R2900 XE

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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R2900 XE Underground Mining Loader Specifications

Engine

Engine Model	Cat® C15	
Engine Power – Stage V Engine – ISO 14396:2002	335 kW	449 hp
Engine Power – Tier 2/Stage II Engine – ISO 14396:2002	333 kW	447 hp
Bore	137 mm	5.39 in
Stroke	172 mm	6.77 in
Displacement	15.2 L	928 in^3

- Power ratings apply at a rated speed of 1,600 rpm for Tier 2/Stage II model engine when tested under the reference conditions for the specified standard.
- Power ratings apply at a rated speed of 1,600 rpm for Stage V model engine when tested under the reference conditions for the specified standard.
- All rating conditions are based on ISO/TR 14396, inlet air standard conditions with a total barometric pressure of 100 kPa (29.5 in Hg), with a vapor pressure of 1 kPa (.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).
- Minimal engine derating* required up to 2926 m (9,600 ft) at rated speed for Stage V engines and 3505 m (11,500 ft) for Tier 2/Stage II equivalent engines.
- Optional DPF (Diesel Particulate Filter) Package available.

*<5%

Transmission

Transmission Type Cat switched reluctance electric drive		
Forward (virtual)		
1st	5.8 km/h	3.6 mph
2nd	9.5 km/h	5.9 mph
3rd	17.0 km/h	10.6 mph
4th	24.6 km/h	15.3 mph
5th	33.4 km/h	20.8 mph
Reverse (virtual)		
1st	6.0 km/h	3.7 mph
2nd	10.1 km/h	6.3 mph
3rd	18.0 km/h	11.2 mph
4th	26.0 km/h	16.2 mph
5th	32.9 km/h	20.4 mph

Operating Specifications

Rated Payload	18 500 kg	40,785 lb
Gross Machine Mass	78 089 kg	172,157 lb
Shipping Weight	59 869 kg	131,988 lb
Static Tipping Load Straight Ahead, Lift Arms Horizontal	43 276 kg	95,407 lb
Static Tipping Load Full Turn, Lift Arms Horizontal	37 598 kg	82,889 lb
Break Out Force (Lift, calculated)	32 500 kg	71,500 lb
Break Out Force (Tilt, calculated)	42 000 kg	92,500 lb
Bucket Capacity Range	7.4-9.8 m^3	9.7-12.8 yd^3
Recommended Clearance Height	4.5 m	177 in
Recommended Clearance Width	4.5 m	177 in

Hydraulic System Lift/Tilt

Lift/Tilt System – Circuit	Electro Hydraulic Controls	
Lift/Tilt System – Pump	Variable Displacement Piston	
Maximum Flow	479 L/min	264 gal/min
Relief Valve Setting – Main	31 700 kPa	4,597 psi
Lift Cylinder – Bore	190 mm	7.48 in
Lift Cylinder – Stroke	1011 mm	39.8 in
Tilt Cylinder – Bore	270 mm	10.63 in
Tilt Cylinder – Stroke	458 mm	18.03 in

Hydraulic Cycle Times

Raise Time	9.0 Seconds
Dump Time	2.8 Seconds
Lower, Empty, Float Down	3.5 Seconds
Total Cycle Time	15.3 Seconds

R2900 XE Underground Mining Loader Specifications

Weights*

Operating Mass*	55 462 kg	122,300 lb
Front Axle	24 685 kg	54,400 lb
Rear Axle	30 777 kg	67,900 lb
Operating Mass + Rated Payload*	73 962 kg	163,100 lb
Front Axle	54 480 kg	120,100 lb
Rear Axle	19 482 kg	43,000 lb

*Calculated Weight.

Operator Cab

ROPS/FOPS	ISO 3471:2008 ROPS/ISO 3449:2005 FOPS

Brakes

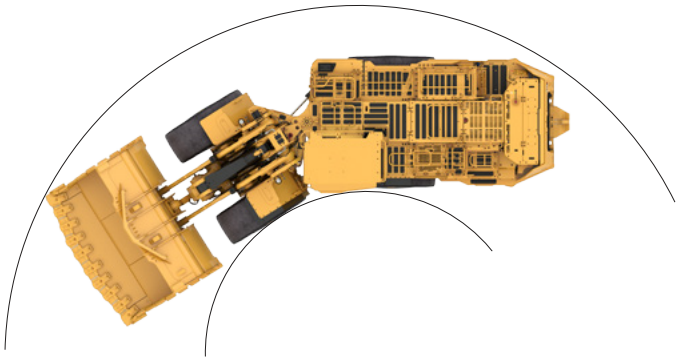
Brakes	ISO 19296:2018 and ISO 3450:2011 as applicable to underground mining equipment.

Bucket Capacities

Dump Bucket – 1 (Standard)	7.4 m^3	9.7 yd^3
Dump Bucket – 2	8.6 m^3	11.2 yd^3
Dump Bucket – 3	9.2 m^3	12.0 yd^3
Dump Bucket – 4	9.8 m^3	12.8 yd^3

Turning Dimensions

Outside Clearance Radius**	7270 mm	286 in
Inner Clearance Radius**	3391 mm	134 in
Axle Oscillation	8°	
Articulation Angle	42.5°	



**Clearance dimensions are for reference only.

Tires

Tire Size	29.5 R29

Service Refill Capacities

Engine Crankcase	52 L	13.7 gal
Propulsion Motor/Drop Box Oil	68 L	18.0 gal
Hydraulic Tank	338 L	89.3 gal
Cooling System (Engine Radiator)	95 L	25.1 gal
Cooling System (Drive Motor – secondary)	32 L	8.5 gal
Front Differential and Final Drives (with Axle Oil Cooling System)	140 L	37.0 gal
Rear Differential and Final Drives (with Axle Oil Cooling System)	154 L	40.7 gal
Fuel Tank	660 L	174.4 gal
DEF Tank	34 L	9.0 gal

Noise Emissions

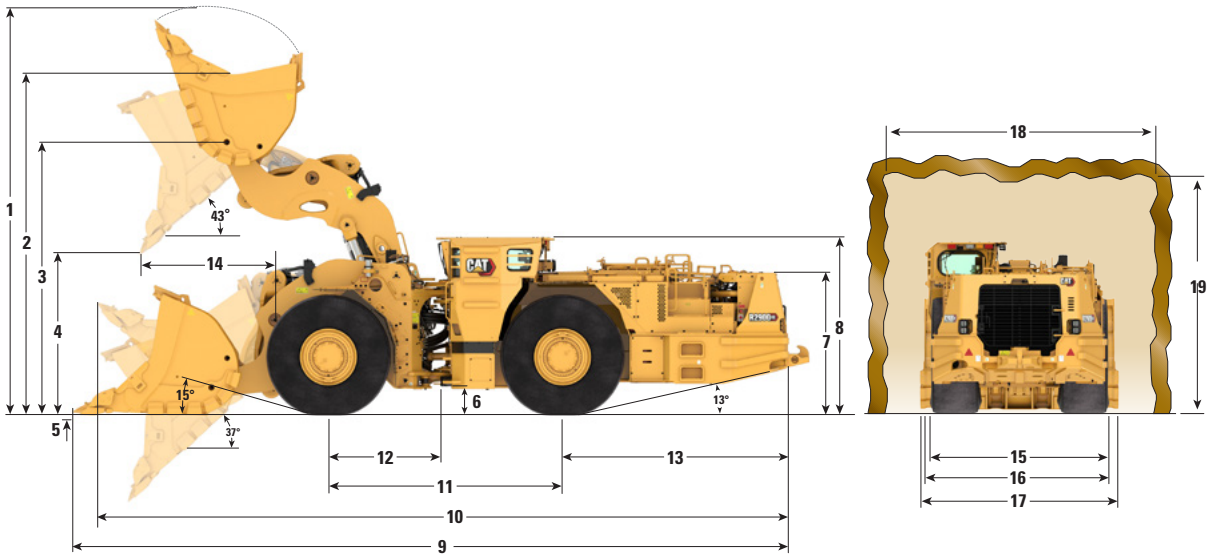
Cab Sound Pressure Level (Stationary)	78 +/- 2.5 dB(A)
Cab Sound Pressure Level (Dynamic)	81 +/- 2.5 dB(A)
Machine Sound Power Level (Stationary)	112 +/- 2.5 dB(A)
Machine Sound Power Level (Dynamic)	113 +/-2.5 dB(A)

- The declared sound levels listed are for standard machine configurations, measured according to ISO 6395/ISO 6393 for machine sound and ISO 6396/ISO 6394 for cab sound and include measurement uncertainty due to the production variation.

R2900 XE Underground Mining Loader Specifications

Dimensions

All dimensions are approximate. Buckets include Modular Weld On GET.



	638-3510 Dump Bucket (Std.)		638-3511 Dump Bucket		638-3512 Dump Bucket		638-3513 Dump Bucket	
Bucket Capacity	7.4 m³	9.7 yd³	8.6 m³	11.2 yd³	9.2 m³	12 yd³	9.8 m³	12.8 yd³
	mm	in	mm	in	mm	in	mm	in
Bucket Width over Cutting Edge	3054	120	3154	124	3354	132	3454	136
1 Height – Max Bucket Raised	6560	258	6560	258	6560	258	6560	258
2 Height – Max Dump	5497	216	5497	216	5497	216	5497	216
3 Height – Max Lift Bucket Pin	4663	184	4663	184	4663	184	4663	184
4 Height – Dump Clearance at Max Lift	3016	119	2835	112	2824	111	2808	111
5 Height – Digging Depth	80	3	111	4	111	4	117	5
6 Height – Ground Clearance	405	16	405	16	405	16	405	16
7 Height – Top of Rear Guard	2291	90	2291	90	2291	90	2291	90
8 Height – Top of ROPS	2860	113	2860	113	2860	113	2860	113
9 Length – Overall (Digging)	11 320	446	11 582	456	11 599	457	11 618	457
10 Length – Overall (Tramming)	11 033	434	11 198	441	11 208	441	11 223	442
11 Length – Wheelbase	3780	149	3780	149	3780	149	3780	149
12 Length – Front Axle to Hitch	1890	74	1890	74	1890	74	1890	74
13 Length – Rear Axle to Bumper (with auxiliary lines)	3660	144	3660	144	3660	144	3660	144
14 Length – Reach	1652	65	1843	73	1857	73	1868	74
15 Width – Overall Tire	2938	116	2938	116	2938	116	2938	116
16 Width – Machine without Bucket	3028	119	3028	119	3028	119	3028	119
17 Width – Machine with Bucket	3090	122	3226	127	3436	135	3532	139
18 Recommended Clearance Width	4500	177	4500	177	4500	177	4500	177
19 Recommended Clearance Height	4500	177	4500	177	4500	177	4500	177
Outer Clearance Radius	7270	286	7444	293	7536	297	7595	299
Inner Turning Radius	3391	134	3391	134	3391	134	3391	134

Gradeability

Gear	% Grade								
Unloaded	**0**	**2**	**4**	**6**	**8**	**10**	**12.5**	**14.3**	**16.7**
		1:25	**1:20**	**1:16.5**	**1:12.5**	**1:10**	**1:8**	**1:7**	**1:6**
Forward	33.4	32.3	21.0	18.7	15.5	13.2	11.1	9.9	8.8
Reverse	32.9	32.0	21.1	18.8	15.6	13.2	11.1	10.0	8.8
Loaded									
Forward	32.5	26.1	16.5	14.5	11.9	10.1	8.4	7.5	6.6
Reverse	32.0	26.1	16.5	14.6	12.0	10.1	8.4	7.6	6.6

Notes: Engine C15 Stage V or LRC (T2 Equiv)
Idle Hydraulics
Machine Mass Empty 55 462 kg (122,273 lb)
Calculated with 2% Rolling Resistance
60C Axle Oil Temperature
R2900 XE has "Virtual Gears" therefore listed above as one single speed/gear

R2900 XE Standard and Optional Equipment

Standard and Optional Equipment

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

	Standard	Optional
ELECTRICAL		
12V Power Supply in Cab	✓	
Alternator, 150-amp	✓	
Auxiliary Start Receptacle	✓	
Battery Disconnect Switch, Ground Level (Two post)	✓	
Battery Disconnect Switch, Ground Level (Four post)		✓
Battery Disconnect Switch, Ground Level (Two post – Four pole)		✓
Battery Disconnect Switch, Ground Level (Four post – Four pole)		✓
Diagnostic Connector	✓	
Electric Starting, 24-volt	✓	
E-stop (Illuminated)		
– Rear Right Hand Side	✓	
– Rear Left Hand Side	✓	
External LED Lighting System, Front, Rear, Stop-brake-tail light dual LED	✓	
Lighting – Loading		✓
Service Bay Light		✓
Low Maintenance Batteries	✓	
Reversing Alarm	✓	
OPERATOR ENVIRONMENT		
Operator's Station, Enclosed ROPS/FOPS		
– Air Conditioning	✓	
– Cab Pressurizer and Filter	✓	
– Cab Pressurizer and Filter (HEPA)		✓
– Dome Light	✓	
– Heater	✓	
– Radio Ready Compartment for Radio and Speakers	✓	
Coat Hook	✓	
Cup holder and storage compartments	✓	
Cat Color Multi Purpose Display (CMPD)	✓	
Camera, Color Rear Facing		✓
Electric Horns	✓	

	Standard	Optional
OPERATOR ENVIRONMENT *(continued)*		
Gauges (Multi Purpose Display) CMPD		
– Brake Pressure	✓	
– Engine Coolant Temperature	✓	
– Electric Drive Coolant Temperature	✓	
– Hydraulic Oil Temperature	✓	
– Fuel Level	✓	
– Speedometer	✓	
– Tachometer	✓	
Guard, Rear Side Quarter Window	✓	
Indicator Lights		
– Alert Warning Light	✓	
– Residual Brake Pressure	✓	
– Low Hydraulic Oil Level	✓	
Operator Presence System	✓	
Door latch monitoring	✓	
Electro-Hydraulic Implement Controls, Single Joystick	✓	
Push Button Panel for Lights	✓	
Seats		
– Suspension Seat Air, Vinyl	✓	
– Suspension Seat Tee, Vinyl		✓
Adjustable arm rest and knee pads	✓	
Seat Belt Monitoring	✓	
Retractable Seat Belt	✓	
Steering and Transmission Integrated Control (STIC™) Steering	✓	
Secondary Steering	✓	
Reversible Steering		✓

(continued on next page)

Standard and Optional Equipment *(continued)*

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

	Standard	Optional
POWER TRAIN		
Cat® C15 Air-to-Air Aftercooler (ATAAC) Diesel Engine, 6-Cylinder	✓	
Engine Options		
– Engine, EU Stage V		✓
– Engine, Tier 2 Equivalent	✓	
Diesel Particulate Filter (DPF) (flow through)		✓
Catalytic Exhaust Purifier/Muffler Group	✓	
Cat Switched Reluctance Electric Generator and Pump Drive	✓	
Cat Switched Reluctance Drive Motor	✓	
Cat Integrated Powered Electronics	✓	
Battery and Engine Shutdown Switches		
– Engine Injection Disable Switch	✓	
– Starter Isolator		✓
– In Cab Isolation Switch		✓
Brakes, fully hydraulic enclosed wet multiple-disc Spring Applied, Fluid Released (SAFR™)	✓	
Brake Axle Cooling	✓	
Power Train (transfer box) with Remote Mounted Filters	✓	
Electric Fuel Priming Pump	✓	
Engine Air Intake Precleaner	✓	
Fast Fill System		
– Fuel		✓
– Diesel Exhaust Fluid (DEF)		✓
– Coolant (Engine)		✓
– Engine Oil		✓
– Hydraulic Oil		✓
– Power Train Oil		✓
Fluids		
– Arctic Coolant		✓
– Arctic Fuel		✓
Heat Shields	✓	
Long Life Coolant	✓	
Park Brake Switch Engagement		
– Push to Apply	✓	
– Pull to Apply		✓

	Standard	Optional
POWER TRAIN *(continued)*		
Radiator		
– Standard	✓	
– High Efficiency		✓
Radiator Cap Manual Release	✓	
Rims, 5-Piece, Tubeless	✓	
Rim		
– Rim Identification Numbering		✓
– Spare (Tubeless)		✓
Switches		
– Engine Shutdown, Fire Suppression Activation		✓
– Idle Timer		✓
– Engine Shutdown/Idle Timer		✓
TECHNOLOGY		
Cat Auto Dig		✓
Traction Control	✓	
Grade Control	✓	
Anti Rollback	✓	
Command for Underground		✓
Payload Control System		✓
Remote Control Interface (excludes Transmitter and Receiver)		✓
Product Link™ Elite	✓	
Ride Control System		✓

(continued on next page)

Standard and Optional Equipment *(continued)*

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

	Standard	Optional
OTHER EQUIPMENT		
Brake Release Arrangements		
– Recovery Hook		✓
– Recovery Bar		✓
Bucket, Dump	✓	
Buckets		
– Various Sizes, Dump 7.4 m^3 to 9.8 m^3 (9.7 yd^3 to 12.8 yd^3)		✓
– Bucket Spill Guard	✓	
Bucket Hardware		
– Cutting Edge, Cat Modular Weld On		✓
– Cutting Edge, Bolt-On		✓
– Cutting Edge, Durilock		✓
– Heel Shrouds		✓
– Mechanical Attached Heel Shroud (MAS)		✓
– Mechanically Attached Wear Plate		✓
– Sidebars		✓
– Mechanically Attached Wear Plate System (MAWPS), Cutting Edge Protection		✓
– MAWPS, Bottom Protection		✓
Bucket Positioner, Return To Dig	✓	
Cover, Anti Vandalism for Shipping		✓
Draw Bar Attachment, Bolt-On		✓
Fuel System		
– Single Fuel Tank, Bolt-In	✓	
– Fuel System Manual Shut Off Taps	✓	
Engine and Transmission Belly Guards	✓	
Fenders, Front, Rear	✓	
Firewall	✓	
Front Light Protectors		✓
Handrails		
– Hand Hold (Access On/Off Top Deck)	✓	
– Fold Down	✓	

	Standard	Optional
OTHER EQUIPMENT *(continued)*		
Hydraulic System		
– Alternate Implement/Pilot Control Configuration		✓
Lubrication System		
– Automatic		✓
– Semi Centralized	✓	
Operation and Maintenance Manual – English and Other Applicable Local Languages to Select	✓	
Reflective Tape		✓
Centralized Service Bay (Remote Mounted Filters)		
– Fuel Filters, Primary and Secondary	✓	
– Engine Oil	✓	
– Power Train Oil	✓	
– Axle Oil Filters, Front and Fear	✓	
S·O·S Port		
– Coolant	✓	
– Engine Oil	✓	
– Hydraulic Oil	✓	
– Power Train Oil	✓	

(continued on next page)

Standard and Optional Equipment *(continued)*

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

	Standard	Optional
OTHER EQUIPMENT *(continued)*		
Swing Out Radiator Grill	✓	
Tire Arrangements	✓	
– Tire, 29.5 × R29**2 VSMS2 L5S L2A Bridgestone		
– Tire, 29.5 × R29**2 VMDL L5 L2A Bridgestone		
Tire Pressure Monitoring		✓
Wear Protection Bars		
– Cab/ROPS		✓
– Hydraulic Tank		✓
– Radiator		✓
Windows		
– Single Pane	✓	
– Dual Pane		✓
– Blanking Plate		✓

	Standard	Optional
OTHER EQUIPMENT *(continued)*		
Wheel Chocks		✓
Rear Protection, "Bat Wings"		✓
Monitor and Front Camera (Hydraulic Tank)		✓
Wet Ansul 57L Fire System		✓

NOTE: Not all features are available in all regions. See your Cat dealer for more information.

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