CATERPILLAR®

Service Repair Manual

Models

320D LRR Excavator

Product: EXCAVATOR
Model: 320D LRR EXCAVATOR EJT
Configuration: 320D LRR Excavator EJT00001-UP (MACHINE) POWERED BY C6.4 Engine

Disassembly and Assembly
C6.4 Engine for Caterpillar Built Machines
Media Number -KENR8106-09 **Publication Date -01/10/2017** **Date Updated -18/10/2017**

i02743771

Flywheel - Remove

SMCS - 1156-011

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	138-7575	Link Bracket	1
B		Forcing bolts M16 - 2 by 120 mm	2

Start By:

a. Remove the crankshaft position sensor. Refer to Disassembly and Assembly, "Crankshaft Position Sensor - Remove and Install".

b. Remove the muffler. Refer to Disassembly and Assembly, "Muffler - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

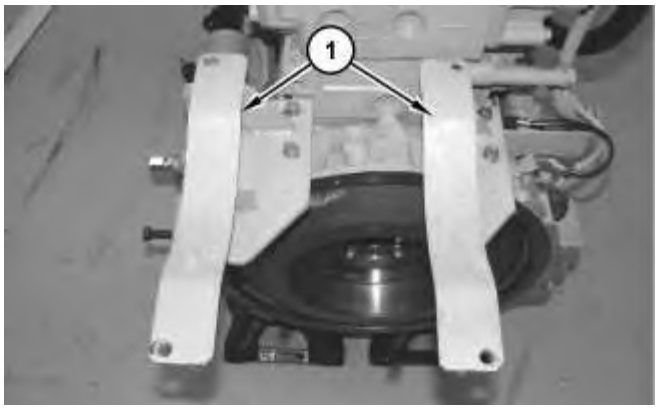

Illustration 1 g01374966

1. Remove muffler brackets (1).

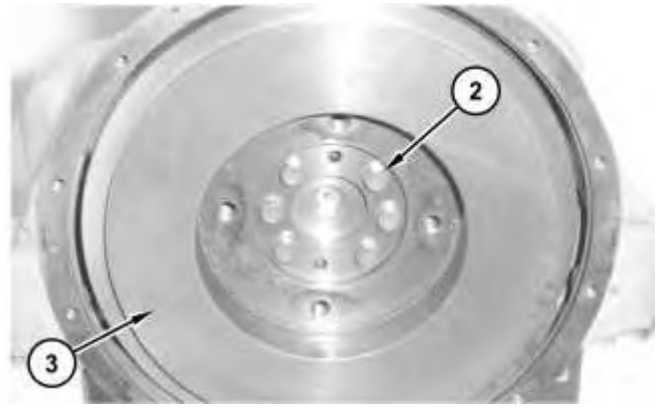

Illustration 2 g01374968

Illustration 3 g01374970

2. Remove bolts (2).
3. Install Tooling (A) and a suitable lifting device onto flywheel (3).
4. Use Tooling (B) in order to remove flywheel (3) out of the housing. The weight of flywheel (3) is approximately 50 kg (110 lb).

5. Perform the following procedure in order to remove the flywheel ring gear.

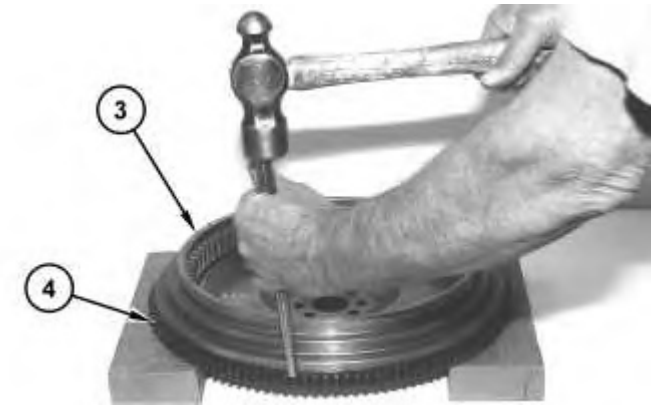

Illustration 4 g01374977

Typical Example

a. Place flywheel (3) and ring gear (4) on suitable cribbing.

Note: Mark the orientation of ring gear (4) on flywheel (3) for assembly purposes.

WARNING

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

b. Raise the temperature of ring gear (4) uniformly.

c. Remove the ring gear (4) by tapping ring gear (4) all the way around flywheel (3).

d. Reposition flywheel (3) in order to remove ring gear (4).

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i02744399

Flywheel - Install

SMCS - 1156-012

Installation Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	138-7575	Link Bracket	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

WARNING

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

1. Perform the following procedure, if the ring gear was removed from the flywheel:
   a. Raise the temperature of the ring gear 149 °C (300 °F).

b. Use a suitable press in order to install the ring gear onto the flywheel.

Note: Prior to the installation of the flywheel, refer to Specifications, "Flywheel" for information on checking the flywheel assembly for flatness.

Illustration 1 g01374993

2. Install Tooling (A) and a suitable lifting device onto flywheel (3).
3. Install flywheel (3). The weight of flywheel (3) is approximately 50 kg (110 lb).

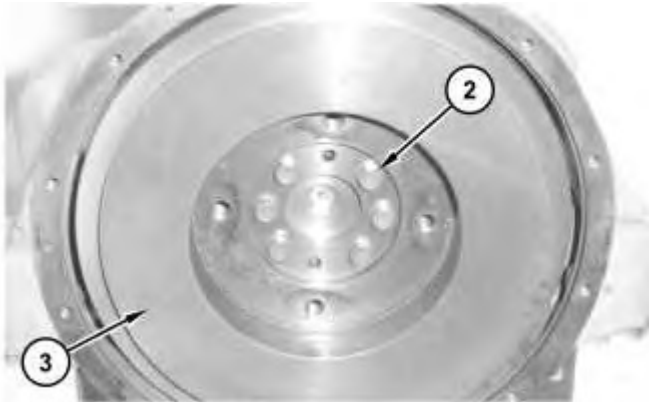

Illustration 2 g01374968

4. Install bolts (2) in order to secure flywheel (3) onto the crankshaft. Tighten bolts (2) to a torque of 83 ± 5 N·m (61 ± 4 lb ft).
5. Remove Tooling (A) from flywheel (3).

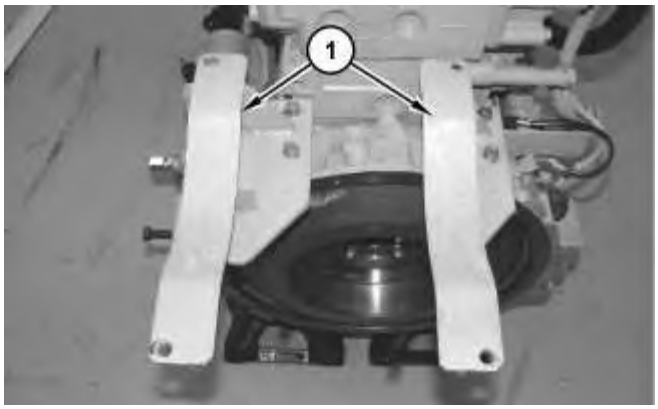

Illustration 3 g01374966

6. Install muffler brackets (1).
7. Check the flywheel runout. Refer to Testing and Adjusting, "Flywheel Housing - Inspect" for more information on flywheel runout.

End By:

a. Install the muffler. Refer to Disassembly and Assembly, "Muffler - Remove and Install".

b. Install the crankshaft position sensor. Refer to Disassembly and Assembly, "Crankshaft Position Sensor - Remove and Install".

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i01135944

Crankshaft Rear Seal - Remove

SMCS - 1161-011

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	1U-7600	Slide Hammer Puller	1
B	5P-7312	Seal Distorter	1
	5P-7338	Distorter Ring	2

Start By:

a. Remove the flywheel. Refer to Disassembly and Assembly, "Flywheel - Remove".

NOTICE

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NOTICE

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Dispose of all fluids according to local regulations and mandates.

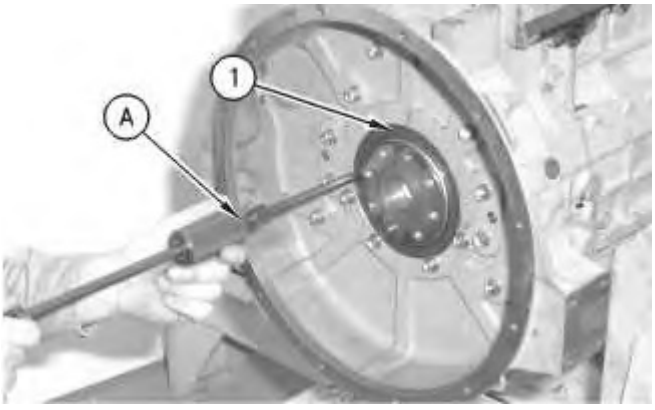

Illustration 1 g00604840

Note: If the oil seal shows a sign of oil leaks, remove the wear sleeve and the oil seal.

1. Drill three evenly spaced 3 mm (0.12 inch) holes in crankshaft rear seal (1).
2. Use Tool (A) to remove the crankshaft rear seal.

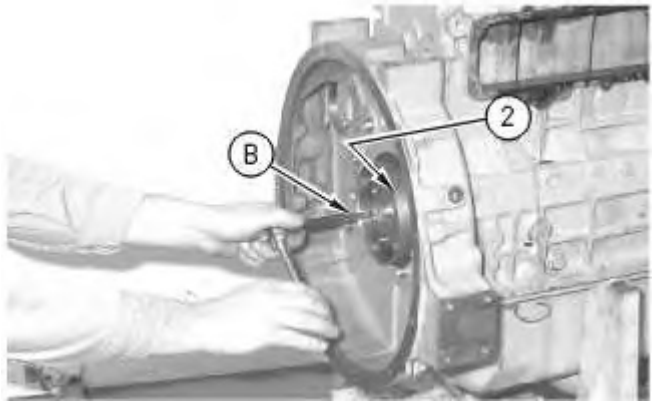

Illustration 2 g00604844

3. Use Tool (B) to remove the wear sleeve (2) (not shown) from the rear of the crankshaft.

   Note: When you are removing the wear sleeve, take extreme care not to damage the crankshaft.

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i01615317

Crankshaft Rear Seal - Install

SMCS - 1161-012

Installation Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	9U-6169	Installer	1
	9U-6171	Locator	1
	9U-6172	Bolt	2
	5P-8247	Hard Washer	1
	6V-3303	Bolt	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. To install a new wear sleeve that is complete with a seal, use **169-5464** Quick Cure Primer to clean the outer diameter of the crankshaft and the inside diameter of the wear sleeve. Apply **4C-9507** Retaining Compound to the faces of all the mating parts.

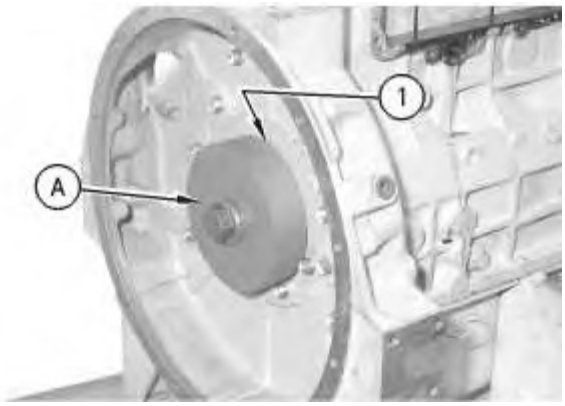

Illustration 1 g00604874

2. Install a new wear sleeve that is complete with a seal (1) (not shown) with Tool (A), as follows:

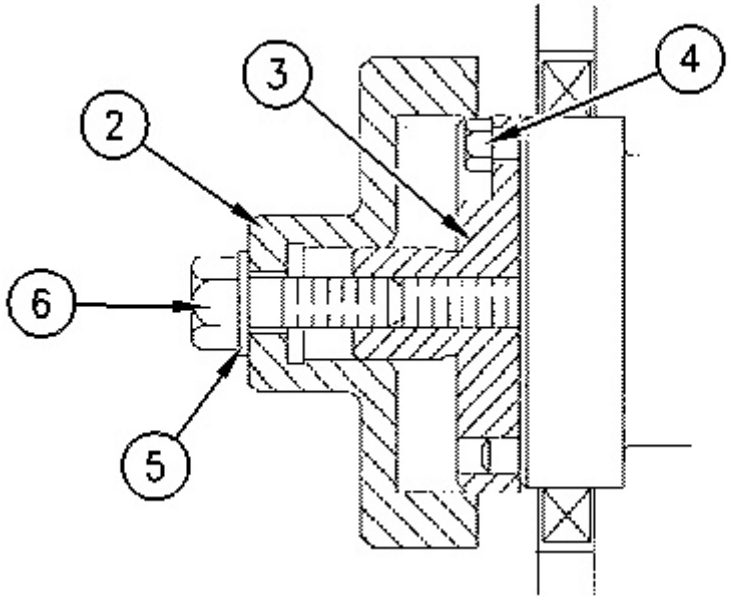

Illustration 2 g00604875

a. Install **9U-6171** Locator (3) onto the crankshaft with **9U-6172** Bolt (4).

b. Put the new wear sleeve that is complete with a seal in **9U-6169** Installer (2).

c. Put **6V-3303** Bolt (6) through **5P-8247** Hard Washer (5) and **9U-6169** Installer (2) and thread into **9U-6171** Locator (3).

d. Push the wear sleeve that is complete with a seal onto the crankshaft until **9U-6169** Installer (2) bottoms out.

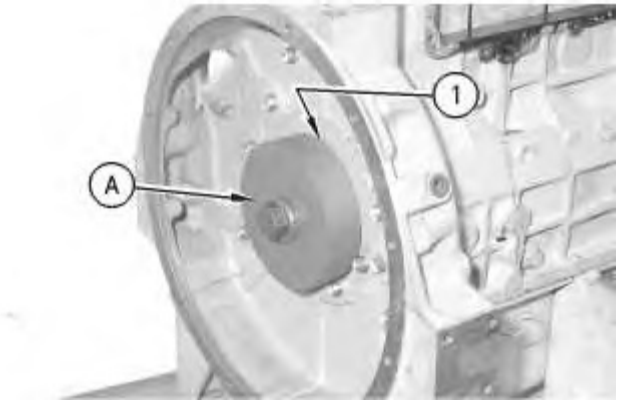

Illustration 3 g00604874

e. Remove Tool (A) and check crankshaft rear seal (1) (not shown) for correct installation.

End By:

a. Install the flywheel. Refer to Disassembly and Assembly, "Flywheel - Install".

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i02742697

Flywheel Housing - Remove and Install

SMCS - 1157-010

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	138-7575	Link Bracket	1
B	1P-0510	Driver Group	1

Start By:

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

b. Remove the flywheel and ring gear. Refer to Disassembly and Assembly, "Flywheel - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

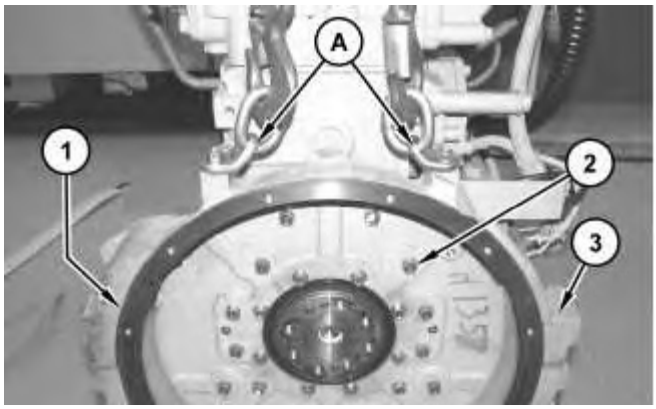

Illustration 1 g01374571

1. Install Tooling (A), and a suitable lifting device onto flywheel housing (3).
2. Remove bolts (2) and the washers that secure flywheel housing (3) to the cylinder block.
3. Remove flywheel housing (3). The weight of flywheel (3) is approximately 29 kg (65 lb).
4. Remove gasket (1) (not shown).

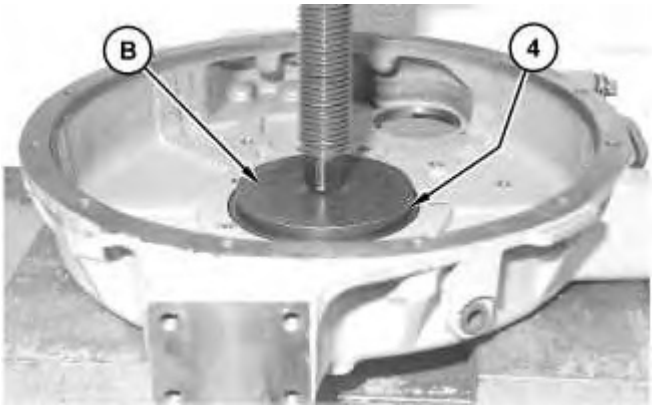

Illustration 2 g01374572

5. Use Tooling (B) in order to remove the oil seal (4) (not shown).

Installation Procedure

Table 2

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	138-7575	Link Bracket	1
B	1P-0510	Driver Group	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

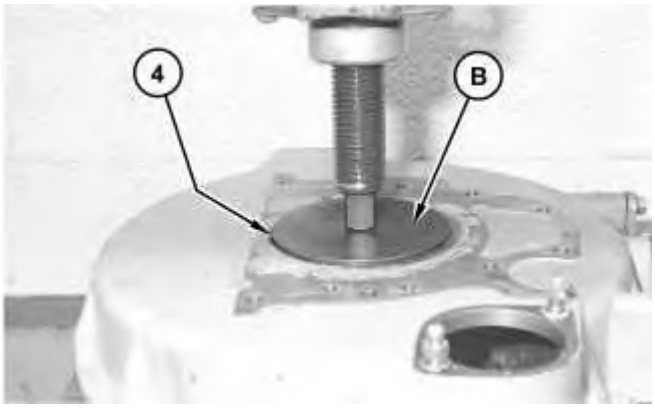

Illustration 3 g01374614

1. Use Tooling (B) in order to install the oil seal (4) (not shown).

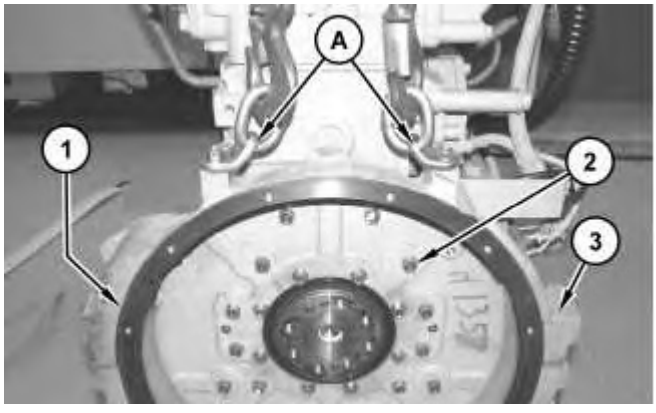

Illustration 4 g01374571

2. Check the condition of two dowels (not shown). If dowels are damaged, use new parts for replacement.
3. Clean old gasket (1) (not shown) from the mating surfaces of the cylinder block and the flywheel housing. Install a new gasket on the cylinder block.
4. Place flywheel housing (3) in position on the cylinder block.
5. Install the washers and bolts (2) in order to secure flywheel housing (3) to the cylinder block.
6. Remove Tooling (A).

End By:

a. Install the flywheel. Refer to Disassembly and Assembly, "Flywheel - Install".

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

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i06790404

Crankshaft Pulley - Remove and Install

SMCS - 1205-010

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	1P-2321	Combination Puller	1
B	6V-9120	Socket(1)	1

(1) Tooling (B) is a 46 mm socket.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Remove the belt. Refer to Operation and Maintenance Manual, "Belt - Inspect/Adjust/Replace".

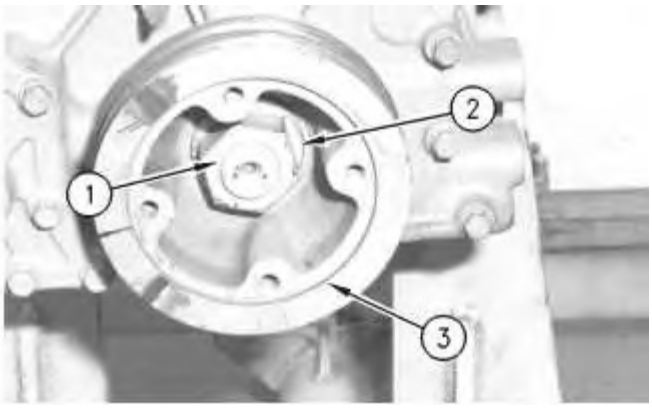

Illustration 1 g00604778

2. Use Tooling (B) in order to remove nut (1) and washer (2) from the threaded end of the crankshaft.

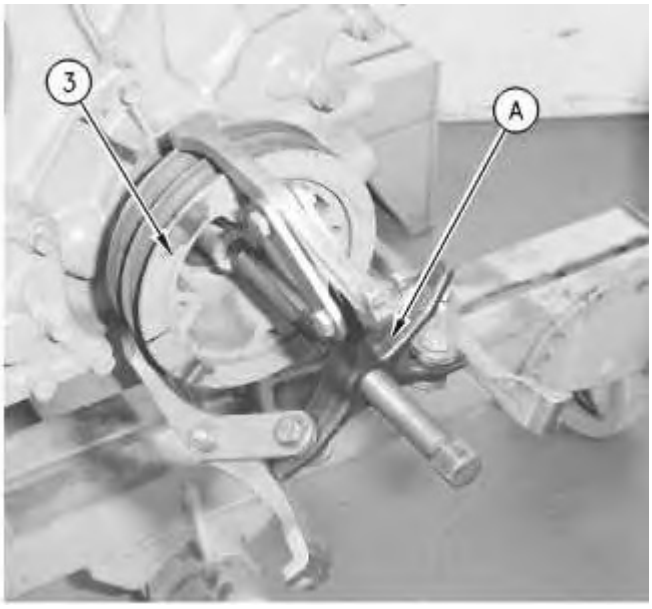

Illustration 2 g00604784

3. Use Tooling (A) in order to remove crankshaft pulley (3) from the engine.

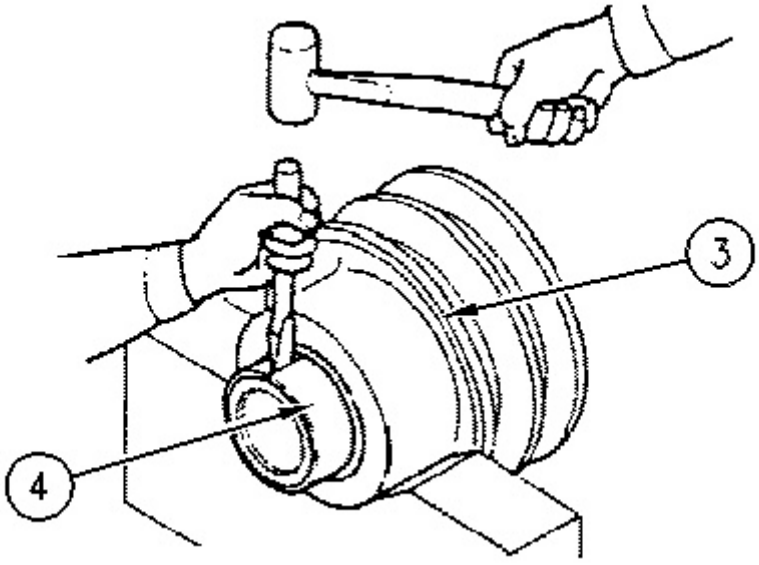

Illustration 3 g00604792

4. If it is necessary to remove wear sleeve (4) from crankshaft pulley (3), use a suitable hammer and a suitable chisel. Hold the suitable chisel at right angles to the surface of the wear sleeve. Tap the wear sleeve in three places. You can remove the wear sleeve once the tension is released.

Installation Procedure

Table 2

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
B	6V-9120	Socket[1]	1
C	1P-0510	Driver Gp	1

[1] Tooling (B) is a 46 mm socket.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Raise the temperature of the wear sleeve. Use Tooling (C) in order to install the wear sleeve onto the crankshaft pulley.

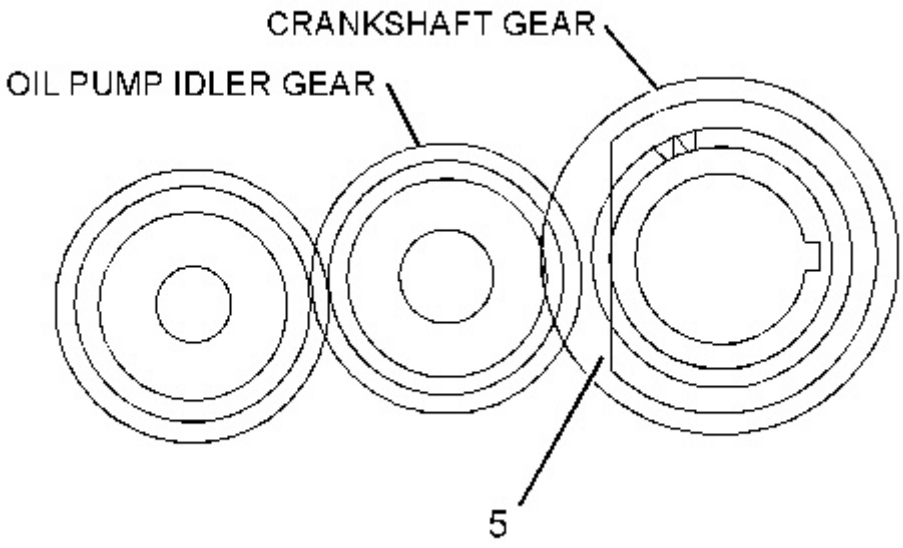

Illustration 4 g01377941

2. Ensure that baffle plate (5) is oriented, as shown.

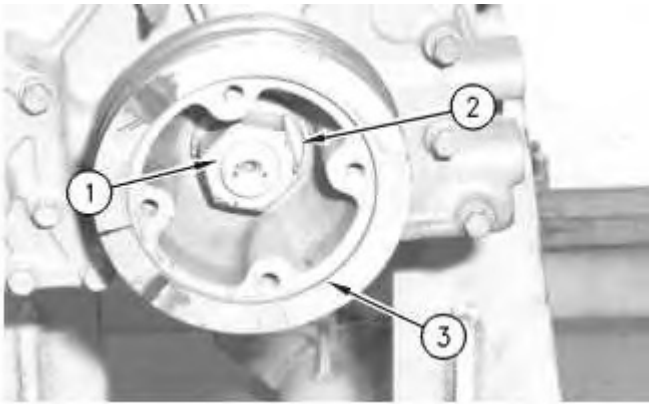

Illustration 5 g00604778

3. Position crankshaft pulley (3) onto the engine.
4. Install washer (2) and nut (1). Use Tooling (B) in order to tighten nut (1) to a torque of 707.5 ± 57.5 N·m (522 ± 42 lb ft).
5. Install the belt. Refer to Operation and Maintenance Manual, "Belt - Inspect/Adjust/Replace".

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i02742689

Crankshaft Front Seal - Remove

SMCS - 1160-011

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	1U-7600	Slide Hammer Puller	1

Start By:

a. Remove the crankshaft pulley. Refer to Disassembly and Assembly, "Crankshaft Pulley - Remove and Install".

NOTICE

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NOTICE

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Dispose of all fluids according to local regulations and mandates.

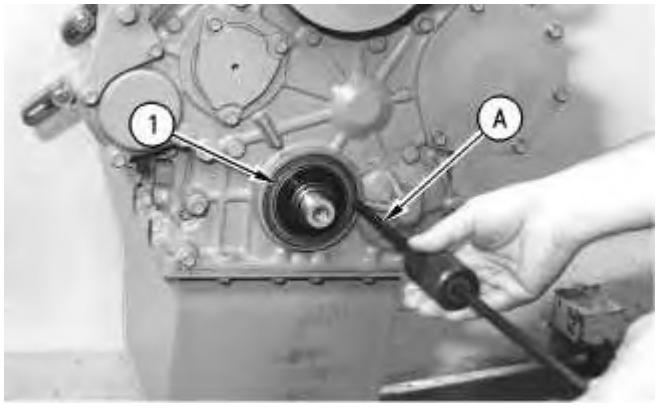

Illustration 1 g00529162

Typical Example

1. Drill three evenly spaced 3.0 mm (0.12 inch) holes in crankshaft front seal (1).
2. Use Tooling (A) in order to remove crankshaft front seal (1). Remove the seal evenly by alternating the position of Tooling (A) from hole to hole.

   Note: Do not damage the flange of the crankshaft during the removal process for the crankshaft front seal.

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i02742692

Crankshaft Front Seal - Install

SMCS - 1160-012

Installation Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	9U-6180	Front Seal Installer	1

NOTICE

Keep all parts clean from contaminants.

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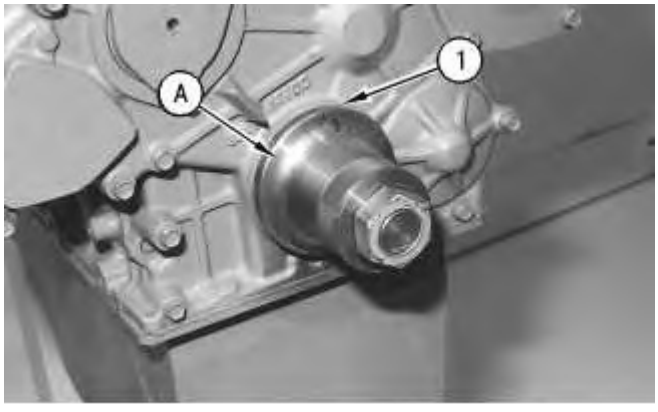

Illustration 1 g00612743

Typical Example

1. Clean the faces of all the mating parts. Apply a thin coat of clean engine oil to a new crankshaft front seal.
2. Use Tooling (A) in order to install new crankshaft front seal (1) in the front housing.
3. Remove Tooling (A) and check crankshaft front seal (1) for correct installation.
4. Apply clean engine oil to the face of the crankshaft pulley that will be in contact with the new crankshaft front seal.

End By:

a. Install the crankshaft pulley. Refer to Disassembly and Assembly, "Crankshaft Pulley - Remove and Install".

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i02742863

Gear Group (Front) - Remove - Idler Gear Only

SMCS - 1206-011

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	9U-6148	Idler Shaft Puller	1
B	1P-0510	Driver Group	1

Start By:

a. Remove the front housing. Refer to Disassembly and Assembly, "Housing (Front) - Remove".

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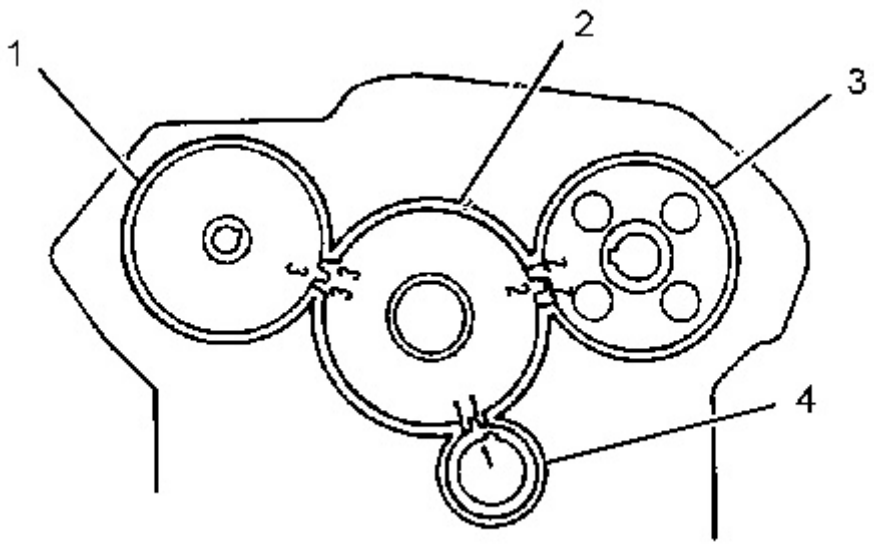

Illustration 1 g01374732

(1) Fuel injection pump drive gear
(2) Idler gear
(3) Camshaft gear
(4) Crankshaft gear

Note: The No. 1 cylinder is at the top center position when these marks are in alignment.

Note: Ensure that the marks on the timing gears are in alignment.

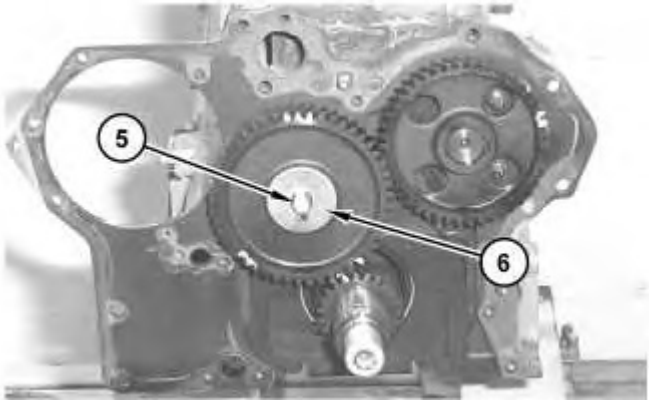

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Illustration 2 g01374789

1. Remove idler gear bolt (5) and the washer from the idler gear shaft .
2. Remove thrust plate (6) from the idler gear shaft.

Illustration 3 g01374793

3. Remove idler gear (2) from the idler gear shaft.

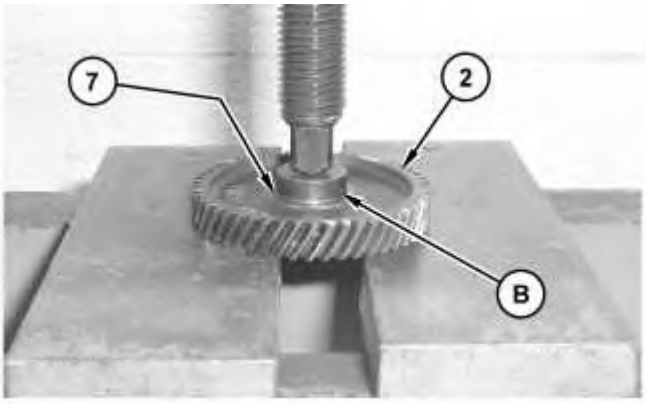

Illustration 4 g01374804

4. If necessary, use Tooling (B) and a suitable press in order to remove bushing (7) (not shown) from idler gear (2).