

14
Motor Grader

Technical Specifications

Configurations and features may vary by region. Please consult your Cat® dealer for availability in your area.

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14 Motor Grader Specifications

Engine

Engine Model	Cat® C13	
Net Engine Power Range		
ISO 9249	0 - 213 kW	0 - 286 hp
Bore	130 mm	5.1 in
Stroke	157 mm	6.2 in
Displacement	12.5 L	3.3 gal
Torque Rise	50%	
Maximum Torque	822 N•m	184.8 lbf
Rated Speed	1,850 rpm	
Number of Cylinders	6	
Idle Speed		
High Idle Speed	1,975 rpm	
Low Idle Speed	830 rpm	
Maximum Altitude at Full Power	4237 m	13,900 ft

- Advertised power is tested per the specified standard in effect at the time of manufacture.
- See page 8 for Environmental Declarations and Sustainability information.
- Net power available at the flywheel when the engine is equipped with fan, air cleaner, aftertreatment, and alternator with engine speed at 1,850 rpm.

(1)Cat engines are compatible with diesel fuel blended with the following lower-carbon intensity fuels** up to:

- ✓ 100% biodiesel FAME (fatty acid methyl ester)*
- ✓ 100% renewable diesel, HVO (hydrotreated vegetable oil) and GTL (gas-to-liquid) fuels

Refer to guidelines for successful application. Please consult your Cat dealer or "Caterpillar Machine Fluids Recommendations" (SEBU6250) for details.

* *For use of blends higher than 20% biodiesel, consult your Cat dealer.*

** *Tailpipe greenhouse gas emissions from lower-carbon intensity fuels are essentially the same as traditional fuels.*

Powertrain

Forward/Reverse Gears	8 Forward/6 Reverse including finish gear
Transmission	Direct Drive Powershift, Countershift
Air Cleaner	Dry
Brakes	Type System
Service	Hydraulic
Parking	Spring Apply/Hydraulic Release
Secondary	Dual Circuit Hydraulic

Net Power (ISO:9249)

Gear		
Forward		
1st	178 kW	239 hp
2nd	181 kW	243 hp
3rd	185 kW	248 hp
4th	189 kW	253 hp
5th	196 kW	263 hp
6th	202 kW	271 hp
7th	206 kW	276 hp
8th	213 kW	286 hp
Reverse		
1st	178 kW	239 hp
2nd	181 kW	243 hp
3rd-6th	185 kW	248 hp

Air Conditioning System

- The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a or R1234yf. See the label or instruction manual for identification of the gas.
  - If equipped with R134a (Global Warming Potential = 1430), the system contains 2 kg (4.4 lb) of refrigerant which has a CO_2 equivalent of 2.860 metric tonnes (3.152 tons).

Hydraulic System

Type (Implement/Steering/Brake)	Closed - Center	
Circuit Type	Electro-Hydraulic Load Sensing	
Pump Type	Variable Piston	
Pump Output	2410 kPa at 1,975 rpm	
System Flow	0 - 257 L/min	0 - 68 gal/min

Operating Specifications

Top Speed Forward	49.9 km/h	31.0 mph
Top Speed Reverse	39.4 km/h	24.5 mph
Turning Radius, Outside Front Tires	7.9 km/h	311.0 in
Steering Range	50°	
Articulation Angle	20°	
Front Wheel Lean	17%	
Total Oscillation	32°	
Forward		
1st	4.4 km/h	2.7 mph
2nd	5.9 km/h	3.7 mph
3rd	8.6 km/h	5.3 mph
4th	11.8 km/h	7.3 mph
5th	18.4 km/h	11.4 mph
6th	24.9 km/h	15.5 mph
7th	34.3 km/h	21.3 mph
8th	49.9 km/h	31.0 mph
Reverse		
1st	3.4 km/h	2.1 mph
2nd	6.4 km/h	4.0 mph
3rd	9.4 km/h	5.8 mph
4th	14.5 km/h	9.0 mph
5th	27 km/h	16.8 mph
6th	39.4 km/h	24.5 mph

*Machine speed measured at 1,975 rpm with 20.5 R25 radial tires, no slip.

Operating Weight

Weight, Typically Equipped	25 968 kg	57,250 lb
Front Axle	6914 kg	15,243 lb
Rear Axle	19 053 kg	42,005 lb

*Operating Weight based on typically-equipped machine, 20.5R25 tires, 90 kg operator, full fluids.

Electrical

Starting System Type	Direct Electric
Standard Duty Battery	47.5°
CCA at –18°	1,125 amp
Volts	12 V
Quantity	2
Standard Alternator	150 amps at 24 V

Service Refill Capacities

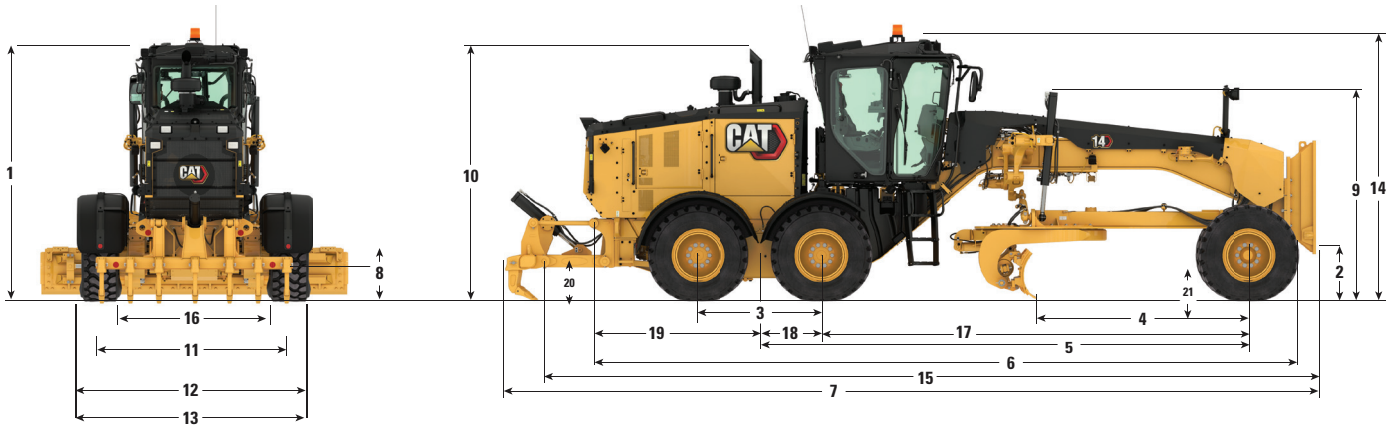
Standard Circle Drive	10 L	2.6 gal
Cooling System	60 L	15.9 gal
Diesel Exhaust Fluid (DEF)*	22 L	5.8 gal
Engine Crankcase	30 L	7.9 gal
Fuel Tank	416 L	109.9 gal
Hydraulic System	60 L	15.9 gal
Tandem Housing (each)	100 L	26.4 gal
Transmission and Differential	89 L	23.5 gal

*Tier 4 Final / Stage V machines only

14 Motor Grader Specifications

Dimensions

All dimensions are approximate and may vary dependent on tire selection. Dimensions below are calculated with 20.5R24 tires.



		14 Motor Grader	
1	Height – Top of Cab	3566 mm	140.4 in
2	Height – Front Axle Center	762 mm	30.0 in
3	Length – Between Tandem Axles	1656 mm	65.2 in
4	Length – Front Axle to Moldboard	2840 mm	111.8 in
5	Length – Front Axle to Mid Tandem	6559 mm	258.2 in
6	Length – Front Tire to Rear of Machine	9600 mm	378.0 in
7	Length – Push Plate to Ripper	10 901 mm	429.2 in
8	Ground Clearance at Rear Axle	373 mm	14.7 in
9	Height to Top of Cylinders	2910 mm	114.6 in
10	Height to Exhaust Stack	3468 mm	136.5 in
11	Width – Tire Center Lines	2516 mm	99.1 in
12	Width – Outside Rear Tires	3050 mm	120.1 in
13	Width – Outside Front Tires	3050 mm	120.1 in
14	Maximum Height – with Attachments	3889 mm	153.1 in
15	Length – Push Plate to Raised Ripper	10 635 mm	418.7 in
16	Width – Inside Rear Tires	1982 mm	78.0 in
17	Length – Front Axle to Articulation Hitch	5767 mm	227.0 in
18	Length – Rear Axle to Articulation Hitch	788 mm	31.0 in
19	Length – Rear Axle to Rear of Frame	2381 mm	93.7 in
20	Height – Rear Tire Deflection at Performance Weight	60 mm	2.4 in
21	Height – Front Tire Deflection at Performance Weight	44 mm	1.7 in

Drawbar and Circle

Drawbar		
Height	203.2 mm	8.0 in
Width	76.2 mm	3.0 in
Thickness	9.5 mm	0.4 in
Shoes	6	
Circle		
Section	Rolling Ring Forging	
Outside Diameter	1822 mm	71.7 in
Number of Teeth	64	
Rotation	360°	

Ripper

Ripping Depth, Maximum	404.3 mm	15.9 in
Ripper Shank Holders	7	
Ripper Shank Holder Spacing		
Minimum	373.4 mm	14.7 in
Maximum	472.4 mm	18.6 in
Penetration Force	13 116 kg	28,916 lb
Pryout Force	21 228 kg	46,800 lb

Sound Standards

Sound	ISO 6395:2008, ISO 6396:2008
Spectator Sound Level	108 dB(A)
Operator Sound Level	72 dB(A)

Blade Range

Circle Centershift		
Left	650 mm	25.6 in
Right	520 mm	20.5 in
Moldboard Side Shift		
Right	790 mm	31.1 in
Left	742 mm	29.2 in
Maximum Shoulder Reach Outside of Tires (14 ft moldboard)		
Left	1998 mm	78.7 in
Right	1820 mm	71.7 in
Maximum Blade Position Angle (both sides)	90º	
Maximum Lift Above Ground	419 mm	16.5 in
Maximum Depth of Cut	593 mm	23.3 in
Maximum Blade Tip		
Forward	40º	
Rear	5º	

Standards

Rollover Protective Structure (ROPS)	ISO 3471:2008
Falling Objects Protective Structure (FOPS)	ISO 3449:2005 Level II
Brakes	ISO 3450:2011
Steering	ISO 5010:2019

Moldboard

Moldboard (Size)	**14 ft Moldboard**		**16 ft Moldboard**	
Height	584.7 mm	23.0 in	584.7 mm	23.0 in
Width	4166 mm	14 ft	4776 mm	16 ft
Thickness	25.4 mm	1.0 in	25.4 mm	1.0 in
Arc Radius	413 mm	16.3 in	413 mm	16.3 in
Throat Clearance	117 mm	4.6 in	111 mm	4.4 in
Cutting Edge				
Height	203.2 mm	8.0 in	213.4 mm	8.4 in
Width	2131.2 mm	7 ft	2436 mm	8 ft
Thickness	19 mm	0.7 in	24.3 mm	1.0 in
Height (Cutting Edges with Moldboard)	631.2 mm	24.9 in	640.1 mm	25.2 in
Width (Cutting Edges with Moldboard)	4264.8 mm	167.9 in	4874.3 mm	191.9 in
End Bit				
Height	452.3 mm	17.8 in	452.3 mm	17.8 in
Width	152.4 mm	1 ft	152.4 mm	1 ft
Thickness	15.9 mm	0.6 in	15.9 mm	0.6 in
Width (Cutting edges with Moldboard)	4290.3 mm	168.9 in	4898.2 mm	192.8 in

14 Motor Grader Standard and Optional Equipment

Standard and Optional Equipment

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

	Standard	Optional
OPERATOR ENVIRONMENT		
Centershift pin indicator	✓	
Coat hook	✓	
Cup holder	✓	
Doors, left and right side with wiper	✓	
Heated door		✓
Heating, ventilation, air conditioner (HVAC)	✓	
Horn	✓	
Joystick gear selection	✓	
Joystick hydraulic controls for implements, steering, transmission	✓	
Joystick, power adjustable armrests	✓	
Ladders, cab, left and right side	✓	
Meter, hour, digital	✓	
Mirror, inside rearview, wide angle	✓	
Mirrors high visibility		✓
Mirrors, outside heated 24V		✓
Mirrors, outside mounted		✓
Power port, 12V	✓	
Radio ready, entertainment	✓	
Rearview camera		✓
Seat, heated/ventilated		✓
Seat, mechanical suspension, cloth	✓	
Storage compartments	✓	
Throttle control, electronic	✓	
POWERTRAIN		
Articulation, automatic return-to-center	✓	
Air-to-Air After Cooler (ATAAC)	✓	
Auto differential lock	✓	
Brake wear indication	✓	
Brakes, oil disc, four-wheel, hydraulic	✓	
Monitoring system	✓	
Clutch, circle drive slip	✓	
Differential, lock/unlock	✓	
Drain, engine oil, ecology	✓	
Demand fan, hydraulic	✓	
Eco mode	✓	

	Standard	Optional
POWERTRAIN *(CONTINUED)*		
Fuel tank, ground level	✓	
Fuel-water separator	✓	
Hydraulic demand fan	✓	
Optimized VHP	✓	
Parking brake, multi disc, sealed, oil-cooled	✓	
Sediment drain, fuel tank	✓	
Transmission, 8F/6R, power shift, direct drive	✓	
ELECTRICAL		
Alternator, 150 ampere, sealed	✓	
Batteries, maintenance free, HD, 1,125 CCA	✓	
Breaker panel	✓	
Electrical system, 24V	✓	
Lights: reversing (LED), roof-mounted roading, stop, and tail (LED)	✓	
Starter, electric	✓	
Service lights, enclosure, rear, LED	✓	
Lights, left and right side lights	✓	
Lights, night time cab, LED	✓	
Light, LED, warning strobe		✓
Lights, front headlights high		✓
Lights, front headlights low		✓
Mounting, for warning light		✓
Working lights halogen		✓
Working lights LED		✓

(Continued on next page)

Standard and Optional Equipment *(continued)*

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

	Standard	Optional
SAFETY		
Alarm, back up	✓	
Ground-level engine shutdown	✓	
Hammer (emergency exit)	✓	
Horn, electric	✓	
Lockout, hydraulic implement for roading	✓	
Operator Not Present Monitoring system	✓	
Paint, glare reducing – top of front frame, rear enclosure and ripper cylinders	✓	
Seat belt, retractable 76 mm (3 in)	✓	
Seat belt indicator		✓
Secondary steering	✓	
Windows, laminated glass: – Fixed front with intermittent wiper – Side and rear wipers (3)	✓	
Additional rearview camera and monitor		✓
Machine security system key		✓
GUARDS		
Debris guard		✓
Front axle cylinder guards		✓
Rear fenders		✓
Sound suppression, engine enclosure, and transmission		✓
Transmission guard		✓
Accumulators, blade lift		✓
Fast fill fuel, 378.5 L/min (100 gal/min)		✓
TECHNOLOGY		
Cat® Grade with Cross Slope		✓
Stable Blade		✓
Attachment Ready Option (ARO)		✓
Advanced Control Joysticks		✓
Auto Articulation		✓
VisionLink™		✓

	Standard	Optional
OTHER ATTACHMENTS		
Snow wing, mounting frame ready		✓
DRAWBAR CIRCLE MOLDBOARD		
14 ft moldboard	✓	
16 ft moldboard		✓
Blade lift accumulators		✓
Circle drive slip clutch	✓	
Circle saver		✓
Standard circle	✓	
Top adjust circle		✓

14 Motor Grader Environmental Declaration

The following information applies to the machine at the time of final manufacture as configured for sale in the regions covered in this document. The content of this declaration is valid as of the date issued; however, content related to machine features and specifications are subject to change without notice. For additional information, please see the machine's Operation and Maintenance Manual.

For more information on sustainability in action and our progress, please visit https://www.caterpillar.com/en/company/sustainability.

Engine

- The Cat® C13 engine is available in multiple options. Meets U.S. EPA Tier 4 Final and/or EU Stage V emission standards; Meets UN ECE R96 Stage IIIA and Brazil MAR-1 emission standards, equivalent to U.S. EPA Tier 3 and EU Stage IIIA; Non-certified configuration, emitting equivalent to U.S. EPA Tier 2.
- Cat engines are compatible with diesel fuel blended with the following lower-carbon intensity fuels** up to:
  - ✓ 100% biodiesel FAME (fatty acid methyl ester)*
  - ✓ 100% renewable diesel, HVO (hydrotreated vegetable oil) and GTL (gas-to-liquid) fuels

  Refer to guidelines for successful application. Please consult your Cat dealer or "Caterpillar Machine Fluids Recommendations" (SEBU6250) for details.

  * *For use of blends higher than 20% biodiesel, consult your Cat dealer.*

  ** *Tailpipe greenhouse gas emissions from lower-carbon intensity fuels are essentially the same as traditional fuels.*

Air Conditioning System

- The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a or R1234yf. See the label or instruction manual for identification of the gas.
  - – If equipped with R134a (Global Warming Potential = 1430), the system contains 2 kg (4.4 lb) of refrigerant which has a CO_2 equivalent of 2.860 metric tonnes (3.152 tons).

Paint

- Based on best available knowledge, the maximum allowable concentration, measured in parts per million (PPM), of the following heavy metals in paint are:
  - – Barium < 0.01%
  - – Cadmium < 0.01%
  - – Chromium < 0.01%
  - – Lead < 0.01%

Sound Performance

Sound	ISO 6395:2008, ISO 6396:2008
Spectator Sound Level	108 dB(A)
Operator Sound Level	72 dB(A)

- The dynamic spectator sound power level measurements are performed according to the dynamic test procedures that are specified in ISO 6395:2008. The measurements were conducted at 70% of the maximum engine cooling fan speed. The machine was equipped with sound suppression system.
- The dynamic operator sound pressure level measurements are performed according to the dynamic test procedures that are specified in ISO 6396:2008. The measurements were conducted at 70% of the maximum engine cooling fan speed, with the cab doors and the cab windows closed. The cab was properly installed and maintained.

Oils and Fluids

- Caterpillar factory fills with ethylene glycol coolants. Cat Diesel Engine Antifreeze/Coolant (DEAC) and Cat Extended Life Coolant (ELC) can be recycled. Consult your Cat dealer for more information.
- Cat Bio HYDO™ Advanced is an EU Ecolabel approved biodegradable hydraulic oil.
- Additional fluids are likely to be present, please consult the Operations and Maintenance Manual or the Application and Installation guide for complete fluid recommendations and maintenance intervals.

Features and Technology

- The following features and technology may contribute to fuel savings and/or carbon reduction. Features may vary. Consult your Cat dealer for details.
  - – Eco mode minimizes fuel consumption for light applications
  - – Engine Idle Shutdown Timer reduces fuel burn, greenhouse gas emissions and unnecessary idle time by shutting down the machine after a pre-set idling period
  - – Cat Grade helps reduce fuel burn and greenhouse gas emissions by enabling you to achieve grade faster and more accurately by automating blade actions
  - – Cut maintenance costs up to 15% with extended service intervals next generation filters
  - – Improve jobsite efficiency with lower operating costs with VisionLink™ insights



For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at **www.cat.com**

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(Global)

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

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