143H
Motor Grader

NA Version

Cat ® 3306 turbocharged diesel engine with variable horsepower and two optional modes:		
Tandem Drive Operation		
Gears 1 - 3	123 kW	165 hp
Gears 4 - 8	138 kW	185 hp
All-Wheel Drive Operation		
All Gears	138 kW	185 hp

Blade width	3658 mm	12 ft
Operating weights (approximate)		
On Front wheels	4214 kg	9290 lb
On Rear wheels	10 809 kg	23,830 lb
Total machine	15 023 kg	33,120 lb

Caterpillar® 143H All-Wheel Drive Motor Grader

The 143H blends productivity and durability to give you the best return on your investment.

Power Train
The field-proven 3306 engine offers exceptional lugging performance and fuel efficiency. The power shift transmission features smooth, on-the-go shifting and electronic overspeed protection. To increase productivity, the direct drive transmission has eight forward speeds and six reverse speeds. **pg. 4-5**

Hydraulics
The load-sensing hydraulic system lowers horsepower consumption and system heat. The control valves provide low lever effort, balanced flow and consistent implement control. Blade float is incorporated into the blade lift valves. **pg. 6**

Drawbar, Circle & Moldboard
The blade linkage design maximizes moldboard positioning. A long wheel base allows the operator to obtain a more aggressive moldboard angle for better material movement. The rugged construction of the drawbar, circle and moldboard, and use of replaceable wear inserts provide durability and minimize maintenance costs. **pg. 7**

Matched and balanced components.
The Cat® 3306 engine, power shift transmission, load-sensing hydraulics and all-wheel drive system are designed to work together to deliver top productivity in all applications.

Superior visibility, control layout and operating ease. *The operator is the single most important factor in maintaining high productivity throughout the work day. By offering the best operator's station in the industry, Caterpillar helps operators achieve peak performance.*

Operator's Station
Well-positioned blade linkage, a tapered engine hood and large windows ensure a clear view in all directions. A roomy interior, contour series suspension seat, low-effort controls and low sound levels create a more productive work environment. **pg. 8-9**

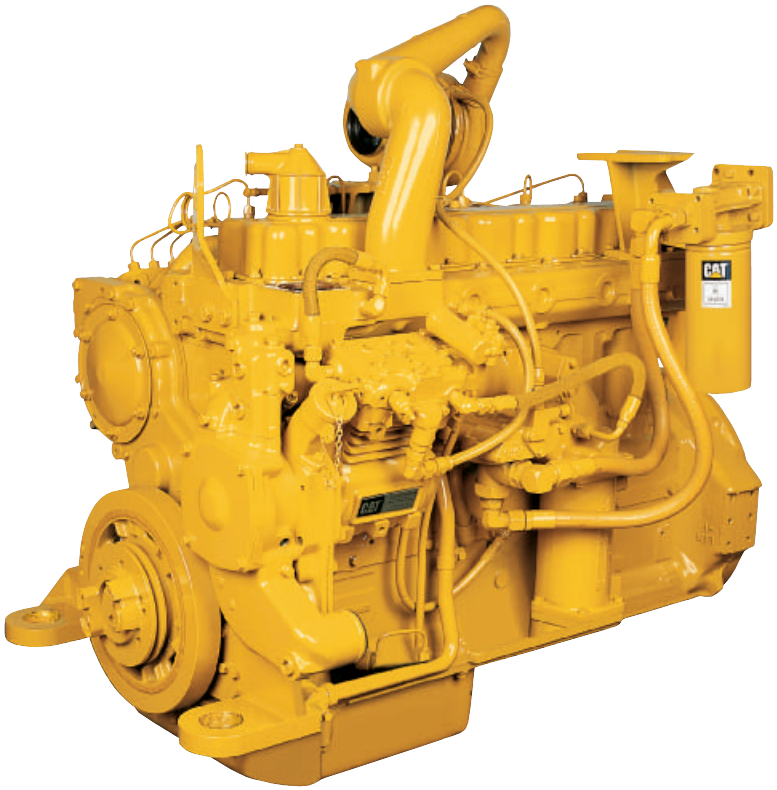
All-Wheel Drive System
All-wheel drive improves tractive performance in poor underfoot conditions. The variable horsepower feature comes standard on the 143H. With three operating modes — automatic, manual and off — the operator can match performance to any application. **pg. 10**

Serviceability
All service areas are easily accessible. A modular design permits easy removal of power train components for servicing. Diagnostic capabilities allow fast servicing of the transmission and all-wheel drive system. **pg. 11**

Environmentally Responsible Design
The engine arrangement is designed to reduce emissions and meet current regulations of the U.S. Environmental Protection Agency, California Air Resources Board and European Union. **pg. 12**

Power Train

Matched Caterpillar components deliver smooth, responsive performance and reliability.



Cat 3306 engine continues its tradition of powerful, efficient performance and unmatched reliability and durability. The six-cylinder engine is turbocharged with a high displacement-to-power ratio. This large displacement produces better lugging capability, lower internal stresses and extended component life.

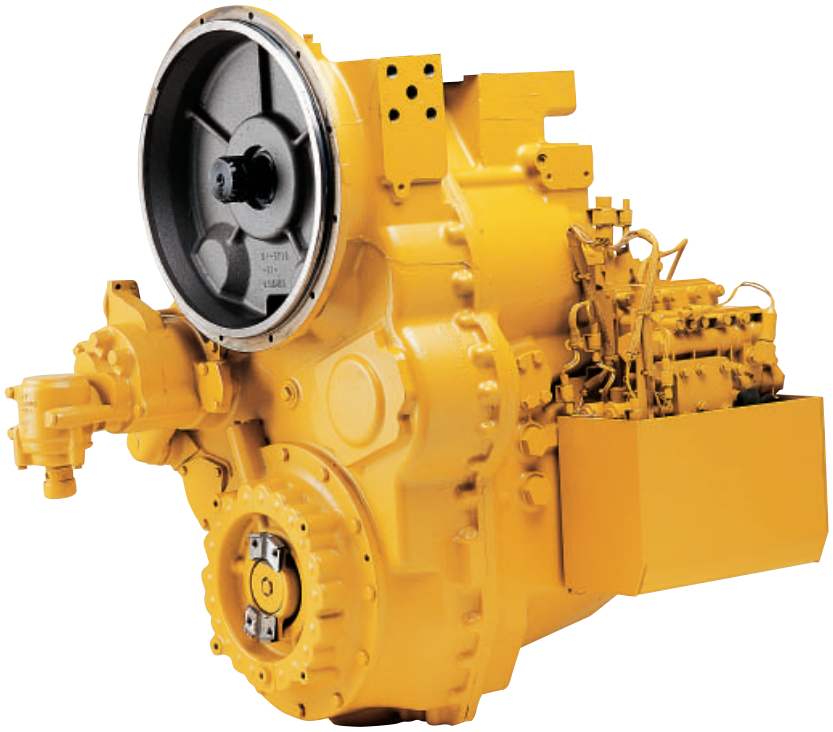
Superior lugging performance. High torque output and high torque rise make the 3306 engine very responsive. The engine's lugging capability allows it to pull through sudden, short-term increases in loads, reducing the need to downshift. As a result, the operator can maintain desirable working speeds, which means the work gets done faster.

Fuel efficiency. High fuel injection pressures ensure proper mixing of fuel and air. This high injection pressure, coupled with the precise metering and timing of the fuel injection, results in superior fuel efficiency and reduced emissions. High compression ratios ensure dependable cold-starting performance and low emissions.

Extended engine life. The large bore-stroke design and conservative power rating help minimize internal stresses and increase component life. The low engine speeds reduce engine wear and sound levels.

Variable horsepower comes standard and can deliver an additional 15 kW (20 hp) in gears 4-8 forward when all-wheel drive is turned off. When all-wheel drive is engaged, it delivers full power in all gears. Variable horsepower produces higher rimpull for moving heavy loads in applications such as high-speed blading and snow removal. It also improves gradeability when roading or working in the high-speed ranges.

Electronic overspeed protection helps prevent engine and transmission damage from premature downshifting and grade-induced overspeeding.



Power shift transmission. Caterpillar designs and builds transmissions specifically for Cat motor graders. The transmission provides on-the-go, full-power shifting as well as inching capability.

Direct drive delivers superior fuel efficiency and better "feel" of blade loads, material hardness and ground speed.

Gear selections. Eight forward speeds and six reverse speeds give the operator a wide operating range. With four gear selections below 9.7 km/h (6 mph), the operator can precisely match working speeds to job conditions for maximum productivity in earthmoving applications. Gears five, six and seven provide the optimal speed range for efficient snow removal operations.

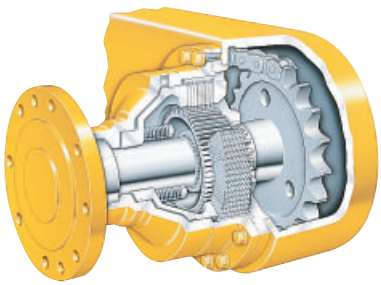
Electronic transmission control produces easy, smooth shifts, which enable the operator to maintain uniform surfaces if shifting is required. Smooth shifts also extend the life of the transmission by placing less stress on transmission clutches. A single lever controls direction, speed and the parking brake.

Inching capability. Low pedal effort and excellent modulation provide precise control of machine movements when using the inching pedal. This is especially important in finish grading or other close-quarter work where machine control is critical.

Optional autoshift improves ease of operation and maximizes productivity by automatically shifting the transmission at optimal shift points.

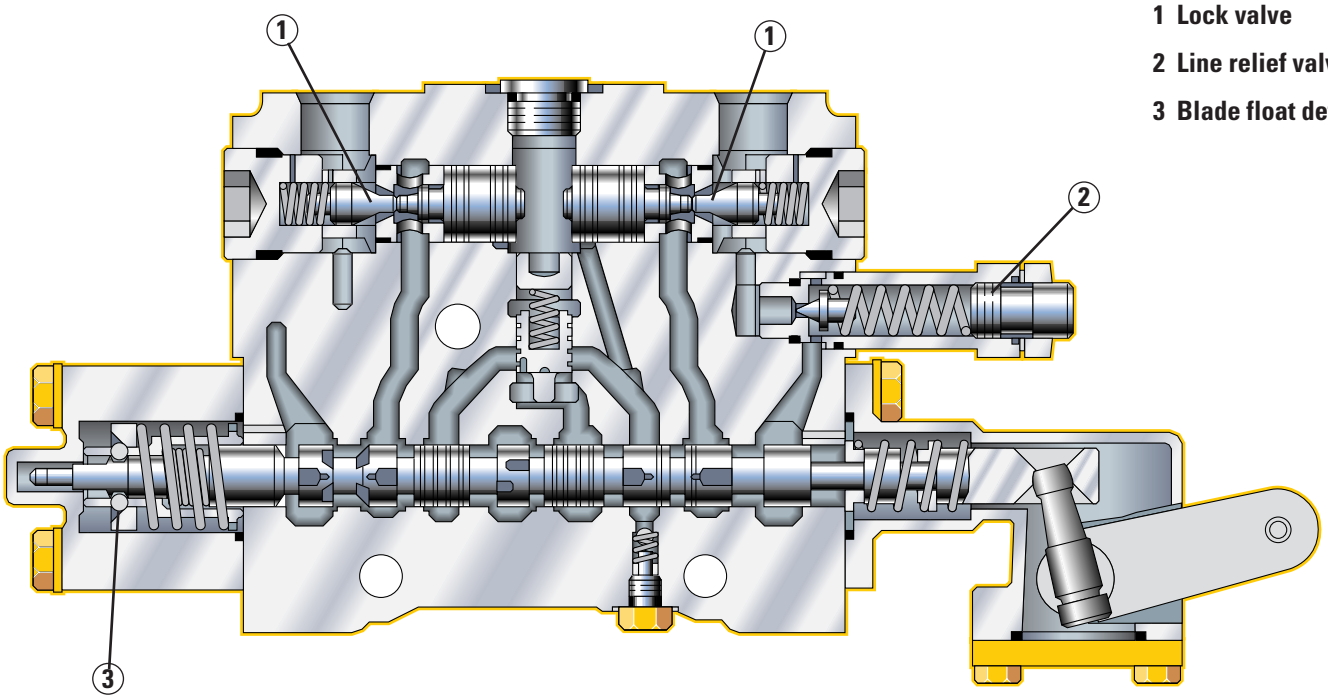
Dual air system supplies braking capacity to each side of the machine. This system ensures secondary braking capability in the event a failure occurs in a single brake line. The dual air system also has a large reserve for stalled-engine braking.

Oil-disc brakes. Caterpillar designs and builds multi-disc brakes that are completely sealed and adjustment-free. The brakes are oil-bathed, air-actuated and spring-released. They are located at each tandem wheel to eliminate braking loads on the power train and to reduce servicing time. The large brake surface provides dependable braking capability and extended life before rebuild.



Hydraulics

Balanced hydraulics deliver consistent, precise and responsive control.



1 Lock valve

2 Line relief valve

3 Blade float detent

Power on demand. Normally, the variable displacement pump idles at near-zero output. When it senses a load requirement, the pump supplies flow and pressure to match the demand. The result is less hydraulic system heat and lower power consumption.

Implement control valves are designed and built by Caterpillar specifically for motor graders. They provide outstanding operator “feel” and predictable system response for unmatched implement control. To help maintain exact blade settings, lock valves are built into all control valves. Line relief valves are also incorporated into selected control valves to protect the cylinders from overpressurization.

Low operator effort. Implement controls are designed to reduce operator fatigue. They feature short lever throws and low effort in both directions. Properly spaced control levers and short lever throws allow the operator to use multiple controls with one hand.

Balanced flow. When the operator uses several controls at one time, flow is proportioned to ensure all implements can operate simultaneously. If hydraulic demand exceeds pump capacity, cylinder velocities will be reduced by the same ratio.

Blade float is incorporated into the blade lift control valves. Blade float allows the blade to move freely under its own weight. By floating both cylinders, the blade can follow the contours of the road when removing snow. Floating only one cylinder permits the toe of the blade to follow a hard surface while the operator controls the slope with the other lift cylinder.

Large independent oil supply prevents cross-contamination and provides proper oil cooling, which means less heat build-up and extended component life.

Drawbar, Circle & Moldboard

Every component is designed for maximum productivity and durability.

Blade positioning. The blade linkage design provides extensive moldboard positioning. This extended range is most beneficial in mid-range bank sloping and in ditch cutting and cleaning.

Blade angle. A long wheel base allows the operator to obtain an aggressive moldboard angle. This aggressive angle permits material to roll more freely along the blade, which reduces power requirements. This is particularly helpful in handling very dry materials, cohesive soils, snow and ice.

Rugged construction. The Y-frame drawbar is constructed of two solid beams. A one-piece forged circle is built to stand up to high stress loads. To resist wear, teeth are induction-hardened in the critical areas. For maximum support, the circle is secured to the drawbar by six support shoes.

Replaceable wear items. Tough, durable nylon composite wear inserts are located between the drawbar and circle, and between the support shoes and circle. This wear system helps keep components tight for fine grading and allows easy replacement. In addition to providing extended life, these inserts allow higher circle turning forces by reducing the friction between the circle and drawbar. Replaceable metallic wear inserts are used in the blade lift and centershift cylinder sockets, draftball surface, moldboard slide rail and tip bracket bearings.

Circle drive slip clutch protects the drawbar, circle and moldboard from shock when the end of the blade encounters hidden objects. It also reduces the possibility of the grader making abrupt directional changes, further protecting the machine, operator and surroundings.

Optional blade lift accumulators absorb vertical shocks encountered when the moldboard contacts immovable objects. This option is especially useful in rough grading and rocky areas.

Operator's Station

Caterpillar sets the standard for comfort, convenience and visibility.

Exceptional visibility helps improve operator confidence and productivity. The drawbar has been modified to improve the view through the circle, allowing the operator to see the material as it rolls along the moldboard without leaning. Large side windows allow a clear view of the moldboard heel and tandem tires. A wide rear window and tapered engine hood provide a good view to the rear of the machine.

Quiet cab. With the doors closed, interior sound level does not exceed 77 dB(A) when tested using SAE J919 standard. The quiet environment keeps the operator alert and focused.

Low efforts on all pedals, hydraulic controls and the transmission shifter reduce operator strain and fatigue. Pedals are angled and raised off the cab floor to make them easy to reach.

All-Wheel Drive. Using the rocker switch on the transmission console, the operator can choose from three operating modes — automatic, manual or off. The torque control lever allows the operator to control the aggressiveness of the front wheels in both active modes.

Roomy interior. Extra leg and foot room create a spacious, open cab. The cab includes built-in storage space for personal items such as a lunch box, cooler and coat.

Contour series suspension seat features fold-up armrests and a retractable seat belt. The seat follows the contours of your body and can be easily adjusted for optimal support and comfort. Seat controls are located in front and to the left of the operator in plain view.

Optional air conditioner and heater arrangements create a comfortable work environment for the operator. Both arrangements use high-capacity systems to ensure the operator stays productive — even in the bitter cold or heat and humidity. They dehumidify the air as well as pressurize the cab, which keeps the air fresh and seals out dust. The adjustable air vents evenly distribute air throughout the cab, keeping the operator comfortable and the windows clear of fog or frost.

Electronic Monitoring System checks important machine systems and provides the operator with three levels of warning.

Comfort and convenience are designed into every feature:

- Engine start-stop switch enables the operator to start and stop engine with a simple key turn.
- Gauges are located inside the cab, directly in front of the operator.
- Controls and switches are located on the steering console, shift console and right cab post — all within easy reach.
- Rocker switches and transmission shifter are backlit for nighttime operation.
- The operator can adjust implement controls and steering wheel angle independently.
- Cab floor is flush with the bottom of the doors, making it easy to sweep out and keep clean.
- Fresh air filters are located above each cab door for quick replacement.
- Cab door releases from ground level or inside the cab.
- Ashtray, lighter and cupholder are well-positioned for easy access.
- Optional 12-V power port is available for use with computers, cellular phones or other electronic equipment.

All-Wheel Drive

All-wheel drive keeps productivity high, even in poor underfoot conditions.

Superior traction. All-wheel drive improves tractive performance in poor underfoot conditions such as snow, mud and sand. This feature also provides excellent steering and sidedraft control.

More power. The variable horsepower feature is standard on the 143H. When all-wheel drive is engaged, variable horsepower kicks in and delivers maximum power in all gears.

Wide working range. All-wheel drive is available in gears 1-7 forward and 1-5 reverse, making it effective in both low-speed and high-speed applications — from ditch cutting to snow winging.

Three operating modes are available — automatic, manual or off. The operator selects the operating mode using a rocker switch on the transmission console.

- Automatic mode makes the all-wheel drive feature easy to use. It automatically increases torque to the front wheels as rear wheel slip increases. The operator controls the responsiveness of the front wheels by adjusting the torque control lever. The farther forward the lever, the more rapidly front wheel torque will increase as slip increases.

  This mode provides power to the front wheels only when needed, which reduces hydraulic system heat and lowers power consumption. It also allows the operator to focus all his attention on his work.

- Manual mode gives the operator 100 percent control. He adjusts the torque control lever to set a constant torque level to the front wheels. He can make torque setting adjustments as operating conditions change.

  There are many situations where an operator may want to control the front wheels independent of rear wheel slip such as when trying to remove a machine from a snow drift; when making a tight turn on snow, mud or sand; or when working on a side slope.

Serviceability

Conveniently placed service points make routine maintenance quick and easy.

Easy access to service areas speeds up maintenance and ensures that routine service is performed on time:

- Large hinged doors provide easy access to the engine and radiator service points.
- Spin-on filters make changes quick and clean.
- Lubrication points for the articulation joint are remote-mounted.
- Disconnect switch and most most service points are located on the left side, making them easy to access when a snow wing is mounted on the right side of the machine.
- Fuse panel is located inside the cab. Its cover clearly identifies circuits and fuse sizes.
- Tandem oil checkpoint is conveniently located between the wheels in the center of the tandem.
- Service meter is located on the left side of the steering console, giving the operator a clear view from the ground.
- Sampling ports are provided for drawing engine and hydraulic oil.
- Lockable battery box cover is easily removed without tools.

Power train components feature a modular design so you can remove the engine, transmission or final drives independently for quick servicing.

Diagnostic capabilities offer fast servicing of the transmission and all-wheel drive system. The electronic control modules automatically record and save any system faults for later analysis. S•O•S oil and coolant sampling valves provide a fast, convenient means of obtaining fluid samples and improve analysis reliability.

XT hose. Caterpillar designs and manufactures its own heavy-duty XT hose and installs it in all high-pressure circuits. Its resistance to abrasion, coupled with its exceptional strength and flexibility, help minimize maintenance and extend life.

O-ring face seals create a reliable seal and are used in all hydraulic circuits to minimize the possibility of oil leaks.

Radiator cleanout access. Removable covers on each side of the radiator guard provide access to the front of the radiator for cleanout with compressed air or pressure washer.

Extended Life Coolant (ELC) extends coolant life to 6000 hours. A single addition of ELC Extender at 3000 hours is the only maintenance required.

Separate wiring harnesses connect all electrical components. This modular harness design provides simple disconnects for major machine repairs or rebuilds. The wires are also color-coded and numbered to speed up diagnosis and repairs. Sure-Seal connectors are made of weather-resistant materials that protect against moisture, corrosion and abrasion.

Environmentally Responsible Design

Caterpillar builds machines that help you create a better world.

The H-Series motor graders respond to important environmental problems such as noise and air pollution. Today's machines run smoother, quieter and cleaner than ever before.

Quiet cab. The sound-suppressed cab has an interior sound level not exceeding 77 dB(A) when tested using SAE J919 standards. The resiliently mounted engine and transmission result in less engine noise and vibration to the operator.

Quiet machine. On the standard machine, the drive-by exterior sound level will not exceed 84 dB(A) when tested at rated engine speed using SAE J88 standard test. This quiet operation enables the machine to work with minimal disturbance to the surrounding environment.

Low emissions. The engine arrangement meets current regulations of the U.S. Environmental Protection Agency, California Air Resources Board and European Union. This engine arrangement reduces the amount of particulates and nitrogen oxides released into the air.

Dry machine. Lubricant fill points and filters are designed to minimize spillage. O-ring face seals, XT hose and Cat hydraulic cylinders protect against leaks.

Ozone protection. To help protect the earth's ozone layer, air-conditioning units use R-134a refrigerant, which does not contain chlorofluorocarbons (CFCs).

Complete Customer Support

Caterpillar dealer services help you operate longer with lower costs.

Your Cat dealer offers a wide range of services that can be set up under a customer support agreement when you purchase your equipment. The dealer will help you choose a plan that can cover everything from machine and attachment selection to replacement, to help you get the best return on your investment.

Selection. Make detailed comparisons of the machines you are considering before you buy. How long do components last? What is the cost of preventive maintenance? What is the true cost of lost production? Your Cat dealer can give you precise answers to these questions.

Purchase. Look past initial price. Consider the financing options available as well as day-to-day operating costs and dealer services. Comparative resale value is another item to consider.

Operation. Improving operating techniques can boost your profits. Your Cat dealer has training videotapes, literature and other ideas to help you increase productivity.

Maintenance. More and more equipment buyers are planning for effective maintenance before buying equipment. Choose from your dealer's wide range of maintenance services at the time you purchase your machine. Repair option programs guarantee the cost of repairs up front. Diagnostic programs such as Scheduled Oil Sampling and Technical Analysis help you avoid unscheduled repairs.

Product support. You will find nearly all parts at our dealer parts counter. In the rare case when we don't have a part in stock, we will get it to you fast — usually within 24 hours. Save money with remanufactured parts. You receive the same warranty and reliability as new products at cost savings of 40 to 70 percent.

Replacement. Repair, rebuild or replace? Your Cat dealer can help you evaluate the costs involved so you can make the right choice.

Engine

Four-stroke cycle, six cylinder Caterpillar® 3306 turbocharged diesel engine with variable horsepower (vhp).

Power ratings (standard power)

Ratings at 1900 rpm*	kW	hp
Gross power	139	186
Net power	123	165

The following ratings apply at 1900 rpm when tested under the specified standard conditions for the specified standard:

Net power	kW	hp	PS
Caterpillar	123	165	—
ISO 9249	123	165	—
SAE J1349	122	163	—
EEC 80/1269	123	165	—
DIN 70020	—	—	171

Peak torque (net) @ 1200 rpm

	804 Nm	593 lb-ft
Torque rise		30 %

Dimensions

Bore	121 mm	4.75 in
Stroke	152 mm	6.00 in
Displacement	10.45 liters	638 cu in

Power ratings (VHP - high power)**

Ratings at 1900 rpm*	kW	HP
Gross power	154	206
Net power	138	185

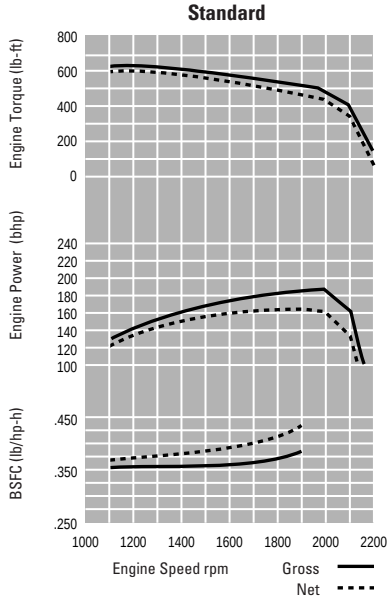
The following ratings apply at 1900 rpm when tested under the specified standard conditions for the specified standard:

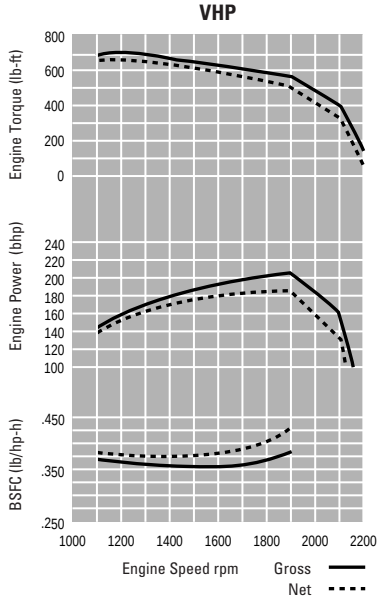
Net power	kW	hp	PS
Caterpillar	138	185	—
ISO 9249	138	185	—
SAE J1349	137	183	—
EEC 80/1269	138	185	—
DIN 70020	—	—	192

Peak torque (net) @ 1200 rpm

	904 Nm	665 lb-ft
Torque rise		30%

**VHP (variable horsepower) available in gears 4-8 forward and 3-6 reverse when All-Wheel Drive is not engaged. When All-Wheel Drive is engaged, VHP is available in all gears.





***Power rating conditions**

- based on standard air conditions of 25°C (77°F) and 99 kPA (29.32 in Hg) dry barometer
- used 35° API gravity fuel having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 30°C (86°F) [ref. a fuel density of 838.9 g/L (7.001 lb/U.S. gal)]
- net power advertised is the power available at the flywheel when engine is equipped with fan, air cleaner, muffler and alternator
- no derating required up to 2237 m (7339 ft) altitude

Features

- direct injection fuel system with individual adjustment-free injection pumps and nozzles
- 3-ring aluminum alloy pistons
- heat-resistant sil-chrome steel intake and stellite-faced exhaust valves
- forged steel connecting rods
- one-piece cylinder head designed with cast intake manifold
- cast cylinder block with replaceable wet liners
- induction-hardened, forged crankshaft
- direct electric 24-V starting and charging system
- two 12-V, 150 amp-hour, 950 CCA, low-maintenance batteries
- 50-amp alternator
- tube-type, water-cooled oil cooler
- vertical-flow, steel-fin, tube-type radiator
- dry-type, radial-seal air cleaner with primary and secondary elements
- resiliently mounted to rear frame

Hydraulic System

Proportional priority pressure compensated system.

Output at 2100 rpm and 24 150 kPa (3500 psi)	206 liters/min	54.4 gpm
Standby pressure	3100 kPa	450 psi
Maximum system pressure	24 150 kPa	3500 psi

Pump features

- load-sensing, pressure-compensating, variable-displacement piston pump
- low standby pressure
- pump supplies only flow and pressure required to move implements plus 2100 kPa (300 psi) margin pressure

Control features

- eight, closed-center control valves standard:
  - — right blade lift
  - — left blade lift
  - — blade sideshift
  - — blade tip
  - — circle drive
  - — centershift
  - — front wheel lean
  - — articulation
- low effort, short throw controls
- controls spaced to allow use of several controls at once
- blade float position built into each blade lift control valve
- lock valves built into all control valves
- line relief valves for the blade lift, blade tip and blade sideshift circuits are incorporated into the control valves
- if flow requirements exceed pump output, control valves proportion flow to each implement circuit

Other features

- steering circuit given priority over implement circuits
- heavy-duty XT hose
- hose couplings with O-ring face seals
- full-flow filter

Transmission

Direct drive, power shift transmission with eight speeds forward.

Maximum travel speeds (at rated rpm with standard 14.00-24 tires)

		km/h	mph
Forward	1	3.5	2.2
	2	4.8	3.0
	3	7.0	4.3
	4	9.6	6.0
	5	15.1	9.4
	6	20.5	12.8
	7	28.3	17.6
	8	41.1	25.5
Reverse	1	2.8	1.7
	2	5.2	3.2
	3	7.6	4.7
	4	11.9	7.4
	5	22.3	13.9
	6	32.4	20.2

Features

- electronic shift control
- electronically controlled overspeed protection
- single lever controls direction, speed and parking brake
- inching pedal
- low efforts on shift lever and inching pedal
- internal parking brake serviceable without removing transmission
- diagnostic connector for easy troubleshooting
- resiliently mounted to frame

Service Refill Capacities

	liters	gallons
Fuel tank	341	90.0
Cooling system	40	10.4
Crankcase	27	7.0
Transmission, differential and final drives	47	12.2
Tandem housing (each)	65	16.9
Hydraulic system	98	25.5
Hydraulic tank	38	9.9
Circle drive housing	7	1.8
Front wheel spindle bearing housing	0.5	0.13

Steering

Two-cylinder, hydraulic steering with hand metering unit.

Dimensions		
Minimum turning radius (outside front tires)*	7.4 m	24' 3"
Steering range	50° Left/Right	
Articulation angle	20° Left/Right	

*Using front wheel steering, frame articulation, and with differential unlocked.

Features

- large steer stops and steering relief valve help prevent damage when object is hit during full turn
- consistent steering response to the left and right
- optional secondary steering system provides secondary steering capability in event of a complete loss of hydraulic pressure

Frame

Flanged, box-section design.

Dimensions

Front frame	mm	in
Top and bottom plates		
Width	305	12
Thickness	25	1
Side plates		
Width	242	9.5
Thickness	12	0.5

Linear weights

Front frame	kg/m	lb/ft
Minimum	165	112
Maximum	213	144

Section modulus

Front frame	cm^3	in^3
Minimum	2083	127
Maximum	4785	291

Features

- single piece top and bottom plates run from bolster to articulation joint
- rear frame has two box-sectioned channels integral with fully welded differential case

Front Axle

Live spindle design.

Dimensions

Front axle		
Ground clearance	625 mm	24.6"
Front wheel lean		18°
Oscillation angle		32°

Features

- allows use of large outboard bearings for high load-carrying capability of the wheel assembly
- wheel spindle rotates inside sealed compartment
- bearings bathed in oil

Tandems

Dimensions

	mm	in
Height	506	19.9
Width	201	7.9
Sidewall thickness		
Inner	16	0.63
Outer	18	0.71
Drive chain pitch	51	2
Wheel axle spacing	1522	60
Tandem oscillation	15° Forward 25° Reverse	

Brakes

Meets the following standards: SAE J1473 OCT 90 and ISO 3450-1996.

Service brake features

- air-actuated, oil-disc brakes located in each of the four wheel spindle housings
- sealed and adjustment-free
- lubricated and cooled by tandem housing oil
- 23 948 cm^2 (3712 in^2) of total braking surface

Parking brake features

- multiple oil-disc unit
- located in the transmission on the output shaft
- manually actuated
- spring-engaged, air pressure-released
- engaged parking brake neutralizes transmission
- 1916 cm^2 (297 in^2) of total brake surface area

Secondary brake features

- separate circuits to right and left tandems
- malfunction of one circuit still leaves machine with at least half of original braking capacity
- dual chamber air tank provides air to actuate brakes five times after engine and compressor stop
- in the event of total braking loss, the spring-actuated parking/emergency brake can be used to lock the wheels on any surface

Tires and Rims

Tires	Rims	Type
14.00-24	10" x 24"	MP
17.5-25	14" x 25"	MP

MP = Multi-Piece Rim

Notes: An assortment of bias or radial tire models are available from various manufactures offering different sizes, strength indexes and industry types.

Dependent on the weight of additional equipment, the machine load may exceed certain tire capabilities. Caterpillar recommends that you carefully evaluate all conditions before selecting a tire model.

Drawbar

Solid steel bars fabricated into Y-frame design.

Dimensions

Drawbar frame	mm	in
Height	127	5
Thickness	76	3

Features

- yoke plate completely covers top of circle
- six shoes support circle
- all shoes have vertical and horizontal adjustment
- 11 replaceable nylon composite wear strips between circle and drawbar
- six replaceable nylon composite wear strips between the circle and support shoes

Circle

Single-piece, rolled ring forging.

Dimensions

Circle	mm	in
Circle diameter	1530	60.2
Blade beam thickness	30	1.2

Features

- 64 uniformly spaced, flame-cut teeth
- teeth surfaces hardened on front 240° of circle
- raised wear surfaces, top and bottom
- hydraulically driven, circle drive motor
- 360° circle rotation

Moldboard

Fabricated from wear-resistant, high-carbon steel.

Dimensions

Moldboard	mm	in
Length	3658	144
Height	610	24
Thickness	22	.87
Arc radius	413	16.25
Throat clearance	120	4.7

Cutting edge	mm	in
Width	152	6
Thickness	16	0.63

End bit	mm	in
Width	152	6
Thickness	16	0.63

Features

- heat-treated sideshift rails
- replaceable metallic wear inserts
- cutting edge and end bit are Caterpillar through-hardened, curved DH-2 steel
- 16 mm (.63") diameter bolts
- three sideshift mounting locations for optional 4267 mm (14') moldboard

Blade Range

Full range of blade positioning.

		mm	in
Circle centershift	Right	728	28.7
	Left	695	27.4
Moldboard sideshift	Right	660	26.0
	Left	524	20.6
Maximum shoulder reach outside of tires	Right	1978	77.9
	Left	1896	74.6
Maximum lift above ground		480	18.9
Maximum depth of cut		715	28.1
Maximum blade position angle			90° Both Sides
Blade tip range			40° Forward
			5° Backward

Features

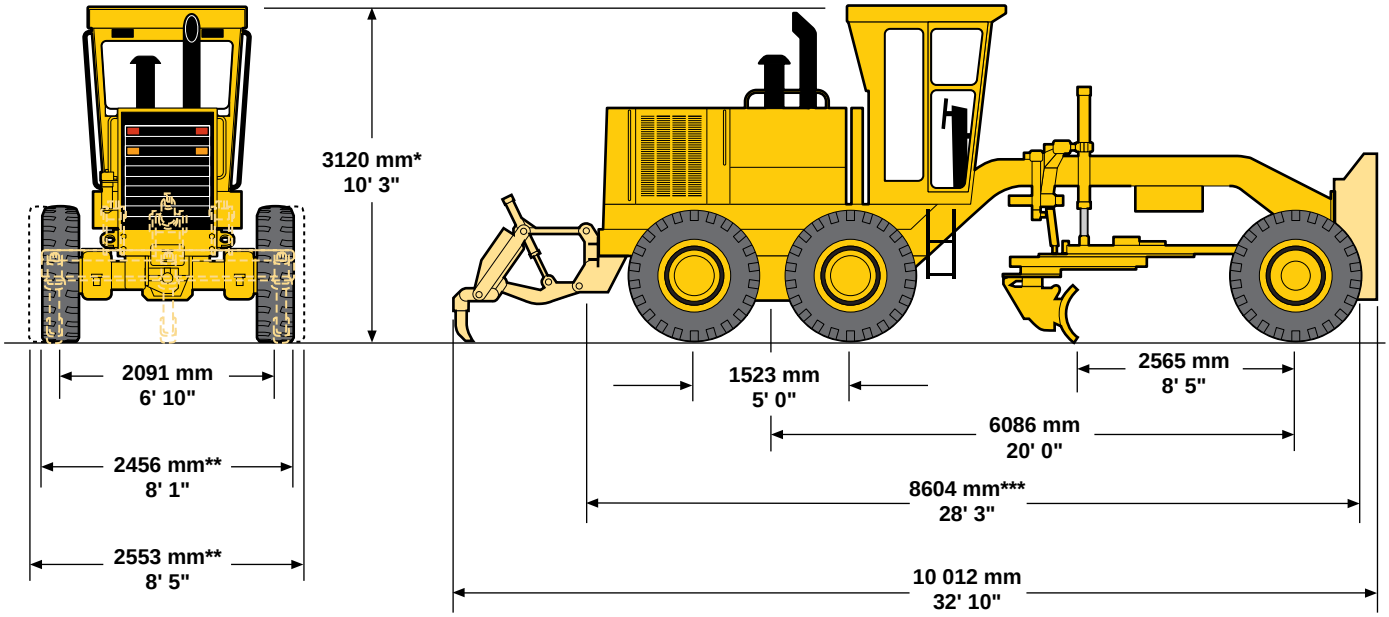
- steep ditch-cutting angles possible
- 1.5:1 and 2:1 backsloping can be done without putting front tire on slope
- aggressive blade-carrying angles possible

Notes:
Add 305 mm (12") for maximum right or left moldboard sideshift when using optional 4267 mm (14') blade.

With the machine in the crab position, add 940 mm (37") to maximum right or left moldboard sideshift.

Dimensions

All dimensions are approximate.



Operating weights (approximate)

on front wheels	4214 kg	9290 lb
on rear wheels	10 809 kg	23,830 lb
total machine	15 023 kg	33,120 lb

Dimensions and operating weights based on standard machine configuration with 14.00-24 10PR (G-2) tires, full fuel tank, coolant, lubricants and operator.

* add 225 mm (8.9") for optional full height cab
** add 193 mm (7.6") for optional 17.5-25 tires
*** add 201 mm (7.9") for front push plate
add 1207 mm (4') for rear-mounted ripper-scarifier

Scarifiers and Ripper-Scarifier

Type	V-Type Scarifier (mid-mounted)	Straight Scarifier (mid-mounted)	Ripper-Scarifier (rear-mounted)
Working width	1184 mm 46.6"	1800 mm 71"	2300 mm 91"
Scarifying depth, maximum	292 mm 11.5"	317 mm 12.5"	411 mm 16.2"
Scarifier shank holders:			
number	11	17	9
spacing	116 mm 4.6"	111 mm 4.38"	267 mm 10.5"
Ripping depth, maximum	—	—	462 mm 18.2"
Ripper shank holders:			
numbers	—	—	5
spacing	—	—	533 mm 21"
Increase in machine length, beam raised	—	—	970 mm 38.2"
Penetration force*	—	—	8047 kg 17,740 lb
Pryout force	—	—	9281 kg 20,460 lb

*Varies with machine configuration.

All-Wheel Drive System

Three operating modes: automatic, manual or off.

Pump output at 2500 rpm and 35 000 kPa (5080 psi)	175 liters/min	46.2 gpm
Maximum operating pressure	35 000 kPa	5080 psi
Minimum operating pressure	5500 kPa	800 psi
Motor displacement:		
High displacement	1650 cc/rev	100.7 cu in/rev
Low displacement	660 cc/rev	40.2 cu in/rev

Features

- variable horsepower is available in all gears when system is turned on
- variable displacement piston pump driven directly from the transmission
- dual displacement, wheel motors
- high motor displacement used in gears 1-4 forward and 1-3 reverse
- low motor displacement used in gears 5-7 forward and 4-5 reverse
- front wheels freewheel in 8 forward and 6 reverse
- pump displacement and motor displacement are electronically controlled
- flow divider valve allows differential flows to the inside and outside motors during a machine turn and limits flow to a spinning wheel to assure adequate flow to the wheel with traction

Cab with ROPS/FOPS

Caterpillar cab and Rollover Protective Structure (ROPS) are standard.

Cab features

- 77 dB(A) operator sound pressure level when measured per SAE J919 at rated speed
- low profile, sound-suppressed cab is standard
- optional full height, sound-suppressed cab
- engine key start/shutoff switch
- back-lit rocker switches
- adjustable control console
- tilt adjustable steering wheel
- cloth-covered, contour suspension seat with multiple adjustments
- retractable seat belt
- fuse panel in steering control console
- optional 24-V to 12-V 25-amp converter
- optional heater/air conditioner systems with adjustable vents and three-speed fan
- optional defroster fans
- gauges located in the cab
  - — fuel
  - — hydraulic oil temperature
  - — brake air pressure, two
  - — engine coolant temperature
  - — articulation
  - — optional speedometer/tachometer
- service hour meter on steering console
- EMS operator warning system
- wipers and washers, windshield and lower front windows
- optional rear wiper and washer
- optional rear window sunshade
- fixed lower front windows
- optional opening lower front windows
- optional sliding side windows
- 10° slanted rear window
- low effort, suspended foot pedals
- sweep-out cab floor
- ground-level door release
- cupholder
- ashtray and 24-V lighter
- optional 12-V power port
- lunch box location
- coat hanger
- location and wiring for two-way or entertainment radio

Note:
When properly installed and maintained, the Caterpillar cab, when tested with doors and windows closed according to ANSI/SAE J1166 MAY90, meets OSHA and MSHA requirements for operator sound exposure limits in effect at time of manufacture.

ROPS/FOPS features

- ROPS (Rollover Protective Structure) meets the following criteria:
  - — SAE J396
  - — SAE J1040 MAY94
  - — ISO 3471-1994
- also meets the following FOPS (Falling Object Protective Structure) criteria:
  - — SAE J231 JAN81
  - — ISO 3449-1992

Functions analyzed by Electronic Monitoring System (EMS)

- **Category I** — Flashing indicator for alternator problem and parking brake engagement.
- **Category II** — Flashing action lamp and indicator for engine coolant and hydraulic oil heating problem and transmission electrical problem. Requires change in machine operation.
- **Category III** — Loud action alarm, plus flashing action lamp and indicator to signal problem with engine oil pressure, brake air pressure, supplemental steering, also parking brake applied with transmission engaged. Requires immediate machine shutdown.

Standard Equipment

Standard and optional equipment may vary. Consult your Caterpillar dealer for details.

Electrical
- Alarm, back up
- Alternator, 50-amp, sealed
- Batteries, two low-maintenance, 950 CCA
- Battery box cover, lockable
- Electrical system, 24-V
- Lights, stop and tail
- Motor, starting

Operator Environment
- Accelerator-decelerator
- Ashtray and lighter
- Coat hook
- Control console, adjustable
- Cupholder
- EMS, operator warning system
- Gauges inside the cab
  - — articulation
  - — engine coolant temperature
  - — fuel
  - — hydraulic oil temperature
  - — brake air pressure, two
- Hydraulic controls, load-sensing
  - — articulation
  - — blade lift, right and left with float position
  - — blade sideshift
  - — blade tip
  - — centershift
  - — circle drive
  - — front wheel lean
- Mirror, wide angle, inside rearview
- Power steering, hydraulic
- ROPS cab, sound-suppressed, 77 dB(A), low profile
- Seat, cloth-covered, contour suspension
- Seat belt, retractable, 3"
- Service hour meter
- Steering wheel, tilt adjustable
- Storage area, cooler/lunch box
- Throttle, hand
- Windows, fixed lower front
- Wipers and washers, windshield and lower front windows

Power Train
- Air cleaner, dry type, radial seal with service indicator
- Blower fan
- Brakes, oil-disc, four-wheel, air actuated
- Differential, lock-unlock
- Engine, 3306 DIT diesel with variable horsepower, low emissions
- Muffler, under hood
- Parking brake, multi-disc, sealed and oil-cooled
- Precleaner, automatic dust ejector
- Prescreener
- Priming pump, fuel
- Tandem drive
- Transmission, 8-speed forward and 6-speed reverse power shift, direct drive with electronic shift control and overspeed protection

Other Standard Equipment
- Bumper, rear, with hitch
- Cap locks for hydraulic tank, radiator access cover and fuel tank, with locks
- Circle drive slip clutch
- Cutting edges, 152 mm x 16 mm (6" x 5/8") curved DH-2 steel
- Doors, engine compartment, with locks
- Drawbar, six shoe with replaceable nylon composite wear strips
- End bits, 16 mm (5/8") DH-2 steel
- Frame, articulated, with safety lock
- Fuel tank, 341-liter (90-gallon)
- Horn, air
- Moldboard, 3658 mm x 610 mm x 22 mm (12' x 24" x 7/8")
- Rims, refer to Tires and Rims section, page 15
- S•O•S ports, engine and hydraulic
- Tires, refer to Tires and Rims section, page 15
- Tool box, with lock

Optional Equipment

With approximate change in operating weight.

	kg	lb
Accumulators, blade lift	71	156
Air conditioner with heater and pressurizer	73	162
Air dryer	13	29
Alternator, 75-amp	10	23
Alternator, 100-amp	11	25
Autoshift, transmission	—	—
Batteries, extreme-duty, 1300 CCA	15	32
Blade, 4267 mm x 610 mm x 22 mm (14' x 24" x 7/8")	75	166
Blade, 4267 mm x 688 mm x 25 mm (14' x 27" x 1")	261	574
Cab, ROPS, high profile, sound suppressed	77	170
Canopy, ROPS, high profile, with rear wall and window	-41	-90
Converter, 25-amp, 24-V to 12-V	5	11
Covers, louver	7	15
Cutting edges, 203 mm x 19 mm (8" x 3/4")	20	44
End bits, overlay, reversible	11	24
Ether starting aid	0	1
Extensions, blade, 610 mm (2')	114	250
Fuel tank, 454-liter (120-gallon)	23	50
Fan, defroster, front and rear	2	4
Fan, reversible, with rear grill cover	9	20
Graderbit system, penetration bit type	163	360
Guard, transmission	98	215
Guard, lower platform	23	50
Heater, engine coolant	1	3
Heater, with pressurizer	18	40
Hydraulic arrangements with one or more additional hydraulic valves are available for front scarifier, rear ripper-scarifier, dozer, dozer angle, snow plow and snow wing		
Instrument panel cover, canopy	4	10
Lighting systems:		
bar mounted lights, directional and headlights	13	28
cab mounted lights, directional and headlights	9	20
cab and bar mounted lights, directional, headlights and work lights	22	48
work lights, front and rear	6	13
snow wing light, right	18	40
warning light, cab or canopy mounted	3	6
Mirrors, dual, inside mounted	—	—
Mirrors, outside mounted	8	18
Power port, 12-V	2	5
Protection, tire chain	18	39
Push plate, front mounted	497	1095
Radio ready, entertainment	4	9
Rims, refer to Tires and Rims section, page 15		
Ripper-scarifier, rear	961	2119
Ripper, shank/tooth, one	33	72
Scarifier, front mounted, V-type	845	1862
Scarifier, front mounted, straight type	903	1988
Scarifier, shanks/teeth, nine	65	144
Seat, vinyl-covered, contour suspension	—	—
Snow arrangements, refer to Snow Arrangement Supplement		
Speedometer/tachometer	0	1
Steering system, secondary	50	111
Sunshade, rear window	3	7
Tires, refer to Tires and Rims section, page 15		
Windows, lower front, opening	3	6
Windows, sliding side	4	8
Wiper and washer, rear	7	16

Notes

Notes

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