

# Comparative Bulletin

## Cat® 320C and 320B Hydraulic Excavators



# Table of Contents

<b>Introduction</b> .....	<b>3</b>
<b>Overview</b> .....	<b>4</b>
<b>Performance</b> .....	<b>6</b>
Performance Overview .....	6
Engine Horsepower .....	7
Hydraulic Pump Flow .....	8
Front Implement Speed .....	9
Swing Performance .....	10
Swing Acceleration .....	11
Swing Slope .....	12
<b>Productivity</b> .....	<b>13</b>
Productivity Overview .....	13
Trenching Overview .....	14
Trenching Productivity .....	15
Level Truck Loading Overview .....	16
Level Truck Loading Productivity .....	17
<b>Versatility</b> .....	<b>18</b>
Stackable Valves .....	18
Optional Tool Control System .....	19
<b>Ease of Operation</b> .....	<b>20</b>
Monitor .....	20
Work Modes .....	21
Monitor - Language Capability .....	22
Monitor - Information Display .....	23
Skylight .....	24
Right-Side Window .....	25
Engine Hood .....	26
<b>Operator Comfort</b> .....	<b>27</b>
Layout .....	27
Cab Shell .....	28
<b>Serviceability</b> .....	<b>29</b>
Extended Service Interval .....	29
Oil Cooler .....	30
Tracks .....	31
Service Access .....	32
<b>Specifications</b> .....	<b>34</b>
Engine .....	34
Weights .....	34
Service Refill Capacities .....	34
Hydraulic System .....	34
Drive .....	35
Swing Mechanism .....	35
Track .....	36

The 320C is a direct replacement for the 320B.

From the introduction, the 300 family excavators have been well received by customers worldwide. Original 300 Series machines created a breakthrough, while the B Series successfully introduced new technologies and maintained the tradition initiated with the original 300 Series. The C Series incorporates innovations that have been introduced to improve Caterpillar hydraulic excavator's competitiveness. International marketing, design and manufacturing teams developed C Series excavators based on surveys of customer needs and market trend research.

The C Series appearance enhances the Caterpillar hydraulic excavator state-of-the-art design. It maintains the B Series image of a strong, solid robust machine. Functionality was also considered when designing the C Series. The side and rear back areas are recessed for protection and the hoodless engine offers better rear viewing.

The controllability and reliability of B Series excavators are well recognized in the marketplace. The C Series intends to maintain these advantages, while at the same time improving product value. To provide this improved value, the main C Series sales features are:

- Productivity and Performance,
- Durability
- Versatility
- Ease of Operation
- Operator Comfort
- Serviceability
- Customer Support

This bulletin compares the sales features, specifications and user benefits of the Caterpillar 320C with those of the 320B.

# 320C Hydraulic Excavators

---

## Performance

Performance has been improved for higher productivity in all applications. An operator can easily feel the differentiated power and speed of the 320C with excellent controllability. **pg. 6**

---

## Productivity

Controllability, high stick and bucket forces, simplified service and a more comfortable, efficient operator station increases productivity and lowers operating costs. **pg. 13**

---

## Versatility

The 320C is highly efficient in a wide range of applications and can be used with a wide variety of work tools. **pg. 18**



---

### **Ease of Operation**

Designed for simple, easy operation, the 320C allows the operator to focus on production. **pg. 20**

---

### **Operator Comfort**

Redesigned interior layout maximizes operator space, provides exceptional comfort, and reduces operator fatigue. **pg. 27**

---

### **Serviceability**

Simplified service and maintenance features save the customer time and money. **pg. 29**





## Performance Overview

The 320C performance has been improved from the 320B to provide higher productivity on truck loading, trenching, leveling, slope finishing and tamping. An operator can easily feel differentiated power and speed on the 320C with the excellent B-Series controllability. Operators that have evaluated the 320C regard it as a very quick and controllable machine.

	320C	320B
Engine Model	Cat 3066T	
Rated Power	140 PS/138 HP/103 kW	130 PS/128 HP/96 kW
Max. Torque	601.1 N•m/443 lb-ft	582.5 N•m/430 lb-ft

### Engine Specification

## Engine Horsepower

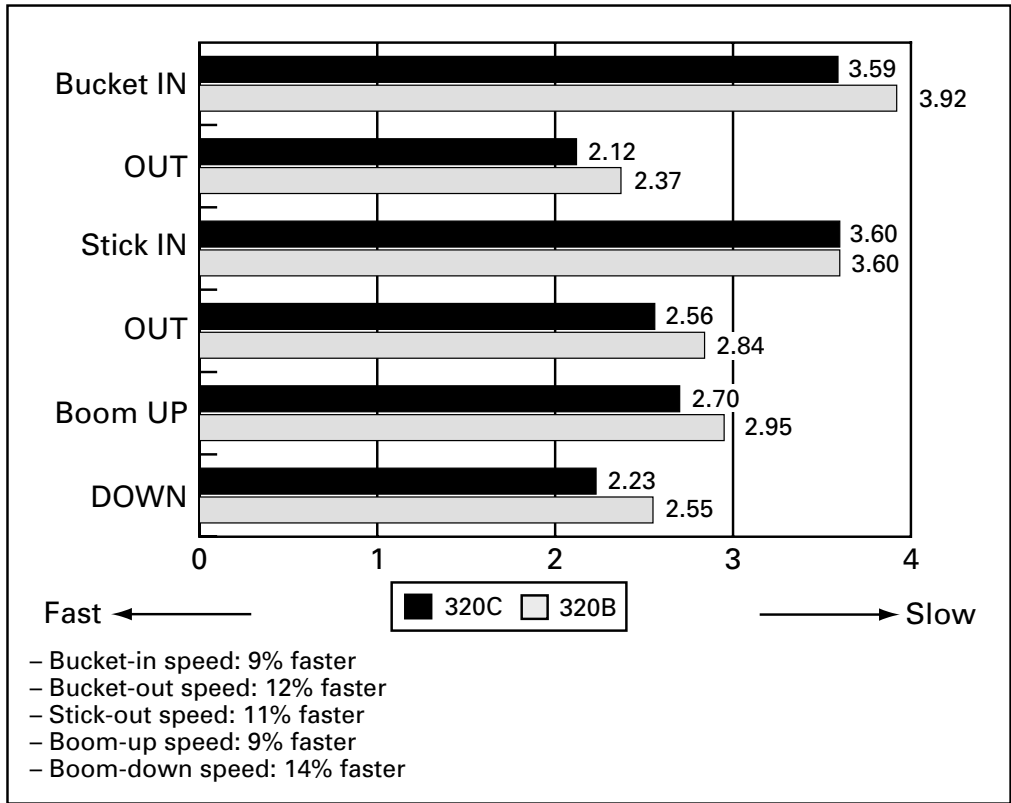
The Cat 3066 T engine was developed specifically for construction machinery. The engine features a long-stroke piston movement for high torque at medium to low speeds, good fuel consumption and low noise. 320C engine horsepower has been increased by 8 percent.

	320C	320B
Max. Pressure	34 300 kPa 4980 psi	34 300 kPa 4980 psi
Max. Flow	205 liter/min × 2 54.2 gal/min × 2	185 liter/min × 2 48.9 gal/min × 2

Main Pump Specification

## Hydraulic Pump Flow

The 320B has a flow control system, which reduces flow to a minimum when joysticks and travel controls are in the neutral position. This reduces fuel consumption and sound levels and extends component life. Main pump flow increases in direct proportion to lever movement, making operation extremely smooth and predictable. The 320C uses the same hydraulic flow control system as the 320B, however, hydraulic pump flow is increased by 11 percent.



Front Implement Speed

## Front Implement Speed

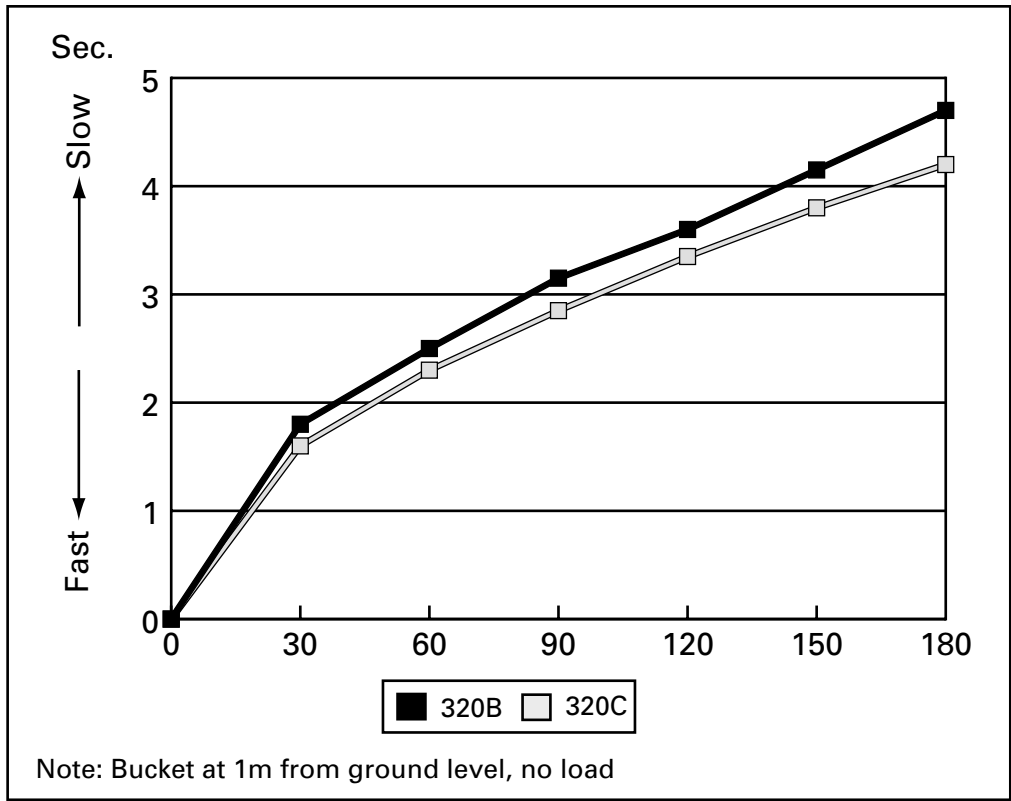
Due to higher engine horsepower and higher pump flow, the 320C implement speed is much faster than the 320B's.

	320C	320B
Swing Motor Capacity	122cc./rev. (7.4 in <sup>3</sup> /rev.)	122cc./rev. (7.4 in <sup>3</sup> /rev.)
Swing Motor Torque	444 N•m (328 lb-ft)	410 N•m (302 lb-ft)
Swing Speed	12.8 rpm	10.7 rpm
Swing Torque	60.9 kN•m (44,920 lb-ft)	55.1 kN•m (40,640 lb-ft)
Swing Hydraulic Pressure	25 000 kPa (3,630 psi)	23 000 kPa (3,340 psi)

Swing Performance

## Swing Performance

Swing performance on the 320C is substantially improved from the 320B. Swing speed is 20 percent higher and swing torque is 7 percent higher. These improvements result in faster swing acceleration, cycle time, and greater swing slope capability.



Swing Acceleration

### Swing Acceleration

This chart demonstrates the swing acceleration test results. Swing times were taken every 30-degrees. These results clearly demonstrate the 320C's excellent swing acceleration capability.

	320C	320B
Right Side Swing	26.0 degrees	20.5 degrees
Left Side Swing	26.5 degrees	21.0 degrees
Average	26.3 degrees	20.8 degrees

Note: Full reach, 1050 kg weight loaded in bucket.

## Swing Slope Capability

### Swing Slope

The 320C swing slope capability is greatly improved from the 320B due to a 12% increase in swing torque.

Machine	Boom	Stick	Bucket	Track Shoes
320C	Reach Boom	2.92 m (9'7")	0.8 m <sup>3</sup> (1.0 yd <sup>3</sup> )	600 mm (24")
320B	Reach Boom	2.92 m (9'7")	0.8 m <sup>3</sup> (1.0 yd <sup>3</sup> )	600 mm (24")

Configuration

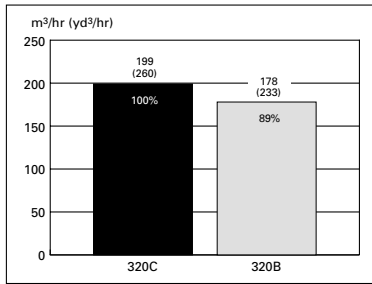
## Productivity Overview

The 320C has excellent productivity due to higher engine horsepower, higher hydraulic pump flow, and better swing performance. Production tests were conducted at the Ono Proving Ground in Japan. Professional Caterpillar evaluators operated each machine.

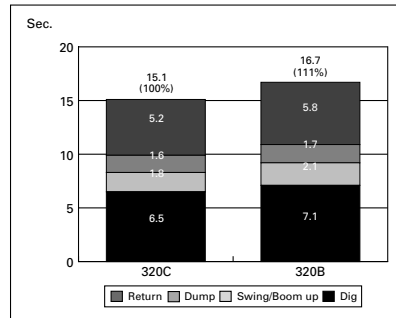


### **Trenching Overview**

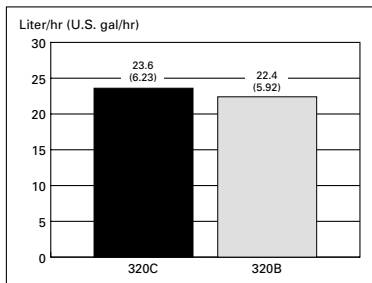
The 320B was operated in Power Up Mode during the trenching test. The trenching tests were conducted by digging a trench 2.5m (8'3") deep for approximately 20 minutes, one-bucket width wide. A cross trench was prepared in order to start the cut consistently for both machines. As the operator was digging the trench, the depth was measured every 2m (6'7") to ensure a consistent trench depth. Trench volume, cycle times, and fuel consumption were measured on each machine. All production figures are based on 100 percent efficiency and a 60-minute working hour. These results should be derated for actual operating conditions.



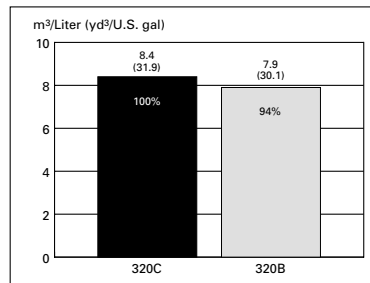
Productivity — Trenching



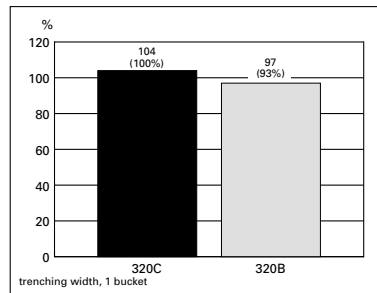
Cycle Time — Trenching



Fuel Consumption — Trenching



Fuel Efficiency — Trenching



Bucket Fill Factor — Trenching

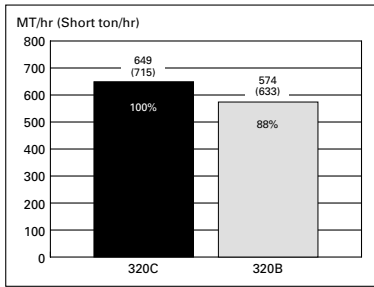
## Trenching Productivity

Hourly production of the 320C was 11 percent higher than the 320B. Higher productivity of the 320C resulted from faster cycle times and higher bucket fill factors. The 320C cycled 11 percent faster than the 320B. The 320C fuel consumption was slightly higher than the 320B's, but the fuel efficiency was 6 percent better than the 320B's.

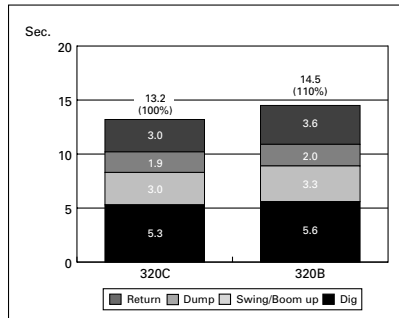


### **Level Truck Loading Overview**

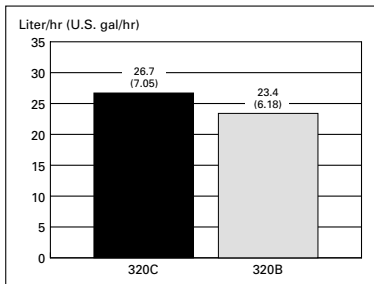
In this test the excavators loaded a truck at the same level, swinging 90 degrees. The digging depth was approximately 2.2m (7'3"). An 11 mton (24,250 lb) dump truck was used. The material was a compacted red sandy clay and rock mixture and the material density was measured at  $1800 \text{ kg/m}^3$  ( $3000 \text{ lb/yd}^3$ ). Scales were used to measure truck payloads. The empty trucks were weighed before the test, after five-bucket loads, and then weighed again to determine the payload. Cycle times were also recorded during the tests.



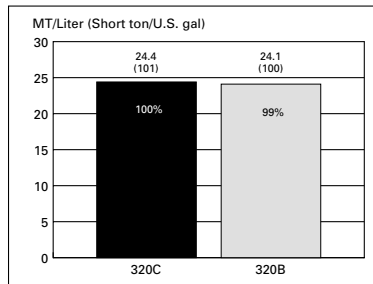
Productivity — Level Truck Loading



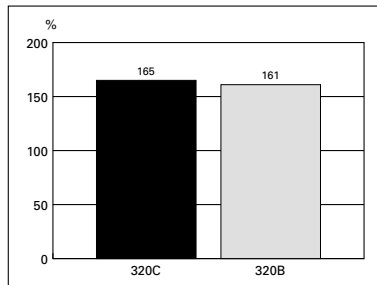
Cycle Time — Level Truck Loading



Fuel Consumption — Level Truck Loading



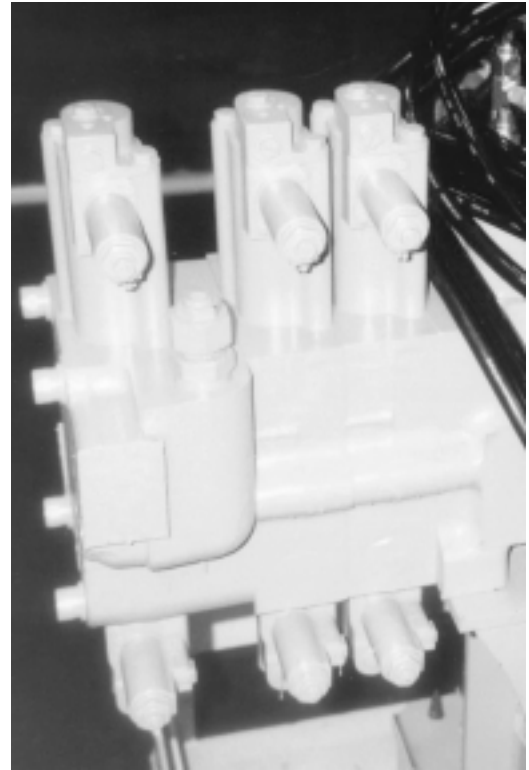
Fuel Efficiency — Level Truck Loading



Bucket Fill Factor — Level Truck Loading

## Level Truck Loading Productivity

The 320C's hourly production was 12 percent higher than the 320B. Higher productivity of the 320C resulted from 10% faster cycle times. All production figures are based on 100 percent efficiency and a 60-minute working hour. These results should be derated for actual operating conditions.



**Cat 320B**

**Cat 320C Stackable Valves**

---

Stackable valves are not available on the 320B.

Like on the 320B, the control valve on the 320C also has a standard auxiliary valve for the hydraulic tools. Additionally, the 320C control valve has a capacity to add a maximum of three auxiliary stackable valves to allow the use of various hydraulic tools. Two types of stackable valves are available: (1) Function 2 (F2) Parallel Circuit, this valve provides ample two-pump combination flow and (2) Function 3 (F3) Auxiliary Pump Circuit, this circuit, which is used when a third pump is required, is ideal for use with a generator for electromagnetic attachments and for use with attachment tools that require rotation.



### **Cat 320B**

### **Cat 320C Optional Tool Control System**

---

An attachment controller that can control flow is not available on the 320B.

A variety of auxiliary hydraulics are available as options. You can choose from a single, dedicated one-way circuit to a programmable tool control system where the attachment controller electronically controls the stackable valve system, and allows such settings as flow, pressure and the switch between one or two pumps to be made from the monitor. The controller memorizes up to five group settings of flow, pressure and engine speed among several other parameters. This feature allows settings for tools that are used frequently to be prerecorded, eliminating the need to readjust the hydraulics each time these tools are used.

## Ease of Operation



**Cat 320B Monitor**

---

A large 320B monitor displays a variety of information to six digit codes. Travel, work, and power mode switches, controls and indicators are located on the monitor.



**Cat 320C Monitor**

The 320C's smaller monitor panel prevents operator knee interference, increases foot space and allows better viewing. Instead of work modes, the 320C has an auto boom/swing function which makes the machine easier to operate.



### **Cat 320B Work Modes**

---

The 320B allows the operator to choose between swing priority and boom priority, improving performance for a given application.



### **Cat 320C Work Modes**

---

The 320C has infinite flow priorities between swing and boom, maximizing performance and simplifying operation. Boom up and swing pilot pressures are sensed by joystick input. The flow sent to the boom and stick circuits is adjusted automatically.

## Ease of Operation



**Cat 320B Monitor - Language Capability**

The 320B monitor does not offer language capability or text messages.



**Cat 320C Monitor - Language Capability**

The 320C monitor uses a liquid crystal display. To help an operator understand machine conditions, written messages are displayed on the dot matrix screen. Twenty different languages are available on the 320C. The machine can be ordered with up to seven language combinations at a time.



**Cat 320B Monitor - Information Display**

The 320B monitor provides information to the operator through warning light indicators. It does not have the capability to store maintenance information.



**Cat 320C Monitor - Information Display**

The display on the 320C has been simplified for the operator. A warning icon and language messages improve the operator's capability to monitor vital machine functions. The monitor provides the number of hours that filters and fluids have been used and displays filter and oil change warning when the number of hours used reaches the maintenance interval. These warnings are shown for five seconds following the prestart check. The warnings ensure operators are aware that maintenance has to be performed. Good maintenance is key for good performance and component life. In addition to vehicle working hours, the monitor displays engine, main pump and travel motor working hours. This allows operators and mechanics to monitor the life of individual components.

## Ease of Operation



**Cat 320B Skylight**



**Cat 320C Skylight**

---

A large polycarbonate skylight delivers excellent natural lighting and good ventilation. Gas cylinders make opening and closing the skylight easy, and eliminate the need to lock the skylight in the open position. A standard sliding sunshade protects the operator from direct sunlight.

320C uses a larger polycarbonate skylight to improve overhead viewing for jobs such as material handling, demolition or when working close to electrical cables.



**Cat 320B Right-Side Window**



**Cat 320C Right-Side Window**

---

The right-side operator station window isolates the operator from the hydraulic lines. Also, because a pillar does not obstruct the window, there's good viewing to the right and ample lighting inside the cab.

320C uses a larger right-side window than 320B. The right-side low angle viewing area is significantly improved.

## Ease of Operation



**Cat 320B Engine Hood**

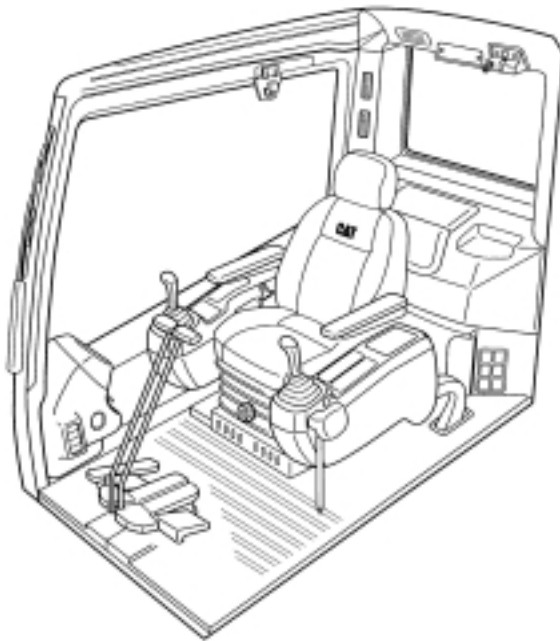


**Cat 320C Engine Hood**

---

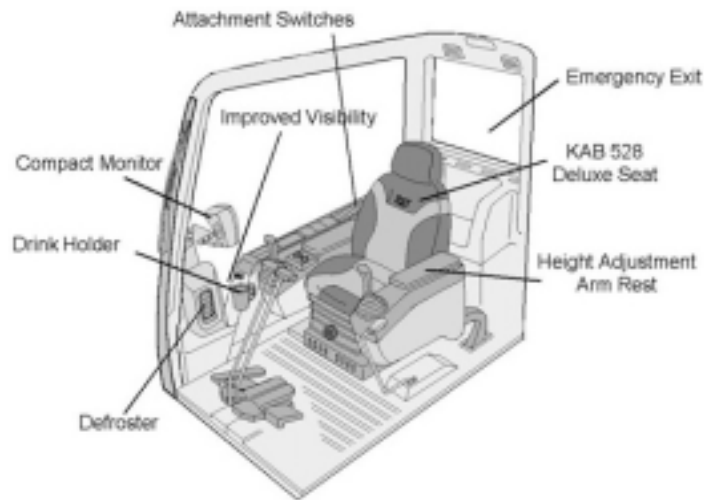
The 320B, like all B-Series machines, was designed with a rear engine hood.

Elimination of the engine hood improves rear viewing on the 320C.



**Cat 320B Layout**

The 320B layout incorporates switches and controls on both the right and left consoles.



**Cat 320C Layout**

The 320C's redesigned cab interior maximizes operator space and ensures a comfortable environment. The air conditioner and attachment switches were moved to the right-hand wall and key switch and throttle dial are situated on the right-hand console for easier access. The monitor remains in the front right hand corner of the operator station.



**Cat 320B Cab Shell**

Falling Object Guard System (FOGS) can not be directly bolted-on to the 320B cab.



**Cat 320C Cab Shell**

The newly designed cab shell uses an asymmetrical steel tube for improved resistance to fatigue and vibration. The new cab configuration allows the FOGS (Falling Object Guard System) to be bolted on directly to the cab.



## Cat 320B Extended Service Interval

Fast and easy maintenance means more uptime and better value. Service points such as fuel-water separator, battery, radiator fluid level, window washer fluid level, and pilot system filter are accessible from ground level.

## Cat 320C Extended Service Interval

The 320C service and maintenance intervals are extended to reduce operator work. Front pin greasing is one of most time consuming and inconvenient maintenance items. Therefore it was dramatically extended on the 320C. For the bucket pins, nitrated helical mesh bearings are used to extend the maintenance interval from 50 to 100 hours. The front linkage pins have self-lubricating bearings, and their inner surface is made of sintered alloy steel. The greasing interval for these pins has been increased from 50 to 1000 hours.

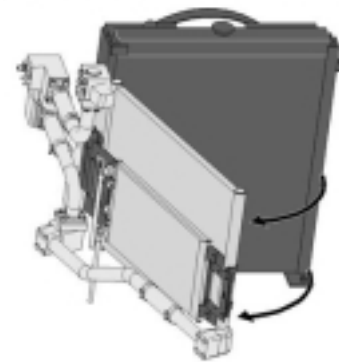
	320C	320B
Front Pin Greasing		
Bucket Linkage	100 hr	50 hr
Other Pins	1000 hr	50 hr
Engine Oil and Filter Change	500 hr	250 hr
Hydraulic Oil Filter Change	1000 hr	500 hr
Final Drive Oil Level Check	1000 hr	250 hr

Service and Maintenance Interval



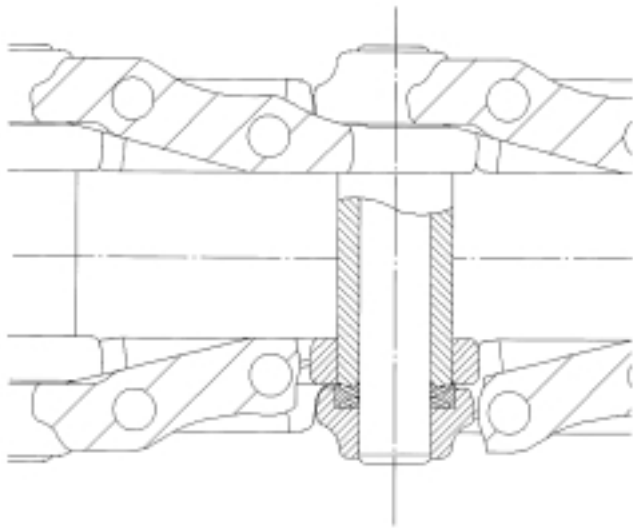
**Cat 320B Oil Cooler**

The 320B's oil cooler is fixed making cleaning less convenient.



**Cat 320C Oil Cooler**

Radiator clogging is the major cause that leads to overheating, especially at job sites with a lot of airborne debris. The 320C offers a swing-out oil cooler with easy access. The oil cooler swings out horizontally and has the capability to open 72 degrees for easy cleaning. The coolant recovery tank has been lowered on the 320C so it is easier to see, service and add fluids. The 320C has a coolant sampling valve for added convenience too.



**Cat 320B Tracks**

---

The 320B uses belleville seals.



**Cat 320C Tracks**

The track link is protected using grease-lubricated seals. These seals deliver longer track link pin and bushing inner life by preventing dirt and debris to enter. The grease-lubricated track also reduces travel noise.



**Cat 320B Service Access**

The 320B hydraulic oil case drain filter is located on the hydraulic tank, on top of the machine. The capsule filter on the 320B is reset from the filter.



**Cat 320C Service Access**

The 320C hydraulic oil case drain filter is serviced from the ground level. The filter head for the pilot filter has a new design which incorporates an S•O•S<sup>sm</sup> sampling port and a pressure test port. Access to this filter has also been improved. For added convenience, the capsule filter is now reset from the cab rather than from the filter.



# Technical Specifications

<b>Engine</b>	<b>Cat 320B</b>	<b>Cat 320C</b>
Engine Model	Cat 3066 T Diesel	Cat 3066 T Diesel
Flywheel Power kW (hp)	96 (128)	103 (138)
ISO 9249 kW (hp)	96 (128)	103 (138)
SAE J1349 kW (hp)	96 (128)	103 (138)
EEC 80/1269 kW (hp)	96 (128)	103 (138)
Bore mm (in)	102 (4.02)	102 (4.02)
Stroke mm (in)	130 (5.12)	130 (5.12)
Displacement L (in <sup>3</sup> )	6.37 (389)	6.37 (389)

<b>Weights</b>	<b>Cat 320B</b>	<b>Cat 320C</b>
Operating Weight - Std. Undercarriage kg (lb)	19 400 (42,770)	19 700 (43,400)
Operating Weight - Long Undercarriage kg (lb)	20 720 (45,680)	21 000 (46,300)

<b>Service Refill Capacities</b>	<b>Cat 320B</b>	<b>Cat 320C</b>
Fuel Tank Capacity L (Gal)	340 (90)	400 (106)
Cooling System L (Gal)	25 (6.6)	30 (7.9)
Engine Oil L (Gal)	20.5 (5.1)	30 (7.9)
Swing Drive L (Gal)	6 (1.6)	8 (2.1)
Final Drive (each) L (Gal)	10 (2.6)	10 (2.6)
Hydraulic System (including tank) L (Gal)	220 (58)	200 (53)
Hydraulic Tank L (Gal)	130 (34)	120 (32)

<b>Hydraulic System</b>	<b>Cat 320B</b>	<b>Cat 320C</b>
Main Implement System - Maximum Flow (2x) L/min (gal/min)	185 (48.9)	205 (54.2)
Max. pressure - Implements kPa (PSI)	34 300 (4,980)	34 300 (4,980)
Max. pressure - Travel kPa (PSI)	34 300 (4,980)	34 300 (4,980)
Max. pressure - Swing kPa (PSI)	23 000 (3,340)	25 000 (3,625)
Pilot System - Maximum flow L/min (gal/min)	41 (10.8)	41 (10.8)
Pilot System - Maximum pressure kPa (PSI)	4120 (600)	4120 (600)
Boom Cylinder - Bore mm (in)	120 (5)	120 (5)
Boom Cylinder - Stroke mm (in)	1260 (50)	1260 (50)
Stick Cylinder - Bore mm (in)	140 (5.5)	140 (5.5)
Stick Cylinder - Stroke mm (in)	1430 (56)	1430 (56)
B Family Bucket Cylinder - Bore mm (in)	120 (5)	120 (5)
B Family Bucket Cylinder - Stroke mm (in)	1030 (41)	1030 (41)
C Family Bucket Cylinder - Bore mm (in)	130 (5)	130 (5)
C Family Bucket Cylinder - Stroke mm (in)	1150 (46)	1150 (46)

<b>Drive</b>	<b>Cat 320B</b>	<b>Cat 320C</b>
Maximum Travel Speed kph (mph)	5.5 (3.4)	5.5 (3.4)
Maximum Drawbar Pull kN (lb)	177 (39,800)	196 (44,040)

<b>Swing Mechanism</b>	<b>Cat 320B</b>	<b>Cat 320C</b>
Swing Speed RPM	10.7	11.5
Swing Torque kN.m (lb ft)	57 (42,050)	60.9 (44,990)

# Technical Specifications

<b>Track</b>	<b>Cat 320B</b>	<b>Cat 320C</b>
Standard w/Standard Undercarriage mm (in)	600 (24)	600 (24)
Standard w/Long Undercarriage mm (in)	800 (32)	800 (32)
Optional mm (in)	600 (24)	600 (24)
Optional mm (in)	700 (28)	700 (28)
Optional mm (in)	800 (32)	800 (32)







The information contained herein is intended for circulation only to Caterpillar and dealer employees whose duties require knowledge of such reports and is intended exclusively for their information and training. It may contain unverified analysis and facts observed by various Caterpillar or dealer employees. However, effort has been made to provide reliable results regarding any information comparing Caterpillar built and competitive machines. Effort has been made to use the latest available spec sheet and other material in the full understanding that these are subject to change without notice. Any reproduction of this release without the foregoing explanation is prohibited.

TEJB7010  
May 2000  
[www.CAT.com](http://www.CAT.com)

**CATERPILLAR**<sup>®</sup>

© 2000 Caterpillar  
Printed in the U.S.A.