

Product: VIBRATORY COMPACTOR

Model: CP-533E VIBRATORY COMPACTOR DAM

Configuration: CS-533E CP-533E Vibratory Compactor DAM00001-UP (MACHINE) POWERED BY 3054C Engine

## **Disassembly and Assembly 3054C Engines for Caterpillar Built Machines**

Media Number -SEN5069-18

Publication Date -01/05/2015

Date Updated -19/09/2018

i05324845

### **Housing (Front) - Remove**

SMCS - 1151-011

### **Removal Procedure**

#### **Start By:**

- a. Remove the alternator. Refer to Disassembly and Assembly, "Alternator - Remove".
- b. Remove the crankshaft pulley. Refer to Disassembly and Assembly, "Crankshaft Pulley - Remove and Install".
- c. Remove the front cover. Refer to Disassembly and Assembly, "Front Cover - Remove and Install".
- d. Remove the engine oil pan. Refer to Disassembly and Assembly, "Engine Oil Pan - Remove and Install".
- e. Remove the idler gear. Refer to Disassembly and Assembly, "Idler Gear - Remove and Install".
- f. Remove the camshaft gear. Refer to Disassembly and Assembly, "Camshaft Gear - Remove and Install".
- g. Remove the air compressor, if equipped. Refer to Disassembly and Assembly, "Air Compressor - Remove and Install".

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#### **NOTICE**

**Keep all parts clean from contaminants.**

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

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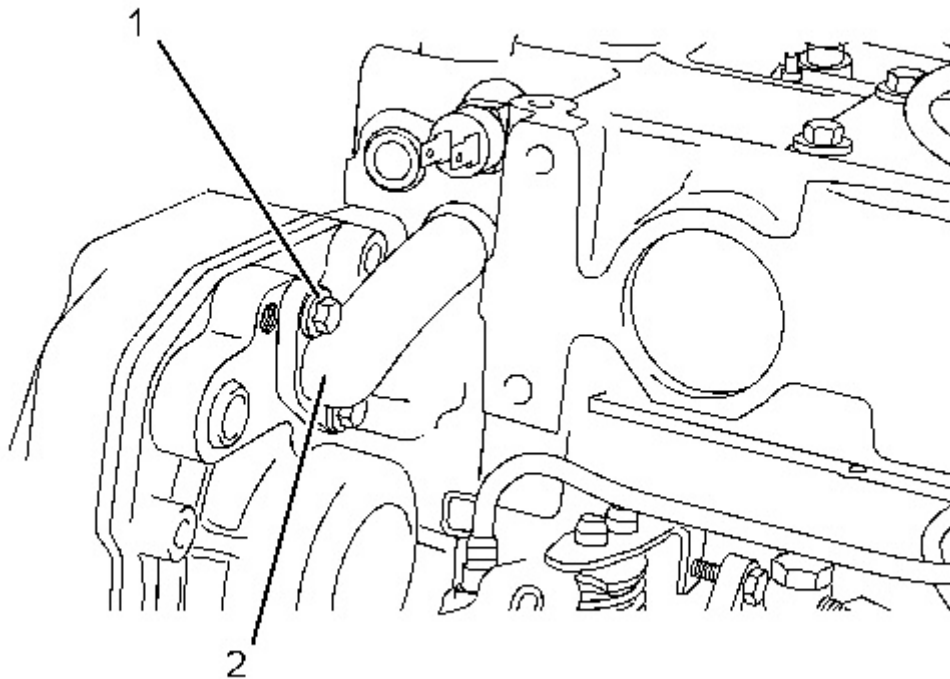
## NOTICE

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.

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

Dispose of all fluids according to local regulations and mandates.

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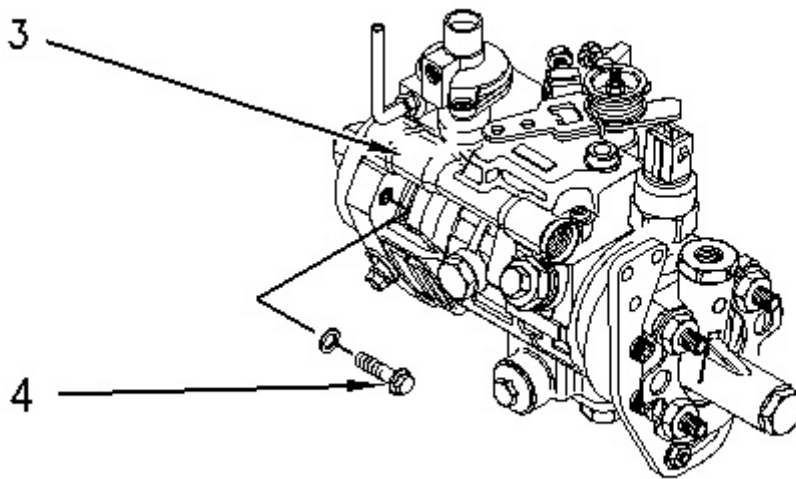
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Illustration 1

g03373179

Typical example

1. Remove bolts (1). Remove bypass tube (2) from the cylinder head. Remove the O-ring seals from the bypass tube.
-

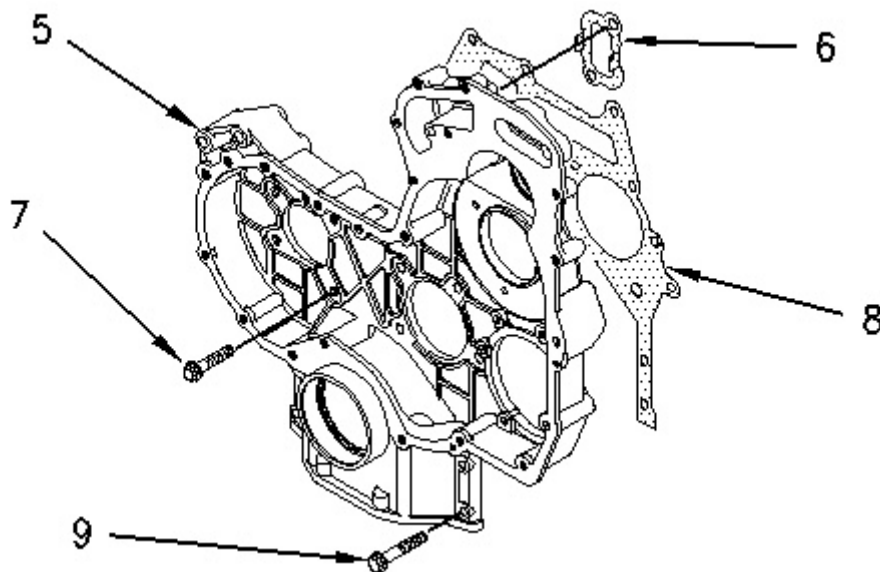


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Illustration 2  
Typical Example

g00994883

2. Remove bolts (4) that fasten fuel injection pump (3) to the front housing.
- 



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Illustration 3

g00985259

3. Remove bolts (7) and bolts (9) that fasten the front housing (5) to the cylinder block.
  4. Remove front housing (5). Remove gasket (8) from the cylinder block and the front housing.
  5. Remove gasket (6) from the back side of the front housing.
  6. Remove the O-ring seal from the fuel injection pump housing.
-

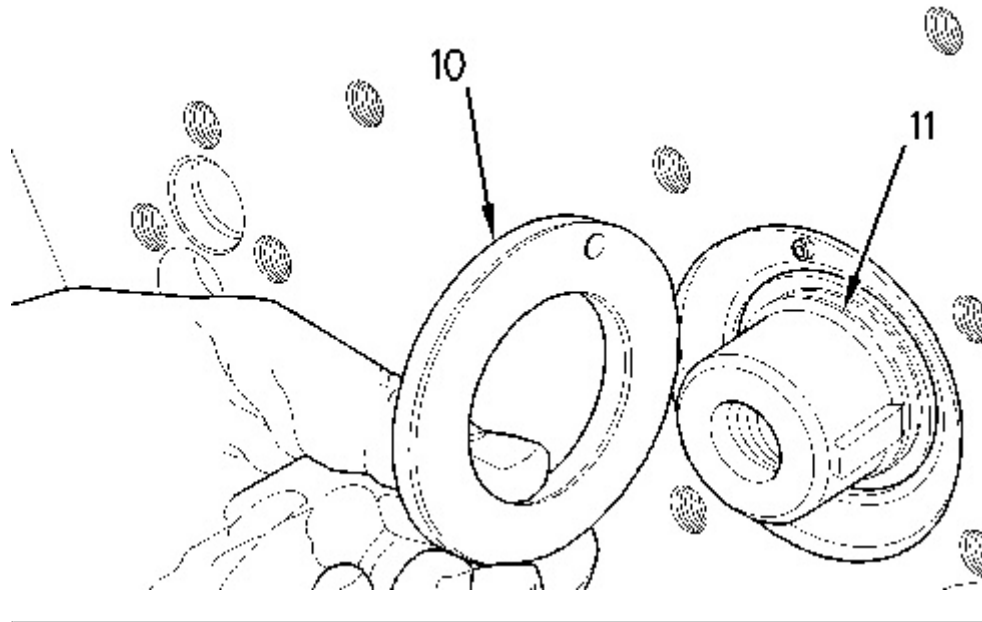


Illustration 4

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- 
7. Remove thrust washer (10) from camshaft (11).
-

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i05324846

### Housing (Front) - Install

SMCS - 1151-012

### Installation Procedure

Table 1

| Tool | Part Number | Part Name                          | Qty |
|------|-------------|------------------------------------|-----|
| A    | -           | Guide Bolt<br>(M8 X 1.25 by 70 mm) | 2   |
| B    | 5P-3975     | Rubber Lubricant                   | -   |

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#### NOTICE

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1. Clean all mating surfaces thoroughly.
-

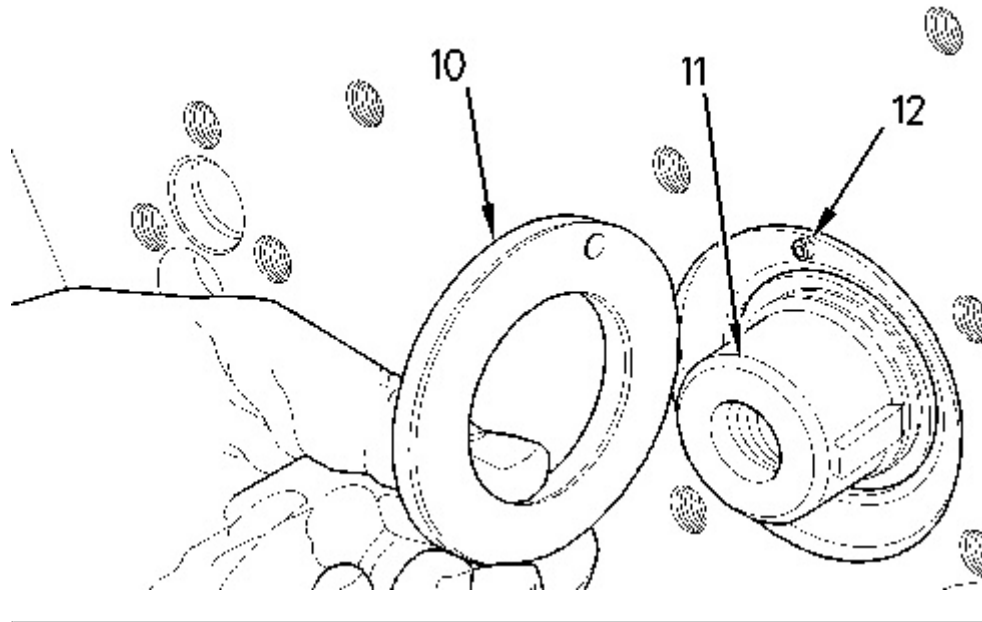


Illustration 1

g00954818

2. Ensure that thrust washer (10) is aligned with hollow dowel (12). Install the thrust washer on camshaft (11).
3. Install a new O-ring seal on the fuel injection pump housing.

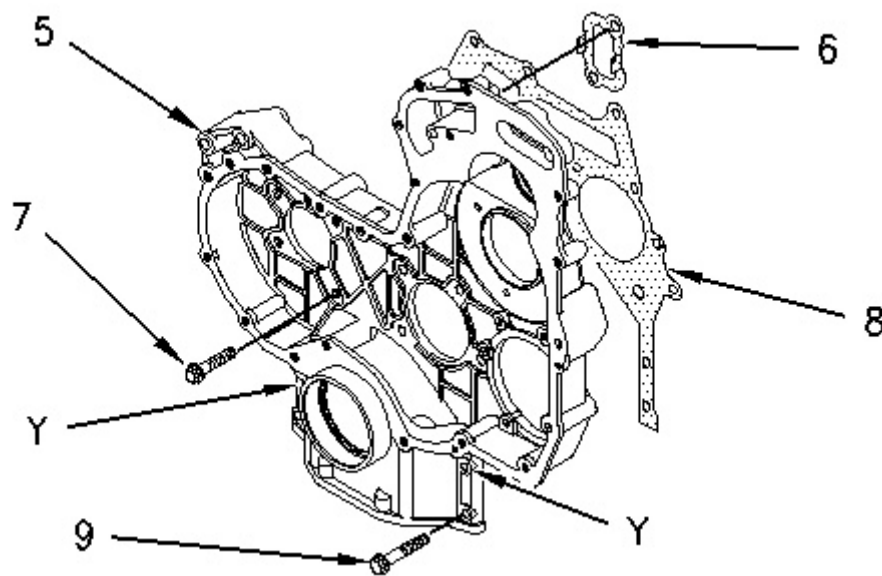
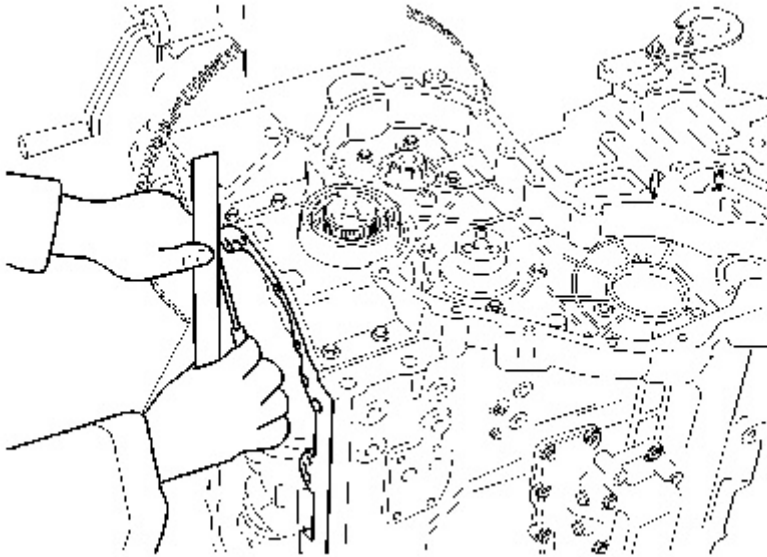


Illustration 2

g00995387

4. Install Tooling (A) in the cylinder block in Hole (Y).
5. Position gasket (8) on Tooling (A). Install gasket (6) on the back side of front housing (5).
6. Position front housing (5) on the cylinder block. Install bolts (7) and bolts (9). Remove Tooling (A) and install the remaining bolts in order to secure the front housing to the cylinder block. Tighten bolts (7) and bolts (9) finger tight at this time.



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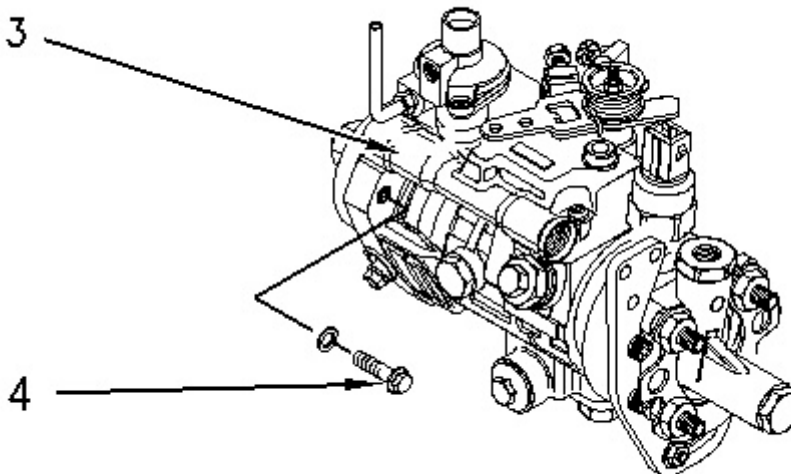
Illustration 3

g00954906

7. Align the front housing and the cylinder block.

**Note:** Ensure that the bottom of the front cover is aligned with the bottom of the cylinder block before the bolts are tightened. The alignment of the bottom face of the front cover and the bottom of the cylinder block must not exceed  $0.00 \pm 0.05$  mm ( $0.000 \pm 0.002$  inch).

8. Tighten bolts (7) and bolts (9) to a torque of 22 N·m (16 lb ft).
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Illustration 4

g00994883

Typical Example

9. Install bolts (4) that fasten fuel injection pump (3) to the front housing. Tighten the bolts to a torque of 25 N·m (18 lb ft).
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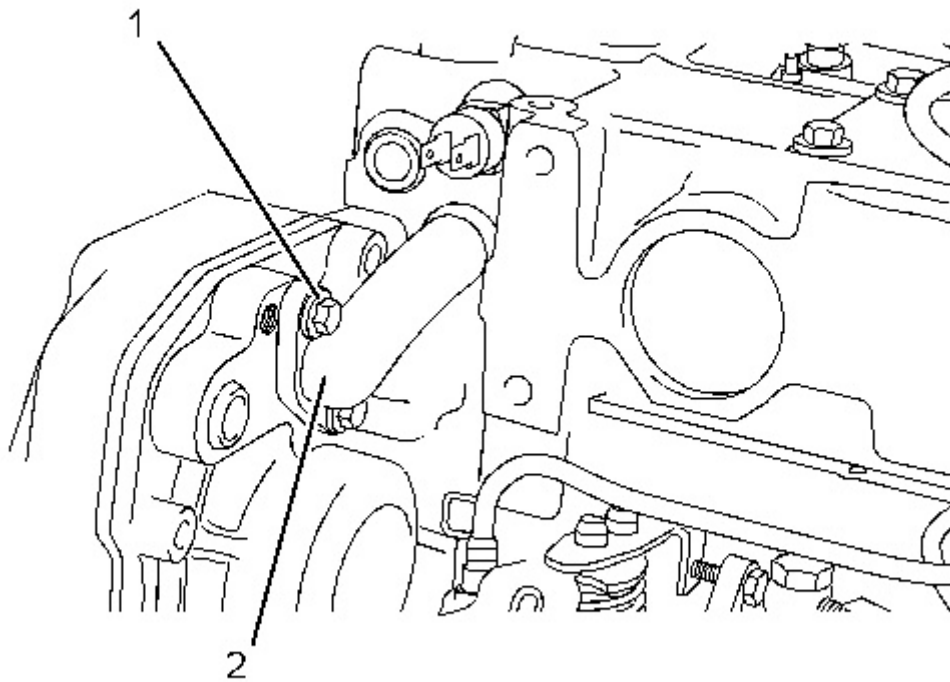


Illustration 5  
Typical example

g03373179

10. Install new O-ring seals on bypass tube (2). Apply Tooling (B) to the O-ring seals. Install the bypass tube in the cylinder head. Install bolts (1).

**End By:**

- a. Install the camshaft gear. Refer to Disassembly and Assembly, "Camshaft Gear - Remove and Install".
- b. Install the idler gear. Refer to Disassembly and Assembly, "Idler Gear - Remove and Install".
- c. Install the engine oil pan. Refer to Disassembly and Assembly, "Engine Oil Pan - Remove and Install".
- d. Install the front cover. Refer to Disassembly and Assembly, "Front Cover - Remove and Install".
- e. Install the crankshaft pulley. Refer to Disassembly and Assembly, "Crankshaft Pulley - Remove and Install".
- f. Install the alternator. Refer to Disassembly and Assembly, "Alternator - Install".
- g. Install the air compressor, if equipped. Refer to Disassembly and Assembly, "Air Compressor - Remove and Install".



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Media Number -SEN5069-18

Publication Date -01/05/2015

Date Updated -19/09/2018

i02295086

# Accessory Drive - Remove and Install

SMCS - 1207-010

## Removal Procedure

Table 1

| Required Tools |             |                   |     |
|----------------|-------------|-------------------|-----|
| Tool           | Part Number | Part Description  | Qty |
| A              | 8H-0663     | Bearing Puller Gp | 1   |
|                | 5F-7345     | Screw             | 1   |
|                | 126-7183    | Crossblock        | 1   |
|                | 126-7181    | Sliding Plate     | 1   |
|                | 126-7177    | Puller Leg        | 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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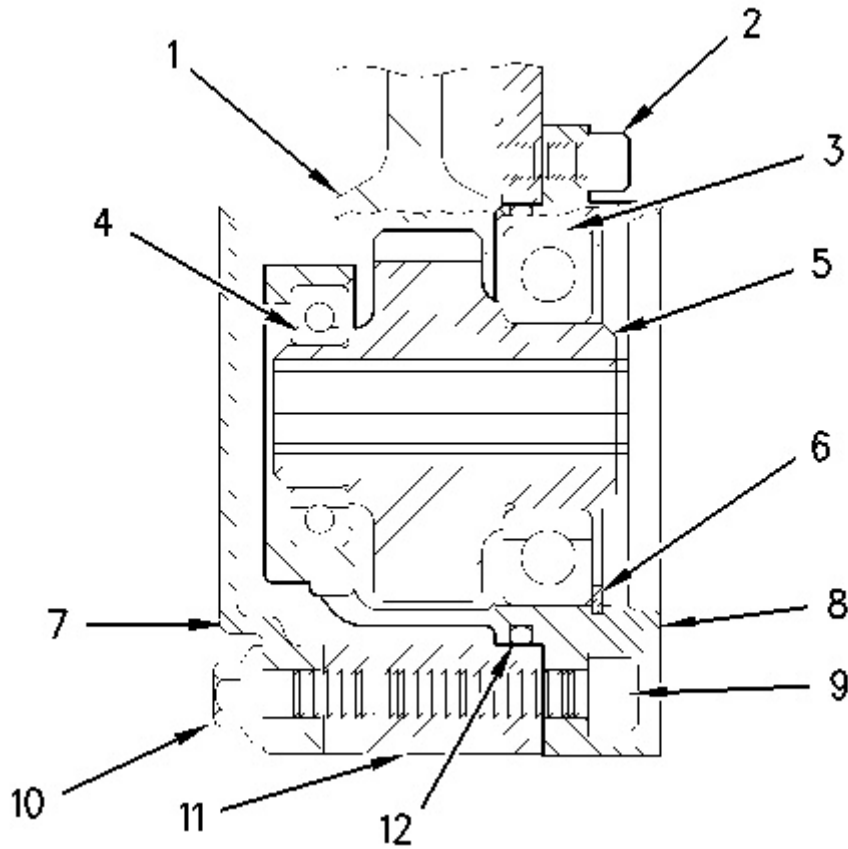


Illustration 1

g00948832

1. Remove the front cover (7). Refer to this Disassembly and Assembly Manual, "Front Cover - Remove and Install".
2. Remove the Allen head screws (2) and (9). Remove the accessory drive assembly (8) from the rear face of the front housing (11).
3. Remove circlip (6) from housing (8).
4. Use the Tooling (A) in order to remove the bearings (3) and (4) from the gear and the housing.
5. Remove the O-ring (12) from the front housing (8) and discard the O-ring.

## Installation Procedure

Table 2

| Required Tools |             |                        |     |
|----------------|-------------|------------------------|-----|
| Tool           | Part Number | Part Description       | Qty |
| B              | 7M-7456     | Bearing Mount Compound | 1   |

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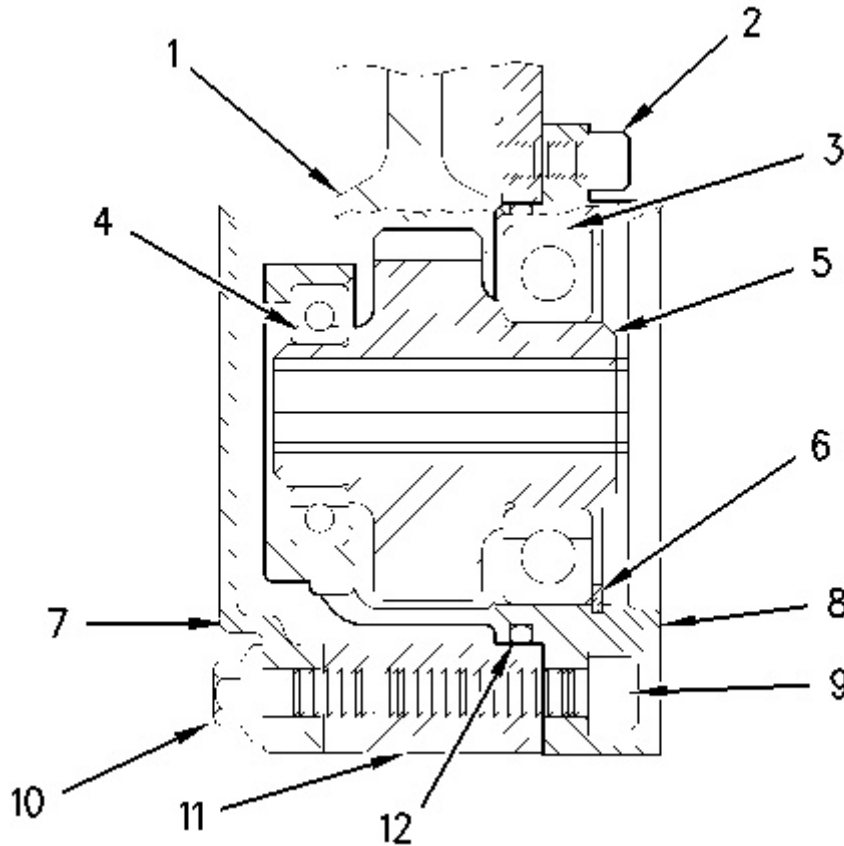
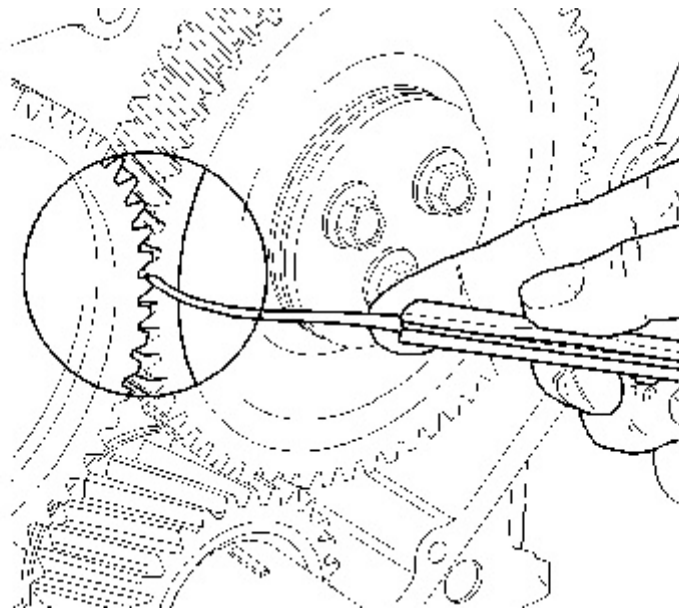


Illustration 2

g00948832

1. Inspect the condition of the teeth and the splines of the gear (5), the bearings (3 and 4), the circlip (6), and the groove for the circlip in the front housing (8) for wear and for damage. Replace any worn component or any damaged component.
2. Apply a small continuous bead of the Tooling (B) to the outer surface of the bearing (4). Support the front face of the housing (8). Position the bearing in the housing. Use a suitable adapter on the outer race of the bearing and press the bearing into the housing (8) until the bearing is against the front face of the recess. Remove any excess bearing mount compound.
3. Apply a small continuous bead of the Tooling (B) to the inner surface of the bearing (4). Support the bearing (4). Position the small hub of the gear (5) toward the bearing and press the gear (5) into the bearing until the shoulder of the gear is against the bearing. Remove any excess bearing mount compound.
4. Apply a small continuous bead of the Tooling (B) to the inner surface and the outer surface of the bearing (3). Support the bearing (4). Use a suitable adapter on the outer race of the bearing (3) and press the bearing into the housing and onto the shoulder of the gear. Remove any excess bearing mount compound.

5. Install the circlip (6) into the groove in the front housing (8). Install a new O-ring seal (12) on housing (8).
  6. Lubricate the O-ring seal with red rubber grease and install the housing in front housing (11). Install Allen head screws (2) and (9) to secure housing (8) in the front housing.
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Illustration 3  
Typical Example

g00946787

7. Check the backlash between the idler gear and gear (5). The backlash for the gears is 0.11 to 0.17 mm (0.004 to 0.007 inch).
  8. Install the front cover (7) on the front housing. Refer to this Disassembly and Assembly Manual, "Front Cover - Remove and Install".
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i02295089

# Crankcase Breather - Remove and Install

SMCS - 1317-010

## Removal Procedure

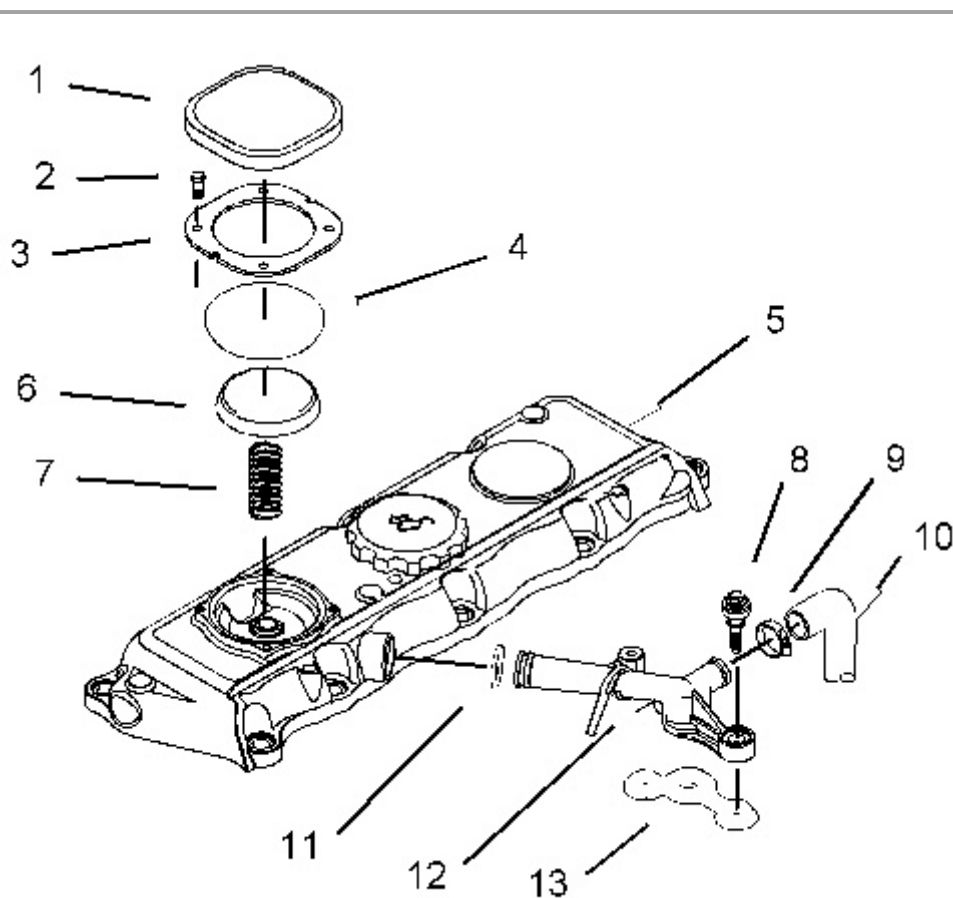


Illustration 1

g01149576

1. Loosen the clamp (9) and remove the hose (10) from the connector (12).
2. Remove the setscrews (8) and remove the connector (12) from the cylinder head. Remove the gasket (13). Remove the O-ring seal (11) from the connector. Discard the gasket (13) and the O-ring seal (11).
3. Remove the cover (1) from the valve mechanism cover (5).

## **WARNING**

**Personal injury can result from parts and/or covers under spring pressure.**

**Spring force will be released when covers are removed.**

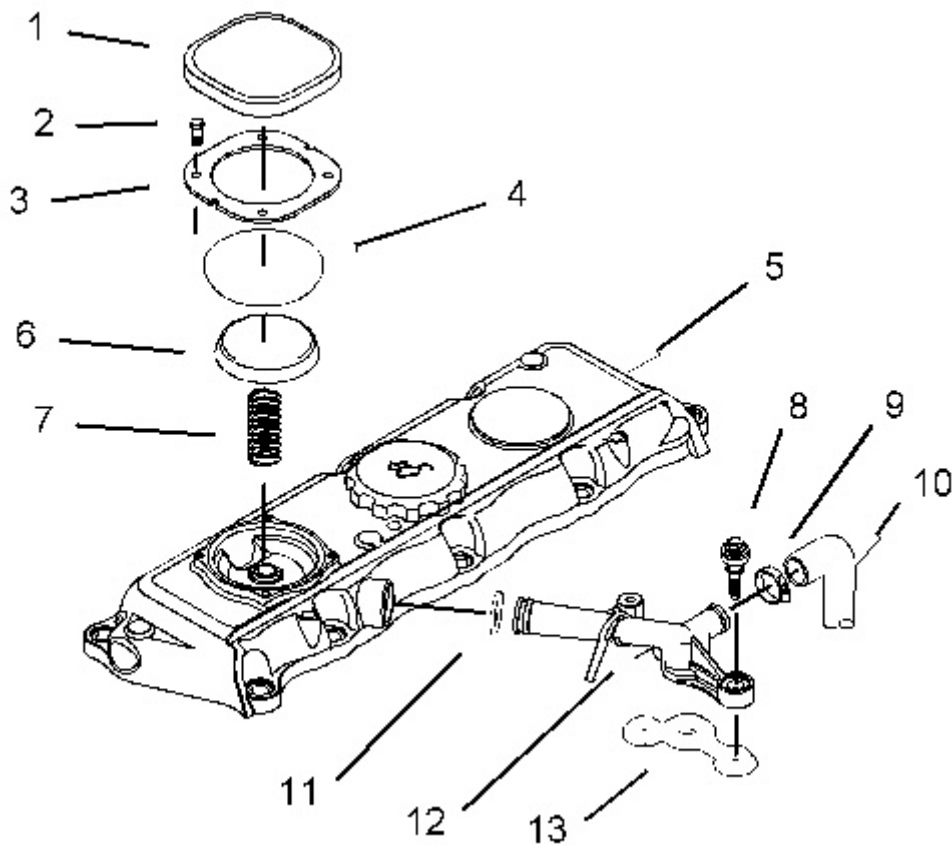
**Be prepared to hold spring loaded covers as the bolts are loosened.**

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4. Remove the screws (2). Remove the plate (3).
5. Remove the diaphragm (4) and the cap (6). Remove the spring (7).

## **Installation Procedure**

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**Improper assembly of parts that are spring loaded can cause bodily injury.**

**To prevent possible injury, follow the established assembly procedure and wear protective equipment.**

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1. Install the spring (7), the cap (6), and the diaphragm (4).
  2. Install the plate (3). Install the screws (2).
  3. Install the cover (1) on the valve mechanism cover.
  4. Install a new O-ring seal (11) on the connector (12). Install a new gasket (13) on the connector (12). Position the connector in the valve mechanism cover.
  5. Install the setscrews (8). Tighten the setscrews to a torque of 9 N·m (80 lb in).
  6. Install the hose (10) on the connector (12). Tighten the clamp (9) to a torque of 5 N·m (44 lb in).
-

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Date Updated -19/09/2018

i02295100

# **Valve Mechanism Cover - Remove and Install**

SMCS - 1107-010

## **Removal Procedure**

### **Start By:**

- a. Remove the heat shields, if equipped.
- b. Remove the cover for the fuel injection nozzles. Refer to this Disassembly and Assembly Manual, "Fuel Injection Nozzle Cover - Remove and Install".

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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.**

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Dispose of all fluids according to local regulations and mandates.

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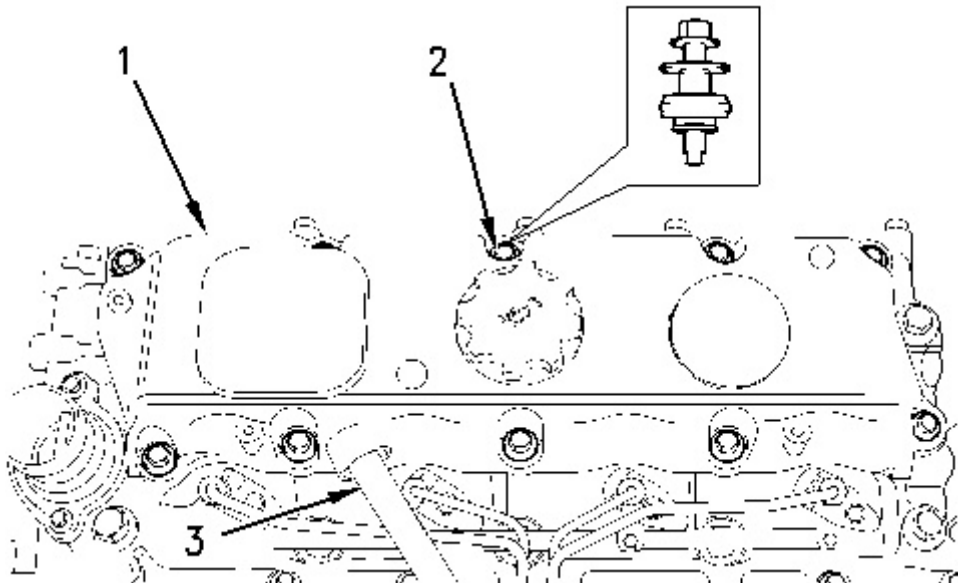


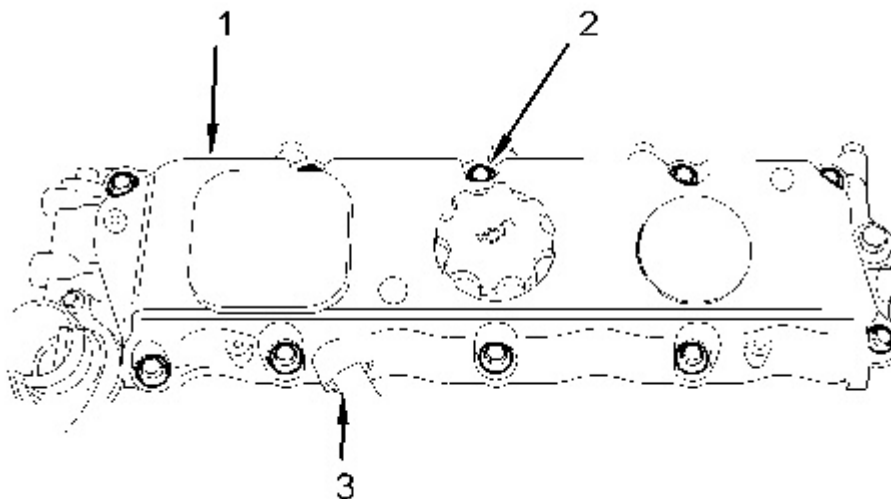
Illustration 1

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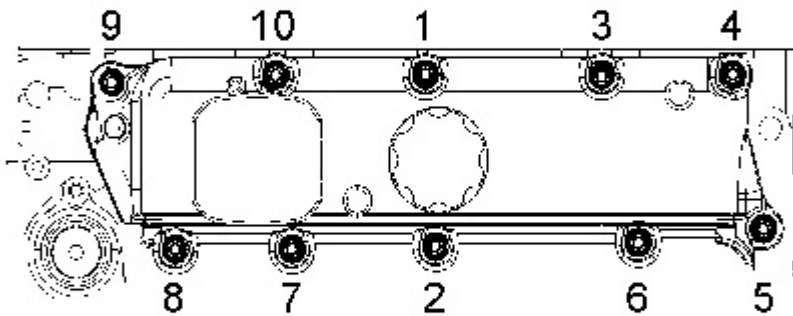
1. Remove the breather tube (3) from the valve mechanism cover (1). Refer to this Disassembly and Assembly Manual, "Crankcase Breather - Remove and Install".
2. Remove the fasteners (2). Remove valve mechanism cover (1). Remove the gasket from the cylinder head and discard the gasket.

## Installation Procedure

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1. Thoroughly clean the valve mechanism cover (1). Ensure that the groove for the gasket for the valve mechanism cover (1) is clean and dry. Ensure that the mating face on the cylinder head is clean and dry.
  2. If the valve mechanism cover (1) is equipped with an oil filler cap, check the condition of the O-ring for the oil filler cap. If necessary, replace the O-ring.
  3. Check the condition of the fasteners (2). Replace the fasteners (2), if necessary.
  4. Install the gasket and valve mechanism cover (1) on the cylinder head.
- 



5. Install the fasteners (2). Tighten the fasteners in the sequence that is shown in Illustration 3 to a torque of 9 N·m (80 lb in).
6. Connect breather tube (3) to the valve mechanism cover. Refer to this Disassembly and Assembly Manual, "Crankcase Breather - Remove and Install".

**End By:**

- a. Install the cover for the fuel injection nozzles. Refer to this Disassembly and Assembly Manual, "Fuel Injection Nozzle Cover - Remove and Install".

- b. If equipped, ensure that the heat shields are clean and free from dust, oil, and paint. Install the heat shields.
-

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i02296699

# Rocker Shaft and Pushrod - Remove

SMCS - 1102-011; 1208-011

## Removal Procedure

Table 1

| Required Tools |             |                  |     |
|----------------|-------------|------------------|-----|
| Tool           | Part Number | Part Description | Qty |
| A              | 6K-0806     | Cable Strap      | 3   |

### Start By:

- Remove the valve mechanism cover. Refer to Disassembly and Assembly, "Valve Mechanism Cover - Remove and Install".

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### NOTICE

**Keep all parts clean from contaminants.**

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

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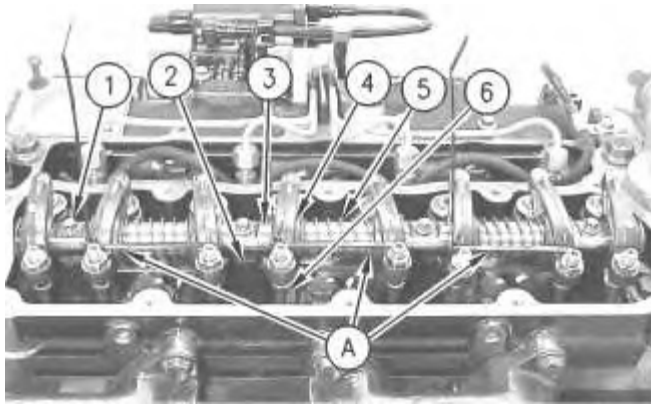


Illustration 1

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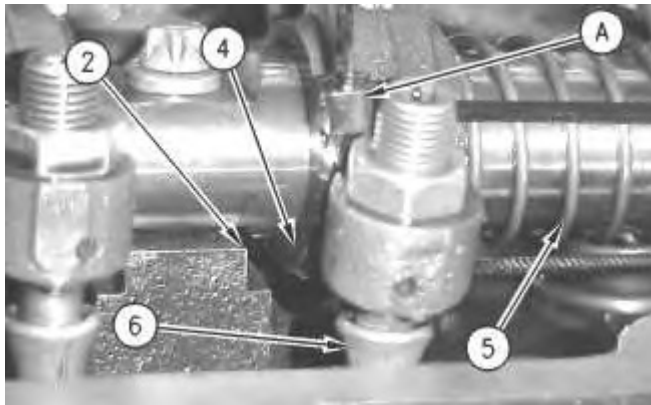


Illustration 2

g00960224

1. If the rocker shaft will not be disassembled, install the Tooling (A) around the rocker arms (4) in order to slightly compress the springs (5). The rocker arms must be held away from the machined faces of the cylinder head (2) during installation.
  2. Remove the Torx screws (1) from the rocker shaft (3).
  3. Remove the rocker shaft assembly from the cylinder head.
  4. Remove the pushrods (6) from the cylinder head. Place an identification mark on each of the pushrods for installation.
-

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i02298103

# Rocker Shaft - Disassemble

SMCS - 1102-015

## Disassembly Procedure

Table 1

| Required Tools |             |                       |     |
|----------------|-------------|-----------------------|-----|
| Tool           | Part Number | Part Description      | Qty |
| A              | 1P-1855     | Retaining Ring Pliers | 1   |

### Start By:

- Remove the rocker shaft assembly. Refer to Disassembly and Assembly, "Rocker Shaft and Pushrod - Remove".



**WARNING**

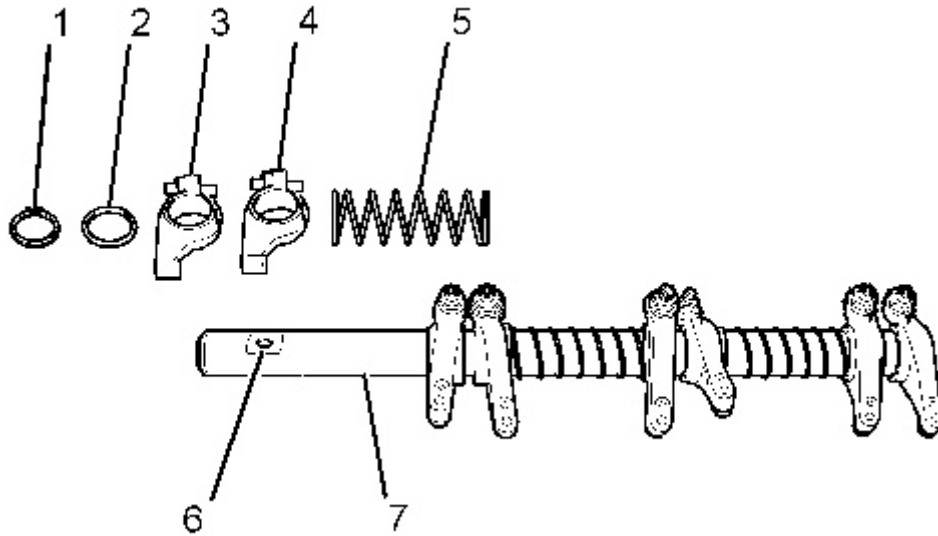
**Personal injury can result from being struck by parts propelled by a released spring force.**

**Make sure to wear all necessary protective equipment.**

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

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Illustration 1

g01150908

1. Remove the retaining ring (1) and remove the washer (2) from both ends of the rocker shaft assembly.  
**Note:** The rocker shaft (7) is not symmetrical as there is a machined flat (6) toward one end of the shaft.
  2. Place an identification mark on each of the components for installation. Ensure that you note the component's relationship to the machined flat (6).
  3. Remove the rocker arm assembly (3) for the inlet valve from the rocker shaft (7). Remove the rocker arm assembly (4) for the exhaust valve from the rocker shaft (7).
  4. Remove the spring (5) from the rocker shaft assembly.
  5. Repeat Step 3 and Step 4 in order to completely disassemble the rocker shaft assembly.
-

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i02298104

### Rocker Shaft - Assemble

SMCS - 1102-016

### Assembly Procedure

Table 1

| Required Tools |             |                       |     |
|----------------|-------------|-----------------------|-----|
| Tool           | Part Number | Part Description      | Qty |
| A              | 1P-1855     | Retaining Ring Pliers | 1   |

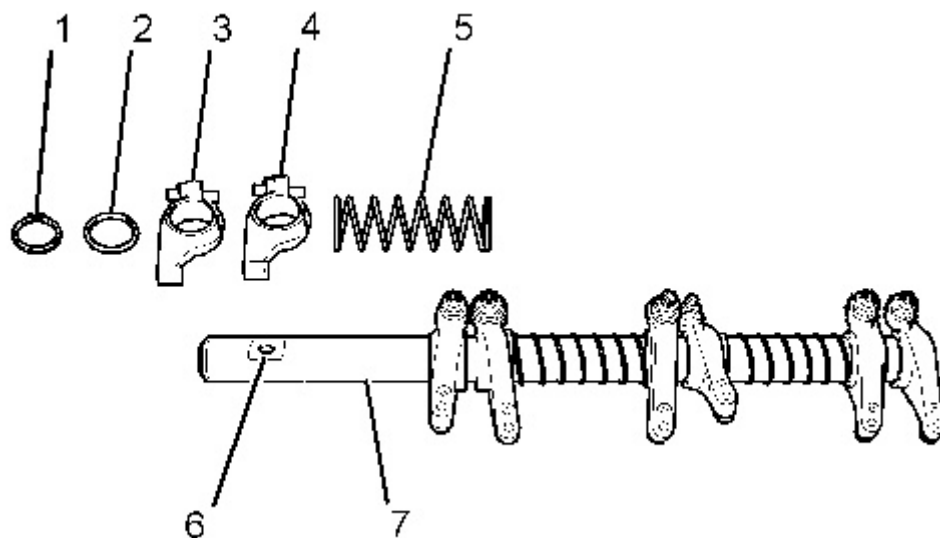


Illustration 1  
Typical example

g01150908



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