

# 312F

Hydraulic Excavator

2017



カタログの写真は海外仕様のもので、オプション装備品を含みます。

## Engine

Engine Model	Cat® C4.4 ACERT™
Gross Power – SAE J1995	74.4 kW
Net Power – SAE J1349	68.5 kW

## Drive

Maximum Travel Speed	5.4 km/h
Maximum Drawbar Pull	113 kN

## Weights

Minimum Operating Weight	12 600 kg
Maximum Operating Weight	14 000 kg



オフロード法2014年  
基準適合

## Introduction

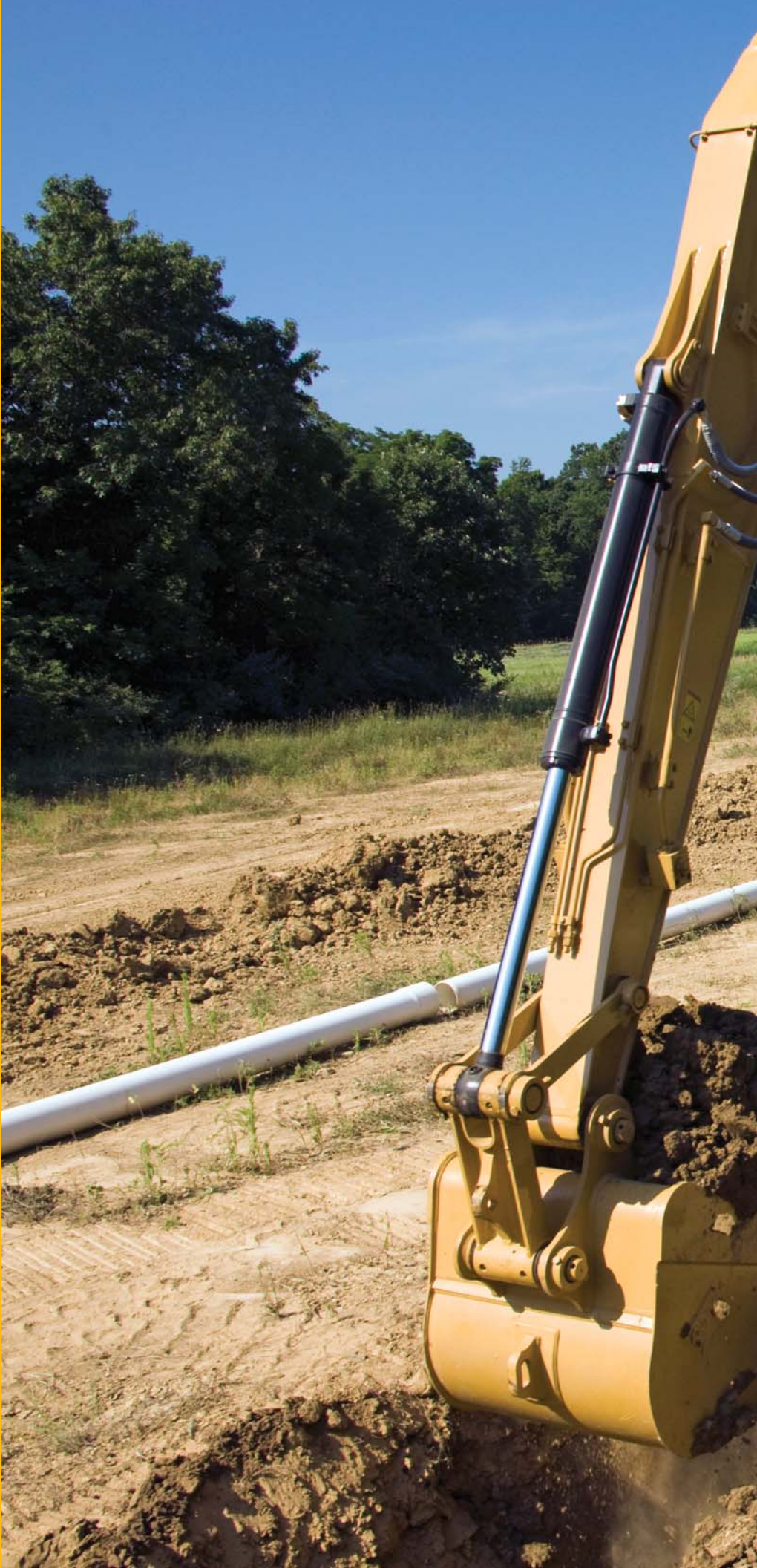
*The Cat 312F is a perfect choice for customers who value reliability, durability, and maximum efficiency to get work done. Powered by a Japan 2014 (Tier 4 Final) C4.4 ACERT engine, the machine features robust structures and a state-of-the-art hydraulic system that enable you to move material all day long with tremendous speed and precision.*

*The cab is ultra quiet and comes equipped with adjustable controls and seat to keep you comfortable and productive. It has easy-to-reach service points that make your routine maintenance fast and simple. Plus there is a full array of Cat work tools and auxiliary hydraulics to help you take on any task.*

*Bottom line: You just won't find a better, more efficient 12-ton excavator from any manufacturer – any place, anywhere.*

## Contents

Engine .....	4
Hydraulics .....	5
Operator Station.....	6
Structures & Undercarriage .....	7
Front Linkage .....	8
Integrated Technologies.....	9
Attachments.....	10
Serviceability .....	12
Safety .....	13
Complete Customer Care.....	14
Sustainability .....	15
Specifications.....	16
Standard Equipment.....	22
Optional Equipment.....	23





# Engine

Powerful and fuel efficient to meet your expectations

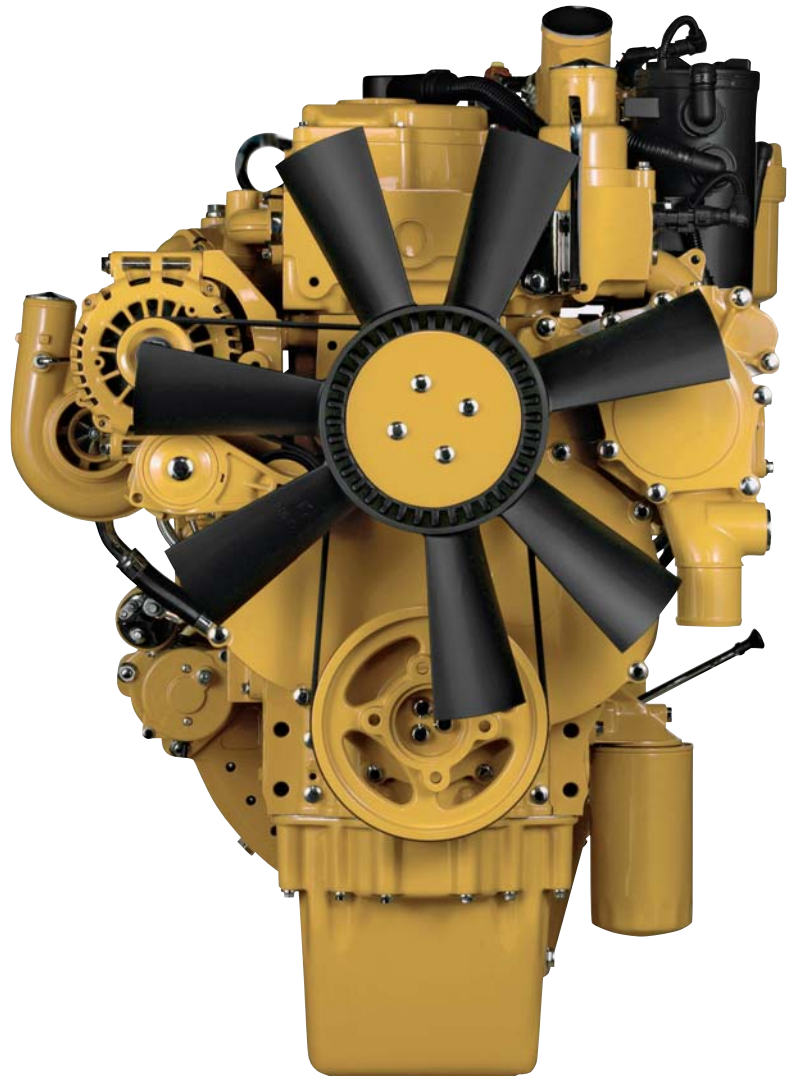
## Proven Technology

The Cat C4.4 ACERT engine meets Japan 2014 (Tier 4 Final) emission standards, and it does so without interrupting your job process. Simply turn the engine on and go to work. It will look for opportunities in your work cycle to regenerate itself, and it will give you plenty of power for the task at hand – all to help keep your owning and operating costs to an absolute minimum.

Like every Cat Japan 2014 (Tier 4 Final) engine, the C4.4 ACERT engine is equipped with a combination of proven electronic, fuel, air, and aftertreatment components. Applying these time-tested technologies lets us meet your high expectations for productivity, fuel efficiency, reliability, and service life.

Following are the results you can expect:

- **High performance** across a variety of applications.
- **Enhanced reliability** through commonality and simplicity of design.
- **Maximized uptime and reduced cost** with world-class Cat dealer support.
- **Minimized impact** on emission systems – with no operator interaction required.
- **Durability** with long service life.
- **Better fuel economy** with minimized maintenance costs.
- **Same great power** and response.





# Hydraulics

Power to move your material with speed and precision

### **A Powerful, Efficient Design**

When it comes to moving material quickly and efficiently, you need hydraulic horsepower – the type of ground-breaking power the 312F can deliver. Major hydraulic components like pumps and valves are located close together so shorter tubes and lines can be used. This design leads to less friction loss, 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.

### **Boom & Stick Oil Re-Circulation For Added Efficiency**

The 312F regenerates the flow of oil from the head end of the boom and stick cylinders to the rod end of the boom and stick cylinders 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 for you.

# Operator Station

Comfort and convenience to keep you productive

## A Safe, Quiet Cab

The roll-over protective structure (ROPS) cab provides you with a safe working environment. It also contributes to your comfort because it's attached to a reinforced frame with special viscous mounts that limit vibration and unnecessary sound. Add in special roof lining and sealing and you have a cab that's as quiet inside as today's top pickup trucks.

## Comfortable Seat Options

All seats include a reclining back, upper and lower slide adjustments, and height and tilt angle adjustments to meet your needs for maximum comfort.

## A Cool & 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.

## 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.



## A Helpful Monitor

The LCD 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 and effectively. Plus it projects the image from the standard rearview camera to help you see what's going on around you so you can stay safely focused on the job at hand.

## Ample Storage & Auxiliary Power

Storage spaces are located in the front, rear, and side consoles of the cab. A drink holder accommodates a large mug, and a shelf behind the seat stores large lunch or toolboxes. Two 12-volt 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.



# Structures & Undercarriage

Made to work in your rugged applications



## Heavy Counterweight

The counterweight is built with thick steel plates and reinforced fabrications to make it less susceptible to damage, and it has curved surfaces that match the machine's sleek, smooth appearance along with integrated housing to help protect the standard rearview camera.

## Robust Frame

The 312F is a well-built machine designed to give you a very long service life. The upper frame has mountings made specifically to support the heavy-duty cab; it is also reinforced around key areas that take on stress like the boom foot and skirt. Massive bolts are used to attach the track frames to the body, and additional bolts are used to increase the machine's digging force, which leads to more productivity for you.

## Durable Undercarriage

The 312F undercarriage contributes significantly to its outstanding stability and durability. Track shoes, links, rollers, idlers, and final drives are all built with long-lasting, high-tensile-strength steel. Cat Grease Lubricated Track 2 (GLT2) track link protects moving parts by keeping water, debris, and dust out and grease sealed in, which delivers longer wear life and reduced noise when traveling. Optional guide guards help maintain track alignment to improve the machine's overall performance – whether you're traveling on a flat, heavy bed of rock or a steep, wet field of mud.

# Front Linkage

Options to take on your far-reaching and up-close tasks



## Built To Last

Your uptime and service intervals are increased with high-quality, durable, reliable booms, sticks, and linkage. Each boom and stick is built with internal baffle plates for maximum durability, and each undergoes ultrasound inspection to ensure quality and reliability for the tough work you do.

## Booms & Sticks

The 312F is offered with a reach boom and two stick configurations: R2.5 and R3.0. Each boom and stick is built with internal baffle plates for added durability, and each undergoes ultrasound inspection to ensure weld quality and reliability. Talk to your Cat dealer to pick the best front linkage for your specific applications.





# Integrated Technologies

Solutions that make work easier and more efficient



### Cat Connect

The smart use of technology and services will improve your job site efficiency. In fact, using data from technology-equipped machines gives you more information and insight into your equipment and operations than ever before.

Cat Connect technologies offer improvements in these key areas:

### LINK Technologies

LINK technologies like Product Link™ wirelessly connect you to your equipment, giving you valuable insight into how your machine or fleet is performing. The system tracks location, hours, fuel usage, productivity, idle time, and diagnostic codes through the online VisionLink® interface so you can make timely, fact-based decisions to maximize efficiency, improve productivity, and lower operating costs.

### GRADE Technologies

GRADE technologies like Cat Grade Control Depth and Slope combine digital design data and in-cab guidance to help you work more productively and accurately with less rework. Real-time bucket tip positioning and cut and fill data on the standard cab monitor guide you to grade, saving money on fuel and materials. You can also easily upgrade to AccuGrade™ when 3D control is required.

# Attachments

Tools to make you productive and profitable



## **Break, Demolish & Scrap**

A hydraulic hammer equips your machine for breaking rock in quarries and preparing trenches on construction sites. Taking down bridge pillars and heavily reinforced concrete is no problem. Shear attachments take your machine into structure demolition jobs for reuse and recycle.

## **Move & Handle**

Add a thumb and you have the ability to move and handle brush, rocks, and debris. For constant material handling, a grapple is your solution for picking, sorting, and loading trash, demolition debris, or recyclables.

## **Set Up Your Machine For Profitability**

Your Cat dealer can install hydraulic kits to properly operate all Cat Work Tool attachments – maximizing the machine's uptime and your profits. All Cat Work Tool attachments are supported by the same Cat dealer network as your Cat machine.

**GRAB, SORT, LOAD**



**Pro Series Hydraulic Thumbs**

**DIG & PACK**



**Ditch Cleaning & Tilt Buckets**



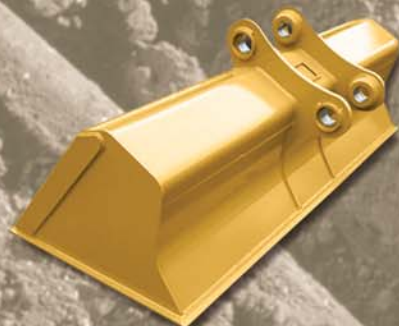
**General Duty Buckets**



**Heavy Duty Buckets**



**Heavy Duty Skeleton Bucket**



**Tamping Bucket**

**SWAP TOOLS**



**Pin Grabber Coupler**

**CUT, CRUSH, BREAK & RIP**



**Scrap & Demolition Shears**



**Hydraulic Hammers**



**Stiff Link Thumbs**



**Demolition & Sorting Grapples**

# Serviceability

Designed to make your maintenance quick and easy

## Safe, Convenient Access

You can reach most routine maintenance items like fuel tank's drain cock and grease points from the safety and convenience of ground level. You will also find filters banked together for higher service efficiency. Compartments feature wide service doors designed to help prevent debris entry, and they also securely latch in place to help make your service work simpler.

## A Smart Design

The high-ambient cooling system features a fuel-saving variable-speed fan and a side-by-side-mounted radiator and oil and air coolers for easy cleaning. Wider clearance between the two makes blowing off debris easy for you, which can help improve your machine's reliability and performance.

## 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.

## More Service Benefits

Filters are banked together to enhance service efficiency. 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.



# Safety

Features to help protect you day in and day out



## A Safe, Quiet Cab

The ROPS cab provides you with a safe working environment when properly seated and belted. It also contributes to your comfort because it's attached to a reinforced frame with special viscous mounts that limit vibration and unnecessary sound. Add in special roof lining and sealing and you have a cab that's as quiet inside as any of today's top pickup trucks.

## Secure Contact Points

Multiple large steps 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. Anti-skid plates reduce your slipping hazards in all types of weather conditions, and they can be removed for cleaning.

## Great Views

Ample glass gives you excellent visibility out front and to the side, and the standard rearview camera gives you a clear field of view behind the machine through the cab monitor. The available 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 also serves as an emergency exit and provides you with enhanced overhead visibility.

## Smart Lighting

Halogen lights provide plenty of illumination, and the cab and boom lights 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.





## Complete Customer Care

Service you can count on

### **Parts Where You Work**

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.



## Sustainability

Generations ahead in every way

- The C4.4 ACERT engine meets Japan 2014 (Tier 4 Final) emission standards.
- The 312F runs on ultra-low-sulfur diesel (ULSD) fuel with 15 ppm.
- An overfill indicator rises when the fuel tank is full to help service technicians avoid spilling.
- The machine 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 312F is an efficient, productive machine that's designed to conserve our natural resources for generations ahead.

# 312F Hydraulic Excavator Specifications

## Engine

Engine Model	Cat C4.4 ACERT
Gross Power – SAE J1995	74.4 kW
Net Power – SAE J1349	68.5 kW
Bore	105 mm
Stroke	127 mm
Displacement	4.4 L

## Weights

Minimum Operating Weight*	12 600 kg
Maximum Operating Weight**	14 000 kg

\*4.65 m boom, 2.5 m stick, 1.75 t counterweight, 0.52 m<sup>3</sup> bucket, and 500 mm shoes.

\*\*4.65 m boom, 3.0 m stick, 1.75 t counterweight, 0.52 m<sup>3</sup> bucket, 700 mm shoes with blade.

## Hydraulic System

Main System – Maximum Flow (Total)	256 L/min
Swing System – Maximum Flow	120 L/min
Maximum Pressure – Equipment	30 500 kPa
Maximum Pressure – Travel	35 000 kPa
Maximum Pressure – Swing	25 000 kPa
Pilot System – Maximum Flow	19.3 L/min
Pilot System – Maximum Pressure	4120 kPa
Boom Cylinder – Bore	110 mm
Boom Cylinder – Stroke	1015 mm
Stick Cylinder – Bore	120 mm
Stick Cylinder – Stroke	1197 mm
Bucket Cylinder – Bore	100 mm
Bucket Cylinder – Stroke	939 mm

## Drive

Maximum Travel Speed	5.4 km/h
----------------------	----------

## Swing Mechanism

Swing Speed	10.9 rpm
-------------	----------

## Service Refill Capacities

Fuel Tank Capacity	223 L
DEF Tank Capacity	20 L
Cooling System	22 L
Engine Oil (with filter)	13.5 L
Swing Drive (each)	2.4 L
Final Drive (each)	3 L
Hydraulic System (including tank)	164 L
Hydraulic Tank	91 L

## Track

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

## Standards

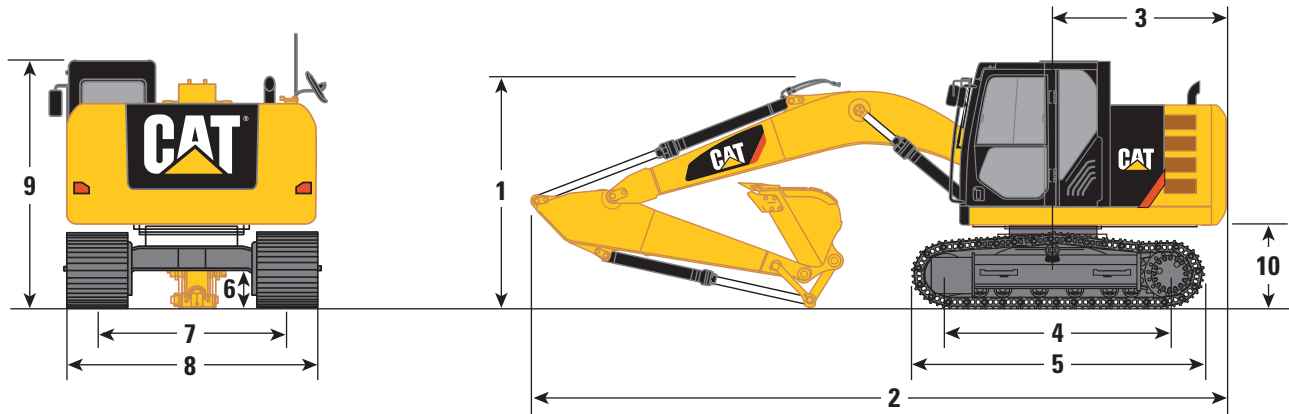
ROPS Cab	ISO 12117-2:2008
----------	------------------



# 312F Hydraulic Excavator Specifications

## Dimensions

All dimensions are approximate.



Boom Option	Reach Boom 4.65 m	
Stick Options	R3.0	R2.5
<b>1</b> Shipping Height*	2820 mm***	2820 mm
Shipping Height at Boom Top	2780 mm***	2820 mm
Shipping Height with Hand Rail	2820 mm	2820 mm
Shipping Height with Top Guard	2970 mm	2970 mm
<b>2</b> Shipping Length		
Standard Undercarriage	7670 mm	7660 mm
Standard Undercarriage with Blade	7900 mm	7890 mm
<b>3</b> Tail Swing Radius	2160 mm	2160 mm
<b>4</b> Length to Center of Rollers		
Standard Undercarriage	2780 mm	2780 mm
<b>5</b> Track Length		
Standard Undercarriage	3490 mm	3490 mm
<b>6</b> Ground Clearance	440 mm	440 mm
<b>7</b> Track Gauge	1990 mm	1990 mm
<b>8</b> Transport Width		
500 mm Shoes	2490 mm	2490 mm
600 mm Shoes	2590 mm	2590 mm
700 mm Shoes	2690 mm	2690 mm
<b>9</b> Cab Height	2770 mm	2770 mm
Cab Height with Top Guard	2970 mm	2970 mm
<b>10</b> Counterweight Clearance**	890 mm	890 mm

\*Including shoe lug height.

\*\*Without shoe lug height.

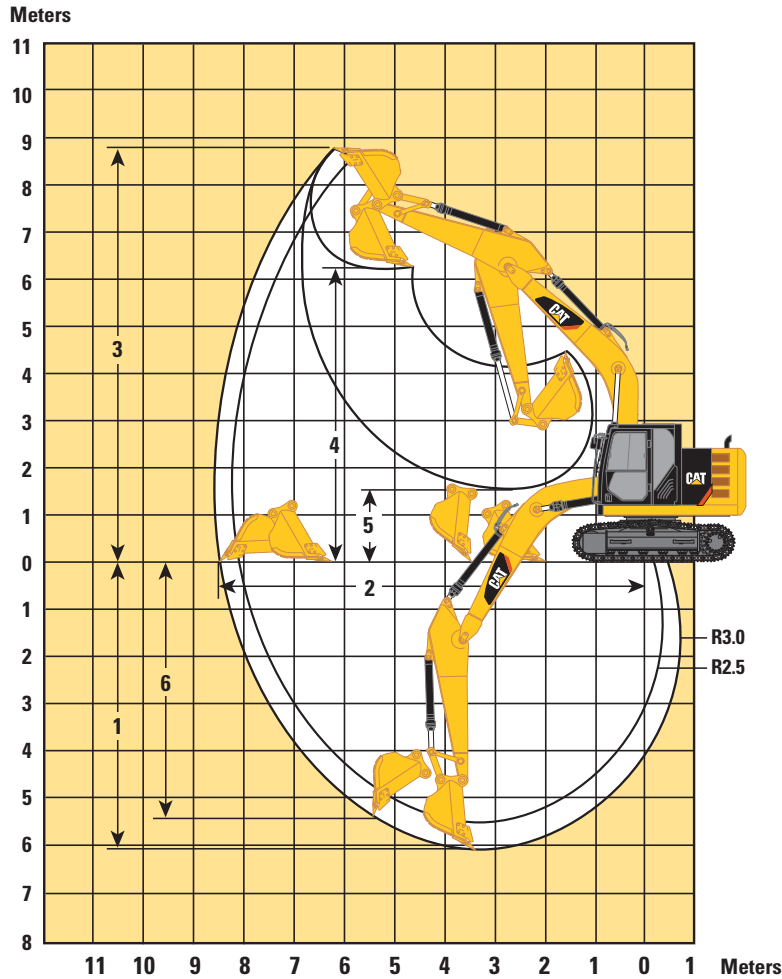
\*\*\*Use Transportation PIN position.

All dimensions calculated with 0.52 m<sup>3</sup>, 900 mm bucket.

# 312F Hydraulic Excavator Specifications

## Working Ranges

All dimensions are approximate.



Boom Option	Reach Boom 4.65 m	
Stick Options	R3.0	R2.5
1 Maximum Digging Depth	6030 mm	5530 mm
2 Maximum Reach at Ground Level	8620 mm	8170 mm
3 Maximum Cutting Height	8700 mm	8480 mm
4 Maximum Loading Height	6340 mm	6100 mm
5 Minimum Loading Height	1530 mm	2020 mm
6 Maximum Vertical Wall Digging Depth	5410 mm	5000 mm

All ranges calculated with 0.52 m<sup>3</sup>, 900 mm bucket.

# 312F Hydraulic Excavator Specifications

## Operating Weight and Ground Pressure

	700 mm Triple Grouser Shoes		600 mm Triple Grouser Shoes		500 mm Triple Grouser Shoes	
	kg	kPa	kg	kPa	kg	kPa
<b>Standard Undercarriage without Blade</b>						
Reach Boom – 4.65 m						
R3.0	13 200	30.5	12 900	34.9	12 700	41.1
R2.5	13 100	30.3	12 800	34.6	12 600	40.8
<b>Standard Undercarriage with Blade</b>						
Reach Boom – 4.65 m						
R3.0	14 000	32.4	13 800	37.1	13 500	43.8
R2.5	13 900	32.2	13 700	36.9	13 400	43.5

All weights are rounded up to nearest 100 kg including General Duty 0.52 m<sup>3</sup> bucket (470 kg).

## Major Component Weights

	kg
Base Machine (with boom cylinder, without counterweight, front linkage and track)	5190
Standard Undercarriage	2410
Counterweight	1750
Boom (includes lines, pins and stick cylinder)	
Reach Boom – 4.65 m	1010
Stick (includes lines, pins, bucket cylinder, and bucket linkage)	
R3.0	670
R2.5	590
Track Shoe (per two tracks)	
500 mm Triple Grouser	1460
600 mm Triple Grouser	1700
700 mm Triple Grouser	1950
Blade	
2500 mm	810
2600 mm	810
2700 mm	820

All weights are rounded up to nearest 10 kg except for buckets.

Base machine includes 75 kg operator weight, 90% fuel weight, and undercarriage with center guard.

# 312F Hydraulic Excavator Specifications

## Bucket and Stick Forces

<b>Boom Option</b>	<b>Reach Boom 4.65 m</b>	
<b>Stick Options</b>	<b>R3.0</b>	<b>R2.5</b>
General Duty Bucket		
Bucket Digging Force (Cutting Edge)	96 kN	96 kN
Stick Digging Force (Cutting Edge)	59 kN	66 kN

# 312F Hydraulic Excavator Specifications

## Work Tool Offering Guide\*

<b>Boom Type</b>	<b>Reach Boom</b>	
<b>Stick Size</b>	<b>R3.0</b>	<b>R2.5</b>
Hydraulic Hammer	H110Es H115Es	H110Es H115Es
Mobile Scrap and Demolition Shear	S320B**	S320B**
Compactor (Vibratory Plate)	CVP75	CVP76
Thumb	These work tools are available for the 312F. Consult your Cat dealer for proper match.	
Pin Grabber Coupler		

\*Matches are dependent on excavator configurations. Consult your Cat dealer for proper work tool match.

\*\*Boom mount.

## Standard Equipment

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

### ENGINE

- C4.4 ACERT diesel engine
- Meets Japan 2014 (Tier 4 Final) emission standards
- 2300 m altitude capability
- Electric priming pump
- Automatic engine speed control
- Economy and standard 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
- Screen filter in fuel line
- Cold weather battery –25° C

### HYDRAULIC SYSTEM

- Regeneration circuit for boom and stick
- Reverse swing dampening valve
- Automatic swing parking brake
- High-performance hydraulic return filter
- Capability of installing HP stackable valve and medium and QC valve
- Capability of installing additional auxiliary pump and circuit
- Capability of installing boom lowering control device and stick lowering check valve
- Control pattern quick-changer, four way

### CAB

- Pressurized operator station with positive filtration
- Sliding upper door window (left-hand cab door)
- Glass-breaking safety hammer
- Removable lower windshield with in cab storage bracket
- Coat hook
- Beverage holder
- Literature holder
- AM/FM radio
- Radio with MP3 auxiliary audio port
- Two 12V 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 two additional pedals
- Two power outlets, 10 amp (total)
- Laminated glass front upper window and tempered other windows

### UNDERCARRIAGE

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

### COUNTERWEIGHT

- 1.75 t

### ELECTRICAL

- 80 amp alternator
- Circuit breaker

### LIGHTS

- Halogen boom light (left side)
- Time delay function for boom light and cab light
- Exterior lights integrated into storage box

### 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 skylight for emergency exit
- Rearview camera

### TECHNOLOGY

- Product Link

## Optional Equipment

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

### HYDRAULIC SYSTEM

- Auxiliary hydraulics
- Boom and stick auxiliary line
- High-pressure line
- Medium-pressure line
- Cat quick coupler line – high-pressure capable
- Boom lowering and stick lowering control device

### CAB

- Seat, high-back mechanical suspension
- Windshield wiper, lower with washer
- Left pedal
- Cab mirror
- Ashtray

### UNDERCARRIAGE

- 500 mm triple grouser shoes
- 600 mm triple grouser shoes
- 700 mm triple grouser shoes
- Guard, heavy-duty bottom
- Center track guiding guard
- 2500 mm blade with replaceable cutting edge
- 2600 mm blade with replaceable cutting edge
- 2700 mm blade with replaceable cutting edge
- Swivel guard

### FRONT LINKAGE

- Quick coupler
- Bucket linkage
- 4.65 m reach boom
- 2.5 m stick
- 3.0 m stick

### LIGHTS

- Working lights, cab mounted with time delay
- Halogen boom lights (right side)

### SECURITY

- FOGS, bolt-on
- Side steel bumper
- Guard, cab front, mesh

### TECHNOLOGY

- Cat Grade with 3D
- Cat Grade Control Depth and Slope
- Shovel crane

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at [www.cat.com](http://www.cat.com)

AEHQ8022  
(Japan)

© 2017 Caterpillar  
All rights reserved

Materials and specifications are subject to change without notice. Featured machines in photos may include additional equipment. See your Cat dealer for available options.

CAT, CATERPILLAR, SAFETY.CAT.COM, their respective logos, "Caterpillar Yellow" and the "Power Edge" trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.

VisionLink is a trademark of Trimble Navigation Limited, registered in the United States and in other countries.

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.

