#### **Disassembly and Assembly**

C2.6 and C3.3B Engines for Caterpillar Built Machines

Media Number -UENR0137-11 Publication Date -01/08/2015

Date Updated -12/07/2018

i05242520

# **Engine Oil Pump - Remove and Install**

SMCS - 1304-010

### **Removal Procedure**

#### **Start By:**

a. Remove the front housing.

**Note:** Refer to Specification UENR0995 "Engine Design" for non-specified engine Torque Values.

#### 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.



g02788686

1. Remove screws (2) and cover (1).



Illustration 2

g02788689

2. Remove inner rotor (4) from outer rotor (3).

# **Installation Procedure**

Table 1						
Required Tools						
Tool	Part Number	Part Description	Qty			
A	129-1967	White Grease	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.



Illustration 3

g02788689

- 2. Position outer rotor (3) into the pump body. Check the clearance between outer rotor (3) and the pump body.
- 3. Install inner rotor (4) into outer rotor (3). Check the clearance between the lobes of outer rotor (3) and inner rotor (4).



Illustration 4

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- 4. Position a strip of Plastigage onto the outer rotor face with Tooling (A). Position cover (1) and install screws (2) and torque. Remove cover (1) and check clearance between the rotor and cover (1).
- 5. Position cover (1) and install screws (2). Tighten screws (2) to a torque of 8 to 9 N ⋅ m (70 to 83 lb in).

### End By:

a. Install the front housing.

#### **Disassembly and Assembly**

C2.6 and C3.3B Engines for Caterpillar Built Machines Media Number -UENR0137-11

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i05242522

# Water Pump - Remove and Install

SMCS - 1361-011; 1361-012

# **Removal Procedure**

#### **Start By:**

a. Remove the v-belts.

Note: Refer to Specification UENR0995 "Engine Design" for non-specified engine Torque Values.

1. Refer to Operation and Maintenance Manual, "Coolant - Change" for the proper draining and filling procedures.



Illustration 1

g02794283

2. Remove bolts (2) and remove pulley (1).



g02794286

- 3. Remove bolts (4).
- 4. Remove water pump (3) and discard the gasket. Install a new gasket upon installation.

# **Installation Procedure**

1. Install water pump (3) in the reverse order of removal.

#### **Disassembly and Assembly**

C2.6 and C3.3B Engines for Caterpillar Built Machines

Media Number -UENR0137-11 Publication Date -01/08/2015

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i05242525

### Water Temperature Regulator - Remove and Install - C3.3B

- SMCS 1355-010
- S/N A9W1-UP
- S/N A9Z1-UP
- S/N AJ71-UP
- S/N CE21-UP
- S/N DML1-UP
- S/N EML1-UP
- S/N F8C1-UP
- S/N FMR1-UP
- S/N FTK1-UP
- S/N GBJ1-UP
- S/N GTK1-UP
- S/N HAM1-UP
- S/N HEL1-UP
- S/N HMR1-UP
- S/N JBE1-UP
- S/N JRD1-UP

S/N - JRF1-UP

S/N - JRS1-UP

S/N - JSL1-UP

S/N - JSN1-UP

S/N - KTS1-UP

S/N - L661-UP

**S/N -** L771-UP

S/N - L881-UP

S/N - LST1-UP

S/N - MLT1-UP

- S/N MPW1-UP
- S/N NTL1-UP
- S/N PPT1-UP
- S/N RCX1-UP
- S/N SEN1-UP
- S/N STK1-UP
- S/N TAZ1-UP

S/N - TLK1-UP

S/N - WCT1-UP

# **Removal Procedure**

**Note:** Refer to Specification UENR0995 "Engine Design" for non-specified engine Torque Values.

#### 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. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change" for the correct draining procedure.

Note: Coolant only needs drained to below the water temperature regulator.



Illustration 1

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- 2. Disconnect hose assembly (1).
- 3. Remove bolts (2) from the water temperature regulator housing . Remove water temperature regulator elbow (3).



Illustration 2

g02794381



g02794385

4. Remove gasket (5) and remove water temperature regulator (4) from the water temperature regulator housing.

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

# **Installation Procedure**

- 1. Install water temperature regulator (4) in the reverse order of removal.
  - a. Check the water temperature regulator for correct operation. Refer to System Operation, Testing and Adjusting, "Water Temperature Regulator - Test" for the correct procedure to test the water temperature regulator. If any components of the water temperature regulator housing are worn or damaged, the complete assembly must be replaced.

#### **Disassembly and Assembly**

C2.6 and C3.3B Engines for Caterpillar Built Machines

Media Number -UENR0137-11 P

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i05242530

# Flywheel - Remove and Install - C3.3B

- SMCS 1156-010
- S/N A9W1-UP
- S/N A9Z1-UP
- S/N AJ71-UP
- **S/N CE21-UP**
- S/N DML1-UP
- S/N EML1-UP
- S/N F8C1-UP
- S/N FMR1-UP
- S/N FTK1-UP
- S/N GBJ1-UP
- S/N GTK1-UP
- S/N HAM1-UP
- S/N HEL1-UP
- S/N HMR1-UP
- S/N JBE1-UP
- S/N JRD1-UP

S/N - JRF1-UP

S/N - JRS1-UP

S/N - JSL1-UP

S/N - JSN1-UP

S/N - KTS1-UP

**S/N -** L661-UP

**S/N -** L771-UP

S/N - L881-UP

S/N - LST1-UP

S/N - MLT1-UP

- S/N MPW1-UP
- S/N NTL1-UP
- S/N PPT1-UP
- S/N RCX1-UP
- S/N SEN1-UP
- S/N STK1-UP
- S/N TAZ1-UP

S/N - TLK1-UP

S/N - WCT1-UP

# **Removal Procedure**

Table 1

Required Tools					
Tool	Part Number	Part Description	Qty		
A	-	Guide Stud M12 - 1.25 - by 100 mm	2		
В	138-7573	Link Bracket	1		

**Note:** Refer to Specification UENR0995 "Engine Design" for non-specified engine Torque Values.

### NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



Illustration 1

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1. Remove two bolts (2) from flywheel (1).



Illustration 2

g02798921

- 2. Install Tooling (A) into the crankshaft.
- 3. Install Tooling (B) and a suitable lifting device on flywheel (1). The weight of flywheel (1) is approximately 30 kg (66 lb).
- 4. Remove remaining bolts (2).
- 5. Remove flywheel (1) from the cylinder block.



g02798923

- 6. Inspect flywheel (1) and the ring gear (3) for wear and damage. Replace any worn components or damaged components.
- 7. If necessary, remove the flywheel ring gear (3), follow Step 7.a through Step 7.b.
  - a. Place the flywheel assembly on a suitable support.
  - b. Use a hammer and a punch in order to remove ring gear (3) from flywheel (1). If necessary, a torch may be needed to heat ring gear (3).

Note: Identify the orientation of the teeth on the flywheel ring gear (3).

# **Installation Procedure**

Table 2							
Required Tools							
Tool	Part Number	Part Description	Qty				
A	-	Guide Stud M12 - 1.25 by 100 mm	2				
В	138-7573	Link Bracket	1				

#### NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



g02798923

# 

Always wear protective gloves when handling parts that have been heated.

- 1. If flywheel ring gear (3) was removed, follow Step 1.a through Step 1.c in order to install ring gear (3) to flywheel (1).
  - a. Identify the orientation of teeth on new ring gear (3).

**Note:** The chamfered side of ring gear teeth must face toward the starting motor when the flywheel is installed. This position will ensure the correct engagement of the starting motor.

b. Raise heat of flywheel ring gear (3) in an oven to a maximum temperature of 250 °C (482 °F) prior to installation.

Note: Do not use a torch to heat the ring gear.

c. Ensure that the orientation of ring gear (3) is correct and quickly install the ring gear onto flywheel (1).



- 2. Install Tooling (B) and a suitable lifting device on flywheel (1). The weight of flywheel (1) is approximately 30 kg (66 lb).
- 3. Install Tooling (A) into the crankshaft.
- 4. Use the lifting device to position flywheel (1) onto Tooling (A).
- 5. Install bolts (2) to flywheel (1).
- 6. Remove Tooling (A).



Illustration 6

g02794543

- 7. Install remaining bolts (2) to flywheel (1). Apply engine oil to bolts. Tighten bolts (2) to a torque of 98 to 107 N⋅m (72 to 80 lb ft).
- 8. Check the run out of the flywheel. Refer to Specifications, "Flywheel" for further information.

#### **Disassembly and Assembly**

C2.6 and C3.3B Engines for Caterpillar Built Machines

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i05242540

# **Crankshaft Rear Seal and Wear Sleeve - Remove - Includes Crankshaft Gear**

SMCS - 1161-011; 7558-011

# **Removal Procedure**

#### **Start By:**

a. Remove the flywheel.

### NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Place the engine at top dead center.



2. Use a screw driver to remove rear seal (1).



Illustration 2

g02799899

3. Check the alignment of crankshaft gear (2) and camshaft gear (3). Remove crankshaft gear (2) and ring seal.



Illustration 3

g02799901

4. Place crankshaft gear (2) with wear sleeve (4) in a suitable vice. Remove wear sleeve (4) with a suitable chisel.

#### **Disassembly and Assembly**

C2.6 and C3.3B Engines for Caterpillar Built Machines

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i05242547

# **Crankshaft Rear Seal and Wear Sleeve - Install - Includes Crankshaft Gear**

SMCS - 1161-012; 7558-012

# **Installation Procedure**

Table 1

Required Tools						
Tool Part Number Part Description		Qty				
A	390-1146	Crankshaft Rear Seal and Wear Sleeve Driver <sup>(1)</sup>	1			
	423-9665	Crank shaft Rear Seal and Wear Sleeve Driver <sup>(2)</sup>	1			

<sup>(1)</sup> Used for the C3.3B

<sup>(2)</sup> Used for the C2.6

Note: Refer to Specification UENR0995 "Engine Design" for non-specified engine Torque Values.



1. Place wear sleeve (4) on crankshaft gear (2). Position Tooling (A). Use a suitable press and install wear sleeve (4).



Illustration 2

g02799899

2. Align crankshaft gear (2) with camshaft gear (3). Install crankshaft gear (2) into the flywheel housing.



Illustration 3

g02800140

3. Apply clean engine oil on the lip of crankshaft rear seal (1). Use Tooling (A) in order to install crankshaft rear seal (1).

#### End By:

a. Install the flywheel.

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