



Service Repair Manual

Models

329D2 and 329D2 L Excavator

Previous Screen

Product: EXCAVATOR

Model: 329D2 EXCAVATOR TMJ

Configuration: 329D2 & 329D2 L Excavators TMJ00001-UP (MACHINE) POWERED BY C7.1 Engine

**Disassembly and Assembly
C7.1 Engines**

Media Number -UENR0633-19

Publication Date -01/07/2015

Date Updated -29/10/2018

i05292267

Engine Oil Cooler - Install - Engine Oil Cooler with a Low Mounted Filter Base

SMCS - 1378-012

Assembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Guide Stud M8 by 50 mm	2

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Ensure that wiring harness are correctly routed and the cable straps are not over tightened. Over tightening of the cable straps will damage the wiring harness convoluting.

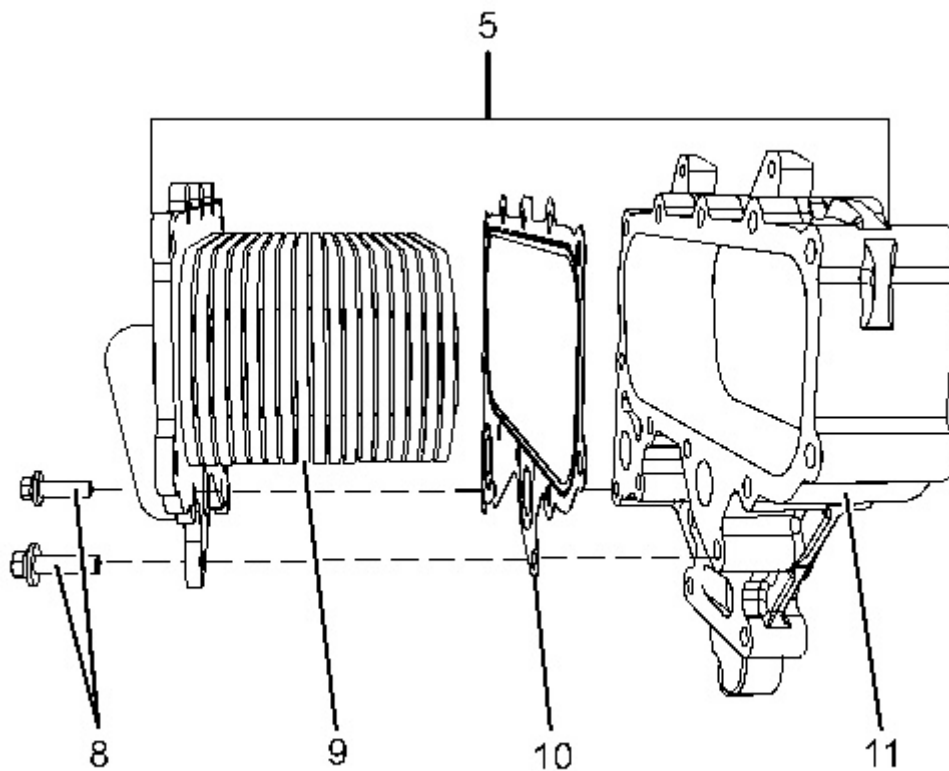


Illustration 1

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1. If necessary, follow Step 1.a through Step 1.d in order to assemble engine oil cooler (5).
 - a. Ensure that engine oil cooler matrix (10) is clean, free from damage and restriction. Replace engine oil cooler matrix (10) if damaged or restricted.
 - b. Ensure that spacer plate (11) is clean and free from damage. Replace spacer plate (11) if damaged.
 - c. Position a new gasket (10) onto spacer plate (17). Install engine oil cooler matrix (9) to the spacer plate.
 - d. Install bolts (8) finger tight.
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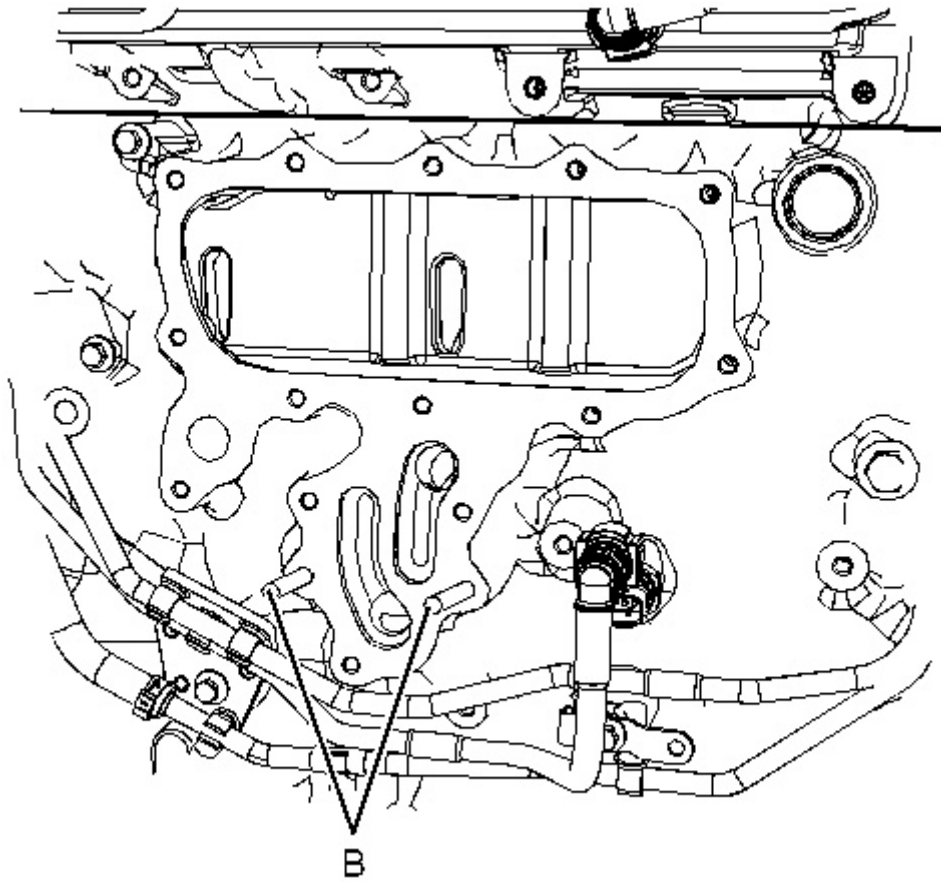


Illustration 2

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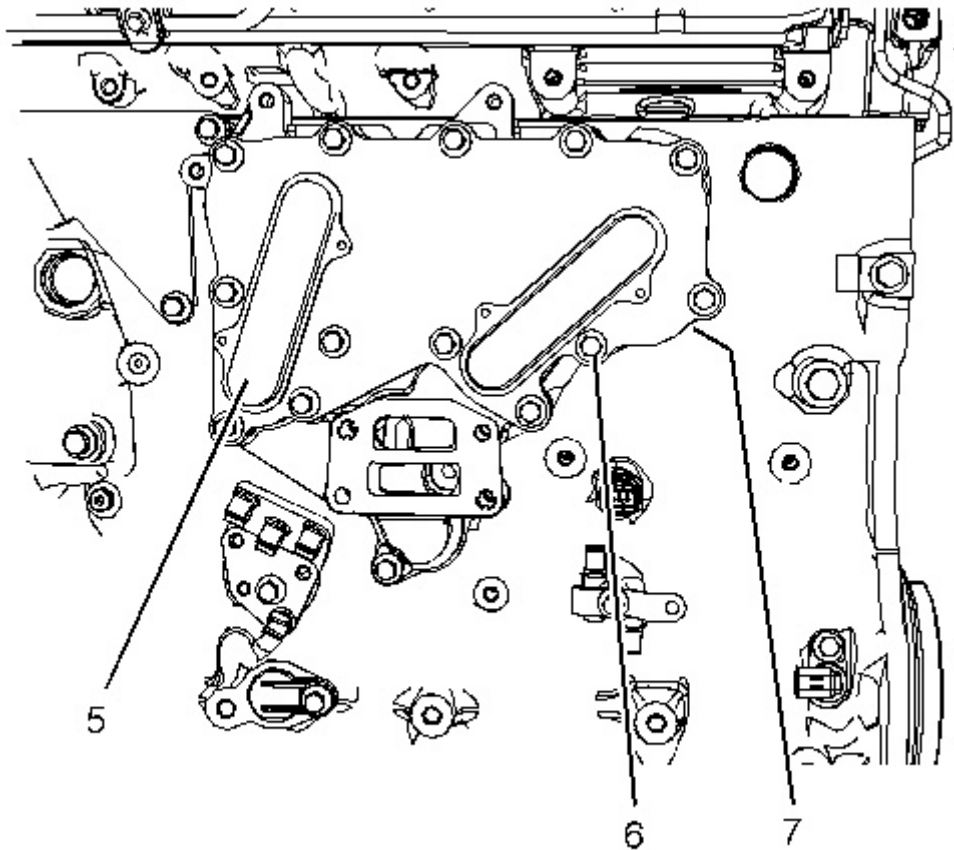


Illustration 3

g03408917

2. Clean the gasket surfaces of the cylinder block.
 3. Install Tooling (A) into Position (B).
 4. Position a new gasket (7) (not shown) onto Tooling (A). Ensure that the gasket is correctly orientated.
 5. Install the assembly of engine oil cooler (5) to the cylinder block.
 6. Install bolts (6) to engine oil cooler (5) finger tight. Support the engine oil cooler as the bolts are installed.
- Note:** Ensure that the bolts of different lengths are installed in the correct position.
7. Remove Tooling (A) and install remaining bolts (6).
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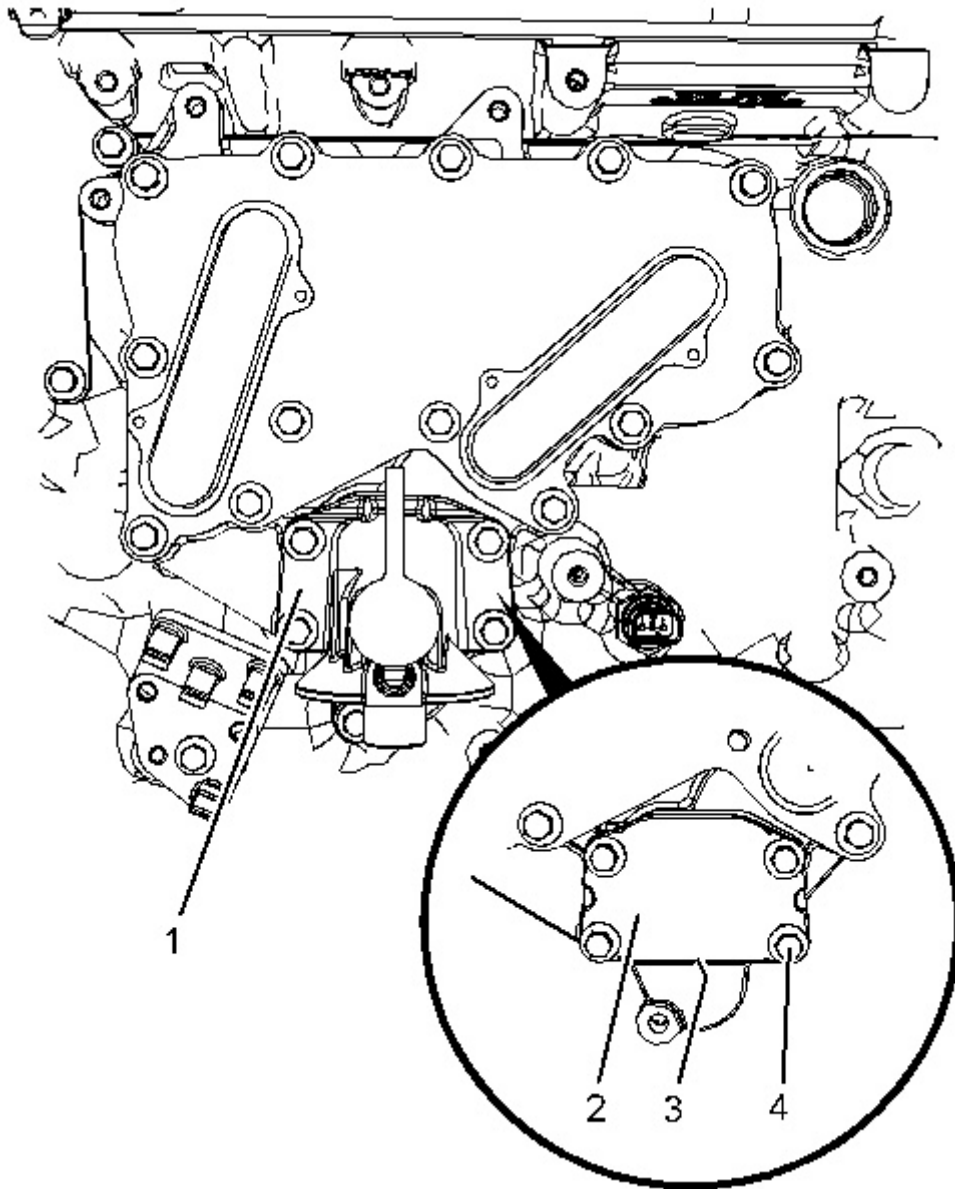


Illustration 4

g03408818

8. If the engine has a low mounted oil filter (1) on the left-hand side, install the oil filter base. Refer to Disassembly and Assembly, "Oil Filter Base - Remove and Install" for the correct procedure.
 9. If the engine has a right-hand side oil filter, follow Step 9.a through Step 9.d in order to install blanking plate (2).
 - a. Install bolts (4) to blanking plate (2).
 - b. Position a new gasket (3) (not shown) onto blanking plate (2).
 - c. Install the assembly of blanking plate (2) to the assembly of the engine oil cooler.
 - d. Tighten bolts (4) to a torque of 22 N·m (195 lb in).
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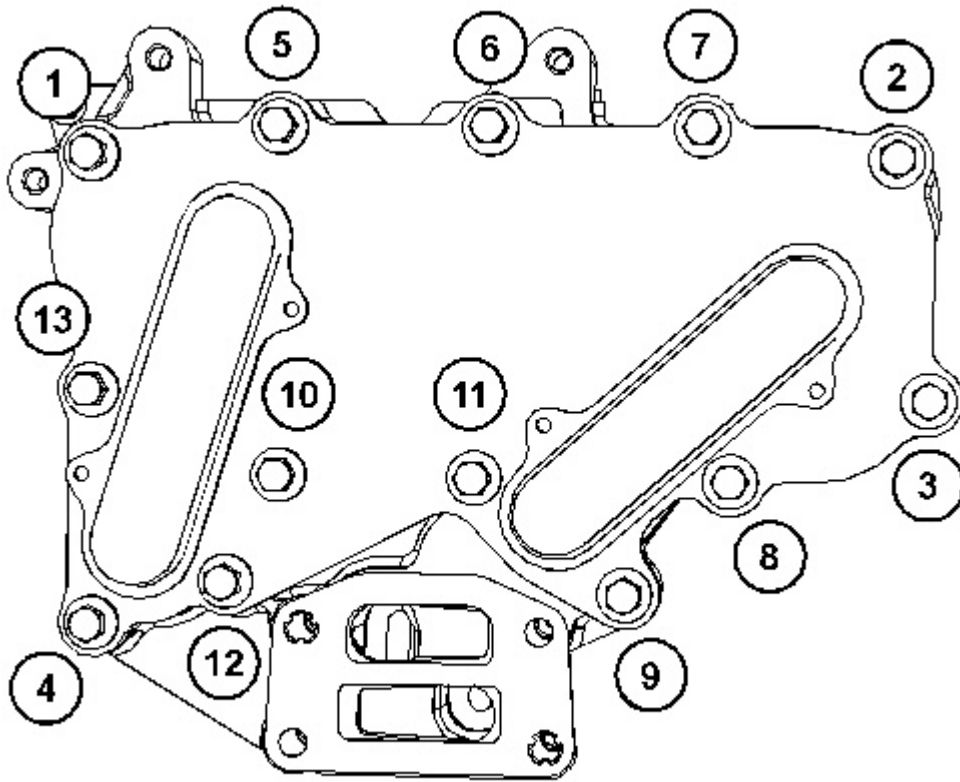


Illustration 5

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Tightening sequence for an engine oil cooler with a blanking plate or with a low mounted oil filter base

10. Tighten the bolts to a torque of 22 N·m (195 lb in) in the sequence that is shown in Illustration 5.
11. Fill the cooling system to the correct level. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change" for the correct procedure.
12. Check the level of the engine lubricating oil. Refer to Operation and Maintenance Manual, "Engine Oil Level - Check" for the correct procedure.

End By:

- a. Install the mounting bracket for the Electronic Control Module (ECM) . Refer to Disassembly and Assembly, "ECM Mounting Bracket- Remove and Install" for the correct procedure.

[Previous Screen](#)

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Disassembly and Assembly

C7.1 Engines

Media Number -UENR0633-19

Publication Date -01/07/2015

Date Updated -29/10/2018

i05292279

Engine Oil Pump - Remove

SMCS - 1304-011

Removal Procedure

Start By:

- a. Remove the engine oil pan. Refer to Disassembly and Assembly, "Engine Oil Pan - Remove" for the correct procedure.

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.

Dispose of all fluids according to local regulations and mandates.

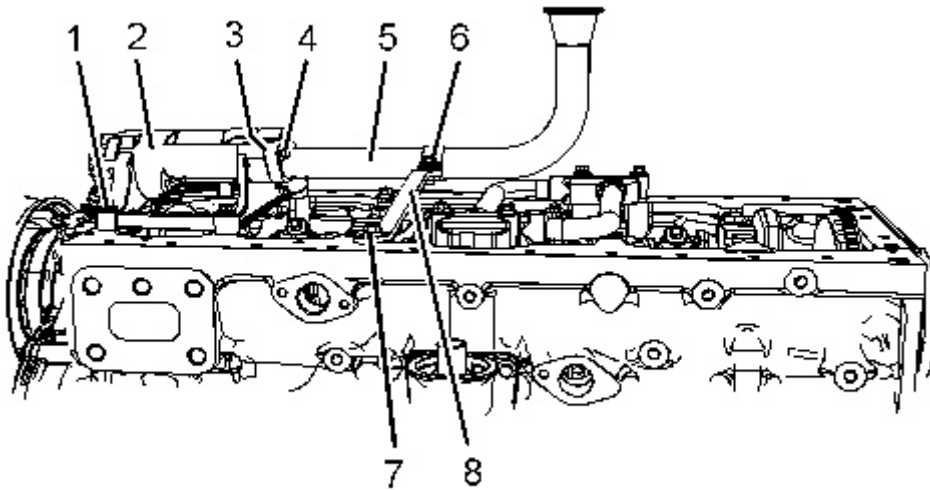


Illustration 1

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1. If suction pipe (5) has a support bracket, remove bolt (7) from bracket (8). Remove bolt (6) for the retaining clip.
 2. Remove bracket (8).
Note: Note the position and orientation of the components for the support bracket.
 3. Remove bolts (4) from suction pipe (1).
 4. Remove suction pipe (5) from oil pump (2).
 5. Remove gasket (3) (not shown).
 6. Remove bolts (1) and remove the assembly of engine oil pump (2) from the cylinder block.
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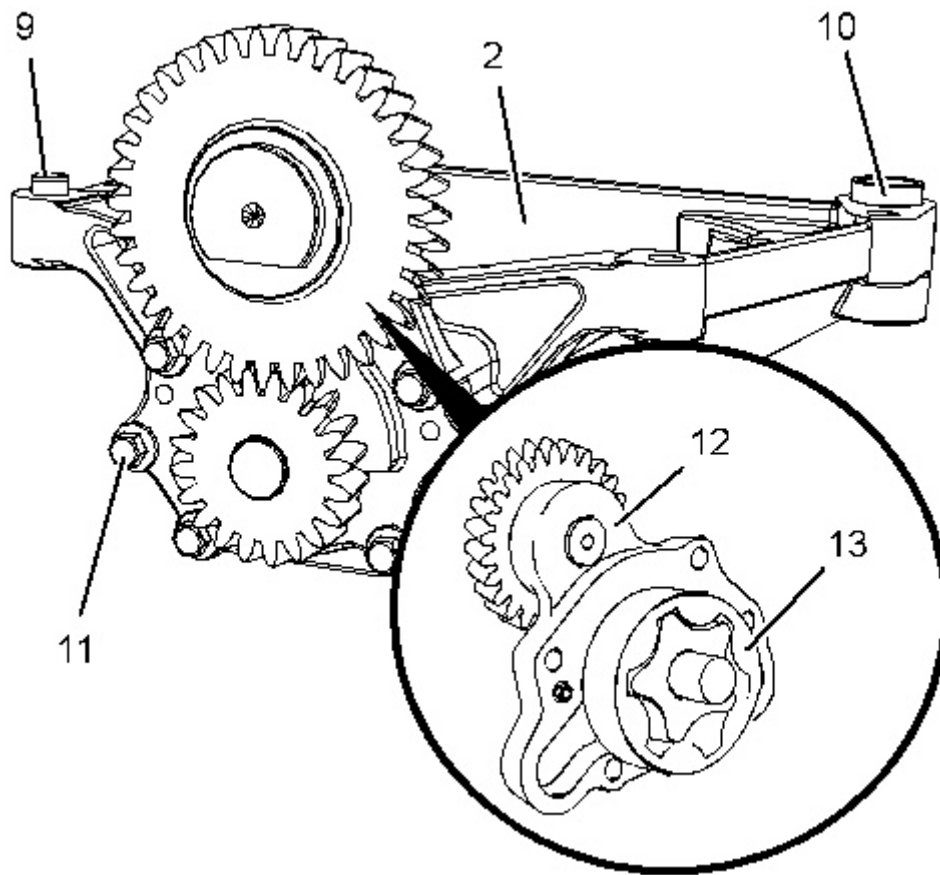


Illustration 2

g03409496

7. If necessary, follow Step 7.a through step 7.c to disassemble engine oil pump assembly (2).
 - a. Remove bolts (11).
 - b. Remove front cover assembly (12) from engine oil pump assembly (2).
 - c. Make temporary mark on outer rotor (13) for assembly purposes. Remove the outer rotor from of engine oil pump (2).
 8. Do not remove dowel (9) or dowel (10) from the housing of the engine oil pump unless the dowels are damaged.
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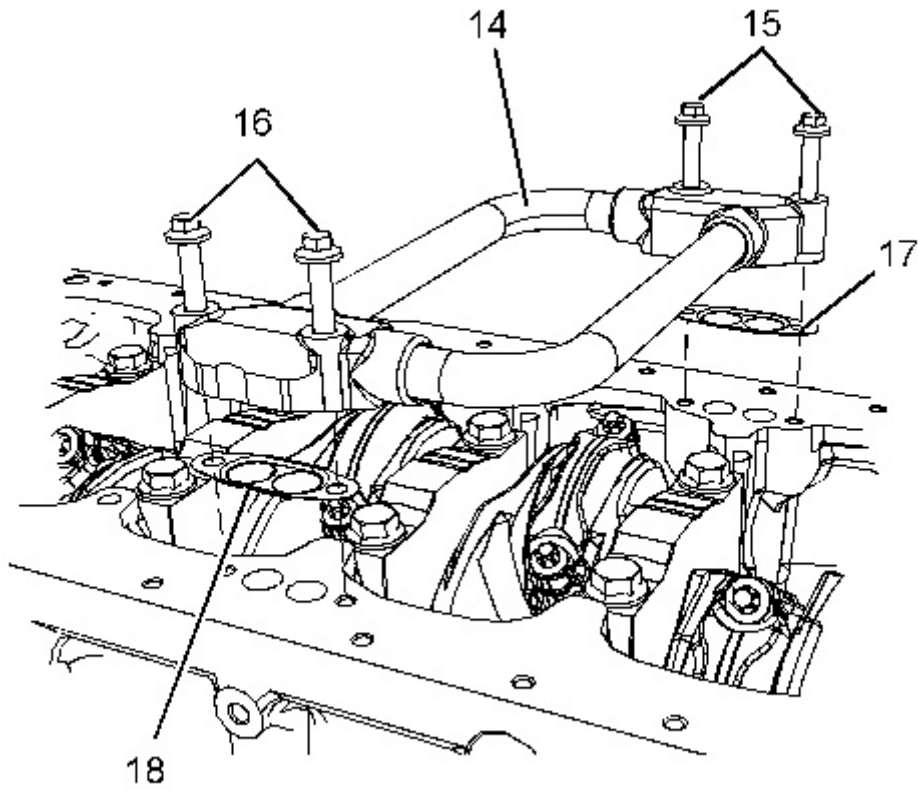


Illustration 3

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9. If necessary, follow Step 9.a through step 9.c to remove cross over tube assembly (14).
 - a. Remove bolts (15) and bolts (16) from cross over tube assembly (14).
 - b. Remove cross over tube assembly (14) from the cylinder block.
 - c. Remove gasket (17) and gasket (18).

[Previous Screen](#)

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Disassembly and Assembly

C7.1 Engines

Media Number -UENR0633-19

Publication Date -01/07/2015

Date Updated -29/10/2018

i05292278

Engine Oil Pump - Install

SMCS - 1304-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	7H-1942	Dial Indicator	1
	-	Magnetic Base and Stand	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

If any part of the engine oil pump is worn or damaged, the complete assembly of the engine oil pump must be replaced.

1. Ensure that all components of the engine oil pump are clean and free from wear and damage. Refer to System Operation, Testing and Adjusting, "Engine Oil Pump - Inspect"

for more information. Replace the complete assembly of the engine oil pump if any of the components are worn or damaged.

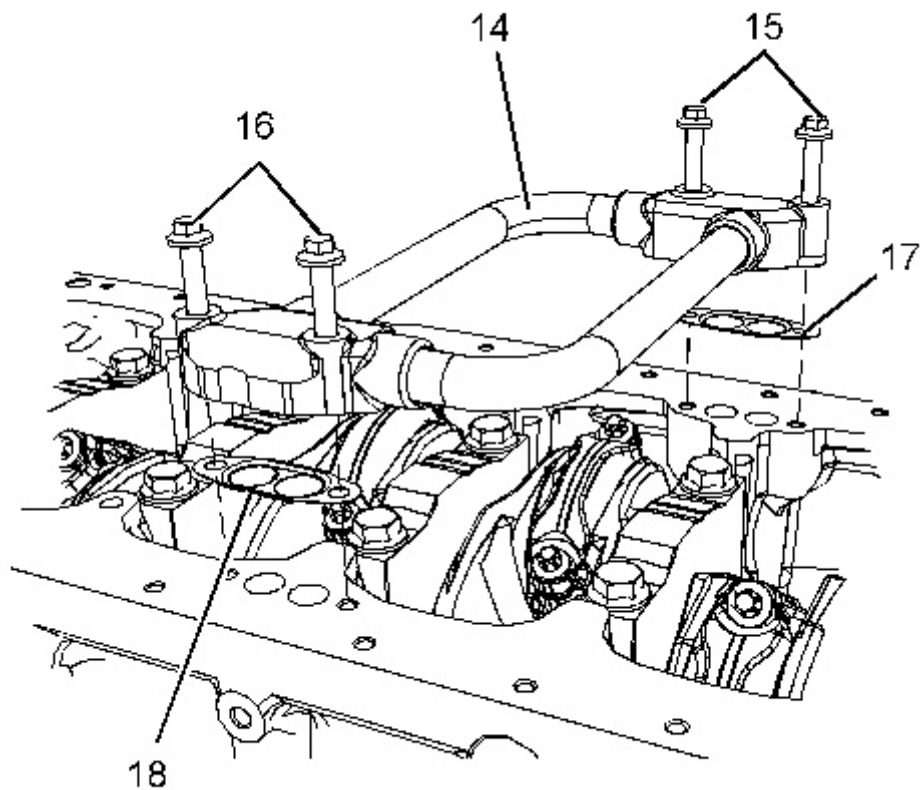


Illustration 1

g03409497

2. If necessary, follow Step 2.a through step 2.d to install cross over tube assembly (14).
 - a. Install new gasket (17) and new gasket (18).
 - b. Position cross over tube assembly (14) onto the cylinder block.
 - c. Install bolts (15) and bolts (16) to cross over tube assembly (14) finger tight.
 - d. Tighten bolts (15) and bolts (16) to a torque of 22 N·m (195 lb in).
-

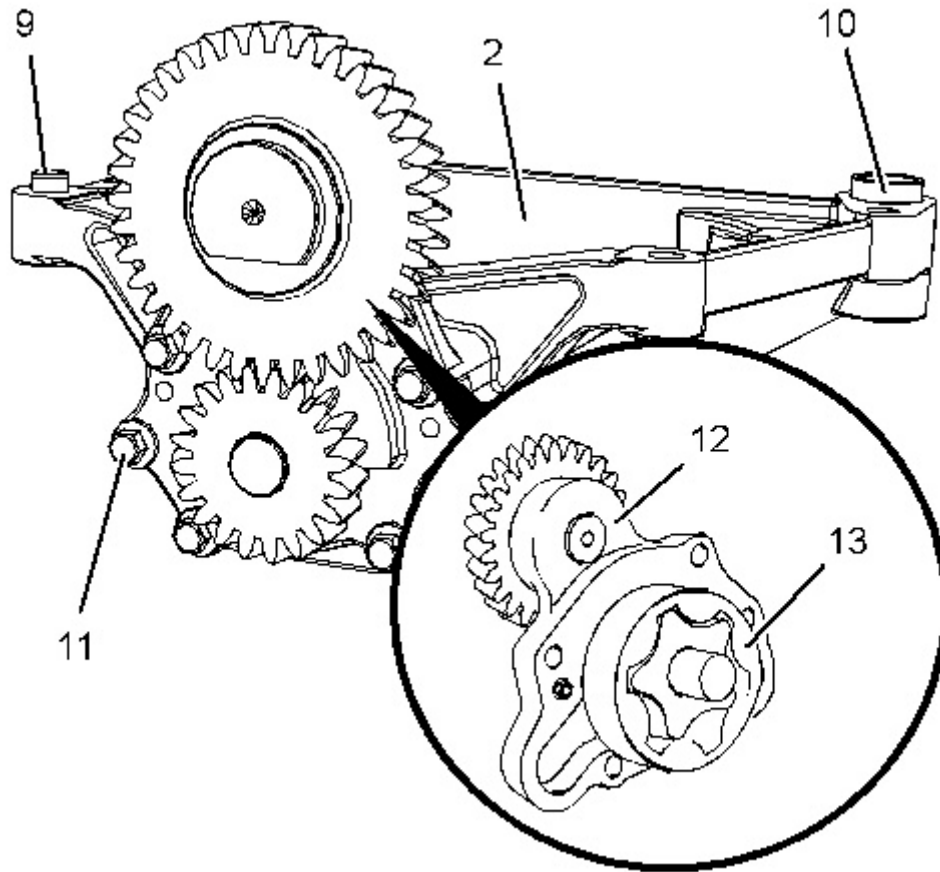


Illustration 2

g03409496

3. If necessary, follow Step 3.a through step 3.d to assemble engine oil pump assembly (2).
 - a. Lubricate the internal components for the assembly of the engine oil pump with clean engine oil.
 - b. Install outer rotor (13) to oil pump assembly (2). Ensure that the outer rotor is installed in the outer rotor original position and orientation.
 - c. Install front cover assembly (12) to engine oil pump assembly (2).
 - d. Install bolts (11) finger tight. Tighten the bolts to a torque of 22 N·m (195 lb in).
4. Ensure that dowel (9) and dowel (10) are correctly located in the housing of engine oil pump (2).
5. Install bolts (7). Tighten the bolts to a torque of 22 N·m (195 lb in).
6. Install the assembly of engine oil pump (2) to the cylinder block. Ensure that dowel (9) and dowel (10) are correctly aligned with the holes in the cylinder block.
7. Install bolts (1) to assembly of engine oil pump (2). Tighten the bolts to a torque of 22 N·m (195 lb in).
8. Use Tooling (A) to check the backlash between idler gear and the crankshaft gear. Refer to Specifications, "Gear Group (Front)" for more information.

9. If suction pipe (5) had a support bracket, Follow Step 9.a through Step 9.e in order to install support bracket and the suction pipe.

- a. Install a new gasket (3) (not shown) to suction pipe (5).
- b. Install bolts (4) to suction pipe (1).
- c. Position the assembly of suction pipe (5) onto oil pump (2). Tighten bolts (4) to a torque to 22 N·m (195 lb in).
- d. Position bracket (8) onto cylinder block and retaining clip. Install bolt (7) to the bracket. Install bolt (6) to the retaining clip. Hand tighten the bolts.

Note: Ensure the correct location and orientation of the bracket and the retaining clip.

- e. Tighten bolt (6) to a torque of 22 N·m (195 lb in).

Tighten bolt (7) to a torque of 44 N·m (32 lb ft).

Note: Ensure that the suction pipe and the bracket are not strained as the bolts are tightened.

End By:

- a. Install the engine oil pan. Refer to Disassembly and Assembly, "Engine Oil Pan - Install" for the correct procedure.

[Previous Screen](#)

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Disassembly and Assembly

C7.1 Engines

Media Number -UENR0633-19

Publication Date -01/07/2015

Date Updated -29/10/2018

i05292437

Water Pump - Remove

SMCS - 1361-011

Removal Procedure

Start By:

- a. Remove the fan and the fan pulley. Refer to Disassembly and Assembly, "Fan - Remove and Install" for the correct procedure.

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.

Dispose of all fluids according to local regulations and mandates.

1. Drain the coolant from the cooling system into a suitable container for storage or disposal. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change" for the correct procedure.
2. Loosen the hose clamps and remove the hose from the water pump inlet.

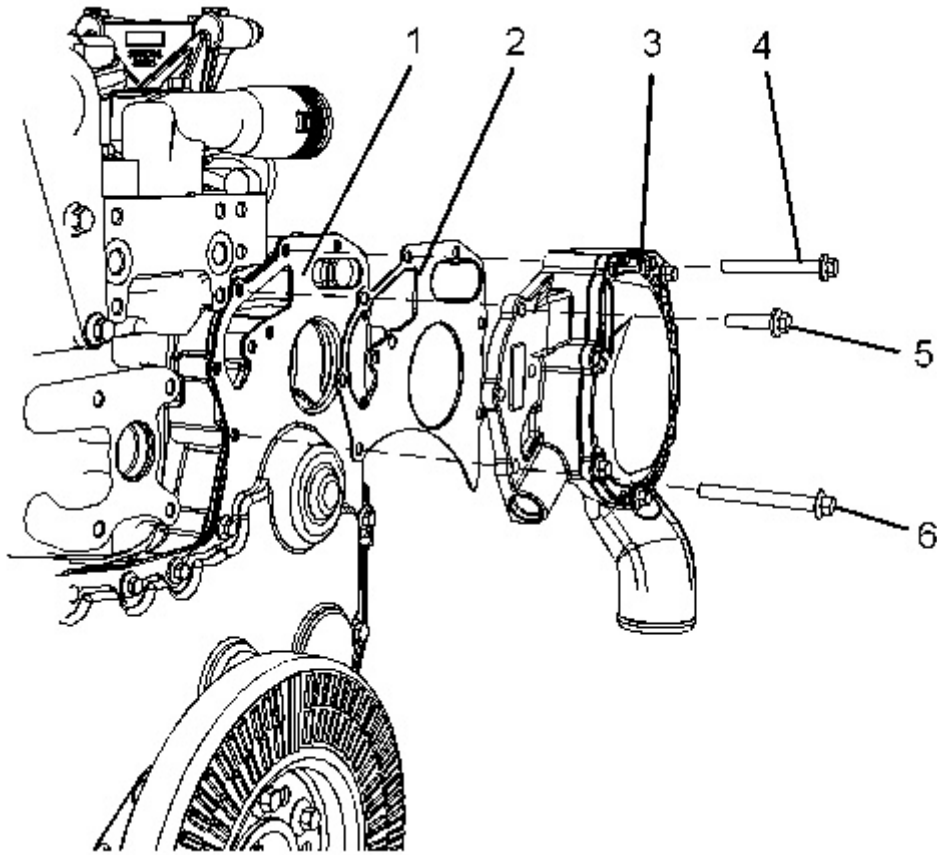


Illustration 1

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3. Remove bolts (4), bolts (5), and bolts (6). Identify the positions of bolts of different length.
4. Remove water pump (3) from front cover (1).

Note: If necessary, tap the water pump with a soft faced hammer in order to loosen the water pump.

5. Remove gasket (2).

[Previous Screen](#)

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Disassembly and Assembly

C7.1 Engines

Media Number -UENR0633-19

Publication Date -01/07/2015

Date Updated -29/10/2018

i05292436

Water Pump - Install

SMCS - 1361-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Guide Studs M8 by 90 mm	2

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.

Dispose of all fluids according to local regulations and mandates.

1. Ensure that the water pump is clean and free from wear and damage. If necessary, replace the water pump. Clean the gasket surface of the water pump.

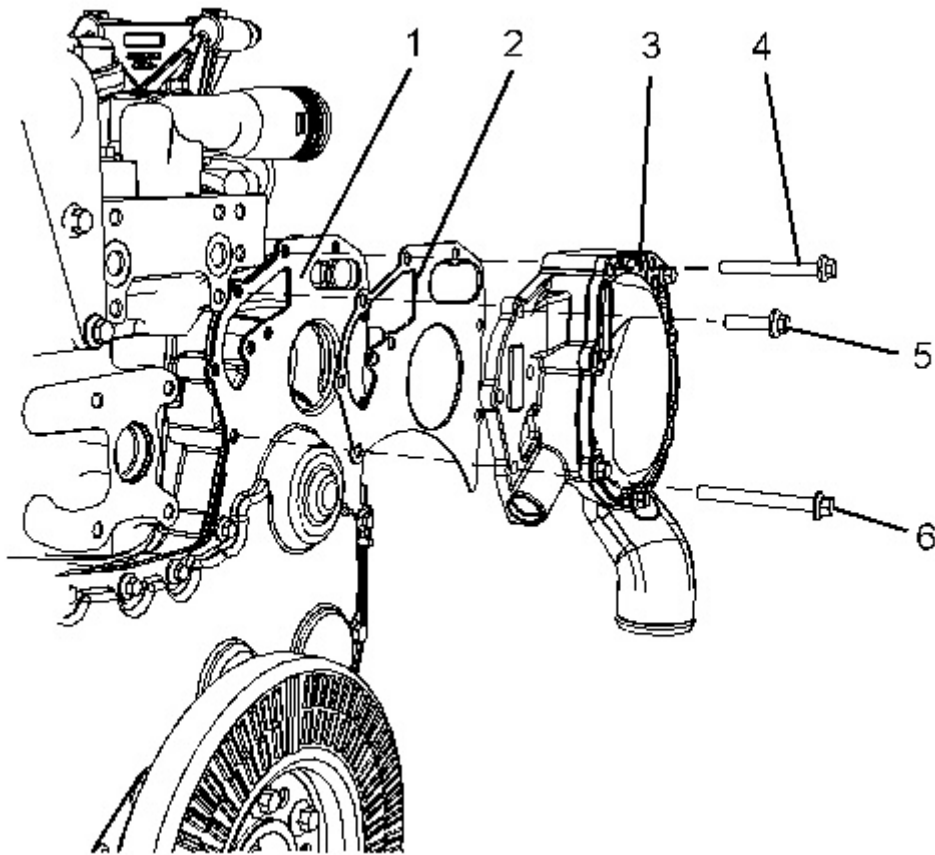


Illustration 1

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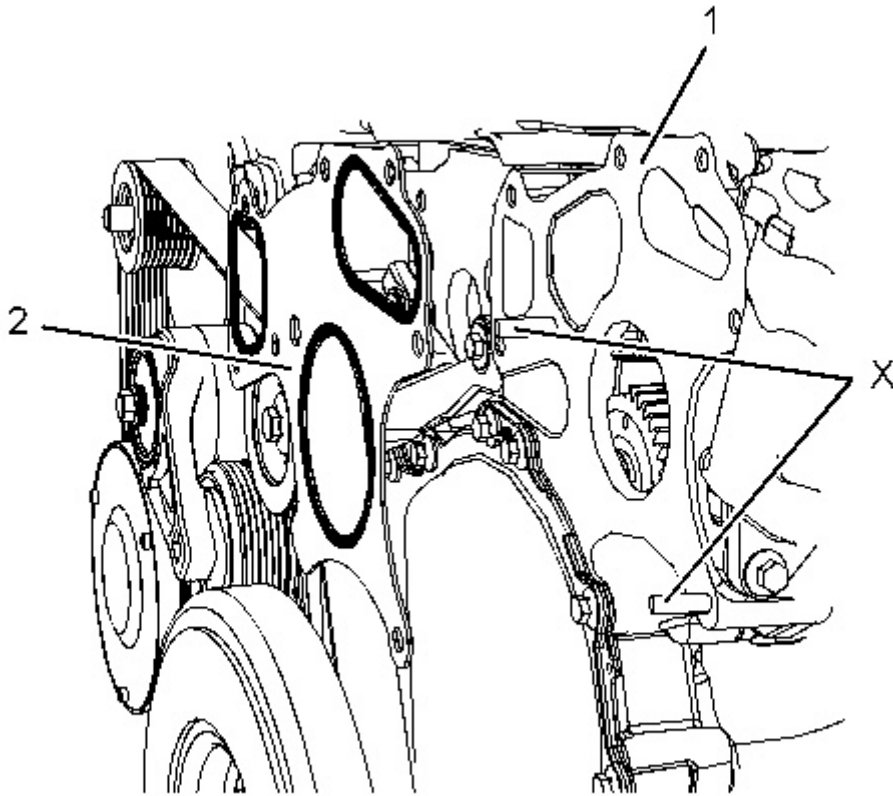


Illustration 2

g03413498

2. Clean the gasket surface of front cover (1).
3. Install Tooling (A) in Position (X).
4. Use Tooling (A) in order to align new gasket (2) to front cover (1). Install the gasket onto the front cover.
5. Align water pump (3) to Tooling (A). Install the water pump to front cover (1).

Note: Ensure that the gear of the water pump and the gear of the fuel injection pump mesh.

6. Install bolts (4), bolts (5), and bolts (6). Refer to Illustration 1. Tighten the bolts finger tight.
 7. Remove Tooling (A) and install the remaining bolts.
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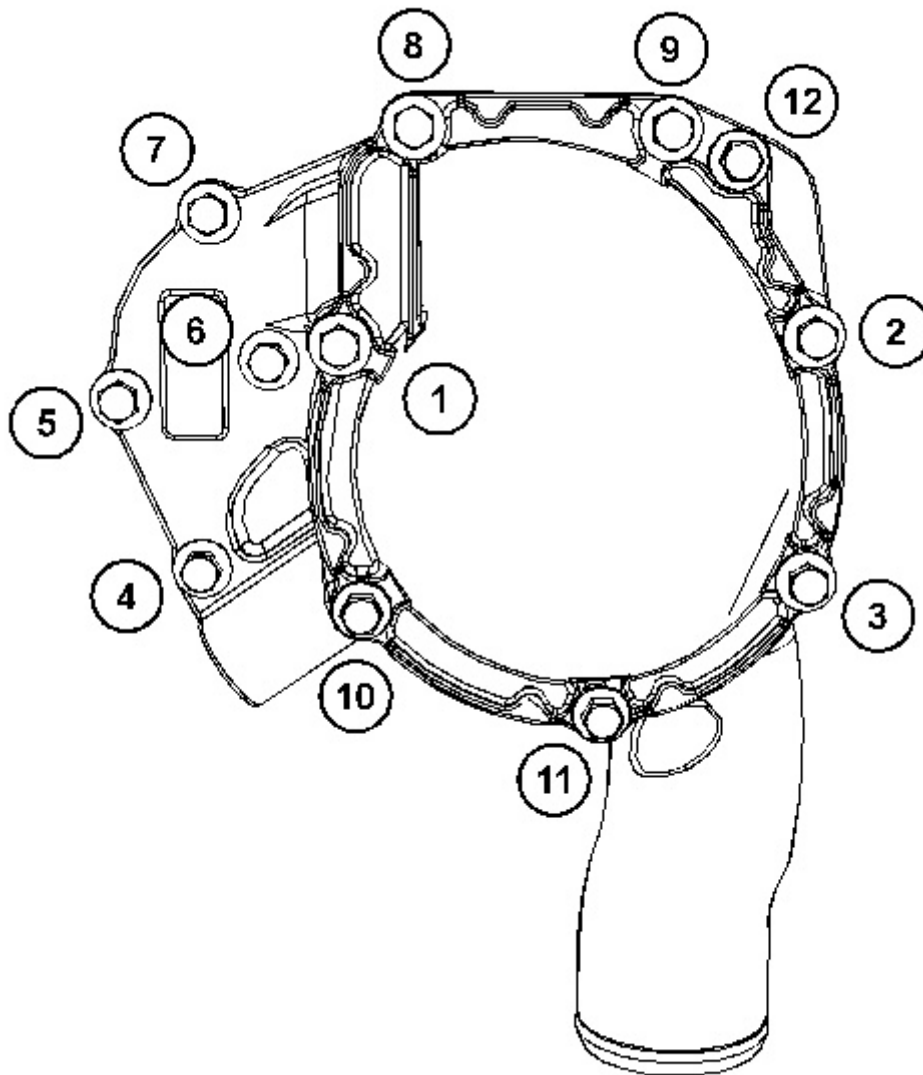


Illustration 3

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8. Tighten bolts (4), bolts (5), and bolts (6) in the sequence that is shown in Illustration 3 to a torque of 22 N·m (195 lb in).
9. Install the hose to the water pump inlet. Tighten the hose clamps securely.
10. Fill the cooling system with coolant. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change" for the correct procedure.

End By:

- a. Install the fan and the fan pulley. Refer to Disassembly and Assembly, "Fan - Remove and Install" for the correct procedure.

[Previous Screen](#)

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Model: 329D2 EXCAVATOR TMJ

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Disassembly and Assembly

C7.1 Engines

Media Number -UENR0633-19

Publication Date -01/07/2015

Date Updated -29/10/2018

i05292439

Water Temperature Regulator - Remove and Install

SMCS - 1355-010

Removal Procedure

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.

Dispose of all fluids according to local regulations and mandates.

1. Drain the coolant from the cooling system to a level below the water temperature regulator, into a suitable container for storage or for disposal. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change" for the correct draining procedure.
 2. Loosen the hose clamps from the upper radiator hose and disconnect the upper radiator hose from water temperature regulator housing (2).
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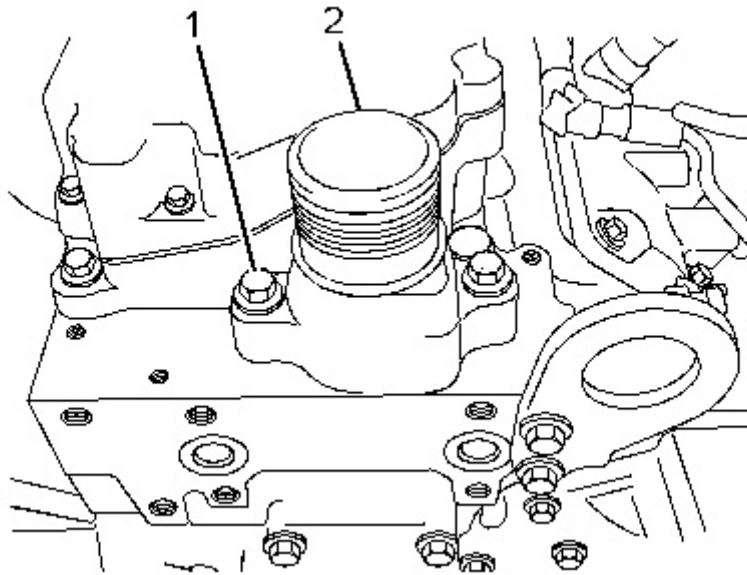


Illustration 1
Typical example

g01336665

3. Remove bolts (1) from water temperature regulator housing (2).
4. Remove water temperature regulator housing (2) from the cylinder head.

Note: Note the orientation of the water temperature regulator housing.

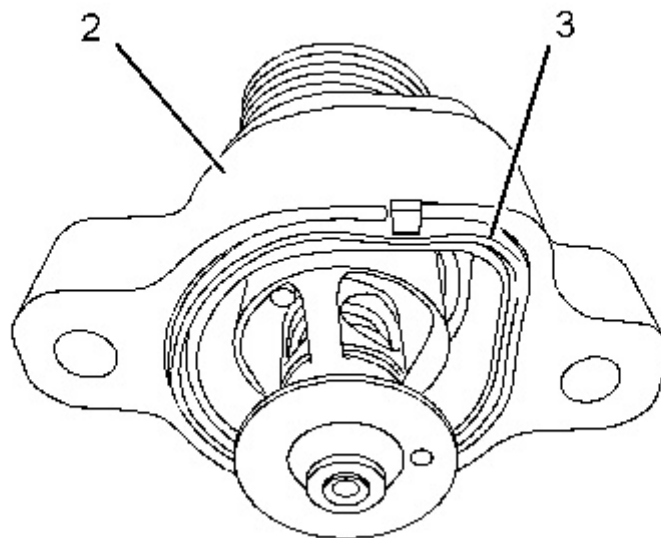


Illustration 2
Typical example

g01336667

5. Remove O-ring seal (3) from water temperature regulator housing (2).

Installation Procedure

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