140H CAT
Grader

Caterpillar 3306 turbocharged diesel engine:		
Maximum fly wheel power	138 kW	185 hp

Blade length	4,267 mm
Operating weight (approximate)	
Front wheels	4,480 kg
Rear wheels	10,560 kg
Total weight of machine	15,040 kg

Caterpillar® 140H Grader

Combining high productivity and outstanding reliability, the 140H gives you the best returns on your investment

Power Train The 3306 engine, which has been tested under actual use conditions, has superior overload performance, fuel efficiency, and engine power control performance. The power-shift gearbox features smooth shifting without having to stop the machine and electronic overspeed protection. To improve work efficiency, it uses a direct-drive gearbox with eight forward gears and six reverse gears. **Pages 4-5**	**Hydraulic System** The load-sensing hydraulic system can reduce power consumption and system heat emission. Hydraulic valve operation requires less effort; flow volume is evenly distributed, and tool operation is coordinated. **Page 6**	**Drawbar, Circle and Moldboard** The moldboard link-bar design ensures that the moldboard is reliably positioned. The long wheelbase enables the operator to select the moldboard pushing angle for the most effective material movement. The solid structures of the drawbar, circle, and moldboard and the use of replaceable wear inserts ensure reliability of components and lower maintenance costs. **Page 7**

Balanced and Matched Components

The Caterpillar 3306 engine, power-shift direct-drive gearbox and load-sensing hydraulic system, which are designed to operate as a whole, can deliver maximum productivity everywhere.

Good field of vision and appropriate control layout make operation for driver easy.

Throughout the work day, the driver is the single most important factor maintaining high work efficiency. By providing a comfortable and convenient driver's station, Caterpillar helps drivers deliver optimal performance.

Cab
With well-laid out moldboard link bars and an angled engine hood, the view from the sealed cab is clear. One can see clearly in all directions. Roomy driver's station, low-effort controls, and low-noise cab make a high-efficiency work environment. **Page 8**

Serviceability
All maintenance points are within easy reach. A modular design permits easy removal of power train components for servicing. Diagnostic ports that allow fast servicing of the gearbox. **Page 9**

Design That Meets Environmental Requirements
Low-emissions engine design complies with national industrial standard JB/T 4198.1-2001. **Page 10**

Drive Train

Matching Caterpillar components provide you with smooth, fast-responding performance and reliability

The **Caterpillar 3306 engine** continues the Caterpillar engine tradition. The powerful, high-efficiency, 6-cyclinder turbocharged engine has a higher displacement/power ratio. The advantages of such large displacement are good overload capabilities, low internal stress, and long service life of parts.

Powerful overload capabilities. Large output torque and high torque reserve make the 3306 engine highly responsive. The engine's overload capabilities can overcome short-term, sudden increases in load, thus reducing downshift frequency and maintaining operating speed. The result is higher work efficiency.

Fuel efficiency. High fuel injection pressure ensures good mixing of fuel and air. High fuel injection pressure combined with precise fuel injection measurement and timing can raise fuel efficiency and lower emissions. The high compression ratio guarantees reliable cold-start performance and low emissions.

Extended engine life. Large bore-stroke ratio and a power rating that leaves leeway help to lower internal stress and extend component life. Low engine speed can reduce engine wear and noise.

The **electronic overspeed protection device** can prevent engine and gearbox wear that result from premature low-gear engagement and slope-induced excessive speed.

The **Engine power adjustment and control feature** can output the full rated power of 138 kW (185 hp) while in forward gears 4-8. When the grader is in a lower gear, the machine's tires might slip under the constraints of ground surface adhesion generated by the machine's own weight and surface friction. Therefore, engine power will automatically drop to 123 kW (165 hp) to meet actual needs. The engine power adjustment and control feature can lower fuel consumption and reduce tire slippage and low-gear wear.

Power-shift gearbox. Caterpillar especially designs and manufactures gearboxes for its own motor graders. They have no-stop, full-power shifting features and inching capability.

Direct drive machines have high fuel efficiency and good "feel" of moldboard load, materials hardness, and operating speed.

Gear selection. 8 forward speeds and 6 reverse speeds provide the driver with a sufficient selection range. When the speed is below 10 km/h (6 mph), the driver can use four gear positions to accurately match vehicle operating speed to work conditions and thus obtain maximum productivity. Gears 5, 6 and 7 can provide an optimal speed range for high-efficiency snow-removal work.

The **gearbox electronic control system** makes shifting easy and smooth. It can maintain an even surface during shifting. Smooth shifting reduce stress on the gearbox clutches and thus extend gearbox life. A single lever can control forward and reverse directions, speed, and parking brake.

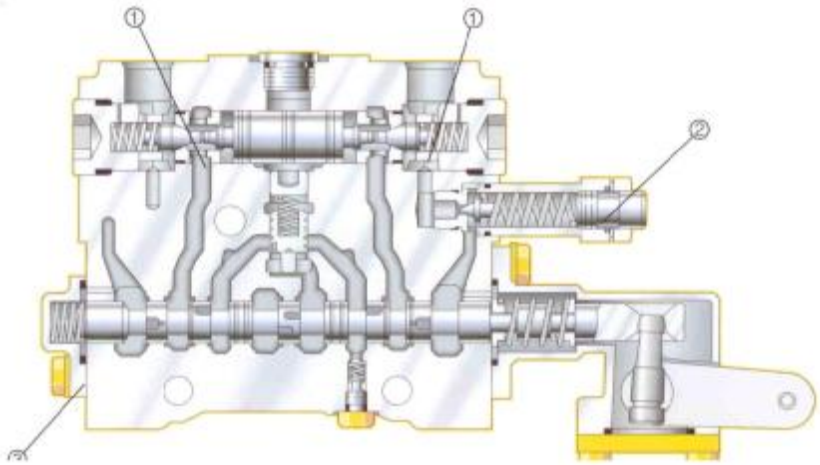
Inching capability. For precise control over grader movements, one can use the inching pedal, which both reduces effort and provides good control performance. This feature is especially valuable for slope finish work or work in narrow places, where machine control capability is critical.

A **dual pneumatic system** provides each side of the grader with braking capability. If one brake line fails, this system can ensure secondary braking capability. This system also has a large-capacity air storage cylinder to provide braking capability if the engine stops.

Oil-bathed disc brakes. The multi-disc brakes designed and manufactured by Caterpillar have an adjustment-free, sealed structure. The brakes are oil-bathed, air-actuated, and spring-released. They are mounted on each tandem drive wheel. The drive system is not subject to braking force and is easy to service. The large braking surface provides reliable braking capability and long service life.

Hydraulic Systems

Balanced-flow hydraulic system provide continuous, precise, and responsive control



1 Lock valve
2 Line relief valve
3 Scraper sway brake

Power on demand. Normally, the variable displacement pump idles at near-zero output. Once it senses a load, the oil pump provides flow and pressure to match the demand. Thus, the hydraulic system emits less heat and has lower power consumption.

Caterpillar designs and builds **tool control valves** especially for motor graders. They give the driver obvious “feel,” predictable system response, and masterly control over tools. To help maintain accurate moldboard settings, all hydraulic control valves contain built-in lock valves. Line relief valves are also included in the main control valves to prevent excessive cylinder pressure.

Reduced operation effort. The tool control levers were designed with reduction of driver fatigue in mind. Featured are throws that are short in two directions and require very little force. Appropriately spaced levers and short throws enable the driver to implement multiple controls with one hand.

Balanced flow. When a driver simultaneously manipulates several levers, flows will proportionately enter all tool cylinders to ensure simultaneous operation. If load exceeds pump capacity, the hydraulic cylinder speeds will decrease according to the same ratio.

Large-flow, independent oil supply prevents cross-contamination and can cool hydraulic fluid as appropriate. Thus, there is less heat build up and longer component life.

Drawbar, Circle and Moldboard

Every component is designed for maximum productivity and durability.

Moldboard positioning. The moldboard connecting-bar design increases moldboard positions. These moldboard connecting bars are most suitable for cutting drainage ditches and for cleaning work.

Moldboard angle. Because of the long wheelbase, the driver can use the most appropriate earth-moving angle. Adjustment to the angle of the moldboard connecting-bar allows material to roll along the moldboard more freely and reduces power consumption. This is especially true for dry and sticky soils.

Solid and sturdy construction. The Y-shaped drawbar consists of two solid beams. The one-piece forged toothed-ring circle is used to withstand high-intensity loads. To increase resistance to wear, all gear teeth in important areas undergo high-frequency induction quenching. To ensure maximum support, the circle is secured to the drawbar by means of six support brackets.

Replaceable wear-resistant parts. Wear inserts are installed between the drawbar and the circle and between the six support brackets and the circle. This wear-resistance measure helps to maintain grading precision during grading work, and replacement is easy. Caterpillar also uses replaceable wear-resistant parts in the following areas:

- tow ball surface
- moldboard rise and centershift cylinder sockets
- moldboard hydraulic elevation angle device
- moldboard hydraulic sideshift device

Circle drive slip clutch. When an end of the moldboard strikes a hidden object in the soil, this can lower the horizontal impact to the drawbar, circle, and moldboard. This component is especially useful in work that involves frequence impacts.

Cab

Caterpillar sets the standard for comfort, convenience and visibility

Clear field of vision helps establish the driver's confidence and boost his work efficiency in all kinds of work. The well-laid out drawbar and moldboard link-bars improve the driver's line of vision through the circle. Without having to turn around, the driver can see materials rolling along the moldboard blade plate. Large-area side windows provide the driver with clear views of the moldboard heels and tandem wheels. A wide rear window and a slightly angled engine hood provide good rear visibility.

Quiet cab. With the door closed, the internal noise level is less than 75 decibels (A) when tested according to the SAE J919 Standard. A quiet environment keeps the driver alert and focused.

Reduced effort. All pedals, hydraulic controls, and gearbox shift sticks require little effort. They reduce the driver's levels of anxiety and fatigue. Pedals are set at an angle and are raised above the cab floor. They are thus easy to reach.

Roomy interior. Especially large leg and foot room creates a spacious, comfortable cab. The cab includes a built-in storage space for personal items. It is suitable for keeping such things as lunch boxes, coolers, and coats.

Optional air conditioning and heating create a comfortable work environment for the driver. Two configurations both use large-capacity systems to ensure that the driver can always work efficiently—even in severe cold or extreme heat and humidity. They can dry the air and pressurize the cab, thus keeping the air fresh and free of dust. Adjustable vents distribute air evenly throughout the cab. They thus keep the driver comfortable and keep fog or frost off the window glass.

Comfort and convenience

- Engine start-stop switch allows the driver to start and stop the engine with just a turn of the key.
- All gauges are located on the instrument panel directly in front of the driver.
- Various control levers and switches are located on the steering console and the shift console. They are easy to reach.
- All switches and gearshifts are backlit for night operation.
- Drivers can independently adjust each kind of work device control lever and steering wheel angle.
- Flat floor is easy to sweep and keep clean.
- The cab door can be opened from the ground or from within the cab.
- The cab is located on the front structure, which helps to improve field of vision and lower the driver's level of physical fatigue.

Easy to Service

Conveniently placed service points make routine maintenance quick and easy

Easy access to service points means that maintenance work is completed quickly:

- It is easy to find engine and radiator service points through the large, hinged doors.
- Spin-on filters are easy to replace and are clean.
- Lubrication points for articulated parts are remote mounted.
- Disconnect switch and the majority of service points are located on the left. They can be used easily even if a snow plow has been mounted on the right side.
- Fuse box is located at the base of the steering control console. Its cover has a clearly labeled wiring diagram and fuse specifications.
- Tandem drive housing oil surface check point is conveniently located in a central position between the two tandem wheels.
- Timer is located to the left of the steering console. The driver can see it clearly from the ground.
- Sampling ports allow one to draw engine oil and hydraulic oil.
- Lockable battery box cover can be easily removed without tools.

Drive system components have a modular design. For fast servicing, you can independently remove the engine, the gearbox, or the parking brake.

Diagnostic features mean quick servicing of the gearbox. The diagnostic device connections can quickly and easily check the system The gearbox electronic control module automatically records and stores any system fault for later analysis. Through the **S.O.S.** engine oil and coolant sampling valves, one can quickly obtain liquid samples and thus improve reliability of analysis.

XT hose. Caterpillar designs and manufactures its own high-pressure XT hoses for installation on all high-pressure circuits. Their resistance to abrasion and high strength and flexibility can greatly reduce frequency of maintenance and extend service life.

O-ring end-face seals are used in all hydraulic systems to minimize the possibility of oil leaks.

Radiator cleaning methods. One can reach the front of the radiator from the removable covers on both sides of the radiator guard and clean it with compressed air or a pressurized washer.

Extended life coolant (ELC) extends the life of coolant to 6,000 hours. The only service point required is to add ELC additive at 3,000 hours.

Independent wiring harnesses connect all electrical components. This modular wiring harness design provides the machine with electrical connections that are easy to repair and rebuild. Wires are also color-coded and numbered to facilitate diagnosis and repair. Reliable, sealed connectors are made from all-weather materials that can prevent dampness, corrosion, and abrasion.

A Design That Meets Environmental Requirements

The machines that Caterpillar builds help you create a better world

H-series graders are a response to a major environmental problems. Today's machines run more smoothly and quietly than those of the past.

Quiet cab. When tested with SAE J919 standards, sound levels in the noise-suppressing cab do not exceed 75 decibels (A) The resiliently-mounted engine and gearbox reduce engine noise and vibrations conveyed to the driver.

Low noise. When tested on a standard machine with SAE J88 standards, the exterior drive-by sound level did not exceed 81 decibels (A). This quiet operation minimizes the effects of the machine on its surrounding environment during work.

Low emissions. The engine design complies with National Standard JB/T 4198.1-2001.

Cleanliness. Lubricant fill points and filters are designed to minimize fluid spills. O-ring flat seals, XT hoses, and Cat hydraulic cylinders all can prevent leaks.

Ozone protection. To help protect the earth's ozone layer, the air conditioning system uses R-134a refrigerant that does not contain Freon (CFC).

Customer Assurance

The customer services provided by Caterpillar dealers can enable your machine to operate at a lower cost for a longer period of time

Selection. Prior to purchase, conduct detailed comparisons of the machines that you are considering. Caterpillar dealers give evaluations of component life, prevent maintenance costs, and the true costs of production losses.

Purchase. Do not consider initial purchase price alone. Consider financing options and day-to-day operating costs. In order to obtain lower maintenance and operating expenses in long-term operations, also gain an understanding of the after-sale services which are included in the machine cost and which are provided by the dealer.

Operation Improvement in operation skills can enable you to increase your income. Caterpillar's dealers will provide you with training videos, literature, and other methods to help you increase productivity.

Maintenance. An increasing number of buyers are establishing effective maintenance plans prior to purchasing equipment. When you purchase a machine, select from the broad range of dealer services. A repair option plan can guarantee repair expenses in advance. Diagnostic plans, such as scheduled engine oil sampling and analysis (S.O.S^{SM}), coolant sampling, and technical analysis can help you avoid unplanned repairs.

Product services. You will be able to find almost all parts among the parts kept at Caterpillar dealers. Caterpillar dealers minimize machine down time by using a worldwide computer network to check for existing parts. Use of authentic Caterpillar remanufactured parts can save you money. You can receive the same guarantees and reliability of new products, but at savings of from 40% to 70%.

Replacement. Repair, rebuild, or replace? Caterpillar dealers can help you evaluate the costs involved so that you make the correct choice.

Engine

4-stroke 6-cylinder Caterpillar 3306 turbocharged diesel engine with engine power management system (VHP)

*Power rating for forward gears 1-3 and reverse gears 1-2 (VHP – large power)**

When speed is 1,900 revolutions per minute*	kW	hp
Gross power	134	179
Net power	123	165

The following are power ratings at 1,900 rpm when tested under the conditions required by specific standards:

Net power	kw	hp
Caterpillar	123	165
ISO 9249	123	165
SAE J1349	123	163
EEC 80/1269	123	165
DIN70020	--	--

Peak torque (net) at 1,200 rpm 8347 Nm

Torque reserve 30%

*Power rating for forward gears 4-8 and reverse gears 3-6 (standard power)

When speed is 1,900 revolutions per minute*	kw	hp
Gross power	148	199
Net power	138	185

The following are power ratings at 1,900 rpm when tested under the conditions required by specific standards:

Net power	kW	hp
Caterpillar	138	185
ISO 9249	138	185
SAE J1349	137	183
EEC 80/1269	138	185
DIN70020	--	--

Peak torque (net) at 1,200 rpm 942 Nm

Torque reserve 31%

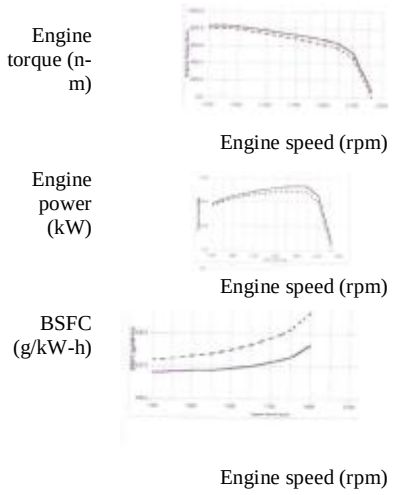
Dimensions

Bore 121 mm

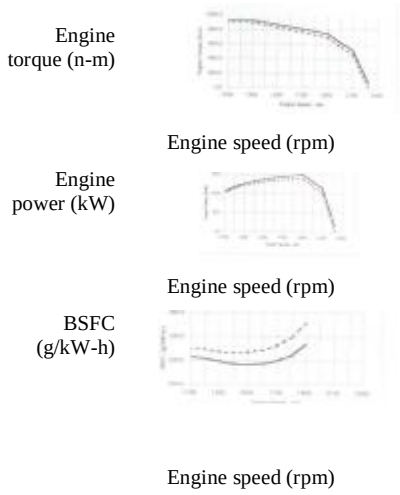
Stroke 152 mm

Displacement 10.45 L

Gears 1-3



Gears 4-8



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***Power rating conditions**

- Atmospheric rating conditions 25 ºC (77 ºF) and 99 kPA (29.32 in Hg) dry barometer
- Used 35º API gravity fuel having low heat value of 42,780 kJ/kg (18,390 BTU/lb); at 30 ºC (86 ºF), used [reference fuel density of 838.9 g/L (7.001 lb/US gal)]
- Net power is the power at the flywheel for an engine has been equipped with fan, air filter, muffler, and alternator
- For the VHP device, there is no need to reduce the rated power at elevations up to 2,573 m (8,842 ft)

Features

- Direct injection fuel system, with adjustment-free unit pumps and nozzle three-ring aluminum alloy pistons
- Heat-resistant silicon-chromium alloy air intake and exhaust valve with tungsten-chromium-cobalt alloy surface layer
- Forged steel connecting rods
- One-piece cylinder head with cast intake manifold
- Cast cylinder blocks with replaceable wet liners
- Induction-quenched, forged crankshafts
- 24-volt DC starting and charging system
- Two 12-volt, 100 amp-hour, 750 CCA, maintenance-free batteries
- 35-amp alternator
- Tube-type, water-cooled oil cooler
- Direct-flow, steel-fin, tube-type radiator
- Dry, radial seal air filter with rough and fine filter elements
- Resiliently mounted on rear frame

Hydraulic System

Proportional priority pressure compensated system

Hydraulic pump at 2,100 rpm and 24,150 kPA output flow rate	155 L/min
Idling pressure	3,100 kPA
Maximum system pressure	24,150 kPA

Hydraulic pump features

- Load-sensing, pressure-compensating, variable-displacement piston pump
- Low idling pressure
- Pump hydraulic pressure provides only the flow and pressure needed to move tools, plus 2,100 kPA (300 lb/in^2) reserve pressure

Control features.

Eight, closed-center control valves:
-- moldboard right side lift
-- moldboard left side lift
-- moldboard side shift
-- moldboard inversion
-- circle drive
-- center shift
-- front wheel tilt
-- articulation

- Reduced effort, short-throw control levers
- Layout of control levers permits simultaneous use of several levers
- All control valves have in-built lock valves
- Line leak valves are incorporated into blade lift control valves
- If flow demand exceeds pump output, hydraulic valve will proportionately allocate flow to each work device circuit

Other features

- Steering circuit has priority over all other operating circuits
- High-pressure XT hose
- Hose connections use O-ring end-face seals
- Full-flow filter

Service Fill Capacities

	L
Fuel tank	284
Cooling system	40
Crankcase	27
Gearbox, differential and final drives	47
Tandem drive housing (each side)	65
Hydraulic system	80
Hydraulic tank	38
Circle drive housing	7
Front wheel spindle bearing housing	0.5

Steering

2-cylinder hydraulic steering, with steering wheel-controlled metering unit

Dimensions

Minimum turn radius (front wheel outer side)*	7.4
Steering range	left/right 50º
Articulation angle	left/right 20º

*Using front wheel steering and frame articulation

Features

§ If, while making maximum turn, one is struck unexpectedly, large steer block and steering safety valve can prevent damage

§ Left and right steering have same response

Gearbox

Direct drive, power-shift, eight forward gears

Maximum driving speed (at rated rpm, equipped 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	2.4	20.2

Features

- Electronic shift control
- Electronically-controlled overspeed protection
- Single-lever control over direction, speed, and parking brake action
- Inching pedal
- Reduced effort on control levers and inching pedal
- No need to remove gearbox when servicing inside of parking brake
- Diagnostic connectors for simplified fault diagnosis
- Resiliently mounted on vehicle frame

Frame

Flanged, box-section design

Dimensions	
Front frame	mm
Top plate and bottom plate	
Width	305
Thickness	25
Side plate	
Width	242
Thickness	12
Weight per unit length	
Front frame	kg/m
Minimum	165
Maximum	213
Section modulus	
Front frame	cm^3
Minimum	2,083
Maximum	4,785

Features

- Single-piece top and bottom plates extend from the front axle support beam to the articulation joint
- Rear frame has two box sections of steel welded so as to be integral with differential case

Front Axle

Rotating spindle design

Dimensions

Front axle	
Ground clearance	625 mm
Front wheel lean	18 º
Oscillation angle	32 º

Features

- allows use of large outboard bearings to increase the load capacity of the wheel assembly
- wheel spindle rotates within sealed components
- oil-bathed bearings

Tandem Drive Housing

Dimensions

		mm
Height		506
Width		201
Thickness of side walls		
Inside		16
Outside		18
Drive chain pitch		51
Axle spacing		1,522
Tandem drive housing oscillation angle		forward 15º
		reverse 25º

Brakes

Complies with the following standards: SAE J1473 OCT 90 and ISO 3450-1996

Moving vehicle brake features

- air-actuated, oil-bathed disk brakes, mounted in each spindle housing of the four wheels
- sealed, adjustment-free
- lubricated and cooled by tandem drive housing
- total braking area is 23,948 cm^2

Parking brake features

- multiple, oil-bathed disc
- mounted on output shaft of gearbox
- manually actuated
- spring-coupled, air pressure-released
- gearbox enters neutral when the parking brake is engaged
- total braking area is 1,916 cm^2

Emergency brake features

- left and right tandem drive boxes have independent circuits
- if one circuit fails, at least one-half of original braking capability will be retained
- after the engine and compressor have stopped, dual-chamber air cylinder has enough to actuate brakes five times
- after all braking capability is lost, the spring-actuated parking/emergency brake still can lock all types of wheels on any surface

Tires and Rims

Tires	Rims	Type
14.00-24	9 in x 24 in	SP
17.5-25	13 in x 25 in	SP

SP = single-piece rim

Note: Different manufacturers can provide many models of bias and radial tires, and in different sizes, strength indices, and industry types. The weight of additional equipment might cause the machine load to exceed the load-bearing capacity of a particular type of tire. Caterpillar recommends that all situations be carefully evaluated prior to selection of tire models.

Drawbar

Y-frame design, made from solid-steel beams

Dimensions

Drawbar frame		mm
Height		127
Thickness		76

Features

- Circle top is completely covered by yoke plate
- Circle plate is supported by six supporting plates
- All supporting plates can be adjusted vertically and horizontally
- 11 replaceable bronze alloy wear-resistant pieces between circle and drawbar
- Six replaceable bronze alloy-wear-resistant pieces between the circle and the six supporting plates

Circle

Single-piece, forged, roller-compacted ring

Dimensions

Circle		mm
Circle diameter		1,530
Moldboard beam thickness		30

Features

- 64 evenly distributed, flame-cut teeth
- teeth surfaces quenched on front 120º of gear ring
- top and bottom have raised wear-resistant surfaces
- circle is driven by a hydraulic motor
- circle can rotate 360º

Moldboard

Made from wear-resistant high-carbon steel

Dimensions

Moldboard		mm
Length		4,267
Height		610
Thickness		22
Arc radius		413
Throat clearance		120
Cutting edge		mm
Width		152
Thickness		16
End blade		mm
Width		152
Thickness		16

Features

- Moldboard mouth and moldboard angles undergo Caterpillar full quenching, curved DH-2 steel
- 16 mm diameter bolts
- Heat-treated lateral-sliding rails
- Bronze alloy wear inserts

Moldboard Range

Maximum range of moldboard positions

			mm
Circle centershift	Right		1,033
	Left		1,000
	Right		965
	Left		829
Maximum reach of blade ends outside of tires	Right		2,283
	Left		2,201
Maximum lift above ground			480
Maximum digging depth			715
Maximum side-scraping slope angle of moldboard		90º for both sides	
Moldboard earth-moving angle range		40º forward	
		5º backward	

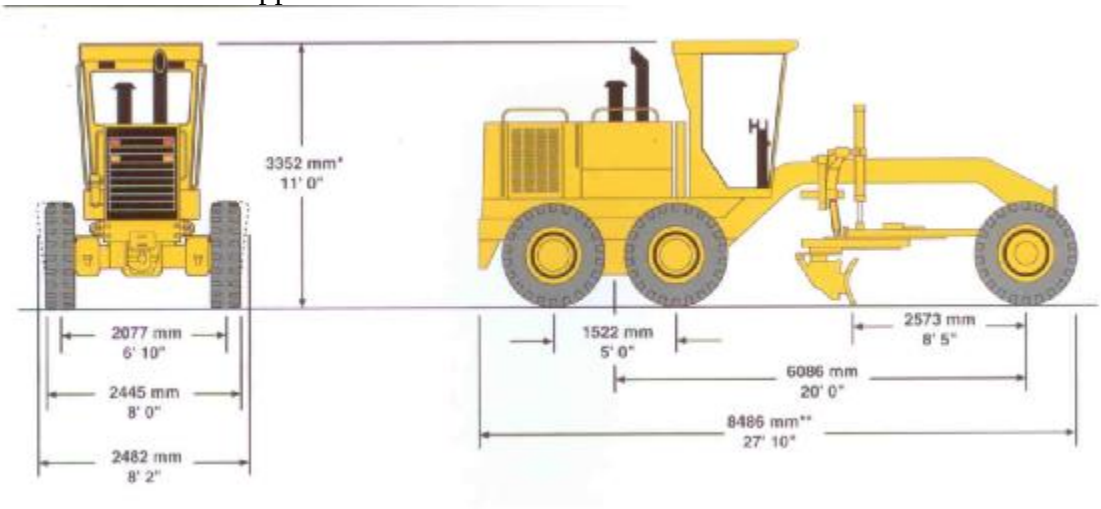
Features

§ can cut ditches at steep angles
§ can achieve very large earth-moving angle range
§ can cut 1.5 : 1 and 2 : 1 back slopes without having to stop front wheels on slope

Note: When the machine is in the crab position, another 940 mm can be added to the blade wall's maximum left and right lateral shifts.

Dimensions

All dimensions are approximate



Operating weight (approximate)

On front wheels	4,480 kg
On rear wheels	10,560 kg
Total weight of machine	15,040 kg

Dimensions and operating weight are based on standard machine configuration: 14.00-24 10PR (G-2) tires, full fuel tank, coolant, and lubricating oil; also includes driver.

* Add 253 mm for optional 17.5-25 tires.

** When using front pushplate, add 201 mm

Cabin Without ROPS

Cabin Features

- Adjustable control console
- Backlit switches
- Key-type engine start-stop switch
- Fuse box on steering control console
- Gauges on front instrument panel
  - -- Fuel gauge
  - -- Articulation indicator
  - -- Engine oil pressure gauge
  - -- Engine coolant temperature gauge
  - -- Two brake air pressure gauges
- Manual throttle
- Horn switch
- Hydraulic-powered steering
- Hydraulic work device control levers
  - -- Articulation
  - -- Centershift
  - -- Circle drive
  - -- Moldboard left side lift
  - -- Moldboard right side lift
  - -- Front wheel tilt
- Driving warning system
- Reduced-effort suspension pedals
  - -- Accelerator
  - -- Decelerator
  - -- Brakes, moving vehicle
  - -- Inching pedal
- Position set aside for storing lunch boxes
- Seat, vinyl cover, fixed position
- Time meter
- Tilt-adjustable steering wheel
- Front windshield and lower front windows all have wipers and washers
- Space and line ports set aside for installation of recorder
- Doors can be opened from ground

Optional Cabin Features

- Rear window with 10º tilt
- Optional front and rear defroster fans
- Optional heating/air conditioning system with adjustable vents and three-speed fan
- Optional drop-down front windshield
- Optional rear window washer and wipers
- Optional rear window sun-shield
- Optional sliding window
- Optional open-type front lower window

Standard Equipment

Standard and optional equipment can vary. For detail, please ask a Caterpillar dealer.

Electrical
Alternator, 35 amps, sealed
Maintenance-free battery, two, 750 CCA
Electrical system, 24-volt
Electronic horn
Brake lights and tail lights
Starting motor
A/C compatible harness

Operator Environment
Non-ROPS, high-canopy, sealed cab
Accelerator-decelerator
Adjustable control console
Gauges located in cab (including engine oil pressure, voltage, articulations, engine coolant temperature, and brake air pressure)
Hydraulic controls, side-mounted gearshift, scraper board inversion, load-sensitive (moldboard left-right lift, circle drive, centershift, front wheel tilt, and articulation)
Indicators (including centershift pin, low air pressure, parking brake, gearbox failure, and gearbox diagnosis)
Key-type start/stop switch
Hour meter
Hydraulic power steering
Vinyl-covered static seat
Seat belts (50 mm)
Tilt, adjustable steering wheel
Area for placing cooler/ lunch box
Manual throttle
Reflectors mounted on outside of vehicle

Drive Train
Dry, radial, sealed air filter, with service indicator light and automatic dust remover
Engine fans
Four-wheel air-actuated oil-disk brakes
Caterpillar 3306 engine, power-variable DIT diesel engine
Differential
Muffler
Sealed, disc, oil-cooled parking brake
Diesel filter, coarse
Manual pump
Serial drive gearbox, power-shift mode with 8 forward gears and 6 reverse gears, direct drive, with electronic shift control and overspeed protection

[right column:]

Other Standard Equipment
Protection against damage: including cap for hydraulic tank, cap for radiator service cover, and cap for fuel tank, locks on caps for engine and gearbox oil check/fill ports, and lockable battery box.
Circle drive slip clutch
Curved-surface DH-2 steel moldboards, 52 mm x 16 mm
Drawbar, 6 supporting brackets with replaceable nylon composite wear-resistant strips
Articulated vehicle frame with safety lock
284 liter fuel tank
7-hole moldboard link bar
Moldboard, 4,267 mm x 610 mm x 22 mm, with hydraulic sideshift and inversion
Tool box with lock, without tools
Engine and hydraulic system SOS sampling ports

Tires, Rims and Wheels
The basic price of the machine includes 14.00-24 10PR tires mounted on 9-in single-piece rims

Anti-freeze
Long-lasting coolant -35 ºC (-30 ºF)

Optional Equipment

Air conditioning, with heater and pressurizer
Alternator, 75 amps
Moldboard blade, 203 mm x 19 mm
Ether supplementary starter
Front and rear defroster fans
Heater equipment with pressurizer
Front scarifier configured with hydraulic system having additional 1 or more hydraulic valves
Lights mounted on front frame, directional lights and headlights
V-shaped , front-mounted scarifier
Adjustable vinyl seat
Tires, see “Tires and Rims” section, page
Backup alarm