

311F L

Hydraulic Excavator



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Engine

Engine Model	Cat® C3.4B
Engine Power (Gross)	55 kW
Engine Power (Net)	52 kW

Drive

Maximum Travel Speed	5.4 km/h
Maximum Drawbar Pull	114.3 kN

Weight

Operating Weight	12 000 kg
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オフロード法2014年
基準適合



国土交通省指定
低騒音型建設機械

Introduction

Get your work done with a lot less fuel.

If you want a machine with the power to match your jobs, and owning and operating costs to fit your business, then the Cat 311FL excavator is your answer. Its reduced radius will get you into some pretty tight spots, and miserly fuel burn will help you operate on a tight budget.

The machine's C3.4B engine meets Japan 2014 (Tier 4 Final) emission standards and comes equipped with fuel savers like engine idle shutdown and eco mode to help you manage consumption. It also comes with an extremely quiet and comfortable cab to help you stay productive all day long.

Whether you are truck loading or stockpiling, trenching or digging, leveling or grading, you will be pleased with the reliable, fuel-saving performance you will get from the all-new Cat 311FL.

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The Cat 311F L delivers fuel savings and performance – two attributes you need to be successful in your business.

Reduced Radius

The right choice for your space-restricted work



Tight Job, Right Machine

With more and more jobs requiring work in tight spaces, a reduced radius machine is the right choice for you. The 311F L's tail swing radius is just 1750 mm. When rotated 90 degrees and working over the side, only 505 mm hangs over the side – ideal when you are working up against a wall, on a narrow road, or other space-restricted area.

Stable Platform

The 311F L offers a stable platform for all applications. One of the main contributors is the 2.45 t counterweight. This allows the shorter 311F L to perform like a longer tail swing machine.



Comfortable Full-Size Cab

While the length of the upper structure is reduced to accommodate the work at hand, the cab of the 311F L is not. It's the same size as our standard machines with all the amenities you've come to expect.

Engine

Powerful and fuel efficient to meet your expectations

A Unique Emissions Solution

The Cat C3.4B engine meets Japan 2014 (Tier 4 Final) emission standards. It provides plenty of power for the utility work you do and won't consume a lot of fuel to do it – all to help keep your owning and operating costs to an absolute minimum.

Fuel-Saving Features

One built-in fuel-saving feature is engine idle shutdown, which automatically turns the engine off when it's been idling for more than a specified amount of time. You can also choose eco mode to more actively manage fuel consumption for the job at hand. Both will help you save fuel, reduce emissions, and extend your service intervals.

Diesel Particulate Filter (DPF) Regeneration System

The DPF regeneration system burns soot generated during exhaust gas purification with high-temperature exhaust heat.

Playback processing is done automatically while the engine is running.



Proven Technology

Every Japan 2014 (Tier 4 Final) engine is equipped with a combination of proven electronic, fuel, air, and aftertreatment components. Applying proven technologies lets us meet your high expectations for productivity, fuel efficiency, reliability, and service life. The right technologies fine tuned for the right applications results in:

- **High performance** across a variety of applications
- **Maximized uptime and reduced cost** with world-class support from the Cat dealer network
- **Minimized impact** of emission systems – designed to be transparent to the operator without requiring interaction
- **Durable** designs with long life to overhaul
- **Better fuel economy** with minimized maintenance costs while providing the same great power and response

More Powerful, Reliable Engine Electronics

The electronics used in Cat Japan 2014 (Tier 4 Final) engines are more powerful and robust than ever. Enhanced features increase quality and reliability, which improves your owning and operating experience.

Next Generation Fuel Systems

As a key component of Cat Tier 4 technology, injection timing provides more control of combustion for the cleanest, most efficient fuel burn. To maximize your value, Caterpillar engineers specified fuel systems based on the power and performance demands for each engine.

Innovative Air Management

Cat Japan 2014 (Tier 4 Final) engines feature innovative air management systems that optimize airflow and enhance power, efficiency, and reliability. We apply a range of simple, reliable turbo charging solutions based on engine size and application. This allows us to match turbo performance to rated output for high productivity, excellent fuel efficiency, long life, and low operating costs for you.

Hydraulics

Made to move your material with speed and precision

Efficient Design

Major hydraulic components like pumps and valves are located close together to make it possible to use shorter tubes and lines. This design leads to less friction loss in the lines, reduced pressure drops, and more power to the ground for the work you need to get done.

Control Like No Other

Controllability is one of the main attributes of Cat excavators, and one of the key contributors to this is the main control valve. The valve opens slowly when your range of joystick lever movement is small and opens rapidly when movement is high. It puts flow where you need it when you need it, which leads to smoother operation, greater efficiency, and lower fuel consumption.

Auxiliary Hydraulics for Added Versatility

Auxiliary hydraulics give you greater tool versatility so you can take on more work with just one machine, and there are several options from which you can choose. A quick coupler circuit, for example, will allow you to switch from one tool to another in a matter of minutes – all from the comfort and convenience of the cab.

Electric Boom and Stick Regeneration for Added Efficiency

The 311FL regenerates the flow of oil from the head end of the boom cylinder to the rod end of the boom cylinder during the work cycle to save energy and improve fuel efficiency. It's optimized for any dial speed setting you select, which results in less pressure loss for higher controllability, more productivity, and lower operating costs. The machine also regenerates the flow of oil from the rod end of the stick cylinder to the head end of the stick cylinder during operation to increase speed.





Structures and Undercarriage

Built to work in your tough utility applications

Robust Frames

The 311F L is a well-built machine that's designed to give you a long service life. The upper frame includes special mountings made specifically to support ROPS certified cab; the lower frame is reinforced to enhance component durability so you can count on the machine doing the work you need done.

Durable Undercarriage

Long undercarriage is standard and works extremely well in various work applications and conditions. Track shoes, links, rollers, idlers, and final drives are all built with high-tensile-strength steel for long-term durability.

Great Weight

The available 2.15 t and 2.45 t counterweights have surfaces that match the 311F L's overall sleek appearance. They provide plenty of balance for your heavy lifting and are bolted directly to the main frame to ensure rigidity. They also have an integrated housing to protect the optional rearview camera.



Operator Station

Comfort and convenience to keep you productive



A Safe and Quiet Cab

The Roll-Over Protective Structure (ROPS) certified cab is not only a safety feature, but it is also a sound suppressor due to its special sealing and insulation. With the door and windows closed, you will experience a machine that's as quiet as the truck you drive to work.

A Cool (and Warm) Environment

The automatic climate control system features multiple air outlets with filtered ventilation. Air flows on the floor, behind the seat, and in front of you to make your work in either hot or cold weather much more pleasant and productive.

Comfortable Seat Options

The optional suspension seat provides a variety of adjustments to accommodate a wide range of operators. All seats include a reclining back, upper and lower slide adjustments, and height and tilt angle adjustments to meet your needs for maximum comfort and productivity.



Controls Just for You

The right and left joystick consoles can be adjusted to improve your comfort and productivity during the course of a day. Also, the right joystick features a button that will reduce engine speed when you are not working to help save fuel. Touch it once and speed reduces; touch it again and speed increases for normal operation.



An Easy-to-Use Monitor

The LED monitor is easy to see and navigate. Programmable in up to 42 languages to meet today's diverse workforce, the monitor clearly displays critical information you need to operate efficiently.



Ample Storage and Auxiliary Power

Storage spaces are located in the front, rear, and side consoles of the cab. A drink holder accommodates a large mug with handle, and a shelf behind the seat stores large lunch or toolboxes. Power supply sockets are conveniently located near the key storage areas for charging your electronic devices like an MP3 player, a cell phone, or a tablet.





Front Linkage

Take on your far-reaching or up-close tasks

Front Variation

Two 2.25 m sticks are available – one for everyday applications and one specifically built for demolition work. A 2.8 m stick is also available to extend the working range.

Built to Last

All Cat booms and sticks are built with internal baffle plates for added durability, and all undergo ultrasound inspection to ensure weld quality and reliability. Large box-section structures with thick multi-plate fabrications, castings, and forgings are used in high-stress areas such as the boom nose, boom foot, boom cylinder, and stick foot to improve durability. Also, the front linkage pins' inner bearing surfaces are welded with a self-lubricated bearing used to extend service intervals and increase uptime.



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Integrated Technologies

Monitor, manage, and enhance your job site operations



Cat Connect makes smart use of technology and services to improve your job site efficiency. Using the data from technology-equipped machines, you'll get more information and insight into your equipment and operations than ever before.

Cat Connect technologies offer improvements in these key areas:



EQUIPMENT
MANAGEMENT

Equipment Management – increase uptime and reduce operating costs.



PRODUCTIVITY

Productivity – monitor production and manage job site efficiency.



SAFETY

Safety – enhance job site awareness to keep your people and equipment safe.



Featured Cat Connect technologies include:

Link

Link technologies provide wireless capability to machines to enable two-way transfer of information collected by on-board sensors, control modules, and other Cat Connect technologies using off-board apps such as our VisionLink® software.

Manage Your Machine Remotely

Cat Product Link™ is an optional system that is deeply integrated into the machine monitoring system to take the guesswork out of managing your equipment. The system tracks location, hours, fuel usage, productivity, idle time, and diagnostic codes through the online VisionLink interface to help you maximize efficiency, improve productivity, and lower operating costs. Manage the data yourself or get expert advice from your Cat dealer to keep your equipment operating at peak performance.

Attachments

Tools to make you productive and profitable



Get the Most Out of One Machine

The 311F L is a highly versatile machine that packs a lot of performance into a small package. You can easily expand that performance by utilizing any of the variety of attachments offered by Cat Work Tools.

Change Jobs Quickly

A quick coupler brings the ability to quickly change attachments and switch from job to job. The Cat Pin Grabber coupler is the secure way to decrease downtime and increase job site flexibility and overall productivity.

Dig, Finish and Compact

A wide range of buckets dig everything from top soil to highly abrasive material. For finishing and grading work, compact, shallow ditch cleaning buckets and tamping buckets fit the need.

Break, Demolish and Scrap

A hydraulic hammer equips the 311F L for breaking sidewalks, driveways, and pavement. A shear allows you to cut metal down to size for recycling or transport.

Move and Handle All Sorts of Material

Choose a thumb to work with your bucket and gain the instant ability to move and handle brush, rocks, and debris at your construction site. When your job requires constant material handling, a grapple may be your solution.

Set Up Your Machine for Maximum Profitability

Your Cat dealer can install hydraulic kits to properly operate all Cat Work Tool attachments – maximizing the machine's uptime and your profits.

GRAB, SORT & BREAK



Pro Series Hydraulic Thumbs



Stiff Link Thumbs



Cat Hammers



Demolition & Sorting Grapples

SWAP TOOLS



Pin Grabber Coupler

DIG & FINISH



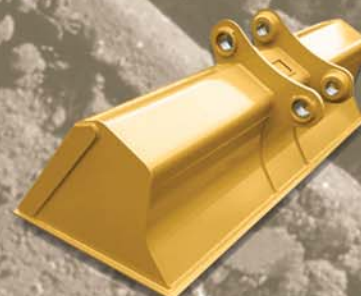
Ditch Cleaning and Tilt Buckets



Heavy Duty Skeleton Buckets



General Duty Buckets



Tamping Buckets

Safety

Features to help protect you day in and day out

A Safe and Quiet Cab

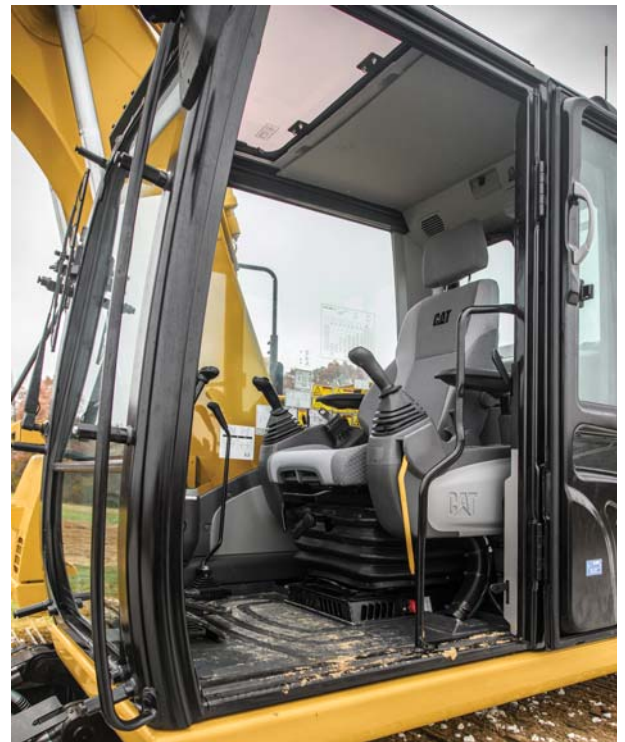
You will benefit from the enhanced protection of a ROPS-certified cab. Not only is it safe, but its special roof lining and sealing make the sound inside comparable to any of today's top pickup trucks. In fact, it's so quiet you won't believe the machine is running.

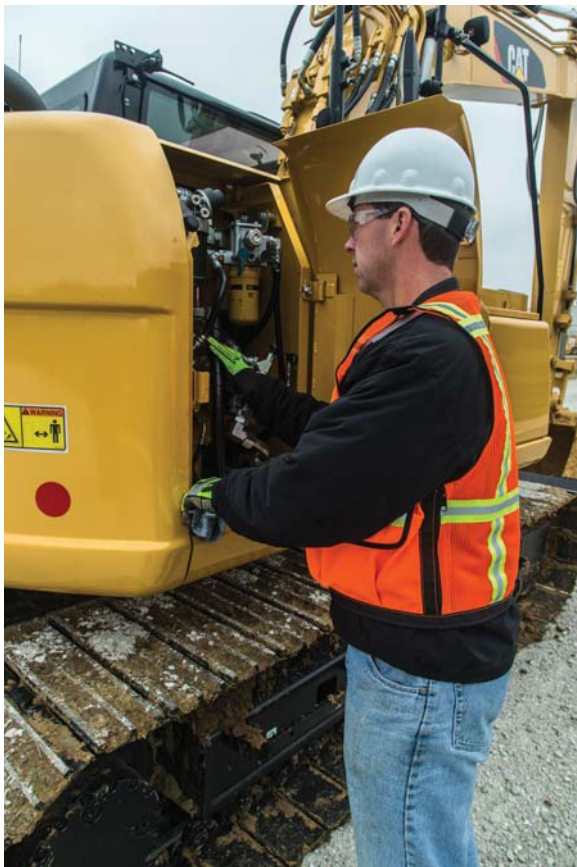
Secure Contact Points

Your slipping hazards are reduced with anti-skid plates on the surface of the upper structure and the top of the storage box area. The plates are effective in all types of weather conditions, and they can be removed for cleaning. Large steps as well as hand rails allow you to confidently and safely work with the machine. Steps on the track frame will get you into the cab as well as a leg up to the compartments. Extended hand rails allow you to safely climb to the upper deck. An additional hand rail above the air cleaner compartment gives you a holding point while standing on the track.

Great Visibility

Ample glass gives you excellent visibility out front and to the side, and the available rearview camera gives you a clear field of view behind the machine through the cab monitor. The split-configuration windshield features an upper window with handles that make it easy to slide and store above you and a lower window that can be removed and stored on the inside wall of the cab. The large skylight provides you with enhanced visibility and also serves as an emergency exit. Halogen lights provide plenty of illumination and can be programmed to stay on for up to 90 seconds after the engine has been turned off to help you safely exit the machine.





Serviceability

Designed to make your maintenance quick and easy

Ground-Level Access Built In

You can easily reach fluid taps and grease points from the safety and convenience of ground level. Not only do compartments feature wide service doors designed to help prevent debris entry, but they also securely latch in place to help make your service work simpler.

A Cool Design

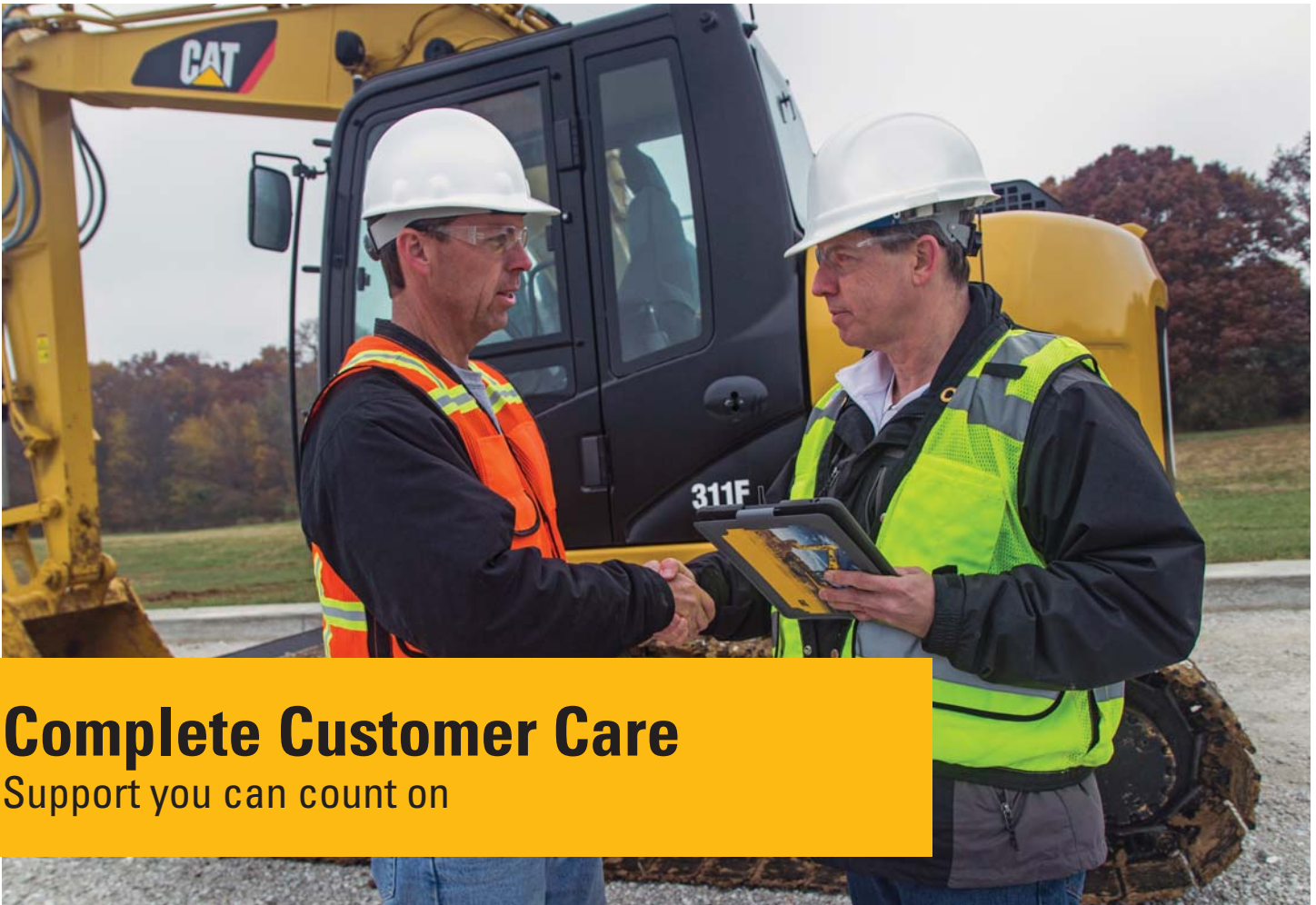
The unique cooling package includes a screen between the radiator and AC condenser to prevent plugging. In addition, wider clearance is provided between the radiator and AC condenser to help make blowing off debris easy for you, which can help improve your machine's reliability and performance in high ambient conditions.

A Fresh Idea

When you select ventilation inside the cab, outside air enters through the fresh air filter. The filter is conveniently located on the side of the cab to make it easy to reach and replace, and it is protected by a lockable door that can be opened with the engine key.

Other Service Benefits

The fuel tank's drain cock makes it easy and simple for you to remove water and sediment during routine maintenance. Plus an integrated fuel level indicator pops up to help you reduce the possibility of fuel tank overfilling.



Complete Customer Care

Support you can count on

Worldwide Parts Availability

Cat dealers utilize a worldwide parts network to maximize your machines' uptime. Plus they can help you save money with Cat remanufactured components.

Advice You Can Trust

What are the job requirements and machine attachments? What production is needed? Your Cat dealer can provide recommendations to help you make the right machine choices.

Financial Options Just for You

Consider financing options and day-to-day operating costs. Look at dealer services that can be included in the machine's cost to yield lower owning and operating costs over time.

Support Agreements to Fit Your Needs

Cat dealers offer a variety of customer support agreements and work with you to develop a plan to meet your specific needs. These plans can cover the entire machine, including attachments, to help protect your investment.

Operating Techniques to Boost Your Profits

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

What's Best for You Today...and Tomorrow

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



Sustainability

Generations ahead in every way

- The C3.4B engine meets Japan 2014 (Tier 4 Final) emission standards.
- The 311F L performs a similar amount of work while consuming less fuel than the previous D Series model. This means more efficiency, less resources consumed, and fewer emissions.
- The 311F L has the flexibility of running on ultra-low-sulfur diesel (ULSD) fuel with 15 ppm of sulfur.
- An overfill indicator rises when the fuel tank is full to help service technicians avoid spilling.
- The 311F L is built to be rebuilt with major structures and components capable of being remanufactured to reduce waste and replacement costs.
- An efficient engine oil filter eliminates the need for painted metal cans and aluminum top plates. The cartridge-style spin-on housing enables the internal filter to be separated and replaced; the used internal element can be incinerated to help reduce waste.
- The 311F L is an efficient, productive machine that's designed to conserve our natural resources for the generations ahead.

311F L Hydraulic Excavator Specifications

Engine

Engine Power (Gross)	55 kW
Engine Power (Net)	52 kW
Bore	99 mm
Stroke	110 mm
Displacement	3.4 L

Hydraulic System

Main System – Maximum Flow (Total)	125 × 2 L/min
Maximum Pressure – Equipment	30.5 MPa
Maximum Pressure – Travel	35 MPa
Maximum Pressure – Swing	23 MPa
Pilot System – Maximum Flow	21.9 L/min
Pilot System – Maximum Pressure	4120 kPa
Boom Cylinder – Bore	100 mm
Boom Cylinder – Stroke	1002 mm
Stick Cylinder – Bore	110 mm
Stick Cylinder – Stroke	1194 mm
Bucket Cylinder – Bore	100 mm
Bucket Cylinder – Stroke	939 mm

Drive

Maximum Travel Speed – High	5.4 km/h
Maximum Travel Speed – Low	3.6 km/h
Maximum Drawbar Pull	114.3 kN

Swing

Swing Speed	10 rpm
Swing Torque	30.9 kN·m

Service Refill Capacities

Fuel Tank Capacity	210 L
Cooling System	18 L
Engine Oil (with filter)	8 L
Swing Drive (each)	3 L
Final Drive (each)	3 L
Hydraulic System (including tank)	160 L
Hydraulic Tank	95 L

Track

Number of Shoes (each side)	43 pieces
Number of Track Rollers (each side)	6 pieces
Number of Carrier Rollers (each side)	1 piece

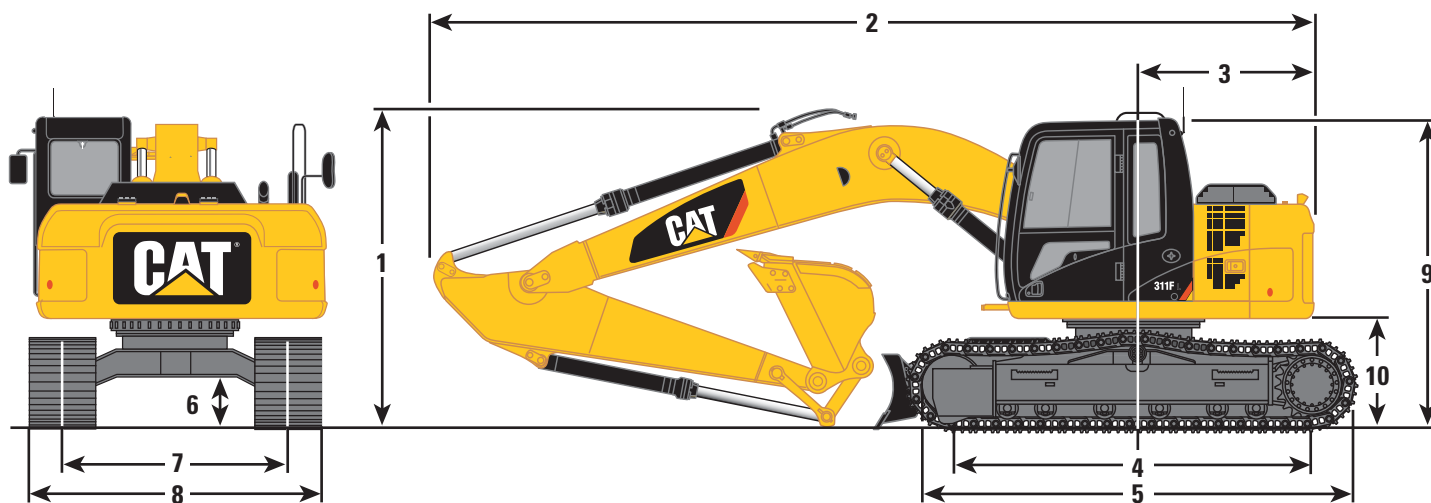
Sound

ISO 6396	
Operator Noise (Closed)	72 dB(A)
ISO 6395	
Spectator Noise	99 dB(A)

311F L Hydraulic Excavator Specifications

Dimensions

All dimensions are approximate.



Stick	Reach Boom 4.3 m	
	R2.25 m	R2.8 m
1 Shipping Height*	2860 mm	2820 mm
Shipping Height at Boom Top	2860 mm	2760 mm
Handrail Height	2820 mm	2820 mm
2 Shipping Length		
Long Undercarriage	6920 mm	6910 mm
Long Undercarriage with Blade	7540 mm	7530 mm
3 Tail Swing Radius	1750 mm	1750 mm
4 Length to Center of Rollers	2780 mm	2780 mm
5 Track Length	3490 mm	3490 mm
6 Ground Clearance	440 mm	440 mm
7 Track Gauge	1990 mm	1990 mm
8 Transport Width		
500 mm Shoes	2490 mm	2490 mm
600 mm Shoes	2590 mm	2590 mm
700 mm Shoes	2690 mm	2690 mm
9 Cab Height	2760 mm	2760 mm
Cab Height with Top Guard	2900 mm	2900 mm
10 Counterweight Clearance**	900 mm	900 mm
Type	GD	GD
Capacity	0.52 m ³	0.38 m ³
Tip Radius	1220 mm	1220 mm

Notes: All dimensions based on bucket A (see table).

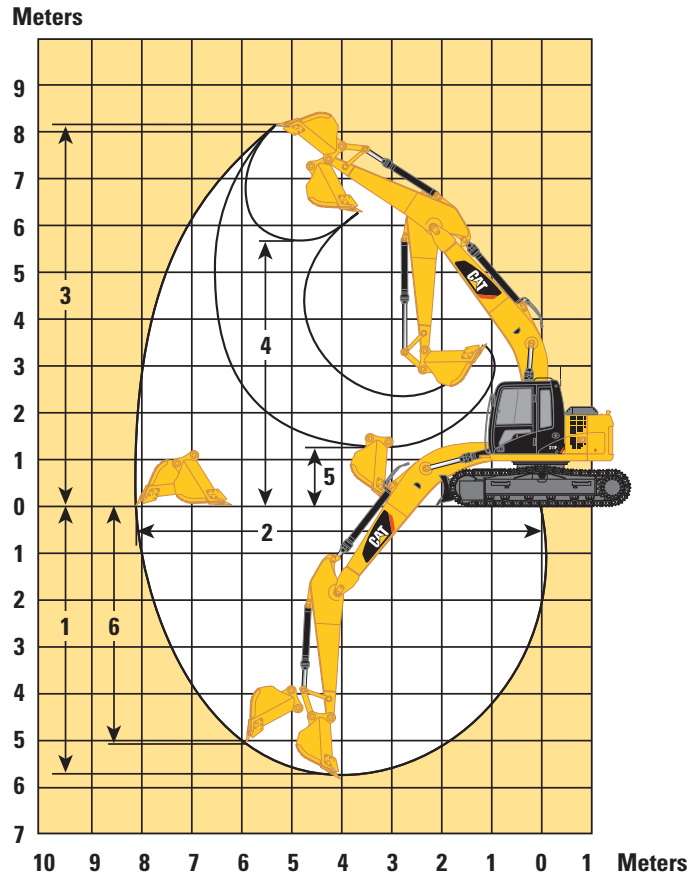
*Including shoe lug height.

**Without shoe lug height.

311F L Hydraulic Excavator Specifications

Working Ranges

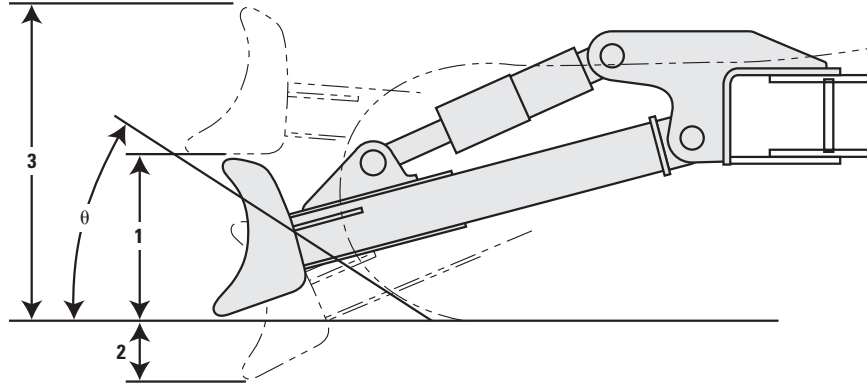
All dimensions are approximate.



Stick	Reach Boom 4.3 m	
	R2.25 m	R2.8 m
1 Maximum Digging Depth	5040 mm	5590 mm
2 Maximum Reach at Ground Level	7570 mm	8100 mm
3 Maximum Cutting Height	7800 mm	8140 mm
4 Maximum Loading Height	5450 mm	5770 mm
5 Minimum Loading Height	1870 mm	1330 mm
6 Maximum Vertical Wall Digging Depth	4510 mm	5030 mm
Type	GD	GD
Capacity	0.52 m ³	0.38 m ³
Tip Radius	1220 mm	1220 mm

311F L Hydraulic Excavator Specifications

Blade



Blade Options	2500 mm	2600 mm	2700 mm
Recommended Track Shoe Width	500 mm	600 mm	700 mm
1 Blade Height		630 mm	
2 Maximum Lowering Depth from Ground		570 mm	
3 Maximum Raising Height above Ground		1000 mm	
Approach Angle		23 degrees	

Major Component Weights

Base Machine (with boom cylinder, without counterweight, front linkage and track)	4050 kg
Long Undercarriage	2430 kg
Counterweight (2.1 t)	2150 kg
Heavy Counterweight (2.45 t)	2450 kg
Boom (includes lines, pins and stick cylinder)	
Reach Boom (4.3 m)	930 kg
Stick (includes lines, pins and bucket cylinder)	
R2.25 m – demolition	640 kg
R2.25 m	530 kg
R2.8 m	610 kg
Track Shoe (long/per two track)	
500 mm Triple Grouser	1460 kg
600 mm Triple Grouser	1700 kg
700 mm Triple Grouser	1960 kg
Quick Coupler	
Center-Lock™ with Pin	480 kg
Blade	
2500 mm	810 kg
2600 mm	810 kg
2700 mm	820 kg

All weights are rounded up to nearest 10 kg.

Base machine includes 75 kg operator weight and 90% fuel weight.

311F L Hydraulic Excavator Specifications

Operating Weights and Ground Pressures

	700 mm Triple Grouser Shoes		600 mm Triple Grouser Shoes		500 mm Triple Grouser Shoes	
Long Undercarriage without Blade						
Reach Boom – 4.3 m						
R2.25 m	12 600 kg	28.9 kPa	12 300 kg	33.1 kPa	12 000 kg	39 kPa
R2.8 m	12 600 kg	28.9 kPa	12 400 kg	33.1 kPa	12 000 kg	38.9 kPa
Long Undercarriage with Blade						
Reach Boom – 4.3 m						
R2.25 m	13 400 kg	30.9 kPa	13 100 kg	35.3 kPa	12 900 kg	41.6 kPa
R2.8 m	13 500 kg	30.9 kPa	13 200 kg	35.3 kPa	13 000 kg	41.6 kPa

Bucket and Stick Forces

	Reach Boom 4.3 m	
	R2.25 m	R2.8 m
Pin On		
General Duty		
Bucket Digging Force (ISO)	89 kN	89 kN
Stick Digging Force (ISO)	60 kN	52 kN
Heavy Duty		
Bucket Digging Force (ISO)	89 kN	89 kN
Stick Digging Force (ISO)	60 kN	52 kN

Standard Equipment

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

CAB

- Pressurized operator station with positive filtration
- Sliding upper door window (left-hand cab door)
- Adjustable high-back, static seat
- Removable lower windshield with in cab storage bracket
- Coat hook
- Beverage holder
- Literature holder
- AM/FM radio
- Two stereo speakers
- Storage shelf suitable for lunch or toolbox
- Color LCD display with indicators, filter/fluid change, and working hour information
- Adjustable armrest
- Height adjustable joystick consoles
- Neutral lever (lock out) for all controls
- Travel control pedals with removable hand levers
- Capability of installing additional pedal
- Two power outlets, 10 amp (total)
- Laminated glass front upper window and tempered other windows
- Ashtray

COUNTERWEIGHTS

- 2.45 t
- 2.1 t without lifting eye

ELECTRICAL

- 80 amp alternator
- Circuit breaker
- Capability to electrically connect a beacon

ENGINE

- C3.4B diesel engine
- Meets Japan 2014 (Tier 4 Final) emission standards
- 2300 m altitude capability
- Manual priming pump
- Automatic engine speed control
- Economy and high power modes
- Two-speed travel
- Side-by-side cooling system
- Radial seal air filter
- Primary filter with water separator and water separator indicator
- Secondary filter
- Standard battery –18° C

HYDRAULIC SYSTEM

- Regeneration circuit for boom and stick
- Reverse swing dampening valve
- Control pattern quick-changer, four way
- Automatic swing parking brake
- High-performance hydraulic return filter

LIGHTS

- Halogen boom light (left and right side)
- Time delay function for boom light and cab light
- Working light, cab mounted
- Exterior light

UNDERCARRIAGE

- Grease Lubricated Track GLT2, resin seal
- Towing eye on base frame

SECURITY

- Cat one key security system
- Door locks
- Cap locks on fuel and hydraulic tanks
- Lockable external tool/storage box
- Signaling/warning horn
- Secondary engine shutoff switch
- Openable roof hatch for emergency exit
- Rearview camera
- Security system fitted (MSS)

311F L Optional Equipment

Optional Equipment

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

FRONT LINKAGE

- Quick coupler
- Bucket linkage
- 4.3 m reach boom
- 2.25 m reach stick – demolition
- 2.25 m reach stick
- 2.8 m reach stick

HYDRAULIC SYSTEM

- Auxiliary hydraulics
- High-pressure line
- Medium-pressure line
- Quick coupler line

SECURITY

- FOGS, bolt-on
- Guard, cab front, mesh
- Side steel bumper
- Bottom guards, heavy duty

TECHNOLOGY

- Product Link
- Shovel Crane

LIGHTS

- Working light, cab mounted with time delay

UNDERCARRIAGE

- 500 mm triple grouser shoes
- 600 mm triple grouser shoes
- 700 mm triple grouser shoes
- 2500 mm blade with replaceable cutting edge
- 2600 mm blade with replaceable cutting edge
- 2700 mm blade with replaceable cutting edge
- Swivel guard
- Track guiding guard

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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Based on the Labor, Safety and Health Laws in Japan, employer of small construction equipment are required to provide specific training for all operators on machines with ship weight less than 3 metric ton. For machines greater than 3 metric ton, operator needs to obtain operator license certification from a Government approved registered training school.

AEHQ7921-01 (03-2018)
Replaces AEHQ7921
(Japan)

