140
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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140 Motor Grader Specifications

Engine

Engine Model	Cat® C9.3	
Net Power ISO 9249/SAE J1349	186 kW	250 hp
Net Power All-Wheel Drive (AWD)	201 kW	270 hp
VHP Plus Range – Net (metric)	179-253 mph	
AWD Range – Net (metric)	179-273 mph	
Bore	115 mm	4.5 in
Displacement	9.3 L	567.5 in^3
Stroke	149 mm	5.9 in
Engine rpm	2,000	
Number of Cylinders	6	
Torque Rise – ISO 9294	44%	
Maximum Torque – ISO 9294	1245 N·m	918 lb-ft
Maximum Torque (AWD On)	1350 N·m	996 lb-ft
Derating Altitude	3962 m	13,000 ft
Derating Altitude AWD	3505 m	11,500 ft
Standard – Fan Speed	1,400 rpm	
Maximum – Fan Speed	1,550 rpm	
Minimum – Fan Speed	500 rpm	
Ambient Capacity	50° C	122° F

- The Cat® C9.3 engine meets U.S. EPA Tier 4 Final and EU Stage V emission standards.
- Net Power advertised is the power available at the flywheel when the engine is equipped with fan, air cleaner, muffler and alternator.
- Rated speed at 2,000 rpm.
- Cat diesel engines are required to use ULSD (ultra-low sulfur diesel fuel with 15 ppm of sulfur or less) or ULSD blended with the following lower-carbon intensity fuels up to:
  - ✓ 20% biodiesel FAME (fatty acid methyl ester)*
  - ✓ 100% renewable diesel, HVO (hydrogenated 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.

  **Engines with no aftertreatment devices can use higher blends, up to 100% biodiesel.*

140 Net Power

Gear	VHP Plus – kW (hp)	AWD Off – kW (hp)	AWD On – kW (hp)
Forward			
1st	132 (177)	139 (186)	147 (197)
2nd	140 (187)	147 (197)	162 (217)
3rd	147 (198)	154 (207)	166 (223)
4th	155 (208)	158 (212)	170 (228)
5th	159 (213)	166 (223)	186 (249)
6th	167 (224)	170 (228)	201 (270)
7th	183 (245)	186 (249)	201 (270)
8th	186 (250)	186 (249)	201 (270)
Reverse			
1st	132 (177)	131 (176)	131 (176)
2nd	140 (187)	139 (186)	139 (186)
3rd-6th	147 (198)	147 (197)	147 (197)

Powertrain

Forward/Reverse Gears	8 Forward/6 Reverse	
Transmission	Direct Drive Powershift	
High Idle Speed	2,150 rpm	
Low Idle Speed	800 rpm	
Air Cleaner	Dry	
Peak Torque at Minimum Fan	1138 N·m	839 lb-ft
Peak Torque at Minimum Fan AWD	1247 N·m	920 lb-ft

Tandems

Tandem Chain Pitch	50.8 mm	2 in
Height and Width	506 mm × 201 mm	20 in × 8 in
Oscillation Front Up	15°	
Oscillation Rear Up	22°	

Service Brakes

Type System	Dual Circuit Hydraulic	
Type Brake	Multiple Oil Disc	
Number of Brakes	4	
Number of Disc Assemblies (each)	6	
Size (outer diameter)	355 mm	14 in
Size (inner diameter)	255 mm	10 in
Lining Area Per Brake	5749 cm²	891.1 in²

Parking Brake

Type System	Hydraulic Actuated
Type Brake	Multiple Oil Disc, Meets ISO 3450:2011
Secondary Brakes	Dual Circuit Control System, Applies Two Service Brakes

Operating Specifications

Top Speed Forward	48.4 km/h	30.1 mph
Top Speed Reverse	37.4 km/h	23.2 mph
Turning Radius, Outside Front Tires	7.6 m	24 ft 11 in
Steering Range	50° Left and Right	
Articulation Angle	18° Left and Right	
Forward		
1st	4.2 km/h	2.6 mph
2nd	5.7 km/h	3.6 mph
3rd	8.3 km/h	5.2 mph
4th	11.4 km/h	7.1 mph
5th	17.8 km/h	11.0 mph
6th	24.2 km/h	15.0 mph
7th	33.3 km/h	20.7 mph
8th	48.4 km/h	30.1 mph
Reverse		
1st	3.2 km/h	2.0 mph
2nd	6.1 km/h	3.8 mph
3rd	8.8 km/h	5.5 mph
4th	13.7 km/h	8.5 mph
5th	25.7 km/h	16.0 mph
6th	37.4 km/h	23.2 mph

- Machine speed measured at 2,150 rpm with 14.00R24 radial tires, no slip.

140 Motor Grader Specifications

Weight – Tandem

Gross Vehicle Weight – Typically Equipped*		
Total	19 198 kg	42,325 lb
Front Axle	5859 kg	12,917 lb
Rear Axle	5088 kg	11,216 lb
Gross Vehicle Weight – Base		
Total	16 787 kg	37,009 lb
Front Axle	4430 kg	9,766 lb
Rear Axle	12 357 kg	27,242 lb
Gross Vehicle Weight – Maximum Tested		
Total	24 500 kg	54,013 lb
Front Axle	8820 kg	19,445 lb
Rear Axle	15 680 kg	34,568 lb

Weight – All-Wheel Drive (AWD)

Gross Vehicle Weight – Typically Equipped*		
Total	20 236 kg	44,613 lb
Front Axle	5859 kg	12,917 lb
Rear Axle	14 377 kg	31,696 lb
Gross Vehicle Weight – Base		
Total	17 825 kg	39,297 lb
Front Axle	5198 kg	11,460 lb
Rear Axle	12 627 kg	27,837 lb
Gross Vehicle Weight – Maximum Tested		
Total	24 500 kg	54,013 lb
Front Axle	8820 kg	19,445 lb
Rear Axle	15 680 kg	34,568 lb

*Typically equipped operating weight is calculated with full fuel tank, coolant, lubricants, operator, push block, transmission guard, rear ripper/scarifier, 14.0R24 tires on multi-piece rims, and other equipment.

Major Component Weights

Base Machine	16 787 kg	37,009 lb
Canopy Open ROPS	–323 kg	–711 lb
All-Wheel Drive	873 kg	1,921 lb
Moldboard		
4267 mm × 610 mm × 22 mm (14 ft × 24 in × 7/8 in)	147 kg	323 lb
4267 mm × 686 mm × 25 mm (14 ft × 27 in × 1 in)	284 kg	625 lb
Guards		
Transmission	121 kg	266 lb
Front Fender	121 kg	266 lb
Blade Extension	113 kg	249 lb
Grader Bit	181 kg	400 lb
Mid-Mount Scarifier Package	917 kg	2,017 lb
Front Lift Group	680 kg	1,500 lb
Counterweight	427 kg	939 lb
Push Plate	895 kg	1,969 lb
Rear Ripper	1104 kg	2,429 lb
Front Scarifier	434 kg	956 lb

Hydraulic System

Type	Closed – Center	
Type Circuit	Parallel	
Pump	Type – Variable Piston	
Output* – @ 1,800 rpm	24 192 kPa 0-171 L/min	3,509 psi 0-45.2 gal/min

*Depending on system requirements.

Service Refill Capacities

Fuel Tank	378 L	100 gal
Circle Drive	7 L	1.8 gal
Engine Crankcase	30 L	7.9 gal
Transmission and Differential	74 L	19.5 gal
Cooling System	57 L	15 gal
Hydraulic System	55 L	14.5 gal
DEF Tank	12.5 L	3.3 gal
Front Wheel Spindle Bearing (each)	0.5 L	0.13 gal
All-Wheel Drive (AWD) Gearbox	7 L	1.8 gal

Drawbar Circle Moldboard

Range of Motion	Standard		Top Adjust	
Lift Cylinders	2		2	
Maximum Depth of Cut	735 mm	28.9 in	715 mm	28.1 in
Maximum Lift Above Ground	480 mm	18.9 in	480 mm	18.9 in
Throat Clearance	119 mm	4.7 in	166 mm	6.5 in
Circle Center Shift Cylinder				
Center Shift Right	728 mm	28.7 in	728 mm	28.7 in
Center Shift Left	752 mm	29.6 in	695 mm	27.4
Moldboard Side Shift Cylinder				
Side Shift Left	663 mm	26.1 in	661 mm	26 in
Side Shift Right	512 mm	20.2 in	515 mm	20.3 in
Blade Tip Cylinder				
Maximum Blade Tip Forward	40°		40°	
Maximum Blade Tip Backward	5°		5°	
Circle Drive	360° of Blade Rotation			
Link Bar	7 Positions to adjust the drawbar circle moldboard range of motion			
Drawbar Shoes	6 with replaceable wear strips			

Moldboard

	Standard		Option 1		Option 2	
Width	3.7 m	12 ft	4.3 mm	14 ft	4.3 mm	14 ft
Height	594 mm	23.4 in	635 mm	25 in	682 mm	26.9 in
End Bit	152 mm	6 in	152 mm	6 in	152 mm	6 in
Cutting Edge	152 mm	6 in	203 mm	8 in	203 mm	8 in
Arc Radius	413 mm	16.3 in	413 mm	16.3 in	413 mm	16.3 in
Throat Clearance	124 mm	4.9 in	124 mm	4.9 in	89 mm	3.5 in

• 3.7 m (12 ft) moldboard is standard.

Circle

Sections	Rolled Ring Forging
Number of Teeth	64
Rotation	360°

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Maximum Shoulder Reach Outside of Tires

Blade	3.7 m (12 ft)		4.3 m (14 ft)	
Right	1928 mm	76 in	2233 mm	88 in
Left	1764 mm	69.4 in	2201 mm	86.7 in

- An additional 300 mm (11.8 in) of reach can be achieved to the right or left by changing the side shift mounting bracket on the 4.3 m (14 ft) blade.

Ripper

Ripping Depth Maximum	426 mm	16.8 in
Ripper Shank Holder	5	
Ripper Shank Holder Spacing	533 mm	21 in
Penetration Force	9440 kg	20,812 lb
Pryout Force	11 877 kg	26,184 lb
Pryout Force (All-Wheel Drive)	13 650 kg	30,093 lb
Machine Length Increase, Beam Raised	1031 mm	40.6 in

Standards

Rollover Protective Structure (ROPS)	ISO 3471:2008
Falling Object Protective Structure (FOPS)	ISO 3449:2005 Level II
Brakes	ISO 3450:2011
Steering	ISO 5010:2007

Sound Performance

Machine Sound Power Level – 110 dB(A) ISO 6395:2008
Operator Sound Pressure Level – 77 dB(A) ISO 6396:2008

- 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 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.

Scarifier

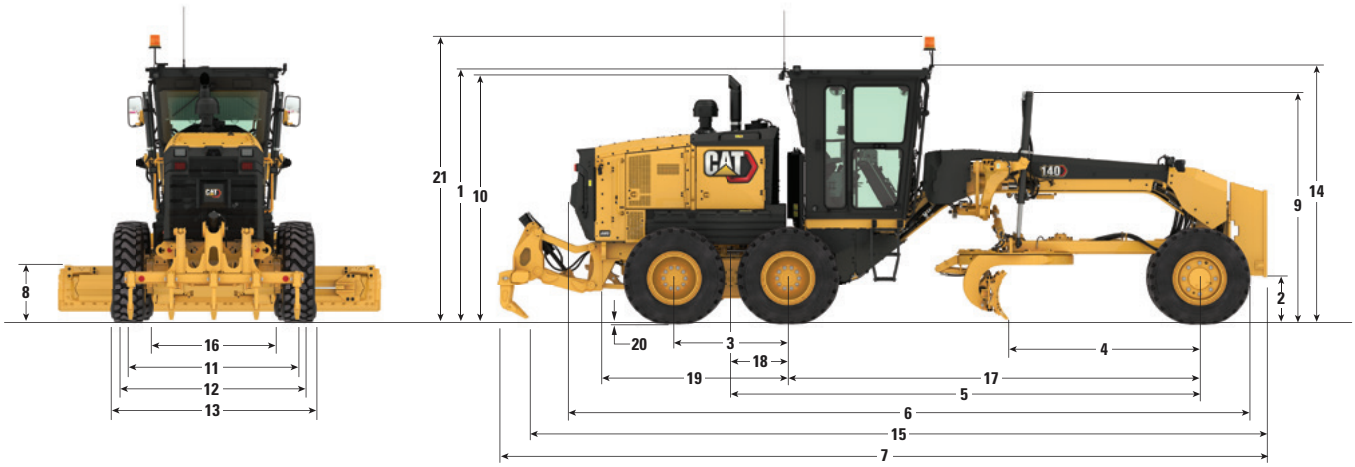
Front, V-Type: Working Width	1205 mm	47.4 in
Front, V-Type: 5 or 11 Tooth		
Working Width	1031 mm	40.6 in
Scarifying Depth, Maximum	467 mm	18.4 in
Scarifier Shank Holders	11	
Scarifier Shank Holder Spacing	116 mm	4.6 in
Rear		
Working Width	2133 mm	84 in
Scarifying Depth, Maximum	426 mm	16.8 in
Scarifier Shank Holders	9	
Scarifier Shank Holder Spacing	267 mm	10.5 in

Electrical

Starting System Type	Direct Electric
Heavy Duty Battery	
CCA at 18°	1,125 amp
Volts	12V
Quantity	2
Extreme Duty Battery	
CCA at 18°	1,400 amp
Volts	12V
Quantity	2
Standard Alternator	115 amps at 24V
Heavy Duty Alternator	150 amps at 24V

Dimensions

All dimensions are approximate.



Length of Machine*	10 100 mm	397.6 in
Maximum Height	3354 mm	148.8 in

*Typically equipped with push block and ripper.

Width	2480 mm	97.6 in
Basic Blade Width	3556 mm	140 in

1	Height – Top of Cab	3354 mm	132 in
2	Height – Front Axle Center	604 mm	23.7 in
3	Length – Between Tandem Axles	1497.5 mm	59 in
4	Length		
	Front Axle to Moldboard (Non AWD)	2592 mm	102 in
	Front AWD Axle to Moldboard (AWD)	2557 mm	100.7 in
5	Length		
	Front Axle to Mid Tandem (Non AWD)	6169 mm	242.9 in
	Front AWD Axle to Mid Tandem (AWD)	6134 mm	241.5 in
6	Length		
	Front Tire to Rear of Machine (Non AWD)	8897 mm	350.3 in
	Front Tire to Rear of Machine (AWD)	8862 mm	348.9 in
7	Length – Push Plate to Ripper	10 100 mm	397.6 in
8	Ground Clearance at Rear Axle	337 mm	13.3 in
9	Height to Top of Cylinders	3043 mm	119.8 in

10	Height to Exhaust Stack	3275 mm	128.9 in
11	Width – Tire Center Lines	2110 mm	83.1 in
12	Width – Outside Rear Tires	2464 mm	97 in
13	Width		
	Outside Front Tires (Non AWD)	2480 mm	97.6 in
	Outside Front Tires (AWD)	2594 mm	102.1 in
14	Maximum Height – with Attachments (Beacon in Shipment Position)	3413 mm	134.4 in
15	Length – Push Plate to Raised Ripper	9778 mm	385 in
16	Width – Inside Rear Tires	1711 mm	67.4 in
17	Length		
	Front Axle to Articulation Hitch (Non AWD)	5325 mm	209.6 in
	Front Axle to Articulation Hitch (AWD)	5290 mm	208.3 in
18	Length Rear Axle to Articulation Hitch	844 mm	33.2 in
19	Length – Rear Axle to Rear of Frame	1705 mm	67.1 in
20	Height – Tire Deflection at Performance Weight	65 mm	2.6 in
21	Maximum Height – with Attachments (Beacon in Operating Position)	3780 mm	149 in

140 Standard and Optional Equipment

Standard and Optional Equipment

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

	Standard	Optional
ENGINE		
Cat C9.3 engine	✓	
Snow precleaner		✓
ECO mode	✓	
Extreme duty starter		✓
50° C (122° F) ambient capacity	✓	
Reversing fan		✓
All-Wheel Drive (AWD)		✓
Differential lock/unlock	✓	
Engine idle shutdown timer	✓	
Transmission, autoshift		✓
MOLDBOARD		
Standard drawbar circle moldboard	✓	
Circle drive slip clutch	✓	
Top adjust drawbar circle moldboard		✓
Circle saver		✓
ELECTRICAL		
Sealed alternator	✓	
Reversing lights	✓	
Breaker panel	✓	
1,125 CCA heavy duty batteries	✓	
1,400 CCA extreme duty batteries		✓
Electric starter	✓	

	Standard	Optional
CAB		
Vinyl seat	✓	
ROPS, standard sound suppression	✓	
Air suspension adjustable seat		✓
Information display screen	✓	
Open ROPS cab		✓
Heating, ventilation, and air conditioning (HVAC) system	✓	
Defrost fans		✓
Halogen lighting	✓	
Cup and bottle holders	✓	
Implement lockout		✓
Adjustable control console	✓	
Interior lights	✓	
LED lighting		✓
Entertainment Radio Ready	✓	
Coat hook	✓	
USB/auxiliary radio		✓
Steering wheel	✓	
Communication radio mounting		✓
Lever controls	✓	
Heated mirrors		✓
Electric throttle control	✓	
Front windshield wiper	✓	
Rear wiper		✓
Rear window screen		✓
Cab storage	✓	

(continued on next page)

Standard and Optional Equipment *(continued)*

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

	Standard	Optional
SAFETY AND SECURITY		
Parking brake	✓	
Back up alarm	✓	
Signaling/warning horn	✓	
Warning beacon		✓
Rearview mirror	✓	
Rearview camera		✓
Hydraulic brakes	✓	
Secondary steering system	✓	
Side view mirrors	✓	
Strategically placed walkways and grab rails	✓	
SERVICE AND MAINTENANCE		
Ground level fuel fill	✓	
Grouped location for engine oil and fuel filters	✓	
Extended Life Coolant	✓	
Radiator, cleanout access	✓	
TECHNOLOGY		
Cat Grade with Cross Slope		✓
Cat Grade with Cross Slope Indicate		✓
Digital Blade Slope Meter		✓
Cat Grade Attachment Ready Option (ARO)		✓
VisionLink®	✓	
Stable blade		✓
Remote services		✓

	Standard	Optional
GUARDS		
Front fenders for All-Wheel Drive		✓
Rear fenders		✓
Front axle guard for All-Wheel Drive		✓
Transmission		✓
Cover, under cab platform		✓
ATTACHMENTS		
Counterweight		✓
Push block		✓
Front lift group		✓
Ripper		✓
Scarifier		✓
Auxiliary hydraulic lines		✓
V-plow		✓
One-way plow		✓

140 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® C9.3 engine meets U.S. EPA Tier 4 Final and EU Stage V emission standards.
- Cat diesel engines are required to use ULSD (ultra-low sulfur diesel fuel with 15 ppm of sulfur or less) or ULSD blended with the following lower-carbon intensity fuels up to:
  - ✓ 20% 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.

  **Engines with no aftertreatment devices can use higher blends, up to 100% biodiesel (for use of blends higher than 20% biodiesel, consult your Cat dealer).*

Air Conditioning System

- The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a (Global Warming Potential = 1430). The system contains 2.0 kg (4.4 lb) of refrigerant which has a CO_2 equivalent of 2.86 metric tonnes (3.15 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

Machine Sound Power Level – 110 dB(A) ISO 6395:2008

Operator Sound Pressure Level – 77 dB(A) ISO 6396:2008

- 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.
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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
  - Improve productivity with the Electronic Throttle Control which matches engine power and torque to application requirements
  - Extended maintenance intervals not only reduce downtime but decrease the amount of fluid and filters that are replaced over the life of the machine
  - The on-demand fan reduces fuel consumption and under-hood heat for longer component life
  - Improve jobsite efficiency with lower operating costs with Product Link™ and VisionLink® insights

Recycling

- The materials included in machines are categorized as below with approximate weight percentage. Because of variations of product configurations, the following values in the table may vary.

Material Type	Weight Percentage
Steel	68.53%
Iron	17.11%
Uncategorized	5.08%
Mixed Metal and Nonmetal	3.40%
Nonferrous Metal	3.25%
Plastic	1.02%
Other	0.62%
Fluid	0.52%
Rubber	0.23%
Mixed Nonmetallic	0.21%
Mixed Metal	0.04%
Total	100.00%

- A machine with higher recyclability rate will ensure more efficient usage of valuable natural resources and enhance End-of-Life value of the product. According to ISO 16714:2008 (Earthmoving machinery – Recyclability and recoverability – Terminology and calculation method), recyclability rate is defined as percentage by mass (mass fraction in percent) of the new machine potentially able to be recycled, reused or both.

  All parts in the bill of material are first evaluated by component type based on a list of components defined by the ISO 16714:2008 and Japan CEMA (Construction Equipment Manufacturers Association) standards. Remaining parts are further evaluated for recyclability based on material type.

  Because of variations of product configurations, the following value in the table may vary.

Recyclability – 97%

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

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

AEXQ2467-02 (12-2023)
Replaces AEXQ2467-01
Build Number 13A
(U.S. Tier 4 Final,
EU Stage V)