



# Cat<sup>®</sup> R2900 XE

## Underground Diesel-Electric LHD Loader

*Built on the platforms of our most popular load haul dump (LHD) models, the R2900 XE is the first diesel electric underground LHD for Caterpillar. R2900 XE is highly productive with smooth and quick machine responses together with improved digging and tramming performances. Employing electric drive components results in fuel burn reductions and improved productivity, helping customers reduce greenhouse gas emissions and carbon footprints.*

### Greater Operator Safety, Comfort and Control

#### Operator Safety

- 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.
- ROPS/FOPS cab with ergonomic layout, improved vision, improved foot controls and improved emergency exit/access to operator by provision of improved dual zipper window seals.
- Operator Presence system using machine sensors, including the door sensor.
- Tire pressure monitoring system available.
- Seat belt monitoring system standard.
- Stiffened cab roof above the door (as per R1700).
- Ansil Liquid Vehicle System (LVS) (wet) Fire Suppression, AS5062:2016 compliant.
- Neutral creep and neutral coast inhibitors – safety features.
- Illuminated estops on both sides of machine.
- Machine speed limits and gear limits are programmable.
- Secondary Steering System standard for consistent machine response.

#### Operator Comfort

- The enclosed design, provides fresh, pressurized, temperature-controlled air circulation with air conditioning for a more comfortable working environment.
- New Display Screen in cab for improved machine monitoring.
- Ride Control System smooths out the ride on uneven ground.
- Smooth controlled directional shifts and reduced driveline shocks.
- Adjustable arm rests are included.
- High Efficiency Particulate Air (HEPA) filter for primary air filtration.
- Hydraulically cushioned bucket and boom cylinder stops (snubbing).

#### Operator Control

- The operator station is ergonomically designed for total machine control. All controls, levers, switches and gauges are positioned to maximize productivity and minimize operator fatigue.
- Steering and Transmission Integrated Control (STIC<sup>™</sup>) – provides maximum responsiveness and control that combines directional selection, virtual gears and steering into a single lever.
- Rear and side view cameras, enhances the operator's visibility.
- Two pedal design with improved spacing and position for better foot actuation.
- Auto lights high and low beam, auto directional switching, auto boom lights on and off functions.
- Provide new window guarding and optional blanking plate.
- Service bay light mounting added to the handhold.

### Superior Productivity without Burning More Fuel

#### Performance\*

- Increased to an 18.5 metric ton (40,785 lb) loading/tramming capability, 3-4 pass match with Cat<sup>®</sup> AD63 truck.
- 52% quicker acceleration, improved machine response.
- Greater than 31% reduced fuel consumption.
- 35% increased breakout force.

\*Compared to R2900G



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## Heavy Structures

- Frame Design – leveraging proven designs.
- Flipped articulation hitch to improve durability and service life.
- New front frame with a lower mounted Y pin to improve breakout.
- Redesigned Z-bar Loader Linkage geometry generates powerful breakout forces 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 colleted pins are fitted to all major bucket and lift arm hinge points for longer pin and bushing life.

## Engine and Power Train

- The R2900 XE employs a high-efficiency electric drive system, which replaces the traditional mechanical transmission in the R2900.
- The efficient Cat® C15 engine will be provided in EU Stage V or Tier 2 configurations and diesel particulate filtration.
- Revolutions Per Minute (RPM), fuel burn, heat generation and exhaust emissions have all been reduced, while offering an increase in power.
- Cat Switched Reluctance Electric Drive System benefits include:
  - Improved power and cycle times.
  - Continuously variable speed control.
  - Implemented virtual gears for machine controllability.
  - Automatic retarding controls for maintaining speed on grade.
  - Anti-roll back feature.
  - Smoother directional changing, no driveline or power train shock loads.
  - Speed management can be programmed, allows improved operator efficiency and reduced fatigue.
  - Neutral creep and coasting inhibitor.
  - Torque control reduces brake application.
- Cat Integrated Powered Electronics are fully sealed to protect from the elements.

## Cooling System

- High Efficiency Radiator as Optional Cooling Package.
- Improved and remote mounted axle oil coolers removed from the radiator.

## Hydraulic

- Lift and Tilt System – Variable Piston pumps deliver higher flow rates for faster hydraulic cylinder cycle times and powerful lift forces. Large-bore lift and tilt cylinders deliver exceptional strength, performances and durability.
- Bucket Controls – Low effort electric over hydraulic, operated joystick implement control with simultaneous lift and tilt functions optimizes operating efficiency.
- The optional ride control system dampens the lift circuit reducing fore and aft pitch, improving cycle times and operator comfort.
- Field proven Cat high pressure XT hydraulic hoses with O-ring face seals provide superior, leak free performance and prolong hose assembly life.
- Other new features include: in-cylinder sensors, electronic controlled cylinder snubbing, and in-cab adjustable boom kickouts.

## Bucket and Ground Engaging Tools (GET)

- Four bucket sizes available: 7.4 m<sup>3</sup> (9.7 yd<sup>3</sup>, standard), 8.6 m<sup>3</sup> (11.2 yd<sup>3</sup>), 9.2 m<sup>3</sup> (12.0 yd<sup>3</sup>), 9.8 m<sup>3</sup> (12.8 yd<sup>3</sup>).
- Full range of Cat GET offering to achieve best productivity while maximizing bucket life.

## Designed for Ease of Maintenance and Repair to Minimize Downtime and Cost

- Fewer moving parts than traditional torque converter and mechanical transmission systems (benefit of electric drive).
- Extended maintenance intervals over mechanical power trains (benefit of electric drive).
- Single bolt in fuel tank with ground level access for easy maintenance.
- Three points of contact at all locations, and flat folding handrails.
- Cold side ground level serviceability of engine.
- All filters are located vertically allowing for spill free servicing. Radial seal air filters are easy to change/maintain.
- Fluid level checks are made easier with sight gauges visible from ground level.
- 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-S<sup>SM</sup>) helps avoid minor repairs becoming major ones. Sample point adapters fitted standard to machine.
- Tow hook design is bolt on, removable and triggers secondary steering on use.
- Radiator guard swings open to allow service access.
- Added remote mounted test ports for testing and troubleshooting.
- Brake bleeder points in centralized locations.

## The Latest Technology Delivers Optimum Productivity and Efficiency

- Cat Minestar™ for Underground Technology ready.
- Autodig function to optimize loading and traction control to maximize tire life.
- Payload Monitoring.
- Product Link™ Elite (PLE) system for machine health monitoring.
- Scalable levels of remote operation from Line of Sight (LOS) through to full automation.

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## Standard and Optional Equipment

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

	Standard	Optional		Standard	Optional
<b>ELECTRICAL</b>			<b>OPERATOR ENVIRONMENT (continued)</b>		
12V Power Supply in Cab	✓		STIC Steering	✓	
Alternator, 150-amp	✓		Secondary Steering	✓	
Auxiliary Start Receptacle	✓		Reversible Steering Return to Dig		✓
Battery Disconnect Switch, Ground Level	✓		<b>POWER TRAIN</b>		
Diagnostic Connector	✓		Cat C15 Air-to-Air Aftercooler (ATAAC)	✓	
Electric Starting, 24V	✓		Diesel Engine, 6-Cylinder		
E-stop (Illuminated):			Engine Options:		
– Rear Right Hand Side	✓		– Engine, EU Stage V		✓
– Rear Left Hand Side	✓		– Engine, Tier 2 Equivalent	✓	
External LED Lighting System, Front, Rear, Stop – Brake – Tail Light Dual LED	✓		Diesel Particulate Filter (DPF) (flow through)		✓
Lighting – Loading		✓	Catalytic Exhaust Purifier/Muffler Group	✓	
Service Bay Light		✓	Cat Switched Reluctance Electric Generator and Pump Drive	✓	
Low Maintenance Batteries	✓		Cat Switched Reluctance Drive Motor	✓	
<b>OPERATOR ENVIRONMENT</b>			Cat Integrated Powered Electronics	✓	
Operator's Station, Enclosed ROPS/FOPS:			Brakes, Fully Hydraulic Enclosed Wet Multiple – Disc with Cooling (SAFR™)	✓	
– Air Conditioning	✓		Fast Fill and S-O-S points		✓
– Cab Pressurizer and Filter	✓		<b>TECHNOLOGY</b>		
– Cab Pressurizer and Filter (HEPA)		✓	Traction Control	✓	
– Radio Ready Compartment for Radio and Speakers	✓		Auto Dig		✓
Cup Holder and Storage Compartments	✓		Tire Pressure Monitoring		✓
Cat® Color Multi Purpose Display (CMPD)	✓		Auto Retarder with Grade Control	✓	
Cameras, Color Forward and Rear Facing		✓	Command for Underground		✓
Electric Horns	✓		Payload Control System		✓
Guard, Rear Side Quarter Window	✓		Remote Control Interface (excludes transmitter and receiver)		✓
Dual Pane Windows		✓	Product Link Elite	✓	
Operator Presence System (Auto Park Brake)	✓		<b>OTHER EQUIPMENT</b>		
Door Latch Monitoring	✓		Remote Recover Hook and Bar		✓
Electro-Hydraulic Implement Controls, Single Joystick	✓		Tire Arrangements:		
Push Button Panel for Lights	✓		– Tire, 29.5 × R29 VSM L-5S Bridgestone	✓	
Seats:			– Tire, 29.5 × R29 VSDL L-5 Bridgestone		✓
– Suspension Seat, Vinyl	✓		Bucket, Various Sizes, Dump (7.4 m³ to 9.8 m³ [9.7 yd³ to 12.8 yd³])		✓
– Suspension Seat Tee, Vinyl		✓	GET and Wear Package Options		✓
– Suspension Seat Air, Vinyl		✓	Centralized or Auto Lube Systems		✓
Adjustable Arm Rest and Knee Pads	✓		Flat Fold Handrails	✓	
Seat Belt Monitoring	✓		Wheel Chocks		✓
Retractable Seat Belt	✓		Rear Protection – Bat Wings		✓

Not all features are available in all regions. Please check with your local Cat dealer for specific offering availability in your area. For additional information, refer to the Technical Specifications brochure available at [www.cat.com](http://www.cat.com) or your Cat dealer.

# Cat® R2900 XE Underground Diesel-Electric LHD Loader

## Technical 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 <sup>3</sup>

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

Operating Specifications		
Rated Payload	18 500 kg	40,785 lb
Gross Machine Mass – Loaded	78 089 kg	172,157 lb
Shipping Weight (30% fuel, no operator)	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)	32 500 kg	71,500 lb
Break Out Force (Tilt)	42 000 kg	92,500 lb
Bucket Capacity Range	7.4-9.8 m <sup>3</sup>	9.7-12.8 yd <sup>3</sup>

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	

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

Machine Dimensions		
<b>Dump Bucket (STD)</b>	<b>7.4 m<sup>3</sup></b>	<b>9.7 yd<sup>3</sup></b>
<b>Bucket Width over Cutting Edge</b>	<b>3054 mm</b>	<b>120 in</b>
Height		
Maximum Bucket Raised	6560 mm	258 in
Maximum Dump	5497 mm	216 in
Maximum Lift Bucket Pin	4663 mm	184 in
Dump Clearance at Maximum Lift	3016 mm	119 in
Digging Depth	80 mm	3 in
Ground Clearance	405 mm	16 in
Top of Rear Guard	2291 mm	90 in
Top of ROPS	2860 mm	113 in
Length		
Overall (Digging)	11 320 mm	446 in
Overall (Tramming)	11 033 mm	434 in
Wheelbase	3780 mm	149 in
Front Axle to Hitch	1890 mm	74 in
Rear Axle to Bumper (with auxiliary lines)	3660 mm	144 in
Reach	1652 mm	65 in
Width		
Overall Tire	2938 mm	116 in
Machine without Bucket	3028 mm	119 in
Machine with Bucket	3090 mm	122 in
Recommended Clearance Width	4500 mm	177 in
Recommended Clearance Height	4500 mm	177 in
Outer Clearance Radius	7270 mm	286 in
Inner Turning Radius	3391 mm	134 in

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