### **Disassembly and Assembly**

C3.3B Tier 4 Final and EU Stage 3B Engines for Caterpillar Built Machines

Media Number -UENR3278-07

Publication Date -01/09/2014

Date Updated -11/07/2016

i05223952

## **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 crankshaft 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**

C3.3B Tier 4 Final and EU Stage 3B Engines for Caterpillar Built Machines

Media Number -UENR3278-07

Publication Date -01/09/2014

Date Updated -11/07/2016

i05306614

## **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	1			

Note: Refer to Specifications, "Engine Design" for non-specified engine torque values.



Illustration 1

g02800138

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



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.

### **Disassembly and Assembly**

#### C3.3B Tier 4 Final and EU Stage 3B Engines for Caterpillar Built Machines

Media Number -UENR3278-07

Publication Date -01/09/2014

Date Updated -11/07/2016

i05306623

## **Flywheel Housing - Remove and Install**

SMCS - 1157-010

## **Removal Procedure**

Table 1							
Required Tools							
Tool	Part Number	Part Description	Qty				
A	-	Guide Stud M12 - 1.25 by 100 mm	2				
В	138-7575	Link Brackets	2				

#### **Start By:**

- a. Remove the flywheel.
- b. Remove the rear crankshaft seal.

Note: Refer to Specifications, "Engine Design" for non-specified engine torque values.

## NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



g02794824

- 1. Remove two bolts (3) from flywheel housing (1).
- 2. Install Tooling (A) into flywheel housing (1).
- 3. Install Tooling (B). Install a suitable lifting device to flywheel housing (1). The weight of flywheel housing (1) is approximately 25 kg (55 lb).
- 4. Remove remaining six bolts (3) and 8 bolts (2) from flywheel housing (1).
- 5. Remove flywheel housing (1) from the cylinder block.



Illustration 2

g02794825

- 6. Remove bearing (4).
- 7. Remove gasket (5).
- 8. If necessary, remove the dowels from the cylinder block.

# **Installation Procedure**

1. Install flywheel housing (1) in the reverse order of removal.



- a. Install liquid gasket to the seam between the lower crankcase section (7) and the upper crankcase section (6).
- b. Apply engine oil to the threads of 8 bolts (3) and 8 bolts (2). Tighten 8 bolts (3) and 8 bolts (2) to a torque of 103 to 117 N·m (76 to 87 lb ft).

### **Disassembly and Assembly**

#### C3.3B Tier 4 Final and EU Stage 3B Engines for Caterpillar Built Machines

Media Number -UENR3278-07

Publication Date -01/09/2014

Date Updated -11/07/2016

i05223788

## **Crankshaft Pulley - Remove and Install**

SMCS - 1205-010

## **Removal Procedure**

#### **Start By:**

a. Remove the v-belt.

**Note:** Refer to Specification UENR3421 "Engine Design" for non-specified engine Torque Values.

## NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



1. Use a suitable tool in order to prevent the crankshaft from rotating. Remove bolt (2) in order to remove crankshaft pulley (1).

# **Installation Procedure**

- 1. Install crankshaft pulley (1) in the reverse order of removal.
  - a. Apply clean engine oil to the threads of bolt (2). Tighten bolt (2) to a torque of 255 to 274 N·m (188 to 202 lb ft).

### **Disassembly and Assembly**

C3.3B Tier 4 Final and EU Stage 3B Engines for Caterpillar Built Machines

Media Number -UENR3278-07

Publication Date -01/09/2014

Date Updated -11/07/2016

i05306703

## **Crankshaft Front Seal - Remove and Install**

SMCS - 1160-010

## **Removal Procedure**

#### **Start By:**

a. Remove the crankshaft pulley.

Note: Refer to Specifications, "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.



```
Illustration 1
```

g02795123



g02795124

1. Use a suitable pry bar to remove crankshaft front seal (1).

# **Installation Procedure**

Table 1Required ToolsToolPart NumberPart DescriptionQtyA390-1140Driver1



```
Illustration 3
```

g02796112



g02795123

1. Position crankshaft front seal (1) on Tooling (A). Install crankshaft front seal (1) on the crankshaft.

### End By:

a. Install the crankshaft pulley.

### **Disassembly and Assembly**

#### C3.3B Tier 4 Final and EU Stage 3B Engines for Caterpillar Built Machines

Media Number -UENR3278-07

Publication Date -01/09/2014

Date Updated -11/07/2016

i05306714

## **Idler Gear - Remove and Install**

**SMCS -** 1206

## **Removal Procedure**

Table 1

Required Tools						
Tool	Part Number	Part Description	Qty			
A	390-1135	Idler Gear Tool	1			

#### **Start By:**

a. Remove the rear housing.

Note: Refer to Specifications, "Engine Design" for non-specified engine torque values.

## 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

g02795977



Illustration 2

g02795978



Illustration 3 Alignment of timing marks g02795981

- 1. Find top dead center for number 4 piston. Refer to Testing and Adjusting, "Finding Top Center for No. 4 Piston".
- 2. Ensure that Timing Marks (X) on the camshaft gear and the crankshaft gear are aligned. Refer to Illustration 1.
- 3. Ensure that Timing Marks (Y) on the idler gear and the camshaft gear are aligned. Refer to Illustration 2.
- 4. Ensure that Timing Marks (Z) on the idler gear and the fuel injection pump gear are aligned. Refer to Illustration 3.



g02795984

5. Remove bolts (2), washer (3), and the idler shaft from idler gear (1). Remove idler gear (1) and the washer.



Illustration 5

g02795985

6. Use Tooling (A) to remove idler gear bearing (4) from idler gear (1).

# **Installation Procedure**

- 1. Install idler gear (1) in the reverse order of removal.
  - a. Tighten bolts (2) to a torque of 49 to 55 N $\cdot$ m (36 to 41 lb ft).

- b. Ensure that the gears, cylinder block surface, and idler gear (1) are clean and free from wear or damage. If necessary, replace any components that are worn or damaged.
- c. Lubricate idler gear bearing surface (4) with clean engine oil.
- d. Check oil clearance between the idler gear shaft and the idler gear bushing. Refer to Specifications, "Gear Group (Front)" for allowable clearance.
- e. Check the idler gear shaft outer diameter and the inner diameter for the idler gear bushing.

### **Disassembly and Assembly**

#### C3.3B Tier 4 Final and EU Stage 3B Engines for Caterpillar Built Machines

Media Number -UENR3278-07

Publication Date -01/09/2014

Date Updated -11/07/2016

i05306965

## Housing (Front) - Remove and Install

SMCS - 1151-010

## **Removal Procedure**

 Table 1

 Required Tools

 Tool
 Part Number
 Part Description
 Qty

 A
 Three Bond 1217H
 1

#### **Start By:**

a. Remove the crankshaft front seal.

Note: Refer to Specifications, "Engine Design" for non-specified engine torque values.

## 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.



Illustration 1

g02795275

2. Disconnect hose assemblies (1) and (2) from the oil cooler.



Illustration 2

g02795251

- 3. Remove bolts (4).
- 4. Remove front housing (3) and the gasket.

## **Installation Procedure**

## NOTICE

Keep all parts clean from contaminants.

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

- 1. Ensure that the front housing is clean and free from damage. If necessary, replace the front housing.
- 2. Clean all the gasket surfaces of the cylinder block.



3. Apply Tooling A to the seam between the lower crankcase section (6) and the upper crankcase section (5).



Illustration 4

g02795251

- 4. Align a new gasket and install the gasket to the cylinder block.
- 5. Tighten 13 bolts (4) in a side to side sequence. Tighten bolts (4) to a torque of 24 to 27 N⋅m (212 to 239 lb in)



g02795275

- 6. Connect hose assemblies (1) and (2) to the oil cooler.
- 7. Fill the cooling system with coolant. Refer to Operation and Maintenance Manual, "Cooling System Coolant (ELC) Change" for the correct draining and filling procedures.

## End By:

a. Install the crankshaft front seal.

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