

Product: TRACK-TYPE TRACTOR

Model: D5K LGP TRACK-TYPE TRACTOR JLF

Configuration: D5K XL & LGP Track Type Tractors JLF00001-UP (MACHINE) POWERED BY C4.4 Engine

Disassembly and Assembly C4.4 Engines for Caterpillar Built Machines

Media Number -KENR6082-19

Publication Date -01/10/2013

Date Updated -21/10/2013

i02929975

Crankshaft Rear Seal - Install

SMCS - 1161-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	227-4390	E12 Torx Socket	1
B	FT-2806	Alignment Tool	1

Note: The crankshaft rear seal and the housing are manufactured as a one-piece assembly.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

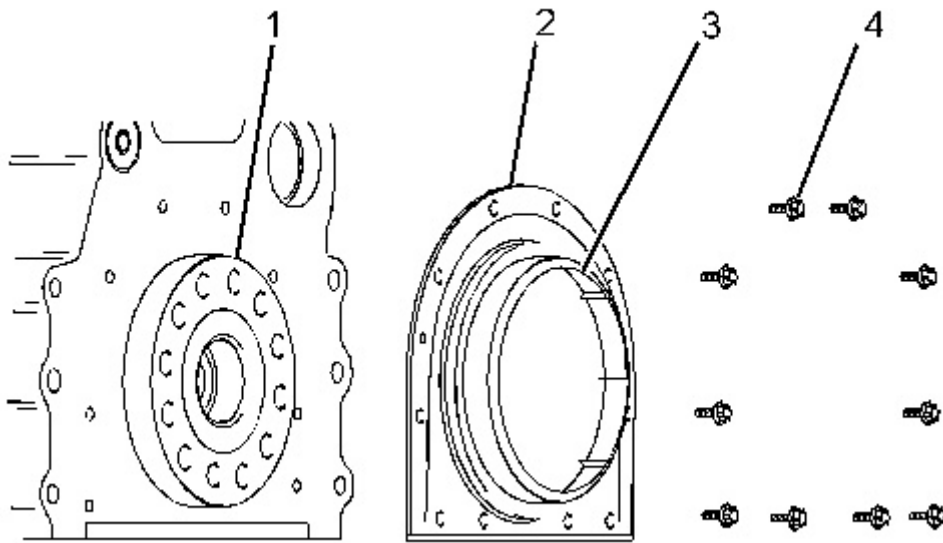


Illustration 1

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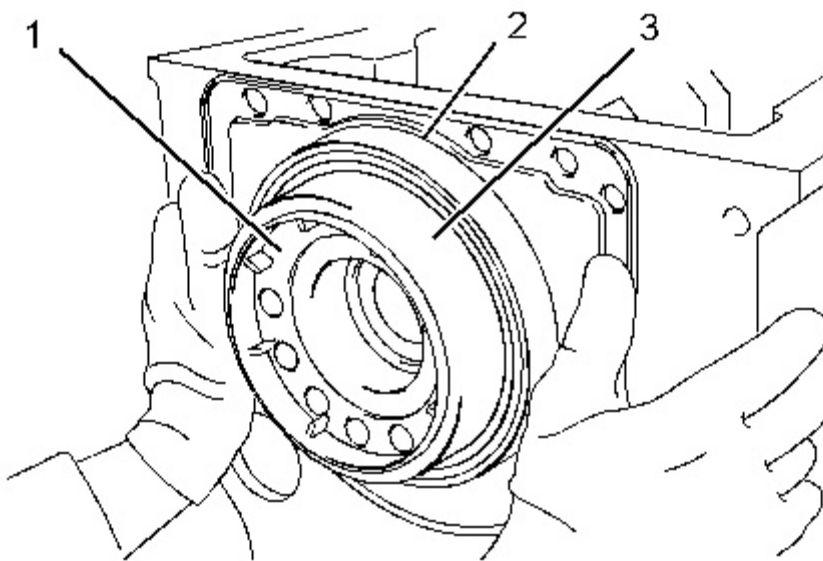


Illustration 2

g01255709

Typical example

1. Ensure that crankshaft flange (1) is clean, dry and free from damage.
2. Ensure that the face of the cylinder block and the bridge piece are clean and dry.
3. A new crankshaft rear seal is supplied with a plastic sleeve (3). Ensure that the plastic sleeve is squarely installed within crankshaft rear seal (2).

Note: The plastic sleeve is included in order to protect the lip of the seal as the seal is pushed over the crankshaft flange.

Note: Do not lubricate the crankshaft rear seal or the crankshaft flange. The crankshaft rear seal must be installed dry.

- Align plastic sleeve (3) with crankshaft flange (1). Ensure that the plastic sleeve is engaged onto the crankshaft flange. Push new crankshaft rear seal (2) squarely onto the crankshaft flange.

During this process, the plastic sleeve will be forced out of the crankshaft rear seal. Discard the plastic sleeve.

- Align the two molded locators on crankshaft rear seal (2) with the holes in the cylinder block. Ensure that the crankshaft rear seal is seated against the cylinder block.

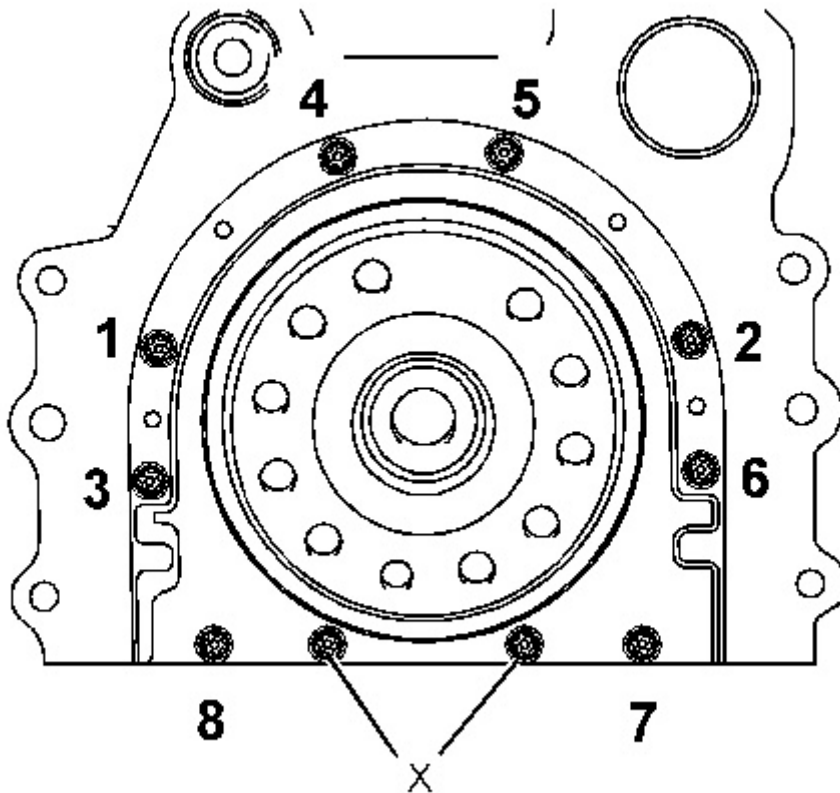


Illustration 3

g01258357

Tightening sequence for the crankshaft rear seal

- Install torx screws (4) finger tight.
Note: Do not install torx screws to Positions (X) at this stage.
- Install Tooling (B) to crankshaft rear seal (2) and to crankshaft flange (1).
- Use Tooling (A) in order to tighten torx screws (4) to a torque of 22 N·m (16 lb ft). Tighten torx screws (4) in the sequence that is shown in Illustration 3.
- Remove Tooling (B).
- Install remaining torx screws (4) to Positions (X). Use Tooling (A) in order to tighten the torx screws to a torque of 22 N·m (16 lb ft). Refer to Illustration 3.

End By:

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

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i02930000

Flywheel Housing - Remove and Install

SMCS - 1157-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Guide Stud M10 by 100 mm	2

Start By:

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

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

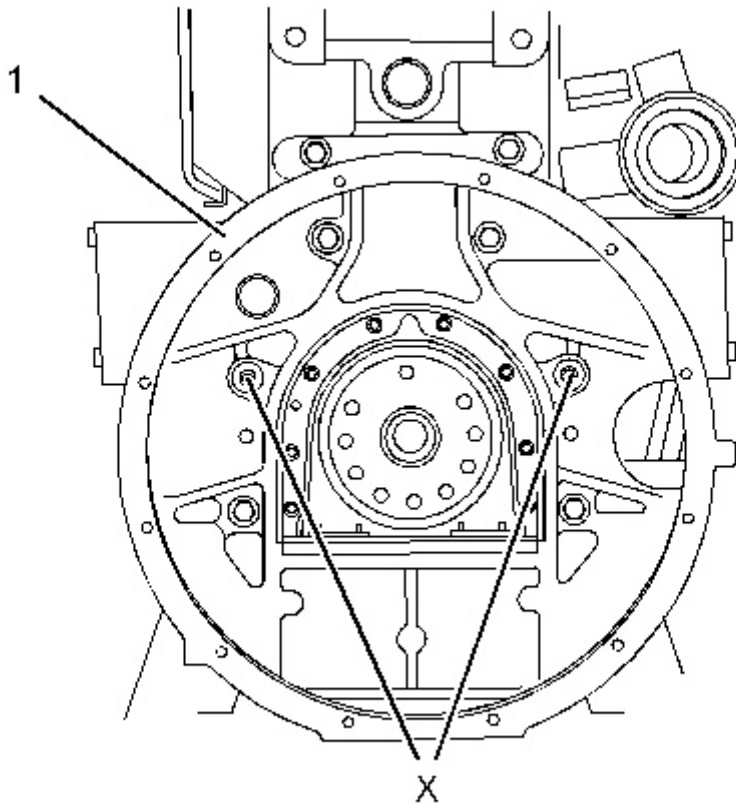


Illustration 1
Typical example

g01470403

1. Remove the bolts from Position (X) from flywheel housing (1).
 2. Install Tooling (A) into Position (X) on flywheel housing (1).
 3. Install a suitable lifting device to the flywheel housing in order to support the flywheel housing. The flywheel housing weighs approximately 30 kg (66 lb).
-

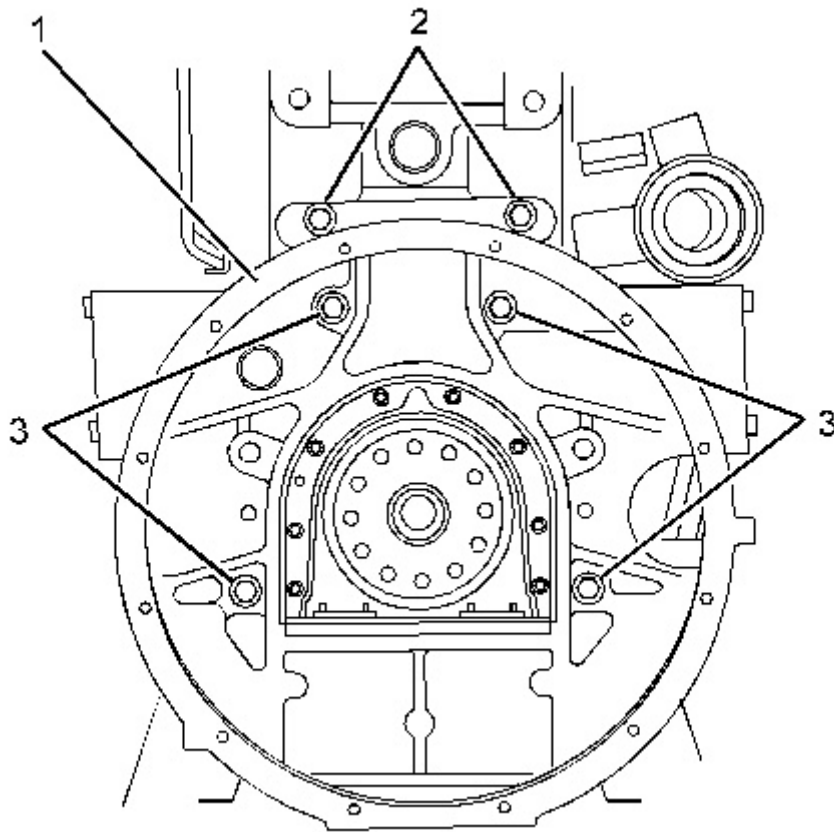


Illustration 2
Typical example

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4. Remove bolts (2) and remaining bolts (3) from flywheel housing (1).
5. Use the lifting device in order to remove flywheel housing (1) from the cylinder block.

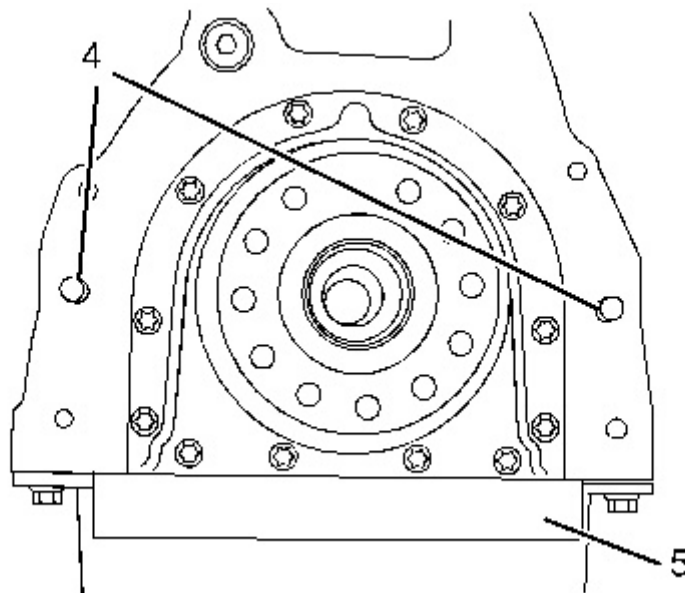


Illustration 3

g01470418

Typical example

6. If the engine has an aluminum oil pan, remove dust seal (5).
7. If necessary, remove dowels (4) from the cylinder block.

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Guide Bolt M10 by 100 mm	2
B	8T-5096	Dial Indicator Group	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Ensure that the flywheel housing is clean and free from damage. If necessary, replace the flywheel housing.

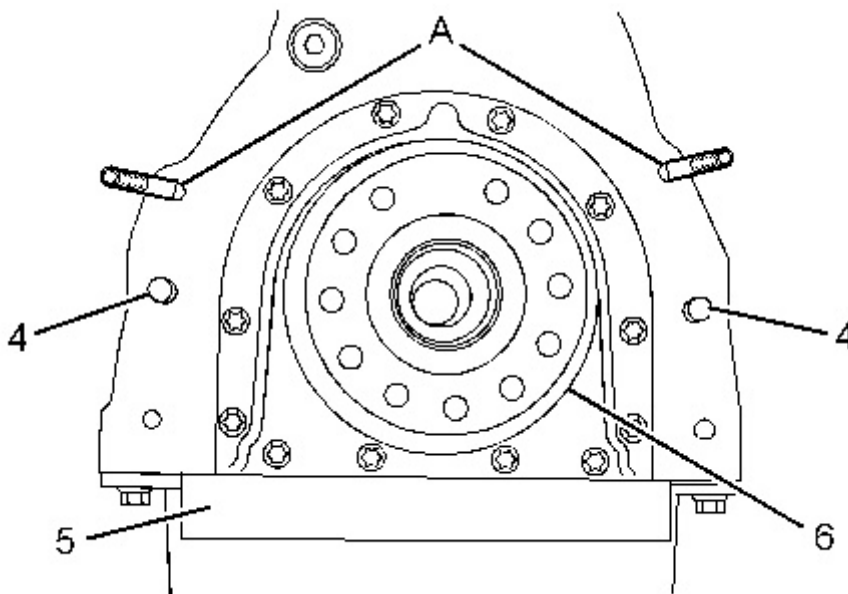


Illustration 4
Typical example

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2. Inspect crankshaft rear seal (6) for leaks. If there are any oil leaks, replace the crankshaft rear seal. Refer to Disassembly and Assembly, "Crankshaft Rear Seal - Remove" and refer to Disassembly and Assembly, "Crankshaft Rear Seal - Install".
 3. Clean the rear face of the cylinder block. If necessary, install dowels (4) to the cylinder block.
 4. Install Tooling (A) to the cylinder block.
 5. Install dust seal (5).
-

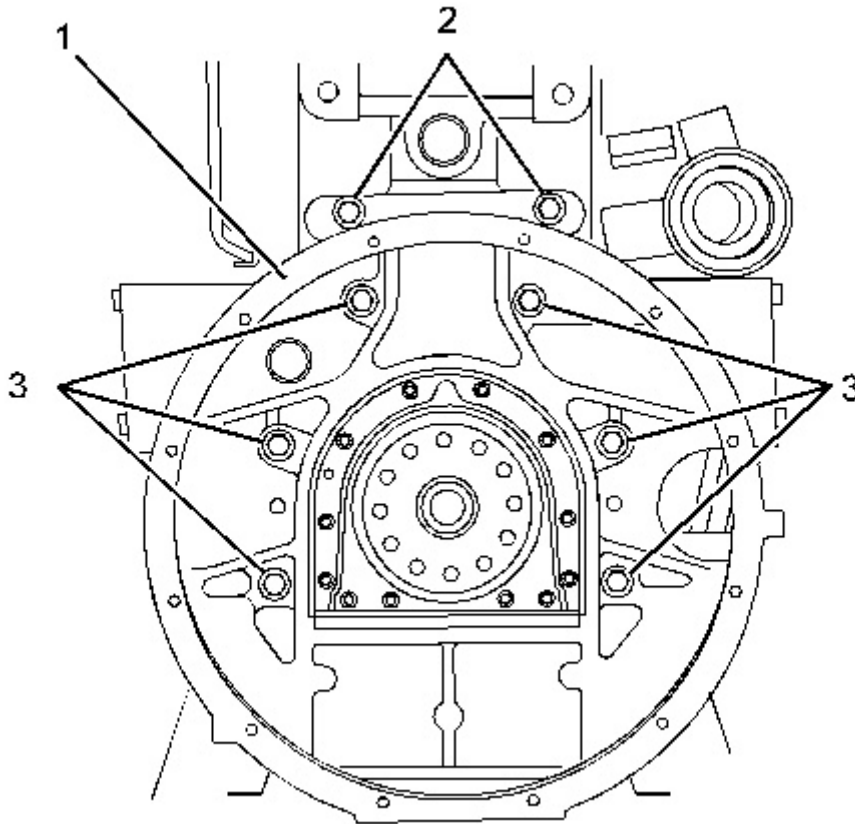


Illustration 5
Typical example

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6. Install a suitable lifting device to the flywheel housing. The flywheel housing weighs approximately 30 kg (66 lb).
7. Use the lifting device to align flywheel housing (1) with Tooling (A). Install the flywheel housing to the cylinder block.
8. Install bolts (2) and bolts (3) finger tight.
9. Remove Tooling (A). Install remaining bolts (3).
10. Tighten bolts (3) to a torque of 63 N·m (46 lb ft).
11. Tighten bolts (2) to a torque of 75 N·m (55 lb ft).

12. Use Tooling (B) to check the alignment of the flywheel housing with the crankshaft. Refer to Systems Operation, Testing and Adjusting, "Flywheel Housing - Inspect".

End By:

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

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i02929973

Crankshaft Pulley - Remove and Install - Engines With an Automatic Belt Tensioner

SMCS - 1205-010

Removal Procedure

Start By:

- a. Remove the alternator belt. Refer to Disassembly and Assembly, "Alternator Belt - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

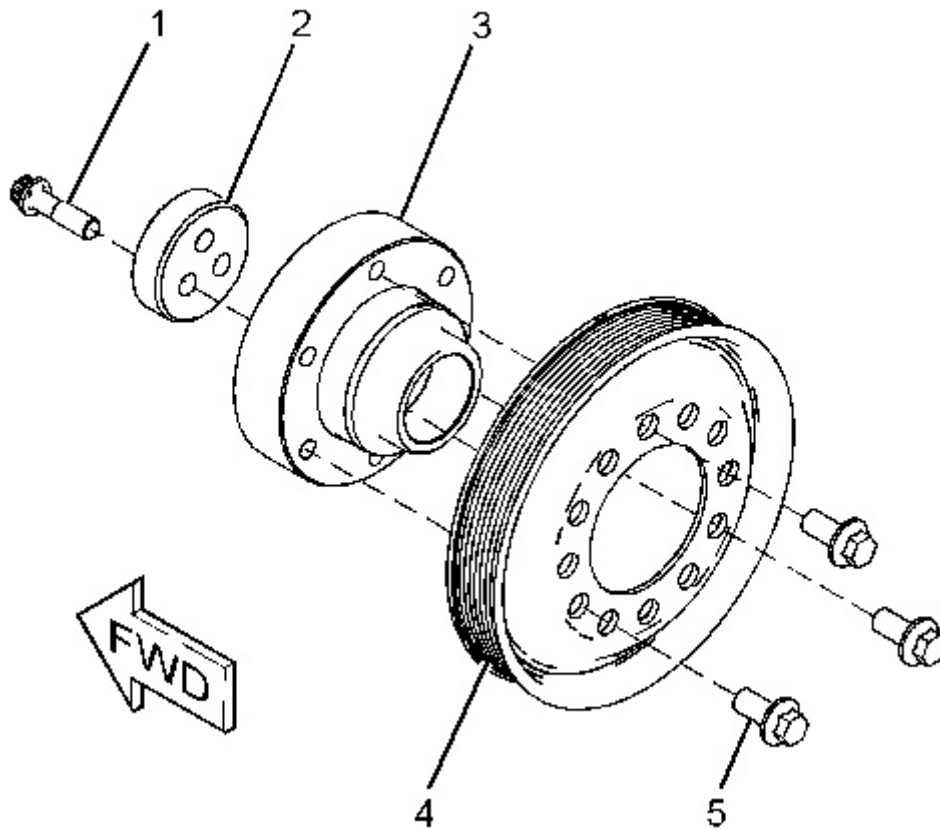


Illustration 1

g01249049

1. Use a suitable tool in order to prevent the crankshaft from rotating. Remove bolts (1).
2. Remove thrust block (2).
3. Carefully remove the assembly of the crankshaft pulley from the crankshaft.
4. Follow Step 4.a through Step 4.b in order to disassemble the crankshaft pulley.
 - a. Remove bolts (5).
 - b. Remove crankshaft pulley (4) from crankshaft adapter (3).

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Ensure that the crankshaft adapter, the pulley and the thrust block are clean and free from damage. Replace any components that are damaged.
-

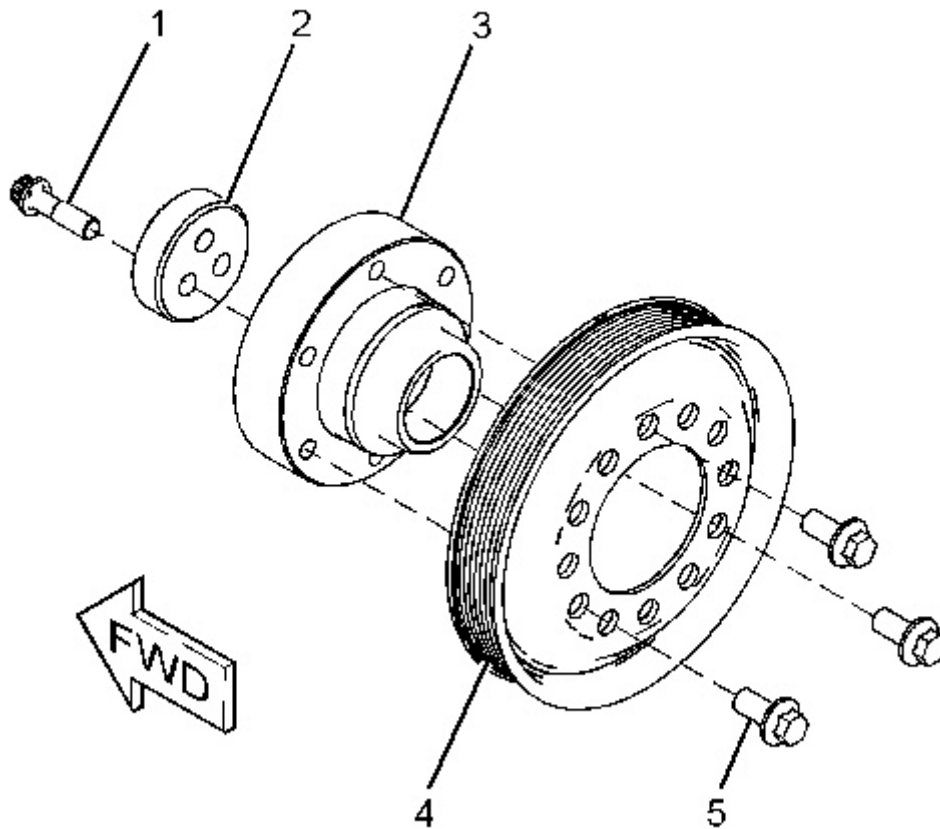


Illustration 2

g01249049

2. If necessary, follow Step 2.a through Step 2.b in order to assemble the crankshaft pulley.
 - a. Install crankshaft pulley (4) to crankshaft adapter (3).
 - b. Install bolts (5) to the assembly of the crankshaft pulley, and the crankshaft adapter. The bolts should be evenly spaced.
 - c. Tighten the bolts to a torque of 78 N·m (58 lb ft).
 3. Ensure that the front of the crankshaft is clean and free from damage. Install the assembly of crankshaft pulley (3) to the crankshaft.
-

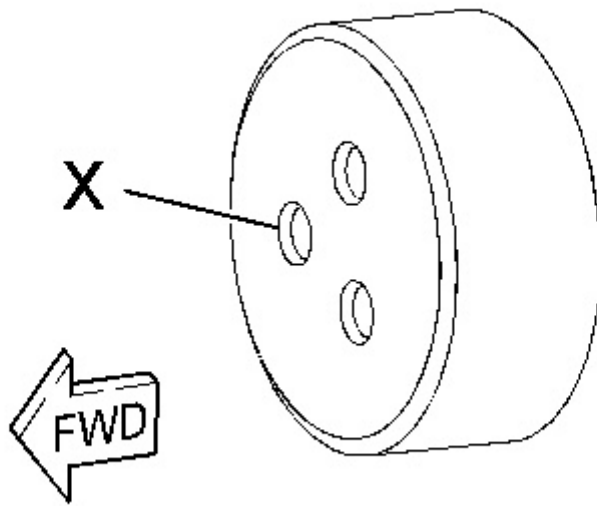


Illustration 3

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4. Align the holes in the thrust block with the holes in the crankshaft.

Note: Ensure chamfered Holes (X) in the thrust block. Face toward the front of the engine.

5. Install thrust block (2) to the assembly of the crankshaft pulley.
6. Install bolts (1) to thrust block (2).
7. Use a suitable tool in order to prevent the crankshaft from rotating. Tighten the bolts to a torque of 115 N·m (85 lb ft).
8. Repeat Step 7 in order to ensure correct torque.

End By:

- a. Install the alternator belt. Refer to Disassembly and Assembly, "Alternator Belt - Remove and Install".
-

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i02929974

Crankshaft Pulley - Remove and Install - Engines Without an Automatic Belt Tensioner

SMCS - 1205-010

Removal Procedure

Start By:

- a. Remove the V-Belts. Refer to Disassembly and Assembly, "V-Belts - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

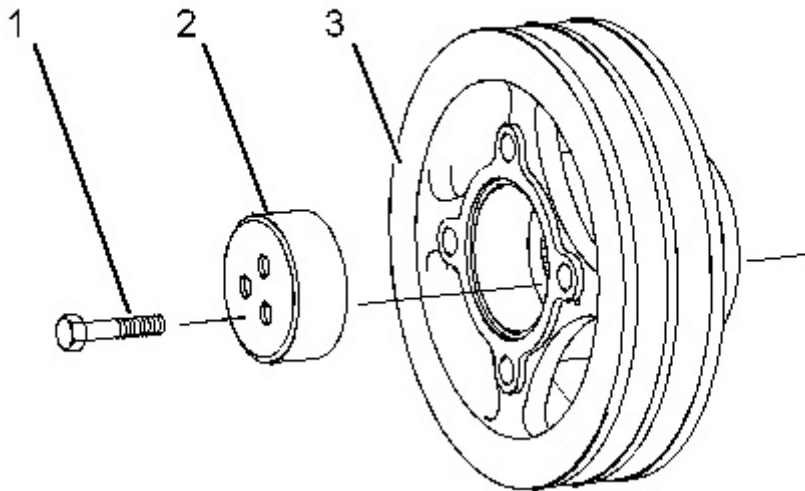


Illustration 1

g01255707

1. Use a suitable tool in order to prevent the crankshaft from rotating. Remove bolts (1).
2. Remove thrust block (2).
3. Carefully remove crankshaft pulley (3) from the crankshaft.

Installation Procedure

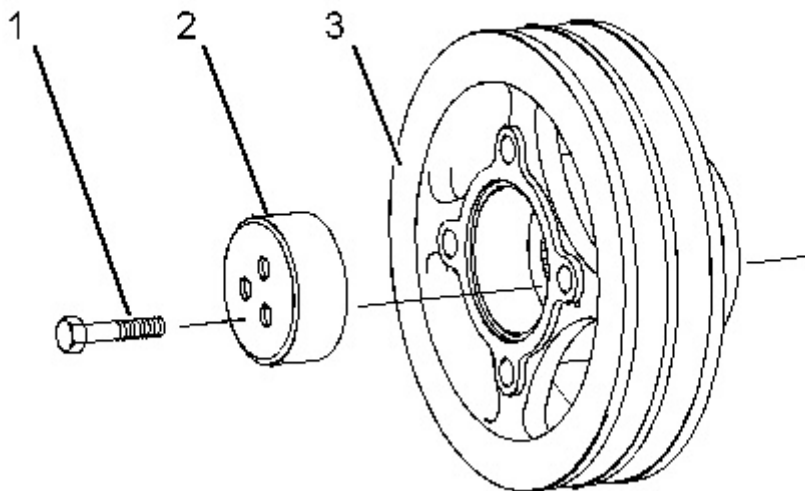


Illustration 2

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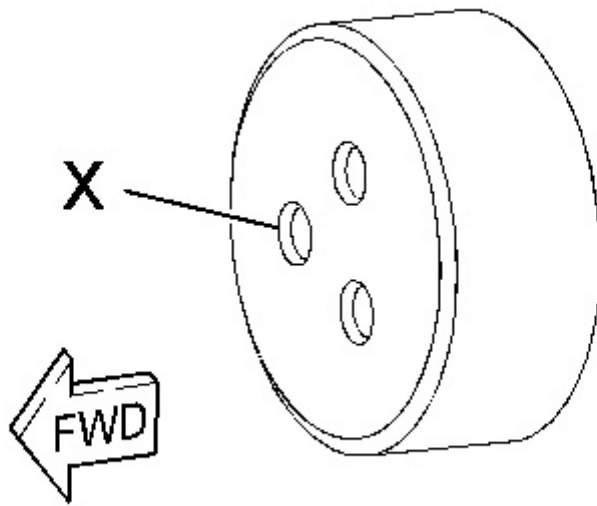


Illustration 3

g01471632

1. Ensure that the crankshaft pulley and the thrust block are clean and free from damage. Replace any components that are damaged.
2. Ensure that the front of the crankshaft is clean and free from damage. Install crankshaft pulley (3) to the crankshaft.
3. Align the holes in the thrust block with the holes in the crankshaft.

Note: Ensure that chamfered Holes (X) in the thrust block face toward the front of the engine.

4. Install thrust block (2) to the crankshaft pulley.
5. Install bolts (1) to thrust block (2).
6. Use a suitable tool in order to prevent the crankshaft from rotating. Tighten the bolts to a torque of 115 N·m (85 lb ft).
7. Repeat Step 6 in order to ensure correct torque.

End By:

- a. Install the V-Belts. Refer to Disassembly and Assembly, "V-Belts - Remove and Install".
-

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i02929969

Crankshaft Front Seal - Remove and Install

SMCS - 1160-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-2320	Combination Puller	1

Start By:

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

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

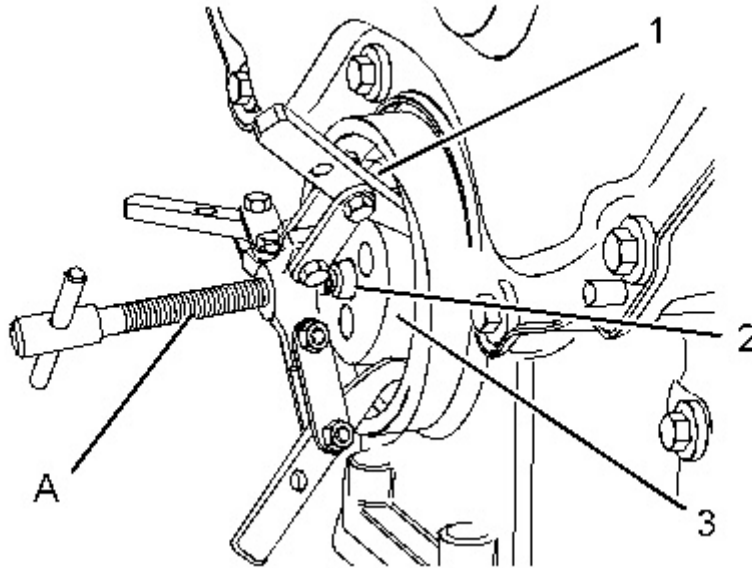


Illustration 1

g01266942

1. Install the legs of Tooling (A) behind crankshaft front seal (1). Install a suitable spacer (2) between Tooling (A) and crankshaft (3). Use Tooling (A) in order to pull the crankshaft front seal out of the front housing.

Note: Do not damage the bore for the crankshaft front seal in the front housing.

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
B	9U-6210	Front Seal Installer	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Ensure that the bore for the crankshaft front seal in the front housing is clean and free from damage.

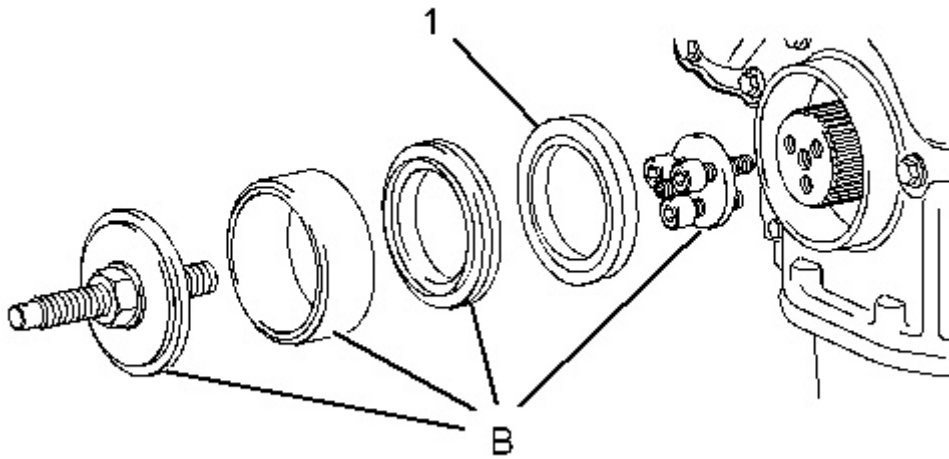


Illustration 2

g01266453

Typical example

2. Assemble Tooling (B).
3. Align a new crankshaft front seal (1) to the front housing.
4. Use Tooling (B) to install crankshaft front seal (1). Ensure that the front face of the seal is installed to a depth of 9 ± 0.2 mm (0.354 ± 0.008 inch) into the front housing.
5. Remove Tooling (B) from the crankshaft.

End By:

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

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i02930001

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".
- b. Remove the water pump. Refer to Disassembly and Assembly, "Water Pump - Remove".

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.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: In order to remove the front cover, it is not necessary to remove the crankshaft pulley or the alternator.

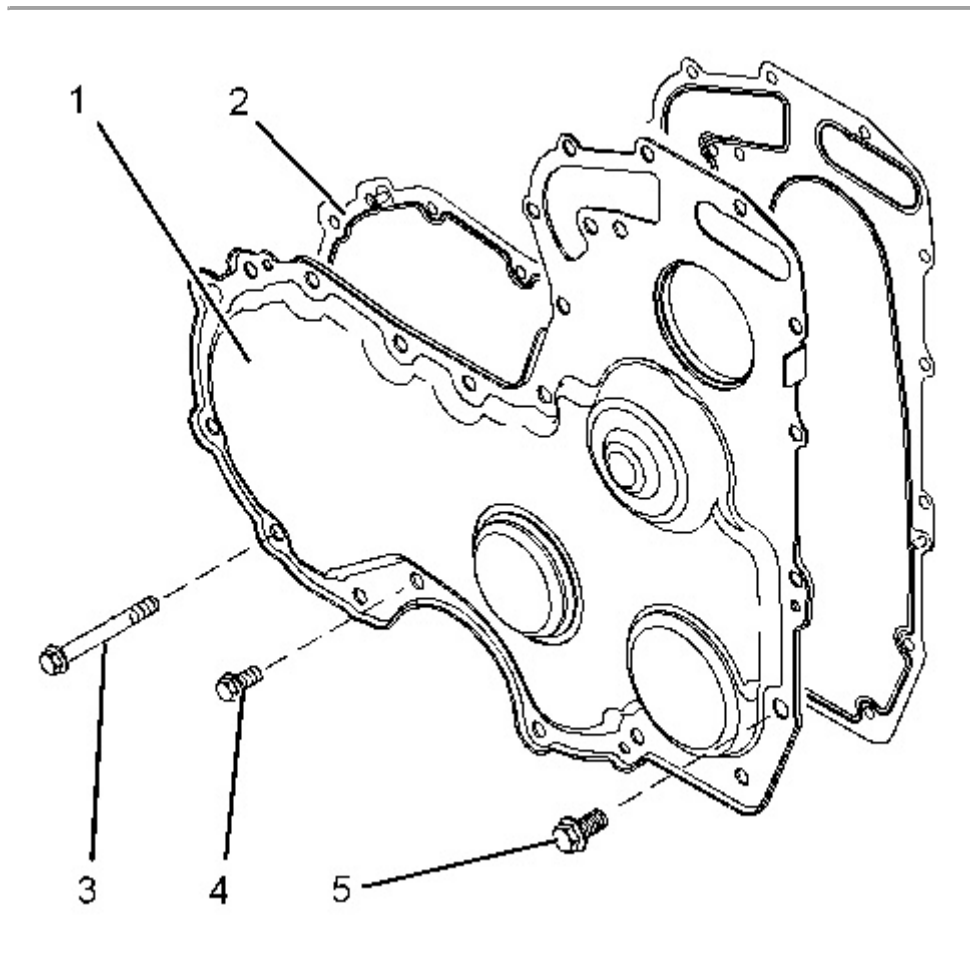


Illustration 1
Typical example

g01258462

1. Remove bolts (3), (4) and (5). Identify the positions of the different bolts.
2. Remove front cover (1) from the front housing.
3. Remove gasket (2) from front cover (1).

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	-	Guide Bolt M8 by 80 mm	2

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

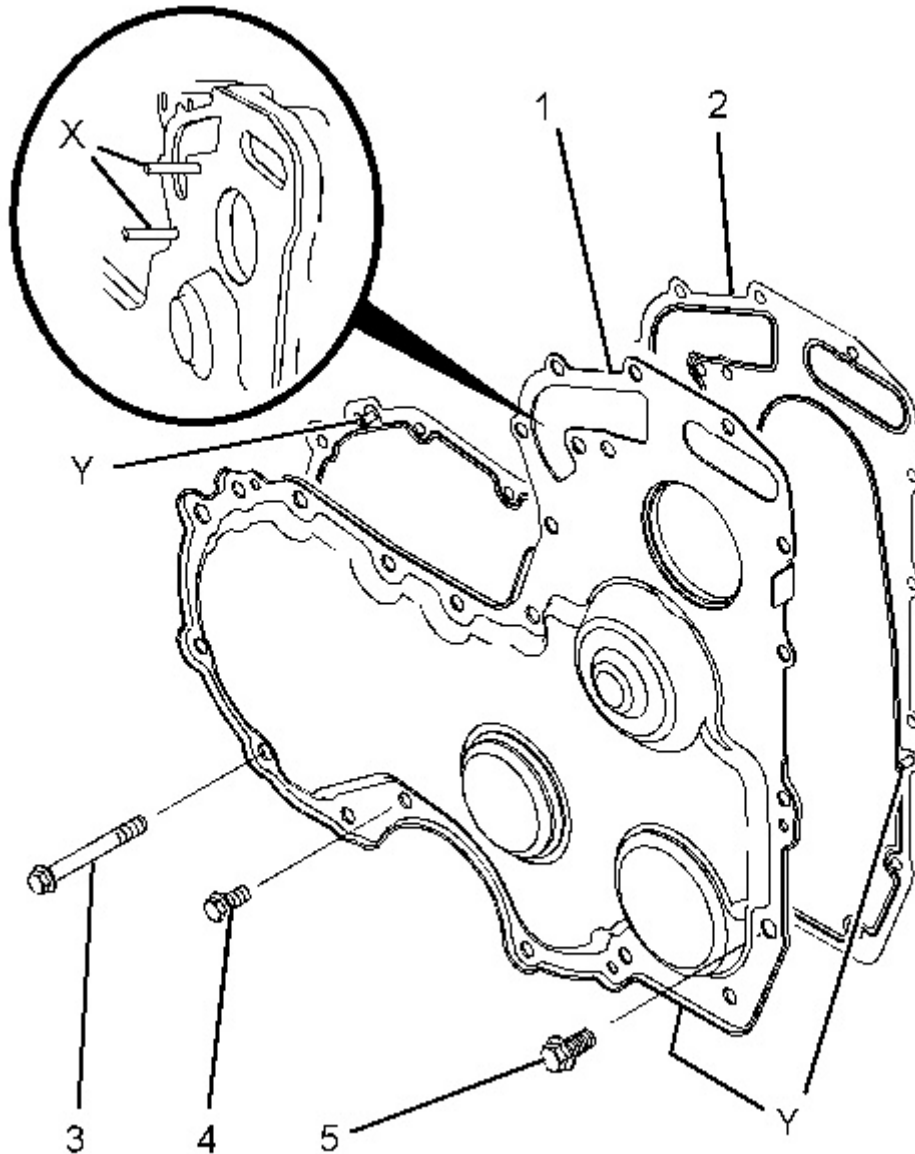


Illustration 2
Typical example

g01471654

1. Thoroughly clean the face of the front housing.
2. If the original front cover is installed, follow Step 2.a and Step 2.b in order to install the gasket.
 - a. Thoroughly clean the front cover.

- b. Install a new gasket (2) to front cover (1). Engage Locators (Y) into the holes in the front cover.
3. Install Tooling (A) into Holes (X) in the front housing.
4. Use Tooling (A) in order to position the front cover assembly onto the front housing.
5. Install bolts (3), (4) and (5) finger tight. Ensure that the different bolts are installed in the correct positions.
6. Loosely install the water pump assembly and remove Tooling (A). Refer to Disassembly and Assembly, "Water Pump - Install" for the correct procedure.
7. Tighten bolts (3), (4) and (5) to a torque of 22 N·m (16 lb ft).
8. Tighten the bolts for the water pump to a torque of 22 N·m (16 lb ft).

End By:

- a. If the engine is equipped with a fan, install the fan. Refer to Disassembly and Assembly, "Fan - Remove and Install".
-

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i02930015

Gear Group (Front) - Remove and Install

SMCS - 1206-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A ⁽¹⁾	9U-6198	Crankshaft Turning Tool	1
A ⁽²⁾	9U-7336	Housing	1
	5P-7305	Engine Turning Tool	1
B	230-6284	Timing Pin (Camshaft)	1
C	230-6283	Timing Pin (Crankshaft)	1

⁽¹⁾ The Crankshaft Turning Tool is used on the front pulley.

⁽²⁾ This Tool is used in the aperture for the electric starting motor.

Start By:

- a. If the engine is equipped with an air compressor, remove the air compressor. Refer to Disassembly and Assembly, "Air Compressor - Remove and Install".
- b. If the engine is equipped with a vacuum pump, remove the vacuum pump. Refer to Disassembly and Assembly, "Vacuum Pump - Remove and Install".
- c. If the engine is equipped with an accessory drive, remove the accessory drive. Refer to Disassembly and Assembly, "Accessory Drive - Remove and Install".
- d. Remove the front cover. Refer to Disassembly and Assembly, "Front Cover - Remove and Install".

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