



613C

SERIES II

ELEVATING SCRAPER

- **Elevator Design** — general earthmoving to finish work with less support equipment requirements than other systems.
- **Performance** — quick response engine combined with a two-speed elevator drive and high hydraulic horsepower for maximum hauling and loading performance.
- **Operator's Compartment** — low sound levels and conveniently located, easy to operate controls for a comfortable and efficient work environment.
- **Total Customer Support** — unmatched in the industry!

Heaped Capacity8.4 m³/11 yd³
Rated Load11 975 kg/26,400 lb

Featured machine may include additional equipment applicable only for special applications. See your authorized Caterpillar dealer for available options.

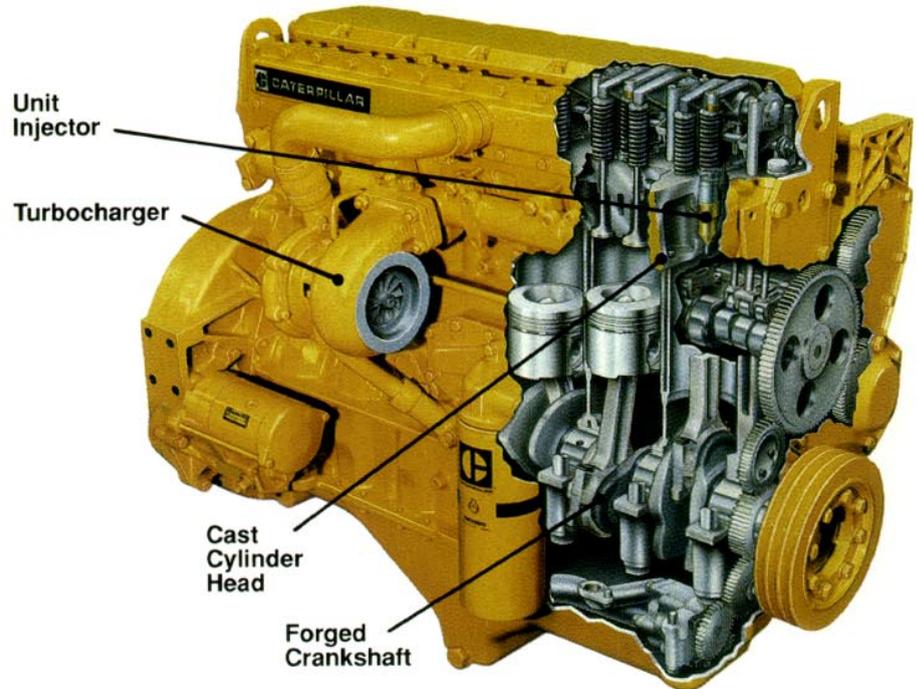


FEATURES

Caterpillar® 3116

Designed with fuel efficiency and emissions control in mind. Traditional items you've come to expect from your Caterpillar engine remain — reliability, durability, performance and serviceability.

- **Unit injection allows very high injection pressures and short injection times** — fast response, low fuel consumption and excellent emissions control.
- **Internal fuel passages** — eliminate the need for high pressure lines and their connections.
- **Two-piece, articulated piston** — maximizes the use of material properties
 - steel in the crown for structural integrity — the piston was designed to withstand cylinder pressure and thermal loads well beyond the capability of an aluminum piston.
 - aluminum skirt isolated from combustion and gas loads
 - lower structural requirements allow the use of weight saving aluminum. Engine efficiency is directly affected by the weight of its moving components (lower weight → lower fuel consumption)
 - less distortion due to thermal expansion and combustion forces means tighter tolerances between piston skirt and cylinder liner can be obtained → reduces piston slap and resultant engine noise.



- **The two-piece piston also features a high top-ring position** — "dead" space is reduced resulting in lower emissions and better fuel efficiency.
- **Serviceability**
 - Block — designed for first overhaul without reborring followed by two reborings with identical weight oversized pistons and lastly, the availability of dry sleeves.
 - Cylinder heads — both valve seats and guides are replaceable, making the head completely rebuildable.



- Water pump
 - externally mounted for easy access
 - fully serviceable with all components available through the parts system.
- Quick access side covers
 - cam followers are attached to side covers for easy access
 - easy inspection of cam lobes
 - allow pushrod removal without pulling the cam.

Elevator Mechanism/Bowl

General earthmoving to finish work with work alone capability.

- **Two-speed elevator drive and high hydraulic horsepower** provide maximum loading performance over a wide range of material conditions. Low speed and high horsepower for tough materials or deeper cuts and high speed with lower horsepower for easier materials or windrow loading.
- **Elevator flights** break up the material during the loading and unloading process — fill area workload is reduced.
- **Retracting floor, bulldozer ejector and reversible elevator** provide clean, quick material ejection.
- **Low-profile bowl design** lets loaded material flow to the rear of the bowl — new material enters with less resistance.
- **Wide cutting edge** allows a large volume of material to enter the bowl — even with shallow cuts, loads are obtained quickly.



- **Angled top plate on ejector** helps retain loads for maximum productivity and minimum haul road spillage.
- **Adjustable throat opening** — lower elevator linkage may be adjusted from 25 to 400 mm / 1 to 16 in from the cutting edge for optimum loading with various material types and conditions.

■ Durability / reliability

- Retractable floor
 - roller mounted design reduces the chance of binding
 - positive support, while closed, transfers stresses from the rollers to the bowl frame.
- Heat-treated carrier rollers and chain idlers for wear resistance.
- Elevator flights
 - triangularly reinforced for strength
 - flexible elevator mounting prevents damage from sudden shock.
- Cellular bowl construction for strength and dent resistance.

■ Serviceability

- Segmented elevator drive sprockets allow exchange without removing the chain.



FEATURES

Cutting Edges Caterpillar cutting edges help you match the machine to job requirements.



Cutting Edge	Penetration Capability	Resistance To Breakage	Typical Application Range
Straight Stinger Teeth	Low	High	Finish / General
	Medium	Medium	General
	High	Low	General

- **Reversibility extends the life** — lowers your G.E.T. cost.
- **Heat-treated and through hardened with minimum Rockwell surface hardness of 45** — long life before reversal is required.

- **All scraper ground engaging tools are warranted against breakage** — if any of the components breaks during normal operation, Caterpillar will replace them free of charge.*

* Refer to complete Caterpillar G.E.T. warranty.

Operator's Compartment

Logical, convenient control placement and exceptional operator comfort promote fast, confident machine operation for top productivity.

■ Excellent visibility

- Cutting edge — enhances finish work capability and overall loading and dumping effectiveness.
- Gauges — whether loading, dumping or hauling the operator can easily monitor machine operating conditions.

■ Seat — multi-adjustable with air/hydraulic suspension for shift-long comfort.

■ Tilt/telescopic steering wheel — enhances operational comfort and allows easier entrance and exit.

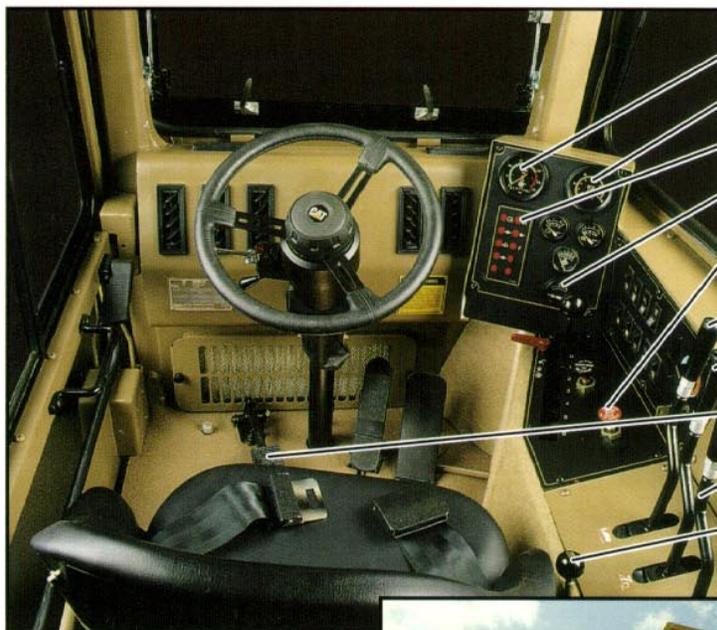
■ Modulated, variable-flow steering for precise, low effort maneuverability.

■ Controls — easy to reach with low operational effort

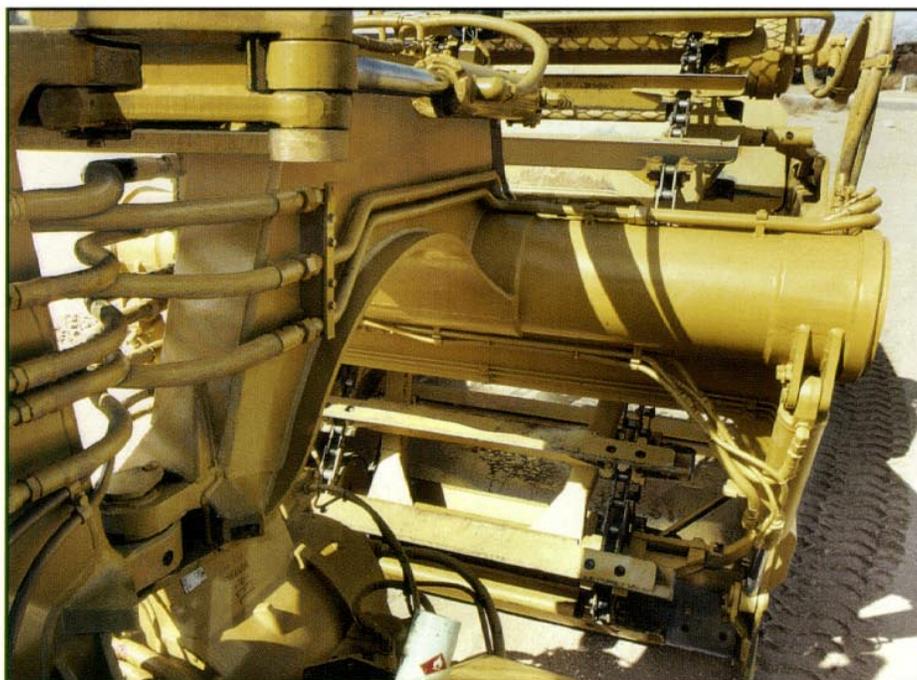
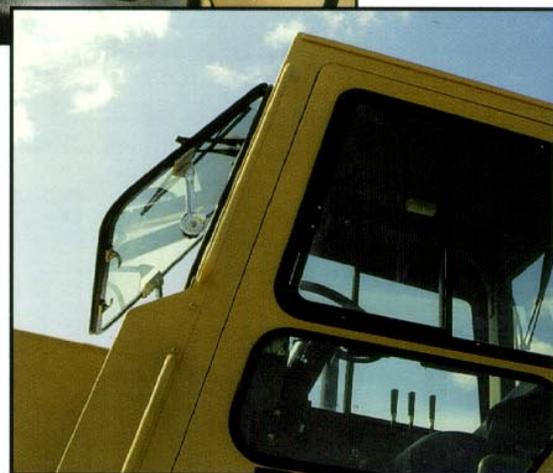
- ejector return with detent and automatic kickout — allows operator to concentrate on other areas of machine operation.

■ Sound — 75 dB(A) operator exposure level when equipped with optional cab (page 11).

■ Vibration — resiliently mounted engine and cab/canopy minimize vibration of the operator's compartment.



- Tach/hour meter
- Speedometer
- EMS
- Fuel gauge
- Secondary brake
- Bowl control
- Ejector control
- Differential lock
- Elevator control
- Elevator direction



■ Tilt-out windshield — additional control of fresh air circulation.

■ Integral Rollover Protective Structure (ROPS)

- Canopy — included in the standard arrangement.
- Cab (optional) — further protection from the elements. Includes rear window wiper and washer. Optional heater or heater / air conditioner provides pressurization, filtration and temperature-controlled air.

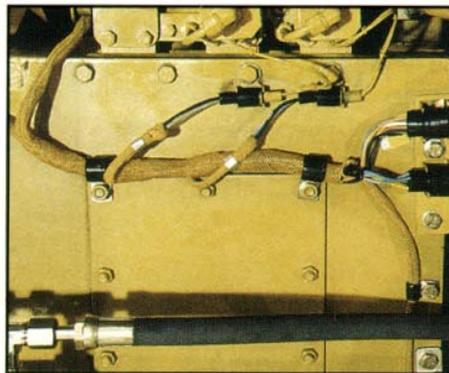
■ Electronic Monitoring System (EMS) — three stages of alert notify the operator of varying degrees of required action to avoid possible damage or failure to components / systems.

FEATURES

Serviceability

Less time spent on maintenance gives you more time on the job.

- **Diagnostic connector** — (located in the cab) with the aid of a service tool, allows quick analysis of the starting and charging system.
- **Wiring** — with the increasing use of electronics in today's machines, the quality of materials and design are having a greater effect on machine availability.
 - **Commonality** — consistent use of numerical coding and coloring of wires across the product line means service personnel can transfer their electrical system knowledge from one CAT machine to another.
 - **Connectors** — junctions stay clean and solid with non-automotive type connectors.
 - **Braiding** — provides protection against abrasion and helps keep routing clean.
 - **Bosses** — for attachment of bolt-on clips to keep wiring in place → prevents loose connections due to vibration and failures due to abrasion.
- **Outboard, planetary final drives** — can be removed independently of wheel mounting and brakes.
- **Quick connect/disconnect check points** — hydraulic pressures can be obtained quickly and easily. Periodic inspection and diagnosis of hydraulic system problems is enhanced.
- **Ground-level access** — transmission fill and check, hydraulic fill and check, manual fuel check (gauge in cab) and fill, majority of grease points, fuel tank sediment and water drain, air tanks sediment and water drain, air filters, batteries, rear brake reservoir, engine oil filter, transmission filter and primary fuel filter.



- **Maintenance platform access** — engine oil check and fill, engine coolant level check and fill, front brake reservoir, hydraulic system filter, secondary fuel filter.

Total Customer Support

Unmatched in the industry!

- **Parts** — time spent waiting on parts directly affects your bottom line! Caterpillar and its worldwide dealer network maintain the largest and most comprehensive parts support system in the industry. Most parts are immediately available directly from the dealer. Worldwide distribution centers provide backup support.
- **Service** — whether in the dealer's fully equipped shop or in the field, trained service personnel using the latest technology and tooling will keep your equipment working.
- **Exchange components** — for quick, yet cost-effective repairs with minimal downtime.
- **Machine management** — Cat dealers help manage equipment investments with:
 - Vehicle systems analysis to match the right machine to your job conditions.
 - Effective preventive maintenance programs.
 - Diagnostic programs like Scheduled Oil Sampling and Technical Analysis.
 - Information to make the most cost-effective repair option decisions.
 - Customer meetings, training for operators and mechanics.



- **Literature** — extensive operation and maintenance guides, parts manuals and other support information help you get the full value out of your equipment investment.

- **Financing/leasing** — through CAT Financial or an alternate source, your dealer can arrange attractive financing or leasing on the entire line of Cat equipment.



SPECIFICATIONS



Caterpillar Engine

Gross power @ 2300 rpm 140 kW/**187 hp**
 Flywheel power @ 2300 rpm..... 131 kW/**175 hp**
 (Kilowatts (kW) is the International System of Units equivalent of horsepower).

Net power at the flywheel of the vehicle engine is based on SAE J1349 standard conditions of 25 C/77° F and 100 kPa/29.61 in Hg. Power is based on using 35° API (15.6 C/60° F) gravity fuel having an LHV of 42 780 kJ/kg 18,390 Btu/lb when used at 29.4 C /85° F and with a density of 838.9 g/l 7.001 lb/U.S. gal. Power rating is adjusted for vehicle equipped with fan, air cleaner, water pump, fuel pump, muffler and lubricating oil pump. No derating is required up to 2286 m/7,500 ft altitude.

Caterpillar four-cycle, turbocharged 3116 diesel engine with six cylinders (in-line). 105 mm/**4.13 in** bore and 127 mm/**5.00 in** stroke with 6.6 l/**403 in³** displacement.

Cat high pressure, unit injector with no external high pressure fuel lines. Flyweight type, full range governor with an internal floating fulcrum linkage and speed sensing torque cam. One intake and one exhaust valve per cylinder. Deep skirted (iron below the centerline of crankshaft) block design. Crankshaft is a dynamically balanced steel forging with induction hardened journals and fillets and bolt-on crank gear. Copper bonded main and rod bearings with large bearing surface. Two-piece, articulated piston with forged steel crown and forged aluminum skirt. Carburized steel camshaft with seven bearings. Gear driven, low mount oil pump. Oil cooler is recessed into the block with minimal exterior oil and coolant lines. External water pump with self adjusting idler is crankshaft driven with solely dedicated belt. Suction fan. Electric fuel pump to bleed fuel lines after maintenance.

Twenty-four volt electrical system with two 100 amp-hour/700 cold cranking amp, maintenance free batteries and a 50-amp alternator.



Transmission

Caterpillar, six speed forward and one reverse, powershift, manual transmission. All forward and reverse gears are torque converter drive.

Top speeds (equipped with 23.5-25 tires, 27 235 kg/60,050 lb gross vehicle weight and 3% total resistance)

Gear.....	1	2	3	4	5	6
kph	3.5	5.8	9.2	14.3	24.3	35.1
mph	2.2	3.6	5.7	8.9	15.1	21.8



Differential Control

Normal differential action allows an uneven distribution of power between the drive wheels in a poor traction situation — loading, dumping and poor haul road conditions. The CAT differential lock, engaged with a foot pedal, prevents the uneven distribution of power and minimizes wheel spin.



Steering

Two Caterpillar double-acting hydraulic cylinders provide full 90° right or left steering. Modulated, variable-flow steering.

Cylinder Bore89 mm/**3.5 in**
 Stroke508 mm/**20.0 in**
 Rod51 mm/**2.0 in**

Turning Radius4.47 m/**14.67 ft**

Optional supplemental system (ground driven piston pump) provides hydraulic power for steering in the event of engine power loss. Emergency steering meets SAE J53 and J1511 and ISO 5010.



Final Drives

Type.....Planetary/Outboard
 AxleFull-floating

	Reduction Ratio
Differential	3.6364:1
Planetary	4.7647:1
Total	17.3264:1

Majority of reduction is taken at the wheel to minimize stresses in the rest of the powertrain. Caterpillar planetary units can be removed independently of wheel mounting and brakes.



Brakes

System meets SAE J1473 and ISO 3450 standards.

Front / Rear Service — Air-over-oil actuated, caliper disc.

Braking Surface Area / Brake484 cm²/75 in²

Parking — Shoe type mounted on rear of transmission transfer case.

Secondary — Utilizes the service brakes, but with a separate air tank. Operator is alerted by the Electronic Monitoring System (3rd level — Brake air pressure panel light, action light and alarm) when the service system air pressure falls below normal operating level. Further loss of air pressure will lead to automatic application of the secondary and parking brake. Can be manually activated by a control knob on the dash.



Tires

Productive capabilities of the 613C II are such that, under certain job conditions, tonnes-kph **ton-mph** capabilities of standard or optional tires could be exceeded and, therefore, limit production. Caterpillar recommends the user evaluate all job conditions and consult the tire manufacturer to make proper tire selection.

Standard (Tractor / Scraper)23.5R25

Optional (Tractor / Scraper).....18.00-25 16PR (E-2)
23.5-25 16PR (E-2)



Hydraulics

Powered by double-section vane pumps with open-center circuits.

Pump outputs at 2300 rpm and 6900 kPa/ 1000 psi

Bowl & Ejector Circuit102 l/min **27 gal/min**
Steering Circuit83 l/min **22 gal/min**

Elevator (Low speed & Reverse)166 l/min **44 gal/min**
(High speed).....268 l/min **71 gal/min**





Cab

(ROPS canopy is standard in U.S.A.).

ROPS (Rollover Protective Structure) offered by Caterpillar for this machine meets ROPS criteria SAE J320a, SAE J1040-Feb86, SAE J1040-Apr88 and ISO 3471-1986. It also meets FOPS (Falling Object Protective Structure) criteria SAE J231 and ISO 3449.

When properly installed and maintained, cab offered by Caterpillar when tested with doors and windows closed per work cycle procedures specified in ANSI/SAE J1166 MAY90 results in an operator sound exposure L_{eq} (equivalent sound pressure level) of 75 dB(A). This operator A-weighted sound exposure level can be used in conjunction with OSHA, MSHA and EEC Occupational Noise Exposure Criteria.



Weight

Standard equipment with ROPS canopy, full fuel tank and operator.

	Kg	Lb
Empty		
Tractor — 63%	9571	21,100
Scraper — 37%	5693	12,550
Total	15 264	33,650
Loaded (based on 11 975 kg/26,400 lb rated load)		
Tractor — 49%	13 353	29,438
Scraper — 51%	13 886	30,612
Total	27 239	60,050



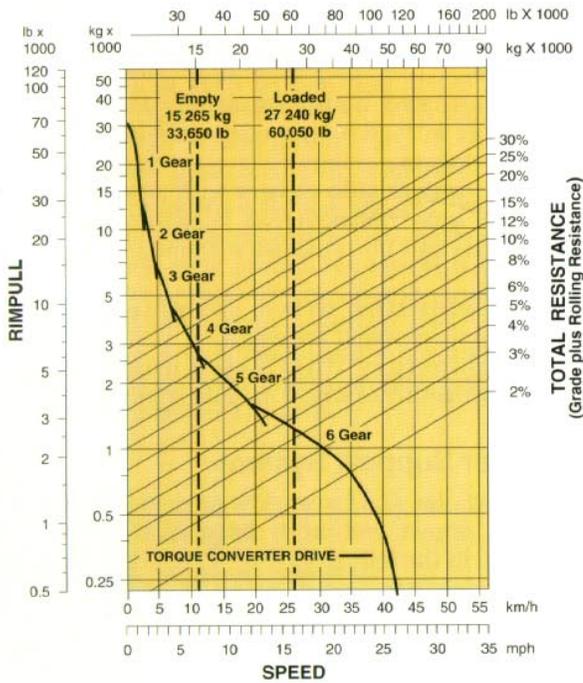
Service Refill Capacities

	Liters	U.S. Gallons
Fuel tank	250	66
Crankcase	20	5.3
Transmission	35	9.2
Differential	19	5
Cooling system	38.5	10.2
Hydraulic system (steering and implements)	100	26.4
Final drives (each)	5.8	1.5

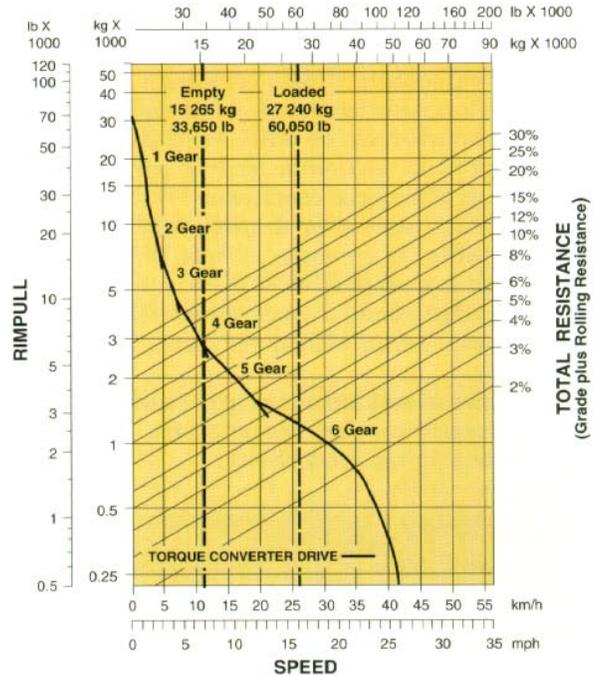


SPECIFICATIONS

GROSS WEIGHT (18.00-25 Tires)

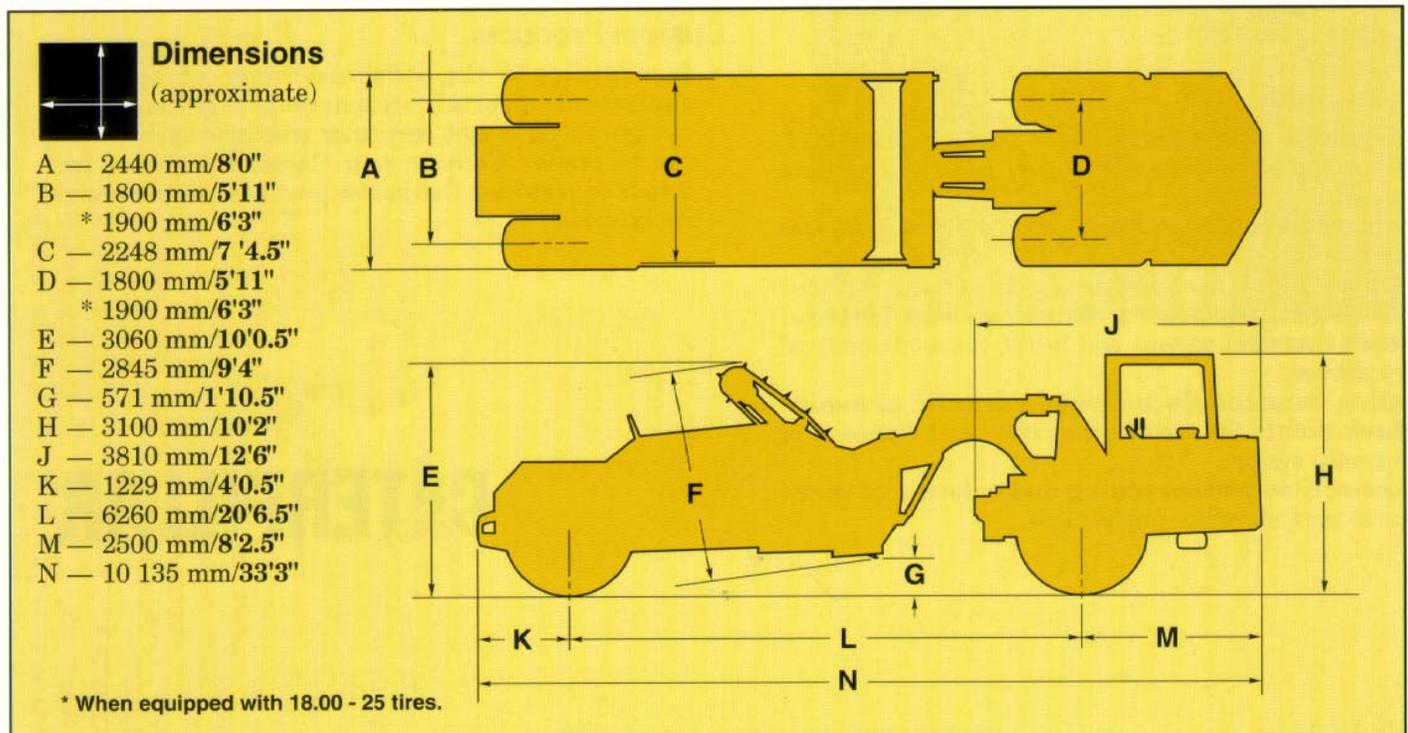


GROSS WEIGHT (23.5R25 Tires)



Gradeability/Rimpull/Speed

To determine gradeability performance: Read from gross weight to the % of total resistance. Total resistance = actual % grade + % rolling resistance. From this weight-resistance point, read horizontally (left or right) to the curve with the highest obtainable gear, then down to the corresponding speed. Useable rimpull will depend upon traction available and weight on drive wheels.



Standard Equipment

(May vary — consult your Caterpillar Dealer for specifics)

Air cleaner service indicator	Fenders (tractor)	Muffler
Alarm, back up	Fuel pump, electric	Precleaner, air cleaner
Alternator, 50-amp	Gauges:	Seat, multi-adjustable with air/hydraulic suspension
Batteries (2), 100 amp-hr. 700 cca	Air pressure	Seat belt
Brakes:	Engine coolant temperature	Starting, electric
Caliper disc (front & rear)	Fuel	Steering wheel, tilt and telescopic
Parking	Speedometer	Tires, 23.5R25
Secondary	Tachometer with electric hour meter	Tow pins, front and rear
Canopy, ROPS (standard in U.S.A.)	Torque converter oil temperature	Transmission, powershift
Crankcase guard	Headlights, halogen with dimmer	Windshield, tilt-out, tinted
Differential lock	Horn	Windshield washer and wiper (front)
Electrical system, 24-volt	Mirror, right-hand and rearview (cab interior)	
Electronic Monitoring System (EMS)	Locks, vandalism protection	
Fan (engine), suction		

Functions monitored by EMS:

Warning Level I — Alternator. Parking brake on - transmission in neutral. (EMS panel light).

Warning Level II — Coolant temperature. Converter oil temperature. (EMS panel light and action light).

Warning Level III — Brake air pressure. Brake oil pressure. Engine oil pressure. Parking brake on - transmission in gear. Supplemental steering active (if equipped). (EMS panel light, action light and alarm).

Optional Equipment

(with approximate change in operating weight)

(equipment may vary — consult your Caterpillar Dealer for specifics)

	kg	lb		kg	lb
Air conditioner and heater	60	132	Starting receptacle.....	2	5
Heater	40	88	Supplemental steering system	76	168
Cab, ROPS includes			Teeth (scraper), bolt-on set of four		
rear window wiper and washer	198	436	with replaceable tips	43	94
Ether starting aid	2	5	Tires, set of two:		
Fenders (scraper)	87	191	18.00-25 16PR (E-2)	297	655
Floodlight (bowl & cutting edge)	2	4	23.5-25 16PR (E-2)	154	340
Guard, powertrain	27	60	Omission of 23.5R25 (set of two).....	325	717
Lighting system (highway):			Vandalism dash protection (canopy		
* scraper — includes directional and			equipped units).....	5	12
hazard	9	20			
* tractor — includes directional/hazard					
and stop/tail.....	8	17			

* Must be ordered together

The Competitive Edge

Performance

- **Engine unit injection** allows very high injection pressures and short injection times — fast response.
- **Two-speed elevator drive and high hydraulic horsepower** provide maximum loading performance over a wide range of material conditions.
- **Spacing between elevator flights and cutting edge is adjustable** for optimum loading with various material types and conditions.
- **Wide cutting edge** allows a large volume of material to enter the bowl — even with shallow cuts, loads are obtained quickly.
- **Logical, convenient control placement** and exceptional operator comfort promote fast, confident machine operation for top productivity.

Durability/Reliability

- **Internal engine fuel passages** eliminate the need for high pressure lines and their connections.
- **Roller mounted retractable floor design** reduces the chance of binding. Positive support, while closed, transfers stresses from the rollers to the bowl frame.
- **Heat-treated elevator carrier rollers and chain idlers** for wear resistance.
- **Elevator flights** are triangularly reinforced for strength.
- **Flexible elevator mounting** prevents damage from sudden shock.
- **Cellular bowl construction** for strength and dent resistance.
- **Electronic Monitoring System (EMS)** has three stages of alert to notify the operator of varying degrees of required action to avoid possible damage or failure of components/systems.

Serviceability

- **Diagnostic connector** with the aid of a service tool, allows quick analysis of the starting and charging system.
- **Ground-level access** to majority of daily maintenance areas.
- **Engine block** designed for first overhaul without reborings followed by two reborings with identical weight oversized pistons and lastly, the availability of dry sleeves.
- **Quick connect/disconnect hydraulic pressure check points** for periodic inspection and diagnosis of hydraulic system.
- **Common numerical coding and coloring of wires** across the Caterpillar product line.

- **Rebuildable cylinder heads** with replaceable valve seats and guides.
- **Externally mounted water pump** for easy access. Fully serviceable with all components available through the CAT parts system.
- **Quick access engine side covers** with attached cam followers allow easy inspection of followers and cam lobes. Pushrods can be removed without pulling the cam.
- **Segmented elevator drive sprockets** allow exchange without removing the chain.
- **Outboard, planetary final drive units** can be removed independently of wheel mounting and brakes.

Total Customer Support System

- **Parts** — Caterpillar and its worldwide dealer network maintain the largest and most comprehensive parts support system in the industry.
- **Trained service personnel** using the latest technology and tooling will keep your equipment working.
- **Machine management** vehicle systems analysis to match the right machine to your job conditions; preventive maintenance programs; diagnostic programs like scheduled oil sampling and technical analysis; cost effective repair options; customer meetings; operator and mechanical training.
- **Exchange components** for quick, yet cost-effective repairs with minimal downtime.
- **Flexible financing and leasing** through CAT Financial or an alternate source, your dealer can arrange attractive financing or leasing on the entire line of CAT equipment.

Custom Products

- In addition to the standard range of optional equipment, special attachments and machine configurations to suit particular customer applications can be made. Contact your Caterpillar dealer for details on matching Caterpillar products to your special applications.

The Caterpillar logo consists of the word "CATERPILLAR" in a bold, black, sans-serif font. A yellow triangle is positioned below the letter "A". A registered trademark symbol (®) is located to the upper right of the word.