



# EG20

MOTOR GRADER



Elphinstone Underground Support Solutions  
[elphinstone.com](http://elphinstone.com)

Main image is referential and may include optional components.

**ELPHINSTONE**

**UNDERGROUND RELIABILITY**



## TECHNICAL SPECIFICATIONS

### Engine - Tier 3/Stage IIIA Equivalent

Engine Model	Cat C7.1	
Emissions	Brazil MAR-1 emission standards, U.S. EPA Tier 3 and EU Stage IIIA equivalent	
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	
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	4500 m	14,764 ft
Maximum - Fan Speed	1,300 rpm	
Minimum - Fan Speed	600 rpm	
Ambient Capacity	50° C	122° F

- 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.

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

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

### Engine - Tier 4 Final/Stage V

Engine Model	Cat C7.1	
Emissions	U.S. EPA Tier 4 Final/ EU Stage V	
Base Net Power ISO 9249/SAE J1349 EEC 80/1269	104 kW	140 hp
Base Net Power ISO 9249/SAE J1349 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

- 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).
- 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.
- VHP Plus is standard for the EG20.
- 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 DEOULS™ 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 4 Final/Stage V

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



## TECHNICAL SPECIFICATIONS

### Powertrain

Forward/Reverse Gears	8 Forward/6 Reverse
Transmission	Direct Drive, Power Shift
High Idle Speed	2,000 rpm
Low Idle Speed	
Tier 3	800 rpm
Tier 4	1,030 rpm
Air Cleaner	Dry

### Hydraulic System

Type	Closed – Centre
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

### 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 Tyres	7400 mm	291.3 in
Steering Range, Left/Right	50 Deg.	
Articulation Angle, Left/Right	20 Deg.	
Front Wheel Lean, Left/Right	18 Deg.	
Total Oscillation	32 Deg.	
Front Wheel Lean	16 Deg.	
Total Oscillation	32 Deg.	

#### 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 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.

### Tandems

Wheel Axle Spacing	1510 mm	59.45 in
Tandem Oscillation		
Front Up	15 Deg.	
Front Down	22 Deg.	

### Moldboard

Width - Standard	3700 mm	12 ft
Width - Optional	3048 mm	10 ft
Height	610 mm	24 in
Arc Radius	413 mm	16.3 in
Throat Clearance	120 mm	4.7 in
Cutting Edge	152 mm	6 in
Blade Pull - Base GVW	9,266 kg	20,429 lb
Blade Pull - Maximum GVW	12,402 kg	27,341 lb
Blade Down Force - Base GVW	6,311 kg	13,914 lb
Blade Down Force - Maximum GVW	10,895 kg	24,019 lb

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

### Drawbar Circle Moldboard

Centreshift		
Right	656 mm	25.8 in
Left	656 mm	25.8 in
Sideshift / 12' Moldboard		
Right	660 mm	26 in
Left	510 mm	20.1 in
Sideshift / 10' Moldboard		
Right	359 mm	14.1 in
Left	205 mm	8 in
Blade Tip Range		
Forward	40 Deg.	
Backward	5 Deg.	

### Maximum Shoulder Reach Outside of Tyres

Wheelbase / Blade Length	Left		Right	
Standard / 12'	1742 mm	68.6 in	1905 mm	75 in
Standard / 10'	1160 mm	45.6 in	1220 mm	48 in
Shortened / 12'	1690 mm	66.5 in	1730 mm	68.1 in
Shortened / 10'	1080 mm	42.5 in	1120 mm	44 in
Maximum Lift Above Ground	410 mm		16.1 in	
Maximum Depth of Cut	775 mm		30.5 in	

### Circle

Section	Rolled Ring Forging
Number of Teeth	64
Rotation	360 Deg.

### Service Refill Capacities

Fuel Tank	246 L	65 gal
Circle Drive Housing	7 L	1.8 gal
Engine Oil	18 L	4.8 gal
Cooling System	52.5 L	14 gal
Hydraulic System	97 L	25.6 gal
Diesel Exhaust Fluid Tank (Tier 4 only)	11 L	2.9 gal
Transmission / Differential	60 L	15.8 gal
Tandem Housing (each)	60 L	15.8 gal



## TECHNICAL SPECIFICATIONS

### Weights - Tier 3/Stage IIIA Equivalent

Gross Vehicle Weight, Base		
Total	13,899 kg	30,642 lb
Front Axle	3,603 kg	7,943 lb
Rear Axle	10,296 kg	22,698 lb
Gross Vehicle Weight, Typically Equipped*		
Total	15,803 kg	34,839 lb
Front Axle	4,359 kg	9,610 lb
Rear Axle	11,444 kg	25,229 lb

### Weights - Tier 4 Final/Stage V

Gross Vehicle Weight, Base		
Total	14,272 kg	31,464 lb
Front Axle	3,564 kg	7,856 lb
Rear Axle	10,708 kg	23,608 lb
Gross Vehicle Weight, Typically Equipped*		
Total	16,271 kg	35,871 lb
Front Axle	4,372 kg	9,637 lb
Rear Axle	11,899 kg	26,234 lb

- Base weight calculated on standard machine configuration with 14.0R24 12PR (G-2) tyres, SP rims, full fuel tank, coolant, lubricants and operator.
- \*Typically equipped includes 3.7 m (12') blade, 14.00R24 tires, push plate, ripper, bottom guard, operator, and full fluids.

### Standards

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

### 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	3504 cm <sup>2</sup>	543.1 in <sup>2</sup>

### Park Brakes

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

### Electrical

Starting System Type	Direct Electric
Heavy Duty Battery	
- CCA at -18 Deg	1,125 amp
- Volts	12V
- Quantity	2
Extreme Duty Battery	
- CCA at -18 Deg	1,400 amp
- Volts	12V
- Quantity	2
Standard Alternator	145 amps at 24V
Heavy Duty Alternator	150 amps at 24V

### Electrical - Tier 3/Stage IIIA Equivalent Lever

Starting System Type	Direct Electric
Standard Duty Battery (Only offered on Levers)	
- CCA at -18 Deg	900 amp
- Volts	12V
- Quantity	2
Heavy Duty Battery	
- CCA at -18 Deg	1,125 amp
- Volts	12V
- Quantity	2
Extreme Duty Battery	
- CCA at -18 Deg	1,400 amp
- Volts	12V
- Quantity	2
Standard Alternator	115 amps at 24V
Heavy Duty Alternator	150 amps at 24V

### Ripper\*

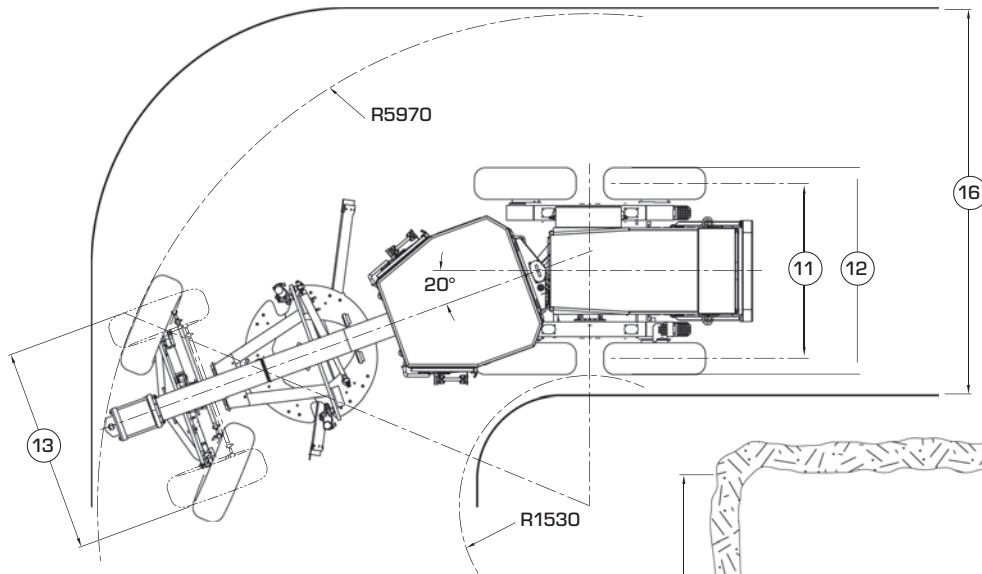
Ripping Depth Maximum	288 mm	11.2 in
Ripper Shank Holder	5	
Ripper Shank Holder Spacing	533 mm	20.8 in
Penetration Force	5119 kg	11,287 lb
Pryout Force	2028 kg	4,474 lb
Machine Length Increase, Beam Raised	900 mm	35.1in

\*Machine ready for dealer fit.

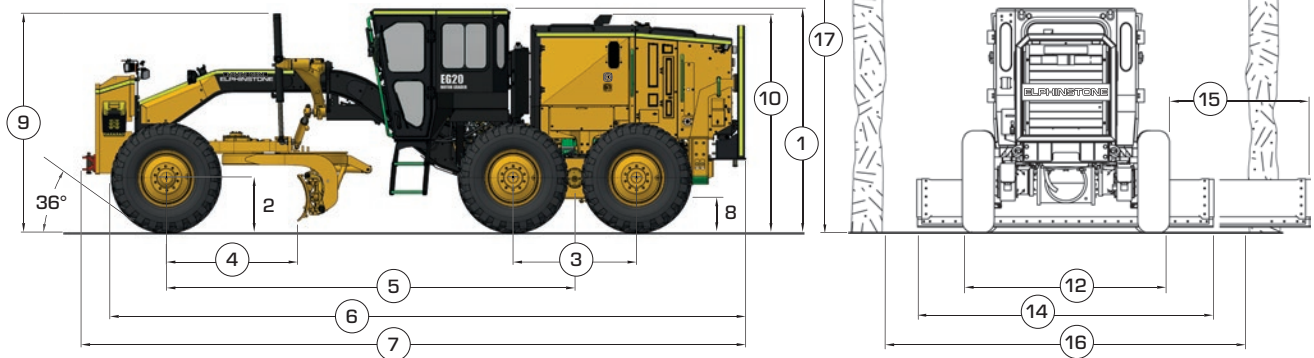


# MACHINE DIMENSIONS

Turning Radius



Side View and Drive Size



## Dimensions

Shortened spine option. All dimensions are based on 14.00R24 tyres. \*Ripper is a dealer fit option

1	Height - Top of Cab	2640 mm	8 ft 7.9 in
2	Height - Front Axle Centre	590 mm	1 ft 11.2 in
3	Length - Between Tandem Axles	1510 mm	4 ft 11.5 in
4	Length - Front Axle to Moldboard Length - Front Axle to Moldboard - Shortened Spine Option	2598 mm 1690 mm	8 ft 6.2 in 5 ft 6.5 in
5	Length - Front Axle to Mid Tandem Length - Front Axle to Mid Tandem - Shortened Spine Option	5870 mm 4950 mm	19 ft 3.1 in 16 ft 2.8 in
6	Length - Front Tyre to Rear of Machine Length - Front Tyre to Rear of Machine - Shortened Spine Option	8380 mm 7500 mm	27 ft 5.9 in 24 ft 7.3 in
7	Length - Counterweight to Rear of Machine Length - Counterweight to Rear of Machine - Shortened Spine Option Length - Counterweight to Ripper* Length - Counterweight to Ripper* - Shortened Spine Option	8850 mm 7930 mm 9770 mm 8850 mm	29 ft 0.4 in 26 ft 0.2 in 32 ft 0.6 in 29 ft 0.4 in
8	Ground Clearance - Transfer Case	349 mm	1 ft 1.7 in
9	Height - Top of Cylinders	2600 mm	8 ft 6.4 in
10	Height - Exhaust Stack	2600 mm	8 ft 6.4 in
11	Width - Tyre Centre Lines	2056 mm	6 ft 8.9 in
12	Width - Outside Rear Tyres	2491 mm	8 ft 2.0 in
13	Width - Outside Front Tyres	2495 mm	8 ft 2.2 in
14	Width - Moldboard Standard Width - Moldboard Optional	3700 mm 3048 mm	12 ft 10 ft
15	Maximum Reach, Standard 12 ft Moldboard	1905 mm	6 ft 3.0 in

## Drive Size

16	Minimum Width Portal (90° corner)	4500 mm	14 ft 9.2 in
17	Typical Minimum Height Portal	4500 mm	14 ft 9.2 in

\*Measurements subject to change



# OVER 45 YEARS IN THE MINING INDUSTRY.

Elphinstone Pty Ltd is an established Caterpillar Original Equipment Manufacturer with over 45 years' experience in the mining industry. Elphinstone specialises in the design, manufacture and support of quality equipment for the global underground and surface mining industries.

The Elphinstone range of Underground Mining Support Vehicles combines practical design, the latest technology and quality manufacturing to ensure reliable performance.

The current product range includes specialised underground support vehicles, mine extraction devices, extended distance off-highway haulage trucks and water tanks customised to suit Caterpillar articulated trucks.

As an authorised Caterpillar Original Equipment Manufacturer, all Elphinstone products are sold and supported via the global Cat® dealer network.

## EG20 MOTOR GRADER

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