

# 14M

## Motor Grader



### Cat® C11 ACERT™ VHP

#### Net Power (ISO 9249) at 1800 rpm

Base Power (1st gear)	193 kW	262 hp
VHP Range	193-204 kW	262-277 hp
VHP Plus Range	193-219 kW	262-298 hp

### Gross Vehicle Weight – Base

Total	21 380 kg
Front Axle	5720 kg
Rear Axle	15 660 kg
Moldboard Blade Width	4.3 m

# 14M Motor Grader

*The 14M delivers multiple technological breakthroughs to give you the best return on your investment.*

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## Operator Station

- ✓ A technologically advanced cab, featuring joystick controls, provides unmatched comfort and visibility. **pg. 4**

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## Steering and Implement Controls

- ✓ Two joysticks offer precise control and unparalleled ease of operation. This advanced technology makes the 14M the most operator-friendly motor grader in the world. **pg. 6**

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## Structures and Drawbar, Circle, Moldboard

- ✓ The 14M frame provides a solid working platform, and the DCM delivers service ease and precise blade control for maximum productivity. **pg. 8**

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## Integrated Electronic Solutions

- ✓ Full systems integration with advanced electronics including Cat® Messenger, AccuGrade™ blade control system and Cat ET, create a “Smart Machine” that optimizes performance and availability. **pg. 14**

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## Work Tools and Attachments

The Work Tools and optional attachments for the 14M expand machine versatility, utilization and performance. **pg. 15**

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## Safety

- ✓ Caterpillar® has been and continues to be proactive in developing machines that meet or exceed safety standards. **pg. 16**

*The 14M motor grader represents a revolution in operational efficiency, visibility, service ease and overall productivity, setting the new standard and building on the legacy of high quality you can trust.*

- ✓ *New Feature*



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### Power Train

- ✓ An electronically controlled power shift transmission assures smooth shifting and maximum power to the ground. A modular rear axle and hydraulic brakes simplify serviceability and reduce operating costs. **pg. 10**

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### Engine

- ✓ The Cat® C11 engine combines power management with ACERT™ Technology to deliver maximum power and efficiency in every gear while reducing the environmental impact. **pg. 12**

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### Hydraulics

- ✓ The electro-hydraulic load-sensing system provides the foundation for advanced machine controls, enabling superior controllability and precise and predictable hydraulic movements, with the reliability you expect from Caterpillar. **pg. 13**

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### Serviceability and Customer Support

- ✓ Fast component replacement and minimum downtime are possible with Caterpillar's exceptional parts availability and dealers' advanced rebuild and repair capabilities. **pg. 18**



## Operator Station

*The 14M features a revolutionary cab design that provides unmatched comfort, visibility and ease of use, making the operator more confident and productive.*



### **Advanced Joystick Controls.**

Two electro-hydraulic joysticks reduce hand and wrist movement as much as 78% compared to conventional lever controls for greatly enhanced operator efficiency. The intuitive pattern is easy to learn and provides the precise implement control you expect from Caterpillar.

### **Auxiliary Pod and Ripper Control.**

The optional ripper control and auxiliary control pod are ergonomically positioned to allow simple, comfortable operation for the multiple hydraulic options.

**Visibility.** The 14M boasts excellent visibility to the work area, made possible with angled cab doors, a tapered engine enclosure and a patented sloped rear window.

**Cat Comfort Series Seat.** The Cat Comfort Series suspension seat has an ergonomic high-back design, with extra thick contoured cushions and infinitely adjustable lumbar support that evenly distributes the operator's weight. Multiple seat controls and armrests are easy to adjust for optimal support and comfort all day. The optional air suspension seat enhances ride quality for additional comfort.

### **In-Dash Instrument Cluster.**

The instrument panel, with easy-to-read, high-visibility gauges and warning lamps, keeps the operator aware of critical system information.

**Cat Messenger.** Cat Messenger provides real-time machine performance and diagnostic data. You can quickly view critical performance and operating information, in multiple languages, helping to maximize the life and productivity of the machine.



**Controls and Switches.** Reliable, long-life rocker switches are located on the right side cab post and front instrument cluster, within easy reach for the operator.

**Comfort and Convenience.** Caterpillar has built the most comfortable cab in the industry by replacing the control levers and steering wheel with two joystick controls, and lengthening the cab to give more leg room. Multiple adjustment capabilities for the arm rest, wrist rests and joystick pods help keep the operator comfortable throughout a long shift.



**Optional HVAC.** The optional heating, ventilation and air conditioning system uses intelligent vent placement for consistent climate control and clear windows for every condition. The high-capacity system dehumidifies air and pressurizes the cab, circulating fresh air and sealing out dust. An easily accessible fresh air filter is located outside the cab at ground level for quick replacement or cleaning.

**Optional HVAC Precleaner.** Increases the service interval of the HVAC fresh air filter by up to ten times.

**Low Interior Sound and Vibration Levels.** Isolation mounts for the cab, engine and transmission, in addition to the relocation of the hydraulic pump and valves, provide significant sound and vibration reductions. The low vibration levels and quiet interior (less than 70 dB(A)) provide a comfortable work environment.

**Additional Cab Features.** Additional cab features include cup holder, lighter and ashtray, coat hook, storage area, night time light, power port and heater. Optional rearview camera, 25 amp power converter and satellite radio are also available.

## Steering and Implement Controls

*The 14M sets the new standard for motor grader operational efficiency.*



**Ease of Operation.** The revolutionary joystick controls and exceptional visibility make the 14M easier to operate without sacrificing control. The intuitive joystick control pattern allows both new and experienced operators to become productive quickly. Logical grouping of hydraulic functions in the joysticks allow any operator to easily control several functions at the same time. This allows the operator to be more productive and remain comfortable throughout the work shift.

**Intuitive Steering Control.** The 14M introduces a breakthrough in joystick steering control. This technology creates a direct relationship between the lean angle of the joystick and the turning angle of the steer tires. A brake tensioning system holds the joystick in position until the operator moves it. In addition, the steering control automatically reduces steering sensitivity at higher ground speeds for comfortable and predictable control.

**Electronic Throttle Control.** Electronic Throttle Control (ETC) provides the operator with easy, precise, and consistent throttle operation. An automatic and manual mode on a single switch offers flexibility for different applications and operator preferences.



**Left Joystick Functions.** The left joystick primarily controls the machine direction and speed.

- 1 Steering: Lean joystick left and right
- 2 Articulation: Twist joystick left and right
- 3 Articulation Return to Center: Yellow thumb button
- 4 Wheel Lean: Two black thumb buttons
- 5 Direction: Index trigger shifts transmission to forward, neutral or reverse
- 6 Gear Selection: Two yellow thumb buttons upshift and downshift
- 7 Left moldboard lift cylinder:  
Push joystick to lower, pull joystick to raise  
Left moldboard lift cylinder float:  
Pushing joystick through detent engages float

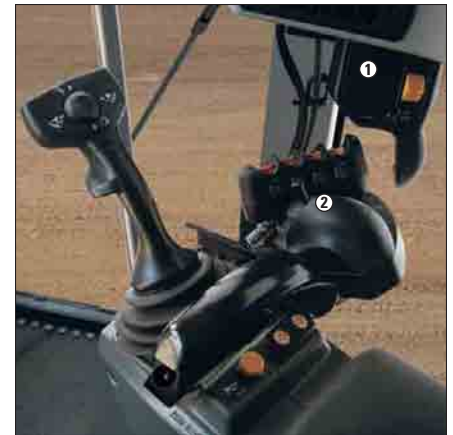
**Articulation Return-to-Center.**

This exclusive feature automatically returns the machine to a straight frame position from any articulation angle with the touch of a single button. Return-to-Center helps improve productivity and safety by allowing the operator to focus on controlling the moldboard.



**Right Joystick Functions.** The right joystick primarily controls the Drawbar, Circle and Moldboard functions.

- 1 Right moldboard lift cylinder:  
Push joystick to lower, pull joystick to raise  
Right moldboard lift cylinder float:  
Pushing joystick through detent engages float
- 2 Moldboard slide: Lean joystick left and right
- 3 Circle turn: Twist joystick left and right
- 4 Moldboard tip: Thumb switch fore and aft
- 5 Drawbar center shift: Thumb switch left and right
- 6 Electronic Throttle Control: Trigger switch is resume and decrement
- 7 Differential Lock/Unlock: Yellow button



**1 Ripper Control Pod.** Infinitely variable roller switches control the rear ripper and/or front lift group (when equipped), for easy and comfortable control.

**2 Programmable Auxiliary Hydraulic Pod.** Four fingertip controls and a mini joystick maximize hydraulic control flexibility, accommodating up to six hydraulic circuits. Individual functions are easily programmable through Cat ET to meet the configuration you need. The optional auxiliary hydraulic pod is provided in addition to the ripper control pod when the machine is configured with three or more auxiliary functions.

## Structures and Drawbar, Circle, Moldboard

*Durable structures with fast and simple DCM adjustments deliver precise material control while lowering operating costs.*



**Front Frame Structure.** The 14M front frame is a formed structural carbon steel tube. Advanced fabrication technology significantly reduces the number of weld joints, which more evenly distributes stress loads. The result is a robust machine that delivers the durability you expect from Caterpillar.

**Rear Frame Structure.** The box-sectioned hitch design and cast axle mounting help resist torsion loads and ensure structural durability. The integrated bumper ties the rear frame together as a single, solid unit, so the frame can withstand heavy-duty applications such as ripping and winging snow.

**Articulation Hitch.** A large tapered roller bearing at the lower pivot carries loads evenly and smoothly. This joint is sealed to prevent contamination in this critical area.

A mechanical locking pin prevents frame articulation to help ensure safety when servicing or transporting the machine.

**Circle Construction.** Our one-piece forged steel circle is built to stand up to high stress loads and provide structural durability. The front 240° of circle teeth are hardened to reduce wear and ensure component reliability.

**Drawbar Construction.** The A-frame drawbar features a tubular design for high strength and optimum durability.

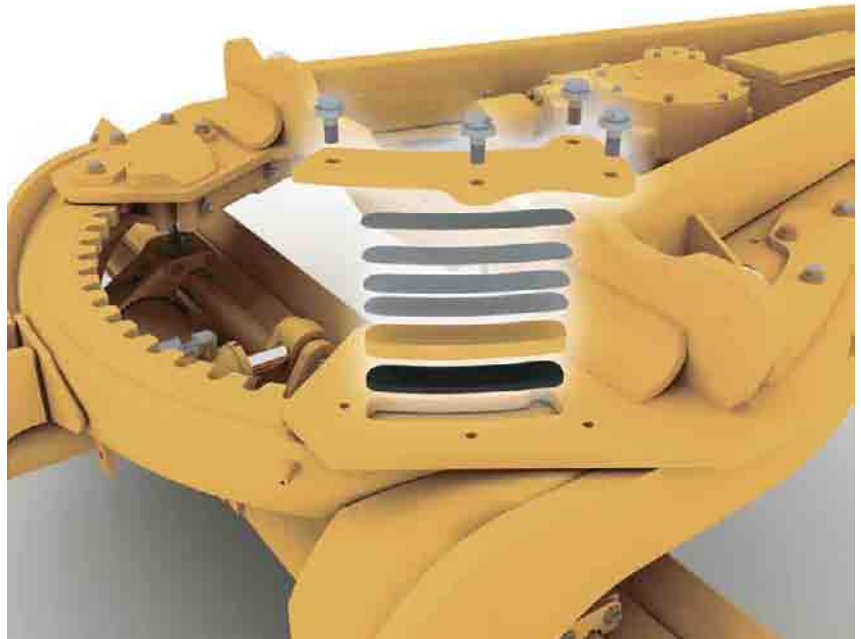
**Aggressive Blade Angle.** With a long wheelbase the operator can obtain aggressive moldboard angles, so material rolls more freely along the length of the blade. This is particularly helpful when handling very dry materials or cohesive soils. Better material control gets the job done faster, requires less power and saves fuel.



**Top-Adjust Drawbar Wear Strips.**

The patented top-adjust wear strips dramatically reduce drawbar/circle adjustment time. By removing the access plates on top of the drawbar, shims and wear strips can easily be added or replaced. This feature reduces service downtime and lowers overall machine operating costs.

**Replaceable Wear Inserts.** Tough, durable nylon composite wear inserts reduce rotational friction for maximum circle torque and longer component life. They are located between the drawbar and circle, and between the support shoes and circle. High load-resistant brass wearstrips are placed between the blade mounting group and moldboard. This sacrificial wear system can be replaced easily and helps keep components tight for fine grading.

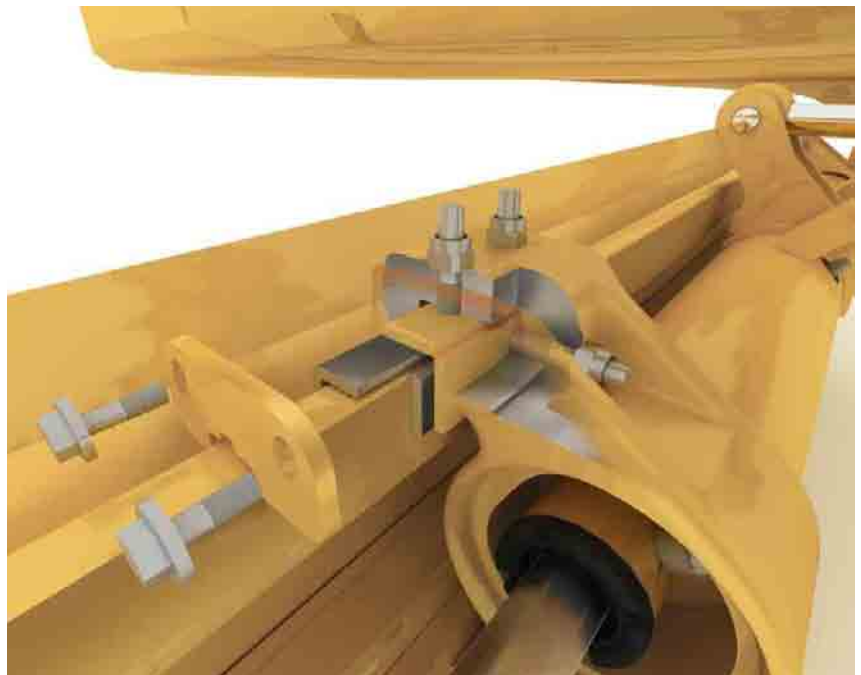


Top-adjust drawbar wear strips

**Moldboard.** The optimal curvature and large throat clearance help move material quickly and efficiently. Heat-treated moldboard rails, hardened cutting edges and end bits, and large diameter bolts assure reliability and longer service life. The moldboard side shift cylinder is positioned on the left side to eliminate snow wing interference.

**Moldboard Positioning.** The blade link bar design extends the possibilities for moldboard positioning, most beneficial in mid-range bank sloping and in ditch cutting and cleaning.

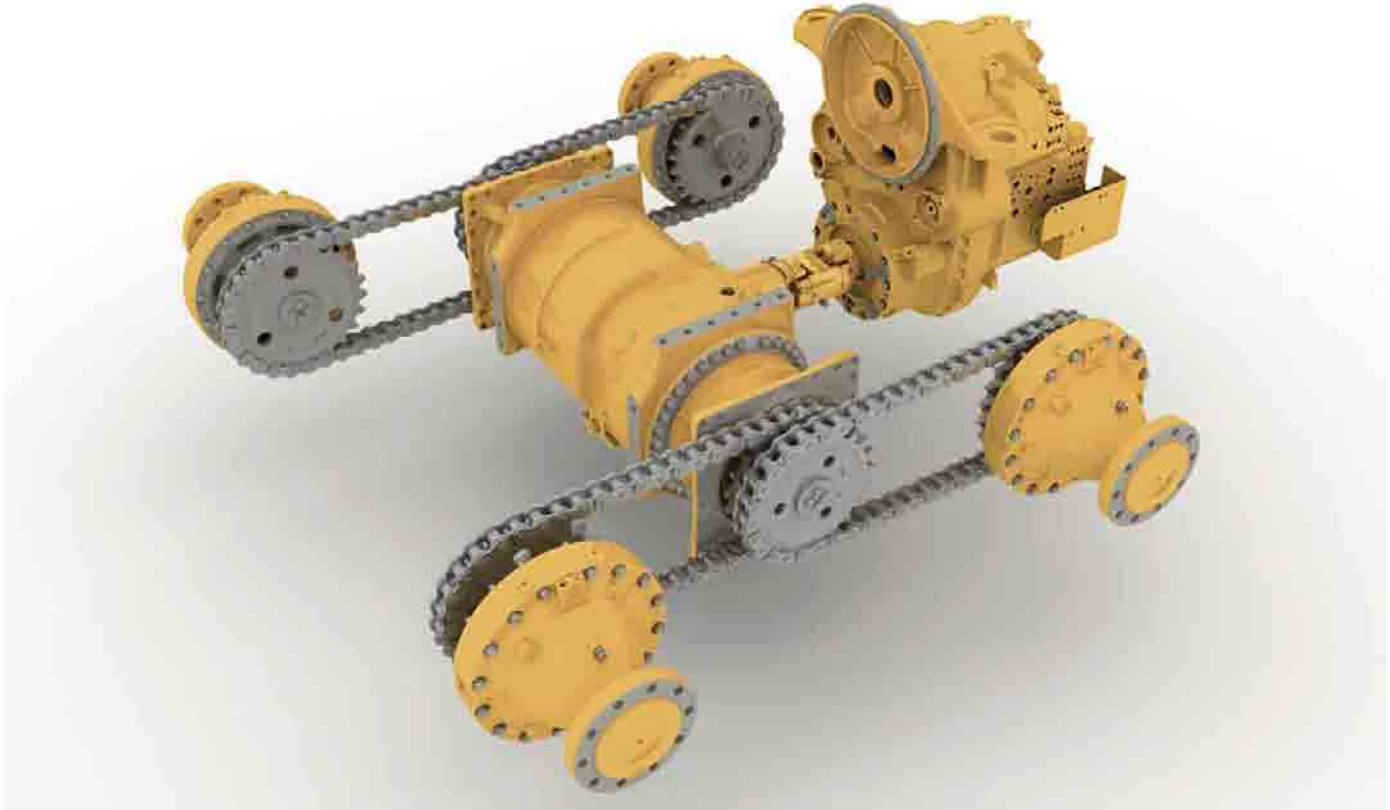
**Shimless Moldboard Retention System.** The unique shimless moldboard retention system reduces the potential for blade chatter. Vertical and horizontal adjusting screws keep the moldboard's wear strips aligned for precise blade control and dramatic reductions in service time.



Shimless moldboard retention system with adjusting screws

## Power Train

*Integrated, electronically controlled systems, deliver smooth reliable performance with reduced operating costs.*



**Smooth Shifting Transmission.** The 14M combines several key innovations to ensure smooth, powerful shifts throughout the gear range.

**Electronically Controlled Shifting.** The full Electronic Clutch Pressure Control (ECPC) system optimizes inching modulation and smooths shifting between all gears and directional changes. This provides outstanding control and also extends the life of the transmission by reducing stress on the gears.

**Load Compensation.** This standard feature ensures consistent shift quality regardless of blade or machine load.

**Controlled Throttle Shifting.** This standard feature helps to smooth directional and gear changes without use of the inching pedal.

**Engine Over-Speed Protection.** Helps protect the transmission and extend component life by preventing downshifting until a safe travel speed has been established.

**Power Shift Countershaft Transmission.** Designed and manufactured specifically for the 14M motor grader, the direct drive countershaft transmission is matched with the powerful Cat C11 engine to maximize power to the ground.

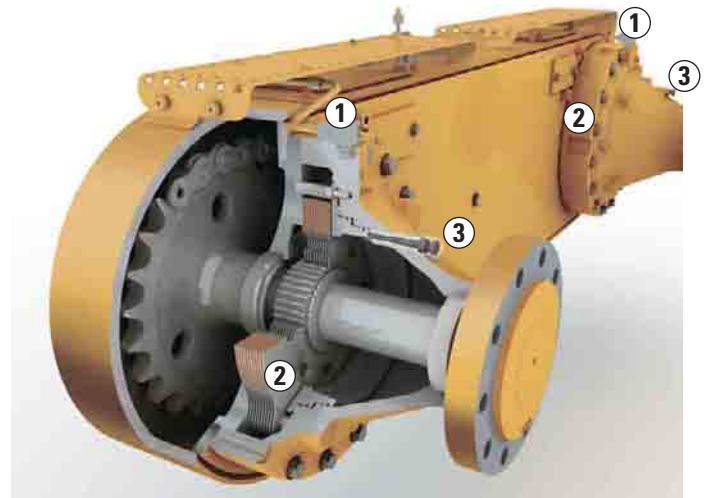
**Modular Rear Axle.** The 14M incorporates a bolt-on modular rear axle design, which offers easy access to differential components, improves serviceability and contamination control, and lowers maintenance time and operating costs. The result is a rugged machine you can rely on for years to come.

**Inching Pedal.** Allows precise control of machine movements in any gear with low pedal effort and excellent modulation, critical in close-quarter work or finish grading.

**Hydraulic Brakes.** The oil bathed, multi-disc service brakes are hydraulically actuated (1), providing smooth predictable braking and lower operating costs. With brakes located at each tandem wheel, the 14M offers the largest total brake surface area in the industry (2), delivering dependable stopping power and longer brake life.

**Brake Serviceability and Reliability.** An easily accessible brake wear indicator/compensator system (3) maintains consistent brake performance and indicates brake wear without disassembly. This system cuts service time and extends brake service life.

**Parking Brake.** The spring-applied, hydraulically released multi-disc parking brake can be easily serviced without transmission removal to reduce operating cost. A sealed, oil-cooled design extends component life and reduces the need for service.

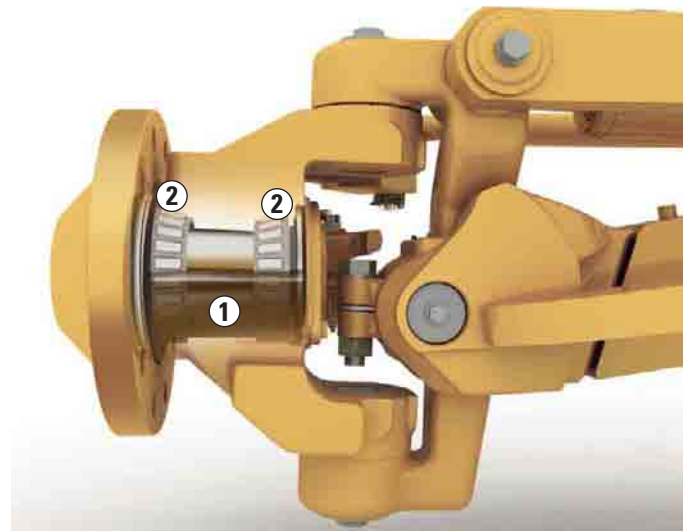


Brake design

**Front Axle.** The Caterpillar® sealed spindle keeps the bearings free from contaminants and lubricated in a light-weight oil (1). This durable, low-maintenance design reduces your owning and operating costs. Two double tapered roller bearings (2) support the wheel spindle. The Cat “Live Spindle” design places the larger tapered roller bearing outboard where the load is greater, extending bearing life.

**Gear Selection.** Eight forward and six reverse gears give the operator a wide operating range. The specifically designed range of gears ensures maximum productivity in all earthmoving applications.

**Programmable Autoshift.** The operator can easily customize various shift parameters through Cat Messenger to match the specific application requirement. This feature automatically shifts the transmission at optimal points so the operator can focus on the work, improving safety, productivity and ease of operation.



Front axle

## Engine

*The 14M combines power management with ACERT™ Technology to deliver maximum power and efficiency while reducing the environmental impact.*



**ACERT™ Technology.** ACERT Technology allows Cat engines to supply more power per unit of displacement without causing premature wear. This breakthrough technology reduces emissions during the combustion process by using advanced technology in the air and fuel systems, in conjunction with integrated electronics. ACERT Technology enhances overall engine performance while dramatically reducing exhaust emissions.

**Fuel Delivery.** The C11 engine with ACERT Technology uses multiple injection fuel delivery to precisely shape the combustion cycle. Several small ignitions lower combustion chamber temperatures, generates fewer emissions and optimizes fuel combustion. Bottom line: more work output for your fuel cost.



**Power Management.** The 14M Power Management System automatically delivers an additional five horsepower in each forward gear 1st through 4th, and each reverse gear 1st through 3rd. This standard feature optimizes rimpull for all gears by balancing traction, speed and horsepower while conserving fuel. The system limits horsepower in lower gears, which helps reduce wheel slip where traction is limited. With the Variable Horsepower Plus (VHP Plus) option, an additional five-horsepower is delivered in each forward gear 5th through 8th for more power at higher speeds.

**Performance.** The Cat C11 engine meets specific performance requirements for 14M applications. Its superior torque and lugging capability can pull through sudden, short-term increases in loads, maintaining consistent, desirable grading speeds to get the work done faster without downshifting.

**Hydraulic Demand Fan.** The hydraulic demand fan automatically adjusts cooling fan speed according to engine cooling requirements. This system reduces demands on the engine, putting more horsepower to the ground and improving fuel efficiency.

**Exhaust Emissions Compliant.** The Cat C11 with ACERT Technology meets or exceeds all and European Union Stage IIIA emissions control standards.

## Hydraulics

*The 14M electro-hydraulics enable advanced machine controls with precise and predictable movements.*



Precise blade control

### **Advanced Electro-Hydraulic System.**

The 14M incorporates a state-of-the-art electro-hydraulic system. This technology is the foundation for revolutionary changes of the machine and implement controls. Advanced joystick controls provide unmatched controllability with precise, predictable hydraulic movements and the reliability you expect from Caterpillar.

**Blade Float.** Blade float is built into the blade lift control valves and is optional for some auxiliary hydraulic functions. The blade float feature 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.

**Cat® XT™ Hose.** Caterpillar hose technology allows high pressures for maximum power and reduced downtime. Intelligent routing minimizes exposure to damage. Hose clips prevent hose rubbing and excessive vibration for lower owning and operating costs.

**Independent Oil Supply.** Large, separate hydraulic oil supply prevents cross-contamination and provides proper oil cooling, which reduces heat build-up and extends component life.

**Load Sensing Hydraulics (PPPC).** The time proven load-sensing system and the advanced Proportional Priority Pressure-Compensating (PPPC, or “triple-PC”) electro-hydraulic valves on the 14M are designed to provide superior implement control and enhanced machine performance in all applications. Continuous matching of hydraulic flow and pressure to power demands creates less heat and reduces power consumption.



Blade lift cylinder:  
red = 40 liter/min, blue = 24 liter/min

**Balanced Flow.** Hydraulic flow is proportioned to ensure all implements operate simultaneously with little effect on the engine or implement speeds. If demand exceeds pump capacity, all cylinder velocities are reduced by the same ratio. The result is improved productivity in all applications.

**Consistent and Predictable Movement.** PPPC valves have different flow rates for the head and rod ends of the cylinder. This ensures consistent extension and retraction speeds for each cylinder, and gives the operator a consistent and predictable response every time an implement control is moved.

## Integrated Electronic Solutions

*Full systems integration optimizes machine performance and availability.*



14M with AccuGrade™ System

**“Smart Machine”.** The 14M fully integrates all core systems creating a “Smart Machine.” The Cat data link shares key data among systems, optimizing machine performance while preventing potential machine damage.

**Electronic Technician (Cat ET).** Cat ET is a two-way communication tool that gives service technicians easy access to stored diagnostic data and lets them configure the machine parameters through the Cat Data Link. This integrated feature reduces machine downtime and lowers operating costs.

**Diagnostics.** Cat Messenger, combined with full systems integration, enhances the diagnostic capability of the 14M. Machine system errors are displayed in text as well as with fault codes, allowing service technicians and operators to quickly analyze critical data, increasing machine availability.

### **Machine Security System (MSS).**

The optional MSS uses electronically coded keys to limit usage by specific individuals or times of the day. MSS deters theft, vandalism and unauthorized use.

**Product Link.** The optional Product Link system streamlines diagnostic efforts, and reduces downtime, maintenance scheduling and costs by providing a communication flow of vital machine data and location. Product Link gives automatic updates on machine parameters such as machine hours, machine condition, location, fault codes and alarms.

**Low Battery Elevated Idle.** After the 14M is at low idle for an extended period and low system voltage is detected, idle speed is raised. This ensures adequate system voltage and improves battery reliability.

**Automatic Engine Deration.** Protects the C11 engine by automatically lowering engine torque output and alerting the operator if critical conditions are detected.



**Cat Messenger.** Standard on the 14M, Cat Messenger provides real-time machine performance and diagnostic data with an easy-to-use interface. Messenger monitors all system data and alerts the operator of any faults through a digital text display that can be shown in multiple languages.

### **Optional Automatic Blade Control.**

The Caterpillar AccuGrade System automatically controls the blade, improving operator efficiency and productivity. AccuGrade™ technology reduces the need for traditional survey stakes or grade checkers, so you can reach grade faster and in fewer passes than ever before.

### **AccuGrade Attachment Ready Option.**

The AccuGrade System is fully integrated into the machine design, making installation quick and easy. Integral hydraulic and electrical components are standard on the 14M (Grade Control Ready). The AccuGrade Attachment Ready Option provides additional mounting brackets, cab controls and electrical harnesses for easy installation of the Cross Slope, Sonic, Laser, GPS or ATS electronics kits.

## Work Tools and Attachments

*The Work Tools and optional attachments for the 14M expand machine versatility, utilization and performance.*



**Moldboard Options.** A 4.3 m moldboard is standard on the 14M, with an optional 4.9 m moldboard available from the factory. Left and right side moldboard extensions are also available, increasing versatility.

**Ground Engaging Tools (GET).** A wide variety of Caterpillar GET is available on the 14M, including cutting edges, graderbits and end bits, all designed for maximum service life and productivity.

**Front Mounted Groups.** A front mounted push plate/counterweight can be ordered on the 14M. The Caterpillar Work Tools front lift group can be combined with a front dozer blade or front scarifier for added versatility.

**Ripper.** The 14M optional ripper is made to penetrate tough material fast and rip thoroughly for easier material movement with the moldboard. The ripper includes three shanks with the ability to add four more if needed.

### **Automatic Lubrication System.**

The optional Lincoln Automatic Lubrication System maintains the proper grease lubrication on working surfaces, significantly extending component life. Contaminants are purged from open pins and bushings to help prevent dirt from damaging critical components.

**Air Compressor.** An optional air compressor is available, giving you a convenient on-board air system to blow debris off the machine and operate power tools.

**Fast-Fill Fuel Option.** The 14M offers a Fast-Fill option allowing customers to refuel in less than two minutes for fast, accurate filling and reduced downtime.

## Safety

*Safety is an integral part of all machine and system designs.*



**Operator Presence System.** The Operator Presence System keeps the parking brake engaged and hydraulic implements disabled until the operator is seated and the machine is ready for safe operation.

**Secondary Steering System.** The standard secondary steering system automatically engages an electric hydraulic pump in case of a drop in steering pressure, allowing the operator to steer the machine to a stop.

**Speed Sensitive Steering.** The steering software automatically provides an infinitely variable ratio between the joystick and the steer tires, resulting in less sensitive steering as the ground speed increases.

**Low Sound and Vibration Levels.** Isolation mounts for the cab, engine and transmission maximize operator comfort and help to minimize sound and vibration. These modifications provide a quieter and more comfortable working environment, optimizing operator focus.

**Hydraulic Lockout.** A simple switch located in the cab disables all implement functions while still providing machine steering control. This safety feature is especially useful while the machine is roading.

**Brake Systems.** Brakes are located at each tandem wheel to eliminate braking loads on the power train. In addition, the brake systems are redundant and utilize accumulators to enable stopping in case of machine failure, further increasing operational safety.

**Drop-Down Rear Lights.** Optional drop-down lights fold out from the rear of the machine. This creates a wider, lower profile to be better aligned with passenger cars.

**Rearview Camera.** Visibility is further enhanced with an optional Work Area Vision System (WAVS) through a 178 mm LCD color monitor in the cab. Developed specifically for rugged applications, this durable camera improves productivity and increases operator awareness of surroundings.

**High Intensity Discharge (HID) Lighting.** Optional HID lights can replace the standard halogen lamps. The powerful HID lights are four times brighter, improving night time visibility and safety.





**Steel Tandem Walkways.** Perforated raised steel walkways cover the tandems. This provides a sturdy platform for standing and walking, and additional protection for the brake lines.

**ROPS/FOPS Cab.** Isolation mounted to the frame to reduce vibration and sound, the integral ROPS/FOPS structure meets ISO and SAE criteria for operator protection.

**Circle Drive Slip Clutch.** This standard feature protects the drawbar, circle and moldboard from shock loads when the blade encounters an immovable object. It also reduces the possibility of abrupt directional changes in poor traction conditions, protecting the machine, operator and surroundings.

**Blade Lift Accumulators.** This optional feature uses accumulators to help absorb impact loads to the moldboard by allowing vertical blade travel. Blade lift accumulators reduce unnecessary wear and help to avoid unintended machine movement for increased operator safety.

**Dual Exits.** The operator has dual exits from the machine allowing for emergency egress should one side become obstructed. If the machine is not equipped with the optional right hand door, a hammer is mounted in the cab for emergency exit.

**Engine Shutoff Switch.** An engine shutoff switch is located at ground level on the left rear of the machine, allowing anyone nearby to shut it down in case of an emergency.

**Rear Fenders.** To help reduce objects flying from the tires, as well as build-up of mud, snow and debris, optional rear fenders can be added.

**Additional Safety Features.** The 14M has many additional standard safety features, including laminated glass on the front windows and doors, back-up lights and sounding alarm, black glare-reducing paint on the front frame and engine enclosure, lockable doors, and conveniently located grab rails for added safety.



**Electrical Disconnect Switch.** A battery disconnect switch, located inside the left rear enclosure, provides ground-level lockout of the electrical system to prevent inadvertent starting of the machine.

## Serviceability and Customer Support

*Simplified service, world-class product support and Cat® dealer-trained experts keep your fleet up and running, maximizing your equipment investment.*



**Grouped Service Points.** Operators are more likely to perform daily inspections when they can do it with ease. The 14M groups daily service points in the left side service center to help ensure proper maintenance and inspection routines.

### **Extended Service Intervals.**

The 14M extended service intervals, such as 500-hour engine oil changes and 4000-hour hydraulic oil changes, reduce machine service time and increase availability.

**Ecology Drains.** Conveniently located ecology drains shorten service times and help keep the environment safe by preventing spills.

**Diagnostics and Monitoring.** The 14M integrates Cat Messenger, Cat Electronic Technician and S•O•S<sup>SM</sup> Sampling ports for easy monitoring and fast troubleshooting, keeping your machine up and running.

**Machine Selection.** Make detailed comparisons of the machines under consideration before purchase. Cat dealers help you size the right machine for your operations and can estimate component life, preventive maintenance cost, and the true cost of production.



**Purchase.** Consider the financing options available, as well as day-to-day operating costs. Look at dealer services that can be included in the cost of the machine to yield lower equipment owning and operating costs over the long run.

**Maintenance Services.** Repair option programs guarantee the cost of repairs up front. Diagnostics programs such as Scheduled Oil Sampling, S•O•S<sup>SM</sup> analysis, Coolant Sampling and Technical Analysis help avoid unscheduled repairs.

**Product Support.** You will find nearly all parts at our dealer parts counter. Cat dealers use a world-wide computer network to track in-stock parts to minimize machine down time. Save money with genuine Cat Reman parts. You receive the same warranty and reliability as new products at substantial cost savings.

## Engine

Cat® C11 ACERT™ VHP

### Net Power

Base Power (1st gear)	193 kW/259 hp
VHP range	193-204 kW 259-274 hp
VHP Plus range	193-219 kW 259-294 hp

Displacement	11.1 liter
Bore	130 mm
Stroke	140 mm
Torque rise	26%
Max torque	1422 Nm
Number of cylinders	6
Standard Fan speed	
maximum	1450 rpm
minimum	550 rpm
Standard Ambient Capability	43° C
Hi Ambient Fan speed	
maximum	1650 rpm
minimum	550 rpm
Hi Ambient Capability	50° C

- All engine horsepower (hp) are metric including front page.
- Net power is tested per ISO 9249 and 80/1269/EEC.
- VHP Plus is an optional attachment.
- Net power advertised is the power available at rated speed of 1800 rpm, measured at the flywheel when engine is equipped with fan running at minimum speed, air cleaner, muffler and alternator.
- No engine derating required up to 4000 m

## Hydraulic System

Circuit type	
Electro-hydraulic load sensing, closed center	
Pump type	Axial piston
Pump output	280 L/min
Maximum system pressure	241 bar
Standby Pressure	31 bar

- Pump output measured at 2150 rpm

## Net Power

	VHP kW/hp	PlusVHP kW/hp
Forward		
1st	193/262	193/262
2nd	197/268	197/268
3rd	201/273	201/273
4th	204/277	204/277
5th	204/277	208/283
6th	204/277	212/288
7th	204/277	216/294
8th	204/277	219/298
Reverse		
1st	193/262	193/262
2nd	197/268	197/268
3rd-6th	201/273	201/273

## Operating Specifications

Top Speed	km/h
Forward	49.8
Reverse	39.4
Turning radius, outside front tires	7.9 m
Steering range	
left/right	47.5°
Articulation angle	
left/right	20°
Forward	km/h
1st	4.3
2nd	5.9
3rd	8.6
4th	11.8
5th	18.3
6th	24.8
7th	34.2
8th	49.8
Reverse	
1st	3.4
2nd	6.4
3rd	9.3
4th	14.5
5th	27.1
6th	39.4

## Power Train

Gears	
Forward	8
Reverse	6
Transmission	
Direct drive, power shift, Countershaft	
Brakes	
Service	
Oil-actuated, oil-disc	
Surface area	34 500 cm <sup>2</sup>
Parking	
Spring applied, hydraulically released	
Secondary	
Oil-actuated, oil-disc	

## Moldboard

Moldboard	
width	4.3 m
height	688 mm
thickness	25 mm
Arc radius	413 mm
Throat clearance	117 mm
Cutting edge	
width	203 mm
thickness	16 mm
End Bit	
width	152 mm
thickness	16 mm
Blade Pull	
base GVW	14 093 kg
max GVW	17 997 kg
Down Pressure	
base GVW	10 094 kg
max GVW	17 539 kg

- Blade pull calculated at 0.9 traction coefficient, which is equal to ideal no-slip conditions, and Gross Machine Weight.

## Weights

	kg
Gross Vehicle Weight – base	
total	21 379
front axle	5720
rear axle	15 659
Gross Vehicle Weight – max	
total	29 936
front axle	9939
rear axle	19 997

- Base operating weight calculated on standard machine configuration with 16.00-24 16 PR (G-2) tires, full fuel tank, coolant, lubricants and operator.

## Tandems

Height	616 mm
Width	214 mm
Sidewall thickness	
inner	20 mm
outer	20 mm
Drive chain pitch	57 mm
Wheel axle spacing	1656 mm
Tandem oscillation	
front up	15°
front down	25°

## ROPS/FOPS

- ROPS (Rollover Protective Structure) offered by Caterpillar for the machine meets ROPS criteria ISO 3471-1994.
- FOPS (Falling Object Protective Structure) meets ISO 3449-1992 Level II.

## Frame

Circle	
diameter	1822 mm
blade beam thickness	50 mm
Drawbar	
height	203 mm
width	76 mm
Front frame structure	
height	406 mm
width	305 mm
thickness	16 mm
Front axle	
height to center	640 mm
wheel lean, left/right	17.1°
total oscillation per side	32.0°

## Ripper

Ripping depth, maximum	401 mm
Ripper shank holders	7
Shank holder spacing	
min	373 mm
max	472 mm
Penetration force	10 676 kg
Pryout force	11 804 kg
Machine length increase, beam raised	
	1130 mm

## Steering

Steering meets the standard ISO 5010:1992

## Brakes

Brakes meet the standard ISO 3450:1996.

## Blade Range

Circle centershift	
right	520 mm
left	650 mm
Moldboard sideshift	
right	790 mm
left	740 mm
Maximum blade position angle	65°
Blade tip range	
forward	40°
backward	5°
Maximum shoulder reach outside of tires	
right	2279 mm
left	2169 mm
Maximum lift above ground	419 mm
Maximum depth of cut	438 mm

## Service Refill

	liters
Fuel Capacity	492
Cooling system	46.5
Hydraulic system – tank	60
Engine Oil	30
Trans./Diff./Final Drives	89
Tandem housing (each)	96.5
Front wheel spindle bearing housing	
	0.9
Circle drive housing	6

## Sound Levels

### Operator Sound

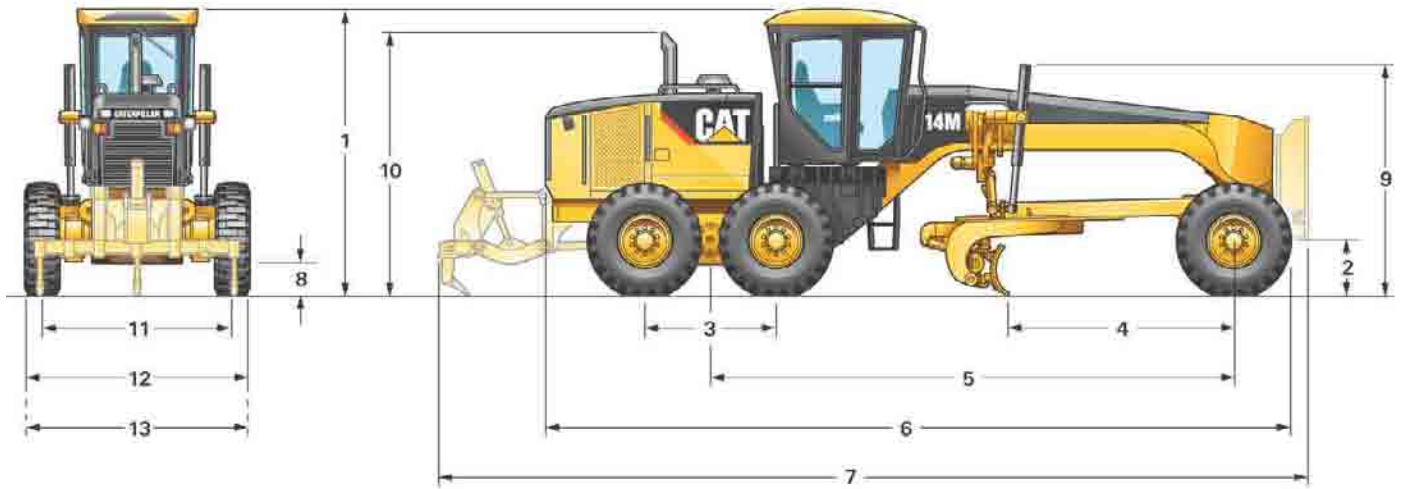
The operator sound level measured according to the procedures specified in ISO 6394:1998 is 70 dB(A), for cab offered by Caterpillar, when properly installed and maintained and tested with the doors and windows closed.

### Exterior Sound

The labeled spectator sound power level measured according to the test procedures and conditions specified in 2000/14/EC is 110 dB(A).

## Dimensions

All dimensions are approximate, based on standard machine configuration with 16.00-24 16 PR (G-2) tires.



	mm
Height	
<b>1</b> Top of cab	3535
<b>2</b> Front axle center	640
Length	
<b>3</b> Between tandem axles	1656
<b>4</b> Front axle to moldboard	2842
<b>5</b> Front axle to mid tandem	6559
<b>6</b> Front tire to rear of machine	9412
<b>7</b> Counterweight to ripper	10 896

	mm
<b>8</b> Ground clearance at rear axle	383
<b>9</b> Height to top of cylinders	2855
<b>10</b> Height to exhaust stack	3256
Width	
<b>11</b> Tire center lines	2361
<b>12</b> Outside rear tires	2791
<b>13</b> Outside front tires	2791

# Standard Equipment

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

## Operator Station

Articulation, automatic Return-to-Center  
Armrest, adjustable  
Ashtray and lighter  
Cat Messenger, operator information system  
Centershift pin indicator  
Coat hook  
Cup holder  
Display, digital speed and gear  
Door, driver access (left side) with wiper  
Gauge cluster – articulation, engine coolant temp, engine RPM, fuel, system voltage  
Gauge, machine level  
Heater, cab  
Hour meter, digital  
Joystick hydraulic controls implements, steering, transmission  
Lights, night time cab  
Mirror, inside rearview, wide angle  
Power port, 12V  
ROPS cab, sound suppressed  
Seat, cloth-covered, comfort suspension  
Seat belt, retractable 75 mm  
Storage area for cooler/lunchbox  
Throttle control, electronic  
Windows, laminated glass: fixed front with intermittent wiper right side with dual wipers, (door optional)  
Windows, side and rear (3)  
Wrist rest, adjustable

## Power Train

Air cleaner, dual stage, dry type, automatic dust ejector, service indicator through Cat Messenger  
Air-to-air after cooler (ATAAC)  
Belt, serpentine, automatic tensioner  
Brakes, four-wheel hydraulic  
Differential, lock/unlock  
Drain, engine oil  
Electronic over speed protection  
Engine, Cat C11 with ACERT™ Technology  
Ether starting aid  
Fuel-water separator  
Hydraulic demand fan  
Muffler, under hood  
Parking brake – multi-disc, sealed, oil-cooled  
Priming pump, fuel  
Rear axle, modular  
Sediment drain, fuel tank  
Transmission, 8F/6R, power shift, direct drive  
VHP (Variable Horsepower)

## Electrical

Alarm, back up  
Alternator, 80 ampere, sealed  
Grade Control Ready – Cab harness, software, electrical hydraulic valves, bosses and brackets  
Batteries, maintenance free, 1125 CCA  
Breaker panel, ground accessible  
Electrical system, 24V  
Lights, reversing  
Lights, stop and tail, LED  
Product Link Ready

## Other Equipment

Brake accumulators, dual certified  
Bumper, rear, integrated with hitch  
Clutch, circle drive slip  
Cutting edges  
    curved DH-2 steel  
    203 x 16 mm  
    3/4-inch mounting bolts  
Doors (3), engine compartment, locking  
Drawbar – 6 shoe with replaceable wear strips  
Endbits  
    5/8-inch DH-2 steel  
    3/4-inch mounting bolts  
Extended Life Coolant to –35° C  
Fluid check, ground level  
Frame, articulated, with safety lock  
Fuel tank, ground level access  
Guards, debris, underside  
Guards, service center debris  
Ground level engine shutdown  
Hammer (emergency exit)  
Horn, electric  
Hydraulics, base 8 implement controls  
Hydraulics, load-sensing  
Lockout, hydraulic implement for roading  
Moldboard 4.3 m (hydraulic sideshift and tip)  
Paint, glare reducing – top of front frame and rear enclosure  
Radiator cleanout access  
Secondary steering  
Serviceability, LH side  
S•O•S ports: engine, hydraulic, transmission, coolant, fuel  
Tandem walkway/guards  
Tool box  
Tow hitch

## Tires, Rims and Wheels

Partial allowance for tires and multi-piece rims

## Optional Equipment

Optional equipment may vary. Consult your Caterpillar dealer for details.

	kg		kg
<b>Electrical</b>		<b>Other Attachments</b>	
Alternator, 150 ampere	2	AccuGrade ARO	39
Batteries:		Accumulators, blade lift	71
heavy duty, 1125 CCA	7	AutoLube, Lincoln	23
extreme duty, 1400 CCA	14	AutoLube, Lincoln, ripper enhancement	5
Converter, communications (CB)	5	Camera, rearview	27
Lights:		Caterpillar Product Link 321SR	5
13 lighting arrangements, including HID options and rear roading, drop down		Compressor/tank, Air	23
Warning: Beacon or Strobe	2	Drain, ecology, engine Wiggins	2
Starter, electric, heavy duty	10	Fenders, rear	184
<b>Guards</b>		Heater, engine coolant:	
Covers, screen	4	120V	1
Transmission	156	220V	1
Sound	91	Hydraulic arrangements with one or more additional hydraulic valves are available for rear ripper, dozer, snow plow and snow wing.	
<b>Operator Environment</b>		Ladder, cab, right hand side	8
Air conditioner with heater	48	Security system	2
Door, cab, right hand side	11	Snow wing mounting, frame ready	91
Fan, defroster, rear window	2	Sound suppression	11
Horn, air	7	<b>Worh Tools and Ground Engaging Tools</b>	
Mirrors, outside:		Moldboard, 4.9 m	136
heated 24V	15	Blade extension, 610 mm right or left hand	128
mounted	10	Cutting Edges, curved	43
Precleaner, HVAC	5	Endbits, overlay	24
Radio ready, AM/FM or Satellite	9	Grader bit, narrow and super penetration	181
Seat, air suspension, cloth	2	Push plate, counterweight	851
Shade, sun	2	Ripper, mounting	34
Wiper, each side	0	Ripper, rear	1552
Wiper/washer, rear	2	Ripper tooth	28
<b>Power Train</b>		<b>Machine Arrangements</b>	
Engine, variable horsepower plus (VHP Plus)		European Arrangement	
Fuel tank, fast fill	14	Snow Arrangement	
Oil, Hydraulic, Biodegradable Synthetic			
Precleaner, Sy-Klone	5		
Transmission, autoshift	2		

# 14M Motor Grader

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at [www.cat.com](http://www.cat.com)

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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