



# 120

## 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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# 120 Motor Grader Specifications

## Engine – U.S. EPA Tier 3/EU Stage IIIA Equivalent

Engine Model	Cat C7.1	
Emissions	China Nonroad Stage III emission standards, equivalent to Tier 3/Stage IIIA	
Base Net Power – ISO 9249/SAE J1349	97 kW	130 hp
Base Net Power – EEC 80/1269 (metric)		132 hp
Power Range – Net	97-116 kW	130-156 hp
Power Range – Net (metric)		132-158 hp
Derating Altitude	4500 m	14,764 ft

## Engine – India CEV Stage V

Engine Model	Cat C7.1	
Emissions	Meets India CEV Stage V emission standards	
Base Net Power – ISO 9249/SAE J1349 EEC 80/1269	104 kW	140 hp
Base Net Power – EEC 80/1269 (metric)		142 hp
Power Range – Net	104-123 kW	140-164 hp
Power Range – Net (metric)		142-167 hp
Bore	105 mm	4.1 in
Displacement	7.01 L	427.8 in <sup>3</sup>
Stroke	135 mm	5.3 in
Engine RPM	2,000	
Number of Cylinders	6	
Torque Rise – ISO 9249	42%	
Maximum Torque – ISO 9249	822 N·m	606 lb-ft
Derating Altitude	3000 m	9,842 ft
Maximum – Fan Speed	1,300 rpm	
Minimum – Fan Speed	600 rpm	
Ambient Capacity	50°C	122°F

- 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, air cleaner, muffler, and alternator.
- Rated speed at 2,000 rpm.
- Biodiesel blends up to B30 (30% blend by volume) are acceptable when blended with 500 ppm (mg/kg) sulfur or less ULSD. B30 should meet ASTM D7467 specification (biodiesel blend should meet Cat biodiesel spec, ASTM D6751 or EN 14214). Cat DEO-ULS™ or oils that meet the Cat ECF-3, API CJ-4, and ACEA E9 specification are required. Consult your OMM for further machine-specific fuel recommendations.

## 120 Net Power – Tier 3/Stage IIIA Equivalent

### Gear – Non-AWD

Forward			
1st	97 kW	130 hp	
2nd	97 kW	130 hp	
3rd	101 kW	136 hp	
4th	108 kW	145 hp	
5th	112 kW	150 hp	
6th	116 kW	156 hp	
7th	116 kW	156 hp	
8th	116 kW	156 hp	
Reverse			
1st	97 kW	130 hp	
2nd	97 kW	130 hp	
3rd-6th	101 kW	135 hp	

## 120 Net Power – India CEV Stage V

### Gear – Non-AWD

Forward			
1st	104 kW	139 hp	
2nd	107 kW	143 hp	
3rd	110 kW	148 hp	
4th	119 kW	160 hp	
5th	123 kW	165 hp	
6th	123 kW	165 hp	
7th	123 kW	165 hp	
8th	123 kW	165 hp	
Reverse			
1st	104 kW	139 hp	
2nd	107 kW	143 hp	
3rd-6th	110 kW	148 hp	

## Power Train

Forward/Reverse Gears	8 Forward/6 Reverse
Transmission	Direct Drive Powershift Countershaft
High Idle Speed	2,000 rpm
Low Idle Speed	
Tier 3	800 rpm
Stage V	1,030 rpm
Air Cleaner	Dry

## Hydraulic System

Type	Closed – Center	
Type Circuit	Parallel	
Pump Type	Variable Displacement Piston	
System Pressure	24 129 kPa	3500 psi
System Flow	0-200 L/min	0-53 gal/min

# 120 Motor Grader Specifications

## Operating Specifications

Top speed forward	48.3 km/h	30.1 mph
Top speed reverse	38.1 km/h	23.7 mph
Turning Radius, Outside Front Tires	7.4 m	291.3 in
Steering Range	50° Left and Right	
Articulation Angle	20° Left and Right	
Front Wheel Lean	18° Left and Right	
Total Oscillation	32°	
Forward		
1st	4.1 km/h	2.6 mph
2nd	5.6 km/h	3.5 mph
3rd	8.2 km/h	5.1 mph
4th	11.3 km/h	7.0 mph
5th	17.7 km/h	11.0 mph
6th	24.1 km/h	15.0 mph
7th	33.2 km/h	20.6 mph
8th	48.3 km/h	30.1 mph
Reverse		
1st	3.3 km/h	2.0 mph
2nd	6.1 km/h	3.8 mph
3rd	8.9 km/h	5.5 mph
4th	14.0 km/h	8.7 mph
5th	26.2 km/h	16.3 mph
6th	38.1 km/h	23.7 mph

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

## Base Machine Weight – Tier 3/Stage IIIA Equivalent

Lever/Steering Wheel Weight	13 899 kg	30,642 lb
Front Axle:	3603 kg	6,943 lb
Rear Axle:	10 296 kg	22,698 lb

## Base Machine Weight – India CEV Stage V

Lever/Steering Wheel Weight	14 272 kg	31,464 lb
Front Axle:	3564 kg	7,856 lb
Rear Axle:	10 708 kg	23,608 lb

## Typically Equipped Machine Weight – Tier 3/Stage IIIA Equivalent

Lever/Steering Wheel Weight*	15 803 kg	34,839 lb
Front Axle:	4359 kg	9,610 lb
Rear Axle:	11 444 kg	25,229 lb

## Typically Equipped Machine Weight – India CEV Stage V

Lever/Steering Wheel Weight*	16 271 kg	35,871 lb
Front Axle:	4372 kg	9,637 lb
Rear Axle:	11 899 kg	26,234 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, 3.7 m (12 ft) blade, and other equipment.

## Major Component Weights

Moldboard (with cutting edge)		
3658 mm × 610 mm × 22 mm (12 ft × 24 in × 7/8 in)	670 kg	1,474 lb
4267 mm × 610 mm × 22 mm (14 ft × 24 in × 7/8 in)	782 kg	1,720 lb
Guards		
Transmission	105 kg	231 lb
Blade Extension		
LH and RH – 152.4 wide, 15.9 thick cutting edge (each)	113 kg	249 lb
LH and RH – 203.2 wide, 19 thick cutting edge (each)	127 kg	280 lb
Mid-Mount Scarifier Package	834 kg	1,835 lb
Front Lift Group	680 kg	1,496 lb
Push Plate	895 kg	1,969 lb
Rear Ripper	680 kg	1,496 lb
Front Scarifier	434 kg	956 lb

## Service Refill Capacities

Fuel Tank	246 L	65 gal
Circle Drive	7 L	1.8 gal
Engine Crankcase	18 L	4.8 gal
Cooling System	52.5 L	14 gal
Hydraulic System	97 L	25.6 gal
Transmission and Differential	60 L	15.8 gal
Tandem	60 L	15.8 gal

## Tandems

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)	270 mm	10.6 in
Size (inner diameter)	189 mm	7.4 in
Lining Area Per Brake	3,504 cm <sup>2</sup>	543.1 in <sup>2</sup>

## Parking Brake

Type System	Hydraulic Actuated	
Type Brake	Multiple Oil Disc, Meets ISO 3450	
Slope Holding Ability	30°	
Secondary Brakes	Dual Circuit Control System, Applies Two Service Brakes	

# 120 Motor Grader Specifications

## Moldboard

	Standard	Option 1	Option 2
Width	3.7 m (12 ft)	3.7 m (12 ft)	4.3 m (14 ft)
Height	610 mm (24 in)	610 mm (24 in)	610 mm (24 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	120 mm (4.7 in)	124 mm (4.9 in)	89 mm (3.5 in)

## Blades – Tier 3/Stage IIIA Equivalent

### Lever/Steering Wheel Weight

Blade Pull Adv. Base GVW	9266 kg	20,429 lb
Blade Down Force Adv. Base GVW	6311 kg	13,914 lb
Blade Pull Adv. Typically Equipped GVW	10 299 kg	22,706 lb
Blade Down Force Adv. Typically Equipped GVW	7636 kg	16,834 lb
Blade Pull Adv. Max GVW	12 402 kg	27,341 lb
Blade Down Force Adv. Max GVW	10 895 kg	24,019 lb

## Blades – India CEV Stage V

### Lever/Steering Wheel Weight

Blade Pull Adv. Base GVW	9638 kg	21,247 lb
Blade Down Force Adv. Base GVW	6242 kg	13,762 lb
Blade Pull Adv. Typically Equipped GVW	10 710 kg	23,610 lb
Blade Down Force Adv. Typically Equipped GVW	7657 kg	16,881 lb
Blade Pull Adv. Max GVW	12 402 kg	27,341 lb
Blade Down Force Adv. Max GVW	10 895 kg	24,019 lb

## Ripper

Ripping Depth Maximum	288 mm	11.2 in
Ripper Shank Holder	5	
Ripper Shank Holder Spacing	533 mm	20.8 in
Penetration Force	5119 kg	11,287 lb
Pryout Force	2029 kg	4,474 lb
Machine Length Increase, Beam Raised	900 mm	35.1 in

## Mid Mount Scarifier

Front, V-Type: Working Width	1205 mm	47.4 in
Number of Shanks	11	
Shank Spacing	116 mm	4.5 in
Scarifying Width	1031 mm	40.2 in

## Drawbar Circle Moldboard

	Standard
Range of Motion	
Lift Cylinders	2
Maximum Depth of Cut	775 mm 30.5 in
Maximum Lift Above Ground	410 mm 16.1 in
Throat Clearance	120 mm 4.7 in
Circle Center Shift Cylinder	
Center Shift Right	656 mm 25.8 in
Center Shift Left	656 mm 25.8 in
Moldboard Side Shift Cylinder	
Side Shift Left	660 mm 26 in
Side Shift Right	510 mm 20.1 in
Blade Tip Cylinder	
Maximum Blade Tip Forward	40°
Maximum Blade Tip Backward	5°
Circle Drive	360° of Blade Rotation
Link Bar	7 Positions to adjust the drawbar circle moldboard range of motion
Drawbar Shoes	4 with replaceable wear strips

## Circle

Section	Rolled Ring Forging
Number of Teeth	64
Rotation	360°

## Maximum Shoulder Reach Outside of Tires

Blade	3.7 m (12 ft)		4.3 m (14 ft)	
Right	1905 mm	75 in	2210 mm	87 in
Left	1742 mm	68.6 in	2180 mm	85.8 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) blad

## Electrical

Starting System Type	Direct Electric
Standard Duty Battery	
CCA at -18°	900 amp
Volts	12V
Quantity	2
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

## Standards

ROPS	ISO 3471:2008
FOPS	ISO 3449:2005 Level II
Brakes	ISO 3450:2011
Steering	ISO 5010:2007

## Sound Standards

Sound	ISO 6395:2008 ISO 6396:2008
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Spectator Sound Level – Non-AWD	107 dB(A)
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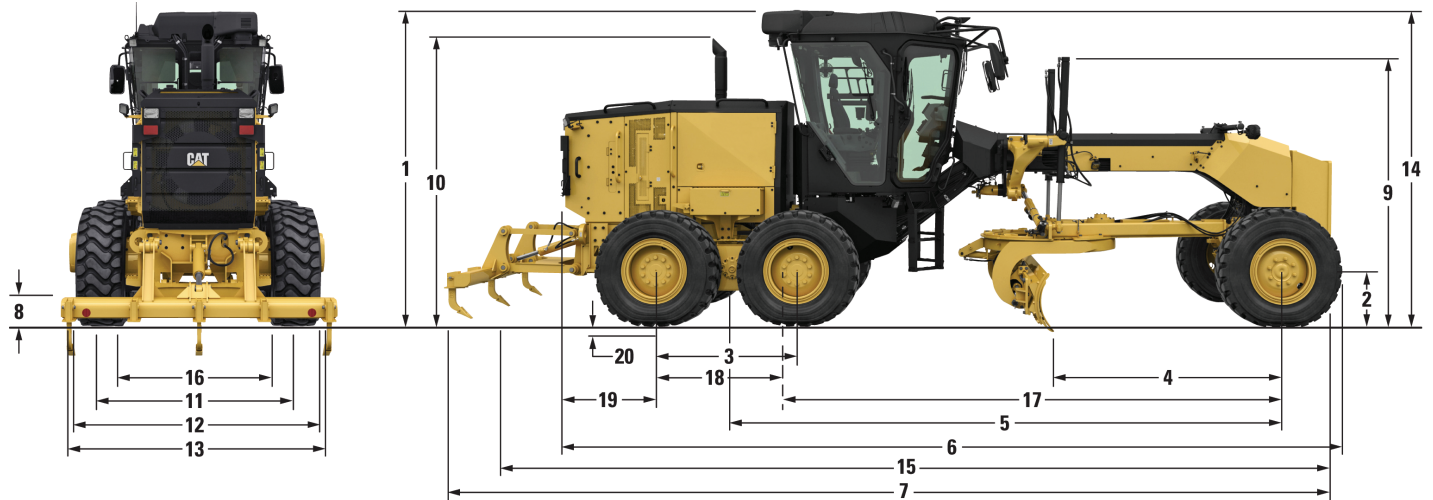
Operator Sound Level – Lever/ Steering Wheel	75 dB(A)
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- The dynamic spectator sound power level measurements are performed according to the test procedures that are specified in ISO 6395:2008. The measurements were conducted at 70% of the maximum engine cooling fan speed. The machine was not equipped with sound suppression.
- The dynamic operator sound pressure level measurements are performed according to the 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. The machine was not equipped with sound suppression.

# 120 Motor Grader Specifications

## Dimensions

All dimensions are approximate.



1	Height – Top of Cab	3465 mm	136.4 in
2	Height – Front Axle Center	590 mm	23.2 in
3	Length – Between Tandem Axles	1510 mm	59.5 in
4	Length – Front Axle to Moldboard	2551 mm	100.4 in
5	Length – Front Axle to Mid Tandem	5945 mm	234 in
6	Length – Front Tire to Rear of Machine	8534 mm	336 in
7	Length – Push Plate to Ripper	9838 mm	387 in
8	Ground Clearance at Rear Axle	349 mm	13.7 in
9	Height to Top of Cylinders	2895 mm	114 in
10	Height to Exhaust Stack	2924 mm	115 in
11	Width – Tire Center Lines	2070 mm	81.5 in
12	Width – Outside Rear Tires	2491 mm	98 in
13	Width – Outside Front Tires	2495 mm	98.2 in
14	Maximum Height – with Attachments	3440 mm	135.4 in
15	Length – Push Plate to Raised Ripper	9583 mm	377 in
16	Width – Inside Rear Tires	1649 mm	64.9 in
17	Length – Front Axle to Articulation Hitch	5284 mm	208 in
18	Length – Rear Axle to Articulation Hitch	660 mm	26 in
19	Length – Rear Axle to Rear of Frame	1726 mm	68 in
20	Height – Tire Deflection at Performance Weight	45 mm	1.8 in

## Optional Tire Arrangements

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

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

# 120 Motor Grader Specifications

## Standard and Optional Equipment

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

	Standard	Optional		Standard	Optional
<b>POWER TRAIN</b>			<b>CAB</b>		
Cat C7.1 engine	✓		Vinyl seat	✓	
Eco mode	✓		ROPS/FOPS		✓
Extreme duty starter		✓	Air suspension adjustable seat		✓
50°C (122°F) ambient capacity	✓		Leather heated/cooled seat		✓
Differential lock/unlock	✓		Seat belt, retractable	✓	
Engine idle shutdown timer	✓		Seat belt, indication		✓
Transmission, autoshift		✓	203 mm (8 in) touchscreen monitor		✓
<b>MOLDBOARD</b>			254 mm (10 in) hybrid information display	✓	
Standard drawbar circle moldboard	✓		Canopy cab		✓
Circle drive slip clutch	✓		Heating, ventilation, and air conditioning (HVAC) system		✓
Circle saver		✓	Defrost fans		✓
Top adjust drawbar circle moldboard		✓	Halogen lighting		✓
<b>ELECTRICAL</b>			Cup and bottle holders	✓	
Sealed alternator	✓		Implement lockout		✓
Reversing lights	✓		Adjustable control console	✓	
Breaker panel	✓		Interior lights (dome lamp)	✓	
900 CCA standard duty batteries		✓	LED lighting		✓
1,125 CCA heavy duty batteries	✓		Entertainment Radio Ready		✓
1,400 CCA extreme duty batteries		✓	Coat hook	✓	
Electric starter	✓		USB/Auxiliary Radio		✓
			Communication radio mounting		✓
			Steering wheel and lever controls	✓	
			Heated mirrors		✓
			Electric throttle control	✓	
			Front windshield wiper (with cabin)	✓	
			Front windshield wiper (lower)		✓
			Rear wiper		✓
			Rear window screen		✓
			Cab storage	✓	
			Slider side window		✓

(continued on next page)

# 120 Motor Grader Specifications

## Standard and Optional Equipment *(continued)*

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

	Standard	Optional
<b>SAFETY AND SECURITY</b>		
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	✓	
Ground level fuel fill		✓
<b>SERVICE AND MAINTENANCE</b>		
Grouped location for engine oil and fuel filters	✓	
Extended Life Coolant	✓	
Reversing fan		✓

	Standard	Optional
<b>CAT TECHNOLOGY</b>		
Stable Blade		✓
Product Link™	✓	
Remote Services	✓	
<b>GUARDS</b>		
Rear fenders		✓
Transmission		✓
<b>ATTACHMENTS</b>		
Push block		✓
Ripper		✓
Scarifier		✓
Mid mount scarifier		✓
Front lift group		✓
Front blade		✓



# 120 Motor Grader Specifications

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at [www.cat.com](http://www.cat.com).

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AEXQ2728-03 (03-2021)  
Build Number: 14B  
(China, India, Indonesia, SE Asia)

