

R1700

Underground Mining Loader

Technical Specifications

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

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R1700 Underground Mining Loader Specifications

Engine

Engine Model	Cat® C13	
Rated Power		
Engine Power – EU Stage V Engine – ISO 14396:2002	257 kW	345 hp
Engine Power – U.S. EPA Tier 3/ EU Stage IIIA Equivalent Engine – ISO 14396:2002	269 kW	361 hp
Engine Power – VR Engine – ISO 14396:2002	269 kW	361 hp

- Power ratings apply at a rated speed of 1,800 rpm for LRCs (VR and Tier 3/Stage IIIA) engines when tested under the reference conditions for the specified standard.
- Power ratings apply at a rated speed of 2,050 rpm for HRC (Stage V) engine when tested under the reference conditions for the specified standard.
- All rating conditions are based on ISO/TR14396, inlet air standard conditions with a total barometric pressure of 100 kPa (29.5 in Hg), with a vapor pressure of 1 kPa (0.295 in Hg), and 25° C (77° F). Performance measured using fuel to EPA specifications in 40 CFR Part 1065 and EU specifications in Directive 97/68/EC with a density of 0.845-0.850 kg/L @ 15° C (59° F) and fuel inlet temperature 40° C (104° F).
- No engine derating required up to 2895 m (9,500 ft) altitude for Stage V engines, 3505 m (11,500 ft) altitude for Tier 3/Stage IIIA engines, and 3200 m (10,500 ft) for Tier 2/Stage II VR engines.
- Optional Ventilation Reduction package available.
- Optional engine with emissions equivalent to Tier 3 and Stage IIIA is also available.
- Optional engine meeting the U.S. EPA Tier 4 Final and EU Stage V emission standards is also available.

Operating Specifications

Rated Payload	15 000 kg	33,069 lb
Gross Machine Mass – Loaded	62 739 kg	138,316 lb
Static Tipping Load Straight Ahead, Lift Arms Horizontal	37 747 kg	83,218 lb
Static Tipping Load Full Turn, Lift Arms Horizontal	31 586 kg	69,635 lb
Break Out Force (Lift and Tilt)	24 190 kg	53,330 lb

Weights

Operating Mass*	43 177 kg	95,189 lb
Front Axle	17 399 kg	38,358 lb
Rear Axle	25 778 kg	56,831 lb
Operating Mass + Rated Payload*	58 177 kg	128,258 lb
Front Axle	41 464 kg	91,412 lb
Rear Axle	16 713 kg	36,846 lb

*Calculated Weight.

Transmission

Forward – 1st	4.9 km/h	3 mph
Forward – 2nd	9.2 km/h	5.7 mph
Forward – 3rd	16.4 km/h	10.2 mph
Forward – 4th	28.8 km/h	17.9 mph
Reverse – 1st	5.9 km/h	3.7 mph
Reverse – 2nd	10.5 km/h	6.5 mph
Reverse – 3rd	18.7 km/h	11.6 mph
Reverse – 4th	32.5 km/h	20.2 mph

Hydraulic Cycle Times

Raise	6.8 seconds
Dump	3.3 seconds
Lower, Empty, Float Down	2.9 seconds
Total Cycle Time	13.2 seconds

Bucket Capacities

Dump Bucket 1 (Standard)	5.7 m^3	7.5 yd^3
Dump Bucket 2	6.1 m^3	8.0 yd^3
Dump Bucket 3	6.6 m^3	8.6 yd^3
Dump Bucket 4	7.2 m^3	9.4 yd^3
Dump Bucket 5	7.5 m^3	9.8 yd^3
Dump Bucket 6	8.0 m^3	10.5 yd^3
Light Material Bucket	8.6 m^3	11.2 yd^3
Ejector Bucket	5.8 m^3	7.6 yd^3
Bolt Together Bucket 1	6.8 m^3	8.9 yd^3
Bolt Together Bucket 2	7.5 m^3	9.8 yd^3

Turning Dimensions

Outside Clearance Radius	6909 mm	272 in
Inner Clearance Radius	3139 mm	123.5 in
Axle Oscillation	8°	
Articulation Angle	44°	

Tires

Tire Size	26.5R25

Refill Capacities

Cooling System	75 L	19.8 gal
Engine Crankcase	37 L	9.8 gal
Hydraulic Tank	135 L	35.7 gal

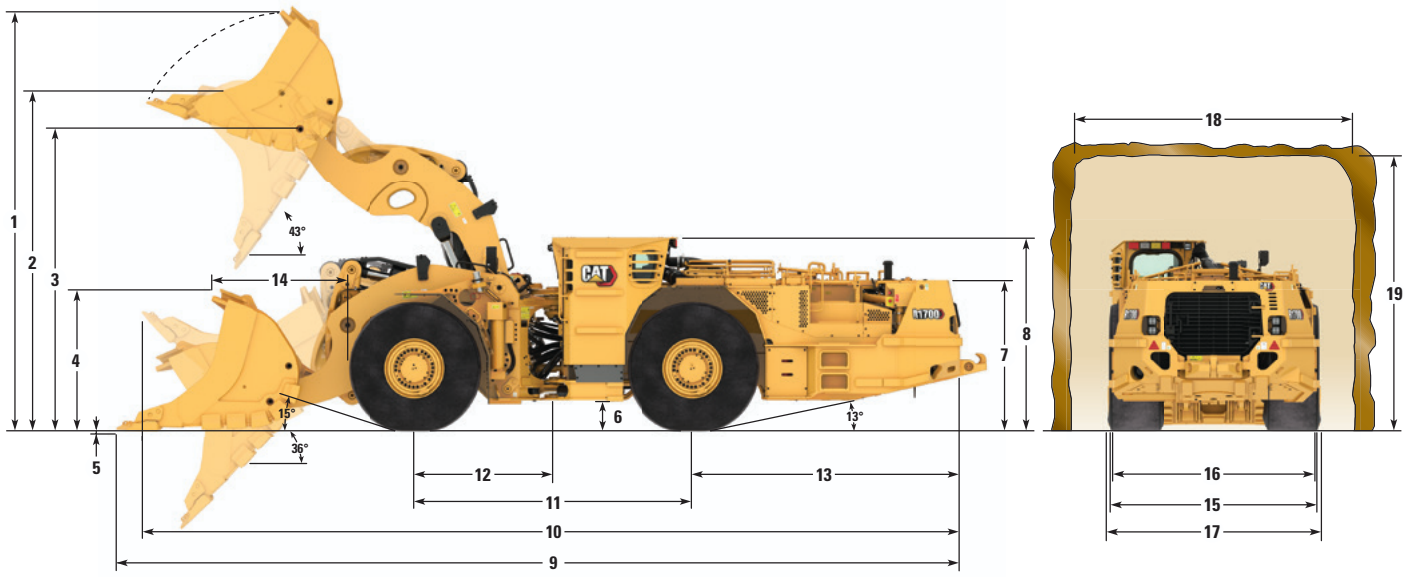
Capacities (Not Refill)

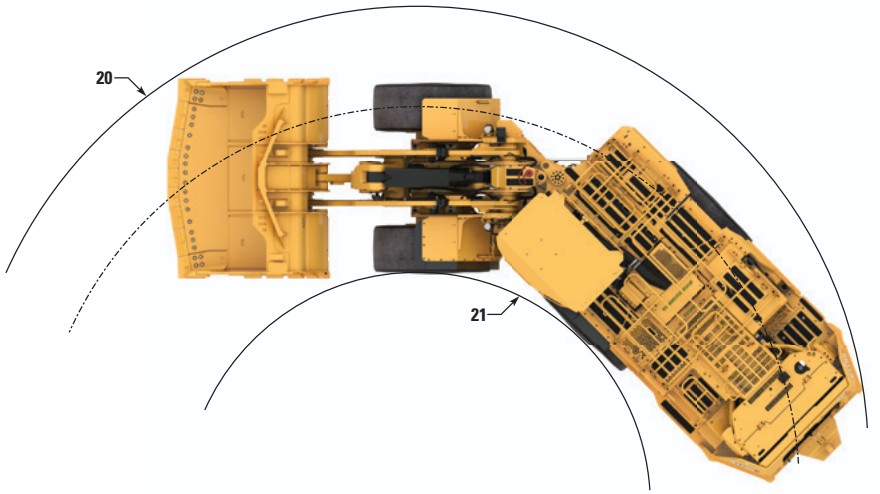
Fuel System	486 L	128.4 gal
Diesel Exhaust Fluid (DEF) Tank	27 L	7.1 gal
Front Differential and Final Drive	148 L	39 gal
Rear Differential and Final Drive	141 L	37.2 gal
Transmission	54 L	14.2 gal

R1700 Underground Mining Loader Specifications

Dimensions

All dimensions are approximate. Buckets include 6Y-2107 Modular Weldon Ground Engaging Tools (GET).





(continued on next page)

Dimensions *(continued)*

All dimensions are approximate. Buckets include 6Y-2107 Modular Weldon GET.

	467-1827 Dump Bucket (STD)		467-1828 Dump Bucket		467-1829 Dump Bucket	
Bucket Capacity	**5.7 m³**	**7.5 yd³**	**6.1 m³**	**8.0 yd³**	**6.6 m³**	**8.6 yd³**
Bucket Width over Cutting Edge without GET	2840 mm	112 in	2982 mm	117 in	2932 mm	115 in
1 Height – Max Bucket Raised	5727 mm	225 in	5732 mm	226 in	5762 mm	227 in
2 Height – Max Dump	4918 mm	194 in	4931 mm	194 in	4921 mm	194 in
3 Height – Max Lift Bucket Pin	4108 mm	162 in	4108 mm	162 in	4108 mm	162 in
4 Height – Dump Clearance at Max Lift	2477 mm	98 in	2467 mm	97 in	2350 mm	93 in
5 Height – Digging Depth	45 mm	2 in	44 mm	2 in	55 mm	2 in
6 Height – Ground Clearance	393 mm	15 in	393 mm	15 in	393 mm	15 in
7 Height – Top of Hood	1987 mm	78 in	1987 mm	78 in	1987 mm	78 in
8 Height – Top of Rollover Protective Structure (ROPS)	2541 mm	100 in	2541 mm	100 in	2541 mm	100 in
9 Length – Overall (Digging)	11 098 mm	437 in	11 112 mm	437 in	11 273 mm	444 in
10 Length – Overall (Tramming)	10 806 mm	425 in	10 815 mm	426 in	10 924 mm	430 in
11 Length – Wheelbase	3680 mm	145 in	3680 mm	145 in	3680 mm	145 in
12 Length – Front Axle to Hitch	1840 mm	72 in	1840 mm	72 in	1840 mm	72 in
13 Length – Rear Axle to Bumper	3552 mm	140 in	3552 mm	140 in	3552 mm	140 in
14 Length – Reach	1712 mm	67 in	1733 mm	68 in	1834 mm	72 in
15 Width – Overall Tire	2767 mm	109 in	2767 mm	109 in	2767 mm	109 in
16 Width – Machine without Bucket	2727 mm	107 in	2727 mm	107 in	2727 mm	107 in
17 Width – Machine with Bucket	2962 mm	117 in	3104 mm	122 in	3054 mm	120 in
18 Recommended Clearance Width	4000 mm	157 in	4000 mm	157 in	4000 mm	157 in
19 Recommended Clearance Height	4000 mm	157 in	4000 mm	157 in	4000 mm	157 in
20 Outer Clearance Radius	6909 mm	272 in	6973 mm	275 in	7000 mm	276 in
21 Inner Turning Radius	3139 mm	124 in	3139 mm	124 in	3139 mm	124 in

(continued on next page)

R1700 Underground Mining Loader Specifications

Dimensions *(continued)*

All dimensions are approximate. Buckets include 6Y-2107 Modular Weldon GET.

	616-0585 Dump Bucket		467-1830 Dump Bucket		549-5378 Dump Bucket	
Bucket Capacity	**7.2 m³**	**9.4 yd³**	**7.5 m³**	**9.8 yd³**	**8.0 m³**	**10.5 yd³**
Bucket Width over Cutting Edge without GET	2932 mm	115 in	3254 mm	128 in	3354 mm	132 in
1 Height – Max Bucket Raised	5887 mm	232 in	5824 mm	229 in	5807 mm	229 in
2 Height – Max Dump	4917 mm	194 in	4917 mm	194 in	4918 mm	194 in
3 Height – Max Lift Bucket Pin	4108 mm	162 in	4108 mm	162 in	4108 mm	162 in
4 Height – Dump Clearance at Max Lift	2239 mm	88 in	2342 mm	92 in	2286 mm	90 in
5 Height – Digging Depth	67 mm	3 in	55 mm	2 in	60 mm	2 in
6 Height – Ground Clearance	393 mm	15 in	393 mm	15 in	393 mm	15 in
7 Height – Top of Hood	1987 mm	78 in	1987 mm	78 in	1987 mm	78 in
8 Height – Top of ROPS	2541 mm	100 in	2541 mm	100 in	2541 mm	100 in
9 Length – Overall (Digging)	11 422 mm	450 in	11 285 mm	444 in	11 363 mm	447 in
10 Length – Overall (Tramming)	11 027 mm	434 in	10 938 mm	431 in	10 983 mm	432 in
11 Length – Wheelbase	3680 mm	145 in	3680 mm	145 in	3680 mm	145 in
12 Length – Front Axle to Hitch	1840 mm	72 in	1840 mm	72 in	1840 mm	72 in
13 Length – Rear Axle to Bumper	3552 mm	140 in	3552 mm	140 in	3552 mm	140 in
14 Length – Reach	1945 mm	77 in	1851 mm	73 in	1895 mm	75 in
15 Width – Overall Tire	2767 mm	109 in	2767 mm	109 in	2767 mm	109 in
16 Width – Machine without Bucket	2727 mm	107 in	2727 mm	107 in	2727 mm	107 in
17 Width – Machine with Bucket	3054 mm	120 in	3376 mm	133 in	3476 mm	137 in
18 Recommended Clearance Width	4000 mm	157 in	4000 mm	157 in	4000 mm	157 in
19 Recommended Clearance Height	4000 mm	157 in	4000 mm	157 in	4000 mm	157 in
20 Outer Clearance Radius	7056 mm	278 in	7138 mm	281 in	7206 mm	284 in
21 Inner Turning Radius	3139 mm	124 in	3139 mm	124 in	3139 mm	124 in

Dimensions *(continued)*

All dimensions are approximate. Buckets include 6Y-2107 Modular Weldon GET.

	467-1831 Light Material Bucket		561-1775 Bolt Together Bucket		581-6671 Bolt Together Bucket		467-1746 Ejector Bucket	
Bucket Capacity	**8.6 m³**	**11.2 yd³**	**6.8 m³**	**8.9 yd³**	**7.5 m³**	**9.8 yd³**	**5.8 m³**	**7.6 yd³**
Bucket Width over Cutting Edge without GET	3492 mm	137 in	2962 mm	117 in	3376 mm	133 in	2780 mm	109 in
1 Height – Max Bucket Raised	5859 mm	231 in	5809 mm	229 in	5808 mm	229 in	5885 mm	232 in
2 Height – Max Dump	4921 mm	194 in	4917 mm	194 in	4915 mm	194 in	4983 mm	196 in
3 Height – Max Lift Bucket Pin	4108 mm	162 in	4108 mm	162 in	4108 mm	162 in	4108 mm	162 in
4 Height – Dump Clearance at Max Lift	2283 mm	90 in	2336 mm	92 in	2376 mm	94 in	2268 mm	89 in
5 Height – Digging Depth	62 mm	2 in	86 mm	3 in	93 mm	4 in	98 mm	4 in
6 Height – Ground Clearance	393 mm	15 in	393 mm	15 in	393 mm	15 in	393 mm	15 in
7 Height – Top of Hood	1987 mm	78 in	1987 mm	78 in	1987 mm	78 in	1987 mm	78 in
8 Height – Top of ROPS	2541 mm	100 in	2541 mm	100 in	2541 mm	100 in	2541 mm	100 in
9 Length – Overall (Digging)	11 362 mm	447 in	11 292 mm	445 in	11 236 mm	442 in	11 405 mm	449 in
10 Length – Overall (Tramming)	10 985 mm	432 in	10 937 mm	431 in	10 899 mm	429 in	11 079 mm	436 in
11 Length – Wheelbase	3680 mm	145 in	3680 mm	145 in	3680 mm	145 in	3680 mm	145 in
12 Length – Front Axle to Hitch	1840 mm	72 in	1840 mm	72 in	1840 mm	72 in	1840 mm	72 in
13 Length – Rear Axle to Bumper	3552 mm	140 in	3552 mm	140 in	3552 mm	140 in	3552 mm	140 in
14 Length – Reach	1907 mm	75 in	1715 mm	68 in	1805 mm	71 in	1938 mm	76 in
15 Width – Overall Tire	2767 mm	109 in	2767 mm	109 in	2767 mm	109 in	2767 mm	109 in
16 Width – Machine without Bucket	2727 mm	107 in	2727 mm	107 in	2727 mm	107 in	2727 mm	107 in
17 Width – Machine with Bucket	3614 mm	142 in	3042 mm	120 in	3370 mm	133 in	2894 mm	114 in
18 Recommended Clearance Width	4000 mm	157 in	4000 mm	157 in	4000 mm	157 in	4000 mm	157 in
19 Recommended Clearance Height	4000 mm	157 in	4000 mm	157 in	4000 mm	157 in	4000 mm	157 in
20 Outer Clearance Radius	7276 mm	286 in	7034 mm	277 in	7136 mm	281 in	7022 mm	276 in
21 Inner Turning Radius	3139 mm	124 in	3139 mm	124 in	3139 mm	124 in	3139 mm	124 in

R1700 Underground Mining Loader Specifications

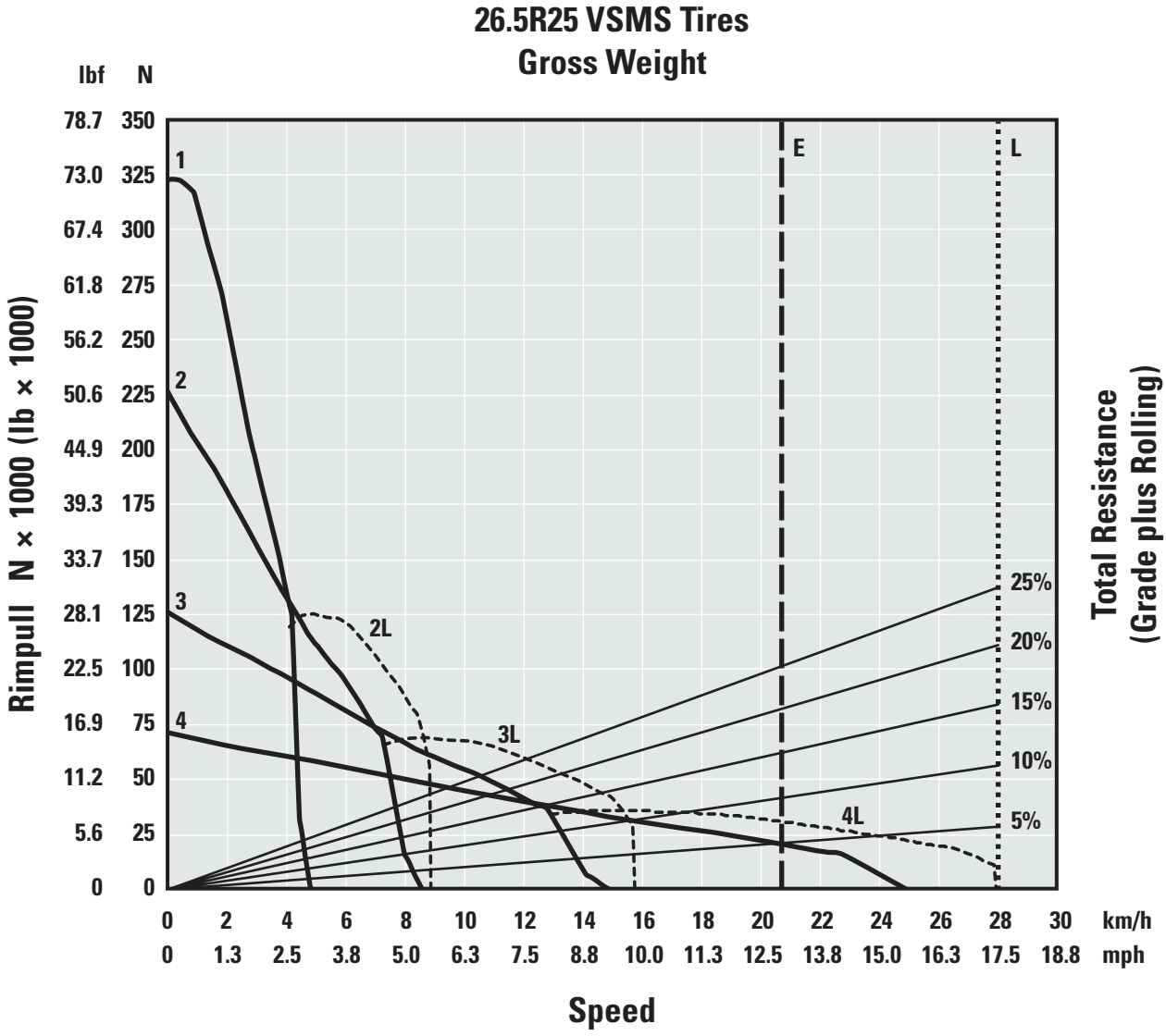
Gradeability

Gear	% Grade								
Unloaded	**0**	**2**	**4**	**6**	**8**	**10**	**12.5**	**14.3**	**16.7**
Forward		**1:20**	**1:25**	**1:16.5**	**1:12.5**	**1:10**	**1:8**	**1:7**	**1:6**
1	4.7	4.6	4.5	4.5	4.4	4.4	4.4	4.4	4.3
2	8.9	8.9	8.9	8.9	8.9	8.9	8.8	8.7	8.5
3	15.7	15.7	15.7	15.5	15.0	13.7	11.9		
4	27.9	27.0	23.6	19.1					
Reverse									
1	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
2	10.1	10.1	10.1	10.1	10.1	10.1	9.9	9.7	
3	18.0	18.0	17.9	17.3	15.9	14.2			
4	31.7	28.9	23.8						
Loaded									
Forward									
1	4.7	4.5	4.5	4.4	4.4	4.4	4.3	4.3	4.3
2	8.9	8.9	8.9	8.9	8.9	8.7	8.4	7.9	7.2
3	15.7	15.7	15.4	14.4	12.6				
4	27.8	24.8	18.7						
Reverse									
1	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.6
2	10.1	10.1	10.1	10.1	10.0	9.7	8.9	8.1	
3	18.0	17.9	17.3	15.1	12.4				
4	31.1	25.5							

Notes: Engine, Cat C13 – meets Stage V emission standards
Minimum fan speeds and idle hydraulics
Machine mass, empty – 42 747 kg (94,241 lb)
Calculated with 2% rolling resistance
All gears with lock-up clutch engaged apart from 1F

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 rolling resistance. As a general guide use 2% for rolling resistance in underground application or refer to the Caterpillar Performance Handbook. From the total 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.



1 – 1st Gear
2 – 2nd Gear
2L – 2nd Gear (Lock-Up Clutch)
3 – 3rd Gear
3L – 3rd Gear (Lock-Up Clutch)
4 – 4th Gear
4L – 4th Gear (Lock-Up Clutch)

E – Empty 43 177 kg (95,189 lb)
L – Loaded 58 177 kg (128,258 lb)

Note: Minimum fan speeds and idle hydraulics are used.

R1700 Standard and Optional Equipment

Standard and Optional Equipment

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

	Standard	Optional
POWER TRAIN		
Brakes, full hydraulic enclosed wet multiple-disc (SAFR)	✓	
Engine:		
– Cat C13 6 cylinder, diesel	✓	
– Air-to-air aftercooler (ATAAC)	✓	
Engine options:		
– Engine, Ventilation Reduction (VR)		✓
– Engine, Stage 3		✓
– Engine, Stage V		✓
Filter, engine, remote mounted	✓	
Fuel priming aid	✓	
Park brake switch engagement – push to apply/pull to apply		✓
Pre-cleaner, engine air intake	✓	
Radiator, high efficiency		✓
Reversible steering		✓
Torque converter with automatic lock up clutch	✓	
Transmission:		
– Electronic Clutch Pressure Control (ECPC)	✓	
– Automatic planetary power shift (4F/4R)	✓	
– Transmission neutralizer	✓	
Traction control	✓	
ELECTRICAL		
Alarm, reversing	✓	
Alternator, 150 amp	✓	
Battery disconnect switch, ground level	✓	
Battery disconnect switch, in cab		✓
Batteries, low maintenance	✓	
Diagnostic connector	✓	
Engine shutdown switch	✓	
Lighting LED:		
– External, front, rear	✓	
– Stop, dual	✓	
– Service bay		✓
– Truck loading		✓
Receptacle group, auxiliary start	✓	
Starter, electric, 24-volt	✓	
Starting and charging system	✓	
Switch isolation		✓

	Standard	Optional
OPERATOR ENVIRONMENT		
Automatic Brake Application (ABA)	✓	
Cab, ROPS and/or Falling Object Protective Structure (FOPS) certified	✓	
Operators station ROPS/FOPS enclosed		✓
Camera, rear view		✓
Color Multi Purpose Display (CMPD):		
– Front and rear brake gauges	✓	
– Transmission pressure	✓	
– System diagnostics	✓	
Control units, roof mounted (with service panel access)	✓	
Electrohydraulic implement controls (single joystick)	✓	
Horns, electric	✓	
Instrumentation/gauges:		
– Speedometer/tachometer	✓	
– Fuel level	✓	
– Hydraulic oil temperature	✓	
– Engine coolant temperature	✓	
Light, warning, residual brake	✓	
Monitor, door latch	✓	
Mounts, radio and speaker (×2)	✓	
Operator Presence System	✓	
Seat:		
– Seat, suspension, air	✓	
– Seat belt, retractable	✓	
– Seat, suspension, TEE, air		✓
– Seat cover		✓
Secondary Steering System		✓
Storage box, enclosed, 5 liter (3 gal)	✓	
Coat hook	✓	
Cup holder	✓	
Armrests and kneepads, independently adjustable	✓	

(continued on next page)

Standard and Optional Equipment *(continued)*

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

	Standard	Optional
TECHNOLOGY		
Command for Underground* – machine pre-requisites		✓
Autodig, underground		✓
Cat Production Measurement (CPM) Payload Weighing System		✓
Product Link™ Elite – machine health and information	✓	
Tire monitoring		✓
TIRES, RIMS, AND WHEELS		
Tires must be selected from the Mandatory Attachments section (choose between):	✓	
– Tire, 26.5 × R25, VSMS2 Bridgestone		
– Tire, 26.5 × R25, VSDL Bridgestone		
Rims:	✓	
– Tubeless, set of 4	✓	
– Spare, tubeless		✓
– Rim identification numbering		✓
OTHER STANDARD AND OPTIONAL EQUIPMENT		
Brake axle cooling	✓	
Brake Release Arrangements, includes Steering Release:		
– Recovery hook		✓
– Recovery bar		✓
Bucket dump (5.7 m^3/7.5 yd^3)	✓	
Bucket:		
– Various sizes, Dump (6.1 m^3/8.0 yd^3, 6.6 m^3/8.6 yd^3, 7.2 m^3/9.4 yd^3, 7.5 m^3/9.8 yd^3, 8.0 m^3/10.5 yd^3)		✓
– Bolt-together (6.8 m^3/8.3 yd^3, 7.5 m^3/9.8 yd^3)		✓
– Light material (8.6 m^3/11.2 yd^3)		✓
– Ejector (5.8 m^3/7.6 yd^3)		✓

*Please consult with your regional commercial or technology representative prior to upgrading your machine to Command for Underground.

	Standard	Optional
OTHER STANDARD AND OPTIONAL EQUIPMENT *(continued)*		
Bucket lip:		
– Modular weld on	✓	
– Bolt-on lip		✓
– Durilock™		✓
– Lip fully welded or tack welded		✓
Cutting edge:		
– Modular weld on		✓
– Bolt-on half arrow		✓
– Durilock		✓
Heel shrouds		✓
Mechanically Attached Wear Plate System (MAWPS)		✓
Wear bars, ejector and dump buckets		✓
Wear liner		✓
Decals, International Picto Graphics	✓	
Fast Fill System:		
– Coolant		✓
– Engine oil		✓
– Fuel		✓
– Hydraulic oil		✓
– Transmission oil		✓
Fenders, front, rear	✓	
Firewall	✓	
Fuel tap, manual shutoff	✓	
Fire Suppression System – Ansul, wet		✓
Fluids:		
– Arctic Fuel		✓
– Arctic Coolant		✓
Guards, engine and transmission	✓	
Guards, light and window		✓
Handholds	✓	
Handrails, quick release	✓	
Handrails, additional		✓
Lift arm positioner for return to dig	✓	

(continued on next page)

R1700 Standard and Optional Equipment

Standard and Optional Equipment *(continued)*

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

	Standard	Optional
OTHER STANDARD AND OPTIONAL EQUIPMENT *(continued)*		
Lifting Group, Mine Transfer		✓
Lubrication System:		
– Semi central	✓	
– Automatic		✓
Oil filter, transmission oil, long life	✓	
Operation and Maintenance Manual	✓	
Radiator grill, swing out	✓	
Reflective tape		✓
Ride Control System		✓
Service tools		✓

	Standard	Optional
OTHER STANDARD AND OPTIONAL EQUIPMENT *(continued)*		
Service oil sample	✓	
Vandalism covers		✓
Wear bars:		
– Fuel tank	✓	
– Hydraulic tank	✓	
– Cab		✓
Window:		
– Window, single pane	✓	
– Window, dual pane		✓

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(Global)

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