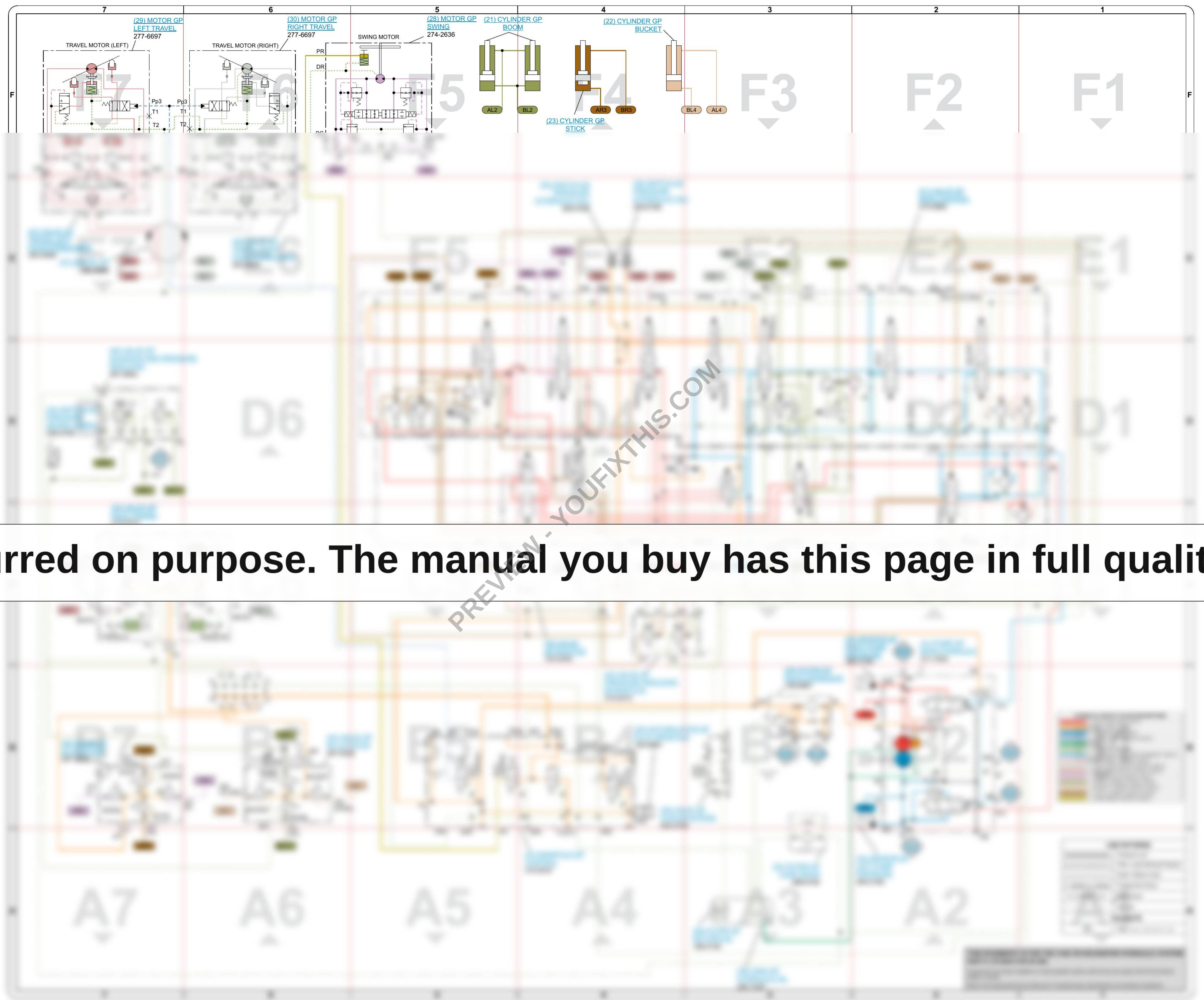
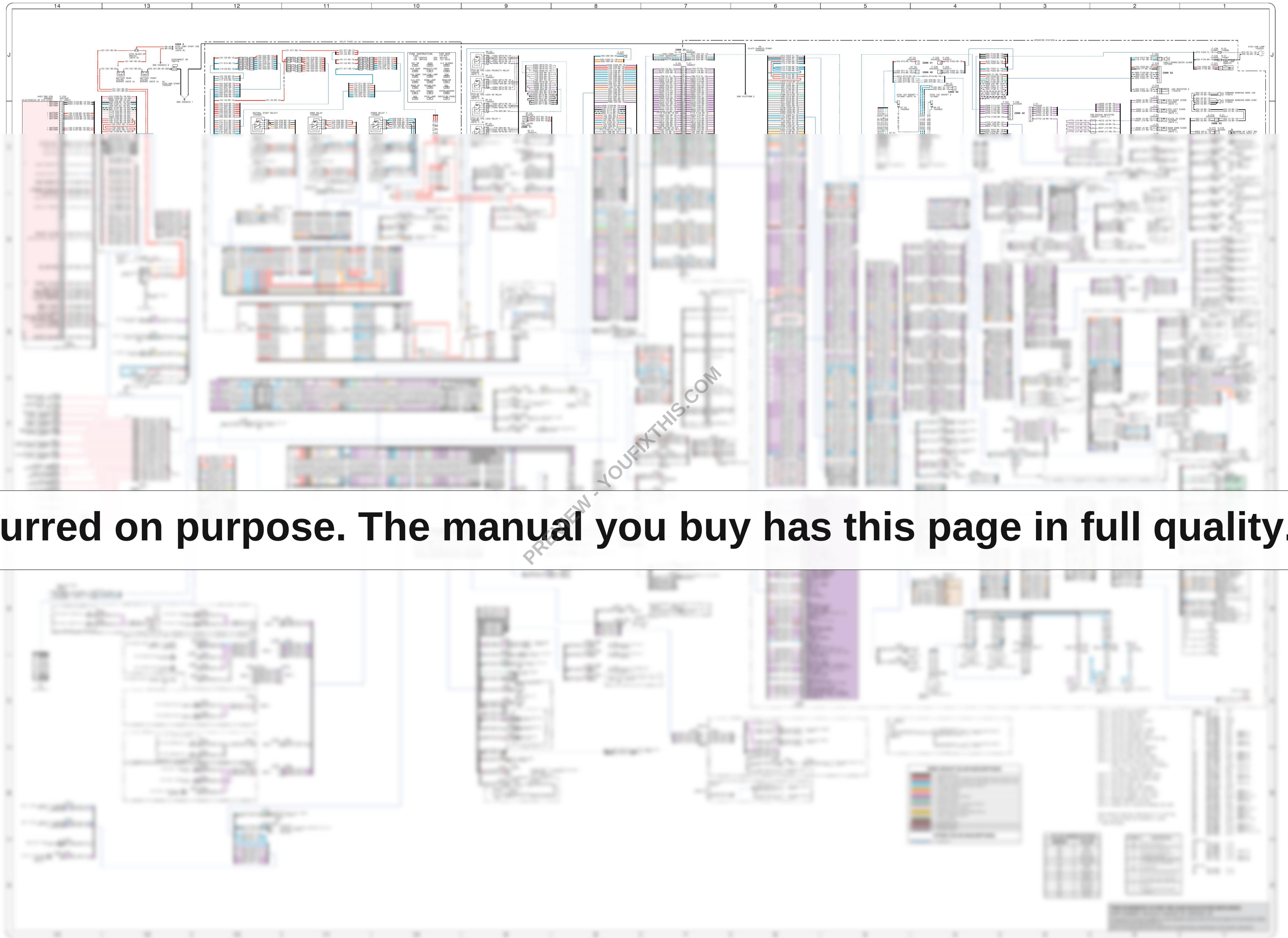




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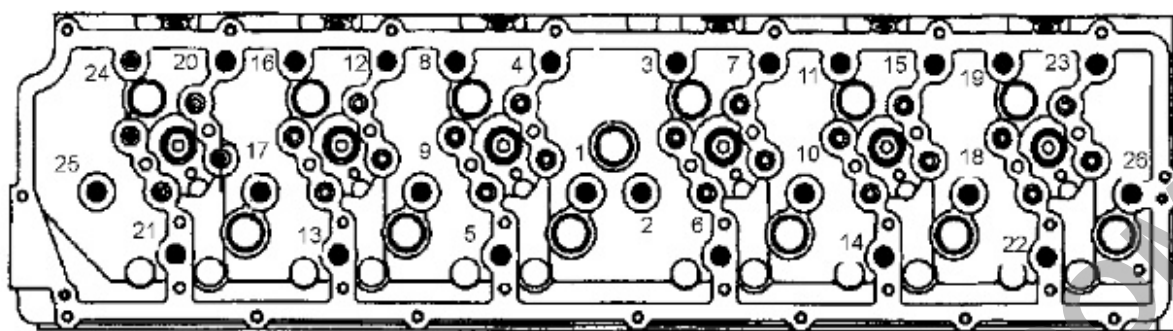


Illustration 2

g01526357

Note: Put clean engine oil on the threads of the cylinder head bolts.

Tighten the bolt 1 through bolt 26 in the numerical sequence that is shown in Illustration 2 to 137 ± 5 N·m (100 ± 4 lb ft).

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Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

10. Remove retainer (56) , spacer (57) , and springs (58) from barrel assembly (53) .

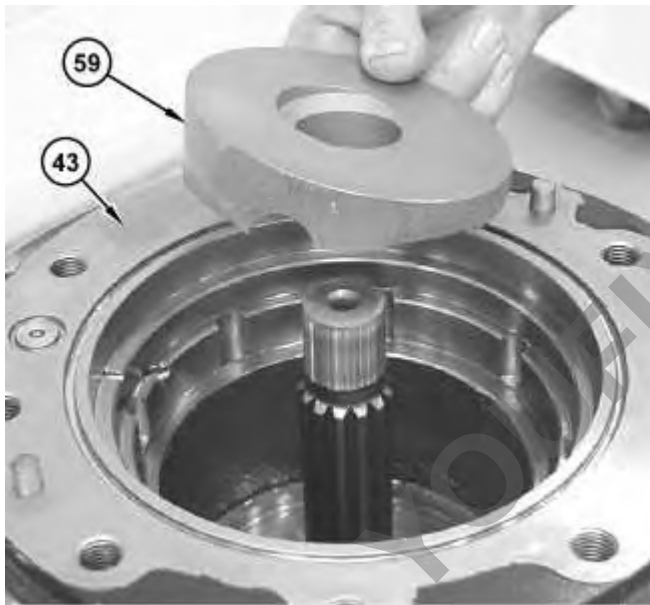


Illustration 20

g01406263

11. Put location marks on cam plate (59) for assembly purposes. Make sure that the thick end of cam plate (59) is adjacent to the opening that is across body (43) . Remove cam plate (59) .



Illustration 21

g01406329

19. Use Tooling (C) to remove pin assembly (21). Use Tooling (D) and the suitable lifting device to remove boom (20) .

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Illustration 3

g01436838

5. Remove cover assembly (1) .

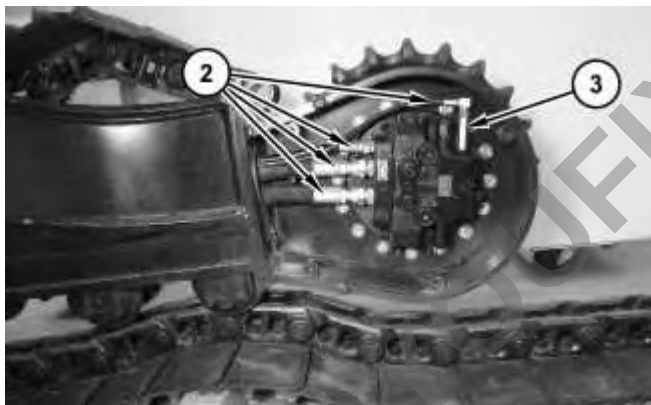


Illustration 4

g01436839

6. Disconnect hose assemblies (2). Remove fitting (3) .

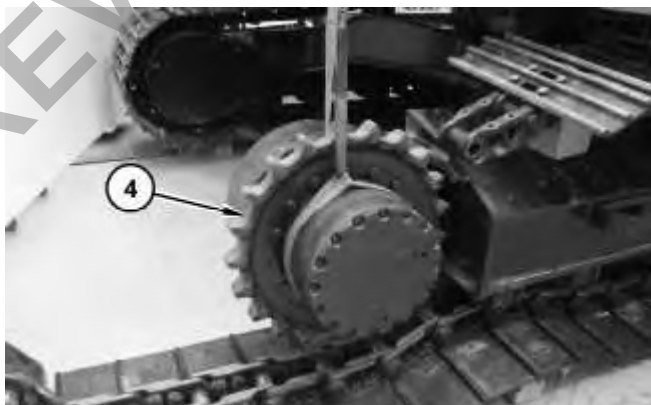


Illustration 5

g01436840

Previous Screen

Product: EXCAVATOR

Model: 314D LCR EXCAVATOR SSZ

Configuration: 314D LCR Excavator SSZ00001-UP (MACHINE) POWERED BY C4.2 Engine

Specifications

314D CR Excavator Machine System Specifications

Media Number -KENR6193-02

Publication Date -01/01/2010

Date Updated -21/01/2010

102880229

Track Adjuster

SMCS - 4157

S/N - -

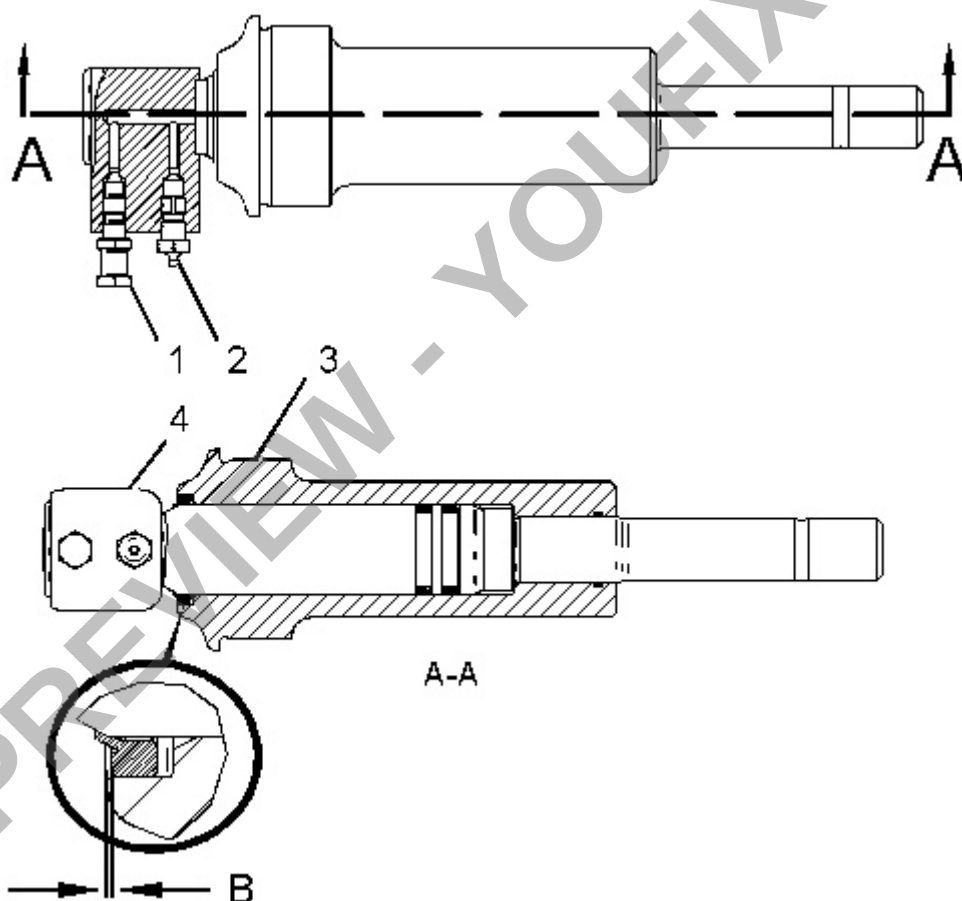


Illustration 1

g01433347

(1) Torque for the relief valve ... $34 \pm 5 \text{ N}\cdot\text{m}$ ($25 \pm 4 \text{ lb ft}$)

(2) Torque for the fill valve ... $34 \pm 5 \text{ N}\cdot\text{m}$ ($25 \pm 4 \text{ lb ft}$)

Turbocharger

- (5) Compressor wheel
- (6) Turbine wheel
- (10) Air inlet
- (11) Compressor housing
- (12) Bearing
- (13) Oil inlet port
- (14) Bearing
- (15) Turbine housing
- (16) Exhaust outlet
- (17) Oil outlet port
- (18) Exhaust inlet

The exhaust gases travel into the turbine housing (15) through exhaust inlet (18) . The exhaust gases push the blades of turbocharger turbine wheel (6) . Turbocharger turbine wheel (6) and turbocharger compressor wheel (5) have the same shaft.

Clean air from the air cleaners is pulled through the air inlet (10) of the compressor housing by the rotation of the turbocharger compressor wheel (5) . The inlet air is compressed by the movement of the blades of the compressor. The compression allows the engine to burn more air and fuel during combustion. The result is greater power for the engine.

More fuel is injected into the cylinders when the load on the engine increases. More exhaust gases are produced and turbocharger turbine wheel (6) and turbocharger compressor wheel (5) of the turbocharger turn faster. More air is forced into the engine as turbocharger compressor wheel (5) turns faster. The engine burns more fuel with greater efficiency because of the increased air flow. More engine power is the result.

The maximum rpm of the turbocharger is controlled by the fuel setting, the high idle speed setting, and the height above sea level of the engine.

NOTICE

If the fuel setting is higher than given in the TMI (Technical Marketing Information), there can be damage to engine or turbocharger parts. Damage will result when increased heat and/or friction due to the higher engine output goes beyond the engine cooling and lubrication systems abilities. A mechanic that has the proper training is the only one to make the adjustment of fuel setting and high idle rpm setting.

The fuel setting adjustment is performed at the factory for a specific engine application. The governor housing is sealed in order to prevent changes in the adjustment of the fuel. The governor housing is also sealed in order to prevent changes of the high idle speed setting.

Refer to Special Publication, NENG2500, "Caterpillar Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

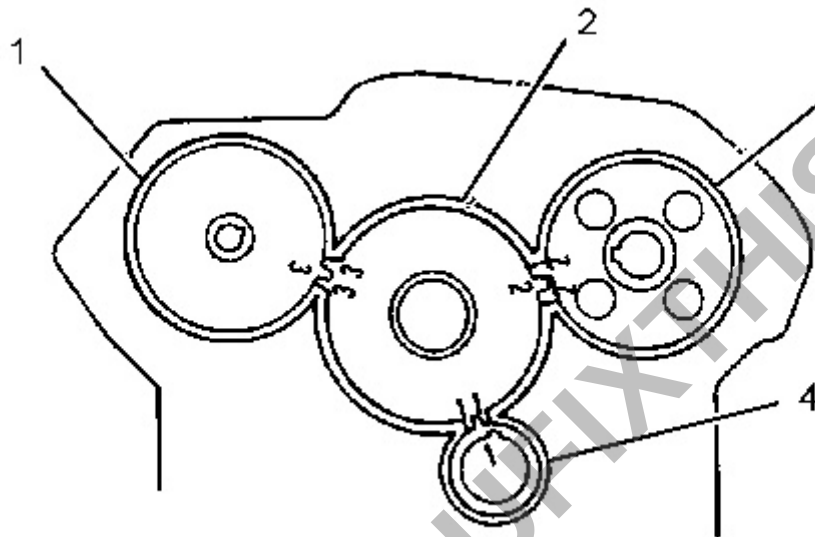


Illustration 1

g01374732

- (1) Fuel injection pump drive gear
- (2) Idler gear
- (3) Camshaft gear
- (4) Crankshaft gear

Note: The No. 1 cylinder is at the top center position when these marks are in alignment.

Note: Ensure that the marks on the timing gears are in alignment.

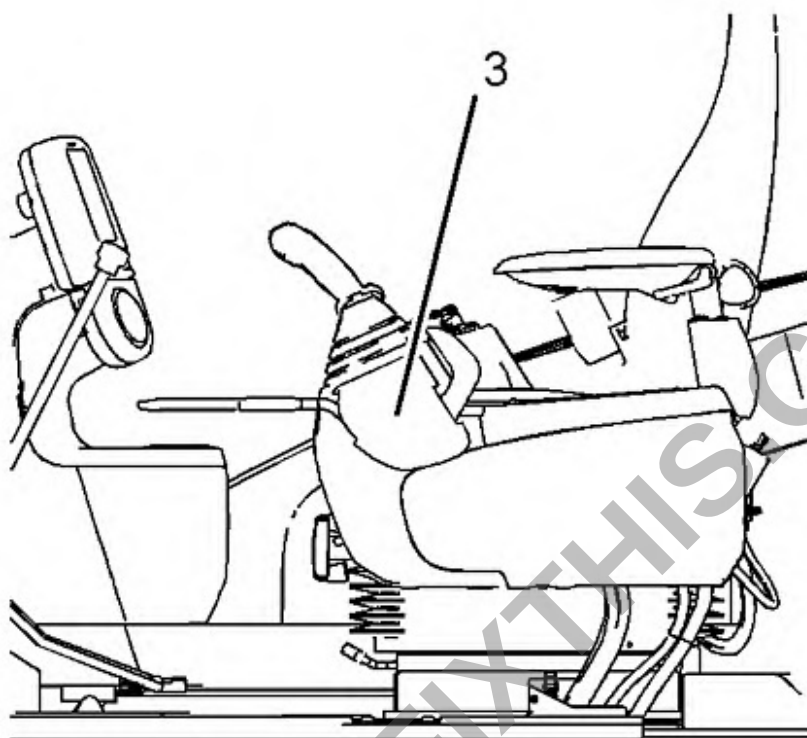


Illustration 12

g01148398

Cab

(3) Hydraulic activation control lever (UNLOCKED position)

Product: EXCAVATOR

Model: 314D LCR EXCAVATOR SSZ

Configuration: 314D LCR Excavator SSZ00001-UP (MACHINE) POWERED BY C4.2 Engine

Testing and Adjusting

C4.2 and C6.4 Engines for Caterpillar Built Machines

Media Number -KENR6741-23

Publication Date -01/07/2013

Date Updated -30/07/2013

102686950

Alternator - Test

SMCS - 1405-081

Table 1

Required Tools		
Part Number	Part Name	Qty
237-5130	Digital Multimeter	1
225-8266	Ammeter Tool Gp	1

1. Put the positive lead "+" of the multimeter on the "Bat" terminal of the alternator. Put the negative "-" lead on the ground terminal or on the frame of the alternator. Put the ammeter around the positive output wire of the alternator.
2. Turn off all electrical accessories. Turn off the fuel to the engine. Crank the engine for 30 seconds. Wait for two minutes in order to cool the starting motor. If the electrical system appears to operate correctly, crank the engine again for 30 seconds.

Note: Cranking the engine for 30 seconds partially discharges the batteries in order to do a charging test. If the battery has a low charge, do not perform this step. Jump start the engine or charge the battery before the engine is started.

3. Start the engine and run the engine at full throttle.
4. Check the output current of the alternator. The initial charging current should be equal to the minimum full load current or greater than the minimum full load current. Refer to Specifications, "Alternator and Regulator" for the correct minimum full load current.

Table 2

Fault Conditions And Possible Causes			
Current At Start-up	The Voltage Is Below Specifications After 10 Minutes.	The Voltage Is Within Specifications After 10 Minutes.	The Voltage Is Above Specifications After 10 Minutes.

[Previous Screen](#)

Product: EXCAVATOR

Model: 314D LCR EXCAVATOR SSZ

Configuration: 314D LCR Excavator SSZ00001-UP (MACHINE) POWERED BY C4.2 Engine

Troubleshooting

311D, 312D, 312D2, 313D, 313D2, 314D, 315D, 318D, 318D2 and 319D Excavators Machine Electronic Control System

Media Number -KENR5924-12

Publication Date -01/09/2013

Date Updated -09/09/2013

i05436386

MID 039 - CID 2426 - FMI 13

SMCS - 1439-038-JJ

S/N - AYF1-UP

S/N - BYJ1-UP

S/N - BZH1-UP

S/N - BZN1-UP

S/N - CJN1-UP

S/N - CLA1-UP

S/N - DAY1-UP

S/N - DDW1-UP

S/N - DLP1-UP

S/N - DWR1-UP

S/N - EAW1-UP

S/N - FMH1-UP

S/N - HCW1-UP

S/N - HJX1-UP

S/N - JBC1-UP

S/N - JGS1-UP

S/N - JHA1-UP



Illustration 12

g01589968

7. Install guard assembly (1) .
8. Turn the battery disconnect switch to the ON position.

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- B. Thoroughly inspect the harness connector P2/J2 and the solenoid connector. Refer to service Troubleshooting, "Electrical Connectors - Inspect" for details.
- C. Perform a 45 N (10 lb) pull test on the wires that are associated with the fuel rail pump solenoid. Refer to Illustration 2.
- D. Check the harness for abrasions and for pinch points from the battery to the ECM. Check the harness for abrasions and for pinch points from the key switch to the ECM.

Expected Result:

All connectors, pins, and sockets are firmly coupled and/or inserted. The harness is free of corrosion, of abrasion, and of pinch points.

Results:

- **OK** - The connectors and the harness are OK. Proceed to Test Step 2.
- **Not OK** - There is a problem with the connectors and/or the harness.

Repair: Repair the connectors or the harness and/or replace the connectors or the harness. Ensure that all of the seals are correctly in place and ensure that the connectors are completely coupled. Verify that the repair has eliminated the fault. If applicable, perform a wiggle test by using Cat ET in order to identify intermittent connections.

STOP

Test Step 2. Check for Active Diagnostic Codes

- A. Connect Cat ET to the diagnostic connector.
- B. Turn the keyswitch to the ON position.
- C. Use Cat ET to verify if any diagnostic codes are active or recently logged. Wait at least 30 seconds for activation of the code.

Expected Result:

One or more diagnostic codes that are associated with the fuel rail pump solenoid are active or recently logged.

- 1779-5 Fuel Rail #1 Pressure Valve Solenoid : Current Below Normal
- 1779-6 Fuel Rail #1 Pressure Valve Solenoid : Current Above Normal

Results:

- **OK** - An open circuit diagnostic code -5 is active at this time. Proceed to Test Step 4.
- **OK** - A short circuit diagnostic code -6 is active at this time. Proceed to Test Step 3.
- **Not OK** - No active diagnostic codes or recently logged diagnostic codes are displayed.

Repair: The electrical problem may be intermittent. Refer to service Troubleshooting, "Electrical Connectors - Inspect". If applicable, perform a wiggle test by using Cat ET in order to identify intermittent connections.

Product: EXCAVATOR

Model: 314D LCR EXCAVATOR SSZ

Configuration: 314D LCR Excavator SSZ00001-UP (MACHINE) POWERED BY C4.2 Engine

Systems Operation

314D Excavator Hydraulic System

Media Number -KENR6194-03

Publication Date -01/09/2012

Date Updated -28/09/2012

i03007174

Check Valve (Load)

SMCS - 5472

The load check valve performs the following two functions.

- The load check valve prevents unexpected movement of an implement when a joystick is initially activated at a low pump delivery pressure.
- The load check valve prevents oil loss from a high pressure circuit to a lower pressure circuit.

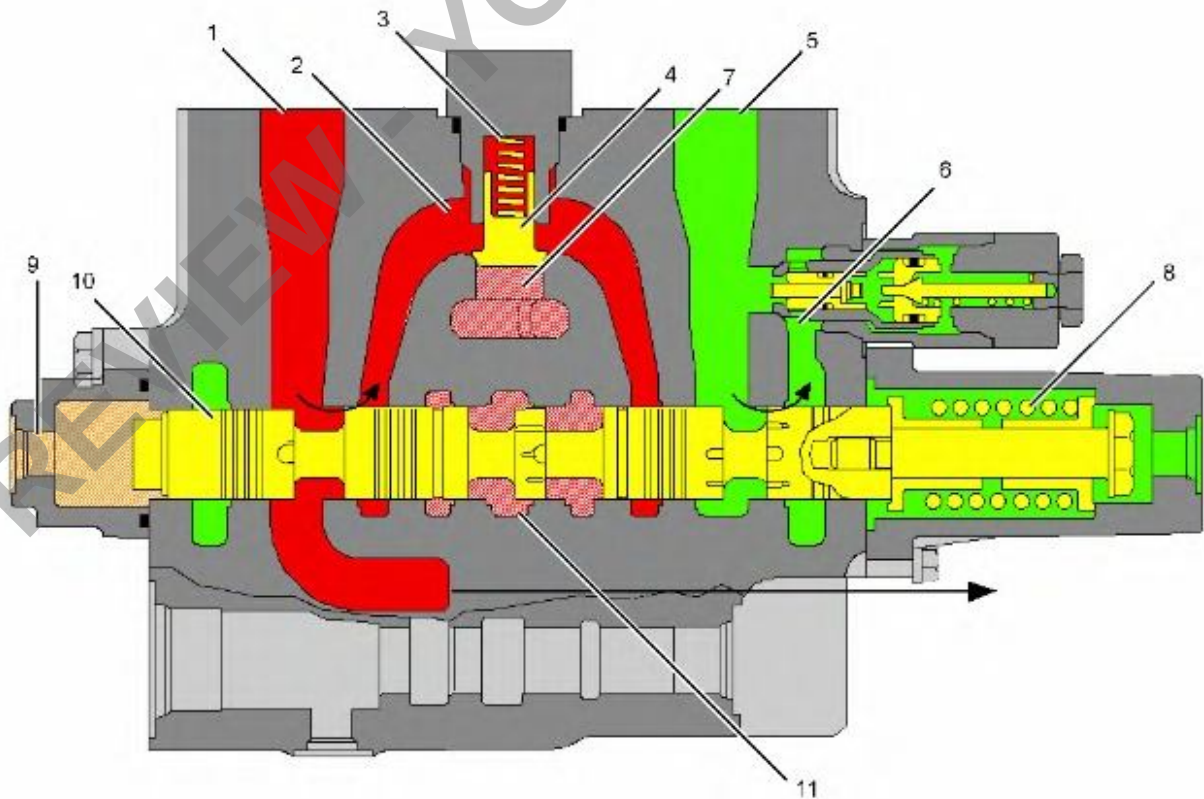


Illustration 1

g01332712

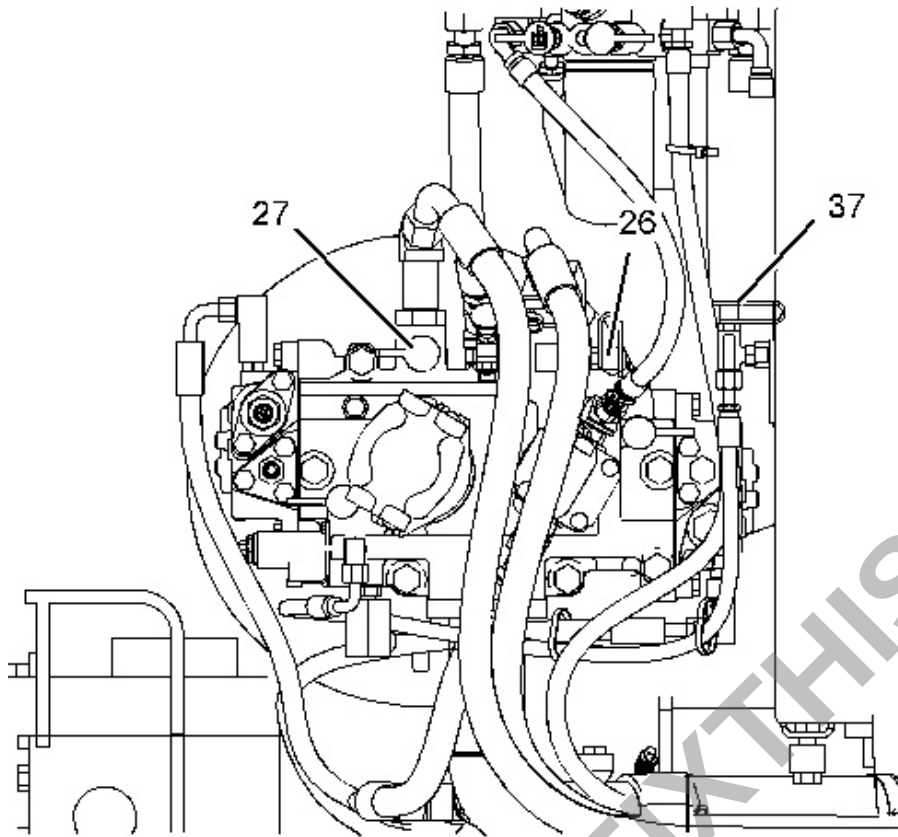


Illustration 3

g01455192

311D pump compartment

(26) Pressure tap (idler pump pressure)

(27) Pressure tap (drive pump pressure)

(37) Pressure tap (power shift pressure)

Product: EXCAVATOR

Model: 314D LCR EXCAVATOR SSZ

Configuration: 314D LCR Excavator SSZ00001-UP (MACHINE) POWERED BY C4.2 Engine

Testing and Adjusting 314D Excavator Hydraulic System

Media Number -KENR6195-05

Publication Date -01/07/2012

Date Updated -26/07/2012

103094281

Relief Valve (Main) - Test and Adjust - Power Offset Boom (If Equipped)

SMCS - 5069-081; 5069-025

Note: In order to adjust the main relief valve, always adjust the travel operation of the main relief valve before adjustments are made to the implement operation of the main relief valve. An adjustment to the travel operation of the main relief valve will change the pressure setting of the implement operation of the main relief valve.

Travel Operation

Note: Refer to Testing and Adjusting, "Specifications" for the pressure setting of the main relief valve.

1. Position the machine on level ground and stop the engine.
 2. Release the pressure in the hydraulic system. Refer to Testing and Adjusting, "Hydraulic System Pressure - Release".
-

ATTACHMENT VALVE #2
RETRACT PRESSURE SOLENOID

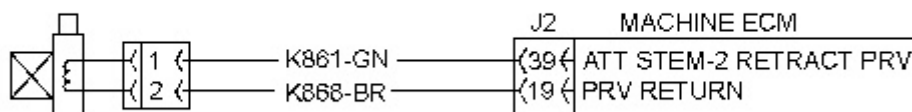


Illustration 1

g02027063

Schematic of the "Attachment Valve #2 Retract Pressure" Solenoid

This diagnostic code is associated with the "Attachment Valve #2 Retract Pressure" Solenoid. The FMI 06 diagnostic code means that the Machine ECM has determined that the current of the solenoid is above normal.

The possible causes of this diagnostic code are listed below:

- The energizer circuit of the solenoid for the modulating valve is shorted to ground.
- The solenoid has failed.
- The ECM has failed. This is unlikely.

Note: The following test procedure may create other diagnostic codes. Ignore these created diagnostic codes and clear these diagnostic codes when the original diagnostic code has been corrected. **Ensure that the diagnostic code of CID 1597 FMI 06 is active before performing this procedure.**

Note: Use the **146-4080** Digital Multimeter for the measurements in this procedure.

System Response:

When this diagnostic code is active, the Machine ECM will turn off the current to the failed solenoid.

Test Step 1. CHECK THE SOLENOID

- Turn the disconnect switch and the key start switch to the ON position. Do not start the engine.
- Observe the status of the diagnostic code.
- Disconnect the solenoid with the active diagnostic code from the machine harness.

Expected Result:

The CID 1597 FMI 06 diagnostic code changes to a CID 1597 FMI 05 diagnostic code when the solenoid is disconnected.

2	2	8T-4196 Bolt	Torque to 32 ± 6 N·m (283 ± 53 lb in).
C	-	-	Orient the support assemblies to an angle of 10 ± 3 degrees.
3	2	8T-4194 Bolt	Torque to 50 ± 10 N·m (37 ± 7 lb ft).

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Product: EXCAVATOR

Model: 314D LCR EXCAVATOR SSZ

Configuration: 314D LCR Excavator SSZ00001-UP (MACHINE) POWERED BY C4.2 Engine

Disassembly and Assembly

314D CR Hydraulic Excavator Machine Systems

Media Number -KENR6404-01

Publication Date -01/03/2010

Date Updated -23/03/2010

103108062

Swivel - Remove

SMCS - 5060-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	FT-2674 ⁽¹⁾	Vacuum Cap	1

⁽¹⁾ Add a 305 mm (12.0 inch) extension.

Start By:

- Release the hydraulic system pressure. Refer to Disassembly and Assembly, "System Pressure - Release".



WARNING

Personal injury can result from hydraulic oil pressure and hot oil.

Hydraulic oil pressure can remain in the hydraulic system after the engine has been stopped. Serious injury can be caused if this pressure is not released before any service is done on the hydraulic system.

Make sure all of the work tools have been lowered to the ground, and the oil is cool before removing any components or lines. Remove the oil filler cap only when the engine is stopped, and the filler cap is cool enough to touch with your bare hand.

Illustration 37

g02105973

The above view is from the back side of the tool box.

4. Install tool box (17) .



Illustration 38

g02105259

The above view is from the back side of the tool box.

5. Connect hose (16) and harness assembly (15) .



Illustration 39

g02105257

6. Install cover assembly (11) .
-

The fuel level sender is attached to a float in the fuel tank. As the fuel level changes, the float inside the tank moves. The movement of the float will change the resistance of the sender. The voltage to the controller will change as the resistance of the sender changes. The controller will monitor this voltage and the controller will compare this voltage to values that are known. This comparison will determine the level of fuel in the tank.

Hydraulic Level Switch and Engine Oil Level Switch

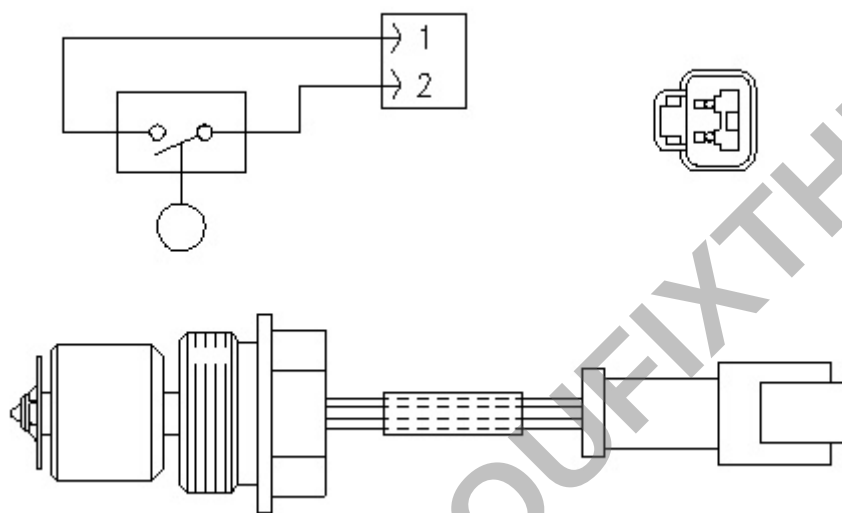


Illustration 3

g00662559

Hydraulic Oil Level Switch

The hydraulic oil level switch monitors the hydraulic oil level after the starter key switch is held in the ON position for 2 seconds or more. The controller checks hydraulic oil level with the switch. The switch closes when the hydraulic oil level is below the normal operating level. This switch is in the normally open position, when the switch is not installed on the machine.

Engine Coolant Level Switch

The engine coolant level switch is an electronic switch that is activated by the coolant. The coolant level switch is closed to ground during normal operation. The switch opens when the coolant level is too low. The open switch informs the controller that the coolant level is too low in the cooling system.

Alternator

The frequency output terminal of the alternator is connected to pin 4 of the monitoring system. The monitoring system will monitor the signal on this circuit. This signal informs the monitoring

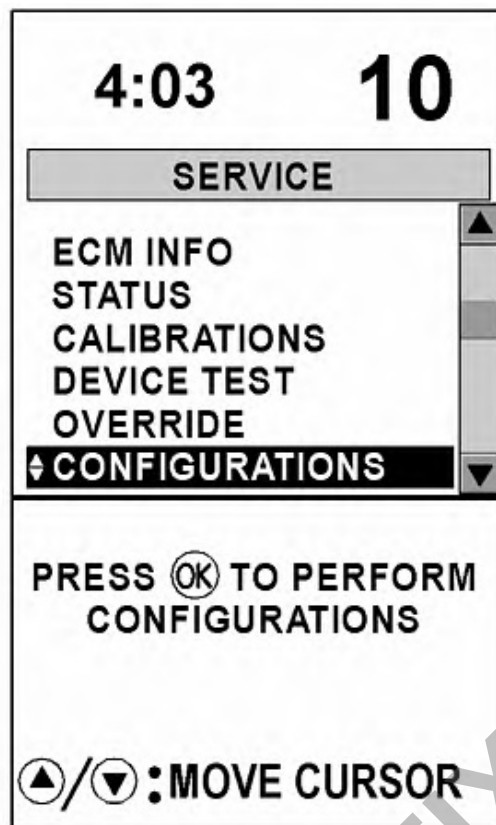


Illustration 9

g01358334

Typical example of the "SERVICE" menu for the monitor

3. From the "SERVICE" menu, use the up key (1) or the down key (6) in order to move the highlighted line.
4. When the "CONFIGURATIONS" menu option is highlighted, press the OK key (8) .

7. Install bolts (5) and connect hose (4) .

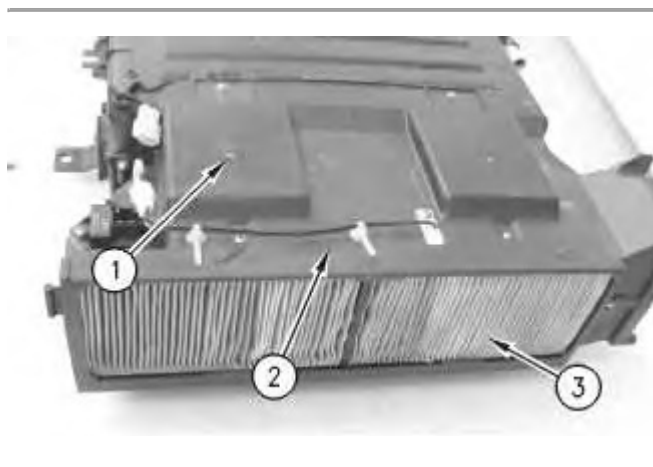


Illustration 8

8. Install air filter (3). Install cover (2) and nine screws (1) .

End By: Install the heating and air conditioning unit. Refer to Disassembly and Assembly, "Heating and Air Conditioning Unit - Install".

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**WARNING**

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

12. Remove covers (28) and the O-ring seals.
13. Remove springs (29) , guides (30) , and spool assembly (31) .

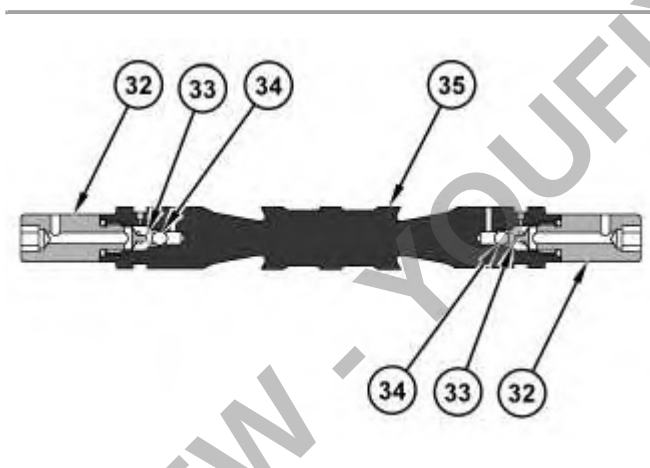


Illustration 10

g01405345

**WARNING**

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

14. Remove valve (32) , spring (33) , and ball (34) from one end of spool (35) . Repeat for the other end of spool (35) .

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