

319D L

Hydraulic Excavator



Engine

Engine Model Cat® C4.2 ACERT™
Net Power (ISO 9249) 93 kW

Weights

Operating Weight 20 000 kg

Drive

Maximum Travel Speed 5 km/h

Features

Low Emissions Engine

The Cat® C4.2 engine with ACERT™ Technology optimizes performance and provides low exhaust emissions with better fuel efficiency and reduced wear.

Efficient Hydraulic System

The hydraulic system delivers increased digging force, lifting capacity and drawbar pull.

Comfortable Operator Station

Spacious and quiet, this world-class ROPS cab lets the operator focus on performance and production.

Proven Reliability

Caterpillar design and manufacturing techniques provide maximum uptime with outstanding durability and service life.

Maximum Versatility

Easily configure a large variety of work tools with the Cat® Tool Control System.



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A high performance engine, optimized hydraulics and redesigned operator station make the 319D L an easy to operate and efficient machine with low operating costs.

Engine

Clean, quiet operation and superior power with ACERT™ Technology.

Performance

The Cat® C4.2 engine with ACERT™ Technology offers more engine power and runs at lower speeds for better fuel efficiency and reduced wear.

Automatic Engine Control and Fuel Delivery

A three-stage control with one-touch command maximizes fuel efficiency and reduces sound levels. Fuel delivery is managed by the ADEM™ A4 engine controller for the best performance per liter of fuel used. Flexible fuel mapping allows the engine to respond quickly to varying application needs. Electronic controls govern the fuel injection system. Multiple injection fuel delivery involves a high level of precision. By precisely shaping the combustion cycle, combustion chamber temperatures are lower so fewer emissions are generated and fuel combustion is optimized – meaning more work output for your fuel cost.

Crankshaft and Pistons

A forged, one-piece, induction-hardened crankshaft enhances balance, decreases vibration and improves abrasion resistance. Heat resistant, aluminum alloy pistons have short compression height for greater efficiency and longer life.

Economy Mode

Economy mode helps balance the demands of performance and fuel economy while maintaining breakout forces and lift capacity enjoyed at standard power.

On Demand Power Supply (ODPS)

ODPS constantly regulates engine power supply based on the power demanded by the hydraulic system. Fuel consumption and machine noise is reduced in light duty applications.

Electronic Control Module (ECM)

Working as the brain of the engine's control system, ECM responds quickly to operating variables to maximize engine efficiency. Fully integrated with sensors in the engine's fuel, air, coolant and exhaust systems, the ECM stores and relays information on conditions such as rpm, fuel consumption and diagnostics.

Air Cleaner

The radial seal air filter features a double layered filter core for more efficient filtration. A warning is displayed on the monitor when dust accumulates above a preset level.



Hydraulics

High efficiency and performance with low effort and precise control.



Outstanding Performance

With 35 MPa hydraulic pressure for additional lift, swing torque and breakout forces, the 319D L hydraulic system is designed for high efficiency and performance. Auxiliary hydraulic and electrical lines are routed to the boom foot, making hydraulic circuit installation easy. Shorter tubes and lines reduce friction and pressure drops for a more efficient use of power.

- Flow is reduced to a minimum when controls are in neutral to reduce fuel consumption and extend component life.
- Electronic Under Speed Control electronically adjusts pump output to not exceed engine power, preventing the need to reserve engine power to avoid engine stalls.
- Hydraulic Cross-Sensing System uses two hydraulic pumps to 100 percent of engine power under all operating conditions to improve productivity with faster implement speeds and quicker, stronger pivot turns.

Pilot System

The pilot system is independent from the main pumps and controls the front linkage, swing and travel operations.

Boom and Stick Regeneration Circuit

The boom and stick regeneration circuit saves energy during boom-down and stick-in operation to increase efficiency and lower operating costs.

Electronic Control System

Ten settings for hydraulic pump flow and pressure can be preset, eliminating the need to adjust the hydraulics each time a tool is changed. Ex factory Cat® Work Tools matching the machine size class are standard preset.

Auxiliary Valve

The auxiliary valve is standard. Control circuits allowing operation of high and medium pressure tools such as shears, grapples, hammers, pulverizers, etc., are optional.

Hydraulic Cylinder Snubbers

Located at the rod-end of the boom cylinders and both ends of the stick cylinder, hydraulic cylinder snubbers cushion shocks while reducing sound levels and extending component life.



Electronic Control Systems

Engine and hydraulics management for maximum performance and safety.

Monitor Display Screen

The full-color Liquid Crystal Display (LCD) monitor provides machine information. The master caution lamp blinks ON and OFF when one of the following critical conditions occurs: engine oil pressure low, coolant temperature high or hydraulic oil temperature high. Under normal conditions or the default condition, the monitor display screen is divided into four display areas for clock and throttle dial, gauge, event display and multi-information. The gauge area displays fuel level, hydraulic oil temperature and coolant temperature.

Auxiliary Hydraulic Options

Work tool functionality has increased the versatility of the machine with the enhancements of the following:

- A combined system enables one or two pump flow in one or two directions. With this system only one hydraulic circuit is required.
- The tool control system stores up to 10 different tool settings through the in-cab display monitor. Cat Work Tools are selectable with preset flows and pressures.

Product Link

Using satellite technology, Product Link assists with fleet management by tracking hours, location and product health to Cat customers and dealers.

Operator Station

New levels of comfort, visibility and operation.



The spacious, quiet and comfortable operator station assures high productivity during a long work day.

- Switches, dials and controls are conveniently located within easy reach of the operator.
- The monitor is easy to see and helps maximize visibility.
- The standard air suspension seats adjust to suit the operator's size and weight.
- The pressurized cab provides positive filtered ventilation and fresh or recirculated air can be selected.
- Visibility is maximized with the elimination of window frames for all glass except the rear window. A large, polycarbonate skylight offers excellent upward visibility.

Hydraulic Activation Control Lever

For added safety, the hydraulic activation control lever must be in the operate position to activate the machine control functions.

Controls

The 319D L uses pilot operated control levers positioned so the operator can operate with arms on the armrests. The vertical stroke is longer than the horizontal to reduce operator fatigue.

Joysticks with integrated buttons and sliding switches control all implement and swing functions. The sliding switches modulate control for hydro-mechanical tools and help increase operator comfort and reduce fatigue.

Prestart Check and Monitor Display

Prior to starting the machine, the system checks for low engine oil, hydraulic oil and engine coolant fluid levels and will warn the operator through a color Liquid Crystal Display (LCD) monitor. The LCD monitor displays vital operating and performance information in 27 different languages for operator convenience.

Cab Exterior – Roll Over Protective Structure (ROPS)

The 319D L ROPS cab design allows the Falling Object Guard System (FOGS) to be bolted directly to the cab, at the factory or as an attachment. This enables the machine to meet specifications and job site requirements. A ROPS cab is standard and provides 10 percent more glass area than the previous non-ROPS cab. The cab shell is attached to the frame with viscous rubber cab mounts that dampen vibrations and sound levels to enhance operator comfort. Also standard on the cab are working lights with time delay functionality. They have auto shut-off capability – programmable up to 90 seconds – to support safe egress out of the machine and easy departure from the job site.



Structures

Excellent stability and maneuverability.



Caterpillar uses advanced engineering and software to analyze all structures, creating a durable, reliable machine for the toughest applications. More than 70 percent of the structural welds are robotic and achieve over three times the penetration of manual welds. These structural components and the undercarriage are the backbone of the machine's durability. The 319D L undercarriage is extremely durable and integrates parts of larger excavators.

Carbody Design

X-shaped, box section carbody provides excellent resistance to torsional bending. Track roller frames are press-formed, pentagonal units that deliver exceptional strength and service life. Integral to the track roller frame are the standard idler and center guards, which help maintain track alignment when traveling or working on slopes.

Travel Motors

Travel motors with automatic speed selection let the 319D L automatically shift up and down from high and low speed in a smooth, controlled manner.

Additional Heavy Counterweight

The 319D L features a 3600 kg counterweight for specific applications that need increased lift abilities.

Linkage

Reliable and versatile.

Built for performance and long service life, Cat® booms and sticks are welded, box-section structures with thick multi-plate, high strength steel fabrications.



Versatility

Combinable hydraulic and tool solutions for any job.



Work Tools

Cat® Work Tools are designed to function as an integral part of your excavator and provide the best possible performance in your particular application. All work tools are performance-matched to Cat machines.

Quick Couplers

Cat® Center-Lock™ Pin Grabber Couplers allow work tools to be changed quickly, improving production and increasing machine versatility. This coupler will engage and disengage any Cat Bucket or Work Tool equipped with pins. The Center-Lock Pin Grabber Coupler gives operators confidence through its locking system and visible locking mechanism. At the heart of the center-lock is over-center locking technology. This technology uses proven principles of physics to keep the coupler locked tight.

Buckets

Cat offers a wide range of specialized buckets to meet your needs. The Cat® K Series™ Tooth System provides more wear material, longer tip and adapter life, a one-piece vertical drive retainer, reliable tip retention along with easy installation and removal to improve performance and penetration.

Shears

Shears provide superior and effective scrap processing and are highly productive in demolition environments.

Hammers

Hammers deliver very high blow rates, increasing productivity in demolition and construction applications.

Vibratory Plate Compactors

Vibratory plate compactors integrate perfectly with the Cat Hammer line – brackets and hydraulic kits are fully interchangeable between the two.

Orange Peel Grapples

Constructed of high-strength, wear-resistant steel with a low and compact design, the orange peel grapples are ideal for dump clearance. There are several choices of tines and shells.

Multi-Grapples

Unlimited left and right rotation makes the multi-grapple the ideal tool for stripping, sorting, handling and loading. The powerful closing force of the grab shells combined with fast opening/closing time ensures rapid cycle time which translates into more tons per hour.

Multi-Processors

With its single basic housing design, the multi-processor series of hydraulic demolition equipment makes it possible to use a range of jaw sets that can handle any demolition job. The multi-processor is the most versatile demolition tool on the market.



Environment

Building a better world while preserving the environment.

Emissions

The Cat® C4.2 with ACERT™ Technology introduces a series of evolutionary, incremental improvements that provide breakthrough engine technology built on systems and components developed by Caterpillar with proven reliability. The technology capitalizes on Cat expertise in three core engine systems: fuel, air and electronics.

By combining ACERT Technology with the new Economy Mode, customers can balance the demands of performance and fuel economy to suit their requirements and application.

Fewer Leaks and Spills

Engine oil and encapsulated hydraulic oil filters are positioned vertically and are easy to reach to minimize spillage. Service intervals are extended to reduce the times fluids are changed and handled.

- Hydraulic oil service interval can be extended to 4,000 hours with the S·O·SSM program.
- In addition to the S·O·S program, fine filtration system attachment extends the service interval to 5,000 hours.
- Cat Extended Life Coolant extends service to 12,000 hour, less need for fluid disposal.
- The hydraulic system is compatible with Cat HEES hydraulic bio-oil for ecologically sensitive applications.

Serviceability

Simplified service and maintenance saves time and money.



Extended Service Intervals

319D L service and maintenance intervals have been extended to reduce machine service time and increase machine availability.

Air Filter Compartment

The air filter features a double-element construction for superior cleaning efficiency. When the air cleaner plugs, a warning is displayed on the monitor screen inside the cab.

Ground Level Service

The design and layout of the 319D L were made with the service technician in mind. Many service locations are easily accessible at ground level, allowing critical maintenance to get done quickly and efficiently.

Pump Compartment

A service door on the right side of the upper structure allows ground-level access to the pump and pilot filter.

Capsule Filter

The hydraulic return filter, a capsule filter, is situated outside the hydraulic tank. This filter prevents contaminants from entering the system when hydraulic oil is changed and keeps the operation clean.

Diagnostics and Monitoring

The 319D L is equipped with S·O·SSM sampling ports and hydraulic test ports for the hydraulic system, engine oil and coolant. A test connection for the Cat Electronic Technician (Cat ET) service tool is located behind the cab.

Anti-Skid Plate

Anti-skid plate covers the top of the storage box and upper structure to prevent slipping during maintenance.

Fan Guard

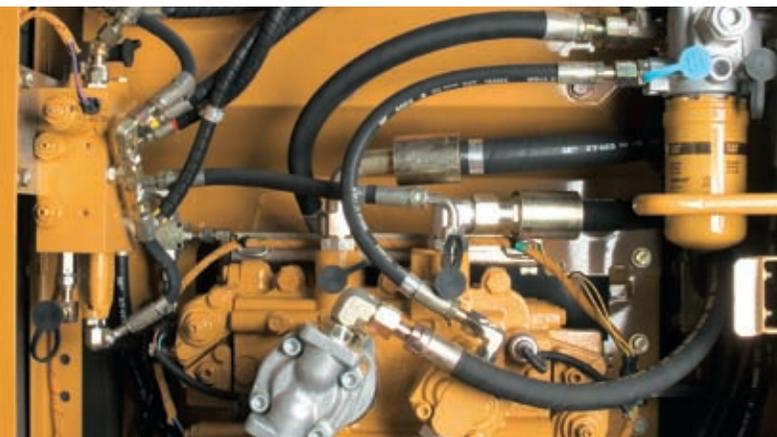
Engine radiator fan is completely enclosed by fine wire mesh, reducing the risk of an accident.

Grease Points

A concentrated remote greasing block on the boom delivers grease to hard-to-reach locations on the front.

Radiator Compartment

The left rear service door allows easy access to the engine radiator, oil cooler and air-to-air aftercooler. Reserve tank and drain cock are attached to the radiator for simplified maintenance.





Complete Customer Support

Cat dealer services help you operate longer with lower costs.

Machine Selection

Make detailed comparisons of the machines you are considering before you buy. What are the job requirements, machine attachments and operating hours? What production is needed? Your Cat dealer can provide recommendations.

Purchase

Consider the financing options available as well as the day-to-day operating costs. This is also the time to look at dealer services that can be included in the cost of the machine to yield lower equipment owning and operating costs over the long run.

Customer Support Agreements

Cat dealers offer a variety of product support agreements and work with customers to develop a plan that best meets specific needs. These plans can cover the entire machine, including attachments, to help protect your investment.

Operation

Improving operating techniques can boost your profits. Your Cat dealer has videos, literature and other ideas to help you increase productivity, and Caterpillar offers certified operator training classes to help maximize the return on your investment.

Product Support

You will find nearly all parts at our dealer parts counters. Cat dealers utilize a worldwide computer network to find in-stock parts to minimize machine downtime. You can save money with Cat Remanufactured components.

Maintenance Services

Repair option programs guarantee the cost of repairs up front. Diagnostic programs such as Scheduled Oil Sampling, Coolant Sampling and Technical Analysis help you avoid unscheduled repairs.

Replacement

Repair, rebuild or replace? Your Cat dealer can help you evaluate the cost involved so you can make the right choice.

319D L Hydraulic Excavator Specifications

Engine

Engine Model	Cat® C4.2 ACERT™
ISO 9249	93 kW
Net Power (ISO 9249)	93 kW
EEC 80/1269	93 kW
Bore	102 mm
Stroke	130 mm
Displacement	4.25 L

- Net power advertised is the power available at the flywheel when the engine is equipped with fan, air cleaner, muffler and alternator.
- No engine derating required below 2300 m altitude.

Weights

Operating Weight	20 000 kg
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- Long undercarriage, one-piece boom, 2700 mm stick, 600 mm shoes

Swing Mechanism

Swing Torque	51 kN·m
Swing Speed	11.3 rpm

Drive

Maximum Travel Speed	5 km/h
Maximum Drawbar Pull	207 kN

Hydraulic System

Main Implement System – Maximum Flow (2x)	176 L/min
Maximum Pressure – Implements	350 bar
Maximum Pressure – Travel	363 bar
Maximum Pressure – Swing	230 bar
Pilot System – Maximum Flow	27 L/min
Pilot System – Maximum Pressure	41 bar
Boom Cylinder – Bore	120 mm
Boom Cylinder – Stroke	1193 mm
Stick Cylinder – Bore	130 mm
Stick Cylinder – Stroke	1364 mm
Bucket Cylinder – Bore	110 mm
Bucket Cylinder – Stroke	1048 mm

Service Refill Capacities

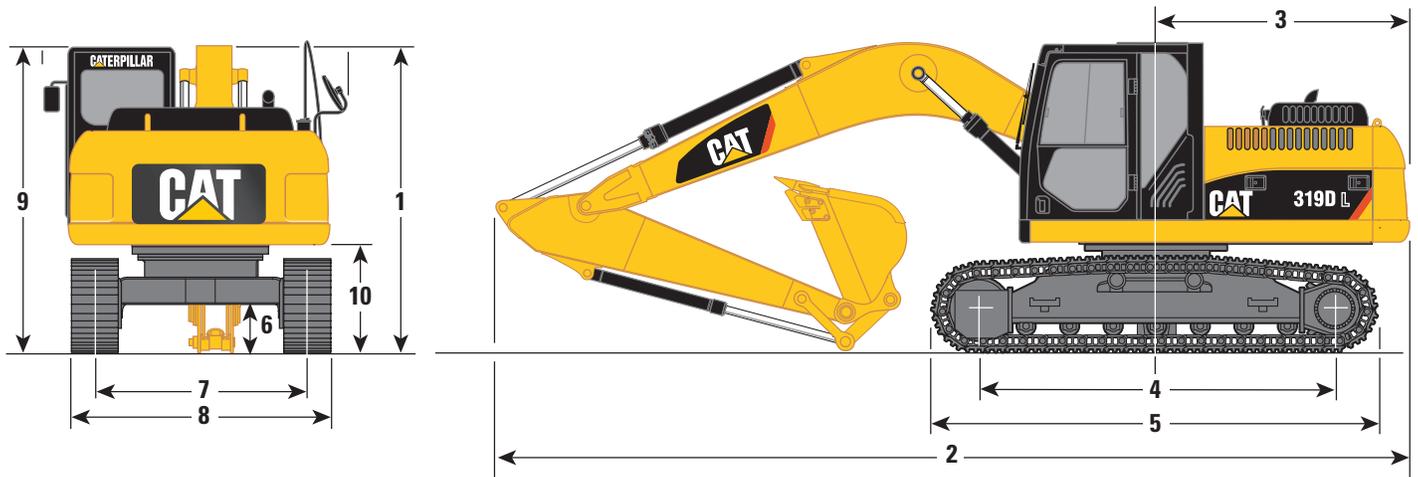
Fuel Tank	300 L
Cooling System	11 L
Engine Oil	18.5 L
Swing Drive (each)	8 L
Final Drive (each)	8 L
Hydraulic System (including tank)	190 L
Hydraulic Tank	106 L

Standards

Cab/FOGS	SAE J1356 FEB88/ ISO 10262
Cab/ROPS	Cat cab with Integrated Roll Over Protective Structure (ROPS) meets ISO 12117-2:2008 criteria

Dimensions

All dimensions are approximate.



	Reach Boom
Boom	5300 mm
Stick Type	R2.7
Stick length	2700 mm
1 Shipping height	3080 mm
2 Shipping length	8770 mm
3 Tail swing radius	2480 mm
4 Length to centers of idler and sprocket	3650 mm
5 Track length	4450 mm
6 Ground clearance	460 mm
7 Track gauge	2200 mm
8 Transport width (600 mm shoes)	2800 mm
9 Cab height	2870 mm
10 Counterweight clearance	1030 mm

319D L Hydraulic Excavator Specifications

Machine and Major Component Weights

Actual weights and ground pressures will depend on final machine configuration.

		Reach boom 5300 mm
Stick type		R2.7
Stick length	mm	2700
Bucket weight	kg	956
Bucket capacity	m ³	1.0
Bucket width	mm	1067
Operating weight*		
319D L (600 mm shoes)	kg	20 000
Ground pressure		
319D L (600 mm shoes)	kPa	41.6
Stick weight ¹	kg	760
Boom weight ²	kg	1520
Upperstructure ³	kg	6070
Undercarriage		
319D L (600 mm shoes)	kg	7090
Counterweight	kg	3600

*with counterweight, auxiliary hydraulics, BLCV, SLCV, bucket, operator and full fuel

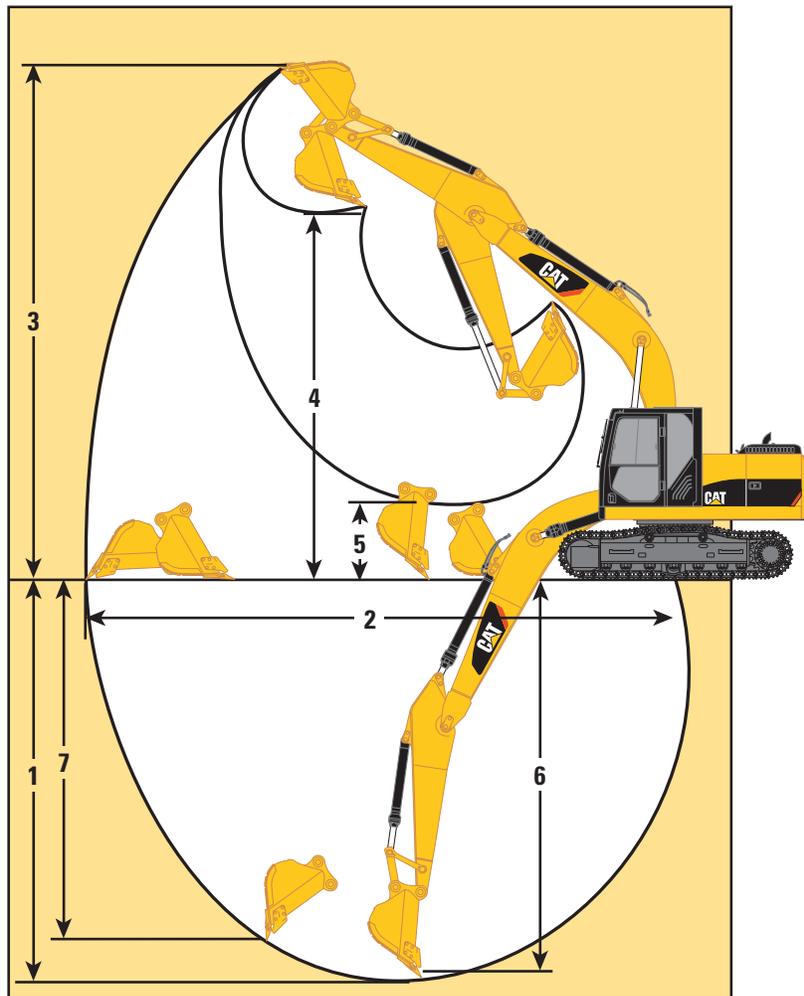
¹ with bucket cylinder + SLCV, QC lines, HP lines

² with QC lines, HP lines

³ with BLCV, circuit combined

Reach Excavator Working Ranges

Reach (R) boom configuration. All measurements are approximate.



	Reach Boom
Stick Options	R2.7
Bucket – Long Fixed Undercarriage	0.84 m³
1 Maximum digging depth	6420 mm
2 Maximum reach at ground level	9300 mm
3 Maximum cutting height	9270 mm
4 Maximum loading height	6410 mm
5 Minimum loading height	2300 mm
6 Maximum depth cut for 2.50 m level bottom	6210 mm
7 Maximum vertical wall digging depth	5570 mm
Bucket digging force (ISO 6015)	108 kN
Stick digging force (ISO 6015)	98 kN

319D L Hydraulic Excavator Specifications

Work Tools Matching Guide

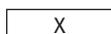
When choosing between various work tool models that can be installed onto the same machine configuration, consider work tool application, productivity requirements, and durability. Refer to work tool specifications for application recommendations and productivity information.

Without quick coupler		319D L	
		600 mm shoes	
		2700 mm	
Hammers		H115 S	
		H120C S	
Mechanical Pulverizers		P115	
		P120	X
Multiprocessors		MP15 CC	
		MP15 CR	
		MP15 PP	
		MP15 PS	
		MP15 S	
Crusher		VHC-30	
Pulverizer		VHP-30	
Mechanical Shears		S115	
		VWC-25	
360° Rotatable Shears		S320	
		S325*	
Compactor		CVP75	
Mechanical Grapples		G112	
		G115	X
Multi-Grapples		G315B-D	
		G315B-R	
Orange Peel Grapples	5 tines	GSH15-400	
	4 tines	GSH15-400	
	5 tines	GSH15-500	
	4 tines	GSH15-500	
	5 tines	GSH15-600	
	4 tines	GSH15-600	
	5 tines	GSH15-800	
	4 tines	GSH15-800	
With quick coupler			
Quick Coupler		B Linkage center-lock coupler	
Hammers		H115 S	
		H120C S	
Multiprocessors		MP15 CC, CR, PS	
		MP15 PP	X
		MP15 S	
Crusher		VHC-30	
Pulverizer		VHP-30	
Mechanical Shear		VWC-25	
360° Rotatable Shear		S320	X
Compactor		CVP75	
Mechanical Grapples		G112	
		G115	X
Multi-Grapples		G315B-D	
		G315B-R	

* Boom Mounted

 360° Working Range

 Maximum material density 1800 kg/m³

 Not compatible

 Maximum material density 1200 kg/m³

Lift Capacities with One-Piece Boom

Calculations are made without bucket.



Load Point Height



Load Radius Over Front



Load Radius Over Side



Load at Maximum Reach

Long stick – 2700 mm

Standard counterweight – 3600 kg

Shoes – 600 mm

Long undercarriage

		1.5 m		3.0 m		4.5 m		6.0 m		7.5 m				m
														
7.5 m	kg											*3900	*3900	5.20
6.0 m	kg							*4750	4200			*3500	*3500	6.52
4.5 m	kg					*5450	*5450	*5000	4150			*3400	3000	7.31
3.0 m	kg			*10 850	*10 850	*7000	6050	*5700	3950	*4550	2850	*3500	2700	7.73
1.5 m	kg					*8600	5650	*6450	3800	4750	2750	*3700	2550	7.84
Ground Line	kg			*5900	*5900	*9550	5400	6500	3650	4700	2700	*4150	2600	7.65
-1.5 m	kg	*5750	*5750	*10 200	9950	*9700	5300	6450	3600			5000	2850	7.15
-3.0 m	kg	*10 500	*10 500	*12 950	10 100	*9050	5350	6500	3600			6150	3450	6.25
-4.5 m	kg			*9950	*9950	*6800	5550					*6300	5200	4.72

*Limited by hydraulic rather than tipping load. The above loads are in compliance with hydraulic excavator lift capacity standard ISO 10567:2007, they do not exceed 87% of hydraulic lifting capacity or 75% of tipping load. Weight of all lifting accessories must be deducted from the above lifting capacities. Lifting capacities are based on the machine standing on a firm, uniform supporting surface.

Always refer to the appropriate Operation and Maintenance Manual for specific product information.

319D L Standard Equipment

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

AUXILIARY CONTROLS AND LINES

Auxiliary boom lines (high pressure)
Auxiliary stick lines (high pressure)
Basic control arrangements:
• Tool Control
 Combined function (one-way high pressure circuit for hammer application, function for one or two-way high pressure)
 Tool selection (10 tools via monitor)
High pressure control group for center-lock quick coupler
Cooling circuit for auxiliary hydraulics
Universal control group for quick coupler
Hammer return filter circuit

ELECTRICAL

Alarm, travel
Alternator, 50 A
Cat® battery
Circuit breaker
Warning horn (front)
Water level indicator
Working light, boom (right side)
Working light, storage box mounted
Working lights, cab mounted
Rearview camera

ENGINE

Cat® C4.2 diesel engine with ACERT™ Technology, Altitude capability to 2300 m
52° C cooling capability
Air inlet heater for low ambient starting
Automatic engine speed control with push button return to idle
24V electric starting
Cat® Extended Life Coolant
Radial seal air filters with double element, integrated cyclonic
Water separator in fuel line
Secondary engine shut-off switch
Fuel economy mode
Fuel filter, 2 micron
Radiator, waved fin with side-by-side type oil cooler

FRONT LINKAGE

Boom (with two working lights), Reach 5300 m
Boom lowering check valve
Bucket linkage, B linkage with lifting eye
Stick, 2700 mm
Stick lowering check valve

GUARDS

Guard, bottom
Guards, track motor
Guard, swivel

OPERATOR STATION

Adjustable armrests
Air conditioner, heater and defroster with automatic climate control
Ashtray and 24V lighter
Beverage cup holder
Bolt-on FOGS capability
Converters, 7A/12V (2)
Floor mat, washable
Instrument panel and gauges with full color graphical display, start-up level checks
Joysticks (2)
Laminated front windshield
Literature compartment
Lunch box storage with lid
Mirrors, left and right
Neutral lever (lock-out) for all controls
Radial windshield wiper and washer (upper and lower)
Positive filtered ventilation, pressurized cab
Rear window, emergency exit
Retractable seat belt
ROPS cab
Seat, adjustable, high back, heated with air suspension
Sliding upper door window
Stationary skylight (polycarbonate)
Storage compartment suitable for a lunch box
Sunscreen for windshield and skylight
Travel control pedals with removable hand levers
Windshield 70-30 split, sliding

SHOES

Shoes, triple grouser, 600 mm

UNDERCARRIAGE

Automatic swing parking brake
Automatic travel parking brakes
Grease lubricated tracks
Hydraulic track adjusters
Idler and center section track guiding guards
Two-speed travel

OTHER STANDARD EQUIPMENT

Boom and stick drift reducing valve
Boom and stick regeneration circuit
Counterweight, 3600 kg
Cat® one key security system with locks for doors, cab and fuel cap
Cat® Data Link and capability for Cat Electronic Technician
Full-steel firewall between engine and hydraulic pump compartment
Mirrors (frame right, cab left)
Precleaner
Product Link 321
Reverse swing damping valve
Separate hydraulic filter with reusable metal tube for filter element – no drop oil filter
S·O·SSM quick sampling valves for engine oil, hydraulic oil and coolant

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

Center lock quick coupler

Medium Pressure

Boom – Medium pressure lines

Stick – Medium pressure lines

319D L Hydraulic Excavator

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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