

12M

Motor Grader



The Cat® 12M Motor Grader is designed to help you get more work done in less time with a 4.2 m (14 ft) moldboard. Unprecedented operator comfort and ease of service help to maximize your return on investment.

Operator Station

Industry leading cab design gives you unmatched comfort, visibility and ease of use, so your operators can be more confident and productive.

Structures, Drawbar, Circle and Moldboard

Durable structures with fast and simple DCM adjustments save you service time. Shims and wear strips save you money and make it easy to maintain factory tightness of components for better grading results.

Hydraulics

Load sensing, proportional hydraulics mean operators can rely on consistent power. This precise, predictable implement response will save time and help assure quality work.

Integrated Technologies

Grade control and machine monitoring technologies help you improve grading efficiency and enhance fleet management for improved machine utilization.

Safety

The safety of your operators and those on the job site is key in the design of every Cat machine. Features like outstanding visibility, hydraulic lockout and redundant steering and braking systems help you meet your goals of getting everyone home safely at the end of each work day.

12M Motor Grader Specifications

Engine		
Engine Model*	Cat C7 ACERT™	
Base Power (1st gear) – Net	136 kW	183 hp
Base Power (1st gear) – Net (Metric)	186 hp	
VHP Plus Range – Net	136-159 kW	183-213 hp
VHP Plus Range – Net (Metric)	186-216 hp	
Displacement	7.2 L	439 in ³
Bore	110 mm	4.3 in
Stroke	127 mm	5 in
Torque Rise (VHP Plus)	39%	
Maximum Torque (VHP Plus)	1052 N·m	776 lb·ft
Speed @ Rated Power	2,000 rpm	
Number of Cylinders	6	
Derating Altitude	3048 m	10,000 ft
Standard – Fan Speed		
Maximum	1,450 rpm	
Minimum	600 rpm	
Standard – Ambient Capability	43° C	109° F
High Ambient – Fan Speed		
Maximum	1,650 rpm	
Minimum	600 rpm	
High Ambient Capability	50° C	122° F

- Maximum torque (VHP Plus) measured at 1,000 rpm.
 - Net power is tested per ISO 9249, SAE J1349, and EEC 80/1269 Standards in effect at the time of manufacture.
 - Net power advertised is the power available at rated speed of 2,000 rpm, measured at the flywheel when engine is equipped with fan running at minimum speed, air cleaner, muffler and alternator.
 - Power as declared per ISO 14396
Rated Speed = 2,000 rpm
VHP Plus = 160 kW (214 hp)
 - No engine derating required up to 3048 m (10,000 ft).
- * Note: Equivalent to U.S. EPA Tier 3 and EU Stage IIIA.

12M Net Power		
Gear	VHP Plus kW (hp)	
Forward		
1st	136 (183)	
2nd	140 (188)	
3rd	144 (193)	
4th	148 (198)	
5th	151 (203)	
6th	151 (203)	
7th	155 (208)	
8th	159 (213)	
Reverse		
1st	136 (183)	
2nd	140 (188)	
3rd	144 (193)	

Power Train		
Forward/Reverse Gears	8 Forward/6 Reverse	
Transmission	Direct drive, power shift, countershaft	
Brakes		
Service	Multiple oil disc	
Service, Surface Area	23 000 cm ²	3,565 in ²
Parking	Multiple oil disc	
Secondary	Dual circuit control system	

Hydraulic System		
Circuit Type	Electro-hydraulic load sensing, closed center	
Pump Type	Variable piston	
Pump Output	210 L/min	55.7 gal/min
Maximum System Pressure	24 150 kPa	3,500 psi
Standby Pressure	3100 kPa	450 psi

- Pump output measured at 2,150 rpm.

12M Motor Grader Specifications

Operating Specifications

Top Speed		
Forward	46.6 km/h	29.0 mph
Reverse	36.8 km/h	22.9 mph
Turning Radius, Outside Front Tires		
	7.6 m	24 ft 10 in
Steering Range – Left/Right		
	47.5 degrees	
Articulation Angle – Left/Right		
	20 degrees	
Forward		
1st	4.0 km/h	2.5 mph
2nd	5.5 km/h	2.4 mph
3rd	8.0 km/h	5.0 mph
4th	11.0 km/h	6.8 mph
5th	17.1 km/h	10.6 mph
6th	23.3 km/h	14.5 mph
7th	32.0 km/h	19.9 mph
8th	46.6 km/h	29.0 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	13.5 km/h	8.4 mph
5th	25.3 km/h	15.7 mph
6th	36.8 km/h	22.9 mph

• Speeds when equipped with 14.0R24 tires.

Service Refill

Fuel Capacity	416 L	110 gal
Cooling System	40 L	10.6 gal
Hydraulic System – Tank	64 L	16.9 gal
Engine Oil	25 L	6.6 gal
Trans./Diff./Final Drives	64 L	16.9 gal
Tandem Housing (each)	64 L	16.9 gal
Front Wheel Spindle Bearing Housing	0.5 L	0.13 gal
Circle Drive Housing	7 L	1.8 gal

Frame

Circle		
Diameter	1530 mm	60.2 in
Blade Beam Thickness	40 mm	1.6 mm
Drawbar		
Height	152 mm	6 in
Width	76.2 mm	3 in
Front Frame Structure		
Height	305 mm	12 in
Width	305 mm	12 in
Thickness	16 mm	0.6 in
Front Axle		
Height to Center	571 mm	23 in
Wheel Lean, Left/Right	18 degrees	
Total Oscillation Per Side	32 degrees	

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	50.8 mm	2 in
Wheel Axle Spacing	1523 mm	60 in
Tandem Oscillation		
Front Up	15 degrees	
Front Down	25 degrees	

Moldboard

Moldboard		
Width	4.2 m	14 ft
Height	610 mm	24 in
Thickness	22 mm	0.87 in
Arc Radius	413 mm	16.3 in
Throat Clearance	166 mm	6.5 in
Cutting Edge		
Width	152 mm	6 in
Thickness	16 mm	0.6 in
End Bit		
Width	152 mm	6 in
Thickness	16 mm	0.6 in
Blade Pull		
Base GVW	10 848 kg	23,915 lb
Maximum GVW	13 685 kg	30,170 lb
Down Pressure		
Base GVW	7335 kg	16,171 lb
Maximum GVW	11 739 kg	25,880 lb

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

12M Motor Grader Specifications

Blade Range

Circle Centershift		
Right	728 mm	28.7 in
Left	695 mm	27.4 in
Moldboard Sideshift		
Right	660 mm	26 in
Left	510 mm	20.1 in
Maximum Blade Position Angle	90 degrees	
Blade Tip Range		
Forward	40 degrees	
Backward	5 degrees	
Maximum Shoulder Reach Outside of Tires		
Right	2278 mm	89.7 in
Left	2090 mm	82.3 in
Maximum Lift Above Ground	452 mm	17.8 in
Maximum Depth of Cut	750 mm	29.5 in

Ripper

Ripping Depth, Maximum	428 mm	16.8 in
Ripper Shank Holders	5	
Ripper Shank Holder Spacing	533 mm	21 in
Penetration Force*	9199 kg	20,280 lb
Pryout Force*	11 641 kg	25,664 lb
Machine Length Increase, Beam Raised	919 mm	36.2 in

* Based on typically equipped weight.

Scarifier

Front, V-Type, 5 or 11 Tooth		
Working Width	1205 mm	47.4 in
Scarifying Depth, Maximum	467 mm	18.4 in
Scarifier Shank Holders	5/11	
Scarifier Shank Holder Spacing	116 mm	4.6 in
Mid, V-Type		
Working Width	1184 mm	46.6 in
Scarifying Depth, Maximum	292 mm	11.5 in
Scarifier Shank Holders	11	
Scarifier Shank Holder Spacing	116 mm	4.6 in
Rear		
Working Width	2300 mm	91 in
Scarifying Depth, Maximum	266 mm	10.5 in
Scarifier Shank Holders	9	
Scarifier Shank Holder Spacing	267 mm	10.5 in

Weights

Gross Vehicle Weight – Base with 4.2 m × 610 mm × 22 mm (14 ft × 24 in × 7/8 in) blade		
Total	16 331 kg	36,003 lb
Front Axle	4278 kg	9,431 lb
Rear Axle	12 053 kg	26,572 lb
Gross Vehicle Weight – Maximum		
Total	22 045 kg	48,601 lb
Front Axle	6839 kg	15,077 lb
Rear Axle	15 206 kg	33,523 lb
Gross Vehicle Weight – Typically Equipped		
Total	18 400 kg	40,565 lb
Front Axle	5090 kg	11,221 lb
Rear Axle	13 310 kg	29,343 lb

- Base operating weight calculated on standard machine configuration with 14.00R24 tires on a single piece rim, 4.2 m × 610 mm × 22 mm (14 ft × 24 in × 7/8 in) blade, full fuel tank, coolant, lubricants, and operator.

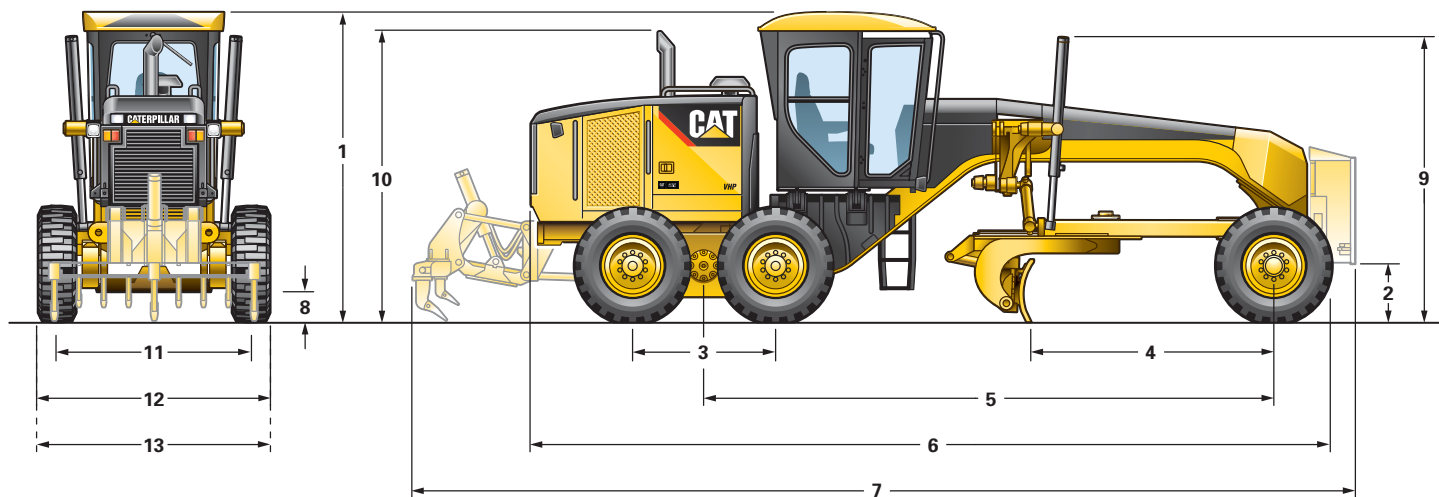
Standards

ROPS/FOPS	ISO 3471:2008, ISO 3449:2005 Level II
Steering	ISO 5010:2007
Brakes	ISO 3450:1996
Sound	ISO 6394:2008, ISO 6395:2008

- The static sound operator pressure level measured according to ISO 6394:2008 for a cab offered by Caterpillar, when properly installed, maintained and tested with doors and windows closed and hydraulic fan at maximum speed is 74 dB(A).

12M Motor Grader Specifications

Dimensions



12M		
	mm	in
1 Height – Top of Cab	3308	130.2
Height – Top of Cab Product Link	3378	133.0
2 Height – Front Axle Center	596	23.5
3 Length – Between Tandem Axles	1523	60.0
4 Length – Front Axle to Moldboard	2552	100.5
5 Length – Front Axle to Mid Tandem	6123	241.1
6 Length – Front Tire to Rear of Machine	8754	344.6
7 Length – Push Plate to Ripper	10 136	399.1
Length – Push Plate to Ripper Retracted	9818	386.5
8 Ground Clearance at Rear Axle	339	13.3
9 Height to Top of Cylinders	3040	119.7
10 Height to Exhaust Stack	3076	121.1
11 Width – Tire Center Lines	2140	84.3
12 Width – Outside Rear Tires	2511	98.9
13 Width – Outside Front Tires	2511	98.9

Dimensions based on 14.00R24 tire on multi-piece rim. Dimensions may vary with tire selection.

12M Motor Grader Specifications

Optional Tire Arrangements

12M	Rim Size	Wheel Group	Tires
	9 × 24	Single-Piece	13.00-24
	9 × 24	Single-Piece	14R24
	13 × 25	Single-Piece	17.5R25
	10 × 24	Multi-Piece	14.00-24
	10 × 24	Multi-Piece	14.00R24
	10 × 24	Multi-Piece	17.5R25

Note: Consult your dealer for individual tire width, size, and brand.

Standard Equipment

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

POWER TRAIN

- Air cleaner, dual stage, dry type, diesel, with automatic engine derate and automatic dust ejector, service indicator through Cat Messenger
- Air-to-air after cooler (ATAAC)
- Belt, serpentine, automatic tensioner
- Brakes, oil disc, four-wheel, hydraulic
- Demand fan, hydraulic
- Differential Lock/Unlock, Automatic
- Drain, engine oil, ecology
- Electronic over speed protection
- Engine Cat C7 with ACERT Technology, diesel, with automatic engine derate and idle control
Note: Equivalent to U.S. EPA Tier 3 and EU Stage IIIA
- Engine Idle Shutdown (EIS)
- Fuel tank, 416 L (110 gal), ground level access and sediment drain
- Fuel-water separator
- Muffler, underhood
- Parking brake – multi-disc, sealed, oil-cooled
- Priming pump, fuel
- Rear axle, modular
- Sediment drain, fuel tank
- Tandem drive
- Transmission, 8F/6R, power shift, direct drive
- Variable Horsepower Plus (VHP Plus)

ELECTRICAL

- Alarm, back up
- Alternator, 80 ampere, sealed
- Batteries, maintenance free, heavy duty, 1,125 CCA
- Breaker panel, ground accessible
- Cab harness and electrical hydraulic valves
- Electrical system, 24V
- Grade Control Ready – Cab harness, software, electrical hydraulic valves, bosses and brackets
- Lights, roof-mounted roading, reversing, LED stop and tail
- Product Link Ready
- Starter, electric

OPERATOR ENVIRONMENT

- Accelerator
- Air conditioning with heater
- Arm and wrist rest, electronically adjustable
- Articulation, automatic Return-to-Center
- Cat Messenger operator information system
- Centershift pin indicator
- Coat hook
- Cup holder
- Display, digital speed and gear
- Doors, left and right side with wiper
- Gauge, machine level
- Gauge cluster (analog) – fuel, articulation, engine coolant temp, engine RPM, hydraulic oil temp
- Hour meter, digital
- Joystick hydraulic controls right/left blade lift with float position, circle drive, blade sideshift and tip, centershift, front wheel lean, articulation and steering
- Joystick, adjustable armrests
- Joystick gear selection

- Joystick hydraulic power steering
- Ladders, cab, left and right side
- Lights, night time cab
- Mirror, inside rearview, wide angle
- Power port, 12V
- Radio Ready, Entertainment
- ROPS cab, sound suppressed
- Seat, cloth-covered, comfort suspension
- Seat belt, retractable 76 mm (3 in)
- Storage area for cooler/lunchbox
- Throttle control, electronic
- Windows, laminated glass:
 - fixed front with intermittent wiper
 - side and rear (3)

FLUIDS

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

TIRES, RIMS AND WHEELS

- Partial allowance for tires on 254×607 mm (10×24 in) multi-piece rims is included in the base machine price and weight

OTHER STANDARD EQUIPMENT

- Accumulators, brake, dual certified
- Anti-glare paint
- Bumper, rear, integrated with hitch
- CD ROM Parts Book
- Clutch, circle drive slip
- Cutting edges
 - 152×16 mm ($6 \times \frac{5}{8}$ in)
 - curved DH-2 steel
 - 19 mm ($\frac{3}{4}$ in) mounting bolts
- Doors (3), engine compartment, locking
- Drawbar – 6 shoes, replaceable wear strips
- Electrical hydraulic valves, hydraulic lines for base 8 functions
- Endbits
 - 16 mm ($\frac{5}{8}$ in) DH-2 steel
 - 19 mm ($\frac{3}{4}$ in) mounting bolts
- Fluid check, ground level
- Frame, articulated, with safety lock
- Ground level engine shutdown
- Ground level fueling
- Hammer (emergency exit)
- Horn, electric
- Hydraulic lines for base functions
- Lockout, hydraulic implement (for roading and servicing)
- Moldboard – $3658 \times 610 \times 22$ mm (12 ft \times 24 in \times $\frac{7}{8}$ in)
- Mounting, cab roof accessories
- Pump, hydraulic, high capacity, 98 cm^3 (6 in^3)
- Radiator, cleanout access
- Secondary steering
- Serviceability, left-hand side
- S•O•SSM ports: engine, hydraulic, transmission, coolant, fuel
- Tandem walkway/guards
- Tool box
- Tow hitch

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Optional Equipment

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

	kg	lb		kg	lb		kg	lb
ELECTRICAL			Precleaner, HVAC	5	10	WORK TOOLS/ GROUND ENGAGING TOOLS		
Alternator, 150 ampere	2	5	Radio ready, AM/FM	9	20	Blade extension, left hand, 610 mm (2 ft)	113	249
Batteries:			Seat, air suspension, cloth	2	5	Endbits, overlay	24	52
extreme duty, 1,400 CCA	14	30	Shade, sun	2	5	Front lift group, mounting	5	11
Converter, communication (CB)	5	11	Wiper/washer, rear	2	4	Front lift group	680	1,500
Lights:			POWER TRAIN			Mid-Mount Scarifier, Package	942	2,077
Headlights, high	5	11	Precleaner, snow/debris	2	4.4	Mid-Mount Scarifier, Mounting	57	125
Headlights, low	5	11	Transmission, autoshift	2	5	Moldboard		
Working lights, basic	9	20	OTHER ATTACHMENTS			4267 × 610 × 22 mm (14 ft × 24 in × 7/8 in)	100	220
Working lights, plus	10	22	AccuGrade ARO	39	85	4267 × 686 × 25 mm (14 ft × 27 in × 1 in)	257	567
Warning: beacon or strobe	2	5	Accumulators, blade lift	77	170	Push plate	885	1,950
Mounting for warning light	5	11	Camera, rearview	9	20	Ripper, mounting	32	70
GUARDS			Cat Grade Control	75	165	Ripper, rear	962	2,120
Articulation guard	13	30	Cross Slope			Ripper tooth	28	61
Axle hose guard	7	15	Cat Product Link 321 (Satellite)	13	29	Scarifier, front	434	956
Fenders, front	56	123	Cat Product Link 522 (Cellular)	13	29	MACHINE ARRANGEMENTS		
Fenders, rear	156	344	Compressor/tank, air	27	50	Snow Arrangement		
Sound guard (bottom)	110	243	Heater, engine coolant:					
Transmission guard	141	311	120V	1	3			
OPERATOR ENVIRONMENT			240V	1	3			
Deluxe CD radio with MP3 and Bluetooth technology			Hydraulic arrangements with one or more additional hydraulic valves are available for ripper, dozer, snow wings, front lift group, mid-mount scarifier.					
Fan, defroster, rear window	2	4	Security system	5	11			
Mirrors, outside:			Snow wing mounting, frame ready	111	245			
heated 24V	15	33	Sound suppression	15	33			
mounted	15	33	Starting aid, ether	0.5	1			

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