 m	**5'2"**	1.58 m	**5'2"**	1.95 m	**6'5"**
P Height	130 mm	**5.1"**	130 mm	**5.1"**	130 mm	**5.1"**	165 mm	**6.5"**
Q Length	140 mm	**5.5"**	140 mm	**5.5"**	140 mm	**5.5"**	211 mm	**8.3"**
Number of Pockets	**5**		**5**		**5**		**3**	
T Pocket Spacing	356 mm	**14"**	356 mm	**14"**	356 mm	**14"**	896 mm	**2'11.3"**
U Shank Gauge	1.42 m	**4'8"**	1.42 m	**4'8"**	1.42 m	**4'8"**	1.79 m	**5'10"**
V Track clearance with standard shoe	151 mm	**5.9"**	151 mm	**5.9"**	151 mm	**5.9"**	108 mm	**4.3"**
Installed weights:								
Ripper with standard shank	250 kg	**550 lb**	250 kg	**550 lb**	250 kg	**550 lb**	758 kg	**1671 lb**
Each additional shank	11 kg	**24 lb**			11 kg	**24 lb**	34 kg	**74 lb**
Ripper Forces:*								
Penetration Force	2460 kg	**5424 lb**	2735 kg	**6031 lb**	3025 kg	**6670 lb**	4010 kg	**8840 lb**
Pryout Force	5265 kg	**11,610 lb**	5265 kg	**11,610 lb**	5265 kg	**11,600 lb**	19 126 kg	**42,165 lb**

*This value may vary slightly with various vehicle configurations.
**D5M XL and LGP Penetration and pryout forces are for machines equipped with UPAT-Blade and Power Shift Transmission
NOTE: Letters correspond to ripper dimension drawings.

Specifications
- D5M LGP
- D6M XL
- D6M LGP

TRACTOR/RIPPER	D5M LGP		D6M XL		D6M 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	**1'7.3"**
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. D5M LGP equipped with UPAT-blade and Power Shift Transmission.
NOTE: Letters correspond to ripper dimension drawings.

TRACTOR/RIPPER	D6R		D6R XL		D7R	
Ripper Type	**Parallelogram**		**Parallelogram**		**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.

TRACTOR/RIPPER	D8R		D9R	
	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	**NA**	**NA**	**NA**	**NA**
B Without Pushblock	1.58 m **5'2"**	1.46 m **4'9"**	1.57 m **5'2"**	1.33 m **4'4"**
Ripper length behind track, shank vertical, ripper down				
C With Pushblock	**NA**	**NA**	**NA**	**NA**
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°**	**10.57°**	**10°**
K Backward	**9.9°**	**10°**	**15.17°**	**15.10°**
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°**	**36.89°**	**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	**NA**	2.46 m **8'1"**	**NA**	2.64 m **8'8"**
P Height	**NA**	334 mm **13.1"**	**NA**	380 mm **15"**
Q Length	**NA**	457 mm **18"**	**NA**	457 mm **18"**
Clearance under beam, shank vertical				
R Ripper Up	**NA**	1.55 m **5'1"**	**NA**	1.77 m **5'10"**
S Ripper Down	**NA**	449 mm **17.7"**	**NA**	378 mm **14.9"**
Number of Pockets	**1**	**3**	**1**	**3**
T Pocket Spacing	**NA**	1092 mm **3'7"**	**NA**	1180 mm **3'10.4"**
U Shank Gauge	**NA**	2.17 m **7'1"**	**NA**	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	**NA**	332 kg **730 lb**	**NA**	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 and D9R single shank rippers. Hydraulic pin puller is standard with deep ripping shank.

D8R Deep Ripping Arrangement maximum digging depth is 1.57 m **(5'2").**
D9R Deep Ripping Arrangement maximum digging depth is 1.66 m **(5'5").**

**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.
NA — Not Applicable.

TRACTOR/RIPPER	D10R		D11R		D11R C.D.
	Adjustable Parallelogram		Adjustable Parallelogram		
Ripper Type	Single Shank	Multishank	Single Shank	Multishank	Single Shank
Dimensions:					
Ripper to Track					
Ripper length behind track, shank vertical, ripper up (A)					
A With Pushblock	2.08 m **6'10"**	**NA**	2.19 m **7'2"**	**NA**	**NA**
B Without Pushblock	1.76 m **5'9"**	1.56 m **5'1"**	1.85 m **6'1"**	1.92 m **6'4"**	2.04 m **6'8"**
Ripper length behind track, shank vertical, ripper down (A)					
C With Pushblock	2.48 m **8'2"**	**NA**	2.59 m **8'6"**	**NA**	**NA**
D Without Pushblock	2.16 m **7'1"**	1.96 m **6'5"**	2.29 m **7'6"**	1.92 m **6'4"**	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"**	651 mm **2'1.6"**	622 mm **2'0.5"**
F Ripper Down	1130 mm **3'8.5"**	1050 mm **3'5.3"**	1041 mm **3'5"**	1030 mm **3'4.6"**	1041 mm **3'5"**
Ripper Shank*					
G Maximum digging depth	1370 mm **4'5.9"**	941 mm **3'1"**	1612 mm **5'3.5"**	1070 mm **3'6.1"**	1612 mm **5'3.5"**
H Dig adjustment per hole	355 mm **14"**	250 mm **10"**	280 mm **11"**	280 mm **11"**	280 mm **11"**
I Total dig adjustment	710 mm **2'4"**	250 mm **10"**	840 mm **2'9.1"**	280 mm **11"**	840 mm **2'9.1"**
Pitch Adjustment, ripper down:					
J Forward	**18°**	**18°**	**15°**	**15°**	**15°**
K Backward	**19.7°**	**19.7°**	**18.3°**	**18.5°**	**18.3°**
L Maximum reach at ground line	1.50 m **4'11"**	1.36 m **4'6"**	1.73 m **5'8"**	1.57 m **5'2"**	1.73 m **5'8"**
M Maximum ground clearance under tooth (shank pinned in bottom hole)	1070 mm **3'6.1"**	1070 mm **3'6.1"**	1115 mm **3'7.9"**	1137 mm **3'8.8"**	1115 mm **3'7.9"**
N Maximum ramp angle, ripper up (shank pinned in bottom hole)	**36.9°**	**37.5°**	**33.9°**	**37.1°**	**33.9°**
Shank Section	100 × 400 mm **4" × 15.75"**	90 × 355 mm **3.5" × 14"**	110 × 450 mm **4.3" × 17.7"**	100 × 400 mm **3.9" × 15.7"**	110 × 450 mm **4.3" × 17.7"**
Ripper Beam					
O Overall width	**NA**	2.92 m **9'7"**	**NA**	3.33 m **10'11"**	**NA**
P Height	**NA**	460 mm **18.1"**	**NA**	560 mm **1'10"**	**NA**
Q Length	**NA**	485 mm **1'7.1"**	**NA**	560 mm **1'10"**	**NA**
Clearance under beam, shank vertical					
R Ripper Up	**NA**	2.03 m **6'8"**	**NA**	2.06 m **6'9"**	**NA**
S Ripper Down	**NA**	380 mm **15"**	**NA**	282 mm **11.1"**	**NA**
Number of Pockets	**1**	**3**	**1**	**3**	**1**
T Pocket Spacing	**NA**	1320 mm **4'4"**	**NA**	1500 mm **5'9"**	**NA**
U Shank Gauge	**NA**	2.63 m **8'8"**	**NA**	2.99 m **9'10"**	**NA**
V Track Clearance with standard shoe	97 mm **4"**	97 mm **4"**	141 mm **5.6"**	166 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"**	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**	9698 kg **21,335 lb**	13 584 kg **29,885 lb**
Each additional tooth group	**NA**	524 kg **1155 lb**	**NA**	671 kg **1489 lb**	**NA**
Ripper Forces:**					
Penetration Force, shank vertical	205 000 N **45,980 lb**	205 000 N **45,980 lb**	279 865 N **62,890 lb**	265 265 N **59,610 lb**	318 440 N **71,560 lb**
Pryout Force, shank vertical	429 000 N **96,360 lb**	429 000 N **96,360 lb**	657 845 N **147,830 lb**	643 895 N **144,695 lb**	619 260 N **139,160 lb**

*Deep Ripping Shank is available for D10R & D11R 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 D10R and 2.18 m **(7'2")** for D11R.
**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.
NA — Not Applicable.

TRACTOR/RIPPER	D4E SR/No. 4		D5E/No. 5		D6G/No. 6		D7G/No. 7	
Ripper Type	**Parallelogram**		**Parallelogram**		**Parallelogram**		**Parallelogram**	
Dimensions:								
Ripper Shank								
G Maximum digging depth	400 mm	**16"**	478 mm	**1'7"**	530 mm	**1'8.9"**	737 mm	**2'5"**
L Maximum reach at ground line	640 mm	**2'1"**	640 mm	**2'1"**	551 mm	**1'9.7"**	994 mm	**3'3.1"**
M Maximum ground clearance under tip (shank pinned in bottom hole)	297 mm	**12"**	297 mm	**12"**	218 mm	**8.6"**	462 mm	**18.2"**
N Maximum ramp angle, ripper up (shank pinned in bottom hole)	**20°**		**20°**		**16°**		**21°**	
Shank Section	61 × 140 mm **2.4" × 5.5"**		61 × 140 mm **2.4" × 5.5"**		76 × 178 mm **3" × 7"**		72 × 228 mm **2.8" × 9"**	
Ripper Beam								
O Overall width	1.98 m	**6'6"**	2.34 m	**7'8"**	2.34 m	**7'8"**	2.21 m	**7'3"**
P Height	140 mm	**5.5"**	140 mm	**5.5"**	214 mm	**8.4"**	279 mm	**11"**
Q Length	171 mm	**7"**	171 mm	**7"**	254 mm	**10"**	343 mm	**13.5"**
Number of Pockets	**5**		**5**		**5**		**3**	
T Pocket Spacing	432 mm	**17"**	432 mm	**17"**	536 mm	**1'9.1"**	991 mm	**3'3"**
U Shank Gauge	1.74 m	**5'8"**	1.74 m	**5'8"**	2.15 m	**7'1"**	1.98 m	**6'6"**
V Track clearance with standard shoe	60 mm	**2"**	60 mm	**2"**	213 mm	**8.4"**	185 mm	**7.3"**
Installed weights:								
Ripper with standard shank	1080 kg	**2376 lb**	1380 kg	**3036 lb**	1500 kg	**3300 lb**	2429 kg	**5344 lb**
Each additional shank	31 kg	**68 lb**	64 kg	**141 lb**	64 kg	**141 lb**	155 kg	**341 lb**

NOTE: Letters correspond to ripper dimension drawings.

TIP SELECTION FOR THE D8R, D9R, D10R AND D11R 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.

	Tips to use		
Ripping Condition	**D8R/ D9R**	**D10R**	**D11R**
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 — D10R — No. 10 with one shank.
910 mm (36 in) between passes.
1.6 km/h (1 mph) average speed (including slippage 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 $\frac{91\text{ m}}{26.7\text{ m/min}} = 3.41$ 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 m × 0.9 m × 0.6 m = 49.1 BCM per pass

Production = 49.1 × 12.3 = 604 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 $\frac{300\text{ ft}}{88\text{ fpm}} = 3.41$ 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: $\frac{300 \times 3 \times 2}{27} = 66.7$ BCY per pass

Production = 66.7 × 12.3 = 820 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	— D10R 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 min

   Cycles/hour = $\frac{60\text{ min/hr}}{3.66\text{ min/cycle}} = 16.4$

2. Production per cycle = 91 m × 0.9 m × 0.6 m = 49.1 BCM/cycle
3. Production = 49.1 BCM/cycle × 16.4 cycles/h = 805 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

   A D10R (ripping only) could have a $115.00/h O & O costs including $30/h operator.
6. Loosening Costs

   $115.00/hr ÷ 644 BCM/h = $0.179/BCM

   $115.00/hr ÷ 725 BCM/h = $0.159/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	— D10R 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	— 6,000 feet per second

Assume 60 min. hour

Solution:

1. Total Cycle Time = 3.41 + 0.25 = 3.66 min

   $$\text{Cycles/hour} = \frac{60 \text{ min/hr}}{3.66 \text{ min/cycle}} = 16.4$$

2. $$\text{Production per cycle} = \frac{300 \times 3 \times 2}{27} = 66.7 \text{ BCY/cycle}$$

3. Production = 66.7 BCY/cycle × 16.4 cycles/hr
   = 1094 BCY/hour
4. Remember results of this method are usually 10 to 20% high.
   Actual Production = 80% × 1094
   = 875 BCY/hr
   or 90% × 1094 = 984 BCY/hr
5. Owning and Operating Costs
   A D10R (ripping only) could have a $115.00/hr O & O cost including $30/hr operator
6. Loosening Costs
   $115.00/hr ÷ 875 BCY/hr = $0.131/BCY
   $115.00/hr ÷ 984 BCY/hr = $0.117/BCY
   The loosening cost should range from 11.7¢ to 13.1¢/BCY

●●●

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.

— 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.

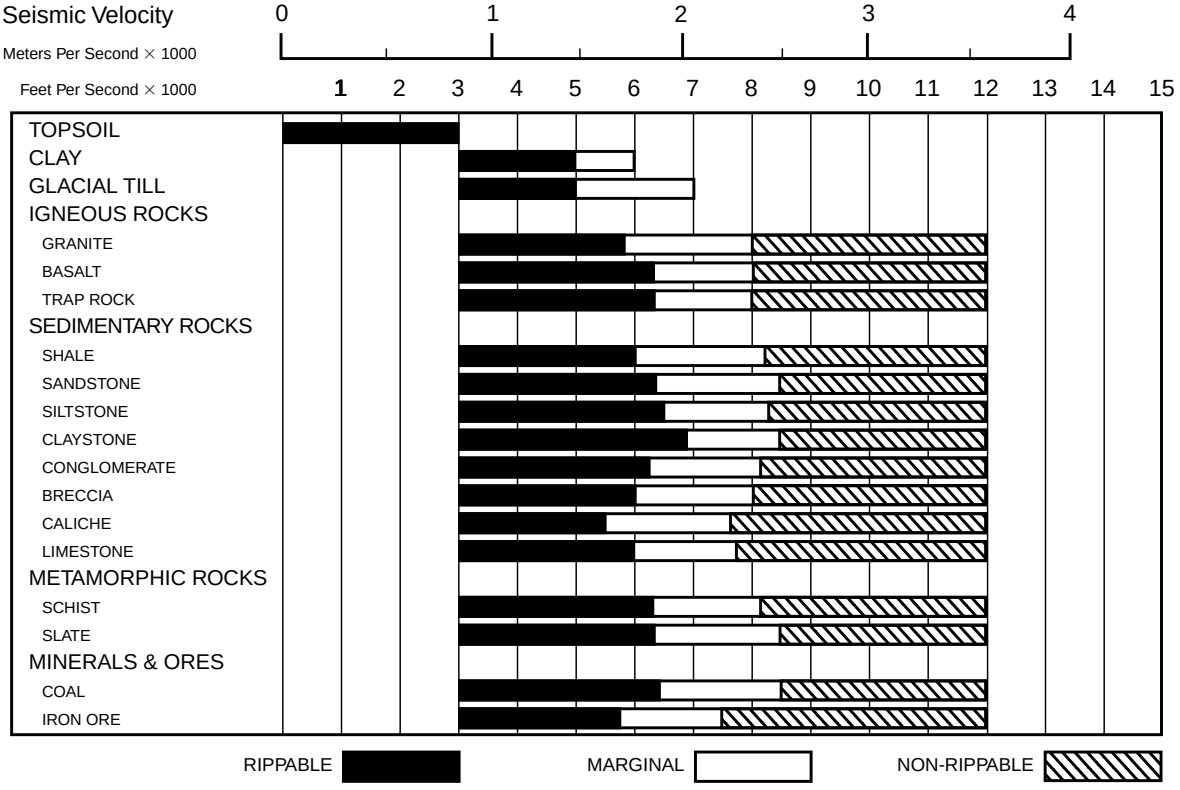
— Pre-blasting or "popping" may induce sufficient fracturing to permit tooth entry, particularly in the caliches, conglomerates and some other rocks; but the economics should be checked carefully when considering popping in the higher grades of sandstones, limestones and granites.

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.

NOTE: Field Seismic Information shown in the following charts is the best single indication of rippability. However, Caterpillar does not rely on any single parameter to select the best machine for your particular operation and rock type. Field Seismic Information is just one aspect of a complete rippability analysis that can be obtained through your Caterpillar dealer. A Caterpillar rippability analysis includes a geological site survey, field seismic velocity measurements, laboratory analysis of rock properties and an equipment investment analysis. Contact your Caterpillar dealer for a complete rippability analysis.

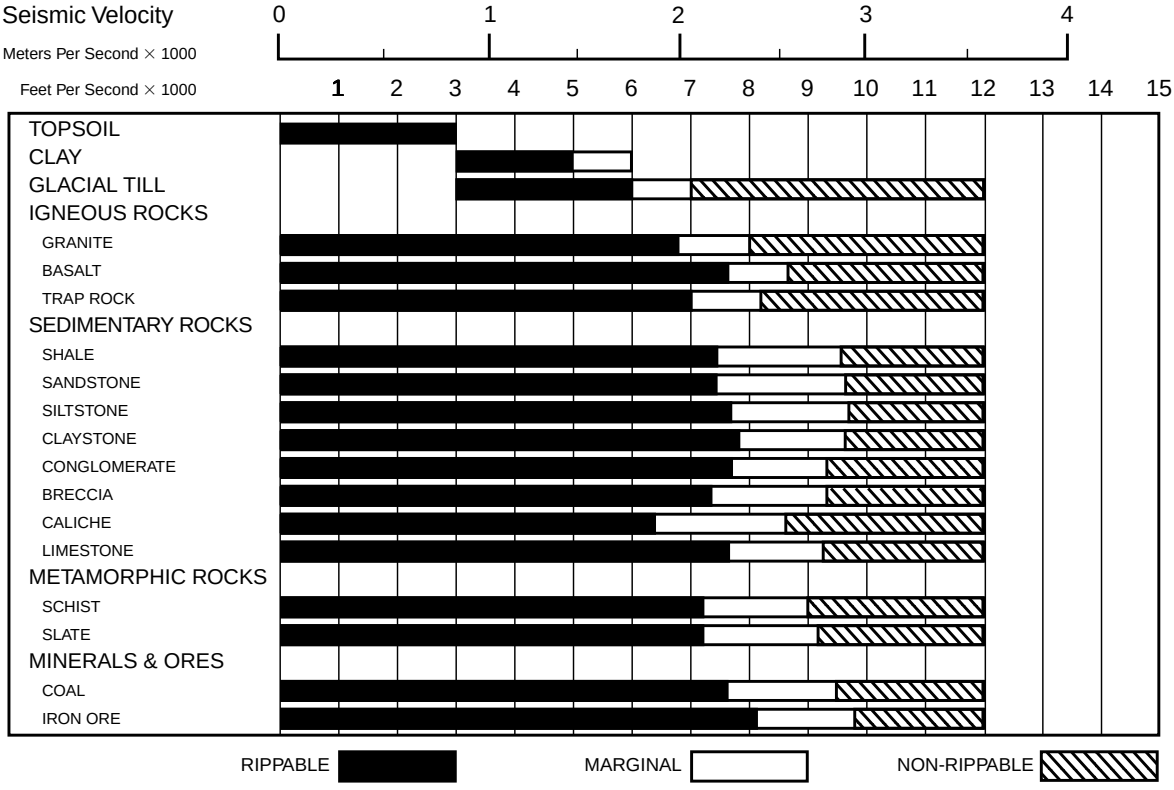
D8R

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



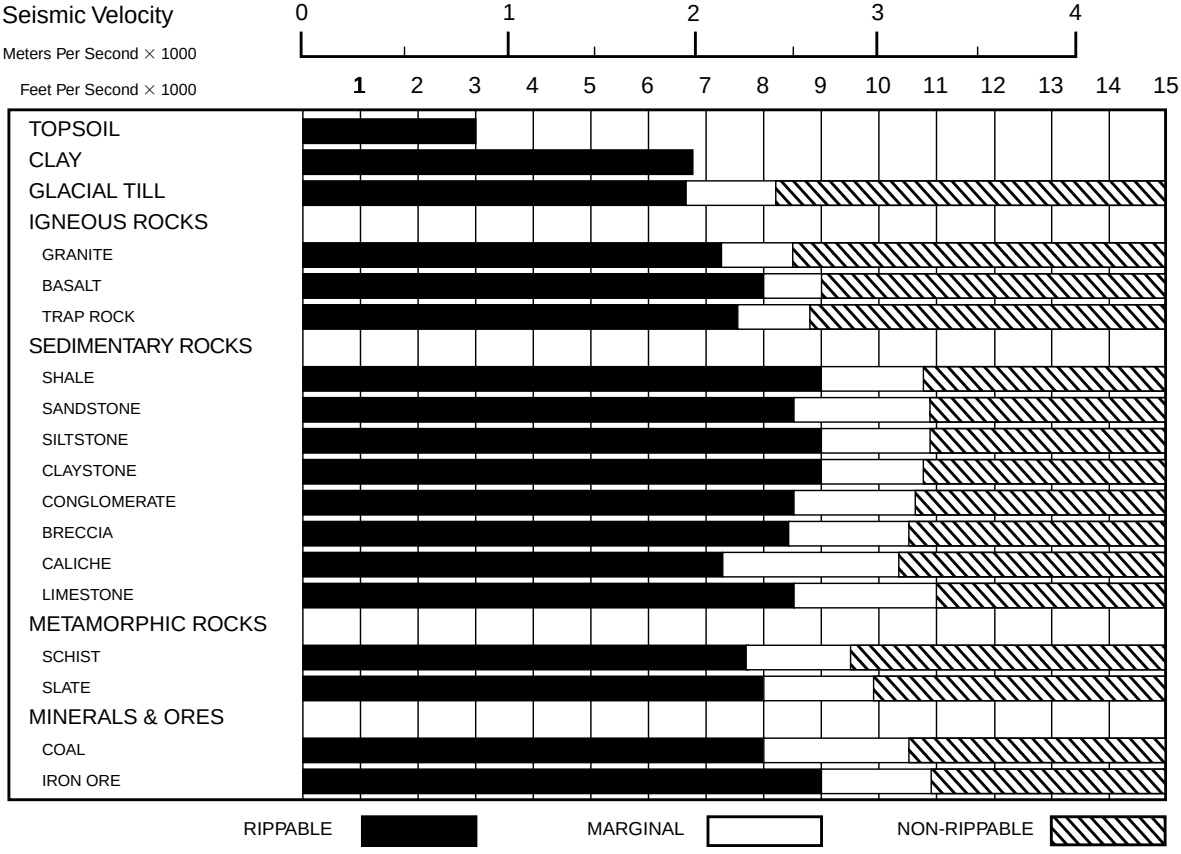
D9R

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



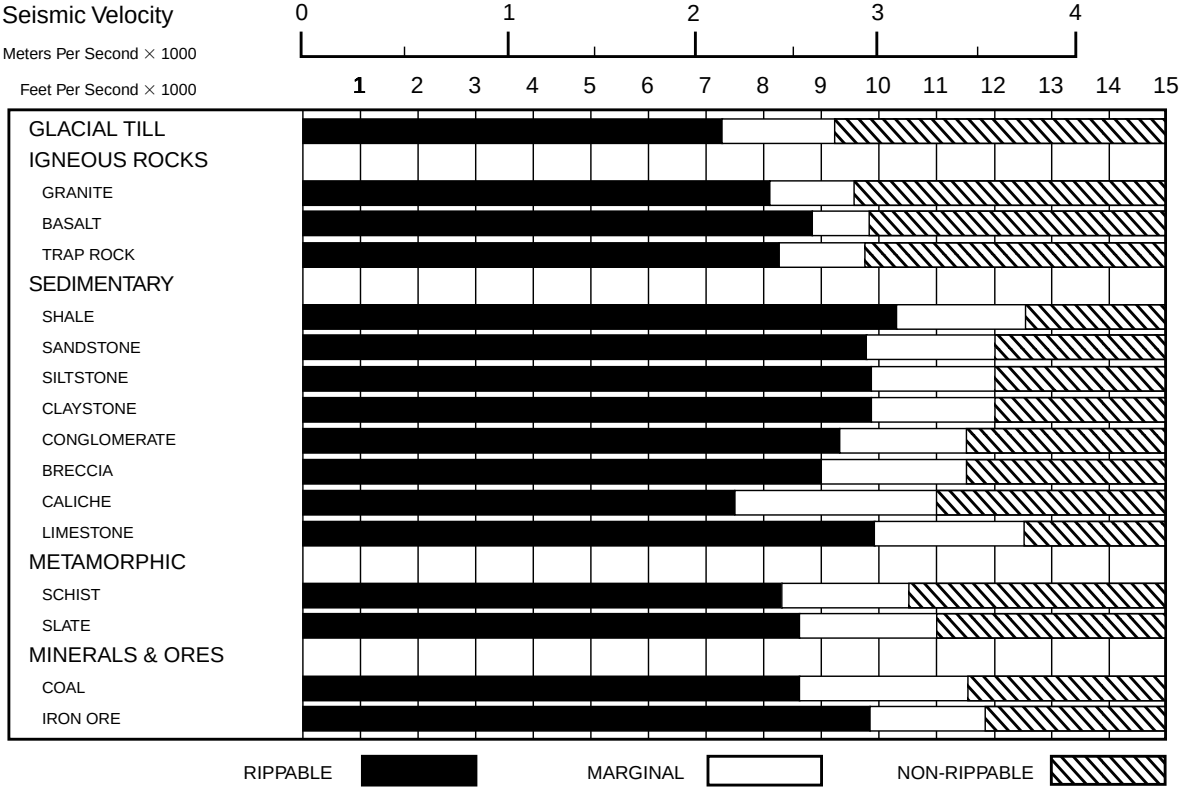
D10R

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



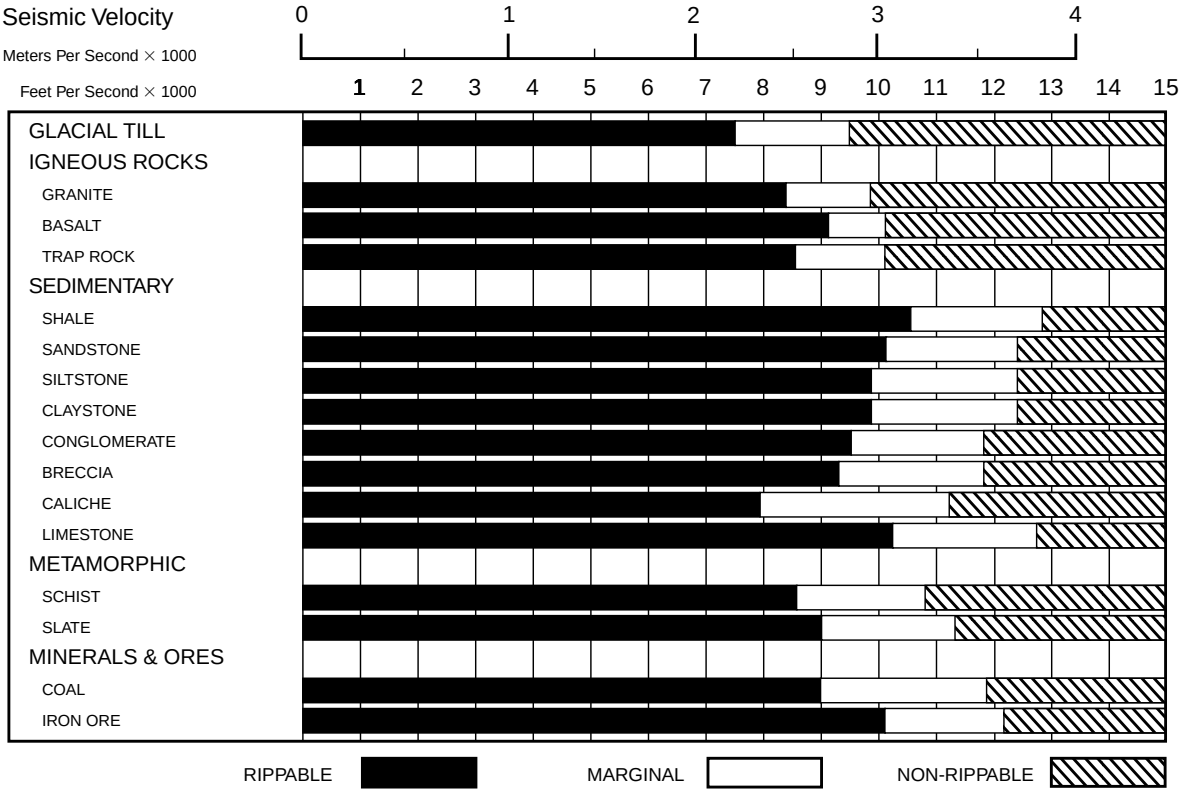
D11R

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



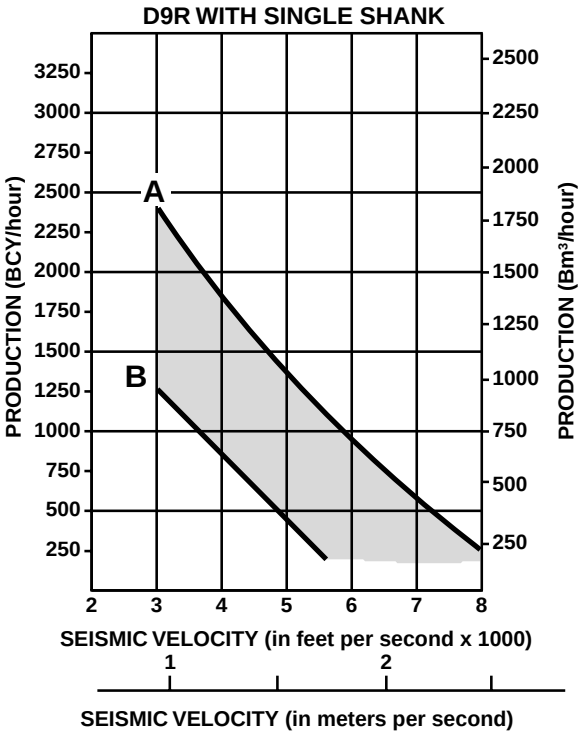
D11R C.D.

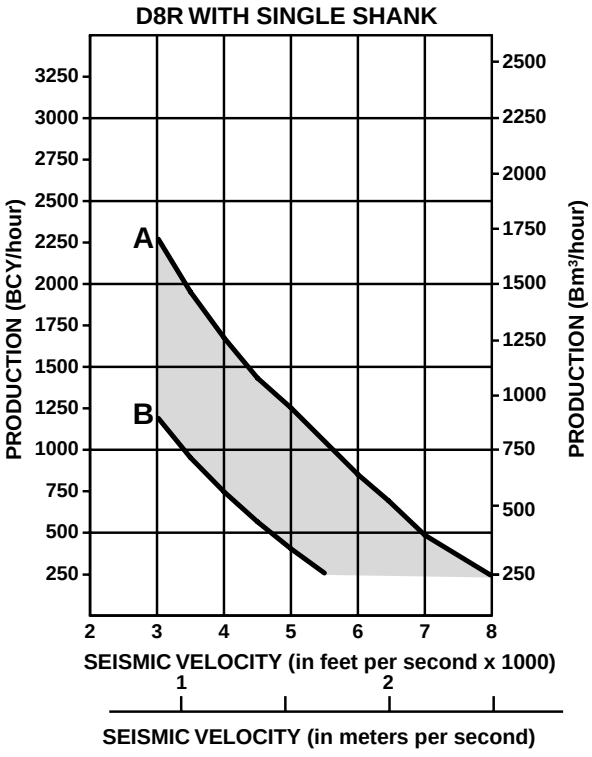
- **Single Shank No. 11 Ripper**
- **Estimated by Seismic Wave Velocities**



CONSIDERATIONS FOR USING PRODUCTION ESTIMATED GRAPHS:

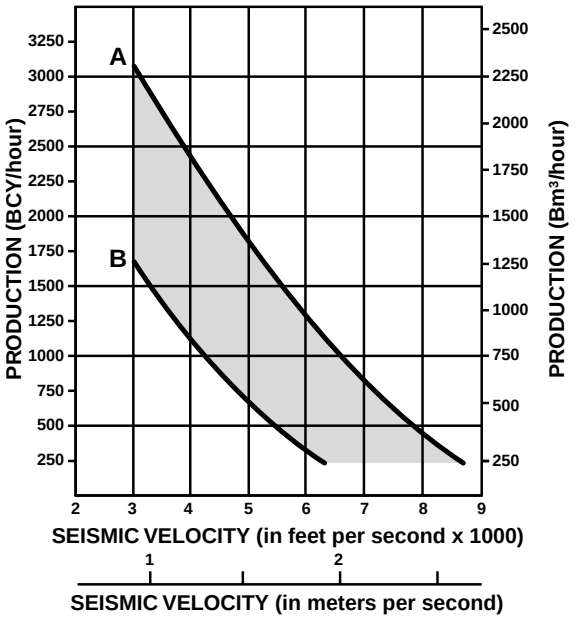
- Machine rips full-time — no dozing.
- Power shift tractors with single shank rippers.
- 100% efficiency (60 min hour).
- Charts are for all classes of material.
- In igneous rock with seismic velocity of 8000 fps or higher for the D11R, and 6000 fps or higher for the D10R, D9R and D8R, the production 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.



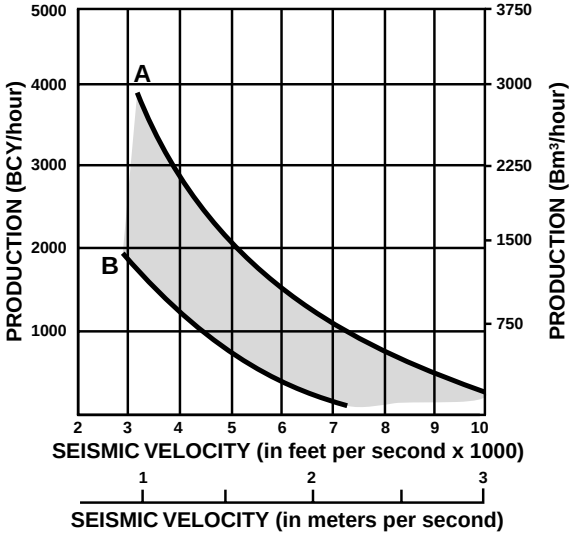


KEY
A — IDEAL
B — ADVERSE

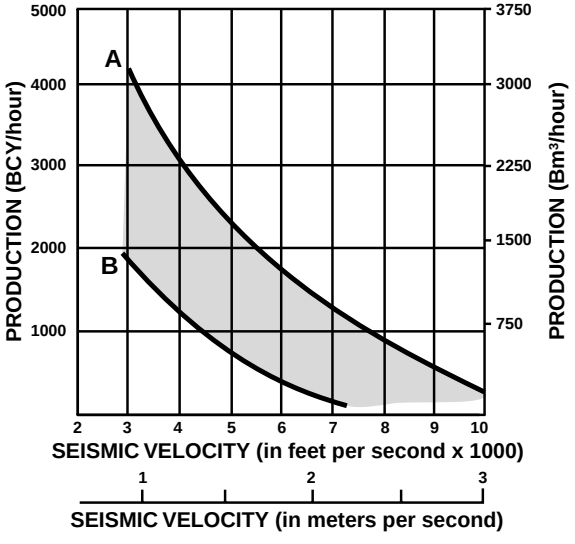
D10R WITH SINGLE SHANK



D11R WITH SINGLE SHANK



D11R C.D. WITH SINGLE SHANK



KEY

A — IDEAL
B — ADVERSE

WINCHES

CONTENTS

PA55 & PA56 Standard Features:

- **Rigid cast ductile case** with integral fairlead mounting lugs and heavy duty drawbar provides durable construction for long life and maximum resale value.
- **Internal Hydraulic System** with gear pump and maintenance free spring type accumulator for easy installation and maintenance.
- **Equal speed gearing** in forward and reverse to provide smooth and predictable performance.
- **Single lever control,** electronic on PA56 or cable control on PA55 for hydraulically actuated multiple disc clutches, brake, and freespool for ease of operation.
- **Freespool with drag adjustment** so the operator can easily pull wire rope from the drum by hand, permitting fast one man operation.

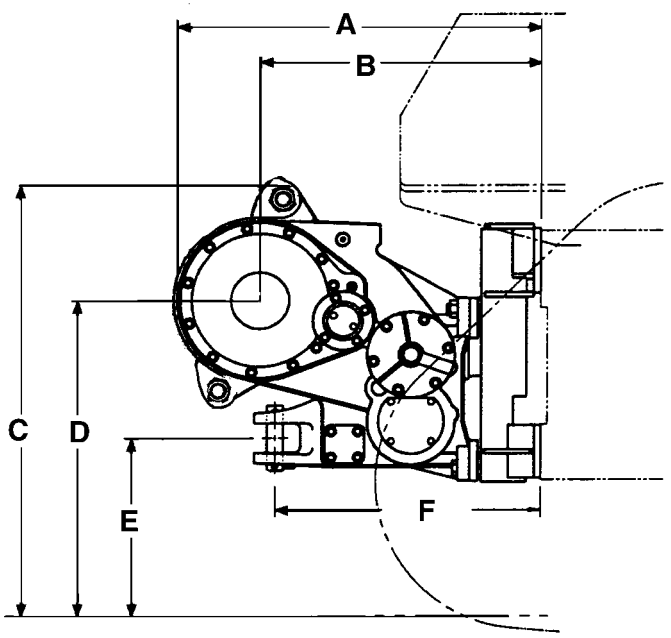
PA57G & Cat 59 Standard Features:

- **Adjust-free oil-disc clutches** in winch assure reliable performance day-in, day-out.
- **Input clutch** reduces parasitic horsepower loss for improved fuel efficiency.
- **Single-lever actuation** of both clutch and brake functions … automatic synchronization of input and directional clutch engagement for smooth control.
- **Equal speed gearing** in reel-in and reel-out to provide smooth and predictable performance.

PA57VS, PA58VS & PA59VS Standard Features:

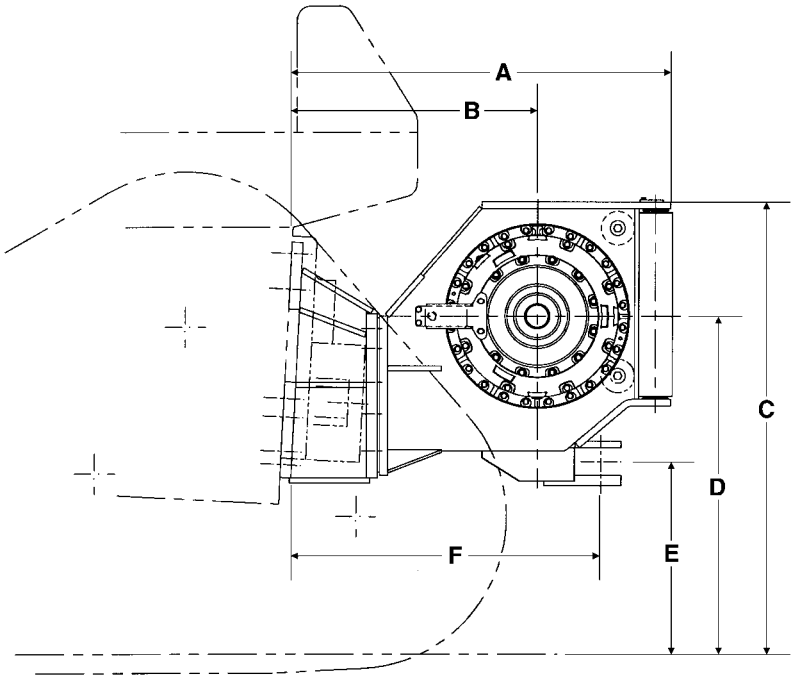
- **Variable** line pull and line speed.
- **Hydraulically driven winch** for precise load control in reel-in or reel-out.
- **Inching control** through modulation of variable displacement pump and motor.
- **Dual braking system** provides a static brake with a sprag clutch to eliminate fall back and a brake valve for dynamic braking.
- **Single lever joy stick control** for ease of operation and reliable performance with no cable nor linkage adjustments.
- **Three roller fairlead** is standard for improved wire rope life during side pulls.

PA55 & PA56



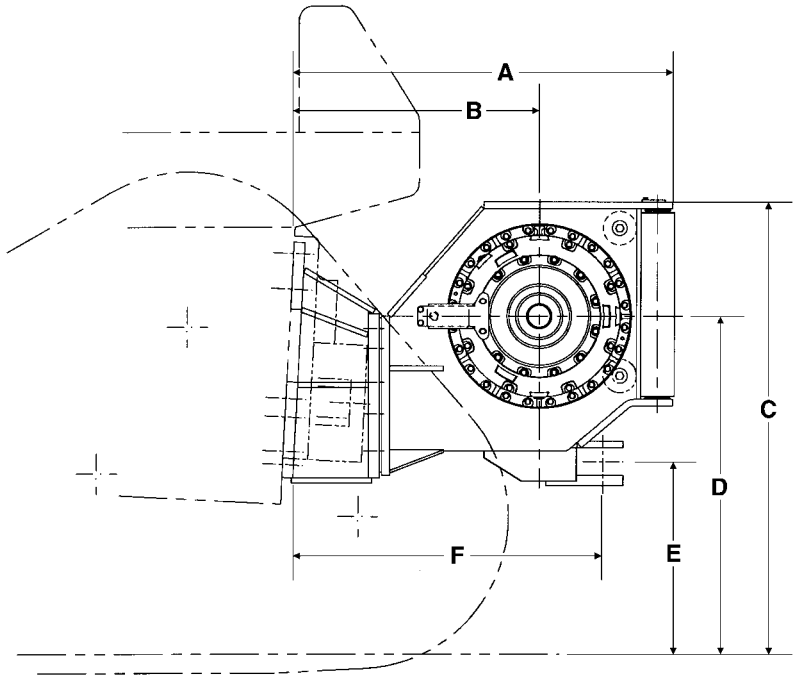
WINCH MODEL	PA55							
TRACTOR MODEL	**D5M XL**		**D5M LGP**		**D6M XL**		**D6M LGP**	
Transmission	PS		PS & DD					
A Tractor to rear of winch	1120 mm	**3'8.1"**	1120 mm	**3'8.1"**	1120 mm	**3'8.1"**	1120 mm	**3'8.1"**
B Tractor to drum centerline	866 mm	**2'10.1"**	866 mm	**2'10.1"**	866 mm	**2'10.1"**	866 mm	**2'10.1"**
C Ground to top of winch	1328 mm	**4'4.3"**	1380 mm	**4'6.3"**	1396 mm	**4'7"**	1511 mm	**4'11.5"**
D Ground to drum centerline	960 mm	**3'1.8"**	1012 mm	**3'3.8"**	1028 mm	**3'4.5"**	1142 mm	**3'9"**
E Ground to center of hitch	526 mm	**1'8.7"**	578 mm	**1'10.7"**	594 mm	**1'11.4"**	708 mm	**2'3.9**"
F Tractor to pin centerline	818 mm	**2'8.2"**	818 mm	**2'8.2"**	818 mm	**2'8.2"**	818 mm	**2'8.2"**
Overall width (not shown)	1080 mm	**3'6.5"**	1080 mm	**3'6.5"**	1080 mm	**3'6.5"**	1080 mm	**3'6.5"**
Drum diameter (not shown)	254 mm	**10"**	254 mm	**10"**	254 mm	**10"**	254 mm	**10"**
Weight*	1276 kg	**2810 lb**	1276 kg	**2810 lb**	1276 kg	**2814 lb**	1276 kg	**2814 lb**
Oil refill capacity	74 L	**19.5 U.S. gal**	74 L	**19.5 U.S. gal**	74 L	**19.55 U.S. gal**	74 L	**19.55 U.S. gal**
Wire rope diameter:								
Recommended	16 mm	**0.63"**	16 mm	**0.63"**	19 mm	**0.75"**	19 mm	**0.75"**
Optional	19 mm	**0.75"**	19 mm	**0.75"**	22 mm	**0.87"**	22 mm	**0.87"**
Drum capacity:								
Recommended rope	177 m	**581'**	177 m	**581'**	122 m	**400'**	122 m	**400'**
Optional rope	122 m	**400'**	122 m	**400'**	88 m	**289'**	88 m	**289'**
Wire rope ferrule size (OD × length)	54 × 65 mm	**2.13 × 2.56"**	54 × 65 mm	**2.13 × 2.56"**	54 × 65 mm	**2.13 × 2.56"**	54 × 65 mm	**2.13 × 2.56"**

*Includes pump, operator controls, oil, mounting brackets, spacers and wire rope.



WINCH MODEL	PA56		PA57G		PA57VS	
TRACTOR MODEL	**D6R**		**D7G**		**D7R**	
A Tractor to rear of winch	1200 mm	**3'11.2"**	973 mm	**3'2.3"**	1435 mm	**4'8.5"**
B Tractor to drum centerline	945 mm	**3'1.2"**	693 mm	**2'3.3"**	940 mm	**3'1"**
C Ground to top of winch	1475 mm	**4'10.1"**	1570 mm	**5'1.7"**	1570 mm	**5'1.8"**
D Ground to drum centerline	1110 mm	**3'7.6"**	1176 mm	**3'10.3"**	1130 mm	**3'8.5"**
E Ground to center of hitch	680 mm	**2'2.7"**	610 mm	**2'0"**	579 mm	**1'10.8"**
F Tractor to pin centerline	915 mm	**3'0"**	752 mm	**2'5.6"**	1216 mm	**3'11.9"**
Overall width (not shown)	975 mm	**3'2.3"**	1148 mm	**3'9.2"**	1158 mm	**3'9.6"**
Drum diameter (not shown)	254 mm	**10"**	305 mm	**12"**	318 mm	**12.5"**
Weight*	1135 kg	**2503 lb**	1727 kg	**3800 lb**	1790 kg	**3950 lb**
Oil refill capacity	67 L	**17.75 U.S. gal**	81 L	**21.5 U.S. gal**	15 L	**4 U.S. gal**
Wire rope diameter:						
Recommended	22 mm	**0.88"**	25 mm	**1"**	29 mm	**1.13"**
Optional	25 mm	**1"**	29 mm	**1.13"**	32 mm	**1.25"**
Drum capacity:						
Recommended rope	88 m	**290'0"**	73 m	**239'0"**	84 m	**276'0"**
Optional rope	67 m	**220'0"**	58 m	**190'0"**	59 m	**193'0"**
Wire rope ferrule size (OD × length)	54 × 67 mm	**2.10 × 2.63"**	60 × 70 mm	**2.38 × 2.75"**	60 × 70 mm	**2.38 × 2.75"**

*Operating weight includes pump and operator controls.



WINCH MODEL	PA58VS		PA59VS		59	
TRACTOR MODEL	**D8R**		**D9R**		**D10R**	
A Tractor to rear of winch	1435 mm	**4'8.5"**	1552 mm	**5'1.1"**	1247 mm	**4'1.1"**
B Tractor to drum centerline	940 mm	**3'1"**	1041 mm	**3'5"**	942 mm	**3'1.1"**
C Ground to top of winch	1712 mm	**5'7.4"**	1738 mm	**5'8.4"**	1787 mm	**5'10.4"**
D Ground to drum centerline	1273 mm	**4'2.1"**	1298 mm	**4'3.1"**	1480 mm	**4'10.3"**
E Ground to center of hitch	721 mm	**2'4.4"**	747 mm	**2'5.4"**	892 mm	**2'11.1"**
F Tractor to pin centerline	1216 mm	**3'11.9"**	1282 mm	**4'2.5"**	1000 mm	**3'3.4"**
Overall width (not shown)	1158 mm	**3'9.6"**	1158 mm	**3'9.6"**	1564 mm	**5'1.6"**
Drum diameter (not shown)	318 mm	**12.5"**	318 mm	**12.5"**	330 mm	**13"**
Weight*	1790 kg	**3950 lb**	1860 kg	**4100 lb**	2184 kg	**4805 lb**
Oil refill capacity	15 L	**4 U.S. gal**	15 L	**4 U.S. gal**	70 L	**18.5 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	84 m	**276'0"**	84 m	**276'**	69 m	**226'**
Optional rope	59 m	**193'0"**	59 m	**193'**	55 m	**180'**
Wire rope ferrule size (OD 3 length)	60 × 70 mm	**2.38 × 2.75"**	60 × 70 mm	**2.38 × 2.75"**	60 × 70 mm	**2.38 × 2.75"**

*Operating weight includes pump and operator controls.

WINCH MODEL		PA55		PA56	PA57G
TRACTOR MODEL		**D5M**	**D6M**	**D6R**	**D7G**
British Units of Measure *Standard speed gearing*					
Winch Drive		PTO	PTO	PTO	PTO
Bare Drum	Rated Linepull ....lbs	26,730	37,510	54,180	53,939
	Maximum linepull* ....lbs	51,200	69,200	89,800	103,794
	Rated linespeed ....fpm	97	94	78	89
	Maximum linespeed ....fpm	151	143	122	159
Full Drum	Rated linepull ....lbs	15,020	21,080	31,570	33,712
	Maximum linepull ....lbs	36,760	53,590	64,970	64,871
	Rated linespeed ....fpm	173	168	134	143
	Maximum linespeed ....fpm	269	254	209	254
Slow/Low speed gearing					
Bare Drum	Rated linepull* ....lbs	51,200	69,200	89,800	113,000
	Maximum linepull* ....lbs	51,200	69,200	89,800	113,000
	Rated linespeed ....fpm	41	39	35	37
	Maximum linespeed ....fpm	63	60	55	66
Full Drum	Rated linepull ....lbs	36,020	50,570	69,340	81,429
	Maximum linepull* ....lbs	51,200	69,200	89,800	113,000
	Rated linespeed ....fpm	72	70	61	59
	Maximum linespeed ....fpm	112	106	95	105
Tractor rating		110 hp @ 2100 rpm	140 hp @ 2200 rpm	165 hp @ 1800 rpm	200 hp @ 2000 rpm
Metric Units of Measure *Standard speed gearing*					
Bare Drum	Rated Linepull ....kg	12 120	17 014	24 576	24 446
	Maximum linepull* ....kg	23 245	31 417	40 733	47 080
	Rated linespeed ....mpm	30	29	24	27
	Maximum linespeed ....mpm	46	44	37	48
Full Drum	Rated linepull ....kg	6813	9562	14 320	15 292
	Maximum linepull ....kg	16 674	24 471	29 470	29 425
	Rated linespeed ....mpm	53	51	41	44
	Maximum linespeed ....mpm	82	77	64	77
Slow/Low speed gearing					
Bare Drum	Rated linepull* ....kg	23 245	31 417	40 733	51 256
	Maximum linepull* ....kg	23 245	31 417	40 733	51 256
	Rated linespeed ....mpm	12	12	11	11
	Maximum linespeed ....mpm	19	18	17	20
Full Drum	Rated linepull ....kg	16 338	22 938	31 453	36 935
	Maximum linepull* ....kg	23 245	31 417	40 733	51 256
	Rated linespeed ....mpm	22	21	19	18
	Maximum linespeed ....mpm	34	32	29	32
Tractor rating		82 kW @ 2100 rpm	104 kW @ 2200 rpm	123 kW @ 1800 rpm	149 kW @ 2000 rpm

*Maximum linepull limited by breaking strength of the optional (larger diameter) wire rope.
Winch linepull and linespeed ratings are based on gear train mechanical efficiency of 90%.

WINCH MODEL		PA57VS		PA58VS	PA59VS	59
TRACTOR MODEL		**D7R Diff. Steer**	**D7R Power Shift**	**D8R**	**D9R**	**D10**
British Units of Measure *Standard speed gearing*						
Winch Drive		HYD	HYD	HYD	HYD	PTO
Bare Drum	Rated linepull .....lbs	35,960	—	—	–	122,110
	Maximum linepull .....lbs	109,657	—	—	–	139,000*
	Rated linespeed .....fpm	132	—	—	–	116
	Maximum linespeed ....fpm	167	—	—	–	149
Full Drum	Rated linepull .....lbs	22,820	—	—	–	82,620
	Maximum linepull .....lbs	69,587	—	—	–	139,000*
	Rated linespeed .....fpm	208	—	—	–	171
	Maximum linespeed ....fpm	264	—	—	–	221
Slow/Low speed gearing						
Bare Drum	Rated linepull .....lbs	107,800	101,200	109,700	120,200	139,000*
	Maximum linepull .....lbs	107,800	101,200	109,700	120,200	139,000*
	Rated linespeed .....fpm	32	22	30	33	63
	Maximum linespeed ....fpm	95	63	61	62	81
Full Drum	Rated linepull .....lbs	69,700	65,500	71,000	72,400	139,000*
	Maximum linepull .....lbs	69,700	65,500	71,000	72,400	139,000*
	Rated linespeed .....fpm	49	35	46	55	97
	Maximum linespeed ....fpm	147	79	95	104	121
Tractor rating		240 hp @ 2100 rpm	240 hp @ 2100 rpm	305 hp @ 2100 rpm	405 hp @ 1900 rpm	570 hp @ 1900 rpm
Metric Units of Measure *Standard speed gearing*						
Bare Drum	Rated linepull .....kg	16 326	—	—	–	55 389
	Maximum linepull .....kg	49 784	—	—	–	63 106*
	Rated linespeed .....mpm	40	—	—	–	35
	Maximum linespeed ...mpm	51	—	—	–	46
Full Drum	Rated linepull .....kg	10 360	—	—	–	37 476
	Maximum linepull .....kg	31 592	—	—	–	63 106*
	Rated linespeed .....mpm	63	—	—	–	52
	Maximum linespeed ...mpm	81	—	—	–	67
Slow/Low speed gearing						
Bare Drum	Rated linepull .....kg	48 941	45 945	49 804	54 571	63 106*
	Maximum linepull .....kg	48 941	45 945	49 804	54 571	63 106*
	Rated linespeed .....mpm	10	7	9	10	19
	Maximum linespeed ...mpm	29	16	19	19	25
Full Drum	Rated linepull .....kg	31 644	29 737	32 234	32 870	63 106*
	Maximum linepull .....kg	31 644	29 737	32 234	32 870	63 106*
	Rated linespeed .....mpm	15	11	14	17	30
	Maximum linespeed ...mpm	45	24	29	32	37
Tractor rating		179 kW @ 2100 rpm	197 kW @ 2100 rpm	228 kW @ 2100 rpm	302 kW @ 1900 rpm	425 kW @ 1900 rpm

*Maximum linepull limited by breaking strength of the optional (larger diameter) wire rope.
Winch linepull and linespeed ratings are based on gear train mechanical efficiency of 90%.

TOWED SCRAPERS

PRODUCTION BASIS FOR ALL TABLES IN THIS SECTION:

- Material 1780 kg/m³ (3000 lb/yd³).
- 60 minute hour.
- Total resistance 100 kg/metric ton ~ (200 lb/U.S. ton).
- Scraper load per trip estimated at rated struck capacity.

- All hydraulic
- Manufactured by Rome Industries

SCRAPER & TRACTOR	Struck Capacity		Haul 120 m 400'		Haul 180 m 600'		Haul 250 m 800'		Haul 300 m 1000'	
Push Loaded			Estimated Hourly Production							
R56H	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**
D6M (Power Shift)	6.9	**9.0**	107	**140**	88	**115**	75	**98**	66	**86**
D6M (Direct Drive)	6.9	**9.0**	101	**132**	83	**109**	71	**93**	61	**80**
D5B (Power Shift)	6.9	**9.0**	105	**138**	86	**113**	74	**96**	63	**83**
D5B (Direct Drive)	6.9	**9.0**	104	**136**	87	**114**	75	**98**	65	**85**
D6R (Power Shift)	6.9	**9.0**	125	**164**	102	**133**	86	**113**	75	**98**
D6R (Direct Drive)	6.9	**9.0**	128	**168**	108	**141**	93	**121**	82	**107**
D6D (Power Shift)	6.9	**9.0**	123	**161**	99	**130**	84	**110**	73	**95**
D6D (Direct Drive)	6.9	**9.0**	125	**163**	104	**136**	89	**116**	78	**102**
Self Loaded										
D6M (Power Shift)	6.9	**9.0**	95	**124**	80	**104**	69	**90**	61	**80**
D6M (Direct Drive)	6.9	**9.0**	89	**117**	75	**98**	64	**84**	57	**75**
D5B (Power Shift)	6.9	**9.0**	93	**122**	78	**102**	67	**88**	59	**77**
D5B (Direct Drive)	6.9	**9.0**	92	**121**	79	**103**	68	**89**	60	**79**
D6R (Power Shift)	6.9	**9.0**	112	**147**	93	**122**	80	**105**	70	**92**
D6R (Direct Drive)	6.9	**9.0**	114	**149**	98	**128**	85	**111**	76	**100**
D6D (Power Shift)	6.9	**9.0**	110	**144**	91	**119**	78	**102**	68	**89**
D6D (Direct Drive)	6.9	**9.0**	111	**145**	94	**123**	82	**107**	73	**95**

Load time (average):

	Push Loaded	Self Loaded
D5	1.0 min	1.5 min
D6	0.8 min	1.2 min

Dump and turn time: D5 1.2 min
D6 1.0 min

Shift time: P.S. 0.0 min
D.D. 0.2 min

SCRAPER & TRACTOR	Struck Capacity		Haul 120 m	400'	Haul 180 m	600'	Haul 250 m	800'	Haul 300 m	1000'
Push Loaded			**Estimated Hourly Production**							
R67H	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**
D6R (Power Shift)	9.2	**12**	161	**210**	130	**170**	109	**142**	93	**121**
D6R (Direct Drive)	9.2	**12**	144	**188**	119	**156**	102	**133**	86	**113**
D6D (Power Shift)	9.2	**12**	152	**200**	122	**160**	100	**132**	85	**112**
D6D (Direct Drive)	9.2	**12**	140	**183**	114	**150**	97	**127**	82	**108**
D7R (Power Shift)	9.2	**12**	208	**272**	169	**221**	140	**183**	118	**154**
D7R (Direct Drive)	9.2	**12**	206	**270**	172	**225**	145	**190**	126	**165**
D7G (Power Shift)	9.2	**12**	198	**260**	159	**208**	131	**172**	110	**144**
D7G (Power Shift)	10.7	**14**	222	**291**	177	**232**	151	**198**	126	**165**
D7G (Direct Drive)	10.7	**14**	215	**281**	168	**221**	146	**191**	123	**162**
D8R (Power Shift)	10.7	**14**	238	**312**	191	**250**	159	**208**	137	**180**
D8K (Power Shift)	10.7	**14**	238	**312**	191	**250**	159	**208**	137	**180**
D8K (Direct Drive)	10.7	**14**	228	**298**	181	**238**	152	**200**	132	**173**
R89H										
D7R (Power Shift)	13.8	**18**	257	**336**	206	**269**	170	**222**	147	**192**
D7R (Direct Drive)	13.8	**18**	240	**314**	194	**254**	160	**209**	141	**185**
D7G (Power Shift)	13.8	**18**	245	**320**	193	**253**	158	**207**	136	**178**
D7G (Direct Drive)	13.8	**18**	229	**299**	184	**240**	150	**196**	131	**171**
D8R (Power Shift)	13.8	**18**	275	**360**	213	**278**	176	**230**	151	**198**
D8K (Power Shift)	13.8	**18**	275	**360**	213	**278**	176	**230**	151	**198**
D8K (Direct Drive)	13.8	**18**	257	**336**	203	**266**	170	**222**	145	**190**
D8L (Power Shift)	13.8	**18**	325	**425**	155	**328**	207	**271**	179	**234**

Load time (average):

R67H	Push Loaded	Self Loaded	**R89H**	Push Loaded	Self Loaded
D6	0.8 min	1.2 min	D7	0.8 min	1.2 min
D7	0.6 min	1.0 min	D8	0.6 min	1.0 min
D8	0.5 min	0.8 min	D8	0.5 min	0.8 min

Dump and turn time: D6 — 1.0 min
All others — 0.8 min

Shift time: Power Shift — 0.0 min
Direct Drive — 0.2 min

SCRAPER & TRACTOR	Struck Capacity		Haul 120 m	400'	Haul 180 m	600'	Haul 250 m	800'	Haul 300 m	1000'
Self Loaded			**Estimated Hourly Production**							
R67H	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**
D6R (Power Shift)	9.2	**12**	143	**187**	119	**156**	101	**132**	88	**115**
D6R (Direct Drive)	9.2	**12**	134	**175**	112	**147**	95	**124**	82	**107**
D6D (Power Shift)	9.2	**12**	136	**178**	112	**147**	94	**123**	81	**107**
D6D (Direct Drive)	9.2	**12**	129	**170**	107	**141**	90	**118**	77	**102**
D7R (Power Shift)	9.2	**12**	187	**244**	151	**197**	128	**168**	109	**142**
D7R (Direct Drive)	9.2	**12**	174	**227**	136	**178**	113	**148**	97	**129**
D7G (Power Shift)	9.2	**12**	177	**232**	142	**186**	120	**158**	100	**132**
D7G (Direct Drive)	9.2	**12**	174	**228**	137	**180**	114	**150**	99	**130**
D7G (Power Shift)	10.7	**14**	194	**255**	160	**210**	137	**180**	116	**152**
D7G (Direct Drive)	10.7	**14**	189	**248**	156	**205**	133	**175**	113	**149**
D8R (Power Shift)	10.7	**14**	214	**280**	175	**230**	147	**193**	128	**168**
D8K (Power Shift)	10.7	**14**	214	**280**	175	**230**	147	**193**	128	**168**
D8K (Direct Drive)	10.7	**14**	206	**270**	168	**220**	143	**180**	123	**162**
R89H										
D7R (Power Shift)	13.8	**18**	229	**299**	189	**247**	156	**204**	129	**169**
D7R (Direct Drive)	13.8	**18**	216	**283**	179	**234**	151	**198**	128	**168**
D7G (Power Shift)	13.8	**18**	218	**285**	178	**232**	145	**190**	129	**169**
D7G (Direct Drive)	13.8	**18**	206	**270**	169	**221**	141	**185**	119	**156**
D8R (Power Shift)	13.8	**18**	238	**312**	192	**251**	162	**212**	141	**184**
D8K (Power Shift)	13.8	**18**	238	**312**	192	**251**	162	**212**	141	**184**
D8K (Direct Drive)	13.8	**18**	229	**300**	184	**241**	157	**206**	136	**178**
D8L (Power Shift)	13.8	**18**	281	**368**	226	**296**	191	**250**	166	**217**

Load time (average):

R67H	Push Loaded	Self Loaded	**R89H**	Push Loaded	Self Loaded
D6	0.8 min	1.2 min	D7	0.8 min	1.2 min
D7	0.6 min	1.0 min	D8	0.6 min	1.0 min
D8	0.5 min	0.8 min	D8	0.5 min	0.8 min

Dump and turn time: D6 — 1.0 min
All others — 0.8 min

Shift time: Power Shift — 0.0 min
Direct Drive — 0.2 min

SCRAPER & TRACTOR	Struck Capacity		Haul 100 m	330'	Haul 200 m	650'	Haul 300 m	1000'	Haul 400 m	1300'
			Estimated Hourly Production							
Agricultural	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**	**m³**	**yd³**
2 × 6C + D4E DD	4.6	**6**	160	**209**	110	**144**	90	**118**	80	**105**
2 × 14C + D6D DD	10.7	**14**	380	**497**	270	**353**	210	**275**	175	**229**
Industrial										
1 × R89H + D8L	27.5	**36**	325	**425**	251	**328**	207	**271**	179	**234**

AGRICULTURAL EQUIPMENT
Challenger Tractors
Versatile Flotation System Trailers
LEXION Combines
Super Rural Tractors (SR)

CONTENTS

CHALLENGER TRACTORS

Challenger Mid-Size Tractors

The Challenger 35, 45 and 55 tractors signal a new direction in row-crop versatility, with row spacing and horsepower to match most every cultivation, planting and tillage requirement.

Patented Mobil-trac™ Undercarriage:

- Exclusive Cat track design is industry's most advanced.
- Weight is spread across five axles, improving traction, flotation and lowering compaction.
- Translates more power to the ground for added performance, improved efficiency.
- Designed as an integral part of the Challenger tractor, not an "add-on."
- Hardbar elastomerically mounted for reduced vibration and smooth ride.
- Two locations allow convenient chemical tank mounting.

Exclusive Belt Design:

- Widest belt choice available: five widths — 406 to 813 mm (16"-32") — two tread-bar styles.
- Inside, patented arrangement of heavy-duty steel cables delivers maximum lateral resistance.
- Belt components are vulcanized, not molded, for excellent durability.

Gauge (Track) Spacing:

- Choice of two chassis (standard and wide-track) for maximum flexibility.
- Standard is adjustable from 1524 to 2286 mm (60"-90"); wide-track from 2032 to 3048 mm (80"-120").
- Adjustable in even, two-inch increments with solid, exacting settings and 100% true alignment.
- Track spacing changes made on-farm in a few hours and no special tools required.

Engines:

- Challenger 35, 45 feature Cat 3116 engine: 6.6 L (403 in^3) displacement.
- Challenger 55 features Cat 3126 engine: 7.2 L (442 in^3) displacement.
- Best-in-the-industry torque rise minimizes downshifting:
  — Challenger 35, 68% torque rise.
  — Challenger 45, 57% torque rise.
  — Challenger 55, 46% torque rise.
- Engine iso-mounted to tractor mainframe for simplified service.

16x9 Powershift Transmission:

- Programmable electronic powershift includes sequential shift, shuttle shift, auto-shift, programmable downshift/upshift, speed matching.
- Speed range from zero to 31.37 km/h (19.5 mph).
- Optional creeper gears allow for ultra slow-speed applications.
- Final drives feature inboard planetaries.

Patented Differential Steering:

- Hydraulic/mechanical design delivers smooth, reliable steering.
- Stronger and more durable than conventional electronic systems.
- Turning under load exceeds wheel tractor's ability, particularly at 3048 mm (120") setting.

Responsive Hydraulics:

- Ample hydraulic flow at couplers of 118 L/min (31.2 gpm).
- Hydraulic flow levers give comforting feeling of control.
- In-cab flow controls allow convenient fine-tuning.

Comfortable Cab:

- Excellent visibility all-around.
- Eight-way adjustable air-ride suspension seat for comfort.
- Patented rubber isolation mounts reduce shock loads, smooth operator ride and reduce noise levels.
- Movable control console allows adjustment for individual comfort.

Challenger High-Horsepower Tractors

The Challenger E-Series tractors take performance in the high-horsepower category to new levels. Worthy successors to the rugged Caterpillar D-Series, and the fifth generation to the original Challenger 65 introduced 12 years ago, the E-Series tractors are truly pulling the entire industry forward.

Patented Mobil-trac™ Undercarriage:

- Exclusive Cat track design is industry's most advanced.
- Weight is spread across six axles, improving traction, flotation and lowering compaction.
- Translates more power to the ground for added performance and improved efficiency.
- Designed as an integral part of the Challenger tractor, not an "add-on."
- Bogie undercarriage system absorbs shock loads, follows ground contours and smoothes ride.
- Choice of two drive wheels (chevron or heavy-duty slotted cast-iron).

Exclusive Belt Design:

- Widest belt choice available: four belt widths — 635, 762 and 889 mm (25", 30", 35") — in standard, special application, reinforced and side-hill versions.
- Inside, patented arrangement of heavy-duty steel cables delivers maximum lateral resistance.
- Belt components are vulcanized, not molded, for excellent durability.

Gauge (Track) Spacing:

- Standard 2286 mm (90") spacing provides improved debris rejection and stability.

Engines:

- Challenger 65E, 75E: Cat 3176C engine: 10.3 L (629 in^3) displacement.
- Challenger 85E, 95E: Cat 3196 engine: 12 L (732 in^3) displacement.
- Excellent torque rise minimizes downshifting:
  — Challenger 65E, 37% torque rise.
  — Challenger 75E, 41% torque rise.
  — Challenger 85E, 42% torque rise.
  — Challenger 95E, 43% torque rise.
- Power reserve of 10% at 1900 rpm on 95E allows exceptional pull-through in tough spots.
- Engine iso-mounted to tractor mainframe for simplified service.

10x2 Full Powershift Transmission:

- Dependable and proven; single in-line lever provides smooth on-the-go shifting in all gears.
- Speed range from zero to 31.7 km/h (19.7 mph).
- Inching pedal permits tight-quarter maneuvers; no need for high-maintenance master clutch.
- Fully hydraulic brake control reduces pedal effort.

Patented Differential Steering:

- Hydraulic/mechanical design delivers smooth, reliable steering.
- Effortless full-power turns under load.
- Mechanical system assures reliable steering under all conditions.
- "Straight-line" tracking allows straight forward pulling with minimal operator input.

Responsive Hydraulics:

- Ample hydraulic flow at couplers of 114 L/min (30 gpm).
- Power-beyond valve (standard) allows flow directly to implement orbital motors or fans.
- Remote, lever-actuated hydraulic couplers for easy connections.
- In-cab flow controls allow convenient fine-tuning.
- Hydraulic levers on the cab console positioned for easy control.

Comfortable Cab:

- Excellent visibility all-around — roomier, brighter, quieter cab improves productivity.
- Eight-way adjustable air-ride suspension seat.
- Fully padded trainer seat with retractable seatbelt.
- Isolation mounts absorb shock loads for smoother ride.
- Exclusive Caterpillar Information Display (optional) provides on-going log of maintenance data and field totals.

VERSATILE FLOTATION SYSTEM (VFS)

The heavy-duty VFS trailer system offers an extremely flexible hauling and spreading platform for grain wagons, spray tanks and other equipment. Certainly the most durable trailer system — track or wheel — available in the industry.

Solid Construction:

- Six axles per track roller frame spread out axle loads, lower rolling resistance.
- VFS 50 — four pressed high-strength low-alloy (HSLA) steel midwheels, two steel idlers.
- VFS 70 — ductile-iron midwheels; an additional layer of steel on idlers' outer diameter increases strength and load-carrying capacity.
- Dual tapered roller bearings on idlers and midwheels improve performance.
- Air-spring tensioning system allows recoil for material flow between belt and idler.
- Exclusive 762 mm (30") belts feature 96 tread bars and a 40-degree tread-bar pattern for traction, low vibration.

Adaptable:

- VFS 50 and 70 available in three configurations: hitch and frame, wide axle, or narrow axle.
- VFS 70 wide- and narrow-axle configurations include bracket-mounting location for weight scale.
- Each roller assembly oscillates up to 17 degrees, independent of the other, for a smooth ride.
- No lubrication required: special seals eliminate need for periodic greasing of midwheel and idler bearings.

Applications:

- Include but are not limited to the following:
  - — Grain transport.
  - — Sugar cane, vegetable or sugar beets hauling.
  - — Lime spreading.
  - — Anhydrous ammonia injection.
  - — Sludge hauling.
  - — Herbicide spreading.
  - — Side-dump carts.
  - — Air seeding.
  - — Manure spreading.
  - — Construction uses include rear dump boxes and waste haulers.

LEXION COMBINES

After years of research, development and field testing, Caterpillar is pleased to offer the LEXION line of combines. This line represents the most significant advancement in combine technology and performance in more than two decades.

Headers:

- Auto-Contour automatically adjusts header height and tilt when traveling over uneven terrain.
- Automatic reel control synchronizes reel speed to travel speed and reel height to crop height.
- Auto-Pilot guidance system on corn heads offers "hands-free" steering control by sensing row location.
- Retractable fingers across the full length of the auger ensures that crop flows evenly into the feederhouse.
- Hydraulic header reverser for positive high-torque back-up of header and feederhouse to clear blockages.
- Multi-Link connector provides quick and simple hydraulic and electrical hook-up with just one connection point.

Threshing:

- Exclusive Accelerated Pre-Separation (APS) system separates out up to 30% of the grain before it moves to the threshing cylinder.
- At 1706 mm (67") the threshing cylinder is the widest in the industry.

Separation:

- LEXION 460 and 465 combines have six high-performance straw walkers (most competitive combines have only five).
- LEXION 480 and 485 combines use dual-rotor separation — a gentle, centrifugal-force system that produces high quality grain.

Cleaning:

- The long preparation pan, dual ventilation, and remote electric adjustment of the upper chaffer and lower sieve are exclusive to the LEXION.
- The optional 3-D sieve system compensates for slopes of up to 20%.
- Turbine fans are sectional, providing even air flow across the entire width of the cleaning area.

Engines:

- LEXION 460 and 465 combines feature the Cat 3126 engine — a 7.2 liter (439 cu. in.) engine producing 216 kW (290 hp). Power reserve of 222 kW (298 hp) is available at 2000 rpm.
- LEXION 480 and 485 combines are powered by the Cat 3176C engine — a 10.3 liter (629 cu. in.) engine producing 272 kW (365 hp). Power reserve of 280 kW (375 hp) is available at 2000 rpm.

Tracks and Tires:

- LEXION 465 and 485 combines feature Caterpillar's exclusive Mobil-trac™ undercarriage that provides greater flotation, sidehill stability and reduced soil compaction.
- LEXION 460 and 480 combines are available with a number of different tire options to fit all applications.
- A powered rear axle is available on all four combines.

SUPER RURAL TRACTORS

- **Cat diesel Engines** with large piston displacement and individual adjustment-free fuel pumps and valves. High drawbar power for all day hard work, season after season.
- **Sealed and Lubricated Track** greatly reduces internal pin and bushing wear for lower undercarriage maintenance costs.
- **Direct drive transmission** helps deliver maximum engine power to the drawbar. Closely spaced speeds match implement requirements.
- **Excellent balance** with weight forward and low center of gravity.
- **Easy maintenance** with spin-on fuel filter, two-piece master link, hydraulic track adjusters. Power train oil dipstick and filler spout are within easy reach from ground level.
- **Variable horsepower arrangements** are available for increased production in high speed tillage operations.



MODEL	Challenger 35		Challenger 45		Challenger 55	
Gross Horsepower	165 kW	**221 hp**	181 kW	**243 hp**	213 kW	**285 hp**
PTO Horsepower	131 kW	**175 hp**	149 kW	**200 hp**	168 kW	**225 hp**
Drawbar Horsepower	112 kW	**150 hp**	127 kW	**170 hp**	142 kW	**191 hp**
Operating Weight Range*	10 047-12 018 kg	**22,150-26,500 lb**	10 070-12 018 kg	**22,200-26,500 lb**	10 070-12 018 kg	**22,200-26,500 lb**
Engine Model	**3116**		**3116**		**3126**	
Rated Engine RPM	**2100**		**2100**		**2100**	
No. of Cylinders/Aspiration	**6 ATAAC**		**6 ATAAC**		**6 ATAAC**	
Bore	105 mm	**4.13"**	105 mm	**4.13"**	110 mm	**4.33"**
Stroke	127 mm	**5"**	127 mm	**5"**	127 mm	**5"**
Displacement	6.6 L	**403 in^3**	6.6 L	**403 in^3**	7.2 L	**442 in^3**
Max. Torque Rise (standard)	**68%****		**57%****		**46%****	
Track Rollers (each side)	**3**		**3**		**3**	
Width of Standard Track Belt▲	457 mm	**18"**	457 mm	**18"**	457 mm	**18"**
Length of Track on Ground	2.18 m	**7'2"**	2.18 m	**7'2"**	2.18 m	**7'2"**
Ground Contact Area (with std. belt)	2 m^2	**3096 in^2**	2 m^2	**3096 in^2**	2 m^2	**3096 in^2**
Grouser Height (std. belt)▼	63.5 mm	**2.5"**	63.5 mm	**2.5"**	63.5 mm	**2.5"**
Track Gauge:						
1.52 m **(60")** base	1.47 m	**60"**	1.47 m	**60"**	1.47 m	**60"**
2.03 m **(80")** base	2.03 m	**80"**	2.03 m	**80"**	2.03 m	**80"**
GENERAL DIMENSIONS:						
Wheelbase	2184 mm	**7'2"**	2184 mm	**7'2"**	2184 mm	**7'2"**
Height (to top of ROPS)	3.05 m	**10'0"**	3.05 m	**10'0"**	3.05 m	**10'0"**
Overall Length	5.36 m	**17'7"**	5.36 m	**17'7"**	5.36 m	**17'7"**
Width with Standard Belt:						
1.52 m **(60")** base	2.31 m	**7'7"**	2.31 m	**7'7"**	2.31 m	**7'7"**
2.03 m **(80")** base	2.82 m	**9'3"**	2.82 m	**9'3"**	2.82 m	**9'3"**
Ground Clearance	480 mm	**18.9"**	480 mm	**18.9"**	480 mm	**18.9"**
Drawbar Height	508 mm	**1'8"**	508 mm	**1'8"**	508 mm	**1'8"**
Fuel Tank Refill Capacity	322 L	**85 U.S. gal**	473 L	**125 U.S. gal**	473 L	**125 U.S. gal**

*__Operating Weight__ includes lubricants, coolants, standard belt, ROPS cab, full fuel tank and operator.
**Maximum PTO torque rise.
▲Optional Belt Widths: 457 mm **(18")**, 508 mm **(20")**, 624 mm **(25")**, 762 mm **(30")**, 813 mm **(32")**.
▼Heavy Duty 38 mm **(1.5")** extra wide Grousers available for all belts.




MODEL	Challenger 65E	Challenger 75E	Challenger 85E	Challenger 95E
Gross Horsepower	231 kW **310 hp**	254 kW **340 hp**	280 kW **375 hp**	306 kW **410 hp**
Power Reserve	**9%**	**8%**	**7%**	**10%**
PTO Horsepower	206 kW **277 hp******	224 kW **301 hp******	253 kW **339 hp******	279 kW **375 hp******
Drawbar Horsepower (firm ground)	175 kW **235 hp**	198 kW **266 hp**	217 kW **291 hp**	236 kW **317 hp**
Operating Weight*	15 186 kW **33,480 lb**	15 186 kg **33,480 lb**	15 413 kg **33,980 lb**	15 413 kg **33,980 lb**
Engine Model	**3176C**	**3176C**	**3196**	**3196**
Rated Engine RPM	**2100**	**2100**	**2100**	**2100**
No. of Cylinders/Aspiration	**6 ATAAC**	**6 ATAAC**	**6 ATAAC**	**6 ATAAC**
Bore	125 mm **4.92"**	125 mm **4.92"**	130 mm **5.1"**	130 mm **5.1"**
Stroke	140 mm **5.5"**	140 mm **5.5"**	150 mm **5.9"**	150 mm **5.9"**
Displacement	10.3 L **629 in³**	10.3 L **629 in³**	12.0 L **732 in³**	12.0 L **732 in³**
Max. Torque Rise (standard)	**37%******	**41%******	**42% in high hp******	**43% in high hp******
Midwheels (each side)	**4**	**4**	**4**	**4**
Width of Standard Track Belt**	635 mm **25"**	635 mm **25"**	635 mm **25"**	635 mm **25"**
Length of Track on Ground	2.72 m **8'11"**	2.72 m **8'11"**	2.72 m **8'11"**	2.72 m **8'11"**
Ground Contact Area (w/std. belt)	3.45 m² **5355 in²**	3.45 m² **5355 in²**	3.45 m² **5355 in²**	3.45 m² **5355 in²**
Grouser Height (std. belt)***	63.5 mm **2.5"**	63.5 mm **2.5"**	63.5 mm **2.5"**	63.5 mm **2.5"**
Track Gauge	2.29 m **90"**	2.29 m **90"**	2.29 m **90"**	2.29 m **90"**
GENERAL DIMENSIONS:				
Wheel Base	2721 mm **8'11"**	2721 mm **8'11"**	2721 mm **8'11"**	2721 mm **8'11"**
Height (to top of ROPS)	3.40 m **11'2"**	3.40 m **11'2"**	3.40 m **11'2"**	3.40 m **11'2"**
Overall Length	5.94 m **19'6"**	5.94 m **19'6"**	5.94 m **19'6"**	5.94 m **19'6"**
Width with Standard Belt	2.92 m **9'7"**	2.92 m **9'7"**	2.92 m **9'7"**	2.92 m **9'7"**
Ground Clearance	394 mm **15.5"**	394 mm **15.5"**	394 mm **15.5"**	394 mm **15.5"**
Drawbar Height	457 mm **18"**	457 mm **18"**	457 mm **18"**	457 mm **18"**
Fuel Tank Refill Capacity	1060 L **280 U.S. gal**	1060 L **280 U.S. gal**	1060 L **280 U.S. gal**	1060 L **280 U.S. gal**

*Operating weight includes lubricants, coolants, standard belt, ROPS cab, full fuel tank and operator.
Optional belt widths: 635 mm **(25") std., 762 mm **(30")**, 889 mm **(35")**.
***Heavy Duty 38 mm **(1.5")** extra wide grousers available for all belt widths.
****Measured at University of Nebraska tractor test lab.

MODEL	VFS50		VFS70	
GENERAL DIMENSIONS:				
Track Gauge				
Wide Axle	3175 mm	**10'5"**	3175 mm	**10'5"**
Narrow Axle	2692 mm	**8'10"**	2692 mm	**8'10"**
Hitch and Frame	2260 mm	**7'5"**	2260 mm	**7'5"**
Track Length CL to CL	3023 mm	**9'11"**	3023 mm	**9'11"**
Track Height	940 mm	**3'1"**	940 mm	**3'1"**
Overall Length	6261 mm	**20'7"**	6261 mm	**20'7"**
Hitch and Frame				
Frame Length	4597 mm	**15'1"**	4597 mm	**15'1"**
Frame Width	864 mm	**2'10"**	864 mm	**2'10"**
Ground Clearance	462 mm	**18"**	462 mm	**18"**
Hitch Height	368 mm	**15"**	368 mm	**15"**
Hitch to Undercarriage Pivot	4115 mm	**13'6"**	4115 mm	**13'6"**
Front of frame to Undercarriage Pivot	2438 mm	**8'0"**	2438 mm	**8'0"**
Weight				
Undercarriage with Hitch and Frame	4589 kg	**10,118 lb**	5121 kg	**11,290 lb**
Narrow Axle	3689 kg	**8132 lb**	4283 kg	**9442 lb**
Wide Axle	3741 kg	**8248 lb**	4350 kg	**9590 lb**
Maximum Gross Weight	27 269 kg	**60,118 lb**	36 873 kg	**81,290 lb**
Travel Speed	up to 32 km/h	**up to 20 mph**	up to 32 km/h	**up to 20 mph**
Axles	**6**		**6**	
Oscillation	**17 deg up, 17 deg down**		**17 deg up, 17 deg down**	
Belt Tension	2449 kg	**5400 lb**	2449 kg	**5400 lb**
Belt Width	762 mm	**30"**	762 mm	**30"**
Crop Clearance	439 mm	**17.3"**	439 mm	**17.3"**

VFS GROUND PRESSURE

				VFS Weight with Load											
				9072 kg **20,000 lb**		13 608 kg **30,000 lb**		18 144 kg **40,000 lb**		22 680 kg **50,000 lb**		27 216 kg **60,000 lb**		31 750 kg **70,000 lb**	
Belt Width		**Contact Area**		**Ground pressure**											
mm	**in**	**m²**	**in²**	**kPa**	**psi**	**kPa**	**psi**	**kPa**	**psi**	**kPa**	**psi**	**kPa**	**psi**	**kPa**	**psi**
762	**30**	4.61	**7140**	19.3	**2.8**	28.9	**4.2**	38.6	**5.6**	48.2	**7.0**	57.9	**8.4**	67.5	**9.8**

MODEL	LEXION 460/465	LEXION 480/485
PRE-SEPARATION:		
Type	**APS system**	**APS system**
THRESHING:		
Cylinder diameter	600 mm **23.5"**	600 mm **23.5"**
Cylinder width	1700 mm **5'7"**	1700 mm **5'7"**
Speed		
Single range	**362 to 1050 rpm**	**362 to 1050 rpm**
Dual range (low)	**158 to 457 rpm**	**158 to 457 rpm**
Dual range (high)	**362 to 1050 rpm**	**362 to 1050 rpm**
Concave type	**Bar and wire**	**Bar and wire**
Concave area		
Pre-concave	0.64 m^2 **993 in^2**	0.64 m^2 **993 in^2**
Main concave	1.29 m^2 **1992 in^2**	1.29 m^2 **1992 in^2**
Concave grate extension	0.32 m^2 **501 in^2**	**NA**
Total concave area	2.25 m^2 **3486 in^2**	1.93 m^2 **2985 in^2**
Concave adjustment	**Electric over hydraulic**	**Electric over hydraulic**
Concave overload protection	**Hydraulic**	**Hydraulic**
Dump rock trap	**Yes**	**Yes**
SEPARATION:		
Straw walkers		
Number of straw walkers	**6**	**NA**
Length	4367 mm **14'4"**	**NA**
Crank shaft throw	100 mm **3.9"**	**NA**
Separation area		
Straw walkers	7.42 m^2 **11,507 in^2**	**NA**
With intensive separation	9.85 m^2 **15,520 in^2**	**NA**
Rotary		
Number of rotors	**NA**	**2**
Diameter	**NA**	444 mm **17.5"**
Length	**NA**	4200 mm **13'9"**
Separation area	**NA**	6.34 m^2 **9826 in^2**
CLEANING SYSTEM:		
Total cleaning area	5.99 m^2 **9286 in^2**	5.99 m^2 **9286 in^2**
Cleaning fan	**6 turbine fans**	**6 turbine fans**
Electric sieve adjustment	**Optional**	**Optional**
3-D sieve	**Optional**	**Optional**
ENGINE:		
Caterpillar	**3126 ATAAC**	**3176C ATAAC**
Number of cylinders	**6**	**6**
Displacement	7.2 L **439 in^3**	10.3 L **629 in^3**
Rated speed	**2100 rpm**	**2100 rpm**
Horsepower	216 kW **290 hp**	272 kW **365 hp**
Transmission		
Type	**Hydrostatic variable 3-speed**	**Hydrostatic variable 3-speed**
DIMENSIONS/CAPACITIES:		
Fuel tank	650 L **170 U.S. gal**	650 L **170 U.S. gal**
Unloading speed	89 L/sec **2.5 bu/sec**	89 L/sec **2.5 bu/sec**
Chassis length	8.83 m **29'0"**	8.83 m **29'0"**
Transport width	**460:** 3.57 m **11'9"***	**480:** 3.57 m **11'9"***
	465: 4.25 m **13'11.5"**	**485:** 4.25 m **13'11.5"**
Transport height	3.99 m **13'1"**	3.99 m **13'1"**
Weight	**460:** 13 381 kg **29,500 lb**	**480:** 14 515 kg **32,000 lb**
	465: 16 874 kg **37,200 lb**	**485:** 18 008 kg **39,700 lb**
CAB INSTRUMENTATION:		
Sound level	**76 bD(A)**	**76 dB(A)**
On-board computer system	**IMO std., CEBIS optional**	**IMO std., CEBIS optional**
Yield monitor	**Optional**	**Optional**
GPS yield mapping	**Optional**	**Optional**
TRACKS/WHEELS:	**465 and 485 — with 893 mm (35") Caterpillar belts**	
Mobil-trac system	**460 and 480 — Variety of sizes and tread types**	
Front tires	**Variety of sizes and treads; optional power rear axle available**	
Rear tires	**Corn, 762 mm (30") row spacing — 6, 8 and 12 row;**	
HEADERS	**Rigid, 7.6 m (25'0") and 9.1 m (30'0"); Flexible, 7.6 m (25'0") and 9.1 m (30'0");**	
	Pickup, 4 m (13'0")	

*With 20.8R-42 tires.

MODEL	D4E SR		D6G SR	
Flywheel Power*	93 kW	**125 hp**	161 kW	**216 hp**
Operating Weight**	9400 kg	**20,730 lb**	14 960 kg	**32,987 lb**
Engine Model	**3304**		**3306**	
Rated Engine RPM	**2200**		**1900**	
No. of Cylinders	**4**		**6**	
Bore	121 mm	**4.75"**	121 mm	**4.75"**
Stroke	152 mm	**6"**	152 mm	**6"**
Displacement	7 L	**425 in^3**	10.5 L	**638 in^3**
Max. Torque Rise				
(standard)	**30%**		**24%**	
(variable horsepower)	**30%**		**21%**	
Track Rollers (each side)	**5**		**7**	
Width of Standard Track Shoe	406 mm	**16"**	508 mm	**1'8"**
Length of Track on Ground	1.89 m	**6'2"**	2.667 m	**8'9"**
Ground Contact Area (with std. shoe)	1.53 m^2	**2380 in^2**	2.72 m^2	**4212 in^2**
Grouser Height	48 mm	**1.88"**	**—**	
Track Gauge	1.52 m	**5'0"**	1.88 m	**6'2"**
GENERAL DIMENSIONS:				
Height (without ROPS or exhaust)	1.93 m	**6'4"**	2.03 m	**6'8"**
Height (to top of ROPS)	2.71 m	**8'11"**	3.06 m	**10'0"**
Overall Length	3.37 m	**11'0"**	3.73 m	**12'3"**
Width with Standard Shoe	1.98 m	**6'6"**	**—**	
Ground Clearance	360 mm	**14"**	310 mm	**12.2"**
Fuel Tank Refill Capacity	295 L	**78 U.S. gal**	435 L	**115 U.S. gal**

*For variable horsepower ratings see the power ratings on adjacent page.
**__Operating Weight__ includes lubricants, coolants, standard track shoes, ROPS canopy, full fuel tank and operator.

HORSEPOWER RATINGS

MODEL	Gross kW	Gross hp	Drawbar** Concrete kW		Drawbar** Concrete hp	Drawbar* Firm Soil kW	Drawbar* Firm Soil hp	PTO kW		PTO hp
Challenger 35	165	**221**	137		**185**	112	**150**	131		**175**
Challenger 45	181	**243**	158		**211**	127	**170**	149		**200**
Challenger 55	213	**285**	176		**236**	142	**191**	168		**225**
Challenger 65E	231	**310**	207	**	**278**	175	**235**	207	**	**277**
Challenger 75E	254	**340**	220	**	**295**	198	**266**	224	**	**301**

VARIABLE HORSEPOWER RATINGS

MODEL	Gross kW	Gross hp	Drawbar Concrete kW		Drawbar Concrete hp	Drawbar Firm Soil kW	Drawbar Firm Soil hp	PTO kW		PTO hp
D4E SR VHP										
Gears 1-2	66	**89**	59		**80**	47	**64**		**—**	
Gears 3-5	103	**138**	92		**125**	76	**104**		**—**	
D6G SR VHP										
Gears 1-2-6	128	**172**	116		**155**	162	**121**		**—**	
Gears 3-4-5	174	**234**	162		**216**	228	**170**		**—**	
Challenger 85E										
Gears 1-2	254	**340**	208	**	**279**	—	**—**	226		**303**
Gears 3-10	280	**375**	244	**	**327**	217	**291**	253		**339**
Challenger 95E										
Gears 1-2	254	**340**	213	**	**285**	—	**—**	227		**305**
Gear 3	280	**375**	244	**	**327**	—	**—**	253		**339**
Gears 4-10	306	**410**	272	**	**365**	236	**317**	280		**375**

*Estimated drawbar power based on firm soil conditions with standard machine configuration.
**University of Nebraska Tractor Test Lab results.

TRAVEL SPEEDS

MODEL	Challenger 35		Challenger 45		Challenger 55	
GEAR	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**
1	2.62	**1.6**	2.62	**1.6**	2.62	**1.6**
2	3.11	**1.9**	3.11	**1.9**	3.11	**1.9**
3	3.64	**2.3**	3.64	**2.3**	3.64	**2.3**
4	4.17	**2.6**	4.17	**2.6**	4.17	**2.6**
5	4.93	**3.1**	4.93	**3.1**	4.93	**3.1**
6	5.76	**3.6**	5.76	**3.6**	5.76	**3.6**
7	6.79	**4.2**	6.79	**4.2**	6.79	**4.2**
8	8.02	**5.0**	8.02	**5.0**	8.02	**5.0**
9	9.39	**5.8**	9.39	**5.8**	9.39	**5.8**
10	11.11	**6.9**	11.11	**6.9**	11.11	**6.9**
11	12.70	**7.9**	12.70	**7.9**	12.70	**7.9**
12	15.04	**9.3**	15.04	**9.3**	15.04	**9.3**
13	17.60	**10.9**	17.60	**10.9**	17.60	**10.9**
14	20.70	**12.9**	20.70	**12.9**	20.70	**12.9**
15	24.49	**15.2**	24.49	**15.2**	24.49	**15.2**
16	28.64	**17.8**	28.64	**17.8**	28.64	**17.8**

TRAVEL SPEEDS

MODEL	D4E SR VHP		D6G SR VHP	
FORWARD GEAR*	**km/h**	**mph**	**km/h**	**mph**
1	3.2	**2.0**	3.0	**1.9**
2	4.6	**2.9**	4.3	**2.7**
3	5.6	**3.5**	5.8	**3.6**
4	6.4	**4.0**	6.8	**4.3**
5	7.2	**4.5**	7.7	**4.8**
6	—		9.3	**5.8**
REVERSE GEAR				
1	3.8	**2.4**	4.1	**2.5**
2	5.4	**3.4**	5.8	**3.6**
3	6.6	**4.1**	7.9	**4.9**
4	7.5	**4.7**	9.1	**5.7**
5	8.6	**5.3**	10.5	**6.6**
6	—		—	

TRAVEL SPEEDS

MODEL	Challenger 65E		Challenger 75E		Challenger 85E		Challenger 95E	
FORWARD GEAR	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**
1	4.3	**2.7**	4.5	**2.8**	4.5	**2.8**	4.5	**2.8**
2	6.4	**4.0**	6.4	**4.0**	6.4	**4.0**	6.4	**4.0**
3	7.6	**4.7**	7.9	**4.9**	7.9	**4.9**	7.9	**4.9**
4	8.7	**5.4**	9.0	**5.6**	9.0	**5.6**	9.0	**5.6**
5	10.0	**6.2**	10.3	**6.4**	10.3	**6.4**	10.3	**6.4**
6	11.3	**7.0**	11.3	**7.0**	11.3	**7.0**	11.3	**7.0**
7	12.9	**8.0**	12.9	**8.0**	12.9	**8.0**	12.9	**8.0**
8	14.8	**9.2**	14.8	**9.2**	14.8	**9.2**	14.8	**9.2**
9	19.3	**12.0**	20.1	**12.5**	20.1	**12.5**	20.1	**12.5**
10	29.0	**18.0**	29.0	**18.0**	29.0	**18.0**	29.0	**18.0**
REVERSE GEAR								
1	3.2	**2.0**	3.2	**2.0**	3.2	**2.0**	3.2	**2.0**
2	7.3	**4.5**	7.6	**4.7**	7.6	**4.7**	7.6	**4.7**

DRAWBAR PULL FORWARD*

GEAR	Challenger 35			Challenger 45			Challenger 55		
	kN	kg	lb	kN	kg	lb	kN	kg	lb
1	84.4	8604	**18,968**	85.1	8675	**19,125**	85.1	8675	**19,125**
2	83.4	8499	**18,737**	85.1	8675	**19,125**	85.1	8675	**19,125**
3	81.6	8314	**18,329**	85.1	8675	**19,125**	85.1	8675	**19,125**
4	77.0	7851	**17,307**	81.0	8255	**18,199**	85.1	8675	**19,125**
5	70.3	7161	**15,787**	75.6	7710	**16,997**	81.0	8255	**18,200**
6	65.7	6694	**14,757**	71.8	7318	**16,134**	76.5	7802	**17,200**
7	58.4	5949	**13,116**	66.3	6757	**14,897**	70.5	7188	**15,848**
8	50.5	5147	**11,348**	57.8	5891	**12,987**	64.7	6593	**14,535**
9	43.5	4436	**9779**	49.7	5063	**11,162**	55.6	5663	**12,484**
10	36.7	3740	**8244**	40.9	4170	**9193**	45.9	4676	**10,310**
11	31.1	3171	**6991**	34.8	3547	**7821**	39.1	3990	**8796**
12	25.5	2601	**5735**	28.7	2920	**6438**	32.3	3295	**7264**
13	21.1	2154	**4749**	23.8	2427	**5351**	26.9	2747	**6056**
14	17.4	1771	**3904**	19.7	2003	**4416**	22.3	2275	**5015**
15	14.2	1449	**3194**	16.1	1646	**3629**	18.4	1876	**4135**
16	11.7	1196	**2637**	13.4	1365	**3010**	15.3	1562	**3443**

DRAWBAR PULL

MODEL	D4E SR VHP			D6G SR VHP		
FORWARD	At Rated RPM			At Rated RPM		
GEAR	kN	kg	lb	kN	kg	lb
1	53.4	5450	**12,012**	110	11 308	**24,878**
2	36.7	3744	**8252**	77	7771	**17,097**
3	49.7	5068	**11,170**	79	8130	**17,887**
4	43.2	4408	**9715**	67	6866	**15,105**
5	37.5	3832	**8448**	58	5926	**13,037**
6	—	—	**—**	31	3135	**6987**
	Max. at Lug			Max. at Lug		
1	57.5	5868	**12,933**	144	14 770	**32,496**
2	50.5	5148	**11,349**	100	10 221	**22,487**
3	57.2	5831	**12,859**	100	10 190	**22,420**
4	48.1	5002	**11,207**	84	8634	**18,996**
5	43.5	4433	**9773**	73	7477	**16,450**
6	—	—	**—**	42	4258	**9368**

DRAWBAR PULL FORWARD
Ballasted @ Max. Power

GEAR	Challenger 35			Challenger 45			Challenger 55		
	kN	kg	lb	kN	kg	lb	kN	kg	lb
1	122.5	12 503	**27,540**	125.19	12 780	**28,150**	129.24	13 193	**29,060**
2	122.42	12 494	**27,520**	126.02	12 862	**28,330**	130.64	13 334	**29,370**
3	121.17	12 367	**27,240**	121.7	12 421	**27,360**	131.21	13 393	**29,500**
4	118.89	12 135	**26,730**	124.95	12 753	**28,090**	130.82	13 352	**29,410**
5	118.14	12 058	**26,560**	122.17	12 471	**27,470**	129.27	13 193	**29,060**
6	100.52	10 260	**22,600**	116.48	11 890	**26,190**	114.38	11 672	**25,710**
7	85.89	8767	**19,310**	94.68	9666	**21,290**	97.89	9993	**22,010**
8	74.34	7586	**16,710**	85.87	8762	**19,300**	83.5	8522	**18,770**
9	62.37	6365	**14,020**	72.09	7359	**16,210**	70.57	7205	**15,870**
10	51.52	5257	**11,580**	59.55	6079	**13,390**	58.18	5938	**13,080**
11	43.5	4440	**9779**	50.2	5191	**11,435**	53.5	5463	**12,034**
12	36.7	3743	**8244**	42.6	4407	**9708**	45.5	4644	**10,229**
13	31.1	3174	**6991**	35.49	3673	**8090**	38.2	3901	**8592**
14	25.5	2604	**5735**	29.3	3030	**6674**	32.1	3277	**7217**
15	21.1	2156	**4749**	24.2	2500	**5506**	26.9	2752	**6062**
16	17.4	1772	**3904**	19.8	2050	**4515**	22.3	2284	**5031**

*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, and weight and traction of equipped tractor.

DRAWBAR PULL FORWARD*

MODEL	Challenger 65E			Challenger 75E			Challenger 85E			Challenger 95E		
FORWARD	At Rated RPM			At Rated RPM			At Rated RPM			At Rated RPM		
GEAR	kN	kg	lb	kN	kg	lb	kN	kg	lb	kN	kg	lb
1	148.05	15 098	**33,284**	148.80	15 174	**33,452**	151.55	15 454	**34,070**	156.59	15 968	**35,202**
2	105.99	10 808	**23,827**	114.70	11 696	**25,785**	113.52	11 576	**25,520**	112.83	11 506	**25,366**
3	90.85	9265	**20,425**	92.20	9402	**20,728**	103.61	10 566	**23,294**	103.02	10 505	**23,159**
4	79.39	8096	**17,849**	79.97	8155	**17,979**	90.00	9177	**20,232**	98.90	10 085	**22,234**
5	68.29	6964	**15,352**	68.80	7015	**15,466**	78.42	7997	**17,629**	85.60	8729	**19,244**
6	59.01	6017	**13,265**	62.87	6412	**14,135**	71.27	7268	**16,022**	77.50	7903	**17,423**
7	51.45	5247	**11,567**	54.36	5543	**12,221**	62.01	6323	**13,940**	67.32	6865	**15,134**
8	43.83	4469	**9853**	47.05	4798	**10,578**	53.12	5417	**11,942**	57.87	5901	**13,009**
9**	33.31	3396	**7488**	34.35	3502	**7722**	38.78	3954	**8718**	42.22	4308	**9497**
10**	22.35	2279	**5025**	23.99	2447	**5395**	38.78	2763	**6090**	29.51	3010	**6635**
	At Max. Power			At Max. Power			At Max. Power			At Max. Power		
1	147.22	15 012	**33,096**	148.12	15 104	**33,299**	150.15	15 312	**33,756**	156.20	15 928	**35,115**
2	130.29	13 286	**29,291**	131.88	13 448	**29,648**	136.79	13 949	**30,751**	138.40	14 113	**31,113**
3	111.96	11 417	**25,169**	112.65	11 487	**25,325**	126.11	12 860	**28,351**	127.39	12 991	**28,639**
4	97.46	9938	**21,910**	98.26	11 020	**22,089**	109.95	11 212	**24,718**	122.54	12 496	**27,548**
5	85.29	8698	**19,175**	86.51	8822	**19,448**	95.59	9747	**21,489**	106.29	10 839	**23,896**
6	73.67	7513	**16,562**	78.47	8002	**17,641**	86.69	8840	**19,488**	96.21	9811	**21,629**
7	64.44	6572	**14,488**	68.15	6949	**15,320**	75.75	7724	**17,029**	83.96	8561	**18,874**
8	55.34	5644	**12,442**	59.12	6029	**13,292**	64.97	6625	**14,605**	73.11	7455	**16,436**
9**	42.06	4289	**9456**	43.16	4401	**9703**	47.43	4836	**10,662**	53.37	5442	**11,998**
10**	28.22	2878	**6345**	30.15	3075	**6779**	33.13	3379	**7449**	32.29	3802	**8382**

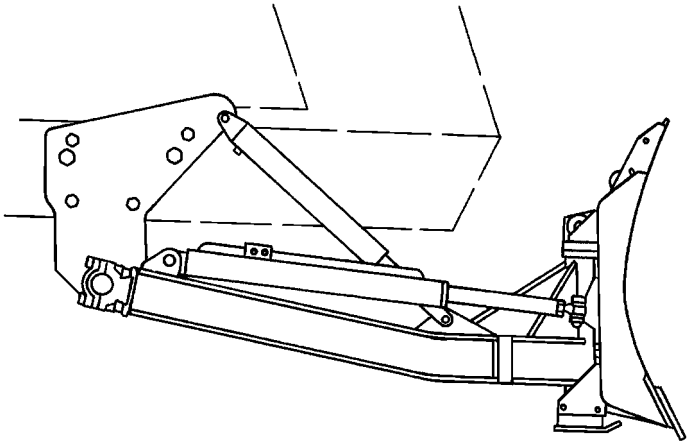
*Numbers from Nebraska test on concrete.
**Tests were not conducted in these gear settings, data is estimated.

Row-Crop

Gauge (Track) Spacing	Spacer Quantity (per side)	Spacer Size
1524 mm **(60")** Base Tractor	No spacers	
1575 mm **(62")**	1	25.4 mm **(1")** [max. belt width 457 mm **(18")**]
1626 mm **(64")**	1	50.8 mm **(2")** [max. belt width 508 mm **(1'8")**]
1676 mm **(66")**	1	76.2 mm **(3")** [max. belt width 508 mm **(1'8")**]
1727 mm **(68")**	1	101.6 mm **(4")** [max. belt width 635 mm **(2'1")**]
1778 mm **(70")**	1 plus 1	101.6 mm **(4")** [max. belt width 635 mm **(2'1")**] 25.4 mm **(1")**
1829 mm **(72")**	1	152.4 mm **(6")** [max. belt width 635 mm **(2'1")**]
1880 mm **(74")**	1 plus 1	152.4 mm **(6")** 25.4 mm **(1")**
1930 mm **(76")**	1	203.2 mm **(8")**
1981 mm **(78")**	1 plus 1	203.2 mm **(8")** 25.4 mm **(1")**
2032 mm **(80")**	1	254 mm **(10")**
2083 mm **(82")**	1 plus 1	254 mm **(10")** 25.4 mm **(1")**
2134 mm **(84")**	1 plus 1	254 mm **(10")** 50.8 mm **(2")**
2184 mm **(86")**	1 plus 1	254 mm **(10")** 76.2 mm **(3")**
2235 mm **(88")**	1	355.6 mm **(14")**
2286 mm **(90")**	1 plus 1	355.6 mm **(14")** 25.4 mm **(1")**

Gauge (Track) Spacing	Spacer Quantity (per side)	Spacer Size
2032 mm **(80")** Base Tractor	No spacers	
2083 mm **(82")**	1	25.4 mm **(1")**
2134 mm **(84")**	1	50.8 mm **(2")**
2184 mm **(86")**	1	76.2 mm **(3")**
2235 mm **(88")**	1	101.6 mm **(4")**
2286 mm **(90")**	1 plus 1	101.6 mm **(4")** 25.4 mm **(1")**
2337 mm **(92")**	1	152.4 mm **(6")**
2389 mm **(94")**	1 plus 1	152.4 mm **(6")** 25.4 mm **(1")**
2438 mm **(96")**	1	203.2 mm **(8")**
2489 mm **(98")**	1 plus 1	203.2 mm **(8")** 25.4 mm **(1")**
2540 mm **(100")**	1	254 mm **(10")**
2591 mm **(102")**	1 plus 1	254 mm **(10")** 25.4 mm **(1")**
2642 mm **(104")**	1 plus 1	254 mm **(10")** 50.8 mm **(2")**
2692 mm **(106")**	1 plus 1	254 mm **(10")** 76.2 mm **(3")**
2743 mm **(108")**	1	355.6 mm **(14")**
2794 mm **(110")**	1 plus	355.6 mm **(14")**
2845 mm **(112")**	1 plus 1	355.6 mm **(14")** 50.8 mm **(2")**
2896 mm **(114")**	1 plus 1	355.6 mm **(14")** 76.2 mm **(3")**
2946 mm **(116")**	1 plus 1	355.6 mm **(14")** 101.6 mm **(4")**
2997 mm **(118")**	1 plus 1 plus 1	355.6 mm **(14")** 25.4 mm **(1")** 101.6 mm **(4")**
3048 mm **(120")**	1	508 mm **(1'8")**

NOTE: The chart reflects the recommended spacer combinations, although others are possible.



Balderson Blades Specifications
Challenger 65E, 75E, 85E, 95E

Model	B95/65A-14P	B95/65A-12'6P	B95/65A-12'6	B95/65A-12P	B95/65A-12
Challenger Track Width	889 mm **2'11"**	762 mm **2'6"**	762 mm **2'6"**	624 mm **2'1"**	624 mm **2'1"**
Capacity	4.8 m^3 **5.3 yd^3**	4.3 m^3 **4.7 yd^3**	4.3 m^3 **4.7 yd^3**	4.1 m^3 **4.5 yd^3**	4.1 m^3 **4.5 yd^3**
Blade Type	**PAT**	**PAT**	**Hyd. Angle**	**PAT**	**Hyd. Angle**
Width — Straight	4216 mm **13'10"**	3785 mm **12'5"**	3785 mm **12'5"**	3683 mm **12'1"**	3683 mm **12'1"**
Width — Angled	3810 mm **12'6"**	3429 mm **11'3"**	3424 mm **11'3"**	3277 mm **10'9"**	3277 mm **10'9"**
Height	1118 mm **3'8"**	1118 mm **3'8"**	1118 mm **3'8"**	1118 mm **3'8"**	1118 mm **3'8"**
Max. Dig Depth	610 mm **2'0"**	610 mm **2'0"**	610 mm **2'0"**	610 mm **2'0"**	610 mm **2'0"**
Max. Height	762 mm **2'6"**	762 mm **2'6"**	762 mm **2'6"**	762 mm **2'6"**	762 mm **2'6"**
Blade Angle (degrees)	**25**	**25**	**25**	**25**	**25**
Weight (approx.)	1800 kg **3970 lbs**	1720 kg **3790 lbs**	1720 kg **3790 lbs**	1542 kg **3400 lbs**	1490 kg **3280 lbs**

DRAWBAR POWER AND TILLAGE

Tillage work ability, or rate, is measurable in drawbar power, either kilowatts or horsepower. If the quantity of work done is being emphasized, then a unit of time is also included. The common terminology is Kilowatt hours or horsepower hours.

Work rate is a combination of *load* (or force) times *distance,* divided by *time* or simply *load* times *speed.* For example a 5000 kg (11,000 lb) load pulled at 5 km/h (3.1 mph) is equivalent work to a 2000 kg (4400 lb) load pulled at 12.5 km/h (7.8 mph).

A Pullmeter is used most frequently to measure implement loads. The Towner Pullmeter is a hydraulic cylinder with a head machined precisely to 10 square inches. Gauges are used to read pounds per square inch thus 10 times the gauge reading gives drawbar pounds pull (DBPP) in thousands of pounds exerted by the implement pulled. Similar pullmeters are available with gauges reading in Kilograms pull.

Formulas providing either Metric or English units of work rate are:

Metric:

$$\text{Drawbar Kilowatts (DBkW)} = \frac{\text{kg Drawbar pull} \times \text{km/h}}{367}$$

$$\text{Drawbar Power} = \frac{\text{kg Drawbar pull} \times \text{km/h}}{274}$$

English:

$$\text{Drawbar Horsepower} = \frac{\text{lb Drawbar pull} \times \text{mph}}{375}$$

Example (Metric)

A 6 m implement imposes 5000 kg draft at 5 km/h requires how many drawbar kilowatts to pull it?

Solution: $\dfrac{5000 \text{ kg} \times 5 \text{ km/h}}{367} = 68.1$ DBkW

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Example (English)

A 20 ft wide implement imposing 11,000 DBPP at 3 mph requires how many drawbar horsepower to pull it?

Solution: $\dfrac{11{,}000 \text{ DBPP} \times 3.0 \text{ mph}}{375} = 88.0$ DBHP

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TILLAGE PRODUCTION

Tillage production is most commonly measured in area covered per hour, i.e. hectares per hour or acres per hour. Production can be determined by field measurement of tractor speed and implement width. If implement width is known and drawbar pull can be estimated, reference to tractor drawbar pull/speed graphs will give estimated speeds for each gear, and use of standard formulas will provide reasonable estimates of tillage production. Drawbar pull is a function of: 1) speed of tractor, 2) implement width and, 3) tillage depth.

Formulas

A. At 100% efficiency (not attainable)

Metric:

$$\text{Hectares/hr} = \frac{\text{Width (m)} \times \text{Speed (km/h)}}{10}$$

English:

$$\text{Acres/hr} = \frac{\text{Width (ft)} \times \text{Speed (mph)}}{8.25}$$

B. At 82.5% efficiency (average for tillage — includes turns)

Metric:

$$\text{Hectares/hr} = \text{meters} \times \text{km/h} \times 0.0825$$

English:

$$\text{Acres/hr} = \frac{\text{feet} \times \text{mph}}{10}$$

Example problem

Calculate normal tillage production of a D6E SR with a 6 m (20 ft) cut width disc plowing harrow pulled at a measured speed of 6 km/h (3.7 mph).

Solution:

Hectares/hr

$$= 6 \text{ m} \times 6 \text{ km/h} \times 0.0825 = 3 \text{ Hectares/hr}$$

$$\text{Acres/hr} = \frac{20 \text{ ft} \times 3.7 \text{ mph}}{10} = 7.4 \text{ Acres/hr}$$

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ESTIMATED DRAFT OR DRAWBAR PULL REQUIRED PER M (FT) OF IMPLEMENT WIDTH OF CUT

			Soil Type				
	Speed	**Depth**	**Heavy Gumbo Clay Loam**	**Moderate Heavy Silty Clay Loam**	**Average Silty Loam**	**Moderate Light Sandy Loam**	**Light Sandy or Coarse**
Moldboard plow	5.6-9.6 km/h **3.5-6 mph**	178-229 mm **7-9"**	1860-2382 kg **1250-1600 lb**	1414-1713 kg **950-1150 lb**	1115-1266 kg **750-850 lb**	745-968 kg **500-650 lb**	522-669 kg **350-480 lb**
Heavy disc plow 965 mm **(3'2")**	4.8-8.0 km/h **3-5 mph**	254-457 mm **10-18"**	2677 kg **1800 lb**	2382 kg **1600 lb**	2083 kg **1400 lb**	1489 kg **1000 lb**	1489 kg **1000 lb**
1270 mm **(4'2")**	3.7-6.4 km/h **2.3-4 mph**	203-305 mm **8-12"**	3573 kg **2400 lb**	3274 kg **2200 lb**	2976 kg **2000 lb**	2677 kg **1800 lb**	2382 kg **1600 lb**
Heavy offset disc harrow 915 mm **(3'0")** (stubble or breaking)	4.8-8.0 km/h **3-5 mph**	102-203 mm **4-8"**	1785 kg **1200 lb**	1637 kg **1100 lb**	1489 kg **1000 lb**	1339 kg **900 lb**	1191 kg **800 lb**
Heavy tandem or med. offset disc harrow 660-813 mm **(2'2"-2'8")**	4.8-9.6 km/h **3-6 mph**	102-203 mm **4-8"**	1191 kg **800 lb**	1043 kg **700 lb**	892 kg **600 lb**	775 kg **500 lb**	594 kg **400 lb**
Finishing or seedbed disc harrow 508-610 mm **(1'8"-2'0")**	6.4-11.2 km/h **4-7 mph**	51-102 mm **2-4"**	446 kg **300 lb**	410 kg **275 lb**	335 kg **225 lb**	335 kg **225 lb**	148 kg **100 lb**
Disc plow (stubble mulch)	6.4-9.6 km/h **4-6 mph**	76-152 mm **3-6"**	558 kg **375 lb**	482 kg **324 lb**	410 kg **275 lb**	335 kg **225 lb**	259 kg **175 lb**
Chisel plow	5.6-10.5 km/h **3.5-6.5 mph**	203-305 mm **8-12"**	1191 kg **800 lb**	968 kg **650 lb**	775 kg **500 lb**	522 kg **350 lb**	299 kg **200 lb**
Field cultivation or springtooth	6.4-11.2 km/h **4-7 mph**	76-102 mm **3-4"**	775 kg **500 lb**	558 kg **375 lb**	371 kg **250 lb**	299 kg **200 lb**	223 kg **150 lb**
Rod weeder (add to FC or springtooth)	6.4-11.2 km/h **4-7 mph**	76-102 mm **3-4"**	177 kg **120 lb**	157 kg **105 lb**	135 kg **90 lb**	112 kg **75 lb**	89 kg **60 lb**

Adjust estimates of varying moisture content.
Use a pullmeter for more accurate measurements.

			Draft or DBPP/Shank					
	Depth		**Heavy**		**Medium**		**Light**	
Lister			363 kg	**800 lb**	272 kg	**600 lb**	181 kg	**400 lb**
V. chisel (parabolic shank)	406 mm	**16"**	1162 kg	**2560 lb**	871 kg	**1920 lb**	653 kg	**1440 lb**
	457 mm	**18"**	1306 kg	**2880 lb**	980 kg	**2160 lb**	735 kg	**1620 lb**
	508 mm	**1'8"**	1452 kg	**3200 lb**	1089 kg	**2400 lb**	816 kg	**1800 lb**
	559 mm	**1'10"**	1597 kg	**3520 lb**	1198 kg	**2640 lb**	898 kg	**1980 lb**
Subsoilers	508 mm	**1'8"**	1633 kg	**3600 lb**	1270 kg	**2800 lb**	907 kg	**2000 lb**
	559 mm	**1'10"**	1814 kg	**4000 lb**	1406 kg	**3100 lb**	998 kg	**2200 lb**
	610 mm	**2'0"**	1950 kg	**4300 lb**	1542 kg	**3400 lb**	1089 kg	**2400 lb**
	660 mm	**2'2"**	2132 kg	**4700 lb**	1633 kg	**3600 lb**	1179 kg	**2600 lb**

MOTOR GRADERS

CONTENTS

Features, H-Series Motor Graders:

- **Geographic Versions** — The H-Series was specifically designed to meet the needs of different geographic regions. NA, Standard, ES and Global Versions are available with an assortment of standard features and optional equipment. All motor graders feature advanced 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) (NA Versions only — standard on models 143H and 163H, optional on models 120H, 135H, 140H and 160H) provides more power in gears 4F-8F and 3R-6R to increase productivity and improve gradeability when roading. Engine Power Management (standard on all ES and Standard Versions) 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 NA and ES 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.
- **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
  – 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
- **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) to alert the operator to potential problems (EMSII 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)
  - oil sampling capability from engine and hydraulics
  - 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
- **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 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.



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	**30%**		**30%**		**30.5%**	
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	**26.0 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	**20.4 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 cm³	**99 in³**	1619 cm³	**99 in³**	2083 cm³	**127 in³**
Max.	3681 cm³	**225 in³**	3681 cm³	**225 in³**	4785 cm³	**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"**	3.04 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	410 mm	**16.1"**	410 mm	**16.1"**	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.

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 in³**	10.45 L	**638 in³**
Max. Torque Rise	**30%**		**30%**	
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	**20.0 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 cm³	**127 in³**	2083 cm³	**127 in³**
Max.	4785 cm³	**291 in³**	4785 cm³	**291 in³**
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)***	3.04 m	**10'0"**	3.04 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	452 mm	**17.8"**	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.



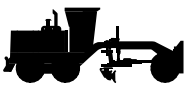
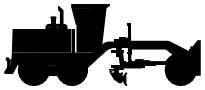
MODEL	120H		135H		12H	
Net Flywheel Power	93 kW	**125 hp**	101 kW	**135 hp**	104 kW	**140 hp**
Variable horsepower: Gears 4-8▲	104 kW	**140 hp**	116 kW	**155 hp**		**—**
Operating Weight*	12 519 kg	**27,600 lb**	12 950 kg	**28,550 lb**	14 247 kg	**31,410 lb**
Engine Model	**3116 DIT**		**3116 DIT**		**3306 DIT**	
Rated Engine RPM	**2000**		**2000**		**1900**	
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	**30%**		**30%**		**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	**26.0 mph**	39.7 km/h	**24.7 mph**
Reverse	33.7 km/h	**20.9 mph**	33.1 km/h	**20.6 mph**	31.3 km/h	**19.5 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 cm³	**99 in³**	1619 cm³	**99 in³**	2083 cm³	**127 in³**
Max.	3681 cm³	**225 in³**	3681 cm³	**225 in³**	4785 cm³	**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	68 L	**17.7 U.S. gal**	68 L	**17.7 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***	**75 dBA**		**75 dBA**		**75 dBA**	
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"**	3.04 m	**10'0"**
Overall Length	8.26 m	**27'1"**	8.26 m	**27'1"**	8.57 m	**28'1"**
With Pushplate	8.50 m	**27'10"**	8.50 m	**27'10"**	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	410 mm	**16.1"**	410 mm	**16.1"**	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	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 with full fuel tank, coolant, lubricants and operator.
**__Minimum Turning Radius__ — combining the use of articulated frame steering, front wheel steer and unlocked differential.
***SAE J919.
****__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.
▲Power is automatically increased in gears 4F-8F and 3R-6R.




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**
Operating Weight*	14 724 kg **32,460 lb**	15 023 kg **33,120 lb**	15 586 kg **34,360 lb**	16 538 kg **36,460 lb**
Engine Model	**3306 DIT**	**3306 DIT**	**3306 DIT**	**3306 DITA**
Rated Engine RPM	**1900**	**1900**	**1900**	**1900**
No. of Cylinders	**6**	**6**	**6**	**6**
Displacement	10.45 L **638 in³**	10.45 L **638 in³**	10.45 L **638 in³**	10.45 L **638 in³**
Max. Torque Rise	**30%**	**30%**	**30%**	**33.5%**
No. of Speeds Forward/Reverse	**8/6**	**8/6**	**8/6**	**8/6**
Top Speed Forward	41.1 km/h **25.5 mph**	41.1 km/h **25.5 mph**	40.7 km/h **25.3 mph**	40.7 km/h **25.3 mph**
Reverse	32.4 km/h **20.2 mph**	32.4 km/h **20.2 mph**	32.1 km/h **20.0 mph**	32.1 km/h **20.0 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**	7.4 m **24'3"**	7.4 m **24'3"**	7.4 m **24'3"**	7.4 m **24'3"**
Front Frame Section Modulus:				
Min.	2083 cm³ **127 in³**	2083 cm³ **127 in³**	2083 cm³ **127 in³**	2083 cm³ **127 in³**
Max.	4785 cm³ **291 in³**	4785 cm³ **291 in³**	4785 cm³ **291 in³**	4785 cm³ **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***	**75 dBA**	**77 dBA**	**75 dBA**	**77 dBA**
Electrical:				
System Size	**24V**	**24V**	**24V**	**24V**
Std. Battery CCA @ 0° F	**750**	**950**	**750**	**950**
Std. Alternator	**50 amp**	**50 amp**	**50 amp**	**50 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	8.60 m **28'3"**	8.60 m **28'3"**	8.60 m **28'3"**	8.60 m **28'3"**
With Ripper & Pushplate	10.01 m **32'10"**	10.01 m **32'10"**	10.01 m **32'10"**	10.01 m **32'10"**
Wheelbase	6.09 m **20'0"**	6.09 m **20'0"**	6.09 m **20'0"**	6.09 m **20'0"**
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 **8'6"**	2.48 m **8'2"**	2.55 m **8'6"**
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	341 L **90 U.S. gal**	341 L **90 U.S. gal**	341 L **90 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.
***SAE J919.
****__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.
▲Power is automatically increased in gears 4F-8F and 3R-6R.


MODEL	14H	16H	24H
Net Flywheel Power	160 kW **215 hp**	205 kW **275 hp**	373 kW **500 hp**
Operating Weight*	18 784 kg **41,410 lb**	24 748 kg **54,560 lb**	61 950 kg **136,600 lb**
Engine Model	**3306 DITA**	**3406 DITA**	**3412E HEUI**
Rated Engine RPM	**1850**	**1850**	**2000**
No. of Cylinders	**6**	**6**	**12**
Displacement	10.45 L **638 in³**	14.6 L **893 in³**	27.0 L **1647 in³**
Max. Torque Rise	**30%**	**30%**	**30%**
No. of Speeds Forward/Reverse	**8/8**	**8/8**	**6/3**
Top Speed Forward	42.7 km/h **26.5 mph**	44.5 km/h **27.7 mph**	37.7 km/h **23.4 mph**
Reverse	47.3 km/h **29.4 mph**	42.3 km/h **26.3 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**	7.9 m **25'11"**	8.2 m **27'0"**	12.0 m **39'11"**
Front Frame Section Modulus:			
Min.	2649 cm³ **162 in³**	3746 cm³ **228 in³**	9655 cm³ **589 in³**
Max.	5091 cm³ **310 in³**	8057 cm³ **491 in³**	22 490 cm³ **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**	445 L/min **116 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***	**80 dBA**	**80 dBA**	**75 dBA**
Electrical:			
System Size	**24V**	**24V**	**24V**
Std. Battery CCA @ 0° F	**950**	**1300**	**1300**
Std. Alternator	**50 amp**	**50 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	9.21 m **30'2"**	9.99 m **32'9"**	14.16 m **46'6"**
With Ripper & Pushplate	10.67 m **35'10"**	11.62 m **38'2"**	15.80 m **51'10"**
Wheelbase	6.46 m **21'2"**	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"**	3.94 m **12'11"**
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"**	50 mm **2"**
Lift Above Ground	419 mm **16.5"**	419 mm **16.5"**	634 mm **2'1"**
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	379 L **100 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.
***SAE J919.
****__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.




MODEL	120H	12H	140H	160H
Net Flywheel Power: Gears 4-8	104 kW **140 hp**	104 kW **140 hp**	138 kW **185 hp**	149 kW **200 hp**
Gears 1-3▲	93 kW **125 hp**	— **—**	123 kW **165 hp**	134 kW **180 hp**
Operating Weight*	12 519 kg **27,600 lb**	14 248 kg **31,410 lb**	14 724 kg **32,460 lb**	15 586 kg **34,360 lb**
Engine Model	**3116 DITA**	**3306 DIT**	**3306 DIT**	**3306 DITA**
Rated Engine RPM	**2000**	**1900**	**1900**	**1900**
No. of Cylinders	**6**	**6**	**6**	**6**
Displacement	6.6 L **403 in³**	10.45 L **638 in³**	10.45 L **638 in³**	10.45 L **638 in³**
Max. Torque Rise	**30%**	**30%**	**30%**	**30%**
No. of Speeds Forward/Reverse	**8/6**	**8/6**	**8/6**	**8/6**
Top Speed Forward	42.6 km/h **26.5 mph**	39.7 km/h **24.7 mph**	41.1 km/h **25.5 mph**	40.7 km/h **25.3 mph**
Reverse	33.7 km/h **20.9 mph**	31.3 km/h **19.5 mph**	32.4 km/h **20.2 mph**	32.1 km/h **20.0 mph**
Std. Tires — Front & Rear	**13.00-24 (10 PR) (G-2)**	**13.00-24 (10 PR) (G-2)**	**14.00-24 (10 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**	7.2 m **23'8"**	7.4 m **24'3"**	7.4 m **24'3"**	7.4 m **24'3"**
Front Frame Section Modulus:				
Min.	1619 cm³ **99 in³**	2083 cm³ **127 in³**	2083 cm³ **127 in³**	2083 cm³ **127 in³**
Max.	3681 cm³ **225 in³**	4785 cm³ **291 in³**	4785 cm³ **291 in³**	4785 cm³ **291 in³**
No. Circle Support Shoes	**4**	**6**	**6**	**6**
Hydraulics: Pump Type	**Axial Piston**	**Axial Piston**	**Axial Piston**	**Axial Piston**
Max. Pump Flow	148 L/min **39 gpm**	206 L/min **54.4 gpm**	206 L/min **54.4 gpm**	206 L/min **54.4 gpm**
System Capacity	68 L **17.7 U.S. gal**	80 L **20.8 U.S. gal**	80 L **20.8 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**	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***	**77 dBA**	**77 dBA**	**77 dBA**	**77 dBA**
Electrical:				
System Size	**24V**	**24V**	**24V**	**24V**
Std. Battery CCA @ 0° F	**950**	**950**	**950**	**950**
Std. Alternator	**50 amp**	**50 amp**	**50 amp**	**50 amp**
GENERAL DIMENSIONS:				
Height (to top of ROPS)	3.11 m **10'2"**	3.11 m **10'2"**	3.12 m **10'3"**	3.12 m **10'3"**
Height (stripped top)****	2.91 m **9'7"**	3.04 m **10'0"**	3.04 m **10'0"**	3.04 m **10'0"**
Overall Length	8.26 m **27'1"**	8.57 m **28'1"**	8.60 m **28'3"**	8.60 m **28'3"**
With Ripper & Pushplate	9.76 m **32'0"**	10.01 m **32'10"**	10.01 m **32'10"**	10.01 m **32'10"**
Wheelbase	5.87 m **19'3"**	6.09 m **20'0"**	6.09 m **20'0"**	6.09 m **20'0"**
Blade Base	2.60 m **8'6"**	2.57 m **8'5"**	2.57 m **8'5"**	2.52 m **8'3"**
Overall Width (at top of front tires)	2.44 m **8'0"**	2.44 m **8'0"**	2.46 m **8'1"**	2.48 m **8'2"**
Standard Blade: Length	3.66 m **12'0"**	3.66 m **12'0"**	3.66 m **12'0"**	4.27 m **14'0"**
Height	610 mm **2'0"**	610 mm **2'0"**	610 mm **2'0"**	686 mm **2'3"**
Thickness	22 mm **0.87"**	22 mm **0.87"**	22 mm **0.87"**	25 mm **1"**
Lift Above Ground	410 mm **16.1"**	480 mm **18.9"**	480 mm **18.9"**	452 mm **17.8"**
Max. Shoulder Reach:◀				
Frame Straight	1.91 m **6'3"**	1.97 m **6'6"**	1.97 m **6'6"**	1.96 m **6'5"**
Articulated Position	2.85 m **9'4"**	2.91 m **9'7"**	2.91 m **9'7"**	2.90 m **9'6"**
Fuel Tank Capacity	284 L **75 U.S. gal**	284 L **75 U.S. gal**	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** — combined use of frame articulation, front wheel steer and unlocked differential.
*** ISO 6394.
**** **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.
▲ Engine Power Management automatically reduces power in gears 1F-3F and 1R-2R.

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**	15.6	**9.7**	21.3	**13.2**	29.3	**18.2**	42.6	**26.5**
	Reverse	2.9	**1.8**	5.4	**3.4**	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	**26.0**
	Reverse	2.9	**1.8**	5.4	**3.3**	7.8	**4.9**	12.2	**7.6**	23.0	**14.3**	33.1	**20.6**	—	**—**	—	**—**
12H*	Forward	3.4	**2.1**	4.6	**2.9**	6.7	**4.2**	9.2	**5.7**	14.6	**9.0**	19.8	**12.3**	27.3	**17.0**	39.7	**24.7**
	Reverse	2.7	**1.7**	5.0	**3.1**	7.3	**4.5**	11.5	**7.2**	21.6	**13.4**	31.3	**19.5**	—	**—**	—	**—**
140H	Forward	3.5	**2.2**	4.8	**3.0**	7.0	**4.3**	9.6	**6.0**	15.1	**9.4**	20.5	**12.8**	28.3	**17.6**	41.1	**25.5**
	Reverse	2.8	**1.7**	5.2	**3.2**	7.6	**4.7**	11.9	**7.4**	22.3	**13.9**	32.4	**20.2**	—	**—**	—	**—**
143H	Forward	3.5	**2.2**	4.8	**3.0**	7.0	**4.3**	9.6	**6.0**	15.1	**9.4**	20.5	**12.8**	28.3	**17.6**	41.1	**25.5**
	Reverse	2.8	**1.7**	5.2	**3.2**	7.6	**4.7**	11.9	**7.4**	22.3	**13.9**	32.4	**20.2**	—	**—**	—	**—**
160H	Forward	3.5	**2.2**	4.8	**3.0**	7.0	**4.3**	9.6	**6.0**	15.0	**9.3**	20.3	**12.6**	28.0	**17.4**	40.7	**25.3**
	Reverse	2.8	**1.7**	5.2	**3.2**	7.6	**4.7**	11.8	**7.3**	22.3	**13.9**	32.1	**20.0**	—	**—**	—	**—**
163H	Forward	3.5	**2.2**	4.8	**3.0**	7.0	**4.3**	9.6	**6.0**	15.0	**9.3**	20.3	**12.6**	28.0	**17.4**	40.7	**25.3**
	Reverse	2.8	**1.7**	5.2	**3.2**	7.6	**4.7**	11.8	**7.3**	22.3	**13.9**	32.1	**20.0**	—	**—**	—	**—**
14H	Forward	3.7	**2.3**	5.3	**3.3**	7.1	**4.4**	10.3	**6.4**	15.5	**9.6**	21.8	**13.5**	29.5	**18.3**	42.7	**26.5**
	Reverse	4.1	**2.6**	5.8	**3.6**	7.9	**4.9**	11.4	**7.1**	17.7	**10.7**	24.1	**15.0**	32.7	**20.3**	47.3	**29.4**
16H	Forward	3.9	**2.4**	5.5	**3.4**	7.4	**4.6**	10.7	**6.7**	16.2	**10.1**	22.7	**14.1**	30.8	**19.1**	44.5	**27.7**
	Reverse	3.7	**2.3**	5.2	**3.2**	7.0	**4.4**	10.2	**6.3**	15.4	**9.6**	21.6	**13.4**	29.2	**18.2**	42.3	**26.3**
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 1.05.

ALL WHEEL DRIVE (AWD)	143H		163H	
Power with AWD engaged	138 kW	**185 hp**	149 kW	**200 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 NA Versions only.

MOTOR GRADER/ RIPPER	120H/135H†	12H/140H/143H/ 160H/163H	14H	16H	24H
Parallelogram — Rear Mounted	**Ripper**	**Ripper/Scarifier**	**Ripper**	**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 x 76 mm **1.4" x 3.0"**	61 x 140 mm **2.4" x 5.5"**	61 x 140 mm **2.4" x 5.5"**	76 x 178 mm **3" x 7"**	78 x 178 mm **3" x 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.
†Available on Standard and ES Versions only.
NOTE: See Section 1 for Ripper Tips.
◄This value may vary slightly with various vehicle configurations.

BALDERSON WORK TOOLS

Work Tools	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 Balderson for special attachment needs.

NOTE: Balderson Attachments for Cat H-Series Motor Graders require additional hydraulics. All front-mounted attachments require a Balderson Quick Attach-Detach Parallel Lift Group. Contact Balderson for details.

EXCAVATORS

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EXCAVATORS

5000 SERIES

MATERIAL HANDLING ARRANGEMENTS




MODEL	301.5		307B		307B SB		307	
Sourcing			Japan		Japan		France	
Flywheel Power	13 kW	**17.4 hp**	40 kW	**54 hp**	40 kW	**54 hp**	40 kW	**54 hp**
Operating Weight*	1673 kg	**3690 lb**	6500 kg	**14,320 lb**	7400 kg	**16,310 lb**	7600 kg	**16,760 lb**
Bucket Capacity Range (heaped)	0.018-0.056 m^3	**0.023-0.073 yd^3**	0.14-0.28 m^3	**0.18-0.37 yd^3**	0.14-0.28 m^3	**0.18-0.37 yd^3**	0.09-0.35 m^3	**0.12-0.46 yd^3**
Engine Model	**3003**		**4M40E1**		**4M40E1**		**3054**	
Rated Engine RPM	**2300**		**2100**		**2100**		**1800**	
No. of Cylinders	**3**		**4**		**4**		**4**	
Bore	75 mm	**2.95"**	95 mm	**3.7"**	95 mm	**3.7"**	100 mm	**3.9"**
Stroke	72 mm	**2.83"**	100 mm	**3.9"**	100 mm	**3.9"**	127 mm	**5"**
Displacement	0.95 L	**58.2 in^3**	2.84 L	**173 in^3**	2.84 L	**173 in^3**	3.99 L	**243 in^3**
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 16/1 × 17 L/min	**2 × 4.2/1 × 4.5 gpm**	2 × 64 L/min	**2 × 17 gpm**	2 × 64 L/min	**2 × 17 gpm**	2 × 67 L/min	**2 × 18 gpm**
Relief Valve Settings:								
Implement Circuits	18 600 kPa	**2700 psi**	27 460 kPa	**3980 psi**	27 460 kPa	**3980 psi**	27 460 kPa	**3980 psi**
Travel Circuits	18 600 kPa	**2700 psi**	31 380 kPa	**4550 psi**	31 380 kPa	**4550 psi**	31 380 kPa	**4550 psi**
Swing Circuits	17 200 kPa	**2500 psi**	22 060 kPa	**3200 psi**	24 030 kPa	**3480 psi**	20 590 kPa	**2990 psi**
Pilot Circuits	—		3930 kPa	**570 psi**	3930 kPa	**570 psi**	3000 kPa	**440 psi**
Maximum Drawbar Pull	13.6 kN	**3060 lb**	55 kN	**12,130 lb**	55 kN	**12,130 lb**	48 kN	**10,800 lb**
Maximum Travel Speed at Rated RPM	**Two Speed Travel** Lo: 2.2 km/h Hi: 4.4 km/h	**1.4 mph 2.7 mph**	**Two Speed Travel** Lo: 3.5 km/h Hi: 5 km/h	**2.2 mph 3.1 mph**	**Two Speed Travel** Lo: 3.5 km/h Hi: 5 km/h	**2.2 mph 3.1 mph**	4.1 km/h	**2.5 mph**
Width of Standard Track Shoe	230 mm	**9"**	450 mm	**18"**	450 mm	**18"**	450 mm	**18"**
Overall Track Length	1390 mm	**4'7"**	2760 mm	**9'1"**	2760 mm	**9'1"**	2660 mm	**8'9"**
Ground Contact Area with Std. Shoe	0.64 m^2	**990 in^2**	2.11 m^2	**3271 in^2**	2.11 m^2	**3271 in^2**	2.04 m^2	**3160 in^2**
Track Gauge	750 mm	**2'6"**	1750 mm	**5'9"**	1750 mm	**5'9"**	1750 mm	**5'9"**
Fuel Tank Refill Capacity	22 L	**5.8 U.S. gal**	135 L	**36 U.S. gal**	135 L	**36 U.S. gal**	110 L	**29 U.S. gal**
Hydraulic System (includes tank)	37 L	**9.8 U.S. gal**	94 L	**25 U.S. gal**	105 L	**28 U.S. gal**	105 L	**28 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 District Office for details.




MODEL	311B		312B		312B		312B L	
Sourcing	**Japan**		**Japan**		**France**		**Japan**	
Flywheel Power	59 kW	**79 hp**	63 kW	**84 hp**	66 kW	**88 hp**	63 kW	**84 hp**
Operating Weight*	11 125 kg	**24,550 lb**	12 435 kg	**27,410 lb**	13 000 kg	**28,665 lb**	12 935 kg	**28,520 lb**
Bucket Capacity Range (heaped)	0.35-0.78 m^3	**0.46-1.02 yd^3**	0.35-0.78 m^3	**0.46-1.02 yd^3**	0.24-0.75 m^3	**0.31-0.98 yd^3**	0.35-0.78 m^3	**0.46-1.02 yd^3**
Engine Model	**3064T**		**3064T**		**3054T**		**3064T**	
Rated Engine RPM	**1800**		**1900**		**1900**		**1900**	
No. of Cylinders	**4**		**4**		**4**		**4**	
Bore	102 mm	**4"**	102 mm	**4"**	100 mm	**3.9"**	102 mm	**4"**
Stroke	130 mm	**5.1"**	130 mm	**5.1"**	127 mm	**5"**	130 mm	**5.1"**
Displacement	4.25 L	**259 in^3**	4.25 L	**259 in^3**	4 L	**244 in^3**	4.25 L	**259 in^3**
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 108 L/min	**2 × 29 gpm**	2 × 120 L/min	**2 × 32 gpm**	2 × 120 L/min	**2 × 32 gpm**	2 × 120 L/min	**2 × 32 gpm**
Relief Valve Settings:								
Implement Circuits	29 900 kPa	**4340 psi**	29 900 kPa	**4340 psi**	30 000 kPa	**4350 psi**	29 900 kPa	**4340 psi**
Travel Circuits	34 300 kPa	**4980 psi**	34 300 kPa	**4980 psi**	34 300 kPa	**4973 psi**	34 300 kPa	**4980 psi**
Swing Circuits	23 050 kPa	**3340 psi**	23 050 kPa	**3340 psi**	25 000 kPa	**3625 psi**	23 050 kPa	**3340 psi**
Pilot Circuits	3930 kPa	**570 psi**	3930 kPa	**570 psi**	4000 kPa	**580 psi**	3930 kPa	**570 psi**
Maximum Drawbar Pull	95 kN	**21,360 lb**	106 kN	**23,835 lb**	104 kN	**23,400 lb**	106 kN	**23,835 lb**
Maximum Travel Speed at Rated RPM	**Two Speed Travel** Lo: 3.8 km/h Hi: 5.5 km/h	**2.4 mph 3.4 mph**	**Two Speed Travel** Lo: 3.8 km/h Hi: 5.5 km/h	**2.4 mph 3.4 mph**	**Two Speed Travel** Lo: 3.6 km/h Hi: 5.5 km/h	**2.2 mph 3.4 mph**	**Two Speed Travel** Lo: 3.8 km/h Hi: 5.5 km/h	**2.4 mph 3.4 mph**
Width of Standard Track Shoe	500 mm	**1'8"**	500 mm	**1'8"**	500 mm	**1'8"**	600 mm	**2'0"**
Overall Track Length	3320 mm	**10'11"**	3490 mm	**11'5"**	3490 mm	**11'5"**	3750 mm	**12'4"**
Ground Contact Area with Std. Shoe	2.86 m^2	**4430 in^2**	3.03 m^2	**4700 in^2**	2.78 m^2	**4309 in^2**	3.95 m^2	**5925 in^2**
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**	250 L	**66 U.S. gal**	250 L	**66 U.S. gal**
Hydraulic System (includes tank)	157 L	**41 U.S. gal**	162 L	**43 U.S. gal**	151 L	**40 U.S. gal**	162 L	**43 U.S. gal**

*Operating weight 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 District Office for details.




MODEL	312B L		315B		315B L		315B L	
Sourcing	**France**		**Japan**		**Japan**		**France**	
Flywheel Power	66 kw	**88 hp**	74 kW	**99 hp**	74 kW	**99 hp**	80 kW	**107 hp**
Operating Weight*	13 270 kg	**29,260 lb**	15 800 kg	**34,800 lb**	16 400 kg	**36,200 lb**	16 200 kg	**35,721 lb**
Bucket Capacity Range (heaped)	0.24-0.75 m^3	**0.31-0.98 yd^3**	0.37-0.84 m^3	**0.5-1.1 yd^3**	0.37-0.84 m^3	**0.5-1.1 yd^3**	0.35-0.9 m^3	**0.45-1.17 yd^3**
Engine Model	**3054T**		**3046T**		**3046T**		**3054TA**	
Rated Engine RPM	**1900**		**2100**		**2100**		**2100**	
No. of Cylinders	**4**		**6**		**6**		**4**	
Bore	100 mm	**3.9"**	94 mm	**3.7"**	94 mm	**3.7"**	100 mm	**3.9"**
Stroke	127 mm	**5"**	120 mm	**4.7"**	120 mm	**4.7"**	127 mm	**5"**
Displacement	4 L	**244 in^3**	5 L	**305 in^3**	5 L	**305 in^3**	4 L	**244 in^3**
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 120 L/min	**2 × 32 gpm**	2 × 132 L/min	**2 × 35 gpm**	2 × 132 L/min	**2 × 35 gpm**	2 × 132 L/min	**2 × 35 gpm**
Relief Valve Settings:								
Implement Circuits	30 000 kPa	**4350 psi**	34 300 kPa	**4980 psi**	34 320 kPa	**4980 psi**	35 000 kPa	**5075 psi**
Travel Circuits	34 300 kPa	**4970 psi**	34 300 kPa	**4980 psi**	34 320 kPa	**4980 psi**	34 300 kPa	**4973 psi**
Swing Circuits	25 000 kPa	**3625 psi**	23 050 kPa	**3340 psi**	23 050 kPa	**3340 psi**	26 500 kPa	**3842 psi**
Pilot Circuits	4000 kPa	**580 psi**	3930 kPa	**570 psi**	3930 kPa	**570 psi**	4000 kPa	**580 psi**
Maximum Drawbar Pull	118 kN	**26,550 lb**	131 kN	**29,540 lb**	131 kN	**29,540 lb**	132 kN	**29,700 lb**
Maximum Travel Speed at Rated RPM	**Two Speed Travel** Lo: 3.2 km/h Hi: 5.5 km/h	**1.9 mph 3.4 mph**	**Two Speed Travel** Lo: 3.3 km/h Hi: 5.5 km/h	**2.1 mph 3.4 mph**	**Two Speed Travel** Lo: 3.3 km/h Hi: 5.5 km/h	**2.1 mph 3.4 mph**	**Two Speed Travel** Lo: 3.2 km/h Hi: 5.5 km/h	**1.9 mph 3.4 mph**
Width of Standard Track Shoe	600 mm	**2'0"**	500 mm	**1'8"**	600 mm	**2'0"**	500 mm	**1'8"**
Overall Track Length	3750 mm	**12'4"**	3685 mm	**12'1"**	3970 mm	**13'0"**	3960 mm	**12'6"**
Ground Contact Area with Std. Shoe	3.65 m^2	**5654 in^2**	3.16 m^2	**4898 in^2**	4.14 m^2	**6420 in^2**	3.16 m^2	**4907 in^2**
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**	280 L	**74 U.S. gal**	280 L	**74 U.S. gal**	280 L	**74 U.S. gal**
Hydraulic System (includes tank)	151 L	**40 U.S. gal**	188 L	**49.7 U.S. gal**	188 L	**49.7 U.S. gal**	188 L	**49.7 U.S. gal**

*Operating weight 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 District Office for details.




MODEL	318B L		318B L		318B LN		318B LN	
Sourcing	**Japan**		**France**		**Japan**		**France**	
Flywheel Power	86 kW	**115 hp**	86 kW	**115 hp**	86 kW	**115 hp**	86 kW	**115 hp**
Operating Weight*	18 410 kg	**40,590 lb**	17 700 kg	**39,028 lb**	18 020 kg	**39,730 lb**	17 160 kg	**37,838 lb**
Bucket Capacity Range (heaped)	0.45-0.8 m^3	**0.59-1.05 yd^3**	0.41-1.35 m^3	**0.53-1.75 yd^3**	0.45-0.8 m^3	**0.59-1.05 yd^3**	0.41-1.35 m^3	**0.53-1.75 yd^3**
Engine Model	**3046T**		**3046T**		**3046T**		**3046T**	
Rated Engine RPM	**2100**		**2100**		**2100**		**2100**	
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 in^3**	5 L	**305 in^3**	5 L	**305 in^3**	5 L	**305 in^3**
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 150 L/min	**2 × 40 gpm**	2 × 150 L/min	**2 × 40 gpm**	2 × 150 L/min	**2 × 40 gpm**	2 × 150 L/min	**2 × 40 gpm**
Relief Valve Settings:								
Implement Circuits	34 320 kPa	**4980 psi**	35 000 kPa	**5075 psi**	34 320 kPa	**4980 psi**	35 000 kPa	**5075 psi**
Travel Circuits	34 320 kPa	**4980 psi**	34 300 kPa	**4973 psi**	34 320 kPa	**4980 psi**	34 300 kPa	**4973 psi**
Swing Circuits	23 050 kPa	**3340 psi**	26 500 kPa	**3842 psi**	23 050 kPa	**3340 psi**	26 500 kPa	**3842 psi**
Pilot Circuits	3930 kPa	**570 psi**	4000 kPa	**580 psi**	3930 kPa	**570 psi**	4000 kPa	**580 psi**
Maximum Drawbar Pull	176 kN	**39,550 lb**	154 kN	**34,650 lb**	176 kN	**39,550 lb**	154 kN	**34,650 lb**
Maximum Travel Speed at Rated RPM	**Two Speed Travel** Lo: 2.5 km/h Hi: 3.9 km/h	**1.6 mph 2.4 mph**	**Two Speed Travel** Lo: 2.8 km/h Hi: 5.5 km/h	**1.7 mph 3.4 mph**	**Two Speed Travel** Lo: 2.5 km/h Hi: 3.9 km/h	**1.6 mph 2.4 mph**	**Two Speed Travel** Lo: 2.8 km/h Hi: 5.5 km/h	**1.7 mph 3.4 mph**
Width of Standard Track Shoe	600 mm	**2'0"**	600 mm	**2'0"**	500 mm	**1'8"**	500 mm	**1'8"**
Overall Track Length	4075 mm	**13'4"**	4075 mm	**13'4"**	4075 mm	**13'4"**	4075 mm	**13'4"**
Ground Contact Area with Std. Shoe	4.26 m^2	**6600 in^2**	3.92 m^2	**6073 in^2**	3.55 m^2	**5500 in^2**	3.26 m^2	**5061 in^2**
Track Gauge	2200 mm	**7'3"**	2200 mm	**7'3"**	1990 mm	**6'6"**	1995 mm	**6'6.5"**
Fuel Tank Refill Capacity	280 L	**74 U.S. gal**	280 L	**74 U.S. gal**	280 L	**74 U.S. gal**	280 L	**74 U.S. gal**
Hydraulic System (includes tank)	188 L	**49.7 U.S. gal**	188 L	**49.7 U.S. gal**	188 L	**49.7 U.S. gal**	188 L	**49.7 U.S. gal**

*Operating weight 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 District Office for details.




MODEL	M312		M315		M318		M320	
Flywheel Power	85.1 kW	**114 hp**	92.4 kW	**124 hp**	104.4 kW	**140 hp**	104.4 kW	**140 hp**
Operating Weight*	13 810 kg	**30,450 lb**	15 730 kg	**34,685 lb**	17 910 kg	**39,490 lb**	19 410 kg	**20,640 lb**
Bucket Capacity Range (heaped)	0.24-0.86 m^3	**0.31-1.12 yd^3**	0.24-0.86 m^3	**0.31-1.12 yd^3**	0.4-1.05 m^3	**0.52-1.37 yd^3**	0.41-1.35 m^3	**0.54-1.77 yd^3**
Engine Model	**3054TA**		**3054TA**		**3116T**		**3116T**	
Rated Engine RPM	**2000**		**2300**		**2000**		**2000**	
No. of Cylinders	**4**		**4**		**6**		**6**	
Bore	100 mm	**3.9"**	100 mm	**3.9"**	102 mm	**4"**	102 mm	**4"**
Stroke	127 mm	**5"**	127 mm	**5"**	130 mm	**5.1"**	130 mm	**5.1"**
Displacement	3.99 L	**243 in^3**	3.99 L	**243 in^3**	6.6 L	**402.6 in^3**	6.6 L	**402.6 in^3**
Max. Implement Hydraulic Pump Output at Rated RPM	190+80 L/min	**50+21 gpm**	220+80 L/min	**58+21 gpm**	260+112 L/min	**69+30 gpm**	320+112 L/min	**85+30 gpm**
Relief Valve Setting	33 000 kPa	**4785 psi**	33 000 kPa	**4785 psi**	33 000 kPa	**4785 psi**	33 000 kPa	**4785 psi**
Tires — standard	**Dual 10.00-20 16PR**		**Dual 10.00-20 16PR**		**Dual 10.00-20 16PR**		**Dual 11.00-20 16PR**	
— optional	**Dual 10.00-20 14PR**		**Dual 10.00-20 14PR**		**Dual 10.00-20 14PR**		**Dual 10.00-20 Solid**	
	Dual 11.00-20 16PR		**Dual 11.00-20 16PR**		**Dual 11.00-20 16PR**		**Single 18R-19.5 XF**	
	Single 18R-19.5 XF		**Single 18R-19.5 XF**		**Single 18R-19.5 XF**		**Single 18R-22.5 XF**	
			Single 18R-22.5 XF		**Single 18R-22.5 XF**		**—**	
Max. Travel Speed	34 km/h	**21 mph**	34 km/h	**21 mph**	34 km/h	**21 mph**	20 km/h	**12 mph**
Tread Width**	1913 mm	**6'3"**	1913 mm	**6'3"**	1913 mm	**6'3"**	1913 mm	**6'3"**
Wheel Base	2500 mm	**8'2"**	2500 mm	**8'2"**	2600 mm	**8'6"**	2750 mm	**9'0"**
Width Over Tires**	2500 mm	**8'2"**	2500 mm	**8'2"**	2500 mm	**8'2"**	2950 mm	**9'8"**
Ground Clearance**	375 mm	**14.8"**	375 mm	**14.8"**	375 mm	**14.8"**	360 mm	**14.1"**
Fuel Tank Refill Capacity	230 L	**60.8 U.S. gal**	240 L	**63.4 U.S. gal**	320 L	**84.5 U.S. gal**	370 L	**98 U.S. gal**
Hydraulic System (includes tank)	180 L	**47.6 U.S. gal**	210 L	**55.5 U.S. gal**	220 L	**58.1 U.S. gal**	300 L	**79 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 District Office for details.




MODEL	320B		320B		320B L		320B L	
Sourcing	**Japan, Brazil**		**Belgium**		**Japan, Brazil**		**Belgium**	
Flywheel Power	96 kW	**128 hp**	96 kW	**128 hp**	96 kW	**128 hp**	96 kW	**128 hp**
Operating Weight*	19 400 kg	**42,770 lb**	20 520 kg	**45,250 lb**	20 720 kg	**45,690 lb**	21 380 kg	**47,140 lb**
Bucket Capacity Range (heaped)	0.45-1.5 m^3	**0.59-1.96 yd^3**	0.41-1.5 m^3	**0.5-1.9 yd^3**	0.45-1.5 m^3	**0.59-1.96 yd^3**	0.41-1.5 m^3	**0.5-1.9 yd^3**
Engine Model	**3066T**		**3116T**		**3066T**		**3116T**	
Rated Engine RPM	**1800**		**1800**		**1800**		**1800**	
No. of Cylinders	**6**		**6**		**6**		**6**	
Bore	102 mm	**4"**	105 mm	**4.1"**	102 mm	**4"**	105 mm	**4.1"**
Stroke	130 mm	**5.1"**	127 mm	**5"**	130 mm	**5.1"**	127 mm	**5"**
Displacement	6.4 L	**389 in^3**	6.6 L	**403 in^3**	6.4 L	**389 in^3**	6.6 L	**403 in^3**
Max. Implement Hydraulic Pump at Rated RPM	2 × 185 L/min	**2 × 49 gpm**	2 × 185 L/min	**2 × 49 gpm**	2 × 185 L/min	**2 × 49 gpm**	2 × 185 L/min	**2 × 49 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	23 000 kPa	**3340 psi**	23 000 kPa	**3340 psi**	23 000 kPa	**3340 psi**	23 000 kPa	**3340 psi**
Pilot Circuits	4140 kPa	**600 psi**	4140 kPa	**600 psi**	4140 kPa	**600 psi**	4140 kPa	**600 psi**
	Two Speed Travel		**Two Speed Travel**		**Two Speed Travel**		**Two Speed Travel**	
Maximum Drawbar Pull	Lo: 177 kN Hi: 106 kN	**39,800 lb 23,810 lb**	Lo: 177 kN Hi: 106 kN	**39,800 lb 23,810 lb**	Lo: 177 kN Hi: 106 kN	**39,800 lb 23,810 lb**	Lo: 177 kN Hi: 107 kN	**39,800 lb 23,810 lb**
Maximum Travel Speed at Rated RPM	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph 3.4 mph**	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph 3.4 mph**	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph 3.4 mph**	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph 3.4 mph**
Width of Standard Track Shoe	600 mm	**2'0"**	600 mm	**2'0"**	800 mm	**2'8"**	550 mm	**1'10"**
Overall Track Length	4075 mm	**13'4"**	4075 mm	**13'4.4"**	4455 mm	**14'7"**	4360 mm	**14'4"**
Ground Contact Area with Std. Shoe	4.26 m^2	**6600 in^2**	4.26 m^2	**6600 in^2**	6.29 m^2	**9750 in^2**	4.15 m^2	**6433 in^2**
Track Gauge	2200 mm	**7'3"**	2200 mm	**7'2.6"**	2380 mm	**7'10"**	1895 mm	**6'3"**
Fuel Tank Refill Capacity	340 L	**90 U.S. gal**	290 L	**77 U.S. gal**	340 L	**90 U.S. gal**	290 L	**77 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 District Office for details.




MODEL	320B N		320B LN		320B S		322B	
Sourcing	**Japan**		**Belgium**		**Belgium**		**Japan**	
Flywheel Power	96 kW	**128 hp**	96 kW	**128 hp**	96 kW	**128 hp**	114 kW	**153 hp**
Operating Weight*	19 930 kg	**43,940 lb**	20 810 kg	**45,900 lb**	22 530 kg	**49,680 lb**	22 760 kg	**50,180 lb**
Bucket Capacity Range (heaped)	0.45-1.5 m^3	**0.59-1.96 yd^3**	0.41-1.5 m^3	**0.5-1.9 yd^3**	0.41-1.5 m^3	**0.5-1.9 yd^3**	0.45-1.8 m^3	**0.6-2.4 yd^3**
Engine Model	**3066T**		**3116T**		**3116T**		**3116T**	
Rated Engine RPM	**1800**		**1800**		**1800**		**1950**	
No. of Cylinders	**6**		**6**		**6**		**6**	
Bore	102 mm	**4"**	105 mm	**4.1"**	105 mm	**4.1"**	105 mm	**4.1"**
Stroke	130 mm	**5.1"**	127 mm	**5"**	127 mm	**5"**	127 mm	**5"**
Displacement	6.4 L	**389 in^3**	6.6 L	**403 in^3**	6.6 L	**403 in^3**	6.6 L	**403 in^3**
Max. Implement Hydraulic Pump at Rated RPM	2 × 185 L/min	**2 × 49 gpm**	2 × 185 L/min	**2 × 49 gpm**	2 × 185 L/min	**2 × 49 gpm**	2 × 205 L/min	**2 × 54 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	23 050 kPa	**3340 psi**	23 050 kPa	**3340 psi**	23 050 kPa	**3340 psi**	27 500 kPa	**3980 psi**
Pilot Circuits	4140 kPa	**600 psi**	4140 kPa	**600 psi**	4140 kPa	**600 psi**	4140 kPa	**600 psi**
	Two Speed Travel		**Two Speed Travel**		**Two Speed Travel**		**Two Speed Travel**	
Maximum Drawbar Pull	Lo: 177 kN Hi: 106 kN	**39,800 lb** **23,810 lb**	Lo: 177 kN Hi: 106 kN	**39,800 lb** **23,810 lb**	Lo: 177 kN Hi: 106 kN	**39,800 lb** **23,810 lb**	Lo: 194 kN Hi: 108 kN	**43,650 lb** **24,500 lb**
Maximum Travel Speed at Rated RPM	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph** **3.4 mph**	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph** **3.4 mph**	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph** **3.4 mph**	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph** **3.4 mph**
Width of Standard Track Shoe	500 mm	**1'8"**	500 mm	**1'8"**	550 mm	**1'9"**	600 mm	**2'0"**
Overall Track Length	4075 mm	**13'4"**	4460 mm	**14'8"**	4358 mm	**14'4"**	4260 mm	**14'0"**
Ground Contact Area with Std. Shoe	3.55 m^2	**5500 in^2**	3.9 m^2	**6045 in^2**	4.15 m^2	**6433 in^2**	4.48 m^2	**6940 in^2**
Track Gauge	2200 mm	**7'3"**	1995 mm	**6'6.5"**	1895 mm	**6'3"**	2390 mm	**7'10"**
Fuel Tank Refill Capacity	340 L	**90 U.S. gal**	290 L	**77 U.S. gal**	290 L	**77 U.S. gal**	340 L	**90 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 District Office for details.

MODEL	 322B L		 322B L		 322B LN	
Sourcing	**Japan, U.S.**		**Belgium**		**Belgium**	
Flywheel Power	114 kW	**153 hp**	114 kW	**153 hp**	114 kW	**153 hp**
Operating Weight*	23 990 kg	**52,890 lb**	24 590 kg	**54,220 lb**	23 810 kg	**52,500 lb**
Bucket Capacity Range (heaped)	0.45-1.9 m^3	**0.6-2.5 yd^3**	0.63-1.9 m^3	**0.82-2.5 yd^3**	0.63-1.9 m^3	**0.82-2.5 yd^3**
Engine Model	**3116TA**		**3116TA**		**3116TA**	
Rated Engine RPM	**1950**		**1950**		**1950**	
No. of Cylinders	**6**		**6**		**6**	
Bore	105 mm	**4.1"**	105 mm	**4.1"**	105 mm	**4.1"**
Stroke	127 mm	**5"**	127 mm	**5"**	127 mm	**5"**
Displacement	6.6 L	**403 in^3**	6.6 L	**403 in^3**	6.6 L	**403 in^3**
Max. Implement Hydraulic Pump 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**
Relief Valve Settings:						
Implement Circuits	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**
Swing Circuits	27 500 kPa	**3980 psi**	27 500 kPa	**3980 psi**	27 500 kPa	**3980 psi**
Pilot Circuits	4140 kPa	**600 psi**	4140 kPa	**600 psi**	4140 kPa	**600 psi**
	Two Speed Travel		**Two Speed Travel**		**Two Speed Travel**	
Maximum Drawbar Pull	Lo: 194 kN Hi: 108 kN	**43,650 lb** **24,500 lb**	Lo: 194 kN Hi: 108 kN	**43,650 lb** **24,500 lb**	Lo: 194 kN Hi: 108 kN	**43,650 lb** **24,500 lb**
Maximum Travel Speed at Rated RPM	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph** **3.4 mph**	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph** **3.4 mph**	Lo: 3.4 km/h Hi: 5.5 km/h	**2.1 mph** **3.4 mph**
Width of Standard Track Shoe	800 mm	**2'8"**	800 mm	**2'8"**	600 mm	**2'0"**
Overall Track Length	4630 mm	**15'2"**	4640 mm	**15'3"**	4640 mm	**15'3"**
Ground Contact Area with Std. Shoe	6.58 m^2	**10,200 in^2**	6.58 m^2	**10,200 in^2**	4.94 m^2	**7650 in^2**
Track Gauge	2590 mm	**8'6"**	2590 mm	**8'6"**	2590 mm	**8'6"**
Fuel Tank Refill Capacity	340 L	**90 U.S. gal**	340 L	**90 U.S. gal**	340 L	**90 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 District Office for details.




MODEL	325B		325B L		325B L		325B LN	
Sourcing	**Japan**		**Japan, U.S.**		**Belgium**		**Belgium**	
Flywheel Power	125 kW	**168 hp**	125 kW	**168 hp**	125 kW	**168 hp**	125 kW	**168 hp**
Operating Weight*	25 900 kg	**57,100 lb**	27 530 kg	**60,700 lb**	28 590 kg	**63,040 lb**	27 070 kg	**59,690 lb**
Bucket Capacity Range (heaped)	0.7-2.2 m^3	**0.92-2.88 yd^3**	0.7-2.2 m^3	**0.92-2.88 yd^3**	0.63-1.9 m^3	**0.82-2.5 yd^3**	0.63-1.9 m^3	**0.82-2.5 yd^3**
Engine Model	**3116TA**		**3116TA**		**3116TA**		**3116TA**	
Rated Engine RPM	**2000**		**2000**		**2000**		**2000**	
No. of Cylinders	**6**		**6**		**6**		**6**	
Bore	105 mm	**4.1"**	105 mm	**4.1"**	105 mm	**4.1"**	105 mm	**4.1"**
Stroke	127 mm	**5"**	127 mm	**5"**	127 mm	**5"**	127 mm	**5"**
Displacement	6.6 L	**403 in^3**	6.6 L	**403 in^3**	6.6 L	**403 in^3**	6.6 L	**403 in^3**
Max. Implement Hydraulic Pump at Rated RPM	2 × 210 L/min	**2 × 55.5 gpm**	2 × 214 L/min	**2 × 56.5 gpm**	2 × 210 L/min	**2 × 55 gpm**	2 × 210 L/min	**2 × 55 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	27 500 kPa	**3980 psi**	29 400 kPa	**4250 psi**	27 500 kPa	**3980 psi**	27 500 kPa	**3980 psi**
Pilot Circuits	4140 kPa	**600 psi**	4100 kPa	**595 psi**	4140 kPa	**600 psi**	4140 kPa	**600 psi**
	Two Speed Travel		**Two Speed Travel**		**Two Speed Travel**		**Two Speed Travel**	
Maximum Drawbar Pull	Lo: 215 kN Hi: 131 kN	**48,350 lb** **29,540 lb**	Lo: 215 kN Hi: 131 kN	**48,350 lb** **29,540 lb**	Lo: 215 kN Hi: 131 kN	**48,350 lb** **29,540 lb**	Lo: 215 kN Hi: 131 kN	**48,350 lb** **29,540 lb**
Maximum Travel Speed at Rated RPM	Lo: 3.1 km/h Hi: 5 km/h	**1.9 mph** **3.1 mph**	Lo: 3.1 km/h Hi: 5 km/h	**1.9 mph** **3.1 mph**	Lo: 3.1 km/h Hi: 5 km/h	**1.9 mph** **3.1 mph**	Lo: 3.1 km/h Hi: 5 km/h	**1.9 mph** **3.1 mph**
Width of Standard Track Shoe	600 mm	**2'0"**	800 mm	**2'8"**	800 mm	**2'8"**	600 mm	**2'0"**
Overall Track Length	4360 mm	**14'4"**	4660 mm	**15'3"**	4660 mm	**15'3"**	4660 mm	**15'3"**
Ground Contact Area with Std. Shoe	4.55 m^2	**7050 in^2**	6.56 m^2	**10,200 in^2**	6.56 m^2	**10,200 in^2**	4.92 m^2	**7630 in^2**
Track Gauge	2390 mm	**7'10"**	2590 mm	**8'6"**	2590 mm	**8'6"**	2390 mm	**7'10"**
Fuel Tank Refill Capacity	420 L	**111 U.S. gal**	420 L	**111 U.S. gal**	420 L	**111 U.S. gal**	420 L	**111 U.S. gal**

*Operating weight includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg **(165 lb)**.

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Contact your Caterpillar District Office for details.




MODEL	330B		330B L		330B L		330B LN	
Sourcing	**Japan**		**Japan, U.S.**		**Belgium**		**Belgium**	
Flywheel Power	165 kW	**222 hp**	165 kW	**222 hp**	165 kW	**222 hp**	165 kW	**222 hp**
Operating Weight*	32 420 kg	**71,470 lb**	33 730 kg	**74,360 lb**	34 180 kg	**75,370 lb**	33 730 kg	**74,380 lb**
Bucket Capacity Range (heaped)	0.7-2.2 m^3	**0.92-2.88 yd^3**	0.7-2.2 m^3	**0.92-2.88 yd^3**	0.66-2.1 m^3	**0.86-2.75 yd^3**	0.66-2.1 m^3	**0.86-2.75 yd^3**
Engine Model	**3306TA**		**3306TA**		**3306TA**		**3306TA**	
Rated Engine RPM	**1800**		**1800**		**1800**		**1800**	
No. of Cylinders	**6**		**6**		**6**		**6**	
Bore	121 mm	**4.75"**	121 mm	**4.75"**	121 mm	**4.75"**	121 mm	**4.75"**
Stroke	152 mm	**6"**	152 mm	**6"**	152 mm	**6"**	152 mm	**6"**
Displacement	10.5 L	**638 in^3**	10.5 L	**638 in^3**	10.5 L	**640 in^3**	10.5 L	**638 in^3**
Max. Implement Hydraulic Pump at Rated RPM	2 × 240 L/min	**2 × 63 gpm**	2 × 240 L/min	**2 × 63 gpm**	2 × 240 L/min	**2 × 63 gpm**	2 × 240 L/min	**2 × 63 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	27 500 kPa	**3980 psi**	27 500 kPa	**3980 psi**	27 500 kPa	**3980 psi**	27 500 kPa	**3980 psi**
Pilot Circuits	4140 kPa	**600 psi**	4140 kPa	**600 psi**	4140 kPa	**600 psi**	4140 kPa	**600 psi**
	Two Speed Travel		**Two Speed Travel**		**Two Speed Travel**		**Two Speed Travel**	
Maximum Drawbar Pull	Lo: 268 kN Hi: 148 kN	**60,250 lb 33,300 lb**	Lo: 268 kN Hi: 148 kN	**60,250 lb 33,300 lb**	Lo: 268 kN Hi: 148 kN	**60,250 lb 33,300 lb**	Lo: 268 kN Hi: 148 kN	**60,250 lb 33,300 lb**
Maximum Travel Speed at Rated RPM	Lo: 2.7 km/h Hi: 4.6 km/h	**1.7 mph 2.9 mph**	Lo: 2.7 km/h Hi: 4.6 km/h	**1.7 mph 2.9 mph**	Lo: 2.7 km/h Hi: 4.6 km/h	**1.7 mph 2.9 mph**	Lo: 2.7 km/h Hi: 4.6 km/h	**1.7 mph 2.9 mph**
Width of Standard Track Shoe	600 mm	**2'0"**	750 mm	**2'6"**	750 mm	**2'5.5"**	600 mm	**2'0"**
Overall Track Length	4.58 m	**15'0"**	5.02 m	**16'6"**	5.02 m	**16'6"**	5.02 m	**16'6"**
Ground Contact Area with Std. Shoe	4.74 m^2	**7350 in^2**	6.58 m^2	**10,200 in^2**	6.58 m^2	**10,200 in^2**	5.26 m^2	**8150 in^2**
Track Gauge	2.59 m	**8'6"**	2.59 m	**8'6"**	2.59 m	**8'6"**	2.39 m	**7'10"**
Fuel Tank Refill Capacity	560 L	**148 U.S. gal**	560 L	**148 U.S. gal**	560 L	**148 U.S. gal**	560 L	**148 U.S. gal**

*Operating weight includes coolant, lubricants, full fuel tank, standard shoes, bucket and operator 75 kg **(165 lb)**.

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Specifications may also vary by Sales area.
Contact your Caterpillar District Office for details.




MODEL	345B		345B L – FIX		345B L – VG		345B L – VG	
Sourcing	**Japan**		**Japan, U.S.**		**U.S.**		**Belgium**	
Flywheel Power	216 kW	**290 hp**	216 kW	**290 hp**	216 kW	**290 hp**	216 kW	**290 hp**
Operating Weight*	43 000 kg	**94,800 lb**	44 900 kg	**98,990 lb**	46 900 kg	**103,400 lb**	47 615 kg	**105,000 lb**
Bucket Capacity Range (heaped)	1.3-2.6 m^3	**1.7-3.4 yd^3**	1.3-2.6 m^3	**1.7-3.4 yd^3**	1.3-2.6 m^3	**1.7-3.4 yd^3**	1.8-3.5 m^3	**2.3-4.6 yd^3**
Engine Model	**3176CATAAC**		**3176CATAAC**		**3176CATAAC**		**3176CATAAC**	
Rated Engine RPM	**2000**		**2000**		**2000**		**2000**	
No. of Cylinders	**6**		**6**		**6**		**6**	
Bore	125 mm	**4.92"**	125 mm	**4.92"**	125 mm	**4.92"**	125 mm	**4.92"**
Stroke	140 mm	**5.51"**	140 mm	**5.51"**	140 mm	**5.51"**	140 mm	**5.51"**
Displacement	10.3 L	**628.5 in^3**	10.3 L	**628.5 in^3**	10.3 L	**628.5 in^3**	10.3 L	**628.5 in^3**
Max. Implement Hydraulic Pump at Rated RPM	2 × 320 L/min	**2 × 85 gpm**	2 × 320 L/min	**2 × 85 gpm**	2 × 320 L/min	**2 × 85 gpm**	2 × 320 L/min	**2 × 85 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	28 400 kPa	**4125 psi**	28 400 kPa	**4125 psi**	28 400 kPa	**4125 psi**	28 400 kPa	**4125 psi**
Pilot Circuits	3930 kPa	**570 psi**	3930 kPa	**570 psi**	3930 kPa	**570 psi**	3930 kPa	**570 psi**
Maximum Drawbar Pull	322 kN	**72,400 lb**	322 kN	**72,400 lb**	322 kN	**72,400 lb**	322 kN	**72,400 lb**
Maximum Travel Speed at Rated RPM	**Two Speed Travel** Lo: 3.2 km/h Hi: 4.4 km/h	**2 mph 2.7 mph**	**Two Speed Travel** Lo: 3.2 km/h Hi: 4.4 km/h	**2 mph 2.7 mph**	**Two Speed Travel** Lo: 3.2 km/h Hi: 4.4 km/h	**2 mph 2.7 mph**	**Two Speed Travel** Lo: 3.2 km/h Hi: 4.4 km/h	**2 mph 2.7 mph**
Width of Standard Track Shoe	600 mm	**2'0"**	750 mm	**2'6"**	750 mm	**2'6"**	600 mm	**2'0"**
Overall Track Length	5.03 m	**16'6"**	5.36 m	**17'7"**	5.34 m	**17'6"**	5.34 m	**17'6"**
Ground Contact Area with Std. Shoe	5.26 m^2	**8150 in^2**	7.07 m^2	**10,960 in^2**	5.63 m^2	**8730 in^2**	5.63 m^2	**8727 in^2**
Track Gauge	2.74 m	**9'0"**	2.74 m	**9'0"**	2.74 m	**9'0"**	2.74 m	**9'0"**
Extended	—		—		2.89 m	**9'6"**	2.89 m	**9'6"**
Fuel Tank Refill Capacity	600 L	**159 U.S. gal**	600 L	**159 U.S. gal**	600 L	**159 U.S. gal**	600 L	**159 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 District Office for details.




MODEL	350		350 L		375		375	
Sourcing	**Japan**		**Japan**		**Japan, U.S.**		**Belgium**	
Flywheel Power	213 kW	**286 hp**	213 kW	**286 hp**	319 kW	**428 hp**	319 kW	**428 hp**
Operating Weight*	48 040 kg	**105,930 lb**	49 010 kg	**108,070 lb**	75 770 kg	**167,070 lb**	79 160 kg**	**174,550 lb****
Bucket Capacity Range (heaped)	1.3-2.6 m^3	**1.7-3.4 yd^3**	0.9-2.6 m^3	**1.2-3.4 yd^3**	1.5-4.4 m^3	**1.96-5.75 yd^3**	3.6-5.6 m^3	**4.7-7.3 yd^3**
Engine Model	**3306ATAAC**		**3306ATAAC**		**3406CATAAC**		**3406CATAAC**	
Rated Engine RPM	**2000**		**2000**		**1800**		**1800**	
No. of Cylinders	**6**		**6**		**6**		**6**	
Bore	121 mm	**4.75"**	121 mm	**4.75"**	137 mm	**5.4"**	137 mm	**5.4"**
Stroke	152 mm	**6"**	152 mm	**6"**	165 mm	**6.5"**	165 mm	**6.5"**
Displacement	10.5 L	**638 in^3**	10.5 L	**638 in^3**	14.6 L	**893 in^3**	14.6 L	**891 in^3**
Max. Implement Hydraulic Pump at Rated RPM	2 × 335 L/min	**2 × 89 gpm**	2 × 335 L/min	**2 × 89 gpm**	2 × 430 L/min	**2 × 114 gpm**	2 × 435 L/min	**2 × 115 gpm**
Relief Valve Settings:								
Implement Circuits	31 400 kPa	**4550 psi**	31 400 kPa	**4550 psi**	31 400 kPa	**4550 psi**	31 400 kPa	**4550 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	27 000 kPa	**3910 psi**	27 000 kPa	**3910 psi**	27 500 kPa	**3980 psi**	—	
Pilot Circuits	3430 kPa	**500 psi**	3500 kPa	**508 psi**	3500 kPa	**508 psi**	3480 kPa	**505 psi**
Maximum Drawbar Pull	336 kN	**75,600 lb**	336 kN	**75,600 lb**	546 kN	**122,800 lb**	**Two Speed Travel** Lo: 546 kN Hi: 278 kN	**122,795 lb** **62,390 lb**
Maximum Travel Speed at Rated RPM	**Two Speed Travel** Lo: 3.3 km/h Hi: 4.6 km/h	**2 mph** **2.9 mph**	**Two Speed Travel** Lo: 3.3 km/h Hi: 4.6 km/h	**2 mph** **2.9 mph**	**Two Speed Travel** Lo: 2.7 km/h Hi: 9.4 km/h	**1.7 mph** **2.7 mph**	Lo: 2.7 km/h Hi: 4.5 km/h	**1.7 mph** **2.8 mph**
Width of Standard Track Shoe	600 mm	**2'0"**	750 mm	**2'6"**	610 mm	**2'0"**	610 mm	**2'0"**
Overall Track Length	5.11 m	**16'9"**	5.57 m	**18'3"**	5.84 m	**19'2"**	5840 m	**19'1.9"**
Ground Contact Area with Std. Shoe	5.30 m^2	**8220 in^2**	7.30 m^2	**11,320 in^2**	6.14 m^2	**9520 in^2**	6.14 m^2	**9520 in^2**
Track Gauge	2.55 m	**8'4"**	2.55 m	**8'4"**	2.75 m	**9'0"**	2.75 m	**9'4"**
Extended	3 m	**9'10"**	3 m	**9'10"**	3.51 m	**11'6"**	3.51 m	**11'6"**
Fuel Tank Refill Capacity	700 L	**185 U.S. gal**	700 L	**185 U.S. gal**	990 L	**262 U.S. gal**	990 L	**262 U.S. gal**

*Operating weight includes coolant, lubricants, full fuel tank, one-piece boom, long stick, small profile bucket, operator 75 kg **(165 lb)** and wide shoes.
Operating weight includes coolant, lubricants, fuel fuel tank, reach boom, medium stick configuration, 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 District Office for details.

MODEL	375 L		375 L	
Sourcing	**Japan, U.S.**		**Belgium**	
Flywheel Power	319 kW	**428 hp**	319 kW	**428 hp**
Operating Weight*	78 870 kg	**173,910 lb**	80 700 kg**	**177,940 lb****
Bucket Capacity Range (heaped)	1.5-4.4 m^3	**1.96-5.75 yd^3**	2.7-5.6 m^3	**3.5-7.3 yd^3**
Engine Model	**3406CATTAC**		**3406CATAAC**	
Rated Engine RPM	**1800**		**1800**	
No. of 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	**891 in^3**
Max. Implement Hydraulic Pump Output at Rated RPM	2 × 430 L/min	**2 × 114 gpm**	2 × 435 L/min	**2 × 115 gpm**
Relief Valve Settings:				
Implement Circuits	31 400 kPa	**4550 psi**	31 400 kPa	**4550 psi**
Travel Circuits	34 300 kPa	**4980 psi**	34 300 kPa	**4980 psi**
Swing Circuits	27 500 kPa	**3980 psi**	—	
Pilot Circuits	3500 kPa	**508 psi**	3480 kPa	**505 psi**
Maximum Drawbar Pull	546 kN	**122,800 lb**	**Two Speed Travel** Lo: 546 kN Hi: 278 kN	**122,795 lb** **62,390 lb**
Maximum Travel Speed at Rated RPM	**Two Speed Travel** Lo: 2.7 km/h Hi: 4.4 km/h	**1.7 mph** **2.7 mph**	Lo: 2.7 km/h Hi: 4.5 km/h	**1.7 mph** **2.8 mph**
Width of Standard Track Shoe	750 mm	**2'6"**	610 mm	**2'0"**
Overall Track Length	6.36 m	**20'10"**	6360 mm	**20'10.4"**
Ground Contact Area with Std. Shoe	8.33 m^2	**12,910 in^2**	6.77 m^2	**10,500 in^2**
Track Gauge	2.75 m	**9'0"**	2.75 m	**9'4"**
Extended	3.51 m	**11'6"**	3.51 m	**11'6"**
Fuel Tank Refill Capacity	990 L	**262 U.S. gal**	990 L	**262 U.S. gal**

*Operating weight includes coolant, lubricants, full fuel tank, one-piece boom, long stick, small profile bucket, operator 75 kg **(165 lb)** and wide shoes.
Operating weight includes coolant, lubricants, full fuel tank, reach boom, medium stick configuration, 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 District Office for details.

MODEL	5130B ME		5230 ME	
Sourcing	**U.S.**		**U.S.**	
Flywheel Power	597 kW	**800 hp**	1095 kW	**1470 hp**
Operating Weight*	182 000 kg	**401,000 lb**	316 600 kg	**698,000 lb**
Bucket Capacity Range (heaped)	8.5-18.3 m^3	**11-24 yd^3**	13-27.5 m^3	**17-36 yd^3**
Engine Model	**3508B EUI**		**3516 EUI**	
Rated Engine RPM	**1750**		**1750**	
No. of Cylinders	**8**		**16**	
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**	69 L	**4210 in^3**
Max. Hydraulic Pump Output at Rated RPM: Implement	4 × 372 L/min	**4 × 99 gpm**	6 × 372 L/min	**6 × 99 gpm**
Swing	1 × 464 L/min	**1 × 123 gpm**	2 × 464 L/min	**2 × 123 gpm**
Relief Valve Settings:				
Implement Circuits	31 000 kPa	**4550 psi**	31 000 kPa	**4550 psi**
Travel Circuits	35 000 kPa	**5080 psi**	35 000 kPa	**5080 psi**
Swing Circuits: Accelerate	35 000 kPa	**5080 psi**	35 000 kPa	**5080 psi**
Decelerate	25 000 kPa	**3620 psi**	25 000 kPa	**3620 psi**
Pilot Circuits	4000 kPa	**580 psi**	4000 kPa	**580 psi**
Maximum Drawbar Pull	872 kN	**196,000 lb**	1545 kN	**340,875 lb**
Maximum Travel Speed at Rated RPM	3.3 km/h	**2.1 mph**	2.5 km/h	**1.6 mph**
Overall Track Length	5.55 m**	**18'3"****	6.26 m**	**20'6"****
Width of Standard Track Shoe	800 mm	**2'8"**	1300 mm	**4'4"**
Ground Contact Area with Std. Shoe	9.8 m^2	**15,200 in^2**	18 m^2	**27,900 in^2**
Track Gauge	4.72 m	**15'6"**	5.2 m	**17'**
Fuel Tank Refill Capacity	2600 L	**687 U.S. gal**	5330 L	**1386 U.S. gal**

* Operating weight includes coolant, lubricants, full fuel tank, one-piece boom, medium stick, bucket, standard counterweight and operator 75 kg **(165 lb)**.
** Measured from center of driver to center of idler.
NOTE: Certain models may not be available in all Sales areas.
Specifications may also vary by Sales area.
Contact your Caterpillar District Office for details.

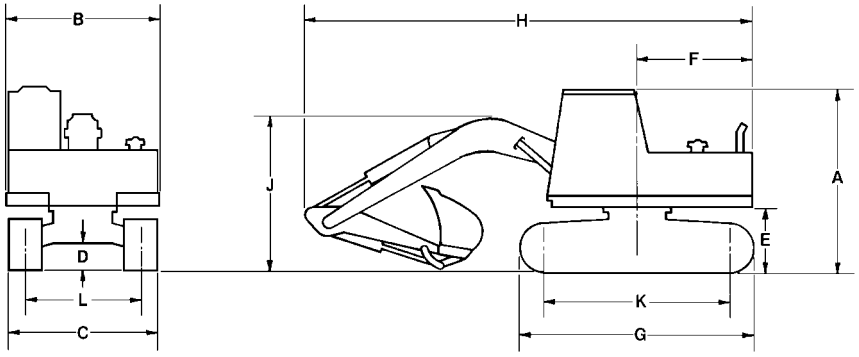
SHIPPING DIMENSIONS KEYS

307 through 5230

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

M312 through M320

A	Cab height
B	Transport width
C	Overall tire width
D	Ground clearance, frame
E	House height
F	Exhaust stack height
G	Overall length (outrigger to outrigger)
H	Overall transport length
J	Transport height
K	Ground clearance, counterweight
L	Transport length without boom
M	Cab swing radius
N	Tail swing radius
O	Wheelbase length
P	Overall width (outrigger to outrigger)

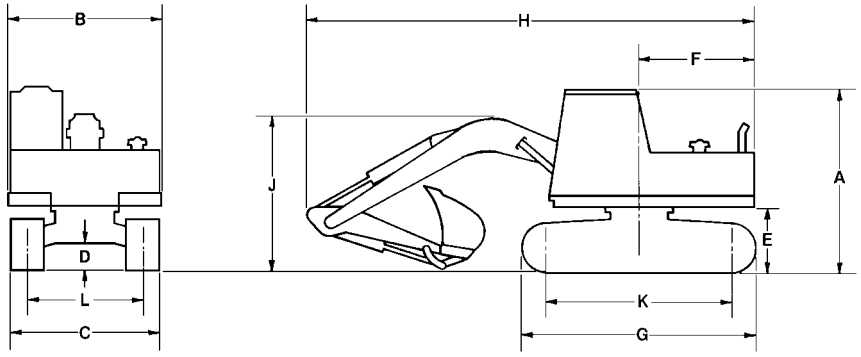


	301.5		307B		307B SB		307		311B		312B	
Sourcing	—		Japan		Japan		France		Japan		Japan	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2190	**7'2"**	2630	**8'8"**	2640	**8'8"**	2660	**8'9"**	2760	**9'1"**	2760	**9'1"**
B	980	**3'3"**	2280	**7'6"**	2280	**7'6"**	2280	**7'6"**	2495	**8'2"**	2495	**8'2"**
C	980	**3'3"**	2200	**7'3"**	2200	**7'3"**	2200	**7'3"**	2490	**8'2"**	2490	**8'2"**
D	220	**8.7"**	380	**15"**	380	**15"**	365	**14"**	455	**18"**	455	**18"**
E	460	**18"**	785	**2'7"**	785	**2'7"**	700	**2'6"**	920	**3'0"**	920	**3'0"**
F	1070	**3'6"**	1750	**5'9"**	1750	**5'9"**	1750	**5'9"**	2130	**7'0"**	2130	**7'0"**
G	1390	**4'7"**	2760	**9'1"**	2760	**9'1"**	2660	**8'9"**	3320	**10'11"**	3490	**11'5"**
H	3690	**12'1"**	6080	**19'11"**	6730	**22'1"**	6310	**20'8"**	7250	**23'9"**	7595	**24'11"**
J*		—	2630	**8'8"**	2640	**8'8"**	2750	**9'0"**	2760	**9'1"**	2760	**9'1"**
K	1020	**3'4"**	2120	**6'11"**	2120	**6'11"**	2050	**6'9"**	2610	**8'7"**	2780	**9'1"**
L		—	1750	**5'9"**	1750	**5'9"**	1750	**5'9"**	1990	**6'6"**	1990	**6'6"**

	312B		312B L		312B L		315B		315B L		315B L	
Sourcing	France		Japan		France		Japan		Japan		France	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2910	**9'6"**	2760	**9'1"**	2760	**9'1"**	2880	**9'5"**	2880	**9'5"**	3000	**9'11"**
B	2480	**8'2"**	2595	**8'6"**	2480	**8'2"**	2490	**8'2"**	2490	**8'2"**	2480	**8'2"**
C	2490	**8'2"**	2590	**8'6"**	2590	**8'6"**	2490	**8'2"**	2590	**8'6"**	2490	**8'2"**
D	435	**17"**	455	**18"**	435	**17"**	460	**18"**	460	**18"**	462	**18"**
E	900	**2'11"**	920	**3'0"**	900	**2'11"**	1030	**3'5"**	1030	**3'5"**	1022	**3'4"**
F	2090	**6'10"**	2130	**7'0"**	2090	**6'10"**	2450	**8'0"**	2450	**8'0"**	2430	**8'0"**
G	3490	**11'5"**	3750	**12'4"**	3750	**12'4"**	3690	**12'1"**	3970	**13'0"**	3965	**13'0"**
H	7590	**24'10"**	7595	**24'11"**	7590	**24'10"**	8500	**28'0"**	8500	**28'0"**	8475	**27'9"**
J*	2660	**8'9"**	2760	**9'1"**	2660	**8'9"**	2880	**9'5"**	2880	**9'5"**	2870	**9'5"**
K	2780	**9'1"**	3040	**12'0"**	3040	**12'0"**	2880	**9'5"**	3170	**10'5"**	3166	**10'4"**
L	1990	**6'6"**	1990	**6'6"**	1990	**6'6"**	1990	**6'6"**	1990	**6'6"**	1990	**6'6"**

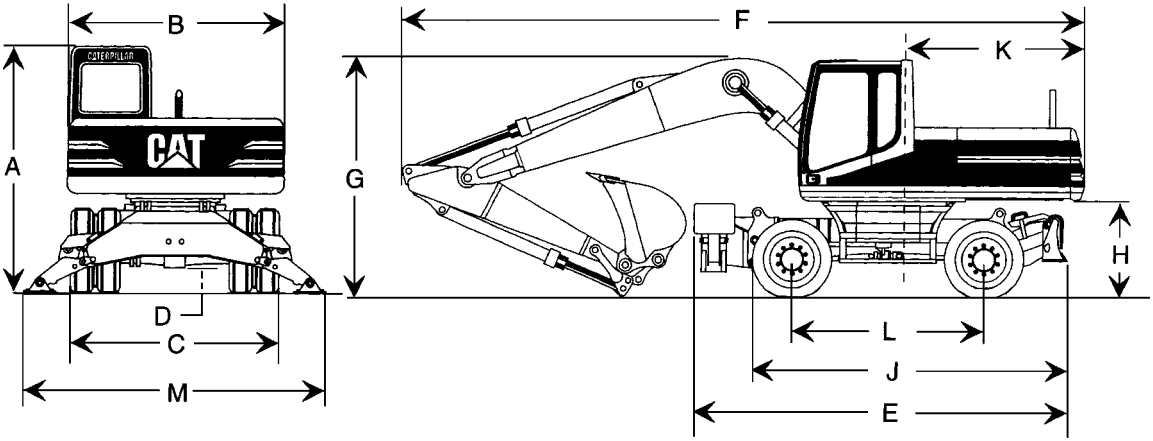
*Varies with stick length.

Shipping Dimensions
● 318B L ● 318B LN



	318B L		318B L		318B LN		318B LN	
Sourcing	**Japan**		**France**		**Japan**		**France**	
	mm	**ft**	**mm**	**ft**	**mm**	**ft**	**mm**	**ft**
A	2930	**9'7"**	3020	**9'10"**	2930	**9'7"**	3020	**9'10"**
B	2800	**9'2"**	2490	**8'2"**	2800	**9'2"**	2490	**8'2"**
C	2800	**9'2"**	2800	**9'2"**	2490	**8'2"**	2495	**8'2"**
D	475	**1'7"**	470	**18"**	475	**1'7"**	470	**18"**
E	1045	**3'5"**	1030	**3'4"**	1045	**3'5"**	1030	**3'4"**
F	2450	**8'0"**	2350	**7'8"**	2450	**8'0"**	2350	**7'8"**
G	4075	**13'4"**	4075	**13'4"**	4075	**13'4"**	4075	**13'4"**
H	8720	**28'7"**	8687	**28'6"**	8720	**28'7"**	8687	**28'6"**
J*	3050	**10'0"**	2830	**9'3"**	3050	**10'0"**	2830	**9'3"**
K	3265	**10'9"**	3265	**10'8"**	3265	**10'9"**	3265	**10'8"**
L	2200	**7'3"**	2200	**7'3"**	1990	**6'6"**	1995	**6'7"**

*Varies with stick length.

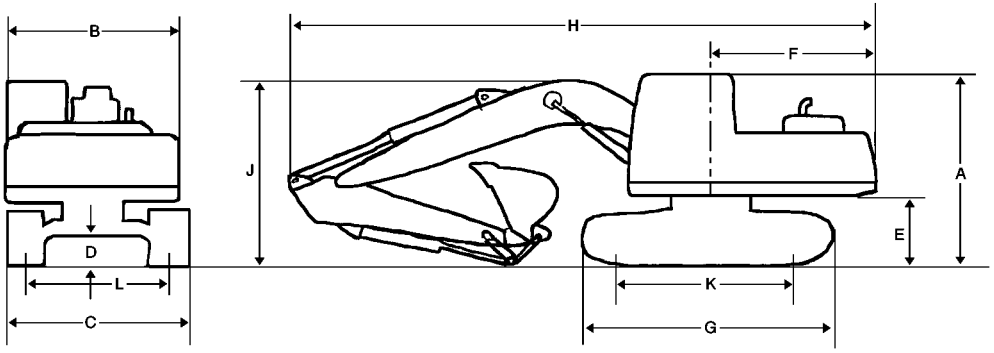


	M312		M315		M318		M320	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3070	**10'1"**	3080	**10'1"**	3100	**10'2"**	3145	**10'4"**
B	2500	**8'2"**	2500	**8'2"**	2500	**8'2"**	2650	**8'8"**
C*	2500	**8'2"**	2500	**8'2"**	2500	**8'2"**	2750	**9'0"**
Dozer width	2500	**8'2"**	2500	**8'2"**	2500	**8'2"**	2750	**9'0"**
D	375	**14.7"**	375	**14.7"**	375	**14.7"**	360	**14.2"**
E[1]	4900	**16'1"**	5000	**16'5"**	5000	**16'5"**	5175	**17'0"**
E[2]	4660	**15'3"**	4930	**16'2"**	5030	**16'5"**	5205	**17'1"**
E[3]	4140	**13'6"**	4140	**13'6"**	4240	**13'9"**	4405	**14'5"**
F	8620**	**28'3"**	8840**	**29'0"**	8970	**29'5"**	9660	**31'8"**
G	3070	**10'1"**	3080	**10'1"**	3100	**10'2"**	3145	**10'4"**
H	1262	**4'2"**	1262	**4'2"**	1280	**4'2"**	1310	**4'4"**
J	4140	**13'7"**	4140	**13'7"**	4240	**13'11"**	4405	**14'5"**
K	1990	**6'5"**	2150	**7'1"**	2450	**8'0"**	2700	**8'10"**
L	2500	**8'2"**	2500	**8'2"**	2600	**8'6"**	2750	**9'0"**
M	3835	**12'7"**	3835	**12'7"**	3835	**12'7"**	3900	**12'9"**

E[1] 2 Sets Outriggers.
E[2] Outriggers/Dozer.
E[3] Dozer only.

*10 × 20 Dual Tires.
**Linkage over dozer.
NOTE: Shipping dimensions above are for standard machine equipped with one-piece boom and medium stick.

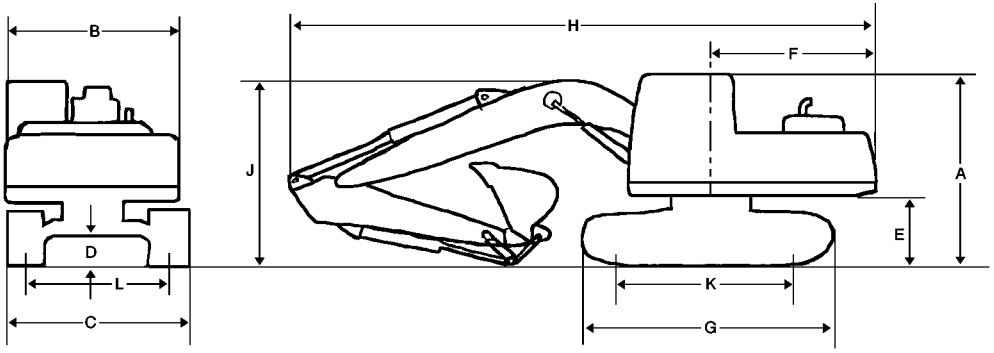
Shipping Dimensions
- 320B, 320B L, 320B N
- Japan Sourced



	320B Reach		320B Mass		320B L Reach		320B L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	2940	**9'8"**	2940	**9'8"**	2940	**9'8"**	2940	**9'8"**
B	2650	**8'8"**	2650	**8'8"**	2650	**8'8"**	2650	**8'8"**
C	2800	**9'2"**	2800	**9'2"**	3180	**10'5"**	3180	**10'5"**
D	475	**1'7"**	475	**1'7"**	475	**1'7"**	475	**1'7"**
E	1045	**3'5"**	1045	**3'5"**	1045	**3'5"**	1045	**3'5"**
F	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**
G	4075	**13'4"**	4075	**13'4"**	4455	**14'7"**	4455	**14'7"**
H	9440	**31'0"**	9000	**29'6"**	9440	**31'0"**	9000	**29'6"**
J*	2940	**9'8"**	3050	**10'0"**	2940	**9'8"**	3050	**10'0"**
K	3265	**10'9"**	3265	**10'9"**	3650	**12'0"**	3650	**12'0"**
L	2200	**7'3"**	2200	**7'3"**	2380	**7'10"**	2380	**7'10"**

	320B N Reach		320B N Mass	
	mm	ft	mm	ft
A	2940	**9'8"**	2940	**9'8"**
B	2470	**8'1"**	2470	**8'1"**
C	2500	**8'2"**	2500	**8'2"**
D	475	**1'7"**	475	**1'7"**
E	1045	**3'5"**	1045	**3'5"**
F	2750	**9'0"**	2750	**9'0"**
G	4075	**13'4"**	4075	**13'4"**
H	10 230	**33'7"**	9000	**29'6"**
J*	2940	**9'8"**	3050	**10'0"**
K	3265	**10'9"**	3265	**10'9"**
L	2200	**7'3"**	2200	**7'3"**

*Varies with stick length.

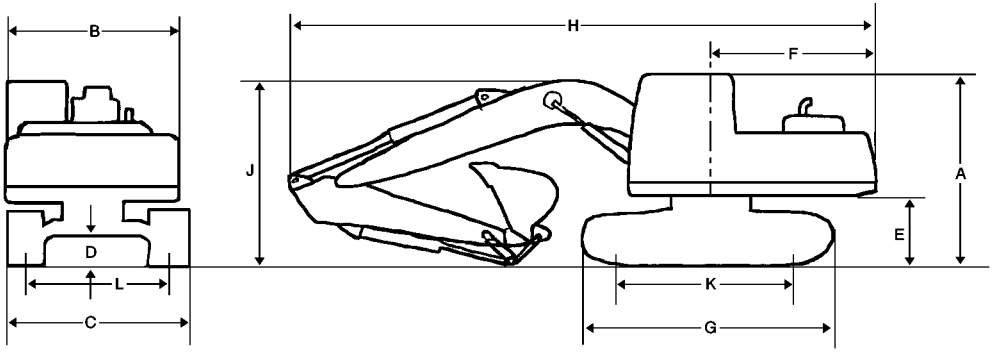


	320B Reach		320B Mass		320B VA		320B L Reach		320B L Mass		320B L VA	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	3030	**9'11"**	3030	**9'11"**	3030	**9'11"**	3030	**9'11"**	3030	**9'11"**	3030	**9'11"**
B	2490	**8'2"**	2490	**8'2"**	2490	**8'2"**	2490	**8'2"**	2490	**8'2"**	2490	**8'2"**
C	2800	**9'2"**	2800	**9'2"**	2800	**9'2"**	2980	**9'9"**	2980	**9'9"**	2980	**9'9"**
D	470	**18"**	470	**18"**	470	**18"**	470	**18"**	470	**18"**	470	**18"**
E	1020	**3'4"**	1020	**3'4"**	1020	**3'4"**	1020	**3'4"**	1020	**3'4"**	1020	**3'4"**
F	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**
G	4075	**13'4"**	4075	**13'4"**	4075	**13'4"**	4455	**14'7"**	4455	**14'7"**	4455	**14'7"**
H	9360	**30'8"**	8890	**29'2"**	9250	**30'4"**	9360	**30'8"**	8890	**29'2"**	9250	**30'4"**
J*	2910	**9'7"**	2870	**9'5"**	2980	**9'9"**	2910	**9'7"**	2870	**9'5"**	2980	**9'9"**
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"**

	320B LN Reach		320B LN Mass		320B LN VA		320B S Reach		320B S Mass		320B S VA	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	3030	**9'11"**	3030	**9'11"**	3030	**9'11"**	3100	**10'2"**	3100	**10'2"**	3100	**10'2"**
B	2490	**8'2"**	2490	**8'2"**	2490	**8'2"**	2490	**8'2"**	2490	**8'2"**	2490	**8'2"**
C	2595	**8'6"**	2595	**8'6"**	2595	**8'6"**	2495	**8'2"**	2495	**8'2"**	2495	**8'2"**
D	470	**18"**	470	**18"**	470	**18"**	490	**1'7"**	490	**1'7"**	490	**1'7"**
E	1000	**3'3"**	1000	**3'3"**	1000	**3'3"**	1080	**3'7"**	1080	**3'7"**	1080	**3'7"**
F	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**
G	4460	**14'8"**	4460	**14'8"**	4460	**14'8"**	4360	**14'4"**	4360	**14'4"**	4360	**14'4"**
H	9360	**30'8"**	8890	**29'2"**	9250	**30'4"**	9360	**30'8"**	8890	**29'2"**	9250	**30'4"**
J*	3225	**10'7"**	3225	**10'7"**	3225	**10'7"**	3245	**10'8"**	3245	**10'8"**	3245	**10'8"**
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.

Shipping Dimensions
- 322B, 322B L — Japan/U.S. Sourced
- 322B L, 322B LN — Belgium Sourced



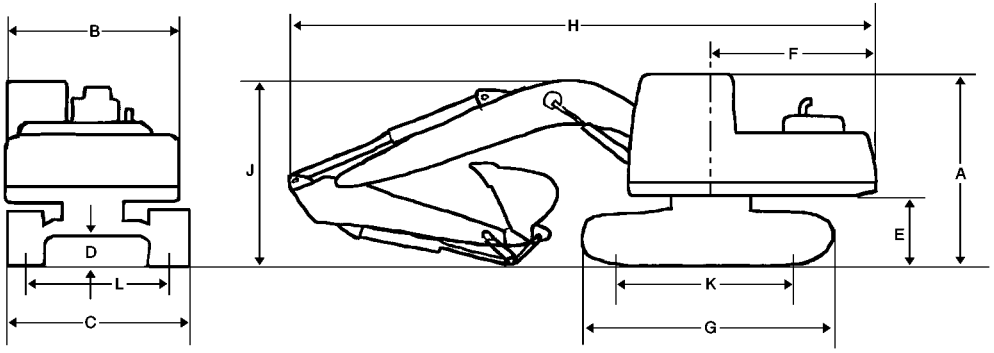
Japan/U.S. Sourced

	322B Reach		322B Mass		322B L Reach		322B L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	2980	**9'9"**	2980	**9'9"**	2980	**9'9"**	2980	**9'9"**
B	2740	**9'0"**	2740	**9'0"**	2740	**9'0"**	2740	**9'0"**
C	2990	**9'10"**	2990	**9'10"**	3390	**11'1"**	3390	**11'1"**
D	445	**18"**	445	**18"**	445	**18"**	445	**18"**
E	1060	**3'6"**	1060	**3'6"**	1060	**3'6"**	1060	**3'6"**
F	2900	**9'6"**	2900	**9'6"**	2900	**9'6"**	2900	**9'6"**
G	4260	**14'0"**	4260	**14'0"**	4640	**15'3"**	4640	**15'3"**
H	9960	**32'8"**	9490	**31'2"**	9960	**32'8"**	9490	**31'2"**
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

	322B L Reach		322B L Mass		322B L VA		322B LN Reach		322B LN Mass		322B LN VA	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	2980	**9'9"**	2980	**9'9"**	2980	**9'9"**	2980	**9'9"**	2980	**9'9"**	2980	**9'9"**
B	2740	**9'0"**	2740	**9'0"**	2740	**9'0"**	2740	**9'0"**	2740	**9'0"**	2740	**9'0"**
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	1080	**3'7"**	1080	**3'7"**	1080	**3'7"**	1080	**3'7"**	1080	**3'7"**	1080	**3'7"**
F	2855	**9'4"**	2855	**9'4"**	2855	**9'4"**	2855	**9'4"**	2855	**9'4"**	2855	**9'4"**
G	4630	**15'2"**	4630	**15'2"**	4630	**15'2"**	4630	**15'2"**	4630	**15'2"**	4630	**15'2"**
H	10 000	**32'10"**	9480	**31'1"**	9700	**31'10"**	10 000	**32'10"**	9480	**31'1"**	9700	**31'10"**
J*	3280	**10'9"**	3320	**10'11"**	3300	**10'10"**	3280	**10'9"**	3320	**10'11"**	3300	**10'10"**
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.



Japan/U.S. Sourced

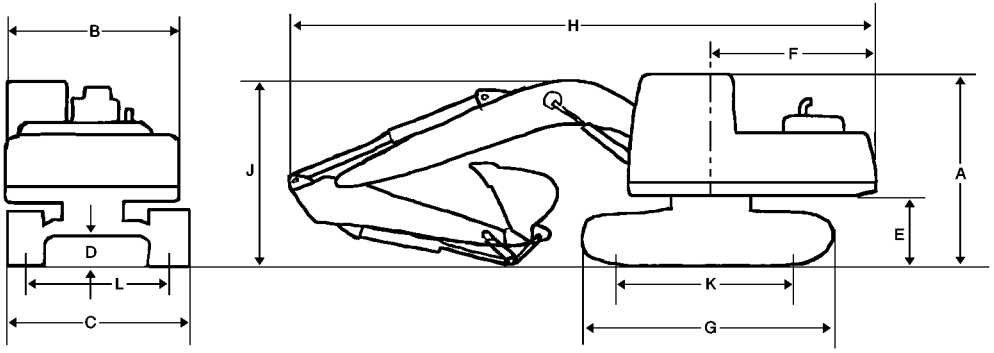
	325B Reach		325B Mass		325B L Reach		325B L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3090	**10'2"**	3090	**10'2"**	3090	**10'2"**	3090	**10'2"**
B	2900	**9'6"**	2900	**9'6"**	2900	**9'6"**	2900	**9'6"**
C	2990	**9'10"**	2990	**9'10"**	3390	**11'1"**	3390	**11'1"**
D	510	**1'8"**	510	**1'8"**	510	**1'8"**	510	**1'8"**
E	1140	**3'9"**	1140	**3'9"**	1140	**3'9"**	1140	**3'9"**
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	10 290	**33'10"**	9710	**31'10"**	10 290	**33'10"**	9710	**31'10"**
J*	3270	**10'9"**	3460	**11'4"**	3270	**10'9"**	3460	**11'4"**
K	3490	**11'5"**	3490	**11'5"**	3795	**12'5"**	3795	**12'5"**
L	2390	**7'10"**	2390	**7'10"**	2590	**8'6"**	2590	**8'6"**

Belgium Sourced

	325B L Reach		325B L Mass		325B L VA		325B LN Reach		325B LN Mass		325B LN VA	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	3140	**10'4"**	3140	**10'4"**	3140	**10'4"**	3140	**10'4"**	3140	**10'4"**	3140	**10'4"**
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	1130	**3'9"**	1130	**3'9"**	1130	**3'9"**	1130	**3'9"**	1130	**3'9"**	1130	**3'9"**
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	10 350	**33'11"**	9890	**32'5"**	10 090	**33'1"**	10 350	**33'11"**	9890	**32'5"**	10 090	**33'1"**
J*	3210	**10'6"**	3330	**10'11"**	3150	**10'4"**	3210	**10'6"**	3330	**10'11"**	3150	**10'4"**
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.

Shipping Dimensions
- 330B, 330B L — Japan/U.S. Sourced
- 330B L, 330B LN — Belgium Sourced



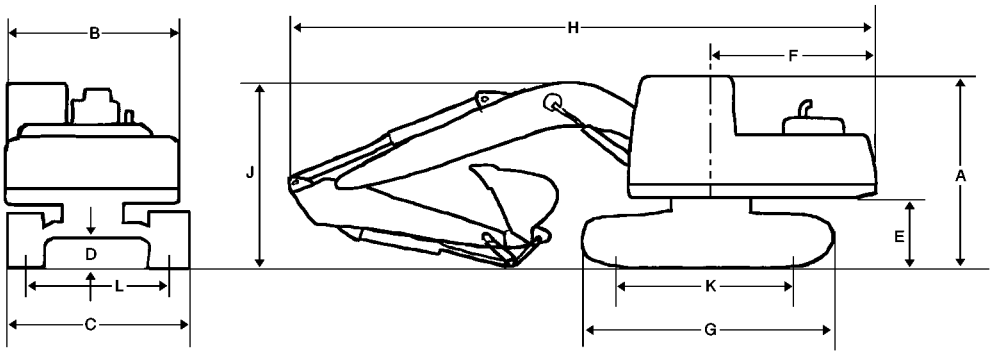
Japan/U.S. Sourced

	330B Reach		330B Mass		330B L Reach		330B L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3150	**10'4"**	3150	**10'4"**	3150	**10'4"**	3150	**10'4"**
B	2990	**9'10"**	2990	**9'10"**	2990	**9'10"**	2990	**9'10"**
C	3190	**10'6"**	3190	**10'6"**	3340	**10'11"**	3340	**10'11"**
D	480	**1'7"**	480	**1'7"**	480	**1'7"**	480	**1'7"**
E	1230	**4'0"**	1230	**4'0"**	1230	**4'0"**	1230	**4'0"**
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	11 010	**36'2"**	10 760	**35'4"**	11 010	**36'2"**	10 760	**35'4"**
J*	3290	**10'10"**	3560	**11'8"**	3290	**10'10"**	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"**

Belgium Sourced

	330B L Reach		330B L Mass		330B LN Reach		330B LN Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3250	**10'8"**	3250	**10'8"**	3250	**10'8"**	3250	**10'8"**
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	1260	**4'2"**	1260	**4'2"**	1260	**4'2"**	1260	**4'2"**
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	11 150	**36'7"**	10 810	**35'6"**	11 150	**36'7"**	10 810	**35'6"**
J*	3560	**11'8"**	3580	**11'9"**	3560	**11'8"**	3580	**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.



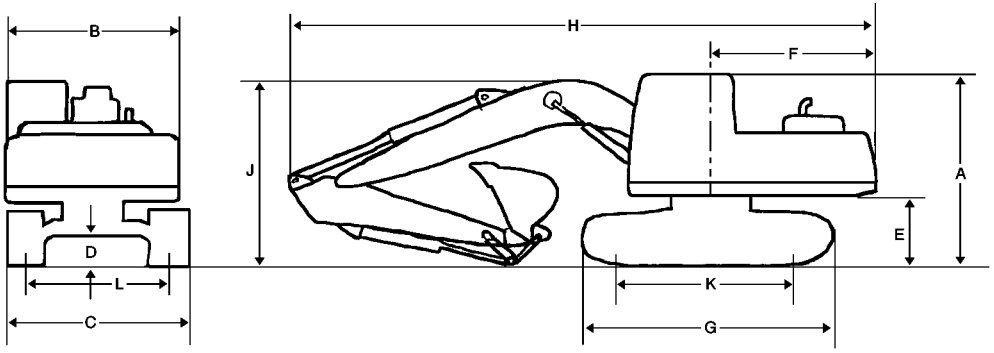
	345B Reach		345B Mass		345B L – FIX Reach		345B L – FIX Mass		345B L – VG Reach		345B L – VG Mass	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	3245	**10'8"**	3245	**10'8"**	3245	**10'8"**	3245	**10'8"**	3405	**11'2"**	3405	**11'2"**
B	2995	**9'10"**	2995	**9'10"**	2995	**9'10"**	2995	**9'10"**	2995	**9'10"**	2995	**9'10"**
C	3340	**10'11"**	3340	**10'11"**	3490	**11'5"**	3490	**11'5"**	2990	**9'10"**	2990	**9'10"**
D	510	**1'8"**	510	**1'8"**	510	**1'8"**	510	**1'8"**	740	**2'5"**	740	**2'5"**
E	1290	**4'3"**	1290	**4'3"**	1290	**4'3"**	1290	**4'3"**	1460	**4'9"**	1460	**4'9"**
F	3610	**11'10"**	3610	**11'10"**	3610	**11'10"**	3610	**11'10"**	3610	**11'10"**	3610	**11'10"**
G	5030	**16'6"**	5030	**16'6"**	5360	**17'7"**	5360	**17'7"**	5330	**17'6"**	5330	**17'6"**
H	11 730	**38'6"**	11 380	**37'4"**	11 770	**38'7"**	11 380	**37'4"**	11 740	**38'6"**	11 380	**37'4"**
J*	3480	**11'5"**	3680	**12'1"**	3660	**12'0"**	3690	**12'1"**	3680	**12'1"**	3850	**12'8"**
K	4030	**13'3"**	4030	**13'3"**	4360	**14'4"**	4360	**14'4"**	4340	**14'3"**	4340	**14'3"**
L	2740	**9'0"**	2740	**9'0"**	2740	**9'0"**	2740	**9'0"**	**2390	**7'10"**	**2390	**7'10"**

*Varies with stick length.
**Transport position.
NOTE: 600 mm shoes are available for 345B.
750 mm shoes are available for 345B L.
Medium stick is available all models.
Undercarriage is retracted.

	350 Reach		350 Mass		350 L Reach		350 L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3500	**11'6"**	3500	**11'6"**	3500	**11'6"**	3500	**11'6"**
B	3170	**10'5"**	3170	**10'5"**	3170	**10'5"**	3170	**10'5"**
C	3200	**10'6"**	3200	**10'6"**	3300	**10'10"**	3300	**10'10"**
D	730	**2'5"**	730	**2'5"**	730	**2'5"**	730	**2'5"**
E	1420	**4'8"**	1420	**4'8"**	1420	**4'8"**	1420	**4'8"**
F	3580	**11'9"**	3580	**11'9"**	3580	**11'9"**	3580	**11'9"**
G	5110	**16'9"**	5110	**16'9"**	5570	**18'3"**	5570	**18'3"**
H	12 200	**40'0"**	11 750	**38'7"**	12 200	**40'0"**	11 750	**38'7"**
J*	3750	**12'4"**	3980	**13'1"**	3750	**12'4"**	3980	**13'1"**
K	4040	**13'3"**	4040	**13'3"**	4490	**14'9"**	4490	**14'9"**
L	2550	**8'4"**	2550	**8'4"**	2550	**8'4"**	2550	**8'4"**

*Varies with stick length.
NOTE: 600 mm shoes are available for 350.
750 mm shoes are available for 350 L.
Medium stick is available all models.
Undercarriage is retracted.

Shipping Dimensions
- 375, 375 L
- Japan/U.S. Sourced
- Belgium Sourced



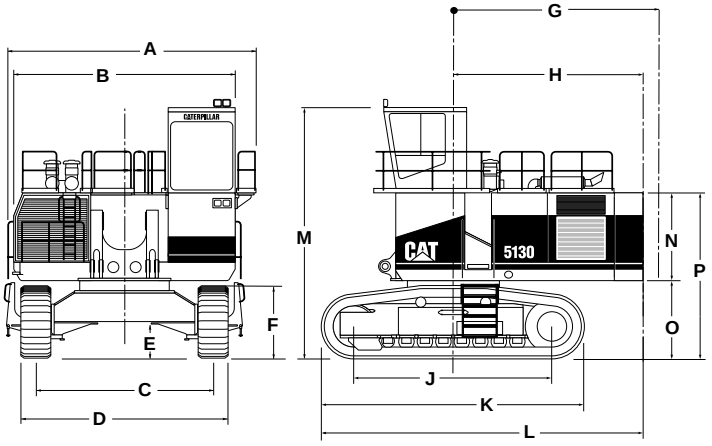
Japan/U.S. Sourced

	375 Reach		375 GP		375 Mass		375 L Reach		375 L GP		375 L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A	3650	**12'0"**	3650	**12'0"**	3650	**12'0"**	3650	**12'0"**	3650	**12'0"**	3650	**12'0"**
B	3470	**11'5"**	3470	**11'5"**	3470	**11'5"**	3470	**11'5"**	3470	**11'5"**	3470	**11'5"**
C	3480	**11'5"**	3480	**11'5"**	3480	**11'5"**	3500	**11'6"**	3500	**11'6"**	3500	**11'6"**
D	890	**2'11"**	890	**2'11"**	890	**2'11"**	890	**2'11"**	890	**2'11"**	890	**2'11"**
E	1600	**5'3"**	1600	**5'3"**	1600	**5'3"**	1600	**5'3"**	1600	**5'3"**	1600	**5'3"**
F	4200	**13'9"**	4200	**13'9"**	4200	**13'9"**	4200	**13'9"**	4200	**13'9"**	4200	**13'9"**
G	5840	**19'2"**	5840	**19'2"**	5840	**19'2"**	6360	**20'10"**	6360	**20'10"**	6360	**20'10"**
H	14 710	**48'3"**	14 290	**46'11"**	13 140	**43'1"**	14 710	**48'3"**	14 290	**46'11"**	13 140	**43'1"**
J	4690	**15'5"**	5240	**17'2"**	4890	**16'1"**	4690	**15'5"**	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"**	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**

NOTE: 610 mm shoes are available for 375.
750 mm shoes are available for 375 L.
Medium stick is available all Reach & Mass.
3.4 m short stick is available for GP.
Undercarriage is retracted.

Belgium Sourced

	375 Reach		375 Mass		375 L Reach		375 L Mass	
	mm	ft	mm	ft	mm	ft	mm	ft
A	3650	**12'0"**	3650	**12'0"**	3650	**12'0"**	3650	**12'0"**
B	3470	**11'5"**	3470	**11'5"**	3470	**11'5"**	3470	**11'5"**
C	3480	**11'5"**	3480	**11'5"**	3480	**11'5"**	3480	**11'5"**
D	890	**2'11"**	890	**2'11"**	890	**2'11"**	890	**2'11"**
E	1600	**5'3"**	1600	**5'3"**	1600	**5'3"**	1600	**5'3"**
F	4200	**13'9"**	4200	**13'9"**	4200	**13'9"**	4200	**13'9"**
G	5840	**19'2"**	5840	**19'2"**	6360	**20'10"**	6360	**20'10"**
H	13 140	**43'1"**	13 140	**43'1"**	14 290	**46'11"**	13 140	**43'1"**
J	5240	**17'2"**	4890	**16'1"**	5240	**17'2"**	4890	**16'1"**
K	4600	**15'1"**	4600	**15'1"**	5120	**16'10"**	5120	**16'10"**
L	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**	2750	**9'0"**



	5130B ME		5230 ME	
	mm	ft	mm	ft
A	6620	**21'9"**	7510	**24'7"**
B	5900	**19'4"**	6960	**22'11"**
C	4720	**15'6"**	5196	**17'0"**
D	5370	**17'7"**	6296	**20'8"**
E	960	**3'2"**	1108	**3'8"**
F	1890	**6'3"**	2260	**7'5"**
G Swing radius	5250	**17'3"**	6450	**21'2"**
H	5140	**16'11"**	6280	**20'7"**
J	5552	**18'3"**	6260	**20'6"**
K	7270	**23'10"**	8174	**26'10"**
L	8775	**28'9"**	10 325	**33'10"**
M	6550	**21'5"**	7455	**24'5"**
N	2350	**7'9"**	2850	**9'4"**
O	2045	**6'9"**	2450	**8'0"**
P	4395	**14'5"**	5300	**17'5"**

● 5130B ME

	Weight		Length		Width		Height	
	kg	lb	mm	ft	mm	ft	mm	ft
Carbody	15 800	**34,820**	3560	**11'8"**	4110	**13'6"**	1520	**5'0"**
Swing Frame	22 830	**50,340**	7060	**23'2"**	2460	**8'1"**	2440	**8'0"**
Track Roller Frame (each)								
650 mm **(2'2")** Shoes	23 610	**52,060**	7140	**23'5"**	1500	**4'11"**	1910	**6'3"**
800 mm **(2'7")** Shoes	24 640	**54,320**	7140	**23'5"**	1500	**4'11"**	1910	**6'3"**
1000 mm **(3'3")** Shoes	25 770	**56,820**	7140	**23'5"**	1500	**4'11"**	1910	**6'3"**
Left Module	8090	**17,830**	5770	**18'11"**	2340	**7'8"**	2620	**8'7"**
Boom Cylinders	3000	**6620**	3840	**12'7"**	910	**3'0"**	690	**2'3"**
Stick Cylinders	1100	**2430**	3840	**12'7"**	910	**3'0"**	690	**2'3"**
Bucket Cylinders	1100	**2430**	3840	**12'7"**	910	**3'0"**	690	**2'3"**
Ladders	2070	**4570**	2240	**7'4"**	1090	**3'7"**	1190	**3'11"**
Parts Box	2100	**4620**	2240	**7'4"**	1090	**3'7"**	990	**3'3"**
Handrails	1150	**2540**	3990	**13'1"**	2290	**7'6"**	1120	**3'8"**
Right Module	13 810	**30,440**	5660	**18'7"**	2440	**8'0"**	3050	**10'0"**
Cab	2050	**4510**	2360	**7'9"**	2060	**6'9"**	3100	**10'2"**
Boom	20 530	**45,260**	8560	**28'1"**	1980	**6'6"**	3400	**11'2"**
Counterweight	20 970	**46,220**	6250	**20'6"**	1170	**3'10"**	2510	**8'3"**
Stick	6220	**13,710**	5260	**17'3"**	1020	**3'4"**	2290	**7'6"**
Brackets	1550	**3420**	1520	**5'0"**	1450	**4'9"**	790	**2'7"**
Bucket	9700	**21,380**	2900	**9'6"**	3200	**10'6"**	2820	**9'3"**

● 5230 ME

	Weight		Length		Width		Height	
	kg	lb	mm	ft	mm	ft	mm	ft
Carbody	24 770	**54,610**	4470	**14'8"**	3840	**12'7"**	1980	**6'6"**
Swing Frame	40 590	**89,490**	8890	**29'2"**	3330	**10'11"**	3480	**11'5"**
Track Roller Frame (each)								
1100 mm **(3'7")** Shoes	45 400	**100,080**	8030	**26'4"**	1830	**6'0"**	2360	**7'9"**
1300 mm **(4'3")** Shoes	46 560	**102,640**	8030	**26'4"**	1830	**6'0"**	2360	**7'9"**
1500 mm **(4'11")** Shoes	48 080	**106,000**	8030	**26'4"**	1830	**6'0"**	2360	**7'9"**
Left Module	12 310	**27,140**	7190	**23'7"**	2510	**8'3"**	3230	**10'7"**
Cylinder Skid	3130	**6900**	4170	**13'8"**	610	**2'0"**	810	**2'8"**
Cylinder Skid	3130	**6900**	4170	**13'8"**	610	**2'0"**	810	**2'8"**
Cylinder Skid	4350	**9580**	4880	**16'0"**	910	**3'0"**	740	**2'5"**
Cylinder Skid	3290	**7260**	4170	**13'8"**	910	**3'0"**	740	**2'5"**
Parts Box	2220	**4890**	2240	**7'4"**	1090	**3'7"**	990	**3'3"**
Parts Box	2170	**4780**	2240	**7'4"**	1090	**3'7"**	990	**3'3"**
Parts Box	2220	**4900**	2240	**7'4"**	1090	**3'7"**	990	**3'3"**
Handrails	1350	**2980**	3990	**13'1"**	2290	**7'6"**	1120	**3'8"**
Right Module	20 880	**46,040**	7570	**24'10"**	2510	**8'3"**	3580	**11'9"**
Cab	2380	**5240**	2360	**7'9"**	2060	**6'9"**	3050	**10'0"**
Boom	28 340	**62,480**	10 030	**32'11"**	3960	**13'0"**	2490	**8'2"**
Counterweight	41 390	**91,240**	7320	**24'0"**	1220	**4'0"**	3050	**10'0"**
Stick	11 030	**24,320**	6250	**20'6"**	1350	**4'5"**	2570	**8'5"**
Brackets	2590	**5720**	1780	**5'10"**	1680	**5'6"**	890	**2'11"**
Guards	940	**2080**	2080	**6'10"**	1700	**5'7"**	840	**2'9"**
Bucket	16 380	**36,110**	4010	**13'2"**	3250	**10'8"**	3100	**10'2"**

	301.5†		307B		307B SB		311B		312B	
Buckets: (see data in bucket section)	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**
Sticks:*										
Short Stick			—	**—**	—	**—**	515	**1140**	560	**1240**
Medium Stick			245	**540**	150	**330**	500	**1105**	540	**1200**
Long Stick			325	**720**	230	**510**	600	**1330**	620	**1370**
Extra Long Stick			—	**—**	—	**—**	—	**—**	—	**—**
Booms:**										
One-piece			635	**1400**	590	**1300**	1135	**2500**	1230	**2710**
Parallel-Offset			1115	**2460**	—	**—**	—	**—**	—	**—**
VA (France sourced only)			—	**—**	—	**—**	—	**—**	1720	**3790**
Other:										
Upperstructure (complete w/o ctwt)			2550	**5620**	3150	**6940**	3870	**8530**	3875	**8540**
Standard undercarriage (std shoe)			2120	**4670**	2120	**4670**	3700	**8155**	3835	**8455**
Long undercarriage (std shoe)			—	**—**	—	**—**	—	**—**	4335	**9555**
Counterweight			750	**1650**	1150	**2540**	1450	**3200**	2450	**5400**

*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 and head end pin.
†Information unavailable.

	315B		315B L		318B L		318B L	
Source	**—**		**France**		**Japan**		**France**	
Buckets: (see data in bucket section)	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**
Sticks:*								
Short Stick	650	**1430**	830	**1830**	820	**1810**	868	**1913**
Medium Stick	580	**1280**	760	**1676**	810	**1790**	878	**1935**
Long Stick	630	**1390**	810	**1786**	860	**1900**	876	**1931**
Extra Long Stick	700	**1540**	890	**1962**	980	**2160**	946	**2085**
Booms:**								
One-piece	1600	**3500**	1610	**3550**	1900	**4190**	1825	**4025**
Parallel-Offset	—	**—**	—	**—**	—	**—**	—	**—**
VA (France sourced only)	—	**—**	2310	**5095**	—	**—**	—	**—**
Other:								
Upperstructure (complete w/o ctwt)	4600	**10,200**	4600	**10,200**	4550	**10,030**	5100	**11,245**
Standard undercarriage (std shoe)	5300	**11,600**	—	**—**	—	**—**	—	**—**
Long undercarriage (std shoe)	5900	**12,900**	5900	**12,900**	6650	**14,650**	6470	**14,260**
Narrow undercarriage (std shoe)	—	**—**	—	**—**	6360	**14,030**	6190	**13,650**
Counterweight	3000	**6600**	3300	**7276**	3610	**7960**	3600	**7940**

*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 and head end pin.

	M312		M315		M318		M320	
Buckets: (see data in bucket section)	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**
Sticks:*								
Short Stick	522	**1151**	588	**1297**	743	**1638**	936	**2064**
Medium Short Stick	509	**1122**	604	**1332**	795	**1753**	991	**2185**
Medium Stick	541	**1193**	633	**1396**	837	**1846**	1081	**2384**
Long Stick	596	**1314**	652	**1438**	1025	**2260**	1253	**2763**
Extra Long Stick	614	**1354**	761	**1678**	—	**—**	—	**—**
Industrial Stick	508	**1120**	606	**1336**	737	**1625**	—	**—**
Booms:**								
One-piece Boom	1208	**2664**	1371	**3023**	1737	**3830**	2165	**4774**
VA Stub Boom	867	**1912**	997	**2198**	1173	**2586**	1409	**3107**
VA Fore Boom	748	**1649**	885	**1951**	1059	**2335**	1329	**2930**
Other:								
Upperstructure (with swing bearing, no boom)	6350	**14,002**	7473	**16,478**	8590	**18,941**	9282	**20,467**
Undercarriage (with standard tires)	3390	**7475**	3700	**8159**	4070	**8974**	4917	**10,842**
Outriggers (each set, with cylinders and linkage)	800	**1764**	1040	**2293**	1070	**2359**	1275	**2811**
Dozer Blade (with cylinders and linkage)	650	**1433**	700	**1544**	700	**1544**	900	**1985**

*Stick weight includes stick, stick lines, bucket cylinder, bucket cylinder pins, bucket linkage and bucket linkage pins.
**One-piece boom weight includes boom, boom lines, boom cylinders, boom cylinder rod end pin, stick cylinder, stick cylinder head end pin and boom nose pin.
— VA stub boom weight includes stub boom, stub boom lines, boom cylinders, VA cylinder, VA cylinder head end pin and stub/fore boom pin.
— VA fore boom weight includes fore boom, fore boom lines, stick cylinder, stick cylinder head end pin, VA cylinder rod end pin and fore boom nose pin.

	320B		322B		325B		330B		345B	
Source	**Japan**		**Japan, U.S.**		**Japan, U.S.**		**Japan, U.S.**		**Japan, U.S.**	
Buckets: (see data in bucket section)	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**
Booms:**										
One-piece Reach	2020	**4450**	2480	**5470**	2745	**6050**	3830	**8445**	4700	**10,360**
Sticks:* (for Reach Boom)										
Short	750	**1650**	760	**1680**	895	**1980**	1090	**2400**	1285	**2830**
*	675	**1490**	785	**1730**	825	**1820**	1130	**2490**	1585	**3490**
*	650	**1430**	985	**2170**	905	**2000**	1220	**2690**	1665	**3670**
*	750	**1650**	—	**—**	903	**1990**	1350	**2980**	—	**—**
Long	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
Booms:**										
One-piece Mass	2060	**4540**	2540	**5600**	2820	**6220**	3755	**8280**	4740	**10,450**
VA Boom	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
Sticks:* (for Mass Boom & VA Boom)										
Short	750	**1650**	880	**1940**	895	**1980**	1090	**2400**	1700	**3750**
*	780	**1720**	935	**2060**	995	**2200**	1180	**2600**	1720	**3790**
Long	—	**—**	—	**—**	—	**—**	1300	**2870**	—	**—**
Upperstructure (complete w/o ctwt)	5600	**12,350**	6445	**14,210**	7020	**15,480**	8830	**19,470**	11 310	**24,930**
Reinforced Frame	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
Undercarriage — Standard	(600) 6470	**14,260**	(600) 7380	**16,270**	(600) 8680	**19,140**	(600) 10 915	**24,060**	(600) 13 980	**30,820**
	(700) 6800	**14,990**	(700) 7640	**16,845**	(700) 8980	**19,800**	(750) 11 410	**25,150**	(750) 15 020	**33,115**
	(800) 7090	**15,630**	(800) 7950	**17,530**	(800) 9615	**21,200**	(850) 12 100	**26,680**	(900) 15 740	**34,700**
( ) Shoe width — Long (FIX)	(600) 7210	**15,900**	(600) 7960	**17,550**	(600) 9280	**20,460**	(600) 11 680	**25,750**	(600) 15 010	**33,090**
	(700) 7410	**16,340**	(700) 8250	**18,180**	(700) 9600	**21,170**	(750) 12 220	**26,940**	(750) 16 110	**35,515**
	(800) 7690	**16,950**	(800) 8580	**18,920**	(800) 10 270	**22,640**	(850) 12 980	**28,620**	(900) 16 870	**37,190**
— Long (VG)	—	**—**	—	**—**	—	**—**	—	**—**	(600) 16 680	**36,770**
	—	**—**	—	**—**	—	**—**	—	**—**	(750) 17 780	**39,200**
	—	**—**	—	**—**	—	**—**	—	**—**	(900) 18 640	**41,095**
— Narrow	(500) 6190	**13,650**	—	**—**	—	**—**	—	**—**	—	**—**
	(600) 6425	**14,160**	—	**—**	—	**—**	(600) 11 560	**25,490**	—	**—**
— Long Narrow	—	**—**	(600) 7950	**17,530**	(600) 9215	**20,320**	(750) 12 100	**26,680**	—	**—**
Counterweight — Standard	3860	**8510**	4460	**9835**	5220	**11,500**	5920	**13,050**	8500	**18,740**
— Extra	—	**—**	—	**—**	—	**—**	—	**—**	9500	**20,940**
— Super Long Reach	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
— Super Long Demo.	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
— Material Handling	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
— Ditch Cleaning	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**

*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.

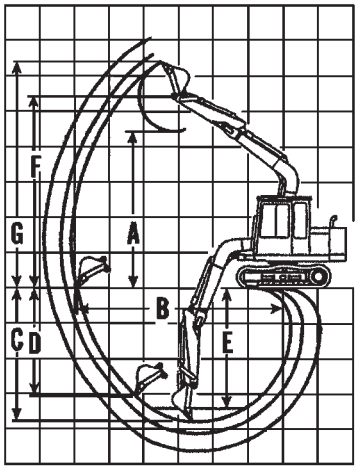
Major Component Weights
● 320B ● 322B ● 325B ● 330B ● 345B
● Belgium Sourced

	320B		322B		325B		330B		345B	
Buckets: (see data in bucket section)	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**
Booms:**										
One-piece Reach	2060	**4540**	2480	**5470**	2480	**5470**	3400	**7500**	4610	**10,165**
Sticks:* (for Reach Boom)										
Short	720	**1590**	730	**1610**	840	**1850**	1020	**2250**	1670	**3680**
Medium	620	**1370**	760	**1680**	800	**1760**	1080	**2380**	1655	**3650**
Long	670	**1480**	—	**—**	870	**1920**	1170	**2580**	—	**—**
Extra Long	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
Booms:**										
One-piece Mass	2085	**4600**	2550	**5620**	2915	**6430**	3610	**7960**	5130	**11,310**
VA Boom	2660	**5865**	—	**—**	3540	**7805**	—	**—**	—	**—**
Sticks:* (for Mass Boom)										
Short	610	**1345**	840	**1850**	840	**1850**	1020	**2250**	1700	**3750**
Medium	750	**1650**	890	**1960**	950	**2095**	1110	**2450**	1675	**3690**
Upperstructure (complete w/o ctwt)	5560	**12,260**	6230	**13,740**	7320	**16,140**	9804	**21,620**	10 150	**22,380**
Undercarriage — Standard	6470	**14,270**	—	**—**	—	**—**	—	**—**	—	**—**
— L	7330	**16,160**	8580	**18,920**	10 685	**23,560**	12 300	**27,120**	18 780	**41,410**
— LN	6750	**14,880**	7910	**17,440**	9625	**21,220**	11 500	**25,360**	—	**—**
— S	7990	**17,620**	—	**—**	—	**—**	—	**—**	—	**—**
Counterweight — Standard	4410	**9725**	—	**—**	—	**—**	—	**—**	—	**—**
— L	4410	**9725**	4860	**10,730**	5210	**11,490**	6120	**13,490**	9300	**20,510**
— LN	4710	**10,385**	4860	**10,730**	5210	**11,490**	6620	**14,600**	—	**—**
— S	4710	**10,385**	—	**—**	—	**—**	—	**—**	—	**—**

*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.

	350		375		375	
Buckets: (see data in bucket section)	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**
Sourcing	**Japan**		**Japan/U.S.**		**Belgium**	
Booms:*						
One-piece Reach	5060	**11,155**	6740	**14,859**	10 500	**23,150**
Sticks: (for Reach Boom)**						
Short	1510	**3330**	2780	**6129**	4540	**10,010**
•	1580	**3480**	2870	**6330**	4130	**9110**
*	—	**—**	2930	**6460**	—	**—**
Long	2000	**4410**	3100	**6834**	4300	**9480**
Booms:*						
One-piece General Purpose	—	**—**	6545	**14,396**	—	**—**
Sticks: (for General Purpose Boom)**						
Short	—	**—**	—	**—**	—	**—**
•	—	**—**	2870	**6330**	—	**—**
•	—	**—**	2930	**6460**	—	**—**
Long	—	**—**	3100	**6834**	—	**—**
Booms:*						
One-piece Mass	5080	**11,199**	6780	**14,947**	10 650	**23,480**
Sticks: (for Mass Boom)**						
Short	1600	**3530**	2870	**6327**	4470	**9860**
•	1660	**3660**	2940	**6480**	4540	**10,010**
•	—	**—**	—	**—**	—	**—**
Long	1860	**4100**	3180	**7011**	4850	**10,690**
Upperstructure (complete w/o ctwt)	13 680	**30,160**	19 200	**42,300**	31 700	**69,900**
Undercarriage — Std	(600) 18 350	**40,455**	(610) 28 140	**62,038**	28 140	**62,050**
( ) Shoe width — Long	(750) 20 000	**44,090**	(750) 31 540	**69,534**	30 800	**67,910**
Counterweight — Std	6200	**13,670**	11 600	**25,550**	11 790	**26,030**
— Long	—	**—**	—	**—**	4860	**10,720**
— Removal C/W	6620	**14,600**	12 090	**26,680**	—	**—**

*Boom weights include
— 350-boom, boom lines, cylinders, rod end pins, stick cylinder and head end pin.
— 375-boom, boom lines and rod end pins.
**Stick weight includes stick and stick lines.
NOTE: Heavy duty track shoes available.
NOTE: Major component weights for 5130B ME and 5230 ME are listed in shipping dimensions in this section.



One-Piece Boom Digging Envelope

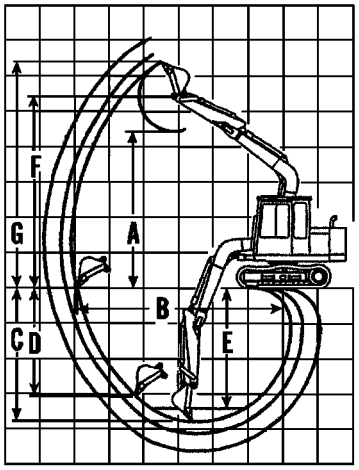
- Standard shoes and undercarriage
- Lug height not included

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

	301.5		307B				307B SB			
Stick	**890 mm**	**2'11"**	**1.67 m**	**5'6"**	**2.21 m**	**7'3"**	**1.67 m**	**5'6"**	**2.21 m**	**7'3"**
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A	2.36	**7'9"**	5.15	**16'11"**	5.56	**18'3"**	4.16	**13'8"**	4.45	**14'7"**
B	3.70	**12'2"**	6.20	**20'4"**	6.72	**22'1"**	6.89	**22'7"**	7.42	**24'4"**
C	2.13	**7'0"**	4.11	**13'5"**	4.65	**15'3"**	4.16	**13'8"**	4.70	**15'5"**
D	1.62	**5'4"**	3.64	**11'11"**	4.16	**13'8"**	3.00	**9'10"**	3.58	**11'9"**
E	—	**—**	3.77	**12'4"**	4.35	**14'3"**	3.76	**12'4"**	4.34	**14'3"**
F	—	**—**	6.24	**20'6"**	6.65	**21'10"**	5.25	**17'3"**	5.54	**18'2"**
G	3.32	**10'11"**	7.29	**23'11"**	7.69	**25'3"**	6.18	**20'3"**	6.49	**21'4"**

	307				311B					
Stick	**1.67 m**	**5'6"**	**2.21 m**	**7'3"**	**1.95 m**	**6'5"**	**2.25 m**	**7'5"**	**2.8 m**	**9'2"**
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A	5.17	**17'0"**	5.57	**18'3"**	5.30	**17'5"**	5.45	**17'11"**	5.78	**19'0"**
B	6.20	**20'4"**	6.72	**22'1"**	7.29	**23'11"**	7.57	**24'10"**	8.10	**26'7"**
C	4.10	**13'5"**	4.64	**15'3"**	4.74	**15'7"**	5.04	**16'6"**	5.59	**18'4"**
D	3.62	**11'11"**	4.14	**13'7"**	4.15	**13'7"**	4.37	**14'4"**	4.88	**16'0"**
E	3.23	**10'7"**	4.33	**14'2"**	4.42	**14'6"**	4.73	**15'6"**	5.30	**17'5"**
F	6.25	**20'6"**	6.64	**21'9"**	6.51	**21'4"**	6.66	**21'10"**	6.99	**22'11"**
G	7.30	**23'11"**	7.71	**25'4"**	7.66	**25'2"**	7.81	**25'7"**	8.13	**26'8"**



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

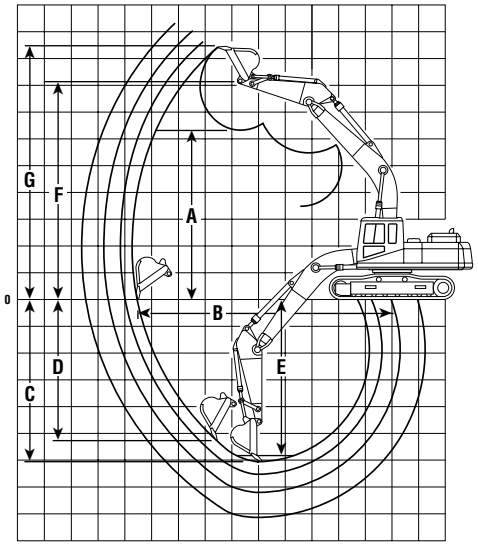
A	Maximum loading height of bucket with teeth
B	Maximum reach at ground level
C	Maximum digging depth
D	Maximum vertical wall
E	Maximum depth of cut for 2.44 m **(8'0")** level bottom (straight clean up)
F	Maximum bucket hinge pin height
G	Maximum height, to bucket teeth at highest arc

Japan Sourced 312B, 312B L

Stick	2.1 m	6'11"	2.5 m	8'2"	3 m	9'10"
	m	ft	m	ft	m	ft
A	5.86	**19'3"**	6.11	**20'1"**	6.34	**20'10"**
B	7.79	**25'7"**	8.17	**26'10"**	8.62	**28'3"**
C	5.13	**16'10"**	5.53	**18'2"**	6.03	**19'9"**
D	4.43	**14'6"**	4.89	**16'1"**	5.25	**17'3"**
E	4.83	**15'10"**	5.24	**17'2"**	5.75	**18'10"**
F	7.07	**23'2"**	7.32	**24'0"**	7.55	**24'9"**
G	8.23	**27'0"**	8.48	**27'10"**	8.70	**28'6"**

France Sourced 312B, 312B L

Stick	2.1 m	6'11"	2.5 m	8'2"	3 m	9'10"
	m	ft	m	ft	m	ft
A	5.83	**19'1"**	6.03	**19'9"**	6.31	**20'8"**
B	7.81	**25'7"**	8.19	**26'10"**	8.64	**28'4"**
C	5.15	**16'11"**	5.55	**18'2"**	6.05	**19'10"**
D	4.62	**15'2"**	5.01	**16'5"**	5.52	**18'1"**
E	4.91	**16'1"**	5.34	**17'6"**	5.87	**19'3"**
F	7.07	**23'2"**	7.32	**24'0"**	7.56	**24'9"**
G	8.27	**27'1"**	8.52	**27'11"**	8.75	**28'8"**



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

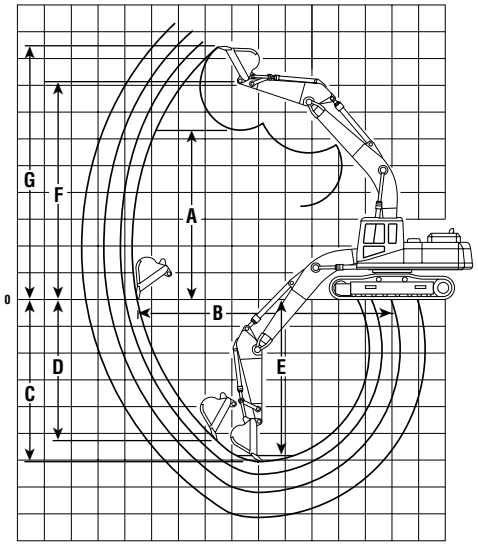
- **A** Maximum loading height of bucket with teeth
- **B** Maximum reach at ground level
- **C** Maximum digging depth
- **D** Maximum vertical wall
- **E** Maximum depth of cut for 2.44 m **(8'0")** level bottom (straight clean up)
- **F** Maximum bucket hinge pin height
- **G** Maximum height, to bucket teeth at highest arc

Japan Sourced — **315B, 315B L**

Stick	1.85 m	6'1"	2.25 m	7'5"	2.6 m	8'6"	3.1 m	10'2"
	m	ft	m	ft	m	ft	m	ft
A	5.93	**19'6"**	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	5.31	**17'5"**	5.71	**18'9"**	6.06	**19'10"**	6.56	**21'6"**
D	4.40	**14'5"**	4.93	**16'2"**	5.34	**17'6"**	5.57	**18'3"**
E	5.02	**16'5"**	5.46	**17'11"**	5.83	**19'1"**	6.33	**20'9"**
F	7.27	**23'10"**	7.49	**24'7"**	7.66	**25'1"**	7.75	**25'5"**
G	8.50	**27'10"**	8.74	**28'8"**	8.91	**29'3"**	8.97	**29'5"**

France Sourced — **315B L**

Stick	1.85 m	6'1"	2.25 m	7'5"	2.6 m	8'6"	3.1 m	10'2"
	m	ft	m	ft	m	ft	m	ft
A	6.05	**19'11"**	6.07	**19'11"**	6.43	**21'1"**	6.27	**20'7"**
B	7.92	**25'11"**	8.21	**26'11"**	8.62	**28'3"**	8.90	**29'2"**
C	5.18	**17'0"**	5.58	**18'3"**	5.93	**19'5"**	6.43	**21'1"**
D	3.89	**12'9"**	4.03	**13'3"**	4.86	**15'11"**	4.68	**15'4"**
E	4.87	**16'0"**	5.27	**17'3"**	5.69	**18'8"**	6.13	**20'1"**
F	7.28	**23'11"**	7.30	**23'11"**	7.66	**25'1"**	7.50	**24'7"**
G	8.49	**27'10"**	8.51	**27'11"**	8.89	**29'2"**	8.69	**28'6"**



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

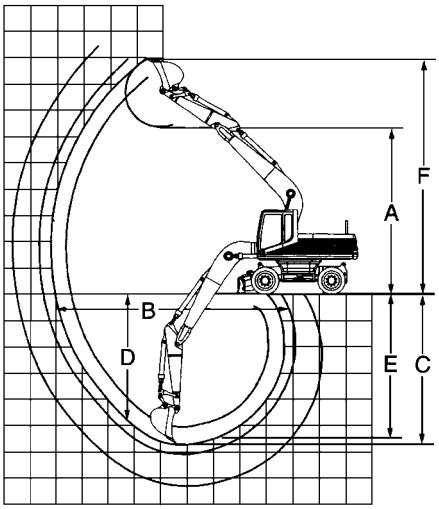
G Maximum height, to bucket teeth at highest arc

Japan Sourced **318B L, 318B LN**

Stick	1.8 m	5'11"	2.25 m	7'5"	2.7 m	8'10"	3.2 m	10'6"
	m	ft	m	ft	m	ft	m	ft
A	5.94	**19'6"**	6.20	**20'4"**	6.50	**21'4"**	6.85	**22'6"**
B	8.27	**27'2"**	8.71	**28'7"**	9.17	**30'1"**	9.70	**31'10"**
C	5.53	**18'2"**	5.98	**19'7"**	6.44	**21'1"**	6.93	**22'9"**
D	3.95	**13'0"**	4.96	**16'3"**	5.59	**18'4"**	6.13	**20'1"**
E	5.16	**16'11"**	5.63	**18'6"**	6.10	**20'0"**	6.76	**22'2"**
F	7.29	**23'11"**	7.57	**24'10"**	7.87	**25'10"**	8.27	**27'2"**
G	8.59	**28'2"**	8.94	**29'4"**	9.27	**30'5"**	9.68	**31'9"**

France Sourced **318B L, 318B LN**

Stick	1.8 m	5'11"	2.25 m	7'5"	2.7 m	8'10"	3.2 m	10'6"
	m	ft	m	ft	m	ft	m	ft
A	5.82	**19'1"**	6.09	**20'0"**	6.39	**20'4"**	6.33	**20'9"**
B	8.27	**27'2"**	8.71	**28'7"**	9.16	**30'1"**	9.27	**30'5"**
C	5.54	**18'2"**	5.99	**19'8"**	6.44	**21'1"**	6.83	**22'5"**
D	3.79	**12'5"**	4.81	**15'9"**	5.48	**18'0"**	3.43	**11'3"**
E	5.23	**17'2"**	5.73	**18'10"**	6.22	**20'5"**	6.52	**21'5"**
F	7.29	**23'11"**	7.57	**24'10"**	7.87	**25'10"**	7.81	**25'7"**
G	8.58	**28'1"**	8.93	**29'3"**	9.26	**30'4"**	8.86	**29'1"**



One-Piece Boom Digging Envelope

- Standard 10 × 20 tires and undercarriage
- General purpose bucket

KEY:

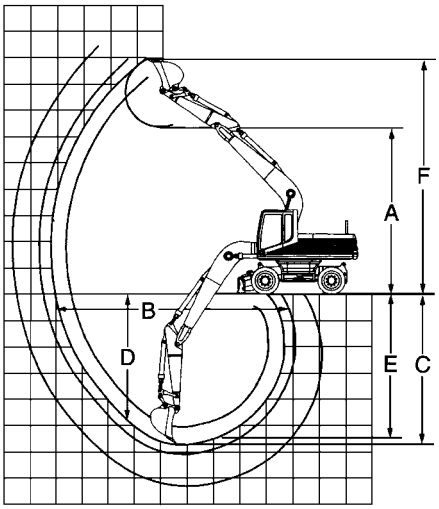
- **A** Maximum loading height of bucket with teeth
- **B** Maximum reach at ground level
- **C** Maximum digging depth
- **D** Maximum vertical wall
- **E** Maximum depth of cut for 2.44 m **(8'0")** level bottom (straight clean up)
- **F** Maximum height, to bucket teeth at highest arc

M312

Stick	1.6 m	5'3"	2 m	6'6"	2.3 m	7'5"	2.6 m	8'5"	3 m	9'9"
	m	ft	m	ft	m	ft	m	ft	m	ft
A	5.64	**18'5"**	5.86	**19'2"**	6.03	**19'8"**	6.19	**20'3"**	6.20	**20'3"**
B	7.62	**25'0"**	8.01	**26'3"**	8.30	**27'2"**	8.59	**28'2"**	8.90	**29'2"**
C	4.42	**14'5"**	4.82	**15'8"**	5.12	**16'8"**	5.42	**17'8"**	5.82	**19'1"**
D	2.39	**7'8"**	3.75	**12'3"**	4.03	**13'2"**	4.30	**14'1"**	4.39	**14'4"**
E	4.10	**13'5"**	4.57	**15'0"**	4.89	**16'0"**	5.21	**17'1"**	5.63	**18'5"**
F	7.88	**25'5"**	8.21	**26'9"**	8.38	**27'5"**	8.55	**28'1"**	8.52	**28'0"**

M315

Stick	1.7 m	5'7"	2.1 m	6'9"	2.4 m	7'9"	2.6 m	8'5"	3.1 m	10'1"
	m	ft	m	ft	m	ft	m	ft	m	ft
A	5.94	**19'6"**	6.16	**20'3"**	6.33	**20'9"**	6.44	**21'1"**	6.59	**21'7"**
B	7.95	**26'1"**	8.34	**27'4"**	8.63	**28'4"**	8.82	**28'9"**	9.26	**30'5"**
C	4.65	**15'3"**	5.05	**16'7"**	5.35	**17'7"**	5.55	**18'2"**	6.05	**19'10"**
D	2.51	**8'3"**	4.00	**13'1"**	4.27	**14'0"**	4.48	**14'8"**	4.76	**15'7"**
E	4.37	**14'4"**	4.81	**15'9"**	5.13	**16'10"**	5.34	**17'6"**	5.87	**19'3"**
F	8.18	**26'10"**	8.52	**27'11"**	8.69	**28'6"**	8.80	**28'10"**	8.93	**29'4"**



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 2.44 m **(8'0")** level bottom (straight clean up)

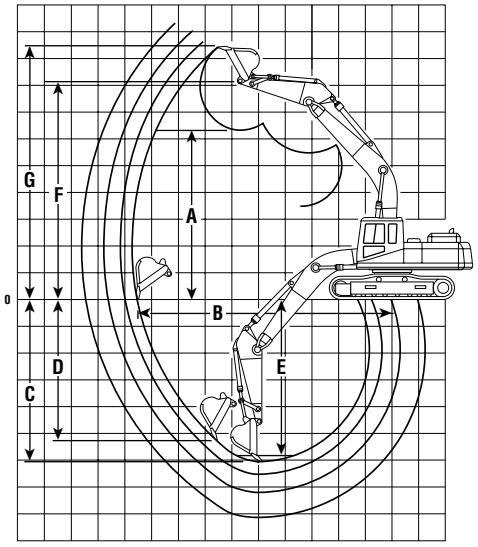
F Maximum height, to bucket teeth at highest arc

M318

Stick	1.8 m	5'11"	2.4 m	7'9"	2.8 m	9'2"	4 m	13'1"
	m	ft	m	ft	m	ft	m	ft
A	6.08	**19'11"**	6.33	**20'9"**	6.42	**21'1"**	6.73	**22'1"**
B	8.49	**27'10"**	9.04	**29'8"**	9.38	**30'9"**	10.55	**34'7"**
C	5.09	**16'8"**	5.69	**18'8"**	6.09	**20'0"**	7.37	**24'2"**
D	2.93	**9'7"**	4.36	**14'4"**	4.56	**15'0"**	5.47	**17'11"**
E	4.82	**15'10"**	5.47	**17'11"**	5.89	**19'4"**	7.22	**23'8"**
F	8.53	**28'0"**	8.89	**29'2"**	8.95	**29'4"**	9.45	**31'0"**

M320

Stick	1.9 m	6'3"	2.5 m	8'2"	2.9 m	9'6"	4.2 m	13'9"
Bucket	1.05 m^3	1.37 yd^3	0.9 m^3	1.18 yd^3	0.81 m^3	1.06 yd^3	0.55 m^3	0.72 yd^3
	m	ft	m	ft	m	ft	m	ft
A	6.06	**19'11"**	6.30	**20'8"**	6.21	**20'4"**	6.84	**22'5"**
B	9.05	**29'8"**	9.61	**31'6"**	9.90	**32'6"**	11.18	**36'8"**
C	5.19	**17'0"**	5.79	**19'0"**	6.19	**20'4"**	7.47	**24'6"**
D	2.46	**8'1"**	3.91	**12'10"**	3.67	**12'0"**	5.34	**17'6"**
E	4.94	**16'2"**	5.58	**18'4"**	6.00	**19'8"**	7.35	**24'1"**
F	8.62	**28'3"**	8.97	**29'5"**	8.80	**28'10"**	9.50	**31'2"**



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

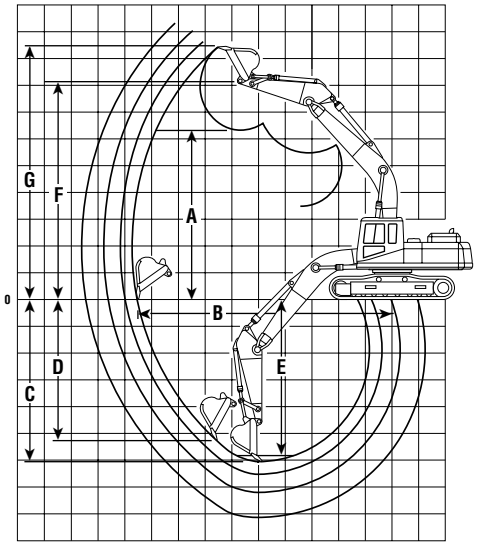
- **A** Maximum loading height of bucket with teeth
- **B** Maximum reach at ground level
- **C** Maximum digging depth
- **D** Maximum vertical wall
- **E** Maximum depth of cut for 2.44 m **(8'0")** level bottom (straight clean up)
- **F** Maximum bucket hinge pin height
- **G** Maximum height, to bucket teeth at highest arc

320B, 320B L, 320B N with Reach Boom

Stick	3.86 m	12'8"	2.92 m	9'7"	2.5 m	8'2"	1.9 m	6'3"
	m	ft	m	ft	m	ft	m	ft
A	6.93	**22'9"**	6.57	**21'5"**	6.46	**21'2"**	5.96	**19'7"**
B	10.63	**34'11"**	9.78	**32'1"**	9.31	**30'7"**	8.76	**28'9"**
C	7.58	**24'10"**	6.64	**21'9"**	6.15	**20'2"**	5.63	**12'6"**
D	6.80	**22'4"**	6.04	**19'10"**	5.33	**17'6"**	4.68	**15'4"**
E	7.25	**23'9"**	6.38	**20'11"**	5.85	**19'2"**	5.31	**17'5"**
F	8.41	**27'7"**	8.06	**26'5"**	7.87	**25'10"**	7.45	**24'5"**
G	9.73	**31'11"**	9.47	**31'1"**	9.16	**30'1"**	8.78	**28'10"**

320B, 320B L, 320B N with Mass Boom

Stick	2.4 m	7'10"	1.9 m	6'3"
	m	ft	m	ft
A	5.92	**19'5"**	5.69	**18'8"**
B	8.76	**28'9"**	8.30	**27'3"**
C	5.70	**18'8"**	5.20	**17'1"**
D	4.91	**16'1"**	4.43	**14'6"**
E	5.39	**17'8"**	4.88	**16'0"**
F	7.42	**24'4"**	7.18	**23'7"**
G	8.77	**28'9"**	8.54	**28'0"**



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

320B, 320B L, 320B N with Reach Boom

Stick	2.92 m	9'7"	2.5 m	8'2"	1.9 m	6'3"
	m	ft	m	ft	m	ft
A	6.66	**21'10"**	6.46	**21'2"**	5.89	**19'4"**
B	9.69	**31'9"**	9.29	**30'6"**	8.82	**28'11"**
C	6.65	**21'10"**	6.14	**20'2"**	5.68	**18'8"**
D	5.45	**17'11"**	5.15	**16'11"**	3.57	**12'1"**
E	6.37	**20'11"**	5.94	**19'6"**	5.42	**17'9"**
F	—	**—**	—	**—**	—	**—**
G	9.39	**30'10"**	9.20	**30'2"**	8.76	**28'9"**

320B, 320B L, 320B N with Mass Boom

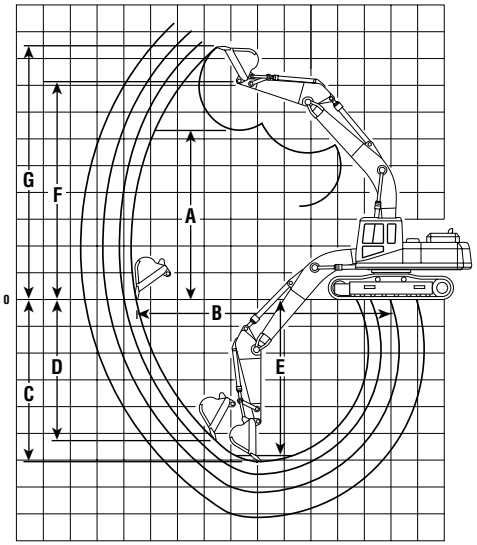
Stick	2.4 m	7'10"	1.9 m	6'3"
	m	ft	m	ft
A	5.85	**19'2"**	5.63	**18'6"**
B	8.82	**28'11"**	8.35	**27'5"**
C	5.75	**18'10"**	5.25	**17'3"**
D	3.87	**12'8"**	3.43	**11'3"**
E	8.84	**29'0"**	5.01	**16'5"**
F	—	**—**	—	**—**
G	8.52	**27'11"**	8.75	**28'8"**

320B, 320B L, 320B LN with VA Boom

Stick	2.4 m	7'10"	1.9 m	6'3"
	m	ft	m	ft
A	7.50	**24'7"**	7.10	**23'4"**
B	9.19	**30'2"**	8.74	**28'8"**
C	5.69	**18'8"**	5.19	**17'0"**
D	3.95	**13'0"**	3.50	**11'6"**
E	5.58	**18'4"**	5.06	**16'7"**
F	—	**—**	—	**—**
G	8.75	**28'8"**	8.53	**28'0"**

320B S with Mass Boom

2.4 m	7'10"	1.9 m	6'3"
m	ft	m	ft
5.94	**19'6"**	5.70	**18'8"**
8.80	**28'10"**	8.34	**27'4"**
5.68	**18'8"**	5.18	**17'0"**
3.80	**12'6"**	3.35	**11'0"**
5.47	**17'11"**	4.93	**16'2"**
—	**—**	—	**—**
8.83	**29'0"**	8.60	**28'3"**



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

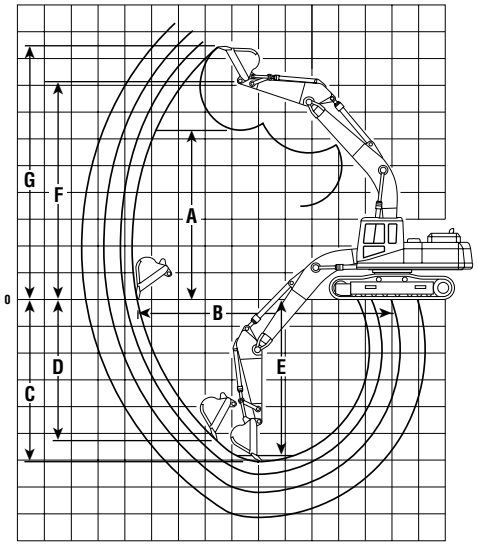
G Maximum height, to bucket teeth at highest arc

Belgium Sourced — **320B S with 5.675 m (18'7") Reach Boom**

Stick	2.92 m	9'7"	2.5 m	8'2"	1.9 m	6'3"
	m	ft	m	ft	m	ft
A	6.74	**22'1"**	6.54	**21'2"**	5.97	**19'7"**
B	9.68	**31'9"**	9.28	**30'5"**	8.80	**28'10"**
C	6.49	**21'4"**	6.06	**19'7"**	5.61	**18'5"**
D	5.48	**18'0"**	5.08	**16'8"**	3.50	**11'6"**
E	6.30	**20'8"**	5.86	**19'3"**	5.35	**17'7"**
F	—	**—**	—	**—**	—	**—**
G	9.47	**31'1"**	9.28	**30'5"**	8.84	**29'0"**

Japan/U.S. Sourced — **322B, 322B L with Reach Boom**

Stick	3.6 m	11'10"	2.95 m	9'8"	2.5 m	8'2"
	m	ft	m	ft	m	ft
A	7.10	**23'4"**	6.73	**22'1"**	6.54	**21'5"**
B	10.47	**34'4"**	10.01	**32'10"**	9.59	**31'6"**
C	7.22	**23'8"**	6.71	**22'0"**	6.26	**20'6"**
D	6.33	**20'9"**	5.70	**18'8"**	5.26	**17'3"**
E	6.91	**22'8"**	6.40	**21'0"**	5.95	**19'6"**
F	8.56	**28'1"**	8.28	**27'2"**	8.08	**26'6"**
G	9.83	**32'3"**	9.68	**31'9"**	9.48	**31'1"**



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

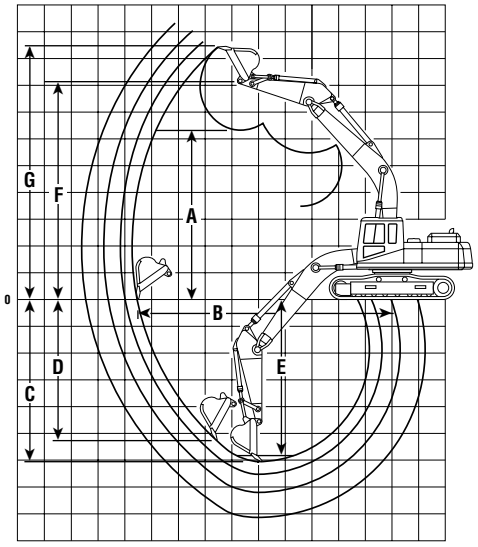
- **A** Maximum loading height of bucket with teeth
- **B** Maximum reach at ground level
- **C** Maximum digging depth
- **D** Maximum vertical wall
- **E** Maximum depth of cut for 2.44 m **(8'0")** level bottom (straight clean up)
- **F** Maximum bucket hinge pin height
- **G** Maximum height, to bucket teeth at highest arc

Japan/U.S. Sourced — 322B, 322B L with Mass Boom

Stick	2.5 m	8'2"	2 m	6'7"
	m	ft	m	ft
A	5.98	**19'7"**	5.75	**18'10"**
B	9.12	**29'11"**	8.65	**28'5"**
C	5.91	**19'5"**	5.41	**17'9"**
D	5.18	**17'0"**	4.70	**15'5"**
E	5.57	**18'3"**	5.06	**16'7"**
F	7.63	**25'0"**	7.41	**24'4"**
G	9.16	**30'1"**	8.93	**29'4"**

Belgium Sourced — 322B L, 322B LN with 5.9 m (19'4") Reach Boom / 322B L, 322B LN with 5.3 m (17'5") Mass Boom

Stick	2.95 m	9'8"	2.5 m	8'2"	2.5 m	8'2"	2 m	6'7"
	m	ft	m	ft	m	ft	m	ft
A	6.75	**22'2"**	6.55	**21'6"**	5.96	**19'7"**	5.74	**18'10"**
B	10.00	**32'10"**	9.59	**31'6"**	9.12	**29'11"**	8.65	**28'5"**
C	6.69	**21'11"**	6.24	**20'6"**	5.92	**19'5"**	5.42	**17'9"**
D	4.43	**14'6"**	4.02	**13'2"**	4.09	**13'5"**	3.65	**12'0"**
E	6.50	**21'4"**	6.03	**19'9"**	5.72	**18'9"**	5.19	**17'0"**
F	—	**—**	—	**—**	—	**—**	—	**—**
G	9.62	**31'7"**	9.42	**30'11"**	9.08	**29'9"**	8.86	**29'1"**



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

KEY:

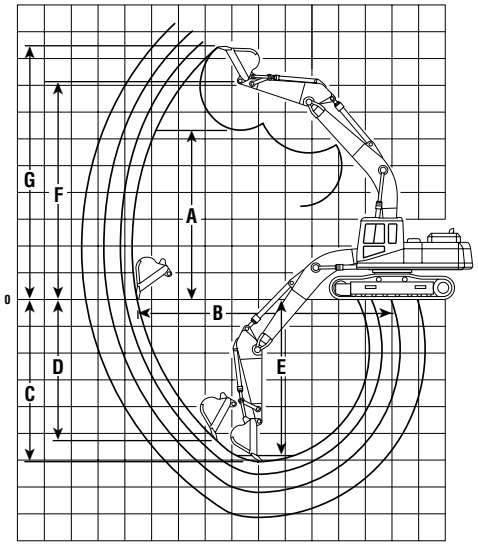
- **A** Maximum loading height of bucket with teeth
- **B** Maximum reach at ground level
- **C** Maximum digging depth
- **D** Maximum vertical wall
- **E** Maximum depth of cut for 2.44 m **(8'0")** level bottom (straight clean up)
- **F** Maximum bucket hinge pin height
- **G** Maximum height, to bucket teeth at highest arc

Belgium Sourced — **322B L, 322B LN with 5.66 m (18'7") VA Boom**

Stick	2.5 m	8'2"	2 m	6'7"
	m	ft	m	ft
A	7.81	**25'7"**	7.40	**24'3"**
B	9.60	**31'6"**	9.13	**29'11"**
C	5.89	**19'4"**	5.40	**17'9"**
D	4.20	**13'9"**	3.74	**12'3"**
E	5.78	**19'0"**	5.28	**17'4"**
F	—	**—**	—	**—**
G	11.10	**36'5"**	10.69	**35'1"**

Japan/U.S. Sourced

Stick	3.2 m	10'6"	2.65 m	8'8"	2 m	6'7"	2.5 m	8'2"	2 m	6'7"
	325B, 325B L with Reach Boom						**325B, 325B L with Mass Boom**			
	m	ft	m	ft	m	ft	m	ft	m	ft
A	7.11	**23'4"**	6.90	**22'8"**	6.31	**20'8"**	6.10	**20'0"**	5.89	**19'4"**
B	10.52	**34'6"**	10.01	**32'10"**	9.52	**31'3"**	9.35	**30'8"**	8.89	**29'2"**
C	7.09	**23'3"**	6.54	**21'5"**	6.06	**19'11"**	6.01	**19'9"**	5.51	**18'1"**
D	6.38	**20'11"**	5.86	**19'3"**	5.27	**17'3"**	5.21	**17'1"**	4.05	**13'3"**
E	6.92	**22'8"**	6.35	**20'10"**	5.83	**19'2"**	5.81	**19'1"**	5.28	**17'4"**
F	8.60	**28'3"**	8.38	**27'6"**	7.97	**26'2"**	7.76	**25'6"**	7.55	**24'9"**
G	9.96	**32'8"**	9.75	**32'0"**	9.46	**31'0"**	9.24	**30'4"**	8.93	**29'4"**



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage

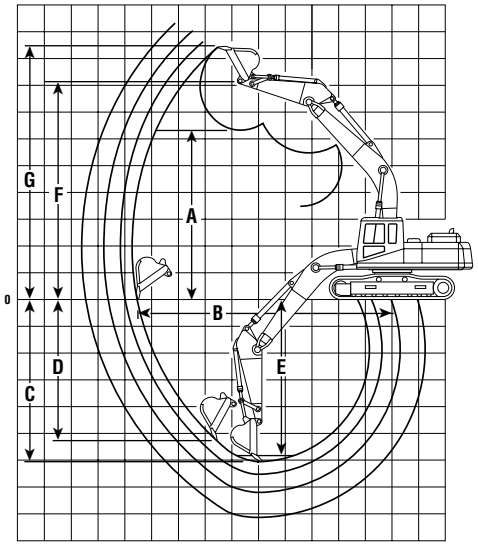
KEY:

- **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

	325B L, 325B LN with 6.15 m (20'2") Reach Boom						325B L, 325B LN with 5.55 m (18'3") Mass Boom			
Stick	**3.2 m**	**10'6"**	**2.65 m**	**8'8"**	**2 m**	**6'7"**	**2.5 m**	**8'2"**	**2 m**	**6'7"**
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A	7.05	**23'2"**	6.84	**22'5"**	6.31	**20'8"**	6.09	**20'0"**	5.89	**19'4"**
B	10.57	**34'8"**	10.07	**33'0"**	9.53	**31'3"**	9.35	**30'8"**	8.89	**29'2"**
C	7.15	**23'5"**	6.59	**21'7"**	6.06	**19'11"**	6.02	**19'9"**	5.52	**18'1"**
D	5.18	**17'0"**	4.78	**15'8"**	4.13	**13'7"**	4.11	**15'6"**	3.65	**12'0"**
E	6.98	**22'11"**	6.40	**21'1"**	5.83	**19'2"**	5.82	**19'1"**	5.29	**17'4"**
F	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
G	9.95	**32'8"**	9.75	**32'0"**	9.39	**30'10"**	9.17	**30'1"**	8.97	**29'5"**

	325B L, 325B LN with 5.66 m (18'7") VA Boom			
Stick	**2.5 m**	**8'2"**	**2 m**	**6'7"**
	m	**ft**	**m**	**ft**
A	7.89	**25'11"**	7.51	**24'8"**
B	9.75	**32'0"**	9.28	**30'5"**
C	5.89	**19'4"**	5.40	**17'9"**
D	4.13	**13'7"**	3.67	**12'0"**
E	5.78	**19'0"**	5.28	**17'4"**
F	—	**—**	—	**—**
G	11.21	**36'9"**	10.83	**35'6"**

Range Dimensions
- 330B
- 330B L
- 330B LN
- Japan/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

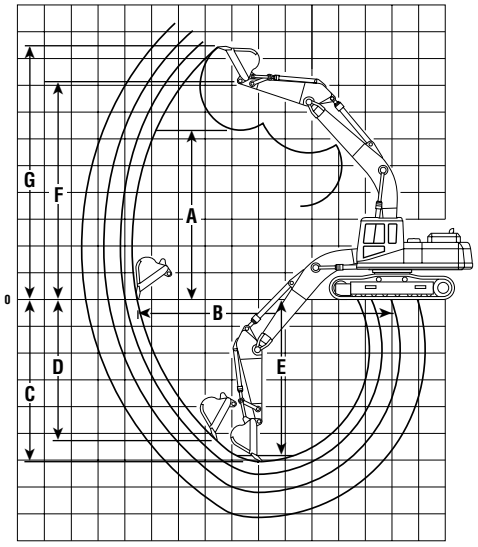
G Maximum height, to bucket teeth at highest arc

Japan/U.S. Sourced

	330B, 330B L with Reach Boom								330B, 330B L with Mass Boom			
Stick	**3.99 m**	**12'10"**	**3.3 m**	**10'10"**	**2.8 m**	**9'2"**	**2.15 m**	**7'1"**	**2.55 m**	**8'4"**	**2.15 m**	**7'1"**
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A	7.60	**24'11"**	7.29	**23'11"**	7.12	**23'4"**	6.50	**21'4"**	6.68	**21'11"**	6.25	**20'6"**
B	11.62	**38'1"**	11.03	**36'2"**	10.58	**34'9"**	10.09	**33'1"**	10.21	**33'6"**	9.71	**31'10"**
C	8.08	**26'6"**	7.49	**24'7"**	6.99	**22'11"**	6.52	**21'5"**	6.59	**21'7"**	6.19	**20'4"**
D	7.23	**23'9"**	6.54	**22'5"**	6.12	**20'1"**	5.14	**16'10"**	5.89	**19'4"**	4.75	**15'7"**
E	7.75	**25'5"**	7.15	**23'5"**	6.65	**21'10"**	6.13	**20'1"**	6.20	**20'4"**	5.80	**19'0"**
F	9.29	**30'6"**	8.98	**29'5"**	8.80	**28'10"**	8.37	**27'6"**	8.54	**27'9"**	8.12	**26'8"**
G	10.77	**35'4"**	10.44	**34'3"**	10.27	**33'8"**	9.90	**32'6"**	10.17	**33'4"**	9.65	**31'8"**

Belgium Sourced

	330B L, 330B LN with Reach Boom								330B L, 330B LN with Mass Boom			
Stick	**3.9 m**	**12'10"**	**3.3 m**	**10'10"**	**2.8 m**	**9'2"**	**2.2 m**	**7'3"**	**2.6 m**	**8'6"**	**2.2 m**	**7'3"**
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A	7.63	**25'0"**	7.31	**24'0"**	7.13	**23'5"**	6.59	**21'7"**	6.76	**22'2"**	6.34	**20'10"**
B	11.62	**38'1"**	11.03	**36'2"**	10.57	**34'8"**	10.01	**32'10"**	10.14	**33'3"**	9.64	**31'8"**
C	8.06	**25'7"**	7.46	**24'6"**	6.96	**22'10"**	6.42	**21'1"**	6.50	**21'4"**	6.10	**20'0"**
D	6.02	**19'9"**	5.36	**17'7"**	4.98	**16'4"**	4.82	**15'10"**	5.38	**17'8"**	4.38	**14'4"**
E	7.96	**26'1"**	7.32	**24'0"**	6.77	**22'3"**	6.19	**20'3"**	6.32	**20'9"**	5.86	**19'3"**
F	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
G	10.73	**35'2"**	10.40	**34'1"**	10.23	**33'7"**	9.91	**32'6"**	10.17	**33'4"**	9.64	**31'8"**



One-Piece Boom Digging Envelope

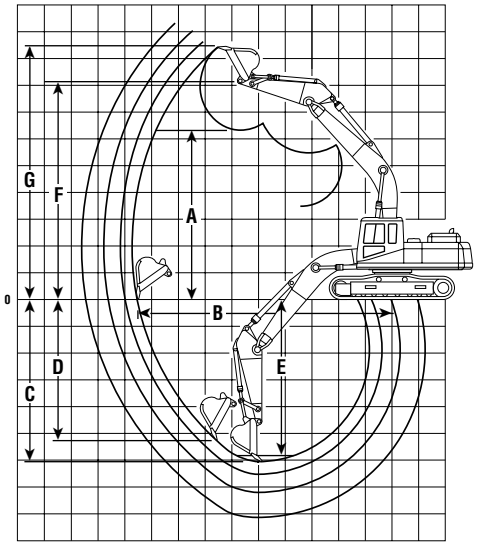
- Standard shoes and undercarriage

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	345B with Reach Boom						345B with Mass Boom			
Stick	**3.9 m**	**12'10"**	**3.35 m**	**11'0"**	**2.9 m**	**9'6"**	**3 m**	**9'11"**	**2.5 m**	**8'2"**
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A	2.12	**6'11"**	2.78	**9'1"**	3.18	**10'5"**	2.79	**9'2"**	3.19	**10'6"**
B	12.20	**40'1"**	11.66	**38'3"**	11.29	**37'0"**	11.02	**36'2"**	10.66	**35'0"**
C	8.28	**27'2"**	7.63	**25'0"**	7.23	**23'9"**	7.08	**23'2"**	6.68	**21'11"**
D	6.52	**21'5"**	6.56	**21'6"**	5.73	**18'10"**	5.63	**18'6"**	4.99	**16'4"**
E	7.88	**25'10"**	7.22	**23'8"**	6.83	**22'5"**	6.63	**21'9"**	6.25	**20'6"**
F	9.28	**30'5"**	9.24	**30'4"**	9.07	**29'9"**	8.81	**28'11"**	8.62	**28'3"**
G	10.82	**35'6"**	10.78	**35'4"**	10.60	**34'9"**	10.27	**33'8"**	10.16	**33'4"**

Japan/U.S. Sourced	345B L – FIX with Reach Boom						345B L – FIX with Mass Boom			
Stick	**3.9 m**	**12'10"**	**3.35 m**	**11'0"**	**2.9 m**	**9'6"**	**3 m**	**9'11"**	**2.5 m**	**8'2"**
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A	7.35	**24'1"**	7.37	**24'2"**	7.20	**23'7"**	6.95	**22'10"**	6.66	**21'10"**
B	12.20	**40'0"**	11.71	**38'5"**	11.29	**37'0"**	11.02	**36'2"**	10.66	**35'0"**
C	8.28	**27'2"**	7.68	**25'2"**	7.23	**23'9"**	7.08	**23'3"**	6.68	**21'11"**
D	6.52	**21'5"**	6.18	**20'3"**	5.73	**18'10"**	5.63	**18'6"**	4.99	**16'4"**
E	7.88	**25'10"**	7.28	**23'11"**	6.83	**22'5"**	6.63	**21'9"**	6.25	**20'6"**
F	9.28	**30'5"**	9.24	**30'4"**	9.07	**29'9"**	8.81	**28'11"**	8.62	**28'3"**
G	10.82	**35'6"**	10.78	**35'4"**	10.60	**34'9"**	10.27	**33'8"**	10.16	**33'4"**



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

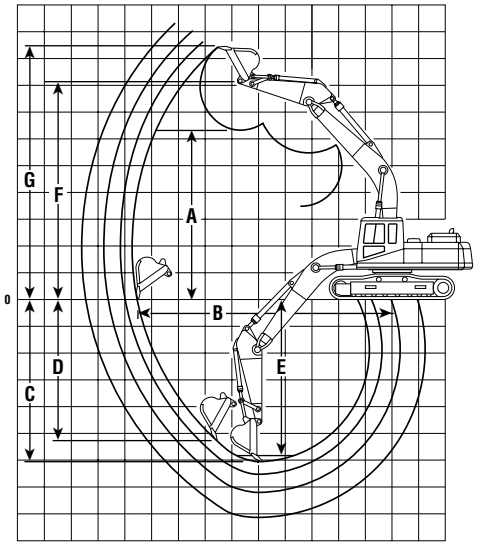
G Maximum height, to bucket teeth at highest arc

U.S. Sourced — **345B L – VG with Reach Boom** / **345B L – VG with Mass Boom**

Stick	3.9 m	12'10"	3.35 m	11'0"	2.9 m	9'6"	3 m	9'11"	2.5 m	8'2"
	m	ft	m	ft	m	ft	m	ft	m	ft
A	7.51	**24'8"**	7.54	**24'9"**	7.36	**24'2"**	7.01	**23'0"**	6.82	**22'5"**
B	12.17	**39'11"**	11.68	**38'4"**	11.26	**36'11"**	11.09	**36'5"**	11.62	**38'1"**
C	8.12	**26'8"**	7.51	**24'8"**	7.06	**23'2"**	7.02	**23'0"**	6.52	**21'5"**
D	6.36	**20'10"**	6.02	**19'9"**	5.56	**18'3"**	5.29	**17'4"**	4.07	**13'4"**
E	7.72	**25'4"**	7.12	**23'4"**	6.67	**21'11"**	6.59	**21'7"**	6.09	**20'0"**
F	9.44	**31'0"**	9.41	**30'10"**	9.23	**30'3"**	8.97	**29'5"**	8.78	**28'10"**
G	10.98	**36'0"**	10.94	**35'11"**	10.76	**35'4"**	10.51	**34'6"**	10.18	**33'5"**

Belgium Sourced — **345B – VG with Reach Boom** / **345B – VG with Mass Boom**

Stick	3.35 m	11'0"	2.9 m	9'6"	3 m	9'11"	2.5 m	8'2"
	m	ft	m	ft	m	ft	m	ft
A	7.54	**24'9"**	7.37	**24'2"**	6.98	**22'11"**	6.79	**22'3"**
B	11.67	**38'3"**	11.25	**36'11"**	11.12	**36'6"**	10.66	**35'0"**
C	7.50	**24'7"**	7.05	**23'2"**	7.05	**23'2"**	6.55	**21'6"**
D	6.15	**20'2"**	5.70	**18'8"**	4.95	**16'3"**	4.52	**14'10"**
E	7.34	**24'1"**	6.89	**22'7"**	6.90	**22'8"**	6.37	**20'11"**
F	—	**—**	—	**—**	—	**—**	—	**—**
G	11.04	**36'3"**	10.87	**35'8"**	10.51	**34'6"**	10.18	**33'5"**



One-Piece Boom Digging Envelope

- Standard shoes and undercarriage
- Lug height not included

KEY:

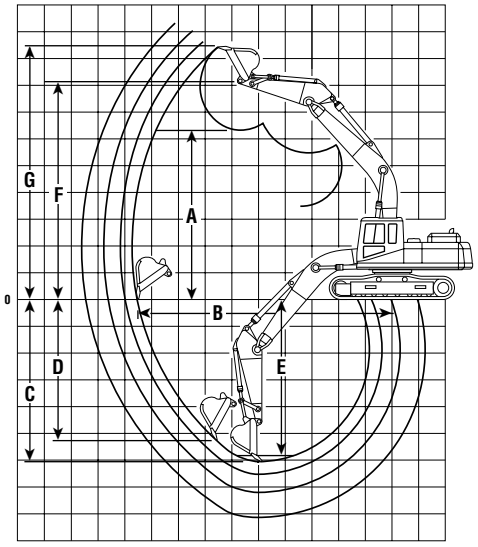
A	Maximum loading height of bucket with teeth
B	Maximum reach at ground level
C	Maximum digging depth
D	Maximum vertical wall
E	Maximum depth of cut for 2.44 m **(8'0")** level bottom (straight clean up)
F	Maximum bucket hinge pin height
G	Maximum height, to bucket teeth at highest arc

350, 350 L with Reach Boom

Stick	4.8 m	15'9"	3.6 m	11'10"	3.1 m	10'2"
	m	ft	m	ft	m	ft
A	8.45	**27'9"**	7.99	**26'3"**	7.85	**25'9"**
B	13.45	**44'2"**	12.33	**40'5"**	11.81	**38'9"**
C	9.57	**31'5"**	8.37	**27'6"**	7.82	**25'8"**
D	8.20	**26'11"**	7.11	**23'4"**	6.67	**21'11"**
E	9.18	**30'1"**	7.98	**26'2"**	7.42	**24'4"**
F	10.38	**34'1"**	9.92	**32'7"**	9.72	**31'11"**
G	12.07	**39'7"**	11.62	**38'1"**	11.38	**37'4"**

350, 350 L with Mass Boom

Stick	3.7 m	12'2"	2.95 m	9'8"	2.4 m	7'10"
	m	ft	m	ft	m	ft
A	7.96	**26'1"**	7.40	**24'3"**	7.06	**23'2"**
B	11.93	**39'2"**	11.25	**36'11"**	10.68	**35'0"**
C	7.96	**26'1"**	7.30	**23'11"**	6.75	**22'2"**
D	6.99	**22'11"**	6.19	**20'4"**	5.42	**17'9"**
E	7.57	**24'10"**	6.87	**22'6"**	6.32	**20'9"**
F	9.83	**32'3"**	9.35	**30'8"**	9.01	**29'7"**
G	11.52	**37'10"**	11.08	**36'4"**	10.70	**35'1"**



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

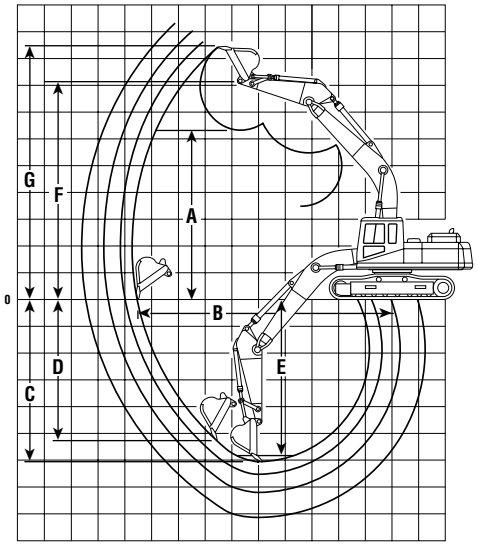
E Maximum depth of cut for 2.44 m **(8'0")** level bottom (straight clean up)

F Maximum bucket hinge pin height

G Maximum height, to bucket teeth at highest arc

	375, 375 L with Reach Boom								375, 375 L with GP Boom			
Stick	**5.5 m**	**18'1"**	**4.4 m**	**14'5"**	**3.4 m**	**11'2"**	**2.9 m**	**9'6"**	**5.5 m**	**18'1"**	**4.4 m**	**14'5"**
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A	10.35	**33'11"**	9.66	**31'8"**	9.44	**31'0"**	9.28	**30'5"**	10.31	**33'10"**	9.55	**31'4"**
B	15.96	**52'4"**	14.66	**48'1"**	14.02	**46'0"**	13.59	**44'7"**	15.67	**51'5"**	14.37	**47'2"**
C	10.84	**35'7"**	9.63	**31'7"**	8.77	**28'9"**	8.29	**27'2"**	10.58	**34'9"**	9.37	**30'9"**
D	9.81	**32'2"**	8.26	**27'1"**	7.70	**25'3"**	7.32	**24'0"**	9.55	**31'4"**	8.39	**27'6"**
E	10.36	**34'0"**	9.16	**30'1"**	8.24	**27'0"**	7.77	**25'6"**	10.09	**33'1"**	8.90	**29'2"**
F	12.56	**41'2"**	11.76	**38'7"**	11.68	**38'4"**	11.51	**37'9"**	12.52	**41'1"**	11.65	**38'3"**
G	14.50	**47'2"**	13.52	**44'4"**	13.58	**44'7"**	13.43	**44'1"**	14.52	**47'8"**	13.48	**44'3"**

	375, 375 L with GP Boom		375, 375 L with Mass Boom					
Stick	**3.4 m**	**11'2"**	**4.1 m**	**13'5"**	**3.4 m**	**11'2"**	**2.9 m**	**9'6"**
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A	9.27	**30'5"**	8.76	**28'9"**	8.43	**27'8"**	8.26	**27'1"**
B	13.69	**44'11"**	13.08	**42'11"**	12.42	**40'9"**	12.00	**39'4"**
C	8.50	**27'11"**	8.11	**26'7"**	7.41	**24'4"**	6.94	**22'9"**
D	7.55	**24'9"**	7.13	**23'5"**	6.46	**21'2"**	5.52	**18'1"**
E	7.98	**26'2"**	7.59	**24'11"**	6.89	**22'7"**	6.41	**21'1"**
F	11.51	**37'9"**	11.00	**36'1"**	10.67	**35'8"**	10.49	**34'5"**
G	13.48	**44'3"**	12.95	**42'6"**	12.61	**41'4"**	12.34	**40'6"**



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

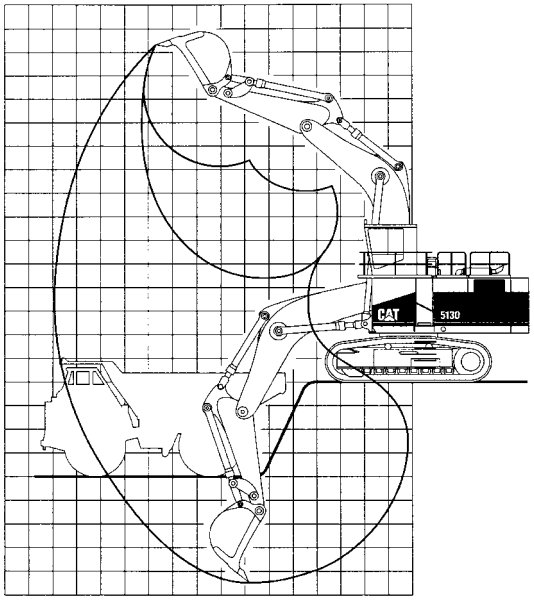
G Maximum height, to bucket teeth at highest arc

375, 375 L with GP Boom

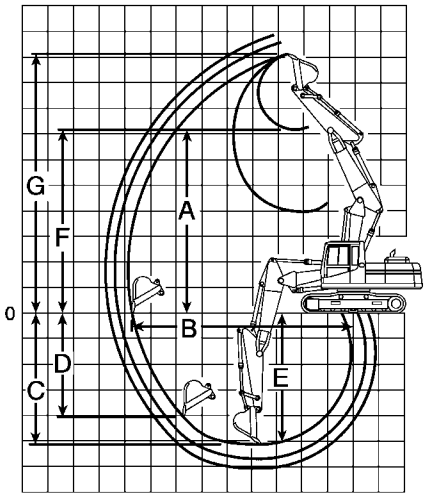
Stick	5.5 m	18'1"	4.4 m	14'5"	3.4 m	11'2"
	m	ft	m	ft	m	ft
A	10.31	**33'10"**	9.55	**31'4"**	9.27	**30'5"**
B	15.67	**51'5"**	14.37	**47'1"**	13.69	**44'11"**
C	10.58	**34'8"**	9.37	**30'8"**	8.50	**27'11"**
D	9.55	**31'4"**	8.39	**27'6"**	7.55	**24'10"**
E	10.09	**33'1"**	8.90	**29'2"**	7.98	**26'2"**
F	12.52	**41'1"**	11.65	**38'2"**	11.51	**37'10"**
G	14.52	**47'7"**	13.48	**44'2"**	13.48	**44'2"**

375, 375 L with Mass Boom

Stick	4.1 m	13'5"	3.4 m	11'2"	2.9 m	9'6"
	m	ft	m	ft	m	ft
A	8.76	**28'8"**	8.43	**27'8"**	8.26	**27'1"**
B	13.08	**42'11"**	12.42	**40'8"**	12.00	**39'5"**
C	8.11	**26'7"**	7.41	**24'4"**	6.94	**22'10"**
D	7.13	**23'5"**	6.46	**21'2"**	5.52	**18'1"**
E	7.59	**24'11"**	6.89	**22'7"**	6.41	**21'0"**
F	11.00	**36'1"**	10.67	**35'0"**	10.49	**34'5"**
G	12.95	**42'6"**	12.61	**41'5"**	12.34	**40'6"**



MODEL	5130B ME				5230 ME	
	m	ft	m	ft	m	ft
Boom	8.0	**26'3"**	8.0	**26'3"**		—
Stick	3.8	**12'5"**	5.2	**17'1"**		—
Max. Loading Height	9.1	**29'8"**	9.7	**31'8"**	9.8	**32'2"**
Max. Reach	14.9	**48'11"**	16.1	**52'8"**	17.7	**58'0"**
Max. Digging Depth	8.4	**27'7"**	9.7	**31'8"**	9.4	**30'11"**



Variable Adjustable Boom Digging Envelope

KEY:

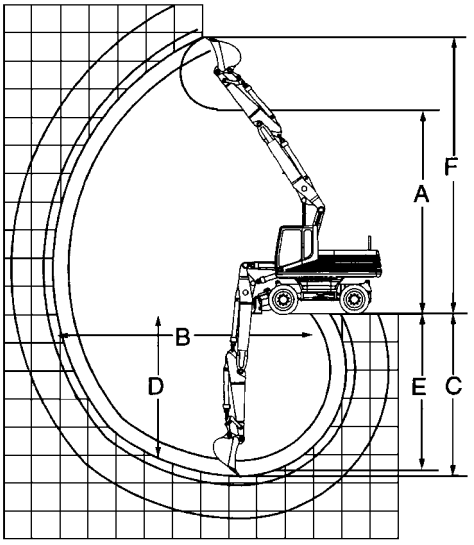
- **A** Maximum loading height of bucket with teeth
- **B** Maximum reach at ground level
- **C** Maximum digging depth
- **D** Maximum vertical wall
- **E** Maximum depth of cut for 2.44 m **(8'0")** level bottom (straight clean up)
- **F** Maximum bucket hinge pin height
- **G** Maximum height, to bucket teeth at highest arc

312B L

Stick	3 m	9'10"	2.5 m	8'2"	2.1 m	6'11"
	m	ft	m	ft	m	ft
A	7.57	**24'10"**	7.18	**23'7"**	6.82	**22'5"**
B	8.80	**28'10"**	8.34	**27'4"**	7.96	**26'1"**
C	5.73	**18'10"**	5.24	**17'2"**	4.84	**15'11"**
D	3.63	**11'11"**	3.18	**10'5"**	2.88	**9'5"**
E	5.61	**18'5"**	5.12	**16'9"**	4.71	**15'5"**
F	8.81	**28'11"**	8.41	**27'7"**	8.05	**26'5"**
G	10.04	**32'11"**	9.64	**31'7"**	9.28	**30'5"**

315B L

Stick	3.1 m	10'2"	2.6 m	8'6"	2.25 m	7'5"	1.85 m	6'1"
	m	ft	m	ft	m	ft	m	ft
A	7.75	**25'5"**	7.71	**25'3"**	7.24	**23'9"**	7.11	**23'4"**
B	8.92	**29'3"**	8.61	**28'3"**	8.20	**26'11"**	7.90	**25'11"**
C	3.15	**10'4"**	2.23	**7'4"**	2.72	**8'11"**	2.14	**7'0"**
D	4.18	**13'8"**	3.71	**12'2"**	3.35	**11'0"**	2.97	**9'9"**
E	5.68	**18'7"**	5.26	**17'3"**	4.87	**16'0"**	4.51	**14'9"**
F	8.95	**29'4"**	8.82	**28'11"**	8.41	**27'7"**	8.21	**26'11"**
G	10.16	**33'4"**	9.99	**32'9"**	9.62	**31'7"**	9.38	**30'9"**



Hydraulic Adjustable Boom Digging Envelope

- Standard 10 × 20 tires and undercarriage
- General purpose bucket

KEY:

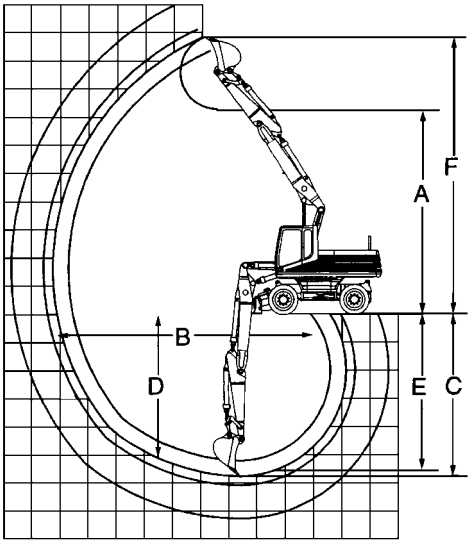
- **A** Maximum loading height of bucket with teeth
- **B** Maximum reach at ground level
- **C** Maximum digging depth
- **D** Maximum vertical wall
- **E** Maximum depth of cut for 2.44 m **(8'0")** level bottom
- **F** Maximum height, to bucket teeth at highest arc

M312

Stick	1.6 m	5'3"	2 m	6'6"	2.3 m	7'5"	2.6 m	8'5"	3 m	9'9"
	m	ft	m	ft	m	ft	m	ft	m	ft
A	6.76	**22'2"**	7.05	**23'1"**	7.29	**23'9"**	7.54	**24'7"**	7.70	**25'3"**
B	7.90	**25'9"**	8.30	**27'2"**	8.59	**28'2"**	8.89	**29'2"**	9.22	**30'3"**
C	4.62	**15'2"**	5.02	**16'5"**	5.32	**17'5"**	5.62	**18'4"**	6.00	**19'7"**
D	2.85	**9'3"**	3.84	**12'6"**	4.11	**13'5"**	4.39	**14'4"**	4.62	**15'2"**
E	4.49	**14'7"**	4.90	**16'1"**	5.21	**17'1"**	5.51	**18'1"**	5.90	**19'4"**
F	9.13	**29'10"**	9.49	**31'3"**	9.73	**31'9"**	9.97	**32'7"**	10.13	**33'2"**

M315

Stick	1.7 m	5'7"	2.1 m	6'9"	2.4 m	7'9"	2.6 m	8'5"	3.1 m	10'1"
	m	ft	m	ft	m	ft	m	ft	m	ft
A	7.03	**23'1"**	7.32	**24'0"**	7.56	**24'10"**	7.72	**25'4"**	8.04	**26'5"**
B	8.19	**26'10"**	8.59	**28'2"**	8.80	**28'10"**	9.08	**29'9"**	9.53	**31'3"**
C	4.80	**13'5"**	5.28	**17'4"**	5.58	**18'4"**	5.78	**19'0"**	6.27	**20'7"**
D	2.96	**9'9"**	4.05	**13'3"**	4.34	**14'3"**	4.53	**14'10"**	4.91	**16'1"**
E	4.77	**15'8"**	5.17	**17'0"**	5.48	**18'0"**	5.68	**18'8"**	6.17	**20'3"**
F	9.40	**30'10"**	9.76	**32'0"**	10.00	**32'10"**	10.16	**33.4"**	10.47	**34'4"**



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 2.44 m **(8'0")** level bottom
- **F** Maximum height, to bucket teeth at highest arc

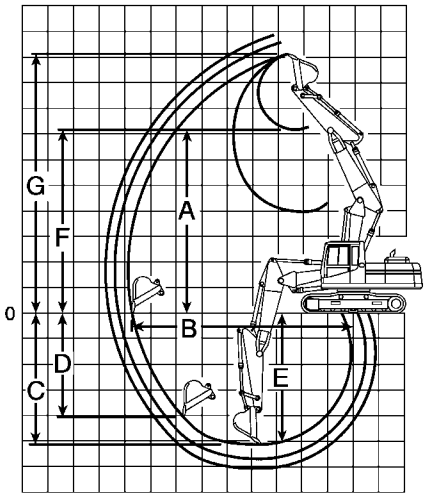
M318

Stick	1.8 m	5'11"	2.4 m	7'9"	2.8 m	9'2"	4 m	13'1"
	m	ft	m	ft	m	ft	m	ft
A	6.78	**22'3"**	7.18	**23'7"**	7.38	**24'3"**	7.99	**26'3"**
B	8.43	**27'8"**	9.00	**29'6"**	9.35	**30'8"**	10.55	**34'7"**
C	5.20	**17'1"**	5.79	**19'0"**	6.18	**20'3"**	7.44	**24'5"**
D	3.17	**10'5"**	4.43	**14'6"**	4.73	**15'6"**	5.72	**18'9"**
E	5.08	**16'8"**	5.69	**18'8"**	6.15	**20'2"**	7.14	**23'5"**
F	9.38	**30'9"**	9.84	**32'3"**	10.02	**32'10"**	10.79	**35'5"**

M320

Stick	1.9 m	6'3"	2.5 m	8'2"	2.9 m	9'6"	4.2 m	13'9"
Bucket	1.05 m^3	1.37 yd^3	0.9 m^3	1.18 yd^3	0.81 m^3	1.06 yd^3	0.55 m^3	0.72 yd^3
	m	ft	m	ft	m	ft	m	ft
A	6.66	**21'10"**	7.04	**23'1"**	7.10	**23'4"**	7.90	**25'11"**
B	8.82	**28'11"**	9.38	**30'9"**	9.67	**31'9"**	10.96	**35'11"**
C	5.42	**17'9"**	6.01	**19'9"**	6.38	**20'11"**	7.68	**25'2"**
D	2.46	**8'1"**	3.85	**12'8"**	3.64	**11'11"**	5.28	**17'4"**
E	5.00	**16'5"**	5.62	**18'5"**	6.00	**19'8"**	7.36	**24'2"**
F	9.37	**30'9"**	9.79	**32'1"**	9.74	**31'11"**	10.63	**34'11"**

Range Dimensions
- 320B
- 320B L
- 320B N
- 320B LN
- Belgium Sourced



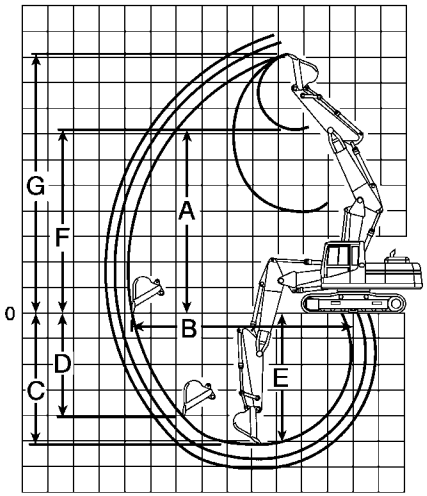
Variable Adjustable Boom Digging Envelope

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

320B, 320B L, 320B N, 320B LN

Stick	2.92 m	9'7"	2.4 m	7'10"	1.9 m	6'3"
	m	ft	m	ft	m	ft
A	8.07	**26'6"**	7.50	**24'7"**	7.16	**23'6"**
B	9.55	**31'4"**	9.19	**30'2"**	8.65	**28'5"**
C	6.06	**19'11"**	5.69	**18'8"**	5.14	**16'11"**
D	5.03	**16'6"**	4.58	**15'0"**	4.07	**13'5"**
E	5.95	**19'6"**	5.58	**18'4"**	5.01	**16'5"**
F	9.48	**31'1"**	9.05	**29'8"**	8.65	**28'5"**
G	10.88	**35'8"**	10.59	**34'8"**	10.13	**33'2"**



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

322B L, 322B N, 322B LN with VA Boom

Stick	2.5 m	8'2"	2 m	6'7"
	m	ft	m	ft
A	6.99	**22'11"**	7.40	**24'4"**
B	9.60	**31'6"**	9.13	**30'0"**
C	5.89	**19'4"**	5.40	**17'8"**
D	3.18	**10'5"**	2.80	**9'2"**
E	5.78	**19'0"**	5.28	**17'4"**
F	9.46	**31'0"**	9.05	**29'8"**
G	11.10	**36'5"**	10.69	**35'1"**

325B L, 325B LN with VA Boom

Stick	3.2 m	10'6"	2.5 m	8'2"	2 m	6'7"
	m	ft	m	ft	m	ft
A	8.59	**28'2"**	7.89	**25'11"**	7.51	**24'7"**
B	10.24	**33'7"**	9.75	**32'0"**	9.28	**30'5"**
C	6.40	**21'0"**	5.89	**19'4"**	5.40	**17'8"**
D	5.28	**17'4"**	4.71	**15'6"**	3.94	**12'11"**
E	6.30	**20'8"**	5.78	**19'0"**	5.28	**17'4"**
F	10.08	**33'1"**	9.55	**31'4"**	9.17	**30'1"**
G	11.57	**38'0"**	11.21	**36'10"**	10.83	**35'6"**

EXCAVATOR LIFTING CAPACITY

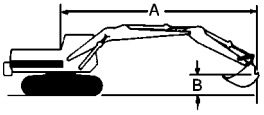
On many sewer jobs an excavator must lift and swing heavy pipe and manboxes in and out of the trench, place manholes and unload material from trucks. In some situations the excavator's lift requirements may be so critical that they determine the size excavator selected.

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.

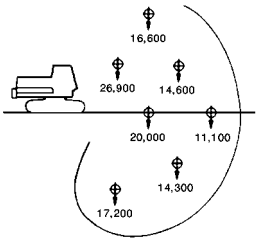
Changes in boom, stick and bucket position affect attachment geometry and can drastically change a machine's hydraulic lifting capacity. Caterpillar defines excavator lifting capabilities using the following SAE guidelines.

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



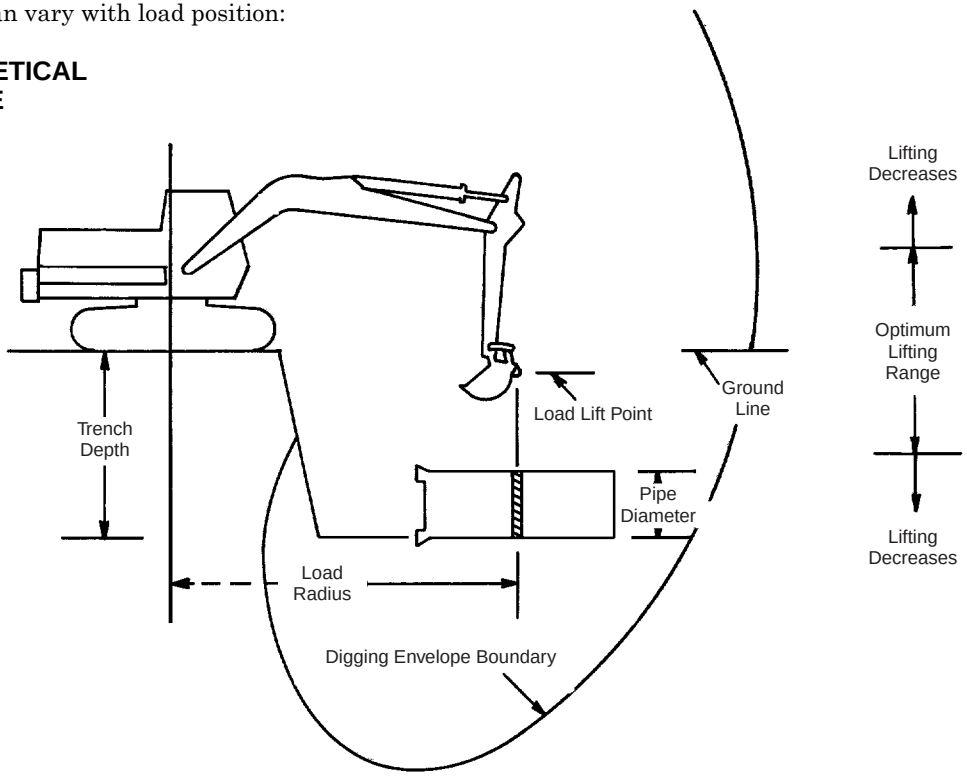
HYPOTHETICAL MACHINE

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.

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.)

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.

301.5 ● Bucket Teeth ● Rubber Track ● Canopy ● Blade Raised

Stick	Bucket		1.5 m 5'0" Front	1.5 m 5'0" Side	2 m 6'6" Front	2 m 6'6" Side	2.5 m 8'0" Front	2.5 m 8'0" Side	3 m 10'0" Front	3 m 10'0" Side	3.5 m 11'6" Front	3.5 m 11'6" Side	At Max. Reach Front	At Max. Reach Side
890 mm	400 mm	kg	620	420	410	280	300	210	230	160	—	—	190	140
2'11"	**16"**	**lb**	**1360**	**920**	**900**	**610**	**660**	**460**	**500**	**350**			**410**	**300**

301.5 ● Bucket Teeth ● Rubber Track ● Canopy ● Blade Lowered

Stick	Bucket		1.5 m 5'0" Front	1.5 m 5'0" Side	2 m 6'6" Front	2 m 6'6" Side	2.5 m 8'0" Front	2.5 m 8'0" Side	3 m 10'0" Front	3 m 10'0" Side	3.5 m 11'6" Front	3.5 m 11'6" Side	At Max. Reach Front	At Max. Reach Side
890 mm	400 mm	kg	680*	490	690*	330	490*	240	390*	190	—	—	310*	150
2'11"	**16"**	**lb**	**1490***	**1080**	**1520***	**720**	**1080***	**520**	**850***	**410**			**680***	**330**

307B ● 450 mm (18") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	At Max. Reach Front	At Max. Reach Side
1665 mm	800 mm	kg	2550	2050	1350	1100	—	—	700*	700*
5'6"	**2'7"**	**lb**	**5450**	**4350**	**2900**	**2350**			**1500***	**1500***
2210 mm	600 mm	kg	2550	2050	1350	1100	—	—	750*	650
7'3"	**2'0"**	**lb**	**5450**	**4350**	**2900**	**2350**			**1650***	**1350**

307B SB ● 450 mm (18") Track Shoes ● Swing Boom

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	At Max. Reach Front	At Max. Reach Side
1665 mm	800 mm	kg	2700	2150	1500	1200	—	—	850	700
5'6"	**2'7"**	**lb**	**5800**	**4600**	**3150**	**1550**			**1900**	**1500**
2210 mm	600 mm	kg	2700	2100	1450	1150	950	750	750	600
7'3"	**2'0"**	**lb**	**5800**	**4450**	**3100**	**2500**	**2000**	**1600**	**1600**	**1250**

307 ● 450 mm (18") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	At Max. Reach Front	At Max. Reach Side
1665 mm	800 mm	kg	2550	2150	1350	1150	—	—	700*	700*
5'6"	**2'7"**	**lb**	**5400**	**4600**	**2850**	**2450**			**1500***	**1500***
2210 mm	600 mm	kg	2550	2150	1350	1150	—	—	750*	650*
7'3"	**2'0"**	**lb**	**5400**	**4550**	**2900**	**2450**			**1650***	**1450***

311B ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1950 mm	925 mm	kg	6030	4160	3060	2210	1930	1390	—	—	1180*	1130
6'5"	**3'0"**	**lb**	**12,910**	**8940**	**6570**	**4750**	**4130**	**2980**			**2590***	**2490**
2250 mm	775 mm	kg	6130	4250	3110	2260	1960	1420	—	—	1210*	1080
7'5"	**2'6"**	**lb**	**13,120**	**9130**	**6670**	**4850**	**4200**	**3050**			**2660***	**2380**
2800 mm	625 mm	kg	6200	4310	3130	2270	1950	1410	—	—	950*	930
9'2"	**2'0"**	**lb**	**13,260**	**9250**	**6690**	**4870**	**4180**	**3030**			**2090***	**2050**

*Load limited by hydraulic capacity rather than tipping.

312B ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
2100 mm	1075 mm	kg	6160*	5080	4070	2730	2580	1750	—	—	1770*	1270
6'11"	**3'6"**	**lb**	**14,320***	**10,290**	**8740**	**5870**	**5550**	**3760**			**3910***	**2790**
2500 mm	925 mm	kg	6730*	5220	4150	2810	2630	1800	—	—	1500*	1190
8'2"	**3'0"**	**lb**	**15,630***	**11,220**	**8910**	**6040**	**5660**	**3870**			**3300***	**2630**
3000 mm	775 mm	kg	7810*	5280	4170	2830	2640	1810	1830	1230	1400*	1080
9'10"	**2'6"**	**lb**	**17,900***	**11,350**	**8960**	**6080**	**5670**	**3880**	**4040**	**2710**	**3080***	**2370**

312B L ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
2100 mm	1075 mm	kg	6160*	5290	4850	2850	3060	1830	—	—	1770*	1330
6'11"	**3'6"**	**lb**	**14,320***	**11,360**	**10,400**	**6130**	**6570**	**3930**			**3910***	**2930**
2500 mm	925 mm	kg	6730*	5430	4930	2920	3110	1880	—	—	1500*	1250
8'2"	**3'0"**	**lb**	**15,630***	**11,670**	**10,580**	**6290**	**6680**	**4040**			**3300***	**2760**
3000 mm	925 mm	kg	7760*	5460	4930	2920	3090	1860	2090	1270	1360*	1100
9'10"	**3'0"**	**lb**	**18,060***	**11,740**	**10,590**	**6280**	**6640**	**3990**	**4600**	**2790**	**3000***	**2420**

312B L France Sourced ● 500 mm (1'8") Track Shoes — 2100/2500 (6'11"/8'2") Stick ● 920 mm (3'0") Bucket ● 600 mm (2'0") Track Shoes — 3000 mm (9'10") Stick

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
2100 mm	kg	6250	5080	4660	2760	2970	1800	—	—	1770	1290
6'11"	**lb**	**2840**	**2310**	**2120**	**1250**	**1350**	**820**			**800**	**590**
2500 mm	kg	6810	5220	4740	2820	3000	1830	—	—	1490	1200
8'2"	**lb**	**3100**	**2370**	**2150**	**1280**	**1360**	**830**			**680**	**540**
3000 mm	kg	7480	5450	4940	2930	3110	1880	2160	1300	1360	1110
9'10"	**lb**	**3400**	**2480**	**2240**	**1330**	**1410**	**850**	**980**	**590**	**620**	**500**

315B ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1850 mm	1220 mm	kg	—	—	5300	3400	3400	2200	—	—	2400	1550
6'1"	**4'0"**	**lb**			**11,350**	**7350**	**7250**	**4750**			**5250**	**3400**
2250 mm	1070 mm	kg	5500*	5500*	5450	3600	3500	2300	—	—	2250*	1500
7'5"	**3'6"**	**lb**	**12,700***	**12,700***	**11,750**	**7700**	**7500**	**4950**			**5000***	**3250**
2600 mm	1070 mm	kg	5900*	5900*	5500	3600	3500	2300	2400	1600	1950*	1350
8'6"	**3'6"**	**lb**	**13,600***	**13,600***	**11,750**	**7700**	**7450**	**4950**	**5300**	**3500**	**4250***	**3000**
3100 mm	770 mm	kg	7000*	6700	5500	3600	3500	2350	2450	1600	1800*	1300
10'2"	**2'6"**	**lb**	**16,100***	**14,400**	**11,850**	**7750**	**7500**	**5000**	**5250**	**3450**	**3950***	**2800**

*Load limited by hydraulic capacity rather than tipping.

315B L ● 1070 mm (3'6") Bucket ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1850 mm	1220 mm	kg	—	—	6250	3500	3950	2300	—	—	2700*	1600
6'1"	**4'0"**	**lb**			**13,450**	**7500**	**8500**	**4850**			**5950***	**3500**
2250 mm	1070 mm	kg	5500*	5500*	6550	3700	4150	2400	—	—	2250*	1550
7'5"	**3'6"**	**lb**	**12,700***	**12,700***	**14,050**	**8000**	**8850**	**5200**			**5000***	**3450**
2600 mm	1070 mm	kg	5900*	5900*	6550	3750	4150	2400	2900	1650	1950*	1450
8'6"	**3'6"**	**lb**	**13,600***	**13,600***	**14,050**	**8000**	**8850**	**5150**	**6350**	**3650**	**4250***	**3150**
3100 mm	770 mm	kg	7000*	6950	6600	3750	4150	2450	2900	1700	1800*	1350
10'2"	**2'6"**	**lb**	**16,100***	**14,950**	**14,150**	**8100**	**8900**	**5200**	**6250**	**3600**	**3950***	**2950**

France Sourced

315B L ● 0.93 m³ (1.22 yd³) Bucket ● 600 mm (2'0") Track Shoes

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1850 mm	kg	—	—	6570	4080	4150	2640	—	—	2550*	1840
6'1"	**lb**			**14,480**	**8990**	**9150**	**5820**			**5620***	**4050**
2250 mm	kg	—	—	6760	4260	4250	2740	—	—	2760	1770
7'5"	**lb**			**14,900**	**9390**	**9370**	**6040**			**6080**	**3900**
2600 mm	kg	5290*	5290*	6780	4270	4240	2730	2940	1880	1830*	1600
8'6"	**lb**	**11,660**	**11,660**	**14,950**	**9410**	**9340**	**6020**	**6480**	**4140**	**4030***	**3520**
3100 mm	kg	6340*	6340*	6800	4280	4230	2720	2920	1860	1620*	1430
10'2"	**lb**	**13,980***	**13,980***	**14,990**	**9430**	**9320**	**5990**	**6430**	**4100**	**3570***	**3150**

Japan Sourced

318B L ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
3200 mm	625 mm	kg	5600*	5600*	7700	4600	4800	2900	3300	2000	2200*	1400
10'6"	**2'0"**	**lb**	**19,900***	**12,900***	**16,450**	**9800**	**10,250**	**6250**	**7050**	**4250**	**4800***	**3050**
2700 mm	775 mm	kg	6550*	6550*	7500	4450	4700	2850	3250	1950	2550*	1500
8'10"	**2'6"**	**lb**	**14,350***	**14,350***	**16,100**	**9500**	**10,050**	**6050**	**6950**	**4150**	**5600***	**3300**
2250 mm	775 mm	kg	—	—	7450	4350	4650	2800	—	—	2850	1650
7'5"	**2'6"**	**lb**			**15,950**	**9350**	**9950**	**5950**			**6200**	**3650**
1800 mm	932 mm	kg	—	—	7400	4300	4650	2750	—	—	3100	1850
5'11"	**3'0"**	**lb**			**15,850**	**9250**	**9900**	**5950**			**6800**	**4000**

*Load limited by hydraulic capacity rather than tipping.

France Sourced

318B L ● 0.8 m³ (1.05 yd³) Bucket ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1800 mm		kg	—	—	8920*	5030	5700	3260	—	—	3820	2200
5'11"		**lb**			**19,660***	**11,090**	**12,560**	**7180**			**8420**	**4850**
2250 mm		kg	—	—	8830*	5070	5700	3260	—	—	3190*	1980
7'5"		**lb**			**19,470***	**11,170**	**12,560**	**7180**			**7030***	**4360**
2700 mm		kg	5380*	5380*	8630*	5100	5700	3260	3950	2250	2240*	1770
8'10"		**lb**	**11,860***	**11,860***	**19,020***	**11,240**	**12,560**	**7180**	**8710**	**4960**	**4930***	**3900**
3200 mm		kg	6850*	6850*	8440*	5040	5570	3200	3840	2200	2440*	1620
10'6"		**lb**	**15,100***	**15,100***	**18,610***	**11,110**	**12,280**	**7050**	**8460**	**4850**	**5380**	**3570**

Japan Sourced

318B LN ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
3200 mm	625 mm	kg	5600*	5600*	7550	3950	4700	2500	3250	1700	2200*	1150
10'6"	**2'0"**	**lb**	**12,900***	**12,900***	**16,200**	**8500**	**10,050**	**5350**	**6950**	**3600**	**4800***	**2550**
2700 mm	775 mm	kg	5550*	5550*	7500	3900	4700	2500	3250	1700	2600	1350
8'10"	**2'6"**	**lb**	**12,850***	**12,850***	**16,050**	**8400**	**10,050**	**5350**	**6950**	**3650**	**5700**	**2900**
2250 mm	775 mm	kg	—	—	7300	4000	4550	1400	—	—	2750	1400
7'5"	**2'6"**	**lb**			**16,300**	**8550**	**9750**	**5100**			**6100**	**3050**
1800 mm	775 mm	kg	—	—	7150	3600	4500	2300	—	—	3000	1500
5'11"	**2'6"**	**lb**			**15,350**	**7750**	**9600**	**4950**			**6550**	**3250**

France Sourced

318B LN ● 0.8 m³ (1.05 yd³) Bucket ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1800 mm		kg	—	—	7420	3860	4680	2510	—	—	3150	1680
5'11"		**lb**			**16,360**	**8510**	**10,310**	**5530**			**6940**	**3700**
2250 mm		kg	—	—	7490	3910	4700	2520	—	—	2870	1510
7'5"		**lb**			**16,510**	**8620**	**10,360**	**5550**			**6320**	**3320**
2700 mm		kg	5410*	5410*	7560	3970	4730	2550	3290	1740	2610*	1360
8'10"		**lb**	**11,920***	**11,920***	**16,660**	**8750**	**10,420**	**5620**	**7250**	**3830**	**5750***	**2990**
3200 mm		kg	6850*	6850*	7590	3980	4720	2540	3270	1720	2440*	1250
10'6"		**lb**	**15,100***	**15,100***	**16,730**	**8770**	**10,400**	**5600**	**7210**	**3870**	**5380***	**2750**

*Load limited by hydraulic capacity rather than tipping.

M312 ● 4-Point Outriggers Down ● 1000 mm (3'3") Bucket ● One-Piece Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1600 mm	kg	—	—	5500*	5250	3950*	3350	—	—	2350*	2350
5'3"	lb	—	—	**12,120***	**11,580**	**8710***	**7390**	—	—	**5180***	**5180**
2000 mm	kg	—	—	5500*	5300	3900*	3300	—	—	1500*	1500*
6'6"	lb	—	—	**12,130***	**11,690**	**8600***	**7280**	—	—	**3310***	**3310***
2300 mm	kg	2700*	2700*	5500*	5300	3900*	3300	—	—	1260*	1260*
7'5"	lb	**5950***	**5950***	**12,120***	**11,680**	**8590***	**7270**	—	—	**2780***	**2780***
2600 mm	kg	2900*	2900*	5400*	5300	3900*	3330	2100*	2100*	1100*	1100*
8'5"	lb	**6390***	**6390***	**11,900***	**11,680**	**8590***	**7340**	**4630***	**4630***	**2420***	**2420***
3000 mm	kg	3600*	3600*	5360*	5300	3800	3360	2600*	2300	1000*	1000
9'9"	lb	**7930***	**7930***	**11,810***	**11,680**	**8370**	**7400**	**5730***	**5070**	**2200***	**2200**

M312 ● Free On Wheels ● 1000 mm (3'3") Bucket ● One-Piece Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1600 mm	kg	—	—	3900	2100	2500	1400	—	—	1800	900
5'3"	lb	—	—	**8590**	**4630**	**5510**	**3080**	—	—	**2860**	**1980**
2000 mm	kg	—	—	4000	2200	2500	1400	—	—	1500*	900
6'6"	lb	—	—	**8820**	**4850**	**5510**	**3090**	—	—	**3310***	**1980**
2300 mm	kg	2700*	2700*	4000	2200	2600	1400	—	—	1300*	800
7'5"	lb	**5950***	**5950***	**8820**	**4850**	**5730**	**3080**	—	—	**2860***	**1760**
2600 mm	kg	2300*	2300*	4000	2100	2500	1960	1800	300	1160*	700
8'5"	lb	**5070***	**5070***	**8820**	**4630**	**5510**	**4320**	**3960**	**660**	**2550***	**1540**
3000 mm	kg	3600*	3600*	4000	2100	2500	1400	1800	360	1000*	740
9'9"	lb	**7930***	**7930***	**8820**	**4630**	**5510**	**3080**	**3960**	**790**	**2200***	**1630**

M312 ● 4-Point Outriggers Down ● 1000 mm (3'3") Bucket ● VA Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1600 mm	kg	7900*	7900*	5400*	5300	3800*	3400	—	—	2300*	2200
5'3"	lb	**17,410***	**17,410***	**11,900***	**11,680**	**8370***	**7500**	—	—	**5070***	**4850**
2000 mm	kg	7900*	7900*	5400*	5300*	3900*	3500	—	—	1500*	1500*
6'6"	lb	**17,420***	**17,420***	**11,910***	**11,690***	**8600***	**7720**	—	—	**3310***	**3310***
2300 mm	kg	7600*	7600*	5900*	5300	3900*	3500	2400*	2400*	1300*	1300
7'5"	lb	**16,750***	**16,750***	**13,000***	**11,680**	**8590***	**3300**	**5290***	**5290***	**2860***	**2860**
2600 mm	kg	7100*	7100*	5300*	5300	3860*	3560	2300*	2400	1100*	1100*
8'5"	lb	**15,650***	**15,650***	**11,680**	**11,680**	**8510***	**7840**	**5070***	**5290**	**2420***	**2420***
3000 mm	kg	7100*	7100*	5200*	5200	3740*	3440*	2900*	2400	1040*	1040*
9'9"	lb	**15,650***	**15,650***	**11,460***	**11,460**	**8240***	**7580***	**6390***	**5290**	**2290***	**2290***

M312 ● Free On Wheels ● 1000 mm (3'3") Bucket ● VA Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1600 mm	kg	7900*	4700	4400	2500	2600	1400	—	—	1600	800
5'3"	lb	**17,410***	**10,360**	**9700**	**5510**	**5730**	**3080**	—	—	**3520**	**1760**
2000 mm	kg	7900*	4800	4400	2600	2700	1500	—	—	1500*	800
6'6"	lb	**17,420***	**10,580**	**9700**	**5730**	**5950**	**3310**	—	—	**3310***	**1760**
2300 mm	kg	7600*	4900	4300	2600	2800	1600	1800	900	1300*	800
7'5"	lb	**16,750***	**10,800**	**9480**	**5730**	**6170**	**3520**	**3960**	**1980**	**2860***	**1760**
2600 mm	kg	7100*	4800	4300	2700	2800	1600	1800	900	1100*	700
8'5"	lb	**15,650***	**10,580**	**9480**	**5950**	**6170**	**3520**	**3960**	**1980**	**2420***	**1100**
3000 mm	kg	7100*	4900*	4300	2600	2800	1700	1800	1000	1060*	700
9'9"	lb	**15,650***	**10,800***	**9480**	**5730**	**6170**	**3740**	**3960**	**2200**	**2330***	**1100**

*Load limited by hydraulic capacity rather than tipping.

M315 ● 4-Point Outriggers Down ● 1100 mm (3'7") Bucket ● One-Piece Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1700 mm	kg	—	—	6700*	6400	4800*	4100	—	—	2600*	2600*
5'10"	lb	—	—	14,770*	14,110	10,580*	9040	—	—	5730*	5730*
2100 mm	kg	—	—	6700*	6500	4800*	4100	—	—	1700*	1700*
6'11"	lb	—	—	14,770*	14,330	10,580*	9040	—	—	3740*	3740*
2400 mm	kg	2500*	2500*	6700*	6500	4800*	4100	2900*	2900*	1500*	1500*
7'10"	lb	5510*	5510*	14,770*	14,330	10,580*	9040	6390*	6390*	3300*	3300*
2600 mm	kg	2700*	2700*	6700*	6500	4800*	4100	3300*	2900*	1300*	1300*
8'6"	lb	5950*	5950*	14,770*	14,330	10,580*	9040	7270*	6390*	2860*	2860*

M315 ● Free On Wheels ● 1100 mm (3'7") Bucket ● One-Piece Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1700 mm	kg	—	—	4700	2600	3100	1700	—	—	2000	1100
5'10"	lb	—	—	10,360	5730	6830	3740	—	—	4410	2420
2100 mm	kg	—	—	4800	2700	3100	1700	—	—	1700*	1000
6'11"	lb	—	—	10,580	5950	6830	3740	—	—	3740*	2200
2400 mm	kg	2500*	2500*	4800	2700	3100	1700	2200	1200	1500*	1000
7'10"	lb	5510*	5510*	10,580	5950	6830	3740	4850	2640	3300*	2200
2600 mm	kg	2700*	2700*	4800	2700	3100	1700	2200	1200	1300*	900
8'6"	lb	5950*	5950*	10,580	5950	6830	3740	4850	2640	2860*	1980

M315 ● 4-Point Outriggers Down ● 1100 mm (3'7") Bucket ● VA Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1700 mm	kg	9500*	9500*	6600*	6600*	4700*	4300	—	—	2400*	2400*
5'10"	lb	20,940*	20,940*	14,550*	14,550*	10,360*	9430	—	—	5290*	5290*
2100 mm	kg	8900*	8900*	6600*	6500	4700*	4300	3000*	2900	1600*	1600*
6'11"	lb	19,620*	19,620*	14,550*	14,330	10,360*	9480	6610*	6390	3520*	3520*
2400 mm	kg	8300*	8300*	6500*	6500*	4700*	4300	3000*	2900	1400*	1400*
7'10"	lb	18,300*	18,300*	14,330*	14,330	10,360*	9480	6610*	6390	3080*	3080*
2600 mm	kg	8500*	8500*	6500*	6500*	4600*	4200	3000*	2900	1300*	1300*
8'6"	lb	18,740*	18,740*	14,330*	14,330*	10,140*	9260	6610*	6390	2860*	2860*

M315 ● Free On Wheel ● 1100 mm (3'7") Bucket ● VA Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1700 mm	kg	9500*	5800	5200	3200	3200	1800	—	—	1900	1000
5'10"	lb	20,940*	12,780	11,460	7050	7050	3960	—	—	4180	2200
2100 mm	kg	8900*	5900	5200	3200	3300	2000	2200	1200	1600*	1000
6'11"	lb	19,620*	13,000	11,460	7050	7270	4410	4850	2640	3520*	2200
2400 mm	kg	8300*	6000	5200	3200	3400	2000	2200	1200	1400*	900
7'10"	lb	18,300*	13,230	11,460	7050	7490	4410	4850	2640	3080*	1980
2600 mm	kg	8500*	5800	5200	3300	3400	2000	2200	1200	1300*	900
8'6"	lb	18,740*	12,780	11,460	7270	7490	4410	4850	2640	2860*	1980

*Load limited by hydraulic capacity rather than tipping.

M318 ● 4-Point Outriggers Down ● 1200 mm (3'11") Bucket ● One-Piece Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1800 mm	kg	—	—	7700*	7200	5500*	4600	—	—	3100*	2700
5'11"	**lb**			**16,970***	**15,870**	**12,120***	**10,140**			**6830***	**5950**
2400 mm	kg	—	—	7700*	7300	5500*	4600	4200*	3200	1800*	1800*
7'10"	**lb**			**16,970***	**16,090**	**12,120***	**10,140**	**9260***	**7050**	**3960***	**3960***
2800 mm	kg	3800*	3800*	7600*	7400	5400*	4600	4200*	3200	1600*	1600*
9'2"	**lb**	**8370***	**8370***	**16,750***	**16,310**	**11,900***	**10,140**	**9260***	**7050**	**3520***	**3520***
4000 mm	kg	5100*	5100*	6900*	6900*	4900	4600	3800*	3200	900*	900*
13'2"	**lb**	**11,240***	**11,240***	**15,210***	**15,210***	**10,800**	**10,140**	**8370***	**7050**	**1980***	**1980***

M318 ● Free On Wheels ● 1200 mm (3'11") Bucket ● One-Piece Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1800 mm	kg	—	—	5900	2900	3700	1900	—	—	2200	1100
5'11"	**lb**			**13,000**	**6390**	**8150**	**4180**			**4850**	**2420**
2400 mm	kg	—	—	5900	3000	3800	1900	2600	1300	1800*	1000
7'10"	**lb**			**13,000**	**6610**	**8370**	**4180**	**5730**	**2860**	**3960***	**2200**
2800 mm	kg	3800*	3800*	5900	3000	3800	1900	2600	1300	1600*	900
9'2"	**lb**	**8370***	**8370***	**13,000**	**6610**	**8370**	**4180**	**5730**	**2860**	**3520***	**1980**
4000 mm	kg	5100*	5100*	6000	3100	3800	1900	2600	1300	900	600
13'2"	**lb**	**11,240***	**11,240***	**13,230**	**6830**	**8370**	**4180**	**5730**	**2860**	**1980**	**1320**

M318 ● 4-Point Outriggers Down ● 1200 mm (3'11") Bucket ● VA Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1800 mm	kg	10 800*	10 800*	7600*	7400*	5400*	4900	—	—	2900*	2800
5'11"	**lb**	**23,810***	**23,810***	**16,750***	**16,310***	**11,900***	**10,800**			**6390***	**6170**
2400 mm	kg	10 200*	10 200*	7500*	7400*	5300*	4800	4100*	3300	1600*	1600*
7'10"	**lb**	**22,490***	**22,490***	**16,530***	**16,310***	**11,680***	**10,580**	**9040***	**7270**	**3520***	**3520***
2800 mm	kg	10 200*	10 200*	7400*	7400*	5200*	4800	4100*	3300	1400*	1400*
9'2"	**lb**	**22,490***	**22,490***	**16,310***	**16,310***	**11,460***	**10,580**	**9040***	**7270**	**3080***	**3080***
4000 mm	kg	6500*	6500*	4600*	4600*	3600*	3300	2300*	2300*	800	800
13'2"	**lb**	**14,330***	**14,330***	**10,140***	**10,140***	**7930***	**7270**	**5070***	**5070***	**1760**	**1760**

M318 ● Free On Wheels ● 1200 mm (3'11") Bucket ● VA Boom

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	At Max. Reach Front	At Max. Reach Side
1800 mm	kg	10 800*	6800	6400	3700	4100	2200	—	—	2200	1100
5'11"	**lb**	**23,810***	**14,990**	**14,110**	**8150**	**9040**	**4850**			**4850**	**2420**
2400 mm	kg	10 200*	6900	6400	3800	4200	2300	2700	1400	1600	1000
7'10"	**lb**	**22,490***	**15,210**	**14,110**	**8370**	**9260**	**5070**	**5950**	**3080**	**3520**	**2200**
2800 mm	kg	10 200*	6900	6300	3800	4100	2400	2800	1400	1400*	900
9'2"	**lb**	**22,490***	**15,210**	**13,890**	**8370**	**9040**	**5290**	**6170**	**3080**	**2200***	**1980**
4000 mm	kg	—	—	6100	3600	4000	2400	2800	1600	800*	600
13'2"	**lb**			**13,450**	**7930**	**8820**	**5290**	**6170**	**3520**	**1760***	**1320**

*Load limited by hydraulic capacity rather than tipping.

M320 ● Rear Dozer Up ● One-Piece 5.65 m (18'6") Boom

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	1.05 m³	kg	—	—	6600	3500	4800	2300	2900	1500	—	—	2200	1100
6'3"	**1.37 yd³**	**lb**	—	—	**14,550**	**7700**	**10,580**	**5070**	**6350**	**3300**	—	—	**4850**	**2400**
2500 mm	0.9 m³	kg	—	—	6700	3600	4200	2300	3000	1600	—	—	1300*	1000
8'2"	**1.17 yd³**	**lb**	—	—	**14,750**	**7930**	**9250**	**5050**	**6600**	**3500**	—	—	**2850**	**2200**
2900 mm	0.81 m³	kg	—	—	6700	3600	4200	2300	3000	1600	—	—	1100*	900
9'6"	**1.06 yd³**	**lb**	—	—	**14,750**	**7900**	**9250**	**5050**	**6600**	**3500**	—	—	**2400**	**1950**
4200 mm	0.55 m³	kg	—	—	6900	3700	4300	2400	3000	1600	2200	1100	600*	600*
13'9"	**0.72 yd³**	**lb**	—	—	**15,200**	**8150**	**9450**	**5250**	**6600**	**3500**	**4850**	**2400**	**1300**	**1300**

M320 ● Rear Dozer Down ● One-Piece 5.65 m (18'6") Boom

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	1.05 m³	kg	—	—	9000*	4200	6400*	2700	4800*	1900	—	—	3000*	1400
6'3"	**1.37 yd³**	**lb**	—	—	**19,800***	**9250**	**14,100***	**5950**	**10,550***	**4150**	—	—	**6600***	**3050**
2500 mm	0.9 m³	kg	—	—	9000*	4300	6300*	2800	4900*	1900	—	—	1300*	1300
8'2"	**1.17 yd³**	**lb**	—	—	**19,800***	**9450**	**13,850***	**6150**	**10,800***	**4150**	—	—	**2850***	**2850**
2900 mm	0.81 m³	kg	—	—	8900*	4300	6200*	2800	4800*	1900	—	—	1100*	1100*
9'6"	**1.06 yd³**	**lb**	—	—	**19,600***	**9450**	**13,650***	**6150**	**10,550***	**4150**	—	—	**2400***	**2400***
4200 mm	0.55 m³	kg	—	—	8100*	4500	5600*	2900	4400*	1900	3600*	1400	600*	600
13'9"	**0.72 yd³**	**lb**	—	—	**17,850***	**9900**	**12,300***	**6350**	**9700***	**4150**	**7900***	**3050**	**1300***	**1300***

M320 ● Rear Stabilizer Down ● One-Piece 5.65 m (18'6") Boom

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Rear	4.5 m 15'0" Front	4.5 m 15'0" Rear	6 m 20'0" Front	6 m 20'0" Rear	7.5 m 25'0" Front	7.5 m 25'0" Rear	9 m 30'0" Front	9 m 30'0" Rear	At Max. Reach Front	At Max. Reach Rear
1900 mm	1.05 m³	kg	—	—	9000*	5400	6200	3500	4300	2400	—	—	3000*	1800
6'3"	**1.37 yd³**	**lb**	—	—	**19,800***	**11,900**	**13,650**	**7700**	**9450**	**5250**	—	—	**6600***	**3960**
2500 mm	0.9 m³	kg	—	—	9000*	5500	6300	3500	4300	2400	—	—	1300*	1300*
8'2"	**1.17 yd³**	**lb**	—	—	**19,800***	**12,100**	**13,850**	**7700**	**9450**	**5250**	—	—	**2850***	**2850***
2900 mm	0.81 m³	kg	—	—	8900*	5500	6200*	3500	4300	2500	—	—	1100*	1100*
9'6"	**1.06 yd³**	**lb**	—	—	**19,600***	**12,100**	**13,650***	**7700**	**9450**	**5500**	—	—	**2400***	**2400***
4200 mm	0.55 m³	kg	—	—	8100*	5700	5600*	3600	4400	2500	3200	1800	600*	600*
13'9"	**0.72 yd³**	**lb**	—	—	**17,850***	**12,550**	**12,300***	**7900**	**9700**	**5500**	**7050**	**3950**	**1300***	**1300***

M320 ● 4-Point Stabilizers Down ● One-Piece 5.65 m (18'6") Boom

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	1.05 m³	kg	—	—	9000*	9000*	6400*	5600	4800*	3900	—	—	3000*	3000
6'3"	**1.37 yd³**	**lb**	—	—	**19,800***	**19,800***	**14,100***	**12,300**	**10,550***	**8550**	—	—	**6600***	**6600**
2500 mm	0.9 m³	kg	—	—	9000*	9000*	6300*	5700	4900*	4000	—	—	1300*	1300*
8'2"	**1.17 yd³**	**lb**	—	—	**19,800***	**19,800***	**13,850**	**12,550**	**10,800***	**8800**	—	—	**2850***	**2850***
2900 mm	0.81 m³	kg	—	—	8900*	8900*	6200*	5700	4800*	4000	—	—	1100*	1100*
9'6"	**1.06 yd³**	**lb**	—	—	**19,600***	**19,600***	**13,650***	**12,550**	**10,550***	**8800**	—	—	**2400***	**2400***
4200 mm	0.55 m³	kg	—	—	8100*	8100*	5600*	5600*	4400*	4000	3600*	3000	600*	600*
13'9"	**0.72 yd³**	**lb**	—	—	**17,850***	**17,850***	**12,300***	**12,300***	**9700***	**8800**	**7900***	**6600**	**1300***	**1300***

M320 ● Dozer and Stabilizer Down ● One-Piece 5.65 m (18'6") Boom

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	1.05 m³	kg	—	—	9000*	7200	6400*	4600	4800*	3200	—	—	3000*	2400
6'3"	**1.37 yd³**	**lb**	—	—	**19,800***	**15,850**	**14,100***	**10,100**	**10,550***	**7050**	—	—	**6600***	**5250**
2500 mm	0.9 m³	kg	—	—	9000*	7300	6300*	4600	4900*	3300	—	—	1300*	1300*
8'2"	**1.17 yd³**	**lb**	—	—	**19,800***	**16,050**	**13,850***	**10,100**	**10,800***	**7250**	—	—	**2850***	**2850***
2900 mm	0.81 m³	kg	—	—	8900*	7300	6200*	4600	4800*	3200	—	—	1100*	1100*
9'6"	**1.06 yd³**	**lb**	—	—	**19,600***	**16,050**	**13,650***	**10,100**	**10,550***	**7050**	—	—	**2400***	**2400***
4200 mm	0.55 m³	kg	—	—	8100*	7500	5600*	4700	4400*	3300	3600*	2400	600*	600*
13'9"	**0.72 yd³**	**lb**	—	—	**19,600***	**16,500**	**12,300***	**10,350**	**9700***	**7250**	**7900***	**5250**	**1300***	**1300***

*Load limited by hydraulic capacity rather than tipping.

M320 ● Rear Dozer Up ● VA Boom @ 5.41 m (17'9") Max.

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	1.05 m³	kg	12 800*	8300	7400	4500	4800	2700	3000	1600	—	—	2400	1200
6'3"	**1.37 yd³**	**lb**	**28,200***	**18,300**	**16,300**	**9900**	**10,550**	**5950**	**6600**	**3500**			**5250**	**2600**
2500 mm	0.9 m³	kg	12 400*	8600	7300	4600	4700	2900	3200	1700	—	—	1400*	1100
8'2"	**1.17 yd³**	**lb**	**27,300***	**18,950**	**16,050**	**10,100**	**10,350**	**6350**	**7050**	**3700**			**3050***	**2400**
2900 mm	0.81 m³	kg	12 100*	8400	7200*	4500	4700	2900	3200	1800	—	—	1200*	1000
9'6"	**1.06 yd³**	**lb**	**26,650***	**18,500**	**15,850***	**9900**	**10,350**	**6350**	**7050**	**3950**			**2600***	**2200**
4200 mm	0.55 m³	kg	10 800*	8300	7100*	4400	4600	2900	3300	2000	2300	1200	600*	600*
13'9"	**0.72 yd³**	**lb**	**23,800***	**18,300**	**15,650***	**9700**	**10,100**	**6350**	**7250**	**4400**	**5050**	**2600**	**1300***	**1300***

M320 ● Rear Dozer Down ● VA Boom @ 5.41 m (17'9") Max.

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	1.05 m³	kg	12 800*	10 100	8900*	5300	6300*	3200	4800*	1900	—	—	3000*	1500
6'3"	**1.37 yd³**	**lb**	**28,200***	**22,250**	**19,600***	**11,650**	**13,850***	**7050**	**10,550***	**4150**			**6600***	**3300**
2500 mm	0.9 m³	kg	12 400*	10 000	8800*	5300	6200*	3400	4800*	2100	—	—	1400*	1400
8'2"	**1.17 yd³**	**lb**	**27,300***	**22,050**	**19,400***	**11,650**	**13,650***	**7450**	**10,550***	**4600**			**3050***	**3050**
2900 mm	0.81 m³	kg	12 100*	9900	8600*	5200	6000*	3400	4700*	2100	—	—	1200*	1200
9'6"	**1.06 yd³**	**lb**	**26,650***	**21,800**	**18,950***	**11,450**	**13,200***	**7450**	**10,350***	**4600**			**2600***	**2600**
4200 mm	0.55 m³	kg	10 800*	9700*	7600*	5100	5300*	3300	4200*	2400	3400*	1500	600*	600*
13'9"	**0.72 yd³**	**lb**	**23,800***	**21,350***	**16,750***	**11,200**	**11,650***	**7250**	**9250***	**5250**	**7450***	**3300**	**1300***	**1300***

M320 ● Rear Stabilizer Down ● VA Boom @ 5.41 m (17'9") Max.

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	1.05 m³	kg	12 800*	12 400	8900*	6400	6300*	4000	4400	2500	—	—	3000*	1900
6'3"	**1.37 yd³**	**lb**	**28,200***	**27,300**	**19,600***	**14,100**	**13,850***	**8800**	**9700**	**5500**			**6600***	**4150**
2500 mm	0.9 m³	kg	12 400*	12 300	8800*	6300	6200*	4200*	4500	2600	—	—	1400*	1400*
8'2"	**1.17 yd³**	**lb**	**27,300***	**27,100**	**19,400***	**13,850**	**13,650***	**9250***	**9900**	**5700**			**3050***	**3050***
2900 mm	0.81 m³	kg	12 100*	12 100*	8600*	6200	6000*	4100	4500*	2700	—	—	1200*	1200*
9'6"	**1.06 yd³**	**lb**	**26,650***	**26,650***	**18,950***	**13,650**	**13,200**	**9000**	**9900***	**5950**			**2600***	**2600***
4200 mm	0.55 m³	kg	10 800*	10 800*	7600*	6100	5300*	4000	4200*	2800	3300	1900	600*	600*
13'9"	**0.72 yd³**	**lb**	**23,800**	**23,800***	**16,750**	**13,450**	**11,650***	**8800**	**9250***	**6150**	**7250**	**4150**	**1300***	**1300***

M320 ● 4-Point Stabilizers Down ● VA Boom @ 5.41 m (17'9") Max.

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	1.05 m³	kg	12 800*	12 800*	8900*	8900*	6300*	6000	4800*	4000	—	—	3000*	3000*
6'3"	**1.37 yd³**	**lb**	**28,200***	**28,200***	**19,600***	**19,600***	**13,850***	**13,200**	**10,550***	**8800**			**6600***	**6600***
2500 mm	0.9 m³	kg	12 400*	12 400*	8800*	8800*	6200*	5900	4800*	4200	—	—	1400*	1400*
8'2"	**1.17 yd³**	**lb**	**27,300***	**27,300***	**19,400***	**19,400***	**13,650***	**13,000**	**10,550***	**9250**			**3050***	**3050***
2900 mm	0.81 m³	kg	12 100*	12 100*	8600*	8600*	6000*	5800*	4700*	4200	—	—	1200*	1200*
9'6"	**1.06 yd³**	**lb**	**26,650***	**26,650***	**18,950***	**18,950***	**13,200***	**12,750***	**10,350***	**9250**			**2600***	**2600***
4200 mm	0.55 m³	kg	10 800*	10 800*	7600*	7600*	5300*	5300*	4200*	4100	3400*	3000	600*	600*
13'9"	**0.72 yd³**	**lb**	**23,800***	**23,800***	**16,750***	**16,750***	**11,650***	**11,650***	**9250***	**9000**	**7450***	**6600**	**1300***	**1300***

M320 ● Dozer and Stabilizer Down ● VA Boom @ 5.41 m (17'9") Max.

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	1.05 m³	kg	12 800*	12 800*	8900*	7900*	6300*	4900	4800*	3300	—	—	3000*	2600
6'3"	**1.37 yd³**	**lb**	**28,200***	**28,200***	**19,600***	**17,400***	**13,850***	**10,800**	**10,550***	**7250**			**6600***	**5700**
2500 mm	0.9 m³	kg	12 400*	12 400*	8800*	7800	6200*	5100	4800*	3400	—	—	1400*	1400*
8'2"	**1.17 yd³**	**lb**	**27,300***	**27,300***	**19,400***	**17,150**	**13,650***	**11,200**	**10,550***	**7450**			**3050***	**3050***
2900 mm	0.81 m³	kg	12 100*	12 100*	8600*	7700	6000*	5000	4700*	3500	—	—	1200*	1200*
9'6"	**1.06 yd³**	**lb**	**26,650***	**26,650***	**18,950***	**16,950**	**13,200***	**11,000**	**10,350***	**7700**			**2600***	**2600***
4200 mm	0.55 m³	kg	10 800*	10 800*	7600*	7600*	5300*	4900	4200*	3500	3400*	2500	600*	600*
13'9"	**0.72 yd³**	**lb**	**23,800***	**23,800***	**16,750***	**16,750***	**11,650***	**10,800**	**9250***	**7700**	**3050***	**5500**	**1300***	**1300***

*Load limited by hydraulic capacity rather than tipping.

Japan Sourced

320B ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	C1370X	kg	—	—	7950	4650	4950	2950	—	—	—	—	3000	1750
6'3"	**4'6"**	**lb**	—	—	**17,050**	**10,000**	**10,600**	**6300**	—	—	—	—	**6550**	**3800**
2500 mm	B1260X	kg	—	—	8350	5050	5300	3300	3700	2300	—	—	2900	1750
8'2"	**4'2"**	**lb**	—	—	**17,950**	**10,850**	**11,350**	**7050**	**7950**	**4900**	—	—	**6350**	**3900**
2920 mm	B1130X	kg	5450*	5450*	8450	5150	5350	3350	3800	2350	—	—	2400*	1700
9'7"	**3'8"**	**lb**	**12,500***	**12,500***	**18,150**	**11,050**	**11,500**	**7200**	**8100**	**5050**	—	—	**5300***	**3700**
3860 mm	B1130X	kg	6850*	6850*	8600	5250	5450	3400	3800	2400	2850	1750	2050*	1450
12'8"	**3'8"**	**lb**	**15,750***	**15,750***	**18,450**	**11,300**	**11,650**	**7350**	**8200**	**5150**	**6100**	**3700**	**4450***	**3150**

320B ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	C1470X	kg	—	—	8100	4750	5000	3000	—	—	—	—	3350	1950
6'3"	**4'10"**	**lb**	—	—	**17,350**	**10,200**	**10,750**	**6400**	—	—	—	—	**7300**	**4300**
2400 mm	C1370X	kg	7600*	7600*	8150	4800	5050	3050	—	—	—	—	3000	1750
7'10"	**4'6"**	**lb**	**17,600***	**17,600***	**17,500**	**10,350**	**10,800**	**6500**	—	—	—	—	**6600**	**3850**

320B L ● Reach Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	C1470X	kg	—	—	9600*	5550	6250	3500	—	—	—	—	3800	2100
6'3"	**4'10"**	**lb**	—	—	**20,800***	**11,850**	**13,400**	**7550**	—	—	—	—	**8300**	**4600**
2500 mm	B1370X	kg	—	—	9900*	5950	6600	3850	4600	2700	—	—	2950*	2050
8'2"	**4'6"**	**lb**	—	—	**21,450***	**12,750**	**14,150**	**8250**	**9900**	**5800**	—	—	**6500***	**4550**
2920 mm	B1260X	kg	5350*	5350*	9750*	6000	6650	3900	4650	2750	—	—	2400*	1950
9'7"	**4'2"**	**lb**	**12,350***	**12,350***	**21,100***	**12,850**	**14,250**	**8350**	**9950**	**5050**	—	—	**5200***	**4300**
3860 mm	B1130X	kg	6850*	6850*	9200*	6150	6650	4000	4750	2800	3550	2100	2050*	1700
12'8"	**3'8"**	**lb**	**15,700***	**15,700***	**19,900***	**13,200**	**14,350**	**8550**	**10,150**	**6050**	**7550**	**4450**	**4450***	**3750**

320B L ● Mass Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	C1440MX	kg	—	—	9700*	5650	6350	3550	—	—	—	—	4200	2350
6'3"	**4'6"**	**lb**	—	—	**20,950***	**12,100**	**13,550**	**7650**	—	—	—	—	**9250**	**5150**
2400 mm	C1470X	kg	7600*	7600*	9600*	5700	6350	3600	—	—	—	—	3800	2150
7'10"	**4'10"**	**lb**	**17,550***	**17,550***	**20,750***	**12,250**	**13,650**	**7700**	—	—	—	—	**8350**	**4650**

*Load limited by hydraulic capacity rather than tipping.

Japan Sourced

320B N ● Reach Boom ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	C1370X	kg	—	—	8500	4450	5300	2850	—	—	—	—	3200	1700
6'3"	**4'6"**	**lb**			**18,200**	**9550**	**11,350**	**6100**					**7050**	**3700**
2500 mm	B1260X	kg	—	—	8900	4850	5600	3200	3950	2250	—	—	3100*	1750
8'2"	**4'2"**	**lb**			**19,050**	**10,400**	**12,050**	**6800**	**8500**	**4800**			**6850***	**3800**
2920 mm	B1130X	kg	5450*	5450*	9000	4950	5700	3250	4050	2300	—	—	2400*	1650
9'7"	**3'8"**	**lb**	**12,500***	**12,500***	**19,300**	**10,600**	**12,250**	**6950**	**8650**	**4900**			**5300***	**3600**
3860 mm	B1130X	kg	6850*	6850*	9100	5050	5750	3300	4050	2350	3050	1700	2050*	1400
12'8"	**3'8"**	**lb**	**15,750***	**15,750***	**19,550**	**10,800**	**12,350**	**7100**	**8700**	**4950**	**6500**	**3600**	**4450***	**3050**

320B N ● Mass Boom ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1900 mm	C1470X	kg	—	—	8600	4550	5350	2900	—	—	—	—	3600	1900
6'3"	**4'10"**	**lb**			**18,450**	**9800**	**11,450**	**6200**					**7850**	**4150**
2400 mm	C1370X	kg	7600*	7600*	8700	4600	5400	2950	—	—	—	—	3250	1700
7'10"	**4'6"**	**lb**	**17,600***	**17,600***	**18,600**	**9900**	**11,550**	**6250**					**7150**	**3750**

Belgium Sourced

320B ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.15 m^3	kg	—	—	8480	5020	5330	3240	—	—	—	—	2180	1910
6'3"	**1.5 yd^3**	**lb**			**18,690**	**11,060**	**11,750**	**7140**					**4800**	**4210**
2.5 m	1.05 m^3	kg	—	—	8910	5430	5620	3530	3950	2480	—	—	2960*	1880
8'2"	**1.37 yd^3**	**lb**			**19,640**	**11,970**	**12,390**	**7780**	**8700**	**5460**			**6520***	**4140**
2.9 m	0.8 m^3	kg	5300*	5300*	9000	5500	5670	3570	3980	2510	—	—	2290*	1170
9'6"	**1.04 yd^3**	**lb**	**11,680***	**11,680***	**19,840**	**12,120**	**12,500**	**7870**	**8770**	**5530**			**5040***	**3900**

320B ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.25 m^3	kg	—	—	8740	5240	5470	3360	—	—	—	—	3580	2190
6'3"	**1.63 yd^3**	**lb**			**19,270**	**11,550**	**12,060**	**7400**					**7890**	**4820**
2.4 m	1.15 m^3	kg	7660*	7660*	8810	5300	5500	3390	3810	2330	—	—	3250	1980
7'10"	**1.5 yd^3**	**lb**	**16,890***	**16,890***	**19,420**	**11,680**	**12,120**	**7470**	**8400**	**5130**			**7160**	**4360**

320B ● VA Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.15 m^3	kg	—	—	8530*	4480	5460	2900	—	—	—	—	3250*	1760
6'3"	**1.5 yd^3**	**lb**			**18,800***	**9870**	**12,030**	**6390**					**7160***	**3880**
2.4 m	0.95 m^3	kg	—	—	8810	4590	5540	2970	3870	2050	—	—	3090	1620
7'10"	**1.24 yd^3**	**lb**			**19,430**	**10,120**	**12,210**	**6540**	**8530**	**4520**			**6810**	**3570**

*Load limited by hydraulic capacity rather than tipping.

Belgium Sourced

320B L ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.15 m³	kg	—	—	9500*	5840	6580	3770	—	—	—	—	3920	2250
6'3"	**1.5 yd³**	**lb**			**20,940**	**12,870**	**14,500**	**8310**					**8640**	**4960**
2.5 m	1.05 m³	kg	—	—	9810*	6250	6870	4060	4820	2860	—	—	2960*	2190
8'2"	**1.37 yd³**	**lb**			**21,630***	**13,780**	**15,140**	**8950**	**10,620**	**6300**			**6520***	**4820**
2.9 m	0.8 m³	kg	5300*	5300*	9680*	6330	6920*	4100	4850	2900	—	—	2290*	2060
9'6"	**1.04 yd³**	**lb**	**11,680***	**11,680***	**21,340***	**13,950**	**15,250**	**9040**	**10,690**	**6390**			**5040***	**4540**

320B L ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.25 m³	kg	—	—	9680*	6070	6730	3900	—	—	—	—	4390	2560
6'3"	**1.63 yd³**	**lb**			**21,340***	**13,380**	**14,830**	**8590**					**9670**	**5640**
2.4 m	1.15 m³	kg	7660*	7660*	9590*	6130	6760	3920	4680	2720	—	—	3810*	2310
7'10"	**1.5 yd³**	**lb**	**16,890***	**16,890***	**21,140***	**13,510**	**14,900**	**8640**	**10,310**	**5990**			**8400***	**5090**

320B L ● VA Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.15 m³	kg	—	—	8530*	5000	5370	3220	—	—	—	—	3250*	1960
6'3"	**1.5 yd³**	**lb**			**18,800***	**11,020**	**11,840**	**7100**					**7160***	**4320**
2.4 m	0.95 m³	kg	—	—	8670	5100	5440	3290	3800	2280	—	—	3030	1800
7'10"	**1.24 yd³**	**lb**			**19,110**	**11,240**	**11,990**	**7250**	**8370**	**5020**			**6680**	**3960**

320B LN** ● Reach Boom ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.15 m³	kg												
6'3"	**1.5 yd³**	**lb**												
2.5 m	1.05 m³	kg												
8'2"	**1.37 yd³**	**lb**												
2.9 m	0.8 m³	kg												
9'6"	**1.04 yd³**	**lb**												

320B LN** ● Mass Boom ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.25 m³	kg												
6'3"	**1.63 yd³**	**lb**												
2.4 m	1.15 m³	kg												
7'10"	**1.5 yd³**	**lb**												

*Load limited by hydraulic capacity rather than tipping.
**Information unavailable.

Belgium Sourced

320B LN** ● VA Boom ● 500 mm (1'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.15 m³	kg												
6'3"	**1.5 yd³**	**lb**												
2.4 m	0.95 m³	kg												
7'10"	**1.24 yd³**	**lb**												

320B S ● Reach Boom ● 550 mm (1'10") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.15 m³	kg	—	—	9490*	4760	6560	3110	—	—	—	—	3960	1860
6'3"	**1.5 yd³**	**lb**	—	—	**20,920**	**10,490**	**14,460**	**6850**	—	—	—	—	**8730**	**4100**
2.5 m	1.05 m³	kg	—	—	9820*	5160	6850	3390	4830	2400	—	—	2980*	1840
8'2"	**1.37 yd³**	**lb**	—	—	**21,650***	**11,370**	**15,100**	**7470**	**10,650**	**5290**	—	—	**6570***	**4050**
2.9 m	0.8 m³	kg	5450*	5450*	9710*	5230	6900	3440	4860	2430	—	—	2300	1730
9'6"	**1.04 yd³**	**lb**	**12,010***	**12,010***	**21,410***	**11,530**	**15,210**	**7580**	**10,710**	**5350**	—	—	**5070**	**3810**

320B S ● Mass Boom ● 550 mm (1'10") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.25 m³	kg	—	—	9670*	4970	6700	3230	—	—	—	—	4440	2130
6'3"	**1.63 yd³**	**lb**	—	—	**2130***	**10,950**	**14,770**	**7120**	—	—	—	—	**9790**	**4690**
2.4 m	1.15 m³	kg	7890*	7890*	9610*	5020	6730	3250	—	—	—	—	3840	1920
7'10"	**1.5 yd³**	**lb**	**17,390***	**17,390***	**21,190***	**11,060**	**14,830**	**7160**	—	—	—	—	**8460**	**4230**

320B S ● VA Boom ● 550 mm (1'10") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
1.9 m	1.15 m³	kg	—	—	8470*	4680	6250*	3050	—	—	—	—	3210*	1880
6'3"	**1.5 yd³**	**lb**	—	—	**18,670***	**10,310**	**13,780***	**6720**	—	—	—	—	**7070***	**4140**
2.4 m	0.95 m³	kg	—	—	8990*	4780	6550*	3110	4680*	2170	—	—	3220*	1730
7'10"	**1.24 yd³**	**lb**	—	—	**19,820***	**10,530**	**14,440***	**6850**	**10,310***	**4780**	—	—	**7100***	**3810**

*Load limited by hydraulic capacity rather than tipping.
**Information unavailable.

Japan/U.S. Sourced

322B ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2500 mm	S1355X	kg	—	—	10 500	6500	6550	4200	4600	2950	—	—	3450	2200
8'2"	**4'5"**	**lb**			**22,450**	**13,950**	**14,050**	**9000**	**9850**	**6350**			**7550**	**4800**
2950 mm	S1225X	kg	5200*	5200*	10 600	6600	6600	4250	4650	3000	—	—	3200	2050
9'8"	**4'0"**	**lb**	**11,950***	**11,950***	**22,700**	**14,150**	**14,200**	**9150**	**9950**	**6400**			**7050**	**4450**
3600 mm	B1260X	kg	6050*	6050*	10 650	6600	6650	4250	4650	3000	3450	2150	2900	1800
11'10"	**4'2"**	**lb**	**13,800***	**13,800***	**22,800**	**14,200**	**14,250**	**9150**	**9950**	**6400**	**7350**	**4600**	**6400**	**4000**

322B ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2000 mm	D1345X	kg	—	—	10 200	6150	6250	3900	—	—	—	—	3900	2400
6'7"	**4'5"**	**lb**			**21,850**	**13,250**	**13,400**	**8350**					**8600**	**5250**
2500 mm	D1345X	kg	—	—	10 250	6200	6250	3900	4300	2600	—	—	3500	2100
8'2"	**4'5"**	**lb**			**21,950**	**13,300**	**13,400**	**8300**	**9150**	**5500**			**7700**	**4650**

322B L ● Reach Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2500 mm	S1315X	kg	—	—	12,150*	7650	8100	4950	5650	3500	—	—	4200	2600
8'2"	**4'4"**	**lb**			**26,250***	**16,400**	**17,350**	**10,550**	**12,100**	**7450**			**9300**	**5650**
2950 mm	S1355X	kg	5150*	5150*	12 000*	7700	8150	4950	5650	3500	—	—	3700	2400
9'8"	**4'5"**	**lb**	**11,850***	**11,850***	**25,950***	**16,550**	**17,450**	**10,650**	**12,150**	**7500**			**8150**	**5250**
3600 mm	B1260X	kg	6050*	6050*	11 600*	7750	8150	5000	5700	3500	4250	2600	3150	2200
11'10"	**4'2"**	**lb**	**13,800***	**13,800***	**25,050***	**16,700**	**17,550**	**10,700**	**12,200**	**7500**	**9050**	**5500**	**6850**	**4800**

322B L ● Mass Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2000 mm	D1500X	kg	—	—	11 750	7300	7750	4600	—	—	—	—	4800	2850
6'7"	**4'11"**	**lb**			**25,350**	**15,600**	**16,650**	**9800**					**10,600**	**6250**
2500 mm	D1430X	kg	—	—	11 550	7250	7750	4550	5300	3100	—	—	4350	2550
8'2"	**4'8"**	**lb**			**24,950**	**15,550**	**16,550**	**9750**	**11,350**	**6600**			**9550**	**5600**

Belgium Sourced

322B L ● Reach Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2500 mm	1.25 m^3	kg	—	—	11 980*	8040	8430	5180	5880	3650	—	—	4310	2670
8'2"	**1.63 yd^3**	**lb**			**26,410***	**17,720**	**18,580**	**11,420**	**12,960**	**8040**			**9500**	**5880**
2950 mm	1.15 m^3	kg	5050*	5050*	11 850*	8130	8430*	5220	5910	3680	—	—	3560*	2480
9'8"	**1.5 yd^3**	**lb**	**11,130***	**11,130***	**26,120***	**17,920**	**18,580***	**11,510**	**13,030**	**8110**			**7840***	**5460**

*Load limited by hydraulic capacity rather than tipping.

Belgium Sourced

322B L ● Mass Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m (10'0") Front	3 m (10'0") Side	4.5 m (15'0") Front	4.5 m (15'0") Side	6 m (20'0") Front	6 m (20'0") Side	7.5 m (25'0") Front	7.5 m (25'0") Side	9 m (30'0") Front	9 m (30'0") Side	At Max. Reach Front	At Max. Reach Side
2000 mm	1.5 m³	kg	—	—	11 660*	7770	8190	4910	—	—	—	—	4950*	2970
6'7"	**1.96 yd³**	**lb**	—	—	**25,710***	**17,130**	**18,050**	**10,820**	—	—	—	—	**10,910***	**6540**
2500 mm	1.45 m³	kg	—	—	11 580*	7860	8230	4940	5630	3380	—	—	4100*	2690
8'2"	**1.9 yd³**	**lb**	—	—	**25,530***	**17,330**	**18,140**	**10,890**	**12,410**	**7450**	—	—	**9040***	**5930**

322B L ● VA Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m (10'0") Front	3 m (10'0") Side	4.5 m (15'0") Front	4.5 m (15'0") Side	6 m (20'0") Front	6 m (20'0") Side	7.5 m (25'0") Front	7.5 m (25'0") Side	9 m (30'0") Front	9 m (30'0") Side	At Max. Reach Front	At Max. Reach Side
2 m	1.5 m³	kg	—	—	10 170*	7430	7590*	4720	5260*	3260	—	—	3540*	2590
6'7"	**1.96 yd³**	**lb**	—	—	**22,420***	**16,380**	**16,730***	**10,400**	**11,590***	**7180**	—	—	**7800***	**5710**
2.5 m	1.45 m³	kg	—	—	10 810*	7520	7880*	4750	5570	3270	—	—	3500*	2340
8'2"	**1.9 yd³**	**lb**	—	—	**23,830***	**16,580**	**17,370***	**10,470**	**12,280**	**7210**	—	—	**7710***	**5150**

322B LN ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m (10'0") Front	3 m (10'0") Side	4.5 m (15'0") Front	4.5 m (15'0") Side	6 m (20'0") Front	6 m (20'0") Side	7.5 m (25'0") Front	7.5 m (25'0") Side	9 m (30'0") Front	9 m (30'0") Side	At Max. Reach Front	At Max. Reach Side
2.5 m	1.15 m³	kg	—	—	12 000*	7030	8190	4550	5710	3210	—	—	4190	2340
8'2"	**1.5 yd³**	**lb**	—	—	**26,460***	**15,500**	**18,050**	**10,030**	**12,590**	**7070**	—	—	**9230**	**5150**
2.95 m	0.95 m³	kg	5130*	5130*	11 920	7160	8290	4640	5790	3280	—	—	3620*	2210
12'8"	**1.24 yd³**	**lb**	**11,310***	**11,310***	**26,280**	**15,780**	**18,270**	**10,230**	**12,760**	**7230**	—	—	**7980***	**4870**

322B LN ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m (10'0") Front	3 m (10'0") Side	4.5 m (15'0") Front	4.5 m (15'0") Side	6 m (20'0") Front	6 m (20'0") Side	7.5 m (25'0") Front	7.5 m (25'0") Side	9 m (30'0") Front	9 m (30'0") Side	At Max. Reach Front	At Max. Reach Side
2 m	1.45 m³	kg	—	—	11 710*	6780	7970	4300	—	—	—	—	4830	2600
6'7"	**1.9 yd³**	**lb**	—	—	**25,820***	**14,940**	**17,570**	**9480**	—	—	—	—	**10,650**	**5730**
2.5 m	1.3 m³	kg	—	—	11 600*	6840	7990	4320	5470	2940	—	—	4120*	2330
8'2"	**1.7 yd³**	**lb**	—	—	**25,570***	**15,080**	**17,610**	**9520**	**12,060**	**6480**	—	—	**9080***	**5130**

322B LN ● VA Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m (10'0") Front	3 m (10'0") Side	4.5 m (15'0") Front	4.5 m (15'0") Side	6 m (20'0") Front	6 m (20'0") Side	7.5 m (25'0") Front	7.5 m (25'0") Side	9 m (30'0") Front	9 m (30'0") Side	At Max. Reach Front	At Max. Reach Side
2 m	1.45 m³	kg	—	—	10 230*	6440	7640*	4110	5310*	2830	—	—	3600*	2250
6'7"	**1.9 yd³**	**lb**	—	—	**22,550***	**14,200**	**16,840***	**9060**	**11,700***	**6240**	—	—	**7930***	**4960**
2.5 m	1.3 m³	kg	—	—	10 830*	6500	7860	4120	5400	2820	—	—	3530*	2000
8'2"	**1.7 yd³**	**lb**	—	—	**23,880***	**14,330**	**17,330**	**9080**	**11,900**	**6210**	—	—	**7780***	**4410**

Japan/U.S. Sourced

325B ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2000 mm	D1430X	kg	—	—	11 850	7150	7400	4650	5200	3250	—	—	3950	2450
6'7"	**4'8"**	**lb**	—	—	**25,400**	**15,350**	**15,900**	**9950**	**11,150**	**6950**	—	—	**8700**	**5400**
2650 mm	C1470X	kg	—	—	12 400	7650	7750	5000	5450	3550	—	—	3800	2450
8'8"	**4'10"**	**lb**	—	—	**26,500**	**16,500**	**16,650**	**10,700**	**11,750**	**7600**	—	—	**8350**	**5300**
3200 mm	C1370X	kg	4300*	4300*	12 450	7750	7800	5000	5500	3550	4100	2600	3300*	2200
10'6"	**4'6"**	**lb**	**9850***	**9850***	**26,700**	**16,600**	**16,750**	**10,800**	**11,750**	**7600**	**8750**	**5550**	**7200***	**4800**

325B ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2000 mm	D1520MX	kg	—	—	12 300	7500	7650	4850	—	—	—	—	4600	2900
6'7"	**5'0"**	**lb**	—	—	**26,300**	**16,150**	**16,400**	**10,400**	—	—	—	—	**10,100**	**6350**
2500 mm	D1500X	kg	—	—	12 350	7550	7650	4850	5300	3550	—	—	4150	2600
8'2"	**4'11"**	**lb**	—	—	**26,450**	**16,250**	**16,350**	**10,350**	**11,300**	**7100**	—	—	**9100**	**5650**

*Load limited by hydraulic capacity rather than tipping.

Japan/U.S. Sourced

325B L ● Reach Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2000 mm	D1520MX	kg	—	—	14 100	8500	8950	5500	6250	3850	—	—	4750	2950
6'7"	**5'0"**	**lb**	—	—	**31,100**	**18,300**	**19,150**	**11,800**	**13,400**	**8300**	—	—	**10,450**	**6450**
2650 mm	C1440MX	kg	—	—	15 100	9050	9300	5850	6550	4150	—	—	4100*	2900
8'8"	**4'9"**	**lb**	—	—	**32,350**	**19,450**	**20,000**	**12,600**	**14,050**	**8950**	—	—	**9050***	**6300**
3200 mm	C1470X	kg	4250*	4250*	15 200	9100	9350	5900	6550	4150	4900	3100	3250*	2600
10'6"	**4'10"**	**lb**	**9800***	**9800***	**32,500**	**19,550**	**20,050**	**12,650**	**14,050**	**8950**	**10,450**	**6600**	**7150***	**5750**

325B L ● Mass Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2000 mm	D1700MX	kg	—	—	15 000	8850	9150	5650	—	—	—	—	5450	3400
6'7"	**5'7"**	**lb**	—	—	**32,050**	**19,000**	**19,600**	**72,150**	—	—	—	—	**12,000**	**7450**
2500 mm	D1520MX	kg	—	—	15 100	8950	9200	5700	6350	3950	—	—	4700*	3100
8'2"	**5'0"**	**lb**	—	—	**32,300**	**19,200**	**19,700**	**12,200**	**13,600**	**8450**	—	—	**10,300***	**6750**

Belgium Sourced

325B L ● Reach Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2 m	1.45 m^3	kg	—	—	14 070*	8730	9160	5630	6410	3970	—	—	4790	2960
6'7"	**1.89 yd^3**	**lb**	—	—	**31,020***	**19,240**	**20,190**	**12,410**	**14,130**	**8750**	—	—	**10,560**	**6520**
2.65 m	1.45 m^3	kg	—	—	15 080*	9270	9530	6000	6690	4260	—	—	3930*	2890
8'8"	**1.9 yd^3**	**lb**	—	—	**33,250***	**20,440**	**21,010**	**13,230**	**14,750**	**9390**	—	—	**8660***	**6370**
3.2 m	1.15 m^3	kg	4180*	4180*	15 460*	9320	9560	6020	6700	4260	5000	3160	3130*	2630
10'6"	**1.5 yd^3**	**lb**	**9210***	**9210***	**34,080***	**20,550**	**21,070**	**13,270**	**14,770**	**9390**	**11,020**	**6960**	**6900***	**5790**

325B L ● Mass Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2 m	1.7 m^3	kg	—	—	15 290	9030	9340	5770	—	—	—	—	5460	3390
6'7"	**2.22 yd^3**	**lb**	—	—	**33,710**	**19,910**	**20,590**	**12,720**	—	—	—	—	**12,030**	**7470**
2.5 m	1.5 m^3	kg	—	—	15 400	9120	9360	5790	6470	4010	—	—	4450*	3070
8'2"	**1.96 yd^3**	**lb**	—	—	**33,950**	**20,100**	**20,630**	**12,760**	**14,260**	**8840**	—	—	**9810***	**6760**

325B L ● VA Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2 m	1.7 m^3	kg	—	—	13 040*	8500	9040	5440	6290	3800	—	—	4800*	2950
6'7"	**2.22 yd^3**	**lb**	—	—	**28,750***	**18,740**	**19,930**	**11,990**	**13,860**	**8370**	—	—	**10,580***	**6500**
2.5 m	1.45 m^3	kg	—	—	14 000*	8610	9100	5490	6310	3820	—	—	4240*	2700
8'2"	**1.89 yd^3**	**lb**	—	—	**30,870***	**18,980**	**20,060**	**12,100**	**13,910**	**8420**	—	—	**9340***	**5950**

*Load limited by hydraulic capacity rather than tipping.

Belgium Sourced

325B LN ● Reach Boom ● 800 mm (2'8") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2 m	1.45 m³	kg	—	—	14 070*	7470	8790	4840	6140	3400	—	—	4580	2510
6'7"	**1.89 yd³**	**lb**			**31,020***	**16,470**	**19,380**	**10,670**	**13,530**	**7490**			**10,090**	**5530**
2.65 m	1.15 m³	kg	—	—	14 920	8020	9180	5220	6440	3700	—	—	3950*	2500
8'8"	**1.5 yd³**	**lb**			**32,890**	**17,680**	**20,240**	**11,510**	**14,200**	**8150**			**8700***	**5510**
3.2 m	0.95 m³	kg	4260*	4260*	15 030	8120	9250	5290	6490	3750	4850	2770	3200*	2310
10'6"	**1.24 yd³**	**lb**	**9390***	**9390***	**33,140**	**17,900**	**20,390**	**11,660**	**14,310**	**8260**	**10,690**	**6100**	**7050***	**5090**

325B LN ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2 m	1.5 m³	kg	—	—	14 770	7820	9030	5030	—	—	—	—	5290	2950
6'7"	**1.96 yd³**	**lb**			**32,560**	**17,240**	**19,910**	**11,090**					**11,660**	**6500**
2.5 m	1.45 m³	kg	—	—	14 860	7880	9030	5030	6240	3480	—	—	4500*	2650
8'2"	**1.89 yd³**	**lb**			**32,760**	**17,370**	**19,910**	**11,090**	**13,750**	**7670**			**9920***	**5840**

325B LN ● VA Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2 m	1.7 m³	kg	—	—	13 040*	7220	8680	4630	6020	3210	—	—	4700*	2480
6'7"	**2.22 yd³**	**lb**			**28,750***	**15,920**	**19,130**	**10,200**	**13,270**	**7070**			**10,360***	**5460**
2.5 m	1.45 m³	kg	—	—	14 000*	7340	8730	4690	6040	3240	—	—	4240*	2260
8'2"	**1.89 yd³**	**lb**			**30,870***	**16,180**	**19,240**	**10,340**	**13,310**	**7140**			**9340***	**4980**

Japan/U.S. Sourced

330B ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2150 mm	E1470X	kg	—	—	15 600	10 150	9700	6500	6800	4600	—	—	4750	3200
7'1"	**4'10"**	**lb**			**33,450**	**21,750**	**20,800**	**14,000**	**14,600**	**9850**			**10,450**	**6950**
2800 mm	D1500X	kg	—	—	16 200	10 700	10 100	6900	7100	4900	5300	3600	4650	3150
9'2"	**4'11"**	**lb**			**34,750**	**22,450**	**21,650**	**14,850**	**15,250**	**10,500**	**11,550**	**7900**	**10,200**	**6900**
3300 mm	D1430X	kg	7000*	7000*	16 300	10 750	10 100	6950	7100	4900	5300	3600	4050*	2850
10'10"	**4'8"**	**lb**	**15,900***	**15,900***	**34,900**	**23,050**	**21,750**	**14,350**	**15,250**	**10,500**	**11,650**	**7700**	**8850***	**6250**
3900 mm	D1345X	kg	7550*	7550*	16 400	10 850	10 200	7000	7150	4900	5300	3600	3250*	2500
12'10"	**4'5"**	**lb**	**17,200***	**17,200***	**35,200**	**23,300**	**21,900**	**15,000**	**15,300**	**10,550**	**11,350**	**7700**	**7200***	**5550**

330B ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2150 mm	E1600X	kg	—	—	16 000	10 450	9900	6700	6900	4700	—	—	5200	3500
7'1"	**5'3"**	**lb**			**34,250**	**22,450**	**21,250**	**14,400**	**14,850**	**10,100**			**11,400**	**7700**
2550 mm	E1470X	kg	—	—	16 100	10 550	9950	6750	6900	4700	—	—	4700	3150
8'4"	**4'10"**	**lb**			**34,500**	**22,650**	**21,300**	**14,450**	**14,800**	**10,050**			**10,350**	**6900**

*Load limited by hydraulic capacity rather than tipping.

Japan/U.S. Sourced

330B L ● Reach Boom ● 750 mm (2'6") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2150 mm	E1470X	kg	—	—	16 900*	10 600	12 100	6800	8450	4800	—	—	5900	3350
7'1"	**4'10"**	**lb**	—	—	**36,600***	**22,700**	**25,950**	**14,650**	**18,100**	**10,350**	—	—	**13,000**	**7350**
2800 mm	D1520MX	kg	—	—	17 500*	11 100	12 450	7200	8700	5100	6500	3750	5600	3250
9'2"	**5'0"**	**lb**	—	—	**37,900***	**23,850**	**26,750**	**15,400**	**18,650**	**10,900**	**13,900**	**8050**	**12,350**	**7150**
3300 mm	D1500X	kg	6950*	6950*	17 350*	11 150	12 350*	7200	8700	5100	6500	3800	4100*	3000
10'10"	**4'11"**	**lb**	**15,900***	**15,900***	**37,550***	**24,000**	**26,700***	**15,500**	**18,700**	**10,900**	**13,900**	**8050**	**9000***	**6600**
3900 mm	D1345X	kg	7550*	7550*	16 950*	11 300	12 000*	7300	8750	5150	6500	3800	3250*	2650
12'10"	**4'5"**	**lb**	**17,200***	**17,200***	**36,600***	**24,250**	**25,950***	**15,650**	**18,800**	**11,050**	**13,950**	**8100**	**7200***	**5850**

330B L ● Mass Boom ● 750 mm (2'6") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2150 mm	E1735MX	kg	—	—	17 100	10 800	12 250	6950	8500	4850	—	—	6350	3600
7'1"	**5'8"**	**lb**	—	—	**37,100**	**23,250**	**26,250**	**14,900**	**18,200**	**10,400**	—	—	**13,950**	**7900**
2550 mm	E1600X	kg	—	—	17 250	10 950	12 300	7000	8500	4850	—	—	5650*	3250
8'4"	**5'3"**	**lb**	—	—	**37,350**	**23,450**	**26,350**	**15,000**	**18,200**	**10,450**	—	—	**12,400***	**7150**

Belgium Sourced

330B L ● Reach Boom ● 750 mm (2'6") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2.2 m	1.7 m^3	kg	—	—	17 110*	12 120	12 530*	7800	8920	5540	—	—	6210	3840
7'3"	**2.2 yd^3**	**lb**	—	—	**37,720***	**26,720**	**27,620***	**17,190**	**19,660**	**12,210**	—	—	**13,690**	**8460**
2.8 m	1.5 m^3	kg	—	—	17 620*	12 490	12 660*	8050	9110	5730	6810	4270	5470*	3590
9'2"	**1.96 yd^3**	**lb**	—	—	**38,850***	**27,540**	**27,910***	**17,750**	**20,080**	**12,630**	**15,010**	**9410**	**12,060***	**7910**
3.3 m	1.45 m^3	kg	6660*	6660*	17 510*	12 570	12 460*	8100	9140	5750	6820	4280	3800*	3320
10'10"	**1.89 yd^3**	**lb**	**14,680***	**14,680***	**38,600***	**27,710**	**27,470***	**17,860**	**20,150**	**12,670**	**15,030**	**9430**	**8370***	**7320**
3.9 m	1.3 m^3	kg	7280*	7280*	17 070*	12 660	12 080*	8140	9150	5760	6810	4270	3160*	2980
12'9"	**1.7 yd^3**	**lb**	**16,050***	**16,050***	**37,630***	**27,910**	**26,630***	**17,940**	**20,170**	**12,700**	**15,010**	**9410**	**6960***	**6570**

330B L ● Mass Boom ● 750 mm (2'6") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2.2 m	1.9 m^3	kg	—	—	17 460*	12 490	12 720*	8010	9050	5650	—	—	6740	4200
7'3"	**2.4 yd^3**	**lb**	—	—	**38,490***	**27,540**	**28,040***	**17,660**	**19,950**	**12,450**	—	—	**14,860**	**9260**
2.6 m	1.7 m^3	kg	—	—	17 600*	12 560	12 650*	8030	9050	5650	—	—	5570*	3820
8'6"	**2.2 yd^3**	**lb**	—	—	**38,800***	**27,690**	**27,890***	**17,700**	**19,950**	**12,450**	—	—	**12,280***	**8420**

*Load limited by hydraulic capacity rather than tipping.

Belgium Sourced

330B LN ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2.2 m	1.7 m³	kg	—	—	17 110*	11 240	12 530*	7300	9080	5190	—	—	6330	3600
7'3"	**2.2 yd³**	**lb**			**37,720***	**24,780**	**27,620***	**16,090**	**20,020**	**11,440**			**13,950**	**7930**
2.8 m	1.5 m³	kg	—	—	17 620*	11 600	12 660*	7540	9270	5380	6930	4010	5470*	3370
9'2"	**1.96 yd³**	**lb**			**38,850***	**25,570**	**27,910***	**16,620**	**20,440**	**11,860**	**15,280**	**8840**	**12,060***	**7430**
3.3 m	1.45 m³	kg	6660*	6660*	17 510*	11 670	12 460*	7590	9290	5400	6940	4020	3800*	3110
10'10"	**1.89 yd³**	**lb**	**14,680***	**14,680***	**38,600***	**25,730**	**27,470***	**16,730**	**20,480**	**11,900**	**15,300**	**8860**	**8370***	**6850**
3.9 m	1.3 m³	kg	7280*	7280*	17 070*	11 760	12 080*	7620	9310	5410	6930	4010	3160*	2790
12'9"	**1.7 yd³**	**lb**	**16,050***	**16,050***	**37,630***	**25,930**	**26,630***	**16,800**	**20,520**	**11,920**	**10,870**	**8840**	**6960***	**6150**

330B LN ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2.2 m	1.9 m³	kg	—	—	17 460*	11 590	12 720*	7500	9210	5310	—	—	6860	3940
7'3"	**2.4 yd³**	**lb**			**38,490***	**25,550**	**28,040***	**16,530**	**20,300**	**11,700**			**15,120**	**8680**
2.6 m	1.7 m³	kg	—	—	17 600*	11 660	12 650*	7520	9210	5310	—	—	5570*	3590
8'6"	**2.2 yd³**	**lb**			**38,800***	**25,700**	**27,390***	**16,580**	**20,300**	**11,700**			**12,280***	**7910**

Japan Sourced

345B ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
2900 mm	F1590X	kg	—	—	18 100*	15 150	15 650*	9700	11 050	6900
9'6"	**5'3"**	**lb**			**42,150***	**32,500**	**33,650***	**20,900**	**23,650**	**14,750**
3350 mm	T1580X	kg	—	—	19 250*	15 350	15 650*	9850	11 100	7000
10'0"	**5'3"**	**lb**			**44,700***	**33,000**	**33,800***	**21,200**	**23,850**	**14,950**
3900 mm	F1218T	kg	7750*	7750*	21 600*	15 800	15 600*	10 150	11 350	7200
12'10"	**4'0"**	**lb**	**17,600***	**17,600***	**47,700***	**33,950**	**33,700***	**21,850**	**24,350**	**15,400**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2900 mm	F1590X	kg	8200	5100	—	—	5650*	3850
9'6"	**5'3"**	**lb**	**17,600**	**10,900**			**12,400***	**8500**
3350 mm	T1580X	kg	8250	5150	—	—	4900*	3650
10'0"	**5'3"**	**lb**	**17,750**	**11,050**			**10,750***	**8000**
3900 mm	F1218T	kg	8450	5300	6500	4000	4800*	3450
12'10"	**4'0"**	**lb**	**18,100**	**11,400**	**14,150**	**8850**	**10,500***	**7600**

345B ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
2500 mm	G1770X	kg	—	—	20 750*	14 600	15 100*	9300	10650	6450
8'2"	**5'10"**	**lb**			**42,150***	**32,500**	**33,650***	**20,900**	**23,650**	**14,750**
3000 mm	U1830V	kg	—	—	20 950*	14 650	14 900*	9250	10 600	6400
9'10"	**5'9"**	**lb**			**45,350***	**31,400**	**32,200***	**19,850**	**22,650**	**13,650**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2500 mm	G1770X	kg	—	—	—	—	6700	3950
8'2"	**5'10"**	**lb**					**14,750**	**8650**
3000 mm	U1830V	kg	7700	4550	—	—	5600*	3550
9'10"	**5'9"**	**lb**	**16,500**	**9700**			**12,300***	**7750**

*Load limited by hydraulic capacity rather than tipping.

Japan/U.S. Sourced

345B L – FIX ● Reach Boom ● 750 mm (2'6") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
2900 mm	F1735X	kg	—	—	18 000*	15 700	15 600*	10 100	11 950*	7150
9'6"	**5'8"**	**lb**			**41,900***	**33,750**	**33,700***	**21,650**	**25,800***	**15,300**
3350 mm	F1590X	kg	—	—	19 200*	15 950	15 600*	10 250	11 950*	7250
11'0"	**5'3"**	**lb**			**44,600***	**34,300**	**33,700***	**22,050**	**25,800***	**15,600**
3900 mm	F1218T	kg	7750*	7750*	21 600*	16 450	15 600*	10 600	11 950*	7500
12'10"	**4'0"**	**lb**	**17,600***	**17,600***	**47,700***	**35,300**	**33,700***	**22,750**	**25,850***	**16,100**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2900 mm	F1735X	kg	9550	5300	—	—	5500*	4000
9'6"	**5'8"**	**lb**	**20,450**	**11,300**			**12,200***	**8800**
3350 mm	F1590X	kg	9600*	5350	—	—	4800*	3800
11'0"	**5'3"**	**lb**	**20,650**	**11,500**			**10,500***	**8300**
3900 mm	F1218T	kg	9700*	5550	7050*	4250	4800*	3650
12'10"	**4'0"**	**lb**	**20,900***	**11,950**	**15,300***	**9300**	**10,500***	**8000**

345B L – FIX ● Mass Boom ● 750 mm (2'6") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
2500 mm	G1770X	kg	—	—	20 750*	15 250	15 100*	9700	11 500*	6800
8'2"	**5'10"**	**lb**			**45,050***	**32,750**	**32,650***	**20,850**	**24,850***	**14,550**
3000 mm	U1830V	kg	—	—	20 950*	15 250	14 900*	9650	11 350*	6700
9'10"	**6'0"**	**lb**			**45,350***	**32,800**	**32,200***	**20,750**	**24,450***	**14,350**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2500 mm	G1770X	kg	—	—	—	—	7100*	4150
8'2"	**5'10"**	**lb**					**15,650***	**9150**
3000 mm	U1830V	kg	8950*	4800	—	—	5600*	3750
9'10"	**6'0"**	**lb**	**19,200***	**10,250**			**12,300***	**8250**

*Load limited by hydraulic capacity rather than tipping.

U.S. Sourced

345B L – VG ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
2900 mm	F1735X	kg	—	—	18 600*	18 600*	15 600*	12 050	11 950*	8600
9'6"	**5'8"**	**lb**			**43,200***	**40,550**	**33,750***	**25,950**	**25,800***	**18,450**
3350 mm	F1590X	kg	—	—	19 550*	19 150	15 650*	12 250	12 000*	8700
11'0"	**5'3"**	**lb**			**45,350***	**41,100**	**33,800***	**26,350**	**25,900***	**18,700**
3900 mm	F1410T	kg	8050*	8050*	21 500*	19 450	15 500*	12 450	11 850*	8850
12'10"	**4'8"**	**lb**	**18,300***	**18,300***	**47,450***	**41,800**	**33,550***	**26,750**	**25,650***	**18,950**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2900 mm	F1735X	kg	9550*	6450	—	—	5650*	5000
9'6"	**5'8"**	**lb**	**20,550***	**13,800**			**12,400***	**11,000**
3350 mm	F1590X	kg	9600*	6500	—	—	4850*	4700
11'0"	**5'3"**	**lb**	**20,750***	**13,950**			**10,650***	**10,400**
3900 mm	F1410T	kg	9550*	6600	6650*	5050	4700*	4400
12'10"	**4'8"**	**lb**	**20,650***	**14,100**	**14,650***	**11,100**	**10,350***	**9650**

345B L – VG ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
2500 mm	G1770X	kg	—	—	21 000*	18 550	15 000*	11 750	11 400*	8200
8'2"	**5'10"**	**lb**			**45,450***	**39,750**	**32,400***	**25,200**	**24,600***	**17,600**
3000 mm	G1895M	kg	—	—	20 600*	18 400	15 000*	11 650	11 400*	8150
9'10"	**6'0"**	**lb**			**44,700***	**39,450**	**32,400***	**25,000**	**24,600***	**17,500**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2500 mm	G1770X	kg	8950*	6000	—	—	7100*	4150
8'2"	**5'10"**	**lb**	**19,250***	**12,900**			**15,650***	**9150**
3000 mm	G1895M	kg	—	—	—	—	7150*	5200
9'10"	**6'0"**	**lb**					**15,750***	**11,400**

*Load limited by hydraulic capacity rather than tipping.

Belgium Sourced**

345B L – VG ● Reach Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
2900 mm **9'6"**	F1735X **5'8"**	**kg** **lb**								
3350 mm **11'0"**	F1590X **5'3"**	**kg** **lb**								
3900 mm **12'10"**	F1410T **4'8"**	**kg** **lb**								

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2900 mm **9'6"**	F1735X **5'8"**	**kg** **lb**						
3350 mm **11'0"**	F1590X **5'3"**	**kg** **lb**						
3900 mm **12'10"**	F1410T **4'8"**	**kg** **lb**						

345B L – VG ● Mass Boom ● 600 mm (2'0") Track Shoes

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
2500 mm **8'2"**	G1770X **5'10"**	**kg** **lb**								
3000 mm **9'10"**	G1895M **6'0"**	**kg** **lb**								

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2500 mm **8'2"**	G1770X **5'10"**	**kg** **lb**						
3000 mm **9'10"**	G1895M **6'0"**	**kg** **lb**						

**Information unavailable.

Japan Sourced

350 ● Reach Boom ● 600 mm (2'0") Triple Grousers

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
4800 mm	F1075T	kg	5950*	5950*	16 600*	16 600*	14 250*	11 700	10 850*	8250
15'9"	**3'6"**	**lb**	**13,500***	**13,500***	**38,500***	**38,500***	**30,800***	**25,100**	**23,450***	**17,700**
3600 mm	F1410T	kg	—	—	13 850*	13 850*	15 150*	11 450	11 550	8150
11'10"	**4'8"**	**lb**			**32,100***	**32,100***	**32,700***	**24,650**	**24,750**	**17,450**
3100 mm	F1590X	kg	—	—	12 500*	12 500*	15 300*	11 350	11 450	8050
10'2"	**5'3"**	**lb**			**29,200***	**29,200***	**33,050***	**24,400**	**24,600**	**17,300**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
4800 mm	F1075T	kg	8700	6150	6700	4700	2900*	2900*
15'9"	**3'6"**	**lb**	**18,650**	**13,150**	**14,400**	**10,000**	**6400***	**6400***
3600 mm	F1410T	kg	8600	6050	6650	4650	3750*	3750*
11'10"	**4'8"**	**lb**	**18,450**	**13,000**	**12,250***	**9900**	**8250***	**8250***
3100 mm	F1590X	kg	8600	6050	—	—	5300*	4250
10'2"	**5'3"**	**lb**	**18,400**	**12,900**			**11,700***	**9350**

350 ● Mass Boom ● 600 mm (2'0") Triple Grousers

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
3700 mm	F1590X	kg	6950*	6950*	19 800*	18 350	15 050*	11 600	11 500*	8150
12'2"	**5'3"**	**lb**	**15,800***	**15,800***	**46,000***	**39,350***	**32,500***	**24,850**	**24,800***	**17,450**
2950 mm	G1655X	kg	—	—	16 550*	17 850	15 050*	11 200	11 250	7850
9'8"	**5'5"**	**lb**			**43,250**	**38,300**	**32,550***	**24,100**	**24,200**	**16,850**
2400 mm	G1770X	kg	—	—	18 300*	17 550	15 000*	11 050	11 200	7750
7'10"	**5'10"**	**lb**			**42,800***	**37,650**	**32,450***	**23,700**	**24,000**	**16,700**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
3700 mm	F1590X	kg	8600	6000	—	—	2800*	2800*
12'2"	**5'3"**	**lb**	**18,400**	**12,850**			**6200***	**6200***
2950 mm	G1655X	kg	8350	5750	—	—	4450*	4450
9'8"	**5'5"**	**lb**	**17,850**	**12,350**			**9800***	**9750**
2400 mm	G1770X	kg	—	—	—	—	6500*	4900
7'10"	**5'10"**	**lb**					**14,350***	**10,800***

*Load limited by hydraulic capacity rather than tipping.

Japan Sourced

350 Heavy Lift ● Reach Boom ● 600 mm (2'0") Triple Grousers

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
4800 mm	F1075T	kg	6450*	6450*	17 750*	17 750*	16 150*	11 700	11 650	8250
15'9"	**3'6"**	**lb**	**14,650***	**14,650***	**41,250***	**39,450***	**34,900***	**25,100**	**25,050**	**17,700**
3600 mm	F1410T	kg	—	—	14 850*	14 850*	16 500	11 450	11 550	8150
11'10"	**4'8"**	**lb**			**34,400***	**34,400***	**35,350**	**24,650**	**24,750**	**17,450**
3100 mm	F1590X	kg	—	—	13 450*	13 450*	16 350	11 350	11 450	8050
10'2"	**5'3"**	**lb**			**31,300***	**31,300***	**35,050**	**24,400**	**24,600**	**17,300**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
4800 mm	F1075T	kg	8700	6150	6700	4700	3350*	3300
15'9"	**3'6"**	**lb**	**18,650**	**13,150**	**14,400**	**10,000**	**7400***	**7200**
3600 mm	F1410T	kg	8600	6050*	6650	4650	4300*	3900
11'10"	**4'8"**	**lb**	**18,450**	**13,000**	**13,800***	**9900**	**9400***	**8600**
3100 mm	F1590X	kg	8600	6050	—	—	6000*	4250
10'2"	**5'3"**	**lb**	**18,400**	**12,900**			**13,200***	**9350**

350 Heavy Lift ● Mass Boom ● 600 mm (2'0") Triple Grousers

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
3700 mm	F1590X	kg	7550*	7550*	21 200*	18 350	16 600	11 600	11 550	8150
12'2"	**5'3"**	**lb**	**17,100***	**17,100***	**49,250***	**39,350**	**35,650**	**24,850**	**24,800**	**17,450**
2950 mm	G1655X	kg	—	—	19 900*	17 850	16 250	11 200	11 250	7850
9'8"	**5'5"**	**lb**			**46,350***	**38,300**	**34,650**	**24,100**	**24,200**	**16,850**
2400 mm	G1770X	kg	—	—	19 600*	17 550	16 050	11 050	11 200	7750
7'10"	**5'10"**	**lb**			**45,800***	**37,650**	**34,450**	**23,700**	**24,000**	**16,700**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
3700 mm	F1590X	kg	8600	6000	—	—	3300*	3300*
12'2"	**5'3"**	**lb**	**18,400**	**12,850**			**7200***	**7200***
2950 mm	G1655X	kg	8350	5750	—	—	5100*	4450
9'8"	**5'5"**	**lb**	**17,850**	**12,350**			**11,150***	**9750**
2400 mm	G1770X	kg	—	—	—	—	7150	4900
7'10"	**5'10"**	**lb**					**15,700**	**10,800**

*Load limited by hydraulic capacity rather than tipping.

Japan Sourced

350 L ● Reach Boom ● 750 mm (2'6") Triple Grousers

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
4800 mm	F1218T	kg	5850*	5850*	16 500*	16 500*	14 200*	12 100	10 800*	8550
15'9"	**4'0"**	**lb**	**13,250***	**13,250***	**38,250***	**38,250***	**30,600***	**25,950**	**23,300***	**18,300**
3600 mm	F1410T	kg	—	—	13 850*	13 850*	15 150*	11 950	11 550*	8450
11'10"	**4'8"**	**lb**			**32,100***	**32,100***	**32,700***	**25,650**	**24,900***	**18,200**
3100 mm	F1735X	kg	—	—	12 450*	12 450*	15 250*	11 750	11 650*	8350
10'2"	**5'3"**	**lb**			**29,000***	**29,000***	**32,950***	**25,300**	**25,150***	**17,950**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
4800 mm	F1218T	kg	8700*	6350	7350*	4850	2850*	2850*
15'9"	**4'0"**	**lb**	**18,850***	**13,550**	**15,900***	**10,300**	**6200***	**6200***
3600 mm	F1410T	kg	9300*	6350	7250*	4850	3750*	3750*
11'10"	**4'8"**	**lb**	**20,050***	**13,550**	**12,250***	**10,400**	**8250***	**8250***
3100 mm	F1735X	kg	9350*	6250	—	—	5250*	4400
10'2"	**5'3"**	**lb**	**20,200***	**13,400**			**11,550***	**9700**

350 L ● Mass Boom ● 750 mm (2'6") Triple Grousers

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
3700 mm	F1735X	kg	6900*	6900*	19 700*	19 000	15 000*	12 000	11 450*	8450
12'2"	**5'8"**	**lb**	**15,650***	**15,650***	**45,800***	**40,750***	**32,400***	**25,750**	**24,700***	**18,100**
2950 mm	G1770X	kg	—	—	18 450*	18 450	14 950	11 600	11 350*	8100
9'8"	**5'10"**	**lb**			**43,050***	**39,550**	**32,300***	**24,900**	**24,550***	**17,400**
2400 mm	G1895M	kg	—	—	18 050*	18 050*	14 900*	11 450	11 400*	8050
7'10"	**6'3"**	**lb**			**42,250***	**39,050***	**32,250***	**24,600**	**24,550***	**17,250**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
3700 mm	F1735X	kg	9200*	6250	—	—	2750*	2750*
12'2"	**5'8"**	**lb**	**19,900***	**13,350**			**6050***	**6050***
2950 mm	G1770X	kg	9000*	5950	—	—	4350*	4350*
9'8"	**5'10"**	**lb**	**19,450***	**12,750**			**9600***	**9600***
2400 mm	G1895M	kg	—	—	—	—	6450*	5050
7'10"	**6'3"**	**lb**					**14,150***	**11,150**

*Load limited by hydraulic capacity rather than tipping.

Japan Sourced

350 L Heavy Lift ● Reach Boom ● 750 mm (2'6") Triple Grousers

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
4800 mm	F1218T	kg	6350*	6350*	17 650*	17 650*	16 050*	12 100	12 300*	8550
15'9"	**4'0"**	**lb**	**14,400***	**14,400***	**41,000***	**40,800***	**34,700***	**25,950**	**26,550***	**18,300**
3600 mm	F1410T	kg	—	—	14 850*	14 850*	17 150*	11 950	13 100*	8450
11'10"	**4'8"**	**lb**			**34,400***	**34,400***	**37,050**	**25,650**	**28,350***	**18,200**
3100 mm	F1735X	kg	—	—	13 350*	13 350*	17 250*	11 750	13 200*	8350
10'2"	**5'3"**	**lb**			**31,150***	**31,150***	**37,300***	**25,300**	**28,600***	**17,950**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
4800 mm	F1218T	kg	10 000*	6350	8150	4850	3300*	3300*
15'9"	**4'0"**	**lb**	**21,600***	**13,550**	**17,500**	**10,300**	**7200***	**7200***
3600 mm	F1410T	kg	10 550	6350	8100*	4850	4300*	4100
11'10"	**4'8"**	**lb**	**22,600**	**13,550**	**13,800***	**10,400**	**9400***	**9050**
3100 mm	F1735X	kg	10 450	6250	—	—	5950*	4400
10'2"	**5'3"**	**lb**	**22,450**	**13,400**			**13,050***	**9700**

350 L Heavy Lift ● Mass Boom ● 750 mm (2'6") Triple Grousers

Stick	Bucket		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side
3700 mm	F1735X	kg	7450*	7450*	21 100*	19 000	16 950*	12 000	13 000*	8450
12'2"	**5'8"**	**lb**	**16,950***	**16,950***	**49,050***	**40,750**	**36,660***	**25,750**	**28,100***	**18,100**
2950 mm	G1770X	kg	—	—	19 800	18 450	16 950*	11 600	12 950*	8100
9'8"	**5'10"**	**lb**			**46,100***	**39,550**	**36,700***	**24,900**	**28,000***	**17,400**
2400 mm	G1895M	kg	—	—	19 350*	18 200	16 950*	11 450	13 000*	8050
7'10"	**6'3"**	**lb**			**45,250***	**39,050**	**36,650***	**24,600**	**28,050***	**17,250**

Stick	Bucket		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
3700 mm	F1735X	kg	10 450	6250	—	—	3200*	3200*
12'2"	**5'8"**	**lb**	**22,450**	**13,350**			**7050***	**7050***
2950 mm	G1770X	kg	10 200	5950	—	—	5000*	4600
9'8"	**5'10"**	**lb**	**21,850**	**12,750**			**10,950***	**10,050**
2400 mm	G1895M	kg	—	—	—	—	7250*	5050
7'10"	**6'3"**	**lb**					**15,950***	**11,150**

*Load limited by hydraulic capacity rather than tipping.

Japan/U.S. Sourced

375 ● Reach Boom ● 610 mm (2'0") Double Grousers

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
5500 mm	H1380T	kg	10 400*	10 400*	27 400*	23 650	20 850*	16 800	16 650*	12 650
18'1"	**4'6"**	**lb**	**24,050***	**24,050***	**59,200***	**50,850**	**45,000***	**36,100**	**36,000***	**27,150**
4400 mm	H1800X	kg	9600*	9600*	25 900*	22 850	21 050*	16 200	16 900*	12 250
14'5"	**5'10"**	**lb**	**22,250***	**22,250***	**59,200***	**49,100**	**45,500***	**34,850**	**36,450***	**26,300**
3400 mm	J1780X	kg	—	—	20 050*	20 050*	20 350*	15 350	16 300*	11 500
11'2"	**5'10"**	**lb**			**47,650***	**46,700**	**43,950***	**32,950**	**35,000**	**24,750**
2900 mm	J1865X	kg	—	—	17 600*	17 600*	20 150*	15 200	16 200	11 400
9'6"	**6'1"**	**lb**			**42,450***	**42,450***	**43,550***	**32,650**	**34,800**	**24,500**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
5500 mm	H1380T	kg	13 650	9850	10 950	7800	8900	6250	5200*	5100
18'1"	**4'6"**	**lb**	**29,300**	**21,100**	**23,450**	**16,700**	**19,050**	**13,350**	**11,450***	**11,250**
4400 mm	H1800X	kg	13 350	9550	10 700	7600	—	—	8050*	5900
14'5"	**5'10"**	**lb**	**28,600**	**20,500**	**22,950**	**16,200**			**17,750***	**12,950**
3400 mm	J1780X	kg	12 700	8950	10 150	7050	—	—	8750	6000
11'2"	**5'10"**	**lb**	**27,250**	**19,150**	**22,350**	**15,500**			**19,300**	**13,250**
2900 mm	J1865X	kg	12 650	8850	—	—	—	—	9250	6350
9'6"	**6'1"**	**lb**	**27,100**	**18,950**					**20,350**	**14,000**

375 ● GP Boom ● 610 mm (2'0") Double Grousers

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
5500 mm	H1380T	kg	13 700*	13 700*	27 700*	24 350	21 100*	17 200	16 900*	12 950
18'1"	**4'6"**	**lb**	**31,600***	**31,600***	**59,800***	**52,300**	**45,500***	**37,050**	**36,600***	**27,800**
4400 mm	H1800X	kg	13 100*	13 100*	27 900*	23 500	21 400*	16 650	17 200*	12 550
14'5"	**5'10"**	**lb**	**30,250***	**30,250***	**60,350***	**50,550**	**46,300***	**35,850**	**37,150***	**27,000**
3400 mm	J1780X	kg	—	—	26 700*	22 450	20 800*	15 800	16 650*	11 850
11'2"	**5'10"**	**lb**			**57,900***	**48,200**	**44,950***	**33,950**	**35,750**	**25,450**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
5500 mm	H1380T	kg	13 850	10 100	11 100	8000	7800*	6400	4150*	4150*
18'1"	**4'6"**	**lb**	**29,750**	**21,600**	**23,800**	**17,100**	**12,800***	**12,800***	**9100***	**9100***
4400 mm	H1800X	kg	13 550	9800	10 900	7750	—	—	6750*	6300
14'5"	**5'10"**	**lb**	**29,150**	**21,000**	**23,350**	**16,600**			**14,850***	**13,900**
3400 mm	J1780X	kg	12 950	9200	—	—	—	—	7850*	6550
11'2"	**5'10"**	**lb**	**27,800**	**19,650**					**17,250***	**14,350**

375 ● Mass Boom ● 610 mm (2'0") Double Grousers

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	10.5 35'0" Front	10.5 35'0" Side	At Max. Reach Front	At Max. Reach Side
4100 mm	J2040X	kg	23 650*	23 650*	27 950*	22 650	21 350*	15 700	16 300	11 550	12 500	8750	7050*	6650
13'5"	**6'8"**	**lb**	**54,750***	**54,750***	**60,400***	**48,600**	**46,100***	**33,700**	**34,950**	**24,750**	**26,700**	**18,650**	**15,500***	**14,700**
3400 mm	J2210X	kg	22 450*	22 450*	27 750*	22 350	21 350*	15 550	16 250	11 500	—	—	8900*	7500
11'2"	**7'3"**	**lb**	**52,050***	**52,050***	**60,050***	**47,950**	**46,150***	**33,400**	**34,800**	**24,600**			**19,550***	**16,500**
2900 mm	J2390MX	kg	20 850*	20 850*	27 100*	21 900*	20 950*	15 250	15 950	11 250	—	—	9400*	7850
9'6"	**7'10"**	**lb**	**48,450***	**48,450***	**58,650***	**47,000**	**45,200***	**32,700**	**34,250**	**24,050**			**20,750***	**17,300**

*Load limited by hydraulic capacity rather than tipping.

Japan/U.S. Sourced

375 Heavy Lift ● Reach Boom ● 750 mm (2'6") Double Grousers ● 11.6 t (25,600 lb) Counterweight with C/W removal

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
5500 mm	H1380T	kg	11 300	11 300	29 600	24 500	22 700	17 400	18 050	13 150
18'1"	**4'6"**	**lb**	**26,050**	**26,050**	**64,400**	**52,700**	**49,100**	**37,450**	**38,800**	**28,250**
4400 mm	H1800X	kg	10 400	10 400	27 750	23 700	23 000	16 850	17 650	12 750
14'5"	**5'10"**	**lb**	**24,150**	**24,150**	**64,500**	**50,950**	**49,700**	**36,200**	**37,900**	**27,350**
3400 mm	J1780X	kg	—	—	21 550	21 550	22 250	15 950	16 900	12 000
11'2"	**5'10"**	**lb**			**51,150**	**48,550**	**48,150**	**34,300**	**36,300**	**25,800**
2900 mm	J1865X	kg	—	—	18 950	18 950	22 050	15 850	16 800	11 900
9'6"	**6'1"**	**lb**			**45,650**	**45,650**	**47,750**	**34,000**	**36,050**	**25,600**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
5500 mm	H1380T	kg	14 100	10 250	11 350	8150	9250	6550	5700*	5350
18'1"	**4'6"**	**lb**	**30,300**	**22,000**	**24,300**	**17,450**	**19,850**	**14,000**	**12,600***	**11,800**
4400 mm	H1800X	kg	13 800	9950	11 100	7950	—	—	8750*	6200
14'5"	**5'10"**	**lb**	**29,650**	**21,350**	**23,800**	**17,000**			**19,250***	**13,600**
3400 mm	J1780X	kg	13 200	9350	10 550	7400	—	—	9150	6350
11'2"	**5'10"**	**lb**	**28,300**	**20,000**	**23,250**	**16,250**			**20,100**	**13,950**
2900 mm	J1865X	kg	13 100	9250	—	—	—	—	9650	6700
9'6"	**6'1"**	**lb**	**28,150**	**19,850**					**21,200**	**14,750**

375 Heavy Lift ● GP Boom ● 750 mm (2'6") Double Grousers ● 11.6 t (25,600 lb) Counterweight with C/W removal

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
5500 mm	H1380T	kg	14 800	14 800	30 050	25 200	22 950	17 850	18 350	13 450
18'1"	**4'6"**	**lb**	**34,050**	**34,050**	**64,950**	**54,150**	**49,600**	**38,400**	**39,450**	**28,900**
4400 mm	H1800X	kg	14 150	14 150	30 300	24 350	23 350	17 300	17 950	13 050
14'5"	**5'10"**	**lb**	**32,600**	**32,600**	**65,600**	**52,400**	**50,450**	**37,200**	**38,600**	**28,050**
3400 mm	J1780X	kg	—	—	29 150	23 300	22 700	16 450	17 250	12 350
11'2"	**5'10"**	**lb**			**63,150**	**50,000**	**49,150**	**35,350**	**37,050**	**26,500**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
5500 mm	H1380T	kg	14 350	10 500	11 500	8350	8500	6700	4600*	4600*
18'1"	**4'6"**	**lb**	**30,800**	**22,500**	**24,700**	**17,850**	**14,050**	**14,050**	**10,050***	**10,050***
4400 mm	H1800X	kg	14 050	10 200	11 300	8100	—	—	7350*	6600
14'5"	**5'10"**	**lb**	**30,200**	**21,850**	**24,200**	**17,350**			**16,200***	**14,550**
3400 mm	J1780X	kg	13 450	9600	—	—	—	—	8550*	6850
11'2"	**5'10"**	**lb**	**28,850**	**20,550**					**18,800***	**15,050**

375 Heavy Lift ● Mass Boom ● 750 mm (2'6") Double Grousers ● 11.6 t (25,600 lb) Counterweight with C/W removal

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	10.5 35'0" Front	10.5 35'0" Side	At Max. Reach Front	At Max. Reach Side
4100 mm	J2040X	kg	25 450	25 450	30 350	24 950	23 250	17 400	17 850	12 850	13 750	9850	7700*	7600
13'5"	**6'8"**	**lb**	**58,800**	**58,800**	**65,700**	**53,550**	**50,300**	**37,350**	**38,250**	**27,600**	**29,400**	**21,000**	**16,950***	**16,700**
3400 mm	J2210X	kg	24 150	24 150	30 200	24 600	23 300	17 250	17 750	12 800	—	—	9650*	8500
11'2"	**7'3"**	**lb**	**55,900**	**55,900**	**65,350**	**52,850**	**50,350**	**37,000**	**38,150**	**27,500**			**21,300***	**18,650**
2900 mm	J2390MX	kg	22 400	22 400	29 500	24 200	22 850	16 900	17 500	12 550	—	—	10 250*	8900
9'6"	**7'10"**	**lb**	**52,100**	**52,100**	**63,900**	**51,950**	**49,400**	**36,350**	**37,550**	**26,900**			**22,550***	**19,550**

*Load limited by hydraulic capacity rather than tipping.

Belgium Sourced

375 ● GP Boom ● 610 mm (2'0") Track Shoes

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
3.4 m	3.6 m³	kg	—	—	26 120*	22 200	20 270*	15 600	16 180*	11 660
11'2"	**4.7 yd³**	**lb**			**57,590***	**48,950**	**44,690***	**34,390**	**35,670***	**25,710**
4.4 m	3.2 m³	kg	12 880*	12 880*	27 500*	23 510	21 080*	16 640	16 890*	12 510
14'5"	**4.1 yd³**	**lb**	**28,400***	**28,400***	**60,630***	**51,830**	**46,480***	**36,690**	**37,240***	**27,580**
5.5 m	2.8 m³	kg	13 390*	13 390*	27 090*	24 130	20 560*	17 010	16 440*	12 730
18'1"	**3.6 yd³**	**lb**	**29,520***	**29,520***	**59,730***	**53,200**	**45,330***	**37,500**	**36,250***	**28,060**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
3.4 m	3.6 m³	kg	12 760	8970	—	—	—	—	7520*	6240
11'2"	**4.7 yd³**	**lb**	**28,130**	**19,770**					**16,580***	**13,750**
4.4 m	3.2 m³	kg	13 510*	9720	10 800	7680	—	—	6590*	6160
14'5"	**4.1 yd³**	**lb**	**29,780***	**21,430**	**23,800**	**16,930**			**14,530***	**13,580**
5.5 m	2.8 m³	kg	13 640*	9840	10 870	7740	7630*	6150	3930*	3930
18'1"	**3.6 yd³**	**lb**	**30,070***	**21,690**	**23,960**	**17,060**	**16,820***	**13,560**	**8660***	**8660**

375 ● Mass Boom ● 610 mm (2'0") Track Shoes

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2.9 m	4.4 m³	kg	20 590*	20 590*	26 750*	23 340	20 650*	16 290	16 250*	12 050	—	—	9250*	8390
9'6"	**5.75 yd³**	**lb**	**45,400***	**45,400***	**58,980***	**51,460**	**45,530***	**35,910**	**35,830***	**26,570**			**20,390***	**18,490**
3.4 m	4.4 m³	kg	21 910*	21 910*	27 100*	23 520	20 770*	16 350	16 390*	12 050	12 720*	9130	8480*	7740
11'2"	**5.75 yd³**	**lb**	**48,310***	**48,310***	**59,750***	**51,860**	**45,790***	**36,050**	**36,130***	**26,570**	**28,040***	**20,130**	**18,690***	**17,060**
4.1 m	3.6 m³	kg	23 620*	23 620*	27 600*	24 090	21 060*	16 770	16 740*	12 370	13 230*	9410	6930*	6930*
13'5"	**4.7 yd³**	**lb**	**52,080***	**52,080***	**60,850***	**53,110**	**46,430***	**36,970**	**36,910***	**27,270**	**29,170***	**20,740**	**15,280***	**15,280***

Japan/U.S. Sourced

375 ● Reach Boom ● 750 mm (2'6") Double Grousers

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
5500 mm	H1380T	kg	10 450*	10 450*	27 400*	24 900	20 850*	17 700	16 700*	13 350
18'1"	**4'6"**	**lb**	**24,100***	**24,100***	**59,200***	**53,500**	**45,000***	**38,050**	**36,050***	**28,700**
4400 mm	H1800X	kg	9650*	9650*	25 900*	24 100	21 050*	17 150	16 900*	12 950
14'5"	**5'11"**	**lb**	**22,350***	**22,350***	**59,200***	**51,750**	**45,500***	**36,850**	**36,450***	**27,850**
3400 mm	J1780X	kg	—	—	20 100*	20 100*	20 350*	16 250	16 300*	12 250
11'2"	**5'10"**	**lb**			**47,750***	**47,750***	**43,950***	**34,950**	**35,200***	**26,300**
2900 mm	J1865X	kg	—	—	17 700*	17 700*	20 150*	16 100	16 200*	12 150
9'6"	**6'1"**	**lb**			**42,650***	**42,650***	**43,550***	**34,650**	**35,000***	**26,050**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
5500 mm	H1380T	kg	13 850*	10 450	11 750	8300	10 100*	6700	5200*	5200*
18'1"	**4'6"**	**lb**	**29,900***	**22,400**	**25,400**	**17,800**	**20,650***	**14,300**	**11,450***	**11,450***
4400 mm	H1800X	kg	13 950*	10 150	11 750*	8100	—	—	8050*	6300
14'5"	**5'11"**	**lb**	**30,150***	**21,750**	**25,250***	**17,300**			**17,750***	**13,900**
3400 mm	J1780X	kg	13 350*	9500	10 900*	7550	—	—	9200*	6500
11'2"	**5'10"**	**lb**	**28,800***	**20,400**	**24,000***	**16,600**			**20,250***	**14,250**
2900 mm	J1865X	kg	13 250*	9450	—	—	—	—	9450*	6850
9'6"	**6'1"**	**lb**	**28,500***	**20,250**					**20,750***	**15,100**

*Load limited by hydraulic capacity rather than tipping.

Japan/U.S. Sourced

375 L ● GP Boom ● 750 mm (2'6") Double Grousers

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
5500 mm	H1380T	kg	13 700*	13 700*	27 700*	25 550	21 100*	18 150	16 950*	13 650
18'1"	**4'6"**	**lb**	**31,650***	**31,650***	**59,850***	**54,950**	**45,550***	**39,000**	**36,600***	**29,350**
4400 mm	H1800X	kg	13 150*	13 150*	27 900*	24 750	21 400*	17 600	17 200*	13 300
14'5"	**5'10"**	**lb**	**30,350***	**30,350***	**60,350***	**53,200**	**46,300***	**37,800**	**37,150***	**28,550**
3400 mm	J1865X	kg	—	—	26 600*	23 550	20 650*	16 600	16 550*	12 500
11'2"	**6'1**	**lb**			**57,600***	**50,600**	**44,700***	**35,700**	**35,700***	**26,800**
2900 mm	J1865X	kg	—	—	25 850*	23 500	20 650*	16 600	16 550*	12 500
9'6"	**6'1"**	**lb**			**56,750***	**50,500**	**44,600***	**35,650**	**35,750***	**26,800**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
5500 mm	H1380T	kg	14 100*	10 650	12 000*	8500	7800*	6850	4150*	4150*
18'1"	**4'6"**	**lb**	**30,500***	**22,900**	**25,950***	**18,200**	**12,750***	**12,750***	**9100***	**9100***
4400 mm	H1800X	kg	14 250*	10 400	11 950*	8300	—	—	6750*	6750
14'5"	**5'10"**	**lb**	**30,750***	**22,250**	**25,650***	**17,700**			**14,900***	**14,850**
3400 mm	J1865X	kg	13 550*	9700	—	—	—	—	7750*	6900
11'2"	**6'1"**	**lb**	**29,150***	**20,750**					**17,100***	**15,200**
2900 mm	J1865X	kg	13 450*	9700	—	—	—	—	8250*	7400
9'6"	**6'1"**	**lb**	**28,950***	**20,800**					**18,150***	**16,350**

375 L Heavy Lift ● GP Boom ● 750 mm (2'6") Double Grousers ● 11.6 t (25,600 lb) Counterweight with C/W removal

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
5500 mm	H1380T	kg	11 300	11 300	29 550	25 450	22 700	18 100	18 250	13 700
18'1"	**4'6"**	**lb**	**26,100**	**26,100**	**64,400**	**54,700**	**49,100**	**38,900**	**39,400**	**29,400**
4400 mm	H1800X	kg	10 450	10 450	27 750	24 650	23 000	17 550	18 450	13 300
14'5"	**5'10"**	**lb**	**24,250**	**24,250**	**64,500**	**52,950**	**49,700**	**37,700**	**39,900**	**28,550**
3400 mm	J1865X	kg	—	—	21 600	21 600	22 250	16 650	17 900	12 550
11'2"	**6'1**	**lb**			**51,300**	**50,600**	**48,150**	**35,800**	**38,700**	**26,950**
2900 mm	J1865X	kg	—	—	19 050	19 050	22 050	16 500	17 800	12 450
9'6"	**6'1"**	**lb**			**45,650**	**45,850**	**47,750**	**35,500**	**38,450**	**26,750**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
5500 mm	H1380T	kg	15 200	10 700	12 950	8550	11 150	6900	5700*	5650
18'1"	**4'6"**	**lb**	**32,800**	**22,950**	**28,000**	**18,300**	**22,400**	**14,750**	**12,600***	**12,450**
4400 mm	H1800X	kg	15 300	10 400	12 950	8300	—	—	8750*	6500
14'5"	**5'10"**	**lb**	**33,100**	**22,300**	**27,850**	**17,800**			**19,300***	**14,300**
3400 mm	J1865X	kg	14 750	9800	12 100	7750	—	—	10 150*	6700
11'2"	**6'1"**	**lb**	**31,800**	**20,950**	**26,650**	**17,100**			**22,300***	**14,700**
2900 mm	J1865X	kg	14 600	9700	—	—	—	—	10 500*	7050
9'6"	**6'1"**	**lb**	**31,500**	**20,800**					**23,150***	**15,550**

*Load limited by hydraulic capacity rather than tipping.

Japan/U.S. Sourced

375 L Heavy Lift ● GP Boom ● 750 mm (2'6") Double Grousers ● 11.6 t (25,600 lb) Counterweight with C/W removal

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
5500 mm	H1380T	kg	14 800	14 800	30 050	26 100	22 950	18 550	18 500	14 000
18'1"	**4'6"**	**lb**	**34,100**	**34,100**	**65,000**	**56,150**	**49,600**	**39,850**	**39,950**	**30,050**
4400 mm	H1800X	kg	14 200	14 200	30 350	25 300	23 350	18 000	18 800	13 600
14'5"	**5'10"**	**lb**	**32,700**	**32,700**	**65,600**	**54,400**	**50,450**	**38,650**	**40,600**	**29,200**
3400 mm	J1865X	kg	—	—	29 150	24 200	22 700	17 100	18 250	12 900
11'2"	**6'1**	**lb**			**63,150**	**52,050**	**49,150**	**36,800**	**39,450**	**27,700**
2900 mm	J1865X	kg	—	—	27 750	24 050	22 550	17 000	18 150	12 800
9'6"	**6'1"**	**lb**			**61,950**	**51,700**	**48,800**	**36,500**	**39,250**	**27,500**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
5500 mm	H1380T	kg	15 450	10 950	13 200	8700	8500	7050	4600*	4600*
18'1"	**4'6"**	**lb**	**33,400**	**23,450**	**28,550**	**18,650**	**14,000**	**14,000**	**10,100***	**10,100***
4400 mm	H1800X	kg	15 600	10 650	13 150	8500	—	—	7400*	6950
14'5"	**5'10"**	**lb**	**33,700**	**22,850**	**28,250**	**18,200**			**16,250***	**15,250**
3400 mm	J1865X	kg	15 000	10 050	—	—	—	—	8550*	7200
11'2"	**6'1"**	**lb**	**32,350**	**21,500**					**18,800***	**15,850**
2900 mm	J1865X	kg	14 850	9950	—	—	—	—	8950*	7650
9'6"	**6'1"**	**lb**	**31,900**	**21,350**					**19,750***	**16,800**

Belgium Sourced

375 L ● GP Boom ● 610 mm (2'0") Track Shoes

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side
3.4 m	3.6 m³	kg	—	—	26 120*	23 130	20 270*	16 280	16 180*	12 190
11'2"	**4.7 yd³**	**lb**			**57,590***	**51,000**	**44,690***	**35,890**	**35,670***	**26,870**
4.4 m	3.2 m³	kg	12 880*	12 880*	27 500*	24 430	21 080*	17 310	16 890*	13 040
14'5"	**4.1 yd³**	**lb**	**28,400***	**28,400***	**60,630***	**53,860**	**46,480***	**38,160**	**37,240***	**28,750**
5.5 m	2.8 m³	kg	13 390*	13 390*	27 090*	25 060	20 560*	17 690	16 440*	13 260
18'1"	**3.6 yd³**	**lb**	**29,520***	**29,520***	**59,730***	**55,250**	**45,330***	**39,000**	**36,250***	**29,230**

Stick	Bucket		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 45'0" Front	13.5 m 45'0" Side	At Max. Reach Front	At Max. Reach Side
3.4 m	3.6 m³	kg	13 190*	9410	—	—	—	—	7520*	6590
11'2"	**4.7 yd³**	**lb**	**29,080***	**20,740**					**16,580***	**14,530**
4.4 m	3.2 m³	kg	13 950*	10 160	11 670*	8060	—	—	6590*	6480
14'5"	**4.1 yd³**	**lb**	**30,750***	**22,400**	**25,730***	**17,770**			**14,530***	**14,280**
5.5 m	2.8 m³	kg	13 640*	10 280	11 570*	8120	7630*	6480	3930*	3930*
18'1"	**3.6 yd³**	**lb**	**30,070***	**22,660**	**25,510***	**17,900**	**16,820***	**14,280**	**8660***	**8660***

375 L ● Mass Boom ● 610 mm (2'0") Track Shoes

Stick	Bucket		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2.9 m	4.4 m³	kg	20 590*	20 590*	26 750*	24 260	20 650*	16 960	16 250*	12 580	—	—	9250*	8800
9'6"	**5.75 yd³**	**lb**	**45,400***	**45,400***	**58,980***	**53,490**	**45,530***	**37,390**	**35,830***	**27,730**			**20,390***	**19,400**
3.4 m	4.4 m³	kg	21 910*	21 900*	27 100*	24 440	20 770*	17 030	16 390*	12 580	12 720*	9570	8480*	8140
11'2"	**5.75 yd³**	**lb**	**48,310***	**48,310***	**59,750***	**53,890**	**45,790***	**37,550**	**36,130***	**27,730**	**28,040***	**21,100**	**18,690***	**17,940**
4.1 m	3.6 m³	kg	23 620*	23 620*	27 600*	25 010	21 060*	17 440	16 740*	12 900	13 490*	9850	6930*	6930*
13'5"	**4.7 yd³**	**lb**	**52,080***	**52,080***	**60,850***	**55,140**	**46,430***	**38,450**	**36,910***	**28,440**	**29,740***	**21,710**	**15,280***	**15,280***

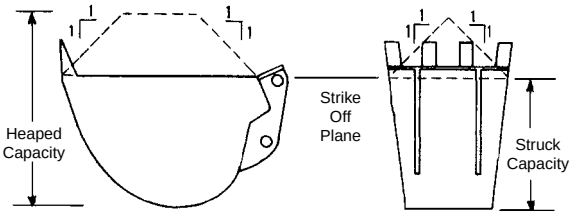
*Load limited by hydraulic capacity rather than tipping.

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.



Excavator Bucket Rating

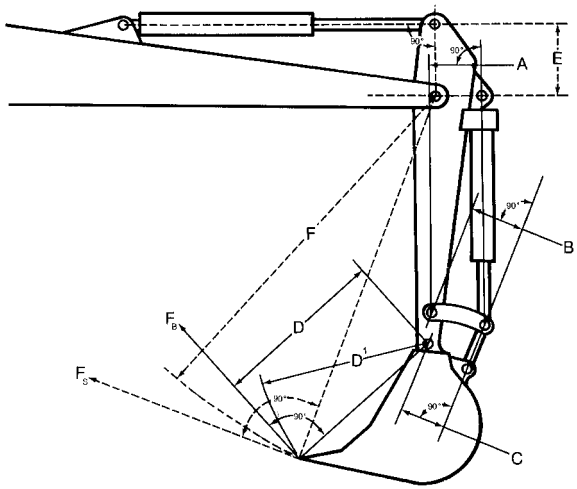
Heaped Capacity

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 = Radial tooth force due to bucket cylinder

$$= \frac{\text{Bucket cylinder force}}{\text{Arm D length}} \left(\frac{\text{Arm A} \times \text{Arm C}}{\text{Arm B}} \right)$$

Cylinder force = (Pressure) × (End area of cylinder head)

Arm D = 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 = Radial tooth force due to stick cylinder

$$= \frac{(\text{Stick cylinder force}) \times (\text{Arm E length})}{(\text{Arm F length})}$$

Arm F = Bucket tip radius + 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

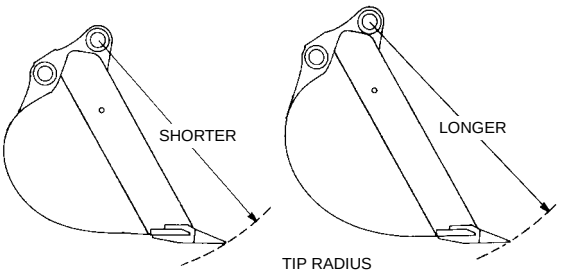
The combination of the excavator's stick crowd force and bucket curling force give this machine configuration more effective bucket penetration force per mm (inch) of bucket cutting edge than is available with other machine types such as wheel and track loaders.

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	—	500	**1'8"**	12.6	**2840**	—	**—**	8.8	**1980**	—	**—**	—	**—**
307B	Japan	1070	**3'6"**	44	**9890**	—	**—**	35	**7870**	31	**6970**	—	**—**
307B SB	Japan	1070	**3'6"**	44	**9890**	—	**—**	35	**7870**	31	**6970**	—	**—**
307	France	1070	**3'6"**	49	**11,020**	—	**—**	36	**7940**	32	**7050**	—	**—**
311B	Japan	1220	**4'0"**	80	**17,980**	62	**13,930**	58	**13,030**	50	**11,240**	—	**—**
312B	Japan	1220	**4'0"**	84	**18,880**	65	**14,610**	63	**14,160**	57	**12,810**	—	**—**
312B	France	1220	**4'0"**	94	**21,190**	73	**16,310**	64	**14,460**	58	**12,920**	—	**—**
312B L	France	1220	**4'0"**	84	**18,880**	71	**15,970**	63	**14,160**	57	**12,810**	—	**—**
315B	Japan	1340	**4'5"**	99	**22,250**	95	**21,350**	84	**18,880**	76	**17,080**	68	**15,280**
315B L	France	1310	**4'4"**		*		*		*		*		*
318B L	France	1410	**4'7.5"**		*		*		*		*		*
318B LN	France	1410	**4'7.5"**		*		*		*		*		*

*Information unavailable at time of printing.

318B L

Boom		1-Piece Boom			
Stick		**Short**	**Medium**	**Long**	**Extra Long**
Bucket Tip Radius	**mm**	1563	1563	1563	1563
	ft	**5'1.5"**	**5'1.5"**	**5'1.5"**	**5'1.5"**
Bucket Curling Forces	**kN**	126	125	106	107
	lb	**28,310**	**28,090**	**23,830**	**24,050**
Stick Crowd Forces	**kN**	117	101	87	78
	lb	**26,290**	**22,700**	**19,560**	**17,530**

M312

Boom		**1-Piece/VA Boom**				
Stick		**1600 mm 5'3"**	**2000 mm 6'6"**	**2300 mm 7'5"**	**2600 mm 8'5"**	**3000 mm 9'9"**
Bucket Tip Radius	**mm** **ft**	1240/1518 **4'1"/5'0"**	1100 **3'7"**	1000 **3'3"**	1000 **3'3"**	900 **2'11"**
Bucket Curling Forces	**kN** **lb**	88 **22,440**	80 **20,400**	80 **20,400**	80 **20,400**	80 **20,400**
Stick Crowd Forces	**kN** **lb**	72 **18,360**	57 **14,535**	52 **13,260**	48 **12,240**	44 **11,220**

M315

Boom		**1-Piece/VA Boom**			
Stick		**1700 mm 5'7"**	**2100 mm 6'11"**	**2400 mm 7'10"**	**2600 mm 8'6"**
Bucket Tip Radius	**mm** **ft**	1220/1290 **4'0"/4'3"**	1220 **4'0"**	1220 **4'0"**	1220 **4'0"**
Bucket Curling Forces	**kN** **lb**	108 **24,300**	99 **22,200**	99 **22,200**	99 **22,200**
Stick Crowd Forces	**kN** **lb**	84 **18,900**	67 **15,000**	67 **15,000**	58 **13,000**

M318

Boom		**1-Piece/VA Boom**			
Stick		**1800 mm 5'11"**	**2400 mm 7'10"**	**2800 mm 9'2"**	**4000 mm 13'1"**
Bucket Tip Radius	**mm** **ft**	1340/1420 **4'5"/4'8"**	1340 **4'5"**	1340 **4'5"**	1340 **4'5"**
Bucket Curling Forces	**kN** **lb**	122 **27,400**	114 **25,600**	114 **25,600**	107 **24,000**
Stick Crowd Forces	**kN** **lb**	108 **24,300**	83 **18,600**	75 **16,800**	57 **12,800**

M320

Boom		**1-Piece/VA Boom**			
Stick		**1900 mm 6'3"**	**2500 mm 8'2"**	**2900 mm 9'6"**	**4200 mm 13'9"**
Bucket Tip Radius	**mm** **ft**	1423 **4'8"**	1423 **4'8"**	1423 **4'8"**	1423 **4'8"**
Bucket Curling Forces	**kN** **lb**	137 **30,800**	127 **28,500**	127 **28,500**	127 **28,500**
Stick Crowd Forces	**kN** **lb**	130 **29,200**	99 **22,200**	90 **20,200**	69 **15,500**

Japan Sourced
320B

Boom		Reach Boom			
Stick		**R1.9C**	**R2.5B**	**R2.9B**	**R3.9B**
Bucket Tip Radius	**mm**	1487	1409	1480	1480
	ft	**4'10.5"**	**4'7"**	**4'10.2"**	**4'10.2"**
Bucket Curling Forces	**kN**	159	132	125	125
	lb	**35,750**	**29,700**	**28,100**	**28,100**
Stick Crowd Forces	**kN**	144	113	98	83
	lb	**32,400**	**25,400**	**22,050**	**18,650**

Boom		Mass Boom	
Stick		**M1.9C**	**M2.4C**
Bucket Tip Radius	**mm**	1487	1487
	ft	**4'10.5"**	**4'10.5"**
Bucket Curling Forces	**kN**	159	160
	lb	**35,750**	**36,000**
Stick Crowd Forces	**kN**	144	126
	lb	**32,400**	**28,300**

Belgium Sourced
320B

Boom		Reach Boom		
Stick		**R1.9C**	**R2.5B**	**R2.9B**
Bucket Tip Radius	**mm**	1550	1410	1410
	ft	**5'1"**	**4'7.5"**	**4'7.5"**
Bucket Curling Forces	**kN**	153	132	132
	lb	**34,400**	**29,700**	**29,700**
Stick Crowd Forces	**kN**	144	113	99
	lb	**32,400**	**25,400**	**22,200**

Boom		Mass Boom	
Stick		**M1.9C**	**M2.4C**
Bucket Tip Radius	**mm**	1550	1550
	ft	**5'1"**	**5'1"**
Bucket Curling Forces	**kN**	153	154
	lb	**34,400**	**34,600**
Stick Crowd Forces	**kN**	144	125
	lb	**32,400**	**28,100**

Boom		VA Boom*	
Stick		**M1.9C**	**M2.4C**
Bucket Tip Radius	**mm**	1550	1550
	ft	**5'1"**	**5'1"**
Bucket Curling Forces	**kN**	153	132
	lb	**34,400**	**29,700**
Stick Crowd Forces	**kN**	144	113
	lb	**32,400**	**25,400**

*Preliminary information.

Japan/U.S. Sourced
322B

Boom		**Reach Boom**		
Stick		**R2.5S**	**R2.95S**	**R3.6B**
Bucket Tip Radius	**mm** **ft**	1550 **5'1"**	1550 **5'1"**	1409 **4'7.5"**
Bucket Curling Forces	**kN** **lb**	151 **33,950**	151 **33,950**	131 **29,500**
Stick Crowd Forces	**kN** **lb**	136 **30,640**	116 **26,230**	104 **23,400**
Boom		**Mass Boom**		
Stick		**M2.0D**	**M2.5D**	
Bucket Tip Radius	**mm** **ft**	1660 **5'5.4"**	1660 **5'5.4"**	
Bucket Curling Forces	**kN** **lb**	189 **42,550**	189 **42,550**	
Stick Crowd Forces	**kN** **lb**	151 **33,950**	133 **29,980**	

Belgium Sourced
322B

Boom		**Reach Boom**	
Stick		**R2.5S**	**R2.95S**
Bucket Tip Radius	**mm** **ft**	1550 **5'1"**	1550 **5'1"**
Bucket Curling Forces	**kN** **lb**	149 **33,500**	149 **33,500**
Stick Crowd Forces	**kN** **lb**	141 **31,700**	121 **27,200**
Boom		**Mass Boom**	
Stick		**M2.0D**	**M2.5D**
Bucket Tip Radius	**mm** **ft**	1670 **5'5.7"**	1670 **5'5.7"**
Bucket Curling Forces	**kN** **lb**	187 **42,000**	187 **42,000**
Stick Crowd Forces	**kN** **lb**	155 **34,800**	136 **30,600**
Boom		**VA Boom***	
Stick		**M2.0D**	**M2.5D**
Bucket Tip Radius	**mm** **ft**	1670 **5'5.7"**	1670 **5'5.7"**
Bucket Curling Forces	**kN** **lb**	187 **42,000**	187 **42,000**
Stick Crowd Forces	**kN** **lb**	155 **34,800**	136 **30,600**

*Preliminary information.

Japan/U.S. Sourced
325B

Boom		Reach Boom		
Stick		**R2.0D**	**R2.7C**	**R3.2C**
Bucket Tip Radius	**mm** **ft**	1660 **5'5.4"**	1487 **4'10.5"**	1487 **5'1"**
Bucket Curling Forces	**kN** **lb**	189 **42,470**	160 **35,960**	160 **35,960**
Stick Crowd Forces	**kN** **lb**	161 **36,180**	136 **30,560**	118 **26,520**
Boom		**Mass Boom**		
Stick		**M2.0D**		**M2.5D**
Bucket Tip Radius	**mm** **ft**	1660 **5'5.4"**		1660 **5'5.4"**
Bucket Curling Forces	**kN** **lb**	198 **44,490**		189 **42,470**
Stick Crowd Forces	**kN** **lb**	162 **36,400**		140 **31,460**

Belgium Sourced
325B

Boom		Reach Boom		
Stick		**R2.0C**	**R2.65C**	**R3.2C**
Bucket Tip Radius	**mm** **ft**	1670 **5'5.7"**	1550 **5'1"**	1550 **5'1"**
Bucket Curling Forces	**kN** **lb**	188 **42,300**	152 **34,200**	151 **33,900**
Stick Crowd Forces	**kN** **lb**	166 **37,300**	137 **30,800**	120 **27,000**
Boom		**Mass Boom**		
Stick		**M2.0D**		**M2.5D**
Bucket Tip Radius	**mm** **ft**	1670 **5'5.7"**		1670 **5'5.7"**
Bucket Curling Forces	**kN** **lb**	188 **42,300**		188 **42,300**
Stick Crowd Forces	**kN** **lb**	165 **37,100**		144 **32,400**
Boom		**VA Boom***		
Stick		**M2.0D**		**M2.5D**
Bucket Tip Radius	**mm** **ft**	1670 **5'5.7"**		1670 **5'5.7"**
Bucket Curling Forces	**kN** **lb**	188 **42,300**		188 **42,300**
Stick Crowd Forces	**kN** **lb**	165 **37,100**		144 **32,400**

*Preliminary information.

Japan/U.S. Sourced 330B

Boom		**Reach Boom**			
Stick		**R2.2E**	**R2.8D**	**R3.3D**	**R3.9D**
Bucket Tip Radius	**mm** **ft**	1845 **6'0.1"**	1600 **5'3"**	1600 **5'3"**	1600 **5'3"**
Bucket Curling Forces	**kN** **lb**	227 **51,000**	189 **42,470**	189 **42,470**	190 **42,670**
Stick Crowd Forces	**kN** **lb**	209 **46,970**	175 **39,330**	151 **33,930**	134 **30,110**
Boom		**Mass Boom**			
Stick		**M2.2E**		**M2.6E**	
Bucket Tip Radius	**mm** **ft**	1845 **6'0.1"**		1845 **6'0.1"**	
Bucket Curling Forces	**kN** **lb**	227 **51,000**		227 **51,000**	
Stick Crowd Forces	**kN** **lb**	239 **53,700**		173 **38,880**	

Belgium Sourced 330B

Boom		**Reach Boom**			
Stick		**R2.2E**	**R2.8D**	**R3.3D**	**R3.9D**
Bucket Tip Radius	**mm** **ft**	1730 **5'8.1"**	1660 **5'5.3"**	1660 **5'5.3"**	1660 **5'5.3"**
Bucket Curling Forces	**kN** **lb**	232 **52,200**	187 **42,000**	187 **42,000**	187 **42,000**
Stick Crowd Forces	**kN** **lb**	216 **48,600**	179 **40,200**	155 **34,800**	138 **42,300**
Boom		**Mass Boom**			
Stick		**M2.15E**		**M2.6E**	
Bucket Tip Radius	**mm** **ft**	1780 **5'8.1"**		1780 **5'8.1"**	
Bucket Curling Forces	**kN** **lb**	232 **52,200**		232 **52,200**	
Stick Crowd Forces	**kN** **lb**	216 **48,600**		179 **40,200**	

345B

Boom		Reach Boom		
Stick		**R2.9F**	**R3.35T**	**R3.9F**
Bucket Tip Radius	**mm** **ft**	1870 **6'1.6"**	1820 **5'11.7"**	1925 **6'3.8"**
Bucket Curling Forces	**kN** **lb**	231 **51,900**	229 **51,460**	225 **50,560**
Stick Crowd Forces	**kN** **lb**	209 **46,970**	194 **43,600**	175 **39,330**
Boom		**Mass Boom**		
Stick		**M2.5G**	**M3.0V**	
Bucket Tip Radius	**mm** **ft**	1958 **6'5.1"**	1860 **6'1.2"**	
Bucket Curling Forces	**kN** **lb**	252 **56,630**	260 **58,430**	
Stick Crowd Forces	**kN** **lb**	230 **51,690**	208 **46,740**	

350

Boom		Reach Boom		
Stick		**R3.1F**	**R3.6F**	**R4.8F**
Bucket Tip Radius	**mm** **ft**	1870 **6'1.6"**	1925 **6'3.8"**	1925 **6'3.8"**
Bucket Curling Forces	**kN** **lb**	219 **49,300**	213 **47,900**	213 **47,900**
Stick Crowd Forces	**kN** **lb**	195 **43,900**	169 **38,000**	142 **32,000**
Boom		**Mass Boom**		
Stick		**M2.4G**	**M3.0G**	**M3.7F**
Bucket Tip Radius	**mm** **ft**	1958 **6'5.1"**	1958 **6'5.1"**	1870 **6'1.6"**
Bucket Curling Forces	**kN** **lb**	271 **61,000**	259 **58,300**	220 **49,500**
Stick Crowd Forces	**kN** **lb**	225 **50,600**	193 **43,400**	164 **37,000**

Japan/U.S. Sourced
375

Boom		**Reach Boom***			
Stick		**R2.9J**	**R3.4J**	**R4.4H**	**R5.5H**
Bucket Tip Radius	**mm** **ft**	2235 **7'4"**	2235 **7'4"**	2100 **6'10.7"**	2210 **7'3"**
Bucket Curling Forces	**kN** **lb**	421 **94,500**	422 **94,800**	335 **75,400**	317 **71,400**
Stick Crowd Forces	**kN** **lb**	325 **73,100**	301 **67,600**	259 **58,200**	212 **47,600**
Boom		**General Purpose Boom**			
Stick		**R2.9J***	**R3.4J**	**R4.4H**	**R5.5H**
Bucket Tip Radius	**mm** **ft**	2235 **7'4"**	2235 **7'4"**	2100 **6'10.7"**	2210 **7'3"**
Bucket Curling Forces	**kN** **lb**	421 **94,500**	422 **94,800**	335 **75,400**	317 **71,400**
Stick Crowd Forces	**kN** **lb**	325 **73,100**	301 **67,600**	259 **58,200**	212 **47,600**
Boom		**Mass Boom**			
Stick		**M2.9J**	**M3.4J**		**M4.1J**
Bucket Tip Radius	**mm** **ft**	2235 **7'4"**	2235 **7'4"**		2235 **7'4"**
Bucket Curling Forces	**kN** **lb**	435 **97,600**	422 **94,800**		423 **95,000**
Stick Crowd Forces	**kN** **lb**	326 **73,100**	301 **67,600**		266 **59,700**

*Not available in all sales areas.

Belgium Sourced
375

Boom		GP Boom			Mass Boom		
Stick		**R3.4J**	**R4.4H**	**R5.5H**	**M2.9J**	**M3.4J**	**M4.1J**
Bucket Tip Radius	**mm**	2236	2100	2100	2236	2236	2236
	ft	**7'4"**	**6'10.7"**	**6'10.7"**	**7'4"**	**7'4"**	**7'4"**
Bucket Curling Forces	**kN**	371	309	297	383	384	372
	lb	**83,500**	**69,500**	**66,800**	**86,100**	**86,300**	**83,600**
Stick Crowd Forces	**kN**	291	251	209	313	291	258
	lb	**65,400**	**56,400**	**47,100**	**70,400**	**65,500**	**58,100**

U.S. Sourced
5130B

Boom		**8 m 26'3"**		**11 m 36'1"**	
Stick*		**3.8 m 12'6"**	**5.2 m 17'1"**	**3.8 m 12'6"**	
Bucket Tip Radius	**mm**	3038	3038	3038	
	ft	**10'0"**	**10'0"**	**10'0"**	
Bucket Curling Force	**kN**	672	666	672	
	lb	**151,000**	**150,000**	**151,000**	
Rated Arm Force	**kN**	624	542	624	
	lb	**140,000**	**122,000**	**140,000**	

*11 m **(36'1")** and 5.2 m **(17'1")** or 6.6 m **(21'8")** sticks use smaller bucket linkage.

5230

Boom		**9.5 m 31'2"**
Stick		**4.5 m 14'9"**
Bucket Tip Radius	**mm**	3254
	ft	**10'8"**
Bucket Curling Force	**kN**	873
	lb	**196,200**
Rated Arm Force	**kN**	874
	lb	**196,400**

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	Digging	0	230	**9.1"**	440	**17.3"**	18.3	**0.024**	25	**55**
		3	230	**9.1"**	500	**19.7"**	18.3	**0.024**	29	**64**
		0	300	**11.8"**	440	**17.3"**	22.2	**0.029**	27	**60**
		3	300	**11.8"**	500	**19.7"**	22.2	**0.029**	31	**68**
		0	400	**15.7"**	440	**17.3"**	32.9	**0.043**	32	**70**
		3	400	**15.7"**	500	**19.7"**	32.9	**0.043**	35	**77**
		0	500	**19.7"**	440	**17.3"**	45.1	**0.059**	36	**79**
		4	500	**19.7"**	500	**19.7"**	45.1	**0.059**	41	**90**
		0	600	**23.6"**	440	**17.3"**	55.8	**0.073**	41	**90**
		4	600	**23.6"**	500	**19.7"**	55.8	**0.073**	45	**99**
	Ditch Cleaning	0	800	**31.5"**	353	**13.9"**	44.3	**0.058**	40	**88**
		0	1000	**39.4"**	353	**13.9"**	55.8	**0.073**	42	**93**
307B, 307B SB, 307	General Purpose		500	**20.0"**	1070	**42.0"**	180	**0.24**	180	**397**
			600	**24.0"**	1070	**42.0"**	230	**0.30**	195	**430**
			610	***24.0"**	1070	**42.0"**	230	**0.30**	200	**440**
			700	**28.0"**	1070	**42.0"**	240	**0.31**	215	**474**
			760	***30.0"**	1070	**42.0"**	310	**0.40**	230	**510**
			800	**31.0"**	1070	**42.0"**	280	**0.37**	225	**496**
			915	***36.0"**	1070	**42.0"**	370	**0.45**	250	**550**
	Excavation		300	**12.0"**	1070	**42.0"**	90	**0.12**	122	**270**
			450	**18.0"**	1070	**42.0"**	160	**0.21**	168	**370**
			600	**24.0"**	1070	**42.0"**	230	**0.30**	191	**420**
			750	**30.0"**	1070	**42.0"**	300	**0.39**	208	**460**
			800	**31.0"**	1070	**42.0"**	325	**0.42**	215	**470**
			850	**33.0"**	1070	**42.0"**	350	**0.46**	222	**490**
			1000	**39.0"**	1070	**42.0"**	800	**1.05**	635	**1400**
	Extreme Service Excavation		300	**12.0"**	1070	**42.0"**	90	**0.12**	133	**290**
			450	**18.0"**	1070	**42.0"**	160	**0.21**	174	**380**
			600	**24.0"**	1070	**42.0"**	230	**0.30**	197	**430**
			750	**30.0"**	1070	**42.0"**	300	**0.39**	214	**470**
			800	**31.0"**	1070	**42.0"**	325	**0.42**	228	**500**
311B	General Purpose		625	**24.0"**	1220	**48.0"**	350	**0.46**	336	**740**
			775	**30.0"**	1220	**48.0"**	460	**0.60**	372	**820**
			925	**36.0"**	1220	**48.0"**	570	**0.75**	415	**914**
			1075	**42.0"**	1220	**48.0"**	670	**0.88**	459	**1011**
			1225	**48.0"**	1220	**48.0"**	780	**1.02**	495	**1091**

*Not available for 307.

Model	Bucket Type	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
		mm	in	mm	in	L	yd³	kg	lb
312B	General Purpose	450	**18.0"**	1220	**48.0"**	235	**0.31**	250	**550**
		600	**24.0"**	1220	**48.0"**	330	**0.43**	270	**594**
		625	**24.0"**	1220	**48.0"**	350	**0.46**	336	**740**
		700	**28.0"**	1220	**48.0"**	400	**0.52**	295	**649**
		775	**30.0"**	1220	**48.0"**	460	**0.60**	372	**820**
		900	**35.0"**	1220	**48.0"**	540	**0.71**	340	**748**
		925	**36.0"**	1220	**48.0"**	570	**0.75**	415	**914**
		1000	**39.0"**	1220	**48.0"**	610	**0.79**	358	**787**
		1075	**42.0"**	1220	**48.0"**	670	**0.88**	459	**1011**
		1100	**43.0"**	1220	**48.0"**	680	**0.89**	385	**847**
		1200	**47.0"**	1220	**48.0"**	750	**0.98**	403	**886**
		1225	**48.0"**	1220	**48.0"**	780	**1.02**	495	**1091**
	Heavy Duty	450	**17.7"**	1220	**48.0"**	235	**0.31**	270	**594**
		600	**23.6"**	1220	**48.0"**	330	**0.43**	300	**660**
		700	**27.6"**	1220	**48.0"**	400	**0.52**	322	**708**
		750	**29.5"**	1220	**48.0"**	400	**0.52**	338	**743**
		900	**35.4"**	1220	**48.0"**	540	**0.71**	374	**822**
		1000	**39.4"**	1220	**48.0"**	610	**0.79**	400	**880**
	Excavation	450	**18.0"**	1220	**48.0"**	235	**0.31**	236	**520**
		600	**24.0"**	1220	**48.0"**	330	**0.43**	263	**580**
		700	**28.0"**	1220	**48.0"**	400	**0.52**	286	**630**
		750	**30.0"**	1220	**48.0"**	440	**0.58**	321	**710**
		900	**35.0"**	1220	**48.0"**	540	**0.70**	329	**725**
		1000	**39.0"**	1220	**48.0"**	550	**0.72**	332	**730**
		1000	**39.0"**	1220	**48.0"**	610	**0.80**	348	**770**
		1100	**43.0"**	1220	**48.0"**	680	**0.89**	371	**820**
		1200	**47.0"**	1220	**48.0"**	750	**0.98**	390	**860**
	Extreme Service Excavation	450	**18.0"**	1220	**48.0"**	235	**0.31**	236	**520**
		600	**24.0"**	1220	**48.0"**	330	**0.43**	263	**580**
		700	**28.0"**	1220	**48.0"**	400	**0.52**	287	**630**
		750	**30.0"**	1220	**48.0"**	440	**0.58**	330	**730**
		900	**35.0"**	1220	**48.0"**	540	**0.70**	329	**725**
		1000	**39.0"**	1220	**48.0"**	610	**0.80**	348	**770**
		1100	**43.0"**	1220	**48.0"**	680	**0.89**	400	**880**
	Ditch Cleaning	1500	**59.0"**	**N/S**		400	**0.52**	340	**750**
		1600	**63.0"**	**N/S**		330	**0.43**	350	**770**
		1800	**71.0"**	**N/S**		370	**0.48**	380	**840**
		2000	**79.0"**	**N/S**		330	**0.43**	350	**770**
	Utility	1200	**47.0"**	**N/S**		395	**0.52**	400	**880**
		1400	**55.0"**	**N/S**		465	**0.61**	440	**970**
		1600	**63.0"**	**N/S**		530	**0.69**	480	**1060**
		1800	**71.0"**	**N/S**		605	**0.79**	530	**1170**
	Utility Light	1200	**47.0"**	**N/S**		395	**0.52**	300	**660**
		1400	**55.0"**	**N/S**		465	**0.61**	330	**730**
		1600	**63.0"**	**N/S**		530	**0.69**	360	**790**
		1800	**71.0"**	**N/S**		605	**0.79**	400	**880**

N/S = Not Significant for Utility, Utility Light and Ditch Cleaning Bucket.

Model	Bucket Type	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
		mm	in	mm	in	L	yd^3	kg	lb
315B/315B L	General Purpose	610	**24.0"**	1340	**53.0"**	380	**0.50**	419	**924**
		760	**30.0"**	1340	**53.0"**	500	**0.65**	471	**1038**
		914	**36.0"**	1340	**53.0"**	610	**0.80**	517	**1140**
		1067	**42.0"**	1340	**53.0"**	690	**0.90**	566	**1248**
		1219	**48.0"**	1340	**53.0"**	840	**1.10**	609	**1343**
	Excavation	600	**24.0"**	1310	**52.0"**	350	**0.46**	365	**800**
		600	**24.0"**	1310	**52.0"**	350	**0.46**	390	**860**
		750	**30.0"**	1310	**52.0"**	470	**0.61**	417	**920**
		750	**30.0"**	1310	**52.0"**	470	**0.61**	435	**960**
		850	**33.0"**	1310	**52.0"**	560	**0.73**	455	**1000**
		850	**33.0"**	1310	**52.0"**	560	**0.73**	495	**1090**
		1000	**39.0"**	1310	**52.0"**	680	**0.89**	502	**1100**
		1000	**39.0"**	1310	**52.0"**	680	**0.89**	544	**1200**
		1100	**43.0"**	1310	**52.0"**	770	**1.01**	540	**1190**
		1100	**43.0"**	1310	**52.0"**	770	**1.01**	542	**1195**
		1200	**47.0"**	1310	**52.0"**	860	**1.12**	570	**1260**
		1200	**47.0"**	1310	**52.0"**	860	**1.12**	590	**1300**
		1300	**51.0"**	1310	**52.0"**	930	**1.22**	609	**1340**
		1300	**51.0"**	1310	**52.0"**	930	**1.22**	620	**1370**
		1300	**51.0"**	1310	**52.0"**	1000	**1.31**	647	**1430**
		1300	**51.0"**	1310	**52.0"**	1000	**1.31**	695	**1530**
	Extreme Service Excavation	600	**24.0"**	1310	**52.0"**	350	**0.46**	373	**820**
		600	**24.0"**	1310	**52.0"**	350	**0.46**	400	**880**
		750	**30.0"**	1310	**52.0"**	470	**0.61**	425	**940**
		750	**30.0"**	1310	**52.0"**	470	**0.61**	445	**980**
		850	**33.0"**	1310	**52.0"**	560	**0.73**	464	**1020**
		850	**33.0"**	1310	**52.0"**	560	**0.73**	495	**1090**
		1000	**39.0"**	1310	**52.0"**	680	**0.89**	510	**1120**
		1000	**39.0"**	1310	**52.0"**	680	**0.89**	555	**1220**
		1100	**43.0"**	1310	**52.0"**	770	**1.01**	548	**1210**
		1200	**47.0"**	1310	**52.0"**	860	**1.12**	579	**1280**
		1200	**47.0"**	1310	**52.0"**	860	**1.12**	630	**1390**
	Ditch Cleaning	1600	**63.0"**	1310	**52.0"**	330	**0.43**	360	**790**
		1800	**71.0"**	**N/S**		370	**0.48**	380	**840**
		1800	**71.0"**	1310	**52.0"**	370	**0.48**	390	**860**
		2000	**79.0"**	**N/S**		410	**0.54**	410	**910**
		2000	**79.0"**	1310	**52.0"**	410	**0.54**	450	**990**
	Utility	1200	**47.0"**	**N/S**		395	**0.52**	410	**900**
		1400	**55.0"**	**N/S**		465	**0.61**	450	**990**
		1600	**63.0"**	**N/S**		535	**0.70**	490	**1080**
		1800	**71.0"**	**N/S**		605	**0.79**	540	**1190**
	Trapezoidal	500	**20.0"**	**Slope:1/1.0**		380	**0.50**	345	**760**
		500	**20.0"**	**Slope:1/1.5**		510	**0.67**	405	**890**
		2400	**94.5"**	1310	**52.0"**	380	**0.50**	360	**790**
		3350	**131.0"**	1310	**52.0"**	510	**0.67**	420	**930**
	Weed Cutting	4000	**157.0"**	—	**—**	—	**—**	—	**—**

N/S = Not Significant for Utility, Utility Light and Ditch Cleaning Bucket.

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
318B L, 318B LN	Heavy Duty	B	625	**24.0"**	1563	**61.5"**	450	**0.59**	600	**1320**
		B	775	**30.0"**	1563	**61.5"**	560	**0.73**	685	**1510**
		B	932	**36.0"**	1563	**61.5"**	800	**1.05**	785	**1730**
		B	1082	**42.0"**	1563	**61.5"**	1000	**1.31**	850	**1870**
		B	1230	**48.0"**	1551	**61.0"**	1200	**1.57**	955	**2100**
	Excavation and Excavation Quick Coupling		600	**24.0"**	1410	**55.5"**	410	**0.54**	473	**1043**
			750	**30.0"**	1410	**55.5"**	550	**0.72**	525	**1158**
			1000	**39.0"**	1410	**55.5"**	800	**1.05**	654	**1442**
			1250	**49.0"**	1410	**55.5"**	1050	**1.37**	753	**1660**
			1400	**55.0"**	1410	**55.5"**	1200	**1.57**	833	**1837**
			1500	**59.1"**	1410	**55.5"**	1350	**1.77**	872	**1923**
	Extreme Excavation and Extreme Excavation Quick Coupling		600	**24.0"**	1410	**55.5"**	410	**0.54**	519	**1144**
			750	**30.0"**	1410	**55.5"**	550	**0.72**	562	**1239**
			1000	**39.0"**	1410	**55.5"**	800	**1.05**	702	**1548**
			1250	**49.0"**	1410	**55.5"**	1050	**1.37**	819	**1806**
			1400	**55.0"**	1410	**55.5"**	1200	**1.57**	878	**1936**
	Utility and Utility Light		1400	**55.0"**	1410	**55.5"**	605	**0.79**	620	**1367**
			1600	**63.0"**	1410	**55.5"**	700	**0.92**	680	**1499**
			1800	**71.0"**	1410	**55.5"**	790	**1.03**	740	**1632**
			2000	**79.0"**	1410	**55.5"**	880	**1.15**	800	**1764**
	Ditch Cleaning		1800	**71.0"**	1410	**55.5"**	490	**0.64**	545	**1202**
			2000	**79.0"**	1410	**55.5"**	550	**0.72**	585	**1290**
	Rock and Rock Quick Coupling		600	**24.0"**	1410	**55.5"**	410	**0.54**	547	**1206**
			750	**30.0"**	1410	**55.5"**	550	**0.72**	645	**1422**
			1000	**39.0"**	1410	**55.5"**	810	**1.06**	751	**1656**
			1250	**49.0"**	1410	**55.5"**	1050	**1.37**	875	**1929**

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
M312/ M315	Excavation		450	**17.7"**	1240	**48.8"**	240	**0.31**	271	**600**
			600	**23.6"**	1240	**48.8"**	330	**0.43**	304	**800**
			700	**27.6"**	1240	**48.8"**	400	**0.52**	340	**750**
			750	**29.5"**	1318	**51.9"**	470	**0.61**	430	**950**
			850	**33.5"**	1318	**51.9"**	560	**0.73**	473	**1040**
			900	**35.4"**	1240	**48.8"**	540	**0.71**	366	**810**
			1000	**39.4"**	1318	**51.9"**	610	**0.80**	410	**900**
			1100	**43.3"**	1240	**48.8"**	680	**0.89**	438	**970**
			1200	**47.2"**	1318	**51.9"**	860	**1.12**	458	**1010**
	Extreme Service Excavation		1100	**43.3"**	1240	**48.8"**	680	**0.89**	472	**1040**
			1200	**47.2"**	1240	**48.8"**	750	**0.98**	493	**1090**
M318	Excavation		600	**23.6"**	1419	**55.9"**	400	**0.52**	540	**1190**
			750	**29.5"**	1419	**55.9"**	550	**0.72**	560	**1235**
			1000	**39.4"**	1340	**52.7"**	700	**0.92**	600	**1320**
			1000	**39.4"**	1419	**55.9"**	800	**1.05**	650	**1430**
			1100	**43.3"**	1340	**52.7"**	800	**1.05**	640	**1410**
			1200	**47.2"**	1340	**52.7"**	900	**1.18**	660	**1455**
			1250	**49.2"**	1419	**55.9"**	1050	**1.37**	740	**1630**
	Extreme Service Excavation		1200	**47.2"**	1340	**52.7"**	900	**1.18**	710	**1570**
	Excavation	B	600	**24.0"**	1410	**55.5"**	410	**0.54**	524	**1155**
		B	750	**30.0"**	1410	**55.5"**	550	**0.72**	550	**1210**
		B	1000	**39.0"**	1410	**55.5"**	800	**1.05**	635	**1400**
		B	1250	**49.0"**	1410	**55.5"**	1050	**1.37**	716	**1580**
		B	1400	**55.0"**	1410	**55.5"**	1200	**1.57**	752	**1660**
		B	1500	**59.0"**	1410	**55.5"**	1350	**1.77**	770	**1700**
	Extreme Service Excavation	B	600	**24.0"**	1410	**55.5"**	410	**0.54**	552	**1220**
		B	750	**30.0"**	1410	**55.5"**	550	**0.72**	606	**1340**
		B	1000	**39.0"**	1410	**55.5"**	800	**1.05**	697	**1540**
		B	1250	**49.0"**	1410	**55.5"**	1050	**1.37**	772	**1700**
		B	1400	**55.0"**	1410	**55.5"**	1200	**1.57**	818	**1800**
	Rock	B	600	**24.0"**	1410	**55.5"**	410	**0.54**	565	**1245**
		B	750	**30.0"**	1410	**55.5"**	550	**0.72**	625	**1380**
		B	1000	**39.0"**	1410	**55.5"**	800	**1.05**	775	**1710**
		B	1250	**49.0"**	1410	**55.5"**	1050	**1.37**	898	**1980**
	Ditch Cleaning	B	1800	**71.0"**	1250	**49.2"**	480	**0.63**	477	**1050**
		B	2000	**79.0"**	1400	**55.1"**	580	**0.76**	680	**1500**
		B	2200	**87.0"**	1250	**49.2"**	620	**0.81**	563	**1240**
	Utility	B	1400	**55.0"**	**N/S**		605	**0.79**	620	**1370**
		B	1600	**63.0"**	**N/S**		700	**0.92**	680	**1500**
		B	1800	**71.0"**	**N/S**		790	**1.03**	740	**1630**
		B	2000	**79.0"**	**N/S**		880	**1.15**	800	**1760**
	Utility Light	B	1400	**55.0"**	**N/S**		605	**0.79**	470	**1040**
		B	1600	**63.0"**	**N/S**		700	**0.92**	510	**1125**
		B	1800	**71.0"**	**N/S**		790	**1.03**	550	**1210**
		B	2000	**79.0"**	**N/S**		880	**1.15**	600	**1320**

N/S = Not Significant for Utility, Utility Light and Ditch Cleaning Bucket.

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
M320	General Purpose		600	**23.6"**	1423	**56.0"**	410	**0.54**	540	**1190**
			750	**29.5"**	1423	**56.0"**	550	**0.72**	560	**1230**
			1000	**39.4"**	1423	**56.0"**	810	**1.06**	600	**1320**
			1100	**43.3"**	1423	**56.0"**	900	**1.18**	685	**1510**
			1250	**49.2"**	1423	**56.0"**	1050	**1.37**	740	**1630**
			1400	**55.1"**	1423	**56.0"**	1200	**1.57**	780	**1920**
			1500	**59.0"**	1423	**56.0"**	1350	**1.77**	810	**1790**
	Extreme Service		1200	**47.2"**	1340	**52.8"**	900	**1.18**	710	**1565**
			1250	**49.2"**	1423	**56.0"**	1050	**1.37**	750	**1650**
	Ditch Cleaning		1800	**70.9"**	1244	**49.0"**	480	**0.63**	477	**1050**
			2000	**78.7"**	1300	**51.2"**	580	**0.76**	680	**1500**
			2000	**78.7"**	1400	**55.1"**	700	**0.92**	720	**1590**
			2300	**90.6"**	1244	**49.0"**	620	**0.81**	570	**1260**
			2000	**78.7"**	896	**35.3"**	700	**0.92**	640	**1410**
320B	General Purpose	B	775	**30.0"**	1626	**64.0"**	700	**0.88**	665	**1466**
		B	932	**36.0"**	1626	**64.0"**	900	**1.12**	741	**1634**
		B	1082	**42.0"**	1626	**64.0"**	1100	**1.50**	777	**1713**
		B	1230	**48.0"**	1626	**64.0"**	1300	**1.75**	906	**1998**
		C	775	**30.0"**	1778	**70.0"**	800	**1.12**	807	**1779**
		C	948	**36.0"**	1778	**70.0"**	1100	**1.50**	909	**2004**
		C	1098	**42.0"**	1778	**70.0"**	1300	**1.75**	966	**2130**
		C	1248	**48.0"**	1778	**70.0"**	1600	**2.12**	1052	**2320**
		C	1395	**54.0"**	1778	**70.0"**	1900	**2.50**	1138	**2509**
	Excavation	B	1130	**44.0"**	1480	**58.2"**	800	**1.05**	640	**1410**
		B	1260	**50.0"**	1409	**55.4"**	900	**1.18**	760	**1680**
		B	1370	**54.0"**	1409	**55.4"**	1000	**1.31**	795	**1750**
		B	600	**23.6"**	1410	**55.5"**	410	**0.54**	524	**1155**
		B	750	**29.5"**	1410	**55.5"**	550	**0.72**	550	**1210**
		B	1000	**39.4"**	1410	**55.5"**	800	**1.05**	635	**1400**
		B	1250	**49.2"**	1410	**55.5"**	1050	**1.37**	716	**1580**
		B	1400	**55.1"**	1410	**55.5"**	1200	**1.57**	752	**1660**
		B	1500	**59.1"**	1410	**55.5"**	1350	**1.77**	770	**1700**
		C	1370	**54.0"**	1487	**58.5"**	1100	**1.44**	940	**2070**
		C	1470	**58.0"**	1487	**58.5"**	1200	**1.57**	895	**1970**
		C	750	**29.5"**	1550	**61.0"**	630	**0.82**	694	**1530**
		C	1000	**39.4"**	1550	**61.0"**	950	**1.24**	780	**1720**
		C	1150	**45.3"**	1550	**61.0"**	1150	**1.50**	874	**1930**
		C	1250	**49.2"**	1550	**61.0"**	1250	**1.63**	903	**1990**
		C	1350	**53.1"**	1550	**61.0"**	1400	**1.83**	940	**2070**
		C	1450	**57.1"**	1550	**61.0"**	1500	**1.96**	990	**2180**
		C	1600	**63.0"**	1550	**61.0"**	1700	**2.22**	1045	**2300**

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
320B (cont'd)	Extreme Service Excavation	B	600	**23.6"**	1410	**55.5"**	410	**0.54**	552	**1220**
		B	750	**29.5"**	1410	**55.5"**	550	**0.72**	606	**1340**
		B	1000	**39.4"**	1410	**55.5"**	800	**1.05**	697	**1540**
		B	1100	**43.0"**	1409	**55.4"**	800	**1.05**	760	**1670**
		B	1250	**49.2"**	1410	**55.5"**	1050	**1.37**	772	**1700**
		B	1400	**55.1"**	1410	**55.5"**	1200	**1.57**	818	**1800**
		C	750	**29.5"**	1550	**61.0"**	630	**0.82**	722	**1590**
		C	1000	**39.4"**	1550	**61.0"**	950	**1.24**	863	**1900**
		C	1150	**45.3"**	1550	**61.0"**	1150	**1.50**	940	**2070**
		C	1250	**49.2"**	1550	**61.0"**	1250	**1.63**	980	**2160**
		C	1350	**53.1"**	1550	**61.0"**	1400	**1.83**	1025	**2260**
		C	1450	**57.1"**	1550	**61.0"**	1500	**1.96**	1085	**2390**
		C	1600	**63.0"**	1550	**61.0"**	1700	**2.22**	1154	**2545**
	Heavy Duty	B	625	**24.0"**	1563	**61.5"**	450	**0.59**	600	**1320**
		B	775	**30.0"**	1563	**61.5"**	560	**0.73**	685	**1510**
		B	932	**36.0"**	1563	**61.5"**	800	**1.05**	785	**1730**
		B	1082	**42.0"**	1563	**61.5"**	1000	**1.31**	850	**1870**
		B	1230	**48.0"**	1551	**61.0"**	1200	**1.57**	955	**2100**
		B	1377	**54.0"**	1551	**61.0"**	1400	**1.83**	1020	**2250**
		B	1507	**60.0"**	1551	**61.0"**	1500	**1.96**	1075	**2370**
		B	1725	**68.0"**	1203	**47.3"**	1200	**1.60**	715*	**1580**
		C	775	**30.0"**	1638	**64.5"**	700	**0.88**	792	**1720**
		C	948	**36.0"**	1638	**64.4"**	900	**1.18**	950	**2100**
		C	1098	**42.0"**	1638	**64.4"**	1100	**1.44**	1060	**2340**
		C	1248	**48.0"**	1638	**64.4"**	1300	**1.70**	1140	**2510**
		C	1378	**54.0"**	1518	**60.0"**	1200	**1.50**	1088	**2400**
		C	1395	**54.0"**	1638	**64.4"**	1500	**1.96**	1240	**2730**
		C	1522	**60.0"**	1638	**64.5"**	1700	**2.25**	1119	**2620**
		C	1680	**66.0"**	1638	**64.5"**	1900	**2.50**	1195	**2825**
	Mass Excavation	C	1440	**57.0"**	1487	**58.5"**	1300	**1.70**	940	**2060**
	Rock	B	600	**23.6"**	1410	**55.5"**	410	**0.54**	565	**1245**
		B	750	**29.5"**	1410	**55.5"**	550	**0.72**	625	**1380**
		B	1000	**39.4"**	1410	**55.5"**	800	**1.05**	775	**1710**
		B	1250	**49.2"**	1410	**55.5"**	1050	**1.37**	898	**1980**
		C	750	**29.5"**	1550	**61.0"**	630	**0.82**	764	**1685**
		C	1000	**39.4"**	1550	**61.0"**	950	**1.24**	552	**1220**
		C	1350	**53.1"**	1550	**61.0"**	1400	**1.83**	1076	**2370**
	Heavy Duty Rock	B	775	**30.0"**	1563	**61.5"**	600	**0.75**	759	**1670**
		B	932	**36.0"**	1563	**61.5"**	800	**1.00**	863	**1900**
		B	1082	**42.0"**	1563	**61.5"**	1000	**1.25**	949	**2095**
		C	948	**36.0"**	1638	**64.5"**	900	**1.25**	988	**2180**
		C	1098	**42.0"**	1638	**64.5"**	1100	**1.50**	1084	**2390**
		C	1248	**48.0"**	1638	**64.5"**	1300	**1.75**	1165	**2570**
	Rock Ripping	C	850	**33.0"**	1660	**65.0"**	600	**0.75**	1084	**2385**

*Weight without teeth.

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
320B (cont'd)	Ditch Cleaning	B	1800	**70.9"**		**N/S**	490	**0.64**	545	**1200**
		B	2000	**78.7"**		**N/S**	550	**0.72**	585	**1290**
		B	2200	**86.6"**		**N/S**	610	**0.80**	625	**1380**
		C	2000	**78.7"**		**N/S**	730	**0.95**	820	**1810**
		C	2200	**86.6"**		**N/S**	805	**1.05**	880	**1940**
		C	2400	**94.5"**		**N/S**	880	**1.15**	980	**2160**
		B	1422	**60.0"**	1143	**45.0"**	900	**1.12**	681	**1500**
		B	1727	**72.0"**	1143	**45.0"**	1100	**1.50**	786	**1733**
		C	1676	**66.0"**	1130	**44.5"**	1100	**1.50**	739	**1629**
		C	1829	**72.0"**	1130	**44.5"**	1200	**1.62**	857	**1890**
	Utility	B	1400	**55.1"**		**N/S**	605	**0.79**	620	**1370**
		B	1600	**63.0"**		**N/S**	700	**0.92**	680	**1500**
		B	1800	**70.9"**		**N/S**	790	**1.03**	740	**1630**
		B	2000	**78.7"**		**N/S**	880	**1.15**	800	**1760**
		C	1600	**63.0"**		**N/S**	940	**1.23**	970	**2140**
		C	1800	**70.9"**		**N/S**	1065	**1.39**	1060	**2340**
		C	2000	**78.7"**		**N/S**	1190	**1.56**	1140	**2510**
		C	2200	**86.6"**		**N/S**	1315	**1.72**	1220	**2690**
	Utility Light	B	1400	**55.1"**		**N/S**	605	**0.79**	470	**1040**
		B	1600	**63.0"**		**N/S**	700	**0.92**	510	**1125**
		B	1800	**70.9"**		**N/S**	790	**1.03**	550	**1210**
		B	2000	**78.7"**		**N/S**	880	**1.15**	600	**1320**
		C	1600	**63.0"**		**N/S**	940	**1.23**	730	**1610**
		C	1800	**70.9"**		**N/S**	1065	**1.39**	800	**1760**
		C	2000	**78.7"**		**N/S**	1190	**1.56**	860	**1900**
		C	2200	**86.6"**		**N/S**	1315	**1.72**	920	**2030**
322B	General Purpose	B	775	**30.0"**	1626	**64.0"**	700	**0.88**	665	**1466**
		B	932	**36.0"**	1626	**64.0"**	900	**1.12**	741	**1634**
		B	1082	**42.0"**	1626	**64.0"**	1100	**1.50**	777	**1713**
		B	1230	**48.0"**	1626	**64.0"**	1300	**1.75**	906	**1998**
		S	625	**24.0"**	1778	**70.0"**	600	**0.75**	691	**1524**
		S	775	**30.0"**	1778	**70.0"**	800	**1.12**	807	**1779**
		S	948	**36.0"**	1778	**70.0"**	1100	**1.50**	909	**2004**
		S	1098	**42.0"**	1778	**70.0"**	1300	**1.75**	966	**2130**
		S	1248	**48.0"**	1778	**70.0"**	1600	**2.12**	1052	**2320**
		S	1395	**54.0"**	1778	**70.0"**	1900	**2.50**	1138	**2509**
		D	775	**30.0"**	1854	**73.0"**	800	**1.12**	953	**2101**
		D	925	**36.0"**	1854	**73.0"**	1100	**1.50**	1043	**2300**
		D	1098	**42.0"**	1854	**73.0"**	1400	**1.88**	1122	**2474**
		D	1246	**48.0"**	1854	**73.0"**	1700	**2.25**	1202	**2650**
		D	1400	**55.0"**	1854	**73.0"**	2000	**2.62**	1315	**2900**
		D	1540	**60.0"**	1854	**73.0"**	2200	**3.00**	1400	**3087**

N/S = Not Significant for Utility, Utility Light and Ditch Cleaning Bucket.

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
322B (cont'd)	Excavation	B	1260	**50.0"**	1409	**55.4"**	900	**1.18**	760	**1680**
		S	1225	**48.0"**	1550	**61.0"**	1000	**1.30**	780	**1720**
		S	1355	**53.0"**	1550	**61.0"**	1100	**1.40**	850	**1870**
		S	1315	**52.0"**	1550	**61.0"**	1200	**1.60**	870	**1920**
		S	750	**29.5"**	1550	**61.0"**	630	**0.82**	694	**1530**
		S	1000	**39.4"**	1550	**61.0"**	950	**1.24**	780	**1720**
		S	1150	**45.3"**	1550	**61.0"**	1150	**1.50**	874	**1930**
		S	1250	**49.2"**	1550	**61.0"**	1250	**1.64**	903	**1990**
		S	1350	**53.1"**	1550	**61.0"**	1400	**1.83**	940	**2070**
		S	1600	**63.0"**	1550	**61.0"**	1700	**2.22**	1120	**2470**
		D	1345	**53.0"**	1660	**65.4"**	1300	**1.70**	1115	**2460**
		D	1430	**56.0"**	1660	**65.4"**	1400	**1.80**	1180	**2600**
		D	1500	**59.0"**	1660	**65.4"**	1500	**2.00**	1190	**2630**
		D	750	**29.5"**	1660	**65.4"**	660	**0.86**	924	**2040**
		D	1000	**39.4"**	1660	**65.4"**	1000	**1.31**	1015	**2240**
		D	1150	**45.3"**	1660	**65.4"**	1300	**1.70**	1120	**2470**
		D	1300	**51.2"**	1660	**65.4"**	1450	**1.90**	1150	**2540**
		D	1350	**53.1"**	1660	**65.4"**	1500	**1.96**	1214	**2680**
		D	1500	**59.1"**	1660	**65.4"**	1700	**2.22**	1307	**2880**
		D	1650	**65.0"**	1660	**65.4"**	1900	**2.49**	1390	**3065**
	Extreme Service Excavation	S	750	**29.5"**	1550	**61.0"**	630	**0.82**	722	**1590**
		S	1000	**39.4"**	1550	**61.0"**	950	**1.24**	865	**1910**
		S	1150	**45.3"**	1550	**61.0"**	1150	**1.50**	940	**2070**
		S	1250	**49.2"**	1550	**61.0"**	1250	**1.64**	980	**2160**
		S	1350	**53.1"**	1550	**61.0"**	1400	**1.83**	1025	**2260**
		S	1450	**57.1"**	1550	**61.0"**	1500	**1.96**	1085	**2390**
		S	1600	**63.0"**	1550	**61.0"**	1700	**2.22**	1150	**2535**
		D	750	**29.5"**	1660	**65.4"**	660	**0.86**	924	**2040**
		D	1000	**39.4"**	1660	**65.4"**	1000	**1.31**	1108	**2440**
		D	1150	**45.3"**	1660	**65.4"**	1300	**1.70**	1260	**2780**
		D	1250	**49.2"**	1660	**65.4"**	1500	**1.96**	1370	**3020**
		D	1500	**59.1"**	1660	**65.4"**	1700	**2.22**	1480	**3260**
		D	1650	**65.0"**	1660	**65.4"**	1900	**2.49**	1571	**3460**
	Heavy Duty	B	625	**24.0"**	1563	**61.5"**	500	**0.62**	578	**1274**
		B	775	**30.0"**	1563	**61.5"**	600	**0.75**	656	**1446**
		B	932	**36.0"**	1563	**61.5"**	800	**1.00**	785	**1730**
		B	1082	**42.0"**	1563	**61.5"**	1000	**1.30**	850	**1870**
		B	1230	**48.0"**	1551	**61.0"**	1200	**1.60**	955	**2100**
		B	1377	**54.0"**	1551	**61.0"**	1400	**1.80**	1020	**2250**
		B	1507	**60.0"**	1551	**61.0"**	1500	**2.00**	1075	**2370**
		B	1725	**68.0"**	1203	**47.3"**	1200	**1.60**	715*	**1580**

*Weight without teeth.

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
322B (cont'd)	Heavy Duty	S	625	**24.0"**	1551	**61.0"**	500	**0.62**	609	**1343**
		S	625	**24.0"**	1551	**61.0"**	500	**0.62**	630	**1390**
		S	775	**30.0"**	1638	**64.4"**	700	**0.90**	840	**1850**
		S	948	**36.0"**	1638	**64.4"**	900	**1.20**	955	**2100**
		S	1098	**42.0"**	1638	**64.4"**	1100	**1.40**	1055	**2330**
		S	1248	**48.0"**	1638	**64.4"**	1300	**1.70**	1135	**2500**
		S	1378	**54.0"**	1518	**60.0"**	1200	**1.50**	1088	**2399**
		S	1395	**54.0"**	1638	**64.4"**	1500	**2.00**	1235	**2720**
		S	1522	**60.0"**	1638	**64.4"**	1700	**2.20**	1330	**2930**
		D	775	**30.0"**	1764	**69.4"**	700	**1.00**	875	**1929**
		D	925	**36.0"**	1764	**69.4"**	900	**1.25**	968	**2134**
		D	1098	**42.0"**	1764	**69.4"**	1200	**1.60**	1150	**2530**
		D	1246	**49.0"**	1764	**69.4"**	1400	**1.80**	1290	**2840**
		D	1400	**55.0"**	1764	**69.4"**	1600	**2.10**	1435	**3170**
		D	1440	**57.0"**	1695	**66.7"**	1500	**2.00**	1368	**3016**
		D	1540	**60.0"**	1764	**69.4"**	1800	**2.40**	1565	**3450**
		D	1695	**66.0"**	1764	**69.4"**	2000	**2.75**	1493	**3292**
		D	1820	**72.0"**	1764	**69.4"**	2200	**3.00**	1620	**3572**
	Rock	S	750	**29.5"**	1550	**61.0"**	630	**0.82**	764	**1685**
		S	1000	**39.4"**	1550	**61.0"**	950	**1.24**	904	**1990**
		S	1350	**53.1"**	1550	**61.0"**	1400	**1.83**	1076	**2370**
		D	750	**29.5"**	1660	**65.4"**	660	**0.86**	974	**2150**
		D	1000	**39.4"**	1660	**65.4"**	1000	**1.31**	1160	**2560**
		D	1650	**65.0"**	1660	**65.4"**	1900	**2.49**	1632	**3600**
	Heavy Duty Rock	B	775	**30.0"**	1563	**61.5"**	600	**0.75**	759	**1674**
		B	932	**36.0"**	1563	**61.5"**	800	**1.00**	863	**1903**
		B	1082	**42.0"**	1563	**61.5"**	1000	**1.25**	949	**2093**
		S	948	**36.0"**	1638	**64.5"**	900	**1.25**	988	**2179**
		S	1098	**42.0"**	1638	**64.5"**	1100	**1.50**	1084	**2390**
		S	1248	**48.0"**	1638	**64.5"**	1300	**1.75**	1165	**2569**
		D	1098	**42.0"**	1764	**69.4"**	1200	**1.50**	1293	**2851**
		D	1246	**48.0"**	1764	**69.4"**	1400	**1.88**	1436	**3166**
		D	1400	**55.0"**	1764	**69.4"**	1600	**2.12**	1552	**3422**
	Rock Ripping	D	900	**35.0"**	1746	**69.0"**	700	**0.88**	1123	**2471**
	Ditch Cleaning	S	2000	**78.7"**	**N/S**		730	**0.95**	820	**1810**
		S	2200	**86.6"**	**N/S**		805	**1.05**	880	**1940**
		S	2400	**94.5"**	**N/S**		880	**1.15**	980	**2160**
		D	2200	**86.6"**	**N/S**		1080	**1.41**	1210	**2670**
		D	2400	**94.5"**	**N/S**		1180	**1.54**	1290	**2840**
		D	2600	**102.4"**	**N/S**		1280	**1.67**	1370	**3020**
		B	1422	**60.0"**	1143	**45.0"**	900	**1.12**	681	**1502**
		B	1727	**72.0"**	1143	**45.0"**	1100	**1.50**	786	**1733**
		S	1575	**60.0"**	1130	**44.5"**	1000	**1.38**	739	**1629**
		S	1829	**72.0"**	1130	**44.5"**	1200	**1.62**	857	**1890**
		D	1676	**66.0"**	1410	**55.5"**	1700	**2.25**	1188	**2620**
		D	1829	**72.0"**	1410	**55.5"**	1800	**2.38**	1247	**2750**

N/S = Not Significant for Utility, Utility Light and Ditch Cleaning Bucket.

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd³	kg	lb
322B (cont'd)	Utility	S	1600	**63.0"**	**N/S**		940	**1.23**	970	**2140**
		S	1800	**70.9"**	**N/S**		1065	**1.39**	1060	**2340**
		S	2000	**78.7"**	**N/S**		1190	**1.56**	1140	**2510**
		S	2200	**86.6"**	**N/S**		1315	**1.72**	1220	**2690**
		D	1800	**70.9"**	**N/S**		1385	**1.81**	1490	**3285**
		D	2100	**82.7"**	**N/S**		1630	**2.13**	1600	**3530**
		D	2400	**94.5"**	**N/S**		1875	**2.45**	1840	**4060**
		D	2700	**106.3"**	**N/S**		2120	**2.77**	2020	**4450**
	Utility Light	S	1600	**63.0"**	**N/S**		940	**1.23**	730	**1610**
		S	1800	**70.9"**	**N/S**		1065	**1.39**	800	**1760**
		S	2000	**78.7"**	**N/S**		1190	**1.56**	860	**1900**
		S	2200	**86.6"**	**N/S**		1315	**1.72**	920	**2030**
		D	1800	**70.9"**	**N/S**		1385	**1.81**	1120	**2470**
		D	2100	**82.7"**	**N/S**		1630	**2.13**	1250	**2760**
		D	2400	**94.5"**	**N/S**		1875	**2.45**	1380	**3040**
		D	2700	**106.3"**	**N/S**		2120	**2.77**	1510	**3330**
325B	General Purpose	C	775	**30.0"**	1778	**70.0"**	800	**1.12**	803	**1767**
		C	948	**36.0"**	1778	**70.0"**	1100	**1.50**	890	**1958**
		C	1098	**42.0"**	1778	**70.0"**	1300	**1.75**	951	**2092**
		C	1248	**48.0"**	1778	**70.0"**	1600	**2.12**	1046	**2301**
		C	1395	**54.0"**	1778	**70.0"**	1900	**2.50**	1116	**2455**
		D	775	**30.0"**	1854	**73.0"**	800	**1.12**	947	**2083**
		D	925	**36.0"**	1854	**73.0"**	1100	**1.50**	1024	**2253**
		D	1098	**42.0"**	1854	**73.0"**	1400	**1.88**	1116	**2455**
		D	1246	**48.0"**	1854	**73.0"**	1700	**2.25**	1146	**2521**
		D	1400	**55.0"**	1854	**73.0"**	1900	**2.50**	1192	**2622**
		D	1540	**60.0"**	1854	**73.0"**	2200	**3.00**	1400	**3080**
	Excavation	C	750	**29.5"**	1550	**61.0"**	630	**0.82**	694	**1530**
		C	1000	**39.4"**	1550	**61.0"**	950	**1.24**	780	**1720**
		C	1150	**45.3"**	1550	**61.0"**	1150	**1.50**	874	**1930**
		C	1250	**49.2"**	1550	**61.0"**	1250	**1.64**	903	**1990**
		C	1350	**53.1"**	1550	**61.0"**	1400	**1.83**	940	**2070**
		C	1370	**54.0"**	1487	**58.5"**	1100	**1.44**	940	**2070**
		C	1450	**57.1"**	1550	**61.0"**	1500	**1.96**	990	**2180**
		C	1470	**58.0"**	1487	**58.5"**	1200	**1.57**	895	**1970**
		C	1600	**63.0"**	1550	**61.0"**	1700	**2.22**	1045	**2300**
		D	750	**29.5"**	1660	**65.3"**	660	**0.86**	924	**2040**
		D	1000	**39.4"**	1660	**65.3"**	1000	**1.31**	1015	**2240**
		D	1150	**45.3"**	1660	**65.3"**	1300	**1.70**	1120	**2470**
		D	1300	**51.2"**	1660	**65.3"**	1450	**1.90**	1150	**2540**
		D	1350	**53.1"**	1660	**65.3"**	1500	**1.96**	1214	**2680**
		D	1430	**56.0"**	1660	**65.4"**	1400	**1.83**	1195	**2640**
		D	1500	**59.0"**	1660	**65.4"**	1500	**1.96**	1160	**2560**
		D	1500	**59.1"**	1660	**65.3"**	1700	**2.22**	1307	**2880**
		D	1650	**65.0"**	1660	**65.3"**	1900	**2.49**	1390	**3060**

N/S = Not Significant for Utility, Utility Light and Ditch Cleaning Bucket.

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
325B (cont'd)	Extreme Service Excavation	C	775	**30.0"**	1638	**64.4"**	700	**0.92**	850	**1880**
		C	948	**36.0"**	1638	**64.4"**	900	**1.18**	970	**2130**
		C	1098	**42.0"**	1638	**64.4"**	1100	**1.44**	1060	**2340**
		C	1248	**48.0"**	1638	**64.4"**	1300	**1.70**	1140	**2510**
		C	1395	**54.0"**	1638	**64.4"**	1500	**1.96**	1240	**2730**
		C	1522	**60.0"**	1638	**64.4"**	1700	**2.22**	1335	**2940**
		C	1680	**66.0"**	1638	**64.4"**	1900	**2.49**	1470	**3240**
		C	750	**29.5"**	1550	**61.0"**	630	**0.82**	722	**1590**
		C	1000	**39.4"**	1550	**61.0"**	950	**1.24**	863	**1900**
		C	1150	**45.3"**	1550	**61.0"**	1150	**1.50**	940	**2070**
		C	1250	**49.2"**	1550	**61.0"**	1250	**1.64**	980	**2160**
		C	1350	**53.1"**	1550	**61.0"**	1400	**1.83**	1025	**2260**
		C	1450	**57.1"**	1550	**61.0"**	1500	**1.96**	1085	**2390**
		C	1600	**63.0"**	1550	**61.0"**	1700	**2.22**	1154	**2540**
		D	1098	**42.0"**	1764	**69.4"**	1200	**1.50**	1150	**2530**
		D	1246	**48.0"**	1764	**69.4"**	1400	**1.88**	1290	**2840**
		D	1400	**55.0"**	1764	**69.4"**	1600	**2.12**	1390	**3060**
		D	1540	**60.0"**	1764	**69.4"**	1800	**2.50**	1500	**3310**
		D	1695	**66.0"**	1764	**69.4"**	2000	**2.62**	1650	**3640**
		D	1820	**72.0"**	1764	**69.4"**	2200	**2.88**	1800	**3970**
		D	750	**29.5"**	1660	**65.3"**	660	**0.86**	924	**2040**
		D	1000	**39.4"**	1660	**65.3"**	1000	**1.31**	1108	**2440**
		D	1150	**45.3"**	1660	**65.3"**	1300	**1.70**	1260	**2780**
		D	1250	**49.2"**	1660	**65.3"**	1500	**1.96**	1370	**3020**
		D	1500	**59.1"**	1660	**65.3"**	1700	**2.22**	1480	**3260**
		D	1650	**65.0"**	1660	**65.3"**	1900	**2.49**	1571	**3460**
	Mass Excavation	C	1440	**57.0"**	1487	**58.5"**	1300	**1.70**	940	**2060**
		C	1530	**60.0"**	1487	**58.5"**	1500	**1.96**	1050	**2310**
		D	1520	**60.0"**	1660	**65.4"**	1600	**2.09**	1330	**2930**
		D	1700	**67.0"**	1660	**65.4"**	1900	**2.49**	1325	**2920**
	Heavy Duty	C	775	**30.0"**	1638	**64.5"**	700	**0.88**	792	**1742**
		C	948	**36.0"**	1638	**64.5"**	900	**1.25**	888	**1954**
		C	1098	**42.0"**	1638	**64.5"**	1100	**1.50**	962	**2116**
		C	1378	**54.0"**	1518	**60.0"**	1200	**1.50**	1082	**2380**
		C	1248	**48.0"**	1638	**64.5"**	1300	**1.75**	1037	**2281**
		C	1395	**54.0"**	1638	**64.5"**	1500	**2.00**	1119	**2462**
		C	1522	**60.0"**	1638	**64.5"**	1700	**2.25**	1195	**2629**
		C	1680	**66.0"**	1638	**64.5"**	1900	**2.50**	1281	**2818**
		D	775	**30.0"**	1764	**69.0"**	700	**1.00**	875	**1925**
		D	925	**36.0"**	1764	**69.0"**	900	**1.25**	968	**2130**
		D	1098	**42.0"**	1764	**69.0"**	1200	**1.50**	1079	**2374**
		D	1246	**48.0"**	1764	**69.0"**	1400	**1.88**	1206	**2653**
		D	1440	**57.0"**	1695	**67.0"**	1500	**2.00**	1330	**2926**
		D	1400	**55.0"**	1764	**69.0"**	1600	**2.12**	1306	**2873**
		D	1540	**60.0"**	1764	**69.0"**	1800	**2.50**	1407	**3095**
		D	1695	**66.0"**	1764	**69.0"**	2000	**2.75**	1493	**3285**
		D	1820	**72.0"**	1764	**69.0"**	2200	**3.00**	1620	**3564**

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
325B (cont'd)	Trenching	C	1075	**42.0"**	1550	**61.0"**	1000	**1.31**	800	**1760**
		D	1225	**48.0"**	1730	**68.1"**	1400	**1.83**	1165	**2560**
		D	1400	**55.1"**	1730	**68.1"**	1600	**2.09**	1120	**2470**
	Rock	C	750	**29.5"**	1550	**61.0"**	630	**0.82**	764	**1680**
		C	1000	**39.4"**	1550	**61.0"**	950	**1.24**	552	**1220**
		C	1350	**53.1"**	1550	**61.0"**	1400	**1.83**	1076	**2370**
		D	750	**29.5"**	1660	**65.3"**	660	**0.86**	974	**2150**
		D	1000	**39.4"**	1660	**65.3"**	1000	**1.31**	1160	**2560**
		D	1650	**65.0"**	1660	**65.3"**	1900	**2.49**	1632	**3600**
	Heavy Duty Rock	C	948	**36.0"**	1638	**64.5"**	900	**1.25**	1000	**2200**
		C	1098	**42.0"**	1638	**64.5"**	1100	**1.50**	1084	**2385**
		C	1248	**48.0"**	1638	**64.5"**	1300	**1.75**	1168	**2570**
		D	1098	**42.0"**	1764	**69.0"**	1200	**1.50**	1294	**2847**
		D	1246	**48.0"**	1764	**69.0"**	1400	**1.88**	1437	**3161**
		D	1400	**55.0"**	1764	**69.0"**	1600	**2.12**	1553	**2417**
	Rock Ripping	C	850	**33.0"**	1660	**65.0"**	600	**0.75**	1084	**2385**
		D	900	**35.0"**	1746	**69.0"**	700	**0.88**	1123	**2471**
	Ditch Cleaning	C	2000	**78.7"**	**N/S**		730	**0.95**	820	**1810**
		C	2200	**86.6"**	**N/S**		805	**1.05**	880	**1940**
		C	2400	**94.5"**	**N/S**		880	**1.15**	980	**2160**
		C	1676	**66.0"**	1132	**45.0"**	1100	**1.50**	813	**1789**
		C	1829	**72.0"**	1132	**45.0"**	1200	**1.62**	860	**1892**
		D	2200	**86.6"**	**N/S**		1080	**1.41**	1210	**2670**
		D	2400	**94.5"**	**N/S**		1180	**1.54**	1290	**2840**
		D	2600	**102.4"**	**N/S**		1280	**1.67**	1370	**3020**
		D	1676	**66.0"**	1424	**56.0"**	1700	**2.25**	1192	**2622**
		D	1829	**72.0"**	1424	**56.0"**	1800	**2.50**	1239	**2726**
	Utility	C	1600	**63.0"**	**N/S**		940	**1.23**	970	**2140**
		C	1800	**70.9"**	**N/S**		1065	**1.39**	1060	**2340**
		C	2000	**78.7"**	**N/S**		1190	**1.56**	1140	**2510**
		C	2200	**86.6"**	**N/S**		1315	**1.72**	1220	**2690**
		D	1800	**70.9"**	**N/S**		1385	**1.81**	1490	**3285**
		D	2100	**82.7"**	**N/S**		1630	**2.13**	1600	**3530**
		D	2400	**94.5"**	**N/S**		1875	**2.45**	1840	**4060**
		D	2700	**106.3"**	**N/S**		2120	**2.77**	2020	**4450**
	Utility Light	C	1600	**63.0"**	**N/S**		940	**1.23**	730	**1610**
		C	1800	**70.9"**	**N/S**		1065	**1.39**	800	**1760**
		C	2000	**78.7"**	**N/S**		1190	**1.56**	860	**1900**
		C	2200	**86.6"**	**N/S**		1315	**1.72**	920	**2030**
		D	1800	**70.9"**	**N/S**		1385	**1.81**	1120	**2470**
		D	2100	**82.7"**	**N/S**		1630	**2.13**	1250	**2760**
		D	2400	**94.5"**	**N/S**		1875	**2.43**	1380	**3040**
		D	2700	**106.3"**	**N/S**		2120	**2.77**	1510	**3330**

N/S = Not Significant for Utility, Utility Light and Ditch Cleaning Bucket.

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd³	kg	lb
330B	General Purpose	D	775	**30.0"**	1854	**73.0"**	800	**1.12**	947	**2083**
		D	925	**36.0"**	1854	**73.0"**	1100	**1.50**	1024	**2253**
		D	1098	**42.0"**	1854	**73.0"**	1400	**1.88**	1116	**2455**
		D	1246	**48.0"**	1854	**73.0"**	1700	**2.25**	1146	**2521**
		D	1400	**55.0"**	1854	**73.0"**	2000	**2.62**	1192	**2622**
		D	1540	**60.0"**	1854	**73.0"**	2200	**3.00**	1400	**3080**
	Excavation	D	1345	**53.0"**	1660	**65.4"**	1300	**1.70**	1115	**2460**
		D	1430	**56.0"**	1660	**65.4"**	1400	**1.83**	1195	**2640**
		D	1500	**59.0"**	1660	**65.4"**	1500	**1.96**	1160	**2560**
		D	750	**29.5"**	1660	**65.4"**	660	**0.86**	924	**2040**
		D	1000	**39.4"**	1660	**65.4"**	1000	**1.31**	1015	**2240**
		D	1150	**45.3"**	1660	**65.4"**	1300	**1.70**	1120	**2470**
		D	1300	**51.2"**	1660	**65.4"**	1450	**1.90**	1150	**2540**
		D	1350	**53.1"**	1660	**65.4"**	1500	**1.96**	1214	**2680**
		D	1500	**59.1"**	1660	**65.4"**	1700	**2.22**	1307	**2880**
		D	1650	**65.0"**	1660	**65.4"**	1900	**2.49**	1390	**3065**
		E	1470	**58.0"**	1845	**72.1"**	1700	**2.22**	1470	**3240**
		E	1600	**63.0"**	1845	**72.1"**	1900	**2.49**	1545	**3410**
		E	1400	**55.1"**	1780	**70.0"**	1700	**2.22**	1490	**3285**
		E	1500	**59.1"**	1780	**70.0"**	1900	**2.49**	1590	**3505**
		E	1650	**65.0"**	1780	**70.0"**	2100	**2.75**	1730	**3815**
	Extreme Service Excavation	D	775	**30.0"**	1764	**69.4"**	700	**1.00**	955	**2100**
		D	925	**36.0"**	1764	**69.4"**	900	**1.25**	1045	**2310**
		D	1098	**42.0"**	1764	**69.4"**	1200	**1.50**	1185	**2610**
		D	1246	**48.0"**	1764	**69.4"**	1400	**1.88**	1335	**2950**
		D	1400	**55.0"**	1764	**69.4"**	1600	**2.12**	1435	**3170**
		D	1540	**60.0"**	1764	**69.4"**	1800	**2.50**	1565	**3450**
		D	1695	**66.0"**	1764	**69.4"**	2000	**2.62**	1650	**3640**
		D	1820	**72.0"**	1764	**69.4"**	2200	**2.88**	1800	**3970**
		D	750	**29.5"**	1660	**65.4"**	660	**0.86**	924	**2040**
		D	1000	**39.4"**	1660	**65.4"**	1000	**1.31**	1108	**2440**
		D	1150	**45.3"**	1660	**65.4"**	1300	**1.70**	1260	**2780**
		D	1250	**49.2"**	1660	**65.4"**	1500	**1.96**	1370	**3020**
		D	1500	**59.1"**	1660	**65.4"**	1700	**2.22**	1480	**3260**
		D	1650	**65.0"**	1660	**65.4"**	1900	**2.49**	1571	**3460**
		E	1400	**55.1"**	1780	**70.0"**	1700	**2.22**	1490	**3285**
		E	1500	**59.1"**	1780	**70.0"**	1900	**2.49**	1590	**3505**
		E	1650	**65.0"**	1780	**70.0"**	2100	**2.75**	1730	**3815**
	Mass Excavation	D	1520	**60.0"**	1660	**65.4"**	1600	**2.09**	1330	**2930**
		D	1700	**67.0"**	1660	**65.4"**	1900	**2.49**	1325	**2920**
		E	1735	**68.0"**	1845	**72.1"**	2100	**2.75**	1710	**3770**

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
330B (cont'd)	Heavy Duty	D	775	**30.0"**	1764	**69.0"**	700	**1.00**	875	**1925**
		D	925	**36.0"**	1764	**69.0"**	900	**1.25**	968	**2130**
		D	1098	**42.0"**	1764	**69.0"**	1200	**1.50**	1079	**2374**
		D	1246	**48.0"**	1764	**69.0"**	1400	**1.88**	1206	**2653**
		D	1440	**57.0"**	1695	**67.0"**	1500	**2.00**	1330	**2926**
		D	1440	**55.0"**	1764	**69.0"**	1600	**2.12**	1306	**2873**
		D	1540	**60.0"**	1764	**69.0"**	1800	**2.50**	1407	**3095**
		D	1695	**66.0"**	1764	**69.0"**	2000	**2.75**	1493	**3285**
		D	1820	**72.0"**	1764	**69.0"**	2200	**2.88**	1620	**3564**
		E	1695	**66.0"**	1764	**69.0"**	2400	**3.14**	2119	**4660**
		E	1820	**72.0"**	1764	**69.0"**	2600	**3.40**	2246	**4940**
	Trenching	D	1400	**55.0"**	1730	**68.1"**	1600	**2.09**	1120	**2470**
	Rock	D	750	**29.5"**	1660	**65.4"**	660	**0.86**	974	**2150**
		D	1000	**39.4"**	1660	**65.4"**	1000	**1.31**	1160	**2560**
		D	1650	**65.0"**	1660	**65.4"**	1900	**2.49**	1632	**3600**
		E	1500	**59.1"**	1780	**70.0"**	1900	**2.49**	1690	**3730**
	Heavy Duty Rock	D	1098	**42.0"**	1764	**69.0"**	1200	**1.50**	1294	**2847**
		D	1246	**48.0"**	1764	**69.0"**	1400	**1.88**	1437	**3161**
		D	1400	**55.0"**	1764	**69.0"**	1600	**2.12**	1552	**3414**
	Rock Ripping	D	900	**35.0"**	1764	**69.0"**	700	**0.88**	1123	**2471**
	Ditch Cleaning	D	2200	**86.6"**		**N/S**	1080	**1.41**	1210	**2670**
		D	2400	**94.5"**		**N/S**	1180	**1.54**	1290	**2840**
		D	2600	**102.4"**		**N/S**	1280	**1.67**	1370	**3020**
		D	1676	**66.0"**	1424	**56.0"**				
		D	1829	**72.0"**	1424	**56.0"**				
	Utility	D	1800	**70.9"**		**N/S**	1385	**1.81**	1490	**3285**
		D	2100	**82.7"**		**N/S**	1630	**2.13**	1600	**3530**
		D	2400	**94.5"**		**N/S**	1875	**2.45**	1840	**4060**
		D	2700	**106.3"**		**N/S**	2120	**2.77**	2020	**4450**
	Utility Light	D	1800	**70.9"**		**N/S**	1385	**1.81**	1120	**2470**
		D	2100	**82.7"**		**N/S**	1630	**2.13**	1250	**2760**
		D	2400	**94.5"**		**N/S**	1875	**2.45**	1380	**3040**
		D	2700	**106.3"**		**N/S**	2120	**2.77**	1510	**3330**
345B	Trenching	F	1075	**42.0"**	1925	**75.8"**	1300	**1.70**	1475	**3250**
		F	1218	**48.0"**	1925	**75.8"**	1600	**2.09**	1563	**3450**
		F	1410	**56.0"**	1925	**75.8"**	1900	**2.49**	1756	**3870**
	Excavation	T	1580	**62.0"**	1820	**71.7"**	1900	**2.49**	1728	**3810**
		U	1650	**65.0"**	1860	**73.2"**	2100	**2.75**	2212	**4880**
		F	1590	**63.0"**	1870	**73.6"**	2000	**2.62**	1814	**4000**
		F	1735	**68.0"**	1870	**73.6"**	2200	**2.88**	1921	**4240**
		G	1655	**65.0"**	1958	**77.1"**	2200	**2.88**	2172	**4790**
		G	1770	**70.0"**	1958	**77.1"**	2400	**3.14**	2292	**5050**
	Mass Excavation	G	1895	**75.0"**	1958	**77.1"**	2600	**3.40**	2434	**5370**

N/S = Not Significant for Utility, Utility Light and Ditch Cleaning Bucket.

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd³	kg	lb
345B (cont'd)	Extreme Service Excavation	T	1560	**61.0"**	1862	**73.3"**	1900	**2.49**	1950	**4300**
		T	1605	**63.0"**	1862	**73.3"**	2000	**2.62**	2091	**4610**
		T	1665	**66.0"**	1862	**73.3"**	2100	**2.75**	2138	**4710**
		F	1600	**63.0"**	1870	**73.6"**	2000	**2.62**	1988	**4380**
		F	1600	**63.0"**	1925	**75.8"**	2100	**2.75**	2027	**4470**
	V-Type Excavation	U	1830	**72.0"**	1860	**73.2"**	2100	**2.75**	2394	**5280**
		G	1750	**69.0"**	1972	**77.6"**	2200	**2.89**	2519	**5550**
		G	1880	**74.0"**	1972	**77.6"**	2400	**3.14**	2630	**5800**
350	Excavation	F	925	**36.4"**	2011	**79.2"**	1100	**1.38**	1636	**3607**
		F	1075	**42.3"**	2011	**79.2"**	1400	**1.75**	1724	**3800**
		F	1225	**48.2"**	1965	**77.4"**	1700	**2.25**	1701	**3750**
		F	1250	**49.2"**	1900	**74.8"**	1800	**2.35**	1650	**3640**
		F	1350	**53.1"**	1900	**74.8"**	2000	**2.62**	1750	**3860**
		F	1375	**54.1"**	1965	**77.4"**	2000	**2.63**	1837	**4050**
		F	1450	**57.1"**	1900	**74.8"**	2200	**2.88**	1995	**4400**
		F	1525	**60.0"**	1965	**77.4"**	2300	**3.00**	1953	**4306**
		F	1590	**62.6"**	1870	**73.6"**	2000	**2.62**	1842	**4060**
		F	1600	**63.0"**	1900	**74.8"**	2500	**3.27**	2175	**4800**
		F	1700	**67.0"**	1900	**74.8"**	2700	**3.53**	2190	**4830**
		F	1735	**68.3"**	1870	**73.6"**	2200	**2.88**	1954	**4310**
		F	1800	**70.9"**	1900	**74.8"**	2700	**3.53**	2310	**5090**
		G	1450	**57.1"**	2000	**78.7"**	2400	**3.14**	2090	**4610**
		G	1550	**61.0"**	2000	**78.7"**	2600	**3.40**	2145	**4730**
		G	1650	**65.0"**	2000	**78.7"**	2800	**3.66**	2270	**5005**
		G	1655	**65.2"**	1958	**77.1"**	2200	**2.88**	2224	**4900**
		G	1770	**69.7"**	1958	**77.1"**	2400	**3.14**	2237	**4930**
		G	1800	**70.9"**	2000	**78.7"**	3100	**4.05**	2410	**5310**
	Extreme Service Excavation	G	1800	**70.9"**	2000	**78.7"**	3100	**4.05**	2405	**5300**
	V-Type Excavation	G	1750	**68.9"**	1958	**77.1"**	2200	**2.88**	2503	**5520**
		G	1880	**74.0"**	1958	**77.1"**	2400	**3.14**	2606	**5750**
	Mass Excavation	G	1895	**74.6"**	1958	**77.1"**	2600	**3.50**	2479	**5470**
	Trenching	F	1075	**42.3"**	1925	**75.8"**	1300	**1.75**	1507	**3320**
		F	1218	**48.0"**	1925	**75.8"**	1600	**2.12**	1601	**3530**
		F	1410	**55.5"**	1925	**75.8"**	1900	**2.50**	1789	**3940**
		F	1225	**48.2"**	1965	**77.4"**	1700	**2.25**	1571	**3456**
		F	1375	**54.1"**	1965	**77.4"**	2000	**2.63**	1707	**3755**
	Extreme Service Trenching	F	925	**36.4"**	2011	**79.0"**	1100	**1.38**	1534	**3375**
		F	1075	**42.3"**	2011	**79.0"**	1400	**1.75**	1622	**3568**
		F	1259	**49.6"**	2011	**79.0"**	1700	**2.25**	1857	**4094**
		F	1525	**60.0"**	2011	**79.0"**	2300	**3.00**	2101	**4622**
		F	1600	**63.0"**	1870	**73.6"**	2000	**2.63**	1963	**4330**
		F	1600	**63.0"**	1925	**75.8"**	2100	**2.75**	2015	**4440**

Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	L	yd^3	kg	lb
350 (cont'd)	Rock	F	953	**37.5"**	1870	**73.6"**	900	**1.25**	2190	**4829**
		F	1350	**53.1"**	1900	**74.8"**	2000	**2.62**	2100	**4630**
		F	1450	**57.1"**	1900	**74.8"**	2200	**2.88**	2205	**4860**
		F	1600	**63.0"**	1900	**74.8"**	2500	**3.27**	2370	**5225**
		G	1750	**68.9"**	2050	**80.7"**	2800	**3.66**	2770	**6110**
		G	1750	**68.9"**	2050	**80.7"**	2800	**3.66**	2810	**6200**
		G	1800	**70.9"**	2050	**80.7"**	3100	**4.05**	2962	**6530**
375	Excavation	H	1800	**70.9"**	2100	**82.7"**	2800	**3.66**	2490	**5490**
		H	1990	**78.3"**	2100	**82.7"**	3200	**4.25**	2667	**5880**
		H	1990	**78.3"**	2210	**87.0"**	3800	**5.00**	2975	**6559**
		H	1750	**68.9"**	2100	**82.7"**	3200	**4.19**	3280	**7232**
		H	1900	**74.8"**	2100	**82.7"**	3600	**4.71**	3430	**7563**
		H	1800	**70.9"**	2300	**90.5"**	4200	**5.49**	3720	**8203**
		J	1750	**68.9"**	2235	**88.0"**	3000	**3.92**	2602	**5780**
		J	1865	**73.4"**	2235	**88.0"**	3200	**4.19**	3026	**6670**
		J	2040	**80.3"**	2235	**88.0"**	3600	**4.75**	3223	**7110**
		J	2210	**87.0"**	2235	**88.0"**	4000	**5.25**	3403	**7500**
		J	2200	**86.6"**	2200	**86.6"**	4400	**5.76**	4030	**8886**
		J	2140	**84.3"**	2200	**86.6"**	5100	**6.67**	4120	**9085**
		J	2300	**90.6"**	2200	**86.6"**	5600	**7.32**	4350	**9592**
	Extreme Service Excavation	J	2380	**93.7"**	2200	**86.6"**	4500	**5.89**	4420	**9746**
		J	2380	**93.7"**	2200	**86.6"**	5200	**6.80**	4150	**9151**
		J	2380	**93.7"**	2200	**86.6"**	5200	**6.80**	4790	**10,562**
		J	2400	**94.5"**	2200	**86.6"**	5200	**6.80**	4450	**9812**
	V-Type Excavation	J	2080	**81.9"**	2235	**88.0"**	3600	**4.75**	3879	**8550**
	Mass Excavation	J*	1744	**68.7"**	2234	**88.0"**	3000	**4.00**	3524	**7771**
		J*	2064	**81.3"**	2234	**88.0"**	3800	**5.00**	4006	**8833**
		J	2390	**94.1"**	2235	**88.0"**	4400	**5.75**	3818	**8420**
		J*	2390	**94.1"**	2234	**88.0"**	4400	**6.00**	4531	**9991**
		J*	2390	**94.1"**	2234	**88.0"**	5400	**7.00**	4835	**10,661**
	V-Type Mass Excavation	J	2260	**89.0"**	2235	**88.0"**	4000	**5.25**	4065	**8960**
	Trenching	H	1380	**54.3"**	2210	**87.0"**	2300	**3.25**	2218	**4890**
		H*	1535	**60.4"**	2210	**87.0"**	2800	**3.75**	2576	**5680**
		H	1560	**61.4"**	2210	**87.0"**	2700	**3.53**	2348	**5180**
		J*	1530	**60.2"**	2350	**92.5"**	2800	**3.75**	2954	**6514**
		J*	1680	**66.1"**	2350	**92.5"**	3200	**4.25**	3103	**6842**
	Extreme Service Trenching	H*	1075	**42.3"**	2309	**90.9"**	1600	**2.13**	2096	**4611**
		H*	1225	**48.2"**	2309	**90.9"**	2000	**2.63**	2251	**4952**
	Rock	H	1190	**46.9"**	2137	**84.1"**	1600	**2.00**	3254	**6589**
		H	1220	**48.0"**	2046	**80.6"**	1500	**1.96**	3131	**6900**
		J	1850	**72.8"**	2350	**92.5"**	4200	**5.49**	3900	**8600**
		J	1950	**76.8"**	2350	**92.5"**	4000	**5.23**	4420	**9746**
		J	2000	**78.7"**	2350	**92.5"**	4300	**5.62**	4830	**10,650**
		J	2380	**93.7"**	2350	**92.5"**	5200	**6.80**	5220	**11,510**
		J	2380	**93.7"**	2350	**92.5"**	5200	**6.80**	5300	**11,687**
	Heavy Duty Rock	J	2380	**93.7"**	2350	**92.5"**	5200	**6.80**	6032	**13,301**

*Available only from U.S.A.

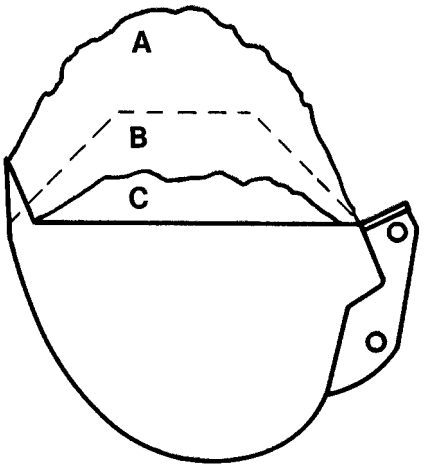
Model	Bucket Type	Bucket Family	Bucket Bite Width		Bucket Tip Radius		Heaped Capacity		Bucket Weight With Teeth	
			mm	in	mm	in	m^3	yd^3	kg	lb
5130B	High Density		2810	**111.0"**	3038	**120.0"**	8.5	**11.0**	8340	**18,380**
	Rock		2810	**111.0"**	3038	**120.0"**	10.5	**13.7**	10 250	**22,600**
	Excavation		2810	**111.0"**	3038	**120.0"**	10.5	**13.7**	8940	**19,700**
	Coal		3500	**138.0"**	3225	**127.0"**	13.6	**17.8**	8760	**19,320**
	Coal		3680	**145.0"**	3225	**127.0"**	18.3	**24.0**	9430	**20,800**
5230	Rock		3940	**156.0"**	3250	**128.0"**	16.0	**21.0**	17 140	**37,785**
	Light Material		3940	**156.0"**	3250	**128.0"**	18.0	**23.5**	19 040	**41,975**
	Coal		4350	**171.0"**	3400	**134.0"**	27.5	**36.0**	15 420	**34,000**

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.

Average Bucket Payload =
(Heaped Bucket Capacity) × (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/m^3 (3035 lb/yd^3). Payloads shown are calculated at 1500 kg/m^3 (2530 lb/yd^3).

Model	Stick Length mm	Stick Length ft	kg	lb
307B	1665	**5'6"**	1050	**2310**
	2210	**7'3"**	860	**1900**
307B SB	1665	**5'6"**	1030	**2270**
	2210	**7'3"**	750	**1650**
307	1665	**5'6"**	1090	**2400**
	2210	**7'3"**	880	**1940**
311B	1950	**6'5"**	1560	**3440**
	2250	**7'5"**	1470	**3240**
	2800	**9'2"**	1230	**2710**
312B	2100	**6'11"**	1580	**3480**
	2500	**8'2"**	1460	**3220**
	3000	**9'10"**	1280	**2820**
312B L	2100	**6'11"**	1770	**3900**
	2500	**8'2"**	1640	**3620**
	3000	**9'10"**	1450	**3200**
312B L*	2100	**6'11"**	1740	**3830**
	2500	**8'2"**	1595	**3510**
	3000	**9'10"**	1450	**3190**
315B	1850	**6'1"**	2070	**4570**
	2250	**7'5"**	1980	**4360**
	2600	**8'6"**	1810	**4000**
	3100	**10'2"**	1630	**3590**
315B L	1850	**6'1"**	2160	**4760**
	2250	**7'5"**	2060	**4540**
	2600	**8'6"**	1890	**4170**
	3100	**10'2"**	1700	**3750**
318B L	1800	**5'11"**	2600	**5730**
	2250	**7'5"**	2380	**5250**
	2700	**8'10"**	2210	**4870**
	3200	**10'6"**	1910	**4210**
318B LN	1800	**5'11"**	2230	**4920**
	2250	**7'5"**	2030	**4480**
	2700	**8'10"**	1900	**4190**
	3200	**10'6"**	1630	**3590**
318B L*/ 318B LN*	1800	**5'11"**	2440	**5380**
	2250	**7'5"**	2250	**4960**
	2700	**8'10"**	2160	**4760**
	3200	**10'6"**	1810	**3990**

*France sourced.

Model	Boom	Stick Length m	Stick Length ft	Working Weights† Buckets & Payload kg	Working Weights† Buckets & Payload lb
320B	Reach	1.90	**6'3"**	2380	**5250**
		2.50	**8'2"**	2330	**5140**
		2.92	**9'7"**	2150	**4740**
		3.86	**12'8"**	1850	**4080**
	Mass	1.90	**6'3"**	2690	**5930**
		2.40	**7'10"**	2430	**5360**
	VA	1.90	**6'3"**	2870	**6330**
		2.40	**7'10"**	2620	**5780**
		2.92	**9'7"**	2460	**5420**
320B L	Reach	1.90	**6'3"**	2850	**6290**
		2.50	**8'2"**	2750	**6070**
		2.92	**9'7"**	2560	**5650**
		3.86	**12'8"**	2200	**4850**
	Mass	1.90	**6'3"**	3210	**7080**
		2.40	**7'10"**	2910	**6420**
	VA	1.90	**6'3"**	3260	**7190**
		2.40	**7'10"**	2990	**6590**
		2.92	**9'7"**	2790	**6150**
320B 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**
	Mass	1.90	**6'3"**	2600	**5730**
		2.40	**7'10"**	2350	**5180**
	VA	1.90	**6'3"**	2640	**5820**
		2.40	**7'10"**	2410	**5310**
		2.92	**9'7"**	2280	**5030**
322B	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**
322B L	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**

Model	Boom	Stick Length m	Stick Length ft	Working Weights† Buckets & Payload kg	Working Weights† Buckets & Payload lb
322B N	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**
322B LN	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**
325B	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**
325B L	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**
325B LN	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**

†Working weights may vary depending on machine configuration.
Contact your Caterpillar Dealer for specific information.

Model	Boom	Stick Length m	Stick Length ft	Working Weights† Buckets & Payload kg	Working Weights† Buckets & Payload lb
330B	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**
330B L	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**
330B LN	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	Reach	2.90	**9'6"**	5780	**12,740**
		3.35	**11'0"**	5210	**11,490**
		3.90	**12'10"**	4790	**10,560**
	Mass	2.50	**8'2"**	6190	**13,650**
		3.00	**9'10"**	5670	**12,500**
345B L – FIX	Reach	2.90	**9'6"**	6360	**14,020**
		3.35	**11'0"**	5710	**12,590**
		3.90	**12'1"**	5320	**11,730**
	Mass	2.50	**8'2"**	6780	**14,950**
		3.00	**9'10"**	6230	**13,730**
345B L – VG	Reach	2.90	**9'6"**	7110	**15,670**
		3.35	**11'0"**	6410	**14,130**
		3.90	**12'10"**	5990	**13,210**
	Mass	2.50	**8'2"**	7650	**16,870**
		3.00	**9'10"**	7150	**15,760**
350	Reach	3.10	**10'2"**	5800	**12,790**
		3.60	**11'10"**	5380	**11,860**
		4.80	**15'9"**	4320	**9520**
	Mass	2.40	**7'10"**	7110	**15,670**
		2.95	**9'8"**	6350	**14,000**
		3.70	**12'2"**	5610	**12,370**
350 L	Reach	3.10	**10'2"**	6060	**13,360**
		3.60	**11'10"**	5610	**12,370**
		4.80	**15'9"**	4520	**9960**
	Mass	2.40	**7'10"**	7300	**16,090**
		2.95	**9'8"**	6640	**14,640**
		3.70	**12'2"**	5860	**12,920**

Model	Boom	Stick Length m	Stick Length ft	Working Weights† Buckets & Payload kg	Working Weights† Buckets & Payload lb
375	Reach	2.90	**9'6"**	8450	**18,630**
		3.40	**11'2"**	7930	**17,480**
		4.40	**14'5"**	7570	**16,690**
		5.50	**18'1"**	6360	**14,020**
	General Purpose	3.40	**11'2"**	8550	**18,850**
		4.40	**14'5"**	8080	**17,810**
		5.50	**18'1"**	6770	**14,930**
	Mass	2.90	**9'6"**	11 120	**24,520**
		3.40	**11'2"**	10 430	**22,990**
		4.10	**13'5"**	9220	**20,330**
375 L	Reach	2.90	**9'6"**	8860	**19,530**
		3.40	**11'2"**	8330	**18,360**
		4.40	**14'5"**	7930	**17,480**
		5.50	**18'1"**	6680	**14,730**
	General Purpose	3.40	**11'2"**	8970	**19,780**
		4.40	**14'5"**	8450	**18,630**
		5.50	**18'1"**	7100	**15,650**
	Mass	2.90	**9'6"**	11 610	**25,600**
		3.40	**11'2"**	10 890	**24,010**
		4.10	**13'5"**	9650	**21,270**
5130B ME	Mass	3.80	**12'6"**	28 500	**62,800**
5230 ME	Mass	4.50	**14'9"**	44 500	**98,100**

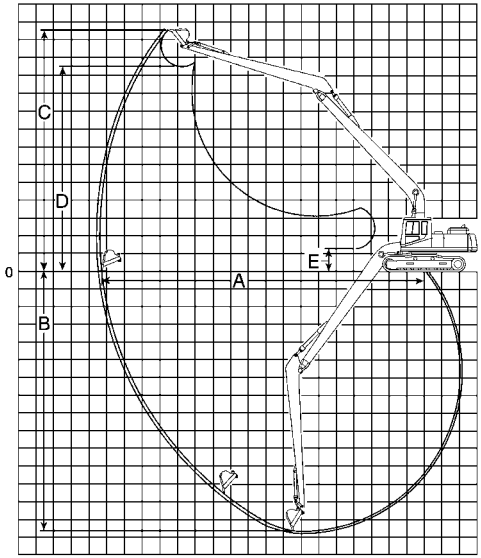
†Working weights may vary depending on machine configuration. Contact your Caterpillar dealer for specific information.

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.

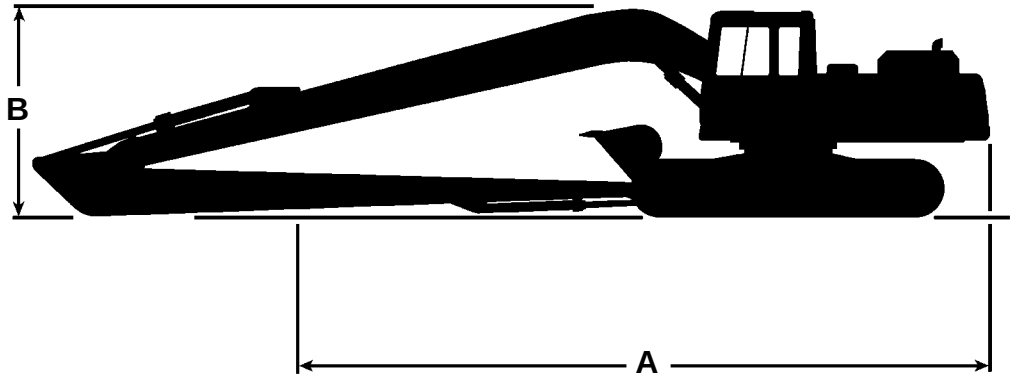
Long Reach Excavation Fronts include: boom, stick, linkage cylinders (boom, stick, and bucket), hydraulic lines, additional counterweight for stability over the side and heavy duty wide undercarriage. Dimensions include light excavation bucket.



Long Reach Model	325B L m	325B L ft	330B L m	330B L ft
A Maximum Reach at Ground Level	16.07	**52'9"**	17.91	**58'9"**
B Maximum Digging Depth	11.34	**37'2"**	12.62	**41'5"**
C Maximum Cutting Height	13.88	**45'6"**	16.01	**52'6"**
D Maximum Dumping Height	11.20	**36'9"**	13.42	**44'0"**
E Minimum Loading Height	3.15	**10'4"**	3.55	**11'8"**

325B L/330B L • Long Reach

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
Excavation	1500	**4'11"**	1350	**1.77**	820	**1810**	6	54.1	**12,170**	—	**—**
Ditch Cleaning	1800	**5'11"**	450	**0.59**	550	**1210**	0	—	**—**	—	**—**
Ditch Cleaning	2000	**6'7"**	550	**0.72**	590	**1300**	0	—	**—**	—	**—**
Ditch Cleaning	2200	**7'3"**	610	**0.80**	630	**1390**	0	—	**—**	—	**—**



LONG REACH ATTACHMENT SHIPPING DIMENSIONS

Model	325B L m	325B L ft	330B L m	330B L ft
A Overall Transport Length (Front Folded)	13.59	**44'7"**	15.45	**50'8"**
B Overall Height (To Top of Boom)	3.44	**11'3"**	3.75	**12'4"**
Overall Width (To Widest Point)	3.72	**12'2"**	3.72	**12'2"**

NOTE: For other base machine dimensions, see section on machines with GP attachments.

LONG REACH ATTACHMENT COMPONENT WEIGHTS

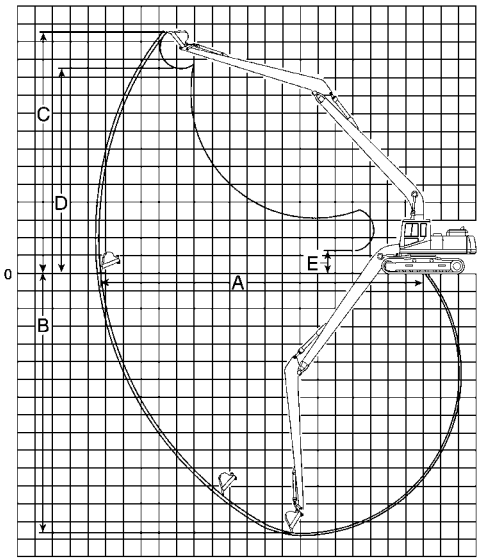
Model	325B L kg	325B L lb	330B L kg	330B L lb
Total Counterweight:	7700	**16,980**	8300	**18,300**
Includes Additional over Standard	1272	**2800**	1510	**3330**
Long Reach Boom: Includes boom, stick cylinder, hydraulic lines, and pins for stick, stick cylinder, and boom rod end	3400	**7500**	4500	**9920**
Long Reach Stick: Includes stick, bucket linkage and pins, bucket cylinder and pin, and hydraulic lines	1940	**4280**	2300	**5070**

INTRODUCTION

Ditch cleaning 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. Ditch cleaning excavators are suited for ditch cleaning, slope finishing, river conservation and other work formerly reserved to draglines.

Caterpillar's ditch cleaning hydraulic excavators use purpose-built booms and sticks designed by Caterpillar for maximum performance and durability in dragging applications.

Ditch Cleaning Fronts include: boom, stick, linkage cylinders (boom, stick, and bucket), hydraulic lines and additional counterweight for stability while working over the side. Dimensions include ditch cleaning bucket.



Long Reach Model	320B L m	320B L ft	320B L m	320B L ft	322B L m	322B L ft	325B L m	325B L ft
Source	**Japan**		**Belgium**		**Japan**		**Belgium**	
A Maximum Reach at Ground Level	15.60	**51'2"**	15.59	**51'2"**	18.30	**60'0"**	18.30	**60'0"**
B Maximum Digging Depth	11.75	**38'7"**	11.75	**38'7"**	14.60	**47'11"**	15.60	**51'2"**
C Maximum Cutting Height	13.24	**43'5"**	13.32	**43'8"**	14.19	**46'7"**	13.60	**44'7"**
D Maximum Dumping Height	11.14	**36'7"**	11.14	**36'7"**	12.14	**39'10"**	11.60	**38'1"**
E Minimum Loading Height	2.10	**6'10"**	2.09	**6'10"**	1.49	**4'11"**	1.32	**4'4"**

320B L • Ditch Cleaning • Japan/U.S. Sourced

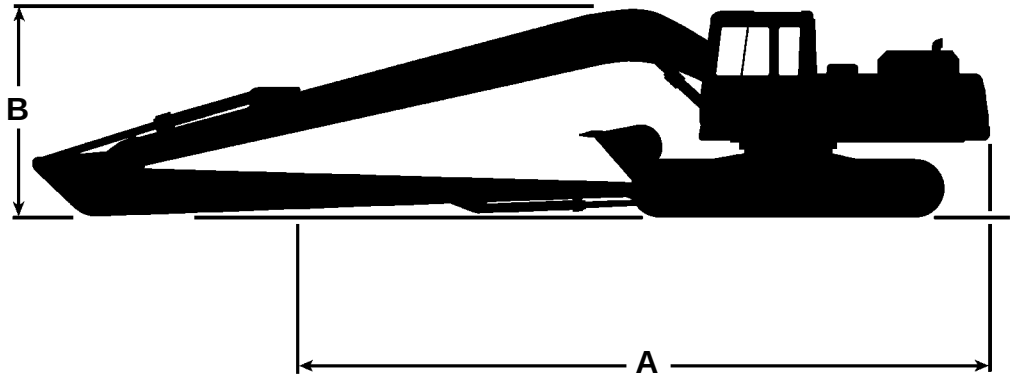
Bucket Type	Bucket Width		Tip Radius		SAE Heaped Cap.		Bucket Weight		No. of Teeth	Bucket Curl Force		Stick Crowd Force	
	mm	ft/in	mm	ft/in	L	yd³	kg	lb		kN	lb	kN	lb
General Purpose	810	**2'8"**	1220	**4'0"**	450	**0.59**	340	**750**	5	60.5	**13,600**	46.0	**10,340**
Ditch Cleaning	1140	**3'9"**	1090	**3'7"**	600	**0.78**	290	**640**	0	54.1	**12,170**	46.6	**10,470**

322B L • Ditch Cleaning • Japan/U.S. Sourced

General Purpose	700	**2'4"**	1220	**4'0"**	380	**0.50**	335	**740**	4	54.1	**12,170**	50.1	**11,270**
General Purpose	810	**2'8"**	1220	**4'0"**	450	**0.59**	340	**750**	5	54.1	**12,170**	50.1	**11,270**
Ditch Cleaning	965	**3'2"**	1090	**3'7"**	480	**0.63**	265	**580**	0	60.5	**13,600**	50.6	**11,380**
Ditch Cleaning	1140	**3'9"**	1090	**3'7"**	600	**0.78**	290	**640**	0	60.5	**13,600**	50.6	**11,380**

320 L/325 L • Ditch Cleaning • Belgium Sourced

	810	**2'8"**	—	**—**	450	**0.59**	350	**770**	—	—	**—**	—	**—**
	1800	**5'11"**	—	**—**	600	**0.78**	400	**880**	—	—	**—**	—	**—**



DITCH CLEANING ATTACHMENT SHIPPING DIMENSIONS

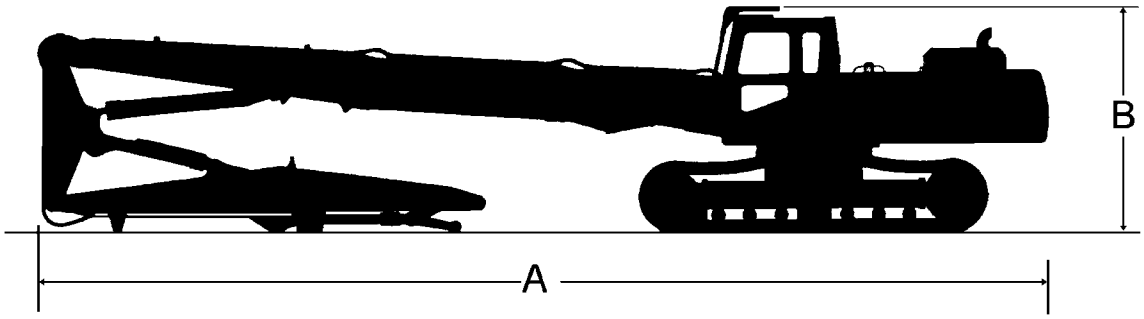
Model	320B L m	320B L ft	320B L m	320B L ft	322B L m	322B L ft	325B L* m	325B L* ft	330B L* m	330B L* ft
Source	**Japan**		**Belgium**		**Japan**		**Belgium**		**Japan**	
A Overall Transport Length (Front Folded)	12.65	**41'6"**	12.80	**42'0"**	14.24	**46'9"**	14.60	**47'11"**	16.62	**54'6"**
B Overall Height (To Top of Boom)	3.21	**10'6"**	3.20	**10'6"**	3.17	**10'5"**	3.30	**10'10"**	3.59	**11'9"**
Overall Width (To Widest Point)	3.18	**10'5"**	3.00	**9'10"**	3.39	**11'1"**	3.38	**11'1"**	3.34	**10'11"**

NOTE: For other base machine dimensions, see section on machines with GP attachments.

DITCH CLEANING ATTACHMENT COMPONENT WEIGHTS

Model	320B L kg	320B L lb	320B L kg	320B L lb	322B L kg	322B L lb	325B L* kg	325B L* lb	330B L* kg	330B L* lb
Total Counterweight:	4810	**10,600**	4810	**10,600**	5900	**13,010**	7700	**16,980**	7390	**16,290**
Includes Additional over Standard	950	**2090**	950	**2090**	1440	**3180**	1272	**2800**	—	**—**
Long Reach Boom: Includes boom, stick cylinder, hydraulic lines, and pins for stick, stick cylinder, and boom rod end	2185	**4820**	2185	**4820**	3130	**6900**	3400	**7500**	4190	**9240**
Long Reach Stick: Includes stick, bucket linkage and pins, bucket cylinder and pin, and hydraulic lines	1260	**2780**	1260	**2780**	1570	**3460**	1940	**4280**	2130	**4700**

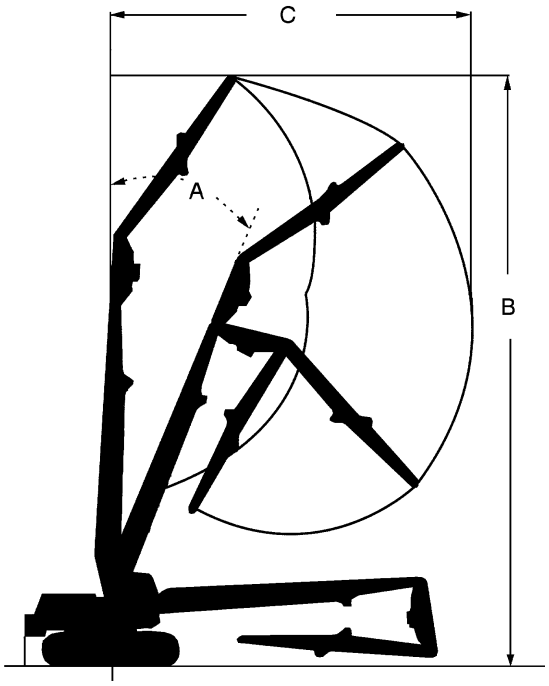
*Custom Product.



Model	325B L		330B L	
	m	ft	m	ft
A Overall Transport Length	12.56	**41'2"**	14.90	**48'11"**
B Transport Height	3.33	**10'11"**	3.34	**10'11"**
Transport Width with 600 mm **(2'0")** Shoe	3.19	**10'6"**	3.19	**10'6"**

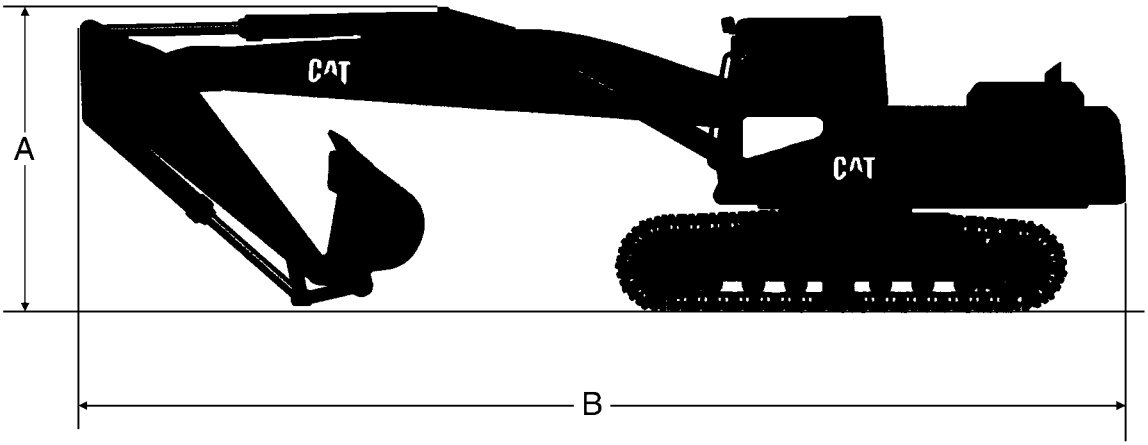
Model	330B LN Hydraulic Gauge		345B L		345B LN Hydraulic Gauge	
	m	ft	m	ft	m	ft
A Overall Transport Length	14.90	**48'11"**	16.25	**53'4"**	16.25	**53'4"**
B Transport Height	3.34	**10'11"**	3.67	**12'0"**	3.67	**12'0"**
Transport Width with 600 mm **(2'0")** Shoe	2.99	**9'10"**	2.99	**9'10"**	2.99	**9'10"**

*Not available in all sales areas.
**Includes wide gauge undercarriage and 2-piece boom.



Model	325B L	
A Max. Boom Angle	**25°**	
	m	**ft**
B Max. Height	17.10	**56'1"**
C Max. Reach	11.10	**36'5"**
Max. Tool Weight	2300 kg	**5070 lb**

Model	330B L		330B LN Variable Gauge		345B L		345B LN Variable Gauge	
A Boom Angle	**25°**		**25°**		**25°**		**25°**	
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
B Max. Height	20.90	**68'7"**	20.90	**68'7"**	22.80	**74'10"**	22.80	**74'10"**
C Max. Reach	13.80	**45'3"**	13.80	**45'3"**	15.30	**50'2"**	15.30	**50'2"**
Max. Tool Weight	2300 kg	**5070 lb**	3000 kg	**6610 lb**	2300 kg	**5070 lb**	3000 kg	**6610 lb**

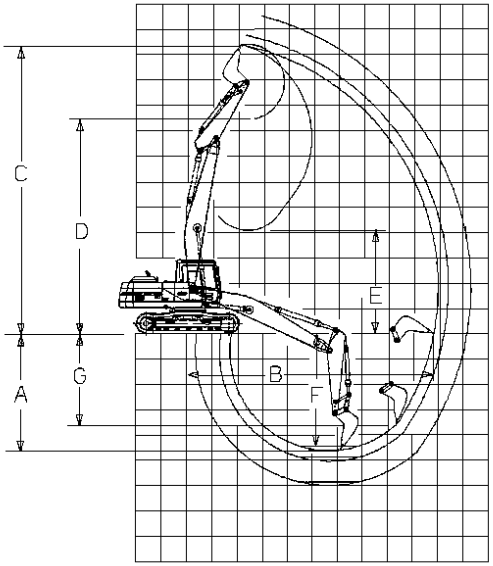


Model	320B				322B			
	m	ft	m	ft	m	ft	m	ft
Stick	2.50	**8'2"**	2.90	**9'6"**	2.50	**8'2"**	2.95	**9'8"**
A Shipping Height	3.07	**10'1"**	3.07	**10'1"**	3.10	**10'2"**	3.13	**10'3"**
B Shipping Length	9.70	**31'10"**	9.70	**31'10"**	10.42	**34'2"**	10.36	**34'0"**

Model	325B				330B			
	m	ft	m	ft	m	ft	m	ft
Stick	2.65	**8'8"**	3.20	**10'6"**	3.30	**10'10"**	3.90	**12'10"**
A Shipping Height	3.15	**10'4"**	3.15	**10'4"**	3.60	**11'10"**	3.60	**11'10"**
B Shipping Length	10.30	**33'10"**	10.30	**33'10"**	10.50	**34'5"**	10.70	**35'1"**

Model	345B L						375 L			
	m	ft	m	ft	m	ft	m	ft	m	ft
Stick	2.90	**9'6"**	3.40	**11'2"**	4.00	**13'1"**	2.90	**9'6"**	3.40	**11'2"**
A Shipping Height	3.35	**11'0"**	3.50	**11'6"**	3.75	**12'4"**	4.35	**14'3"**	4.60	**15'1"**
B Shipping Length	12.10	**39'8"**	12.05	**39'6"**	12.00	**39'4"**	14.80	**48'7"**	14.55	**47'9"**

Demolition Arrangements
- Straight Booms
- Range Dimensions
- Belgium Sourced

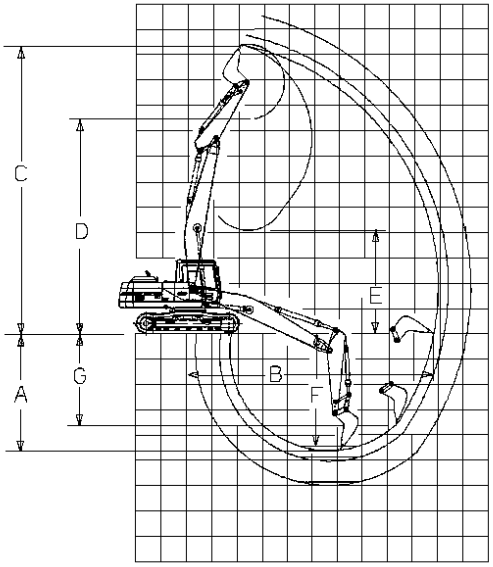


KEY:

A Maximum digging depth
B Maximum reach @ ground line
C Maximum cutting height
D Maximum loading height
E Minimum loading height
F Maximum depth at 2.44 m **(8'0")** level bottom
G Maximum vertical wall depth

Model	320B L				322B			
	m	ft	m	ft	m	ft	m	ft
Boom	6.02	**19'9"**	6.02	**19'9"**	6.20	**20'4"**	6.20	**20'4"**
Stick	2.50	**8'2"**	2.92	**9'6"**	2.50	**8'2"**	2.95	**9'8"**
Bucket Tip radius	1.50	**4'11"**	1.50	**4'11"**	1.55	**5'1"**	1.55	**5'1"**
A	4.64	**15'3"**	5.06	**16'7"**	4.50	**14'9"**	4.94	**16'2"**
B	9.77	**32'1"**	10.18	**33'5"**	10.02	**32'10"**	10.47	**34'4"**
C	11.36	**37'3"**	11.72	**38'5"**	11.62	**38'1"**	12.00	**39'4"**
D	8.45	**27'9"**	8.81	**28'11"**	8.54	**28'0"**	8.92	**29'3"**
E	4.07	**13'4"**	3.59	**11'9"**	4.42	**14'6"**	3.83	**12'7"**
F	4.44	**14'7"**	4.88	**16'0"**	4.30	**14'1"**	4.74	**15'7"**
G	3.60	**11'10"**	3.93	**12'11**	3.40	**11'2"**	3.80	**12'6"**

Model	325B				330B			
	m	ft	m	ft	m	ft	m	ft
Boom	6.48	**21'3"**	6.48	**21'3"**	6.87	**22'6"**	6.87	**22'6"**
Stick	2.65	**8'8"**	3.20	**10'6"**	3.30	**10'10"**	3.90	**12'10"**
Bucket Tip radius	1.60	**5'3"**	1.60	**5'3"**	1.85	**6'1"**	1.85	**6'1"**
A	5.54	**18'2"**	6.09	**20'0"**	6.06	**19'11"**	6.66	**21'10"**
B	10.48	**34'5"**	11.01	**36'1"**	11.54	**37'10"**	12.13	**39'10"**
C	11.84	**38'10"**	12.24	**40'2"**	13.15	**43'2"**	13.67	**44'10"**
D	8.63	**28'4"**	9.03	**29'8"**	9.70	**31'10"**	10.23	**33'7"**
E	4.05	**13'3"**	3.47	**11'5"**	3.87	**12'8"**	3.35	**11'0"**
F	5.36	**17'7"**	5.93	**19'5"**	5.91	**19'5"**	6.53	**21'5"**
G	4.76	**15'7"**	5.24	**17'2"**	5.04	**16'6"**	5.52	**18'1"**



KEY:

- **A** Maximum digging depth
- **B** Maximum reach @ ground line
- **C** Maximum cutting height
- **D** Maximum loading height
- **E** Minimum loading height
- **F** Maximum depth at 2.44 m **(8'0")** level bottom
- **G** Maximum vertical wall depth

Model	345B L						375 L					
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
Boom	7.20	**23'7"**	7.20	**23'7"**	7.20	**23'7"**	8.80	**28'10"**	8.80	**28'10"**	8.80	**28'10"**
Stick	2.90	**9'6"**	3.40	**11'2"**	4.00	**13'1"**	2.92	**9'7"**	3.40	**11'2"**	4.10	**13'5"**
Bucket Tip radius	1.90	**6'3"**	1.90	**6'3"**	1.90	**6'3"**	2.23	**7'4"**	2.23	**7'4"**	2.23	**7'4"**
A	5.20	**17'1"**	5.65	**18'6"**	6.30	**20'8"**	6.52	**21'5"**	6.98	**22'11"**	7.69	**25'3"**
B	11.80	**38'9"**	12.25	**40'2"**	12.90	**42'4"**	13.85	**45'5"**	14.30	**46'11"**	15.00	**49'3"**
C	13.55	**44'5"**	13.95	**45'9"**	14.50	**47'7"**	15.79	**51'10"**	16.13	**54'11"**	16.72	**54'10"**
D	9.80	**32'2"**	10.20	**33'6"**	10.70	**35'1"**	11.34	**37'2"**	11.68	**38'4"**	12.27	**40'3"**
E	4.75	**15'7"**	4.35	**14'3"**	3.75	**12'4"**	9.29	**30'6"**	8.86	**29'1"**	8.23	**27'0"**
F	5.00	**16'5"**	5.45	**17'11"**	6.10	**20'0"**	6.37	**20'11"**	6.85	**22'6"**	7.57	**24'10"**
G	4.90	**16'1"**	5.20	**17'1"**	5.70	**18'8"**	4.85	**15'11"**	5.37	**17'7"**	5.81	**19'1"**

320B L

- **Straight Boom**
- **600 mm (2'0") Track Shoes**
- **0.8 m³ (1.05 yd³) Bucket**

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2.50 m	kg	—	—	9320*	6340	6980*	4160	4960	2970	—	—	2740*	2070
8'2"	**lb**	—	—	**20,550***	**13,990**	**15,390***	**9180**	**10,930**	**6550**	—	—	**6040***	**4560**
2.92 m	kg	—	—	9600*	6350	7000	4140	4920	2930	3040*	2165	2050*	1880
9'7"	**lb**	—	—	**21,170***	**14,010**	**15,440**	**9130**	**10,850**	**6470**	**6710***	**4770**	**4530***	**4150**

322B LN

- **Straight Boom**
- **600 mm (2'0") Track Shoes**
- **1.25 m³ (1.64 yd³) Bucket**

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2.50 m	kg	—	—	10 680*	6800	8000	4390	5570	3070	—	—	3600*	2040
8'2"	**lb**	—	—	**23,550***	**15,000**	**17,650**	**9680**	**12,290**	**6780**	—	—	**7940***	**4500**
2.95 m	kg	—	—	11 480*	6840	8020	4400	5570	3070	4130	2230	3130*	1860
9'8"	**lb**	—	—	**25,320***	**15,090**	**17,700**	**9700**	**12,300**	**6780**	**9110**	**4930**	**6910***	**4100**

325B LN

- **Straight Boom**
- **600 mm (2'0") Track Shoes**
- **1.2 m³ (1.57 yd³) Bucket**

Stick		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side
2.65 m	kg	—	—	8510*	7400	8650	4790	6060	3390	4520	2490	3760*	2110
8'8"	**lb**	—	—	**18,770***	**16,330**	**19,070**	**10,570**	**13,360**	**7470**	**9970**	**5490**	**8300***	**4660**
3.20 m	kg	—	—	10 040*	7400	8650	4780	6040	3360	4490	2450	2960*	1870
10'6"	**lb**	—	—	**22,150***	**16,330**	**19,070**	**10,550**	**13,320**	**7420**	**9900**	**5420**	**6530***	**4140**

*Load limited by hydraulic capacity rather than tipping.

330B LN

● **Straight Boom** ● **600 mm (2'0") Track Shoes** ● **1.2 m³ (1.57 yd³) Bucket**

Stick		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2.80 m	kg	—	—	12 290*	6810	8630	4870	6470	3630	—	—	5000	2770
9'2"	**lb**	—	—	**27,110***	**15,020**	**19,040**	**10,750**	**14,270**	**8020**	—	—	**11,040**	**6110**
3.30 m	kg	11 870*	10 460	12 330	6810	8620	4850	6440	3600	—	—	3520*	2500
10'10"	**lb**	**26,170***	**23,060**	**27,180**	**15,020**	**19,010**	**10,700**	**14,200**	**7940**	—	—	**7770***	**5530**
3.90 m	kg	12 750*	10 510	12 580*	6830	8610	4840	6410	3570	4650	2680	2920*	2200
12'10"	**lb**	**28,130***	**23,170**	**27,740***	**15,060**	**19,000**	**10,670**	**14,140**	**7870**	**10,250**	**5910**	**6450***	**4860**

345B L

● **Straight Boom** ● **600 mm (2'0") Track Shoes** ● **2.0 m³ (2.62 yd³) Bucket**

Stick		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	At Max. Reach Front	At Max. Reach Side
2.90 m	kg	—	—	13 480*	10 780	10 450*	7510	7900*	5530	—	—	4240*	4050
9'6"	**lb**	—	—	**29,720***	**23,760**	**23,040***	**16,550**	**17,410***	**12,190**	—	—	**9340***	**8930**
3.40 m	kg	10 790*	10 790*	14 060*	10 780	10 780*	7550	8240*	5530	5660*	4180	4140*	3720
11'2"	**lb**	**23,790***	**23,790***	**31,000***	**23,760**	**23,760***	**16,640**	**18,160***	**12,190**	**12,480***	**9210**	**9120***	**8200**
4.00 m	kg	12 000*	12 000*	14 410*	10 790	10 930*	7460	8410*	5410	6270*	4020	3180*	3180*
13'1"	**lb**	**26,460***	**26,460***	**31,770***	**23,790**	**24,100***	**16,440**	**18,540***	**11,920**	**13,820***	**8860**	**7010***	**7010***

*Load limited by hydraulic capacity rather than tipping.

EXCAVATOR SELECTION: TRACKS VERSUS WHEELS

Features:

Tracks	Wheels
• Flotation	• Mobility and speed
• Traction	• No pavement damage
• Maneuverability	• Better stability with outriggers or dozers
• Severe underfoot	• Leveling machine with outriggers
• Faster machine repositioning	• Dozing capability

307–375

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 (M312 and M320)

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.

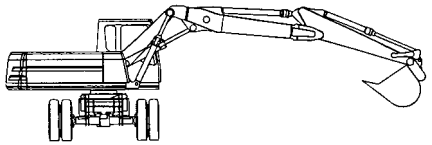
Caterpillar Wheel Excavators offer a load independent, load-sensing, flow distribution hydraulic system that gives the operator absolute precision and control no matter what the application.

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.



FOR USE WITH 1-PIECE BOOM — UNIQUE M312/M315 BUCKETS

Bucket Bite Width	mm ft/in	450 **17.7"**	600 **1'11.6"**	700 **2'3.6"**	900 **2'11.4"**	1000 **3'3.4"**	1100 **3'7.3"**	1100 **3'7.3"**	1200 **3'11.2"**	1200* **3'11.2"**
ISO Bucket Capacity	m^3 yd^3	0.24 **0.31**	0.33 **0.43**	0.40 **0.52**	0.54 **0.70**	0.61 **0.79**	0.68 **0.88**	0.68 **0.88**	0.75 **0.98**	0.86 **1.12**
Bucket Tip Radius	mm ft/in	1240 **4'0.8"**	1240 **4'0.8"**	1240 **4'0.8"**	1240 **4'0.8"**	1240 **4'0.8"**	1240 **4'0.8"**	1220 **4'0"**	1220 **4'0"**	1318 **4'3.9"**
Number of Tips		3	3	4	5	5	6	6	6	5
Weight with Tips	kg lb	271 **596**	304 **669**	340 **748**	365 **803**	410 **902**	438 **964**	472 **1038**	458 **1008**	592 **1305**
Bucket Type[1]		T	T	T	X	X	X	EX	X	EX
Longest Acceptable Stick:										
Dozer Only — Up (FOW[2])	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	2.6 **8'6"**	2.6 **8'6"**	2.4 **7'11"**	2.4 **7'11"**
Dozer Only — Down	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	2.6 **8'6"**	2.6 **8'6"**
Rear Outriggers — Down	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**
2 Sets Outriggers — Down	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**
Dozer/Outriggers — Down	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**

FOR USE WITH VA BOOM — UNIQUE M312/M315 BUCKETS

Bucket Bite Width	mm ft/in	450 **17.7"**	600 **1'11.6"**	700 **2'3.6"**	900 **2'11.4"**	1000 **3'3.4"**	1100 **3'7.3"**	1100 **3'7.3"**	1200 **3'11.2"**	1200* **3'11.2"**
ISO Bucket Capacity	m^3 yd^3	0.24 **0.31**	0.33 **0.43**	0.40 **0.52**	0.54 **0.70**	0.61 **0.79**	0.68 **0.88**	0.68 **0.88**	0.75 **0.98**	0.86 **1.12**
Bucket Tip Radius	mm ft/in	1220 **4'0"**	1220 **4'0"**	1220 **4'0"**	1220 **4'0"**	1220 **4'0"**	1220 **4'0"**	1220 **4'0"**	1220 **4'0"**	1318 **4'3.9"**
Number of Tips		3	3	4	5	5	6	6	6	5
Weight with Tips	kg lb	271 **596**	304 **669**	340 **748**	365 **803**	410 **902**	438 **964**	472 **1038**	458 **1008**	592 **1305**
Bucket Type[1]		T	T	T	X	X	X	EX	X	EX
Longest Acceptable Stick:										
Dozer Only — Up (FOW[2])	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	2.6 **8'6"**	2.4 **7'11"**	2.4 **7'11"**	2.1 **6'11"**	1.7 **5'7"**
Dozer Only — Down	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	2.6 **8'6"**	2.6 **8'6"**	2.6 **8'6"**
Rear Outriggers — Down	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**
2 Sets Outriggers — Down	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**
Dozer/Outriggers — Down	m ft/in	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**	3.1 **10'2"**

*Requires J300 tips. All other buckets require J250 tips.
[1]T = Trenching X = Excavation EX = Extreme Service Excavation
[2]Free on wheels

FOR USE WITH 1-PIECE & VA BOOMS — UNIQUE M318 BUCKETS

Bucket Bite Width	1000 mm **3'3"**	1100 mm **3'7"**	1200 mm **3'11"**	1200 mm **3'11"**
ISO Bucket Capacity	0.70 m^3 **0.92 yd^3**	0.80 m^3 **1.05 yd^3**	0.90 m^3 **1.18 yd^3**	0.90 m^3 **1.18 yd^3**
Bucket Tip Radius	1340 mm **4'5"**	1340 mm **4'5"**	1340 mm **4'5"**	1340 mm **4'5"**
Number of Tips	5	5	5	5
Weight with Tips	600 kg **1323 lb**	640 kg **1411 lb**	660 kg **1455 lb**	713 kg **1569 lb**
Bucket Type[1]	X	X	X	X
Longest Acceptable Stick:				
Dozer Only — Up (FOW[2])	2.8 m **9'2"**	2.4 m **7'10"**	1.8 m **5'11"**	1.8 m **5'11"**
Dozer Only — Down	4.0 m **13'1"**	2.8 m **9'2"**	2.4 m **7'10"**	2.4 m **7'10"**
Rear Outriggers — Down	4.0 m **13'1"**	2.8 m **9'2"**	2.4 m **7'10"**	2.4 m **7'10"**
2 Sets Outriggers — Down	4.0 m **13'1"**	4.0 m **13'1"**	4.0 m **13'1"**	4.0 m **13'1"**
Dozer/Outriggers — Down	4.0 m **13'1"**	4.0 m **13'1"**	4.0 m **13'1"**	4.0 m **13'1"**

[1]T = Trenching X = Excavation EX = Extreme Service Excavation
[2]Free on wheels

FOR USE WITH 1-PIECE & VA BOOMS — UNIQUE M320 BUCKETS

Bucket Bite Width	600 mm **2'0"**	750 mm **2'6"**	1000 mm **3'3"**	1100 mm **3'7"**	1250 mm **4'1"**
ISO Bucket Capacity	0.41 m^3 **0.54 yd^3**	0.55 m^3 **0.72 yd^3**	0.81 m^3 **1.06 yd^3**	0.90 m^3 **1.18 yd^3**	1.05 m^3 **1.37 yd^3**
Bucket Tip Radius	1423 mm **4'8"**	1423 mm **4'8"**	1423 mm **4'8"**	1423 mm **4'8"**	1423 mm **4'8"**
Number of Tips	3	3	4	5	5
Weight with Tips	540 kg **1190 lb**	560 kg **1230 lb**	600 kg **1320 lb**	685 kg **1510 lb**	740 kg **1630 lb**
Bucket Type	GP	GP	GP	GP	GP

Bucket Bite Width	1400 mm **4'7"**	1500 mm **4'11"**	1200 mm **3'11"**	1250 mm **4'1"**	1800 mm **5'11"**
ISO Bucket Capacity	1.20 m^3 **1.57 yd^3**	1.35 m^3 **1.77 yd^3**	0.90 m^3 **1.18 yd^3**	1.05 m^3 **1.37 yd^3**	0.48 m^3 **0.63 yd^3**
Bucket Tip Radius	1423 mm **4'8"**	1423 mm **4'8"**	1340 mm **4'4"**	1423 mm **4'8"**	1244 mm **4'1"**
Number of Tips	6	6	5	5	—
Weight with Tips	780 kg **1720 lb**	810 kg **1785 lb**	710 kg **1565 lb**	750 kg **1655 lb**	477 kg* **1050 lb***
Bucket Type	GP	GP	ES	ES	DC

Bucket Bite Width	2000 mm **6'7"**	2000 mm **6'7"**	2300 mm **7'7"**	2000 mm **6'7"**
ISO Bucket Capacity	0.58 m^3 **0.76 yd^3**	0.70 m^3 **0.92 yd^3**	0.62 m^3 **0.81 yd^3**	0.70 m^3 **0.92 yd^3**
Bucket Tip Radius	1300 mm **4'3"**	1400 mm **4'7"**	1244 mm **4'1"**	896 mm **2'11"**
Number of Tips	—	—	—	—
Weight with Tips	680 kg* **1500 lb***	720 kg* **1590 lb***	569 kg* **1255 lb***	640 kg **1410 lb**
Bucket Type	DC	DC	DC	DC

*Not including adapter and cylinders.
GP = General Purpose DC = Ditch Cleaning ES = Extreme Service

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	ShoeType	Shoe Width mm	Shoe Width in	Pressure kPa	Pressure psi
301.5	Double	230	**9"**		
	Rubber Belt	230	**9"**		
307B	Triple	450	**18"**	30.0	**4.35**
	Triple	600	**24"**	23.0	**3.34**
	Segment Rubber	450	**18"**	30.0	**4.35**
307B SB	Triple	450	**18"**	34.0	**4.93**
	Triple	600	**24"**	26.0	**3.77**
	Segment Rubber	450	**18"**	34.0	**4.93**
307	Triple	450	**18"**	32.3	**4.68**
	Triple	600	**24"**	25.3	**3.67**
	Apex*	600	**24"**	NA	**NA**
	Flat*	450	**18"**	NA	**NA**
	Rubber	450	**18"**	32.3	**4.68**
311B	Triple	500	**20"**	38.0	**5.51**
	Triple	600	**24"**	32.0	**4.64**
	Triple	700	**28"**	28.0	**4.06**
	Triple	770	**30"**	26.0	**3.77**
	Segment Rubber	500	**20"**	38.2	**5.54**
312B	Triple	500	**20"**	39.0	**5.66**
	Triple	600	**24"**	33.0	**4.79**
	Triple	700	**28"**	29.0	**4.21**
	Triple	770	**30"**	26.0	**3.77**
	Segment Rubber	500	**20"**	40.2	**5.83**
312B L	Triple	500	**20"**	38.0	**5.51**
	Triple	600	**24"**	32.0	**4.64**
	Triple	700	**28"**	28.0	**4.10**
	Triple	770	**30"**	26.0	**3.77**
	Triple	850	**34"**	24.0	**3.60**
	Segment Rubber	500	**20"**	40.2	**5.83**

*Custom product.

Model	ShoeType	Shoe Width mm	Shoe Width in	Pressure kPa	Pressure psi
315B	Triple	500	**20"**	48.0	**6.96**
	Triple	600	**24"**	41.0	**5.95**
	Triple	700	**28"**	35.0	**5.08**
315B L	Triple	500	**20"**	46.0	**6.67**
	Triple	600	**24"**	39.0	**5.67**
	Triple	700	**28"**	33.0	**4.79**
318B L	Triple	500	**20"**	44.0	**6.39**
	Triple	600	**24"**	42.4	**6.15**
	Triple	600	**24"**	38.0	**5.54**
	Triple	700	**28"**	36.5	**5.30**
	Triple	700	**28"**	32.0	**4.69**
	Triple	800	**32"**	32.8	**4.75**
318B LN	Triple	500	**20"**	50.0	**7.25**
	Triple	500	**20"**	49.0	**7.10**
	Triple	600	**24"**	44.0	**6.39**
	Triple	600	**24"**	42.3	**6.13**
	Triple	700	**28"**	38.0	**5.54**
	Triple	700	**28"**	36.7	**5.30**
320B*	Triple	600	**24"**	44.7	**6.36**
	Triple	700	**28"**	39.0	**5.55**
	Triple	800	**32"**	34.5	**4.91**
320B L*	Triple	600	**24"**	41.8	**5.95**
	Triple	700	**28"**	36.4	**5.18**
	Triple	800	**32"**	32.3	**4.59**
320B N	Triple	500	**20"**	55.4	**7.88**
	Triple	600	**24"**	46.7	**6.64**
322B	Triple	600	**24"**	49.8	**7.22**
	Triple	700	**28"**	43.4	**6.29**
	Triple	800	**32"**	38.3	**5.55**
322B L	Triple	600	**24"**	46.4	**6.73**
	Triple	700	**28"**	40.3	**5.85**
	Triple	800	**32"**	35.8	**5.19**
322B LN	Triple	600	**24"**	46.3	**6.72**
325B	Triple	600	**24"**	55.8	**8.09**
	Triple	700	**28"**	48.4	**7.02**
	Triple	800	**32"**	43.3	**6.29**
325B L	Triple	600	**24"**	52.9	**7.67**
	Triple	700	**28"**	45.9	**6.66**
	Triple	800	**32"**	41.1	**5.96**
325B LN	Triple	600	**24"**	52.7	**7.64**
330B	Triple	600	**24"**	67.0	**9.70**
	Triple	750	**30"**	54.0	**7.80**
	Triple	850	**33"**	49.0	**7.10**

*3066T Engine.
NOTE: Belgium sourced excavators have different ground pressures. See Technical Data Sheets.

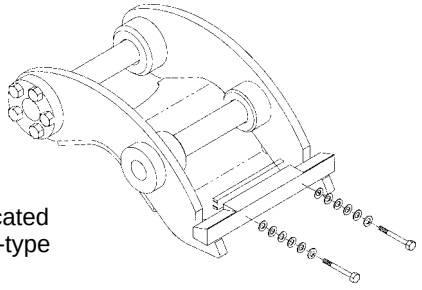
Model	ShoeType	Shoe Width mm	Shoe Width in	Pressure kPa	Pressure psi
330B L	Triple	600	**24"**	62.0	**9.0**
	Triple	750	**30"**	50.0	**7.3**
	Triple	850	**33"**	45.0	**6.5**
330B LN	Triple	600	**24"**	62.0	**9.0**
345B	Triple	600	**24"**	80.3	**11.6**
	Triple	750	**30"**	65.8	**9.5**
	Triple	900	**35"**	55.7	**8.1**
345B L – FIX	Triple	600	**24"**	76.0	**11.0**
	Triple	750	**30"**	62.3	**9.0**
	Triple	900	**35"**	52.8	**7.7**
345B L – VG	Triple	600	**24"**	81.8	**11.9**
	Triple	750	**30"**	67.0	**9.7**
	Triple	900	**35"**	56.7	**8.2**
350	Triple	600	**24"**	87.6	**12.7**
	Triple	750	**30"**	70.3	**10.2**
	Triple	900	**35"**	60.0	**8.7**
	Double	600	**24"**	87.6	**12.7**
	Double	750	**30"**	71.7	**10.4**
350 L	Triple	600	**24"**	80.7	**11.7**
	Triple	750	**30"**	64.8	**9.4**
	Triple	900	**35"**	55.9	**8.1**
	Double	600	**24"**	80.7	**11.7**
	Double	750	**30"**	65.5	**9.5**
375	Double	610	**24"**	120.7	**17.5**
	Double	750	**30"**	99.3	**14.4**
	Double	900	**35"**	83.4	**12.1**
	Single	610	**24"**	122.1	**17.7**
375 L	Double	610	**24"**	113.1	**16.4**
	Double	750	**30"**	93.1	**13.5**
	Double	900	**35"**	78.6	**11.4**
	Single	610	**24"**	113.1	**16.4**
5130B ME	Double	650	**26"**	179.0	**26.0**
	Double	800	**32"**	218.0	**31.6**
	Double	1000	**39"**	145.0	**21.0**
5230 ME	Double	1100	**43"**	151.0	**21.9**
	Double	1300	**51"**	172.0	**25.0**
	Double	1500	**59"**	202.0	**29.4**

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

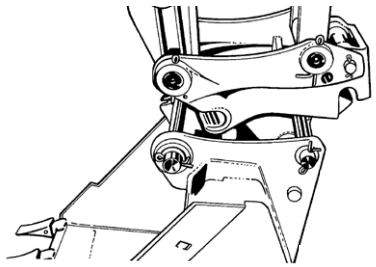
Advantages:

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 significantly increases the tip radius. This can compromise performance. It is an additional assembly between a standard bucket and stick. This means it adds more weight and reduces the excavator's payload capability.

Pin grabbers are required to mate up with existing bucket pins. Because different machines require different pin spreads, 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.

EQUIPMENT FOR …	301.5	307B	307B SB	307
Undercarriage:				
Standard	●	●	●	●
Booms:				
One-Piece Reach	●	●	—	●
Swing	—	—	●	—
Sticks:		**mm** **ft**	**mm** **ft**	**mm** **ft**
Short	●	1670 **5'6"**	1670 **5'6"**	1665 **5'6"**
●	—	2212 **7'3"**	2210 **7'3"**	2210 **7'3"**
Booms:				
Parallel offset	—	●	—	●
Sticks:		**mm** **ft**		**mm** **ft**
Short	●	1670 **5'6"**	—	1665 **5'6"**
Buckets (No. of)	12	3	3	4
Teeth:				
Long (G.P.)	●	●	●	●
Short (Rock)	—	●	●	●
Side Cutters:				
One-Piece Blade	—	●	●	●
Track Shoes:	Double Grouser 230 mm **(9")** Rubber Belt 230 mm **(9")**	Triple Grouser 450, 600 mm **(18", 24")** Rubber Pads 450 mm **(18")**	Triple Grouser 450, 600 mm **(18", 24")** Rubber Pads 450 mm **(18")**	Triple Grouser 450, 600 mm **(18", 24")** Rubber Pads 450 mm **(18")**

NOTE: Number of buckets includes Gen. Purpose, Trenching and Rock. Other types of buckets have not been included.
All attachments may not be available in all sales areas.

EQUIPMENT FOR ...	311B		312B 312B L		315B 315B L		318B L 318B LN	
Undercarriage:								
Standard	●		●		●		—	
Long (L)	—		●		●		●	
Narrow (N)	—		—		—		●	
Booms:								
One-Piece Reach	●		●		●		●	
Sticks:	**mm**	**ft**	**mm**	**ft**	**mm**	**ft**	**mm**	**ft**
Short	1950	**6'5"**	2100	**6'11"**	1850	**6'1"**	1800	**5'11"**
●	2250	**7'5"**	2500	**8'2"**	2250	**7'5"**	2250	**7'5"**
●	2800	**9'2"**	3000	**9'10"**	2600	**8'6"**	2700	**8'10"**
Long	—		—		3100	**10'2"**	3200	**10'6"**
Booms:								
One-Piece Mass	—		—		—		—	
Two-Piece VA	—		●		●		●	
Parallel offset	—		—		—		—	
Sticks:			**mm**	**ft**	**mm**	**ft**		
Short	—		2100	**6'11"**	1850	**6'1"**	—	
●	—		2500	**8'2"**	2250	**7'5"**	—	
●	—		3000	**9'10"**	2600	**8'6"**	—	
Long	—		—		3100	**10'2"**	—	
Bucket Family	—		—		—		B	
Buckets (No. of)	5		68		55		40	
Teeth:								
Abrasion	●		●		●		●	
Long (G.P.)	●		●		●		●	
Short (Rock)	●		●		●		●	
Penetration	●		●		●		●	
Wide (Spade)	●		●		●		●	
Sharp	●		●		●		●	
Side Cutters:								
One-Piece Blade	●		●		●		●	
Track Shoes:	Triple Grouser 500, 600, 700, 770 mm **(20", 24", 28", 30")** Rubber Pads 500 mm **(20")**		Triple Grouser 500, 600, 700, 770, 850, 900, 1400 mm **(20", 24", 28", 30", 34", 36", 56")** Rubber Pads 500 mm **(20")**		Triple Grouser 500, 600, 700, 900 mm **(20", 24", 28", 36")** Rubber Pads 500, 600 mm **(20", 24")**		Triple Grouser 600, 700, 800, 900 mm **(24", 28", 32", 36")** Rubber Pads 500, 600 mm **(20", 24")**	

NOTE: Number of buckets includes Gen. Purpose, Trenching and Rock. Other types of buckets have not been included.
All attachments may not be available in all sales areas.

EQUIPMENT FOR …	320B 320B L 320B LN	322B 322B L 322B LN	325B 325B L 325B LN	330B 330B L 330B LN	345B 345B L
Undercarriage:					
Standard	●	●	●	●	●
Long (L)	●	●	●	●	●
Narrow (N)	●	—	—	—	—
Long Narrow (LN)*	—	●*	●*	●*	—
Booms:					
One-Piece Reach	●	●	●	●	●
Sticks:	**mm ft**	**mm ft**	**mm ft**	**mm ft**	**mm ft**
Short	1900 **6'3"**	—	2000 **6'7"**	2150 **7'1"**	—
●	2500 **8'2"**	2500 **8'2"**	2650 **8'8"**	2800 **9'2"**	2900 **9'6"**
●	2920 **9'7"**	2950 **9'8"**	3200 **10'6"**	3300 **10'10"**	3350 **11'0"**
●	—	3600 **11'10"**	4200 **13'9"**	3900 **12'10"**	3900 **12'10"**
Long	3860 **12'8"**	—	—	—	—
Booms:					
One-Piece Mass	●	●	●	●	●
Two-Piece VA	●	●	—	—	—
Sticks:	**mm ft**	**mm ft**	**mm ft**	**mm ft**	**mm ft**
Short	1900 **6'3"**	2000 **6'7"**	2000 **6'7"**	2150 **7'1"**	2500 **8'2"**
●	2400 **7'10"**	2500 **8'2"**	2500 **8'2"**	2550 **8'4"**	3000 **9'10"**
●	2920 **9'7"**	—	3200 **10'6"**	—	—
Bucket Family	B, C	B, S, D	B, C, D	D, E	F, G, T, U
Buckets (No. of)	19	24	24	17	15
Teeth:					
Abrasion	●	●	●	●	●
Long (G.P.)	●	●	●	●	●
Short (Rock)	●	●	●	●	●
Penetration	●	●	●	●	●
Wide (Spade)	●	●	●	●	●
Sharp	●	●	●	●	●
Side Cutters:					
One-Piece Blade	●	●	●	●	●
Track Shoes:	Triple Grouser 500, 600, 700 800 mm **(20", 24", 28", 30")** Apex 800 mm **(32")**	Triple Grouser 600, 700, 800 mm **(24", 28", 32")**	Triple Grouser 600, 700, 800 mm **(24", 28", 32")** Double Grouser 600, 700 mm **(24", 28")**	Triple Grouser 600, 750, 850 mm **(24", 30", 34")** Double Grouser 700 mm **(28")**	Triple Grouser 600, 750, 900 mm **(24", 30", 35")** Double Grouser 600, 750 mm **(24", 30")**
Quick Coupler	—	*	*	*	*

*All attachments may not be available in all sales areas.
NOTE: Number of buckets includes Gen. Purpose, Trenching and Rock. Other types of buckets have not been included.

EQUIPMENT FOR ...	350 350 L	375 375 L	5130B ME	5230 ME
Undercarriage:				
Standard	●	●	●	●
Long (L)	●	●	—	—
Booms:				
One-Piece Reach	●	●	N/A	N/A
One-Piece GP	—	●	N/A	N/A
Sticks:	**mm ft**	**mm ft**		
Short	3100 **10'2"**	2900* **9'6"**	N/A	N/A
●	3600 **11'10"**	3400* **11'2"**	N/A	N/A
●	4050 **13'3"**	4400 **14'5"**	N/A	N/A
●	4800 **15'9"**	5500 **18'1"**	N/A	N/A
Booms:				
One-Piece Mass	●	●	●	●
Sticks:	**mm ft**	**mm ft**		
Short	2400 **7'10"**	2900 **9'6"**	N/A	N/A
●	2950 **9'8"**	3400 **11'2"**	N/A	N/A
Long	3700 **12'2"**	4100 **13'5"**	N/A	N/A
Bucket Family	F, G	H, J	—	—
Sticks	—	—	ME & LR	ME & LR
Buckets (No. of)	24	23	5	3
Teeth:				
Abrasion	●	●	●	—
Long (G.P.)	●	●	●	●
Short (Rock)	●	●	●	●
Penetration	●	●	●	—
Wide (Spade)	●	●	—	—
Sharp	●	●	—	—
Side Cutters:				
One-Piece Blade	●	●	●	●
Track Shoes:	Triple Grouser 600, 750, 900 mm **(24", 30", 36")** Double Grouser 600, 750 mm **(24", 30")**	Double Grouser 610, 750, 900 mm **(24", 30", 36")** Single Grouser 610 mm **(24")**	Double Grouser 650, 800, 1000 mm **(26", 32", 39")**	Double Grouser 1100, 1300, 1500 mm **(43", 52", 60")**

*All attachments may not be available in all sales areas.
NOTE: Number of buckets includes Gen. Purpose, Trenching and Rock. Other types of buckets have not been included.

EQUIPMENT FOR …	M312		M315		M318		M320	
Undercarriage:								
Wheeled	●		●		●		●	
Booms:								
One-piece	●		●		●		●	
VA	●		●		●		●	
Backhoe Sticks:	**mm**	**ft**	**mm**	**ft**	**mm**	**ft**	**mm**	**ft**
Short	1600	**5'3"**	1700	**5'7"**	1800	**5'11"**	1900	**6'3"**
Medium	2000	**6'6"**	2100	**6'9"**	2400	**7'9"**	2500	**8'2"**
Medium Long	2300	**7'5"**	2400	**7'9"**	—		—	
Long	2600	**8'5"**	2600	**8'5"**	2800	**9'2"**	2900	**9'6"**
Extra Long	3000	**9'9"**	3100	**10'1"**	4000	**13'1"**	4200	**13'9"**
Material Handling Stick	—		—		3200	**10'6"**	—	
Buckets (No. of)	13		13		8		14	
Teeth:								
Abrasion	●		●		●		●	
Long (G.P.)	●		●		●		●	
Short (Rock)	●		●		●		●	
Penetration	●		●		●		●	
Wide	—		—		—		●	
Sharp	—		—		—		●	
Side Cutters:								
One-Piece Blade	●		●		●		—	
Tires:	Tires: Duals 10.00-20 11.00-20 Singles 18-19.5		Tires: Duals 10.00-20 11.00-20 Singles 18-19.5 18R-22.5XF		Tires: Duals 10.00-20 11.00-20 Singles 18-19.5 18-22.5		Tires: Duals 11.00-20 10.00-20 Solid Singles 18R-19.5XF 18R-22.5XF	

NOTE: Number of buckets shown includes general purpose, rock and trenching. Not included are ditch cleaning, ditch grading and trapezoidal ditching.

Work Tools	M312	M315	M318	M320
Clamshell*	X	X	X	
Ditch Cleaning Bucket	X	X	X	X
Grapples*	X	X	X	
Hammer Installation Kit	X	X	X	

*With hydraulic rotator.

Work Tools	375	345B/ 350	330B	325B	322B	320B	318B L/ 318B LN	315B	311B, 312B L	307B
Quick Coupler		X	X	X	X	X	X	X	X	X
Ditch Cleaning		X	X	X	X	X	X	X	X	X
General Purpose	X	X	X	X	X	X	X	X	X	X
Rock	X	X	X	X	X	X	X	X	X	X
Tilt Bucket			X	X	X	X	X	X	X	X
Thumb	X	X	X	X	X	X	X	X	X	X
Construction Grapple		X	X	X	X	X	X	X	X	
Medium Grapple		X	X	X	X	X	X	X	X	
Trash Grapple		X	X	X	X	X	X	X	X	
Hydraulic Hammer	X	X	X	X	X	X	X	X	X	X
Vibratory Plate Compactor				X	X	X	X	X	X	X
Shear	X	X	X	X	X	X				
Crusher		X	X	X	X	X				
Pulverizer	X	X	X	X	X	X				
Rock Drill						X		X		

NOTE: Other attachments available upon request. Contact Caterpillar Attachment Products and Services.

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.

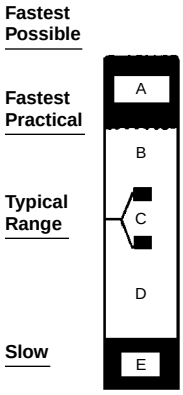
In sewer construction work the operator may not be able to work at full speed because he has to dig around existing utilities, load the bucket inside a trench shield, or avoid people working in the area.

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.



KEY

A — Excellent
B — Above Average
C — Average
D — Below Average
E — Severe

CYCLE TIME -vs- JOB CONDITION DESCRIPTION

— 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		307	311B	312B, 312B L	315B, 315B L	318B L*, 318B LN	320B	322B	325B	330B	345B*	350	375	5130 ME	5230 ME
Bucket Size															
L		280	450	520	520		800	1000	1100	1400		1900	2800	10 m^3	15.5 m^3
(yd^3)		**0.37**	**0.59**	**0.68**	**0.68**		**1.05**	**1.31**	**1.44**	**1.83**		**2.5**	**3.66**	**13**	**20.3**
Soil Type		◄		Packed Earth		►	◄			Hard Clay					►
Digging Depth	**(m)**	1.5	1.5	1.8	3.0		2.3	3.2	3.2	3.4		4.2	5.2	4.0	5.0
	(ft)	**5**	**5**	**6**	**10**		**8**	**10**	**10**	**11**		**14**	**17**	**13**	**16**
Load Bucket	**(min)**	0.08	0.07	0.07	0.10		0.09	0.09	0.09	0.09		0.10	0.11	0.12	0.12
Swing Loaded	**(min)**	0.05	0.06	0.06	0.04		0.06	0.06	0.06	0.07		0.09	0.10	0.13	0.14
Dump Bucket	**(min)**	0.03	0.03	0.03	0.02		0.03	0.04	0.04	0.04		0.04	0.04	0.04	0.04
Swing Empty	**(min)**	0.06	0.05	0.05	0.05		0.05	0.06	0.06	0.07		0.07	0.09	0.13	0.14
Total Cycle Time	**(min)**	0.22	0.21	0.21	0.21		0.23	0.25	0.25	0.27		0.30	0.34	0.42	0.44

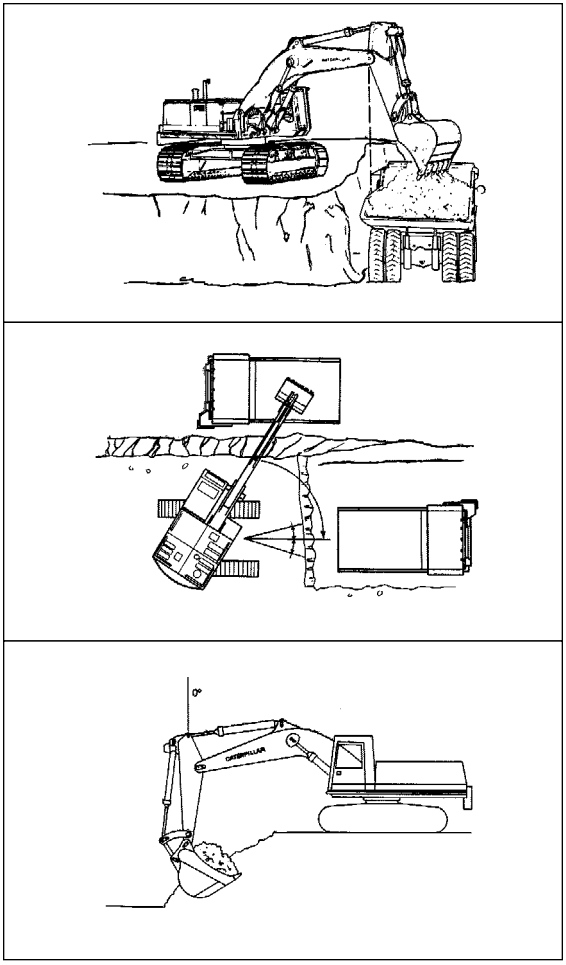
*Information not available at time of printing.

CYCLE TIME ESTIMATING CHART															
	MACHINE SIZE CLASS														
CYCLE TIME	**307**	**311B**	**312B**	**315B**	**318B L***	**320B**	**322B**	**325B**	**330B**	**345B***	**350**	**375**	**5130B ME**	**5230 ME**	**CYCLE TIME**
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.

*Information not available at time of printing.

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.

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.

m^3 (yd^3)/60 min hr = Cycles/60 min hr × Avg. Bucket Payload in m^3 (yd^3)

$$m^3\ (yd^3)/60\ min\ hr = \frac{60\ min/hr}{Cycle\ Time - min} \times Avg.\ Bucket\ Payload\ in\ m^3\ (yd^3)$$

Avg. Bucket Payload = Heaped Bucket Capacity × Bucket Fill Factor

Actual m^3 (yd^3)/hr = m^3 (yd^3)/60 min hr × 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 Bm^3 (19 100 Lm^3 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 m^3 bucket or a 330 with 1.9 m^3 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 Lm^3/Day (19 100 Lm^3 ÷ 10 Days) which means the required average hourly rate will be 190 Lm^3/60 Min. Hr. (1900 Lm^3/Day ÷ 10 hrs/day). Further considering the 83% job efficiency, the excavator's capability will have to be 230 Lm^3/50 min hr.

The production estimating table shows that the 320 with a 1.0 m^3 bucket would have to achieve a 17.1 sec. average cycle time to produce the required 190 Lm^3/60 min. hr. With job efficiency applied a 15.0 second average cycle time is required to produce the 230 Lm^3/50 min. hr. The 330 with a 1.9 m^3 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 yd^3 bucket or 330 with 2.5 yd^3 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																					Cycles Per Min.	Cycles Per Hr.
Seconds	Min.	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		
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																					Cycles Per Min.	Cycles Per Hr.
Seconds	Min.	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		
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	08	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.

Cubic Meters/Yards per 60 Minute Hour*

ESTIMATED CYCLE TIMES		ESTIMATED BUCKET PAYLOAD** — LOOSE CUBIC METERS/YARDS											ESTIMATED CYCLE TIMES	
Cycle Time													Cycles Per Min.	Cycles Per Hr.
Seconds	Min.	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0		
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												Cycles Per Min.	Cycles Per Hr.
Seconds	Min.	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0		
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 m^3 (yd^3) per hour to m (lineal feet) per hour, if the excavating rate m^3/hr (yd^3/hr) and trench volume m^3/m (yd^3/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 Lm^3/hour. Trench survey shows that the trench contains 2.5 Lm^3/meter. What trenching rate will the 325 produce?

Solution: Enter the horizontal axis of the Trenching Conversion Chart at 200 m^3/Hour and move up to the 2.5 m^3/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 Bm^3 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 Bm^3 to Lm^3 (excavator handles Lm^3) 1.5 Bm^3/m × 1.30 = 2.0 Lm^3/m. Enter vertical axis of trenching conversion chart at m/h and travel horizontally to diagonal line representing 2.0 m^3/m. Next move down to horizontal axis and read answer to 200 Lm^3/50 min hr. Convert 200 Lm^3/50 min hr to Lm^3/60 min hr = 200 = 241 Lm^3/60 min hr.

Production estimating tables in this section show that 241 Lm^3/60 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 yd^3/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 BCY/ft × 1.25 = 2.0 LCY/ft

Enter vertical axis of trenching conversion chart at 100 ft/hr and travel over to diagonal line representing 2.0 yd^3/ft. Next move down to horizontal axis and read answer of 200 LCY/50 min hr.

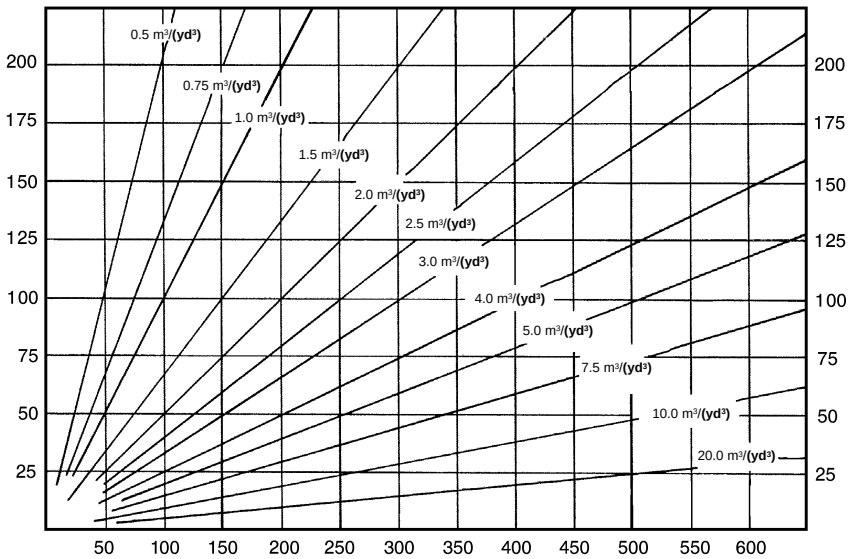
Convert 200 LCY/50 min hr to LCY/60 min hr =

$$\frac{200}{0.83} = 241 \text{ LCY/60 min hr}$$

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 (yd^3) PER HOUR TO METER (ft) PER HOUR



m (ft.) = m^3/**(yd^3)** Hr.
Hr. = m^3/**(yd^3)** m **(ft.)**

Values in m^3/m or yd^3/ft

If excavating rate has been calculated in Bm^3/h use Bm^3/m for Trench Volume/m.
" " " " " " " Lm^3/h use Lm^3/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

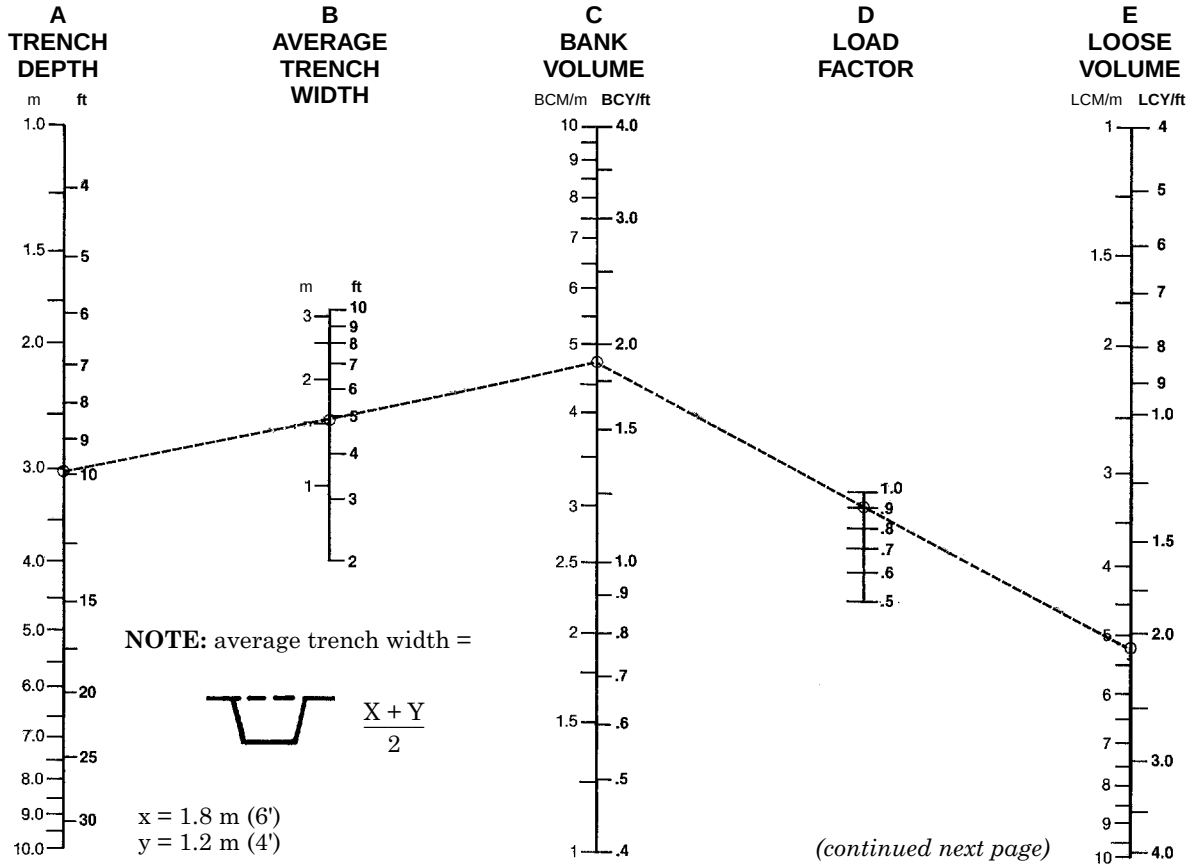
In addition to the trenching calculations on the previous pages, an alternative method of figuring trenching production is the nomograph. Shown on the following pages, this particular nomograph can be used for estimating bucket size when given trench dimensions and linear production rate. The nomograph 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 m^3 (yd^3). 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.

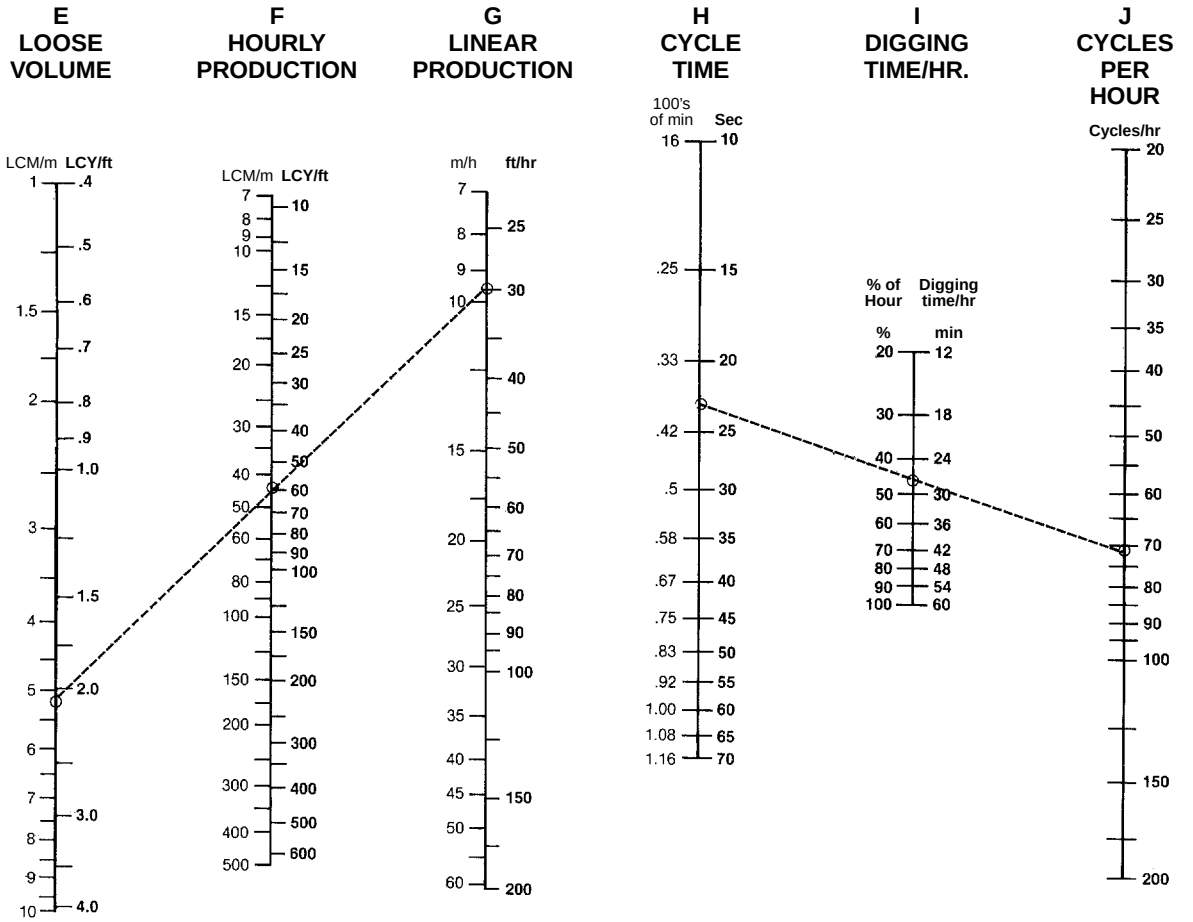
1) Enter trench depth 3.1 m (10') on scale A and average trench width 1.5 m (5') on scale B.
2) Connect A and B and extend to scale C for bank volume per m (ft).
3) Enter estimated load factor (0.90) on scale D.
4) Connect C & D and extend to scale E for loose volume per m (ft).



(continued next page)

(get loose volume from scale E and enter on this page scale E)

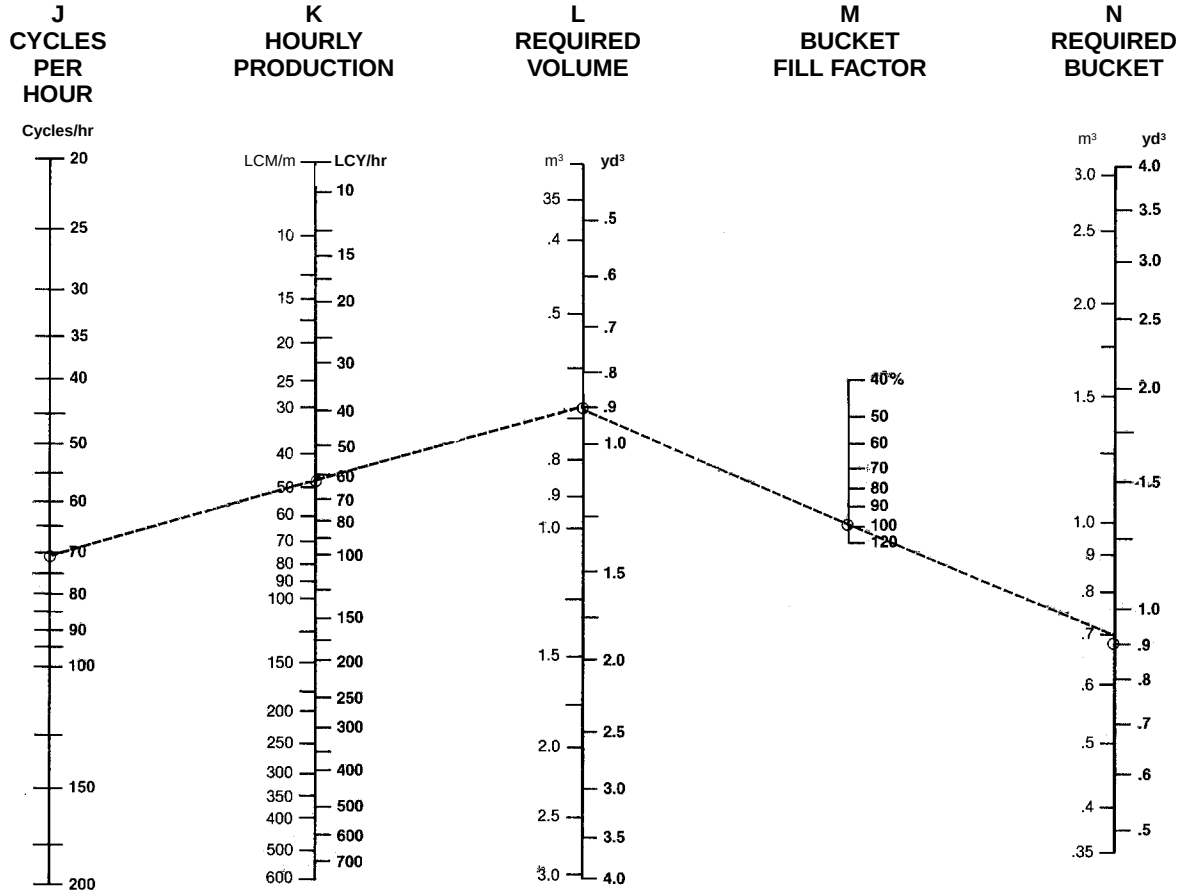
5) Enter required linear production rate 9 m/h (30 t/hr) on scale G.
6) Connect E and G. Transfer hourly production rate from scale F to scale K (next page).
7) Estimate cycle time (23 sec) based on anticipated conditions and enter on scale H.
8) Estimate hourly digging time (27 min) and enter on scale I.
9) Connect H through I to scale J for cycles per hour.

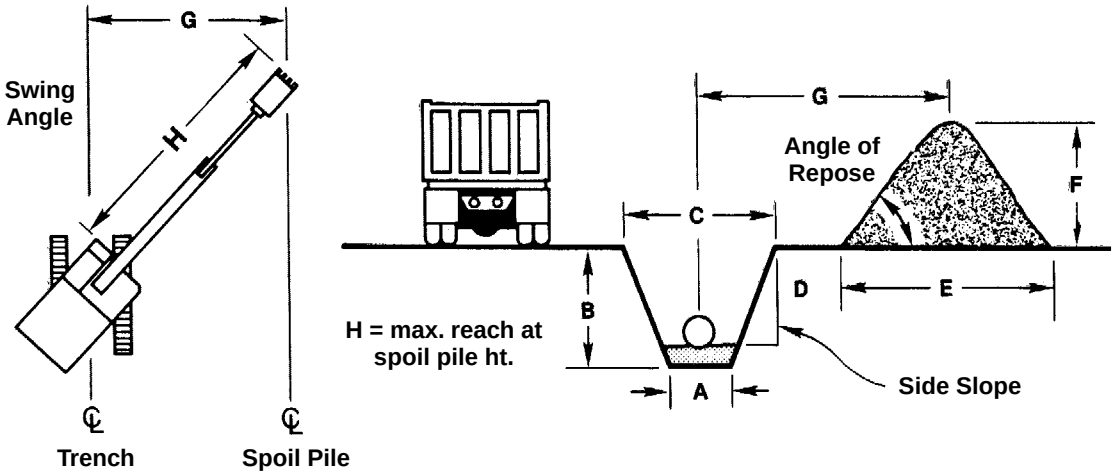


(get cycles per hour from scale J and enter on this page scale J)

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 m^3/meter = (Trench end area m^2) × (one m)
Trench volume (Bm^3/m) = ½ (A + C) × B
Spoil pile volume (Lm^3/m) = (Bm^3/m) × (1.00 + % Swell)

English version

$$\text{Bank } yd^3/\text{foot} = \frac{(\text{Trench end area } ft^2) \times (\text{one ft})}{27}$$

$$\text{Trench volume (BCY/ft)} = \frac{½\,(A + C) \times B}{27}$$

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	mm	ft	m	ft
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	**16'2"**	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

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 BCY/ft) = 4.0 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:
Digging time = 9.6 min
Other time = 10.0 min
Pipe Installation time = 19.6 min

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 hrs (3.06 pipe/hr) = 24.48 pipe/day

Actual pipe/day:
0.83 (24.48 pipe/day) = 20.3 – 20 pipe/day

Actual feet/day:
(20 pipe/day) × (20 ft/pipe) = 400 ft/day

5000 SERIES
EXCAVATORS AND SHOVELS

CONTENTS

Features:

- **Modular design** on the 5130B/5230 provides enhanced service access, isolated cooling systems for improved efficiency, superior stability through lower center of gravity and simplified assembly/disassembly process. Modules mount to the main frame on vertical shear ledges. The Right Hand (RH) or Power module includes the engine, pump drive, pumps, filters and engine radiator. A bulkhead separates the pump drive and engine compartments. Space between the engine and radiator allows the engine to be disconnected, slid forward and lifted from the module. The Left Hand (LH) or Cooler/Fluids module includes the hydraulic tank and filters, hydraulic coolers, fuel tank, autolube system, and cab riser. The cab riser allows standup access to hydraulic pilot lines, electrical components, VIMS Main module, windshield washer reservoir, and cab air filters.
- **Large castings in critical areas** provide superior stress resistance eliminating welds in high stress areas. Boom and stick castings provide structure designs which improve visibility over competitive designs. Large single floating pins mount the boom to main frame, boom to stick and stick to bucket. Single pins provide additional strength to these critical areas. Caterpillar's shovel manufacturing facility uses the latest machining and manufacturing processes. Large five plane machining center performs the precision milling required to mount the swing bearing to the carbody eliminating the need for a swing bearing collar assembly.
- **Proportional Priority Pressure Compensation hydraulic system** delivers excellent controllability with efficient full-powered response. The system uses a closed center design. Pressure compensation senses implement loads/pressures and meters pump flow according to implement requirements. Pumps deliver only the flow necessary to do the work. The 5130B/5230 hydraulics have proportioning or flow modulation that senses the implement loads. Implement valves adjust to provide consistent and constant feel modulation. PPPC valves deliver flow proportional to joy stick deflection. The flow remains proportional even as pressures change due to increased loads. Operation is smooth and predictable with reduced effort improving operator efficiency.
- **Undercarriage track roller frames** on the 5130B/5230 attach to the carbody on large precision machined surfaces with 32 dowels pressed fit into the carbody. These dowels provide superior resistance to shear loads between the carbody/upper structure and the track roller frames. Automatic track tension eliminates manual adjustments. Accumulators absorb shock loads caused by debris passing through the undercarriage. Sloped track roller frames resist material build up improving component life. The 5000 U/C uses solid track pins and positive pin retention. All undercarriage components are lifetime lubricated for reduced maintenance. A hunting tooth drive sprocket alternates tooth-pin engagement resulting in extended undercarriage life. The 5230 uses a patented shovel style single piece cast shoe/link assembly. Two solid floating pins join the shoe/link casting providing even pin wear. Four load bearing surfaces increase undercarriage life and eliminate track walking.



MODEL	5080	5130B	5230
Sourcing	U.S.	U.S.	U.S.
Flywheel Horsepower	319 kW	597 kW	1095 kW
Operating Weight*	83 800 kg	181 000 kg	318 500 kg
Bucket Capacity Range (heaped)	5.2 m^3	9-11 m^3	12.5-17 m^3
Engine Model	3406C	3508B EUI	3516 EUI
Rated Engine RPM	1800	1750	1750
No. of Cylinders	6	8	16
Bore	137 mm	170 mm	170 mm
Stroke	165 mm	190 mm	190 mm
Displacement	14.6 L	34.5 L	69.1 L
Max. Hydraulic Pump Output at Rated RPM: Implement	2 × 430 L/min	4 × 372 L/min	6 × 372 L/min
Swing	1 × 340 L/min	1 × 464 L/min	2 × 464 L/min
Relief Valve Setting:			
Implement Circuits	31 400 kPa	31 000 kPa	31 000 kPa
Travel Circuits	34 300 kPa	35 000 kPa	35 000 kPa
Swing Circuits: Accelerate	27 500 kPa	35 000 kPa	35 000 kPa
Decelerate	27 500 kPa	25 000 kPa	25 000 kPa
Pilot Circuits	3500 kPa	4000 kPa	4000 kPa
Maximum Drawbar Pull	546 kN	872 kN	1545 kN
Maximum Travel Speed	Low: 2.7 km/h	—	—
at Rated RPM	High: 4.4 km/h	3.3 km/h	2.5 km/h
Overall Track Length**	4.6 m	5.55 m	6.26 m
Track Gauge	3.51 m	4.72 m	5.12 m
Grouser Height	48 mm	29, 71 mm	15 mm
Track Shoe Widths	610, 750 mm	650, 800, 1000 mm	1100, 1300, 1500 mm
Ground Contact Areas	6.13, 7.55 m^2	8.0, 9.8, 12.3 m^2	15.2, 18.0, 20.8 m^2
Ground Pressures	132, 107 kPa	217, 178, 144 kPa	205, 174, 153 kPa
Fuel Tank Refill Capacity	990 L	2600 L	5330 L

*Operating Weights include coolant, lubricants, full fuel tank, standard shoes, bucket, and operator.
**Track length measured from center of idler to center of sprocket.

Adjustments to Standard Operating Weight

Track	**5080**	610 mm Track 750 mm Track	0 kg +966 kg
	5130B	650 mm Track 800 mm Track 1000 mm Track	0 kg +2050 kg +4320 kg
	5230	1100 mm Track 1300 mm Track 1500 mm Track	0 kg +2320 kg +5370 kg
Buckets	**5080**	G.P. Rock Bucket (5.2 m^3)	0 kg
	5130B	Rock Bucket (11.0 m^3) High Density (9.0 m^3)	0 kg –225 kg
	5230	Rock Bucket (17.0 m^3) High Density (14.5 m^3) High Density (12.5 m^3)	0 kg –3050 kg –3750 kg



MODEL	5080	5130B	5230
Sourcing	U.S.	U.S.	U.S.
Flywheel Horsepower	428 hp	800 hp	1470 hp
Operating Weight*	184,600 lb	399,000 lbs	702,000 lbs
Bucket Capacity Range (heaped)	6.8 yd^3	12.0-14.5 yd^3	16.3-22.2 yd^3
Engine Model	3406C ATAAC	3508B EUI	3516 EUI
Rated Engine RPM	1800	1750	1750
No. of Cylinders	6	8	16
Bore	5.4"	6.7"	6.7"
Stroke	6.5"	7.5"	7.5"
Displacement	891 in^3	2105 in^3	4211 in^3
Max. Hydraulic Pump Output at Rated RPM: Implement	2 × 114 gpm	4 × 99 gpm	6 × 99 gpm
Swing	1 × 90 gpm	1 × 123 gpm	2 × 123 gpm
Relief Valve Setting:			
Implement Circuits	4550 psi	4500 psi	4500 psi
Travel Circuits	4980 psi	5080 psi	5080 psi
Swing Circuits: Accelerate	3980 psi	5080 psi	5080 psi
Decelerate	3980 psi	3620 psi	3620 psi
Pilot Circuits	505 psi	580 psi	580 psi
Maximum Drawbar Pull	122,850 lb	196,000 lb	340,875 lb
Maximum Travel Speed	Low: 1.7 mph	—	—
at Rated RPM	High: 2.7 mph	2.1 mph	1.6 mph
Overall Track Length**	15'1"	18'3"	20'6"
Track Gauge	11'6"	15'6"	17'
Grouser Height	2"	1.1", 2.8"	0.6"
Track Shoe Widths	24", 30"	26", 32", 39"	43", 51", 59"
Ground Contact Areas	66, 81.3 ft^2	86.1, 105.4 ft^2	163.6,193.7, 223.8 ft^2
Ground Pressures	19.2, 16 psi	31.4, 25.8, 20.9 psi	29.7, 25.3, 22.2 psi
Fuel Tank Refill Capacity	262 U.S. gal	687 U.S. gal	1386 U.S. gal

*Operating Weights include coolant, lubricants, full fuel tank, standard shoes, bucket, and operator.
**Track length measured from center of idler to center of sprocket.

Adjustments to Standard Operating Weight

Track	**5080**	2'0" Track 2'6" Track	0 lbs +2125 lbs
	5130B	2'2" Track 2'8" Track 3'3" Track	0 lbs +4520 lbs +9520 lbs
	5230	3'7" Track 4'3" Track 4'11" Track	0 lbs +5120 lbs +11,840 lbs
Buckets	**5080**	G.P. Rock Bucket (6.8 yd^3)	0 lbs
	5130B	Rock Bucket (14.4 yd^3) High Density (12.0 yd^3)	0 lbs –500 lbs
	5230	Rock Bucket (22.2 yd^3) High Density (19.0 yd^3) High Density (16.3 yd^3)	0 lbs –6700 lbs –8300 lbs

MODEL	5130B	5230
Sourcing	U.S.	U.S.
Flywheel Horsepower	597 kW	1095 kW
Operating Weight*	182 000 kg	316 600 kg
Bucket Capacity Range (heaped)	8.5-18.3 m^3	13-27.5 m^3
Engine Model	3508B EUI	3516 EUI
Rated Engine RPM	1750	1750
No. of Cylinders	8	16
Bore	170 mm	170 mm
Stroke	190 mm	190 mm
Displacement	34.5 L	69.1 L
Max. Hydraulic Pump Output at Rated RPM: Implement	4 × 372 L/min	6 × 372 L/min
Swing	1 × 464 L/min	2 × 464 L/min
Relief Valve Settings:		
Implement Circuits	31 000 kPa	31 000 kPa
Travel Circuits	35 000 kPa	35 000 kPa
Swing Circuits: Accelerate	35 000 kPa	35 000 kPa
Decelerate	25 000 kPa	25 000 kPa
Pilot Circuits	4000 kPa	4000 kPa
Maximum Drawbar Pull	872 kN	1545 kN
Maximum Travel Speed	—	—
at Rated RPM	3.3 km/h	2.5 km/h
Overall Track Length**	5.55 m	6.26 m
Track Gauge	4.72 m	5.12 m
Grouser Height	29,71 mm	15 mm
Track Shoe Widths	650, 800 mm	1100, 1300, 1500 mm
Ground Contact Areas	8.0, 9.8 m^2	15.2, 18.0, 20.8 m^2
Ground Pressures	218, 179, 145 kPa	202, 172, 151 kPa
Fuel Tank Refill Capacity	2600 L	5330 L

*Operating Weights include coolant, lubricants, full fuel tank, standard shoes, bucket, and operator.
**Track length measured from center of idler to center of sprocket.

Model	Boom	Stick Length m	Working Weights Buckets & Payload kg
5130B	8.0 m	3.8 m	28 500
		5.2 m	23 900
	11.0 m	3.8 m	18 250
5230	9.5 m	4.5 m	44 500

Adjustments to Standard Operating Weight

Track	**5130B**	650 mm Track 800 mm Track 1000 mm Track	–2050 kg 0 kg +2270 kg
	5230	1100 mm Track 1300 mm Track 1500 mm Track	–2320 kg 0 kg +5370 kg
Buckets	**5130B**	Rock (10.5 m^3) High Density (8.5 m^3) Excavation (10.5 m^3) Coal (13.6 m^3) Coal (18.3 m^3)	0 kg –1079 kg –500 kg –800 kg –130 kg
	5230	Rock (16.0 m^3) High Density (13.0 m^3) Rock (18.0 m^3) Coal (27.5 m^3)	0 kg –2000 kg +1800 kg –1140 kg

MODEL	5130B	5230
Sourcing	U.S.	U.S.
Flywheel Horsepower	800 hp	1470 hp
Operating Weight*	401,000 lb	698,000 lb
Bucket Capacity Range (heaped)	11.0-24.0 yd^3	17-36 yd^3
Engine Model	3508B EUI	3516 EUI
Rated Engine RPM	1750	1750
No. of Cylinders	8	16
Bore	6.7"	6.7"
Stroke	7.5"	7.5"
Displacement	2105 in^3	4211 in^3
Max. Hydraulic Pump Output at Rated RPM: Implement	4 × 99 gpm	6 × 99 gpm
Swing	1 × 123 gpm	2 × 123 gpm
Relief Valve Settings:		
Implement Circuits	4500 psi	4500 psi
Travel Circuits	5080 psi	5080 psi
Swing Circuits: Accelerate	5080 psi	5080 psi
Decelerate	3620 psi	3620 psi
Pilot Circuits	580 psi	580 psi
Maximum Drawbar Pull	196,000 lb	340,875 lb
Maximum Travel Speed at Rated RPM	2.1 mph	1.6 mph
Overall Track Length**	18'3"	20'6"
Track Gauge	15'6"	17'
Grouser Height	1.1", 2.8"	0.6"
Track Shoe Widths	26", 32"	43", 51", 59"
Ground Contact Areas	86.1, 105.5 ft^2	163.6, 193.7, 346.6 ft^2
Ground Pressures	31.6, 26.0, 21.0 psi	29.4, 25.0, 21.9 psi
Fuel Tank Refill Capacity	687 U.S. gal	1386 U.S. gal

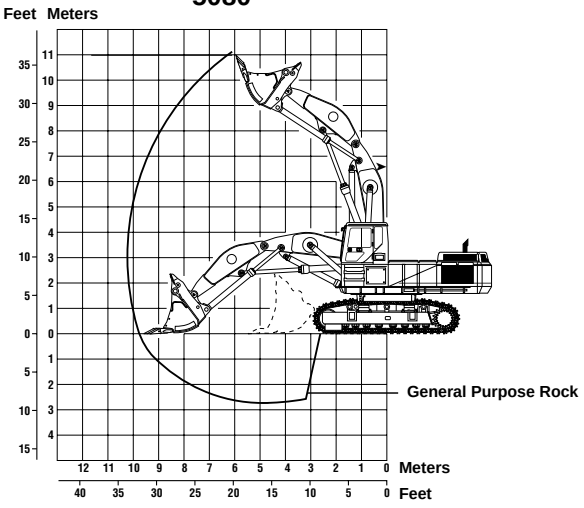
*Operating Weights include coolant, lubricants, full fuel tank, standard shoes, bucket, and operator.
**Track length measured from center of idler to center of sprocket.

Model	Boom	Stick Length ft	Working Weights Buckets & Payload lb
5130B	26'3"	12'6" 17'1"	62,800 52,700
	36'1"	12'6"	35,800
5230	31'2"	14'9"	98,100

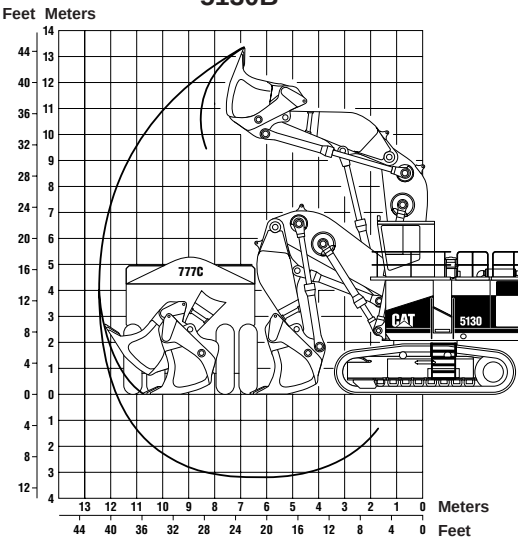
Adjustments to Standard Operating Weight

Track	**5130B**	2'2" Track 2'8" Track 3'3" Track	–4520 lbs 0 lbs +5000 lbs
	5230	3'7" Track 4'3" Track 4'11" Track	–5120 lbs 0 lbs +6720 lbs
Buckets	**5130B**	Rock (13.7 yd^3) High Density (11.0 yd^3) Excavation (13.7 yd^3) Coal (17.8 yd^3) Coal (24.6 yd^3)	0 lbs –2380 lbs –2080 lbs –2760 lbs –1280 lbs
	5230	Rock (20.9 yd^3) High Density (17 yd^3) Rock (24.2 yd^3) Coal (36 yd^3)	0 lbs –4400 lbs +4000 lbs –2500 lbs

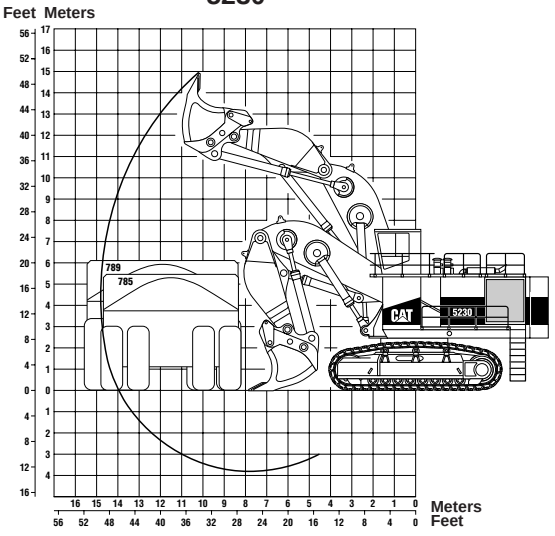
5080



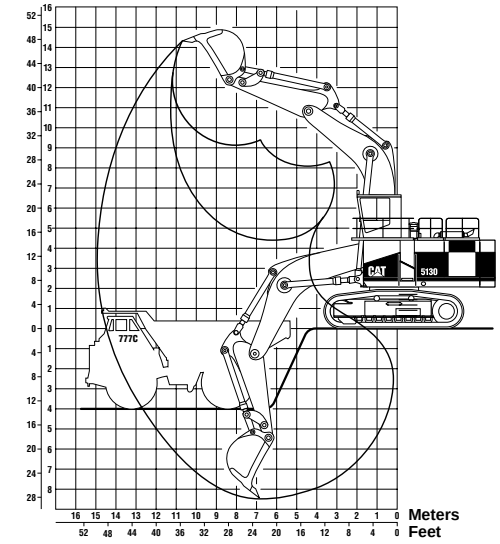
5130B



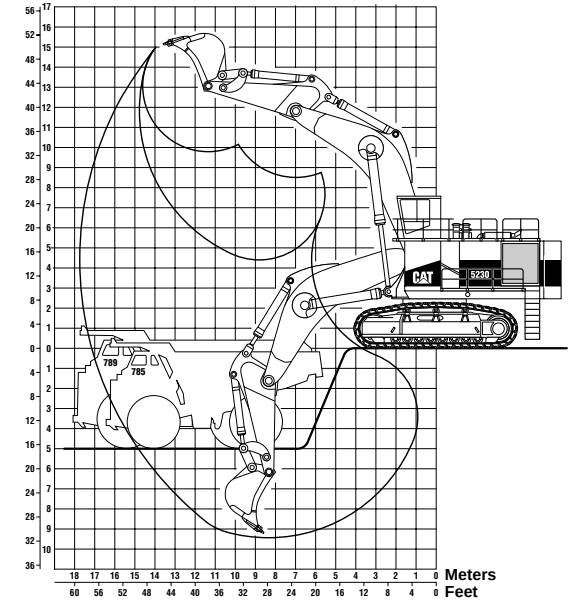
5230



5130B ME



5230 ME

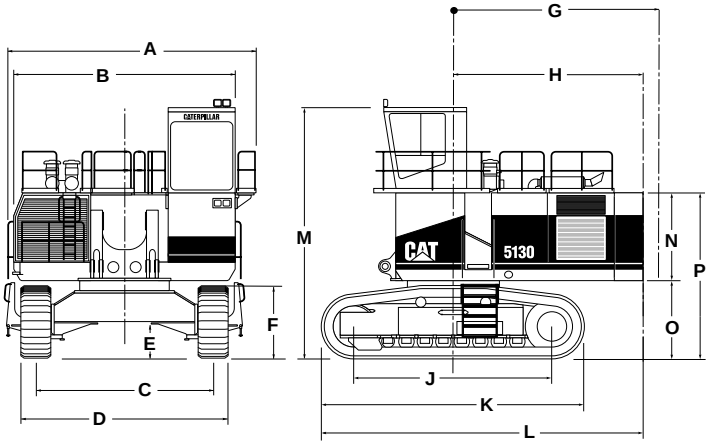


● 5130B ME

	Weight		Length		Width		Height	
	kg	**lb**	**mm**	**ft**	**mm**	**ft**	**mm**	**ft**
Carbody	15 800	**34,820**	3560	**11'8"**	4110	**13'6"**	1520	**5'0"**
Swing Frame	22 830	**50,340**	7060	**23'2"**	2460	**8'1"**	2440	**8'0"**
Track Roller Frame (each)								
650 mm **(2'2")** Shoes	23 610	**52,060**	7140	**23'5"**	1500	**4'11"**	1910	**6'3"**
800 mm **(2'7")** Shoes	24 640	**54,320**	7140	**23'5"**	1500	**4'11"**	1910	**6'3"**
1000 mm **(3'3")** Shoes	25 770	**56,820**	7140	**23'5"**	1500	**4'11"**	1910	**6'3"**
Left Module	8090	**17,830**	5770	**18'11"**	2340	**7'8"**	2620	**8'7"**
Boom Cylinders	3000	**6620**	3840	**12'7"**	910	**3'0"**	690	**2'3"**
Stick Cylinders	1100	**2430**	3840	**12'7"**	910	**3'0"**	690	**2'3"**
Bucket Cylinders	1100	**2430**	3840	**12'7"**	910	**3'0"**	690	**2'3"**
Ladders	2070	**4570**	2240	**7'4"**	1090	**3'7"**	1190	**3'11"**
Parts Box	2100	**4620**	2240	**7'4"**	1090	**3'7"**	990	**3'3"**
Handrails	1150	**2540**	3990	**13'1"**	2290	**7'6"**	1120	**3'8"**
Right Module	13 810	**30,440**	5660	**18'7"**	2440	**8'0"**	3050	**10'0"**
Cab	2050	**4510**	2360	**7'9"**	2060	**6'9"**	3100	**10'2"**
Boom	20 530	**45,260**	8560	**28'1"**	1980	**6'6"**	3400	**11'2"**
Counterweight	20 970	**46,220**	6250	**20'6"**	1170	**3'10"**	2510	**8'3"**
Stick	6220	**13,710**	5260	**17'3"**	1020	**3'4"**	2290	**7'6"**
Brackets	1550	**3420**	1520	**5'0"**	1450	**4'9"**	790	**2'7"**
Bucket	9700	**21,380**	2900	**9'6"**	3200	**10'6"**	2820	**9'3"**

● 5230 ME

	Weight		Length		Width		Height	
	kg	lb	mm	ft	mm	ft	mm	ft
Carbody	24 770	**54,610**	4470	**14'8"**	3840	**12'7"**	1980	**6'6"**
Swing Frame	40 590	**89,490**	8890	**29'2"**	3330	**10'11"**	3480	**11'5"**
Track Roller Frame (each)								
1100 mm **(3'7")** Shoes	45 400	**100,080**	8030	**26'4"**	1830	**6'0"**	2360	**7'9"**
1300 mm **(4'3")** Shoes	46 560	**102,640**	8030	**26'4"**	1830	**6'0"**	2360	**7'9"**
1500 mm **(4'11")** Shoes	48 080	**106,000**	8030	**26'4"**	1830	**6'0"**	2360	**7'9"**
Left Module	12 310	**27,140**	7190	**23'7"**	2510	**8'3"**	3230	**10'7"**
Cylinder Skid	3130	**6900**	4170	**13'8"**	610	**2'0"**	810	**2'8"**
Cylinder Skid	3130	**6900**	4170	**13'8"**	610	**2'0"**	810	**2'8"**
Cylinder Skid	4350	**9580**	4880	**16'0"**	910	**3'0"**	740	**2'5"**
Cylinder Skid	3290	**7260**	4170	**13'8"**	910	**3'0"**	740	**2'5"**
Parts Box	2220	**4890**	2240	**7'4"**	1090	**3'7"**	990	**3'3"**
Parts Box	2170	**4780**	2240	**7'4"**	1090	**3'7"**	990	**3'3"**
Parts Box	2220	**4900**	2240	**7'4"**	1090	**3'7"**	990	**3'3"**
Handrails	1350	**2980**	3990	**13'1"**	2290	**7'6"**	1120	**3'8"**
Right Module	20 880	**46,040**	7570	**24'10"**	2510	**8'3"**	3580	**11'9"**
Cab	2380	**5240**	2360	**7'9"**	2060	**6'9"**	3050	**10'0"**
Boom	28 340	**62,480**	10 030	**32'11"**	3960	**13'0"**	2490	**8'2"**
Counterweight	41 390	**91,240**	7320	**24'0"**	1220	**4'0"**	3050	**10'0"**
Stick	11 030	**24,320**	6250	**20'6"**	1350	**4'5"**	2570	**8'5"**
Brackets	2590	**5720**	1780	**5'10"**	1680	**5'6"**	890	**2'11"**
Guards	940	**2080**	2080	**6'10"**	1700	**5'7"**	840	**2'9"**
Bucket	16 380	**36,110**	4010	**13'2"**	3250	**10'8"**	3100	**10'2"**



	5080		5130B ME		5230 ME	
A	4400 mm	**14'5"**	6620 mm	**21'9"**	7510 mm	**24'7"**
B	3470 mm	**11'5"**	5900 mm	**19'4"**	6960 mm	**22'11"**
C	3510 mm	**11'6"**	4720 mm	**15'6"**	5196 mm	**17'0"**
D	4120 mm	**13'6"**	5370 mm	**17'7"**	6296 mm	**20'8"**
E	890 mm	**2'11"**	960 mm	**3'2"**	1108 mm	**3'8"**
F	—	**—**	1890 mm	**6'3"**	2260 mm	**7'5"**
G **Swing radius**	4200 mm	**13'9"**	5250 mm	**17'3"**	6450 mm	**21'2"**
H	4200 mm	**13'9"**	5140 mm	**16'11"**	6280 mm	**20'7"**
J	4600 mm	**15'1"**	5552 mm	**18'3"**	6260 mm	**20'6"**
K	5840 mm	**19'2"**	7270 mm	**23'10"**	8174 mm	**26'10"**
L	7120 mm	**23'4"**	8775 mm	**28'9"**	10 325 mm	**33'10"**
M	4820 mm*	**15'10"**	6550 mm	**21'5"**	7455 mm	**24'5"**
N	—	**—**	2350 mm	**7'9"**	2850 mm	**9'4"**
O	1620 mm	**5'4"**	2045 mm	**6'9"**	2450 mm	**8'0"**
P	—	**—**	4395 mm	**14'5"**	5300 mm	**17'5"**

*Euro cab with FOPS.

CHOOSING A TRACK SHOE

In severe underfoot conditions, narrow shoes impose lower forces on other undercarriage components, and normally result in improved overall track life. Machines working in rock should be equipped with the narrowest available shoe. Wider shoes will improve flotation, but shoes wider than those shown here should not be used. Track shoe width has little effect on stability.

Double grouser shoes will provide adequate traction in most underfoot conditions, and are less damaging to floor and road surfaces. For additional traction in deep mud, or in rock applications which allow some grouser penetration, single grouser shoes are recommended. Hard, smooth quarry floors that allow little or no grouser penetration are best handled by the narrowest double grouser shoes.

Track Shoe Widths and Ground Pressures

Model	Shoe	GROUND PRESSURE With Bottom Dump Bucket	
		kPa	psi
5080 Front Shovel	610 mm **(2'0")** double grouser	132	**19.2**
	750 mm **(2'6")** double grouser	107	**16.0**
5130B Front Shovel	650 mm **(2'2")**	215	**31.2**
	800 mm **(2'8")**	174	**25.3**
	1000 mm **(3'3")**	144	**20.9**
5230 Front Shovel	1100 mm **(3'7")**	202	**29.3**
	1300 mm **(4'3")**	171	**24.8**
	1500 mm **(4'11")**	148	**21.5**

CURL AND CROWD FORCES

Rated digging forces are the forces that can be exerted at the outermost cutting point. They are calculated by applying working relief hydraulic pressure to the cylinder(s) providing the digging force. Weight of components and friction are excluded from the calculations.

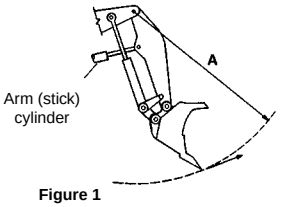


Figure 1

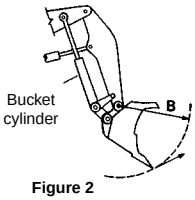


Figure 2

Rated Arm (Stick) Force — is generated by the arm (stick) cylinder and is tangent to the arc of radius "A". The arm is positioned to obtain the maximum output moment from the arm cylinder with the bucket positioned as in figure 1.

Rated Bucket Tangential Force — is generated by the bucket cylinders and is tangent to the arc of radius "B". The bucket is positioned to obtain the maximum output moment from the bucket cylinders and connecting linkage as in figure 2.

Model	Bucket	Bucket Capacity m^3	Bucket Capacity yd^3	A — Crowd Force kN	A — Crowd Force lb	B — Bucket Tangential Force kN	B — Bucket Tangential Force lb
5080 Front Shovel	Bottom Dump	5.2	**6.8**	434	**97,600**	451	**101,500**
5130B Front Shovel	Bottom Dump	11.0	**14.5**	770	**173,000**	715	**161,000**
5230 Front Shovel	Bottom Dump	17.0	**22.2**	1250	**281,000**	1125	**253,000**

MAJOR BOTTOM DUMP BUCKET APPLICATION FEATURES:

- Controlled dumping action permits more accurate loading of narrow trucks with less chance of spillage. Closer bucket positioning over the truck, and metering the material flow on the first pass, lessens impact on truck bodies increasing their life.
- The bottom-dump clamping action is ideal for sorting in rock applications. Oversized material can be segregated for secondary breakage. In some cases, the operator can screen material as he dumps by limiting the bucket opening.
- Sticky material is easier to dislodge, thus avoiding material build-up which robs production. The bottom-dump bucket bulldozer assembly is nearly vertical when the bucket is fully open.

Bucket Selection

Model	Heaped Capacity m³	Heaped Capacity yd³	Struck Capacity m³	Struck Capacity yd³	Weight kg	Weight lb	Width m	Width ft
5080								
General Purpose	5.2	**6.8**	4.1	**5.4**	8893	**19,610**	2.59	**8'6"**
5130B Front Shovel								
General Purpose	11.0	**14.5**	NA	**NA**	15 790	**34,820**	3.64	**11'11"**
Rock	11.0	**14.5**	NA	**NA**	17 960	**39,500**	3.64	**11'11"**
Hi-density Rock	9.0	**12.0**	NA	**NA**	17 700	**39,000**	3.06	**10'0"**
5230 Front Shovel								
Rock	17.0	**22.2**	NA	**NA**	29 820	**65,740**	4.36	**14'4"**
Hi-density Rock	15.5	**20.2**	NA	**NA**	28 580	**63,000**	3.67	**12'0"**

VITAL INFORMATION MANAGEMENT SYSTEM (VIMS):

VIMS is a Caterpillar exclusive advanced diagnostic and equipment management tool designed to lower operating costs. Equipment utilization can be improved through higher mechanical availability, optimized component life, reduced risk of catastrophic failures, faster diagnostics and improved serviceability. VIMS includes both on-board hardware and an off-board software package — VIMS-PC.

The VIMS system "coaches" the operator to improve vehicle performance and productivity. On-board, VIMS is designed to work with the operator and not interfere with equipment operation. In-cab modules provide meaningful messages, indicators, gauges and warnings from sensors located throughout the machine. VIMS provides the operator immediate access to current machine information. VIMS data can also be transmitted for in-office/remote machine monitoring and analysis.

The CAT DATA LINK is the on-board network allowing communication between VIMS and the many machine mounted electronic control modules.

VIMS is like having a first rate mechanic riding in the cab with all of his diagnostic tools connected to the machine. Listening, watching, monitoring the entire vehicle by converting data signals from various sensors into meaningful information. VIMS displays information in "real-time" and records and stores information similar to a Flight Data Recorder on an airplane.

VIMS works with four types of information: 1. Internal (e.g.: service meter hours); 2. Sensed (e.g.: Exhaust Temperature); 3. Communicated (e.g.: Tach from ECM); 4. Calculated (e.g.: fuel consumption).

VIMS organizes and stores information into six categories: 1. Event List; 2. Event Recorder; 3. Data Logger; 4. Trends; 5. Cumulatives; 6. Histograms.

VIMS provides value to more than the operator. Whether you're in operations, maintenance, engineering, planning or management — Caterpillar's VIMS is your best choice for maximizing availability, productivity and reducing the risk of catastrophic failure while lowering overall cost.

ESTIMATING FRONT SHOVEL CYCLE TIME

The loading cycle of the front shovel is composed of four segments:

1. Load bucket
2. Swing loaded
3. Dump bucket
4. Swing empty

Total shovel cycle time is dependent on machine size and job conditions. As conditions become more severe (tougher loading, more obstacles, etc.), the shovel slows down accordingly.

The following table breaks down what experience has shown to be typical Caterpillar Front Shovel cycle times with above average job conditions and an operator of average ability.

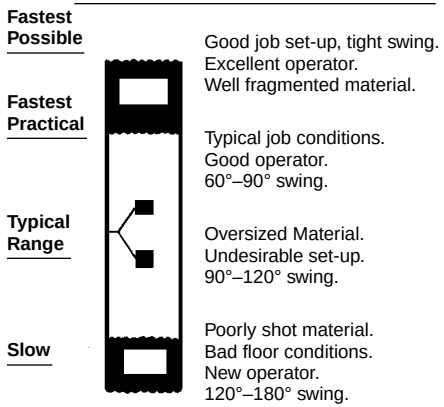
These times would decrease as job conditions or operator ability improved and would become slower as conditions become less favorable. For example:

Tough material . . . . . .Longer bucket fill and dump time.
Greater swing angle . . . . . .Longer swing times.
Operator ability . . . . . .Affects total cycle time.
Loading from the top down . . . . . .May improve swing time.

MODEL	5080	5130B	5230
Bucket Size	5.2 m^3 **6.8 yd^3**	11.1 m^3 **14.5 yd^3**	17.0 m^3 **22.2 yd^3**
Soil Type	Shot rock	Shot rock	Shot rock
Swing Angle	90°	90°	90°
Load Area	No Obstructions	No Obstructions	No Obstructions
Operator Ability	Average	Average	Average
Load Bucket	0.16 Min.	0.18 Min.	0.20 Min.
Swing Loaded	0.09 Min.	0.13 Min.	0.14 Min.
Dump Bucket	0.03 Min.	0.04 Min.	0.05 Min.
Swing Empty	0.09 Min.	0.10 Min.	0.10 Min.
Total Cycle Time	**0.37 Min.**	**0.45 Min.**	**0.49 Min.**

CYCLE TIME ESTIMATING CHART				
CYCLE TIME (MIN)	MACHINE AND BUCKET			CYCLE TIME (SEC)
	5080	5130B	5230	
				10
0.25				15
0.30				20
0.35				
0.40				25
0.45				
0.50				30
0.60				35
				40
0.75				45
				50
				55
1.00				60

CYCLE TIME vs JOB CONDITION DESCRIPTION



BOTTOM DUMP BUCKET FILL FACTORS

Material	Fill Factor*
Bank Clay; Earth	100%-105%
Rock-Earth Mixture	100%-105%
Rock — Poorly Blasted	85%-95%
Rock — Well Blasted	95%-105%
Shale, Sandstone — Standing Bank	85%-100%

*Percent of heaped bucket capacity.

ROCK LOADING PRODUCTION TABLES

- **Shot Rock**
- **Estimated Density — 1600 kg/Lm³ or 2700 lb/LCY (1.35 ton/LCY)**

METRIC TONS PER 60 MIN. HOUR*

ESTIMATED CYCLE TIME		ESTIMATED BUCKET PAYLOAD** — LOOSE CUBIC METER					ESTIMATED CYCLES	
Cycle Time (Sec)	Cycle Time (Min)	2.6 m³	3.8 m³	7.5 m³	8.8 m³	12 m³	Cycles/ Minute	Cycles/ Hour
15	0.25	998	1459	2880	3379	4608	4.0	240
18	0.30	832	1216	2400	2816	3840	3.0	200
21	0.35	711	1040	2052	2408	3283	2.9	171
25	0.42	599	876	1728	2028	2765	2.5	144
32	0.53	470	687	1356	1591	2170	1.9	113
40	0.67	374	547	1080	1267	1728	1.5	90
45	0.75	333	486	960	1126	1536	1.3	80
50	0.83	300	438	864	1014	1382	1.2	72

U.S. TONS PER 60 MIN. HOUR*

ESTIMATED CYCLE TIME		ESTIMATED BUCKET PAYLOAD** — LOOSE CUBIC YARD					ESTIMATED CYCLES	
Cycle Time (Sec)	Cycle Time (Min)	3.4 yd³	5 yd³	9.75 yd³	11.5 yd³	15.75 yd³	Cycles/ Minute	Cycles/ Hour
15	0.25	1102	1620	3159	3726	5103	4.0	240
18	0.30	918	1350	2633	3105	4253	3.0	200
21	0.35	785	1154	2251	2655	3636	2.9	171
25	0.42	661	972	1895	2236	3062	2.5	144
32	0.53	519	763	1487	1754	2403	1.9	113
40	0.67	413	608	1185	1397	1914	1.5	90
45	0.75	367	540	1053	1242	1701	1.3	80
50	0.83	330	486	948	1118	1531	1.2	72

*Actual Hourly Production = (60 Min. Hr. Production) × (Job Efficiency Factor)
**Estimated Bucket Payload = (Heaped Bucket Capacity) × (Bucket Fill Factor)
These tables are calculated using a 100% bucket fill factor.
See bucket fill factors prior to the rock loading production charts.

EARTH LOADING PRODUCTION TABLES

METRIC Lm^3 PER 60 MIN. HOUR

ESTIMATED CYCLE TIME		ESTIMATED BUCKET PAYLOAD — LOOSE CUBIC METER					ESTIMATED CYCLES	
Cycle Time (Sec)	Cycle Time (Min)	2.6 m^3	3.8 m^3	7.5 m^3	8.8 m^3	12 m^3	Cycles/ Minute	Cycles/ Hour
15	0.25	624	912	1800	2112	3880	4.0	240
18	0.30	520	760	1500	1760	2400	3.0	200
21	0.35	445	650	1283	1505	2052	2.9	171
24	0.40	390	570	1125	1320	1800	2.5	150
27	0.45	346	505	998	1170	1596	2.2	133
30	0.50	312	456	900	1056	1440	2.0	120
33	0.55	283	414	818	959	1308	1.8	109
36	0.60	260	380	750	880	1200	1.7	100

U.S. LCY PER 60 MIN. HOUR

ESTIMATED CYCLE TIME		ESTIMATED BUCKET PAYLOAD** — LOOSE CUBIC YARD					ESTIMATED CYCLES	
Cycle Time (Sec)	Cycle Time (Min)	3.4 yd^3	5 yd^3	9.75 yd^3	11.5 yd^3	15.75 yd^3	Cycles/ Minute	Cycles/ Hour
15	0.25	816	1200	2340	2760	3780	4.0	240
18	0.30	680	1000	1950	2300	3150	3.0	200
21	0.35	581	855	1667	1967	2693	2.9	171
24	0.40	510	750	1463	1725	2363	2.5	150
27	0.45	452	665	1297	1530	2095	2.2	133
30	0.50	408	600	1170	1380	1890	2.0	120
33	0.55	370	545	1063	1254	1717	1.8	109
36	0.60	340	500	975	1150	1575	1.7	100

NOTE: This page compiled from Owning and Operating Section for your convenience. All terms, conditions etc. stated in the O & O Section also apply to this page.

OWNERSHIP PERIOD

Model	Zone A	Zone B	Zone C
5130B	60,000 hr	50,000 hr	40,000 hr
5230	60,000 hr	50,000 hr	40,000 hr

FUEL CONSUMPTION

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
5130B	91-95	**24-25**	110-114	**29-30**	129-132	**34-35**
5230	163-185	**43-49**	189-201	**50-53**	204-227	**54-60**

APPROXIMATE HOURLY CONSUMPTION OF LUBRICANTS

	Crankcase		Transmission*		Final Drives**		Hydraulic Control		Coolant		Lubricant Changes	Grease Fittings
Model	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal		
5130B FS	0.364	**0.096**	0.077	**0.020**	0.392	**0.103**	0.600	**0.159**	0.050	**0.013**	20	0
5130B ME	0.364	**0.096**	0.077	**0.020**	0.392	**0.103**	0.600	**0.159**	0.050	**0.013**	20	2800
5230 FS	0.760	**0.200**	0.090	**0.024**	0.499	**0.131**	0.830	**0.169**	0.083	**0.022**	22	0
5230 ME	0.760	**0.200**	0.090	**0.024**	0.499	**0.131**	0.830	**0.169**	0.083	**0.022**	22	2800

*Includes pump drives.
**Includes travel drives and swing drives.
†Plus auto lube (see auto lube).

Model	Kg/hr grease	lb/hr grease	Grease canister refills*	Auto lube interval (minutes)	Number of injectors	Grease canister size (lb)
5130B FS	0.34	0.75	13	10	48	120
5130B ME	0.27	0.60	10	10	36	120
5230 FS	0.47	1.04	5	10	48	400
5230 ME	0.33	0.73	4	10	38	400

NOTE: These figures are based on auto lube system as set from the factory.
*Total number of times you can expect to refill the auto lube grease canister in a 2000 hour period.

Factors used (labor)

— hourly labor rate of U.S. $50.00
— 30 minutes per lube oil change
— 15 minutes per auto lube grease canister refill
— 5 minutes per filter change
— 1 minute per grease fitting

Factors used (materials)

— Lube oils at U.S. 6.35 per U.S. gallon
— Long life coolant at U.S. $7.00 per U.S. gallon
— Filters at suggested U.S. consumer's list prices.
— Grease at U.S. $.05 per fitting
— Auto lube grease at U.S. $3.68 per pound

GUIDE FOR ESTIMATING LOCAL HOURLY COST OF FILTERS

Model	Approx. Hourly Filter Cost	Filters
5130B	0.89	88
5230	1.49	140

UNDERCARRIAGE BASIC FACTORS

5130B	13.75
5230	19.00

QUICK ESTIMATOR TABLE Lube Oils, Filters, Grease

	Approx. Cost Per Hour	
Model	Materials	Labor
5130B FS	6.16	0.57
5130B ME	5.68	1.66
5230 FS	8.83	0.60
5230 ME	7.77	1.76

COST DISTRIBUTION

% parts	70
% labor	30

*Insufficient data.

REPAIRS

Model	Low	Typical	High
5130B	25.00	38.00	53.00
5230	34.00	52.00	73.00

LIFE ADJUSTMENT MULTIPLIERS

0-10,000 hours	0.40
0-20,000	0.80
0-30,000	1.00
0-40,000	1.21
0-60,000	1.25

MATERIAL HANDLING ARRANGEMENTS

CONTENTS

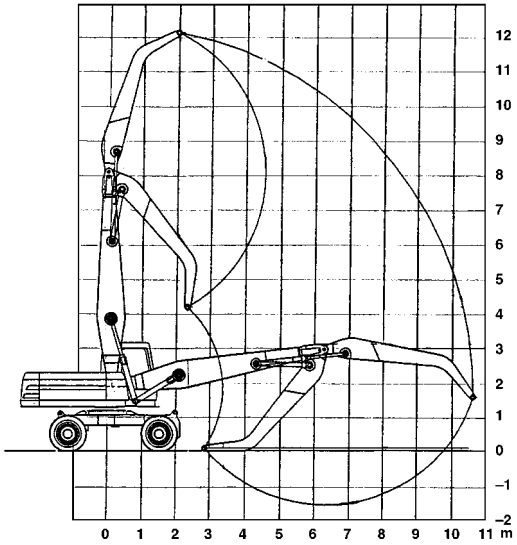
(Scrap specifications and classifications can be found in the Institute of Scrap Iron and Steel Inc.'s "Handbook". The common unit measure for the scrap industry is the gross ton which is 2240 pounds. However, short tons, net tons and metric tons may also be used.)

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.

M318 MH/M320 MH Range Diagram

● Caterpillar Material Handling Boom and Stick



Model	M318 MH		M320 MH	
	m	ft	m	ft
Boom	6.20	**20'4"**	6.80	**22'4"**
Stick	4.50	**14'9"**	4.90	**16'1"**
Maximum Horizontal Reach	10.60	**34'9"**	11.60	**38'1"**
Maximum Vertical Pin Height	12.00	**39'4"**	12.70	**41'8"**

Lift Capacities

Equipped with Caterpillar material handling arrangement.

Includes purpose built material handling boom and stick complete with boom foot adapter, wiring and connecting hydraulics, hydraulic cylinders (boom cylinder — 120 mm (4.72") diameter, stick cylinder — 100 mm (3.94") diameter).

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, 1.2 m fixed cabriser, wide axles, 2 sets of outriggers, solid tires, 3350 kg (7390 lb) counterweight, lubricants, full fuel tank and operator.
  M318 MH — 19 300-20 500 kg (42,550-45,200 lb)
  M320 MH — 21 150-22 350 kg (46,630-49,230 lb)

M318 MH

● **Stabilizers Raised**

Height		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side	Max. Reach Radius m	Max. Reach Radius ft
9.0 m	kg	—	—	—	—	4300*	3700	3800*	2400	—	—	—	—	—	—
29'6"	**lb**					**9480***	**8150**	**8370***	**5290**						
7.5 m	kg	—	—	—	—	5400	3800	3800	2600	—	—	1700*	1700*		
24'7"	**lb**					**11,900**	**8370**	**8370**	**5730**			**3740***	**3740***	**8.9**	**29'2"**
6.0 m	kg	—	—	7800*	5800	5300	3700	3700	2600	2700	1800	1600*	1600		
19'8"	**lb**			**17,190***	**12,780**	**11,680**	**8150**	**8150**	**5730**	**5950**	**3960**	**3520***	**3520**	**9.7**	**31'10"**
4.5 m	kg	10 400*	10 400*	8200	5600	5100	3500	3600	2500	2700	1800	1600*	1400		
14'10"	**lb**	**22,930***	**22,930***	**18,080**	**12,340**	**11,240**	**7710**	**7930**	**5510**	**5950**	**3960**	**3520***	**3080**	**10.2**	**33'6"**
3.0 m	kg	—	—	7600	5000	4900	3300	3500	2300	2600	1800	1600*	1300		
9'10"	**lb**			**16,750**	**11,020**	**10,800**	**7270**	**7710**	**5070**	**5730**	**3960**	**3520***	**2860**	**10.5**	**34'5"**
1.5 m	kg	—	—	7000	4400	4600	3000	3300	2200	2500	1700	—	—	—	—
4'11"	**lb**			**15,430**	**9700**	**10,140**	**6610**	**7270**	**4850**	**5510**	**3740**				
0 m	kg	3700*	3700*	6600	4100	4400	2800	3200	2100	2500	1600	—	—	—	—
0'	**lb**	**8150***	**8150***	**14,550**	**9040**	**9700**	**6170**	**7050**	**4630**	**5510**	**3520**				
–1.5 m	kg	—	—	—	—	4100	2700	—	—	—	—	—	—	—	—
–4'11"	**lb**					**9040**	**5950**								

*Load limited by hydraulic capacity rather than tipping.

M318 MH

● **Stabilizers Lowered**

Height		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side	Max. Reach Radius m	Max. Reach Radius ft
9.0 m	kg	—	—	—	—	4300*	4300*	2400*	2400*	—	—	—	—	—	—
29'6"	**lb**					**9480***	**9480***	**5290***	**5290***						
7.5 m	kg	—	—	—	—	6300*	6300*	5100*	4800*	—	—	1700*	1700*	8.9	**29'2"**
24'7"	**lb**					**13,890***	**13,890***	**11,240***	**10,580***			**3740***	**3740***		
6.0 m	kg	—	—	7800*	7800*	6500*	6500*	5500*	4700*	4100*	3500	1600*	1600*	9.7	**31'10"**
19'8"	**lb**			**17,190***	**17,190***	**14,330***	**14,330***	**12,120***	**10,360***	**9040***	**7710**	**3520***	**3520***		
4.5 m	kg	8500*	8500*	8600*	8600*	6800*	6600	5700*	4600	4800*	3500	1600*	1600*	10.2	**33'6"**
14'10"	**lb**	**18,740***	**18,740***	**18,960***	**18,960***	**14,990***	**14,550**	**12,560***	**10,140**	**10,580***	**7710**	**3520***	**3520***		
3.0 m	kg	—	—	9500	9500	7200*	6300	5800*	4500	4800*	3400	1600*	1600*	10.5	**34'5"**
9'10"	**lb**			**20,940**	**20,940**	**15,870***	**13,890**	**12,780***	**9920**	**10,580***	**7490**	**3520***	**3520***		
1.5 m	kg	—	—	10 000*	9400	7400*	6000	5800*	4300	4700*	3300	—	—	—	—
4'11"	**lb**			**22,050***	**20,720**	**16,310***	**13,230**	**12,780***	**9480**	**10,360***	**7270**				
0 m	kg	3700*	3700*	9600*	9000	7200*	5800	5600*	4200	4300	3200	—	—	—	—
0'	**lb**	**8150***	**8150***	**21,160***	**19,840**	**15,870***	**12,780**	**12,340***	**9260**	**9480**	**7050**				
–1.5 m	kg	—	—	—	—	6400*	5000	—	—	—	—	—	—	—	—
–4'11"	**lb**					**14,110***	**11,020**								

*Load limited by hydraulic capacity rather than tipping.

M320 MH

● Stabilizers Raised

Height		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9. m 30'0" Front	9. m 30'0" Side	At Max. Reach Front	At Max. Reach Side	Max. Reach Radius m	Max. Reach Radius ft
7.5 m	kg	—	—	6300	4500	4400	3100	3200	2200	2600	1800	10.10	**33'2"**
24'7"	lb	—	—	**13,890**	**9920**	**9700**	**6830**	**7050**	**4850**	**5730**	**3960**		
6.0 m	kg	—	—	6200	4300	4300	3000	3200	2200	2300	1500	10.81	**35'6"**
19'6"	lb	—	—	**13,670**	**9480**	**9480**	**6610**	**7050**	**4850**	**5070**	**3300**		
4.5 m	kg	9400	6300	5900	4100	4100	2900	3100	2100	2100	1400	11.28	**37'0"**
14'9"	lb	**20,720**	**13,890**	**13,000**	**9040**	**9040**	**6390**	**6830**	**4630**	**4630**	**3080**		
3.0 m	kg	8600	5600	5500	3700	3900	2700	3000	2000	2000	1300	11.53	**38'4"**
9'10"	lb	**18,960**	**12,340**	**12,120**	**8150**	**8590**	**5950**	**6610**	**4410**	**4410**	**2860**		
1.5 m	kg	7900	5000	5100	3400	3700	2500	2800	1900	—	—	—	—
4'11"	lb	**17,410**	**11,020**	**11,240**	**7490**	**8150**	**5510**	**6170**	**4180**				
Ground	kg	7400	4600	4900	3200	3600	2300	2800	1800	—	—	—	—
Line	lb	**16,310**	**10,140**	**10,800**	**7050**	**7930**	**5070**	**6170**	**3960**				
–1.5 m	kg	—	—	4700	3000	3500	2200	—	—	—	—	—	—
–4'11"	lb	—	—	**10,360**	**6610**	**7710**	**4850**						

M320 MH

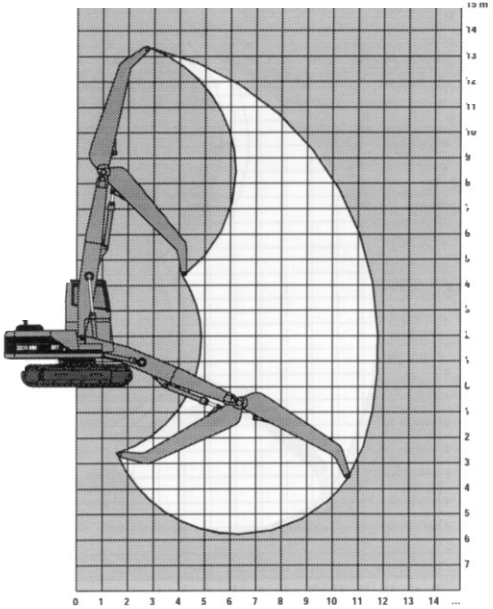
● Stabilizers Lowered

Height		4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	At Max. Reach Front	At Max. Reach Side	Max. Reach Radius m	Max. Reach Radius ft
7.5 m	kg	—	—	7100*	7100*	6200*	6000	5400*	4500	2800*	2800*	10.10	**33'2"**
24'7"	lb	—	—	**15,650***	**15,650***	**13,670***	**13,230**	**11,900***	**9920**	**6170***	**6170***		
6.0 m	kg	—	—	7400*	7400*	6300*	5900	5500*	4400	2800*	2800*	10.81	**35'6"**
19'6"	lb	—	—	**16,310***	**16,310***	**13,890***	**13,000**	**12,120***	**9700**	**6170***	**6170***		
4.5 m	kg	10 100*	10 100*	7900*	7900*	6500*	5800	5500*	4300	2700*	2700*	11.28	**37'0"**
14'9"	lb	**22,270***	**22,270***	**17,410***	**17,410***	**14,330***	**12,780**	**12,120***	**9480**	**5950***	**5950***		
3.0 m	kg	11 200*	11 200*	8400*	7900	6700*	5600	5600*	4200	2800*	2800*	11.53	**38'4"**
9'10"	lb	**24,690***	**24,690***	**18,520***	**17,410**	**14,770***	**12,340**	**12,340***	**9260**	**6170***	**6170***		
1.5 m	kg	11 800*	11 800*	8600*	7500	6800*	5300	5500*	4100	—	—	—	—
4'11"	lb	**26,010***	**26,010***	**18,960***	**16,530**	**14,990***	**11,680**	**12,120***	**9040**				
Ground	kg	10 800*	10 800*	8400*	7200	6600*	5200	5200*	4000	—	—	—	—
Line	lb	**23,810***	**23,810***	**18,520***	**15,870**	**14,550***	**11,460**	**11,460***	**8820**				
–1.5 m	kg	—	—	7500*	7000	5900*	5100	—	—	—	—	—	—
–4'11"	lb	—	—	**16,530***	**15,430**	**13,000***	**11,240**						

*Load limited by hydraulic capacity rather than tipping.

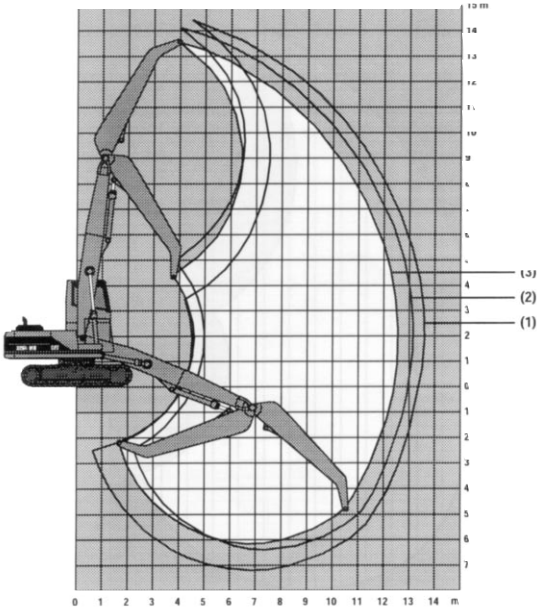
320B MH Range Diagram

● Caterpillar Material Handling Boom and Stick



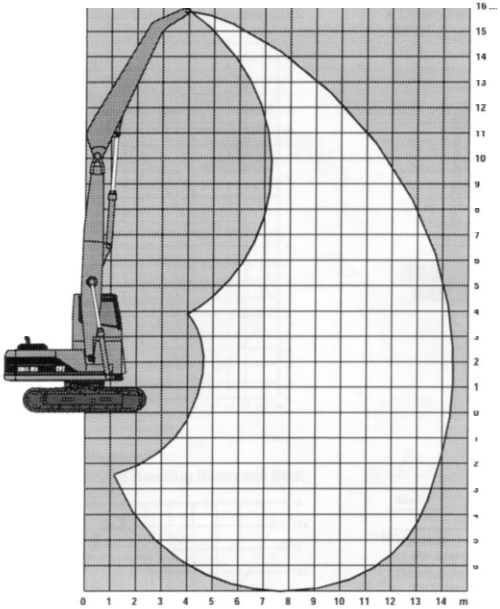
325B MH Range Diagram

● Caterpillar Material Handling Boom and Stick



330B MH Range Diagram

● Caterpillar Material Handling Boom and Stick



Model	320B MH		330B MH	
	m	ft	m	ft
Boom	6.65	**21'10"**	7.77	**25'6"**
Stick	5.40	**17'9"**	6.83	**22'5"**
Maximum Horizontal Reach	12.40	**40'3"**	14.37	**47'1"**
Maximum Vertical Pin Height	13.60	**44'6"**	15.78	**51'9"**

Model	325B MH					
	1		2		3	
	m	ft	m	ft	m	ft
Boom	7.20	**23'7"**	7.80	**25'7"**	7.20	**23'7"**
Stick	6.35	**20'10"**	5.35	**17'7"**	5.35	**17'7"**
Maximum Horizontal Reach	13.40	**44'0"**	12.90	**42'4"**	12.40	**40'8"**
Maximum Vertical Pin Height	14.60	**47'11"**	14.00	**45'11"**	13.50	**44'3"**

NOTE: All Material Handling Arrangements require extra wide gage, reinforced upper frame and additional counter weight.

Lift Capacities

Equipped with Caterpillar material handling arrangement.

Includes purpose built material handling boom and stick, wiring and connecting hydraulics, hydraulic cylinders and heavier counterweight. Boom cylinder — 140 mm (5.5") diameter stick cylinder — 150 mm (5.9") diameter.

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, 1.2 m fixed cabriser, wide gage undercarriage, counterweight, lubricants, full fuel tank and operator.
- 600 mm (2'0") triple grouser shoes.

320B MH — Heavy Duty Square Undercarriage configuration

Maximum reach, height and lift capacity (6.65 m boom and 5.4 m stick)

		3 m		4.5 m		6 m		7.5 m		Max. Reach
Height		Front	Side	Front	Side	Front	Side	Front	Side	Radius
12.0 m	kg	—	—	—	—	6233*	6233*	—	—	6.46 m
10.5 m	kg	—	—	—	—	7627*	7627*	6161*	6161*	8.37 m
9.0 m	kg	—	—	—	—	—	—	6979*	6531	9.69 m
7.5 m	kg	—	—	—	—	—	—	6972*	6511	10.63 m
6.0 m	kg	—	—	—	—	8164*	8164*	7173*	6390	11.29 m
4.5 m	kg	—	—	9215*	9215*	8848*	8848*	7070	6186	11.73 m
3.0 m	kg	—	—	12 551*	12 551*	9652*	8390	6803	5927	11.96 m
1.5 m	kg	—	—	13 903*	12 366	9166	7894	6524	5657	12.00 m
Ground	kg	—	—	11 336*	11 336*	8746	7491	6285	5425	11.84 m
–1.5 m	kg	3656*	3656*	8933*	8933*	8484	7239	6122	5266	11.49 m
–3.0 m	kg	4990*	4990*	9408*	9408*	8375	7135	6047	5194	10.52 m
–4.5 m	kg	—	—	—	—	6295*	6295*	4887*	4887*	7.68 m

		9 m		10.5 m		At Max. Reach		Max. Reach
Height		Front	Side	Front	Side	Front	Side	Radius
12.0 m	kg	—	—	—	—	5124*	5124*	6.46 m
10.5 m	kg	—	—	—	—	4190*	4190*	8.37 m
9.0 m	kg	5418	4755	—	—	3741*	3741*	9.69 m
7.5 m	kg	5451	4786	4043*	3612	3494*	3494*	10.63 m
6.0 m	kg	5392	4728	4153	3626	3362*	3159	11.29 m
4.5 m	kg	5274	4614	4101	3576	3308*	2939	11.73 m
3.0 m	kg	5123	4466	4021	3497	3255	2818	11.96 m
1.5 m	kg	4964	4311	3933	3411	3212	2778	12.00 m
Ground	kg	4824	4175	3859	3338	3255	2813	11.84 m
–1.5 m	kg	4728	4080	3816	3296	3195*	2934	11.49 m
–3.0 m	kg	4692	4045	3326*	3308	3297*	3297*	10.52 m
–4.5 m	kg	—	—	—	—	4716*	4716*	7.68 m

*Limited by hydraulic rather than tipping load.
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.

320B MH — Heavy Duty High Undercarriage configuration

Maximum reach and height but less lift capacity (6.65 m boom and 5.4 m stick). To be used when shipping width is limited.

Height		3 m Front	3 m Side	4.5 m Front	4.5 m Side	6 m Front	6 m Side	7.5 m Front	7.5 m Side	Max. Reach Radius
12.0 m	kg	—	—	—	—	6233*	6233*	—	—	6.46 m
10.5 m	kg	—	—	—	—	7627*	7627*	6161*	5248	8.37 m
9.0 m	kg	—	—	—	—	—	—	6979*	5363	9.69 m
7.5 m	kg	—	—	—	—	—	—	6972*	5344	10.63 m
6.0 m	kg	—	—	—	—	8164*	7520	7173*	5229	11.29 m
4.5 m	kg	—	—	9215*	9215*	8848*	7182	7035	5034	11.73 m
3.0 m	kg	—	—	12 551*	10 542*	9636	6735	6768	4786	11.96 m
1.5 m	kg	—	—	13 903*	9570	9120	6268	6490	4528	12.00 m
Ground	kg	—	—	11 336*	8875	8700	5889	6251	4307	11.84 m
–1.5 m	kg	3656*	3656*	8933*	8528	8437	5651	6087	4155	11.49 m
–3.0 m	kg	4990*	4990*	9408*	8433	8328	5553	6012	4086	10.52 m
–4.5 m	kg	—	—	—	—	6295*	5577	4887*	4104	7.68 m

Height		9 m Front	9 m Side	10.5 m Front	10.5 m Side	At Max. Reach Front	At Max. Reach Side	Max. Reach Radius
12.0 m	kg	—	—	—	—	5124*	5124*	6.46 m
10.5 m	kg	—	—	—	—	4190*	4190*	8.37 m
9.0 m	kg	5391	3880	—	—	3741*	3339	9.69 m
7.5 m	kg	5424	3910	4043*	2915	3494*	2835	10.63 m
6.0 m	kg	5365	3855	4131	2929	3362*	2530	11.29 m
4.5 m	kg	5247	3744	4079	2880	3308*	2343	11.73 m
3.0 m	kg	5096	3601	3999	2804	3236	2238	11.96 m
1.5 m	kg	4936	3451	3912	2721	3193	2200	12.00 m
Ground	kg	4797	3321	3837	2649	3236	2226	11.84 m
–1.5 m	kg	4701	3230	3793	2608	3195*	2324	11.49 m
–3.0 m	kg	4665	3195	3326*	2620	3297*	2615	10.52 m
–4.5 m	kg	—	—	—	—	4716*	3976	7.68 m

*Limited by hydraulic rather than tipping load.

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.

Lift Capacities

Equipped with Caterpillar material handling arrangement.

Includes purpose built material handling boom and stick, wiring and connecting hydraulics, hydraulic cylinders (boom cylinder — 140 mm (5.5") diameter, stick cylinder — 170 mm (7") diameter).

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, 1.2 m fixed cabriser, wide gage undercarriage, counterweight, lubricants, full fuel tank and operator.
- 800 mm (2'8") triple grouser shoes.

325B MH — Standard configuration (1)

Maximum reach, height and lift capacity (7.2 m boom and 6.35 m stick)

		3 m		4.5 m		6 m		7.5 m		Max. Reach
Height		Front	Side	Front	Side	Front	Side	Front	Side	Radius
13.5 m	kg	—	—	—	—	—	—	—	—	6.94 m
12.0 m	kg	—	—	—	—	—	—	6751*	6751*	8.98 m
10.5 m	kg	—	—	—	—	—	—	—	—	10.42 m
9.0 m	kg	—	—	—	—	—	—	—	—	11.47 m
7.5 m	kg	—	—	—	—	—	—	—	—	12.26 m
6.0 m	kg	—	—	—	—	—	—	6771*	6771*	12.82 m
4.5 m	kg	—	—	—	—	8413*	8413*	7347*	7347*	13.18 m
3.0 m	kg	—	—	12 309*	12 309*	9629*	9629*	8014*	7543	13.36 m
1.5 m	kg	—	—	14 524*	14 524*	10 744*	9945	8617*	7196	13.37 m
Ground	kg	—	—	12 855*	12 855*	11 420*	9434	8889	6894	13.21 m
–1.5 m	kg	4204*	4204*	10 392*	10 392*	11 470*	9099	8658	6676	12.88 m
–3.0 m	kg	6043*	6043*	11 133*	11 133*	10 847*	8934	8529	6554	12.35 m
–4.5 m	kg	7956*	7956*	12 210*	12 210*	9533*	8908	7586*	6527	11.60 m
–6.0 m	kg	—	—	9210*	9210*	7447*	7447*	5924*	5924*	10.23 m

		9 m		10.5 m		12 m		At Max. Reach		Max. Reach
Height		Front	Side	Front	Side	Front	Side	Front	Side	Radius
13.5 m	kg	—	—	—	—	—	—	7823*	7823*	6.94 m
12.0 m	kg	—	—	—	—	—	—	6536*	6078	8.98 m
10.5 m	kg	6078*	6078*	—	—	—	—	5894*	4820	10.42 m
9.0 m	kg	5937*	5937*	5676*	4846	—	—	5182	4115	11.47 m
7.5 m	kg	5999*	5999*	5648*	4839	4830	3828	4647	3674	12.26 m
6.0 m	kg	6217*	6117	5741*	4773	4817	3815	4302	3388	12.82 m
4.5 m	kg	6544*	5946	5880	4670	4763	3762	4085	3207	13.18 m
3.0 m	kg	6913*	5741	5750	4544	4689	3691	3966	3105	13.36 m
1.5 m	kg	7038	5531	5615	4414	4611	3617	3930	3070	13.37 m
Ground	kg	6843	5344	5495	4299	4545	3552	3975	3102	13.21 m
–1.5 m	kg	6696	5204	5406	4214	4503	3512	4028*	3207	12.88 m
–3.0 m	kg	6612	5124	5364	4173	4159*	3516	3672*	3403	12.35 m
–4.5 m	kg	6037*	5113	4593*	4191	—	—	3164*	3164*	11.60 m
–6.0 m	kg	4466*	4466*	—	—	—	—	3017*	3017*	10.23 m

*Limited by hydraulic rather than tipping load.
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.

325B MH — Optional configuration (2)

More dump height close at machine with the same reach (7.8 m boom and 5.35 m stick)

		3 m		4.5 m		6 m		7.5 m		Max. Reach
Height		**Front**	**Side**	**Front**	**Side**	**Front**	**Side**	**Front**	**Side**	**Radius**
13.5 m	**kg**	—	—	—	—	8952*	8952*	—	—	6.17 m
12.0 m	**kg**	—	—	—	—	—	—	7291*	7291*	8.40 m
10.5 m	**kg**	—	—	—	—	—	—	6934*	6934*	9.92 m
9.0 m	**kg**	—	—	—	—	—	—	6902*	6902*	11.03 m
7.5 m	**kg**	—	—	—	—	—	—	7110*	7110*	11.84 m
6.0 m	**kg**	—	—	—	—	8713*	8713*	7513*	7513*	12.42 m
4.5 m	**kg**	—	—	12 440*	12 440*	9683*	9683*	8037*	7566	12.79 m
3.0 m	**kg**	—	—	—	—	10 667*	9961	8559*	7224	12.98 m
1.5 m	**kg**	—	—	—	—	11 324*	9408	8903	6906	12.99 m
Ground	**kg**	—	—	5604*	5604*	11 404*	9030	8643	6661	12.83 m
–1.5 m	**kg**	—	—	7022*	7022*	10 861*	8836	8485	6512	12.48 m
–3.0 m	**kg**	5454*	5454*	9104*	9104*	9732*	8788	7885*	6456	11.93 m
–4.5 m	**kg**	—	—	9516*	9516*	8024*	8024*	6606*	6488	11.16 m
–6.0 m	**kg**	—	—	—	—	5654*	5654*	4676*	4676*	8.94 m

		9 m		10.5 m		12 m		At Max. Reach		Max. Reach
Height		**Front**	**Side**	**Front**	**Side**	**Front**	**Side**	**Front**	**Side**	**Radius**
13.5 m	**kg**	—	—	—	—	—	—	8870*	8870*	6.17 m
12.0 m	**kg**	—	—	—	—	—	—	7067*	6663	8.40 m
10.5 m	**kg**	6464*	6113	—	—	—	—	6276*	5141	9.92 m
9.0 m	**kg**	6352*	6145	5925*	4740	—	—	5458	4329	11.03 m
7.5 m	**kg**	6435*	6079	5896*	4734	—	—	4856	3836	11.84 m
6.0 m	**kg**	6645*	5944	5877	4665	4743	3743	4475	3522	12.42 m
4.5 m	**kg**	6926*	5762	5766	4560	4695	3696	4239	3324	12.79 m
3.0 m	**kg**	7068	5558	5640	4437	4628	3631	4110	3215	12.98 m
1.5 m	**kg**	6866	5364	5517	4320	4560	3567	4073	3180	12.99 m
Ground	**kg**	6702	5208	5417	4223	4509	3517	4126	3218	12.83 m
–1.5 m	**kg**	6595	5106	5355	4163	4491	3499	4015*	3337	12.48 m
–3.0 m	**kg**	6415*	5067	5122*	4151	—	—	3586*	3560	11.93 m
–4.5 m	**kg**	5294*	5098	3881*	3881*	—	—	2970*	2970*	11.16 m
–6.0 m	**kg**	—	—	—	—	—	—	3506*	3506*	8.94 m

*Limited by hydraulic rather than tipping load.
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.

325B MH — Optional configuration (3)

Allows more lift capacity but less maximum reach (7.2 m boom and 5.35 m stick)

Height		3 m Front	3 m Side	4.5 m Front	4.5 m Side	6 m Front	6 m Side	7.5 m Front	7.5 m Side	Max. Reach Radius
13.5 m	kg	—	—	—	—	—	—	—	—	4.77 m
12.0 m	kg	—	—	—	—	—	—	—	—	7.45 m
10.5 m	kg	—	—	—	—	—	—	7222*	7222*	9.13 m
9.0 m	kg	—	—	—	—	—	—	7054*	7054*	10.32 m
7.5 m	kg	—	—	—	—	—	—	7184*	7184*	11.19 m
6.0 m	kg	—	—	—	—	8548*	8548*	7551*	7551*	11.80 m
4.5 m	kg	—	—	11 837*	11 837*	9532*	9532*	8082*	7722	12.19 m
3.0 m	kg	—	—	14 086*	14 086*	10 621*	10 279	8652*	7424	12.39 m
1.5 m	kg	—	—	14 966*	14 904	11 646*	9765	9094*	7136	12.40 m
Ground	kg	—	—	9229*	9229*	11 749*	9390	8892	6906	12.23 m
–1.5 m	kg	4309*	4309*	9810*	9810*	11 351*	9181	8738	6761	11.86 m
–3.0 m	kg	6770*	6770*	11 753*	11 753*	10 258*	9117	8184*	6705	11.29 m
–4.5 m	kg	—	—	10 348*	10 348*	8436*	8436*	6768*	6738	10.46 m
–6.0 m	kg	—	—	—	—	—	—	—	—	7.08 m

Height		9 m Front	9 m Side	10.5 m Front	10.5 m Side	12 m Front	12 m Side	At Max. Reach Front	At Max. Reach Side	Max. Reach Radius
13.5 m	kg	—	—	—	—	—	—	10 985*	10 985*	4.77 m
12.0 m	kg	—	—	—	—	—	—	7922*	7922*	7.45 m
10.5 m	kg	6898*	6050	—	—	—	—	6887*	5896	9.13 m
9.0 m	kg	6611*	6150	—	—	—	—	6102	4865	10.32 m
7.5 m	kg	6618*	6124	5976	4769	—	—	5368	4269	11.19 m
6.0 m	kg	6794*	6025	5937	4731	—	—	4918	3899	11.80 m
4.5 m	kg	7068*	5877	5854	4651	4764	3769	4644	3672	12.19 m
3.0 m	kg	7211	5703	5751	4551	4719	3726	4499	3549	12.39 m
1.5 m	kg	7032	5532	5647	4452	4672	3681	4461	3515	12.40 m
Ground	kg	6884	5391	5562	4371	4641	3650	4527	3562	12.23 m
–1.5 m	kg	6788	5299	5514	4323	—	—	4400*	3707	11.86 m
–3.0 m	kg	6551*	5268	5022*	4327	—	—	3924*	3924*	11.29 m
–4.5 m	kg	5213*	5213*	—	—	—	—	3218*	3218*	10.46 m
–6.0 m	kg	—	—	—	—	—	—	4858*	4858*	7.08 m

*Limited by hydraulic rather than tipping load.

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.

Lift Capacities

Equipped with Caterpillar material handling arrangement.

Includes purpose built material handling boom and stick , wiring and connecting hydraulics, hydraulic cylinders (boom cylinder — 150 mm (5.9") diameter, stick cylinder — 170 mm (6.7") diameter).

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, 1.2 m fixed cabriser, wide gage undercarriage, counterweight, lubricants, full fuel tank and operator.
- 750 mm (2'6") triple grouser shoes.

330B MH

Maximum reach, height and lift capacity (7.8 m boom and 6.8 m stick)

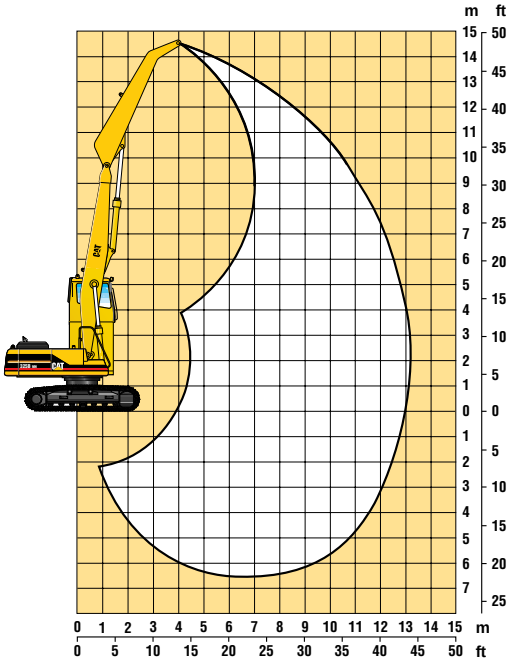
		3 m		4.5 m		6 m		7.5 m		9 m		Max. Reach
Height		Front	Side	Front	Side	Front	Side	Front	Side	Front	Side	Radius
15.0 m	kg	—	—	—	—	9198*	9198*	—	—	—	—	6.64 m
13.5 m	kg	—	—	—	—	—	—	7676*	7676*	—	—	8.97 m
12.0 m	kg	—	—	—	—	—	—	—	—	6765*	6765*	10.59 m
10.5 m	kg	—	—	—	—	—	—	—	—	6543*	6543*	11.80 m
9.0 m	kg	—	—	—	—	—	—	—	—	6533*	6533*	12.72 m
7.5 m	kg	—	—	—	—	—	—	—	—	6698*	6698*	13.40 m
6.0 m	kg	—	—	—	—	—	—	7733*	7733*	7006*	7006*	13.89 m
4.5 m	kg	—	—	—	—	9808*	9808*	8420*	8420*	7408*	7408*	14.21 m
3.0 m	kg	—	—	—	—	11 155*	11 155*	9167*	9167*	7834*	7589	14.36 m
1.5 m	kg	—	—	—	—	12 312*	12 312*	9808*	9456	8188*	7290	14.35 m
Ground	kg	—	—	7670*	7670*	12 943*	12 355	10 178*	9042	8372*	7026	14.18 m
–1.5 m	kg	2864*	2864*	7237*	7237*	12 901*	11 910	10 158*	8742	8298*	6826	13.85 m
–3.0 m	kg	4569*	4569*	8312*	8312*	12 177*	11 684	9677*	8568	7884*	6703	13.34 m
–4.5 m	kg	6320*	6320*	9933*	9933*	10 787*	10 787*	8679*	8511	7043*	6664	12.63 m
–6.0 m	kg	—	—	10 626*	10 626*	8691*	8691*	7071*	7071*	5637*	5637*	11.43 m

		10.5 m		12 m		13.5 m		At Max. Reach		Max. Reach
Height		Front	Side	Front	Side	Front	Side	Front	Side	Radius
15.0 m	kg	—	—	—	—	—	—	8224*	8224*	6.64 m
13.5 m	kg	—	—	—	—	—	—	6690*	6690*	8.97 m
12.0 m	kg	6171*	6171*	—	—	—	—	5951*	5951*	10.59 m
10.5 m	kg	6233*	6233*	—	—	—	—	5527*	5298	11.80 m
9.0 m	kg	6164*	6164*	5832*	5216	—	—	5273*	4672	12.72 m
7.5 m	kg	6234*	6234*	5816*	5204	—	—	5130*	4258	13.40 m
6.0 m	kg	6401*	6384	5879*	5138	5370*	4197	5068*	3980	13.89 m
4.5 m	kg	6625*	6219	5978*	5037	5370	4152	4936	3801	14.21 m
3.0 m	kg	6855*	6029	6070*	4919	5304	4088	4818	3699	14.36 m
1.5 m	kg	7027*	5838	6109*	4798	5235	4021	4637*	3668	14.35 m
Ground	kg	7073*	5667	6034*	4692	5030*	3967	4412*	3705	14.18 m
–1.5 m	kg	6919*	5538	5773*	4615	4550*	3941	4137*	3817	13.85 m
–3.0 m	kg	6482*	5460	5221*	4581	—	—	3780*	3780*	13.34 m
–4.5 m	kg	5644*	5448	4176*	4176*	—	—	3288*	3288*	12.63 m
–6.0 m	kg	4186*	4186*	—	—	—	—	3031*	3031*	11.43 m

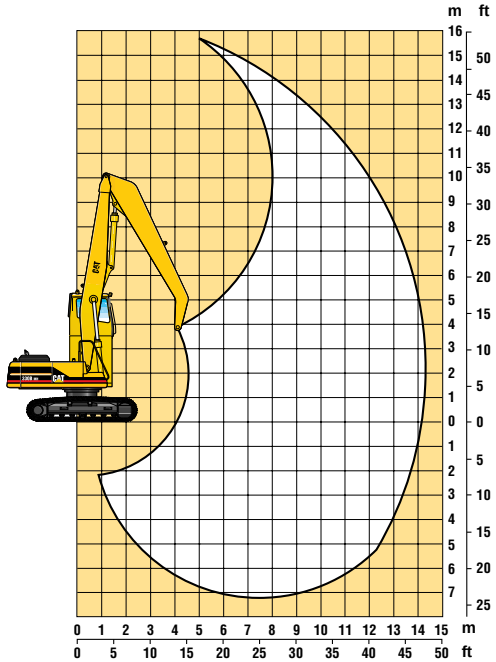
*Limited by hydraulic rather than tipping load.

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.

325B MH Range Diagram



330B MH Range Diagram



Model	325B MH		330B MH	
	m	ft	m	ft
MH Two-Piece Front	13.40	**43'11"**	14.40	**47'3"**
Maximum Reach @ 1.5 m **(5'0")**	13.40	**43'11"**	14.40	**47'3"**
Maximum Height @ 5.09 m **(16'8")**	14.80	**48'7"**	15.65	**51'4"**
Track Shoe	800 mm	**2'8"**	850 mm	**2'10"**

325B MH

Equipped with Cat two-piece, 13.4 m **(43'11")** Front, 800 mm **(2'7.5")** triple grouser shoes

Height		1.5 m 5'0" Front	1.5 m 5'0" Side	3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	Max. Reach Radius m	Max. Reach Radius ft
15.0 m	kg	—	—	—	—	—	—	—	—	—	—	—	**21.43**
45'0"	**lb**							**18,600***	**18,600***				
12.0 m	kg	—	—	—	—	—	—	—	—	6700*	6700*	8.96	**28.68**
40'0"	**lb**									**15,100***	**15,100***		
10.5 m	kg	—	—	—	—	—	—	—	—	6300*	6300*	10.40	**33.67**
35'0"	**lb**									**14,100***	**14,100***		
9.0 m	kg	—	—	—	—	—	—	—	—	6300*	6300*	11.46	**37.32**
30'0"	**lb**									**13,800***	**13,800***		
7.5 m	kg	—	—	—	—	—	—	—	—	6400*	6400*	12.25	**40.02**
25'0"	**lb**									**14,300***	**14,300***		
6.0 m	kg	—	—	—	—	—	—	—	—	6800*	6800*	12.81	**41.94**
20'0"	**lb**									**15,000***	**15,000***		
4.5 m	kg	—	—	—	—	—	—	8500*	8500*	7400*	7400*	13.18	**43.19**
15'0"	**lb**							**18,500***	**18,500***	**16,200***	**16,200***		
3.0 m	kg	—	—	—	—	12 300*	12 300*	9700*	9700*	8100*	7700	13.37	**43.84**
10'0"	**lb**					**26,800***	**26,800***	**21,000***	**21,000***	**17,600***	**16,700**		
1.5 m	kg	—	—	—	—	—	—	10 800*	10 200*	8700*	7400	13.38	**43.90**
5'0"	**lb**					**31,700***	**31,700***	**23,500***	**21,900**	**18,900***	**15,900**		
0.0 m	kg	—	—	—	—	12 700*	12 700*	11 500*	9700	9100*	7100	13.22	**43.39**
0'	**lb**					**30,400***	**30,400***	**25,000***	**20,800**	**19,700***	**15,300**		
–1.5 m	kg	—	—	4100*	4100*	10 300*	10 300*	11 500*	9400	9000	6900	12.89	**42.27**
–5'0"	**lb**			**9600***	**9600***	**24,000***	**24,000***	**25,000***	**20,100**	**19,500**	**14,800**		
–3.0 m	kg	—	—	6000*	6000*	11 000*	11 000*	10 900*	9200	8600*	6800	12.36	**40.50**
–10'0"	**lb**	**9100***	**9100***	**13,700***	**13,700***	**25,400***	**25,400***	**23,800***	**19,800**	**18,800***	**14,600**		
–4.5 m	kg	—	—	7900*	7900*	12 300*	12 300*	9600*	9200	7600*	6700	11.62	**37.98**
–15'0"	**lb**			**18,000***	**18,000***	**26,900***	**26,900***	**20,900***	**19,700***	**16,600***	**14,500**		
–6.0 m	kg	—	—	—	—	—	—	—	—	—	—	—	—
–20'0"	**lb**				**20,100***	**20,100***	**16,200***	**16,200***	**12,800***	**12,800***	**9500***		

Height		9 m 30'0" Front	9 m 30'0" Side	10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	At Max. Reach Front	At Max. Reach Side	Max. Reach Radius m	Max. Reach Radius ft
15.0 m	kg	—	—	—	—	—	—	—	—	—	**21.43**
45'0"	**lb**							**18,300***	**18,300***		
12.0 m	kg	—	—	—	—	—	—	6600*	6200	8.96	**28.68**
40'0"	**lb**							**14,900***	**14,300**		
10.5 m	kg	6100*	6100*	—	—	—	—	5900*	5000	10.40	**33.67**
35'0"	**lb**	**13,600***	**13,600***					**13,400***	**11,200**		
9.0 m	kg	6000*	6000*	5700*	5000	—	—	5400	4300	11.46	**37.32**
30'0"	**lb**	**13,500***	**13,500***	**12,800***	**10,700**			**12,100**	**9500**		
7.5 m	kg	6000*	6000*	5700*	5000	—	—	4900	3800	12.25	**40.02**
25'0"	**lb**	**13,400***	**13,400***	**12,600***	**10,700**	**10,800**	**8500**	**10,800**	**8500**		
6.0 m	kg	6300*	6300*	5800*	4900	5000	4000	4500	3500	12.81	**41.94**
20'0"	**lb**	**13,800***	**13,500**	**12,800***	**10,600**	**10,800**	**8500**	**10,000**	**7800**		
4.5 m	kg	6600*	6100	6000*	4800	5000	3900	4300	3300	13.18	**43.19**
15'0"	**lb**	**14,400***	**13,200**	**13,100***	**10,400**	**10,700**	**8400**	**9500**	**7400**		
3.0 m	kg	7000*	5900	6000	4700	4900	3800	4200	3200	13.37	**43.84**
10'0"	**lb**	**15,200***	**12,700**	**12,900**	**10,100**	**10,600**	**8200**	**9200**	**7100**		
1.5 m	kg	7300*	5700	5900	4600	4800	3800	4100	3200	13.38	**43.90**
5'0"	**lb**	**15,800**	**12,300**	**12,700**	**9800**	**10,400**	**8100**	**9100**	**7100**		
0.0 m	kg	7200	5500	5800	4500	4800	3700	4200	3200	13.22	**43.39**
0'	**lb**	**15,400**	**11,900**	**12,400**	**9600**	**10,300**	**8000**	**9200**	**7100**		
–1.5 m	kg	7000	5400	5700	4400	4700	3700	4100*	3300	12.89	**42.27**
–5'0"	**lb**	**15,100**	**11,600**	**12,200**	**9400**	**10,200**	**7900**	**9000***	**7400**		
–3.0 m	kg	6900	5300	5600	4300	4200*	3700	3700*	3500	12.36	**40.50**
–10'0"	**lb**	**14,900**	**11,400**	**12,100**	**9400**	**8800***	**7900**	**8200***	**7800**		
–4.5 m	kg	6100*	5300	4600*	4400	—	—	3200*	3200*	11.62	**37.98**
–15'0"	**lb**	**13,200***	**11,400**	**9900***	**9400**			**7100***	**7100***		
–6.0 m	kg	—	—	—	—	—	—	—	—	—	—
–20'0"	**lb**	**9500***									

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard J1097. Rated loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity.

330B MH

Equipped with Cat two-piece, 14.4 m **(47'3")** Front, 850 mm triple grouser shoes

Height		3 m 10'0" Front	3 m 10'0" Side	4.5 m 15'0" Front	4.5 m 15'0" Side	6 m 20'0" Front	6 m 20'0" Side	7.5 m 25'0" Front	7.5 m 25'0" Side	9 m 30'0" Front	9 m 30'0" Side	Max. Reach Radius m	Max. Reach Radius ft
13.5 m	kg	—	—	—	—	—	—	7600*	7600*	—	—	8.93	**26.37**
46'0"	lb							**17,200***	**17,200***				
12.0 m	kg	—	—	—	—	—	—	—	—	6700*	6700*	10.56	**34.05**
40'0"	lb									**15,000***	**15,000***		
10.5 m	kg	—	—	—	—	—	—	—	—	6500*	6500*	11.78	**38.25**
35'0"	lb									**14,800***	**14,800***		
9.0 m	kg	—	—	—	—	—	—	—	—	6500*	6500*	12.70	**41.41**
30'0"	lb									**14,600***	**14,600***		
7.5 m	kg	—	—	—	—	—	—	—	—	6700*	6700*	13.39	**43.76**
25'0"	lb									**14,800***	**14,800***		
6.0 m	kg	—	—	—	—	—	—	7700*	7700*	7000*	7000*	13.89	**45.47**
20'0"	lb							**17,000***	**17,000***	**15,400***	**15,400***		
4.5 m	kg	—	—	—	—	9800*	9800*	8400*	8400*	7400*	7400*	14.21	**46.57**
15'0"	lb					**21,300***	**21,300***	**18,400***	**18,400***	**16,200***	**16,200***		
3.0 m	kg	—	—	—	—	11 200*	11 200*	9200*	9200*	7900*	7700	14.36	**47.10**
10'0"	lb					**24,300***	**24,300***	**20,000***	**20,000***	**17,100***	**16,600**		
1.5 m	kg	—	—	—	—	12 300*	12 300*	9800*	9600	8200*	7400	14.35	**47.10**
5'0"	lb					**26,800***	**26,800***	**21,400***	**20,600**	**17,900***	**16,000**		
0.0 m	kg	—	—	7600*	7600*	13 000*	12 500	10 200*	9200	8400*	7100	14.19	**46.55**
0'	lb			**18,800***	**18,800***	**26,200***	**26,800**	**22,200***	**19,700**	**18,300***	**15,400**		
–1.5 m	kg	2900*	2900*	7200*	7200*	12 900*	12 000	10 200*	8900	8300*	6900	13.86	**45.45**
–5'0"	lb	**6800***	**6800***	**17,000***	**17,000***	**28,000***	**25,900**	**22,100***	**19,100**	**18,100***	**15,000**		
–3.0 m	kg	4600*	4600*	8300*	8300*	12 200*	11 800	9700*	8700	7900*	6800	13.35	**43.75**
–10'0"	lb	**10,600***	**10,600***	**19,200***	**19,200***	**26,300***	**25,400**	**21,100***	**18,700**	**17,200***	**14,700**		
–4.5 m	kg	6300*	6300*	9900*	9900*	10 800*	10 800*	8700*	8600	7100*	6800	12.65	**41.37**
–15'0"	lb	**14,400***	**14,400***	**22,700***	**22,700***	**23,600***	**23,600***	**18,900***	**18,600**	**15,300***	**14,600**		
–6.0 m	kg	—	—	10 600*	10 600*	8700*	8700*	7100*	7100*	5600*	5600*	—	—
–20'0"	lb			**23,200***	**23,200***	**18,900***	**18,900***	**15,300***	**15,300***	**12,100***	**12,100***		

Height		10.5 m 35'0" Front	10.5 m 35'0" Side	12 m 40'0" Front	12 m 40'0" Side	13.5 m 46'0" Front	13.5 m 46'0" Side	At Max. Reach Front	At Max. Reach Side	Max. Reach Radius m	Max. Reach Radius ft
13.5 m	kg	—	—	—	—	—	—	6600*	6600*	8.93	**26.37**
46'0"	lb							**15,200***	**15,200***		
12.0 m	kg	6000*	6000*	—	—	—	—	5900*	5900*	10.56	**34.05**
40'0"	lb	—	—					**13,300***	**13,300***		
10.5 m	kg	6200*	6200*	—	—	—	—	5500*	5400	11.78	**38.25**
35'0"	lb	**14,100***	**14,100***					**12,200***	**12,100**		
9.0 m	kg	6200*	6200*	5800*	5300	—	—	5200*	4800	12.70	**41.41**
30'0"	lb	**13,700***	**13,700***	**13,000***	**11,300**			**11,600***	**10,600**		
7.5 m	kg	6200*	6200*	5800*	5300	—	—	5100*	4400	13.39	**43.76**
25'0"	lb	**13,800***	**13,800***	**12,900***	**11,400**			**11,300***	**9600**		
6.0 m	kg	6400*	6400*	5900*	5200	5400*	4300	5000*	4100	13.89	**45.47**
20'0"	lb	**14,100***	**13,900***	**12,900***	**11,200**	**11,800***	**9200**	**11,100***	**9000**		
4.5 m	kg	6600*	6300	6000*	5100	5400*	4200	5000*	3900	14.21	**46.57**
15'0"	lb	**14,500***	**13,600**	**13,100***	**11,000**	**11,700***	**9100**	**11,100***	**8600**		
3.0 m	kg	6900*	6100	6100*	5000	5400*	4200	4900*	3800	14.36	**47.10**
10'0"	lb	**15,000***	**13,200**	**13,300**	**10,800**	**11,700***	**9000**	**10,800***	**8300**		
1.5 m	kg	7100*	5900	6100*	4900	5300*	4100	4700*	3800	14.35	**47.10**
5'0"	lb	**15,400***	**12,800**	**13,400***	**10,500**	**11,400***	**8800**	**10,400***	**8300**		
0.0 m	kg	7100*	5800	6100*	4800	5100*	4100	4400*	3800	14.19	**46.55**
0'	lb	**15,400***	**12,400**	**13,200***	**10,300**	**10,900***	**8700**	**9900***	**8400**		
–1.5 m	kg	6900*	5600	5800*	4700	4600*	4000	4200*	3900	13.86	**45.45**
–5'0"	lb	**15,100***	**12,200**	**12,500***	**10,200**	**9600***	**8700**	**9200***	**8600**		
–3.0 m	kg	6500*	5600	5200*	4700	—	—	3800*	3800*	13.35	**43.75**
–10'0"	lb	**14,100***	**12,000**	**11,200***	**10,100**			**8400***	**8400***		
–4.5 m	kg	5700*	5600	4200*	4200*	—	—	3300*	3300*	12.65	**41.37**
–15'0"	lb	**12,200***	**12,000**	**8700***	**8700***			**7300***	**7300***		
–6.0 m	kg	4200*	4200*	—	—	—	—	—	—	—	—
–20'0"	lb	**8800***	**8800***								

*Indicates that the load is limited by hydraulic capacity rather than tipping capacity. Lift capacity ratings are based on SAE standard J1097. Rated loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity.

BACKHOE LOADERS

CONTENTS

Features:

- **416C/426C/436C/446B** — center pivot backhoe design.
- **428C/438C** — side shift backhoe design.
- **Standard single-tilt loader ...** features divergent loader arms, a narrow loader tower and single bucket tilt cylinder for improved visibility.
- **Optional integrated toolcarrier (IT) loader ...** offers maximum lift and breakout forces, divergent loader arms, and parallel lift for efficient loading and material handling.
  - **Hydraulic Quick Coupler ...** allows a wide range of selected attachments, including those available for Cat integrated toolcarriers.
- **Excavator-style backhoe ...** provides enhanced visibility even with narrow buckets, ability to reach over obstacles, and faster, easier truck loading.
- **Load-sensing hydraulic system ...** provides full hydraulic power to implements at all engine speeds, low fuel consumption, smooth control and low lever efforts.
- **All wheel steer ...** is available on the 426C, 436C, and 438C. Full hydrostatic steering with three operator selected modes. Two wheel steer, circle steer, and independent rear maneuvering for the tightest turning circle in the industry.
- **4F/4R fully synchronized gear box ...** provides on-the-go shifting in all gears and on-the-go engagement of optional all wheel drive.
- **Power-Shift transmission standard on 446B and available as an option on C-Series ...** for operator comfort and efficiency.
- **Brakes ...** are oil immersed, mutli-disc and self adjusting for long service life. Hydraulic assist allows low pedal effort.
- **E-Stick wear pads ...** are field replaceable and can be shimmed independently for reduced maintenance cost.
- **XT-3 hose with O-ring face seals ...** provides a dry, reliable machine.
- **Cat 3054 engine ...** proven reliability, durable gear- driven water pump, thermal starting aid, parts commonality, and low cost per hour. Large fuel tank for extended operation.
- **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.
- **Cat radial-seal air filter ...** is an air cleaner and precleaner in a single unit, eliminates hood-mounted precleaner.
- **Operator compartment features:**
  Adjustable tilt steering is optional. Heating/air conditioning system with vents in the front console. Rear, door and side windows can be fully opened for enhanced visibility and cab roof is extended to help keep operator dry. Four-post Rollover Protective Structure (ROPS) for increased protection. Lunch box storage, rear mounted hand throttle, transmission disconnect switch on loader lift lever and low effort levers all add up to more precise control with a less fatigued operator.
- **Stabilizer legs ...** on the 428C and 438C use internal, self-lubricated, adjustable wear pads.



MODEL	416C		426C		436C	
Flywheel Power (Gross)	59 kW	**78 hp**	63 kW	**84 hp**	66 kW	**89 hp**
Flywheel Power (Net)	56 kW	**75 hp***	60 kW	**80 hp**	63 kW	**85 hp**
Operating Weight	6300 kg	**13,890 lb**	7010 kg	**15,450 lb**	7075 kg	**15,600 lb**
Engine Model	**3054 DINA**		**3054 DIT**		**3054 DIT**	
Rated Engine RPM	**2200**		**2200**		**2200**	
No. of Cylinders	**4**		**4**		**4**	
Bore	100 mm	**3.94 in**	100 mm	**3.94 in**	100 mm	**3.94 in**
Stroke	127 mm	**5 in**	127 mm	**5 in**	127 mm	**5 in**
Displacement	4 L	**243 in^3**	4 L	**243 in^3**	4 L	**243 in^3**
Speeds Forward	km/h	**mph**	km/h	**mph**	km/h	**mph**
1st	5.8	**3.6**	5.8	**3.6**	6.0	**3.7**
2nd	9.3	**5.8**	4.3	**5.8**	9.6	**6.0**
3rd	17.9	**11.1**	17.9	**11.1**	19.9	**12.4**
4th	34.0	**21.1**	34.0	**21.1**	33.7	**20.9**
Speeds Reverse						
1st	5.8	**3.6**	5.8	**3.6**	6.0	**3.7**
2nd	9.3	**5.8**	9.3	**5.8**	9.6	**6.0**
3rd	17.9	**11.1**	17.9	**11.1**	19.9	**12.3**
4th	34.0	**21.1**	34.0	**21.1**	33.7	**20.9**
Turning Circle Wall to Wall	10 670 mm	**35'0"**	10 800 mm	**35'5"**	10 859 mm	**35'7"**
All Wheel Steer Wall to Wall						
Two Wheel Steer		**—**	10 800 mm	**35'5"**	10 800 mm	**35'5"**
Circle Steer		**—**	10 400 mm	**34'1"**	10 400 mm	**34'1"**
Independent Rear		**—**	9500 mm	**31'2"**	9500 mm	**31'2"**
Tires, Single-Tilt, Front						
Standard, 2WD	**11LX16, 10 PR, F3**		**11LX16, 10 PR, F3**		**11L-16, 12 PR, F3**	
Standard, AWD	**12.5/80-18, 10 PR, SG**		**12.5/80-18, 10 PR, SG**		**12.5/80-18, 10 PR, SG**	
Tires, Single-Tilt, Rear						
Standard, 2WD	**16.9X24, 8 PR, R4**		**16.9X24, 8 PR, R4**		**19.5L-24, 10 PR, IT525**	
Standard, AWD	**19.5LX24, 8 PR, IT525**		**19.5L-24, 8 PR, IT525**		**19.5L-24, 10 PR, IT525**	
Standard, AWS	**—**		**19.5L-24, 10 PR, IT525**		**19.5L-24, 10 PR, IT525**	
Tire, Parallel Lift, Front						
Standard, 2WD	**11LX16, 12 PR, F3**		**11LX16, 12 PR, F3**		**11L-16, 12 PR, F3**	
Standard, AWD	**12.5/80-18, 10 PR, SG**		**12.5/80-18, 10 PR, SG**		**12.5/80-18, 10 PR, SGI**	
Tires, Parallel Lift, Rear						
Standard, 2WD	**16.9X24, 8 PR, R4**		**16.9X24, 8 PR, R4**		**—**	
Standard, AWD	**19.5L-24, 8 PR, IT525**		**19.5L-24, 8 PR, IT525**		**19.5L-24, 10 PR, IT525**	
Standard, AWS	**—**		**19.5L-24, 10 PR, IT525**		**19.5L-24, 10 PR, IT525**	
Hydraulic System, closed center	**LSPC**		**LSPC**		**LSPC**	
Pump capacity:	162 L/min @ 2200 rpm @ 20 700 kPa **(43 gpm @ 2200 rpm @ 3000 psi)**		162 L/min @ 2200 rpm @ 20 700 kPa **(43 gpm @ 2200 rpm @ 3000 psi)**		162 L/min @ 2200 rpm @ 20 700 kPa **(43 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 turbocharger 60 kW **(80 hp)**.



MODEL	446B		428C		438C	
Flywheel Power (Gross)	82 kW	**110 hp**	59 kW	**78 hp**	66 kW	**89 hp**
Flywheel Power (Net)	76 kW	**102 hp**	56 kW	**75 hp***	63 kW	**85 hp**
Operating Weight	8890 kg	**19,600 lb**	7416 kg	**16,350 lb**	7560 kg	**16,670 lb**
Engine Model	**3114 DIT**		**3054 DINA**		**3054 DIT**	
Rated Engine RPM	**2200**		**2200**		**2200**	
No. of Cylinders	**4**		**4**		**4**	
Bore	105 mm	**4.13 in**	100 mm	**3.94 in**	100 mm	**3.94 in**
Stroke	127 mm	**5 in**	127 mm	**5 in**	127 mm	**5 in**
Displacement	4.40 L	**268 in³**	4 L	**243 in³**	4 L	**243 in³**
Speeds Forward	km/h	**mph**	km/h	**mph**	km/h	**mph**
1st	6.6	**4.1**	5.7	**3.5**	5.8	**3.6**
2nd	12.1	**7.5**	9.1	**5.6**	9.3	**5.8**
3rd	21.7	**13.5**	18.7	**11.6**	19.2	**11.9**
4th	33.0	**20.5**	31.5	**19.6**	32.3	**20.0**
Speeds Reverse						
1st	7.3	**4.5**	5.7	**3.5**	5.8	**3.6**
2nd	13.4	**8.3**	9.1	**5.6**	9.3	**5.8**
3rd	24.1	**15.0**	18.7	**11.6**	19.2	**11.9**
4th	36.5	**22.7**	31.5	**19.6**	32.3	**20.0**
Turning Circle Wall to Wall	11 357 mm	**37'3"**	10 800 mm	**35'5"**	10 800 mm	**35'5"**
All Wheel Steer Wall to Wall						
Two Wheel Steer		—		—	10 800 mm	**35'5"**
Circle Steer		—		—	10 400 mm	**34'1"**
Independent Rear		—		—	9500 mm	**31'2"**
Tires, Single-Tilt, Front						
Standard, 2WD	**14.5/75-16, 10 PR, F3**		**11L-16, 10 PR, F3**		—	
Standard, AWD	**12.5-20, 10 PR, R4**		**10.5-20, 10 PR, ISG**		**12.5/80-18, 10 PR, SG**	
Tires, Single-Tilt, Rear						
Standard, 2WD	**21L-24, 12 PR, R4, IT525**		**16.9-28, 10 PR, R4, ISG**		—	
Standard, AWD	**21L-24, 12 PR, R4, IT525**		**16.9-28, 10 PR, R4, ISG**		**16.9-28, 10 PR, R4, ISG**	
Standard, AWS	—		—		**16.9-28, 10 PR, R4, ISG**	
Tire, Parallel Lift, Front						
Standard, 2WD		—		**11L-16, 12 PR, F3**		—
Standard, AWD		—		**12.5/80-18, 10 PR, SG**		**12.5/80-18, 10 PR, SG**
Standard, AWD		—		**12.5/80-18, 10 PR, SGI**		**12.5/80-18, 10 PR, SGI**
Tires, Parallel Lift, Rear						
Standard, 2WD		—		**16.9-28, 10 PR, R4, ISG**		—
Standard, AWD		—		—		**16.9-28, 10 PR, R4, ISG**
Standard, AWD		—		—		****16.9-28, 12 PR, R4, ISG**
Standard, AWS		—		—		**16.9-28, 10 PR, R4, ISG**
Hydraulic System, closed center	**LSPC**		**LSPC**		**LSPC**	
Pump capacity:	178 L/min @ 2200 rpm @ 22 400 kPa **(47 gpm @ 2200 rpm @ 3250 psi)**		155 L/min @ 2200 rpm @ 20 700 kPa **(41 gpm @ 2200 rpm @ 3000 psi)**		162 L/min @ 2200 rpm @ 20 700 kPa **(43 gpm @ 2200 rpm @ 3000 psi)**	
Fuel Tank Capacity	125 L	**33 U.S. gal**	128 L	**34 U.S. gal**	128 L	**34 U.S. gal**

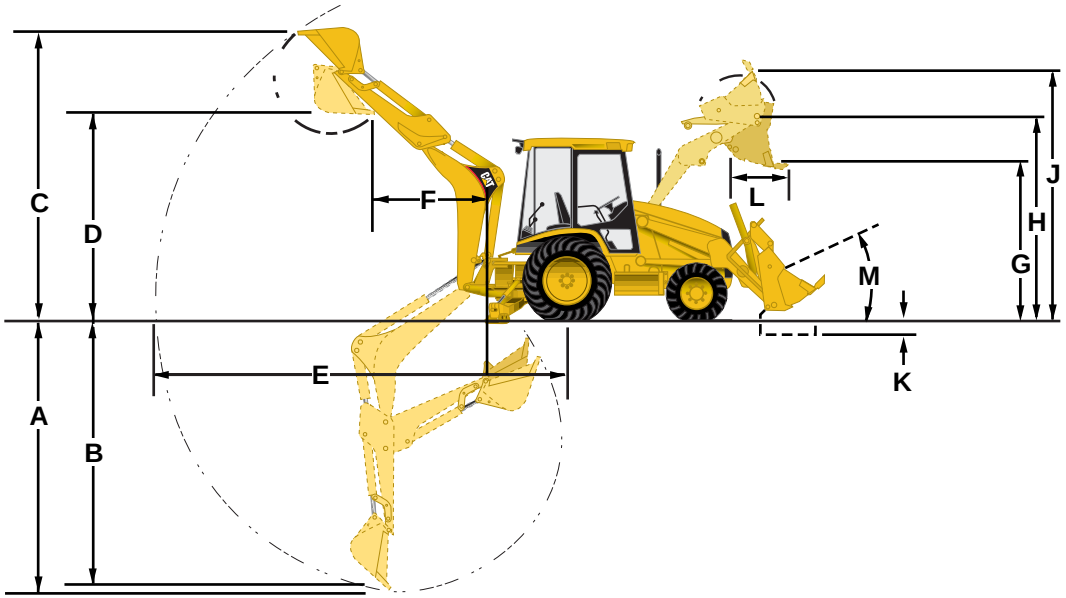
*With turbocharger 60 kW **(80 hp)**.
**For use with E-Stick.

MODEL	416C	426C	436C
Tires, Single-Tilt, Front			
Standard, 2WD	11L-16, 10 PR, F3	11L-16, 10 PR, F3	—
Standard, 2WD	—	—	11L-16, 12 PR, F3
Optional, 2WD	11L-16, 12 PR, F3	11L-16, 12 PR, F3	—
Optional, 2WD	—	14.5/75-16, 10 PR, F3	14.5/75-16, 10 PR, F3
Standard, 4WD	—	—	—
Standard, AWD	12.5/80-18, 10 PR, SG	12.5/80-18, 10 PR, SG	12.5/80-18, 10 PR, SG
Standard, AWD	—	—	—
Optional, AWD	—	—	—
Optional, AWD	—	—	—
Optional, AWD	—	—	—
Optional, AWD	340/80-R18, IT510	340/80-R18, IT510	340/80-R18, IT510
Tires, Single-Tilt, Rear			
Standard, 2WD	*16.9-24, 8 PR, R4	*16.9-24, 8 PR, R4	19.5L-24, 10 PR, IT525
Optional, 2WD	**16.9-24, 10 PR, R4	**16.9-24, 10 PR, R4	19.5LR-24, IT510
Optional, 2WD	19.5L-24, 8 PR, IT525	19.5L-24, 8 PR, IT525	21L-24, 12 PR, IT525
Optional, 2WD	19.5L-24, 10 PR, IT525	19.5L-24, 10 PR, IT525	—
Optional, 2WD	19.5LR-24, IT510	19.5LR-24, IT510	—
Optional, 2WD	—	21L-24, 12 PR, IT525	—
Optional, 2WD	—	—	—
Standard, 4WD	19.5L-24, 8 PR, IT525	19.5L-24, 8 PR, IT525	—
Standard, AWD	—	—	19.5L-24, 10 PR, IT525
Optional, AWD	19.5L-24, 10 PR, IT525	19.5L-24, 10 PR, IT525	—
Optional, AWD	19.5LR-24, IT510	19.5LR-24, IT510	19.5LR-24, IT510
Optional, AWD	—	21L-24, 12 PR, IT525	21L-24, 12 PR, IT525
Optional, AWD	—	—	—
Optional, AWD	—	—	—
Optional, AWD	—	—	—
Standard, AWS	—	19.5L-24, 10 PR, IT525	19.5L-24, 10 PR, IT525
Optional, AWS	—	19.5LR-24, IT510	19.5LR-24, IT510
Optional, AWS	—	—	—
Optional, AWS	—	—	—
Tires, Parallel Lift, Front			
Standard, 2WD	11L-16, 12 PR, F3	11L-16, 12 PR, F3	11L-16, 12 PR, F3
Optional, 2WD	—	14.5/75-16, 10 PR, F3	14.5/75-16, 10 PR, F3
Standard, AWD	12.5/80-18, 10 PR, SG	12.5/80-18, 10 PR, SG	12.5/80-18, 10 PR, SG
Standard, AWD	—	—	—
Optional, AWD	—	—	—
Optional, AWD	340/80-R18, IT510	340/80-R18, IT510	340/80-R18, IT510
Tires, Parallel Life, Rear			
Standard, 2WD	*16.9-24, 8 PR, R4	*16.9-24, 8 PR, R4	—
Optional, 2WD	**16.9-24, 10 PR, R4	**16.9-24, 10 PR, R4	—
Optional, 2WD	19.5L-24, 8 PR, IT525	19.5L-24, 8 PR, IT525	—
Optional, 2WD	19.5L-24, 10 PR, IT525	19.5L-24, 10 PR, IT525	19.5L-24, 10 PR, IT525
Optional, 2WD	19.5LR-24, IT510	19.5LR-24, IT510	19.5LR-24, IT510
Optional, 2WD	—	21L-24, 12 PR, IT525	21L-24, 12 PR, IT525
Optional, 2WD	—	—	—
Standard, AWD	19.5L-24, 8 PR, IT525	19.5L-24, 8 PR, IT525	19.5L-24, 10 PR, IT525
Standard, AWD	—	—	—
Optional, AWD	19.5L-24, 10 PR, IT525	19.5L-24, 10 PR, IT525	19.5LR-24, IT510
Optional, AWD	19.5LR-24, IT510	19.5LR-24, IT510	21L-24, 12 PR, IT525
Optional, AWD	—	21L-24, 12 PR, IT525	—
Optional, AWD	—	—	—
Standard, AWS	—	19.5L-24, 10 PR, IT525	19.5L-24, 10 PR, IT525
Optional, AWS	—	19.5LR-24, IT510	19.5LR-24, IT510
Optional, AWS	—	—	—
Optional, AWS	—	—	—

*Not for use with E-Stick.
**For use with E-Stick.

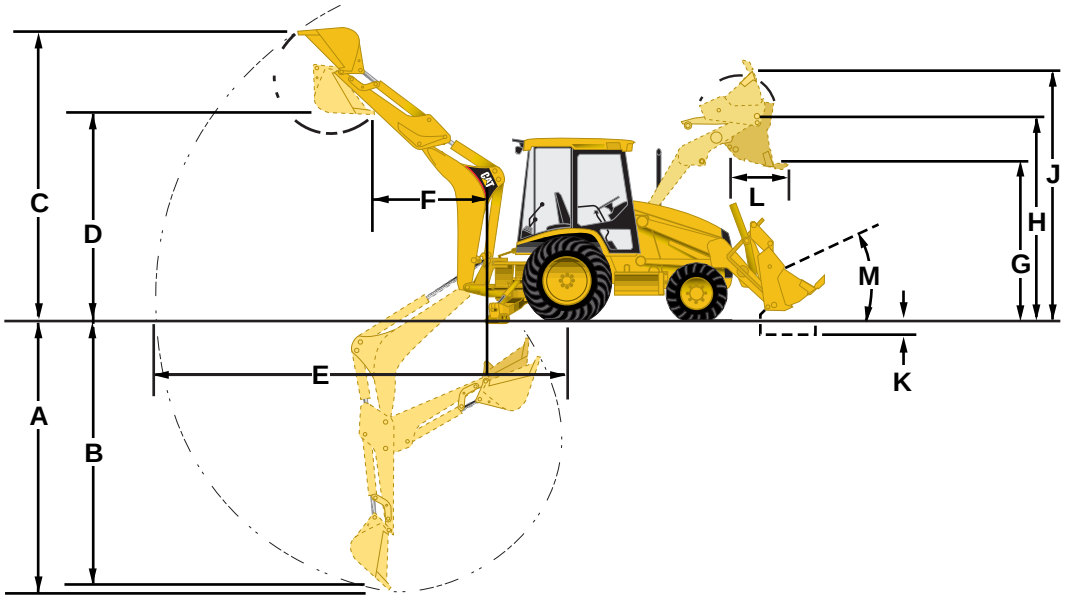
MODEL	446B	428C	438C
Tires, Single-Tilt, Front			
Standard, 2WD	14.5/75-16, 10 PR, F3	11L-16, 10 PR, F3	—
Standard, 2WD	—	—	—
Optional, 2WD	—	11L-16, 12 PR, F3	—
Optional, 2WD	—	14.5/75-16, 10 PR, F3	—
Standard, 4WD	12.5-20, 10 PR, R4, IT525	10.5-20, 10 PR, ISG	—
Standard, AWD	—	—	12.5/80-18, 10 PR, SG
Standard, AWD	—	—	12.5/80-18, 10 PR, SGI
Optional, AWD	—	12.5/80-18, 10 PR, SG	—
Optional, AWD	—	12.5/80-18, 10 PR, SGI	
Optional, AWD	—	335/80R-18, MX27	335/80R-18, MX27
Optional, AWD	—	340/80R-18, IT510	340/80R-18, IT510
Tires, Single-Tilt, Rear			
Standard, 2WD	21L-24, 12 PR, R4, IT525	*16.9-28, 10 PR, R4, ISG	—
Optional, 2WD	—	**16.9-28, 12 PR, R4, ISG	—
Optional, 2WD	—	16.9/14-28, 12 PR, R1	—
Optional, 2WD	—	16.9R-28, MX27	—
Optional, 2WD	—	16.9R-28, IT510	—
Optional, 2WD	—	18.4/15-26, 12 PR, ISG	—
Optional, 2WD	—	18.4/15R-26, MX27	—
Standard, 4WD	—	*16.9-28, 10 PR, R4, ISG	*16.9-28, 10 PR, R4, ISG
Standard, AWD	—	—	—
Optional, AWD	—	**16.9-28, 12 PR, R4, ISG	**16.9-28, 12 PR, R4, ISG
Optional, AWD	21L-24, 12 PR, R4, IT525	16.9/14-28, 12 PR, R1	—
Optional, AWD	—	16.9R-28, MX27	16.9R-28, MX27
Optional, AWD	—	16.9R-28, IT510	16.9R-28, IT510
Optional, AWD	—	18.4/15-26, 12 PR, ISG	18.4/15-26, 12 PR, ISG
Optional, AWD	—	18.4/15R-26, MX27	18.4/15R-26, MX27
Standard, AWS	—	—	*16.9-28, 10 PR, R4, ISG
Optional, AWS	—	—	*16.9-28, 12 PR, R4, ISG
Optional, AWS	—	—	16.9R-28, MX27
Optional, AWS	—	—	16.9R-28, IT510
Tires, Parallel Lift, Front			
Standard, 2WD	—	11L-16, 12 PR, F3	—
Optional, 2WD	—	14.5/75-16, 10 PR, F3	—
Standard, AWD	—	12.5/80-18, 10 PR, SG	12.5/80-18, 10 PR, SG
Standard, AWD	—	12.5/80-18, 10 PR, SGI	12.5/80-18, 10 PR, SGI
Optional, AWD	—	335/80R-18, MX27	335/80R-18, MX27
Optional, AWD	—	340/80R-18, IT510	340/80R-18, IT510
Tires, Parallel Life, Rear			
Standard, 2WD	—	*16.9-28, 10 PR, R4, ISG	—
Optional, 2WD	—	*16.9-28, 12 PR, R4, ISG	—
Optional, 2WD	—	16.9/14-28, 12 PR, R1	—
Optional, 2WD	—	16.9R-28, MX27	—
Optional, 2WD	—	16.9R-28, IT510	—
Optional, 2WD	—	18.4/15-26, 12 PR, ISG	—
Optional, 2WD	—	18.4/15R-26, MX27	—
Standard, AWD	—	—	*16.9-28, 10 PR, R4, ISG
Standard, AWD	—	—	**16.9-28, 12 PR, R4, ISG
Optional, AWD	—	—	16.9R-28, MX27
Optional, AWD	—	—	16.9R-28, IT510
Optional, AWD	—	—	18.4/15-26, 12 PR, ISG
Optional, AWD	—	—	18.4/15R-26, MX27
Standard, AWS	—	—	*16.9-28, 10 PR, R4, ISG
Optional, AWS	—	—	**16.9-28, 12 PR, R4, ISG
Optional, AWS	—	—	16.9R-28, MX27
Optional, AWS	—	—	16.9R-28, IT510

*Not for use with E-Stick.
**For use with E-Stick.



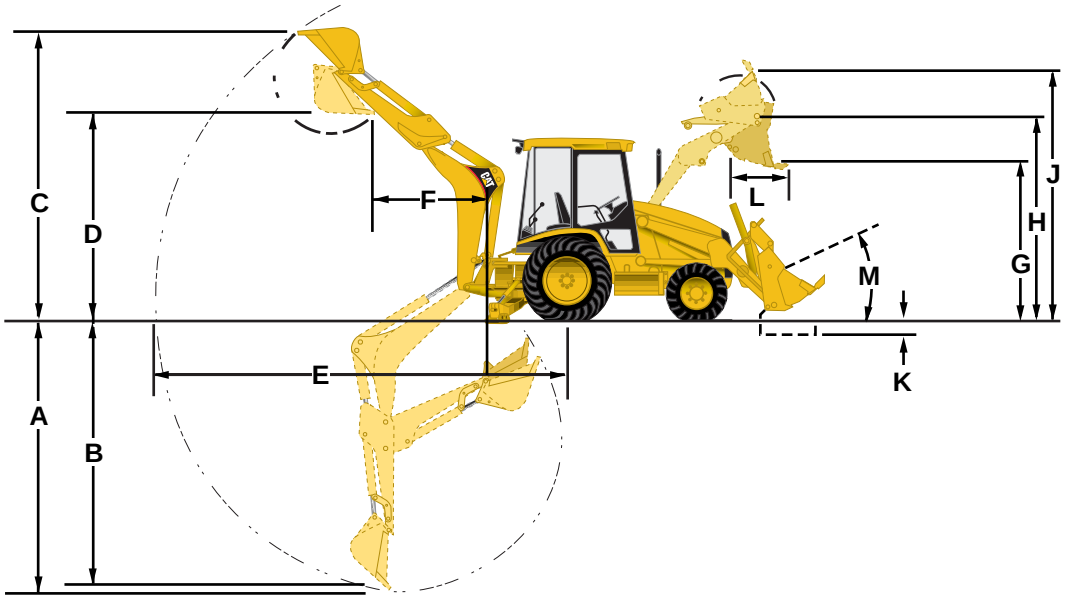
MODEL	416C*					
Backhoe	**Standard Stick**		**Extendible Stick Retracted**		**Extendible Stick Extended**	
A) Digging depth (SAE max.)	4420 mm	**14'6"**	4498 mm	**14'9"**	5545 mm	**18'2"**
B) 610 mm **(2'0")** flat bottom (SAE)	4379 mm	**14'4"**	4446 mm	**14'7"**	5498 mm	**18'1"**
C) Overall operating height — fully raised	5269 mm	**17'3"**	5240 mm	**17'2"**	5919 mm	**19'5"**
D) Loading height	3483 mm	**11'5"**	3654 mm	**12'0"**	4223 mm	**13'10"**
E) Overall reach from rear axle centerline	6729 mm	**22'1"**	6772 mm	**22'3"**	7770 mm	**25'6"**
Overall reach from swing pivot @ ground line	5639 mm	**18'6"**	5682 mm	**18'8"**	6680 mm	**21'11"**
F) Loading reach	1764 mm	**5'10"**	1804 mm	**5'11"**	2706 mm	**8'11"**
Swing arc	**180°**		**180°**		**180°**	
Bucket rotation — Vertical wall position	**170°**		**165°**		**165°**	
Truck loading position	**170°**		**165°**		**165°**	
Stabilizer spread —						
Operating position	3219 mm	**10'7"**	3219 mm	**10'7"**	3219 mm	**10'7"**
Transport position	2352 mm	**7'9"**	2352 mm	**7'9"**	2352 mm	**7'9"**
Digging force, bucket cylinder, SAE	52 kN	**11,700 lb**	53.7 kN	**12,065 lb**	53.7 kN	**12,065 lb**
Digging force, stick cylinder, SAE	34.3 kN	**7704 lb**	34.9 kN	**7836 lb**	25.1 kN	**5635 lb**
Leveling angle (maximum slope on which backhoe will make vertical cut)	**14°**		**14°**		**14°**	

*Equipped with 610 mm **(2'0")** standard duty bucket.



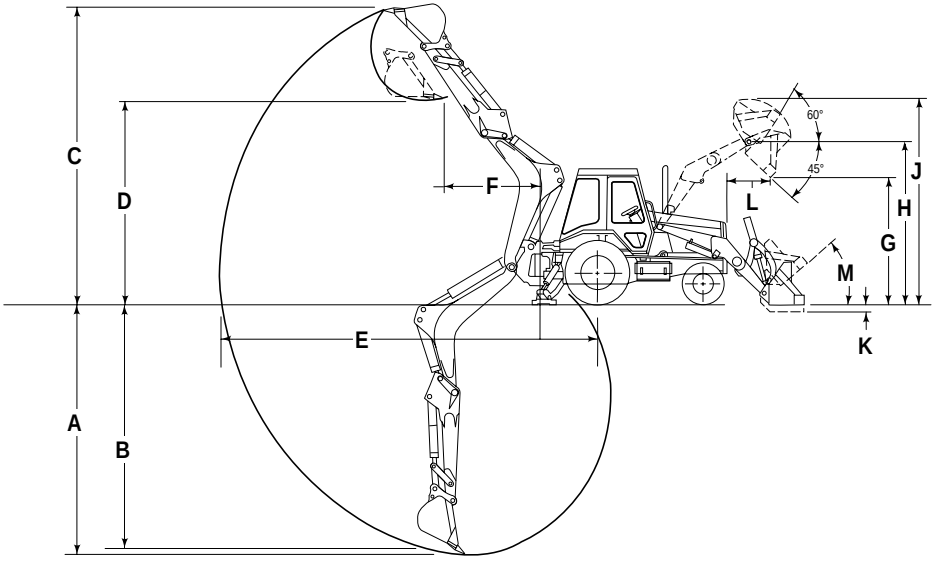
MODEL	426C*					
Backhoe	**Standard Stick**		**Extendible Stick Retracted**		**Extendible Stick Extended**	
A) Digging depth (SAE max.)	4721 mm	**15'6"**	4956 mm	**16'3"**	6169 mm	**20'3"**
B) 610 mm **(2'0")** flat bottom (SAE)	4696 mm	**15'4"**	4909 mm	**16'1"**	6129 mm	**20'1"**
C) Overall operating height — fully raised	5752 mm	**18'11"**	5832 mm	**19'2"**	6667 mm	**21'11"**
D) Loading height	3815 mm	**12'6"**	4096 mm	**13'5"**	4925 mm	**16'2"**
E) Overall reach from rear axle centerline	7146 mm	**23'5"**	7332 mm	**24'1"**	8485 mm	**27'10"**
Overall reach from swing pivot	6056 mm	**19'10"**	6242 mm	**20'6"**	7395 mm	**24'3"**
F) Loading reach	1711 mm	**5'7"**	1823 mm	**6'0"**	2717 mm	**8'11"**
Swing arc	**180°**		**180°**		**180°**	
Bucket rotation — Vertical wall position	**170°**		**165°**		**165°**	
Truck loading position	**170°**		**165°**		**165°**	
Stabilizer spread —						
Operating position	3219 mm	**10'7"**	3219 mm	**10'7"**	3219 mm	**10'7"**
Transport position	2352 mm	**7'9"**	2352 mm	**7'9"**	2352 mm	**7'9"**
Digging Force; Bucket cylinder, SAE	64.3 kN	**14,440 lb**	64.3 kN	**14,440 lb**	64.3 kN	**14,440 lb**
Digging Force; Stick cylinder, SAE	37.9 kN	**8510 lb**	39.1 kN	**8790 lb**	28.1 kN	**6310 lb**
Leveling angle (maximum slope on which backhoe will make vertical cut)	**14°**		**14°**		**14°**	

*Equipped with 610 mm **(2'0")** heavy duty bucket.



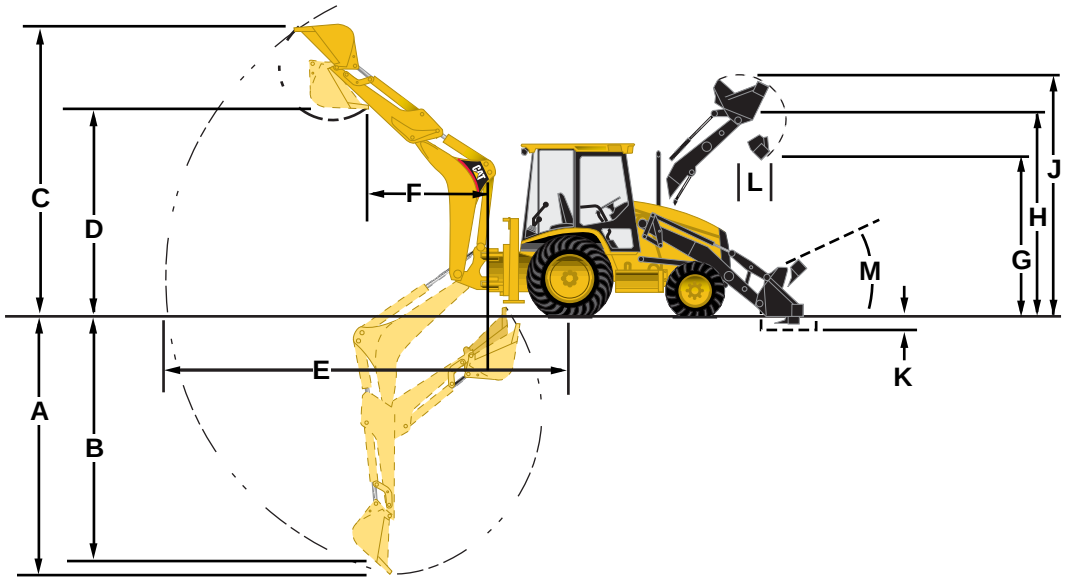
MODEL	436C*					
Backhoe	**Standard Stick**		**Extendible Stick Retracted**		**Extendible Stick Extended**	
A) Digging depth (SAE max.)	4953 mm	**16'3"**	4995 mm	**16'5"**	6202 mm	**20'4"**
B) 610 mm **(2'0")** flat bottom (SAE)	4926 mm	**16'2"**	4938 mm	**16'2"**	6160 mm	**20'3"**
C) Overall operating height — fully raised	5862 mm	**19'3"**	5664 mm	**18'7"**	6444 mm	**21'2"**
D) Loading height	3935 mm	**12'11"**	4003 mm	**13'2"**	4783 mm	**15'8"**
E) Overall reach from rear axle centerline	7358 mm	**24'2"**	7344 mm	**24'1"**	8496 mm	**27'11"**
Overall reach from swing pivot	6268 mm	**20'7"**	6254 mm	**20'6"**	7406 mm	**24'4"**
F) Loading reach	1917 mm	**6'4"**	2038 mm	**6'8"**	2717 mm	**8'11"**
Swing arc	**180°**		**180°**		**180°**	
Bucket rotation — Vertical wall position	**170°**		**165°**		**165°**	
Truck loading position	**170°**		**165°**		**165°**	
Stabilizer spread —						
Operating position	3219 mm	**10'7"**	3219 mm	**10'7"**	3219 mm	**10'7"**
Transport position	2352 mm	**7'9"**	2352 mm	**7'9"**	2352 mm	**7'9"**
Digging Force; Bucket cylinder, SAE	64.2 kN	**14,440 lb**	64.2 kN	**14,440 lb**	64.2 kN	**14,440 lb**
Digging Force; Stick cyilnder, SAE	38.7 kN	**8685 lb**	40.3 kN	**9060 lb**	29 kN	**6529 lb**
Leveling angle (maximum slope on which backhoe will make vertical cut)	**14°**		**14°**		**14°**	

*Equipped with 610 mm **(2'0")** heavy duty bucket.



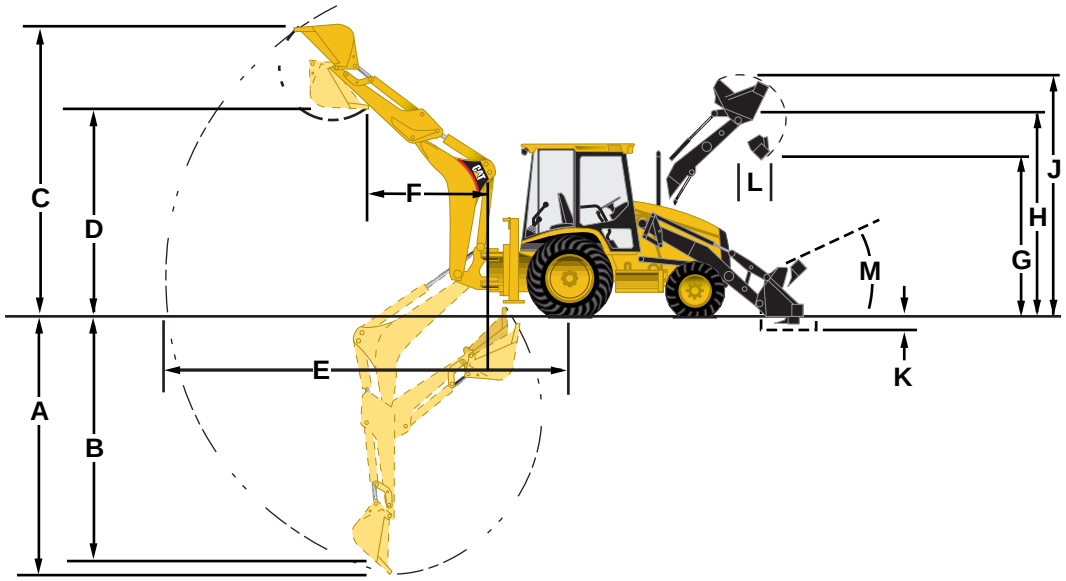
MODEL	446B*					
Backhoe	**Standard Stick**		**Extendible Stick Retracted**		**Extendible Stick Extended**	
A) Digging depth (SAE max.)	5219 mm	**17'2"**	5182 mm	**17'0"**	6528 mm	**21'5"**
B) 610 mm **(2'0")** flat bottom (SAE)	5173 mm	**17'0"**	5134 mm	**16'10"**	6479 mm	**21'3"**
C) Overall operating height — fully raised	6335 mm	**20'9"**	6298 mm	**20'8"**	7240 mm	**23'9"**
D) Loading height	4310 mm	**14'2"**	4205 mm	**13'10"**	4894 mm	**16'1"**
E) Overall reach from rear axle centerline	7866 mm	**25'10"**	7825 mm	**25'8"**	9130 mm	**29'11"**
Overall reach from swing pivot	6604 mm	**21'8"**	6563 mm	**21'6"**	7868 mm	**25'9"**
F) Loading reach	2027 mm	**6'8"**	2070 mm	**6'9"**	3261 mm	**10'8"**
Swing arc	**180°**		**180°**		**180°**	
Bucket rotation — Vertical wall position	**169°**		**163°**		**163°**	
Truck loading position	**169°**		**163°**		**163°**	
Stabilizer spread —						
Operating position	4084 mm	**13'5"**	4084 mm	**13'5"**	4084 mm	**13'5"**
Transport position	2405 mm	**7'11"**	2405 mm	**7'11"**	2405 mm	**7'11"**
Digging force, bucket cylinder, SAE	67.6 kN	**15,200 lb**	67.4 kN	**15,150 lb**	67.4 kN	**15,150 lb**
Digging force, stick cylinder, SAE	48 kN	**10,800 lb**	49.8 kN	**11,200 lb**	34.8 kN	**7830 lb**
Leveling angle (maximum slope on which backhoe will make vertical cut)	**13°**		**13°**		**13°**	

*Equipped with 610 mm **(2'0")** standard duty bucket.



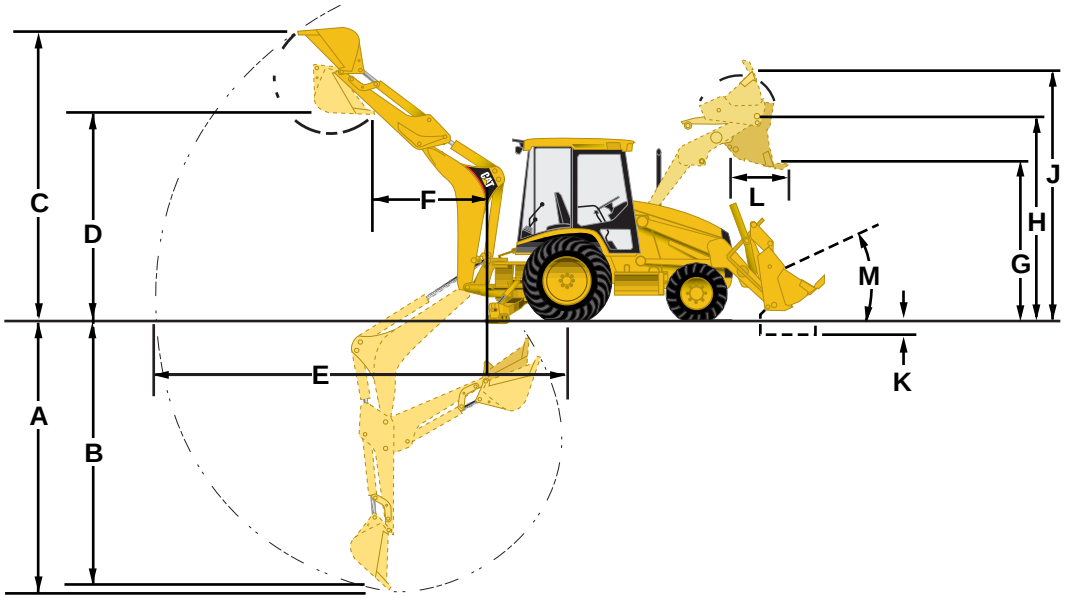
MODEL	428C*					
Backhoe	**Standard Stick**		**Extendible Stick Retracted**		**Extendible Stick Extended**	
A) Digging depth (SAE max.)	4153 mm	**13'7"**	4236 mm	**13'11"**	5290 mm	**17'4"**
B) 610 mm **(2'0")** flat bottom (SAE)	4120 mm	**13'6"**	4190 mm	**13'9"**	5246 mm	**17'2"**
C) Overall operating height — fully raised	5564 mm	**18'3"**	5541 mm	**18'2"**	6250 mm	**20'6"**
D) Loading height	3803 mm	**12'5"**	3845 mm	**12'7"**	4454 mm	**14'7"**
E) Overall reach from rear axle centerline	6903 mm	**22'8"**	6947 mm	**22'10"**	7950 mm	**26'1"**
Overall reach from swing pivot @ ground line	5727 mm	**18'9"**	5622 mm	**18'5"**	6625 mm	**21'9"**
F) Loading reach	1638 mm	**5'4"**	1677 mm	**5'6"**	2579 mm	**8'6"**
Swing arc	**180°**		**180°**		**180°**	
Sideshift from machine centerline	630 mm	**2'1"**	630 mm	**2'1"**	630 mm	**2'1"**
Bucket rotation — Vertical wall position	**170°**		**170°**		**170°**	
Truck loading position	**170°**		**170°**		**170°**	
Stabilizer spread	2360 mm	**7'9"**	2360 mm	**7'9"**	2360 mm	**7'9"**
Digging Force; Bucket cylinder	52 kN	**11,693 lb**	53.6 kN	**12,057 lb**	53.6 kN	**12,056 lb**
Digging Force; Stick cylinder	34 kN	**7631 lb**	33.6 kN	**7541 lb**	23.8 kN	**5356 lb**
Leveling angle (maximum slope on which backhoe will make vertical cut)	**11°**		**11°**		**11°**	

*Equipped with 610 mm **(2'0")** heavy duty bucket.

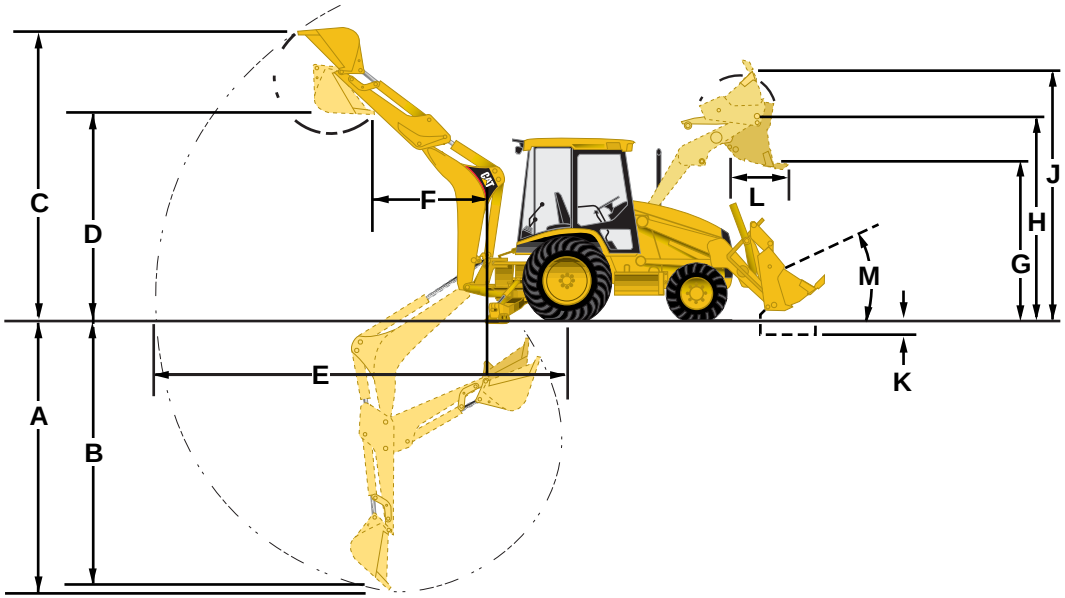


MODEL	438C*					
Backhoe	**Standard Stick**		**Extendible Stick Retracted**		**Extendible Stick Extended**	
A) Digging depth (SAE max.)	4326 mm	**14'2"**	4405 mm	**14'5"**	5455 mm	**17'11"**
B) 610 mm **(2'0")** flat bottom (SAE)	4288 mm	**14'1"**	4356 mm	**14'3"**	5409 mm	**17'9"**
C) Overall operating height — fully raised	5568 mm	**18'3"**	5532 mm	**18'2"**	6220 mm	**20'5"**
D) Loading height	3684 mm	**12'1"**	3766 mm	**12'4"**	4344 mm	**14'3"**
E) Overall reach from rear axle centerline	7036 mm	**23'1"**	7072 mm	**23'3"**	8081 mm	**26'7"**
Overall reach from swing pivot @ ground line	5711 mm	**18'9"**	5752 mm	**18'10"**	6756 mm	**22'2"**
F) Loading reach	1660 mm	**5'5"**	1699 mm	**5'7"**	2596 mm	**8'6"**
Swing arc	**180°**		**180°**		**180°**	
Sideshift from machine centerline	630 mm	**2'1"**	630 mm	**2'1"**	630 mm	**2'1"**
Bucket rotation — Vertical wall position	**170°**		**165°**		**165°**	
Truck loading position	**170°**		**165°**		**165°**	
Stabilizer spread	2360 mm	**7'9"**	2360 mm	**7'9"**	2360 mm	**7'9"**
Digging Force; Bucket cylinder	54.2 kN	**12,195 lb**	53.6 kN	**12,060 lb**	53.6 kN	**12,060 lb**
Digging Force; Stick cylinder	33 kN	**7427 lb**	33.5 kN	**7531 lb**	23.8 kN	**5350 lb**
Leveling angle (maximum slope on which backhoe will make vertical cut)	**11°**		**11°**		**11°**	

*Equipped with 610 mm **(2'0")** heavy duty backhoe bucket.

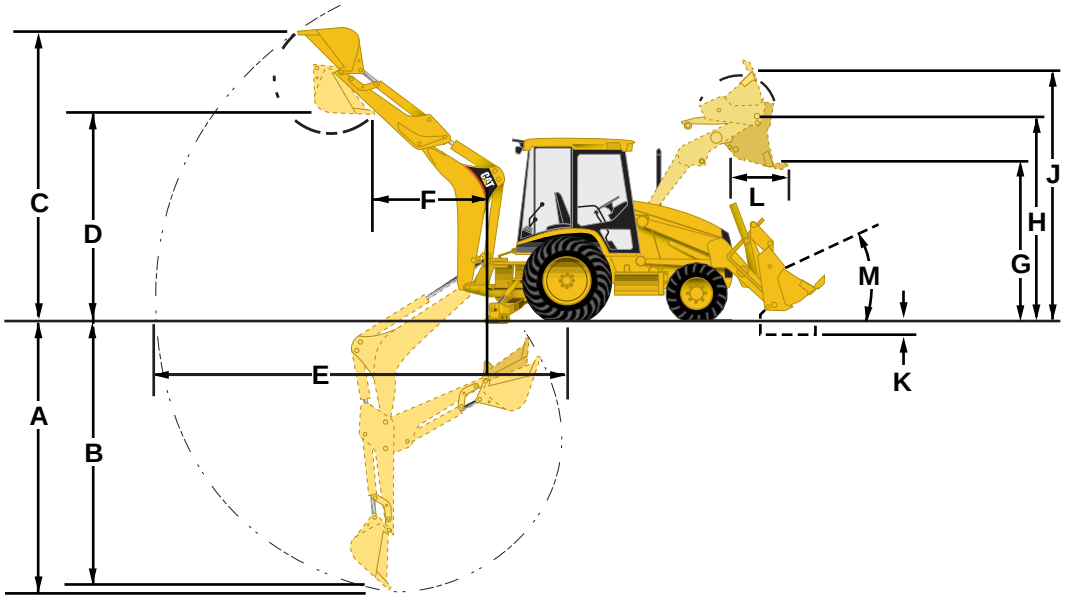


MODEL	416C									
Loader	**Single Tilt**						**IT Loader with QC**			
Bucket	**General Purpose**		**General Purpose**		**Multi-Purpose**		**General Purpose**		**Multi-Purpose**	
Bucket capacity	0.76 m³	**1 yd³**	0.96 m³	**1.25 yd³**	0.96 m³	**1.25 yd³**	0.96 m³	**1.25 yd³**	0.96 m³	**1.25 yd³**
Width	2262 mm	**7'5"**	2262 mm	**7'5"**	2262 mm	**7'5"**	2262 mm	**7'5"**	2262 mm	**7'5"**
Lift capacity at max height	2622 kg	**5780 lb**	2486 kg	**5480 lb**	2368 kg	**5220 lb**	3250 kg	**7166 lb**	2981 kg	**6570 lb**
Breakout force	40 kN	**9030 lb**	38.3 kN	**8606 lb**	42 kN	**9490 lb**	47.1 kN	**10,600 lb**	46.6 kN	**10,485 lb**
G) Dump height @ max dump angle	2650 mm	**8'8"**	2575 mm	**8'5"**	2640 mm	**8'8"**	2495 mm	**8'2"**	2560 mm	**8'5"**
H) Hinge pin height	3290 mm	**10'10"**	3290 mm	**10'10"**	3290 mm	**10'10"**	3290 mm	**10'10"**	3290 mm	**10'10"**
J) Max operating height	4020 mm	**13'2"**	4170 mm	**13'8"**	4200 mm	**13'9"**	4170 mm	**13'8"**	4200 mm	**13'9"**
K) Digging depth	105 mm	**4"**	105 mm	**4"**	105 mm	**4"**	105 mm	**4"**	135 mm	**5"**
Grading angle	**110°**		**106°**		**110°**		**107°**		**111°**	
Width of dozer cutting edge	—	—	—	—	2406 mm	**7'11"**	—	—	2262 mm	**7'11"**
Clam opening — maximum	—	—	—	—	790 mm	**2'7"**	—	—	790 mm	**2'7"**
L) Reach @ full height max dump angle	730 mm	**2'5"**	810 mm	**2'8"**	700 mm	**2'4"**	840 mm	**2'9"**	730 mm	**2'5"**
M) Maximum rollback @ groundline	**40°**		**40°**		**40°**		**40°**		**41°**	
Weight	380 kg	**838 lb**	428 kg	**944 lb**	659 kg	**1453 lb**	466 kg	**983 lb**	659 kg	**1453 lb**



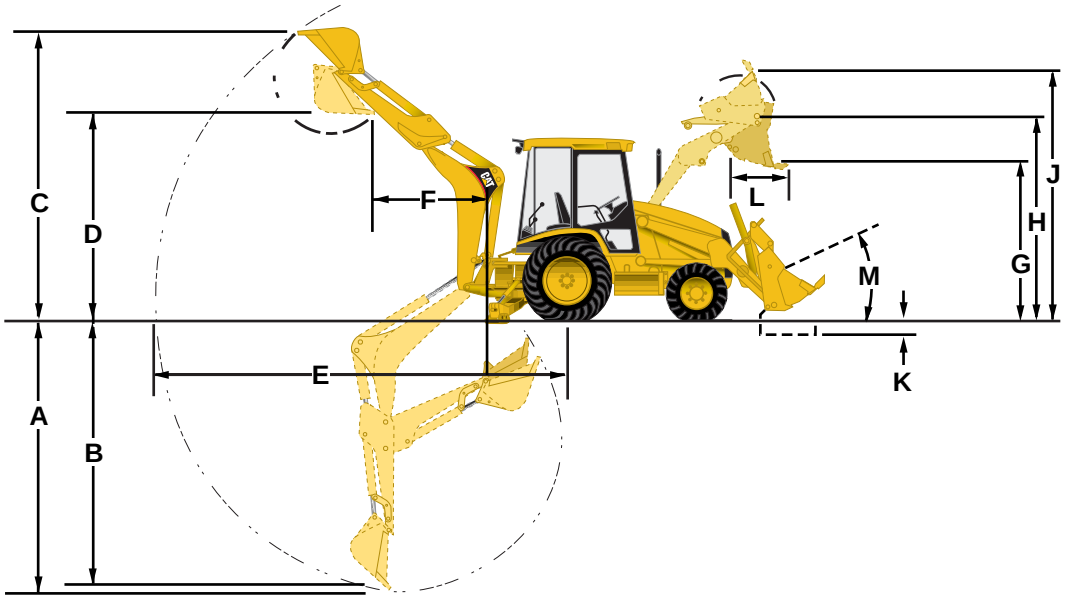
MODEL	426C									
Loader	Single Tilt									
Bucket	General Purpose		General Purpose*		General Purpose		Multi-Purpose		Multi-Purpose*	
Bucket capacity	0.96 m³	**1.25 yd³**	1 m³	**1.31 yd³**	1.07 m³	**1.40 yd³**	0.96 m³	**1.25 yd³**	1.03 m³	**1.35 yd³**
Width	2262 mm	**7'5"**	2406 mm	**7'11"**	2262 mm	**7'5"**	2262 mm	**7'5"**	2406 mm	**7'11"**
Lift capacity at full height	2826 kg	**6230 lb**	2930 kg	**6460 lb**	2876 kg	**6340 lb**	2771 kg	**6110 lb**	2750 kg	**6064 lb**
Breakout force	45.3 kN	**10,181 lb**	45.4 kN	**10,204 lb**	44.5 kN	**10,000 lb**	44.7 kN	**10,035 lb**	44.4 kN	**9979 lb**
G) Dump height @ max dump angle	2575 mm	**8'5"**	2610 mm	**8'7"**	2555 mm	**8'5"**	2640 mm	**8'8"**	2640 mm	**8'8"**
H) Hinge pin height	3290 mm	**10'10"**	3290 mm	**10'10"**	3290 mm	**10'10"**	3290 mm	**10'10"**	3290 mm	**10'10"**
J) Max operating height	4170 mm	**13'8"**	4170 mm	**13'8"**	4215 mm	**13'10"**	4200 mm	**13'9"**	4200 mm	**13'9"**
K) Digging depth	105 mm	**4"**	105 mm	**4"**	145 mm	**6"**	135 mm	**5"**	135 mm	**5"**
Grading angle	**106°**		**107°**		**107°**		**110°**		**110°**	
Width of dozer cutting edge	—	—	—	—	—	—	2406 mm	**7'11"**	2406 mm	**7'11"**
Clam opening — maximum	—	—	—	—	—	—	790 mm	**2'7"**	790 mm	**2'7"**
L) Reach @ full height max dump angle	810 mm	**2'8"**	780 mm	**2'7"**	780 mm	**2'7"**	700 mm	**2'3"**	700 mm	**2'4"**
M) Maximum rollback @ groundline	**40°**		**40°**		**41°**		**41°**		**40°**	
Weight	428 kg	**944 lb**	440 kg	**970 lb**	437 kg	**964 lb**	659 kg	**1453 lb**	682 kg	**1504 lb**

*Recommended for use with All Wheel Steer option.



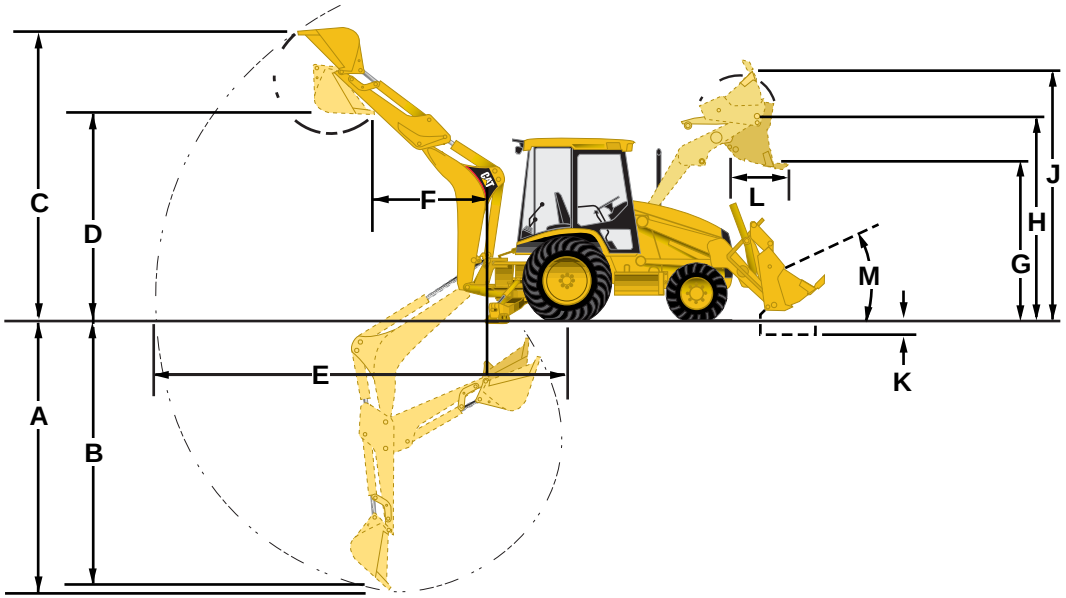
MODEL	426C							
Loader	IT Loader with QC							
Bucket	General Purpose		General Purpose*		Multi-Purpose		Multi-Purpose*	
Bucket capacity	0.96 m³	**1.25 yd³**	1 m³	**1.31 yd³**	0.96 m³	**1.25 yd³**	1.03 m³	**1.35 yd³**
Width	2262 mm	**7'5"**	2406 mm	**7'11"**	2262 mm	**7'5"**	2406 mm	**7'11"**
Lift capacity at full height	3116 kg	**6871 lb**	3190 kg	**7034 lb**	2981 kg	**6573 lb**	2955 kg	**6516 lb**
Breakout force	45.8 kN	**10,300 lb**	46.9 kN	**10,541 lb**	45.4 kN	**10,200 lb**	46.5 kN	**10,451 lb**
G) Dump height @ max dump angle	2495 mm	**8'2"**	2530 mm	**8'4"**	2560 mm	**8'5"**	2560 mm	**8'5"**
H) Hinge pin height	3290 mm	**10'10"**	3290 mm	**10'10"**	3290 mm	**10'10"**	3290 mm	**10'10"**
J) Max operating height	4170 mm	**13'8"**	4170 mm	**13'8"**	4200 mm	**13'9"**	4200 mm	**13'9"**
K) Digging depth	105 mm	**4"**	105 mm	**4"**	135 mm	**5"**	135 mm	**5"**
Grading angle	**107°**		**108°**		**111°**		**111°**	
Width of dozer cutting edge	—	**—**	—	**—**	2262 mm	**7'5"**	2262 mm	**7'5"**
Clam opening — maximum	—	**—**	—	**—**	790 mm	**2'7"**	790 mm	**2'7"**
L) Reach @ full height/max dump angle	840 mm	**2'9"**	810 mm	**2'8"**	730 mm	**2'5"**	730 mm	**2'5"**
M) Maximum rollback @ groundline	**40°**		**40°**		**41°**		**41°**	
Weight	446 kg	**983 lb**	459 kg	**1012 lb**	659 kg	**1453 lb**	682 kg	**1504 lb**

*Recommended for use with All Wheel Steer option.



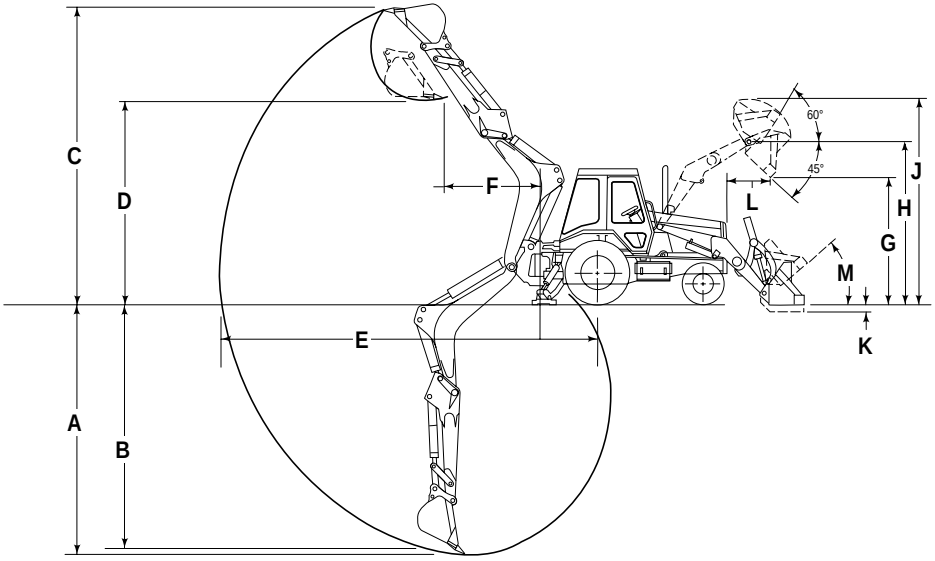
MODEL	436C									
Loader	Single Tilt									
Bucket	General Purpose*		General Purpose		General Purpose*		Multi-Purpose		Multi-Purpose*	
Bucket capacity	1 m³	**1.31 yd³**	1.07 m³	**1.40 yd³**	1.15 m³	**1.50 yd³**	0.96 m³	**1.25 yd³**	1.03 m³	**1.35 yd³**
Width	2406 mm	**7'11"**	2262 mm	**7'5"**	2406 mm	**7'11"**	2262 mm	**7'5"**	2406 mm	**7'11"**
Lift capacity at full height	3000 kg	**6614 lb**	2946 kg	**6494 lb**	2901 kg	**6395 lb**	2845 kg	**6273 lb**	2821 kg	**6218 lb**
Breakout force	45.7 kN	**10,278 lb**	44.9 kN	**10,080 lb**	44.4 kN	**9990 lb**	45 kN	**10,125 lb**	44.8 kN	**10,069 lb**
G) Dump height @ max dump angle	2670 mm	**8'9"**	2620 mm	**8'7"**	2590 mm	**8'6"**	2705 mm	**8'11"**	2305 mm	**7'7"**
H) Hinge pin height	3350 mm	**11'0"**	3350 mm	**11'0"**	3350 mm	**11'0"**	3350 mm	**11'0"**	3350 mm	**11'0"**
J) Max operating height	4230 mm	**13'11"**	4270 mm	**14'0"**	4270 mm	**14'0"**	4260 mm	**14'0"**	4260 mm	**14'0"**
K) Digging depth	43 mm	**2"**	85 mm	**3"**	85 mm	**3"**	75 mm	**3"**	75 mm	**3"**
Grading angle	**108°**		**108°**		**108°**		**111°**		**111°**	
Width of dozer cutting edge	—	—	—	—	—	—	2262 mm	**7'5"**	2406 mm	**7'11"**
Clam opening — maximum	—	—	—	—	—	—	790 mm	**2'7"**	790 mm	**2'7"**
L) Reach @ full height max dump angle	750 mm	**2'6"**	750 mm	**2'6"**	750 mm	**2'6"**	670 mm	**2'2"**	670 mm	**2'2"**
M) Maximum rollback @ groundline	**39°**		**40°**		**40°**		**40°**		**40°**	
Weight	440 kg	**970 lb**	437 kg	**964 lb**	456 kg	**1003 lb**	659 kg	**1453 lb**	682 kg	**1504 lb**

*Recommended for use with All Wheel Steer option.



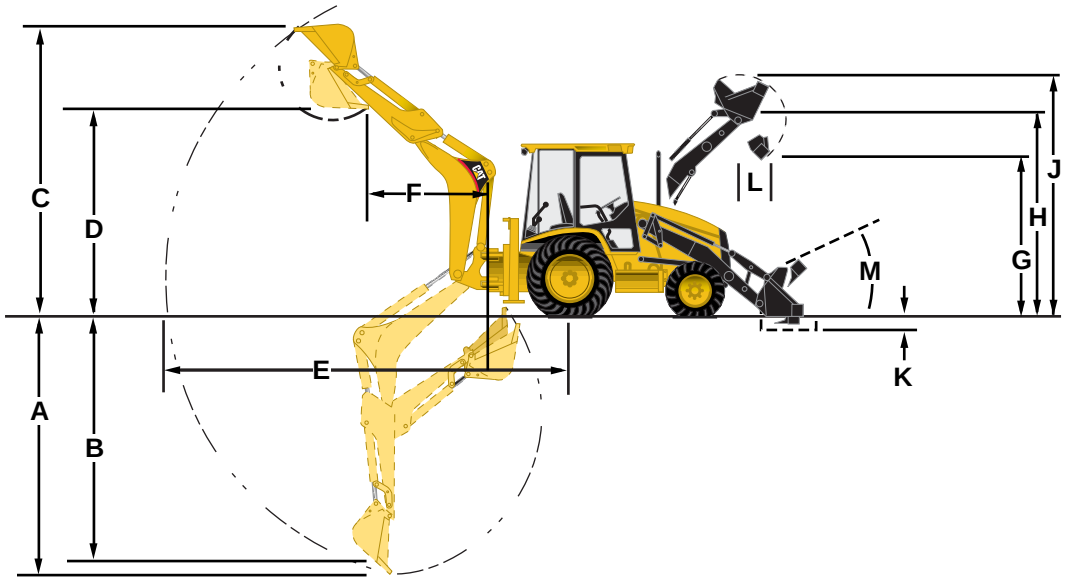
MODEL	436C							
Loader	IT Loader with QC							
Bucket	General Purpose*		General Purpose*		Multi-Purpose		Multi-Purpose*	
Bucket capacity	1 m³	**1.31 yd³**	1.15 m³	**1.50 yd³**	0.96 m³	**1.25 yd³**	1.03 m³	**1.35 yd³**
Width	2406 mm	**7'11"**	2406 mm	**7'11"**	2262 mm	**7'5"**	2262 mm	**7'5"**
Lift capacity at full height	3264 kg	**7196 lb**	3211 kg	**7080 lb**	3056 kg	**6739 lb**	3031 kg	**6681 lb**
Breakout force	46.8 kN	**10,518 lb**	45.9 kN	**10,316 lb**	46.6 kN	**10,462 lb**	46.4 kN	**10,429 lb**
G) Dump height @ max dump angle	2590 mm	**8'6"**	2540 mm	**8'4"**	2630 mm	**8'8"**	2630 mm	**8'8"**
H) Hinge pin height	3350 mm	**11'0"**	3350 mm	**11'0"**	3350 mm	**11'0"**	3350 mm	**11'0"**
J) Max operating height	4290 mm	**14'1"**	4330 mm	**14'3"**	4320 mm	**14'2"**	4320 mm	**14'2"**
K) Digging depth	42 mm	**2"**	80 mm	**3"**	75 mm	**3"**	75 mm	**3"**
Grading angle	**109°**		**109°**		**112°**		**112°**	
Width of dozer cutting edge	—	**—**	—	**—**	2262 mm	**7'5"**	2406 mm	**7'11"**
Clam opening — maximum	—	**—**	—	**—**	790 mm	**2'7"**	790 mm	**2'7"**
L) Reach @ full height/max dump angle	780 mm	**2'7"**	780 mm	**2'7"**	700 mm	**2'4"**	700 mm	**2'4"**
M) Maximum rollback @ groundline	**39°**		**40°**		**40°**		**40°**	
Weight	459 kg	**1012 lb**	473 kg	**1043 lb**	659 kg	**1453 lb**	682 kg	**1504 lb**

*Recommended for use with All Wheel Steer option.

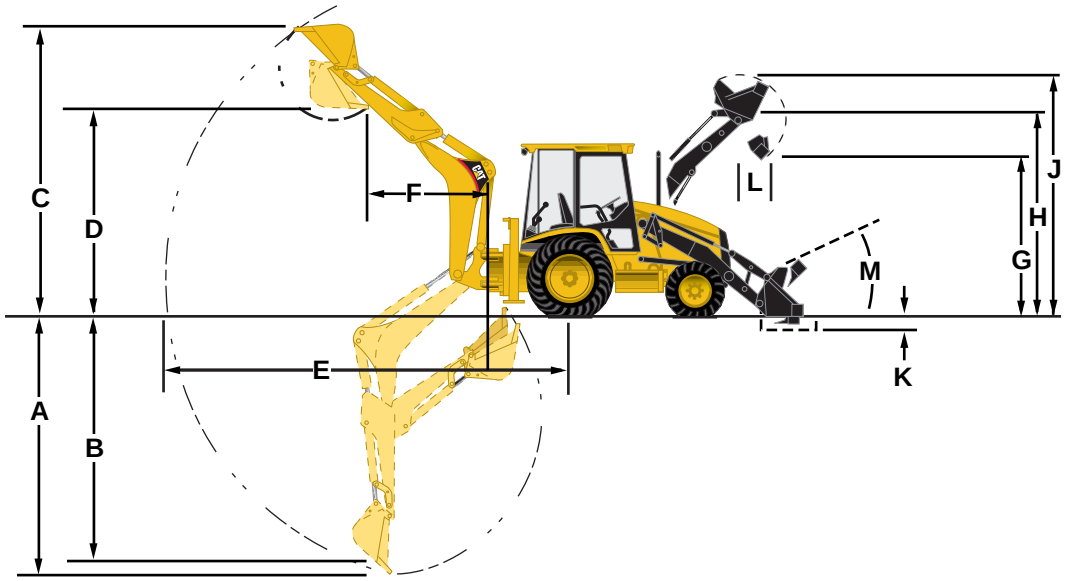


MODEL	446B					
Loader	**General Purpose**		**General Purpose**		**Multi-Purpose**	
Bucket capacity	1.1 m^3	**1.5 yd^3**	1.3 m^3	**1.75 yd^3**	1.05 m^3	**1.375 yd^3**
Width	2434 mm	**8'0"**	2434 mm	**8'0"**	2434 mm	**8'0"**
Lift capacity at full height	3970 kg	**8760 lb**	3905 kg	**8610 lb**	3790 kg	**8350 lb**
Breakout force	56 kN	**12,600 lb**	51.7 kN	**11,610 lb**	57.4 kN	**12,900 lb**
G) Dump height @ 45 degrees	2699 mm	**8'10"**	2657 mm	**8'9"**	2731 mm	**9'0"**
H) Hinge pin height	3490 mm	**11'5"**	3490 mm	**11'5"**	3490 mm	**11'5"**
J) Overall operating height — fully raised	4410 mm	**14'3"**	4198 mm	**13'9"**	4410 mm	**14'6"**
K) Digging depth	162 mm	**6.4"**	162 mm	**6.4"**	143 mm	**5.6"**
Grading angle	**115°**		**115°**		**115°**	
Width of dozer cutting edge	—	**—**	2434 mm	**8'0"**	2434 mm	**8'0"**
Clam opening — maximum	—	**—**	965 mm	**3'2"**	1000 mm	**3'3"**
L) Reach @ full height/45 degrees	868 mm	**2'10"**	910 mm	**3'0"**	868 mm	**2'10"**
M) Maximum rollback @ groundline	**40°**		**40°**		**40°**	
Weight	553 kg	**1217 lb**	608 kg	**1338 lb**	849 kg	**1868 lb**

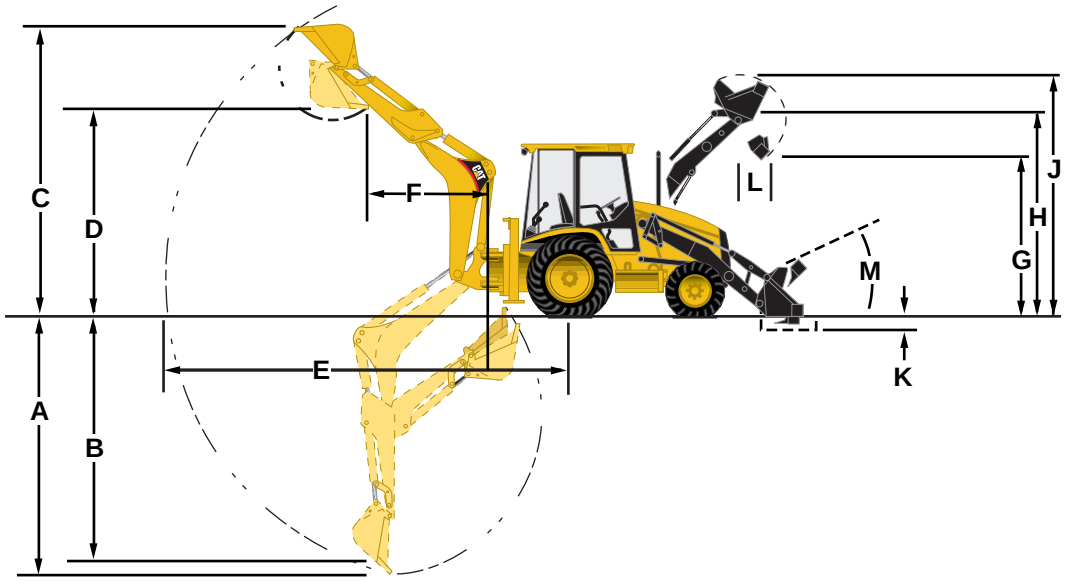
NOTE: All 446B specifications are effective with S/N 5BL00500.



MODEL	428C							
Loader	Single Tilt				Parallel Lift			
Bucket	General Purpose		Multi-Purpose		General Purpose		Multi-Purpose	
Bucket capacity	1 m³	**1.30 yd³**	1.03 m³	**1.35 yd³**	1 m³	**1.30 yd³**	1.03 m³	**1.35 yd³**
Width	2396 mm	**7'10"**	2406 mm	**7'11"**	2396 mm	**7'10"**	2406 mm	**7'11"**
Lift capacity at full height	2340 kg	**5158 lb**	2145 kg	**4728 lb**	3295 kg	**7265 lb**	3060 kg	**6747 lb**
Breakout force	38.5 kN	**8655 lb**	41.1 kN	**9239 lb**	50.1 kN	**11,262 lb**	53.2 kN	**11,959 lb**
G) Dump height @ max dump angle	2570 mm	**8'5"**	2605 mm	**8'6"**	2565 mm	**8'5"**	2600 mm	**8'6"**
H) Hinge pin height	3270 mm	**10'8"**	3270 mm	**10'8"**	3270 mm	**10'8"**	3270 mm	**10'8"**
J) Max operating height	4150 mm	**13'7"**	4175 mm	**13'8"**	4150 mm	**13'7"**	4175 mm	**13'8"**
K) Digging depth	135 mm	**5"**	165 mm	**7"**	135 mm	**5"**	165 mm	**7"**
Grading angle	**108°**		**111°**		**111°**		**114°**	
Width of dozer cutting edge	—	**—**	2406 mm	**7'11"**	—	**—**	2406 mm	**7'11"**
Clam opening — maximum	—	**—**	927 mm	**3'0"**	—	**—**	927 mm	**3'0"**
L) Reach @ full height/max dump angle	825 mm	**2'8"**	745 mm	**2'5"**	820 mm	**2'8"**	735 mm	**2'5"**
M) Maximum rollback @ groundline	**39°**		**40°**		**40°**		**40°**	
Weight	445 kg	**981 lb**	700 kg	**1543 lb**	445 kg	**981 lb**	685 kg	**1510 lb**



MODEL	438C					
Loader	Single Tilt					
Bucket	General Purpose		General Purpose		Multi-Purpose	
Bucket capacity	1 m³	**1.30 yd³**	1.15 m³	**1.50 yd³**	1.03 m³	**1.35 yd³**
Width	2396 mm	**7'10"**	2396 mm	**7'10"**	2406 mm	**7'11"**
Lift capacity at full height	2390 kg	**5269 lb**	2300 kg	**5070 lb**	2200 kg	**4850 lb**
Breakout force	39.3 kN	**8835 lb**	38 kN	**8543 lb**	40.4 kN	**9082 lb**
G) Dump height @ max dump angle	2670 mm	**8'9"**	2615 mm	**8'7"**	2700 mm	**8'10"**
H) Hinge pin height	3360 mm	**11'0"**	3360 mm	**11'0"**	3360 mm	**11'0"**
J) Max operating height	4240 mm	**13'11"**	4285 mm	**14'1"**	4270 mm	**14'0"**
K) Digging depth	40 mm	**2"**	80 mm	**3"**	70 mm	**3"**
Grading angle	**110°**		**110°**		**113°**	
Width of dozer cutting edge	—	**—**	—	**—**	2406 mm	**7'11"**
Clam opening — maximum	—	**—**	—	**—**	927 mm	**3'1"**
L) Reach @ full height/max dump angle	800 mm	**2'7"**	800 mm	**2'7"**	720 mm	**2'4"**
M) Maximum rollback @ groundline	**38°**		**39°**		**38°**	
Weight	445 kg	**981 lb**	635 kg	**1400 lb**	700 kg	**1543 lb**



MODEL	438C					
Loader	**Parallel Lift**					
Bucket	**General Purpose**		**General Purpose**		**Multi-Purpose***	
Bucket capacity	1 m³	**1.30 yd³**	1.15 m³	**1.50 yd³**	1.03 m³	**1.35 yd³**
Width	2396 mm	**7'10"**	2396 mm	**7'10"**	2406 mm	**7'11"**
Lift capacity at full height	3355 kg	**7396 lb**	3300 kg	**7275 lb**	3120 kg	**6878 lb**
Breakout force	50.4 kN	**11,330 lb**	49.4 kN	**11,105 lb**	53.4 kN	**12,004 lb**
G) Dump height @ max dump angle	2655 mm	**8'9"**	2600 mm	**8'6"**	2690 mm	**8'10"**
H) Hinge pin height	3360 mm	**11'0"**	3360 mm	**11'0"**	3360 mm	**11'0"**
J) Max operating height	4240 mm	**13'11"**	4285 mm	**14'1"**	4270 mm	**14'0"**
K) Digging depth	40 mm	**2"**	80 mm	**3"**	70 mm	**3"**
Grading angle	**113°**		**113°**		**116°**	
Width of dozer cutting edge	—	—	—	—	2406 mm	**7'11"**
Clam opening — maximum	—	—	—	—	927 mm	**3'1"**
L) Reach @ full height/45 degrees	780 mm	**2'7"**	780 mm	**2'7"**	700 mm	**2'3"**
M) Maximum rollback @ groundline	**38°**		**39°**		**39°**	
Weight	445 kg	**981 lb**	635 kg	**1400 lb**	685 kg	**1510 lb**

*Recommended for use with All Wheel Steer.

Standard Duty Buckets (SD)
416C, 428C, 438C

Width mm	Width in	SAE Heaped Capacity L	SAE Heaped Capacity ft³	SAE Struck Capacity L	SAE Struck Capacity ft³	Weight kg	Weight lb	No. of Teeth
305	**12**	70	**2.5**	60	**2.0**	110	**243**	3
457	**18**	127	**4.5**	99	**3.5**	130	**287**	4
610	**24**	198	**7.0**	156	**5.5**	150	**331**	5
762	**30**	255	**9.5**	198	**7.0**	165	**364**	5
914	**36**	311	**11.5**	227	**8.0**	180	**397**	6

Heavy Duty Buckets (HD)
416C, 426C, 436C, 428C, 438C

Width mm	Width in	SAE Heaped Capacity L	SAE Heaped Capacity ft³	SAE Struck Capacity L	SAE Struck Capacity ft³	Weight kg	Weight lb	* No. of Teeth
305	**12**	70	**2.5**	60	**2.0**	110	**243**	3
400	**16**	100	**3.5**	85	**3.0**	132	**291**	4
457	**18**	127	**4.5**	99	**3.5**	150	**331**	4
610	**24**	198	**7.0**	156	**5.5**	175	**386**	4
762	**30**	255	**9.5**	198	**7.0**	195	**430**	5
914	**36**	311	**11.5**	227	**8.0**	210	**463**	6

*Bolt-on teeth available.

High Capacity Buckets (HC)
416C, 426C, 436C, 428C, 438C

Width mm	Width in	SAE Heaped Capacity L	SAE Heaped Capacity ft³	SAE Struck Capacity L	SAE Struck Capacity ft³	Weight kg	Weight lb	No. of Teeth
457	**18**	184	**6.5**	127	**4.5**	155	**342**	4
610	**24**	225	**9.0**	184	**6.5**	180	**397**	4
762	**30**	311	**11.0**	227	**8.0**	200	**441**	5
914	**36**	396	**14.0**	283	**10.0**	215	**474**	6

Teeth Options:
Utility — Short
Penetration — Long
Abrasion

Extreme Service Buckets (ES)
416C, 426C, 436C, 428C, 438C

Width mm	Width in	SAE Heaped Capacity L	SAE Heaped Capacity ft³	SAE Struck Capacity L	SAE Struck Capacity ft³	Weight kg	Weight lb	No. of Teeth
457	**18**	99	**4.0**	83	**3.0**	145	**320**	4
610	**24**	156	**6.0**	140	**5.0**	165	**364**	4

Heavy Duty Buckets (HD)
446B

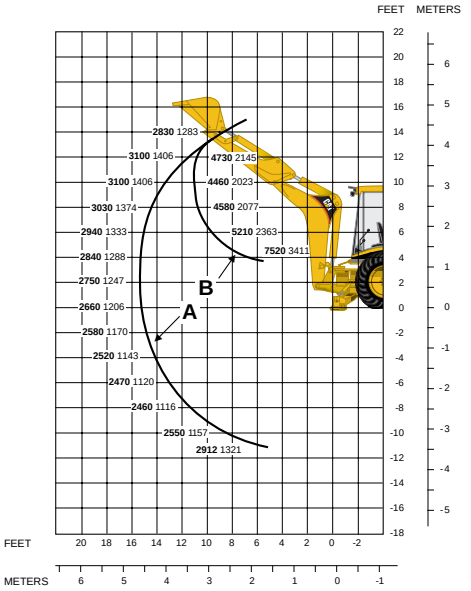
Width mm	Width in	SAE Heaped Capacity L	SAE Heaped Capacity ft³	SAE Struck Capacity L	SAE Struck Capacity ft³	Weight kg	Weight lb	No. of Teeth
457	**18**	190	**6.5**	170	**5.9**	178	**392**	3
610	**24**	280	**10.0**	240	**8.4**	216	**476**	4
762	**30**	380	**13.0**	300	**10.5**	237	**523**	5
914	**36**	480	**17.0**	380	**13.0**	267	**589**	6

Extreme Service Buckets (ES)
446B

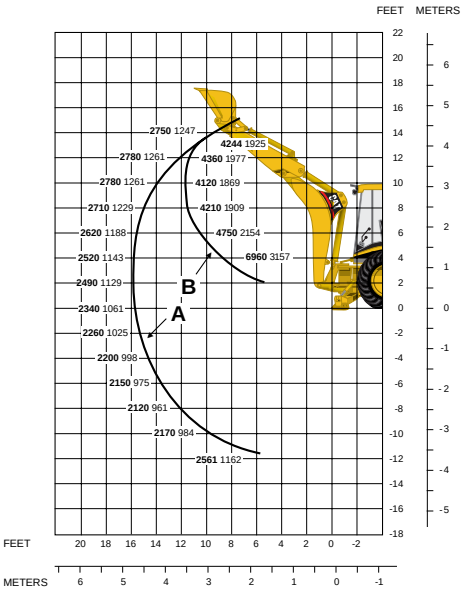
Width mm	Width in	SAE Heaped Capacity L	SAE Heaped Capacity ft³	SAE Struck Capacity L	SAE Struck Capacity ft³	Weight kg	Weight lb	No. of Teeth
600	**24**	270	**9.0**	230	**8.1**	227	**501**	4
760	**30**	370	**13.0**	290	**10.0**	249	**549**	5

KEY

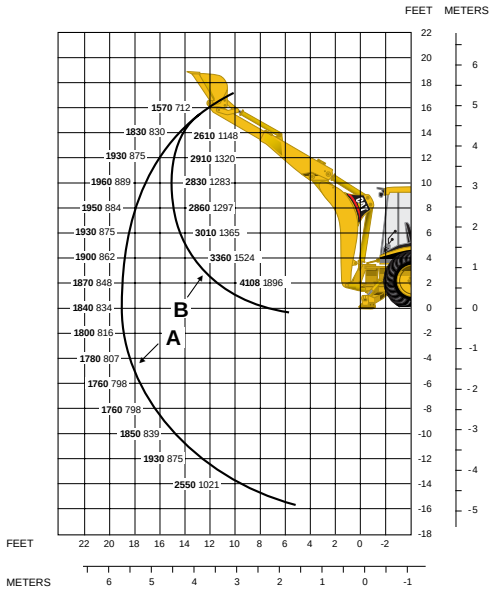
A — Boom lift **lb** kg
B — Stick lift **lb** kg



Standard Stick



Extendible Stick — Retracted

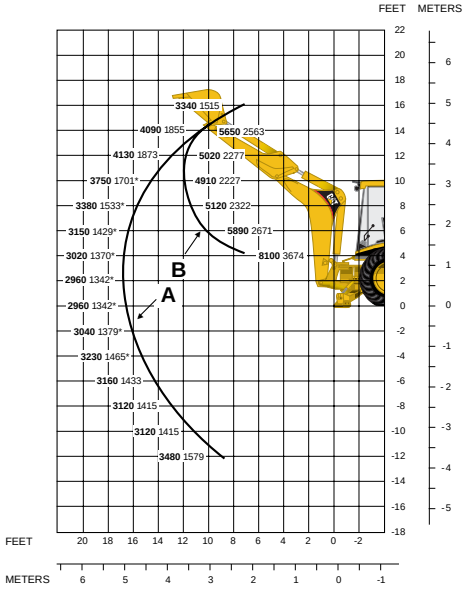


Extendible Stick — Extended

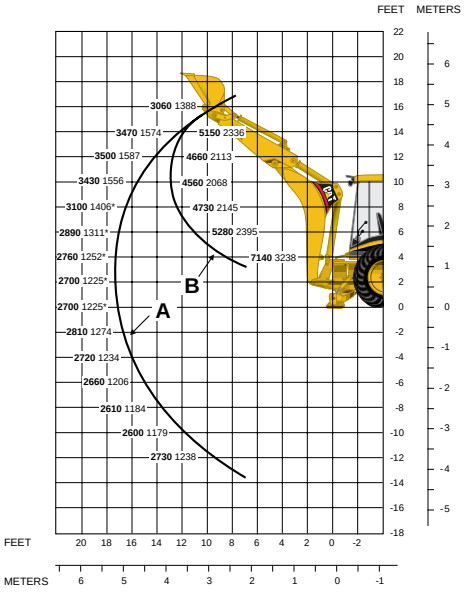
NOTE: Boom at 65°.
Machine configuration includes 16.9X24, 8PR, R4 rear and 11LX16, 10PR, F3 front tires, open ROPS, two wheel drive, single tilt loader, 0.76 m³ **(1 yd³)** GP bucket, 610 mm **(2'0")** standard duty bucket, base counterweight 145 kg **(320 lb)**.

KEY

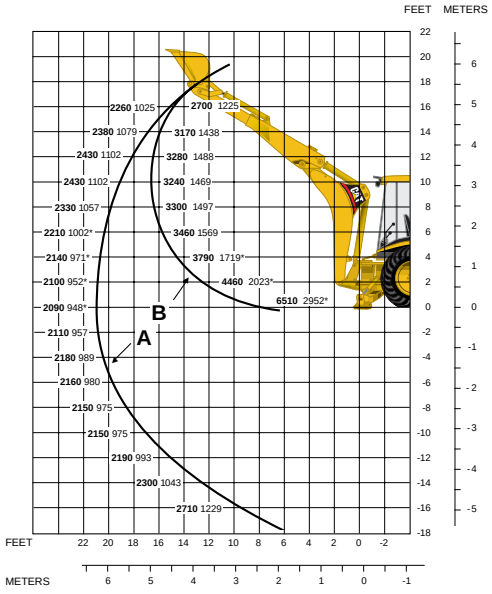
A — Boom lift **lb** kg
B — Stick lift **lb** kg



Standard Stick



Extendible Stick — Retracted

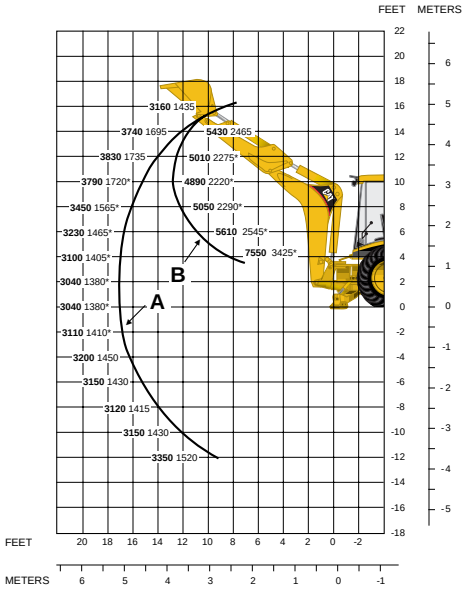


Extendible Stick — Extended

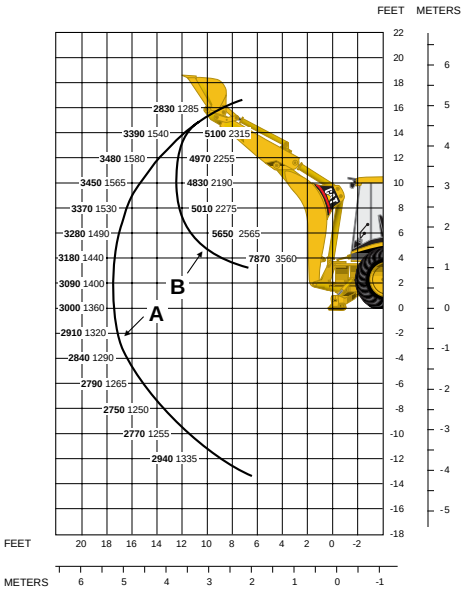
NOTE: Boom at 65°.
Machine configuration includes 16.9X24, 8PR, R4 rear and 11LX16, 12PR, F3 front tires, open ROPS, two wheel drive, single tilt loader, 0.96 m^3 **(1.25 yd^3)** GP bucket, 610 mm **(2'0")** heavy duty bucket, base counterweight 145 kg **(320 lb)** plus 1 add on 105 kg **(231 lb)**.

KEY

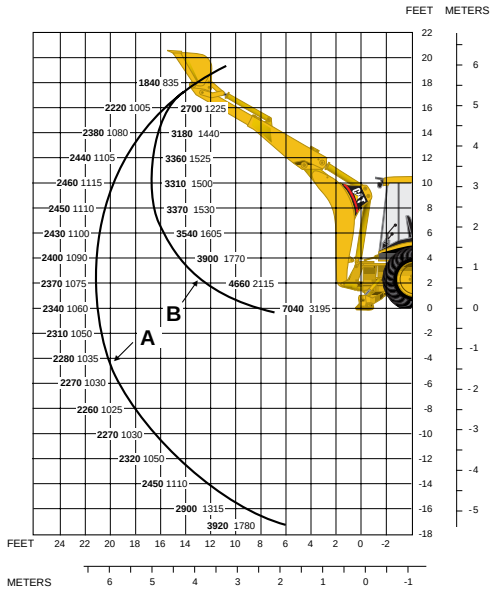
A — Boom lift **lb** kg
B — Stick lift **lb** kg



Standard Stick



Extendible Stick — Retracted

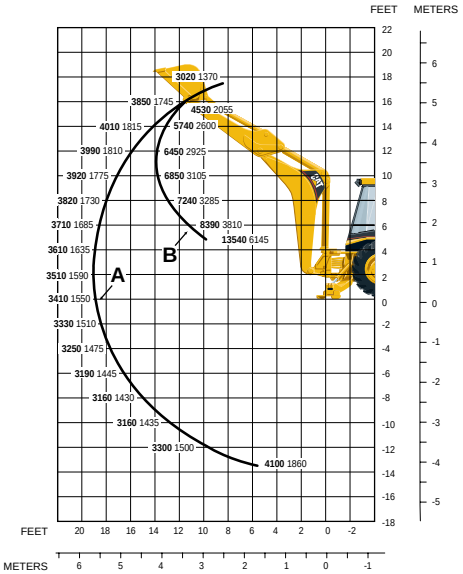


Extendible Stick — Extended

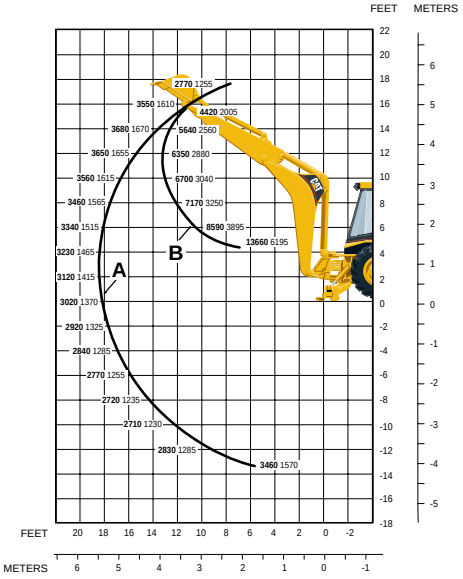
NOTE: Boom at 65°.
Machine configuration includes 11L-16, 12PR, F3 front and 19.5LX24, 10PR, IT525 rear tires, open ROPS, two wheel drive, single tilt loader, 1.07 m³ **(1.4 yd³)** GP bucket, 610 mm **(2'0")** high capacity bucket, base counterweight 145 kg **(320 lb)** plus 1 add on 105 kg **(231 lb)**.
*Indicates lift capacity is stability limited.

KEY

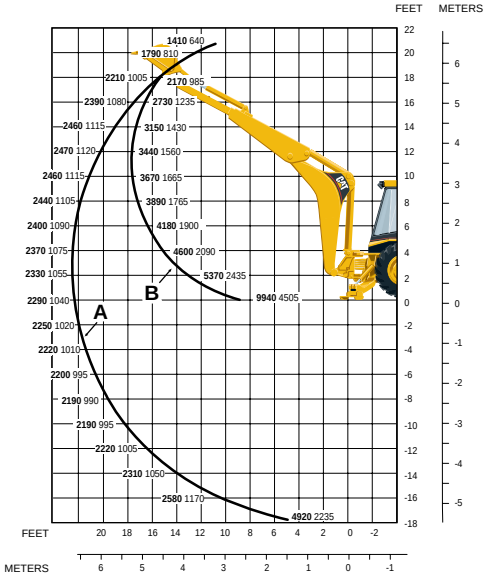
A — Boom lift **lb** kg
B — Stick lift **lb** kg



Standard Stick*



Extendible Stick** — Retracted

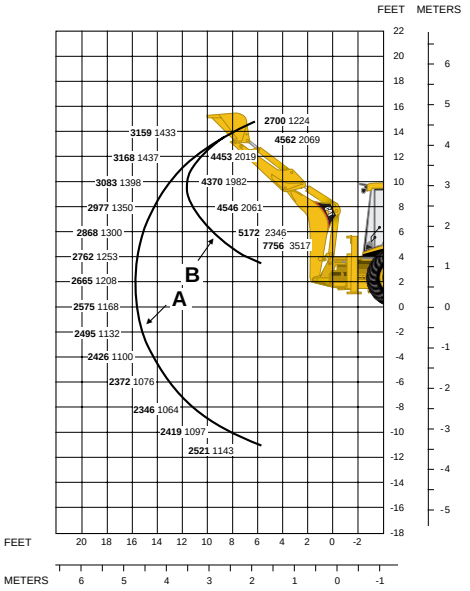


Extendible Stick** — Extended

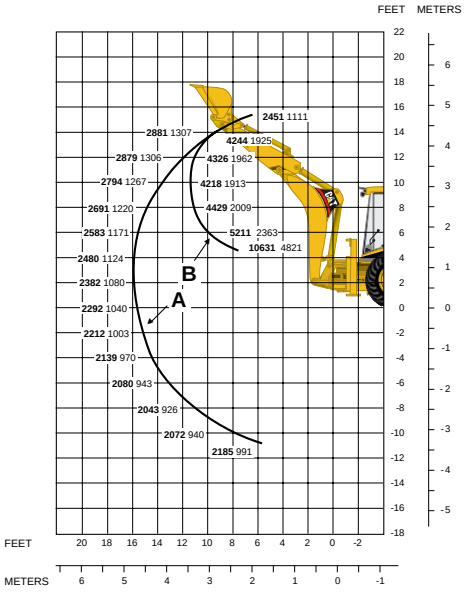
NOTE: Boom at 65°.
*With 455 kg **(1000 lb)** counterweight.
With 680 kg **(1500 lb) counterweight.

KEY

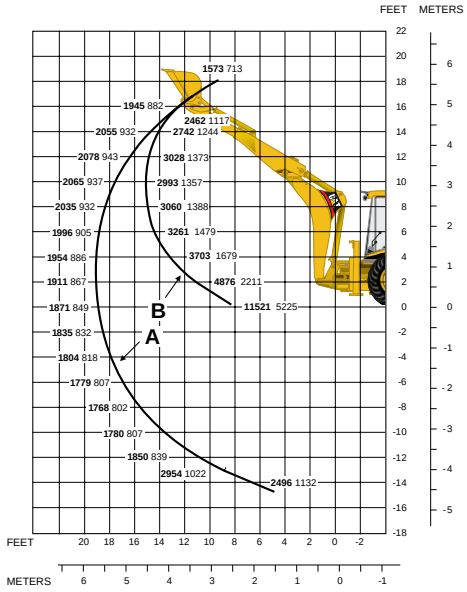
A — Boom lift **lb** kg
B — Stick lift **lb** kg



Standard Stick



Extendible Stick — Retracted

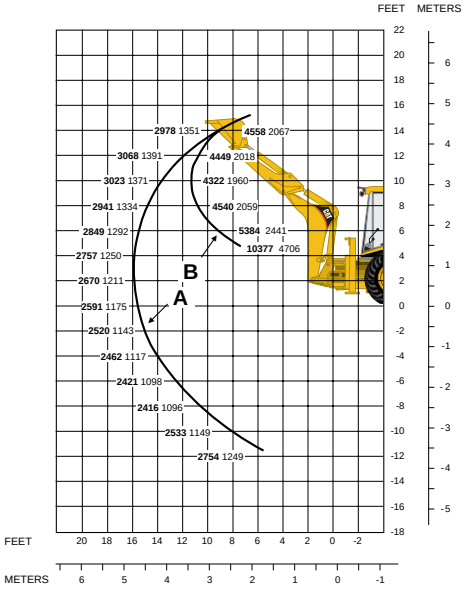


Extendible Stick — Extended

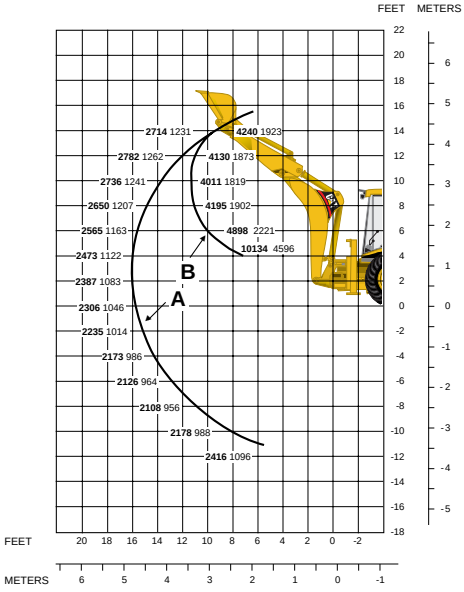
NOTE: Boom at 65°.
Machine configuration includes 11LX16 12PR, F-3 laborer front and 16.9X28, 10PR, R4 rear tires, cab, two wheel drive, parallel lift loader, 1 m^3 **(1.3 yd^3)** GP bucket, 610 mm **(2'0")** heavy duty bucket, base counterweight 16 kg **(35 lb)**.

KEY

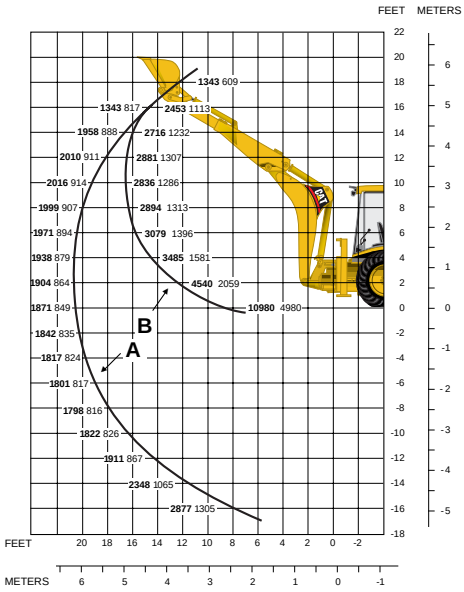
A — Boom lift **lb** kg
B — Stick lift **lb** kg



Standard Stick



Extendible Stick — Retracted



Extendible Stick — Extended

NOTE: Boom at 65°.
Machine configuration includes 12.5/80X18 10PR, I-3 implement front and 18.4/15X26, 12PR, R4 rear tires, cab, all wheel drive, parallel lift loader, 1 m³ **(1.3 yd³)** GP bucket, 610 mm **(2'0")** heavy duty bucket, base counterweight 16 kg **(35 lb)**.

	Centerpivot					
Dimensions	**416C**		**426C**		**436C**	
Overall transport length	6890 mm	**22'7"**	7260 mm	**23'10"**	7300 mm	**23'11"**
Overall length (loader on ground)	6870 mm	**22'6"**	7280 mm	**23'11"**	7295 mm	**23'11"**
Overall transport height	3585 mm	**11'9"**	3770 mm	**12'4"**	3750 mm	**12'4"**
Overall width, without bucket	2235 mm	**7'4"**	2235 mm	**7'4"**	2235 mm	**7'4"**
Height to top of cab	2850 mm	**9'4"**	2850 mm	**9'4"**	2870 mm	**9'5"**
Height to top of stack	2670 mm	**8'9"**	2670 mm	**8'9"**	2710 mm	**8'11"**
Height to top of steering wheel	1940 mm	**6'4"**	1940 mm	**6'4"**	1965 mm	**6'5"**
Ground clearance (minimum)	297 mm	**12"**	291 mm	**12"**	352 mm	**14"**
Rear axle centerline to front grill	2660 mm	**8'9"**	2660 mm	**8'9"**	2660 mm	**8'9"**
Front wheel tread	1780 mm	**5'10"**	1977 mm	**6'4"**	1828 mm	**6'0"**
Rear wheel tread	1714 mm	**5'8"**	1714 mm	**5'8"**	1714 mm	**5'8"**
Wheel base: (2WD)	2100 mm	**6'11"**	2100 mm	**6'11"**	2100 mm	**6'11"**
(4WD)	2100 mm	**6'11"**	2100 mm	**6'11"**	2100 mm	**6'11"**

	Centerpivot		Sideshift			
Dimensions	**446B**		**428C**		**438C**	
Overall transport length	7954 mm	**26'1"**	5760 mm	**18'11"**	5740 mm	**18'10"**
Overall length (loader on ground)	7922 mm	**26'0"**	5710 mm	**18'9"**	5665 mm	**18'7"**
Overall transport height	4193 mm	**13'9"**	3740 mm	**12'3"**	3765 mm	**12'4"**
Overall width, without bucket	2434 mm	**8'0"**	2392 mm	**7'10"**	2392 mm	**7'10"**
Height to top of cab	2864 mm	**9'5"**	2900 mm	**9'6"**	2900 mm	**9'6"**
Height to top of stack	2960 mm	**9'9"**	2700 mm	**8'10"**	2750 mm	**9'0"**
Height to top of steering wheel	2111 mm	**6'11"**	1940 mm	**6'4"**	1940 mm	**6'4"**
Ground clearance (machine main frame)	332 mm	**13"**	320 mm	**13"**	335 mm	**13"**
Rear axle centerline to front grill	2752 mm	**9'0"**	2613 mm	**8'7"**	2620 mm	**8'7"**
Front wheel tread	1970 mm	**6'6"**	1780 mm	**5'10"**	1780 mm	**5'10"**
Rear wheel tread	1800 mm	**5'11"**	1714 mm	**5'7"**	1714 mm	**5'7"**
Wheel base: (2WD)	2233 mm	**7'4"**	2100 mm	**6'11"**	2100 mm	**6'11"**
(4WD)	2233 mm	**7'4"**	2100 mm	**6'11"**	2100 mm	**6'11"**

Loader End Work Tools	446B	436C	428C	426C	416C
Quick coupler	X	X	X	X	X
General purpose bucket	X	X	X	X	X
Light material bucket	X	X	X	X	X
Multi-purpose bucket	X	X	X	X	X
Pallet fork	X	X	X	X	X
Hydraulic angle blade	X	X	X	X	X
Hydraulic broom	X	X	X	X	X
Asphalt cutter	X	X	X	X	X
Loader rake	X	X	X	X	X
Side dump bucket	X	X	X	X	X

Stick End Work Tools	446B	436C	428C	426C	416C
Ditch cleaning bucket	X	X	X	X	X
Heavy duty bucket	X	X	X	X	X
Extreme service bucket	X	X	X	X	X
Hydraulic hammer	X	X	X	X	X
Vibratory plate compactor	X	X	X	X	X

This list is not all-inclusive. Contact Caterpillar Special Attachments for special attachment needs.

WHEEL SKIDDERS
TRACK SKIDDERS

CONTENTS

WHEEL SKIDDERS

TRACK SKIDDERS

525/515 Features:

- **Proven Cat 3304 diesel engine.** 515 is turbocharged; 525 is turbocharged and aftercooled.
- **4 speed powershift transmission ...** provides better match of engine power to skidding requirements.
- **Long wheelbase** for stability with large grapple loads and uphill skidding.
- **Front Axle Cradle oscillation** — helps improve tractor stability with grapples and provides excellent ride for operator.
- **Enclosed oil disk brakes,** sealed, adjustment free, and fade resistant.
- **Load Sensing Hydraulic System** — variable displacement pressure compensating hydraulic system provides reduced power requirements when there is no hydraulic demand, significantly reduced heat generation.
- **Single, dual-function arch, swing-boom (525) and cable skidder** options available to meet various logging requirements.
- **Outstanding operator environment** superior visibility, logical control placement, and significantly reduced hydraulic, steering and transmission control efforts. ROPS structures meets OSHA regulations for roll-over and falling object.
- **Easy servicing** — minimal daily requirements, grouped and accessible grease fittings, accessible hydraulic oil sight gauges, engine oil dipstick and fuel cap.

528B Features:

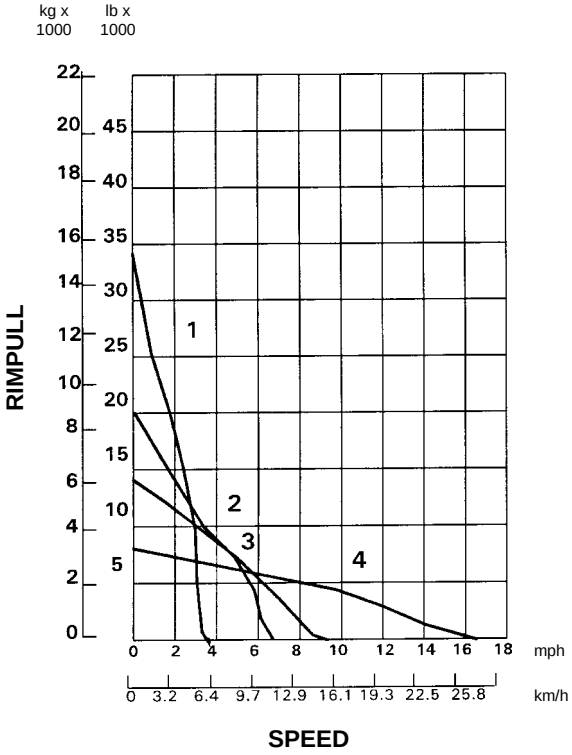
- **Proven Cat 3306 Turbocharged diesel engine** provides power and outstanding durability and reliability.
- **Frame oscillation** for excellent side hill stability.
- **Caliper disk brakes** — reliable and easy to service.
- **Protection for operator and machine** — ROPS structures and guarding provide operator and machine protection in the most severe logging environments.



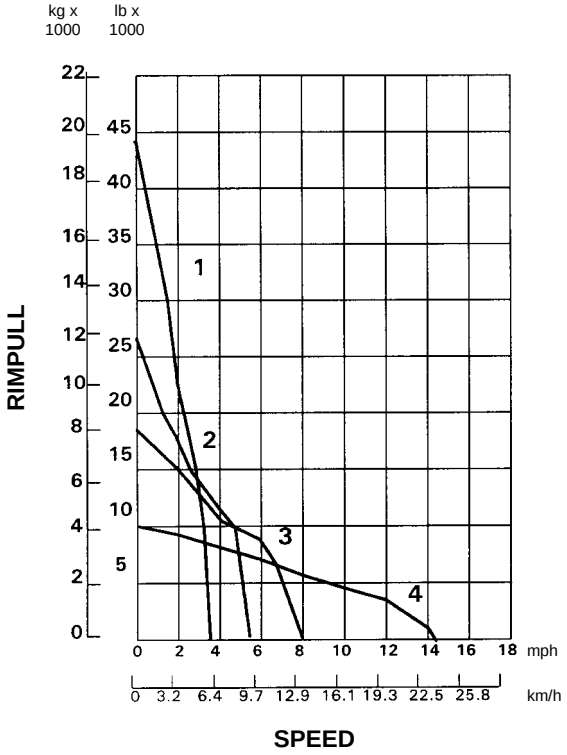
MODEL	515		525		528B	
Flywheel Power	104 kW	**140 hp**	118 kW	**160 hp**	138/145 kW	**185/195 hp**
Operating Weight	12 700 kg	**27,940 lb**	15 200 kg	**33,500 lb**	15 550 kg	**34,210 lb**
Engine Model	**3304**		**3304**		**3306**	
Rated Engine RPM	**2200**		**2200**		**2200**	
No. Cylinders	**4**		**4**		**6**	
Displacement	7 L	**425 in³**	7 L	**425 in³**	10.5 L	**638 in³**
Oscillation, Type	**front axle cradle**		**front axle cradle**		**frame (center hitch)**	
Oscillation, degrees	**±15°**		**±15°**		**±14°**	
Tires, standard	**23.1-26**		**23.1-26**		**24.5-32**	
optional	**28L-26**		**28L-26**		**30.5-32**	
	67/34-25		**67/34-25**			
	66/43-25		**66/43-25**			
			73/44-32			
Turning Diameter (outside rear wheel)*	5.532 m	**36'6"**	11.4 m	**37'5"**	11.86 m	**38'10"**
Heavy Duty Winch Line Pull, max. at stall, bare drum	13 608 kg	**30,000 lb**	19 500 kg	**43,000 lb**	18 140 kg	**40,000 lb**
Line Speed at Rated Engine RPM, full drum	97.5 m/min	**300 fpm**	101 m/min	**333 fpm**	113 m/min	**370 fpm**
Winch Weight	522 kg	**1150 lb**	522 kg	**1150 lb**	522 kg	**1150 lb**
Drum Capacity,						
Standard — 5/8 **(16 mm)**	96 m	**315'0"**	96 m	**315'0"**	66 m	**216'0"**
Optional — 3/4 **(19 mm)**	66 m	**216'0"**	65 m	**213'0"**	96 m	**315'0"**
Flange Diameter	495 mm	**1'7.5"**	495 mm	**1'7.5"**	495 mm	**1'7.5"**
Drum Width	200 mm	**7.88"**	200 mm	**7.88"**	200 mm	**7.88"**
Drum Diameter	305 mm	**12"**	305 mm	**12"**	305 mm	**12"**
Fuel Tank Refill Capacity	185 L	**48 U.S. gal**	258 L	**68 U.S. gal**	208 L	**55 U.S. gal**
Hydraulic Retrieval Device						
Line Pull, max at stall, bare drum	88 kN	**19,800 lb**	88 kN	**19,800 lb**		**—**
Line Speed at Rated Engine RPM, bare drum	29.25 m/min	**96 fpm**	29.25 m/min	**96 fpm**		**—**
HRD Weight	499 kg	**1100 lb**	499 kg	**1100 lb**		**—**
Drum Capacity — 5/8 **(16 mm)**	67 m	**18'4"**	67 m	**18'4"**		**—**
Drum Diameter	254 mm	**10"**	254 mm	**10"**		**—**
Hydraulic System Refill Capacity	75 L	**19.5 U.S. gal**	74 L	**19.5 U.S. gal**	75 L	**19.5 U.S. gal**
GENERAL DIMENSIONS*						
Length with Dozer @ ground	5.8 m	**19'0"**	6.00 m	**19'8"**	6.76 m	**22'2"**
Wheelbase	3.30 m	**10'10"**	3.50 m	**11'6"**	3.25 m	**10'8"**
Width over Tires*	2.72 m	**9'0"**	3.13 m	**10'3"**	2.96 m	**9'9"**
Height to Top of ROPS	3.03 m	**9'11.5"**	3.05 m	**10'0"**	3.07 m	**10'1"**
Height to Exhaust	3.07 m	**10'1"**	3.09 m	**10'1.5"**	3.13 m	**10'3"**
Ground Clearance*	457 mm	**18"**	527 mm	**1'8.7"**	610 mm	**2'0"**
Tread Width*	2.10 m	**6'11"**	2.39 m	**7'10"**	2.34 m	**7'8"**
Dozer Width	2.16 m	**7'1"**	2.16 m	**7'1"**	2.29 m	**7'6"**

*With standard tires.

515 Skidder



525 Skidder



KEY

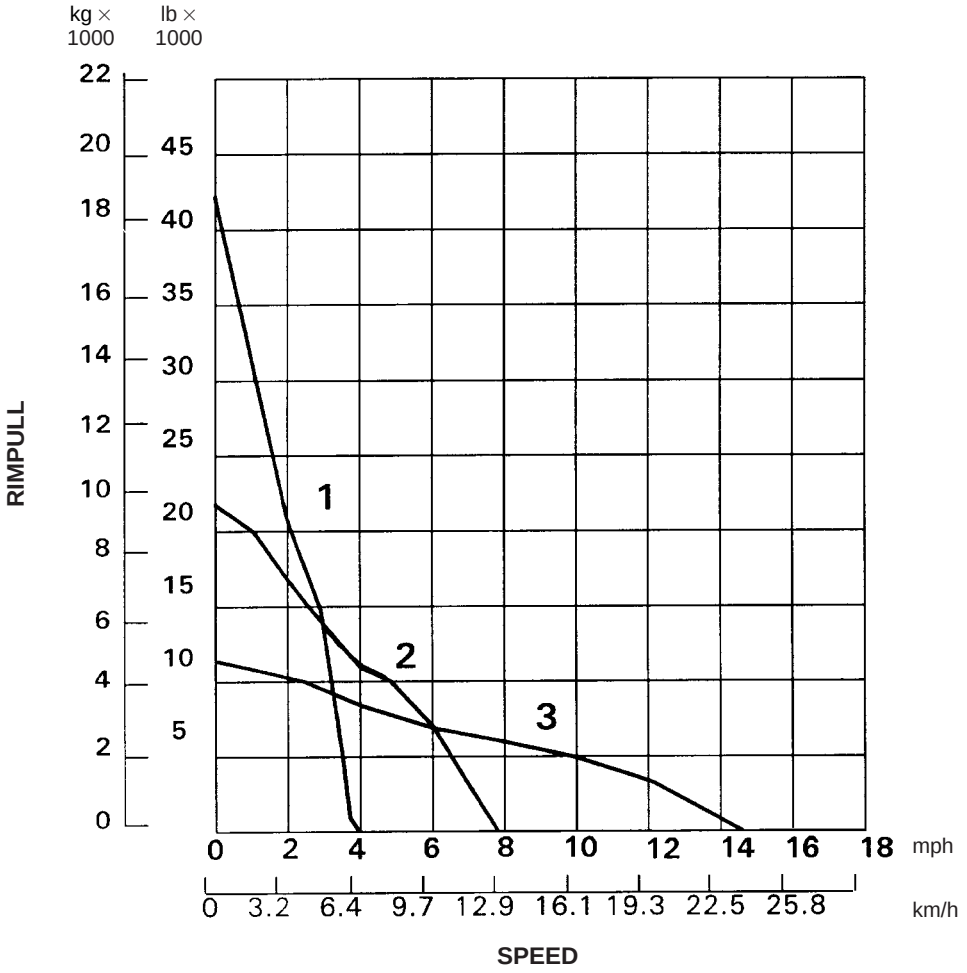
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear

	1st	2nd	3rd	4th
Forward, km/h	6.21	10.63	15.00	27.15
mph	**3.86**	**6.61**	**9.32**	**16.87**
Reverse, km/h	6.21	10.63	19.22	—
mph	**3.86**	**6.61**	**11.95**	**—**

	1st	2nd	3rd	4th
Forward, km/h	5.37	9.2	12.97	23.5
mph	**3.34**	**5.72**	**8.06**	**14.6**
Reverse, km/h	5.37	9.2	16.64	—
mph	**3.34**	**5.72**	**10.34**	**—**

Usable rimpull depends on traction, tire size and equipped weight of loaded machines. Grapple weights may vary.
NOTE: Rimpull shown with 28L-26 tires. Consult your Caterpillar Dealer for further information.

528B Skidder



KEY

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

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

GRAPPLES

Grapples for Cat 515 and 525 Skidders are built by independent manufacturers of auxiliary equipment (AEMS) to Caterpillar specifications. All fixed and swing grapples are factory installed and supplied 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.

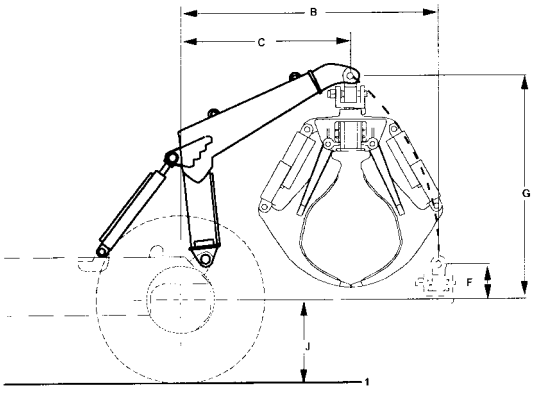
Minimum Log Size (M) — The smallest diameter which the grapple can close on.

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

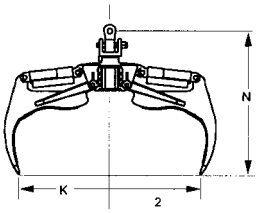
Single-function arch

- 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.

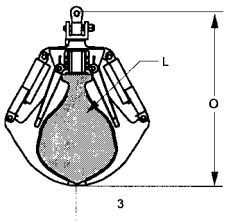


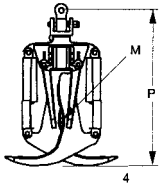
KEY

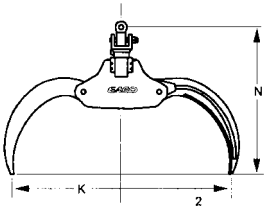
1 — Horizontal Reference Plane
2 — Fully Open
3 — Tip to Tip
4 — Fully Closed



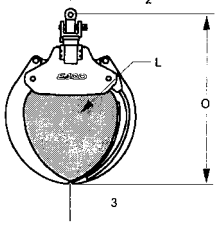
Sorting grapple is designed to pick up individual or several stems for quick cycles of 305 mm (12") or larger diameter trees.

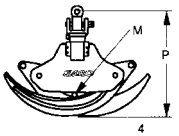






Bunching grapple is designed to gather bundled stems and maximize grapple loads of 305 mm (12") or smaller diameter trees.



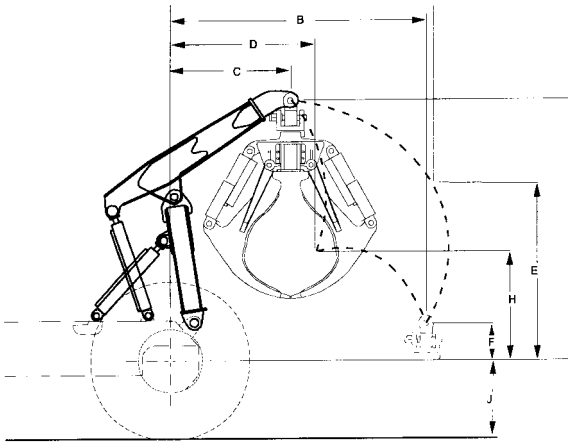


Grapples for 515		**B**	**C**	**F**	**G**	**J**	**K**	**M**	**N**	**O**	**P**	**L**
84" Sorting	mm	2140	1323	515	223	724	2130	76	1680	1980	1740	0.74 m²
	in	**84.3**	**52.0**	**20**	**8**	**28.5**	**84**	**3**	**66**	**78**	**68.5**	**8 ft²**
90" Bunching	mm	2140	1323	515	223	724	2290	102	1640	1920	1310	0.74 m²
	in	**84.3**	**52.0**	**20**	**8**	**28.5**	**90**	**4**	**64**	**75**	**51**	**8 ft²**

Grapples for 525		**B**	**C**	**F**	**G**	**J**	**K**	**M**	**N**	**O**	**P**	**L**
100" Sorting	mm	2517.1	1662.2	342.9	2169.2	737	2540.0	76.2	1562.1	2044.7	1828.8	0.84 m²
	in	**99.1**	**65.4**	**13.5**	**85.4**	**29**	**100.0**	**3.0**	**61.5**	**80.5**	**72.0**	**9 ft²**
110" Bunching	mm	2517.1	1662.2	342.9	2169.2	737	2794.0	76.2	1879.6	2171.7	1358.9	1.04 m²
	in	**99.1**	**65.4**	**13.5**	**85.4**	**29**	**110.0**	**3.0**	**74.0**	**85.5**	**53.5**	**11.2 ft²**

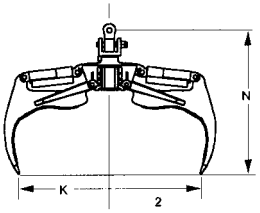
Dual-function arch

- Extended range provides extra reach for grabbing large bundles of feller bunched, small diameter logs.
- Ability to position load closer to tractor for improved stability and traction.
- Typical applications include longer cycles and smaller diameter bunched timber.

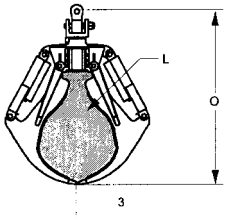


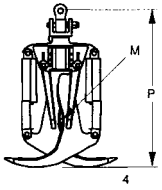
KEY

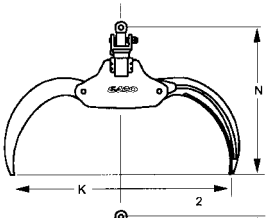
1 — Horizontal Reference Plane
2 — Fully Open
3 — Tip to Tip
4 — Fully Closed



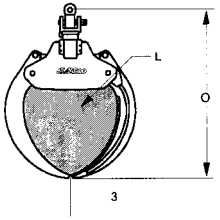
Sorting grapple is designed to pick up individual or several stems for quick cycles of 305 mm (12") or larger diameter trees.

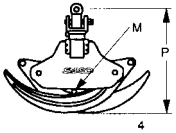






Bunching grapple is designed to gather bundled stems and maximize grapple loads of 305 mm (12") or smaller diameter trees.

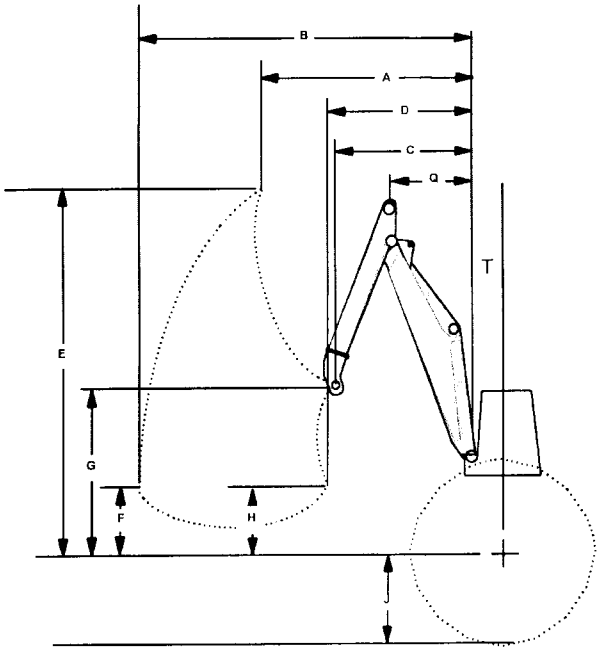


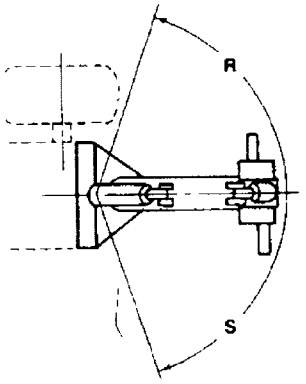


Grapples for 525		A	B	C	D	E	F	G	H	J	K	M	N	O	P	L
100" Sorting	mm	2725.4	2654.3	1242.1	1491.0	1828.8	378.5	2694.9	1125.2	731.5	2540.0	76.2	1562.1	2044.7	1828.8	0.84 m^2
	in	**107.3**	**104.5**	**48.9**	**58.7**	**72.0**	**14.9**	**106.1**	**44.3**	**28.8**	**100.0**	**3.0**	**61.5**	**80.5**	**72.0**	**9 ft^2**
110" Bunching	mm	2725.4	2654.3	1242.1	1491.0	1828.8	378.5	2694.9	1125.2	731.5	2794.0	76.2	1879.6	2171.7	1358.9	1.04 m^2
	in	**107.3**	**104.5**	**48.9**	**58.7**	**72.0**	**14.9**	**106.1**	**44.3**	**28.8**	**110.0**	**3.0**	**74.0**	**85.5**	**53.5**	**11.2 ft^2**
120" Bunching	mm	2725.4	2654.3	1242.1	1491.0	1828.8	378.5	2694.9	1125.2	731.5	3048.0	203.2	1778.0	2235.2	1574.8	1.16 m^2
	in	**107.3**	**104.5**	**48.9**	**58.7**	**72.0**	**14.9**	**106.1**	**44.3**	**28.8**	**120.0**	**8.0**	**70.0**	**88.0**	**62.0**	**12.5 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 manuevering of the skidder to reach logs.





Grapples for 525 with Swing-boom		A	B	C	D	E	F	G	H	J	Q	R	S	T
100" Sorting	mm	2257	3705	1365	1410	3818	500	1671	127	737	904	70°	70°	207
	in	**89**	**146**	**54**	**56**	**150**	**20**	**66**	**5**	**29**	**35.6**			**8**

TRACK SKIDDERS

CONTENTS

Features 517 and 527:

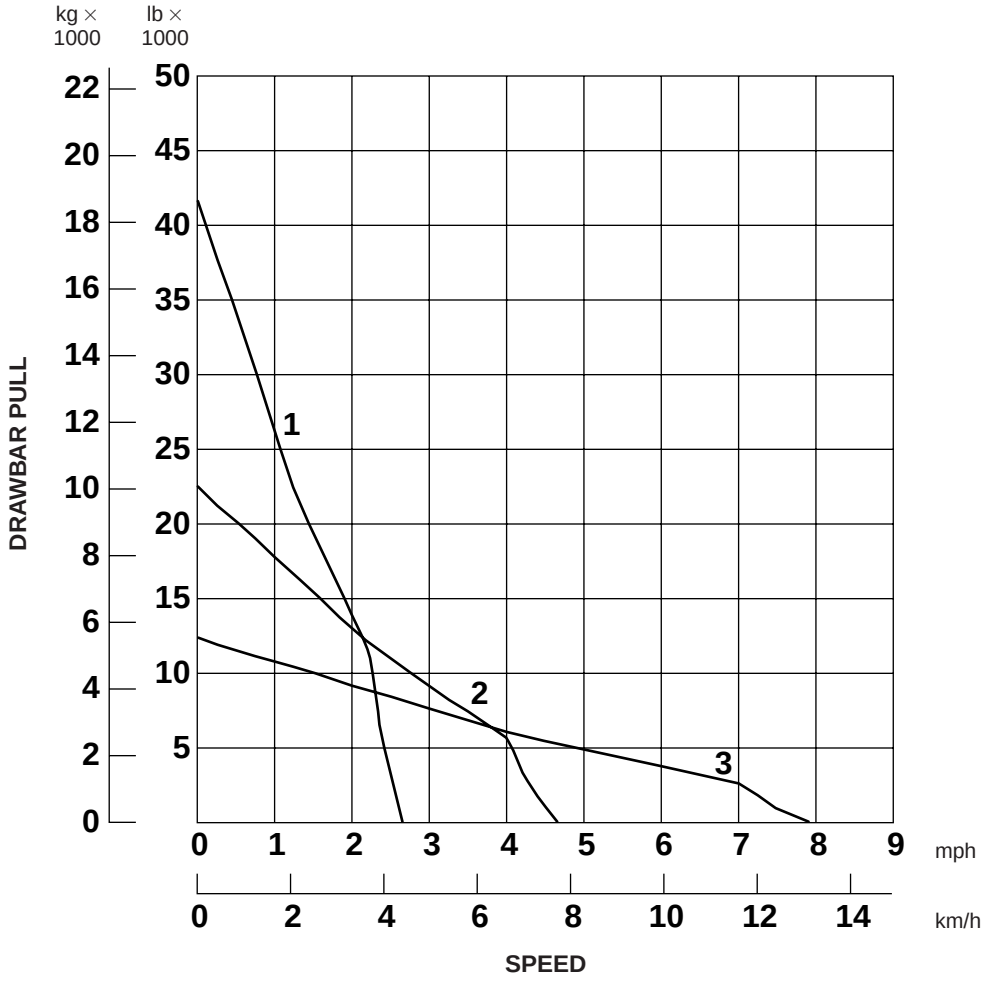
- **Exceptional balance** — roller frames extended to rear significantly improves traction capability under heavy loads and uphill skidding applications.
- **Excellent ground clearance** — no diagonal braces allow tractor to pass over stumps and debris, reduces maneuvering for reduced cycle times and minimizes soil impact. Smooth belly pans are also less likely to hang up in mud or debris in soft ground or swamp logging applications.
- **Outstanding sidehill stability** — wide gauge and long track roller frames provide excellent sidehill capability.
- **Improved flotation** — more track on ground distributes tractor weight and propulsion forces over a much larger area than conventional track skidders or wheel skidders. This improves flotation capabilities, gradeability and significantly reduces soil impact.
- **Superior component durability** — final drives are raised above the work area, isolating the powertrain from ground impact shock loads and abrasive materials.
- **Outstanding reliability and durability** — built to handle the toughest logging conditions.




MODEL	517 Cable		517 Grapple		527 Cable		527 Grapple	
Flywheel Power	89 kW	**120 hp**	89 kW	**120 hp**	112 kW	**150 hp**	112 kW	**150 hp**
Operating Weight*	17 330 kg	**38,200 lb**	18 350 kg	**40,450 lb**	17 236 kg	**38,000 lb**	21 380 kg	**47,140 lb**
Engine Model	**3304 DIT**		**3304 DIT**		**3304**		**3304**	
Rated Engine RPM	**2200**		**2200**		**2200**		**2200**	
No. of Cylinders	**4**		**4**		**4**		**4**	
Bore	121 mm	**4.75"**	121 mm	**4.75"**	121 mm	**4.75"**	121 mm	**4.75"**
Stroke	152 mm	**6"**	152 mm	**6"**	152 mm	**6"**	152 mm	**6"**
Displacement	7 L	**425 in³**	7 L	**425 in³**	7 L	**425 in³**	7 L	**425 in³**
Track Rollers (Each Side)	**8**		**8**		**7**		**7**	
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 (W/Std. Shoe)	3.52 m²	**5458 in²**	3.52 m²	**5458 in²**	3.19 m²	**4940 in²**	3.19 m²	**4940 in²**
Track Gauge	2 m	**6'7"**	2 m	**6'7"**	2.16 m	**7'1"**	2.16 m	**7'1"**
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"**
(Without Blade)	4.10 m	**13'5"**	4.87 m	**16'0"**	4.35 m	**14'3"**	5.6 m	**18'5"**
Width (W/O 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	**1'8.9"**	531.8 mm	**1'8.9"**
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	2.48 m	**8'1"**	2.48 m	**8'1"**	3.10 m	**10'2"**	2.92 m	**9'7"**
Fuel Tank Capacity	260 L	**69 U.S. gal**	260 L	**69 U.S. gal**	256 L	**67 U.S. gal**	256 L	**67 U.S. gal**
Winch								
Line Pull, max 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**
Drum Capacity: Recommended	122 m	**400'0"**	122 m	**400'0"**	122 m	**400'0"**	122 m	**400'0"**
Optional	88 m	**290'0"**	88 m	**290'0"**	88 m	**290'0"**	88 m	**290'0"**
Cable Size: 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 Diameter	254 mm	**10"**	254 mm	**10"**	254 mm	**10"**	254 mm	**10"**

*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, 100" Sorting head, and enclosed cab.
With 22 mm **(0.88") cable.

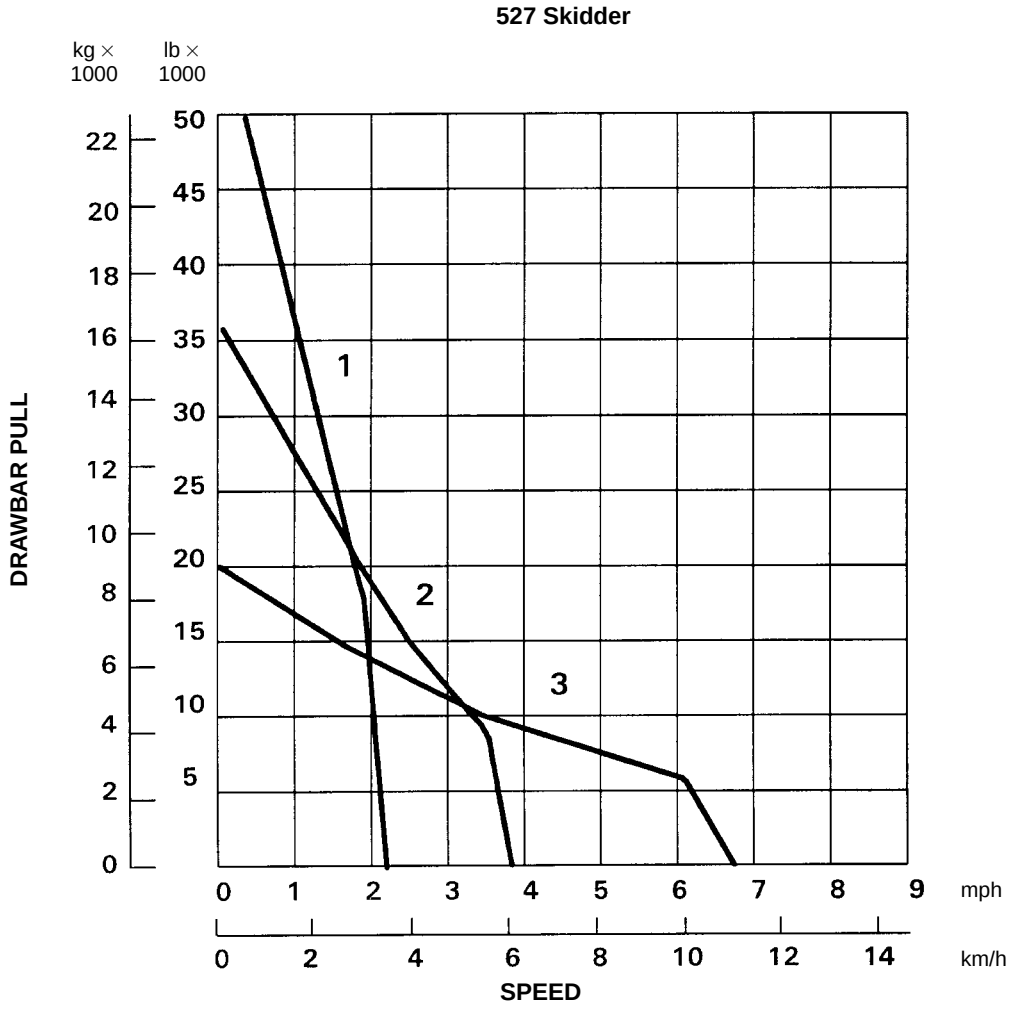
517 Skidder



KEY

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

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



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 by independent manufacturers of auxiliary equipment (AEMS) 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.

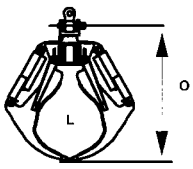
Minimum Log Size (M) — The smallest diameter which the grapple can close.

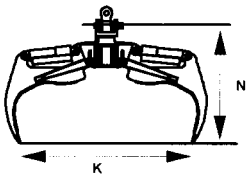
Grapple Length (N, O, P) — The distance from the grapple fore and aft pivot to tips of grapple arms.

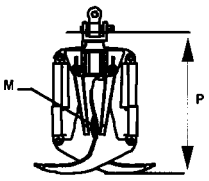
N) With grapple fully open.

O) With grapple in tips together position.

P) With grapple fully closed.





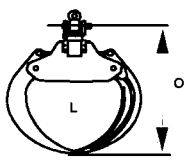


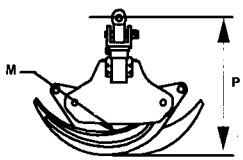
Sorting Grapple

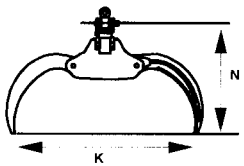
- Used for 305 mm (12") or larger diameter trees.
- Designed to pick up individual or several stems for quick cycles.

Bunching Grapple

- Used for 305 mm (12") or smaller diameter trees.
- Designed to gather bundle of stems and maximize grapple loads.





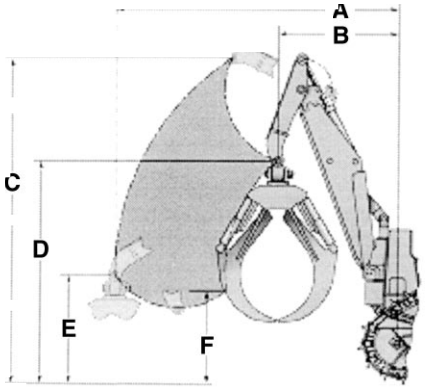


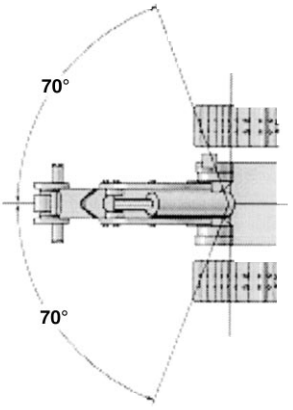
Grapples for 517		K	M	N	O	P	L
84" Sorting	mm	2130	76	1680	1980	1740	0.74 m²
	in	**84**	**3**	**66**	**78**	**68.5**	**8 ft²**
90" Sorting	mm	2290	102	1640	1920	1310	0.74 m²
	in	**90**	**4**	**64**	**75**	**51**	**8 ft²**

Grapples for 527		K	M	N	O	P	L
100" Sorting	mm	2540	76	1560	2040	1830	0.84 m²
	in	**100**	**3**	**61.5**	**80.5**	**72**	**9 ft²**
102" Bunching	mm	2590	76	1780	2020	136	0.93 m²
	in	**102**	**3**	**70**	**79.5**	**53.5**	**10 ft²**

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 manuevering of the skidder to reach logs.

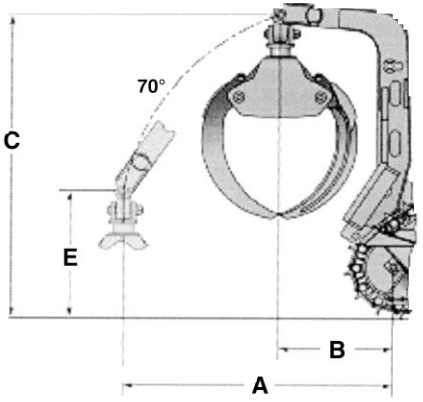




Swing-boom		A	B	C	D	E	F
517	mm	3269	1241	4092	2800	1366	1166
	in	**129**	**49**	**161**	**110**	**54**	**46**
527	mm	3544	1515	4048	2792	1358	1158
	in	**139**	**60**	**160**	**110**	**53**	**46**

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.



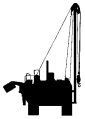
Single-function		A	B	C	D	E	F
517	mm	2465	909	2974	—	1000	—
	in	**96**	**36**	**117**	**—**	**39**	**—**
527	mm	2619	1105	2970	—	1231	—
	in	**103**	**44**	**117**	**—**	**49**	**—**

PIPELAYERS

CONTENTS

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 (572R, 583R and 589).
- **Hydraulic Drawworks** with two independently driven hydraulic motors for boom and hook winches.
- **Suspended Undercarriage** for improved ride and greater operator comfort (583R and 589).

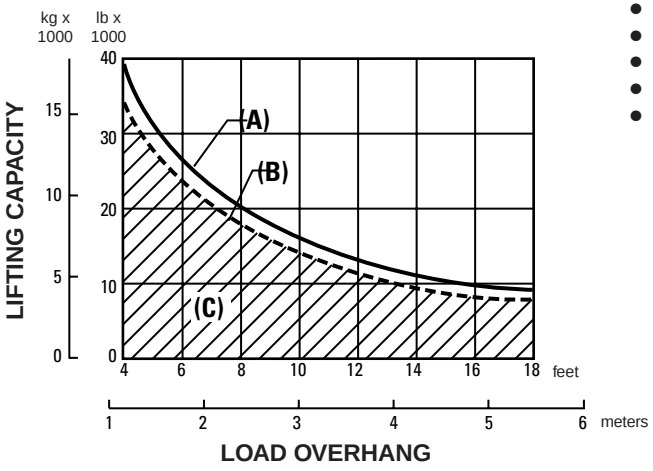



MODEL	561M		572R		583R		589	
Flywheel Power	82 kW	**110 hp**	171 kW	**230 hp**	228 kW	**305 hp**	313 kW	**420 hp**
Operating Weight (with full fuel tank and operator)	16 240 kg	**35,800 lb**	30 110 kg	**66,250 lb**	44 750 kg	**98,650 lb**	65 366 kg	**151,212 lb**
Engine Model	**3116T**		**3306TA**		**3406C TA**		**3408TA**	
Rated Engine RPM	**2100**		**2100**		**2100**		**1900**	
No. of Cylinders	6		**6**		**6**		**8**	
Displacement	6.6 L	**403 in³**	10.5 L	**638 in³**	14.6 L	**893 in³**	18 L	**1099 in³**
Lift Capacity at 1.22 m **(4'0")** Overhang	18 145 kg	**40,000 lb**	40 910 kg	**90,000 lb**	63 500 kg	**140,000 lb**	104 330 kg	**230,000 lb**
Standard Boom Length	5.49 m	**18'0"**	6.1 m	**20'0"**	6.1 m	**20'0"**	8.8 m	**28'10"**
Width of Standard Shoe	510 mm	**1'8"**	660 mm	**2'2"**	710 mm	**2'4"**	914 mm	**3'0"**
Length of Track on Ground	2.619 m	**8'7"**	3.167 m	**10'5"**	3.586 m	**11'9"**	4.29 m	**14'1"**
Ground Contact Area (with standard shoes)	2.67 m²	**4120 in²**	4.18 m²	**3250 in²**	5.1 m²	**7896 in²**	6.96 m²	**12,148 in²**
Track Gauge	2.0 m	**6'7"**	2.235 m	**7'4"**	2.34 m	**7'8"**	2.9 m	**9'6"**
Fuel Tank Refill Capacity	218 L	**57.6 U.S. gal**	479 L	**127 U.S. gal**	416 L	**110 U.S. gal**	776 L	**205 U.S. gal**
GENERAL DIMENSIONS:								
Height to Top of Stack	3.12 m	**10'3"**	3.45 m	**11'4"**	3.51 m	**11'6"**	3.92 m	**12'10"**
Height to Top of Counterweight	1.68 m	**5'6"**	2.90 m	**9'6"**	3.41 m	**11'2"**	2.88 m	**9'5"**
Width, Weights Retracted	3.19 m	**10'5"**	3.66 m	**12'0"**	3.63 m	**11'11"**	4.63 m	**15'2"**
Minimum Shipping Width (both side frames removed)	2.90 m	**9'6"**	3.0 m	**9'10"**	3.48 m	**11'5"**	3.55 m	**11'8"**
Shipping Width (left frame removed)	3.05 m	**10'0"**	3.66 m	**12'0"**	3.51 m*	**11'6"***	—	
Overall Length	3.73 m	**12'3"**	4.74 m	**15'6"**	5.48 m	**18'0"**	5.94 m	**19'6"**
Ground Clearance	438 mm	**17.2"**	414 mm	**16.3"**	537 mm	**1'9.1"**	625 mm	**2'0.6"**
DRUMS and CABLES:								
Drum Capacity Load	73 m	**239'**	80 m	**263'**	126 m	**415'**	152 m	**500'**
Boom	49.4 m	**162'**	52 m	**170'**	126 m	**415'**	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"**	343 mm	**13.5"**	343 mm	**13.5"**
Boom	245 mm	**9.63"**	224 mm	**8.5"**	343 mm	**13.5"**	343 mm	**13.5"**
Adjustable Counterweights	**14 @** 177 kg ea	**391 lb ea**	**9 @** 216 kg ea	**475 lb ea**	**2 @** 299 kg ea **6 @** 535 kg ea **5 @** 432 kg ea	**658 lb ea** **1180 lb ea** **952 lb ea**	**7 @** 1315 kg ea	**2900 lb ea**
Total Weight Extendable	3270 kg	**7208 lb**	4320 kg	**9524 lb**	9016 kg	**19,880 lb**	11 854 kg	**26,134 lb**

*Boom and counterweight only removed.

561M

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 16 240 kg **(35,804 lb)**.

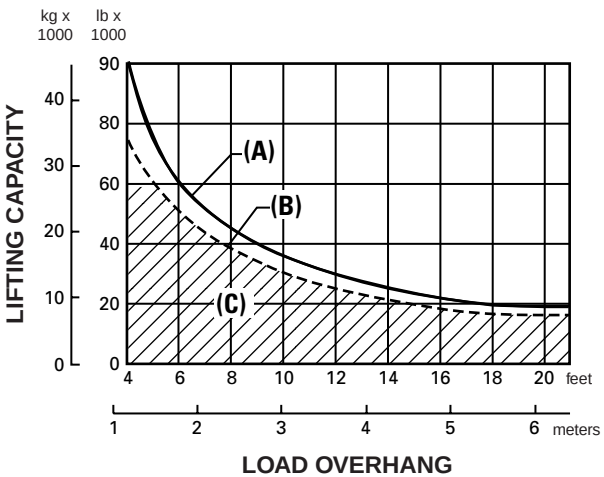
KEY

A — Max lift capacity per ANSI/SAE J743 MAR92
B — Rated load capacity per ANSI/ASME B30.14
C — Working range per ANSI/ASME B30.14

7

572R

LIFTING CAPACITY* 6.10 m (20'0") BOOM



***Specified Equipment:**

- 19 mm **(3/4")** dia. wire rope 26 670 kg **(58,800 lb)** minimum breaking strength.
- 4 part load line.
- 4 part boom line.
- 4330 kg **(9525 lb)** of counterweights extended.
- 6.10 m **(20'0")** Boom.

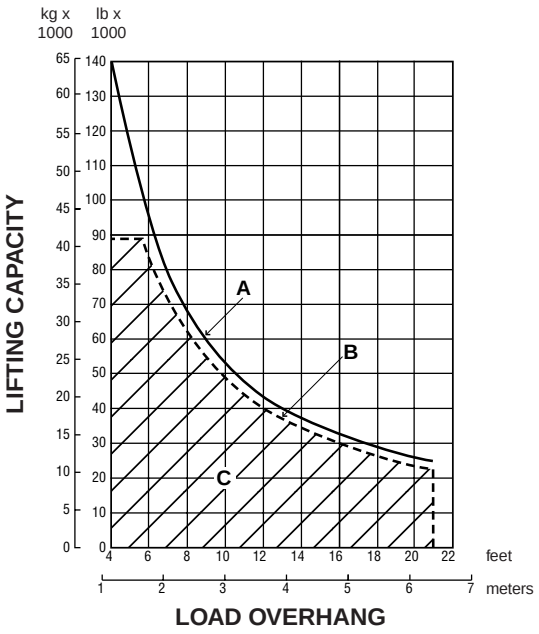
KEY

A — Max lift capacity per ANSI/SAE J743 MAR92
B — Rated load capacity per ANSI/ASME B30.14
C — Working range per ANSI/ASME B30.14

NOTE: SAE stands for the Society of Automotive Engineers. ANSI stands for American National Standard Institute.

583R

LIFTING CAPACITY* 6.10 m (20'0") BOOM



*Specified Equipment:

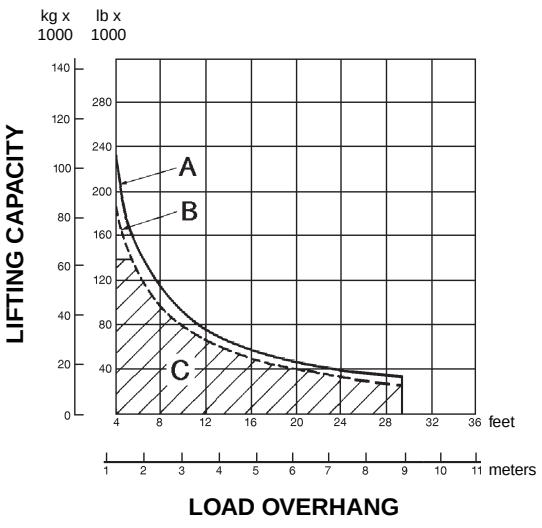
- 19 mm **(3/4")** diameter wire rope.
- 26 672 kg **(58,800 lb)** minimum breaking strength.
- 6 part load line.
- 5 part boom line.
- 9036 kg **(19,920 lb)** counterweight extended.
- boom 6.10 m **(20 ft)** standard.
- total operating weight 44 748 kg **(98,650 lb)**.

KEY

A — Max lift capacity per SAE J743 MAR92
B — Rated load capacity per ANSI/ASME B30.14
C — Working range per ANSI/ASME B30.14

589

LIFTING CAPACITY* 8.53 m (28'0") BOOM



*Specified Equipment:

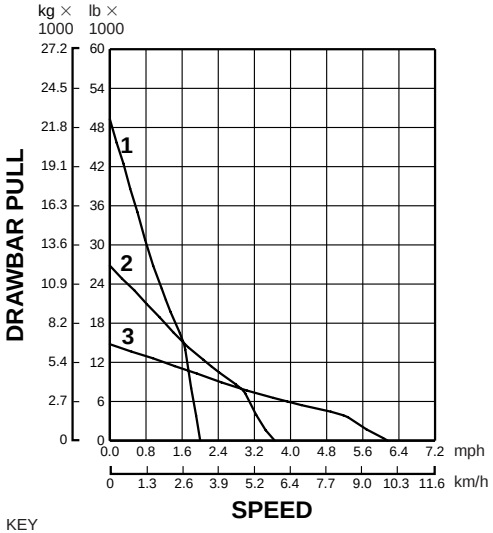
- Load: 22 mm **(7/8")** dia. wire rope 31 389 kg **(69,200 lb)** minimum breaking strength.
- Boom: 22 mm **(7/8")** dia. wire rope 31 389 kg **(69,200 lb)** minimum breaking strength.
- 8 part load line.
- 8 part boom line.
- 14 633 kg **(32,260 lb)** of counterweights extended.
- 8.53 m **(28'0")** Boom.

KEY

A — Max lift capacity per SAE J743b
B — Max load capacity per ANSI B30.14
C — Working range per ANSI B30.14

NOTE: SAE stands for the Society of Automotive Engineers. ANSI stands for American National Standard Institute.

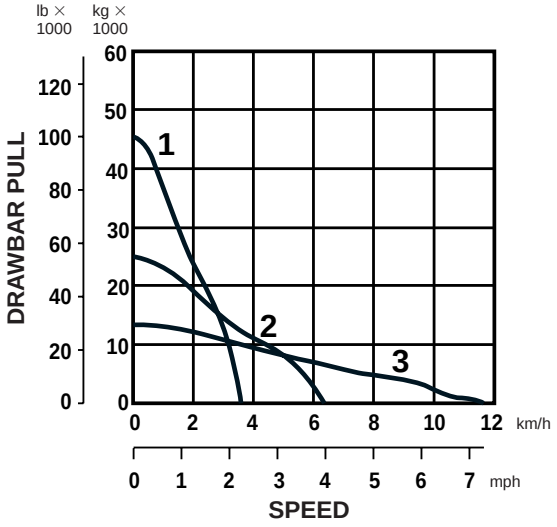
561M



KEY

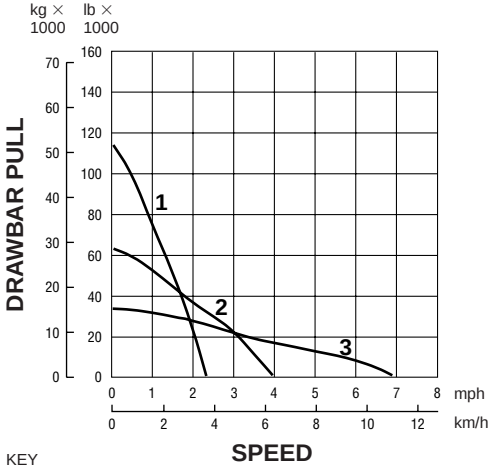
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear

572R



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

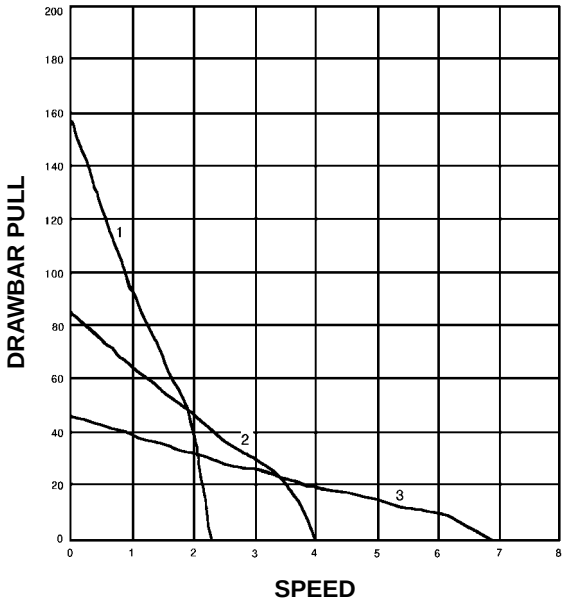
583R



KEY

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

589



MODEL	561M				572R			
Travel	**Forward**		**Reverse**		**Forward**		**Reverse**	
Speeds (at rated RPM)	km/h	**mph**	km/h	**mph**	km/h	**mph**	km/h	**mph**
1st Gear	3.27	**2.03**	4.01	**2.49**	3.5	**2.3**	4.7	**2.9**
2nd Gear	5.81	**3.61**	7.09	**4.41**	6.4	**4.0**	8.1	**5.0**
3rd Gear	9.93	**6.17**	12.06	**7.49**	10.8	**6.8**	13.8	**8.6**

Pipelayer Hook Speeds per minute, Bare drum at rated engine RPM	**m/min**	**ft/min**	**m/min**	**ft/min**
First (Lo)	(33)	**(108)**	(11)	**(37)**
Second	—	**—**	—	**—**
Third (High)	(69.5)	**(228)**	(37)	**(75)**
Lower	—	**—**	16.3	**53.4**
Boom Line Speed	46	**151**	73	**241**

MODEL	583R				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**

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**

WHEEL TRACTOR-SCRAPERS

CONTENTS

Features:

- **Hydraulic Electronic Unit Injector (HEUI)** fuel system used in 631E Series II thru 657E.
- **Semi-automatic power shift transmissions.** Eight speed used in 621F thru 657E.
- **Power shift transmissions** with six speeds used in 613C Series II and 615C Series II.
- **Differential lock ...** operator controlled, rigidly connects both tractor drive wheels for positive traction.
- **Cushion Hitch** on 621F through 657E (optional axle suspension on 615C Series II) absorbs haul road shocks, stabilizes machine travel, substantially increases usable working speeds.
- **Double-acting hydraulics** supply positive cutting edge penetration, apron closure and material ejection. Positive bulldozer-type ejection. Automatic ejector return kickout.
- **Quick-drop valves** for pump loading (except 613C Series II, 615C Series II, 623F, 633E). Carry check valves isolate bowl cylinders to carry load rather than hydraulic lines.
- **Hydraulic retarder** standard on 651E/657E, optional on 621F through 637E Series II. Not available on 613C Series II or 615C Series II.

Tandem Powered:

- **Push-Pull arrangement** allows two 627F, 637E Series II or 657E scrapers to assist one another in loading eliminating the push tractor.

Elevating:

- **Uninterrupted elevator reverse** allows sticky material to be ejected more easily.
- **Two-speed elevator** on 613C Series II and 615C Series II allows operator to match elevator speed to material conditions.
- **Infinitely variable elevator speed** on 623F and 633E allows operator to match elevator speed to material conditions.

Auger:

- **Factory installed attachment** provides self loading capability in standard and tandem powered scrapers.



MODEL	621F		631E Series II		651E	
Flywheel Power	246 kW	**330 hp**	335/365 kW	**450/490 hp**	410/452 kW	**550/605 hp**
Approx. Operating						
Weight (Empty)◄	32 070 kg	**70,700 lb**	45 400 kg	**100,000 lb**	61 120 kg	**134,760 lb**
Scraper Capacity —						
Struck	10.7 m^3	**14 yd^3**	16.1 m^3	**21 yd^3**	24.5 m^3	**32 yd^3**
Heaped	15.3 m^3	**20 yd^3**	23.7 m^3	**31 yd^3**	33.6 m^3	**44 yd^3**
Rated Load	21 775 kg	**48,000 lb**	34 020 kg	**75,000 lb**	47 175 kg	**104,000 lb**
Weight Distribution — Empty						
Drive		**68%**		**67%**		**66%**
Rear		**32%**		**33%**		**34%**
Weight Distribution — Loaded						
Drive		**53%**		**53%**		**53%**
Rear		**47%**		**47%**		**47%**
Engine Model		**3406C**		**3408**		**3412**
Rated Engine RPM		**1900**		**2000**		**1900**
Displacement	14.6 L	**893 in^3**	18 L	**1099 in^3**	27 L	**1649 in^3**
Top Speed (Loaded)	51 km/h	**32 mph**	53 km/h	**33 mph**	53 km/h	**33 mph**
Non-Stop Turning Circle	10.9 m	**35'8"**	12.2 m	**40'1"**	13.6 m	**44'7"**
With ROPS Restriction		—		—	14.5 m	**47'7"**
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"**	3.49 m	**11'6"**	3.85 m	**12'8"**
Maximum Depth of Cut	333 mm	**13.1"**	437 mm	**17.2"**	470 mm	**18.5"**
Maximum Depth of Spread	522 mm	**1'8.6"**	480 mm	**18.9"**	533 mm	**1'9"**
Fuel Tank Refill Capacity	530 L	**140 U.S. gal**	806 L	**213 U.S. gal**	954 L	**252 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"**	9.97 m	**32'9"**
Overall Length	12.93 m	**42'5"**	14.56 m	**47'9"**	16.18 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	2.20 m	**7'3"**	2.46 m	**8'1"**	2.64 m	**8'8"**

◄Operating weight includes standard machine, coolant, lubricants, full fuel tank, and operator.



MODEL	627F		637E Series II		657E	
Flywheel Power: Tractor	246.2 kW	**330 hp**	335/365 kW	**450/490 hp**	410/452 kW	**550/605 hp**
Scraper	168 kW	**225 hp**	187 kW	**250 hp**	298/328 kW	**400/440 hp**
Approx. Operating Weight (Empty)◄	37 060 kg	**81,640 lb**	50 990 kg	**112,320 lb**	70 670 kg	**155,650 lb**
Scraper Capacity: Struck	10.7 m^3	**14 yd^3**	16.1 m^3	**21 yd^3**	24.5 m^3	**32 yd^3**
Heaped	15.3 m^3	**20 yd^3**	23.7 m^3	**31 yd^3**	33.6 m^3	**44 yd^3**
Rated Load	21 775 kg	**48,000 lb**	34 020 kg	**75,000 lb**	47 175 kg	**104,000 lb**
Weight Distribution — Empty: Front	**60%**		**59%**		**60%**	
Rear	**40%**		**41%**		**40%**	
Weight Distribution — Loaded: Front	**49%**		**49%**		**51%**	
Rear	**51%**		**51%**		**49%**	
Engine Model: Tractor	**3406C**		**3408**		**3412**	
Scraper	**3306**		**3306**		**3408**	
Rated Engine RPM: Tractor	**1900**		**2000**		**1900**	
Scraper	**2200**		**2200**		**1900**	
Displacement: Tractor	14.6 L	**893 in^3**	18 L	**1099 in^3**	27 L	**1649 in^3**
Scraper	10.5 L	**638 in^3**	10.5 L	**638 in^3**	18 L	**1099 in^3**
Top Speed (Loaded)	51.3 km/h	**32 mph**	53 km/h	**33 mph**	53 km/h	**33 mph**
Non-Stop Turning Circle	10.9 m	**35'9"**	12.2 m	**40'1"**	13.6 m	**44'8"**
With ROPS Restriction	—		—		14.5 m	**47'7"**
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"**	470 mm	**18.5"**
Maximum Depth of Spread	522 mm	**1'8.6"**	480 mm	**18.9"**	533 mm	**1'9"**
Fuel Tank Refill Capacity: Tractor	—		—		—	
Scraper	992 L	**262 U.S. gal**	1272 L	**336 U.S. gal**	1772 L	**468 U.S. gal**
GENERAL DIMENSIONS:						
Height to Top of Scraper	3.81 m	**12'2"**	4.29 m	**14'1"**	4.71 m	**15'5"**
Wheelbase	7.72 m	**25'4"**	8.77 m	**28'9"**	9.97 m	**32'9"**
Overall Length	12.93 m	**42'5"**	14.56 m	**47'9"**	16.2 m	**53'0"**
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)◄	38 103 kg	**84,000 lb**	52 385 kg	**115,490 lb**	72 640 kg	**160,140 lb**
Overall Length	15.2 m	**49'7"**	16.49 m	**54'1"**	18.01 m	**59'1"**
Weight Distribution — Empty: Front	**60%**		**60%**		**60%**	
Rear	**40%**		**40%**		**40%**	
Weight Distribution — Loaded: Front	**49%**		**50%**		**51%**	
Rear	**51%**		**50%**		**49%**	

◄Operating weight includes standard machine, coolant, lubricants, full fuel tank, and operator.




MODEL	613C Series II		615C Series II		623F		633E Series II	
Flywheel Power	131 kW	**175 hp**	197.5 kW	**265 hp**	272 kW	**365 hp**	335/365 kW*	**450/490 hp***
Approx. Operating Weight (Empty)◀	15 264 kg	**33,650 lb**	25 605 kg	**56,450 lb**	35 290 kg	**77,800 lb**	51 110 kg	**112,670 lb**
Scraper Capacity — Heaped	8.4 m^3	**11 yd^3**	13 m^3	**17 yd^3**	17.6 m^3	**23 yd^3**	26 m^3	**34 yd^3**
Rated Load	11 975 kg	**26,400 lb**	18 506 kg	**40,800 lb**	24 950 kg	**55,000 lb**	37 200 kg	**82,000 lb**
Weight Distribution — Empty								
Drive	**63%**		**66%**		**65%**		**64%**	
Rear	**37%**		**34%**		**35%**		**36%**	
Weight Distribution — Loaded								
Drive	**49%**		**51%**		**52%**		**51%**	
Rear	**51%**		**49%**		**48%**		**49%**	
Engine Model	**3116**		**3306**		**3406C**		**3408**	
Rated Engine RPM	**2300**		**2200**		**1900**		**2000**	
Displacement	6.6 L	**403 in^3**	10.5 L	**638 in^3**	14.6 L	**893 in^3**	18 L	**1099 in^3**
Top Speed (Loaded)	35.1 km/h	**21.8 mph**	44.4 km/h	**27.6 mph**	48 km/h	**30 mph**	53 km/h	**32.9 mph**
Non-Stop Turning Circle	8.9 m	**29'4"**	9.63 m	**31'7"**	10.9 m	**35'8"**	13.16 m	**43'2"**
Tires — Standard								
Tractor	**23.5R25★**		**29.5R25★**		**33.25R29★★E2**		**37.25R35★★E2**	
Scraper	**23.5R25★**		**29.5R25★**		**33.25R29★★E2**		**37.25R35★★E2**	
Width of Cut	2.35 m	**7'8.5"**	2.89 m	**9'6"**	3.5 m	**11'6"**	3.5 m	**11'6"**
Maximum Depth of Cut	160 mm	**6.3"**	414 mm	**16.3"**	330 mm	**13"**	431 mm	**17"**
Elevator Flight Spacing	419 mm	**16.5"**	419 mm	**16.5"**	520 mm	**1'8.5"**	610 mm	**2'0"**
Number of Flights	**15**		**18**		**15**		**14**	
Maximum Floor Opening	1.14 m	**3'9"**	1.181 m	**3'10.5"**	1.53 m	**5'**	1.22 m	**4'0"**
Maximum Depth of Spread	370 mm	**14.6"**	399 mm	**15.7"**	390 mm	**15.4"**	578 mm	**1'10.7"**
Fuel Tank Refill Capacity	250 L	**66 U.S. gal**	399 L	**105 U.S. gal**	606 L	**160 U.S. gal**	807 L	**213 U.S. gal**
GENERAL DIMENSIONS:								
Height to Top of Scraper	3.06 m	**10'0"**	3.589 m	**11'9"**	3.58 m	**11'9"**	4.24 m	**13'11"**
Wheelbase	6.26 m	**20'6.5"**	6.995 m	**22'11"**	7.98 m	**26'2"**	9.02 m	**29'7"**
Overall Length	10 m	**32'9"**	11.6 m	**38'1"**	13.21 m	**43'4"**	14.81 m	**48'7"**
Overall Width	2.44 m	**8'0"**	3.05 m	**10'0"**	3.55 m	**11'8"**	3.96 m	**13'0"**
Shipping Width (Draft Arm on Inside of Bowl)	2.44 m	**8'0"**	3.05 m	**10'0"**	3.55 m	**11'8"**	3.64 m	**11'11"**
Scraper Tread	1.80 m	**5'11"**	2.12 m	**6'9"**	2.20 m	**7'3"**	2.5 m	**8'1"**
Tractor Tread	1.80 m	**5'11"**	2.12 m	**6'9"**	2.20 m	**7'3"**	2.5 m	**8'1"**

◀Operating weight includes coolants, lubricants, ROPS canopy, full fuel tank and operator.
*Elevator on.



MODEL	621F		631E Series II		651E	
Flywheel Power: Tractor	272 kW	**365 hp**	335/365 kW	**450/490 hp**	410/452 kW	**550/605 hp**
Approx. Operating Weight (Empty)◀	37 762 kg	**83,250 lb**	45 980 kg	**101,370 lb**	66 575 kg	**146,770 lb**
Scraper Capacity (Heaped)	15.96 m^3	**21 yd^3**	23.7 m^3	**31 yd^3**	33.6 m^3	**44 yd^3**
Rated Load	21 775 kg	**48,000 lb**	34 020 kg	**75,000 lb**	47 175 kg	**104,000 lb**
Approx. Operating Weight (Loaded)	57 950 kg	**127,750 lb**	80 000 kg	**176,370 lb**	113 750 kg	**250,770 lb**
AUGER ATTACHMENT						
Auger Diameter	1320 mm	**4'4"**	1524 mm	**5'0"**	1676 mm	**5'6"**
Auger RPM	**Variable 55 to 35 RPM**		**Variable 55 to 35 RPM**		**Variable 55 to 35 RPM**	
Auger Power	149 kW	**200 hp**	201 kW	**270 hp**	354 kW	**475 hp**
Hydraulic Flow	273 L/min	**72 gpm**	378 L/min	**100 gpm**	549 L/min	**145 gpm**
Cooling Flow	—	—	—	—	132 L/min	**35 gpm**
System Pressure	41 370 kPa	**6000 psi**	37 895 kPa	**5500 psi**	41 370 kPa	**5700 psi**
Auger Control	**electronic**		**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)



MODEL	627F		637E Series II		657E	
Flywheel Power: Tractor	246 kW	**330 hp**	335/365 kW	**450/490 hp**	410/452 kW	**550/605 hp**
Scraper	168 kW	**225 hp**	187 kW	**250 hp**	298 kW	**400 hp**
Approx. Operating Weight (Empty)◀	42 230 kg	**93,100 lb**	54 540 kg	**120,235 lb**	75 875 kg	**167,270 lb**
Scraper Capacity (Heaped)	15.96 m^3	**21 yd^3**	23.7 m^3	**31 yd^3**	33.6 m^3	**44 yd^3**
Rated Load	21 775 kg	**48,000 lb**	34 020 kg	**75,000 lb**	47 175 kg	**104,000 lb**
Approx. Operating Weight (Loaded)	62 160 kg	**137,035 lb**	88 560 kg	**195,235 lb**	123 050 kg	**271,270 lb**
AUGER ATTACHMENT						
Auger Diameter	1320 mm	**4'4"**	1524 mm	**5'0"**	1676 mm	**5'6"**
Auger RPM	**Variable 55 to 35 RPM**		**Variable 55 to 35 RPM**		**Variable 55 to 35 RPM**	
Auger Power	149 kW	**200 hp**	201 kW	**270 hp**	354 kW	**475 hp**
Hydraulic Flow	273 L/min	**72 gpm**	378 L/min	**100 gpm**	549 L/min	**145 gpm**
Cooling Flow	—	—	—	—	132 L/min	**35 gpm**
System Pressure	41 370 kPa	**6000 psi**	37 923 kPa	**5500 psi**	41 340 kPa	**5700 psi**
Auger Control	**electronic**		**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)

TIRE OPTIONS			613C Series II		615C Series II		621F 623F 627F		631E Series II 633E Series II 637E Series II		651E 657E	
			Tr.	Sc.	Tr.	Sc.	Tr.	Sc.	Tr.	Sc.	Tr.	Sc.
23.5-25	20 PR	E2	●	●								
"	"	E3	●	●								
23.5R25	★		● 1	●								
26.5R25	★★	E2			●	●						
29.5-25	28 PR	E2			●	●						
"	"	E3			●	●						
29.5R25	★	E2			● 2	●						
29.5-25	34 PR	E3			●	●						
29.5-29	34 PR	E2					●	●				
"	"	E3					●	●				
29.5R29	★ ★	E2					●	●				
"	"	E3					●	●				
33.25-29	32 PR	E3					●	●				
33.25R29	★ ★	E2					● 3	●				
"	"	E3					●	●				
37.25-35	42 PR	E3							●	●		
37.25R35	★ ★	E2/E3							● 4 & 5	●		
37.5-39	52 PR	E3									●	●
37.5R39	★ ★	E3									●	●
40.5/75R39	★ ★	E3									● 6	●

KEY

1. Standard on 613C Series II.
2. Standard on 615C Series II.
3. Standard on 621F, 623F and 627F.
4. Standard on 631E Series II and 637E Series II.
5. Standard on 633E Series II.
6. Standard on 651E and 657E.

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 631E Series II with an estimated payload of 34 020 kg (75,000 lb) is operating on a total effective grade of 10%. Find the available rimpull and maximum attainable speed.

Empty weight payload = Gross Weight
43 945 kg + 34 020 kg = 77 965 kg
(96,880 lb + 75,000 lb = 171,880 lb)

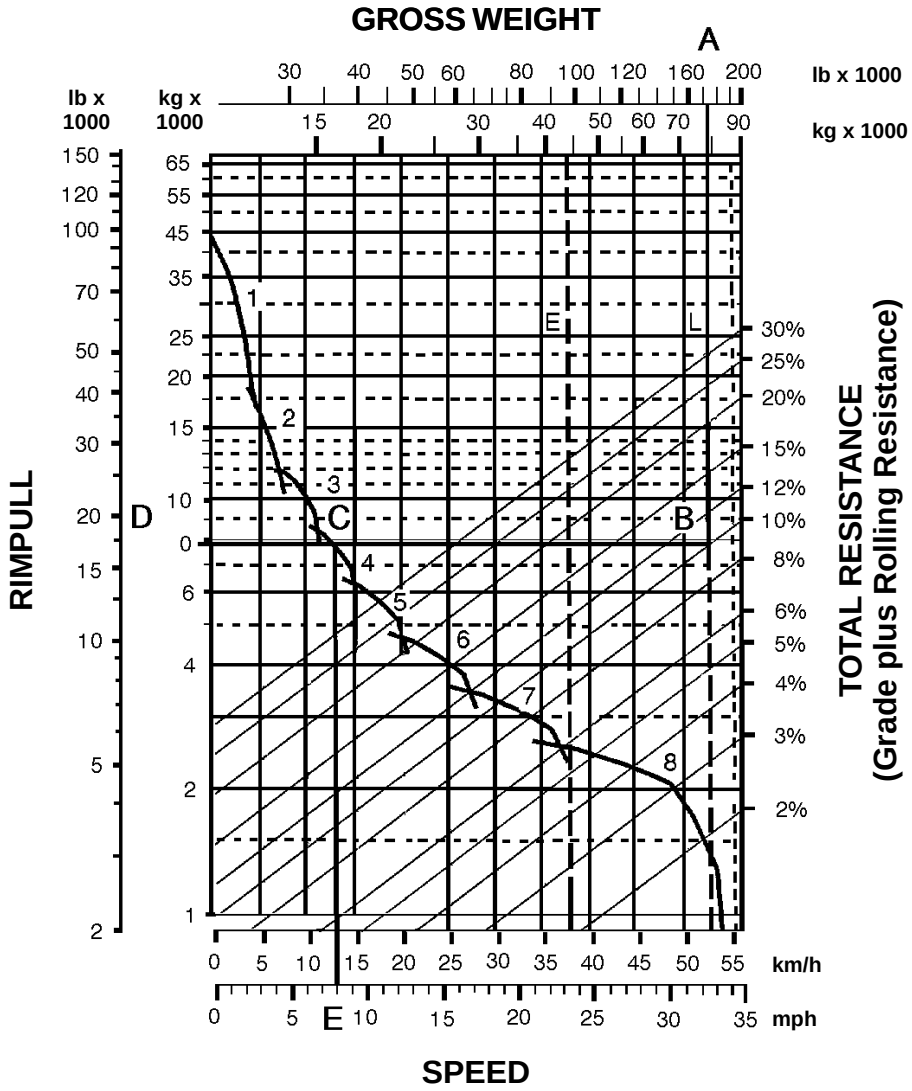
Solution: Using graph on the next page, read from 77 965 kg (171,880 lb) (point A) on top of gross weight scale down the line to the intersection of the 10% total resistance line (point B).

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).

● ● ●



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 77 965 kg (171,880 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.

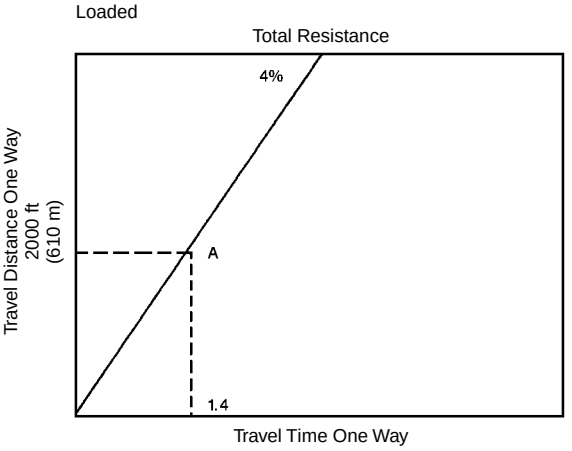
Travel times were derived using Caterpillar Machine Simulation Program and standard tire inputs. Travel times for machines equipped with (larger) optional tires vary slightly.

Example problem:

631E Series II hauls its rated payload 34 020 kg — 19.1 bank cubic meters (75,000 lb — 25 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.

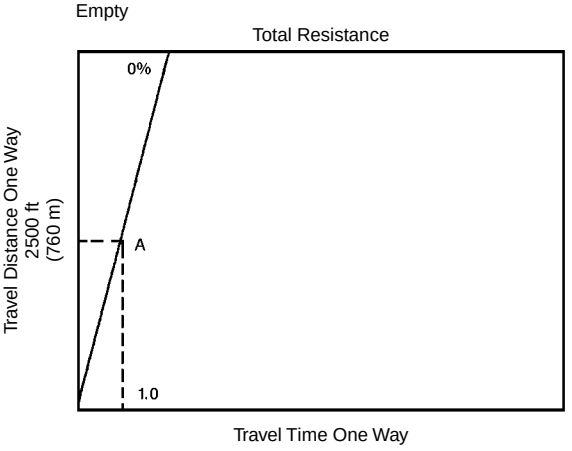
Haul —

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 —

= load* + haul + maneuver & spread* + return
= 0.6 + 1.4 + 0.7 + 1.0
= 3.7 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
623F	Self	0.9	0.7
633E Series II	Self	0.9	0.7
621F	One D8R	0.5	0.7
627F	One D8R	0.5	0.6
621F	One D9R	0.4	0.7
627F	One D9R	0.4	0.6
627F PP	Self	0.9*	0.6
631E Series II	One D9R	0.6	0.7
637E Series II	One D9R	0.6	0.6
631E Series II	One D10R	0.5	0.7
637E Series II	One D10R	0.5	0.6
637E/PP Series II	Self	1.0*	0.6
651E	One D11R	0.6	0.7
657E	One D11R	0.6	0.6
657E	Push Pull Self	1.1*	0.6
621F	Auger	0.9	0.7
627F	Auger	0.7	0.7
631E Series II	Auger	0.9	0.7
637E Series II	Auger	0.8	0.7
651E	Auger	1.3	0.7
657E	Auger	1.0	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 kg/metric ton (20 lb/U.S. ton) = 1% adverse grade.

Example

15% favorable grade with 5% rolling resistance. Find Total Effective Grade.

Total Effective Grade = 15% Grade Assistance — 5%

Rolling Resistance = 10% 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.

Empty Weight + Payload = Gross Weight
= 60 950 kg + 47 175 kg = 108 125 kg
(134,370 lb + 104,000 lb = 238,370 lb)

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.

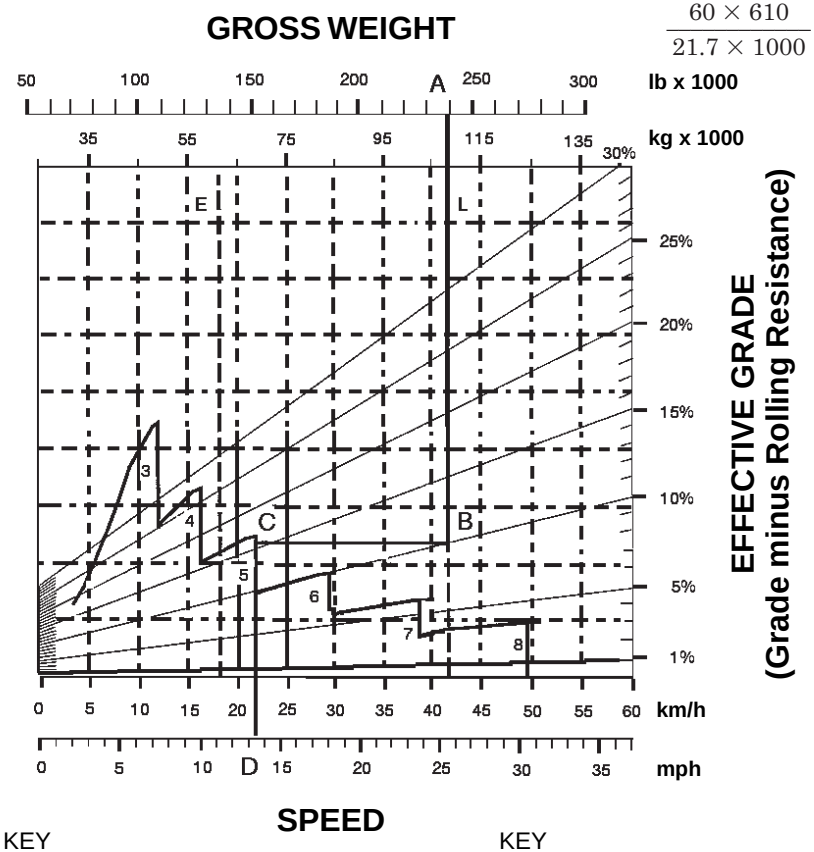
$$\frac{610 \text{ m}}{363 \text{ m/min}} = 1.68 \text{ min}$$

*(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 ÷ 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 × 610 m ÷ 21.7 km/h × 1000 = T.

$$\frac{60 \times 610}{21.7 \times 1000} = T = (1.68)$$

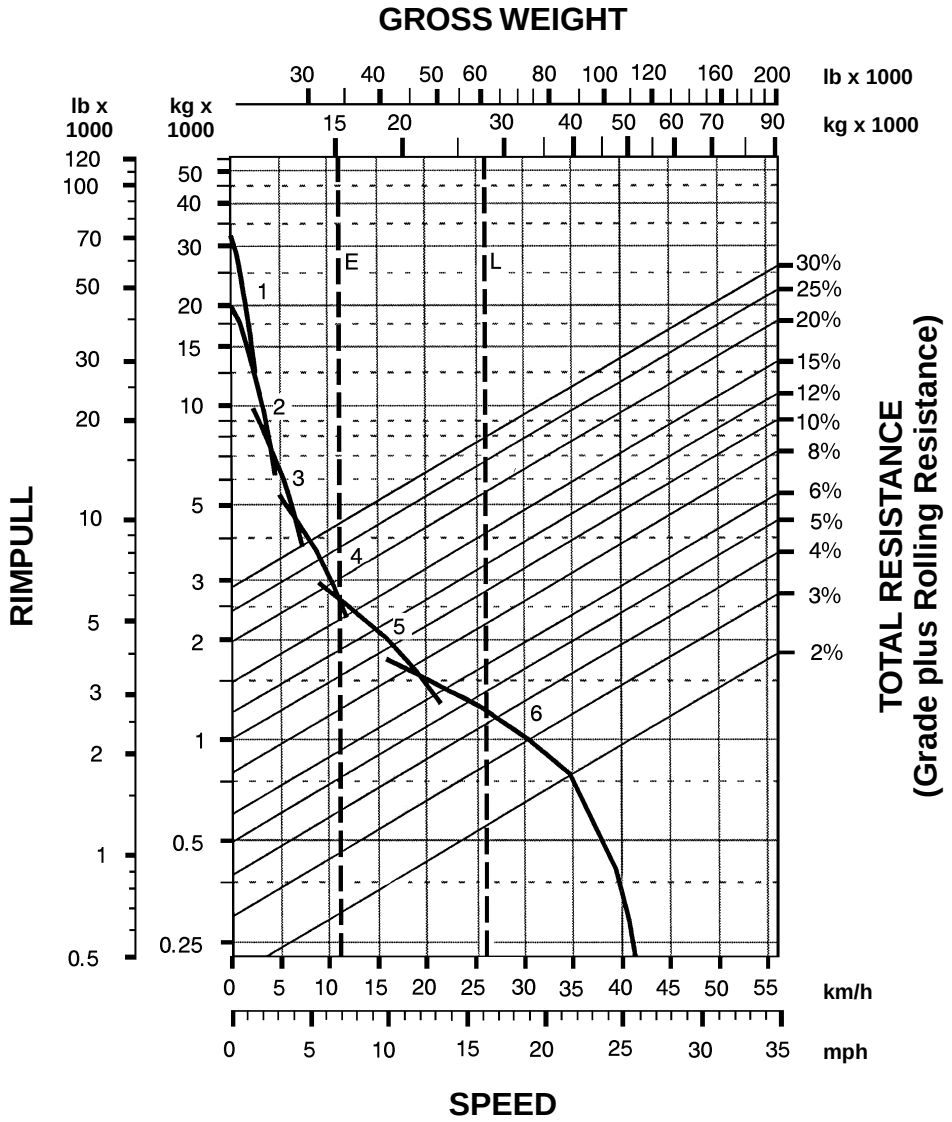


KEY

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)



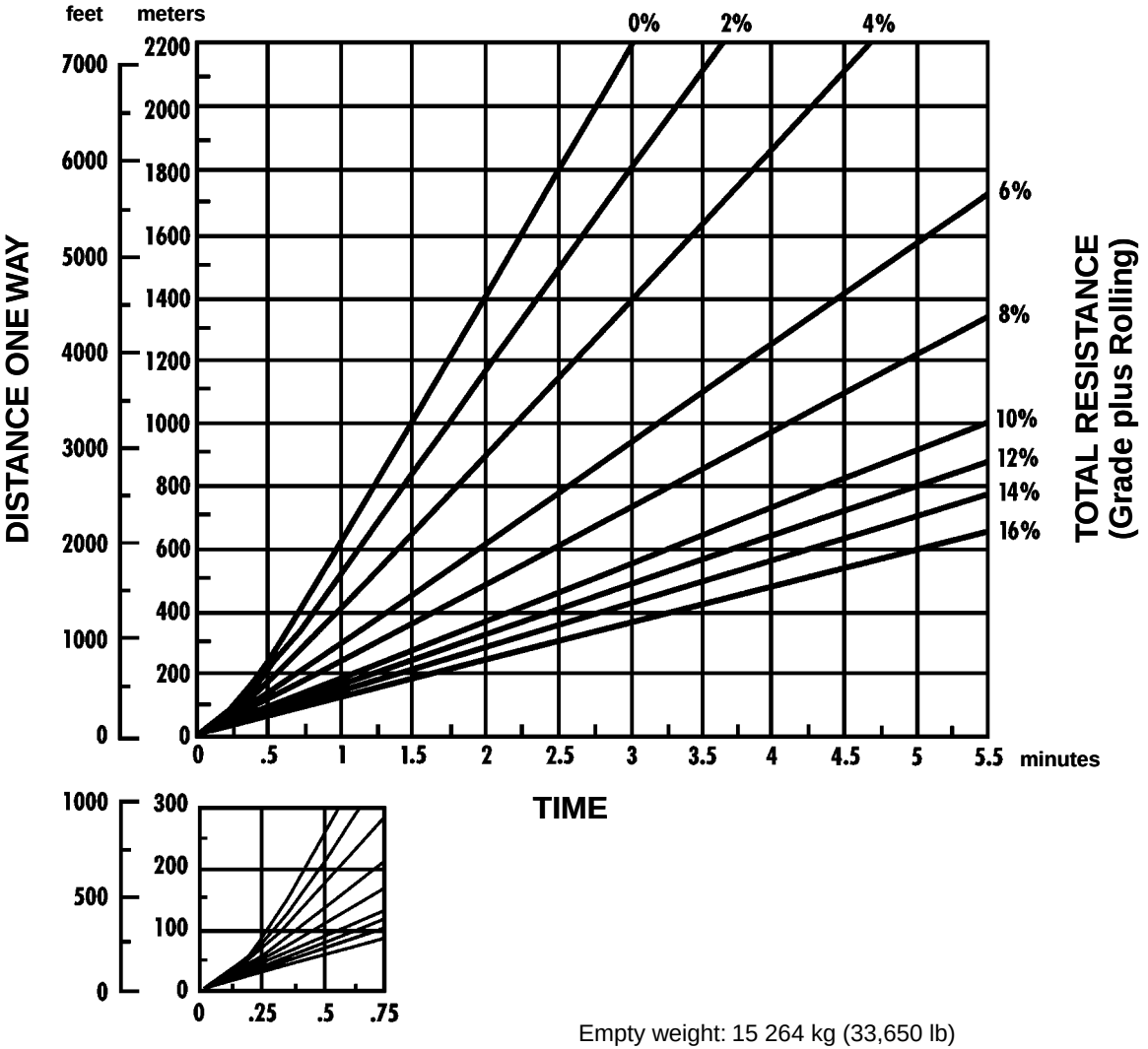
KEY

1 — 1st Torque Converter Drive
2 — 2nd Torque Converter Drive
3 — 3rd Torque Converter Drive
4 — 4th Torque Converter Drive
5 — 5th Torque Converter Drive
6 — 6th Torque Converter Drive

KEY

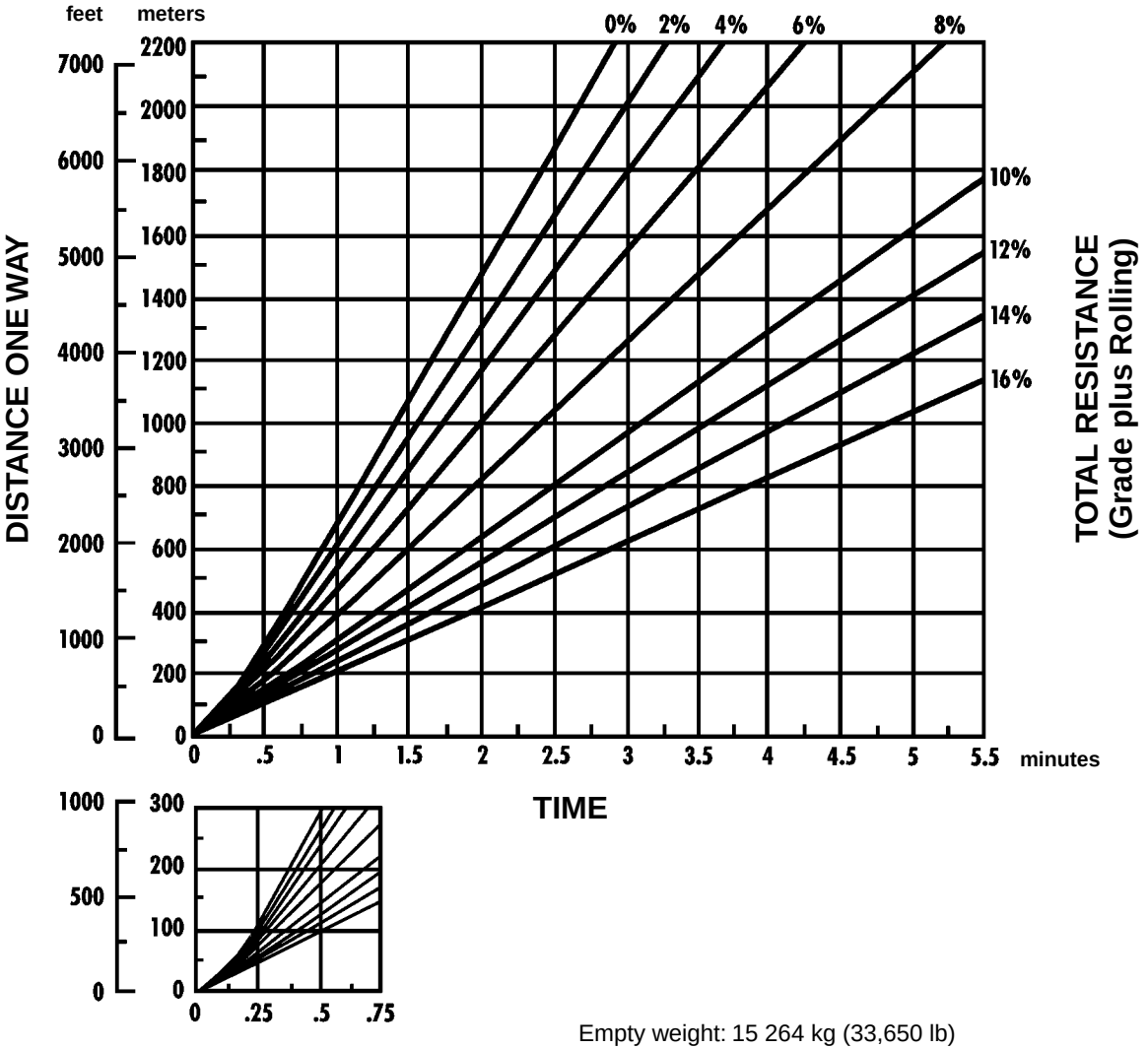
E — Empty 15 265 kg (33,650 lb)
L — Loaded 27 240 kg (60,050 lb)

LOADED



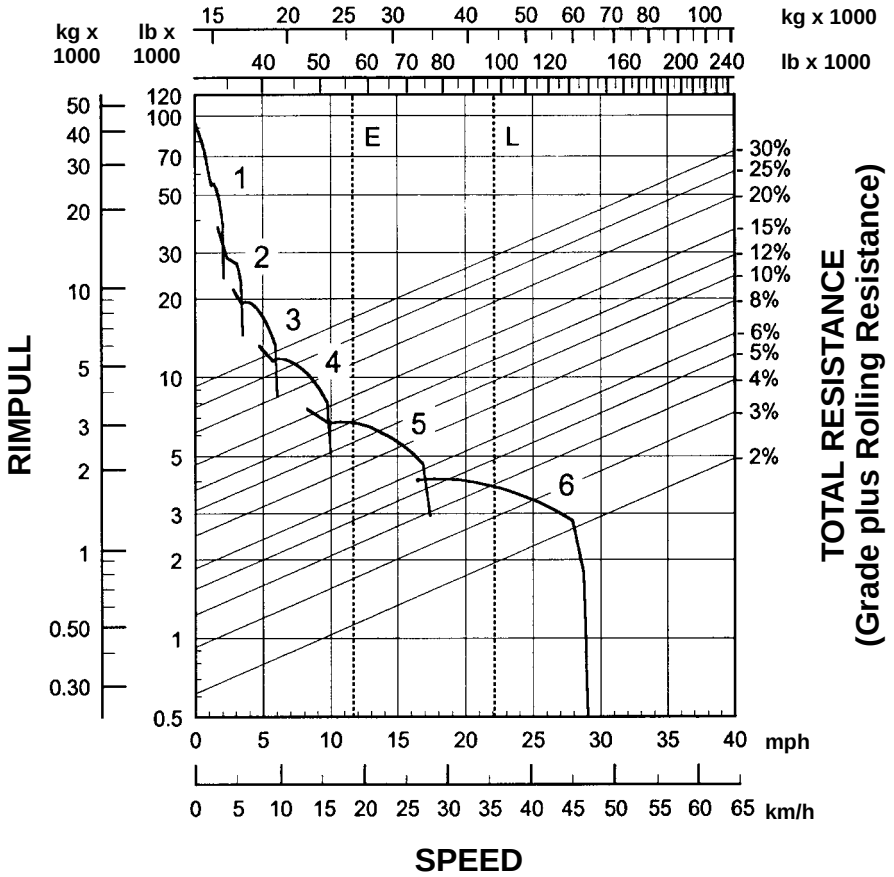
Empty weight: 15 264 kg (33,650 lb)
Payload: 11 975 kg (26,400 lb)

EMPTY



Empty weight: 15 264 kg (33,650 lb)

GROSS WEIGHT



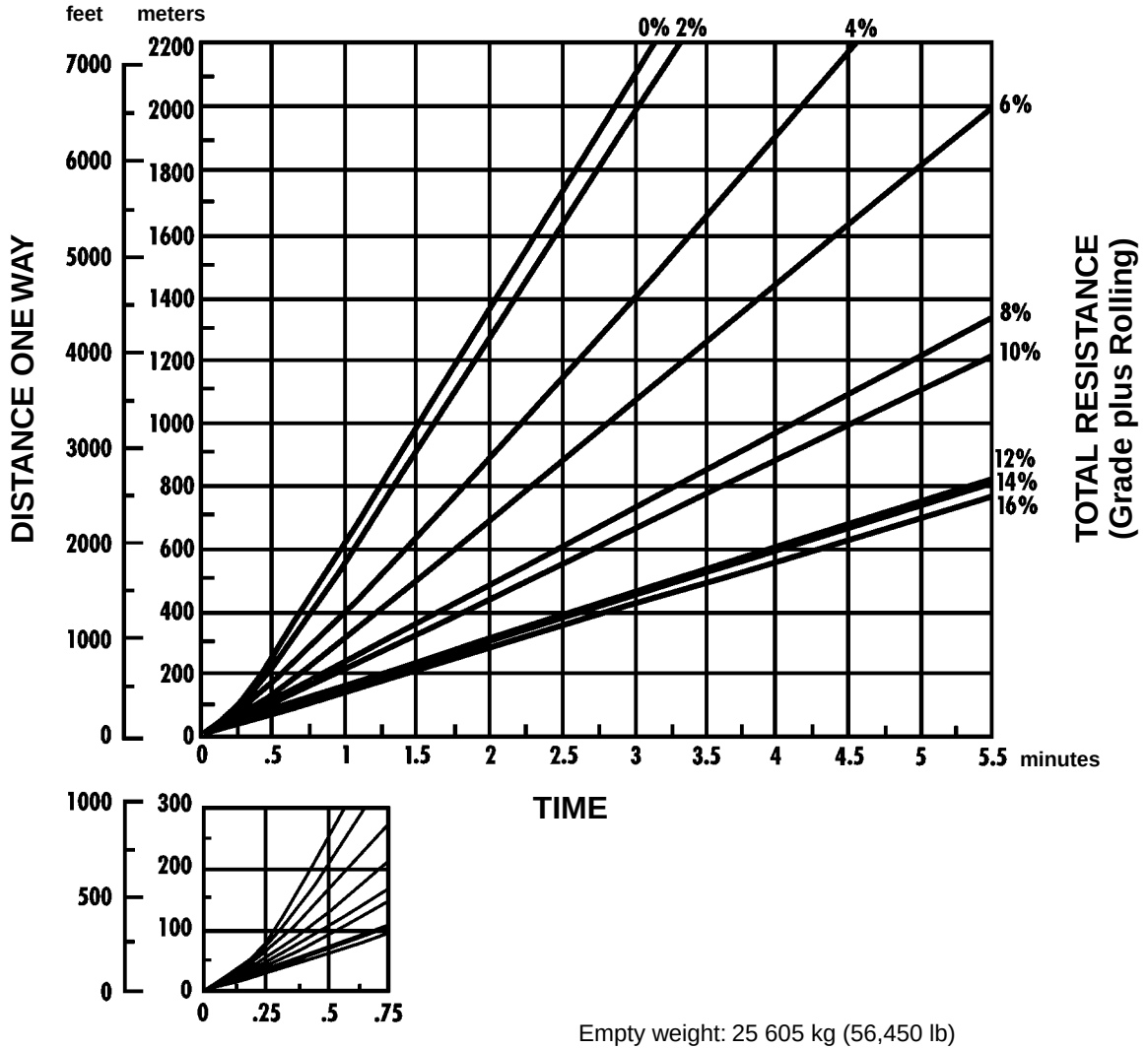
KEY

1 — 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

KEY

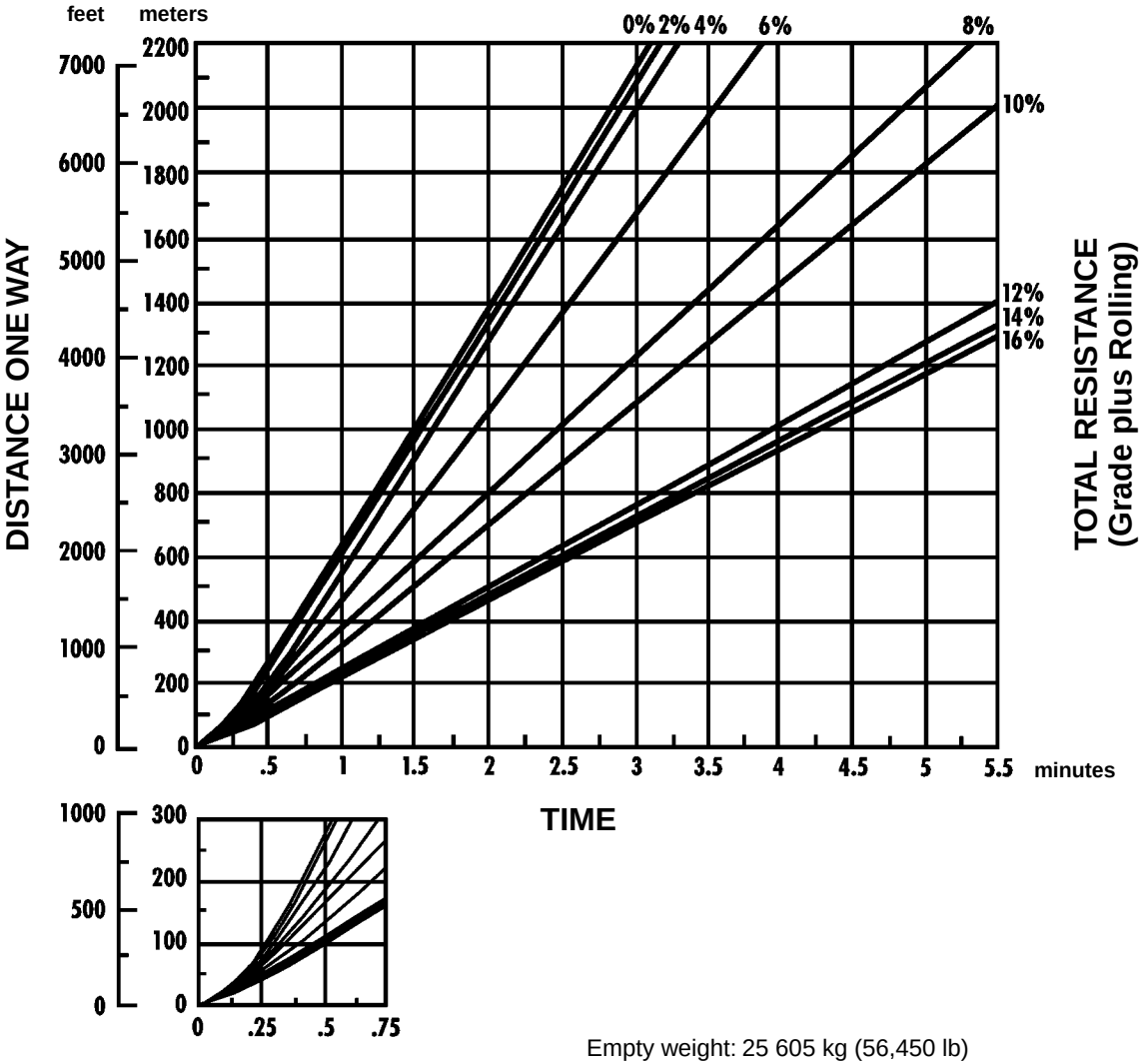
E — Empty 25 605 kg (56,450 lb)
L — Loaded 44 113 kg (97,250 lb)

LOADED

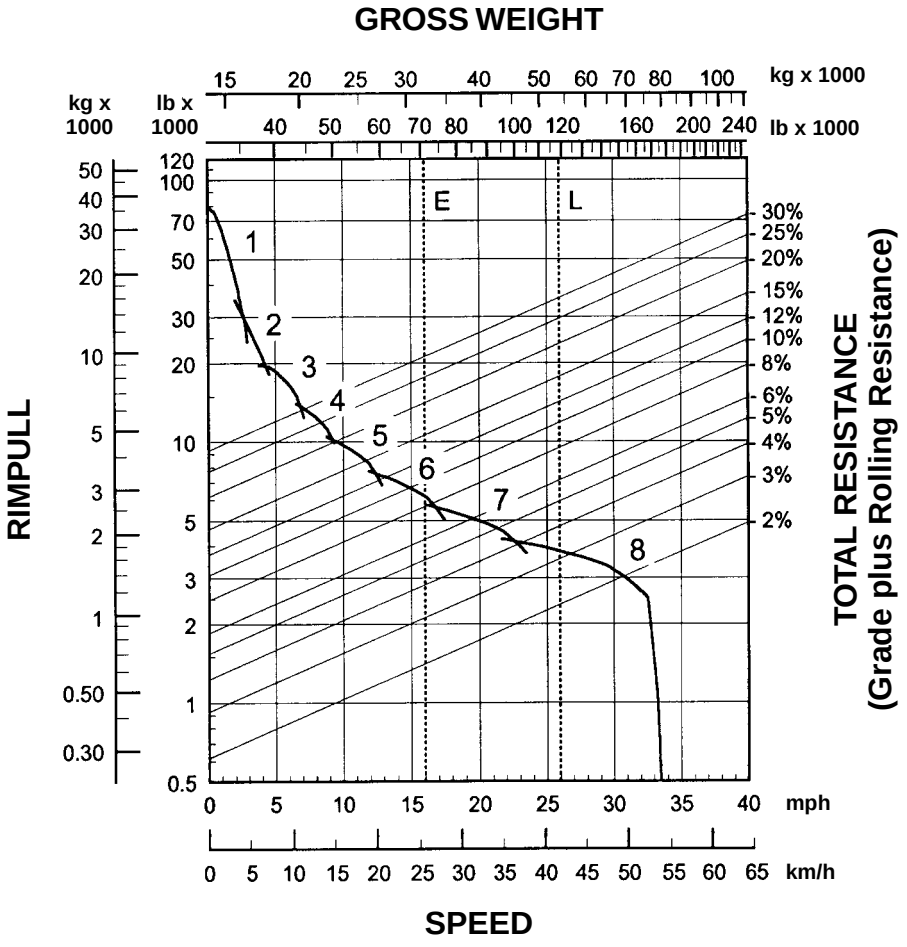


Empty weight: 25 605 kg (56,450 lb)
Payload: 18 506 kg (40,800 lb)

EMPTY



Empty weight: 25 605 kg (56,450 lb)



KEY

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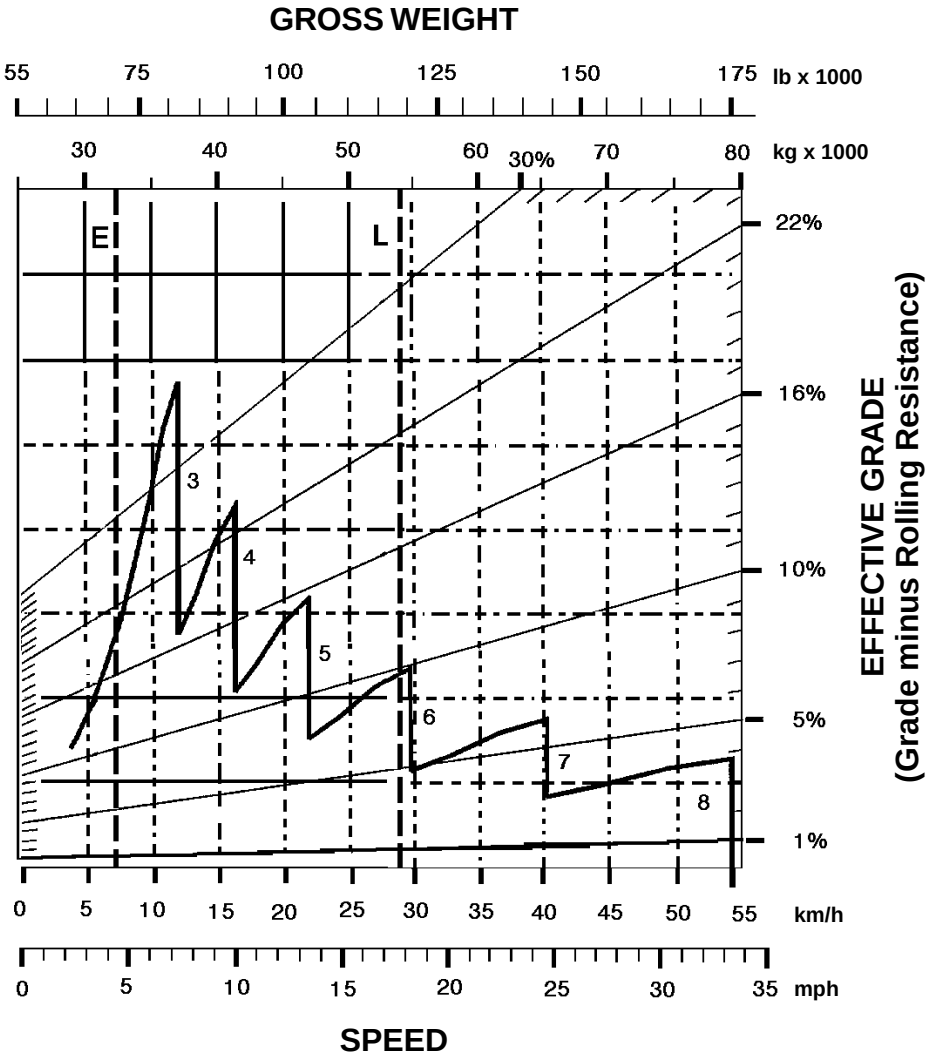
6 — 6th Gear Direct Drive
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

E — Empty 32 070 kg (70,700 lb)
L — Loaded 53 843 kg (118,700 lb)



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KEY

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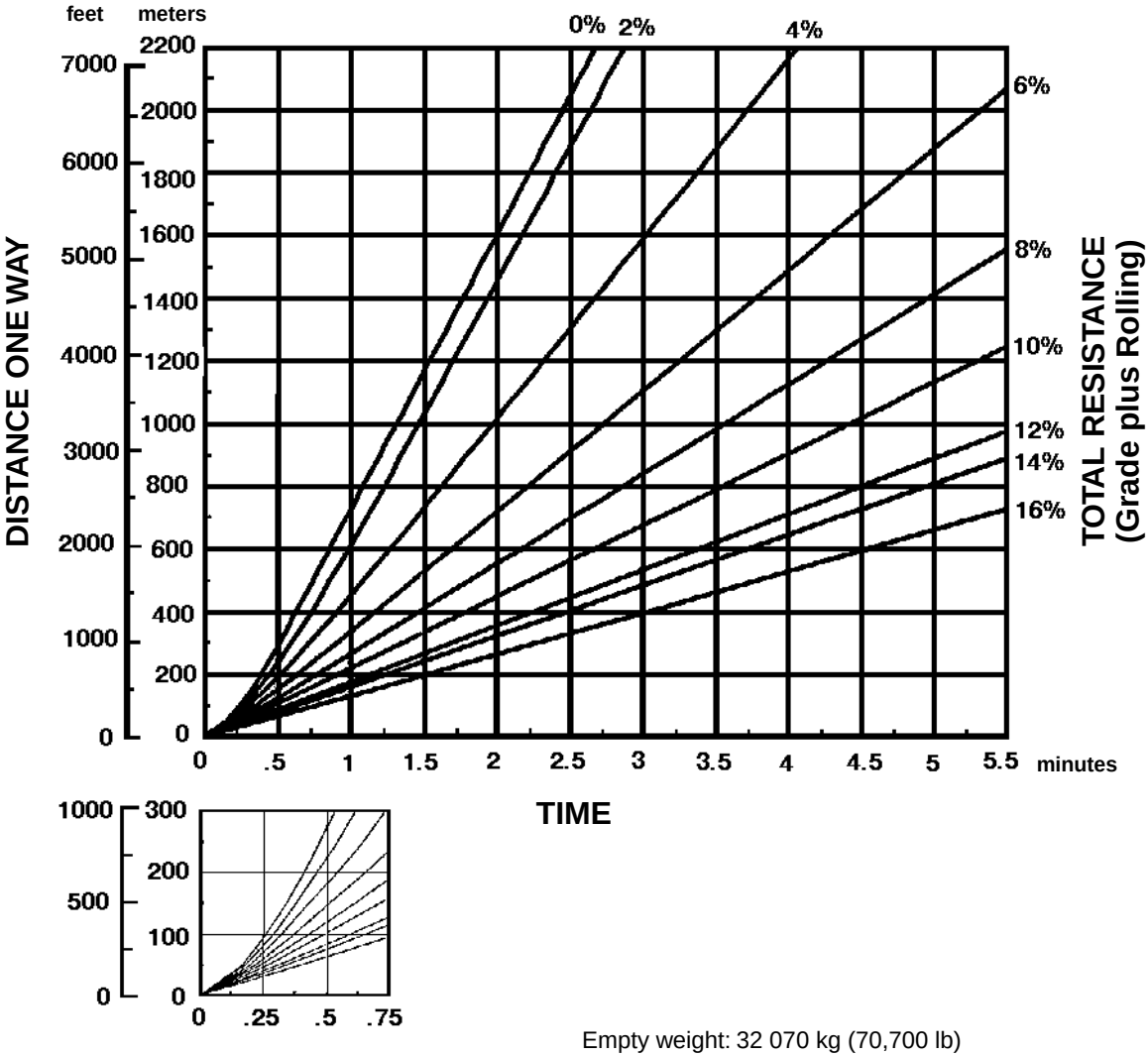
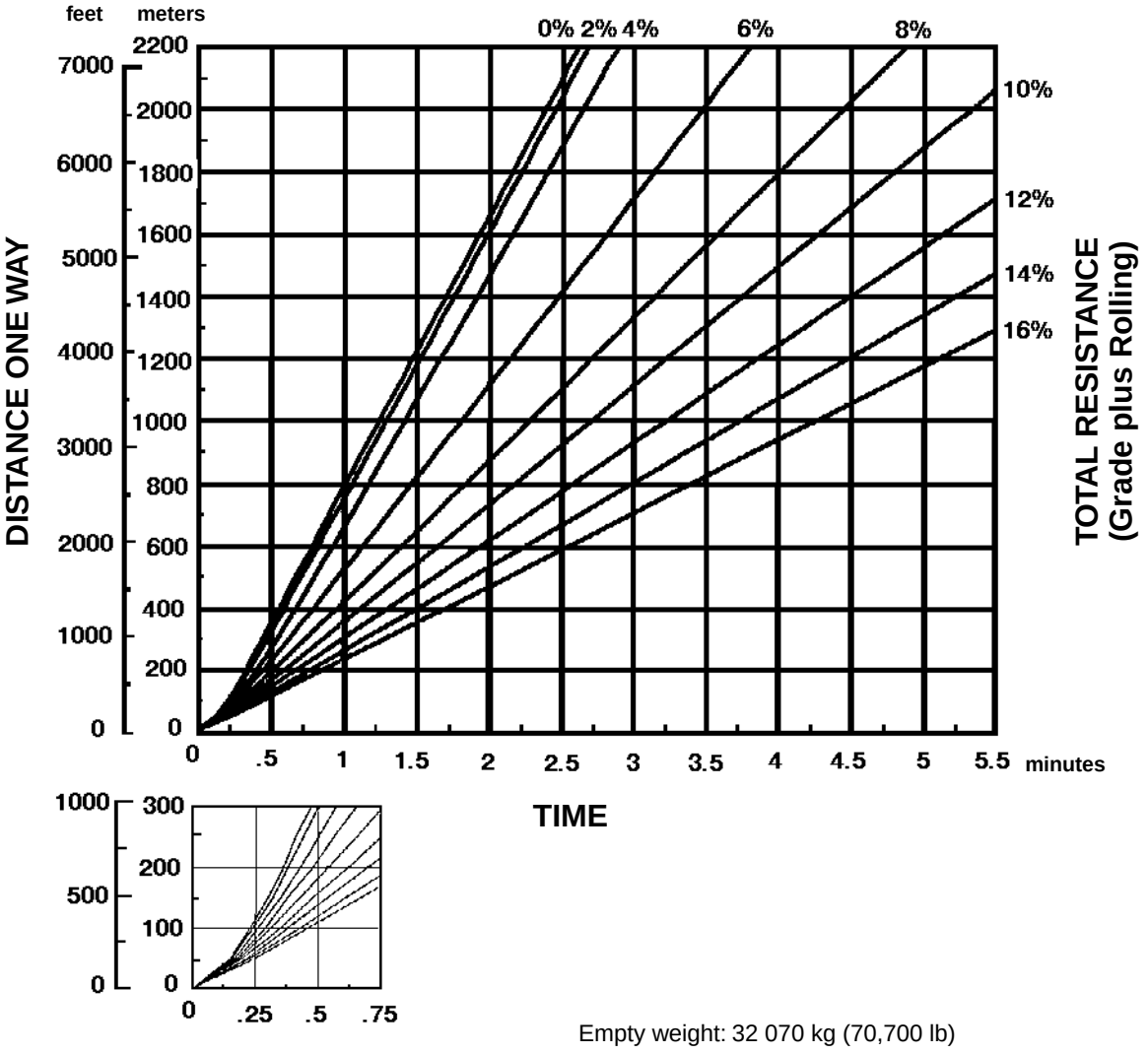
L — Loaded 53 843 kg (118,700 lb)

LOADED



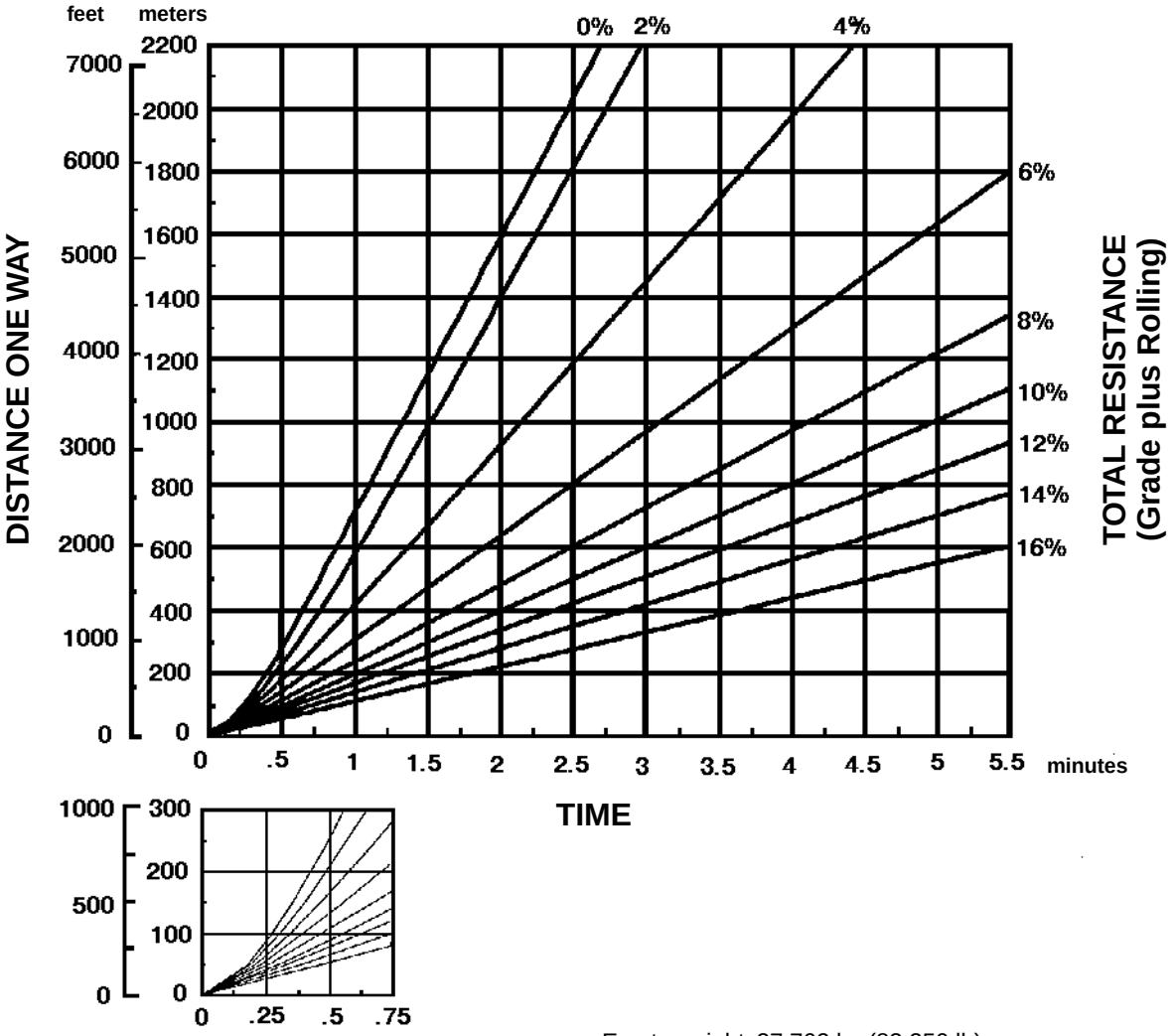
Empty weight: 32 070 kg (70,700 lb)
Payload: 21 775 kg (48,000 lb)

EMPTY



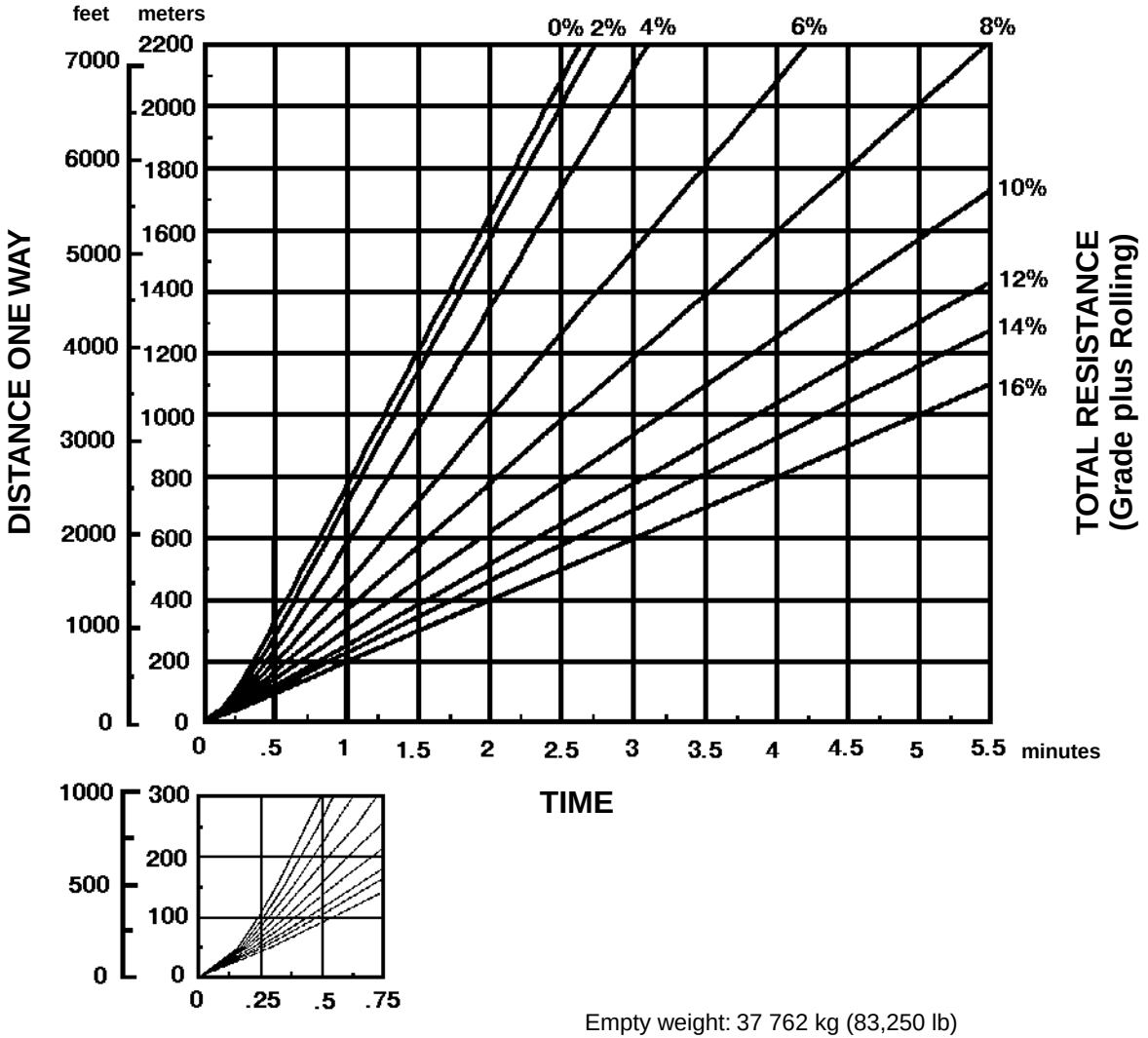
Empty weight: 32 070 kg (70,700 lb)

LOADED

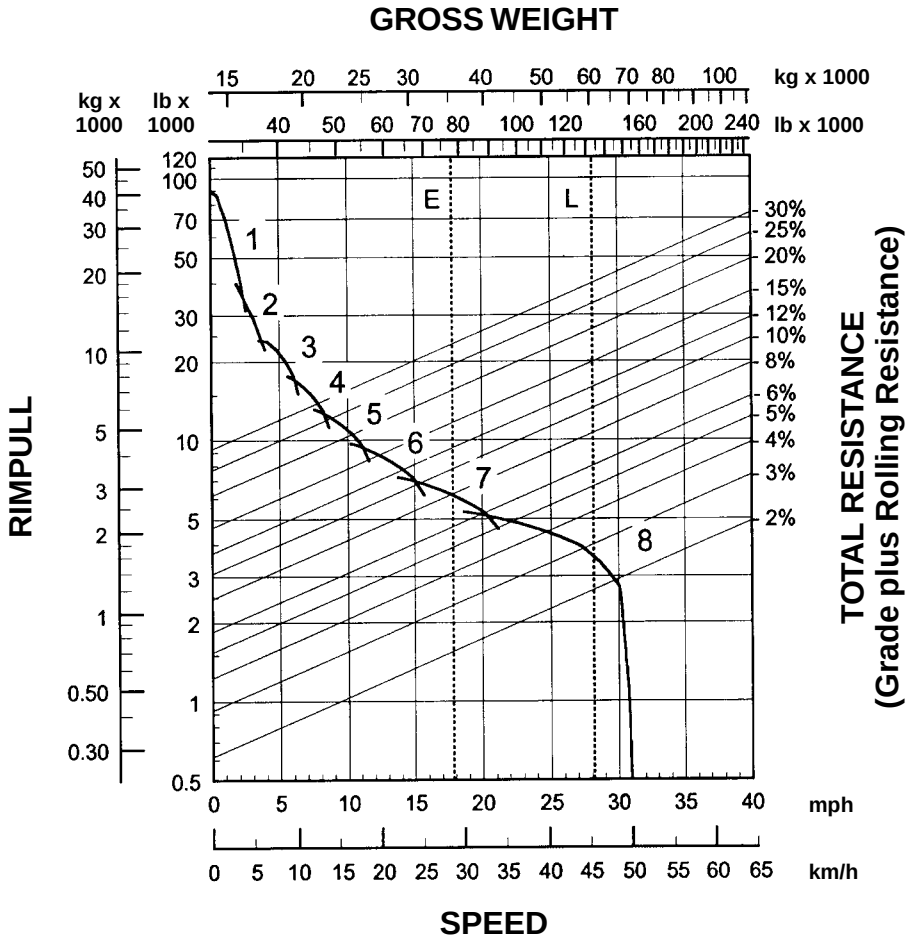


Empty weight: 37 762 kg (83,250 lb)
Payload: 21 775 kg (48,000 lb)

EMPTY



Empty weight: 37 762 kg (83,250 lb)



KEY

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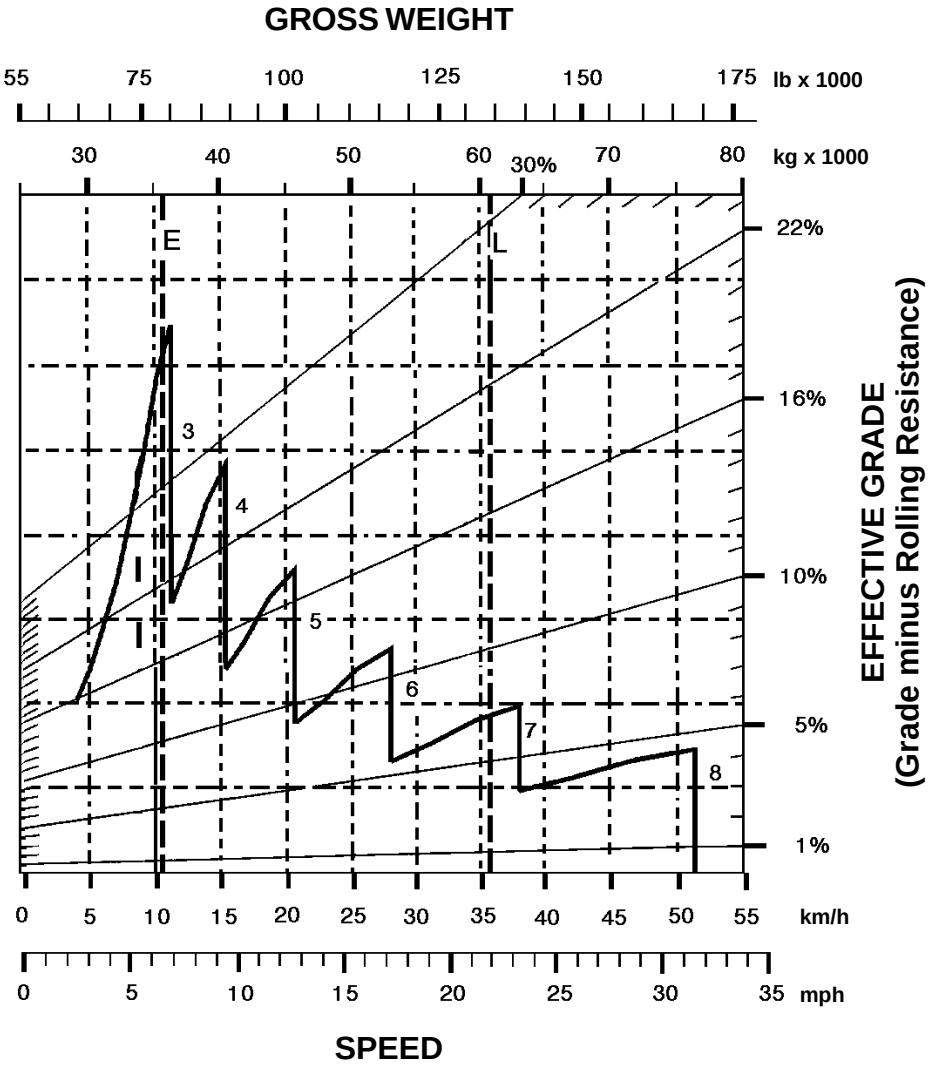
2 — 2nd Gear Torque Converter Drive
3 — 3rd Gear Direct Drive
4 — 4th Gear Direct Drive
5 — 5th Gear Direct Drive
6 — 6th Gear Direct Drive
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

E — Empty 35 290 kg (77,800 lb)
L — Loaded 60 238 kg (132,800 lb)



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KEY

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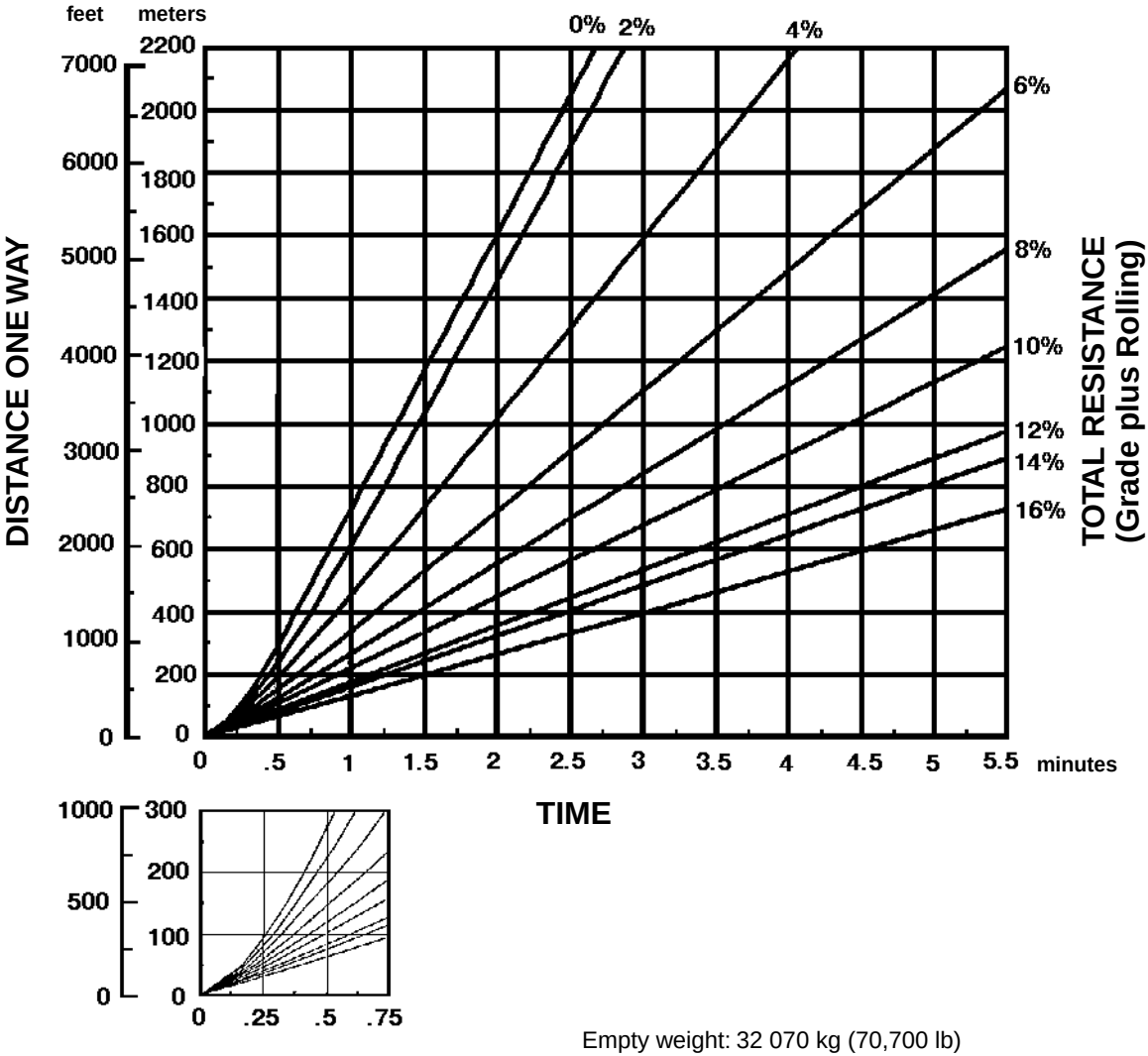
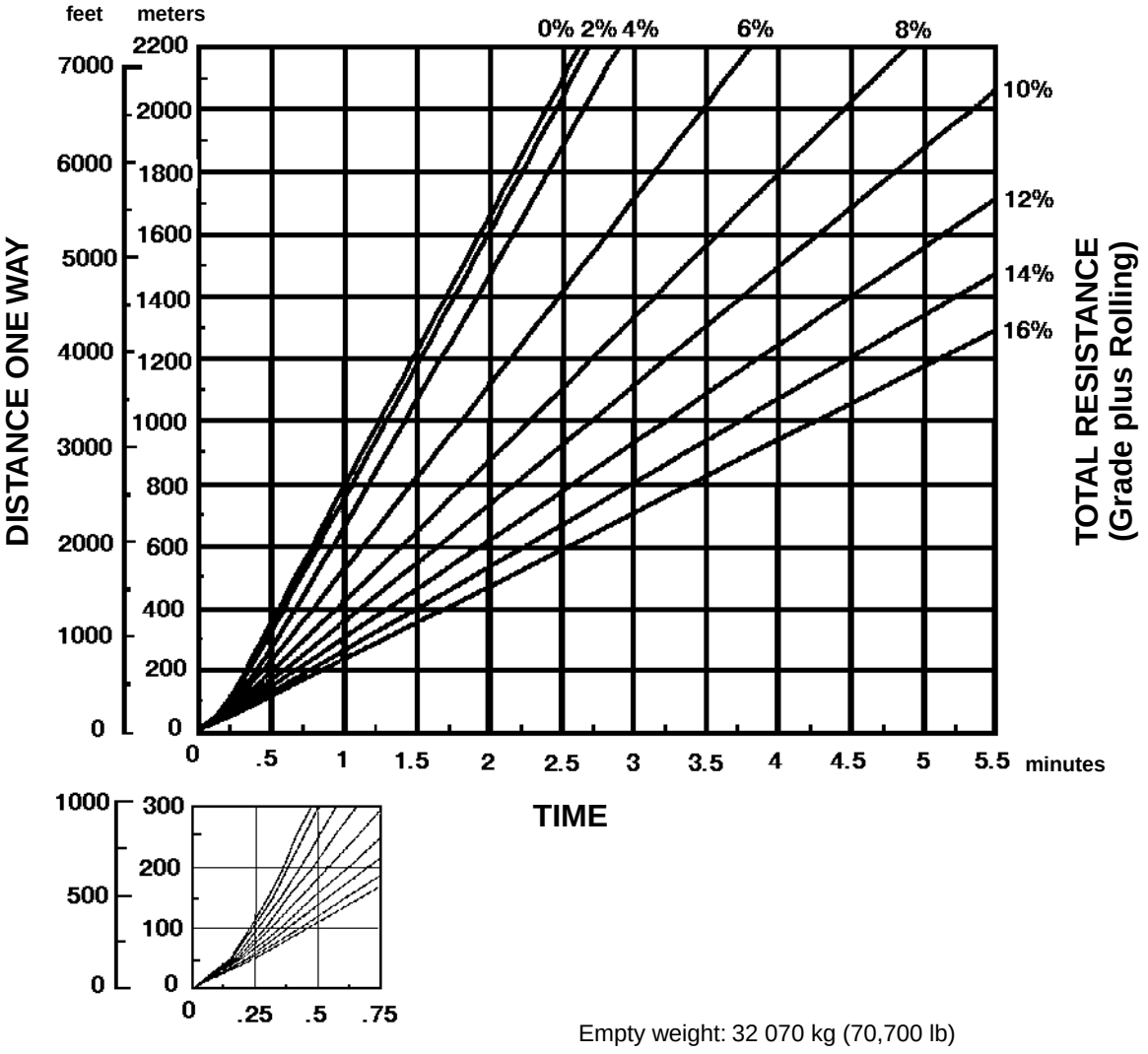
LOADED

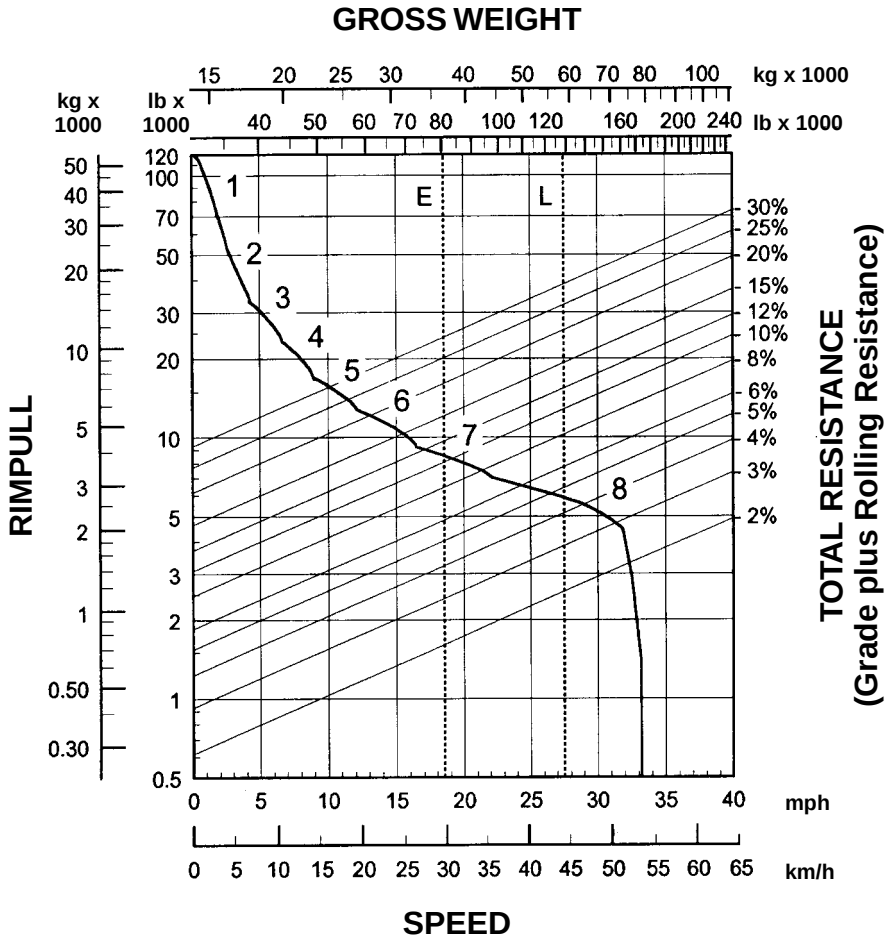


Empty weight: 32 070 kg (70,700 lb)
Payload: 21 775 kg (48,000 lb)

EMPTY



Empty weight: 32 070 kg (70,700 lb)



KEY

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3 — 3rd Gear Direct Drive
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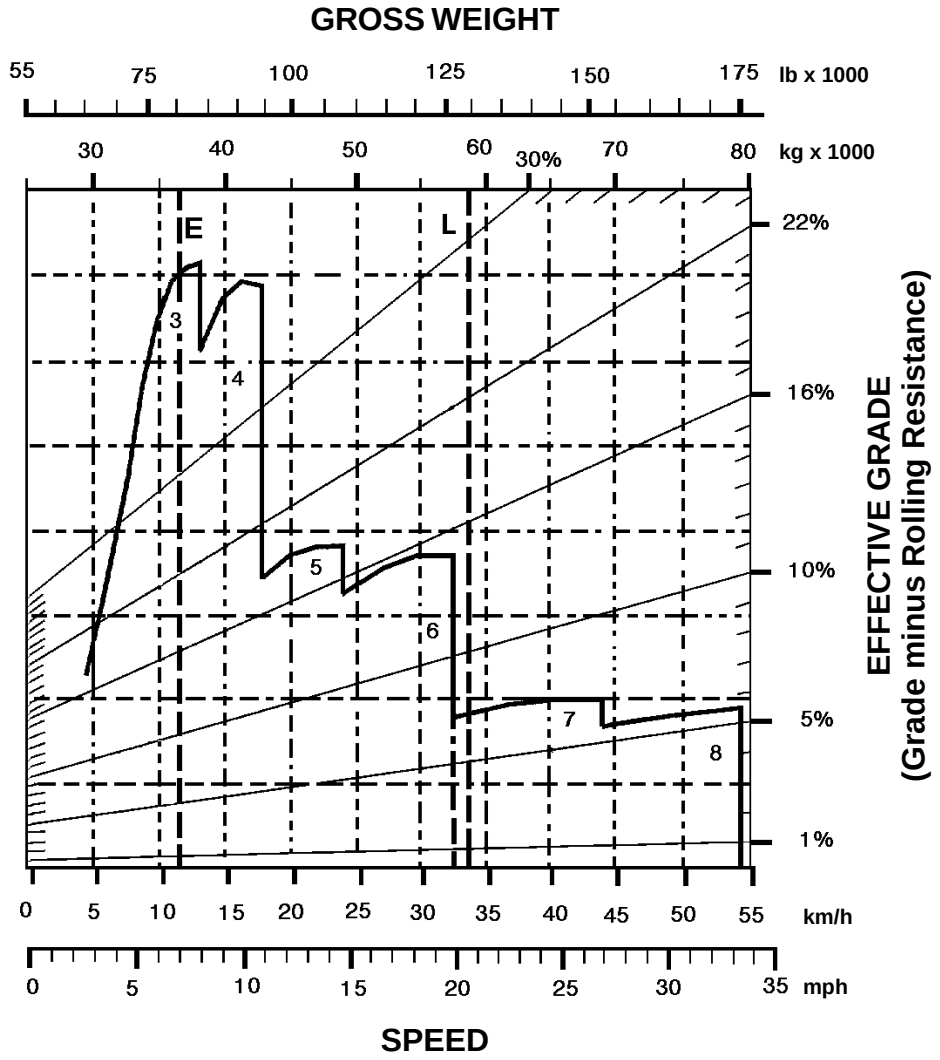
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

E — Empty 36 538 kg (80,550 lb)
L — Loaded 58 311 kg (128,550 lb)



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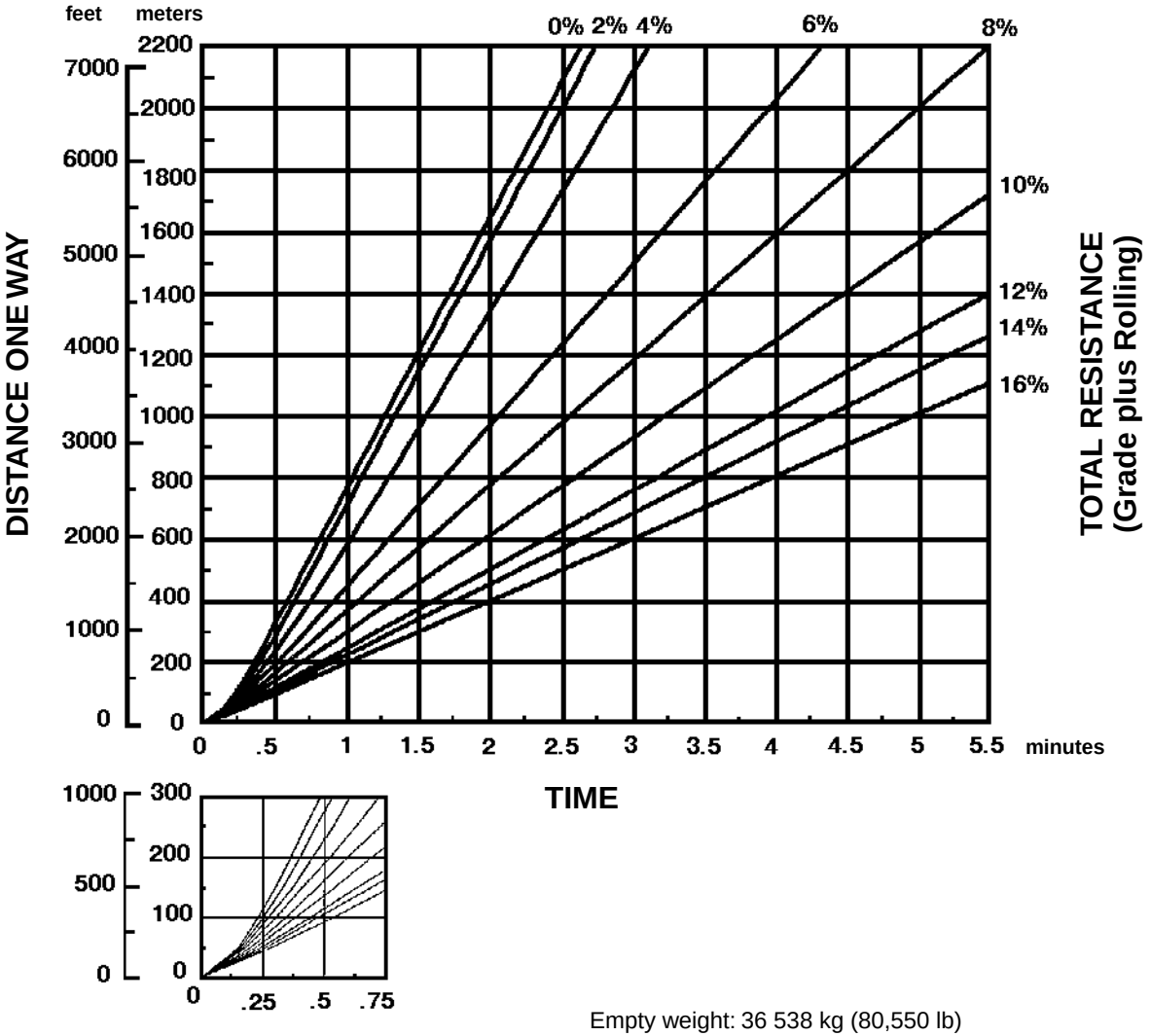
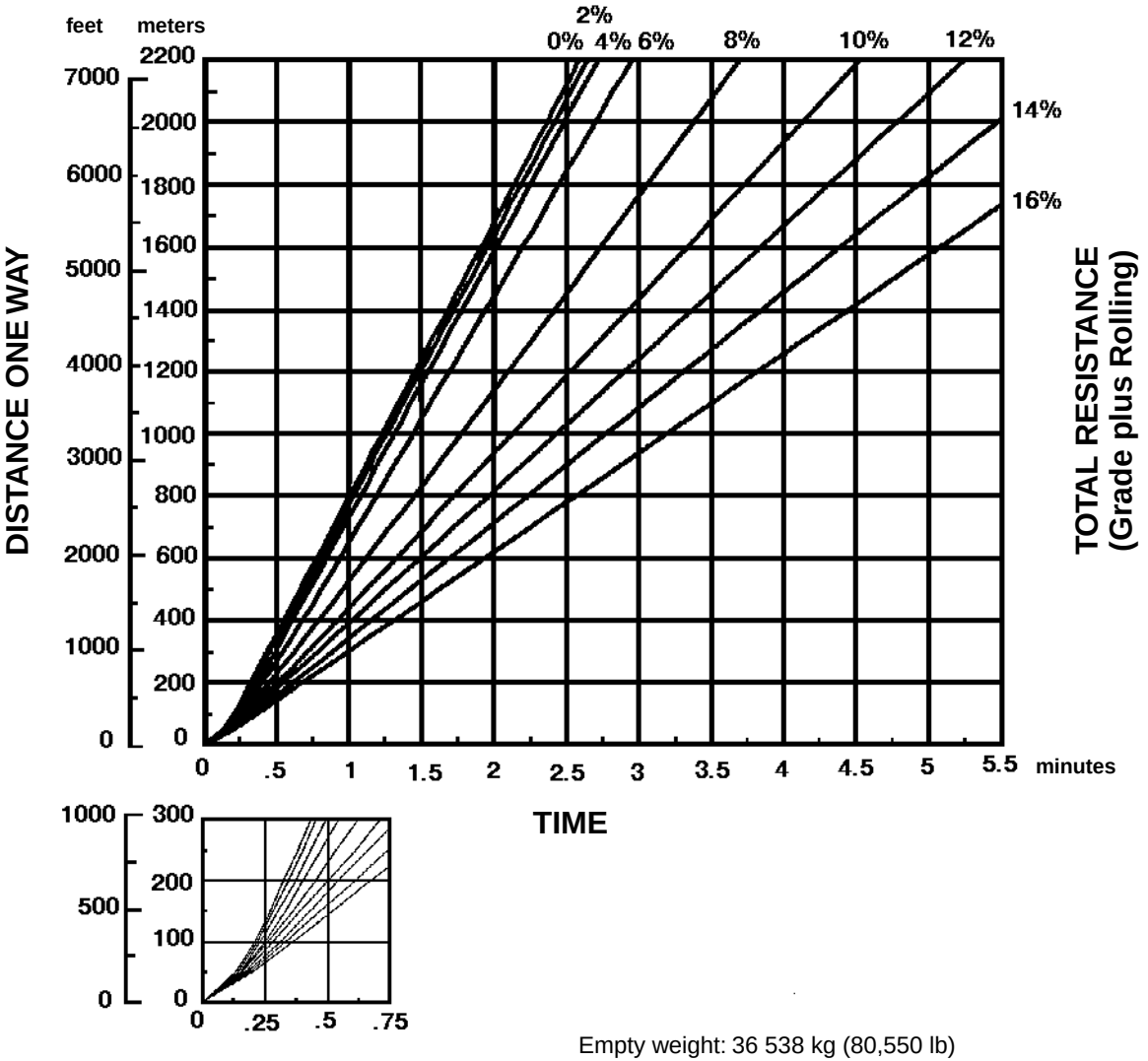
E — Empty 36 538 kg (80,550 lb)
L — Loaded 58 311 kg (128,550 lb)

LOADED



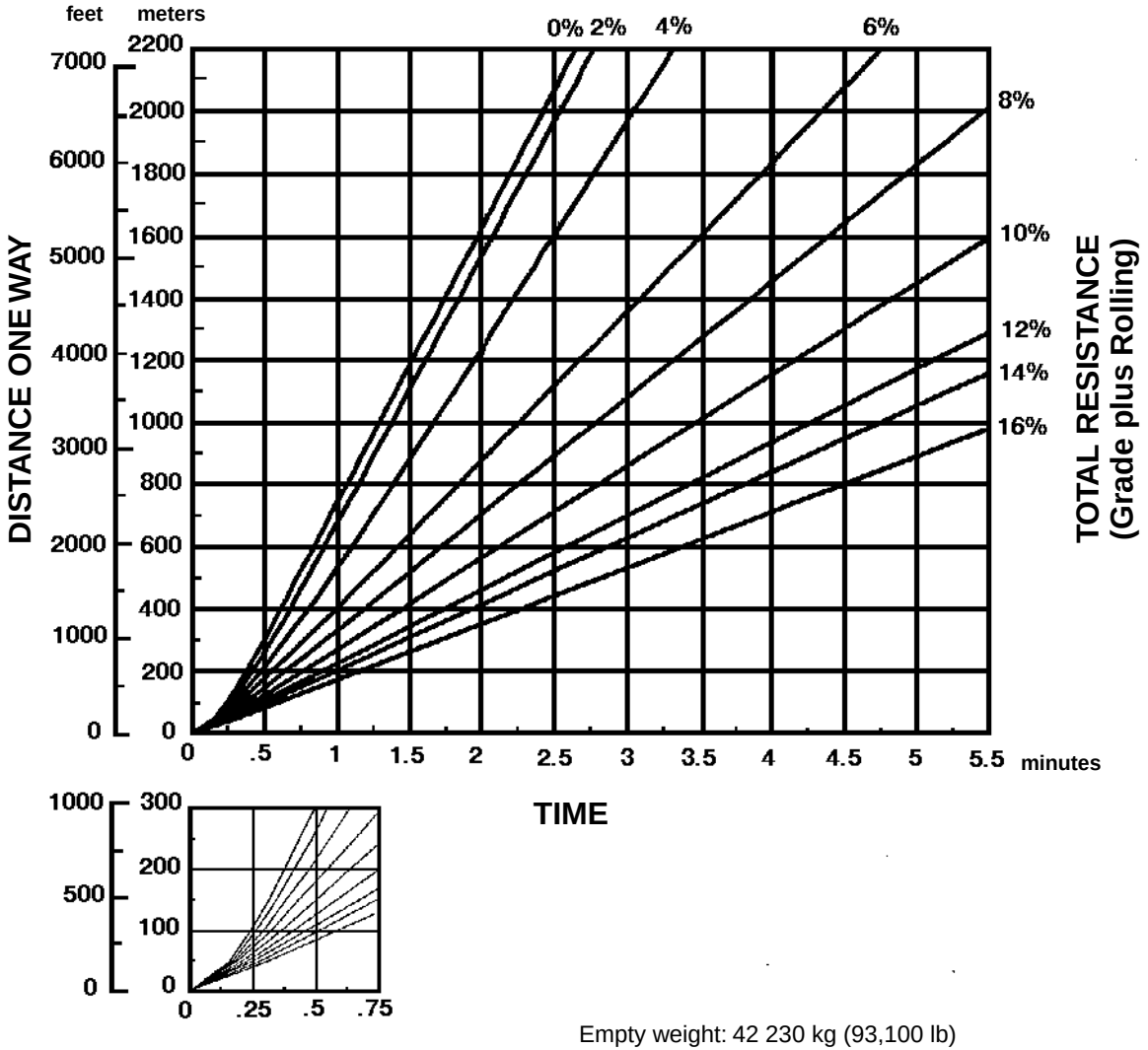
Empty weight: 36 538 kg (80,550 lb)
Payload: 21 775 kg (48,000 lb)

EMPTY



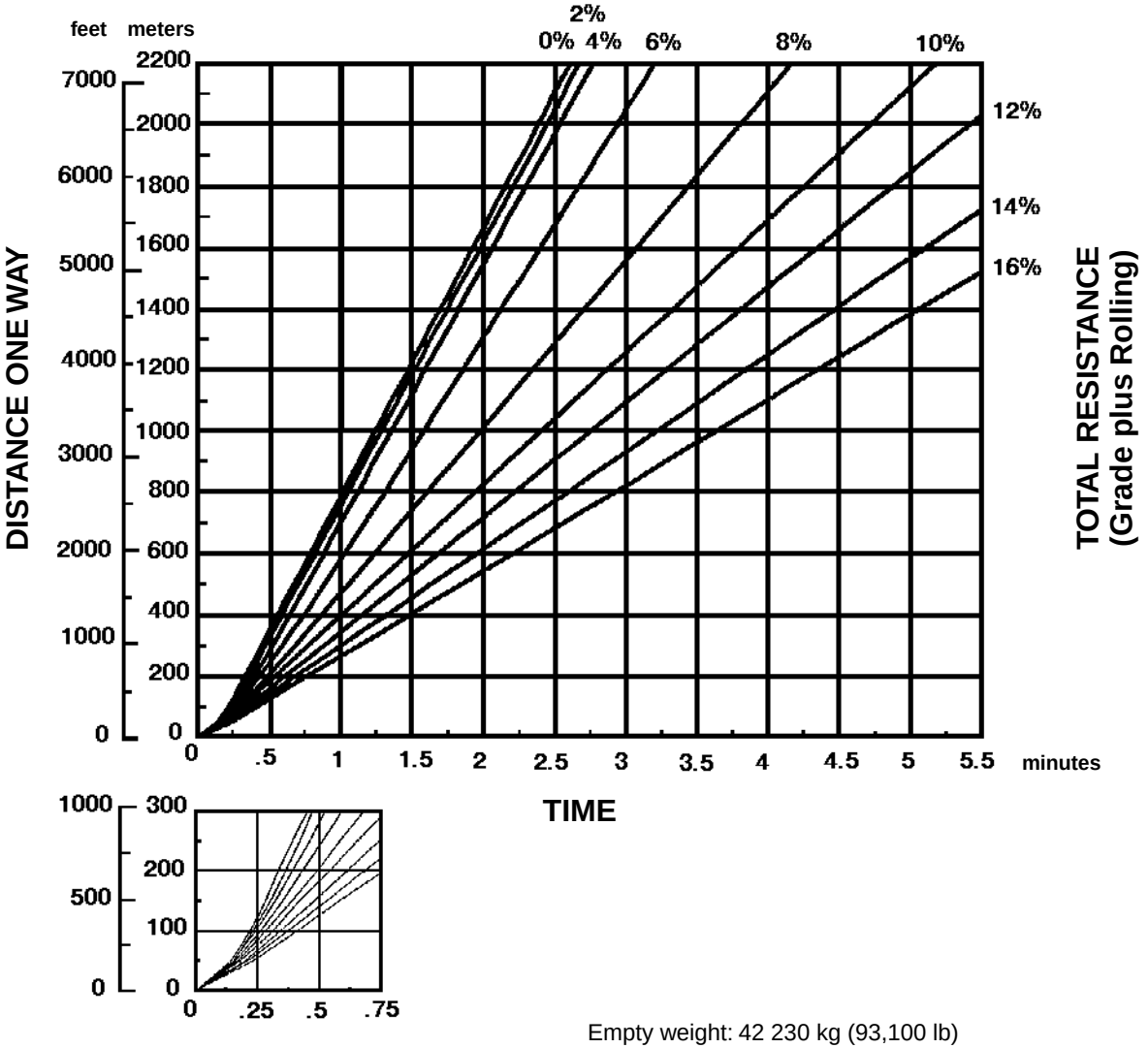
Empty weight: 36 538 kg (80,550 lb)

LOADED

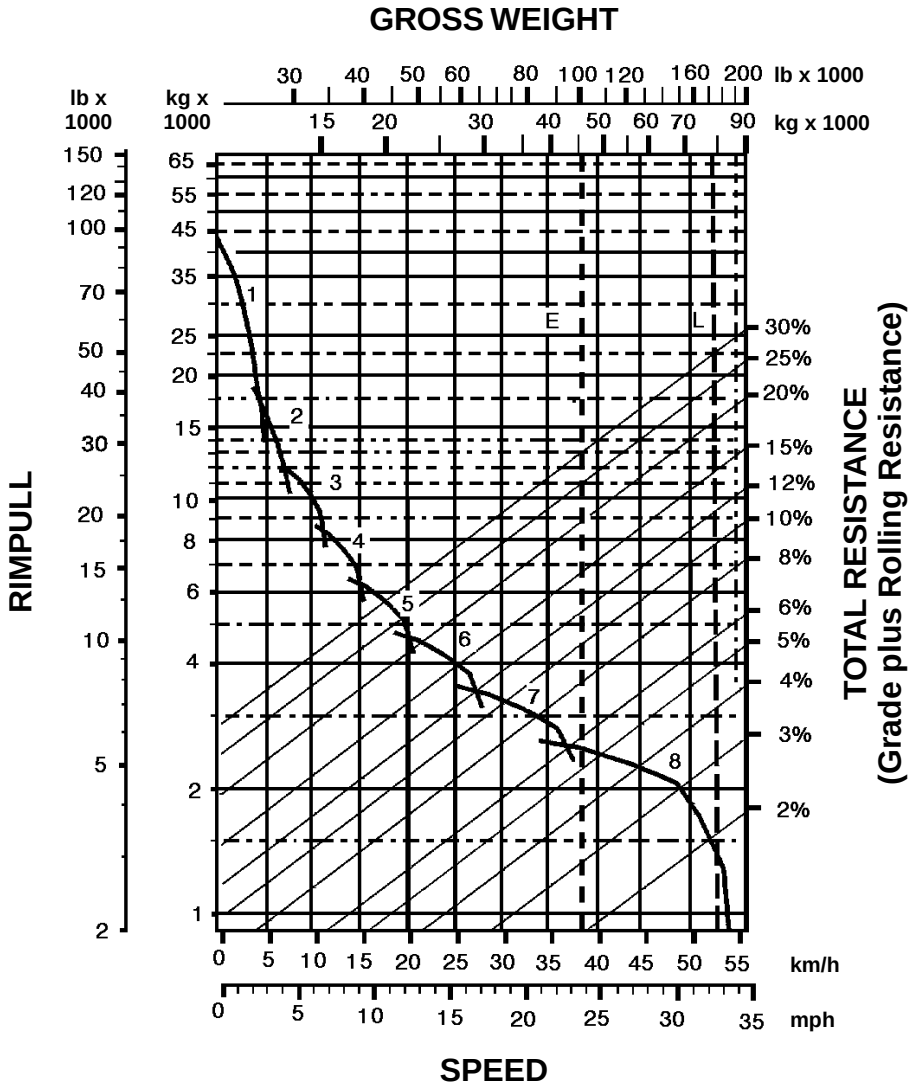


Empty weight: 42 230 kg (93,100 lb)
Payload: 21 775 kg (48,000 lb)

EMPTY



Empty weight: 42 230 kg (93,100 lb)



KEY

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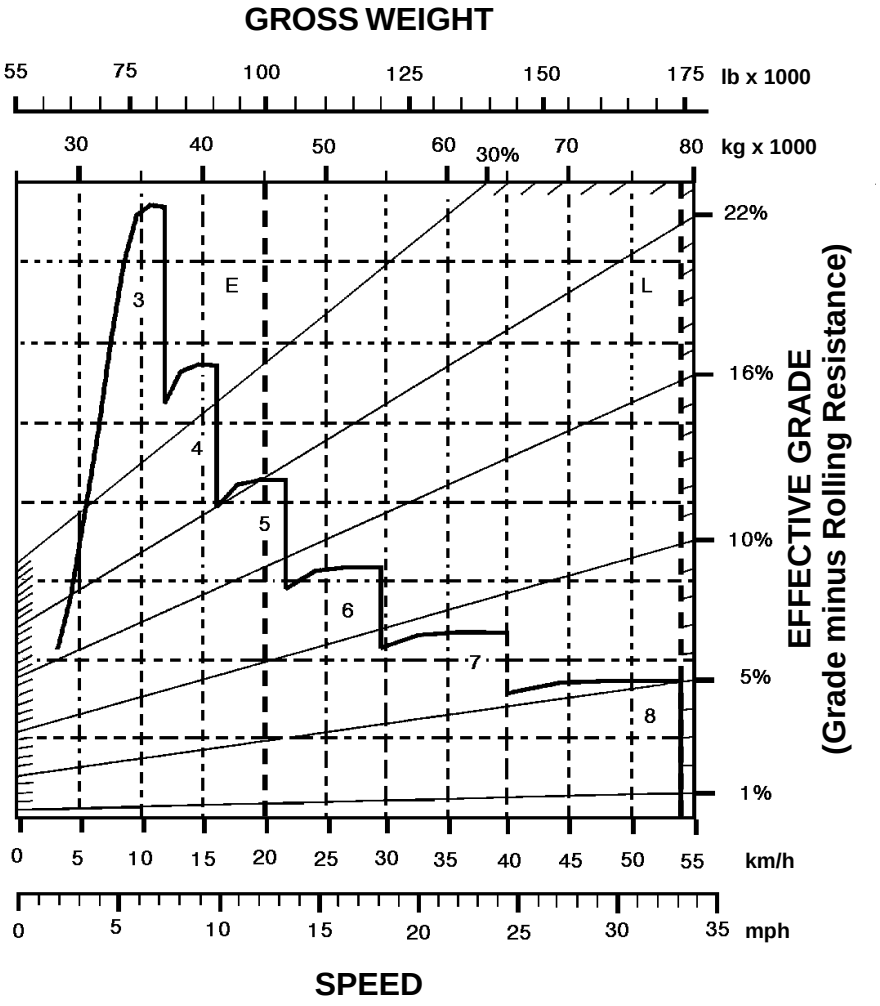
2 — 2nd Gear Torque Converter Drive
3 — 3rd Gear Direct Drive
4 — 4th Gear Direct Drive
5 — 5th Gear Direct Drive
6 — 6th Gear Direct Drive
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

E — Empty 45 400 kg (100,000 lb)
L — Loaded 79 420 kg (175,000 lb)

8



KEY

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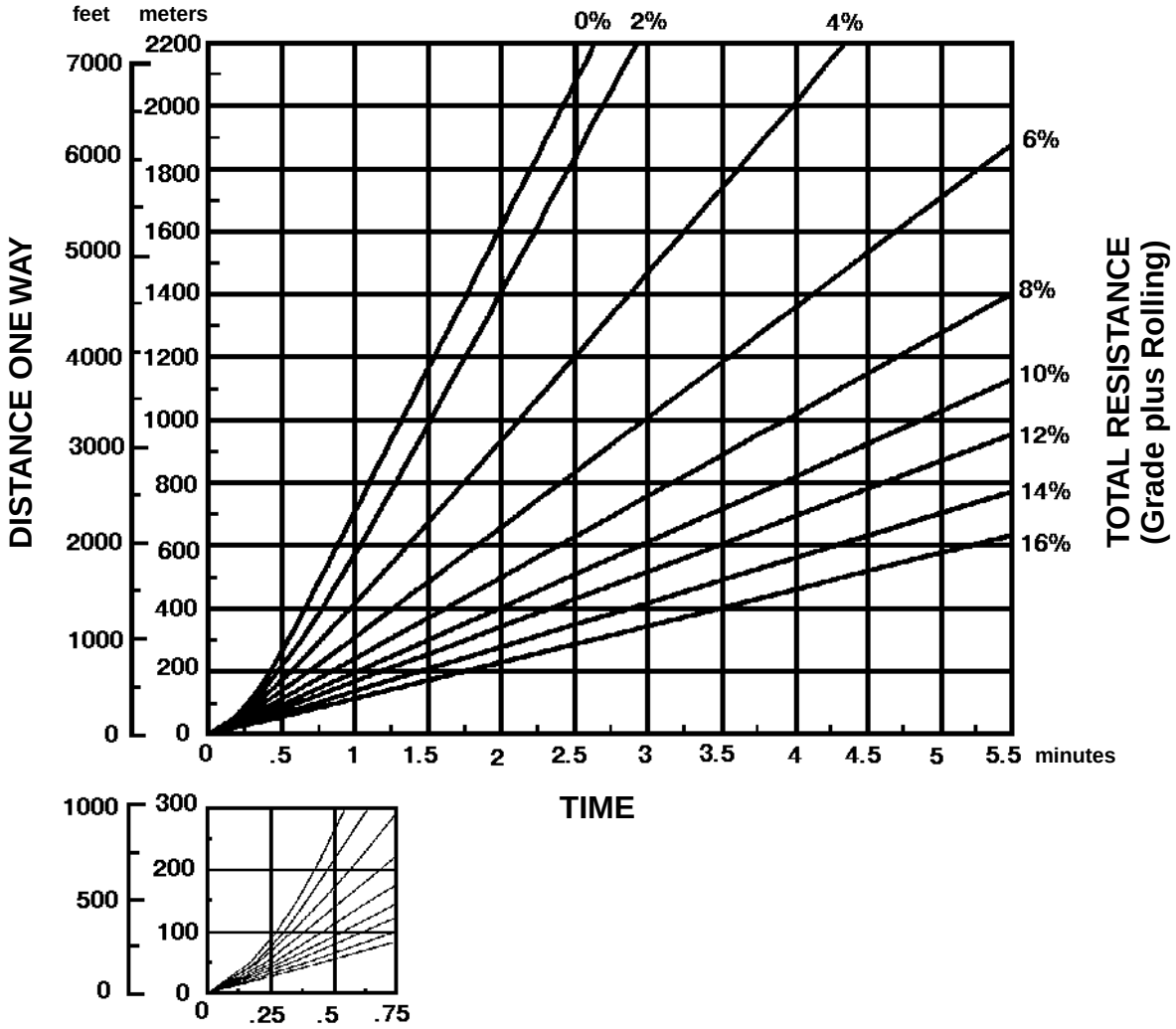
8 — 8th Gear Direct Drive

KEY

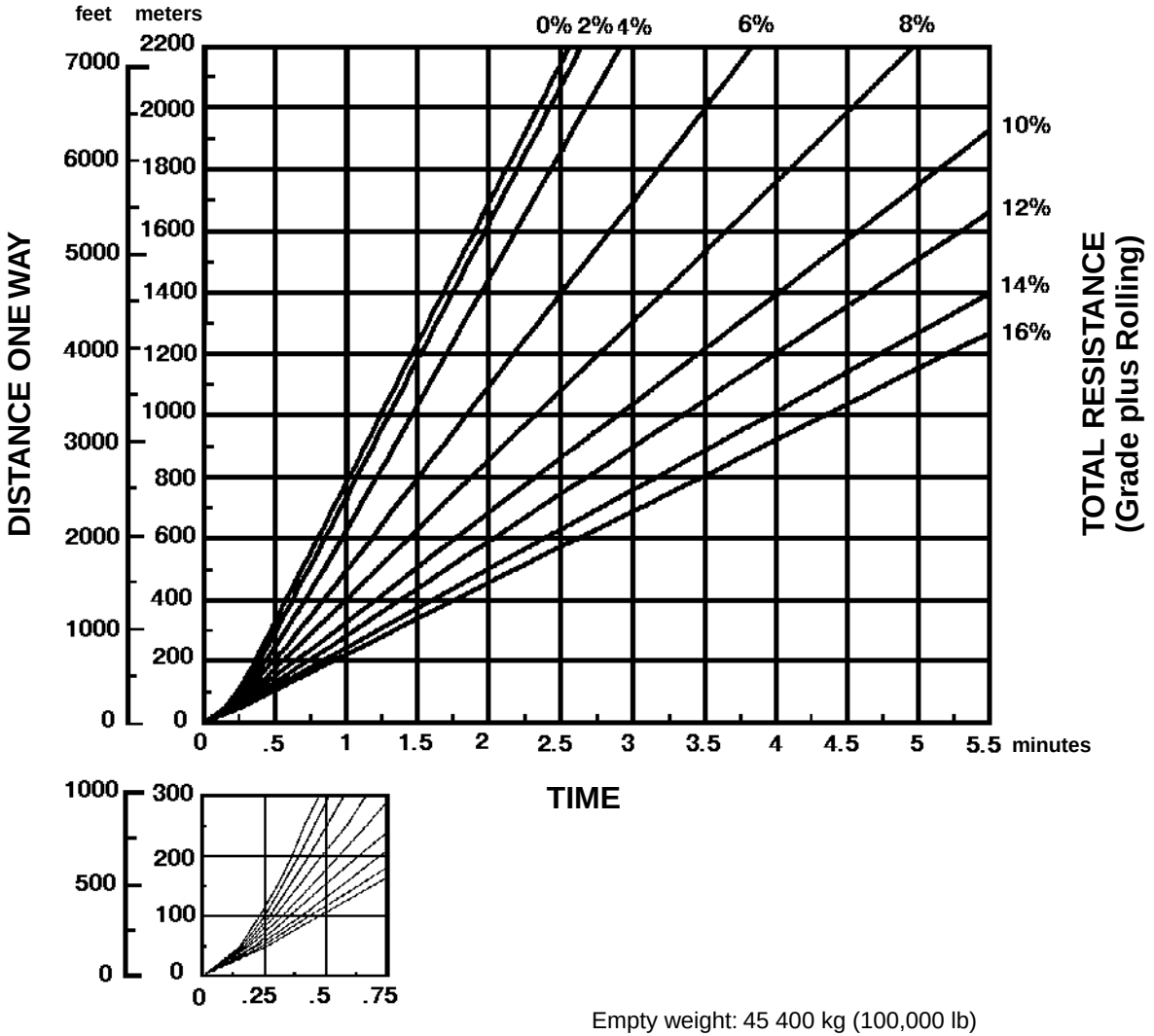
E — Empty 45 400 kg (100,000 lb)
L — Loaded 79 420 kg (175,000 lb)

LOADED



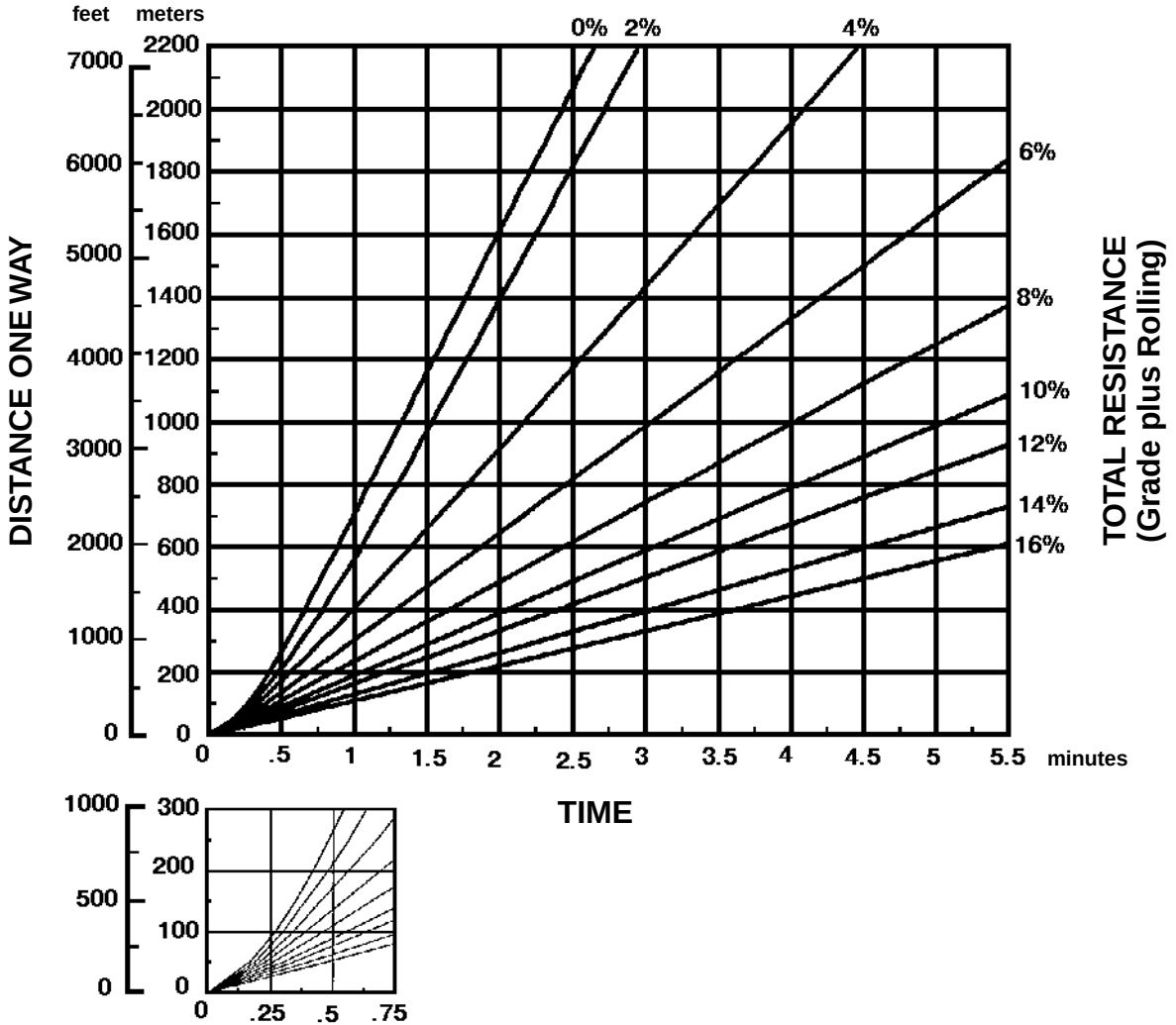
Empty weight: 45 400 kg (100,000 lb)
Payload: 34 020 kg (75,000 lb)

EMPTY



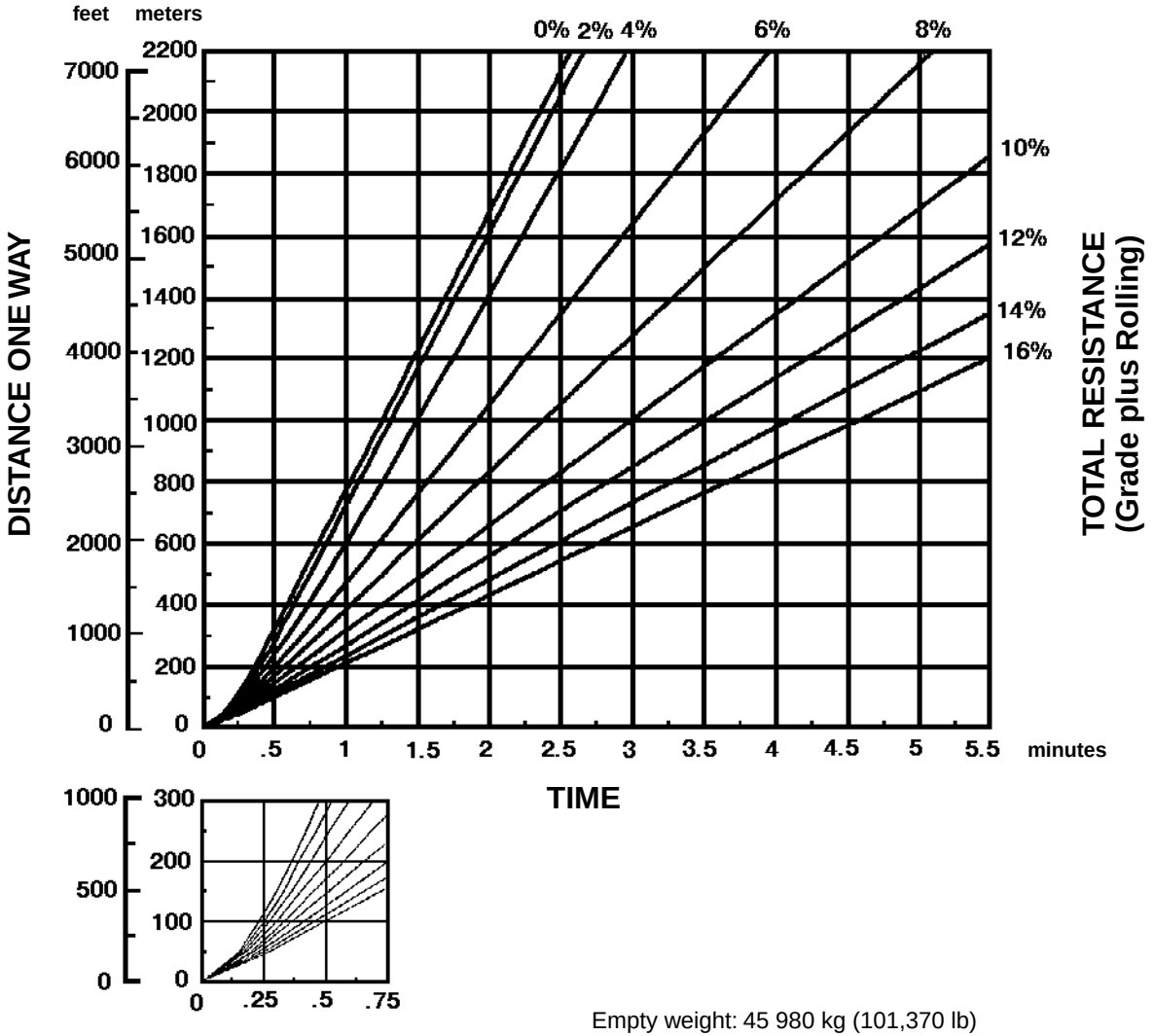
Empty weight: 45 400 kg (100,000 lb)

LOADED

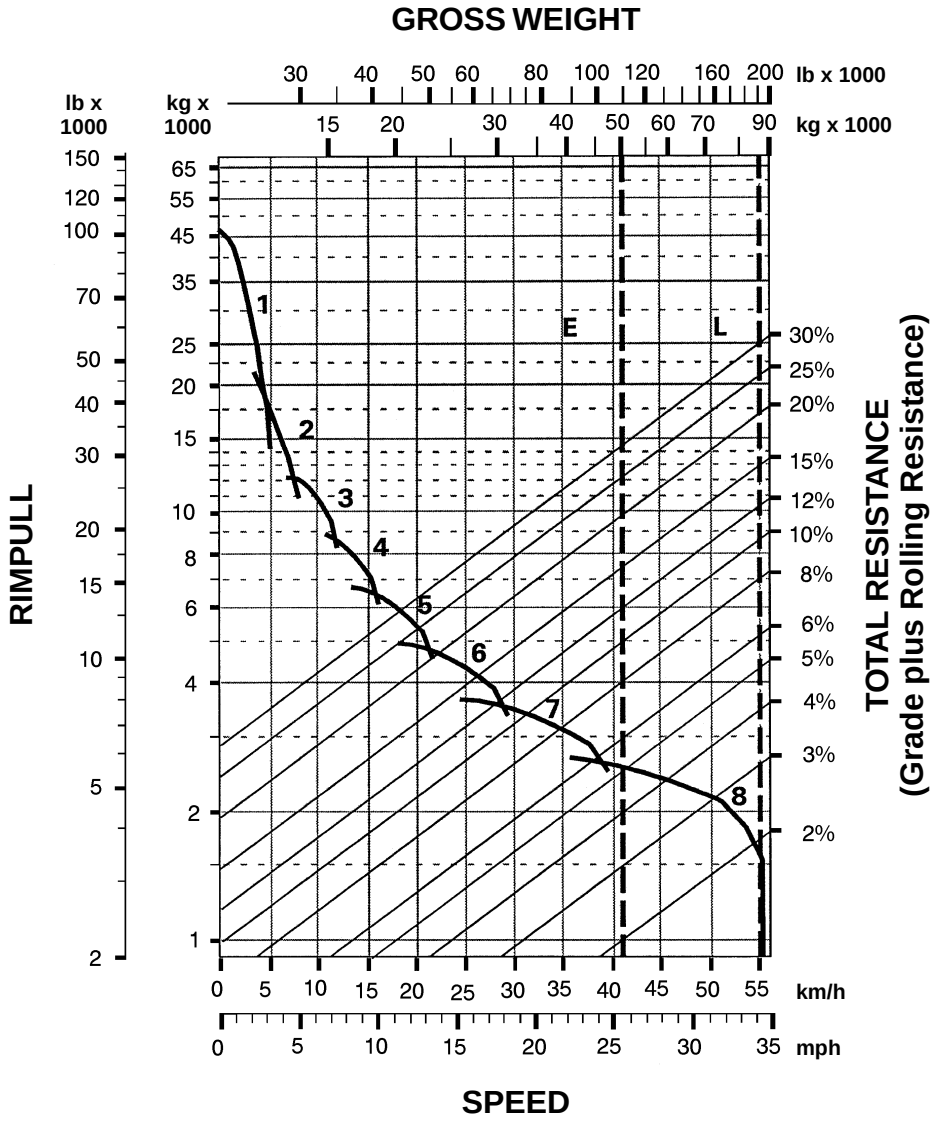


Empty weight: 45 980 kg (101,370 lb)
Payload: 34 020 kg (75,000 lb)

EMPTY



Empty weight: 45 980 kg (101,370 lb)

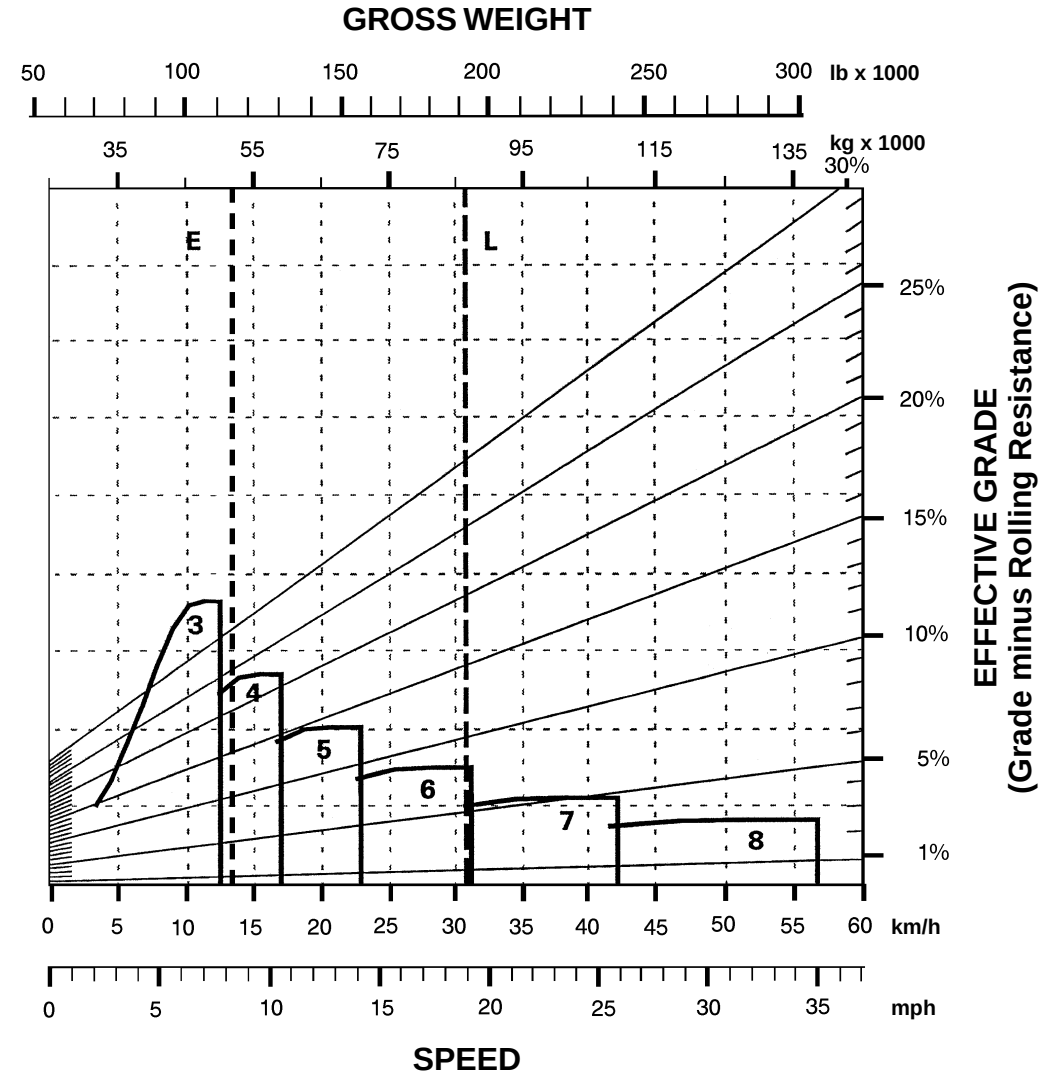


KEY

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
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

E — Empty 51 100 kg (112,670 lb)
L — Loaded 88 300 kg (194,670 lb)



KEY

3 — 3rd Gear Direct Drive
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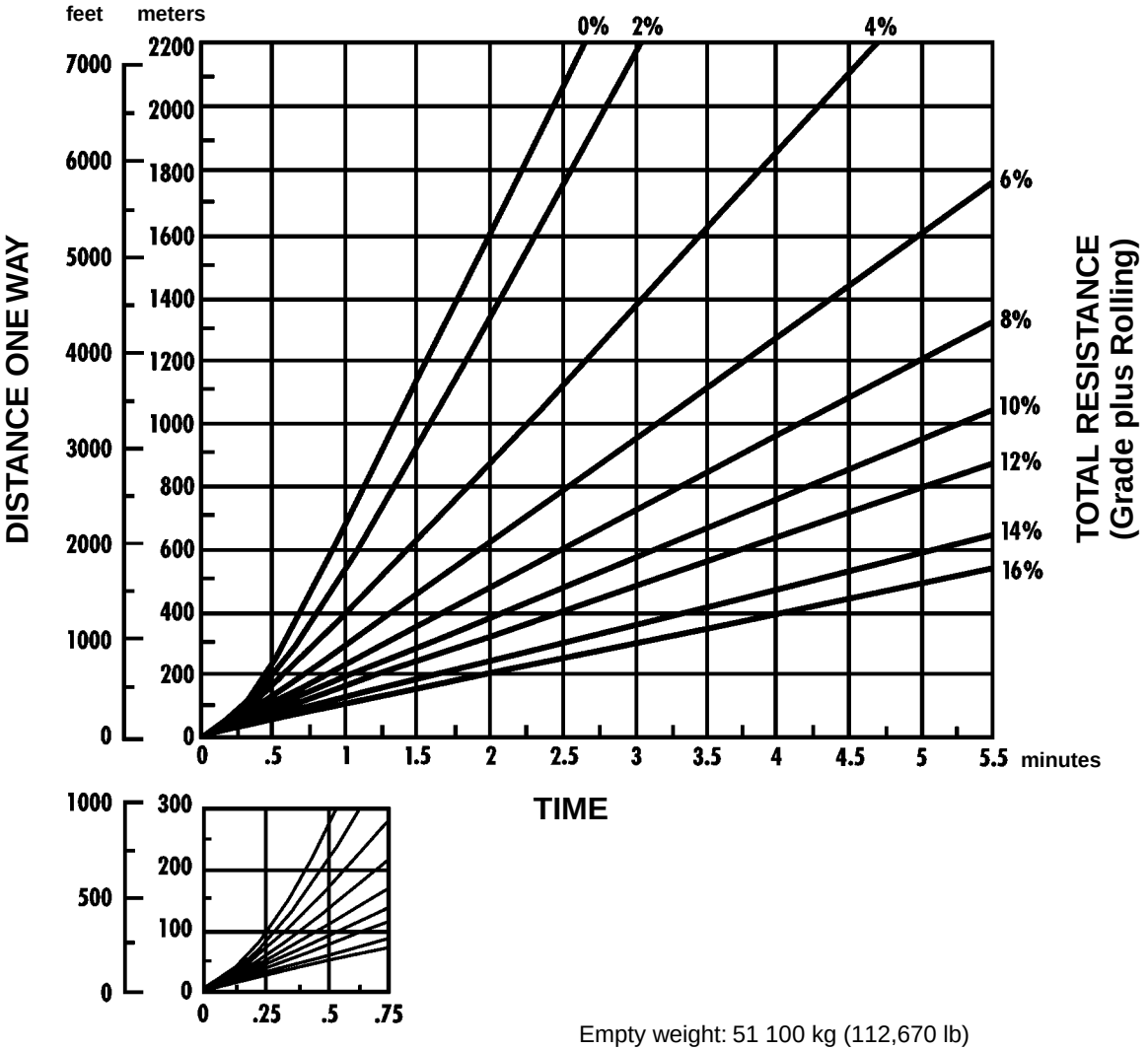
6 — 6th Gear Direct Drive
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

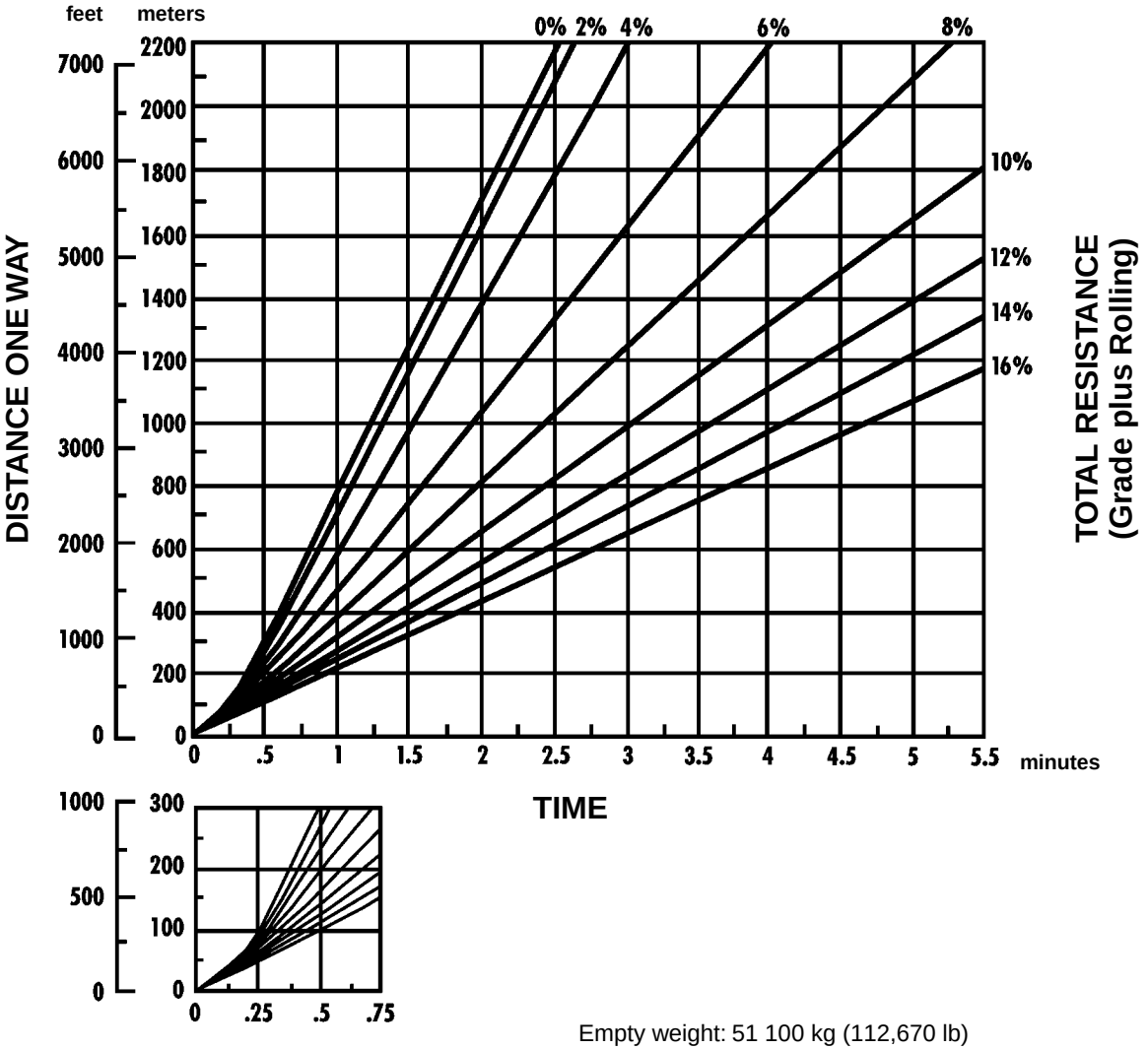
E — Empty 51 100 kg (112,670 lb)
L — Loaded 88 300 kg (194,670 lb)

LOADED

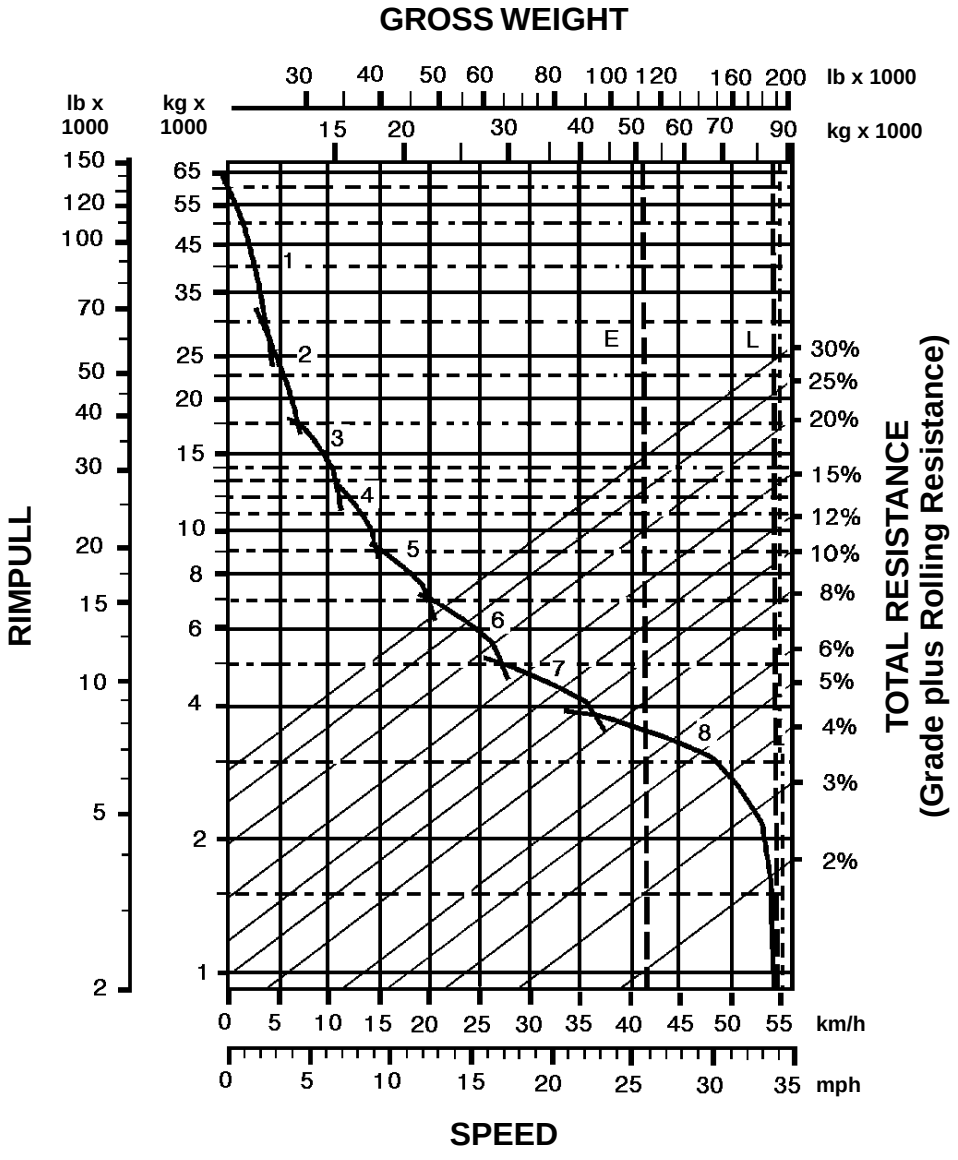


Empty weight: 51 100 kg (112,670 lb)
Payload: 37 200 kg (82,000 lb)

EMPTY



Empty weight: 51 100 kg (112,670 lb)



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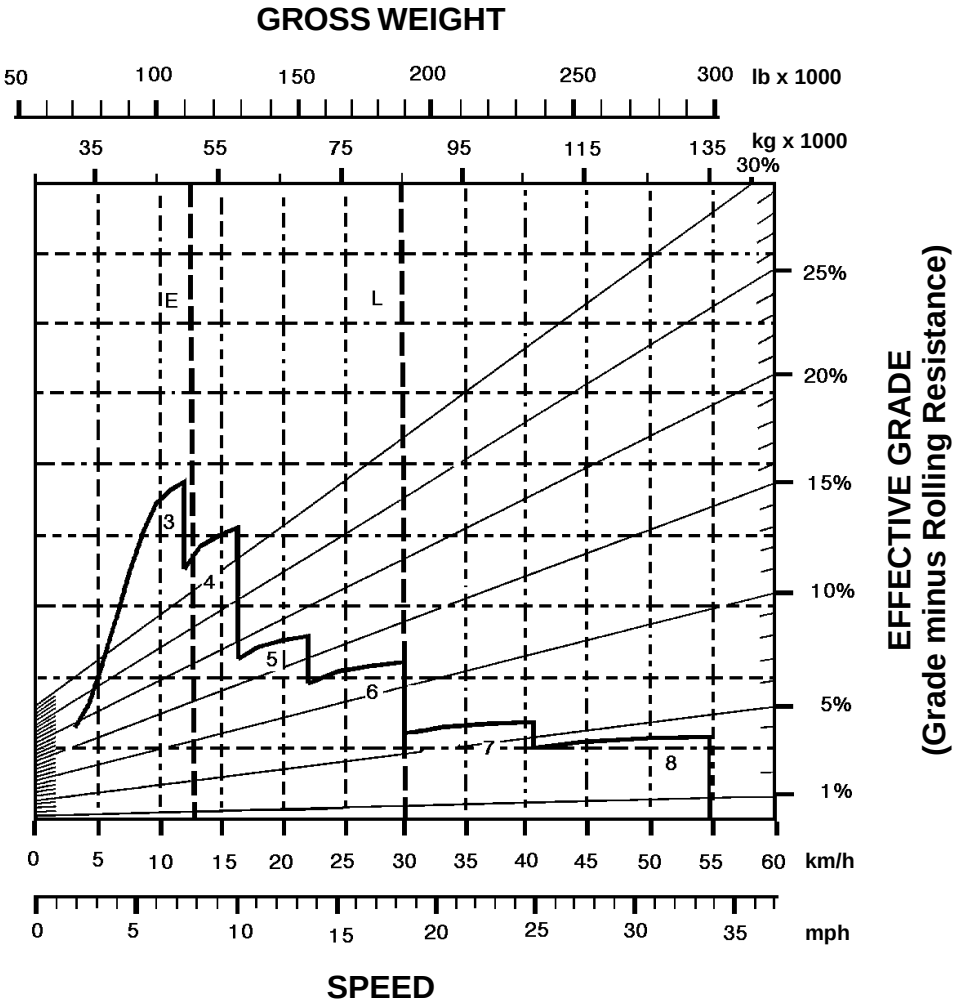
5 — 5th Gear Direct Drive
6 — 6th Gear Direct Drive
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

E — Empty 51 000 kg (112,320 lb)
L — Loaded 85 020 kg (187,320 lb)

8



KEY

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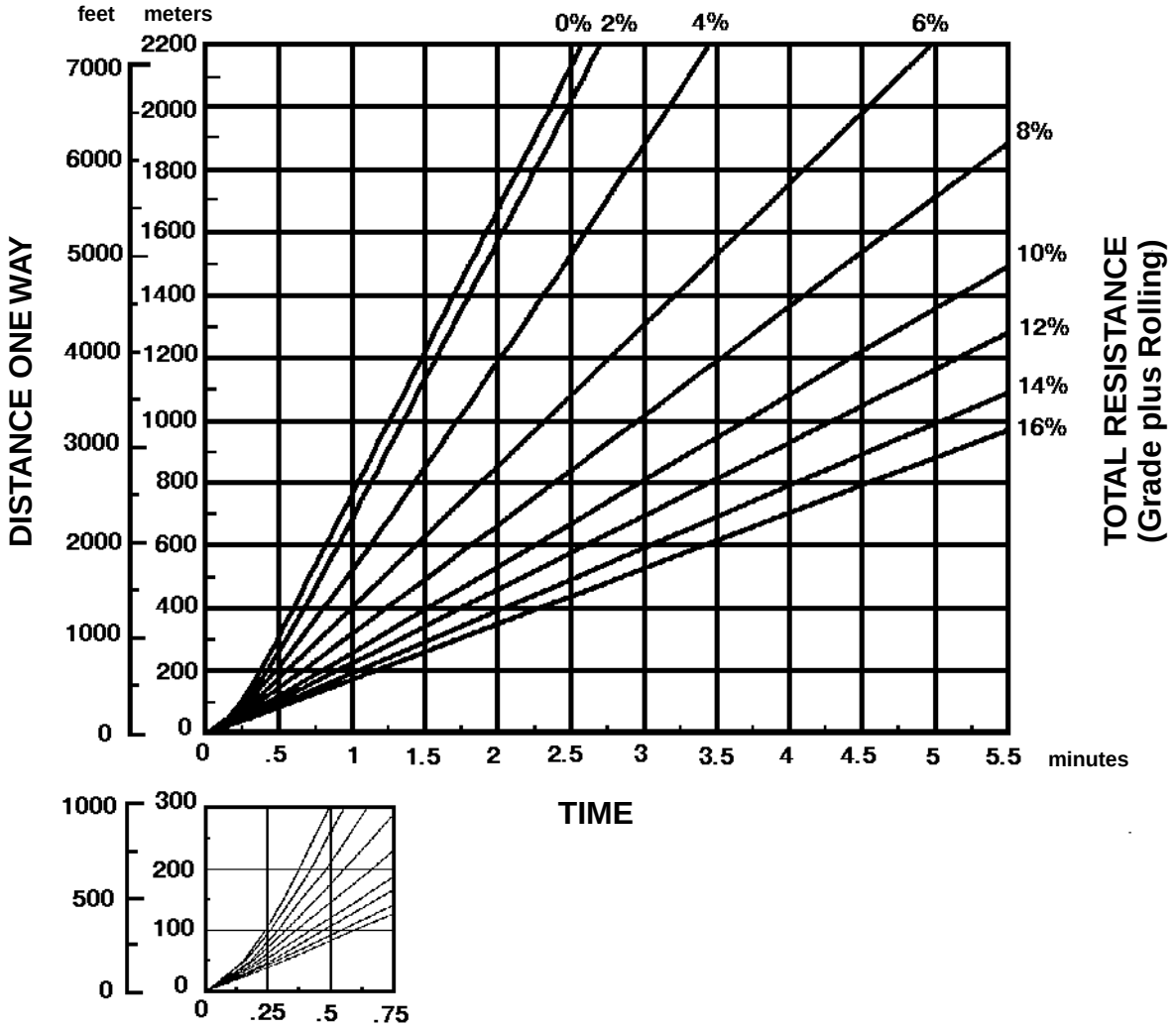
6 — 6th Gear Direct Drive
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

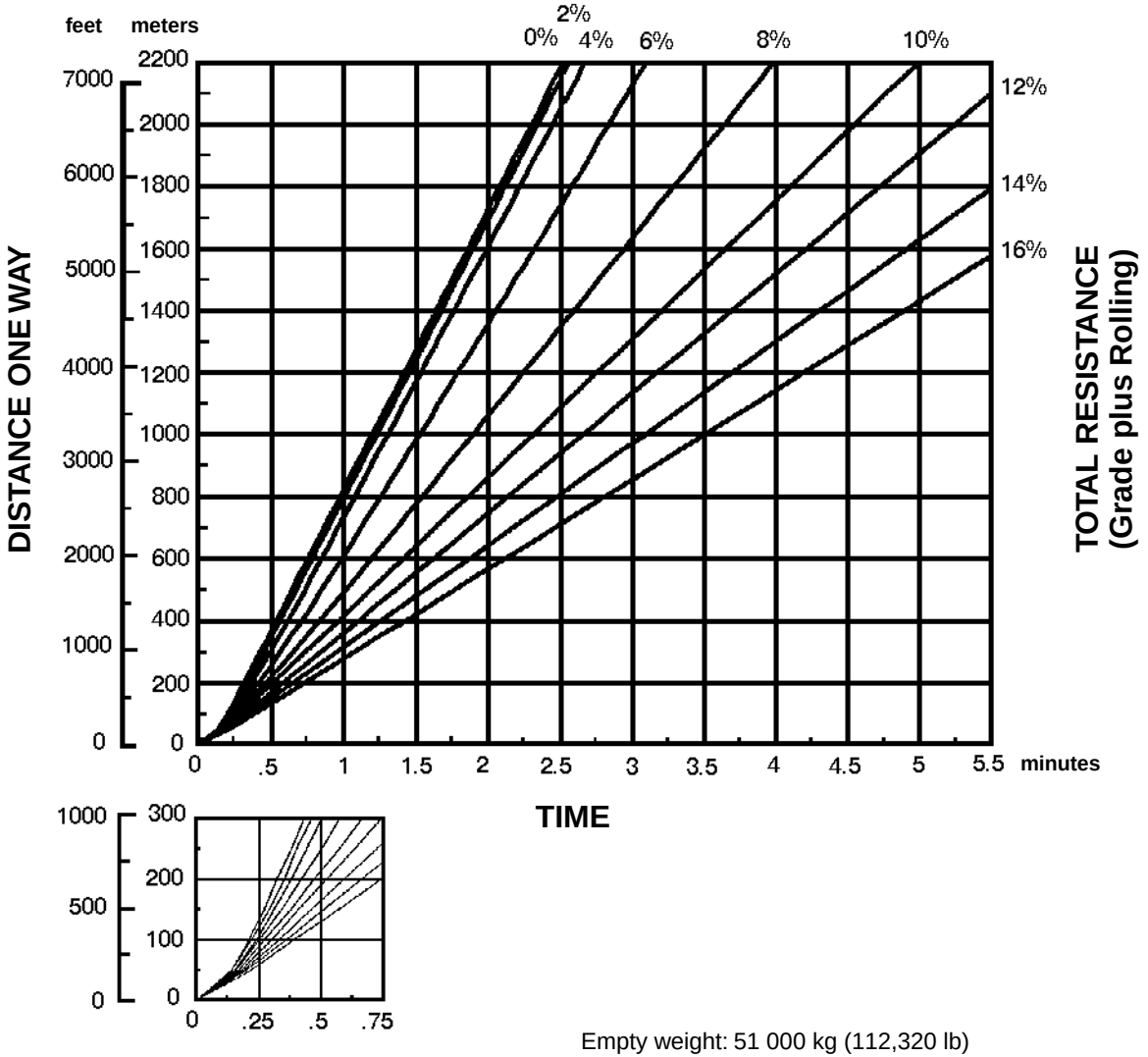
E — Empty 51 000 kg (112,320 lb)
L — Loaded 85 020 kg (187,320 lb)

LOADED



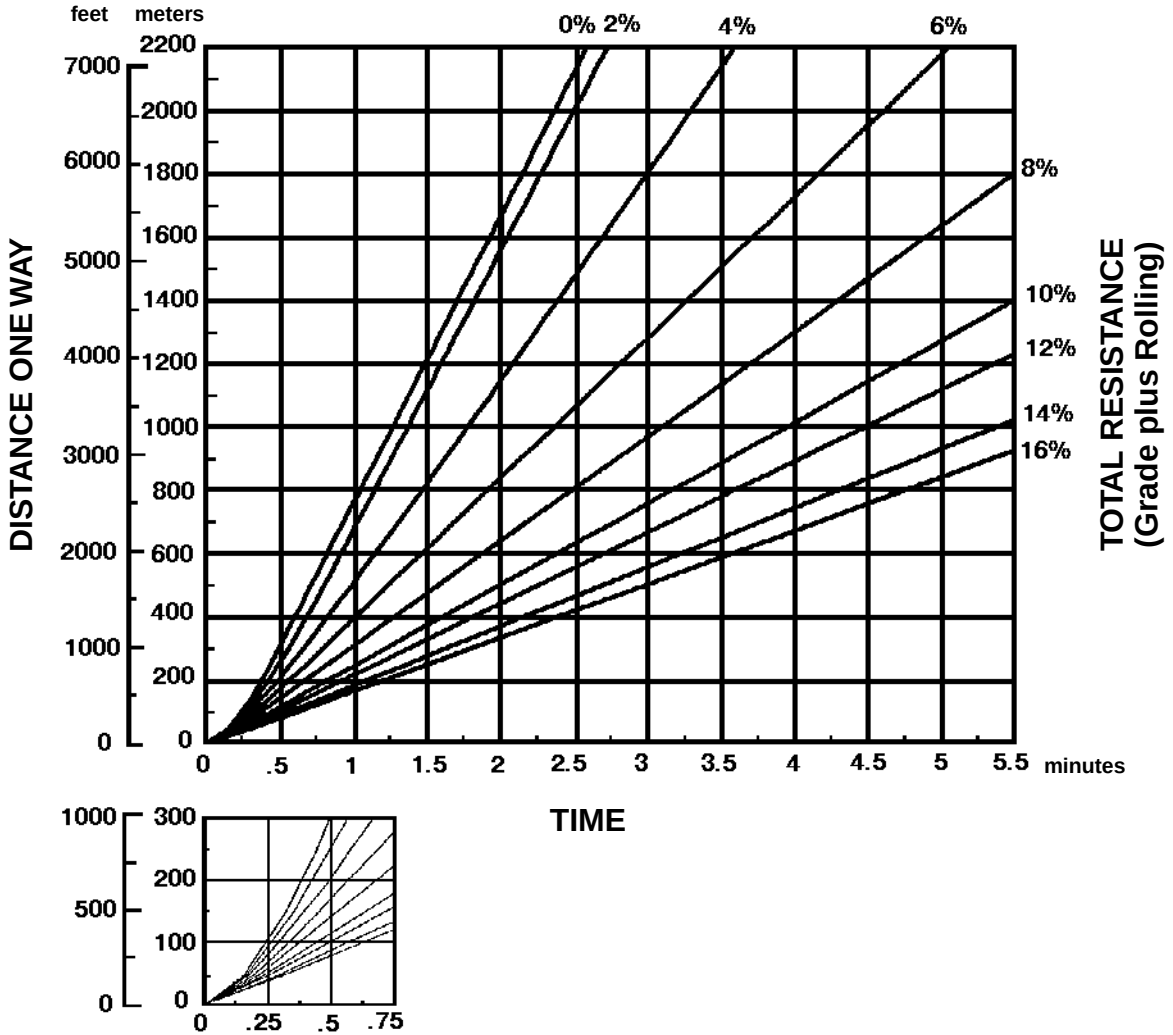
Empty weight: 51 000 kg (112,320 lb)
Payload: 34 020 kg (75,000 lb)

EMPTY



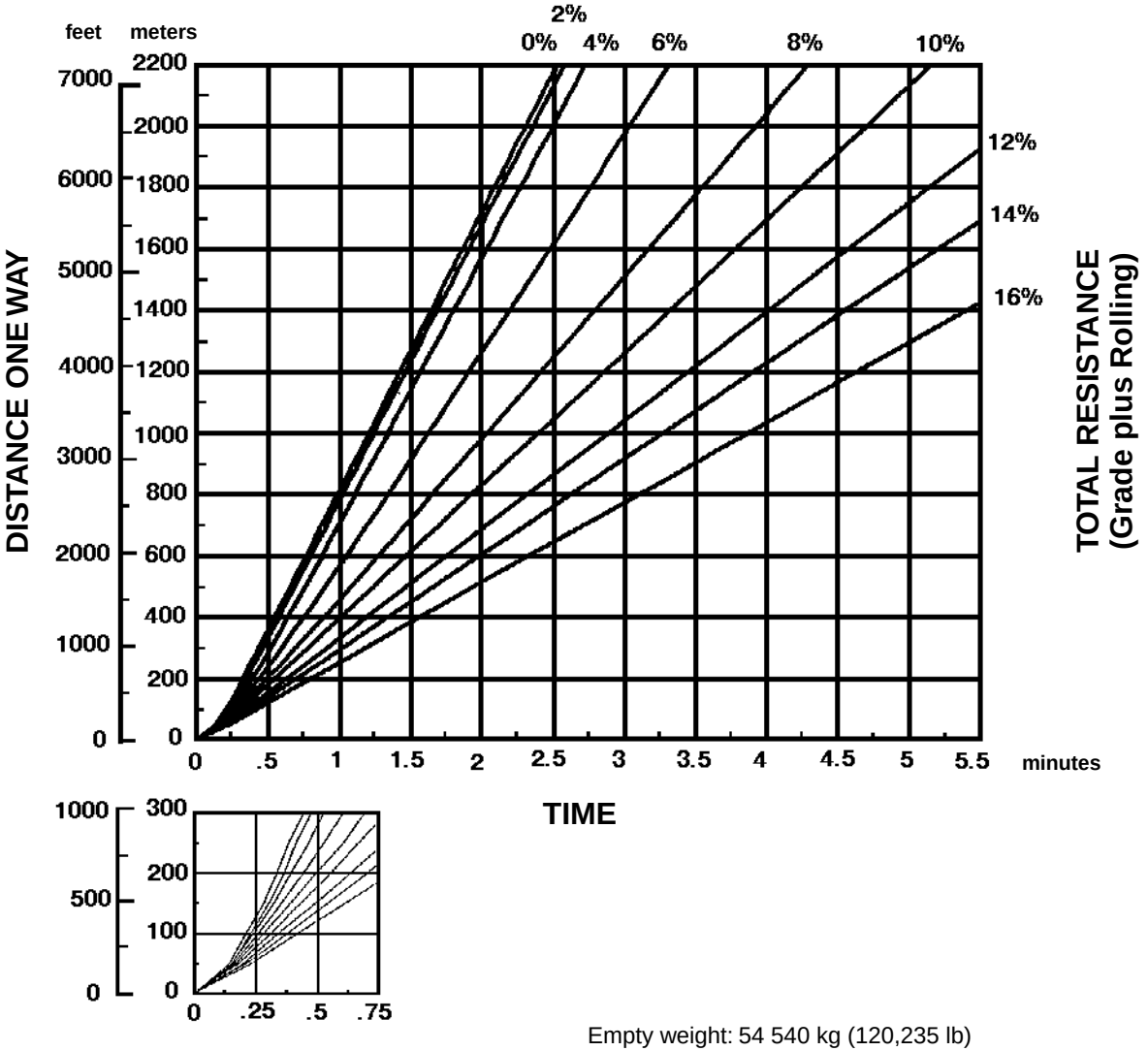
Empty weight: 51 000 kg (112,320 lb)

LOADED

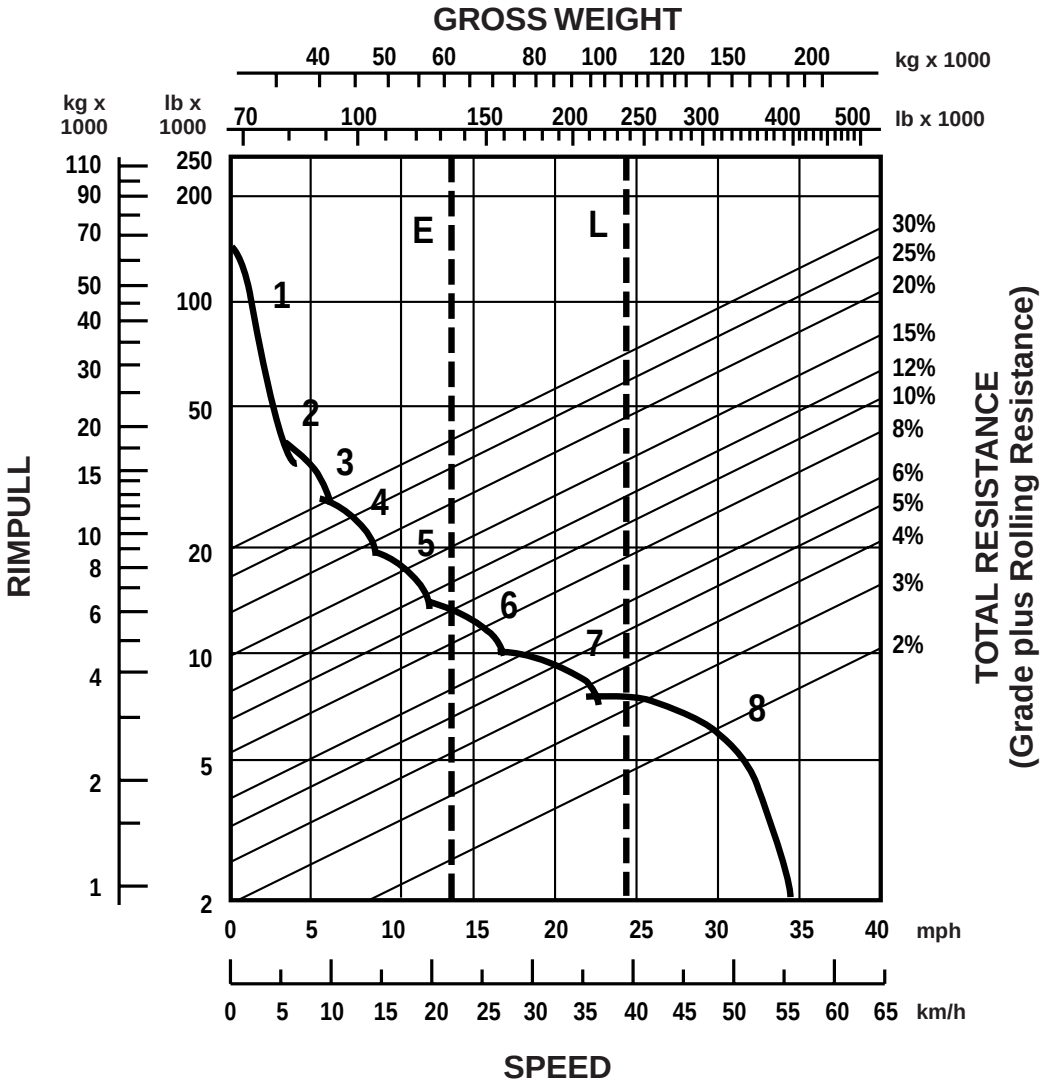


Empty weight: 54 540 kg (120,235 lb)
Payload: 34 020 kg (75,000 lb)

EMPTY



Empty weight: 54 540 kg (120,235 lb)



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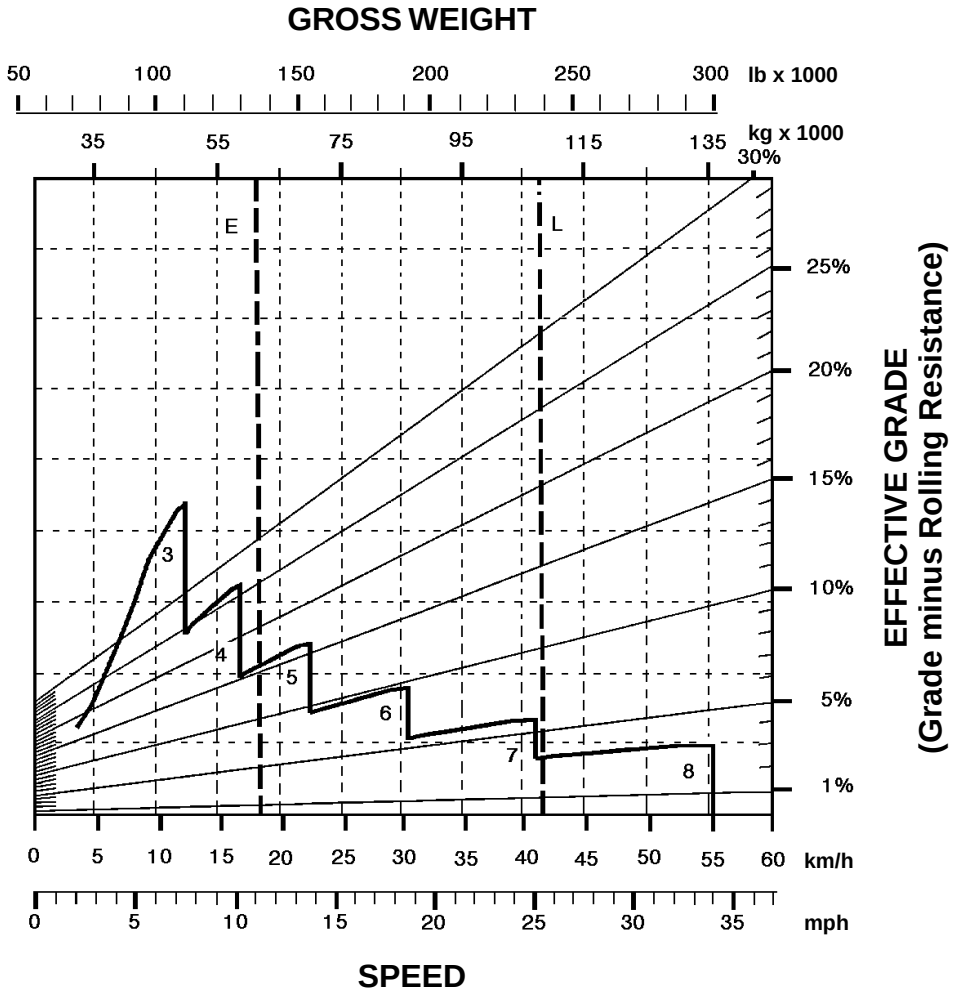
3 — 3rd Gear Direct Drive
4 — 4th Gear Direct Drive
5 — 5th Gear Direct Drive
6 — 6th Gear Direct Drive
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

E — Empty 61 120 kg (134,760 lb)
L — Loaded 108 295 kg (238,760 lb)



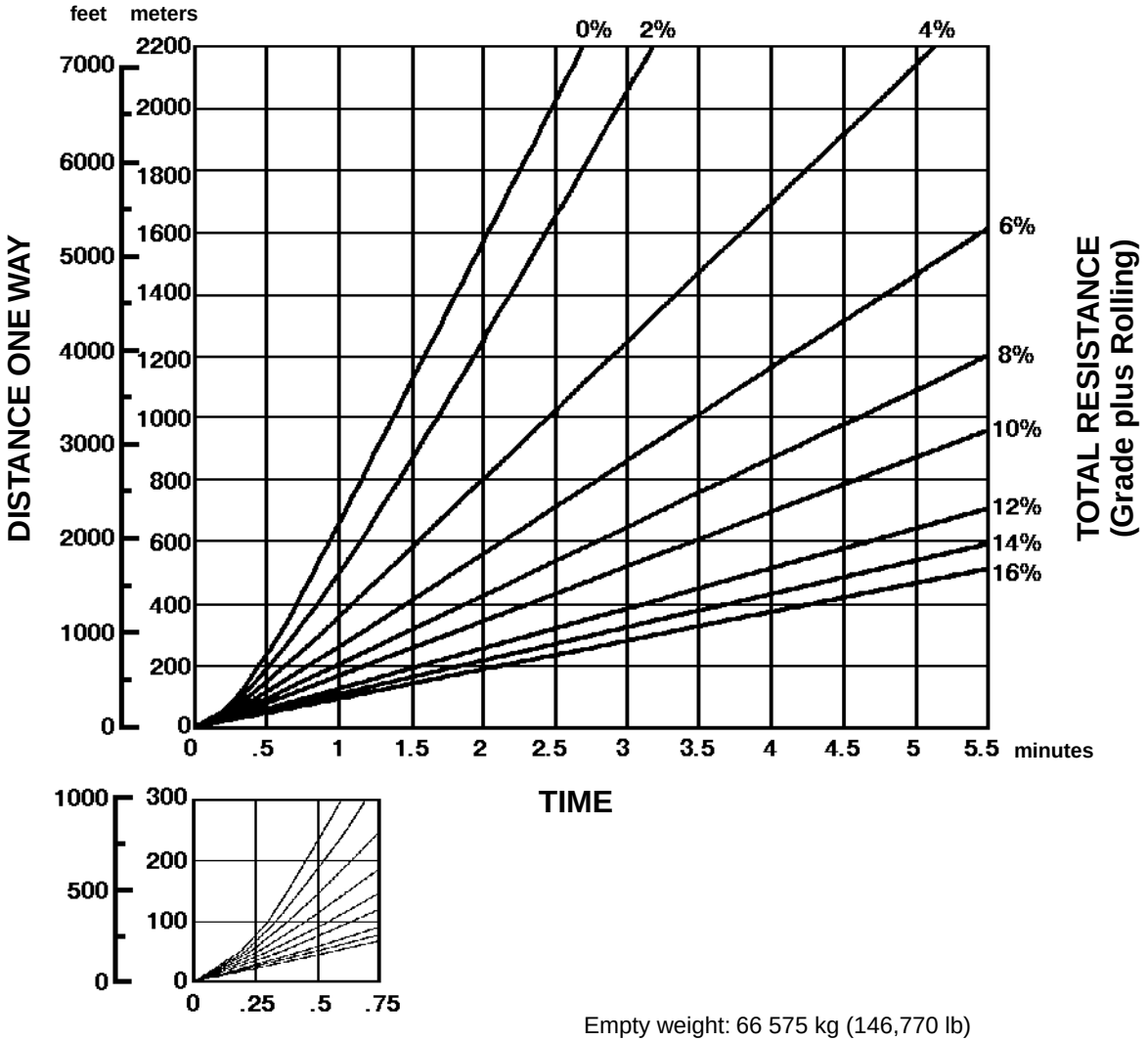
KEY

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 61 120 kg (134,760 lb)
L — Loaded 108 295 kg (238,760 lb)

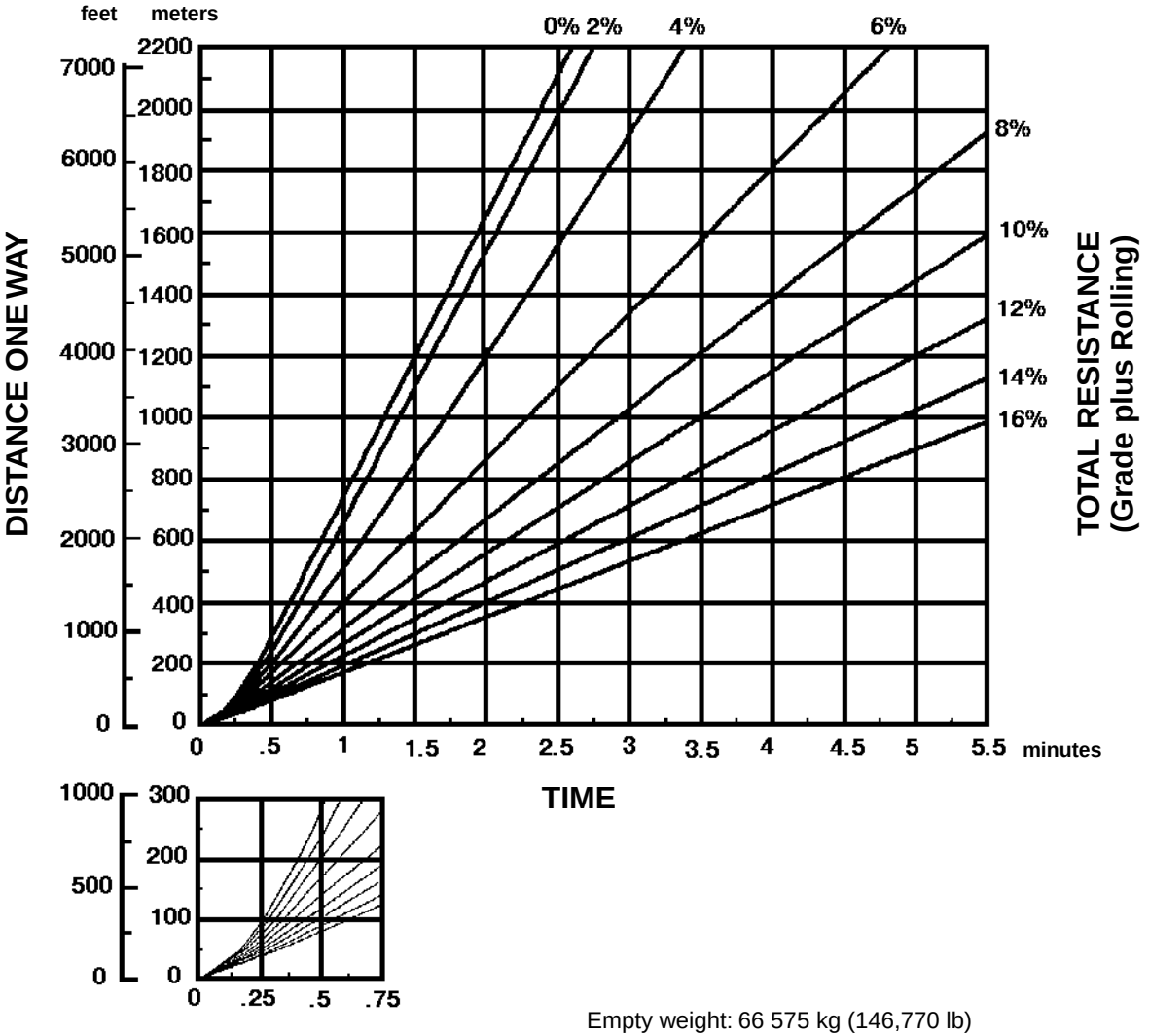
LOADED



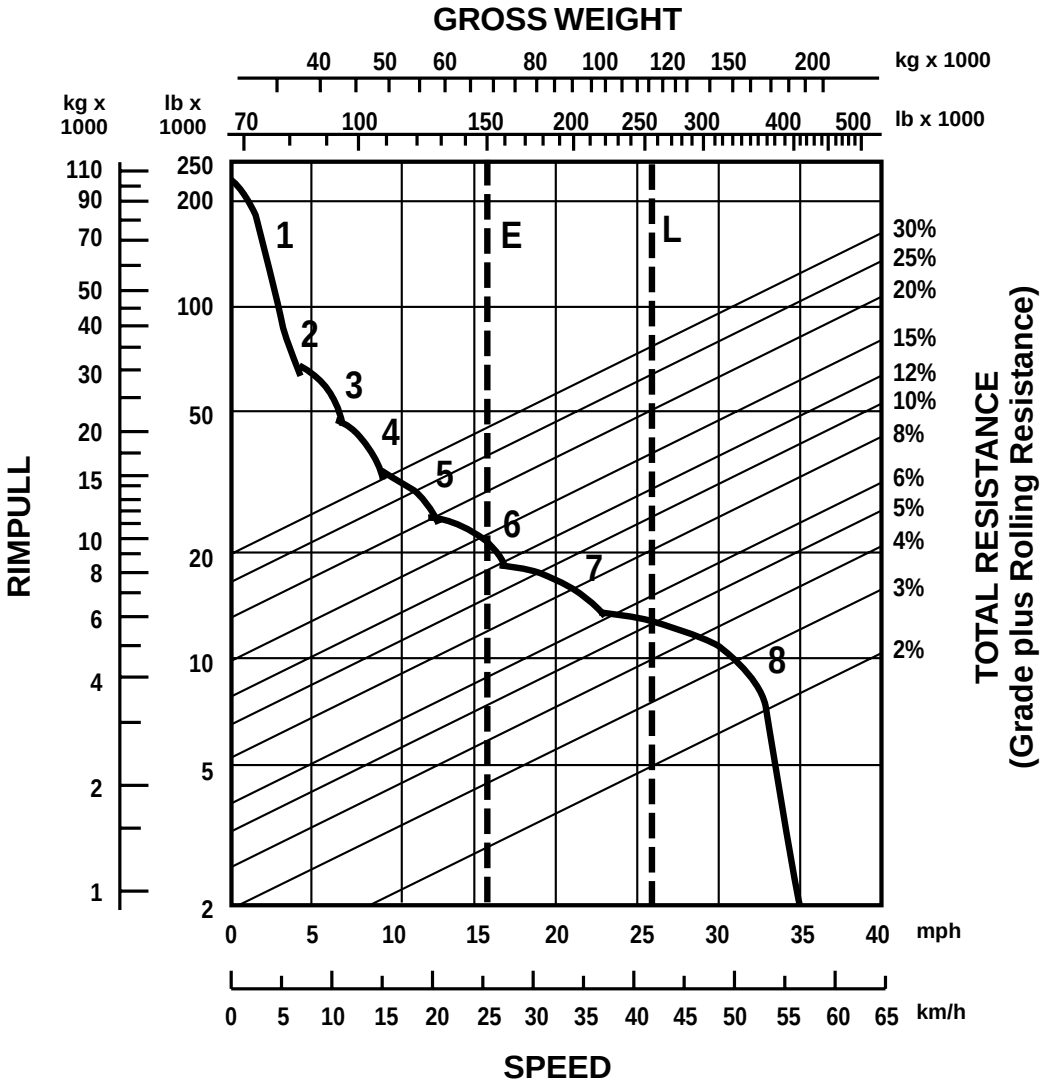
Empty weight: 66 575 kg (146,770 lb)
Payload: 47 175 kg (104,000 lb)

8

EMPTY



Empty weight: 66 575 kg (146,770 lb)



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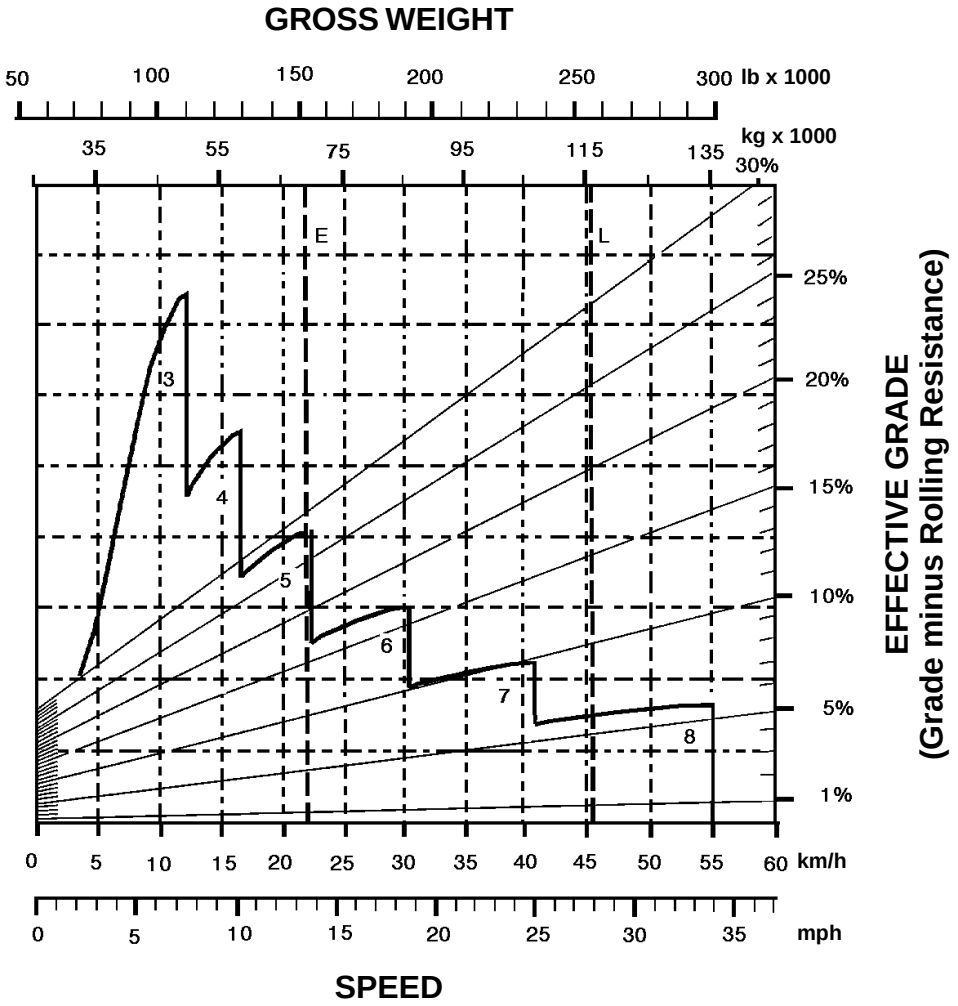
3 — 3rd Gear Direct Drive
4 — 4th Gear Direct Drive
5 — 5th Gear Direct Drive
6 — 6th Gear Direct Drive
7 — 7th Gear Direct Drive
8 — 8th Gear Direct Drive

KEY

E — Empty 69 080 kg (152,290 lb)
L — Loaded 116 250 kg (256,290 lb)



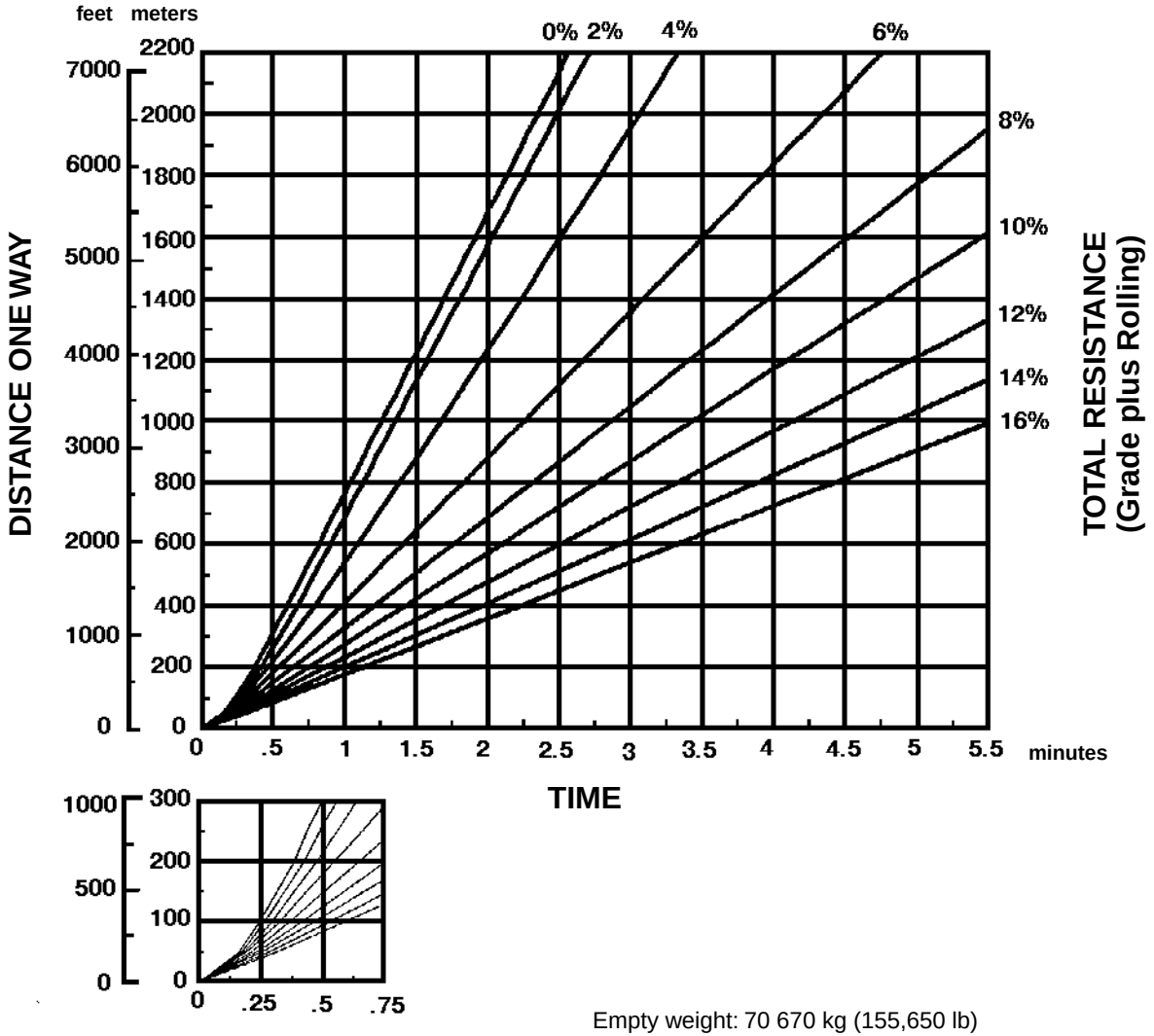
KEY

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

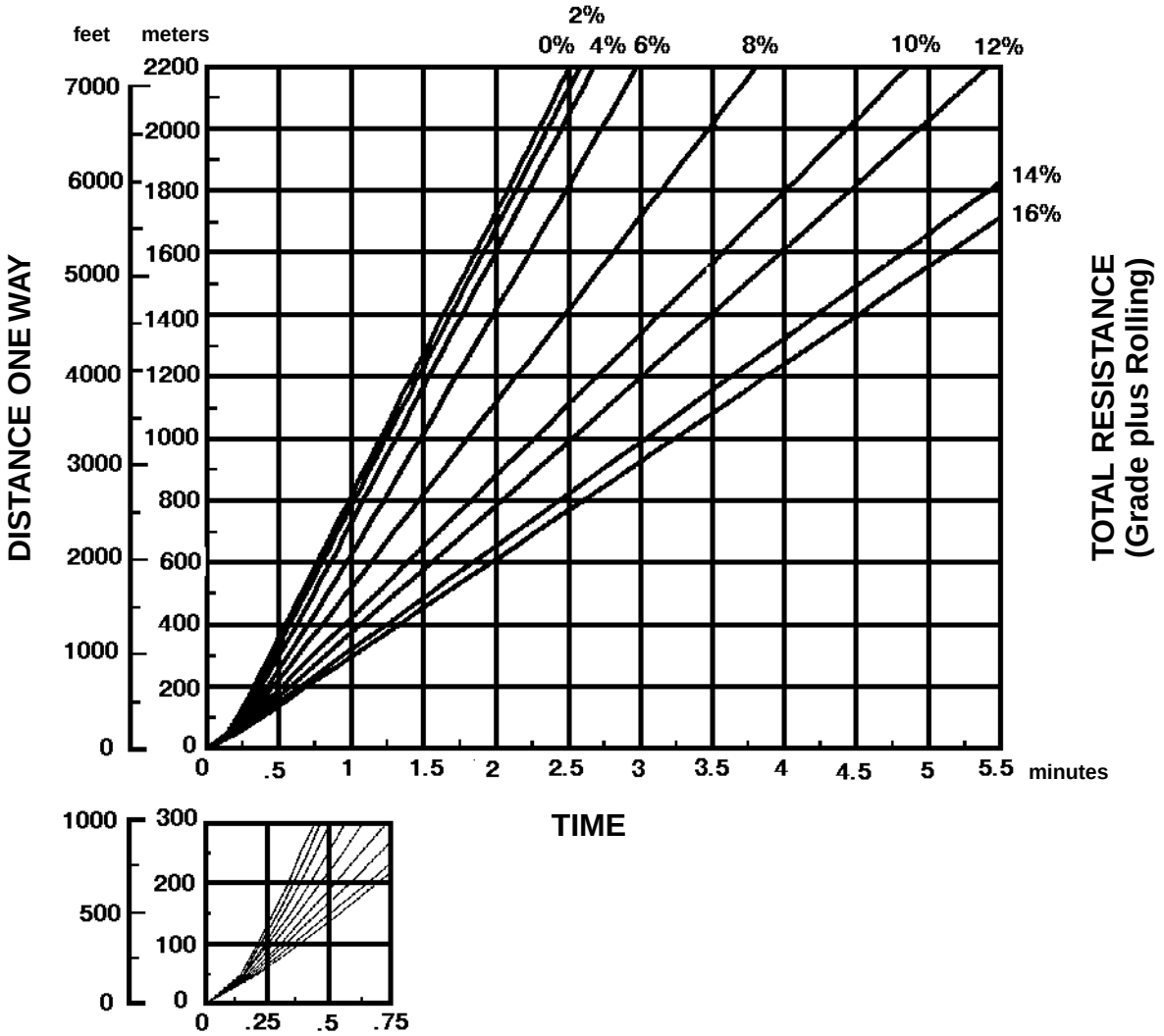
E — Empty 70 670 kg (155,650 lb)
L — Loaded 117 935 kg (259,650 lb)

LOADED



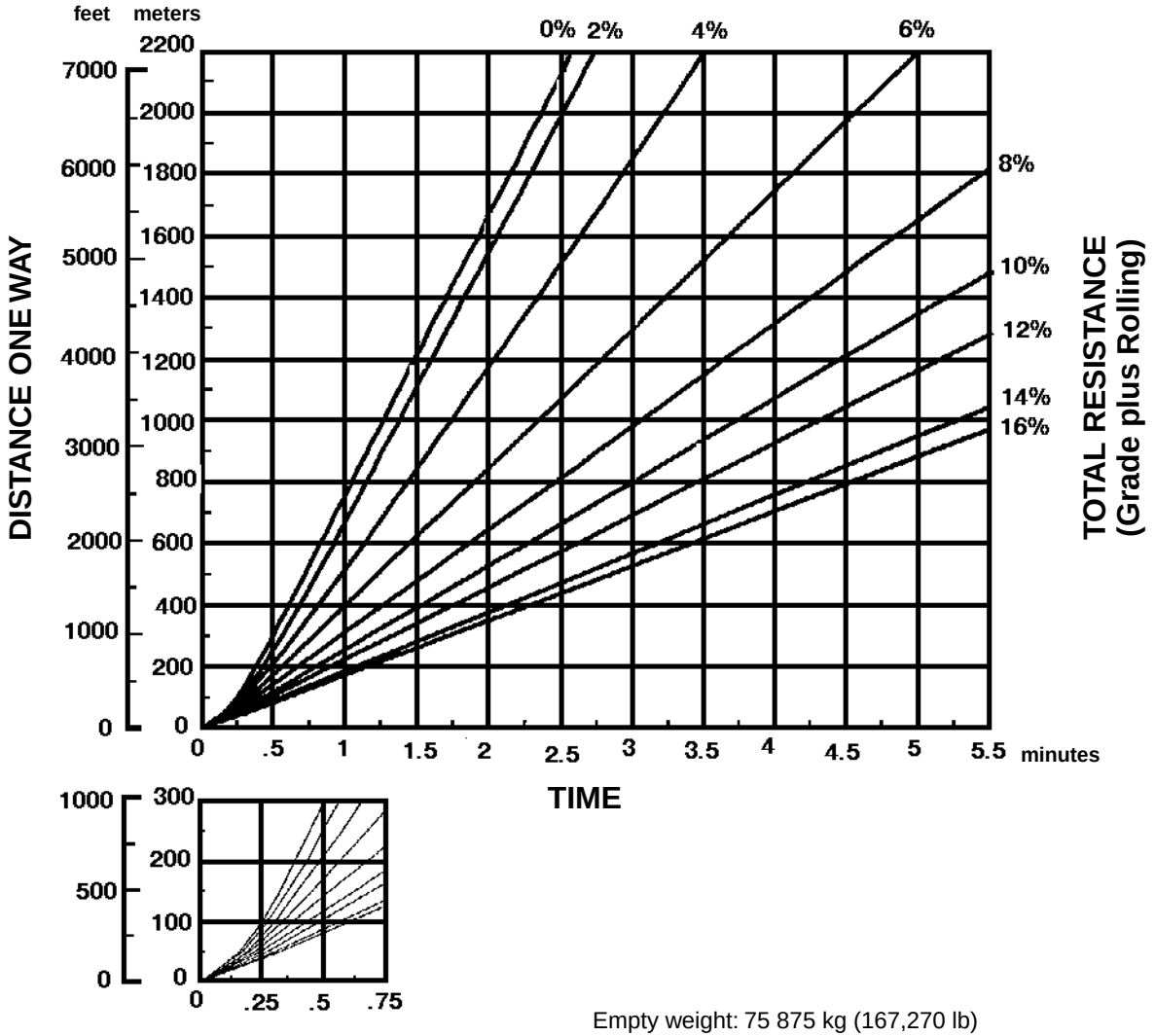
Empty weight: 70 670 kg (155,650 lb)
Payload: 47 175 kg (104,000 lb)

EMPTY



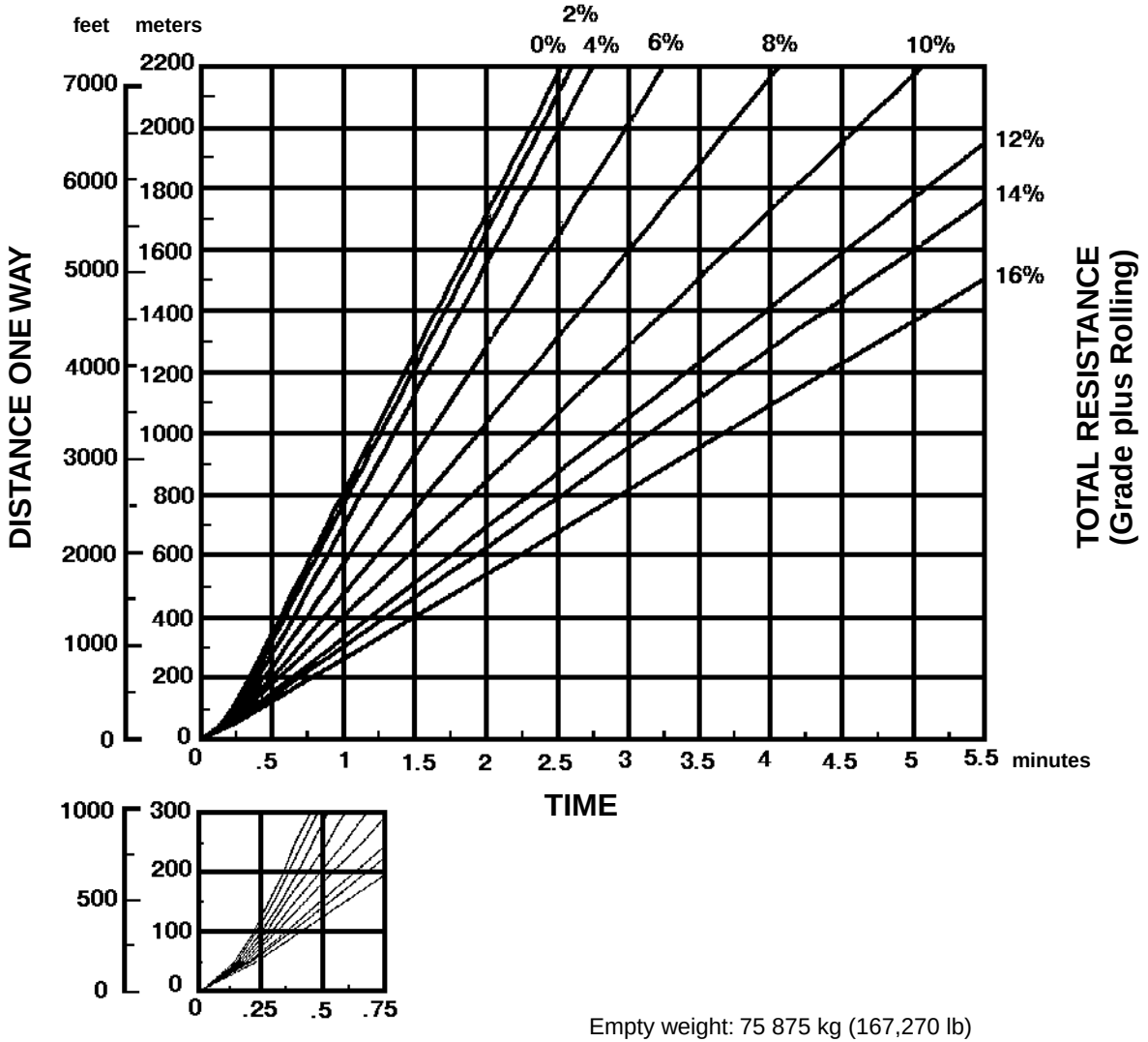
Empty weight: 70 670 kg (155,650 lb)

LOADED



Empty weight: 75 875 kg (167,270 lb)
Payload: 47 175 kg (104,000 lb)

EMPTY

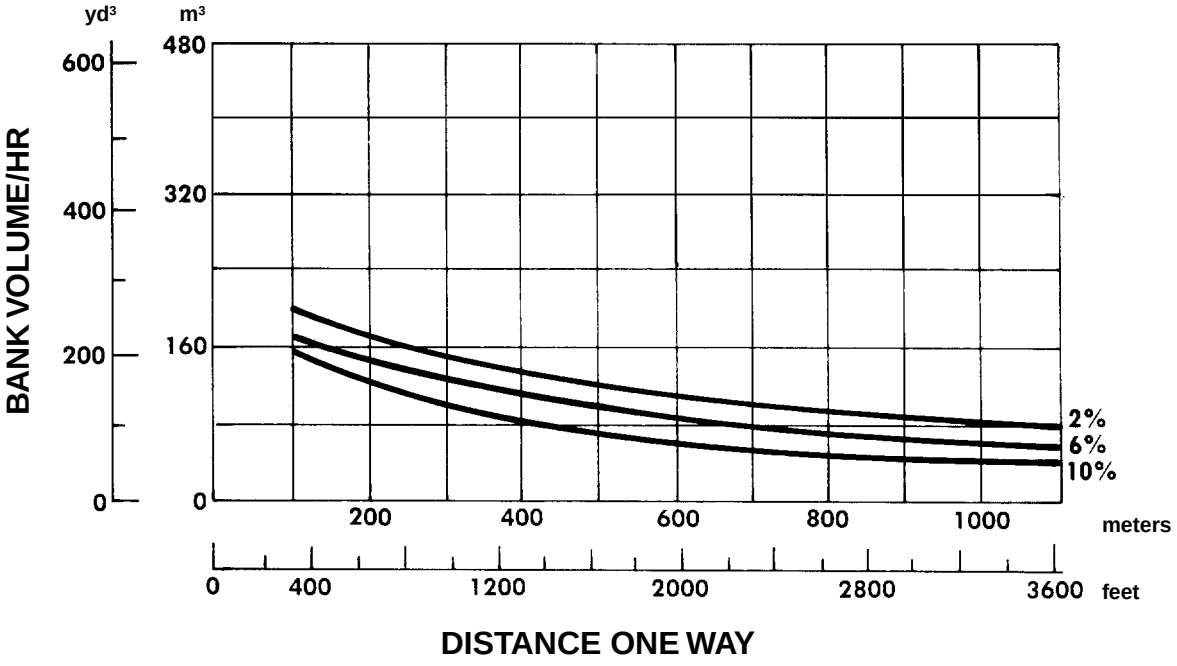


Empty weight: 75 875 kg (167,270 lb)

DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.
100% efficiency (60 min hour).

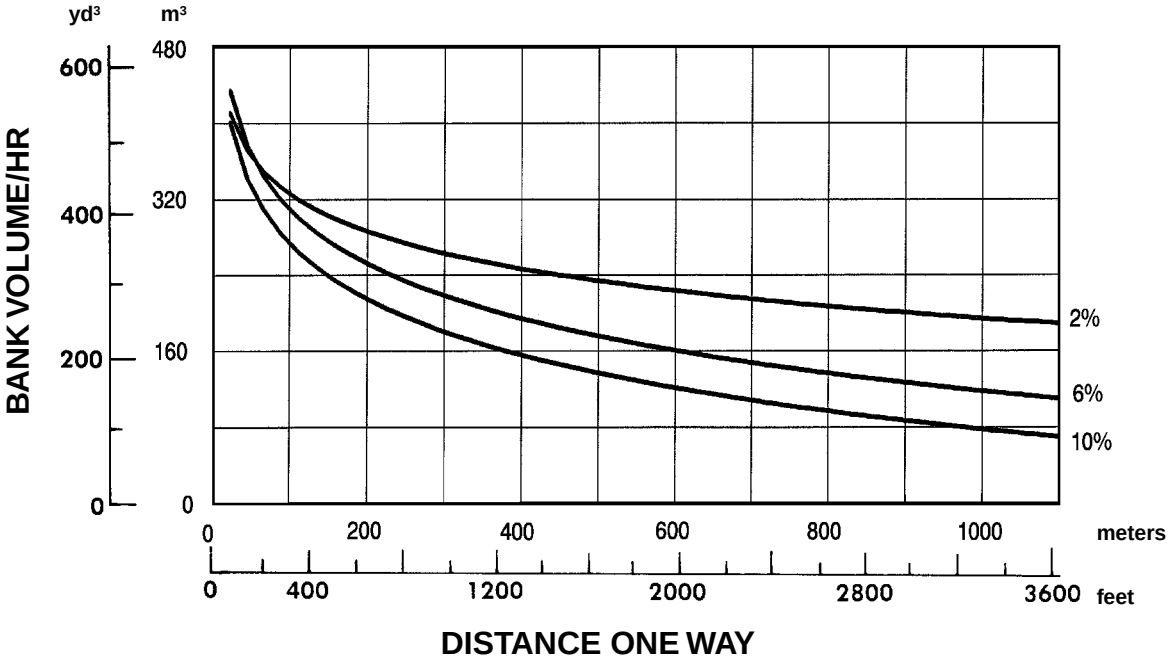
- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 11 975 kg, 6.7 Bm³ (26,400 lb, 8.8 BCY).
- Empty weight: 15 264 kg (33,650 lb).
- Fixed time: 1.6 min.



DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.
100% efficiency (60 min hour).

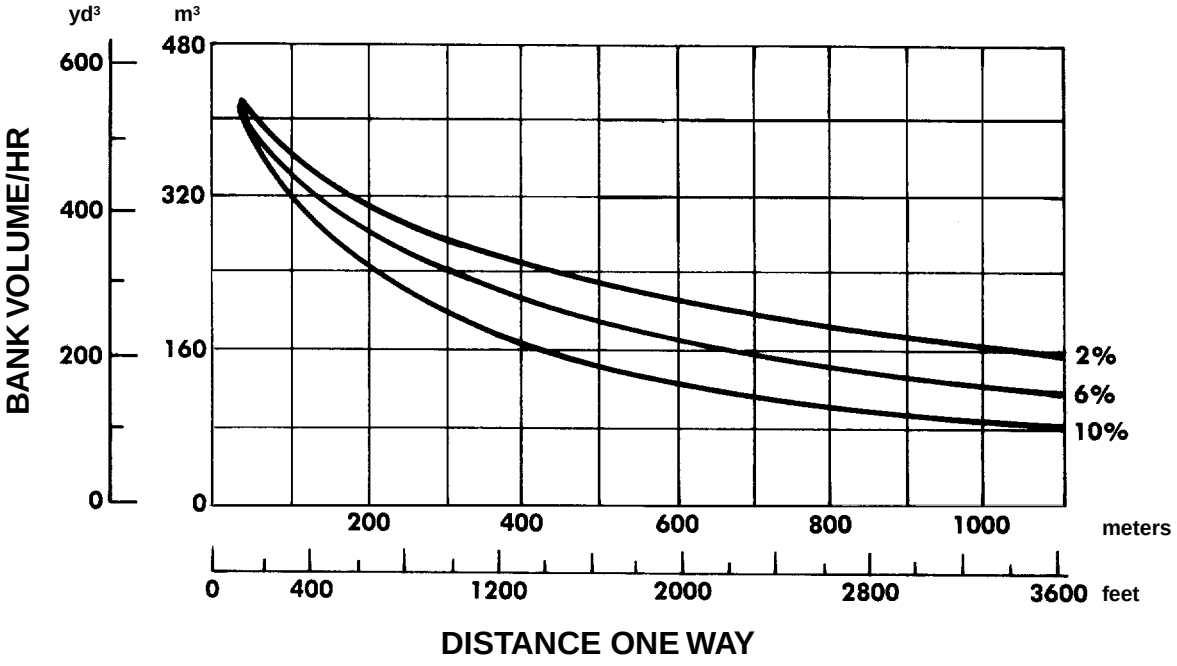
- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 18 506 kg, 10.4 Bm³ (40,800 lb, 13.6 BCY).
- Empty weight: 44 113 kg (97,250 lb).
- Fixed time: 1.6 min.



DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.
100% efficiency (60 min hour).

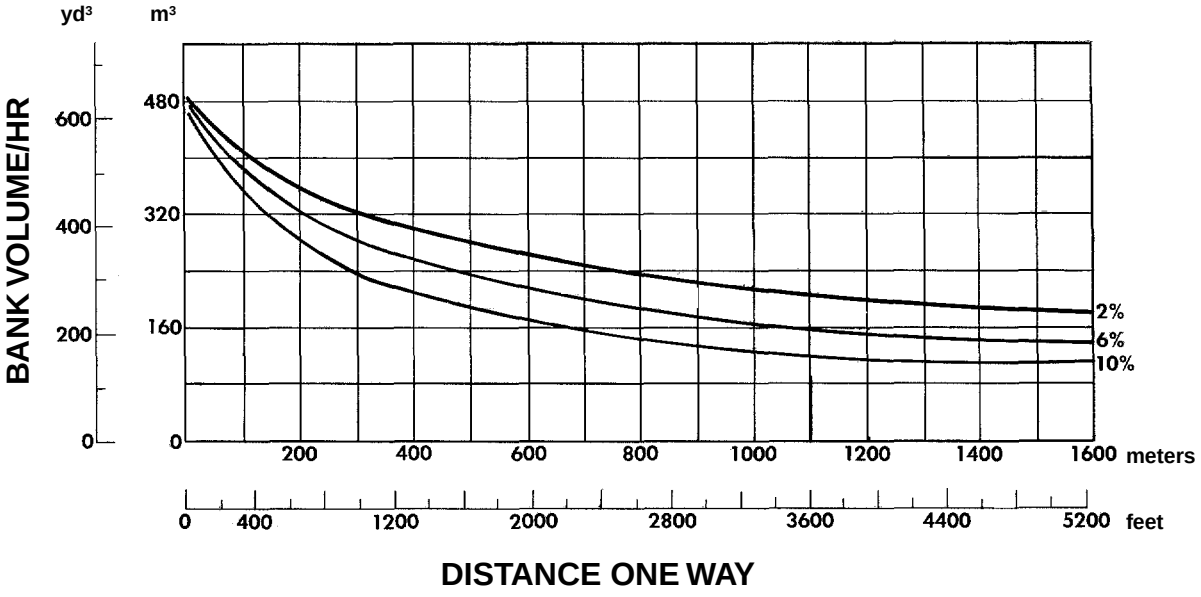
- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 21 770 kg, 12.2 Bm³ (48,000 lb, 16 BCY).
- Empty weight: 32 070 kg (70,700 lb).
- Fixed time: 1.4 min.



DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.
100% efficiency (60 min hour).

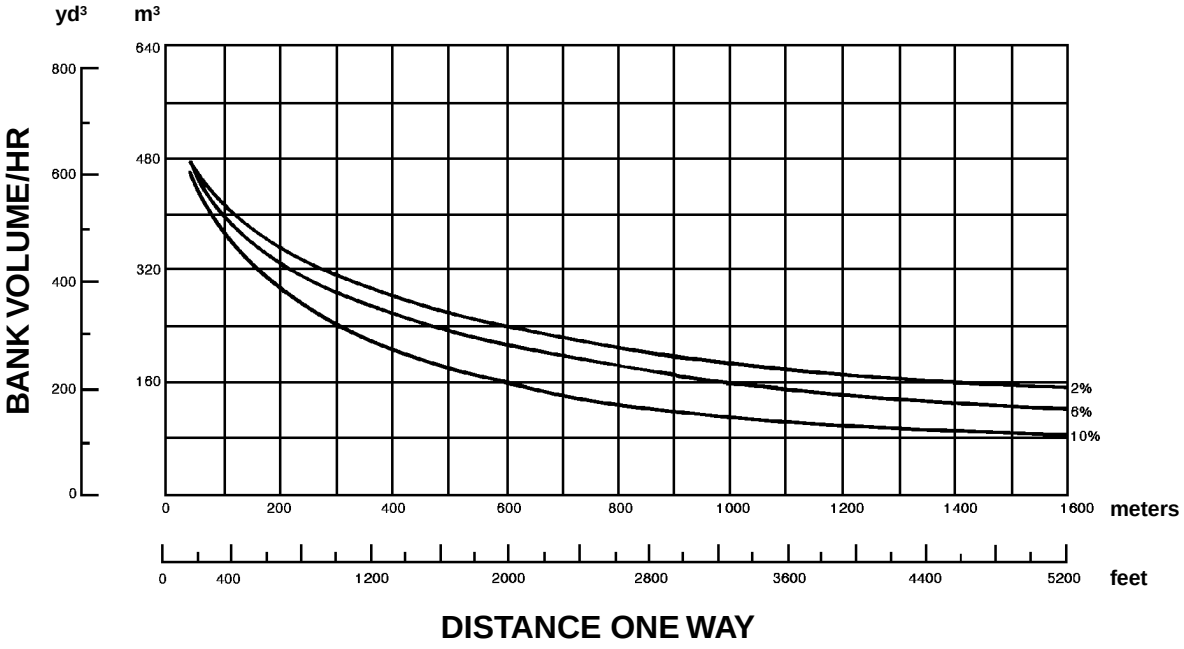
- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 24 950 kg, 12.2 Bm³ (55,000 lb, 16 BCY).
- Empty weight: 35 290 kg (77,800 lb).
- Fixed time: 1.6 min.



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: 21 770 kg, 12.2 Bm³ (48,000 lb, 16 BCY).
- Empty weight: 37 060 kg (81,640 lb).
- Fixed time: 1.2 min.

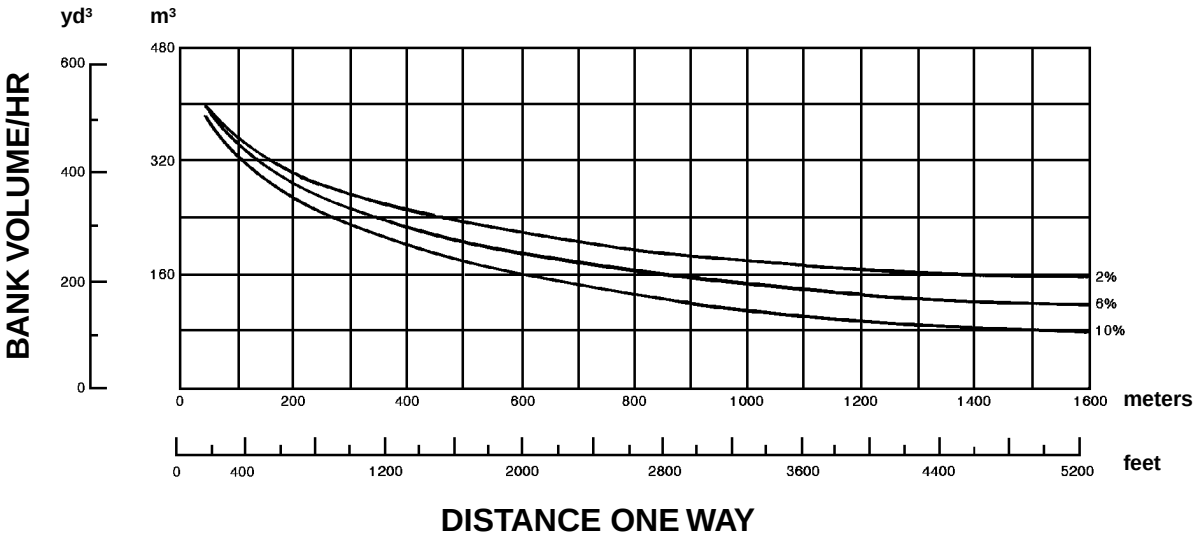


DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.
100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 21 770 kg, 12.2 Bm³ (48,000 lb, 16 BCY).
- Empty weight: 38 103 kg (84,000 lb).
- Fixed time: 1.5 min. (includes loading both units and transfer time).

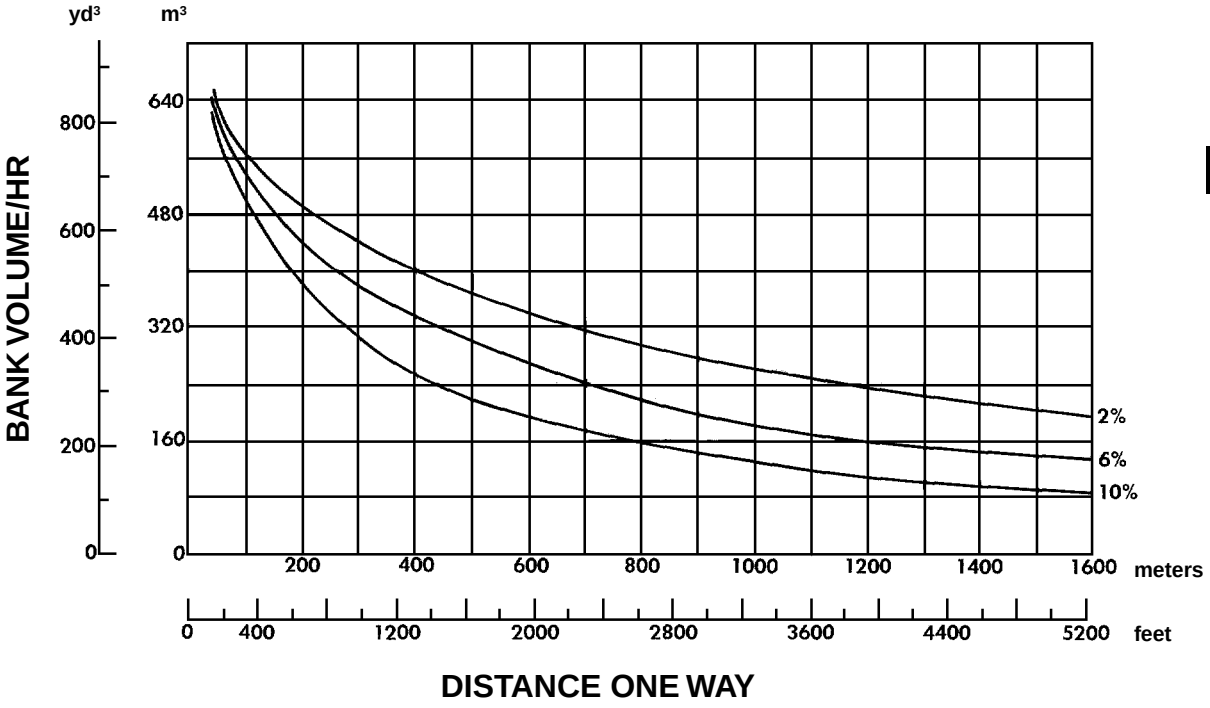
NOTE: Production estimates apply to one unit. Double these figures for a push-pull pair.



DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.
100% efficiency (60 min hour).

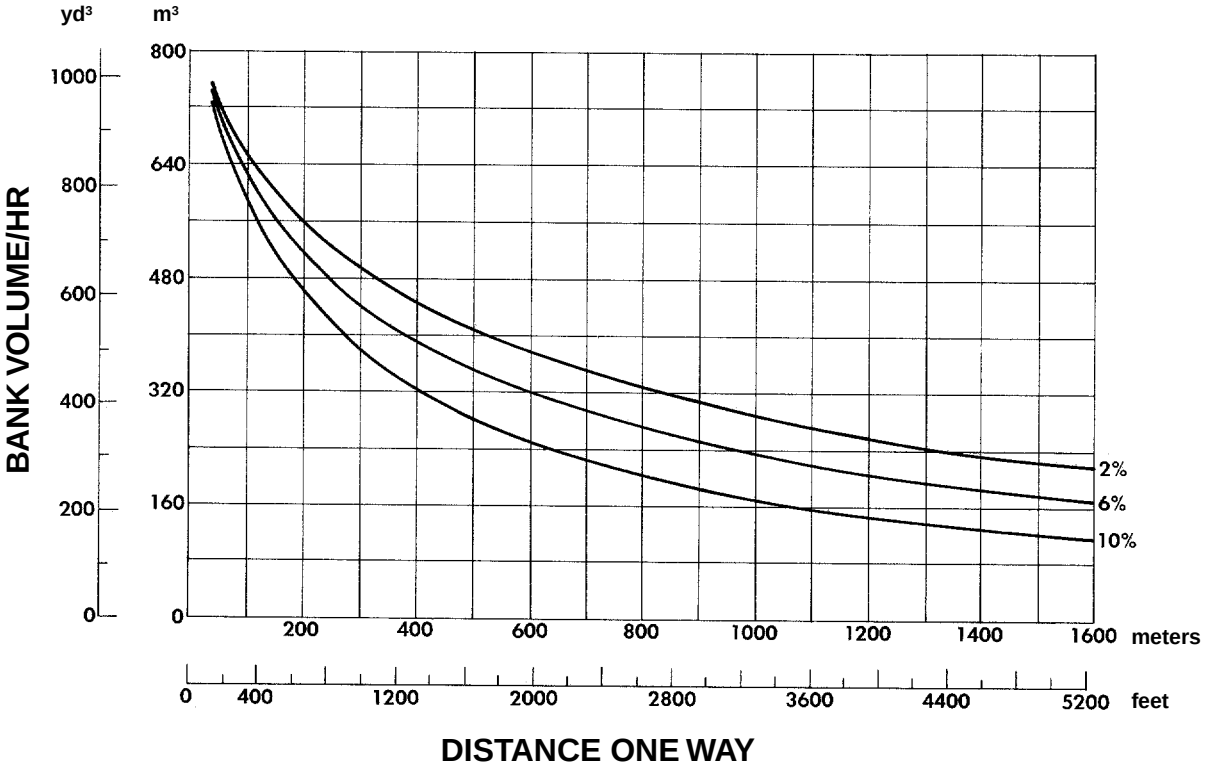
- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 34 020 kg, 19.1 Bm³ (75,000 lb, 25 BCY).
- Empty weight: 45 400 kg (100,000 lb).
- Fixed time: 1.3 min.



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: 34 020 kg, 19.1 Bm³ (75,000 lb, 25 BCY).
- Empty weight: 50 990 kg (112,320 lb).
- Fixed time: 1.1 min.

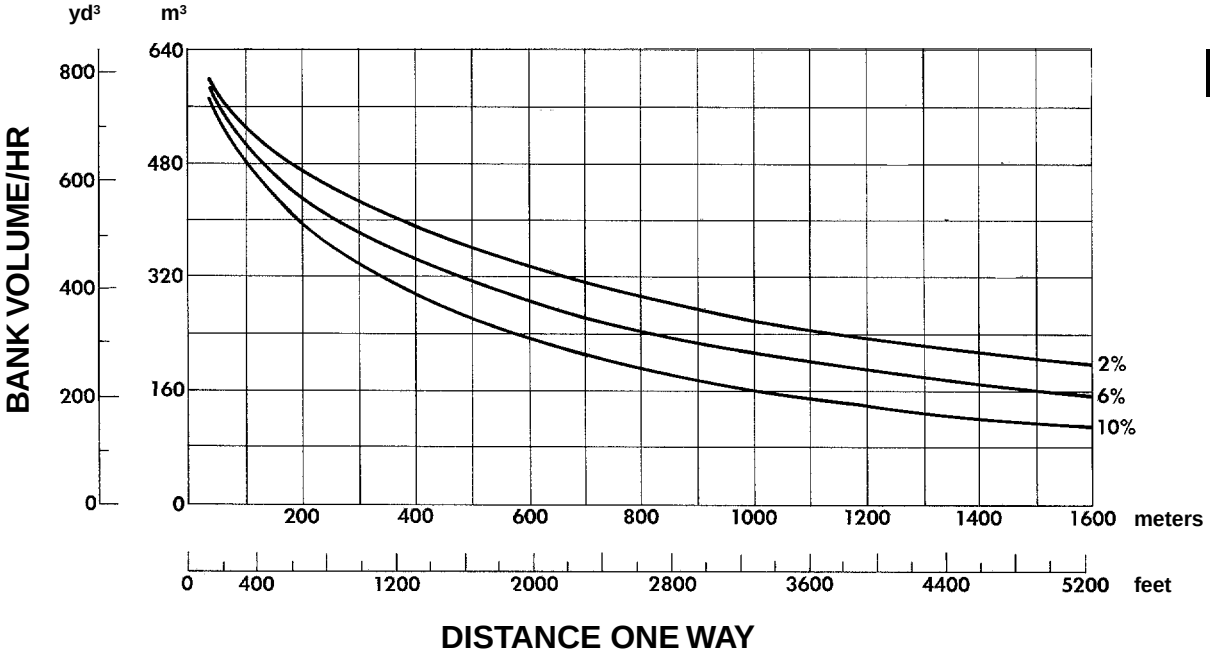


DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.
100% efficiency (60 min hour).

- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 34 020 kg, 19.1 Bm³ (75,000 lb, 25 BCY).
- Empty weight: 52 385 kg (115,490 lb).
- Fixed time: 1.6 min. (includes loading both units and transfer time).

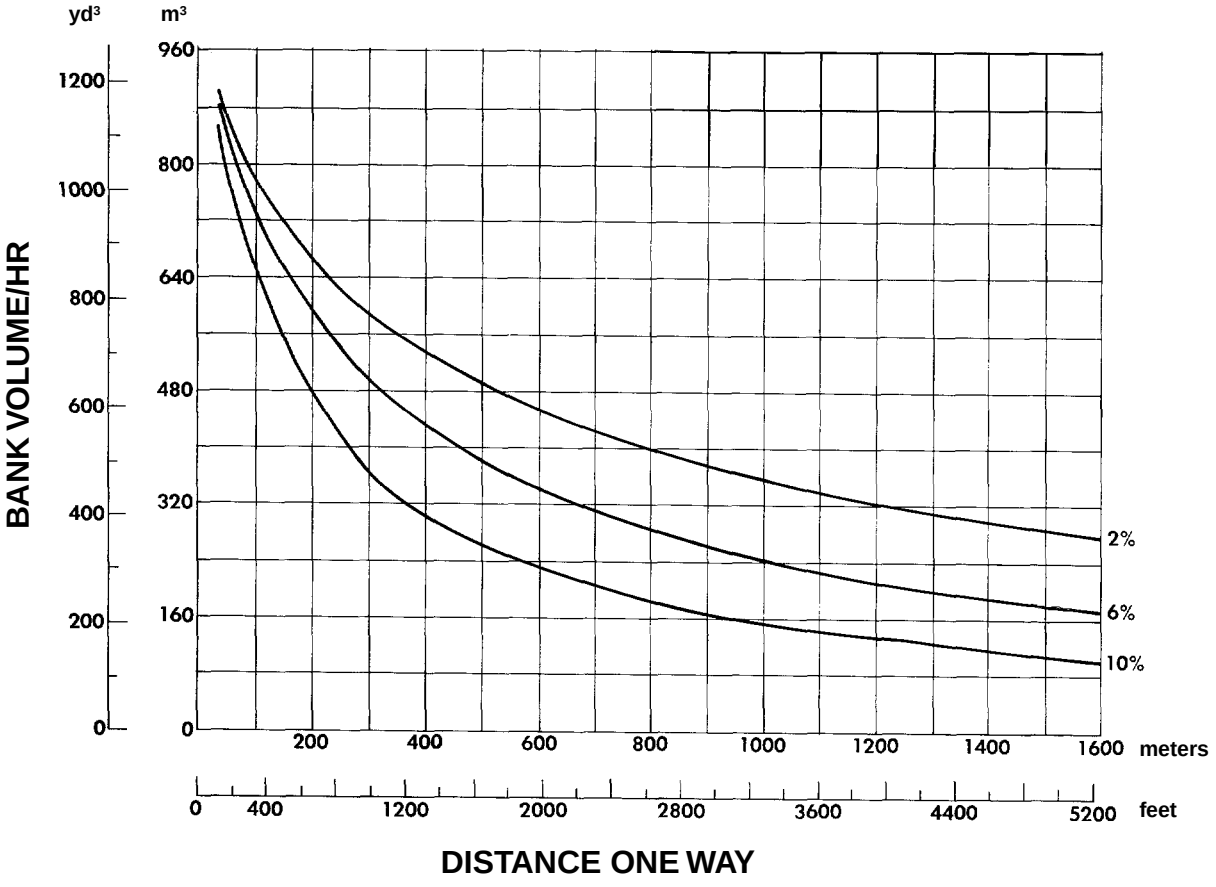
NOTE: Production estimates apply to one unit. Double these figures for a push-pull pair.



DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.
100% efficiency (60 min hour).

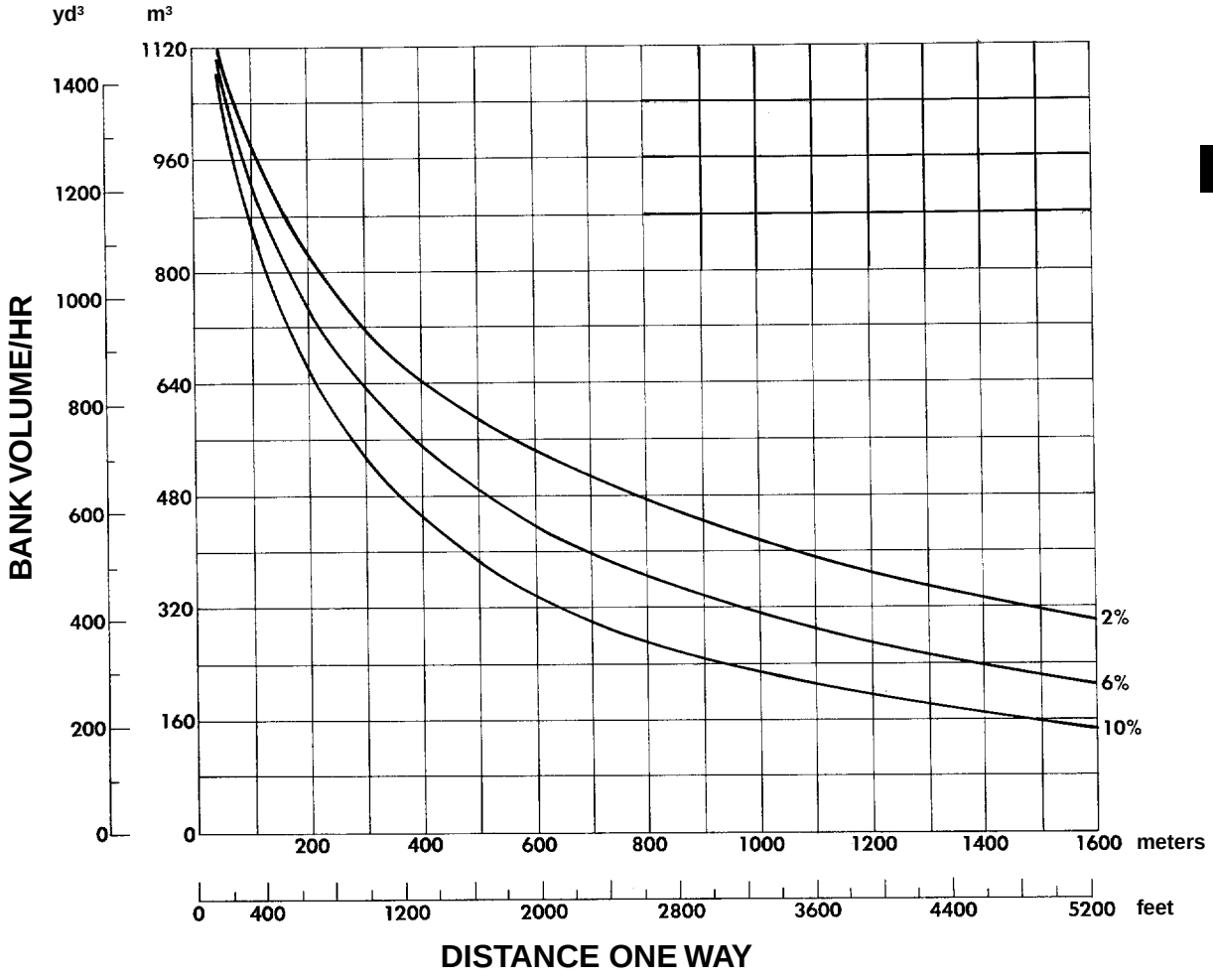
- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 47 200 kg, 26.5 Bm³ (104,056 lb, 34.6 BCY).
- Empty weight: 61 120 kg (134,760 lb).
- Fixed time: 1.3 min.



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: 47 200 kg, 26.5 Bm³ (104,000 lb, 34.6 BCY).
- Empty weight: 70 670 kg (155,650 lb).
- Fixed time: 1 min.

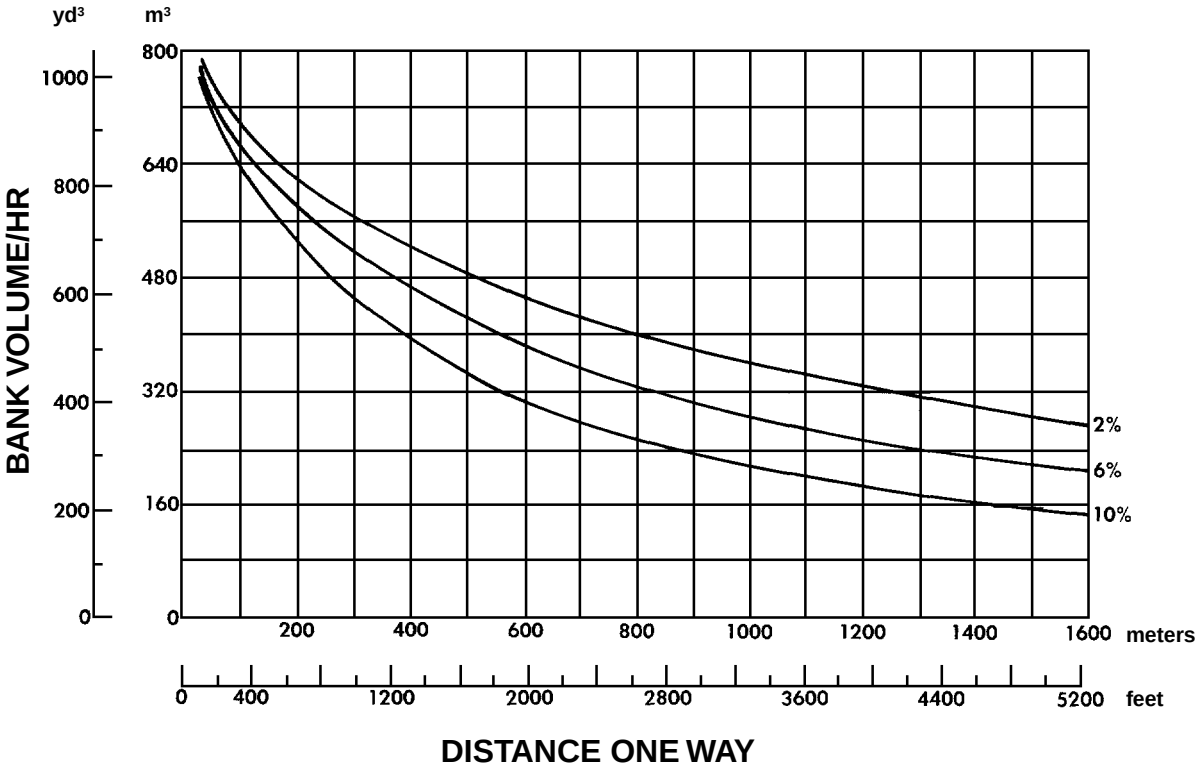


DISTANCE vs. PRODUCTION

CONDITIONS: Flat haul. Percentages shown are rolling resistance only.
100% efficiency (60 min hour).

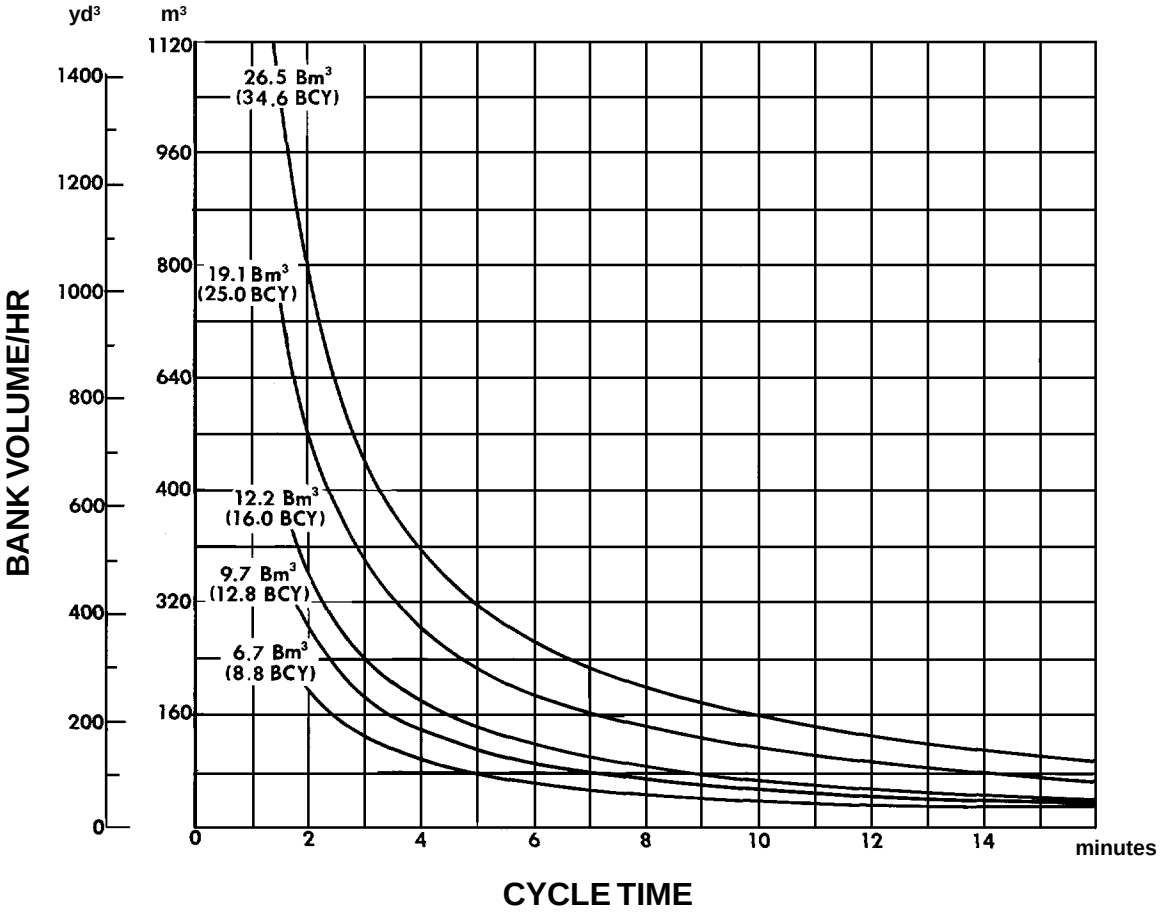
- Material: 1780 kg/m³ (3000 lb/yd³).
- Payload: 47 200 kg, 26.5 Bm³ (104,000 lb, 34.6 BCY).
- Empty weight: 72 640 kg (160,140 lb).
- Fixed time: 1.7 min. (includes loading both units and transfer time).

NOTE: Production estimates apply to one unit. Double these figures for a push-pull pair.



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)
621F, 623F, 627F @ 12.2 Bm³/trip (16 BCY)
631E Series II, 633E Series II, 637E Series II @ 19.1 Bm³/trip (25 BCY)
651E, 657E @ 26.5 Bm³/trip (34.6 BCY)



CONSTRUCTION & MINING TRUCKS
CONSTRUCTION & MINING TRACTORS

CONTENTS

Features:

- **Caterpillar four-stroke-cycle diesels** ... 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)** 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 Production Management System.
- **Electronic Unit Injection (EUI)** in the 776D-793C and **Hydraulic Electronic Unit Injection (HEUI)** on 769D-775D electronically maintains fuel settings, provides automatic altitude and air filter restriction compensation, automatic variable timing, improved diagnostics and increased fuel efficiency.
- **Oil cooled disc brakes** provide retarding, service, parking, and secondary braking in one sealed, fade-resistant, maintenance-free unit. 769D-777D front brakes are caliper disc, can be switched out of the service system when not needed but activate as part of the secondary system. (Front oil-cooled brakes optional on 777D.) 784C-793C front brakes are oil-cooled disc.
- **Automatic Retarder Control (ARC)** electronically controls braking on grade to maintain faster downhill speeds and consistently higher engine speed.
- **Full hydraulic steering,** with front suspension cylinders serving as kingpins.
- **Four independent,** self-contained, oil-pneumatic suspension cylinders absorb loading and road shocks. Wide spacing for stability.
- **Dual slope body** has V-bottom for load balance and retention. Low loading height and center of gravity.
- **Quarry trucks** have single-slope flat floor for smooth, metered dumping into crushers or hoppers. Optional flat floor body available for 769D, 773D.
- **Integral Roll Over Protective Structure (ROPS)** cab standard on all models.
- **Separate hydraulic systems** prevents cross contamination.

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	
Body Type	Flat Floor		Dual Slope		Quarry	
Gross Vehicle Weight	68 180 kg	**150,000 lb**	68 180 kg	**150,000 lb**	73 970 kg	**163,100 lb**
Chassis Weight*	22 950 kg	**50,600 lb**	22 950 kg	**50,600 lb**	22 950 kg	**50,600 lb**
Body Weight	7800 kg	**17,200 lb**	7330 kg	**16,170 lb**	10 350 kg	**22,820 lb**
Maximum Payload**	37 430 kg	**82,533 lb**	37 900 kg	**83,570 lb**	40 670 kg	**89,680 lb**
Standard Liner Weight	3300 kg	**7280 lb**	3160 kg	**6970 lb**		—
Payload with Standard Liner	34 130 kg	**75,250 lb**	34 740 kg	**76,600 lb**		—
Capacity:						
Struck (SAE)	16.5 m^3	**21.6 yd^3**	17 m^3	**22.2 yd^3**	20.2 m^3	**26.4 yd^3**
Heaped (2:1) (SAE)	24.2 m^3	**31.7 yd^3**	24.2 m^3	**31.7 yd^3**	27.5 m^3	**36 yd^3**
Distribution Empty:						
Front	**49.7%**		**49.8%**		**46.3%**	
Rear	**50.3%**		**50.2%**		**53.7%**	
Distribution Loaded:						
Front	**33.2%**		**33.3%**		**32.9%**	
Rear	**66.8%**		**66.7%**		**67.1%**	
Engine Model	**3408E**		**3408E**		**3408E**	
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 in^3**	18 L	**1099 in^3**	18 L	**1099 in^3**
Flywheel Power	362 kW	**485 hp**	362 kW	**485 hp**	362 kW	**485 hp**
Gross Power	380 kW	**510 hp**	380 kW	**510 hp**	380 kW	**510 hp**
Standard Tires	**18.00R33(E-4)**		**18.00R33(E-4)**		**18.00R33(E-4)**	
Machine Clearance Turning Circle	19.8 m	**65'0"**	19.8 m	**65'0"**	19.8 m	**65'0"**
Fuel Tank Refill Capacity	530 L	**140 U.S. gal**	530 L	**140 U.S. gal**	530 L	**140 U.S. gal**
Top Speed (Loaded)	75 km/h	**47 mph**	75 km/h	**47 mph**	56 km/h	**35 mph**
GENERAL DIMENSIONS (Empty):						
Height to Canopy Rock Guard Rail	4.07 m	**13'4"**	4.03 m	**13'3"**	4.02 m	**13'2"**
Wheelbase	3.71 m	**12'2"**	3.71 m	**12'2"**	3.71 m	**12'2"**
Overall Length	8.73 m	**28'7"**	8.57 m	**28'1"**	8.73 m	**28'7"**
Loading Height (Empty)	3.19 m	**10'6"**	3.14 m	**10'4"**	3.40 m	**11'2"**
Height at Full Dump	7.75 m	**25'5"**	7.71 m	**25'3"**	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	**16'5"**	5.01 m	**16'5"**	5.01 m	**16'5"**
Width (Shipping)***	3.95 m	**12'11"**	3.95 m	**12'11"**	3.95 m	**12'11"**
Front Tire Tread	3.10 m	**10'2"**	3.10 m	**10'2"**	3.10 m	**10'2"**

*Weights include lubricants, coolants, and 10% fuel.
**Maximum rating requires selection of proper tires and is dependent on selection of optional equipment. Gross vehicle weight should not be exceeded.
***Disassembled.




MODEL	773D	773D	775D	775D
Body Type	**Flat Floor**	**Dual Slope**	**Quarry**	**Lined Quarry**
Gross Vehicle Weight	92 530 kg **204,000 lb**	92 530 kg **204,000 lb**	106 590 kg **235,000 lb**	106 590 kg **235,000 lb**
Chassis Weight*	30 165 kg **66,500 lb**	30 165 kg **66,500 lb**	30 390 kg **67,000 lb**	30 390 kg **67,000 lb**
Body Weight	9375 kg **20,670 lb**	9030 kg **19,910 lb**	12 830 kg **28,230 lb**	14 140 kg **31,170 lb**
Maximum Payload**	52 990 kg **116,840 lb**	53 340 kg **117,610 lb**	63 370 kg **139,730 lb**	62 070 kg **136,860 lb**
Standard Liner Weight	3981 kg **8778 lb**	3920 kg **8640 lb**	—	—
Payload with Standard Liner	49 010 kg **108,065 lb**	49 420 kg **108,970 lb**	—	62 070 kg **136,860 lb**
Capacity:				
Struck (SAE)	26.6 m^3 **34.8 yd^3**	26.6 m^3 **34.8 yd^3**	31.4 m^3 **41.1 yd^3**	31.2 m^3 **40.8 yd^3**
Heaped (2:1) (SAE)	35.5 m^3 **46.4 yd^3**	35.2 m^3 **46 yd^3**	41.5 m^3 **54.3 yd^3**	41.2 m^3 **53.9 yd^3**
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**	**3412E**	**3412E**	**3412E**
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 m **6"**	152 mm **6"**	152 mm **6"**
Displacement	27 L **1649 in^3**	27 L **1649 in^3**	27 L **1649 in^3**	27 L **1649 in^3**
Flywheel Power	485 kW **650 hp**	485 kW **650 hp**	517 kW **693 hp**	517 kW **693 hp**
Gross Power	509 kW **682 hp**	509 kW **682 hp**	541 kW **725 hp**	541 kW **725 hp**
Standard Tires	**24.00R35(E-4)**	**24.00R35(E-4)**	**24.00R35(E-4)**	**24.00R35(E-4)**
Machine Clearance Turning Circle	24 m **78'9"**	24 m **78'9"**	24 m **78'9"**	24 m **78'9"**
Fuel Tank Refill Capacity	700 L **185 U.S. gal**	700 L **185 U.S. gal**	700 L **185 U.S. gal**	700 L **185 U.S. gal**
Top Speed (Loaded)	66 km/h **41 mph**	66 km/h **41 mph**	66 km/h **41 mph**	66 km/h **41 mph**
GENERAL DIMENSIONS (Empty):				
Height to Canopy Rock Guard Rail	4.42 m **14'6"**	4.39 m **14'5"**	4.41 m **14'5"**	4.41 m **14'5"**
Wheelbase	4.19 m **13'9"**	4.19 m **13'9"**	4.19 m **13'9"**	4.19 m **13'9"**
Overall Length	9.70 m **31'10"**	9.61 m **31'6"**	9.70 m **31'10"**	9.70 m **31'10"**
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 **28'10"**	8.80 m **28'10"**
Body Length (Target Length)	6.49 m **21'3"**	6.40 m **21'0"**	6.54 m **21'5"**	6.51 m **21'4"**
Width (Operating)	5.08 m **16'8"**	5.08 m **16'8"**	5.21 m **17'1"**	5.21 m **17'1"**
Width (Shipping)***	3.97 m **13'0"**	3.97 m **13'0"**	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, and 10% fuel.
**Maximum rating requires selection of proper tires and is dependent on selection of optional equipment. Gross vehicle weight should not be exceeded.
***Disassembled.




MODEL	777D		777D		785C		785C	
Body Type	**Flat Floor**		**Dual Slope**		**Flat Floor**		**Dual Slope**	
Gross Vehicle Weight	161 030 kg	**355,000 lb**	161 030 kg	**355,000 lb**	249 480 kg	**550,000 lb**	249 480 kg	**550,000 lb**
Chassis Weight*	48 580 kg	**107,100 lb**	48 580 kg	**107,100 lb**	74 450 kg	**164,170 lb**	74 450 kg	**164,170 lb**
Body Weight	16 430 kg	**36,185 lb**	15 780 kg	**34,785 lb**	24 610 kg	**54,200 lb**	21 280 kg	**46,870 lb**
Maximum Payload**	96 020 kg	**211,710 lb**	96 670 kg	**213,110 lb**	150 560 kg	**331,630 lb**	153 890 kg	**338,970 lb**
Standard Liner Weight	5675 kg	**12,500 lb**	5460 kg	**12,040 lb**	1090 kg	**2400 lb**	7640 kg	**16,840 lb**
Payload with Standard Liner	90 340 kg	**199,210 lb**	91 210 kg	**201,070 lb**	149 470 kg	**329,230 lb**	146 250 kg	**322,130 lb**
Capacity:								
Struck (SAE)	42.0 m^3	**54.6 yd^3**	42.1 m^3	**55 yd^3**	74 m^3	**96 yd^3**	57 m^3	**74 yd^3**
Heaped (2:1) (SAE)	60.5 m^3	**79.1 yd^3**	60.1 m^3	**78.6 yd^3**	91 m^3	**119 yd^3**	78 m^3	**102 yd^3**
Distribution Empty:								
Front	**47%**		**47%**		**47%**		**47%**	
Rear	**53%**		**53%**		**53%**		**53%**	
Distribution Loaded:								
Front	**47%**		**33%**		**32%**		**33%**	
Rear	**53%**		**67%**		**68%**		**67%**	
Engine Model	**3508B**		**3508B**		**3512**		**3512**	
Number of Cylinders	**8**		**8**		**12**		**12**	
Bore	170 mm	**6.7"**	170 mm	**6.7"**	170 mm	**6.7"**	170 mm	**6.7"**
Stroke	190 mm	**7.5"**	190 mm	**7.5"**	190 mm	**7.5"**	190 mm	**7.5"**
Displacement	34.5 L	**2105 in^3**	34.5 L	**2105 in^3**	51.8 L	**3158 in^3**	51.8 L	**3158 in^3**
Flywheel Power	699 kW	**938 hp**	699 kW	**938 hp**	962 kW	**1290 hp**	962 kW	**1290 hp**
Gross Power	746 kW	**1000 hp**	746 kW	**1000 hp**	1029 kW	**1380 hp**	1029 kW	**1380 hp**
Standard Tires	**27.00R49**		**27.00R49**		**33.00R51**		**33.00R51**	
Machine Clearance Turning Circle	26.1 m	**85'6"**	26.1 m	**85'6"**	30.2 m	**99'2"**	30.2 m	**99'2"**
Fuel Tank Refill Capacity	1137 L	**300 U.S. gal**	1137 L	**300 U.S. gal**	1893 L	**500 U.S. gal**	1893 L	**500 U.S. gal**
Top Speed (Loaded)	60 km/h	**38 mph**	60 km/h	**38 mph**	56 km/h	**35 mph**	56 km/h	**35 mph**
GENERAL DIMENSIONS (Empty):								
Height to Canopy Rock Guard Rail	5.00 m	**16'5"**	4.95 m	**16'3"**	5.93 m	**19'6"**	5.77 m	**18'11"**
Wheelbase	4.57 m	**15'0"**	4.57 m	**15'0"**	5.18 m	**17'0"**	5.18 m	**17'0"**
Overall Length	9.78 m	**32'1"**	9.78 m	**32'1"**	11.02 m	**36'2"**	11.02 m	**36'2"**
Loading Height (Empty)	4.34 m	**14'3"**	4.29 m	**14'1"**	5.55 m	**18'3"**	4.98 m	**16'4"**
Height at Full Dump	9.97 m	**32'9"**	9.95 m	**32'8"**	11.12 m	**36'6"**	11.20 m	**36'9"**
Body Length (Target Length)	9.60 m	**31'6"**	6.95 m	**22'10"**	10.46 m	**34'4"**	7.65 m	**25'1"**
Width (Operating)	5.53 m	**18'2"**	6.10 m	**20'0"**	6.79 m	**22'3"**	6.64 m	**21'9"**
Width (Shipping)***	3.51 m	**11'6"**	3.51 m	**11'6"**	3.84 m	**12'6"**	3.84 m	**12'6"**
Front Tire Tread	4.17 m	**13'8"**	4.17 m	**13'8"**	4.85 m	**15'11"**	4.85 m	**15'11"**

*Weights include lubricants, coolants, and 10% fuel.
**Maximum rating requires selection of proper tires and is dependent on selection of optional equipment. Gross vehicle weight should not be exceeded.
***Disassembled.




MODEL	789C		789C		793C		793C	
Body Type	**Flat Floor**		**Dual Slope**		**Flat Floor**		**Dual Slope**	
Gross Vehicle Weight	317 520 kg	**700,000 lb**	317 520 kg	**700,000 lb**	376 820 kg	**830,000 lb**	376 820 kg	**830,000 lb**
Chassis Weight*	95 220 kg	**209,930 lb**	95 220 kg	**209,930 lb**	113 510 kg	**250,250 lb**	113 510 kg	**250,250 lb**
Body Weight	30 220 kg	**66,570 lb**	26 305 kg	**57,940 lb**	32 980 kg	**72,650 lb**	31 200 kg	**68,800 lb**
Maximum Payload**	192 270 kg	**423,500 lb**	196 190 kg	**432,130 lb**	230 320 kg	**507,100 lb**	232 105 kg	**510,950 lb**
Standard Liner Weight	1360 kg	**3000 lb**	9440 kg	**20,790 lb**	1360 kg	**3000 lb**	11 070 kg	**24,420 lb**
Payload with Standard Liner	190 910 kg	**420,500 lb**	186 750 kg	**411,340 lb**	228 860 kg	**504,100 lb**	221 030 kg	**486,530 lb**
Capacity:								
Struck (SAE)	94 m^3	**123 yd^3**	73 m^3	**96 yd^3**	120 m^3	**157 yd^3**	96 m^3	**126 yd^3**
Heaped (2:1) (SAE)	121.5 m^3	**158 yd^3**	105 m^3	**137 yd^3**	147.5 m^3	**193 yd^3**	129 m^3	**169 yd^3**
Distribution Empty:								
Front	**47%**		**47%**		**47%**		**47%**	
Rear	**53%**		**53%**		**53%**		**53%**	
Distribution Loaded:								
Front	**32%**		**33%**		**32%**		**33%**	
Rear	**68%**		**67%**		**68%**		**67%**	
Engine Model	**3516**		**3516**		**3516B**		**3516B**	
Number of Cylinders	**16**		**16**		**16**		**16**	
Bore	170 mm	**6.7"**	170 mm	**6.7"**	170 mm	**6.7"**	170 mm	**6.7"**
Stroke	190 mm	**7.5"**	190 mm	**7.5"**	190 mm	**7.5"**	190 mm	**7.5"**
Displacement	69 L	**4211 in^3**	69 L	**4211 in^3**	69 L	**4211 in^3**	69 L	**4211 in^3**
Flywheel Power	1272 kW	**1705 hp**	1272 kW	**1705 hp**	1616 kW	**2166 hp**	1616 kW	**2166 hp**
Gross Power	1342 kW	**1800 hp**	1342 kW	**1800 hp**	1716 kW	**2300 hp**	1716 kW	**2300 hp**
Standard Tires	**37.00R57**		**37.00R57**		**40.00R57**		**40.00R57**	
Machine Clearance Turning Circle	30.2 m	**99'2"**	30.2 m	**99'2"**	30.2 m	**99'2"**	30.2 m	**99'2"**
Fuel Tank Refill Capacity	3222 L	**851 U.S. gal**	3222 L	**851 U.S. gal**	3861 L	**1020 U.S. gal**	3861 L	**1020 U.S. gal**
Top Speed (Loaded)	54 km/h	**34 mph**	54 km/h	**34 mph**	55 km/h	**34 mph**	55 km/h	**34 mph**
GENERAL DIMENSIONS (Empty):								
Height to Canopy Rock Guard Rail	6.16 m	**20'3"**	6.15 m	**20'2"**	6.56 m	**21'6"**	6.43 m	**21'1"**
Wheelbase	5.70 m	**18'8"**	5.90 m	**18'8"**	5.90 m	**19'4"**	5.90 m	**19'4"**
Overall Length	12.13 m	**39'9"**	12.18 m	**39'11"**	13.23 m	**43'4"**	12.86 m	**42'3"**
Loading Height (Empty)	5.69 m	**18'8"**	5.21 m	**17'1"**	6.40 m	**20'11"**	5.86 m	**19'3"**
Height at Full Dump	11.93 m	**39'2"**	11.91 m	**39'1"**	13.14 m	**43'1"**	13.21 m	**43'4"**
Body Length (Target Length)	11.62 m	**38'2"**	8.15 m	**26'9"**	12.67 m	**41'7"**	8.94 m	**29'4"**
Width (Operating)	7.97 m	**26'2"**	7.67 m	**25'2"**	8.02 m	**26'8"**	7.42 m	**24'4"**
Width (Shipping)***	3.84 m	**12'6"**	3.84 m	**12'6"**	3.84 m	**12'6"**	3.84 m	**12'6"**
Front Tire Tread	5.43 m	**17'10"**	5.43 m	**17'10"**	5.61 m	**18'5"**	5.61 m	**18'5"**

*Weights include lubricants, coolants, and 10% fuel.
**Maximum rating requires selection of proper tires and is dependent on selection of optional equipment. Gross vehicle weight should not be exceeded.
***Disassembled.

MODEL	776D		784C	
Flywheel Power	699 kW	**938 hp**	962 kW	**1290 hp**
Gross Power	746 kW	**1000 hp**	1029 kW	**1380 hp**
Operating Weight*	55 480 kg	**122,311 lb**	89 280 kg	**196,825 lb**
Engine Model	**3508B (EUI)**		**3512 (EUI)**	
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 in³**	51.8 L	**3158 in³**
Standard Tires, Front & Dual Rear	**27.00R49 (E-4)**		**36.00R51 (E-3)**	
Machine Clearance Turning Circle	26.1 m	**85'6"**	33.5 m	**109'10"**
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'**
Overall Length	8.06 m	**26'5.5"**	9343 mm	**30'8"**
Ground Clearance	200 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.

MODEL TIRE SIZE	PLY RATING/ STAR RATING*	TYPE
769D		
18.00-33	32	E-4
18.00R33	★★	E-3
18.00R33◀	★★	E-4
771D		
18.00R33◀	★★	E-4
773D		
24.00-35	36	E-4
24.00-35	42	E-4
24.00R35	★★	E-3
24.00R35◀	★★	E-4
775D		
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

MODEL TIRE SIZE	PLY RATING/ STAR RATING*	TYPE
789C		
37.00R57	★★	E-4
793C		
40.00R57	★★	E-4
776D		
27.00R49	★★	E-3
27.00R49◀	★★	E-4
784C		
36.00R51	★★	E-3

*Manufacturer uses star (★) rating system instead of ply rating.
◀Standard 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.

(50 kg/metric ton) = 50 ÷ 10 = 5% Effective Grade (from Rolling Resistance)
100 lb/ton = 100 ÷ 20 = 5% Effective Grade
20% (grade) – 5% (resistance) =
15% Total Effective Grade

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

$$\frac{\text{1530 grade horsepower}}{\text{1800 gross engine HP}} \times 100 = 85\% \text{ power train efficiency}$$

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

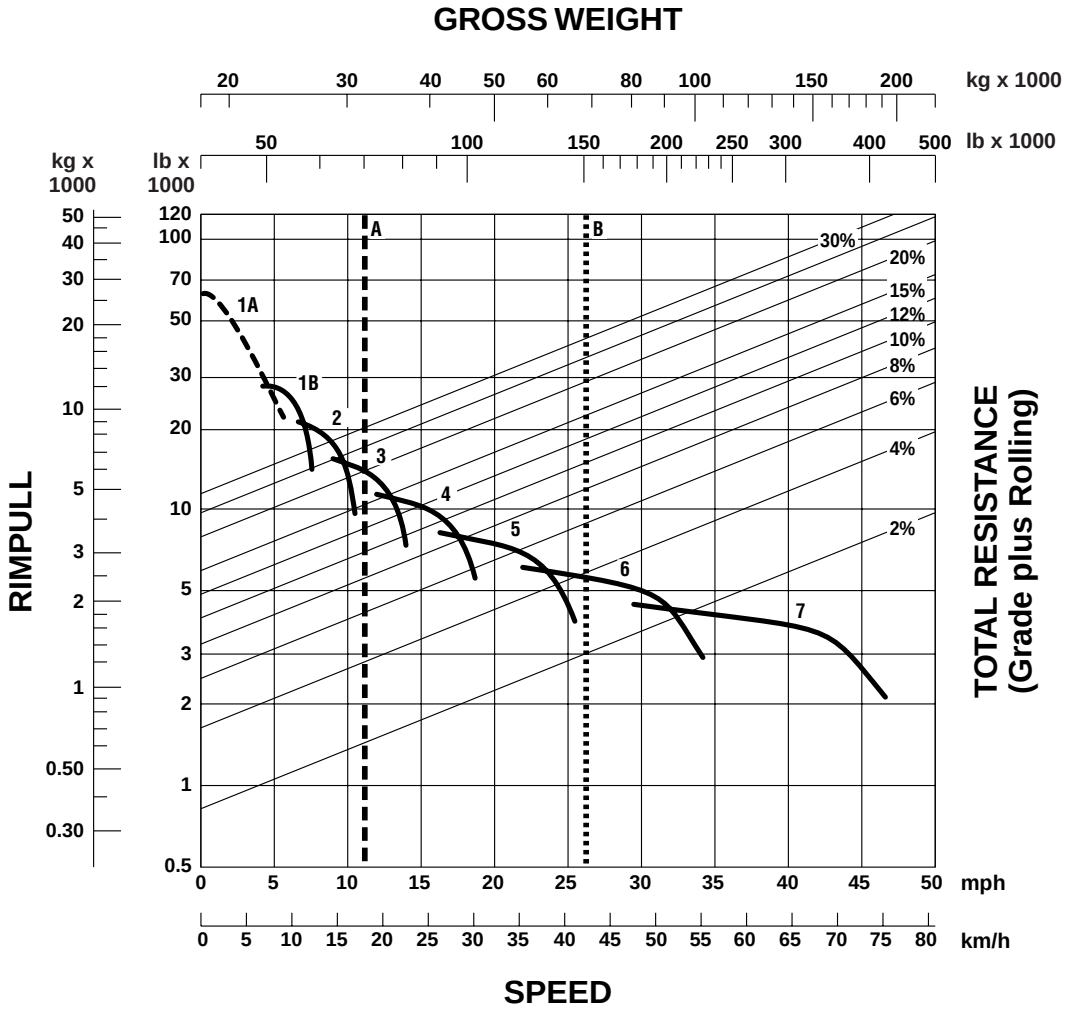
$$\frac{700{,}000 \times (.02 - .08) \times 14.7}{375} = 1646 \text{ HP}$$

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.

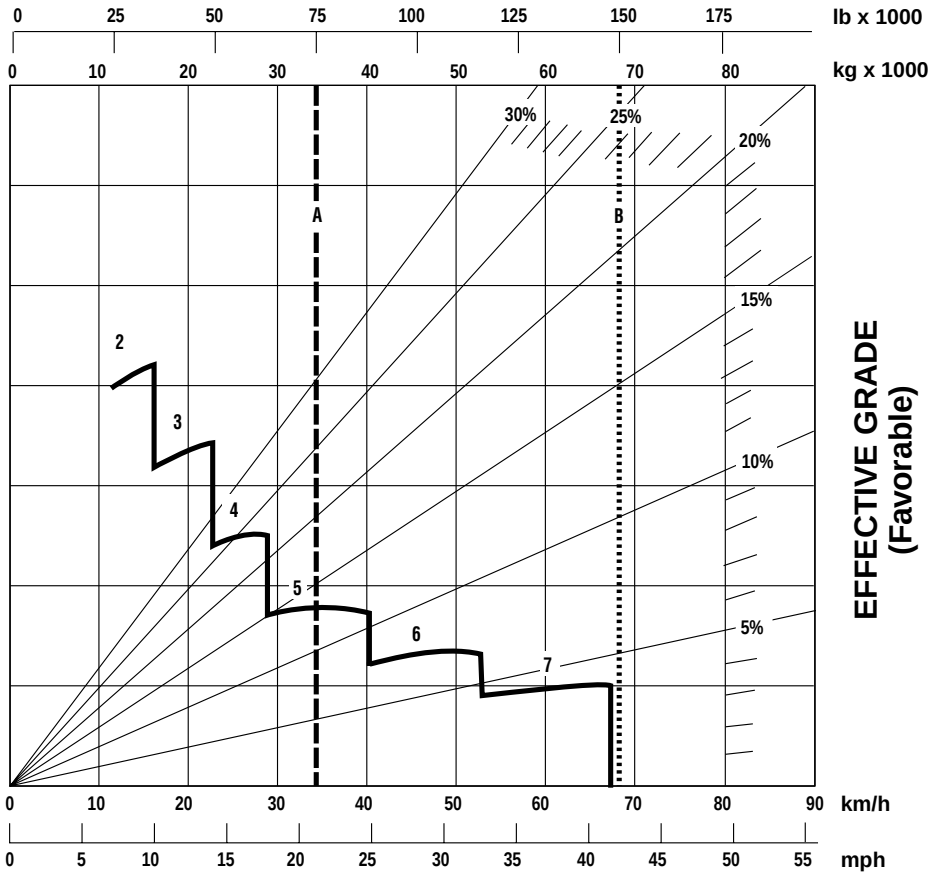


KEY

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 31 250 kg (68,900 lb)
B — Max GMW 68 182 kg (150,000 lb)



KEY

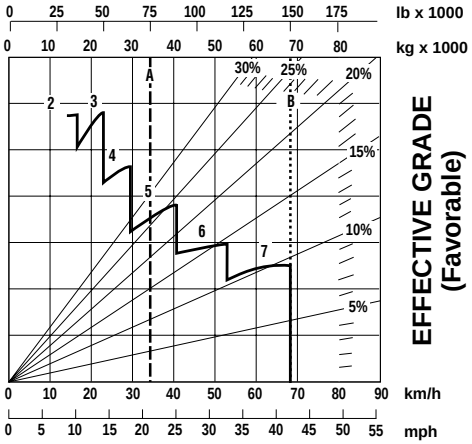
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
6 — 6th Gear
7 — 7th Gear

KEY

A — Empty 31 250 kg (68,900 lb)
B — Max GMW 68 182 kg (150,000 lb)

9

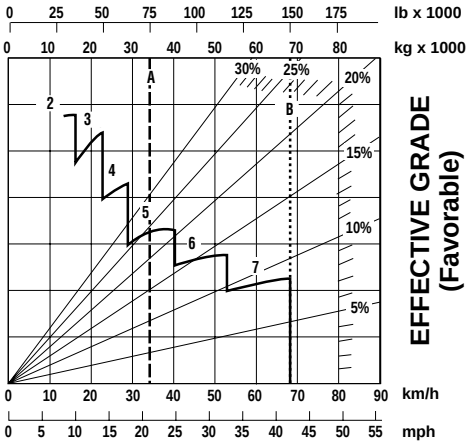
GROSS WEIGHT



SPEED

GRADE DISTANCE — 450 m (1500 ft)

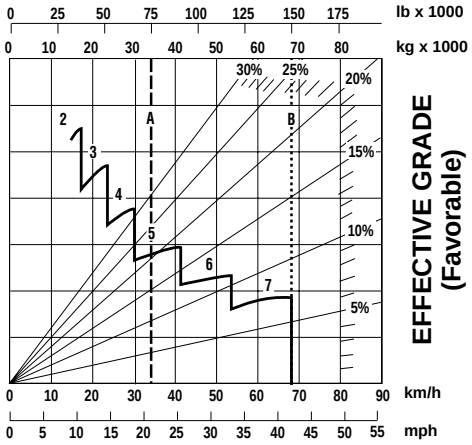
GROSS WEIGHT



SPEED

GRADE DISTANCE — 600 m (2000 ft)

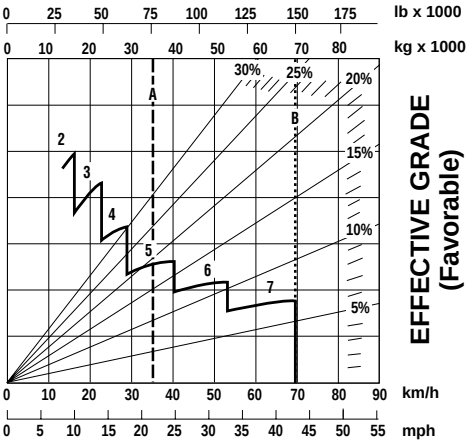
GROSS WEIGHT



SPEED

GRADE DISTANCE — 900 m (3000 ft)

GROSS WEIGHT



SPEED

GRADE DISTANCE — 1500 m (5000 ft)

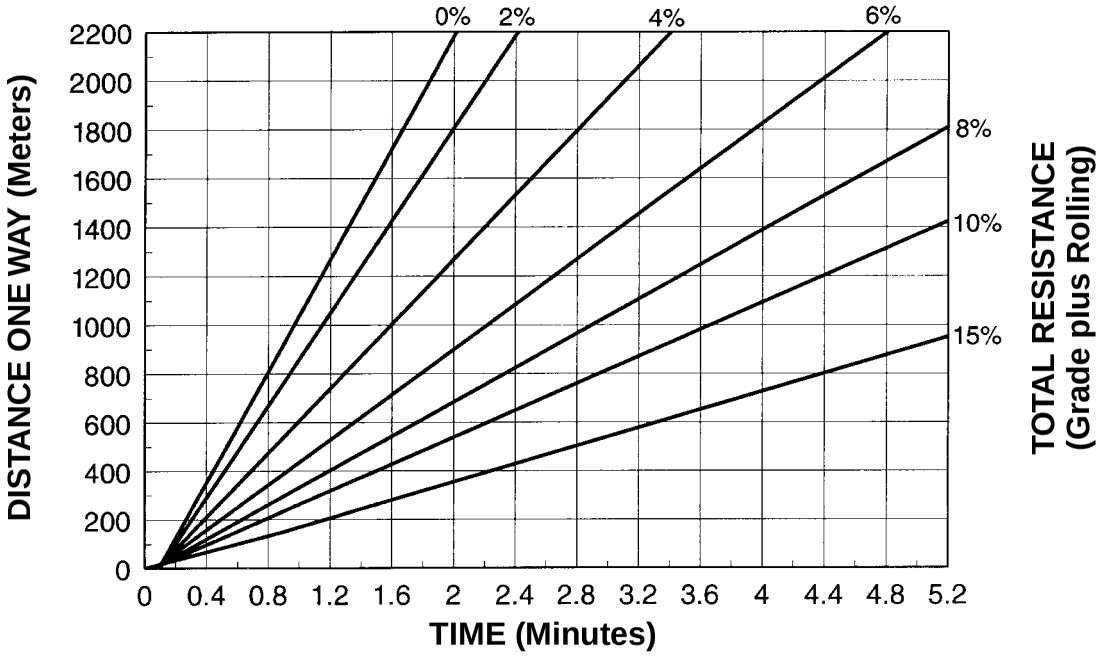
KEY

2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
6 — 6th Gear
7 — 7th Gear

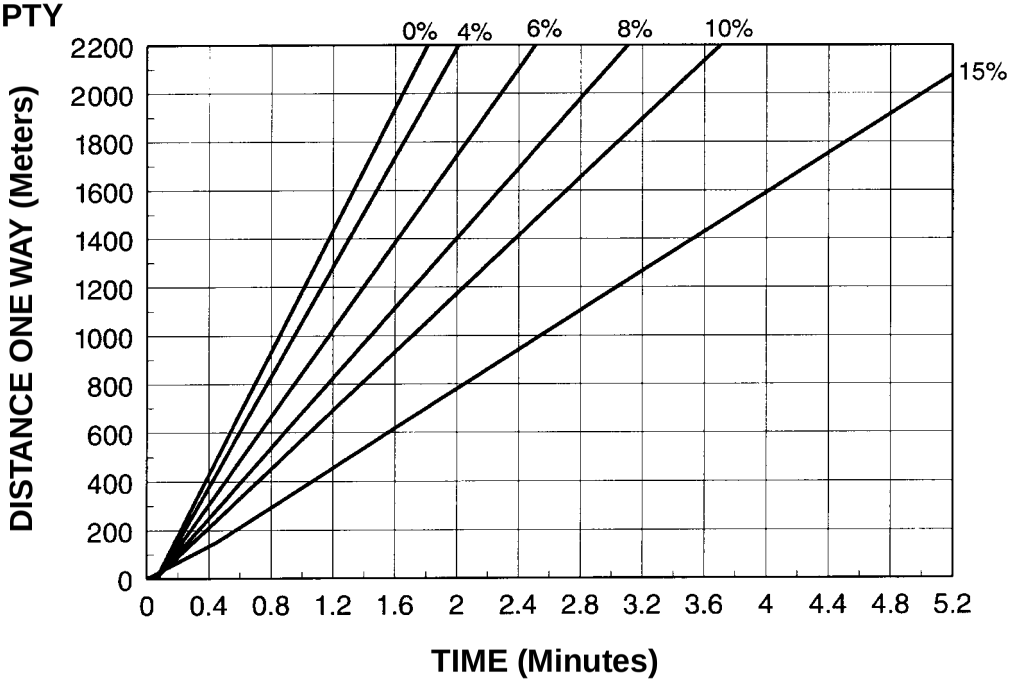
KEY

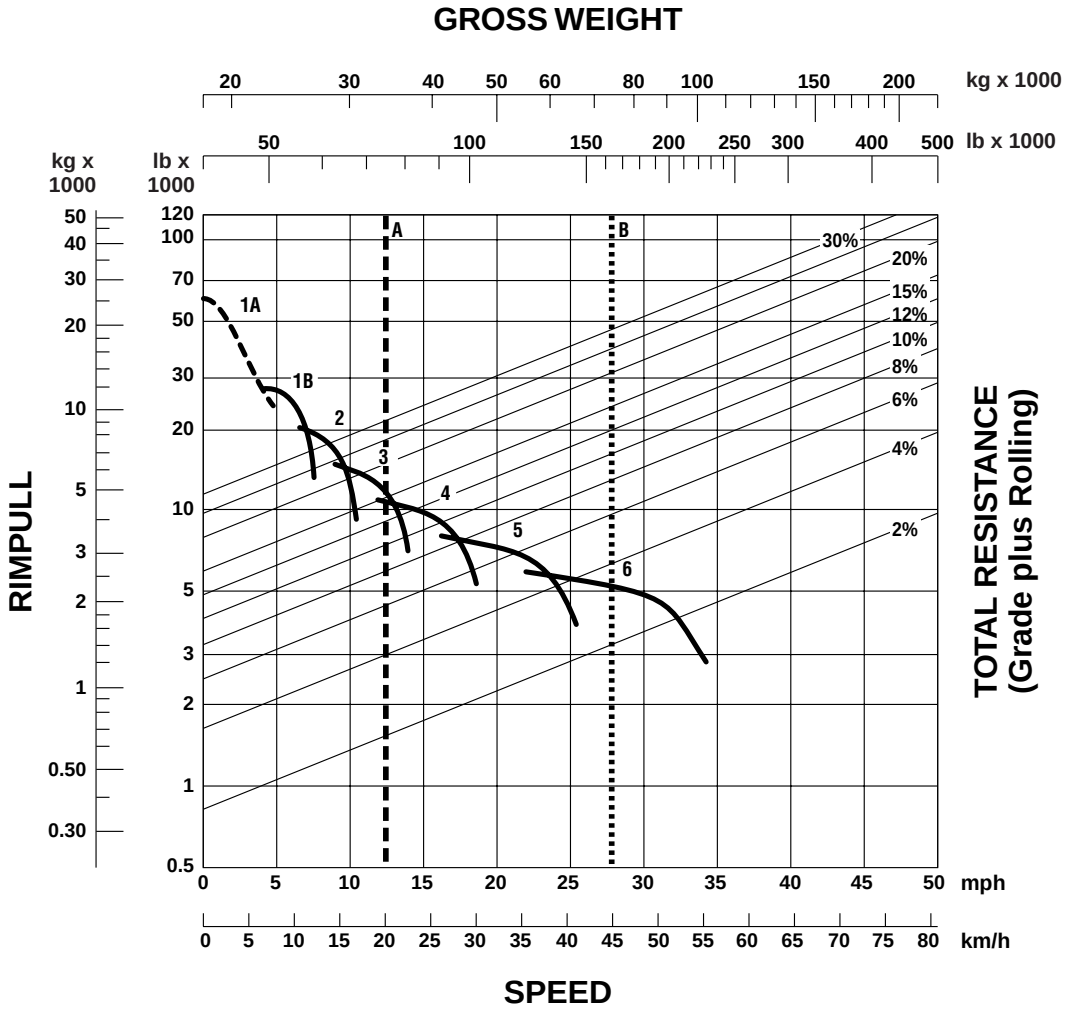
A — Empty 31 250 kg (68,900 lb)
B — Max GMW 68 182 kg (150,000 lb)

LOADED



EMPTY



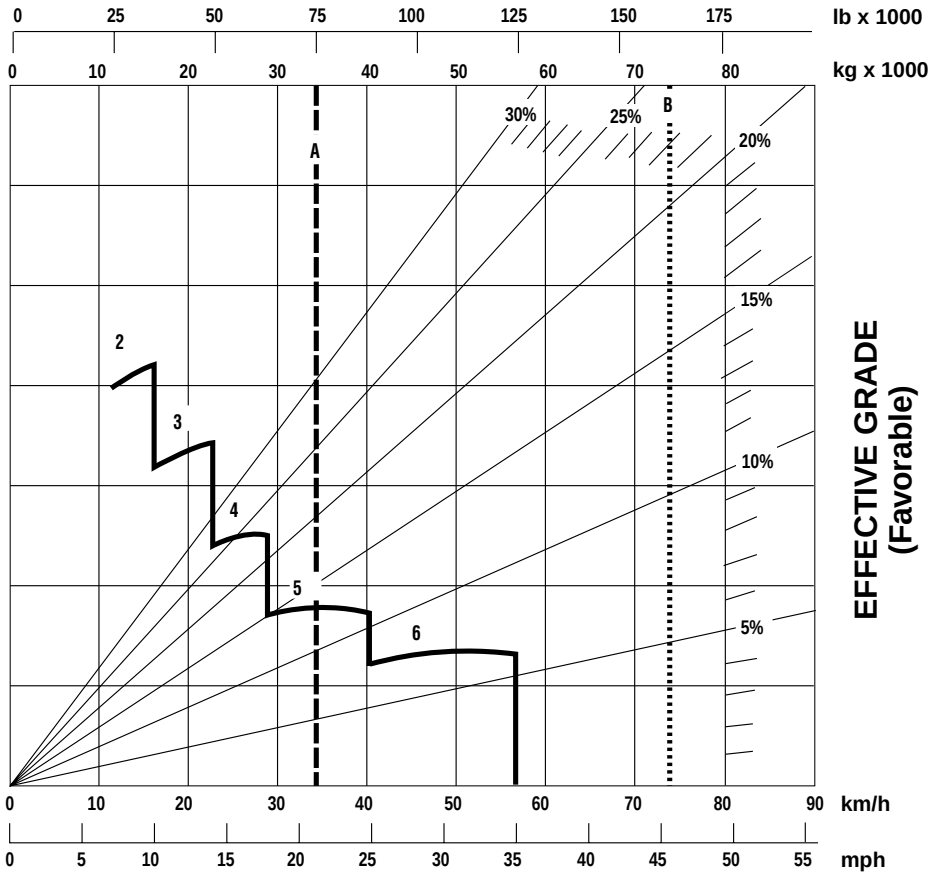


KEY

1A — 1st Gear (Torque Converter)
1B — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
6 — 6th Gear

KEY

A — Empty 33 975 kg (74,900 lb)
B — Max GMW 73 970 kg (163,100 lb)



KEY

2 — 2nd Gear
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KEY

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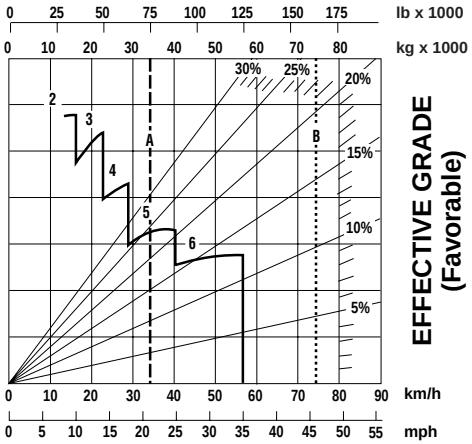
9

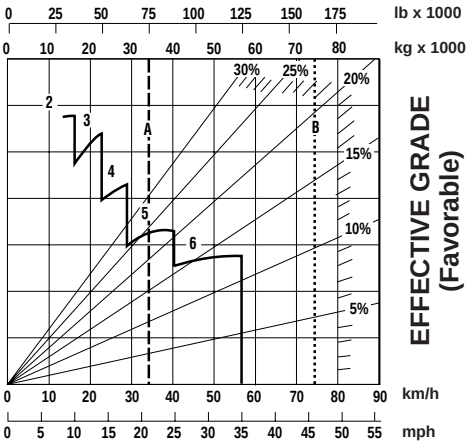
GROSS WEIGHT



SPEED

GRADE DISTANCE — 450 m (1500 ft)

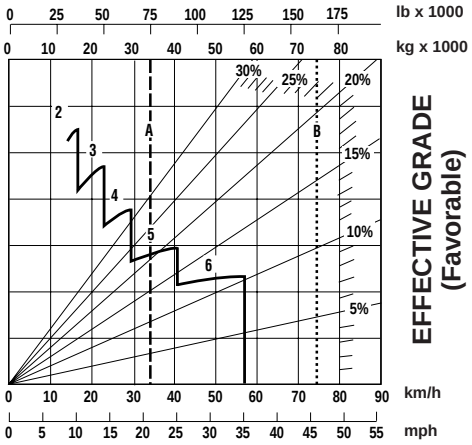
GROSS WEIGHT



SPEED

GRADE DISTANCE — 600 m (2000 ft)

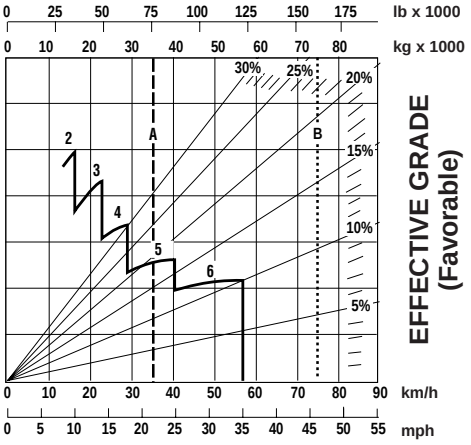
GROSS WEIGHT



SPEED

GRADE DISTANCE — 900 m (3000 ft)

GROSS WEIGHT



SPEED

GRADE DISTANCE — 1500 m (5000 ft)

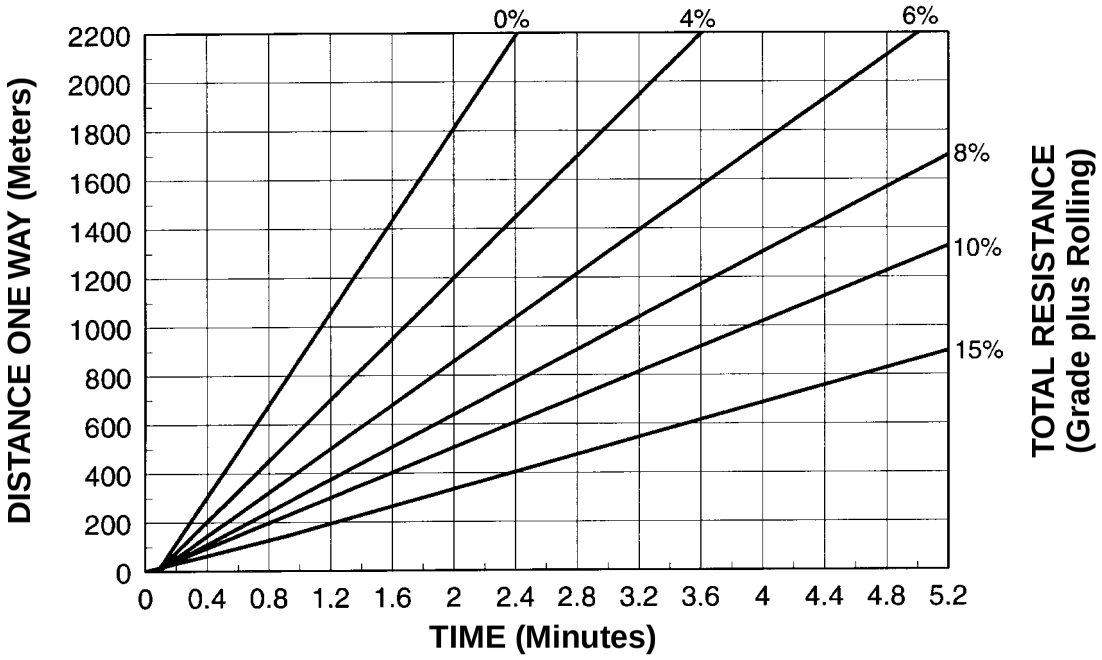
KEY

2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
6 — 6th Gear

KEY

A — Empty 33 975 kg (74,900 lb)
B — Max GMW 73 970 kg (163,100 lb)

LOADED



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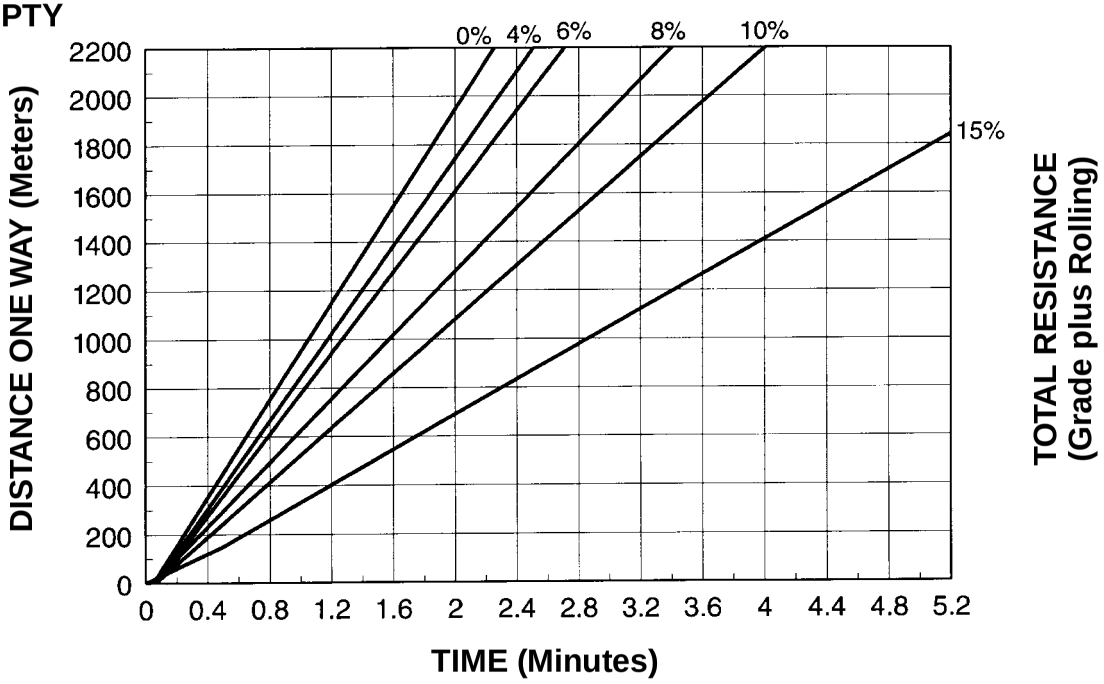

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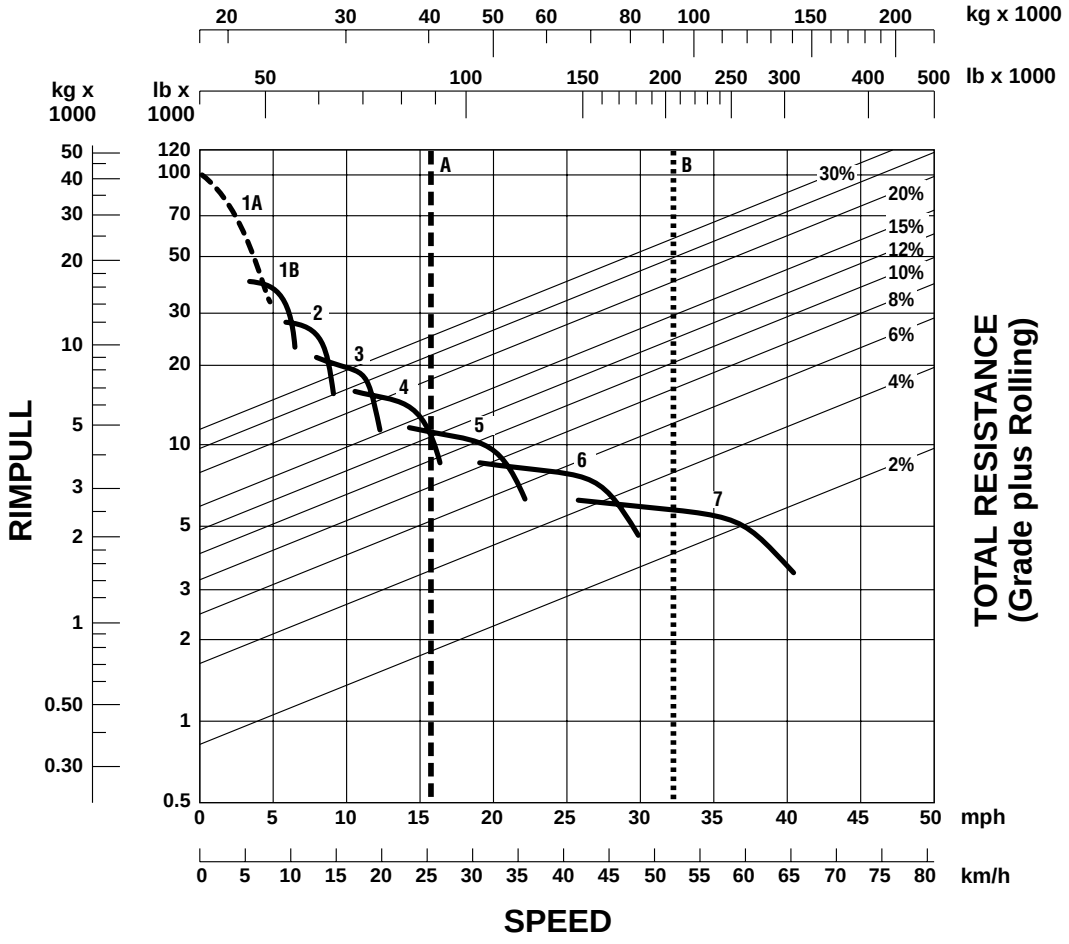

KEY

1A — 1st Gear (Torque Converter)
1B — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
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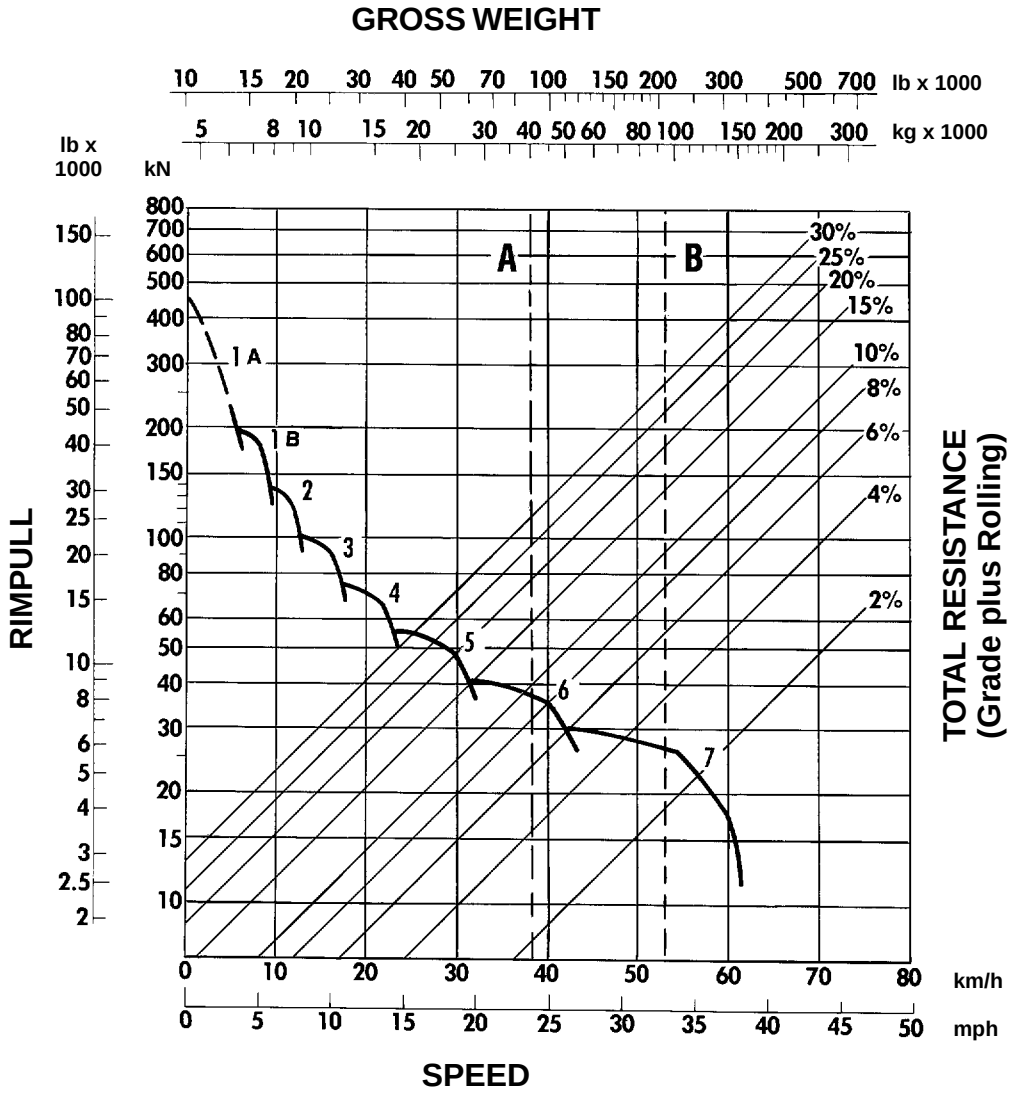
5 — 5th Gear
6 — 6th Gear
7 — 7th Gear

KEY

A — Empty 40 188 kg (88,600 lb)
B — Max GMW 92 534 kg (204,000 lb)



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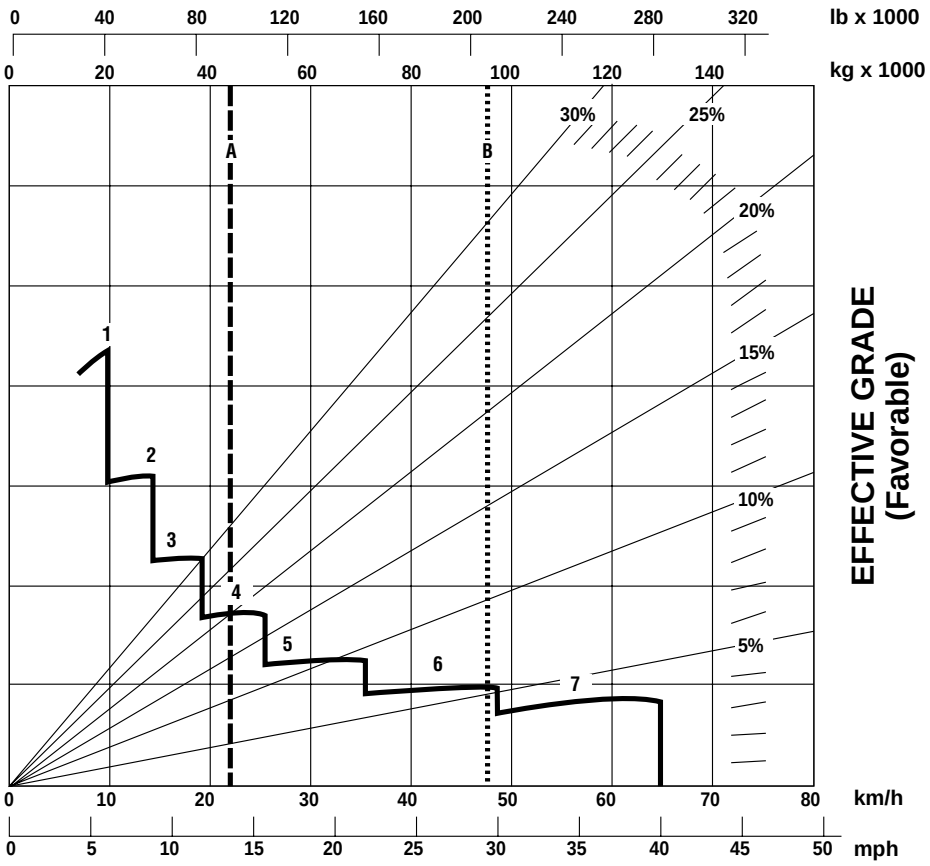

SPEED

CONTINUOUS GRADE LENGTH

KEY

1 — 1st Gear
2 — 2nd Gear
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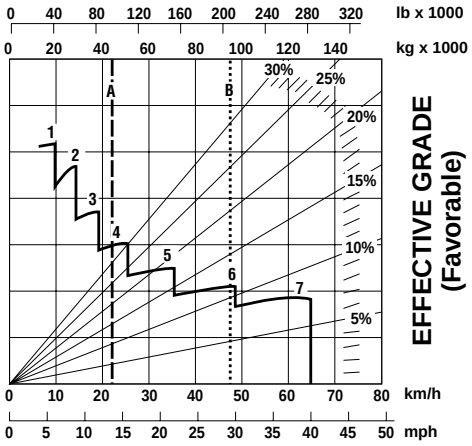
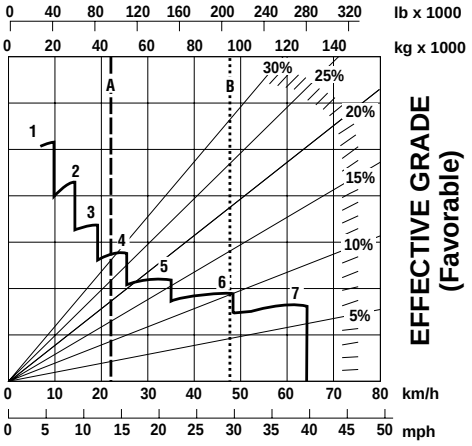


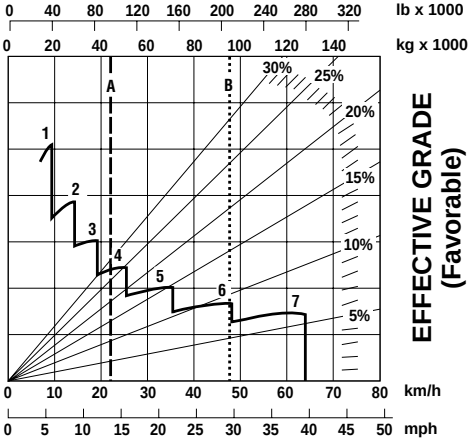
GRADE DISTANCE — 450 m (1500 ft)

GROSS WEIGHT



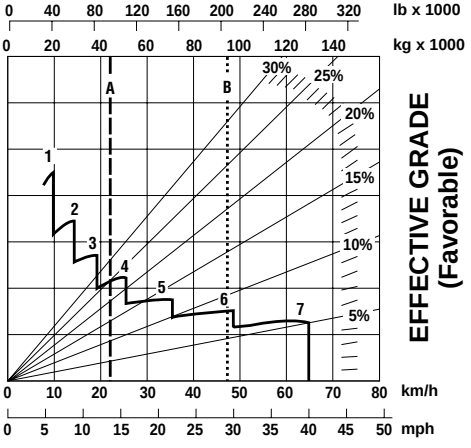
GRADE DISTANCE — 600 m (2000 ft)

GROSS WEIGHT



GRADE DISTANCE — 900 m (3000 ft)

GROSS WEIGHT



GRADE DISTANCE — 1500 m (5000 ft)

KEY

1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
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7 — 7th Gear

KEY

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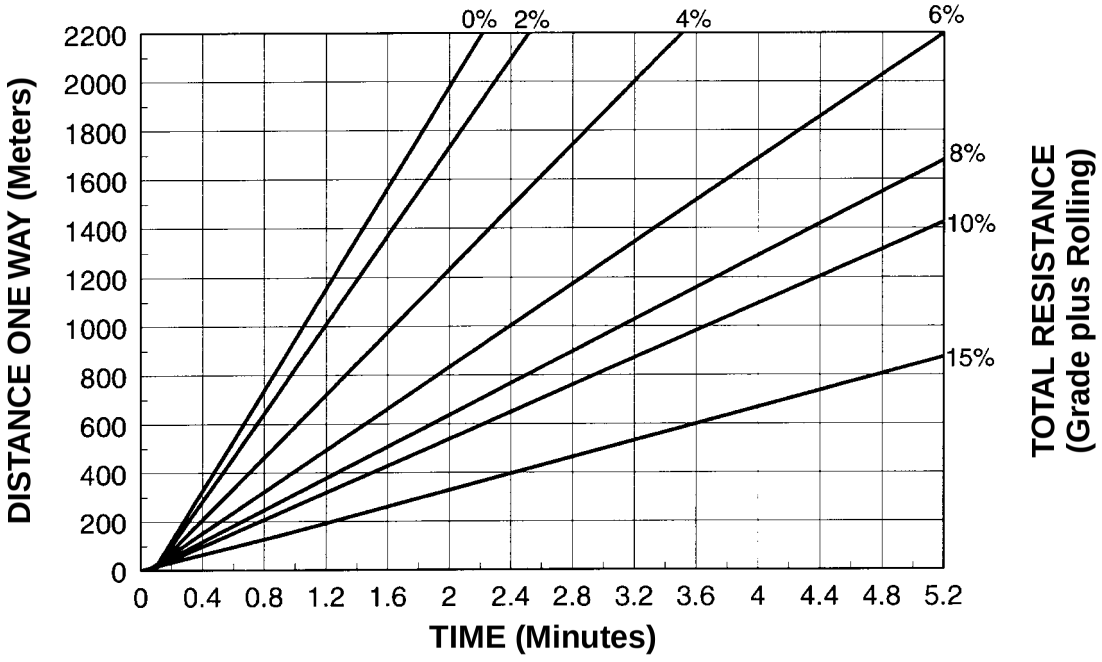
B — Max GMW 92 534 kg (204,000 lb)

9

LOADED



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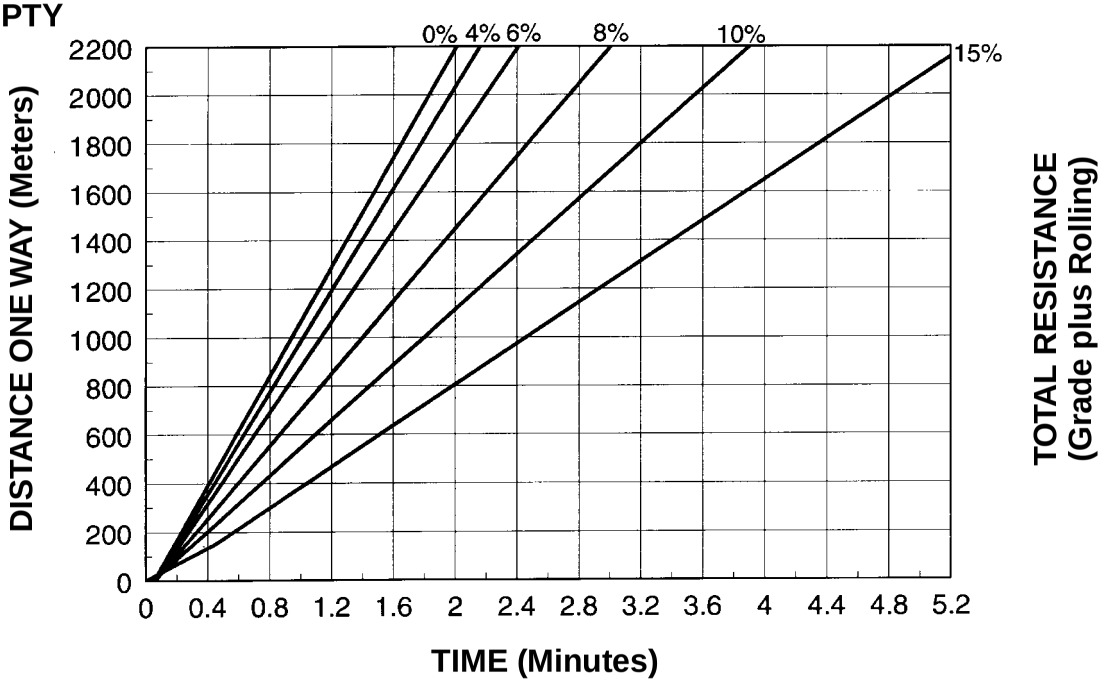

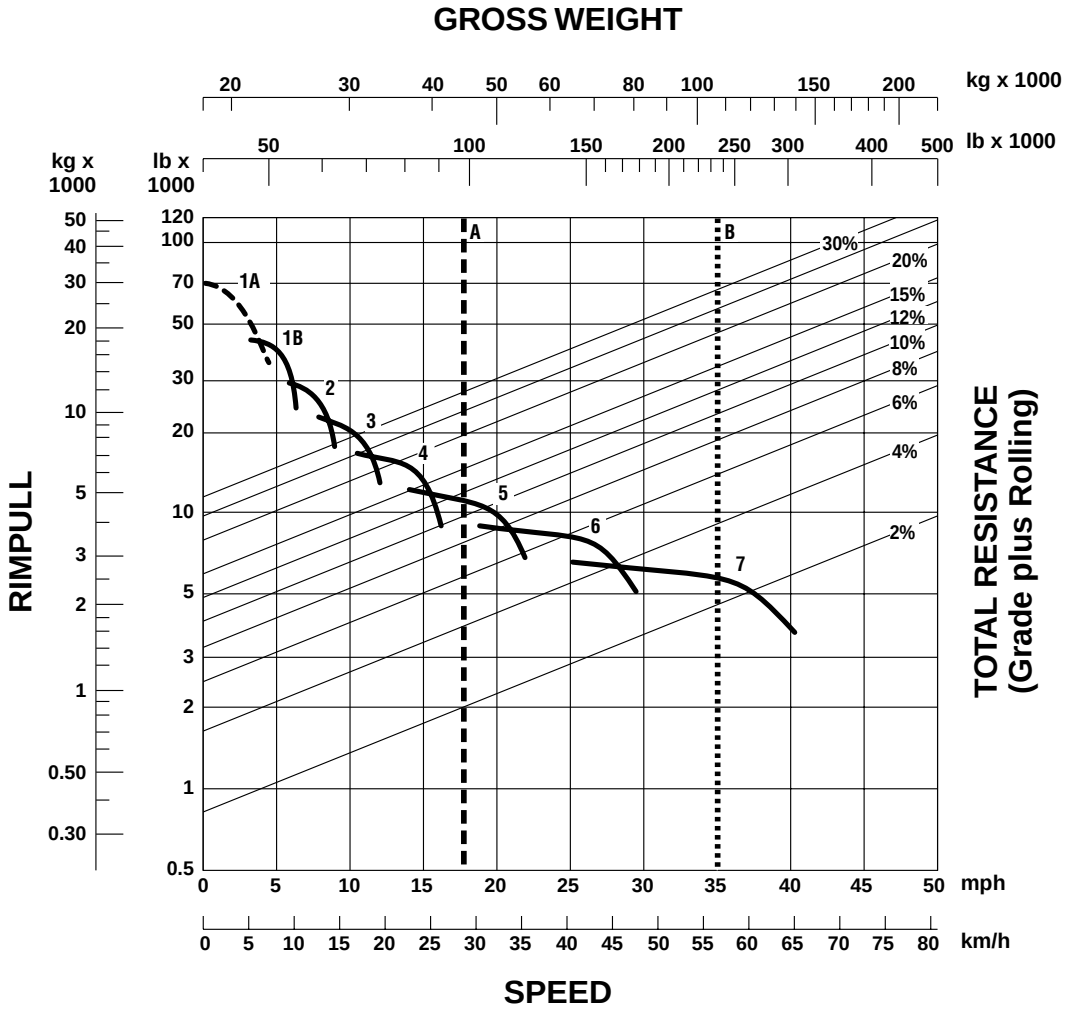

KEY

1A — 1st Gear (Torque Converter)
1B — 1st Gear
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3 — 3rd Gear
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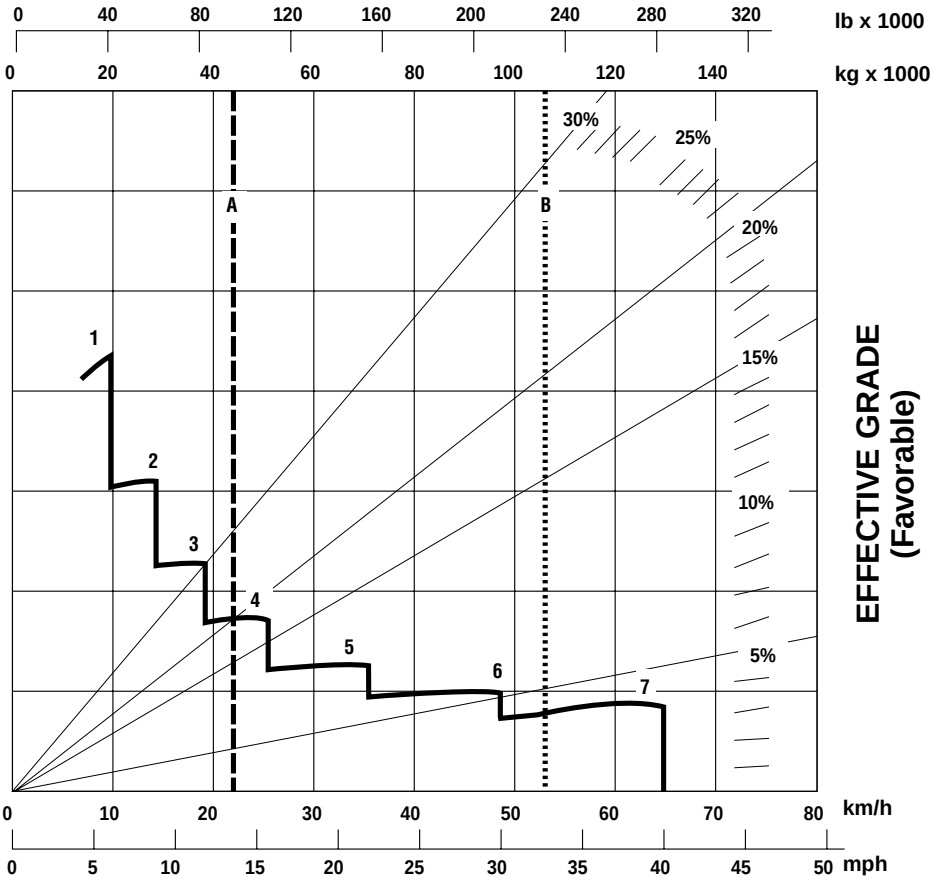
6 — 6th Gear
7 — 7th Gear

KEY

A — Empty 43 953 kg (96,900 lb)
B — Max GMW 106 594 kg (235,000 lb)

GROSS WEIGHT



SPEED

CONTINUOUS GRADE LENGTH

KEY

1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
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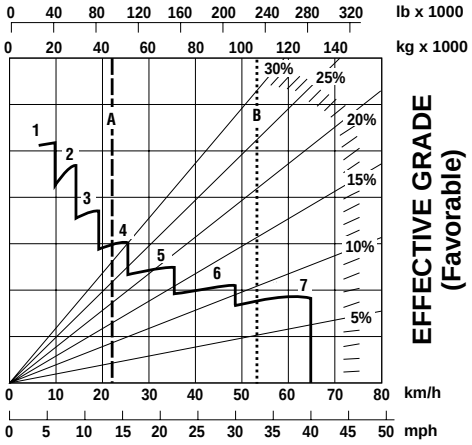
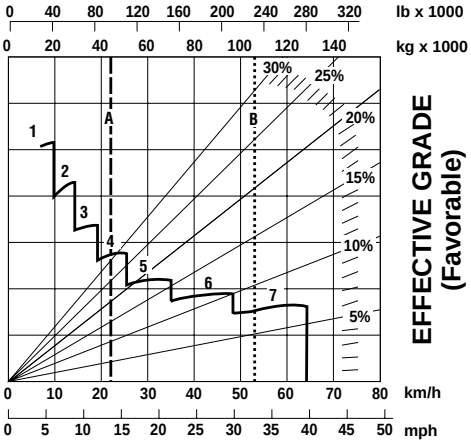


GRADE DISTANCE — 450 m (1500 ft)

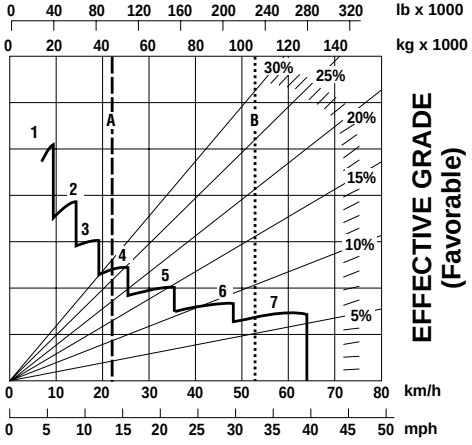
GROSS WEIGHT



GRADE DISTANCE — 600 m (2000 ft)

9

GROSS WEIGHT

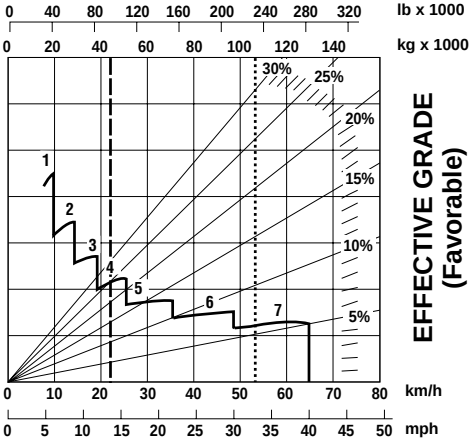


GRADE DISTANCE — 900 m (3000 ft)

KEY

1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
6 — 6th Gear
7 — 7th Gear

GROSS WEIGHT



GRADE DISTANCE — 1500 m (5000 ft)

KEY

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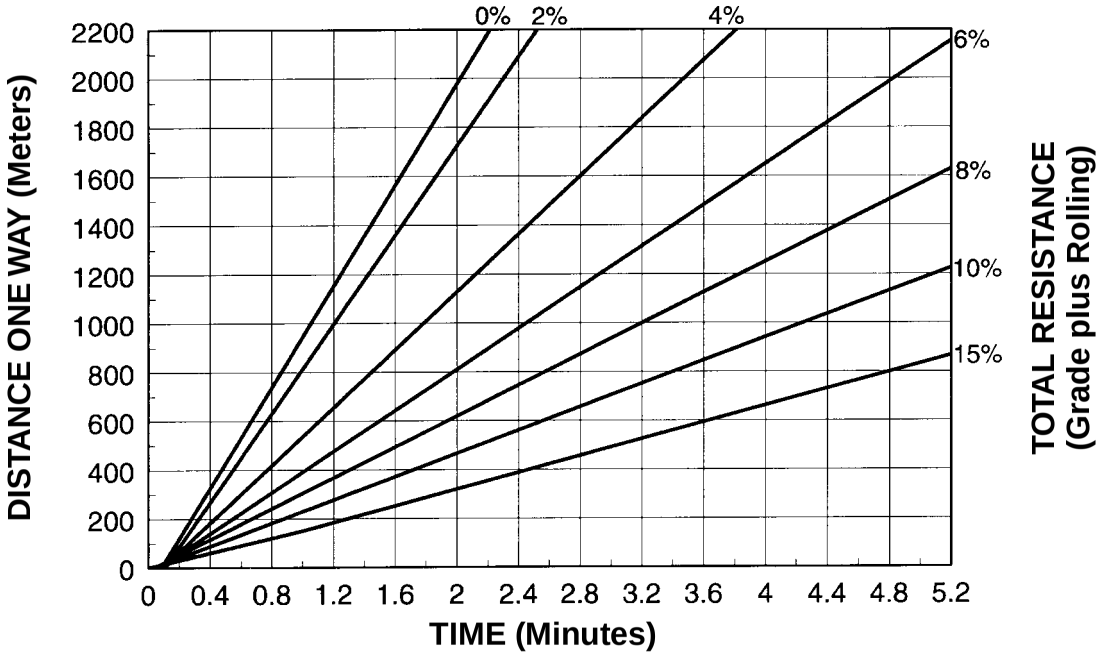

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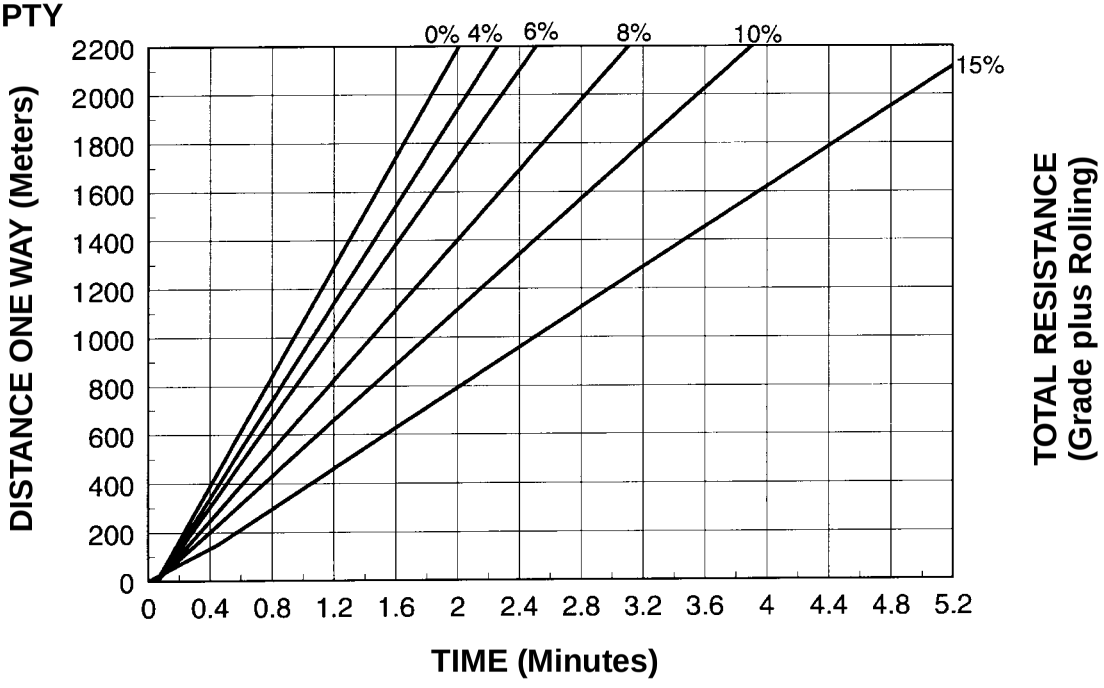

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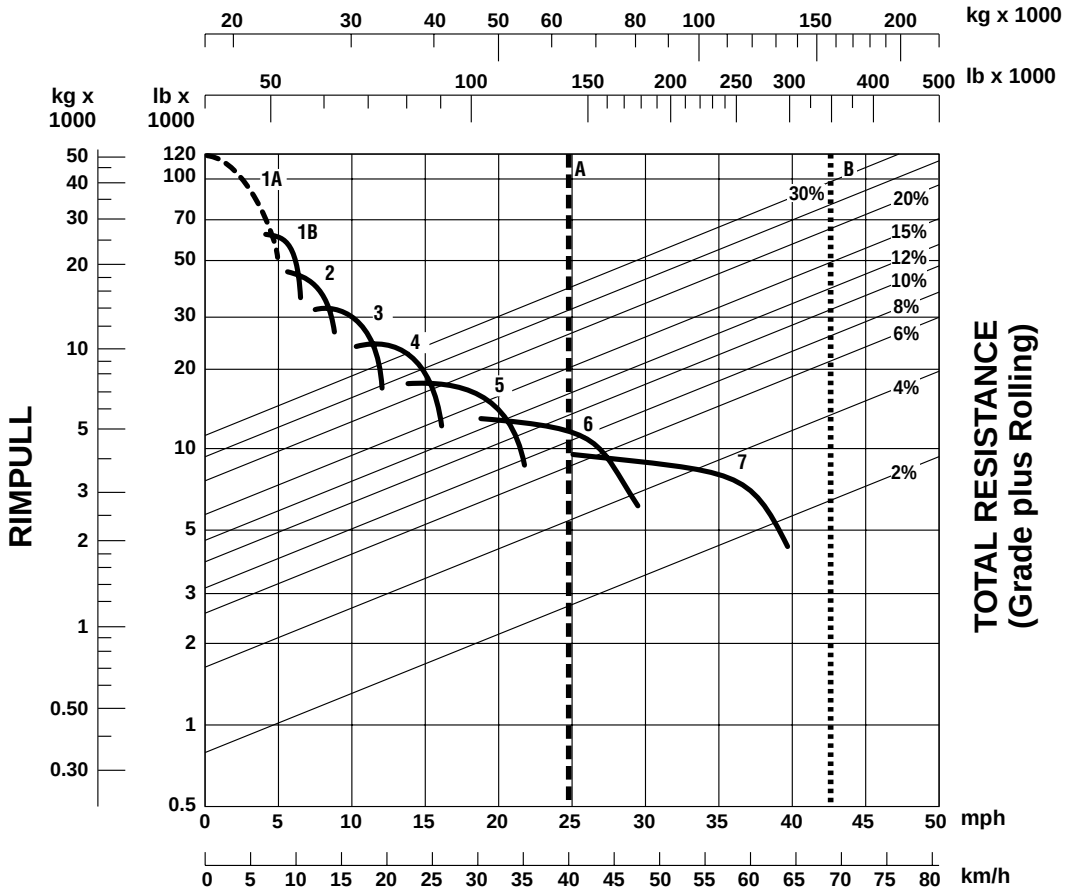


KEY

1A — 1st Gear (Torque Converter)
1B — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
6 — 6th Gear
7 — 7th Gear

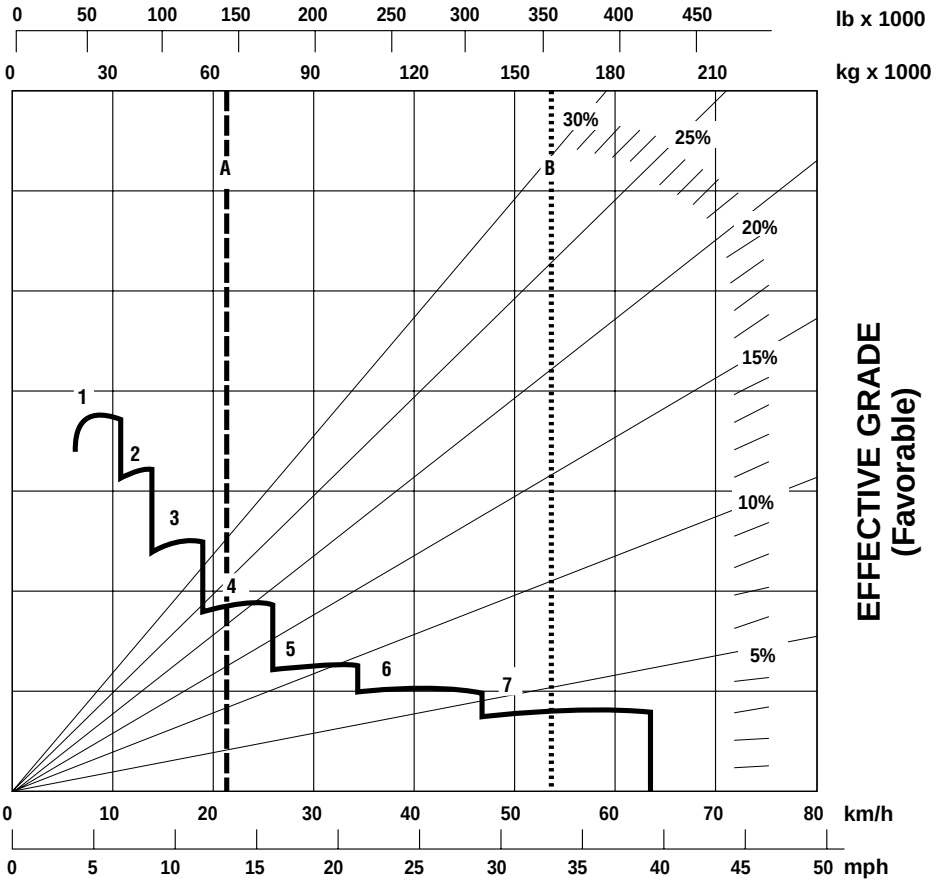
KEY

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.

9

GROSS WEIGHT



SPEED

CONTINUOUS GRADE LENGTH

KEY

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

A* — Empty 64 359 kg (141,889 lb)
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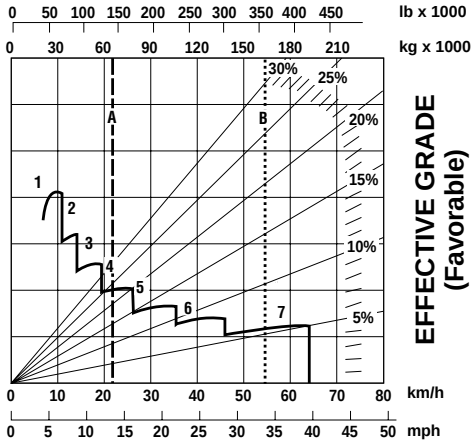
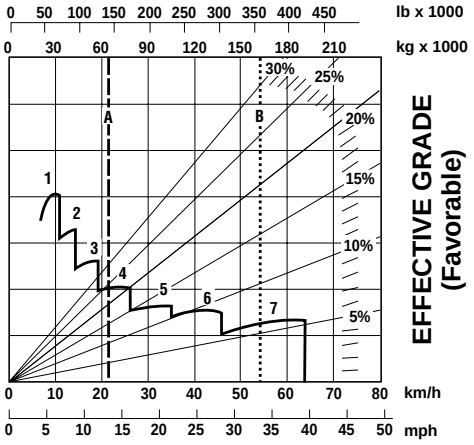
GROSS WEIGHT



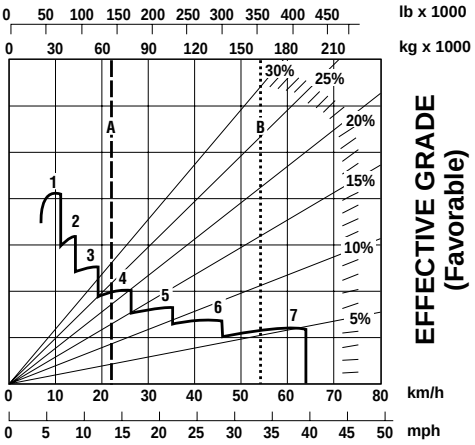
GRADE DISTANCE — 450 m (1500 ft)

GROSS WEIGHT



GRADE DISTANCE — 600 m (2000 ft)

GROSS WEIGHT



GRADE DISTANCE — 900 m (3000 ft)

KEY

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5 — 5th Gear
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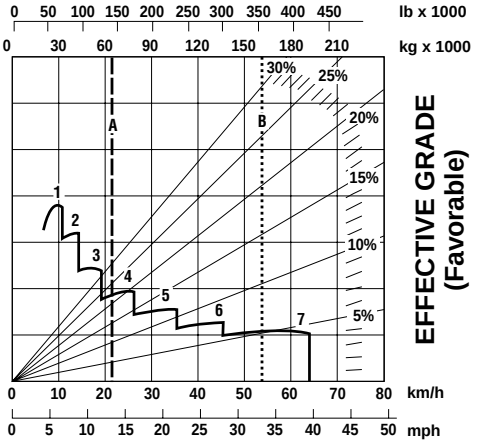
GROSS WEIGHT



GRADE DISTANCE — 1500 m (5000 ft)

KEY

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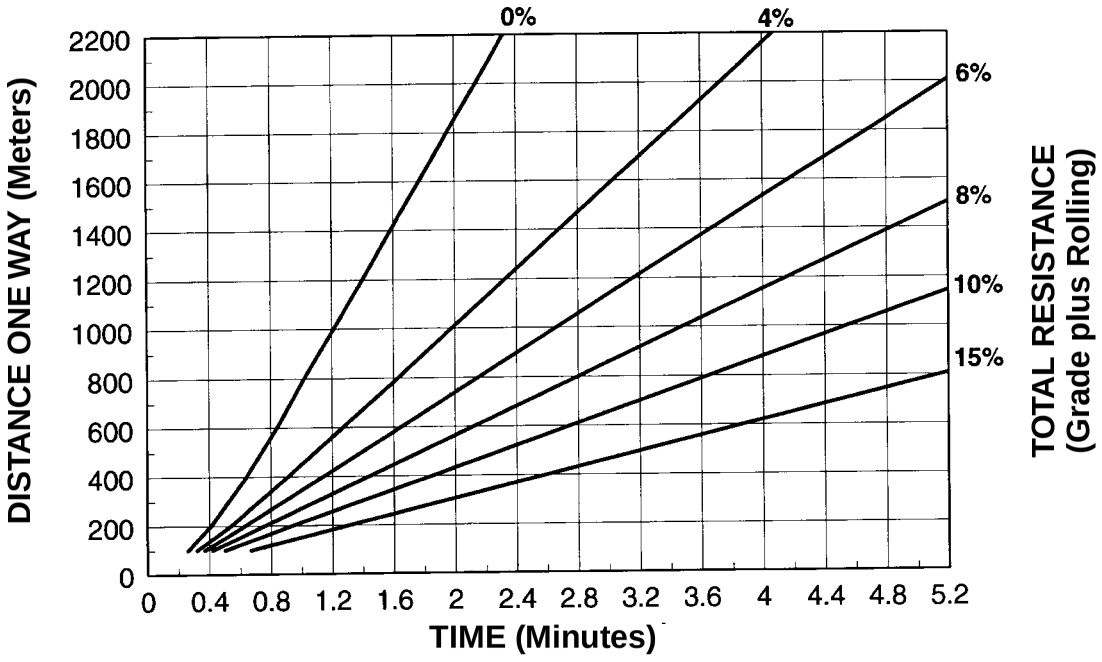
9

LOADED



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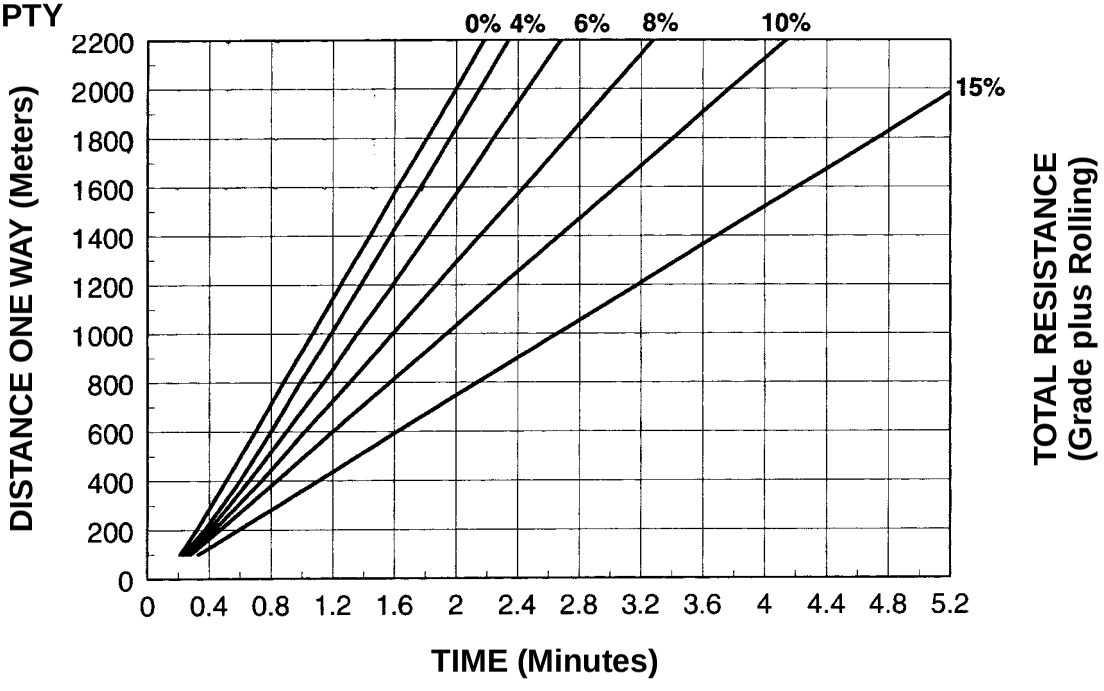

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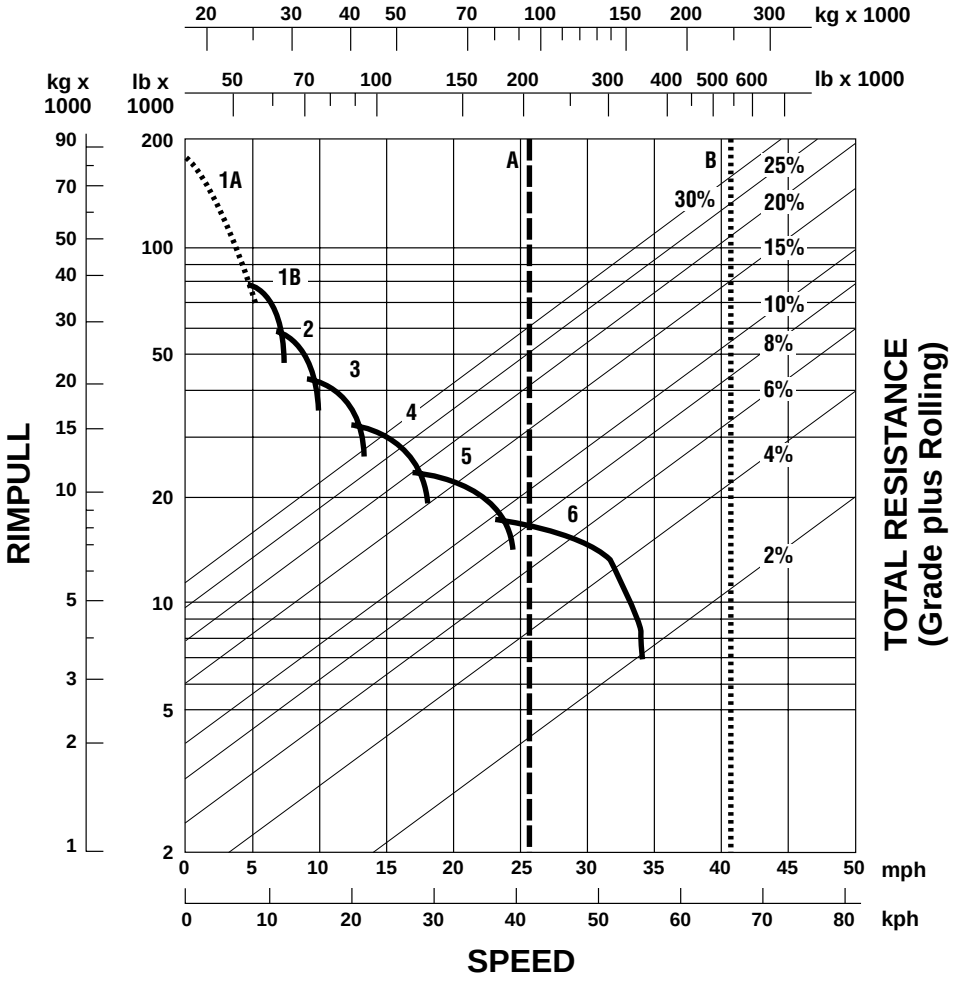


KEY

1A— 1st Gear (Torque Converter)
1B— 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
6 — 6th Gear

KEY

A* — Est. Field Empty Weight 113 400 kg (250,000 lb)**
B* — Max GMW 249 433 kg (550,000 lb)

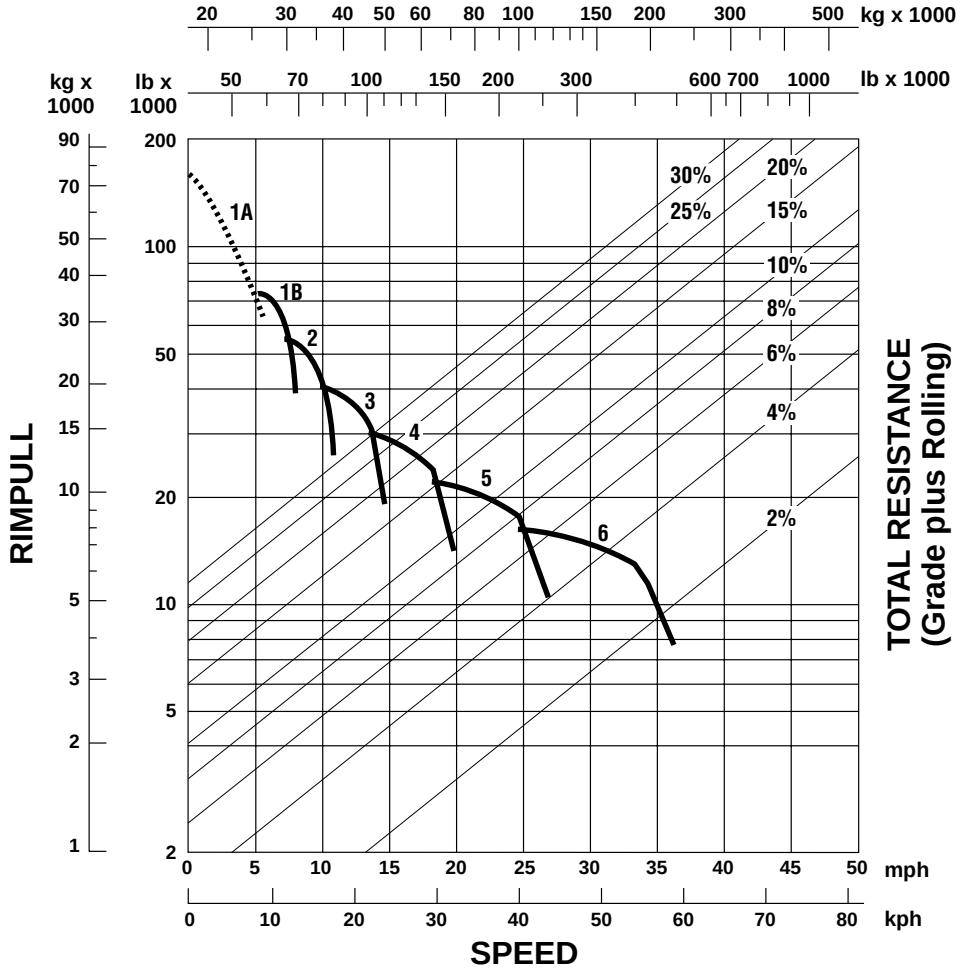
Maximum travel speeds

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**

*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

GROSS WEIGHT

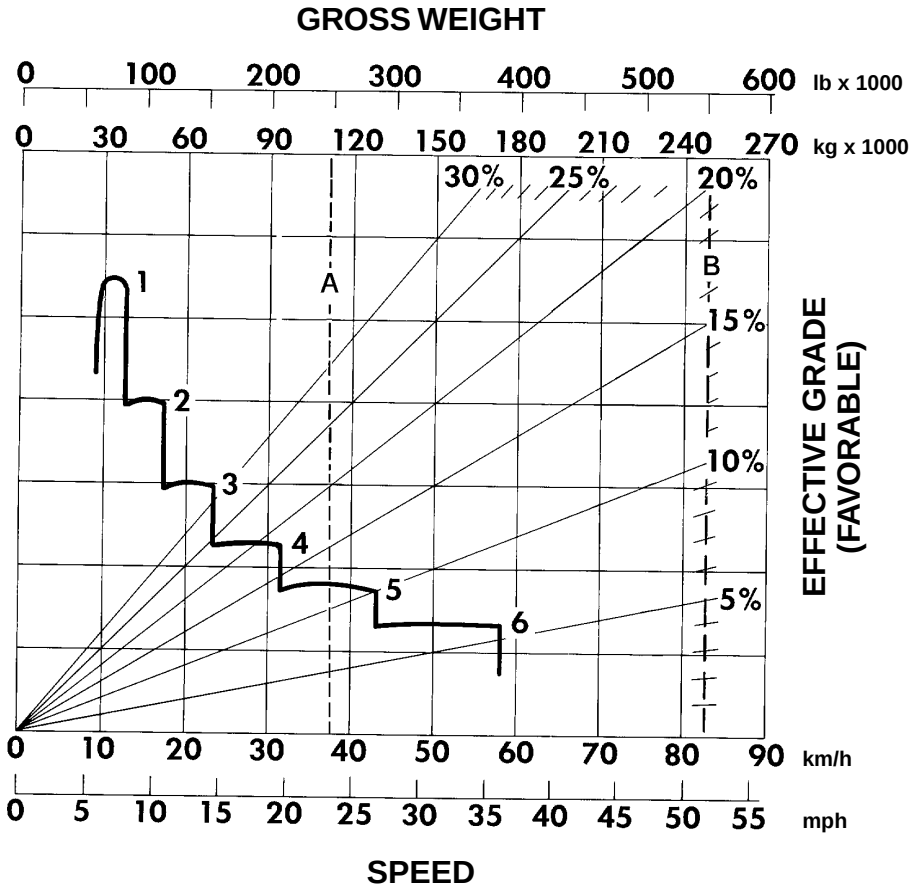


KEY

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**



KEY

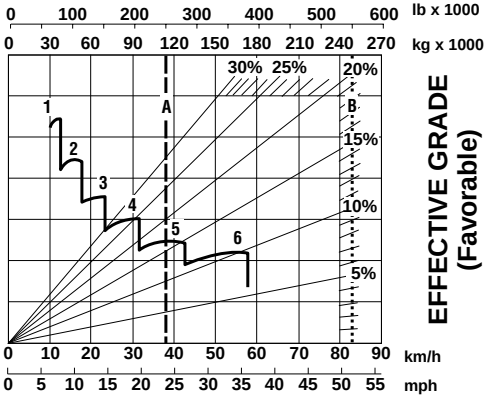
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
6 — 6th Gear

KEY

A* — Est. Field Empty Weight 113 400 kg (250,000 lb)**
B* — Max GMW 249 433 kg (550,000 lb)

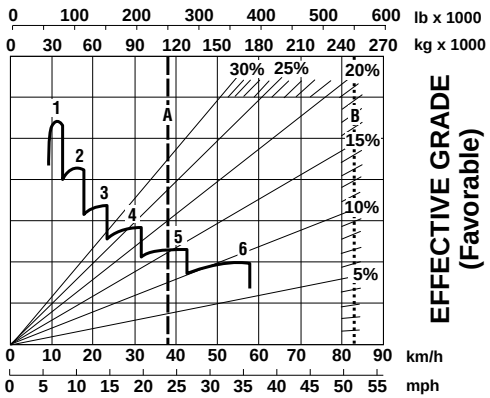
*These two reference lines (A and B) apply only to 785C. Brake performance for 784C will vary depending on trailer brake capability.
**Truck equipped with sideboards and liners.

GROSS WEIGHT



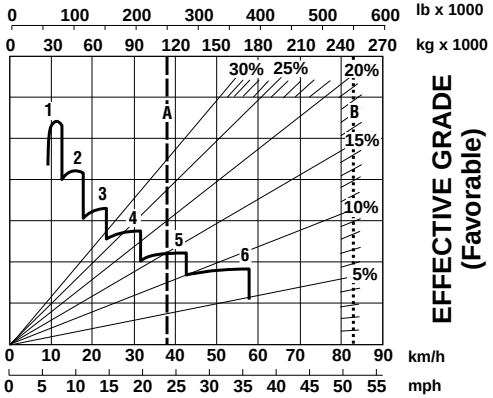
GRADE DISTANCE — 450 m (1500 ft)

GROSS WEIGHT



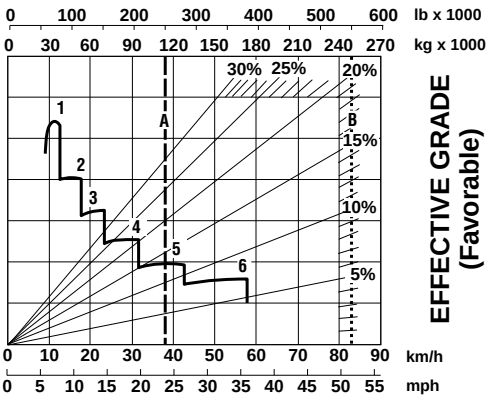
GRADE DISTANCE — 600 m (2000 ft)

GROSS WEIGHT



GRADE DISTANCE — 900 m (3000 ft)

GROSS WEIGHT



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 113 400 kg (250,000 lb)**
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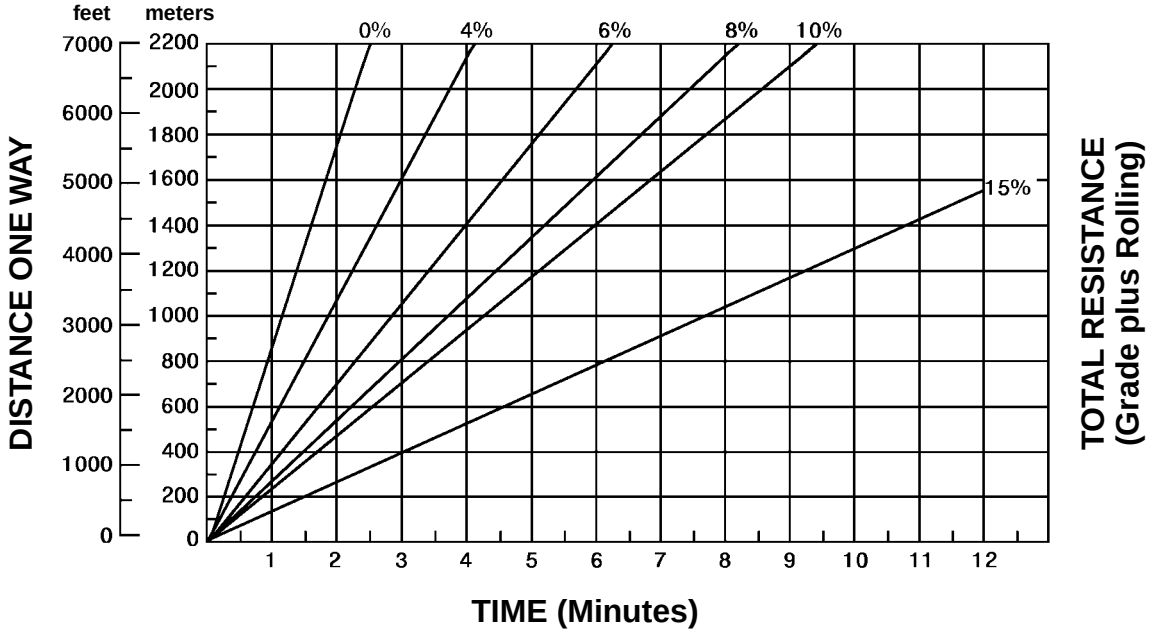
*These two reference lines (A and B) apply only to 785C. Brake performance for 784C will vary depending on trailer brake capability.
**Truck equipped with sideboards and liners.

LOADED



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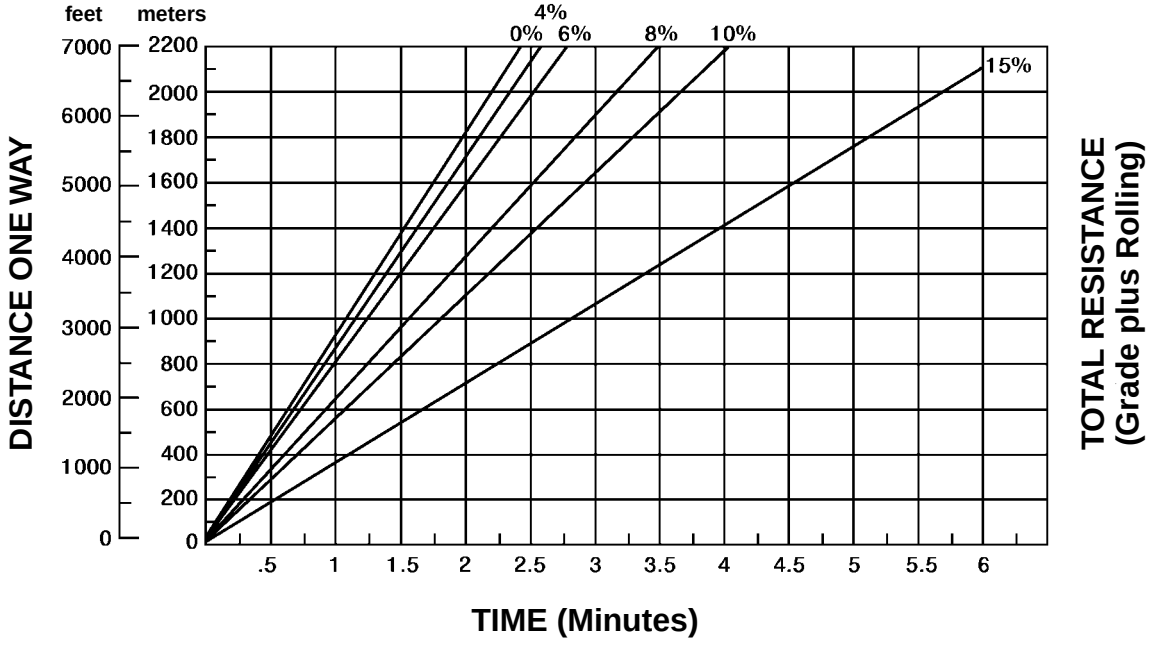
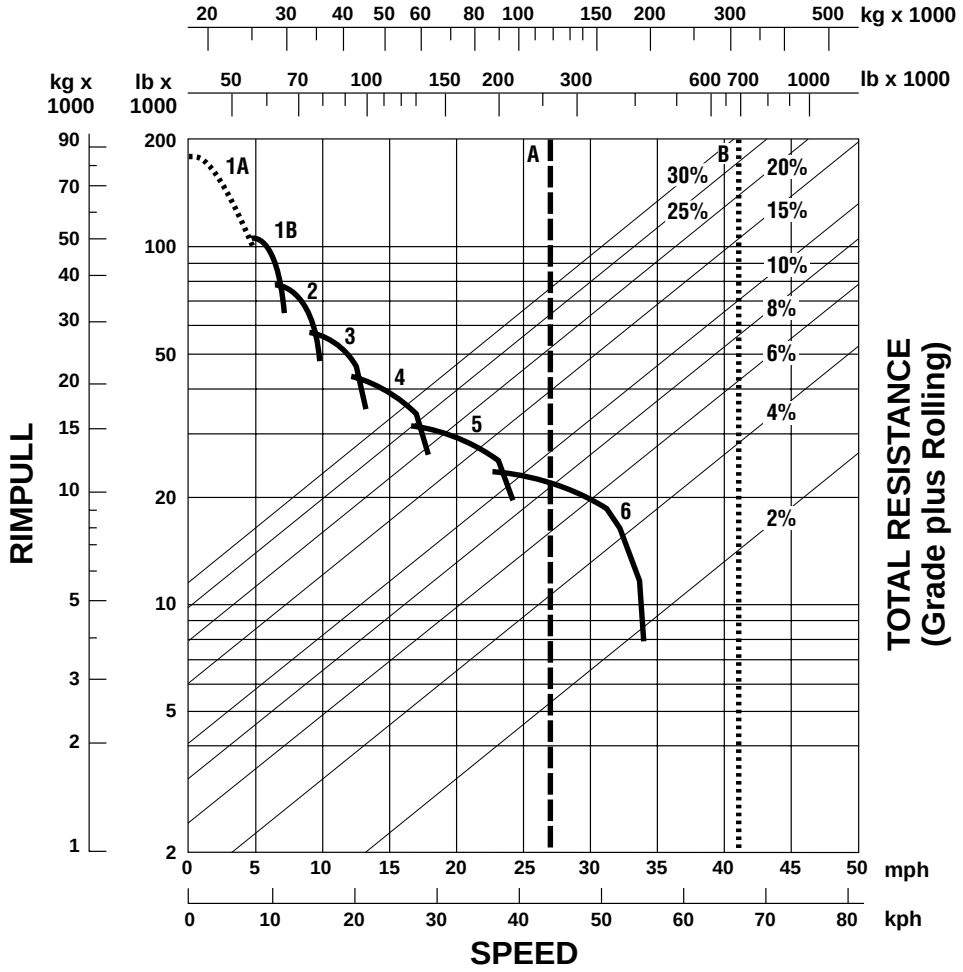


789C Rimpull-Speed-Gradeability
- 37.00R57 Tires
- 1593 mm (5'2.7") Tire Radius

GROSS WEIGHT



KEY

1A— 1st Gear (Torque Converter)
1B— 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear
6 — 6th Gear

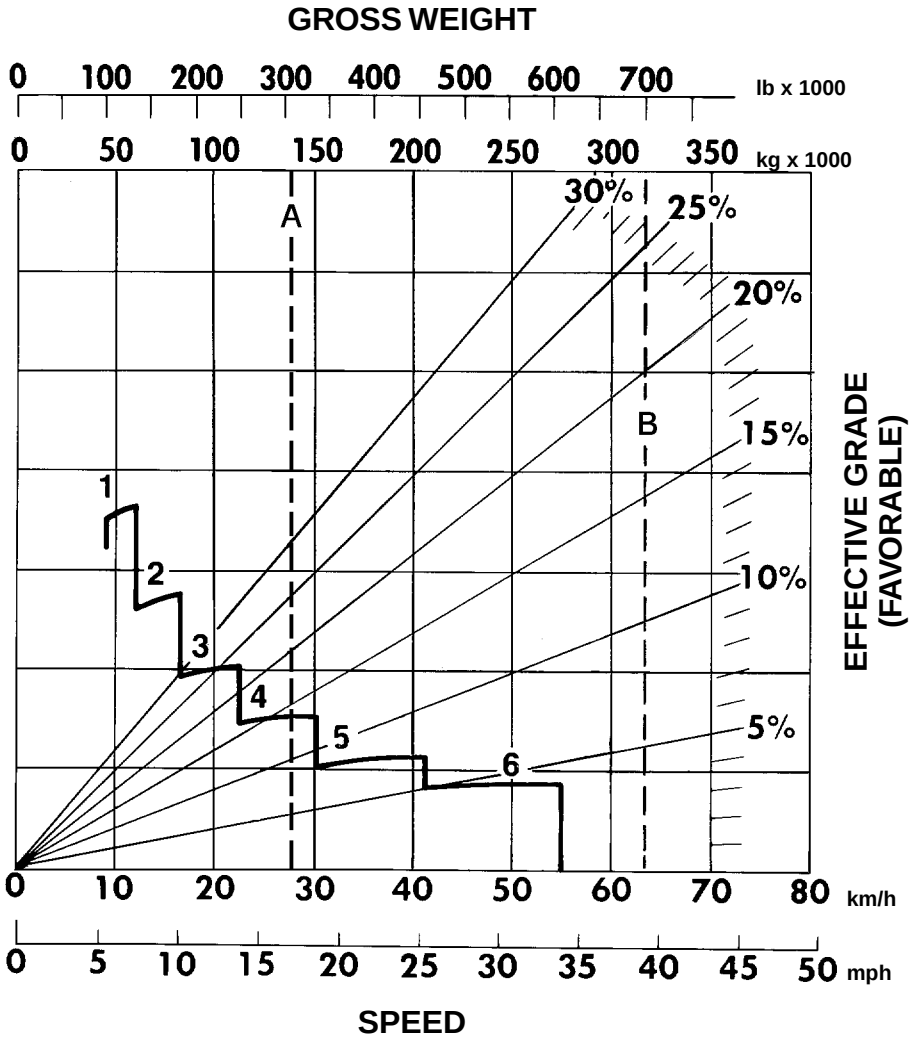
KEY

A — Est. Field Empty Weight 140 616 kg (310,000 lb)*
B — Max GMW 317 460 kg (700,000 lb)

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**

*Truck equipped with sideboards and liners.



KEY

1 — 1st Gear
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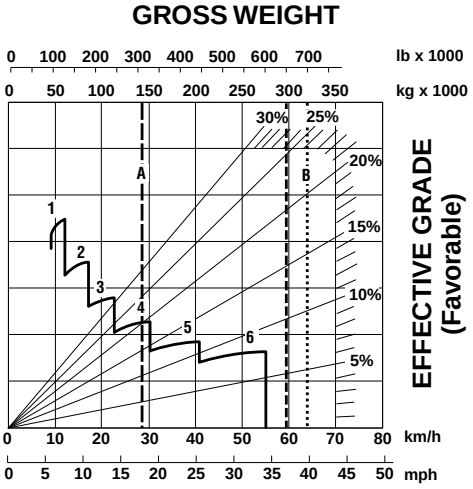
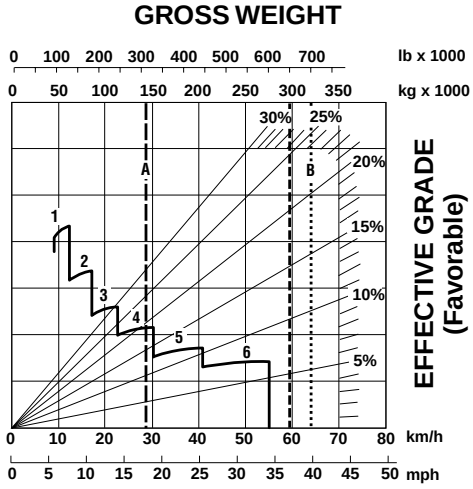
B — Max GMW 317 460 kg (700,000 lb)

*Truck equipped with sideboards and liners.

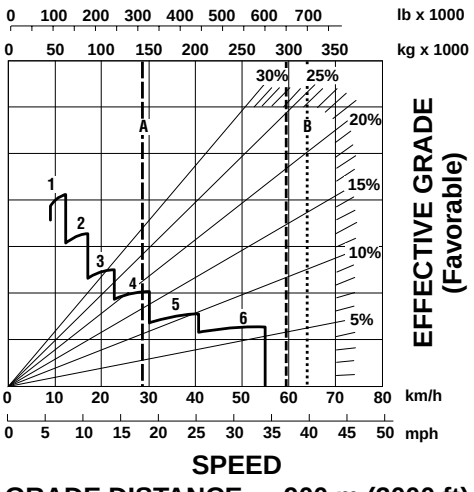
9



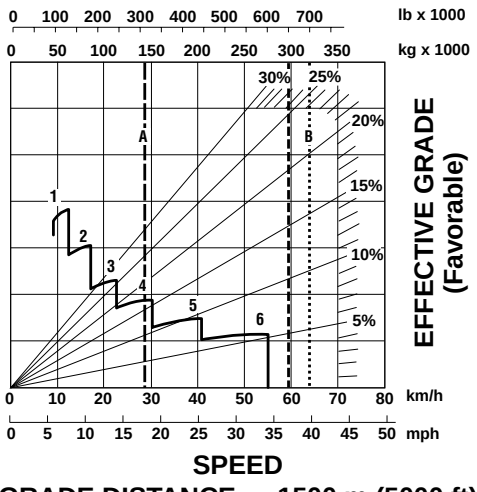
GRADE DISTANCE — 450 m (1500 ft)



GRADE DISTANCE — 600 m (2000 ft)



GRADE DISTANCE — 900 m (3000 ft)



GRADE DISTANCE — 1500 m (5000 ft)

KEY

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2 — 2nd Gear
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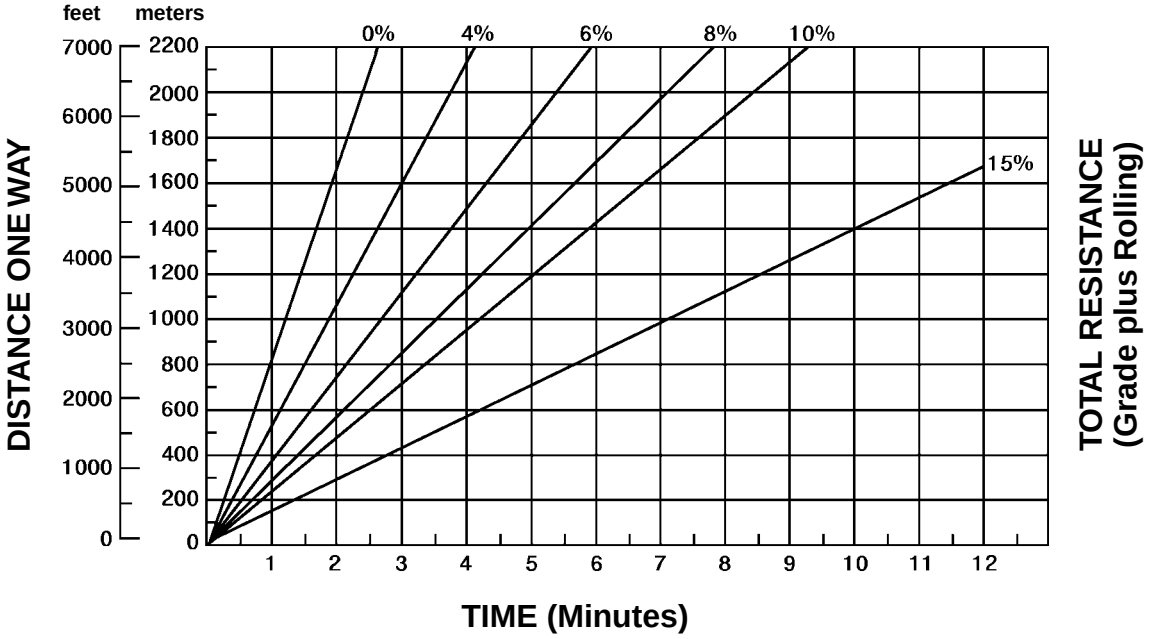
A — Est. Field Empty Weight 140 616 kg (310,000 lb)*
B — Max GMW 317 460 kg (700,000 lb)

*Truck equipped with sideboards and liners.

LOADED



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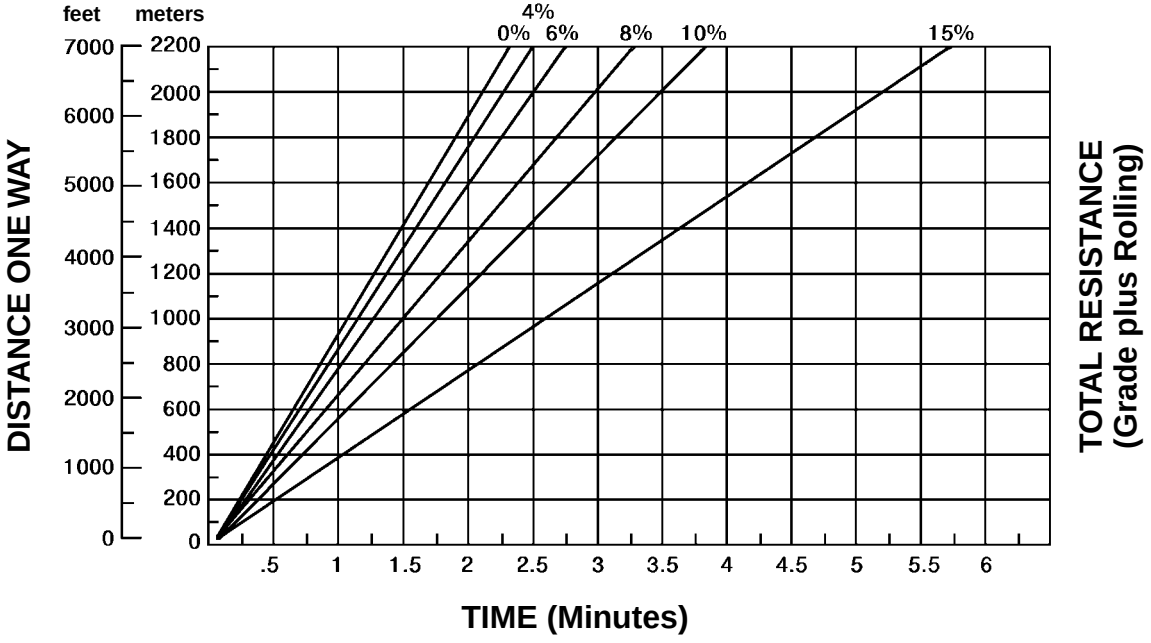
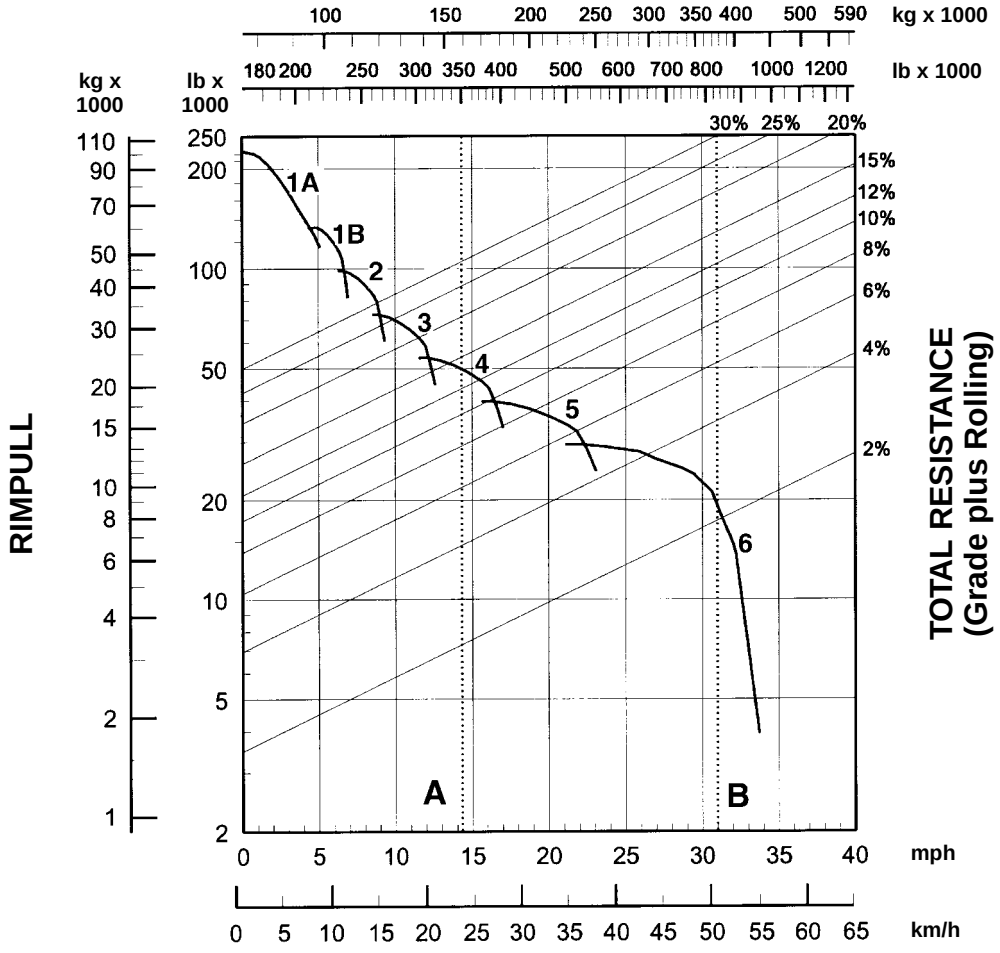


793C Rimpull-Speed-Gradeability
- 40.00R57 Tires
- 1778 mm (5'10") Tire Radius

GROSS WEIGHT



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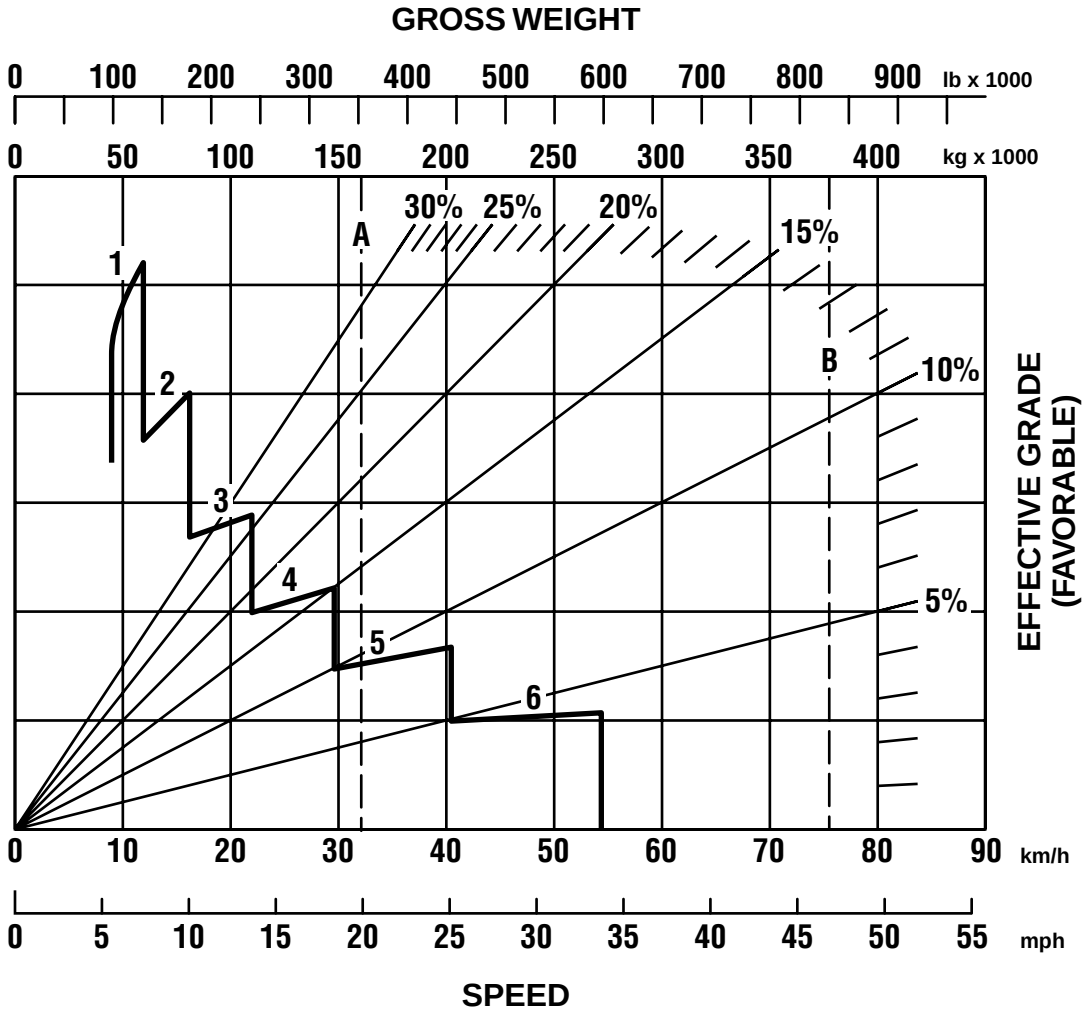
KEY

A — Est. Field Empty Weight 158 760 kg (350,000 lb)*
B — Max GMW 376 488 kg (830,000 lb)

*Truck equipped with sideboards and liners.



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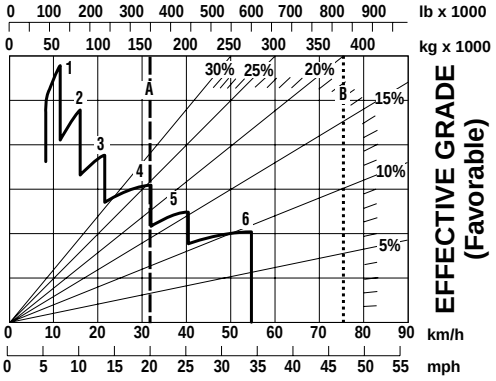
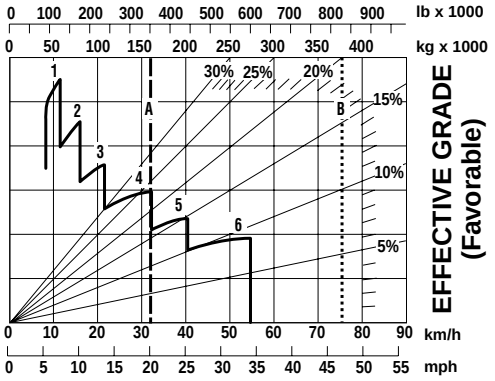
GROSS WEIGHT



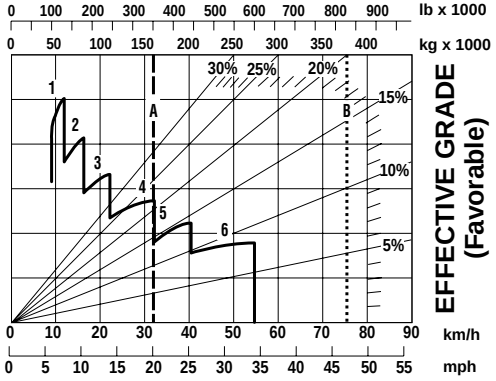
SPEED
GRADE DISTANCE — 450 m (1500 ft)

GROSS WEIGHT



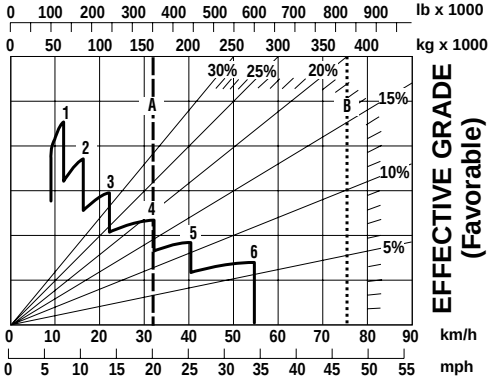
SPEED
GRADE DISTANCE — 600 m (2000 ft)

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
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6 — 6th Gear

KEY

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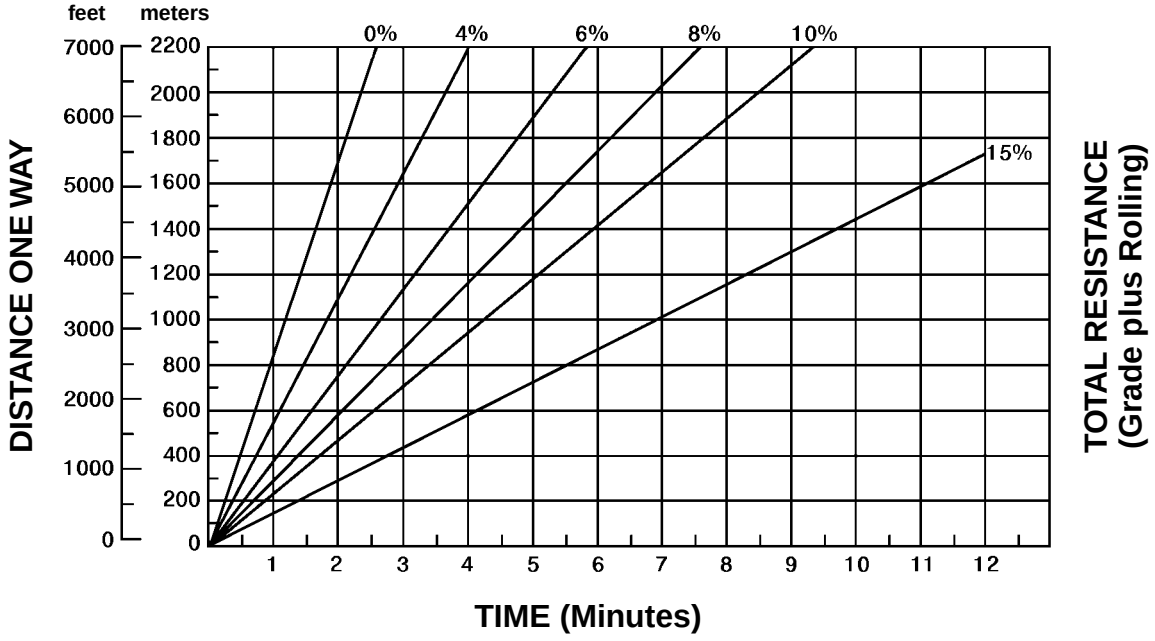
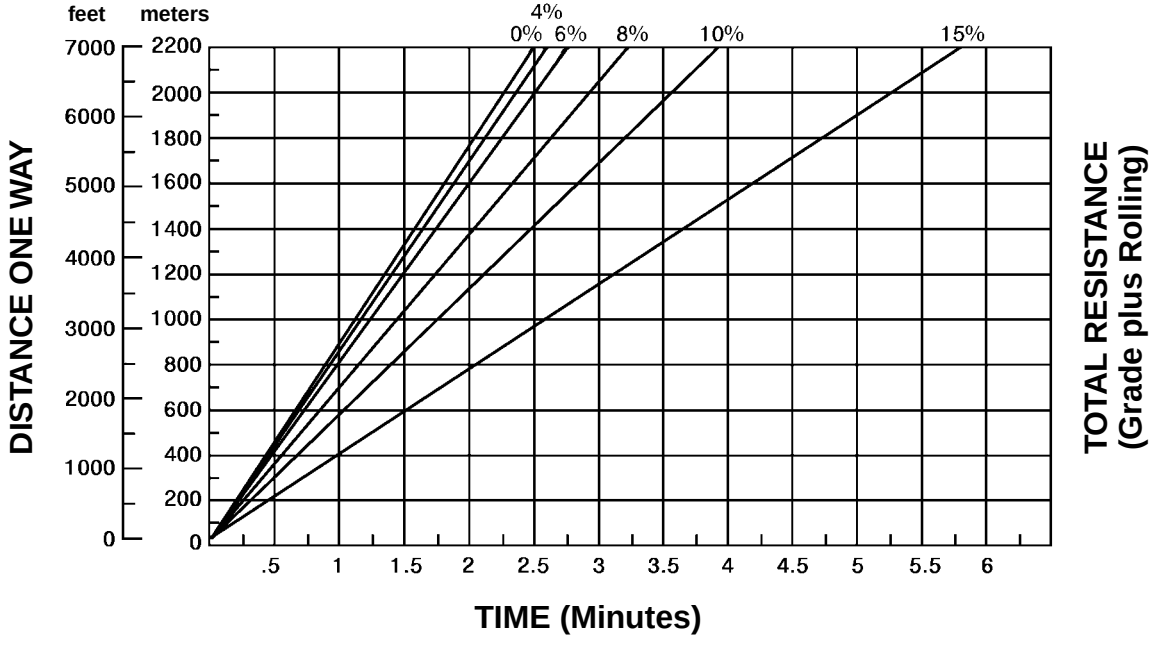
B — Max GMW 376 488 kg (830,000 lb)

*Truck equipped with sideboards and liners.

LOADED



EMPTY



ARTICULATED TRUCKS

CONTENTS

Features:

- **Caterpillar four-stroke-cycle diesels** … turbocharged and aftercooled, automatic variable timing … parallel porting … direct injection, adjustment-free fuel system … meet all environment regulations effective January 1, 1996.
- **Electronically programmable transmission control on "E" series models** … speed sensing device automatically shifts transmission between 1st and gear selected by operator. Control constantly monitors transmission behavior for quick and efficient troubleshooting.
- **Articulating and fully oscillating hitch** … links torsion-free front and rear frames for exceptional maneuverability and traction on uneven terrain. Cast hitch head is robotically-welded to steel alloy forged tube for unmatched strength and durability.
- **Superior suspension systems** … coupled with oscillating hitch, provide smooth ride and excellent traction for prime performance and operator comfort.
- **Wide, long, low dump body design** … for enhanced loadability, material retention and ejection, with excellent machine stability. Low load-over-height allows versatile loader match.
- **High capacity low pressure tires in single formation** … for superior traction and flotation on poor underfoot conditions.
- **High power-to-weight ratio and excellent gradeability** … for high-efficiency and versatile performance.
- **Standard ROPS/FOPS, low sound level cab with tinted safety glass** … for productive and safe operation.


MODEL	D25D		D30D	
Flywheel Power	194 kW	**260 hp**	213 kW	**285 hp**
Operating Weight (Empty)*	19 450 kg	**42,880 lb**	21 690 kg	**47,320 lb**
Top Speed (Loaded)	48 km/h	**30 mph**	52 km/h	**32 mph**
GMW — Gross Machine Weight	42 250 kg	**93,145 lb**	49 150 kg	**108,360 lb**
Distribution Empty:				
Front		**70%**		**66%**
Rear		**30%**		**34%**
Distribution Loaded:				
Front		**48%**		**44%**
Rear		**52%**		**56%**
Max. Capacity**	22.7 t	**25 T**	27.2 t	**30 T**
Struck (SAE)	10 m^3	**13 yd^3**	12.5 m^3	**16.4 yd^3**
Heaped (2:1) (SAE)	14 m^3	**18 yd^3**	16.5 m^3	**21.6 yd^3**
Engine Model		**3306TA**		**3306TA**
No. Cylinders		**6**		**6**
Bore	121 mm	**4.75"**	121 mm	**4.75"**
Stroke	152 mm	**6"**	152 mm	**6"**
Displacement	10.5 L	**638 in^3**	10.5 L	**638 in^3**
Tires, Front & Rear		**26.5R25 Radials**		**29.5R25 Radials**
Circular Clearance Diameter	15.9 m	**52'2"**	16.4 m	**53'9"**
Fuel Tank Refill Capacity	450 L	**120 U.S. gal**	450 L	**120 U.S. gal**
GENERAL DIMENSIONS (Empty):				
Height to Cab Top	3.34 m	**10'11"**	3.40 m	**11'2"**
Wheel Base	4.93 m	**16'2"**	5.04 m	**16'6"**
Overall Length	8.79 m	**28'10"**	8.89 m	**29'2"**
Loading Height (Empty)	2.63 m	**8'8"**	2.83 m	**9'3"**
Height at Full Dump	5.19 m	**17'0"**	5.46 m	**17'11"**
Body Length	4.79 m	**15'8"**	4.90 m	**16'1"**
Width (Operating)	3.00 m	**9'10"**	3.30 m	**10'10"**
Front Tire Tread	2.32 m	**7'7"**	2.55 m	**8'4"**

*Includes coolant, lubricant and full fuel tank.
**Rating dependent on optional equipment. Maximum gross weight (empty weight plus payload) should not be exceeded.




MODEL	D250E Series II		D300E Series II		D350E		D400E	
Flywheel Power	201 kW	**270 hp**	213 kW	**285 hp**	253 kW	**340 hp**	302 kW	**405 hp**
Operating Weight (Empty)*	21 600 kg	**47,630 lb**	22 450 kg	**49,500 lb**	27 871 kg	**61,455 lb**	29 263 kg	**64,510 lb**
Top Speed (Loaded)	50.9 km/h	**31.6 mph**	49 km/h	**30.5 mph**	50.7 km/h	**31.5 mph**	55.4 km/h	**34 mph**
GMW — Gross Machine Weight	44 280 kg	**97,640 lb**	49 670 kg	**109,520 lb**	59 631 kg	**131,486 lb**	65 563 kg	**144,500 lb**
Distribution Empty:								
Front		**56%**		**54%**		**60%**		**60%**
Center		**23%**		**24%**		**20%**		**20%**
Rear		**21%**		**22%**		**20%**		**20%**
Distribution Loaded:								
Front		**30%**		**30%**		**35%**		**34%**
Center		**35%**		**35%**		**33%**		**33%**
Rear		**35%**		**35%**		**32%**		**33%**
Max. Capacity**	22.7 t	**25 T**	27.2 t	**30 T**	31.8 t	**35 T**	36.3 t	**40 T**
Struck (SAE)	10.5 m^3	**13.7 yd^3**	13 m^3	**17 yd^3**	14.6 m^3	**19.1 yd^3**	16.5 m^3	**21.6 yd^3**
Heaped (2:1) (SAE)	13.7 m^3	**18 yd^3**	16.5 m^3	**21.6 yd^3**	19.2 m^3	**25.1 yd^3**	22 m^3	**28.8 yd^3**
Engine Model		**3306DITA**		**3306DITA**		**3406DITA**		**3406DITA**
No. Cylinders		**6**		**6**		**6**		**6**
Bore	121 mm	**4.75"**	121 mm	**4.75"**	137 mm	**5.4"**	137 mm	**5.4"**
Stroke	152 mm	**6"**	152 mm	**6"**	165 mm	**6.5"**	165 mm	**6.5"**
Displacement	10.5 L	**638 in^3**	10.5 L	**638 in^3**	14.6 L	**893 in^3**	14.6 L	**893 in^3**
Tires, Front, Center & Rear		**23.5R25 Radials**		**23.5R25 Radials 30/65R25 Radials (Opt.)**		**26.5R25 Radials**		**29.5R25 Radials**
Circle Clearance Diameter	14.9 m	**48'10"**	15.2 m	**49'8"**	16.42 m	**53'10"**	16.5 m	**54'3"**
Fuel Tank Refill Capacity	360 L	**95 U.S. gal**	360 L	**95 U.S. gal**	570 L	**154 U.S. gal**	570 L	**154 U.S. gal**
GENERAL DIMENSIONS (Empty):								
Height to Cab Top	3.35 m	**11'0"**	3.35 m	**11'0"**	3.51 m	**11'6"**	3.58 m	**11'9"**
Wheel Base (Front-Center of Bogie)	4.72 m	**15'6"**	4.72 m	**15'6"**	5.02 m	**16'6"**	5.12 m	**16'10"**
Overall Length	9.99 m	**32'9"**	9.99 m	**32'9"**	10.38 m	**34'1"**	10.52 m	**34'6"**
Loading Height (Empty)	2.75 m	**9'0"**	2.89 m	**9'6"**	2.94 m	**9'8"**	3.06 m	**10'1"**
Height at Full Dump	6.40 m	**21'0"**	6.44 m	**21'2"**	6.60 m	**21'8"**	6.58 m	**21'7"**
Body Length	5.80 m	**19'0"**	5.80 m	**19'0"**	6.01 m	**19'9"**	5.90 m	**19'4"**
Width (Operating)	2.88 m	**9'5"**	2.91 m	**9'7"**	3.26 m	**10'8"**	3.30 m	**10'10"**
Front Tire Tread	2.22 m	**7'3"**	2.30 m	**7'7"**	2.55 m	**8'4"**	2.55 m	**8'4"**

*Includes coolant, lubricant and full fuel tank.
**Rating dependent on optional equipment. Maximum gross weight (empty weight plus payload) should not be exceeded.

A variety of special arrangements are available on a custom product basis. Below is a summary of some of the most popular versions, which are attainable in different model sizes. Please contact your Caterpillar dealer for details and availability.

Refuse Haulers — Very large capacity body arrangements for transport of bulk solid waste, normally used between a transfer station and the face of a sanitary landfill. Arrangement includes large capacity body, extended rear frame and scissors tailgate.

Hydraulically operated steel covers — Available for certain refuse bodies. The covers improve light material retention during transport.

Container Carriers — Allows transport and dump of 6 m (20'0") ISO containers. Usual application is handling containerized waste in landfills. Arrangement includes an extended and reinforced rear frame combined with a special tipping structure.

Transverse Steering — Improves maneuverability in areas with limited space, like tunnels, underground mines and industrial sites. This option allows the truck to turn completely around in a space slightly longer than the truck itself. Available for two axle trucks only.

Heavy Duty Bodies — More robust bodies made with thicker plates and incorporating rock deflectors for tire protection. Increase the vehicle's material appetite and provide longer life in applications involving highly abrasive materials and high impact loading.

Extended Chassis/Water Wagons — Long wheel base chassis, suitable for installation of low center of gravity liquid tanks and other AEM accessories. The extended rear frame permits use of low center of gravity arrangements for added stability. Common applications are haul road dust control and off-road transport of water or fuel. Available for three axle trucks only.

Coal Haulers — Machines configured with large capacity body, extended rear frame and scissors tailgate, for transport of coal. The longer frame helps maintain stability and gives loading height accessible to many loading systems.

Sugar Cane Haulers — May be manufactured by using extended rear frame chassis, adding a sub frame and special tires.

Model	D25D	D30D	D250E	D300E	D350E	D400E
Refuse Haulers			X	X	X	X
Container Carriers			X	X		
Transverse Steer	X	X				
Heavy Duty Bodies	X	X				
Extended Chassis			X	X	X	X
Coal Haulers				X	X	X
Sugar Cane Haulers				X		

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 D250E 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.

$$\text{D250E Tire Load} = \frac{43\,680 \text{ kg} \times 0.34}{2} = 7426 \text{ kg}$$

$$\text{D250E Tire Load} = \frac{96{,}300 \text{ lb} \times 0.34}{2} = 16{,}371 \text{ lb}$$

From the tire section in this book, inflation pressure for the D250E is 325 kPa = 3.25 bar (47 psi).

From the ground pressure chart for 23.5R25 tires, Ground pressure = 3.1 kg/cm^2 (44 psi) with zero tire penetration.

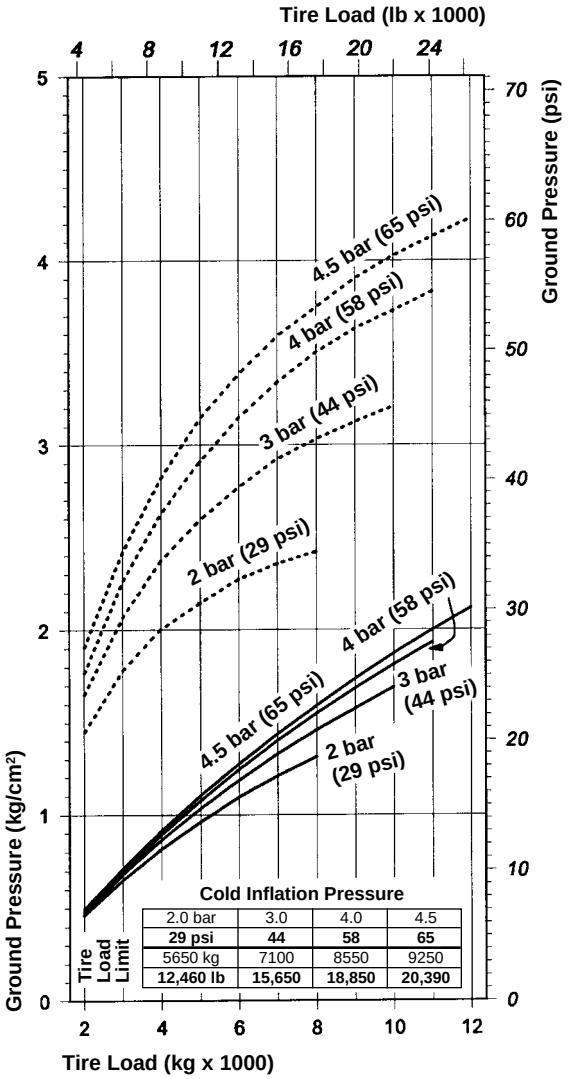
Ground pressure = 1.4 kg/cm^2 (21 psi) with 76 mm (3 in) tire penetration.

See the Wheel Tractor Scraper section for explanation on using:

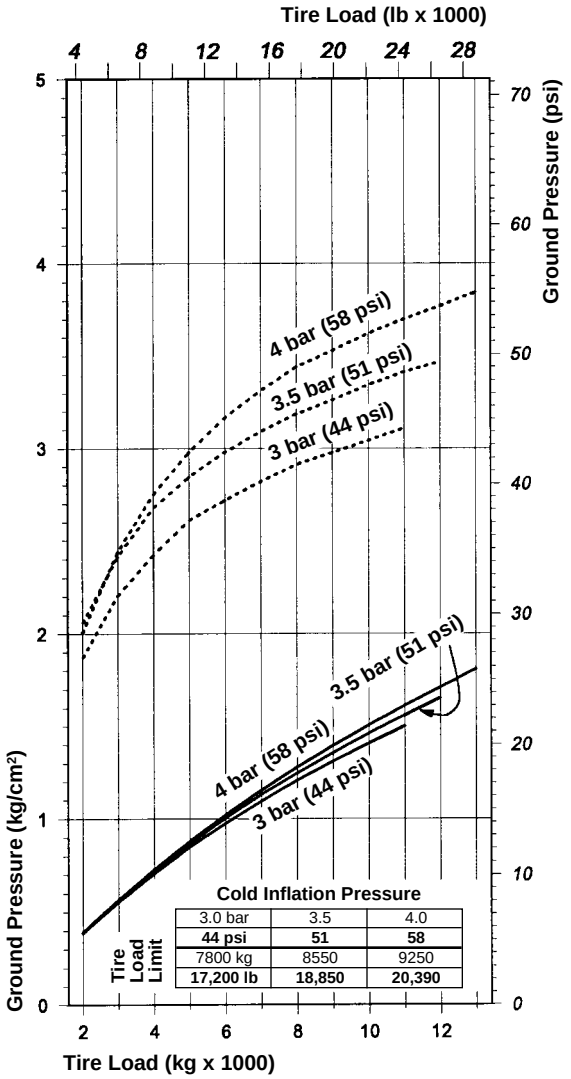
- **Rimpull-Speed-Gradeability Curves**
- **Retarder Curves**
- **Travel Time Charts**

See the Construction and Mining Trucks section for Hauling Unit Fixed Times.

23.5R25 Tires*



30/65R25 Tires*



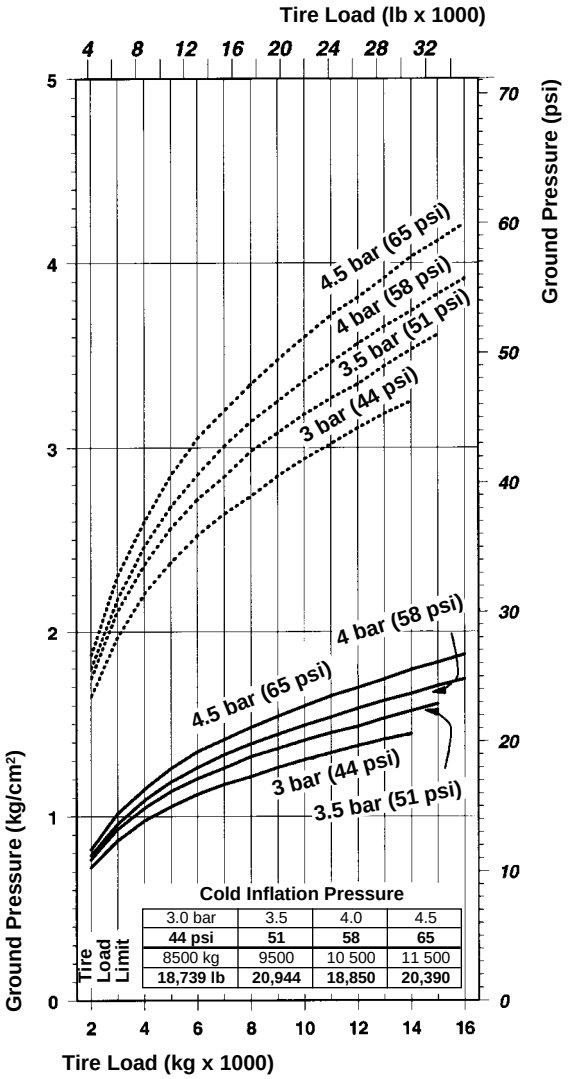
KEY

-------- Zero Penetration (Flat Plate)

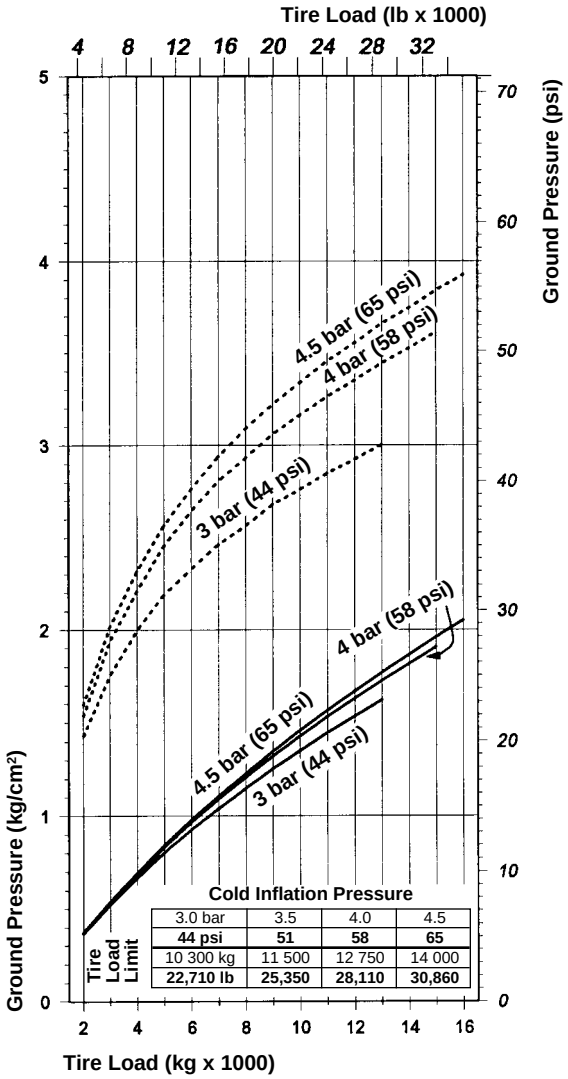
——— 76 mm (3") Penetration

*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*

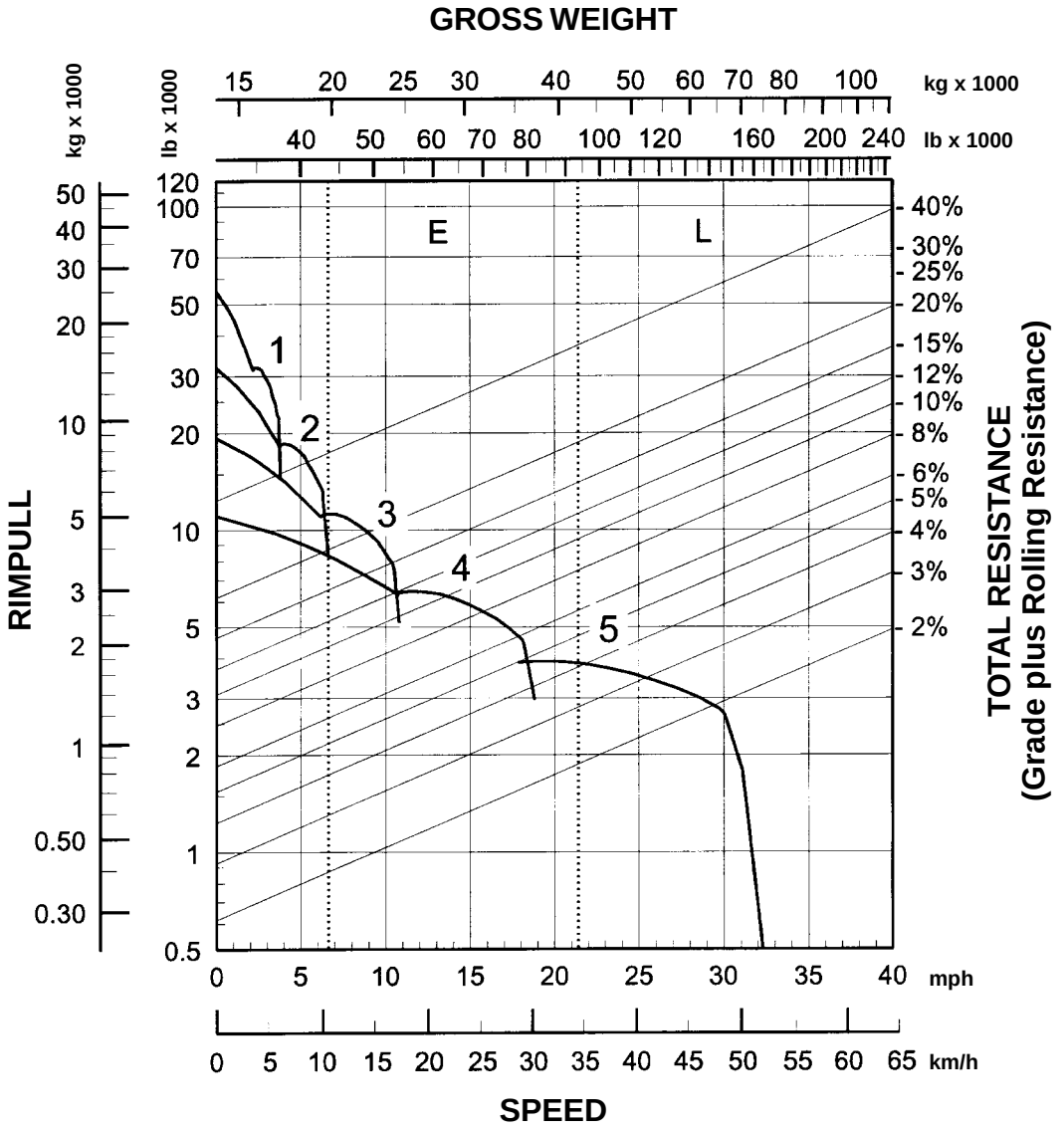


KEY

-------- 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.

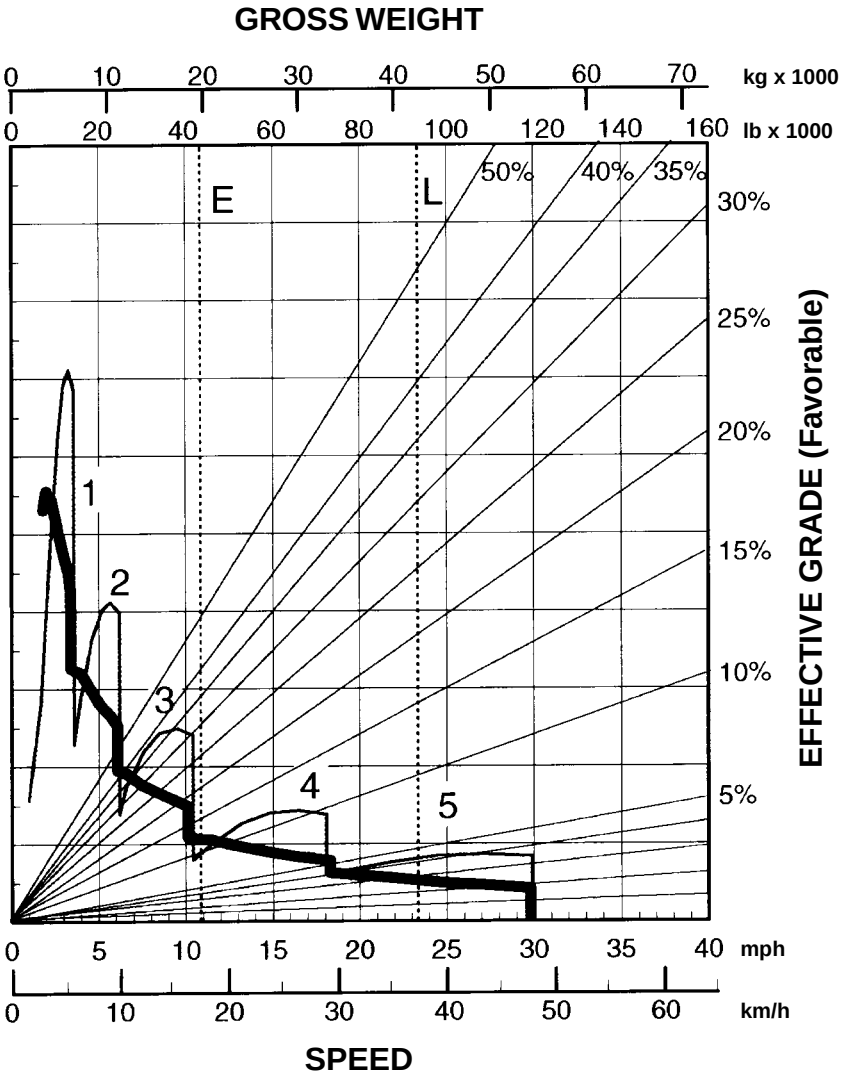


KEY

1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear

KEY

E — Empty 19 700 kg (43,428 lb)
L — Loaded 42 381 kg (93,428 lb)



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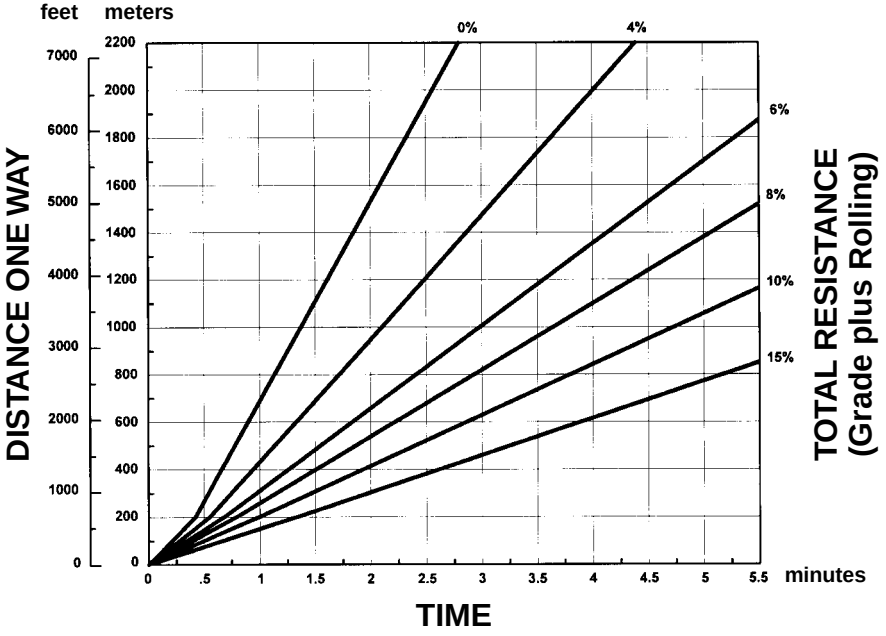
10

LOADED



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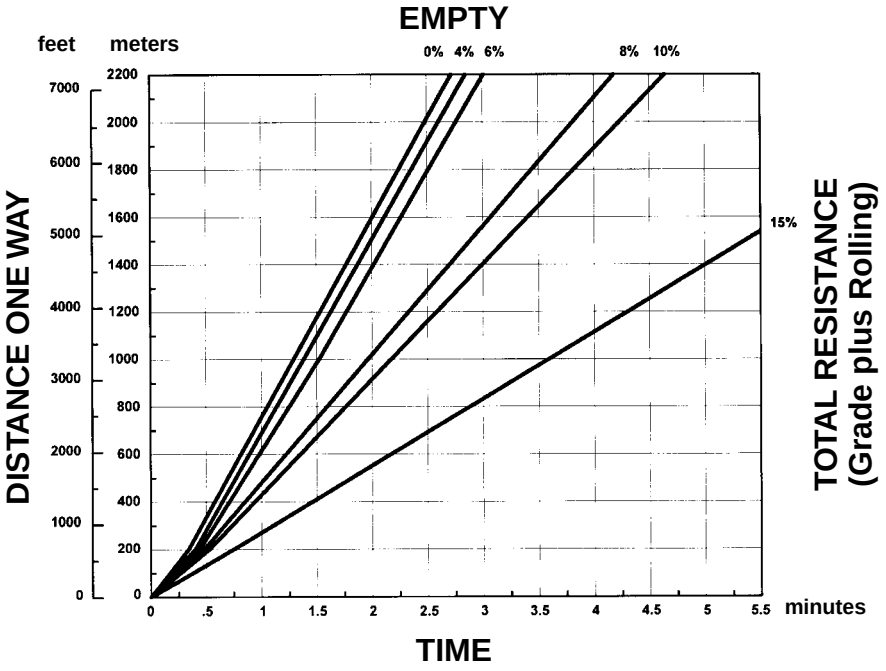

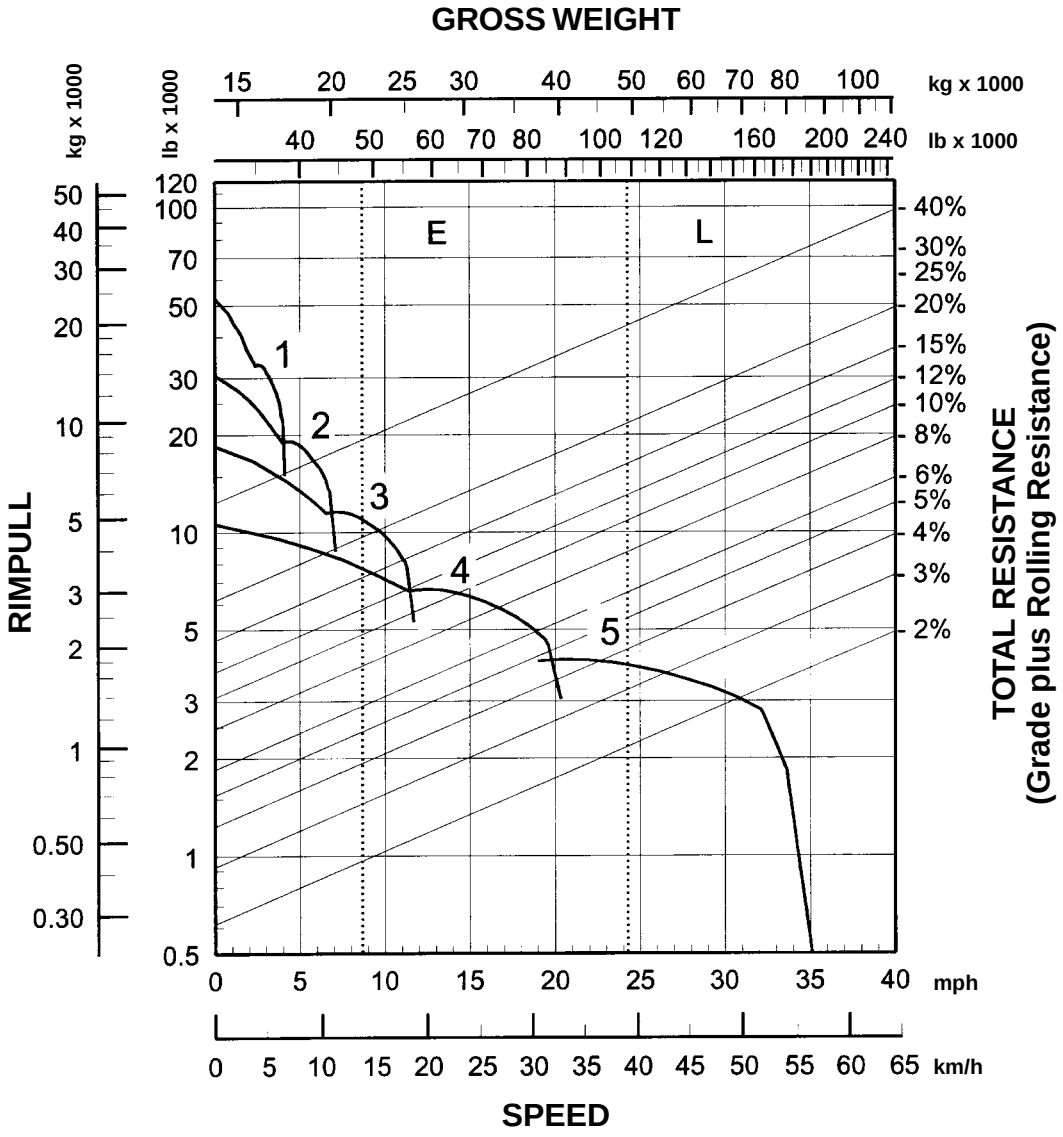

KEY

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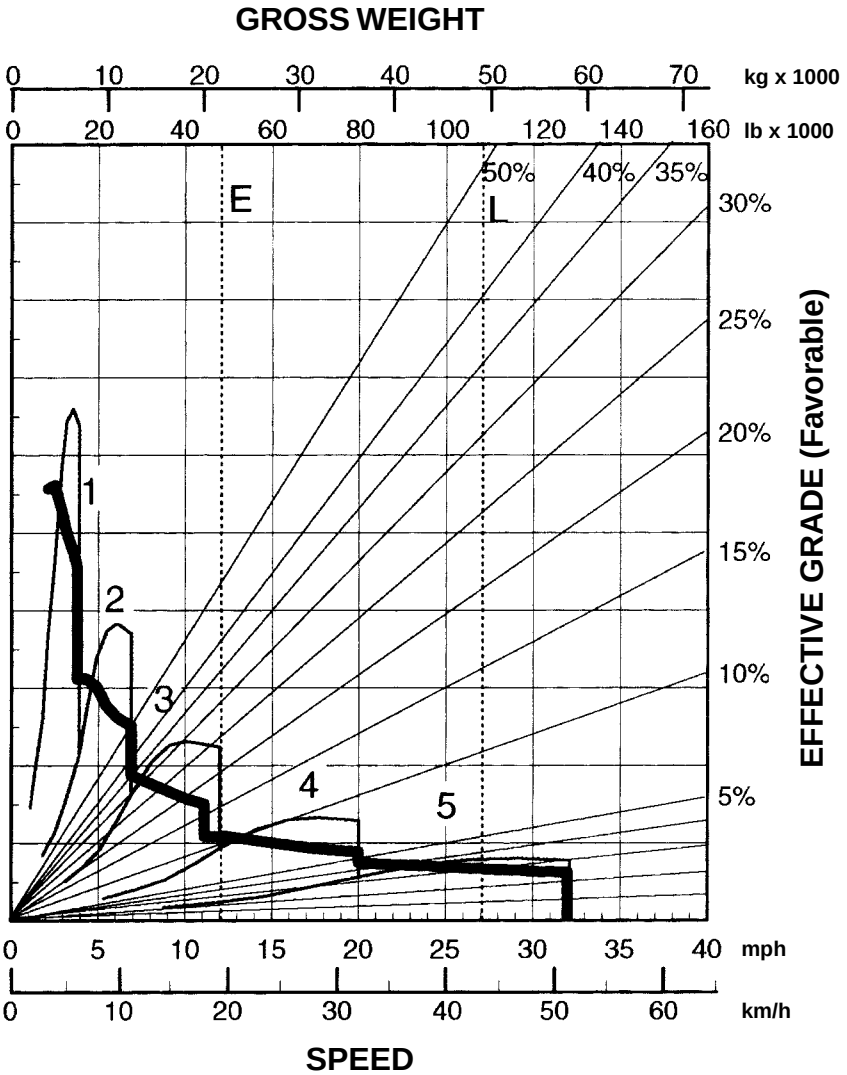
4 — 4th Gear
5 — 5th Gear

KEY

E — Empty 21 900 kg (48,278 lb)
L — Loaded 49 117 kg (108,278 lb)

10



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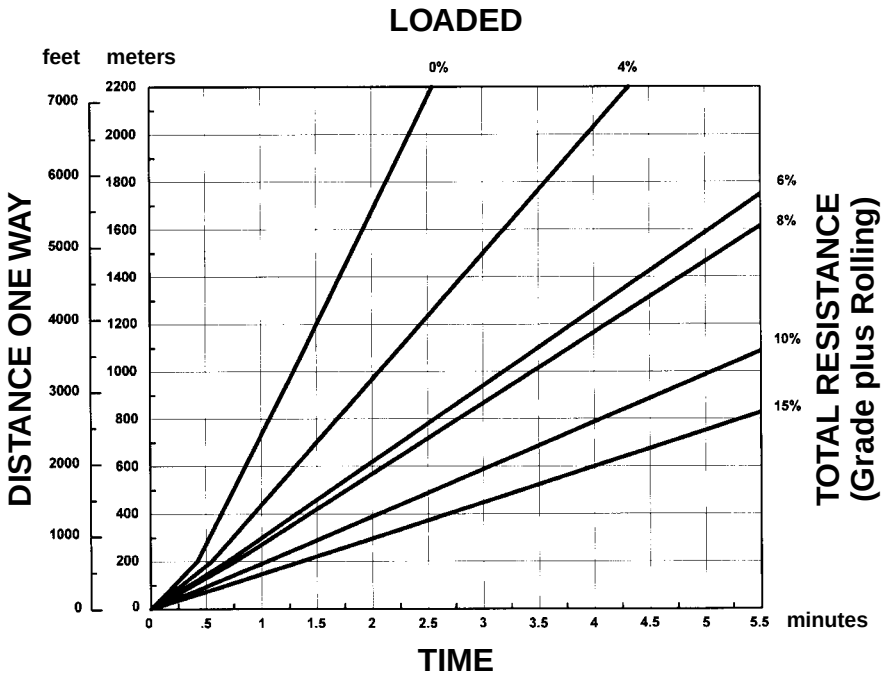
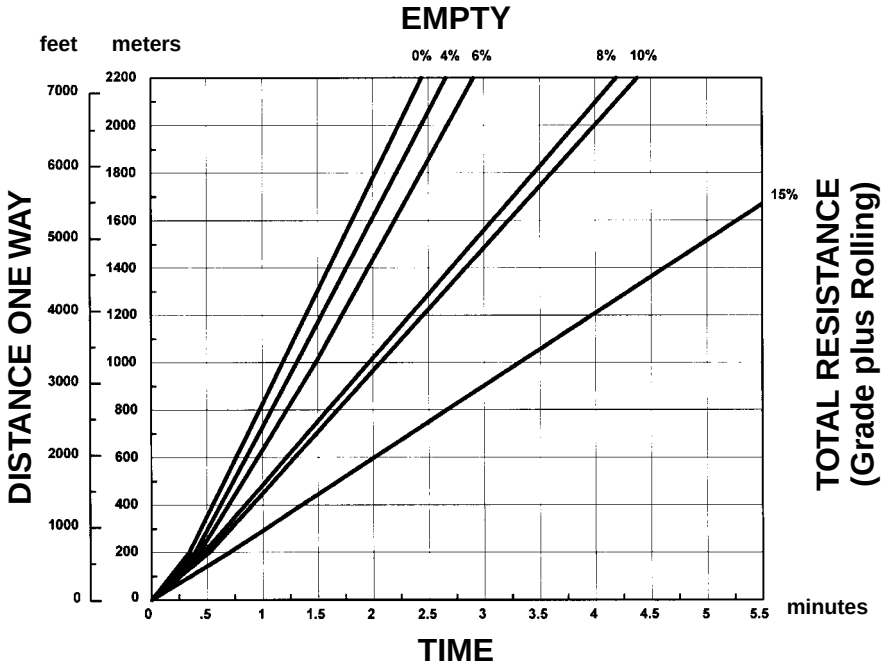

LOADED
feet
meters
0%
4%
6%
8%
10%
15%
DISTANCE ONE WAY
TOTAL RESISTANCE
(Grade plus Rolling)
minutes
TIME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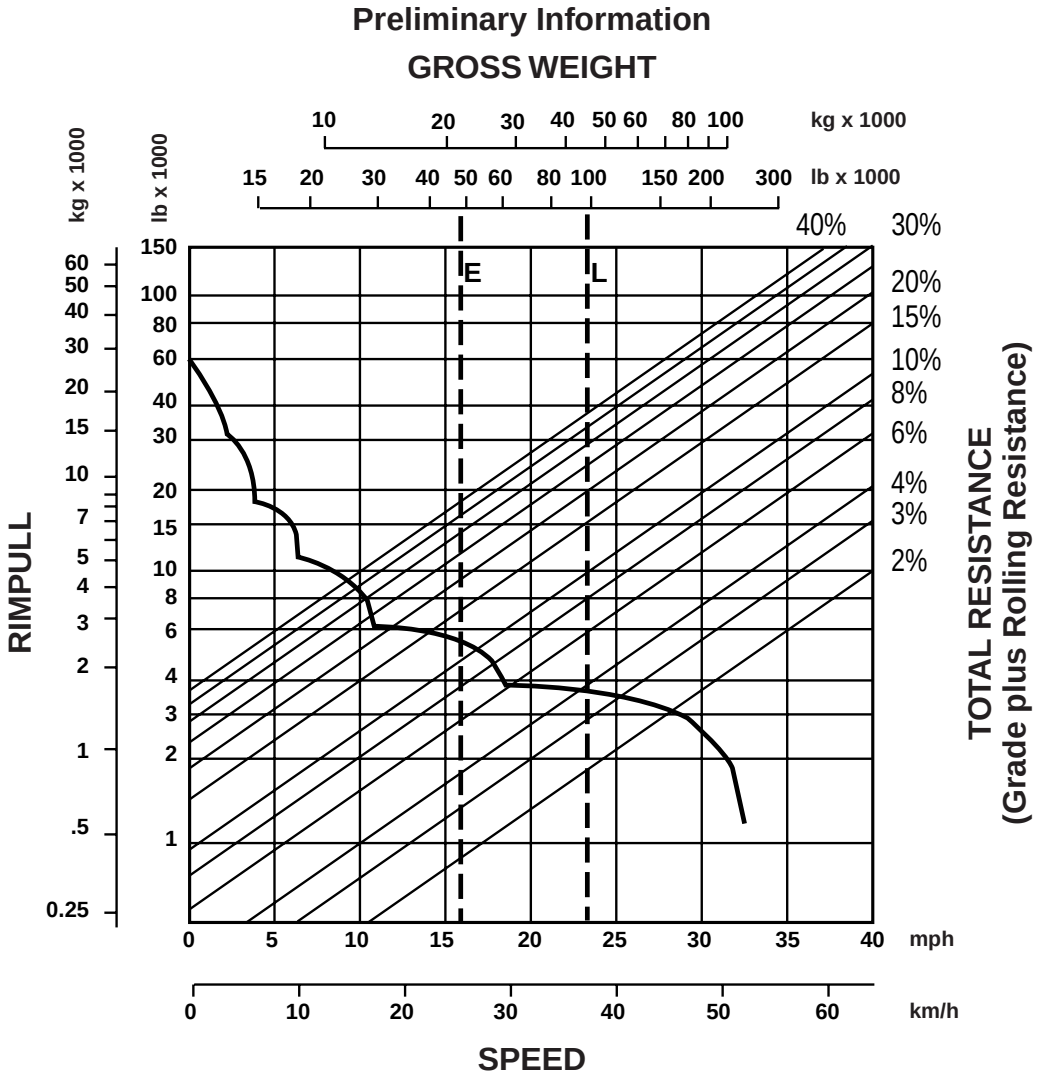

KEY

1 — 1st Gear
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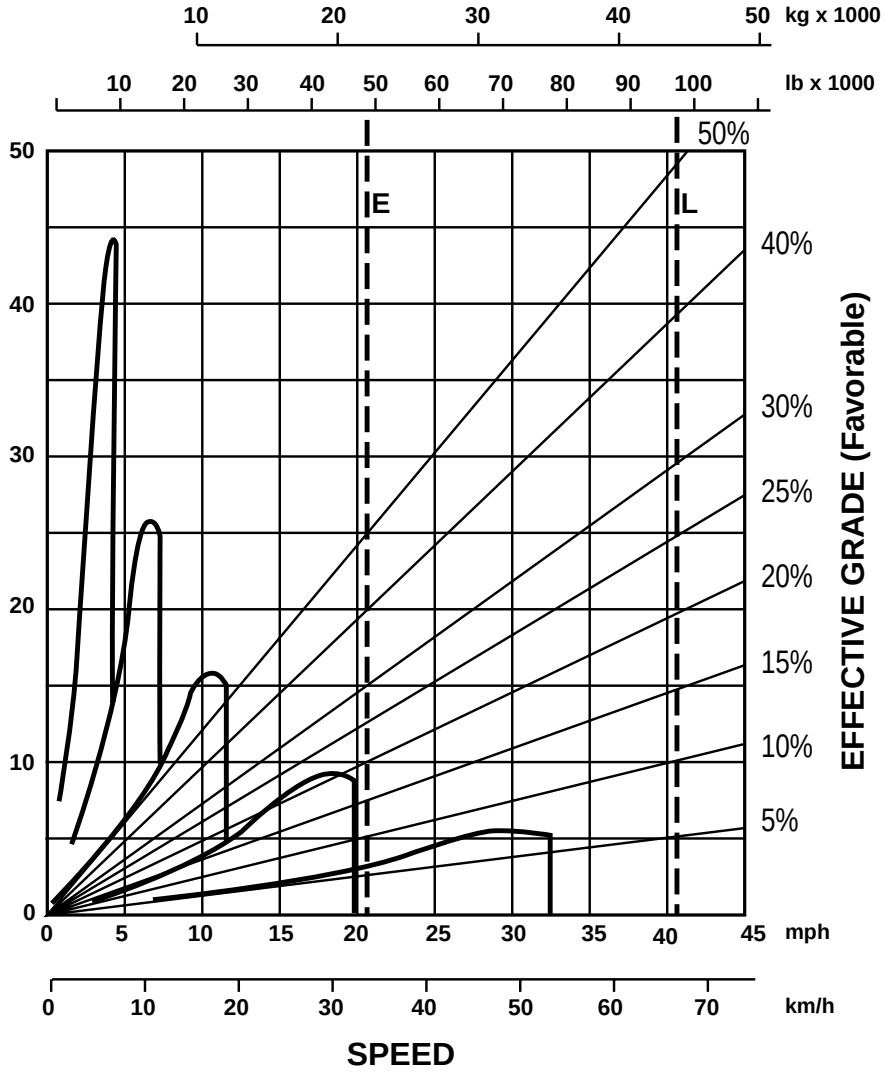
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear

KEY

E — Empty 21 700 kg (47,840 lb)
L — Loaded 44 380 kg (97,840 lb)

Preliminary Information

GROSS WEIGHT



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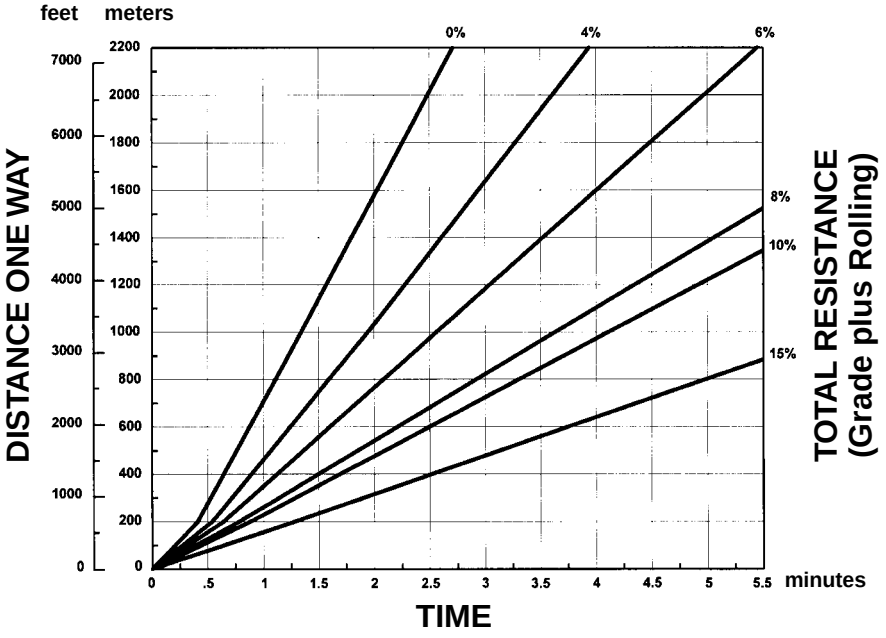

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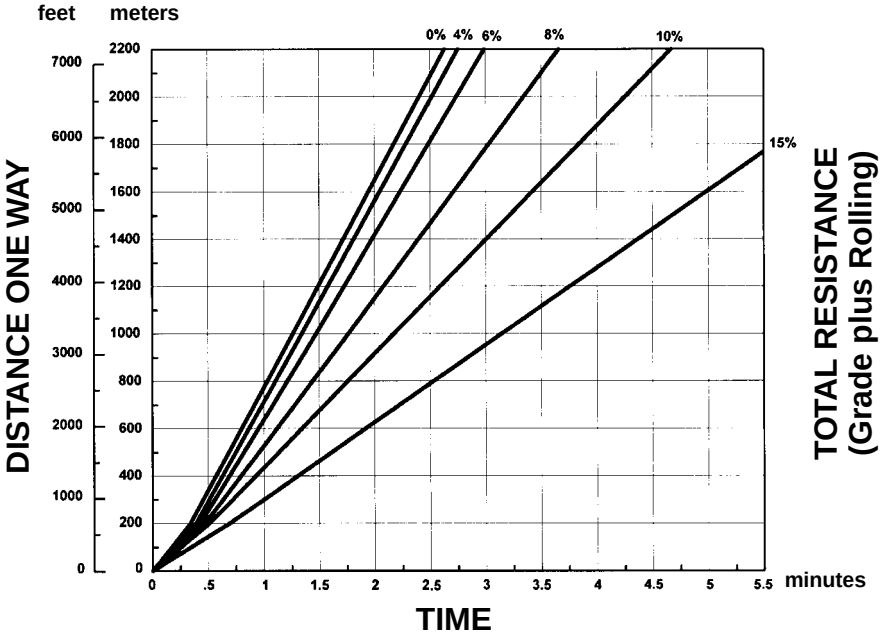
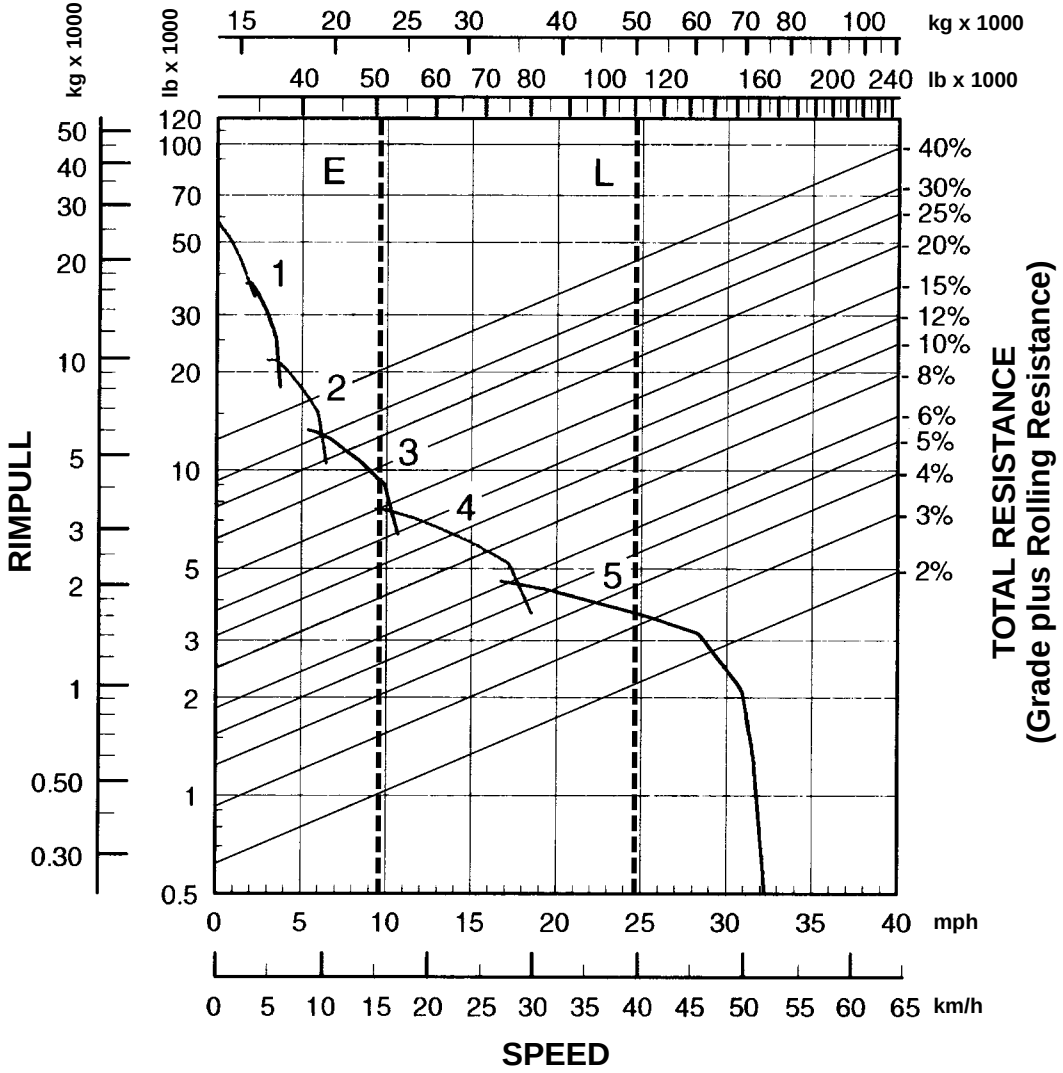


Preliminary Information

GROSS WEIGHT



KEY

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3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear

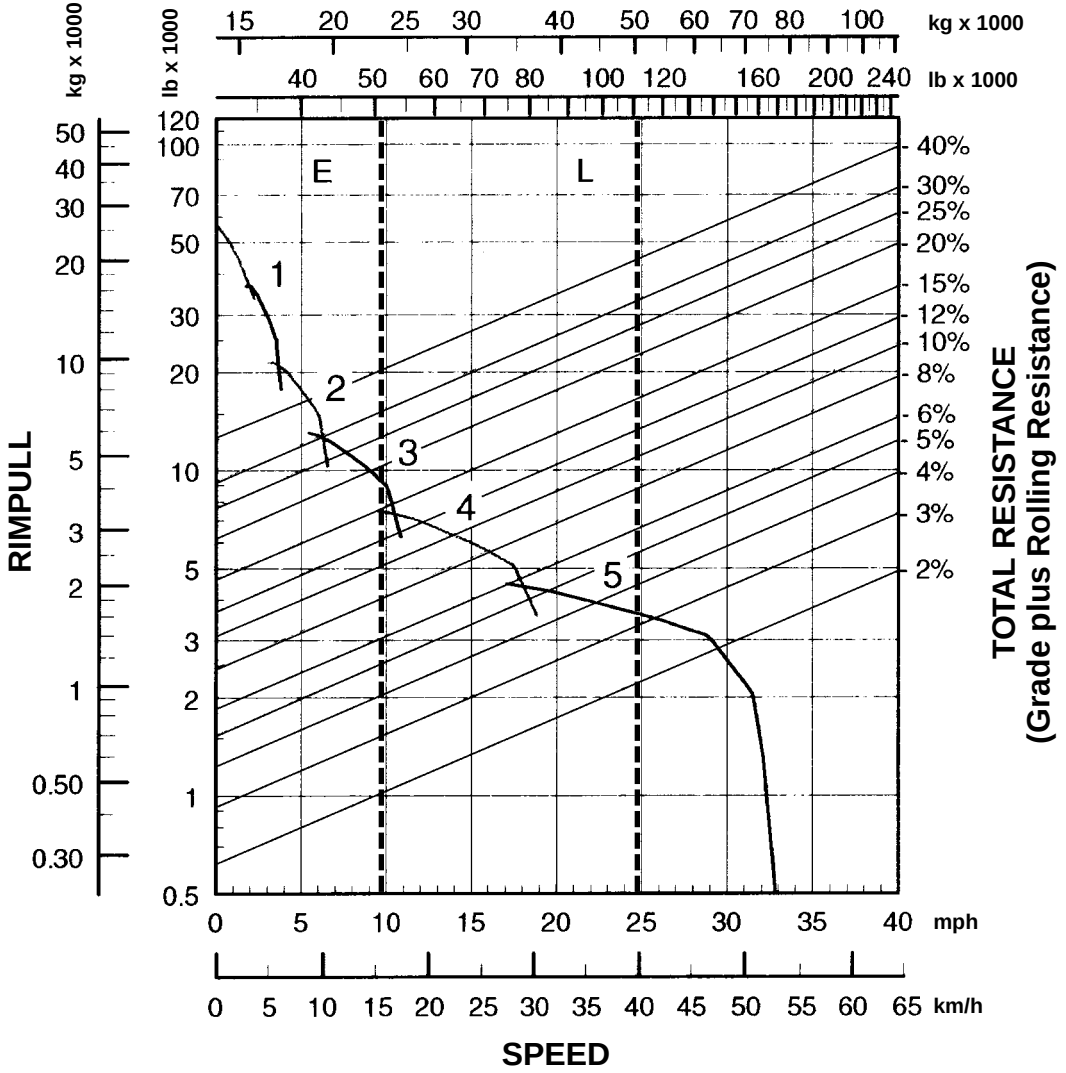
KEY

E — Empty 22 890 kg (50,460 lb)
L — Loaded 50 100 kg (110,460 lb)

10

Preliminary Information

GROSS WEIGHT



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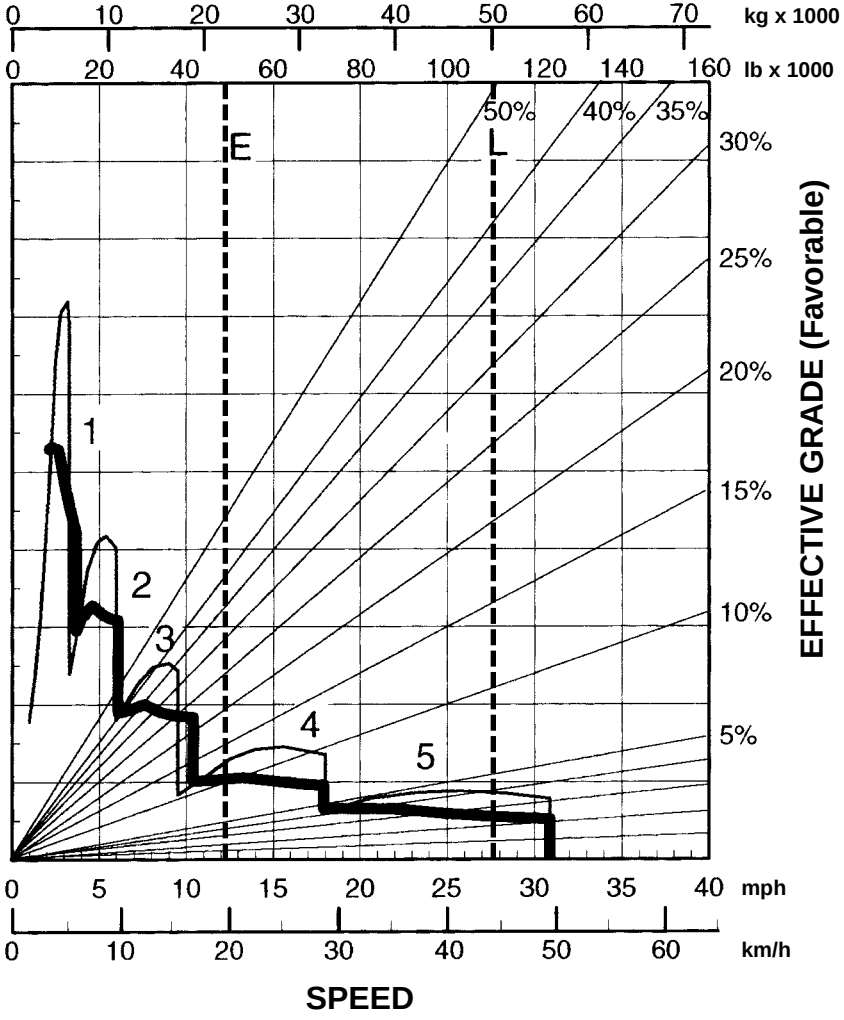


200 m (660 ft) OR LESS GRADE LENGTH
CONTINUOUS

KEY

1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear
5 — 5th Gear

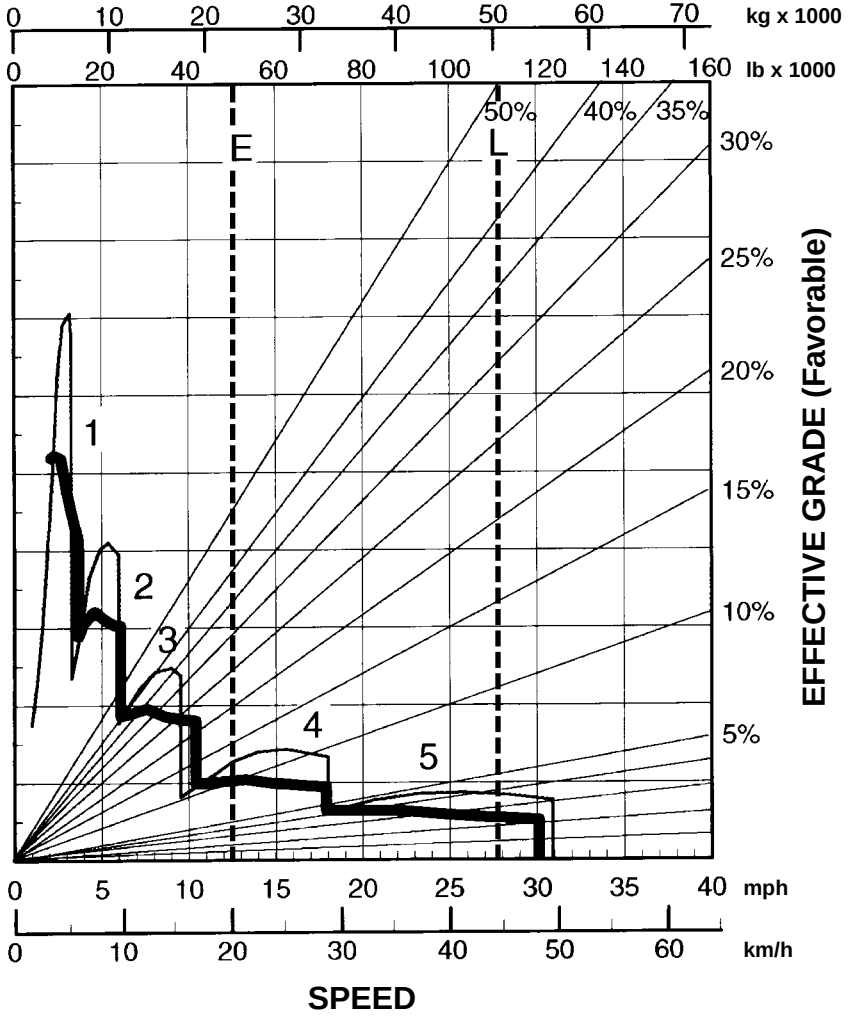
KEY

E — Empty 22 890 kg (50,460 lb)
L — Loaded 50 100 kg (110,460 lb)

10

Preliminary Information

GROSS WEIGHT



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Preliminary Information

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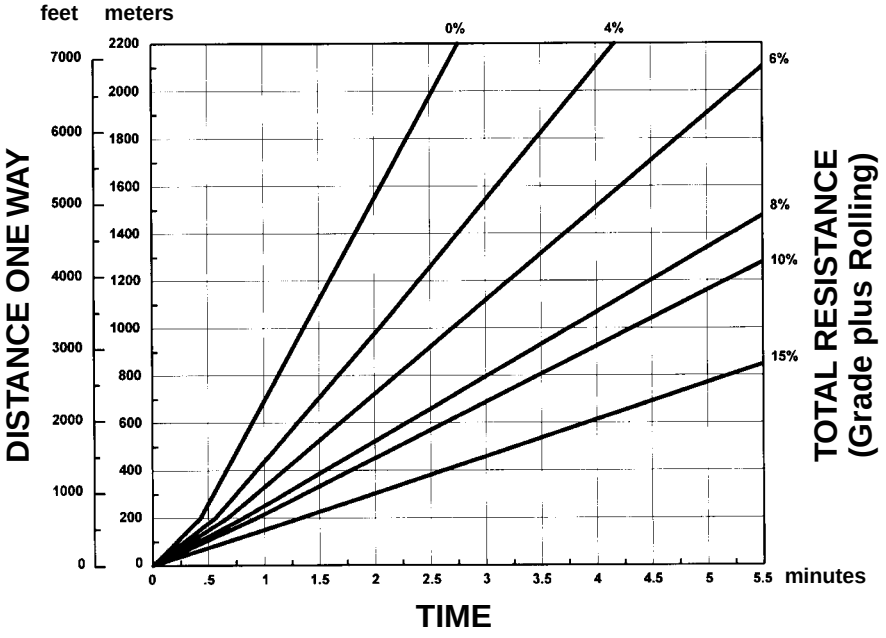

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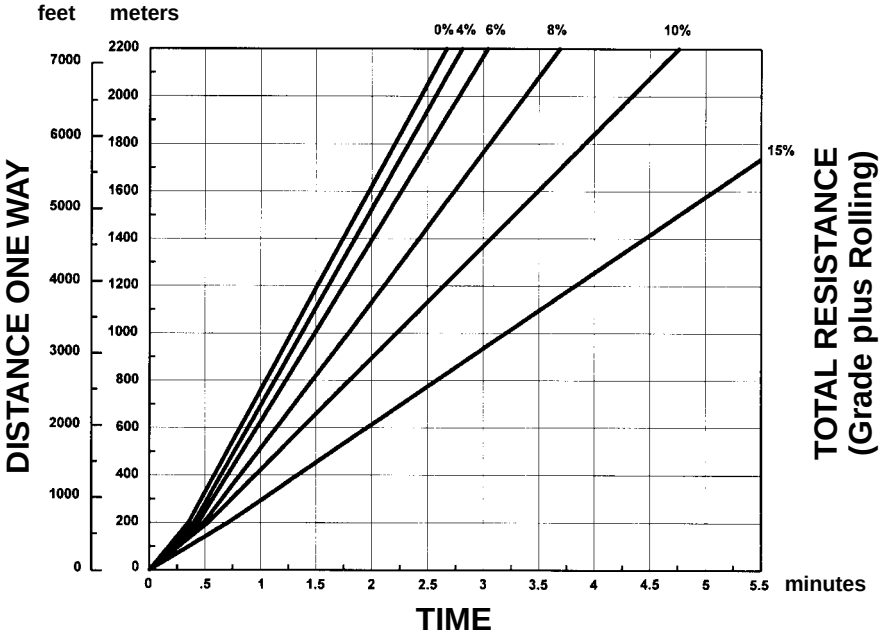

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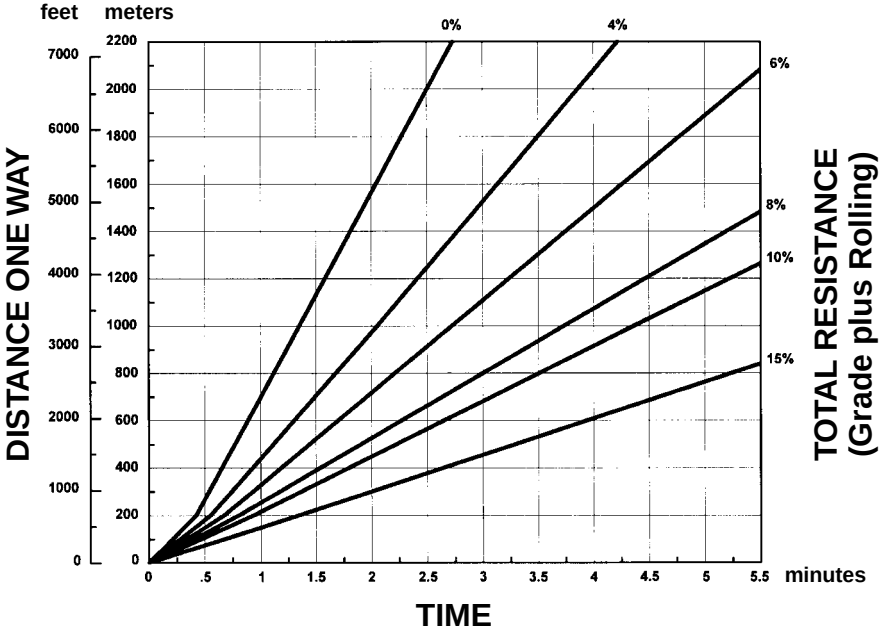
LOADED



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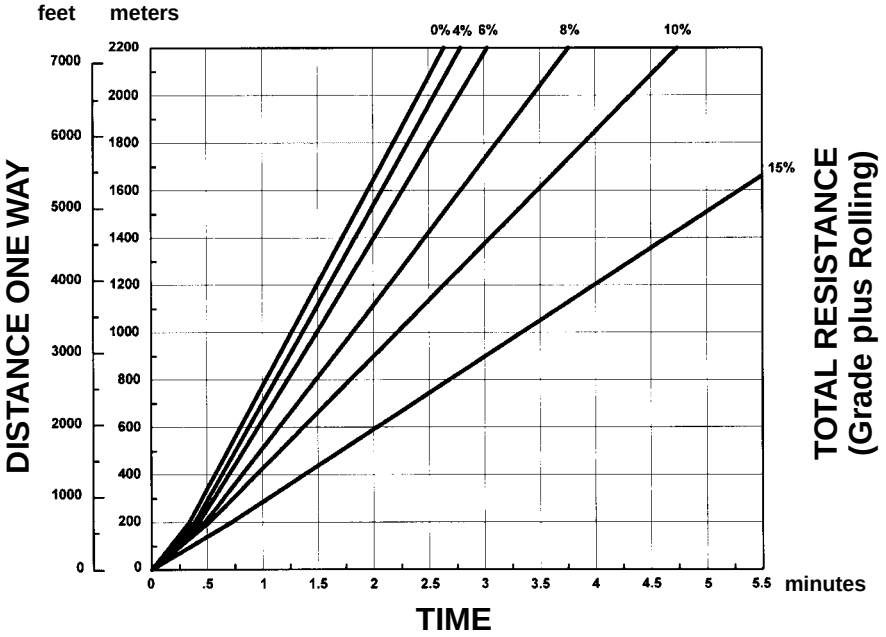
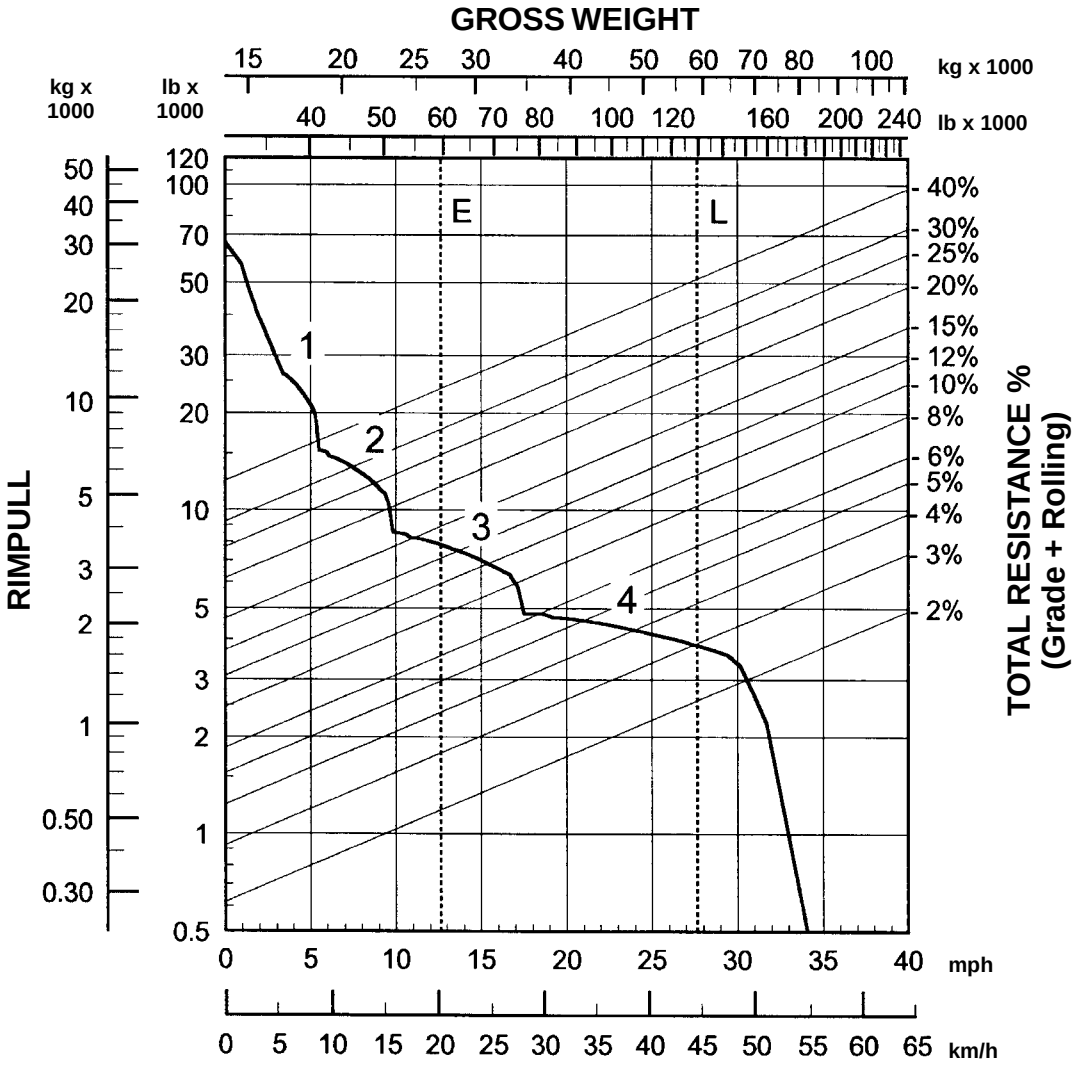




KEY

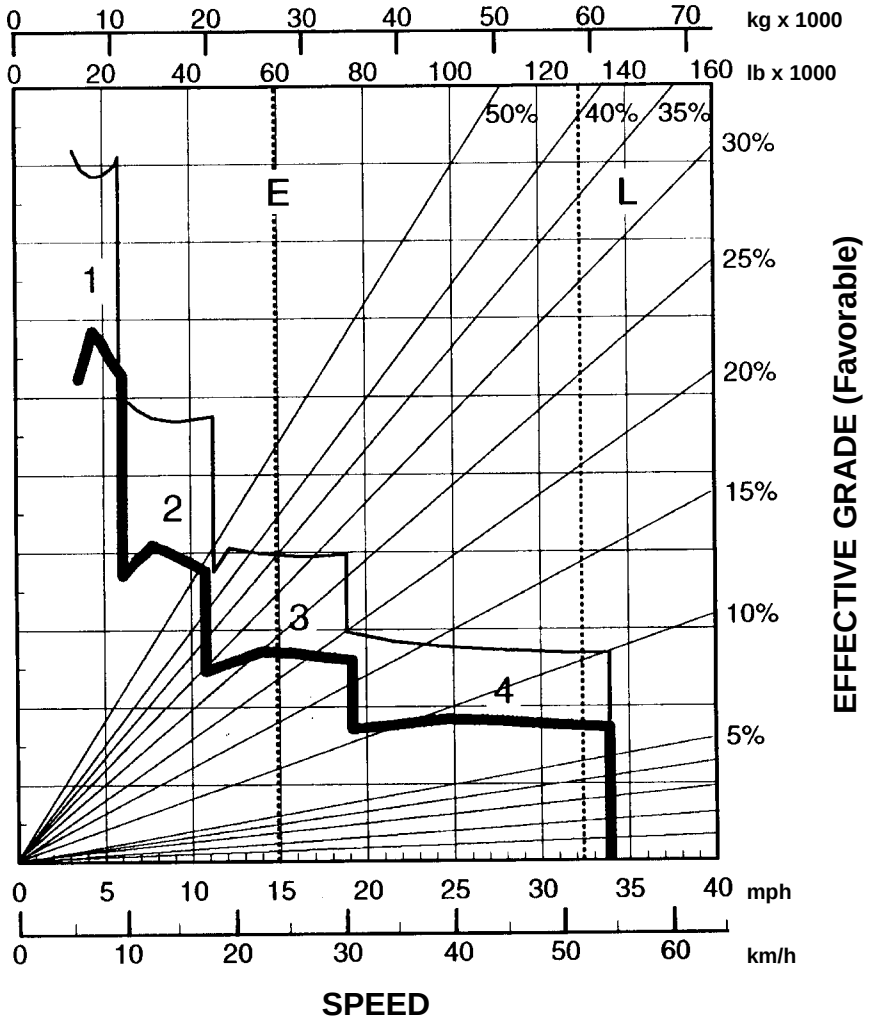
1 — 1st Gear
2 — 2nd Gear
3 — 3rd Gear
4 — 4th Gear

KEY

E — Empty 26 990 kg (59,500 lb)
L — Loaded 58 750 kg (129,520 lb)

10

GROSS WEIGHT



200 m (660 ft) OR LESS GRADE LENGTH
CONTINUOUS

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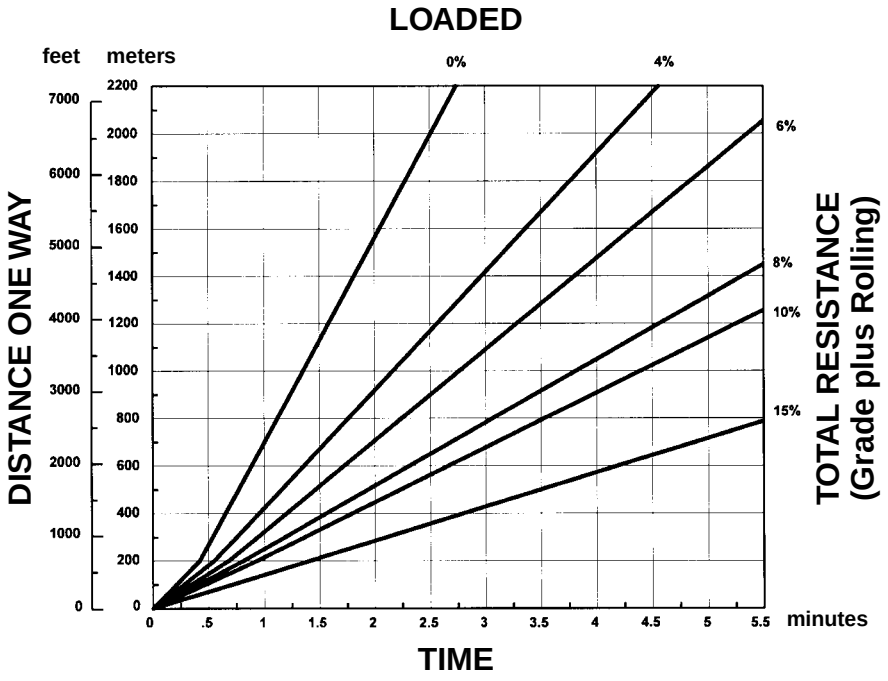
LOADED
feet
meters
0%
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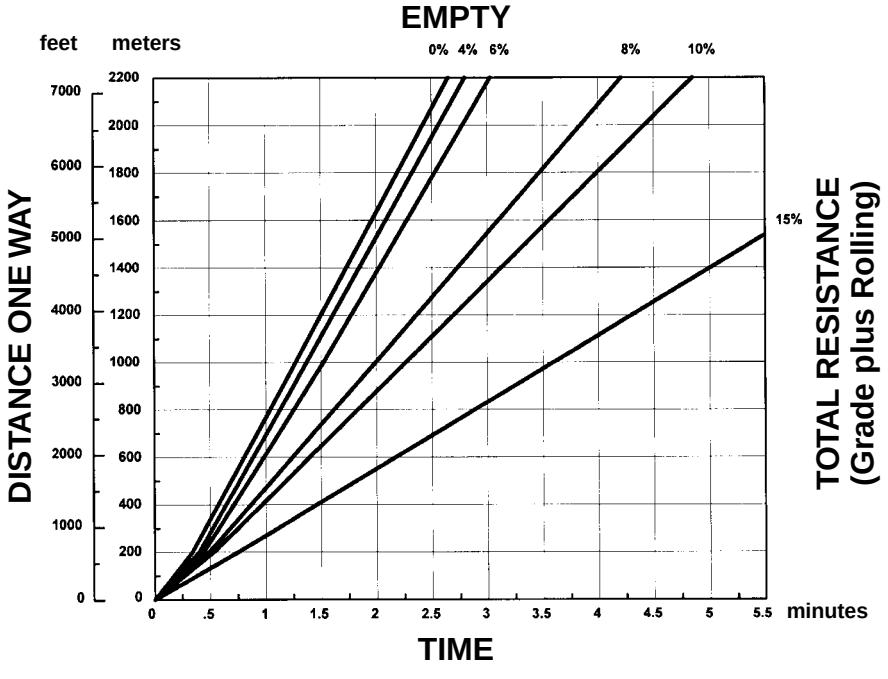
8%
10%
15%
DISTANCE ONE WAY
TOTAL RESISTANCE
(Grade plus Rolling)
minutes
TIME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meters
0% 4% 6%
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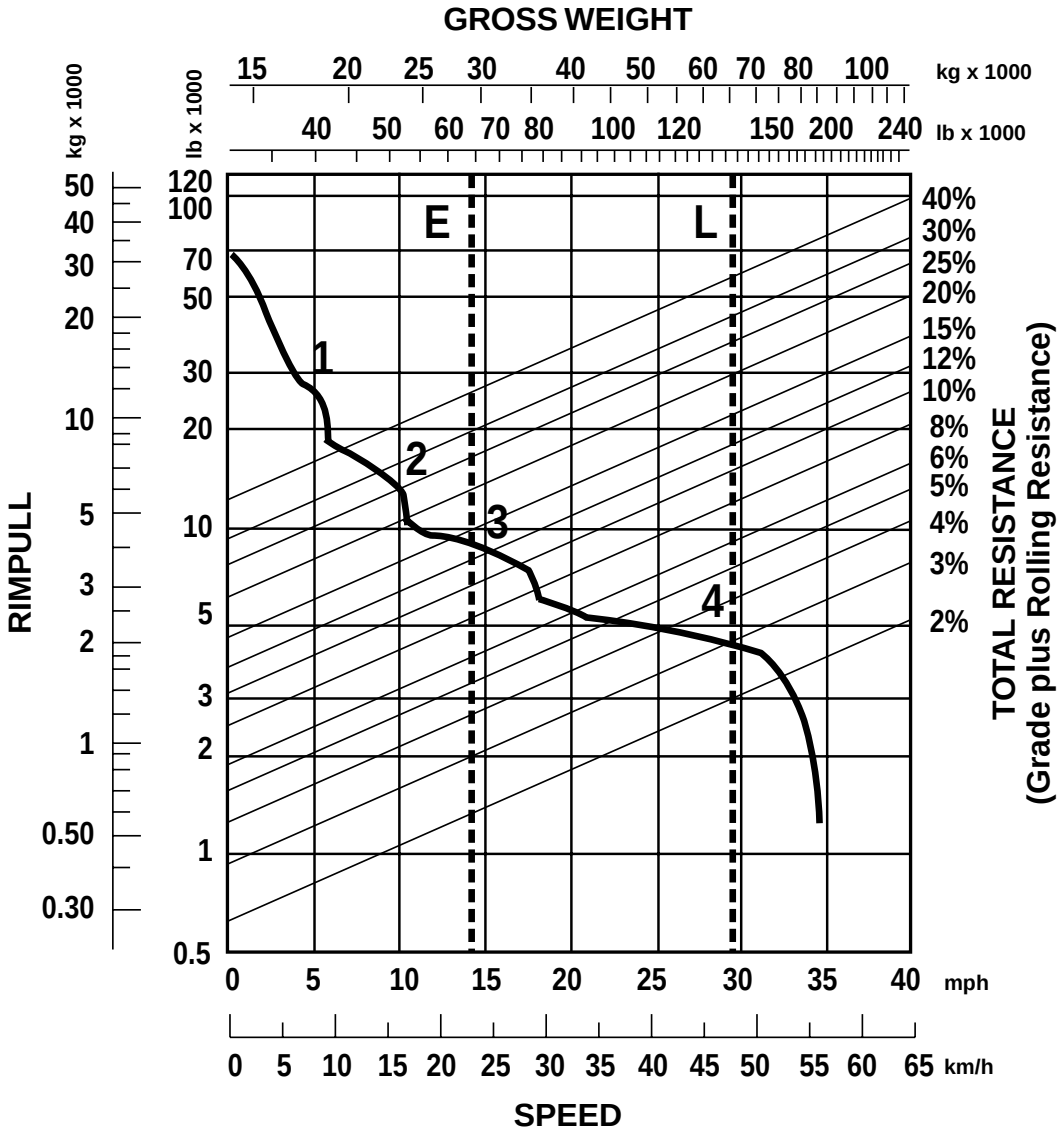

KEY

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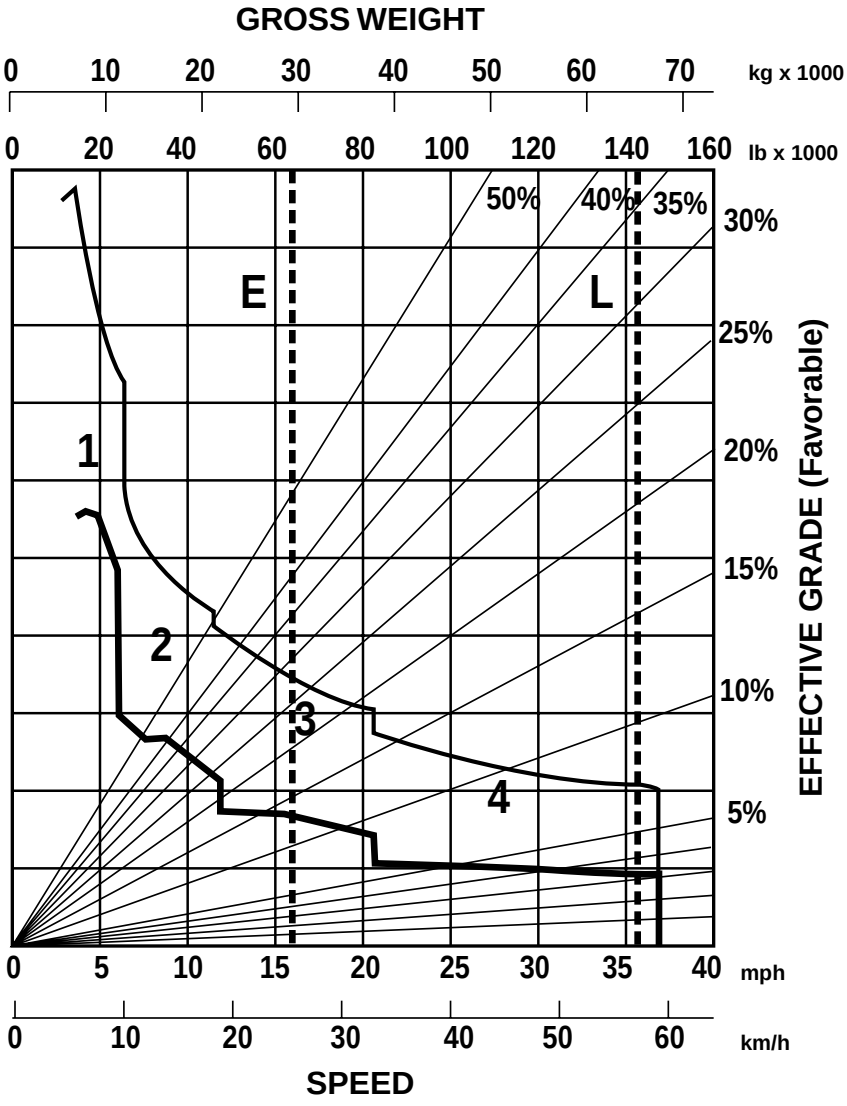
KEY

E — Empty 29 260 kg (64,510 lb)
L — Loaded 65 560 kg (144,500 lb)



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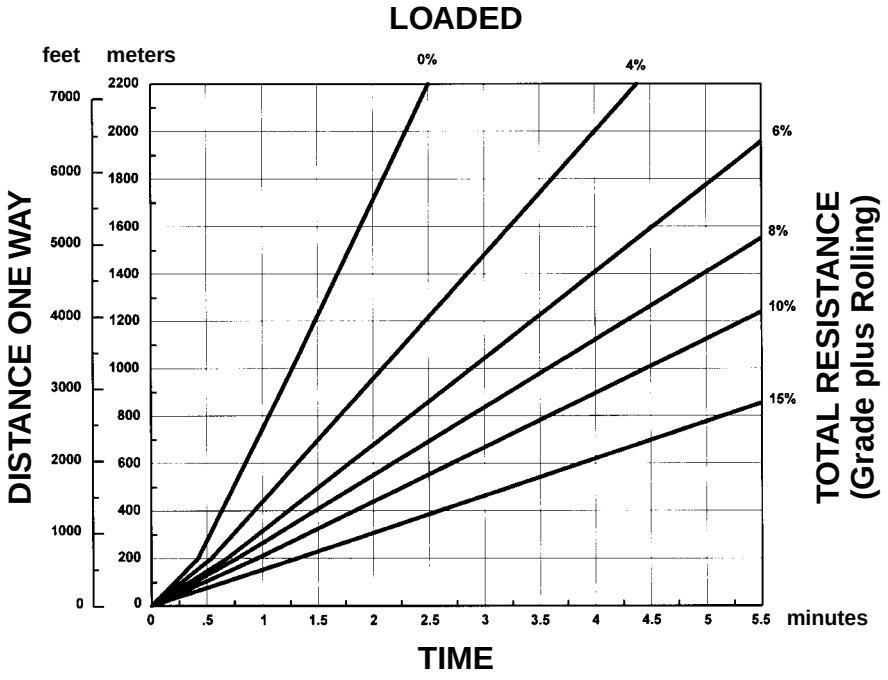
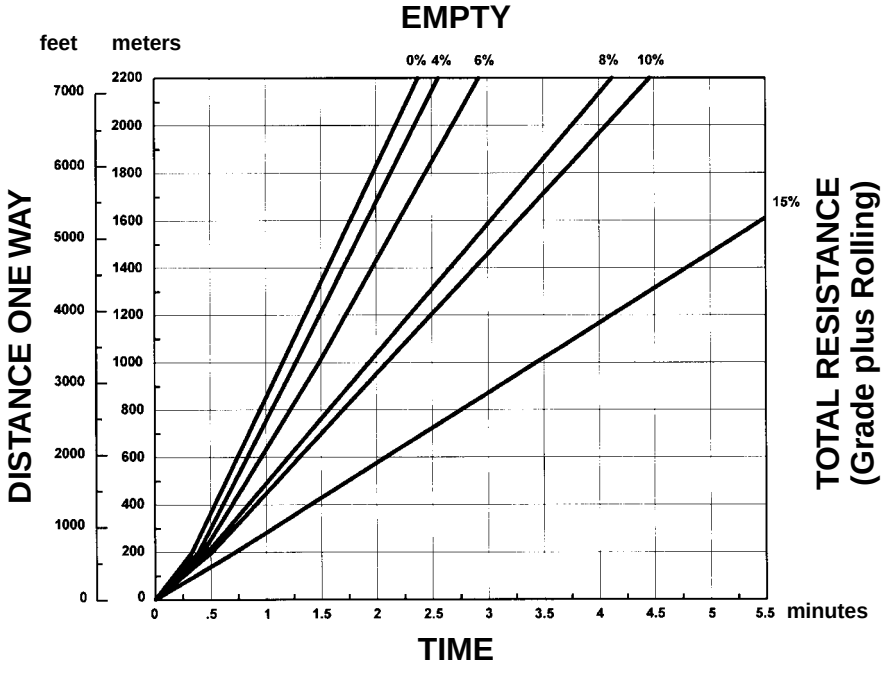
10

D400E Travel Time — Loaded/Empty
- 29.5R25 Tires





WHEEL TRACTORS
SOIL COMPACTORS
LANDFILL COMPACTORS

CONTENTS

WHEEL TRACTORS

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.



MODEL	814F		824G		834B	
Flywheel Power	164 kW	**220 hp**	235 kW	**315 hp**	336 kW	**450 hp**
Operating Weight*	18 611 kg	**40,944 lb**	26 620 kg	**58,564 lb**	46 355 kg	**102,213 lb**
Engine Model	**3306 DITA (EMISSIONS)**		**3406C DITA (EMISSIONS)**		**3408E HEUI**	
Rated Engine RPM	**2200**		**2100**		**2100**	
No. Cylinders	**6**		**6**		**8**	
Displacement	10.5 L	**638 in³**	14.6 L	**893 in³**	18 L	**1098 in³**
Speeds:						
Forward	**4**		**4**		**4**	
Reverse	**4**		**4**		**4**	
Top Speed Forward	29.9 km/h	**18.6 mph**	33.0 km/h	**20.4 mph**	34.1 km/h	**21.2 mph**
Turning Circle with Blade	12.5 m	**41'0"**	14.6 m	**40'0"**	17.2 m	**56'6"**
Standard Tire Size	**23.5-25, 12 PR (L-2)**		**29.5-25, 16 PR (L-3)**		**35/65-33, 24 PR (L-4)**	
Fuel Tank Refill Capacity	462 L	**122 U.S. gal**	630 L	**166.5 U.S. gal**	595 L	**157 U.S. gal**
GENERAL DIMENSIONS:						
Height (to top of ROPS)	3.368 m	**11'1"**	3.764 m	**12'4"**	4.102 m	**13'5.5"**
Height (stripped top)**	2.418 m	**7'11"**	2.676 m	**8'9"**	2.955 m	**9'8"**
Wheel Base	3.350 m	**11'0"**	3.700 m	**12'2"**	3.810 m	**12'6"**
Overall Length with Dozer	6.844 m	**22'5"**	8.020 m	**26'4"**	8.716 m	**28'7"**
Width (over standard tires)	2.865 m	**9'5"**	3.28 m	**10'9"**	3.556 m	**11'8"**
Ground Clearance	448 mm	**17.6"**	383 mm	**15.1"**	466 mm	**18"**
STRAIGHT BULLDOZER:						
Width	3.650 m	**12'0"**	4.51 m	**14'9"**	4.623 m	**15'2"**
Height	1.004 m	**3'4"**	1.23 m	**4'0"**	1.448 m	**4'9"**
Capacity	2.91 LCM	**3.8 LCY**	4.67 LCM	**6.11 LCY**	7.27 LCM	**9.5 LCY*** **
Ground Clearance Below Skid Shoe	940 mm	**3'1"**	955 mm	**3'1.6"**	1118 mm	**3'8"**
Depth of Cut	460 mm	**18.1"**	430 mm	**16.9"**	441 mm	**17"**
Tilt Adjustment	747 mm	**2'5.4"**	1.18 m	**3'11"**	1.278 m	**4'2"**
Tip Adjustment	**18°**		**23°**		**22°**	
Lift Speed	0.40 m/sec	**1.3 ft/sec**	0.46 m/sec	**1.5 ft/sec**	0.40 m/sec	**1.3 ft/sec**

*Operating Weight includes straight dozer, 75% $CaCl_2$ in all tires, lubricants, coolant, ROPS cab, full fuel tank and operator. 75% $CaCl_2$ in all tires adds the following weight to each model: 814F — 1996 kg **(4400 lb)**, 824G — 3881 kg **(8556 lb)**, 834B — 5360 kg **(11,816 lb)**.

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

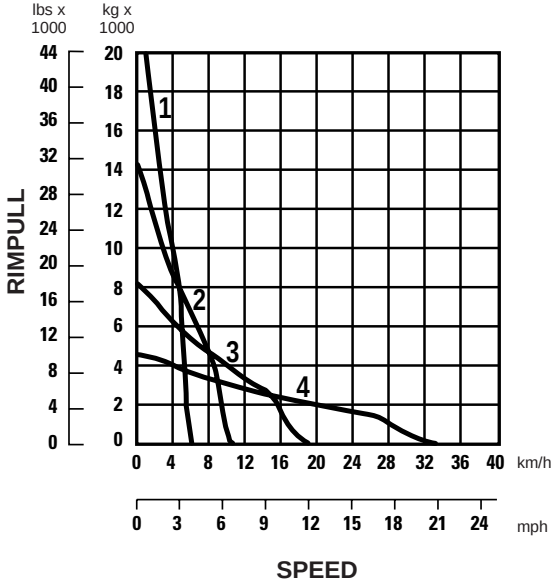
***Capacity of 834B U-Blade is 10.48 LCM **(13.7 LCY)**.

MODEL	844		854G	
Flywheel Power	466 kW	**625 hp**	597 kW	**800 hp**
Operating Weight*	73 830 kg	**162,410 lb**	96 470 kg	**212,230 lb**
Engine Model	**3412E HEUI**		**3508B EUI**	
Rated Engine RPM	**2000**		**1750**	
No. Cylinders	**12**		**8**	
Displacement	27 L	**1649 in³**	34.5 L	**2105 in³**
Speeds:				
Forward	**3**		**3**	
Reverse	**3**		**3**	
Top Speed Forward	22.5 km/h	**14.0 mph**	20.5 km/h	**12.7 mph**
Turning Circle with Blade				
Standard Tire Size	**45/65R39, PR (L-4)**		**45/65R45, L-4**	
Fuel Tank Refill Capacity	930 L	**245 U.S. gal**	1345 L	**355 U.S. gal**
GENERAL DIMENSIONS:				
Height (to top of ROPS)	5.142 m	**16'9"**	5.50 m	**18'3"**
Height (stripped top)**	3.469 m	**11'4"**	3.984 m	**13'1"**
Wheel Base	4.60 m	**15'1"**	5.89 m	**19'3"**
Overall Length with Dozer	10.94 m	**35'9"**	13.405 m	**44'0"**
Width (over standard tires)				
Ground Clearance	1197 mm	**3'9"**	1314 mm	**4'3"**
SEMI-U DOZER:				
Width	5.278 m	**17'4"**	6.604 m	**20'8"**
Height	1.877 m	**6'2"**	2.124 m	**6'11"**
Capacity	16.1 m³	**21.1 yd³**	25.4 m³	**33.1 yd³**
Ground Clearance Below Skid Shoe	1372 mm	**4'5"**	1539 mm	**5'1"**
Depth of Cut	466 mm	**18"**	398 mm	**16"**
Tilt Adjustment	830 mm	**2'7"**	1165 mm	**3'8"**
Tip Adjustment	**13°**		**15°**	
Lift Speed	0.353 m/sec	**1.2 ft/sec**	0.385 m/sec	**1.3 ft/sec**

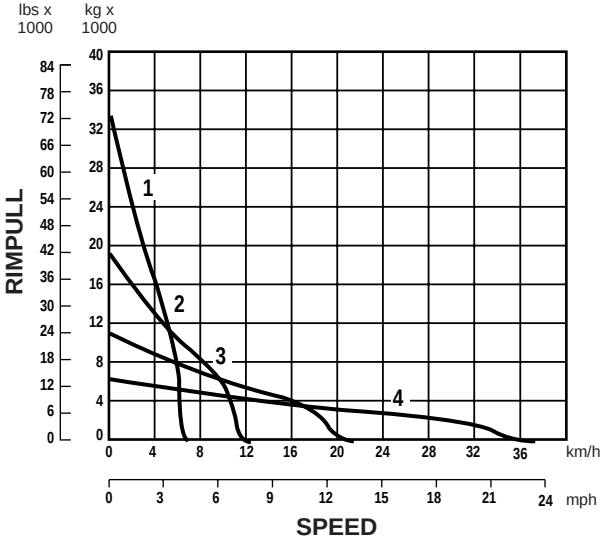
*Operating Weight includes straight dozer, 75% $CaCl_2$ in all tires, lubricants, coolant, ROPS cab, full fuel tank and operator.
**Height (stripped top) — without ROPS, exhaust, seat back or easily removed encumbrances.

MODEL	814F		824G		834B		844		854G	
FORWARD GEAR	km/h	**mph**	km/h	**mph**	km/h	**mph**	km/h	**mph**	km/h	**mph**
1	5.6	**3.5**	5.9	**3.6**	6.3	**3.9**	7.2	**4.5**	6.9	**4.3**
2	9.8	**6.1**	10.5	**6.5**	11.3	**7.0**	12.9	**8.0**	12.0	**7.4**
3	17.2	**10.7**	18.6	**11.5**	19.8	**12.3**	22.5	**14.0**	20.5	**12.7**
4	29.9	**18.6**	33.0	**20.4**	34.1	**21.2**		—		—
REVERSE GEAR										
1	6.3	**3.9**	6.8	**4.2**	7.9	**4.9**	8.2	**5.0**	7.7	**4.8**
2	11.3	**7.0**	12.0	**7.4**	14.0	**8.7**	14.2	**8.8**	13.3	**8.3**
3	19.6	**12.2**	21.3	**13.2**	24.5	**15.2**	25.0	**15.5**	22.7	**14.1**
4	34.1	**21.1**	37.8	**23.5**	41.8	**25.9**		—		—

814F



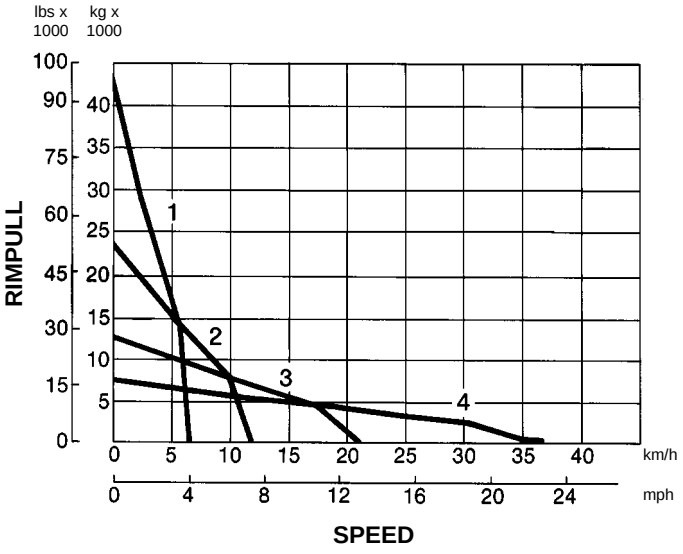
824G



Usable rimpull depends upon traction and weight of tractor.

KEY
1 – 1st Gear
2 – 2nd Gear
3 – 3rd Gear
4 – 4th Gear

834B



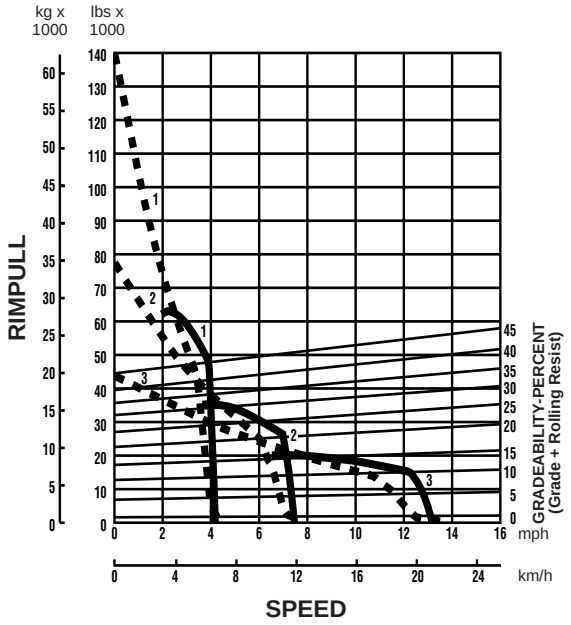
KEY
1 – 1st Gear
2 – 2nd Gear
3 – 3rd Gear
4 – 4th Gear

Torque Converter

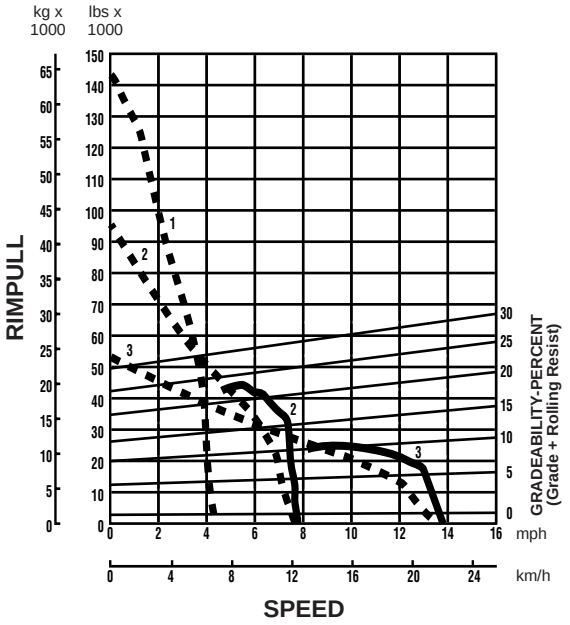
Direct Drive

Usable rimpull depends upon traction and weight of tractor.

844



854G



11

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 andor 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 35/65R 33
310 kPa (45 psi) on 29.5R 25
205 kPa (30 psi) on 26.5R 25
240 kPa (35 psi) on 23.5R 25

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.

MODEL	814F		824G		834B	
Type	**Straight**		**Straight**		**Straight**	
Capacity**	2.89 m^3	**3.77 yd^3**	5.12 m^3	**6.70 yd^3**	7.26 m^3	**9.5 yd^3**
Weight, Dozer*	3740 kg	**8245 lb**	5136 kg	**11,323 lb**	4738 kg	**10,443 lb**
General Dimensions						
(Tractor & Dozer)						
Length	6.82 m	**22'5"**	8.29 m	**27'2"**	8.72 m	**28'7"**
Width	3.65 m	**12'0"**	4.51 m	**14'9"**	4.62 m	**15'2"**
Blade:						
Width (including std. end bits)	3.65 m	**12'0"**	4.51 m	**14'9"**	4.62 m	**15'2"**
Height	1004 mm	**3'3.5"**	1220 mm	**4'0"**	1462 mm	**4'9"**
Max. Digging Depth	460 mm	**18.1"**	430 mm	**16.9"**	441 mm	**17.4"**
Ground Clearance @ Full Lift Under Skid Plate	940 mm	**3'1"**	955 mm	**3'1.6"**	1118 mm	**3'8"**
Tilt Adjust. from Horizontal	747 mm	**2'5.4"**	1184 mm	**3'10.6"**	1278 mm	**4'2"**
Total Tip Adjustment	**18°**		**22.4°**		**22°**	

MODEL	834B		844		854G	
Type	**U-Blade**		**Semi-U**		**Semi-U**	
Capacity**	10.5 m^3	**13.7 yd^3**	15.9 m^3	**20.7 yd^3**	25.4 m^3	**33.1 yd^3**
Weight, Dozer*	4803 kg	**10,588 lb**	15 670 kg	**34,520 lb**	21 910 kg	**48,270 lb**
General Dimensions						
(Tractor & Dozer)						
Length	9.40 m	**30'10"**	10.94 m	**35'9"**	13.405 m	**44'0"**
Width	4.85 m	**15'11"**	5.42 m	**17'8"**	6.321 m	**20'7"**
Blade:						
Width (including std. end bits)	4.85 m	**15'11"**	5.42 m	**17'8"**	6.321 m	**20'7"**
Height	1448 mm	**4'9"**	1813 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.

BALDERSON COAL U-BLADE	814F		824G		834B	
Balderson Models						
Replaces "S" Blade	**BD814U-14**		**BD824U-15'9"**		**BD834U-20**	
Blade:						
Capacity	10.55 m^3	**13.8 yd^3**	16.1 m^3	**21.0 yd^3**	21.18 m^3	**27.7 yd^3**
Length (Cutting Width)	4318 mm	**14'2"**	4788 mm	**15'8.5"**	6198 mm	**20'4"**
Height, wing section (tapered down)	1473 mm	**4'10"**	1783 mm	**5'10"**	1803 mm	**5'11"**
Wing Angle	**25°**		**30°**		**30°**	
Weight, Installed (Without Hydraulics)	1810 kg	**3985 lb**	3085 kg	**6800 lb**	3560 kg	**7850 lb**

BALDERSON WOODCHIP U-BLADE	814F		824G		834B	
Balderson Models						
Replaces "S" Blade	**BD814US-14**		**BD824US-15'9"**		**BD834US-20**	
Blade:						
Capacity	16.7 m^3	**21.9 yd^3**	23.9 m^3	**31.4 yd^3**	29.8 m^3	**39.0 yd^3**
Length (Cutting Width)	4318 mm	**14'2"**	4775 mm	**15'8"**	6096 mm	**20'0"**
Height, wing section	1880 mm	**6'2"**	2253 mm	**7'4.7"**	2235 mm	**7'4"**
Wing Angle	**30°**		**30°**		**30°**	
Weight	1975 kg	**4350 lb**	3630 kg	**8000 lb**	4295 kg	**9470 lb**

BALDERSON COAL SCOOP WITH TILT	814F		824G		834B	
Balderson Models						
Replaces "S" Blade	**B14-15**		**B24-17**		**B34-26**	
Scoop:						
Lift and Carrying Capacity	11.5 m^3	**15.0 yd^3**	12.9 m^3	**17.0 yd^3**	19.9 m^3	**26.0 yd^3**
Dozing Capacity	19.1 m^3	**25.0 yd^3**	25.8 m^3	**34.0 yd^3**	37.5 m^3	**49.0 yd^3**
Width	3734 mm	**12'3"**	4013 mm	**13'2"**	5283 mm	**17'4"**
Height	1626 mm	**5'4"**	—	**—**	2083 mm	**6'10"**
Depth	2083 mm	**6'10"**	—	**—**	2540 mm	**8'4"**
Overall length	7.3 m	**24'0"**	—	**—**	11.0 m	**36'0"**
Weight	5216 kg	**11,500 lb**	8400 kg	**18,500 lb**	8700 kg	**19,180 lb**
Dump Clearance	1041 mm	**3'5"**	—	**—**	1448 mm	**4'9"**

BALDERSON CHIP SCOOP WITH TILT	814F		824G		834B	
Balderson Models						
Replaces "S" Blade	**B14-20S**		**B24-27S**		**B34-40S**	
Scoop:						
Capacity/Lift & Carry	15.3 m^3	**20.0 yd^3**	20.6 m^3	**27.0 yd^3**	30.2 m^3	**39.5 yd^3**
Capacity/Dozing	30.6 m^3	**40.0 yd^3**	41.3 m^3	**54.0 yd^3**	49.7 m^3	**65.0 yd^3**
Width	3734 mm	**12'3"**	4026 mm	**13'2.5"**	4826 mm	**15'10"**
Height	2286 mm	**7'6"**	2794 mm	**9'2"**	2248 mm	**7'4.5"**
Depth	2464 mm	**8'1"**	2946 mm	**9'8"**	3023 mm	**9'11"**
Weight	5390 kg	**11,880 lb**	11 420 kg	**19,125 lb**	11 105 kg	**24,480 lb**

SOIL COMPACTORS

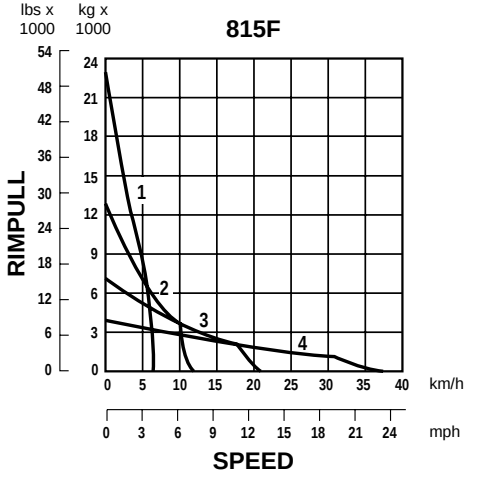
CONTENTS

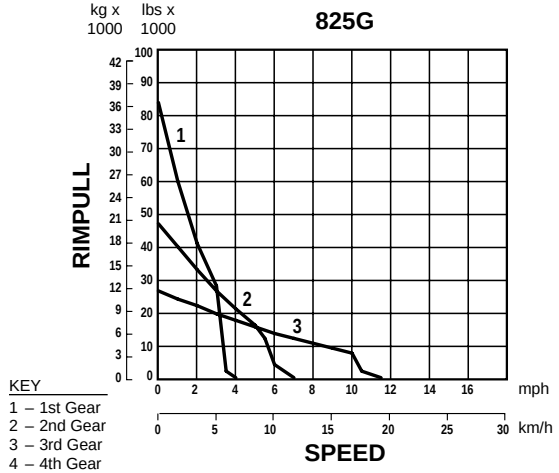
Features:

- **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.)

MODEL	815F		825G	
Flywheel Power	164 kW	**220 hp**	235 kW	**315 hp**
Operating Weight*	20 879 kg	**45,934 lb**	31 740 kg	**69,828 lb**
Engine Model	**3306 DITA**		**3406C DITA**	
Rated Engine RPM	**2200**		**2100**	
No. Cylinders	**6**		**6**	
Displacement	10.5 L	**638 in³**	14.6 L	**893 in³**
Speeds:				
Forward	**4**		**3**	
Reverse	**4**		**3**	
Turning Circle with Blade	12.6 m	**41'5"**	14.6 m	**48'0"**
Fuel Tank Refill Capacity	464 L	**122.6 U.S. gal**	630 L	**166.5 U.S. gal**
TAMPING FOOT WHEELS:				
Each Drum Width	978 mm	**3'2.5"**	1125 mm	**3'8.3"**
Diameters, over feet	1.42 m	**4'7.9"**	1.68 m	**5'6"**
over drum	1.03 m	**3'4.5"**	1.29 m	**4'3"**
Feet per Wheel	**60**		**65**	
Feet per Row	**12**		**13**	
Rows of Feet	**5**		**5**	
Foot Length	198 mm	**7.8"**	203 mm	**8"**
End Area Per Foot	116 cm²	**18 in²**	183 cm²	**28.4 in²**
Width of Two Pass Coverage	4.35 m	**14'3"**	4.88 m	**16'0"**
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"**	3.70 m	**12'2"**
Overall Length with Dozer	6.82 m	**22'5"**	8.24 m	**27'1"**
Width over Drums	3.24 m	**10'8"**	3.65 m	**12'0"**
Ground Clearance	423 mm	**17"**	355 mm	**14"**
STRAIGHT BULLDOZER:				
Width	3.76 m	**12'4"**	4.41 m	**14'5"**
Height	860 mm	**2'10"**	1.03 m	**3'5"**

*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.





COMPACTION FUNDAMENTALS

The following discussion applies to soil compaction only. For information on refuse compaction, see Waste Disposal section of this book.

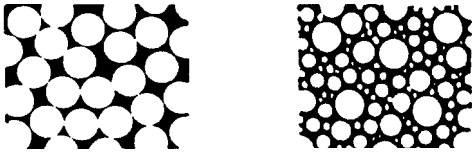
Definition

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



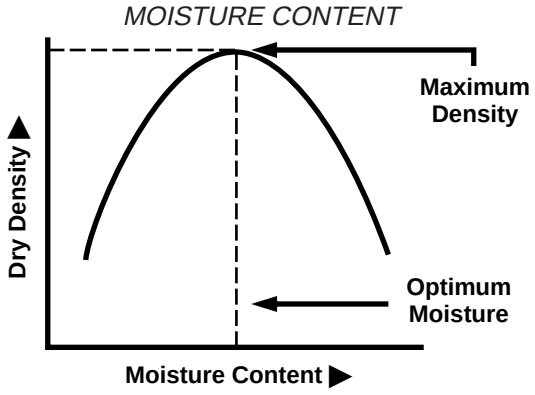
Poorly-graded Well-graded

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)

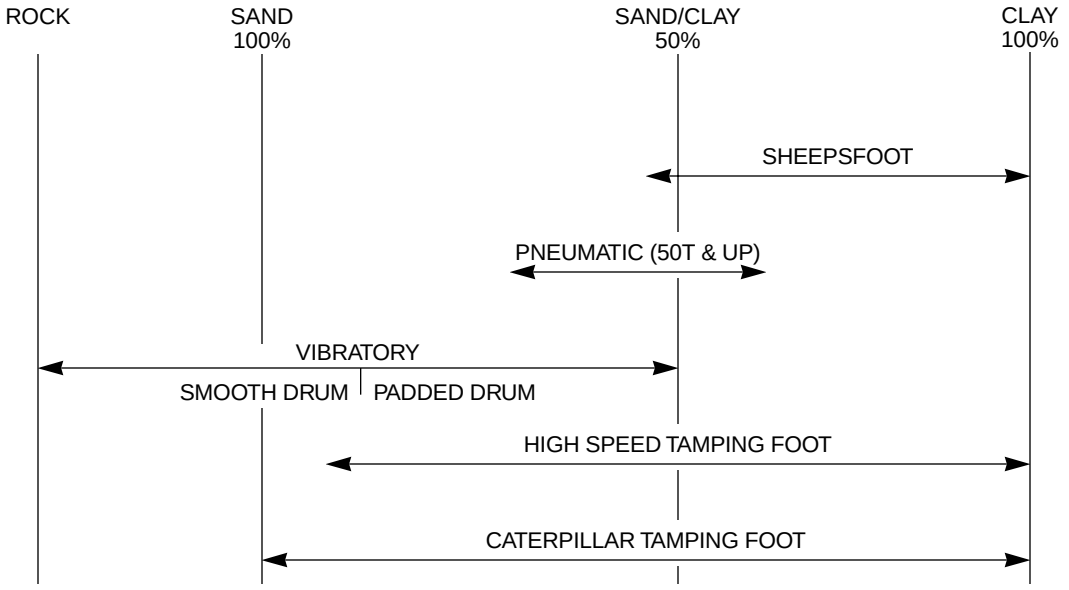
COMPACTOR TYPES

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 (Cm^3) or compacted cubic yards (CCY) per hour. Material in its natural or bank state is measured in bank cubic meters or yards (Bm^3 or BCY). When it is removed or placed in a fill, it is measured in loose cubic meters or yards (Lm^3 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).

$$SF = \frac{\text{Compacted cubic meters } (Cm^3)}{\text{Bank cubic meters } (Bm^3)}$$

$$SF = \frac{\text{Compacted cubic yards (CCY)}}{\text{Bank cubic yards (BCY)}}$$

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

$$Cm^3 = \frac{W \times S \times L}{P}$$

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

$$CCY/Hr = \frac{W \times S \times L \times 16.3}{P}$$

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 km/h, L = 100 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 Cm^3/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 Cm^3/h.)

Example problem (English)

Determine production for an 825G operating under the following conditions:

P = 4, S = 8 mph, L = 6 inches

Refer to the production estimating table on the next page. This table contains estimates for the 815F and 825G 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 825 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.

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PRODUCTION TABLE

MODEL AND MACHINE PASSES*		AVERAGE SPEED km/h	AVERAGE SPEED mph	COMPACTED LIFT THICKNESS 100 mm m³/h	4 in yd³/hr	150 mm m³/h	6 in yd³/hr	200 mm m³/h	8 in yd³/hr	250 mm m³/h	10 in yd³/hr
815F	3	6.5	**4**	419	**548**	628	**822**	837	**1095**	—	
		9.5	**6**	628	**822**	942	**1232**	1256	**1643**	—	
		13.0	**8**	837	**1095**	1256	**1643**	1675	**2191**	—	
	4	6.5	**4**	314	**411**	471	**616**	628	**822**	—	
		9.5	**6**	471	**616**	706	**924**	942	**1232**	—	
		13.0	**8**	628	**822**	942	**1232**	1256	**1643**	—	
	5	6.5	**4**	251	**329**	377	**493**	502	**657**	—	
		9.5	**6**	377	**493**	565	**739**	754	**986**	—	
		13.0	**8**	502	**657**	754	**986**	1005	**1314**	—	
	6	6.5	**4**	286	**274**	314	**411**	419	**548**	—	
		9.5	**6**	314	**411**	471	**616**	628	**822**	—	
		13.0	**8**	419	**548**	628	**822**	837	**1095**	—	
825G	3	6.5	**4**	488	**642**	731	**962**	975	**1283**	1219	**1604**
		9.5	**6**	713	**962**	1069	**1444**	1425	**1925**	1781	**2406**
		13.0	**8**	975	**1283**	1463	**1925**	1950	**2566**	2438	**3208**
	4	6.5	**4**	366	**481**	534	**722**	731	**962**	914	**1203**
		9.5	**6**	534	**722**	802	**1083**	1069	**1444**	1336	**1804**
		13.0	**8**	731	**962**	1097	**1444**	1463	**1925**	1828	**2406**
	5	6.5	**4**	293	**385**	439	**577**	585	**770**	731	**962**
		9.5	**6**	428	**577**	641	**866**	855	**1155**	1069	**1444**
		13.0	**8**	585	**770**	878	**1155**	1170	**1540**	1463	**1925**
	6	6.5	**4**	244	**321**	366	**481**	488	**642**	609	**802**
		9.5	**6**	356	**481**	534	**722**	713	**962**	891	**1203**
		13.0	**8**	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		825G	
Type	**Fill Spreading**		**Fill Spreading**	
Capacity**				
Earth	2.16 m³	**2.82 yd³**	3.79 m³	**4.95 yd³**
Refuse	—		—	
Weight, Dozer*	1460 kg	**3220 lb**	2831 kg	**6241 lb**
General Dimensions:				
(Tractor & Dozer)				
Length	6.82 m	**22'5"**	8.37 m	**27'6"**
Width	3.76 m	**12'4"**	4.61 m	**15'2"**
Blade Dimensions:				
Width, End Bits	3.76 m	**12'4"**	4.41 m	**14'5"**
Height, Moldboard	860 mm	**2'10"**	1.03 m	**3'4"**
Height, Trash Rack	—		—	
Max. Digging Depth	407 mm	**16"**	312 mm	**12.3"**
Ground Clearance				
@ Full Lift	628 mm	**2'0.7"**	932 mm	**3'0.7"**
Tilt Adjust. from Horizontal	328 mm	**12.9"**	801 mm	**2'7.5"**

*Total Bulldozer Arrangement.
**Blade capacities determined by SAE recommended practice J1265.

LANDFILL COMPACTORS

CONTENTS

Landfill Compactors Features:

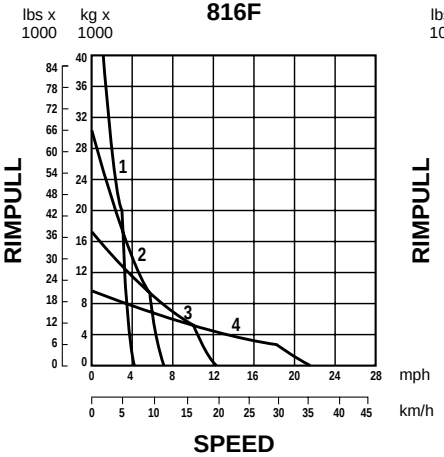
- **Choice of Chopper Blades or PLUS TIPS** … Chopper blades alternate in a staggered-chevron design for maximum coverage and density. PLUS TIPS are standard on 836 — optional on 816F and 826G.
- **Cat designed and manufactured power train** … for optimum match, performance and efficiency. Responsive 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 826G, 836 and 816F, prevents refuse from being carried over the rear wheels.

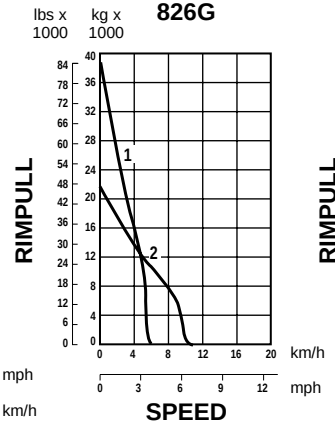


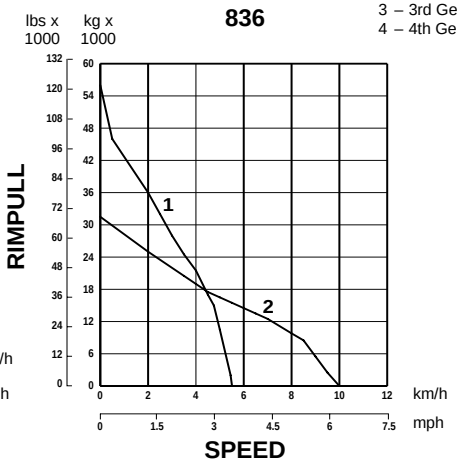
MODEL	816F		826G		836	
Flywheel Power	164 kW	**220 hp**	235 kW	**315 hp**	353 kW	**473 hp**
Operating Weight*	22 780 kg	**50,115 lb**	33 350 kg	**73,370 lb**	44 135 kg	**97,300 lb**
Engine Model		**3306 DITA**		**3406C DITA**		**3408**
Rated Engine RPM		**2200**		**2100**		**2100**
No. Cylinders		**6**		**6**		**8**
Displacement	10.5 L	**638 in³**	14.6 L	**893 in³**	18.0 L	**1098 in³**
Speeds:						
Forward		**4**		**2**		**2**
Reverse		**4**		**2**		**2**
Clearance Turning Circle with Blade	12.8 m	**42'2"**	14.69 m	**48'2"**	18.59 m	**61'0"**
Fuel Tank Refill Capacity	446 L	**117.8 U.S. gal**	630 L	**166.5 U.S. gal**	890 L	**235 U.S. gal**
WHEELS:		**CHOPPER**		**CHOPPER**		**PLUS-TIPS**
Each Drum Width	1.02 m	**3'4"**	1.20 m	**3'11"**	1.40 m	**4'7"**
Diameters, over Blade Tips	1.60 m	**5'3"**	1.83 m	**6'0"**	2.04 m	**6'8"**
Drum only	1.30 m	**4'3"**	1.53 m	**5'0"**	1.72 m	**5'8"**
Blade Tips per Wheel		**20**		**24**		**28**
Blade Length	348 mm	**13.7"**	419 mm	**16.5"**	294 mm	**11.6"**
Blade Height	152 mm	**6"**	152 mm	**6"**	165 mm	**6.5"**
Blade Thickness/Width	22 mm	**0.87"**	28.6 mm	**1.125"**	150 mm	**5.9"**
PLUS TIPS per Wheel		**20**		**25**		**35**
Width of Two Pass Coverage	4.5 m	**14'9"**	4.78 m	**15'8"**	5.67 m	**18'7"**
GENERAL DIMENSIONS:						
Height (to top of ROPS)	3.45 m	**11'4"**	3.82 m	**12'7"**	4.57 m	**15'0"**
Height (stripped top)**	2.50 m	**8'3"**	2.74 m	**9'0"**	2.96 m	**9'8"**
Wheel Base	3.35 m	**11'0"**	3.70 m	**12'2"**	3.81 m	**12'6"**
Overall Length with Dozer	7.79 m	**25'7"**	8.42 m	**27'7"**	10.17 m	**33'4"**
Width over Drums	3.33 m	**10'11"**	3.80 m	**12'6"**	4.27 m	**14'0"**
Ground clearance	532 mm	**1'9"**	505 mm	**1'8"**	525 mm	**1'8"**
LANDFILL BULLDOZER:						
Width	3.65 m	**12'0"**	4.50 m	**14'9"**	5.18 m	**17'0"**
Height***	1.91 m	**6'3"**	1.90 m	**6'3"**	2.21 m	**7'3"**

*Operating Weight includes coolant, bulldozer, hydraulics, ROPS cab, full fuel tank, and operator.
**Height (stripped top) — without ROPS cab, exhaust, seat back or other easily removed encumbrances.
***To top of trash screen.

KEY
1 – 1st Gear
2 – 2nd Gear
3 – 3rd Gear
4 – 4th Gear





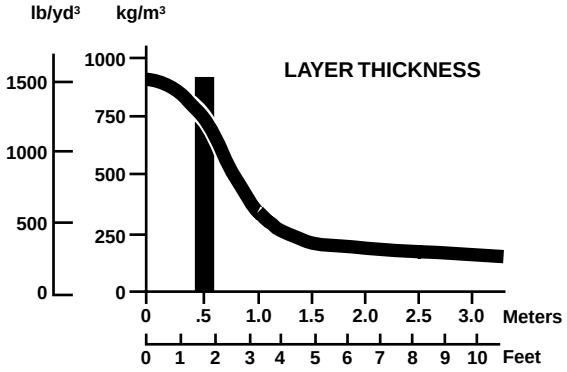


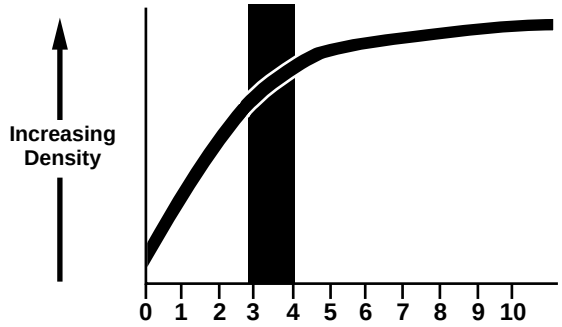
COMPACTION FUNDAMENTALS

To maximize compaction, the following guidelines should be employed when possible:

1. *Refuse Layer Thickness* — The depth of each com-pacted layer is perhaps the single most important controllable factor influencing density. To obtain maximum density efficiency, waste should be spread and compacted in layers **not exceeding a depth of 609 mm (2'0")**. Deeper layers will reduce the density that a machine can develop in a given number of passes. (See top table at right.)
2. *Number of Passes* made over the refuse also affects density. Regardless of what **type** of machine used, the unit should make 3-4 passes to achieve optimum density. The following graph illustrates that more than five passes result in little additional compactive effort. The added expense of additional passes is not justified by the incremental increase in density. (See bottom table at right).
3. *Slope* — To maximize compaction, a compactor should be operated on as flat a slope as possible. This is because the weight of the landfill compactor is more efficiently utilized and concentrated when working on a flat surface. Landfill compactors should never operate on a slope steeper than 4:1.

(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. For more landfill discussion please see Waste Disposal section of this handbook.)





Number of machine passes made with each steel wheel, rubber tire or track.

MODEL	816F		826G		836	
Type	Land Fill Spreading		Land Fill Spreading		Land Fill Spreading	
Capacity**						
Earth	2.90 m^3	**3.79 yd^3**	3.68 m^3	**4.81 yd^3**	5.0 m^3	**6.56 yd^3**
Refuse	10.48 m^3	**13.70 yd^3**	12.74 m^3	**16.66 yd^3**	18.9 m^3	**24.66 yd^3**
Weight, Dozer*	2107 kg	**4645 lb**	2739 kg	**6038 lb**	3290 kg	**7250 lb**
General Dimensions:						
(Tractor & Dozer)						
Length	7.79 m	**25'7"**	8.38 m	**27'6"**	10.17 m	**33'4"**
Width	3.65 m	**12'0"**	4.50 m	**14'9"**	5.18 m	**17'0"**
Blade Dimensions:						
Width, End Bits	3.65 m	**12'0"**	4.50 m	**14'9"**	5.18 m	**17'0"**
Height, Trash Rack	1915 mm	**6'3"**	1935 mm	**6'4"**	2210 mm	**7'3"**

*Total Bulldozer Arrangement.
**Blade capacities determined by SAE recommended practice J1265.

BALDERSON U-BLADE	816F		826G		836			
Balderson Model:	**BD816UL-12**		**BD826UL-14**		**BD836UL-17**		**BD836SUL-17**	
Type	**U-Blade**		**U-Blade**		**U-Blade**		**Semi-U-Blade**	
Blade:								
Capacity (Refuse)	11.9 m^3	**15.5 yd^3**	16.7 m^3	**21.9 yd^3**	25.2 m^3	**33 yd^3**	20.3 m^3	**26.5 yd^3**
(Earth)	8.3 m^3	**10.8 yd^3**	12.2 m^3	**16 yd^3**	7.74 m^3	**10.13 yd^3**	6.38 m^3	**8.34 yd^3**
Length (Cutting Width)	3658 mm	**12'0"**	4369 mm	**14'4"**	5182 mm	**17'0"**	5316 mm	**17'5.31"**
Height	1857 mm	**6'1.1"**	2007 mm	**6'7"**	2210 mm	**7'3"**	2210 mm	**7'3"**
Wing Angle	**25°**		**25°**		**25°**		**—**	
Max. lift above ground	889 mm	**2'11"**	864 mm	**2'10"**	864 mm	**2'10"**	—	**—**
Weight, Installed								
(Without Hydraulics)	1680 kg	**3700 lb**	2100 kg	**4625 lb**	4310 kg	**9500 lb**	3355 kg	**7400 lb**

BALDERSON W-BLADE	816F		826G		836	
Balderson Model:	**BD816WL-12**		**BD826WL-14**		**BD836WL-17**	
Replaces “S” Blade						
Blade:						
Capacity (Refuse)	11.9 m^3	**15.5 yd^3**	16.8 m^3	**22.0 yd^3**	23.9 m^3	**31.3 yd^3**
Length (Cutting Width)	3658 mm	**12'0"**	4420 mm	**14'6"**	5207 mm	**17'1"**
Moldboard Height	1857 mm	**6'1.1"**	2057 mm	**6'9"**	2210 mm	**7'3"**
Weight, Installed						
(Without Hydraulics)	2070 kg	**4560 lb**	2975 kg	**6600 lb**	4515 kg	**9950 lb**

BALDERSON TILT STRAIGHT BLADE	816F		826G	
Balderson Model:	**BDI816SL-12'T**		**BDI826SL-14'8"T**	
Blade:				
Capacity (Refuse)	10.7 m^3	**14.0 yd^3**	13.0 m^3	**17.0 yd^3**
Length (Cutting Width)	3647 mm	**11'11.6"**	4375 mm	**14'4.3"**
Weight, Installed	2225 kg	**4500 lb**	3530 kg	**7780 lb**

WHEEL LOADERS
WASTE HANDLING WHEEL LOADERS

CONTENTS

WHEEL LOADERS

WHEEL LOADERS

Features:

- **Caterpillar large displacement, 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 902, 906 and 914G.**
- **Transmission neutralizer switch.**
- **Centerpoint articulated frame steering.**
- **Computerized machine function monitoring.**
- **Variable capacity torque converter on 988F Series II and 992G.**
- **Command control steering** with integrated transmission controls.
- **Lock up clutch on 990 and 994 (optional on 988F).**
- **Impeller clutch on 994.**
- **Limited slip differentials.**
- **Traction control system…938G.**
- **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.




MODEL	902	906	914G	924F
Flywheel Power: Net	34 kW **45 hp**	45 kW **60 hp**	67 kW **90 hp**	78 kW **105 hp**
Gross	36 kW **48 hp**	47 kW **63 hp**	—	—
Engine Model	**3024**	**3034**	**3054T**	**3114T**
Rated Engine RPM	**2600**	**2600**	**2200**	**2400**
Bore	84 mm **3.31"**	97 mm **3.82"**	100 mm **3.94"**	105 mm **4.13"**
Stroke	100 mm **3.94"**	100 mm **3.94"**	127 mm **5"**	127 mm **5"**
No. Cylinders	**4**	**4**	**4**	**4**
Displacement	2.2 L **135 in³**	2.95 L **180 in³**	4 L **243 in³**	4.4 L **268 in³**
Speeds Forward	km/h **mph**	km/h **mph**	km/h **mph**	km/h **mph**
1st	7 Lo **4**	8 Lo **5**	7 Lo* **4.3**	7.1 **4.4**
2nd	20 Hi **12**	20 Hi **12**	20 Lo **12.4**	13.1 **8.2**
3rd	**—**	**—**	9 Hi** **5.6**	23.6 **14.8**
4th	**—**	**—**	35 Hi **21.7**	38.2 **23.9**
Speeds Reverse				
1st	7 Lo **4**	8 Lo **5**	7 Lo* **4.3**	7.1 **4.4**
2nd	20 Hi **12**	20 Hi **12**	20 Lo **12.4**	13.1 **8.2**
3rd	**—**	**—**	9 Hi** **5.6**	23.6 **14.8**
4th	**—**	**—**	35 Hi **21.7**	**—**
Hydraulic Cycle Time, Rated Load in Bucket:	**Seconds**	**Seconds**	**Seconds**	**Seconds**
Raise	**4.5**	**4.5**	**5.6**	**4.3**
Dump	**1.5**	**1.5**	**2.1**	**1.3**
Lower (Empty, Float Down)	**3.2**	**3.2**	**3.2**	**2.7**
Total	**9.2**	**9.2**	**10.9**	**8.3**
Tread Width	1.35 m **4'5"**	1.40 m **4'7"**	1.80 m **5'11"**	1.85 m **6'1"**
Width Over Tires	1.70 m **5'7"**	1.82 m **6'0"**	2.26 m **7'5"**	2.32 m **7'7.7"**
Ground Clearance	385 mm **15"**	420 mm **17"**	456 mm **18"**	318 mm **12.5"**
Fuel Tank Capacity	74 L **19.6 U.S. gal**	74 L **19.6 U.S. gal**	150 L **39.6 U.S. gal**	157 L **41.5 U.S. gal**
Hydraulic Tank Capacity	49 L **13 U.S. gal**	49 L **13 U.S. gal**	70 L **18.5 U.S. gal**	53 L **14 U.S. gal**
Hydraulic System Capacity (includes tank)	66 L **17.5 U.S. gal**	66 L **17.5 U.S. gal**	100 L **26.4 U.S. gal**	77 L **20.3 U.S. gal**

*Hydrostatic transmission standard speed version.
**Hydrostatic transmission high speed version.

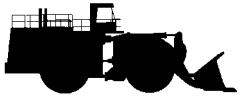



MODEL	928G		938G		950G		962G	
Flywheel Power: Net	93 kW	**125 hp**	108 kW	**145 hp**	134 kW	**180 hp**	149 kW	**200 hp**
Gross	—		118 kW	**158 hp**	140 kW	**185 hp**	154 kW	**207 hp**
Engine Model	**3116T**		**3126TA**		**3126TA**		**3126TA**	
Rated Engine RPM	**2300**		**2200**		**2200**		**2200**	
Bore	105 mm	**4.13"**	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"**
No. Cylinders	**6**		**6**		**6**		**6**	
Displacement	6.6 L	**403 in³**	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**	km/h	**mph**
1st	7.6	**4.7**	7	**4.3**	6.9	**4.3**	6.9	**4.3**
2nd	12	**7.5**	12.7	**7.9**	12.7	**7.9**	12.7	**7.9**
3rd	24.6	**15.3**	21.9	**13.6**	22.3	**13.9**	22.3	**13.9**
4th	36.7	**22.8**	35.9	**22.3**	37	**23**	37	**23.0**
Speeds Reverse								
1st	7.6	**4.7**	7	**4.3**	7.6	**4.7**	7.6	**4.7**
2nd	12	**7.5**	12.7	**7.9**	13.9	**8.7**	13.9	**8.7**
3rd	24.6	**15.3**	21.9	**13.6**	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**		**Seconds**	
Raise	**6.1**		**6**		**6.3**		**6.3**	
Dump	**1.2**		**1.4**		**2.2**		**2.2**	
Lower (Empty, Float Down)	**2.8**		**2.8**		**2.2**		**2.2**	
Total	**10.1**		**10.2**		**10.7**		**10.7**	
Tread Width	1.82 m	**6'1"**	2.02 m	**6'8"**	2.14 m	**7'0"**	2.14 m	**7'0"**
Width Over Tires	2.44 m	**8'0"**	2.60 m	**8'6"**	2.89 m	**9'6"**	2.89 m	**9'6"**
Ground Clearance	408 mm	**16"**	400 mm	**15.7"**	400 mm	**15.7"**	400 mm	**15.7"**
Fuel Tank Capacity	230 L	**60.8 U.S. gal**	254 L	**67 U.S. gal**	295 L	**78 U.S. gal**	295 L	**78 U.S. gal**
Hydraulic Tank Capacity	70 L	**18.5 U.S. gal**	55 L	**14.5 U.S. gal**	88 L	**23.2 U.S. gal**	88 L	**23.2 U.S. gal**
Hydraulic System Capacity (includes tank)	125 L	**33 U.S. gal**	90 L	**23.8 U.S. gal**	153 L	**40.4 U.S. gal**	153 L	**40.4 U.S. gal**




MODEL	966F Series II	970F	980G	988F Series II
Flywheel Power	164 kW **220 hp**	187 kW **250 hp**	224 kW **300 hp**	321 kW **430 hp**
Engine Model	**3306TA**	**3306TA**	**3406TA**	**3408E TA**
Rated Engine RPM	**2200**	**2200**	**2100**	**2000**
Bore	121 mm **4.75"**	121 mm **4.75"**	137 mm **5.4"**	137 mm **5.4"**
Stroke	152 mm **6"**	152 mm **6"**	165 mm **6.5"**	152 mm **6"**
No. Cylinders	**6**	**6**	**6**	**8**
Displacement	10.5 L **638 in³**	10.5 L **638 in³**	14.6 L **893 in³**	18 L **1099 in³**
Speeds Forward	km/h **mph**	km/h **mph**	km/h **mph**	km/h **mph**
1st	7.3 **4.5**	7.2 **4.5**	7 **4.3**	6.9 **4.3**
2nd	13 **8.1**	12.6 **7.8**	12.3 **7.7**	12.1 **7.5**
3rd	22.5 **14**	21.7 **13.5**	21.6 **13.4**	20.7 **12.8**
4th	38.8 **24.1**	37.3 **23.2**	37.4 **23.2**	35.1 **21.8**
Speeds Reverse				
1st	8.3 **5.2**	8.2 **5.1**	8 **5**	7.9 **4.9**
2nd	14.8 **9.2**	14.4 **8.9**	14 **8.8**	13.7 **8.5**
3rd	25.6 **15.9**	24.6 **15.3**	24.6 **15.3**	23.5 **14.6**
4th	43.9 **27.3**	42.7 **26.5**	42.8 **26.6**	—
Hydraulic Cycle Time, Rated Load in Bucket:	**Seconds**	**Seconds**	**Seconds**	**Seconds**
Raise	**7.1**	**6.1**	**6**	**7.9**
Dump	**2**	**1.3**	**2**	**3.3**
Lower (Empty, Float Down)	**2.4**	**2.1**	**3.4**	**4.0**
Total	**11.5**	**9.5**	**11.4**	**15.2**
Tread Width	2.20 m **7'3"**	2.20 m **7'3"**	2.44 m **8'0"**	2.59 m **8'6"**
Width Over Tires	2.94 m **9'8"**	2.94 m **9'8"**	3.25 m **10'8"**	3.52 m **11'7"**
Ground Clearance	476 mm **18.7"**	482 mm **1'7"**	467 mm **18.4"**	496 mm **1'7"**
Fuel Tank Capacity	377 L **99.6 U.S. gal**	377 L **99.6 U.S. gal**	470 L **124 U.S. gal**	659 L **174 U.S. gal**
Hydraulic Tank Capacity	140 L **37 U.S. gal**	140 L **37 U.S. gal**	125 L **33 U.S. gal**	235 L **62 U.S. gal**
Hydraulic System Capacity (includes tank)	205 L **54 U.S. gal**	205 L **54 U.S. gal**	208 L **55 U.S. gal**	295 L **78 U.S. gal**





MODEL	990 Series II		992G		994	
Flywheel Power	466 kW	**625 hp**	597 kW	**800 hp**	932 kW	**1250 hp**
Engine Model		**3412E TA**		**3508B TA**		**3516TA**
Rated Engine RPM		**2000**		**1750**		**1600**
Bore	137 mm	**5.4"**	170 mm	**6.7"**	170 mm	**6.69"**
Stroke	152 mm	**6"**	190 mm	**7.5"**	190 mm	**7.48"**
No. Cylinders		**12**		**8**		**16**
Displacement	27 L	**1649 in³**	34.5 L	**2105 in³**	69 L	**4211 in³**
Speeds Forward	km/h	**mph**	km/h	**mph**	km/h	**mph**
1st	7.2	**4.5**	6.7	**4.2**	6.8	**4.2**
2nd	12.9	**8**	11.9	**7.3**	12.2	**7.6**
3rd	22.5	**14**	20.2	**12.5**	21.2	**13.2**
Speeds Reverse						
1st	8	**5**	7.4	**4.6**	7.6	**4.7**
2nd	14.2	**8.8**	12.6	**7.8**	14	**8.7**
3rd	25	**15.5**	22.7	**14.1**	24.3	**15.1**
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**		**4.2**
Total		**15.9**		**15.85**		**20.1**
Tread Width	3.1 m	**10'0"**	3.30 m	**10'10"**	3.90 m	**12'10"**
Width Over Tires	4.1 m	**13'6"**	4.50 m	**14'9"**	5.20 m	**17'0"**
Ground Clearance	507 mm	**20"**	691 mm	**27"**	650 mm	**25.6"**
Fuel Tank Capacity	970 L	**252 U.S. gal**	1319 L	**343 U.S. gal**	4540 L	**1200 U.S. gal**
Hydraulic Tank Capacity	174 L**	**45 U.S. gal**	326 L†	**84.8 U.S. gal**	623 L*	**165 U.S. gal**
Hydraulic System Capacity (includes tank)	435 L**	**113 U.S. gal**	646 L†	**168 U.S. gal**	723 L*	**190 U.S. gal**

*Separate steering system 265 L **(70 U.S. gal)**. Brakes 42 L **(11 U.S. gal)**.
Also contains separate systems for steering and engine cooling fan 193 L **(51 U.S. gal), tank only 129 L **(34 U.S. gal)**.
†Separate steering and fan system 227 L **(60 U.S. gal)**. Tank only 156 L **(41.3 U.S. gal)**.

Bucket Type		General Purpose					Multi-Purpose			
Ground Engaging Type		**Bare**	**Bolt-on Edge**	**Bolt-on Teeth**	**Weld-on Edge**	**Pin-on Tips**	**Bare**	**Bolt-on Edge**	**Bolt-on Teeth**	**Weld-on Edge**
Rated bucket capacity (§)	m^3	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.7
	yd^3	**0.78**	**0.78**	**0.78**	**0.78**	**0.78**	**0.78**	**0.78**	**0.78**	**0.78**
Struck capacity (§)	m^3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	yd^3	**0.65**	**0.65**	**0.65**	**0.65**	**0.65**	**0.65**	**0.65**	**0.65**	**0.65**
Width	mm	1780	1790	1780	1790	1780	1790	1790	1790	1790
	ft/in	**5'10"**	**5'10"**	**5'10"**	**5'10"**	**5'10"**	**5'10"**	**5'10"**	**5'10"**	**5'10"**
Dump clearance at full lift and 43° discharge (§)	mm	2341	2307	2341	2273	2341	2341	2307	2341	2273
	ft/in	**7'8"**	**7'7"**	**7'8"**	**7'5"**	**7'8"**	**7'8"**	**7'7"**	**7'8"**	**7'5"**
Reach at full lift and 43° discharge (§)	mm	751	764	751	801	751	751	764	751	801
	ft/in	**2'6"**	**2'6"**	**2'6"**	**2'7"**	**2'6"**	**2'6"**	**2'6"**	**2'6"**	**2'7"**
Reach at 45° discharge and 2130 mm **(7'0")** clearance (§)	mm	920	902	856	905	839	920	902	856	905
	ft/in	**3'0"**	**3'0"**	**2'10"**	**3'0"**	**2'9"**	**3'0"**	**3'0"**	**2'10"**	**3'0"**
Reach with lift arms horizontal and bucket level	mm	1779	1811	1779	1862	1779	1779	1811	1779	1882
	ft/in	**5'10"**	**5'11"**	**5'10"**	**6'1"**	**5'10"**	**5'10"**	**5'11"**	**5'10"**	**6'2"**
Digging depth (§)	mm	52	68	52	68	52	52	68	52	68
	in	**2"**	**2.7"**	**2"**	**2.7"**	**2"**	**2"**	**2.7"**	**2"**	**2.7"**
Overall length	mm	5155	5200	5155	5251	5155	5155	5200	5155	5251
	ft/in	**16'11"**	**17'1"**	**16'11"**	**17'3"**	**16'11"**	**16'11"**	**17'1"**	**16'11"**	**17'3"**
Overall height with bucket at full raise (§)	mm	3967	3967	3967	3967	3967	3944	3944	3944	3944
	ft/in	**13'0"**	**13'0"**	**13'0"**	**13'0"**	**13'0"**	**12'11"**	**12'11"**	**12'11"**	**12'11"**
Loader clearance circle with bucket in carry position	mm	7724	7764	7724	7792	7724	7732	7792	7732	7804
	ft/in	**25'4"**	**25'6"**	**25'4"**	**25'7"**	**25'4"**	**25'4"**	**25'7"**	**25'4"**	**25'7"**
Static tipping load, straight* (§)	kg	3040	2983	3022	2955	3012	2788	2732	2771	2706
	lb	**6700**	**6570**	**6660**	**6510**	**6640**	**6140**	**6020**	**6110**	**5960**
Static tipping load, full 43° turn* (§)	kg	2551	2496	2533	2472	2523	2308	2254	2289	2231
	lb	**5620**	**5500**	**5580**	**5450**	**5560**	**5080**	**4970**	**5040**	**4910**
Breakout force (§)	kN	36.4	34.7	36.3	32.1	36.2	35.6	33.6	35.4	31.4
	lb	**8190**	**7800**	**8160**	**7220**	**8140**	**8010**	**7560**	**7960**	**7060**
Operating weight*	kg	4452	4487	4467	4492	4475	4685	4720	4700	4721
	lb	**9820**	**9890**	**9850**	**4900**	**9870**	**10,330**	**10,410**	**10,360**	**10,410**

*Static tipping load and operating weights shown are with implements, ROPS cab, 12.5-18 tires, full fuel tank and operator.
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	+ 110	**+ 243**	+ 113	**+ 249**
Wheel chock	+ 5	**+ 11**	+ 2	**+ 4**
Tool roll	+ 4	**+ 9**	+ 4	**+ 9**

Bucket Type		**Multi-Purpose**	**High Dump**			**Light Material**		**Stone Sieve**		
Ground Engaging Type		**Pin-on Tips**	**Bare**	**Bolt-on Edge**	**Bolt-on Teeth**	**Bare**	**Bolt-on Edge**	**Bare**	**Bolt-on Edge**	**Bolt-on Teeth**
Rated bucket capacity (§)	m^3	0.6	0.6	0.6	0.6	1	1	0.6	0.6	0.6
	yd^3	**0.78**	**0.78**	**0.78**	**0.78**	**1.3**	**1.3**	**0.78**	**0.78**	**0.78**
Struck capacity (§)	m^3	0.5	0.5	0.5	0.5	0.8	0.8	0.5	0.5	0.5
	yd^3	**0.65**	**0.65**	**0.65**	**0.65**	**1.05**	**1.05**	**0.65**	**0.65**	**0.65**
Width	mm	1790	1887	1787	1787	1880	1890	1780	1780	1780
	ft/in	**5'10"**	**6'2"**	**5'10"**	**5'10"**	**6'2"**	**6'2"**	**5'10"**	**5'10"**	**5'10"**
Dump clearance at full lift and 43° discharge (§)	mm	2341	2341	2307	2341	2204	2170	2341	2307	2341
	ft/in	**7'8"**	**7'8"**	**7'7"**	**7'8"**	**7'3"**	**7'1"**	**7'8"**	**7'7"**	**7'8"**
Reach at full lift and 43° discharge (§)	mm	844	717	728	788	856	867	717	728	788
	ft/in	**2'9"**	**2'4"**	**2'5"**	**2'7"**	**2'10"**	**2'10"**	**2'4"**	**2'5"**	**2'7"**
Reach at 43° discharge and 2130 mm **(7'0")** clearance (§)	mm	929	920	902	928	929	904	920	902	928
	ft/in	**3'1"**	**3'0"**	**3'0"**	**3'1"**	**3'1"**	**3'0"**	**3'0"**	**3'0"**	**3'1"**
Reach with lift arms horizontal and bucket level	mm	1906	1779	1811	1881	1979	2011	1779	1811	1881
	ft/in	**6'3"**	**5'10"**	**5'11"**	**5'11"**	**6'6"**	**6'7"**	**5'10"**	**5'11"**	**6'2"**
Digging depth (§)	mm	52	52	68	52	52	69	52	68	52
	in	**2"**	**2"**	**2.7"**	**2"**	**2"**	**2.7"**	**2"**	**2.7"**	**2"**
Overall length	mm	5282	5155	5200	5257	5355	5400	5155	5200	5257
	ft/in	**17'4"**	**16'11"**	**17'1"**	**17'3"**	**17'7"**	**17'9"**	**16'11"**	**17'1"**	**17'3"**
Overall height with bucket at full raise (§)	mm	3944	3967	3967	3967	3944	3944	3816	3816	3816
	ft/in	**12'11"**	**13'0"**	**13'0"**	**13'0"**	**12'11"**	**12'11"**	**12'6"**	**12'6"**	**12'6"**
Loader clearance circle with bucket in carry position	mm	7752	7724	7764	7724	7934	7974	7724	7764	7724
	ft/in	**25'5"**	**25'4"**	**25'6"**	**25'4"**	**26'0"**	**26'2"**	**25'4"**	**25'6"**	**25'4"**
Static tipping load, straight* (§)	kg	2763	2788	2818	2859	2962	2900	2985	2924	2940
	lb	**6090**	**6140**	**6210**	**6300**	**6530**	**6390**	**6580**	**6440**	**6480**
Static tipping load, full turn* (§)	kg	2282	2386	2329	2368	2473	2414	2498	2439	2452
	lb	**5030**	**5260**	**5130**	**5220**	**5450**	**5320**	**5500**	**5370**	**5400**
Breakout force (§)	kN	35.3	35.3	33.3	35.1	27.5	23.6	36.3	34.3	35.8
	lb	**7940**	**7940**	**7490**	**7890**	**6180**	**5310**	**8160**	**7710**	**8050**
Operating weight*	kg	4704	4639	4674	4654	4531	4568	4509	4544	4552
	lb	**10,370**	**10,230**	**10,310**	**10,260**	**9990**	**10,070**	**9940**	**10,020**	**10,040**

*Static tipping load and operating weights shown are with implements, ROPS cab, 12.5-18 tires, full fuel tank and operator.

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	+ 110	**+ 243**	+ 113	**+ 249**
Wheel chock	+ 5	**+ 11**	+ 2	**+ 4**
Tool roll	+ 4	**+ 9**	+ 4	**+ 9**

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Bucket Type		General Purpose					Multi-Purpose		
Ground Engaging Type		**Bare**	**Bolt-on Edge**	**Bolt-on Teeth**	**Weld-on Edge**	**Pin-on Tips**	**Bare**	**Bolt-on Edge**	**Bolt-on Teeth**
Rated bucket capacity (§)	m^3	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8
	yd^3	**1.05**	**1.05**	**1.05**	**1.18**	**1.05**	**1.05**	**1.05**	**1.05**
Struck capacity (§)	m^3	0.6	0.7	0.6	0.7	0.6	0.6	0.6	0.6
	yd^3	**0.78**	**0.92**	**0.78**	**0.92**	**0.78**	**0.78**	**0.78**	**0.78**
Width	mm	1880	1890	1880	1890	1880	1890	1890	1890
	ft/in	**6'2"**	**6'2"**	**6'2"**	**6'2"**	**6'2"**	**6'2"**	**6'2"**	**6'2"**
Dump clearance at full lift and 43° discharge (§)	mm	2425	2391	2425	2356	2425	2425	2391	2425
	ft/in	**7'11"**	**7'11"**	**7'11"**	**7'9"**	**7'11"**	**7'11"**	**7'10"**	**7'11"**
Reach at full lift and 43° discharge (§)	mm	829	842	901	879	922	829	842	904
	ft/in	**2'9"**	**2'9"**	**2'11"**	**2'11"**	**3'0"**	**2'9"**	**2'9"**	**3'0"**
Reach at 43° discharge and 2130 mm **(7'0")** clearance (§)	mm	1070	982	1142	1118	1160	1071	1045	1143
	ft/in	**3'6"**	**3'3"**	**3'9"**	**3'8"**	**3'10"**	**3'7"**	**3'5"**	**3'9"**
Reach with lift arms horizontal and bucket level	mm	1912	1945	2014	1995	2040	1912	1945	2014
	ft/in	**6'3"**	**6'5"**	**6'7"**	**6'6"**	**6'8"**	**6'3"**	**6'5"**	**6'7"**
Digging depth (§)	mm	84	100	84	100	84	84	99	84
	in	**3.31**	**3.94**	**3.31**	**3.94**	**3.31**	**3.31**	**3.90**	**3.31**
Overall length	mm	5310	5355	5412	5405	5437	5309	5354	5411
	ft/in	**17'5"**	**17'7"**	**17'9"**	**17'9"**	**17'10"**	**17'5"**	**17'7"**	**17'9"**
Overall height with bucket at full raise (§)	mm	4170	4170	4170	4170	4170	4205	4205	4205
	ft/in	**13'8"**	**13'8"**	**13'8"**	**13'8"**	**13'8"**	**13'10"**	**13'10"**	**13'10"**
Loader clearance circle with bucket in carry position	mm	8330	8368	8330	8394	8330	8330	8358	8330
	ft/in	**27'4"**	**27'5"**	**27'4"**	**27'6"**	**27'4"**	**27'4"**	**27'5"**	**27'4"**
Static tipping load, straight* (§)	kg	3427	3382	3410	3374	3399	3234	3169	3215
	lb	**7550**	**7450**	**7510**	**7430**	**7490**	**7130**	**6980**	**7080**
Static tipping load, full turn* (§)	kg	2962	2917	2944	2909	2934	2765	2702	2746
	lb	**6530**	**6430**	**6490**	**6410**	**6460**	**6090**	**5950**	**6050**
Breakout force (§)	kN	45.4	43.2	45.3	40.4	45.2	44.5	42.3	44.3
	lb	**10,210**	**9720**	**10,190**	**9090**	**10,170**	**10,010**	**9510**	**9960**
Operating weight*	kg	5096	5131	5110	5138	5118	5343	5379	5357
	lb	**11,240**	**11,310**	**11,270**	**11,330**	**11,290**	**11,780**	**11,860**	**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**

Bucket Type		**Multi-Purpose**		**High Dump**			**Side Dump**		
Ground Engaging Type		**Weld-on Edge**	**Pin-on Tips**	**Bare**	**Bolt-on Edge**	**Bolt-on Teeth**	**Bare**	**Bolt-on Edge**	**Bolt-on Teeth**
Rated bucket capacity (§)	m^3	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
	yd^3	**1.05**	**1.05**	**0.92**	**0.92**	**0.92**	**0.92**	**0.92**	**0.92**
Struck capacity (§)	m^3	0.7	0.6	0.6	0.6	0.6	0.5	0.6	0.5
	yd^3	**0.92**	**0.78**	**0.78**	**0.78**	**0.78**	**0.65**	**0.78**	**0.65**
Width	mm	1890	1890	1887	1887	1887	1880	1880	1880
	ft/in	**6'2"**	**6'2"**	**6'2"**	**6'2"**	**6'2"**	**6'2"**	**6'2"**	**6'2"**
Dump clearance at full lift and 43° discharge (§)	mm	2357	2425	2425	2391	2425	2322	2288	2322
	ft/in	**7'9"**	**7'11"**	**7'11"**	**7'11"**	**7'11"**	**7'7"**	**7'6"**	**7'7"**
Reach at full lift and 43° discharge (§)	mm	879	923	829	842	904	938	951	1013
	ft/in	**2'11"**	**3'0"**	**2'9"**	**2'9"**	**3'0"**	**3'1"**	**3'1"**	**3'4"**
Reach at 43° discharge and 2130 mm **(7'0")** clearance (§)	mm	1061	1161	1070	1039	1082	1087	1067	1091
	ft/in	**3'6"**	**3'10"**	**3'6"**	**3'5"**	**3'7"**	**3'7"**	**3'6"**	**3'7"**
Reach with lift arms horizontal and bucket level	mm	1995	2040	1912	1945	2015	2062	2095	2165
	ft/in	**6'7"**	**6'8"**	**6'3"**	**6'4"**	**6'7"**	**6'9"**	**6'10"**	**7'1"**
Digging depth (§)	mm	99	84	84	100	84	84	100	84
	in	**3.90**	**3.31**	**3.31**	**3.94**	**3.31**	**3.31**	**3.94**	**3.31**
Overall length	mm	5405	5437	5310	5355	5412	5461	5505	5562
	ft/in	**17'9"**	**17'10"**	**17'5"**	**17'7"**	**17'9"**	**17'11"**	**18'1"**	**18'3"**
Overall height with bucket at full raise (§)	mm	4205	4205	4212	4212	4212	4211	4211	4211
	ft/in	**13'10"**	**13'10"**	**13'10"**	**13'10"**	**13'10"**	**13'10"**	**13'10"**	**13'10"**
Loader clearance circle with bucket in carry position	mm	8386	8330	8366	8404	8366	8412	8442	8412
	ft/in	**27'6"**	**27'4"**	**27'5"**	**27'7"**	**27'5"**	**27'7"**	**27'8"**	**27'7"**
Static tipping load, straight* (§)	kg	3147	3205	3252	3188	3234	3038	2979	3020
	lb	**6930**	**7060**	**7170**	**7020**	**7130**	**6690**	**6560**	**6650**
Static tipping load, full turn* (§)	kg	2684	2736	2787	2725	2768	2598	2540	2580
	lb	**5910**	**6030**	**6140**	**6000**	**6100**	**5720**	**5600**	**5680**
Breakout force (§)	kN	39.5	44.2	44.3	42	44.1	36.3	34.6	36.1
	lb	**8880**	**9940**	**9960**	**9450**	**9920**	**8160**	**7780**	**8120**
Operating weight*	kg	5380	5365	5279	5316	5294	5318	5355	5332
	lb	**11,860**	**11,830**	**11,640**	**11,720**	**11,670**	**11,730**	**11,810**	**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**

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Bucket Type		**Light Material**		**Stone Sieve**		
Ground Engaging Type		**Bare**	**Bolt-on Edge**	**Bare**	**Bolt-on Edge**	**Bolt-on Teeth**
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**
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	mm	8506	8556	8328	8358	8328
	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**

Bucket Type		**General Purpose**						**Penetration**	
Ground Engaging Type		**Bolt-on Cutting Edge**		**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	1.1	1.1	1.2
	yd^3	**1.4**	**1.5**	**1.4**	**1.5**	**1.3**	**1.5**	**1.5**	**1.5**
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	5869	5840	5830	5800	5965	5935	5953	5774
	lb	**12,912**	**12,848**	**12,826**	**12,760**	**13,123**	**13,057**	**13,097**	**12,703**
Static tipping load, full 40° turn* (§)	kg	5123	5095	5084	5056	5213	5185	5203	5024
	lb	**11,270**	**11,209**	**11,185**	**11,123**	**11,468**	**11,407**	**11,447**	**11,053**
Breakout force (§)	kg	6367	5971	6415	6010	6930	6469	6484	6359
	lb	**14,007**	**13,136**	**14,113**	**13,222**	**15,246**	**14,232**	**14,265**	**13,983**
Operating weight*	kg	7198	7211	7230	7243	7157	7170	7156	7321
	lb	**15,836**	**15,864**	**15,906**	**15,935**	**15,745**	**15,744**	**15,743**	**16,106**

*Static tipping load and operating weights shown are for high-speed version 914G and 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**
Standard speed version machine	– 70	**– 154**	– 74	**– 163**
Supplemental steering	+ 30	**+ 66**	+ 44	**+ 97**
Tires & rims, 15.5-25, 12 PR (L-2)	– 127	**– 280**	– 79	**– 174**
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**

Bucket Type		Loose Material			Excavating		
Ground Engaging Type		Bolt-on Cutting Edge	Bolt-on Teeth & Segments	Bolt-on Teeth	Bolt-on Cutting Edge	Bolt-on Teeth & Segments	Bolt-on Teeth
Rated bucket capacity (§)	m^3	1.70	1.70	1.50	1.50	1.50	1.40
	yd^3	**2.25**	**2.25**	**2.00**	**2.00**	**2.00**	**1.80**
Struck capacity (§)	m^3	1.40	1.40	1.30	1.30	1.30	1.20
	yd^3	**1.80**	**1.80**	**1.70**	**1.70**	**1.70**	**1.60**
Width	mm	2395	2431	2431	2395	2431	2431
	ft/in	**7'10"**	**7'11"**	**7'11"**	**7'10"**	**7'11"**	**7'11"**
Dump clearance at full lift and 45° discharge (§)	mm	2700	2592	2592	2700	2592	2592
	ft/in	**8'10"**	**8'6"**	**8'6"**	**8'10"**	**8'6"**	**8'6"**
Reach at full lift and 45° discharge	mm	855	956	956	855	956	956
	ft/in	**2'10"**	**3'2"**	**3'2"**	**2'10"**	**3'2"**	**3'2"**
Reach at 45° discharge and 2130 mm **(7'0")** clearance	mm	1296	1333	1333	1296	1333	1333
	ft/in	**4'3"**	**4'4"**	**4'4"**	**4'3"**	**4'4"**	**4'4"**
Reach with lift arms horizontal and bucket level	mm	2049	2196	2196	2049	2196	2196
	ft/in	**6'9"**	**7'2"**	**7'2"**	**6'9"**	**7'2"**	**7'2"**
Digging depth	mm	93	108	108	93	108	108
	in	**3.6"**	**4.3"**	**4.3"**	**3.6"**	**4.3"**	**4.3"**
Overall length	mm	6524	6670	6649	6524	6670	6649
	ft/in	**21'5"**	**21'11"**	**21'8"**	**21'5"**	**21'11"**	**21'8"**
Overall height with bucket at full raise	mm	4682	4682	4682	4557	4557	4557
	ft/in	**15'4"**	**15'4"**	**15'4"**	**14'11"**	**14'11"**	**14'11"**
Loader clearance circle with bucket in carry position	m	10.70	10.82	10.82	10.67	10.79	10.79
	ft/in	**35'0"**	**35'6"**	**35'6"**	**35'0"**	**35'5"**	**35'5"**
Static tipping load, straight*	kg	7203	7100	7257	7203	7101	7258
	lb	**15,883**	**15,655**	**16,002**	**15,883**	**15,658**	**16,004**
Static tipping load, full 40° turn*	kg	6297	6194	6342	6302	6200	6351
	lb	**13,885**	**13,658**	**13,984**	**13,896**	**13,671**	**14,004**
Breakout force	kg	9553	9470	10 373	9593	9512	10 418
	lb	**21,067**	**20,881**	**22,872**	**21,153**	**20,974**	**22,972**
Operating weight*	kg	9025	9107	9040	8988	9069	9002
	lb	**19,900**	**20,081**	**19,933**	**19,819**	**19,997**	**19,849**

*Static tipping and operating weights shown include lubricants, full fuel tank, ROPS cab, 257 kg **(566 lb)** counterweight, 80 kg **(176 lb)** operator and 17.5 x 25 12 PR (L2) 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
15.5-25, 12 PR (L-2) tires & rims	– 62	**– 137**	– 40	**– 88**
15.5-25, 12 PR (L-3) tires & rims	– 13	**– 29**	– 9	**– 20**
15.5-25, Radial (L-2 equivalent) tires & rims	– 31	**– 68**	– 20	**– 44**
15.5-25, Radial (L-3 equivalent) tires & rims	+ 62	**+ 137**	+ 40	**+ 88**
17.5-25, 12 PR (L-2) tires & rims	0	**0**	0	**0**
17.5-25, Radial (L-2 equivalent) tires & rims	+ 45	**+ 99**	+ 29	**+ 64**
17.5-25, Radial (L-3 equivalent) tires & rims	+ 166	**+ 366**	+ 108	**+ 238**
17.5-25, Radial (L-2/L-3 equivalent) tires & rims	+ 160	**+ 353**	+ 103	**+ 227**
Air conditioner	+ 47	**+ 104**	+ 50	**+ 110**
Canopy, ROPS (less cab)	– 210	**– 463**	– 199	**– 439**
Counterweight, 257 kg **(566 lb)** (removal)	– 257	**– 567**	– 480	**– 1059**
Counterweight, add second set, 257 kg **(566 lb)**	+ 257	**+ 567**	+ 480	**+ 1059**
Crankcase guard	+ 42	**+ 93**	+ 66	**+ 146**
Power train guard	+ 74	**+ 163**	+ 83	**+ 183**

Bucket Type		**General Purpose**						**Penetration**
Ground Engaging Type		**Bolt-On Cutting Edge**		**Bolt-On Teeth & Segments***		**Bolt-On Teeth***		**Flush Mounted Teeth***
Rated bucket capacity (§)	m^3	2	2.2	2	2.2	1.9	2.1	2.1
	yd^3	**2.6**	**2.9**	**2.6**	**2.9**	**2.5**	**2.75**	**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	7255	7307	7401	7453	7416	7433	7432
	ft/in	**23'10"**	**24'0"**	**24'3"**	**24'5"**	**24'4"**	**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"**
Bucket floor angle at full dump and maximum lift		47.5°	47.5°	47.5°	47.5°	47.5°	47.5°	47.5°
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	9231	9074	9062	8909	9150	9083	9074
	lb	**20,354**	**20,008**	**19,982**	**19,644**	**20,176**	**20,028**	**20,008**
Static tipping load, full 40° turn* (§)	kg	8020	7877	7850	7709	7941	7877	7868
	lb	**17,684**	**17,369**	**17,309**	**16,998**	**17,510**	**17,369**	**17,349**
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	11 657	11 707	11 791	11 841	11 706	11 756	11 778
	lb	**25,704**	**25,814**	**25,999**	**26,109**	**25,812**	**25,922**	**25,970**
Shipping weight	kg	11 397	11 447	11 531	11 581	11 446	11 496	11 518
	lb	**25,131**	**25,241**	**25,426**	**25,536**	**25,239**	**25,349**	**25,397**

*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 buckets 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 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, 250 kg/550 lb (removal)	−252	**−556**	−421	**−928**
Guard, crankcase	+ 17	**+ 37**	+ 24	**+ 53**
Guard, power train	+ 58	**+128**	+ 56	**+123**
Ride control	+ 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)	+204	**+450**	+126	**+278**
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**

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Bucket Type		General Purpose					High Lift Arrangement****
Ground Engaging Type		**Bolt-on Edges**	**Bolt-on Adapters & Segments**	**Bolt-on Adapters**	**Bolt-on Edges**	**Bolt-on Adapters & Segments**	
Rated bucket capacity	m^3	2.8		2.6	2.5		Same
	yd^3	**3.65**		**3.40**	**3.25**		**Same**
Struck capacity	m^3	2.37	2.37	2.27	2.09	2.09	Same
	yd^3	**3.10**	**3.10**	**2.99**	**2.74**	**2.74**	**Same**
Width	mm	2740	2740	2706	2740	2740	Same
	ft/in	**9'0"**	**9'0"**	**8'10.5"**	**9'0"**	**9'0"**	**Same**
Dump clearance at full lift and 45° discharge**	mm	2786	2679	2679	2846	2739	+426.4
	ft/in	**9'1.5"**	**8'9.5"**	**8'9.5"**	**9'4"**	**9'0"**	**+14.5"**
Reach at full lift and 45° discharge**	mm	1060	1162	1162	1004	1106	+67.7
	ft/in	**3'6"**	**3'10"**	**3'10"**	**3'3.5"**	**3'7.5"**	**+2.7"**
Reach with lift arms horizontal and bucket level	mm	2315	2462	2462	2235	2382	+374.5
	ft/in	**7'7"**	**8'1"**	**8'1"**	**7'4"**	**7'10"**	**+14.7"**
Digging depth	mm	48	48	23	48	48	+61.3
	in	**1.9"**	**1.9"**	**0.09"**	**1.90"**	**1.90"**	**+2.4"**
Overall length**	mm	7315	7419	7419	7281	7389	+472.3
	ft/in	**24'0"**	**24'4"**	**24'4"**	**23'9"**	**24'3"**	**+18.6"**
Overall height with bucket at full raise	mm	5185	5185	5185	5084	5084	+363.7
	ft/in	**17'0"**	**17'0"**	**17'0"**	**16'8"**	**16'8"**	**+14.3"**
Loader clearance circle with bucket in carry position	m	11.98	12.10	12.10	11.92	12.04	+430.0
	ft/in	**39'3.5"**	**39'8.5"**	**39'8.5"**	**39'1"**	**39'6"**	**+16.9"**
Static tipping load, straight*	kg	10 572	10 474	10 659	10 707	10 608	–1373
	lb	**23,307**	**23,091**	**23,499**	**23,604**	**23,386**	**–3027**
Static tipping load, full 40° turn*	kg	9241	9143	9317	9371	9272	–1241
	lb	**20,373**	**20,157**	**20,540**	**20,659**	**20,441**	**–2736**
Breakout force***	kg	11 376	11 376	12 314	12 328	12 328	–558
	lb	**25,078**	**25,078**	**27,146**	**27,179**	**27,179**	**–1230**
Operating weight*	kg	13 154	13 234	13 151	13 062	13 142	+162
	lb	**28,999**	**29,175**	**28,992**	**28,796**	**28,973**	**+356**

*Static tipping load and operating weight shown are based on standard machine configuration with sound-suppression cab and ROPS, 20.5-R25 XTLA (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 J732 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**
Remove cab only, ROPS	–198	**–437**	–191	**–421**
20.5-25, 12 PR (L-2)	– 60	**–132**	– 39	**– 86**
20.5-25, 12 PR (L-3)	+ 85	**+187**	+ 56	**+123**
20.5-R25, XTLA (L-2)	—	—	—	—
20.5-R25, GP-2B (L-2/L-3)	+130	**+287**	+ 86	**+190**
20.5-R25, XHA (L-3)	+172	**+379**	+114	**+251**

Bucket Type		General Purpose				Penetration	High Lift Arrangement****
Ground Engaging Type		**Bolt-on Edges**	**Bolt-on Adapters & Segments**	**Bolt-on Adapters**	**Bolt-on Adapters**	**Flush-mounted Teeth**	
Rated bucket capacity	m^3	2.3			2.1	2.1	Same
	yd^3	**3.00**			**2.75**	**2.75**	**Same**
Struck capacity	m^3	1.93	1.93	1.99	1.83	1.81	Same
	yd^3	**2.52**	**2.52**	**2.60**	**2.40**	**2.37**	**Same**
Width	mm	2740	2740	2706	2706	2773	Same
	ft/in	**9'0"**	**9'0"**	**8'10.5"**	**8'10.5"**	**9'1"**	**Same**
Dump clearance at full lift and 45° discharge**	mm	2846	2739	2739	2739	2763	+426.4
	ft/in	**9'4"**	**9'0"**	**9'0"**	**9'0"**	**9'1"**	**+14.5"**
Reach at full lift and 45° discharge**	mm	1004	1106	1106	1106	1192	+67.7
	ft/in	**3'3.5"**	**3'7.5"**	**3'7.5"**	**3'7.5"**	**3'11"**	**+2.7"**
Reach with lift arms horizontal and bucket level	mm	2235	2382	2382	2382	2379	+374.5
	ft/in	**7'4"**	**7'10"**	**7'10"**	**7'10"**	**7'10"**	**+14.7"**
Digging depth	mm	48	48	23	23	23	+61.3
	in	**1.90"**	**1.90"**	**0.90"**	**0.90"**	**0.90"**	**+2.4"**
Overall length**	mm	7231	7389	7389	7389	7414	+472.3
	ft/in	**23'9"**	**24'3"**	**24'3"**	**24'3"**	**24'4"**	**+18.6"**
Overall height with bucket at full raise	mm	4993	4993	5084	4993	4949	+363.7
	ft/in	**16'5"**	**16'5"**	**16'8"**	**16'5"**	**16'3"**	**+14.3"**
Loader clearance circle with bucket in carry position	m	11.02	12.04	12.04	12.04	12.06	+430.0
	ft/in	**39'1"**	**39'6"**	**39'6"**	**39'6"**	**39'7"**	**+16.9"**
Static tipping load, straight*	kg	10 639	10 580	10 795	10 766	10 668	–1373
	lb	**23,455**	**23,326**	**23,798**	**23,734**	**23,518**	**–3027**
Static tipping load, full 40° turn*	kg	9347	9248	9448	9422	9332	–1241
	lb	**20,606**	**20,388**	**20,829**	**20,772**	**20,573**	**–2736**
Breakout force***	kg	12 328	12 328	13 291	13 291	13 291	–558
	lb	**27,179**	**27,179**	**29,301**	**29,301**	**29,301**	**–1230**
Operating weight*	kg	13 064	13 144	13 059	13 061	13 104	+162
	lb	**28,800**	**28,977**	**28,790**	**28,794**	**28,889**	**+356**

*Static tipping load and operating weight shown are based on standard machine configuration with sound-suppression cab and ROPS, 20.5-R25 XTLA (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 J732 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**
Remove cab only, ROPS	–198	**–437**	–191	**–421**
20.5-25, 12 PR (L-2)	– 60	**–132**	– 39	**– 86**
20.5-25, 12 PR (L-3)	+ 85	**+187**	+ 56	**+123**
20.5-R25, XTLA (L-2)	—	—	—	—
20.5-R25, GP-2B (L-2/L-3)	+130	**+287**	+ 86	**+190**
20.5-R25, XHA (L-3)	+172	**+379**	+114	**+251**

Bucket Type		General Purpose									High Lift†
Ground Engaging Type		Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	All Stand. Buckets Available
Rated capacity (§)	m^3	3.1	3.1	2.9	2.9	2.9	2.7	2.7	2.7	2.5	Same
	yd^3	**4**	**4**	**3.75**	**3.75**	**3.75**	**3.5**	**3.5**	**3.5**	**3.25**	**Same**
Struck capacity (§)	m^3	2.66	2.66	2.50	2.46	2.46	2.31	2.27	2.27	2.12	Same
	yd^3	**3.46**	**3.46**	**3.25**	**3.2**	**3.2**	**3**	**2.95**	**2.95**	**2.76**	**Same**
Width (§)	mm	2843	2927	2927	2843	2927	2927	2843	2927	2927	Same
	ft/in	**9'3.9"**	**9'7.2"**	**9'7.2"**	**9'3.9"**	**9'7.2"**	**9'7.2"**	**9'3.9"**	**9'7.2"**	**9'7.2"**	**Same**
Dump clearance at full lift and 45° discharge (§)	mm	2852.1	2748.7	2748.7	2898.4	2795.8	2795.8	2945.7	2844.2	2844.2	+558
	ft/in	**9'4.3"**	**9'0.2"**	**9'0.2"**	**9'6.1"**	**9'2.1"**	**9'2.1"**	**9'8"**	**9'4"**	**9'4"**	**+1'10"**
Reach at full lift and 45° discharge (§)	mm	1286.6	1384.6	1384.6	1250.8	1349.7	1349.7	1216.7	1316.7	1316.7	+25
	ft/in	**4'2.7"**	**4'6.5"**	**4'6.5"**	**4'1.3"**	**4'5.1"**	**4'5.1"**	**3'11.9"**	**4'3.9"**	**4'3.9"**	**+1.0"**
Reach with lift arms horizontal and bucket level	mm	2597.2	2739	2739	2537.2	2679	2679	2477.2	2619	2619	+425
	ft/in	**8'6.3"**	**8'11.8"**	**8'11.8"**	**8'3.9"**	**8'9.5"**	**8'9.5"**	**8'1.5"**	**8'7.1"**	**8'7.1"**	**+16.7"**
Digging depth (§)	mm	101	101	101	101	101	101	101	101	101	+25
	in	**3.97**	**3.97**	**3.97**	**3.97**	**3.97**	**3.97**	**3.97**	**3.97**	**3.97**	**+1.0"**
Overall length (§)	mm	8048.2	8190	8190	7988.2	8130	8130	7928.2	8070	8070	+525
	ft/in	**26'4.9"**	**26'10.4"**	**26'10.4"**	**26'2.5"**	**26'8.1"**	**26'8.1"**	**26'0.1"**	**26'5.7"**	**26'5.7"**	**+1'8.7"**
Overall height with bucket at full raise (§)	mm	5256.5	5256.5	5256.5	5198.1	5198.1	5198.1	5140.3	5140.3	5140.3	+558
	ft/in	**17'2.9"**	**17'2.9"**	**17'2.9"**	**17'0.6"**	**17'0.6"**	**17'0.6"**	**16'10.4"**	**16'10.4"**	**16'10.4"**	**+1'10"**
Loader clearance circle with bucket in carry position (§)	m	13.29	13.43	13.43	13.25	13.39	13.97	13.22	13.36	13.36	+237
	ft	**43'7"**	**44'1"**	**44'1"**	**43'6"**	**43'11"**	**45'10"**	**43'4"**	**43'10"**	**43'10"**	**+9.3"**
Static tipping load, straight** (§)	kg	11 850	11 741	12 047	11 965	11 856	12 166	12 082	11 974	12 287	–850
	lb	**26,117**	**25,877**	**26,552**	**26,371**	**26,131**	**26,814**	**26,629**	**26,391**	**27,081**	**–1874**
Static tipping load, full 40° turn** (§)	kg	10 410	10 301	10 591	10 518	10 410	10 703	10 629	10 521	10 817	–935
	lb	**22,944**	**22,703**	**23,343**	**23,182**	**22,944**	**23,589**	**23,426**	**23,188**	**23,841**	**–2062**
Breakout force*** (§)	kN	146.3	145.8	146.6	154.5	154	154.8	163.1	162.7	163.4	–878
	lb	**32,809.2**	**32,697.1**	**32,876.5**	**34,648.2**	**34,536**	**34,715.4**	**36,576**	**36,487.1**	**36,644.1**	**–1935**
Operating weight** (§)	kg	17 428	17 523	17 358	17 376	17 471	17 306	17 322	17 417	17 252	+210
	lb	**38,411**	**38,621**	**38,257**	**38,297**	**38,506**	**38,142**	**38,178**	**38,387**	**38,023**	**+463**

*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 include standard machine with 23.5-R25, XHA (L-3) tires, full fuel tank, coolant, lubricants, operator, air conditioning, crankcase and power train guards.

***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 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 Standards J732 JUN92 and J742 FEB85 govern loader ratings and are 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	**–900**	–300	**–660**
23.5-25, 16 PR (L-3)	–300	**–660**	–221	**–487**
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		Material Handling						Rock		High Lift†
Ground Engaging Type		Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Teeth & Segments*	Teeth*	Bolt-on Edges	Bottom Strap Teeth	All Stand. Buckets Available
Rated capacity (§)	m^3	3.3	3.3	3.1	3.1	3.1	2.9	2.7	2.7	Same
	yd^3	**4.25**	**4.25**	**4**	**4**	**4**	**3.75**	**3.5**	**3.5**	**Same**
Struck capacity (§)	m^3	2.83	2.83	2.66	2.66	2.66	2.51	2.38	2.37	Same
	yd^3	**3.68**	**3.68**	**3.46**	**3.46**	**3.46**	**3.26**	**3.09**	**3.08**	**Same**
Width (§)	mm	2843	2927	2927	2843	2927	2927	2984	2969	Same
	ft/in	**9'3.9"**	**9'7.2"**	**9'7.2"**	**9'3.9"**	**9'7.2"**	**9'7.2"**	**9'9.4"**	**9'8.9"**	**Same**
Dump clearance at full lift and 45° discharge (§)	mm	2808.2	2698.3	2698.3	2843.6	2775.6	2733.6	2862.5	2807.3	+558
	ft/in	**9'2.6"**	**8'10.2"**	**8'10.2"**	**9'3.9"**	**9'1.2"**	**8'11.6"**	**9'4.7"**	**9'2.5"**	**+1'10"**
Reach at full lift and 45° discharge (§)	mm	1196	1286.3	1286.3	1160.4	1250.9	1250.9	1316.7	1353.3	+25
	ft/in	**3'11.1"**	**4'2.6"**	**4'2.6"**	**3'9.7"**	**4'1.3"**	**4'1.3"**	**4'3.9"**	**4'5.3"**	**+1.0"**
Reach with lift arms horizontal and bucket level	mm	2582.2	2724	2724	2532.2	2674	2674	2607.2	2689	+425
	ft/in	**8'5.7"**	**8'11.2"**	**8'11.2"**	**8'3.7"**	**8'9.3"**	**8'9.3"**	**8'6.6"**	**8'9.9"**	**+16.7"**
Digging depth (§)	mm	101	101	101	101	101	101	101	120	+25
	in	**3.97**	**3.97**	**3.97**	**3.97**	**3.97**	**3.97**	**3.97**	**4.72**	**+1.0"**
Overall length (§)	mm	8033.2	8175	8175	7983.2	8125	8125	8058	8096	+525
	ft/in	**26'4.3"**	**26'9.9"**	**26'9.9"**	**26'2.3"**	**26'7.9"**	**26'7.9"**	**26'5.2"**	**26'6.7"**	**+1'8.7"**
Overall height with bucket at full raise (§)	mm	5245.9	5245.9	5245.9	5198.2	5198.2	5198.2	5330.1	5330.1	+558
	ft/in	**17'2.5"**	**17'2.5"**	**17'2.5"**	**17'0.6"**	**17'0.6"**	**17'0.6"**	**17'5.8"**	**17'5.8"**	**+1'10"**
Loader clearance circle with bucket in carry position (§)	m	13.28	13.42	13.42	13.25	13.39	13.39	13.36	13.38	+237
	ft	**43'7"**	**44'0"**	**44'0"**	**43'6"**	**43'11"**	**43'11"**	**43'10"**	**43'11"**	**+9.3"**
Static tipping load, straight** (§)	kg	12 073	11 963	12 276	12 175	12 065	12 381	11 827	11 964	–850
	lb	**26,609**	**26,366**	**27,056**	**26,834**	**26,591**	**27,288**	**26,067**	**26,369**	**–1874**
Static tipping load, full 40° turn** (§)	kg	10 614	10 504	10 800	10 710	10 600	10 899	10 361	10 493	–935
	lb	**23,393**	**23,151**	**23,803**	**23,605**	**23,362**	**24,021**	**22,836**	**23,127**	**–2062**
Breakout force*** (§)	kN	148.1	147.6	148.4	155.3	154.8	155.6	141.3	149.3	–878
	lb	**33,212.9**	**33,100.8**	**33,280.2**	**34,827.6**	**34,715.4**	**34,894.9**	**31,687.9**	**33,482**	**–1935**
Operating weight** (§)	kg	17 357	17 452	17 287	17 316	17 411	17 246	17 656	17 573	+210
	lb	**38,255**	**38,464**	**38,101**	**38,164**	**38,374**	**38,010**	**38,914**	**38,731**	**+463**

*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 include standard machine with 23.5-R25, XHA (L-3) tires, full fuel tank, coolant, lubricants, operator, air conditioning, crankcase and power train guards.

***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 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 Standards J732 JUN92 and J742 FEB85 govern loader ratings and are 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	**–900**	–300	**–660**
23.5-25, 16 PR (L-3)	–300	**–660**	–221	**–487**
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						Material Handling		
Ground Engaging Type		Bolt-on Edges	Teeth & Seg-ments*	Teeth*	Bolt-on Edges	Teeth & Seg-ments*	Teeth*	Bolt-on Edges	Teeth & Seg-ments*	Teeth*
Rated capacity (§)	m^3	3.3	3.3	3.1	3.1	3.1	2.9	3.8	3.8	3.6
	yd^3	**4.25**	**4.25**	**4**	**4**	**4**	**3.75**	**5**	**5**	**4.75**
Struck capacity (§)	m^3	2.83	2.83	2.66	2.66	2.66	2.50	3.26	3.26	3.10
	yd^3	**3.68**	**3.68**	**3.46**	**3.46**	**3.46**	**3.25**	**4.24**	**4.24**	**4**
Width (§)	mm	2927	2994	2994	2927	2994	2994	2927	2994	2994
	ft/in	**9'7.2"**	**9'9.9"**	**9'9.9"**	**9'7.2"**	**9'9.9"**	**9'9.9"**	**9'7.2"**	**9'9.9"**	**9'9.9"**
Dump clearance at full lift and 45° discharge (§)	mm	3029.8	2926.2	2962.2	3065	2961.8	2961.8	2915.8	2805.9	2805.9
	ft/in	**9'11.3"**	**9'7.2"**	**9'7.2"**	**10'0.7"**	**9'8.6"**	**9'8.6"**	**9'6.8"**	**9'2.5"**	**9'2.5"**
Reach at full lift and 45° discharge (§)	mm	1252.7	1350.4	1350.4	1218.4	1316.5	1316.5	1324.6	1324.6	1324.6
	ft/in	**4'1.3"**	**4'5.2"**	**4'5.2"**	**4'0"**	**4'3.8"**	**4'3.8"**	**4'4.1"**	**4'4.1"**	**4'4.1"**
Reach with lift arms horizontal and bucket level	mm	2722.6	2864.4	2864.4	2672.6	2814.4	2814.4	2949.4	2949.4	2949.4
	ft/in	**8'11.2"**	**9'4.8"**	**9'4.8"**	**8'9.2"**	**9'2.8"**	**9'2.8"**	**9'8.1"**	**9'8.1"**	**9'8.1"**
Digging depth (§)	mm	97.6	97.6	97.6	97.6	97.6	97.6	97.6	97.6	97.6
	in	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**
Overall length (§)	mm	8200.7	8342.5	8342.5	8150.7	8292.5	8292.5	8285.7	8427.5	8427.5
	ft/in	**26'10.9"**	**27'4.4"**	**27'4.4"**	**26'8.9"**	**27'2.5"**	**27'2.5"**	**27'2.2"**	**27'7.8"**	**27'7.8"**
Overall height with bucket at full raise (§)	mm	5479.3	5479.3	5479.3	5454.9	5454.9	5454.9	5563.6	5563.6	5563.6
	ft/in	**17'11.7"**	**17'11.7"**	**17'11.7"**	**17'10.8"**	**17'10.8"**	**17'10.8"**	**18'3"**	**18'3"**	**18'3"**
Loader clearance circle with bucket in carry position (§)	m	13.47	13.59	13.59	13.44	13.56	13.56	13.51	13.63	13.63
	ft	**44'2"**	**44'7"**	**44'7"**	**44'1"**	**44'6"**	**44'6"**	**44'4"**	**44'9"**	**44'9"**
Static tipping load, straight** (§)	kg	12 515	12 484	12 712	12 627	12 518	12 828	12 595	12 484	12 788
	lb	**27,583**	**27,515**	**28,017**	**27,830**	**27,590**	**28,273**	**27,759**	**27,515**	**28,185**
Static tipping load, full 40° turn** (§)	kg	10 913	10 881	11 093	11 019	10 910	11 202	10 983	10 872	11 160
	lb	**24,052**	**23,982**	**24,449**	**24,286**	**24,046**	**24,689**	**24,207**	**23,962**	**24,597**
Breakout force*** (§)	kN	140.7	140.2	141	147.1	146.7	147.5	133.8	133.3	134.2
	lb	**31,553.5**	**31,441.4**	**31,620.8**	**32,988.8**	**32,899.1**	**33,078.5**	**30,006.1**	**29,894**	**30,095.8**
Operating weight** (§)	kg	18 324	18 419	18 254	18 259	18 354	18 189	18 295	18 390	18 225
	lb	**40,386**	**40,595**	**40,232**	**40,243**	**40,452**	**40,089**	**40,322**	**40,532**	**40,168**

*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 include standard machine with 23.5-R25, XHA (L-3) tires, air conditioning, crankcase guard, power train guard, 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 Standards J732 JUN92 and J742 FEB85 govern loader ratings and are 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	**–900**	–300	**–660**
23.5-25, 16 PR (L-3)	–300	**–660**	–221	**–487**
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		Material Handling						Rock	
Ground Engaging Type		Bolt-on Edges	Teeth & Seg-ments*	Teeth*	Bolt-on Edges	Teeth & Seg-ments*	Teeth*	Bolt-on Edges	Bottom Strap Teeth
Rated capacity (§)	m^3	3.5	3.5	3.3	3.3	3.3	3.1	3.1	3.1
	yd^3	**4.5**	**4.5**	**4.25**	**4.25**	**4.25**	**4**	**4**	**4**
Struck capacity (§)	m^3	3.00	3.00	2.83	2.83	2.83	2.67	2.72	2.72
	yd^3	**3.9**	**3.9**	**3.68**	**3.68**	**3.68**	**3.47**	**3.53**	**3.53**
Width (§)	mm	2927	2994	2994	2927	2994	2994	2984	2969
	ft/in	**9'7.2"**	**9'9.9"**	**9'9.9"**	**9'7.2"**	**9'9.9"**	**9'9.9"**	**9'9.5"**	**9'8.9"**
Dump clearance at full lift and 45° discharge (§)	mm	2968.9	2858.9	2858.9	3004.5	2894.5	2894.5	2994.5	2938.8
	ft/in	**9'8.9"**	**9'4.6"**	**9'4.6"**	**9'10.3"**	**9'6"**	**9'6"**	**9'9.9"**	**9'7.7"**
Reach at full lift and 45° discharge (§)	mm	1271.6	1271.6	1271.6	1236.6	1236.6	1236.6	1311.6	1347.2
	ft/in	**4'2.1"**	**4'2.1"**	**4'2.1"**	**4'0.7"**	**4'0.7"**	**4'0.7"**	**4'3.6"**	**4'5"**
Reach with lift arms horizontal and bucket level	mm	2874.4	3016.2	3016.2	2824.4	2966.2	2966.2	2787.6	2869.4
	ft/in	**9'10.7"**	**9'10.7"**	**9'10.7"**	**9'8.8"**	**9'8.8"**	**9'8.8"**	**9'1.7"**	**9'5"**
Digging depth (§)	mm	97.6	97.6	97.6	97.6	97.6	97.6	97.6	116.54
	in	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**4.6**
Overall length (§)	mm	8210.7	8352.5	8352.5	8160.7	8302.5	8302.5	8265.7	8305.6
	ft/in	**27'4.8"**	**27'4.8"**	**27'4.8"**	**26'9.3"**	**27'2.9"**	**27'2.9"**	**27'1.4"**	**27'3"**
Overall height with bucket at full raise (§)	mm	5492	5492	5492	5444.4	5444.4	5444.4	5608.8	5608.8
	ft/in	**18'0.2"**	**18'0.2"**	**18'0.2"**	**17'10.3"**	**17'10.3"**	**17'10.3"**	**18'4.8"**	**18'4.8"**
Loader clearance circle with bucket in carry position (§)	m	13.46	13.58	13.58	13.43	13.55	13.55	13.54	13.65
	ft	**44'2"**	**44'7"**	**44'7"**	**44'1"**	**44'5"**	**44'5"**	**44'5"**	**44'9"**
Static tipping load, straight** (§)	kg	12 749	12 639	12 952	12 853	12 744	13 060	12 161	12 312
	lb	**28,099**	**27,856**	**28,546**	**28,328**	**28,088**	**28,784**	**26,803**	**27,136**
Static tipping load, full 40° turn** (§)	kg	11 127	11 017	11 313	11 224	11 115	11 413	10 534	10 681
	lb	**24,524**	**24,281**	**24,934**	**24,738**	**24,497**	**25,154**	**23,217**	**23,541**
Breakout force*** (§)	kN	142.5	142	142.8	148.9	148.5	149.2	131.6	137.8
	lb	**31,957.2**	**31,845.1**	**32,024.5**	**33,392.5**	**33,302.8**	**33,459.7**	**29,512.7**	**30,903.2**
Operating weight** (§)	kg	18 230	18 325	18 160	18 188	18 283	18 118	18 843	18 760
	lb	**40,179**	**40,388**	**40,025**	**40,086**	**40,296**	**39,932**	**41,530**	**41,347**

*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 include standard machine with 23.5-R25, XHA (L-3) tires, air conditioning, crankcase guard, power train guard, 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 Standards J732 JUN92 and J742 FEB85 govern loader ratings and are 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	**–900**	–300	**–660**
23.5-25, 16 PR (L-3)	–300	**–660**	–221	**–487**
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					Penetration	High Lift*
Ground Engaging Tools		Bolt-on Edges	Teeth & Segments	Teeth	Bolt-on Edges	Teeth & Segments	Teeth	All Stand. Buckets Available
Capacity, rated (§)	m^3	3.8	3.8	3.6	3.6	3.6	3.6	Same
	yd^3	**5**	**5**	**4.75**	**4.75**	**4.75**	**4.75**	**Same**
Capacity, struck (§)	m^3	3.25	3.25	3.04	3.18	3.18	3.12	Same
	yd^3	**4.26**	**4.26**	**3.95**	**4.17**	**4.17**	**4.09**	**Same**
Width (§)	mm	3059	3107	3107	3059	3107	3128	Same
	ft/in	**10'0"**	**10'2"**	**10'2"**	**10'0"**	**10'2"**	**10'3"**	**Same**
Dump clearance at full lift and 45° discharge (§)	mm	2987	2851	2851	2987	2851	2775	+606
	ft/in	**9'9"**	**9'4"**	**9'4"**	**9'9"**	**9'4"**	**9'1"**	**+1'11.6"**
Reach at full lift and 45° discharge	mm	1277	1400	1400	1277	1400	1320	+37
	ft/in	**4'2"**	**4'7"**	**4'7"**	**4'2"**	**4'7"**	**4'4"**	**+1.5"**
Reach at 45° discharge and 2130 mm **(7'0")** clearance (§)	mm	1834	1894	1894	1834	1894	1776	+497
	ft/in	**6'0"**	**6'2"**	**6'2"**	**6'0"**	**6'2"**	**5'10"**	**+1'7.6"**
Reach with lift arm horizontal and bucket level	mm	2585	2766	2766	2585	2766	2788	+465
	ft/in	**8'6"**	**9'1"**	**9'1"**	**8'6"**	**9'1"**	**9'2"**	**+18.3"**
Digging depth (§)	mm	76	76	46	76	76	46	Same
	in	**3"**	**3"**	**1.8"**	**3"**	**3"**	**1.8"**	**Same**
Overall length (§)	mm	8303	8506	8506	8213	8506	8491	+576
	ft/in	**27'3"**	**27'11"**	**27'11"**	**26'11"**	**27'11"**	**27'10"**	**+1'10.7"**
Overall height with bucket at full raise (§)	mm	5595	5595	5595	5595	5595	5595	+600
	ft/in	**18'4"**	**18'4"**	**18'4"**	**18'4"**	**18'4"**	**18'4"**	**+1'11.8"**
Loader clearance circle with bucket in carry position (§)	mm	14 722	14 876	14 876	14 722	14 876	14 880	+251
	ft/in	**48'4"**	**48'10"**	**48'10"**	**48'4"**	**48'10"**	**48'10"**	**+9.9"**
Static tipping load, straight**	kg	14 539	14 781	14 684	14 503	14 369	14 593	–468
	lb	**32,044**	**32,577**	**32,364**	**31,965**	**31,669**	**32,163**	**–1030**
Static tipping load, full 40° turn**	kg	13 230	13 433	13 363	13 184	13 060	13 274	–554
	lb	**29,172**	**29,620**	**29,465**	**29,093**	**28,797**	**29,269**	**–1220**
Breakout force*** (§)	kN	201	200.2	215.5	201.1	201	215.1	–24.5
	lb	**45,187**	**45,007**	**48,446**	**45,209**	**45,187**	**48,356**	**–5511**
Operating weight** (§)	kg	21 293	21 466	21 312	21 286	21 459	21 371	+1202
	lb	**46,951**	**47,333**	**46,993**	**46,936**	**47,317**	**47,123**	**+2645**

*All buckets shown can be used on 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.

**Static tipping load and operating weight shown include sound-suppressed cab and ROPS, 26.5-25 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 Standards J732 JUN92 and J742 FEB85 govern loader ratings and are denoted in the text by (§).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	lb	kg	lb
Remove cab only, ROPS remains	–177	**– 390**	– 150	**– 331**
26.5-25, 20 PR (L-3)	–211	**– 465**	– 142	**– 313**
26.5-R25, GP-2B, (L-2/3) radial	– 35	**– 77**	– 24	**– 53**
26.5-25, 14 PR (L-2)	–561	**–1237**	– 376	**– 829**
23.5-25, 16 PR (L-2)	–980	**–2161**	– 657	**–1449**
23.5-25, 16 PR (L-3)	–818	**–1804**	– 548	**–1208**
23.5-25, 24 PR (L-3)	–691	**–1524**	– 464	**–1023**
23.5-R25, GP-2B (L-2/3) radial	–664	**–1464**	– 445	**– 981**
23.5-R25, XHA (L-3) radial	–580	**–1279**	– 389	**– 858**
Tire ballast: 23.5-25 bias ply tires	+191	**+ 421**	+ 631	**+1391**
Tire ballast: 26.5-25 bias ply tires	+995	**+2105**	+1656	**+3652**

Bucket Type		General Purpose				Rock		High Lift*
Ground Engaging Tools		**With Teeth**	**Bolt-on Edges**	**Teeth & Segments**	**Teeth**	**No Teeth**	**Bottom Strap Teeth**	**All Stand. Buckets Available**
Capacity, rated (§)	m^3	3.5	3.5	3.5	3.3	3.5	3.5	Same
	yd^3	**4.5**	**4.5**	**4.5**	**4.25**	**4.5**	**4.5**	**Same**
Capacity, struck (§)	m^3	2.76	2.91	2.91	2.76	2.94	2.94	Same
	yd^3	**3.59**	**3.81**	**3.81**	**3.62**	**4.51**	**4.51**	**Same**
Width (§)	mm	3107	3059	3107	3107	3085	3085	Same
	ft/in	**10'2"**	**10'0"**	**10'2"**	**10'2"**	**10'1"**	**10'1"**	**Same**
Dump clearance at full lift and 45° discharge (§)	mm	2851	3061	2927	2927	3022	2807	+600
	ft/in	**9'4"**	**10'0"**	**9'7"**	**9'7"**	**9'11"**	**9'2"**	**+1'11.6"**
Reach at full lift and 45° discharge	mm	1400	1229	1354	1354	1360	1525	+37
	ft/in	**4'7"**	**4'0"**	**4'5"**	**4'5"**	**4'5"**	**5'0"**	**+1.5"**
Reach at 45° discharge and 2130 mm **(7'0")** clearance (§)	mm	1894	1816	1885	1885	1932	1997	+497
	ft/in	**6'2"**	**5'11"**	**6'2"**	**6'2"**	**6'4"**	**6'6"**	**+1'7.6"**
Reach with lift arm horizontal and bucket level	mm	2766	2495	2676	2676	2618	2879	+465
	ft/in	**9'1"**	**8'2"**	**8'9"**	**8'9"**	**8'7"**	**9'5"**	**+18.3"**
Digging depth (§)	mm	46	76	76	46	46	46	Same
	in	**1.8"**	**3"**	**3"**	**1.8"**	**1.8"**	**1.8"**	**Same**
Overall length (§)	mm	8506	8213	8416	8416	8311	8630	+576
	ft/in	**27'11"**	**26'11"**	**27'7"**	**27'7"**	**27'3"**	**28'4"**	**+1'10.7"**
Overall height with bucket at full raise (§)	mm	5595	5521	5521	5521	5616	5616	+600
	ft/in	**18'4"**	**18'1"**	**18'1"**	**18'1"**	**18'5"**	**18'5"**	**+1'11.8"**
Loader clearance circle with bucket in carry position (§)	mm	14 876	14 674	14 828	14 828	14 748	14 926	+251
	ft/in	**48'10"**	**48'2"**	**48'8"**	**48'8"**	**48'5"**	**49'0"**	**+9.9"**
Static tipping load, straight**	kg	14 702	14 658	14 465	14 842	14 786	14 712	–468
	lb	**32,403**	**32,306**	**31,881**	**32,712**	**32,588**	**32,425**	**–1030**
Static tipping load, full 40° turn**	kg	13 381	13 342	13 148	13 513	13 456	13 381	–554
	lb	**29,505**	**29,419**	**28,981**	**29,796**	**29,670**	**29,505**	**–1220**
Breakout force*** (§)	kN	215.9	216.6	214.9	233.6	196.1	197	–24.5
	lb	**48,536**	**48,693**	**48,311**	**52,515**	**44,123**	**44,287**	**–5513**
Operating weight** (§)	kg	21 305	21 233	21 406	21 252	21 329	21 395	+1202
	lb	**46,778**	**46,819**	**47,200**	**46,861**	**47,030**	**47,176**	**+2645**

*All buckets shown can be used on 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.

**Static tipping load and operating weight shown include sound-suppressed cab and ROPS, 26.5-25 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 Standards J732 JUN92 and J742 FEB85 govern loader ratings and are denoted in the text by (§).

	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	**lb**	**kg**	**lb**
Remove cab only, ROPS remains	–177	**– 390**	– 150	**– 331**
26.5-25, 20 PR (L-3)	–211	**– 465**	– 142	**– 313**
26.5-R25, GP-2B, (L-2/3) radial	– 35	**– 77**	– 24	**– 53**
26.5-25, 14 PR (L-2)	–561	**–1237**	– 376	**– 829**
23.5-25, 16 PR (L-2)	–980	**–2161**	– 657	**–1449**
23.5-25, 16 PR (L-3)	–818	**–1804**	– 548	**–1208**
23.5-25, 24 PR (L-3)	–691	**–1524**	– 464	**–1023**
23.5-R25, GP-2B (L-2/3) radial	–664	**–1464**	– 445	**– 981**
23.5-R25, XHA (L-3) radial	–580	**–1279**	– 389	**– 858**
Tire ballast: 23.5-25 bias ply tires	+191	**+ 421**	+ 631	**+1391**
Tire ballast: 26.5-25 bias ply tires	+995	**+2105**	+1656	**+3652**

Bucket Type		**Material Handling**						**General Purpose**	
Ground Engaging Tools		**Bolt-on Edges**	**Teeth & Segments**	**Bolt-on Edges**	**Teeth & Segments**	**Bolt-on Edges**	**Teeth & Segments**	**Bolt-on Edges**	**Teeth & Segments**
Capacity, heaped (§)	m^3	4.7	4.7	4.3	4.3	4	4	4.3	4.3
	yd^3	**6**	**6**	**5.6**	**5.6**	**5.25**	**5.25**	**5.6**	**5.6**
Struck capacity	m^3	3.91	3.91	3.67	3.67	3.44	3.44	3.57	3.57
	yd^3	**5.11**	**5.11**	**4.80**	**4.80**	**4.50**	**4.50**	**4.67**	**4.67**
Width	mm	3220	3268	3220	3220	3059	3107	3220	3268
	ft/in	**10'7"**	**10'9"**	**10'7"**	**10'7"**	**10'0"**	**10'2"**	**10'7"**	**10'9"**
Dump clearance at full lift and 45° discharge*	mm	3225	3097	3225	3097	3323	3191	3323	3191
	ft/in	**10'6"**	**10'1"**	**10'6"**	**10'1"**	**10'10"**	**10'5"**	**10'10"**	**10'5"**
Reach at full lift and 45° discharge**	mm	1357	1469	1357	1469	1238	1348	1147	1272
	ft/in	**4'5"**	**4'10"**	**4'5"**	**4'10"**	**4'1"**	**4'5"**	**3'9"**	**4'2"**
Reach at 45° discharge and 2130 mm **(7'0")** clearance	mm	1887	1926	1887	1926	1834	1876	1981	2047
	ft/in	**6'2"**	**6'4"**	**6'2"**	**6'4"**	**6'0"**	**6'2"**	**6'6"**	**6'9"**
Reach with lift arms horizontal and bucket level	mm	2864	3045	2864	3045	2715	2896	2715	2896
	ft/in	**9'5"**	**10'0"**	**9'5"**	**10'0"**	**8'11"**	**9'6"**	**8'11"**	**9'6"**
Digging depth	mm	76	76	76	76	76	76	76	76
	in	**3"**	**3"**	**3"**	**3"**	**3"**	**3"**	**3"**	**3"**
Overall length**	mm	8675	8856	8675	8856	8526	8707	8526	8707
	ft/in	**28'6"**	**29'1"**	**28'6"**	**29'1"**	**28'0"**	**28'7"**	**28'0"**	**28'7"**
Overall height with bucket at full raise	mm	5808	5808	5865	5865	5893	5893	5893	5893
	ft/in	**19'1"**	**19'1"**	**19'3"**	**19'3"**	**19'4"**	**19'4"**	**19'4"**	**19'4"**
Loader clearance circle with bucket in carry position	mm	15 012	15 120	15 012	15 120	14 782	14 936	14 930	15 084
	ft/in	**49'3"**	**49'7"**	**49'3"**	**49'7"**	**48'6"**	**49'0"**	**49'0"**	**49'6"**
Static tipping load, straight***	kg	16 083	15 910	16 096	15 920	16 674	16 497	16 865	16 487
	lb	**35,447**	**35,066**	**35,476**	**35,088**	**36,749**	**36,359**	**37,170**	**36,337**
Static tipping load, full 35° turn***	kg	14 435	14 279	14 470	14 295	15 026	14 849	15 214	14 836
	lb	**31,870**	**31,484**	**31,906**	**31,520**	**33,132**	**32,741**	**33,546**	**32,713**
Breakout force****	kN	161.8	160.9	162.1	161.2	183.3	182.4	183.1	182.4
	lb	**36,405**	**36,202**	**36,473**	**36,270**	**41,243**	**41,040**	**41,175**	**40,995**
Operating weight***	kg	23 693	23 866	23 639	23 812	23 310	23 483	23 328	23 501
	lb	**52,237**	**52,625**	**52,124**	**52,505**	**51,399**	**51,780**	**51,438**	**51,820**

*Material handling buckets discharge at less than 45° as measured from the inside floor of the bucket at full lift, in accordance with SAE J732 JUN92.
**Reach at 45° discharge is measured at less than full lift for material handling buckets.
***Static tipping load and operating weight shown includes sound-suppressed cab and ROPS, 26.5-25, 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.

	Change in Operating Weight		**Change in Articulated Static Tipping Load**	
	kg	**lb**	**kg**	**lb**
Remove cab only, ROPS remains	–177	**– 390**	–150	**– 331**
26.5-25, 20 PR (L-3)	–211	**– 465**	–130	**– 286**
26.5-R25, GP-2B, (L-2/3) radial	– 35	**– 77**	– 22	**– 47**
23.5-25, 20 PR (L-3)	–754	**–1663**	–465	**–1025**
23.5-R25, GP-2B (L-2/3) radial	–664	**–1464**	–408	**– 900**
23.5-R25, XHA (L-3) radial	–580	**–1279**	–357	**– 786**

Bucket Type		**General Purpose**				
Ground Engaging Tools		**Bolt-on Edges**	**Teeth & Segments**	**Bolt-on Edges**	**Teeth & Segments**	**Teeth**
Rated bucket capacity	m^3	4	4	3.8	3.8	3.8
	yd^3	**5.25**	**5.25**	**5**	**5**	**5**
Struck capacity	m^3	3.39	3.39	3.25	3.25	3.23
	yd^3	**4.43**	**4.43**	**4.25**	**4.25**	**4.22**
Width	mm	3059	3107	3059	3107	3107
	ft/in	**10'0"**	**10'2"**	**10'0"**	**10'2"**	**10'2"**
Dump clearance at full lift and 45° discharge*	mm	3323	3191	3323	3191	3191
	ft/in	**10'10"**	**10'5"**	**10'10"**	**10'5"**	**10'5"**
Reach at full lift and 45° discharge**	mm	1147	1272	1147	1272	1272
	ft/in	**3'9"**	**4'2"**	**3'9"**	**4'2"**	**4'2"**
Reach at 45° discharge and 2130 mm **(7'0")** clearance	mm	1981	2047	1981	2047	2047
	ft/in	**6'6"**	**6'9"**	**6'6"**	**6'9"**	**6'9"**
Reach with lift arms horizontal and bucket level	mm	2715	2896	2715	2896	2896
	ft/in	**8'11"**	**9'6"**	**8'11"**	**9'6"**	**9'6"**
Digging depth	mm	76	76	76	76	46
	in	**3"**	**3"**	**3"**	**3"**	**1.8"**
Overall length**	mm	8526	8707	8526	8707	8707
	ft/in	**28'0"**	**28'7"**	**28'0"**	**28'7"**	**28'7"**
Overall height with bucket at full raise	mm	5893	5893	5893	5893	5893
	ft/in	**19'4"**	**19'4"**	**19'4"**	**19'4"**	**19'4"**
Loader clearance circle with bucket in carry position	mm	14 782	14 936	14 782	14 936	14 936
	ft/in	**48'6"**	**49'0"**	**48'6"**	**49'0"**	**49'0"**
Static tipping load, straight***	kg	16 770	16 595	16 850	16 674	16 897
	lb	**36,961**	**36,525**	**37,137**	**36,749**	**37,241**
Static tipping load, full 35° turn***	kg	15 120	14 944	15 202	15 026	15 232
	lb	**33,339**	**32,951**	**33,520**	**33,132**	**33,586**
Breakout force****	kN	183.5	182.7	184.2	183.3	195.7
	lb	**41,288**	**41,108**	**41,445**	**41,243**	**44,033**
Operating weight***	kg	23 224	23 397	23 153	23 526	23 243
	lb	**51,209**	**51,590**	**51,052**	**51,434**	**51,251**

*Material handling buckets discharge at less than 45° as measured from the inside floor of the bucket at full lift, in accordance with SAE J732 JUN92.
**Reach at 45° discharge is measured at less than full lift for material handling buckets.
***Static tipping load and operating weight shown includes sound-suppressed cab and ROPS, 26.5-25, 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.

	Change in Operating Weight		**Change in Articulated Static Tipping Load**	
	kg	**lb**	**kg**	**lb**
Remove cab only, ROPS remains	–177	**– 390**	–150	**– 331**
26.5-25, 20 PR (L-3)	–211	**– 465**	–130	**– 286**
26.5-R25, GP-2B, (L-2/3) radial	– 35	**– 77**	– 22	**– 47**
23.5-25, 20 PR (L-3)	–754	**–1663**	–465	**–1025**
23.5-R25, GP-2B (L-2/3) radial	–664	**–1464**	–408	**– 900**
23.5-R25, XHA (L-3) radial	–580	**–1279**	–357	**– 786**

Bucket Type		General Purpose							
Ground Engaging Tools		**Bolt-on Edges**	**Teeth & Segments***	**Bolt-on Edges**	**Teeth***	**Teeth & Segments***	**Bolt-on Edges**	**Teeth***	**Teeth & Segments***
Rated capacity (§)	m^3	5.7	5.6	5.4	5.4	5.3	5	5	4.9
	yd^3	**7.5**	**7.25**	**7**	**7**	**6.75**	**6.5**	**6.5**	**6.25**
Struck capacity (§)	m^3	4.92	4.85	4.61	4.68	4.55	4.25	4.38	4.19
	yd^3	**6.44**	**6.34**	**6.03**	**6.12**	**5.95**	**5.56**	**5.73**	**5.48**
Width (§)	mm	3447	3533	3447	3533	3533	3447	3533	3533
	ft/in	**11'4"**	**11'7"**	**11'4"**	**11'7"**	**11'7"**	**11'4"**	**11'7"**	**11'7"**
Dump clearance at full lift and 45° discharge (§)	mm	3271	3160	3311	3160	3201	3374	3201	3265
	ft/in	**10'9"**	**10'4"**	**10'10"**	**10'4"**	**10'6"**	**11'1"**	**10'6"**	**10'9"**
Reach at full lift and 45° discharge (§)	mm	1545	1656	1516	1656	1627	1469	1627	1581
	ft/in	**5'1"**	**5'5"**	**5'0"**	**5'5"**	**5'4"**	**4'10"**	**5'4"**	**5'2"**
Reach with lift arms horizontal and bucket level	mm	3021	3177	2971	3177	3127	2891	3127	3047
	ft/in	**9'11"**	**10'5"**	**9'9"**	**10'5"**	**10'3"**	**9'6"**	**10'3"**	**10'0"**
Digging depth (§)	mm	138	133	138	103	133	138	103	133
	in	**5**	**5**	**5**	**4**	**5**	**5**	**4**	**5**
Overall length (§)	mm	9465	9632	9415	9632	9582	9335	9582	9502
	ft/in	**31'1"**	**31'7"**	**30'11"**	**31'7"**	**31'5"**	**30'8"**	**31'5"**	**31'2"**
Overall height with bucket at full raise (§)	mm	6205	6205	6135	6205	6135	6067	6135	6067
	ft/in	**20'4"**	**20'4"**	**20'2"**	**20'4"**	**20'2"**	**19'11"**	**20'2"**	**19'11"**
Loader clearance circle with bucket in carry position (§)	mm	15 780	15 937	15 753	15 937	15 909	15 710	15 909	15 865
	ft/in	**51'9"**	**52'3"**	**51'8"**	**52'3"**	**52'2"**	**51'7"**	**52'2"**	**52'1"**
Static tipping load, straight** (§)	kg	20 306	20 274	20 648	20 646	20 600	20 886	21 008	20 837
	lb	**44,767**	**44,696**	**45,521**	**45,516**	**45,415**	**46,045**	**46,314**	**45,937**
Static tipping load at full 37° turn** (§)	kg	18 146	18 109	18 483	18 465	18 431	18 707	18 819	18 655
	lb	**40,005**	**39,923**	**40,748**	**40,708**	**40,633**	**41,241**	**41,488**	**41,127**
Breakout force*** (§)	kN	210	213	219	225	222	233	235	236
	lb	**47,277**	**47,836**	**49,255**	**50,736**	**49,868**	**52,391**	**52,978**	**53,104**
Operating weight** (§)	kg	29 773	29 831	29 519	29 666	29 576	29 426	29 411	29 484
	lb	**65,638**	**65,765**	**65,078**	**65,402**	**65,203**	**64,873**	**64,839**	**65,000**

*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 29.5-R25 1-Star (L-3) 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 Standards J732 JUN92 govern loader ratings and are denoted in the text by (§).

	Change in Operating Weight Standard		**Change in Articulated Static Tipping Load**			
			Standard		**High Lift**	
	kg	**lb**	**kg**	**lb**	**kg**	**lb**
29.5-25, 22 PR (L-3)	–323	**– 712**	–255	**– 562**	–235	**– 517**
29.5-25, 22 PR (L-4)	+337	**+ 743**	+266	**+ 586**	+245	**+ 540**
29.5-25, 22 PR (L-5)	+951	**+2097**	+751	**+1655**	+691	**+1523**
29.5-R25, 1-Star (L-2/L-3)	– 82	**– 181**	– 65	**– 143**	– 60	**– 131**
29.5-R25, 1-Star (L-5)	+868	**+1914**	+685	**+1510**	+631	**+1390**

Bucket Type		General Purpose					Rock			
Ground Engaging Tools		**Bolt-on Edges**	**Teeth***	**Teeth & Segments***	**Teeth***	**Spade Teeth & Segments***	**Spade With Teeth***	**Spade No Teeth**	**Spade With Teeth***	**High Lift Change in Specs**
Rated capacity (§)	m^3	4.7	4.7	4.5	4.2	4.5	4.2	4.2	3.8	—
	yd^3	**6**	**6**	**5.75**	**5.5**	**5.75**	**5.5**	**5.5**	**5**	**—**
Struck capacity (§)	m^3	3.87	4.03	3.81	3.66	3.73	3.53	3.53	3.53	—
	yd^3	**5.06**	**5.27**	**4.98**	**4.79**	**4.88**	**4.62**	**4.62**	**4.25**	**—**
Width (§)	mm	3447	3533	3533	3533	3492	3492	3492	3492	—
	ft/in	**11'4"**	**11'7"**	**11'7"**	**11'7"**	**11'5"**	**11'5"**	**11'5"**	**11'5"**	**—**
Dump clearance at full lift and 45° discharge (§)	mm	3448	3265	3342	3342	3206	3206	3415	3271	221
	ft/in	**11'4"**	**10'9"**	**11'0"**	**11'0"**	**10'6"**	**10'6"**	**11'2"**	**10'9"**	**9"**
Reach at full lift and 45° discharge (§)	mm	1419	1581	1534	1534	1798	1798	1580	1760	—
	ft/in	**4'8"**	**5'2"**	**5'0"**	**5'0"**	**5'11"**	**5'11"**	**5'2"**	**5'9"**	**—**
Reach with lift arms horizontal and bucket level	mm	2801	3047	2957	2957	3243	3243	2940	3169	160
	ft/in	**9'2"**	**10'0"**	**9'8"**	**9'8"**	**10'8"**	**10'8"**	**9'8"**	**10'5"**	**6"**
Digging depth (§)	mm	138	103	133	103	133	103	103	103	—
	in	**5**	**4**	**5**	**4**	**5**	**4**	**4**	**4**	**—**
Overall length (§)	mm	9245	9502	9412	9412	9687	9687	9357	9614	199
	ft/in	**30'4"**	**31'2"**	**30'11"**	**30'11"**	**31'9"**	**31'9"**	**30'8"**	**31'7"**	**8"**
Overall height with bucket at full raise (§)	mm	5994	6067	5994	5994	6360	6360	6360	6282	221
	ft/in	**19'8"**	**19'11"**	**19'8"**	**19'8"**	**20'10"**	**20'10"**	**20'10"**	**20'7"**	**9"**
Loader clearance circle with bucket in carry position (§)	mm	15 662	15 865	15 815	15 815	15 757	15 757	15 563	15 718	225
	ft/in	**51'5"**	**52'1"**	**51'11"**	**51'11"**	**51'8"**	**51'8"**	**51'1"**	**51'7"**	**9"**
Static tipping load, straight** (§)	kg	21 122	21 208	21 071	21 468	20 428	20 942	21 274	21 040	(1830)
	lb	**46,566**	**46,755**	**46,453**	**47,328**	**45,036**	**46,169**	**46,901**	**46,385**	**(4034)**
Static tipping load, full 37° turn** (§)	kg	18 932	19 010	18 878	19 256	18 256	18 753	19 086	18 848	(1680)
	lb	**41,737**	**41,909**	**41,618**	**42,452**	**40,247**	**41,343**	**42,077**	**41,552**	**(3704)**
Breakout force*** (§)	kN	251	251	254	272	207	224	228	233	—
	lb	**56,386**	**56,583**	**57,216**	**61,214**	**46,485**	**50,473**	**51,228**	**52,488**	**—**
Operating weight** (§)	kg	29 325	29 319	29 383	29 218	29 770	29 497	29 247	29 449	105
	lb	**64,650**	**64,637**	**64,778**	**64,414**	**65,631**	**65,029**	**64,478**	**64,923**	**231**

*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 29.5-R25 1-Star (L-3) 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 Standards J732 JUN92 govern loader ratings and are denoted in the text by (§).

	Change in Operating Weight Standard		**Change in Articulated Static Tipping Load**			
			Standard		**High Lift**	
	kg	**lb**	**kg**	**lb**	**kg**	**lb**
29.5-25, 22 PR (L-3)	–323	**– 712**	–255	**– 562**	–235	**– 517**
29.5-25, 22 PR (L-4)	+337	**+ 743**	+266	**+ 586**	+245	**+ 540**
29.5-25, 22 PR (L-5)	+951	**+2097**	+751	**+1655**	+691	**+1523**
29.5-R25, 1-Star (L-2/L-3)	– 82	**– 181**	– 65	**– 143**	– 60	**– 131**
29.5-R25, 1-Star (L-5)	+868	**+1914**	+685	**+1510**	+631	**+1390**

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Rock Buckets		Standard							High Lift
		Spade-edge						Straight-edge	Spade-edge
		With Teeth**	Bare	With DST & BOS*	With BOCE*	Modulok	Quarry▶	With DST & BOS*	With Teeth*
Capacity, heaped	m^3	6.1	6.1	6.3	6.1	6	6.9	6.1	5.6
	yd^3	**8**	**8**	**8.25**	**8**	**8**	**9**	**8**	**7.25**
Capacity, struck (§)	m^3	5.04	5.04	5.27	5.1	5.1	5.6	5.1	4.6
	yd^3	**6.59**	**6.59**	**6.89**	**6.6**	**6.6**	**7.3**	**6.6**	**6**
Width (§)	mm	3772	3772	3772	3772	3776	3980	3772	3772
	ft/in	**12'5"**	**12'5"**	**12'5"**	**12'5"**	**12'5"**	**13'1"**	**12'5"**	**12'5"**
Dump clearance at full lift and 45° discharge (§)	mm	3209	3496	3176	3393	3240	3218	3434	3675
	ft/in	**10'7"**	**11'6"**	**10'5"**	**11'2"**	**10'8"**	**10'7"**	**11'3"**	**12'1"**
Reach at full lift and 45° discharge (§)	mm	1611	1611	1658	1658	1671	1688	1685	1684
	ft/in	**5'3"**	**5'3"**	**5'5"**	**5'5"**	**5'6"**	**5'6"**	**5'6"**	**5'6"**
Reach at 45° dump and 2130 mm **(7'0")** height (§)	mm	2248	2340	2279	2356	2316	2326	2395	2600
	ft/in	**7'5"**	**7'8"**	**7'6"**	**7'9"**	**7'7"**	**7'7"**	**7'10"**	**8'6"**
Reach with lift arms horizontal and bucket level	mm	3089	3089	3196	3196	3202	3239	3234	3382
	ft/in	**10'2"**	**10'2"**	**10'6"**	**10'6"**	**10'6"**	**10'8"**	**10'8"**	**11'1"**
Digging depth (§)	mm	82	82	123	123	111	123	123	135
	in	**3"**	**3"**	**5"**	**5"**	**4"**	**5"**	**5"**	**5"**
Overall length (§)	mm	10 928	10 589	11 000	10 728	10 938	10 961	10 655	11 314
	ft/in	**35'10"**	**34'9"**	**36'1"**	**35'2"**	**35'11"**	**36'0"**	**35'0"**	**37'1"**
Overall height with bucket at full raise (§)	mm	6852	6852	6852	6852	6852	6890	6720	7236
	ft/in	**22'6"**	**22'6"**	**22'6"**	**22'6"**	**22'6"**	**22'7"**	**22'0"**	**23'9"**
Loader clearance circle with bucket in carry position (§)	mm	16 966	16 754	17 002	16 966	16 986	17 138	16 988	17 340
	ft/in	**55'8"**	**55'0"**	**55'9"**	**55'8"**	**55'9"**	**56'3"**	**55'9"**	**56'11"**
Static tipping load, straight† (§)	kg	30 794	30 967	29 875	30 371	29 996	30 090	30 692	26 365
	lb	**67,747**	**68,127**	**65,725**	**66,816**	**65,991**	**66,198**	**67,522**	**58,003**
Static tipping load, full 35° turn† (§)	kg	27 596	27 770	26 699	27 179	26 798	26 910	27 502	23 524
	lb	**60,711**	**61,094**	**58,738**	**59,794**	**58,956**	**59,202**	**60,504**	**51,753**
Breakout force†† (§)	kg	37 401	37 596	34 500	34 742	35 785	34 686	42 267	39 114
	lb	**82,282**	**82,652**	**75,900**	**76,432**	**78,727**	**76,309**	**92,987**	**86,051**
Operating weight†	kg	45 678	45 481	46 111	45 941	46 274	46 085	45 693	46 114
	lb	**100,492**	**100,267**	**101,655**	**101,070**	**101,803**	**101,387**	**100,525**	**101,451**

* DST & BOS = Double Strap Teeth and Bolt-On Segments, BOCE = Bolt-On Cutting Edge.
** Dimensions measured to end of teeth and do not conform to SAE standards.
▶ Specification is with BOS and DST.
† Static tipping load and operating weight are based on standard machine configuration with 35/65-33, 30 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 Standard J732 JUN92 and J742 FEB85 govern loader ratings, denoted in the text by (§).

	Change in Operating Weight		Change in Articulated Static Tipping Load			
	Standard		Standard		High Lift	
	kg	lb	kg	lb	kg	lb
Remove cab only	– 480	**–1058**	– 487	**–1074**	– 438	**– 966**
Remove ROPS canopy and cab	–2257	**–4976**	–2625	**–5787**	–2337	**–5152**
35/65-33, 24 PR (L-5) tires	+ 493	**+1087**	+ 349	**+ 769**	+ 310	**+ 683**
35/65 R33, (L-5) equivalent tires	– 588	**–1290**	– 416	**– 917**	– 369	**– 813**

Standard Rock Buckets		Spade-edge						Straight-edge	
		With Teeth**	**Bare**	**With DST & BOS***	**With BOCE***	**Modulok**	**Quarry**	**With DST & BOS***	**With BOCE***
Capacity, heaped	m^3	8.4	8.4	8.6	8.6	8.6	9.2	8.6	8.6
	yd^3	**11**	**11**	**11.2**	**11.2**	**11.2**	**12**	**11.2**	**11.2**
Capacity, struck	m^3	6.9	6.9	7	7	7.2	7.5	7	7
	yd^3	**9**	**9**	**9.1**	**9.1**	**9.4**	**9.8**	**9.1**	**9.1**
Width (§)	mm	4450	4450	4450	4500	4490	4610	4450	4500
	ft/in	**14'7"**	**14'7"**	**14'7"**	**14'9"**	**14'8"**	**15'2"**	**14'7"**	**14'9"**
Dump clearance at full lift and 45° discharge (§)	mm	4046	4367	4046	4254	4026	3989	4454	4641
	ft/in	**13'3"**	**14'4"**	**13'3"**	**13'11"**	**13'3"**	**13'1"**	**14'7"**	**15'3"**
Reach at full lift and 45° discharge (§)	mm	1986	1986	2042	2042	2049	2099	1956	1956
	ft/in	**6'6"**	**6'6"**	**6'8"**	**6'8"**	**6'8"**	**6'11"**	**6'5"**	**6'5"**
Reach at 45° dump and 2130 mm **(7'0")** height (§)	mm	2965	3026	3022	3064	3024	3065	3009	3029
	ft/in	**9'9"**	**9'11"**	**9'11"**	**10'1"**	**9'11"**	**10'1"**	**9'10"**	**9'11"**
Reach with lift arms horizontal and bucket level	mm	3822	3822	3942	3942	3947	4022	3582	3582
	ft/in	**12'6"**	**12'6"**	**12'11"**	**12'11"**	**12'11"**	**13'2"**	**11'9"**	**11'9"**
Digging depth (§)	mm	72	72	112	112	107	112	112	112
	in	**2.8"**	**2.8"**	**4.4"**	**4.4"**	**4.2"**	**4.4"**	**4.4"**	**4.4"**
Overall length (§)	mm	12 610	12 170	12 610	12 322	12 646	12 689	12 249	11 962
	ft/in	**41'4"**	**39'11"**	**41'4"**	**40'5"**	**41'6"**	**41'8"**	**40'2"**	**39'3"**
Overall height with bucket at full raise (§)	mm	8130	8130	8130	8130	8130	8130	8130	8130
	ft/in	**26'8"**	**26'8"**	**26'8"**	**26'8"**	**26'8"**	**26'8"**	**26'8"**	**26'8"**
Loader clearance circle with bucket in carry position (§)	mm	20 578	20 496	20 578	20 624	20 608	20 726	20 606	20 652
	ft/in	**67'6"**	**67'3"**	**67'6"**	**67'8"**	**67'7"**	**68'0"**	**67'7"**	**67'9"**
Static tipping load, straight† (§)	kg	40 996	41 567	40 203	40 403	39 387	39 606	40 742	40 960
	lb	**90,191**	**91,447**	**88,447**	**88,887**	**86,651**	**87,133**	**89,632**	**90,112**
Static tipping load, full 35° turn† (§)	kg	37 139	37 709	36 356	36 556	35 561	35 778	36 903	37 120
	lb	**81,706**	**82,960**	**79,983**	**80,423**	**78,234**	**78,712**	**81,187**	**81,664**
Breakout force†† (§)	kg	63 106	63 523	58 772	58 937	58 213	56 162	72 917	73 113
	lb	**138,833**	**139,751**	**129,298**	**129,661**	**128,069**	**123,556**	**160,417**	**160,850**
Operating weight†	kg	73 453	73 023	73 971	73 825	74 454	74 315	73 520	73 357
	lb	**161,597**	**160,651**	**162,736**	**162,415**	**163,800**	**163,493**	**161,744**	**161,385**

* DST & BOS = Double Strap Teeth and Bolt-On Segments, BOCE = Bolt-On Cutting Edge.
** Dimensions measured to end of teeth and do not conform to SAE standards.
† Static tipping load and operating weight are based on standard machine configuration with 41.25/70-39, 34 PR (L-5) tires, full fuel 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 Standard J732 JUN92 and J742 FEB85 govern loader ratings, denoted in the text by (§).

Rock Buckets			Standard Spade Edge Teeth & Segments Std.	Standard Spade Edge Teeth & Segments Hi-Lift	Large Standard Spade Edge Teeth & Segments Std.	Large Standard Spade Edge Teeth & Segments Hi-Lift	Light Aggregate Spade Edge Teeth & Segments Std.	Light Aggregate Spade Edge Teeth & Segments Hi-Lift	Heavy Duty Mining Teeth Std.	Heavy Duty Mining Teeth Hi-Lift
Rated capacity (§)		m^3	11.5	11.5	12.3	12.3	11.5	11.5	12	12
		yd^3	**15**	**15**	**16**	**16**	**15**	**15**	**15.5**	**15.5**
Struck capacity (§)		m^3	9.39	9.39	10.1	10.1	9.39	9.39	9.86	9.86
		yd^3	**12.1**	**12.1**	**13.1**	**13.1**	**12.1**	**12.1**	**12.9**	**12.9**
Width (§)		mm	4824	4824	4824	4824	4824	4824	4840	4840
		ft/in	**15'10"**	**15'10"**	**15'10"**	**15'10"**	**15'10"**	**15'10"**	**15'11"**	**15'11"**
Dump clearance at full lift and 45° discharge (§)	**With teeth:**	mm	4636	5256	4636	5256	4695	5315	4623	5243
		ft/in	**15'3"**	**17'3"**	**15'3"**	**17'3"**	**15'5"**	**17'5"**	**15'2"**	**17'2"**
	Bare:	mm	5003	5623	5003	5623	5009	5629	5003	5623
		ft/in	**16'5"**	**18'5"**	**16'5"**	**18'5"**	**16'5"**	**18'6"**	**16'5"**	**18'5"**
Reach at full lift and 45° discharge (§)	**With teeth:**	mm	2303	2299	2303	2299	2261	2256	2363	2358
		ft/in	**7'7"**	**7'6"**	**7'7"**	**7'6"**	**7'5"**	**7'5"**	**7'9"**	**7'9"**
	Bare:	mm	1699	1694	1699	1694	1699	1694	1729	1725
		ft/in	**5'7"**	**5'7"**	**5'7"**	**5'7"**	**5'7"**	**5'7"**	**5'8"**	**5'8"**
Reach with boom – horizontal and bucket level	**With teeth:**	mm	5105	5585	5105	5585	5033	5513	5156	5636
		ft/in	**16'9"**	**18'4"**	**16'9"**	**18'4"**	**16'6"**	**18'1"**	**16'11"**	**18'6"**
	Bare:	mm	4663	5143	4663	5143	4661	5141	4663	5143
		ft/in	**15'4"**	**16'10"**	**15'7"**	**16'10"**	**15'4"**	**16'10"**	**15'4"**	**16'10"**
Digging depth (§)		mm	140	144	140	144	140	144	149	149
		in	**5.5"**	**5.7"**	**5.5"**	**5.7"**	**5.5"**	**5.7"**	**5.9"**	**5.9"**
Overall length (§)	**With teeth:**	mm	15 585	16 175	15 585	16 175	15 513	16 103	15 636	16 226
		ft/in	**51'2"**	**53'1"**	**51'2"**	**53'1"**	**50'11"**	**52'10"**	**51'4"**	**53'3"**
	Bare:	mm	15 143	15 733	15 143	15 733	15 141	15 731	15 143	15 733
		ft/in	**49'8"**	**51'7"**	**49'8"**	**51'7"**	**49'8"**	**51'7"**	**49'8"**	**51'7"**
Overall height with bucket at full raise (§)		mm	9415	10 035	9415	10 035	9415	10 035	9415	10 035
		ft/in	**30'11"**	**32'11"**	**30'11"**	**32'11"**	**30'11"**	**32'11"**	**30'11"**	**32'11"**
Loader clearance circle with bucket in carry position (§)	**With teeth:**	mm	22 272	22 876	22 272	22 876	22 216	22 818	22 310	22 918
		in	**73'1"**	**75'1"**	**73'1"**	**75'1"**	**72'11"**	**74'10"**	**73'2"**	**75'2"**
	Bare:	mm	21 882	22 464	21 882	22 464	21 882	22 464	21 942	22 512
		in	**71'9"**	**73'8"**	**71'9"**	**73'8"**	**71'9"**	**73'8"**	**72'**	**73'10"**
Static tipping load, straight†		kg	56 782	55 951	56 802	56 117	57 371	56 179	55 036	55 079
		lb	**124,920**	**123,092**	**124,964**	**123,457**	**126,216**	**123,594**	**121,079**	**121,174**
Static tipping load, full 43° turn†		kg	49 035	47 877	49 019	48 004	49 632	48 112	47 344	47 053
		lb	**107,877**	**105,329**	**107,842**	**105,609**	**109,190**	**105,846**	**104,157**	**103,517**
Breakout force†† (§)		kg	62 655	61 203	62 413	61 203	63 139	61 929	58 059	56 849
		lb	**137,841**	**134,647**	**137,309**	**134,647**	**138,906**	**136,244**	**127,730**	**125,068**
Operating weight† (§)		kg	91 810	94 921	92 045	95 156	91 171	94 281	93 141	96 251
		lb	**201,982**	**208,826**	**202,499**	**209,343**	**200,576**	**207,418**	**204,910**	**211,752**

† 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, cooolant, lubricants and operator.

†† Measured 102 mm **(4")** behind tip of segments with bucket hinge pin as pivot point not in accordance with SAE J732 JUN92.

NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers. SAE Standards J732 JUN92 govern loader ratings and are 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 Standard (for four tires) kg	Change in Operating Weight Standard (for four tires) lb	Change in Articulated Static Tipping Load Standard kg	Change in Articulated Static Tipping Load Standard lb	Change in Articulated Static Tipping Load High Lift kg	Change in Articulated Static Tipping Load High Lift lb
45/65-45, 46 ply L-5 Firestone	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**

Bucket Type		**Iron Ore*** **		**Rock**				**Coal**	**High Lift**	**Equipped w/**
Ground Engaging Tools		**Spade With Teeth**		**Spade With Teeth**				**Straight w/Teeth**	**All Stand. Bkts. Avail.**	**53.5/85-57 Tires**
Capacity, rated (§)	m^3	10	12	14	16	18	20	30	Same	Same
	yd^3	**13**	**16**	**18**	**21**	**23**	**26**	**40**	**Same**	**Same**
Capacity, struck (§)	m^3	7.4	9.6	11.3	13	14.5	16.3	25.8	Same	Same
	yd^3	**9.8**	**12.6**	**14.8**	**17**	**18.9**	**21.3**	**33.8**	**Same**	**Same**
◆Width (§)	mm	5650	5650	5650	5650	5650	5650	5650	Same	Same
	ft/in	**18'6"**	**18'6"**	**18'6"**	**18'6"**	**18'6"**	**18'6"**	**18'6"**	**Same**	**Same**
◆Dump clearance at full lift and 45° discharge (§)	mm	6082	6082	5870	5508	5402	5658	5496	+340	+180
	ft/in	**19'11"**	**19'11"**	**19'3"**	**18'1"**	**17'9"**	**18'7"**	**18'0"**	**+1'1"**	**+7"**
◆Reach at full lift and 45° discharge	mm	1842	1842	2054	2310	2416	2266	2462	+561	–200
	ft/in	**6'1"**	**6'1"**	**6'9"**	**7'7"**	**7'11"**	**7'5"**	**8'1"**	**+1'10"**	**–8"**
◆Reach with lift arms horizontal, bucket level*	mm	4487	4487	4787	5224	5374	5087	5340	+640	–200
	ft/in	**14'9"**	**14'9"**	**15'8"**	**17'2"**	**17'6"**	**16'8"**	**17'6"**	**+2'1"**	**–8"**
◆Digging depth (§)	mm	246	246	246	248	248	246	222	+14.1	–180
	in	**9.7"**	**9.7"**	**9.7"**	**9.8"**	**9.8"**	**9.7"**	**8.7"**	**+0.6"**	**–7"**
◆Overall length (§)	mm	16 047	16 047	16 347	16 839	16 989	16 647	16 882	+780	–130
	ft/in	**52'8"**	**52'8"**	**53'8"**	**55'3"**	**55'9"**	**54'7"**	**55'5"**	**+2'7"**	**–5.1"**
Overall height bucket at full lift (§)	mm	10 246	10 696	10 724	10 749	10 840	11 276	12 161	+340	+180
	ft/in	**33'7"**	**35'1"**	**35'2"**	**35'3"**	**35'7"**	**37'0"**	**39'11"**	**+1'1"**	**+7"**
Loader clearance circle with bucket in carry position	m	25.19	25.19	25.30	25.5	25.6	25.50	25.70	+720 mm	–40 mm
	ft/in	**82'8"**	**82'8"**	**83'0"**	**83'8"**	**84'0"**	**83'8"**	**84'4"**	**+2'4"**	**–2"**
◆Static tipping load, straight** (§)	kg	120 910	122 050	119 780	118 620	116 090	130 340	117 670	0.82▶	1.02▶
	lb	**266,600**	**269,100**	**264,100**	**261,500**	**255,400**	**287,400**	**259,400**	**0.82▶**	**1.02▶**
◆Static tipping load, full 40° turn** (§)	kg	104 840	105 790	103 630	102 380	100 040	112 310	101 620	0.80▶	1.02▶
	lb	**231,100**	**233,200**	**228,500**	**225,200**	**220,100**	**247,600**	**224,000**	**0.80▶**	**1.02▶**
Breakout force (§)	kN	1370	1370	1165	1014	952	1010	900	0.96▶	1.00▶
	lb	**308,000**	**308,000**	**262,000**	**228,000**	**214,000**	**228,000**	**202,000**	**0.96▶**	**1.00▶**
◆Operating weight**	kg	174 600	174 800	175 500	177 000	178 000	177 900	177 100	+2500	+2600
	lb	**385,000**	**385,500**	**387,000**	**399,000**	**392,000**	**392,300**	**390,500**	**+5520**	**+5720**

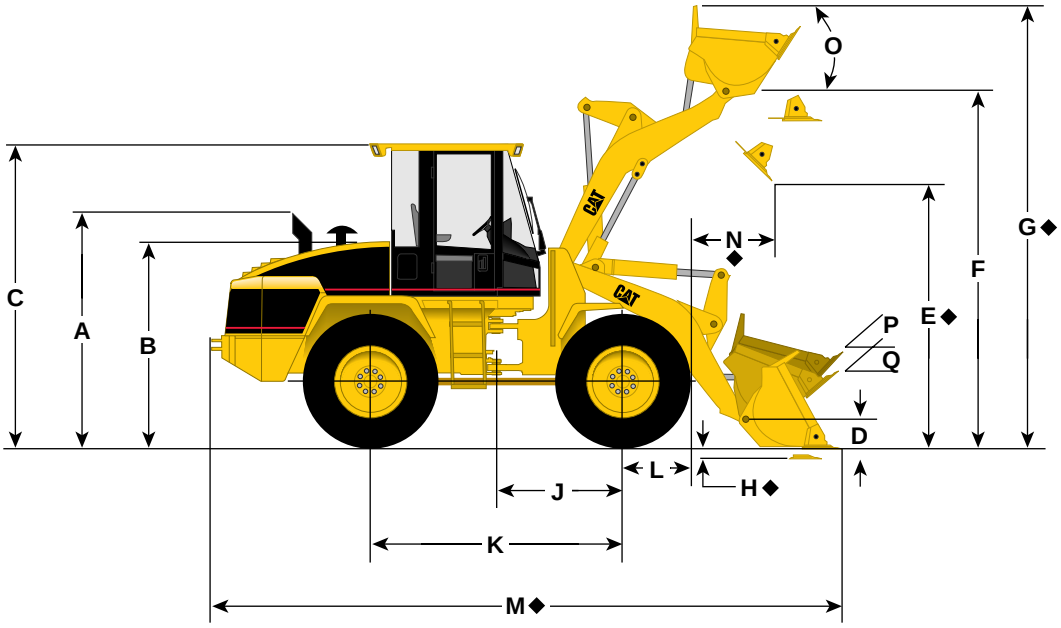
*Reach is measured to tooth tip when applicable, otherwise to cutting edge.
**Static tipping load and operating weight include sound-suppressed cab and ROPS, 49.5-57 (L-4) tires, full fuel tank, coolant, lubricants and operator.
***Iron ore buckets with 75 mm **(3")** reversible bolt on segments. All other buckets with 50 mm **(2")** segments.
▶Multiply this factor to standard rating to obtain High Lift rating.
◆ Varies with bucket tip, segment or wing configuration.
NOTE: Also available 30 m^3 **(35 yd^3)** general purpose coal bucket spade with teeth and segments.
NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers. 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 ROPS canopy & cab	–3595	**–7930**	–2680	**–5910**
Remove cab only	– 335	**– 740**	– 250	**– 550**
Remove ROPS canopy only	–3260	**–7190**	–2430	**–5360**

Bucket Type		Iron Ore***		Rock				Coal	High Lift	Equipped w/
Ground Engaging Tools		Spade With Teeth		Spade With Teeth				Straight w/Teeth	All Stand. Bkts. Avail.	53.5/85-57 Tires
Capacity, rated (§)	m^3	11	12	14	16	18	20	30	Same	Same
	yd^3	**14**	**16**	**18**	**21**	**23**	**26**	**40**	**Same**	**Same**
Capacity, struck (§)	m^3	8.4	9.3	11	12.8	14.3	16.3	25.6	Same	Same
	yd^3	**11**	**12.2**	**14.3**	**16.8**	**18.7**	**21.3**	**33.5**	**Same**	**Same**
◆Width (§)	mm	6220	6220	6220	6220	6220	6220	6220	Same	Same
	ft/in	**20'5"**	**20'5"**	**20'5"**	**20'5"**	**20'5"**	**20'5"**	**20'5"**	**Same**	**Same**
◆Dump clearance at full lift and 45° discharge (§)	mm	5994	5994	5782	5508	5402	5569	5496	+340	+180
	ft/in	**19'8"**	**19'8"**	**19'0"**	**18'1"**	**17'9"**	**18'3"**	**18'0"**	**+1'1"**	**+7"**
◆Reach at full lift and 45° discharge	mm	1930	1930	2142	2310	2416	2354	2462	+561	–200
	ft/in	**6'4"**	**6'4"**	**7'0"**	**7'7"**	**7'11"**	**7'9"**	**8'1"**	**+1'10"**	**–8"**
◆Reach with lift arms horizontal, bucket level*	mm	4612	4612	4912	5224	5374	5212	5340	+640	–200
	ft/in	**15'2"**	**15'2"**	**16'1"**	**17'2"**	**17'6"**	**17'1"**	**17'6"**	**+2'1"**	**–8"**
◆Digging depth (§)	mm	246	246	246	248	248	246	222	+14.1	–180
	in	**9.7"**	**9.7"**	**9.7"**	**9.8"**	**9.8"**	**9.7"**	**8.7"**	**+0.6"**	**–7"**
◆Overall length (§)	mm	16 172	16 172	16 472	16 839	16 989	16 772	16 882	+780	–130
	ft/in	**53'1"**	**53'1"**	**54'1"**	**55'3"**	**55'9"**	**55'0"**	**55'5"**	**+2'7"**	**–5.1"**
Overall height bucket at full lift (§)	mm	10 246	10 406	10 388	10 507	10 598	10 990	11 770	+340	+180
	ft/in	**33'7"**	**33'7"**	**34'1"**	**34'6"**	**34'9"**	**36'1"**	**38'8"**	**+1'1"**	**+7"**
Loader clearance circle with bucket in carry position	m	25.70	25.70	25.87	25.5	25.6	26.00	26.21	+720 mm	–40 mm
	ft/in	**84'4"**	**84'4"**	**84'10"**	**83'8"**	**84'0"**	**85'4"**	**86'0"**	**+2'4"**	**–2"**
◆Static tipping load, straight** (§)	kg	118 560	118 620	116 390	116 460	115 160	113 720	115 100	0.82▶	1.02▶
	lb	**261,400**	**261,500**	**256,600**	**256,200**	**253,900**	**250,700**	**253,700**	**0.82▶**	**1.02▶**
◆Static tipping load, full 40° turn** (§)	kg	102 510	102 520	100 400	100 340	98 940	97 700	99 160	0.80▶	1.02▶
	lb	**226,000**	**226,000**	**221,300**	**220,700**	**217,700**	**215,400**	**218,600**	**0.80▶**	**1.02▶**
Breakout force (§)	kN	1275	1275	1095	956	903	960	900	0.96▶	1.00▶
	lb	**287,000**	**287,000**	**247,000**	**215,000**	**203,000**	**216,000**	**202,000**	**0.96▶**	**1.00▶**
◆Operating weight**	kg	176 200	176 400	177 100	179 000	180 000	179 600	178 800	+2500	+2600
	lb	**388,500**	**389,000**	**390,500**	**393,000**	**396,000**	**395,900**	**394,100**	**+5520**	**+5720**

*Reach is measured to tooth tip when applicable, otherwise to cutting edge.
**Static tipping load and operating weight include sound-suppressed cab and ROPS, 49.5-57 (L-4) tires, full fuel tank, coolant, lubricants and operator.
***Iron ore buckets with 75 mm **(3")** reversible bolt on segments. All other buckets with 50 mm **(2")** segments.
▶Multiply this factor to standard rating to obtain High Lift rating.
◆ Varies with bucket tip, segment or wing configuration.
NOTE: Also available 30 m^3 **(35 yd^3)** general purpose coal bucket spade with teeth and segments.
NOTE: Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers. SAE Standards J732 JUN92 and J742 FEB85 govern loader ratings, denoted in the text by (§).

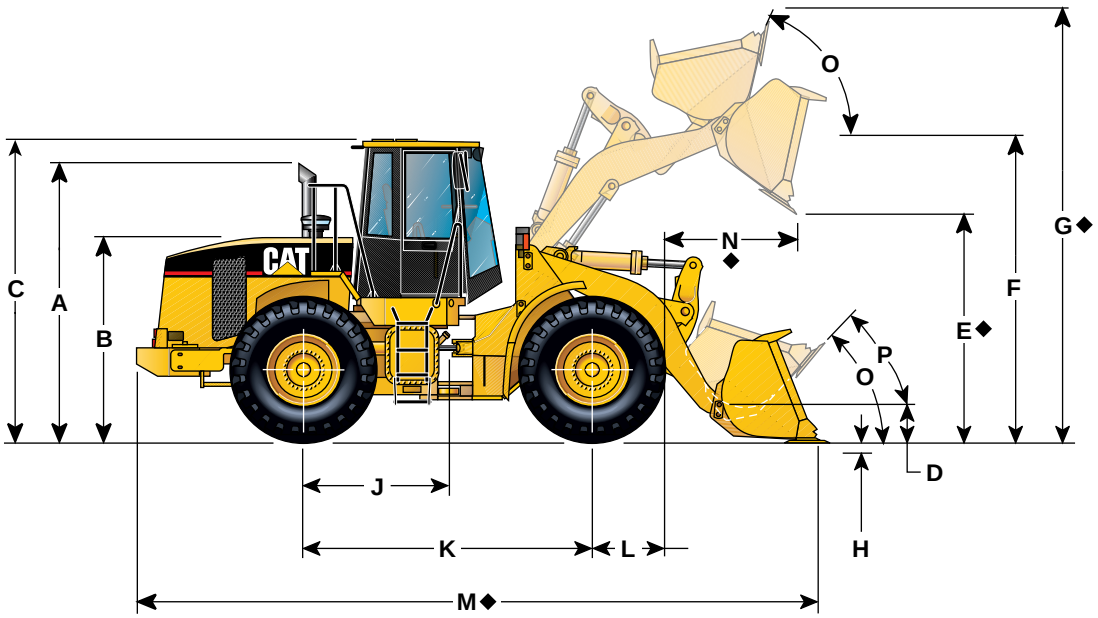
	Change in Operating Weight		Change in Articulated Static Tipping Load	
	kg	**lb**	**kg**	**lb**
Remove ROPS canopy & cab	–3595	**–7930**	–2680	**–5910**
Remove cab only	– 335	**– 740**	– 250	**– 550**
Remove ROPS canopy only	–3260	**–7190**	–2430	**–5360**



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

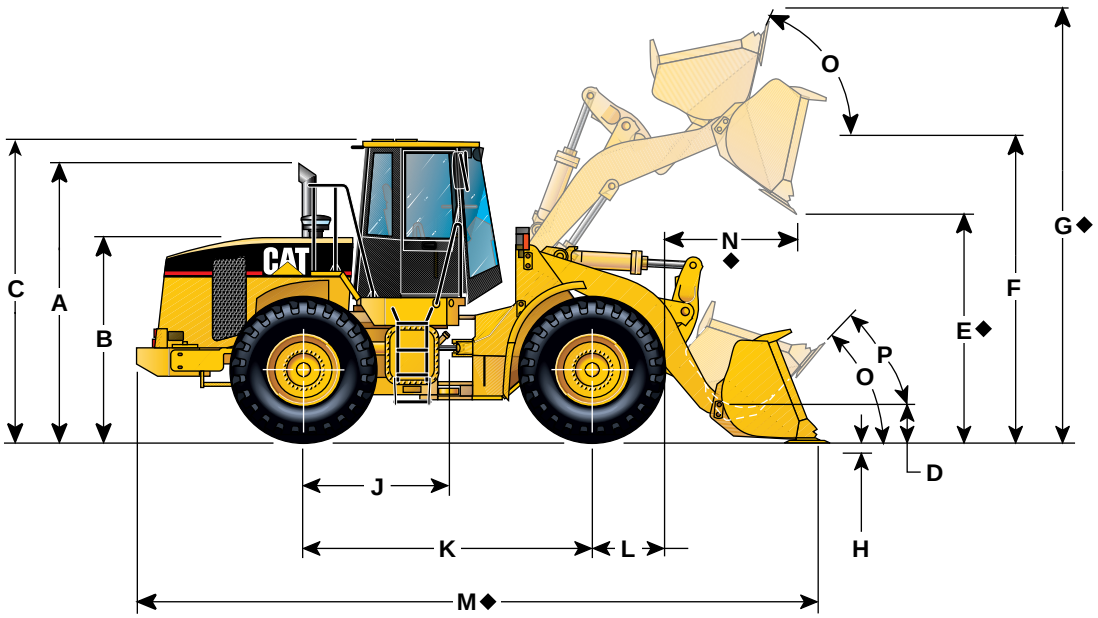
MODEL:	902 General Purpose Bolt-on edge 0.6 m³	902 General Purpose Bolt-on edge 0.78 yd³	906 General Purpose Bolt-on edge 0.8 m³	906 General Purpose Bolt-on edge 1.05 yd³	914G General Purpose Bolt-on edge 1.3 m³	914G General Purpose Bolt-on edge 1.7 yd³
A Height to top of stack	2.69 m	**8'10"**	2.72 m	**8'11"**	2.26 m	**7'5"**
B Height to top of engine compartment	1.78 m	**5'10"**	1.82 m	**6'0"**	2.08 m	**6'10"**
C Height to top of ROPS	2.65 m	**8'8"**	2.68 m	**8'10"**	3.1 m	**10'2"**
D Hinge pin height at carry position	330 mm	**13"**	416 mm	**16"**	374 mm	**15"**
E Dump clearance at full lift and 45° discharge angle	2.31 m	**7'7"**	2.39 m	**7'10"**	2.66 m	**8'9"**
F Hinge pin height at full lift	3.02 m	**9'11"**	3.13 m	**10'3"**	3.44 m	**11'3"**
G Maximum overall height	3.97 m	**13'0"**	4.17 m	**13'8"**	4.39 m	**14'5"**
H Maximum digging depth	68 mm	**2.7"**	100 mm	**3.9"**	89 mm	**3.5"**
J Machine center point to axle	1.0 m	**3'3"**	1.0 m	**3'3"**	1.3 m	**4'3"**
K Wheelbase	2.0 m	**6'7"**	2.0 m	**6'7"**	2.6 m	**8'6"**
L Free radius of tire	440 mm	**17"**	475 mm	**1'7"**	670 mm	**2'2"**
M Maximum overall length	5.2 m	**17'1"**	5.36 m	**17'7"**	6.23 m	**20'5"**
N Reach at full lift	764 mm	**2'6"**	982 mm	**3'3"**	973 mm	**3'2"**
O Maximum rollback at maximum lift	**63°**		**63°**		**60°**	
P Maximum rollback at carry height	**50°**		**53°**		**46°**	
Q Maximum rollback at ground	**44°**		**43°**		**41°**	
Ground clearance (std. tires)	282 mm	**11.1"**	317 mm	**12.5"**	456 mm	**18"**
Tread width (std. tires)	1.35 m	**4'5"**	1.4 m	**4'7"**	1.8 m	**5'10.9"**
Width over tires (std. tires)	1.7 m	**4'3"**	1.74 m	**5'9"**	2.26 m	**7'4.9"**
Tires used for measurements	**12.5-18**		**12.5-20**		**17.5-R25 (L-2)**	



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.

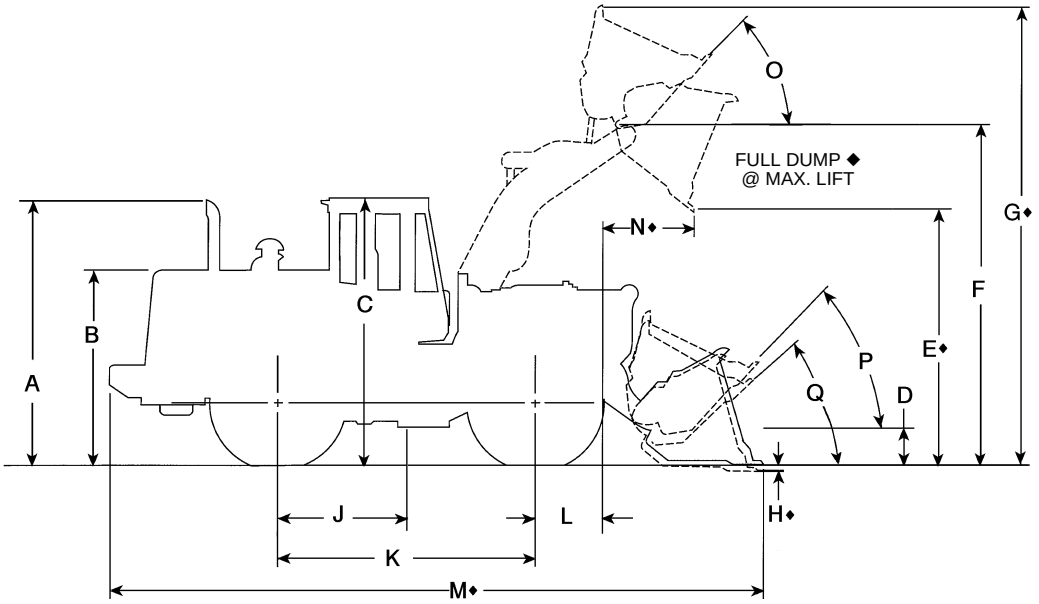
MODEL:	924F Loose Material Bolt-on edge 1.5 m³	924F Loose Material Bolt-on edge 2.00 yd³	928G General Purpose Bolt-on edge 2.2 m³	928G General Purpose Bolt-on edge 2.9 yd³	938G General Purpose Bolt-on edge 2.5m³	938G General Purpose Bolt-on edge 3.25 yd³	950G General Purpose Bolt-on edge 3.1 m³	950G General Purpose Bolt-on edge 4 yd³
A Height to top of stack	3.07 m	**10'1"**	3.11 m	**10'2"**	3.23 m	**10'7"**	3.22 m	**10'7"**
B Height to top of engine compartment	2.14 m	**7'0"**	2.16 m	**7'1"**	2.36 m	**7'9"**	2.25 m	**7'5"**
C Height to top of ROPS	3.14 m	**10'4"**	3.27 m	**10'8"**	3.3 m	**10'10"**	3.37 m	**11'1"**
D Hinge pin height at carry position	415 mm	**16"**	449 mm	**18"**	419 mm	**16.5"**	230 mm	**9"**
E Dump clearance at full lift and 45° discharge angle	2.70 m	**8'10"**	2.84 m	**9'4"**	2.85 m	**9'4"**	2.85 m	**9'4"**
F Hinge pin height at full lift	3.59 m	**11'9"**	3.87 m	**12'8"**	3.84 m	**12'7"**	3.98 m	**13'1"**
G Maximum overall height	4.68 m	**15'4"**	5.07 m	**16'8"**	5.08 m	**16'8"**	5.26 m	**17'3"**
H Maximum digging depth	93 mm	**3.6"**	86 mm	**3.4"**	48 mm	**1.9"**	101 mm	**3.97"**
J Machine center point to axle	1.35 m	**4'5"**	1.45 m	**4'9"**	1.510 m	**4'11"**	1.68 m	**5'6"**
K Wheelbase	2.70 m	**8'10"**	2.90 m	**9'6"**	3.020 m	**9'11"**	3.35 m	**11'0"**
L Radius of wheel	677 mm	**2'3"**	752 mm	**2'6"**	750 mm	**2'6"**	818 mm	**2'8"**
M Maximum overall length	6.52 m	**21'5"**	7.81 m	**24'0"**	7.28 m	**23'9"**	8.05 m	**26'5"**
N Reach at full lift	855 mm	**2'10"**	964 mm	**3'2"**	1004 mm	**3'3.5"**	1.29 m	**4'3"**
O Maximum rollback at maximum lift	**58°**		**58°**		**65°**		**59°**	
P Maximum rollback at carry height	**45°**		**47.8°**		**46°**		**45°**	
Q Maximum rollback at ground	**40°**		**44°**		**41°**		**37.5°**	
Ground clearance (std. tires)	318 mm	**12.5"**	408 mm	**16"**	400 mm	**15.7"**	400 mm	**16"**
Tread width (std. tires)	1.85 m	**6'1"**	1.82 m	**6'1"**	2.02 m	**5'8"**	2.14 m	**7'0"**
Width over tires (std. tires)	2.33 m	**7'8"**	2.44 m	**8'0"**	2.61 m	**8'6"**	2.89 m	**9'6"**
Tires used for measurements	**17.5-25 (L-2)**		**20.5-25 (L-2)**		**20.5-R25 (L-2)**		**23.5-R25, XHA (L-3)**	



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.

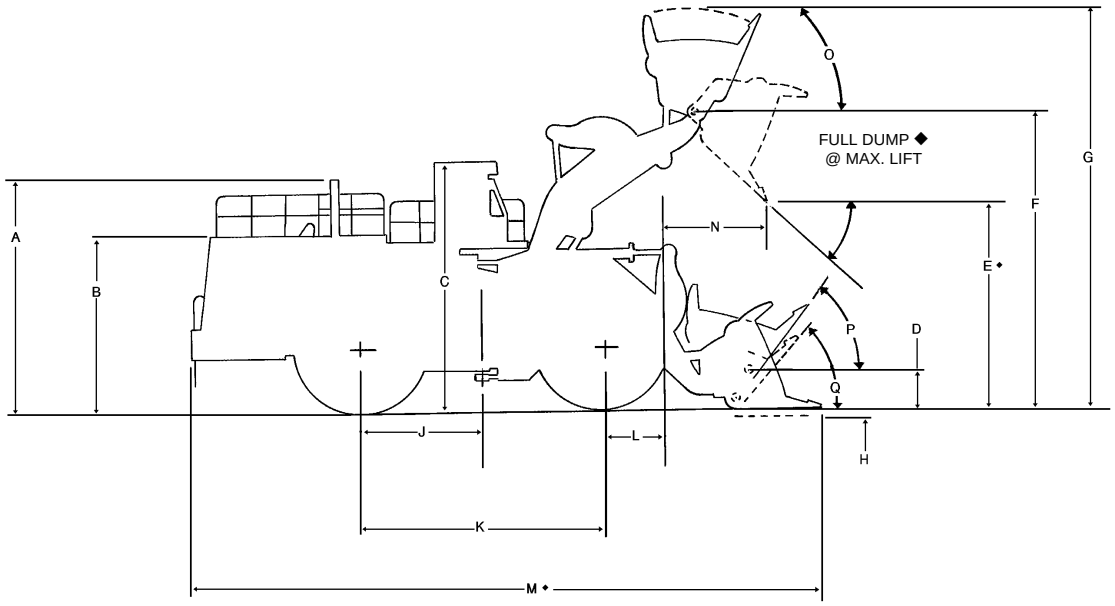
MODEL:	962G Material Handler Bolt-on edge 3.5 m³	962G Material Handler Bolt-on edge 4.5 yd³	966F Series II General Purpose Bolt-on edge 3.8 m³	966F Series II General Purpose Bolt-on edge 5 yd³	970F Material Handling Bolt-on edge 4.7 m³	970F Material Handling Bolt-on edge 6 yd³	980G General Purpose Bolt-on edge 5.7 m³	980G General Purpose Bolt-on edge 7.5 yd³
A Height to top of stack	3.22 m	**10'7"**	3.4 m	**11'2"**	3.4 m	**11'3"**	3.39 m	**11'1"**
B Height to top of engine compartment	2.25 m	**7'5"**	2.46 m	**8'1"**	2.48 m	**8'1"**	2.33 m	**7'8"**
C Height to top of ROPS	3.37 m	**11'1"**	3.43 m	**11'3"**	3.43 m	**11'3"**	3.75 m	**12'4"**
D Hinge pin height at carry position	230 mm	**9"**	470 mm	**18.5"**	470 mm	**18.5"**	453 mm	**18"**
E Dump clearance at full lift and 45° discharge angle	2.97 m	**9'8"**	2.98 m	**9'9"**	3.23 m	**10'6"**	3.27 m	**10'9"**
F Hinge pin height at full lift	4.17 m	**13'8"**	4.12 m	**13'6"**	4.43 m	**14'7"**	4.50 m	**14'9"**
G Maximum overall height	5.49 m	**18'0"**	5.59 m	**18'4"**	5.81 m	**19'1"**	6.20 m	**20'4"**
H Maximum digging depth	98 mm	**3.8"**	76 mm	**3"**	76 mm	**3"**	138 mm	**5"**
J Machine center point to axle	1.68 m	**5'6"**	1.675 m	**5'6"**	1.675 m	**5'6"**	1.85 m	**6'1"**
K Wheelbase	3.35 m	**11'0"**	3.350 m	**11'0"**	3.35 m	**11'0"**	3.70 m	**12'2"**
L Radius of wheel	818 mm	**2'8"**	864 mm	**2'10"**	864 mm	**2'10"**	928 mm	**36.6"**
M Maximum overall length	8.21 m	**27'5"**	8.30 m	**27'4"**	8.68 m	**28'6"**	9.46 m	**31'1"**
N Reach at full lift	1.27 m	**4'2"**	1275 mm	**4'2"**	1355 mm	**4'5"**	1.54 mm	**5'1"**
O Maximum rollback at maximum lift	**60°**		**59°**		**54.3°**		**61°**	
P Maximum rollback at carry height	**45°**		**48°**		**47°**		**46°**	
Q Maximum rollback at ground	**37.5°**		**40°**		**43°**		**36°**	
Ground clearance (std. tires)	400 mm	**16"**	476 mm	**18.7"**	482 mm	**19"**	467 mm	**18.4"**
Tread width (std. tires)	2.14 m	**7'0"**	2.20 m	**7'3"**	2.20 m	**7'3"**	2.44 m	**8'0"**
Width over tires (std. tires)	2.89 m	**9'6"**	2.94 m	**9'8"**	2.94 m	**9'8"**	3.24 m	**10'7"**
Tires used for measurements	**23.5-R25, XHA (L-3)**		**26.5-25 (L-3)**		**26.5-25 (L-3)**		**29.5-R25 (L-3)**	



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

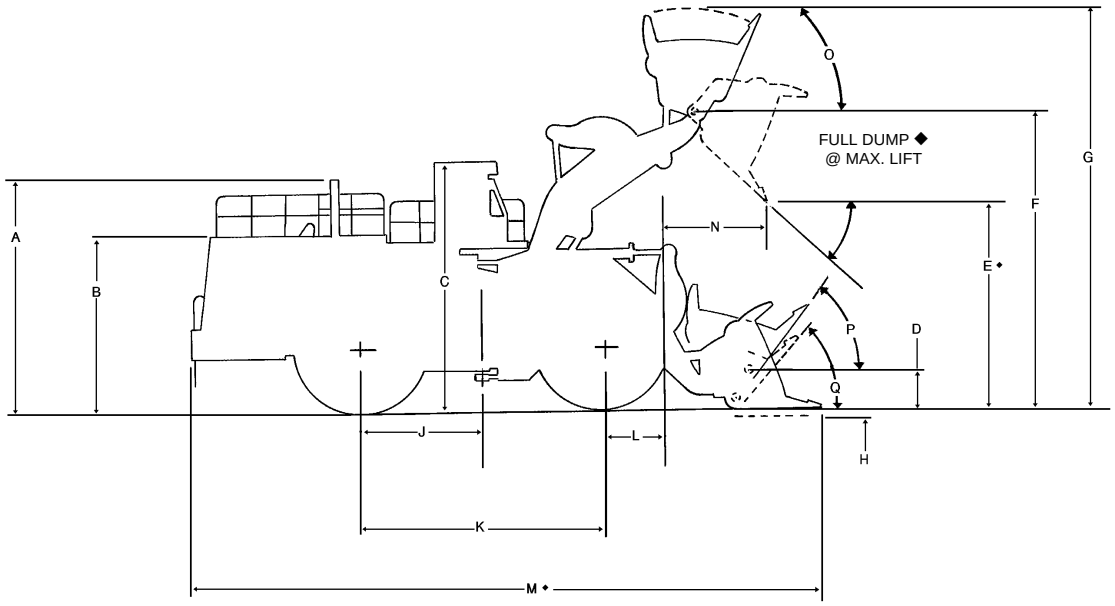
MODEL:	980G General Purpose High Lift Bolt-on edge 5.7 m³	980G General Purpose High Lift Bolt-on edge 7.5 yd³	988F Series II Spade Edge Rock With Teeth 6 m³	988F Series II Spade Edge Rock With Teeth 7.8 yd³	988F Series II High Lift Spade Edge Rock With Teeth 5.6 m³	988F Series II High Lift Spade Edge Rock With Teeth 7.25 yd³	990 Series II Spade Edge Rock With Teeth 8.4 m³	990 Series II Spade Edge Rock With Teeth 11 yd³
A Height to top of stack	3.39 m	**11'1"**	3.97 m	**13'0"**	3.97 m	**13'0"**	4.59 m	**15'5"**
B Height to top of engine compartment	2.33 m	**7'8"**	2.98 m	**9'9"**	2.98 m	**9'9"**	3.46 m	**11'4"**
C Height to top of ROPS	3.75 m	**12'4"**	4.13 m	**13'6"**	4.13 m	**13'6"**	5.13 m	**16'10"**
D Hinge pin height at carry position	453 mm	**18"**	650 mm	**2'4"**	780 mm	**2'4"**	816 mm	**2'8"**
E Dump clearance at full lift and 45° discharge angle	3.49 m	**11'6"**	3.21 m	**10'6"**	3.72 m	**12'2"**	4.05 m	**13'3"**
F Hinge pin height at full lift	4.73 m	**15'6"**	4.90 m	**16'1"**	5.36 m	**17'7"**	5.90 m	**19'4"**
G Maximum overall height	6.42 m	**21'1"**	6.85 m	**22'6"**	7.23 m	**23'9"**	8.13 m	**26'8"**
H Maximum digging depth	138 mm	**5"**	98 mm	**4"**	146 mm	**6"**	72 mm	**2.8"**
J Machine center point to axle	1.85 m	**6'1"**	1.90 m	**6'3"**	1.90 m	**6'3"**	2.30 m	**7'7"**
K Wheelbase	3.70 m	**12'2"**	3.81 m	**12'6"**	3.81 m	**12'6"**	4.60 m	**15'1**
L Radius of wheel	928 mm	**36.6"**	1.03 m	**3'4"**	1.03 m	**3'4"**	1.25 m	**4'1"**
M Maximum overall length	9.68 m	**31'9"**	10.99 m	**36'1"**	11.31 m	**37'1"**	12.61 m	**41'4"**
N Reach at full lift	1.54 mm	**5'1"**	1.61 m	**5'3"**	1.68 m	**5'6"**	1.99 m	**6'6"**
O Maximum rollback at maximum lift	**61°**		**63.3°**		**63.3°**		**64°**	
P Maximum rollback at carry height	**46°**		**50°**		**50°**		**48.4°**	
Q Maximum rollback at ground	**36°**		**40°**		**40°**		**39.1°**	
Ground clearance (std. tires)	467 mm	**18.4"**	529 mm	**1'9"**	529 mm	**1'9"**	491 mm	**1'7"**
Tread width (std. tires)	2.44 m	**8'0"**	2.59 m	**8'6"**	2.59 m	**8'6"**	3.05 m	**10'0"**
Width over tires (std. tires)	3.25 m	**10'8"**	3.55 m	**11'8"**	3.55 m	**11'8"**	4.16 m	**13'3"**
Tires used for measurements	**29.5-R25 (L-3)**		**35/65-33 (L-4)**		**35/65-33 (L-4)**		**41.25/70-39 (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:	992G Spade Edge Rock With Teeth 11.5 m³	992G Spade Edge Rock With Teeth 15 yd³	992G High Lift Spade Edge Rock With Teeth 11.5 m³	992G High Lift Spade Edge Rock With Teeth 15 yd³	994 5640 mm (18'6") Spade-Edge Bucket With Teeth And Segments 16 m³	994 5640 mm (18'6") Spade-Edge Bucket With Teeth And Segments 21 yd³	994 High Lift 5640 mm (18'6") Spade Edge Bucket With Teeth And Segments 16 m³	994 High Lift 5640 mm (18'6") Spade Edge Bucket With Teeth And Segments 21 yd³
A Height to top of stack	5.23 m	**17'2"**	5.23 m	**17'2"**	6.30 m	**20'8"**	6.30 m	**20'8"**
B Height to top of engine compartment	3.98 m	**13'0"**	3.98 m	**13'0"**	4.66 m	**15'3"**	4.66 m	**15'3"**
C Height to top of ROPS	5.59 m	**18'4"**	5.59 m	**18'4"**	6.53 m	**21'5"**	6.53 m	**21'5"**
D Hinge pin height at carry position	960 mm	**3'1.8"**	1125 mm	**3'8.3"**	1030 mm	**3'5"**	1258 mm	**4'2"**
◆E Dump clearance at full lift and 45° discharge angle	4.63 m	**15'3"**	5.25 m	**17'3"**	5.51 m	**18'1"**	5.85 m	**19'2"**
◆F Hinge pin height at full lift	6.94 m	**22'9"**	7.55 m	**24'10"**	7.98 m	**26'2"**	8.32 m	**27'3"**
◆G Maximum overall height	9.41 m	**30'11"**	10.03 m	**32'11"**	10.75 m	**35'3"**	11.09 m	**36'5"**
◆H Maximum digging depth	140 mm	**5.5"**	144 mm	**5.7"**	248 mm	**9"**	262 mm	**10"**
J Machine center point to axle	2.94 m	**9'8"**	2.94 m	**9'8"**	3.20 m	**10'6"**	3.20 m	**10'6"**
K Wheelbase	5.89 m	**19'4"**	5.89 m	**19'4"**	6.40 m	**21'0"**	6.40 m	**21'0"**
L Radius of wheel	1.37 m	**4'6"**	1.37 m	**4'6"**	1.80 m	**5'11"**	1.80 m	**5'11"**
◆M Maximum overall length	15.58 m	**49'8"**	16.17 m	**53'1"**	16.84 m	**55'3"**	17.61 m	**57'9"**
◆N Reach at full lift	2.3 m	**7'7"**	2.29 m	**7'7"**	2.31 m	**7'7"**	2.87 m	**9'5"**
O Maximum rollback at maximum lift	**65°**		**65°**		**64°**		**64°**	
P Maximum rollback at carry height	**50°**		**50°**		**53°**		**58°**	
Q Maximum rollback at ground	**42°**		**42°**		**40°**		**40°**	
Ground clearance (std. tires)	691 mm	**2'3.2"**	691 mm	**2'3.2"**	650 mm	**2'2"**	650 mm	**2'2"**
Tread width (std. tires)	3.30 m	**10'10"**	3.30 m	**10'10"**	3.90 m	**12'10"**	3.90 m	**12'10"**
Width over tires (std. tires)	4.50 m	**14'9"**	4.49 m	**14'9"**	5.20 m	**17'1"**	5.20 m	**17'1"**
Tires used for measurements	**45/65-45 (L-5)**		**45/65-45 (L-5)**		**50/80-57 (L-4)**		**50/80-57 (L-4)**	



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:	994 5640 mm (18'6") Spade Edge Bucket With Teeth And Segments 18 m³	23 yd³	994 High Lift 5640 mm (18'6") Spade Edge Bucket With Teeth And Segments 18 m³	23 yd³
A Height to top of stack	6.48 m	**21'3"**	6.48 m	**21'3"**
B Height to top of engine compartment	4.84 m	**15'11"**	4.84 m	**15'11"**
C Height to top of ROPS	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"**
◆E Dump clearance at full lift and 45° discharge angle	5.58 m	**18'4"**	5.92 m	**19'5"**
◆F Hinge pin height at full lift	8.16 m	**26'9"**	8.50 m	**27'11"**
◆G Maximum overall height	11.02 m	**36'2"**	11.36 m	**37'3"**
◆H Maximum digging depth	68 mm	**3"**	82 mm	**3"**
J Machine center point to axle	3.20 m	**10'6"**	3.20 m	**10'6"**
K Wheelbase	6.40 m	**21'0"**	6.40 m	**21'0"**
L Radius of wheel	2.00 m	**6'7"**	2.00 m	**6'7"**
◆M Maximum overall length	16.86 m	**55'4"**	17.64 m	**57'11"**
◆N Reach at full lift	2.42 m	**7'11"**	2.98 m	**9'9"**
O Maximum rollback at maximum lift	**64°**		**64°**	
P Maximum rollback at carry height	**53°**		**58°**	
Q Maximum rollback at ground	**40°**		**40°**	
Ground clearance (std. tires)	830 mm	**2'9"**	830 mm	**2'9"**
Tread width (std. tires)	4.00 m	**13'1"**	4.00 m	**13'1"**
Width over tires (std. tires)	5.35 m	**17'7"**	5.35 m	**17'7"**
Tires used for measurements	**53.5/85-57 (L-5)**		**53.5/85-57 (L-5)**	

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

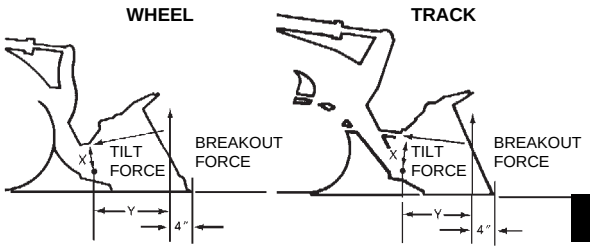
a. "Raise Time" — Time in seconds required to raise the bucket from level position on the ground.
b. "Lower Time" — Time in seconds required to lower the empty bucket from the full height to a level position on the ground.
c. "Dump Time" — Time in seconds required to move the bucket at maximum height 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.

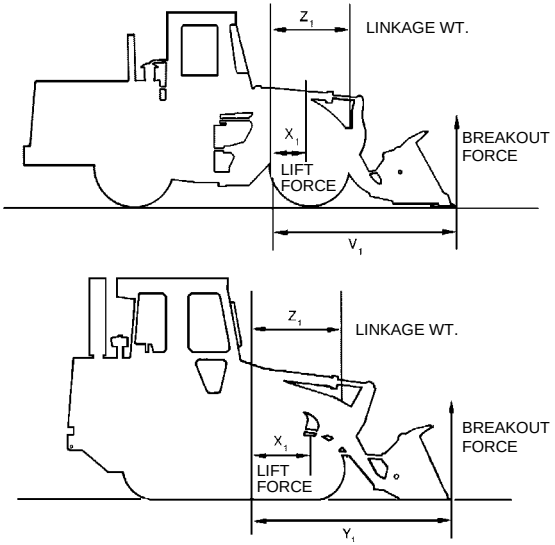
The following are illustrations used (according to provisions of SAE J732 JUN92) to measure Caterpillar Loader breakout forces.



a. Breakout force resulting from rackback:
(Tilt Force) × (Dist. "X") = ("Y" Dist.) × (Breakout Force)

$$\frac{\text{(Tilt Force)} \times \text{(Dist. "X")}}{\text{"Y" Dist.}} = \text{Breakout Force}$$

b. Breakout force resulting from bucket lift:



$$\text{(Lift Force)} \times \text{(Dist. "}X_1\text{")} = (\text{"}Y_1\text{" Dist.}) \times (\text{Breakout Force}) + (\text{Linkage Wt.}) \times (\text{Dist. "}Z_1\text{"}) + (\text{Breakout Force}) \times (\text{Linkage Mechanical Advantage}) \text{ "}V_1\text{"}$$

or

$$\text{Breakout Force} = \frac{(\text{Lift Force}) \times (\text{Dist. "}X_1\text{"}) - (\text{Linkage Wt.}) \times (\text{Dist. "}Z_1\text{"})}{(\text{Dist. "}Y_1\text{"}) + (\text{Dist. "}V_1\text{"}) \times (\text{Linkage Mech. Advantage})}$$

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:

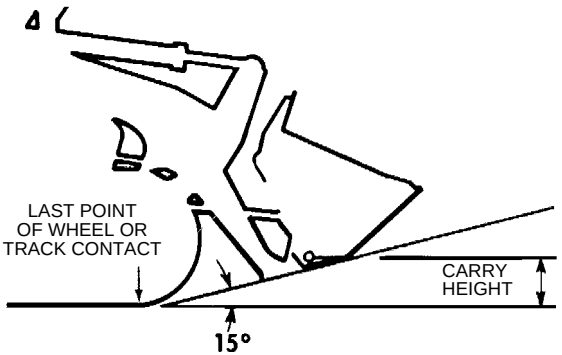
a. Loader on hard level surface and stationary.
b. Unit at standard operating weight.
c. Bucket at maximum rollback position.
d. Load at maximum forward position during raising cycle.
e. For articulated wheel loaders, the test will be run both with frame straight (straight static tipping load) and fully turned to a specific angle (full turn static tipping load).
f. 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.

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:



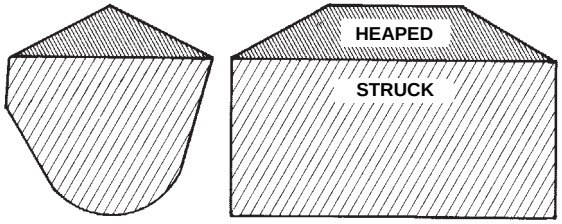
Loader Clearance Circle

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 m^3 (4 yd^3) 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.

	Minutes added (+) or Subtracted (–) From Basic Cycle
Machine	
— Material handler	–.05
Materials	
— 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
Pile	
— Conveyor or Dozer piled 3 m (10 ft) and up	.00
— Conveyor or Dozer piled 3 m (10 ft) or less	+.01
— Dumped by truck	+.02
Miscellaneous	
— 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.

$$\textit{Cycles per hour at 100\% Efficiency} = \frac{\textit{60 min}}{\textit{Total Cycle Time in Minutes}}$$

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.

$$\text{Cycles per hour at 50 minutes per hour (83\% efficiency)} = \text{Cycles per hour at 100\% efficiency} \times \frac{\text{50 min actual work time}}{\text{60 min hour}}$$

TRUCK LOADING

Average loader cycle times

914G-962G	0.45-0.50
966F Series II-980G	0.50-0.55
988F-990	0.55-0.60
992G-994	0.60-0.70

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.

$$\textit{Bucket size} = \frac{\textit{Volume Required/Cycle}}{\textit{Bucket Fill Factor}}$$

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

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 m^3 (4 yd^3) bucket.
.90 × 3 m^3 = 2.75 Loose m^3 delivered per cycle.
.90 × 4 yd^3 = 3.6 Loose yd^3 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

$$\textit{Tons Required/Cycle} = \frac{\textit{Tons Required/Hour}}{\textit{CyclesHour}}$$

$$\textit{Kg (Pounds) Required/Cycle} = \textit{Tons Required/Cycle} \times \textit{907 kg (2000 lb)}$$

$$\textit{Volume Required/Cycle} = \frac{\textit{kg (Pounds)Cycle}}{\textit{Material Weight } kg/m^3 \textit{ (lb/yd}^3\textit{)}}$$

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 ($CaCl_2$) 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 m^3 (8-12 yd^3) 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 962G 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.

$$\text{Cycles/hr at 83\% efficiency} = 120 \text{ cycles/hr} \times \frac{\text{50 min actual work time}}{\text{60 min per hr}} = 100 \text{ cycles/hr}$$

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.

Metric: $\frac{1660 \text{ kg/m}^3}{1000 \text{ kg/ton}} = 1.66 \text{ ton/m}^3$

English: $\frac{2800 \text{ lb/yd}^3}{2000 \text{ lb/ton}} = 1.4 \text{ tons/yd}^3$

Production Rate Required

Metric: $\frac{450 \text{ tons/hr}}{1.66 \text{ tons/m}^3} = 271 \text{ m}^3\text{/hr}$

English: $\frac{496 \text{ tons/hr}}{1.4 \text{ tons/yd}^3} = 354 \text{ yd}^3\text{/hr}$

Volume Required per Cycle

Metric: $\frac{271 \text{ m}^3\text{/hr}}{100 \text{ cycles/hr}} = 2.71 \text{ m}^3\text{/cycle}$

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 m^3 (3.75 yd^3) bucket would provide the required capacity.

5. *MACHINE SELECTION*

The bucket size required and material density lead to the choice of a 950G with a 2.9 m^3 (3.75 yd^3) 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 m^3 × 1660 kg/m^3 = 4814 kg
(3.75 yd^3 × 2800 lb/yd^3 = 10,500 lb)

One half of full turn static tipping load for the 950G with a 2.9 m^3 (3.75 yd^3) General Purpose Bucket is 5259 kg (11,591 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 m^3 (yd^3). Remember that bucket fill factor, material density and cycle time are at best close estimates.

Example problem:

A Wheel Loader must produce 230 m^3 (300 yd^3) 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/m^3 (3000 lb/yd^3).

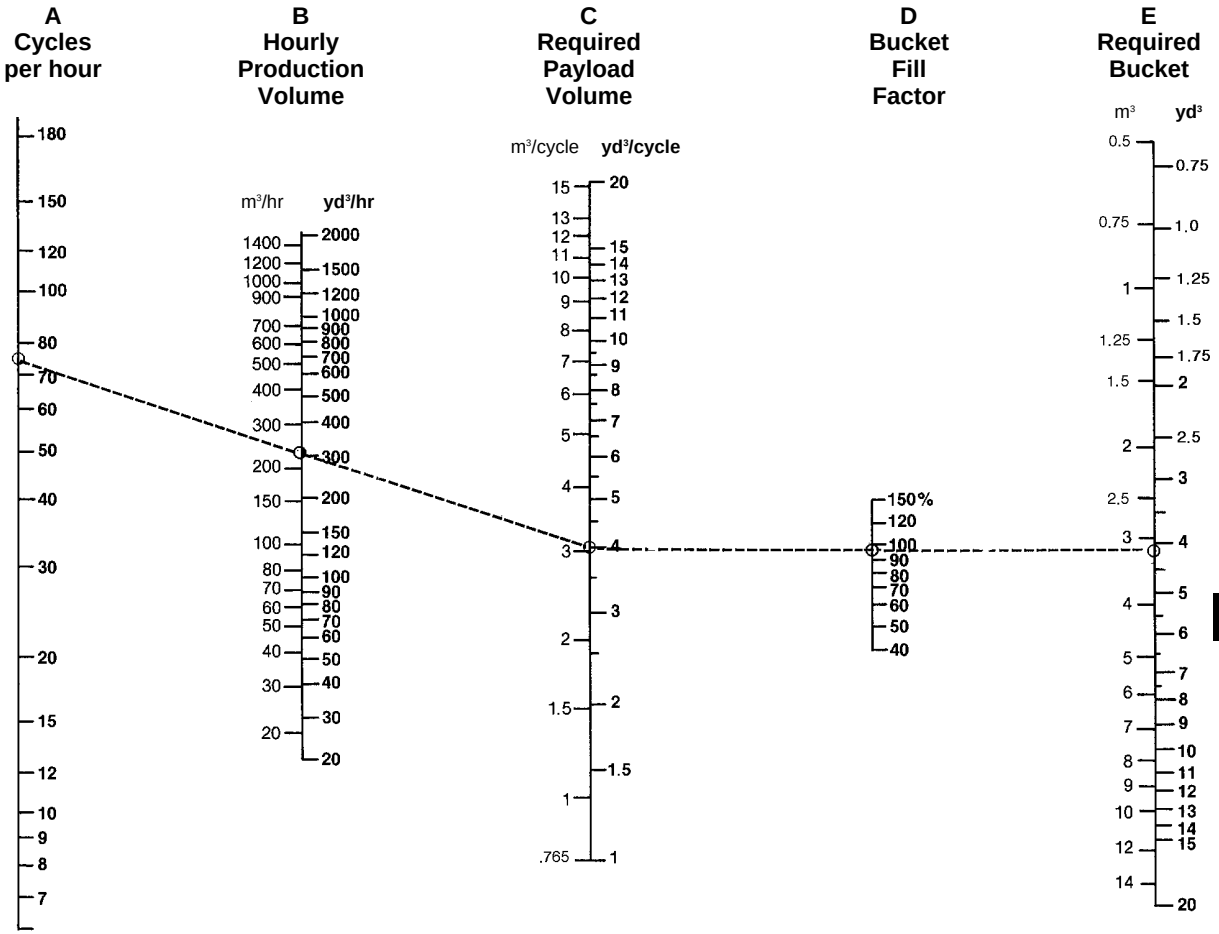
Determine bucket size and machine model.

Solution:

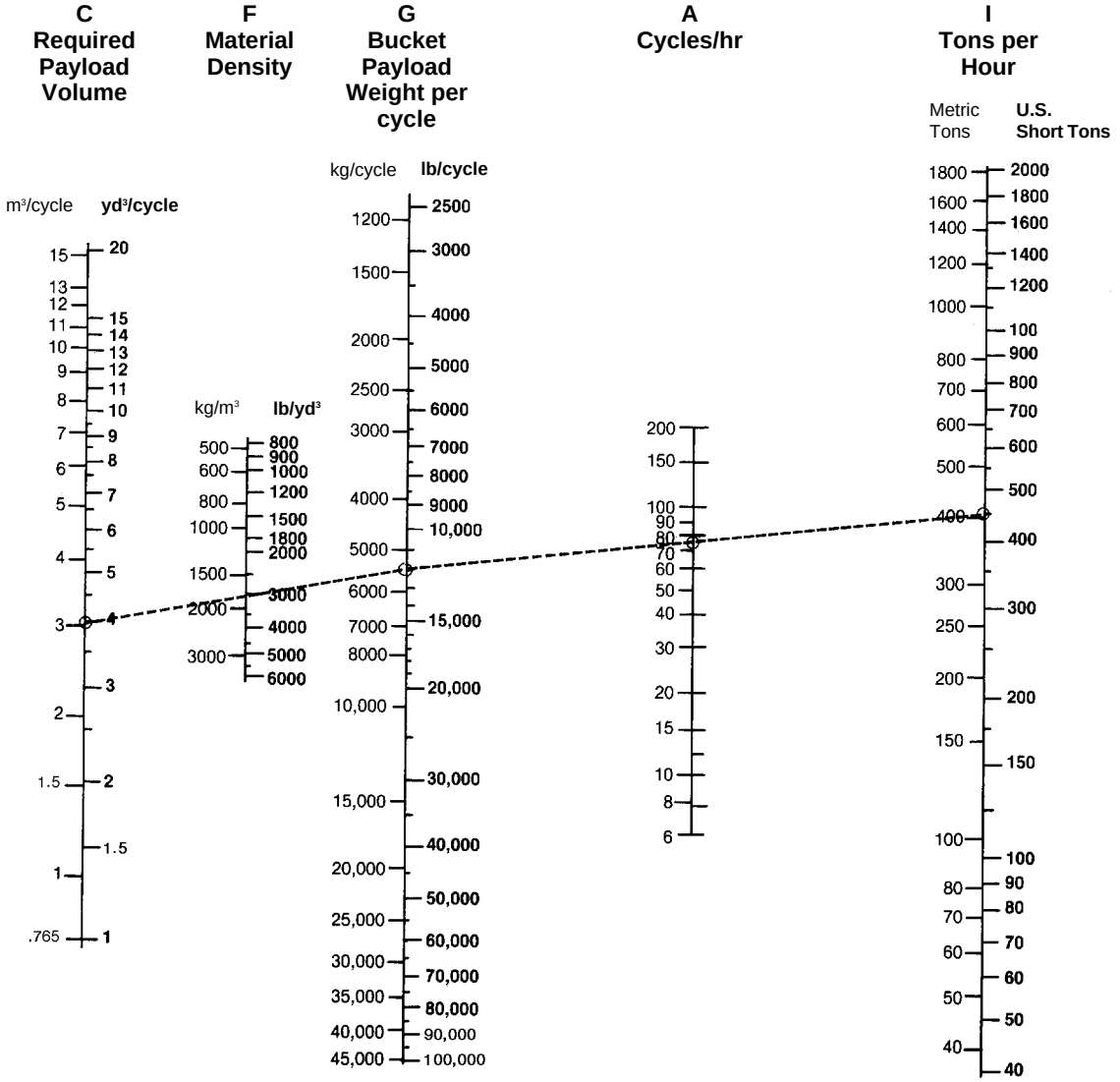
At full efficiency, the Wheel Loader will cycle 100 times per hour. Since only an average of 45 minutes are available, only 75 cycles will be completed.

Starting on Scale A at 75 cycles per hour draw a straight line intersecting 230 m^3/hr (300 yd^3/hr) on Scale B and extending it on to Scale C giving 3 m^3/cycle (4 yd^3/cycle) required payload. Follow solution steps 1-10.

1. Enter required hourly production on Scale B 230 m^3/hr (300 yd^3/hr).
2. Enter cycles per hour on Scale A (60 ÷ .6 = 100 × .75 = 75 cycles/hr).
3. Connect A thru B to C. This shows a required payload of 3 m^3 (4 yd^3) per cycle.
4. Enter estimated bucket fill factor on Scale D (0.95).
5. Connect C thru Scale D to E for required bucket size 3 m^3 (4 yd^3).
6. Transfer cycles per hour Scale A and required payload Scale C to the following page.



7. Enter material density on Scale F 1780 kg/m³ (3000 lb/yd³).
8. Connect C thru Scale F to Scale G to give payload weight per cycle 5300 kg (11,500 lb).
9. 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 950G with 3.1 m³ (4 yd³) bucket is dependent on material density and bucket capacity (see bucket selection pages that follow).
10. For hourly tonnage, draw a straight line from Scale G thru Scale A to Scale I 400 metric tons (450 U.S. tons).



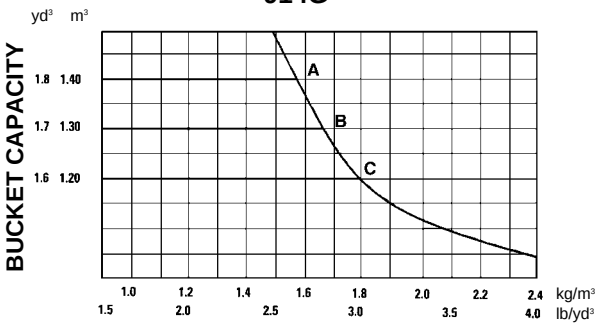
902

Bucket Type	Rated Capacity		Maximum Material Density	
	m³	yd³	kg/m³	lb/yd³
General Purpose	0.6	**0.78**	2100	**3540**
Light Material	1.0	**1.31**	1230	**2070**
Stone Sieve	0.6	**0.78**	2050	**3460**
Multi-Purpose	0.6	**0.78**	1900	**3200**
High Dump	0.6	**0.78**	2000	**3370**

906

Bucket Type	Rated Capacity		Maximum Material Density	
	m³	yd³	kg/m³	lb/yd³
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**

914G

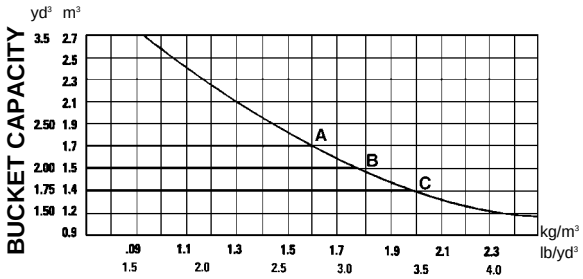


MATERIAL DENSITY (THOUSANDS)

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

924F



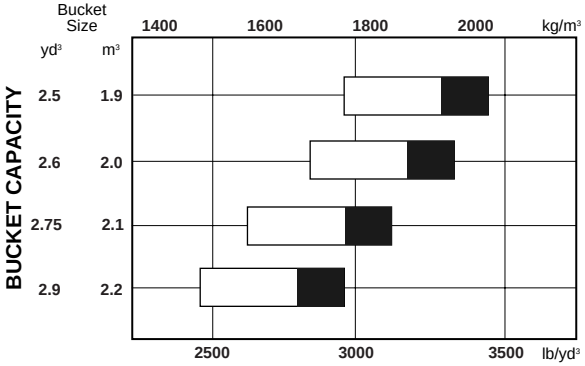
MATERIAL DENSITY (THOUSANDS)

KEY

A — 1.7 m³ **(2.25 yd³)** Loose Material Bucket, bolt-on edge
1.7 m³ **(2.25 yd³)** Loose Material Bucket, bolt-on teeth and segments
B — 1.5 m³ **(2.00 yd³)** Loose Material Bucket, bolt-on teeth
1.5 m³ **(2.00 yd³)** Excavating Bucket, bolt-on edge
1.5 m³ **(2.00 yd³)** Excavating Bucket, bolt-on teeth and segments
C — 1.4 m³ **(1.75 yd³)** Excavating Bucket, bolt-on teeth

12

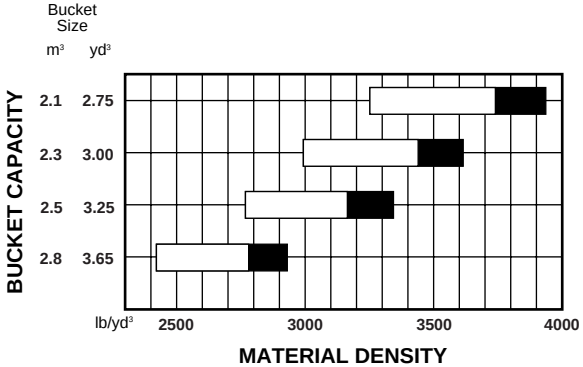
928G



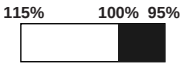
MATERIAL DENSITY

% = Bucket Fill Factor

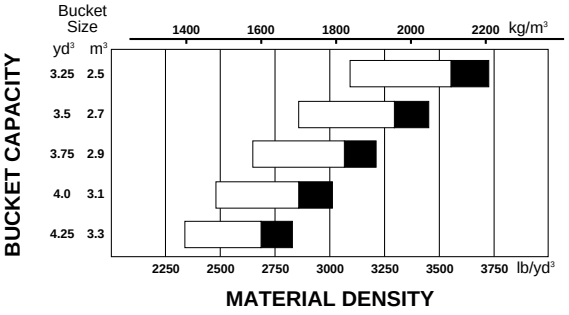
938G



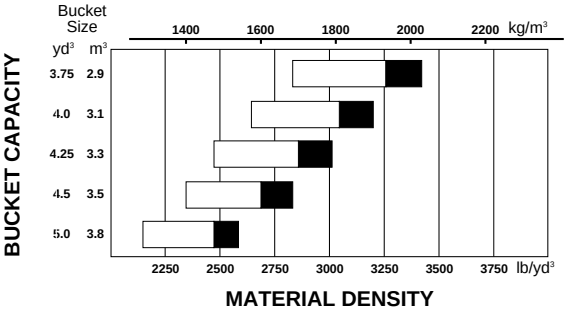
MATERIAL DENSITY



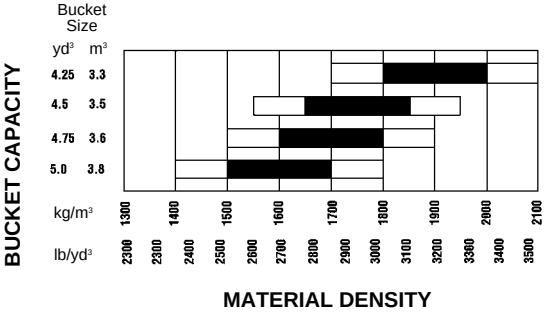
950G



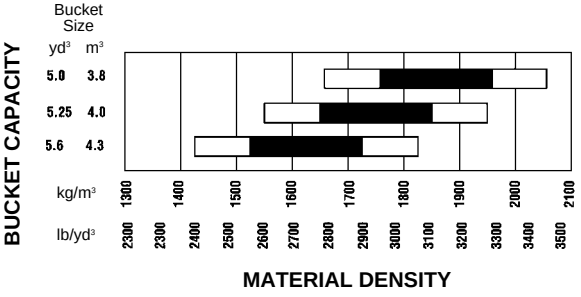
962G



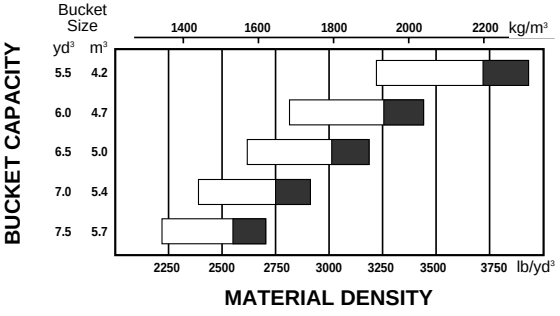
966F Series II



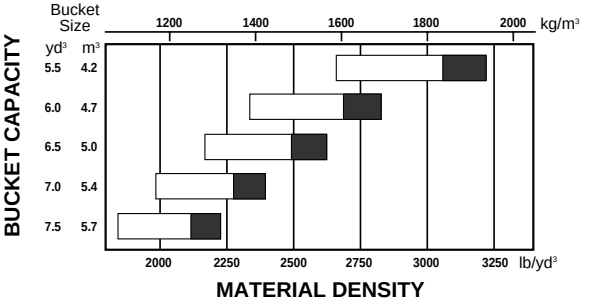
970F

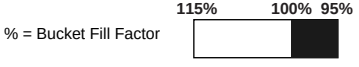


980G

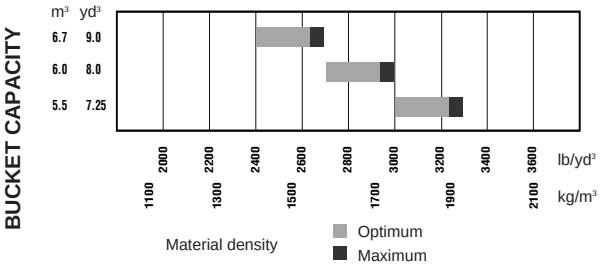


980G High Lift





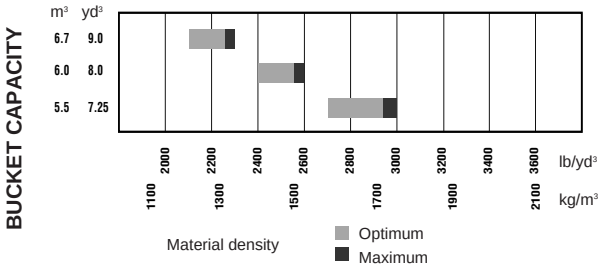
988F Series II



MATERIAL DENSITY (THOUSANDS)

NOTE: Percentages represent bucket fill factors

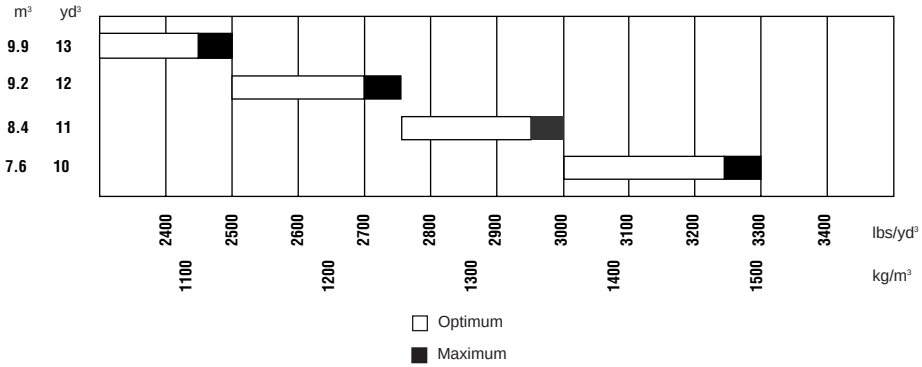
988F Series II High Lift



MATERIAL DENSITY (THOUSANDS)

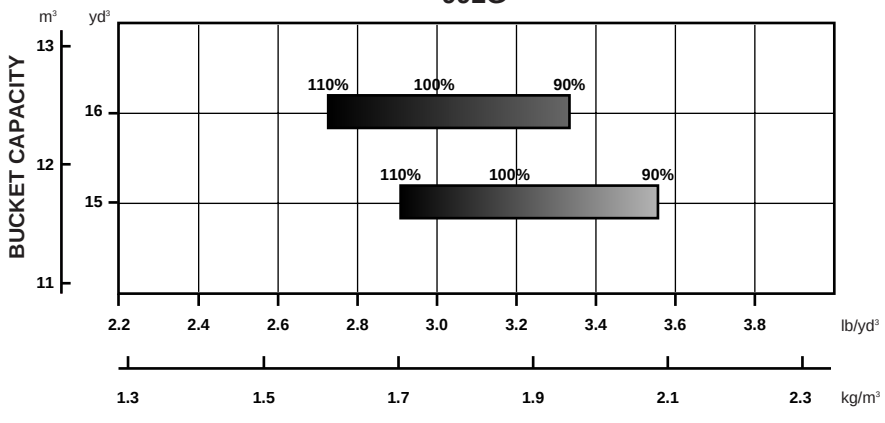
NOTE: Percentages represent bucket fill factors

990 Series II



MATERIAL DENSITY (THOUSANDS)

992G

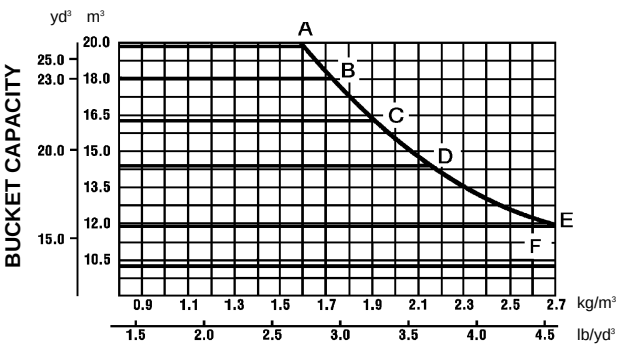


MATERIAL DENSITY (THOUSANDS)

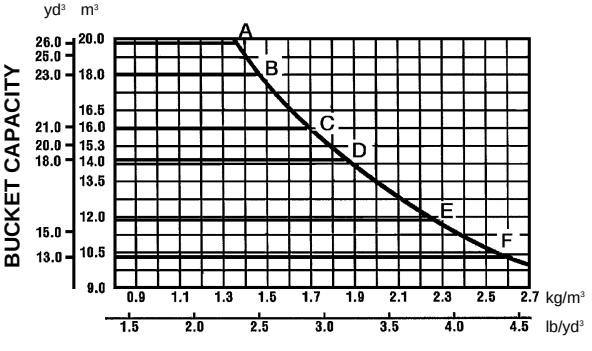
NOTE: Percentages represent bucket fill factors

12

994

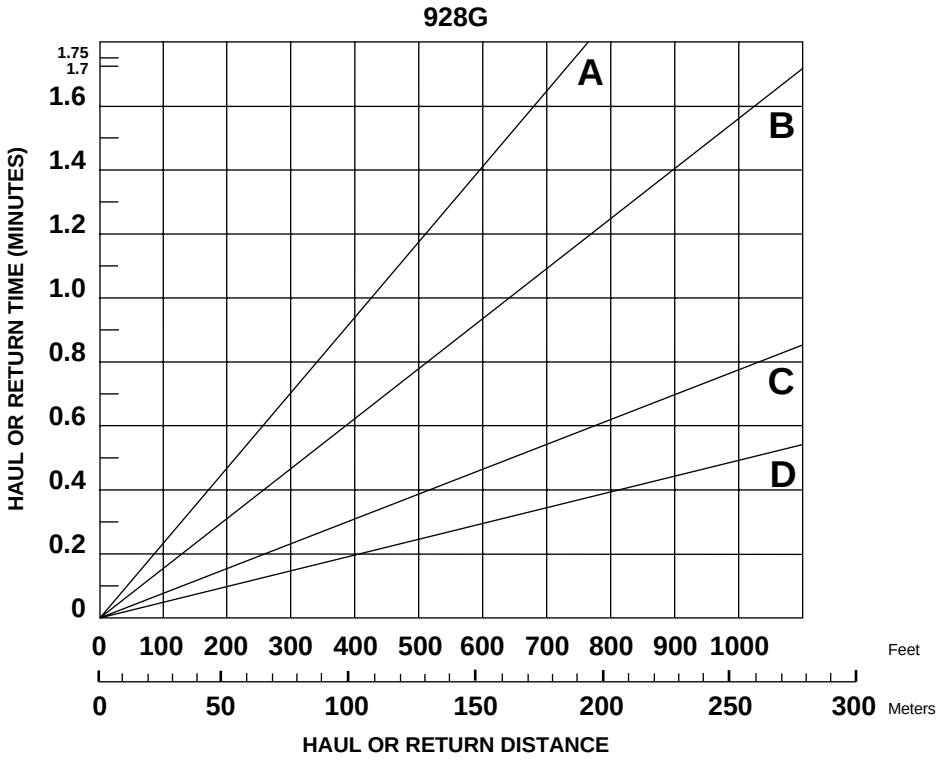


994 High Lift



KEY

A — 20.0 m³ **(26.0 yd³)** Rock Bucket Spade edge with teeth
B — 18.0 m³ **(23.0 yd³)** Rock Bucket Spade edge with teeth
C — 16.0 m³ **(21.0 yd³)** Rock Bucket Spade edge with teeth and segments
D — 14.0 m³ **(18.0 yd³)** Rock Bucket Spade edge with teeth and segments
E — 10.0 m³ **(13.0 yd³)** General Purpose Bucket Spade edge with teeth

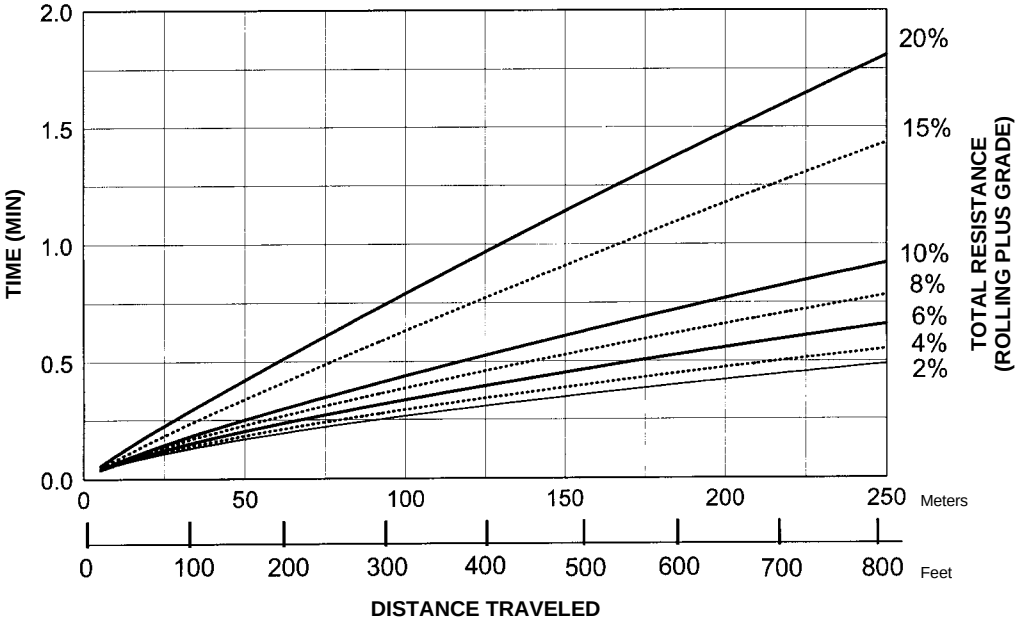


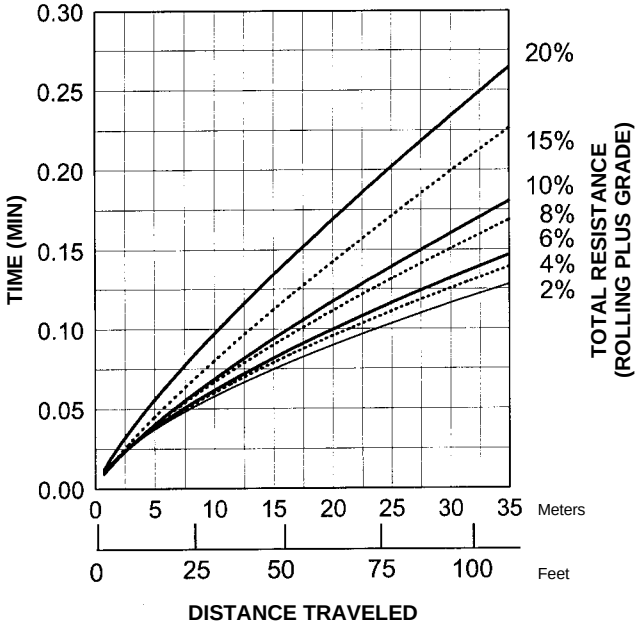
KEY

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.

938G TRAVEL TIME — LOADED

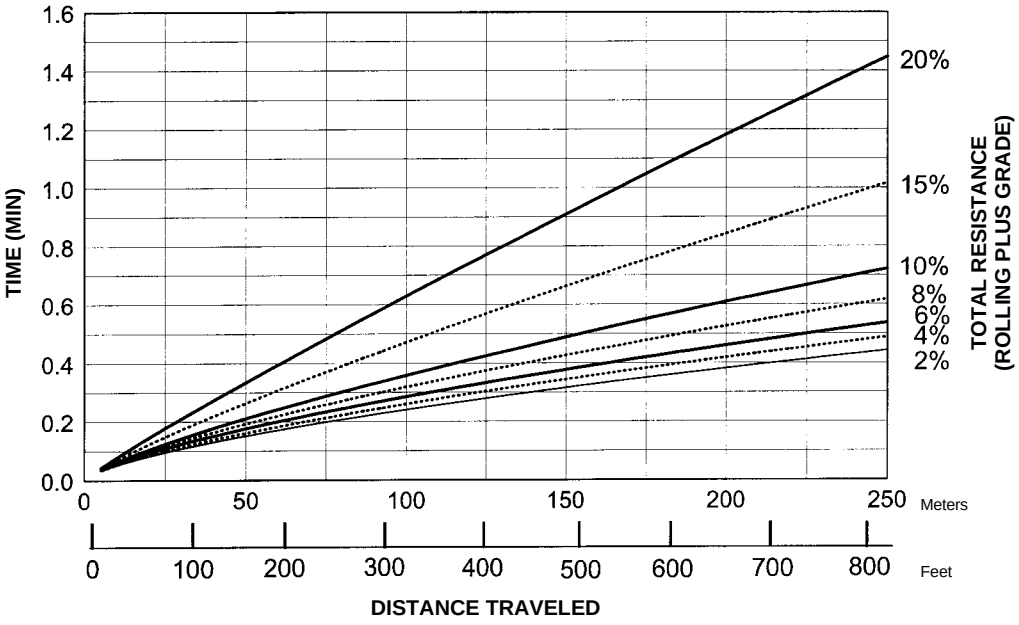


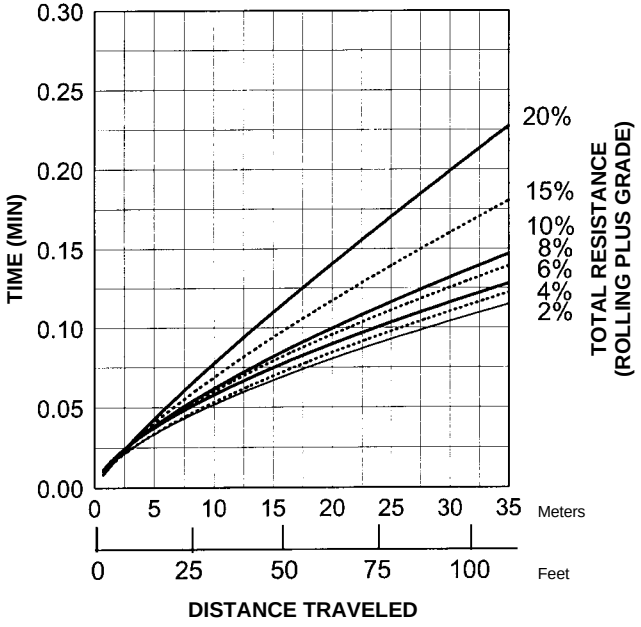


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

938G TRAVEL TIME — EMPTY

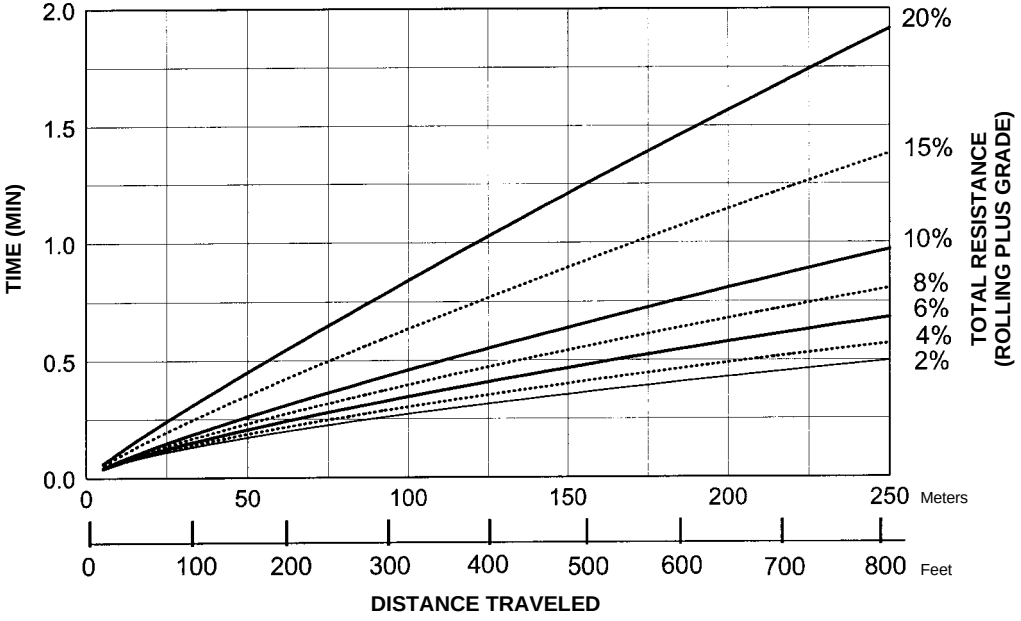


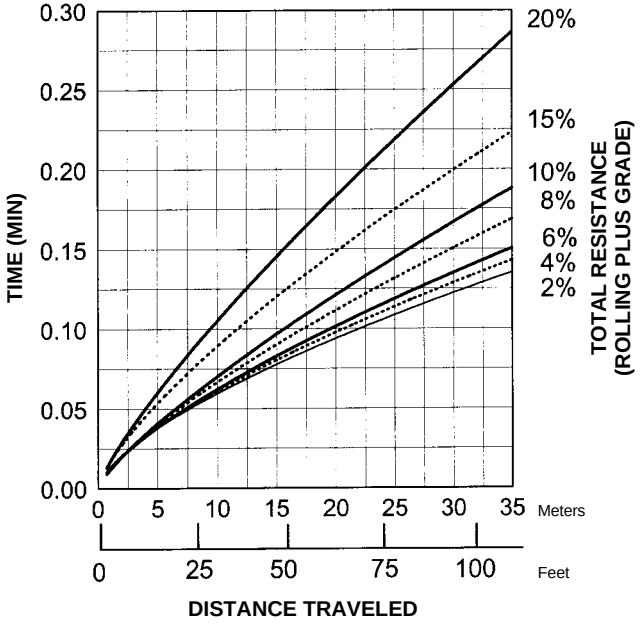


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

950G TRAVEL TIME — LOADED

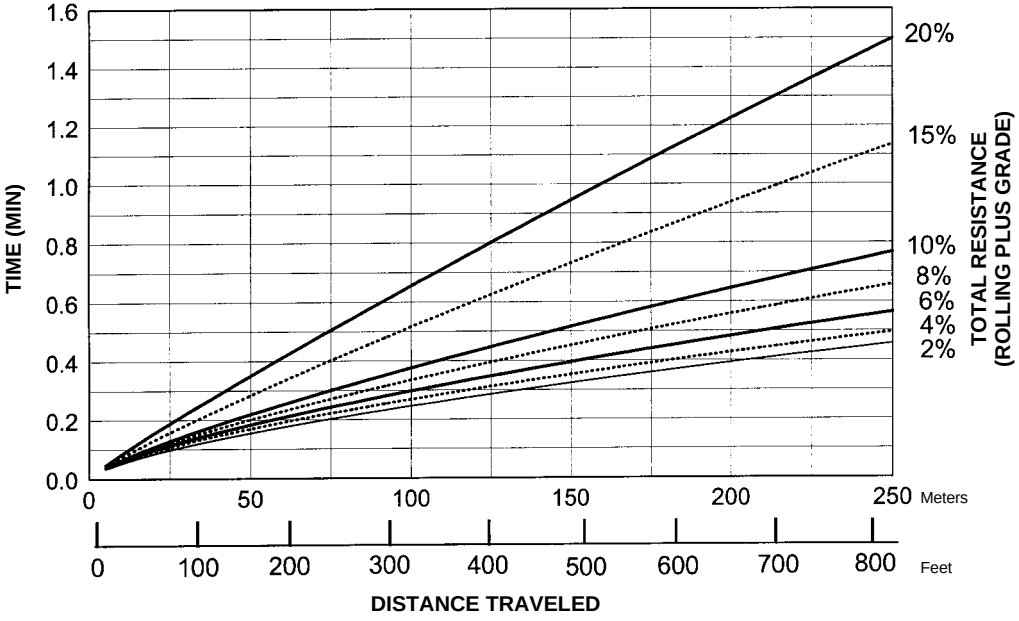


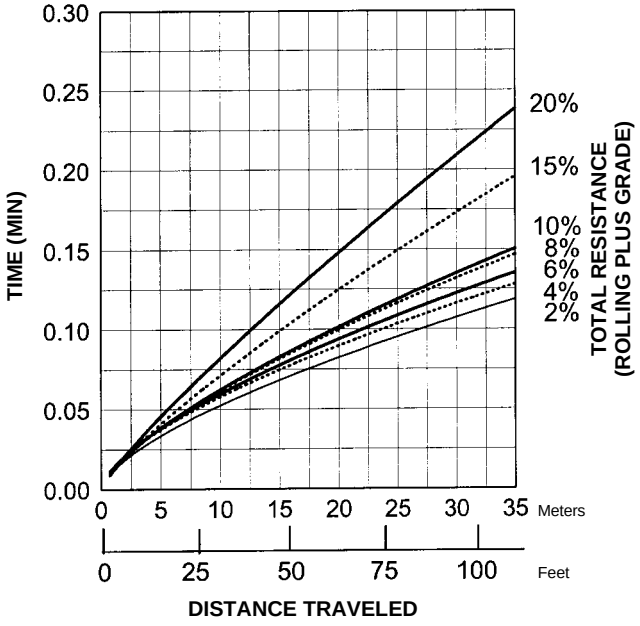


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

950G TRAVEL TIME — EMPTY

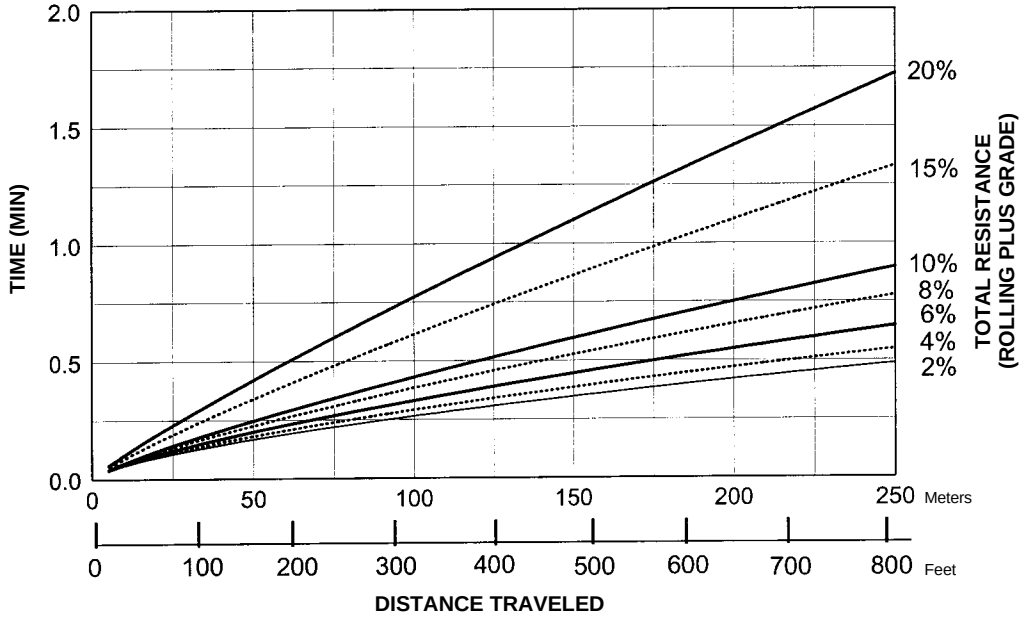


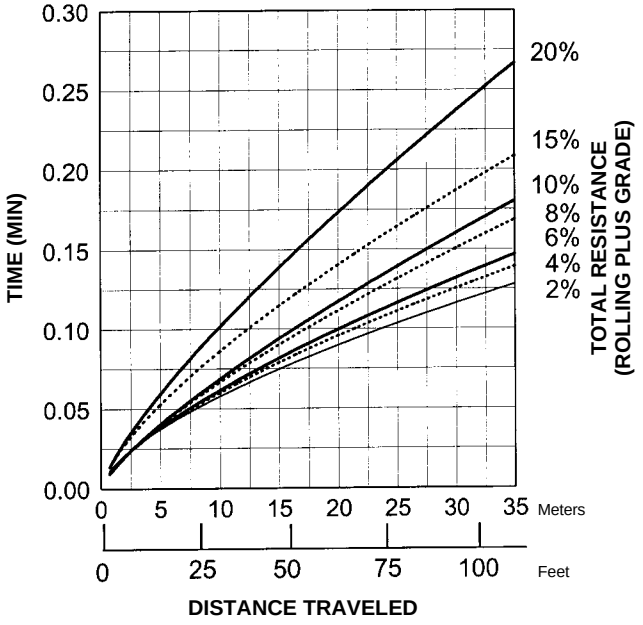


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

962G TRAVEL TIME — LOADED

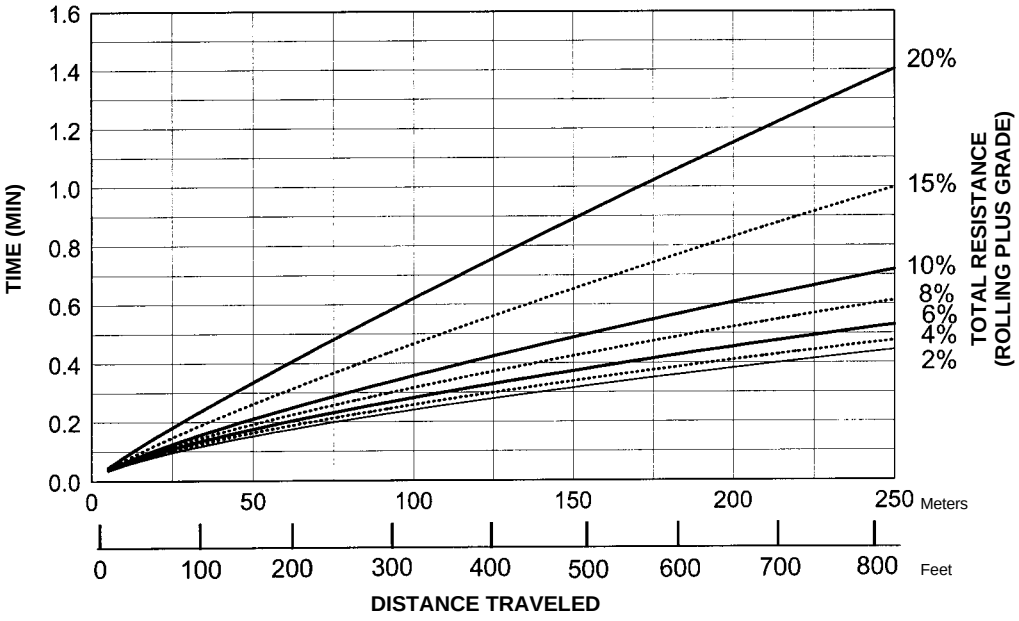


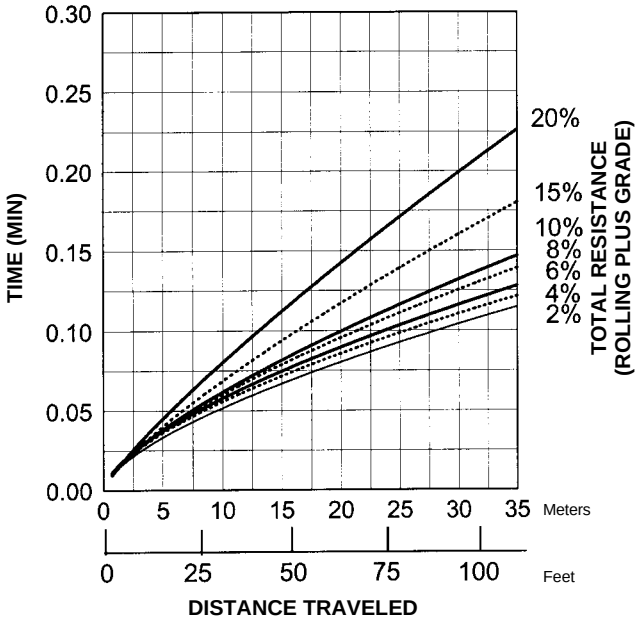


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

962G TRAVEL TIME — EMPTY

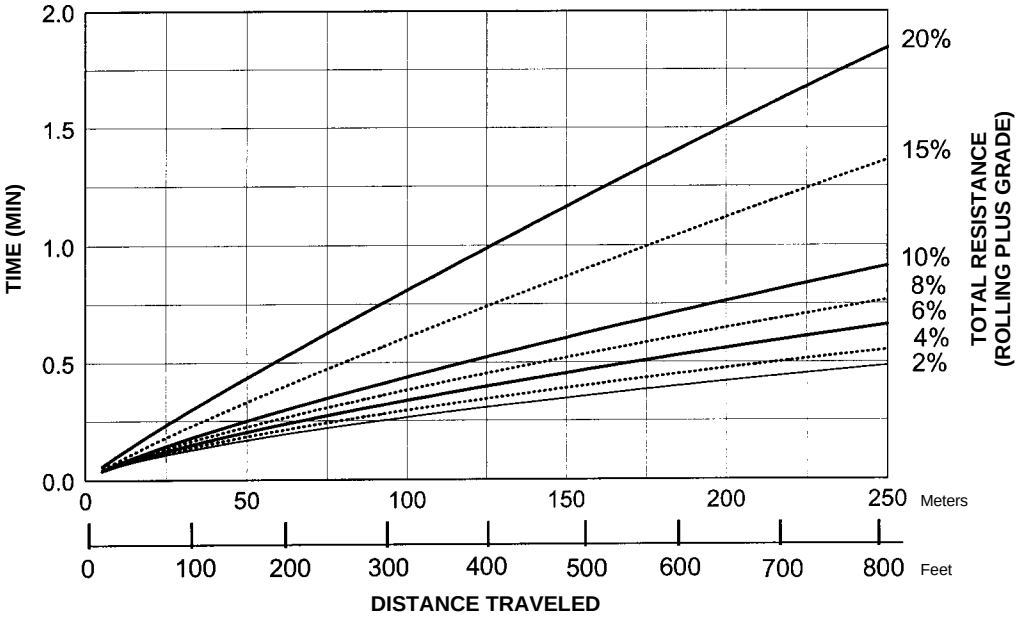


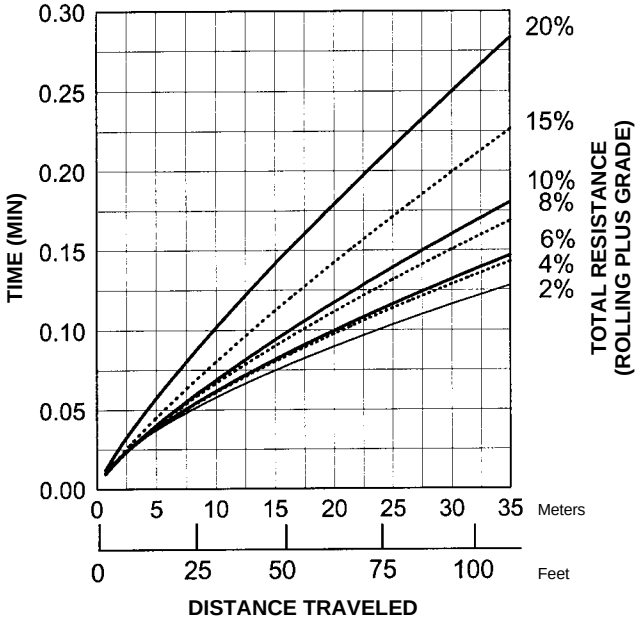


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

966F SERIES II TRAVEL TIME — LOADED

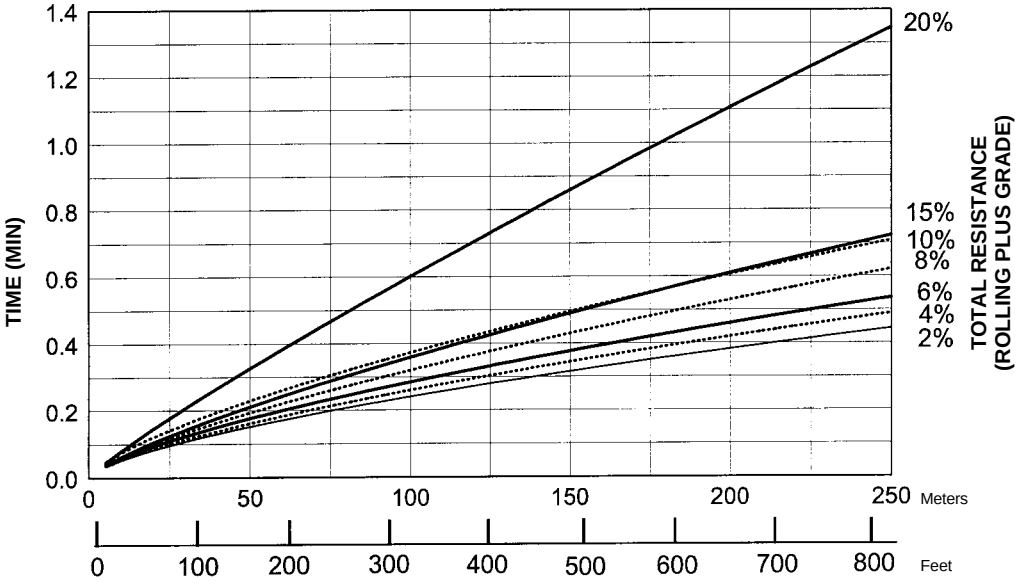


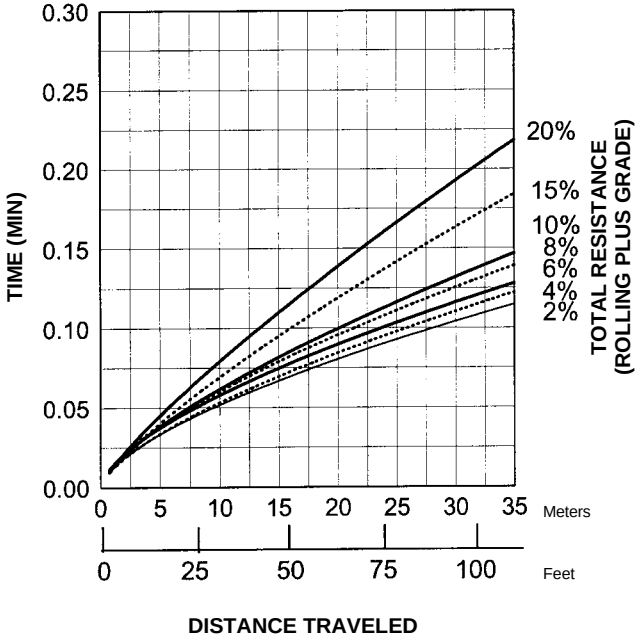


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

966F SERIES II TRAVEL TIME — EMPTY

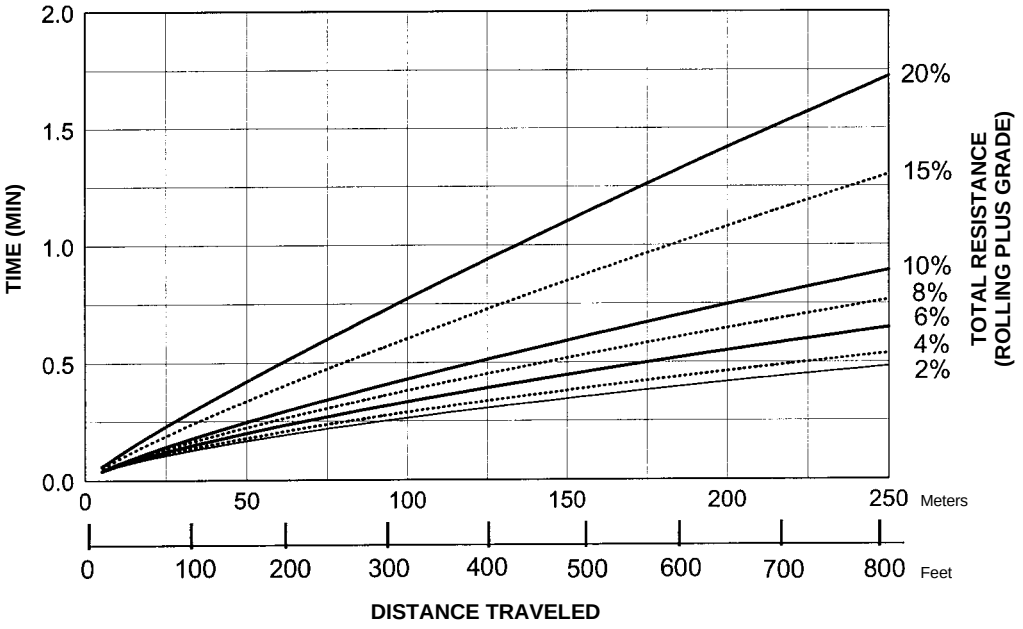


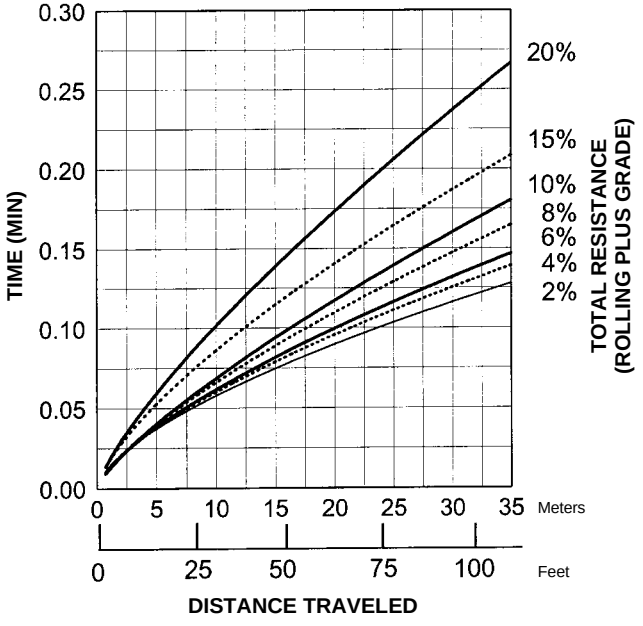


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

970F MATERIAL HANDLER TRAVEL TIME — LOADED

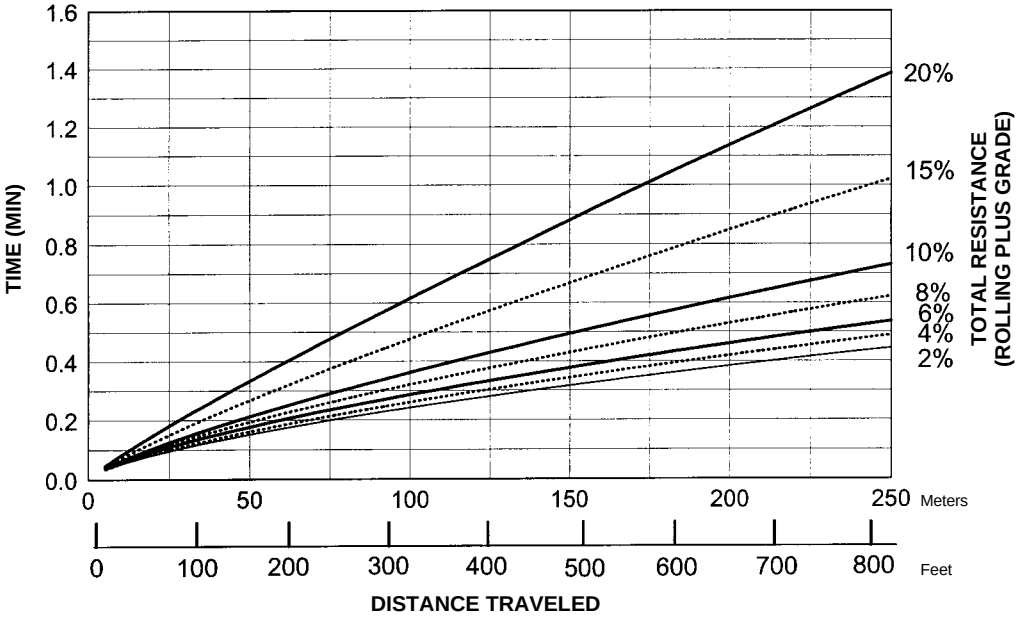


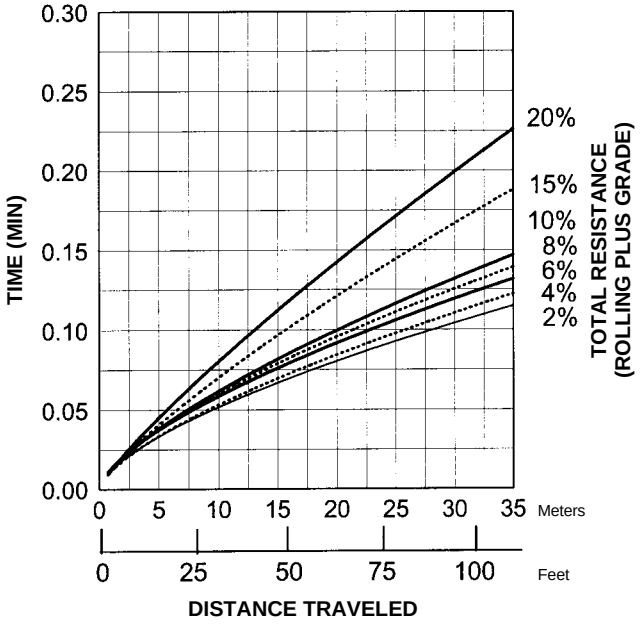


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

970F MATERIAL HANDLER TRAVEL TIME — EMPTY

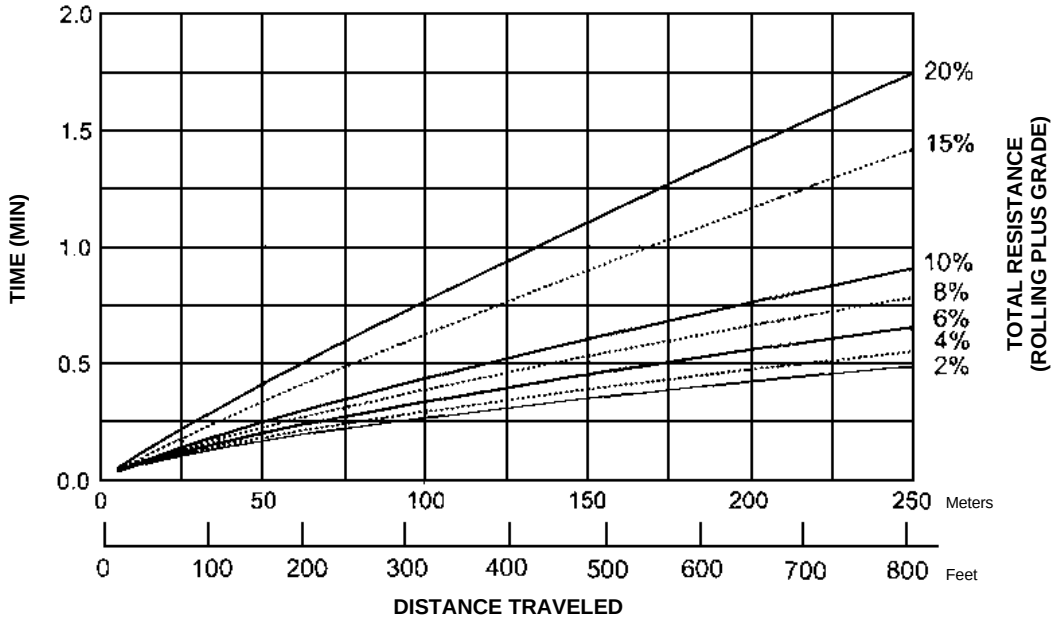


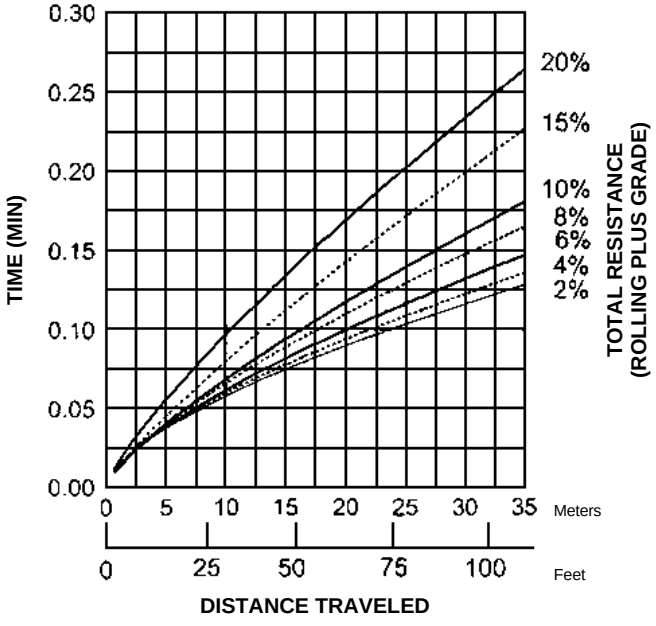


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

980G TRAVEL TIME — LOADED

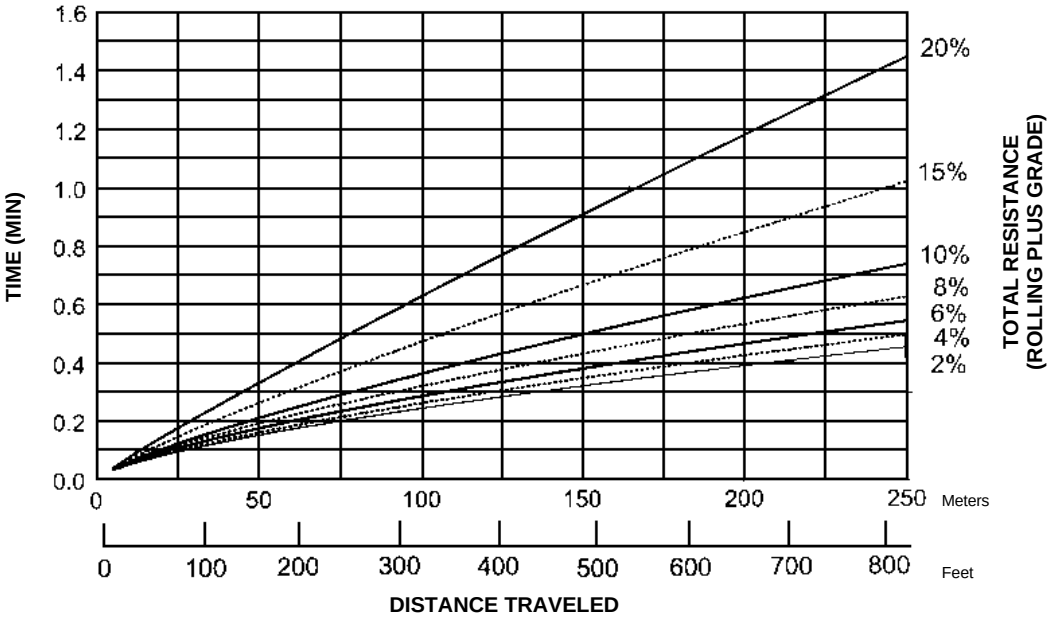


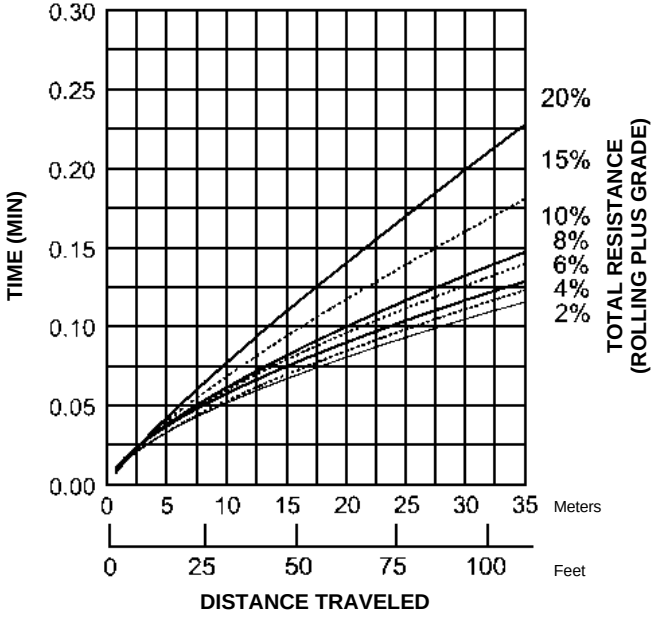


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

980G TRAVEL TIME — EMPTY

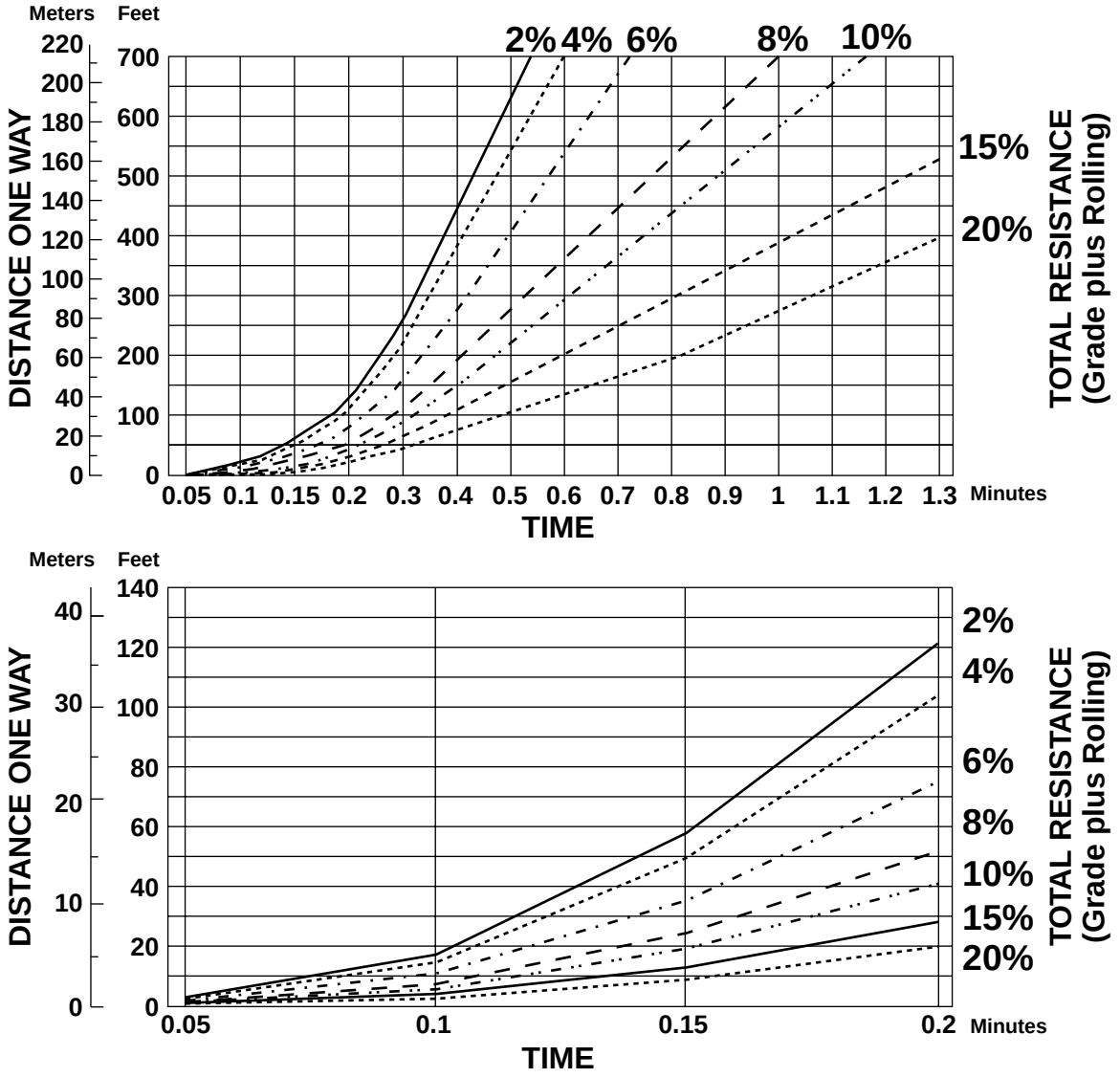




NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

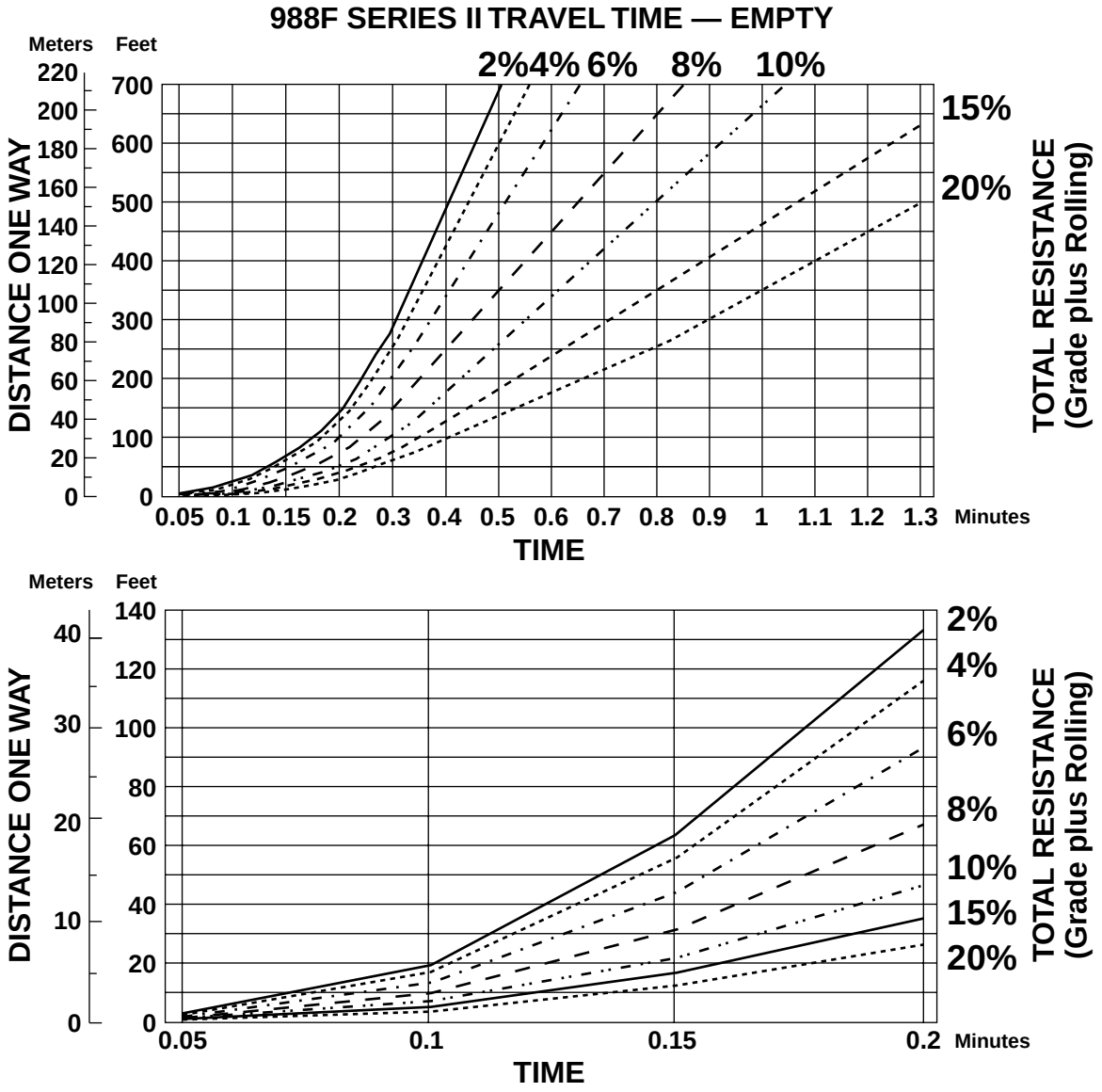
In load and carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

988F SERIES II TRAVEL TIME — LOADED

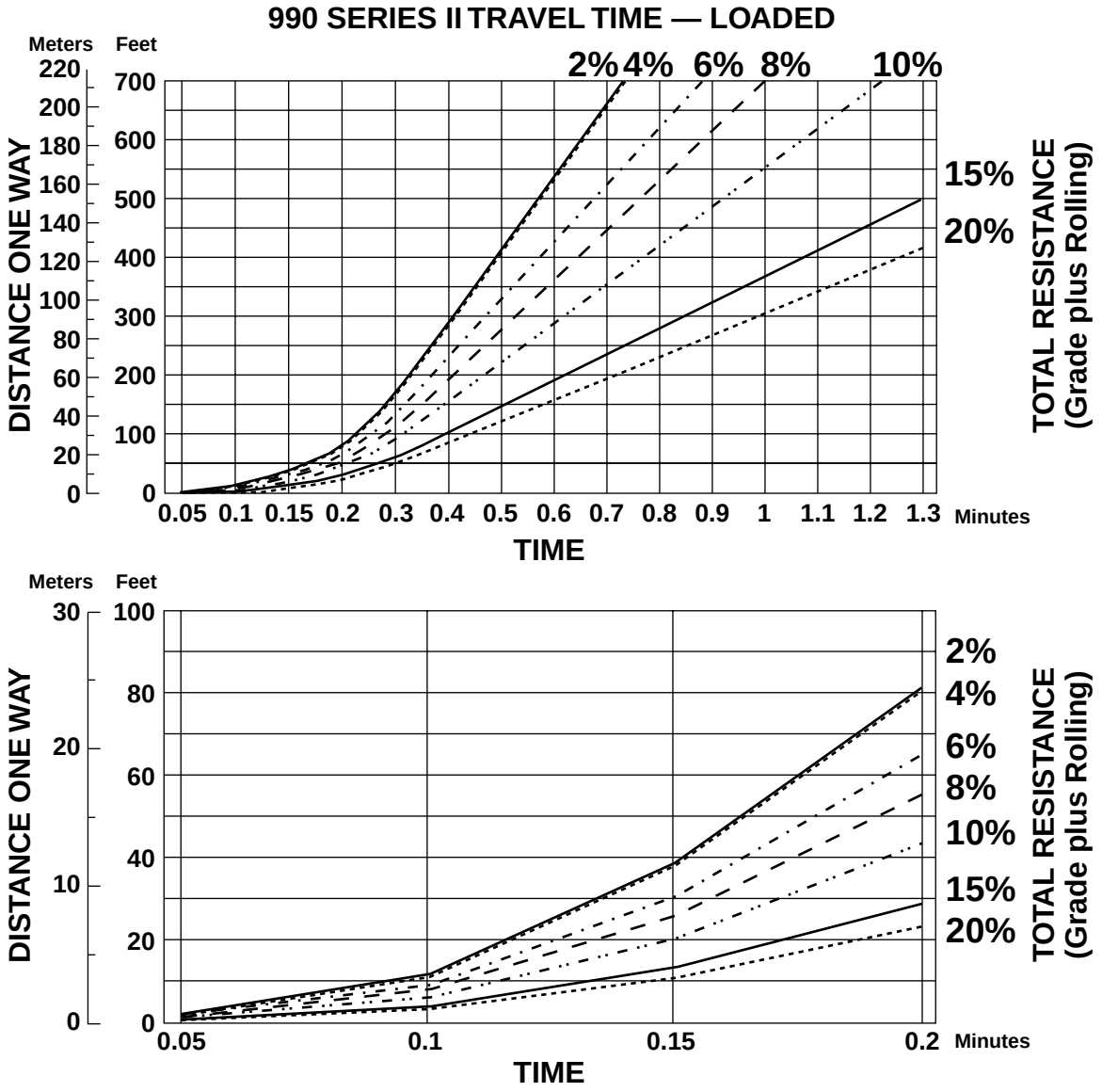


NOTE: Curves assume use of highest operating speed attainable: 4th gear for 2%-6% TR, 3rd gear for 8%-10% TR, 2nd gear for 15% and 20% TR.

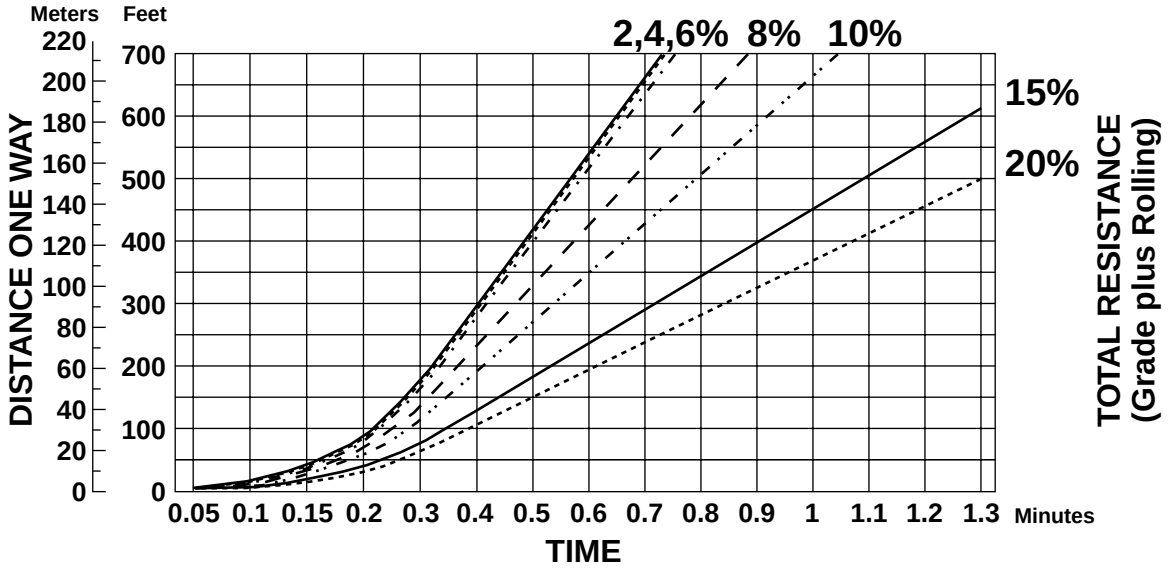
In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

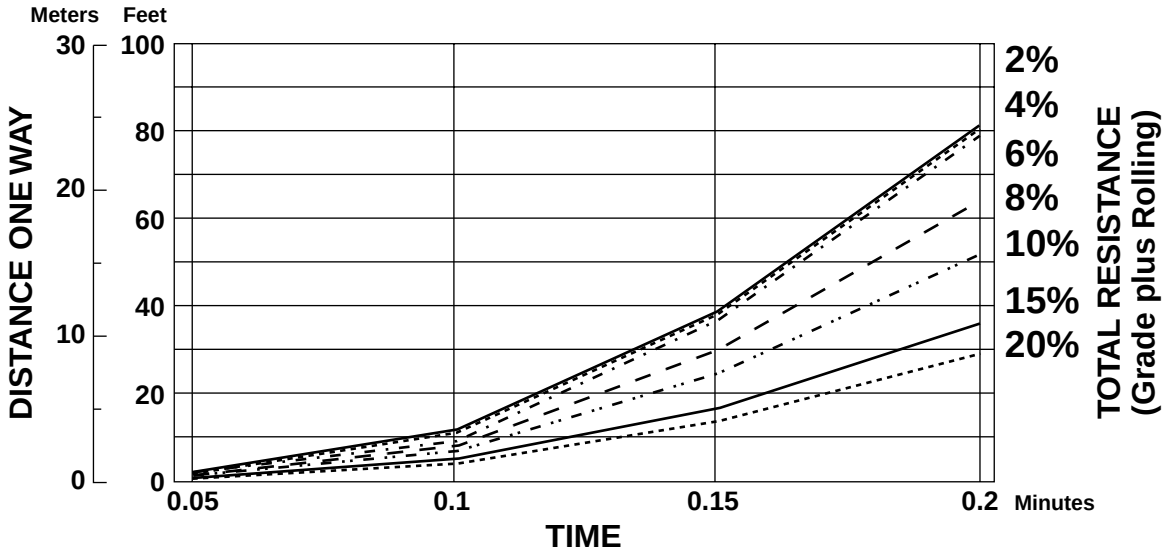

988F SERIES II TRAVEL TIME — EMPTY
Meters
Feet
DISTANCE ONE WAY
220
200
180
160
140
120
100
80
60
40
20
0
700
600
500
400
300
200
100
0
2%
4%
6%
8%
10%
15%
20%
TOTAL RESISTANCE
(Grade plus Rolling)
0.05 0.1 0.15 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3
Minutes
TIME
Meters
Feet
DISTANCE ONE WAY
40
30
20
10
0
140
120
100
80
60
40
20
0
2%
4%
6%
8%
10%
15%
20%
TOTAL RESISTANCE
(Grade plus Rolling)
0.05
0.1
0.15
0.2
Minutes
TIME

12


990 SERIES II TRAVEL TIME — LOADED
Meters
Feet
DISTANCE ONE WAY
220
200
180
160
140
120
100
80
60
40
20
0
700
600
500
400
300
200
100
0
2%
4%
6%
8%
10%
15%
20%
TOTAL RESISTANCE
(Grade plus Rolling)
0.05
0.1
0.15
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
Minutes
TIME
Meters
Feet
DISTANCE ONE WAY
30
20
10
0
100
80
60
40
20
0
2%
4%
6%
8%
10%
15%
20%
TOTAL RESISTANCE
(Grade plus Rolling)
0.05
0.1
0.15
0.2
Minutes
TIME

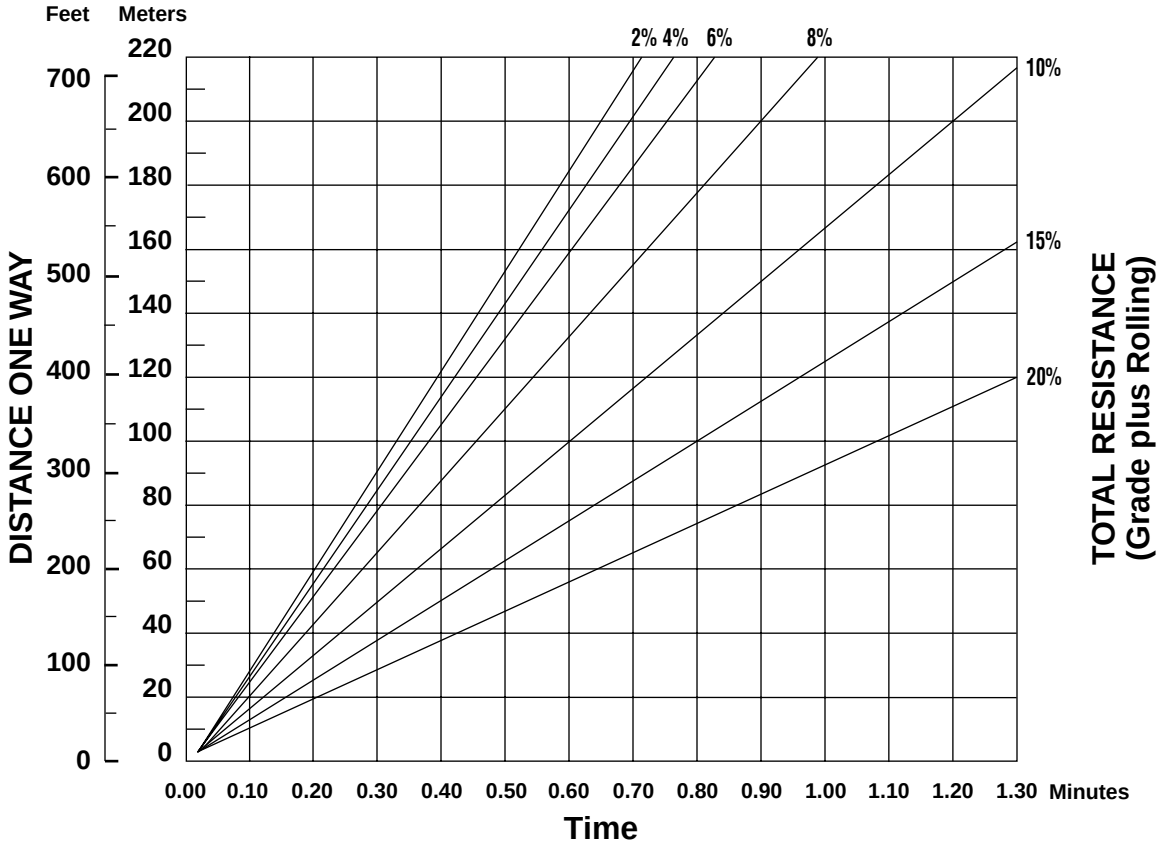
990 SERIES II TRAVEL TIME — EMPTY

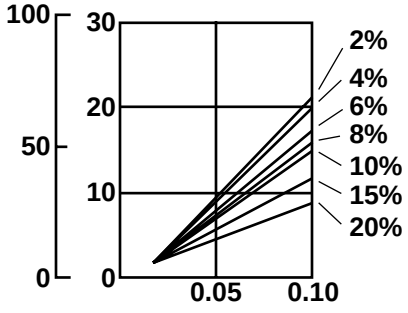




12

992G TRAVEL TIME — LOADED

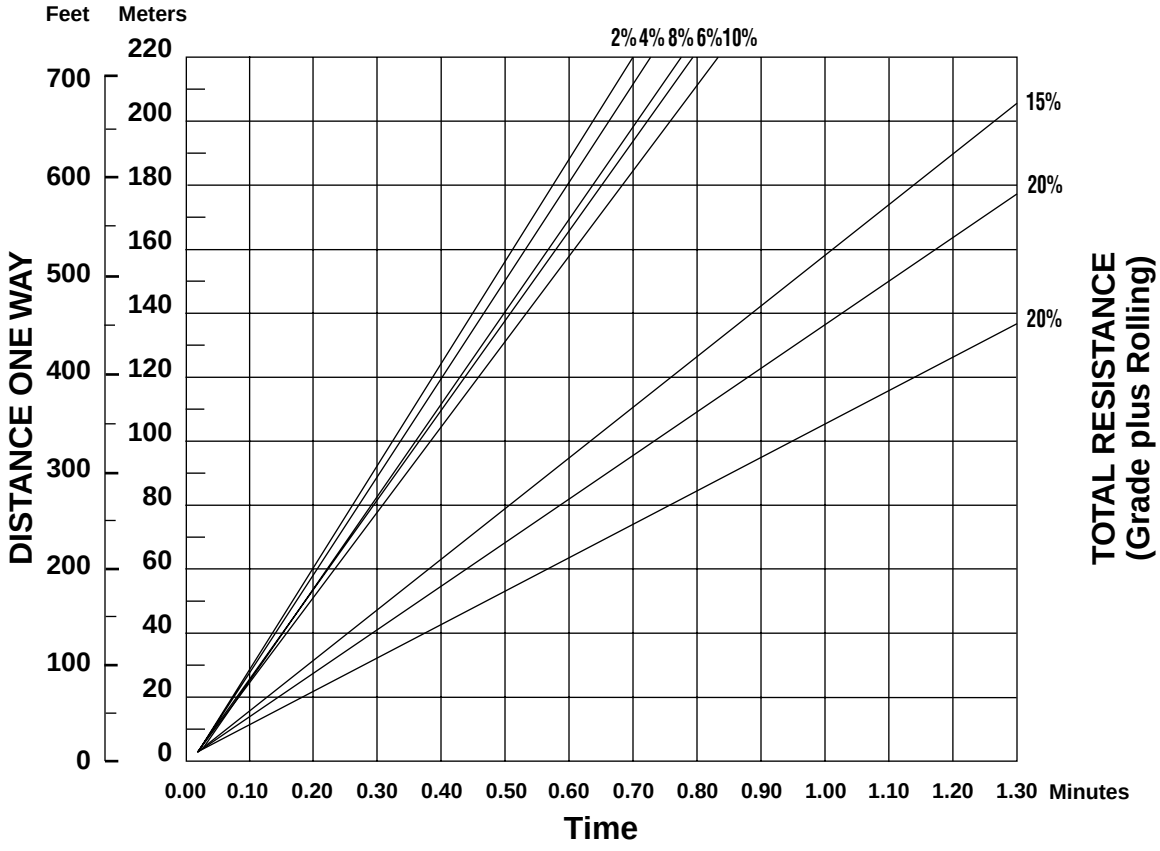


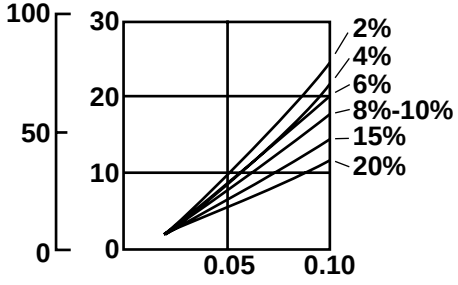


NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

In load-and-carry applications it is important to consult the tire manufacturer on Ton-MPH ratings and pressure recommendations.

992G TRAVEL TIME — EMPTY

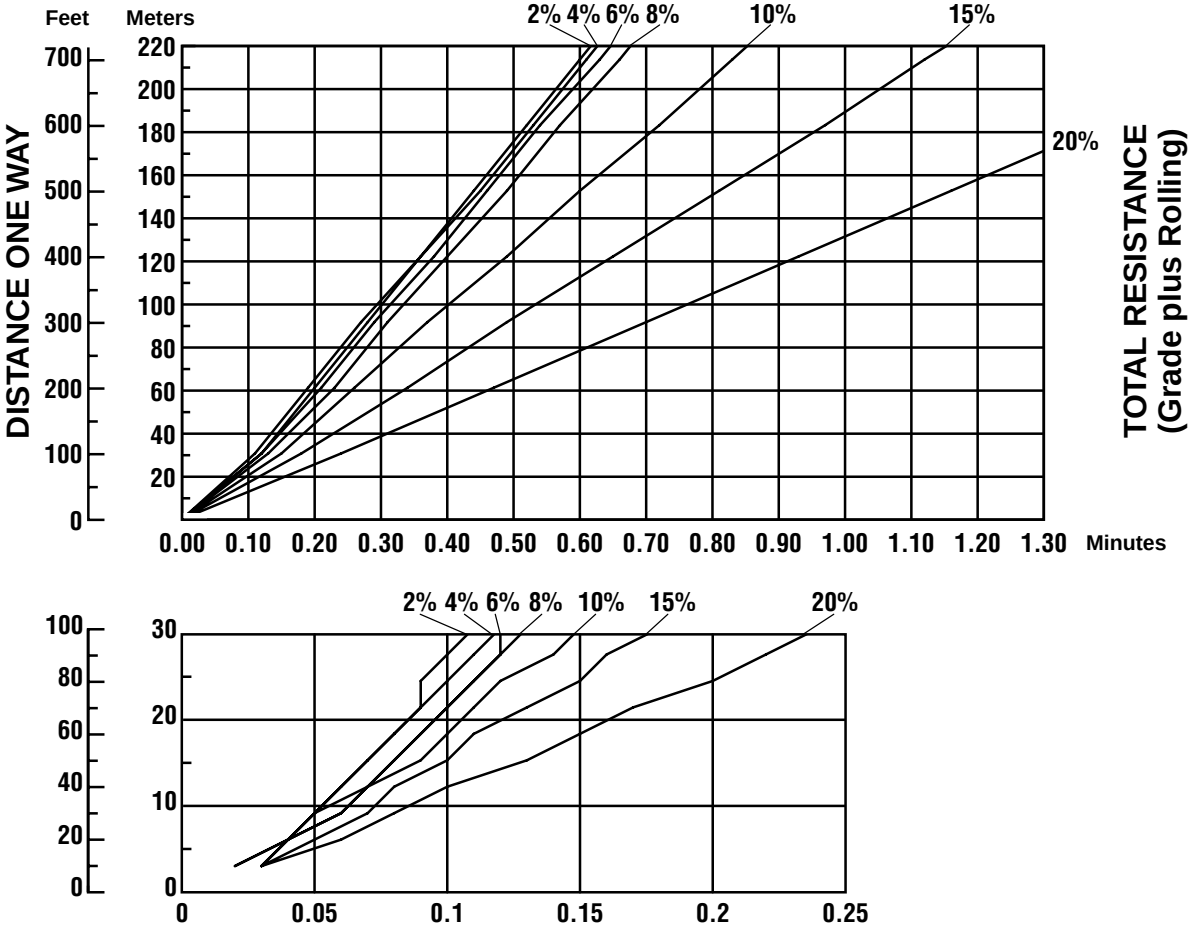


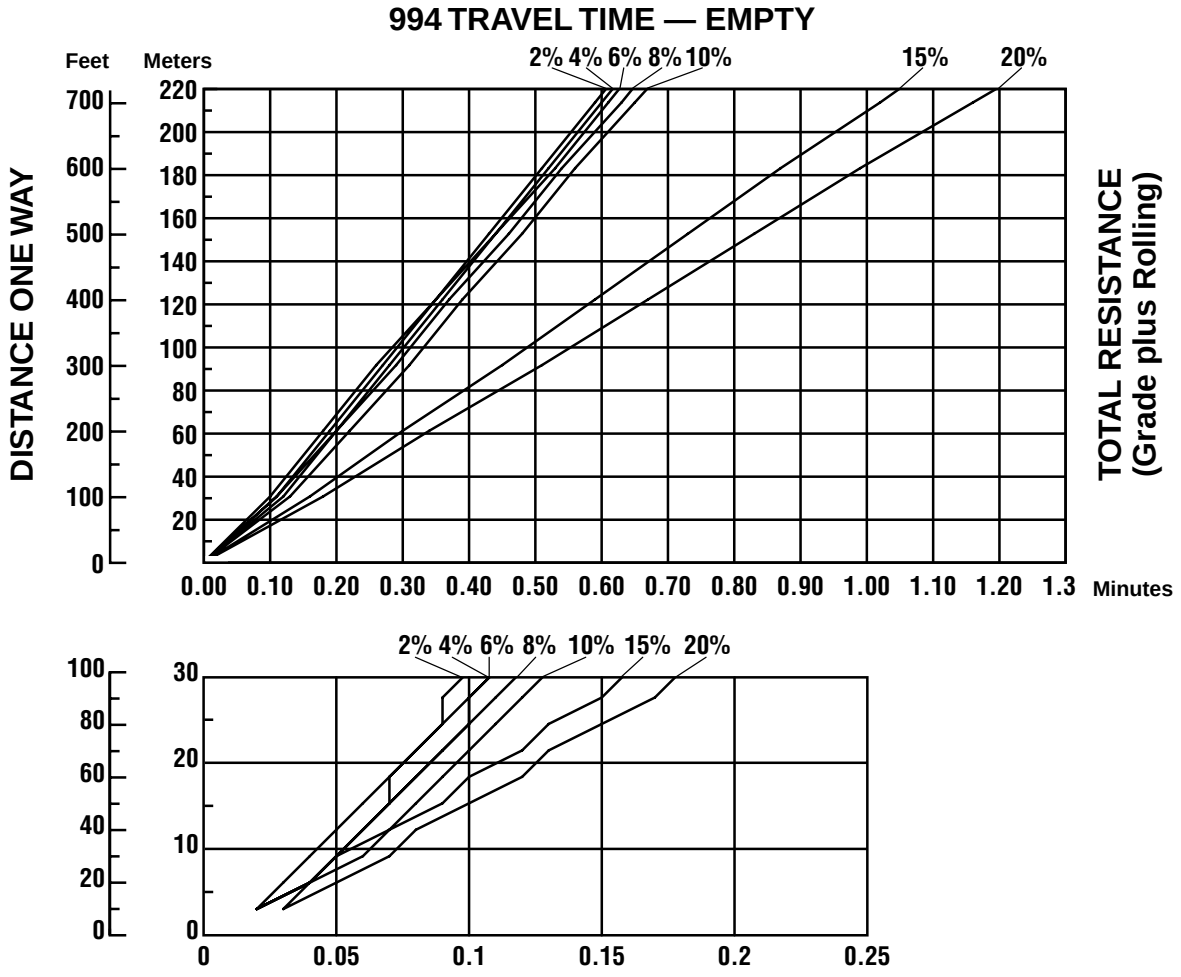


NOTE: Curves assume use of highest operating speed attainable: 3rd gear for 2%-10% TR, 2nd gear for 15% TR and 1st gear for 20% TR.

12

994 TRAVEL TIME — LOADED




994 TRAVEL TIME — EMPTY
Feet
Meters
2% 4% 6% 8% 10%
15%
20%
DISTANCE ONE WAY
TOTAL RESISTANCE
(Grade plus Rolling)
700
600
500
400
300
200
100
0
220
200
180
160
140
120
100
80
60
40
20
0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.3
Minutes
2% 4% 6% 8% 10% 15% 20%
100
80
60
40
20
0
30
20
10
0
0 0.05 0.1 0.15 0.2 0.25

Production Estimating Table
● m^3 or yd^3/60 min. hour

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
60 Min Hr	100%	Bucket Size × 1.00
55	91%	.95
50	83%	.90
45	75%	.85
40	69%	.80
—	—	.75

Metric Tons ● 1600 kg Lm³ (1.6 t) density

Bucket Size m³		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 m³		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**	**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

U.S. Tons ● 2700 lb/LCY (1.35 T) density

Bucket Size yd³		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 yd³		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**																
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**

Work Tools	992G	990 Series II	988F Series II	980G	970F	966F Series II	962G	950G	938G	928G	924F	914G	906	902
Quick coupler	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
Coke bucket														
Coal bucket	X	X	X	X	X	X	X	X	X	X	X	X		
Coal seam bucket	X	X												
Woodchip bucket			X	X		X		X	X	X	X	X		
Refuse bucket				X		X		X			X			
Light material bucket					X	X	X	X	X	X			X	X
Loose material bucket										X	X			
Snow bucket						X		X						
Fertilizer bucket										X	X	X		
Sand & gravel bucket				X	X	X	X	X						
Crushed rock bucket					X									
Rock bucket	X		X	X										
Skeleton rock bucket			X			X								
Slag bucket	X		X	X		X								
Bonus bucket			X											
Multi-purpose bucket						X		X	X	X	X			
Side dump bucket						X		X	X	X	X		X	X
Control discharge bucket														
Bucket with top clamp										X	X			
Tire loader														
Material handling arm			X	X		X		X	X	X	X	X		
Pallet fork	X	X	X	X		X		X	X	X	X	X	X	X
Pallet fork with top clamp						X		X	X	X	X			
Millyard fork			X	X		X		X	X	X				
Log/lumber fork						X		X	X	X	X	X		
Logging fork		X	X	X		X		X						
Core fork								X	X	X				
Grab & Grip bucket									X	X				
Straight blade			X	X					X	X	X	X		
Manual angle blade						X		X	X	X				
Hydraulic angle blade						X		X		X				
V-plow						X		X	X	X		X		
Manual reverse plow						X		X		X	X	X		
Hydraulic reverse plow						X		X		X	X	X		
Clamp rake														
Clearing rake														
Loader rake						X		X	X	X	X	X		
Hydraulic broom												X	X	X
Block handling bucket			X											
Block handling fork			X	X										
Breaker tine			X	X										
Boom clearing rake			X											
Stone seive bucket													X	X
High dump bucket													X	X
Pickup sweeper													X	X

NOTE: List is not all-inclusive. Contact Balderson for special attachment needs.

WASTE HANDLING WHEEL LOADERS

CONTENTS

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 966F Series II 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** protect from wire, string, strapping and other debris from wrapping around 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** eliminates debris larger than what the radiator core will pass.
- **Suction fan** on 966F II pulls cooler outside air through the prescreener and radiator helping prevent debris from entering through other openings. Reduces trash build-up and fire risk.
- **Air conditioning** features a roof mounted condenser improves air conditioning and engine cooling efficiency. Standard on some models, optional on others.

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 stockpiling capability. A critical feature when incoming volumes exceed conveyor capacity, floor space or when a unit goes down.
- **Traction control system (TCS)** option for 938G 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
- **Articulation guards** (938G only) help protect components in hitch area from damage.
- **Bolt-on power train and crankcase guards** on 938G and 950G help protect from contact damage.

Attachments

- **Refuse bucket** has excellent dozing and stockpiling 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 attachments in a host of applications.



MODEL	938G WHA		950G WHA		966F Series II WHA	
Flywheel Power	108 kW	**145 hp**	127 kW	**170 hp**	164 kW	**220 hp**
Peak Power	115 kW	**158 hp**	138 kW	**185 hp**	**—**	
Engine Model	**3126T**		**3126TA**		**3306T**	
Rated Engine RPM	**2200**		**2200**		**2200**	
Bore	110 mm	**4.3"**	110 mm	**4.3"**	121 mm	**4.75"**
Stroke	127 mm	**5"**	127 mm	**5"**	152 mm	**6"**
No. Cylinders	**6**		**6**		**6**	
Displacement	7.2 L	**439 in³**	7.2 L	**439 in³**	10.5 L	**638 in³**
Speeds Forward	km/h	**mph**	km/h	**mph**	km/h	**mph**
1st	7	**4.3**	6.9	**4.3**	7.3	**4.5**
2nd	12.7	**7.9**	12.7	**7.9**	13	**8.1**
3rd	21.9	**13.6**	22.3	**13.9**	22.5	**14**
4th	35.9	**22.3**	37	**23**	38.8	**24.1**
Speeds Reverse						
1st	7	**4.3**	7.6	**4.7**	8.3	**5.2**
2nd	12.7	**7.9**	13.9	**8.7**	14.8	**9.2**
3rd	21.9	**13.6**	24.5	**15.3**	25.6	**15.9**
4th	**—**		40.5	**25.3**	43.9	**27.3**
Hydraulic Cycle Time*						
Rated Load in Bucket:	**Seconds**		**Seconds**		**Seconds**	
Raise	**6**		**6.3**		**7.1**	
Dump	**1.4**		**2.2**		**2**	
Lower (empty, float down)	**2.8**		**2.2**		**2.4**	
Total	**10.2**		**10.7**		**11.5**	
Tread Width**	2.02 m	**6'8"**	2.14 m	**7'0"**	2.20 m	**7'3"**
Width Over Tires**	2.60 m	**8'6"**	2.89 m	**9'6"**	2.94 m	**9'8"**
Ground Clearance**	400 mm	**16"**	400 mm	**16"**	476 mm	**18.7"**
Fuel Tank Capacity	254 L	**67 U.S. gal**	295 L	**78 U.S. gal**	304 L	**79 U.S. gal**
Hydraulic Tank Capacity	90 L	**23.8 U.S. gal**	153 L	**40.4 U.S. gal**	205 L	**54 U.S. gal**
Hinge Pin Height						
Full Lift Std.	3.84 m	**12'7"**	3.98 m	**13'1"**	4.12 m	**13'5"**
High Lift w/ L-5 tires	4.20 m	**13'9"**	4.54 m	**14'11"**	4.80 m	**15'9"**
Operating weight up to:	13 605 kg	**30,000 lb**	18 027 kg	**39,750 lb**	26 400 kg	**58,200 lb**

*With standard lift arms.
**Wth standard tires.

TRACK LOADERS

CONTENTS

Features of 933C and 939C:

- **Hydrostatic drive train** offers infinitely variable speeds, fast acceleration, dynamic hydrostatic braking, superior maneuverability and excellent controllability.

Features of 953C-973

- **Rear engine location** provides natural stability as a "working" counterweight, excellent visibility and good weight to horsepower ratio.
- **Hydrostatic drive train** offers independent control of each track, power turns, infinitely variable speeds, fast acceleration and counterrotation for increased production.
- **Z-bar linkage** provides increased breakout force, fewer grease points and fast dump speed.
- **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 time.
- **Oscillating track roller frames** decrease ground shock, increase machine stability.

Features common to all models:

- **Sound-suppressed, air-pressurized, resiliently mounted ROPS cab** for superior working environment.
- **Sealed and Lubricated Track** reduces wear and maintenance expense.
- **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.
- **Radial rippers** are Multishank with wide beam coverage for utility ripping close to walls, footings and embankments. Five shanks available for 933 and 939. Three shanks for 953C, 963B and 973.

MODEL	933C		939C	
Flywheel Power	52 kW	**70 hp**	67.1 kW	**90 hp**
Operating Weight*	8485 kg	**18,690 lb**	9480 kg	**20,900 lb**
Engine Model	**3046**		**3046**	
Rated Engine RPM	**2400**		**2400**	
Bore	94 mm	**3.7"**	94 mm	**3.7"**
Stroke	120 mm	**4.7"**	120 mm	**4.7"**
No. Cylinders	**6**		**6**	
Displacement	5 L	**305 in^3**	5 L	**305 in^3**
Speeds Forward/Reverse	0-9 km/h	**0-5.6 mph**	0-9 km/h	**0-5.6 mph**
Hydraulic Cycle Time, Bucket Empty, in Seconds:				
Raise	**5.8**		**5.6**	
Dump	**1.7**		**2.4**	
Lower (Empty, Float Down)	**2**		**2.9**	
Total	**9.5**		**10.9**	
Track Rollers (Each Side)	**6**		**6**	
Width of Standard Track Shoe	356 mm	**14"**	406 mm	**16"**
Length of Track on Ground	2.05 m	**6'8.9"**	2.14 m	**7'0.4"**
Ground Contact Area (With Std. Shoe)	1.46 m^2	**2265 in^2**	1.74 m^2	**2700 in^2**
Ground Pressure	54 kPa	**7.8 psi**	53.7 kPa	**7.8 psi**
Ground Clearance	324 mm	**12.8"**	369 mm	**14.5"**
Track Gauge	1.45 m	**4'9"**	1.55 m	**5'1"**
Width Without Bucket	1.81 m	**5'11"**	1.96 m	**6'5"**
Fuel Tank Refill Capacity	157 L	**41.4 U.S. gal**	157 L	**41.4 U.S. gal**
Hydraulic System Refill Capacity	56.8 L	**15 U.S. gal**	56.8 L	**15 U.S. gal**

	LGP 933C		LGP 939C
(Specs that differ from above)			
Operating Weight	8744 kg	**19,260 lb**	**No**
Width of Track Shoe	635 mm	**2'1"**	**LGP**
Ground Contact Area	2.60 m^2	**4045 in^2**	**Model**
Ground Pressure	32.8 kPa	**4.76 psi**	
Track Gauge	1.68 m	**5'6"**	
Width Without Bucket	2.31 m	**7'7"**	

See Wheel Loader section of this book for summary of S.A.E. Guidelines for Loader Specifications, to which Caterpillar adheres.
*933C weights for standard and LGP models include basic machine (General Arrangement Number), lubricants, coolant, full fuel tank, operator, general purpose bucket, bucket teeth, and OROPS.
939C weights include basic machine (General Arrangement Number), lubricants, coolants, full fuel tank, operator, general purpose bucket and bucket teeth and OROPS.



MODEL	953C		963B		973	
Flywheel Power	90 kW	**121 hp**	119 kW	**160 hp**	157 kW	**210 hp**
Operating Weight*	14 680 kg	**32,360 lb**	19 630 kg	**43,280 lb**	25 040 kg	**55,200 lb**
Engine Model		**3116T**		**3116TA**		**3306T**
Rated Engine RPM		**2200**		**2200**		**2200**
Bore	105 mm	**4.13"**	105 mm	**4.13"**	121 mm	**4.75"**
Stroke	127 mm	**5"**	127 mm	**5"**	152 mm	**6"**
No. Cylinders		**6**		**6**		**6**
Displacement	6.6 L	**403 in³**	6.6 L	**403 in³**	10.5 L	**638 in³**
Speeds Forward/Reverse	km/h	**mph**	km/h	**mph**	km/h	**mph**
1st	0-10	**0-6.2**	0-10.1	**0-6.3**	0-10.3	**0-6.4**
2nd		**Infinitely**		**Infinitely**		**Infinitely**
3rd		**Variable**		**Variable**		**Variable**
Hydraulic Cycle Time, Bucket Empty, in Seconds:						
Raise		**6.7**		**6.2**		**7.4**
Dump**		**1.4**		**1.3**		**1.4**
Lower (Empty, Float Down)		**3**		**2.3**		**2.6**
Total		**9.7**		**8.5**		**10**
Track Rollers (Each Side)		**6**		**6**		**7**
Width of Standard Track Shoe	380 mm	**15"**	450 mm	**17.7"**	500 mm	**19.7"**
Length of Track on Ground	2.295 m	**7'6"**	2.454 m	**8'1"**	2.917 m	**9'7"**
Ground Contact Area (With Std. Shoe)	1.74 m²	**2704 in²**	2.21 m²	**3423 in²**	2.92 m²	**4522 in²**
Ground Pressure	82.5 kPa	**11.97 psi**	86.8 kPa	**12.6 psi**	84.1 kPa	**12.2 psi**
Ground Clearance	377 mm	**14.8"**	439 mm	**17"**	456 mm	**17.9"**
Track Gauge	1.80 m	**5'11"**	1.85 m	**6'0.8"**	2.08 m	**6'10"**
Width Without Bucket	2.18 m	**7'2"**	2.30 m	**7'6.5"**	2.58 m	**8'6"**
Fuel Tank Refill Capacity	241 L	**63.8 U.S. gal**	296 L	**78 U.S. gal**	356 L	**94 U.S. gal**
Hydraulic System Refill Capacity	104 L	**27.5 U.S. gal**	138 L	**36 U.S. gal**	120 L	**31.6 U.S. gal**

Equipped With Wide Track Shoe Option

(Specs that differ from above)	953C		963B		973	
Operating Weight	14 970 kg	**33,010 lb**	19 900 kg	**43,880 lb**	25 534 kg	**56,293 lb**
Width of Track Shoe	500 mm	**1'8"**	550 mm	**1'9.7"**	675 mm	**2'2.6"**
Ground Contact Area	2.30 m²	**3558 in²**	2.70 m²	**4184 in²**	3.94 m²	**6104 in²**
Ground Pressure	63.9 kPa	**9.28 psi**	72.3 kPa	**10.5 psi**	64.2 kPa	**9.14 psi**
Track Gauge	1.80 m	**5'11"**	1.85 m	**7'6.5"**	2.08 m	**6'10"**
Width Without Bucket	2300 mm	**7'6"**	2400 mm	**9'4.2"**	2755 mm	**9'0"**

*Includes GP bucket with bolt-on adapters, long tips and segments.
**Simultaneous lift/dump.
See Track Loader section of this book for summary of S.A.E. Guidelines for Loader Specifications, to which Caterpillar adheres.

BUCKET	General Purpose		Multi-Purpose		LGP Arrangement	
Capacity, Rated (Nominal Heaped)	1 m^3	**1.3 yd^3**	0.96 m^3	**1.25 yd^3**	0.96 m^3	**1.25 yd^3**
Struck	0.84 m^3	**1.1 yd^3**	0.79 m^3	**1.03 yd^3**	0.8 m^3	**1.05 yd^3**
Bucket Width*	1969 mm	**6'5"**	1969 mm	**6'5"**	2330 mm	**7'8"**
Dump Clearance at Full Lift and 45° Discharge	2692 mm	**8'10"**	2642 mm	**8'8"**	2728 mm	**8'11"**
Maximum Reach at Full Lift and 45° Discharge	839 mm	**2'9"**	859 mm	**2'9.8"**	803 mm	**2'7.6"**
Digging Depth	148 mm	**5.8"**	160 mm	**6.3"**	148 mm	**5.8"**
Overall Length	4352 mm	**14'3"**	4352 mm	**14'3"**	4301 mm	**14'1"**
Overall Height	4426 mm	**14'6"**	4426 mm	**14'6"**	4203 mm	**13'9"**
Static Tipping Load	5821 kg	**12,834 lb**	5626 kg	**12,392 lb**	5630 kg	**12,400 lb**
Breakout Force**	77.4 kN	**17,390 lb**	71.3 kN	**16,000 lb**	83.6 kN	**18,790 lb**
Operating Weight***	8042 kg	**17,730 lb**	9010 kg	**19,840 lb**	8744 kg	**19,260 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. 426 kg **(940 lb)** counterweight is also included with 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**	+253	**+558**
Bucket teeth (long) & segments	+179	**+394**	–226	**–498**
Air Conditioner	+ 77	**+170**	+ 84	**+185**
457 mm **(18")** shoes	+108	**+238**	+ 76	**+168**
Ripper with 3 teeth (includes removal of 295 kg **(650 lb)** rear counterweight)	+ 13	**+ 29**	+ 48	**+106**
Rear counterweight (per plate)	+116	**+255**	+195	**+430**

BUCKET	General Purpose		Multi-Purpose	
Capacity, Rated (Nominal Heaped)	1.15 m^3	**1.5 yd^3**	1.15 m^3	**1.5 yd^3**
Struck	0.95 m^3	**1.25 yd^3**	0.95 m^3	**1.25 yd^3**
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"**	4411 mm	**14'6"**
Overall Height	4384 mm	**14'4.6"**	4384 mm	**14'4.6"**
Static Tipping Load	6607 kg	**14,565 lb**	6396 kg	**14,100 lb**
Breakout Force**	89.9 kN	**20,200 lb**	92 kN	**20,690 lb**
Operating Weight***	9480 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**

BUCKET	1.75 m³/2.25 yd³ General Purpose Bare		1.75 m³/2.25 yd³ General Purpose Bolt-on Adapters, Long Tips & Segments		1.75 m³/2.25 yd³ General Purpose Bolt-on Cutting Edge		1.75 m³/2.25 yd³ General Purpose Weld-on Adapters & Tips	
Capacity, Rated (Nominal Heaped)	1.75 m³	**2.25 yd³**	1.85 m³	**2.4 yd³**	1.85 m³	**2.4 yd³**	1.75 m³	**2.25 yd³**
Struck	1.45 m³	**1.90 yd³**	1.55 m³	**2.05 yd³**	1.55 m³	**2.05 yd³**	1.45 m³	**1.90 yd³**
Cutting Edge, Type	**Straight**		**Straight**		**Straight**		**Straight**	
Bucket Width◄	2380 mm	**7'10"**	2380 mm	**7'10"**	2380 mm	**7'10"**	2380 mm	**7'10"**
Teeth	**None**		**8, optional, bolt-on with replaceable tips**		**None**		**8, weld-on with replaceable tips**	
Dump Clearance @ Full Lift and 45° Discharge	2899 mm	**9'6"**	2706 mm	**8'10"**	2834 mm	**9'3"**	2732 mm	**8'11"**
Reach at 45° Discharge Angle 2133 mm **(7')** Clearance	1554 mm	**5'1"**	1495 mm	**4'10"**	1563 mm	**5'1"**	1457 mm	**4'9"**
Reach @ Full Lift and 45° Discharge	1011 mm	**3'3.8"**	1051 mm	**3'5.4"**	1051 mm	**3'5.4"**	998 mm	**3'3.3"**
Digging Depth	107 mm	**4.2"**	132 mm	**5.2"**	132 mm	**5.2"**	107 mm	**4.2"**
Overall Length	5889 mm	**19'4"**	6133 mm	**20'1"**	5988 mm	**19'7"**	6134 mm	**20'1"**
Overall Height	4869 mm	**16'0"**	4869 mm	**16'0"**	4869 mm	**16'0"**	4869 mm	**16'0"**
Static Tipping Load**	9931 kg	**21,900 lb**	9550 kg	**21,060 lb**	9672 kg	**21,330 lb**	9860 kg	**21,740 lb**
Breakout Force*	121 kN	**27,220 lb**	108.7 kN	**24,460 lb**	109.7 kN	**24,680 lb**	122.6 kN	**27,580 lb**
Operating Weight**	14 450 kg	**31,870 lb**	14 680 kg	**32,360 lb**	14 570 kg	**32,140 lb**	14 510 kg	**32,000 lb**

◄Bolt-on teeth increase bucket width by 52 mm **(2").** Bolt-on cutting edge increases bucket width by 17 mm **(0.67").**

*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.

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)	–221	**– 487**	– 280	**– 617**
Ripper (includes rear hydraulic arrangement and bumper removal)	+ 20	**+ 44**	—	**—**
Air conditioner	+ 95	**+ 209**	+ 135	**+ 298**
Wide track shoes	+291	**+ 642**	+ 189	**+ 417**
Rear bumper (removed)	–564	**–1243**	–1180	**–2601**

BUCKET	Multi-Purpose Bare		Multi-Purpose Bolt-on Segments & Long Teeth		Multi-Purpose Bolt-on Cutting Edge	
Capacity, Rated (Nominal Heaped)	1.5 m^3	**2 yd^3**	1.6 m^3	**2.1 yd^3**	1.6 m^3	**2.1 yd^3**
Struck	1.25 m^3	**1.65 yd^3**	1.35 m^3	**1.75 yd^3**	1.35 m^3	**1.75 yd^3**
Cutting Edge, Type	**Straight**		**Straight**		**Straight**	
Bucket Width◄	2378 mm	**7'10"**	2378 mm	**7'10"**	2378 mm	**7'10"**
Teeth	**None**		**8, optional, bolt-on with replaceable tips**		**None**	
Dump Clearance @ Full Lift and 45° Discharge	2724 mm	**8'11"**	2655 mm	**8'8"**	2655 mm	**8'8"**
Reach at 45° Discharge Angle 2133 mm **(7')** Clearance	1440 mm	**4'9"**	1363 mm	**4'6"**	1433 mm	**4'8"**
Reach @ Full Lift and 45° Discharge	986 mm	**3'2.8"**	1019 mm	**3'4.1"**	1019 mm	**3'4.1"**
Digging Depth	158 mm	**6.2"**	182 mm	**7.2"**	182 mm	**7.2"**
Overall Length	6046 mm	**19'10"**	6261 mm	**20'6"**	6118 mm	**20'0"**
Overall Height	4860 mm	**16'0"**	4860 mm	**16'0"**	4860 mm	**16'0"**
Static Tipping Load**	8844 kg	**19,500 lb**	8490 kg	**18,710 lb**	8602 kg	**18,970 lb**
Breakout Force*	95.1 kN	**21,400 lb**	86.4 kN	**19,440 lb**	86.9 kN	**19,550 lb**
Operating Weight**	15 060 kg	**33,200 lb**	15 280 kg	**33,690 lb**	15 180 kg	**33,470 lb**

◄Bolt-on teeth increase bucket width by 52 mm **(2").** Bolt-on cutting edge increases bucket width by 17 mm **(0.67").**
*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.

Machine stability can be affected by the addition of other attachments.

BUCKET	General Purpose Bare		General Purpose Bolt-on Cutting Edge		General Purpose Weld-on Teeth		General Purpose Bolt-on Segments & Long Teeth	
Capacity, Rated (Nominal Heaped)	2.3 m^3	**3 yd^3**	2.45 m^3	**3.2 yd^3**	2.3 m^3	**3 yd^3**	2.45 m^3	**3.2 yd^3**
Struck	2 m^3	**2.6 yd^3**	2.14 m^3	**2.8 yd^3**	2 m^3	**2.6 yd^3**	2.14 m^3	**2.8 yd^3**
Cutting Edge, Type	**Straight**		**Straight**		**Straight**		**Straight**	
Bucket Width◄	2498 mm	**8'2.3"**	2498 mm	**8'2.3"**	2498 mm	**8'2.3"**	2498 mm	**8'2.3"**
Teeth	**None**		**None**		**8, weld-on, flush mounted with replaceable tips**		**8, optional, bolt-on with replaceable tips**	
Dump Clearance @ Full Lift and 45° Discharge	3144 mm	**10'4"**	3058 mm	**10'0"**	3087 mm	**10'2"**	3087 mm	**10'2"**
Reach at 45° Discharge Angle 2133 mm **(7')** Clearance	1772 mm	**5'10"**	1801 mm	**5'11"**	1784 mm	**5'10"**	1784 mm	**5'10"**
Reach @ Full Lift and 45° Discharge	1157 mm	**3'10"**	1228 mm	**4'0"**	1190 mm	**3'11"**	1157 mm	**3'10"**
Digging Depth	88 mm	**3.5"**	118 mm	**4.6"**	88 mm	**3.5"**	113 mm	**4.5"**
Overall Length	6342 mm	**20'10"**	6465 mm	**21'3"**	6599 mm	**21'8"**	6599 mm	**21'8"**
Overall Height	5314 mm	**17'5"**	5314 mm	**17'5"**	5314 mm	**17'5"**	5314 mm	**17'5"**
Static Tipping Load**	13 429 kg	**29,611 lb**	13 033 kg	**28,738 lb**	13 357 kg	**29,452 lb**	12 867 kg	**28,372 lb**
Breakout Force*	171.5 kN	**38,588 lb**	153.4 kN	**34,515 lb**	171.5 kN	**38,587 lb**	152.1 kN	**34,223 lb**
Operating Weight**	19 295 kg	**42,545 lb**	19 503 kg	**43,004 lb**	19 367 kg	**42,704 lb**	19 626 kg	**43,275 lb**

◄Bolt-on teeth increase bucket width by 52 mm **(2")**. Bolt-on cutting edge increases bucket width by 33 mm **(1.30")**.
*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.

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**
Remove ROPS and cab	–475	**–1048**	– 573	**–1264**
ROPS canopy only (cab removed)	–168	**– 371**	– 192	**– 423**
Ripper (includes rear hydraulic arrangement and three shanks)	+569	**+ 313**	+1325	**+2921**
Air conditioner	+108	**+ 238**	+ 172	**+ 379**
Bumper (removed)	–260	**– 573**	– 561	**–1239**
Wide track shoes	+273	**+ 602**	+ 185	**+ 408**
Long teeth	+152	**+ 334**	– 203	**– 448**

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 yd^3**	2 m^3	**2.6 yd^3**	2 m^3	**2.6 yd^3**
Struck	1.6 m^3	**2.1 yd^3**	1.7 m^3	**2.2 yd^3**	1.7 m^3	**2.2 yd^3**
Cutting Edge, Type	**Straight**		**Straight**		**Straight**	
Bucket Width◄	2498 mm	**8'2.3"**	2498 mm	**8'2.3"**	2498 mm	**8'2.3"**
Teeth	**None**		**8, optional, bolt-on with replaceable tips**		**None**	
Dump Clearance @ Full Lift and 45° Discharge	2967 mm	**9'9"**	2906 mm	**9'6"**	2874 mm	**9'5"**
Reach at 45° Discharge Angle 2133 mm **(7')** Clearance	1582 mm	**5'2"**	1580 mm	**5'2"**	1590 mm	**5'3"**
Reach @ Full Lift and 45° Discharge	1038 mm	**3'5"**	1063 mm	**3'6"**	1088 mm	**3'7"**
Digging Depth	170 mm	**6.5"**	195 mm	**7.5"**	200 mm	**8"**
Overall Length	6454 mm	**21'2"**	6710 mm	**22'0"**	6575 mm	**21'7"**
Overall Height	5295 mm	**17'4"**	5295 mm	**17'4"**	5295 mm	**17'4"**
Static Tipping Load**	12 646 kg	**27,884 lb**	12 213 kg	**26,930 lb**	12 257 kg	**27,027 lb**
Breakout Force*	167.7 kN	**37,732 lb**	149.5 kN	**33,638 lb**	149.8 kN	**33,705 lb**
Operating Weight**	19 820 kg	**43,703 lb**	20 061 kg	**44,235 lb**	20 028 kg	**44,162 lb**

◄Bolt-on teeth increase bucket width by 52 mm **(2")**. Bolt-on cutting edge increases bucket width by 17 mm **(0.67")**.
*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.

Machine stability can be affected by the addition of other attachments.

BUCKET	General Purpose Bare		General Purpose Bolt-on Segments & Long Teeth		General Purpose Bolt-on Cutting Edge		Rock Weld-on Flush Teeth	
Capacity, Rated (Nominal Heaped)	2.8 m^3	**3.75 yd^3**	3.2 m^3	**4.2 yd^3**	3.2 m^3	**4.2 yd^3**	2.8 m^3	**3.75 yd^3**
Struck	2.41 m^3	**3.16 yd^3**	2.77 m^3	**3.62 yd^3**	2.77 m^3	**3.62 yd^3**	2.46 m^3	**3.21 yd^3**
Cutting Edge, Type	**Straight**		**Straight**		**Straight**		**Spade**	
Bucket Width◄	2854 mm	**9'4"**	2854 mm	**9'4"**	2854 mm	**9'4"**	2705 mm	**8'11"**
Teeth	**8, optional, bolt-on with replaceable tips**		**8, optional, bolt-on with replaceable tips**		**8, optional, weld-on with replaceable tips**		**8, optional, bolt-on with replaceable tips**	
Dump Clearance @ Full Lift and 45° Discharge	3340 mm	**10'11"**	3266 mm	**10'9"**	3266 mm	**10'9"**	3014 mm	**9'10"**
Reach @ 45° Discharge Angle, 2.133 m **(7')** Clearance	2006 mm	**6'7"**	2029 mm	**6'8"**	2029 mm	**6'8"**	2023 mm	**6'8"**
Reach @ Full Lift and 45° Discharge	1328 mm	**4'4"**	1375 mm	**4'6"**	1375 mm	**4'6"**	1464 mm	**4'9"**
Digging Depth	118 mm	**4.6"**	148 mm	**5.8"**	148 mm	**5.8"**	118 mm	**4.6"**
Overall Length	7123 mm	**23'4"**	7123 mm	**23'4"**	6942 mm	**22'9"**	7296 mm	**23'11"**
Overall Height	5735 mm	**19'0"**	5785 mm	**19'0"**	5785 mm	**19'0"**	5726 mm	**18'9"**
Static Tipping Load**	16 788 kg	**37,010 lb**	16 503 kg	**36,383 lb**	16 696 kg	**36,809 lb**	16 678 kg	**36,768 lb**
Breakout Force*	213 kN	**47,981 lb**	197 kN	**44,188 lb**	198 kN	**44,507 lb**	183 kN	**41,223 lb**
Operating Weight**	24 902 kg	**54,899 lb**	25 037 kg	**55,196 lb**	24 894 kg	**54,882 lb**	24 908 kg	**54,912 lb**

◄Bolt-on teeth increase bucket width by 63.8 mm **(2.5").** Bolt-on cutting edge increases bucket width by 19 mm **(0.74").**
*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.

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:

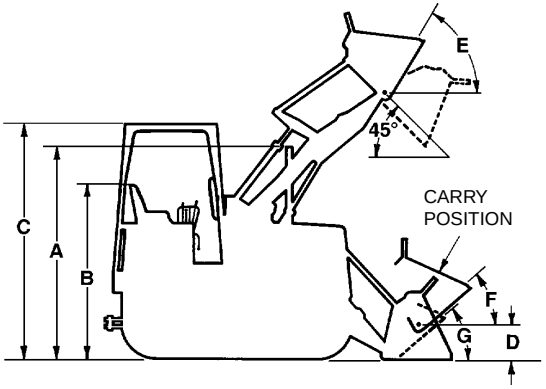
	Change in Operating Weight		Change in Static Tipping Load	
	kg	**lb**	**kg**	**lb**
Remove ROPS	– 485	**–1070**	– 545	**–1202**
ROPS canopy only (cab removed)	– 175	**– 385**	– 208	**– 459**
Ripper (includes rear hydraulic arrangement)	+1228	**+2707**	+2843	**+6268**
Air conditioner	+ 107	**+ 236**	+ 166	**+ 366**
Bumper	+ 151	**+ 332**	+ 345	**+ 761**
Wide track shoes	+ 632	**+1394**	+ 476	**+1050**
Long teeth	+ 223	**+ 492**	– 305	**– 672**

BUCKET	Multi-Purpose Bare		Multi-Purpose Bolt-on Segments & Long Teeth		Multi-Purpose Bolt-on Cutting Edge		Steel Mill Arrangement	
Capacity, Rated (Nominal Heaped)	2.6 m^3	**3.40 yd^3**	2.9 m^3	**3.8 yd^3**	2.9 m^3	**3.8 yd^3**	2.5 m^3	**3.25 yd^3**
Struck	2.419 m^3	**2.87 yd^3**	2.56 m^3	**3.34 yd^3**	2.56 m^3	**3.34 yd^3**	2.03 m^3	**2.65 yd^3**
Cutting Edge, Type	**Straight**		**Straight**		**Straight**		**Semi-Spade**	
Bucket Width◄	2710 mm	**8'11"**	2710 mm	**8'11"**	2710 mm	**8'11"**	2714 mm	**8'11"**
Teeth	**8, optional, bolt-on with replaceable tips**		**8, optional, bolt-on with replaceable tips**		**8, optional, weld-on with replaceable tips**		**6, standard, weld-on with replaceable tips**	
Dump Clearance @ Full Lift and 45° Discharge	3044 mm	**9'11"**	2965 mm	**9'9"**	2965 mm	**9'9"**	2986 mm	**9'10"**
Reach @ 45° Discharge Angle, 2.133 m **(7')** Clearance	1859 mm	**6'1"**	1861 mm	**6'1"**	1861 mm	**6'1"**	1784 mm	**5'10"**
Reach @ Full Lift and 45° Discharge	1287 mm	**4'2"**	1324 mm	**4'4"**	1324 mm	**4'4"**	1237 mm	**4'1"**
Digging Depth	211 mm	**8.3"**	241 mm	**9.5"**	241 mm	**9.5"**	118 mm	**4.6"**
Overall Length	7318 mm	**24'1"**	7318 mm	**24'1"**	7221 mm	**23'8"**	7572 mm	**24'10"**
Overall Height	5894 mm	**19'4"**	5894 mm	**19'4"**	5894 mm	**19'4"**	5825 mm	**19'1"**
Static Tipping Load**	14 120 kg	**31,130 lb**	13 930 kg	**30,711 lb**	14 114 kg	**31,116 lb**	18 470 kg	**40,720 lb**
Breakout Force*	174 kN	**39,026 lb**	161 kN	**36,281 lb**	163 kN	**36,591 lb**	203 kN	**45,765 lb**
Operating Weight**	26 086 kg	**57,510 lb**	26 205 kg	**57,772 lb**	26 067 kg	**57,467 lb**	27 551 kg	**60,740 lb**

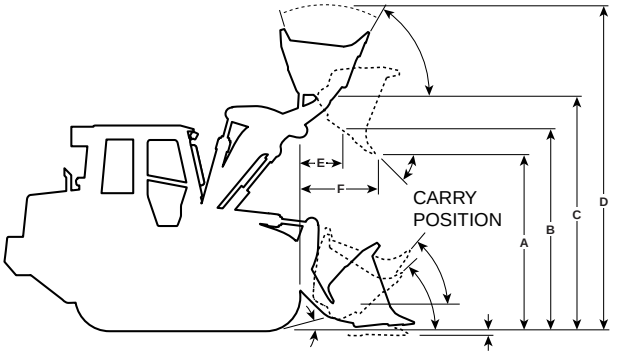
◄Bolt-on teeth increase bucket width by 63.8 mm **(2.5")**. Bolt-on cutting edge increases bucket width by 19 mm **(0.74")**.
*Breakout force is measured 100 mm **(3.94")** behind tip of cutting edge with bucket hinge pin as pivot point.
Operating weight includes lubricants, full fuel tank, ROPS cab, General Purpose bucket, and 80 kg **(176 lb) operator.

Machine stability can be affected by the addition of other attachments.

933C-939C

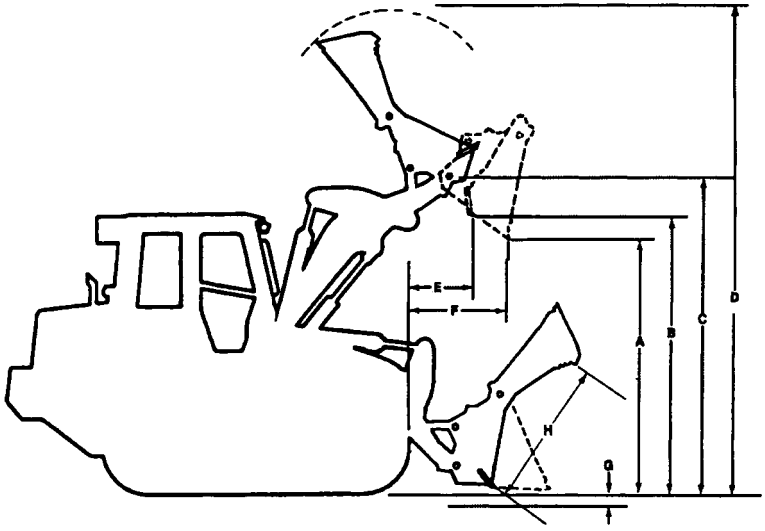


953C-973



	933C		939C		953C	
A Height to Top of Stack	2.80 m	**9'2"**	2.81 m	**9'2"**	2.441 m	**8'0"**
B Height to Top of Seat	2 m	**6'7"**	2 m	**6'7"**	2.353 m	**7'9"**
C Height to Top of ROPS	2.73 m	**9'0"**	2.74 m	**9'0"**	3.084 m	**10'1"**
D Hinge Pin Height at Carry Position	402 mm	**15.8"**	414 mm	**16.3"**	424 mm	**16.7"**
E Rollback at Maximum Lift	**67.7°**		**67.7°**		**56°**	
F Rollback at Carry Height	**51.2°**		**51.2°**		**48°**	
G Rollback at Ground Level	**42.8°**		**42.6°**		**41°**	
Grading Angle (Bare Edge)	—		—		**74°**	
Width Without Bucket (std. track)	1.80 m	**5'11"**	1.96 m	**6'5"**	2.18 m	**7'2"**
(optional track)	2.31 m	**7'7"**	2.01 m	**6'7"**	2.30 m	**7'7"**

	963B		973	
A Height to Top of Stack	3307 mm	**10'11"**	3.357 m	**11'0"**
B Height to Top of Seat	2681 mm	**8'10"**	2.681 m	**8'10"**
C Height to Top of ROPS	3423 mm	**11'3"**	3.423 m	**11'3"**
D Hinge Pin Height at Carry Position	467 mm	**18.4"**	492 mm	**1'7.4"**
E Rollback at Maximum Lift	**59°**		**59°**	
F Rollback at Carry Height	**50°**		**50°**	
G Rollback at Ground Level	**42°**		**42°**	
Grading Angle (Bare Edge)	**68°**		**69°**	
Width Without Bucket (std. track)	2580 mm	**8'6"**	2580 mm	**8'6"**
(optional track)	2755 mm	**9'0.9"**	2760 mm	**9'0"**



	933C		939C		953C	
A Forward Dump Clearance*	2.56 m	**8'5"**	2.57 m	**8'5"**	2.72 m	**8'11"**
B Bottom Dump Clearance*	2.62 m	**8'7"**	3.05 m	**10'0"**	3.16 m	**10'5"**
C Hinge Pin Height*	3.31 m	**10'10"**	3.32 m	**10'11"**	3.60 m	**11'10"**
D Overall Height	4.67 m	**15'4"**	4.68 m	**15'4"**	5.37 m	**17'8"**
E Bottom Dump Reach	453 mm	**18"**	453 mm	**18"**	540 mm	**1'9.3"**
F Forward Dump Reach*	859 mm	**2'10"**	776 mm	**2'7"**	986 mm	**3'3"**
G Digging Depth	184 mm	**7.2"**	190 mm	**7.5"**	158 mm	**6.2"**
H Bucket Opening	1103 mm	**3'7"**	930 mm	**3'0"**	1140 mm	**3'9"**
Reach at 2133 mm **(7'0")** Height*	1200 mm	**3'11"**	1200 mm	**3'11"**	1440 mm	**4'9"**
Tilt Back at Ground Level		**43°**		**43°**		**43°**
Closure Force, Clamp to Cutting Edge	50.7 kN	**11,400 lb**	56.8 kN	**12,780 lb**	71.8 kN	**16,134 lb**
Weight of Bucket and Additional Hydraulics	754 kg	**1663 lb**	1005 kg	**2216 lb**	1413 kg	**3115 lb**

	963B		973	
A Forward Dump Clearance*	3.04 m	**9'11"**	3.04 m	**10'0"**
B Bottom Dump Clearance*	3.50 m	**11'6"**	3.65 m	**12'0"**
C Hinge Pin Height*	4.22 m	**13'10"**	4.22 m	**13'10"**
D Overall Height	5.89 m	**19'4"**	6.52 m	**21'5"**
E Bottom Dump Reach	612 mm	**2'0.1"**	721 mm	**2'4.4"**
F Forward Dump Reach*	2967 mm	**9'9"**	1290 mm	**4'2"**
G Digging Depth	211 mm	**8.3"**	211 mm	**8.3"**
H Bucket Opening	1260 mm	**4'1"**	1380 mm	**4'6"**
Reach at 2133 mm **(7'0")** Height*	1590 mm	**5'2"**	1860 mm	**6'1"**
Tilt Back at Ground Level		**42°**		**45°**
Closure Force, Clamp to Cutting Edge	72.3 kN	**16,250 lb**	89 kN	**20,000 lb**
Weight of Bucket and Additional Hydraulics	2884 kg	**6359 lb**	2829 kg	**6237 lb**

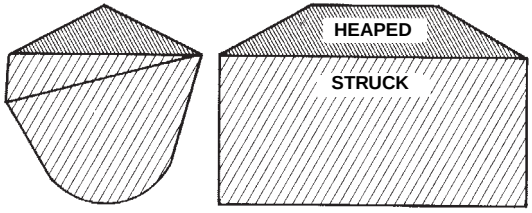
*45° Discharge and full lift.
Operator may prefer to tip bucket forward when bottom dumping.

TRACK LOADER	933C	939C	953C	963B	973
Ripper-Scarifier Type	**—**	**Radial**	**Radial**	**Radial**	**Radial**
Dimensions:					
Ripper Shank					
Maximum digging depth	276 mm **10.9"**	193 mm **7.6"**	284 mm **11.2"**	360 mm **14.2"**	428 mm **16.8"**
Maximum reach at ground line	721 mm **2'4.4"**	504 mm **1'7.8"**	1092 mm **3'7"**	1160 mm **3'9.7"**	1295 mm **4'3"**
Maximum ground clearance under tip (shank pinned in bottom hole)	520 mm **1'8.5"**	604 mm **1'11.8"**	415 mm **1'8.3"**	513 mm **1'8.2"**	670 mm **2'2.4"**
Maximum ramp angle, ripper up (shank pinned in bottom hole)	**24°**	**30.5°**	**19°**	**19°**	**20°**
Shank section	36 × 76 mm **1.4" × 3"**	36 × 76 mm **1.4" × 3"**	50 × 109 mm **2" × 4.3"**	58 × 139 mm **2.3" × 5.5"**	74 × 175 mm **2.9" × 6.9"**
Ripper Beam					
Overall width	1.58 m **5'2"**	1.58 m **5'2"**	1.95 m **6'5"**	1.95 m **6'5"**	2.20 m **7'3"**
Height	130 mm **5.1"**	130 mm **5.1"**	165 mm **6.5"**	165 mm **6.5"**	216 mm **8.5"**
Length	140 mm **5.5"**	140 mm **5.5"**	211 mm **8.3"**	211 mm **8.3"**	254 mm **10"**
Number of Pockets	**5**	**5**	**3**	**3**	**3**
Pocket Spacing	356 mm **14"**	356 mm **14"**	900 mm **2'11.4"**	896 mm **2'11.3"**	1000 mm **3'3.4"**
Shank Gauge	1.42 m **4'8"**	1.42 m **4'8"**	1.80 m **5'11"**	1.79 m **5'11"**	2 m **6'7"**
Track clearance with standard shoe	151 mm **5.9"**	151 mm **5.9"**	**NA**	**NA**	**NA**
Installed weights:					
Ripper with standard shanks	250 kg **550 lb**	250 kg **550 lb**	428 kg **944 lb**	563 kg **1241 lb**	1228 kg **2707 lb**
Each additional shank	11 kg **24 lb**	11 kg **24 lb**	**NA**	**NA**	**NA**
Ripper Forces*:					
Penetration Force	2650 kg **5843 lb**	2687 kg **5924 lb**	4707 kg **10,380 lb**	6385 kg **14,080 lb**	8820 kg **19,450 lb**
Pryout Force	5265 kg **11,610 lb**	5265 kg **11,610 lb**	10 388 kg **22,905 lb**	13 897 kg **30,640 lb**	17 450 kg **38,480 lb**

*These values may vary slightly with different vehicle configurations.

NA – Not Applicable

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 loaders, 2 m^3 (2.6 yd^3) 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 loaders on the average outcycle power shift models by up to 10 percent due to faster machine speed and easier operation. (2) Hydrostatic 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 loaders	Up to –0.04
— Independently owned trucks	Up to +0.04
— Constant operation	Up to –0.04
— Inconsistent operation	Up to +0.04
— Small target	Up to +0.04
— Fragile target	Up 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.

$$\textit{Cycles per hour at 100\% Efficiency} = \frac{\textit{60 Min}}{\textit{Total Cycle Time in Minutes}}$$

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 13-18

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	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 or bolt-on replaceable cutting edges and segments.

GENERAL PURPOSE BUCKET MAXIMUM OPERATING CAPACITIES

MODEL	GENERAL PURPOSE BUCKET SIZE m^3	GENERAL PURPOSE BUCKET SIZE yd^3	MAXIMUM OPERATING CAPACITY kg	MAXIMUM OPERATING CAPACITY lb
933C	1.0	**1.3**	1770	**3900**
939C	1.15	**1.5**	2040	**4500**
953C	1.75	**2.25**	3410	**7490**
963B	2.3	**3.0**	4700	**10,360**
973	2.8	**3.75**	6265	**13,190**

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 m^3 (yd^3)

   For example, a 973 with a 2.8 m^3 (3.75 yd^3) General-Purpose bucket loading uniform aggregate from a stockpile will carry:
   2.8 m^3 × 1.0 = 2.8 loose cubic meters
   (3.75 yd^3 × 1.0 = 3.75 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 Bm^3 (BCY) is estimated by applying one of the load factors from the Tables section to convert the excavated material in the bucket from Bm^3 (BCY) to Lm^3 (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 Bm^3 (BCY)

   Example: a 953C with a 1.75 m^3 (2.25 yd^3) General Purpose bucket loading wet loam earth from bank:
   1.75 m^3 × 0.80 × 1.15 = 1.61 Bm^3
   (2.25 yd^3 × 0.80 × 1.15 = 2.07 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	1.75 m³ (2.25 yd³)
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	0.03 min
Maneuver time	0.20
Travel time (from curves)	0.40
Dump time	0.00
Total	0.63 min

Loads Per Hour —

$$\frac{60 \text{ min/hr}}{0.63 \text{ min/cycle}} = 95 \text{ cycles per hour @ 100\% efficiency}$$

Load Per Cycle —

1.75 m^3 × 1.15 BFF = 2.0 Lm^3 × 0.81 LF = 1.63 Bm^3

(2.25 yd^3 × 1.15 BFF = 2.58 LCY × 0.81 LF = 2.10 BCY)

Hourly Production —

1.63 Bm^3 × 95 cycles/h = 154.9 Bm^3/h

(2.10 BCY × 95 cycles/hr = 199.1 BCY/hr)

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 proceding 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 m^3 (yd^3). Remember that bucket fill factor, material density, and cycle time are at best close estimates.

Example problem

A track loader must produce 180 Lm^3 (235 LCY) per hour. Estimated cycle time is 0.5 minutes, working 50 minutes per hour. Bucket fill factor is 100% and the material density is 1600 kg/Lm^3 (2700 lb/LCY).

Determine bucket size, machine model and hourly production in tons and yards.

Solution:

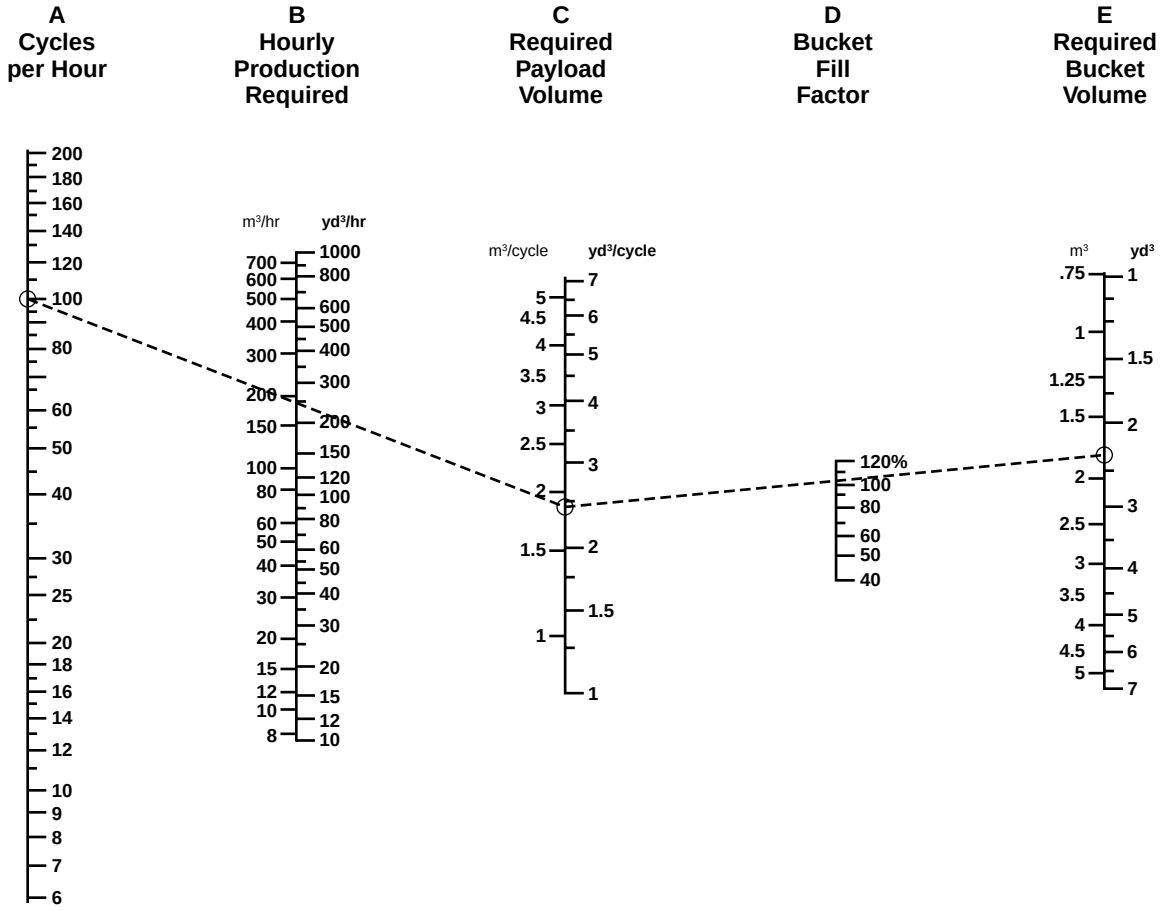
At full efficiency, it will cycle 120 times per hour. Since only an average 50 minutes are available, only 100 cycles will be completed per hour.

Starting on Scale A at 100 cycles per hour draw a straight line intersecting 180 m^3/hr (235 yd^3/hr) on Scale B and continuing the line on to Scale C giving 1.80 m^3 (2.35 yd^3) required payload.

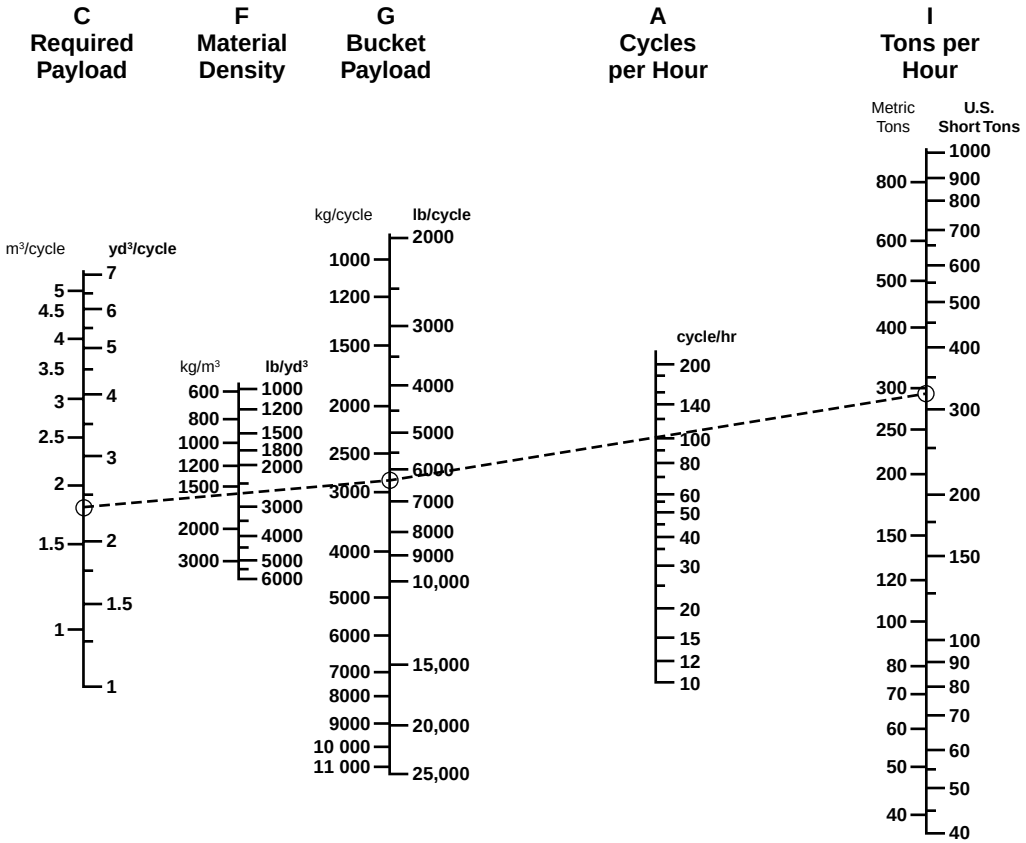
Follow steps 1 through 7 on the next two pages.

• • •

1) Enter Scale A cycles per hour (100) and B hourly production 180 m^3/hr (235 yd^3/hr).
2) Connect A and B and extend to C to find required payload 1.8 m^3 (2.35 yd^3).
3) Connect C to bucket fill factor on Scale D (1.0) and extend to E to find required bucket size 1.8 m^3 (2.35 yd^3).
4) Transfer Scale A and C readings to nomograph on following page.



5) Connect C 1.8 m^3 (2.35 yd^3) to F 1600 kg/m^3 (2700 lb/yd^3) 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 1.75 m^3 (2.25 yd^3) bucket can handle the desired payload. Table indicates the 953C with a 1.75 m^3 (2.25 yd^3) bucket equipped with bolt-on cutting edge or teeth and segments has a greater operating capacity of 3097 kg (6827 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:

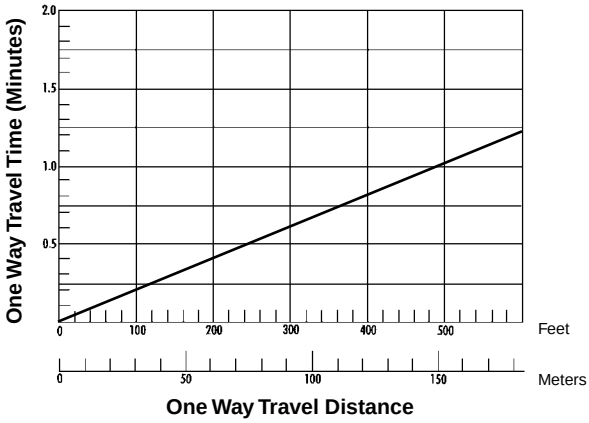
- No grades.
- Speeds loaded and empty essentially the same.
- Bucket position constant during travel.
- Travel encountered in maneuver time portion of cycle not included.
- Acceleration time accounted for in maneuver time.

Travel Time (in minutes) =

Metric $= \dfrac{\text{number of meters traveled}}{\text{speed (in km/h)} \times 16.67}$

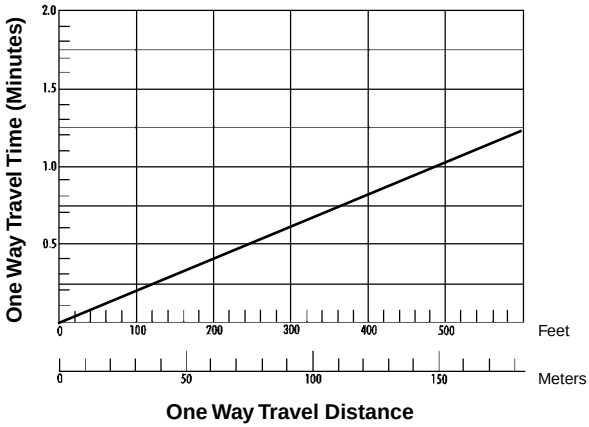
English $= \dfrac{\text{number of feet traveled}}{\text{speed (in mph)} \times 88}$

933C



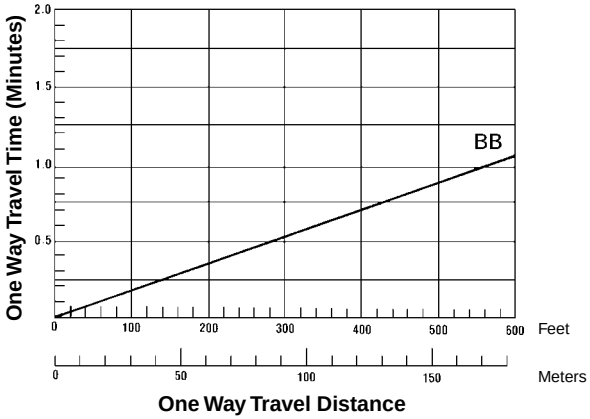
939C

Hydrostatic top speed both forward and reverse 9 km/h **(5.6 mph)**.

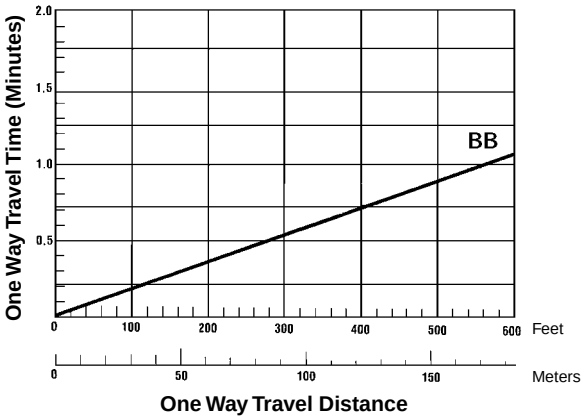


13

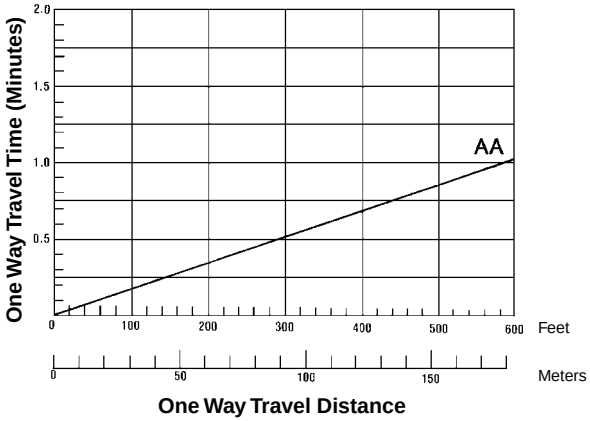
953C



963B



973



KEY

AA — Hydrostatic top speed both forward and reverse 10.3 km/h **(6.4 mph)**

BB — Hydrostatic top speed both forward and reverse 10 km/h **(6 mph)**

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) =

$$\textit{Metric} \quad - \frac{\text{number of meters traveled}}{\text{speed (in km/h)} \times 16.67}$$

$$\textit{English} \quad - \frac{\text{number of feet traveled}}{\text{speed (in mph)} \times 88}$$

Production Estimating Table
- m^3 or yd^3/60 min. hour
- Estimated bucket payload in bank m^3 or yd^3

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

WASTE HANDLING TRACK LOADERS

CONTENTS

Features

- **Unmatched versatility** — excavates, loads, dozes, compacts, shreds, sorts, grapples — a true all purpose machine.
- **Additional heavy duty guarding** helps protect sheet metal and machine components from damage in waste handling applications.
- **Improved serviceability** — swing open doors, guards and oil coolers give quicker access for cleaning debris and for servicing.
- **Hinged heavy duty radiator guard** with quick release "T" handles allows for easy access to the radiator for cleaning.
- **Rear Striker Bar (optional)** keeps trash from climbing the track and damaging fenders.
- **Lamp Guard Group (front and rear)** protects lamps with bolt on grid guards.
- **Single grouser trapezoidal-shaped center hole track shoes (optional)** provides maximum traction and center holes allow sprocket to punch out dirt and debris.
- **Debris Barrier Package** protects machine from material entering engine and other compartments.



MODEL	953C WHA	963B WHA	973 WHA
Flywheel Power	90 kW **121 hp**	119 kW **160 hp**	157 kW **210 hp**
Operating Weight	15 840 kg **34,920 lb**	21 269 kg **46,898 lb**	29 266 kg **64,585 lb**
Engine Model	**3116T**	**3116TA**	**3306T**
Rated Engine RPM	**2200**	**2200**	**2200**
Bore	105 mm **4.13"**	105 mm **4.13"**	121 mm **4.75"**
Stroke	127 mm **5"**	127 mm **5"**	152 mm **6"**
No. Cylinders	**6**	**6**	**6**
Displacement	6.6 L **403 in³**	6.6 L **403 in³**	10.5 L **638 in³**
Speeds Forward,	km/h **mph**	km/h **mph**	km/h **mph**
1st	0-10 **0-6.2**	0-10.1 **0-6**	0-10.3 **0-6.4**
2nd	**Infinitely**	**Infinitely**	**Infinitely**
3rd	**Variable**	**Variable**	**Variable**
Reverse			
1st	0-10 **0-6.2**	0-10.1 **0-6**	0-10.3 **0-6.4**
2nd	**Infinitely**	**Infinitely**	**Infinitely**
3rd	**Variable**	**Variable**	**Variable**
Hydraulic Cycle Time, Bucket Empty, in Seconds:			
Raise	**6.7**	**6.2**	**7.4**
Dump	**1.4**	**1.3**	**1.4**
Lower (Empty, Float Down)	**3**	**2.3**	**2.6**
Total	**11.1**	**9.8**	**11.4**
Track Rollers (Each Side)	**6**	**6**	**7**
Width of Standard Track Shoe	380 mm **15"**	450 mm **17.7"**	500 mm **1'7.7"**
Length of Track on Ground	2.295 m **7'6"**	2.454 m **8'1"**	2.85 m **9'6"**
Ground Contact Area (With Std. Shoe)	1.74 m² **2704 in²**	2.21 m² **3426 in²**	2.92 m² **4526 in²**
Ground Pressure	89 kPa **12.9 psi**	96.2 kPa **13.7 psi**	100.2 kPa **14.3 psi**
Ground Clearance	377 mm **14.8"**	439 mm **17"**	456 mm **17.9"**
Track Gauge	1.80 m **5'11"**	1.85 m **6'0.8"**	2.08 m **6'10"**
Width Without Bucket	2.18 m **7'2"**	2.30 m **7'6.5"**	2.58 m **8'5.6"**
Fuel Tank Refill Capacity	241 L **63.6 U.S. gal**	296 L **78 U.S. gal**	356 L **94 U.S. gal**
Hydraulic System Refill Capacity	65 L **17.2 U.S. gal**	68 L **18 U.S. gal**	60 L **16 U.S. gal**

See Wheel Loader section of this book for summary of S.A.E. Guidelines for Loader Specifications, to which Caterpillar adheres.

LANDFILL BUCKETS

Machine Model	953C		963B		973	
Bucket Model	**B53-4L**		**B63-6L**		**B73-8L**	
Capacity, rated (Refuse)	2.7 m^3	**3.5 yd^3**	4.2 m^3	**5.5 yd^3**	5.58 m^3	**7.25 yd^3**
Capacity, rated (Earth)	1.91 m^3	**2.5 yd^3**	2.87 m^3	**3.75 yd^3**	4.2 m^3	**5.5 yd^3**
Width	2438 mm	**8'0"**	3033 mm	**9'11"**	3323 mm	**10'11"**
Height	1448 mm	**4'9"**	1967 mm	**6'5"**	2284 mm	**7'6"**
Depth	889 mm	**2'11"**	1585 mm	**5'2"**	1626 mm	**5'4"**
Teeth-optional	**8**		**8**		**8**	
Clearance @ 45° dump	2852 mm	**9'3"**	2769 mm	**9'1"**	2918 mm	**9'7"**
Reach @ 45° dump	810 mm	**2'8"**	1406 mm	**4'7"**	1560 mm	**5'1"**
Digging depth	132 mm	**5.2"**	124 mm	**4.9"**	114 mm	**4.5"**
Weight (approx.)	998 kg	**2200 lb**	2475 kg	**5460 lb**	2905 kg	**6400 lb**

MUTLI-PURPOSE LANDFILL BUCKETS

Machine Model	953C		963B		973	
Bucket Model	**B53-3ML**		**B63-4ML**		**B73-6ML**	
Capacity, rated (Refuse)	2 m^3	**2.62 yd^3**	2.7 m^3	**3.5 yd^3**	4.4 m^3	**5.75 yd^3**
Capacity, rated (Earth)	1.53 m^3	**2 yd^3**	1.9 m^3	**2.5 yd^3**	2.68 m^3	**3.5 yd^3**
Width	2426 mm	**8'0"**	2529 mm	**8'4"**	3399 mm	**11'2"**
Height	1676 mm	**5'6"**	1905 mm	**6'3"**	1968 mm	**6'6"**
Depth	953 mm	**3'2"**	1060 mm	**3'6"**	1243 mm	**4'1"**
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.)	1615 kg	**3565 lb**	2109 kg	**4650 lb**	2765 kg	**6100 lb**

Work Tools	973	963B	953C	939C*	933C*
Quick coupler	X	X	X		
General purpose bucket	X	X	X		
Landfill bucket	X	X	X		
Landfill Multi-purpose	X	X	X		
Skeleton rock bucket		X			
Coal bucket			X		
Woodchip bucket					
Fertilizer bucket					
Multi-purpose bucket	X	X	X		
Side dump bucket	X	X			
Demolition bucket	X				
Trim blade	X	X	X		
Straight blade			X		
Manual angle blade			X		
Hydraulic angle blade			X		
Fork	X	X	X		
Material handling arm	X	X	X		
Loader rake		X	X		

*This list is not all-inclusive. Contact Caterpillar Attachment Products and Services for specific attachment needs.

INTEGRATED TOOLCARRIERS

CONTENTS

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.
- **Pressure compensating valves** provide precise hydraulic "feel" on the IT28G.
- **Transmission neutralizer lockout switch** for low speed maneuverability is standard. (IT14G-IT38G)
- **Positive carry position** for load stability and retention.
- **Standard third valve and optional fourth function** for multiple tool functions.
- **Work tool interchangeability.** IT14G thru IT28G share the same tools. IT38G and IT62G can share the same tools.
- **Excellent center visibility** to quick coupler and work tool.
- **Two position return** to work kickouts.

MODEL	IT14G			IT24F		
Flywheel Power	67 kW		**90 hp**	78 kW		**105 hp**
Engine Model		**3054T**			**3114T**	
Rated Engine RPM		**2200**			**2400**	
Bore	100 mm		**3.94"**	105 mm		**4.13"**
Stroke	127 mm		**5"**	127 mm		**5"**
No. Cylinders		**4**			**4**	
Displacement	4 L		**244 in³**	4.4 L		**268 in³**
Speeds Forward:	km/h		**mph**	km/h		**mph**
1st	7.0	**Lo***	**4.3**	7.1		**4.4**
2nd	20.0	**Hi***	**12.4**	13.1		**8.2**
3rd	9.0	**Lo****	**5.6**	23.6		**14.8**
4th	32.0	**Hi****	**19.9**	38.2		**23.9**
Speeds Reverse:						
1st	7.0	**Lo***	**4.3**	7.1		**4.4**
2nd	20.0	**Hi***	**12.4**	13.1		**8.2**
3rd	9.0	**Lo****	**5.6**	23.6		**14.8**
4th	32.0	**Hi****	**19.9**		**—**	
Hydraulic Cycle Time, rated load in bucket:		**Seconds**			**Seconds**	
Raise		**6.9**			**5.3**	
Dump		**2.5**			**1.5**	
Lower (empty, float down)		**3.1**			**4.3**	
Total		**12.5**			**11.1**	
Fuel tank capacity	150 L		**39.6 U.S. gal**	157 L		**41.5 U.S. gal**
Hydraulic tank capacity	70 L		**18.5 U.S. gal**	53 L		**14 U.S. gal**
Hydraulic system capacity (includes tank)	100 L		**26.4 U.S. gal**	79 L		**20 U.S. gal**

*Hydrostatic transmission standard speed version.
**Hydrostatic transmission high speed version.



MODEL	IT28G	IT38G	IT62G
Flywheel Power	93 kW **125 hp**	108 kW **145 hp**	149 kW **200 hp**
Engine Model	**3116T**	**3126T**	**3126TA**
Rated Engine RPM	**2300**	**2200**	**2200**
Bore	105 mm **4.13"**	110 mm **4.3"**	110 mm **4.3"**
Stroke	127 mm **5"**	127 mm **5"**	127 mm **5"**
No. Cylinders	**6**	**6**	**6**
Displacement	6.6 L **403 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**	7.0 **4.3**	6.9 **4.3**
2nd	12.0 **7.5**	12.7 **7.9**	12.7 **7.9**
3rd	24.6 **15.3**	21.9 **13.6**	22.3 **13.9**
4th	36.7 **22.8**	35.9 **22.3**	37.0 **23.0**
Speeds Reverse:			
1st	7.6 **4.7**	7.0 **4.3**	7.6 **4.7**
2nd	12.0 **7.5**	12.7 **7.9**	13.9 **8.7**
3rd	24.6 **15.3**	21.9 **13.6**	24.5 **15.3**
4th	**—**	**—**	40.5 **25.3**
Hydraulic Cycle Time, rated load in bucket:	**Seconds**	**Seconds**	**Seconds**
Raise	**6.1**	**5.8**	**6.3**
Dump	**1.4**	**2.0**	**2.2**
Lower (empty, float down)	**2.8**	**2.9**	**2.2**
Total	**10.3**	**10.7**	**10.7**
Fuel tank capacity	230 L **60.8 U.S. gal**	254 L **67 U.S. gal**	295 L **78 U.S. gal**
Hydraulic tank capacity	70 L **18.5 U.S. gal**	55 L **14.5 U.S. gal**	88 L **23.3 U.S. gal**
Hydraulic system capacity (includes tank)	125 L **33 U.S. gal**	90 L **23.8 U.S. gal**	153 L **40.4 U.S. gal**

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.

Grab and Grip — positive clamping jaws for garbage pickup, snow removal, debris cleanup or any loose or bundled loads.

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 Caterpillar Attachment Products and Services.

Balderson Work Tools

Work Tools	IT62G	IT38G	IT28G	IT24F	IT14G
Light Material Bucket		X	X	X	X
Fertilizer Bucket				X	X
Bucket With Top Clamp		X	X	X	X
Grab and Grip Bucket		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
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
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 Broom	X	X	X	X	X
Hydraulic Hammers			X	X	X
Tire Loader	X		X	X	X
Loader Rake		X	X	X	X
Woodchip	X	X	X	X	X
Refuse		X	X	X	X

This list not all inclusive. Contact Caterpillar Attachment Products and Services for special attachment needs.

Operating Specifications — Buckets

	IT14G		IT24F		IT28G		IT38G		IT62G	
Cutting Edge	Corner Guard or Bolt-on Edge									
Capacity, heaped	1.3 m^3	**1.7 yd^3**	1.6 m^3	**2 yd^3**	2 m^3	**2.6 yd^3**	2.5 m^3	**3.25 yd^3**	3.1 m^3	**4 yd^3**
Capacity, struck	1.1 m^3	**1.4 yd^3**	1.4 m^3	**1.8 yd^3**	1.7 m^3	**2.25 yd^3**	2.1 m^3	**2.7 yd^3**	2.7 m^3	**3.5 yd^3**
Width	2401 mm	**7'10.5"**	2395 mm	**7'10"**	2549 mm	**8'4"**	2708 mm	**8'10"**	2870 mm	**9'5"**
Dump clearance @ full lift and 45° discharge	2920 mm	**9'7"**	2752 mm	**9'0"**	2911 mm	**9'7"**	2800 mm	**9'2"**	2840 mm	**9'4"**
Reach at 45° discharge angle, 2130 mm/**7'0"** clearance	1425 mm	**4'8"**	1547 mm	**5'8"**	1567 mm	**5'2"**	1657 mm	**5'5"**	***	
Reach at full lift and 45° discharge	787 mm	**2'7"**	1088 mm	**3'7"**	1014 mm	**3'4"**	1200 mm	**3'11"**	1242 mm	**4'11"**
Reach with arms horizontal and bucket level	2150 mm	**7'1"**	2374 mm	**7'10"**	2383 mm	**7'10"**	2521 mm	**8'3"**	2775 mm	**9'1"**
Digging depth	175 mm	**6.9"**	132 mm	**5.2"**	108 mm	**4.3"**	70 mm	**2.8"**	88 mm	**3.5"**
Overall length	6424 mm	**21'1"**	6771 mm	**22'3"**	7318 mm	**24'0"**	7487 mm	**24'7"**	8263 mm	**27'1"**
Overall height (bucket @ full raise)	4801 mm	**15'9"**	4855 mm	**15'11"**	5080 mm	**16'8"**	5237 mm	**17'2"**	5436 mm	**17'10"**
Loader clearance circle (bucket in carry position)	10.4 m	**34'1"**	10.76 m	**35'4"**	11.36 m	**37'4"**	12.13 m	**39'10"**	***	
Static tipping load**										
Straight	5307 kg	**11,675 lb**	6091 kg	**13,431 lb**	8469 kg	**18,674 lb**	8861 kg	**19,535 lb**	13 014 kg	**28,631 lb**
Full turn	4588 kg	**10,094 lb**	5284 kg	**11,651 lb**	7335 kg	**16,124 lb**	7621 kg	**16,802 lb**	11 288 kg	**24,834 lb**
Breakout force*	7850 kg	**17,270 lb**	8813 kg	**19,433 lb**	10 631 kg	**23,441 lb**	12 650 kg	**27,830 lb**	13 280 kg	**29,216 lb**
Operating weight**	7861 kg	**17,294 lb**								
4 forward, 3 reverse	—		9915 kg	**21,863 lb**	11 970 kg	**26,394 lb**	13 062 kg	**28,714 lb**	—	
4 forward, 4 reverse	—		—		—		—		18 284 kg	**40,225 lb**

*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 17.5R25 tires.
— IT24F includes 17.5-25, 12 PR tires.
— IT28G includes 20.5-25, 12 PR (L-2) tires and optional counterweight.
— IT38G includes 20.5R25, XTLA (L-2) tires.
Machine stability is affected by the tire size, tire ballast and attachments.
***Information unavailable.

Operating Specifications — Buckets

	IT14G		IT24F		IT28G		IT38G	
Cutting Edge	Bolt-on Teeth							
Capacity, heaped	1.2 m^3	**1.6 yd^3**	1.5 m^3	**2 yd^3**	1.9 m^3	**2.5 yd^3**	2.4 m^3	**3.1 yd^3**
Capacity, struck	1 m^3	**1.3 yd^3**	1.3 m^3	**1.70 yd^3**	1.6 m^3	**2.1 yd^3**	2 m^3	**2.6 yd^3**
Width	2424 mm	**7'11.4"**	2424 mm	**7'11.4"**	2532 mm	**8'4"**	2735 mm	**8'11"**
Dump clearance @ full lift and 45° discharge	2975 mm	**9'9"**	2640 mm	**8'8"**	2799 mm	**9'2"**	2720 mm	**8'11"**
Reach at 45° discharge angle, 2130 mm/**7'0"** clearance	1351 mm	**4'5"**	1579 mm	**5'2"**	1605 mm	**5'3"**	1704 mm	**5'7"**
Reach at full lift and 45° discharge	757 mm	**2'6"**	1183 mm	**3'11"**	1109 mm	**3'8"**	1288 mm	**4'3"**
Reach with arms horizontal and bucket level	2090 mm	**6'10"**	2520 mm	**8'3"**	2529 mm	**8'4"**	2640 mm	**8'8"**
Digging depth	156 mm	**6.1"**	146 mm	**5.7"**	122 mm	**4.8"**	45 mm	**1.8"**
Overall length	6506 mm	**21'4"**	6894 mm	**22'7"**	7442 mm	**24'5"**	7601 mm	**24'11"**
Overall height (bucket @ full raise)	4801 mm	**15'9"**	4855 mm	**15'11"**	5080 mm	**16'8"**	5237 mm	**17'2"**
Loader clearance circle (bucket in carry position)	10.47 m	**34'4"**	10.87 m	**35'8"**	11.46 m	**37'6"**	12.23 m	**40'1"**
Static tipping load**								
Straight	5400 kg	**11,880 lb**	6169 kg	**13,603 lb**	8567 kg	**18,890 lb**	9059 kg	**20,037 lb**
Full turn	4675 kg	**10,285 lb**	5356 kg	**11,810 lb**	7423 kg	**16,370 lb**	7806 kg	**17,209 lb**
Breakout force*	8438 kg	**18,564 lb**	9446 kg	**20,828 lb**	11 340 kg	**25,000 lb**	12 738 kg	**28,024 lb**
Operating weight**	7819 kg	**17,202 lb**	—		—		—	
4 forward, 3 reverse	—		9900 kg	**21,830 lb**	11 945 kg	**26,340 lb**	12 967 kg	**28,527 lb**
4 forward, 4 reverse	—		—		—		—	

*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 17.5R25 tires.
— IT24F includes 17.5-25, 12 PR tires.
— IT28G includes 20.5-25, 12 PR tires and optional counterweight.
— IT38G includes 20.5R25 XTLA (L-2) tires.
Machine stability is affected by the tire size, tire ballast and attachments.

Operating Specifications — Pallet Forks

	IT14G		IT24F		IT28G	
Fork tine length	1050 mm	**3'5"**	1050 mm	**3'5"**	1050 mm	**3'5"**
Ground to top of tine clearance	3708 mm	**12'2"**	3629 mm	**11'11"**	3843 mm	**12'7"**
Reach with arms horizontal and forks level	1490 mm	**4'11"**	1584 mm	**5'2"**	1513 mm	**5'0"**
Overall length	6723 mm	**22'1"**	6939 mm	**22'9"**	7407 mm	**24'4"**
Static tipping load*						
Straight	4267 kg	**9387 lb**	4952 kg	**10,919 lb**	7126 kg	**15,713 lb**
Full turn	3700 kg	**8140 lb**	4327 kg	**9541 lb**	6212 kg	**13,697 lb**
Operating weight*						
4 forward, 3 reverse	7715 kg	**16,973 lb**	9588 kg	**21,142 lb**	11 550 kg	**25,470 lb**

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.

	IT14G		IT24F		IT28G		IT38G		IT62G	
Fork tine length	1200 mm	**3'11"**	1200 mm	**3'11"**	1200 mm	**3'11"**	1219 mm	**4'0"**	1219 mm	**4'0"**
Ground to top of tine clearance	3708 mm	**12'2"**	3629 mm	**11'11"**	3843 mm	**12'7"**	3716 mm	**12'2"**	3792 mm	**12'5"**
Reach with arms horizontal and forks level	1490 mm	**4'11"**	1584 mm	**5'2"**	1513 mm	**5'0"**	2891mm	**9'6"**	1976 mm	**6'6"**
Overall length	6873 mm	**22'7"**	7089 mm	**23'3"**	7557 mm	**24'10"**	7826 mm	**25'8"**	8756 mm	**28'9"**
Static tipping load*										
Straight	4133 kg	**9093 lb**	4934 kg	**10,879 lb**	6922 kg	**15,263 lb**	7196 kg	**15,830 lb**	8928 kg	**19,642 lb**
Full turn	3582 kg	**7880 lb**	4309 kg	**9501 lb**	6032 kg	**13,300 lb**	6218 kg	**13,680 lb**	7753 kg	**17,057 lb**
Operating weight*										
4 forward, 3 reverse	7732 kg	**17,010 lb**	9605 kg	**21,179 lb**	11 570 kg	**25,510 lb**	12 470 kg	**27,390 lb**	—	
4 forward, 4 reverse	—		—		—		—		17 663 kg	**38,859 lb**

	IT14G		IT24F		IT28G	
Fork tine length	1350 mm	**4'5"**	1350 mm	**4'5"**	1350 mm	**4'5"**
Ground to top of tine clearance	3708 mm	**12'2"**	3629 mm	**11'11"**	3843 mm	**12'7"**
Reach with arms horizontal and forks level	1490 mm	**4'11"**	1584 mm	**5'2"**	1513 mm	**5'0"**
Overall length	7023 mm	**23'1"**	7239 mm	**23'9"**	7707 mm	**25'3"**
Static tipping load*						
Straight	4008 kg	**8818 lb**	4918 kg	**10,844 lb**	6729 kg	**14,837 lb**
Full turn	3471 kg	**7636 lb**	4293 kg	**9466 lb**	5862 kg	**12,296 lb**
Operating weight*						
4 forward, 3 reverse	7745 kg	**17,010 lb**	9618 kg	**21,208 lb**	11 580 kg	**25,580 lb**

*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.
— IT24F includes 17.5-25, 12 PR tires.
— IT28G includes 20.5-25, 12 PR tires and optional counterweight.
— IT38G includes 20.5R25 XTLA (L-2) tires.
Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

Operating Specifications — Material Handling Arm The rated operating load for a machine with material handling arm is 50% of full turn static tipping load, or the hydraulic/structural limit.

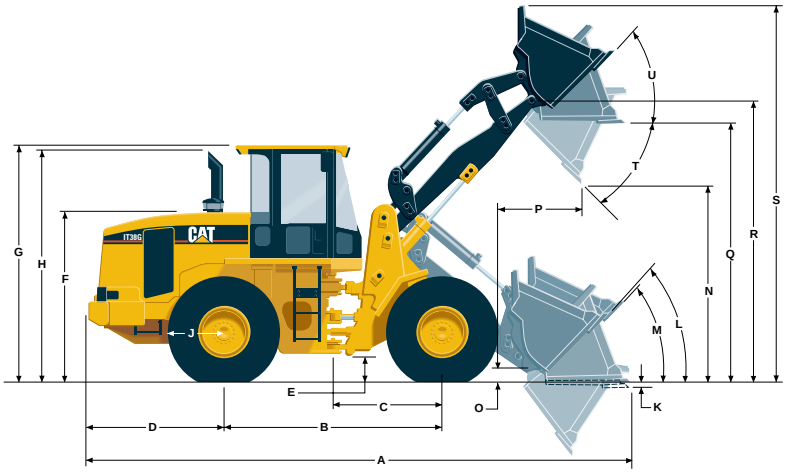
	IT14G	IT24F	IT28G	IT38G	IT62G
Handling Arm Position	Retracted				
Operating load —					
Full articulation	1292 kg **2842 lb**	1576 kg **3475 lb**	2528 kg **5574 lb**	2049 kg **4508 lb**	3085 kg **6795 lb**
Static tipping load*					
Straight	2981 kg **6558 lb**	3605 kg **7949 lb**	5055 kg **11,146 lb**	4746 kg **10,441 lb**	7095 kg **15,548 lb**
Full turn	2585 kg **5678 lb**	3151 kg **6948 lb**	4407 kg **9717 lb**	4098 kg **9016 lb**	6170 kg **13,590 lb**
Operating weight*					
4 forward, 3 reverse	7600 kg **16,720 lb**	9473 kg **21,483 lb**	11 440 kg **25,220 lb**	12 380 kg **27,200 lb**	—
4 forward, 4 reverse	—	—	—	—	17 506 kg **38,583 lb**

	IT14G	IT24F	IT28G	IT38G	IT62G
Handling Arm Position	Mid-position				
Operating load —					
Full articulation	1015 kg **2233 lb**	1245 kg **2745 lb**	1747 kg **3852 lb**	1729 kg **3804 lb**	2626 kg **5783 lb**
Static tipping load*					
Straight	2345 kg **5159 lb**	2852 kg **6289 lb**	4011 kg **8844 lb**	4009 kg **8820 lb**	6017 kg **13,253 lb**
Full turn	2031 kg **4486 lb**	2490 kg **5490 lb**	3494 kg **7704 lb**	3457 kg **7605 lb**	5251 kg **11,565 lb**
Operating weight*					
4 forward, 3 reverse	7600 kg **16,720 lb**	9473 kg **21,483 lb**	11 440 kg **25,220 lb**	12 380 kg **27,200 lb**	—
4 forward, 4 reverse	—	—	—	—	17 506 kg **38,583 lb**

	IT14G	IT24F	IT28G	IT38G	IT62G
Handling Arm Position	Extended				
Operating load —					
Full articulation	837 kg **1841 lb**	1031 kg **2273 lb**	1449 kg **3195 lb**	1492 kg **3282 lb**	2288 kg **5040 lb**
Static tipping load*					
Straight	1936 kg **4259 lb**	2362 kg **5208 lb**	3327 kg **7336 lb**	3463 kg **7619 lb**	5240 kg **11,484 lb**
Full turn	1675 kg **3685 lb**	2062 kg **4547 lb**	2898 kg **6390 lb**	2983 kg **6563 lb**	4576 kg **10,080 lb**
Operating weight*					
4 forward, 3 reverse	7600 kg **16,720 lb**	9473 kg **21,483 lb**	11 440 kg **25,220 lb**	12 380 kg **27,200 lb**	—
4 forward, 4 reverse	—	—	—	—	17 506 kg **38,583 lb**

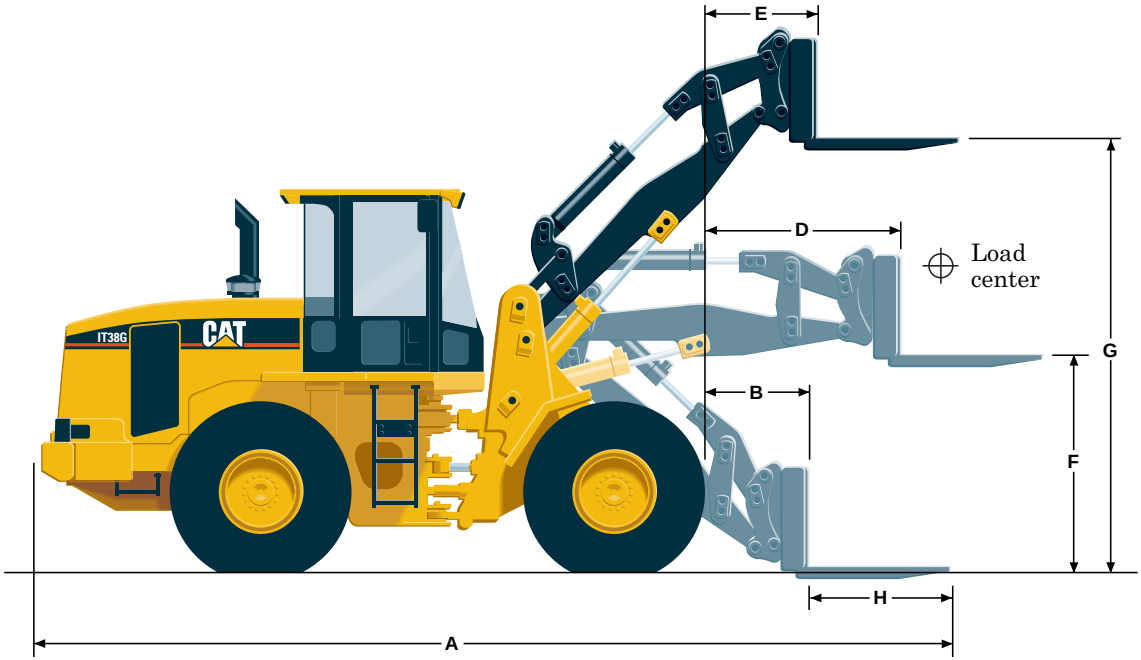
*Static tipping load and operating weight include lubricants, full fuel tank, ROPS cab and 80 kg **(176 lb)** operator.
— IT14G includes high speed version, standard counterweight and 17.5R25 tires.
— IT24F includes 17.5-25, 12 PR tires.
— IT28G includes 20.5-25, 12 PR tires and optional counterweight.
— IT38G includes 20.5R25 XTLA (L-2) tires.
Machine stability and operating weight are affected by tire size, tire ballast and other attachments.

See rating plate on each tool. Plate shows the effect of using the same tools on different size machines and aids in machine tool selection. Each plate states capabilities of standard machine in terms of capacity. Any significant weight change of attachments can adversely affect these ratings.



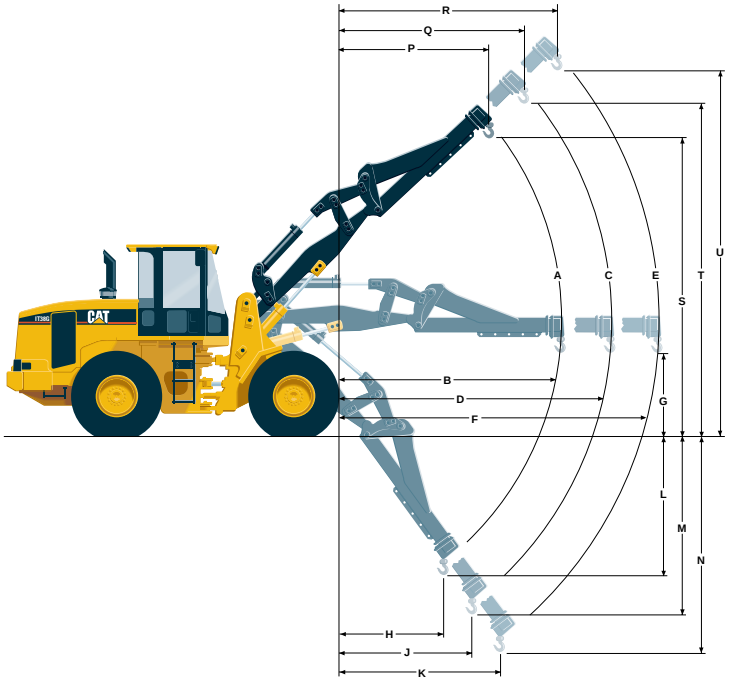
MODEL		IT14G		IT24F		IT28G		IT38G		IT62G	
	Bucket	1.3 m³	**1.7 yd³**	1.6 m³	**2 yd³**	2 m³	**2.6 yd³**	2.5 m³	**3.25 yd³**	3.1 m³	**4 yd³**
A	Maximum Overall Length	6424 mm	**21'1"**	6771 mm	**22'3"**	7318 mm	**24'0"**	7487 mm	**24'7"**	8263 mm	**27'1"**
B	Wheel base	2600 mm	**8'6"**	2700 mm	**8'10"**	2900 mm	**9'6"**	3020 mm	**9'11"**	3350 mm	**11'0"**
C	Machine center point to front axle	1300 mm	**4'3"**	1350 mm	**4'5"**	1450 mm	**4'9"**	1510 mm	**4'11"**	1675 mm	**5'6"**
D	Rear axle to counterweight	1658 mm	**5'5"**	1667 mm	**5'6"**	1955 mm	**6'7"**	1907 mm	**6'3"**	1938 mm	**6'4"**
E	Ground clearance	456 mm	**18"**	321 mm	**12.6"**	407 mm	**16"**	400 mm	**16"**	474 mm	**18.7"**
F	Height to top of engine compartment	2080 mm	**6'10"**	2138 mm	**7'0"**	2149 mm	**7'1"**	2215 mm	**7'3"**	2254 mm	**7'5"**
G	Height to top of ROPS	3100 mm	**10'2"**	3134 mm	**10'4"**	3268 mm	**10'8"**	3300 mm	**10'10"**	3374 mm	**11'1"**
H	Height to top of stack	2255 mm	**7'5"**	3070 mm	**10'1"**	3184 mm	**10'5"**	3210 mm	**10'6"**	3224 mm	**10'7"**
J	Tire radius (empty machine)	620 mm	**2'0"**	612 mm	**2'0"**	684 mm	**2'3"**	688 mm	**2'3"**	728 mm	**2'5"**
K	Maximum Digging Depth (bucket level)	175 mm	**6.9"**	132 mm	**5.2"**	108 mm	**4.3"**	70 mm	**2.8"**	88 mm	**3.5"**
L	Maximum rollback at carry height	**54°**		**55°**		**56°**		**46.6°**		**50°**	
M	Maximum rollback at ground	**49°**		**53°**		**53°**		**48.8°**		**44°**	
N	Dump Clearance at full lift and 45° Discharge Angle	2920 mm	**9'7"**	2752 mm	**9'0"**	2911 mm	**9'7"**	2800 mm	**9'2"**	2841 mm	**9'4"**
O	Hinge pin Height at carry position	374 mm	**15"**	360 mm	**14"**	382 mm	**15"**	475 mm	**18.7"**	*	
P	Reach at full lift and 45° Dump	787 mm	**2'7"**	1088 mm	**3'7"**	1014 mm	**3'4"**	1200 mm	**3'11"**	1242 mm	**4'11"**
Q	Clearance Level Bucket at full height	3565 mm	**11'8"**	3506 mm	**11'6"**	3694 mm	**12'1"**	3625 mm	**11'11"**	3742 mm	**12'3"**
R	Maximum Hinge Pin Height	3798 mm	**12'6"**	3766 mm	**12'4"**	3980 mm	**13'1"**	3930 mm	**12'11"**	4106 mm	**13'6"**
S	Maximum Overall Height	4801 mm	**15'9"**	4855 mm	**15'11"**	5080 mm	**16'8"**	5237 mm	**17'2"**	5436 mm	**17'10"**
T	Full Dump at Maximum Lift	**48°**		**49°**		**48°**		**45°**		**45°**	
U	Maximum roll back at Maximum Lift	**57°**		**53°**		**55°**		**44.6°**		**58°**	
	Tires	**17.5R25**		**17.5-25**		**20.5-25**		**20.5R25**		**23.5-25**	

*Information unavailable.



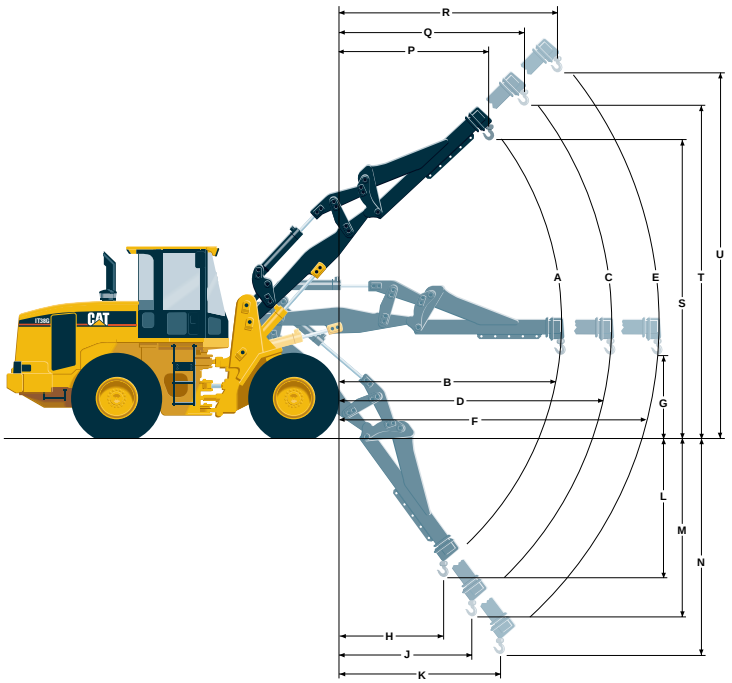
MODEL		IT14G		IT24F		IT28G		IT38G		IT62G	
	Rated Operating Load										
	Per SAE J1197	1791 kg	**3940 lb**	2155 kg	**4738 lb**	3016 kg	**6650 lb**	—	—	—	—
	Per CEN 474-3 Rough Terrain	2149 kg	**4728 lb**	2585 kg	**5688 lb**	3619 kg	**7980 lb**	—	—	—	—
	Per CEN 474-3 Firm level ground	2865 kg	**6303 lb**	3447 kg	**7584 lb**	4826 kg	**10,640 lb**	—	—	—	—
A	Maximum Overall Length	6873 mm	**22'7"**	7089 mm	**23'3"**	7557 mm	**24'10"**	7826 mm	**25'8"**	8756 mm	**28'9"**
B	Reach with forks at ground level	745 mm	**2'5"**	852 mm	**2'10"**	750 mm	**2'6"**	955 mm	**3'2"**	1446 mm	**4'9"**
C	Load center	600 mm	**2'0"**	600 mm	**2'0"**	600 mm	**2'0"**	600 mm	**2'0"**	610 mm	**2'0"**
D	Reach with arms horizontal and forks level	1490 mm	**4'11"**	1584 mm	**5'2"**	1513 mm	**5'0"**	1672 mm	**5'6"**	1976 mm	**6'6"**
E	Reach with fork at maximum height	586 mm	**1'11"**	836 mm	**2'9"**	703 mm	**2'4"**	946 mm	**3'1"**	1117 mm	**3'8"**
F	Arms horizontal & forks level	1808 mm	**5'11"**	1831 mm	**6'0"**	1923 mm	**6'4"**	1864 mm	**6'1"**	1738 mm	**5'8"**
G	Ground to top of tine at maximum height	3708 mm	**12'2"**	3629 mm	**11'11"**	3843 mm	**12'7"**	3716 mm	**12'2"**	3792 mm	**12'5"**
H	Fork Tine Length	1200 mm	**3'11"**	1200 mm	**3'11"**	1200 mm	**3'11"**	1219 mm	**4'0"**	1219 mm	**4'0"**
	Tires	**17.5R25**		**17.5-25**		**20.5-25**		**20.5R25**		**23.5-25**	

For IT14G, IT24F and IT28G 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.



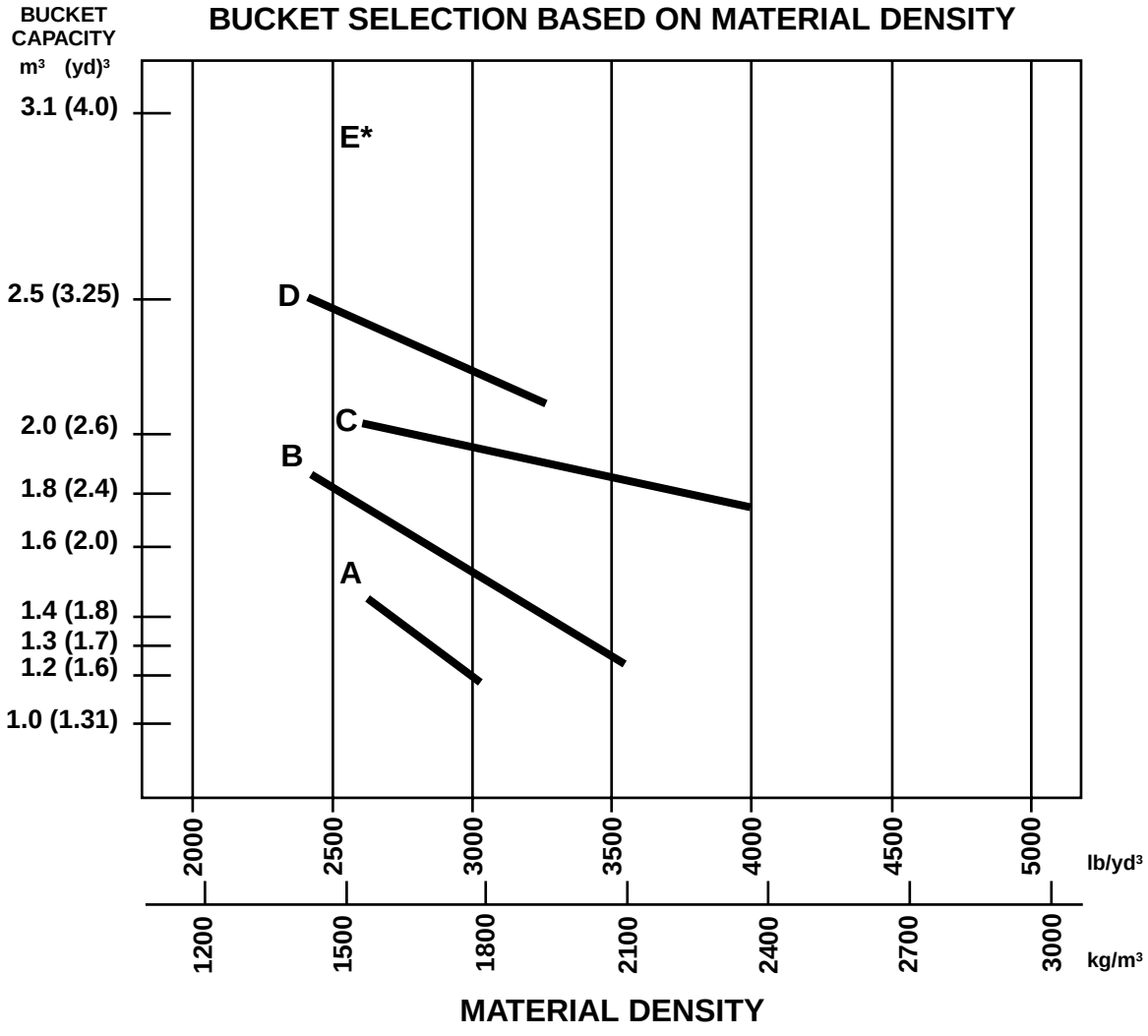
MODEL	IT14G		IT24F		IT28G	
A Operating load (retracted) @ full articulation	1292 kg	**2842 lb**	1576 kg	**3475 lb**	2528 kg	**5574 lb**
B Reach horizontal (retracted)	3179 mm	**10'5"**	3285 mm	**10'7"**	3187 mm	**10'5"**
C Operating load (mid-position) @ full articulation	1015 kg	**2233 lb**	1245 kg	**2745 lb**	1747 kg	**3852 lb**
D Reach horizontal (mid-position)	4178 mm	**13'8"**	4257 mm	**14'0"**	4986 mm	**13'9"**
E Operating load (extended) @ full articulation	837 kg	**1841 lb**	1031 kg	**2273 lb**	1449 kg	**3195 lb**
F Reach horizontal (extended)	5178 mm	**17'0"**	5257 mm	**17'3"**	5186 mm	**17'0"**
G Clearance horizontal	1585 mm	**5'2"**	1607 mm	**5'4"**	1983 mm	**6'6"**
H Reach full down (retracted)	1514 mm	**4'11"**	1646 mm	**5'5"**	1529 mm	**5'0"**
J Reach full down (mid-position)	2116 mm	**6'11"**	2257 mm	**7'5"**	2122 mm	**7'0"**
K Reach full down (extended)	2719 mm	**8'11"**	2869 mm	**9'5"**	2715 mm	**8'11"**
L Clearance full down (retracted)	1874 mm	**6'2"**	1786 mm	**5'10"**	1502 mm	**4'11"**
M Clearance full down (mid-position)	2670 mm	**8'9"**	2576 mm	**8'6"**	2306 mm	**7'8"**
N Clearance full down (extended)	3468 mm	**11'5"**	3367 mm	**11'1"**	3111 mm	**10'2"**
P Reach at maximum height (retracted)	1402 mm	**4'7"**	1783 mm	**5'10"**	1608 mm	**5'3"**
Q Reach at maximum height (mid-position)	1962 mm	**6'5"**	2396 mm	**7'10"**	2199 mm	**7'3"**
R Reach at maximum height (extended)	2522 mm	**8'2"**	3009 mm	**9'11"**	2791 mm	**9'2"**
S Clearance at maximum height (retracted)	5185 mm	**17'0"**	5039 mm	**16'6"**	5578 mm	**18'3"**
T Clearance at maximum height (mid-position)	6012 mm	**19'9"**	5828 mm	**19'1"**	6379 mm	**20'11"**
U Clearance at maximum height (extended)	6840 mm	**22'5"**	6617 mm	**21'9"**	7185 mm	**23'7"**
Tires	**17.5R25**		**17.5-25**		**20.5-25**	

Machine Dimensions
● with Material Handling Arm



MODEL		IT38G		IT62G*	
A	Operating load (retracted) @ full articulation	2049 kg	**4508 lb**	3085 kg	**6795 lb**
B	Reach horizontal (retracted)	3816 mm	**12'6"**	4002 mm	**13'2"**
C	Operating load (mid-position) @ full articulation	1729 kg	**3804 lb**	2626 kg	**5783 lb**
D	Reach horizontal (mid-position)	4616 mm	**15'2"**	4802 mm	**15'9"**
E	Operating load (extended) @ full articulation	1492 kg	**3282 lb**	2288 kg	**5040 lb**
F	Reach horizontal (extended)	5416 mm	**17'9"**	5602 mm	**18'5"**
G	Clearance horizontal	1562 mm	**5'1"**	1817 mm	**6'0"**
H	Reach full down (retracted)	1840 mm	**6'0"**	2720 mm	**8'11"**
J	Reach full down (mid-position)	2309 mm	**7'7"**	3354 mm	**11'0"**
K	Reach full down (extended)	2777 mm	**9'1"**	3987 mm	**13'1"**
L	Clearance full down (retracted)	2282 mm	**7'6"**	1483 mm	**4'10"**
M	Clearance full down (mid-position)	2930 mm	**9'7"**	1971 mm	**6'6"**
N	Clearance full down (extended)	3580 mm	**11'9"**	2460 mm	**8'1"**
P	Reach at maximum height (retracted)	2506 mm	**8'3"**	2546 mm	**8'4"**
Q	Reach at maximum height (mid-position)	3076 mm	**10'1"**	3109 mm	**10'2"**
R	Reach at maximum height (extended)	3646 mm	**11'11"**	3672 mm	**12'1"**
S	Clearance at maximum height (retracted)	5296 mm	**17'5"**	5774 mm	**18'11"**
T	Clearance at maximum height (mid-position)	5857 mm	**19'3"**	6342 mm	**20'10"**
U	Clearance at maximum height (extended)	6419 mm	**21'1"**	6910 mm	**22'8"**
	Tires	**20.5R25**		**23.5-25**	

*All dimensions are to lift eye.



NOTE: Machines equipped same as those on Performance Data pages.

KEY

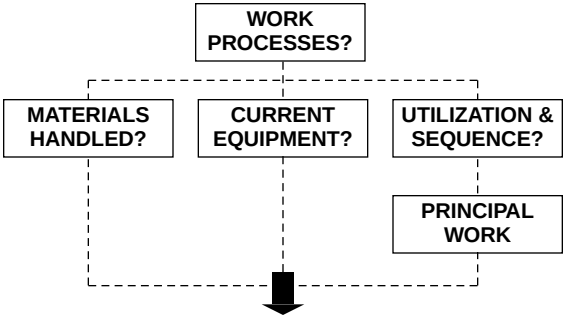
A — IT14G
B — IT24F
C — IT28G
D — IT38G
E — IT62G Information unavailable

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 econo-mies of various systems. Other important consider-ations 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?

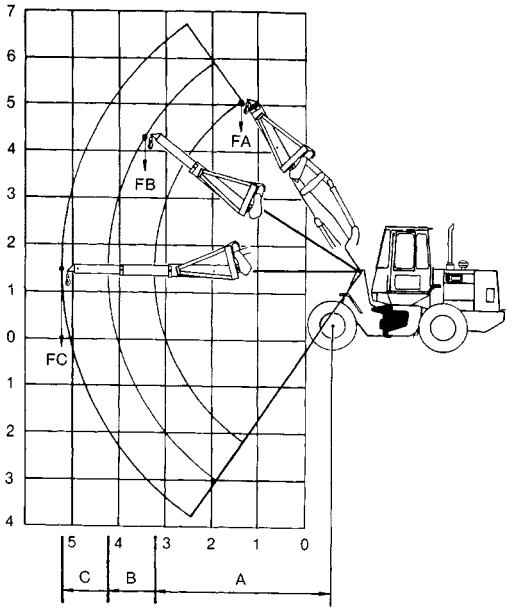
Additional Tips for Tool Sizing and Selection

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.

Rating Plates

The Caterpillar tools have rating plates showing rated or 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 thru IT28G share common attachment points and can share attachments. The IT38G and IT62G can share the same attachments. This ability to interchange tools necessitates the need for rating plates.

Shown below are examples of the rating plates that will be found on each Caterpillar tool. Beginning with the IT14G, the rating plate on each tool will refer the user 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**
IT24F	3.92	**12.8**	1554	**3426**	4.92	**16.2**	1220	**2690**	5.92	**19.5**	960	**2117**
IT28G	3.93	**12.9**	2528	**5574**	4.97	**16.3**	1747	**3852**	5.94	**19.5**	1449	**3195**
IT38G	4.57	**15.0**	4098	**9016**	5.37	**17.7**	3457	**7605**	6.17	**20.3**	2983	**6563**
IT62G	4.81	**15.8**	6170	**13,590**	5.61	**18.4**	5251	**11,565**	6.41	**21.0**	4576	**10,080**

Fork Rating Plate

(Located on back of carriage, left side)

Table indicates rated pallet fork load at standard machine configuration with 1200 mm (3'11") fork tine length and a load center distance of 600 mm (24"), see operator manual to determine rated load for vehicle configuration being used.

Model	kg	lb	Model	kg	lb
IT14G	1791	**3940**	**IT24F**	2147	**4723**
IT28G	2867	**6321**			

Bucket Rating Plate

(Located left rear of buckets)

Bucket capacity, SAEJ742 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.

Part No. 112-3121 — 1.4 m^3 (1.75 yd^3) w/Bolt-On Cutting Edge

Model	kg	lb
IT14G*	2273	**5000**
IT24F**	2680	**5909**

Part No. 132-2257 — 1.6 m^3 (2.1 yd^3) w/Bolt-On Cutting Edge

Model	kg	lb
IT24F**	2642	**5825**

Part No. 132-2256 — 1.8 m^3 (2.35 yd^3) w/Bolt-On Cutting Edge

Model	kg	lb
IT24F**	2614	**5746**
IT28G***	3708	**8176**

Part No. 132-2258 — 2.0 m^3 (2.6 yd^3) w/Bolt-On Cutting Edge

Model	kg	lb
IT28G***	3667	**8087**

*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 (L2 equivalent) tires.

Specifications shown include lubricants, full fuel tank, ROPS cab, 80 kg **(176 lb) operator and 17.5 x 25, 12 PR (L2) tires.

***Specifications shown include optional counterweight, standard lubricants, full fuel tank, ROPS cab, 80 kg **(176 lb)** operator and 20.5-25, 12 PR (L2) tires.

The bucket rating plate can be used to illustrate the attachment sizing and selection process. 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 [48 in] 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 m³ (1.5 yd³) 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	1735	**3817**
IT24F	2146	**4722**
IT28G	2931	**6463**

Water pipes: 1309 kg (2885 lb)
- IT14G ... 1 pipe — no problem
- IT24F ... 1 pipe — no problem
- IT28G ... 1 pipe — no problem

Storm sewer pipes: 1556 kg (3430 lb)
- IT14G ... 1 pipe — no problem
- IT24F ... 1 pipe — no problem
- IT28G ... 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	1292 kg	1015 kg	837 kg
	2542 lb	**2233 lb**	**1841 lb**
IT24F*	1576 kg	1245 kg	1031 kg
	3475 lb	**2745 lb**	**2273 lb**
IT28G	2528 kg	1747 kg	1449 kg
	5574 lb	**3852 lb**	**3195 lb**

Storm sewer pipes:
1556 kg (3430 lb)
IT14G ... no
IT24F ... marginal in retracted
IT28G ... yes in retracted and mid

Manhole boxes:
1361 kg (3000 lb)
IT14G ... no
IT24F ... yes in retracted
IT28G ... yes in retracted, mid and extended

Buckets

All general purpose buckets are interchangeable on IT14G-IT28G 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/m^3 (3200 lb/yd^3) ... 100% fill factor

Model	Bucket	Payload	50% Full Turn Static Tipping
IT24F*	1.4 m^3	2660 kg	2680 kg
	1.8 yd^3	**5852 lb**	**5896 lb**
	1.6 m^3	3040 kg	2642 kg
	2.0 yd^3	**6688 lb**	**5812 lb**
	1.8 m^3	3424 kg	2614 kg
	2.4 yd^3	**7680 lb**	**5750 lb**
IT28G	1.8 m^3	3420 kg	3708 kg
	2.3 yd^3	**7524 lb**	**8176 lb**
	2.0 m^3	3800 kg	3668 kg
	2.6 yd^3	**8360 lb**	**8087 lb**
IT38G	2.3 m^3	3856 kg	3850 kg
	3.0 yd^3	**8500 lb**	**8488 lb**

NOTE: Metric numbers are a product of conversion.
*IT24F and IT28G equipped with 17.5 × 25 tires.

Machine/Attachment Recommendation

IT28G — 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 IT28G 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.
1.8 m^3 (2.3 yd^3), or 2.0 m^3 (2.6 yd^3) 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

TELESCOPIC HANDLERS

CONTENTS

Features:

- **Tough, reliable machine components** — Cat 3054 engine turbocharged on U.S. models, naturally aspirated on non-U.S. models. Powershift transmission, enclosed oil immersed brakes, differential lock on front axle and mechanical driveline. Variable displacement axial piston pump. Proven components and well protected from the perils of the jobsite.
- **High visibility factors** — include low boom pivot point, side mounted power module and close fitting fenders. Carefully profiled engine hood allows front wheel visibility. Low profile stabilizers on 3-section machines provides excellent forward visibility.
- **Excellent Operator Comfort** — with large spacious operator station. Open cab or deluxe closed cab with large glazed glass area. Single lever pilot operated boom control. Powershift transmission with 4 forward speeds, 3 reverse and transmission disconnect. Power assisted brakes and steering. Easy engine access for daily maintenance.
- **Superior Performance** — with low center of gravity, maximized wheel base. Fast, responsive hydraulic system with variable displacement axial piston pump. Front and rear overhang is minimized. Four wheel drive and steer with three steering modes, 2-wheel steer, circle steer and crab steer.

MODEL		TH62
Flywheel Power (Gross)	60 kW	**81 hp**
Turbocharged*	81 kW	**109 hp**
Operating Weight	6840 kg	**15,080 lb**
Engine Model		**3054**
Rated Engine RPM		**2200**
No. of Cylinders		**4**
Bore	100 mm	**3.94 in**
Stroke	127 mm	**5.00 in**
Displacement	4.0 L	**243 in³**
Speeds Forward:	**km/h**	**mph**
1st	6	**4**
2nd	11	**7**
3rd	22	**14**
4th	32	**20**
Speeds Reverse:		
1st	6	**4**
2nd	11	**7**
3rd	22	**14**
Turning Circle Radius	**m**	**ft**
Over Tires	3.63	**11'11"**
Over Forks	4.63	**15'2"**
Over Bucket	4.72	**15'6"**
Track	3.43	**11'3"**
Aisle Width		
Over Forks	3.84	**12'7"**
Over Bucket @ carry	3.94	**12'11"**
Tires		15.4 x 24
Service Refill Cap:		
Fuel Tank @ 90% fill	120 L	**32 U.S. gal**
Hydraulic Tank	150 L	**40 U.S. gal**

*U.S. models only.

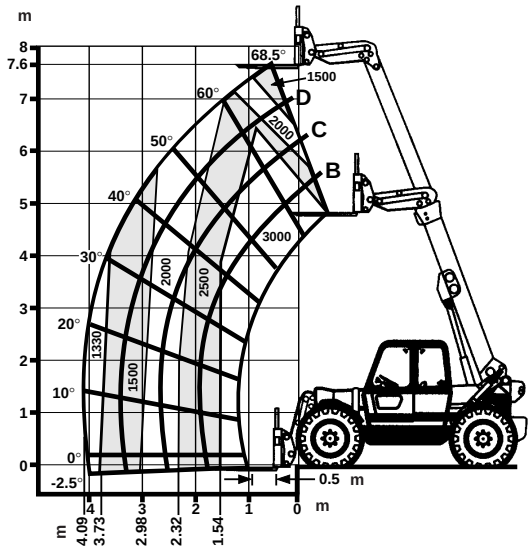



MODEL	TH63		TH82		TH83		TH103	
Flywheel Power (Gross)	60 kW	**81 hp**	60 kW	**81 hp**	81 kW	**109 hp**	81 kW	**109 hp**
Turbocharged*	81 kW	**109 hp**	81 kW	**109 hp**	Std		Std	
Operating Weight	9260 kg	**20,420 lb**	7470 kg	**16,470 lb**	10 000 kg	**22,050 lb**	11 360 kg	**25,050 lb**
Engine Model	**3054**		**3054**		**3054T**		**3054T**	
Rated Engine RPM	**2200**		**2200**		**2200**		**2200**	
No. of Cylinders	**4**		**4**		**4**		**4**	
Bore	100 mm	**3.94 in**	100 mm	**3.94 in**	100 mm	**3.94 in**	100 mm	**3.94 in**
Stroke	127 mm	**5.00 in**	127 mm	**5.00 in**	127 mm	**5.00 in**	127 mm	**5.00 in**
Displacement	4.0 L	**243 in³**	4.0 L	**243 in³**	4.0 L	**243 in³**	4.0 L	**243 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	11	**7**	11	**7**	11	**7**	11	**7**
3rd	22	**14**	22	**14**	22	**14**	22	**14**
4th	32	**20**	32	**20**	32	**20**	32	**20**
Speeds Reverse:								
1st	6	**4**	6	**4**	6	**4**	6	**4**
2nd	11	**7**	11	**7**	11	**7**	11	**7**
3rd	22	**14**	22	**14**	22	**14**	22	**14**
Turning Circle Radius	**m**	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
Over Tires	3.79	**12'5"**	3.79	**12'5"**	3.79	**12'5"**	4.19	**13'9"**
Over Forks	4.62	**15'2"**	4.62	**15'2"**	5.07	**15'2"**	5.61	**18'5"**
Over Bucket	4.71	**15'5"**	4.71	**15'5"**	5.24	**17'2"**	5.61	**18'5"**
Track	3.59	**11'9"**	3.59	**11'9"**	3.59	**11'9"**	3.86	**12'8"**
Aisle Width								
Over Forks	3.84	**12'7"**	3.84	**12'7"**	4.28	**14'8"**	4.75	**15'7"**
Over Bucket @ carry	3.94	**12'11"**	3.94	**12'11"**	4.45	**14'7"**	4.75	**15'7"**
Tires	15.5 x 25		15.5 x 24		13.0 x 25		14.0 x 24	
Service Refill Cap:								
Fuel Tank @ 90% fill	120 L	**32 U.S. gal**	120 L	**32 U.S. gal**	120 L	**32 U.S. gal**	140 L	**37 U.S. gal**
Hydraulic Tank	150 L	**40 U.S. gal**	150 L	**40 U.S. gal**	150 L	**40 U.S. gal**	170 L	**45 U.S. gal**

*U.S. models only.

TH62

Non-U.S. Version

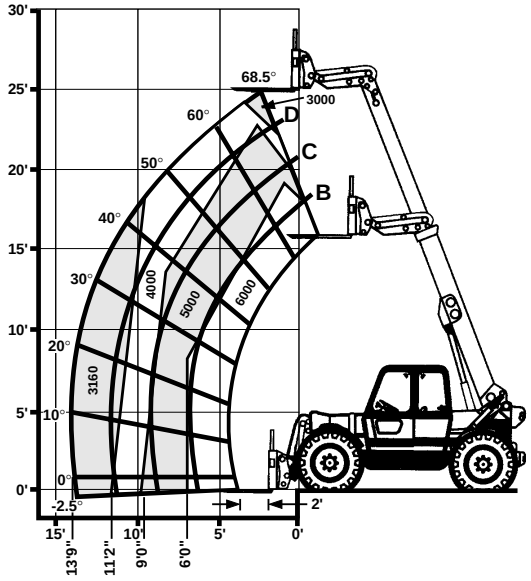


Numbers in chart measured in kilograms.

Maximum lift capacity	3000 kg	**6615 lb**
Maximum lift height	7.6 m	**24'11"**
Load at maximum height	1500 kg	**3307 lb**
Max. height at maximum load	6.5 m	**21'4"**
Max. reach at maximum load	1.54 mm	**5'1"**
Maximum forward reach	4.09 m	**13'5"**
Load at maximum reach	1330 kg	**2932 lb**

TH62

North American Version

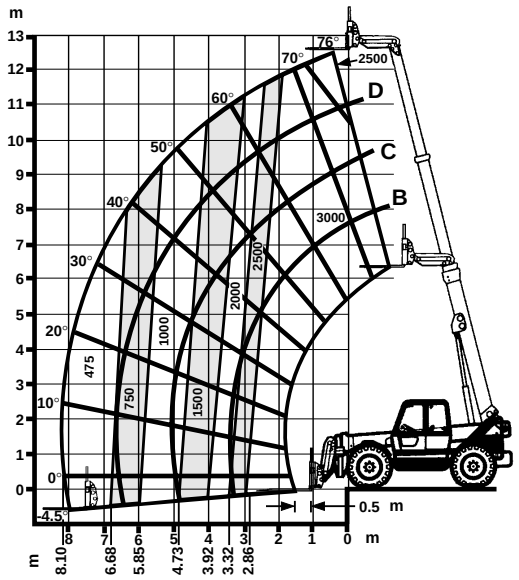


Numbers in chart measured in pounds.

Maximum lift capacity	2725 kg	**6000 lb**
Maximum lift height	7.6 m	**25'0"**
Load at maximum height	1365 kg	**3000 lb**
Maximum forward reach	4.2 m	**13'9"**
Load at maximum reach	1435 kg	**3160 lb**

TH63

Stabilizers Up

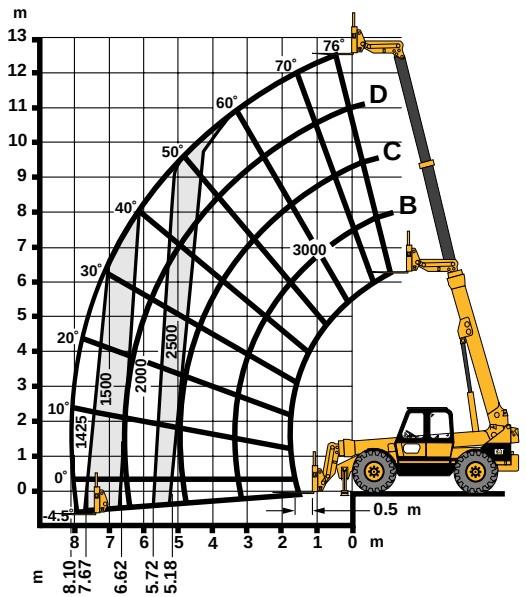


Numbers in chart measured in kilograms.

Maximum lift capacity	3000 kg	**6615 lb**
Maximum lift height	12.5 m	**41'0"**
Load at maximum height	2500 kg	**5512 lb**
Max. height at maximum load	12.0 m	**39'4"**
Max. reach at maximum load	2.86 m	**9'5"**
Maximum forward reach	8.10 m	**26'7"**
Load at maximum reach	475 kg	**1047 lb**

TH63

Stabilizers Down

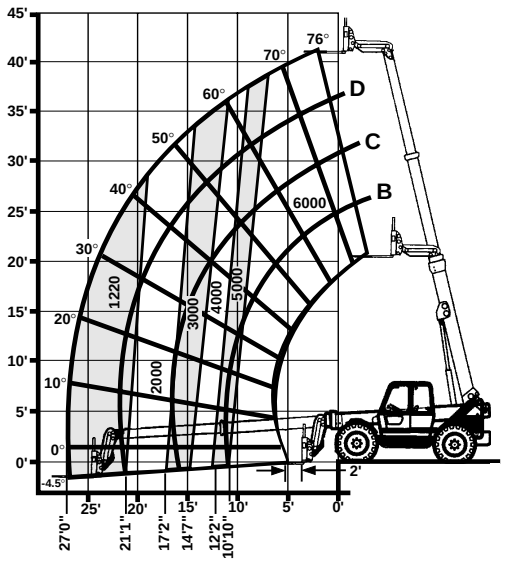


Numbers in chart measured in kilograms.

Maximum lift capacity	3000 kg	**6615 lb**
Maximum lift height	12.5 m	**41'0"**
Load at maximum height	3000 kg	**6515 lb**
Max. height at maximum load	12.5 m	**41'0"**
Max. reach at maximum load	5.18 m	**17'0"**
Maximum forward reach	8.10 m	**26'7"**
Load at maximum reach	1425 kg	**3142 lb**

TH63

No Stabilizers

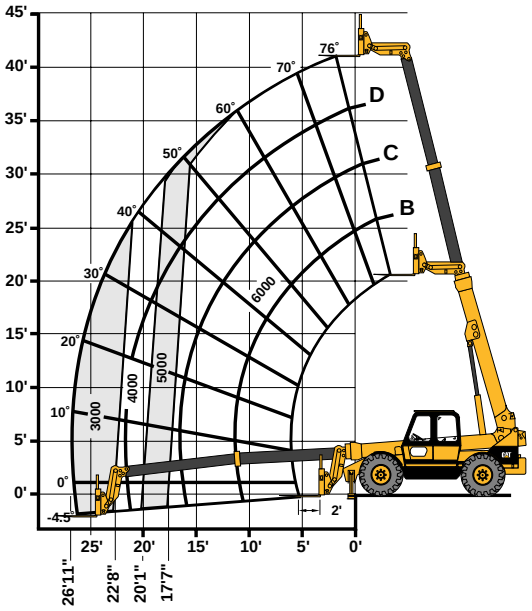


Numbers in chart measured in pounds.

Maximum lift capacity	2725 kg	**6000 lb**
Maximum lift height	12.5 m	**41'0"**
Load at maximum height	2725 kg	**6000 lb**
Maximum forward reach	8.2 m	**27'0"**
Load at maximum reach	554 kg	**1220 lb**

TH63

Stabilizers Down

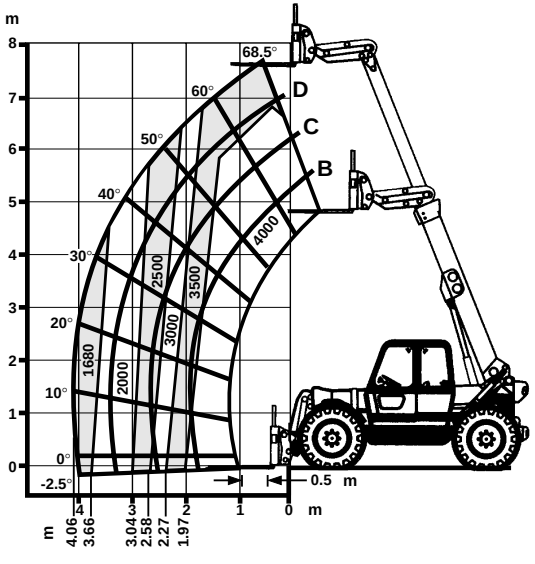


Numbers in chart measured in pounds.

Maximum lift capacity	2725 kg	**6000 lb**
Maximum lift height	12.5 m	**41'0"**
Load at maximum height	2725 kg	**6000 lb**
Maximum forward reach	8.2 m	**27'0"**
Load at maximum reach	1365 kg	**3000 lb**

TH82

Non-U.S. Version

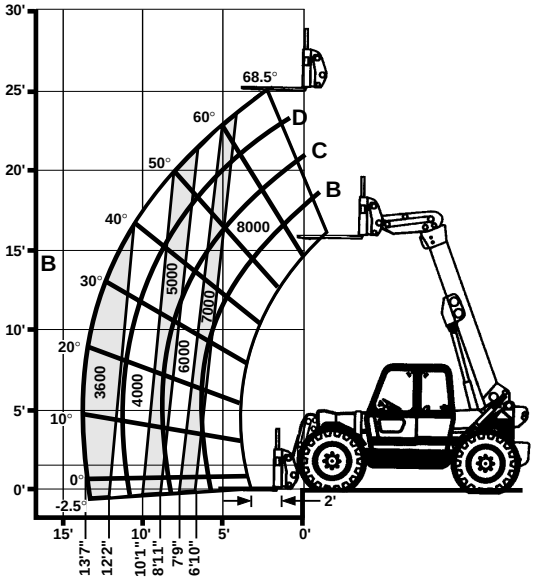


Numbers in chart measured in kilograms.

Maximum lift capacity	4000 kg	**8820 lb**
Maximum lift height	7.6 m	**25'0"**
Load at maximum height	3500 kg	**7717 lb**
Max. height at maximum load	7.0 m	**23'0"**
Max. reach at maximum load	1.97 m	**6'6"**
Maximum forward reach	4.06 m	**13'4"**
Load at maximum reach	1680 kg	**3704 lb**

TH82

North American Version

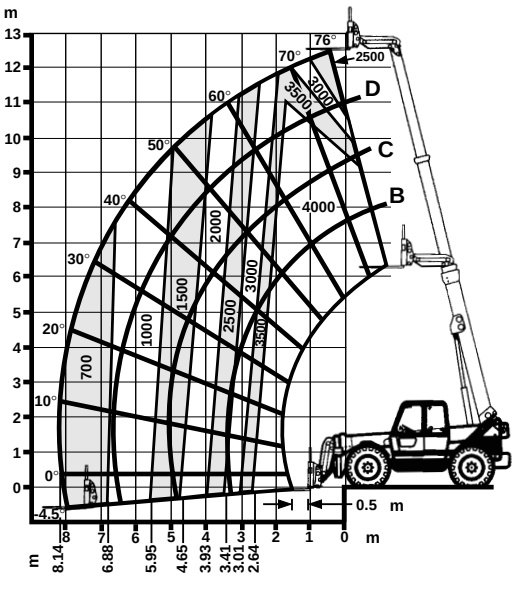


Numbers in chart measured in pounds.

Maximum lift capacity	3635 kg	**8000 lb**
Maximum lift height	7.6 m	**25'0"**
Load at maximum height	3182 kg	**7000 lb**
Maximum forward reach	4.2 m	**13'9"**
Load at maximum reach	1635 kg	**3600 lb**

TH83

Stabilizers Up

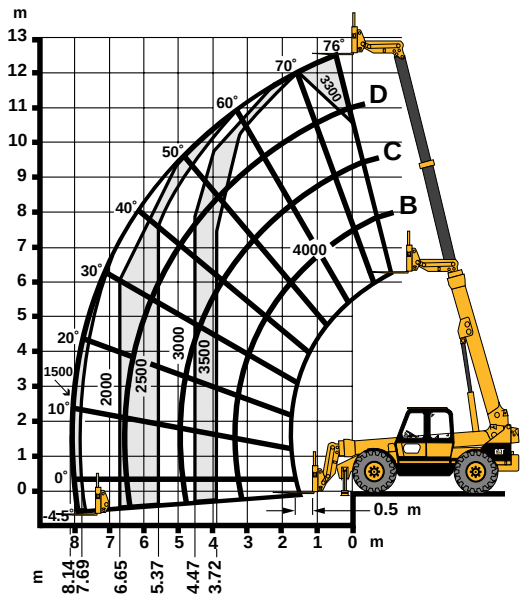


Numbers in chart measured in kilograms.

Maximum lift capacity	4000 kg	**8820 lb**
Maximum lift height	12.5 m	**41'0"**
Load at maximum height	2500 kg	**5512 lb**
Max. height at maximum load	11.0 m	**36'1"**
Max. reach at maximum load	2.64 m	**8'8"**
Maximum forward reach	8.14 m	**26'8"**
Load at maximum reach	700 kg	**1543 lb**

TH83

Stabilizers Down

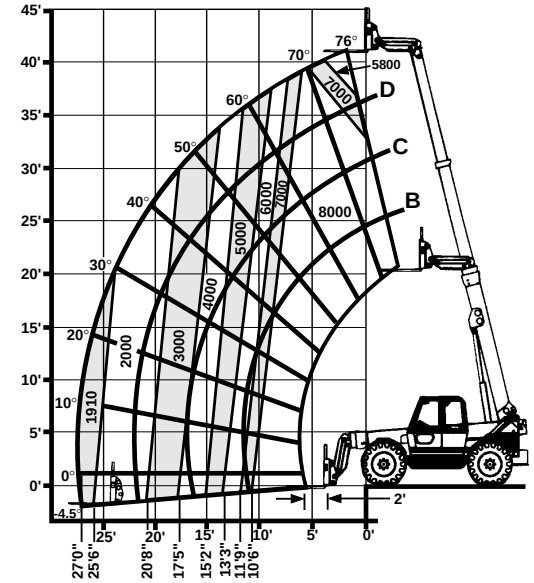


Numbers in chart measured in kilograms.

Maximum lift capacity	4000 kg	**8820 lb**
Maximum lift height	12.5 m	**41'0"**
Load at maximum height	3300 kg	**7276 lb**
Max. height at maximum load	12.25 m	**40'2"**
Max. reach at maximum load	3.72 m	**12'2"**
Maximum forward reach	8.14 m	**26'8"**
Load at maximum reach	1500 kg	**3307 lb**

TH83

No Stabilizers

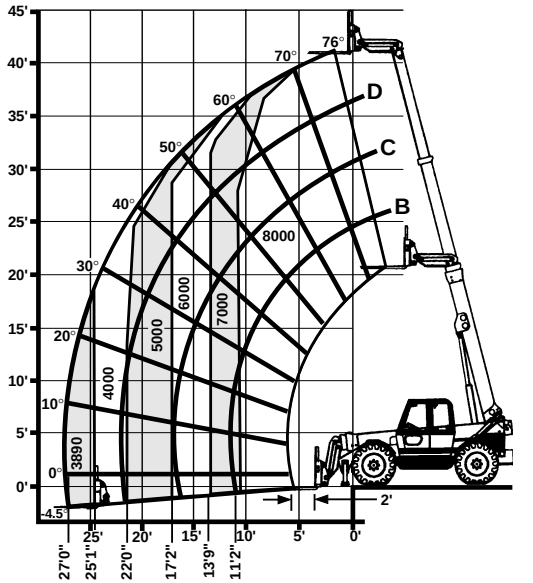


Numbers in chart measured in pounds.

Maximum lift capacity	3635 kg	**8000 lb**
Maximum lift height	12.5 m	**41'0"**
Load at maximum height	2725 kg	**6000 lb**
Maximum forward reach	8.2 m	**27'0"**
Load at maximum reach	870 kg	**1910 lb**

TH83

Stabilizers Down

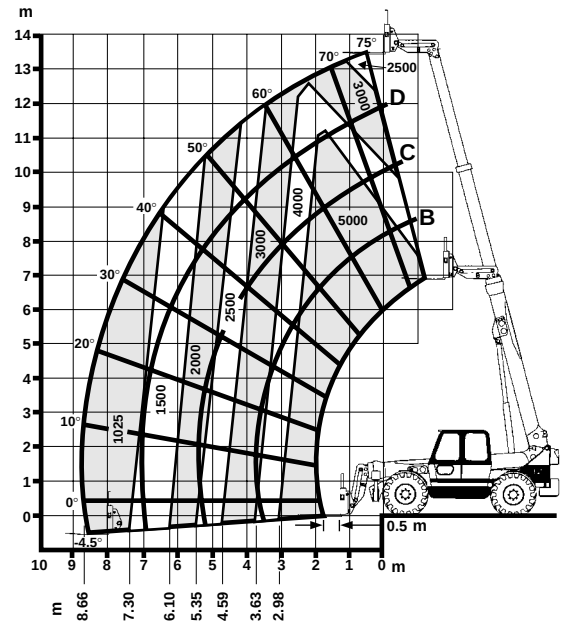


Numbers in chart measured in pounds.

Maximum lift capacity	3635 kg	**8000 lb**
Maximum lift height	12.5 m	**41'0"**
Load at maximum height	3635 kg	**8000 lb**
Maximum forward reach	8.2 m	**27'0"**
Load at maximum reach	1770 kg	**3890 lb**

TH103

Stabilizers Up

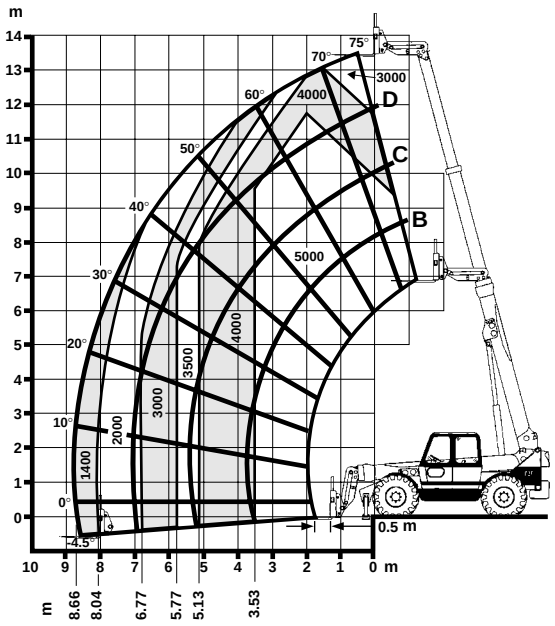


Numbers in chart measured in kilograms.

Maximum lift capacity	5000 kg	**11,025 lb**
Maximum lift height	13.5 m	**44'0"**
Load at maximum height	2500 kg	**5513 lb**
Maximum forward reach	8.66 m	**28'4"**
Load at maximum reach	1025 kg	**2260 lb**

TH103

Stabilizers Down

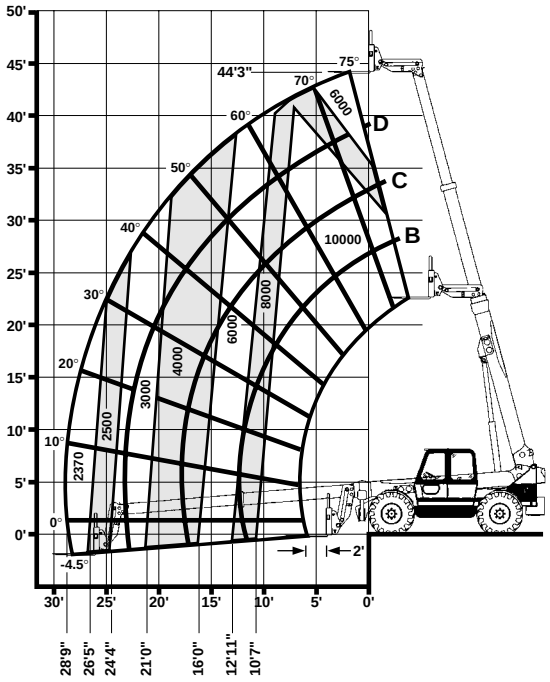


Numbers in chart measured in kilograms.

Maximum lift capacity	5000 kg	**11,025 lb**
Maximum lift height	13.5 m	**44'0"**
Load at maximum height	3000 kg	**6615 lb**
Maximum forward reach	8.66 m	**28'4"**
Load at maximum reach	1400 kg	**3087 lb**

TH103

No Stabilizers

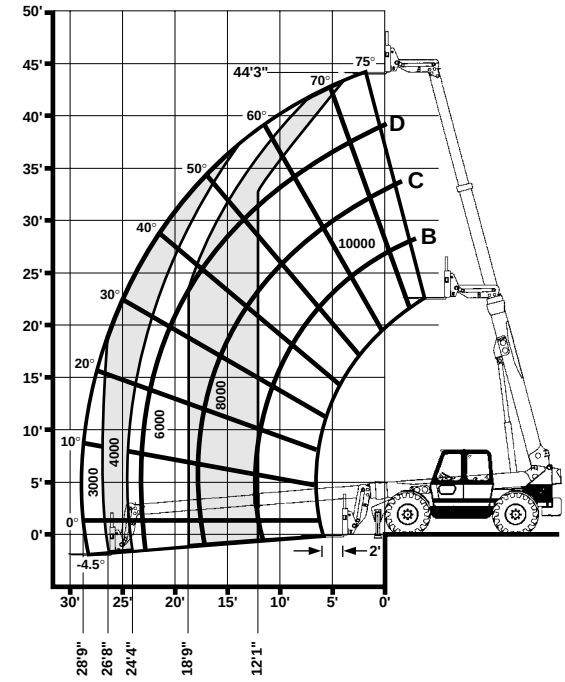


Numbers in chart measured in pounds.

Maximum lift capacity	4536 kg	**10,000 lb**
Maximum lift height	13.5 m	**44'0"**
Load at maximum height	2725 kg	**6000 lb**
Maximum forward reach	8.8 m	**28'9"**
Load at maximum reach	1075 kg	**2370 lb**

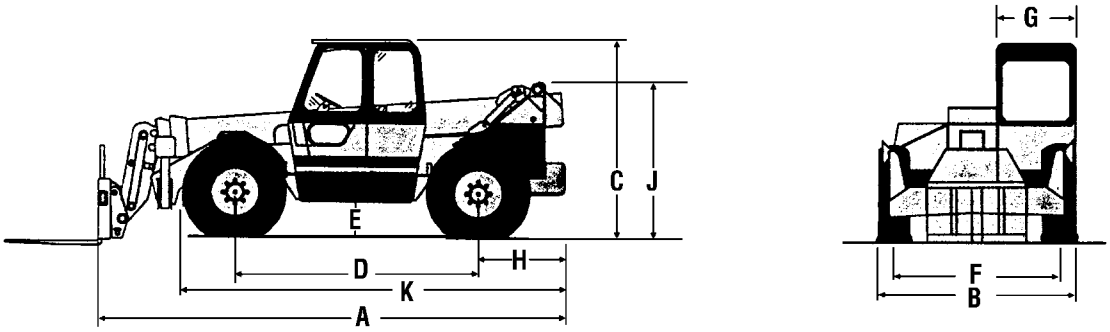
TH103

Stabilizers Down



Numbers in chart measured in pounds.

Maximum lift capacity	4536 kg	**10,000 lb**
Maximum lift height	13.5 m	**44'0"**
Load at maximum height	4536 kg	**10,000 lb**
Maximum forward reach	8.8 m	**28'9"**
Load at maximum reach	1365 kg	**3000 lb**



Dimensions (approx.)

MODEL	TH62		TH63		TH82		TH83		TH103	
	mm	ft	mm	ft	mm	ft	mm	ft	mm	ft
A) Length to fork face	4760	**15'7"**	5720	**18'9"**	4760	**15'7"**	5720	**18'9"**	6332	**20'9"**
B) Width	2230	**7'4"**	2450	**8'0"**	2450	**8'0"**	2450	**8'0"**	2440	**8'0"**
C) Height	2430	**8'0"**	2450	**8'0"**	2450	**8'0"**	2450	**8'0"**	2675	**8'9"**
D) Wheel base	2900	**9'6"**	2970	**9'9"**	2970	**9'9"**	2970	**9'9"**	3175	**10'5"**
E) Ground clearance	450	**18"**	450	**18"**	450	**18"**	450	**18"**	496	**1'7.5"**
F) Wheel track	1850	**6'1"**	2080	**6'10"**	2080	**6'10"**	2080	**6'10"**	2074	**6'10"**
G) Cab width (inside)	900	**2'11"**	955	**3'2"**	955	**3'2"**	955	**3'2"**	955	**3'2"**
H)	777	**2'7"**	1085	**3'7"**	772	**2'6"**	1060	**3'6"**	1318	**4'4"**
J)	1770	**5'10"**	1932	**6'4"**	1770	**5'10"**	1990	**6'6"**	2058	**6'9"**
K)	4316	**14'2"**	4688	**15'5"**	4374	**14'4"**	4662	**15'4"**	*	*

*Unavailable at time of printing.

Tire Selection

Non-U.S. Models			North American Models		
Model	**Tire Size**	**Tire Type**	**Model**	**Tire Size**	**Tire Type**
TH62	15.5 x 24 10PR*	Agricultural	TH62	13.0 x 24 12PR*	Construction
	17.5LR24	Agricultural		15.0 x 25 12PR	Construction
	13.0 x 24 12PR	Construction		17.5LR24	Agricultural
	15.5 x 25 12PR	Construction	TH63	13.0 x 24 12PR*	Construction[a]
TH63	15.5 x 25 12PR*	Construction		13.0 x 24 12PR	Construction[b]
	15.5 x 80-24	Agricultural		15.5 x 25 12PR	Construction[a]
TH82	15.5 x 25 12PR*	Construction		15.5 x 25 12PR	Construction[b]
	13.0 x 24	Construction	TH82	13.0 x 24 12PR*	Construction
	15.5 x 80-24	Agricultural		15.5 x 25 12PR	Construction
	17.5LR24	Agricultural		17.5LR24	Agricultural
	49.5/70R24	Agricultural	TH83	14.0 x 24 12PR*	Construction[a]
TH83	14.0 x 24 12PR*	Construction		14.0 x 24 12PR*	Construction[b]
	17.5 x 25 12PR	Construction		17.5 x 25 12PR	Construction[a]
TH103	14.0 x 24 16PR*	Construction		17.5 x 25 12 PR	Construction[b]
	17.5R25	Construction	TH103	14.0 x 24 16PR*	Construction
				17.5R25	Construction

*Standard tire.
[a]No stabilizers.
[b]With stabilizers.

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**	**Wide**	**Rotate**	**Wide/Rotate**
TH62 & TH63				
Capacity	3000 kg **6615 lb**	2920 kg **6440 lb**	2865 kg **6320 lb**	2785 kg **6140 lb**
Weight w/1220 mm **(4'0")** fork	240 kg **529 lb**	320 kg **706 lb**	375 kg **827 lb**	455 kg **1003 lb**
Width	1220 mm **4'0"**	1880 mm **6'2"**	1220 mm **4'0"**	1880 mm **6'2"**
Height	1155 mm **3'9"**	1155 mm **3'9"**	1155 mm **3'9"**	1155 mm **3'9"**
Max. fork spread	1200 mm **3'11"**	1850 mm **6'1"**	1200 mm **3'11"**	1850 mm **6'1"**
Floating fork movement	70 mm **3"**	70 mm **3"**	70 mm **3"**	70 mm **3"**
Rotation	**—**	**—**	**12°**	**12°**
TH82/TH83				
Capacity	4000 kg **8820 lb**	3920 kg **8640 lb**	3890 kg **8580 lb**	3810 kg **8400 lb**
Weight w/1220 mm **(4'0")** fork	286 kg **631 lb**	366 kg **807 lb**	395 kg **871 lb**	475 kg **1047 lb**
Width	1220 mm **4'0"**	1880 mm **6'2"**	1220 mm **4'0"**	1880 mm **6'2"**
Height	1155 mm **3'9"**	1155 mm **3'9"**	1155 mm **3'9"**	1155 mm **3'9"**
Max. fork spread	1200 mm **3'11"**	1850 mm **6'1"**	1200 mm **3'11"**	1850 mm **6'1"**
Floating fork movement	70 mm **3"**	70 mm **3"**	70 mm **3"**	70 mm **3"**
Rotation	**—**	**—**	**12°**	**12°**
TH103				
Capacity	5000 kg **11,025 lb**	4920 kg **10,850 lb**	4850 kg **10,690 lb**	4680 kg **10,320 lb**
Weight w/1220 mm **(4'0")** fork	318 kg **701 lb**	398 kg **878 lb**	468 kg **1032 lb**	548 kg **1208 lb**
Width	1220 mm **4'0"**	1880 mm **6'2"**	1220 mm **4'0"**	1880 mm **6'2"**
Height	1155 mm **3'9"**	1155 mm **3'9"**	1155 mm **3'9"**	1155 mm **3'9"**
Max. fork spread	1200 mm **3'11"**	1850 mm **6'1"**	1200 mm **3'11"**	1850 mm **6'1"**
Floating fork movement	70 mm **3"**	70 mm **3"**	70 mm **3"**	70 mm **3"**
Rotation	**—**	**—**	**12°**	**12°**

Fork Type	**Pallet**			**Block**		
Model	**Forks/Set**	**Size**		**Model**	**Forks/Set**	**Size**
TH62/TH63	2	50 x 100 x 1097 mm	**2" x 4" x 43"**	**TH62/TH63**	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"**
TH82/TH83	2	50 x 100 x 1220 mm	**2" x 4" x 48"**	**TH82/TH83/ TH103**	4	50 x 50 x 1220 mm **2" x 2" x 48"**
TH103	2	50 x 125 x 1220 mm	**2" x 5" x 48"**		6	50 x 50 x 1220 mm **2" x 2" x 48"**

HEAVY DUTY BUCKET ● **Cutting Edge Included**

Model	TH62		TH63/TH82/TH83/TH103	
Capacity (heaped)*	1.0 m^3	**1.3 yd^3**	1.07 m^3	**1.4 yd^3**
Width	2190 mm	**7'2"**	2438 mm	**8'0"**
Weight	444 kg	**979 lb**	446 kg	**983 lb**

LOOSE MATERIAL BUCKET ● **Cutting Edge Included**

Model	TH62		TH63/TH82/TH83/TH103	
Capacity (heaped)*	1.5 m^3	**2.0 yd^3**	1.61 m^3	**2.1 yd^3**
Width	2290 mm	**7'6"**	2438 mm	**8'0"**
Weight	550 kg	**1212 lb**	590 kg	**1300 lb**

4 IN 1 BUCKET ● **Hydraulic Gripping Jaw Included**

Model	TH62		TH63/TH82/TH83/TH103	
Capacity (heaped)*	0.75 m^3	**1.0 yd^3**	0.78 m^3	**1.02 yd^3**
Width	2290 mm	**7'6"**	2440 mm	**8'0"**
Weight	440 kg	**970 lb**	480 kg	**1058 lb**

ROOT CROP BUCKET

Model	TH62 & TH82	
Capacity (heaped)*	1.5 m^3	**2.0 yd^3**
Width	2290 mm	**7'6"**
Weight	410 kg	**904 lb**

EXTENSION BOOM

Model	TH62/TH63/TH82/TH83/TH103	
Length	3660 mm	**12'0"**
Weight	310 kg	**683 lb**
Capacity	650 kg	**1433 lb**

MANURE FORK

Model	TH62 & TH82	
Capacity (heaped)*	1.9 m^3	**2.5 yd^3**
Width	2290 mm	**7'6"**
No. of tines	**9**	
Tine length	1060 mm	**3'6"**
Weight	375 kg	**827 lb**

MANURE GRAB ● **Hydraulic Top Grab Included**

Model	TH62 & TH82	
Capacity (heaped)*	1.9 m^3	**2.5 yd^3**
Width	2290 mm	**7'6"**
No. of tines	**9**	
Tine length	1060 mm	**3'6"**
Weight	595 kg	**1312 lb**

MANURE FORK WITH PUSHOFF ● **Includes Hydraulic Top Grab and Push Off**

Model	TH62 & TH82	
Capacity (heaped)*	1.73 m^3	**2.26 yd^3**
Width	2290 mm	**7'6"**
No. of tines	**9**	
Tine length	1060 mm	**3'6"**
Weight	575 kg	**1268 lb**

*SAE Ratings.

GRAIN PUSHER

Model	TH62 & TH82	
Blade width	2110 mm	**6'11"**
Forward reach	2110 mm	**6'11"**
Weight	320 kg	**706 lb**

BALE SPIKE

Model	TH62 & TH82	
Width	1820 mm	**6'0"**
No. of Tines	**6**	
Tine length	1370 mm	**4'6"**
Weight	130 kg	**287 lb**

AVAILABLE ATTACHMENTS	TH62	TH63	TH82	TH83	TH103
Standard Carriage	●	●	●	●	●
Rotate Carriage*	●	●	●	●	●
Carriage, Wide/Framers	●	●	●	●	●
Carriage, Wide/Framers, Rotate*	●	●	●	●	●
Forks, Pallet — 2 of (50 x 100 x 1097 mm)	●	●	N/A	N/A	N/A
Forks, Pallet — 2 of (50 x 100 x 1220 mm)	●	●	●	●	N/A
Forks, Pallet — 2 of (50 x 125 x 1220 mm)	N/A	N/A	N/A	N/A	●
Forks, Block — 4 of (50 x 50 x 1220 mm)	●	●	●	●	●
Forks, Block — 6 of (50 x 50 x 1220 mm)	●	●	●	●	●
1.0 m^3, Heavy Duty Bucket	●	N/A	N/A	N/A	N/A
1.07 m^3, Heavy Duty Bucket	N/A	●	●	●	●
1.5 m^3, Root Crop Ag Bucket	●	N/A	●	N/A	N/A
1.5 m^3, Loose Material Bucket	●	N/A	N/A	N/A	N/A
1.61 m^3, Loose Material Bucket	N/A	●	●	●	●
4 In 1, 0.75 m^3, Bucket*	●	N/A	N/A	N/A	N/A
4 In 1, 0.78 m^3, Bucket*	N/A	●	●	●	●
Manure Fork	●	N/A	●	N/A	N/A
Manure Grab*	●	N/A	●	N/A	N/A
Manure Fork and Push Off*	●	N/A	●	N/A	N/A
Extension Boom (3.66 m)	●	●	●	●	●
Blade, Grain Pusher	●	N/A	●	N/A	N/A
Bale Spike — 2 Bales	●	N/A	●	N/A	N/A
Quick Coupler, Hydraulic*	●	●	●	●	●
Hitch, Hydraulic Rear Tow	●	N/A	N/A	N/A	N/A

*Additional Hydraulics Required.

PAVING PRODUCTS

CONTENTS

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 and PM-465.
- **Short turning radii** for productivity and jobsite flexibility.
- **Front-discharge conveyor on PM-565B and PM-465** 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 and PM-465.
- **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.

MODEL	PM-465		PM-565B	
Flywheel Power	343 kW	**460 hp**	466 kW	**625 hp**
Operating Weight	25 880 kg	**57,060 lb**	38 000 kg	**83,600 lb**
Engine Model	**3406C**		**3408E**	
Rated Engine RPM	**2100**		**2100**	
No. of Cylinders	**6**		**8**	
Bore	137 mm	**5.4"**	137 mm	**5.4"**
Stroke	165 mm	**6.5"**	152 mm	**6"**
Displacement	14.6 L	**893 in^3**	18 L	**1099 in^3**
Drive Systems: Rotor	**Mechanical**		**Mechanical**	
Ground	**Hydrostatic with 4 track design**		**Hydrostatic with 4 track design**	
Discharge Conveyor Width	762 mm	**2'6"**	762 mm	**2'6"**
Width of Standard Track Shoe	250 mm	**10"**	348 mm	**13.7"**
Track Length on Ground	1242 mm	**4'1"**	2045 mm	**6'8.5"**
Ground Contact Area (w/std. shoe)	0.29 m^2	**450 in^2**	0.43 m^2	**672 in^3**
Operating Dimensions:				
Height	4.6 m	**15'0"**	4835 mm	**14'11"**
Width	2.5 m	**8'2"**	3151 mm	**10'7"**
Length	12.83 m	**42'1"**	14.5 m	**47'6"**
Standard Mandrel (Width of Cut)	1905 mm	**6'3"**	2100 mm	**6'11"**
No. of Teeth	**137**		**—**	
Depth of Cut (max.)	305 mm	**12"**	305 mm	**12"**
Optional Mandrel Widths	2000 mm	**6'7"**	**N/A**	
Speeds: Operating (max.)	0-37 m/min	**0-120 ft/min**	0-40 mpm	**0-132 fpm**
Speeds: Travel (max.)	0-5.2 km/hr	**0-3.2 mph**	0-6 km/hr	**0-3.7 mph**
Inside Turning Radius: Right	3.62 m	**11'10"**	4674 mm	**15'4"**
Left	4.12 m	**13'6"**	—	**—**
Grade Control	**Contacting and Non Contacting Electric Over Hydraulic**		**Standard Non Contact Electric Over Hydraulic**	
Slope Control	**Electric Over Hydraulic**		**—**	
Fuel Capacity	796 L	**210 U.S. gal**	946 L	**250 U.S. gal**
Water Capacity	2275 L	**600 U.S. gal**	3790 L	**1000 U.S. gal**

		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"	
Speed m/min	ft/min	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**

		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"	
Speed m/min	ft/min	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 115 lb/yd^2, 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-465 is a four track, front discharge cold planer designed primarily for the Urban/City environment. The PM-465, with its tight turning radius and easy set up, makes it suitable for many applications. The PM-465 has the productive capacity to perform effectively on highway applications as well. Machine dimensions and weight allow transport on one truck, often no special weight permits are required.

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 overlayed 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.

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.

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)	• To establish grade and slope. • Remove excess pavement.	• To establish proper grade and slope. • To establish new grade and slope.
Partial Removal	• For use with hot mix recycle. • Remove pavement irregularities. • Texture for skid resistance.	• To correct drainage and curb reveal. • To lower elevation at overpass. • For use with hot recycle. • Eliminate leveling course.
Full Depth Removal	• Total rebuild. RAP used for base or hot recycle. • Cold recycle. This requires additional surface treatment.	• Total rebuild. RAP used for base or hot recycle. • Cold recycle. Requires additional surface treatment.
Texturing	• For skid resistance and improved bond when overlay is applied.	• For skid resistance and improved bond when overlay is applied.
Leveling		• At intersections to remove bumps, shoving and improve drainage.
Special	• Joint and crack repair. • Cut rumble grooves on shoulders of bridge approaches.	• Intersection defect repair. • Pothole repair. • Railroad crossing repair. • Tight radius profiling around manhole covers, etc. • Pavement adjustments (transitions from existing pavements to new overlays).

RR-250B:

The RR-250B is a single rotor full depth reclaiming machine. 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 RR-250B can be equipped with attachments that accurately inject liquid additives directly into the mixing hood. Optional rotors can be installed to convert the RR-250B into a soil stabilizer. The internally mounted breaker bar aids in material sizing.

SS-250B:

The SS-250B is a single rotor soil stabilization machine. The machine cuts, mixes and pulverizes native in-place soils or select materials, with or without additives. It modifies and stabilizes the soil obtaining a strong base.

Both the RR & SS-250B feature automatic depth control, engine load sensing, and rear steering.

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.

RR-250B/SS-250B 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.



MODEL	RR-250B	SS-250B	RM-350B
Flywheel Power	250 kW **335 hp**	250 kW **335 hp**	373 kW **500 hp**
Operating Weight	19 264 kg **42,470 lb**	14 343 kg **31,620 lb**	24 040 kg **53,000 lb**
Engine Model	**3406C**	**3406C**	**3406D DITA**
Rated Engine RPM	**2100**	**2100**	**2100**
No. Cylinders	**6**	**6**	**6**
Bore	137 mm **5.4"**	137 mm **5.4"**	137 mm **5.4"**
Stroke	165 mm **6.5"**	165 mm **6.5"**	165 mm **6.5"**
Displacement	14.6 L **893 in³**	14.6 L **893 in³**	14.6 L **893 in³**
Drive Systems: Rotor	**3 speed Mechanical**	**3 speed Mechanical**	**3 speed Mechanical**
Ground	**4 speed Hydrostatic**	**4 speed Hydrostatic**	**4 speed Hydrostatic**
Operating Dimensions: Height	2600 mm **8'6.5"**	2600 mm **8'6.5"**	3404 mm **11'2"**
Width	2921 mm **9'7"**	2921 mm **9'7"**	2997 mm **9'10"**
Length	8560 mm **28'1"**	8560 mm **28'1"**	9595 mm **31'6"**
Width of Cut	2438 mm **8'0"**	2438 mm **8'0"**	2438 mm **8'0"**
Depth of Cut (Max.)	330 mm **13"**	457 mm **18"**	508 mm **20"**
Rotor Speed	**Trans / Drive / Speed**	**Trans / Drive / Speed**	**Trans / Drive / Speed**
	Low / Low / 123 rpm	Low / Low / 123 rpm	Low / Low / 115 rpm
	Low / High / 168 rpm	Low / High / 168 rpm	Low / High / 160 rpm
	High / Low / 284 rpm	High / Low / 284 rpm	High / Low / 215 rpm
Mimimum Turning Radius:			
Standard	5.5 m **18'0"**	5.5 m **18'0"**	5.48 m **18'0"**
Travel Speed (Max.)	19.3 km/h **12 mph**	19.3 km/h **12 mph**	16.8 km/h **10.5 mph**
Standard Tires: Front	**23.5 × 25-16 ply Lug Type E-2**	**28.1 × 26-10 PR Lug**	**23.5R25, L-2 Loader/Dozer**
Rear	**15.5 × 25-8 ply Lug Type L-2**	**14.9 × 24-6 PR Lug**	**19.5L × 24-12 R-4 Lug All**
Fuel Capacity	416 L **110 U.S. gal**	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**	61 L **16 U.S. gal**
Crankcase	34 L **9 U.S. gal**	34 L **9 U.S. gal**	34 L **9 U.S. gal**

OPTIONAL EQUIPMENT — RR-250B/SS-250B

- 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 (emulsion or water) (English or Metric).
- Water spray system with in-line flow meter.
- Rear wheel power.
- Sound suppression package.
- Torque limiter.
- Mirror package.

OPTIONAL EQUIPMENT — RM-350B

- Roll Over Protective Structure (ROPS).
- Working light package.
- Roading light package.
- Deluxe cab.
- Liquid additive system (emulsion or water).
- Water spray system.
- Sound suppression package.
- Rear wheel power.
- Mirror package.

Rotor Options for SS-250B

Rotor	Maximum Depth of Work		No. of Bits/Tools	Direction of Cut
Quick Change Tool	381 mm	**15"**	58	Up
Deep Mix Quick Change	457 mm	**18"**	58	Down
Combination	381 mm	**15"**	108	Up

Rotor Options for RR-250B

Rotor	Maximum Depth of Work		No. of Bits/Tools	Direction of Cut
Cone Tool Milldrum	330 mm	**13"**	188	Up
Breakaway Holder Rotor	330 mm	**13"**	188	Up
Quick Change	381 mm	**15"**	58	Up
Combination	381 mm	**15"**	108	Up

Rotor Options for RM-350B

Rotor	Maximum Depth of Work		No. of Bits/Tools	Direction of Cut
Reclamation	381 mm	**15"**	190	Up
Quick Change	508 mm	**20"**	58	Up
Combination	457 mm	**18"**	108	Up

Other rotors available by custom order.

PRODUCTION ESTIMATING

The maximum cutting depth is 381 mm (15") for the RR-250B and 457 mm (18") for the RM-350B. The SS-250B can mix up to 457 mm (18"). In addition, the cutting width of their rotors is 8 feet. The following formulas allow you to determine the production in square yards (yd^2)/minute or cubic yards (yd^3)/ minute.

Production in square yards (yd^2) per minute

$$yd^2/min = \frac{\text{FPM of travel speed}}{1.125}$$

$$\frac{9\ ft^2/yd^2}{8\ ft\ Cutting\ width} = 1.125$$ (This is a constant value for an eight foot wide rotor)

Gallons of additive (for units with pump and metering additive system)

$$\frac{GPM}{yd^2/min} = gal/yd^2$$

Or, if required additive amounts are known, you can determine necessary travel speed as shown:

$$\frac{GPM}{gal/yd^2} = yd^2/min;\ yd^2/min \times 1.125 = ft/min$$

Production in Cubic Yards (yd^3) per minute

$$\frac{\text{FPM of travel speed}}{1.125} \times \frac{\text{Cutting or mixing depth in inches}}{36} = \frac{yd^3}{min}$$

Production in Tons per Minute

$$yd^3/min \times \frac{\text{Wt. of Material per yd in lbs}}{2000\ lb/ton} = tons/min$$

Abbreviations

FPM = Feet Per Minute
GPM = Gallons Per Minute

WEIGHT OF MATERIALS

Material		LOOSE kg/m³	LOOSE lbs/yd³	IN-PLACE kg/m³	IN-PLACE lbs/yd³
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, RR-250B and SS-250B equipped with a 2438 mm **(8 ft)** cutting rotor.

PRODUCTION RATES

Travel Speed m/min	m²/ min	m³/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	yd²/ min	yd³/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 Extend-A-Mat B screeds or Pavemaster B fixed screeds** available for AP-650B, AP-800C, AP-1000B, AP-1050B and AP-1055B.
- **Single sliding operator's station** on AP-650B thru AP-1055B can be positioned on either side of paver for excellent visibility.
- **Hydrostatic pumps** provide infinitely variable speed ranges.
- **Direct hydrostatic drives** on the AP-650B thru AP-1055B eliminate gear boxes, differentials, final drive chains etc.
- **Patented variable speed hydraulic augers on AP-200B** extend with wings to ensure proper material distribution.
- **Self-dumping hydraulic hoppers** are heavy-duty and high capacity.
- **Self-cleaning all-steel tracks on AP-200B** assure long life with virtually no maintenance required.

MODEL	AP-200B	
Flywheel Power	26 kW	**35 hp**
Rated Engine RPM	**2650**	
No. Cylinders	**2**	
Displacement	1.716 L	**104.7 in³**
Engine Model	**Hatz 2m40 Air-Cooled Diesel**	
Operating Weight (empty)	4080 kg	**9000 lb**
Speeds	0-54 m/min	**0-176 ft/min**
Maximum theoretical capacity	609.6 (t)/hr	**600 TPH**
Track Assemblies:		
Width	381 mm	**15"**
Length on Ground	760 mm	**2'6"**
Outside to Outside	2440 mm	**8'0"**
General Dimensions:		
Basic Width	3000 mm	**9'10"**
Length	2440 mm	**8'0"**
Height (less exhaust stack)	1730 mm	**6'8"**
Wheelbase	**—**	
Hopper Capacity	5.4 metric ton	**6 standard tons**
Screed (extendable)	2743 to 3658 mm	**9'0" to 12'0"**
Paving Width:		
Minimum	914 mm	**3'0" (with optional cut-off shoes)**
Maximum	3658 mm	**12'0"**
Service Refill Capacities:		
Cooling system	**Air-cooled**	
Fuel tank	39.8 L	**10.5 U.S. gal**
Hydraulic oil tank	75.8 L	**20 U.S. gal**

MODEL		AP-800C		AP-1000B	
Flywheel Power		80 kW	**107 hp**	130 kW	**174 hp**
Rated Engine RPM		**2200**		**2200**	
No. Cylinders		**4**		**6**	
Displacement		4 L	**243 in³**	6.6 L	**403 in³**
Engine Model		**3054DIT**		**3116TA**	
Operating Weight:					
Tractor		12 202 kg	**26,900 lb**	16 190 kg	**35,700 lb**
Pavemaster B Screed	8 ft	1374 kg	**3030 lb**	—	**—**
	10 ft	1656 kg	**3650 lb**	1656 kg	**3650 lb**
Extend-A-Mat B Screed	8 ft	2994 kg	**6600 lb**	—	**—**
	10 ft	3266 kg	**7200 lb**	3266 kg	**7200 lb**
Extend-A-Mat B Wide Plates	10 ft	—	**—**	3760 kg	**8300 lb**
Speeds: Paving		0-76 m/min	**0-250 ft/min**	0-114 m/min	**0-374 ft/min**
Travel		0-19 km/h	**0-12 mph**	0-23.5 km/h	**0-14.5 mph**
Maximum theoretical capacity		1801 (t)/hr	**1773 TPH**	2177 (t)/hr	**2400 TPH**
Tires:					
Front (4)		**13 × 22 Solid Rubber**		**16 × 22 Solid Rubber**	
Rear (2)		**16.00 × 24**		**18.00 × 25 16 PR sand rib**	
Dimensions:					
Operating Width	8 ft Screed	3269 mm	**10'9"**	—	**—**
	10 ft Screed	3327 mm	**10'11"**	3327 mm	**10'11"**
Shipping Width*	8 ft Screed	2438 mm	**8'0"**	—	**—**
	10 ft Screed	3048 mm	**10'0"**	3048 mm	**10'0"**
Height (less exhaust)		2620 mm	**8'7"**	2769 mm	**9'1"**
Length (Extend-A-Mat B, push roller)		6477 mm	**21'3"**	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 m³	**195 ft³**	6.1 m³	**215 ft³**
Auger Diameter		406 mm	**16"**	406 mm	**16"**
Paving Widths:					
Pavemaster B Screed					
(Min. w/cutoff shoes)	8 ft	1828 mm	**6'0"**	—	**—**
(Max. w/extensions)		6096 mm	**20'0"**	—	**—**
Pavemaster B Screed					
(Min. w/cutoff shoes)	10 ft	2438 mm	**8'0"**	2438 mm	**8'0"**
(Max. w/extensions)		6096 mm	**20'0"**	9147 mm	**30'0"**
Extend-A-Mat B Screed					
(Min. w/cutoff shoes)	8 ft	1828 mm	**6'0"**	—	**—**
(Max. w/extensions)		4724 mm	**15'6"**	—	**—**
Extend-A-Mat B Screed					
(Min. w/cutoff shoes)	10 ft	2438 mm	**8'0"**	2438 mm	**8'0"**
(Max. w/extensions)		6147 mm	**20'2"**	7290 mm	**24'2"**
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**

*Transport width — hoppers raised without end gates.



MODEL		AP-650B		AP-1050B		AP-1055B	
Flywheel Power		70 kW	**121 hp**	130 kW	**174 hp**	180 kW	**174 hp**
Rated Engine RPM		**2200**		**2200**		**2200**	
No. Cylinders		**4**		**6**		**6**	
Displacement		4 L	**243 in³**	6.6 L	**403 in³**	6.6 L	**403 in³**
Engine Model		**3054TA**		**3116T**		**3116TA**	
Operating Weight:							
Tractor		11 790 kg	**25,990 lb**	15 785 kg	**34,800 lb**	16 103 kg	**35,500 lb**
Pavemaster B Screed	8 ft	1374 kg	**3030 lb**	—	**—**	—	**—**
	10 ft	—	**—**	1656 kg	**3650 lb**	1656 kg	**3650 lb**
Extend-A-Mat B Screed	8 ft	2944 kg	**6600 lb**	—	**—**	—	**—**
	10 ft	—	**—**	3266 kg	**7200 lb**	3266 kg	**7200 lb**
Extend-A-Mat B Wide plates	10 ft	—	**—**	3760 kg	**8300 lb**	3760 kg	**8300 lb**
Speeds: Paving: 1st		0-67 m/min	**0-220 ft/min**	0-65.6 m/min	**0-215 ft/min**	0-61 m/min	**0-200 ft/min**
Travel: 2nd		8 km/h	**5 mph**	8 km/h	**5 mph**	0-14.9 km/h	**0-9.3 mph**
Maximum theoretical capacity		1300 mtph	**1435 TPH**	2177 mtph	**2400 TPH**	2177 mtph	**2400 TPH**
Tracks Assemblies:							
Width		356 mm	**14"**	356 mm	**14"**	457 mm	**18"**
Length on Ground		2249 mm	**7'5"**	2718 mm	**8'11"**	2718 mm	**8'11"**
Total Number of Track Pads		**42**		**100**		**NA**	
Dimensions:							
Operating Width	8 ft Screed	3269 mm	**10'9"**	—	**—**	—	**—**
	10 ft Screed	—	**—**	3327 mm	**10'11"**	3327 mm	**10'11"**
Shipping Width*	8 ft Screed	3269 mm	**10'9"**	—	**—**	—	**—**
	10 ft Screed	—	**—**	3048 mm	**10'0"**	3048 mm	**10'0"**
Height (less exhaust)		2623 mm	**8'7"**	2769 mm	**9'1"**	2769 mm	**9'1"**
Length (Screed**, Osc. pushroller)		5613 mm	**18'5"**	6579 mm	**21'7"**	6579 mm	**21'7"**
Turning Radius***		—	**—**	—	**—**	—	**—**
Hopper Capacity		5 m³	**177 ft³**	6.1 m³	**215 ft³**	6.1 m³	**215 ft³**
Auger Diameter		406 mm	**16"**	406 mm	**16"**	406 mm	**16"**
Paving Widths:							
8 ft Pavemaster B Screed							
Minimum w/cutoff shoes		1828 mm	**6'0"**	—	**—**	—	**—**
Maximum w/extensions		6096 mm	**20'0"**	—	**—**	—	**—**
10 ft 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"**
8 ft Extend-A-Mat B Screed							
Minimum w/cutoff shoes		1828 mm	**6'0"**	—	**—**	—	**—**
Maximum w/extensions		4724 mm	**15'6"**	—	**—**	—	**—**
10 ft 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"**
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**	227 L	**60 U.S. gal**	227 L	**60 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**

*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.

Features:

- **New variable width Extend-A-Mat B 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.

MODEL		BG-210B		BG-230	
Flywheel Power		80 kW	**107 hp**	80 kW	**107 hp**
Rated Engine RPM		**2200**		**2200**	
No. Cylinders		**4**		**4**	
Displacement		4 L	**243 in³**	4 L	**243 in³**
Engine Model		**3054DIT**		**3054DIT**	
Operating Weight:					
Tractor		8786 kg	**19,395 lb**	12 202 kg	**26,900 lb**
Pavemaster B Screed	8 ft	1374 kg	**3030 lb**	1374 kg	**3030 lb**
	10 ft	1656 kg	**3650 lb**	1656 kg	**3650 lb**
Extend-A-Mat B	8 ft	2994 kg	**6600 lb**	2994 kg	**6600 lb**
	10 ft	—	**—**	—	**—**
Extend-A-Mat B (wide plates)	10 ft	—	**—**	—	**—**
Speeds: Paving		0-83.9 mpm	**0-275 fpm**	0-76 mpm	**0-250 fpm**
Travel		0-21.7 kmph	**0-13.5 mph**	0-19 kmph	**0-12 mph**
Maximum theoretical capacity		1222 (t)/hr	**1203 TPH**	1801 (t)/hr	**1773 TPH**
Tires:					
Front (4) (Solid Rubber)		305 mm × 559 mm	**12" × 22"**	330 mm × 559 mm	**13" × 22"**
Rear (2)		**14:00 × 24**		**16:00 × 24 sand rib**	
Dimensions:					
Operating Width	8 ft Screed	3226 mm	**10'7"**	3269 mm	**10'9"**
	10 ft Screed	—	**—**	3327 mm	**10'11"**
Shipping Width*	8 ft Screed	2502 mm	**8'2.5"**	2438 mm	**8'0"**
	10 ft Screed	—	**—**	3048 mm	**10'0"**
Height (less exhaust)		2578 mm	**8'5.5"**	2620 mm	**8'7⅛"**
Length (Extend-A-Mat B, pushroller)		5842 mm	**19'2"**	6477 mm	**21'3"**
Turning Radius		3048 mm	**10'0"**	2896 mm	**9'6"**
Wheelbase		2007 mm	**6'7"**	2336 mm	**7'8"**
Hopper Capacity		4.8 m³	**170 ft³**	5.5 m³	**195 ft³**
Auger Diameter		357 mm	**14"**	406 mm	**16"**
Paving Widths:					
8 ft Pavemaster B Screed					
Minimum w/cutoff shoes		1828 mm	**6'0"**	1828 mm	**6'0"**
Maximum w/extensions		4877 mm	**16'0"**	6096 mm	**20'0"**
10 ft Pavemaster B Screed					
Minimum w/cutoff shoes		—	**—**	—	**—**
Maximum w/extensions		—	**—**	—	**—**
8 ft Extend-A-Mat B Screed					
Minimum w/cutoff shoes		1828 mm	**6'0"**	1828 mm	**6'0"**
Maximum w/extensions		4724 mm	**15'6"**	4724 mm	**15'6"**
10 ft Extend-A-Mat B Screed					
Minimum w/cutoff shoes		—	**—**	2438 mm	**8'0"**
Maximum w/extensions		—	**—**	6147 mm	**20'2"**
Service Refill Capacities:					
Cooling system		19 L	**5 U.S. gal**	19 L	**5 U.S. gal**
Fuel tank		189 L	**50 U.S. gal**	189 L	**50 U.S. gal**
Hydraulic oil tank		178 L	**47 U.S. gal**	189 L	**50 U.S. gal**

*Shipping width with hoppers raised and without end gates.

MODEL		BG-240B		BG-260C	
Flywheel Power		86 kW	**115 hp**	130 kW	**174 hp**
Rated Engine RPM		**2310**		**2200**	
No. Cylinders		**4**		**6**	
Displacement		4.5 L	**276 in³**	6.6 L	**403 in³**
Engine Model		**JD4045T**		**3116TA**	
Operating Weight:					
Tractor		11 896 kg	**26,260 lb**	16 170 kg	**35,700 lb**
Pavemaster B Screed	8 ft	—	**—**	—	**—**
	10 ft	1656 kg	**3650 lb**	1656 kg	**3650 lb**
Extend-A-Mat B	8 ft	—	**—**	—	**—**
	10 ft	3266 kg	**7200 lb**	3266 kg	**7200 lb**
Extend-A-Mat B (wide plates)	10 ft	—	**—**	3760 kg	**8300 lb**
Speeds: Paving		0-80.8 mpm	**0-265 fpm**	0-114 mpm	**0-374 fpm**
Travel		0-16.7 kmph	**0-10.4 mph**	0-23.5 kmph	**0-14.5 mph**
Maximum theoretical capacity		2936 (t)/hr	**2890 TPH**	2177 (t)/hr	**2400 TPH**
Tires:					
Front (4) (Solid Rubber)		406 mm × 559 mm	**16" × 22"**	406 mm × 559 mm	**16" × 22"**
Rear (2)		**16:00 × 24**		**18:00 × 25, 16 ply sand rib**	
Dimensions:					
Operating Width	8 ft Screed	—	**—**	—	**—**
	10 ft Screed	3327 mm	**10'11"**	3327 mm	**10'11"**
Shipping Width*	8 ft Screed	—	**—**	—	**—**
	10 ft Screed	3048 mm	**10'0"**	3048 mm	**10'0"**
Height (less exhaust)		2616 mm	**8'7"**	2769 mm	**9'1"**
Length (Extend-A-Mat B, pushroller)		6731 mm	**22'1"**	6783 mm	**22'3"**
Turning Radius		3048 mm	**10'0"**	2900 mm	**9'6"**
Wheelbase		2184 mm	**7'2"**	2540 mm	**8'4"**
Hopper Capacity		6.5 m³	**230 ft³**	5.8 m³	**230 ft³**
Auger Diameter		406 mm	**16"**	406 mm	**16"**
Paving Widths:					
8 ft Pavemaster B Screed					
Minimum w/cutoff shoes		—	**—**	—	**—**
Maximum w/extensions		—	**—**	—	**—**
10 ft Pavemaster B Screed					
Minimum w/cutoff shoes		2438 mm	**8'0"**	2438 mm	**8'0"**
Maximum w/extensions		6096 mm	**20'0"**	7925 mm	**26'0"**
8 ft Extend-A-Mat B Screed					
Minimum w/cutoff shoes		—	**—**	—	**—**
Maximum w/extensions		—	**—**	—	**—**
10 ft Extend-A-Mat B Screed					
Minimum w/cutoff shoes		2438 mm	**8'0"**	2438 mm	**8'0"**
Maximum w/extensions		5944 mm	**19'6"**	7290 mm	**24'2"**
Service Refill Capacities:					
Cooling system		35 L	**9.2 U.S. gal**	37 L	**9.78 U.S. gal**
Fuel tank		157 L	**41 U.S. gal**	265 L	**70 U.S. gal**
Hydraulic oil tank		159 L	**42 U.S. gal**	189 L	**50 U.S. gal**

*Shipping width with hoppers raised and without end gates.

MODEL		BG-225C		BG-245C	
Flywheel Power		90 kW	**121 hp**	130 kW	**174 hp**
Rated Engine RPM		**2200**		**2200**	
No. Cylinders		**4**		**6**	
Displacement		4 L	**243 in³**	6.6 L	**403 in³**
Engine Model		**3054DIT**		**3116TA**	
Operating Weight:					
Tractor		11 790 kg	**25,990 lb**	15 560 kg	**34,300 lb**
Pavemaster B Screed	8 ft	1374 kg	**2850 lb**	—	**—**
	10 ft	—	**—**	1472 kg	**3650 lb**
Extend-A-Mat B	8 ft	2994 kg	**6600 lb**	—	—
	10 ft	—	—	3266 kg	**7200 lb**
Extend-A-Mat B (wide plates)	10 ft	—	—	3760 kg	**8300 lb**
Speeds: Paving		0-67 mpm	**0-220 fpm**	0-65.6 mpm	**0-215 fpm**
Travel		0-8 kmph	**0-5 mph**	0-8 kmph	**0-5 mph**
Maximum theoretical capacity		1300 (t)/hr	**1435 TPH**	2177 (t)/hr	**2400 TPH**
Track Assemblies:					
Width		356 mm	**14"**	356 mm	**14"**
Length on ground		2244 mm	**7'5"**	2718 mm	**8'11"**
Total Number of Track Pads		**92**		**100**	
Dimensions:					
Operating Width	8 ft Screed	3269 mm	**10'9"**	—	**—**
	10 ft Screed	—	**—**	3327 mm	**10'11"**
Shipping Width*	8 ft Screed	2623 mm	**8'7"**	—	**—**
	10 ft Screed	—	**—**	3048 mm	**10'0"**
Height (less exhaust)		2623 mm	**8'7"**	2769 mm	**9'1"**
Length (Extend-A-Mat B Screed, pushroller)		5613 mm	**18'5"**	6579 mm	**21'7"**
Turning Radius**		—	**—**	—	**—**
Hopper Capacity		5 m³	**177 ft³**	6.1 m³	**215 ft³**
Auger Diameter		406 mm	**16"**	446 mm	**16"**
Paving Widths:					
8 ft Pavemaster B Screed					
Minimum w/cutoff shoes		1828 mm	**6'0"**	—	**—**
Maximum w/extensions		6096 mm	**20'0"**	—	**—**
10 ft Pavemaster B Screed					
Minimum w/cutoff shoes		—	**—**	2438 mm	**8'0"**
Maximum w/extensions		—	**—**	9144 mm	**30'0"**
8 ft Extend-A-Mat B Screed					
Minimum w/cutoff shoes		1828 mm	**6'0"**	—	**—**
Maximum w/extensions		4724 mm	**15'6"**	—	**—**
10 ft Extend-A-Mat B Screed					
Minimum w/cutoff shoes		—	**—**	2438 mm	**8'0"**
Maximum w/extensions		—	**—**	7366 mm	**24'2"**
Service Refill Capacities:					
Cooling system		31.5 L	**8.3 U.S. gal**	31.5 L	**8.3 U.S. gal**
Fuel tank		227 L	**60 U.S. gal**	227 L	**60 U.S. gal**
Hydraulic oil tank		189 L	**50 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.

MODEL		BG-265B		BG-2455C	
Flywheel Power		145 kW	**195 hp**	130 kW	**174 hp**
Rated Engine RPM		**2200**		**2200**	
No. Cylinders		**6**		**6**	
Displacement		6.6 L	**403 in³**	6.6 L	**403 in³**
Engine Model		**3116TA**		**3116TA**	
Operating Weight:					
Tractor		15 119 kg	**33,375 lb**	16 103 kg	**35,500 lb**
Pavemaster B Screed	8 ft	—	**—**	—	**—**
	10 ft	1656 kg	**3650 lb**	1656 kg	**3650 lb**
Extend-A-Mat B	8 ft	—	—	—	—
	10 ft	3266 kg	**7200 lb**	3266 kg	**7200 lb**
Extend-A-Mat B (wide plates)	10 ft	3760 kg	**8300 lb**	3760 kg	**8300 lb**
Speeds: Paving		0-50 mpm	**0-164 fpm**	0-61 mpm	**0-200 fpm**
Travel		0-8.4 kmph	**0-5.5 mph**	0-14.9 kmph	**0-9.3 mph**
Maximum theoretical capacity		2936 (t)/hr	**2890 TPH**	2177 (t)/hr	**2400 TPH**
Track Assemblies:					
Width		457 mm	**18"**	457 mm	**18"**
Length on ground		3251 mm	**10'8"**	2718 mm	**107"**
Total Number of Track Pads		**94**		**—**	
Dimensions:					
Operating Width	8 ft Screed	—	**—**	—	**—**
	10 ft Screed	3327 mm	**10'11"**	3327 mm	**10'11"**
Shipping Width*	8 ft Screed	—	**—**	—	**—**
	10 ft Screed	3048 mm	**10'0"**	3048 mm	**10'0"**
Height (less exhaust)		2565 mm	**8'5"**	2769 mm	**9'1"**
Length (Extend-A-Mat B Screed, pushroller)		6505 mm	**21'4"**	6579 mm	**21'7"**
Turning Radius**		—	**—**		NA
Hopper Capacity		5.8 m³	**206 ft³**	6.1 m³	**215 ft³**
Auger Diameter		406 mm	**16"**	406 mm	**16"**
Paving Widths:					
8 ft Pavemaster B Screed					
Minimum w/cutoff shoes		—	**—**	—	**—**
Maximum w/extensions		—	**—**	—	**—**
10 ft Pavemaster B Screed					
Minimum w/cutoff shoes		2438 mm	**8'0"**	2438 mm	**8'0"**
Maximum w/extensions		9754 mm	**32'0"**	9144 mm	**30'0"**
8 ft Extend-A-Mat B Screed					
Minimum w/cutoff shoes		—	**—**	—	**—**
Maximum w/extensions		—	**—**	—	**—**
10 ft 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"**
Service Refill Capacities:					
Cooling system		34.8 L	**9.2 U.S. gal**	31.5 L	**8.3 U.S. gal**
Fuel tank		303 L	**80 U.S. gal**	227 L	**60 U.S. gal**
Hydraulic oil tank		107.7 L	**45.1 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.

Production in tons/hr with 1" compacted mat

Speed	Paving Width						
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

Features:

- **Superior maneuverability.** All 700 Series machines are equipped with four wheel steering and three steering modes which provide unmatched maneuverability on the job … turn radius under 4267 mm/14 ft.
- **Unmatched traction**. Four wheel drive on the BG-730 and BG-750 with differential locks on the drive axles combined with engine horsepower and weight distribution make the toughest widening jobs easy.
- **High capacity conveyors.** All machines have high capacity 762 mm/30 in. wide belt conveyors for handling large projects.
- **Quick shift conveyor.** The BG-730 and BG-750 conveyors are equipped with a dual drive system allowing rapid change of direction. Conveyors on all units shift hydraulically from side to side.
- **Power dump front hopper lip.** Front lip on hopper hydraulically lifts to clean out material after truck dumps, reducing hand work.
- **Sliding operator's console.** Operator's console slides from side to side providing rapid change of station location.

MODEL	BG-730	
Flywheel Power	111 kW	**149 hp**
Rated Engine RPM	**2200**	
No. Cylinders	**6**	
Displacement	6 L	**365 in³**
Engine Model	**3056T**	
Operating Weight	14 062 kg	**31,000 lb**
Speeds: Paving	0-98 mpm	**0-320 fpm**
Travel	0-24.1 kmph	**0-15 mph**
Maximum theoretical capacity	3658 (t)/hr	**3600 TPH**
Tires	**15.00 × 22.5**	
Dimensions:		
Length with pushroller	7820 mm	**25'8"**
Operating height	2921 mm	**9'7"**
Shipping height	2578 mm	**8'5.5"**
Shipping width	3048 mm	**10'0"**
Turning Radius	3962 mm	**13'0"**
Wheelbase	4572 mm	**15'0"**
Hopper Capacity	10 m³	**80 ft³**
Truck entry width	2845 mm	**9'4"**
Laydown widths	to 3048 mm	**to 10'**
Service Refill Capacities:		
Cooling system	28.4 L	**7.7 U.S. gal**
Fuel tank	151.4 L	**40 U.S. gal**
Hydraulic oil tank	151.4 L	**40 U.S. gal**

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		**2100**
Operating Weight	7973 kg	**17,600 lb**
Engine		**3054DIT**
Displacement	4 L	**243 in³**
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	1524 mm	**5'0"**
Lift	178 mm	**7"**
Tires:		
Front (2)	178 mm × 559 mm	**7" × 22" Solid Rubber**
Rear (2)	8.25 × 15	**8.25 × 15**
Service Refill Capacities:		
Fuel	151.4 L	**40 U.S. gal**

Features:

- **Designed with optimum horsepower-to-weight ratio** for best operating economy and peak performance.
- **Hydrostatic transmission** allows infinitely variable speeds in both forward and reverse.
- **Drum-drive units** feature a unique, Cat-designed hydraulic flow divider valve (blade-equipped CS-323C) or dual pump and circuit arrangement that 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.
- **NoSPIN high traction differential** is standard on all units for best traction of rear tires. (Except CS-533C.)
- **Routine maintenance** simplified by grouped service points and easy, ample access to service areas.
- **Operator comfort** provided by full-width padded seats or adjustable bucket seats for all day productivity. All machine controls and instrumentation are within easy sight and reach. Unobstructed visibility increases work area productivity.
- **ROPS (Roll Over Protective Structure)** standard on all units. Enclosed cabs with EROPS rating available as an option to provide all-weather comfort and productivity.
- **Oil bath lubrication** increases bearing service life and eliminates daily maintenance.
- **High centrifugal force and amplitude** work together for a highly productive compactor.

MODEL	CS-323C	
Flywheel Power	60 kW	**80 hp**
Rated Engine RPM	**2200**	
No. Cylinders	**4**	
Displacement	4 L	**243 in³**
Engine Model	**3054 DINA**	
Speeds:		
Forward	**1**	
Reverse	**1**	
Max. Speed (For./Rev.)	8.9 km/h	**5.5 mph**
Operating Weight	4540 kg	**9985 lb**
Shipping Weight	4395 kg	**9670 lb**
Drive	**Drum/rear wheel**	
Gradeability	**49%**	
Steering:		
Inside radius	2625 mm	**8'6"**
Outside radius	3895 mm	**12'8"**
Steering angle	**±38°**	
Vibratory System:		
Ecc. Weight Drive	**Hydraulic**	
Frequency	35 Hz	**2100 vpm**
Amplitude Settings	**1**	
Centrifugal Force (Max.)	66.8 kN	**15,000 lb**
General Dimensions:		
Overall width	1395 mm	**4'6"**
Drum width	1270 mm	**4'2"**
Drum diameter	1016 mm	**3'4"**
Tires	**11.2 × 24 6-ply**	
Overall height	2514 mm	**8'3"**
Wheel to drum	2240 mm	**7'4"**
Overall length	4095 mm	**13'4"**
Curb Clearance	347 mm	**13.7"**
Service Refill Capacities:		
Fuel tank	144 L	**38 U.S. gal**
Crankcase	7.6 L	**2 U.S. gal**
Hydraulic fluid	49.2 L	**13 U.S. gal**



MODEL	CS-431C	CS-433C	CS-531C*
Flywheel Power	80 kW **107 hp**	80 kW **107 hp**	108 kW **145 hp**
Rated Engine RPM	**2200**	**2200**	**2200**
No. Cylinders	**4**	**4**	**6**
Displacement	4 L **243 in³**	4 L **243 in³**	6.6 L **403 in³**
Engine Model	**3054T**	**3054T**	**3116T**
Speeds:			
Forward	**2**	**2**	**2**
Reverse	**2**	**2**	**2**
Max. Speed (For./Rev.)	12.8 km/h **0-8 mph**	12.8 km/h **0-8 mph**	12.8 km/h **0-8 mph**
Operating Weight	6526 kg **14,375 lb**	6670 kg **14,675 lb**	9300 kg **20,450 lb**
Shipping Weight	6243 kg **13,750 lb**	6379 kg **14,080 lb**	9090 kg **20,000 lb**
Drive	**Rear wheel**	**Drum/rear wheel**	**Rear wheel**
Steering:			
Inside radius	3008 mm **9'10"**	3008 mm **9'10"**	3912 mm **12'10"**
Outside radius	4684 mm **15'4"**	4684 mm **15'4"**	6325 mm **20'9"**
Steering angle	**±37°**	**±37°**	**±30°**
Vibratory System:			
Ecc. Weight Drive	**Hydraulic**	**Hydraulic**	**Hydraulic**
Frequency	30 Hz **1800 vpm**	30 Hz **1800 vpm**	30 Hz **1800 vpm**
Amplitude Settings	**2**	**2**	**2**
Centrifugal Force			
High amplitude	12 727 kg **28,000 lb**	12 727 kg **28,000 lb**	24 060 kg **53,100 lb**
Low amplitude	6273 kg **13,800 lb**	6273 kg **13,800 lb**	12 030 kg **26,550 lb**
General Dimensions:			
Overall width	1905 mm **6'3"**	1905 mm **6'3"**	2438 mm **8'0"**
Drum width	1680 mm **5'6"**	1680 mm **5'6"**	2130 mm **7'0"**
Drum diameter	1220 mm **4'0"**	1220 mm **4'0"**	1520 mm **5'0"**
Tires	**14.9" × 24" 6-ply**	**14.9" × 24" 6-ply**	**23.1" × 26" 8-ply**
Overall height	2900 mm **9'6"**	2900 mm **9'6"**	2667 mm **8'9"**
Wheel to drum	2583 mm **8'6"**	2583 mm **8'6"**	2740 mm **9'0"**
Overall length	4825 mm **15'10"**	4825 mm **15'10"**	5258 mm **17'3"**
Curb clearance	380 mm **15"**	380 mm **15"**	483 mm **1'7"**
Service Refill Capacities:			
Fuel tank	167 L **44 U.S. gal**	167 L **44 U.S. gal**	220 L **58 U.S. gal**
Crankcase	6.8 L **1.8 U.S. gal**	6.8 L **1.8 U.S. gal**	20 L **6.4 U.S. gal**
Hydraulic fluid	71 L **18.7 U.S. gal**	71 L **18.7 U.S. gal**	110 L **29 U.S. gal**

*Not offered in the United States.




MODEL	CS-533C*	CS-563C	CS-573C*	CS-583C
Flywheel Power	108 kW **145 hp**	108 kW **145 hp**	108 kW **145 hp**	108 kW **145 hp**
Rated Engine RPM	**2200**	**2200**	**2200**	**2200**
No. Cylinders	**6**	**6**	**6**	**6**
Displacement	6.6 L **403 in³**	6.6 L **403 in³**	6.6 L **403 in³**	6.6 L **403 in³**
Engine Model	**3116T**	**3116T**	**3116T**	**3116T**
Speeds:				
Forward	**2**	**2**	**2**	**2**
Reverse	**2**	**2**	**2**	**2**
Max. Speed (For./Rev.)	12.8 km/h **0-8 mph**	12.8 km/h **0-8 mph**	12.8 km/h **8 mph**	12.8 km/h **8 mph**
Operating Weight	9397 kg **20,700 lb**	11 215 kg **24,700 lb**	13 300 kg **29,300 lb**	15 460 kg **34,030 lb**
Shipping Weight	9284 kg **20,450 lb**	10 900 kg **24,000 lb**	13 010 kg **28,690 lb**	15 140 kg **33,380 lb**
Drive	**Drum/rear wheel**	**Drum/rear wheel**	**Drum/rear wheel**	**Drum/rear wheel**
Steering:				
Inside radius	3912 mm **12'10"**	3912 mm **12'10"**	3800 mm **12'6"**	3800 mm **12'6"**
Outside radius	6325 mm **20'9"**	6325 mm **20'9"**	6170 mm **20'3"**	6170 mm **20'3"**
Steering angle	**±30°**	**±30°**	**±30°**	**±30°**
Vibratory System:				
Ecc. Weight Drive	**Hydraulic**	**Hydraulic**	**Hydraulic**	**Hydraulic**
Frequency	30 Hz **1800 vpm**	30 Hz **1800 vpm**	30 Hz **1800 vpm**	30 Hz **1800 vpm**
Amplitude Settings	**2**	**2**	**2**	**2**
Centrifugal Force				
High amplitude	24 060 kg **53,100 lb**	24 060 kg **53,100 lb**	31 750 kg **70,000 lb**	31 750 kg **70,000 lb**
Low amplitude	12 030 kg **26,550 lb**	12 030 kg **26,550 lb**	16 675 kg **36,760 lb**	16 675 kg **36,760 lb**
General Dimensions:				
Overall width	2438 mm **8'0"**	2438 mm **8'0"**	2508 mm **8'3"**	2508 mm **8'3"**
Drum width	2130 mm **7'0"**	2130 mm **7'0"**	2130 mm **7'0"**	2130 mm **7'0"**
Drum diameter	1520 mm **5'0"**	1520 mm **5'0"**	1520 mm **5'0"**	1520 mm **5'0"**
Tires	**23.1" × 26" 8-ply**	**23.1" × 26" 8-ply**	**23.1" × 26" 8-ply**	**23.1" × 26" 8-ply**
Overall height	2667 mm **8'9"**	2997 mm **9'10"**	2997 mm **9'10"**	2997 mm **9'10"**
Wheel to drum	2740 mm **9'0"**	2740 mm **9'0"**	2740 mm **9'0"**	2740 mm **9'0"**
Overall length	5258 mm **17'3"**	5400 mm **17'9"**	5400 mm **17'9"**	5400 mm **17'9"**
Curb clearance	483 mm **1'7"**	483 mm **1'7"**	483 mm **1'7"**	483 mm **1'7"**
Service Refill Capacities:				
Fuel tank	220 L **58 U.S. gal**	220 L **58 U.S. gal**	220 L **58 U.S. gal**	220 L **58 U.S. gal**
Crankcase	20 L **5.4 U.S. gal**	20 L **5.4 U.S. gal**	20 L **5.4 U.S. gal**	20 L **5.4 U.S. gal**
Hydraulic fluid	110 L **29 U.S. gal**	110 L **29 U.S. gal**	110 L **29 U.S. gal**	110 L **29 U.S. gal**

*Not offered in the United States.

MODEL AND MACHINE PASSES		AVERAGE SPEED MPH	COMPACTED LIFT THICKNESS							
			150 mm m^3/hr	6 in yd^3/hr	200 mm m^3/hr	8 in yd^3/hr	250 mm m^3/hr	10 in yd^3/hr	300 mm m^3/hr	12 in yd^3/hr
CS-323C	3	2.5	249.5	326.0	332.7	434.7	415.9	543.3	499.0	652.0
	3	3.0	299.4	391.2	399.2	521.6	499.0	652.0	598.8	782.4
	3	3.5	349.3	456.4	465.8	608.5	582.2	760.7	698.7	912.8
	3	4.0	399.2	521.6	532.3	695.5	665.4	869.3	798.5	1043.2
	4	2.5	187.1	244.5	249.5	326.0	311.9	407.5	374.3	489.0
	4	3.0	224.6	293.4	299.4	391.2	374.3	489.0	449.1	586.8
	4	3.5	262.0	342.3	349.3	456.4	436.7	570.5	524.0	684.6
	4	4.0	299.4	391.2	399.2	521.6	499.0	652.0	598.8	782.4
	5	2.5	149.7	195.6	199.6	260.8	249.5	326.0	299.4	391.2
	5	3.0	179.7	234.7	239.5	313.0	299.4	391.2	359.3	469.4
	5	3.5	209.6	273.8	279.5	365.1	349.3	456.4	419.2	547.7
	5	4.0	239.5	313.0	319.4	417.3	399.2	521.6	479.1	625.9
CS-431C	3	2.5	343.1	448.3	457.5	597.7	571.8	747.1	686.2	896.5
	3	3.0	411.7	537.9	548.9	717.2	686.2	896.5	823.4	1075.8
	3	3.5	480.3	627.6	640.4	836.7	800.5	1045.9	960.7	1255.1
	3	4.0	548.9	717.2	731.9	956.3	914.9	1195.3	1097.9	1434.4
	4	2.5	257.3	336.2	343.1	448.3	428.9	560.3	514.6	672.4
	4	3.0	308.8	403.4	411.7	537.9	514.6	672.4	617.6	806.9
	4	3.5	360.2	470.7	480.3	627.6	600.4	784.4	720.5	941.3
	4	4.0	411.7	537.9	548.9	717.2	686.2	896.5	823.4	1075.8
	5	2.5	205.9	269.0	274.5	358.6	343.1	448.3	411.7	537.9
	5	3.0	247.0	322.7	329.4	430.3	411.7	537.9	494.1	645.5
	5	3.5	288.2	376.5	384.3	502.0	480.3	627.6	576.4	753.1
	5	4.0	329.4	430.3	439.2	573.8	548.9	717.2	658.7	860.6
CS-433C	3	2.5	343.1	448.3	457.5	597.7	571.8	747.1	686.2	896.5
	3	3.0	411.7	537.9	548.9	717.2	686.2	896.5	823.4	1075.8
	3	3.5	480.3	627.6	640.4	836.7	800.5	1045.9	960.7	1255.1
	3	4.0	548.9	717.2	731.9	956.3	914.9	1195.3	1097.9	1434.4
	4	2.5	257.3	336.2	343.1	448.3	428.9	560.3	514.6	672.4
	4	3.0	308.8	403.4	411.7	537.9	514.6	672.4	617.6	806.9
	4	3.5	360.2	470.7	480.3	627.6	600.4	784.4	720.5	941.3
	4	4.0	411.7	537.9	548.9	717.2	686.2	896.5	823.4	1075.8
	5	2.5	205.9	269.0	274.5	358.6	343.1	448.3	411.7	537.9
	5	3.0	247.0	322.7	329.4	430.3	411.7	537.9	494.1	645.5
	5	3.5	288.2	376.5	384.3	502.0	480.3	627.6	576.4	753.1
	5	4.0	329.4	430.3	439.2	573.8	548.9	717.2	658.7	860.6
CS-533C	3	2.5	436.7	570.5	582.2	760.7	727.8	950.8	873.3	1141.0
CS-563C	3	3.0	524.0	684.6	698.7	912.8	873.3	1141.0	1048.0	1369.2
CS-573C	3	3.5	611.3	798.7	815.1	1064.9	1018.9	1331.2	1222.6	1597.4
CS-583C	3	4.0	698.7	912.8	931.5	1217.1	1164.4	1521.3	1397.3	1825.6
	4	2.5	327.5	427.9	436.7	570.5	545.8	713.1	655.0	855.8
	4	3.0	393.0	513.5	524.0	684.6	655.0	855.8	786.0	1026.9
	4	3.5	458.5	599.0	611.3	798.7	764.2	998.4	917.0	1198.1
	4	4.0	524.0	684.6	698.7	912.8	873.3	1141.0	1048.0	1369.2
	5	2.5	262.0	342.3	349.3	456.4	436.7	570.5	524.0	684.6
	5	3.0	314.4	410.8	419.2	547.7	524.0	684.6	628.8	821.5
	5	3.5	366.8	479.2	489.1	639.0	611.3	798.7	733.6	958.4
	5	4.0	419.2	547.7	558.9	730.2	698.7	912.8	838.4	1095.4

Features:

- **Designed with optimum horsepower-to-weight** ratio for best operating economy and peak performance.
- **All units feature a unique, Cat-designed hydraulic flow divider valve (CP-323C) or dual pump and circuit arrangement** that 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.
- **NoSPIN high traction differential** is standard on all units for best traction of rear tires. (Except CP-533C.)
- **Optional Heavy-duty front-mounted blade** with reversible cutting edge is available to allow backfilling and leveling during compaction.
- **Routine maintenance** simplified by grouped service points and easy access to service areas.
- **Operator comfort** provided by full-width padded seats or adjustable bucket seats for all day productivity. All machine controls and instrumentation are within easy sight and reach. Unobstructed visibility increases work area productivity.
- **ROPS (Roll Over Protective Structure)** standard on all units. Enclosed cabs with EROPS rating available as an option to provide all-weather comfort and productivity.
- **Oil bath lubrication** increases bearing service life and eliminates daily maintenance.
- **High centrifugal force and amplitude** work together for a highly productive compactor.
- **Adjustable jaw-type cleaner bar** keeps drums clean between pads during forward and reverse movement.

MODEL	CP-323C	
Flywheel Power	60 kW	**80 hp**
Rated Engine RPM	**2200**	
No. Cylinders	**4**	
Displacement	4 L	**243 in³**
Engine Model	**3054 DINA**	
Speeds:		
Forward	**1**	
Reverse	**1**	
Max. Speed (For./Rev.)	8.9 km/h	**5.5 mph**
Operating Weight	4745 kg	**10,440 lb**
Shipping Weight	4600 kg	**10,125 lb**
Drive	**Drum/rear wheel**	
Steering:		
Inside radius	2625 mm	**8'7.3"**
Outside radius	3895 mm	**12'9.3"**
Steering angle	**±38°**	
Vibratory System:		
Ecc. Weight Drive	**Hydraulic**	
Frequency	35 Hz	**2100 vpm**
Amplitude Settings	**1**	
Centrifical Force (Max.)	66.8 kN	**15,000 lb**
General Dimensions:		
Overall width w/blade	1575 mm	**5'2"**
Overall width w/o blade	1393 mm	**4'7"**
Drum width	1270 mm	**4'2"**
Drum diameter over pads	1016 mm	**3'4"**
Tires	**11.2 × 24 6-ply**	
Overall height	2514 mm	**8'3"**
Wheel to drum	2240 mm	**7'4.2"**
Overall length	4095 mm	**13'5.2"**
Curb Clearance	347 mm	**13.7"**
Service Refill Capacities:		
Fuel Tank	144 L	**38 U.S. gal**
Crankcase	7.6 L	**2 U.S. gal**
Hydraulic fluid	49.2 L	**13 U.S. gal**



MODEL	CP-433C	CP-533C*	CP-563C
Flywheel Power	80 kW **107 hp**	108 kW **145 hp**	108 kW **145 hp**
Rated Engine RPM	**2500**	**2200**	**2200**
No. Cylinders	**4**	**6**	**6**
Displacement	4 L **243 in³**	6.6 L **403 in³**	6.6 L **403 in³**
Engine Model	**3054T**	**3116T**	**3116T**
Speeds:			
Forward	**2**	**2**	**2**
Reverse	**2**	**2**	**2**
Max. Speed (For./Rev.)	13.3 km/h **0-8 mph**	12.8 km/h **0-8 mph**	12.8 km/h **0-8 mph**
Operating Weight	6912 kg **15,225 lb**	10 760 kg **23,700 lb**	11 670 kg **25,700 lb**
Shipping Weight	6628 kg **14,600 lb**	10 646 kg **23,450 lb**	11 360 kg **25,000 lb**
Drive	**Drum/rear wheel**	**Drum/rear wheel**	**Drum/rear wheel**
Steering:			
Inside radius	3008 mm **9'10"**	3912 mm **12'10"**	3912 mm **12'10"**
Outside radius	4684 mm **15'4"**	6325 mm **20'9"**	6325 mm **20'9"**
Steering angle	**±37°**	**±30°**	**±30°**
Vibratory System:			
Ecc. Weight Drive	**Hydraulic**	**Hydraulic**	**Hydraulic**
Frequency	30 Hz **1800 vpm**	30 Hz **1800 rpm**	30 Hz **1800 vpm**
Amplitude Settings	**2**	**2**	**2**
Centrifugal Force			
Low amplitude	6273 kg **13,800 lb**	31 750 kg **70,000 lb**	31 750 kg **70,000 lb**
High amplitude	12 727 kg **28,000 lb**	16 675 kg **36,760 lb**	16 675 kg **36,760 lb**
General Dimensions:			
Overall width w/blade	1981 mm **6'6"**	2740 mm **9'0"**	2740 mm **9'0"**
Overall width w/o blade	1905 mm **6'3"**	2440 mm **8'0"**	2440 mm **8'0"**
Drum width	1680 mm **5'6"**	2130 mm **7'0"**	2130 mm **7'0"**
Drum diameter over pads	1220 mm **4'0"**	1549 mm **5'1"**	1549 mm **5'1"**
Tires	**14.9" × 24" 6-ply**	**23.1" × 26" 8-ply**	**23.1" × 26" 8-ply**
Overall height	2900 mm **9'6"**	2667 mm **8'9"**	2997 mm **9'10"**
Wheel to drum	2583 mm **8'6"**	2740 mm **9'10"**	2740 mm **9'0"**
Overall length	4825 mm **15'10"**	5258 mm **17'3"**	5258 mm **17'3"**
Curb clearance	380 mm **15"**	483 mm **1'7"**	483 mm **1'7"**
Service Refill Capacities:			
Fuel tank	167 L **44 U.S. gal**	220 L **58 U.S. gal**	220 L **58 U.S. gal**
Crankcase	6.8 L **1.8 U.S. gal**	20 L **5.4 U.S. gal**	20 L **5.4 U.S. gal**
Hydraulic fluid	71 L **18.7 U.S. gal**	110 L **29 U.S. gal**	110 L **29 U.S. gal**

*Not offered in United States.

MODEL AND MACHINE	PASSES	AVERAGE SPEED MPH	COMPACTED LIFT THICKNESS							
			150 mm m^3/hr	6 in yd^3/hr	200 mm m^3/hr	8 in yd^3/hr	250 mm m^3/hr	10 in yd^3/hr	300 mm m^3/hr	12 in yd^3/hr
CP-323C	3	2.5	249.5	326.0	332.7	434.7	415.9	543.3	499.0	652.0
	3	3.0	299.4	391.2	399.2	521.6	499.0	652.0	598.8	782.4
	3	3.5	349.3	456.4	465.8	608.5	582.2	760.7	698.7	912.8
	3	4.0	399.2	521.6	532.3	695.5	665.4	869.3	798.5	1043.2
	4	2.5	187.1	244.5	249.5	326.0	311.9	407.5	374.3	489.0
	4	3.0	224.6	293.4	299.4	391.2	374.3	489.0	449.1	586.8
	4	3.5	262.0	342.3	349.3	456.4	436.7	570.5	524.0	684.6
	4	4.0	299.4	391.2	399.2	521.6	499.0	652.0	598.8	782.4
	5	2.5	149.7	195.6	199.6	260.8	249.5	326.0	299.4	391.2
	5	3.0	179.7	234.7	239.5	313.0	299.4	391.2	359.3	469.4
	5	3.5	209.6	273.8	279.5	365.1	349.3	456.4	419.2	547.7
	5	4.0	239.5	313.0	319.4	417.3	399.2	521.6	479.1	625.9
CP-433C	3	2.5	343.1	448.3	457.5	597.7	571.8	747.1	686.2	896.5
	3	3.0	411.7	537.9	548.9	717.2	686.2	896.5	823.4	1075.8
	3	3.5	480.3	627.6	640.4	836.7	800.5	1045.9	960.7	1255.1
	3	4.0	548.9	717.2	731.9	956.3	914.9	1195.3	1097.9	1434.4
	4	2.5	257.3	336.2	343.1	448.3	428.9	560.3	514.6	672.4
	4	3.0	308.8	403.4	411.7	537.9	514.6	672.4	617.6	806.9
	4	3.5	360.2	470.7	480.3	627.6	600.4	784.4	720.5	941.3
	4	4.0	411.7	537.9	548.9	717.2	686.2	896.5	823.4	1075.8
	5	2.5	205.9	269.0	274.5	358.6	343.1	448.3	411.7	537.9
	5	3.0	247.0	322.7	329.4	430.3	411.7	537.9	494.1	645.5
	5	3.5	288.2	376.5	384.3	502.0	480.3	627.6	576.4	753.1
	5	4.0	329.4	430.3	439.2	573.8	548.9	717.2	658.7	860.6
CP-563C	3	2.5	436.7	570.5	582.2	760.7	727.8	950.8	873.3	1141.0
	3	3.0	524.0	684.6	698.7	912.8	873.3	1141.0	1048.0	1369.2
	3	3.5	611.3	798.7	815.1	1064.9	1018.9	1331.2	1222.6	1597.4
	3	4.0	698.7	912.8	931.5	1217.1	1164.4	1521.3	1397.3	1825.6
	4	2.5	327.5	427.9	436.7	570.5	545.8	713.1	655.0	855.8
	4	3.0	393.0	513.5	524.0	684.6	655.0	855.8	786.0	1026.9
	4	3.5	458.5	599.0	611.3	798.7	764.2	998.4	917.0	1198.1
	4	4.0	524.0	684.6	698.7	912.8	873.3	1141.0	1048.0	1369.2
	5	2.5	262.0	342.3	349.3	456.4	436.7	570.5	524.0	684.6
	5	3.0	314.4	410.8	419.2	547.7	524.0	684.6	628.8	821.5
	5	3.5	366.8	479.2	489.1	639.0	611.3	798.7	733.6	958.4
	5	4.0	419.2	547.7	558.9	730.2	698.7	912.8	838.4	1095.4

Dual Drum Vibratory Asphalt Compactors

Features:

- **Direct hydrostatic drive to both drums** provides dependable, responsive propulsion effort and maximum gradeability.
- **On larger units, vibration automatically ceases before machine comes to a stop** to help produce a smooth, flawless mat surface.
- **Flexible gear coupling between the vibratory motor and shaft** increase motor life.
- **Larger units** feature multiple operator positions with operator positioned away from engine noise and heat.
- **Exhaust systems** direct fumes away from operator.
- **Smaller units** feature padded seats and unobstructed visibility of all rolling edges.
- **Clean frame design and close side clearances** allow compactors to work close to curbs, walls and other obstructions.
- **External plumbing of all motors and brakes** makes maintenance easy. All servicing is possible from ground level.
- **Large, rust-proof water tanks and pressure spray system** provide hours of reliable operation between fill-ups.

MODEL	CB-214C	
Flywheel Power	28 kW	**37 hp**
Rated Engine RPM	**2400**	
No. Cylinders	**2**	
Displacement	1.72 L	**105 in³**
Engine Model	**Hatz 2M41**	
Speeds:		
Forward	**1**	
Reverse	**1**	
Max. Speed (For./Rev.)	10.5 km/h	**0-6.5 mph**
Operating Weight	2320 kg	**5115 lb**
Shipping Weight	2110 kg	**4652 lb**
Drive	**Hydraulic**	
Gradeability	**35%**	
Operator Position(s)	**Single/bucket seat**	
Steering:		
Inside radius	2525 mm	**8'3"**
Outside radius	3525 mm	**11'7"**
Steering angle	**±32°**	
Vibratory System:		
Ecc. Weight Drive	**Hydraulic**	
Frequency	60 Hz	**3600 vpm**
Amplitude Settings	**1**	
Centrifugal Force per drum (Max.)	25.4 kN	**5715 lb**
General Dimensions:		
Overall width	1090 mm	**3'7"**
Drum width	1000 mm	**3'3.4"**
Drum diameter	700 mm	**2'3.5"**
Overall height (ROPS)	7500 mm	**8'2"**
Wheelbase	1700 mm	**5'7"**
Overall length	2430 mm	**7'11.5"**
Curb clearance	400 mm	**15.75"**
Ground clearance	250 mm	**10"**
Service Refill Capacities:		
Fuel tank	53 L	**14 U.S. gal**
Crankcase	4.5 L	**1.19 U.S. gal**
Hydraulic tank	29 L	**7.7 U.S. gal**
Sprinkler water	160 L	**42 U.S. gal**




MODEL	CB-224C	CB-434C	CB-534C	CB-634C
Flywheel Power	28 kW **37 hp**	60 kW **80 hp**	80 kW **107 hp**	108 kW **145 hp**
Rated Engine RPM	**2400**	**2200**	**2200**	**2200**
No. Cylinders	**2**	**4**	**4**	**6**
Displacement	1.72 L **104.7 in³**	4 L **243 in³**	4 L **243 in³**	6.6 L **403 in³**
Engine Model	**Hatz 2M41**	**3054**	**3054T**	**3116T**
Speeds:				
Forward	**1**	**1**	**2**	**2**
Reverse	**1**	**1**	**2**	**2**
Max. Speed (For./Rev.)	10.5 km/h **0-6.5 mph**	11.6 km/h **0-7.2 mph**	11 km/h **0-7 mph**	12.2 km/h **0-7.6 mph**
Operating Weight	2420 kg **5335 lb**	6485 kg **14,300 lb**	9195 kg **20,270 lb**	11 680 kg **25,750 lb**
Shipping Weight	2190 kg **4872 lb**	5950 kg **13,120 lb**	8495 kg **18,728 lb**	10 855 kg **23,931 lb**
Drive	**Hydraulic**	**Hydraulic**	**Hydraulic**	**Hydraulic**
Gradeability	**35%**	**—**	**—**	**—**
Operator Position(s)	**Single/bucket seat**	**Swivel/bucket seat**	**Swivel/bucket seat**	**Swivel/bucket seat**
Steering:				
Inside radius	2425 mm **7'11.5"**	3404 mm **11'2"**	4165 mm **13'8"**	4318 mm **14'2"**
Outside radius	3625 mm **11'11"**	4832 mm **15'10.25"**	5865 mm **19'3"**	6655 mm **21'10"**
Steering angle	**±32°**	**±35°**	**±35°**	**±32°**
Vibratory System:				
Ecc. Weight Drive	**Hydraulic**	**Hydraulic**	**Hydraulic**	**Hydraulic**
Frequency	60 Hz **3600 vpm**	48 Hz **2900 vpm**	42 Hz **2520 vpm**	42 Hz **2520 vpm**
Amplitude Settings	**1**	**3**	**3**	**3**
Centrifugal Force per drum (Max.)	28.6 kN **6570 lb**	74.7 kN **16,800 lb**	118.1 kN **26,550 lb**	118.1 kN **26,550 lb**
General Dimensions:				
Overall width	1300 mm **4'3"**	1613 mm **5'4"**	1850 mm **6'1"**	2311 mm **7'7"**
Drum width	1200 mm **3'11.2"**	1422 mm **4'8"**	1700 mm **5'7"**	2130 mm **7'0"**
Drum diameter	700 mm **2'3.5"**	1100 mm **3'7.5"**	1300 mm **4'3"**	1300 mm **4'3"**
Overall height	1640 mm **5'4"**	2261 mm **7'5"**	2410 mm **7'11"**	2362 mm **7'9"**
Wheelbase	1700 mm **5'7"**	2616 mm **8'7"**	3150 mm **10'4"**	3150 mm **10'4"**
Overall length	2430 mm **7'11.5"**	4191 mm **13'9"**	4940 mm **16'2"**	4953 mm **16'3"**
Curb clearance	400 mm **15.75"**	381 mm **15"**	416 mm **16"**	416 mm **16"**
Ground clearance	250 mm **10"**	381 mm **15"**	416 mm **16"**	416 mm **16"**
Service Refill Capacities:				
Fuel tank	53 L **14 U.S. gal**	144 L **38 U.S. gal**	208 L **55 U.S. gal**	208 L **55 U.S. gal**
Crankcase	4.5 L **1.19 U.S. gal**	7.6 L **2 U.S. gal**	7.6 L **2 U.S. gal**	17 L **4.5 U.S. gal**
Hydraulic tank	29 L **7.7 U.S. gal**	49.2 L **13 U.S. gal**	60 L **15 U.S. gal**	60 L **15 U.S. gal**
Sprinkler water	160 L **42 U.S. gal**	666 L **176 U.S. gal**	950 L **264 U.S. gal**	1200 L **317 U.S. gal**



MODEL	CB-214C	CB-224C	CB-434B*
Flywheel Power	28 kW **37 hp**	28 kW **37 hp**	60 kW **80 hp**
Rated Engine RPM	**2400**	**2400**	**2200**
No. Cylinders	**2**	**2**	**4**
Displacement	1.72 L **105 in³**	1.72 L **104.7 in³**	4 L **243 in³**
Engine Model	**Hatz 2M41**	**Hatz 2M41**	**3054**
Speeds:			
Forward	**1**	**1**	**1**
Reverse	**1**	**1**	**1**
Max. Speed (For./Rev.)	10.5 km/h **0-6.5 mph**	10.5 km/h **0-6.5 mph**	11.6 km/h **0-7.2 mph**
Operating Weight	2320 kg **5115 lb**	2420 kg **5335 lb**	6595 kg **14,540 lb**
Shipping Weight	2110 kg **4652 lb**	2190 kg **4872 lb**	6059 kg **13,350 lb**
Drive	**Hydraulic**	**Hydraulic**	**Hydraulic**
Gradeability	**35%**	**35%**	**—**
Operator Position(s)	**Single/bucket seat**	**Single/bucket seat**	**Swivel/bucket seat**
Steering:			
Inside radius	2525 mm **8'3"**	2425 mm **7'11.5"**	3410 mm **11'2.25"**
Outside radius	3525 mm **11'7"**	3625 mm **11'11"**	4832 mm **15'10.25"**
Steering angle	**±32°**	**±32°**	**±35°**
Vibratory System:			
Ecc. Weight Drive	**Hydraulic**	**Hydraulic**	**Hydraulic**
Frequency	60 Hz **3600 vpm**	60 Hz **3600 vpm**	48 Hz **2900 vpm**
Amplitude Settings	**1**	**1**	**3**
Centrifugal Force per drum (Max.)	25.4 kN **5715 lb**	28.6 kN **6570 lb**	7640 kg **16,800 lb**
General Dimensions:			
Overall width	1090 mm **3'7"**	1300 mm **4'3"**	1613 mm **5'3.5"**
Drum width	1000 mm **3'3.4"**	1200 mm **3'11.2"**	1422 mm **4'8"**
Drum diameter	700 mm **2'3.5"**	700 mm **2'3.5"**	1100 mm **3'7.5"**
Height w/ROPS	2500 mm **8'2"**	1640 mm **5'4"**	2970 mm **9'9"**
Wheelbase	1700 mm **5'7"**	1700 mm **5'6.9"**	2616 mm **8'7"**
Overall length	2430 mm **7'11.5"**	2430 mm **7'11.5"**	4191 mm **13'9"**
Curb clearance	400 mm **15.75"**	400 mm **15.75"**	381 mm **15"**
Ground clearance	250 mm **10"**	250 mm **10"**	381 mm **15"**
Service Refill Capacities:			
Fuel tank	53 L **14 U.S. gal**	53 L **14 U.S. gal**	144 L **38 U.S. gal**
Crankcase	4.5 L **1.19 U.S. gal**	4.5 L **1.19 U.S. gal**	7.6 L **2 U.S. gal**
Hydraulic tank	29 L **7.7 U.S. gal**	29 L **7.7 U.S. gal**	57 L **15 U.S. gal**
Sprinkler water	160 L **42 U.S. gal**	160 L **42 U.S. gal**	666 L **176 U.S. gal**

*Not available in the United States.

MODEL	CB-544*	CB-534C*
Flywheel Power	60 kW **80 hp**	79 kW **106 hp**
Rated Engine RPM	**2200**	**2200**
No. Cylinders	**4**	**4**
Displacement	4 L **243 in³**	4 L **243 in³**
Engine Model	**3054**	**3054T**
Speeds:		
Forward	**2**	**2**
Reverse	**2**	**2**
Max. Speed (For./Rev.)	8.9 km/h **5.5 mph**	11.3 km/h **0-7 mph**
Operating Weight	10 700 kg **23,593 lb**	9910 kg **21,850 lb**
Shipping Weight	9777 kg **21,558 lb**	8440 kg **18,610 lb**
Drive	**Hydraulic**	**Hydraulic**
Gradeability	**35%**	**—**
Operator Position(s)	**4**	**4**
Steering:		
Inside radius	3005 mm **9'10"**	4165 mm **13'8"**
Outside radius	4837 mm **15'10"**	5865 mm **19'3"**
Steering angle	**±25°**	**±35°**
Vibratory System:		
Ecc. Weight Drive	**Hydraulic**	**Hydraulic**
Frequency	42/50 Hz **2520/3000 vpm**	42 Hz **2520 vpm**
Amplitude Settings	**1**	**3**
Centrifugal Force per drum (Max.)	86.8 kN **19,530 lb**	118.1 kN **27,087 lb**
General Dimensions:		
Overall width	1810 mm **5'11"**	1850 mm **6'1"**
Drum width	1700 mm **5'7"**	1700 mm **5'7"**
Drum diameter	1200 mm **3'11"**	1300 mm **4'3"**
Height w/ROPS	3000 mm **9'10"**	3000 mm **9'10"**
Wheelbase	3000 mm **9'10"**	3150 mm **10'4"**
Overall length	4200 mm **13'9"**	4940 mm **16'2.5"**
Curb clearance	855 mm **2'10"**	416 mm **16"**
Ground clearance	296 mm **12"**	416 mm **16"**
Service Refill Capacities:		
Fuel tank	208 L **55 U.S. gal**	208 L **55 U.S. gal**
Crankcase	9 L **2.4 U.S. gal**	7.6 L **2 U.S. gal**
Hydraulic tank	55 L **14.5 U.S. gal**	54.9 L **14.5 U.S. gal**
Sprinkler water	850 L **225 U.S. gal**	1000 L **264 U.S. gal**

*Not available in the United States.

ASPHALT COMPACTION PRODUCTION RATES

Formula for Compacted Cubic Yards (yd^3) Per Hour:

$$\frac{W \times S \times L \times 16.3 \times .83}{P} = yd^3/hr$$

W = Effective width of compaction per pass in feet (See NOTE below)
S = Average speed in MPH
L = Compacted Lift in Inches
16.3 = Constant
0.83 = Efficiency Rate (50 minute hour)
P = Number of passes required to achieve compaction

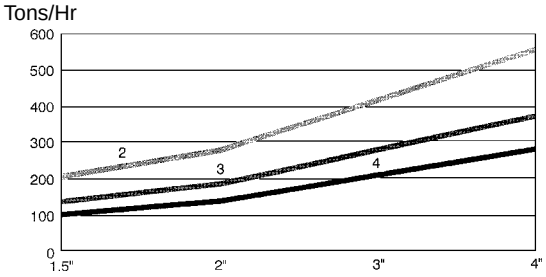
NOTE: In calculating the effective width of the compactor, the width of the laydown lane in relation to the roller width must be taken into consideration.

Example: A CB-634C with a 2130 mm (84 in) drum width takes two roller widths to cover a 3658 mm (12 ft) lane, therefore the effective rolling width is 1829 mm (6 ft). A CB-534C with a 1702 mm (67 in) drum width requires 3 passes to cover the 3658 mm (12 ft) lane, so effective rolling width is 1219 mm (4 ft). The CB-434C, with 1422 mm (56 in) drum width, requires three passes to cover the 3658 mm (12 ft) lane, so also has an effective rolling width of 1219 mm (4 ft) per pass.

Actual production rate will vary depending on many variables including the following:

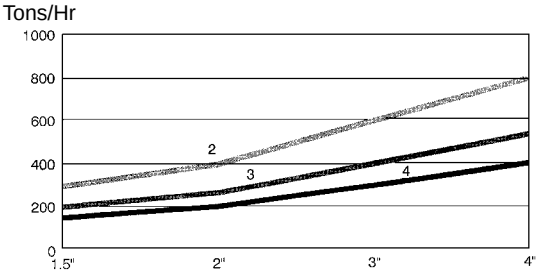
Asphalt mix
Temperature of mix
Ambient temperature
Lift thickness
Percent of density required
Operator technique

CB-224C
Capacity On Asphalt @ 3 MPH



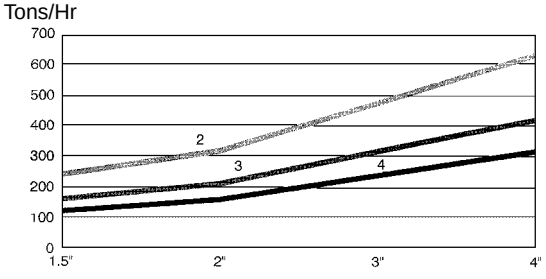
Lift Thickness

CB-534B/CB-534C/CB-544
Capacity On Asphalt @ 3 MPH



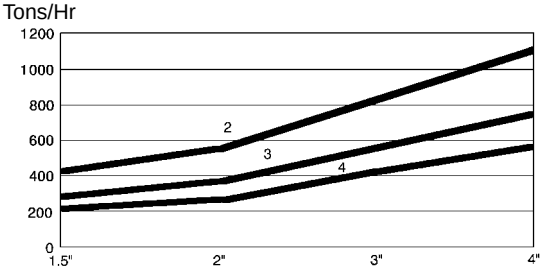
Lift Thickness

CB-434B/CB-434C
Capacity On Asphalt @ 3 MPH



Lift Thickness

CB-634C
Capacity On Asphalt @ 3 MPH



Lift Thickness

KEY

2 — Two Passes
3 — Three Passes
4 — Four Passes

Features:

- **Direct hydrostatic drive** to front drum and rear tires, provides dependable, responsive propulsion effort and maximum gradeability.
- **Vibration stops when machine stops** to help produce a smooth flawless mat surface.
- **Maximum Visibility Multiple Position** sliding console for visibility to front and rear of machine as well as drum edges.
- **Large rust-proof water tanks** and pressure spray system provides hours of reliable operation between fill ups.
- **Equal spacing between tires.** The middle rear tire on the CB-535B is mounted on a hydraulic cylinder for equal weight per wheel and avoids bridging low spots.
- **ROPS Cab or ROPS Canopy** available as an option.
- **Operator comfort** is provided by adjustable bucket seat. Machine controls and instruments move with the operator to one of four operating positions allowing easy access.

MODEL	CB-535B**		CB-545**	
Flywheel Power	80 kW	**107 hp**	60 kW	**80 hp**
Rated Engine RPM	**2200**		**2200**	
No. Cylinders	**4**		**4**	
Displacement	4 L	**243 in³**	4 L	**243 in³**
Engine Model	**3054 DIT**		**3054 DINA**	
Speeds:				
Forward	**3**		**2**	
Reverse	**3**		**2**	
Max. Speed (For./Rev.)	12.7 km/h	**7.9 mph**	12.4 km/h	**7.7 mph**
Operating Weight	13 400 kg	**29,547 lb**	9410 kg	**20,750 lb**
Shipping Weight	13 035 kg	**28,742 lb**	8910 kg	**19,645 lb**
Drive	**Hydraulic**		**Hydraulic**	
Gradeability	**±35°**		**±35°**	
Position(s)	**4**		**4**	
Steering:				
Inside radius	4350 mm	**14'3"**	3005 mm	**9'10"**
Outside radius	6335 mm	**20'9"**	4837 mm	**15"10"**
Steering angle	**±35°**		**±25°**	
Vibratory System:				
Ecc. Weight Drive	**Hydraulic**		**Hydraulic**	
Frequency	42 Hz	**2520 vpm**	42/50 Hz	**2520/3000 vpm**
Amplitude Settings	**0.36/0.80/1.05 mm**		**0.33/0.58 mm**	
Centrifugal Force per drum/Drum (Max.)	118 kN	**26,550 lb**	80.54 kN	**17,757 lb**
Tires	**15.00R***		**13/80-20***	
Weight per wheel	3000 kg	**6615 lb**	1100 kg	**3991 lb**
General Dimensions:				
Overall width	1850 mm	**6'1"**	1810 mm	**5'11"**
Drum width	1700 mm	**5'7"**	1700 mm	**5'7"**
Drum diameter	1300 mm	**4'3"**	1200 mm	**3'11"**
Tire width			**315 mm**	
Overall height (w/ROPS)	3000 mm	**9'10"**	3000 mm	**9'10"**
Wheelbase	3516 mm	**11'6"**	3000 mm	**9'10"**
Overall length	5300 mm	**17'5"**	4200 mm	**13'9"**
Curb clearance	416 mm	**16"**	855 mm	**2'10"**
Service Refill Capacities:				
Fuel tank	208 L	**55 U.S. gal**	208 L	**55 U.S. gal**
Hydraulic fluid	55 L	**14.5 U.S. gal**	55 L	**14.5 U.S. gal**
Emulsion	130 L	**34.3 U.S. gal**	380 L	**100 U.S. gal**
Sprinkler water	440 L	**116 U.S. gal**	460 L	**122 U.S. gal**

*Optional treaded tires available.
**Not available in North America.

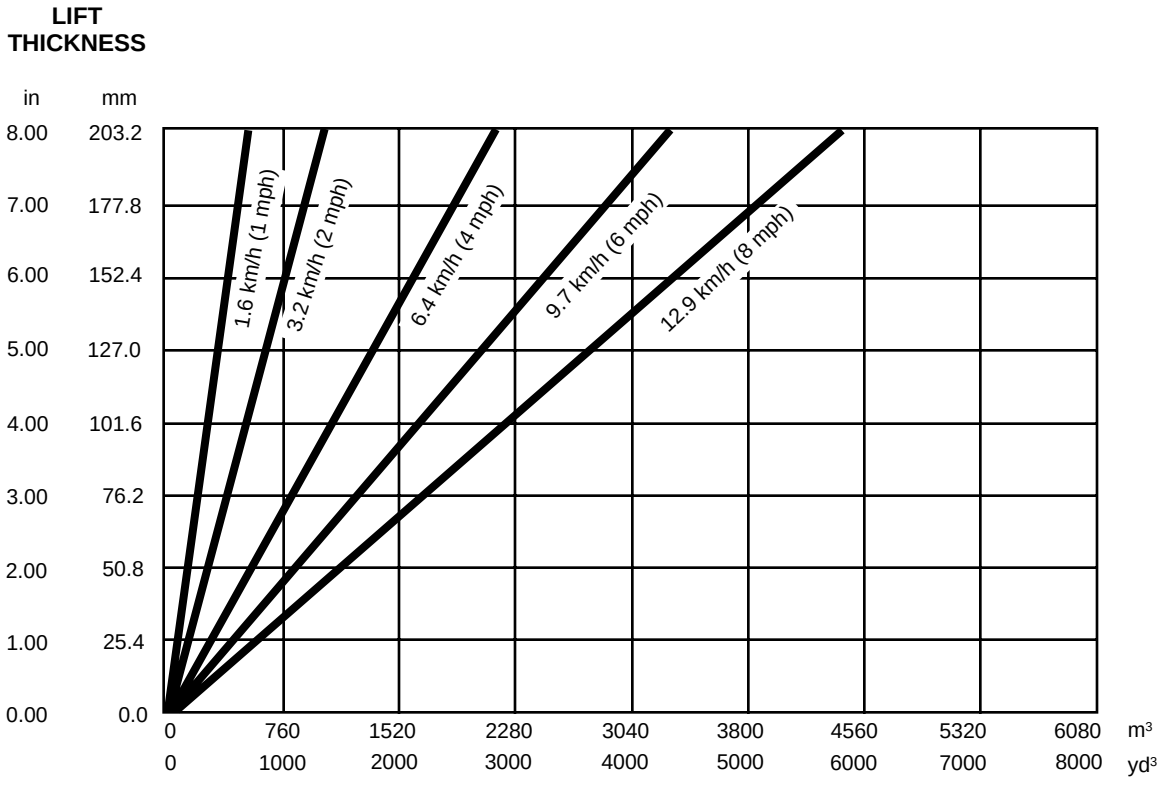
Pneumatic Tire Asphalt Compactors

Features:

- **Designed for high density compaction** of any hot or cold mix or surface seal applications.
- **Tire positions overlap** to provide full width compaction in a single pass.
- **All wheel oscillation**. Front and rear seek out low spots and provide even wheel loads.
- **High drive propel system:** Completely hydrostatic with drive motors and brakes located in mainframe away from contamination and damage.
- **Hydraulic full-power steering** makes for effortless steering.
- **Ballast compartments** are easily accessible for quick loading and are located to provide a balanced wheel/weight ratio. Large side covers provide for fast, convenient unloading.

MODEL	PS-150B	
Flywheel Power	60 kW	**80 hp**
Rated Engine RPM	**2300**	
No. Cylinders	**4**	
Displacement	3.9 L	**243 in³**
Engine Model	**3054**	
Speeds:		
Forward	**2**	
Reverse	**2**	
Max. Speed (For./Rev.)	25.6 km/h	**15.9 mph**
Wheel Configuration	**5 front/6 rear**	
Tires	**7.5" × 15" 6 ply**	
Operating Weight Empty (no ballast)	4885 kg	**10,775 lb**
Operating Weight Full (max. ballast)	12 940 kg	**28,535 lb**
Maximum Weight per Wheel	1438 kg	**3173 lb**
Steering:		
Inside radius	4846 mm	**15'3"**
Outside radius	6375 mm	**20'11"**
General Dimensions:		
Overall width	1750 mm	**5'9"**
Rolling width	1727 mm	**5'8"**
Overall height	3000 mm	**9'10"**
Wheelbase	3352 mm	**11'0"**
Overall length	4299 mm	**14'1"**
Ground clearance	267mm	**10.5"**
Service Refill Capacities:		
Fuel tank	173 L	**45.7 U.S. gal**
Crankcase	7.3 L	**1.9 U.S. gal**
Sprinkler water	394 L	**104 U.S. gal**

MODEL	PS-200B		PS-360B	
Flywheel Power	80 kW	**107 hp**	77.5 kW	**104 hp**
Rated Engine RPM	**2200**		**2200**	
No. Cylinders	**4**		**4**	
Displacement	3.9 L	**243 in³**	3.9 L	**243 in³**
Engine Model	**3054T**		**3054T**	
Speeds:				
Forward	**2**		**2**	
Reverse	**2**		**2**	
Max. Speed (For./Rev.)	19.3 km/h	**12 mph**	18 km/h	**11.2 mph**
Wheel Configuration	**5 front/4 rear**		**3 front/4 rear**	
Tires	**7.5" × 15" 6 ply**		**14/70 × 20**	
Operating Weight Empty (no ballast)	4133 kg	**9110 lb**	8500 kg	**18,740 lb**
Operating Weight Full (max. ballast)	18 145 kg	**40,000 lb**	25 000 kg	**55,115 lb**
Maximum Weight per Wheel	2016 kg	**4444 lb**	3570 kg	**7870 lb**
Steering:				
Inside radius	4648 mm	**15'3"**	3470 mm	**11'5"**
Outside radius	6375 mm	**20'11"**	6700 mm	**22'0"**
General Dimensions:				
Overall width	1750 mm	**5'9"**	2150 mm	**7'1"**
Rolling width	1727 mm	**5'8"**	2275 mm	**7'6"**
Overall height	3000 mm	**9'10"**	2530 mm	**8'4"**
Wheelbase	3352 mm	**11'0"**	3650 mm	**12'0"**
Overall length	4299 mm	**14'1"**	4850 mm	**15'11"**
Ground Clearance	267 mm	**10.5"**	252 mm	**10"**
Service Refill Capacities:				
Fuel tank	173 L	**45.7 U.S. gal**	200 L	**53 U.S. gal**
Crankcase	7.3 L	**1.9 U.S. gal**	7.3 L	**1.9 U.S. gal**
Sprinkler water	394 L	**104 U.S. gal**	394 L	**104 U.S. gal**



m³ (yd³) per hour per pass

$$\text{Production Rate [m}^3\text{ (yd}^3\text{)]} = \frac{\text{m}^3\text{ (yd}^3\text{)/hr per pass}}{\text{No. of passes required}}$$

Features:

- **Designed for high density compaction of any hot or cold mix or surface seal applications.**
- **Tire positions overlap** to provide full width compaction in a single pass.
- **Wheel suspension** helps eliminate bridging of low spots and helps provide equal load under each wheel. PS models have suspension front and rear. PF models have rear suspension only.
- **Single-lever fingertips control of forward and reverse movement** makes smooth shuttle rolling easy.
- **Heavy-duty 3-speed powershift transmission** allows infinitely variable travel speeds up to 26.5 km/h (16.5 mph), forward or reverse.
- **Hydraulic full-power steering** makes for effortless steering. Steer wheels swivel individually preventing scuffing of material during turns, similar to automotive style steering.
- **Ballast compartments are easily accessible for quick loading and are located** to provide a balanced wheel/weight ratio.
- **Electric pump water spray system with cleaner mats on all wheels** keep tires clean and resistant to pick-up during compaction.
- **Optional on-the-run tire inflation device,** engine cooled for long life.

MODEL	PF-300B/PS-300B	
Flywheel Power	80 kW	**107 hp**
Rated Engine RPM	**2200**	
No. Cylinders		
Displacement	4 L	**243 in³**
Engine Model	**3054 DIT**	
Speeds:		
Forward	**3**	
Reverse	**3**	
Max. Speed	20 km/h	**12.4 mph**
Wheel Configuration	**3 front/4 rear**	
Tires	**13/80-20***	
Operating Weight Empty (no ballast)	14 000 kg	**30,870 lb**
Operating Weight Full (max. ballast)**	23 300 kg	**51,380 lb**
Maximum Weight per Wheel**	3300 kg	**7280 lb**
Shipping weight	14 000 kg	**30,870 lb**
Drive	**Mechanical**	
Gradeability	**±45°**	
Operator positions	**4**	
Steering:		
Inside radius	4800 mm	**15'9"**
Outside radius	7700 mm	**25'3"**
General Dimensions:		
Overall width	2000 mm	**6'7"**
Rolling width	1900 mm	**6'3"**
Tire width	315 mm	**12"**
Tire overlap	48 mm	**1.9"**
Overall height w/ROPS	3000 mm	**9'10"**
Wheelbase	4030 mm	**13'3"**
Overall length	5300 mm	**17'5"**
Ground clearance	250 mm	**9.8"**
Service Refill Capacities:		
Fuel tank	215 L	**56.8 U.S. gal**
Crankcase	7 L	**1.8 U.S. gal**
Cooling system	28 L	**7.4 U.S. gal**
Differential	7 L	**1.8 U.S. gal**
Transmission	22 L	**5.8 U. S. gal**
Hydraulic fluid	10 L	**2.6 U.S. gal**
Sprinkler water	460 L	**121 U.S. gal**

*Optional treaded tires available.
**Includes added weight option.

MODEL	PS-500*	
Flywheel Power	112 kW	**150 hp**
Rated Engine RPM	**2300**	
No. Cylinders	**8**	
Displacement	10.4 L	**636 in³**
Engine Model	**3208**	
Speeds:		
Forward	**3**	
Reverse	**3**	
Max. Speed	26.5 km/h	**16.5 mph**
Wheel Configuration	**3 front/4 rear**	
Tires	**15.00 R 24**	
Operating Weight Empty (no ballast)	19 000 kg	**41,875 lb**
Operating Weight Full (max. ballast)	35 000 kg	**77,140 lb**
Maximum Weight per Wheel	5000 kg	**11,020 lb**
Steering:		
Inside radius	5150 mm	**16'11"**
Outside radius	8550 mm	**28'1"**
General Dimensions:		
Overall width	2500 mm	**8'2"**
Rolling width	2420 mm	**7'11"**
Overall height w/ROPS	3630 mm	**11'11"**
Wheelbase	4465 mm	**14'8"**
Overall length	6270 mm	**20'7"**
Ground clearance	360 mm	**14.2"**
Service Refill Capacities:		
Fuel tank	310 L	**82 U.S. gal**
Crankcase	12.5 L	**3.3 U.S. gal**
Sprinkler water	350 L	**92 U.S. gal**

*Not available in the United States.

The following table gives, as a guide, the utilization possibilities of the equipment on different types of materials. The symbols and values given correspond to the following cases: ● equipment well suited to this utilization — current utilization: 0.30/0.80 the top figure indicates the minimum rational thickness in metres; the bottom figure indicates the thickness capable of yielding a maximum output — ▲ possible but not current utilization.

Roadworks	
Surface dressing	●
wearing course (bituminous mixes)	≧ 0.03
base course	0.10 0.30
sub-base	0.10 0.40
sub-grade	●

Earthworks: coarse grained soils	
rock D > 250 mm	
shot rock D ≦ 250 mm	
well graded gravel GW	0.10 0.30
poorly grade gravel GP	▲
silty gravel GF	0.10 0.40
clayey gravel GC	0.15 0.30
well graded sand SW	0.10 0.40
poorly graded sand SP	▲
silty sand SF	0.10 0.40
clayey sand SC	0.10 0.30

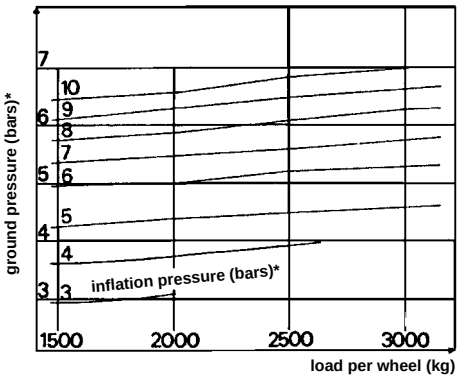
Earthworks: fine grained soils	
low plasticity silt ML	▲
low plasticity clay CL	▲
high plasticity silt MH	
high plasticity clay CH	
lime stabilized fine soils	0.15 0.30
limestone	0.10 0.30

Nomograms of Ground Pressure

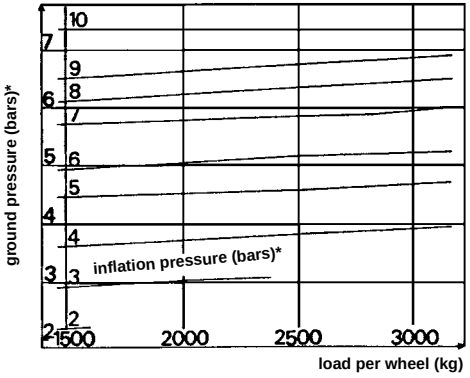
These nomograms make it possible to determine the pressure exerted on the ground under a wheel as a function of its load and of the tire inflation pressure.

Ground pressure values are theoretical because they result from prints obtained on an indeformable ground.

treadless tires
E 20 Pilote X (13/80-20) Michelin



treaded tires
F 20 Pilote XZZ (14/80-20) Michelin



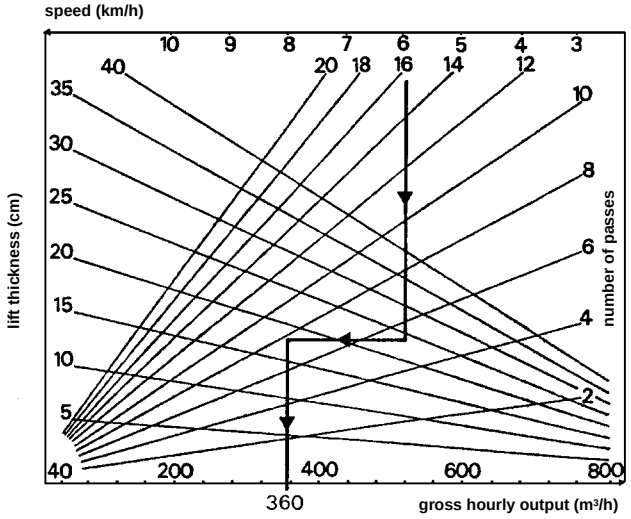
*1 bar = 1.02 kgf/cm²

Nomogram of hourly output

The gross hourly output of the equipment is given by the formula: Q (m^3/h) = V.H.L./N where V is the working speed in metres/hour; H is the thickness of the compacted layer in metres; L is the compacted width in metres; N is the number of passes.

The facing nomogram makes it possible to determine the gross hourly output of the equipment without calculation: on the basis of the chosen working speed, draw a vertical line; where it intersects with the "layer thickness" line selected, draw a horizontal line; where this horizontal intersects with the "number of passes" line adopted, draw a vertical which gives directly the value of the gross hourly output in m^3/h.

The net output is obtained by multiplying the gross value by a coefficient depending on jobsite conditions: — easy: 0.8 — normal: 0.7 — difficult: 0.6



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The following table gives, as a guide, the utilization possibilities of the equipment on different types of materials. The symbols and values given correspond to the following cases: ● equipment well suited to this utilization — current utilization: 0.30/0.80 the top figure indicates the minimum rational thickness in metres; the bottom figure indicates the thickness capable of yielding a maximum output — ▲ possible but not current utilization.

Roadworks	
Surface dressing	▲
wearing course (bituminous mixes)	≧ 0.05
base course	0.15 0.40
sub-base	0.15 0.40
sub-grade	●

Earthworks: coarse grained soils	
rock D > 250 mm	
shot rock D ≦ 250 mm	▲
well graded gravel GW	0.15 0.60
poorly graded gravel GP	0.20 0.50
silty gravel GF	0.15 0.60
clayey gravel GC	0.20 0.50
well graded sand SW	0.15 0.60
poorly graded sand SP	0.20 0.50
silty sand SF	0.15 0.60
clayey sand SC	0.15 0.50

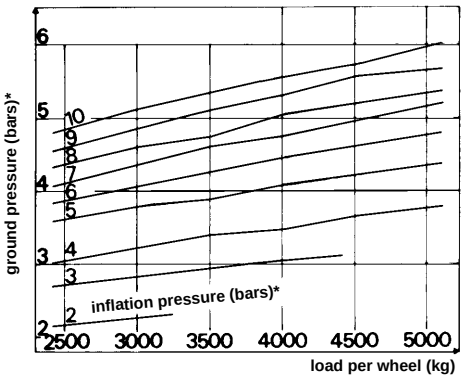
Earthworks: fine grained soils	
low plasticity silt ML	0.20 0.70
low plasticity clay CL	0.20 0.50
high plasticity silt MH	0.15 0.30
high plasticity clay CH	0.15 0.30
lime stabilized fine soils	0.20 0.40
limestone	0.15 0.40

Nomograms of Ground Pressure

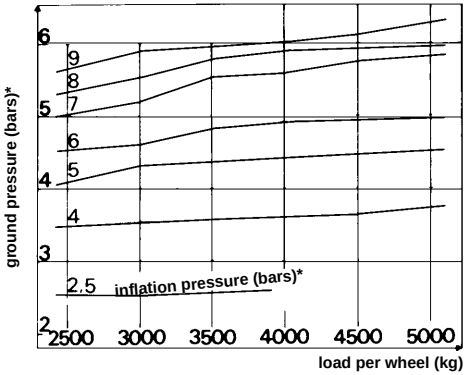
These nomograms make it possible to determine the pressure exerted on the ground under a wheel as a function of its load and of the tire inflation pressure.

Ground pressure values are theoretical because they result from prints obtained on an indeformable ground.

treadless tires
15.00-24 X (17/80-24) Michelin



treaded tires
16.00-20 XS Michelin



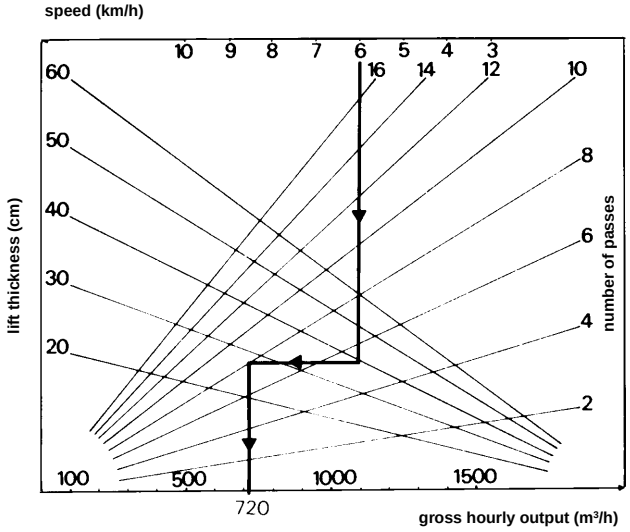
*1 bar = 1.02 kgf/cm²

Nomogram of hourly output

The gross hourly output of the equipment is given by the formula: Q (m^3/h) = V.H.L./N where V is the working speed in metres/hour; H is the thickness of the compacted layer in metres; L is the compacted width in metres; N is the number of passes.

The facing nomogram makes it possible to determine the gross hourly output of the equipment without calculation: on the basis of the chosen working speed, draw a vertical line; where it intersects with the "layer thickness" line selected, draw a horizontal line; where this horizontal intersects with the "number of passes" line adopted, draw a vertical which gives directly the value of the gross hourly output in m^3/h.

The net output is obtained by multiplying the gross value by a coefficient depending on jobsite conditions: — easy: 0.8 — normal: 0.7 — difficult: 0.6



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ELPHINSTONE UNDERGROUND MACHINES
Loaders and Haulers for Hard Rock Mining

CONTENTS

Elphinstone machines:

- Produced by a joint venture company of Caterpillar Inc. and Dale B. Elphinstone Pty Ltd.
- Manufactured in Burnie, Tasmania (Australia).
- Supported by the worldwide Caterpillar parts and dealer network.

Features, all models:

- Rugged design for underground application.
- Caterpillar diesel engines and power trains.
- High proportion of Caterpillar parts.
- Extensive use of steel castings and forgings.
- Engineered for productivity, reliability, safety, and machine rebuildability.
- Remote control options on loaders.

Elphinstone product line:

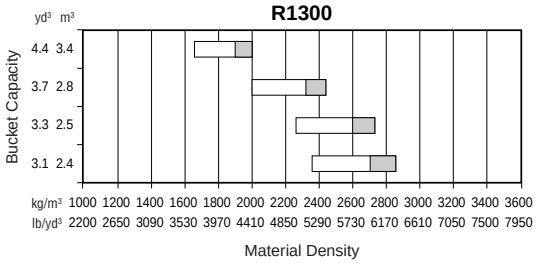
- Four models of Load-Haul-Dump (LHD) machines, with rated bucket payloads ranging from 6.5-17 tonnes (17 to 19 tons).
- Dump and ejector versions of an articulated truck, with payload capacities of 40-44 tonnes (44-48 tons).
- Three models of rigid frame trucks; dump versions with 38 tonne (42 tons) and 52 tonne (58 tons) payload capacity; ejector version with 36 tonne (40 tons) capacity.

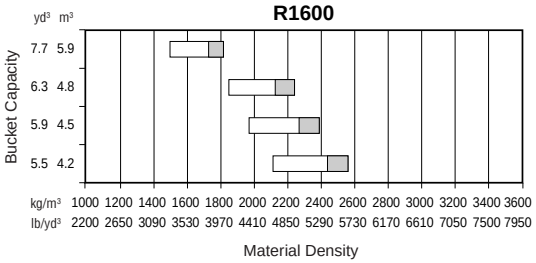
MODEL	R1300		R1600	
Bucket Size Minimum	2.4 m^3	**3 yd^3**	4.2 m^3	**5 yd^3**
Bucket Size Maximum	3.4 m^3	**4 yd^3**	5.9 m^3	**8 yd^3**
Tramming Capacity	6500 kg	**14,330 lb**	10 200 kg	**22,490 lb**
Length	8650 mm	**28'5"**	9710 mm	**31'10"**
Width Bucket	2000 mm	**6'7"**	2600 mm	**8'6"**
Width over Tires	1900 mm	**6'3"**	2400 mm	**7'10"**
Height	2000 mm	**6'7"**	2400 mm	**7'10"**
Operating Weight	19 000 kg	**41,900 lb**	29 800 kg	**65,710 lb**
Engine Power	123 kw	165 hp	201 kW	**270 hp**
Engine Model	**Cat 3306 DITA**		**Cat 3176C ATAAC**	
Tire Size	**17.5x25 20 Ply L5 STMS**		**18x25 28 Ply STMS**	
Outer Turning Radius	5575 mm	**18'3"**	6540 mm	**21'5"**
Inner Turning Radius	2972 mm	**9'9"**	3305 mm	**10'10"**
Articulation Angle	**42.5°**		**42.5°**	
Oscillation Angle	**±10°**		**±10°**	
Bucket Raise Time	**5**		**7.6**	
Bucket Lower Time	**2.3**		**1.6**	
Bucket Tip Time	**2**		**2**	
Bucket Total Time	**9.3**		**11.2**	
Travel Speeds	**km/h**	**mph**	**km/h**	**mph**
Forward 1	4.2	**2.6**	5.5	**3.4**
2	7.6	**4.7**	9.8	**6.1**
3	13.8	**8.6**	17.5	**10.9**
4	24.1	**15**	30.6	**19**
Reverse 1	3.7	**2.3**	6.2	**3.9**
2	6.8	**4.2**	11.2	**7**
3	12.4	**7.7**	19.8	**12.3**
4	21.7	**13.5**	34	**21.1**
Maximum Bucket Pin Height	2900 mm	**9'6"**	3752 mm	**12'4"**
Maximum Bucket Dump Angle	**43°**		**45°**	
Break Out Force Tilt SAE	12 020 kg	**26,500 lb**	19 500 kg	**43,000 lb**
Static Tipping (Tramming)	22 615 kg	**49,870 lb**	33 350 kg	**73,540 lb**
Emergency Brake	**S.A.F.R. Inboard Spring Applied Fluid Released, Enclosed Wet Disc @ All Wheels, Front and Rear Circuits**		**S.A.F.R. Inboard Spring Applied Fluid Released, Enclosed Wet Disc @ All Wheels, Front and Rear Circuits**	
Service Brake	**Hydraulically Applied Spring Released, Enclosed Wet Disc @ All Wheels, Front and Rear Circuits**		**Fluid Applied Spring Released, Wet Disc**	
Park Brake	**S.A.F.R. Inboard Spring Applied Fluid Released, Enclosed Wet Disc @ All Wheels, Front and Rear Circuits**		**S.A.F.R. Inboard Spring Applied Fluid Released, Enclosed Wet Disc @ All Wheels, Front and Rear Circuits**	
Fuel Capacity	260 L	**69 U.S. gal**	400 L	**106 U.S. gal**

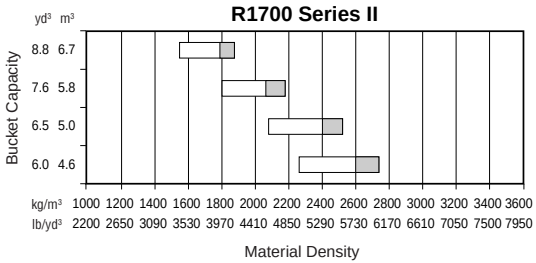
MODEL	R1700 Series II		R2900	
Bucket Size Minimum	4.6 m^3	**6 yd^3**	6.4 m^3	**8 yd^3**
Bucket Size Maximum	6.7 m^3	**9 yd^3**	11.5 m^3	**15 yd^3**
Tramming Capacity	12 000 kg	**26,460 lb**	17 200 kg	**37,930 lb**
Length	10 417 mm	**34'2"**	10 970 mm	**36'0"**
Width Bucket	2818 mm	**9'3"**	3100 mm	**10'2"**
Width over Tires	2550 mm	**8'4"**	2900 mm	**9'6"**
Height	2630 mm	**8'8"**	2888 mm	**9'6"**
Operating Weight	36 000 kg	**79,380 lb**	46 500 kg	**102,530 lb**
Engine Power	231 kW	**310 hp**	269 kW	**361 hp**
Engine Model	**Cat 3176B ATAAC**		**Cat 3406E ATAAC**	
Tire Size	**26.5x25 32 Ply L5 STMS**		**29.5x29 34 Ply STMS**	
Outer Turning Radius	6755 mm	**22'2"**	7310 mm	**24'0"**
Inner Turning Radius	3165 mm	**10'5"**	3410 mm	**11'2"**
Articulation Angle	**45°**		**42.5°**	
Oscillation Angle	**±8°**		**±8°**	
Bucket Raise Time	**6.7**		**6.7**	
Bucket Lower Time	**2.4**		**2.4**	
Bucket Tip Time	**2.8**		**2.8**	
Bucket Total Time	**11.9**		**11.9**	
Travel Speeds	**km/h**	**mph**	**km/h**	**mph**
Forward 1	5.1	**3.2**	5.1	**3.2**
2	9	**5.6**	9.2	**5.7**
3	18.6	**11.6**	15.7	**9.8**
4	26.8	**16.6**	26.7	**16.6**
Reverse 1	5.8	**3.6**	6.4	**4**
2	10.3	**6.4**	11.2	**7**
3	17.9	**11.1**	19.3	**12**
4	30.6	**19**	32.5	**20.2**
Maximum Bucket Pin Height	4098 mm	**13'5"**	4540 mm	**14'11"**
Maximum Bucket Dump Angle	**46°**		**46°**	
Break Out Force Tilt SAE	23 430 kg	**51,660 lb**	28 600 kg	**63,060 lb**
Static Tipping (Tramming)	31 900 kg	**70,340 lb**	39 690 kg	**87,520 lb**
Emergency Brake	**Combined Driveline and Service Brakes**		**Spring Applied Fluid Released, Wet Discs All Wheel Ends**	
Service Brake	**Fluid Applied Spring Released, Wet Disc All Wheels**		**Fluid Applied Wet Discs All Wheel Ends**	
Park Brake	**Spring Applied Hydraulic Released on Driveline**		**Spring Applied Fluid Released, Wet Discs All Wheel Ends**	
Fuel Capacity	520 L	**137 U.S. gal**	900 L	**238 U.S. gal**
Load Clearance	—	**—**	2955 mm	**9'8"**

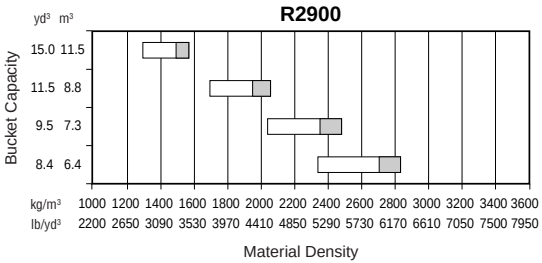
Model	R1300		R1600		R1700 Series II		R2900	
Rated payload	6500 kg	**14,330 lb**	10 200 kg	**22,490 lb**	12 000 kg	**26,460 lb**	17 200 kg	**37,930 lb**
Bucket capacity	3.4 m^3	**4.4 yd^3**	5.9 m^3	**7.7 yd^3**	6.7 m^3	**8.8 yd^3**	11.5 m^3	**15 yd^3**
Overall width	2000 mm	**6'7"**	2600 mm	**8'6"**	2818 mm	**9'3"**	3100 mm	**10'2"**
Overall height	2000 mm	**6'7"**	2400 mm	**7'10"**	2630 mm	**8'8"**	2888 mm	**8'6"**
Length (tramming)	8650 mm	**28'5"**	9710 mm	**31'10"**	10 417 mm	**34'2"**	10 970 mm	**36'0"**
Empty weight	19 000 kg	**41,900 lb**	29 800 kg	**65,710 lb**	36 000 kg	**79,380 lb**	46 500 kg	**102,530 lb**
Loaded weight	25 500 kg	**56,230 lb**	40 000 kg	**88,200 lb**	48 000 kg	**105,840 lb**	63 700 kg	**140,460 lb**
Ground clearance	320 mm	**12.6"**	342 mm	**13.5"**	400 mm	**15.7"**	500 mm	**19.7"**
Axle oscillation	**±10°**		**±10°**		**±8°**		**±8°**	

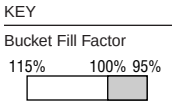
Model	Bucket Type	SAE Capacity	
		m^3	yd^3
R1300	Standard	2.4	**3.1**
	Standard	2.8	**3.7**
	Standard	3.4	**4.4**
	High penetration	2.4	**3.1**
	High penetration	2.8	**3.7**
	High penetration	3.4	**4.4**
	Ejector	2.5	**3.3**
R1600	Standard	4.2	**5.5**
	Standard	4.8	**6.3**
	Standard	5.9	**7.7**
	High penetration	4.2	**5.5**
	High penetration	4.8	**6.3**
	High penetration	5.9	**7.7**
	Ejector	4.5	**5.9**
R1700 Series II	Standard	4.6	**6.0**
	Standard	5.0	**6.5**
	Standard	5.8	**7.6**
	Standard	6.7	**8.8**
	High penetration	5.0	**6.5**
	High penetration	5.8	**7.6**
	High penetration	6.7	**8.8**
R2900	Standard	6.4	**8.4**
	Standard	7.3	**9.5**
	Standard	8.8	**11.5**
	Standard	11.5	**15.0**
	High penetration	6.4	**8.4**
	High penetration	7.3	**9.5**
	High penetration	8.8	**11.5**
	High penetration	11.5	**15.0**











Turning Dimensions

Model	R1300	R1600	R1700 Series II	R2900
Turn radius (outside)	5575 mm **18'4"**	6540 mm **21'5"**	6755 mm **22'2"**	7310 mm **24'0"**
Turn radius (inside)	2972 mm **9'9"**	3305 mm **10'10"**	3165 mm **10'5"**	3410 mm **11'2"**
Articulation angle	**±42.5°**	**±42.5°**	**±45°**	**±42.5°**

MODEL	AD40 Series II		AE40 Series II	
Engine Power	365 kW	**489 hp**	365 kW	**489 hp**
Engine Model	**3408E HEUI**		**3408E HEUI**	
Tare Weight	38 100 kg	**84,000 lbs**	41 800 kg	**92,170 lbs**
Max. Capacity Tonnes	44 t	**48 T**	40 t	**44 T**
Capacity M3 (SAE) 2:1 Heaped	18.4 m^3	**24 yd^3**	18.4 m^3	**24 yd^3**
Distribution Loaded Front	**48%**		**47%**	
Distribution Loaded Rear	**52%**		**53%**	
Turning Radius	9228 mm	**30'3"**	9589 mm	**31'6"**
Height	2700 mm	**8'10"**	2890 mm	**9'6"**
Length	10 660 mm	**35'0"**	11 266 mm	**37'0"**
Loading Height	2660 mm	**8'9"**	2700 mm	**8'10"**
Width	3000 mm	**9'10"**	3200 mm	**10'5"**
Oscillation	**12°**		**12°**	
Articulation	**42.5°**		**42.5°**	
Tray Height Raised	5946 mm	**19'6"**	**N/A**	
Dump Time Sec	**10**		**15**	
Travel Speeds	**km/h**	**mph**	**km/h**	**mph**
Forward 1	7.7	**4.8**	7.7	**4.8**
2	10.6	**6.6**	10.6	**6.6**
3	14.5	**9**	14.5	**9**
4	19.3	**12**	19.3	**12**
5	26.2	**16.3**	26.2	**16.3**
6	35.4	**22**	35.4	**22**
7	48.1	**29.9**	48.1	**29.9**
8	—	—	—	—
Reverse 1	7.7	**4.8**	7.7	**4.8**
2	10.6	**6.6**	10.6	**6.6**
Tire Size	**29.5x29 2** Radials**		**29.5x29 2** Radials**	
Emergency Brake	**Spring Applied Hyd. Released All Wheels**		**Spring Applied Hyd. Released All Wheels**	
Service Brake	**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**	
Fuel Capacity	520 L	**137 U.S. gal**	520 L	**137 U.S. gal**



MODEL	69D Dump		69D Ejector		73D	
Engine Power	380 kW	**510 hp**	380 kW	**510 hp**	509 kW	**683 hp**
Engine Model	**3408E HEUI**		**3408E HEUI**		**3412E HEUI**	
Tare Weight	30 100 kg	**66,370 lbs**	34 700 kg	**78,500 lbs**	40 300 kg	**88,860 lbs**
Max. Capacity Tonnes	38 t	**42 T**	36.2 t	**40 T**	52.2 t	**58 T**
Capacity M3 (SAE) 2:1 Heaped	18.3 m^3	**24 yd^3**	18.2 m^3	**24 yd^3**	31.9 m^3	**42 yd^3**
Distribution Loaded Front	**33%**		**31%**		**33%**	
Distribution Loaded Rear	**67%**		**69%**		**67%**	
Turning Radius	9616 mm	**31'7"**	9616 mm	**31'7"**	10 820 mm	**35'6"**
Height	3442 mm	**11'4"**	3442 mm	**11'4"**	3770 mm	**12'4"**
Length	8127 mm	**26'8"**	7830 mm	**25'8"**	9230 mm	**30'3"**
Loading Height	3058 mm	**10'0"**	3160 mm	**10'4"**	3400 mm	**11'2"**
Width	3665 mm	**12'0"**	3665 mm	**12'0"**	4200 mm	**13'9"**
Oscillation	**N/A**		**N/A**		**N/A**	
Articulation	**N/A**		**N/A**		**N/A**	
Tray Height Raised	5735 mm	**18'10"**	**N/A**		6635 mm	**21'9"**
Dump Time Sec	**9**		**16**		**11.4**	
Travel Speeds	**km/h**	**mph**	**km/h**	**mph**	**km/h**	**mph**
Forward 1	12.4	**7.7**	12.4	**7.7**	9.2	**5.7**
2	16.9	**10.5**	16.9	**10.5**	12.7	**7.9**
3	23	**14.3**	23	**14.3**	17.2	**10.7**
4	30.9	**19.2**	30.9	**19.2**	23.2	**14.4**
5	41.2	**25.6**	41.2	**25.6**	31.4	**19.5**
6	54.2	**33.7**	54.2	**33.7**	42.3	**26.3**
7	76.6	**47.6**	76.6	**47.6**	57.3	**35.6**
8	—	—	—	—	—	—
Reverse 1	13.5	**8.4**	13.5	**8.4**	11.3	**7**
2	**N/A**		**N/A**		**N/A**	
Tire Size	**18x33 2** Radials**		**18x33 2** Radials**		**21x35 2** Radials**	
Emergency Brake	**Caterpillar Oil Cooled Hyd. Applied Wet Discs on Rear Dry Disc on Front**		**Caterpillar Oil Cooled Hyd. Applied Wet Discs on Rear Dry Disc on Front**		**Caterpillar Oil Cooled Hyd. Applied Wet Discs on Rear Dry Disc on Front**	
Service Brake	**Caterpillar Oil Cooled Hyd. Applied Wet Disc on Rear Dry Disc on Front**		**Caterpillar Oil Cooled Hyd. Applied Wet Disc on Rear Dry Disc on Front**		**Caterpillar Oil Cooled Hyd. Applied Wet Disc on Rear Dry Disc on Front**	
Park Brake	**Spring Applied Hyd. Released All Wheels**		**Spring Applied Hyd. Released All Wheels**		**Spring Applied Hyd. Released All Wheels**	
Fuel Capacity	530 L	**140 U.S. gal**	530 L	**140 U.S. gal**	700 L	**185 U.S. gal**

Articulated Trucks

Model	AD40 Series II		AE40 Series II	
Heaped capacity*	18.4 m^3	**24.1 yd^3**	18.4 m^3	**24.1 yd^3**
Overall width	3000 mm	**9'10"**	3200 mm	**10'6"**
Overall height	2700 mm	**8'10"**	2890 mm	**9'6"**
Overall length	10 660 mm	**35'0"**	11 265 mm	**36'11"**
Empty weight	38 100 kg	**84,010 lb**	41 800 kg	**92,170 lb**
Loaded weight	78 100 kg	**172,210 lb**	81 800 kg	**180,370 lb**
Ground clearance	452 mm	**17.8"**	452 mm	**17.8"**
Frame oscillation	**±12°**		**±12°**	

*2:1 per SAE.

Rigid Frame Trucks

Model	69D Dump		69D Ejector		73D	
Max. capacity	38 t	**41.9 T**	36.2 t	**39.9 T**	52.2 t	**57.5 T**
Heaped capacity	18.3 m^3	**23.9 yd^3**	18.2 m^3	**23.8 yd^3**	31.9 m^3	**41.7 yd^3**
Height (FOPS)	3442 mm	**11'4"**	3442 mm	**11'4"**	3770 mm	**12'4"**
Length	8127 mm	**26'8"**	7830 mm	**25'8"**	9230 mm	**30'3"**
Width	3665 mm	**12'0"**	3665 mm	**12'0"**	4200 mm	**13'9"**
Loading height (empty)	3058 mm	**10'0"**	3160 mm	**10'4"**	3400 mm	**11'2"**

Body Selection

Model	SAE Body Capacity	
AD40 Series II	18.4 m^3	**24.1 yd^3**
	21.3 m^3	**27.9 yd^3**
	25.5 m^3	**33.4 yd^3**
AE40 Series II	18.4 m^3	**24.1 yd^3**
	17.7 m^3	**23.2 yd^3**
	20.8 m^3	**27.2 yd^3**
69D Dump	18.3 m^3	**23.9 yd^3**
	22.7 m^3	**29.7 yd^3**
	24.9 m^3	**32.6 yd^3**
69D Ejector	18.2 m^3	**23.8 yd^3**
73D	31.9 m^3	**41.7 yd^3**
	24.0 m^3	**31.4 yd^3**
	30.6 m^3	**40.0 yd^3**

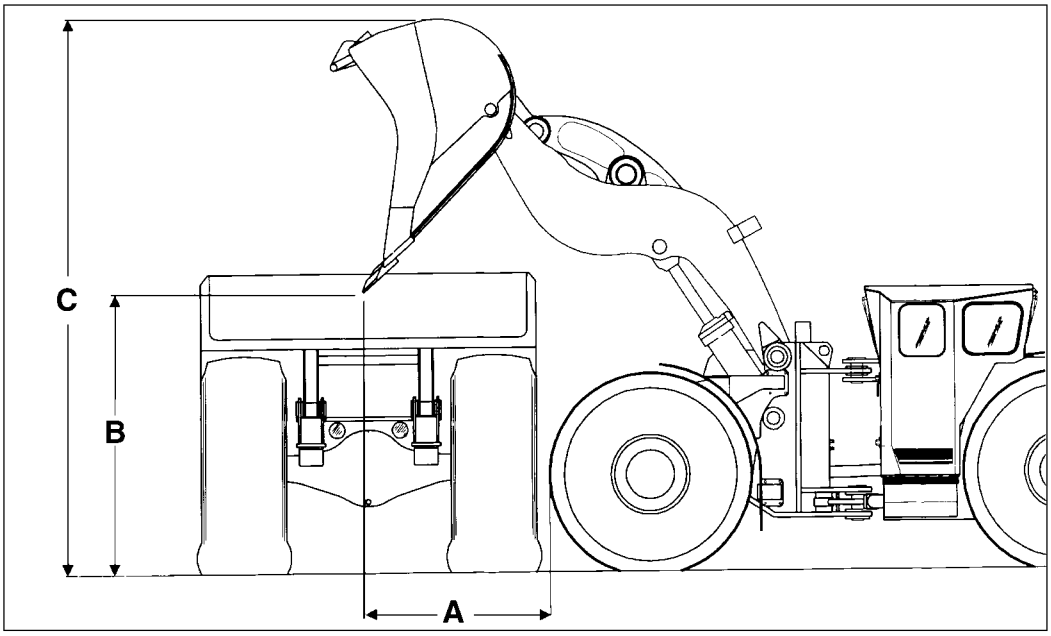
Turning Dimensions

Articulated Trucks

Model	AD40 Series II		AE40 Series II	
Turn radius (outside)	9228 mm	**30'3"**	9589 mm	**31'6"**
Turn radius (inside)	5296 mm	**17'5"**	5448 mm	**19'11"**
Articulation angle	**±42.5°**		**±42.5°**	

Rigid Frame Trucks

Model	69D Dump		69D Ejector		73D	
Turn circle (outside)	9616 mm	**31'7"**	9616 mm	**31'7"**	10 820 mm	**35'6"**
Turn circle (inside)	4372 mm	**14'4"**	4372 mm	**14'4"**	5090 mm	**16'8"**



Loader	Target	A		B		C	
R1300		1637 mm	**5'4.5"**	1632 mm	**5'4"**	3525 mm	**11'7"**
R1600	**AD40 Series II**	1408 mm	**4'7"**	2213 mm	**7'3"**	4497 mm	**14'9"**
R1700 Series II	**AD40 Series II**	1652 mm	**5'5"**	2490 mm	**8'2"**	4903 mm	**16'1"**
R2900	**AD40 Series II**	1625 mm	**5'4"**	2855 mm	**9'4"**	5370 mm	**17'7"**
R2900	**69D**	1625 mm	**5'4"**	2855 mm	**9'4"**	5370 mm	**17'7"**
R2900	**73D**	1625 mm	**5'4"**	2855 mm	**9'4"**	5370 mm	**17'7"**

HYDROMECHANICAL WORK TOOLS

CONTENTS

HYDRAULIC HAMMERS

H115s-H195 Hammer Features:

- **Shock Mount** isolates both short and long duration forces to protect the carrier.
- **Integrally Mounted Accumulator** dampens pressure peaks inside the hammer to further protect the carrier hydraulic system, and assist the piston in the power stroke.
- **Pressure Control Valve** allows hammer to always 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** protects the carrier hydraulics from pressure spikes.
- **Tie Rods** are heat torqued to ensure maximum clamping force and minimal maintenance.
- **Long Heavy Piston** minimizes recoil forces to protect hammer components and carrier structures.
- **Slip Fit Thrust Ring** is rotatable for longer life and is replaceable. Dissipates shock loads in abusive applications.
- **High Abrasion Resilient Plastic Wear Plates** on all four sides guide the power cell within the housing.
- **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 Lower Tool Bushing** is field replaceable and rotatable. It has grease retention grooves for extended lubrication and wear indication.
- **Sound Suppression** consists of housing noise abatement material, plugs and covers.
- **Autolube** available for all hammers.

H45-H100 Hammer Features:

- **Low Pressure Accumulator** assists in the power stroke of the piston.
- **Custom Side Plates** designed for Caterpillar carrier geometry. Protects power cell and front end.
- **High Pressure Accumulator** protects against internal cavitation. Dampens pressure peaks thus protecting carrier hydraulic system.
- **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** is rotatable for additional life and dissipates harmful shock loads in abusive applications.
- **Slip Fit Upper Tool Bushing** is rotatable for additional life and provides positive alignment of the tool.
- **Slip Fit Lower Tool Bushing** is field replaceable. Grease retention grooves provide extended lubrications and wear indication.
- **Autolube** available on all models.
- **Sound suppressed** versions available for all models.

Hammer Applications

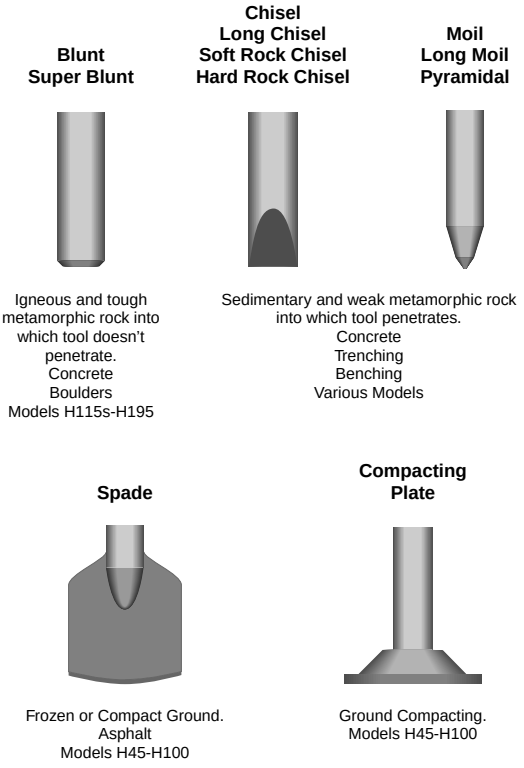
- Sewer and Water — The hammer can be used on pockets of rock that slow down production. Also good for breaking up old concrete pipes, manholes, etc.
- Road Construction — An essential tool during improvements and upgrading. The hammer works well on removing existing curbs, traffic islands, ramps, or sections of concrete. With special tools, it can cut asphalt.
- Bridge Renewal — Hammers are increasingly 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 sections and floor sections as well as handling loading ramps, foundations, or other brick and concrete structures near ground level.
- Mining — Hammers can break oversized material to avoid secondary blasting, and size riprap.
- Trenching/Primary Excavation — In soft or layered materials, the hydraulic hammer with a moil or chisel point can be cost-effective.
- Tunneling — This work has traditionally been performed by tunnel boring machines or the drill- and blast method. As hydraulic hammers have improved in power and reliability, they have been proven an economical alternative.
- Direct Quarrying — In many types of limestone, direct quarrying with hydraulic hammers can prove cost effective, especially where blasting is prohibited. See Hydraulic Hammer productivity graphs for production estimates.

A hammer need not be full time attachment for these applications. It can be replaced by a bucket in very little time so the excavator can be used for digging, loading, lifting, or other tasks.

Consult your Caterpillar dealer for advice on correct sizing, installation and tool selection.

NOTES: Internal components of hammers are finely machined to close tolerances and require clean oil with full lubricating properties. Hammers also tend to heat hydraulic oil considerably and this can lead to earlier oil deterioration and the need for more frequent oil changes than recommended for the basic excavator. Extra care should also be taken to avoid the entry of dust or dirt when installing or removing a hammer in the field.

Choosing the Tool



Model	H195		H180s		H160s		H140s	
Working weight	6600 kg	**14,520 lb**	3800 kg	**8360 lb**	3000 kg	**6600 lb**	2200 kg	**4840 lb**
Impact frequency	**300-400 bpm**		**350-470 bpm**		**400-600 bpm**		**360-520 bpm**	
Operating pressure	13 500 kPa	**1958 psi**	16 000 kPa	**2321 psi**	14 000 kPa	**2031 psi**	13 500 kPa	**1958 psi**
Carrier relief pressure	21 000 kPa	**3045 psi**	21 000 kPa	**3045 psi**	21 000 kPa	**3045 psi**	21 000 kPa	**3045 psi**
Acceptable oil flow	300-400 L/min	**78-104 gpm**	220-300 L/min	**57-78 gpm**	210-310 L/min	**55-81 gpm**	160-230 L/min	**42-60 gpm**
Maximum back pressure	1000 kPa	**145 psi**	1000 kPa	**145 psi**	500 kPa	**73 psi**	500 kPa	**73 psi**
Low pressure	—		—		—		—	
Oil temperature	–20°-+80°C	**–4°-+176°F**	–20°-+80°C	**–4°-+176°F**	–20°-+80°C	**–4°-+176°F**	–20°-+80°C	**–4°-+176°F**
Oil viscosity	**15-1000 cSt**		**15-1000 cSt**		**15-1000 cSt**		**15-1000 cSt**	
Line Size (minimum)								
ID pressure	36 mm	**1.42"**	32 mm	**1.25"**	25 mm	**1"**	25 mm	**1"**
ID return	42 mm or 2 × 32 mm	**1.65" or 2 × 1.25"**	36 mm	**1.42"**	32 mm	**1.25"**	32 mm	**1.25"**
Certified CIMA tool energy*	9275 J	**6841 ft-lb**	5906 J	**4357 ft-lb**	4873 J	**3594 ft-lb**	3976 J	**2934 ft-lb**

Model	H130s		H120Cs		H115s		H100	
Working weight	1700 kg	**3740 lb**	1300 kg	**2860 lb**	1000 kg	**2200 lb**	730 kg	**1605 lb**
Impact frequency	**330-610 bpm**		**400-620 bpm**		**400-700 bpm**		**470-1000 bpm**	
Operating pressure	14 500 kPa	**2103 psi**	14 000 kPa	**2031 psi**	14 000 kPa	**2031 psi**	14 500 kPa	**2103 psi**
Carrier relief pressure	21 000 kPa	**3045 psi**	21 000 kPa	**3045 psi**	21 000 kPa	**3045 psi**	21 000 kPa	**3045 psi**
Acceptable oil flow	120-220 L/min	**31-57 gpm**	120-160 L/min	**31-42 gpm**	70-130 L/min	**18-34 gpm**	60-120 L/min	**16-31 gpm**
Maximum back pressure	1000 kPa	**145 psi**	1000 kPa	**145 psi**	1000 kPa	**145 psi**	1000 kPa	**145 psi**
Low pressure	—		—		—		2700 kPa	**392 psi**
Oil temperature	–20°-+80°C	**–4°-+176°F**	–20°-+80°C	**–4°-+176°F**	–20°-+80°C	**–4°-+176°F**	–20°-+80°C	**–4°-+176°F**
Oil viscosity	**15-1000 cSt**		**15-1000 cSt**		**15-1000 cSt**		**15-1000 cSt**	
Line Size (minimum)								
ID pressure	32 mm	**1.25"**	25 mm	**1"**	25 mm	**1"**	25 mm	**1"**
ID return	32 mm	**1.25"**	25 mm	**1"**	25 mm	**1"**	25 mm	**1"**
Certified CIMA tool energy*	3739 J	**2758 ft-lb**	2884 J	**2127 ft-lb**	1481 J	**1092 ft-lb**	1152 J	**850 ft-lb**

*Measured in accordance with the CIMA measuring guide for tool energy rating for hydraulic breakers developed by the Mounted Breaker Manufacturers Bureau of the Construction Industry Manufacturers Association (CIMA-MBMB).

Model	H90C		H70/H70s		H63/H63s	
Working weight[1]	480 kg	**1056 lb**	370/400 kg	**814/880 lb**	275 kg	**605 lb**
Impact frequency[2]	**500-1300 bpm**		**600-1800 bpm**		**400-2000 bpm**	
Hammer operating pressure	13 500 kPa	**1958 psi**	12 500 kPa	**1813 psi**	14 000 kPa	**2031 psi**
Carrier relief pressure	21 000 kPa	**3045 psi**	21 000 kPa	**3045 psi**	21 000 kPa	**3045 psi**
Acceptable oil flow	60-150 L/min	**16-39 gpm**	50-150 L/min	**13-39 gpm**	20-100 L/min	**5-26 gpm**
Maximum back pressure	2000 kPa	**290 psi**	3000 kPa	**435 psi**	3500 kPa	**508 psi**
Low pressure	3300 kPa	**479 psi**	3900 kPa	**566 psi**	3100 kPa	**450 psi**
Oil temperature working range	–20°-+80°C	**–4°-+176°F**	–20°-+80°C	**–4°-+176°F**	–20°-+80°C	**–4°-+176°F**
Oil viscosity	**15-1000 cSt**		**15-1000 cSt**		**15-1000 cSt**	
Line size (minimum)						
ID pressure	25 mm	**1"**	25 mm	**1"**	19 mm	**0.75"**
ID return	25 mm	**1"**	25 mm	**1"**	19 mm	**0.75"**
Certified CIMA tool energy*	735 J	**542 ft-lb**	622 J	**459 ft-lb**	372 J	**274 ft-lb**

Model	H50/H50s		H45/H45s	
Working weight[1]	180/208 kg	**396/458 lb**	125/131 kg	**275/288 lb**
Impact frequency[2]	**450-1800 bpm**		**750-2200 bpm**	
Hammer operating pressure	10 500 kPa	**1523 psi**	11 500 kPa	**1668 psi**
Carrier relief pressure	21 000 kPa	**3045 psi**	21 000 kPa	**3045 psi**
Acceptable oil flow	20-70 L/min	**5-18 gpm**	20-50 L/min	**5-13 gpm**
Maximum back pressure	3000 kPa	**435 psi**	3000 kPa	**435 psi**
Low pressure	**—**		3100 kPa	**450 psi**
Oil temperature working range	–20°-+80°C	**–4°-+176°F**	–20°-+80°C	**–4°-+176°F**
Oil viscosity	**15-1000 cSt**		**15-1000 cSt**	
Line size (minimum)				
ID pressure	15 mm	**0.62"**	12 mm	**0.5"**
ID return	15 mm	**0.62"**	12 mm	**0.5"**
Certified CIMA tool energy*	198 J	**146 ft-lb**	137 J	**101 ft-lb**

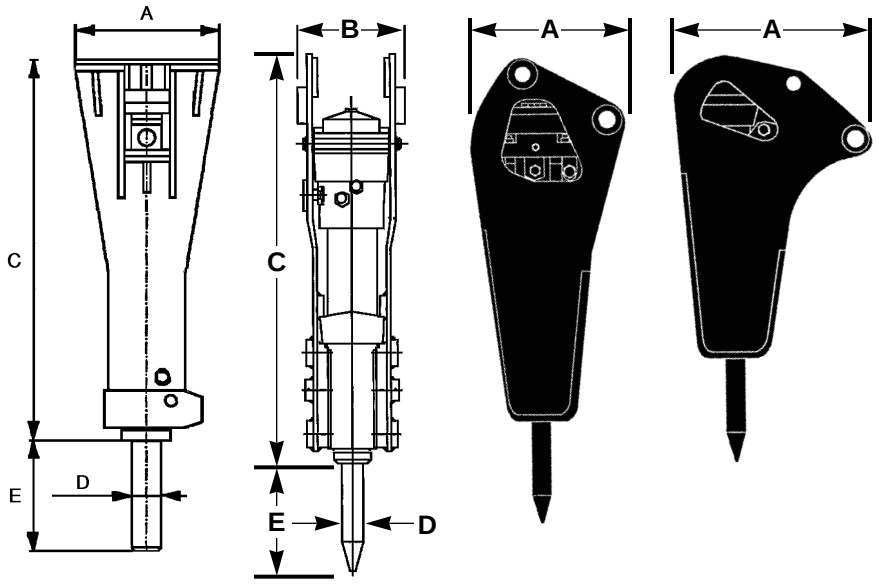
[1] Includes standard tool.
[2] Approximate value, actual impact frequency depends on oil flow, oil viscosity, temperature, and materials to be broken.

Backhoe Loaders equipped with hydraulic hammers are well-suited to breaking concrete, asphalt and hard or frozen ground. Rock applications require hammers classed at 2710 J **(2000 ft-lb)** and above.

*Measured in accordance with the CIMA measuring guide for tool energy rating for hydraulic breakers developed by the Mounted Breaker Manufacturers Bureau of the Construction Industry Manufacturers Association (CIMA-MBMB).

All Models

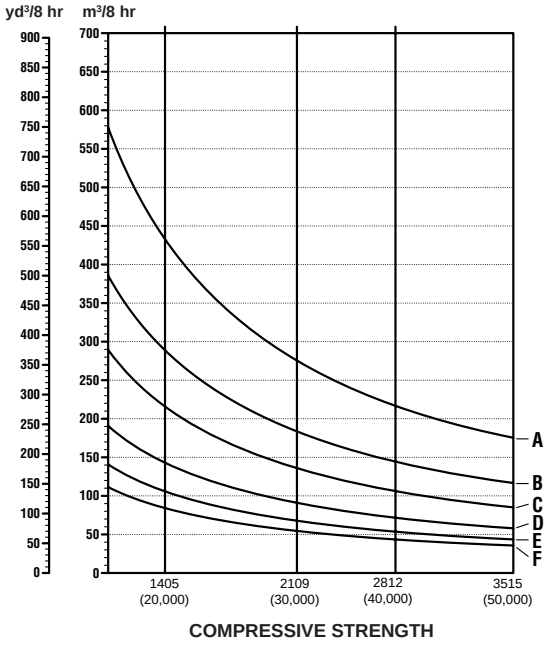
Pin-on Illustrated



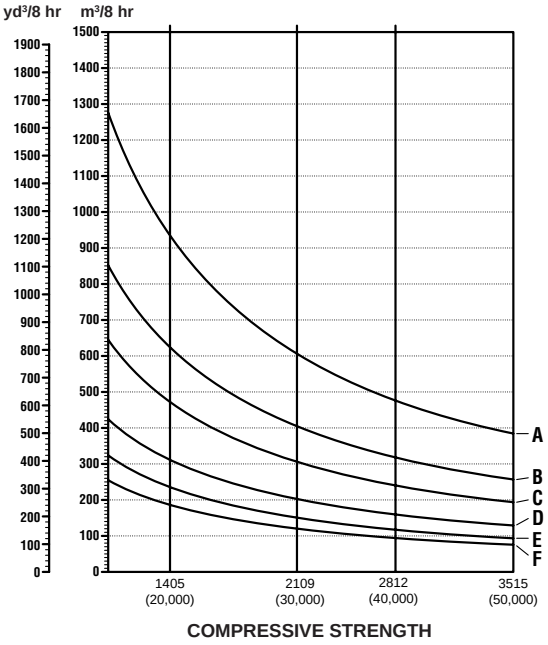
Model	A		B		C		D		E	
	mm	**in**	mm	**in**	mm	**in**	mm	**in**	mm	**in**
H195	1090	**42.9**	1090	**42.9**	2805	**110.4**	195	**7.7**	732	**28.8**
H180s	730	**28.7**	730	**28.7**	2458	**96.8**	170	**6.7**	542	**21.3**
H160s	730	**28.7**	730	**28.7**	2306	**90.8**	160	**6.3**	560	**22.0**
H140s	585	**23.0**	540	**21.3**	2058	**81.0**	140	**5.5**	469	**18.5**
H130s	585	**23.0**	540	**21.3**	1870	**73.6**	130	**5.1**	397	**15.6**
H120Cs	585	**23.0**	540	**21.3**	1753	**69.0**	115	**4.5**	357	**14.1**
H115s	585	**23.0**	540	**21.3**	1595	**62.8**	106	**4.2**	390	**15.4**
H100	585	**23.0**	540	**21.3**	1380	**54.3**	95	**3.7**	459	**18.1**
H100s	585	**23.0**	540	**21.3**	1390	**54.7**	95	**3.7**	459	**18.1**
H100 (pin-on)	588	**23.1**	450	**17.7**	1512	**59.5**	95	**3.7**	459	**18.1**
H90C	510	**20.1**	380	**15.0**	1269	**50.0**	84	**3.3**	417	**16.4**
H90Cs	520	**20.5**	400	**15.7**	1277	**50.3**	84	**3.3**	417	**16.4**
H90C (pin-on)	888	**35.0**	348	**13.7**	1153	**45.4**	84	**3.3**	445	**17.5**
H70	470	**18.5**	380	**15.0**	1134	**44.6**	70	**2.8**	355	**14.0**
H70s	520	**20.5**	400	**15.7**	1150	**45.3**	70	**2.8**	355	**14.0**
H70 (pin-on)	771	**30.4**	348	**13.7**	1215	**48.3**	70	**2.8**	355	**14.0**
H70s (pin-on)	771	**30.4**	348	**13.7**	1215	**48.3**	70	**2.8**	355	**14.0**
H63	470	**18.5**	380	**15.0**	1025	**40.4**	63	**2.5**	364	**14.3**
H63s	440	**17.3**	380	**15.0**	1006	**39.6**	63	**2.5**	364	**14.3**
H50	340	**13.4**	280	**11.0**	920	**36.2**	50	**2.0**	261	**10.3**
H50s	440	**17.3**	316	**12.4**	893	**35.2**	50	**2.0**	262	**10.3**
H45	340	**13.4**	280	**11.0**	775	**30.5**	45	**1.8**	262	**10.3**
H45s	440	**17.3**	280	**11.0**	775	**30.5**	45	**1.8**	249	**9.8**

Hammer Model	Machine Model(s)	Recommended Carrier Weight	
		kg	lb
H195	375	60 000-100 000	**132,000-220,000**
H180s	375, 350, 345B	40 000-80 000	**88,000-176,000**
H160s	350, 345B, 330B	32 000-55 000	**70,400-121,000**
H140s	330B, 325B, 322B	25 000-40 000	**55,000-88,000**
H130s	325B, 322B, M320, 320B	19 000-32 000	**41,800-70,400**
H120s	325B, 322B, M320, 320B, M318, 317B, M315, 315B	17 000-26 000	**37,400-57,200**
H115s	M320, 320B, M318, 317B, 315B, M312, 312B, M315	12 000-20 000	**26,400-44,000**
H100	446B, M315, M312, 315B, 312B, 311B	8000-14 000	**17,600-30,800**
H90C	446B, 436C, 426C, 312B, 311B, 307B	7000-12 000	**15,400-26,400**
H70	428C, 436C, 426C, 416C, 307	5000-8000	**11,000-17,600**
H63	416C	3000-6500	**6600-14,300**
H50	302.5	2500-4500	**5500-9900**
H45	302.5, 301.5	1300-3200	**2860-7040**

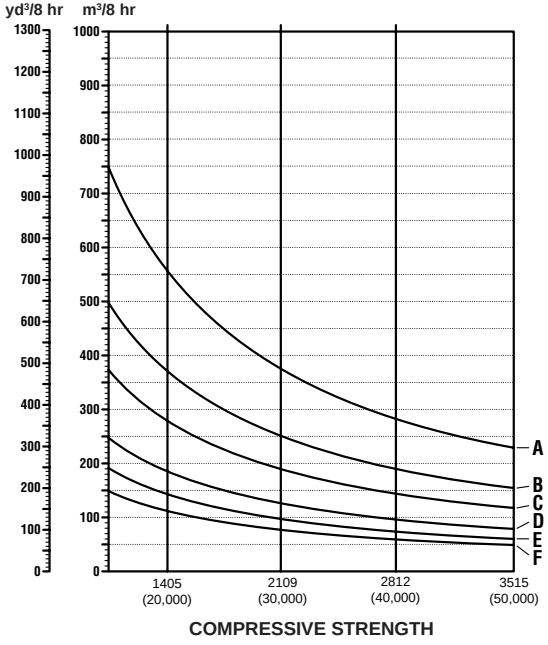
Model H140s



Model H180s



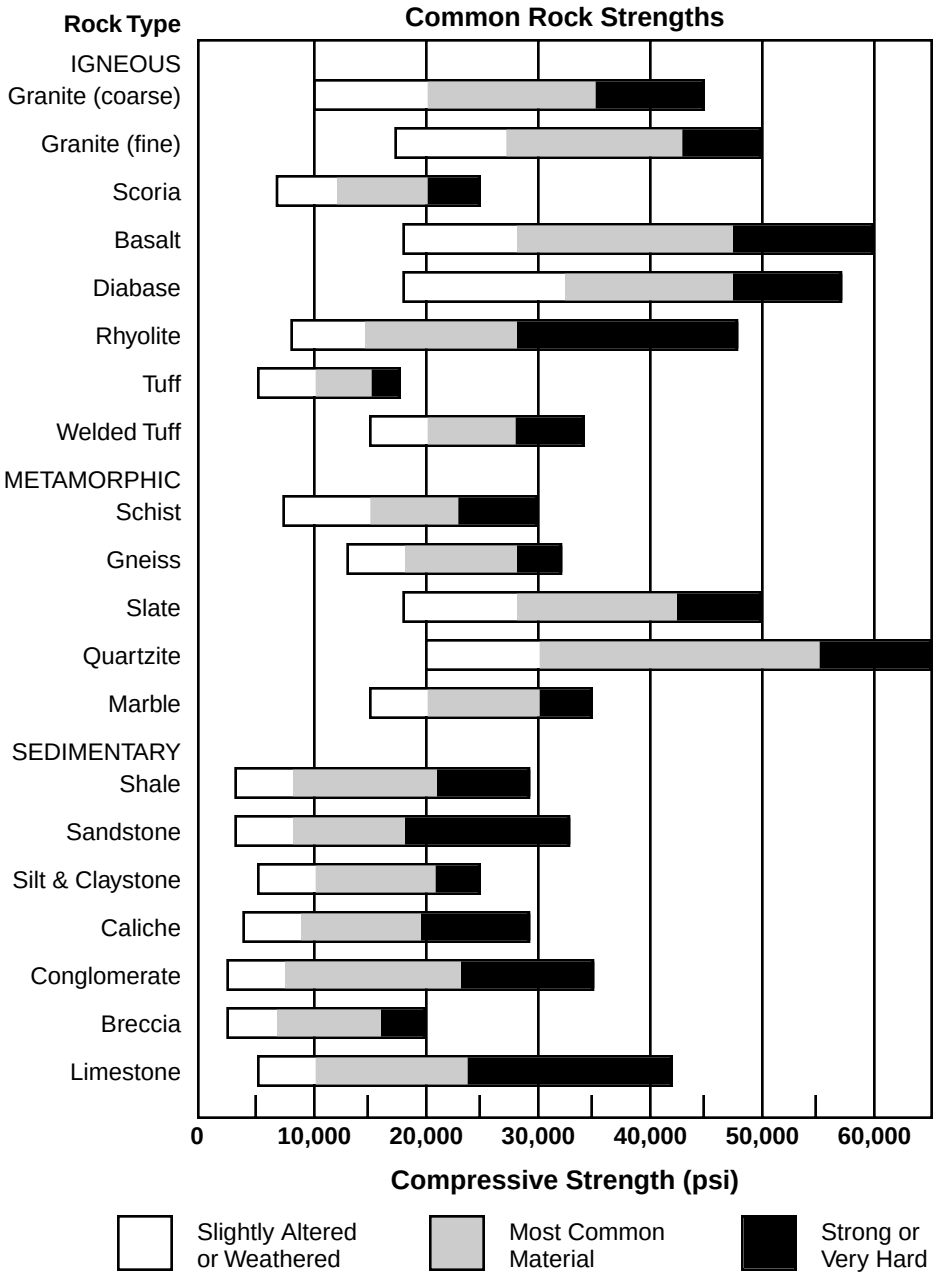
Model H160s



KEY

A — Bedding thickness less than 20 inches
B — Bedding thickness — 20 to 40 inches
C — Bedding thickness — 40 to 80 inches or closely spaced vertical fractures
D — Some vertical fracturing
E — Widely spaced vertical fractures
F — Massive formation

The figures are for comparison and evaluation purposes only. Results will vary depending on operation, carrier and job conditions.



The rock strengths shown are those most commonly encountered by Caterpillar in near surface excavations. Highly altered or deeply weathered rocks can have strength values much lower than those listed. Also, strength values greater than those shown may occasionally be encountered.

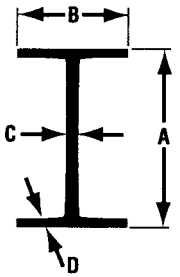
MOBILE SCRAP AND DEMOLITION SHEARS

Features:

- 180 degree side mounted rotation.
- Precision machined main bolt is field removable.
- 500 Brinell hardness wear plates throughout the upper and lower jaw.
- Hydraulic cylinder rod is protected. When activated the cylinder barrel is pushed out and the rod remains protected by the housing at all times.
- Transportation safety bars are designed to convert the shears to straight shears if the rotator is down for repair or overhaul.

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	S25		S30		S40		S50		S80		S130	
Narrow I-beams	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
A Height	320	**12.6**	400	**15.7**	425	**16.7**	500	**19.7**	550	**21.7**	600	**23.6**
B Flange Width	131	**5.2**	115	**6.1**	163	**6.4**	185	**7.3**	200	**7.9**	215	**8.5**
C Web Thickness	11.5	**0.45**	14.4	**0.57**	15.3	**0.6**	18	**0.7**	19	**0.75**	21.6	**0.85**
D Flange Thickness	17.3	**0.68**	21.8	**0.86**	23	**0.9**	27	**1.1**	30	**1.2**	32.4	**1.28**
Wide I-beams												
A Height	171	**6.7**	230	**9.1**	250	**9.8**	330	**13**	390	**15.4**	440	**17.3**
B Flange Width	180	**7.1**	240	**9.4**	260	**10.2**	300	**11.8**	300	**11.8**	300	**11.8**
C Web Thickness	6	**0.24**	7.5	**0.3**	7.5	**0.3**	9.5	**0.37**	11	**0.43**	11.5	**0.45**
D Flange Thickness	9.5	**0.37**	12	**0.47**	12.5	**0.49**	16.5	**0.65**	19	**0.75**	21	**0.83**

The above profiles provide an indication of the shears relative cutting capability. The exact cutting dimensions depend on excavator operating pressure, the conditions of the shear knives and jaws and the steel's tensile strength.

Technical Data (All dimensions are approximate.)

Model	S25		S30		S40	
Approximate Service Weight Excluding Mounting Bracket	2400 kg	**5300 lb**	3300 kg	**7300 lb**	4785 kg	**10,550 lb**
Length	2930 mm	**9'7.4"**	3500 mm	**11'5.8"**	4120 mm	**13'6"**
Jaw Opening	550 mm	**1'9.7"**	550 mm	**1'9.7"**	710 mm	**2'4"**
Jaw Depth	530 mm	**1'8.9"**	530 mm	**1'8.9"**	725 mm	**2'4"**
Primary Cutter Length	300 mm	**11.8"**	300 mm	**11.8"**	330 mm	**13"**
Maximum Shear Force Throat/ Primary Blade Center	3495/ 1800 kN	**393/202 st**	5030/ 2530 kN	**565/283 st**	6750/ 3426 kN	**759/385 st**
Maximum Oil Flow — Hydraulic Cylinder	160 L/min	**42 gpm**	180 L/min	**48 gpm**	400 L/min	**106 gpm**
Maximum Oil Flow — Rotation	15 L/min	**4 gpm**	17 L/min	**4.5 gpm**	23 L/min	**6.1 gpm**
Maximum Working Pressure						
Hydraulic Cylinder	34 300 kPa	**4980 psi**	34 300 kPa	**4980 psi**	34 300 kPa	**4980 psi**
Rotation	20 200 kPa	**2900 psi**	20 200 kPa	**2900 psi**	20 200 kPa	**2900 psi**
Cycle Time @ Max. Flow						
Open	**4.3 sec**		**4.7 sec**		**4.3 sec**	
Close	**7.5 sec**		**9.2 sec**		**7.2 sec**	
Hydraulic Rotation	**180°**		**180°**		**180°**	
Approximate Base Machine Operating Weight:						
Boom	18 000 kg	**40,000 lb**	20 000 kg	**44,000 lb**	26 000 kg	**57,000 lb**
Stick	26 000 kg	**57,000 lb**	30 000 kg	**66,000 lb**	40 000 kg	**88,000 lb**

Model	S50		S80		S130	
Approximate Service Weight Excluding Mounting Bracket	6200 kg	**13,700 lb**	7900 kg	**17,500 lb**	12 300 kg	**27,200 lb**
Length	4480 mm	**14'8.4"**	4650 mm	**15'3"**	5500 mm	**18'0.5"**
Jaw Opening	715 mm	**2'4.2"**	820 mm	**2'8.3"**	1100 mm	**3'7.3"**
Jaw Depth	795 mm	**2'7.3"**	820 mm	**2'8.3"**	1080 mm	**3'6.5"**
Primary Cutter Length	450 mm	**17.7"**	450 mm	**17.7"**	550 mm	**1'9.7"**
Maximum Shear Force Throat/ Primary Blade Center	8440/ 3635 kN	**949/409 st**	9280/ 4310 kN	**1043/484 st**	11 445/ 5255 kN	**1287/591 st**
Maximum Oil Flow — Hydraulic Cylinder	400 L/min	**106 gpm**	450 L/min	**119 gpm**	800 L/min	**211 gpm**
Maximum Oil Flow — Rotation	31 L/min	**8.2 gpm**	53 L/min	**14 gpm**	47 L/min	**12.4 gpm**
Maximum Working Pressure						
Hydraulic Cylinder	34 300 kPa	**4980 psi**	34 300 kPa	**4980 psi**	34 300 kPa	**4980 psi**
Rotation	20 200 kPa	**2900 psi**	20 200 kPa	**2900 psi**	20 200 kPa	**2900 psi**
Cycle Time @ Max. Flow						
Open	**4.6 sec**		**4.3 sec**		**4.2 sec**	
Close	**7.8 sec**		**8.8 sec**		**8.5 sec**	
Hydraulic Rotation	**180°**		**180°**		**180°**	
Approximate Base Machine Operating Weight:						
Boom	30 000 kg	**66,000 lb**	40 000 kg	**88,000 lb**	120 000 kg	**265,000 lb**
Stick	50 000 kg	**110,000 lb**	80 000 kg	**176,000 lb**	**N/A**	

Matching Guide

Stick Mounted/Reach Boom

Shear Model	Cat Excavator	Stick Range mm	Stick Range ft
S25	320B	1900	**6'3"**
	322B	2500-3600	**8'2"-11'10"**
	325B	2000-4200	**6'7"-13'9"**
	330B	2150-4800	**7'1"-15'9"**
S30	325B L	2000-2700	**6'7"-8'10"**
	330B L	2150-3900	**7'1"-12'10"**
	345B	2900-4800	**9'6"-15'9"**
	350 L	3100-4800	**10'2"-15'9"**
S40	345B	2900-4800	**10'2"-12'2"**
	350 L	3100-3700	**9'6"-15'9"**
S50	375 L	2900-5500	**9'6"-18'1"**
S80	375 L	2900-3400	**9'6"-11'2"**
	375 L*	2900-4400	**9'6"-14'5"**

*GP Boom.

Reach Boom Mounted

Shear Model	Cat Excavator
S25	315B L
	320B
	322B
S30	320B
	320B L
	322B
	322B L
	325B L
	330B L
S40	325B L
	330B L
S50	330B L
S80	345B
	350B L
S130	375

CONCRETE PULVERIZERS

Features:

- Hydraulic cylinder rod is protected. When activated the cylinder barrel is pushed out and the rod remains protected by the housing at all times.
- Large diameter slewing ring powered by a hydraulic motor constitutes a rugged and fast 360 degree rotation system.
- P16 and P25 Pulverizers provide the optimum reach configuration. Fifteen replaceable teeth and two square shaped cutting knives.
- P20, P28, P40 and P60 provide the optimum productivity configuration. Twenty-one replaceable teeth with six replaceable square cutting knives.
- Patented staggered tooth design enhances crushing effectiveness of the jaws.
- Long powerful rebar cutters.

Applications:

Primary and secondary demolition in one operation. Ideal for reinforced concrete found in bridge decks, parking garages, support columns and abutments.

Matching Guide

Stick Mounted/Reach Boom

Pulverizer Model	Cat Excavator	Stick Range mm	Stick Range ft
P16	320B L	1900-2900	**6'3"-9'7"**
	322B L	2000-3600	**6'7"-11'10"**
	325B L	2000-4200	**6'7"-13'9"**
P20	322B L	2000-3600	**6'7"-11'10"**
	325B L	2000-4200	**6'7"-13'9"**
P25	325B L	2000-3200	**6'7"-10'6"**
	330B L	2150-4800	**7'1"-15'9"**
	345B L	3900-4800	**12'10"-15'9"**
	350 L	4050-4800	**13'3"-15'9"**
P28	330B L	2150-3300	**7'1"-10'10"**
	345B L	3900-4800	**12'10"-15'9"**
	350 L	4050-4800	**13'3"-15'9"**
P40	345B L	3900-4800	**12'10"-15'9"**
	350 L	3100-3700	**9'6"-12'2"**
	375 L	4400-5500	**14'5"-18'1"**
P60	375	2900-4400	**9'6"-14'5"**
	375*	2900-4400	**9'6"-14'5"**

*GP Boom.

Technical Data (All dimensions are approximate.)

Model	P16		P20		P25	
Approximate Service Weight Excluding Mounting Bracket	2100 kg	**4650 lb**	2400 kg	**5300 lb**	3000 kg	**6600 lb**
Length Excluding Mounting Bracket	2450 mm	**8'0.47"**	2370 mm	**7'9.3"**	2730 mm	**8'11.48"**
Width: Fixed Jaw Moving Jaw	530 mm 305 mm	**1'8.87"** **12"**	635 mm 450 mm	**2'1"** **17.7"**	650 mm 400 mm	**2'1.6"** **15.75"**
Jaw Opening	750 mm	**2'5.53"**	650 mm	**2'1.7"**	900 mm	**2'11.43"**
Maximum Crushing Force Tooth — Jaw's Tip Tooth — Throat	 740 kN 1235 kN	 **83 st** **139 st**	 773 kN 1748 kN	 **86 st** **197 st**	 935 kN 1515 kN	 **105 st** **170 st**
Maximum Shear Force Cutting Blade Middle (Throat)	2110 kN	**237 st**	2574 kN	**290 st**	2990 kN	**336 st**
Maximum Oil Flow Hydraulic Cylinder	200 L/min	**53 gpm**	200 L/min	**53 gpm**	250 L/min	**66 gpm**
Maximum Oil Flow Rotation	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**
Maximum Working Pressure Rotation	17 200 kPa	**2465 psi**	17 200 kPa	**2465 psi**	17 200 kPa	**2465 psi**
Cycle Time @ Max. Flow Open Close	 **2.9 sec** **4.6 sec**		 **2.9 sec** **4.6 sec**		 **2.7 sec** **5.3 sec**	
Hydraulic Rotation Continuous	**360°**		**360°**		**360°**	
Approximate Base Machine Operating Weight	16 000 kg	**35,000 lb**	20 000 kg	**44,000 lb**	25 000 kg	**55,000 lb**

Model	P28		P40		P60	
Approximate Service Weight Excluding Mounting Bracket	3600 kg	**7950 lb**	5500 kg	**12,150 lb**	8100 kg	**17,900 lb**
Length Excluding Mounting Bracket	2650 mm	**8'8.3"**	2970 mm	**9'8.9"**	3265 mm	**10'8.5"**
Width: Fixed Jaw Moving Jaw	730 mm 505 mm	**2'4.7"** **1'7.9"**	820 mm 650 mm	**2'8.3"** **2'1.6"**	950 mm 655 mm	**3'1.4"** **2'1.8"**
Jaw Opening	850 mm	**2'9.5"**	1050 mm	**3'5.3"**	1150 mm	**3'9.3"**
Maximum Crushing Force Tooth — Jaw's Tip Tooth — Throat	 880 kN 1973 kN	 **99 st** **222 st**	 1533 kN 3776 kN	 **173 st** **464 st**	 1920 kN 4130 kN	 **216 st** **464 st**
Maximum Shear Force Cutting Blade Middle (Throat)	2853 kN	**320 st**	5931 kN	**667 st**	5770 kN	**649 st**
Maximum Oil Flow Hydraulic Cylinder	250 L/min	**66 gpm**	400 L/min	**106 gpm**	600 L/min	**159 gpm**
Maximum Oil Flow Rotation	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**
Maximum Working Pressure Rotation	17 200 kPa	**2465 psi**	17 200 kPa	**2465 psi**	17 200 kPa	**2465 psi**
Cycle Time @ Max. Flow Open Close	 **2.7 sec** **5.3 sec**		 **3.4 sec** **6.6 sec**		 **3.7 sec** **6.3 sec**	
Hydraulic Rotation Continuous	**360°**		**360°**		**360°**	
Approximate Base Machine Operating Weight	28 000 kg	**62,000 lb**	40 000 kg	**88,000 lb**	60 000 kg	**132,000 lb**

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 mm	Stick Range ft
CR20	320B L	1900-3900	**6'3"-12'10"**
	322B L	2000-3600	**6'7"-11'10"**
CR28	325B L	2000-3200	**6'7"-10'6"**
	330B L	2150-3900	**7'1"-12'10"**
	345B L	4800	**15'9"**
	350 L	4800	**15'9"**
CR35	345B L	2900-3900	**9'6"-12'10"**
	350 L	3100-4050	**10'2"-13'3"**
CR50	375	2900-5500	**9'6"-18'1"**
	375*	2900-5500	**9'6"-18'1"**

*GP Boom.

Technical Data (All dimensions are approximate.)

Model	CR20		CR28		CR35		CR50	
Approximate Service Weight Excluding Mounting Bracket	2500 kg	**5500 lb**	3300 kg	**7300 lb**	4600 kg	**10,200 lb**	6500 kg	**14,400 lb**
Length Excluding Mounting Bracket	2100 mm	**6'10.7"**	2235 mm	**7'7.9"**	2620 mm	**8'7.1"**	2850 mm	**9'4.2"**
Jaw Opening (Maximum)	720 mm	**2'4.3"**	915 mm	**3'0"**	1190 mm	**3'10.8"**	1600 mm	**5'3"**
Cutter Length	280 mm	**11"**	400 mm	**15.8"**	500 mm	**1'7.7"**	450 mm	**17.7"**
Maximum Crushing Force								
Tip	719 kN	**81 st**	793 kN	**90 st**	836 kN	**94 st**	1426 kN	**161 st**
Middle Tooth	965 kN	**108 st**	1169 kN	**131 st**	1233 kN	**139 st**	1909 kN	**214 st**
Maximum Shear Force — Cutting	3593 kN	**403 st**	4815 kN	**541 st**	4987 kN	**561 st**	7262 kN	**816 st**
Maximum Oil Flow Hydraulic Cylinder	160 L/min	**42 gpm**	180 L/min	**48 gpm**	250 L/min	**66 gpm**	450 L/min	**119 gpm**
Maximum Oil Flow 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**
Maximum Working Pressure Rotation	17 200 kPa	**2465 psi**	17 200 kPa	**2465 psi**	17 200 kPa	**2465 psi**	17 200 kPa	**2465 psi**
Cycle Time @ Max. Flow								
Open	**3.2 sec**		**3.2 sec**		**3.3 sec**		**3.2 sec**	
Close	**5.1 sec**		**6.2 sec**		**5.5 sec**		**6.7 sec**	
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**

ENGINES

CONTENTS

	TYPE	NO. OF MODELS	RANGE
INDUSTRIAL 	**Diesel**	20	56 to 4920 kW 76 to 6600 hp EPA Certified
	Gaseous Fueled	13	30 to 3506 kW 40 to 4700 hp EPA Certified
GENERATOR SETS 	**Diesel**	13	50 HZ-kV•A w/fan Prime-112 to 1944 Standby-125 to 2250 w/o fan Prime-1960 to 6500 Standby-2160 to 7150 60 HZ-kW w/fan Prime-113 to 1825 Standby-125 to 2000 w/o fan 1525 to 4840
	Gaseous Fueled	12	50 HZ-kV•A w/o fan Continuous-45 to 3385 60 HZ-kW w/o fan Continuous-55 to 3050
OLYMPIAN GENERATOR SETS*	**Diesel**		50 HZ-kV•A w/fan Prime-6 to 100 Standby-8 to 200 60 HZ-kV•A w/fan Prime-6 to 100 Standby-8 to 200
	Gaseous Fueled		50 HZ-kV•A w/fan Prime-6 to 50 Standby-12 to 100 60 HZ-kV•A w/fan Prime-6 to 50 Standby-12 to 100
MARINE 	**Propulsion**	17	63 to 5420 kW 85 to 7270 hp
	Generator Sets	12	50 HZ kV•A 63 to 6500 Prime 60 HZ-kW 65 to 4840 Prime
TRUCK 	**Diesel**	9	123 to 410 kW 170 to 550 hp EPA, CARB and Canadian certified

*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, 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.

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 J1349 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 (5,000 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.

Cat Diesel Engines for Industrial Applications

Model Type	"Ind A" Continuous			"Ind B"			"Ind C" Intermittent			"Ind D"			"Ind E"			EPA Certified
	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	
3054 NA	46	**62**	2200	—	**—**	—	—	**—**	—	51	**69**	2200	—	**—**	—	
3054 NA	56	**76**	2400	—	**—**	—	65	**87**	2600	—	**—**	—	—	**—**	—	
3304 NA	63	**85**	2000	67	**90**	2000	75	**100**	2200	—	**—**	—	82	**110**	2200	
3116 T	—	**—**	—	86	**115**	1800	—	**—**	—	—	**—**	—	—	**—**	—	X
3116 TA	—	**—**	—	97	**130**	1800	—	**—**	—	—	**—**	—	—	**—**	—	X
3304 NA (PC)	63	**85**	2000	—	**—**	—	75	**100**	2200	—	**—**	—	—	**—**	—	X
3054 T	72	**96**	2400	—	**—**	—	83	**111**	2600	—	**—**	—	—	**—**	—	
3056 NA	84	**114**	2400	—	**—**	—	96	**129**	2600	—	**—**	—	—	**—**	—	
3304 T (PC)	93	**125**	2000	—	**—**	—	123	**165**	2200	—	**—**	—	—	**—**	—	
3208 NA	93	**125**	2400	112	**150**	2400	131	**175**	2800	—	**—**	—	—	**—**	—	
3304 T	93	**125**	2000	112	**150**	2000	123	**165**	2200	131	**175**	2200	138	**185**	2200	
3306 NA (PC)	93	**125**	2000	—	**—**	—	112	**150**	2200	—	**—**	—	—	**—**	—	
3306 NA	93	**125**	2000	101	**135**	2000	112	**150**	2200	119	**160**	2200	127	**170**	2200	
3116 T	97	**130**	2200	104	**140**	2200	108	**145**	2200	119	**160**	2200	119	**160**	2200	X
3116 T	104	**140**	2400	112	**150**	2400	116	**155**	2400	123	**165**	2400	123	**165**	2400	X
3116 TA	104	**140**	2200	112	**150**	2200	119	**160**	2200	146	**195**	2200	168	**225**	2200	X
3056 T	105	**140**	2400	—	**—**	—	119	**159**	2600	—	**—**	—	—	**—**	—	
3116 TA	104	**140**	2200	112	**150**	2200	119	**160**	2200	142	**190**	2200	142	**190**	2200	X
3116 T	—	**—**	—	—	**—**	—	127	**170**	2600	127	**170**	2600	127	**170**	2600	X
3116 T	104	**140**	2400	112	**150**	2400	116	**155**	2400	123	**165**	2400	123	**165**	2400	X
3116 TA	—	**—**	—	119	**160**	1800	134	**180**	1800	—	**—**	—	—	**—**	—	X
3116 TA	112	**150**	2400	123	**165**	2400	131	**175**	2400	157	**210**	2400	164	**220**	2400	X
3116 TA	—	**—**	—	—	**—**	—	142	**190**	2600	142	**190**	2600	142	**190**	2600	X
3208 NA	112	**150**	2400	—	**—**	—	157	**210**	2800	—	**—**	—	—	**—**	—	X
3208 T	—	**—**	—	131	**175**	2400	—	**—**	—	—	**—**	—	—	**—**	—	
3306 T	116	**155**	2000	131	**175**	2000	149	**200**	2200	—	**—**	—	—	**—**	—	
3208 T	119	**160**	2200	119	**160**	2200	123	**165**	2200	131	**175**	2200	138	**185**	2200	X
3116 TA	112	**150**	2400	123	**165**	2400	131	**175**	2400	146	**200**	2400	149	**200**	2400	X
3056 TA	119	**160**	2400	—	**—**	—	135	**181**	2600	—	**—**	—	—	**—**	—	
3306 T	127	**170**	2000	149	**200**	2000	168	**225**	2200	—	**—**	—	—	**—**	—	
3116 TA	131	**175**	2200	138	**185**	2200	145	**195**	2200	164	**220**	2200	164	**220**	2200	
3116 TA	131	**175**	2200	138	**185**	2200	145	**195**	2200	153	**205**	2200	153	**205**	2200	X
3116 TA	142	**190**	2400	149	**200**	2400	157	**210**	2400	172	**230**	2400	172	**230**	2400	
3116 TA	—	**—**	—	—	**—**	—	172	**230**	2600	179	**240**	2600	179	**240**	2600	
3116 ATAAC	—	**—**	—	—	**—**	—	172	**230**	2450	—	**—**	—	—	**—**	—	X
3116 TA	—	**—**	—	—	**—**	—	194	**260**	2600	201	**270**	2600	201	**270**	2600	
3306 T (PC)	142	**190**	2000	—	**—**	—	187	**250**	2200	—	**—**	—	—	**—**	—	
3306 T	142	**190**	2000	168	**225**	2000	187	**250**	2200	198	**265**	2200	205	**275**	2200	
3306	142	**190**	2000	157	**210**	2000	168	**225**	2000	160	**215**	2200	160	**215**	2200	X
3208 T	142	**190**	2400	142	**190**	2400	157	**210**	2600	—	**—**	—	—	**—**	—	X
3116 TA	142	**190**	2400	149	**200**	2400	157	**210**	2400	157	**210**	2400	157	**210**	2400	X
3208 T	149	**200**	2400	—	**—**	—	168	**225**	2600	—	**—**	—	—	**—**	—	
3208 T	—	**—**	—	—	**—**	—	187	**250**	2600	194	**260**	2600	194	**260**	2600	X
3208 T	149	**200**	2400	168	**225**	2400	187	**250**	2600	—	**—**	—	—	**—**	—	
3306 DITA	157	**210**	2000	172	**230**	2000	186	**250**	2200	198	**265**	2200	205	**275**	2200	X
3306 TA (PC)	160	**215**	2000	—	**—**	—	201	**270**	2200	—	**—**	—	—	**—**	—	
3126 TA	160	**215**	2200	172	**230**	2200	179	**240**	2200	186	**250**	2200	190	**255**	2200	X
3126 TA	164	**220**	2400	172	**230**	2400	179	**240**	2400	190	**255**	2400	194	**260**	2400	X
3126 TA	—	**—**	—	—	**—**	—	186	**250**	2500	186	**250**	2500	186	**250**	2500	X
3126 TA	—	**—**	—	—	**—**	—	194	**260**	2600	194	**260**	2600	194	**260**	2600	X

NA — Naturally Aspirated
T — Turbocharged
TA — Turbocharged-Aftercooled
PC — Pre-combustion Chamber
ATAAC — Air-to-air Aftercooled
DITA — Direct Injection Turbocharged-Aftercooled

(Continued on next page)

Cat Diesel Engines for Industrial Applications (cont'd)

Model Type	"Ind A" Continuous			"Ind B"			"Ind C" Intermittent			"Ind D"			"Ind E"			EPA Certi-fied
	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	
3208 T	172	**230**	2400	183	**245**	2400	205	**275**	2600	213	**285**	2600	220	**295**	2600	
3116 ATAAC	—	**—**	—	—	**—**	—	205	**275**	2450	—	**—**	—	—	**—**	—	X
3208 JWAC	183	**245**	2400	183	**245**	2400	224	**300**	2600	224	**300**	2400	224	**300**	2400	X
3208 ATAAC	187	**250**	2200	187	**250**	2200	187	**250**	2200	209	**280**	2200	209	**280**	2200	
3306 TA	194	**260**	2000	205	**275**	2000	224	**300**	2200	231	**310**	2200	243	**325**	2200	
3406 TA	199	**267**	1300	—	**—**	—	199	**267**	1300	—	**—**	—	—	**—**	—	
3406 T	201	**270**	1800	224	**300**	2000	242	**325**	2100	283	**380**	2100	291	**390**	2100	
3306 TA	205	**275**	2000	220	**295**	2000	242	**325**	2200	246	**330**	2200	250	**335**	2200	X
3208 ATAAC	205	**275**	2400	209	**280**	2400	224	**300**	2600	235	**315**	2600	246	**330**	2600	
3406 TA	205	**275**	1800	242	**325**	2000	269	**360**	2100	313	**420**	2100	336	**450**	2100	
3306 DITA	205	**275**	2000	216	**290**	2000	242	**325**	2200	246	**330**	2200	250	**335**	2200	X
3306 DITA	205	**275**	2000	216	**290**	2000	224	**300**	2200	239	**320**	2200	250	**335**	2200	X
3208 ATAAC	224	**300**	2400	224	**300**	2400	224	**300**	2400	235	**315**	2400	235	**315**	2400	
3208 ATAAC	—	**—**	—	—	**—**	—	231	**310**	2600	246	**330**	2600	246	**330**	2600	
3176B ATAAC	—	**—**	—	—	**—**	—	272	**365**	2100	298	**400**	2100	—	**—**	—	X
3196 TA	—	**—**	—	—	**—**	—	272	**365**	1800	—	**—**	—	—	**—**	—	
3196 TA	—	**—**	—	—	**—**	—	272	**365**	2100	—	**—**	—	—	**—**	—	
3176B ATAAC	231	**310**	2100	250	**335**	2100	255	**342**	1800	291	**390**	2100	317	**425**	2100	X
3406 TA (PC)	—	**—**	—	—	**—**	—	280	**375**	2100	—	**—**	—	—	**—**	—	
3408 TA	238	**319**	1200	—	**—**	—	261	**350**	1200	—	**—**	—	—	**—**	—	
3406 TA	242	**325**	1800	276	**370**	2000	298	**400**	2100	358	**480**	2100	373	**500**	2100	
3408 T	242	**325**	1800	272	**365**	2000	317	**425**	2100	339	**455**	2100	358	**480**	2100	
3196 TA	276	**370**	1800	298	**400**	1800	317	**425**	1800	339	**455**	1800	373	**500**	1800	
3196 TA	276	**370**	2100	298	**400**	2100	317	**425**	2100	339	**455**	2100	373	**500**	2100	
3406C DITA	287	**385**	1800	328	**440**	2000	343	**460**	2100	373	**500**	2100	384	**515**	2100	X
3406C DITA	280	**375**	1800	291	**390**	2000	298	**400**	2100	324	**435**	2100	362	**485**	2100	X
3406C DITA	268	**360**	1800	268	**360**	2000	268	**360**	2100	298	**400**	2100	324	**435**	2100	X
3406C DITA	257	**345**	1800	254	**340**	2000	250	**335**	2100	—	**—**	—	—	**—**	—	X
3406 TA	313	**420**	1800	328	**440**	2000	343	**460**	2100	384	**515**	2100	392	**525**	2100	
3456 TA	—	**—**	—	—	**—**	—	410	**550**	2100	—	**—**	—	—	**—**	—	
3406E ATAAC	—	**—**	—	—	**—**	—	392	**525**	2100	421	**565**	2100	429	**575**	2100	X
3456 TA	—	**—**	—	—	**—**	—	391	**525**	2100	—	**—**	—	—	**—**	—	
3406E ATAAC	317	**425**	1800	317	**425**	2000	336	**450**	2100	—	**—**	—	—	**—**	—	X
3408 TA (PC)	—	**—**	—	—	**—**	—	354	**475**	2100	—	**—**	—	—	**—**	—	
3412 TA (S)	317	**425**	1200	—	**—**	—	399	**535**	1300	—	**—**	—	—	**—**	—	
3456 TA	317	**425**	1800	336	**450**	2000	336	**450**	1800	—	**—**	—	—	**—**	—	
3456 TA	336	**450**	1800	354	**475**	2000	354	**475**	1800	—	**—**	—	—	**—**	—	
3456 TA	354	**475**	1800	373	**500**	2000	373	**500**	1800	421	**565**	2100	429	**575**	2100	
3408E TA	354	**475**	1800	392	**525**	2000	373	**500**	1800	—	**—**	—	—	**—**	—	X
3408 TA	347	**465**	1800	366	**490**	2000	377	**505**	2100	392	**525**	2100	399	**535**	2100	
3408C TA	347	**465**	1800	365	**490**	2000	377	**505**	2100	392	**525**	2100	399	**535**	2100	X
3456 TA	—	**—**	—	—	**—**	—	410	**550**	2100	—	**—**	—	—	**—**	—	
3408E TA	—	**—**	—	—	**—**	—	429	**575**	2100	466	**625**	2100	504	**675**	2100	X
3456 TA	—	**—**	—	—	**—**	—	429	**575**	2100	—	**—**	—	—	**—**	—	
3412 T (S)	354	**475**	1800	384	**515**	2000	429	**575**	2100	522	**700**	2100	552	**740**	2100	
3408E ATAAC	—	**—**	—	—	**—**	—	466	**625**	2100	522	**700**	2100	660	**750**	2100	X
3456 TA	373	**500**	1800	391	**525**	2000	391	**525**	1800	447	**600**	2100	466	**625**	2100	
3456 TA	—	**—**	—	—	**—**	—	447	**600**	2100	—	**—**	—	—	**—**	—	
3412 T (D)	373	**500**	1800	410	**550**	2000	485	**650**	2100	503	**675**	2100	522	**700**	2100	

T — Turbocharged
TA — Turbocharged-Aftercooled
PC — Pre-combustion Chamber
ATAAC — Air-to-air Aftercooled
DITA — Direct Injection Turbocharged-Aftercooled
JWAC — Jacket Water Aftercooled

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Cat Diesel Engines for Industrial Applications (cont'd)

Model Type	"Ind A" Continuous			"Ind B"			"Ind C" Intermittent			"Ind D"			"Ind E"			EPA Certified
	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	
3412E DITA	418	**560**	1800	447	**600**	2000	485	**650**	2100	522	**700**	2100	552	**740**	2100	
3412E DITA	373	**500**	1800	448	**600**	2000	485	**650**	2100	—	**—**	—	—	**—**	—	
3456 TA	384	**515**	1800	410	**550**	2000	410	**550**	1800	470	**630**	2100	492	**660**	2100	
3412E DITA	433	**580**	1800	507	**680**	2000	560	**750**	2100	—	**—**	—	—	**—**	—	
3412 TA	533	**715**	1800	541	**725**	2000	559	**750**	2100	656	**880**	2100	716	**960**	2100	X
3508 TA	507	**680**	1200	—	**—**	—	612	**820**	1300	—	**—**	—	—	**—**	—	
3412 TA (D)	533	**715**	1800	552	**740**	2000	559	**750**	2100	656	**880**	2100	716	**960**	2100	
3412 DITA	533	**715**	1800	541	**725**	2000	559	**750**	2100	656	**880**	2100	716	**960**	2100	X
3412E DITTA	548	**735**	1800	560	**750**	2000	560	**750**	2100	—	**—**	—	—	**—**	—	
3508 TA	578	**775**	1800	—	**—**	—	634	**850**	1800	—	**—**	—	—	**—**	—	
3508 TA	638	**855**	1800	697	**935**	1800	746	**1000**	1800	—	**—**	—	—	**—**	—	
3512 TA	761	**1020**	1200	—	**—**	—	858	**1150**	1300	—	**—**	—	—	**—**	—	
3512 TA	877	**1175**	1800	—	**—**	—	1007	**1350**	1800	—	**—**	—	—	**—**	—	
3512 TA	955	**1280**	1800	1048	**1405**	1800	1119	**1500**	1800	—	**—**	—	—	**—**	—	
3516 TA	1011	**1355**	1200	—	**—**	—	1242	**1665**	1300	—	**—**	—	—	**—**	—	
3516 TA	1156	**1550**	1800	—	**—**	—	1268	**1700**	1800	—	**—**	—	—	**—**	—	
3516 TA	1275	**1710**	1800	1391	**1865**	1800	1492	**2000**	1800	—	**—**	—	—	**—**	—	

TA — Turbocharged-Aftercooled

DITA — Direct Injection Turbocharged-Aftercooled
DITTA — Direct Injection Twin Turbocharged-Aftercooled

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 29.6 in Hg (100 kPa), 30% relative humidity and 77°F (25°C). Ratings also apply at AS1501, BS5514, DIN6271 and ISO3046/1 standard conditions.

Power is based on API gravity of 35 at 60°F (15°C), fuel having a LHV of 18,390 Btu/lb (42 780 kJ/kg) used at 84°F (29°C) with a density of 7.001 lb/U.S. gal (838.9 g/L).

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, ventilation.

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 agricultural tractors, harvesters and combines, truck off-highway, fire pumps, blast hole drills, rock crushers, wood chippers with high torque rise, oil field hoisting, and portable air compressors.

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, 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.

Cat Diesel Engines for Industrial Applications (cont'd)

	Distillate A Rating (Continuous)			Heavy Fuel A Rating (Continuous)		
Engine Model	**kW**	**bhp**	**rpm**	**kW**	**bhp**	**rpm**
3606 TA	1490	**1998**	750	1350	**1810**	750
3606 TA	1560	**2092**	800	1355	**1817**	825
3606 TA	1730	**2320**	900	1570	**2105**	900
3606 TA	1850	**2481**	1000	1680	**2253**	1000
3608 TA	1980	**2655**	750	1800	**2414**	750
3608 TA	2080	**2789**	800	1800	**2414**	825
3608 TA	2300	**3084**	900	2090	**2803**	900
3608 TA	2460	**3299**	1000	2240	**3004**	1000
3612 TA	2980	**3996**	750	2700	**3621**	750
3612 TA	3120	**4184**	800	2710	**3634**	825
3612 TA	3460	**4640**	900	3140	**4211**	900
3612 TA	3700	**4962**	1000	3360	**4506**	1000
3616 TA	3960	**5310**	750	3600	**4828**	750
3616 TA	4160	**5579**	800	3600	**4828**	825
3616 TA	4600	**6169**	900	4180	**5605**	900
3616 TA	4920	**6598**	1000	4480	**6008**	1000

TA — Turbocharged-Aftercooled

Cat Engines for Fire Pump Packages

Engine Model	Cycl.	Disp.		1460 rpm		1750 rpm		1900 rpm		2100 rpm		2200 rpm	
		L	cu in	kW	hp	kW	hp	kW	hp	kW	hp	kW	hp
3208 NA	V8	10.4	**636**	75	**101**	90	**121**	97	**130**	105	**141**	108	**145**
3208 NA	V8	10.4	**636**	91	**122**	105	**141**	112	**150**	123	**165**	127	**170**
3208 T	V8	10.4	**636**	108	**145**	146	**196**	157	**211**	175	**235**	183	**245**
3306 T	I-6	10.5	**638**	145	**195**	172	**231**	184	**247**	199	**267**	—	**—**
3306 TA	I-6	10.5	**638**	183	**245**	198	**266**	207	**278**	214	**287**	—	**—**
3406 T	I-6	14.6	**893**	184*	**247**	218	**292**	233*	**312**	246	**330**	—	**—**
3406 TA	I-6	14.6	**893**	224	**300**	313	**420**	317	**425**	321	**430**	—	**—**
3406 T	I-6	14.6	**893**	242†	**325**	276†	**370**	280†	**375**	280†	**375**	—	**—**
3406 TA	I-6	14.6	**893**	—	**—**	343†	**460**	343†	**460**	360†	**483**	—	**—**
3408 TA	V8	18.0	**1099**	—	**—**	359	**481**	369	**495**	378	**507**	—	**—**
3408 TA	V8	18.0	**1099**	—	**—**	380†	**510**	392†	**525**	392†	**525**	—	**—**
3412 T	V12	27.0	**1649**	—	**—**	401	**538**	—	**—**	427	**572**	—	**—**
3412 TA	V12	27.0	**1649**	—	**—**	476	**638**	551	**739**	551	**739**	—	**—**
3412 T	V12	27.0	**1649**	466†	**625**	492†	**660**	507†	**680**	522†	**700**	—	**—**
3412 TA	V12	27.0	**1649**	—	**—**	597†	**800**	642†	**860**	649†	**870**	—	**—**
3508 TA	V8	34.5	**2105**	709*	**950**	794*	**1065**	—	**—**	—	**—**	—	**—**
3512 TA	V12	51.8	**3158**	1067*	**1430**	1193*	**1600**	—	**—**	—	**—**	—	**—**
3516 TA	V16	69.0	**4210**	1417*	**1900**	1480*	**1985**	—	**—**	—	**—**	—	**—**

Engine Model	Cycl.	Disp.		2300 rpm		2400 rpm		2600 rpm		2800 rpm		3000 rpm	
		L	cu in	kW	hp	kW	hp	kW	hp	kW	hp	kW	hp
3208 NA	V8	10.4	**636**	112	**150**	116	**156**	119	**160**	123	**165**	119	**160**
3208 NA	V8	10.4	**636**	131	**176**	134	**180**	136	**182**	139	**187**	138	**185**
3208 T	V8	10.4	**636**	187	**251**	190	**255**	194	**260**	201	**270**	—	**—**
3306 T	I-6	10.5	**638**	203	**272**	—	**—**	—	**—**	—	**—**	—	**—**
3306 TA	I-6	10.5	**638**	212	**284**	—	**—**	—	**—**	—	**—**	—	**—**
3406 T	I-6	14.6	**893**	261†	**350**	—	**—**	—	**—**	—	**—**	—	**—**
3406 TA	I-6	14.6	**893**	339†	**455**	—	**—**	—	**—**	—	**—**	—	**—**
3408 TA	V8	18.0	**1099**	380†	**510**	—	**—**	—	**—**	—	**—**	—	**—**
3412 T	V12	27.0	**1649**	466†	**625**	—	**—**	—	**—**	—	**—**	—	**—**
3412 TA	V12	27.0	**1649**	649†	**870**	—	**—**	—	**—**	—	**—**	—	**—**

*This rating is not listed or approved by ULI or FM, but it meets the same standards as the listed or approved ratings.
†These ratings are for engines with dry shielded exhaust manifolds and turbocharges.
T — Turbocharged
NA — Naturally Aspirated
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.

Engine Model	Compression Ratio	1800 rpm		1600 rpm		1500 rpm		1400 rpm		1200 rpm		1100 rpm		1000 rpm	
		bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp
G3304 NA	L	63	**85**	56	**75**	52	**70**	48	**65**	41	**55**	37	**50**	34	**45**
G3304 NA	H	71	**95**	63	**85**	60	**80**	56	**75**	48	**65**	45	**60**	41	**55**
G3306 NA	L	93	**125**	82	**110**	78	**103**	71	**95**	62	**83**	56	**75**	52	**70**
G3306 NA	H	108	**145**	97	**130**	94	**126**	86	**115**	75	**100**	67	**90**	60	**80**
G3306 TA[1]	H	151	**203**	134	**180**	123	**165**	118	**158**	97	**130**	90	**120**	82	**110**
G3306 TA[2]	L	157	**211**	140	**188**	138	**185**	123	**164**	108	**145**	101	**135**	90	**125**
G3306 TA	H	164	**220**	145	**195**	138	**185**	127	**170**	108	**145**	101	**135**	90	**120**
G3406 TA[1]	L	242	**325**	216	**290**	201	**270**	187	**250**	160	**215**	—	**—**	134	**189**
G3406 TA[2]	L	272	**365**	242	**325**	228	**305**	209	**280**	183	**245**	164	**230**	153	**205**
G3406 NA	H	160	**215**	149	**200**	138	**185**	131	**175**	112	**150**	101	**135**	93	**125**
G3406 TA[2]	H	257	**345**	242	**325**	227	**305**	209	**280**	183	**245**	164	**220**	153	**205**
G3408 TA[2]	L	298	**400**	265	**355**	250	**335**	224	**300**	194	**260**	179	**240**	160	**215**
G3408 TA[1]	L	336	**450**	298	**400**	280	**375**	246	**330**	213	**285**	198	**265**	175	**235**
G3408 TA[2]	H	298	**400**	265	**355**	250	**335**	231	**310**	198	**265**	183	**245**	168	**235**
G3408 TA[1]	H	336	**450**	298	**400**	280	**375**	261	**350**	224	**300**	205	**275**	187	**250**
G3408 NA	H	190	**255**	175	**235**	168	**225**	157	**210**	131	**175**	119	**160**	108	**145**
G3412 TA[2]	H	504	**675**	448	**600**	421	**565**	393	**525**	336	**450**	306	**410**	280	**325**
G3412 TA[1]	L	504	**675**	448	**600**	421	**565**	369	**495**	317	**425**	287	**385**	261	**350**
G3412 TA[2]	H	448	**600**	399	**535**	373	**500**	347	**465**	298	**400**	272	**365**	250	**335**
G3412 TA[1]	H	504	**675**	448	**600**	421	**565**	392	**525**	336	**450**	306	**410**	280	**375**
G3412 TA[2,3]	H	475	**637**	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**
G3412 TA[1,3]	H	504	**675**	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**	—	**—**

NA — Naturally Aspirated
TA — Turbocharged-Aftercooled
H — High compression ratio
L — Low compression ratio

[1]54°C/**130°F** or lower temperature water to the aftercooler.
[2]32°C/**90°F** or lower temperature water to the aftercooler.
[3]Low Emissions.

Rating Definition:

Continuous: Output available without varying load for an unlimited time. Continuous power in accordance with ISO8528, ISO3046/1, AS2789, DIN6271, and BS5514.

Engine Model	Compression Ratio	1400 rpm		1200 rpm		1100 rpm		1000 rpm	
		bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp
G3508 NA	H			231	**310**	213	**285**	194	**260**
G3508 TA[2,3]	L			384	**515**	350	**470**	319	**430**
G3508 TA[2]	H			392	**525**	362	**485**	328	**440**
G3508 TA[1,3]	L	500	**670**	407	**545**	373	**500**	336	**450**
3508 TA[2]	H			407	**545**	373	**500**	336	**450**
G3512 NA	H			392	**525**	362	**485**	328	**440**
G3512 TA[1]	H			589	**790**	541	**725**	492	**660**
G3512 TA[2]	H			608	**815**	556	**745**	504	**675**
G3512 TA[1,3]	L	705	**945**	604	**810**	556	**745**	504	**675**
G3512 TA[2,3]	L	750	**1005**	642	**860**	589	**790**	537	**720**
G3516 NA	H			492	**660**	466	**625**	436	**585**
G3516 TA[1]	H			783	**1050**	720	**965**	653	**875**
G3516 TA[2]	H			809	**1085**	742	**995**	675	**905**
G3516 TA[1,3]	L	944	**1265**	809	**1085**	742	**995**	671	**900**
G3516 TA[2,3]	L	1000	**1340**	858	**1150**	783	**1050**	712	**955**

Engine Model	Compression Ratio	1000 rpm		900 rpm		800 rpm		700 rpm	
		bkW	bhp	bkW	bhp	bkW	bhp	bkW	bhp
G3606[1,3]	L	1316	**1765**	1184	**1588**	1052	**1410**	984	**1320**
G3606[2,3]	L	1242	**1665**	1119	**1500**	992	**1330**	928	**1245**
G3608[1,3]	L	1754	**2352**	1579	**2117**	1402	**1880**	1312	**1760**
G3608[2,3]	L	1659	**2225**	1491	**2000**	1324	**1775**	1242	**1665**
G3612[1,3]	L	2632	**3530**	2368	**3175**	2107	**2825**	1976	**2650**
G3612[2,3]	L	2487	**3335**	2237	**3000**	1987	**2665**	1864	**2500**
G3616[1,3]	L	3509	**4705**	3158	**4235**	2808	**3765**	2632	**2530**
G3616[2,3]	L	3320	**4450**	2984	**4000**	2652	**3555**	2632	**3335**

NA — Naturally Aspirated
TA — Turbocharged-Aftercooled
H — High compression ratio
L — Low compression ratio

[1]54°C/**130°F** or lower temperature water to the aftercooler.
[2]32°C/**90°F** or lower temperature water to the aftercooler.
[3]Low Emissions.

Rating Definition:

Continuous: Output available without varying load for an unlimited time. Continuous power in accordance with ISO8528, ISO3046/1, AS2789, DIN6271, and BS5514.

50 Hz Diesel Gen Set Ratings

Gen Set Model	1500 rpm — With Fan		
	Standby kV•A	Prime kV•A	Continuous kV•A
3304 T	125	112	105
3208 T	175	150	145
3208 ATAAC	200	—	—
3306 TA	250	225	188
3306 ATAAC	275	250	206
3406 T	300	275	238
3406 TA	350	320	238
3406 TA	400	365	319
3408 TA	400	365	319
3412 T	500	455	369
3412 TT	550	500	319
3412 TA	600	545	432
3412 TA	650	600	444
3412 TA	700	635	500
3412 TA	750	680	549
3412 TA	800	725	575
3508 TA	1000	910	812
3508B	1100	1000	906
3512 TA	1250	1150	1000
3512 TA	1400	1275	1206
3512B	1500	1360	1320
3512B	1600	1500	—
3516 TA	1750	1600	1600
3516 TA	2000	1825	1600
3516B	2250	2000	1750
	1000 rpm		
3406 TA	—	188	—
3408 TA	—	256	—
3412 TA	—	350	—
3508 TA	525	500	488
3512 TA	812	750	700
3512 TA	950	856	838
3516 TA	950	875	689
3516 TA	1300	1169	1175

Gen Set Model	1000 rpm — Without Fan		
	Standby	Prime	Continuous
3606 TA	2690	2425	2200
3608 TA	3575	3250	2940
3612 TA	5375	4850	4400
3616 TA	7150	6500	5875
	750 rpm		
3606 TA	2160	1960	1775
3608 TA	2860	2600	2365
3612 TA	4325	3925	3550
3616 TA	5725	5200	4725

T — Turbocharged
TA — Turbocharged-Aftercooled
TT — Twin Turbochargers
ATAAC — Air-to-air Aftercooled
kV•A — Generator output

Rating Definitions:

Standby: Output available with varying load for the duration of the interruption of the normal source power.*

Prime: Output available with varying load for an unlimited time.**

Continuous: Output available without varying load for an unlimited time.***

*Fuel stop power in accordance with ISO3046/1, AS2789, DIN6271, and BS5514.
**Prime power in accordance with ISO8528, overload power in accordance with ISO3046/1, AS2789, DIN6271, and BS5514.
***Continuous power in accordance with ISO8528, ISO3046/1, AS2789, DIN6271, and BS5514.

60 Hz Diesel Gen Set Ratings

Gen Set Model	1800 rpm — With Fan		
	Standby ekW	Prime ekW	Continuous ekW
3304 T	125	113	100
3208 T	175	160	139
3208 ATAAC	200	—	—
3306 TA	230	210	—
3306 ATAAC	250	225	210
3406 TA	300	275	265
3406 TA	350	320	265
3406 TA	400	365	290
3408 TA	400	365	300
3412 T	500	455	360
3412 TA	550	500	400
3412 TA	600	545	435
3412 TA	650	591	473
3412 TA	700	635	500
3412 TA	750	680	540
3412 TA	800	725	575
3508 TA	900	820	660
3508B	1000	910	832
3512 TA	1000	910	890
3512 TA	1100	1000	890
3512 TA	1250	1135	1010
3512B	1400	1275	1230
3512B	1500	1360	—
3516 TA	1750	1600	1450
3516B	2000	1825	1640
	1200 rpm		
3406 TA	—	170	—
3408 TA	—	225	—
3412 TA	—	325	—
3508 TA	450	425	400
3512 TA	700	650	650
3512 TA	925	830	830
3516 TA	975	900	820
3516 TA	1250	1100	1020

Gen Set Model	900 rpm — Without Fan		
	Standby	Prime	Continuous
3606 TA	2000	1820	1650
3608 TA	2660	2420	2200
3612 TA	4000	3640	3300
3616 TA	5320	4840	4400
	720 rpm		
3606 TA	1680	1525	1375
3608 TA	2220	2020	1830
3612 TA	3360	3050	2750
3616 TA	4440	4040	3660

T — Turbocharged
TA — Turbocharged-Aftercooled
TT — Twin Turbochargers
ATAAC — Air-to-air Aftercooled
ekW — Generator output at 0.8 p.f.

Rating Definitions:

Standby: Output available with varying load for the duration of the interruption of the normal source power.*

Prime: Output available with varying load for an unlimited time.**

Continuous: Output available without varying load for an unlimited time.***

*Fuel stop power in accordance with ISO3046/1, AS2789, DIN6271, and BS5514.

**Prime power in accordance with ISO8528, overload power in accordance with ISO3046/1, AS2789, DIN6271, and BS5514.

***Continuous power in accordance with ISO8528, ISO3046/1, AS2789, DIN6271, and BS5514.

Olympian Generator Sets*

Gen Set Model	Prime		Standby	
	50 Hz (kV•A)	60 Hz ekW	50 Hz (kV•A)	60 Hz (ekW)
Gas				
CG012	6	6	12	12
CG015	10	10	15	15
CG020	15	15	20	20
CG025	20	20	25	25
CG030	20	20	30	30
CG035	25	25	35	35
CG040	30	30	40	40
CG050	40	40	50	50
CG070	50	50	70	70
CG085	70	70	80	80
CG100	90	90	100	100
CG125	110	110	125	125
Diesel				
CD008	6	6	8	8
CD010	8	8	10	10
CD012	10	10	12.5	12.5
CD015	12.5	12.5	15	15
CD017	15	15	17.5	17.5
CD020	15	15	20	20
CD025	20	20	25	25
CD030	25	25	30	30
CD035	30	30	35	35
CD040	45	36	50	40
CD050	50	45	55	50
CD060	59	54	65	60
CD075	67	68	75	75
CD080	79	72	88	80
CD100	100	90	110	100
CD125	100	100	125	125
CD150	135	135	150	150
CD175	160	160	175	175
CD200	180	180	200	200

*Olympian Generator Sets are manufactured exclusively for Caterpillar dealers by Generac Corporation.
kV•A — Generator output
ekW — Generator output at 0.8 p.f.

Gaseous-Fueled Generator Set Ratings

Gen Set Model	Continuous		Standby	Compression Ratio
	1500 rpm	1800 rpm	1800 rpm	
	Without Fan		Without Fan	
	50 Hz kV•A	60 Hz ekW	60 Hz ekW	
G3304-NA	45	55	—	L
G3304-NA	55	65	—	H
G3306-NA	70	85	—	L
G3306-NA	85	100	—	H
G3306-TA[2]	110	135	—	L/H
G3306-TA[1]	125	140	—	L
G3306-TA[1]	125	150	—	L/H
G3406-NA	125	145	—	H
G3408-NA	155	175	—	H
G3306-NA	—	160	160	H
G3406-TA[2]	175	210	255	H
G3406-TA[2]	175	210	245	L
G3406-TA[1]	185	225	265	L
G3406-TA[1]	185	225	275	H
G3408-TA[2]	210	255	300	L
G3408-TA[2]	210	255	310	H
G3412-NA	225	250	—	H
G3408-TA[1]	230	280	325	L
G3408-TA[1]	230	280	340	H
G3412-TA[2]	325	395	455	L
G3412-TA[2]	325	395	480	H
G3412-TA[1]	350	425	495	L
G3412-TA[1]	355	425	515	H
G3508-TA[3,4]	455	—	—	L/H
G3508-TA[2,4]	480	—	—	L/H
G3508-TA[1,4]	505	—	—	L/H
G3512-TA[2,4]	725	—	—	L/H
G3512-TA[1,4]	765	—	—	L/H
G3516-TA[2,4]	975	—	—	L/H
G3516-TA[1,4]	1030	—	—	L/H
G3516-TA[2,4]	—	—	1040	H
G3516-TA[1,4]	—	—	1040	H

TA — Turbocharged-Aftercooled
NA — Naturally Aspirated
kV•A — Generator output
ekW — Generator output at 0.8 p.f.
H — High compression ratio
L — Low compression ratio

[1]32°C/**90°F** or lower water temperature to the aftercooler.
[2]54°C/**130°F** or lower water temperature to the aftercooler.
[3]70°C/**160°F** or lower water temperature to the aftercooler.
[4]Low emission.

Gaseous-Fueled Generator Set Ratings (cont'd)

Gen Set Model	Continuous		Standby	Compression Ratio
	1000 rpm	1200 rpm	1800 rpm	
	Without Fan		Without Fan	
	50 Hz kV•A	60 Hz ekW	60 Hz ekW	
G3508-NA	—	210	—	L
G3508-TA[2]	—	370	—	L
G3508-TA[1]	—	380	—	L
G3508-TA[2,4]	—	375	—	L/H
G3508-TA[1,4]	—	400	—	L/H
G3512-NA	—	365	—	L
G3516-NA	—	460	—	L
G3512-TA[2]	—	555	—	L
G3512-TA[1]	—	570	—	L
G3512-TA[2,4]	—	570	—	L/H
G3512-TA[1,4]	—	600	—	L/H
G3516-TA[2]	—	750	—	L
G3516-TA[1]	—	770	—	L
G3516-TA[2,4]	—	770	—	L/H
G3516-TA[1,4]	—	820	—	L/H
	1000 rpm	**900 rpm**	**1800 rpm**	
G3606-TA[2,4]	1494	1075	—	L
G3606-TA[1,4]	1580	1135	—	L
G3608-TA[2,4]	1990	1430	—	L
G3608-TA[1,4]	2105	1515	—	L
G3612-TA[2,4]	3000	2160	—	L
G3612[2,4]	3010	2180	—	H
G3612-TA[1,4]	3175	2285	—	L
G3612[1,4]	3420	2475	—	H
G3616-TA[2,4]	3995	2880	—	L
G3516[2,4]	4020	2900	—	H
G3616-TA[1,4]	4230	3050	—	L
G3516[1,4]	4570	3285	—	H

TA — Turbocharged-Aftercooled
NA — Naturally Aspirated
kV•A — Generator output
ekW — Generator output at 0.8 p.f.
H — High compression ratio
L — Low compression ratio

[1]32°C/**90°F** or lower water temperature to the aftercooler.
[2]54°C/**130°F** or lower water temperature to the aftercooler.
[3]70°C/**160°F** or lower water temperature to the aftercooler.
[4]Low emission.

Cat Engines for Marine Propulsion Applications

Engine Model	A			B			C			D			E		
	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm
3304 NA	63	**85**	2000	—	**—**	—	75	**100**	2200	—	**—**	—	—	**—**	—
3304 T	93	**125**	2000	104	**140**	2000	123	**165**	2200	134	**180**	2200	142	**190**	2200
3208 NA	112	**150**	2400	134	**180**	2400	157	**210**	2800	157	**210**	2800	157	**210**	2800
3306 T	142	**190**	2000	164	**220**	2000	186	**250**	2200	—	**—**	—	209	**280**	2200
3116 TA	153	**205**	2400	153	**205**	2400	190	**255**	2600	205	**275**	2600	224	**300**	2800
3116 TA	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—	242	**325**	2800
3116 TA	172	**230**	2400	172	**230**	2400	209	**280**	2600	231	**310**	2600	261	**350**	2800
3126 TA	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—	287	**385**	2800
3126 TA	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—	313	**420**	2800
3208 T	160	**215**	2400	190	**255**	2400	216	**290**	2800	224	**300**	2800	239	**320**	2800
3208 TA	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—	325	**435**	2800
3306 TA	160	**215**	2000	175	**235**	2000	201	**270**	2200	235	**315**	2200	261	**350**	2200
3306 SCAC	175	**235**	2000	186	**250**	2000	216	**290**	2200	250	**335**	2200	265	**355**	2200
3208 TA	175	**235**	2400	205	**275**	2400	235	**315**	2600	254	**340**	2800	280	**375**	2800
3406 T	186	**250**	1800	224	**300**	1800	260	**348**	2100	—	**—**	—	300	**402**	2100
3176B	—	**—**	—	—	**—**	—	336	**450**	2300	392	**525**	2300	448	**600**	2300
3406 TA	205	**275**	1200	231	**310**	1350	—	**—**	—	—	**—**	—	—	**—**	—
3406 TA	240	**322**	1800	283	**380**	1800	358	**480**	2100	399	**535**	2100	433	**580**	2100
3408 TA	261	**350**	1250	294	**394**	1350	—	**—**	—	—	**—**	—	—	**—**	—
3406E	—	**—**	—	298	**400**	1800	—	**—**	—	—	**—**	—	—	**—**	—
3406 TA	272	**365**	1800	328	**440**	2100	—	**—**	—	—	**—**	—	—	**—**	—
3196 TA	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—	448	**600**	2300
3196	—	**—**	—	—	**—**	—	366	**490**	2300	425	**570**	2300	492	**660**	2300
3408 TA	280	**375**	1300	350	**470**	1800	—	**—**	—	—	**—**	—	—	**—**	—
3408 TA	300	**402**	1800	384	**515**	2100	403	**540**	2100	425	**570**	2100	436	**585**	2100
3412 TA	317	**425**	1200	354	**475**	1200	570	**764**	2100	—	**—**	—	—	**—**	—
3406E	336	**450**	1800	410	**550**	2100	448	**600**	2100	522	**700**	2200	597	**800**	2300
3408 TA	339	**455**	1800	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3412 T	375	**503**	1800	403	**540**	1800	403	**540**	1800	—	**—**	—	—	**—**	—
3508 TA	447	**600**	1200	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3412 T	448	**600**	1800	459	**615**	1800	474	**635**	1800	—	**—**	—	—	**—**	—
3412 TA	465	**624**	1800	500	**671**	1800	—	**—**	—	—	**—**	—	—	**—**	—
3412 TA	485	**650**	1800	537	**720**	1800	—	**—**	—	—	**—**	—	—	**—**	—
3508 TA	526	**705**	1200	600	**805**	1300	611	**820**	1300	—	**—**	—	—	**—**	—
3412 TTA	—	**—**	—	—	**—**	—	615	**825**	2100	671	**900**	2100	746	**1000**	2100
3508 TA	578	**775**	1600	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3508 TA	578	**775**	1800	—	**—**	—	634	**850**	1800	—	**—**	—	—	**—**	—
3508B	578	**775**	1200	634	**850**	1200	671	**900**	1200	—	**—**	—	—	**—**	—

NA — Naturally Aspirated
T — Turbocharged
TA — Turbocharged-Aftercooled
SCAC — Separate Circuit Aftercooled
TTA — Twin Turbocharged-Aftercooled

(Continued on next page)

Rating Definitions: (except 3600s)

A: For use with little load cycling in oceangoing displacement hulls such as freighters, tugboats and bottomdrag trawlers, and deep river towboats.

B: For use in midwater trawlers, purse seiners, crew and supply boats, ferry boats with trips longer than one hour, and towboats in rivers where locks, sandbars, curves or traffic dictate frequent slowing.

C: For use in yachts with displacement hulls, as well as ferries with trips less than one hour, fish boats with higher speed journey out and back (e.g., some lobster, crayfish and tuna), and short trip coastal freighters.

D: For use in patrol, customs, police boats, and some fire boats. Also for bow/stern thrusters.

E: For use in pleasure craft with planing hulls, as well as for patrol, pilot and harbor master boats.

Cat Engines for Marine Propulsion Applications (cont'd)

Engine Model	A			B			C			D			E		
	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm	kW	hp	rpm
3412 TA	—	**—**	—	—	**—**	—	634	**850**	2300	783	**1050**	2300	970	**1300**	2300
3412 TA	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—	1007	**1350**	2300
3508 TA	638	**855**	1600	675	**905**	1600	701	**940**	1600	—	**—**	—	—	**—**	—
3508 TA	638	**855**	1800	716	**960**	1800	746	**1000**	1800	858	**1500**	1800	—	**—**	—
3508 EUI	638	**855**	1600	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3508 EUI	638	**855**	1800	716	**960**	1800	746	**1000**	1800	858	**1150**	1800	—	**—**	—
3512 TA	671	**900**	1200	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3512B	738	**990**	900	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3508B	746	**1000**	1600	783	**1050**	1600	821	**1100**	1600	—	**—**	—	—	**—**	—
3508B	746	**1000**	1800	783	**1050**	1800	821	**1100**	1800	—	**—**	—	—	**—**	—
3512 TA	790	**1060**	1200	902	**1210**	1300	932	**1250**	1300	—	**—**	—	—	**—**	—
3508B	—	**—**	—	895	**1200**	1785	969	**1300**	1835	1044	**1400**	1880	1119	**1500**	1925
3512 TA	876	**1175**	1600	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3512 TA	876	**1175**	1800	—	**—**	—	969	**1300**	1800	—	**—**	—	—	**—**	—
3516 TA	895	**1200**	1200	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3512 TA	900	**1200**	1200	970	**1300**	1200	1060	**1410**	1200	—	**—**	—	—	**—**	—
3512 TA	954	**1280**	1600	1014	**1360**	1600	1051	**1410**	1600	—	**—**	—	—	**—**	—
3512 TA	954	**1280**	1800	1078	**1445**	1800	1119	**1500**	1800	1305	**1750**	1800	—	**—**	—
3512 EUI	954	**1280**	1600	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3512 EUI	954	**1280**	1800	1078	**1445**	1800	1119	**1500**	1800	1305	**1750**	1800	—	**—**	—
3512B	970	**1300**	1200	1007	**1350**	1200	1100	**1475**	1200	—	**—**	—	—	**—**	—
3516B	984	**1320**	900	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3516 TA	1051	**1410**	1200	1200	**1610**	1200	1242	**1665**	1200	—	**—**	—	—	**—**	—
3512B	1119	**1500**	1600	1175	**1575**	1600	1231	**1650**	1600	—	**—**	—	—	**—**	—
3512B	1119	**1500**	1800	1175	**1575**	1800	1231	**1650**	1800	—	**—**	—	—	**—**	—
3516 TA	1156	**1550**	1600	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3516 TA	1156	**1550**	1800	—	**—**	—	1268	**1700**	1800	—	**—**	—	—	**—**	—
3516 TA	1195	**1600**	1200	1250	**1675**	1200	1305	**1750**	1200	—	**—**	—	—	**—**	—
3516B	1231	**1650**	1200	1305	**1750**	1200	1380	**1850**	1200	—	**—**	—	—	**—**	—
3512B	—	**—**	—	1343	**1800**	1785	1455	**1950**	1835	1567	**2100**	1880	1679	**2250**	1925
3516 TA	1275	**1710**	1600	1350	**1810**	1600	1398	**1875**	1600	—	**—**	—	—	**—**	—
3516 TA	1275	**1710**	1800	1432	**1920**	1800	1491	**2000**	1800	1641	**2200**	1800	—	**—**	—
3516 EUI	1275	**1710**	1600	—	**—**	—	—	**—**	—	—	**—**	—	—	**—**	—
3516 EUI	1275	**1710**	1800	1432	**1920**	1800	1491	**2000**	1800	1641	**2200**	1800	—	**—**	—
3516B	1491	**2000**	1600	1567	**2100**	1600	1641	**2200**	1600	—	**—**	—	—	**—**	—
3516B	1491	**2000**	1800	1567	**2100**	1800	1641	**2200**	1800	—	**—**	—	—	**—**	—
3516B	—	**—**	—	1790	**2400**	1785	1940	**2600**	1835	2088	**2800**	1880	2238	**3000**	1925

TA — Turbocharged-Aftercooled

Rating Definitions: (except 3600s)

A: For use with little load cycling in oceangoing displacement hulls such as freighters, tugboats and bottomdrag trawlers, and deep river towboats.

B: For use in midwater trawlers, purse seiners, crew and supply boats, ferry boats with trips longer than one hour, and towboats in rivers where locks, sandbars, curves or traffic dictate frequent slowing.

C: For use in yachts with displacement hulls, as well as ferries with trips less than one hour, fish boats with higher speed journey out and back (e.g., some lobster, crayfish and tuna), and short trip coastal freighters.

D: For use in patrol, customs, police boats, and some fire boats. Also for bow/stern thrusters.

E: For use in pleasure craft with planing hulls, as well as for patrol, pilot and harbor master boats.

Cat Engines for Marine Propulsion Applications

	CS			MC		
Engine Model	**kW**	**hp**	**rpm**	**kW**	**hp**	**rpm**
3606 TA	1490	**2000**	750	1640	**2200**	750
3606 TA	1560	**2090**	800	1720	**2310**	800
3606 TA	1730	**2320**	900	1900	**2550**	900
3606 TA	1850	**2480**	1000	2030	**2720**	1000
3608 TA	1980	**2660**	750	2180	**2920**	750
3608 TA	2080	**2790**	800	2290	**3070**	800
3608 TA	2300	**3080**	900	2530	**3390**	900
3608 TA	2460	**3300**	1000	2710	**3630**	1000
3612 TA	2980	**4000**	750	3280	**4400**	750
3612 TA	3120	**4180**	800	3440	**4610**	800
3612 TA	3460	**4640**	900	3800	**5100**	900
3612 TA	3700	**4960**	1000	4060	**5440**	1000
3616 TA	3960	**5310**	750	4360	**5850**	750
3616 TA	4160	**5580**	800	4580	**6140**	800
3616 TA	4600	**6170**	900	5060	**6790**	900
3616 TA	4920	**6600**	1000	5420	**7270**	1000

	Fast commercial vessel rating			Military fast vessel rating		
Engine Model	**kW**	**hp**	**rpm**	**kW**	**hp**	**rpm**
3612	4250	**5700**	1000	4500	**6035**	1000
3616	5650	**7575**	1000	6000	**8050**	1000
3618	7200	**9655**	1050	—	**—**	—

TA — Turbocharged-Aftercooled

RATING DEFINITIONS: (3600s)

CS: Continuous Service is suitable for continuous duty applications, including dredges, for operation without interruption or load cycling.

MC: Maximum Continuous is generally used for vessel applications involving varying loads. The engine power actually produced is limited by application guidelines, leaving a power reserve for unusual operating conditions.

Engine Model	50 Hertz			60 Hertz*			
	1500 rpm kV•A	1000 rpm kV•A	750 rpm kV•A	1800 rpm ekW	1200 rpm ekW	900 rpm ekW	720 rpm ekW
3304 NA	63	—	—	65	—	—	—
3304 T	106	—	—	105	—	—	—
3306 T	150, 194	—	—	170	—	—	—
3306 T	181, 200	—	—	175	—	—	—
3306 TA	—	—	—	190	—	—	—
3306 TA	—	—	—	195	—	—	—
3406 T	250	—	—	250	—	—	—
3406 T	269	—	—	260	—	—	—
3406 TA	300	—	—	315	—	—	—
3406 TA	306	188	—	320	190	—	—
3408 TA	—	238	—	—	245	—	—
3408 TA	388	—	—	370	—	—	—
3412 T	481	—	—	400	—	—	—
3412 T	438, 506	—	—	425	—	—	—
3412 TA	600	—	—	550	—	—	—
3412 TA	575, 625	—	—	500, 590	310	—	—
3508 TA	631, 788	500	—	560, 715	450	—	—
3508B	906, 1000	—	—	910	—	—	—
3512 TA	950, 1206	913, 1019	—	850, 1070	750, 910	—	—
3512B	1363, 1500	—	—	1275, 1360	—	—	—
3516 TA	1281, 1606	1188, 1300	—	1135, 1440	1000, 1170	—	—
3516B	1825, 2000	—	—	1825	—	—	—
3606 TA**	—	2425	1963	—	—	1820	1525
3608 TA**	—	3250	2600	—	—	2420	2020
3612 TA**	—	4850	3925	—	—	3640	3050
3616 TA**	—	6500	5200	—	—	4840	4040

*@ .8 power factor.
**Cat does not manufacture a generator for these engine models.
ekW and kV•A are assumed using generators ranging in efficiency from 95.4 to 97.0.
NA — Naturally Aspirated
T — Turbocharged
TA — Turbocharged-Aftercooled

Rating Definition:

For continuous electrical service with 10% overload capability for one hour in 12 in accordance with ISO 3046/1, DIN 6271, BS 5514.

Engine Model	Heat Exchanger Cooled			Radiator Cooled		
	kW	hp	rpm	kW	hp	rpm
3304 NA	54	**72**	1200	—	**—**	—
3304 NA	59	**79**	1500	57	**76**	1500
3304 NA	77	**104**	1800	73	**98**	1800
3306B T	78, 96	**105, 130**	1200	—	**—**	—
3304 T	96	**129**	1500	94	**126**	1500
3304 T	118	**158**	1800	116	**156**	1800
3306B T	156, 171	**209, 229**	1500	130, 154, 169	**174, 206, 227**	1500
3406C TA	167	**224**	1000	—	**—**	—
3306B T	190	**255**	1800	183	**245**	1800
3406C TA	208	**279**	1200	—	**—**	—
3408C TA	208	**279**	1000	—	**—**	—
3306B TA	210	**281**	1800	206	**276**	1800
3406C T	229	**307**	1500	229	**307**	1500
3406C TA	260	**348**	1500	260	**349**	1500
3408C TA	266	**357**	1200	—	**—**	—
3406C T	228, 277	**306, 371**	1800	277	**371**	1800
3412C TA	336	**451**	1200	—	**—**	—
3408C TA	340	**456**	1500	340	**456**	1500
3406C TA	345	**462**	1800	345	**462**	1800
3408C TA	410	**549**	1800	410	**555**	1800
3412C T	431	**578**	1500	431	**578**	1500
3412C T	450	**603**	1800	450	**603**	1800
3412C TA	487, 534	**653, 716**	1500	534	**716**	1500
3412C TA	536, 620	**719, 831**	1800	620	**831**	1800

NA — Naturally Aspirated
T — Turbocharged
TA — Turbocharged-Aftercooled

Diesel Engine Model	Rating kW	Rating hp	Rating rpm	Peak Torque N•m	Peak Torque lb-ft	Peak Torque rpm	Torque Rise (%)	Weight kg	Weight lb
3126									
ATAAC	131	**175**	2500	571	**420**	1440	25%	568	**1250**
ATAAC	152	**190**	2500	707	**520**	1440	40%	568	**1250**
ATAAC	157	**210**	2500	707	**520**	1440	23%	568	**1250**
ATAAC	157	**210**	2400	823	**605**	1440	45%	568	**1250**
ATAAC	172	**230**	2400	898	**660**	1440	37%	568	**1250**
ATAAC	187	**250**	2400	898	**660**	1440	26%	568	**1250**
ATAAC	187	**250**	2400	1088	**800**	1440	52%	568	**1250**
ATAAC	205	**275**	2400	1088	**800**	1440	39%	568	**1250**
ATAAC	205	**275**	2400	1170	**860**	1440	49%	568	**1250**
ATAAC	224	**300**	2400	1088	**800**	1440	27%	568	**1250**
ATAAC	224	**300**	2400	1170	**860**	1440	37%	568	**1250**
ATAAC	246	**330**	2400	1170	**860**	1440	19%	568	**1250**
C-10									
ATAAC	227	**305**	2100	1424	**1050**	1200	34%	932	**2050**
ATAAC	227	**305**	1800	1550	**1150**	1200	29%	932	**2050**
ATAAC	227	**305**	1800	1550	**1150**	1200	51%	932	**2050**
ATAAC	250	**335**	1800	1695	**1250**	1200	28%	932	**2050**
ATAAC	250	**335**	2100	1695	**1250**	1200	49%	932	**2050**
ATAAC	250	**335**	1800	1830	**1350**	1200	38%	932	**2050**
ATAAC	261	**350**	1800	1830	**1350**	1200	32%	932	**2050**
ATAAC	261	**350**	1800	1830	**1350**	1200	54%	932	**2050**
ATAAC	276	**370**	1800	1830	**1350**	1200	25%	932	**2050**
ATAAC	250/276	**335/370***	1800	1695/1830	**1250/1350**	1200	28/25%	932	**2050**
ATAAC	209	**280**	2100	1322	**975**	1200	39%	932	**2050**
C-12									
ATAAC	250	**335**	2100	2108	**1550**	1200	85%	940	**2070**
ATAAC	264	**355**	1800	1830	**1350**	1200	30%	940	**2070**
ATAAC	264/306	**355*/410**	1800	1830/2108	**1350/1550**	1200	30/21%	940	**2070**
ATAAC	264/306	**355*/410**	1800	1830/1972	**1350/1450**	1200	31%	940	**2070**
ATAAC	283	**380**	1800	1972	**1450**	1200	21%	940	**2070**
ATAAC	306	**410**	1800	1972	**1450**	1200	53%	940	**2070**
ATAAC	283/306	**380*/410**	1800	1972/2108	**1450/1550**	1200	31/30%	940	**2070**
ATAAC	283/321	**380/430**	1800	1972/2108	**1450/1650**	1200	31/53%	940	**2070**
ATAAC	306	**410**	2100	2108	**1550**	1200	51%	940	**2070**
ATAAC	317	**425****	2100	1972	**1450**	1200	41%	940	**2070**
ATAAC	317	**425****	2100	2108	**1550**	1200	51%	940	**2070**
ATAAC	321	**430**	1800	2244	**1650**	1200	32%	940	**2070**
ATAAC	321	**430**	2100	2244	**1650**	1200	53%	940	**2070**
ATAAC	339	**455**	2100	2108	**1550**	1200	36%	940	**2070**
3306C									
ATAAC	224	**300**	1900	1496	**1150**	1200	46%	896	**1975**
3406C***									
ATAAC	261	**350**	1800	1830	**1450**	1200	42%	1328	**2926**
ATAAC	317	**425**	1900	2244	**1650**	1200	40%	1328	**2926**

*Multi-Torque.
**Firetruck/RV rating.
***49-State and Canada.
ATAAC — Air-to-Air Aftercooled

Diesel Engine Model	Rating kW	Rating hp	Rating rpm	Peak Torque N•m	Peak Torque lb-ft	Peak Torque rpm	Torque Rise (%)	Weight kg	Weight lb
3406E									
ATAAC	261	**350**	1800	1972	**1450**	1200	42%	1301	**2867**
ATAAC	264	**355**	1800	1836	**1350**	1200	30%	1301	**2867**
ATAAC	264	**355**	2100	1836	**1350**	1200	52%	1301	**2867**
ATAAC	264	**355**	1800	1836/1972	**1350/1450**	1200	40%	1301	**2867**
ATAAC	280	**375**	1800	1972	**1450**	1200	33%	1301	**2867**
ATAAC	280	**375**	2100	1972	**1450**	1200	55%	1301	**2867**
ATAAC	280	**375**	1800	1972/2108	**1450/1550**	1200	42%	1301	**2867**
ATAAC	280/324	**375/435**	1800	1972/2108	**1450/1550**	1200	33/22%	1301	**2867**
ATAAC	280/324	**375/435***	1800	1972/2244	**1450/1650**	1200	33/30%	1301	**2867**
ATAAC	317	**425**	1900	2244	**1650**	1200	40%	1301	**2867**
ATAAC	324	**435**	1800	2108	**1550**	1200	22%	1301	**2867**
ATAAC	324	**435**	2100	2108	**1550**	1200	42%	1301	**2867**
ATAAC	324	**435**	1800	2244	**1650**	1200	30%	1301	**2867**
ATAAC	324	**435**	2100	2244	**1650**	1200	52%	1301	**2867**
ATAAC	339	**455**	1800	2244	**1650**	1200	24%	1301	**2867**
ATAAC	339	**455**	2100	2244	**1650**	1200	45%	1301	**2867**
ATAAC	354	**475**	1800	2244	**1650**	1200	19%	1301	**2867**
ATAAC	354	**475**	2100	2244	**1650**	1200	39%	1301	**2867**
ATAAC	354/373	**475/500**	2100	2244/2516	**1650/1850**	1200	19/27%	1301	**2867**
ATAAC	354	**475**	1800	2380	**1750**	1200	26%	1301	**2867**
ATAAC	354	**475**	2100	2380	**1750**	1200	47%	1301	**2867**
ATAAC	373	**500**	2100	2244	**1650**	1200	32%	1301	**2867**
ATAAC	373	**500**	2100	2380	**1750**	1200	47%	1301	**2867**
ATAAC	373	**500**	1800	2516	**1850**	1200	27%	1301	**2867**
ATAAC	373	**500**	2100	2516	**1850**	1200	48%	1301	**2867**
ATAAC	410	**550**	2100	2516	**1850**	1200	41%	1301	**2867**

*Multi-Torque.
ATAAC — Air-to-Air Aftercooled

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)	Trans-mission	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) 2.9 (1.8)	2588 (5700) 4.4 (2.7)	2061 (4540) 5.2 (3.2)	1634 (3600) 6.3 (3.9)	1067 (2350) 8.9 (5.5)	
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) 2.7 (1.7)	2588 (5700) 4.0 (2.5)	2061 (4540) 4.8 (3.0)	1634 (3600) 5.8 (3.6)	1067 (2350) 8.2 (5.1)	
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) 2.7 (1.7)	2483 (5420) 4.0 (2.5)	2007 (4420) 4.8 (3.0)	1703 (3570) 5.8 (3.6)	1035 (2280) 8.2 (5.1)	
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) 2.9 (1.8)	2588 (5700) 4.4 (2.7)	2061 (4540) 5.2 (3.2)	1634 (3600) 6.3 (3.9)	1067 (2250) 8.9 (5.5)	
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) 2.48 (1.5)	3993 (8802) 3.40 (2.1)	2694 (5940) 4.68 (2.9)	1830 (4034) 6.45 (4.0)	1326 (2925) 8.27 (5.1)	
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) 2.48 (1.5)	3993 (8802) 3.40 (2.1)	2694 (5940) 4.68 (2.9)	1830 (4034) 6.45 (4.0)	1326 (2925) 8.27 (5.1)	

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)	Trans-mission	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 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 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)**			
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)** 2.7 **(1.7)**	3496 **(7700)** 4.2 **(2.4)**	2656 **(5850)** 4.8 **(3.0)**	2089 **(4600)** 6.0 **(3.7)**	1339 **(2950)** 8.7 **(5.4)**	
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)** 3.1 **(1.9)**	3496 **(7700)** 4.3 **(2.7)**	2724 **(6000)** 5.5 **(3.4)**	2093 **(4610)** 6.8 **(4.2)**	1326 **(2920)** 9.8 **(6.1)**	
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)** 3.1 **(1.9)**	3528 **(7770)** 4.3 **(2.7)**	2724 **(6000)** 5.5 **(3.4)**	2093 **(4610)** 6.8 **(4.2)**	1326 **(2920)** 9.8 **(6.1)**	
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)** 3.1 **(1.9)**	3528 **(7770)** 4.3 **(2.7)**	2724 **(6000)** 5.5 **(3.4)**	2093 **(4610)** 6.8 **(4.2)**	1326 **(2920)** 9.8 **(6.1)**	
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)**			
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)** 3.1 **(1.9)**	3528 **(7770)** 4.3 **(2.7)**	2724 **(6000)** 5.5 **(3.4)**	2093 **(4610)** 6.8 **(4.2)**	1321 **(2910)** 9.8 **(6.1)**	

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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
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)** 3.1 **(1.9)**	3528 **(7770)** 4.3 **(2.7)**	2724 **(6000)** 5.5 **(3.4)**	2093 **(4610)** 6.8 **(4.2)**	1321 **(2910)** 9.8 **(6.1)**	
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	3.1 **(1.9)**	5.9 **(3.7)**	11.1 **(6.9)**			
D4C Series II		90-93	80	7557 **(16,660)**	1.42 **(4'8")** 1.83 **(6'5")**		PS	3.2 **(2.0)**	5.9 **(3.7)**	11.1 **(6.9)**			
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)**			
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)** 2.7 **(1.7)**	3700 **(8160)** 3.9 **(2.4)**	2560 **(5640)** 5.5 **(3.4)**	1880 **(4150)** 7.1 **(4.4)**	1350 **(2980)** 9.3 **(5.8)**	
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	3.2 **(2.0)**	5.8 **(3.6)**	9.3 **(5.8)**			
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)** 2.7 **(1.7)**	4150 **(9140)** 4.0 **(2.5)**	2820 **(6210)** 5.4 **(3.4)**	2030 **(4480)** 7.2 **(4.5)**	1420 **(3120)** 9.4 **(5.9)**	
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)** 2.7 **(1.7)**	4150 **(9140)** 4.0 **(2.5)**	2820 **(6210)** 5.4 **(3.4)**	2030 **(4480)** 7.2 **(4.5)**	1420 **(3120)** 9.4 **(5.9)**	
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)** 2.8 **(1.7)**	4425 **(9756)** 4.0 **(2.5)**	3018 **(6654)** 5.5 **(3.4)**	2172 **(4788)** 7.2 **(4.5)**	1509 **(3327)** 9.5 **(5.9)**	
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	3.3 **(2.1)**	5.9 **(3.7)**	9.5 **(5.9)**			

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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th
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	3.5 **(2.2)**	6.2 **(3.9)**	10.2 **(6.3)**			
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)** 2.5 **(1.6)**	5843 **(12,884)** 3.2 **(2.0)**	4333 **(9554)** 4.3 **(2.6)**	3207 **(7071)** 5.5 **(3.4)**	2335 **(5149)** 7.2 **(4.4)**	1640 **(3617)** 9.5 **(5.9)**
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	3.5 **(2.2)**	6.2 **(3.9)**	10.2 **(6.3)**			
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	3.5 **(2.2)**	6.2 **(3.9)**	10.2 **(6.3)**			
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)** 2.5 **(1.6)**	5715 **(12,599)** 3.2 **(2.0)**	4235 **(9336)** 4.3 **(2.6)**	3132 **(6904)** 5.5 **(3.4)**	2277 **(5020)** 7.2 **(4.4)**	1597 **(3520)** 9.5 **(5.9)**
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)** 2.5 **(1.6)**	5715 **(12,599)** 3.2 **(2.0)**	4235 **(9336)** 4.3 **(2.6)**	3132 **(6904)** 5.5 **(3.4)**	2227 **(5020)** 7.2 **(4.4)**	1597 **(3520)** 9.5 **(5.9)**
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	3.5 **(2.2)**	6.2 **(3.9)**	10.2 **(6.3)**			
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)** 2.5 **(1.6)**	5843 **(12,884)** 3.2 **(2.0)**	4333 **(9554)** 4.3 **(2.6)**	3207 **(7071)** 5.5 **(3.4)**	2335 **(5149)** 7.2 **(4.4)**	1640 **(3617)** 9.5 **(5.9)**
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	3.5 **(2.2)**	6.2 **(3.9)**	10.2 **(6.3)**			
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)** 2.5 **(1.6)**	5715 **(12,599)** 3.2 **(2.0)**	4235 **(9336)** 4.3 **(2.6)**	3132 **(6904)** 5.5 **(3.4)**	2277 **(5020)** 7.2 **(4.4)**	1597 **(3520)** 9.5 **(5.9)**
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)**			

*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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th
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)** 3.8 **(2.3)**	4910 **(10,820)** 4.7 **(2.9)**	3330 **(7320)** 5.8 **(3.6)**	2230 **(4920)** 7.1 **(4.4)**	1440 **(3170)** 8.9 **(5.5)**	
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)** 2.7 **(1.7)**	4910 **(10,820)** 4.2 **(2.6)**	3330 **(7320)** 5.8 **(3.6)**	2230 **(4920)** 8.0 **(5.0)**	1440 **(3170)** 11.1 **(6.9)**	
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)** 4.0 **(2.5)**	5500 **(12,130)** 4.8 **(3.0)**	3750 **(8270)** 5.6 **(3.5)**	2540 **(5610)** 6.4 **(4.0)**	1660 **(3660)** 7.4 **(4.6)**	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)** 2.7 **(1.7)**	5500 **(12,130)** 4.2 **(2.6)**	3750 **(8270)** 5.8 **(3.6)**	2540 **(5610)** 8.0 **(5.0)**	1660 **(3660)** 11.1 **(6.9)**	
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)** 2.7 **(1.7)**	5500 **(12,130)** 4.2 **(2.6)**	3750 **(8270)** 5.8 **(3.6)**	2540 **(5610)** 8.0 **(5.0)**	1660 **(3660)** 11.1 **(6.9)**	
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						
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						
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)** 2.7 **(1.7)**	5030 **(11,100)** 4.2 **(2.6)**	3410 **(7520)** 5.8 **(3.6)**	2290 **(5060)** 8.0 **(5.0)**	1480 **(3260)** 11.1 **(6.9)**	
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 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)**			

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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
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	— 3.3 **(2.1)**	— 5.9 **(3.7)**	— 10.0 **(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)** 2.7 **(1.7)**	7005 **(15,440)** 3.4 **(2.1)**	5190 **(11,440)** 4.5 **(2.8)**	3835 **(8450)** 5.8 **(3.6)**	2785 **(6140)** 7.6 **(4.7)**	1950 **(4300)** 10.0 **(6.2)**
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)** 2.7 **(1.7)**	7005 **(15,440)** 3.4 **(2.1)**	5190 **(11,440)** 4.5 **(2.8)**	3835 **(8450)** 5.8 **(3.6)**	2785 **(6140)** 7.6 **(4.7)**	1950 **(4300)** 10.0 **(6.2)**
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 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)** 2.7 **(1.7)**	7005 **(15,440)** 3.4 **(2.1)**	5190 **(11,440)** 4.5 **(2.8)**	3835 **(8450)** 5.8 **(3.6)**	2785 **(6140)** 7.6 **(4.7)**	1950 **(4300)** 10.0 **(6.2)**
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)** 2.6 **(1.6)**	7725 **(17,031)** 3.4 **(2.1)**	5738 **(12,650)** 4.5 **(2.7)**	4256 **(9384)** 5.8 **(3.6)**	3109 **(6855)** 7.5 **(4.7)**	2195 **(4840)** 9.9 **(6.2)**
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)** 2.7 **(1.7)**	7005 **(15,440)** 3.4 **(2.1)**	5190 **(11,440)** 4.5 **(2.8)**	3835 **(8450)** 5.8 **(3.6)**	2785 **(6140)** 7.6 **(4.7)**	1950 **(4300)** 10.0 **(6.2)**
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)** 2.7 **(1.7)**	7005 **(15,440)** 3.4 **(2.1)**	5190 **(11,440)** 4.5 **(2.8)**	3835 **(8450)** 5.8 **(3.6)**	2785 **(6140)** 7.6 **(4.7)**	1950 **(4300)** 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.

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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th
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)** 2.7 **(1.7)**	7005 **(15,440)** 3.4 **(2.1)**	5190 **(11,440)** 4.5 **(2.8)**	3835 **(8450)** 5.8 **(3.6)**	2785 **(6140)** 7.6 **(4.7)**	1950 **(4300)** 10.0 **(6.2)**
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)** 2.6 **(1.6)**	7725 **(17,031)** 3.4 **(2.1)**	5738 **(12,650)** 4.5 **(2.7)**	4256 **(9384)** 5.8 **(3.6)**	3109 **(6855)** 7.5 **(4.7)**	2195 **(4840)** 9.9 **(6.2)**
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)**			
D6	4R	47-59	85	8042 **(17,730)**	1.88 **(6'2")** 1.52 **(5'0")**	3.75 **(12'4")** 1.91 **(6'3")**	DD	8618 **(19,000)** 2.7 **(1.7)**	5534 **(12,200)** 4.2 **(2.6)**	3837 **(8460)** 5.8 **(3.6)**	2617 **(5770)** 8.0 **(5.0)**	1842 **(4060)** 10.6 **(6.6)**	
D6	9U	47-59	93/75	8153 **(17,975)**	1.88 **(6'2")** 1.52 **(5'0")**	3.75 **(12'4")** 1.91 **(6'3")**	DD	8618 **(19,000)** 2.7 **(1.7)**	5534 **(12,200)** 4.2 **(2.6)**	3837 **(8460)** 5.8 **(3.6)**	2617 **(5770)** 8.0 **(5.0)**	1842 **(4060)** 10.6 **(6.6)**	
D6B	37A	59-67	93/75	8130 **(17,930)**	1.52 **(5'0")** 2.02 **(6'8")**	3.85 **(12'9")** 1.91 **(6'3")**	DD						
D6B	44A	59-67	93/75	8300 **(18,300)**	1.88 **(6'2")** 2.38 **(7'10")**	3.85 **(12'9")** 1.91 **(6'3")**	DD	7820 **(16,240)** 2.7 **(1.7)**	4940 **(10,900)** 4.2 **(2.6)**	3220 **(7090)** 6.0 **(3.7)**	2120 **(4670)** 8.4 **(5.2)**	1450 **(3190)** 10.9 **(6.8)**	
D6C	74A	63-67	120	10 400 **(23,000)**	1.88 **(6'2")** 2.38 **(7'9")**	3.95 **(13'0")** 1.92 **(6'4")**	DD	12 050 **(26,540)** 2.4 **(1.5)**	8020 **(17,670)** 3.4 **(2.1)**	5300 **(11,690)** 4.8 **(3.0)**	3360 **(7400)** 6.8 **(4.2)**	2030 **(4470)** 9.5 **(5.9)**	
D6C	76A	63-67	120	10 700 **(23,500)**	1.88 **(6'2")** 2.38 **(7'9")**	3.95 **(13'0")** 1.92 **(6'4")**	PS						
D6C	10K	67-76	140	13 880 **(30,600)**	1.88 **(6'2")** 2.38 **(7'9")**	3.73 **(12'3")** 2.87 **(9'5")**	PS	4.0 **(2.5)**	6.9 **(4.3)**	10.8 **(6.7)**			

*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.

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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th
D6 LGP	69U	72-77	140	17 010 **(37,500)**	2.11 **(6'11")** 3.02 **(9'11")**	3.94 **(12'11")** 2.97 **(9'9")**	PS						
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)** 2.7 **(1.7)**	7750 **(17,090)** 4.0 **(2.5)**	5180 **(11,420)** 5.6 **(3.5)**	3350 **(7380)** 7.9 **(4.9)**	2090 **(4610)** 11.1 **(6.9)**	
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)** 1.7 **(2.7)**	7750 **(17,090)** 4.0 **(2.5)**	5180 **(11,420)** 5.6 **(3.5)**	3350 **(7380)** 7.9 **(4.9)**	2090 **(4610)** 11.1 **(6.9)**	
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)** 2.7 **(1.7)**	9520 **(20,990)** 3.5 **(2.2)**	7140 **(15,740)** 4.6 **(2.9)**	5440 **(11,990)** 5.8 **(3.6)**	4010 **(8840)** 7.6 **(4.7)**	2820 **(6220)** 10.0 **(6.2)**
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 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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
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 (CB)	4RC (E. Peoria) 2KD (Sagami) 4LG (Grenoble)	92-96	123/165	17 997 **(39,676)**	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 XL (DS)	9KJ (E. Peoria) 8SK (Sagami) 9LK (Grenoble)	92-96	130/175	19 080 **(42,063)**	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 XL (CB)	8ZJ (E. Peoria) 9RK (Sagami) 8KK (Grenoble)	92-96	130/175	18 966 **(41,811)**	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 XR (DS)	6CK (E. Peoria) 2TL (Sagami) 1YL (Grenoble)	92-96	130/175	18 799 **(41,444)**	1.88 **(6'2")** 3.36 **(11'0")**	4.22 **(13'10")** 3.12 **(10'3")**	PS	3.8 **(2.3)**	6.6 **(4.1)**	11.4 **(7.1)**			
D6H XR (CB)	5KK (E. Peoria) 7ZK (Sagami) 2BL (Grenoble)	92-96	130/175	18 799 **(41,444)**	1.88 **(6'2")** 3.36 **(11'0")**	4.22 **(13'10")** 3.12 **(10'3")**	PS	3.8 **(2.3)**	6.6 **(4.1)**	11.4 **(7.1)**			
D6H LGP (DS)	3YG (E. Peoria) 4GG (Sagami) 5HF (Grenoble)	92-96	134/180	20 486 **(45,163)**	2.24 **(7'3")** 4.0 **(13'1")**	4.49 **(14'9")** 3.17 **(10'5")**	PS	3.8 **(2.3)**	6.6 **(4.1)**	11.4 **(7.1)**			
D6H LGP (CB)	6FC (E. Peoria) 1KD (Sagami) 2TG (Grenoble)	92-96	134/180	20 486 **(45,163)**	2.24 **(7'3")** 4.0 **(13'1")**	4.49 **(14'9")** 3.17 **(10'5")**	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.

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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th
D6H (JPN)	3ED*	86-92	165/—	16 954 **(37,377)**	1.88 **(6'2")**	4.069 **(13'4")**	DD	12 500 **(27,560)**	9520 **(20,990)**	7140 **(15,740)**	5440 **(11,990)**	4010 **(8840)**	2820 **(6220)**
					2.64 **(8'8")**	3.114 **(10'3")**		2.7 **(1.7)**	3.5 **(2.2)**	4.6 **(2.9)**	5.8 **(3.6)**	7.6 **(4.7)**	10.0 **(6.2)**
D6H (JPN)	4YF*	88-90	165/—	17 055 **(37,599)**	1.88 **(6'2")**	4.069 **(13'4")**	PS/DS						
					2.64 **(8'8")**	3.114 **(10'3")**		3.8 **(2.4)**	6.5 **(4.0)**	11.3 **(7.0)**			
D6H LGP (JPN)	1KD*	86-90	165/—	19 555 **(43,111)**	2.225 **(7'4")**	4.493 **(14'9")**	PS						
					3.43 **(11'3")**	3.164 **(10'5")**		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")**	4.485 **(14'9")**	DD	12 500 **(27,560)**	9520 **(20,990)**	7140 **(15,740)**	5440 **(11,990)**	4010 **(8840)**	2820 **(6220)**
					3.43 **(11'3")**	3.164 **(10'5")**		2.7 **(1.7)**	3.5 **(2.2)**	4.6 **(2.9)**	5.8 **(3.6)**	7.6 **(4.7)**	10.0 **(6.2)**
D6H LGP (JPN)	4GG*	88-90	165/—	19 527 **(43,049)**	2.225 **(7'4")**	4.493 **(14'9")**	PS/DS						
					3.43 **(11'3")**	3.164 **(10'5")**		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")**	4.069 **(13'4")**	PS						
					2.64 **(8'8")**	3.114 **(10'3")**		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")**	4.069 **(13'4")**	DD	12 500 **(27,560)**	9520 **(20,990)**	7140 **(15,740)**	5440 **(11,990)**	4010 **(8840)**	2820 **(6220)**
					2.64 **(8'8")**	3.114 **(10'3")**		2.7 **(1.7)**	3.5 **(2.2)**	4.6 **(2.9)**	5.8 **(3.6)**	7.6 **(4.7)**	10.0 **(6.2)**
D6H (FR)	6CF*	88-90	165/—	17 055 **(37,599)**	1.88 **(6'2")**	4.069 **(13'4")**	PS/DS						
					2.64 **(8'8")**	3.114 **(10'3")**		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")**	4.493 **(14'9")**	PS						
					3.43 **(11'3")**	3.164 **(10'5")**		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")**	4.493 **(14'9")**	PS/DS						
					3.43 **(11'3")**	3.164 **(10'5")**		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")**	4.069 **(13'4")**	PS						
					2.64 **(8'8")**	3.114 **(10'3")**		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")**	4.493 **(14'9")**	PS						
					3.43 **(11'3")**	3.164 **(10'5")**		3.8 **(2.4)**	6.5 **(4.0)**	11.3 **(7.0)**			

*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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th
D7	3T	54-55	108/90	11 770 **(25,925)**	1.88 **(6'2")** 2.64 **(8'1")**	4.27 **(14'0")** 2.06 **(6'10")**	DD						
D7C	17A	55-59	128/102	11 954 **(26,355)**	1.88 **(6'2")** 2.64 **(8'1")**	4.26 **(14'0")** 2.06 **(6'10")**	DD	11 759 **(25,900)** 2.4 **(1.5)**	8045 **(17,720)** 3.5 **(2.2)**	4521 **(11,960)** 5.2 **(3.2)**	3428 **(7550)** 7.4 **(4.6)**	2397 **(5280)** 9.5 **(5.9)**	
D7D	17A	59-61	140/112	12 056 **(26,555)**	1.88 **(6'2")** 2.64 **(8'1")**	4.26 **(14'0")** 2.06 **(6'10")**	DD	12 300 **(27,100)** 2.4 **(1.5)**	8600 **(18,900)** 3.5 **(2.2)**	5700 **(12,550)** 5.2 **(3.2)**	3650 **(8080)** 7.4 **(4.6)**	2600 **(5720)** 9.5 **(5.9)**	
D7E	47A	61-68	160/128	14 787 **(32,590)**	1.98 **(6'6")** 2.56 **(8'5")**	4.47 **(14'8")** 2.30 **(7'7")**	DD	14 741 **(32,500)** 2.4 **(1.5)**	10 296 **(22,700)** 3.5 **(2.2)**	6803 **(15,000)** 4.9 **(3.1)**	4259 **(9390)** 7.4 **(4.6)**	3070 **(6770)** 9.4 **(5.9)**	
D7E	48A	61-66	160/128	14 787 **(32,590)**	1.98 **(6'6")** 2.56 **(8'5")**	4.47 **(14'8")** 2.30 **(7'7")**	PS	3.3 **(2.1)**	5.7 **(3.6)**	9.3 **(5.8)**			
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)** 2.4 **(1.5)**	11 350 **(25,000)** 3.5 **(2.2)**	7420 **(16,340)** 5.0 **(3.1)**	4540 **(9990)** 7.4 **(4.6)**	3180 **(7010)** 9.5 **(5.9)**	
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)** 2.4 **(1.5)**	11 350 **(25,000)** 3.5 **(2.2)**	7450 **(16,400)** 5.0 **(3.4)**	4580 **(10,000)** 7.4 **(4.6)**	3240 **(7140)** 9.5 **(5.9)**	
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)** 2.5 **(1.6)**	11 730 **(25,860)** 3.7 **(2.3)**	7680 **(16,940)** 5.3 **(3.3)**	4700 **(10,370)** 7.8 **(4.9)**	3320 **(7320)** 10.1 **(6.3)**	
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 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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph)					
								1st	2nd	3rd	4th	5th	6th
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)**			
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)** 2.7 **(1.7)**	12 861 **(28,353)** 3.5 **(2.2)**	9703 **(21,390)** 4.5 **(2.8)**	7436 **(16,394)** 5.8 **(3.6)**	5522 **(12,173)** 7.6 **(4.7)**	3940 **(8686)** 10.0 **(6.2)**
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)** 2.7 **(1.7)**	12 861 **(28,353)** 3.5 **(2.2)**	9703 **(21,390)** 4.6 **(2.8)**	7436 **(16,394)** 5.8 **(3.6)**	5522 **(12,173)** 7.6 **(4.7)**	3940 **(8686)** 10.0 **(6.2)**

*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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th
D7H (US)	5BF*	88-90	215/—	24 351 **(53,683)**	1.981 **(6'6")**	4.624 **(15'2")**	PS/DS						
					2.871 **(9'5")**	3.429 **(11'3")**		3.7 **(2.3)**	6.4 **(4.0)**	11.1 **(6.9)**			
D7H LGP (US)	80Z*	85-90	215/—	25 237 **(55,638)**	2.235 **(7'4")**	4.619 **(15'2")**	PS						
					3.371 **(11'1")**	3.503 **(11'6")**		3.9 **(2.4)**	6.8 **(4.2)**	11.9 **(7.4)**			
D7H LGP (US)	4FG*	87-90	230/—	25 894 **(57,086)**	2.235 **(7'4")**	4.624 **(15'2")**	PS/DS	3.7 **(2.3)**	6.4 **(4.0)**	11.1 **(6.9)**			
					3.377 **(11'1")**	3.505 **(11'6")**							
D7H (JPN)	4AB*	86-90	215/—	23 647 **(52,134)**	1.981 **(6'6")**	4.619 **(15'2")**	PS						
					2.869 **(9'5")**	3.421 **(11'3")**		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")**	4.619 **(15'2")**	DD	16 834 **(37,113)**	12 861 **(28,353)**	9703 **(21,390)**	7436 **(16,394)**	5522 **(12,173)**	3940 **(8686)**
					2.869 **(9'5")**	3.421 **(11'3")**		2.7 **(1.7)**	3.5 **(2.2)**	4.6 **(2.8)**	5.8 **(3.6)**	7.6 **(4.7)**	10.0 **(6.2)**
D7H (JPN)	2RG*	88-90	215/—	24 351 **(53,683)**	1.981 **(6'6")**	4.624 **(15'2")**	PS/DS						
					2.871 **(9'5")**	3.429 **(11'3")**		3.7 **(2.3)**	6.4 **(4.0)**	11.1 **(6.9)**			
D7H LGP (JPN)	5WB*	86-90	215/—	25 237 **(55,638)**	2.235 **(7'4")**	4.619 **(15'2")**	PS						
					3.371 **(11'1")**	3.503 **(11'6")**		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")**	4.619 **(15'2")**	DD	16 834 **(37,113)**	12 861 **(28,353)**	9703 **(21,390)**	7436 **(16,394)**	5522 **(12,173)**	3940 **(8686)**
					3.371 **(11'1")**	3.503 **(11'6")**		2.7 **(1.7)**	3.5 **(2.2)**	4.6 **(2.8)**	5.8 **(3.6)**	7.6 **(4.7)**	10.0 **(6.2)**
D7H LGP (JPN)	3XG*	88-90	230/—	25 894 **(57,086)**	2.235 **(7'4")**	4.624 **(15'2")**	PS/DS						
					3.377 **(11'1")**	3.505 **(11'6")**		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.

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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th	Remarks
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)** 2.7 **(1.7)**	6870 **(15,150)** 3.8 **(2.4)**	5720 **(12,610)** 4.5 **(2.8)**	4800 **(10,590)** 5.1 **(3.2)**	3860 **(8520)** 6.3 **(3.9)**	2740 **(6050)** 8.5 **(5.3)**	RD-8 with 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)** 2.5 **(1.6)**	9750 **(21,500)** 3.5 **(2.2)**	7940 **(17,500)** 4.2 **(2.6)**	6800 **(15,000)** 4.8 **(3.0)**	5620 **(12,400)** 5.8 **(3.6)**	3990 **(8800)** 7.9 **(4.9)**	Horsepower Increase
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)** 2.5 **(1.6)**	9840 **(21,700)** 3.7 **(2.3)**	7120 **(15,700)** 4.6 **(2.9)**	5400 **(11,900)** 5.9 **(3.7)**	3900 **(8600)** 7.7 **(4.8)**		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)** 3.1 **(1.9)**	12 939 **(28,500)** 4.3 **(2.7)**	8926 **(19,660)** 5.6 **(3.5)**	6955 **(15,320)** 7.2 **(4.5)**	4935 **(10,870)** 9.3 **(5.8)**		
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	5.8 **(3.6)**	8.5 **(5.3)**	11.9 **(7.4)**				
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)** 2.4 **(1.5)**	16 135 **(35,540)** 3.1 **(1.9)**	10 964 **(24,150)** 4.5 **(2.8)**	7373 **(16,240)** 6.1 **(3.8)**	4953 **(10,910)** 8.3 **(5.2)**		
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	5.6 **(3.5)**	8.2 **(5.1)**	12.2 **(7.6)**				
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)** 2.4 **(1.5)**	15 648 **(34,500)** 3.0 **(1.9)**	10 931 **(24,100)** 4.3 **(2.7)**	8051 **(17,750)** 5.6 **(3.5)**	5869 **(13,000)** 7.4 **(4.6)**	3832 **(8450)** 10.1 **(6.3)**	
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	3.8 **(2.4)**	6.7 **(4.2)**	10.4 **(6.5)**				
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)** 2.7 **(1.7)**	18 930 **(41,740)** 3.5 **(2.2)**	12 990 **(28,640)** 4.8 **(3.0)**	9370 **(20,650)** 6.3 **(3.9)**	6610 **(14,580)** 8.2 **(5.1)**	4090 **(9010)** 11.3 **(7.0)**	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	4.0 **(2.5)**	7.1 **(4.4)**	10.9 **(6.8)**				Turbocharged, Sealed and Lubricated Track
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	3.9 **(2.4)**	6.8 **(4.2)**	11.9 **(7.4)**				
D8L SA	4FB	84-87	400/325	36 650 **(80,820)**	2.54 **(8'4")** 3.11 **(10'3")**		DD	31 679 **(69,840)** 2.9 **(1.8)**	23 115 **(50,960)** 3.9 **(2.4)**	17 196 **(37,910)** 5.0 **(3.1)**	12 388 **(27,310)** 6.8 **(4.2)**	9154 **(20,180)** 8.9 **(5.5)**	6428 **(14,170)** 11.9 **(7.4)**	

* 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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th	Remarks
D8N	9TC 5TJ	87-92 92-95	285 285	37 462 **(82,590)**	2.08 **(6'10")** 3.05 **(10'0")**	4.95 **(16'3")** 3.43 **(11'3")**	PS	 3.5 **(2.2)**	 6.2 **(3.9)**	 10.8 **(6.7)**	4			Turbocharged, Sealed and Lubricated Track
D9D	18A	55-56	286/230	25 772 **(56,765)**	2.29 **(7'6")** 3.03 **(10'0")**	5.46 **(17'11")** 2.67 **(8'9")**	DD	27 631 **(60,860)** 2.6 **(1.6)**	21 207 **(46,710)** 3.4 **(2.1)**	15 423 **(33,970)** 4.7 **(2.9)**	10 706 **(23,580)** 6.3 **(3.9)**	7658 **(16,670)** 8.1 **(5.0)**	4958 **(10,920)** 10.9 **(6.8)**	
D9D	18A	56-59	320/260	26 125 **(57,543)**	2.29 **(7'6")** 3.03 **(10'0")**	5.46 **(17'11")** 2.67 **(8'9")**	DD	28 603 **(63,000)**	23 835 **(52,500)**	16 617 **(36,600)**	12 167 **(26,800)**	9171 **(20,200)**	6106 **(13,450)**	
D9D	19A	55-56	286/230	25 729 **(56,670)**	2.29 **(7'6")** 3.03 **(10'0")**	5.46 **(17'11")** 2.67 **(8'9")**	TC	 6.6 **(4.1)**	 9.0 **(5.6)**	 12.6 **(7.8)**				
D9D	19A	56-59	320/260	26 238 **(57,990)**	2.29 **(7'6")** 3.03 **(10'0")**	5.46 **(17'11")** 2.68 **(8'9")**	TC	 6.6 **(4.1)**	 9.5 **(5.9)**	 13.0 **(8.1)**				
D9E	50A	59-60	335	27 016 **(59,506)**	2.29 **(7'6")** 3.03 **(10'0")**	5.50 **(18'1")** 2.70 **(8'11")**	TC	 6.8 **(4.2)**	 9.7 **(6.0)**	 13.2 **(8.2)**				
D9D	34A	59-61	335	27 167 **(59,837)**	2.29 **(7'6")** 3.03 **(10'0")**	5.50 **(18'1")** 2.70 **(8'11")**	PS	 4.2 **(2.6)**	 7.2 **(4.5)**	 11.2 **(7.0)**				
D9E	49A	59-60	335/268	26 957 **(59,375)**	2.29 **(7'6")** 3.03 **(10'0")**	5.50 **(18'1")** 2.70 **(8'11")**	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)**	
D9G	66A	61-74	385	31 072 **(68,500)**	2.29 **(7'6")** 3.10 **(10'0")**	5.50 **(18'1")** 2.10 **(8'7")**	PS	 3.9 **(2.4)**	 6.8 **(4.2)**	 10.5 **(6.5)**				

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)	Trans-mission	Rated Drawbar Pull — kg (lb) and Forward Speed — km/h (mph) 1st	2nd	3rd	4th	5th	6th	Remarks
S × S D9G	29N	69-74	770	86 200• **(190,000)**	5.8* **(19'0")**	8.0◀ **(25'0")**	PS	3.9 **(2.4)**	6.8 **(4.2)**	10.0 **(6.2)**				L.H. of S × S D9G
	30N				7.3** **(24'0")**	2.8◀◀ **(9'2")**								R.H. of S × S D9G
Dual D9G	90J	69-74	770	79 470• **(175,200)**	2.3* **(7'6")**	12.9◀ **(42'6")**	PS	3.9 **(2.4)**	6.8 **(4.2)**	10.5 **(6.5)**				Front of Dual D9G
	91J				3.3** **(10'9")**	3.1◀◀ **(9'11")**								Rear of Dual D9G
S × S D9H	99V	74-77	820	83 400• **(183,900)**	5.8* **(19'0")**	9.0◀ **(26'1")**	PS	4.0 **(2.5)**	6.9 **(4.3)**	10.8 **(6.7)**				L.H. of S × S D9H
	12U				7.3** **(24'0")**	2.9◀◀ **(9'6")**								R.H. of S × S D9H
Dual D9H	97V	74-80	820	81 100• **(178,800)**	2.3* **(7'6")**	12.9◀ **(42'6")**	PS	4.0 **(2.5)**	6.9 **(4.3)**	10.8 **(6.7)**				Front of Dual D9H
	98V				3.3** **(10'9")**	3.1◀◀ **(9'11")**								Rear of Dual D9H
D9H	90V	74-81	410	32 840 **(72,400)**	2.3* **(7'6")** 3.0 **(9'11")**	5.6 **(18'5")** 2.7◀◀ **(8'10")**	PS	4.0 **(2.5)**	6.9 **(4.3)**	10.8 **(6.7)**				Standard Model
D9L	14Y	80-87	460	52 055 **(114,656)**	2.5 **(8'2")** 3.11 **(10'2")**	5.32 **(17'5")** 4.41 **(14'6")**		3.9 **(2.4)**	7.2 **(4.5)**	12.4 **(7.7)**				
D9N	1JD	86-94	370	42 816 **(96,196)**	2.55 **(7'5")**	5.17 **(16'11.5")**	PS	3.9 **(2.4)**	6.9 **(4.3)**	12.1 **(7.5)**				
	6XJ	93-95			2.43 **(9'7")**	3.91 **(12'10")**								
D10	84W	78-86	700	79 619 **(175,526)**	2.89 **(9'6")**	5.92 **(19'8")**	PS	3.9 **(2.4)**	6.9 **(4.3)**	11.9 **(7.4)**				
	76X				3.61 **(11'11.5")**	3.48◀◀ **(11'5")**								
D10N	2YD	87-93	520	66 400 **(147,405)**	2.55 **(8'4")**	5.89 **(18'4")**	PS							
	3SK	93-96			3.30 **(10'10")**	4.45 **(14'7")**		4.0 **(2.5)**	7.1 **(4.4)**	12.5 **(7.7)**				
D11N	74Z	86-93	770	97 454 **(214,847)**	2.90 **(9'6")**	6.16 **(20'3")**	PS							
	4HK	93-96			3.65 **(12'0")**	4.56 **(14'11")**		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")** 3.60 **(11'10")**	6.16 **(20'3")** 4.67 **(15'3")**	PS	3.9 **(2.4)**	6.8 **(4.4)**	11.6 **(7.2)**				Electronic Finger Tip Control Steering

* Gauge of both tractors combined.
** Width to outside of dozer blade.
• Approximate weight of both machines plus Bulldozer, hydraulic controls, coolant and 5% fuel.
◀ Length including dozer blade.
◀◀ Overall height excluding stack and canopy.

NOTE: Power Shift models show speeds only, not drawbar pull.
NOTE: Track-Type Tractor weights do not include blades until 1967.

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")**
	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")**
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")**
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")**

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)
Scotland	D6D	19X	78-86	140/—	DD	1.88 **(6'2")**
	D6D	20X	78-86	140/—	PS	1.88 **(6'2")**
	D6D	0IY	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")**
	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")**
	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")**
	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	9th	10th
Challenger 65	7YC	87-90	270/200	14 061	3.24	14 825	10 393	8880	7701	6656	5708	4950	4245	2858	1725
				(31,000)	**(10'8")**	**(32,684)**	**(22,912)**	**(19,577)**	**(16,978)**	**(14,674)**	**(12,583)**	**(10,912)**	**(9358)**	**(6300)**	**(3803)**
					2.15	4.2	6.4	7.5	8.6	9.9	11.3	13.0	14.9	19.3	29.3
					(7'1")	**(2.6)**	**(4.0)**	**(4.7)**	**(5.3)**	**(6.1)**	**(7.0)**	**(8.1)**	**(9.3)**	**(12.0)**	**(18.1)**
Challenger 65B	7YC	91-92	285/225	14 060	3.24	14 893	11 074	9492	8252	7138	6109	5294	4545	3057	1851
				(31,000)	**(10'8")**	**(32,914)**	**(24,413)**	**(20,926)**	**(18,193)**	**(15,737)**	**(13,467)**	**(11,672)**	**(10,019)**	**(6740)**	**(4080)**
					2.15	4.2	6.4	7.5	8.6	9.9	11.3	13.0	14.9	19.3	29.3
					(7'1")	**(2.6)**	**(4.0)**	**(4.7)**	**(5.3)**	**(6.1)**	**(7.0)**	**(8.1)**	**(9.3)**	**(12.0)**	**(18.1)**
Challenger 65C	2ZJ	93-95	285/225	14 330	3.24	12 587	9574	8186	7156	6147	5230	4497	3855	2701	1637
				(31,530)	**(10'8")**	**(27,750)**	**(21,106)**	**(18,046)**	**(15,775)**	**(13,551)**	**(11,530)**	**(9914)**	**(8498)**	**(5955)**	**(3610)**
					2.29	4.2	6.4	7.5	8.6	9.9	11.3	13.0	14.9	19.3	29.1
					(7'5")	**(2.6)**	**(4.0)**	**(4.7)**	**(5.3)**	**(6.1)**	**(7.0)**	**(8.1)**	**(9.3)**	**(12.0)**	**(18.1)**
Challenger 65D	2ZJ	95-97	300	14 909	3.24	12 689	10 706	9161	7934	6837	5843	5005	4256	3119	2030
				(32,875)	**(10'8")**	**(27,975)**	**(23,603)**	**(20,197)**	**(17,492)**	**(15,072)**	**(12,881)**	**(11,034)**	**(9382)**	**(6875)**	**(4475)**
					2.29	4.2	6.4	7.5	8.6	9.9	11.3	13.0	14.9	19.3	29.1
					(7'5")	**(2.6)**	**(4.0)**	**(4.7)**	**(5.3)**	**(6.1)**	**(7.0)**	**(8.1)**	**(9.3)**	**(12.0)**	**(18.1)**
Challenger 70C	2YL	93-95	1st Gear 215/154	16 201	3.24	12 621	9574	8186	7156	6147	5230	4497	3855	2701	1637
				(35,685)	**(10'8")**	**(27,825)**	**(21,106)**	**(18,046)**	**(15,775)**	**(13,551)**	**(11,530)**	**(9914)**	**(8498)**	**(5955)**	**(3610)**
			2nd & up 285/225		2.29	4.2	6.4	7.5	8.6	9.9	11.3	13.0	14.9	19.3	21.1
					(7'5")	**(2.6)**	**(4.0)**	**(4.7)**	**(5.3)**	**(6.1)**	**(7.0)**	**(8.1)**	**(9.3)**	**(12.0)**	**(18.1)**
Challenger 75	4CJ	91-92	325/256	14 060	3.24	15 391	12 371	10 753	9382	8073	6923	6017	5162	3588	2181
				(31,000)	**(10'8")**	**(33,931)**	**(27,273)**	**(23,706)**	**(20,684)**	**(17,797)**	**(15,263)**	**(13,264)**	**(11,379)**	**(7910)**	**(4830)**
					2.15	4.2	6.4	7.5	8.6	9.9	11.3	13.0	14.9	19.3	29.3
					(7'1")	**(2.6)**	**(4.0)**	**(4.7)**	**(5.3)**	**(6.1)**	**(7.0)**	**(8.1)**	**(9.3)**	**(12.0)**	**(18.1)**
Challenger 75C	4KK		325/268	15 158	3.24	12 689	10 761	9329	8106	6932	5944	5095	4380	3075	1878
				(33,419)	**(10'8")**	**(27,975)**	**(23,724)**	**(20,567)**	**(17,871)**	**(15,282)**	**(13,105)**	**(11,232)**	**(9657)**	**(6780)**	**(4140)**
					2.29	4.2	6.4	7.5	8.6	9.9	11.3	13.0	14.9	19.3	29.1
					(7'5")	**(2.6)**	**(4.0)**	**(4.7)**	**(5.3)**	**(6.1)**	**(7.0)**	**(8.1)**	**(9.3)**	**(12.0)**	**(18.1)**
Challenger 75D	5AR	96-97	330	14 878	3.24	12 884	12 562	10 919	9526	8197	7030	6109	5241	3643	2225
				(32,800)	**(10'8")**	**(28,406)**	**(27,693)**	**(24,071)**	**(21,003)**	**(18,071)**	**(15,498)**	**(13,468)**	**(11,554)**	**(8031)**	**(4904)**
					2.29	4.2	6.4	7.5	8.6	9.9	11.3	13.0	14.9	19.3	29.1
					(7'5")	**(2.6)**	**(4.0)**	**(4.7)**	**(5.3)**	**(6.1)**	**(7.0)**	**(8.1)**	**(9.3)**	**(12.0)**	**(18.1)**
Challenger 85C	9TK		1-2 Gears 325/216		3.24	12 689	11 596	9544	8302	7089	6406	5490	4720	3146	2024
					(10'8")	**(27,975)**	**(25,565)**	**(21,042)**	**(18,304)**	**(15,629)**	**(14,122)**	**(12,104)**	**(10,406)**	**(6935)**	**(4461)**
			3-10 Gears 355/272		2.29	4.5	6.4	7.9	9.0	10.5	11.3	13.0	14.9	20.3	29.1
					(7'5")	**(2.8)**	**(4.0)**	**(4.9)**	**(5.6)**	**(6.5)**	**(7.0)**	**(8.1)**	**(9.3)**	**(12.6)**	**(18.1)**
Challenger 85D	4GR	96-97	Gears 1-2 330 3-5 360 6-10 370	15 286	3.24	15 529	10 684	9599	8247	7175	6590	5705	4887	3825	2461
				(33,700)	**(10'8")**	**(34,234)**	**(23,553)**	**(21,162)**	**(18,181)**	**(15,819)**	**(14,528)**	**(12,578)**	**(10,774)**	**(8432)**	**(5425)**
					2.29	4.0	6.25	7.75	8.9	10.2	11.2	12.8	14.7	20.3	29.1
					(7'5")	**(2.5)**	**(3.9)**	**(4.8)**	**(5.5)**	**(6.4)**	**(7.0)**	**(8.0)**	**(9.2)**	**(12.6)**	**(18.1)**
D3B SA	2PC	85-87	101	6650	2.71	7634	6226	5306	4531	3888					
				(14,670)	**(8'11")**	**(16,830)**	**(13,725)**	**(11,700)**	**(9990)**	**(8573)**					
						4.1	5.0	5.7	6.5	7.6					
						(2.5)	**(3.1)**	**(3.6)**	**(4.0)**	**(4.7)**					
D3C SA	7JF	87-92	101	7202	2.71	5552	4521	3827	3235	2755					
				(15,846)	**(8'11")**	**(12,250)**	**(9960)**	**(8450)**	**(7130)**	**(6070)**					
					1.52	4.1	5.0	5.7	6.5	7.6					
					(5'0")	**(2.5)**	**(3.1)**	**(3.6)**	**(4.0)**	**(4.7)**					

*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
D4D SA	20J	66-68	—/68	6750	2.44	4590	3928	3098	2631	2232					
				(14,900)	**(8'0")**	**(10,120)**	**(8660)**	**(6830)**	**(5800)**	**(4920)**					
					1.52	4.0	4.7	5.6	6.4	7.4					
					(5'0")	**(2.5)**	**(2.9)**	**(3.5)**	**(4.0)**	**(4.6)**					
D4D SA	84J	66	—/68	6470	2.67	4880	4170	3310	2840	2420					
				(14,270)	**(8'9")**	**(10,750)**	**(9200)**	**(7300)**	**(6260)**	**(5330)**					
					1.52	4.0	4.7	5.6	6.4	7.4					
					(5'0")	**(2.5)**	**(2.9)**	**(3.5)**	**(4.0)**	**(4.6)**					
D4E SA	7PB	84-89	97	7600	2.71	5901	5148	5831	5002	4433					
	2CB	84-91		**(16,760)**	**(8'11")**	**(13,102)**	**(11,349)**	**(12,859)**	**(11,027)**	**(9773)**					
						3.4	4.6	5.5	6.4	8.3					
						(2.1)	**(2.8)**	**(3.5)**	**(4.0)**	**(5.1)**					
D4E SA	29X	77-84	—/74	7585	2.72	5802	4986	4007	3814	2896					
				(16,722)	**(8'11")**	**(12,791)**	**(10,993)**	**(8835)**	**(8408)**	**(6384)**					
					1.52	4.1	4.7	5.8	6.6	7.5					
					(5'0")	**(2.5)**	**(2.9)**	**(3.6)**	**(4.1)**	**(4.7)**					
D5 SA	21J	67-67	—/90	9300	2.64	6620	5160	3990	3080	2290					
				(20,400)	**(8'8")**	**(14,580)**	**(11,360)**	**(8740)**	**(6790)**	**(5030)**					
					1.88										
					(6'2")										
D5 SA	98J	67-77	—/90	9660	2.95	6120	5180	4110	3640	2950	2250				
				(21,300)	**(9'8")**	**(13,500)**	**(11,410)**	**(9950)**	**(7620)**	**(6500)**	**(4970)**				
					1.88	3.7	4.6	5.8	7.1	8.8					
					(6'2")	**(2.3)**	**(2.9)**	**(3.6)**	**(4.4)**	**(5.5)**					
D5B SA	26X	77-84	—/90		2.77	6409	5384	4323	3688	3180	2486				
					(9'1")	**(14,130)**	**(11,870)**	**(9530)**	**(8130)**	**(7010)**	**(5480)**				
					1.88	4.0	4.7	5.6	6.6	7.4	9.0				
					(6'2")	**(2.5)**	**(2.9)**	**(3.5)**	**(4.1)**	**(4.6)**	**(5.6)**				
D5B SA	22X	77-82	105/—	11 283	2.77	8060	5030	3410	2290	1480					
				(24,875)	**(9'1")**	**(17,770)**	**(11,100)**	**(7520)**	**(5060)**	**(3260)**					
					1.52	2.7	4.2	5.8	8.0	11.1					
					(5'0")	**(1.7)**	**(2.6)**	**(3.6)**	**(5.0)**	**(6.9)**					
D5B SA	24X	77-84	105/—	11 619	2.77										
				(25,615)	**(9'1")**										
					1.52	3.5	6.1	10.1							
					(5'0")	**(2.2)**	**(3.8)**	**(6.3)**							

*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)** 4.0 **(2.5)**	6970 **(15,370)** 4.8 **(3.0)**	5880 **(12,780)** 5.6 **(3.5)**	4810 **(10,610)** 6.4 **(4.0)**	4080 **(9000)** 7.4 **(4.6)**	3190 **(7030)** 8.8 **(5.5)**				
D6D SR	7XF	89-91	140	15 200 **(33,500)**	2.87 **(9'5")**	14 358 **(31,645)** 2.0 **(1.2)**	12 429 **(27,394)** 2.9 **(1.8)**	11 721 **(25,833)** 4.1 **(2.5)**	7067 **(15,576)** 6.5 **(4.0)**	6096 **(13,436)** 7.4 **(4.6)**	4931 **(10,868)** 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)** 4.5 **(2.8)**	8510 **(18,744)** 5.3 **(3.3)**	9210 **(20,287)** 6.1 **(3.8)**	7789 **(17,156)** 7.1 **(4.4)**	6732 **(14,828)** 8.2 **(5.1)**	5456 **(12,017)** 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)** 4.5 **(2.8)**	8510 **(18,744)** 5.3 **(3.3)**	7181 **(15,817)** 6.1 **(3.8)**	8732 **(19,234)** 7.1 **(4.4)**	7560 **(16,651)** 8.2 **(5.1)**	6144 **(13,532)** 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)** 3.0 **(1.9)**	7771 **(17,097)** 4.3 **(2.7)**	8130 **(17,887)** 5.8 **(2.6)**	6866 **(15,105)** 6.8 **(4.3)**	5926 **(13,037)** 7.7 **(4.8)**	3135 **(6987)** 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)** 4.5 **(2.8)**	8455 **(18,639)** 5.3 **(3.3)**	7134 **(15,727)** 6.1 **(3.8)**	9041 **(19,931)** 7.1 **(4.4)**	7830 **(17,268)** 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)** 4.5 **(2.8)**	10 482 **(23,110)** 5.3 **(3.3)**	10 667 **(23,514)** 6.1 **(3.8)**	9091 **(19,931)** 7.1 **(4.4)**	7830 **(17,263)** 8.2 **(5.1)**					
D7G SA std. trans.	35N	80-86	250	18 462 **(40,700)**	3.2 **(10'6")**	19 101 **(42,110)** 3.5 **(2.2)**	13 622 **(30,030)** 4.8 **(3.0)**	11 358 **(25,040)** 5.6 **(3.5)**	10 015 **(22,080)** 6.4 **(4.0)**	8627 **(19,020)** 7.2 **(4.5)**	7584 **(16,720)** 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)** 3.5 **(2.2)**	12 090 **(26,631)** 4.8 **(3.0)**	11 358 **(25,040)** 5.6 **(3.5)**	10 015 **(22,080)** 6.4 **(4.0)**	8627 **(19,020)** 7.2 **(4.5)**	7584 **(16,720)** 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)** 2.9 **(1.8)**	39 466 **(64,960)** 3.9 **(2.4)**	22 013 **(48,530)** 5.0 **(3.1)**	15 953 **(35,170)** 6.8 **(4.2)**	11 880 **(26,190)** 8.9 **(5.5)**	8446 **(18,620)** 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	Horse-power, 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	Maximum Speed km/h (mph) 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)**
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)**
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)**

Motor Graders (cont'd)

Model	Product Ident. No. Prefix	Years Built	Horse-power, 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	Maximum Speed km/h (mph) Rev.
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)**
12F	89H(U.S.) 13K(U.S.)	69-73 67-73	125	12 973 **(28,600)**	6.0 **(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")**	7.3 **(24'0")**	Hyd.	39.4 **(24.5)**	39.4 **(24.5)**
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")**	7.3 **(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")**	7.3 **(24'0")**	Hyd.	41.0 **(25.5)**	41.0 **(25.5)**
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")**	7.9 **(25'11")**	Hyd.	43.0 **(26.8)**	50.1 **(31.1)**
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")**	8.2 **(27'0")**	Hyd.	43.6 **(27.1)**	43.6 **(27.1)**

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)**

*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)
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)**
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	3GB 3CG	87-89 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)**

*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.

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)
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 **(3'11")**	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)**
EL240	4JF(OSJ) 4MF(JPN)	87-89 87-89	148	23 600 **(52,000)**	2.58 **(8'6")**	3.02 **(9'11")**	9.73 **(31'11")**	3.38 **(11'1")**	10.6 **(34'9")**	11 300 **(24,300)**
EL240B	5WG(OSJ) 6MG(JPN)	89-92	148	23 600 **(52,000)**	2.58 **(8'6")**	3.02 **(9'11")**	9.73 **(31'11")**	3.38 **(11'1")**	10.6 **(34'9")**	10 320 **(22,750)**
EL240C	9PK(OSJ) 9NK(JPN)	92-93	148	23 600 **(52,000)**	2.58 **(8'6")**	3.02 **(9'11")**	9.73 **(31'11")**	3.38 **(11'1")**	10.6 **(34'9")**	10 320 **(22,750)**
E300	2CF(OSJ) 1KG(JPN)	87-89 87-89	187	30 500 **(67,300)**	2.6 **(8'6")**	3.22 **(10'7")**	10.94 **(35'11")**	3.4 **(11'2")**	11.84 **(38'9")**	12 550 **(27,650)**
E300B	1WJ(OSJ) 2HJ(JPN)	90-91 90-91	206	30 200 **(66,580)**	2.6 **(8'6")**	3.22 **(10'7")**	10.94 **(35'11")**	3.4 **(11'2")**	11.84 **(38'9")**	12 450 **(26,850)**
EL300	4NF(OSJ) 4SF(JPN)	87-89 87-89	187	31 600 **(69,700)**	2.6 **(8'6")**	3.22 **(10'7")**	10.94 **(35'11")**	3.4 **(11'2")**	11.84 **(38'9")**	12 550 **(27,650)**
EL300B	3FJ(OSJ) 1GK(JPN)	90-91 90-91	206	31 200 **(68,780)**	2.6 **(8'6")**	3.22 **(10'7")**	10.94 **(35'11")**	3.4 **(11'2")**	11.84 **(38'9")**	12 450 **(26,850)**
E450	3HG(OSJ) 3JG(JPN)	87-93 87-93	276	46 000 **(101,430)**	2.89 **(9'6")**	3.49 **(11'5")**	11.96 **(39'3")**	3.15 **(10'4")**	13.08 **(42'11")**	10 900 **(23,500)**
E650	3KG(OSJ) 3LG(JPN)	87-92 87-92	375	62 600 **(138,000)**	3.25 **(10'8")**	4.84 **(15'11")**	14.0 **(45'11")**	3.49 **(11'5")**	13.33 **(43'9")**	15 850 **(34,000)**
307	2WM 2PM(OSJ) 9ZL(JPN)	94-97	54	7600 **(16,760)**	1.75 **(5'9")**	2.9 **(9'6")**	6.3 **(20'8")**	2.4 **(7'10")**	6.38 **(20'11")**	2450 **(5390)**
311	9LJ(OSJ) 5PK(JPN)	93-96 93-96	79	11 100 **(24,400)**	1.99 **(6'6")**	2.76 **(9'1")**	7.25 **(23'9")**	2.49 **(8'2")**	8.10 **(26'7")**	3100 **(6650)**
312	6GK(OSJ) 7DK(JPN)	93-96 93-96	84	12 600 **(27,910)**	1.99 **(6'6")**	2.76 **(9'1")**	7.6 **(24'11")**	2.49 **(8'2")**	8.63 **(28'4")**	4200 **(9260)**
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 **(28'3")**	4200 **(9260)**
312B	6SW 9NW(blade)	98	84	13 000 **(28,665)** 13 785 **(30,395)**	1.99 **(6'6")** 1.99 **(6'6")**	2.91 **(9'6")** 2.91 **(9'6")**	7.59 **(24'11")** 7.59 **(24'11")**	2.49 **(8'2")** 2.49 **(8'2")**	8.30 **(27'3")** 8.30 **(27'3")**	4590 **(10,120)** 4940 **(10,890)**
312B L	9FS 2KW(blade)	97	84	13 270 **(29,260)** 14 055 **(30,990)**	1.99 **(6'6")** 1.99 **(6'6")**	2.91 **(9'6")** 2.91 **(9'6")**	7.59 **(24'11")** 7.59 **(24'11")**	2.59 **(8'6")** 2.59 **(8'6")**	8.30 **(27'3")** 8.30 **(27'3")**	5000 **(11,025)** 5050 **(11,135)**

*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)
315	4YM(OSJ) 6XM(JPN)	94-97 94-97	99	15 300 **(33,730)**	1.99 **(6'6")**	2.88 **(9'5")**	8.5 **(28'0")**	2.49 **(8'2")**	8.74 **(28'8")**	5250 **(11,290)**
315 L	6YM(OSJ)	94-97	99	15 920 **(35,100)**	1.99 **(6'6")**	2.88 **(9'5")**	8.5 **(28'0")**	2.59 **(8'6")**	8.74 **(28'8")**	6320 **(13,570)**
315	3ZM	95-98	99	15 920 **(35,100)**	1.99 **(6'6")**	2.88 **(9'5")**	8.5 **(28'0")**	2.49 **(8'2")**	8.21 **(26'11")**	5300 **(11,300)**
317	4MM	95-98	99	17 260 **(38,050)**	2.15 **(7'1")**	2.88 **(9'5")**	8.5 **(28'0")**	2.75 **(9'0")**	8.62 **(28'3")**	4210 **(9280)**
317N	9SR	96-98	99	17 220 **(37,960)**	1.99 **(6'6")**	2.88 **(9'5")**	8.5 **(28'0")**	2.75 **(9'0")**	8.62 **(28'3")**	6450 **(14,200)**
318B L	9WW	98	110	17 700 **(39,030)**	2.20 **(7'2")**	3.02 **(9'10")**	8.67 **(28'6")**	2.80 **(9'2")**	8.94 **(29'4")**	8440 **(18,610)**
318B LN	6DZ	98	110	17 160 **(37,840)**	1.995 **(6'6")**	3.02 **(9'10")**	8.67 **(28'6")**	2.495 **(8'2")**	8.94 **(29'4")**	7590 **(16,735)**
320	7WK(OSJ) 2DL(OSJ) 8LG(OSJ) 7GJ(JPN) 3XM(JPN) 4ZJ(GOS)	91-96	128	19 120 **(42,150)**	2.20 **(7'3")**	2.93 **(9'7")**	9.37 **(30'9)**	2.80 **(9'2")**	10.63 **(34'9")**	6200 **(17,700)**
320L	1TL(OSJ) 9KK(OSJ) 8HJ(JPN) 4JM(JPN) 3XK(GOS)	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)**
320N 320S	1XM(OSJ) 9WG(GOS) 6KM	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)**
322*	7WL(OSJ) 7WL(JPN)	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)**
322L*	8CL(OSJ) 8CL(JPN)	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)**
325*	5WK(OSJ) 8NL(OSJ) 8JG(JPN) 5WK(JPN)	91-95 91-95	168 168	25 520 **(56,270)** 25 520 **(56,270)**	2.39 **(7'10")** 2.39 **(7'10")**	3.24 **(10'8")** 3.24 **(10'8")**	10.27 **(33'8")** 10.27 **(33'8")**	2.99 **(9'10")** 2.99 **(9'10")**	11.50 **(37'7")** 11.50 **(37'7")**	11 100 **(24,000)** 11 000 **(24,000)**
325L*	6KK(OSJ) 9KL(OSJ) 7CJ(JPN) 6KK(JPN)	91-95 91-95	168 168	27 010 **(59,560)** 27 010 **(59,560)**	2.59 **(8'6")** 2.59 **(8'6")**	3.24 **(10'8")** 3.24 **(10'8")**	10.27 **(38'8")** 10.27 **(38'8")**	3.39 **(11'1")** 3.39 **(11'1")**	11.50 **(37'7")** 11.50 **(37'7")**	11 650 **(25,150)** 11 650 **(25,150)**
330*	9PJ(OSJ) 8RL(OSJ) 9NG(JPN) 9PJ(JPN)	92-95 92-95	222 222	32 130 **(70,830)** 32 130 **(70,830)**	2.59 **(8'6")** 2.59 **(8'6")**	3.29 **(10'10")** 3.29 **(10'10")**	11.01 **(36'2")** 11.01 **(36'2")**	3.19 **(10'6")** 3.19 **(10'6")**	12.37 **(40'6")** 12.37 **(40'6")**	15 550 **(33,650)** 15 550 **(33,650)**
330L*	6SK(OSJ) 9ML(OSJ) 6WJ(JPN) 6SK(JPN)	92-95 92-95	222 222	33 510 **(73,880)** 33 510 **(70,830)**	2.59 **(8'6")** 2.59 **(8'6")**	3.29 **(10'10")** 3.29 **(10'10")**	11.01 **(36'2")** 11.01 **(36'2")**	3.34 **(10'11")** 3.34 **(10'11")**	12.37 **(40'6")** 12.37 **(40'6")**	14 600 **(31,500)** 14 600 **(31,500)**

*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 (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.

5000 SERIES EXCAVATORS AND FRONT SHOVELS

Model	Product Ident. No. Prefix (USA)	Years Built	Flywheel Horsepower	Approx. Operating Weight kg (lb)	Rated* Capacity m^3 (yd^3)	Breakout Force kg (lb)	Crowd Force kg (lb)	Truck Gauge m (ft)	Max Reach* m (ft)	Max Load Height m (ft)	Max Digging Depth m (ft)
5130ME	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")**
5130FS	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")**	—

*Standard boom and stick.

LOGGING AND FOREST PRODUCT MACHINES

Model	Product Ident. No. Prefix	Year Built	Flywheel Horsepower	Overall Track Length m (ft)	Overall Length m (ft)	Overall Width m (ft)	Operating Weight kg (lb)
FB221	8XD	1986	197	4.47 **(14'8")**	9.78 **(32'1")**	3.20 **(10'6")**	28 180 **(62,000)**
FB227	10W	1983-93	135/180	4.55 **(14'11")**	11.88 **(39'0")**	3.35 **(11'0")**	31 769 **(69,892)**
DL221	8YD	1987	132	4.47 **(14'8")**	—	—	22 816 **(50,300)**
LL216	8JD	1986	128	—	10.70 to 11.23 **(35'1" to 36'10")**	2.64 **(8'8")**	17 577 **(38,750)**
LL228	8MD	1986	176	—	9.7 to 11.6 **(32'0" to 38'0")**	2.62 **(8'7")**	30 391 **(67,000)**
LL231	8PD	1986	235	5.03 **(16'6")**	10.6 to 11.6 **(35'0" to 38'0")**	3.56 **(11'8")**	39 146 **(86,300)**

WHEEL SKIDDERS

Model	Product Ident. No. Prefix	Year 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 **dual (130/145)**	10 260 **(22,600)**	470 **(18.5039)**	3251 **(10'8.4")**
518 Series II Grapple	95U	91-92	dual 97/108 **dual (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	Year 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	Year 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)
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)**
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)**
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)**
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)**
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)**
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)**

Pipelayers (cont'd)

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) Forward	Speed Range km/h (mph) Reverse	Ground Clearance mm (in)	Ground Contact m² (sq. in.)
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)**
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)**
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)**
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	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			
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")** Scraper —	12.0 × 20-14 21.0 × 25-20 16.0 × 21-20	42/46	11.23 **(37'0")**
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")** Scraper —	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	46/33	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")**

*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			
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)	63/49	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)	65/35	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)	79/53	9.63 **(31'7")**
619B DD	89E	59-60	/225							Turbocharged, Electric start		
DD	90E									Turbocharged, Gas start		
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	62F											
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	16.5/— **(21.5/—)**	28 400 **(62,600)**	12.00 **(39'5")**	3.60 **(11'10")**	3.45 **(11'4")**	2.19 **(7'3")**	29.5 × 29-22	53/65	11.50 **(37'8")**
621	23H	65-74	/300	10.6/15.3 **(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	55	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)	55/70	11.10 **(36'6")**
621E	6AB	86-93	/330	15.3 **(20)**	30 480 **(67,195)**	12.93 **(42'5")**	3.47 **(11'4")**	3.71 **(12'2")**	2.21 **(7'3")**	33.25-29	68/53	10.9 **(35'8")**
	2PD									26 PR (E-3)		
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	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)	49/63	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	17.6 **(23)**	35 290 **(77,800)**	12.61 **(41'4")**	3.55 **(11'8")**	3.94 **(12'11")**	2.18 **(7'2")**	29.5R25	66/51	10.9 **(35'8")**
627	54K	68-74	/450	10.6/15.3 **(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	49	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)	49/59	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)	59/48	10.90 **(35'9")**
627E	7CG	90-93	T/330 S/225	15.3 **(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)	59/48	10.9 **(35'8")**
627B/PP	15S	73-86	T/225 S/225	15.3 **(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)	60/49	10.90 **(35'9")**
627E/PP	7CG	90-93	T/330 S/225	15.3 **(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)	60/49	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			
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")** Scraper	16.0 × 25-16 29.5 × 35-28 33.5 × 33-26	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")**
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	51/67	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	53/69	11.45 **(37'7")**
631D	24W	75-85	/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)	/69	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	5367	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	36/40	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	41/62	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	53/67	11.78 **(38'8")**
633D	25W	75-85	450	26 **(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)	67	12.4 **(40'7")**
633E		85-95	475	26 **(34)**	50 800 **(112,000)**	14.40 **(47'3")**	3.96 **(13'0")**	4.24 **(13'11")**	2.46 **(8'1")**	37.25R35	64/36	13.15 **(43'2")**
637	65M	70-75	/*640	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	51/62	11.68 **(38'4")**
637/PP	79P	70-75	/*640	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	450 S250	16.1/23.7 **(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	450 S250	16.1/23.7 **(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	473/450	16.1/23.7 **(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/PP	1FB	85-91	473/450	16.1/23.7 **(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")**
639D	99X	79-84	/450	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	51/66	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")**

*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) Length	Width	Height	Width of Tread	Tire Size (Standard) & ply rating Tractor & Scraper	Approx. % Weight on Drivers Loaded/ Empty	Turning Circle m (ft)
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	36/40	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	52/65	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")**
657	31G	62-68	T560/450 S420/335	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, 4	48/56	13.29 **(43'7")**
657	46M	68-69	T—/500 S420/360	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	49/59	13.7 **(45'1")**
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")** Scraper—	18.0 × 25-20 37.5 × 39-28 37.5 × 51-36	37/41	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	41/46	14.00 **(46'0")**
666	77F	63-69	F460/450 R420/335	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")** Scraper—	18.0 × 25-20 37.5 × 39-28 37.5 × 51-36	34/35*	13.87 **(45'6")**
666	64H	67-69	F—/500 R420/360	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")** Scraper—	18.0 × 25-20 37.5 × 39-28 37.5 × 51-51	35/36*	13.87 **(45'6")**
666B	66K	69-78	/950	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	39/36	14.00 **(46'0")**

*Tractor & Scraper Combined.

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")**

Tractor-Towed Scrapers (cont'd)

Model	Product Ident. No. Prefix	Years Built	Capacity Struck/ Heaped m³ (yd³)	Weight kg (lb)	Width m (ft)	Length m (ft)	Height m (ft)	Width of Cut m (ft)
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 (Horse-power)	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

Construction & Mining Trucks/Tractors (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horse-power)	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	
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
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
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
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
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

ARTICULATED TRUCKS

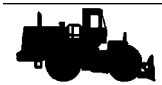
Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horse-power)	Capacity Metric Tons (U.S. Tons)	Approx. Weight kg (lb)	Dimensions m (ft)						Tire Size
						Width	Length	Height	Loading Height	Dumping Height (55°)	Turning Circle	
D20D	9MG	92-94	134 (180)	18.0 (20.0)	15 000 (33,070)	2.75 (9'0")	8.43 (27'8")	3.30 (10'10")	2.40 (7'11")	5.0 (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
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

*Information not available — DJB models.

Articulated Trucks (cont'd)

Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horse-power)	Capacity Metric Tons (U.S. Tons)	Approx. Weight kg (lb)	Width	Length	Height	Loading Height	Dumping Height (55°)	Turning Circle	Tire Size
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
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
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
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
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
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 TRACTORS

Model	Product Ident. No. Prefix	Years Built	Flywheel Kilowatts (Horsepower)	Approx. Oper. Wt. kg (lb)	Length (Dozer on ground) m (ft)	Tread m (ft)	Wheelbase m (ft)	Ground Clearance mm (in)	Trans-mission	Maximum Speeds Fwd. km/h (mph)	Maximum Speeds 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			161 **(216)**	20 927 **(46,137)**	6.82 **(22'5")**			459 **(18'0")**		29.9 **(18.6)**		*
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			235 **(315)**	30 380 **(66,975)**	7.69 **(25'2")**			477 **(18'8")**		33.2 **(20.6)**		
834	43E	63-74	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)**	

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)	Maximum Speeds 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			161 **(216)**	20 035 **(44,175)**						*
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			161 **(216)**	20 628 **(45,477)**						**
825B	43N	70-78	224 **(300)**	30 075 **(66,300)**	1.13 **(3'8.5")**	44° Either Side	Power Shift	29.8 **(18.5)**	29.8 **(18.5)**	
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)**	

*Turbocharged, Articulated Steering.
**Turbocharged, ROPS Cab, Sleeve Metering Fuel System.

WHEEL LOADERS

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) Fwd.	Rev.	Remarks
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 (91.6")	3.18 (1'1")	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)	
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
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
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)	

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 m (ft)	Dump Clearance at max height m (ft)	Maximum Speeds km/h (mph) Fwd.	Rev.	Remarks
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)**	9.5 **(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)**	
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 II	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)**	
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
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)**	
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
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 980F-II	8CJ	91-92 92-95	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
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
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
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 **(84,660)**	— **—**	— **—**	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)**	

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.

*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	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.
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")**	
955C	12A	55-60	70	9590 **(21,145)**	1.15 **(1.5)**	4.60 **(15'2")**	2.03 **(6'8")**	2.08 **(6'11")**	Integral loader.
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.
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")**	
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")**	Improved undercarriage.
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")**	Power shift, Turbo, oil cooled brakes.
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")***	Walk-through compartment, longer roller frame.
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")***	Horsepower and bucket capacity increase.
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.

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 Fwd.	Maximum Speeds (mph) Rev.
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)**
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)**
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)**

PAVING PRODUCTS — COLD PLANERS

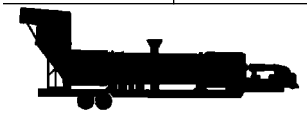
Model	Product Ident. No. Prefix	Years Built	kW Flywheel (Horsepower)	Approximate Operating Weight kg (lb)	General Dimensions (Shipping)		
					Height mm (ft)	Length mm (ft)	Width mm (ft)
PR-75		85-92	52 **(77)**	5900 **(13,000)**	2690 **(8'10")**	3050 **(10'0")**	2130 **(7'0")**
PR-105		85-92	67 **(90)**	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")**

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")**
RR-250	6ED	85-96	250 **(335)**	17 876 **(39,300)**	3220 **(10'7")**	8780 **(28'10")**	2900 **(9'7")**

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

	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

						Shipping Dimensions (Min.)			
Model	**Product Ident. No. Prefix**	**Years Built**	**Flywheel Horsepower**	**Approx. Operating Weight kg (lb)**	**Standard Paving Width m (ft)**	**Length m (ft)**	**Width m (ft)**	**Height m (ft)**	**Remarks**
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 **(23'0")**	3.7 **(12'0")**	2.9 **(9'8")**	

*Weight of 25'0" machine.
**Weight of 38'0" machine.
***Machine legs and track shipped separately.

Former Models

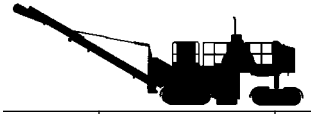
Paving Products
- Placer-Spreader-Trimmer
- Texturing/Curing
- Belt Placer
- Trimmer Reclaimer
- Tube Finisher

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 m^3 (ft^3)	Maximum Op. Speed m/min (ft/min)
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)**	NA	1524 **(5'0")**	NA	NA
AP-200	6AD	85-91	26 **(35)**	4080 **(9000)**	Track	2743 **(9'0")**	5.4 **(6)**	0-54 **(0-776)**
BG-200A	NA	89-91	35 **(47)**	6750 **(14,900)**	Wheel	1803 **(5'11")**	3.26 **(116)**	56 **(180)**
BG-210	NA	90-91	79 **(106)**	10 192 **(22,500)**	Wheel	2438 **(8'0")**	4.76 **(170)**	84 **(275)**
BG-220	NA	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	NA	84-87	58 **(78)**	11 339 **(25,000)**	Track	2438 **(8'0")**	3.7 **(130)**	58 **(188)**
BG-225B	NA		118 **(158)**	16 400 **(36,200)**	Track	2438 **(8'0")**	4.3 **(155)**	57 **(189)**
BG-240	NA	85-86	72 **(96)**	13 154 **(29,000)**	Wheel	3048 **(10'0")**	3.7 **(130)**	81 **(265)**
BG-245	NA	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	NA	85-87	106 **(142)**	14 514 **(32,000)**	Wheel	3048 **(10'0")**	5.8 **(206)**	77 **(253)**
BG-260B	NA		116 **(155)**	14 740 **(32,500)**	Wheel	3048 **(10'0")**	5.8 **(206)**	90 **(296)**
BG-265	NA	85-87	106 **(142)**	16 782 **(37,000)**	Track	3048 **(10'0")**	5.8 **(206)**	50 **(164)**
BG-270B	NA		145 **(195)**	15 510 **(34,200)**	Wheel	3048 **(10'0")**	6.5 **(230)**	90 **(296)**
BG-610	NA	85	58 **(78)**	4394 **(9700)**	NA	1524 **(5'0")**	NA	NA
BG-610A	NA	86-90	58 **(78)**	4911 **(10,840)**	NA	1524 **(5'0")**	NA	NA
BG-710	NA		111 **(149)**	13 380 **(29,500)**	NA	3048 **(10'0")**	10.0 **(80)**	98 **(320)**
BG-750	NA	87-97	116 **(155)**	17 010 **(37,500)**	Wheel	4270 **(14'0")**	10.0 **(80)**	0-24.1 **(0-15.0)**
MTP-1260	NA	86-90	58 **(78)**	4911 **(10,840)**	NA	3048 **(10'0")**	7.7 **(275)**	58 **(189)**
MTP-1265	NA	88-91	167 **(224)**	25 368 **(56,000)**	NA	3048 **(10'0")**	11.2 **(400)**	50 **(164)**

PAVING PRODUCTS — SOIL VIBRATORY COMPACTORS

Model	Product Ident. No. Prefix	Years Built	Flywheel kW (hp)	Approx. Op. Weight kg (lb)	Drive	Drum Width mm (in)	Dynamic 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-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)**
CP-433B	1MG	88-94	76.5 **(102)**	6668 **(15,225)**	Wheel/ Drum	1680 **(66")**	11 235 **(24,746)**	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-533	3BL	93-95	108 **(145)**	10 110 **(22,500)**	Wheel/ Drum	2134 **(84")**	22 680 **(50,000)**	12.8 **(8.0)**
CP-533	3ZL	93-95	108 **(145)**	11 470 **(25,250)**	Wheel/ Drum	2134 **(84")**	22 680 **(50,000)**	12.8 **(8.0)**
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)**
CP-563	1YJ	89-95	108 **(145)**	11 580 **(25,800)**	Wheel/ Drum	2134 **(84")**	22 680 **(50,000)**	12.8 **(8.0)**
CS-583	8YJ	91-95	108 **(145)**	15 040 **(33,090)**	Wheel/ Drum	2134 **(84")**	22 680 **(50,000)**	12.8 **(8.0)**
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 — ASPHALT VIBRATORY COMPACTORS

Model	Product Ident. No. Prefix	Years Built	Flywheel kW (hp)	Approx. Op. Weight kg (lb)	Drive	Drum Width mm (in)	Dynamic 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-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-314	6HD	85-89	41 **(55)**	3357 **(7400)**	Drum	1120 **(44")**	2770 **(6100)**	8 **(5)**
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-514	6YD	85-88	68 **(91)**	9730 **(21,450)**	Drum (2)	1730 **(68")**	9073 **(20,000)**	11 **(7)**
CB-614	7CD	85-93	115 **(155)**	11 340 **(25,000)**	Drum (2)	1980 **(78")**	9525 **(21,000)**	11.2 **(7)**
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-634	5CL	94-95	108 **(145)**		Drums	2134 **(84")**	12 043 **(26,550)**	0-9.2 **(0-5.7)**
PF-200		85-92	49 **(66)**	7000 **(15,430)**	Wheel Pneumatic	1700 **(67")**	NA	24 **(14.9)**
PS-110	7MD	85-96	57 **(77)**	12 500 **(27,550)**	Wheel Pneumatic	2134 **(84")**	NA	38.6 **(24)**
PS-130	7ND	85-96	57 **(77)**	12 500 **(27,550)**	Wheel Pneumatic	1700 **(68")**	NA	38.6 **(24)**
PS-150	7PD	85-96	57 **(77)**	15 050 **(37,300)**	Mechanical	1700 **(68")**	NA	38.6 **(24)**
PS-300 PF-300		85-95 85-95	77 **(102)**	21 000 **(46,200)**	Mechanical	1900 **(75")**	NA	26.5 **(16.4)**

*Non-current for U.S. only.

UNDERGROUND MINING

LHD Model	Product Ident. No. Prefix (USA)	Years Built	Flywheel Horsepower 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
R1500	NA	NA	178 **(239)**	25 100 **(55,360)**	9000 **(19,850)**	9.19 **(30'2")**	2.30 **(7'7")**	2480 **(8'2")**	18 460 **(140,700)**	30.4 **(18.9)**	33.0 **(20.5)**
R2800	NA	NA	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)**

ESTIMATING OWNING & OPERATING COSTS

CONTENTS

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:

$$\frac{\textit{Lowest Possible Hourly Costs}}{\textit{Highest Possible Hourly Productivity}} = \textit{Top Machine Performance}$$

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, local prices of fuel and lubricants, 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 as well as data on Caterpillar-built machines which, when coupled with local conditions, will permit accurate estimates.

The method suggested follows several basic principles:

- No prices are provided for any items. For reliable estimates, these must always be obtained locally.
- Calculations are based on the complete machine. Separate estimates are not necessary for the basic machine, dozer, control, etc.
- The multiplier factors provided will work equally well in any currency expressed in decimals.
- Because of different standards of comparison, what may seem a severe application to one machine owner may appear only average to another. Therefore, to better describe machine use, operating conditions and applications are defined in zones.
- Unless otherwise specified, the word "hour" when used in this section means clock or operating hours, not Service Meter Units.

HOURLY OWNING AND OPERATING COST ESTIMATE

DATE _____

	(1)	(2)
Machine Designation	_____	_____
Estimated Ownership Period (Years)	_____	_____
Estimated Usage (Hours/Year)	_____	_____
Ownership Usage (Total Hours)	_____	_____

OWNING COSTS

1. a. Delivered Price (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. Value to be recovered through work (line 1c less line 2)	_____	_____
b. Cost Per Hour: Value / Hours (1) _____ (2) _____	_____	_____

4. Interest Costs

$$\text{N = No. Yrs.} \quad \frac{\frac{N+1}{2N} \times \text{Del. Price} \times \text{Simple Int. \% Rate}}{\text{Hours/Year}} =$$

(1) ___ + 1 ___ × _____ × ___ % (2) ___ + 1 ___ × _____ × ___ %

_____ = _____ = _____ _____

_____ Hours/Yr. _____ Hours/Yr.

5. Insurance

$$\text{N = No. Yrs.} \quad \frac{\frac{N+1}{2N} \times \text{Del. Price} \times \text{Insurance \% Rate}}{\text{Hours/Year}} =$$

(1) ___ + 1 ___ × _____ × ___ % (2) ___ + 1 ___ × _____ × ___ %

_____ = _____ = _____ _____

_____ Hours/Yr. _____ Hours/Yr.

Or

$ _____ Per Yr. ÷ _____ Hours/Yr. =

CATERPILLAR FORM NO. 01-085419-01 (52.00)

	(1)	(2)
6. Property Tax $\frac{N+1}{2N} \times$ Del. Price $\times$ Tax Rate % / Hours/Year =		
(1) $\frac{+1}{\quad} \times$ _____ $\times$ ___ % (2) $\frac{+1}{\quad} \times$ _____ $\times$ ___ %		
_____ = _____ Hours/Yr. _____ = _____ Hours/Yr.	_____	_____
Or		
$ _____ Per Yr. ÷ _____ 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. Lube Oils, Filters, Grease: (See subsection 9A on back)	_____	_____	
10. a. Tires: Replacement Cost ÷ Life in Hours			
$\frac{\text{Cost}}{\text{Life}}$ (1) _____ (2) _____	_____	_____	
b. Undercarriage (Impact + Abrasiveness + Z Factor) $\times$ Basic Factor			
(1) (_____ + _____ + _____) = _____ $\times$ _____ =	_____	_____	
(2) (_____ + _____ + _____) = $\frac{\text{(Total)}}{\quad}$ $\times$ $\frac{\text{(Factor)}}{\quad}$ =			
11. Repair Reserve (Extended Use Multiplier $\times$ Basic Repair Factor)			
(1) _____ $\times$ _____ = (2) _____ $\times$ _____ =	_____	_____	
12. Special Wear Items: Cost ÷ 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

	(1) (___%)	(2) (___%)
Gross Selling Price	_____	_____
Less: a. Commission	_____	_____
b. Make-ready costs	_____	_____
c. Inflation during ownership period*	_____	_____
Net Residual Value (Enter on line 2)	_____ (___%)	_____ (___%) of original 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 9A: Lube Oils, Filters, Grease

	Unit Price	×	Consumption	=	Cost/Hour					
Engine	(1)_____	×	_____	=	_____	(2)_____	×	_____	=	_____
Transmission	_____	×	_____	=	_____	_____	×	_____	=	_____
Final Drives	_____	×	_____	=	_____	_____	×	_____	=	_____
Hydraulics	_____	×	_____	=	_____	_____	×	_____	=	_____
Grease	_____	×	_____	=	_____	_____	×	_____	=	_____
Filters	_____	×	_____	=	_____	_____	×	_____	=	_____
			Total		(1) _____	(2)_____				

(Enter total on line 9 or use Quick Estimator Tables)

SUBSECTION 12A: Special Items
(cutting edges, ground engaging tools, bucket teeth, excavator stick repair, 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)

REPAIR RESERVE CONVERSION FACTORS (line 11)

For use in countries outside the United States where parts and service costs might differ from those used in charts and tables:

Labor Rate Ratio (1) _____ (2) _____
Parts Cost Ratio (1) _____ (2) _____

1-7 ESTIMATING OWNING COSTS

(Line Items 1 through 7)

To protect his equipment investment and be able to replace it, the machine owner must recover over the machine's useful life 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.

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 or hours the owner expects to use the machine gainfully. 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 it approaches the limits of its useful life.

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 useful life rather than tax write-off life. The table of machine operating conditions (next page) only suggests such useful life periods in clock or operating hours. Recognize, however, that factors other than operating conditions can influence machine depreciation periods — an owner's wish to accelerate recovery of his investment, purchase of a machine for a job of specific duration, local customs, local economic conditions, availability of foreign exchange to buy a replacement, and many others.

Maintenance practices are not considered in this table but play an important part in determining economic machine life. For example, operating conditions may suggest a 12,000 hour depreciation period for a machine, but poor maintenance could make it uneconomical to retain the unit beyond 10,000 hours. Good, regular maintenance often can extend economical machine life.

Therefore, a knowledge of the intended use, operating conditions and maintenance practices, plus any special factors, is essential in establishing expected machine life for depreciation purposes.

GUIDE FOR SELECTING OWNERSHIP PERIOD BASED ON APPLICATION AND OPERATING CONDITIONS

	ZONE A Moderate	ZONE B Average	ZONE C Severe
TRACK-TYPE TRACTORS	Pulling scrapers, most agricultural drawbar, stockpile, coalpile. No impact. Intermittent full throttle operation.	Production dozing in clays, sands, gravels. Pushloading scrapers, borrow pit ripping, most landclearing applications. Medium impact conditions. Production landfill work.	Heavy rock ripping. Pushloading and dozing in hard rock. Work on rock surfaces. Continuous high impact conditions.
D3-D7R	12,000 Hr	10,000 Hr	8,000 Hr
D8R/D9R	45,000 Hr	35,000 Hr	25,000 Hr
D10R/D11R	50,000 Hr	40,000 Hr	30,000 Hr
AGRICULTURAL TRACTORS	Pulling combines, grain wagons and grain carts.	Pulling field cultivators, moldboard plows, chisel plows, discing, primary and finishing tillage.	Pulling layer scrapers, used in construction applications, ripping, dozing.
CHALLENGER 35, 45 & 55	10,000 Hr	8,000 Hr	N/A
CHALLENGER 65E-95E	12,000 Hr	10,000 Hr	8,000 Hr
'SR' TRACTORS	14,000 Hr	12,000 Hr	10,000 Hr
MOTOR GRADERS	Light road maintenance. Finishing. Plant and road mix work. Light snowplowing. Large amounts of traveling.	Haul road maintenance. Road construction, ditching. Loose fill spreading. Landforming, landleveling. Summer road maintenance with medium to heavy winter snow removal. Elevating grader use.	Maintenance of hard packed roads with embedded rock. Heavy fill spreading. Ripping-scarifying of asphalt or concrete. Continuous high load factor. High impact.
120H Thru 16H	20,000 Hr	15,000 Hr	12,000 Hr
24H	40,000 Hr	35,000 Hr	30,000 Hr
EXCAVATORS	Utility construction, low density material, rehandling and scrap handling applications.	Continuous digging in sandy clay/ sandy gravel, site development and lumber yard applications.	Continuous digging in rock/natural bed clay, high impact, using hammer, working in forests or quarries.
M312-M320, 307, 307B	10,000 Hr	8,000 Hr	6,000 Hr
311B-318B L	12,000 Hr	10,000 Hr	8,000 Hr
EXCAVATORS	Shallow depth utility construction where excavator sets pipe and digs only 3 or 4 hours/shift. Free flowing, low density material and little or no impact. Most scrap handling arrangements.	Mass excavation or trenching where machine digs all the time in natural bed clay soils. Some traveling and steady, full throttle operation. Most log loading applications.	Continuous trenching or truck loading in rock or shot rock soils. Large amount of travel over rough ground. Machine continuously working on rock floor with constant high load factor and high impact.
320B, 322B,	15,000 Hr	12,000 Hr	10,000 Hr
325B, 330B	15,000 Hr	12,000 Hr	10,000 Hr
345B, 350, 375	20,000 Hr	18,000 Hr	15,000 Hr
5130B & 5230	60,000 Hr	50,000 Hr	40,000 Hr
FRONT SHOVELS	Continuous loading in loose banks or stockpile. Good underfoot conditions. (Might be considered similar to "normal" wheel loader conditions.)	Continuous loading in well-shot rock or fairly tight bank. Good underfoot conditions; dry floor, little impact or sliding on undercarriage.	Continuous loading in poorly-shot rock, virgin or lightly-blasted tight banks, e.g., shales, cemented gravels, caliches, etc. Adverse underfoot conditions: rough floors; high impact sliding on undercarriage.
5080	20,000 Hr	18,000 Hr	15,000 Hr
5130B & 5230	60,000 Hr	50,000 Hr	40,000 Hr

	ZONE A Moderate	ZONE B Average	ZONE C Severe
FELLER BUNCHERS	Continuous felling and stacking in good underfoot conditions. Flat ground uniform trees below 305 mm (12 inches).	Continuous cycling in good underfoot conditions. Rolling terrain, some trees up to 508 mm (20 inches) or some hardwoods.	Continuous cycling in steep terrain over stumps and fallen trees. Most trees 508 mm (20 inches) or larger hardwoods.
	18,000 Hr	15,000 Hr	10,000 Hr
BACKHOE LOADERS	Light duty utility applications in light to medium soil. Trenching depths less 1.83 m (6 ft.)	Utility applications in medium to heavy soil. Occasional use of constant flow implements. Dig depths to 3.05 m (10 ft.)	Production applications or digging in rock. Regular use of constant flow implements. Dig depths over 3.05 m (10 ft.)
	12,000 Hr	10,000 Hr	5,000 Hr
SKIDDERS	Intermittent skidding for short distances, no decking. Good underfoot conditions: level terrain, dry floor, few if any stumps.	Continuous turning, steady skidding for medium distances with moderate decking. Good underfooting: dry floor with few stumps and gradual rolling terrain.	Continuous turning, steady skidding for long distances with frequent decking. Poor underfoot conditions: wet floor, steep slopes and numerous stumps.
Wheel	10,000 Hr	8,000 Hr	7,200 Hr
Track	12,000 Hr	10,000 Hr	8,000 Hr
PIPELAYERS	Little or no use in mud, water or on rock. Use on level, regular surfaces.	Typical pipelayer use in operating conditions ranging from very good to severe.	Continuous use in deep mud or water or on rock surfaces.
561-572	20,000 Hr	15,000 Hr	10,000 Hr
583-589	25,000 Hr	20,000 Hr	15,000 Hr
WHEEL TRACTOR-SCRAPERS	Level or favorable hauls on good haul roads. No impact. Easy-loading materials.	Varying loading and haul road conditions. Long and short hauls. Adverse and favorable grades. Some impact. Typical road-building use on a variety of jobs.	High impact condition, such as loading ripped rock. Overloading. Continuous high total resistance conditions. Rough haul roads.
613C Series II, 615C Series II	12,000 Hr	10,000 Hr	8,000 Hr
621F-627F,631E-657E	22,000 Hr	17,000 Hr	12,000 Hr
CONSTRUCTION & MINING TRUCKS & TRACTORS	Continuous operation at an average gross weight less than recommended. Excellent haul roads. No overloading, low load factor. (See Hourly Fuel Consumption section for definition).	Continuous operation at an average gross weight approaching recommended. Minimal overloading, good haul roads, moderate load factor. (See Hourly Fuel Consumption section for definition).	Continuous operation at or above maximum recommended gross weight. Overloading, poor haul roads, high load factor. (See Hourly Fuel Consumption section for definition). Note — Continual loading beyond recommended maximum gross weight will further reduce Zone C hours.
769D-777D	50,000 Hr	40,000 Hr	30,000 Hr
784C/785C/789C/793C	60,000 Hr	50,000 Hr	40,000 Hr

*Empty weight + payload.

	ZONE A Moderate	ZONE B Average	ZONE C Severe
ARTICULATED TRUCKS	Earthmoving and stockpile use with well matched loading equipment. Short to medium hauls on well-maintained level haul roads. Free flowing material. Few impact loads.	Varying load and haul road conditions. High rolling resistance and poor traction during part of the job. Some adverse grades. Some impact loads. Typical use in road-building, dam construction, open-pit mining, etc.	Continuous use on very poorly maintained haul roads, high rolling resistance and poor traction. Frequent adverse grades and high impact loads. Poorly-matched loading equipment with continuous over-loading.
	15,000 Hr	10,000 Hr	8,000 Hr
WHEEL TRACTORS & COMPACTORS	Light utility work. Stockpile work. Pulling compactors. Dozing loose fill. No impact.	Production dozing, pushloading in clays, sands, silts, loose gravels. Shovel clean-up.	Production dozing in rock. Push-loading in rocky, bouldery borrow pits. High impact conditions. Landfill compactor work.
	15,000 Hr	12,000 Hr	8,000 Hr
WHEEL LOADERS	Intermittent truck loading from stockpile, hopper charging on firm, smooth surfaces. Free flowing, low density materials. Utility work in governmental and industrial applications. Light snowplowing. Load and carry on good surface for short distances with no grades.	Continuous truck loading from stockpile. Low to medium density materials in properly sized bucket. Hopper charging in low to medium rolling resistance. Loading from bank in good digging. Load and carry on poor surfaces and slight adverse grades.	Loading shot rock (large loaders). Handling high density materials with counterweighted machine. Steady loading from very tight banks. Continuous work on rough or very soft surfaces. Load and carry in hard digging; travel longer distances on poor surfaces with adverse grades.
914G-966F Series II	12,000 Hr	10,000 Hr	8,000 Hr
970F	12,000 Hr	10,000 Hr	—
980G-992G	15,000 Hr	12,000 Hr	10,000 Hr
994	60,000 Hr	50,000 Hr	40,000 Hr
TRACK LOADERS	Site clearing of small vegitation, stripping top soil, carrying to stockpile. Intermittent truck loading from stockpile. Free flowing, low density materials with standard bucket. No impact. Backfilling and grading.	Bank excavation, intermittent ripping, basement digging of natural bed clays, sands, silts, gravels. Some traveling. Steady full throttle operation.	Loading shot rock, cobbles, glacial till, caliche. Steel mill work. High density materials in standard bucket. Continuous work on rock surfaces. Large amount of ripping of tight, rocky materials. High impact conditions.
933C-939C	8,000 Hr	6,000 Hr	Not Recommended
953C	10,000 Hr	8,000 Hr	6,000 Hr
963B-973	12,000 Hr	10,000 Hr	8,000 Hr
INTEGRATED TOOLCARRIERS	Intermittent truck loading from stockpile, hopper charging on firm, smooth surfaces. Free flowing, low density materials. Utility work in governmental and industrial applications. Light snow-plowing. Load and carry on good surface for short distances with no grades.	Continuous truck loading from stockpile. Low to medium density materials in properly sized bucket. Hopper charging in low to medium rolling resistance. Loading from bank in good digging. Load and carry on poor surfaces and slight adverse grades.	Loading shot rock (large loaders). Handling high density materials with counterweighted machine. Steady loading from very tight banks. Continuous work on rough or very soft surfaces. Load and carry in hard digging; travel longer distances on poor surfaces with adverse grades.
	12,000 Hr	10,000 Hr	8,000 Hr

AGRICULTURAL TRACTOR DEPRECIATION AND REPAIR COSTS

Unlike construction tractors which often are depreciated over 10,000 hours, the expected useful life of a Caterpillar steel tracked tractor in agriculture can range up to and beyond 20,000 hours (about eighteen years). The Challenger Tractor Line expected life is about 10,000 hours.

The tractor's decline in value is always a significant portion of the machinery cost in farming. The actual market value of any tractor is determined by many variables ... machine age and condition, rate of change in size and farm operations in the area, popularity of given makes of tractors in the community, etc.

Whatever the variables, the decline in value is greater the first year than the second, greater the second year than the third, etc. The shorter the machine's work life, the higher the percentage of its value lost in a year.

Although the percentage of loss each year depends on the life of the machine, it's a general rule that 40 to 50% of the value will be lost in the first quarter of the machine's life. By the halfway point of lifetime, from 70 to 75% of value will be lost.

The sum of digits is a common, easily used method for predicting the farm tractor's depreciation value.

Assume a machine's total life is 18 years. Assign each of those years a value, beginning with 18 for the first year, 17 for the second, 16 for the third, etc. The sum of all 18 digits is 171 which when divided into the initial new machine value, will give a specific monetary figure. The first year, 18 units of value are written off, 17 the second year, etc.

The resale value loss for the first four-year's of machine life progresses as follows:

End of Year	Largest Remaining Digit	Loss of Value In Year	Loss of Value To Date	Remaining Value
1	18	18/171 or 10.5%	10.5%	89.5%
2	17	17/171 or 9.9%	(10.5 + 9.9) 20.4%	79.6%
3	16	16/171 or 9.3%	(20.4 + 9.3) 29.7%	70.3%
4	15	15/171 or 8.7%	(29.7 + 8.7) 38.4%	61.6%

Repairs — The reverse of the sum of digits formula can be used to predict repair costs for agricultural tractors.

Again, assuming an 18-year life, the sum of the digits would be 171. But the digit assigned the first year would be 1, the second year 2, etc.

(**NOTE:** The digital method applied to depreciation yields an eventual 100% of the purchase price. The American Society of Agricultural Engineers recommends repair costs for crawler tractors be figured at 78% and wheel tractors at 120% of purchase price.)

(1) DELIVERED PRICE

(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 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

(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 multiplied 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:

$$\frac{\frac{\text{Insurance}}{\text{N = No. Years}}}{\text{hours/year}}$$

$$\left[\frac{N+1}{2N} \times \text{Delivered Price}\right] \times \text{Insurance rate \%}$$

$$\frac{\frac{\text{Property Tax}}{\text{N = No. Years}}}{\text{hours/year}}$$

$$\left[\frac{N+1}{2N} \times \text{Delivered Price}\right] \times \text{Tax rate \%}$$

8-13 ESTIMATING OPERATING COSTS

(Line Items 8 through 13)

8 FUEL CONSUMPTION

(Line Item 8)

Fuel consumption can be closely measured in the field. However, if no opportunity exists to do this, consumption can be predicted 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:

Hourly consumption × Local Unit Price of Fuel = 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
D3C & LGP Series III	4-7½	**1-2**	7½-11	**2-3**	9½-13	**2½-3½**
D4C & LGP Series III	5½-9½	**1½-2½**	9½-13	**2½-3½**	11-15	**3-4**
D5C & LGP Series III	5½-9½	**1½-2½**	9½-13	**2½-3½**	13-17	**3½-4½**
D4E	5½-9½	**1½-2½**	9½-13	**2½-3½**	11-15	**3-4**
D5M XL & LGP	6-10½	**1½-3**	10½-14½	**3-4**	12½-17	**3½-4½**
D5B	9½-13	**2½-3½**	11-17	**3-4½**	15-21	**4-5½**
D6M XL & LGP	11-15	**3-4**	12½-19½	**3½-5**	17-24	**4½-6½**
D6G	11-20½	**3½-5**	15½-21	**4-6**	23-28½	**6-7½**
D6R XL, XR & LGP	13-22½	**3½-6**	17½-25	**4½-6½**	25-30½	**6½-8½**
D7G Series II*	19-25	**5-6½**	26-34	**7-9**	32-40	**8½-10½**
D7R XR & LGP	19-23	**5-6**	25-28	**6½-7½**	32-36	**8½-10**
D8R & LGP	23-28	**6-7½**	28-38	**7½-10**	38-51	**10-13½**
D9R	36-47	**9½-12½**	47-58	**12½-15½**	60-76	**16-20**
D10R	44-59	**11½-15½**	59-76	**15½-20**	76-93	**20-24½**
D11R	62-87	**16½-23**	87-112	**23-29½**	112-134	**29½-35½**

*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.

AGRICULTURAL TRACTORS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
D4E SR	5½-9½	**1½-2½**	9½-13	**2½-3½**	11-15	**3-4**
D6G SR	11-19	**3-5**	15-21	**4-5½**	21-26	**5½-7**
Challenger 35	9½-21	**2½-5½**	21-32	**5½-8½**	32-42	**8½-11**
Challenger 45	9½-23	**2½-6**	23-38	**6-10**	38-45	**10-12**
Challenger 55	11-26	**3-7**	26-42	**7-11**	42-53	**11-14**
Challenger 65E	34-42	**9-11**	42-49	**11-13**	49-61	**13-16**
Challenger 75E	34-42	**9-11**	42-49	**11-13**	53-64	**14-17**
Challenger 85E	34-42	**9-11**	42-53	**11-14**	53-61	**14-16**
Challenger 95E	34-42	**9-11**	45-57	**12-15**	57-72	**15-19**

LOAD FACTOR GUIDE

High: Steady ripping, shuttle pushloading and downhill dozing. Agricultural drawbar work at full throttle, engine lugged to max. power most of the time. Little or no idling or travel in reverse.

Medium: Production dozing, pulling scrapers, most pushloading. Agricultural drawbar work at full throttle but not always lugging engine. Some idling and some travel with no load.

Low: Considerable idling or travel with no load.

MOTOR GRADERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
120H*	9-13	**2.4-3.4**	13-17	**3.4-4.5**	17-21	**4.5-5.5**
135H*	10-14	**2.6-3.7**	14-18	**3.7-4.8**	18-22	**4.8-5.9**
12H	11-16	**2.9-4.2**	16-21	**4.2-5.5**	21-26	**5.5-6.7**
140H*	12-17	**3.1-4.4**	17-22	**4.4-5.7**	22-26	**5.7-7.0**
143H**	12-17	**3.2-4.6**	17-22	**4.6-5.9**	22-28	**5.9-7.3**
160H*	14-20	**3.7-5.3**	20-26	**5.3-6.8**	26-32	**6.8-8.4**
163H**	14-21	**3.8-5.4**	20-27	**5.4-7.0**	27-33	**7.0-8.6**
14H	15-22	**4.0-5.8**	22-28	**5.8-7.5**	28-35	**7.5-9.2**
16H	19-27	**5.0-7.1**	27-35	**7.1-9.2**	35-43	**9.2-11.3**
24H	32-46	**8.6-12.2**	46-60	**12.2-15.8**	60-74	**15.8-19.4**

*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.

LOAD FACTOR GUIDE

High: Ditching, fill spreading, spreading base material, ripping, heavy road maintenance, snow plowing.
Medium: Average road maintenance, road mix work, scarifying, snow plowing.
Low: Finish grading, light maintenance, road travel.

EXCAVATORS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
301.5	*	*	*	*	*	*
307/307B	3-5	¾-1¼	5-8	1¼-2	7-10	1¾-2½
311B	4-6	1-1½	6-9	1½-2¼	9-12	2¼-3½
312B/312B L	4-6	1-1½	6-10	1½-2½	10-13	2½-3½
315B	5-9	1¼-2¼	9-13	2¼-3½	13-15	3½-4
318B L	*	*	*	*	*	*
M312	5-9	1¼-2¼	9-12	2¼-3½	12-15	3½-4
M315	6-10	1¾-2½	10-13	2½-3½	13-16	3½-4½
M318	8-12	2-3½	12-16	3½-4	17-19	4½-5
M320	9-13	2-3½	13-17	3½-4½	17-20	4½-5½
320B	9-13	2½-3½	13-15	3½-4	15-19	4-5
322B	11-15	3-4	16-18	4¼-4¾	18-23	4¾-6¼
325B	13-16	3½-4¼	18-21	4¾-5½	25-27	6¾-7¼
330B	18-24	4¾-6½	24-30	6½-8	34-38	9-10
345B	25-30	5½-8	35-40	9¼-10½	45-50	11¾-13¼
350	23-28	6-7½	32-37	8½-9¾	47-53	12½-14
375	33-38	8¾-10	42-48	11-12¾	61-67	16-17¾
5130B	91-95	24-25	110-114	29-30	129-132	34-35
5230	163-193	43-51	193-204	51-54	208-227	55-60

*Insufficient data.

LOAD FACTOR GUIDE

High: Most pipeline applications in hard rocky material. Digging 90-95% of the daily work schedule.
Medium: Most residential sewer applications in natural bed clay. Digging 60-85% of the daily work schedule. Most log loading applications.
Low: Most utility, urban applications in sandy loam. Digging less than 50% of the daily work schedule. Scrap handling applications.

FRONT SHOVELS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
5080	36-42	**10-11**	46-53	**12-14**	62-74	**18-20**
5130B	91-95	**24-25**	110-114	**29-30**	129-132	**34-35**
5230	163-193	**43-51**	193-204	**51-54**	208-227	**55-60**

LOAD FACTOR GUIDE

High: Steady cycling in hard to dig material.
Medium: Steady cycling with frequent periods at idle.
Low: Light easy work. Considerable idling.

PIPELAYERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
561M	4-7½	**1-2**	7½-11	**2-3**	9½-13	**2½-3½**
572R	7½-11	**2-3**	13-17	**3½-4½**	17-21	**4½-5½**
583R	9½-13	**2½-3½**	16½-20	**4½-5½**	22½-26	**6½-7½**
589	17-21	**4½-5½**	26-30	**7-8**	34-40	**9-10½**

LOAD FACTOR GUIDE

Pipelayer load factor depends largely on amount of time spent at idle speed.

WHEEL TRACTOR-SCRAPERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
613C Series II	15-19	**4-5**	21-25	**5½-6½**	27½-34	**7¼-9**
615C Series II	23-26	**6-7**	30-36	**8-9½**	42-47½	**11-12½**
621F	27-32	**7-8½**	38-44	**10-11½**	49-57	**13-15**
623F	30-36	**8-9½**	40-46	**10½-12**	53-59	**14-15½**
627F	45½-51	**12-13½**	64-70	**17-18½**	85-89½	**22½-23½**
631E Series II	40-45	**10½-12**	53-59	**14-15½**	72-78	**19-20½**
633E Series II	45-49	**12-13**	56-62	**15-16½**	78-81	**20½-21½**
637E Series II	64-70	**17-18½**	87-93	**23-24½**	113½-121	**30-32**
651E	47-57	**12½-15**	66-76	**17½-20**	87-95	**23-25**
657E	87-98	**23-26**	116-125½	**30½-33**	153-163	**40½-43**

LOAD FACTOR GUIDE

High: Continuous high total resistance conditions with steady cycling.
Medium: Typical road building use.
Low: Average use but with considerable idling, favorable grades, low rolling resistance and easy loading material.

BACKHOE LOADERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
416C (NA)	4.5-6.4	**1.2-1.7**	6.4-8.3	**1.7-2.2**	8.3-10.2	**2.2-2.7**
428C (NA)	4.5-6.4	**1.2-1.7**	6.4-8.3	**1.7-2.2**	8.3-10.2	**2.2-2.7**
416C (T)	5.3-7.2	**1.4-1.9**	7.2-9.1	**1.9-2.4**	9.1-11.4	**2.4-3.0**
428C (T)	5.3-7.2	**1.4-1.9**	7.2-9.1	**1.9-2.4**	9.1-11.4	**2.4-3.0**
426C	5.3-7.2	**1.4-1.9**	7.2-9.1	**1.9-2.4**	9.1-11.4	**2.4-3.0**
436C	6.1-8.3	**1.6-2.2**	8.3-10.2	**2.2-2.7**	10.2-12.5	**2.7-3.3**
438C	6.1-8.3	**1.6-2.2**	8.3-10.2	**2.2-2.7**	10.2-12.5	**2.7-3.3**
446B	7.6-9.8	**2.0-2.6**	9.8-12.1	**2.6-3.2**	12.1-14.4	**3.2-3.8**

NA = Naturally Aspirated
T = Turbocharged

LOAD FACTOR GUIDE
High: Production work with long cycles and/or constant flow implements.
Medium: General work with regular cycles in medium applications.
Low: Utility work with intermittent cycles in light to medium applications.

SKIDDERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
515	9-12	**2½-3¼**	12-16	**3¼-4¼**	16-22	**4¼-5¾**
525	10-14	**2¾-3¾**	14-18	**3¾-4¾**	18-25	**4¾-6½**
528B	13-17	**3½-4½**	19-23	**5-6**	23-28	**6-7½**
517	7-13	**1½-3½**	13-18	**3½-5**	15-21	**4-5½**
527	14-19	**3¾-5**	19-24	**5-6¼**	24-32	**6¼-8½**

LOAD FACTOR GUIDE — 515
High: Skidding loads over 4536 kg (10,000 lb) in steep terrain (over 10%) with high skidding resistance.
Medium: Skidding loads up to 4536 kg (10,000 lb) in medium (5-10%) terrain with average skidding resistance.
Low: Skidding loads less than 2720 kg (6000 lb) in flat terrain (0-5%) with low skidding resistance.

LOAD FACTOR GUIDE — 525
High: Skidding loads over 6800 kg (15,000 lb) in steep terrain (over 10%) with high skidding resistance.
Medium: Skidding loads up to 6800 kg (15,000 lb) in moderate terrain (5-10%) with average skidding resistance.
Low: Skidding loads less than 4500 kg (10,000 lb) in flat terrain (0-5%) with low skidding resistance.

LOAD FACTOR GUIDE — 528B
High: Skidding loads over 11 300 kg (25,000 lb) in steep terrain (over 10%) with high skidding resistance.
Medium: Skidding loads up to 11 300 kg (25,000 lb) in moderate terrain (5-10%) with average skidding resistance.
Low: Skidding loads less than 6800 kg (15,000 lb) in flat terrain (0-5%) with low skidding resistance.

LOAD FACTOR GUIDE — 517
High: Skidding loads over 4536 kg (10,000 lb) in steep terrain (over 30%) with high skidding resistance.
Medium: Skidding loads up to 4536 kg (10,000 lb) in moderate terrain (8-30%) with medium skidding resistance.
Low: Skidding loads less than 4536 kg (10,000 lb) in flat terrain (0-8%) with low skidding resistance.

LOAD FACTOR GUIDE — 527
High: Skidding loads over 6360 kg (14,000 lb) in steep terrain (over 30%) with high skidding resistance.
Medium: Skidding loads up to 6360 kg (14,000 lb) in moderate terrain (8-30%) with medium skidding resistance.
Low: Skidding loads less than 6360 kg (14,000 lb) in flat terrain (0-8%) with low skidding resistance.

CONSTRUCTION & MINING TRUCKS & TRACTORS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
769D	20.8-30.3	**5½-8**	30.3-40	**8-10½**	40-68	**10½-14**
771D	22.7-32.2	**6-8½**	32.2-41.6	**8½-11**	41.6-55	**11-14½**
773D	24.5-36	**6½-9½**	36-53	**9½-14**	53-68	**14-18**
775D	30.3-41.6	**8-11**	41.6-56.8	**11-15**	56.8-73.8	**15-19½**
776D	53.0-73.8	**14-19½**	73.8-96.5	**19½-25½**	96.5-117.3	**25½-31**
777D	36.0-53.0	**9½-14**	53.0-73.8	**14-19½**	73.8-96.5	**19½-25½**
784C/785C	53.0-79.5	**14-21**	79.5-109.8	**21-29**	100.8-145.7	**29-38½**
789C	68.1-102.2	**18-27**	102.2-141.9	**27-37½**	141.9-185.5	**37½-49**
793C	86-129	**23-34**	129-172	**34-45½**	172-215	**45½-57**

NOTE: Load factors above 50% may be experienced in many applications.

LOAD FACTOR GUIDE

Low: 20%-30% Medium: 30%-40% High: 40%-50%

ARTICULATED TRUCKS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
D25D	13.1-18.3	**3.5-4.8**	18.3-25.7	**4.8-6.8**	25.7-37.1	**6.8-9.8**
D30D	14.7-20.4	**3.9-5.4**	20.4-28.7	**5.4-7.6**	28.7-41.5	**7.6-11.0**
D250E	13.2-18.3	**3.5-4.8**	18.3-25.8	**4.8-6.8**	25.8-37.2	**6.8-9.8**
D300E	14.2-19.7	**3.7-5.2**	19.7-27.7	**5.2-7.3**	27.7-40.0	**7.3-10.6**
D350E	15.9-22.2	**4.2-5.9**	22.2-31.2	**5.9-8.2**	31.2-45.0	**8.2-11.9**
D400E	17.6-24.5	**4.6-6.5**	25.2-35.4	**6.7-9.4**	36.1-52.2	**9.6-13.8**

LOAD FACTOR GUIDE

High: Long haul time with frequent adverse grades. Continuous use on very poorly maintained haul roads with high rolling resistance.

Medium: Normal load and haul time. Varying load and haul road conditions. Some adverse grades. Some high rolling resistance.

Low: Large amount of idling. Short to medium hauls on well maintained level haul roads. Minimum total resistance.

TELEHANDLERS

Model	Intermittent		Continuous	
	liter	U.S. gal	liter	U.S. gal
TH62 NA	11.00	**2.90**	16.00	**4.22**
TH62 T	14.20	**3.75**	19.60	**5.17**
TH63 NA	11.00	**2.90**	16.00	**4.22**
TH63 T	14.20	**3.75**	19.60	**5.17**
TH82 NA	11.00	**2.90**	16.00	**4.22**
TH82 T	14.20	**3.75**	19.60	**5.17**
TH83 T	14.20	**3.75**	19.60	**5.17**

LOAD FACTOR GUIDE

Continuous: Continuous loading/cycling applications.

Intermittent: Average loading/cycle applications with periods at idle.

WHEEL TRACTORS & COMPACTORS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
814F	21-25	**5½-6½**	26-30	**7-8**	36-40	**9½-10½**
815F	26-30	**7-8**	36-42	**9½-11**	44-47	**11½-12½**
816F	26-30	**7-8**	36-42	**9½-11**	44-47	**11½-12½**
824G	28-32	**7½-8½**	38-44	**10-11½**	51-57	**13½-15**
825G	36-42	**9½-11**	51-57	**13½-15**	60-66	**16-17½**
826G	36-42	**9½-11**	51-57	**13½-15**	60-66	**16-17½**
834B	40-45	**10½-12**	53-59	**14-15½**	72-78	**19-20½**
836	40-45	**10½-12**	52-59	**13-15½**	72-78	**19-20½**
844	45-53	**12-14**	60½-68	**16-18**	79½-87	**21-23**
854G	58-66	**15-17**	83-91	**22-24**	116-125	**30-33**

LOAD FACTOR GUIDE

High: Heavy dozing, compacting heavy material. Heavy landfill work.
Medium: Production dozing, most pushloading, shovel cleanup, normal compaction.
Low: Considerable idling or travel with no load.

COMPACTION EQUIPMENT

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
CS-323C	8-11	**2-3**	11-13	**3-3½**	11-15	**3-4**
CS-431C	8-11	**2-3**	11-13	**3-3½**	11-15	**3-4**
CS-433C	11	**3**	11-13	**3-3½**	13-15	**3½-4**
CS-563C	13	**3½**	13-15	**3½-4**	15-21	**4-5½**
CS-573	13	**3½**	13-15	**3½-4**	15-21	**4-5½**
CS-583C	15-17	**4-4½**	17-19	**4½-5**	19-23	**5-6**
CP-323C	9-13	**2½-3½**	13-15	**3½-4**	15-19	**4-5**
CP-433C	13	**3½**	15-17	**4-4½**	17-19	**4½-5**
CP-533C	15	**4**	17-19	**4½-5**	19-25	**5-6½**
CP-563C	15	**4**	17-19	**4½-5**	21-25	**5½-6½**
CB-214C	6-8	**1½-2**	8-9	**2-2½**	9-13	**2½-3½**
CB-224C	8	**2**	9-11	**2½-3**	11-15	**3-4**
CB-434C	11-13	**3-3½**	13-17	**3½-4½**	17-19	**4½-5**
CB-534C	13	**3½**	15-17	**4-4½**	17-23	**4½-6**
CB-535B	13	**3½**	15-17	**4-4½**	17-23	**4½-6**
CB-544	11-13	**3-3½**	13-17	**3½-4½**	17-19	**4½-5**
CB-545	11-13	**3-3½**	13-17	**3½-4½**	17-19	**4½-5**
CB-634C	13-15	**3½-4**	15-19	**4-5**	19-21	**5-5½**
PF-300B	13	**3½**	15-17	**4-4½**	17-23	**4½-6**
PS-300B	13	**3½**	15-17	**4-4½**	17-23	**4½-6**
PS-500	13-15	**3½-4**	15-19	**4-5**	19-21	**5-5½**

LOAD FACTOR GUIDE

High: Vibration 80-100%, heavy cohesive soil, 305 mm **(12")** lifts or more.
Medium: Vibration 50-80%, granular soil, 100 mm-305 mm **(4"-12")** lifts.
Low: Vibration 30-50%, asphalt mix, 51 mm-305 mm **(2"-4")** lifts.

ASPHALT PAVERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
BG-201B	11-13	**3-3½**	13-15	**3½-4**	15-19	**4-5**
AP-800C	11-15	**3-4**	15-19	**4-5**	17-19	**4½-5**
AP-1000B	18-20	**4¾-5¼**	22-24	**5¾-6¼**	25-27	**6½-7¼**
AP-650B	11-15	**3-4**	15-19	**4-5**	19-21	**5-5½**
AP-1050B	19-21	**5-5½**	23-25	**6-6½**	26-28	**6¾-7½**
AP-1055B	19-21	**5-5½**	23-25	**6-6½**	26-28	**6¾-7½**
BG-650	11-13	**3-3½**	13-17	**3½-4½**	17-19	**4½-5**
BG-730	13-17	**3½-4½**	17-19	**4½-5**	19-25	**5-6½**

LOAD FACTOR GUIDE
High: Wide width, deep lift paving.
Medium: 3-4 m (10'-12') width, 50-75 mm (2"-3") lift.
Low: Narrow width paving — low production.

WHEEL LOADERS & INTEGRATED TOOLCARRIERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
902	*	*	*	*	*	*
906	*	*	*	*	*	*
914G, IT14G	5-6½	**1-2**	8-10½	**2-2¾**	11½-13	**3-3½**
924F, IT24F	5½-7½	**1½-2**	9½-12	**2½-3**	13-15	**3½-4**
928G, IT28G	7½-11	**2-3**	11-15	**3-4**	15-19	**4-5**
938G, IT38G	9-12½	**2-3**	13-17	**3½-4½**	18-22	**4¾-5¼**
950G	11-15	**3-4**	17-21	**4½-5½**	23-28	**6-7½**
962G, IT62G	12-16	**3-4**	18-22	**5-6**	24-29	**6½-8**
966F Series II	17-21	**4½-5½**	23-28	**6-7½**	32-38	**8½-10**
970F	19-23	**5-6**	25-30	**6½-8**	35-41	**9-11**
980G	23-26	**6-7**	30-36	**8-9½**	42-47	**11-12½**
988F Series II	32-38	**8½-10**	44-49	**11½-13**	60-66	**16-17½**
990 Series II	45-53	**12-14**	60½-68	**16-18**	79½-87	**21-23**
992G	58-66	**15-17**	83-91	**22-24**	116-125	**30-33**
994	102-109½	**27-29**	129-144	**34-38**	163-178	**43-47**

*Insufficient data.

LOAD FACTOR GUIDE
High: Steady cycling on basic loader cycle.
Medium: Steady cycling but over haul distances or work on basic loader cycle with frequent periods at idle.
Low: Light utility work. Considerable idling.

TRACK LOADERS

Model	Low		Medium		High	
	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal
933C	3½-7½	**1-2**	7½-11	**2-3**	9½-13	**2½-3½**
939C	5½-9½	**1½-2½**	9½-13	**2½-3½**	13-17	**3½-4½**
953C	9½-13	**2½-3½**	15-19	**4-5**	19-23	**5-6**
963B	13-17	**3½-4½**	19-23	**5-6**	23-28	**6-7½**
973	19-23	**5-6**	28-34	**7½-9**	36-42	**9½-11**

LOAD FACTOR GUIDE

High: Continuous excavating and loading from bank. Land clearing.
Medium: Bank or stockpile loading with idling periods. Load and carry.
Low: Large amounts of idling in any application.

9 LUBE OILS, FILTERS, GREASE

(Line Item 9 and Subsection 9A)

Hourly costs of lube oils and grease can be approximately estimated by taking consumptions from the table below and applying local prices.

See the page following this table for instructions on how to estimate local hourly filter costs.

For quick estimating, *approximate* hourly costs in U.S. dollars for the total lube oils, filters and grease for each machine are shown in the last table in this area.

APPROXIMATE HOURLY CONSUMPTION OF LUBRICANTS

(When operating in heavy dust, deep mud or water, increase the quantities by 25%.)

Model	Crankcase		Transmission		Final Drives		Hydraulic Control		Lubricant Changes*	Grease Fittings**
Track-Type Tractors	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**		
D3C/D4C Series III	0.045	**0.012**	0.011	**0.003**	0.009	**0.002**	0.015	**0.004**	16	320
D5C Series III	0.045	**0.012**	0.011	**0.003**	0.012	**0.003**	0.015	**0.004**	16	320
D4E	0.076	**0.020**	0.039	**0.010**	0.018	**0.005**	0.011	**0.003**	11	864
D5M	0.076	**0.020**	0.120	**0.032**	0.006	**0.002**	0.018	**0.005**	12	336
D5B	0.108	**0.029**	0.076	**0.020**	0.022	**0.006**	0.024	**0.006**	9	916
D6M	0.104	**0.027**	0.120	**0.032**	0.007	**0.002**	0.015	**0.004**	11	152
D6G	0.108	**0.029**	0.095	**0.025**	0.038	**0.010**	0.025	**0.006**	12	132
D6R	0.110	**0.029**	0.144	**0.038**	0.013	**0.003**	0.023	**0.006**	13	32
D7G	0.110	**0.029**	0.070	**0.019**	0.034	**0.009**	0.046	**0.012**	14	560
D7R	0.110	**0.029**	0.129	**0.034**	0.019	**0.005**	0.030	**0.008**	10	20
D8R	0.129	**0.034**	0.144	**0.038**	0.015	**0.004**	0.038	**0.010**	13.7	580
D9R	0.181	**0.048**	0.163	**0.043**	0.015	**0.004**	0.038	**0.010**	13.3	580
D10R	0.242	**0.064**	0.189	**0.050**	0.022	**0.006**	0.054	**0.014**	13.3	628
D11R	0.424	**0.112**	0.344	**0.091**	0.030	**0.008**	0.102	**0.027**	13.3	816
Agricultural Tractors										
D4E SR	0.038	**0.010**	0.039	**0.010**	0.018	**0.005**	0.011	**0.003**	11	864
D6G SR	0.109	**0.029**	0.045	**0.012**	0.038	**0.010**	0.024	**0.006**	13	428
Challenger 35	0.130	**0.034**	0.121	**0.032**	***	***	***	***	10	320
Challenger 45	0.130	**0.034**	0.121	**0.032**	***	***	***	***	10	320
Challenger 55	0.130	**0.034**	0.121	**0.032**	***	***	***	***	10	320
Challenger 65E	0.104	**0.027**	0.055	**0.015**	0.197	**0.052**	0.110	**0.029**	14	12
Challenger 75E	0.136	**0.036**	0.055	**0.015**	0.197	**0.052**	0.120	**0.032**	14	12
Challenger 85E	0.136	**0.036**	0.055	**0.015**	0.197	**0.052**	0.120	**0.032**	14	12
Challenger 95E	0.136	**0.036**	0.055	**0.015**	0.197	**0.052**	0.120	**0.032**	14	12
Motor Graders										
120H	0.092	**0.024**	0.047	**0.012**	0.049	**0.013**	0.019	**0.005**	12	876
135H	0.092	**0.024**	0.047	**0.012**	0.061	**0.016**	0.019	**0.005**	12	876
12H	0.108	**0.029**	0.047	**0.012**	0.065	**0.017**	0.019	**0.005**	12	876
140H	0.108	**0.029**	0.047	**0.012**	0.065	**0.017**	0.019	**0.005**	12	876
143H	0.108	**0.029**	0.047	**0.012**	0.065	**0.017**	0.019	**0.005**	12	876
160H	0.108	**0.029**	0.047	**0.012**	0.080	**0.021**	0.019	**0.005**	12	876
163H	0.108	**0.029**	0.047	**0.012**	0.080	**0.021**	0.019	**0.005**	12	876
14H	0.108	**0.029**	0.083	**0.022**	0.098	**0.026**	0.032	**0.015**	12	916
16H	0.136	**0.036**	0.140	**0.037**	0.121	**0.032**	0.032	**0.015**	12	916
24H	0.272	**0.072**	0.224	**0.060**	0.330	**0.087**	0.127	**0.034**	20	2056

*Total number of lubricant changes (crankcase, transmission, final drives and hydraulic) over a 2000 hour period. Total may vary depending upon the sulfur content of your diesel fuel. Always consult your machine's Lube and Maintenance Guide.

**Total number of grease fittings you can expect to service over a 2000 hour period. Total can vary depending upon how your machine is equipped.

***Common sump with transmission.

NOTE: These figures are based upon machines operating in ideal conditions without *loss* of lubricants. They were computed by dividing recommended change intervals (in hours) into tank capacity. Make-up quantities are *not* included in these computations.

APPROXIMATE HOURLY CONSUMPTION OF LUBRICANTS

Model	Crankcase		Transmission†		Final Drives††		Hydraulic Control		Lubricant Changes*	Grease Fittings**
Excavators & Front Shovels	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**		
301.5	**	**	**	**	**	**	**	**	**	**
307	0.041	**0.011**	—	—	0.003	**0.001**	0.053	**0.014**	15	777
307B	0.032	**0.008**	—	—	0.003	**0.001**	0.047	**0.012**	15	969
307B SB	0.032	**0.008**	—	—	0.003	**0.001**	0.047	**0.012**	15	1067
311B	0.059	**0.016**	—	—	0.005	**0.001**	0.079	**0.021**	15	863
312B	0.059	**0.016**	—	—	0.005	**0.001**	0.081	**0.021**	15	863
312B L	0.060	**0.016**	—	—	0.005	**0.001**	0.094	**0.025**	15	863
312B/312B L*	0.017	**0.004**	—	—	0.005	**0.001**	0.076	**0.020**	11	863
315B	0.059	**0.016**	—	—	0.005	**0.001**	0.094	**0.025**	15	912
315B L*	0.034	**0.009**	—	—	0.006	**0.001**	0.094	**0.025**	14	912
318B L/318B LN	0.059	**0.016**	—	—	0.005	**0.001**	0.094	**0.025**	15	912
M312	0.034	**0.009**	0.03	**0.008**	0.008	**0.002**	0.058	**0.015**	17	1088
M315	0.034	**0.009**	0.03	**0.008**	0.008	**0.002**	0.058	**0.015**	17	1088
M318	0.080	**0.021**	0.03	**0.008**	0.008	**0.002**	0.067	**0.018**	17	1088
M320	0.080	**0.021**	0.03	**0.008**	0.008	**0.002**	0.067	**0.018**	17	1088
320B (3066)	0.092	**0.024**	—	—	0.020	**0.005**	0.110	**0.029**	15	912
320 (3116)	0.084	**0.022**	—	—	0.020	**0.005**	0.096	**0.025**	11	910
322B	0.086	**0.023**	—	—	0.020	**0.005**	0.133	**0.035**	14	910
325B	0.080	**0.021**	—	—	0.016	**0.004**	0.155	**0.041**	14	910
330B	0.120	**0.032**	—	—	0.030	**0.007**	0.200	**0.053**	14	926
345B	0.136	**0.036**	—	—	0.030	**0.007**	0.260	**0.069**	14	926
350	0.120	**0.032**	—	—	0.016	**0.004**	0.265	**0.070**	12	1975
375	0.260	**0.069**	—	—	0.050	**0.013**	0.498	**0.132**	14	1991
5080 FS	0.260	**0.069**	—	—	0.050	**0.013**	0.498	**0.132**	11	1492
5130B FS	0.364	**0.096**	0.077	**0.020**	0.392	**0.103**	0.600	**0.159**	20	Auto-Lube*
5130B ME	0.364	**0.096**	0.077	**0.020**	0.392	**0.103**	0.600	**0.159**	20	2800 + Auto-Lube*
5230 FS	0.760	**0.200**	0.090	**0.024**	0.499	**0.131**	0.830	**0.169**	22	Auto-Lube*
5230 ME	0.760	**0.200**	0.090	**0.024**	0.499	**0.131**	0.830	**0.169**	22	2800 + Auto-Lube*

*****France sourced.
******Insufficient data.
NOTE: ME includes manual hose reel for bucket pin lube.

AUTO LUBE* APPROXIMATE HOURLY CONSUMPTION OF GREASE

Model	Kg/hr Grease	lb./hr Grease	Grease Canister Refills*	Auto Lube Interval (minutes)	Number Of Injectors	Grease Canister Size (lb.)
5130B FS	0.34	0.75	13	10	48	120
5130B ME	0.27	0.60	10	10	36	120
5230 FS	0.47	1.04	5	10	48	400
5230 ME	0.33	0.73	4	10	38	400

*****Total number of times you can expect to refill the auto lube grease canister in a 2000 hour period.
NOTE: These figures are based on auto lube system as set from the factory.

APPROXIMATE HOURLY CONSUMPTION OF LUBRICANTS

Model	Crankcase		Transmission†		Final Drives††		Hydraulic Control		Lubricant Changes*	Grease Fittings**
Backhoe Loaders	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**		
416C	0.017	**0.004**	0.010	**0.002**	0.018	**0.005**	0.015	**0.004**	11	8012
426C	0.017	**0.004**	0.010	**0.002**	0.018	**0.005**	0.015	**0.004**	11	8012
428C	0.017	**0.004**	0.010	**0.002**	0.018	**0.005**	0.015	**0.004**	11	8012
436C	0.017	**0.004**	0.010	**0.002**	0.018	**0.005**	0.015	**0.004**	11	8012
438C	0.017	**0.004**	0.010	**0.002**	0.018	**0.005**	0.015	**0.004**	11	8012
446B	0.027	**0.006**	0.026	**0.005**	0.029	**0.008**	0.022	**0.006**	11	8092

*Total number of lubricant changes (crankcase, transmission, final drives and hydraulic) over a 2000 hour period. Total may vary depending upon the sulfur content of your diesel fuel. Always consult your machine's Lube and Maintenance Guide.
**The number shown here refers to the total number of grease fittings you can expect to service over a 2000 hour period. Total can vary depending upon how your machine is equipped.
†Includes hydraulic pump drive (Excavators).
††Includes travel drives and swing drive (Excavators).

APPROXIMATE HOURLY CONSUMPTION OF LUBRICANTS

Model	Crankcase		Transmission		Final Drives†		Hydraulic Control††		Lubricant Changes*	Grease Fittings**
Skidders	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**		
515/525	0.076	**0.020**	0.053	**0.014**	0.045	**0.012**	0.034	**0.009**	13	2436
528B	0.113	**0.030**	0.032	**0.008**	0.032	**0.008**	0.023	**0.006**	12	584
517	0.034	**0.009**	0.117	**0.031**	0.014	**0.003**	0.023	**0.006**	12	2336
527	0.044	**0.011**	0.132	**0.034**	0.014	**0.003**	0.034	**0.009**	11	2152
Pipelayers										
561M	0.102	**0.027**	0.106	**0.028**	0.006	**0.002**	0.030	**0.008**	16	3400
572G	0.132	**0.035**	0.117	**0.031**	0.038	**0.010**	0.072	**0.019**	13	3632
578	0.132	**0.035**	0.155	**0.041**	0.011	**0.003**	0.083	**0.022**	14	2268
589	0.171	**0.045**	0.167	**0.044**	0.023	**0.006**	0.114	**0.030**	16	2464
Wheel-Tractor Scrapers										
613C Series II	0.102	**0.027**	0.024	**0.009**	0.016	**0.004**	0.049	**0.013**	12	5820
615C Series II	0.094	**0.025**	0.034	**0.009**	0.030	**0.008**	0.079	**0.021**	12	9004
621F	0.106	**0.028**	0.083	**0.022**	0.106	**0.028**	0.068	**0.018**	13	1326
623F	0.106	**0.028**	0.083	**0.022**	0.106	**0.028**	0.068	**0.018**	13	5448
627F	0.250	**0.006**	0.144	**0.038**	0.098	**0.026**	0.072	**0.019**	22	1326
631E Series II	0.182	**0.048**	0.127	**0.033**	0.092	**0.024**	0.085	**0.022**	12	1368
633E Series II	0.182	**0.048**	0.127	**0.033**	0.092	**0.024**	0.085	**0.022**	12	5488
637E Series II	0.290	**0.077**	0.185	**0.049**	0.164	**0.043**	0.085	**0.022**	22	1368
651E	0.272	**0.072**	0.136	**0.036**	0.098	**0.026**	0.094	**0.025**	12	1552
657E	0.454	**0.120**	0.257	**0.048**	0.182	**0.048**	0.094	**0.025**	24	2088

*Total number of lubricant changes (crankcase, transmission, final drives and hydraulic) over a 2000 hour period. Total may vary depending upon the sulfur content of your diesel fuel. Always consult your machine's Lube and Maintenance Guide.
**The number shown here refers to the total number of grease fittings you can expect to service over a 2000 hour period. Total can vary depending upon how your machine is equipped.
†Includes differential (Construction & Mining Trucks/Tractors, Wheel Loaders and Articulated Trucks).
††Includes brakes, converter hoist system and steering system (Construction & Mining Trucks/Tractors).
NOTE: Lubricant changes shown for the tandem powered 627F, 637E Series II and 657E include both tractor and scraper engines.

APPROXIMATE HOURLY CONSUMPTION OF LUBRICANTS

Model	Crankcase		Transmission		Final Drives†		Hydraulic Control††		Lubricant Changes*	Grease Fittings**
Construction/Mining Trucks/Tractors	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal	liter	U.S. gal		
769D	0.182	**0.048**	0.083	**0.022**	0.083	**0.022**	0.276	**0.073**	20	552
771D	0.182	**0.048**	0.083	**0.022**	0.083	**0.022**	0.276	**0.073**	20	552
773D	0.273	**0.072**	0.083	**0.022**	0.155	**0.041**	0.276	**0.073**	20	552
775D	0.273	**0.072**	0.083	**0.022**	0.155	**0.041**	0.276	**0.073**	20	552
776D	0.500	**0.132**	0.083	**0.022**	0.326	**0.086**	0.302	**0.080**	20	1056
777D	0.500	**0.132**	0.083	**0.022**	0.326	**0.086**	0.302	**0.080**	20	632
784C	0.531	**0.140**	0.076	**0.020**	0.292	**0.077**	0.337	**0.101**	16.7	Auto Lube*
785C	0.531	**0.140**	0.076	**0.020**	0.292	**0.077**	0.337	**0.101**	16.7	Auto Lube*
789C	0.796	**0.210**	0.076	**0.020**	0.375	**0.099**	0.531	**0.157**	16.7	Auto Lube*
793C	0.584	**0.154**	0.076	**0.020**	0.445	**0.118**	0.580	**0.170**	12.7	Auto Lube*

*Total number of lubricant changes (crankcase, transmission, final drives and hydraulic) over a 2000 hour period. Total may vary depending upon the sulfur content of your diesel fuel. Always consult your machine's Lube and Maintenance Guide.

**The number shown here refers to the total number of grease fittings you can expect to service over a 2000 hour period. Total can vary depending upon how your machine is equipped.

†Includes differential (Construction & Mining Trucks/Tractors, Wheel Loaders and Articulated Trucks).

††Includes brakes, converter hoist system and steering system (Construction & Mining Trucks/Tractors).

NOTE: Lubricant changes shown for the tandem powered 627F, 637E Series II and 657E include both tractor and scraper engines.

AUTO LUBE* APPROXIMATE HOURLY CONSUMPTION OF GREASE

Model	Kg/hr Grease	lb./hr Grease	Grease Canister Refills*	Auto Lube Interval (minutes)	Number Of Injectors	Grease Canister Size (lb.)
784C/785C	0.022	0.010	1	60	27	60
789C	0.022	0.010	1	60	27	60
793C	0.023	0.011	1	60	29	60

***Total number of times you can expect to refill the auto lube grease canister in a 2000 hour period.

NOTE: These figures are based on auto lube system as set from the factory.

APPROXIMATE HOURLY CONSUMPTION OF LUBRICANTS

Model	Crankcase		Transmission		Final Drives†		Hydraulic Control††		Lubricant Changes*	Grease Fittings**
Articulated Trucks	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**	**liter**	**U.S. gal**		
D25D	0.110	**0.029**	0.065	**0.017**	0.080	**0.021**	0.135	**0.036**	16	2488
D30D	0.110	**0.029**	0.065	**0.017**	0.085	**0.022**	0.135	**0.036**	16	3688
D250E	0.110	**0.029**	0.060	**0.016**	0.093	**0.025**	0.100	**0.026**	20	1664
D300E	0.110	**0.029**	0.060	**0.016**	0.105	**0.028**	0.100	**0.026**	20	1664
D350E	0.136	**0.036**	0.130	**0.034**	0.193	**0.051**	0.133	**0.035**	20	4504
D400E	0.136	**0.036**	0.130	**0.034**	0.193	**0.051**	0.133	**0.035**	20	4504
Wheel Tractors & Compactors										
814F	0.113	**0.030**	0.060	**0.016**	0.051	**0.013**	0.043	**0.011**	12	192
815F	0.113	**0.030**	0.060	**0.016**	0.051	**0.013**	0.043	**0.011**	12	192
816F	0.113	**0.030**	0.060	**0.016**	0.051	**0.013**	0.043	**0.011**	12	192
824G	0.113	**0.030**	0.060	**0.016**	0.073	**0.019**	0.043	**0.011**	12	200
825G	0.113	**0.030**	0.060	**0.016**	0.096	**0.025**	0.043	**0.011**	12	200
826G	0.113	**0.030**	0.060	**0.016**	0.096	**0.025**	0.043	**0.011**	12	200
834B	0.166	**0.044**	0.102	**0.027**	0.102	**0.027**	0.121	**0.032**	12	318
836	***	***	***	***	***	***	***	***	***	***
844	0.288	**0.075**	0.070	**0.018**	0.218	**0.057**	0.152	**0.040**	15	266
854G	0.408	**0.108**	0.169	**0.045**	0.353	**0.093**	0.243	**0.054**	15	76
Wheel Loaders & Integrated Toolcarriers										
902	***	***	***	***	***	***	***	***	***	***
906	***	***	***	***	***	***	***	***	***	***
914G	0.014	**0.004**	0.069	**0.018**	0.013	**0.004**	—	—	7	600
IT14G	0.014	**0.004**	0.069	**0.018**	0.013	**0.004**	—	—	7	600
924F	0.040	**0.010**	0.023	**0.006**	0.020	**0.006**	0.026	**0.007**	12	404
IT24F	0.040	**0.010**	0.023	**0.006**	0.020	**0.006**	0.026	**0.007**	12	584
928G	0.080	**0.021**	0.034	**0.009**	0.026	**0.007**	0.035	**0.009**	12	444
IT28G	0.080	**0.021**	0.034	**0.009**	0.026	**0.007**	0.035	**0.009**	12	784
938G	0.081	**0.021**	0.026	**0.008**	0.030	**0.008**	0.023	**0.006**	13	444
IT38G	0.081	**0.021**	0.026	**0.008**	0.030	**0.008**	0.150	**0.006**	13	444
950G	0.120	**0.032**	0.034	**0.009**	0.030	**0.008**	0.038	**0.010**	13	392
962G, IT62G	0.160	**0.043**	0.034	**0.009**	0.036	**0.010**	0.038	**0.010**	13	392
966F Series II	0.114	**0.030**	0.045	**0.012**	0.050	**0.014**	0.070	**0.019**	13	432
970F	0.116	**0.031**	0.046	**0.013**	0.050	**0.014**	0.070	**0.019**	13	432
980G	0.136	**0.036**	0.058	**0.016**	0.084	**0.022**	0.100	**0.028**	15	714
988F Series II	0.168	**0.044**	0.070	**0.018**	0.136	**0.035**	0.118	**0.031**	14	198
990 Series II	0.288	**0.075**	0.070	**0.018**	0.218	**0.057**	0.152	**0.040**	15	266
992G	0.408	**0.108**	0.169	**0.045**	0.353	**0.093**	0.243	**0.054**	15	76
994	0.800	**0.208**	0.291	**0.076**	0.621	**0.164**	0.450	**0.119**	17	3694
Telehandlers										
TH62	0.031	**0.008**	0.012	**0.003**	0.011	**0.003**	0.095	**0.025**	17	1032
TH63	0.031	**0.008**	0.012	**0.003**	0.011	**0.003**	0.095	**0.025**	17	1032
TH82	0.031	**0.008**	0.012	**0.003**	0.011	**0.003**	0.095	**0.025**	17	1032
TH83	0.031	**0.008**	0.012	**0.003**	0.011	**0.003**	0.095	**0.025**	17	1032
Track Loaders										
933C	0.048	**0.012**	0.014	**0.004**	0.008	**0.002**	0.026	**0.007**	14	720
939C	0.049	**0.013**	0.015	**0.004**	0.008	**0.002**	0.026	**0.007**	16	720
953C	0.084	**0.022**	0.033	**0.007**	0.015	**0.004**	0.033	**0.009**	8	832
963B	0.084	**0.022**	0.036	**0.009**	0.014	**0.004**	0.034	**0.009**	8	828
973	0.110	**0.029**	0.031	**0.008**	0.029	**0.008**	0.030	**0.008**	8	828

*Total number of lubricant changes (crankcase, transmission, final drives and hydraulic) over a 2000 hour period. Total may vary depending upon the sulfur content of your diesel fuel. Always consult your machine's Lube and Maintenance Guide.

**The number shown here refers to the total number of grease fittings you can expect to service over a 2000 hour period. Total can vary depending upon how your machine is equipped.

***Insufficient data.

†Includes differential (Construction & Mining Trucks/Tractors, Wheel Loaders and Articulated Trucks).

††Includes brakes, converter hoist system and steering system (Construction & Mining Trucks/Tractors).

GUIDE FOR ESTIMATING LOCAL HOURLY COST OF FILTERS

The approximate hourly filter costs at right were determined by using the following formula:

Filters	Change Interval*	#Filters	Cost**	#Filters/ 2000 hr.	Total Cost
Engine	250 hr.	_____	$_____	_____	$_____
Transmission	500	_____	_____	_____	_____
Hydraulic	500	_____	_____	_____	_____
Fuel — primary	2000	_____	_____	_____	_____
— final	500	_____	_____	_____	_____
Air — primary	2000	_____	_____	_____	_____
— secondary	1000	_____	_____	_____	_____

Total Filter Cost/2000 hr. = $_____

Total Cost $_____ ÷ 2000 hr. = $_____ Hourly Filter Cost.

*Recommended change interval may vary with machine and sulfur content of diesel fuel. Always consult Lube & Maintenance Guide.

**Cost of filter is suggested consumer list price. For the small excavators and the 613C, we assumed an average of $6.50 per filter.

NOTE: The approximate hourly filter costs do *not* include labor. To determine your labor cost you can apply your hourly labor rate to 5 minutes per each filter change. For example, if your labor rate is $50.00 per hour then your labor cost for one filter change would be $4.17.

Model	Approx. Hourly Filter Cost	Filters◀
Track-Type Tractors		
D3C Series III	0.08	23
D4C Series III	0.08	23
D5C Series III	0.08	23
D4E	0.09	23
D5M	0.25	35
D5B	0.11	26
D6M	0.27	35
D6G	0.09	24
D6R	0.13	24
D7G	0.10	24
D7R	0.08	24
D8R	0.35	33
D9R	0.47	51
D10R	0.52	47
D11R	0.62	53

Model	Approx. Hourly Filter Cost	Filters◀
Agricultural Tractors		
D4E SR	0.09	23
D6G SR	0.12	27
Challenger 35	0.42	37
Challenger 45	0.42	37
Challenger 55	0.42	37
Challenger 65E	0.64	36
Challenger 75E	0.64	36
Challenger 85E	0.72	36
Challenger 95E	0.72	36
Motor Graders		
120H	0.16	26
135H	0.16	26
12H	0.12	22
140H	0.12	22
143H	0.19	26
160H	0.12	22
163H	0.19	26
14H	0.12	22
16H	0.16	22
24H	0.67	58

Model	Approx. Hourly Filter Cost	Filters◀
Backhoe Loaders		
416C	0.16	16
426C	0.16	16
428C	0.16	16
436C	0.16	16
438C	0.16	16
446B	0.17	16
Skidders		
515/525	0.21	30
528B	0.10	24
D4H TSK	0.09	24
527	0.10	24
Pipelayers		
561M	0.25	35
572G	0.20	27
578	0.31	33
589	0.39	43
5000 Series		
5130B	0.89	88
5230	1.49	140
Wheel Tractor-Scrapers		
613C Series II	0.12	28
615C Series II	0.12	24
621E	0.21	38
623E	0.21	38
627E	0.31	52
631E Series II	0.25	40
633E Series II	0.25	40
637E Series II	0.34	59
651E	0.27	44
657E	0.52	80
Construction & Mining Trucks & Tractors		
769D, 771D	0.31	43
773D, 775D	0.32	47
776D, 777D	0.42	50
784C	0.61	80
785C	0.61	80
789C	0.76	88
793C	0.72	72
Telehandlers		
TH62	0.23	22
TH63	0.23	22
TH82	0.23	22
TH83	0.23	22
TH103	*	*

Model	Approx. Hourly Filter Cost	Filters◀
Articulated Trucks		
D25D	0.17	32
D30D	0.17	32
D250E	0.15	28
D300E	0.15	28
D350E	0.17	32
D400E	0.25	40
Wheel Tractors & Compactors		
814F	0.13	28
815F, 816F	0.14	28
824G, 825G 826G	0.18	28
834B	0.26	36
844	*	*
854G	*	*
836	*	*
Wheel Loaders & Integrated Toolcarriers		
902	*	*
906	*	*
914G	0.27	23
IT14G	0.27	23
924F	0.15	24
IT24F	0.15	24
928G	0.24	26
IT28G	0.24	26
938G	0.24	24
IT38G	0.14	24
950G	0.14	34
962G, IT62G	0.14	34
966F Series II	0.18	45
970F	0.18	45
980G	0.26	46
988F Series II	0.39	51
990 Series II	0.43	56
992G	0.70	47
994	1.31	94
Track Loaders		
933C	0.08	28
939C	0.08	30
953C	0.11	24
963B	0.09	19
973	0.09	20

*Insufficient data.

◀Total number of filters changed over a 2000 hour period. Includes engine crankcase, transmission, hydraulic, fuel (primary and final) and air (primary and secondary). Some models include coolant conditioner and air filters. Telehandlers do not include air filters.

GUIDE FOR ESTIMATING LOCAL HOURLY COST OF FILTERS

The approximate hourly filter costs at right were determined by using the following formula:

Filters	Interval*	Change #Filters	Cost**	#Filters/ 2000 hr.	Total Cost
Engine	250 hr.	_____	$_____	_____	$_____
Transmission	500	_____	_____	_____	_____
Hydraulic	500	_____	_____	_____	_____
Fuel — primary	2000	_____	_____	_____	_____
— final	500	_____	_____	_____	_____
Air — primary	2000	_____	_____	_____	_____
— secondary	1000	_____	_____	_____	_____

Total Filter Cost/2000 hr. = $_____

Total Cost $_____ ÷ 2000 hr. = $_____ Hourly Filter Cost.

*Recommended change interval may vary with machine and sulfur content of diesel fuel. Always consult Lube & Maintenance Guide.
**Cost of filter is suggested consumer list price.

NOTE: The approximate hourly filter costs at right do *not* include labor. To determine your labor cost you can apply your hourly labor rate to 5 minutes per each filter change. For example, if your labor rate is $50.00 per hour then your labor cost for one filter change would be $4.17.

Model	Filters◀
301.5	**
307	40
307B	26
311B	29
312B (3064)	29
312B (3054)	27
315B	29
315B L (3054)	30
318B L	29
318B L*	32
M312	14
M315	16
M318	20

Model	Filters◀
M320	20
320B (3066)	32
320 (3116)	26
322B	38
325B	38
330B	30
345B	38
350	30
375	51
5080	51
5130B	88
5230	140

*France sourced.
**Insufficient data.
◀Total number of filters changed over a 2000 hour period. Includes engine crankcase, transmission, hydraulic, fuel (primary and final) and air (primary and secondary).

TOTAL NUMBER OF FILTERS CHANGED OVER 2000 Hr

Model	307B	311B	312B (3064)	312B (3054)	315B	315B L (3054)	318B L	318B L (3046)	M312	M315	M318	M320	320B (3066)	320 (3116)	322B	325B	330B	345B	350	375	5080
Filter																					
Engine																					
Fuel	5	5	5	4	5	4	5	5	4	4	8	8	5	8	4	4	4	4	4	8	8
Oil	9	9	9	5	9	8	9	9	8	8	8	8	9	8	8	8	8	8	8	8	8
Air Cleaner	1	1	1	4	1	4	1	4	0	0	0	0	4	0	4	4	4	4	4	4	4
Water Separater	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	8	—	8	—	—	—
Hydraulic																					
Return	5	3	3	3	3	3	3	3	1	2	2	2	3	5	3	3	3	3	3	15	15
Drain	—	5	5	5	5	5	5	5	—	—	—	—	5	—	5	5	5	5	5	10	10
By-Pass	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pilot	5	5	5	5	5	5	5	5	1	2	2	2	5	5	5	5	5	5	5	5	5
Screen	1	1	1	1	1	1	1	1	—	—	—	—	1	—	1	1	1	1	1	1	1
Total Number Change	26	29	29	27	29	30	29	32	14	16	20	20	32	26	38	38	30	38	30	51	51

10a TIRES

(Line Item 10a)

Tire costs are an important part of the hourly cost of any wheel machine. The best estimate of this item is obtained when tire life figures based on experience 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 by stumps or sharpened tree limbs (Skidders) or rocks (Trucks, Loaders, etc.).
- Application Zones:

  Zone A: almost all tires actually wear through the tread from abrasion.

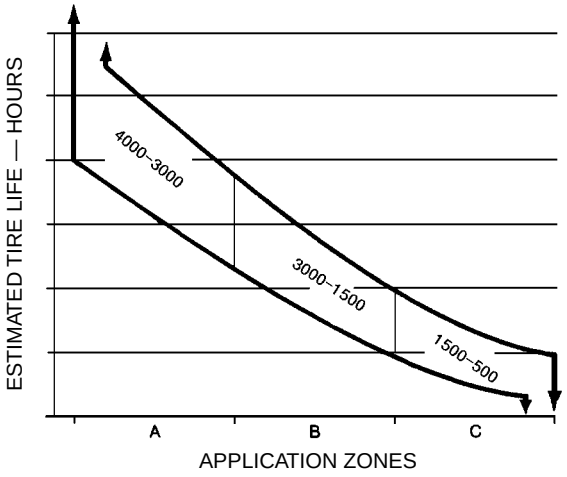
  Zone B: tires wear out normally but others fail prematurely due to rock cuts, impacts and non-repairable punctures.

  Zone C: few, if any, tires wear through the tread due to non-repairable damages, usually from rock cuts, impacts and continuous overloading.

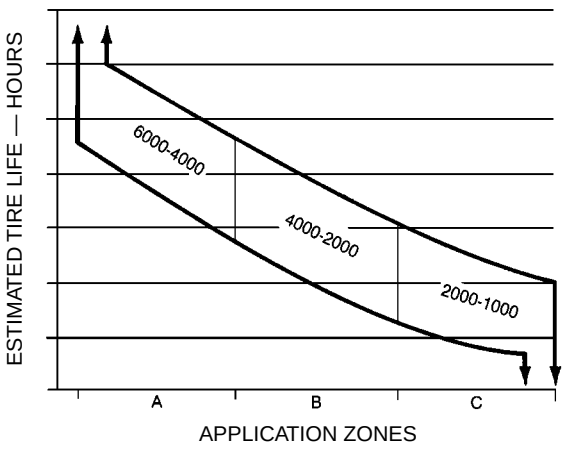
NOTE: Tire life can often be increased by using extra tread and extra deep tread tires.

NOTE: Premature failure could occur at any time due to puncture by stumps or sharpened tree limbs.

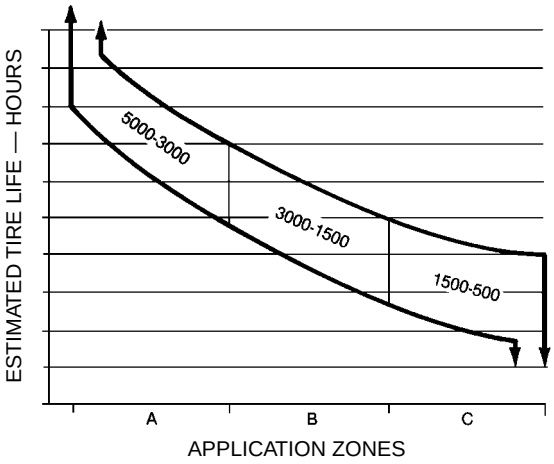
MOTOR GRADERS



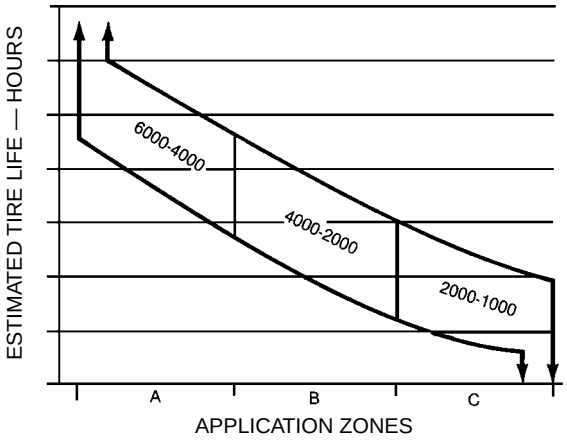
SKIDDERS



WHEEL TRACTOR-SCRAPERS



CONSTRUCTION & MINING TRUCKS



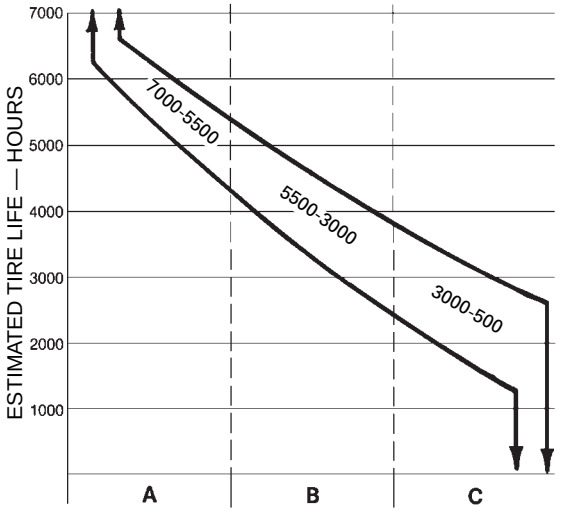
Key:

Zone A — Almost all tires actually wear through the tread due to abrasion.

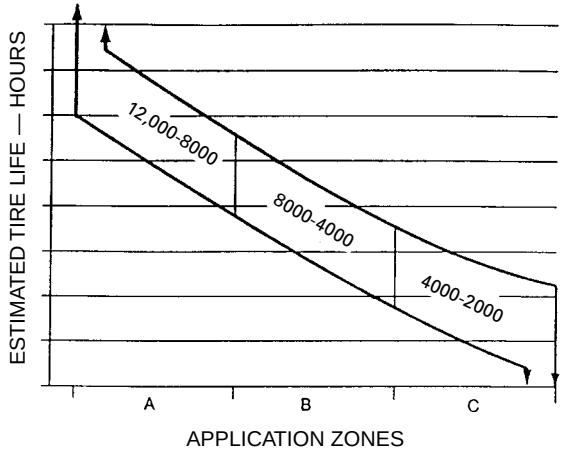
Zone B — Some tires wear out normally while others fail prematurely due to rock cuts, impacts and non-repairable punctures.

Zone C — Few, if any, tires wear through the tread because of non-repairable damages, usually from rock cuts, impacts or continuous overloading.

ARTICULATED TRUCKS



TRACTORS/WAGONS



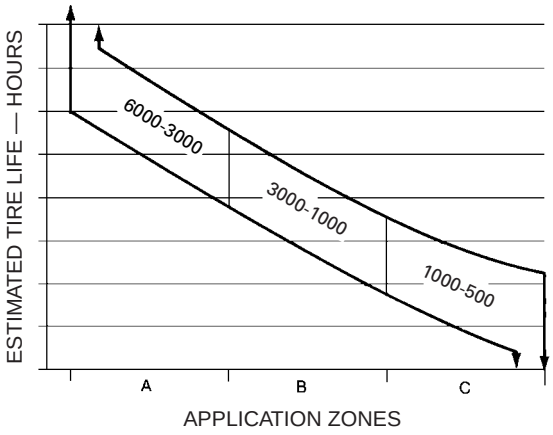
Key:

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.

WHEEL TRACTORS
WHEEL LOADERS



Application Tire Life	Tires Cost Per Hour - Basic Factors		
	Zone A 8000-5000	Zone B 5000-2500	Zone C 2500-500
Model 990 992 994	$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)**	
	10 mph ~ 16 km/h	1.090
	20 mph ~ 32 km/h	0.872
	30 mph ~ 48 km/h	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
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	Miles	km
E-3 Std. Bias Tread	2510	25,100	40 400
E-4 Bias Xtra Tread	3510	35,100	56 500
E-4 Radial Xtra Tread	4200	42,000	67 600

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: $0.981 \times 0.872 \times 0.981 \times 0.872 \times 0.872 \times 0.981 \times 0.981 \times 0.981 \times 3510$ 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 Item10b)

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 reserve for the basic machine. Notice that the repair reserves (Line Item11) DO NOT include provision for undercarriage replacement.

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 interference 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, 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%. Thus, even 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**
5230	19.0
D11R	17.0
5130B	15.0
D10R	12.5
D9R	10.0
D8R	8.5
973, 589, D7R LGP	9.0
D7R, 963B, 578, D6R LGP, D7R XR	8.0
375, 5080	6.4
D6R, 953C, 572, D6M LGP, D6R XL, D6R XR	6.2
345B, 350	5.3
D5M LGP, D6 SR, D6M XL, 517, 527	5.0
330B	4.4
D3C (All), D4C (All), D5C (All), 933 (All), 939, 561M	3.7
325B	3.4
315B, 318B L, 320B, 322B	3.0
D4 SR	2.5
307, 307B, 311B, 312B	2.2

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.

D10R Basic Factor = 12.5
Multipliers: I = 0.3
A = 0.1
Z = 0.5

Hourly undercarriage cost = 12.5 (0.3 + 0.1 + 0.5) = **$11.25/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 $40.00 (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 RESERVE

(Line Item 11)

Repairs 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 stairstep pattern since major outlays for repairs usually come in spurts. However, when broad averages are considered, the stairstep 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.

Machine applications, operating conditions and maintenance attention determine repair costs. In any specific application, actual cost experience on similar work provides the best basis for establishing the hourly repair reserve. When local records are inadequate or not available, the hourly repair reserve charts following this discussion may be used. Turn for a moment to these charts and examine their general format.

These average costs are taken from a variety of applications and every attempt was made to assure accuracy. Recognize that any one application may vary considerably from these averages. They are only marginally useful in predicting costs since few jobs are 'average'. The use of these averages would be especially questioned when special attachments such as rippers are used, and when a machine is moving from job to job. For these reasons, we suggest the use of these averages for comparative purposes and gross estimates only. Your Caterpillar dealer has the ability to make more accurate repair cost estimates and we suggest you use his experience and expertise if you need help in estimating operating costs.

Applying these basic factors and multipliers will result in the average hourly cost over the entire period. This should produce an excess in the early hours (or a "sinking fund") to cover normal increases in actual repair costs as the machine ages.

The cost applies to the machine as described in each individual chart, but does not cover the following:

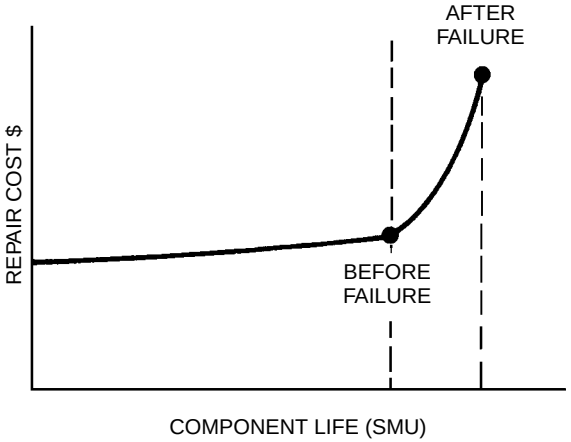
- Dozer blade (although hydraulics are included)
- Bucket (although hydraulics are included)
- Ground engaging tools
- Undercarriage
- Tires, Chopper Blades or Tamping Feet Assemblies and Rims

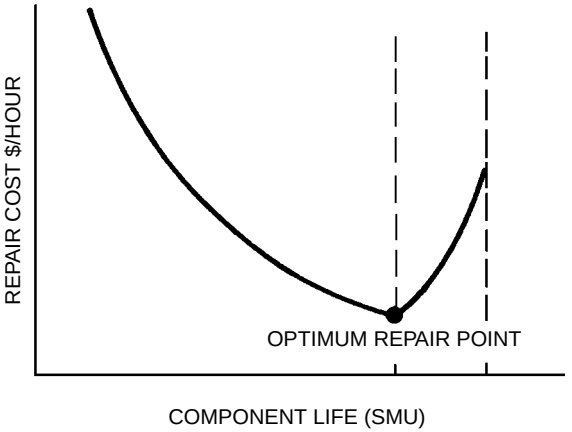
- Labor for daily and periodic maintenance
- Material/supply items for daily and periodic maintenance
- Fuel, oil and grease
- Service truck mileage costs
- Serviceman's travel costs
- Machine transportation to and from shop
- Cost of performing Technical Analysis or Scheduled Oil Sampling
- Operator
- Risk or insurance
- Parts and labor price escalation
- Attachments

The basic repair factors are based on the first 10,000 hours of service, parts at published U.S. Consumers List Prices, and labor at a total selling price of $40.00 (U.S.) per hour. Extended use multipliers are given for those cases where a machine is to be used beyond 10,000 hours; the adjusted cost-per hour will apply to the *entire* use period, not just the additional hours. For applications outside the United States where import duties and other expenses have a large effect on parts prices, and for other areas where labor charges (remember to include shop and tool overhead in addition to mechanic's wages!) differ greatly from the $40.00 base, an approximate breakdown of the total factor by percentages for parts and labor also are given. This breakdown should permit easy adjustment to local conditions.

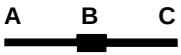
As stated, repair costs are affected by application, operation, maintenance, and age of the equipment. The most significant effects on cost will be those factors affecting major component life. A second significant factor is whether the repair is performed before or after catastrophic failure. Repair before a major component fails can be one-third of an after failure repair with only a moderate sacrifice in life (see graphs). Repairing a major component just prior to failure achieves optimum cost per hour. 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.

Another important factor in using repair reserve estimates is the Service Meter Unit (SMU) or hour basis. The cost estimate should be flexed depending on the machine's duty cycle. Fuel consumption is often a good indicator of duty cycle, and this factor may override the application zone. All of these factors are significant in estimating repair costs. Weigh them carefully prior to using the repair reserve tables.





INSTRUCTIONS — To estimate hourly repair costs, enter the chart for the machine in question and determine the basic factor for the applicable job conditions. Operating conditions zones for each bar are:



These generally conform to the definitions given earlier in the section on depreciation. If the unit is to be used more than 10,000 hours, apply the Extended-life Multiplier for that period.

Example:

1 — A 988F Wheel Loader loading well-shot rock on a hard, level quarry floor will be used for seven years or about 15,000 hours.

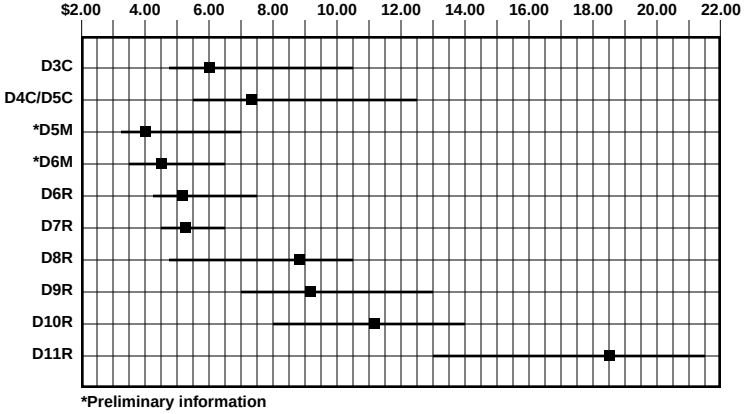
Basic Repair Factor = 9.50
Extended-life Multiplier = 1.10
Estimated Repair Cost = 9.50 × 1.10 =
$10.45/Hour

2 — A D6H is used about 1600 hours per year on general utility and clean-up work for a contractor who does not baby his equipment, but does insist on careful operation, and has an excellent preventive maintenance program. He intends to trade at the end of five years. He can be considered to be at the lower end of the "normal" or B zone, if not slightly less.

Basic Repair Factor = 4.50
Total Use:
5 years @ 1600 hr/yr = **8000** hours
Extended-use Multiplier = 1.0
Estimated Repair Cost = 4.50 × 1.0 =
$4.50/Hour

Repair Reserve charts follow …►

TRACK-TYPE TRACTORS



Cost distribution
D3 to D7 — 60% Parts
40% Labor
D8 to D11 — 70% Parts
30% Labor

Extended-life Multipliers

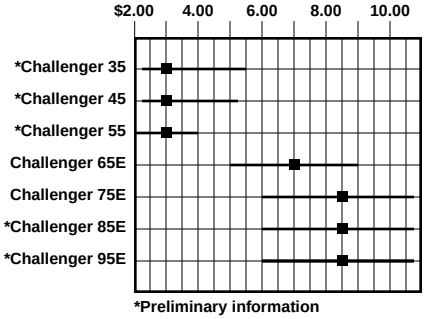
0-10,000 hours	1.0
0-15,000	1.1
0-20,000	1.3

Includes basic tractor equipped with ROPS canopy, straight bulldozer and hydraulic control.

NOTE: Repair time may be less on Elevated Sprocket Tractors due to modular design of power train components.

AGRICULTURAL TRACTORS (basic configuration)

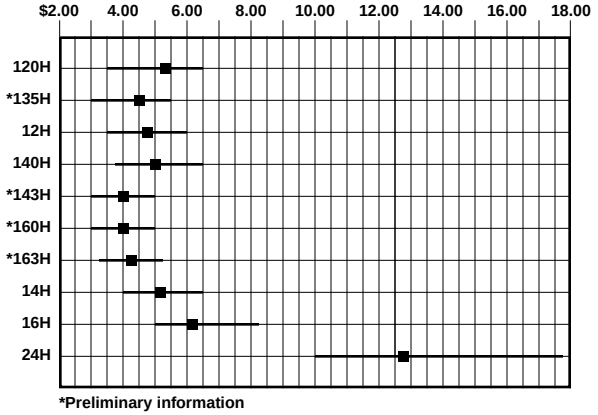
Cost distribution
60% Parts
40% Labor



MOTOR GRADERS

Cost distribution

120H Thru 135H	Extended-life Multipliers	
65% Parts	0-10,000 hours	1.00
35% Labor	0-15,000	1.00
	0-20,000	1.33
12H Thru 16H		
65% Parts	0-10,000 hours	1.00
35% Labor	0-15,000	1.20
	0-20,000	1.55
24H		
60% Parts	0-15,000 hours	0.78
40% Labor	0-20,000	1.00
	0-30,000	1.05
	0-40,000	1.20



Includes basic motor grader equipped with ROPS cab.

EXCAVATORS

Cost distribution
50% Parts
50% Labor

Extended-life Multipliers
(Not available)

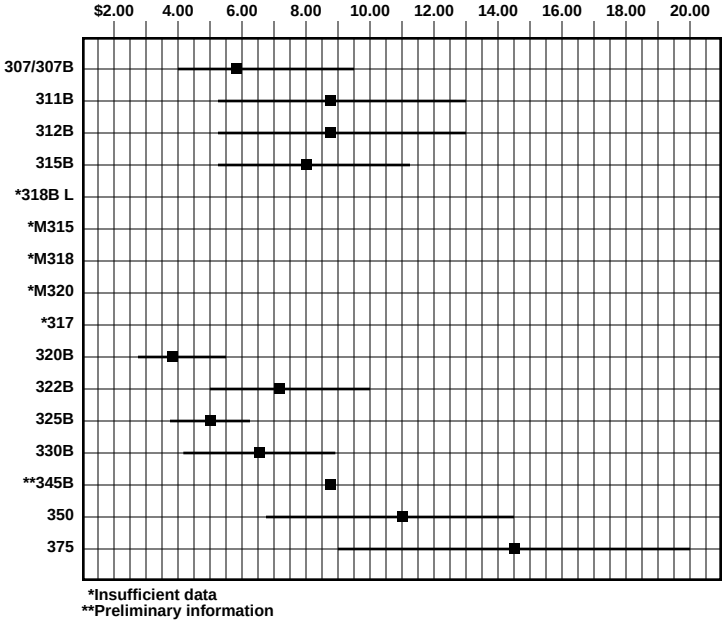
5130 & 5230

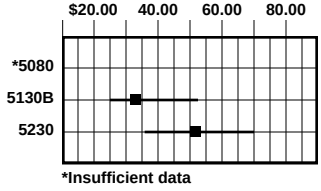
Cost distribution
70% Parts
30% Labor

Extended-life Multipliers

0-10,000 hours	0.40
0-20,000	0.80
0-30,000	1.00
0-40,000	1.21
0-60,000	1.25

Includes basic excavator equipped with largest bucket, one-piece boom and medium stick. Logger with standard feller buncher.



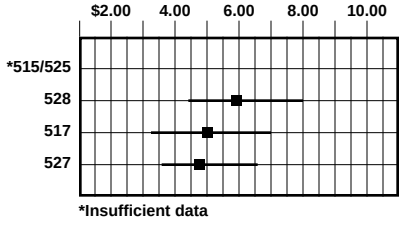


SKIDDERS

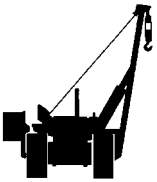
Cost distribution
55% Parts
45% Labor

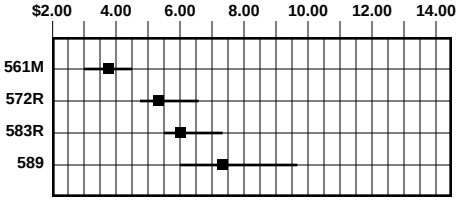
Extended-life Multipliers
(Not available)

Includes basic skidder equipped with ROPS canopy, arch, fairlead and winch. 518 Grapple skidders with Cat grapple, 530B Grapple skidder with AEM grapple.



PIPELAYERS



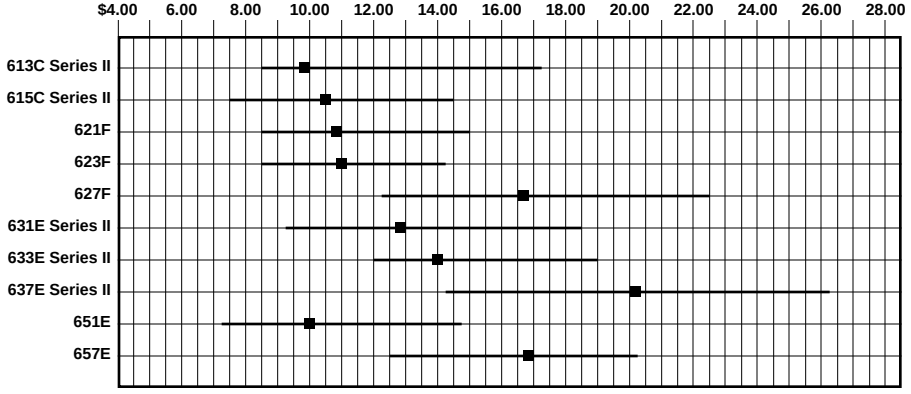


Cost distribution
60% Parts
40% Labor

Extended-life Multipliers
(Not available)

Includes basic pipelayer equipped with counterweight and boom.

WHEEL-TRACTOR SCRAPERS



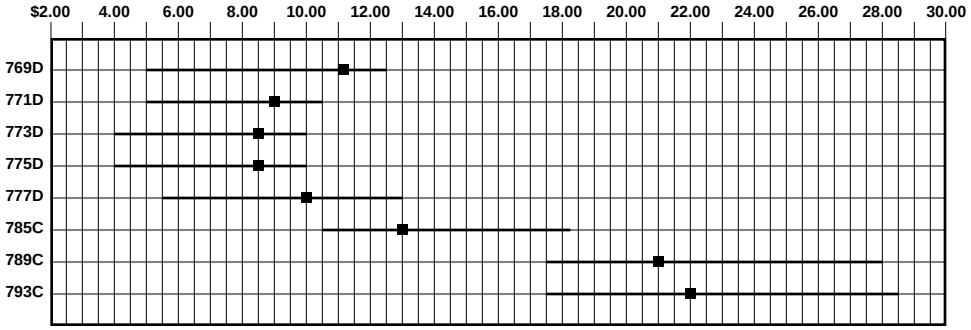
Cost distribution:
55% Parts
45% Labor

Extended-life Multipliers:

Period	Single-engine	Tandem & Elevator
0-10,000	1.00	1.00 (1.03 for Push-Pull)
1-15,000	1.06	1.08
0-20,000	1.21	1.24

Includes standard wheel tractor equipped with standard scraper.

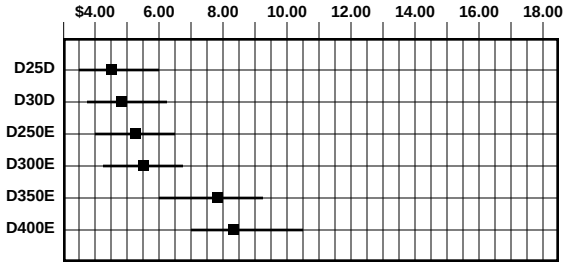
CONSTRUCTION & MINING TRUCKS



Cost distribution	Extended-life Multipliers	
769-777		
55% Parts	0-10,000 hours	0.20
45% Labor	0-20,000	1.00
785-793	0-30,000	1.18
70% Parts	0-40,000	1.50
30% Labor	0-60,000	1.50

Includes basic truck equipped with standard earth body (785/789 — Option I Body) without liners. Off-highway tractors' hourly repair costs are approximately 9% less than trucks.

ARTICULATED TRUCKS

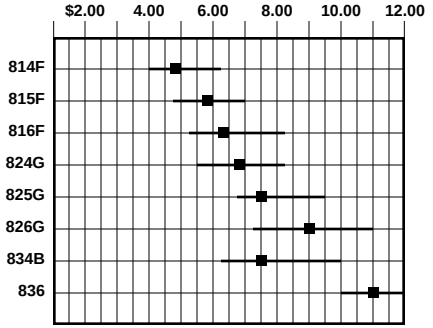


Cost distribution	Extended-life Multipliers	
55% Parts	0-10,000 hours	1.00
45% Labor	0-15,000	1.05
	0-20,000	Not Available

WHEEL TRACTORS & SOIL/LANDFILL COMPACTORS

Cost distribution
60% Parts
40% Labor

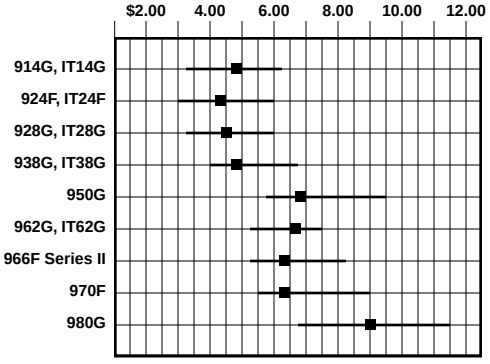
Extended-life Multipliers
(Not available)



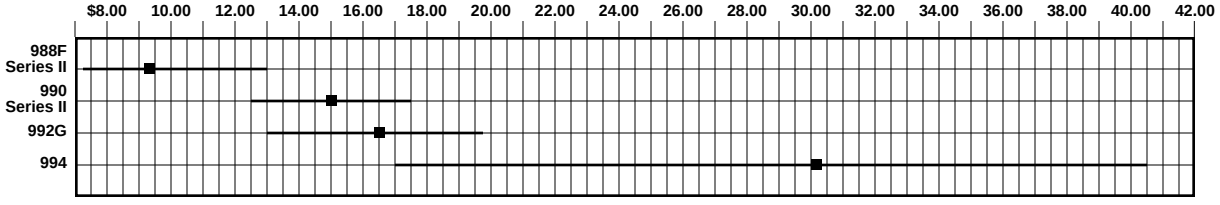
Includes: 814F, 824G & 834B — Basic tractor equipped with ROPS canopy and bulldozer.
815F & 825G — Basic compactor equipped with ROPS canopy and fill-spreading bulldozer.
816F & 826G — Basic Landfill Compactor equipped with ROPS cab and landfill bulldozer.

WHEEL LOADERS & INTEGRATED TOOLCARRIERS

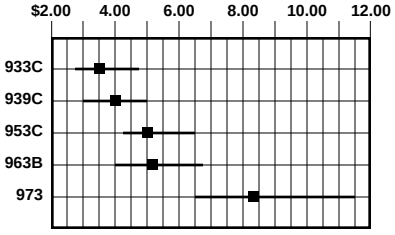
Cost distribution	Extended-life Multipliers	
914-992		
60% Parts	0-10,000 hours	1.00
40% Labor	0-15,000	1.10
994		
75% Parts	0-10,000	0.25
25% Labor	0-20,000	0.54
	0-30,000	1.00
	0-40,000	1.07
	0-60,000	1.25



Includes basic wheel loader equipped with ROPS cab and General Purpose bucket (988 and 992 with Spade nose rock bucket).



TRACK LOADERS



Cost distribution	Extended-life Multipliers	
55% Parts	0-10,000 hours	1.00
45% Labor	0-15,000	1.13

Includes basic track loader equipped with ROPS canopy and General Purpose bucket.

(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

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 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:

$$\frac{\left[\frac{7+1}{2\times 7}\times \$135{,}000\right]\times 0.16}{1{,}200} = \$10.29$$

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 18.1 liter/hr (4.8 U.S. gal/hr.). Cost of fuel in this locality is $0.34/liter ($1.25/U.S. gal.).

Consumption		Unit Cost		Total
18 liter/hr	×	$0.34 liter	=	$6.12
5 gal/hr	×	$1.25 gal.	=	$6.25

Enter this figure in space (I).

Lube Oils, Filters, Grease

For these items, you can use the lubricants consumption tables and the filter cost calculator for a detailed estimate, or you can obtain an estimate of the total of these items from the Quick Estimator table. We will assume local prices in this example are about the same as those used for the Quick Estimate Table and use this method. Assume the table shows an approximate hourly cost for lube oils, filters and grease (materials and labor) for this tractor of $0.46. Enter this figure in space (J).

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 6.2 for this tractor. It is anticipated that with some ripping on the job, impact loadings of the 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 latitude for flexibility is provided and was used in the above example. Such flexibility is intended and its use encouraged.

Then:

Cost per hour = Basic Factor × (I + A + Z)
Basic Factor = 6.2
Conditions Multipliers: I = 0.2
A = 0.2
Z = 0.3
Cost per hour 6.2 (0.2 + 0.2 + 0.3) = $4.34 which is entered in space (L).

Repairs

In determining the depreciation period, we established the intended use of the machine as a Zone B application. The Repair Reserve graph for track-type tractors indicates that the mid-range for our tractor is approximately 4.50 on the basis of 10,000 hours of use. The tractor is to be used over 8400 hours, so the Extended-life Multiplier in this case is 1.0.

Therefore, Repair Reserve = 1.0 × 4.50 = $4.50 per hour, which is entered in space (M).

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:

$$\frac{30 \text{ Hours}}{0.20} = \text{each 150 hours of tractor operation}$$

Shank protector life is estimated at three times tip life or 450 hours of tractor operation. In this medium duty application, no shank replacement is expected in the 8400 hour depreciation period of the tractor.

Cutting edge life is estimated to be 500 hours.

Using local prices for these items, hourly costs are estimated as follows:

$$\text{Tips: } \frac{3 \text{ @ } \$35.00 \text{ ea.}}{150 \text{ hr.}} = \$0.70 \text{ per hour}$$

$$\text{Shank Protectors: } \frac{3 \text{ @ } \$55.00 \text{ ea.}}{450 \text{ hr.}} = \$0.37 \text{ per hour}$$

$$\text{Cutting Edges: } \frac{\$125 \text{ per set}}{500 \text{ hr.}} = \$0.25 \text{ per hour}$$

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, $15.63, is entered in space (O), Total Hourly Operating Costs.

Operator's Hourly Wage

Assume this is $20.00 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, $57.65, 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 factor 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).

Lube Oils, Filters, Etc.

Use either the item-by-item worksheet or the summary tables. Enter the total item 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.

Repairs

Find the applicable basic repair factor for Zone B application from the bar charts (4.00). Again, the use period for the Wheel Loader is 7500 hours, so the Extended-life Multiplier is 1.0.

Therefore, Repair Reserve = 1.0 × 4.00 = $4.00 per hour.

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 Wages

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 _____

	(1)		(2)
Machine Designation	Track-type Tractor		Wheel Loader
Estimated Ownership Period (Years)	7		5
Estimated Usage (Hours/Year)	1200		1500
Ownership Usage (Total Hours)	8400		7500
OWNING COSTS	(1)		(2)
1. a. Delivered Price (including attachments)	135,000 (A)		70,000
b. Less Tire Replacement Cost if desired			4000
c. Delivered Price Less Tires	135,000		66,000
2. Less Residual Value at Replacement (See subsection 2A on back)	(35 %) 47,250 (B)	(48 %)	31,680
3. a. Value to be recovered through work (line 1c less line 2)	87,750 (C)		34,320
b. Cost Per Hour: Value / Hours (1) 87,750 / 8400 (2) 34,320 / 7500	10.45 (D)		4.58
4. Interest Costs: N = No. Yrs. $\frac{N+1}{2N} \times$ Del. Price $\times$ Simple Int. % Rate / Hours/Year =			
(1) $\frac{7+1}{14} \times \frac{135{,}000}{1200 \text{ Hours/Yr.}} \times 16\%$ = (2) $\frac{5+1}{10} \times \frac{66{,}000}{1500 \text{ Hours/Yr.}} \times 16\%$ =	10.29 (E)		4.22
5. Insurance: N = No. Yrs. $\frac{N+1}{2N} \times$ Del. Price $\times$ Insurance % Rate / Hours/Year =			
(1) $\frac{7+1}{14} \times \frac{135{,}000}{1200 \text{ Hours/Yr.}} \times 1\%$ = (2) $\frac{5+1}{10} \times \frac{66{,}000}{1500 \text{ Hours/Yr.}} \times 1\%$ =	0.64 (F)		0.26

Or

$ _____ Per Yr. ÷ _____ Hours/Yr. =

Estimating form continues next page

	(1)	(2)
6. Property Tax $\frac{N+1}{2N} \times$ Del. Price $\times$ Tax Rate % / Hours/Year =		
(1) $\frac{7+1}{14} \times \frac{135{,}000}{1200}$ Hours/Yr. $\times \frac{1}{\quad}$ % =	0.64 (G)	
(2) $\frac{5+1}{10} \times \frac{66{,}000}{1500}$ Hours/Yr. $\times \frac{1}{\quad}$ % =		0.26

Or

$ _____ 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: Unit Price × Consumption		
(1) 1.25 × 5 =	6.25 (I)	5.00
(2) 1.25 × _____ =		
9. Lube Oils, Filters, Grease: (See subsection 9A on back)	0.46 (J)	0.43
10. a. Tires: Replacement Cost ÷ Life in Hours		
Cost / Life (1) _____ (2) 4000 / 3500	(K)	1.14
b. Undercarriage (Impact + Abrasiveness + Z Factor) × Basic Factor		
(1) (0.2 + 0.2 + 0.3) = 0.7 × 6.2 =	4.34 (L)	
(2) (_____ + _____ + _____) = _____ (Total) × _____ (Factor) =		
11. Repair Reserve (Extended Use Multiplier × Basic Repair Factor)		
(1) 1.0 × 4.5 = (2) 1.0 × 4.00 =	4.50 (M)	4.00
12. Special Wear Items: Cost ÷ Life . . . . . (See subsection 12A on back)	1.32 (N)	0.60
13. TOTAL OPERATING COSTS (add lines 8, 9, 10a (or 10b), 11 and 12)	16.87 (O)	11.17
14. MACHINE OWNING PLUS OPERATING (add lines 7 and 13)	38.89	20.49
15. OPERATOR'S HOURLY WAGE (include fringes)	20.00 (P)	20.00
16. TOTAL OWNING AND OPERATING COST	58.89 (Q)	40.49

SUBSECTION 2A: Residual Value at Replacement

	(1) (___%)	(2) (___%)
Gross Selling Price	_____	_____
Less: a. Commission	_____	_____
b. Make-ready costs	_____	_____
c. Inflation during ownership period*	_____	_____
Net Residual Value (Enter on line 2)	47,250 (35 %)	31,680 (48 %) of original 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 9A: Lube Oils, Filters, Grease

	Unit Price	×	Consumption	=	Cost/Hour						
Engine	(1)_____	×	_____	=	_____	(2)_____	×	_____	=	_____
Transmission	_____	×	_____	=	_____	_____	×	_____	=	_____
Final Drives	_____	×	_____	=	_____	_____	×	_____	=	_____
Hydraulics	_____	×	_____	=	_____	_____	×	_____	=	_____
Grease	_____	×	_____	=	_____	_____	×	_____	=	_____
Filters	_____	×	_____	=	_____	_____	×	_____	=	_____
			Total	(1)	_____	(2)_____				

(Enter total on line 9 or use Quick Estimator Tables)

SUBSECTION 12A: Special Items
(cutting edges, ground engaging tools, bucket teeth, excavator stick repair, etc.)

(1)	Cost		Life		Cost/Hour	(2)				
1.	105	÷	150	=	0.70	1. _____	÷	_____	=	_____
2.	165	÷	450	=	0.37	2. _____	÷	_____	=	_____
3.	125	÷	500	=	0.25	3. _____	÷	_____	=	_____
4.	_____	÷	_____	=	_____	4. _____	÷	_____	=	_____
5.	_____	÷	_____	=	_____	5. _____	÷	_____	=	_____
6.	_____	÷	_____	=	_____	6. _____	÷	_____	=	_____
			Total	(1)	$1.32	(2) _____				

(Enter total on line 12)

REPAIR RESERVE CONVERSION FACTORS (line 11)

For use in countries outside the United States where parts and service costs might differ from those used in charts and tables:

Labor Rate Ratio (1) _____ (2) _____
Parts Cost Ratio (1) _____ (2) _____

QUICK ESTIMATOR HOURLY OWNING AND OPERATING COSTS

NOTE: Hourly Owning and Operating Costs for a given model of machinery vary widely because they are influenced by many factors: the type of work the machine does, local prices for fuel and lubricants, shipping costs from the factory, interest rates, operator's wages, tire or track life, rock versus earth, hours per year, etc. Use the following figures as QUICK GUIDELINES ONLY. When precise owning & operating cost estimates are required, calculate them using the format on the preceding pages and your particular conditions.

Quick estimator figures shown are based on the following assumptions:

- List prices f.o.b. factory.
- Machines equipped as indicated (certain attachments included may not be normal in some areas).
- Ownership period: Guide for selecting ownership period based on application and operating conditions.
- The basic repair factors are based on the first 10,000 hours of service.
- Parts at published U.S. Consumers List Prices.
- Labor for repairs at a total selling price of $50.00 (U.S.) per hour.
- MODERATE: Zone A, or moderate job conditions. Typical U.S.A. Auction Results for the machine used in computing resale and depreciation.
- AVERAGE: Zone B, or average job conditions. Typical U.S.A. Auction Results for the machine used in computing resale and depreciation.
- SEVERE: Zone C, or severe job conditions. Typical U.S.A. Auction Results for the machine used in computing resale and depreciation and is adjusted for machine condition.
- Lubricants and hydraulic oil at $6.35 per U.S. Gal. plus labor.
- Grease at $0.71 per fitting (includes labor).
- Filters at U.S. Consumer's List Prices plus labor.
- Fuel at $1.25 per U.S. Gal.
- Figures include average tire costs at 50% list price.
- ALL FIGURES EXCLUDE INTEREST, INSURANCE, TAXES AND OPERATOR (due to wide variance around the world).

Track-Type Tractors *Example equipment:* straight bulldozer with tilt cylinder, hydraulic control, ROPS canopy, crankcase and track roller guards, front pull hook, light system, and vandalism protection.

	O&O/hr.		
	Moderate	**Average**	**Severe**
D3C Series III	$ 9.00	$ 14.00	$ 22.00
D4C Series III	11.00	16.00	25.00
D5C Series III	12.00	16.00	25.00
D5M	20.00	25.00	30.00
D5B	18.00	21.00	35.00
D6M	25.00	31.00	37.00
D6G	23.00	30.00	50.00
D6R	27.00	35.00	43.00
D7G	32.00	41.00	63.00
D7R	36.00	46.00	56.00
D8R	46.00	61.00	73.00
D9R	69.00	86.00	107.00
D10R	86.00	104.00	131.00
D11R	120.00	135.00	165.00

Agricultural Tractors *Example equipment*: programmable monitor, 544 kg (1200 lb) front counterweight, additional light group, 132 Lpm (35 gpm) implement pump and high torque steering motor.

D4E SR	$15.00	$20.00	$30.00
D6G SR	22.00	29.00	45.00
Challenger 35	15.00	20.00	30.00
Challenger 45	18.00	23.00	33.00
Challenger 55	20.00	25.00	35.00
Challenger 65E	21.00	26.00	36.00
Challenger 75E	22.00	28.00	38.00
Challenger 85E	22.00	30.00	39.00
Challenger 95E	23.00	31.00	40.00

Motor Graders *Example equipment:* hydraulic sideshift with tip, ROPS cab, heater, front lights, vandalism protection.

	O&O/hr.		
	Moderate	**Average**	**Severe**
120H	$17.00	$22.00	$28.00
135H	18.00	23.00	29.00
12H	21.00	25.00	31.00
140H	22.00	26.00	33.00
143H	23.00	29.00	37.00
160H	23.00	29.00	37.00
163H	24.00	32.00	40.00
14H	27.00	35.00	46.00
16H	37.00	48.00	64.00
24H	55.00	71.00	87.00

Excavators, Feller Bunchers and Front Shovels *Example equipment:* largest undercarriage (or standard tires), largest bucket or standard feller buncher, medium stick, one-piece boom.

	Moderate	O&O/hr. Average	Severe
301.5	*	*	*
307B/307B SB	*	*	*
311B	*	*	*
312B	*	*	*
315B	*	*	*
318B L/318B LN	*	*	*
320B	$19.00	$22.00	$34.00
322B	19.00	25.00	38.00
325B	19.00	29.00	46.00
330B	27.00	32.00	51.00
345B	*	*	*
350	39.00	50.00	79.00
375	62.00	80.00	124.00
5080	65.00	83.00	130.00
5130B	*	*	*
5230	*	*	*

*Insufficient data.

Backhoe Loaders

	Moderate	O&O/hr. Average	Severe
416C	$14.00	$16.00	$20.00
426C	15.00	19.00	22.00
428C	15.00	19.00	22.00
436C	16.00	20.00	24.00
438C	18.00	21.00	25.00
446B	18.00	22.00	26.00

Skidders *Example equipment:* dual function arch, 100" sorting head, 30.5-32 tires, standard blade.

	Moderate	O&O/hr. Average	Severe
515	$18.00	$27.00	$37.00
525	19.00	28.00	40.00
528B	24.00	34.00	56.00
517	*	*	*
527	33.00	40.00	50.00

*Insufficient data.

Pipelayers *Example equipment:* front pull hook, lighting system and standard vandalism protection.

	Moderate	O&O/hr. Average	Severe
561M	$17.00	$20.00	$23.00
572R	30.00	36.00	54.00
583R	*	*	*
589	*	*	*

*Insufficient data.

Wheel-Tractor Scrapers *Example equipment:* standard tractor, standard scraper, standard tires.

	Moderate	O&O/hr. Average	Severe
613C Series II	$ 35.00	$ 44.00	$ 61.00
615C Series II	51.00	64.00	88.00
621F	45.00	60.00	94.00
623F	58.00	72.00	110.00
627F	61.00	80.00	118.00
627F PP	62.00	82.00	121.00
631E Series II	66.00	90.00	142.00
633E Series II	85.00	109.00	168.00
637E Series II	99.00	132.00	201.00
637E Series II PP	101.00	135.00	206.00
651E	74.00	98.00	151.00
657E	108.00	145.00	216.00
657PP	110.00	149.00	222.00

Construction & Mining Trucks and Tractors *Example equipment:* body liners on trucks, downshift inhibitor, standard E-3 tires, standard body (Option I — 785/789/793) with liners and standard tires. Tractors do not include trailer.

	Moderate	O&O/hr. Average	Severe
769D	$ 36.00	$ 45.00	$ 58.00
771D	37.00	46.00	58.00
773D	48.00	61.00	80.00
775D	50.00	63.00	82.00
776D	56.00	82.00	119.00
777D	58.00	80.00	109.00
784C	*	*	*
785C	76.00	102.00	138.00
789C	101.00	135.00	175.00
793C	121.00	161.00	206.00

*Insufficient data.

Articulated Trucks

	Moderate	O&O/hr. Average	Severe
D25D	$32.00	$37.00	$47.00
D30D	38.00	44.00	55.00
D250E	31.00	37.00	49.00
D300E	36.00	42.00	54.00
D350E	43.00	50.00	64.00
D400E	48.00	56.00	72.00

Wheel Tractors *Example equipment:* straight bulldozer, ROPS cab, lighting system, vandalism protection, standard tires.

	Moderate	O&O/hr. Average	Severe
814F	$28.00	$32.00	$48.00
824G	34.00	41.00	70.00
834B	51.00	58.00	92.00
844	*	*	*
854G	*	*	*

Compactors *Example equipment:* fill spreading bulldozer, ROPS canopy, lighting system, vandalism protection.

	Moderate	O&O/hr. Average	Severe
815F	$28.00	$34.00	$ 52.00
816F	32.00	38.00	52.00
825G	36.00	48.00	70.00
826C	48.00	56.00	82.00
836	56.00	74.00	104.00

Wheel Loaders *Example equipment:* 980 and up, standard ROPS sound suppressed cab, heater and air-conditioner. 966 and down, standard ROPS sound suppressed cab, standard tires and smallest bucket with teeth.

	Moderate	O&O/hr. Average	Severe
902	*	*	*
906	*	*	*
914G	$ 14.00	$ 15.00	$ 16.00
IT14G	14.00	15.00	16.00
924F	14.00	18.00	24.00
IT24F	15.00	20.00	25.00
928G	16.00	21.00	28.00
IT28G	18.00	24.00	30.00
938G	20.00	25.00	34.00
IT38G	*	*	*
950G	24.00	31.00	41.00
962G	25.00	32.00	44.00
966F Series II	31.00	41.00	62.00
970F	32.00	44.00	66.00
980G	38.00	54.00	75.00
988F Series II	60.00	81.00	109.00
990 Series II	75.00	100.00	140.00
992G	105.00	125.00	171.00
994	142.00	185.00	228.00

*Insufficient data.

Track Loaders *Example equipment:* canopy, track roller guards, front pull hook, lighting system, vandalism protection and GP bucket with teeth and segments.

	Moderate	O&O/hr. Average	Severe
933C	$12.00	$18.00	$26.00
939C	14.00	19.00	28.00
953C	21.00	30.00	41.00
963B	26.00	38.00	52.00
973	36.00	50.00	68.00

Paving Compactors *Example equipment:* standard equipment with working lights and all CP models equipped with leveling blades.

	Moderate	O&O/hr. Average	Severe
CB-214C	$ 5.00	$ 8.00	$11.00
CB-224C	8.00	11.00	18.00
CB-434C	15.00	20.00	24.00
CB-534C	18.00	24.00	26.00
CB-535B	18.00	24.00	26.00
CB-544	18.00	24.00	26.00
CB-545	18.00	24.00	26.00
CB-634C	20.00	26.00	29.00
CS-323C	11.00	18.00	22.00
CS-431C	15.00	19.00	24.00
CS-433C	16.00	22.00	31.00
CS-563C	14.00	29.00	36.00
CS-583C	16.00	29.00	36.00
CP-323C	16.00	22.00	30.00
CP-433C	18.00	29.00	35.00
CP-563C	25.00	32.00	42.00
CB-523	14.00	19.00	22.00
CB-525	14.00	19.00	22.00
PS-150	6.00	11.00	18.00
PS-200	8.00	14.00	18.00
PS-300B	12.00	18.00	22.00
PF-300B	12.00	18.00	22.00
PS-500	14.00	19.00	22.00

Road Reclaimer *Example equipment:* standard equipment with reclamation rotor.

	Moderate	O&O/hr. Average	Severe
RR-250B	$141.00	$167.00	$213.00
SS-250B	95.00	99.00	139.00
RM-350B	164.00	190.00	236.00

Cold Planers *Example equipment:* standard equipment with stated rotor size.

	O&O/hr. Moderate	Average	Severe
PM-465 (75" rotor)	$227.00	$291.00	$368.00
PM-565B (83" rotor)	270.00	346.00	437.00

PM-565B ESTIMATED* PRODUCTION TABLE (83" DRUM) LIGHT APPLICATION/ SOFT LIME STONE AGGREGATE/ $232.40/O&O COST PER HR.

Depth Of Cut	Travel Speed	Square Yards/ Hour (50 Min Hour)	Cost Per sq/yd	115 lbs/cu/ft 86 lbs/sq/ yd/inch/ depth US Tons
1"	130 FPM	4995	0.05	215
3"	90 FPM	3460	0.07	446
5"	60 FPM	2305	0.10	495
7"	35 FPM	1345	0.17	405
10"	25 FPM	960	0.24	413

MODERATE APPLICATION HARD LIMESTONE AGGREGATE $270.27/O&O COST PER HR.

Depth Of Cut	Travel Speed	Square Yards/ Hour (50 Min Hour)	Cost Per sq/yd	125 lbs/cu/ft 93.75 lbs/sq/ yd/inch/ depth US Tons
1"	100 FPM	3840	0.07	180
3"	70 FPM	2690	0.10	378
5"	40 FPM	1535	0.18	360
7"	30 FPM	1155	0.23	379
10"	20 FPM	770	0.35	361

SEVERE APPLICATION GRANITE/AGGREGATE $436.89/O&O COST PER HR.

Depth Of Cut	Travel Speed	Square Yards/ Hour (50 Min Hour)	Cost Per sq/yd	135 lbs/cu/ft 101.25 lbs/ sq/yd/ inch/depth US Tons
1"	70 FPM	2690	0.16	136
3"	50 FPM	1920	0.23	292
5"	30 FPM	1155	0.38	292
7"	25 FPM	960	0.45	340
10"	15 FPM	575	0.76	291

*Production and costs are estimates that are dependent on number of variables. Factors include, but are not limited to the following: percent asphalt, content, material density, ambient temperature, asphalt condition, aggregate type.

TIRES

CONTENTS

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 has proven to be more acceptable in more 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.

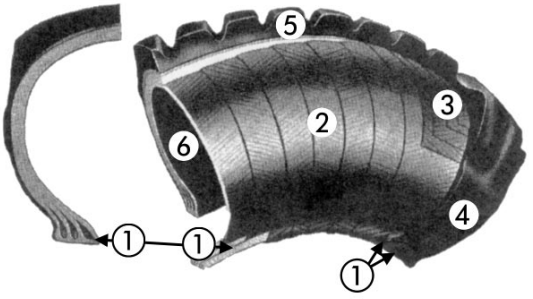
TIRE CONSTRUCTION

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

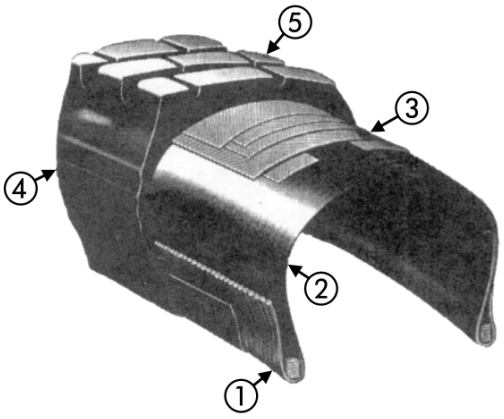
1. *Beads* — The tire beads consist of steel wire-bundles (3 or 4 in larger tires) which are forced laterally by tire inflation pressure to wedge the tire firmly on the rim's tapered bead seat. The nylon plies tie into the bead bundles. The forces inherent in the tire are transmitted from the rim through 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* — There are a few applications where tire life may be improved by using tubes and flaps (not shown).
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.

In actual practice there are few instances where it is necessary to apply a type of tire in an application not originally intended by the tire designer. More tires are now being designed for a wide range of applications.

TIRE SIZE NOMENCLATURE

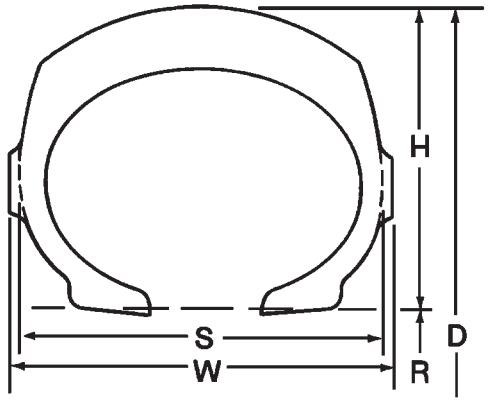
Tire size nomenclature is derived from the approximate cross section width and rim diameter with various systems being available:

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.



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

Tire and Rim Assoc. Code	Tread Type	FIRESTONE	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, VLT, VHB, VSB	XV, XL, XMP, XG, XH, XS, XR
E-3	Rock	Rock Grip Excavator Super Rock Grip E67 GSR	ND LCM CM 100 SL 100 XG-3 LCM	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+	R-Lug, W-Lug E-Lug, VE Block V-LUG 2, VMT, VEL, VRL	XK, XR XRDN XH XADN XADT XAD65-1 XHAD XZH
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 CRL 150 XG-4	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	XHDI, XDT XKDI XRS
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	SGG-2A SG-2B	Fast Grip, G-Lug VKT, VSW, VUT	XTL, XMPS, X SNOPLUS, XGL2, XR
G-3	Rock	Rock Grip Road Builder	ND LCM Grader	RKG-3A	R-Lug	XH, XHAD, XHF XLD70-1, XRDN
G-4	Rock Deep Tread	Super Rock Grip Deep Tread Road Builder		SGG-4B	R-Lug	XRD1, XLDD1 XLD70-1

Tire and Rim Assoc. Code	Tread Type	FIRESTONE	GENERAL	GOODYEAR	BRIDGESTONE	MICHELIN
Log-Skidder						
LS-1	Regular					
LS-2	Intermediate	Forestry Special	Tree Logger Timber Skid		Timber Grip S Fast Grip	
LS-3	Deep	Champion Spade Grip Logger	Timber Skid II			
HF-4			Timber Skid Flotation			
Loader & Dozer						
L-2	Traction	Super Ground Grip LD	Loader Grader II LD Loader Grader LD All Duty	Sure Grip Loader Sure Grip Lug D&L SGL E/L-2A GP-2B RL-2+ RL-2F	Fast Grip, VKT VLT V-Grip, VSW, VUT	XTL, XGL 2 XF, XM27, XM47 X SNOPLUS XMPS, XR
L-3	Rock	Super Rock Grip LD GSR	LD ND LCM LD 100	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	XRDN, XH, XHAD XHF, XK, XR XLD70-1
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	XRD1, XLDD1, XMINE D1 XKD1 XLD70-1
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 RL-4K	D-Lug M-Lug S VSDL	XRD2, 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	XSMD 2
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	
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 A — Cut resistant tread compound with reinforced sidewalls for work machines, mine vehicles, and slow moving transport machines on ground where there is danger of cuts, penetration, etc.

Type B — Wear and heat resistant construction for use on most transport machines.

Type C — For use on the highest speed transport machines.

A4/B4/C4 — Additional tread compounds are available for haul trucks which can optimize performance for specific site conditions.

The current combinations of tread patterns, construction, and tread depths offered, and primary TRA codes are:

Tread Design	Type A	Type B	Type C	Primary TRA Codes
XH	x	—	x	L3, G3, E3
XHD1	x	x	—	E4
XF	x	—	—	L2
XMP	—	x	—	E2
XMPS	x	—	—	G2
XTL	x	—	—	L2, G2
XGL2	x	—	—	L2, G2
XG	—	—	x	E2
XV	—	—	x	E2
XLDD1	x	—	—	L4
XLDD2	x	—	—	L5
XK	x	x	—	E3
XRDN	x	x	—	L3, E3
XRD1	x	—	—	L4, E4
XRD2	x	—	—	L5
XL	—	x	—	E2
XS	—	x	—	E7
XKD1	x	x	—	E4
XMINED1	x	—	—	L4
XMINED2	x	—	—	L5
XSMD2	x	—	—	L5S
XLISSE	—	—	x	C1
XR	x	x	—	E3, G3
XADN	x	x	—	E3
XADT	x	—	—	E4
X SNOPLUS	x	—	—	L2, G2
XDT	x	x	—	E4
XRIB	x	—	—	E1
XAD65-1	—	x	—	E3/E4
XLD70-1	x	—	—	L3/L4
XHF	x	—	—	L3
XR5	—	x	—	E3

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 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-5K	L5
RL-3J	E3 and L3	GP-2B	E2/3,
RL-4	E4		L2/3
RL-4A	E4	SG-2B	G2
RL-4B	E4	RL-4K	L4
GP-4B	E4	GP-4B	L4
GP-4D	E4		

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)	E2/L2
V-Steel M-Traction	(VMT)	E3/L3
V-Steel G-Traction	(VGT)	E2
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

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. 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 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 overflexing 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 superelevation, 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. Some tire companies rate fabric cord tires at 111°C (232°F) and on occasion as high as 118°C (250°F). These higher temperature levels are questionable under average field conditions.

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 temperature with Michelin tires might be a problem.

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

$$\frac{\text{"Empty" tire load + "loaded" tire load}}{2}$$

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 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.

T-km/h **(Ton-MPH) RATINGS**
AT 38° C (100° F) AMBIENT TEMPERATURE
For Hauls of 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
Tread Design		Hard Rock Rib HRR-1A		Sure Grip 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
14.00-24	TKPH		102							
	TMPH		**70**							
16.00-25	TKPH	182	131			102	131	95		
	TMPH	**125**	**90**			**70**	**90**	**65**		
18.00-25	TKPH			146	182	131		117		234
	TMPH			**100**	**125**	**90**		**80**		**160**
18.00-33	TKPH				219	161		146	124	
	TMPH				**150**	**110**		**100**	**85**	
21.00-25	TKPH									270
	TMPH									**185**
24.00-35	TKPH					255		234	204	
	TMPH					**175**		**160**	**140**	
27.00-49	TKPH						460	328	277	
	TMPH						**315**	**225**	**190**	
36.00-51	TKPH						679	489		628
	TMPH						**465**	**335**		**430**

T-km/h **(Ton-MPH) RATINGS**
AT 38° C (100° F) AMBIENT TEMPERATURE
For Haul Lengths of 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	TKPH	109		95			
	TMPH	**75**		**65**			
23.5-25	TKPH	131		102			
	TMPH	**90**		**70**			
26.5-25	TKPH	153		131			
	TMPH	**105**		**90**			
29.5-25	TKPH	182		168			248
	TMPH	**125**		**115**			**170**
29.5-29	TKPH	197	255	182	190		
	TMPH	**135**	**175**	**125**	**130**		
29.5-35	TKPH			212	234		
	TMPH			**145**	**160**		
33.25-29	TKPH				204		
	TMPH				**140**		
33.25-35	TKPH				248	234	
	TMPH				**170**	**160**	
33.5-33	TKPH				248	234	
	TMPH				**170**	**160**	
37.25-35	TKPH				321	307	
	TMPH				**220**	**210**	
37.5-33	TKPH			299	321	307	
	TMPH			**205**	**220**	**210**	
37.5-39	TKPH				350	328	
	TMPH				**240**	**225**	

T-km/h **(Ton-MPH) RATINGS**
AT 38° C (100° F) AMBIENT TEMPERATURE

For Haul Lengths of 32 k (20 Miles) or Less One Way
Maximum Speed Not to Exceed 48 k (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-3			E-4			E-4			E-4		
Tread Design		RL			EL			RLS			ELS			ELS2		
Custom Code		E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
12.00-24/25	TKPH	66	80													
	TMPH	**45**	**55**													
14.00-24/25	TKPH	95	109	146				69	90							
	TMPH	**65**	**75**	**100**				**47**	**62**							
16.00-25	TKPH	124	139	204				97	111							
	TMPH	**85**	**95**	**140**				**66**	**76**							
18.00-24/25	TKPH	160	173	263				139	153					139		
	TMPH	**110**	**119**	**180**				**95**	**105**					**95**		
24.00-25	TKPH		212													
	TMPH		**145**													
18.00-33	TKPH	190	212	314				161	182					161	182	
	TMPH	**130**	**145**	**215**				**110**	**125**					**110**	**125**	
24.00-35	TKPH	292	328	460				234	277	394						
	TMPH	**200**	**225**	**315**				**160**	**190**	**270**						
24.00-49	TKPH	357	431	577				292	343	482	321	365	518			
	TMPH	**245**	**295**	**395**				**200**	**235**	**330**	**220**	**250**	**355**			
27.00-49	TKPH				423	496	701	336	406	547	350	409	569			
	TMPH				**290**	**340**	**480**	**230**	**278**	**275**	**240**	**280**	**390**			
33.00-51	TKPH							453	533	708	460	533	752			
	TMPH							**310**	**365**	**485**	**315**	**365**	**515**			
36.00-51	TKPH							526	635	847	526	649	891			
	TMPH							**360**	**435**	**580**	**360**	**445**	**610**			
40.00-57	TKPH							547	657	876	547	657	920			
	TMPH							**375**	**450**	**600**	**375**	**450**	**630**			

T-km/h **(Ton-MPH) RATINGS**
AT 38° C (100° F) AMBIENT TEMPERATURE

For Haul Lengths of 32 k (20 Miles) or Less One Way
Maximum Speed Not to Exceed 48 k (30 Miles) per Hour

BRIDGESTONE BIAS WIDE BASE SIZES

Industry Code		E-2			E-3			E-4		
Tread Design		FG			RL and VL2			RLS		
Custom Code		E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
20.5-25	TKPH	109			88	95				
	TMPH	**75**			**60**	**65**				
23.5-25	TKPH		161		117	131		88		
	TMPH		**110**		**80**	**90**		**60**		
26.5-25	TKPH				139	161				
	TMPH				**95**	**110**				
29.5-25	TKPH				168	190	234			
	TMPH				**115**	**130**	**160**			
26.5-29	TKPH					190				
	TMPH					**130**				
29.5-29	TKPH		234		182	204		124	139	
	TMPH		**160**		**125**	**140**		**85**	**95**	
33.5-33	TKPH				248	285				
	TMPH				**170**	**195**				
37.5-33	TKPH					343				
	TMPH					**235**				
29.5-35	TKPH					255				
	TMPH					**175**				
33.25-35	TKPH				255	292	380			
	TMPH				**175**	**200**	**260**			
37.25-35	TKPH					358	467			
	TMPH					**245**	**320**			
37.5-39	TKPH				325	372	489			
	TMPH				**223**	**255**	**335**			

T-km/h **(Ton-MPH) RATINGS**
AT 38° C (100° F) AMBIENT TEMPERATURE
For Haul Lengths of 20 Miles or Less One Way

GOODYEAR RADIAL PLY CONSTRUCTION CONVENTIONAL SIZES

Industry Code		E-2		E-2/E-3		E-3		E-4					
Tread Design		RL-2F		GP2B		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	TKPH										124	95	
	TMPH										**85**	**65**	
16.00R25	TKPH	190	146	220		168	124						
	TMPH	**130**	**100**	**150**		**115**	**85**						
18.00R25	TKPH	248	190			226	168				190	146	
	TMPH	**170**	**130**			**155**	**115**				**130**	**100**	
18.00R33	TKPH	292	219			263	197				226	175	131
	TMPH	**200**	**150**			**180**	**135**				**155**	**120**	**90**
24.00R35	TKPH					438	335				394	299	234
	TMPH					**300**	**230**				**270**	**205**	**160**
27.00R49	TKPH			730	562	628	474	547	423	328	547	423	328
	TMPH			**500**	**385**	**430**	**325**	**327**	**290**	**225**	**375**	**290**	**225**
33.00R51	TKPH							715	540	321			
	TMPH							**490**	**370**	**220**			
36.00R51	TKPH							788	598	358	788	598	358
	TMPH							**540**	**410**	**245**	**540**	**410**	**245**
37.00R57	TKPH							1022	781	460	1095	730	490
	TMPH							**700**	**535**	**315**	**750**	**500**	**335**
40.00R57	TKPH							1145	875	518			
	TMPH							**785**	**600**	**355**			

T-km/h **(Ton-MPH) RATINGS**
AT 38° C (100° F) AMBIENT TEMPERATURE
For Haul Lengths of 20 Miles or Less One Way

GOODYEAR RADIAL PLY CONSTRUCTION WIDE BASE SIZES

Industry Code		E-2						E-3		
Tread Design		AT-2A	RL-2+		RL-2F		GP-2B	RL-3	RL-3F	RL-3J
Custom Code		2S	2S	4S	2S	4S	4S	4S	4S	4S
15.5R25	TKPH				146	109				
	TMPH				**100**	**75**				
17.5R25	TKPH	190	146	109			151			124
	TMPH	**130**	**100**	**75**			**105**			**85**
20.5R25	TKPH		175	131			168			146
	TMPH		**120**	**90**			**115**			**100**
23.5R25	TKPH		197	146			197			160
	TMPH		**135**	**100**			**135**			**110**
26.5R25	TKPH		226	168			226			
	TMPH		**155**	**115**			**155**			
26.5R29	TKPH									
	TMPH									
29.5R25	TKPH		270	204			270			
	TMPH		**185**	**140**			**185**			
29.5R29	TKPH		306	233	379	284		270		
	TMPH		**210**	**160**	**260**	**195**		**185**		
33.25R35	TKPH				474	357				335
	TMPH				**325**	**245**				**230**
37.25R35	TKPH				547	416				379
	TMPH				**375**	**285**				**260**
37.5R39	TKPH				613	460				430
	TMPH				**420**	**315**				**295**
40.5/75R39	TKPH						445			
	TMPH						**305**			
22/65R25	TKPH	284								
	TMPH	**195**								
25/65R25	TKPH			182					182	
	TMPH			**125**					**125**	
30/65R25	TKPH			160						
	TMPH			**110**						

T-km/h **(Ton-MPH) RATINGS**
AT 38° C (100° F) AMBIENT TEMPERATURE

For Haul Lengths of 32 k (20 Miles) or Less One Way
Maximum Speed Not to Exceed 48 k (30 Miles) per Hour

BRIDGESTONE RADIAL PLY

Industry Code		E-4			E-4			E-4		
Tread Design		VMTS			VRLS/VWTS			VELS		
Custom Code		E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
14.00R24	TKPH	91	119	136						
	TMPH	**62**	**82**	**93**						
14.00R25	TKPH	91	119	136	85	112	128			
	TMPH	**62**	**82**	**93**	**58**	**77**	**88**			
16.00R25	TKPH	123	157	179	112	146	165			
	TMPH	**84**	**108**	**123**	**77**	**100**	**115**			
18.00R25	TKPH	169	209	244				144	179	209
	TMPH	**116**	**143**	**167**				**99**	**123**	**143**
15.00R33	TKPH	199	246	287				170	211	246
	TMPH	**136**	**158**	**197**				**116**	**145**	**168**
24.00R35	TKPH	338	415	489	314	358	453			
	TMPH	**232**	**286**	**335**	**215**	**266**	**310**			
27.00R49	TKPH	486	600	702	415	513	600			
	TMPH	**333**	**411**	**481**	**284**	**351**	**411**			
33.00R51	TKPH	660	815	953	558	690	807			
	TMPH	**452**	**558**	**653**	**382**	**473**	**553**			
36.00R51	TKPH				642	793	927			
	TMPH				**440**	**543**	**635**			
37.00R57	TKPH				694	858	1003			
	TMPH				**475**	**588**	**687**			
40.00R57	TKPH							773	955	1117
	TMPH							**529**	**654**	**765**

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.

T-km/h **(Ton-MPH) RATINGS**
AT 38° C (100° F) AMBIENT TEMPERATURE

For Haul Lengths of 32 k (20 Miles) or Less One Way
Maximum Speed Not to Exceed 48 k (30 Miles) per Hour

BRIDGESTONE RADIAL PLY

Industry Code		E-2			E-2/E-3			E-3			E-3		
Tread Design		VHB			VKT/VFT			VRL/VEL			VMT		
Custom Code		E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
14.00R24	TKPH	136	179	205	106	141	159						
	TMPH	**93**	**123**	**140**	**73**	**97**	**109**						
14.00R25	TKPH	136	179	205									
	TMPH	**93**	**123**	**140**									
16.00R25	TKPH	179	235	269	134	179	202						
	TMPH	**123**	**161**	**184**	**92**	**123**	**138**						
18.00R25	TKPH				193	239	280	181	224	262			
	TMPH				**132**	**164**	**192**	**124**	**153**	**179**			
18.00R33	TKPH				227	281	328	213	263	307			
	TMPH				**155**	**192**	**225**	**146**	**180**	**210**			
24.00R35	TKPH				386	477	558	362	448	524			
	TMPH				**264**	**327**	**382**	**248**	**307**	**359**			
27.00R49	TKPH				557	688	804	521	644	753			
	TMPH				**382**	**471**	**551**	**357**	**441**	**516**			
33.00R51	TKPH										837	1034	1209
	TMPH										**573**	**708**	**828**
36.00R51	TKPH										974	1203	1407
	TMPH										**667**	**824**	**964**

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.

T-km/h **(Ton-MPH) RATINGS**
AT 38° C (100° F) AMBIENT TEMPERATURE

For Haul Lengths of 38 k (20 Miles) or Less One Way
Maximum Speed Not to Exceed 48 k (30 Miles) per Hour

BRIDGESTONE RADIAL PLY

Industry Code		E-2/E-3			E-3			E-3			E-4		
Tread Design		VKT			VMT			VRL/VAL			VALS		
Custom Code		E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A	E2A	E1A	E3A
17.5R25	TKPH	95	125	145	90	117	138						
	TMPH	**65**	**86**	**99**	**62**	**80**	**95**						
17.5R25	TKPH	120	154	180	114	144	171						
	TMPH	**82**	**105**	**123**	**78**	**99**	**117**						
20.5R25	TKPH	129	166	193	120	157	184	110	147	165	92	119	138
	TMPH	**58**	**114**	**132**	**82**	**108**	**126**	**75**	**101**	**113**	**63**	**82**	**95**
20.5R25	TKPH	160	206	240	149	194	229	137	182	205	114	148	171
	TMPH	**110**	**141**	**164**	**102**	**133**	**157**	**94**	**125**	**140**	**78**	**101**	**117**
23.R25	TKPH	166	213	247	153	201	236	141	188	212	117	153	176
	TMPH	**114**	**146**	**169**	**105**	**138**	**162**	**57**	**129**	**145**	**80**	**105**	**121**
23.R25	TKPH	205	263	307	190	245	292	175	233	262	146	189	219
	TMPH	**140**	**180**	**210**	**130**	**170**	**200**	**120**	**160**	**179**	**100**	**129**	**150**
26.5R25	TKPH	257	312	349	220	293	330				165	220	256
	TMPH	**176**	**214**	**239**	**151**	**201**	**226**				**113**	**151**	**175**
29.5R25	TKPH	310	376	421	266	354	399						
	TMPH	**212**	**258**	**288**	**182**	**242**	**273**						
29.5R29	TKPH	330	401	449							212		
	TMPH	**226**	**275**	**308**							**145**		
33.25R29	TKPH	407	494	552				319	435	493			
	TMPH	**279**	**338**	**378**				**215**	**298**	**338**			
33.5R33	TKPH	444	539	603									
	TMPH	**304**	**369**	**413**									
37.5R33	TKPH	534	648	724									
	TMPH	**366**	**444**	**496**									
29.5R35	TKPH							279	380	431			
	TMPH							**191**	**260**	**295**			
33.25R35	TKPH	441	536	599				346	472	535			
	TMPH	**302**	**367**	**410**				**237**	**323**	**366**			
37.25R35	TKPH	530	644	720				413	563	638			
	TMPH	**363**	**441**	**493**				**283**	**386**	**437**			
37.5R39	TKPH	573	696	778									
	TMPH												
26/65R25	TKPH	162	205	243									
	TMPH												

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.

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							
Tread Design		XV	XR	XK	XDT				XKD1			
Type		C	B	B	A4	A	B4	B	A4	A	B4	B
18.00R33	TKPH	436	305	279	157	192		262	122	157		227
	TMPH	**299**	**209**	**191**	**108**	**132**		**179**	**84**	**108**		**155**
24.00R35	TKPH	740	518	474	266	326		444	207	266		385
	TMPH	**507**	**355**	**325**	**182**	**223**		**304**	**142**	**182**		**264**
27.00R49	TKPH	1090	763	698	392	480	567	654		392	480	567
	TMPH	**747**	**523**	**478**	**269**	**329**	**388**	**448**		**269**	**329**	**388**
33.00R51	TKPH				558	682	806	930		496	620	744
	TMPH				**382**	**590**	**552**	**804**		**340**	**425**	**644**
36.00R51	TKPH		1295	1184						592	740	888
	TMPH		**887**	**811**						**406**	**507**	**608**
37.00R57	TKPH									678	848	1018
	TMPH									**464**	**581**	**697**
40.00R57	TKPH									268	960	1152
	TMPH									**526**	**658**	**789**

*Consult Michelin for TKPH **(TMPH)** ratings for haul cycles greater than 5 km **(3 m)**.

NOTE: Additional tread compounds are available to meet specific T-km/h **(TMPH)**.

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	XRDN		XRS
Type		B	A	B	B
25/65R25 Low Profile	TKPH	217			
	TMPH	**149**			
29.5R29	TKPH	420			
	TMPH	**288**			
33.25R29	TKPH	518			
	TMPH	**355**			
33.5R33	TKPH	560			
	TMPH	**384**			
37.5R33	TKPH	680			
	TMPH	**466**			
29.5R35	TKPH	448			
	TMPH	**307**			
33.25R35	TKPH	560			
	TMPH	**384**			
37.25R35	TKPH	661			415
	TMPH	**453**			**284**
37.5R39	TKPH	721			
	TMPH	**494**			
40.5/75R39	TKPH		534	766	766
	TMPH		**366**	**525**	**525**

*Consult Michelin for TKPH **(TMPH)** 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 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	
750/65R25 Low Profile			190B

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

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.

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 with no attachments, 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 (N_2) 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	
			kPa	psi	kPa	psi
525	28L-26	14	172	**25**	172	**25**
	24.5-32	16	207	**30**	207	**30**
	30.5-32	16	172	**25**	172	**25**
528B	24.5-32	16	210	**30**	210	**30**
	30.5L-32	16	170	**25**	170	**25**
530B	24.5-32	16	210	**30**	210	**30**
	30.5L-32	16	170	**25**	170	**25**

MOTOR GRADERS — Bias Ply

Model	Tire Size	Ply Rating	Pressure Front kPa	Front psi	Rear kPa	Rear 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**
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**

*Standard tire and ply rating.

MOTOR GRADERS — Bias Ply (continued)

Model	Tire Size	Ply Rating	Pressure Front kPa	Front psi	Rear kPa	Rear psi
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.

WHEEL TRACTORS — Bias Ply

Model	Tire Size	Ply Rating or Strength Index	Pressure Front kPa	Front psi	Rear kPa	Rear 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**
834B	35/65-33*	24	241	**35**	241	**35**

WHEEL TRACTOR — Radial Ply

814F	23.5R25	★	276	**40**	276	**40**
	26.5R25	★	241	**35**	241	**35**
824G	29.5R25	★	345	**50**	345	**50**
834B	3565R33	★	345	**50**	345	**50**

*Standard tire, ply rating, and inflation pressures.

MOTOR GRADERS — Michelin, Goodyear and Bridgestone/Firestone Radial Ply

Model	Tire Size	Strength Rating	Michelin Pressure Front kPa	Front psi	Rear kPa	Rear psi	Goodyear Pressure Front kPa	Front psi	Rear kPa	Rear psi	Bridgestone Pressure Front kPa	Front psi	Rear kPa	Rear psi
120H	13.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	14.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	15.5R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
135H	13.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	14.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	15.5R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
12H	13.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	14.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	15.5R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
140H	14.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	17.5R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
160H	14.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	17.5R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
143H	14.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	17.5R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
163H	14.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	17.5R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
14H	16.00R24TG	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	20.5R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
16H	18.00R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**
	23.5R25	★	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**	310	**45**

BACKHOE LOADERS (Front)

Tire Size	Ply/Star Rating	Pressure kPa	Pressure psi
9x16 F2	10	415	**60**
11Lx16 F3	10	360	**52**
	12	440	**64**
14.5/75x16.1 F3	10	280	**41**
12.5/80-18 I3 SG LUG	10	310	**45**
12.5x20 R4	10	350	**51**
340/80R18 IT510	★	330	**48**
335/80R18 XM27 139	★	330	**48**
15-19.5 SSSG	8	275	**40**

BACKHOE LOADERS (Rear)

Tire Size	Ply/Star Rating	Pressure kPa	Pressure psi
16.9x24 R4	8	195	**28**
	10	220	**32**
19.5x24 IT525	8	165	**24**
	10	195	**28**
19.5LR24 IT510	★	275	**40**
16.9x28 R4	10	220	**32**
	12	260	**38**
16.9/14x28 R1	12	235	**34**
16.9R28 IT510	★	275	**40**
16.9R28 XM27	★	275	**40**
18.4/15x26 R4	12	250	**36**
18.4/15x26 XM27	★	275	**40**
21Lx24 IT525	12	220	**32**

PAVING PRODUCTS — Bias Ply

Model	Tire Size	Ply Rating	Pressure Front kPa	Pressure Front psi	Pressure Rear kPa	Pressure Rear psi
PS-150	7.50-15	6, 12, 14	*	*		
PS-210	7.50-15	12, 14	*	*		
PF-300	13.80-20/E20					
PS-300	E20 Pilotex (13/80-20)		*	*		
PS-500	15.00R24		*	*		
CS-323C	11.2-24	6	—	—	138	**20**
CP-323C	11.2-24	6	—	—	138	**20**
CS-431C	14.9-24	6	—	—	138	**20**
CS-433C	14.9-24	6	—	—	138	**20**
CP-433C	14.9-24	6	—	—	138	**20**
CS-563C	23.1-26	8	—	—	138	**20**
CP-563C	23.1-26	8	—	—	138	**20**
CS-573C	23.1-26	8	—	—	138	**20**
CS-583C	23.1-26	8	—	—	138	**20**
CB-525B	15.00-24	★ ★ ★	—	—	100	**20**
CB-523B	15.00-24	★ ★ ★	—	—	100	**20**
CS-583C	23.1-26	8	—	—	83	**20**
CS-533C	23.1-26	8	—	—	83	**20**
CP-533C	23.1-28	8	—	—	241	**20**
RR-250	23.5-25	16	310	**45**	—	—
	15.5-25	8	—	—	205	**30**
SS-250	28.1-26	10	165	**24**	—	—
	14.9-24	6	—	—	124	**18**
RM-350	23.5-25	16	310	**45**	—	—
	15.5-25	8	—	—	205	**30**
SM-350	28.1-26	10	241	**35**	—	—
	14.9-24	6	—	—	124	**18**
AP-800B	16.00-24	12	—	—	241	**35**
AP-1000	18.00-25	16	—	—	241	**35**

*Tire pressure varies with application.

WHEEL TRACTOR-SCRAPERS — Bias Ply

Model	Ply Tire Size	Rating	Pressure Front kPa	Pressure Front psi	Pressure Rear kPa	Pressure Rear psi
613C Series II	23.5-25	20	310	**45**	310	**45**
615C Series II	29.5-25	28	324	**47**	310	**45**
	29.5-25	34	448	**65**	380	**55**
621F	33.25-29	26	380	**55**	310	**45**
	29.5-29	34	413	**60**	310	**45**
	29.5-35	28	380	**55**	275	**40**
623F	29.5-29	34	450	**65**	345	**50**
	29.5-35	28	413	**60**	310	**45**
627F	29.5-29	34	413	**60**	450	**65**
	29.5-35	34	345	**50**	380	**55**
631E Series II	37.25-35	42	413	**60**	380	**55**
633E Series II	37.25-35	42	413	**60**	380	**55**
637E Series II	37.25-25	42	413	**60**	380	**55**

ARTICULATED TRUCK — Radial Ply

Model	Tire Size	Ply Rating	Pressure Front kPa	Pressure Front psi	Pressure Center kPa	Pressure Center psi	Pressure Rear kPa	Pressure Rear psi
D25D	26.5R25	★ ★	400	**58**	—	—	450	**65**
D30D	29.5R25	★ ★	325	**47**	—	—	450	**65**
D250E	20.5R25	★ ★	375	**54**	450	**65**	450	**65**
	23.5R25	★ ★	275	**40**	325	**47**	325	**47**
D300E	23.5R25	★ ★	325	**47**	400	**58**	400	**58**
	30/65R25	★ ★	275	**40**	350	**51**	350	**51**
D350E	26.5R25	★ ★	375	**54**	350	**51**	350	**51**
	29.5R25	★ ★	300	**44**	300	**44**	300	**44**
D400E	26.5R25	★ ★	400	**58**	425	**62**	425	**62**
	29.5R25	★ ★	300	**44**	330	**48**	330	**48**

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	★	413	**60**	413	**60**	413	**60**	450	**65**	485	**70**	485	**70**
	23.5R25	★	310	**45**	345	**50**	345	**50**	345	**50**	380	**55**	380	**55**
615C Series II	26.5R25	★ ★	450	**65**	450	**65**	485	**70**	480	**70**	517	**75**	517	**75**
	29.5R25	★	345	**50**	345	**50**	380	**55**	380	**55**	413	**60**	413	**60**
621F	29.5R29	★ ★	450	**65**	380	**55**	480	**70**	380	**55**	517	**75**	413	**60**
	29.5R35	★ ★	450	**65**	380	**55**	—	—	—	—	450	**65**	380	**55**
	33.25R29	★ ★	413	**60**	345	**50**	413	**60**	345	**50**	413	**60**	345	**50**
623F	29.5R29	★ ★	485	**70**	413	**60**	517	**75**	413	**60**	517	**75**	517	**75**
	29.5R35	★ ★	450	**65**	380	**55**	—	—	—	—	517	**75**	450	**65**
627F	29.5R29	★ ★	413	**60**	413	**60**	517	**75**	517	**75**	517	**75**	517	**75**
	29.5R35	★ ★	413	**60**	413	**60**	—	—	—	—	517	**75**	517	**75**
	33.25R29	★ ★	380	**55**	380	**55**	380	**55**	380	**55**	413	**60**	413	**60**
631E Series II	37.25R35	★ ★	517	**75**	413	**60**	517	**75**	413	**60**	517	**75**	413	**60**
633E Series II	37.25R35	★ ★	517	**75**	517	**75**	517	**75**	517	**75**	517	**75**	517	**75**
637E Series II	37.25R35	★ ★	517	**75**	517	**75**	517	**75**	517	**75**	517	**75**	517	**75**
651E	37.5R39	★ ★	620	**90**	550	**80**	620	**90**	515	**75**	620	**90**	550	**80**
	40.5/ 75R39	★ ★	517	**75**	450	**65**	517	**75**	450	**65**	517	**75**	450	**65**
657E	37.5R39	★ ★	690	**100**	690	**100**	690	**100**	690	**100**	690	**100**	690	**100**
	40.5/ 75R39	★ ★	517	**75**	517	**75**	550	**80**	550	**80**	550	**80**	550	**80**

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*	★ ★	655	**95**	655	**95**	725	**105**	725	**105**	725	**105**	725	**105**
771D	18.00R33*	★ ★	760	**110**	760	**110**	825	**120**	825	**120**	825	**120**	825	**120**
773D	24.00R35*	★ ★	515	**75**	515	**75**	550	**80**	550	**80**	585	**85**	585	**85**
775D	24.00R35*	★ ★	585	**85**	585	**85**	620	**90**	620	**90**	655	**95**	655	**95**
776D	27.00R49*	★ ★	585	**85**	585	**85**	585	**85**	585	**85**	620	**90**	620	**90**
777D	27.00R49*	★ ★	585	**85**	585	**85**	655	**95**	655	**95**	620	**90**	620	**90**
784B	36.00R51*	★ ★	655	**95**	655	**95**	725	**105**	690	**100**	725	**105**	725	**105**
785B	33.00R51*	★ ★	725	**105**	725	**105**	725	**105**	725	**105**	725	**105**	725	**105**
789B	37.00R57*	★ ★	655	**95**	655	**95**	725	**105**	725	**105**	725	**105**	725	**105**
793C	40.00R57*	★ ★	655	**95**	655	**95**	760	**110**	760	**110**	760	**110**	760	**110**

*Standard tire and ply rating.

WHEEL LOADERS — Bias and Bias Belted

Model	Tire Size	Ply Rating or Strength Index	Pressure Front		Pressure Rear	
			kPa	psi	kPa	psi
914G	15.5-25	12	275	**40**	175	**25**
	15.5-25	12	225	**33**	175	**25**
924F	17.5-25	12	225	**33**	175	**25**
	20.5-25	12	225	**33**	175	**25**
928G	17.5-25	12	325	**47**	225	**33**
	20.5-25	12	225	**33**	175	**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**
	29.5-25	28	517	**75**	241	**35**
988F Series II	35/65-33*	30	552	**80**	276	**40**
990 Series II	41.25/70-39	34	483	**70**	276	**40**
	41.25/70-39	42	483	**70**	276	**40**
992G	45/65-45	46	621	**90**	276	**40**
994	50/80-57	68	690	**100**	585	**85**
	55.5/80-57	68	690	**100**	585	**85**

*Higher ply ratings are recommended for High Lift Machines.
NOTE: Tire pressure on front tires of front end loaders may be increased up to 100 kPa **(15 psi)**.

LOG LOADERS — Bias and Bias Belted

Model	Tire Size	Ply Rating	Inflation Pressure Front		Inflation Pressure Rear	
			kPa	psi	kPa	psi
914G	15.5-25	12	300	**44**	200	**29**
	17.5-25	12	250	**36**	175	**25**
924F	17.5-25	12	250	**36**	175	**25**
	20.5-25	12	225	**33**	175	**25**
928G	17.5-25	12	350	**50**	250	**36**
	20.5-25	12	250	**36**	200	**29**
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**
988F Series II	35/65-33	30	552	**80**	276	**40**

INTEGRATED TOOL CARRIERS — Bias and Bias Belted

Model	Tire Size	Ply Rating	Inflation Pressure Front		Inflation Pressure Rear	
			kPa	psi	kPa	psi
IT14G	15.5-25	12	300	**44**	200	**29**
	17.5-25	12	250	**36**	175	**25**
IT24F	15.5-25	12	275	**40**	175	**25**
	17.5-25	12	225	**33**	175	**25**
IT28G	17.5-25	12	325	**47**	225	**33**
	20.5-25	12	225	**33**	175	**25**
IT38G	20.5-25	12	345	**50**	241	**35**
	20.5-25	16	483	**70**	241	**35**

TELEHANDLERS — Bias and Bias Belted

Model	Tire Size	Ply Rating or Strength Index	Inflation Pressure Front		Inflation Pressure Rear	
			kPa	psi	kPa	psi
TH62	13.0-24	12	310	**45**	310	**45**
	15.5/80-24	10	310	**45**	310	**45**
	15.5-25	12	276	**40**	276	**40**
TH82	13.0-24(ANSI)	12	380	**55**	380	**55**
	13.0-24(FEM)	12	448	**65**	448	**65**
	15.5/80-24	10	415	**60**	415	**60**
	15.5-25	12	345	**50**	345	**50**
TH63	13.0-24	12	380	**55**	380	**55**
	15.5/80-24	12	345	**50**	345	**50**
	15.5-25(ANSI)	12	415	**60**	415	**60**
	15.5-25(FEM)	12	415	**60**	415	**60**
TH83	14.0-24	12	415	**60**	415	**60**
	17.5-25	12	345	**50**	345	**50**
TH103	14.0-24	12	518	**75**	518	**75**
	17.5-25	12	485	**70**	485	**70**

WHEEL 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
914G	15.5R25	★	250	**36**	175	**25**	—	**—**	—	**—**	—	**—**	—	**—**
	17.5R25	★	200	**29**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
924F	17.5R25	★	225	**33**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
	555/70R25	★	200	**29**	175	**25**	—	**—**	—	**—**	—	**—**	—	**—**
	20.5R25	★	200	**29**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
928G	17.5R25	★	375	**54**	200	**29**	400	**58**	300	**44**	—	**—**	—	**—**
	555/70R25	★	250	**36**	175	**25**	—	**—**	—	**—**	—	**—**	—	**—**
	20.5R25	★	250	**36**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
938G	20.5R25	★	276	**40**	207	**30**	276	**40**	241	**35**	—	**—**	—	**—**
950G	23.5R25	★	276	**40**	207	**30**	310	**45**	207	**30**	414	**60**	310	**45**
962G	23.5R25	★	310	**45**	207	**30**	345	**50**	207	**30**	414	**60**	310	**45**
966G	26.5R25	★	345	**50**	207	**30**	345	**50**	207	**30**	414	**60**	310	**45**
972G	26.5R25	★	414	**60**	207	**30**	414	**50**	276	**40**	414	**60**	310	**45**
980G	26.5R25	★	414	**60**	207	**30**	448	**65**	310	**45**	485	**70**	380	**55**
	29.5R25	★	345	**50**	207	**30**	345	**50**	207	**30**	414	**60**	310	**45**
988F Series II	35/65R33	★	483	**70**	207	**30**	483	**70**	345	**50**	585	**85**	450	**65**
990 Series II	45/65R39	★	552	**80**	276	**40**	—	**—**	—	**—**	—	**—**	—	**—**
	40.5/75R39	★	—	**—**	—	**—**	483	**70**	345	**50**	—	**—**	—	**—**
992G	45/65R45	★	552	**80**	276	**40**	—	**—**	—	**—**	585	**85**	450	**65**
994	55/80R57	—	689	**100**	552	**80**	—	**—**	—	**—**	—	**—**	—	**—**

NOTE: Tire pressure on front tires of front end loaders may be increased up to 100 kPa **(15 psi)**.

TELEHANDLERS — Radial Ply

Model	Tire Size	Ply Rating or Strength Index	Pressure							
			Michelin				Goodyear			
			Front		Rear		Front		Rear	
			kPa	psi	kPa	psi	kPa	psi	kPa	psi
TH62	17.5LR24	★	—	**—**	—	**—**	276	**40**	276	**40**
TH82	445/70R24	★	310	**45**	310	**45**	—	**—**	—	**—**
	495/70R24	★	276	**40**	276	**40**	—	**—**	—	**—**
TH83	15.5R25	★	—	**—**	—	**—**	518	**75**	518	**75**
	17.5R25	★	—	**—**	—	**—**	415	**60**	415	**60**
TH103	17.5R25	★	—	**—**	—	**—**	518	**75**	518	**75**

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
914G	15.5R25	★	275	**40**	175	**25**	—	**—**	—	**—**	—	**—**	—	**—**
	17.5R25	★	225	**33**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
924F	17.5R25	★	275	**40**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
	555/70R25	★	200	**29**	175	**25**	—	**—**	—	**—**	—	**—**	—	**—**
	20.5R25	★	200	**29**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
928G	17.5R25	★	400	**58**	225	**33**	400	**58**	300	**44**	—	**—**	—	**—**
	555/70R25	★	275	**40**	275	**40**	—	**—**	—	**—**	—	**—**	—	**—**
	20.5R25	★	275	**40**	275	**40**	400	**58**	300	**44**	—	**—**	—	**—**
938G	20.5R25	★	310	**45**	207	**30**	345	**50**	276	**40**	—	**—**	—	**—**
950G	23.5R25	★	414	**60**	207	**30**	414	**60**	276	**40**	414	**60**	310	**45**
966G	26.5R25	★	414	**60**	207	**30**	414	**60**	276	**40**	415	**60**	310	**45**
980G	29.5R25	★	448	**65**	207	**30**	438	**70**	276	**40**	485	**70**	345	**50**
988F Series II	35/65R33	★	552	**80**	241	**35**	655	**95**	310	**45**	665	**95**	345	**50**

INTEGRATED TOOL CARRIERS — 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	★	275	**40**	175	**25**	—	**—**	—	**—**	—	**—**	—	**—**
	17.5R25	★	225	**33**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
IT24F	17.5R25	★	275	**40**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
	555/70R25	★	200	**29**	175	**25**	—	**—**	—	**—**	—	**—**	—	**—**
	20.5R25	★	200	**29**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
IT28G	17.5R25	★	375	**54**	200	**29**	400	**58**	300	**44**	—	**—**	—	**—**
	555/70R25	★	250	**36**	175	**25**	—	**—**	—	**—**	—	**—**	—	**—**
	20.5R25	★	250	**36**	175	**25**	400	**58**	300	**44**	—	**—**	—	**—**
IT38G	20.5R25	★	310	**45**	207	**30**	345	**50**	241	**35**	380	**55**	205	**30**

UNDERGROUND MINING — Bias and Bias Belted

LOAD – HAUL – DUMP			Ply	Bridgestone			
Model	**Wheel Size**	**Tire Size**	**Rating**	**Front***		**Rear***	
				kPa	psi	kPa	psi
R1300	14.0×25	17.5×25	20	650	**94**	410	**60**
R1600	13.0×25	18.0×25	28	620	**90**	410	**60**
R1700 Series II	22.0×25	26.5×25	32	600	**87**	410	**60**
R2900	25.0×25	29.5×29	34	650	**94**	410	**60**
ARTICULATED TRUCKS							
AD40 Series II	25.0×29	29.5×R29	40	620	**90**	620	**90**
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	650	**94**	650	**94**
69D Ejector	13.0×33	18.0×R33	40	630	**91**	630	**91**
73D	15.0×35	21.0×R35	—	—	**—**	—	**—**

*For standard loading applications.
NOTE: When tramming cycles exceed 150 m **(500 ft)** contact tire supplier.

UNDERGROUND MINING — Radial Ply

LOAD – HAUL – DUMP			Strength	Bridgestone			
Model	**Wheel Size**	**Tire Size**	**Index**	**Front***		**Rear***	
				kPa	psi	kPa	psi
R1300	14.0×25	17.5×25	★★	700	**102**	410	**60**
R1600	13.0×25	18.0×25	★★	675	**98**	410	**60**
R1700 Series II	22.0×25	26.5×25	★★	650	**94**	410	**60**
R2900	25.0×25	29.5×29	★★	675	**98**	410	**60**
ARTICULATED TRUCKS							
AD40 Series II	25.0×29	29.5×R29	★★	650	**94**	620	**90**
AE40 Series II	29.5×29	29.5×R29	★★	650	**94**	650	**94**
RIGID TRUCKS							
69D Dump	13.0×33	18.0×R33	★★	700	**102**	700	**102**
69D Ejector	13.0×33	18.0×R33	★★	700	**102**	700	**102**
73D	15.0×35	21.0×R35	★★	700	**102**	700	**102**

*For standard loading applications.
NOTE: When tramming cycles exceed 150 m **(500 ft)** contact tire supplier.

	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. Also total machine mass with ballasted tires must not exceed certification mass listed on the ROPS certification label.

MINING AND EARTHMOVING

CONTENTS

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 m^3
- Loose Cubic Meters — LCM — loose m^3
- Compacted Cubic Meters — CCM — compacted m^3
- Tonnes

English

- Bank Cubic Yards — BCY — bank yd^3
- Loose Cubic Yards — LCY — loose yd^3
- Compacted Cubic Yards — CCY — compacted yd^3
- 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.

Production = Load/cycle × cycles/hour

The load can be determined by

1) load weighing
2) load estimating based on machine rating
3) surveyed volume divided by load count

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)?

Loose = Bank × (1 + Swell) =
1000 BCM × (1 + .2) = 1200 LCM
1308 BCY × (1 + .2) = 1570 LCY

How many bank cubic meters (yards) were moved if a total of 1000 loose cubic meters (1308 yards) have been moved? Swell is 25%.

Bank = Loose ÷ (1 + Swell) =
1000 LCM ÷ (1 + .25) = 800 BCM
1308 LCY ÷ (1 + .25) = 1046 BCY

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 lbs.

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 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.

$$\text{Density} = \frac{\text{Weight}}{\text{Volume}} = \frac{\text{kg (lbs)}}{\text{m}^3\ (\text{yd}^3)}$$

$$\text{Weight} = \text{Volume} \times \text{Density}$$

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.

$$1 + \text{Swell} = \frac{\text{kg/BCM}}{\text{kg/LCM}} \text{ or } \frac{\text{lbs/BCY}}{\text{lbs/LCY}}$$

$$\text{lbs/LCY} = \frac{\text{lb/BCY}}{(1 + \text{Swell})}$$

$$\text{lbs/BCY} = \text{lbs/LCY} \times (1 + \text{Swell})$$

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 lbs/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) lb/LCY = lb/BCY ÷ (1 + Swell) = 4125 ÷ (1.35) = 3056 lb/LCY
b) LCY = rated LCY × fill factor = 14 × 1.05 = 14.7 LCY
c) lbs/pass = volume × density lb/LCY = 14.7 × 3056 = 44,923 lbs
   BCY/pass = weight ÷ density lb/BCY = 44,923 ÷ 4125 = 10.9 BCY
   or bucket LCY from part b ÷ (1 + Swell) = 14.7 ÷ 1.35 = 10.9 BCY
d) tons/pass = lbs ÷ 2000 lbs/ton = 44,923 ÷ 2000 = 22.5 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) Load (BCY) = Capacity (LCY) × Load factor (L.F.) = 20 × 0.81
= 16.2 BCY/Load
(L.F. of 0.81 from Tables)

$$\text{Number of loads required} = \frac{12{,}500 \text{ BCY}}{16.2 \text{ BCY/Load}} = 772 \text{ Loads}$$

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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 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.

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 relatively 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
load = Gross machine weight – 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. 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. $\text{Load} = \dfrac{\text{Weight of load}}{\text{Bank density}}$

   $= \dfrac{42{,}000 \text{ lb}}{3125 \text{ lb/BCY}} = 13.4 \text{ BCY}$
4. Cycles/hr = $\dfrac{60 \text{ min/hr}}{\text{Cycle time}} = \dfrac{60 \text{ min/hr}}{7.50 \text{ min/cycle}} = 80 \text{ cycles/hr}$
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
123 355 kg;
average = 41 120 kg

1. Average load weight = 41 120 kg – 22 070 kg = 19 050 kg
2. Bank density = 1854 kg/BCM
3. $\text{Load} = \frac{\text{Weight of load}}{\text{Bank density}}$

$$= \frac{19\,050 \text{ kg}}{1854 \text{ kg/BCM}} = 10.3 \text{ BCM}$$

4. Cycles/hr = $\frac{60 \text{ min/hr}}{\text{Cycle time}} = \frac{60 \text{ min/hr}}{7.50 \text{ min/cycle}} = 80$ cycles/hr
5. Production (less delays) = Load/cycle × cycles/hr
= 10.3 BCM/cycle × 8.0 cycles/hr
= 82 BCM/hr

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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 approximately 2% (1.5% for radial tires or dual tired trucks) of the gross machine weight (on tires). 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:

RR = 2% of GMW + 0.6% of GMW per cm tire penetration
RR = 2% of GMW + 1.5% of GMW per inch tire penetration

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 tracktype 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 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 53.5 m (175 ft) equals an 8.6% grade.

$$\frac{\text{4.6 m (rise)}}{\text{53.3 m (horizontal distance)}} = \text{8.6\% grade}$$

$$\frac{\text{15 ft (rise)}}{\text{175 ft (horizontal distance)}} = \text{8.6\% grade}$$

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):

Grade Resistance Factor = 10 kg/m ton × % grade
= 20 lb/U.S. ton × % grade

Grade resistance (assistance) is then obtained by multiplying the Grade Resistance Factor by the machine weight (GMW) in metric (U.S.) tons.

Grade Resistance = GR Factor × 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.

Grade Resistance = 1% of GMW × % 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.

Total Resistance = Rolling Resistance + 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.

Rolling Resistance (%) = 2% + 0.6% per cm tire penetration
= 2% + 1.5% per inch tire penetration
Grade Resistance (%) = % grade
Effective Grade (%) = RR (%) + 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:

Usable pull = Coeff. of traction × 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 × 26 800 kg = 24 120 kg
(0.90 × 59,100 lb = 53,190 lb)
Loose earth — Usable DBP =
0.60 × 26 800 kg = 16 080 kg
(0.60 × 59,100 lb = 35,460 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 (52,000 lb)	wheels: 21 800 kg (48,000 lb)

Remember, use weight on drivers only.
Answer:
Firm earth — 0.55 × 23 600 kg = 12 980 kg
(0.55 × 52,000 lb = 28,600 lb)
Loose earth — 0.45 × 23 600 kg = 10 620 kg
(0.45 × 52,000 lb = 23,400 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 deration will produce less drawbar pull or rimpull.

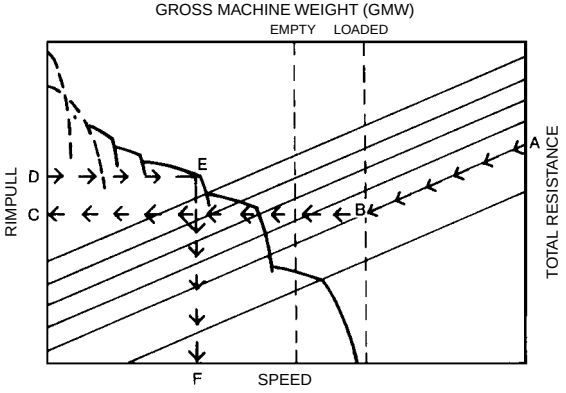
The Tables Section gives the altitude deration in percent of flywheel horsepower for current machines. It should be noted that some turbocharged engines can operate up to 3050 m (10,000 ft) before they require derating. Most machines are engineered to operate up to 1520 m (5000 ft) before they require deration.

The horsepower deration 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).

The example job problem that follows indicates one method of accounting for altitude deration: by increasing the appropriate components of the total cycle time by a percentage equal to the percent of horsepower deration 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 deration from the Tables Section. This yields rimpull value D higher than point C.

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.

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.

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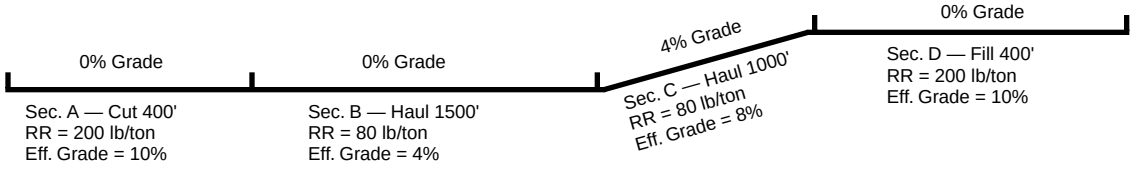
Example problem (English)

A contractor is planning to put the following spread on a dam job. What is the estimated production and cost/BCY?

Equipment:
11 — 631E Series II Wheel Tractor-Scrapers
2 — D9N Tractors with C-dozers
2 — 12G Motor Graders
1 — 825C 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%

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. — 88,000 lb or 44 tons
Wt. of Load — 74,400 lb or 37.2 tons
Total (GMW) — 162,400 lb or 81.2 tons

3. Calculate Usable Pull (traction limitation):
Loaded: (weight on driving wheels = 54%) (GMW)
Traction Factor × Wt. on driving wheels =
0.50 × 162,400 lb × 54% = 43,848 lbs
Empty: (weight on driving wheels = 69%) (GMW)
Traction Factor × Wt. on driving wheels =
0.50 × 88,000 lbs × 69% = 30,360 lbs

4. Derate for Altitude:
Check power available at 7500 ft from altitude deration table in the Tables Section.
631E Series II — 100% 12G — 85%
D9N — 100% 825C — 94%

Then adjust if necessary:

Load Time — controlled by D9N, at 100% power, no change.

Travel, Maneuver and Spread time — 631E Series II, no change.

5. Compare Total Resistance to Tractive Effort on haul:

Grade Resistance —

GR = lb/ton × tons × adverse grade in percent

Sec. C: = 20 lb/ton × 81.2 tons × 4% grade = 6496 lb

Rolling Resistance —

RR = RR Factor (lb/ton) × GMW (tons)

Sec. A: = 200 lb/ton × 81.2 tons = 16,240 lb
Sec. B: = 80 lb/ton × 81.2 tons = 6,496 lb
Sec. C: = 80 lb/ton × 81.2 tons = 6,496 lb
Sec. D: = 200 lb/ton × 81.2 tons = 16,240 lb

Total Resistance —

TR = RR + GR

Sec. A: = 16,240 lb + 0 = 16,240 lb
Sec. B: = 6,496 lb + 0 = 6,496 lb
Sec. C: = 6,496 lb + 6,496 lb = 12,992 lb
Sec. D: = 16,240 lb + 0 = 16,240 lb

Check usable pounds pull against maximum pounds pull required to move the 631E.

Pull usable … 43,848 lb loaded

Pull required … 16,240 lb maximum total resistance

Estimate travel time for haul from 631E (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 = 20 lb/ton × tons × negative grade in percent

Sec. C: = 20 lb/ton × 44 tons × 4% grade = 3520 lbs

Rolling Resistance —

RR = RR Factor × Empty Wt (tons)

Sec. D: = 200 lb/ton × 44 tons = 8800 lb
Sec. C: = 80 lb/ton × 44 tons = 3520 lb
Sec. B: = 80 lb/ton × 44 tons = 3520 lb
Sec. A: = 200 lb/ton × 44 tons = 8800 lb

Total Resistance —

TR = RR – GA

Sec. D: = 8,800 lb – 0 = 8,800 lb
Sec. C: = 3,520 lb – 3,520 lb = 0
Sec. B: = 3,520 lb – 0 = 3,520 lb
Sec. A: = 8,800 lb – 0 = 8,800 lb

Check usable pounds pull against maximum pounds pull required to move the 631E.

Pounds pull usable … 30,360 lb empty

Pounds pull required … 8800 lb

Estimate travel time for return from 631E 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.
= 31 LCY × 0.80
= 24.8 BCY

Hourly unit production = Est. load × cycles/hr
= 24.8 BCY × 8.6 cycles/hr
= 213 BCY/hr

Adjusted production = Efficiency factor × hourly production
= 0.83 (50 min hour) × 213 BCY
= 177 BCY/hr

Hourly fleet production = Unit production × No. of units
= 177 BCY/hr × 11
= 1947 BCY/hr

10. Estimate Compaction:

Compaction requirement = S.F. × hourly fleet production
= 0.85 × 1947 BCY/hr
= 1655 CCY/hr

Compaction capability (given the following):

Compacting width, 7.4 ft	(W)
Average compacting speed, 6 mph	(S)
Compacted lift thickness, 7 in	(L)
No. of passes required, 3	(P)

825C 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 CCY/hr

Given the compaction requirement of 1655 CCY/hr, the 825C 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:

631E	@ $65.00/hr ×	11 units	$715.00
D9N	@ 75.00/hr ×	2 units	150.00
12G	@ 15.00/hr ×	2 units	30.00
825C	@ 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:

$$\text{Cost per BCY} = \frac{\text{Total cost/hr}}{\text{Production/hr}}$$

$$= \frac{\$1{,}255.00}{1947 \text{ BCY/hr}}$$

= 64¢ BCY

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.

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Example problem (Metric)

A contractor is planning to put the following spread on a dam job. What is the estimated production and cost/BCM?

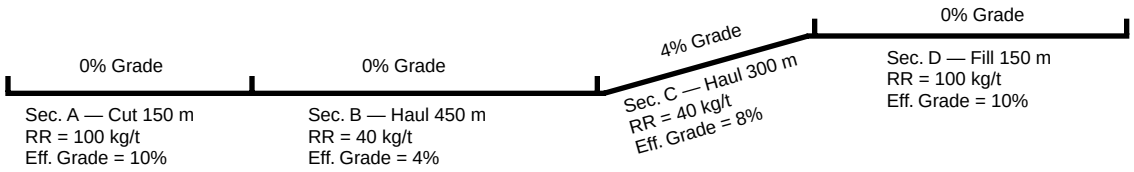
Equipment:

11 — 631E Wheel Tractor-Scrapers
2 — D9N Tractors with C-dozers
2 — 12G Motor Graders
1 — 825C 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. — 40 000 kg or 40 metric tons
Wt. of Load — 34 000 kg or 34 metric tons
Total (GMW) — 74 000 kg or 74 metric tons

3. Calculate Usable Pull (traction limitation):
Loaded: (weight on driving wheels = 54%) (GMW)
Traction Factor × Wt. on driving wheels =
0.50 × 74 000 kg × 54% = 19 980 kg
Empty: (weight on driving wheels = 69%) (GMW)
Traction Factor × Wt. on driving wheels =
0.50 × 40 000 kg × 69% = 13 800 kg

4. Derate for Altitude:
Check power available at 2300 m from altitude deration table in the Tables Section.
631E — 100% 12G — 85%
D9N — 100% 825C — 94%

Then adjust if necessary:
Load Time — controlled by D9N, at 100% power, no change.
Travel, Maneuver and Spread time — 631E, 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 × 74 metric tons × 4% grade = 2960 kg

Rolling Resistance —
RR = RR Factor (kg/mton) × GMW (metric tons)
Sec. A: = 100 kg/metric ton × 74 metric tons
= 7400 kg
Sec. B: = 40 kg/metric ton × 74 metric tons
= 2960 kg
Sec. C: = 40 kg/metric ton × 74 metric tons
= 2960 kg
Sec. D: = 100 kg/metric ton × 74 metric tons
= 7400 kg

Total Resistance —
TR = RR + GR
Sec. A: = 7400 kg + 0 = 7400 kg
Sec. B: = 2960 kg + 0 = 2960 kg
Sec. C: = 2960 kg + 2960 kg = 5920 kg
Sec. D: = 7400 kg + 0 = 7400 kg

Check usable kilogram force against maximum kilogram force required to move the 631E.
Force usable ... 19 980 kg loaded
Force required ... 7400 kg maximum total resistance
Estimate travel time for haul from 631E (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 tim*e, 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 × 40 metric ton × 4% grade = 1600 kg

Rolling Resistance —

RR = RR Factor × Empty Wt.

Sec. D: = 100 kg/metric ton × 40 metric tons
= 4000 kg

Sec. C: = 40 kg/metric ton × 40 metric tons
= 1600 kg

Sec. B: = 40 kg/metric ton × 40 metric tons
= 1600 kg

Sec. A: = 100 kg/metric ton × 40 metric tons
= 4000 kg

Total Resistance —

TR = RR – GA

Sec. D: = 4000 kg – 0 = 4000 kg
Sec. C: = 1600 kg – 1600 kg = 0
Sec. B: = 1600 kg – 0 = 1600 kg
Sec. A: = 4000 kg – 0 = 4000 kg

Check usable kilogram force against maximum force required to move the 631E.

Kilogram force usable … 13 800 kg empty
Kilogram force required … 4000 kg

Estimate travel time for return from 631E 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)

825C 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 825C 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:

631E	@ $65.00/hr ×	11 units	$715.00
D9N	@ 75.00/hr ×	2 units	150.00
12G	@ 15.00/hr ×	2 units	30.00
825C	@ 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:

$$\text{Cost per BCM} = \frac{\text{Total cost/hr}}{\text{Production/hr}}$$

$$= \frac{\$1{,}255.00}{1507 \text{ BCM/hr}}$$

$$= 83¢/\text{BCM}$$

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.

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 applcation based on distance. These haul ranges will vary by application.

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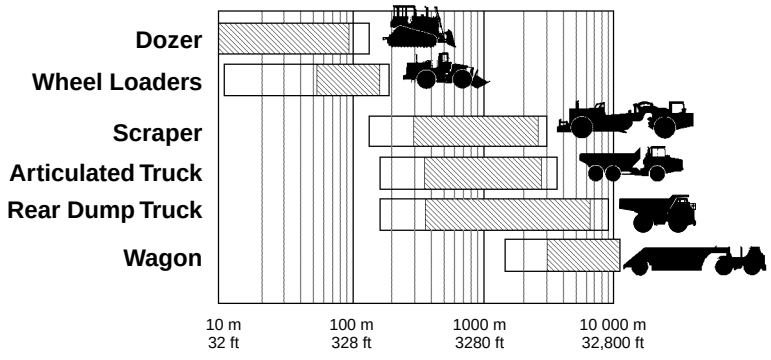
GENERAL HAUL DISTANCES FOR MOBILE SYSTEMS



HAUL DISTANCE

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.

Caterpillar Earthmoving and Mining Systems Production/50 Min. Hr.

Tonnes	Tons	Loading Tool	Passes	Target
2270/2450	2500/2700	994 HL	7	793C
2450/2700	2700/3000	994	5	789C
2270/2450	2500/2700	994 HL	6	789C
2450/2700	2700/3000	994	4	785C
1450/1600	1600/1800	992G	6	785C
1540/1720	1700/1900	992G	4	777D
1180/1360	1300/1500	990	3	773D
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
630/900	700/900	988F HL	5	773D
730/910	800/1000	988F	4	771D
540/730	600/800	980F HL	6	771D
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

Production, hourly = Load (BCM) cycle × cycles/hr
= Load (BCY) cycle × cycles/hr

$$\textit{Load Factor (L.F.)} = \frac{100\%}{100\% + \%\ \text{swell}}$$

Load (bank measure) = Loose cubic meters (LCM) × L.F.
= Loose cubic yards (LCY) × L.F.

$$\textit{Shrinkage Factor (S.F.)} = \frac{\text{Compacted cubic meters (or yards)}}{\text{Bank cubic meters (or yards)}}$$

Density = Weight/Unit Volume

$$\textit{Load (bank measure)} = \frac{\text{Weight of load}}{\text{Bank density}}$$

Rolling Resistance Factor
= 20 kg/t × (6 kg/t/cm × cm)
= 40 lb/ton + (30 lb/ton/inch × inches)

Rolling Resistance
= RR Factor (kg/t) × GMW (tons)
= RR Factor (lb/ton) × GMW (tons)

Rolling Resistance
= 2% of GMW + 0.6% of GMW per cm tire penetration
= 2% of GMW + 1.5% of GMW per inch tire penetration

$$\%\ \text{Grade} = \frac{\text{vertical change in elevation (rise)}}{\text{corresponding horizontal distance (run)}}$$

Grade Resistance Factor = 10 kg/m ton × % grade
= 20 lb/ton × % grade

Grade Resistance = GR Factor (kg/t) × GMW (tons)
= GR Factor (lb/ton) × GMW (tons)

Grade Resistance = 1% of GMW × % grade

Total Resistance
= Rolling Resistance (kg or lb) + Grade Resistance (kg or lb)

Total Effective Grade (%) = RR (%) + GR (%)

Usable pull (traction limitation) = Coeff. of traction × weight on drivers
= Coeff. of traction × (Total wt × % on drivers)

Pull required = Rolling Resistance + Grade Resistance
= Total Resistance

Total Cycle Time = Fixed time + Variable time

Fixed time: See respective machine production section.

Variable time = Total haul time + Total return time

$$\textit{Travel Time} = \frac{\text{Distance (m)}}{\text{Speed (m/min)}}$$

$$= \frac{\text{Distance (ft)}}{\text{Speed (fpm)}}$$

$$\textit{Cycles per hour} = \frac{60\ \text{min/hr}}{\text{Total cycle time (min/cycle)}}$$

Adjusted production = Hourly production × Efficiency factor

$$\textit{No. of units required} = \frac{\text{Hourly production required}}{\text{Unit hourly production}}$$

$$\textit{No. of scrapers a pusher will load} = \frac{\text{Scraper cycle time}}{\text{Pusher cycle time}}$$

Pusher cycle time (min) = 1.40 Load time (min) + 0.25 min

$$\textit{Grade Horsepower} = \frac{\text{GMW (kg)} \times \text{Total Effective Grade} \times \text{Speed (km/h)}}{273.75}$$

$$= \frac{\text{GMW (lb)} \times \text{Total Effective Grade} \times \text{Speed (mph)}}{375}$$

LOGGING AND FOREST PRODUCTS

CONTENTS

Introduction

This chapter gives information for estimating performance of Cat machines in logging. The chapters on Earthmoving and Owning and Operating Costs should be understood before applying this chapter. Because of variations in conditions, actual experience should be considered whenever it is available.

ESTIMATING WHEEL AND TRACK SKIDDER PRODUCTION

1. Determine the weight of the average log and multiply log loads expected to be skidded. If average weights or volumes are not available from local timber cruise or log scale data, they can be estimated using the following procedure:
   — Determine length and both end diameters of the average size log to be skidded. Then determine its volume using tables in this section.
   — Determine average log weight based on its estimated volume and green density for the species being skidded using the tables in this section.
2. Determine operating weight of machines being considered. If one end of the logs will be suspended by a cable arch or hydraulic grapple, estimate the percent of log weight that will be transferred to the machine. Then determine total machine plus load transferred weight. Weight transfer of small diameter logs with substantial taper may be as high as two-thirds when skidded with large end ahead and as low as one-third with small end ahead. Large diameter logs with little taper will have weight transfer closer to 50% of their weight.

3. Determine the average percent grade on the proposed skid trails. Then determine the grade resistance or assistance for the haul and return portions of the cycle for each machine considered. If there are significant differences in grade along the proposed trails, the grade resistance or assistance must be determined for each section of the trails. For the haul portion of the cycle, grade resistance must be determined for log loads.

   Grade Resistance in Kilograms = % Grade × 10 kg/metric ton × GMW in tons
   Grade Resistance in Pounds = % Grade × 20 lb/U.S. ton × GMW in tons

4. Determine the average rolling resistance for each wheel-type machine being considered based on expected tire penetration or on typical rolling resistance factors shown in the Tables Section. If there are significant differences in underfoot conditions and tire penetration along the proposed skid trails, rolling resistance must also be determined for machines with and without loads.

   RR Factor in kg/metric ton = 20 kg/t + (6 kg/t/cm × tire penetration in cm)
   RR Factor in lb/U.S. ton = 40 lb/ton + (30 lb/ton/inch × tire penetration in inches)

   Total Rolling Resistance in Kilograms = RR Factor in kg/t × GMW in metric tons
   Total Rolling Resistance in Pounds = RR Factor in lb/U.S. ton × GMW in tons

5. Determine skidding resistance for log loads on each machine using the tables on the next page. For log weights and grades not shown, skidding resistance must be determined by interpolation. The arch skidding tables must be used when one end of the logs will be suspended by a cable arch or hydraulic grapple. The ground skidding tables are used when logs are not suspended. If there are significant differences in grade along the proposed trails, then skidding resistance must be determined for each section.

6. Determine the total resistance or pull required to overcome the total of grade, rolling, and skidding resistance. Total resistance must be determined for each machine and skid trail section on both haul and return portions of the cycles.

   Total Resistance on Return = Grade Resistance + Rolling Resistance
   Total Resistance on Haul = Grade Resistance + Rolling Resistance + Skidding Resistance

7. Determine the traction limitations or usable pull for each machine with and without loads if one end of the logs will be suspended. Usable pull is estimated using the approximate coefficient of traction factors for the soil conditions shown in Tables Section.

   Usable Pull in Kilograms = Coefficient of Traction × GMW in Kilograms
   Usable Pull in Pounds = Coefficient of Traction × GMW in Pounds

8. Determine maximum return and haul travel speeds for each machine and skid trail section on those loads whose total resistance (required pull) estimated in step 6 is less than the usable pull estimated in step 7. Travel speeds for track-type tractors are estimated from the drawbar pull graphs in the Tractor Section. Wheel skidder travel speeds are estimated from the rim-pull graphs in the Skidder Section.

9. Determine return and haul travel times for each machine, load and segment based on the length of each skid trail segment and the speeds determined in step 8.

   Travel Time in Minutes = Distance in meters ÷ [(speed in km/h) (16.7)]
   Travel Time in Minutes = Distance in feet ÷ [(speed in mph) (88)]

10. Determine fixed times to maneuver machines and to hook, unhook and deck logs based on local experience.

11. Determine total cycle time and cycles per hour for each machine with log loads on each skid trail.

    Cycle Time = Return Time + Haul Time + Fixed Time
    Cycles/Hour = 60 ÷ cycle time in minutes

12. Determine production for each machine on each skid trail at the expected job efficiency in the desired units, such as number of logs, weight of logs, cubic volume, board feet, cords, etc., using the appropriate conversion factors.

    Units/Hour = Cycles/Hour × Unit/Cycle × Job Efficiency

DRAWBAR KILOGRAMS PULL Required To Overcome Log Skidding Resistance

*Grade	Load Weight (kg)									
	500	1000	1500	2000	2500	3000	3500	4000	4500	5000
	Drawbar Kilograms Required									
GROUND SKIDDING — Log Lengths										
30% Upgrade	683	1205	1808	2410	3013	3615	4218	4820	5423	6025
20% Upgrade	550	1100	1650	2200	2750	3300	3850	4400	4950	5500
10% Upgrade	498	995	1493	1990	2488	2985	3483	3980	4478	4975
Level	445	890	1335	1780	2225	2670	3115	3560	4005	4450
10% Downgrade	392	784	1176	1568	1960	2352	2744	3136	3528	3920
20% Downgrade	340	679	1091	1358	1698	2037	2377	2716	3056	3395
30% Downgrade	287	574	861	1148	1435	1722	2009	2296	2583	2870
ARCH SKIDDING — Log Lengths										
30% Upgrade	603	964	1246	1527	1809	2090	2377	2653	2935	3216
20% Upgrade	513	750	987	1224	1461	1698	1935	2172	2409	2645
10% Upgrade	343	535	728	920	1113	1305	1498	1690	1883	2075
Level	167	317	468	618	769	919	1070	1220	1371	1521
10% Downgrade	—	105	207	313	417	521	625	729	833	937
20% Downgrade	—	—	—	—	30	100	170	239	310	380

DRAWBAR POUNDS PULL Required To Overcome Log Skidding Resistance

*Grade	Load Weight (lb)									
	1000	2000	3000	4000	5000	6000	7000	8000	9000	10 000
	Drawbar Pounds Pull Required									
GROUND SKIDDING — Log Lengths										
30% Upgrade	1365	2410	3615	4820	6025	7230	8435	9650	10 845	12 050
20% Upgrade	1100	2200	3300	4400	5500	6600	7700	8800	9900	11 000
10% Upgrade	995	1990	2985	3980	4975	5970	6965	7960	8955	9950
Level	890	1780	2670	3560	4450	5340	6230	7120	8010	8900
10% Downgrade	784	1568	2352	3136	3920	4704	5488	6272	7056	7840
20% Downgrade	679	1358	2037	2716	3395	4074	4753	5432	6111	6790
30% Downgrade	574	1148	1722	2296	2870	3444	4018	4592	5166	5740
ARCH SKIDDING — Log Lengths										
30% Upgrade	1205	1928	2491	3054	3617	4180	4753	5306	5869	6432
20% Upgrade	1025	1499	1973	2447	2921	3395	3869	4343	4817	5291
10% Upgrade	685	1070	1455	1840	2225	2610	2995	3380	3765	4150
Level	333	634	935	1236	1537	1838	2139	2440	2741	3042
10% Downgrade	—	209	414	625	833	1041	1249	1457	1665	1873
20% Downgrade	—	—	—	—	59	199	339	479	619	759

Data taken on dry, smooth, clay loam slopes, Resistances are less on wet soil. Source — Central States Forest Experiment Station, U.S. Forest Service.

*% Grade = $\frac{\text{Vertical Rise}}{\text{Horizontal Distance}} \times 100\%$

Example problem (Metric)

Determine the production capabilities in logs per hour of a 525 grapple skidder and a 527 grapple skidder in a skidding application. Operating weights are 13 865 kilograms for the 525 with grapple and 19 353 kilograms for the 527 with grapple. The timber is Radiata pine with the average log being 18 meters long with a butt diameter of 350 millimeters and a top diameter of 100 millimeters.

The average skid trail is 150 meters long with a 5% average adverse skidding grade and 75 millimeters average tire penetration. The coefficient of traction is estimated to be 0.5 for wheels and 0.8 for tracks.

The logs will be bunched in groups of 6 logs for the 525 and 9 logs for the 527. Maneuver time for a log hook-up averages 0.3 minutes and hook-up time averages 0.2 minutes. Landing maneuver, decking, and unhook time average a total of 1.0 minute.

1. **Average Load Size:**

   Volume/Log = (1.73 + 0.014)/2 = 0.935 m^3
   Density of Radiata Pine = 865 kg/m^3
   Weight/Log = 865 × 0.935 = 809 kg

   Six Log Load = 809 × 6 = 4853 kg
   Nine Log Load = 809 × 9 = 7279 kg

2. **Gross Machine Weights:**

   525 Empty GMW = 13 865 kg = 13.8 Metric tons
   527 Empty GMW = 19 353 kg = 19.3 Metric tons

   525 Load Weight Transferred = 0.6 × Load Weight
   527 Load Weight Transferred = 0.6 × Load Weight

   525 Loaded:
   13 865 + (0.6 × 4853) = 16 777 kg = 16.78 Metric tons
   527 Loaded:
   19 353 + (0.6 × 7279) = 23 720 kg = 23.72 Metric tons

3. **Grade Resistance/Assistance:**

   Grade Assistance: Return = 5 × 10 kg/T × GMW in tons (empty)

   Grade Resistance: Haul = 5 × 10 kg/T × GMW in tons

	525	**527**
Assistance:		
Return Empty	(–690 kg)	(–965 kg)
Resistance:		
Haul Load	839 kg	1186 kg

4. **Rolling Resistance — 525:**

   RR Factor = 20 kg/ton + (6 kg/ton/cm × 7.5 cm) = 65 kg/T
   RR = 65 × GMW in tons

   Resistance:
   Return = 65 × 13.8 = 897 kg
   Haul = 65 × 16.78 = 1091 kg

5. **Skidding Resistance** (derived from tables in this section):

   Skid Resistance/Log = 450 kg
   Skid Resistance — Six Logs = 2700 kg
   Skid Resistance — Nine Logs = 4050 kg

6. **Total Resistance — Required Pull:**

   525 Return Empty = (–690) + 897 = 207 kg
   525 Haul Load = 839 + 1091 + 2700 = 4630 kg

   527 Return Empty = (–965) kg
   527 Haul Load = 1186 + 4050 = 5236 kg

7. **Usable Pull:**

   525 Return Empty = 0.5 × 13 865 = 6933 kg
   525 Haul Load = 0.5 × 16 777 = 8389 kg

   527 Return Empty = 0.8 × 19 353 = 15 482 kg

   527 Haul Load = 0.8 × 23 720 = 18 976 kg

8. **Travel Speeds:** from rimpull/drawbar pull graphs

	525	527
Return Empty	14 km/h*	6.4 km/h*
Haul Load	6 km/h	3.2 km/h

*Depending upon haul road conditions and job site factors, a slower speed may be preferred for a safer return.

9. **Travel Times:**

Travel Time = 150 m x 0.9 (speed in km/h)

	525	527
Return Empty	0.64 min.	1.4 min.
Haul Load	1.5 min.	2.8 min.

10. **Fixed Times:**

Total Fixed Time = 0.3 + 0.2 + 1.0 = 1.5 min.

11. **Cycles per Hour:**

Cycles/hr = (60 min/hr)/(Total Cycle Time in min)

	525	527
Total Cycle Time	3.64 min.	5.7 min.
Cycles per Hour	16.5	10.5

12. **Production per Hour:**

Logs/Hour = Cycles/hr × Logs/cycle

	525	527
Logs/cycle	6	9
Logs/hour	99	95

Example problem (English)

Determine the production capabilities in logs per hour of a 525 grapple skidder and a 527 grapple skidder in a thinning application. Operating weights are 30,570 pounds for the 525 with grapple and 42,670 pounds for the 527 with grapple. The timber is Loblolly pine with the average log being 60 feet long with a butt diameter of 14 inches and a top diameter of 4 inches.

The average skid trail is 500 feet long with a 5% average adverse skidding grade and 3 inches average tire penetration. The coefficient of traction is estimated to be 0.5 for wheels and 0.8 for tracks.

The logs will be bunched in groups of 6 logs for the 525 and 9 logs for the 527. Maneuver time for a log hook-up averages 0.3 minutes and hook-up time averages 0.2 minutes. Landing maneuver, decking, and unhook time average a total of 1.0 minute.

1. **Average Load Size:**

Volume/Log = (64 + 5.2)/2 = 34.6 ft^3
Density of Loblolly Pine = 62 lb/ft^3
Weight/Log = 62 × 34.6 = 2145 lb

Six Log Load = 2145 × 6 = 12,871 lb
Nine Log Load = 2145 × 9 = 19,305 lb

2. **Gross Machine Weights:**

525 Empty GMW = 30,570 lb = 15.3 tons
527 Empty GMW = 42,670 lb = 21.3 tons

525 Load Weight Transferred = 0.6 × Load Weight
527 Load Weight Transferred = 0.6 × Load Weight

525 Loaded:
30,570 + (0.6 × 12,871) = 38,293 lb = 19.1 tons
527 Loaded:
42,670 + (0.6 × 19,306) = 54,254 lb = 27.1 tons

3. **Grade Resistance/Assistance:**

Grade Assistance: Return = 5 × 20 lb/T × GMW in tons

Grade Resistance: Haul = 5 × 20 lb/T × GMW in tons

	525	527
Assistance:		
Return Empty	(–1530 lb)	(–2130 lb)
Resistance:		
Haul Load	1910 lb	2710 lb

4. **Rolling Resistance — 525:**

   RR Factor = 40 lb/ton + (30 lb/ton/in × 3 in) = 130 lb/T
   RR = 130 × GMW in tons

   Resistance:
   Return = 130 × 15.3 = 1989 lb
   Haul = 130 × 19.1 = 2483 lb

5. **Skidding Resistance** (derived from tables in this section):

   Skid Resistance/Log = 1169 lb
   Skid Resistance — Six Logs = 7014 lb
   Skid Resistance — Nine Logs = 10,521 lb

6. **Total Resistance — Required Pull:**

   525 Return Empty = (–1530) + 1989 = 459 lb
   525 Haul Load = 1910 + 2483 + 7014 = 11,407 lb

   527 Return Empty = (–2130) lb
   527 Haul Load = 2710 + 10,521 = 13,231 lb

7. **Usable Pull:**

   525 Return Empty = 0.5 × 30,570 = 15,285 lb
   525 Haul Load = 0.5 × 38,293 = 19,146 lb

   527 Return Empty = 0.8 × 42,670 = 34,136 lb
   527 Haul Load = 0.8 × 54,254 = 43,403 lb

8. **Travel Speeds:** from rimpull/drawbar pull graphs

	525	527
Return Empty	8.7 mph*	3.9 mph*
Haul Load	3.7 mph	2 mph

   *Depending upon haul road conditions and job site factors, a slower speed may be preferred for a safer return.

9. **Travel Times:**

   Travel Time = 500 ft × (60 min/hr)/(5280 ft/mi)/(speed in mph)

	525	527
Return Empty	0.65 min.	1.45 min.
Haul Load	1.53	2.84

10. **Fixed Times:**

    Total Fixed Time = 0.3 + 0.2 + 1.0 = 1.5 min.

11. **Cycles per Hour:**

    Cycles/hr = (60 min/hr)/(Total Cycle Time in min)

	525	527
Total Cycle Time	3.68 min.	5.79 min.
Cycles per Hour	16.3	10.4

12. **Production per Hour:**

    Logs/hr = Cycles/hr × Logs/cycle

	525	527
Logs/cycle	6	9
Logs/hour	98	94

● ● ●

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 966F vs 950F

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 950F vs. 966F. Both are equipped with logging fork.

950F

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)

966F

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 (950F)	Time (966F)
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

(Off-loading trucks)

Description	Time (950F)	Time (966F)
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:

— 950F

$$\frac{544\ 320 \text{ kg (1,200,000 lb)/8 hr/day}}{10\ 000 \text{ kg (22,000 lb)/loader cycle}} = \frac{55 \text{ loader cycles}}{8 \text{ hr/day}}$$

$$\frac{55 \text{ loader cycles/8 hr/day}}{19.06 \text{ cycles/45-min hr}} = 2.88 \text{ hr/day required to supply mill}$$

— 966F

$$\frac{544\ 320 \text{ kg (1,200,000 lb)/8 hr/day}}{13\ 500 \text{ kg (29,700 lb)/loader cycle}} = \frac{41 \text{ loader cycles}}{8 \text{ hr/day}}$$

$$\frac{41 \text{ loader cycles/8 hr/day}}{19.23 \text{ cycles/45-min hr}} = 2.13 \text{ hr/day required to supply mill}$$

Off-Load Requirements:

— 950F

20 logs/truck × 30 truckloads/day = 600 logs/day

600 logs/day × 1180 kg (2600 lb)/log = 707 616 kg/day or 1,560,000 lbs/day Incoming Wood

$$\frac{707\ 616 \text{ kg (1,560,000 lb)/8 hr/day}}{10{,}000 \text{ kg (22,000 lb)/loader cycle}} = \frac{71 \text{ loader cycles}}{8 \text{ hr/day}}$$

$$\frac{71 \text{ loader cycles/8 hr/day}}{29.45 \text{ cycles/hr}} = 3.47 \text{ hr/day required to off-load wood}$$

— 966F

20 logs/truck × 30 truckloads/day = 600 logs/day

600 logs/day × 1180 kg (2600 lb)/log = 707 616 kg/day or 1,560,000 lbs/day Incoming Wood

$$\frac{707\ 616 \text{ kg (1,560,000 lb)/8 hr/day}}{13{,}500 \text{ kg (29,700 lb)/loader cycle}} = \frac{53 \text{ loader cycles}}{8 \text{ hr/day}}$$

$$\frac{53 \text{ loader cycles/8 hr/day}}{20.45 \text{ cycles/hr}} = 2.59 \text{ hr/day required to off-load wood}$$

Total Production Required:

— 950F = 2.88 hr/day to supply mill
3.47 hr/day to off-load
6.35 hr/day total time

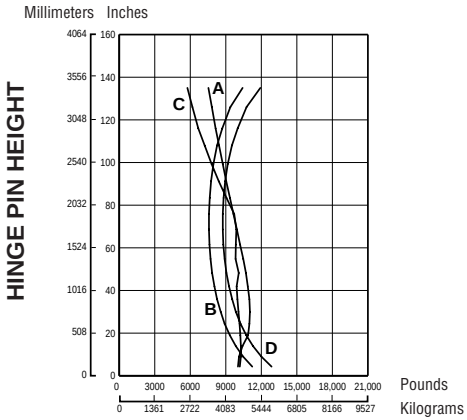
— 966F = 2.13 hr/day to supply mill
2.59 hr/day to off-load wood
4.72 hr/day total time

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 950F and 966F 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 950F is not capable of clearing the stakes with a load. This leaves the 966F as the machine to recommend, since it can handle all restrictions and production requirements.

914G with Balderson Lumber and Log Fork



CAPACITY IN FULL TURN NO CLAMP

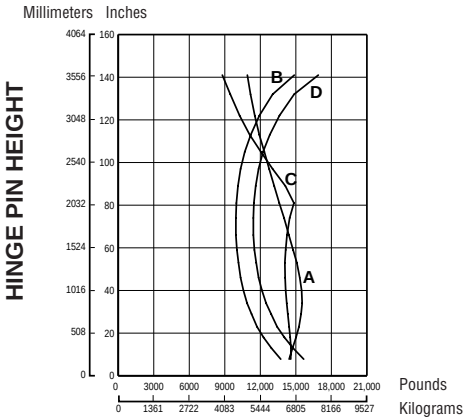
KEY

A — Hydraulic Lift Capacity Fork Racked
B — Static Tipping Load Full 40° Turn Fork Level
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level

Curves based on machine with full fuel tank, operator, 17.5R25 tires and Balderson 125-9293 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.

	Change in Operating Weight	Change in Articulated Static Tipping Load	
		Racked	Level
Add ROPS canopy	+317 kg (+700 lb)	+309 kg (+682 lb)	+233 kg (+515 lb)
Add ROPS canopy and cab	+527 kg (+1163 lb)	+388 kg (+856 lb)	+345 kg (+762 lb)

924F with Balderson Lumber and Log Fork



CAPACITY IN FULL TURN NO CLAMP

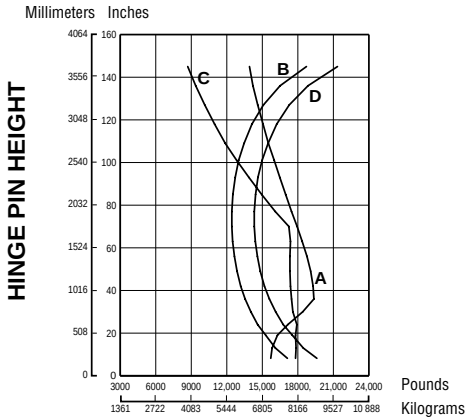
KEY

A — Hydraulic Lift Capacity Fork Racked
B — Static Tipping Load Full 40° Turn Fork Level
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level

Curves based on machine with full fuel tank, operator, 17.5R25 tires and Balderson 8918C3 lumber/log fork without top clamp. Fork weight 834 kg (1838 lb). Total operating weight, 9280 kg (20,444 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar Dealer for additional fork data.

	Change in Operating Weight	Change in Articulated Static Tipping Load
		Level
Without ROPS canopy and cab (platform only)	–418 kg (–922 lb)	–258 kg (–569 lb)
Without cab (ROPS/ platform)	–207 kg (–456 lb)	–128 kg (–282 lb)

928G with Balderson Lumber and Log Fork



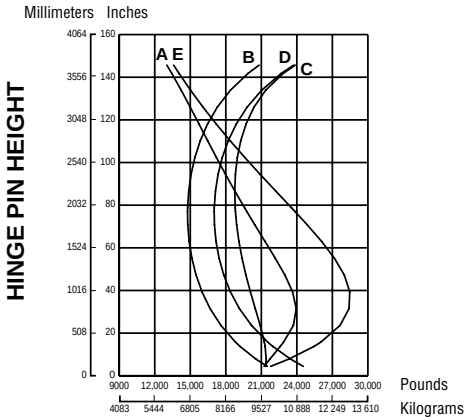
CAPACITY IN FULL TURN NO CLAMP

KEY

A — Hydraulic Lift Capacity Fork Racked
B — Static Tipping Load Full 40° Turn Fork Level
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 20.5-25 tires, 250 kg (550 lb) counterweight, 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.

938G Logger with Balderson Millyard Fork



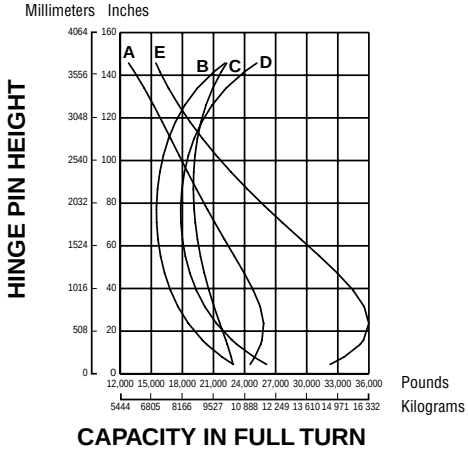
CAPACITY IN FULL TURN

KEY

A — Hydraulic Lift Capacity 40° Turn, Fork Racked
B — Static Tipping Load Full 40° Turn Fork Level
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 20.5-25, 16PR(L-2) tires, with 810 kg (1785 lb) rear tire ballast, 562 kg (1240 lb) counterweight, Balderson millyard fork 119-8243.00 with 1345 mm (4'5") tines, 1635 kg (3600 lb) combined weight. Total operating weight, 14 297 kg (31,520 lb).

938G Logger with Balderson Log and Lumber Fork

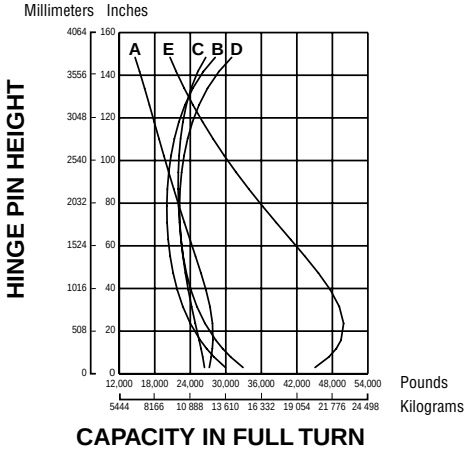


KEY

A — Hydraulic Lift Capacity 40° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 20.5-25, 16PR(L-2) tires, and 562 kg (1240 lb) counterweight, with 810 kg (1785 lb) rear tire ballast Balderson 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).

950F Series II Logger with Balderson Logging Fork and Top Clamp

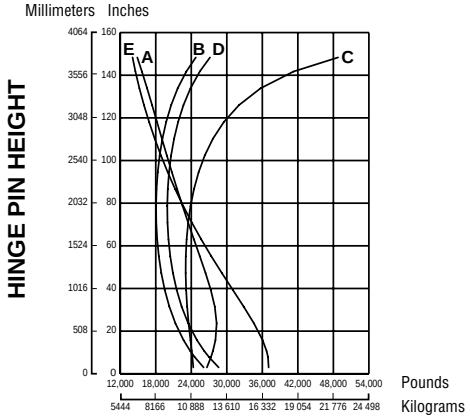


KEY

A — Hydraulic Lift Capacity 35° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves and operating weight on chart are based on machine equipped with 23.5-25, 16PR(L-3) tires, counterweight, 1244 kg (2743 lb) ballast in rear tires, full fuel tank, operator, Balderson 896IC2 (BLF 950 ED-TC) log fork with 1397 mm (4'7") tines and top clamp, 2018 kg (4450 lb) combined weight. Total operating weight, 18 255 kg (40,245 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar dealer for additional information.

950F Series II Logger with Balderson Millyard Fork and Top Clamps

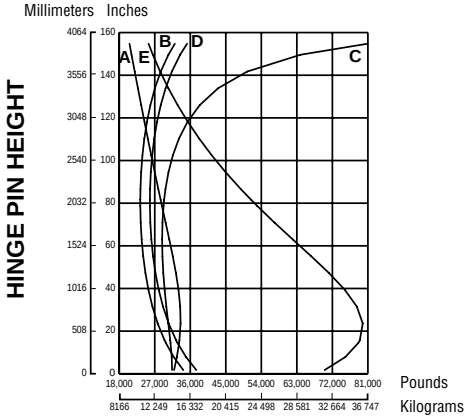


KEY

A — Hydraulic Lift Capacity 35° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves and operating weight on chart are based on machine equipped with 23.5-25 16PR(L-3) tires 1069 kg (3246 lb) counterweight with 1244 kg (2587 lb) ballast in rear tires, full fuel tank, operator, Balderson millyard fork 5544C3 1930 kg (4250 lb) total weight. Total operating weight, 17 990 kg (39,660 lb).

966F Series II Logger with Balderson Millyard Fork

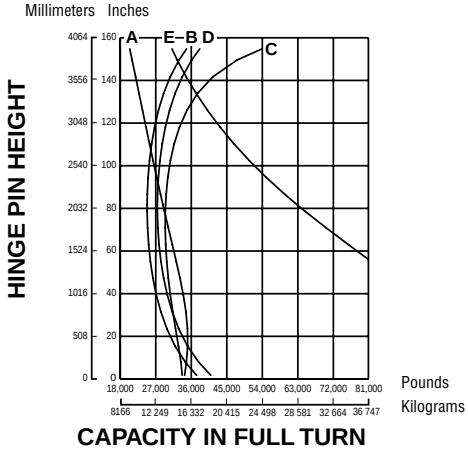


KEY

A — Hydraulic Lift Capacity 35° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves and operating weight on chart are based on machine equipped with 26.5-25, 20PR(L-3) tires, counterweight with 1515 kg (3440 lb) ballast in rear tires, full fuel tank, operator, Balderson millyard fork 5831C1 with 1600 mm (5'3") tines and top clamp, 2450 kg (5400 lb) combined weight. Total operating weight, 22 740 kg (50,130 lb).

966F Series II Logger with Balderson Logging Fork

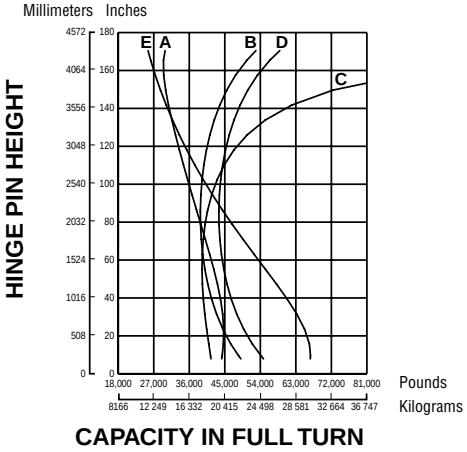


KEY

A — Hydraulic Lift Capacity 35° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves and operating weight on chart are based on machine equipped with 26.5-25, 20PR(L-3) tires, counterweight with 1515 kg (3440 lb) ballast in rear tires, full fuel tank, operator, Balderson logging fork 9209C with 1600 mm (5'3") tines and top clamp, 2360 kg (5200 lb) combined weight. Total operating weight, 22 634 kg (49,910 lb).

980G Logger with Balderson Millyard Fork

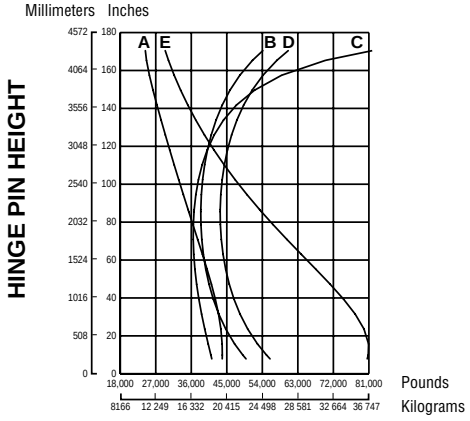


KEY

A — Hydraulic Lift Capacity 35° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves based on logging machine with full fuel tank, ROPS cab, 29.5-25, 22PR(L-3) tires, with 1945 kg (4290 lb) ballast in rear tires, 3810 kg (8400 lb) counterweight, Balderson millyard fork weight of 1850 kg (4075 lb). Total operating weight, 32 680 kg (72,050 lb).

980G Logger with Balderson Double Top Clamp Log Fork

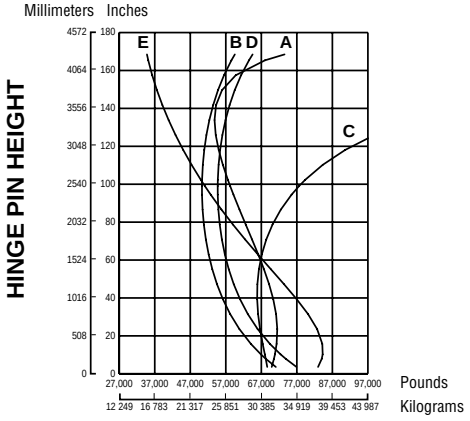


KEY

A — Hydraulic Lift Capacity 35° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 29.5-25, 22PR(L-3) tires, with 2060 kg (4535 lb) ballast in rear tires, 3200 kg (7050 lb) counterweight, Balderson 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).

988F Series II Logger with Balderson Millyard Fork

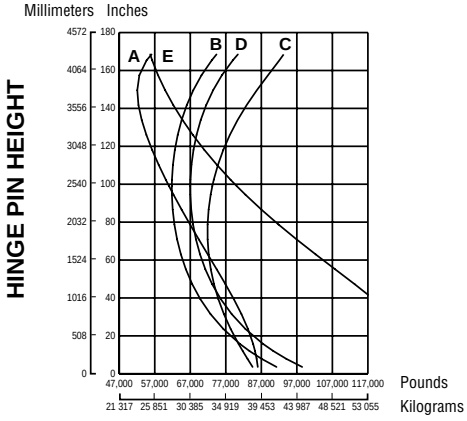


KEY

A — Hydraulic Lift Capacity 30° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 35/65-33 30PR(L-4) tires. Standard 4455 kg (9825 lb) counterweight, 2690 kg (5930 lb) ballast in rear tires Balderson 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.

988F Series II Logger with Balderson Double Top Clamp Log Fork

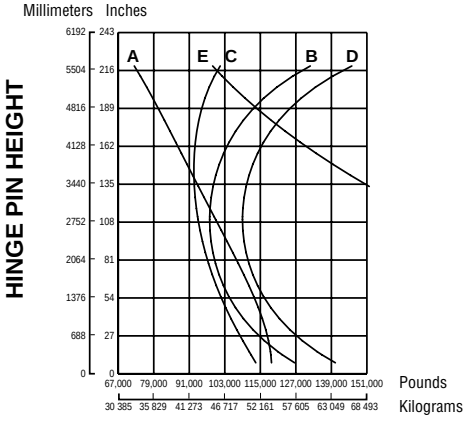


KEY

A — Hydraulic Lift Capacity 30° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 35/65-33 30PR(L-4) tires. Standard log 4455 kg (9825 lb) counterweight, 2690 kg (5930 lb) ballast in rear tires Balderson 8965C DTC log fork at 4490 kg (9900 lb). Total operating weight 51 775 kg (114,160 lb).

990 Series II Logger with Balderson Double Top Clamp Log Fork

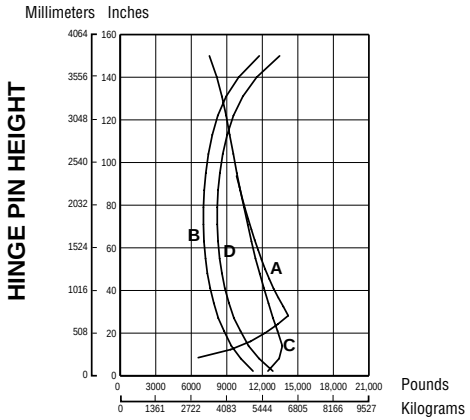


KEY

A — Hydraulic Lift Capacity 35° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

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, Balderson 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).

IT14G with Balderson Lumber and Log Fork



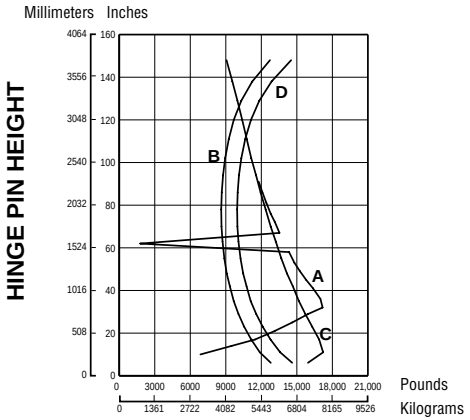
CAPACITY IN FULL TURN

KEY

A — Hydraulic Lift Capacity Fork Racked
B — Static Tipping Load Full 40° Turn Fork Level
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level

Curves and operating weight are based on machine equipped with 17.5R25 tires, full fuel tank, 80 kg (176 lb) operator, Balderson 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.

IT24F with Balderson Lumber and Log Fork



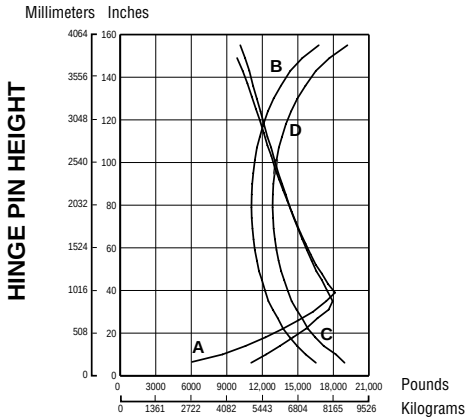
CAPACITY IN FULL TURN

KEY

A — Hydraulic Lift Capacity Fork Racked
B — Static Tipping Load Full 40° Turn Fork Level
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level

Curves and operating weight are based on machine equipped with 17.5R25 tires, full fuel tank, 80 kg (176 lb) operator, Balderson 9816C2 lumber and log fork without top clamp. Fork weight is 803 kg (1770 lb). Total operating weight 9963 kg (21,948 lb). Forks of other dimensions or weight may affect machine capacity. Consult your Caterpillar Dealer for additional fork data.

IT28G with Balderson Lumber and Log Fork



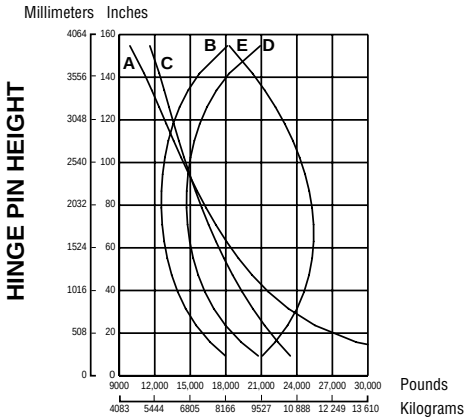
CAPACITY IN FULL TURN

KEY

A — Hydraulic Lift Capacity Fork Racked
B — Static Tipping Load Full 40° Turn Fork Level
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, 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, Balderson 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.

IT38 Logger with Balderson Millyard Fork and Quick Coupler



CAPACITY IN FULL TURN

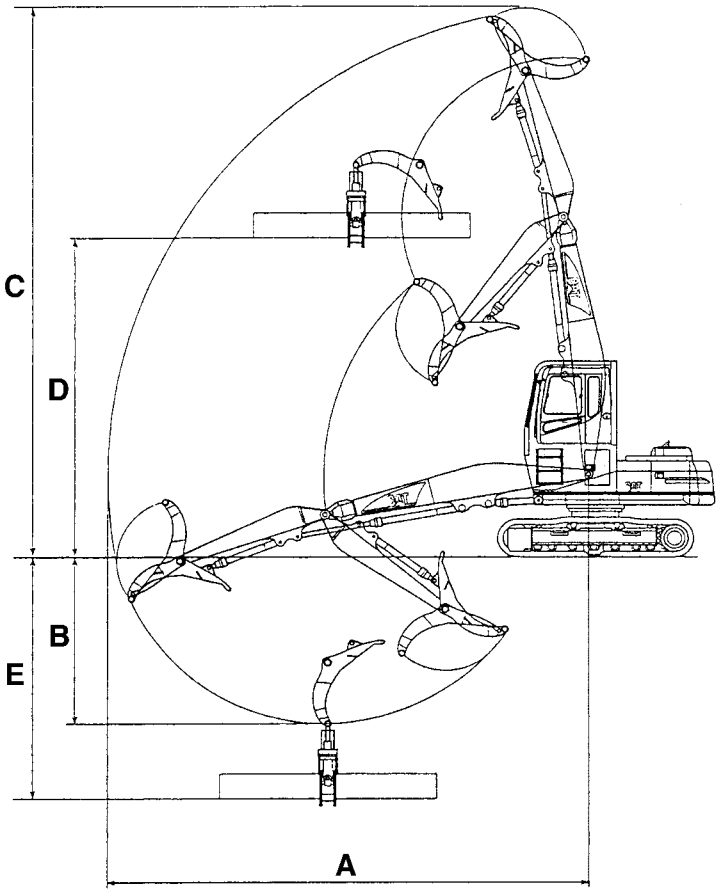
KEY

A — Hydraulic Lift Capacity 40° Turn, Fork Racked
B — Articulated Tipping Capacity
C — Hydraulic Lift Capacity Fork Level
D — Static Tipping Load Machine Straight, Fork Level
E — Hydraulic Tilt Capacity Fork Level

Curves based on machine with full fuel tank, operator, ROPS cab, 20.5-25, 16PR(L-2) tires, with 810 kg (1785 lb) rear tire ballast, 760 kg (1675 lb) counterweight, Balderson 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.

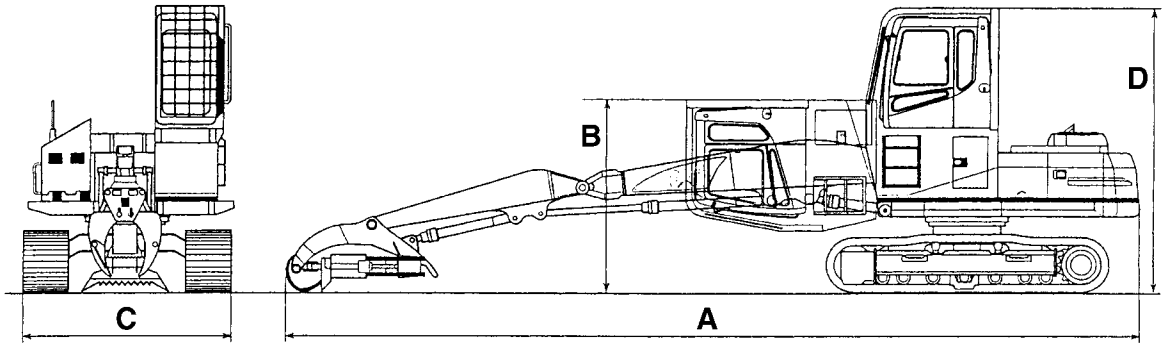
Introduction

Caterpillar foresty machines are specifically designed for tough forest work. Each model uses purpose built booms and sticks designed by Caterpillar for maximum performance and durability.



Working Envelope

		320B FM w/high wide carbody		320B FM w/reinforced carbody	
		m	ft	m	ft
A	Max. Reach	10.98	**36'0"**	10.98	**36'0"**
B	Max. Depth	4	**13'1"**	4.17	**13'8"**
C	Max. Height	12.63	**41'5"**	12.46	**40'10"**
D	Max. Deck Height	7.37	**24'2"**	7.20	**23'7"**
E	Max. Deck Depth	5.68	**18'8"**	5.85	**19'2"**



Shipping Dimensions

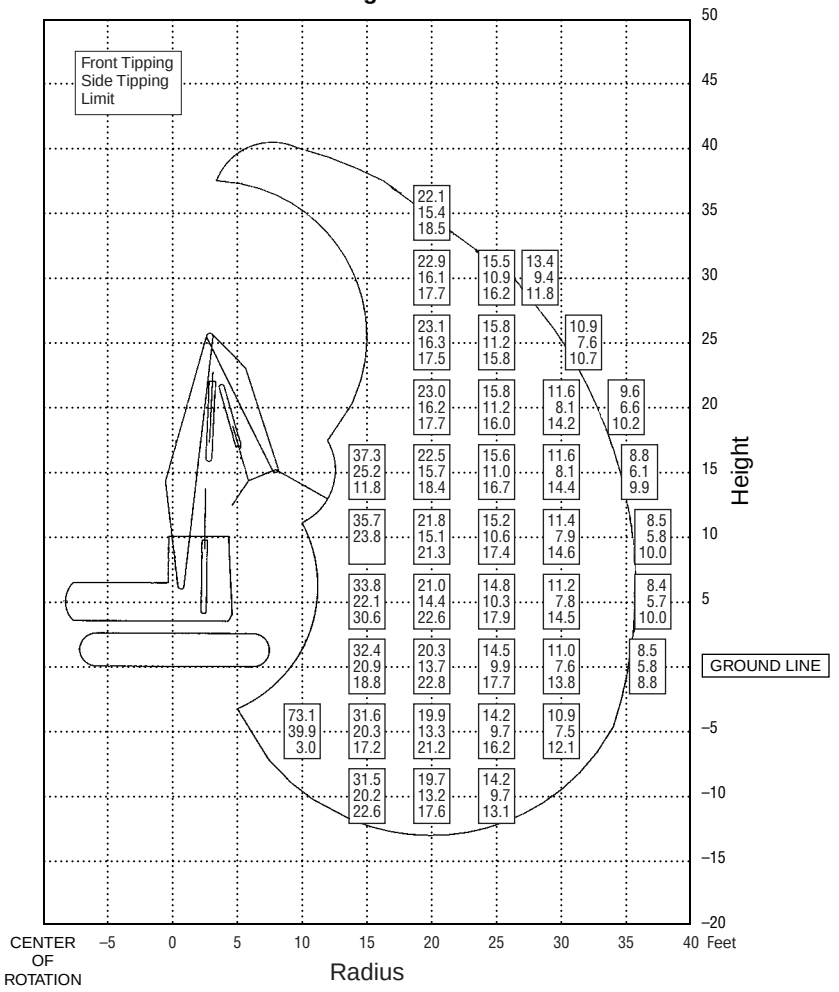
	320B FM w/high wide carbody 1.22 m (4'0") cab riser		320B FM w/high wide carbody 457 mm (18") cab riser		320B FM w/reinforced carbody 1.22 m (4'0") cab riser		320B FM w/reinforced carbody 457 mm (18") cab riser	
	m	**ft**	**m**	**ft**	**m**	**ft**	**m**	**ft**
A Overall Length	13.62	**44'8"**	13.62	**44'8"**	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"**

Forest Machine	**320B FM**	
	kg	**lb**
Booms*		
Reach	2020	**4450**
Mass	2050	**4520**
LL Boom	2610	**5750**
Sticks (for Reach)**		
Short	750	**1650**
•	650	**1430**
•	675	**1490**
Long	750	**1650**
Sticks (for Mass)		
Short	750	**1650**
•	780	**1720**
Long	—	**—**
Sticks (for LL Boom)		
LL Stick	905	**2000**
Upperstructure (complete w/o counterweight)		
w/1.22 m **(4'0")** cab riser	7400	**16,310**
w/457 mm **(18")** cab riser	7180	**15,830**
Undercarriage (for high wide carbody)		
— 600 mm **(2'0")** shoe	8850	**19,510**
— 700 mm **(2'4")** shoe	9175	**20,230**
— 800 mm **(2'7")** shoe	9165	**20,210**
Undercarriage (reinforced carbody)		
— 600 mm **(2'0")** shoe	8390	**18,500**
— 700 mm **(2'4")** shoe	8710	**19,200**
— 800 mm **(2'7")** shoe	8700	**19,180**
Counterweight — Standard	3865	**8520**
— Heavy	5830	**12,850**

*Boom weights include boom, boom lines, boom cylinders and rod end pins, stick cylinder and head end pin.
**Stick weights include stick and stick lines.

LIFT AND RANGE DIAGRAM

320B Log Loader



XXX
YYY
ZZZ

STATIC TIPPING OVER FRONT
STATIC TIPPING OVER SIDE
HYDRAULIC CAPACITY

100% TIPPING & HYDRAULIC LOADS
LOADS IN KIPS AT HEEL/GRAPPLE PIN
GRAPPLE WEIGHT NOT INCLUDED
UNIT: THOUSAND POUNDS

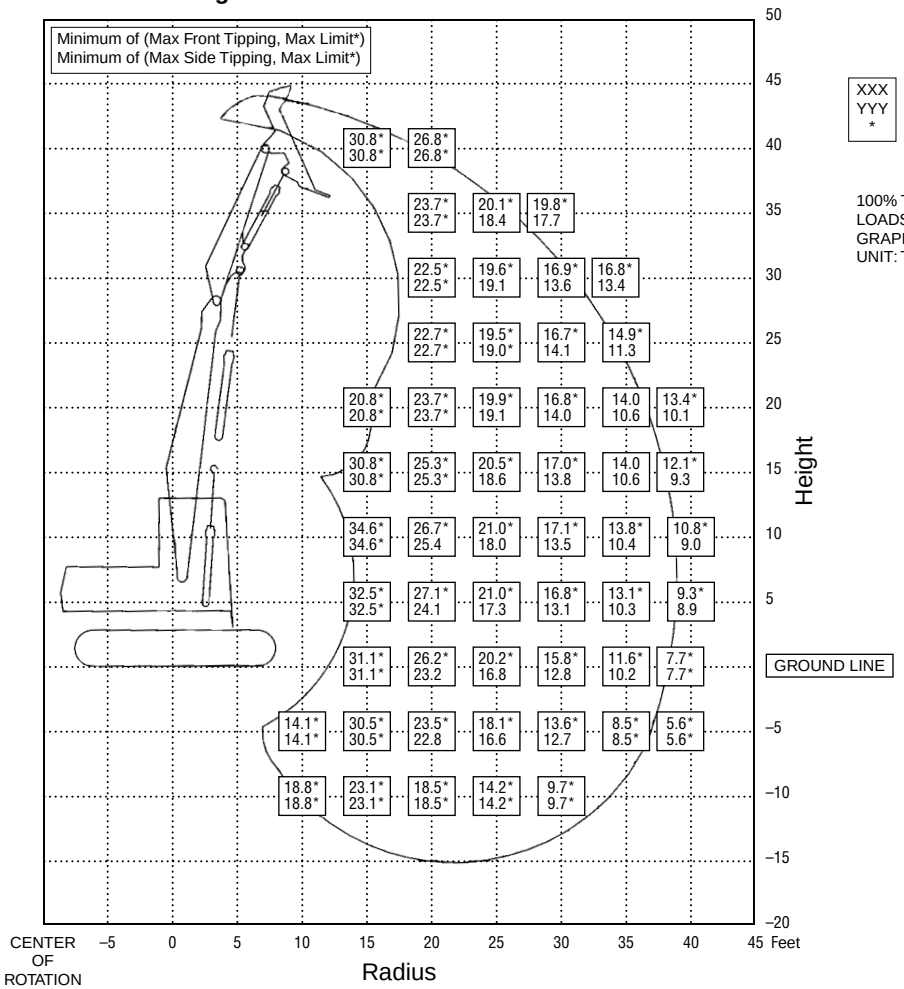
24

- Undercarriage — long
- Logging Front — Caterpillar 320B LL HB-36, 10 970 mm (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.

LIFT AND RANGE DIAGRAM

322B High Wide Forest Machine — Under/Under

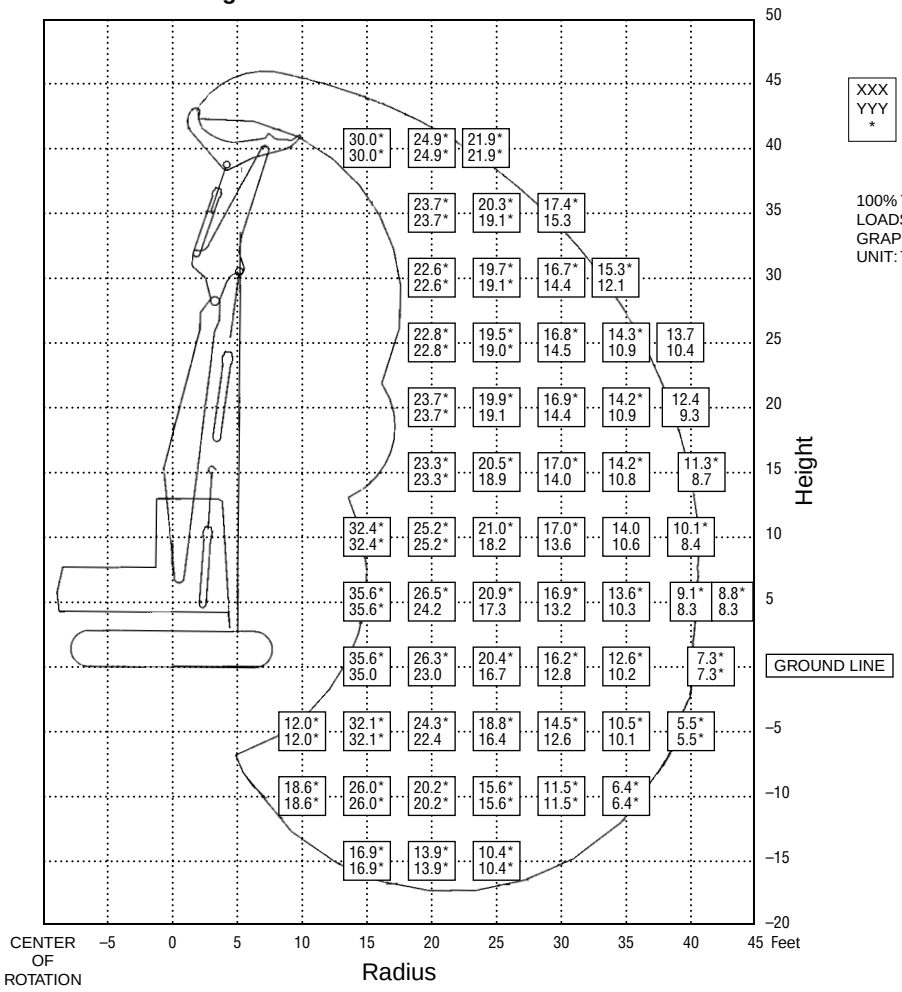


- Undercarriage — long, extended gauge
- Logging Front — Caterpillar 322B LL Under-Under Log Loader, 11 580 mm (38'0") maximum reach
- Capacity, lbs., (thousands)
  - Top Number: Tipping over front
  - Middle Number: Tipping over side
  - Bottom Number: Hydraulic capacity
- All capacities are 100% stability 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.

LIFT AND RANGE DIAGRAM

322B High Wide Forest Machine — Over/Under

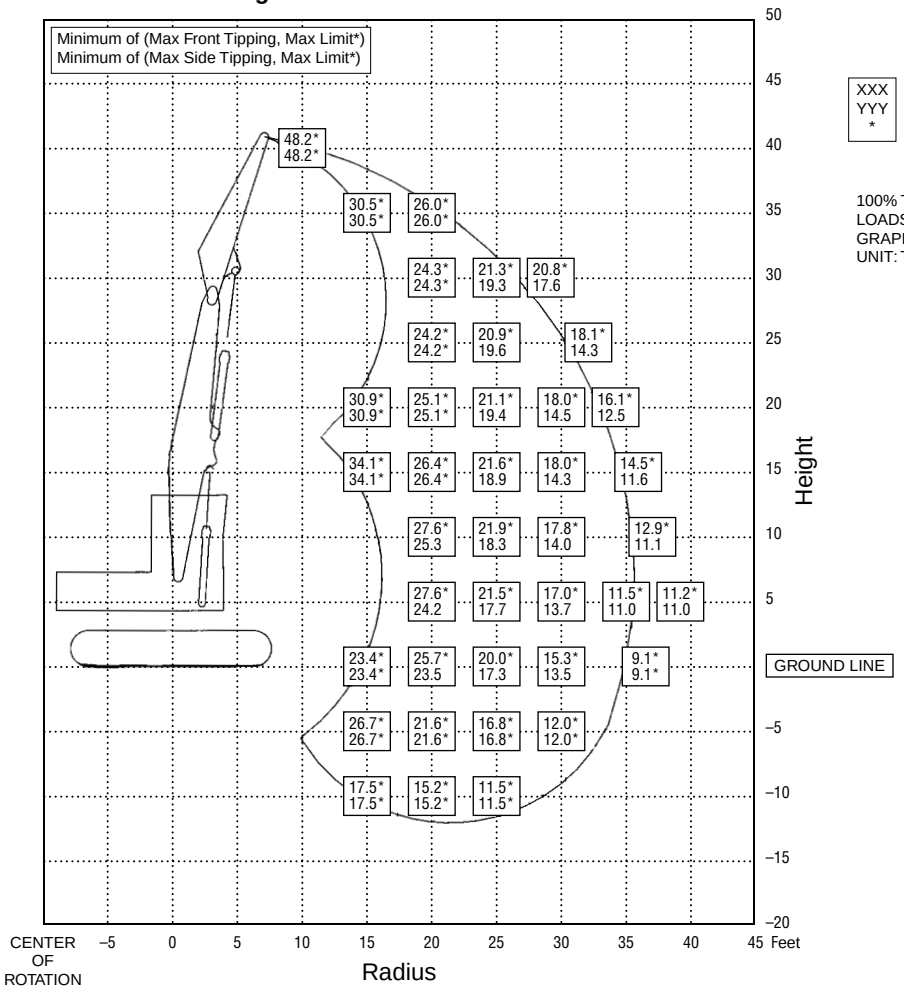


- Undercarriage — long, extended gauge
- Logging Front — Caterpillar 322B LL Over-Under Log Loader, 12 500 mm (41'0") maximum reach
- Capacity, lbs., (thousands)
  - Top Number: Tipping over front
  - Middle Number: Tipping over side
  - Bottom Number: Hydraulic capacity
- All capacities are 100% stability 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.

LIFT AND RANGE DIAGRAM

322B High Wide Forest Machine — B-N-T

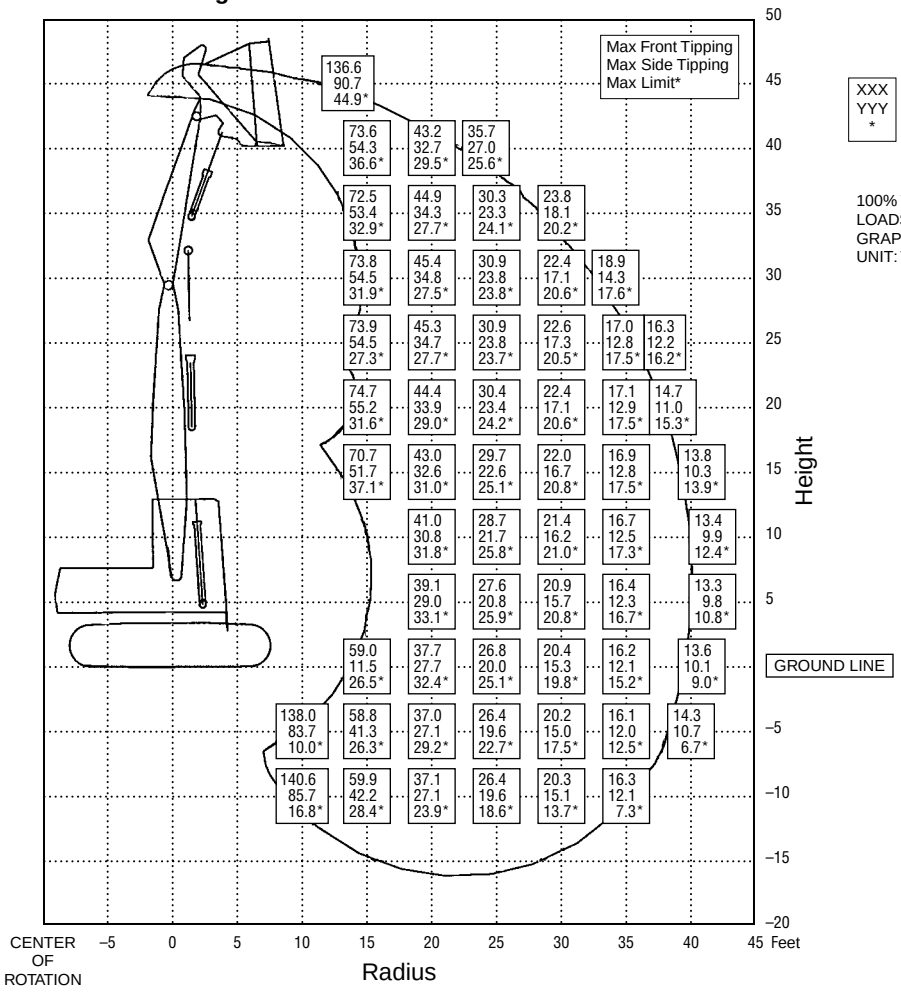


- Undercarriage — long, extended gauge
- Logging Front — Caterpillar 322B LL Butt-N-Top Log Loader, 10 970 mm (36'0") maximum reach
- Capacity, lbs., (thousands)
  - Top Number: Tipping over front
  - Middle Number: Tipping over side
  - Bottom Number: Hydraulic capacity
- All capacities are 100% stability 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.

LIFT AND RANGE DIAGRAM

325B High Wide Forest Machine — Under/Under



XXX
YYY
*

STATIC TIPPING OVER FRONT
STATIC TIPPING OVER SIDE
MAXIMUM LIMIT

100% TIPPING & HYDRAULIC LOADS
LOADS IN KIPS AT HEEL/GRAPPLE PIN
GRAPPLE WEIGHT NOT INCLUDED
UNIT: THOUSAND POUNDS

24

- Undercarriage — long, extended gauge
- Logging Front — Caterpillar 325B LL Under-Under Log Loader, 12 190 mm (40'0") maximum reach
- Capacity, lbs., (thousands)

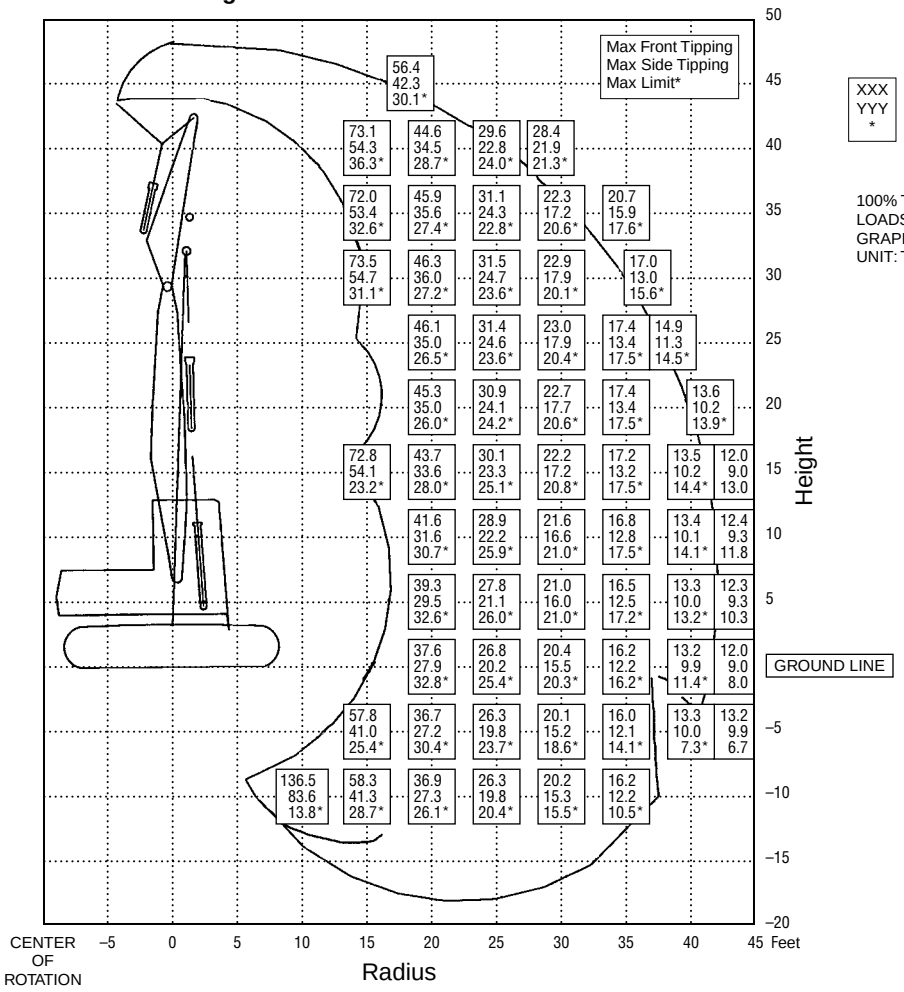
  Top Number: Tipping over front
  Middle Number: Tipping over side
  Bottom Number: Hydraulic capacity

- 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.

LIFT AND RANGE DIAGRAM

325B High Wide Forest Machine — Over/Under



- Undercarriage — long, extended gauge
- Logging Front — Caterpillar 325B LL Over-Under Log Loader, 12 800 mm (42'0") maximum reach
- Capacity, lbs., (thousands)

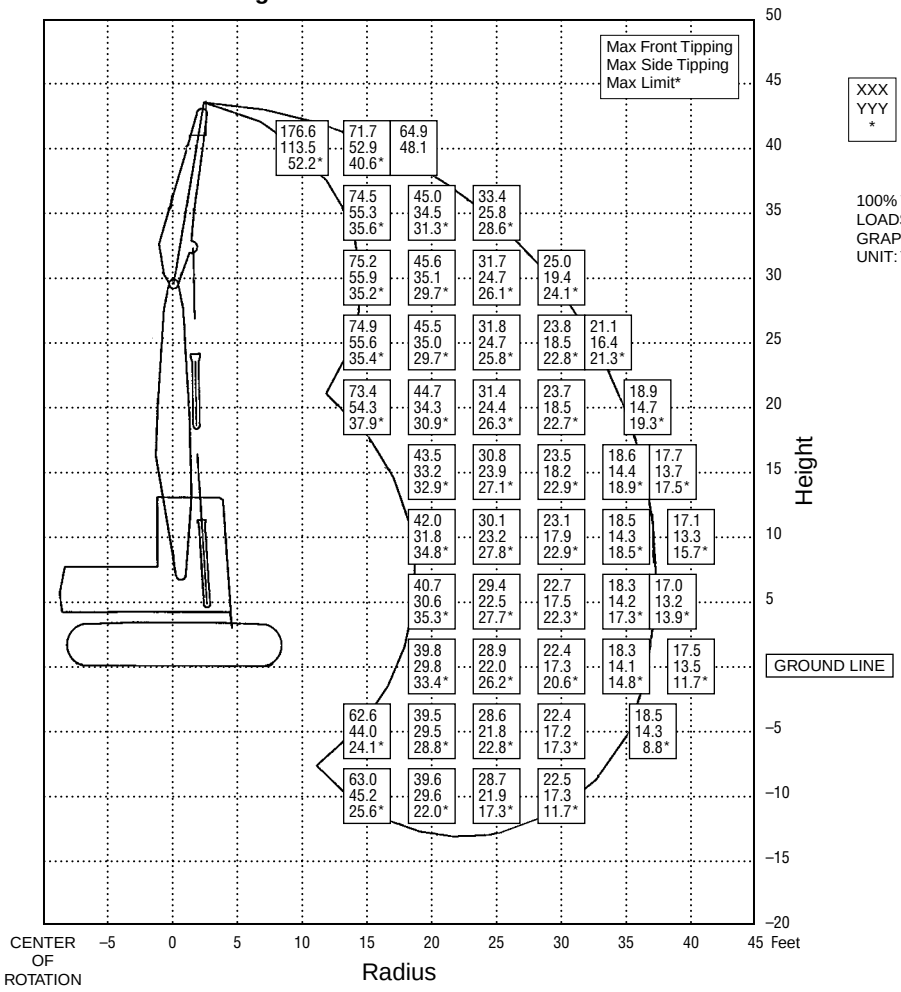
  Top Number: Tipping over front
  Middle Number: Tipping over side
  Bottom Number: Hydraulic capacity

- 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.

LIFT AND RANGE DIAGRAM

325B High Wide Forest Machine — B-N-T

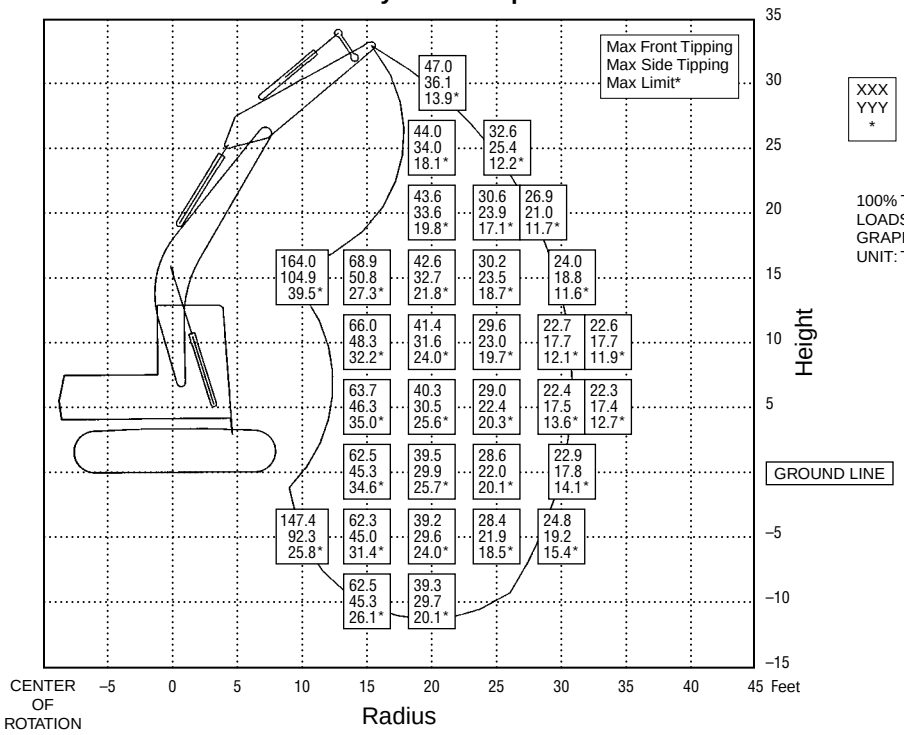


- Undercarriage — long, extended gauge
- Logging Front — Caterpillar 325B LL Butt-N-Top Log Loader, 11 280 mm (37'0") maximum reach
- Capacity, lbs., (thousands)
  - Top Number: Tipping over front
  - Middle Number: Tipping over side
  - Bottom Number: Hydraulic capacity
- All capacities are 100% stability 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.

LIFT AND RANGE DIAGRAM

325B High Wide Forest Machine with Hoist Cylinder Adapter



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STATIC TIPPING OVER FRONT
STATIC TIPPING OVER SIDE
MAXIMUM LIMIT

100% TIPPING & HYDRAULIC LOADS
LOADS IN KIPS AT HEEL/GRAPPLE PIN
GRAPPLE WEIGHT NOT INCLUDED
UNIT: THOUSAND POUNDS

- Undercarriage — long, extended gauge
- Excavator Front — Caterpillar 325B LL with hoist cylinder adapter, heavy counterweight, R-Boom, R-Stick, 9450 mm (31'0") maximum reach
- Capacity, lbs., (thousands)

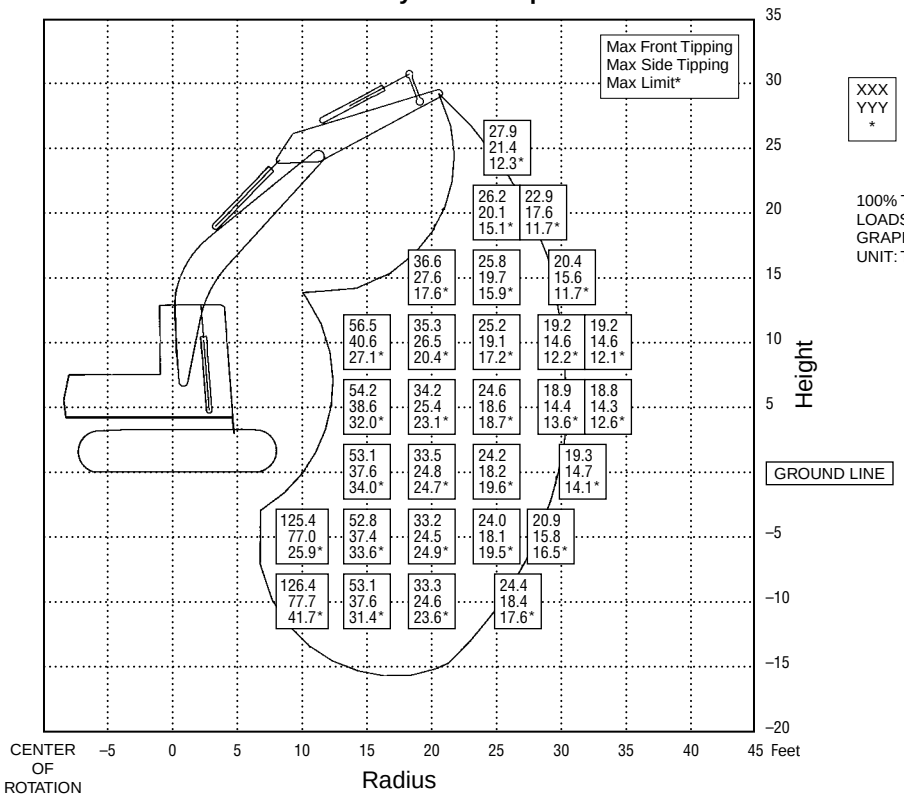
  Top Number: Tipping over front
  Middle Number: Tipping over side
  Bottom Number: Hydraulic capacity

- 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.

LIFT AND RANGE DIAGRAM

325B High Wide Forest Machine without Hoist Cylinder Adapter



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STATIC TIPPING OVER FRONT
STATIC TIPPING OVER SIDE
MAXIMUM LIMIT

100% TIPPING & HYDRAULIC LOADS
LOADS IN KIPS AT HEEL/GRAPPLE PIN
GRAPPLE WEIGHT NOT INCLUDED
UNIT: THOUSAND POUNDS

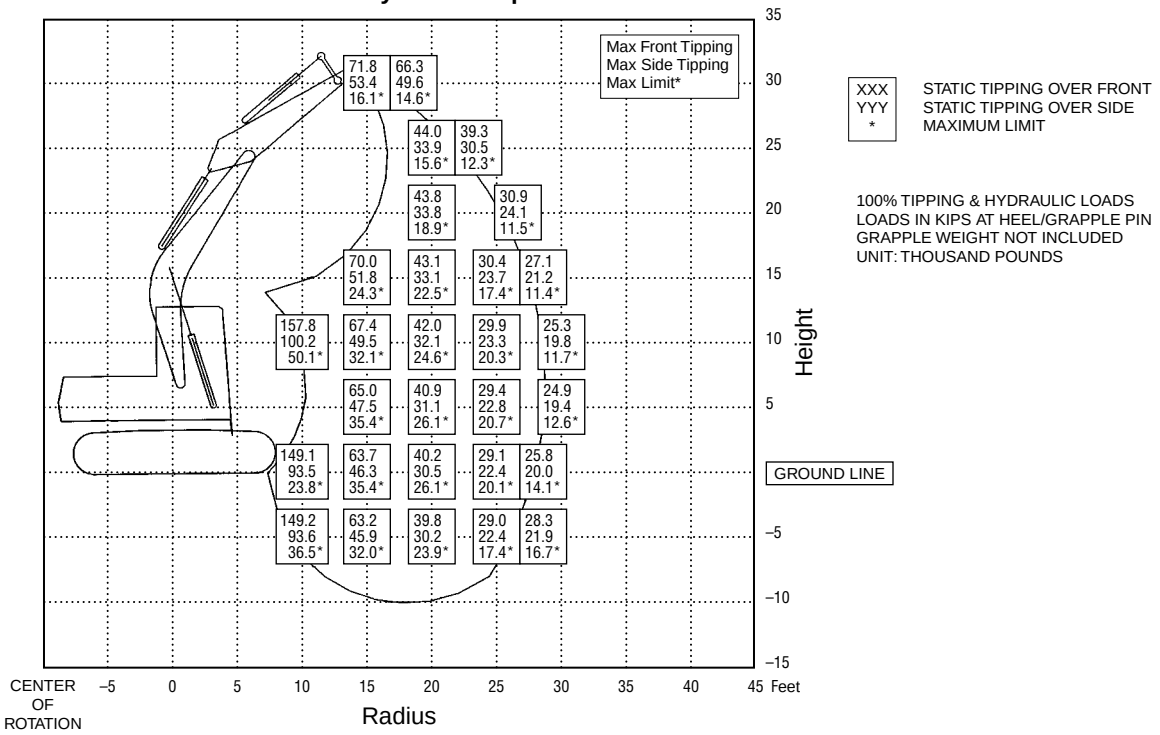
24

- Undercarriage — long, extended gauge
- Excavator Front — Caterpillar 325B LL without hoist cylinder adapter, R-Boom, R-Stick, 9300 mm (30'6") 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.

LIFT AND RANGE DIAGRAM

325B High Wide Forest Machine with Hoist Cylinder Adapter



- Undercarriage — long, extended gauge
- Excavator Front — Caterpillar 325B LL with hoist cylinder adapter, heavy counterweight, M-Boom, R-Stick, 8530 mm (28'0") maximum reach
- Capacity, lbs., (thousands)

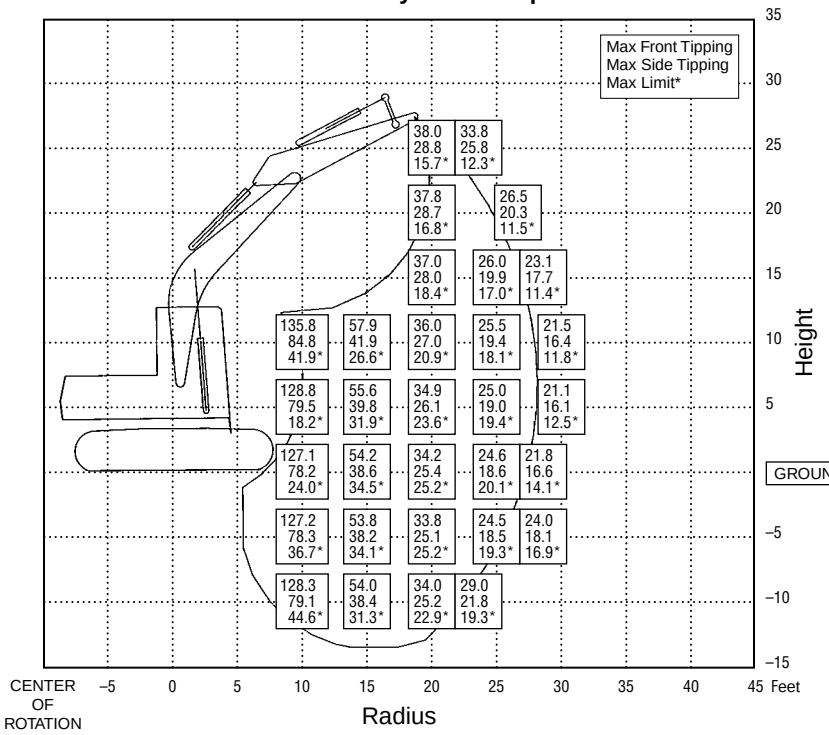
  Top Number: Tipping over front
  Middle Number: Tipping over side
  Bottom Number: Hydraulic capacity

- 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.

LIFT AND RANGE DIAGRAM

325B Standard Gauge Forest Machine without Hoist Cylinder Adapter



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STATIC TIPPING OVER FRONT
STATIC TIPPING OVER SIDE
MAXIMUM LIMIT

100% TIPPING & HYDRAULIC LOADS
LOADS IN KIPS AT HEEL/GRAPPLE PIN
GRAPPLE WEIGHT NOT INCLUDED
UNIT: THOUSAND POUNDS

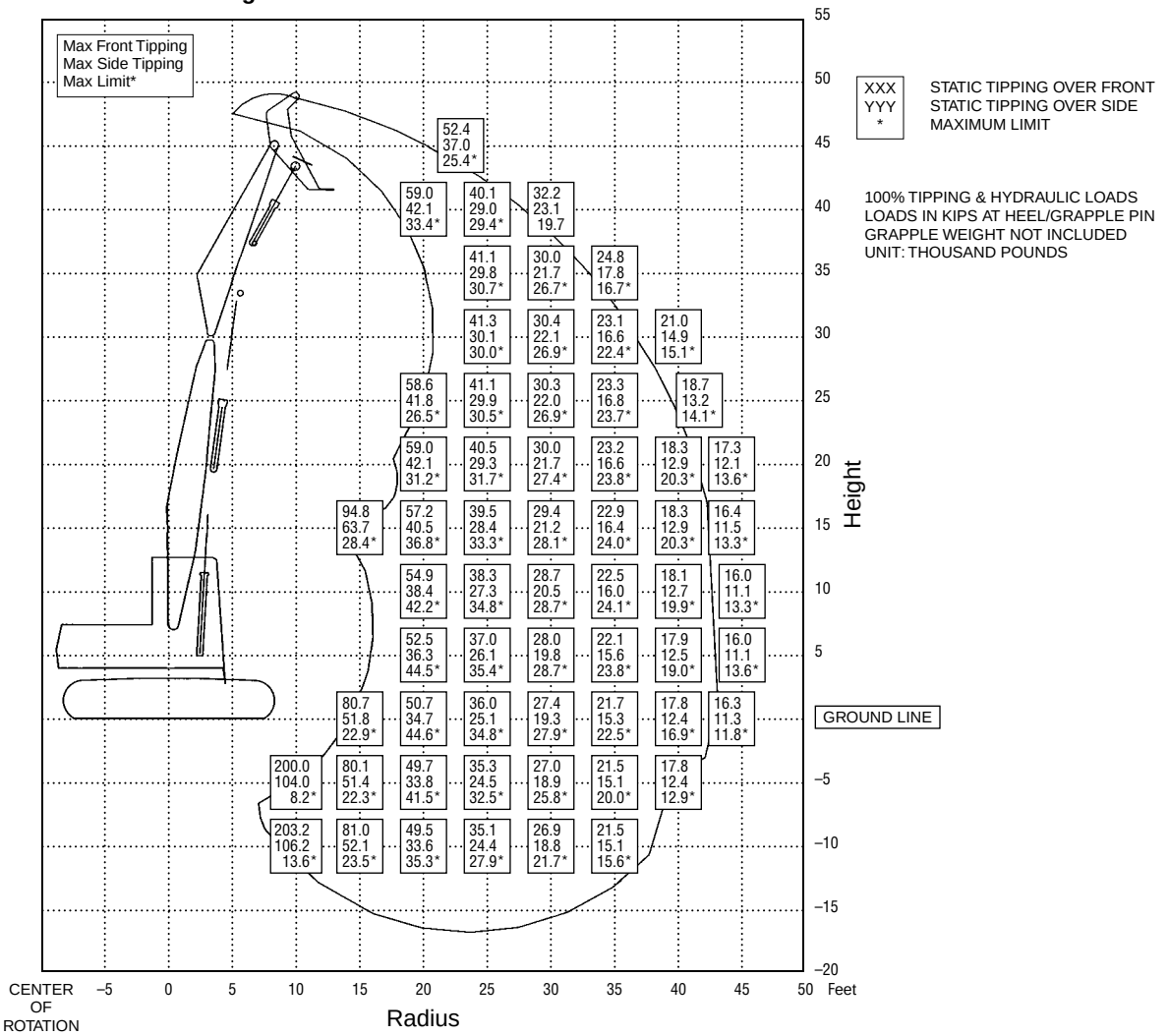
24

- Undercarriage — long, standard gauge
- Excavator Front — Caterpillar 325B LL without hoist cylinder adapter, M-Boom, R-Stick, 8530 mm (28'0") 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.

LIFT AND RANGE DIAGRAM

330B High Wide Forest Machine — Under/Under



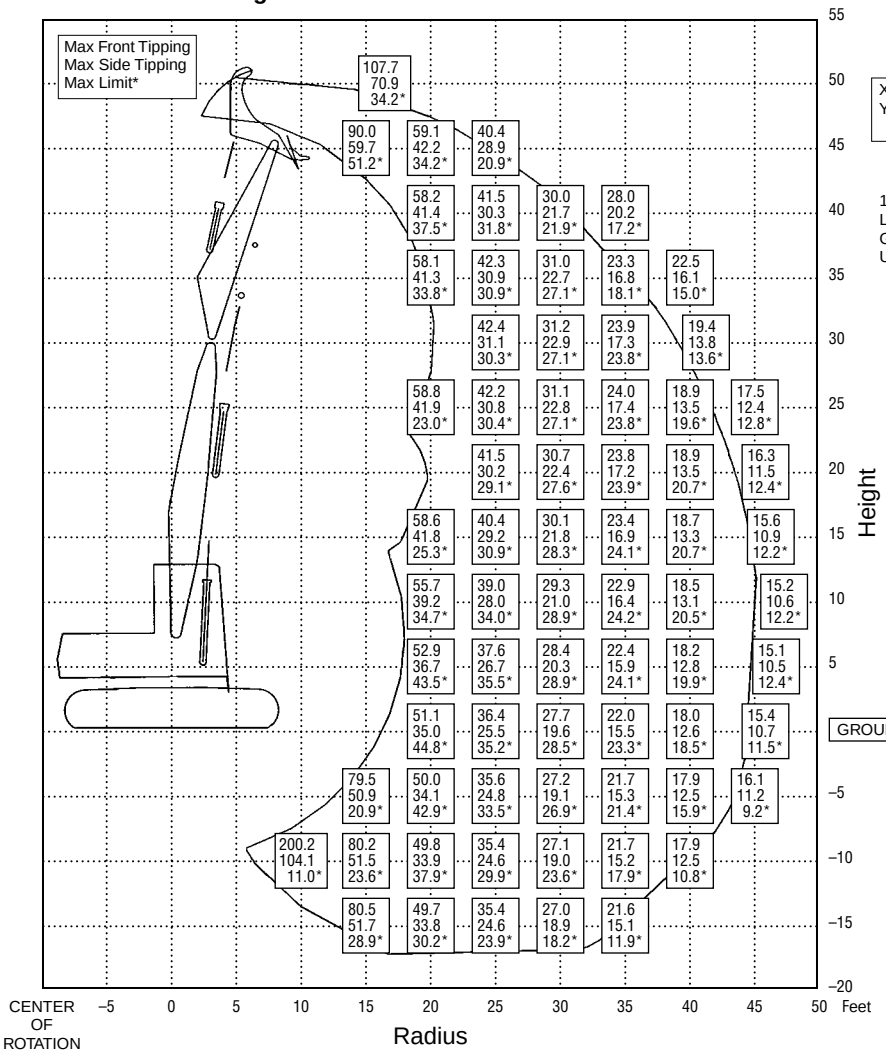
- Undercarriage — long, extended gauge
- Logging Front — Caterpillar 330B LL Under-Under Log Loader, 13 100 mm (43'0") maximum reach
- Capacity, lbs., (thousands)

  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.

LIFT AND RANGE DIAGRAM

330B High Wide Forest Machine — Over/Under

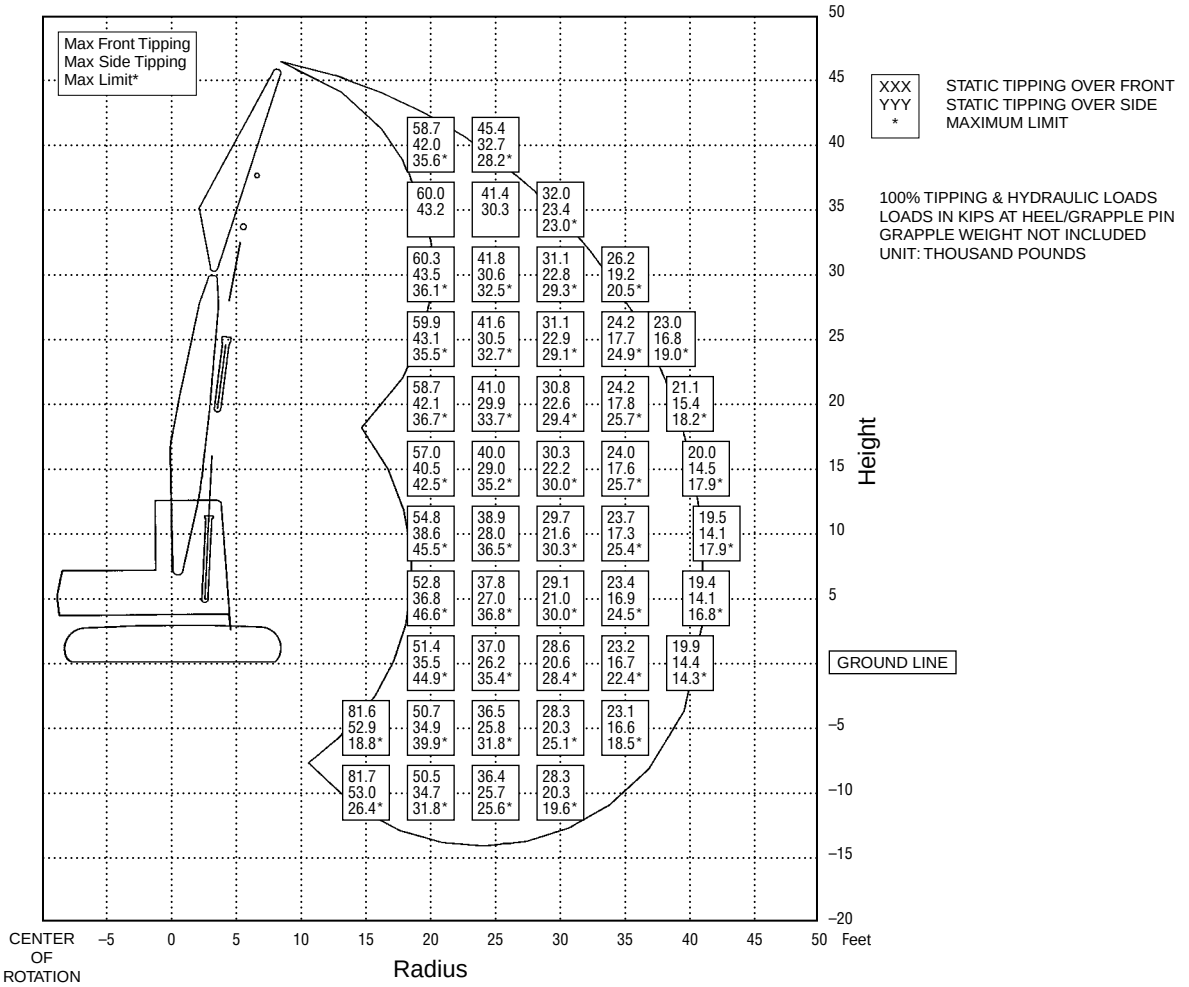


- Undercarriage — long, extended gauge
- Logging Front — Caterpillar 330B LL Over-Under Log Loader, 13 700 mm (45'0") maximum reach
- Capacity, lbs., (thousands)
  - Top Number: Tipping over front
  - Middle Number: Tipping over side
  - Bottom Number: Hydraulic capacity
- All capacities are 100% stability 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.

LIFT AND RANGE DIAGRAM

330B High Wide Forest Machine — B-N-T

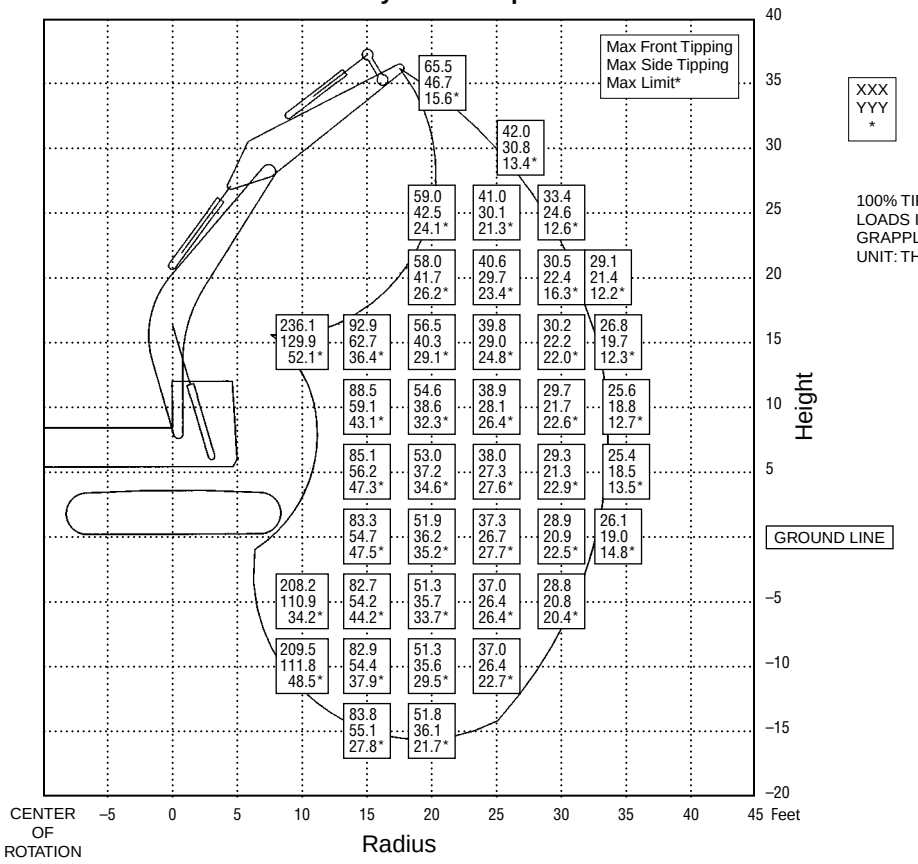


- Undercarriage — long, extended gauge
- Logging Front — Caterpillar 330B LL Butt-N-Top Log Loader, 12 190 mm (40'0") maximum reach
- Capacity, lbs., (thousands)
  - Top Number: Tipping over front
  - Middle Number: Tipping over side
  - Bottom Number: Hydraulic capacity
- All capacities are 100% stability 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.

LIFT AND RANGE DIAGRAM

330B High Wide Forest Machine with Hoist Cylinder Adapter



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STATIC TIPPING OVER FRONT
STATIC TIPPING OVER SIDE
MAXIMUM LIMIT

100% TIPPING & HYDRAULIC LOADS
LOADS IN KIPS AT HEEL/GRAPPLE PIN
GRAPPLE WEIGHT NOT INCLUDED
UNIT: THOUSAND POUNDS

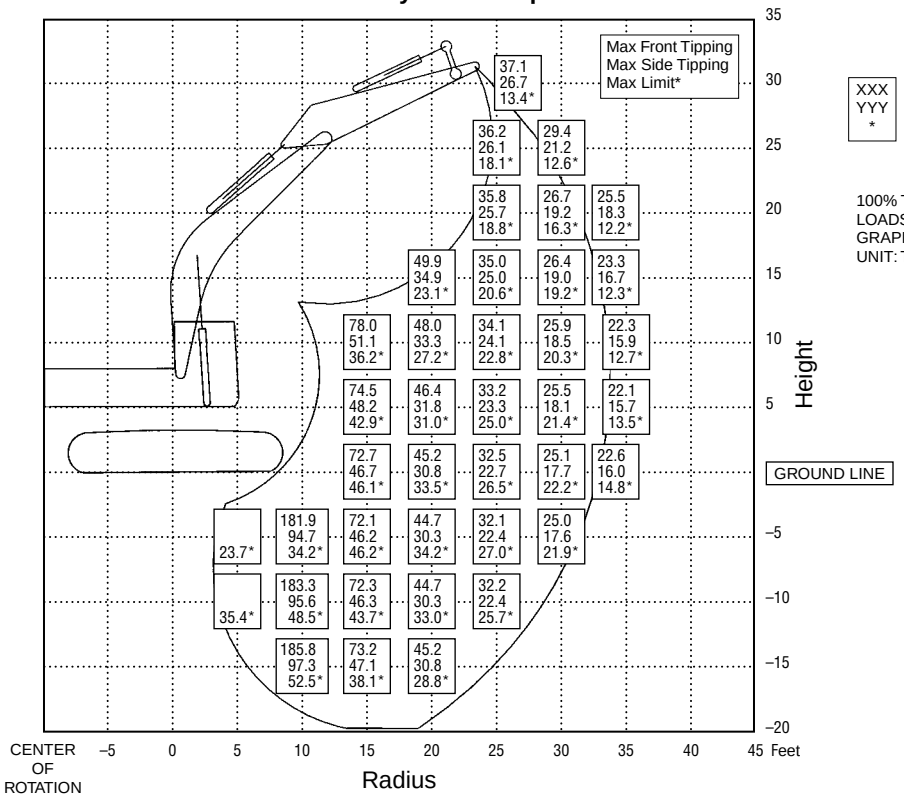
24

- Undercarriage — long, extended gauge
- Excavator Front — Caterpillar 330B LL with hoist cylinder adapter, R-Boom, R-Stick, 10 100 mm (33'0") 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.

LIFT AND RANGE DIAGRAM

330B High Wide Forest Machine without Hoist Cylinder Adapter

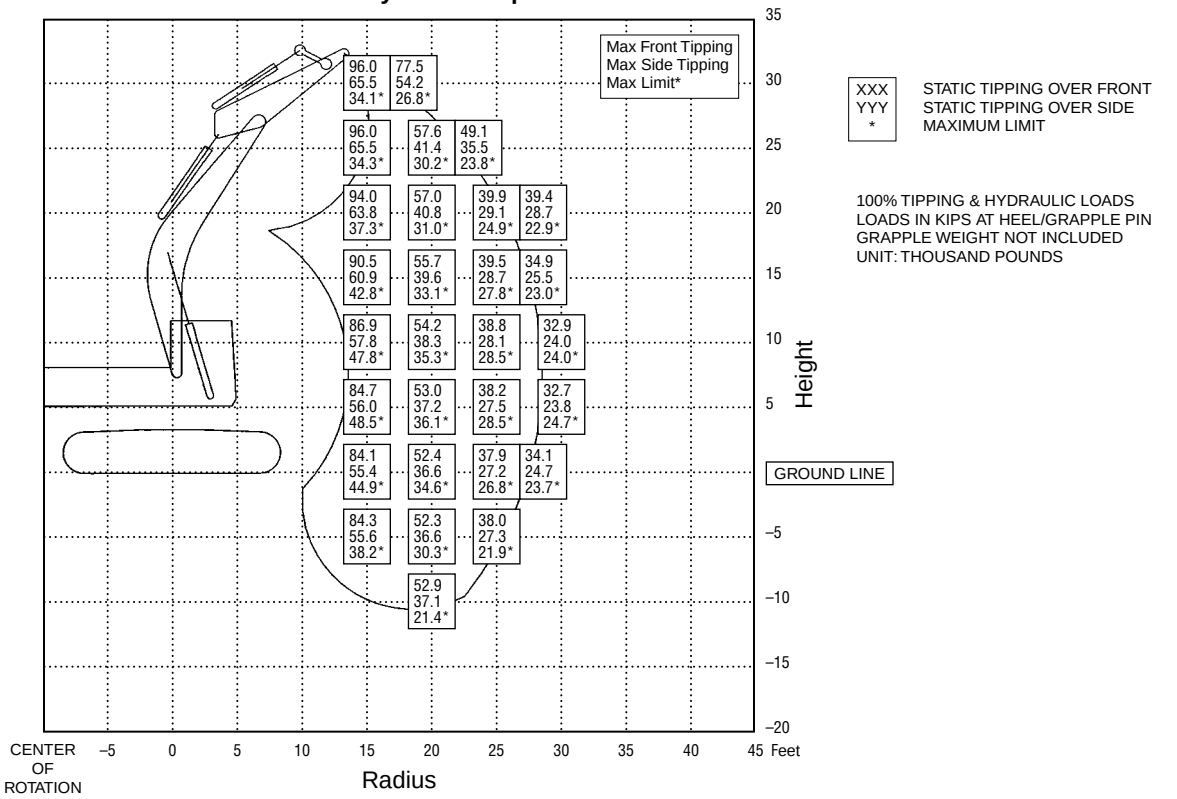


- Undercarriage — long, extended gauge
- Excavator Front — Caterpillar 330B LL without hoist cylinder adapter, 10 100 mm (33'0") maximum reach
- Capacity, lbs., (thousands)
  - Top Number: Tipping over front
  - Middle Number: Tipping over side
  - Bottom Number: Hydraulic capacity
- All capacities are 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.

LIFT AND RANGE DIAGRAM

330B High Wide Forest Machine with Hoist Cylinder Adapter



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STATIC TIPPING OVER FRONT
STATIC TIPPING OVER SIDE
MAXIMUM LIMIT

100% TIPPING & HYDRAULIC LOADS
LOADS IN KIPS AT HEEL/GRAPPLE PIN
GRAPPLE WEIGHT NOT INCLUDED
UNIT: THOUSAND POUNDS

24

- Undercarriage — long, extended gauge
- Excavator Front — Caterpillar 330B LL with hoist cylinder adapter, heavy counterweight, M-Boom, M-Stick, 8530 mm (28'0") maximum reach
- Capacity, lbs., (thousands)

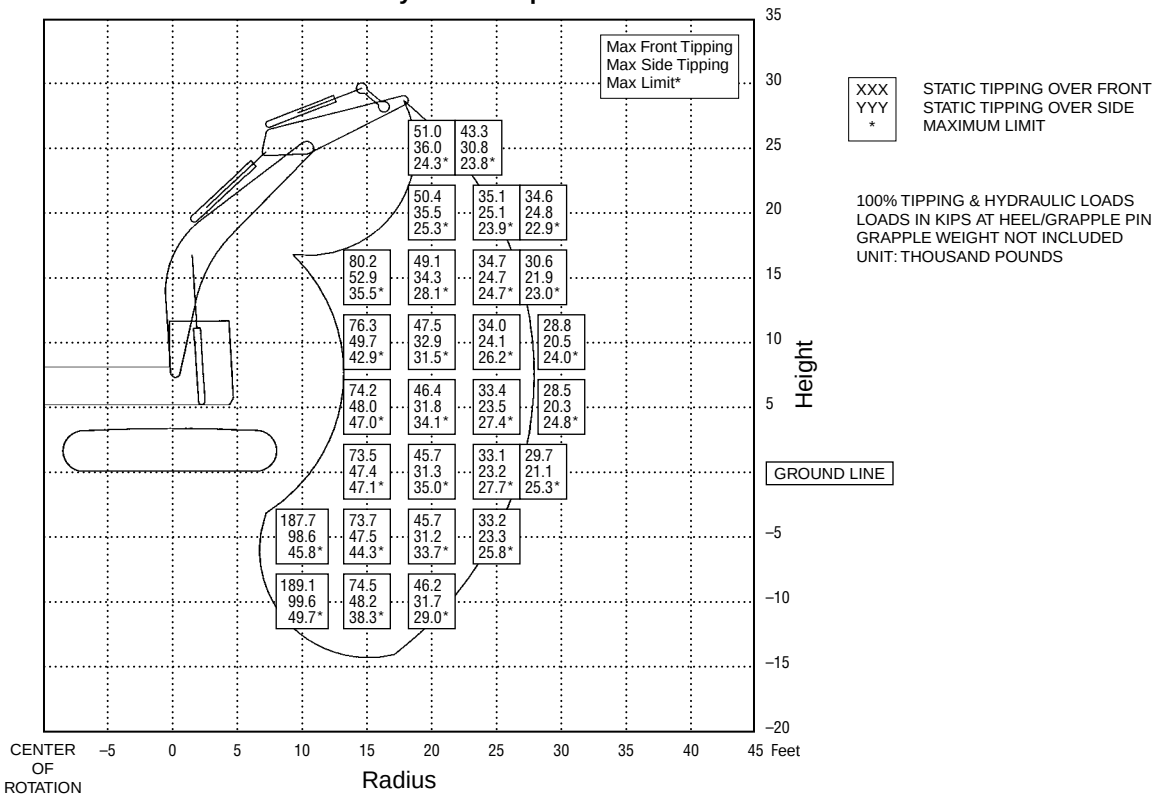
  Top Number: Tipping over front
  Middle Number: Tipping over side
  Bottom Number: Hydraulic capacity

- 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.

LIFT AND RANGE DIAGRAM

330B Forest Machine without Hoist Cylinder Adapter

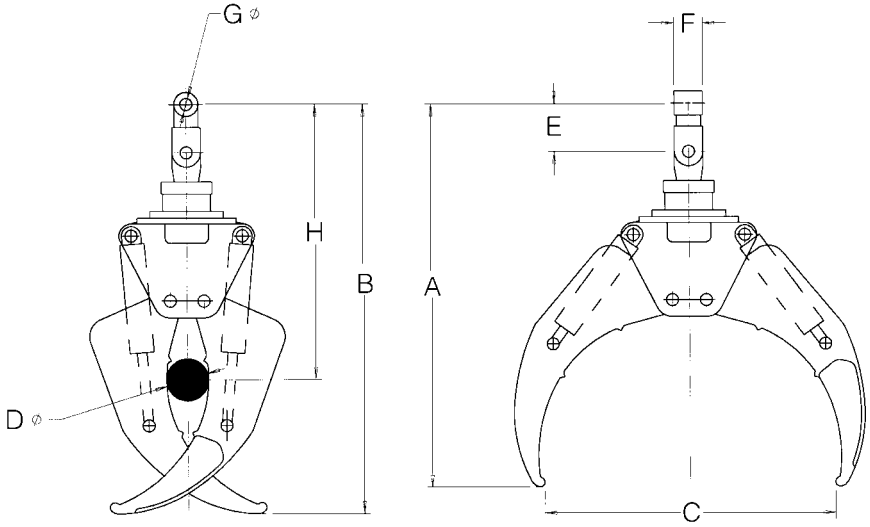


- Undercarriage — long, standard gauge
- Excavator Front — Caterpillar 330B LL without hoist cylinder adapter, M-Boom, M-Stick, 8530 mm (28'0") maximum reach
- Capacity, lbs., (thousands)
  - Top Number: Tipping over front
  - Middle Number: Tipping over side
  - Bottom Number: Hydraulic capacity
- All 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.

Features:

- **Full 360° continuous rotation.**
- **Applicable to** shovel logging and sorting applications.
- **Paddle style tines** are made of abrasion resistant material.
- **Induction hardened** pins and bushings.
- **Heavy well hydraulic cylinders** with large diameter rod and integral load check valves.



Dimensions:

Grapple Model		A	B	C	D	E	F	G	H
B52	**mm**	1854	2006	1372	195	254	152	63	1371
(320B LL/322B LL)	**in**	**73**	**79**	**54**	**7.7**	**10**	**6**	**2.5**	**54**
B60	**mm**	2032	2160	1524	218	254	152	63	1448
(325B LL/330B LL)	**in**	**80**	**85**	**60**	**8.6**	**10**	**6**	**2.5**	**57**

WHEEL TRACTOR MODEL	814F		824G		834B	
Balderson Models						
Replaces “S” Blade	**BD814US-14'**		**BD824US-15'9"**		**BD834US-20'**	
Blade:						
Capacity	16.74 m^3	**21.9 yd^3**	24 m^3	**31.4 yd^3**	29.8 m^3	**39 yd^3**
Length (cutting width)	4.3 m	**14'4"**	4.78 m	**15'7"**	6.09 m	**20'0"**
Height	1.88 m	**6'2"**	2.24 m	**7'4"**	2.24 m	**7'4"**
Wing angle	**25°**		**30°**		**30°**	
Weight, Installed (without hydraulics) BD (S) Dozer	1973 kg	**4350 lb**	3630 kg	**8000 lb**	4627 kg	**9470 lb**

WHEEL TRACTOR MODEL	814F		824G		834B	
Balderson Models						
Replaces “S” Blade	**B14-20S**		**B24-27S**		**B34-40S**	
Chip Scoop:						
Lift and Carrying Capacity	15.3 m^3	**20 yd^3**	20.6 m^3	**27 yd^3**	34.4 m^3	**39.5 yd^3**
Dozing Capacity	30.4 m^3	**40 yd^3**	41.3 m^3	**54 yd^3**	49.4 m^3	**65 yd^3**
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.

SPECIFICATIONS

Excavator Model	325B FB	
Balderson Model	**BFS325II**	
Saw Disc		
Blade diameter	1397 mm	**4'7"**
Weight	320 kg	**700 lb**
Saw kerf	51 mm	**2"**
Blade speed	**1250 RPM**	

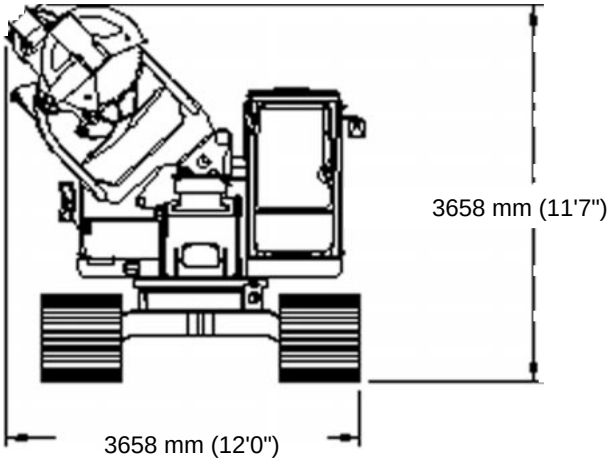
Replaceable carbide inserts for teeth and rakers

Features:

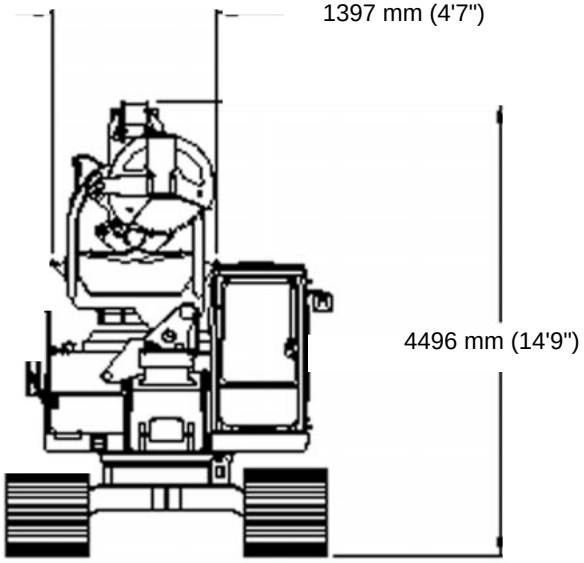
- **Dual Motion Stroking Action.** Rear grapple moves the tree to the rear while the boom strokes forward.
- **Full 12 m (40'0") delimbing stroke** with tail swing limited to 5.6 m (18'6").
- **Unique dual motion design** keeps tree stem weight and delimbing machine close to swing centerline.
- **Balanced loading** allows mounting on a smaller carrier than is required for conventional delimbers.
- **Simple conversion** from shipping to working mode. One person can do the conversion using only 2 wrenches in 10-15 minutes.

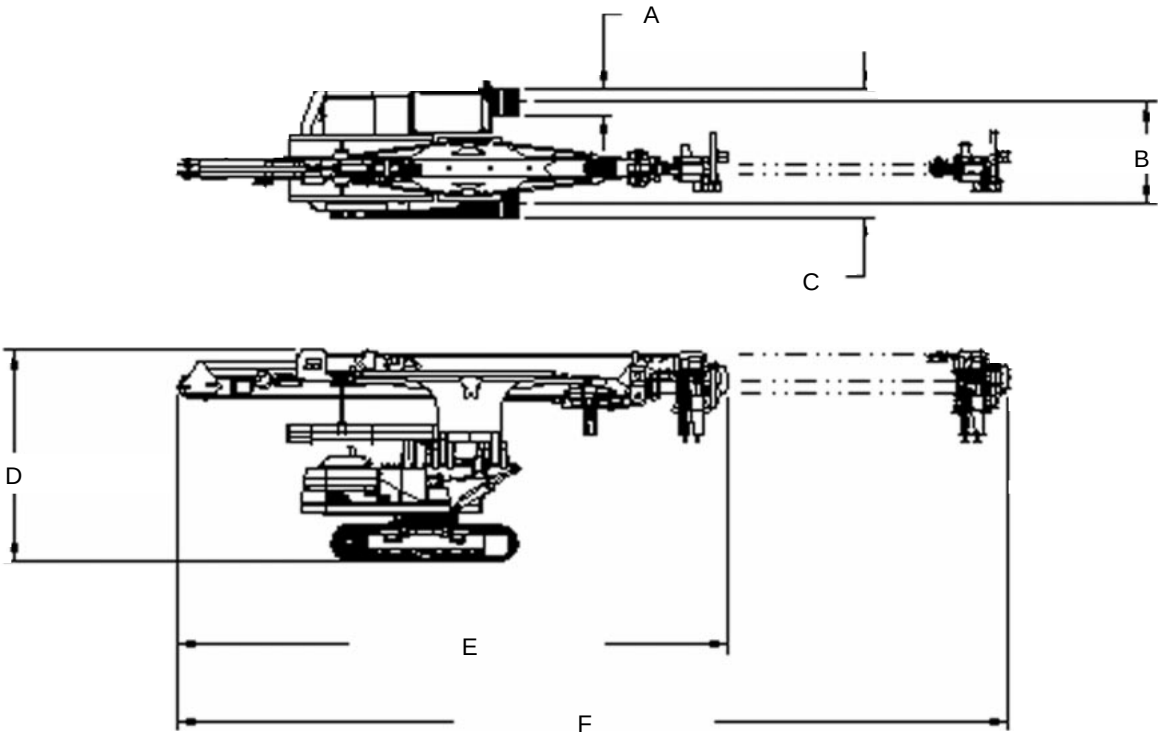
MODEL	320B	
Carrier	**320B Forest Machine**	
Stroke Length	12.19 m	**40'0"**
Max. Tree Diameter: @ Rear Grapple	660 mm	**2'2"**
Through Center Arch	1168 mm	**3'10"**
Tail Swing	5.64 m	**18'6"**
Drive Type	**Hydraulic Cylinder**	
Boom Speed m/min	**198-251**	
ft/min	**650-825**	
Delimb Stroke Force	71.2 kN	**16,000 lb**
Pulling Force	57.4 kN	**12,900 lb**
Lift Capacity @ 11.6 m (38'0")	1089 kg	**2400 lb**
Topping Saw Capacity		
Circular Saw	381 mm	**15"**
Chain Saw	533 mm	**1'9"**
Butt Saw Capacity	609 mm	**2'0"**
	711 mm	**2'4"**
Delimber Attachment Weight	9935 kg	**21,900 lb**
Max. Total Package Weight (all options installed)	30 390 kg	**67,000 lb**

Shipping Dimensions:



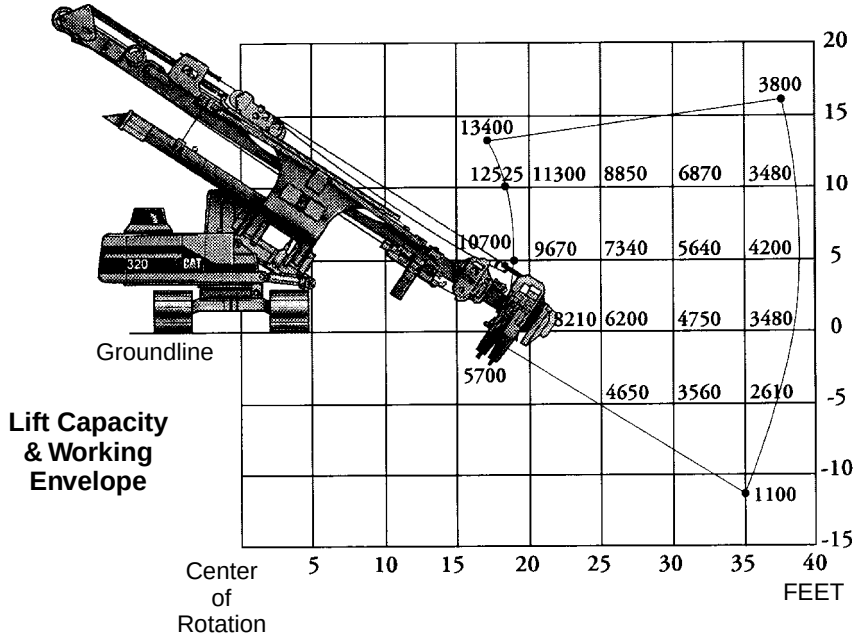
Working Dimensions:



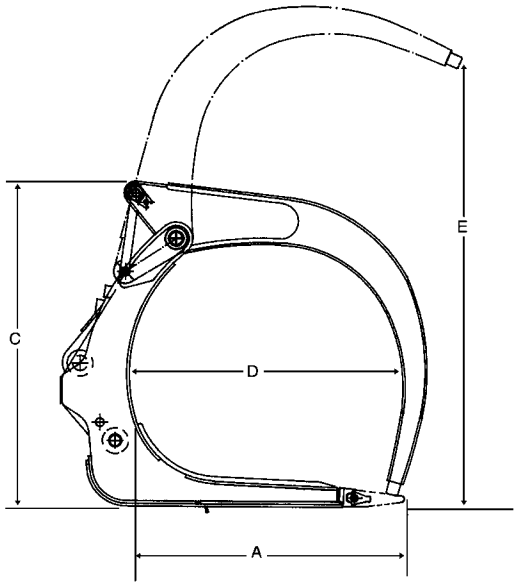


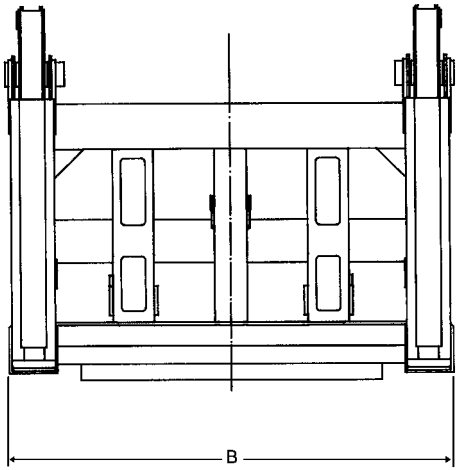
A	B	C	D	E	F
813 mm **2'8"**	2.4 m **7'10"**	3.2 m **10'6"**	4.6 m **15'1"**	11.96 m **39'3"**	18.06 m* **59'3"**

*Maximum stroke position.



Lift Capacity & Working Envelope



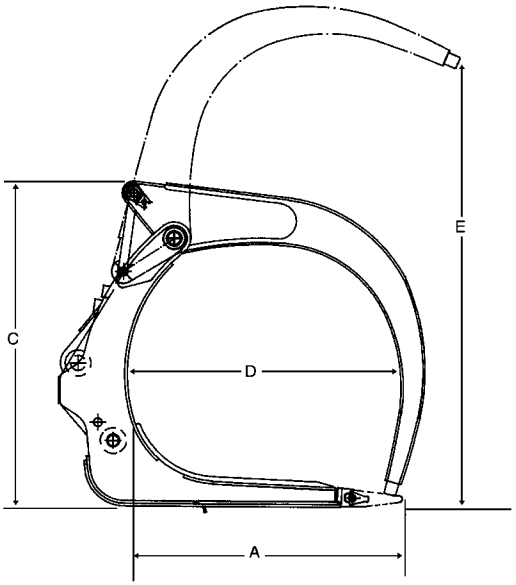


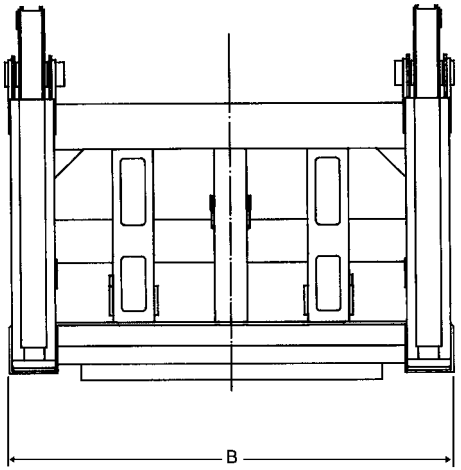
Caterpillar Model	**990**		**988F**		**988F**		**980G**	
Balderson Model	**High Capacity Logging Fork**		**BFHC988DTC**		**BLF988DTC**		**BLF980DTC**	
Group Number								
Logging Arrangement	**114-3557**		**8966**		**8965**		**125-4135**	
Bucket Arrangement			**—**		**8965***		**9210**	
A — Tine Length	2438 mm	**8'0"**	2286 mm	**7'6"**	2286 mm	**7'6"**	1829 mm	**6'0"**
B — Overall Width	2762 mm	**9'1"**	2743 mm	**9'0"**	2775 mm	**9'1"**	2756 mm	**9'2"**
C — Back Height	3670 mm	**12'0"**	3505 mm	**11'6"**	2974 mm	**9'9.1"**	2040 mm	**6'8.3"**
D — Minimum Opening	2498 mm	**8'2"**	2540 mm	**8'4"**	2370 mm	**7'9.3"**	1828 mm	**5'11.95"**
E — Maximum Clamp Opening	4529 mm	**14'10"**	4598 mm	**15'0.9"**	3713 mm	**12'2.2"**	2990 mm	**9'9"**
Weight, Approximate	4930 kg	**10,870 lb**	5350 kg	**11,800 lb**	4490 kg	**9400 lb**	3175 kg	**7000 lb**

Caterpillar Model	**980G**		**966F Series II**		**966F Series II**	
Balderson Model	**Millyard Fork**		**BLF966DTC**		**Millyard Fork**	
Group Number						
Logging Arrangement	**133-1545**		**9209**		**5831C**	
Bucket Arrangement			**9209**			
A — Tine Length	1829 mm	**6'0"**	1600 mm	**5'3"**	1651 mm	**5'5"**
B — Overall Width	2388 mm	**7'10"**	2362 mm	**7'9"**	2388 mm	**7'10"**
C — Back Height	2070 mm	**6'10"**	1899 mm	**6'2.75"**	1905 mm	**6'3"**
D — Minimum Opening	254 mm	**10"**	1624 mm	**5'3.95"**	432 mm	**17"**
E — Maximum Clamp Opening	2746 mm	**9'0"**	2539 mm	**8'3.95"**	2642 mm	**8'8"**
Weight, Approximate	2742 kg	**5450 lb**	2360 kg	**5200 lb**	2450 kg	**5400 lb**

*BLF988DTC with bucket arrangement — must order Balderson Link Assembly #137519.

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 or Balderson for more information.





Caterpillar Model	**966C**		**950G/962G**		**950G/962G**		**938G**	
Balderson Model	**BLF966DTC**		**BLF950DTC**		**Millyard Fork**		**Millyard Fork**	
Group Number								
Logging Arrangement	**8963**		**157-3467**		**157-3466**		**119-8243**	
Bucket Arrangement	**8963**							
A — Tine Length	1448 mm	**4'9"**	1626 mm	**5'4"**	1626 mm	**5'4"**	1372 mm	**4'6"**
B — Overall Width	2362 mm	**7'9"**	2261 mm	**7'5"**	2261 mm	**7'5"**	2288 mm	**7'6"**
C — Back Height	1822 mm	**5'11.75"**	1895 mm	**6'2.59"**	1890 mm	**6'2.42"**	1842 mm	**6'1"**
D — Minimum Opening	1359 mm	**4'5.5"**	1328 mm	**4'4.27"**	448 mm	**17.64"**	165 mm	**6.5"**
E — Maximum Clamp Opening	2500 mm	**8'2.45"**	2565 mm	**8'5"**	2913 mm	**9'6.7"**	2794 mm	**9'2"**
Weight, Approximate	2155 kg	**4750 lb**	2200 kg	**4860 lb**	2310 kg	**5100 lb**	1633 kg	**3600 lb**

Caterpillar Model	**IT38G**		**IT38G**		**950F Series II Custom Toolcarrier**		**950F Series II Custom Toolcarrier**	
Balderson Model	**Grapple Fork**		**Millyard Fork**		**Grapple Fork**		**Log & Lumber Fork**	
Group Number								
Logging Arrangement	**119-2297**		**125-2607**		**119-2301**		**114-3532**	
Bucket Arrangement								
A — Tine Length	1056 mm	**3'6"**	1372 mm	**4'6"**	1158 mm	**3'10"**	1219 mm	**4'0"**
B — Overall Width	1637 mm	**5'4"**	2286 mm	**7'6"**	1702 mm	**5'7"**	2134 mm	**7'0"**
C — Back Height	1905 mm	**6'3"**	1902 mm	**6'3"**	2095 mm	**6'10"**	1859 mm	**6'1"**
D — Minimum Opening	1029 mm	**3'4"**	165 mm	**6.5"**	1024 mm	**3'4"**	339 mm	**14"**
E — Maximum Clamp Opening	2595 mm	**8'6"**	2845 mm	**9'4"**	2927 mm	**9'7"**	2705 mm	**8'11"**
Weight, Approximate	2085 kg	**4600 lb**	1555 kg	**3430 lb**	2130 kg	**4700 lb**	1540 kg	**3400 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 or Caterpillar Attachment Products and Services for more 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	113	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 COMMERCIALLY IMPORTANT WOODS

Species	kg/m³ (Green)	lb/ft³ (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/m³ (Green)	lb/ft³ (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.

Species	kg/m³ (Green)	lb/ft³ (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**
Nyatoh	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/m³ (Green)	lb/ft³ (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 (Afrormosia)	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**

Weights of Commercially Important Woods

- Australia
- New Zealand
- Papua New Guinea

Species	kg/m³ (Green)	lb/ft³ (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/m³ (Green)	lb/ft³ (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**

Species	kg/m³ (Green)	lb/ft³ (Green)
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	= 1273 board feet-Brereton
MBF	= 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

STOCKPILE COAL HANDLING

CONTENTS

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-scrapers. 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 Balderson Coal Dozer, along with the recommended counterweight for D11R, D10R, D9R, D8R, and 834B.

COAL STOCKPILE BLADE WEIGHT COMPARISON/ COUNTERWEIGHTING

Model	Caterpillar U-Blade kg	Caterpillar U-Blade lb	Balderson Coal Dozer/ Scoop kg	Balderson Coal Dozer/ Scoop lb	Counterweight kg	Counterweight lb
D11R	11 608	**25,590**	10 115	**22,300**	4989	**11,000**
D10R	6188	**13,643**	6620	**14,600**	2928	**6,456**
D9R	4179	**9,214**	4490	**9,900**	3142	**6,926**
D8R	2825	**6,228**	3560	**7,850**	2749	**6,060**
834B	2994	**6,600**	4070	**8,975**	75% $CaCl_2$ in all tires —	
*834B with Balderson Scoop			8700	**19,180**	5360	**11,816**

Both Caterpillar and Balderson weights include blade or scoop only. The change in machine weight is determined by adding or subtracting the difference between the Caterpillar and Balderson blade. 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.)

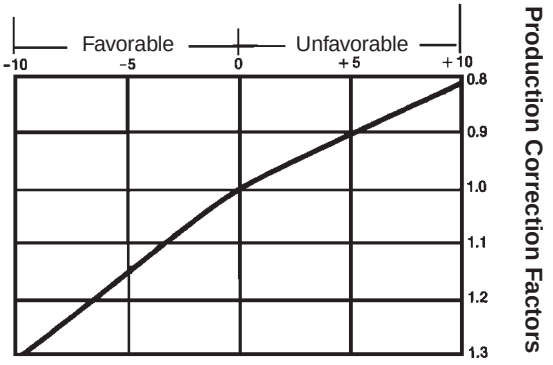
Other

The 834B'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.

Effect of Grade on Production
% Grade



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, D10R, D9R and D8R 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/m³	lb/ft³	lb/yd³
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**

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ESTIMATING HOURLY PRODUCTION

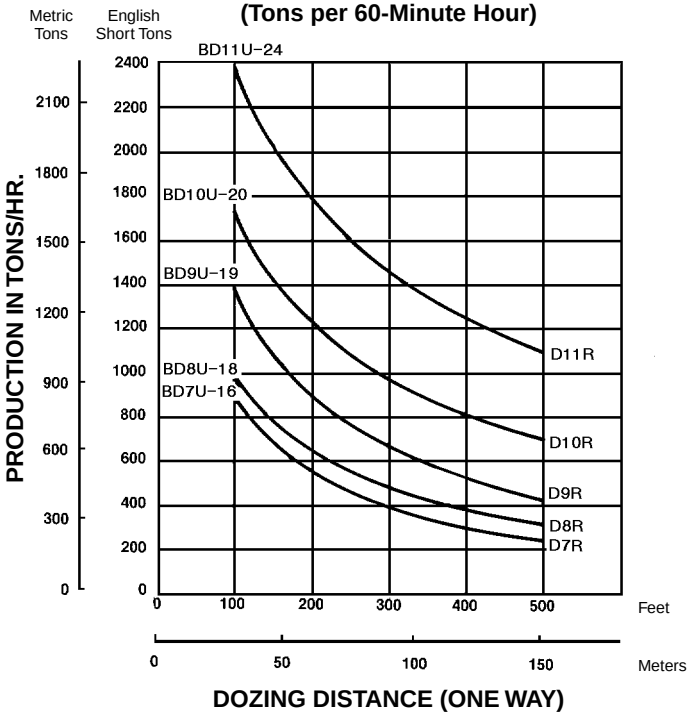
The following graphs may be used for estimating the hourly production of machines handling mixed bituminous coal. The graphs are based on 100% machine efficiency under normal job conditions and average operator; they do not take into account adverse grades, downtime, wait time, poor traction, etc. These 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 .90. For lignite with an average density of 710 kg/m³ or 1200 lb/yd³ or 45 lb/ft³ multiply tonnage figure by .80.

Track-Type Tractors Estimated Production with Balderson U-Blade (Coal Dozer)

Factors:
- **Mixed Bituminous Coal**
- **Storage and Reclamation**
- **0% Grade**
- **.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	Balderson U-Blade			Blade Capacities			
	Model	m	ft	Metric tons	U.S. tons	m^3	yd^3
D11R	BD11U-24	7.32	**24'**	64.0	**70.5**	71.9	**94**
D10R	BD10U-20	6.10	**20'**	40.85	**45.0**	45.9	**60**
D9R	BD9U-19	5.79	**18'**	31.8	**35.1**	35.6	**46.8**
D8R	BD8U-18	5.49	**18'**	19.0	**21.0**	21.4	**28**
D7R	BD7U-16	4.88	**16'**	14.28	**15.75**	16.05	**21**
D6R	BD6U	4.27	**14'**	8.84	**9.75**	9.9	**13**

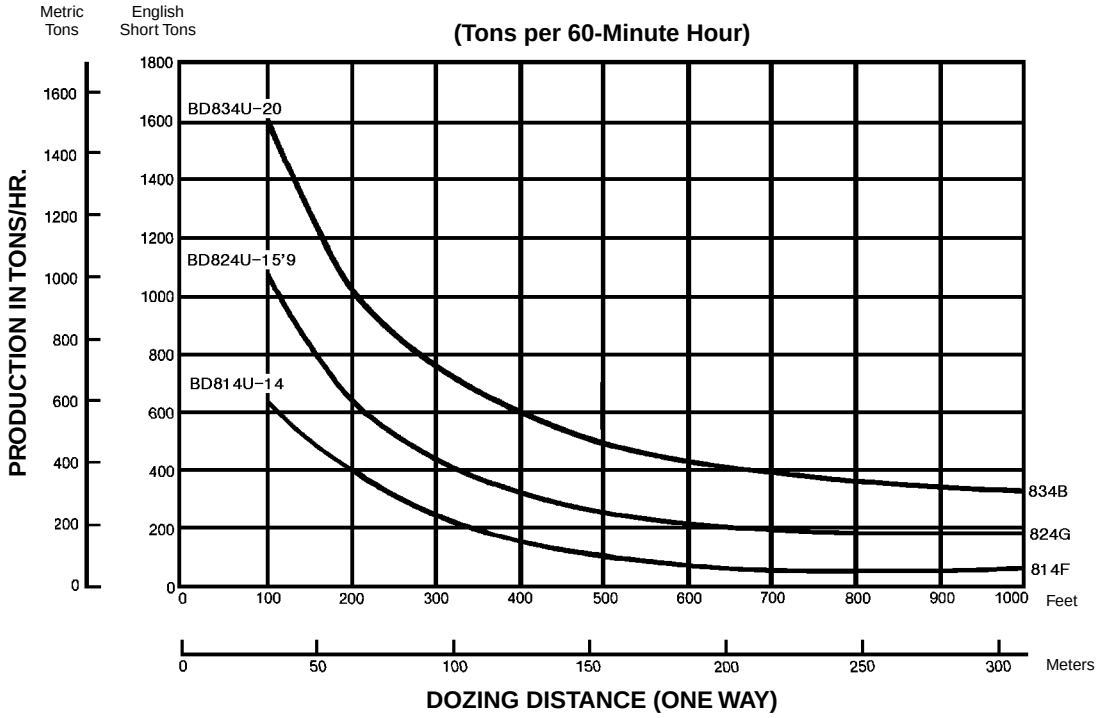
Refer to Track-Type Tractor/Bulldozer section for additional special attachment specifications.

Wheel Tractors Estimated Production with Balderson 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**
- **.80 Coefficient of Traction**



Tractor	Balderson U-Blade			Blade Capacities			
	Model	m	ft	Metric tons	U.S. tons	m^3	yd^3
834B	BD834U-20	6.17	**20'3"**	18.8	**20.8**	21.2	**27.7**
824G	BD824U-15'9	4.79	**15'9"**	14.3	**15.8**	16.1	**21.10**
814F	BD814U-14	4.32	**14'2"**	9.4	**10.3**	10.6	**13.8**

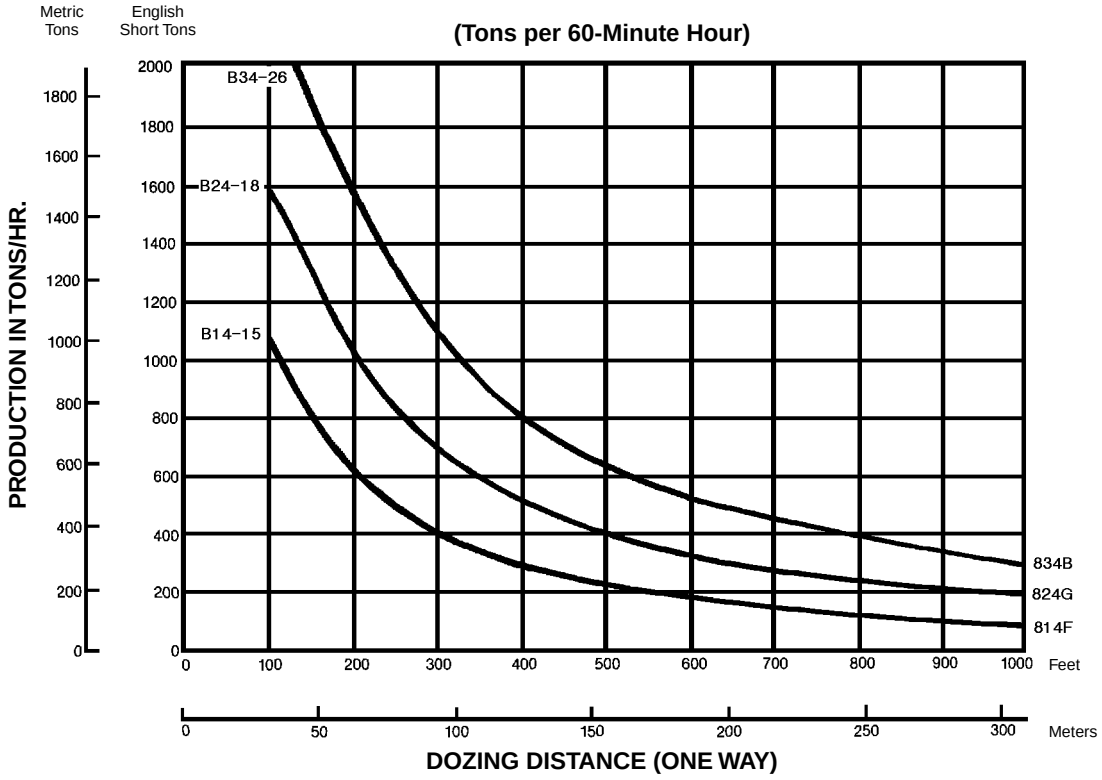
NOTE: Blade capacities in tons figured using weight of coal at 890 kg/m^3 **(1500 lb/yd^3).**

Refer to Track-Type Tractor/Bulldozer section for additional special attachment specifications.

Wheel Tractors Estimated Production with Balderson Coal Scoop

Factors:

- **Mixed Bituminous Coal**
- **Storage and Reclamation**
- **0% Grade**
- **.80 Coefficient of Traction**



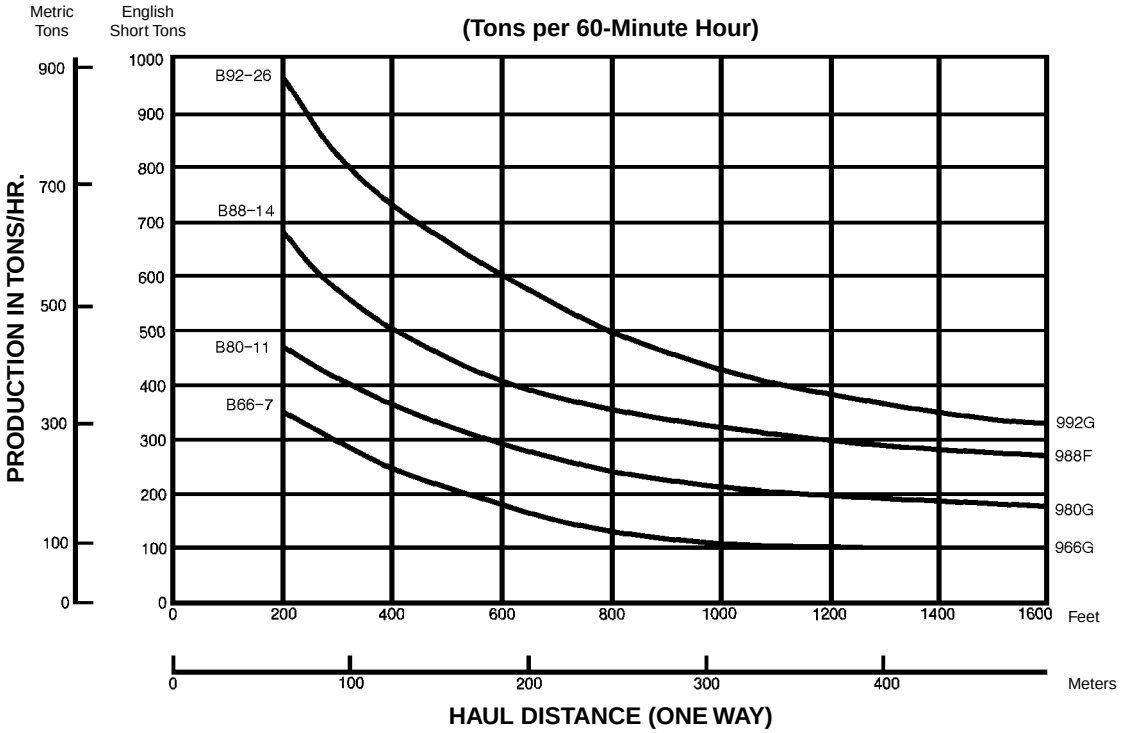
Tractor	Balderson Coal Scoop			Scoop Capacities (Lift and Carry)				Doze Capacities			
	Model	m	ft	Metric tons	U.S. tons	m^3	yd^3	Metric tons	U.S. tons	m^3	yd^3
834B	B34-26	5.3	**17'4"**	18.3	**20.2**	19.9	**26**	37.5	**41.25**	37.5	**49**
824G	B24-17	4.0	**13'2"**	12.3	**13.5**	13.0	**17**	24.5	**27.0**	26.0	**34**
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 Balderson Coal Bucket

Factors:

- **Mixed Bituminous Coal**
- **Storage and Reclamation**
- **0% Grade**
- **.80 Coefficient of Traction**

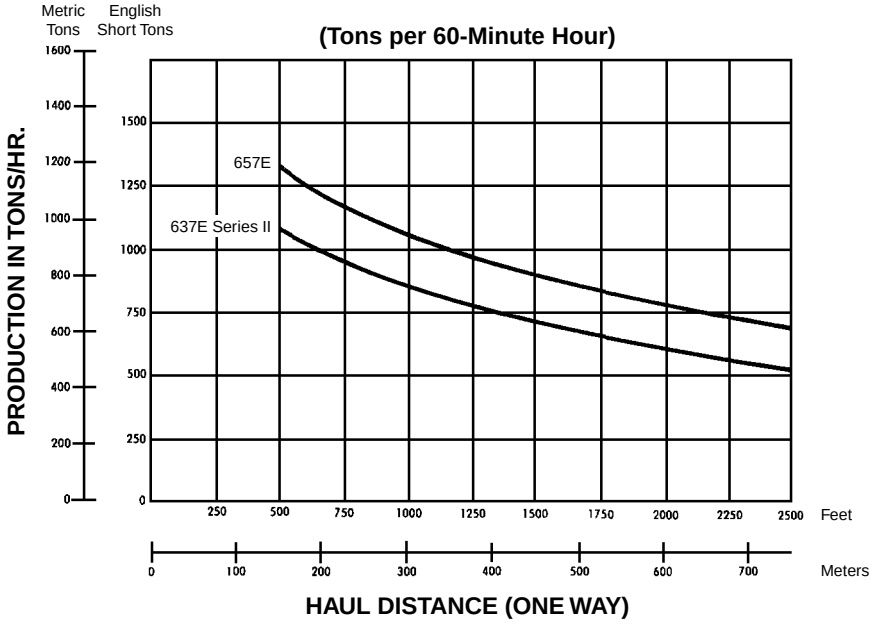


Loader	Balderson Coal Bucket Model	Blade Capacities Metric tons	U.S. tons	m^3	yd^3
992G	B92-25	17.0	**18.8**	19.3	**25.25**
988F	B88-14	9.4	**10.4**	10.3	**13.5**
980G	B80-11	7.3	**8.1**	8.2	**10.75**
966G	B66-7	4.8	**5.3**	5.5	**7.25**

NOTE: Bucket capacities include bottom cutting edge in tons figured using weight of coal at 890 kg/m^3 **(1500 lb/yd^3)**.

Wheel Tractor-Scrapers Estimated Production

Factors:
- **Mixed Bituminous Coal**
- **Storage and Reclamation**
- **0% Grade**
- **.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/m^3 (1200 lb/yd^3)
90 m (300 ft) push distance
5% adverse grade
50 minute hour operation efficiency

Solution:

Calculate the D9R's production equipped with the Balderson BD9U-19 Coal U-Blade by using the D9R production curve. Start at 90 m (300 ft) and read up to the D9R 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/m^3 (1500 lb/yd^3) 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 = .83.

Now calculate the adjusted D9R hourly production using the correction factors:

Metric $612 \times .8 \times .9 \times .83 = 366$ tons/hour
English $675 \times .8 \times .9 \times .83 = 403$ tons/hour

The D9R falls in the required production range. For short periods of peak power capacity, production could be increased by slot dozing.

Production for the D10R, 824G and 834B can be calculated using the same method.

D10R

Metric $850 \times .8 \times .9 \times .83 = 508$ tons/hour
English $935 \times .8 \times .9 \times .83 = 559$ tons/hour

824G

Metric $400 \times .8 \times .9 \times .83 = 239$ tons/hour
English $440 \times .8 \times .9 \times .83 = 263$ tons/hour

834B

Metric $689 \times .8 \times .9 \times .83 = 412$ tons/hour
English $760 \times .8 \times .9 \times .83 = 454$ tons/hour

Therefore, the D9R or 834B could most economically satisfy the production requirements.

LAND CLEARING

CONTENTS

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).
NOTE:

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 4.0 hectares (10 acres)	Bulldozer blade, axes, grub hoes and mattocks	Axes, machetes, brush hooks, grub hoes and mattocks, 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 (1,000 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 4.0 hectares (10 acres)	Bulldozer blade	Axes, crosscut saws, power chain saws, wheel-mounted circular saws	Bulldozer blade	Heavy-duty disc plow; disc harrow
Medium areas 40 hectares (100 acres)	Bulldozer blade	Power chain saws, 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 (1,000 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 4.0 hectares (10 acres)	Bulldozer blade	Axes, crosscut saws, power chain saws	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 (1,000 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:

$$\frac{\text{Width of cut (ft)} \times \text{speed (mph)}}{43{,}560\ (\text{ft}^2)} = \text{acres/hr}$$

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:

$$\frac{\text{Width of cut (ft)} \times \text{speed (mph)} \times .825}{43{,}560\ (\text{ft}^2)} = \text{acres/hr}$$

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.

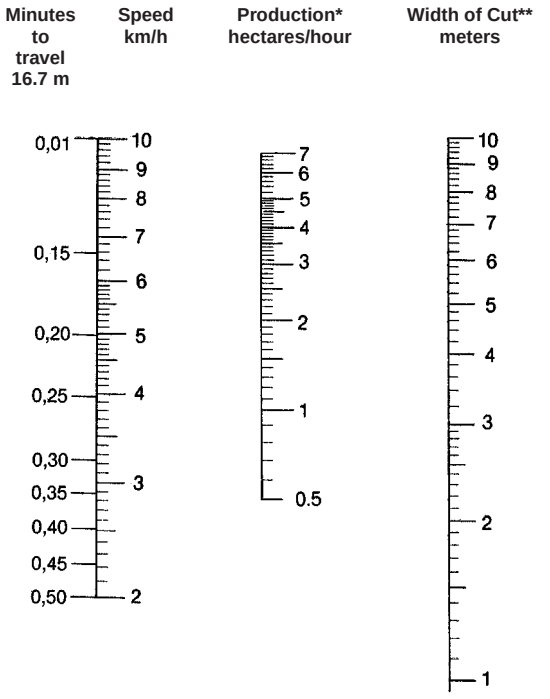
$$\frac{1.0}{(\text{Time in min. to travel 16.7 meters})} = \text{speed (km/h)}$$

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.

$$\frac{1.0}{(\text{Time in min. to travel 88 ft})} = \text{speed (mph)}$$

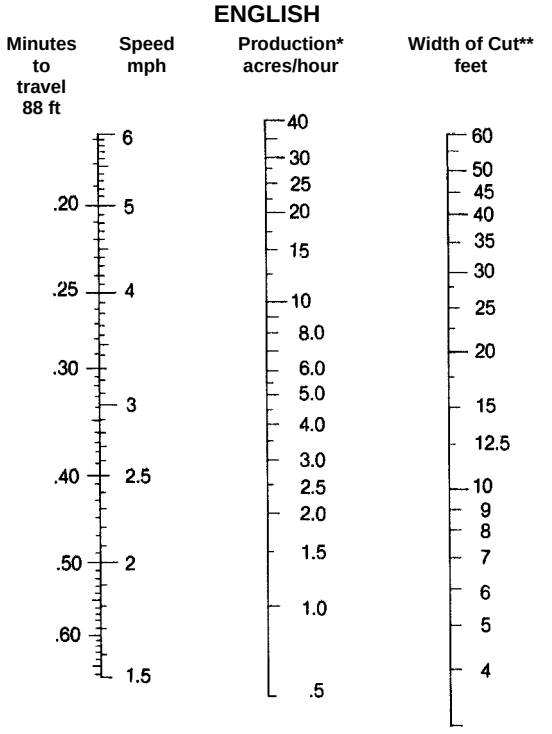
The following nomographs in both the Metric and English systems convert speed and width of cut directly into acres or hectares per hour at 82.5% efficiency without the need for calculations.

METRIC



*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	1.8
405 hp	39	0.1	0.4	1.3	3	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)

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 D8L 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:

$T = X\ [A(B)+M_1N_1+M_2N_2+M_3N_3+M_4N_4+DF]$

$T = 1.3\ [2.0\ (45)+0.2\ (35)+1.3\ (6)+2.2\ (6)+6\ (4)+16\ (1.8)]$

$= 1.3\ (90+7+7.8+13.2+24+28.8)$

$= 1.3\ (170.8)$

$= 222$ 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 stumper, 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 D8L 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 Balderson 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:

$T = B+M_1N_1+M_2N_2+M_3N_3+M_4N_4+DF$
$= 125+0.4\ (35)+0.6\ (6)+2.5\ (6)+5.0\ (2)+[DF=0]$
$= 42.6$
$= 177.6$ minutes/hectare (72 min/acre)

● ● ●

To find the number of machines required for each operation, use the formula:

Hr/hectare (acre) × number of hectares (acres) = 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:

Owning and Operating cost/hr × hr/hectare (acre) × number of hectares (acres) = 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.

ROME K/G BLADES Tractors Equipped with CAT C-Frame

Tractor Model		D6M	D6R	D7R	D8K & D8R	D8L
Blade Model		KGBA5H	KGBA6H	KGBA7H	KGBA8	KGBA8L
Overall Width, Mounted	m	3.29	3.29	3.40	3.76	3.88
	ft	**10'9.5"**	**10'9.5"**	**11'2"**	**12'4"**	**12'9"**
Weight	kg	1600	1600	2364	3090	3157
	lb	**3520**	**3520**	**5200**	**6820**	**6960**

ROME K/G BLADES Tractors Equipped with Rome C-Frame

Tractor Model		D6M LGP	D6R LGP	D6R	D7R LGP	D7R	D7R	D8K*	D8K
Blade Model		KB5HLGP	KGB6HLGP	KGB6CH	KGB7HLGP	KGB7HTCA	KGB7H	KGB8KTC	KGB8K
Overall Width, Mounted	m	3.89	3.89	3.16	3.96	3.40	3.40	3.76	3.76
	ft	**12'9"**	**12'9"**	**10'4.5"**	**13'0"**	**11'2"**	**11'2"**	**12'4"**	**12'4"**
Weight	kg	2140	2140	2282	3770	3572	3420	5320	5160
	lb	**4708**	**4708**	**5030**	**8310**	**7860**	**7530**	**11,730**	**11,380**

*Equipped with Caterpillar Tilt Cylinder

BALDERSON BLADE RAKES

Tractor Model & Dozer		D6R 6A	D6R 6S	D6R 6SLGP	D7R 7A	D7R 7S	D7R 7SLGP
Raking Width	m	3.3	2.62	3.18	3.72	3.18	3.66
	ft	**10'10"**	**8'6"**	**10'5"**	**12'3"**	**10'5"**	**12'**
Opening at Tooth Tips	mm	356	305	310	406	381	381
	in	**14"**	**12"**	**12.22"**	**16"**	**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	1245	1119
	lb	**1585**	**1490**	**1820**	**2525**	**2470**	**2470**

BALDERSON RAKES FOR WHEEL LOADERS

Wheel Loader Model and Rake type		914G Loader Rake	924F Loader Rake	928G Loader Rake	938G Loader Rake	950G/ 962G Loader Rake	966G/ 972G Loader Rake
Raking Width	mm	2210	2165	2837	2845	3048	3353
	ft	**7'3"**	**7'1"**	**9'4"**	**9'4"**	**10'0"**	**11'0"**
Tooth Penetration	mm	762	762	914	914	965	1143
	ft	**2'6"**	**2'6"**	**3'0"**	**3'0"**	**3'2"**	**3'9"**
Opening at Tooth Tips	mm	318	324	349	298	298	330
	in	**12.75"**	**12.8"**	**13.8"**	**11.75"**	**11.75"**	**13"**
Rake Weight	kg	770	760	1420	1450	1590	2210
	lb	**1700**	**1675**	**3130**	**3200**	**3500**	**4880**

BALDERSON RAKES FOR TRACK LOADERS

Track Loader Model and Rake type		953C Loader Rake	963B 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 Balderson for special attachment needs.

WASTE DISPOSAL

CONTENTS

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.

The most commonly accepted disposal method is burying refuse in a sanitary landfill. A sanitary 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 wheel tractor-scrapers 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 steel-wheeled 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, 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 sanitary 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/m^3 (800-1000 lb/yd^3). 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

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/m^3 (800-1000 lb/yd^3). 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.

Track loaders are also ideal for transfer stations. The machine's weight compacts the trash reducing volume and increases density. Wider and larger capacity buckets from Balderson Special Attachments are needed to fully utilize the capabilities of the track loader in this application.

Landfill Compactors (Steel-Wheeled)

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/m^3 (1200-1600 lb/yd^3).

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 are also popular in transfer stations to load and separate refuse. Special foam-filled tires should be considered due to the constant threat of tire puncture. However, foam filled tires will have reduced ton-mile-per hour capabilities.

Wheel loaders can achieve compaction densities of 530 to 650 kg/m^3 (900-1100 lb/yd^3). 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.

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 sanitary 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 m^3 (2,500,000 yd^3) of *total volum*e would provide for disposing of 1 520 000 m^3 (2,000,000 yd^3) of refuse and allow 380 000 m^3 (500,000 yd^3) 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)

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.

REFUSE DENSITIES

Generally, loose residential and commerical refuse weighs 150-180 kg/m^3 (250-300 lb/yd^3). A refuse collection vehicle will increase this density to 237-415 kg/m^3 (400-700 lb/yd^3). In-place landfill density can vary from 355-890 kg/m^3 (600-1500 lb/yd^3), 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/m^3 (2500 lb/yd^3). Cover material will generally raise fill densities 60-120 kg/m^3 (100-200 lb/yd^3) over the figures given above.

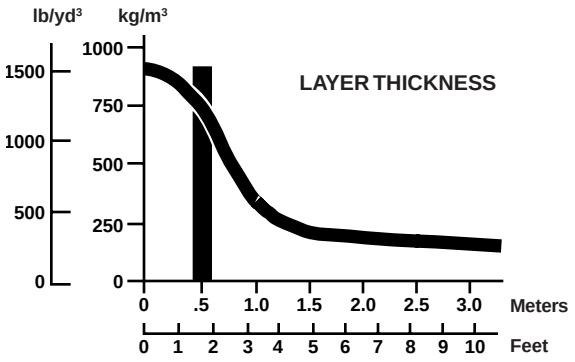
Weight of Refuse

	kg/m^3	lb/yd^3
Loose Refuse:	148-178	**250-300**
Packer Truck	237-415	**400-700**
Fill Density:	356-890	**600-1500**
Refuse and Cover:	415-1009	**700-1700**

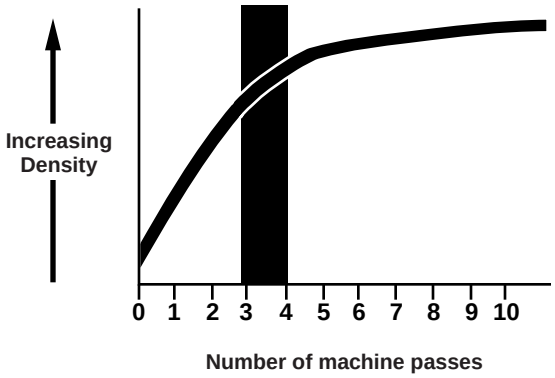
FACTORS GOVERNING COMPACTION

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.

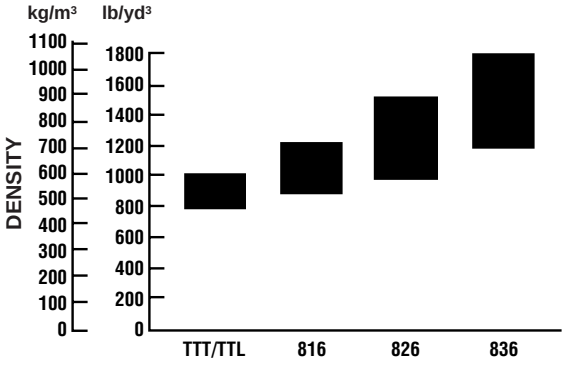
   Just the opposite is true for the landfill compactor. The flatter the slope, the better the compaction. This is because the weight of the landfill compactor is more efficiently utilized and concentrated when working on a flat surface.

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 m³ **(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/m³ **1000 lb/yd³**	9.6 years	0
710 kg/m³ **1200 lb/yd³**	11.5 years	1.9 years
830 kg/m³ **1400 lb/yd³**	13.4 years	3.8 years
950 kg/m³ **1600 lb/yd³**	15.3 years	5.7 years
1070 kg/m³ **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

	Tons/Day		Tons/Hr	
Model	Metric	U.S.	Metric	U.S.
836	1016	1000	127	125
826G	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 refuse one time in one direction.

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 sanitary 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:?

a. Probable amount of refuse generated daily?
b. Type of machine for the proposed SLF?
c. Size of machine for the proposed SLF?

Solution

a. At three year projected population — 2.26 kg/day (5 lb/day) per person × 40,000 people = 90.4 metric tons (100 tons) daily.
b. Track loader — excavating ability, single machine application based on tonnage requirements.
c. 953B handle current refuse, and has extra capacity for future growth. Small compactor if additional compaction is required.

Example Problem #2

Existing sanitary 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 m^3 (4,250,000 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:

a. What range of in-place densities could be expected using a track-type tractor; a Cat steel-wheeled landfill compactor?
b. What effect does machine selection have on site life?
c. What are the advantages and limitations of steel-wheeled landfill compactors?
d. What are the advantages and limitations of track-type units?
e. How many machines should be used on the site?
f. What type should they be?
g. What size should they be?

Solution

a. The Track-Type Tractor will achieve 475 to 595 kg/m^3 (800 to 1,000 lb/yd^3) in-place density. The Cat steel-wheeled landfill compactor will achieve 595 to 830 kg/m^3 (1,000 to 1,400 lb/yd^3) in-place density.
b. There are 3 249 125 m^3 (4,250,000 yd^3) available. 500 metric tons (550 tons) per day is how many m^3 (yd^3)? Assume a minimum density of 475 kg/m^3 (800 lb/yd^3).

$$500 \text{ metric tons/day} \times \frac{1000 \text{ kg/metric ton}}{475 \text{ kg/m}^3} = 1052 \text{ m}^3\text{/day}$$

$$550 \text{ tons/day} \times \frac{2000 \text{ lb/ton}}{800 \text{ lb/yd}^3} = 1{,}375 \text{ yd}^3\text{/day}$$

$5.5 \text{ days/week} \times 52 \text{ weeks/year} = 286 \text{ days/year}$

Yearly volume: $1{,}052 \times 286 = 300\,872 \text{ m}^3$
$1{,}375 \times 286 = 393{,}250 \text{ yd}^3$

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 kg/m^3	Density lb/yd^3	Landfill Life (years)
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 kg/m^3	Density lb/yd^3	Landfill Life (years)
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/m^3 (1,000 lb/yd^3). Compaction will extend that life 5.4 years to 18.9 years at 835 kg/m^3 (1,400 lb/yd^3).

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; 826G — with large amount of demolition debris and brush and projected increase in tonnage would justify 826G over 816F.

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

Loose Material	Fill Factor
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		Track	Track
	Bias	Radial	**	+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

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 (D11N, D10N, D9N and D8N), 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/in²	Metric t/m²	U.S. tons/ft²
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 m	TURN RADIUS ft	Speed 16 km/h 10 mph	Speed 24 km/h 15 mph	Speed 32 km/h 20 mph	Speed 40 km/h 25 mph	Speed 48 km/h 30 mph	Speed 56 km/h 35 mph	Speed 64 km/h 40 mph	Speed 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%

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 m	TURN RADIUS ft	Flat Curve km/h	Flat Curve mph	5% Super-elevation km/h	5% Super-elevation mph	10% Super-elevation km/h	10% Super-elevation 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.

WEIGHT* OF MATERIALS	LOOSE kg/m³	LOOSE lb/yd³	BANK kg/m³	BANK lb/yd³	LOAD FACTORS
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: $lb/yd^3 = (lb/ft^3) \times .4 \times 27$

$kg/m^3 = (kg/m^3) \times .4$

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')
D3C Series III	100	100	100	100	96	88
D3C XL Series III	100	100	100	100	96	88
D3C LGP Series III	100	100	100	100	96	88
D4C Series III	100	100	97	88	81	74
D4C XL Series III	100	100	97	88	81	74
D4C LGP Series III	100	100	97	88	81	74
D5C Series III	100	100	100	100	**	**
D5C XL Series III	100	100	100	100	**	**
D5C LGP Series III	100	100	100	100	**	**
D5M XL & LGP	100	100	100	100	100	100
D5E	100	100	94	87	80	73
D6M XL & LGP	100	100	100	99	91	84
D6D	100*	100*	100*	100*	94*	87*
D6G	100	100	100	100	94	87
D6R	100*	100*	100*	100	94	87
D6R (DIFF STR)	100	100	100	100	100	95
D6R XL	100	100	100	100	94	87
D6R XR	100	100	100	100	94	87
D6R LGP	100	100	100	100	94	87
D6R LGP (DIFF STR)	100	100	100	100	95	87
D7G	100*	100*	100*	94	86	80
D7R	100*	100*	100*	93*	86*	79*
D7R (DIFF STR)	100	100	95	88	81	75
D7R XR	100	100	100	93	86	79
D7R LGP	100	100	100	93	86	79
D7R LGP (DIFF STR)	100	100	95	88	81	75
D8R	100	100	100	100	94	87
D8R LGP	100	100	100	100	94	87
D9R	100	100	100	95	87	80
D10R	100	100	100	100	97	86
D11R	100	100	100	93	86	80
D4E SR	100	100	100	94	87	80
D6E SR	100	100	100	100	94	87
Challenger 35	100	100	100	100	89	82
Challenger 45	100	100	94	86	80	74
Challenger 55	100	100	100	90	82	76
Challenger 65E	100	100	***	***	***	***
Challenger 75E	100	100	***	***	***	***
Challenger 85E	100	100	***	***	***	***
Challenger 95E	100	100	***	***	***	***
Lexion 460/465	**	**	**	**	**	**
Lexion 480/485	**	**	**	**	**	**

*Refer to “Captive Vehicle Engine Fuel Specifications” microfiche at your local dealer.
**Information not available at time of printing.
***Electronically controlled engine, no deration at higher altitudes.

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')
120H NA	100	100	100	100	100	95
120H NA-VHPO	100	100	100	100	100	100
120H STD	100	100	100	100	100	100
120H ES	100	100	100	100	100	100
120H ES-SSO	100	100	100	100	100	100
135H NA	100	100	100	100	95	88
135H NA-VHPO	100	100	100	100	100	98
135H STD	100	100	100	100	100	98
12H NA	100	100	100	100	100	100
12H STD	100	89	83	77	71	65
12H ES	100	100	100	100	100	100
12H ES-SSO	100	100	100	100	100	100
140H NA	100	100	100	100	98	91
140H NA-VHPO	100	100	100	96	88	82
140H STD	100	100	100	100	97	89
140H ES	100	100	100	96	88	82
140H ES-SSO	100	100	100	97	90	83
143H NA	100	100	100	92	85	79
143H NA-SSO	100	100	100	97	90	83
160H NA	100	100	100	98	91	84
160H NA-VHPO	100	100	100	100	97	89
160H STD	100	100	100	97	89	82
160H ES	100	100	100	100	97	89
160H ES-SSO	100	100	100	100	97	90
160H NA	100	100	100	100	93	85
14H GL	100	100	100	98	91	84
14H GL-SSO	100	100	100	99	91	84
16H GL	100	100	100	100	100	100
24H GL	100	100	100	100	93	85
301.5	**	**	**	**	**	**
307B (4M40)	100	100	**	**	**	**
307 (3054)	100	100	89	81	**	**
311B	100	100	90	87	83	**
312B/312B L (3064 T)	100	100	90	87	83	**
312B/312B L (3054 T)	100	100	98	95	92	88
315B (3046 T)	100	100	90	87	83	**
315B L (3046 T)	100	100	90	87	83	**
315B L (3054 T)	100	100	98	95	92	88
318B L/318B LN (3046 T)	100	100	90	87	83	**
M312	100	100	100	100	92	85
M315	100	100	100	100	92	85
M318	100	100	100	100	100	93
M320	100	100	100	100	100	93

*Refer to "Captive Vehicle Engine Fuel Specifications" microfiche at your local dealer.
**Information not available at time of printing.
VHPO = Variable Horsepower Option
SSO = Sound Suppression Option

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')
320B (3066 T)	100	100	90	87	83	**
320B L (3066 T)	100	100	90	87	83	**
320B N (3066 T)	100	100	90	87	83	**
320B (3116 T)	100	100	100	100	100	96
320B L (3116 T)	100	100	100	100	100	96
320B N (3116 T)	100	100	100	100	100	96
322B	100	100	100	100	100	97
322B L	100	100	100	100	100	97
322B LN	100	100	100	100	100	97
325B	100	100	100	100	94	87
325B L	100	100	100	100	94	87
325B LN	100	100	100	100	94	87
330B	100	100	100	100	95	92
330B L	100	100	100	100	95	92
330B LN	100	100	100	100	95	92
345B	100	100	100	100	100	**
350	100	100	100	100	96	88
375	100	100	100	93	86	78
5080	100	100	100	93	86	78
5130B◀	100	100	100	100	93	86
5230◀	100	100	100	93	86	79
416C (Turbo normalized)	100	100	98	96	94	88
416C (Turbo)	100	100	98	96	94	88
426C (Turbo)	100	100	98	96	94	88
436C (Turbo)	100	100	98	96	94	88
428C (NA)	100	98	90	84	74	60
428C (Turbo)	100	100	98	96	94	88
438C (Turbo)	100	100	98	96	94	88
446B (Turbo)	100	100	97	91	83	77
515/525	100*	100*	100	100	94	86
528B Cable	100*	100*	100	100	100	93
D4H TSK Series II	100	100	100	100	94	87
517	100	100	100	99	95	87
527	100	100	100	100	99	91
561M	100	100	100	94	86	80
572R	100*	100*	100*	94	86	80
583R	100	100	100	100	94	87
589	100	100	94	87	80	73

*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')
621F	100	100	94	87	80	74
631E Series II	100	100	96	88	82	75
651E	100	100	100	95	87	80
627F Tractor	100*	100*	100*	96	89	82
Scraper	100*	100*	100*	92	85	79*
637E Series II Tractor	100	100	96	88	83	76
Scraper	100*	100*	100	95	87	80
657E 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
623F	100	100	94	87	80	74
633E Series II	100	100	96	88	82	75
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
D25D	100	100	100	100	100	95
D30D	100	100	95	88	81	75
D250E Series II	100	100	100	100	100	95
D300E Series II	100	100	95	88	81	75
D350E	100	100	100	100	99	91
D400E	100	100	100	96	88	82
814F	100*	100*	100	100	97	94
824G	100	100	100	97	89	82
834B	100	100	90	80	70	60
844	100	100	100	100	92	85
854G	100	100	100	92	85	77
815B	100*	100*	100	100	97	94
825G	100	100	100	97	89	82
816F	100	100	100	100	97	94
826G	100	100	100	97	89	82
836	100	100	90	80	70	60

*Refer to “Captive Vehicle Engine Fuel Specifications” microfiche at your local dealer.
◀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	*	*	*	*	*	*
906	*	*	*	*	*	*
914G	100	100	100	89	86	74
924F	100	100	100	100	97	89
928G	100	100	100	100	92	85
930T	100	100	94	87	80	73
938G	100	100	100	100	100	97
950G	100	100	100	*	*	*
962G	100	100	100	*	*	*
966F Series II	100	100	100	100	100	93
970F	100	100	100	100	100	85
980G	100	100	100	100	96	88
988F Series II	100	100	100	94	89	79
990 Series II	100	100	100	100	92	85
992G	100	100	100	92	85	77
994	100	100	100	100	95	88
933C	100	100	100	100	96	88
939C	100	100	100	100	*	*
953C	100	100	100	100	100	100
963B	100	100	100	100	100	100
973	100	100	100	100	100	98
IT14G	100	100	100	89	86	74
IT24F	100	100	100	100	100	93
IT28G	100	100	100	100	92	85
IT38G	100	100	100	96	88	82
IT62G	100	100	100	*	*	*
TH62	100	*	*	*	*	*
TH63	100	*	*	*	*	*
TH82	100	*	*	*	*	*
TH83	100	*	*	*	*	*
TH103	100	*	*	*	*	*
PM-465	100	100	100	*	*	*
PM-565B	100	100	100	*	*	*
RR-250B	100	100	100	100	100	100
SS-250B	100	100	100	100	100	100
RM-350B	100	100	100	*	*	*
AP-200B	100	100-90	90-83	83-73	73-62	62-52
AP-800C	100	100	100-97	97-93	93-89	89-83
AP-1000B	100	100	100-97	97-93	93-89	89-83
AP-650B	100	100	100	97-93	93-89	89-83
AP-1050B	100	100	100-97	97-93	93-89	89-83
AP-1055B	100	100	100-97	97-93	93-89	89-83

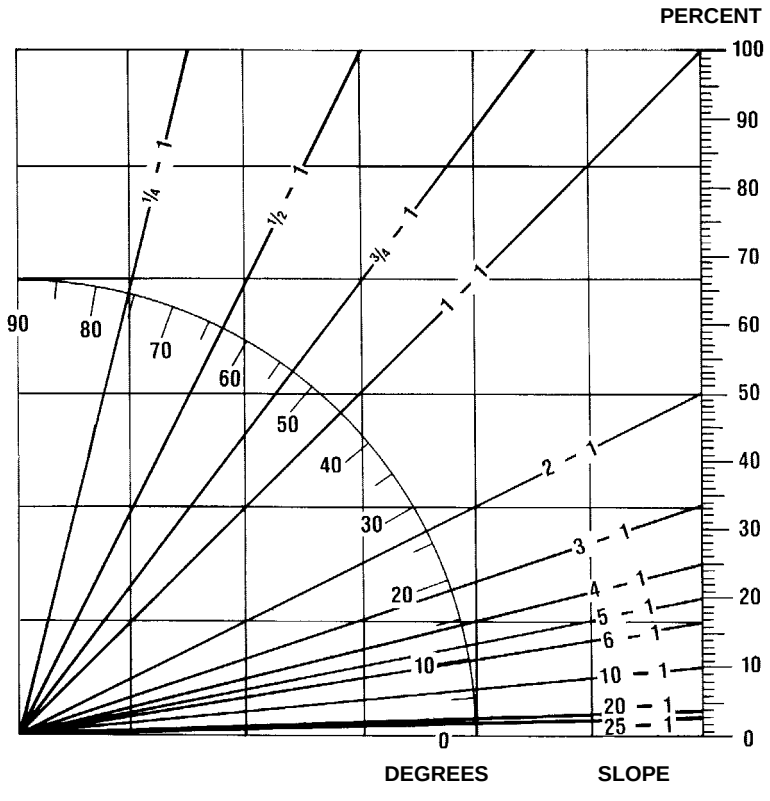
*Information not available at time of printing.

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-210B	100	100	100-97	97-93	93-89	89-83
BG-230	100	100	100-97	97-93	93-89	89-83
BG-240B	100	100	100-97	97-93	93-89	89-83
BG-260C	100	100	100-97	97-93	93-89	89-83
BG-225C	100	100	100-97	97-93	93-89	89-83
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-265B	100	100	100-97	97-93	93-89	89-83
BG-730	100	100	100-97	97-93	93-89	89-83
BG-650	100	100	100-97	97-93	93-89	89-83
CS-323C	100	100	100-97	97-93	93-89	89-83
CS-431C	100	100	100-97	97-93	93-89	89-83
CS-433C	100	100	100-97	97-93	93-89	89-83
CS-531C	*	*	*	*	*	*
CS-533C	100	100	100-97	97-93	93-89	89-83
CS-563C	100	100	100-97	97-93	93-89	89-83
CS-573C	100	100	100-97	97-93	93-89	89-83
CS-583C	100	100	100-97	97-93	93-89	89-83
CP-323C	100	100-90	90-83	83-73	73-62	62-52
CP-433C	100	100	100-97	97-93	93-89	89-83
CP-533C	100	100	100-97	97-93	93-89	89-83
CP-563C	100	100	100-97	97-93	93-89	89-83
CB-214C	100	100	100-97	97-93	93-89	89-83
CB-224C	100	100	100-97	97-93	93-89	89-83
CB-434B	*	*	*	*	*	*
CB-434C	100	100	100-97	97-93	93-89	89-83
CB-534C	100	100	100-97	97-93	93-89	89-83
CB-544	*	*	*	*	*	*
CB-634C	100	100	100-97	97-93	93-89	89-83
PS-150B	100	100-90	90-83	83-73	73-62	62-52
PS-200B	100	100	100-97	83-73	73-62	62-52
PS-360B	*	*	*	*	*	*
PF-300B	100	100	100-97	83-73	73-62	62-52
PS-300B	100	100	100-97	83-73	73-62	62-52
PS-500	100	100	100-97	97-93	93-89	89-83
CB-535B	*	*	*	*	*	*
CB-545B	*	*	*	*	*	*
R1300	*	*	*	*	*	*
R1600	*	*	*	*	*	*
R1700 Series II	*	*	*	*	*	*
R2900	*	*	*	*	*	*
AD40/AE40	*	*	*	*	*	*
69D	*	*	*	*	*	*
73D	*	*	*	*	*	*

*Insufficient data.

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

CONVERSION FACTORS

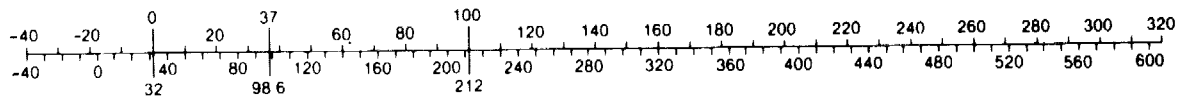
Multiply Metric Unit	By	To Obtain English Unit
kilometer (km)	.6214	mile
meter (m)	1.0936	yard
meter (m)	3.28	foot
centimeter (cm)	.0328	foot
millimeter (mm)	.03937	inch
sq kilometer (km^2)	.3861	square mile
hectare (ha)	2.471	acre
sq meter (m^2)	10.764	square foot
sq meter (m^2)	1550	square inch
sq centimeter (cm^2)	.1550	square inch
cu centimeter (cm^3)	.061	cubic inch
cu meter (m^3)	1.308	cubic yard
liter (L)	61.02	cubic inch
liter (L)	.001308	cubic yard
km/h	.621	mph
liter (L)	.2642	U.S. gallon
liter (L)	.22	Imperial gallon
metric ton (t)	.984	long ton
metric ton (t)	1.102	short ton
kilogram (kg)	2.205	pound, avdp.
gram (g or gr)	.0353	ounce, avdp.
kilonewton (kN)	225	pound (force)
newton (N)	.225	pound (force)
cu centimeter (cm^3)	.0338	fluid ounce
kilograms/cu meter	1.686	pounds/cu yd
kilograms/cu meter	.062	pounds/cu ft
kilograms/sq cm (kg/cm^2)	14.225	pounds/sq in
kilocalorie (kcal)	3.968	Btu
kilogram-meter (kg•m)	7.233	foot-pound
meter-kilogram (m•kg)	7.233	pound-foot
metric horsepower (CV)	.9863	hp
kilowatt (kW)	1.341	hp
kilopascal (kPa)	.145	psi
bar	14.5	psi
tons/m^3	1692	pounds/cu yd
decaliter	.283	bushel

Multiply English Unit	By	To Obtain Metric Unit
mile, statute (m)	1.609	kilometer
yard (yd)	.9144	meter
foot (ft)	.3048	meter
inch (in)	25.4	millimeter
sq mile ($mile^2$)	2.590	sq kilometer
acre	.4047	hectare
sq foot (ft^2)	.0929	sq meter
sq inch (in^2)	.000645	sq meter
cu yard (yd^3)	.7645	cu meter
cu inch (in^3)	16.387	cu centimeter
cu foot (ft^3)	.0283	cu meter
cu inch (in^3)	.0164	liter
cubic yard (yd^3)	764.55	liter
mph	1.61	km/h
Ton — mph	1.459	tkm/h
U.S. gallon (US Gal)	3.785	liter
U.S. gallon	.833	Imperial gallon
long ton (lg ton)	1.016	metric ton
short ton (sh ton)	.907	metric ton
pound (lb)	.4536	kilogram
ounce (oz)	28.35	gram
pound (lb) (force)	.00445	kilonewton
pound (lb) (force)	4.45	newton
fluid oz (fl oz)	29.57	cu centimeter
lb/cu ft (lb/ft^3)	16.018	kg/cu meter
lb/cu yd (lb/yd^3)	.5933	kg/cu meter
pounds/sq. in.	.0703	kilogram/sq cm
psi	.0689	bar
psi	6.89	kilopascal
Btu	.2520	kilogram-calorie
foot-pound (ft-lb)	.1383	kilogram-meter
horsepower (hp)	1.014	metric horsepower
horsepower (hp)	.7457	kilowatt
pounds/cu yd	.0005928	tons/m^3
pounds (No. 2 diesel fuel)	.1413	U.S. gallon
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

$°C = (°F - 32) \div 1.8$

$°F = (C \times 1.8) + 32$

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
Track-Type Tractors	
D3C Series III & Hystat	3046
D3C XL Series III & Hystat	3046
D3C LGP Series III & Hystat	3046
D4C Series III & Hystat	3046
D4C XL Series III & Hystat	3046
D4C LGP Series III & Hystat	3046
D5C Series III & Hystat	3046 T
D5C XL Series III & Hystat	3046 T
D5C LGP Series III & Hystat	3046 T
D5M XL	3116 T
D5M LGP	3116 T
D5E	3306
D6M XL	3116 T
D6M LGP	3116 T
D6G	3306 T
D6R	3306 T
D6R XL	3306 T
D6R XL (IG)	3306 T
D6R XR	3306 T
D6R LGP	3306 T
D7G	3306 T
D7R	3306 TA
D7R XR	3306 TA
D7R LGP	3306 TA
D8R	3406C TA
D8R LGP	3406C TA
D9R	3408E TA
D10R	3412 TA
D11R	3508B TA
Agricultural Equipment	
D4E SR	3304 T
D6G SR	3306 T
Challenger 35	3116 ATAAC
Challenger 45	3116 ATAAC
Challenger 55	3126 ATAAC
Challenger 65E	3176 ATAAC
Challenger 75E	3176 ATAAC
Challenger 85E	3196 ATAAC
Challenger 95E	3196 ATAAC
Lexion 460/465	3126 ATAAC
Lexion 480/485	3176 ATAAC
Waste Handling Arrangements	
D6R WDA	3306 T
D7R WDA	3306 TA
D8R WDA	3406C TA
D9R WDA	3408E TA
D10R WDA	3412 TA
953C WDA	3116 T
963B WDA	3116 TA
973 WDA	3306 T

Machine Model	Engine Model
Motor Graders	
120H NA	3116 T
120H NA (VHP)	3116 TA
120H STD	3116 TA
120H ES	3116 TA
135H NA	3116 T
135H NA (VHP)	3116 TA
135H STD	3116 TA
12H NA	3306 T
12H STD	3306
12H ES	3306 T
140H NA	3306 T
140H STD	3306 T
140H ES	3306 T
143H NA	3306 T
160H NA	3306 T
160H NA (VHP)	3306 TA
160H STD	3306 T
160H ES	3306 TA
163H NA	3306 TA
14H	3306 TA
16H	3406 TA
24H	3412E TA
Excavators	
301.5	3003
307B	Mitsubishi 4M40EI
307	3054***
311B	3064 T
312B/312B L	3064 T*
312B L	3054 T***
315B/315B L	3046 T*
315B L	3054 T***
318B L/318B LN	3046 T
M312	3054 TA
M315	3054 TA
M318	3116 T
M320	3116 T
320B/320B L/320B N	3066 T*
320B/320B L/320B N/320B S	3116 T**
322B/322B L	3116 T
322B L/322B LN	3116 TA**
325B/325B L/325B LN	3116 TA
330B/330B L/330B LN	3306 TA
345B/345B L	3176 ATAAC
350/350 L	3306 ATAAC
375/375 L	3406C ATAAC
5130B	3508 (EUI) TA
5230	3516 (EUI) TA
Front Shovels	
5080	3406 TA
5130B	3508 (EUI) TA
5230	3516 (EUI) TA

Machine Model	Engine Model
Backhoe Loaders	
416C	3054
426C	3054 T
436C	3054 T
446B	3114 T
428C	3054
438C	3054 T
Wheel Skidders	
515	3304 T
525	3304 T
528B	3306 T
Track Skidders	
517	3304 T
527	3304 T
Pipelayers	
561M	3116 T
572R	3306 T
583R	3406 TA
589	3408 TA
Wheel Tractor-Scrapers	
613C Series II	3116 T
615C Series II	3306 TA
623F	3406 TA
633E Series II	3408 TA
621F	3406 TA
631E Series II	3408 TA
651E	3412 TA
627F Tractor	3406 TA
627F Scraper	3306 T
637E Series II Tractor	3408 TA
637E Series II Scraper	3306 TA
657E Tractor	3412 TA
657E Scraper	3408 TA
Construction & Mining Trucks	
769D	3408E TA
771D	3408E TA
773D	3412E TA
775D	3412E TA
777D	3508B (EUI) TA
785C	3512 (EUI) TA
789C	3516 (EUI) TA
793C	3516B (EUI) TA
Construction & Mining Tractors	
776D	3508B (EUI) TA
784C	3512 (EUI) TA

*Japan Sourced.
**Belgium Sourced.
***France Sourced.

IG — Intermediate Gauge
VHP — Variable Horsepower

Machine Model	Engine Model
Articulated Trucks	
D25D	3306 TA
D30D	3306 TA
D250E Series II	3306 TA
D300E Series II	3306 TA
D350E	3406 TA
D400E	3406 TA
Wheel Tractors	
814F	3306 TA
824G	3406C TA
834B	3408 TA
844	3412E TA
854G	3508B TA
Soil Compactors	
815F	3306 TA
825G	3406C TA
Landfill Compactors	
816F	3306 TA
826G	3406C TA
836	3408 TA
Wheel Loaders	
902	3024
906	3034
914G	3054 T
924F	3114 T
928G	3116 T
938G	3126 T
950G	3126 TA
962G	3126 TA
966F Series II	3306 T
970F	3306 TA
980G	3406 T
988F Series II	3408E TA
990 Series II	3412E TA
992G	3508B TA
994	3516 TA
Track Loaders	
933C	3046
939C	3046 T
953C	3116 T
963B	3116 TA
973	3306 T

Machine Model	Engine Model
Integrated Toolcarriers	
IT14G	3054 T
IT24F	3114 T
IT28G	3116 T
IT38G	3126 T
IT62G	3126 TA
Telehandlers	
TH62	3054
TH63	3054
TH82	3054
TH83	3054 T
TH103	3054 T
Paving Products	
Cold Planers	
PM-465	3406C
PM-565B	3408 TA
Reclaimer/Stabilizers	
RR-250B	3406C TA
SS-250B	3406C TA
RM-350B	3406D TA
Asphalt Pavers	
AP-200B	Hatz 2M40L
AP-800C	3054 T
AP-1000B	3116 TA
AP-650B	3054 TA
AP-1050B	3116 T
AP-1055B	3116 TA
BG-210B	3054 T
BG-230	3054 T
BG-240B	JD4045T*
BG-260C	3116 TA
BG-225C	3054 T
BG-245C	3116 TA
BG-265B	3116 TA
BG-2455C	3116 TA
Road Wideners	
BG-730	3056 T
Windrow Elevators	
BG-650	3054 T

Machine Model	Engine Model
Compactors	
Smooth Drum-Soil	
CS-323C	3054
CS-431C	3054 T
CS-433C	3054 T
CS-531C	3116 T
CS-533C	3116 T
CS-563C	3116 T
CS-573C	3116 T
CS-583C	3116 T
Padded Drum-Soil	
CP-323C	3054
CP-433C	3054 T
CP-533C	3116 T
CP-563C	3116 T
Dual Drum-Asphalt	
CB-214C	Hatz 2M41
CB-224C	Hatz 2M41
CB-434C/434B	3054
CB-534C	3054 T
CB-544	3054
CB-634C	3116 T
Single Drum-Combination	
CB-535B	3054 T
CB-545	3054
Pneumatic Tire-Asphalt	
PS-150B	3054
PS-200B	3054 T
PS-360B	3054 T
PF-300B	3054 T
PS-300B	3054 T
PS-500	3208
Underground Mining	
R1300	3306 TA
R1600	3176C ATAAC
R1700 Series II	3176 ATAAC
R2900	3406E ATAAC
AD40/AE40 Series II	3408E TA
69D	3408E TA
73D	3412E TA

*John Deere.

Tables

Engine Model and (Cylinders)	Machine	Aspiration	Fuel Injection System	Bore × Stroke mm	Bore × Stroke in	Displacement L	Displacement in³
3003 (3)	301.5	NA	DI	75 × 72	**2.95 × 2.83**	0.95	**58.2**
Hatz 2M41L (2)	CB-214C, CB-224C, AP200B	NA	DI	102 × 105	**4 × 4.13**	1.716	**105**
3024 (4)	902	NA	DI	84 × 100	**3.31 × 3.94**	2.22	**135**
Mitsubishi 4M40EI (4)	307B*	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**
3054 (I-4)	416C, 428C, 307***, CB-434B, CB-544, CB-434C, CB-545, CS-323C, CP-323C, PS-150B, TH62, TH82, TH63	NA	DI	100 × 127	**3.94 × 5.0**	4.0	**243**
	(416C), 426C, (428C), 436C, 438C, 312B L***, 315B L***, AP-800C, BG-210B, BG-225C, BG-230, BG-650, 914G, IT14G, PS-200B, PS-360B, PF-300B, PS-300B, CS-431C, CS-433C, CP-433C, CB-534C, CB-534B, CB-535B, (TH62), (TH63), (TH82), TH83, TH103	T (optional)					
	M312, M315, AP-650B	TA					
3064 (I-4)	311B, 312B*	T	DI	105 × 127	**4.1 × 5.0**	4.40	**268**
3114 (I-4)	446B, IT24F, 924F	T	DI	105 × 127	**4.13 × 5.0**	4.4	**268**
JD4045	BG-240B	T	DI	106 × 127	**4.19 × 5.0**	4.5	**276**
3046 (I-6)	D3C Series III, D3C XL Series III, D3C LGP Series III, D4C Series III, 933C, D4C XL Series III, D4C LGP Series III	NA	DI	94 × 120	**3.7 × 4.7**	5.0	**305**
	D5C Series III, D5C XL Series III, D5C LGP Series III, 315B/315B L*, 939C, 318B L, 318B LN	T	DI				

DI — Direct Injection
T — Turbocharged
NA — Naturally Aspirated

*Japan sourced.
**Belgium sourced.
***France sourced.

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Engine Model and (Cylinders)	Machine	Aspiration	Fuel Injection System	Bore × Stroke mm	Bore × Stroke in	Displacement L	Displacement in³
3056 (I-6)	BG-730	T	DI	100 × 127	**3.94 × 5.0**	6.0	**365**
3066 (I-6)	320B*, 320B L*, 320B N*	T	DI	102 × 130	**4.0 × 5.1**	6.4	**391**
3116 (I-6)	M318, M320, 320B**, 320B L**, 320B N**, 320B S**, 613C Series II, 928G, 953C, IT28F, AP-1050B, CS-533C, CS-531C, CS-563C, CS-573C, CS-583C, CB-634C, CP-533C, CP-563C, 322B, 322B L, 322B LN, BG-750, 120H NA, 135H NA, D5M, D6M, 561M	T	DI	105 × 127	**4.13 × 5.0**	6.6	**402**
	BG-260C, BG-245C, AP-1055B, 120H NA***, 135H***, 120H STD, 135H STD, 120H ES, 322B/ 322B LN**, 325B, 325B L, 325B LN, 963B, BG-270B, BG-265B, BG-2455C, AP1000B	TA	DI				
	Challenger 35, Challenger 45	T ATAAC	DI				
3304 (I-4)	D4E SR, 515, 525, 527, 517	T	DI	121 × 152	**4.75 × 6**	7	**425**
3126 (I-6)	938G, IT38G	T	DI	110 × 127	**4.33 × 5.0**	7.2	**442**
	950G, 962G, IT62G	TA					
	Challenger 55, Lexion 460/465	ATAAC					
3176 (I-6)	Challenger 65E, Challenger 75E, R1700 Series II, R1600, 345B, 345B L, Lexion 480/485	T ATAAC	DI	125 × 140	**4.92 × 5.5**	10.2	**629**
3208 (V-8)		NA	DI	114 × 127	**4.5 × 5**	10.4	**636**

PC — Precombustion
DI — Direct Injection
T — Turbocharged
TA — Turbocharged and Aftercooled
T ATAAC — Turbocharged and Air/Air Aftercooled
NA — Naturally Aspirated

*Japan sourced.
**Belgium sourced.
***With VHP option.

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Tables

Engine Model and (Cylinders)	Machine	Aspiration	Fuel Injection System	Bore × Stroke mm	Bore × Stroke in	Displacement L	Displacement in³
3306 (I-6)	D5E, 12H STD	NA	DI	121 × 152	**4.75 × 6**	10.5	**638**
	D6R XL, D6R XR, D6R, D6R LGP, D6R WHA, D6G, D6G SR, D7G, 12H NA, 140H NA, 143H NA, 160H NA, 140H STD, 160H STD, 12H ES, 140H ES, 528B, 572R, 627F Sc., 973, 966F Series II	T	DI				
	D7R, D7R XR, D7R LGP, D7R WHA, 637E Series II Sc., R1300, 615C, D25D, 970F, D30D, D250E Series II, D300E Series II, 330B, 330B L, 330B LN, 814F, 815F, 816F, 160H NA***, 163H NA, 160H ES, 14H	TA	DI				
	350, 350 L	T ATAAC	DI				
3196 (I-6)	Challenger 85E, Challenger 95E	T ATAAC	DI	130 × 150	**5.1 × 5.9**	12	**732**
3406 (I-6)	980G, PM-465	T	DI	137 × 165	**5.4 × 6.5**	14.6	**893**
	621F, 623F, 627F Tr., D350E, D400E, RR-250B, SS-250B, RM-350B, 16H 583R, 824G, 825G, 826G, D8R, D8R LGP, D8R WHA	TA	DI				
	375, 375 L, 5080, R2900	T ATAAC	DI				
3408 (V-8)	D9R, D9R WHA, 589, 631E-II, 633E-II, 637E-II Tr., 657E Sc., 771D, 769D, 834B, 836, 988F-II, PM-565B, AD40, 69D	TA	DI	137 × 152	**5.4 × 6**	18	**1099**
		T ATAAC					
3412 (V-12)	D10R, D10R WHA, 651E, 657E Tr., 773D, 775D, 990, 24H, 73D, 844	TA	DI	137 × 152	**5.4 × 6**	27	**1649**
3508 (V-8)	D11R, 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, 994, 5230	TA	DI	170 × 190	**6.7 × 7.5**	69.1	**4211**

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T ATAAC — Turbocharged and Air/Air Aftercooled
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