

Product: ENGINE - MACHINE  
Model: C3.4B ENGINE - MACHINE CJG  
Configuration: C3.4B Industrial Engine CJG00001-UP

## **Disassembly and Assembly**

### **C3.4B Industrial Engine**

**Media Number -UENR0621-05**

**Publication Date -01/08/2013**

**Date Updated -27/04/2018**

i05289217

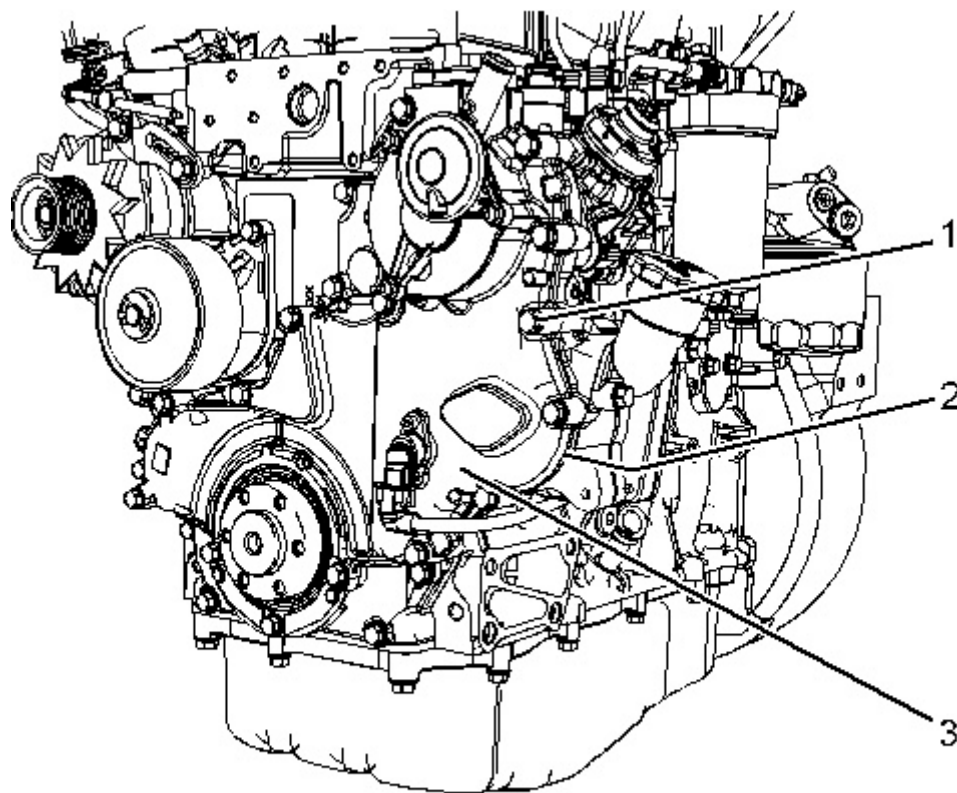
## **Front Cover - Remove and Install**

SMCS - 1166-010

### **Removal Procedure**

#### **Start By:**

- A. If the engine is equipped with a fan, remove the fan. Refer to Disassembly and Assembly, "Fan - Remove and Install" for the correct procedure.
  - B. Remove the crankcase breather. Refer to Disassembly and Assembly, "Crankcase Breather - Remove and Install" for the correct procedure.
  - C. Remove the camshaft position sensor. Refer to Disassembly and Assembly, "Camshaft Position Sensor - Remove and Install" for the correct procedure.
  - D. Remove the crankshaft pulley. Refer to Disassembly and Assembly, "Crankshaft Pulley - Remove and Install" for the correct procedure.
-



---

Illustration 1

g02727693

---

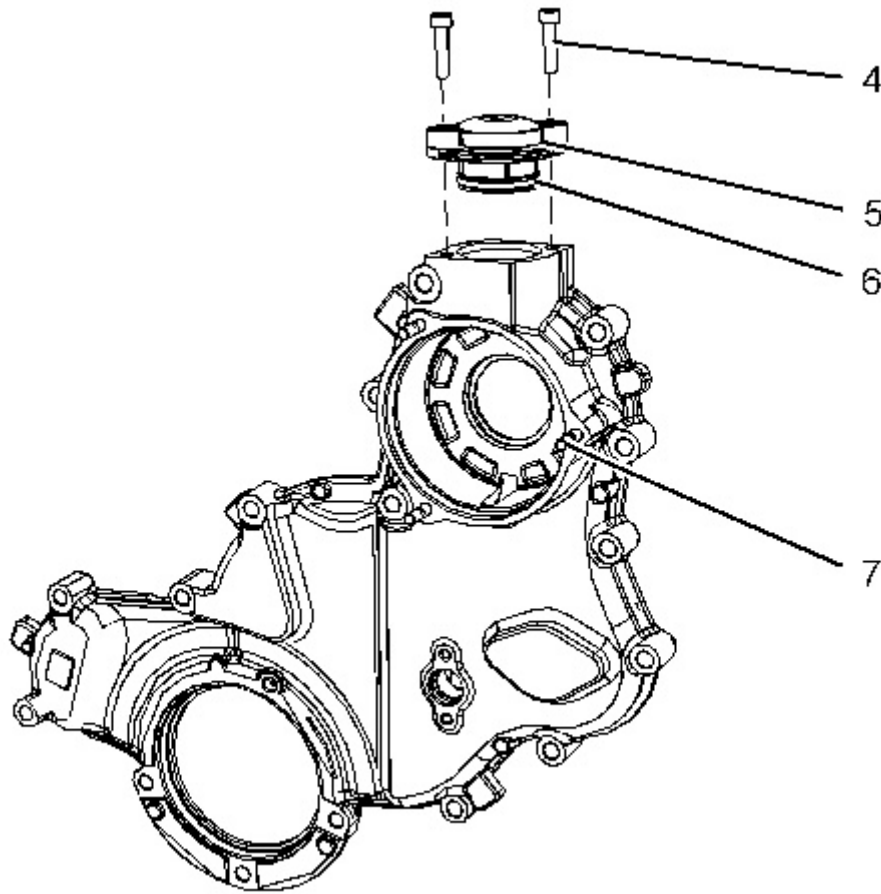


Illustration 2

g02727966

1. Remove bolts (1) from front cover (3) .

**Note:** Note the position of the different length bolts.

2. Remove front cover (3) from the front housing.

3. Remove gasket (2) (not shown).

4. Remove the crankshaft front seal using a suitable tool. Ensure that the front cover (3) is not damaged during the removal of the crankshaft front seal.

5. If necessary, follow Step 5.a through Step 5.c in order to remove crankcase pressure relief valve (5) from the front cover.

a. Remove bolts (4) from crankcase pressure relief valve (5) .

b. Remove crankcase pressure relief valve (5) from the front cover (3) .

c. Remove O-ring seal (6) from crankcase pressure relief valve (5) .

6. If necessary, remove studs (7) from front cover (3) .

## Installation Procedure

| Required Tools |             |   |     |
|----------------|-------------|---|-----|
| Tool           | Part Number | Part Description                                | Qty |
| A              | -           | Guide Stud<br>M8 by 70 mm                       | 2   |
| B              | 390-1125    | Front Cover Alignment Tool - Crankshaft         | 1   |
| C              | 390-1132    | Front Cover Alignment Tool - Crankcase Breather | 1   |

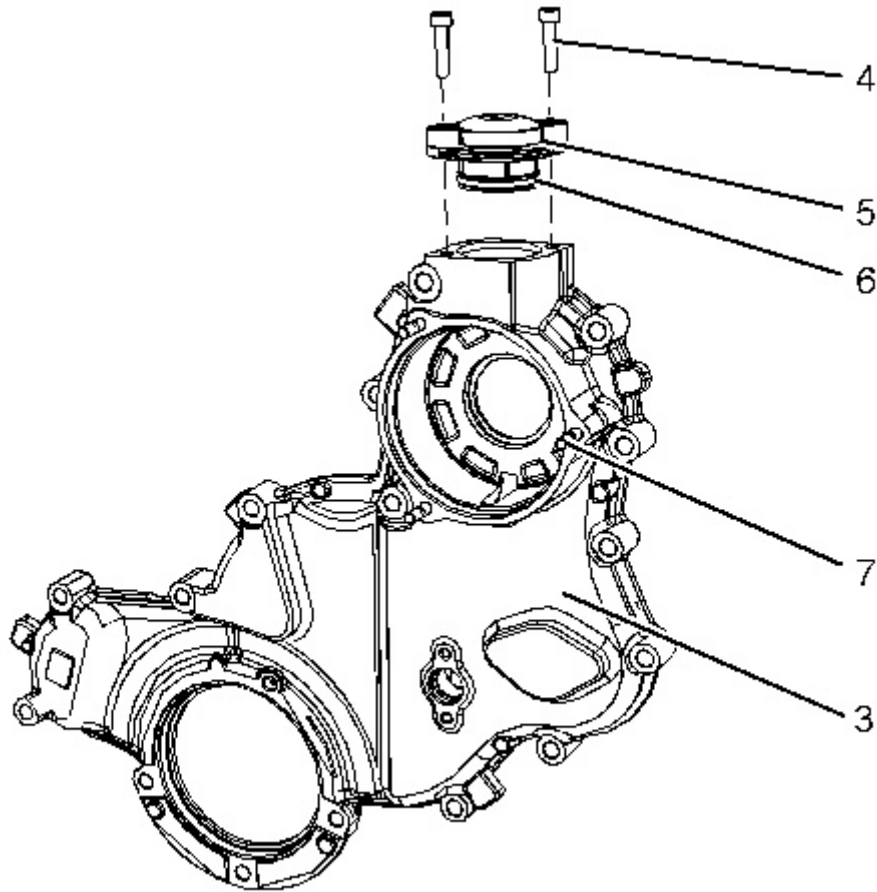
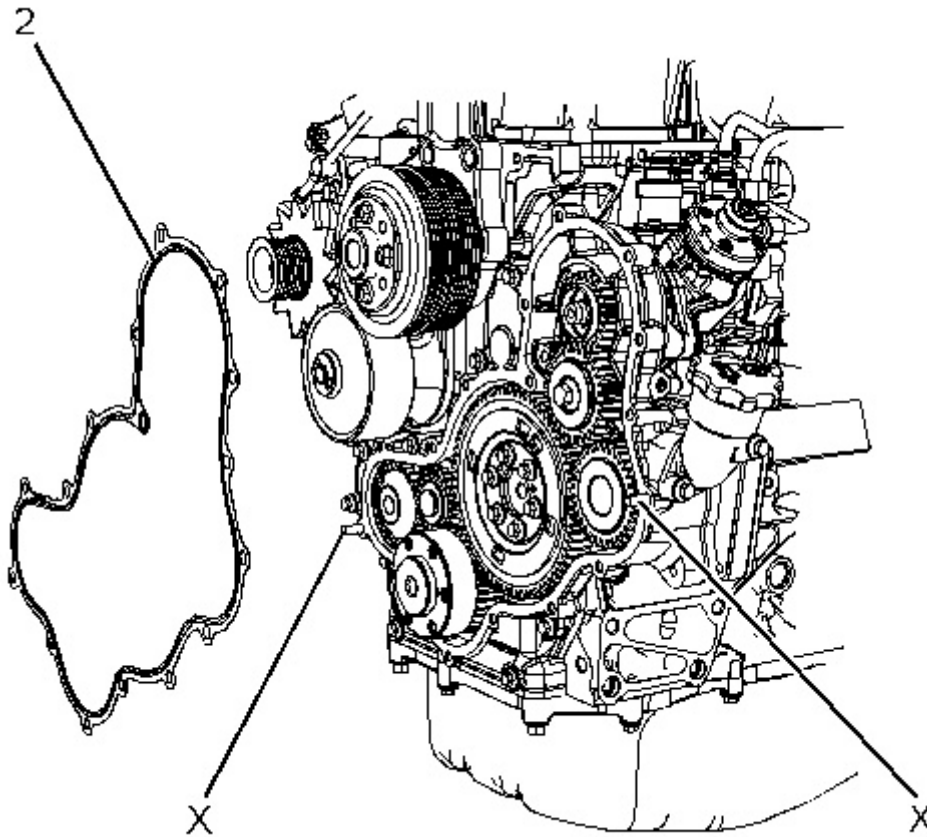


Illustration 3

g02931736

1. If necessary, follow Step 1.a through Step 1.c in order to install crankcase pressure relief valve (5) to the front cover.
  - a. Install O-ring seal (6) to crankcase pressure relief valve (5) .
  - b. Install crankcase pressure relief valve (5) to the front cover (3) .
  - c. Install bolts (4) to crankcase pressure relief valve (5) . Tighten the bolts to a torque of 10 N·m (89 lb in).
2. If necessary, install studs (7) to front cover (3) . Tighten the studs to a torque of 10 N·m (89 lb in)

3. Thoroughly clean the gasket surface of the front housing.
4. Ensure that all components are clean and free from wear and damage. If necessary, replace any components that are worn or damaged.

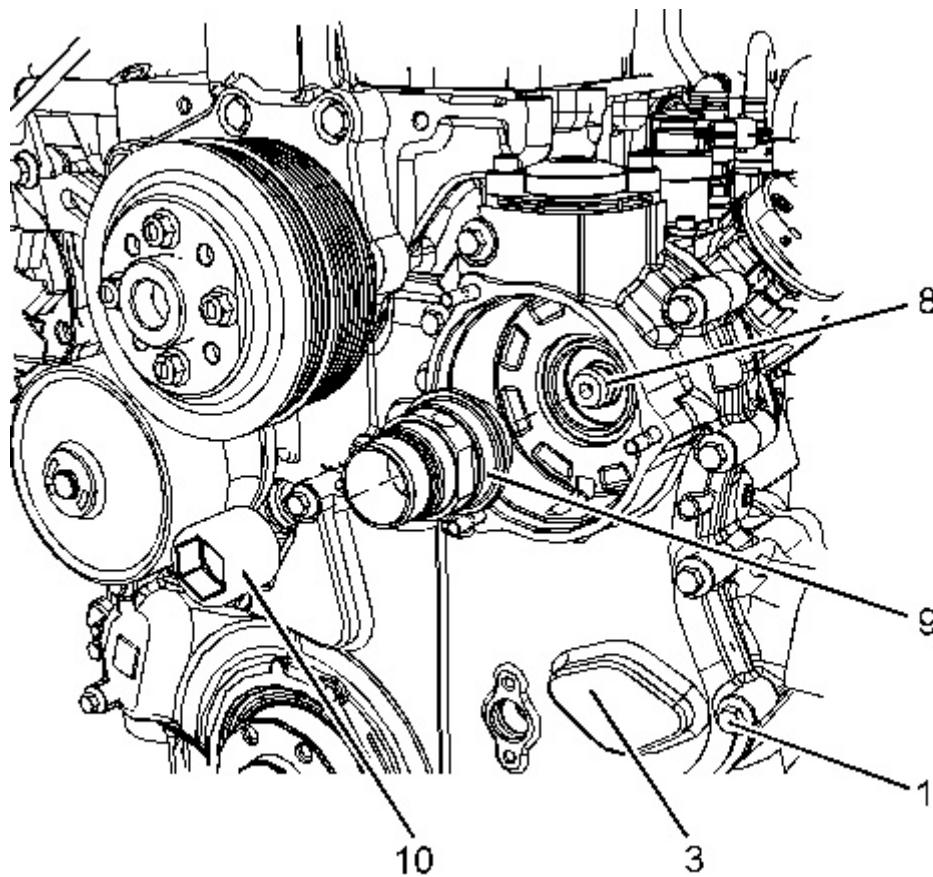


---

Illustration 4

g02931738

---



---

Illustration 5

g02932042

5. Install Tooling (A) into the holes in Positions (X) in the front housing.
  6. Position a new gasket (2) onto Tooling (A) .
  7. Position front cover (3) onto Tooling (A) .
  8. Install bolts (1) in the available locations finger tight.
  9. Remove Tooling (A) and install remaining bolts (1) .
  10. Install the breather drive (9) and install nut (10) to fuel injection pump shaft (8) .
  11. Use a suitable tool in order to prevent the engine from rotating. Tighten nut (10) to a torque of 80 N·m (59 lb ft).
  12. Install Tooling (B) into the aperture for the crankshaft front seal.
  13. Install Tooling (C) into the aperture for the crankcase breather.
-

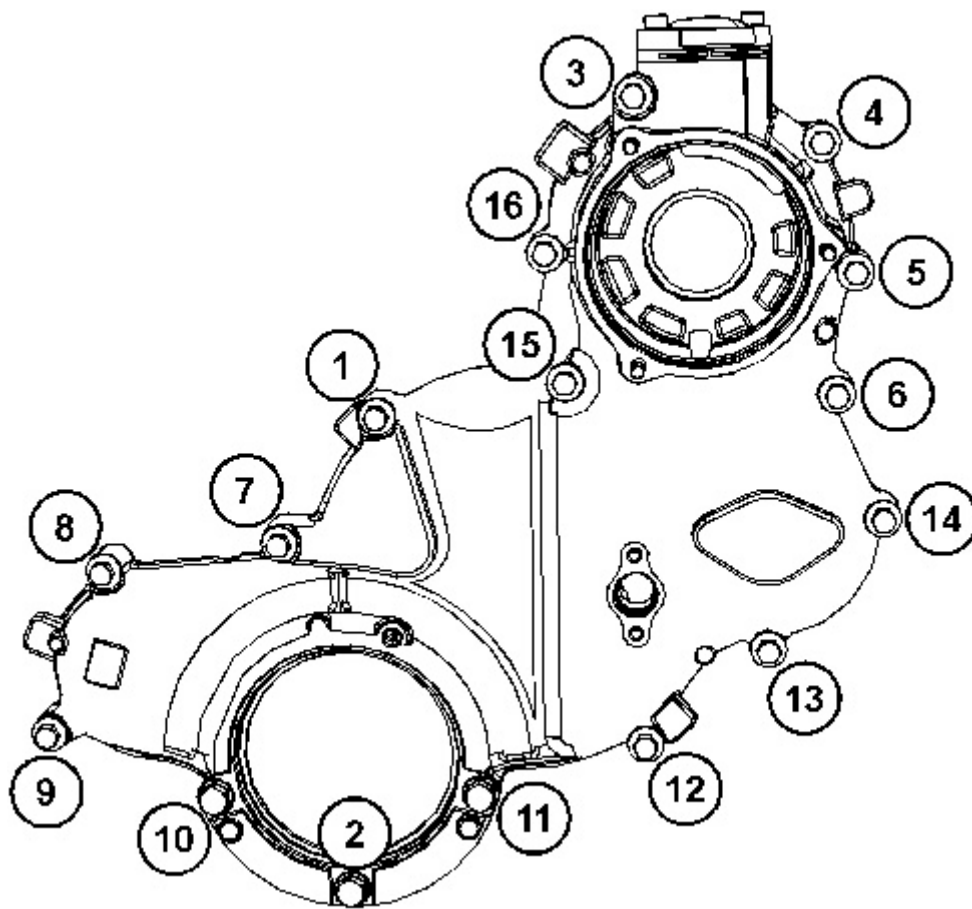


Illustration 6

g02727967

14. Tighten bolts (1) in the sequence that is shown in Illustration 6 in two stages.  
Tighten the bolts to an initial torque of 8 N·m (71 lb in).  
Tighten the nuts to a final torque of 25 N·m (221 lb in).
15. Remove Tooling (B) and remove Tooling (C) .
16. Install the crankshaft front seal to the front cover. Refer to Disassembly and Assembly, "Crankshaft Front Seal - Remove and Install" for the correct procedure.

**End By:**

- a. Install the crankcase breather. Refer to Disassembly and Assembly, "Crankcase Breather - Remove and Install" for the correct procedure.
- b. Install the crankshaft pulley. Refer to Disassembly and Assembly, "Crankshaft Pulley - Remove and Install" for the correct procedure.
- c. Install the camshaft position sensor. Refer to Disassembly and Assembly, "Camshaft Position Sensor - Remove and Install" for the correct procedure.
- d. If the engine was equipped with a fan, install the fan. Refer to Disassembly and Assembly, "Fan - Remove and Install" for the correct procedure.

Product: ENGINE - MACHINE  
Model: C3.4B ENGINE - MACHINE CJG  
Configuration: C3.4B Industrial Engine CJG00001-UP

## Disassembly and Assembly C3.4B Industrial Engine

Media Number -UENR0621-05

Publication Date -01/08/2013

Date Updated -27/04/2018

i05350941

## Idler Gear - Remove

SMCS - 1206-011

## Removal Procedure

Table 1

| Required Tools |             |                         |     |
|----------------|-------------|-------------------------|-----|
| Tool           | Part Number | Part Description        | Qty |
| A              | 390-1131    | Timing Pin (Crankshaft) | 1   |
| B              | 435-3146    | Timing Pin (Camshaft)   | 1   |

### Start By:

- Remove the front cover. Refer to Disassembly and Assembly, "Front Cover - Remove and Install" for the correct procedure.

**Note:** Care must be taken in order to ensure that the fuel injection pump timing is not lost during the removal of the idler gear.

---

### NOTICE

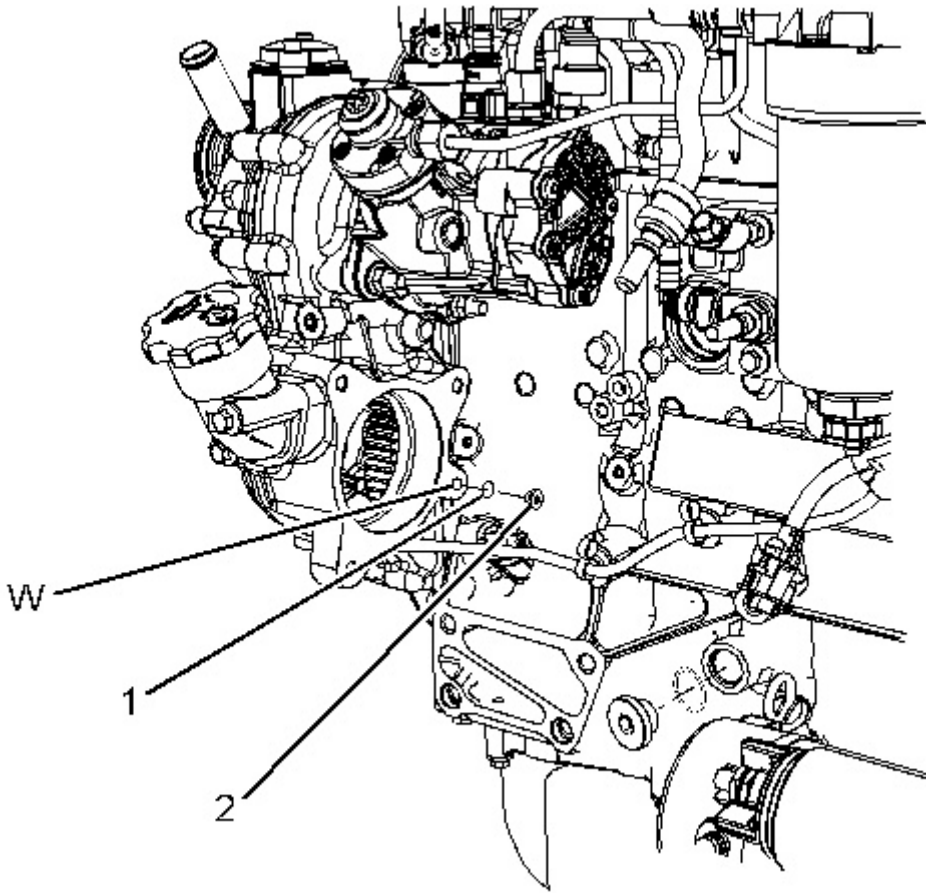
**Keep all parts clean from contaminants.**

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

---

---



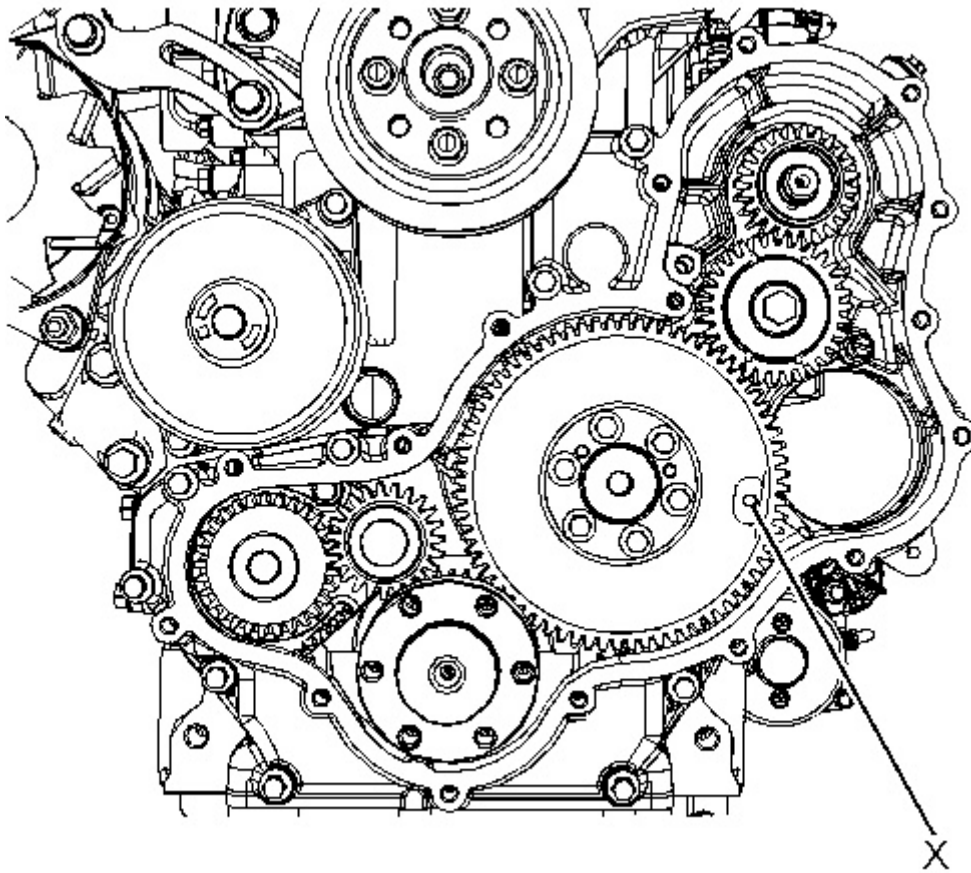


---

Illustration 1

g02937156

---



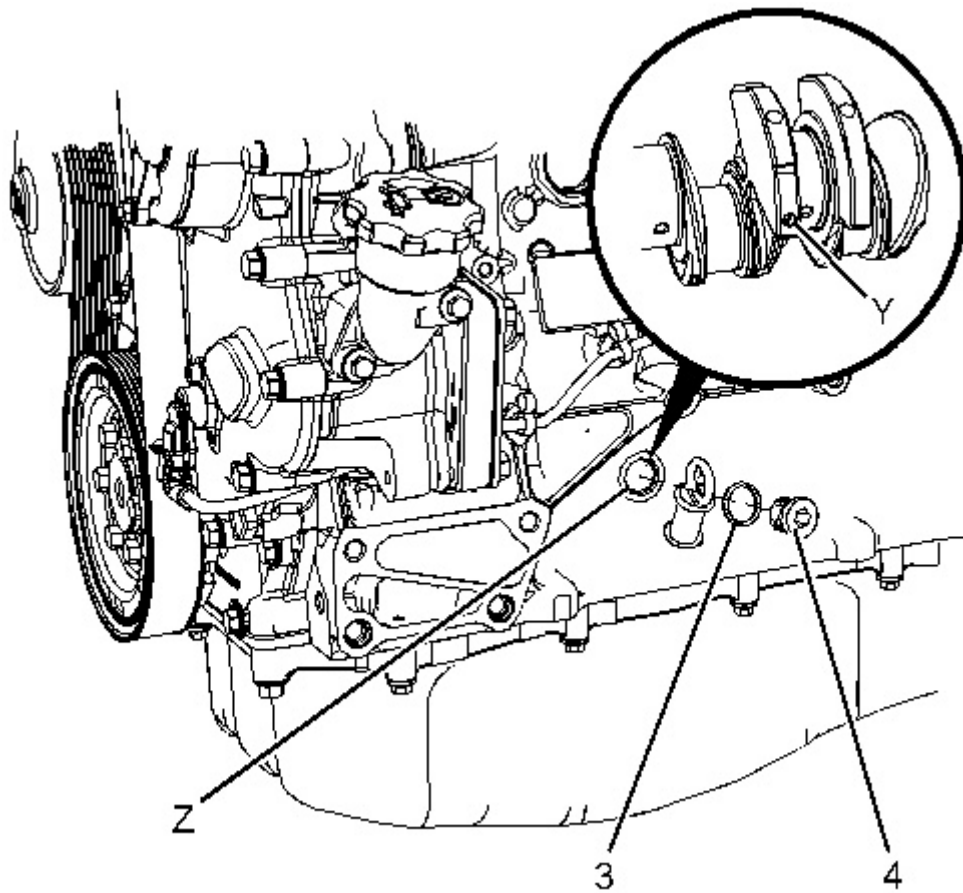
---

Illustration 2

g02937157

Camshaft timing ring removed for clarity.

1. Follow Step 1.a through Step 1.e in order to install the camshaft timing tool.
    - a. If equipped, remove the accessory drive. Refer to Disassembly and Assembly, "Accessory Drive - Remove and Install" for the correct procedure.
    - b. Remove plug (2) in Position (W) from the front housing.
    - c. Remove O-ring seal (1) from plug (2).
    - d. Rotate the engine until Hole (X) in the camshaft gear is aligned with Position (W) in the front housing.
    - e. Install Tooling (B) through Position (W) and into Hole (X) in the camshaft gear.
-



---

Illustration 3

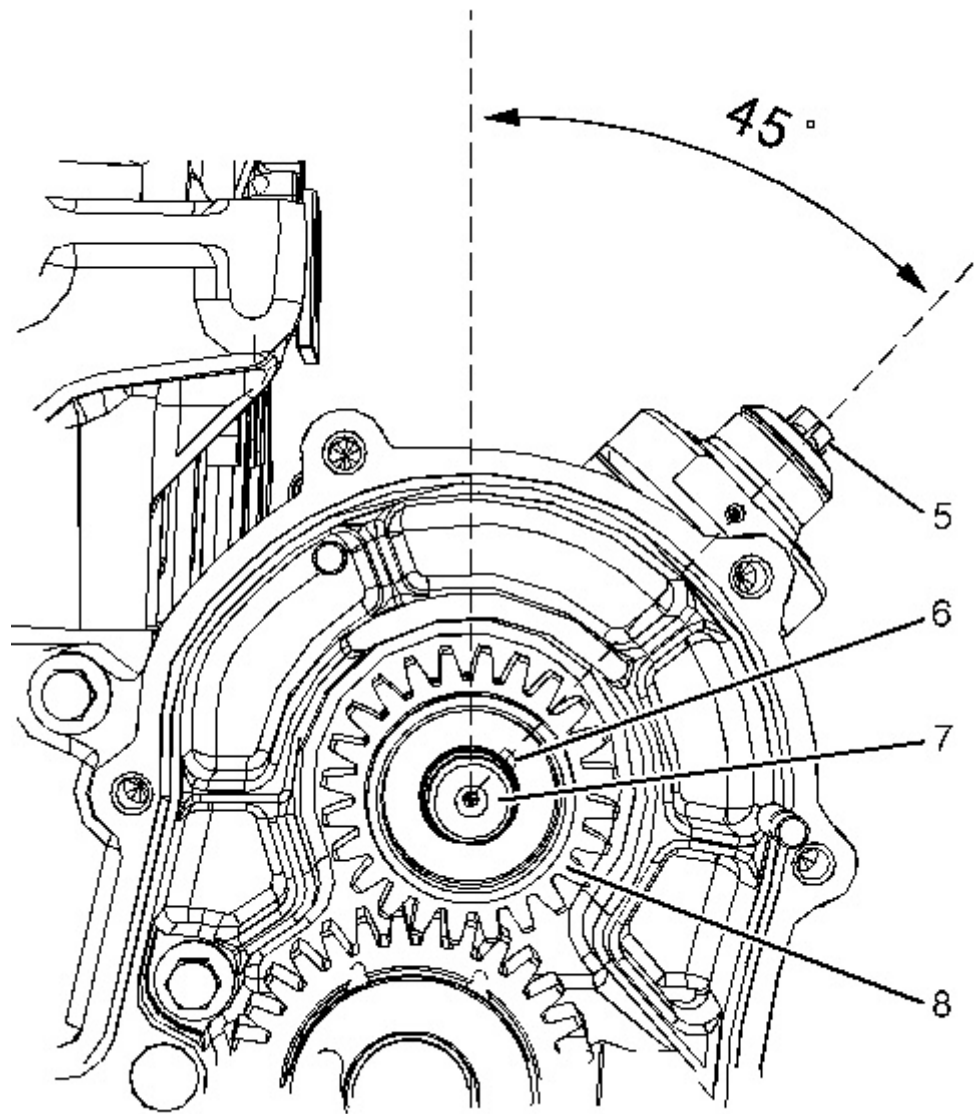
g02934298

2. Follow Step 2.a through Step 2.c in order to install the crankshaft positioning tool.
  - a. Remove plug (4) from Position (X) in the cylinder block.
  - b. Remove O-ring seal (3) from plug (4).
  - c. Install Tooling (A) into the cylinder block in Position (Z).

**Note:** Tooling (A) must be located in Hole (Y) in the crankshaft.

**Note:** Ensure that Tooling (A) is located in the correct drilling in the crankshaft as shown in Illustration 3.

---

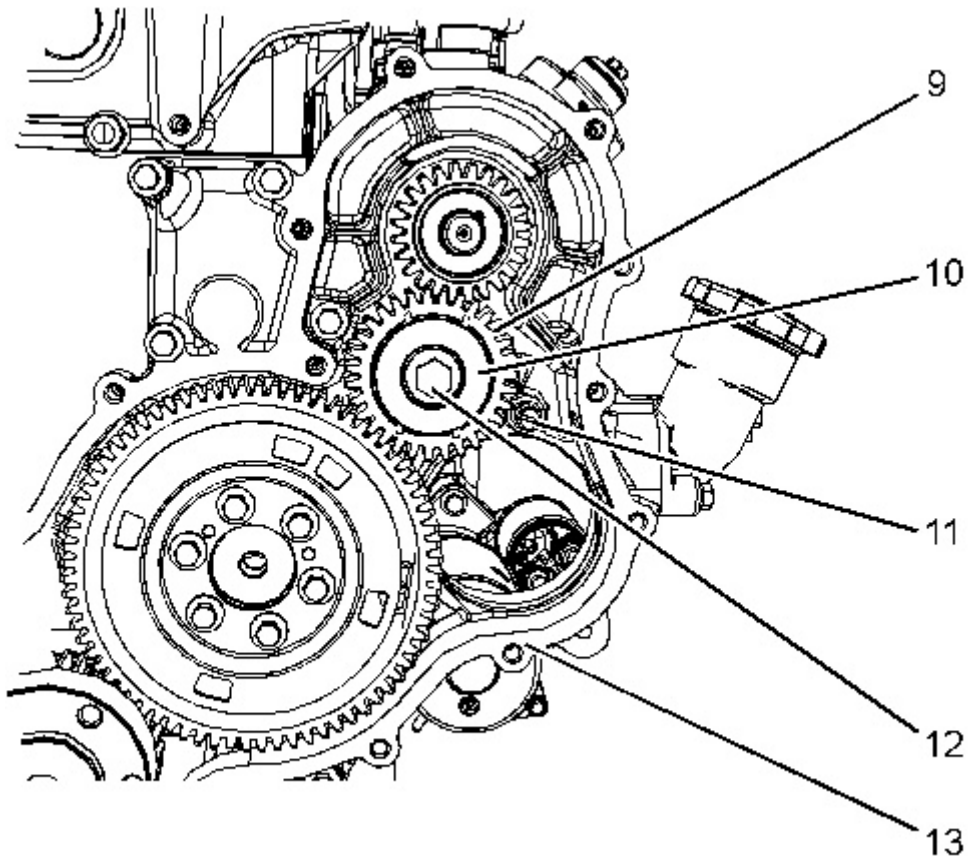


---

Illustration 4

g02937163

---



---

Illustration 5

g02939977

3. Before removing the idler gear ensure that alignment pin (6) on the fuel injection pump gear is 45 degrees from vertical and parallel to the center of Torx head plug (5), refer to Illustration 4.
  4. Make temporary identification marks on idler hub (10) for installation purposes.
  5. Remove bolt (12) from idler hub (10).
  6. Remove the idler hub (10) and gear (9) from front housing (13).
  7. Remove idler hub (10) from gear (9).
  8. If necessary, remove lubricating jet (11) from front housing (13).
-

Product: ENGINE - MACHINE  
Model: C3.4B ENGINE - MACHINE CJG  
Configuration: C3.4B Industrial Engine CJG00001-UP

## Disassembly and Assembly C3.4B Industrial Engine

Media Number -UENR0621-05

Publication Date -01/08/2013

Date Updated -27/04/2018

i05350944

## Idler Gear - Install

SMCS - 1206-012

## Installation Procedure

Table 1

| Required Tools |             |                         |     |
|----------------|-------------|-------------------------|-----|
| Tool           | Part Number | Part Description        | Qty |
| A              | 390-1131    | Timing Pin (Crankshaft) | 1   |
| B              | 435-3146    | Timing Pin (Camshaft)   | 1   |
| C              | -           | Loctite 242 Thread Lock | 1   |

---

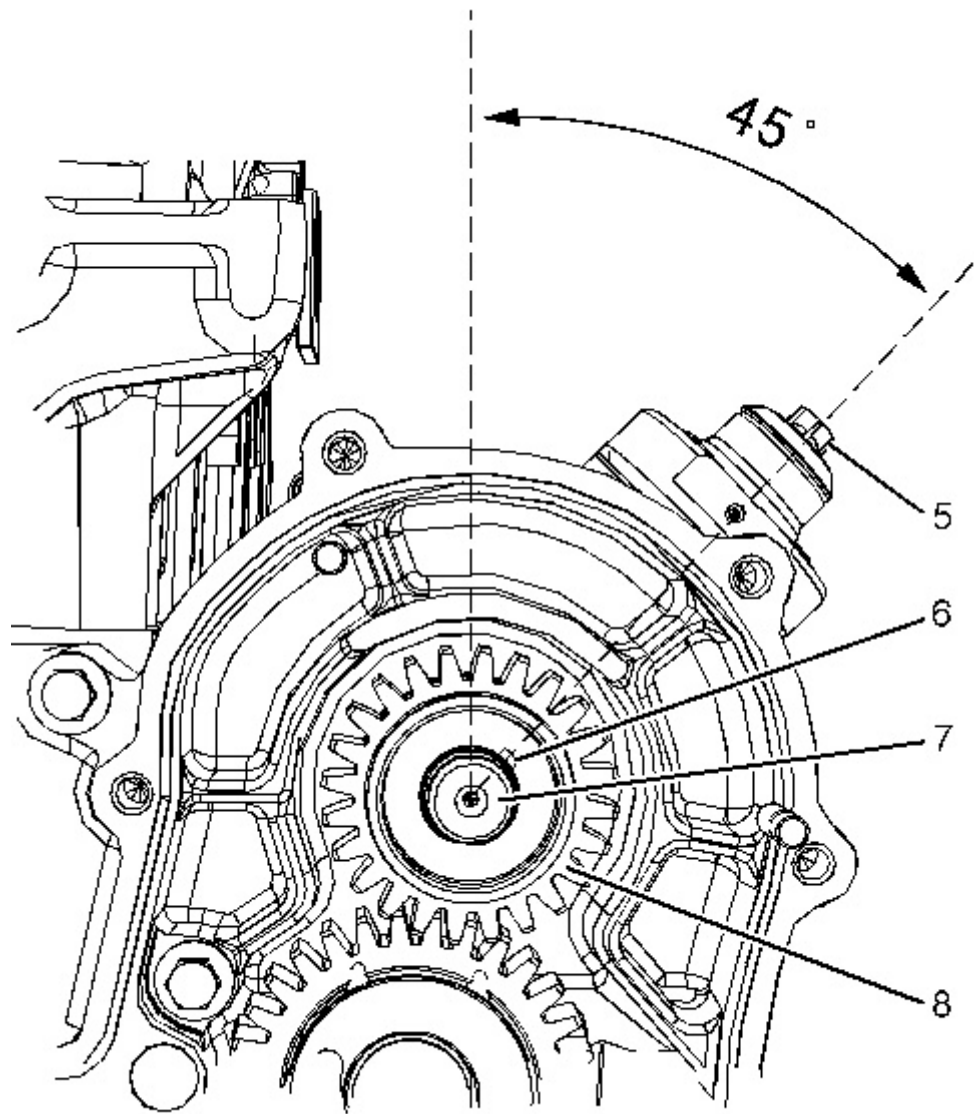
### NOTICE

**Keep all parts clean from contaminants.**

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

---

1. Ensure that all components are clean and free from wear or damage. If necessary, replace any components that are worn or damaged.
  2. If Tooling (A) and Tooling (B) are not installed, install Tooling (A) and install Tooling (B). Refer to Disassembly and Assembly, "Idler Gear - Remove" for the correct procedure.
-

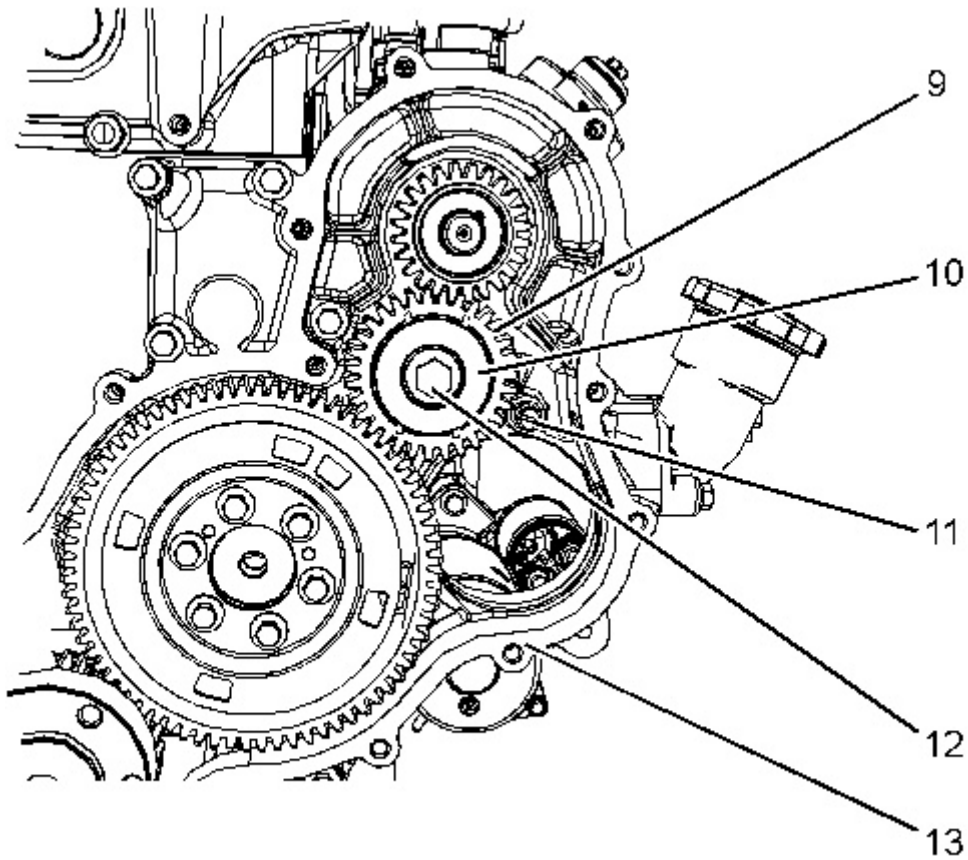


---

Illustration 1

g02937163

---



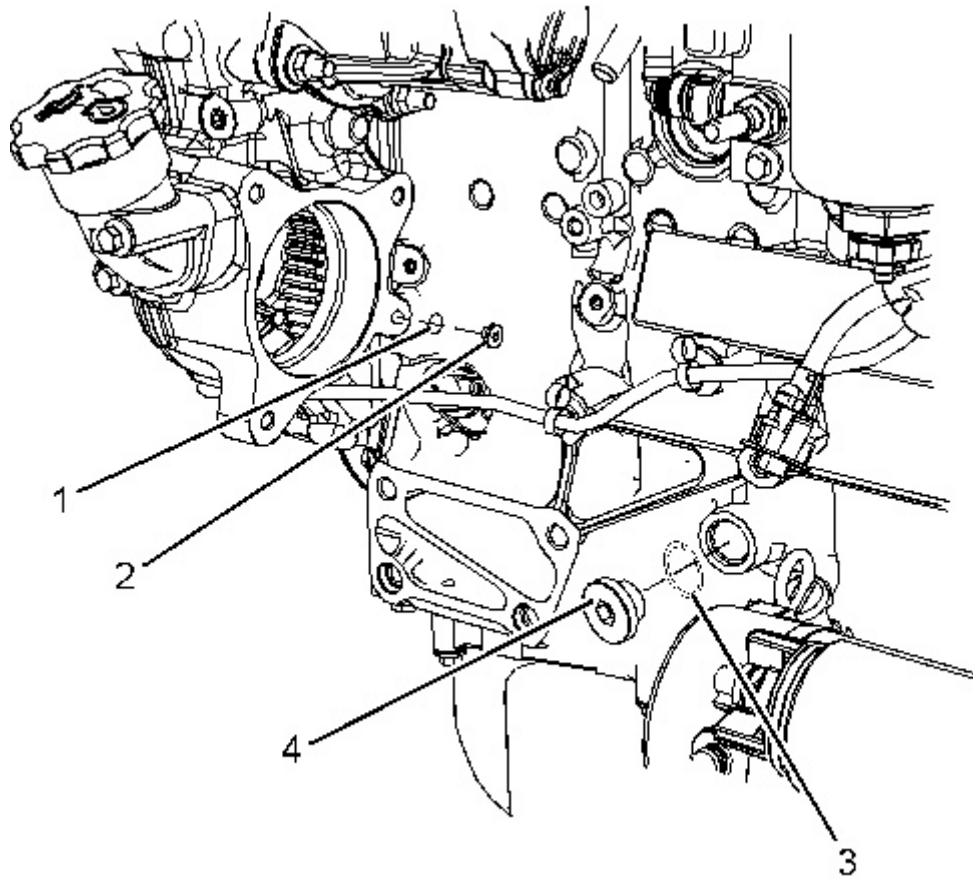
---

Illustration 2

g02939977

3. If necessary, Apply Tooling (C) to lubricating jet (11) and install the lubricating jet into front housing (13). Tighten the lubricating jet to a torque of 18 N·m (159 lb in).
  4. Ensure that locating pin (6) is 45 degrees from vertical and parallel to the center of Torx head plug (5), refer to Illustration 1.
  5. Position gear (9) into the front housing. Ensure that the teeth on all gears mesh correctly.
  6. Install idler hub (10) to gear (9). Ensure that the temporary marks are aligned and the idler hub (10) is correctly installed into the front housing.
  7. Install bolt (12) to idler hub (10). Tighten the bolt to a torque of 50 N·m (37 lb ft)
  8. Install the front cover. Refer to Disassembly and Assembly, "Front Cover - Remove and Install" for the correct procedure.
-





---

Illustration 3

g02937277

9. Remove Tooling (B) from the front housing.
  10. Install new O-ring seal (1) to plug (2).
  11. Install plug (2). Tighten the plug to a torque of 25 N·m (221 lb in).
  12. Remove Tooling (A) from the cylinder block.
  13. Install new O-ring seal (3) to plug (4).
  14. Install plug (4). Tighten the plug to a torque of 30 N·m (266 lb in).
  15. If equipped, install the accessory drive. Refer to Disassembly and Assembly, "Accessory Drive - Remove and Install" for the correct procedure.
-

Product: ENGINE - MACHINE  
Model: C3.4B ENGINE - MACHINE CJG  
Configuration: C3.4B Industrial Engine CJG00001-UP

## **Disassembly and Assembly C3.4B Industrial Engine**

Media Number -UENR0621-05

Publication Date -01/08/2013

Date Updated -27/04/2018

i04884964

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

SMCS - 1151-011

### **Removal Procedure**

#### **Start By:**

- a. Remove the engine oil pan . Refer to Disassembly and Assembly, "Engine Oil Pan - Remove and Install" for the correct procedure.
- b. Remove the camshaft gear. Refer to Disassembly and Assembly, "Camshaft Gear - Remove and Install" for the correct procedure.
- c. Remove the fuel injection pump. Refer to Disassembly and Assembly, "Fuel Injection Pump - Remove" for the correct procedure.

---

#### **NOTICE**

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shorten 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. If necessary, remove the fan drive. Refer to Disassembly and Assembly, "Fan Drive - Remove and Install" for the correct procedure.
- 

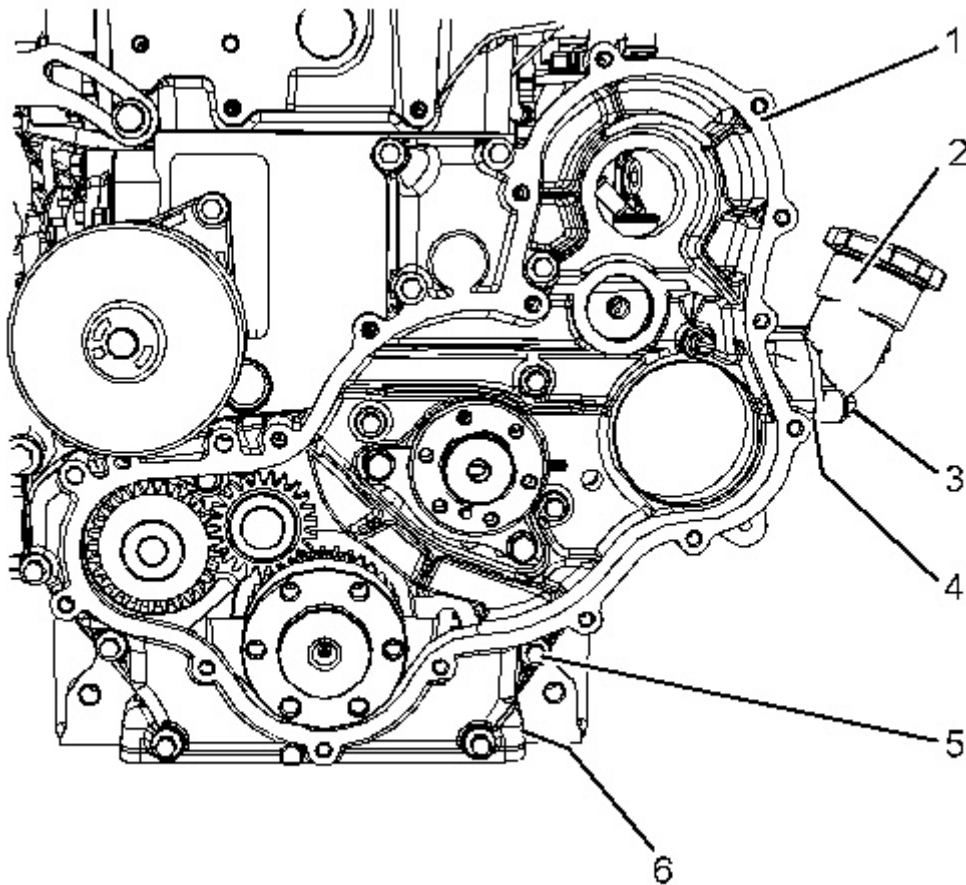


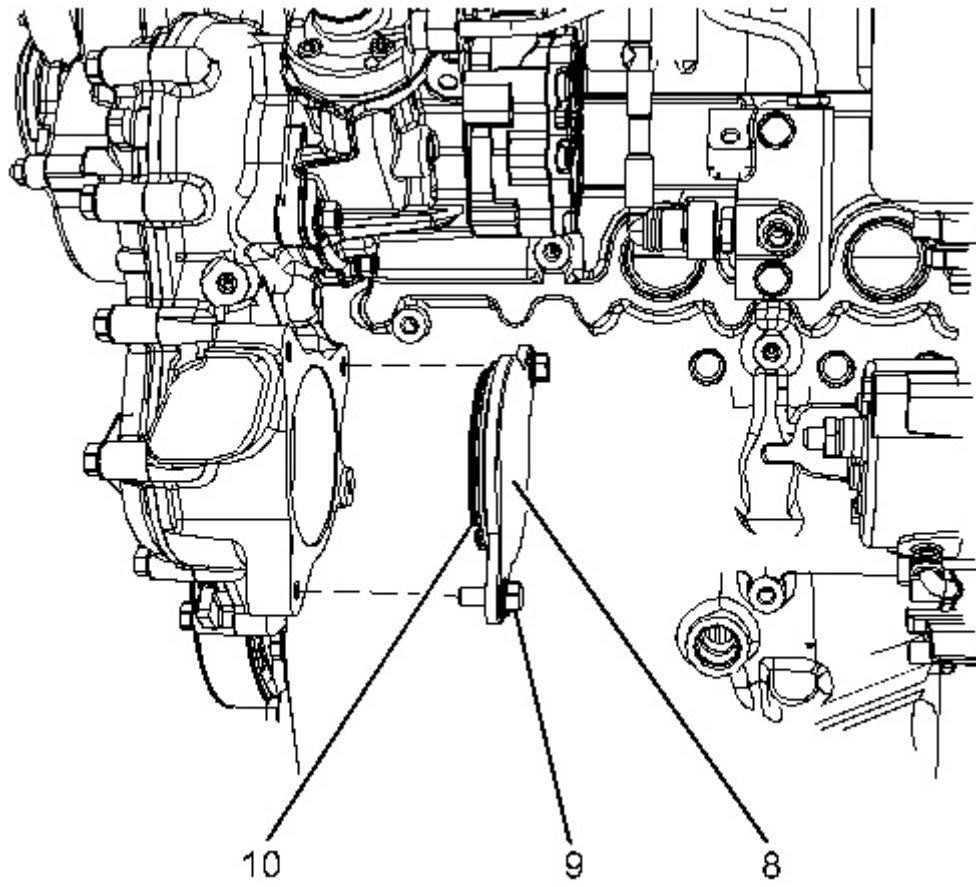
Illustration 1

g02729108

2. Remove bolts (5) from front housing (1).

**Note:** Note the positions of the different length bolts for installation purposes.

3. Remove front housing (1) from the cylinder block and dowels (6) (not shown).
  4. Dowels (6) (not shown) should only be removed if damaged.
  5. If necessary, follow Step 5.a through Step 5.c in order to remove engine oil filler (2).
    - a. Remove bolts (3) from engine oil filler (2).
    - b. Remove engine oil filler (2) from front housing (1).
    - c. Remove O-ring seal (4) (not shown).
-

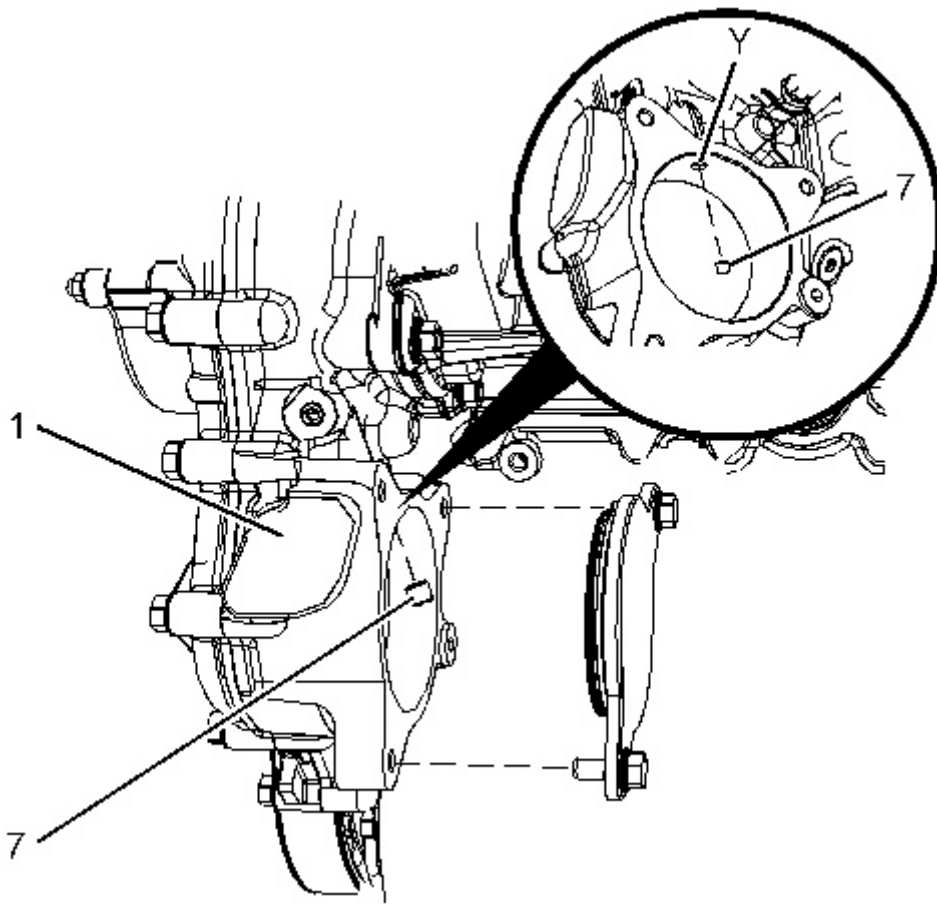


---

Illustration 2

g03025257

---



---

Illustration 3

g03025256

6. If necessary, follow Step 6.a through Step 6.c in order to remove cover plate (8) from the front housing.
    - a. Remove bolts (9) from cover plate (8).
    - b. Remove cover plate (8) from front housing (1).
    - c. Remove O-ring seal (10) from the cover plate.
  7. If necessary, remove plug (7) in Position (Y) from the front housing.
-

Product: ENGINE - MACHINE  
Model: C3.4B ENGINE - MACHINE CJG  
Configuration: C3.4B Industrial Engine CJG00001-UP

## Disassembly and Assembly C3.4B Industrial Engine

Media Number -UENR0621-05

Publication Date -01/08/2013

Date Updated -27/04/2018

i04884963

## Housing (Front) - Install

SMCS - 1151-012

## Installation Procedure

Table 1

| Required Tools |             |                                  |     |
|----------------|-------------|----------------------------------|-----|
| Tool           | Part Number | Part Description                 | Qty |
| A              | -           | Loctite 5970<br>Silicone Sealant | 1   |
| B              | -           | Guide Bolt<br>M8 x 1.25 by 35 mm | 2   |
| C              | -           | Loctite 506                      | 1   |
| D              | 1U-6396     | O-Ring Assembly Compound         | 1   |

---

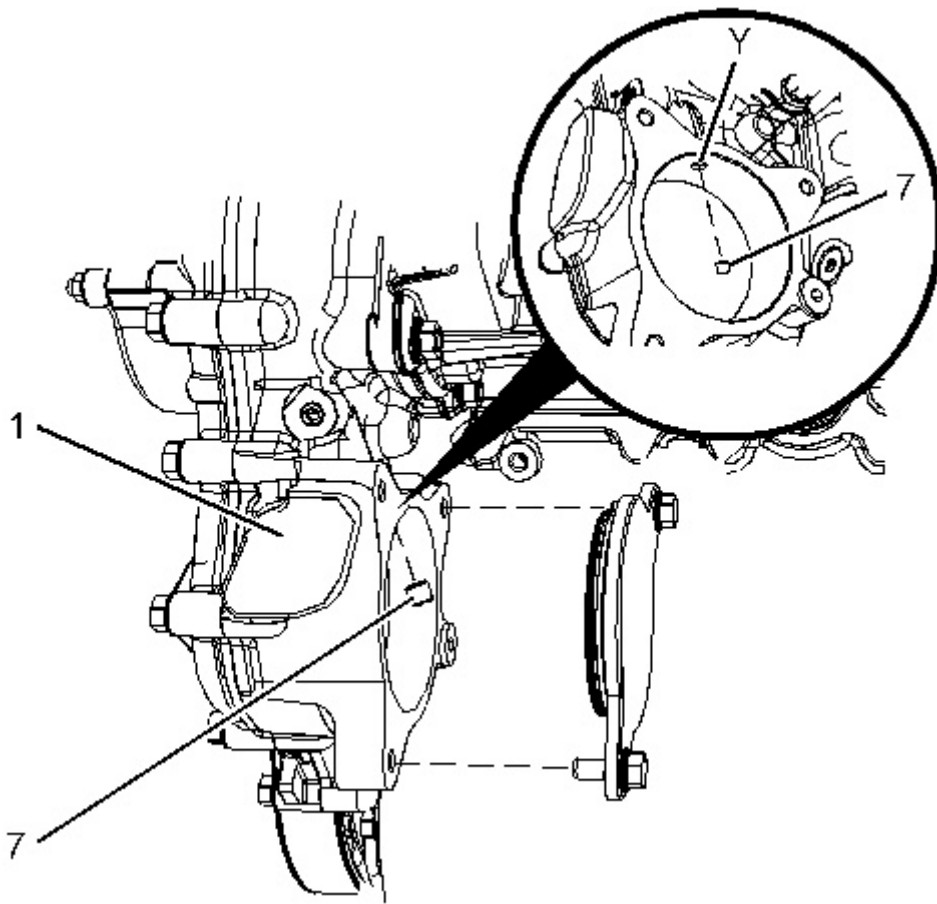
### NOTICE

**Keep all parts clean from contaminants.**

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

---

1. Ensure that all components are clean and free from wear and damage. If necessary, replace any components that are worn or damaged.
-

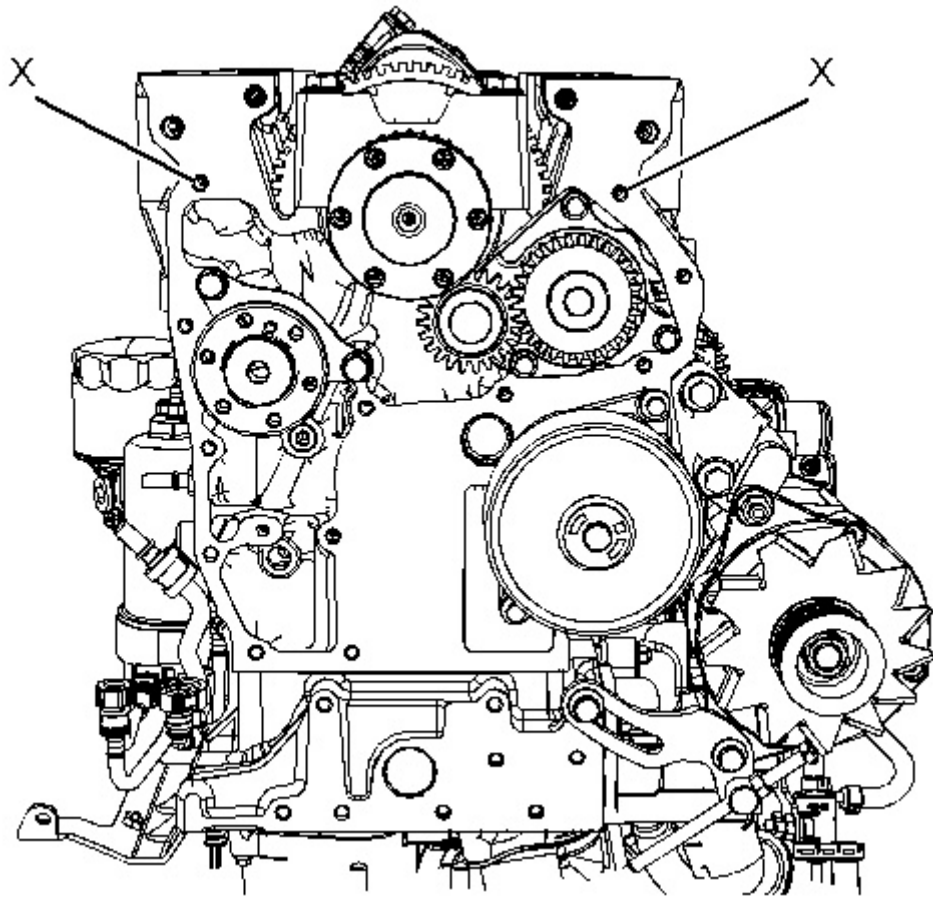


---

Illustration 1

g03022878

2. If a new front housing is being installed, it will be necessary to remove plug (7) in Position (Y) for engines that are equipped with any accessory drive in order to maintain the lubrication of the accessory drive.
  3. If the accessory drive was removed but will not be installed, the oil gallery in Position (Y) must be plugged. Follow Step 3.a through Step 3.c in order to maintain engine oil circulation.
    - a. Apply Tooling (C) to plug (7).
    - b. Install plug (7) into front housing (1).
    - c. Tighten plug (7) to a torque of 15 N·m (133 lb in).
-



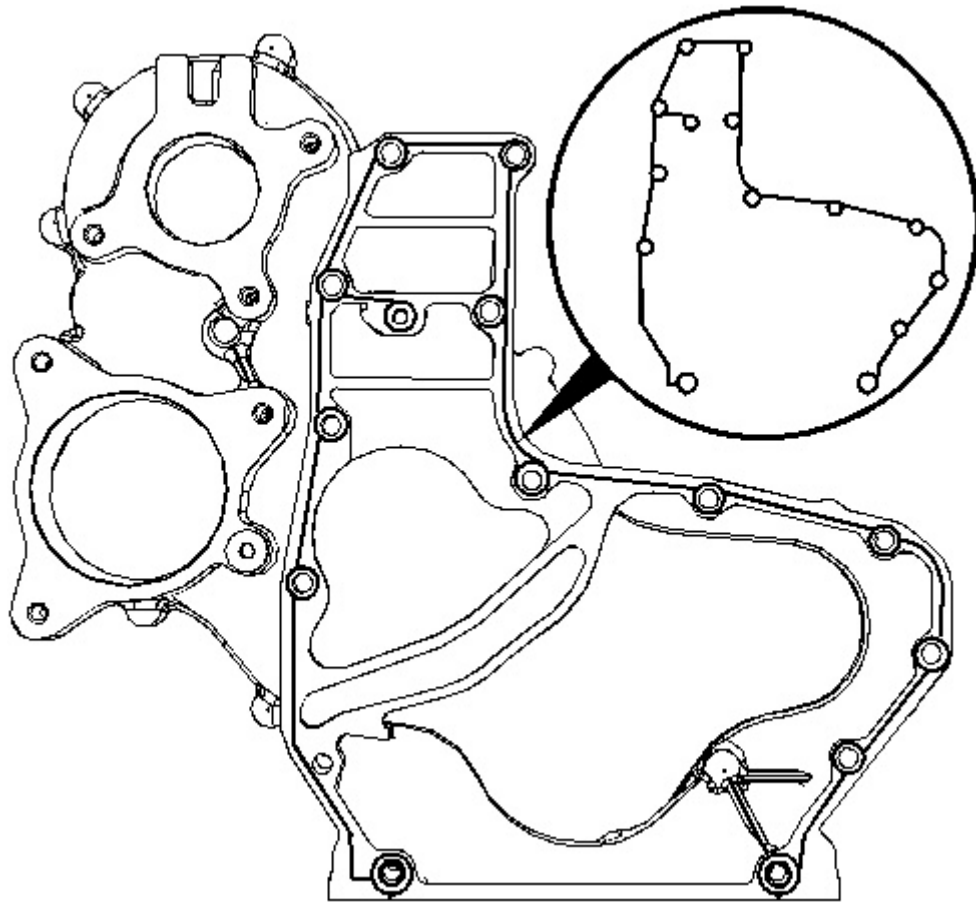
---

Illustration 2

g02951196

---





---

Illustration 3  
Front housing sealant path.

---

g02729111

Thank you so much for reading.  
Please click the “Buy Now!”  
button below to download the  
complete manual.



After you pay.

You can download the most  
perfect and complete manual in  
the world immediately.

Our support email:

[ebooklibonline@outlook.com](mailto:ebooklibonline@outlook.com)