

R1700

Underground Mining Loader



Engine

Engine Model	Cat® C13	
Gross Power – EU Stage V Engine – ISO 14396	257 kW	345 hp
Gross Power – U.S. EPA Tier 3/EU Stage IIIA	269 kW	361 hp
Equivalent Engine – ISO 14396		
Gross Power – Ventilation Reduction (VR) Engine – ISO 14396	269 kW	361 hp

Operating Specifications

Rated Payload	15 000 kg	33,069 lb
Gross Machine Mass – Loaded	62 739 kg	138,316 lb
Bucket Capacities	5.7-8.6 m ³	7.5-11.2 yd ³

The Next Generation Load-Haul- Dump (LHD) from Caterpillar



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Our goal for the redesign of the R1700 was simple; add value, power and performance with safety at its core. With each cycle, the R1700 hauls 20 percent more payload, it loads, climbs, hauls and dumps quicker. It features three engine emission options that can be tailored to your mine's ventilation requirements. The R1700 is a powerful new tool for mining.

Structures

Strength through Advanced Technology and Validation



We've integrated more tie down and lift points to this machine to help drop it down a mine shaft. The new optional tow hook is bolted on for quick removal and installation.



Technology Enabled Strength

The R1700 is a stronger, more robust machine which is clearly reflected in the new design of its structures. Using the latest engineering design and validation tools, we've given this frame strength where it needs it most, and saved weight in other locations.

The Non Engine End Frame

The front frame section has a new four plate design with a new, fully integrated front axle support casting at its base. This new casting absorbs greater impact, vibration and tram loads that come with the growth of the machine capacity and weight.

Lift Arms and Bucket Linkage

The lift arms on the R1700 are visibly stronger with additional steel thicknesses in key areas.

- This new design allowed us to widen access to service points to the front frame and hydraulic components.
- Our bucket linkage, cylinder attachment points and cylinder sizes have been updated to greatly improve the mechanics of loading.
- Complimenting this new geometry are brand new, redesigned buckets for this machine.

The Engine End Frame

The engine end frame was a complete redesign. With the addition of (optional) Stage V aftertreatment, the frame grew slightly. The redesign allowed us to improve:

- The center of gravity.
- The machine's loading characteristics.
- Ride quality for the operator.

You'll notice that we've angled the rear of the frame while maintaining our departure angle to minimize impact damage, and we've increased wear material coverage.

- Two castings have been incorporated into the rear of the frame as counterweights and to help manage loads through the frame.
- Service access points underneath the machine have been made larger.

Where previous generations of this machine had two frame-integrated fuel tanks, the R1700 has a single bolted in fuel tank that is simple to maintain and offers approximately 12 hours of operation before refueling.

The Hitch

Like the newly expanded service access on the front linkage, we have redesigned the hitch with:

- More space for service technicians to work.
- New and larger pins connecting the two frames.
- Clean and simplified hydraulic routings across the hitch.





Power Train

Production Is the Priority

The Cat® C13 Diesel Engine

All new levels of power and performance for the R1700 start with the engine. Where the R1700G made good use of the power from the C11, this new machine and its performance goals demanded more – so we moved up in size to the C13.

The C13 is a heavy-duty performer with an in-line, 6-cylinder configuration that is turbo-charged and air-to-air aftercooled. In the R1700, this engine is set at a horsepower rating of:

- 257 kW or 345 hp at 2,050 rpm for Stage V engines.
- 269 kW or 361 hp at 1,800 rpm for engines that emit equivalent to Tier 3/Stage IIIA or Tier 2/Stage II VR (ventilation reduction).

The C13 is capable of high altitude operation and will begin to derate after:

- Altitude 2895 m (9,500 ft) for Stage V engines.
- Altitude 3505 m (11,500 ft) for Tier 3/Stage IIIA engines.
- Altitude 3200 m (10,500 ft) for Tier 2/Stage II VR engines.

The C13 features the Cat MEUI (mechanically-actuated electronic unit injection) system for providing high pressure injection across the engines operating speed range. This engine requires multiple injections of highly pressurized and atomized fuel during the combustion cycle. Precisely shaping the combustion cycle lowers combustion chamber temperatures, which generates fewer emissions, optimizes fuel combustion; translating into more work per liter (gallon) of fuel burned.

Aftertreatment for the Stage V engine configuration is chassis mounted for convenience and includes a Diesel Emission Fluid (DEF) tank sized to match the 12-hour capacity of the fuel tank. Aftertreatment components are carefully guarded and heat wrapped. The system uses regeneration to manage emissions inside the Clean Emissions Module (CEM). Regeneration can be set to automatic – the operator is informed when regeneration is happening, and the machine takes care of the process while continuing to operate.

Lock-Up Clutch Torque Converter

Part of the speed on grade improvement comes from a new lock-up clutch torque converter. It is the same component used in our larger LHD range and it has been sized for extreme durability. It engages automatically as the machine shifts into second gear.

Transmission

The Cat transmission on this machine is also newly resized for durability. It is now governed by our APECS software that allows the transmission to comfortably shift under higher torque conditions. This allows the machine to climb grades more quickly by reducing lost momentum between shifts, and it can potentially allow the machine to climb in a lower gear saving fuel. This will be determined by your mine conditions.

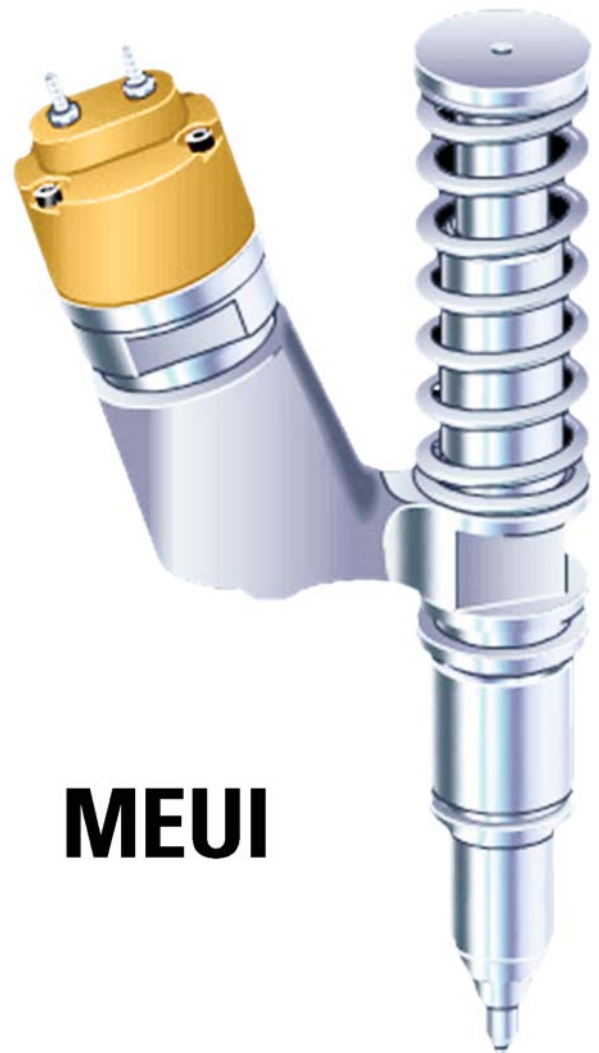
ECPC or Electronic Clutch Pressure Control is working in tandem with APECS to reduce pressure spikes inside the transmission and ensure its long-term durability. The result is more efficient delivery of rimpull for production. These controls also improve the ride quality of the machine.

We've improved oil flow to the output gear group for long term durability, and you'll change the oil every 1,000 hours reducing maintenance time and cost.

Axles

Our axles have grown to manage the added weight and capacity of the machine. We've increased the axle housing thickness for abrasion protection and corrosion resistance. There has been a slight track width increase of 64 mm (2.51 in) with these new axles. The R1700 has the same differential used on our R2900 machine. Here are the major updates to the axle:

- Larger spindles.
- Wider planetary gear.
- Larger dual cone seal.
- Upgraded planet shaft retention.
- Larger trunnions and trunnion supports and trunnion bearings.



Electro-Hydraulic Braking

Adding EH braking allowed us to substantially improve the traction control system, engine overspeed limiting, ground speed limiting and improved braking under remote control.



Hydraulics

Next Generation Power, Performance and Safeguards

Our hydraulic system on this machine is state-of-the-art. It uses on-demand piston pumps for durability, higher pressures and overall system efficiency. Full system pressure is available to the operator while the engine is at idle. The system is load sensing, and it puts priority on braking and steering for safety.

During loading – it is providing significantly more breakout force during digging and at the other end of the cycle we've given the machine faster dumping times. The front linkage cylinders have been repositioned for better mechanical lift.

The system also has some built in safeguards. Should the operator open the door to the cab while the machine is energized, the hydraulic system is neutralized and implements will not move.

Operators will appreciate the responsiveness of the machine.

- During the load or dump cycle – the harder the operator pushes the controls, the faster the machine responds.
- For the first time, we can offer automated loading of the bucket with the Auto Dig feature. This is a system that is well proven on Cat surface products, and it paves the way for full autonomy in the future.
- The steering system is pilot controlled to provide more acute feel for the operator as they maneuver in tight places.

Ride control is now fully integrated into the hydraulic system and engages automatically as the machine goes above 5 km/h (3 mph). We are electronically snubbing the cylinders for protection and operator comfort.

The R1700 has auto retarding that is hydraulically actuated.

- As the name implies, the system comes on automatically when the operator's foot is lifted from the throttle.
- It will improve cycle times as operators gain confidence and become more comfortable on downhill grades at faster speeds.





Operator Environment

Next Generation Control and Information

The cab on the R1700 maintains the same footprint as previous generations; however, we have completely changed the interior with new space allotment for the operator and all new electronic components. Material has been added to the underside of the cab structure to protect against corrosion. We offer both an enclosed cab or an open cab configuration.

Operator Comfort

- Additional space created around the operator.
- New, adjustable padding for the operator's knees.
- The operator sits slightly lower inside the cab for improved ride quality and head room.
- Additional space created for foot comfort when operating the pedals.
- Climate control standard with enclosed cab option.
- All new HVAC coverage with improved airflow, greater defrosting coverage, and reduced noise levels.
- Improved ergonomics on all controls, joy sticks.
- Adjustable arm rest.
- Cab is isolation mounted to reduce vibration transfer to the operator.
- Optional dual pane windows reduce noise and improve temperature control in extreme ambient conditions.
- Cab pressurization to keep dust out.
- Automatic loading of the bucket reduces fatigue.
- Two air ride seat options – with the Tee seat allowing for personal protective equipment.
- Ride control option with electronic cylinder snubbing.
- New cup holder.



Operator Environment

Next Generation Comfort and Safety



Operator Safety

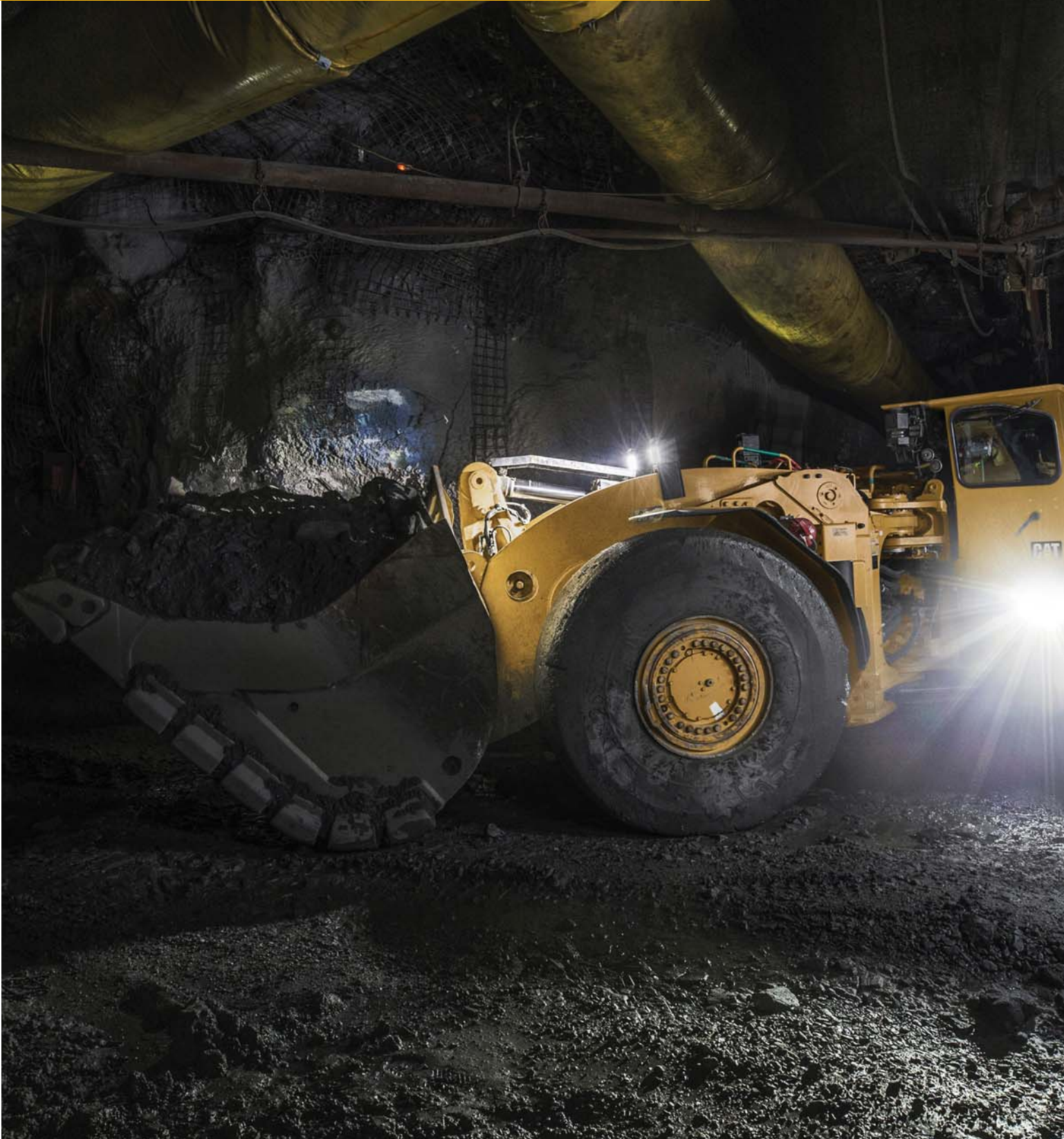
- Operator present system and door latch sensor.
- Dual secondary emergency exits.
- Dual zipper sealed glass standard.
- Significantly improved HVAC double ducting to defrost and dehumidify glass.
- Increased door width.
- EROPS/OROPS certified.
- Twin windshield wipers on the forward-facing window and single wipers on the door and rear facing window.
- Camera for operating in reverse with color display (optional).
- Fire Suppression activation from within the cab.
- Caterpillar designed, new remote control with full diagnostics display.
- Ground speed control limiting can be set from the factory.
- Neutral coast inhibiting.

Information Displays and Technology

- Real time system information on high resolution dash display with 11 language options.
- Tire pressure monitoring.
- Dash display is quick-start enabled with information available before engine start.
- Operator can see that the lock-up clutch, ride control, auto loading and high beam lights are in use, and that regeneration emission controls are engaged.
- J1939 and Ethernet communications connectivity available.
- Product Link™ Elite (PLE) data analysis with WiFi connectivity.
- All machine ECMs have been moved to a dedicated sealed box outside of the cab.
- Command for Underground now managed through onboard electronics and available automation-ready from the factory.

Electrical Systems

Long Term Reliability and Corrosion Resistance





Cat electrical components – like connectors, wiring harnesses and ECMs – are a critical element in our machine’s long-term reliability. Our electrical components are designed to live in corrosive environments.

For the R1700, we have placed all the machine’s ECMs in a single, air cooled and sealed box located on the service platform of the machine. This allowed us to provide clean, simplified electrical routings throughout the machine and greatly improved access and convenience for service personnel.

Other key electrical components include a new high-resolution camera system – with three new cameras added for Command for Underground.

For this machine, Caterpillar has standardized on LED lights, with plenty of illumination both to the front and rear of the machine.

- We added a cab door-mounted light to provide visibility to the walls when turning.
- The transmission bay has a light that is actuated on the side of the cab.
- A green light at the back of the cab indicates remote control is being activated.
- Two amber lights indicate the machine is operating under remote control.
- An optional truck loading light is available – it comes on automatically as the lift arms reach 50 percent of their travel up.

For safety – we have placed the electrical control box at ground level on the cold side of the engine and we’ve improved battery accessibility also from ground level.

One of the more significant improvements we’ve made to our electrical components is incorporating Command for Underground into our ECMs. This allows us to deliver the technology ready from the factory.

Payload monitoring is available and requires only low lift of the bucket to take the measurement.



Buckets and Ground Engaging Tools

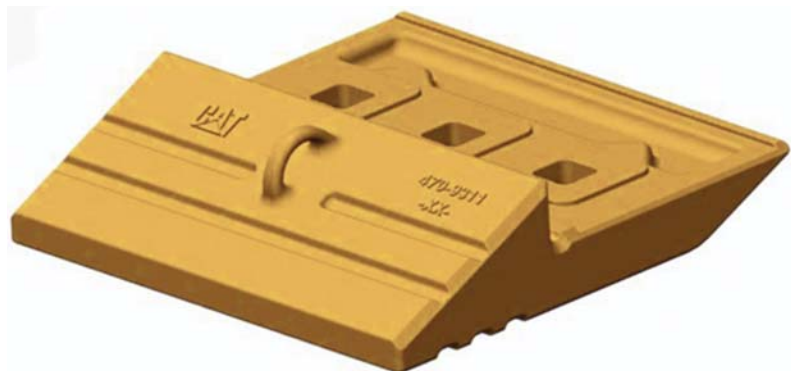
Performance Has Never Been Better

Caterpillar designed and manufactured the R1700 bucket to match its performance capabilities. The result is a newly patented bucket design with the following advantages:

- Load path management for long wear life.
- Increased throat angle for easier loading in rock.
- Improved tire coverage for cleanup and tire protection.
- Added strength to match improved break out force.
- Added stiffness to inside torque tube for torsional rigidity.
- Corner gussets on top.
- There are six dump bucket sizes, ranging from 5.7 m³ (7.5 yd³) up to 8.6 m³ (11.2 yd³), a 5.8 m³ (7.6 yd³) ejector bucket and a 6.8 m³ (8.9 yd³) bolt together bucket available.

Complimenting this bucket design is a new Ground Engaging Tool offering. The Bolt-On, Half Arrow GET (BOHA) underwent rigorous field testing prior to production. The advantages of this system are:

- A reduction in throw away material since there is no welding or cutting.
- Integrated lift eyes make the segments easy to handle.
- Built-in wear indicators allow you to plan downtime for replacement.
- Replacement is simple, quick, and allows your machine to go back into production in less time. In one field trial instance – a customer saw a 75 percent reduction in downtime to replace their GET and 39 percent reduction in their cost per hour.





Safety

Always Top of Mind, Always the Priority



We've taken safety to another level on the R1700. Critical new features include:

- Dedicated fire suppression canister real estate and factory available.
- Multiple fire suppression activation points.
- Newly redesigned handrail system with full coverage for people on the work platform.
- Operator present system with hydraulic system neutralization and door sensor.
- Anti-slip tread on all walking surfaces.
- Improvements in visibility, lighting coverage and camera coverage.
- New braking performance, slope holding capabilities, brake wear indicators.
- Ground level access to most daily service checks.
- Service area located on cold side of engine.
- Thermal protection on aftertreatment components.
- Integrated lock out/tag out points.
- In cab warnings – both visual and audible.
- Cat line of site console has new ergonomics, emergency shut down and fire suppression activation control.
- Front linkage pins for locking the lift arms in place.
- Reverse alarm.
- Bolt-on tow hook.
- Tire pressure monitoring system.



Serviceability

Introducing Modular Service Components





Modular Components

The R1700 features several components – like the HVAC system and the cooling system – as modular designs that can be removed from the machine as a single unit and slotted back into place as a single unit allowing the machine to get back into service much quicker. Similarly, all machine ECMs are in a single, well protected and sealed box accessible from the work platform.

Service Access

In addition to modular components, all filter and key service tasks have been grouped into a centralized service section on the cold side of the engine. The radiator guard swings open for ground-level access to the radiator, and oil coolers and the batteries are easily accessed just under the centralized service location.

Machine Health Information

- Critical machine information is now visible on an integrated display when operating the machine using the Cat line-of-sight remote control console.
- In cab health monitoring can be viewed on the digital display and monitored through the Cat Product Link Elite (PLE) system formerly known as VIMS.

The fuel tank is easily cleaned or replaced if damaged as it bolts in to the frame.

Lubrication options are available fitted from the factory.

Our new brake release and tow hook option allows you to remove the machine and disengage the park brake in the event the machine must be towed.



Technology Enabled Solutions

MineStar™ and Command for Underground



Caterpillar's technology suite for mining operations is called MineStar. An important element of MineStar for our underground mining customers is Command for Underground. This technology enabled solution allows you to take a stepped approach to full autonomy.

Command for Underground has been proven to significantly increase production by doing a great deal more than just reducing exposure to hazardous conditions. Using our new, ergonomically correct operator console, your team can operate your fleet of LHDS from a safe environment either above or below ground.

Command for underground can increase productivity in several ways:

- Improved comfort and safety leads to more confident and productive operators.
- Safety is enhanced through locating the operator in an ergonomic and isolated environment where he can maintain high productivity rates. From here the operator can run either one or multiple machines based on the system selected.
- Damage from impacts with drive walls and subsequent downtime can be eliminated using our guidance system.
- Shift changes are a simple matter of getting up off the console chair – and having the next person sit down. There's no need for your LHD operator to take up space in the elevator, or take the time to chase down a machine inside the mine.

Thanks to the R1700, MineStar and Command for Underground are ready for a new, more advanced phase – complete automation. We've made adopting this new technology even easier by making the machine technology enabled right from the factory.

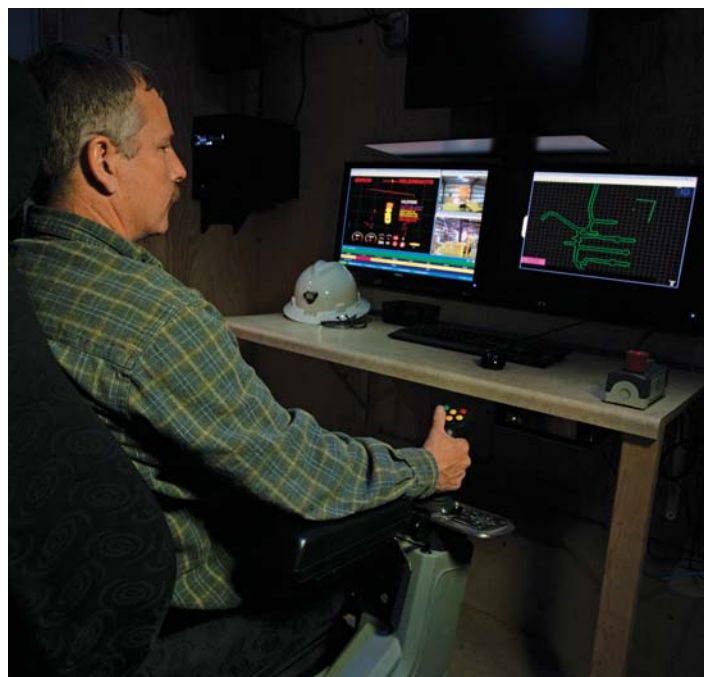
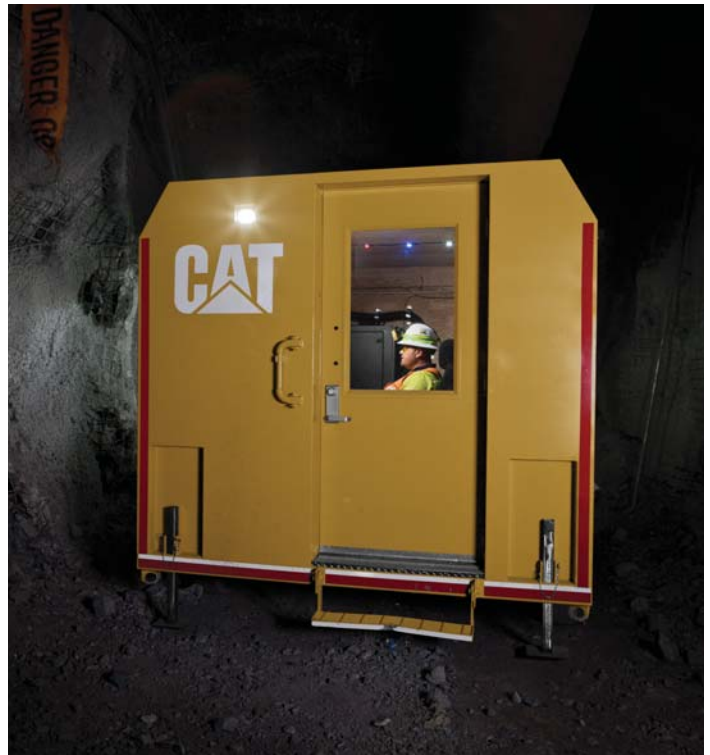
The R1700 is the first Cat LHD to be able to offer all the following technology enabled solutions:

- **Line of sight remote** – with newly redesigned remote control.
- **Tele remote operation** – where the operator is not within sight of the machine.
- **Guidance** – is a means of tele remote operation that does not rely on the operator to avoid collisions with walls.
- **Co-Pilot** – only requires directional input from the operator (forward or reverse) – self steering is done with map guidance.

Fully Autonomous operation – is made possible on the R1700 with the addition of three new controls:

- **Auto Pilot** – oversees tramming of the machine without input between the load and dump points.
- **Auto Dump** – allows the machine to dump into a fixed infrastructure without operator input.
- **Auto Dig** – is autonomous digging and bucket loading that is now available on the R1700.

The R1700 also has higher tramming speeds while operating the machine in autonomous modes – allowing the machine to reduce cycle times and improve productivity.



Manufacturing

A Focus on Quality and Safety

The R1700 is designed in Burnie Tasmania (Australia) and manufactured in Rayong Thailand.

Burnie is also home of the Caterpillar Burnie Proving Grounds where a complete Command for Underground test facility and training center is available to customers. A video of this facility is available at www.cat.com/underground.

The Caterpillar factory in Rayong is one of the newest manufacturing facilities at Caterpillar, with 100 percent focus given to underground hard rock mining products.

The Rayong facility was designed and built by Caterpillar, and is managed and operated by a highly skilled and uniquely diverse team who have embedded the Cat Production System into their culture.

Upon joining the team in Rayong, an employee will undergo 250 hours of training before performing their task on the line. Significantly more education is given to our welders. To ensure they succeed in their tasks, we provide our welders with the latest tooling so that our team can work ergonomically and achieve the weld penetration specified. The quality of your Cat machine starts with this team.

Each step of the manufacturing process has quality control gates, and every single employee is empowered to stop the assembly line to continuously improve safety or the manufacturing process.

A clean environment helps keep components free of contaminants and provides a better work climate. Like all Caterpillar facilities around the world, visitors are most welcome to see where and how their machines are made.



R1700 Underground Mining Loader Specifications

Engine

Engine Model	Cat C13	
Rated Power		
Gross Power – Stage V Engine – ISO 14396	257 kW	345 hp
Gross Power – Tier 3/Stage IIIA Equivalent Engine – ISO 14396	269 kW	361 hp
Gross Power – VR Engine – ISO 14396	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 Tier 4 Final and Stage V emission standards is also available.

Operating Specifications

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

Empty	43 177 kg	95,189 lb
Front Axle	17 399 kg	38,358 lb
Rear Axle	25 778 kg	56,831 lb
Loaded	58 177 kg	128,258 lb
Front Axle	41 464 kg	91,412 lb
Rear Axle	16 713 kg	36,846 lb

Transmission

Forward – 1 st	4.9 km/h	3 mph
Forward – 2 nd	9.2 km/h	5.7 mph
Forward – 3 rd	16.4 km/h	10.2 mph
Forward – 4 th	28.8 km/h	17.9 mph
Reverse – 1 st	5.9 km/h	3.7 mph
Reverse – 2 nd	10.5 km/h	6.5 mph
Reverse – 3 rd	18.7 km/h	11.6 mph
Reverse – 4 th	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	7.5 m ³	9.8 yd ³
Dump Bucket 5	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	6.8 m ³	8.9 yd ³

Turning Dimensions

Outside Clearance Radius	6857 mm	270 in
Inner Clearance Radius	3139 mm	123.5 in
Axle Oscillation	8°	
Articulation Angle	44°	

Tires

Tire Size	26.5R25
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Refill Capacities

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

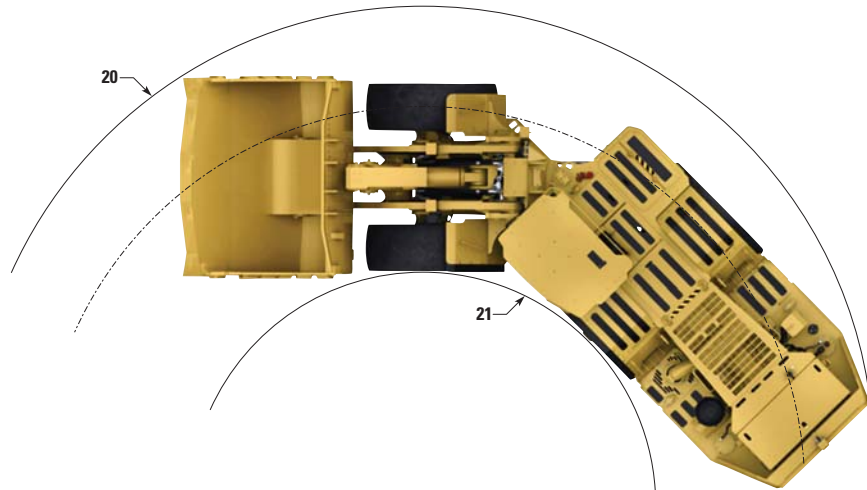
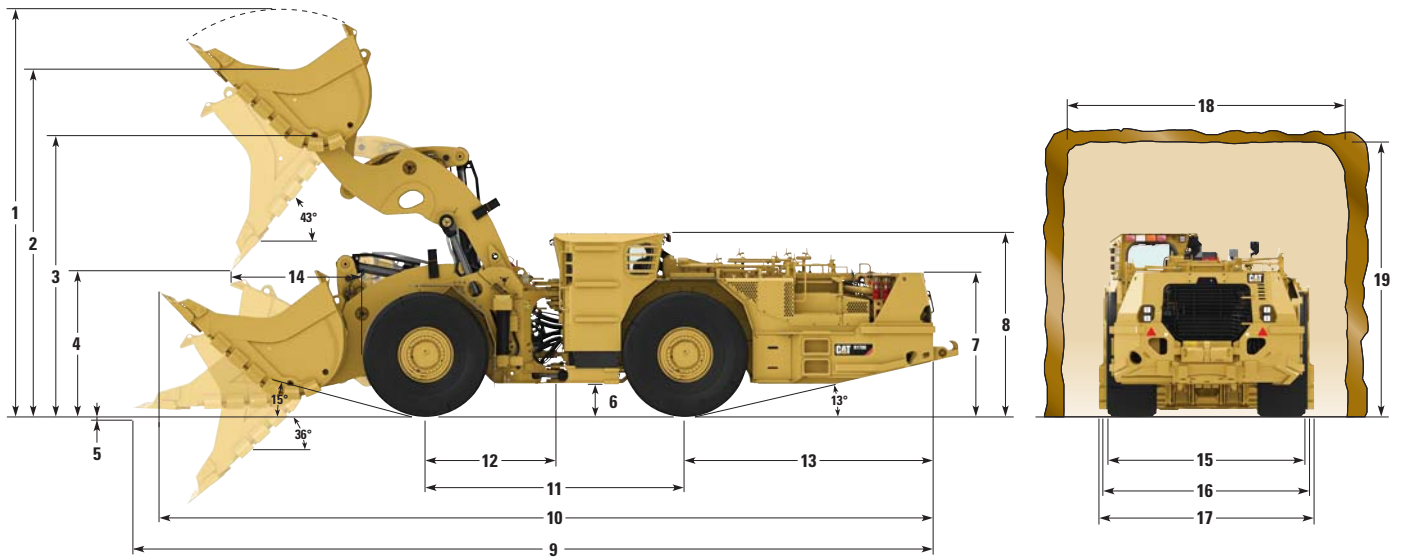
Capacities (Not Refill)

Fuel System	486 L	128.4 gal
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 GET.



(continued on next page)

R1700 Underground Mining Loader Specifications

Dimensions (continued)

All dimensions are approximate. Buckets include GET.

Bucket Capacity	467-1827 Dump Bucket (STD)		566-6471 Ejector Bucket		467-1828 Dump Bucket		467-1829 Dump Bucket	
	5.7 m ³	7.5 yd ³	5.8 m ³	7.6 yd ³	6.1 m ³	8.0 yd ³	6.6 m ³	8.6 yd ³
Bucket Width over Cutting Edge	2830 mm	111 in	2762 mm	109 in	2972 mm	117 in	2926 mm	115 in
1 Height – Max Bucket Raised	5664 mm	223 in	5885 mm	232 in	5665 mm	223 in	5762 mm	227 in
2 Height – Max Dump	4918 mm	194 in	4983 mm	196 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	4108 mm	162 in
4 Height – Dump Clearance at Max Lift	2477 mm	98 in	2268 mm	89 in	2467 mm	97 in	2350 mm	93 in
5 Height – Digging Depth	45 mm	2 in	98 mm	4 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	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)	11 098 mm	437 in	11 405 mm	449 in	11 112 mm	437 in	11 273 mm	444 in
10 Length – Overall (Tramming)	10 806 mm	425 in	11 079 mm	436 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	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	1712 mm	67 in	1938 mm	76 in	1723 mm	68 in	1834 mm	72 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	2860 mm	113 in	2894 mm	114 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	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	6857 mm	270 in	—	—	6946 mm	273 in	6979 mm	275 in
21 Inner Turning Radius	3139 mm	124 in	3139 mm	124 in	3139 mm	124 in	3139 mm	124 in

Bucket Capacity	561-1756 Bolt Together Bucket		467-1830 Dump Bucket		549-5378 Dump Bucket		467-1831 Light Material Bucket	
	6.8 m ³	8.9 yd ³	7.5 m ³	9.8 yd ³	8.0 m ³	10.5 yd ³	8.6 m ³	11.2 yd ³
Bucket Width over Cutting Edge	3096 mm	122 in	3244 mm	128 in	3354 mm	132 in	3482 mm	137 in
1 Height – Max Bucket Raised	5781 mm	228 in	5762 mm	227 in	5807 mm	229 in	5829 mm	229 in
2 Height – Max Dump	4821 mm	190 in	4921 mm	194 in	4918 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	4108 mm	162 in
4 Height – Dump Clearance at Max Lift	2329 mm	92 in	2334 mm	92 in	2286 mm	90 in	2283 mm	90 in
5 Height – Digging Depth	55 mm	2 in	55 mm	2 in	60 mm	2 in	55 mm	2 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)	11325 mm	446 in	11 296 mm	445 in	11 363 mm	447 in	11 372 mm	448 in
10 Length – Overall (Tramming)	10944 mm	431 in	10 938 mm	431 in	10 983 mm	432 in	10 985 mm	432 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	1675 mm	66 in	1851 mm	73 in	1895 mm	75 in	1907 mm	75 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	3076 mm	121 in	3376 mm	133 in	3429 mm	135 in	3614 mm	142 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	6979 mm	275 in	7118 mm	280 in	7155 mm	282 in	7252 mm	286 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								
	0	2	4	6	8	10	12.5	14.3	16.7
Unloaded									
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							

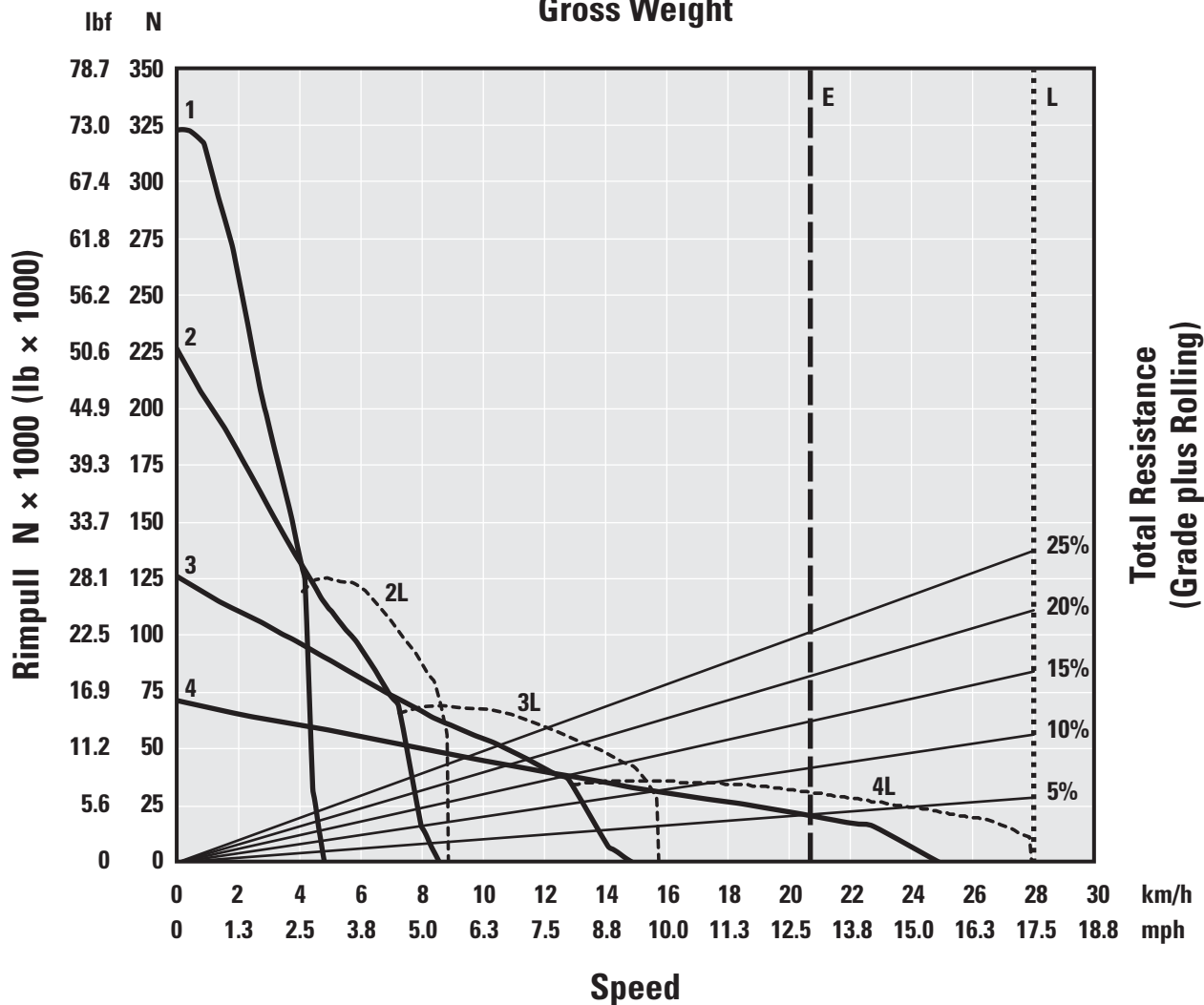
Notes: Engine, Cat C13 – meets Stage V emission standards
 Minimum fan speeds and idle hydraulics
 Machine mass, empty – 42 747 kg (94,241 lb)
 Calculated with 2% rolling resistance
 All gears with lock-up clutch engaged apart from 1F

R1700 Underground Mining Loader Specifications

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.

26.5R25 VSMS Tires Gross Weight



- 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 Equipment

Standard Equipment

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

POWER TRAIN

- Brake axle cooling
- Brakes, full hydraulic enclosed wet multiple-disc (SAFR)
- Engine:
 - Cat C13 6-cylinder diesel
 - Air-to-air aftercooler (ATAAC)
- Filter, engine, remote mounted
- Electric fuel priming pump
- Oil filter, transmission oil, long life
- Precleaner, engine air intake
- Torque converter, lock-up clutch (LUC)
- Transmission:
 - Electronic Clutch Pressure Control (ECPC)
 - Auto planetary powershift (4F/4R)
 - Transmission neutralizer
- Traction control

ELECTRICAL

- Alarm, reversing
- Alternator, 150 amp
- Battery disconnect switch, ground level
- Batteries, low maintenance
- Diagnostic connector
- Engine shutdown switch
- Lighting, external, front, rear (LED)
- Lighting, stop, dual (LED)
- Receptacle, auxiliary start
- Starter, electric, 24-volt
- Starting and charging system
- Reverse alarm

OPERATOR ENVIRONMENT

- Cab, ROPS/FOPS certified.
- Color Multi Purpose Display (CMPD):
 - Front and rear brake gauges
 - Transmission pressure
 - System diagnostics
 - Residual brake warning
- Horns, electric
- Instrumentation/gauges:
 - Speedometer/tachometer
 - Fuel level
 - Hydraulic oil temperature
 - Engine coolant temperature
- Operator presence system
- Automatic Brake Application (ABA)
- Light, warning, residual brake
- Monitor, door latch
- Electrohydraulic implement controls (single joystick)
- Seat belt, retractable
- Mounts, radio and speaker (×2)
- Control units, roof mounted (with service panel access)
- Storage box, enclosed, 5 L (3 gal)
- Coat hook
- Cup holder
- Armrests and kneepads, independently adjustable

TIRES, RIMS, AND WHEELS

- Tires must be selected from the Mandatory Attachments section
- Rims (set of four):
 - Five piece

OTHER STANDARD EQUIPMENT

- Dump bucket
- Fenders, front, rear
- Firewall
- Fuel tap, manual shutoff
- Guards, engine and transmission
- Lift arm positioner for return to dig
- Radiator grill, swing out
- Service oil sample
- Handholds
- Wear bars:
 - Fuel tank
 - Hydraulic
- Operation and Maintenance Manual – English and other languages
- Brake lights
- Product Link Elite System

CHOOSE BETWEEN:

- **Engines:**
 1. Ventilation Reduction C13
 2. Tier 3/Stage IIIA Equivalent C13
 3. Stage V C13
- **Cab:**
 1. Enclosed
 2. Open
- **Windows:**
 1. Single pane
 2. Dual pane
- **Seats:**
 1. Tee seat (with suspension)
 2. Seat (with suspension)

Optional Equipment

Optional equipment may vary. Consult your Cat dealer for details.

- Ride control
- Reversible hydraulic steering lines
- Fast fill fuel
- Fast fill and evacuation of fluids
- Rims, tube type
- Alternate implement control functions
- Battery isolation switch in the cab
- Autolube
- High efficiency radiator*
- Light weight material bucket
- Ejector bucket
- Bolt Together bucket
- Bolt-on bucket lips
- Mechanically attached shroud bucket lips
- Color rearview camera
- Tire monitoring
- Cat payload monitoring
- Product Link Elite with WiFi**
- Command for Underground remote control interface
- Cat line of sight remote receiver for the machine
- Cat line of sight remote console (over the shoulder design)
- Cat Auto Dig
- Wireless communications control group
- Spare rim
- Guards – lighting group
- Guards – rear side quarter window
- Wear bar – cab
- Ansul fire suppression – wet 57 L (15.1 gal)
- Reflective tape decals
- Lifting package for mine transfers
- Bolt-on, brake release recovery bar or hook
- Handrails, quick release
- Additional handrail package
- Service bay light
- Truck loading light
- Bucket cutting edges and lip protectors
- Mechanically attached wear protection system for buckets
- Bucket heel shrouds
- Bucket wear bars
- Bucket liners
- Arctic coolant
- Vandalism protection
- Arctic fuel (Ultra Low Sulfur Diesel)

*Standard equipment with Stage V engine.

**Confirm regional availability with your Cat dealer.

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at www.cat.com

AEHQ8124-01 (06-2019)
Replaces AEHQ8124

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