

Product: SOIL COMPACTOR

Model: CS12 SOIL COMPACTOR GCS

Configuration: CS12 Vibratory Soil Compactor GCS00001-UP (MACHINE) POWERED BY C4.4 Engine

## **Disassembly and Assembly**

### **C4.4 (Mech) Engines for Caterpillar Built Machines**

Media Number -KENR9210-10

Publication Date -01/12/2014

Date Updated -08/08/2018

i02763420

## **Engine Oil Pump - Remove and Install - Engines Without a Balancer Unit**

SMCS - 1304-010

### **Removal Procedure**

#### **Start By:**

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

**Note:** This procedure is for the removal of the engine oil pump on engines that are not equipped with a balancer. Refer to Disassembly and Assembly, "Balancer Group - Remove" for information on the removal of the engine oil pump for engines that are equipped with a balancer.

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#### **NOTICE**

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

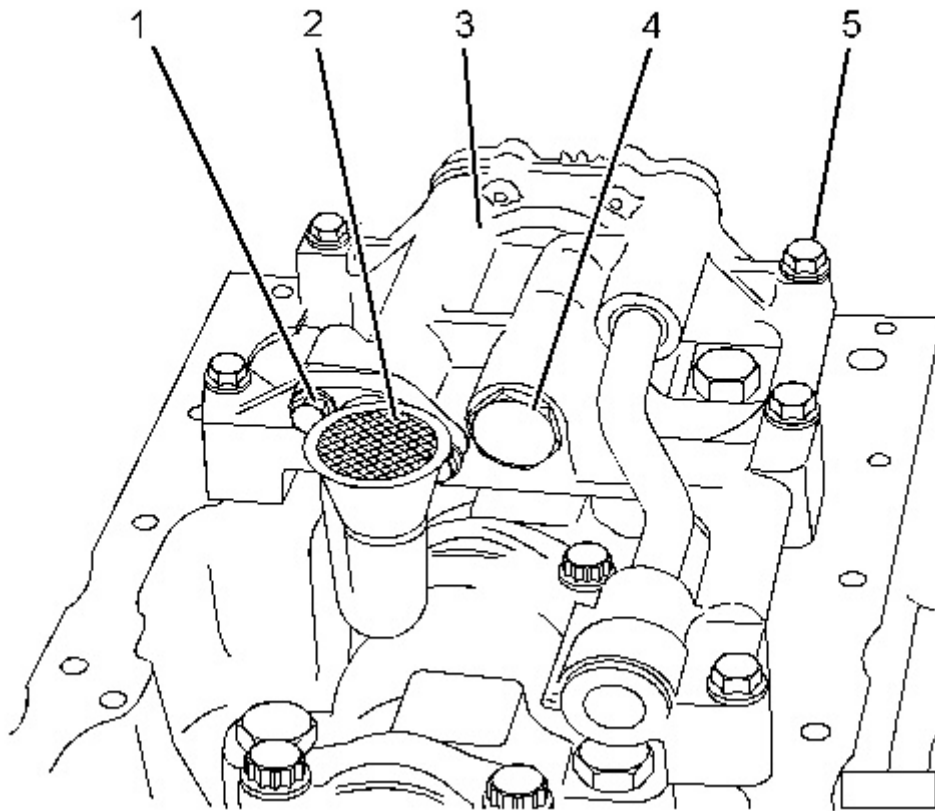
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#### **NOTICE**

**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.**



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Illustration 1  
Typical example

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1. Remove bolts (1) and suction pipe (2).
  2. Remove the joint from suction pipe (2).
  3. Remove bolts (5). Remove the assembly of engine oil pump (3) from the cylinder block.
  4. If necessary, remove pressure relief valve (4) from the housing of engine oil pump (3). Refer to Disassembly and Assembly, "Engine Oil Relief Valve - Remove and Install".
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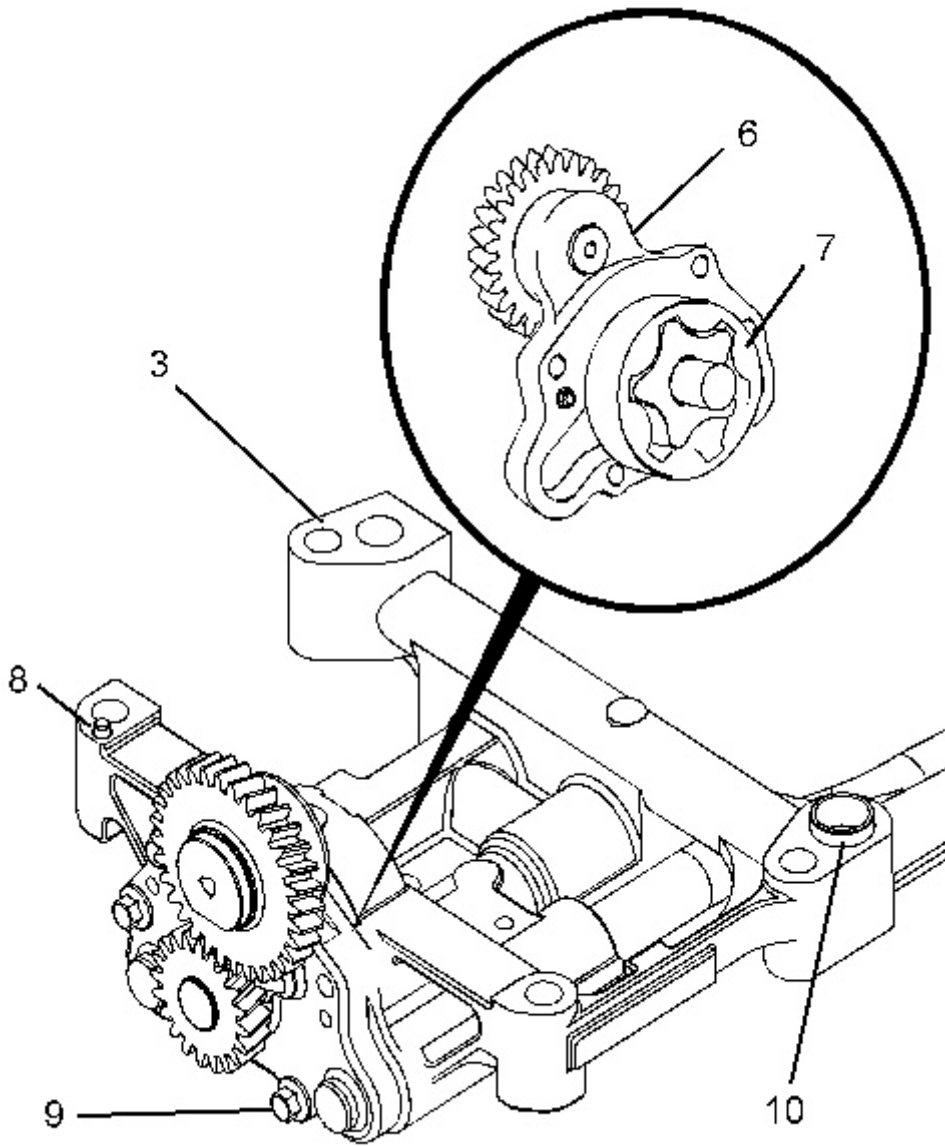


Illustration 2

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Typical example

5. If necessary, remove bolts (9) and front cover assembly (6). Remove outer rotor (7) from the housing of engine oil pump (3).

**Note:** Do not remove dowels (8) and (10) from the housing of the engine oil pump unless the dowels are damaged.

## Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	9U-7324	Indicator Bracket	1

7H-1942	Dial Indicator	1
3S-3268	Indicator Contact Point	1
7H-1940	Universal Attachment	1

**Note:** This procedure is for the installation of the engine oil pump on engines that are not equipped with a balancer. Refer to Disassembly and Assembly, "Balancer Group - Install" for information on the installation of the engine oil pump for engines that are equipped with a balancer.

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### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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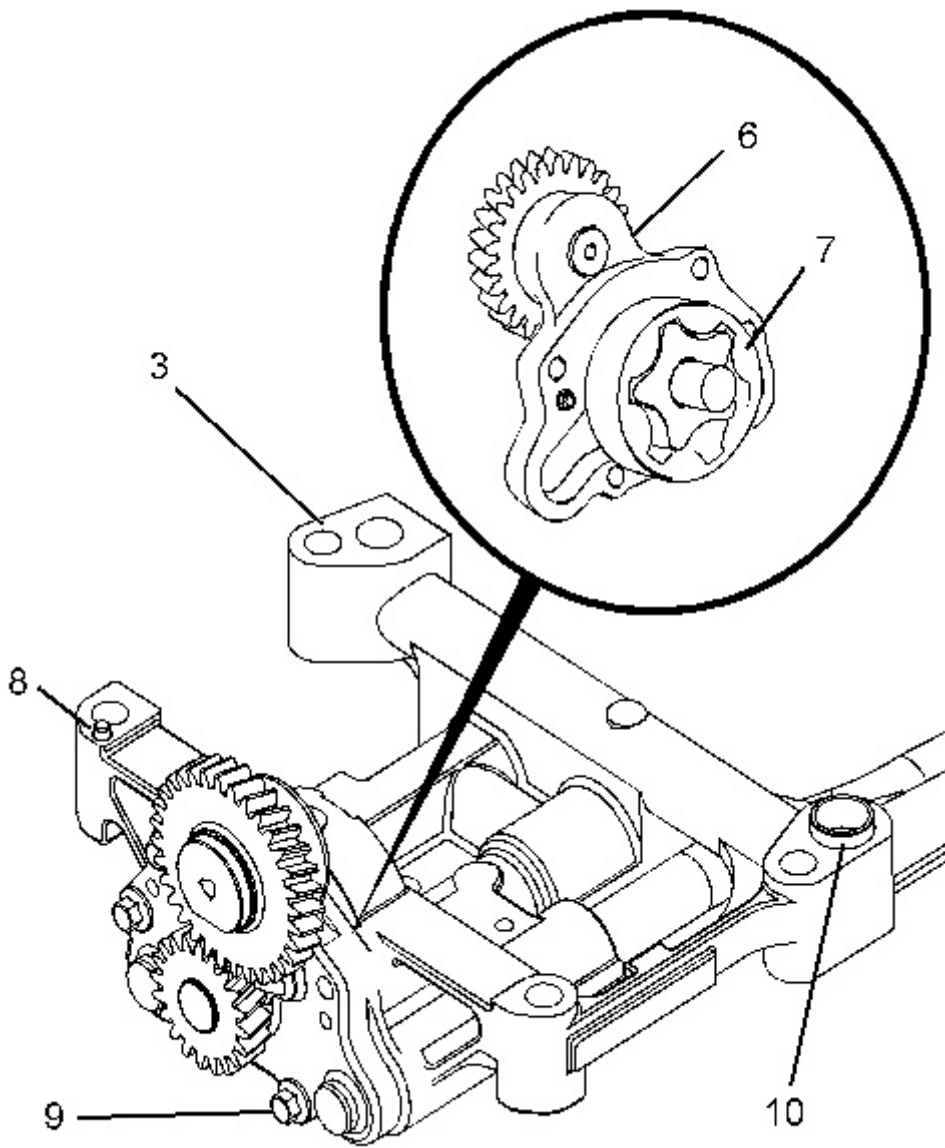
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### NOTICE

**If any of the parts on the engine oil pump are worn or damaged, the entire pump must be replaced.**

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1. Ensure that all components of the engine oil pump are clean and free from wear or damage. Check the clearance between the outer rotor of the oil pump and the oil pump body. Check the clearance between the outer rotor and the inner rotor. Check the end play of the rotor. Refer to the Systems Operation, Testing and Adjusting, "Engine Oil Pump - Inspect". Replace the complete assembly of the engine oil pump if any of the components are worn or damaged.
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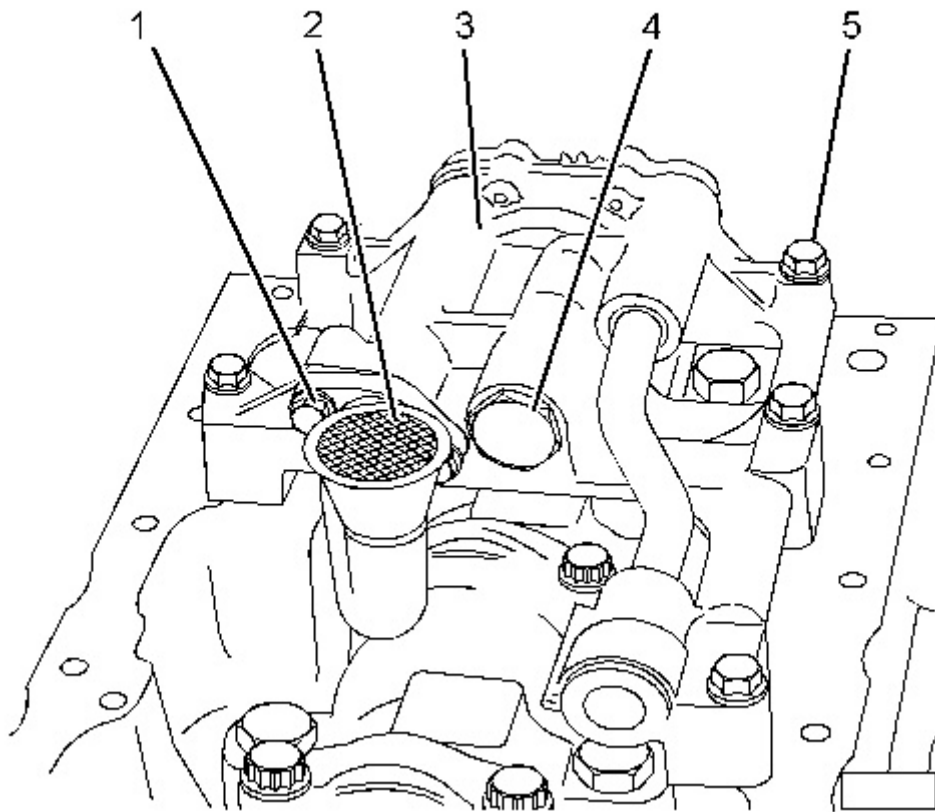


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Illustration 3

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2. If necessary, lubricate the internal components of the assembly of the engine oil pump with clean engine oil. Install outer rotor (7) and front cover (6) to the housing of engine oil pump (3). Install bolts (9). Tighten the bolts to a torque of 9.5 N·m (84 lb in).
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Illustration 4

g01343631

3. If necessary, install pressure relief valve (4). Refer to Disassembly and Assembly, "Engine Oil Relief Valve - Remove and Install" for further information.
4. Ensure that dowels (8) and (10) are correctly located in the housing of engine oil pump (3). Position the assembly of the engine oil pump onto the cylinder block.

**Note:** Ensure that the dowels in the housing of the engine oil pump are aligned with the holes in the cylinder block.

5. Install bolts (5). Tighten the bolts to a torque of 44 N·m (32 lb ft).
6. Install suction pipe (2) and a new joint to the assembly of the engine oil pump.
7. Install bolts (1). Tighten the bolts to a torque to 22 N·m (16 lb ft).
8. Use Tooling (A) in order to check the backlash between the idler gear of the oil pump and the crankshaft gear. Refer to Specifications, "Gear Group - Front" for further information.

**End By:**

- a. Install the engine oil pan. Refer to Disassembly and Assembly, "Engine Oil Pan - Remove and Install".
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## **Disassembly and Assembly C4.4 (Mech) Engines for Caterpillar Built Machines**

Media Number -KENR9210-10

Publication Date -01/12/2014

Date Updated -08/08/2018

i02763422

# **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".

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### **NOTICE**

**Keep all parts clean from contaminants.**

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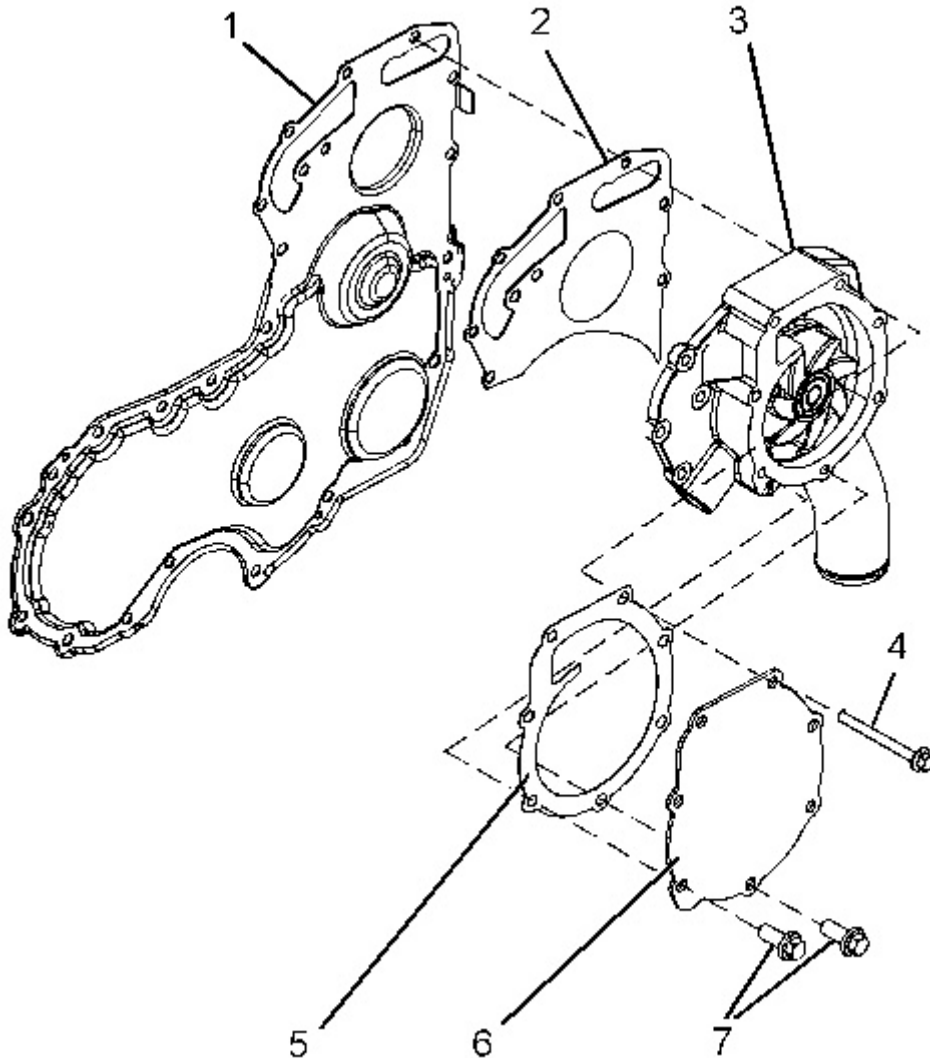
### **NOTICE**

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**Dispose of all fluids according to local regulations and mandates.**

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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.
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Illustration 1

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Typical example

3. Remove bolts (4). The bolts are different lengths. Note the positions of the different bolts.

**Note:** Do not remove bolts (7) at this time.

4. Remove water pump (3) from front cover (1).

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



5. Remove joint (2).
  6. If necessary, remove cover (6) from the water pump. Follow Steps 6.a through 6.c in order to remove the cover.
    - a. Remove bolts (7).
    - b. Remove cover (6).
    - c. Remove joint (5).
-

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Publication Date -01/12/2014

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i02763423

# Water Pump - Install

SMCS - 1361-012

## Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Guide Bolt (M8 by 80 mm)	2

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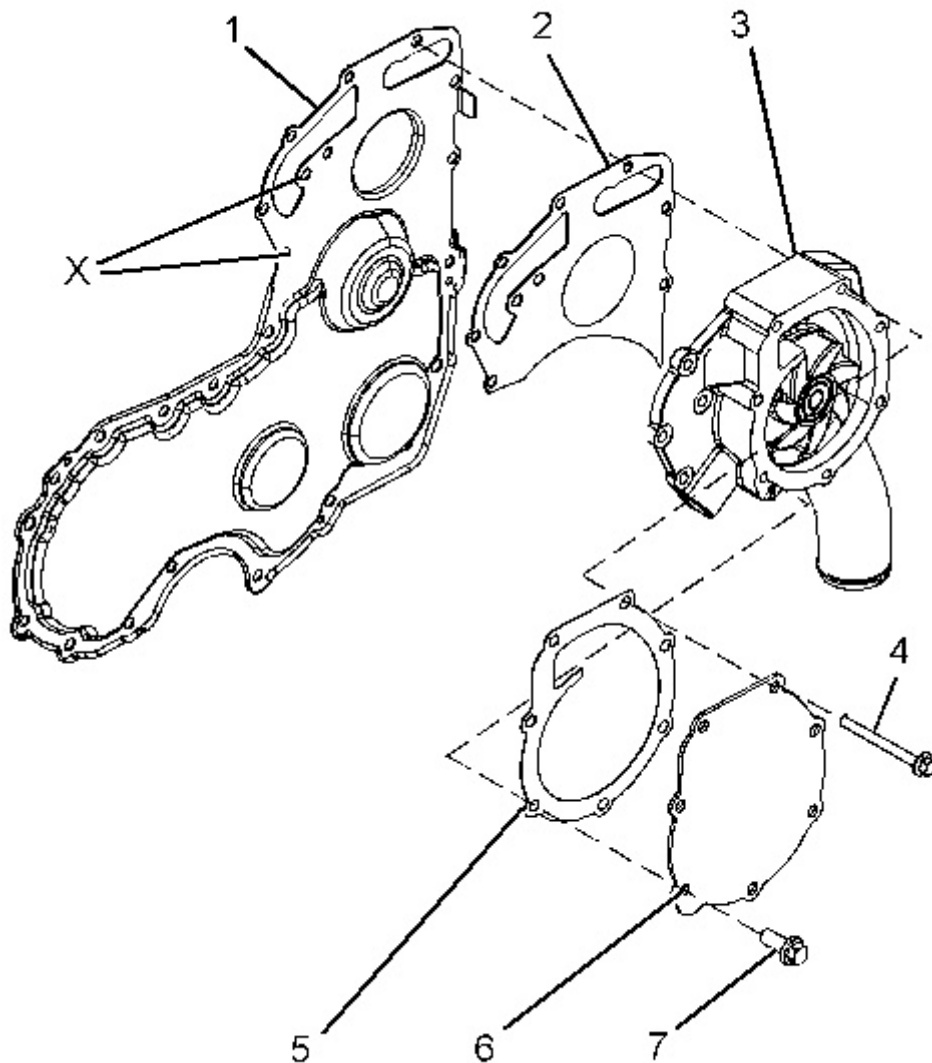
### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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1. Ensure that the water pump is clean and free from wear or damage. If necessary, replace the water pump.
-



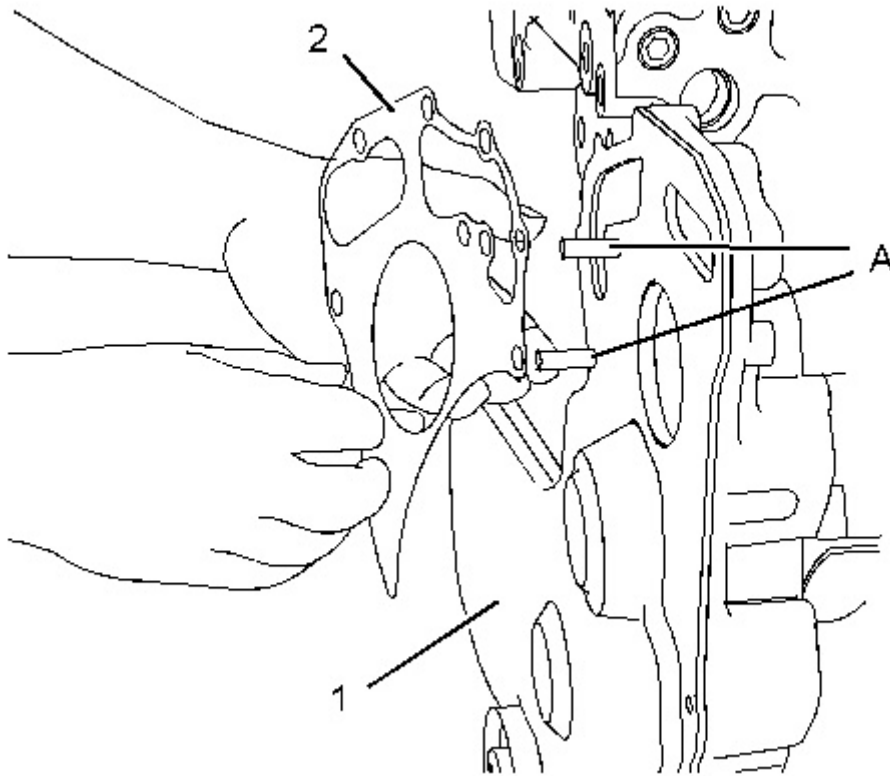
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Illustration 1

g01269391

Typical example

2. If necessary, install cover (6) to water pump (3). Follow Steps 2.a through 2.d in order to install the cover.
    - a. Clean the mating surface of cover (6).
    - b. Position a new joint (5) onto water pump (3).
    - c. Install cover (6) to water pump (3).
    - d. Install bolts (7) to cover (6). Tighten the bolts finger tight.
  3. Clean the mating surface of front cover (1).
-

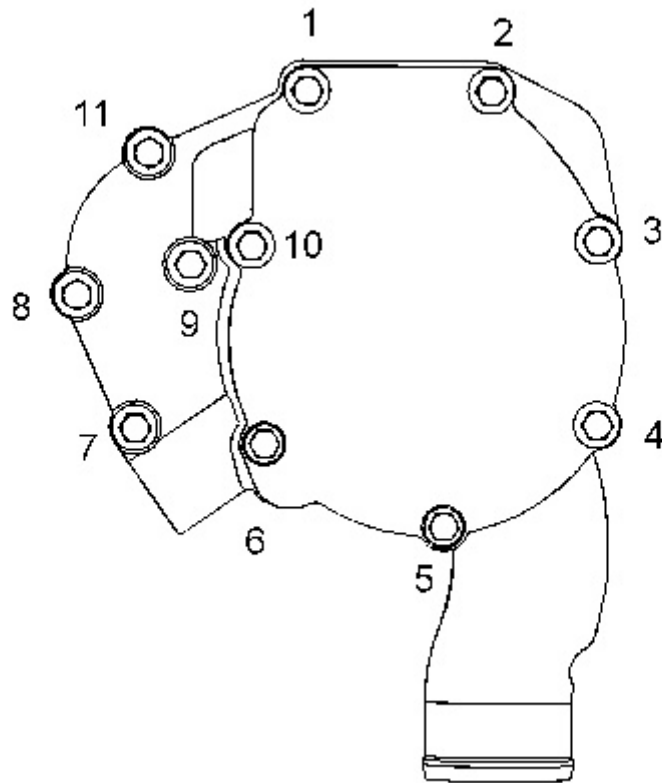


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Illustration 2

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4. Install Tooling (A) in position (X).
  5. Use Tooling (A) in order to align a new joint (2) to front cover (1). Install the joint to the front cover.
  6. Align water pump (3) with 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.
  7. Install bolts (4). Refer to Illustration 1. Tighten the bolts finger tight.  
**Note:** Ensure that bolts of different lengths are installed in the correct positions.
  8. Remove Tooling (A) and install remaining bolts (4) finger tight.
-



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Illustration 3

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Tightening sequence for the water pump

9. Tighten bolts (4) and bolts (7) to a torque of 22 N·m (16 lb ft). Refer to Illustration 1. Tighten the bolts in the sequence that is shown in Illustration 3.
10. Install the hose to the water pump inlet. Tighten the hose clamps.
11. 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".
-

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### **C4.4 (Mech) Engines for Caterpillar Built Machines**

Media Number -KENR9210-10

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i02763424

# **Water Temperature Regulator - Remove and Install**

SMCS - 1355-010

## **Removal Procedure**

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### **NOTICE**

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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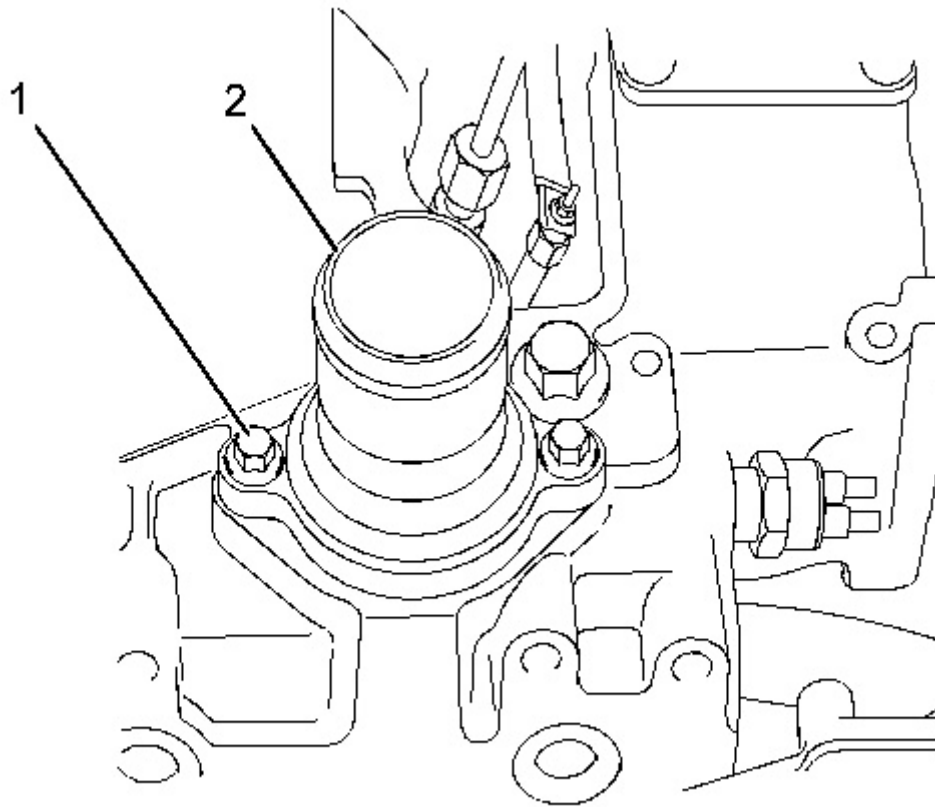
### **NOTICE**

**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.**

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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

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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.

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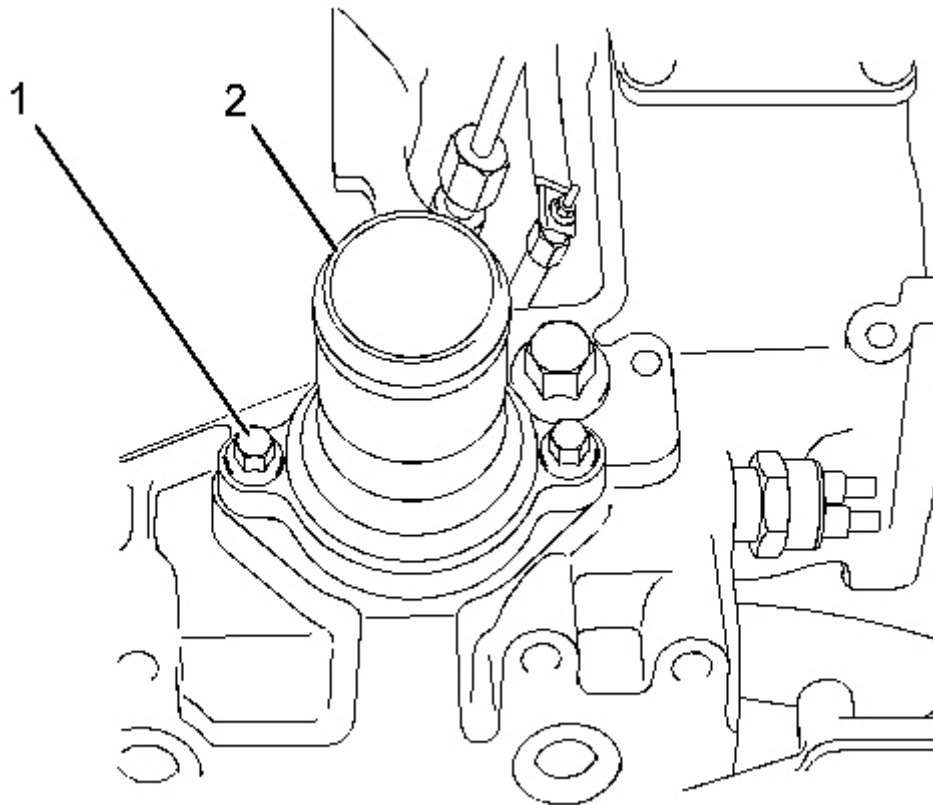


Illustration 2  
Typical example

g01343959

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

## Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-6396	O-Ring Assembly Compound	1

### NOTICE

**Keep all parts clean from contaminants.**

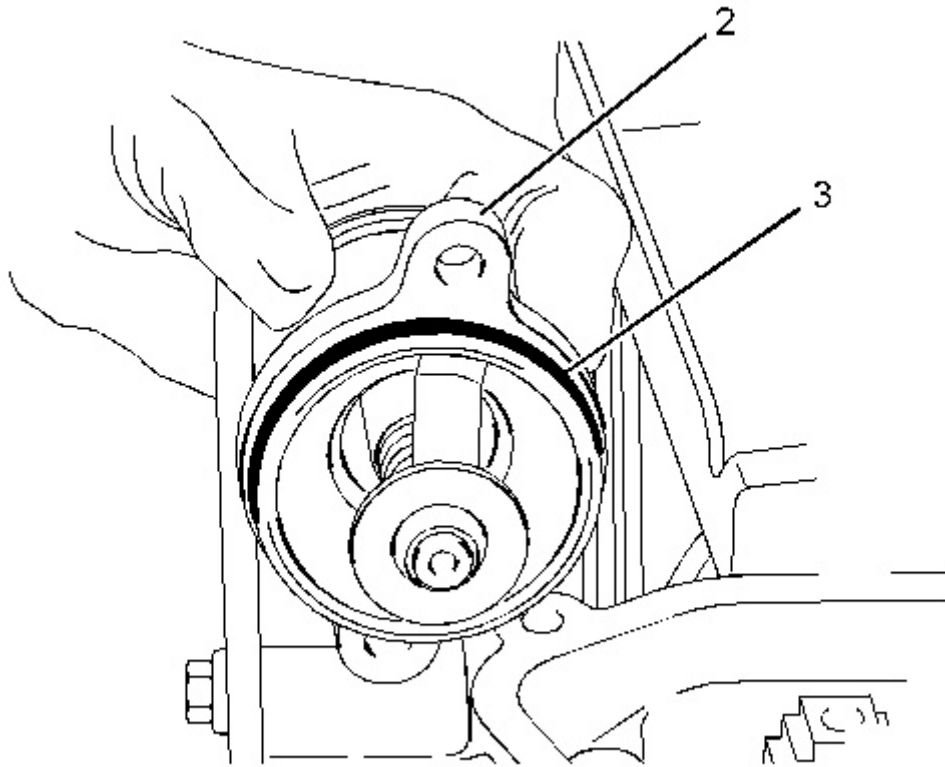
**Contaminants may cause rapid wear and shortened component life.**

- Ensure that all components of water temperature regulator are clean and free of wear or damage. Check the water temperature regulator for correct operation. Refer to Systems



Operation, Testing and Adjusting, "Water Temperature Regulator - Test" for the procedure to test the water temperature regulator. If any components of the water temperature regulator are worn or damaged, the complete assembly must be replaced.

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Illustration 3  
Typical example

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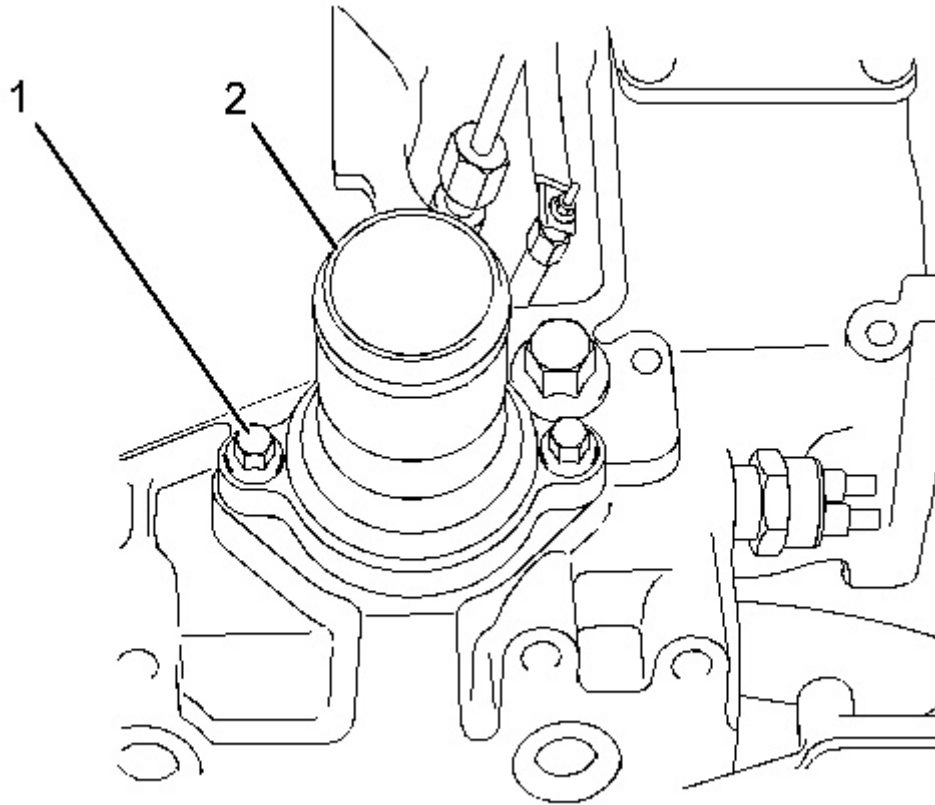
2. If the original water temperature regulator housing is installed, position a new O-ring seal (3) into the groove in water temperature regulator housing (2).

A new water temperature regulator housing is supplied with a new O-ring seal.

3. Use Tooling (A) to lubricate the new O-ring seal.
4. Install water temperature regulator housing (2) to the cylinder head.

**Note:** Ensure the correct orientation of the water temperature regulator housing.

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Illustration 4  
Typical example

g01343959

5. Install bolts (1). Tighten the bolts to a torque of 22 N·m (16 lb ft).
  6. Connect the upper radiator hose and tighten the hose clamps.
  7. Fill the cooling system to the correct level. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change" for the correct procedure.
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## Disassembly and Assembly C4.4 (Mech) Engines for Caterpillar Built Machines

Media Number -KENR9210-10

Publication Date -01/12/2014

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i02763425

### Flywheel - Remove

SMCS - 1156-011

### Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Guide Bolt (1/2 inch - UNF by 4 inch)	2

#### Start By:

- Remove the electric starting motor. Refer to Disassembly and Assembly, "Electric Starting Motor - Remove and Install".

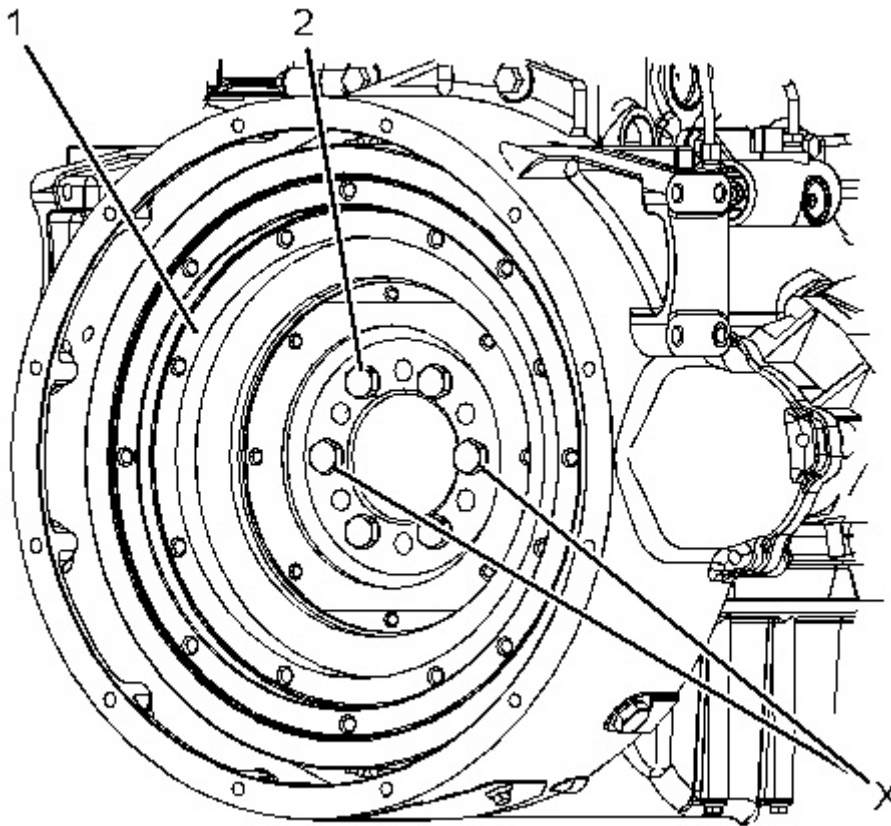
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#### NOTICE

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Illustration 1  
Typical example

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1. Remove two bolts from positions (X) on flywheel (1).
  2. Install Tooling (A) to positions (X) on flywheel (1).
  3. Attach a suitable lifting device to flywheel (1). Support the weight of the flywheel. The weight of the flywheel is approximately 71 kg (155 lb).
  4. Remove remaining bolts (2).
  5. Use the lifting device in order to remove the flywheel from the engine.
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