140/160
Motor Graders

Engine	**140**		**160**	
Engine Model	Cat® C7		Cat C7	
Base Power (1st gear) – Net	128 kW	171 hp	139 kW	186 hp
Base Power (1st gear) – Net (Metric)	174 mhp		189 mhp	
Weights – Typically Equipped				
Gross Vehicle Weight	17 271 kg	38,076 lb	17 706 kg	39,035 lb
Gross Vehicle Weight – Maximum				
Gross Vehicle Weight	22 870 kg	50,420 lb	22 870 kg	50,420 lb
Moldboard				
Blade Width	3.7 m	12 ft	4.3 m	14 ft

Features

Cat® C7 Engine
Optimum power and fuel efficiency, combined with Power Management and Electronic Throttle Control, assure maximum productivity.

Powertrain
The Power Shift transmission features direct drive and electronic control for smooth, powerful shifts at any speed.

Balanced Hydraulics
Proportional hydraulic flow gives operators outstanding "feel" and predictable movements.

Machine Safety
Cat machines are designed with features to help protect the operator and others around the jobsite.

Serviceability
Grouped service points make daily maintenance easier and faster, while enhanced diagnostics and monitoring help reduce downtime.

Contents

The 140 and 160 Motor Graders are the machines that you can count on when you need to get work done. Cat motor graders help you make the most of your investment by delivering maximum productivity and durability. The Cat C7 engine, direct-drive power shift transmission and load sensing hydraulics work together to ensure the power and precision you need to work in demanding conditions. And Cat motor graders are backed by the world-class Cat dealer network to keep you up and running.

Cat C7 Engine

Maximum power and efficiency

Power Management

The Cat C7 engine uses electronic control, precision fuel delivery and refined air management to provide outstanding performance and lower emissions.

Variable Horse Power (VHP) is standard to provide more power in the higher gears. The Electronic Throttle Control provides easier, more precise and consistent throttle operation. Engine Over-Speed Protection prevents downshifting until an acceptable safe travel speed has been established.

Powertrain

Reliable performance

Smooth Shifting Transmission

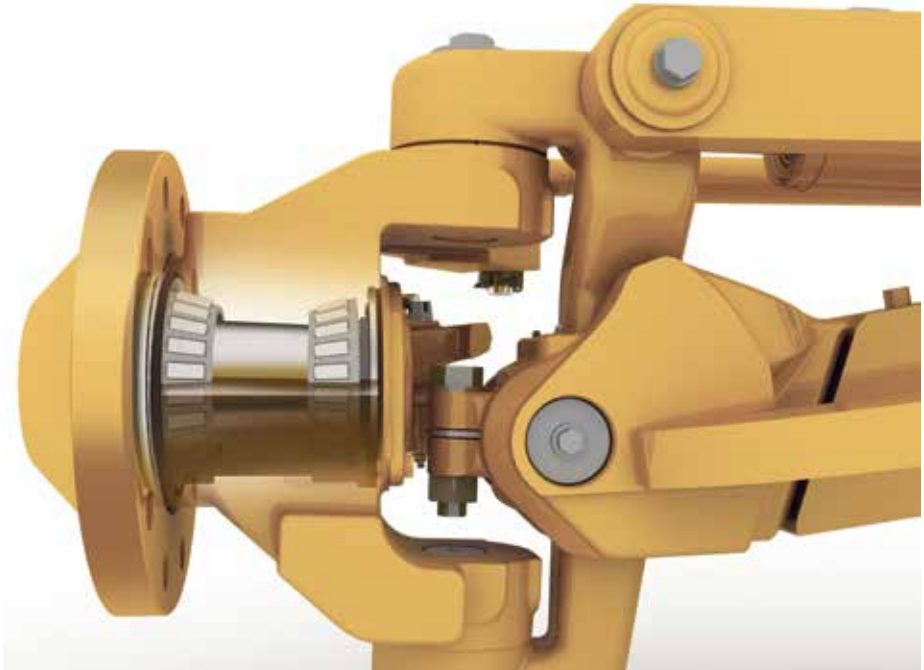
- Full Electronic Clutch Pressure Control ensures smooth shifting and directional changes.
- Shift Torque Management helps to smooth gear changes without the use of the inching pedal, helping the operator to remain focused on the task at hand.
- Load Compensation ensures consistent shift quality regardless of blade or machine load.
- Optional Autoshift automatically shifts the transmission at optimal points for easier operation.

Oil Disc Brakes – Completely Sealed, Adjustment Free

Oil-bathed, air actuated and spring-released, located at each tandem wheel to eliminate powertrain braking loads and to reduce service time. The large brake surface area provides dependable braking capability and extended life before rebuild.

Front Axle with Cat Live Spindle Design

Cat sealed spindle keeps the bearings free from contaminants and lubricated in a lightweight oil to reduce owning and operating costs. A larger tapered roller bearing is outboard where the load is greater, extending bearing life.



Hydraulics

Balanced hydraulics deliver consistent, precise and responsive control

Balanced Flow, Independent Oil Supply

Hydraulic flow is proportioned to ensure all implements operate simultaneously. Independent oil supply prevents cross-contamination and provides proper oil cooling, which means less heat build-up and extended component life.

Implement Control Valves

Provide outstanding operator "feel" and predictable system response for unmatched implement control. To help maintain exact blade settings, lock valves are built into all control valves. Line relief valves are also incorporated into selected control valves to protect the cylinders from over pressurization.

Load-Sensing Hydraulics

A load sensing variable displacement pump and advanced hydraulic valves provide superior implement control and better machine performance. Continuously matching hydraulic flow and pressure to power demands creates less heat and reduces power consumption.

Consistent and Predictable Movement

The hydraulic system valves are specifically designed for each hydraulic function on the motor grader. They compensate for differences in flow requirements, based on cylinder size and the difference in surface volume between the rod end (blue) and barrel end (red) of the cylinder. The result is predictable, consistent hydraulic speeds whether extending or retracting the cylinder.

Structures/Drawbar-Circle-Moldboard

Designed for strength and durability

Frame Structure – Provides Consistency and Strength

Front frame is a continuous top and bottom plate construction. Flanged box section design removes welds from high stress areas, improving reliability and durability. The rear frame structure has two box section channels with fully welded differential case for a solid working platform. An integrated bumper ties the rear frame together into a cohesive unit to handle high stress loads.

Drawbar, Circle and Moldboard

The drawbar is designed for high strength and optimum durability for any application.

The circle stands up to high stress loads. Raised wear surfaces prevent circle teeth wear against the drawbar. The 64 uniformly spaced circle teeth are flame cut and heat induction hardened to resist wear, and the circle is secured to the drawbar by six support shoes for maximum support.

The moldboard provides optimal curvature and large throat clearance that helps move all soil types quickly and efficiently. These features deliver excellent load distribution and minimal material buildup in the circle area while allowing large blade loads to roll freely.

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.

Blade Float

Standard Blade Float reduces down pressure and unnecessary cutting edge wear by allowing the blade to move freely under its own weight. By floating both cylinders, the blade can follow the contours of the ground. Floating only one cylinder permits the toe of the blade to follow a hard surface while you control the slope with the other lift cylinder. Blade Float is especially useful for mud/snow cleanup or sweeping activities.

Work Tools and Attachments

Allows expansion of machine versatility, utilization, and performance

Moldboard Options

Standard moldboard length is 3.7 m (12 ft) (140) and 4.3 m (14 ft) (160), with an optional 4.3 m (14 ft) (140 only) moldboard available from the factory. Moldboard extensions are available to increase moldboard surface area and extend reach capability.

Ground Engaging Tools

A wide variety of cutting edges and end bits are available, all designed for maximum service life and productivity.

Rear Ripper/Scarifier

The optional ripper/scarifier 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 two more if needed. Nine scarifier shanks can also be added for additional versatility.

Front Mounted Groups

A front mounted push plate/counterweight or front blade can be ordered.

Mid-Mount Scarifier

Positioned between the front axle and the circle to break up tough material that the blade can then move, all in a single pass. The V-Type scarifier can accommodate up to 11 teeth.

Snow Removal Work Tools

Includes snow wings, angle blades, and V-Plows. Multiple mounting options are available, increasing machine versatility. (Availability may differ by region.)

Operator Station

Caterpillar sets the standard for comfort, convenience and visibility

Designed for Productivity

Cabs are designed to keep you comfortable, relaxed and productive. Features like low effort pedals and controls, adjustable implement controls and adjustable steering wheel angle help make your work easier while a clear view to the moldboard heel and tandem tires enhance your productivity and safety. Working at night is easier now with backlit transmission shifter and rocker switches.

In-Dash Instrument Cluster

The instrument panel, with easy-to-read, high-visibility gauges and warning lamps, places vital machine information and diagnostic capability easily in your view. The dash includes gauges for engine coolant temperature, articulation, voltage and fuel level. Service brake air pressure gauges and an hour meter are also standard. Speedometer and tachometer are optional. All major systems are monitored by warning lights.

Additional Cab Features

Additional cab features include a storage area, adjustable control console and coat hook. Optional offerings include a power port, an air conditioner/heater, suspension seat, defroster fan, sun shade, backup lights, intermittent front wipers, slope meter, interior mirrors, radio installation ready, ashtray/cup holder, and VisionLink® ready.

NOTE: Some attachments are not available in all regions.

Integrated Technologies

Solutions to make work easier and more efficient

Cat Grade

Cat Grade uses positioning and guidance technologies, machine sensors, and automatic blade control to help operators get to grade faster, easier and more efficiently. Digital design plans, real-time cut/fill data, and in-cab guidance give operators detailed information to work more confidently and achieve greater accuracy, in fewer passes, using less material. Operators can stay on grade and improve productivity and accuracy by nearly 50 percent over conventional methods. Grade stakes and checkers are minimized, making the work site safe, efficient, and cost effective. Grade technologies include Cat Grade with Cross Slope, Sonic, Laser, GPS, and/or Universal Total Station (UTS).

Attachment Ready Option (ARO)

Machines can be equipped with ARO. It can be ordered as a factory or dealer installed option. The attachment option includes built-in mounting points and internal wiring, making installation of the grade control system faster and easier.

Cat Product Link™

Product Link™ helps take the guesswork out of equipment management with remote monitoring capabilities for your machine or your entire fleet. Track asset location, hours, fuel usage, diagnostic codes, idle time and more through the secure VisionLink user interface. Knowing where your equipment is, what it's doing and how it's performing enables you or your Cat dealer to manage your fleet in real-time so you can maximize efficiency, improve productivity, and lower operating costs. All 2D and 3D solutions are offered as aftermarket options. Contact your Cat dealer for details.

Safety
Designed with safety in mind

ROPS/FOPS Cab
The four post roll over protection system (ROPS) or falling objects protective structure (FOPS) cab provides a quiet environment with low vibration levels helping you remain efficient, productive and safer all day.

Brake Systems and Machine Protection
Brakes located at each tandem wheel offer the largest total brake surface area in the industry, delivering dependable stopping power and longer brake life. Standard circle drive slip clutch protects the drawbar, circle and moldboard from shock loads when the blade encounters an immovable object. Blade lift accumulators help absorb impact loads to the moldboard by allowing vertical blade travel.

Electrical Disconnect Switch and Engine Shutoff Switch
Disconnect switch provides ground-level lockout of the electrical system to prevent inadvertent machine starts. Engine shutoff allows anyone nearby to shut the machine down in case of an emergency.

Additional Safety Features
Laminated glass on the front windows and lockable doors to reduce theft and vandalism are available with the optional cab. Brake lights, conveniently located grab rails, back up lights and alarm also help ensure a safe work environment.

Complete Customer Support
When uptime counts

Renowned Cat Dealer Support

From helping you choose the right machine to financing and ongoing support, your Cat dealer provides the best in sales and service.

Manage your costs with preventive maintenance programs like S·O·S℠ fluids analysis, coolant sampling and guaranteed maintenance contracts.

Stay productive with best-in-class parts availability. Your Cat dealer can help you boost your profits with operator training.

And when it's time for component replacement, your Cat dealer can help you save even more. Genuine Cat Remanufactured parts carry the same warranty and reliability as new products at savings of 40 to 70 percent for powertrain and hydraulic components.

Sustainability
Thinking generations ahead

- Integrated machine systems and technologies improve productivity for greater accuracy, lower fuel use and reduced machine wear.
- Replaceable wear parts save maintenance time and cost, and extend major component life.
- Ecology drains help make draining fluids more convenient and help prevent spills.
- Major components are built to be rebuilt, eliminating waste and saving customers money by giving the machine and/or major components a second – and even third – life.
- A variety of safety features help safeguard operators and others on the jobsite.

Serviceability

Convenient service points make routine maintenance quick and easy

Easy Maintenance for More Uptime

Easy access to service areas speeds up maintenance and ensures that routine service is performed on time. Ecology drains shorten service times and help prevent spills. Radiator cleanout access gives the operator the ability to clear away debris and other materials that build up around the radiator.

Extended Service Intervals

- 500 hour engine oil changes
- 4,000 hour hydraulic oil changes
- 12,000 hour engine coolant changes

Diagnostics and Machine Monitoring

The dash cluster panel provides enhanced machine information and diagnostic capability, which allows faster servicing of the transmission and engine.

O-Ring Face Seals

O-Ring face seals create a reliable connection and are used in all hydraulic circuits to minimize the possibility of oil leaks.

Separate Wiring Harnesses

Modular harness design provides simple disconnects for major machine repairs or rebuilds which reduces machine downtime.

Cat Electronic Technician

Cat Electronic Technician is a two-way communication tool that gives service technicians easy access to stored diagnostic data, reducing machine downtime and lowering operating costs.

Circle Saver™

Keeping your system lubricated daily is important and the optional Circle Saver makes it easy to do. The easy-to-access grease kit allows you to keep the circle drive pinion greased at all times. Circle Saver features a remote fitting and grease line that runs from the drawbar to the pinion housing (a.k.a. bucket) making it easier for you to grease the pinion from the top of the drawbar instead of underneath the circle.

Engine

Engine Model	Cat® C7	
Base Power (1st gear) – Net	128 kW	171 hp
Base Power (1st gear) – Net (Metric)	174 mhp	
VHP Range – Net	128-143 kW	171-191 hp
VHP – Gears		
1-2 Net	128 kW	171 hp
3 Net	135 kW	181 hp
4-8 Net	143 kW	191 hp
1-2 Gross	140 kW	188 hp
3 Gross	147 kW	198 hp
4-8 Gross	155 kW	208 hp
Displacement	7.2 L	439 in3
Bore	105 mm	4.1 in
Stroke	127 mm	5 in
Torque Rise	46%	
Maximum Torque Net	996 N·m	735 lbf-ft
Speed @ Rated Power	2,000 rpm	
Number of Cylinders	6	
Derating Altitude	3048 m	10,000 ft
Fan Speed Maximum	1,925 rpm	
High Ambient Capability	50° C	122° F

- Net power is tested per ISO 9249:2007, SAE J1349:2011, and 80/1269 EEC standards.
- Net power advertised is the power available at rated speed of 2,000 rpm, measured at the flywheel when engine is equipped with fan, air cleaner, muffler and alternator.
- Maximum torque measured at 1,000 rpm in gears 4-8.
- Power as declared per ISO 14396:2002 for Brazil MAR-1 emission standards respectively 164 kW (220 hp) at 2,000 rpm rated speed.

Powertrain

Forward/Reverse Gears	8 Forward/6 Reverse	
Transmission	Direct Drive, Power Shift	
Brakes		
Service	Air Actuated, Multiple Oil-Disc	
Service, Surface Area	23 948 cm2	3,712 in2
Parking	Air Actuated, Multiple Oil-Disc	
Secondary	Dual Circuit	
Eco Mode	2.5% Better Fuel Economy	

- Brakes meet the following standards: ISO 3450:1996.
- Engine idle shutdown.
- Next gen filter design.

Operating Specifications

Top Speed		
Forward	47.3 km/h	29.4 mph
Reverse	37.4 km/h	23.2 mph
Turning Radius, Outside Front Tires	7.5 m	24 ft 9 in
Steering Range – Left/Right	47.5 Degrees	
Articulation Angle – Left/Right	20 Degrees	
Forward		
1st	4.1 km/h	2.5 mph
2nd	5.5 km/h	3.4 mph
3rd	8.0 km/h	5.0 mph
4th	11.0 km/h	6.9 mph
5th	17.4 km/h	10.8 mph
6th	23.6 km/h	14.7 mph
7th	32.5 km/h	20.2 mph
8th	47.3 km/h	29.4 mph
Reverse		
1st	3.2 km/h	2.0 mph
2nd	6.0 km/h	3.7 mph
3rd	8.7 km/h	5.4 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

- Maximum travel speeds calculated at high idle on standard machine configuration with 17.50-25 12PR (G-2) tires.

Hydraulic System

Circuit Type	Load Sensing, Closed Center, Proportional Priority Pressure Compensating System	
Pump Type	Variable Piston	
Pump Output Standard Pump	159.1 L/min	42 gal/min
Optional High Output Pump	210.5 L/min	55.6 gal/min
Maximum System Pressure	25 500 kPa	3,698.5 psi
Standby Pressure	3600 kPa	522.1 psi
Reservoir Tank Capacity	55 L	14.5 gal

- Pump output measured @ 2,150 rpm.

140 Motor Grader Specifications

Moldboard

Blade Width	4.3 m	14 ft
Moldboard		
Height	610 mm	24 in
Thickness	22 mm	0.9 in
Arc Radius	413 mm	16.3 in
Throat Clearance	120 mm	4.7 in
Cutting Edge		
Width	203.3 mm	8 in
Thickness	19 mm	0.75 in
End Bit		
Width	152 mm	6 in
Thickness	16 mm	0.6 in
Blade Pull		
Base GVW	9442 kg	20,815 lb
Maximum GVW	13 379 kg	29,496 lb
Down Pressure		
Base GVW	7431 kg	16,383 lb
Maximum GVW	13 963 kg	30,784 lb

- Top adjust drawbar, circle.
- Blade Pull calculated at 0.9 traction coefficient, which is equal to ideal no-slip conditions, and Gross Vehicle Weight (GVW).

Blade Range

Circle Centershift		
Right	728 mm	28.7 in
Left	752 mm	29.6 in
Moldboard Sideshift		
Right	943 mm	37.1 in
Left	851 mm	33.5 in
Maximum Blade Position Angle	90 Degrees	
Blade Tip Range		
Forward	40 Degrees	
Backward	5 Degrees	
Maximum Shoulder Reach Outside of Tires		
Right	2261 mm	89 in
Left	2223 mm	87.5 in
Maximum Lift Above Ground	452 mm	17.8 in
Maximum Depth of Cut	790 mm	31.1 in

Ripper

Ripping Depth – Maximum	462 mm	18.2 in
Ripper Shank Holders, Quantity	5	
Ripper Shank Holder Spacing	533 mm	21 in
Penetration Force	8694 kg	19,166 lb
Pryout Force	11 673 kg	25,735 lb
Machine Length Increase, Beam Raised	970 mm	38.2 in
Scarifier Shank Holder Quantity	9	

- Ripper tow package.

Scarifier

Mid, V-Type		
Working Width	1184 mm	46.6 in
Scarifying Depth, Maximum	229 mm	9 in
Scarifier Shank Holders Quantity	11	
Scarifier Shank Holder Spacing	116 mm	4.6 in
Rear		
Working Width	2300 mm	90.6 in
Scarifying Depth, Maximum	266 mm	10.5 in
Scarifier Shank Holders Quantity	9	
Scarifier Shank Holder Spacing	267 mm	10.5 in

- The mid-mount scarifier is positioned under the drawbar between the moldboard and front axle.

Frame

Circle		
Diameter	1530 mm	60.2 in
Blade Beam Thickness	35 mm	1.4 in
Drawbar		
Height	127 mm	5 in
Width	76.2 mm	3 in
Front Axle		
Height to Center	628 mm	24.7 in
Wheel Lean, Left/Right	18 Degrees	
Total Oscillation	32 Degrees	
Front – Top/Bottom Plate		
Width	305 mm	12 in
Thickness	25 mm	1 in
Front – Side Plates		
Width	242 mm	9.5 in
Thickness	12 mm	0.5 in
Front – Linear Weights		
Minimum	165 kg/m	112 lb/ft
Maximum	213 kg/m	144 lb/ft
Front – Section Modulus		
Minimum	2083 cm3	127 in3
Maximum	4785 cm3	291 in3

Tandems

Height	506 mm	19.9 in
Width	201 mm	7.9 in
Sidewall Thickness		
Inner	16 mm	0.6 in
Outer	18 mm	0.7 in
Drive Chain Pitch	51 mm	2 in
Wheel Axle Spacing	1522 mm	59.9 in
Tandem Oscillation		
Front Up	15 Degrees	
Front Down	25 Degrees	

Service Refill

Fuel Capacity	305 L	80.6 gal
Cooling System	40 L	10.6 gal
Engine Oil	18 L	4.8 gal
Transmission/Differential/Final Drives	60 L	15.9 gal
Tandem Housing (each)	64 L	16.9 gal
Front Wheel Spindle Bearing Housing	0.5 L	0.1 gal
Circle Drive Housing	7 L	1.9 gal

Weights

Gross Vehicle Weight – Base		
Total	14 750 kg	32,518 lb
Front Axle	4259 kg	9,390 lb
Rear Axle	10 491 kg	23,128 lb
Gross Vehicle Weight – Typically Equipped		
Total	17 271 kg	38,076 lb
Front Axle	4936 kg	10,883 lb
Rear Axle	12 335 kg	27,193 lb
Gross Vehicle Weight – Maximum		
Total	22 870 kg	50,420 lb
Front Axle	8005 kg	17,649 lb
Rear Axle	14 865 kg	32,771 lb

- Base weight calculated on standard machine configuration with 14.00-24 12PR (G-2) tires, SP rims, full fuel tank, coolant, lubricants and 90 kg (198 lb) operator.
- Typical operating weight calculated on standard machine configuration with HVAC ROPS cab, 14.00-24 12PR (G-2) tires, MP rims, ripper, push plate, transmission guard, full fuel tank, coolant, lubricants and 90 kg (198 lb) operator.

Standards

ROPS/FOPS	ISO 3471:2008/ ISO 3449:2005 LEVEL II
Steering	ISO 5010:2019*
Brakes	ISO 3450:1996
Operator Noise – ISO 6394:2008	77 dB(A)
External (Spectator) Noise – ISO 6395:2008	109 dB(A)

- These standards are met when the machine is equipped with a cab.
- The static operator sound pressure level is 77 dB(A) when "ISO 6394:2008" is used to measure the value for an enclosed cab. The measurement was conducted with the cab doors and the cab windows closed. The cab was properly installed and maintained.

*If equipped with optional secondary steering.

160 Motor Grader Specifications

Engine

Engine Model	Cat® C7	
Base Power (1st gear) – Net	139 kW	186 hp
Base Power (1st gear) – Net (Metric)	189 mhp	
VHP Range – Net	139-154 kW	186-206 hp
VHP – Gears		
1-2 Net	139 kW	186 hp
3 Net	147 kW	196 hp
4-8 Net	154 kW	206 hp
1-2 Gross	151 kW	203 hp
3 Gross	159 kW	213 hp
4-8 Gross	166 kW	223 hp
Displacement	7.2 L	439 in3
Bore	105 mm	4.1 in
Stroke	127 mm	5 in
Torque Rise	46%	
Maximum Torque Net	1076 N·m	794 lbf-ft
Speed @ Rated Power	2,000 rpm	
Number of Cylinders	6	
Derating Altitude	3048 m	10,000 ft
Fan Speed Maximum	1,925 rpm	
High Ambient Capability	50° C	122° F

- Net power is tested per ISO 9249:2007, SAE J1349:2011, and 80/1269 EEC standards.
- Net power advertised is the power available at rated speed of 2,000 rpm, measured at the flywheel when engine is equipped with fan, air cleaner, muffler and alternator.
- Maximum torque measured at 1,000 rpm in gears 4-8.
- Power as declared per ISO 14396:2002 for Brazil MAR-1 emission standards respectively 164 kW (220 hp) at 2,000 rpm rated speed.

- 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	
Transmission	Direct Drive, Power Shift	
Brakes		
Service	Air Actuated, Multiple Soil-Disc	
Service, Surface Area	23 948 cm2	3,712 in2
Parking	Air Actuated, Multiple Soil-Disc	
Secondary	Dual Circuit	
Eco Mode	2.5% Better Fuel Economy	

- Brakes meet the following standards: ISO 3450:1996.
- Engine idle shutdown.
- Next gen filter design.

Operating Specifications

Top Speed		
Forward	46.9 km/h	29.1 mph
Reverse	37.0 km/h	23.0 mph
Turning Radius, Outside Front Tires	7.5 m	24 ft 9 in
Steering Range – Left/Right	47.5 Degrees	
Articulation Angle – Left/Right	20 Degrees	
Forward		
1st	4.1 km/h	2.5 mph
2nd	5.5 km/h	3.4 mph
3rd	8.1 km/h	5.0 mph
4th	11.1 km/h	6.9 mph
5th	17.2 km/h	10.7 mph
6th	23.4 km/h	14.6 mph
7th	32.2 km/h	20.0 mph
8th	46.9 km/h	29.1 mph
Reverse		
1st	3.2 km/h	2.0 mph
2nd	6.0 km/h	3.7 mph
3rd	8.8 km/h	5.4 mph
4th	13.6 km/h	8.4 mph
5th	25.4 km/h	15.8 mph
6th	37.0 km/h	23.0 mph

- Maximum travel speeds calculated at rated rpm on standard machine configuration with 17.50-25 12PR (G-2) tires.

Hydraulic System

Circuit Type	Load Sensing, Closed Center, Proportional Priority Pressure Compensating System	
Pump Type	Variable Piston	
Pump Output Standard Pump	159.1 L/min	42 gal/min
Optional High Output Pump	210.5 L/min	55.6 gal/min
Maximum System Pressure	25 500 kPa	3,698.5 psi
Standby Pressure	3600 kPa	522.1 psi
Reservoir Tank Capacity	55 L	14.5 gal

- Pump output measured @ 2,150 rpm.

Moldboard

Blade Width	4.3 m	14 ft
Moldboard		
Height	686 mm	27 in
Thickness	25 mm	1 in
Arc Radius	413 mm	16.3 in
Throat Clearance	90 mm	3.5 in
Cutting Edge		
Width	203 mm	8 in
Thickness	16 mm	0.6 in
End Bit		
Width	152 mm	6 in
Thickness	16 mm	0.6 in
Blade Pull		
Base GVW	9653 kg	21,282 lb
Maximum GVW	13 379 kg	29,496 lb
Down Pressure		
Base GVW	7780 kg	17,153 lb
Maximum GVW	13 964 kg	30,785 lb

- Top adjust drawbar, circle.
- Blade Pull calculated at 0.9 traction coefficient, which is equal to ideal no-slip conditions, and Gross Vehicle Weight (GVW).

Blade Range

Circle Centershift		
Right	728 mm	28.7 in
Left	752 mm	29.6 in
Moldboard Sideshift		
Right	943 mm	37.1 in
Left	851 mm	33.5 in
Maximum Blade Position Angle	90 Degrees	
Blade Tip Range		
Forward	40 Degrees	
Backward	5 Degrees	
Maximum Shoulder Reach Outside of Tires		
Right	2261 mm	89 in
Left	2223 mm	87.5 in
Maximum Lift Above Ground	452 mm	17.8 in
Maximum Depth of Cut	790 mm	31.1 in

Ripper

Ripping Depth – Maximum	462 mm	18.2 in
Ripper Shank Holders, Quantity	5	
Ripper Shank Holder Spacing	533 mm	21 in
Penetration Force	9095 kg	20,051 lb
Pryout Force	12 112 kg	26,703 lb
Machine Length Increase, Beam Raised	970 mm	38.2 in
Scarifier Shank Holder Quantity	9	

- Ripper tow package.

Scarifier

Mid, V-Type		
Working Width	1184 mm	46.6 in
Scarifying Depth, Maximum	229 mm	9 in
Scarifier Shank Holders Quantity	11	
Scarifier Shank Holder Spacing	116 mm	4.6 in
Rear		
Working Width	2300 mm	90.6 in
Scarifying Depth, Maximum	266 mm	10.5 in
Scarifier Shank Holders Quantity	9	
Scarifier Shank Holder Spacing	267 mm	10.5 in

- The mid-mount scarifier is positioned under the drawbar between the moldboard and front axle.

Frame

Circle		
Diameter	1553 mm	61.1 in
Blade Beam Thickness	40 mm	1.6 in
Drawbar		
Height	127 mm	5 in
Width	76.2 mm	3 in
Front Axle		
Height to Center	628 mm	24.7 in
Wheel Lean, Left/Right	18 Degrees	
Total Oscillation	32 Degrees	
Front – Top/Bottom Plate		
Width	305 mm	12 in
Thickness	25 mm	1 in
Front – Side Plates		
Width	242 mm	9.5 in
Thickness	12 mm	0.5 in
Front – Linear Weights		
Minimum	165 kg/m	112 lb/ft
Maximum	213 kg/m	144 lb/ft
Front – Section Modulus		
Minimum	2083 cm3	127 in3
Maximum	4785 cm3	291 in3

160 Motor Grader Specifications

Tandems

Height	572 mm	22.5 in
Width	201 mm	7.9 in
Sidewall Thickness		
Inner	16 mm	0.6 in
Outer	18 mm	0.7 in
Drive Chain Pitch	51 mm	2 in
Wheel Axle Spacing	1522 mm	59.9 in
Tandem Oscillation		
Front Up	15 Degrees	
Front Down	25 Degrees	

Service Refill

Fuel Capacity	305 L	80.6 gal
Cooling System	40 L	10.6 gal
Engine Oil	18 L	4.8 gal
Transmission/Differential/Final Drives	60 L	15.9 gal
Tandem Housing (each)	80 L	21.1 gal
Front Wheel Spindle Bearing Housing	0.5 L	0.1 gal
Circle Drive Housing	7 L	1.8 gal

Weights

Gross Vehicle Weight – Base		
Total	15 185 kg	33,477 lb
Front Axle	4459 kg	9,831 lb
Rear Axle	10 726 kg	23,646 lb
Gross Vehicle Weight – Typically Equipped		
Total	17 706 kg	39,035 lb
Front Axle	5136 kg	11,324 lb
Rear Axle	12 570 kg	27,711 lb
Gross Vehicle Weight – Maximum		
Total	22 870 kg	50,420 lb
Front Axle	8005 kg	17,647 lb
Rear Axle	14 865 kg	32,771 lb

- Base weight calculated on standard machine configuration with 14.00-24 12PR (G-2) tires, SP rims, full fuel tank, coolant, lubricants and 90 kg (198 lb) operator.
- Typical operating weight calculated on standard machine configuration with HVAC ROPS cab, 14.00-24 12PR (G-2) tires, MP rims, ripper, push plate, transmission guard, full fuel tank, coolant, lubricants and 90 kg (198 lb) operator.

Standards

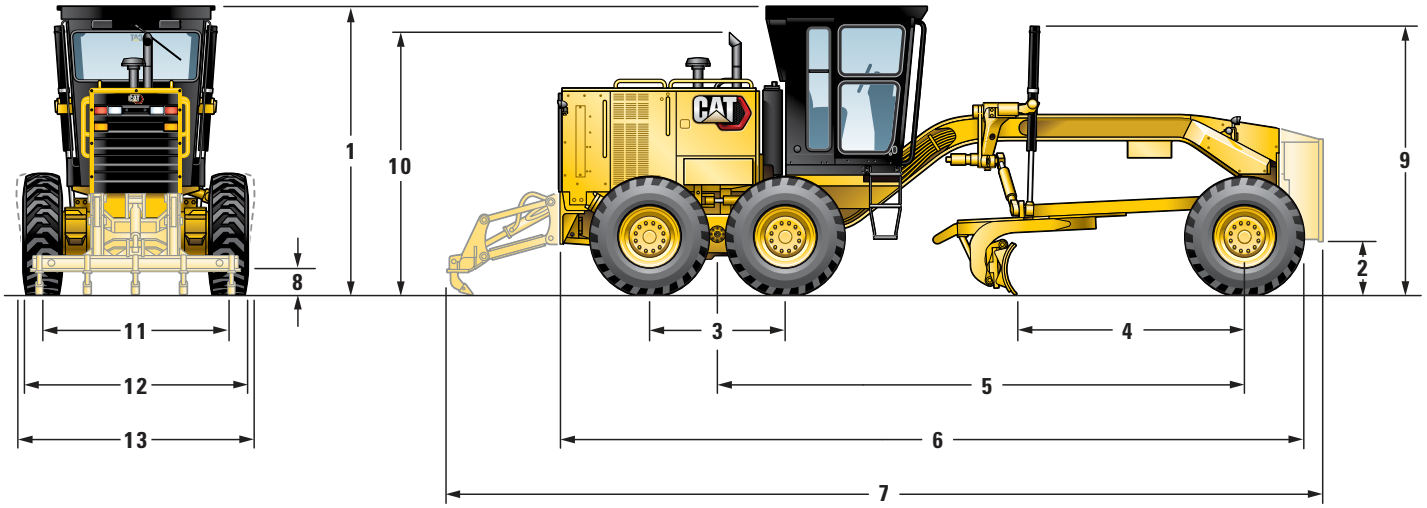
ROPS/FOPS	ISO 3471:2008/ ISO 3449:2005 LEVEL II
Steering	ISO 5010:2019*
Brakes	ISO 3450:1996
Operator Noise – ISO 6394:2008	77 dB(A)
External (Spectator) Noise – ISO 6395:2008	109 dB(A)

- These standards are met when the machine is equipped with a cab.
- The static operator sound pressure level is 77 dB(A) when "ISO 6394:2008" is used to measure the value for an enclosed cab. The measurement was conducted with the cab doors and the cab windows closed. The cab was properly installed and maintained.

*If equipped with optional secondary steering.

Dimensions

All dimensions are approximate.



		140		160	
		mm	in	mm	in
1	Height – ROPS Cab	3354	132.0	3354	132.0
	Height – Non-ROPS Cab	3348	131.8	3348	131.8
	Height – ROPS Canopy	3354	132.0	3354	132.0
2	Ground Clearance – Center Front Axle	626	24.6	626	24.6
3	Length – Between Tandem Axles	1523	60.0	1523	60.0
4	Length – Front Axle to Moldboard	2598	102.3	2598	102.3
5	Length – Front Axle to Mid Tandem	6086	239.6	6086	239.6
6	Length – Front Tire to Rear of Machine	8504	334.8	8504	334.8
7	Length – Counterweight to Ripper	10 013	394.2	10 013	394.2
8	Ground Clearance, Trans. Case	362	14.3	362	14.3
9	Height – Top of Cylinders	3049	120.0	3049	120.0
10	Height to Exhaust Stack	2895	114.0	2895	114.0
11	Width – Tire Center Lines	2065	81.3	2065	81.3
12	Width – Outside Rear Tires	2452	96.6	2452	96.6
13	Width – Outside Front Tires	2481	97.7	2481	97.7

Standard Equipment

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

ELECTRICAL

- Alternator, 115 ampere
- Backup alarm, reversing lights
- Batteries, maintenance free 750 CCA
- Common fuse block
- Electrical system, 24 volt
- Horn, electric
- Indication display
- Lights, stop and tail
- Motor, starting
- Product Link™ ready
- Working lights

OPERATOR ENVIRONMENT

- Accelerator
- Control console, adjustable
- Gauge cluster (includes voltmeter, articulation, engine coolant temperature, air brake pressure and fuel level)
- Guard rails, operator station
- Hydraulic controls, load sensing (right/left blade lift, circle drive, centershift, sideshift, front wheel lean and articulation)
- Indicator lights (includes high beam, LH and RH turn, low engine oil pressure, throttle lock, check engine, transmission filter bypass and check, centershift pin, brake air pressure, parking brake engaged, auto shift)
- Key start/stop switch
- Meter, hour
- Power steering, hydraulic
- Seat, vinyl-covered static
- Seat belt
- Steering wheel, tilt, adjustable
- Storage area, cooler/lunch box
- Throttle, electronic control

POWERTRAIN

- Air cleaner, dry type radial seal with service indicator and automatic dust ejector
- Air to air after cooler (ATAAC)
- Blower fan
- Brakes, oil disc, four-wheel air actuated
- Differential with lock/unlock
- Eco mode
- Engine idle shutdown
- Engine, Cat C7 diesel with automatic engine derate and idle control
- Fuel water separator
- Muffler, under hood
- Next gen filter design
- Parking brake, multi-disc, sealed and oil cooled
- Prescreener
- Priming pump, fuel, resiliently mounted
- Sediment drain, fuel tank
- Tandem drive
- Transmission, 8 speed forward and 6 speed reverse, power shift, direct drive with electronic shift control and overspeed protection
- VHP (Variable Horse Power)

OTHER STANDARD EQUIPMENT

- Blade Float
- Bumper, rear
- CD ROM Parts Book
- Circle drive slip clutch
- Cutting edges, 152 mm × 16 mm (6 in × ⅝ in) curved DH-2 steel
- Doors, engine compartment
- Drawbar, 6 shoe (140, 160) replaceable nylon composite wear strips
- End bits, 16 mm (⅝ in) DH-2 steel
- Frame, articulated with safety lock
- Fuel tank, 305 L (80.6 gal)
- Ground level engine shutdown
- Link bar, 7 position
- Moldboard, 3658 mm × 610 mm × 22 mm (12 ft × 24 in × ⅞ in) blade with hydraulic sideshift and mechanical tip (140)
- Moldboard, 4267 mm × 686 mm × 25 mm (14 ft × 27 in × 1 in) blade with hydraulic sideshift and tip (160 only)
- S·O·S℠ ports, engine, hydraulic, transmission and cooling
- Toolbox with padlock
- Vandalism protection – including cap locks for hydraulic tank, radiator access cover, fuel tank, engine and transmission oil check/fill and lockable battery boxes.

ANTIFREEZE

- Extended Life Coolant to –35° C (–30° F)

Optional Equipment

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

GUARDS
- Guard, transmission

OPERATOR ENVIRONMENT
- Air conditioner with heater
- Heater, cab

CAB/CANOPY
- Cab, ROPS
- Cab, Non-ROPS
- Canopy, ROPS
- Seat, vinyl adjustable
- Seat, cloth, contour
- Fan, defroster, front window
- Fan, defroster, rear window
- Sun shade, rear
- Wiper/washer, rear
- Wipers, intermittent front
- Mirrors, dual inside
- Mirror, heated
- Mirrors, outside mounted
- Power port, 12V accessory
- Radio, Bluetooth®
- Radio ready entertainment
- Rear vision camera
- Tachometer/speedometer

RIPPER/SCARIFIER (140, 160)
- Ripper/scarifier, rear mounted
- Scarifier, mid mounted, V-Type

LIGHTS (140, 160)
- Bar mounted, low, directional and headlights
- Beacon light
- Combination headlight
- Cab and bar mounted, high, directional, headlights and work lights
- Rear facing cab lights

POWERTRAIN
- Autoshift

OTHER ATTACHMENTS
- Cat Grade with Cross Slope Indicate
- VisionLink®
- VisionLink Elite
- Snow Wing Mounting, frame-ready
- Attachment Ready Option (ARO)
- Dryer, air
- Push plate, counterweight
- Accumulator, blade lift
- Battery, extreme duty (1,400 CCA)
- Ether, starting aid
- Heater, engine coolant, 220V
- Circle Saver
- Ripper tow package

HYDRAULICS
- Pump, hydraulic, high capacity (210 L/min, 55.7 gal/min)
- Hydraulic arrangements with one or more additional hydraulic valves are available for rear ripper, mid-mount scarifier, dozer, snow plow and snow wing

BLADES, MOLDBOARDS
- Moldboard (140, 160)
  - Blade, 4267 mm × 610 mm × 22 mm (14' × 24" × ⅞")
- Moldboard, top adjust drawbar, circle
- Blade, front
- Cutting edge, 203 mm × 19 mm (8" × ¾") – for use with 4.3 m (14') blade
- End bits, overlay, reversible pair for use with 203 mm (8") cutting edges

IBAMA PROCONVE HOMOLOGADO

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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