R2900G

Underground Mining Loader





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Engine Model		Cat® C15 AC	ERT™
Gross Power -	- SAE J1995 (1st gear/2nd-4th gear)	321/333 kW	430/447 hp
Net Power –	SAE J1349 (1st gear/2nd-4th gear)	290/302 kW	389/405 hp

Operating Specifications

Nominal Payload Capacity	17 200 kg	37,926 lb
Gross Machine Operating Weight	67 409 kg	148,611 lb
Bucket Capacities		
Bucket Capacities	6.3-8.9 m ³	8.2-11.6 yd ³

R2900G Features

One Supplier

Caterpillar designed and manufactured major power and drive train components for reliability and performance.

Reliable and Durable Engine

The Cat® C15 engine offers the perfect balance between power, robust design and economy.

Power Shift Transmission

Reliable and rugged design to deliver power and efficiency for peak power train performance.

Hydraulics

Perfect balance between low effort controls and powerful hydraulics for smooth and fast cycle time.

Durable Structures

The heavy duty frame is designed and built to absorb twisting, impact and high loading forces for maximum durability and reliability.

Comfortable Cab

Ergonomically designed for all-day comfort, control and productivity.

Aggressive Bucket Design

Engineered for optimal loadability and life in tough mining application. Various sizes and confi gurations available to match material and mine conditions.

Enhanced Serviceability

Designed with improved service points and grouped service locations to simplify maintenance and repair.

Built in Safety

Safety is not an after thought, but an integral part of all machine and system design.

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The R2900G underground loader is designed for high production, low cost-per-ton loading and tramming in underground mining applications. Compact design with agile performance, rugged construction and simplified maintenance ensures excellent productivity, long life and low operating costs.

Engineered for performance, designed for comfort, built to last.

Power Train – Engine

The Cat® C15 engine with ACERT™ Technology delivers the power and reliability necessary to perform in the most demanding underground mining applications.

Cat C15 Engine with ACERT™ Technology

The Cat® C15 engine with ACERT™ Technology is U.S. EPA Tier 3 and EU Stage III compliant. It features efficient fuel management for quick response, high productivity and exceptional service life. A new, sculptured cylinder block provides greater strength and lighter weight.

High Torque Rise

Provides unequalled lugging force while digging, tramming and traversing steep grades. Torque rise effectively matches transmission shift points for maximum efficiency and fast cycle times.

Radiator

Modular radiator with swing-out grill provides easy access for cleaning or repair. Built in sight gauge allows for quick, safe coolant level checks.

Pistons

Oil cooled pistons increase heat dissipation and promote longer piston life.

ADEM™ IV System

Controls the fuel injector solenoids to monitor fuel injection. This system provides automatic altitude compensation, air filter restriction indication and it will not allow the engine to fire until it has oil pressure, acting as cold start protection and a form of pre-lube.

Turbocharged and Aftercooled

Air-to-air aftercooling provides improved fuel economy by packing cooler, denser air into cylinders for more complete combustion of fuel and lower emissions. The turbocharger enhances performance and efficiency.

Mechanically Actuated, Electronic Unit Injection (MEUI™)

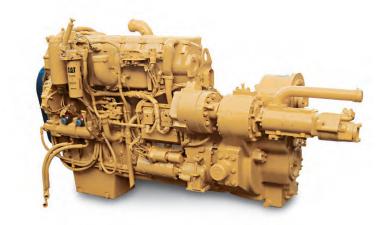
Proven high-pressure, direct injection fuel system electronically monitors operator demands and sensor inputs to optimize engine performance.

Cylinder Liners

Full-length water-cooled cylinder liners provide maximum heat transfer.

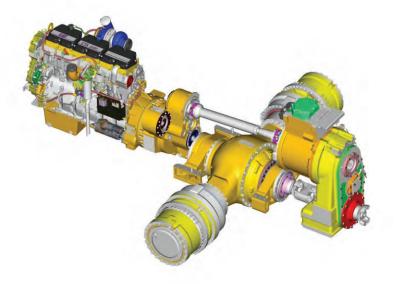
Crankshaft

The crankshaft is forged and induction hardened for long-term durability.



Power Train – Transmission

More power to the ground for greater productivity.



Power Shift Transmission

The Cat four-speed planetary power shift transmission is matched with the Cat C15 diesel engine to deliver constant power over a wide range of operating speeds.

Robust Design

Designed for rugged underground mining conditions, the proven planetary power shift transmission is built for long life between overhauls.

Torque Converter

High capacity torque converter delivers more power to the wheels for superior power train efficiency.

Electronic Autoshift Transmission

The electronic auto shift transmission increases operator efficiencies and optimizes machine performance. The operator can choose between manual or auto shift modes.

Transmission Neutralizer

Using the left brake pedal, the operator can engage the service brakes and neutralize the transmission, maintaining high engine rpm for full hydraulic flow, enhancing digging and loading functions.

Final Drives

Cat final drives work as a system with the planetary power shift transmission to deliver maximum power to the ground. Built to withstand the forces of high torque and impact loads, double reduction final drives provide high torque multiplication to further reduce drive train stress.

Axles

Heavy duty axles are built rugged for long-life in the most demanding environments.

Oscillating Rear Axle

Oscillating rear axle ensures four-wheel ground contact for maximum traction and stability at all times.

Differential

No spin rear differential reduces tire wear and maximizes traction in uneven terrain.

Brakes

Fully enclosed oil immersed disc brakes incorporate independent service and parking brake pistons. Hydraulic actuated independent circuits provide improved performance and reliability.



Hydraulics

Cat hydraulics deliver the power and control to keep material moving.

Hydraulic System

Powerful Cat hydraulics deliver exceptional digging and lifting forces for fast cycle times.

Lift and Tilt System

High hydraulic flow rates provide fast hydraulic cylinder response and powerful lift forces. Large-bore lift and tilt cylinder delivers exceptional strength, performance and durability.

Pilot Controls

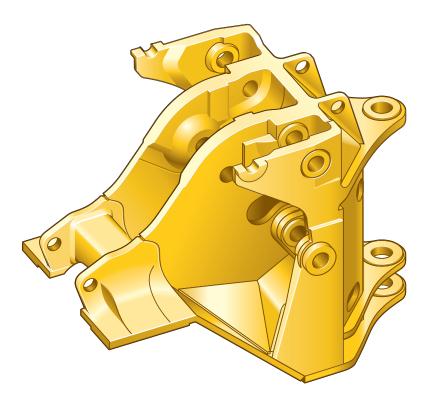
Low effort, pilot operated joystick implement control with simultaneous lift and tilt functions optimizes operating efficiency.

Optional Ride Control

The optional ride control system uses a nitrogen filled oil accumulator in the hydraulic lift circuit to act as a shock absorber for the bucket and lift arms. The lift arm and bucket response to movement is dampened over rough ground, reducing fore and aft pitch, improving cycle times and load retention. A smoother, more comfortable ride gives operators the confidence to travel at speeds above 5 km/h (3 mph) during load and carry operations.

Cat Hydraulic Hose

Field proven Cat high pressure XT[™] hydraulic hoses are exceptionally strong and flexible for maximum system reliability and long life in the most demanding conditions. Reusable couplings with O-ring face seals provide superior, leak free performance and prolong hose assembly life.



Structures

Rugged Cat structures – the backbone of the R2900G's durability.

Frame Design

The frame is engineered to withstand extreme forces generated during loading and tramming cycles. Precision manufacturing process ensures all structures are consistently built to high quality. Deep penetration and consistent welds throughout the frame ensures structures are solidly fused to provide sturdy platform for the linkage and the axles. The design and manufacturing quality of Cat LHD frames have been proven by our customers, many of whom reuse frames during machine rebuilds to get 2nd and 3rd lives out of their LHD's.

Z-Bar Loader Linkage

Proven Z-Bar loader linkage geometry generates powerful breakout force and an increased rack back angle for better bucket loading and material retention. Heavy duty steel lift arms with cast steel cross tube ensures extreme loads encountered during loading and tramming are efficiently dissipated for long service life.

Sealed Pins

Sealed colleted pins are fitted to all bucket and lift arm hinge points for longer pin and bushing life. This reduces maintenance costs and extends service intervals. The sealed joints retain lubrication and prevent contaminant entry.

Hitch

Spread hitch design widens the distance between upper and lower hitch plates to distribute forces and increase bearing life. Thicker hitch plates reduce deflection. The wide opening provides easy service access. Upper and lower hitch pins pivot on roller bearings to distribute horizontal and vertical loads over a greater surface area. Shim adjusted preload reduces maintenance time. An on-board steering frame lock pin is fitted to prevent articulation during maintenance and service.

Operator Comfort

Ergonomically designed for all-day comfort, control and productivity.

The operator station is ergonomically designed for total machine control in a comfortable, productive and safe environment. All controls, levers, switches and gauges are positioned to maximize productivity and minimize operator fatigue.

Protective Structure

Integral to the cab and frame, the Rollover Protective Structure (ROPS) and the Falling Objects Protective Structure (FOPS), are resiliently mounted to the frame to isolate the operator from vibration for a more comfortable ride.

Optional Enclosed Cab

Optional sound-suppressed ROPS cab provides a quiet, secure working environment. Large window openings offer excellent visibility in all directions. Enclosed design provides fresh, pressurized, temperature-controlled air circulation with air condition for a more comfortable working environment.

STIC™ Steering and Transmission Integrated Control

STICTM provides effortless control of the machine by a single controller. Simple side-to-side motion articulates the machine. Directional shifting (forward/neutral/reverse) is controlled using a three position rocker switch. The thumb operated buttons control gear selection.

Dual-Pedal Braking

Dual brake pedals function as a brake and a transmission neutralizer so the operator can maintain high engine rpm for full hydraulic flow and fast cycle times.

Monitoring System

Cat® Electronic Monitoring System (Cat EMS) continuously provides critical machine data to keep the machine performing at top production levels.

- **Message Center.** Three-category warning system alerts operator of abnormal machine health conditions.
- Gauge Cluster. Maintains a constant display of vital machine functions.
- **Speedometer/Tachometer Module.** Monitors three systems: engine speed, ground speed and gear indicator.

Pilot Controls

Low-effort pilot operated joystick controls integrate steering, transmission and implement functions for smoother, faster cycles with less operator fatigue.

Suspension Seat

Ergonomic, fully adjustable suspension seat provides optimal operator comfort. Thick cushions reduce pressure on the operator's lower back and thighs. Wide, retractable seat belts provide a secure, comfortable restraint.









Loader Bucket Systems

Rugged performance and reliability in tough underground mining applications.







Buckets

Aggressive Cat bucket designs deliver unmatched productivity in the most demanding applications. Underground mining buckets are designed for optimal loadability and structural reliability to help lower your cost-per-ton.

Bucket Selection

Cat underground loader buckets are available in standard and penetration configurations to meet a range of loading, hauling and dumping conditions.

Bucket Capacities

Buckets are available in a range of sizes and capacities to suit most material types and densities.

Optional Wear Packages

Weld-on wear plates in high wear areas are standard. Additional wear packages, including sacrificial wear strips and Cat heel shrouds protect the edges from damage and reduce the need for costly bucket rebuilds.

Optional Cutting Edges

Cat half arrow, cast half arrow and weld on GET cutting edges extend bucket life in high wear applications.



Serviceability

More time for production.

Service Access

Easy access to daily service points simplifies servicing and reduces time spent on regular maintenance procedures.

Ground-Level Access

Allows convenient servicing to all tanks, filters, lubrication points and compartment drains.

Air Filters

Radial seal air filters are easy to change, reducing time required for air filter maintenance.

Sight Gauges

Fluid level checks are made easier with sight gauges.

Diagnostics

Cat Electronic Technician (Cat ET) service tool enables quick electronic diagnosis of machine performance and key diagnostic data for effective maintenance and repairs.

Sealed Electrical Connectors

Electrical connectors are sealed to lock out dust and moisture. Harnesses are covered for protection. Wires are color and number coded for easy diagnosis and repair.

Scheduled Oil Sampling

S·O·SSM helps avoid minor repairs becoming major ones.

Customer Support

Cat® dealer services keep underground mining equipment productive.



Cat dealers offer solutions, services and products that help lower costs, enhance productivity and manage your operation efficiently. From the selection of Cat equipment until the day you rebuild, trade or sell it, the support you get from your Cat dealer makes the difference that counts.

Dealer Capability

Cat dealers will provide the level of support you need, on a global scale. Dealer expert technicians have the knowledge, experience, training and tooling to handle your repair and maintenance needs, when and where you need them.

Product Support

When Cat products reach the field, they are supported 24/7 by a worldwide network of reliable and prompt parts distribution facilities, dealer service centers, and technical training facilities to keep your equipment up and running.

Service Support

Cat equipment is designed and built to provide maximum productivity and operating economy throughout its working life. Cat dealers offer a wide range of service plans that will maximize return on your investment, including:

- Preventive Maintenance Programs
- Diagnostic Programs, such as Scheduled Oil Sampling and Technical Analysis
- Rebuild and Reman Options
- Customer Support Agreements

Technology Products

Cat dealers offer a range of advanced technology products designed to improve efficiency, productivity and lower costs.

Operator Training

Today's complex products require operators have a thorough understanding of machine systems and operating techniques to maximize efficiency and profitability. Your Cat dealer can arrange training to improve productivity, decrease downtime, reduce operating costs, enhance safety, and improve your return on investment.

Application Awareness

Application and site-specific factors, such as: material density, loading position, grades, speeds, and haul road design influence operating and maintenance costs. Your Cat dealer can provide you with the understanding to optimize productivity and the total cost of ownership.

www.cat.com

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



Safety

Cat mining machines and systems are designed with safety as their first priority.

Product Safety

Caterpillar has been and continues to be proactive in developing mining machines that meet or exceed safety standards. Safety is an integral part of all machine and systems designs.

Engine Shut Off Switch

A secondary engine shutoff switch is located at ground level.

Integral ROPS Cab

Integral to the cab and frame, the ROPS is resiliently mounted to the frame to isolate the operator from vibration for a more comfortable ride.

Brake Systems

Four corner oil-cooled braking system provides excellent control. The service brake system is actuated by modulated hydraulic pressure, while the parking break function is spring applied and hydraulic released. This system assures braking in the event of loss of hydraulic failure.

Standard Safety Features

Anti-skid upper deck surfaces, lower cab light, ground level compartment sight glasses, increased visibility, 3-point access to cab and machine, push out safety glass, suspension seat, inertia reel retractable seat belt, bucket control group safety pins, hot and cold side of engine, articulation lock, hinged belly guards.

SAFETY.CAT.COM™

For more complete information on safety, please visit http://safety.cat.com.

R2900G Underground Mining Loader Specifications

Engine		
Engine Model	Cat® C15 A	ACERT TM
Rated Power	1,900/1,800) rpm
Gross Power – SAE J1995	321/ 333 kW	430/ 447 hp
Net Power – SAE J1349	290/ 302 kW	389/ 405 hp
Net Power – ISO 9249	288/ 300 kW	386/ 402 hp
Net Power – 80/1269/EEC	288/ 300 kW	386/ 402 hp
Bore	137.2 mm	5.4 in
Stroke	171.5 mm	6.8 in
Displacement	15.2 L	927.9 in ³

- Power ratings apply at a rated speed of 1,900/1,800 rpm when tested under the reference conditions for the specified standard.
- Ratings based on SAE J1995 standard air conditions of 25° C (77° F) and 100 kPa (29.61 Hg) 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 591 m (1,938 ft) altitude.
- Compliant with U.S. Environmental Protection Agency Tier 3 emissions standards.

Operating Considerations

Operating Speci	incations	
Nominal Payload Capacity	17 200 kg	37,926 lb
Gross Machine Operating Weight	67 409 kg	148,611 lb
Static Tipping Load Straight Ahead Lift Arms Horizontal	39 923 kg	88,015 lb
Static Tipping Load Full Turn Lift Arms Horizontal	34 069 kg	75,109 lb
Breakout Force (SAE)	27 346 kg	60,298 lb

Weights		
Empty	50 209 kg	110,692 lb
Front Axle	23 057 kg	50,832 lb
Rear Axle	27 152 kg	59,860 lb
Loaded	67 409 kg	148,611 lb
Front Axle	50 220 kg	110,716 lb
Rear Axle	17 189 kg	37,895 lb

Transmission		
Forward 1	5 km/h	3.1 mph
Forward 2	8.8 km/h	5.5 mph
Forward 3	15.2 km/h	9.4 mph
Forward 4	25.3 km/h	15.7 mph
Reverse 1	6.2 km/h	3.9 mph
Reverse 2	10.9 km/h	6.8 mph
Reverse 3	18.6 km/h	11.6 mph
Reverse 4	26.4 km/h	16.4 mph

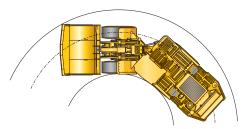
Hydraulic Cycle Time		
Raise	9.2 Seconds	_
Dump	3.4 Seconds	_
Lower, empty, float down	3.1 Seconds	_
Total Cycle Time	15.7 Seconds	_

Bucket Capacit	ties	
Dump Bucket – 1*	6.3 m ³	8.2 yd ³
Dump Bucket – 2*	7.2 m ³	9.4 yd³
Dump Bucket – 3*	8.3 m ³	10.9 yd³
Dump Bucket – 4*	8.9 m ³	11.6 yd³

^{*} High penetration bucket versions also available.

Turning Dimens	ions	
Outside Clearance Radius**	7323 mm	288.3 in
Inner Clearance Radius**	3383 mm	133.2 in
Axle Oscillation	8°	
Articulation Angle	42.5°	

** Clearance dimensions are for reference only.



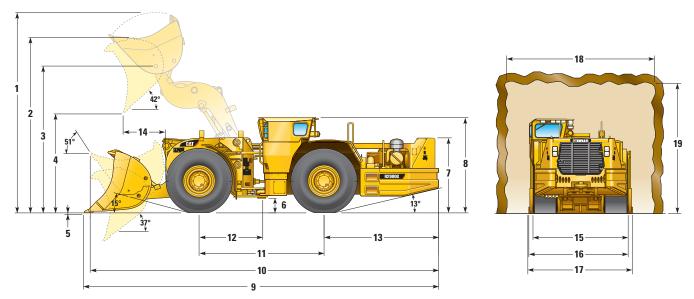
Tires	
Tire Size	29.5 × 29 34 PLY STMS

Service Refill Capacities								
Engine Crankcase	34 L	9 gal						
Transmission	62 L	16.4 gal						
Hydraulic Tank	140 L	37 gal						
Cooling System	75 L	19.8 gal						
Front Differential and Final Drives	119 L	31.4 gal						
Rear Differential and Final Drives	127 L	33.5 gal						
Front Differential and Final Drives (with Axle Oil Cooling System)	159 L	42 gal						
Rear Differential and Final Drives (with Axle Oil Cooling System)	167 L	44.1 gal						
Fuel Tank	854 L	225.6 gal						
Secondary Fuel Tank (if equipped)	571 L	150.8 gal						

Standards	
Brakes	ISO 3450, AS2958.1, CAN-CSA424.30-M90
Cab/FOPS	ISO 3449, SAE J231, AS2294.3, EN13627
Cab/ROPS	ISO 3471, SAE J1040, AS2294.2, EN13510

Dimensions

All dimensions are approximate.



	303 8806		249 4899		249 4892		249 4893		
	Dump E	Dump Bucket*		Dump Bucket*		Dump Bucket*		Dump Bucket*	
Bucket Capacity	6.3 m ³	8.2 yd ³	7.2 m ³	9.4 yd ³	8.3 m ³	10.9 yd³	8.9 m ³	11.6 yd ³	
	mm	in	mm	in	mm	in	mm	in	
Bucket Width over Cutting Edge	3054	120.2	3054	120.2	3154	124.2	3354	132.0	
1 Height – Bucket Raised	6014	236.8	6179	243.3	6232	245.4	6232	245.4	
2 Height – Max Dump	5427	213.7	5427	213.7	5427	213.7	5427	213.7	
3 Height – Max Lift Bucket Pin	4539	178.7	4539	178.7	4539	178.7	4539	178.7	
4 Height – Dump Clearance at Max Lift	2868	112.9	2868	112.9	2735	107.7	2724	107.2	
5 Height – Digging Depth	52	2.0	52	2.0	65	2.6	65	2.6	
6 Height – Ground Clearance	465	18.3	465	18.3	465	18.3	465	18.3	
7 Height – Top of Hood	2371	93.3	2371	93.3	2371	93.3	2371	93.3	
8 Height – Top of ROPS	2886	113.6	2886	113.6	2886	113.6	2886	113.6	
9 Length – Overall (Digging)	11 302	445.0	11 302	445.0	11 507	453.0	11 525	453.7	
10 Length – Overall (Tramming)	10 949	431.1	10 949	431.1	11 073	435.9	11 083	436.3	
11 Length – Wheelbase	3780	148.8	3780	148.8	3780	148.8	3780	148.8	
12 Length – Front Axle to Hitch	1890	74.4	1890	74.4	1890	74.4	1890	74.4	
13 Length – Rear Axle to Bumper	3572	140.6	3572	140.6	3572	140.6	3572	140.6	
14 Length – Reach	1656	65.2	1656	65.2	1803	71.0	1817	71.5	
15 Width – Overall Tire	2898	114.1	2898	114.1	2898	114.1	2898	114.1	
16 Width – Machine with Bucket	3176	125.0	3176	125.0	3272	128.8	3472	136.7	
17 Width – Machine without Bucket	3010	118.5	3010	118.5	3010	118.5	3010	118.5	
18 Recommended Clearance Width**	4500	177.2	4500	177.2	4500	177.2	4500	177.2	
19 Recommended Clearance Height**	4500	177.2	4500	177.2	4500	177.2	4500	177.2	

^{*} Dimensions shown with standard material bucket sizes. High penetration bucket versions also available.

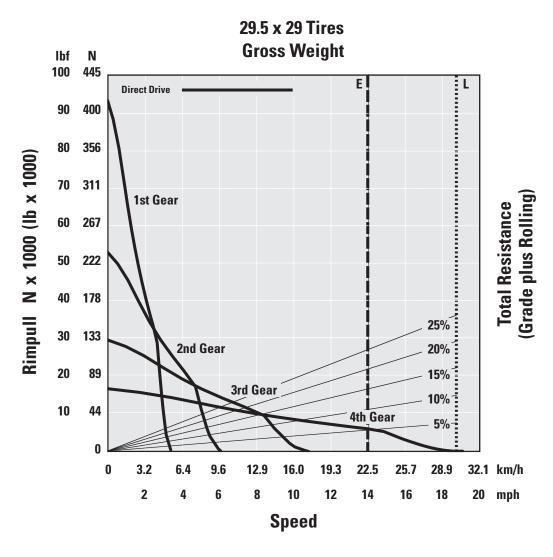
^{**} Clearance dimensions are for reference only.

R2900G 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 applications 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.

Typical Field Empty Weight
Loaded Weight



E - Empty 50 209 kg (110,711 lb)

L - Loaded 67 409 kg (148,637 lb)

R2900G Standard Equipment

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

ELECTRICAL

Alternator, 95-amp

Battery Disconnect Switch, Ground Level

Corrosive Protection Spray Diagnostic Connector Electric Starting, 24-volt Engine Shutdown Switch

External Lighting System, Front, Rear

Low Maintenance Batteries

Reversing Alarm

Starting and Charging System

OPERATOR ENVIRONMENT

Cat Electronic Monitoring System (Cat EMS)

Electric Horns

Gauges

Engine Coolant Temperature

Fuel Level Hydraulic Oil Speedometer Tachometer

Pilot Hydraulic Implement Controls,

Single Joystick

ROPS/FOPS Structure

STIC Steering

Suspension Seat with Retractable Seat Belt

POWER TRAIN

Cat C15 ATAAC Diesel Engine with ACERTTM Technology, 6-Cylinder

Long Life Coolant

Full Hydraulic Enclosed Wet Multiple-Disc

Brakes (SAFRTM)

Planetary Powershift Transmission with Automatic Shift Control, 4 Speed Forward/4 Speed Reverse Engine Air Intake Precleaner

Torque Converter Transmission Neutralizer Fuel Priming Aid Crossflow Radiator OTHER STANDARD EQUIPMENT

Auto Park Brake Brake Axle Cooling

Bucket Positioner, Return To Dig Catalytic Exhaust Purifier/Muffler Group

Engine and Transmission Belly Guards

Fenders, Front, Rear

Firewall

Hardox 450 Bucket Lip Operator Present System

Rear Frame Protection Wear Bars

 $100 \times 50 \text{ mm} (4 \times 2 \text{ in})$

Semi Centralized Lubrication Points

Swing Out Radiator Grill

Tires, STMS (L5) $29.5 \times 29 \ 34$ -Ply

R2900G Optional Equipment

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

Alternative Tire Arrangements Automatic Lube System Auxiliary Start Receptacle

Brake Light

Brake Pressure Gauges
Brake Release Arrangements

Bucket Heel Shrouds

Bucket Sacrificial Wear Strip Package Centralized Lube System, Manual

Color Rearview Camera Draw Bar Attachment, Bolt-on Electronic Access Module Enclosed Operators Station

Air Conditioning Pressurizer Dome Light

Radio Ready

Fast Fill System
Coolant
Engine

Fuel Hydraulic Transmission

Fire Extinguishers
Fire Suppression System

Fold Down Top Deck Handrails

Front Light Protectors Heater, Air Conditioning Oil Sample Adapters

Payload Control System (PCS)

Reflective Tape

Remote Control Systems

Proportional

Retrieval Attachment

Reversible Steering Ride Control System

Seat Covers

Secondary Steering System

Service Tools Tee Seat

R2900G Underground Mining Loader

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

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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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