

# 135H

Motor Grader



## NA Version

Cat® 3116 turbocharged diesel engine available in two power arrangements:

Standard (all gears)	101 kW	135 hp
Variable Horsepower (VHP) Arrangement		
Gears 1 - 3	101 kW	135 hp
Gears 4 - 8	116 kW	155 hp

Blade width	3658 mm	12 ft
Operating weights (approximate)		
On Front wheels	3701 kg	8160 lb
On Rear wheels	9249 kg	20,390 lb
Total machine	12 950 kg	28,550 lb



# Caterpillar 135H Motor Grader

*The 135H blends productivity and durability to give you the best return on your investment.*

## **Power Train**

Using advanced engine technology, the Cat 3116 delivers 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 3116 engine, direct-drive power shift transmission and load-sensing hydraulics 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.*





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### **Operator's Station**

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

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### **Serviceability**

All service areas are easily accessible. A modular design permits easy removal of power train components for servicing. Diagnostic capability allows fast servicing of the transmission. **pg. 10**

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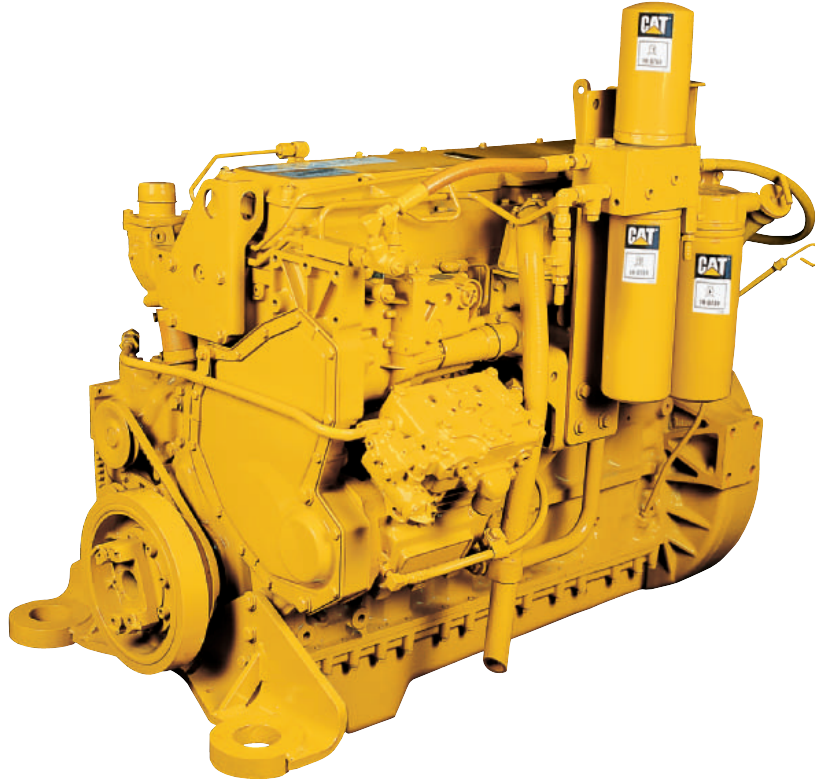
### **Environmentally Responsible Design**

Engine arrangements are designed to reduce emissions and meet current regulations of the U.S. Environmental Protection Agency, California Air Resources Board and European Union. **pg. 11**



## Power Train

*Matched Caterpillar components deliver smooth, responsive performance and reliability.*



**Cat 3116 engine.** This modern, turbocharged, six-cylinder engine provides high performance in a fuel-efficient, low emissions package.

**Superior lugging performance.** High torque output and high torque rise make the 3116 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.** Unit injectors deliver very high fuel injection pressures to ensure proper mixing of fuel to air. This very high injection pressure, coupled with the precise metering and timing of the fuel injection, results in superior fuel efficiency and reduced emissions.

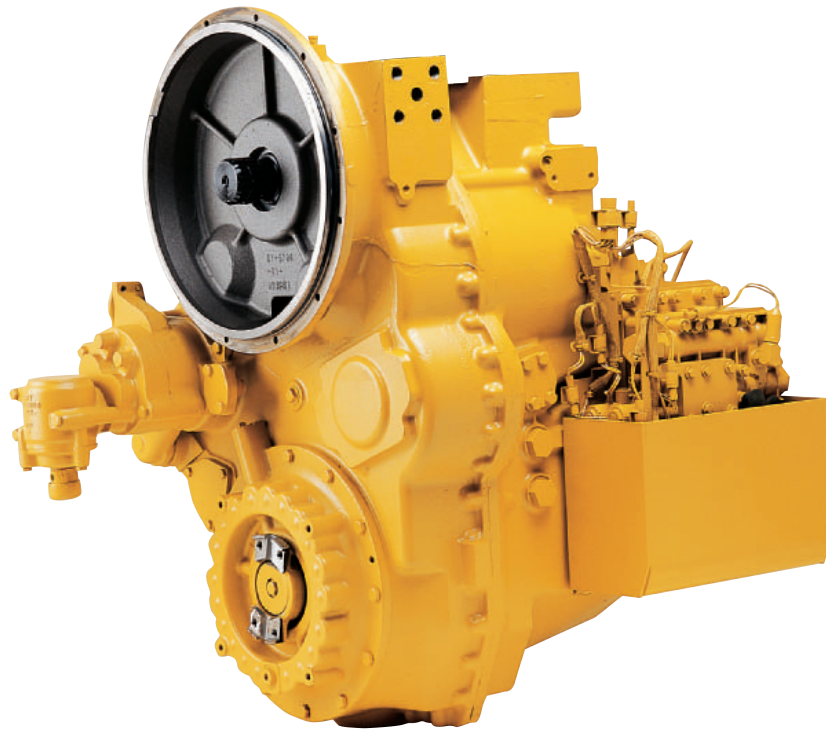
**Extended engine life.** A strong, rigid cylinder block, large-sized bearings and robust reciprocating parts are designed to withstand the rigors of high-pressure, low-emissions engines.

**Dual secondary fuel filters** provide an extra measure of assurance against engine and fuel system damage caused by fuel contaminants.

**Variable horsepower option** can deliver an additional 15 kW (20 hp) in gears 4-8 forward. It produces higher rimpull for moving heavy loads in these higher speed gears.

**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.

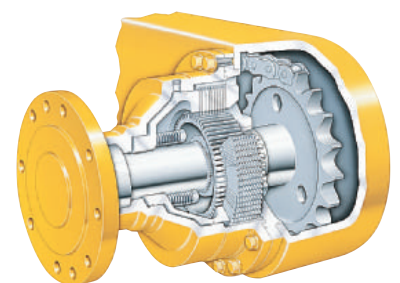
**Gear selections.** Eight forward speeds and six reverse speeds give the operator a wide operating range. With four gear selections below 9.7 km/h (6 mph), the operator can precisely match working speeds to job conditions for maximum productivity in earthmoving applications.

**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.

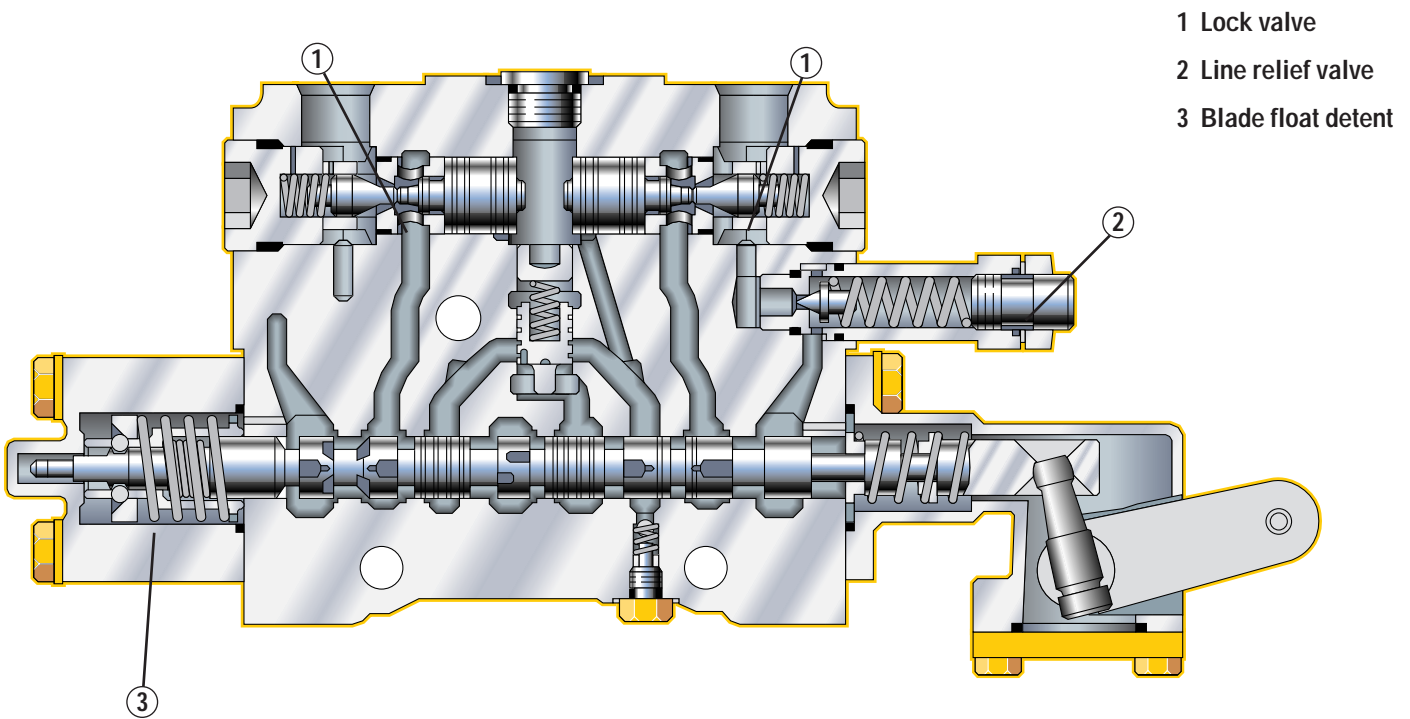
**Dual air system** supplies braking capacity to each side of the machine. This system ensures secondary braking capability in the event a failure occurs in a single brake line. The dual air system also has a large reserve for stalled-engine braking.

**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.*



**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. The circle is secured to the drawbar by four support shoes. For maximum support, six shoes are available.

**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 and moldboard slide rail.

**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 in all grader applications. The large front glass area and well-positioned blade linkage provide an unobstructed view of the moldboard and front tires. The large side windows offer a clear view of the moldboard heel and tandem tires. A wide rear window and tapered engine hood provide good visibility to the rear of the machine.

**Quiet cab.** With the doors closed, interior sound level does not exceed 75 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.

**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.

**Optional 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.





## 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 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 capability** offers fast servicing of the transmission. The transmission's electronic control module automatically records and saves 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.



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## Environmentally Responsible Design

*Caterpillar builds machines that help you create a better world.*

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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 75 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 81 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 arrangements meet current regulations of the U.S. Environmental Protection Agency, California Air Resources Board and European Union. These engine arrangements reduce 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).

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## Complete Customer Support

*Caterpillar dealer services help you operate longer with lower costs.*

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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® 3116 turbocharged diesel engine (with optional variable horsepower, 3116 turbocharged aftercooled diesel engine).

Power ratings (standard power)			
<b>Ratings at 2000 rpm*</b>			
	kW	hp	
Gross power	109	146	
Net power	101	135	

The following ratings apply at 2000 rpm when tested under the specified standard conditions for the specified standard:

Net power	kW	hp	PS
Caterpillar	101	135	—
ISO 9249	101	135	—
SAE J1349	101	135	—
EEC 80/1269	101	135	—
DIN 70020	—	—	140

Peak torque (net) @ 1400 rpm  
627 Nm 461 lb-ft

Torque rise 30%

## Dimensions

Bore	105 mm	4.13 in
Stroke	127 mm	5.00 in
Displacement	6.6 liters	403 cu in

Power ratings (VHP - high power)**			
<b>Ratings at 2000 rpm*</b>			
	kW	hp	
Gross power	124	166	
Net power	116	155	

The following ratings apply at 2000 rpm when tested under the specified standard conditions for the specified standard:

Net power	kW	hp	PS
Caterpillar	116	155	—
ISO 9249	116	155	—
SAE J1349	116	155	—
EEC 80/1269	116	155	—
DIN 70020	—	—	161

Peak torque (net) @ 1400 rpm  
719 Nm 529 lb-ft

Torque rise 30%

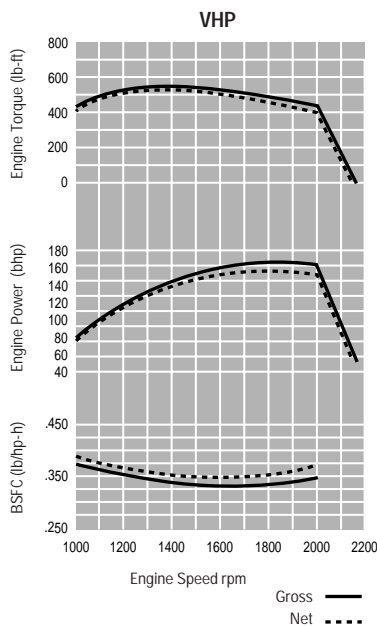
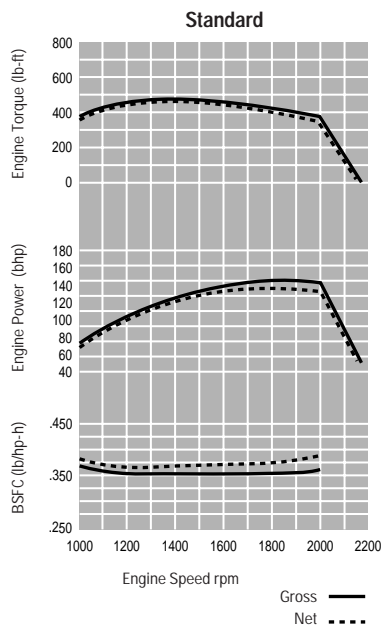
\*\*VHP (variable horsepower) available in gears 4-8 forward and 3-6 reverse

## \*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
- for standard arrangement (3116 DIT), no derating required up to 3000 m (9843 ft) altitude; for VHP arrangement (3116 DITA), no derating required up to 3750 m (12,304 ft) altitude

## Features

- direct injection fuel system with individual adjustment-free unit injectors
- 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 oil cooler cavity cast into block
- induction-hardened, forged crankshaft that is dynamically balanced
- direct electric 24-V starting and charging system
- two 12-V, 100 amp-hour, 750 CCA, maintenance-free batteries
- 35-amp alternator
- plate-type, water-cooled oil cooler
- vertical-flow, steel-fin, tube-type radiator
- dry-type, radial-seal air cleaner with primary and secondary elements
- dual fuel filters
- resiliently mounted to rear frame



## Hydraulic System

Proportional priority pressure compensated system.

Output at 2000 rpm and 24 150 kPa (3500 psi)	148 liters/min	39.0 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
- reliable couplings with O-ring face seals
- full-flow filter

## Service Refill Capacities

	liters	gallons
Fuel tank	284	75.0
Cooling system	40	10.4
Crankcase	23	6.0
Transmission, differential and final drives	47	12.2
Tandem housing (each)	61	15.9
Hydraulic system	68	17.7
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)*	7.2 m	23' 8"
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 the event of a complete loss of hydraulic pressure

## Transmission

Direct drive, power shift transmission with eight speeds forward.

### Maximum travel speeds (at rated rpm with standard 13.00-24 tires)

		km/h	mph
Forward	1	3.6	2.3
	2	4.9	3.1
	3	7.2	4.5
	4	9.9	6.2
	5	15.4	9.6
	6	20.9	13.0
	7	28.8	17.9
	8	41.9	26.0
Reverse	1	2.9	1.8
	2	5.4	3.3
	3	7.8	4.9
	4	12.2	7.6
	5	23.0	14.3
	6	33.1	20.6

### 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 rear frame



## Frame

Flanged, box-section design.

### Dimensions

Front frame	mm	in
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#### Top and bottom plates

Width	280	11
Thickness	22	.9

#### Side plates

Width	236	9.3
Thickness	10	.4

### Linear weights

Front frame	kg/m	lb/ft
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Minimum	134	90
Maximum	172	115

### Section modulus

Front frame	cm <sup>3</sup>	in <sup>3</sup>
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Minimum	1619	99
Maximum	3681	225

### 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
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Ground clearance	608 mm	23.9"
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
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Height	502	19.8
Width	172	6.8

#### Sidewall thickness

Inner	14	.55
Outer	16	.63
Drive chain pitch	44.5	1.75
Wheel axle spacing	1510	59.5
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
- 18 604 cm<sup>2</sup> (2884 in<sup>2</sup>) 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<sup>2</sup> (297 in<sup>2</sup>) 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
13.00-24	9" x 24"	SP
	10" x 24"	MP
14.00-24	9" x 24"	SP
	10" x 24"	MP
15.5-25	13" x 25"	SP
17.5-25	13" x 25"	SP

SP = Single-Piece Rim

MP = Multi-Piece Rim

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

Depending 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

- four shoes support circle (six optional)
- all shoes have vertical and horizontal adjustment
- nine replaceable nylon composite wear strips between circle and drawbar
- four replaceable nylon composite wear strips between the circle and support shoes (six with optional 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	0.87
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	628	24.7
	Left	625	24.6
Moldboard sideshift	Right	660	26.0
	Left	524	20.6
Maximum shoulder reach outside of tires	Right	1912	75.3
	Left	1840	72.4
Maximum lift above ground		457	18.0
Maximum depth of cut		775	30.5
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:

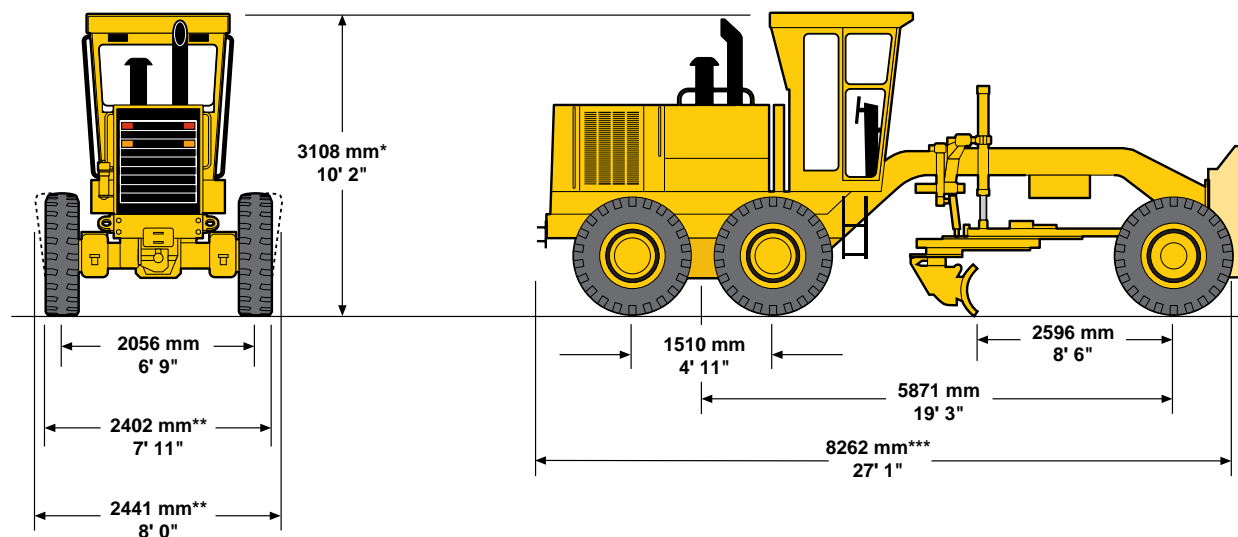
Add 305 mm (12") for maximum right or left moldboard sideshift when using optional 4267 mm (14') blade.

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	3701 kg	8160 lb
on rear wheels	9249 kg	20,390 lb
total machine	12 950 kg	28,550 lb

- \* add 225 mm (8.9") for optional full height cab
- \*\* add 267 mm (10.5") for optional 17.5-25 tires
- \*\*\* add 235 mm (9.3") for front push plate

Dimensions and operating weights based on standard machine configuration with 13.00-24 10PR (G-2) tires, full fuel tank, coolant, lubricants and operator.

## Scarifiers

Type	V-Type (mid-mounted)		Straight (mid-mounted)	
	Working width	1184 mm	46.6"	1800 mm
Scarifying depth, maximum	292 mm	11.5"	317 mm	12.5"
Scarifier shank holders:				
number	11		17	
spacing	116 mm	4.6"	111 mm	4.38"

## Cab with ROPS/FOPS

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

### Cab features

- 75 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 adjustable seat with retractable seat belt
- optional contour series suspension seat with multiple adjustments
- 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
  - brake air pressure, two
  - engine coolant temperature
  - articulation
  - voltmeter
  - 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
- lunch box location
- cupholder
- ashtray and 24-V lighter
- optional 12-V power port
- 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, 35-amp, sealed
- Batteries, two maintenance-free, 750 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
  - voltmeter
  - 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, 75 dB(A), low profile
- Seat, cloth-covered, adjustable
- 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, 3116 DIT diesel, low emissions
- Fuel filters, dual
- 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, four shoe with replaceable nylon composite wear strips
- End bits, 16 mm (5/8") DH-2 steel
- Frame, articulated, with safety lock
- Fuel tank, 284-liter (75-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 14
- S•O•S ports, engine and hydraulic
- Tires, refer to Tires and Rims section, page 14
- Tool box, with lock

## Optional Equipment

With approximate change in operating weight.

	kg	lb		kg	lb	
Accumulators, blade lift	71	156	Lighting systems:			
Air conditioner with heater and pressurizer	49	107		bar mounted lights, directional and headlights	13	28
Air dryer	13	29		cab mounted lights, directional and headlights	9	20
Alternator, 50-amp	7	15		cab and bar mounted lights, directional, headlights and work lights	22	48
Alternator, 75-amp	11	25		work lights, front and rear	6	13
Batteries, heavy-duty, 950 CCA	44	96		warning light, cab or canopy mounted	3	6
Blade, 4267 mm x 610 mm x 22 mm (14' x 24" x 7/8")	151	332		Mirrors, dual, inside mounted	—	—
Cab, ROPS, high profile, sound suppressed	77	170		Mirrors, outside mounted	8	18
Canopy, ROPS, high profile, with rear wall and window	-41	-90		Power port, 12-V	2	5
Converter, 25-amp, 24-V to 12-V	5	11		Pump, hydraulic, high capacity	4	10
Cutting edges, 203 mm x 19 mm (8" x 3/4")	20	44		Push plate, front mounted	919	2025
Drawbar, six shoe	23	50		Radio ready, entertainment	—	—
End bits, overlay, reversible	11	24		Rims, refer to Tires and Rims section, page 14		
Engine, variable horsepower, 3116 DITA	5	10		Scarifier, mid-mounted, V-type	845	1862
Ether starting aid	0	1		Scarifier, mid-mounted, straight-type	903	1988
Extensions, blade, 610 mm (2')	114	250		Seat, cloth-covered, contour suspension	14	30
Fan, defroster, front and rear	2	4	Seat, vinyl-covered, contour suspension	14	30	
Graderbit system, sharp bit type	127	280	Speedometer/tachometer	0	1	
Guard, lower platform	23	50	Steering system, secondary	50	111	
Guard, transmission	98	215	Sunshade, rear window	3	7	
Heater, engine coolant	1	3	Tires, refer to Tires and Rims section, page 14			
Heater, with pressurizer	18	40	Windows, lower front, opening	3	6	
Heater, without pressurizer	14	30	Windows, sliding side	4	8	
Hydraulic arrangements with one or more additional hydraulic valves are available for front scarifier, dozer, snow plow and snow wing			Wiper and washer, rear	7	16	
Instrument panel cover, canopy	4	10				



# 135H Motor Grader

AEHQ5265 (10-98)  
(Replaces AEHQ5021)

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Materials and specifications are subject to change without notice.  
Featured machines in photos may include additional equipment.  
See your Caterpillar dealer for available options.

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