



Cat[®] 785D

Mining Truck

Technical Specifications

Configurations and features may vary by region. Please consult your Cat[®] dealer for availability in your area.

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785D Mining Truck Specifications

Engine

Engine Model	Cat® 3512C HD-EUI	
Gross Power– SAE J1995:2014	1082 kW	1,450 hp
Rated Speed	1750 rpm	
Emissions Rating	Fuel Optimized	
Bore	170 mm	6.7 in
Stroke	215 mm	8.4 in
Displacement	58.56 L	3,573.6 in ³

Optional Engine

Engine Model	Cat 3512C HD	
Gross Power– SAE J1995:2014	1082 kW	1,450 hp
Rated Speed	1750 rpm	
Emissions Rating	U.S. EPA Tier-2 Equivalent	
Bore	170 mm	6.7 in
Stroke	215 mm	8.4 in
Displacement	58.56 L	3,573.6 in ³

- Ratings based on standard air conditions of 25° C (77° F) and 99 kPa (29.32 Hg) dry barometer. Power based on fuel having API gravity of 35 at 16° C (60° F) and an LHV of 42 780 kJ/kg (18,390 BTU/lb) when engine used at 30 °C (86 °F).
- No engine derating required up to 4267 m (14,000 ft) altitude.

Weights – Approximate

Rated Gross Machine Weight (RGMW)	249 476 kg	550,000 lb
Chassis Weight (CW)	82 320 kg	181,485 lb
Body Weight (BW)		
HP	20 917 kg	46,114 lb
HP-Coal	21 948 kg	48,387 lb
X body	25 091 kg	55,316 lb
Dual Slope	23 538 kg	51,892 lb
MSD II	21 188 kg	46,712 lb
Gateless Coal (183 cyd)	24 019 kg	52,952 lb
Gateless Coal (217 cyd)	25 066 kg	55,261 lb
Dual Slope	23 538 kg	51,892 lb
Nominal Rated Payload (NRP) (with MSDII body)	141 tonnes	155 tons

- Consult your tire manufacturer for maximum tire load.
- Chassis weight with full fuel and fluids, standard and mandatory attachments, hoist, body mounting group, rims, and tires.

Weight Distributions – Approximate

Front Axle – Empty	47.5%
Rear Axle – Empty	52.5%
Front Axle – Loaded	32.6%
Rear Axle – Loaded	67.4%

- Weight distributions optimized with Cat body.

Final Drives

Double reduction, planetary with full floating axles.	
Differential Ratio	2.10:1
Planetary Ratio	10.83:1
Total Reduction Ratio	22.75:1

Transmission

Forward 1	12.1 km/h	7.5 mph
Forward 2	16.3 km/h	10.2 mph
Forward 3	22.2 km/h	13.8 mph
Forward 4	29.9 km/h	18.6 mph
Forward 5	40.6 km/h	25.2 mph
Forward 6	54.8 km/h	34 mph
Reverse	11 km/h	6.8 mph
Top Speed – Loaded	54.8 km/h	34 mph

Tires and Rims

Standard Tire 33.00-R51 (E3 and E4)

- Quick Change Rims optional.
- Caterpillar recommends the customer evaluate all job conditions and consult tire manufacturer for proper tire selection and Tonne Kilometers Per Hour (TKPH) Ton-Miles Per Hour (TMPH) capabilities.

Braking System

Service Brakes	Four corner, Wet multi disc, oil cooled, air over hydraulic actuated	
Front Brake Surface Area	61 269 cm ²	9,497 in ²
Rear Brake Surface Area	89 727 cm ²	13,908 in ²
Standards	ISO 3450:2011	
Parking Brake	Four-corner, wet multi disc, Spring applied, Hydraulically Released	

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Bodies

HP Body	85 m ³	111 yd ³
HP-Coal Body	110 m ³	143 yd ³
Standard MSD II Body (SAE 2:1)	99 m ³	130 yd ³
Standard X Body (SAE 2:1)	85 m ³	111 yd ³
Standard Dual Slope Body (SAE 2:1)	78 m ³	102 yd ³
Standard Gateless Coal Body (SAE 2:1)	166 m ³	217 yd ³
Standard Gateless Coal Body (SAE 2:1)	183 m ³	183 yd ³

- Refer to the Cat Mining Truck payload policy for maximum gross machine weight limitations.

Body Hoists

Twin, two-stage hydraulic cylinders with snubbing valve		
Pump Flow– High Idle	750 L/min	198 gal/min
Relief Valve Setting – Raise	17 238 kPa	2,500 psi
Body Raise Time– High Idle	15.2 Seconds	
Body Lower Time – Float	16.2 Seconds	
Body Power Down – High Idle	15.9 Seconds	

- Power raise in both stages; power down in second stage.

Suspension

Self-contained nitrogen/oil cylinders, pin-to-pin mounting, top and bottom double shear clevis attachments.

Effective Cylinder Stroke – Front	320 mm	12.6 in
Effective Cylinder Stroke – Rear	165 mm	6.5 in
Empty to Loaded Stroke – Front	107.95 mm	4.25 in
Empty to Loaded Stroke – Rear	90.68 mm	3.57 in
Rear Axle Oscillation	±5.4 degrees	

Service Refill Capacities

Fuel Tank	1893 L	500 gal
Fuel Tank (optional)	2498 L	660 gal
Cooling System	490 L	129 gal
Crankcase	204 L	54 gal
Differentials and Final Drives	650 L	171 gal
Steering Tank	90 L	24 gal
Steering System (Includes Tank)	117 L	31 gal
Brake/Hoist Hydraulic Tank	337 L	89 gal
Brake/Hoist System (Includes Tank)	641 L	169 gal
Torque Converter/Transmission System (Includes Sump)	248 L	65.5 gal
Front Wheels, Each	13.5L	3 gal

Cab

Air Conditioning	6.9 kW	23,543 Btu/hr
Heater/Defroster	10.01 kW	34,462 Btu/hr
Operator Sound pressure level Tested to ISO 6396:2008	82 dB(A)	

Rollover Protective Structure (ROPS) for:

Operator meets	ISO 3471:2008	
Trainer meets	ISO 13459:2012	

Falling Objects Protective Structure (FOPS) for:

Operator meets	ISO 3449:2005 Level II	
Trainer meets	ISO 13459:2012 Level II	

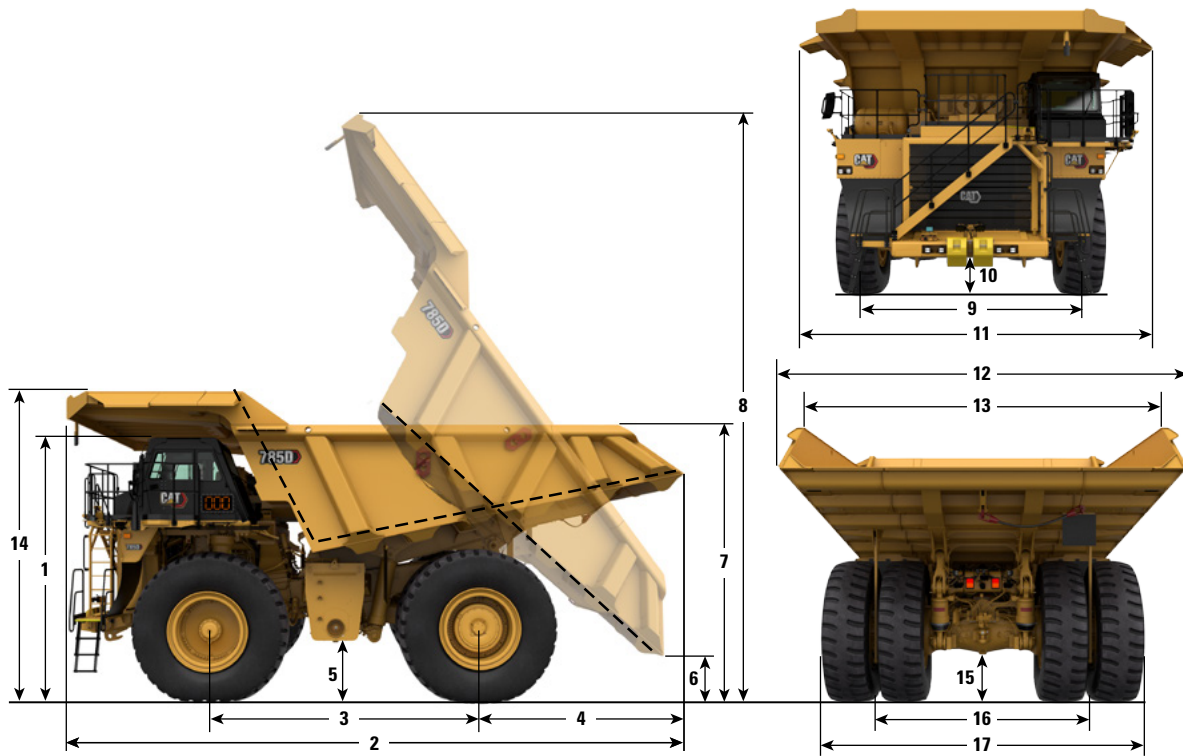
Steering

Steering Angle	31.34 degree	
Turning diameter, (ISO 7457:1997)	29.8 m	97 ft 9 in
Steering Standards	ISO 5010:2019	

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Dimensions

All dimensions are approximate. Shown with MSD II Body, 33.00 R51 size tires, unloaded machine.



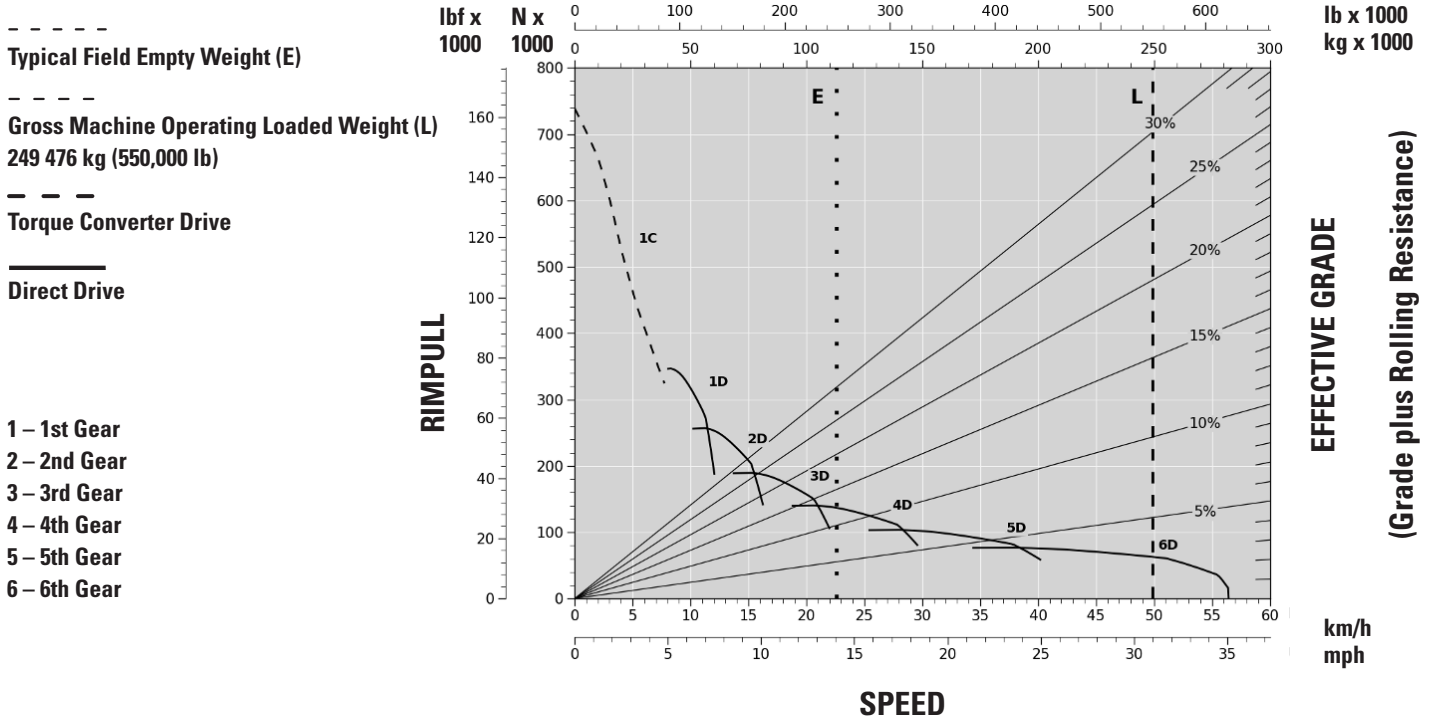
DIMENSION	DIM. SL #	MSD II		DUAL SLOPE		HP STD	
		mm	ft	mm	ft	mm	ft
1 Height to top of ROPS	1	5610	18.4	5530	18.1	5560	18.2
2 Overall Length	2	12 685	41.6	12 520	41.1	12 310	40.4
3 Wheelbase	3	5180	17	5180	17	5180	17
4 Rear Axle to Tail	4	4610	15.1	3780	12.4	4690	15.4
5 Ground Clearance	5	1165	3.8	1165	3.8	1165	3.8
6 Dump Clearance	6	1125	3.7	1275	4.2	1365	4.5
7 Loading Height – Empty	7	5300	17.4	4890	16	5615	18.4
8 Overall Height – Body Raised	8	11 800	38.7	11 860	38.9	11 895	39
9 Centerline Front Tire Width	9	4870	16	4870	16	4870	16
10 Engine Guard Clearance	10	1045	3.4	1045	3.4	1000	3.3
11 Overall Canopy Width	11	7560	24.8	7660	25.1	7560	24.8
12 Outside Body Width	12	6250	20.5	6090	20	6076	19.9
13 Inside Body Width	13	6020	19.8	5850	19.2	6060	19.9
14 Front Canopy Height	14	5890	19.3	5530	18.1	5880	19.3
15 Rear Axle Clearance	15	980	3.2	980	3.2	980	3.2
16 Centerline Rear Dual Tire Width	16	4285	14.1	4285	14.1	4285	14.1
17 Overall Tire Width	17	6265	20.6	6265	20.6	6265	20.6

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Gradeability/Speed/Rimpull

To determine gradeability performance: Read from gross weight down to the percent of total resistance. Total resistance equals actual percent grade plus 1% for each 10 kg/t (20 lb/ton) of rolling resistance. From this weight-resistance point, read horizontally to the curve with the highest obtainable gear, then down to maximum speed. Usable rimpull will depend upon traction available and weight on drive wheels.

GROSS WEIGHT



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785D Resistive Braking – 450 m (1,476 ft)

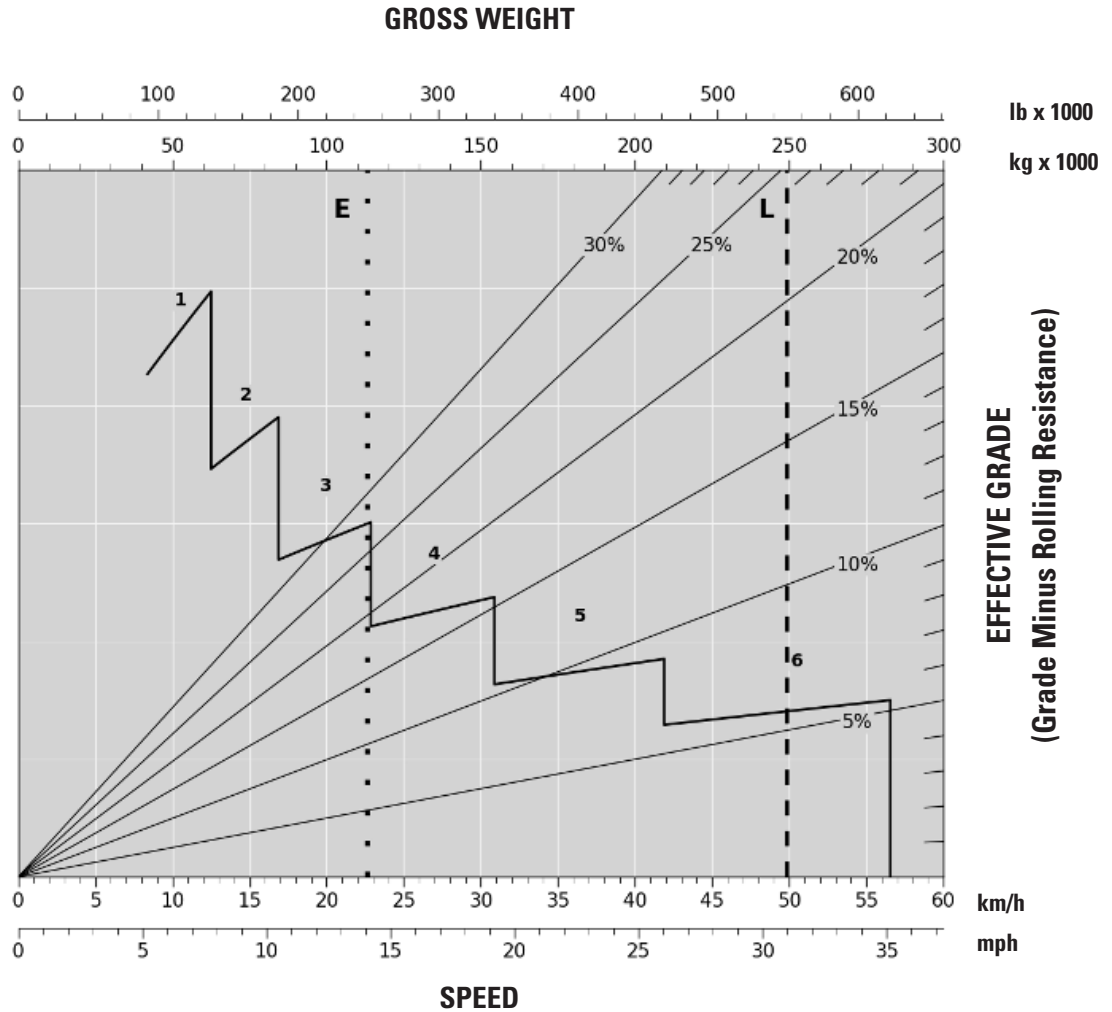
To determine performance: Add lengths of all downhill segments and, using this total, refer to proper resistive braking chart. Read from gross weight down to the percent effective grade. Effective grade equals actual % grade minus 1% for each 10 kg/t (20 lb/ton) of rolling resistance. From this weight-effective grade point, read horizontally to the curve with the highest obtainable gear, then down to maximum descent speed brakes can properly handle without exceeding cooling capacity. The following charts are based on these conditions: 32° C (90° F) ambient temperature, at sea level, with 33.00-R51 tires.

NOTE: Select the proper gear to maintain engine rpm at the highest possible level, without overspeeding the engine. If cooling oil overheats, reduce ground speed to allow transmission to shift to the next lower speed range.

Typical Field Empty Weight (E)

- - - - -
**Gross Machine Operating
 Loaded Weight (L)**
 249 476 kg (550,000 lb)

- 1 – 1st Gear
- 2 – 2nd Gear
- 3 – 3rd Gear
- 4 – 4th Gear
- 5 – 5th Gear
- 6 – 6th Gear



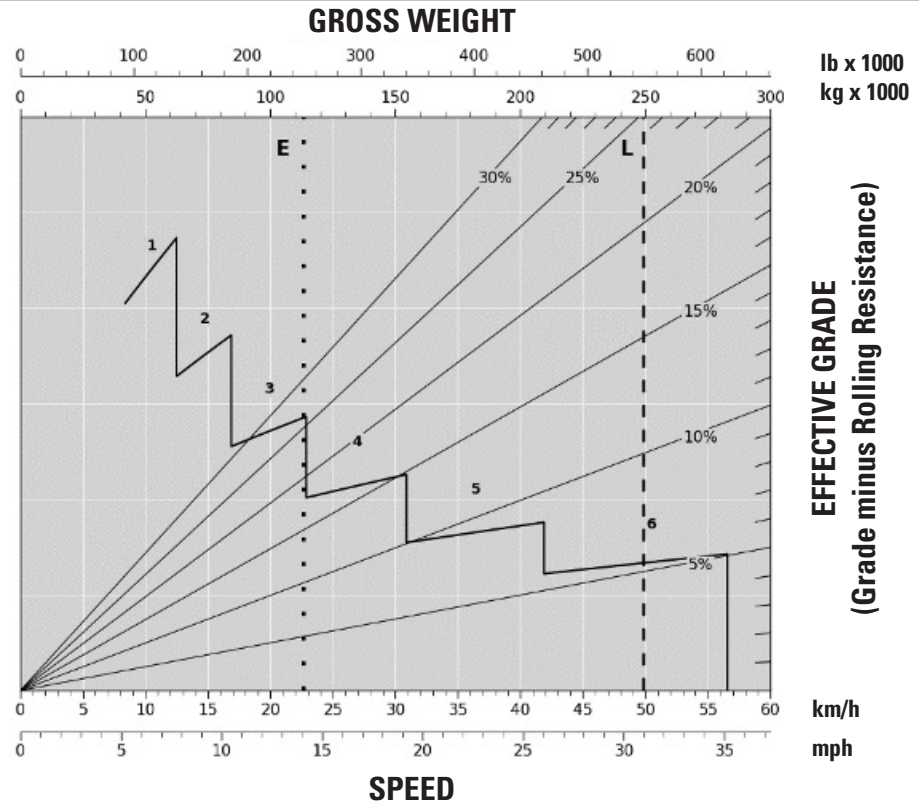
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785D Resistive Braking – 600 m (1,969 ft)

Typical Field Empty Weight (E)

- - - - -
Gross Machine Operating
Loaded Weight (L)
249 476 kg (550,000 lb)

- 1 – 1st Gear
- 2 – 2nd Gear
- 3 – 3rd Gear
- 4 – 4th Gear
- 5 – 5th Gear
- 6 – 6th Gear

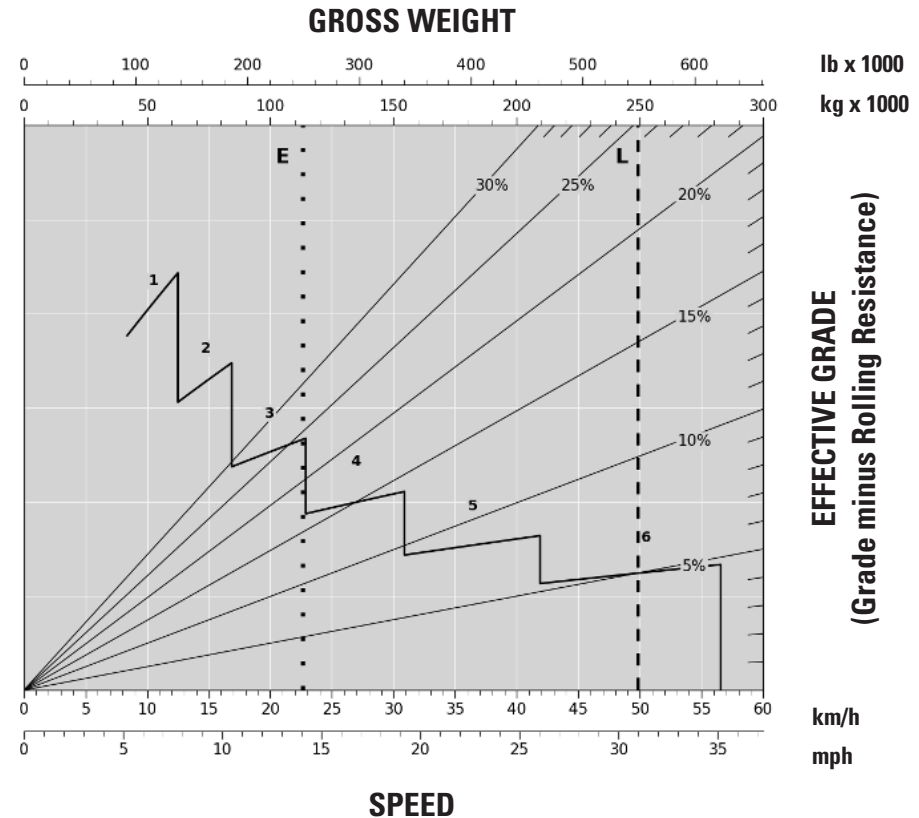


785D Resistive Braking – 900 m (2,953 ft)

Typical Field Empty Weight (E)

- - - - -
Gross Machine Operating
Loaded Weight (L)
249 476 kg (550,000 lb)

- 1 – 1st Gear
- 2 – 2nd Gear
- 3 – 3rd Gear
- 4 – 4th Gear
- 5 – 5th Gear
- 6 – 6th Gear



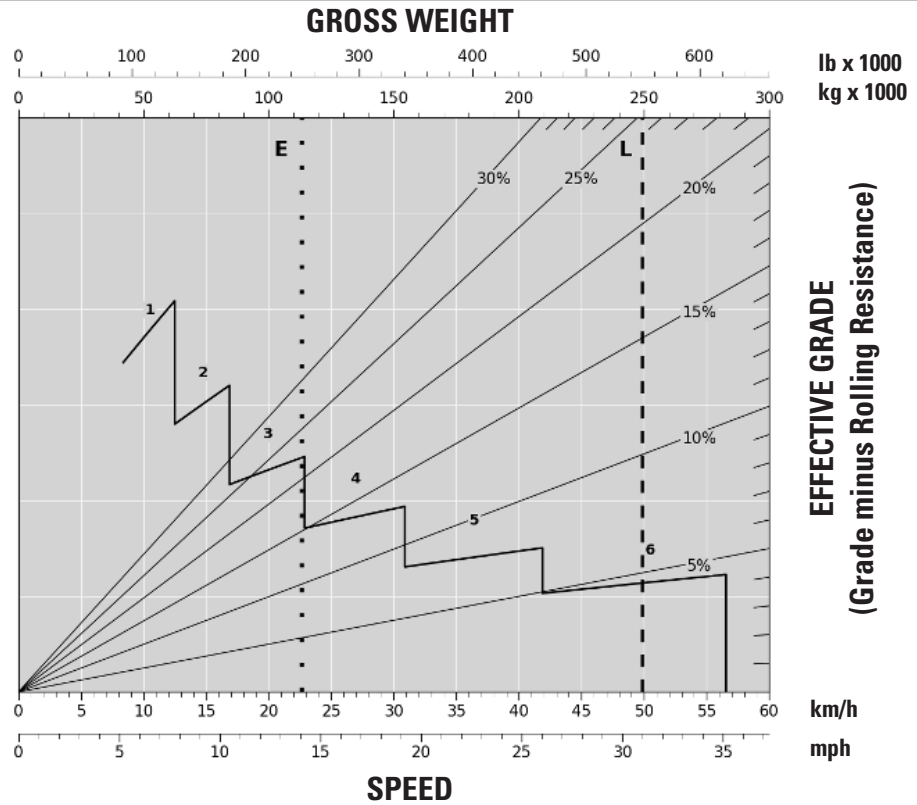
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785D Resistive Braking – 1500 m (4,921 ft)

Typical Field Empty Weight (E)

- - - - -
Gross Machine Operating
Loaded Weight (L)
249 476 kg (550,000 lb)

- 1 – 1st Gear
- 2 – 2nd Gear
- 3 – 3rd Gear
- 4 – 4th Gear
- 5 – 5th Gear
- 6 – 6th Gear

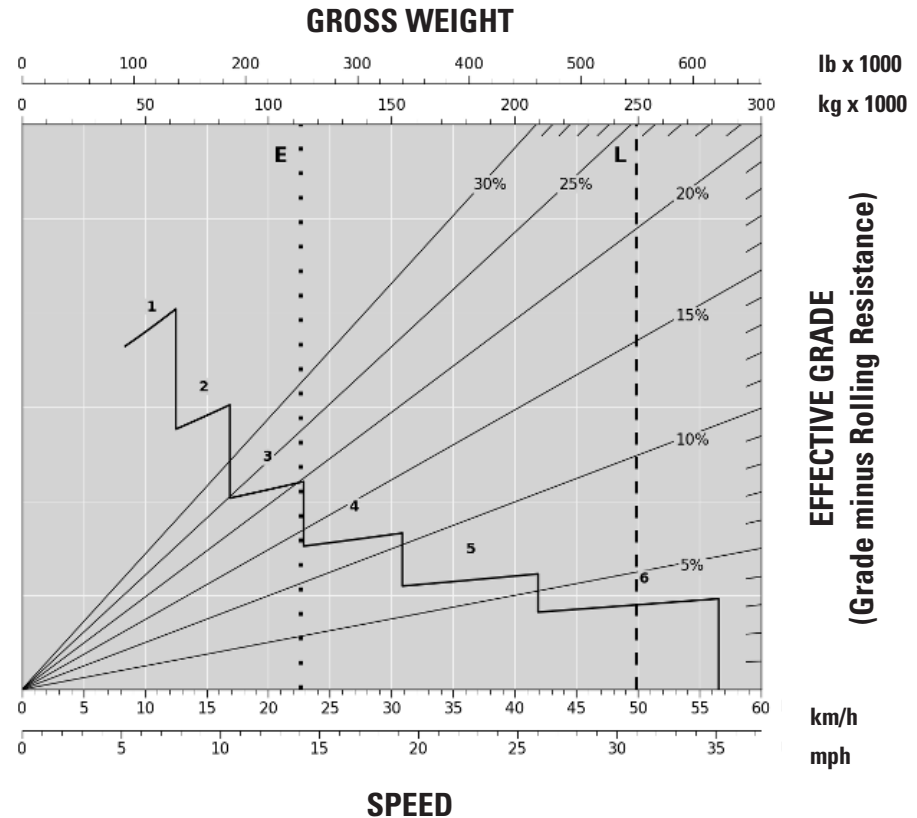


785D Continuous Resistive Braking

Typical Field Empty Weight (E)

- - - - -
Gross Machine Operating
Loaded Weight (L)
249 476 kg (550,000 lb)

- 1 – 1st Gear
- 2 – 2nd Gear
- 3 – 3rd Gear
- 4 – 4th Gear
- 5 – 5th Gear
- 6 – 6th Gear



Standard and Optional Equipment

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

	Standard	Optional		Standard	Optional
POWERTRAIN			ELECTRICAL		
Engine, 3512C 1450 hp, Fuel optimized	✓		Back up alarm	✓	
Engine, 3512C, 1450 hp, U.S EPA Tier 2 equivalent		✓	Alternator 105 ampere	✓	
Diesel engine/turbocharged/aftercooled	✓		Batteries, 12V (2), 93 amp-hour	✓	
Ground level engine shutdown	✓		Converter, 12V electrical	✓	
Ether starting aid (automatic)	✓		Electrical system, 24V, 15 amp	✓	
Aftercooler	✓		Led lighting system	✓	
Elevated low idle control	✓		– Backup and hazard lights		
Automatic starter protection	✓		– Directional signals, front and rear		
Multi-point oil pressure sensing	✓		– Engine compartment lights		
Pre-lube		✓	– External payload lights		
Filtration with oil cooler		✓	– Headlights and fog lights		
Oil renewal system		✓	– Lo-hi beam selector		
Muffler	✓		– Ladder light and service deck lights		
Muffler, extended exhaust		✓	– Left-hand ladder/service deck		
Exhaust system to heat body		✓	– Stop/tail lights		
Fan, conventional drive	✓		Vehicle Information Management Systems (VIMS)	✓	
Fan, variable speed, rockford for use in freezing weather operations		✓	VIMS, blue light	✓	
Air start	✓		Payload indicator lights	✓	
Electric start		✓	Payload digital display		✓
Engine idle shutdown	✓		INFORMATION MANAGEMENT		
BRAKING SYSTEM			Road Analysis Control (RAC)	✓	
Brake release motor (towing)	✓		<i>(continued on next page)</i>		
Oil-cooled, wet multi-disc (front and rear)/ (service, resistive braking, parking, secondary)	✓				
Automatic resistive braking control	✓				
Engine overspeed protection	✓				
Extended life brake disc material	✓				
TRANSMISSION					
6-speed, automatic powershift with electronic Transmission Chassis Control (TCC)	✓				
Controlled throttle shifting	✓				
Individual clutch modulation	✓				
Body-up shift inhibitor	✓				
Directional shift management	✓				
Downshift/reverse shift inhibitor	✓				
Oil level sensor	✓				
Neutral start switch/coast inhibitor	✓				
Body-up reverse neutralizer	✓				
Programmable top gear	✓				
Lock-up torque converter	✓				
Rear axle continuous lubrication/ filtration	✓				

785D Standard and Optional Equipment

Standard and Optional Equipment *(continued)*

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

	Standard	Optional		Standard	Optional
CAB			OBJECT DETECTION SYSTEM		
Standard Cab	✓		Radar and camera	✓	
– Deluxe operator seat			Radar and camera, alternate		✓
– Basic companion seat			Camera only (radar ready)		✓
– Payload indicator lamps			Camera, alternate		✓
– Retractable windshield visor			Omission, camera and radar		✓
Deluxe cab		✓	TECHNOLOGY PRODUCTS		
– Includes the standard cab features plus:			Product link™ cellular	✓	
– Premium plus operator seat			Product link satellite		✓
– Deluxe companion seat			SAFETY AND SECURITY		
– External payload digital display monitors			Ground level VIMS data port	✓	
– Cab cleanout vacuum			Ground level battery disconnect	✓	
– Operator footrest			Working at heights handrail		✓
Air conditioner	✓		Working at heights package		✓
Auxiliary power connection/cigarette lighter	✓		Working at heights service		✓
Diagnostic connection port	✓		Fire extinguisher, portable		✓
Dome courtesy light	✓				
Entertainment radio ready	✓				
– 5-amp converter, speakers, antenna, and wiring					
Air cleaner service indicator	✓				
Gauge panel: Air pressure, Brake oil temperature, Engine coolant temperature, Fuel level	✓				
Electric hour meter	✓				
Electric engine control fault indicator	✓				
Mirrors, right and left	✓				
Speedometer and Tachometer	✓				
Supplemental steering (automatic)	✓				
Traction control system	✓				
Transmission gear indicator	✓				
Vital Info Management System (VIMS)	✓				
VIMS message center w/universal gauge and keypad	✓				
Heater/defroster (11 070 kCal/43,930 BTU)	✓				
Horn	✓				
Hoist, body control (electric)	✓				
ROPS cab, insulated/sound suppressed	✓				
Seatbelt for operator, park brake safety; two-point seatbelt for Trainer	✓				
Stairway and walkway access, 600 mm (24 in)	✓				
Steering wheel, tilt, padded, telescopic	✓				
Window, operator, electric powered	✓				
Windshield, wiper, intermittent control, and washer	✓				
Prohibit access handrail – rear cab	✓				

(continued on next page)

785D Standard and Optional Equipment

Standard and Optional Equipment *(continued)*

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

	Standard	Optional		Standard	Optional
FUEL SYSTEMS			SERVICE		
Fast fill fuel system	✓		Service center		✓
1893 L (500 gallon) capacity fuel tank and fast fill system	✓		Quick connect fitting for engine oil	✓	
2498 L (660 gallon) capacity fuel tank and fast fill system		✓	Grease injector	✓	
Fuel filter basic screen	✓		Dual [LM2] [TS3] dryer for compressed air system	✓	
Fuel filter with separator		✓	Auto lube	✓	
Fuel heater		✓	Auxiliary steering quick connect (towing)	✓	
FLUIDS			BODIES AND ACCESSORIES		
Antifreeze protection to -50° C (-58° F)	✓		MSD II Body		✓
RIMS AND WHEELS			Dual Slope Body		✓
33R51 standard rim	✓		Gateless Coal Body		✓
33R51 quick change rim		✓	X Body		✓
Rim diffuser		✓	Side Extensions		✓
Hub odometer		✓	Tail Wraparound		✓
Wheel chocks		✓	Liner for base only		✓
Brake wear indicator		✓	Liner for entire body		✓
MUD GUARD			Rock guard for dual slope body		✓
Mud guards for standard hydraulic and fuel tank		✓	Rock ejectors	✓	
Mud guards for standard hydraulic and large fuel tank		✓			
ACCESS					
Fixed ladder	✓				
Powered staircase		✓			
CHASSIS					
Mirror heated	✓				
Mirror wide and heated		✓			
Driveline guard	✓				
COLD WEATHER					
240V engine coolant and oil heater		✓			

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Materials and specifications are subject to change without notice. Featured machines in photos may include additional equipment. See your Cat dealer for available options.

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