



Cat[®]

120M2/120M2 AWD

Motor Graders

FEATURES:

- **Operator Station** – A revolutionary cab design provides unmatched comfort, visibility and ease of use, making the operator more confident and productive.
- **Engine and Power Train** – Combining power management with ACERT™ Technology delivers maximum power and efficiency while reducing the environmental impact. M Series 2 Motor Graders meet U.S. Tier 4 Interim/EU Stage IIIB emission standards.
- **Structures, Drawbar, Circle and Moldboard** – Durable structures with fast and simple DCM adjustments deliver precise material control while lowering operating costs.
- **Hydraulics** – The M Series 2 Motor Grader electro-hydraulics enable advanced machine controls with precise and predictable movements.
- **Integrated Technologies** – Full systems integration optimizes machine performance and availability.
- **All Wheel Drive (AWD)** – Maximum productivity with six powered wheels. Hydrostatic Mode powers only the front wheels, perfect for precise finish work. Steering Compensation adjusts the outside front tire speed for tighter turns, less scuffing and tire wear, and improved control.

Specifications

Engine

Engine Model	Cat [®] C7.1 ACERT™	
Emissions	U.S. Tier 4 Interim/EU Stage IIIB	
Base Power (1st gear) – Net	108 kW	145 hp
Base Power (1st gear) – Net (Metric)		147 hp
VHP Plus range – Net	108-141 kW	145-189 hp
VHP Plus range – Net (Metric)		147-192 hp
AWD range – Net	114-156 kW	153-209 hp
AWD range – Net (Metric)		155-212 hp
Displacement	7.01 L	428 in ³
Bore	105 mm	4.13 in
Stroke	135 mm	5.31 in
Torque rise	45%	
Max torque	939 N·m	693 lb ft
Speed @ rated power	2,100 rpm	
Number of cylinders	6	
Derating altitude	3048 m	10,000 ft
Hi Ambient – Fan speed		
Standard	1,000 rpm	
Max	1,350 rpm	
Min	500 rpm	
Standard Capability	43° C	109° F
Hi Ambient Capability	50° C	122° F
VHP Plus – gear		
1F, Net	108 kW	145 hp
2F, Net	114 kW	153 hp
3F, Net	120 kW	161 hp
4F, Net	126 kW	169 hp
5F, Net	130 kW	174 hp
6F, Net	134 kW	179 hp
7F, Net	137 kW	184 hp
8F, Net	141 kW	189 hp

Engine (cont'd)

- Net power is tested per ISO 9249, SAE J1349, and EEC 80/1269 Standards in effect at the time of manufacture.
- VHP Plus is a standard attachment for the 120M2; standard for the 120M2 AWD.
- Net power advertised is the power available at rated speed of 2,100 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 3048 m (10,000 ft).
- Power as declared per ISO 14396
Rated rpm 2,100
VHP+ = 142 kW (190 hp)
AWD = 157 kW (211 hp)
- All non-road U.S. EPA Tier 4, European Union (EU) Stage IIIB and IV, and Japan (MLIT) Step IV certified diesel engines are required to use:
 - Ultra Low Sulfur Diesel (ULSD) and Sulfur-Free fuels that are 15 ppm (mg/kg) sulfur or less.
 - Cat DEO-ULS™ or oils that meet the Cat ECF-3, API CJ-4, and ACEA E9 specification.

Power Train

Forward/Reverse Gears	8 Fwd/6 Rev	
Transmission	Direct Drive, Powershift	
Brakes		
Service	Multiple Oil Disc	
Service, surface area	23 000 cm ²	3,565 in ²
Parking	Multiple Oil Disc	
Secondary	Dual Circuit	



120M2/120M2 AWD Motor Graders

Hydraulic System

Circuit type	Parallel	
Pump type	Variable Piston	
Pump output	210 L/min	55.7 gal/min
Maximum system pressure	24 150 kPa	3,500 psi
Reservoir tank capacity	60 L	15.85 gal
Standby Pressure	4200 kPa	609 psi

- Pump output measured at 2,150 rpm

Operating Specifications

Top Speed		
Fwd.	45.7 km/h	28.4 mph
Rev.	36.1 km/h	22.4 mph
Turning radius, outside front tires	7.4 m	24 ft 3 in
Steering range – left/right	47.5°	
Articulation angle – left/right	20°	
Fwd.		
1st	4.0 km/h	2.5 mph
2nd	5.4 km/h	3.4 mph
3rd	7.8 km/h	4.9 mph
4th	10.8 km/h	6.7 mph
5th	16.8 km/h	10.4 mph
6th	22.8 km/h	14.2 mph
7th	31.4 km/h	19.5 mph
8th	45.7 km/h	28.4 mph
Rev.		
1st	3.1 km/h	1.9 mph
2nd	5.9 km/h	3.9 mph
3rd	8.5 km/h	5.3 mph
4th	13.2 km/h	8.2 mph
5th	24.8 km/h	15.4 mph
6th	36.1 km/h	22.4 mph

Calculated with no slip and 14.0R24 tires.

Service Refill

Fuel Capacity	378 L	100 gal
Cooling system	49 L	12.9 gal
Hydraulic system		
Tank	64 L	16.9 gal
Engine Oil	30 L	7.9 gal
Trans./Diff./ Final Drives	62.5 L	16.5 gal
Tandem housing (each)	59 L	15.6 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	35 mm	1.4 in
Drawbar		
Height	152 mm	6.0 in
Width	76.2 mm	3.0 in
Thickness	9.5 mm	0.4 in
Front-top/bottom plate		
Width	255 mm	10.0 in
Thickness	22 mm	0.87 in
Front frame structure		
Height	280 mm	11.0 in
Width	204 mm	8.0 in
Front axle		
Height to center	572 mm	22.5 in
Wheel lean, left/right	18°	
Front axle – total oscillation per side	32°	

- Front-top/bottom plate – width tolerance ± 2.5 mm (0.098 in)

Tandems

Height	502 mm	19.8 in
Width	172 mm	6.8 in
Sidewall thickness		
Inner	14 mm	0.5 in
Outer	16 mm	0.6 in
Drive chain pitch	44.5 mm	1.8 in
Wheel axle spacing	1510 mm	59.5 in
Tandem oscillation		
Front up	15°	
Front down	25°	

Moldboard

Blade width	3.7 m	12 ft
Moldboard		
Height	610 mm	24 in
Thickness	22 mm	0.87 in
Arc radius	413 mm	16.3 in
Throat clearance	123.9 mm	4.9 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	10 767 kg	23,737 lb
Max GVW	13 599 kg	29,980 lb
Max GVW AWD	19 998 kg	44,088 lb
Blade Down Pressure		
Base GVW	6818 kg	15,030 lb
Max GVW	12 354 kg	27,235 lb

Blade Range

Circle centershift		
Right	656 mm	25.8 in
Left	656 mm	25.8 in
Moldboard sideshift		
Right	660 mm	26 in
Left	510 mm	20.1 in
Maximum blade position angle	90°	
Blade tip range		
Forward	40°	
Backward	5°	
Maximum shoulder reach outside of tires		
Right	1905 mm	75 in
Left	1742 mm	68.6 in
Maximum lift above ground	427 mm	16.8 in
Maximum depth of cut	720 mm	28.3 in

Ripper

Ripping depth, maximum	226.5 mm	8.9 in
Ripper shank holders	5	
Ripper shank holder spacing	534 mm	21 in
Penetration force	8024 kg	17,692 lb
Pryout force	2567 kg	5,660 lb
Machine length increase, beam raised	1053 mm	41.5 in

120M2/120M2 AWD Motor Graders

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	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
Mid, straight		
Working width	1800 mm	71 in
Ripping depth, maximum	317 mm	12.5 in
Scarifying depth, maximum	426 mm	16.8 in
Scarifier shank holders	17	
Scarifier shank holder spacing	111 mm	4.4 in

Weights

Gross Vehicle Weight, base		
Total	15 887 kg	35,025 lb
Front axle	3924 kg	8,651 lb
Rear axle	11 963 kg	26,374 lb
Gross Vehicle Weight, max		
Total	22 220 kg	48,987 lb
Front axle	7110 kg	15,675 lb
Rear axle	15 110 kg	33,312 lb
Operating Weight, typically equipped		
Total	18 095 kg	39,892 lb
Front axle	4791 kg	10,563 lb
Rear axle	13 304 kg	29,329 lb

Weights – AWD

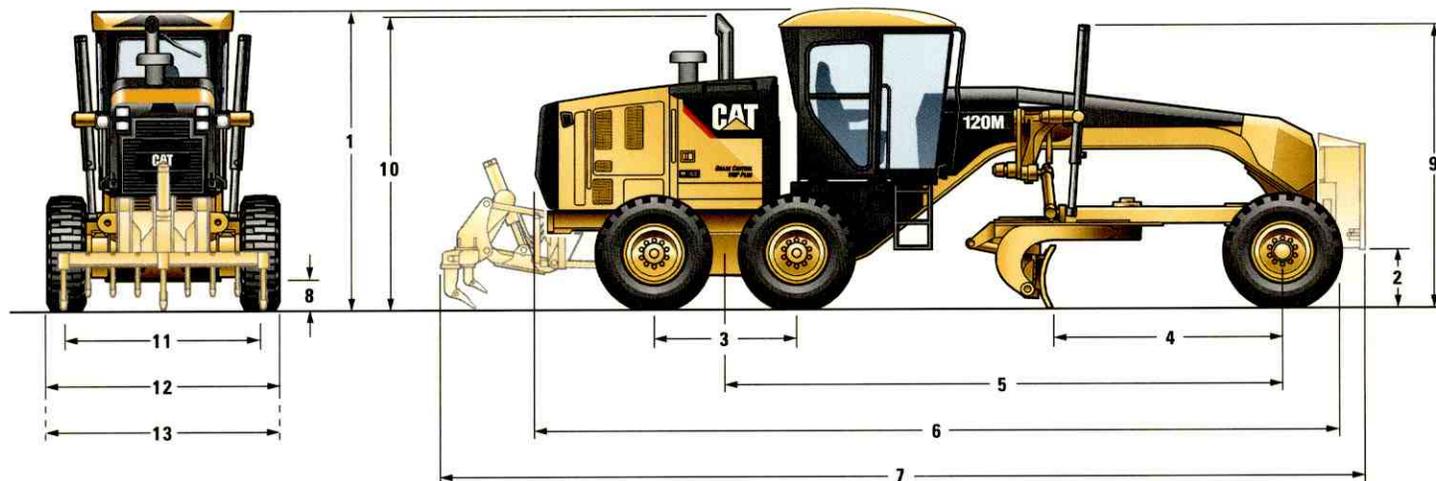
Gross Vehicle Weight, base		
Total	16 880 kg	37,214 lb
Front axle	4435 kg	9,777 lb
Rear axle	12 445 kg	27,438 lb
Gross Vehicle Weight, max		
Total	22 220 kg	48,987 lb
Front axle	7110 kg	15,675 lb
Rear axle	15 110 kg	33,312 lb
Operating Weight, typically equipped		
Total	18 987 kg	41,859 lb
Front axle	5268 kg	11,614 lb
Rear axle	13 719 kg	30,244 lb

- Base operating weight calculated on standard machine configuration with 14.0R24 tires, full fuel tank, coolant, lubricants and operator.
- Typically equipped operating weight is calculated with push block, rear ripper/scarifier, and other equipment.

Standards

ROPS/FOPS	ISO 3471/ISO 3499
Steering	ISO 5010
Brakes	ISO 3450, ISO 10265
Sound	ISO 6394; ISO 6395

- The static sound operator sound 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 engine cooling hydraulic fan at maximum speed is 70 dB(A).
- The dynamic spectator sound power level measured according to ISO 6395:2008 for the standard machine when equipped with optional sound suppression package and engine cooling hydraulic fan running at 70% of maximum speed, machine sound is 106 dB(A) for 120M2 and 120M2 AWD, complying with EU 2000/14/EC requirement.



Dimensions (based on 14.0R24 tires)

1 Height – Top of Cab	3308 mm	130.2 in	9 Height to Top of Cylinders	2917 mm	114.8 in
2 Height – Front Axle Center	596 mm	23.5 in	10 Height to Exhaust Stack	3258 mm	128.3 in
3 Length – Between Tandem Axles	1510 mm	59.4 in	11 Width – Tire Center Lines	2119 mm	83.4 in
4 Length – Front Axle to Moldboard	2510 mm	98.8 in	Width – Tire Center Lines Front (AWD)	2223 mm	87.5 in
5 Length – Front Axle to Mid Tandem	5917 mm	233 in	12 Width – Outside Rear Tires	2490 mm	98.0 in
6 Length – Front Tire to Rear of Machine	8820 mm	347.2 in	13 Width – Outside Front Tires	2511 mm	98.9 in
7 Length – Counterweight to Ripper	10 032 mm	395.0 in	Width – Outside Front Tires (AWD)	2594 mm	102.1 in
8 Ground Clearance at Rear Axle	348 mm	13.7 in			

120M2/120M2 AWD Motor Graders

STANDARD EQUIPMENT

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, swing-out
- Differential Lock/Unlock, Automatic
- Drain, engine oil, ecology
- Electronic over speed protection
- Engine, C9.3 with ACERT Technology, Tier 4 Interim and Stage IIIB emission standards
- Fuel tank, 378 L (100 gal), ground level access and sediment drain
- 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
- VHP Plus (Variable Horsepower)

ELECTRICAL

- Alarm, back up
- Alternator, 150 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
- Ashtray and lighter
- 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, regen
- 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 power 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 70 dB(A)
- 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 × 5/8 in)
 - curved DH-2 steel
 - 19 mm (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 (5/8 in) DH-2 steel
 - 19 mm (3/4 in) mounting bolts
- Fluid check, ground level
- Frame, articulated, with safety lock
- Ground level engine shutdown
- Hammer (emergency exit)
- Horn, electric
- Hydraulic lines for base functions
- Lockout, hydraulic implement (for roading and servicing)
- Moldboard – 3658 × 610 × 22 mm (12 ft × 24 in × 7/8 in)
- Mounting, cab roof accessories
- Pump, hydraulic, high capacity, 98 cm³ (6 in³)
- Radiator, cleanout access (both sides with swing doors)
- Secondary steering
- Serviceability, LH side
- S[•]O[•]SSM ports: engine, hydraulic, transmission, coolant, fuel
- Tandem walkway/guards
- Tool box
- Tow hitch

OPTIONAL EQUIPMENT (See 120M2/120M2 AWD Motor Graders Specalogs [AEHQ6323-01] for list)

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