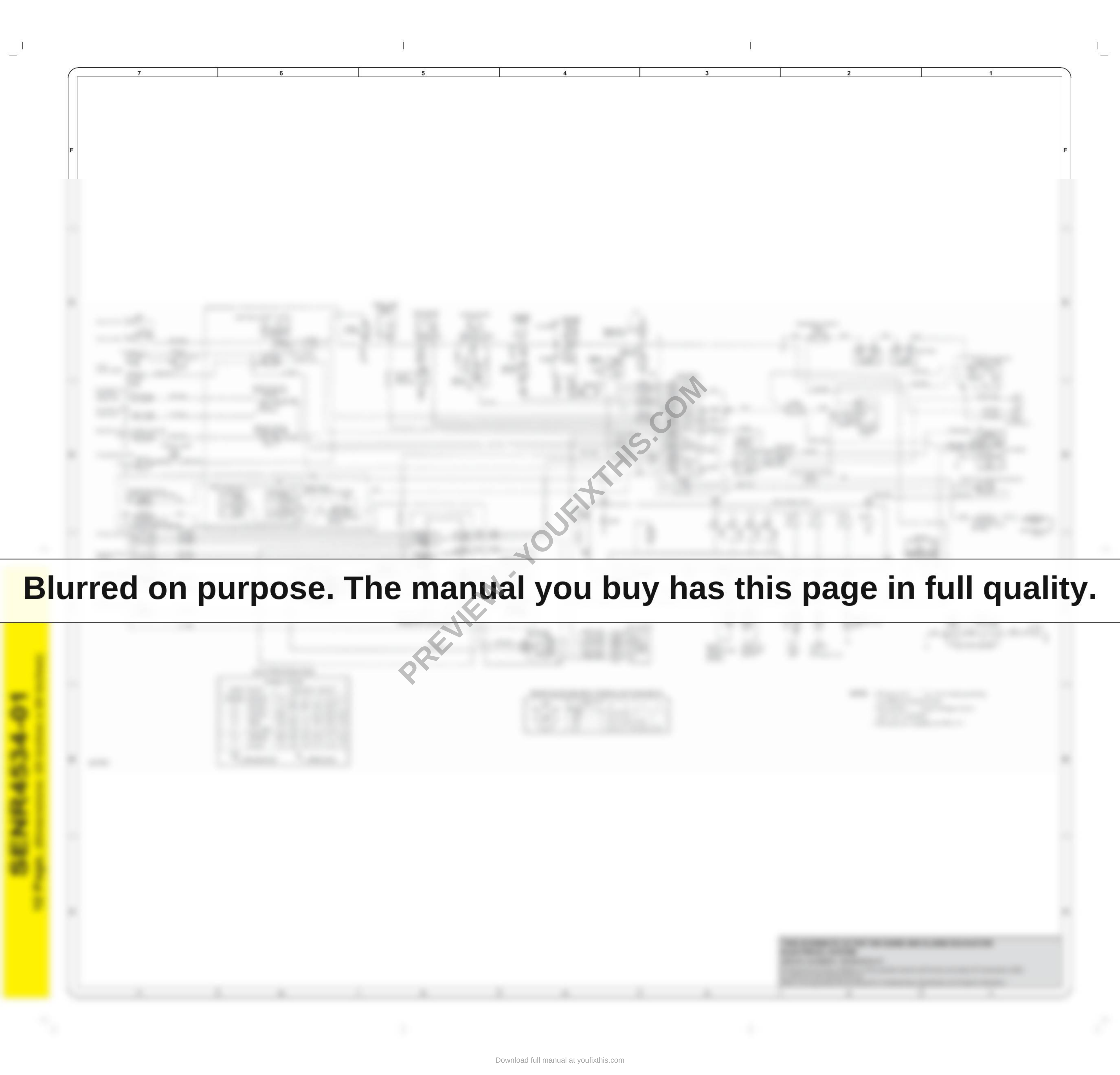


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Blurred on purpose. The manual you buy has this page in full quality.

[Previous Screen](#)

Product: EXCAVATOR

Model: E200B EXCAVATOR 6KF

Configuration: E200B, EL200B TRACK-TYPE EXCAVATORS 6KF00001-UP (MACHINE) POWERED BY 3116 ENGINE

Testing and Adjusting

3114 , 3116 and 3126 Engines for Caterpillar Built Machines

Media Number -SEN3583-13

Publication Date -01/10/2008

Date Updated -31/10/2008

101126690

Excessive Bearing Wear - Inspect

SMCS - 1203-040; 1211-040; 1219-040

When some components of the engine show bearing wear in a short time, the cause can be a restriction in an oil passage.

An engine oil pressure indicator may show that there is enough oil pressure, but a component is worn due to a lack of lubrication. In such a case, look at the passage for the oil supply to the component. A restriction in an oil supply passage will not allow enough lubrication to reach a component. This will result in early wear.

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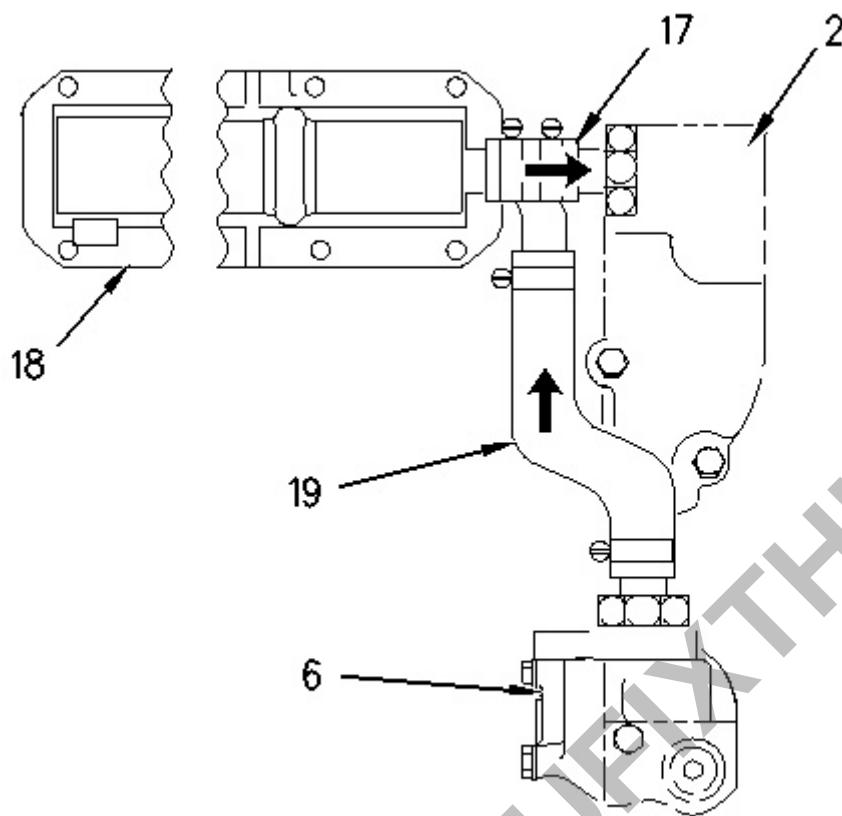


Illustration 5

g00697417

Connections for the Aftercooler

- (2) Water temperature regulator housing
- (6) Water pump
- (17) Outlet hose
- (18) Aftercooler
- (19) Inlet hose

The aftercooler that is equipped on some engines is connected into the jacket water coolant system. Inlet hose (19) delivers coolant to aftercooler (18) from a separate outlet of water pump (6). Once the coolant has circulated through the aftercooler core, the coolant then goes through outlet hose (17) of the aftercooler to water temperature regulator housing (2) .

3126 Engine with a Heat Exchanger

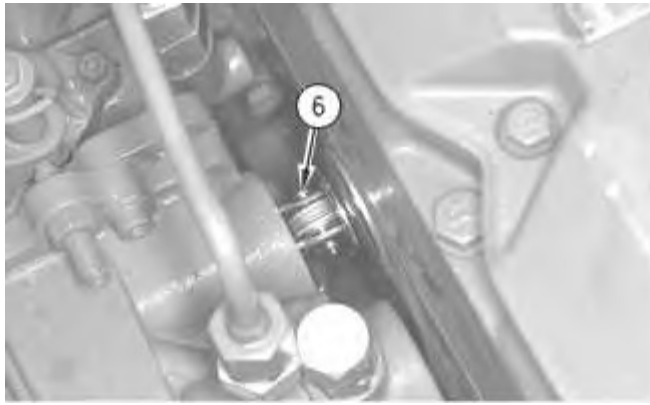


Illustration 3

g00613149

3. Remove the clip and use Tooling (A) to remove the clevis pin (6). Clevis pin (6) connects the governor to the control lever of the fuel injection control linkage.

Note: Clevis pin (6) must stay with the governor in order to be adjusted.

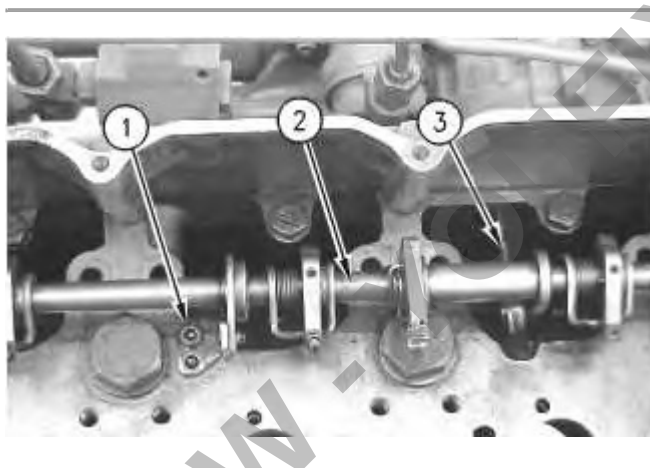


Illustration 4

g00630566

4. Remove bolts (1) and remove fuel injection control linkage (2). Control lever (3) connects the fuel injection control linkage (2) to the governor.

Note: For information on the inspection procedure for control lever (3), refer to Special Instruction, REHS0601, "Inspection and Modification of the 102-7459 Fuel Injection Control Linkage and the 4P-9048 Fuel Injection Control Linkage".

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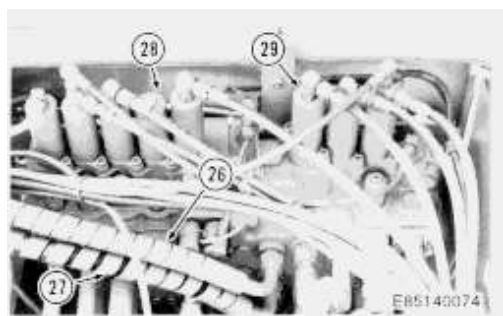
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The main hydraulic system is driven by two variable displacement pumps (23) and (25) which make up the main pumps. The pumps are identical in performance. Front pump (23), directly connected to the engine by a flexible coupling is also coupled in series with rear pump (25). Outside the main pumps, gear type pilot pump (24) drives the pilot hydraulic system. These three pumps run at the same speed as the engine (1850 rpm.). All engine output is used for driving these three pumps.

Each of the main pumps delivers 183 liters (48 U.S. gal) of hydraulic oil per minute at no load. When a load is placed on the machine, the hydraulic oil is forced into the main hydraulic circuit, overcoming the resistance. As a result, the delivery pressure of the main pumps increases. At the same time, the engine speed decreases.

As the load increases, the main pumps increase their pressures to the relief pressure of 31400 kPa (4550 psi). To maintain the absorbed horsepower from the engine constant, the main pumps begin to decrease the flow rate as the delivery pressure increases.

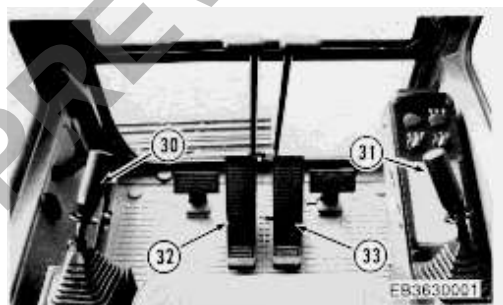


Main Control Valve Compartment

(26) Outlet line (front pump). (27) Outlet line (rear pump). (28) Right control valve (Operated by rear pump oil). (29) Left control valve (Operated by front pump oil).

The oil delivered from front and rear pumps (23) and (25) respectively enters the left and right sides of control valves (8). If no work is being performed, pump oil flows through the control valves and returns to tank. At the same time, the control valves send a signal (negative control flow) to each pump which causes the respective pump to destroke to minimum output flow.

If an operation is being performed, the control valves direct pump oil to the respective cylinders (boom, bucket and stick) and/or motors (swing and travel). The control valves contain various valve spools, passages, check valves and orifices which allow an operation to be done by itself or in combination with other operations. The valve spools are controlled by pilot oil from the pilot oil circuit.



Cab

(30) Control lever (stick and swing). (31) Control lever (boom and bucket). (32) Travel pedal (left). (33) Travel pedal (right).

	160 ± 30 N·m (120 ± 22 lb ft)
M16	240 ± 40 N·m (175 ± 30 lb ft)
M20	460 ± 60 N·m (340 ± 44 lb ft)
M24	800 ± 100 N·m (590 ± 75 lb ft)
M30	1600 ± 200 N·m (1180 ± 150 lb ft)
M36	2800 ± 350 N·m (2060 ± 260 lb ft)

Note: The following table has the recommended standard torque values for metric nuts and bolts for use on Perkins engines.

Table 2

Thread Size mm	Torque
M6	5 N·m (44 lb in)
M8	22 N·m (195 lb in)
M10	44 N·m (32 lb ft)
M12	78 N·m (60 lb ft)
M14	124 N·m (90 lb ft)
M16	177 N·m (130 lb ft)
M18	200 N·m (150 lb ft)
M20	400 N·m (300 lb ft)
M24	790 N·m (580 lb ft)

Note: The difference between Caterpillar standard torque values and Perkins standard torque values are due to different classes of fasteners. Caterpillar uses class 10.9 fasteners. Perkins uses class 8.8 fasteners. The different class of fasteners have different tensile strengths.

1. Fasten tool (A) to the front support for the recoil spring as shown. Use the existing center cover bolt to hold tool (A).
 2. Fasten a hoist to front idler (1) and tool (A) as shown.
 3. Slide front idler (1) and recoil spring and hydraulic track adjuster (2) out of the track roller frame as a unit. Weight of the unit is 209 kg (460 lb).
 4. Remove four bolts (3) that hold the front idler to the front support for the recoil spring. Separate the front idler from the recoil spring and hydraulic track adjuster. Weight of the front idler is 118 kg (260 lb). Weight of the recoil spring and hydraulic track adjuster as a unit is 91 kg (200 lb).
- NOTE:** The following steps are for the installation of the front idlers, recoil springs and hydraulic track adjusters.
5. Be sure the mating surfaces on the front support for the recoil spring and the two bearings for the front idler are clean and free of dirt and debris prior to reassembly.
 6. Fasten a hoist to the recoil spring and hydraulic track adjuster. Put the unit in position on the front idler. Temporarily install four bolts (3) that hold the unit together.
 7. Install tool (A) on the front support for the recoil spring. Fasten a hoist to the front idler and tool (A).
 8. Slide the front idler, recoil spring and hydraulic track adjuster partially into the track roller frame leaving bolts (3) exposed. Remove the hoist from the unit. Tighten bolts (3) to a torque of $145 \pm 15 \text{ N}\cdot\text{m}$ ($110 \pm 11 \text{ lb ft}$).
 9. Using a pry bar, slide the front idler the remainder of the way into the track roller frame.

End By:

a. connection of track assemblies

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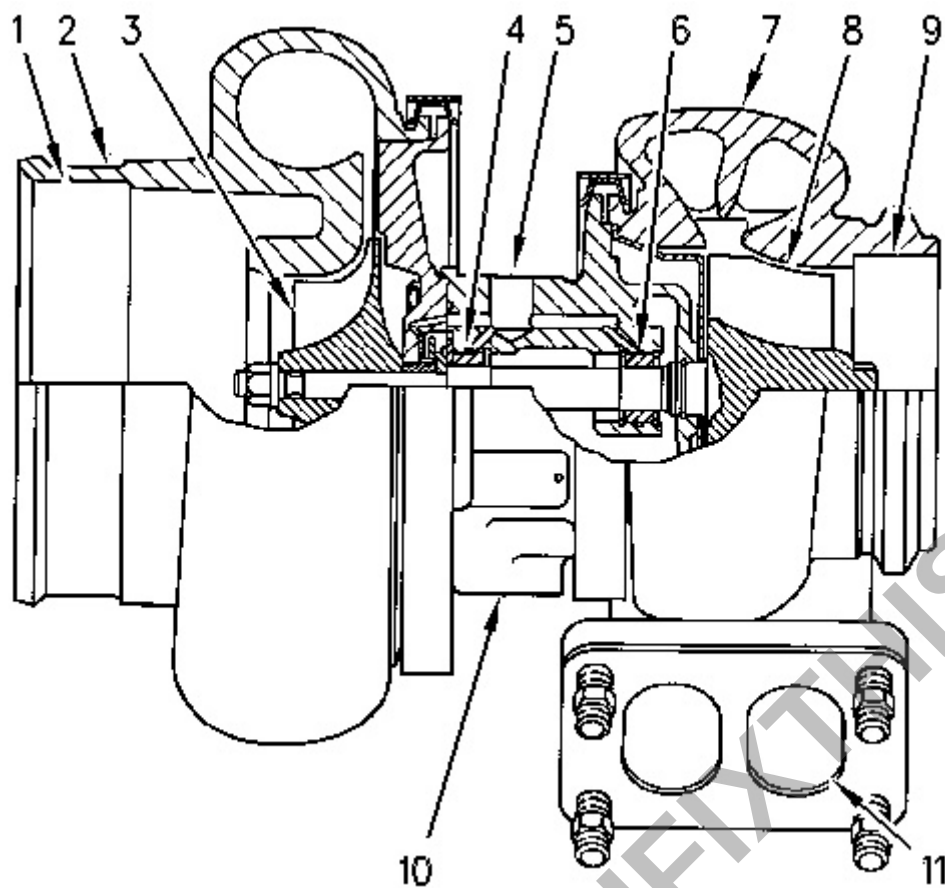


Illustration 3

g00294193

Turbocharger

- (1) Air inlet
- (2) Compressor housing
- (3) Compressor wheel
- (4) Bearing
- (5) Oil Inlet port
- (6) Bearing
- (7) Turbine housing
- (8) Turbine wheel
- (9) Exhaust outlet
- (10) Oil outlet port
- (11) Exhaust inlet

The turbocharger is installed on the center section of the exhaust manifold. All the exhaust gases from the engine go through the turbocharger. The compressor side of the turbocharger is connected to the aftercooler by pipe.

[Previous Screen](#)

Product: EXCAVATOR

Model: E200B EXCAVATOR 6KF

Configuration: E200B, EL200B TRACK-TYPE EXCAVATORS 6KF00001-UP (MACHINE) POWERED BY 3116 ENGINE

Disassembly and Assembly

446 and 446B Backhoe Loaders, Lexion 450 Combine, 3114 and 3116 Engines, IT18F Integrated Toolcarrier, D6M Track-Type Tractor and 928F, 950F and 950G Wheel Loaders

Media Number -SEN3611-18

Publication Date -01/05/2009

Date Updated -27/05/2009

i03706818

Crankshaft Main Bearings - Remove

SMCS - 1203-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	2P-5518	Bearing Tool	1

Start By:

- Remove the engine balancer shaft on 3114 engines. Refer to Disassembly and Assembly, "Engine Balancer Shaft - Remove and Install".
- Remove the engine oil pump. Refer to Disassembly and Assembly, "Engine Oil Pump - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Previous Screen

Product: EXCAVATOR

Model: E200B EXCAVATOR 6KF

Configuration: E200B, EL200B TRACK-TYPE EXCAVATORS 6KF00001-UP (MACHINE) POWERED BY 3116 ENGINE

Specifications

3114, 3116 and 3126 Engines for Caterpillar Built Machines

Media Number -SEN3582-16

Publication Date -01/02/2007

Date Updated -20/02/2007

101582171

Valve Mechanism Cover

SMCS - 1107

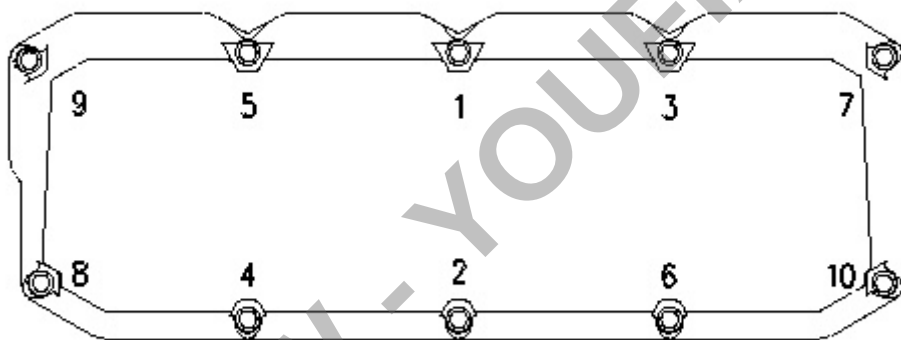


Illustration 1

g00583272

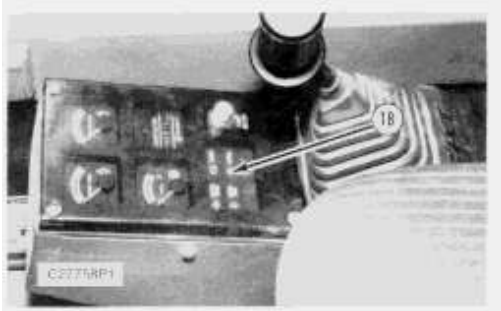
3114 Valve cover

Typical example



Pump Compartment

(9) Proportional (pressure) reducing valve (PRV).



Console

(18) Monitor (controller) light.

Test switches (23) and (24) are used to help troubleshoot the controller system.

Reference: For more information on the use of switches (23) and (24), see Testing And Adjusting, E200B And EL200B Excavators Hydraulic And Electronic Systems, Form No. SENR4527.

Backup switch (6) provides a means of bypassing controller (2) and forcing the pump to destroke a small amount. Switch (6) is used to troubleshoot the controller system.

Electronic Controller Regulation

Introduction



Cab (Left/Rear Of Seat)

(1) Controller.

The radius of the fence will be drawn on the map in order to provide a visual reference for the parameters of the fence. Click the "Show/Hide Fence" button in order to hide a fence. Also click the "Show/Hide Fence" button in order to show a fence. This button is located to the left of the "Description" box.

Load Description Button

You can load an existing fence with the load fence button. This button is located to the right of the "Description" field.

Configure Exclusive Geographic Fence



Illustration 8

g01397861

To configure an exclusive geographic fence with a map, use the following procedure:

1. View the "Exclusive" section of the "Setup Fence" screen. Click the radio button in the exclusive section.

Note: The color on the indicator for the "Fence Radius" bar will be the same color as the selected fence.

2. Type a description for the new fence in the "Description" field.

Previous Screen

Product: EXCAVATOR

Model: E200B EXCAVATOR 6KF

Configuration: E200B, EL200B TRACK-TYPE EXCAVATORS 6KF00001-UP (MACHINE) POWERED BY 3116 ENGINE

Systems Operation EquipmentManager User Guide

Media Number -KENR6303-08

Publication Date -01/05/2010

Date Updated -18/05/2010

i03333061

Asset Watch

SMCS - 7600; 7606

Overview

The Asset Watch subscription is used for monitoring and managing the usage and the location of your equipment.

The screenshot displays the John Wilson's Fleet EquipmentManager (EM) web application. On the left is a navigation sidebar with links for 'EquipmentManager', 'Administration', 'Subscriptions', and 'Preferences'. The main content area is divided into two sections: 'Event Summary' and 'Equipment Search'.

Event Summary Section:

- 1. 'Event Start Date' and 'Event End Date' fields with calendar icons, followed by 'Submit' and 'Clear' buttons.
- 2. 'Select a Group' dropdown menu set to 'North Jobsite'.
- 3. A table showing incident counts for different status levels:

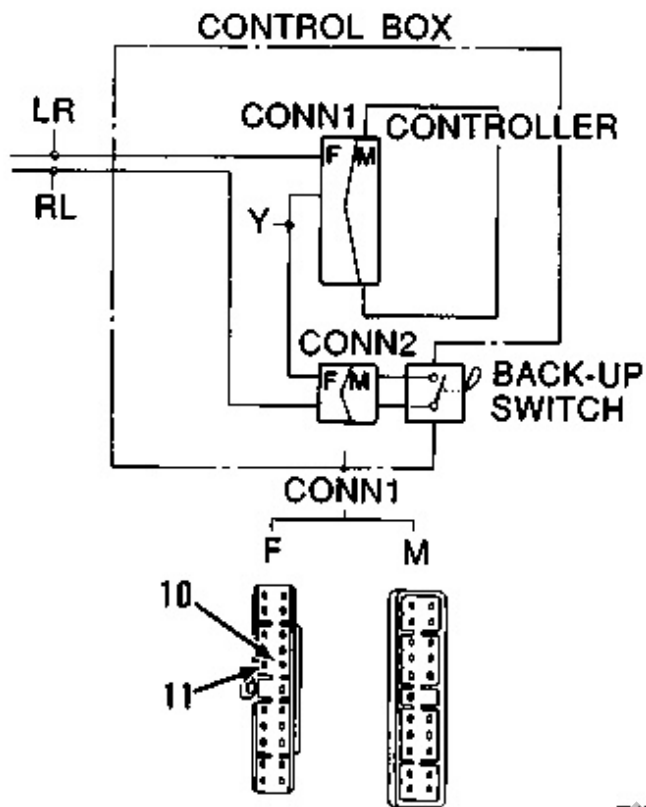
Status	Equipment	Incidents
Action	10	10
Monitor	5	14
Normal	9	26

Below the table, it states 'SOS Incidents last updated: Sep-28, 2008 12:00:03 AM' and includes 'View Checked' and 'SOS Incident Refresh' buttons.

Equipment Search Section:

This section contains several search criteria fields: 'Equipment Group' (dropdown), 'Equipment ID *' (text), 'Manufacturer' (dropdown), 'Equipment Type' (dropdown), 'Product Family' (dropdown), 'Model *' (text), and 'Serial Number *' (text). A note indicates that fields marked with an asterisk support partial-word matching. 'Display Equipment' and 'Clear' buttons are at the bottom, along with a link to 'Perform an Advanced Search'.

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EB6060167

Connector (CONN1) Of Controller
(10) Socket No.7. (11) Socket No.17.

1. Mount Multimeter across sockets No.7 (10) (SOL.B+) and No.17 (11) (SOL.B-) which are output terminals of CONN1 to AEC relay.
2. Let the engine run at high idle to light LED4.
3. Press switch 1 to put out LED4.
4. While keep switch 1 pressed, check AEC motor activating every 20 seconds to make the engine run at high idle and at AEC activated speed by turns.
5. Set switch 1 to OFF to light LED4. Then controller will return to the control mode.

Change Power Mode Switch Over

1. Set start switch to ON to light LED4.
2. Press switch 1 on the top of the controller to put LED4 OFF.
3. While keeping switch 1 pressed, operate power mode switch.

If everything is in order, LED1 will light when power mode switch is in the position III. In the position II, LED2 will light. In the position I, LED1 and 2 will light.

AEC Switch ON/OFF

1. Let the engine run at high idle. Release safety lock.

Product: EXCAVATOR

Model: E200B EXCAVATOR 6KF

Configuration: E200B, EL200B TRACK-TYPE EXCAVATORS 6KF00001-UP (MACHINE) POWERED BY 3116 ENGINE

Troubleshooting

Product Link - PL522/523

Media Number -REN8143-02

Publication Date -01/07/2013

Date Updated -23/07/2013

103990058

General Information

SMCS - 7606

General Hazard Information

To prevent injury or death, all machines equipped with a Caterpillar PL522 or 523 system require a warning label that is clearly posted in the cab.



WARNING

This machine is equipped with a Caterpillar Product Link communication device. When electric detonators are used, this communication device should be deactivated within 12 m (40 ft) of a blast site, or within the distance mandated under applicable legal requirements. Failure to do so could cause interference with blasting operations and result in serious injury or death.



WARNING

To prevent possible personal injury during installation, removal, testing, and adjustment of the Product Link system, use an approved access system and appropriate fall protection to reach the intended location. Do not climb on the machine.

The blast site is defined as the area that handles explosive material during loading. This includes the perimeter that is formed by the loaded blast holes. If the machine is required to work within 12 m (40 ft) of a blast area, then the operator must take one of the following precautions:

Previous Screen

Product: EXCAVATOR

Model: E200B EXCAVATOR 6KF

Configuration: E200B, EL200B TRACK-TYPE EXCAVATORS 6KF00001-UP (MACHINE) POWERED BY 3116 ENGINE

Specifications

3114, 3116 and 3126 Engines for Caterpillar Built Machines

Media Number -SEN3582-16

Publication Date -01/02/2007

Date Updated -20/02/2007

101601887

Fuel Shutoff Solenoid

SMCS - 1259

Energize-To-Shutoff (ETS) Latching Type

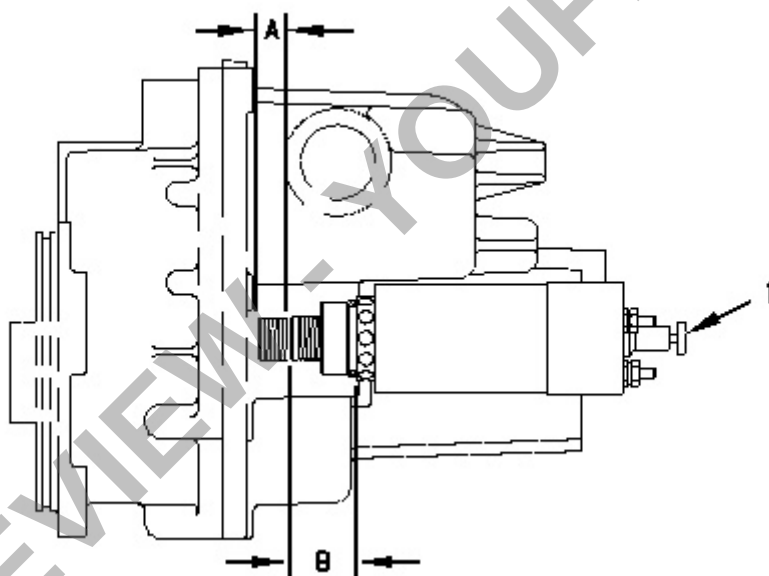


Illustration 1

g00601694

Note: Push in the button (1) on the latching type solenoid in order to manually shut off the engine. The solenoid cannot be manually latched in the run position for starting.

155-4651 Solenoid

System voltage ... 12 VDC

Install the solenoid to the governor housing. Tighten to the following torque. ... $30 \pm 5 \text{ N}\cdot\text{m}$ ($22 \pm 4 \text{ lb ft}$)

2. Check the oil level in the reservoir for the governor test fluid. Remove cover (1) and add clean SAE 10W engine oil to the reservoir, if necessary. Add the engine oil until the oil level on the indicator inside the reservoir indicates that the engine oil is at the "2/3 CAL" Mark. Install cover (1) .
3. Remove plug (4) and check the oil level in the variable speed drive on the governor calibration bench. If oil does not flow out of the hole for plug (4), remove plug (2) at the fill port. Add the recommended oil until the oil seeps from the hole for plug (4). When the correct oil level is obtained, install plugs (2) and (4). Use drain plug (5) in order to drain the oil from the reservoir. For additional information on the type of oil that is used in a specific variable speed drive, refer to Table 2.

Table 2

Recommended Oils For The Variable Speed Drive	
ARAG	Vitam GF-10
B.P.	Energol HLP10 or LPT15
ESSO	IL2102 or Spinesso 10
GULF	Harmondy HLP10 or LPT15
MOBIL	Mobilfluid 62 or Velocite
MONSTATO	Santotrac 50
SHELL	Tellus R10 or Tellus C10
SUN	Solnus 55

Note: Do not use engine oil in the variable speed drive on the governor calibration bench. A friction type oil is required.

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48. Remove one bolt (76). Remove bracket (75) and fuel ratio control valve (74) .

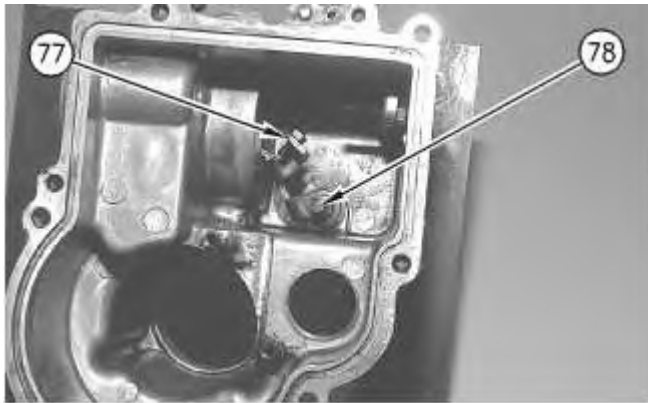


Illustration 44

g00697654

49. Remove fuel ratio control lever assembly (77). Do not remove shaft (78) from the governor front housing.



Illustration 45

g00697674

50. Remove O-ring seal (79) from fuel ratio control valve (74). Check the O-ring seal for wear or damage. If the O-ring seal is worn or damaged, use a new part for replacement.

Note: The fuel ratio control valve is not serviceable. Do not disassemble the fuel ratio control valve beyond this point.

Note: The following steps are for the disassembly of the C spring on Type I governors.

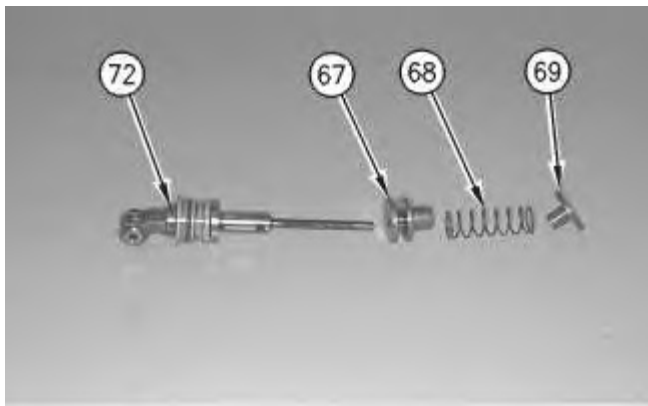


Illustration 14

g00605196

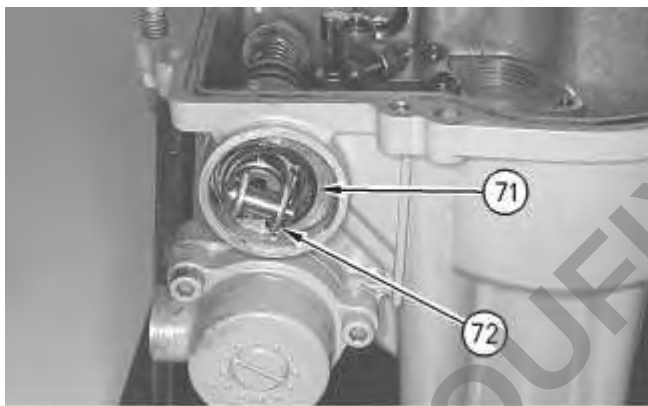
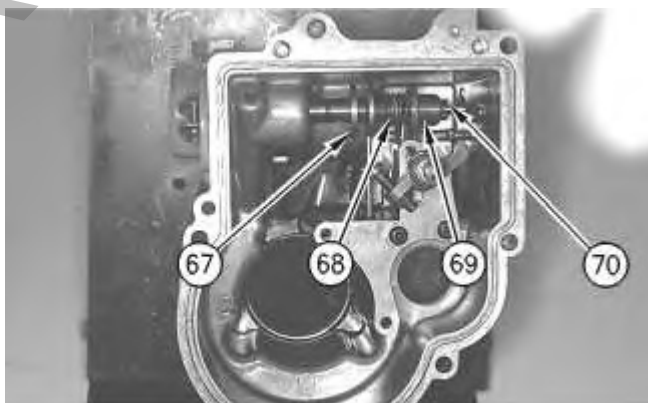


Illustration 15

g00605187

12. To install governor output servo (72) into the governor rear housing, push the small end of governor output servo (72) through the opening in the governor rear housing. As the governor output servo is installed, slide sleeve (67), spring (68), and sleeve (69) onto governor output servo (72) .
13. Press on clevis (73) until governor output servo (72) is seated in the bore of the governor rear housing. Use Tool (E) to install retaining ring (71) .



Previous Screen

Product: EXCAVATOR

Model: E200B EXCAVATOR 6KF

Configuration: E200B, EL200B TRACK-TYPE EXCAVATORS 6KF00001-UP (MACHINE) POWERED BY 3116 ENGINE

Specifications

3114, 3116 and 3126 Engines for Caterpillar Built Machines

Media Number -SEN3582-16

Publication Date -01/02/2007

Date Updated -20/02/2007

101582121

Fuel Transfer Pump

SMCS - 1256

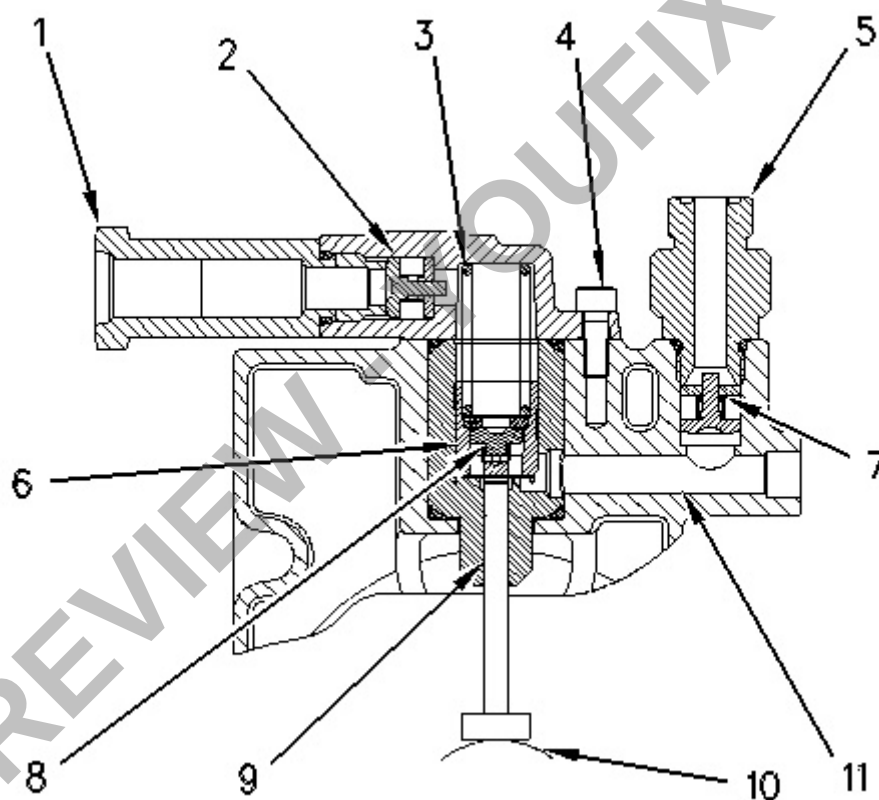


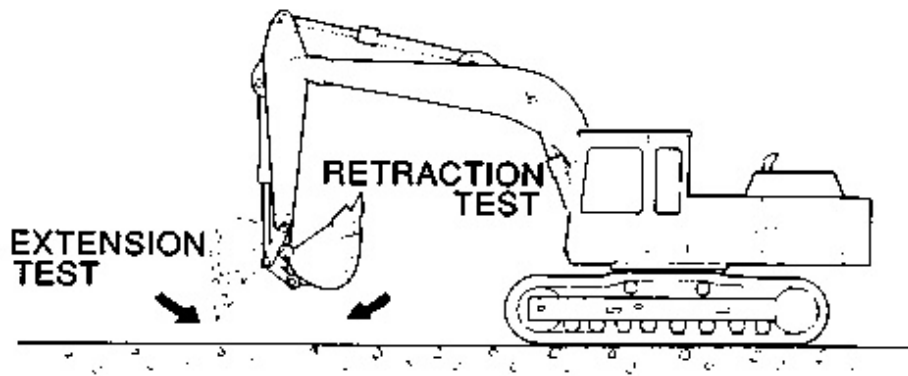
Illustration 1

g00579361

Typical example

(1) Tighten the fitting for the fuel inlet to the following torque. ... $17 \pm 2 \text{ N}\cdot\text{m}$ ($13 \pm 1 \text{ lb ft}$)

(2) Inlet check valve



BUCKET CYLINDER TEST

D55040021

Operating Speed:

Boom (Extension) ... 3.7 ± 0.8 sec.

Boom (Retraction) ... 3.2 ± 0.6 sec.

Stick (Extension) ... 5.1 ± 1.0 sec.

Stick (Retraction) ... 3.4 ± 0.7 sec.

Bucket (Extension) ... 4.4 ± 0.9 sec.

Bucket (Retraction) ... 2.6 ± 0.6 sec.

Release Of Pressure

Release the pressure in the implement hydraulic circuits (boom, stick and bucket) before any hydraulic lines or components are disconnected or removed. Follow this procedure:

1. Fully retract the rod in the stick cylinder.
2. Adjust the position of the bucket so that it will be flat on the ground when the boom is lowered.
3. Lower the boom until the bucket is flat on the ground.
4. Shut off the engine and put the hydraulic activation control lever in the LOCK position.
5. Move the control levers for boom, bucket, stick and swing full strokes. This will relieve any pressure that might be present in the pilot system.
6. Slowly loosen the air breather cap on the hydraulic tank and release the pressure.
7. Tighten the air breather back on the hydraulic tank.
8. The pressure in the system has been released and lines and components can be removed.

Relief Valves

Put sealant (Three Bond No. 1107) on area E of the outside surface of oil seal (10) before installation.

(12) 964001 Springs (twelve)

(22) 964363 Springs (two)

		(12)	(22)
Free length	mm (in.)	37.3 (1.47)	43.45 (1.71)
Outside diameter	mm (in.)	11.3 (0.44)	29.5 (1.16)

(24) 964362 Springs (two)

(25) 963947 Springs (two)

		(24)	(25)
Free length	mm (in.)	39.7 (1.56)	17.4 (0.68)
Outside diameter	mm (in.)	19.4 (0.76)	17.2 (0.68)

(21) Shims

Thickness of the shim which makes direct contact with spring

(22) must be 1 mm (0.04 in.) or more.

Previous Screen

Product: EXCAVATOR

Model: E200B EXCAVATOR 6KF

Configuration: E200B, EL200B TRACK-TYPE EXCAVATORS 6KF00001-UP (MACHINE) POWERED BY 3116 ENGINE

Testing and Adjusting

3114 , 3116 and 3126 Engines for Caterpillar Built Machines

Media Number -SEN3583-13

Publication Date -01/10/2008

Date Updated -31/10/2008

101339622

Engine Oil Pressure - Test

SMCS - 1304-081

Measuring Engine Oil Pressure



WARNING

Work carefully around an engine that is running. Engine parts that are hot, or parts that are moving, can cause personal injury.

NOTICE

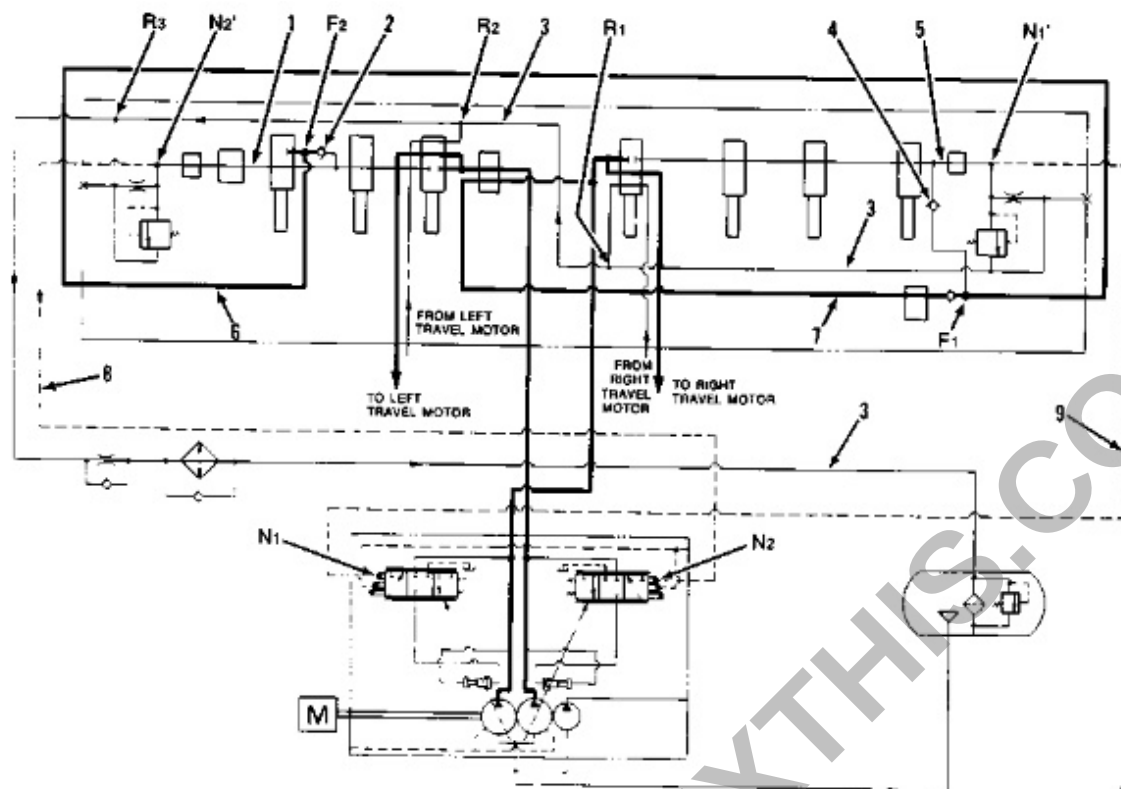
Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.



E86090063

Hydraulic Diagram For Negative Control System (6KF590-UP, 7DF1405-UP)

(1) Center bypass passage. (2) Check valve. (3) Return line. (4) Check valve. (5) Center bypass passage. (6) Line. (7) Parallel feeder passage. (8) Hose (rear pump negative control). (9) Hose (front pump negative control).

When the machine travels, negative control pressure is acting on each pump regulator as described below.

Return oil from left and right travel motors flows into return line (3) at points R_1 and R_2 respectively. Combined flow returns to the tank through point R_3 .

Resistance to flow in the circuit past R_1 creates higher pressure at R_1 than R_3 . This pressure difference is 390 kPa (56 psi) when the machine travels on a flat ground.

Pressures at N_1' and N_2' of the control valve are equal to negative control pressures at N_1 and N_2 of the pump regulators. N_1' and N_2' do not differ from R_1 and R_3 respectively. Differential pressure that exists between N_1 and N_2 , therefore, is also 390 kPa (56 psi) approximately.

1. Machine does not travel straight because of missing or incorrect negative control adjusting shim.

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