



Service Repair Manual

Models

C27 Locomotive Engine

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◀ Product: INDUSTRIAL ENGINE
 Model: C27 INDUSTRIAL ENGINE WJC
 Configuration: C27 Locomotive Engine WJC00001-UP

Disassembly and Assembly C27 and C32 Engines

Media Number -M0074364-00

Publication Date -01/08/2015

Date Updated -13/09/2016

i02986920

Crankshaft Front Seal - Install

SMCS - 1160-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
E	5P-1733	Seal Locator	1
	5P-1737	Bolt	3
	9S-8858	Nut (Seal Installer)	1
	6V-6142	Seal Installer	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Clean the outside diameter of the crankshaft.
-

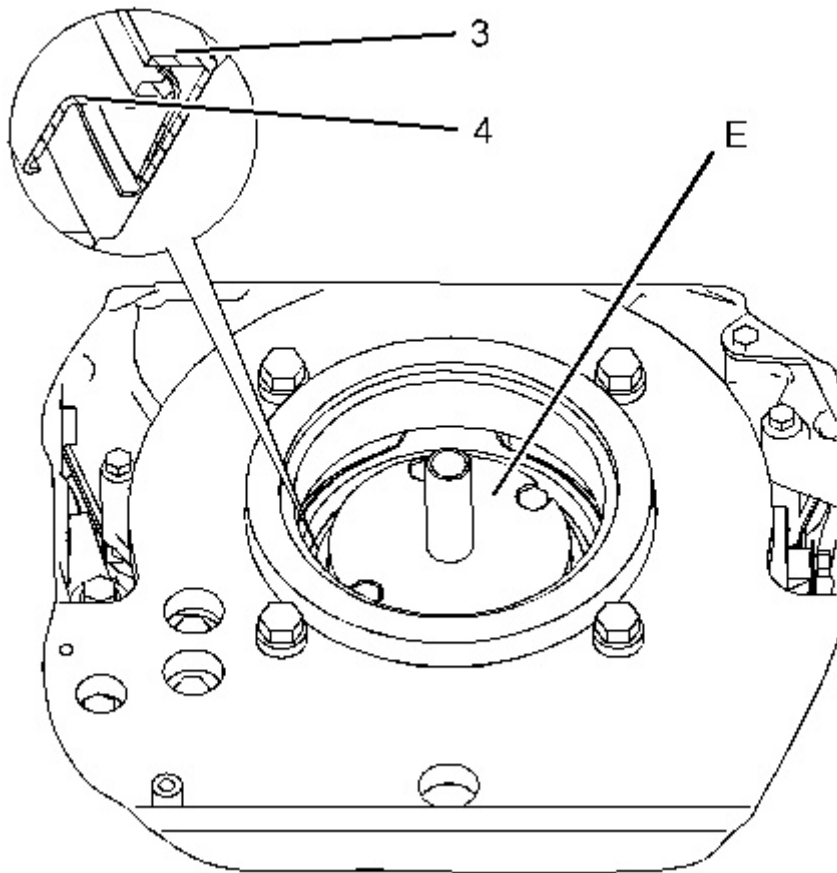


Illustration 1

g01513455

2. Use Tooling (E) to install crankshaft front seal (4) and crankshaft wear sleeve (3) as a unit.

Note: Install the crankshaft front seal with the arrow that shows the direction of crankshaft rotation toward the front of the engine.

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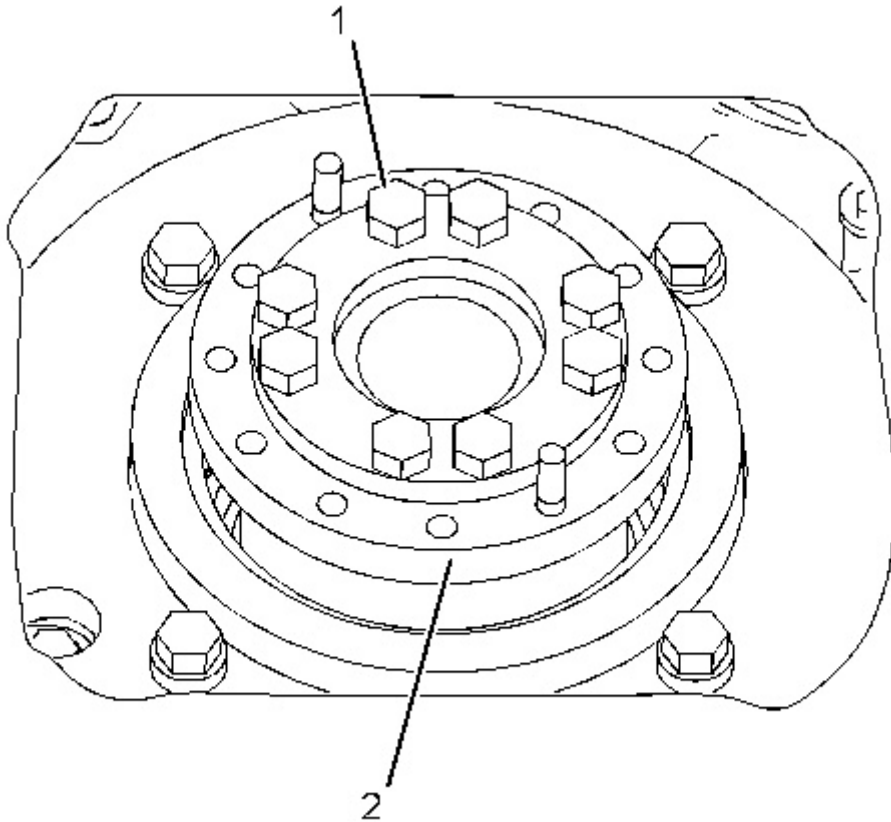


Illustration 2

g01098057

3. Install adapter (2) and bolts (1).

End By:

- a. Install the crankshaft vibration damper and pulley. Refer to Disassembly and Assembly, "Vibration Damper and Pulley - Remove and Install".

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**Disassembly and Assembly
 C27 and C32 Engines**

Media Number -M0074364-00

Publication Date -01/08/2015

Date Updated -13/09/2016

i05933887

Gear Group (Front) - Remove

SMCS - 1206-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	8S-2241	Camshaft Bearing Tool Group	1
	6V-4869	Adapter	1
	6V-6174	Plug	1

Start By:

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

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

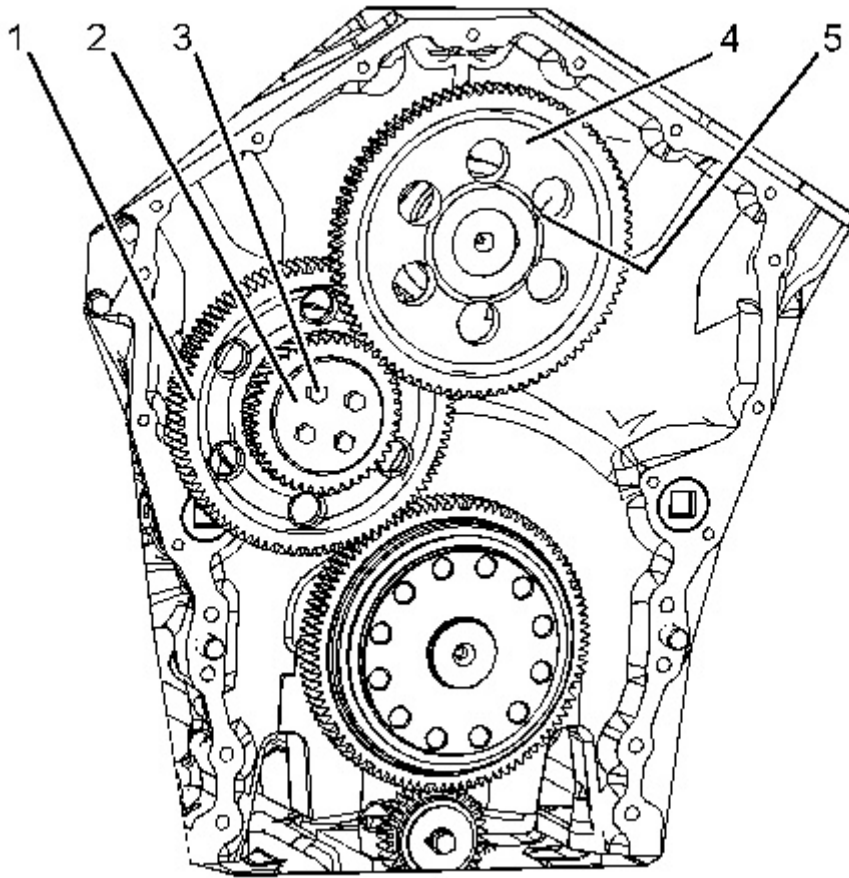


Illustration 1

g01147593

1. Remove bolts (5) and gear assembly (4).
2. Remove bolts (3) and plate (2). Remove gear assembly (1).

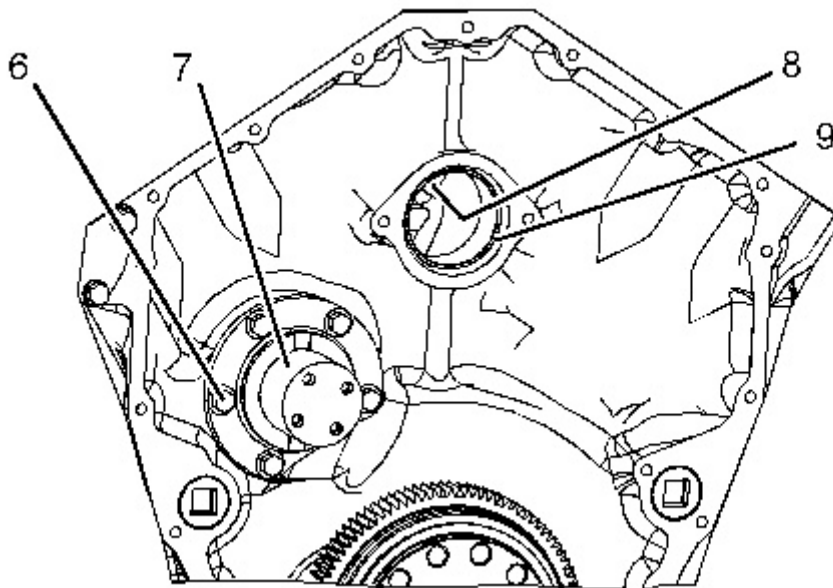


Illustration 2

g03729282

3. Remove bolts (6) and shaft (7).

Note: The crankshaft will have to be removed to remove and install bushings (8) and (9). Refer to Disassembly and Assembly, "Crankshaft - Remove".

4. If necessary, use Tooling (A) to remove bushing (8) and (9).

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i06280625

Gear Group (Front) - Install

SMCS - 1206-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	8S-2241	Camshaft Bearing Tool Group	1
	6V-4869	Adapter	1
	6V-6174	Plug	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

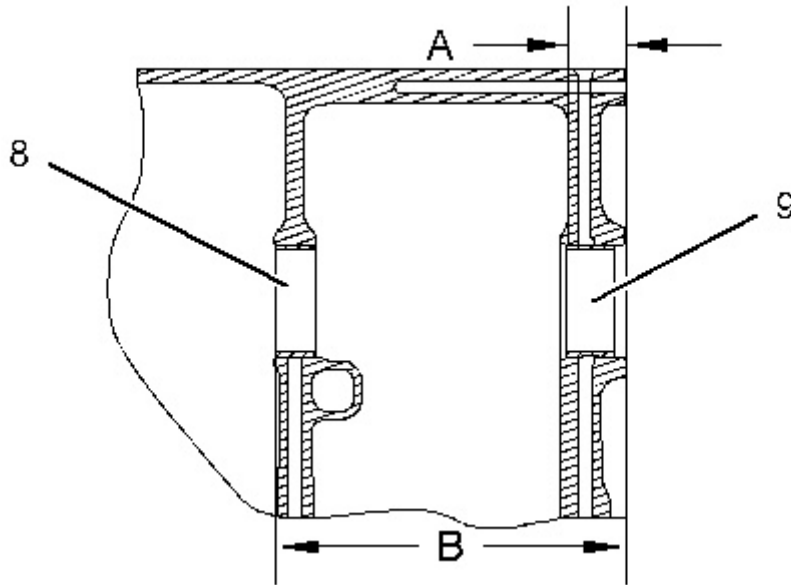


Illustration 1

g03729299

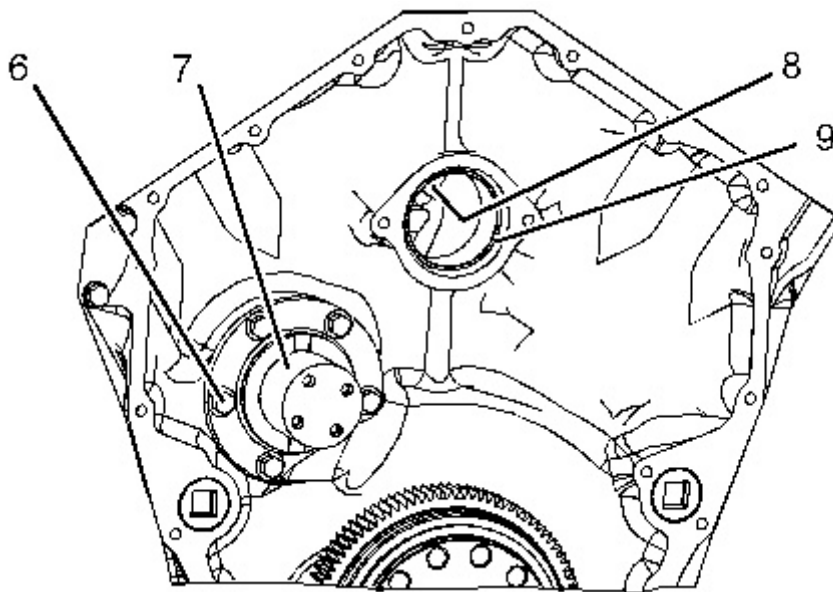


Illustration 2

g03729282

1. Use Tooling (A) to install bushings (8) and (9) . Install bushing (8) to a Dimension (B) . Dimension (B) is 236.7 ± 0.5 mm (9.32 ± 0.02 inch) . Install bushing (9) to a Dimension (A) . Dimension (A) is 40.4 ± 0.5 mm (1.59 ± 0.02 inch) . Install the crankshaft. Refer to Disassembly and Assembly, "Crankshaft - Install".
2. Apply clean engine oil to shaft (7) , the bearing bore, and the thrust faces prior to installation. Install shaft (7) and bolts (6) . Tighten bolts (6) to a torque of 55 ± 10 N·m (41 ± 7 lb ft).

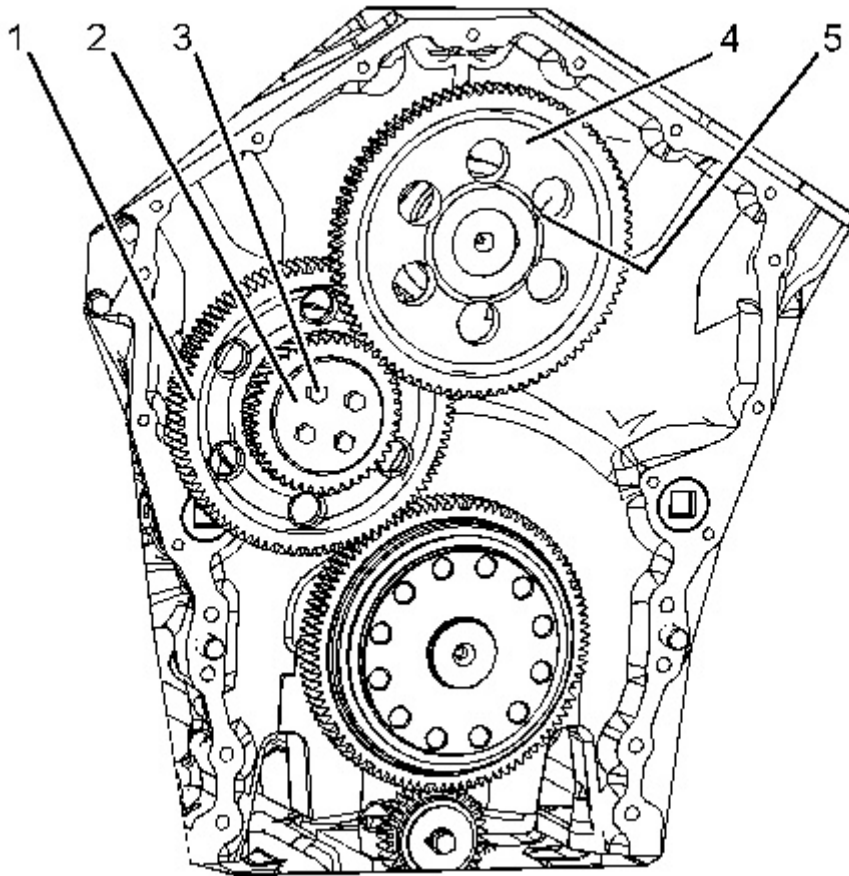


Illustration 3

g01147593

3. Position gear assembly (1) on the shaft. Install plate (2) and bolts (3) .
4. Install gear assembly (4) and bolts (5) .

End By: Install the front housing. Refer to Disassembly and Assembly, "Housing (Front) - Install".

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i02292574

Housing (Front) - Remove

SMCS - 1151-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	185-3630	Strap Wrench As	1

Start By:

- a. Remove the water pump. Refer to Disassembly and Assembly, "Water Pump - Remove".
- b. Remove the crankshaft front seal. Refer to Disassembly and Assembly, "Crankshaft Front Seal - Remove".
- c. Remove the water temperature regulator housing. Refer to Disassembly and Assembly, "Water Temperature Regulator Housing - Remove and Install".
- d. Remove the front engine support. Refer to Disassembly and Assembly, "Engine Trunnion - Remove and Install".

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.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

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.

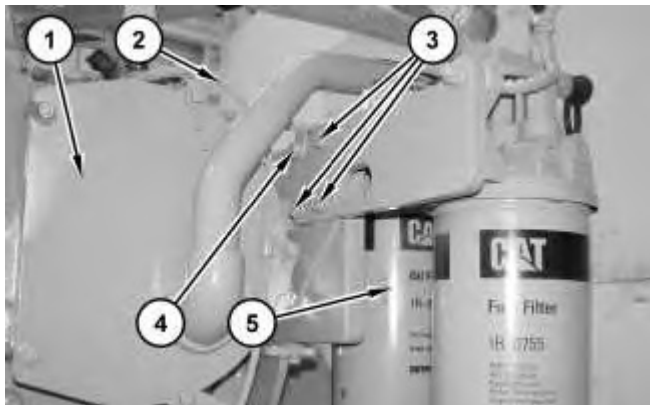


Illustration 1

g01147751

1. Remove covers (1).
 2. Disconnect harness assembly (2).
 3. Remove three bolts (3).
 4. Loosen bolt (4) and reposition the filter housing assembly. Tighten bolt (4).
 5. Use Tooling (A) to remove engine oil filter (5).
-

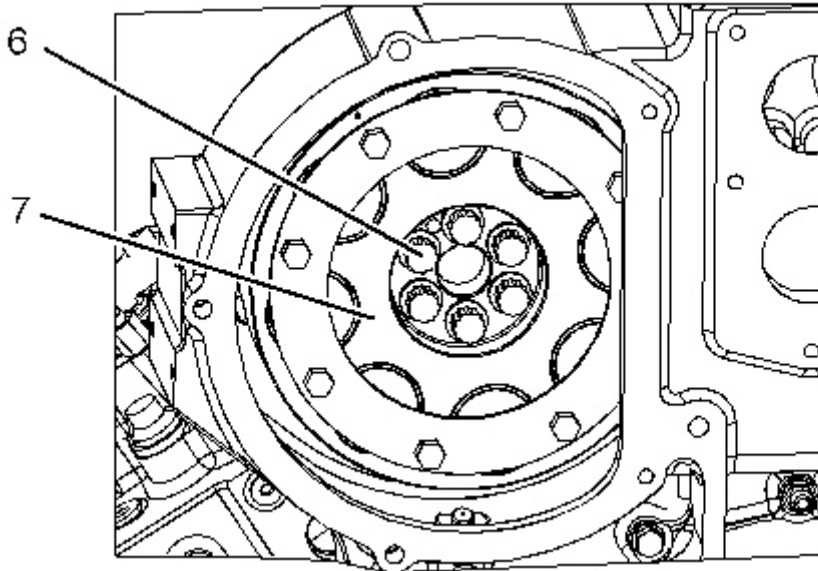


Illustration 2

g01147758

6. Remove bolts (6) and dampers (7).

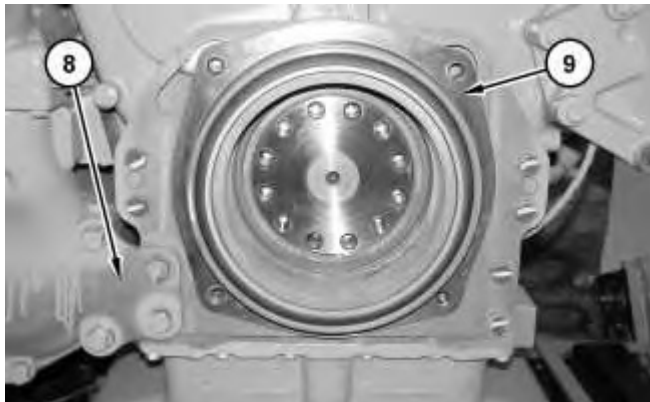


Illustration 3

g01147761

7. Remove bracket (8) and engine trunnion (9).

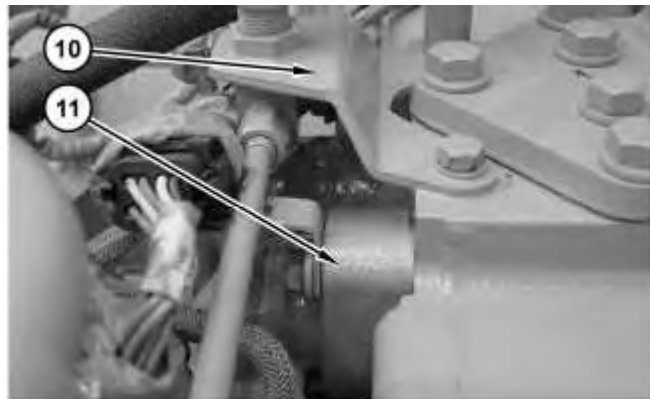


Illustration 4

g01147762

8. Disconnect bracket (10) and elbows (11).

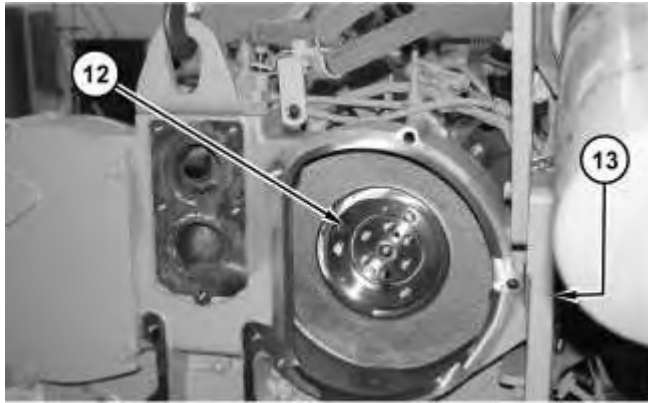


Illustration 5

g01147777

9. Remove adapters (12) and bolts (13).

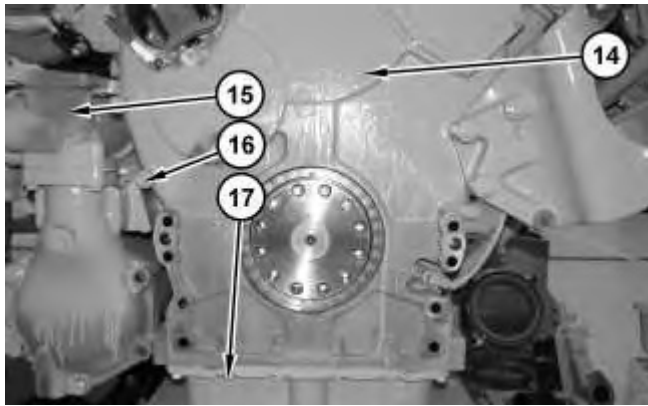


Illustration 6

g01147783

10. Attach a suitable lifting device to front housing (14). The weight of front housing (14) is approximately 70 kg (154 lb).
11. Remove bonnet (15).
12. Remove bolts (16) and bolts (17).
13. Remove front housing (14) and the gasket.

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Disassembly and Assembly C27 and C32 Engines

Media Number -M0074364-00

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i06746008

Housing (Front) - Install

SMCS - 1151-012

Installation Procedure

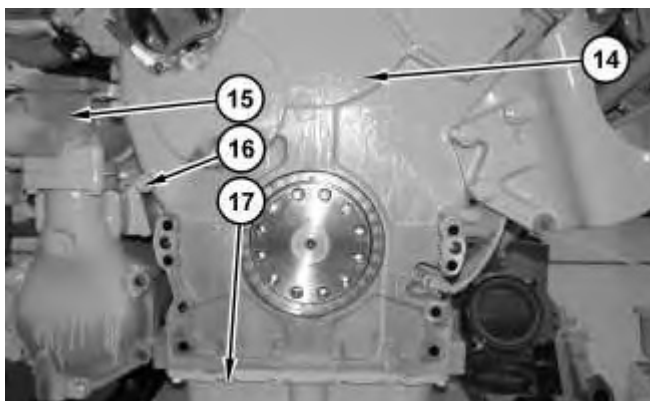
Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
B		Loctite 598	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



1. Apply Tooling (B) to the bottom of front housing (14) at the junction of the cylinder block and the engine oil pan.
2. Attach a suitable lifting device to front housing (14). The weight of front housing (14) is approximately 70 kg (154 lb). Position the gasket and front housing (14) on the dowel pins on the cylinder block.
3. Install bolts (16) and bolts (17).
4. Install bonnet (15).
5. Trim the gasket between the front housing and the cylinder block even with the bottom of the front housing.

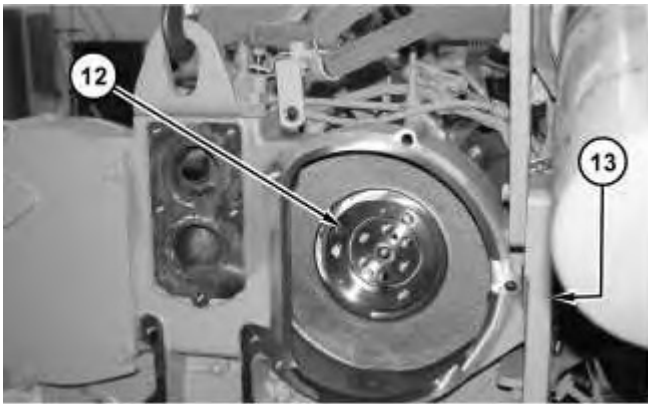


Illustration 2

6. Install bolts (13) and adapters (12).



Illustration 3

7. Connect elbows (11) and bracket (10).
-

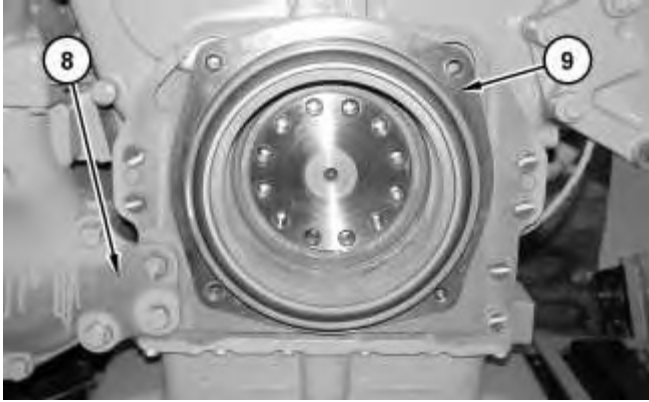


Illustration 4

g01147761

8. Install engine trunnion (9) and bracket (8).

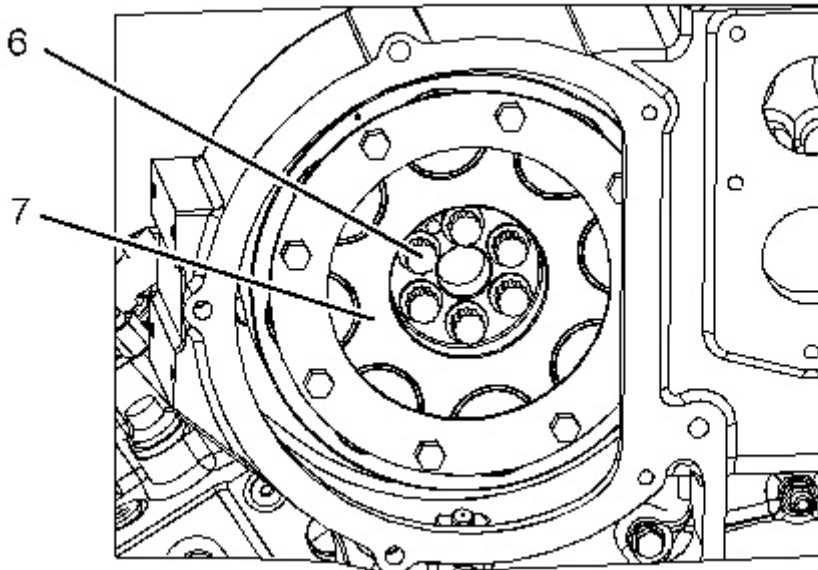


Illustration 5

g01147758

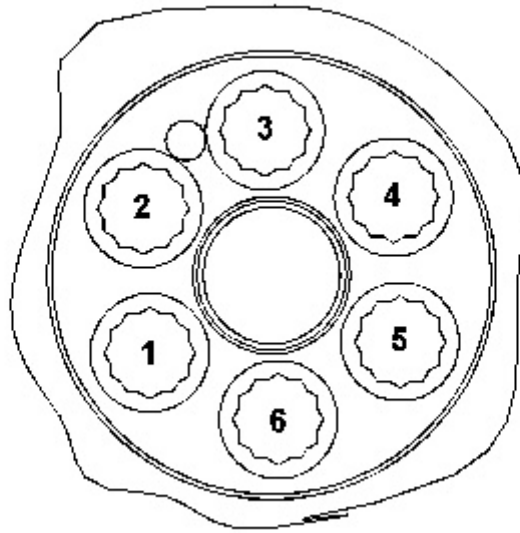


Illustration 6

g01151441

9. Install dampers (7) and bolts (6).
10. Tighten the bolts to a torque of $240 \pm 40 \text{ N}\cdot\text{m}$ ($177 \pm 30 \text{ lb ft}$). Tighten the bolts in the following sequence: 1, 4, 2, 5, 3, 6, 1, 4.

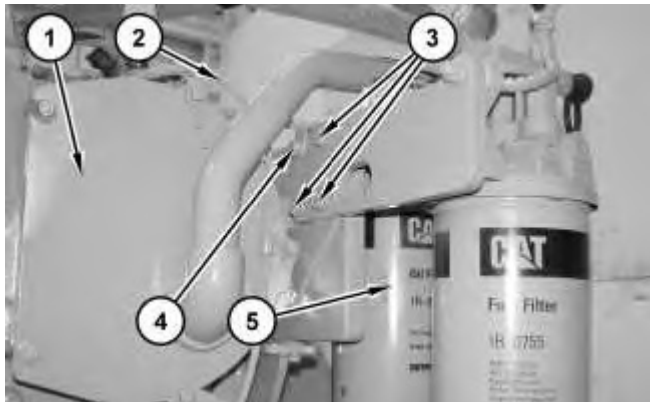


Illustration 7

g01147751

11. Install engine oil filter (5).
12. Reposition the filter housing assembly and tighten bolt (4).
13. Install bolts (3).
14. Connect harness assembly (2).
15. Install covers (1).

End By:

- a. Install the front engine support. Refer to Disassembly and Assembly, "Engine Trunnion - Remove and Install".

- b. Install the water temperature regulator housing. Refer to Disassembly and Assembly, "Water Temperature Regulator Housing - Remove and Install".
- c. Install the crankshaft front seal. Refer to Disassembly and Assembly, "Crankshaft Front Seal - Install".
- d. Install the water pump. Refer to Disassembly and Assembly, "Water Pump - Install".

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Disassembly and Assembly C27 and C32 Engines

Media Number -M0074364-00

Publication Date -01/08/2015

Date Updated -13/09/2016

i04165076

Housing (Rear) - Remove

SMCS - 1157-011

Removal Procedure

Start By:

- a. Remove the rear gear group.
- b. Remove the fuel transfer pump.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

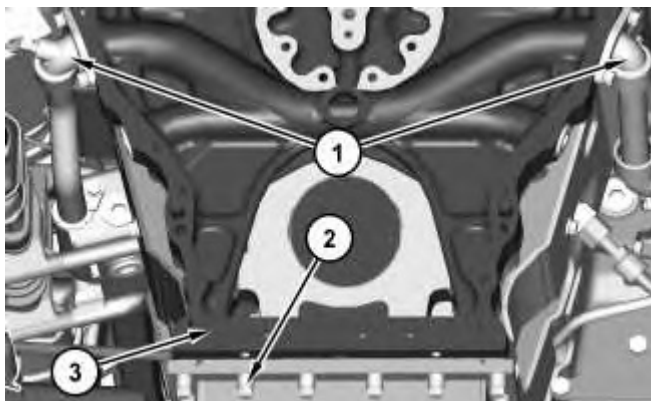


Illustration 1

g02223214

1. Remove elbow assemblies (1).
2. Remove bolts (2) that hold the engine oil pan to rear housing (3).

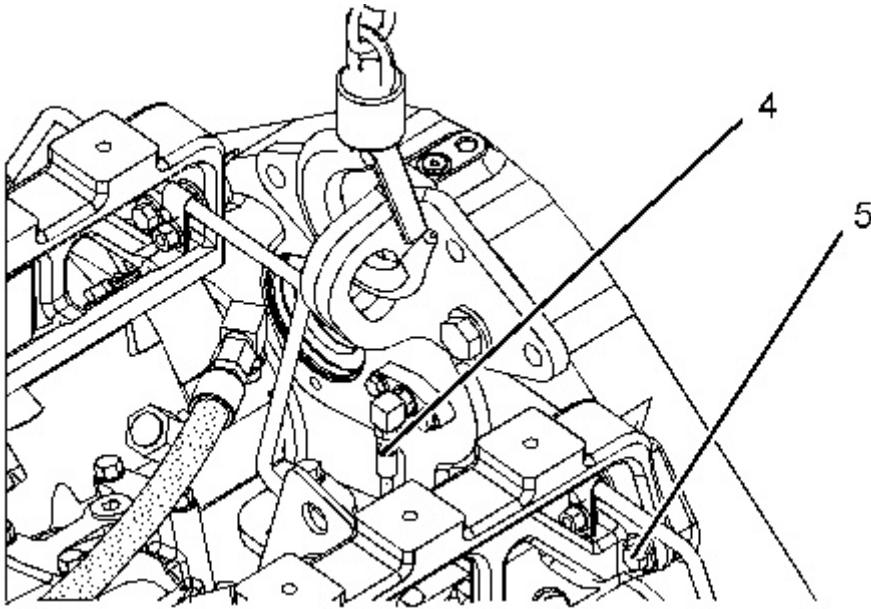


Illustration 2

g02223255

3. Disconnect hose assembly (4). Remove bolts (5).

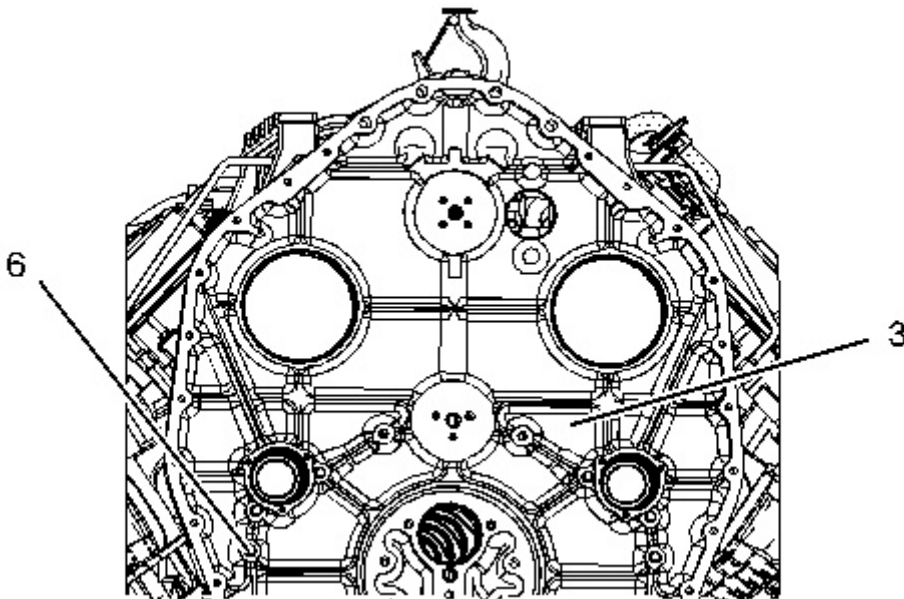


Illustration 3

g02223273

4. Attach a suitable lifting device to rear housing (3). The weight of rear housing (3) is approximately 84 kg (185 lb).
5. Remove bolts (6).
6. Remove rear housing (3) and the gasket.

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i04165077

Housing (Rear) - Install

SMCS - 1157-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	4C-9612	Silicone Sealant	-

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Apply Tooling (A) to the bottom of the rear housing at the junction of the cylinder block and the engine oil pan.
-

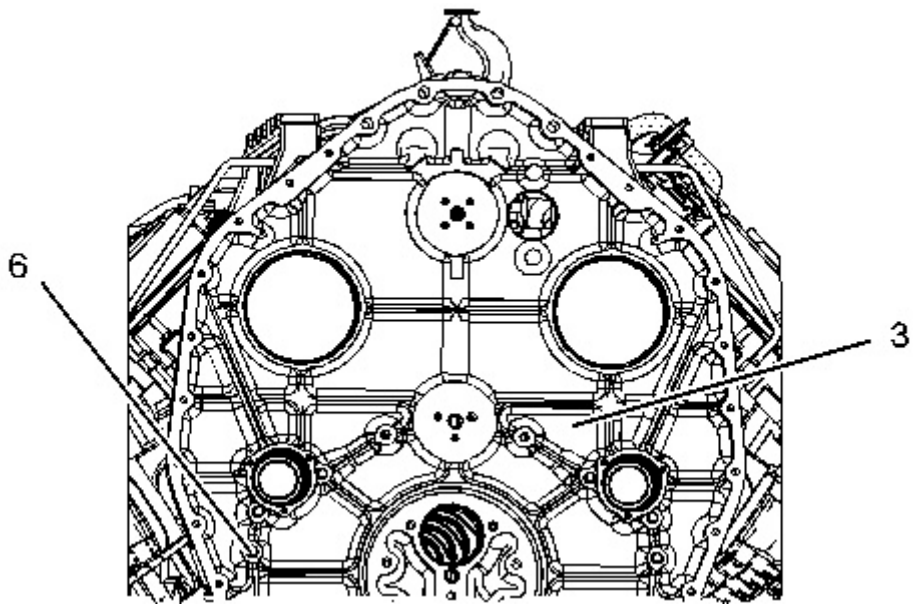


Illustration 1

g02223273

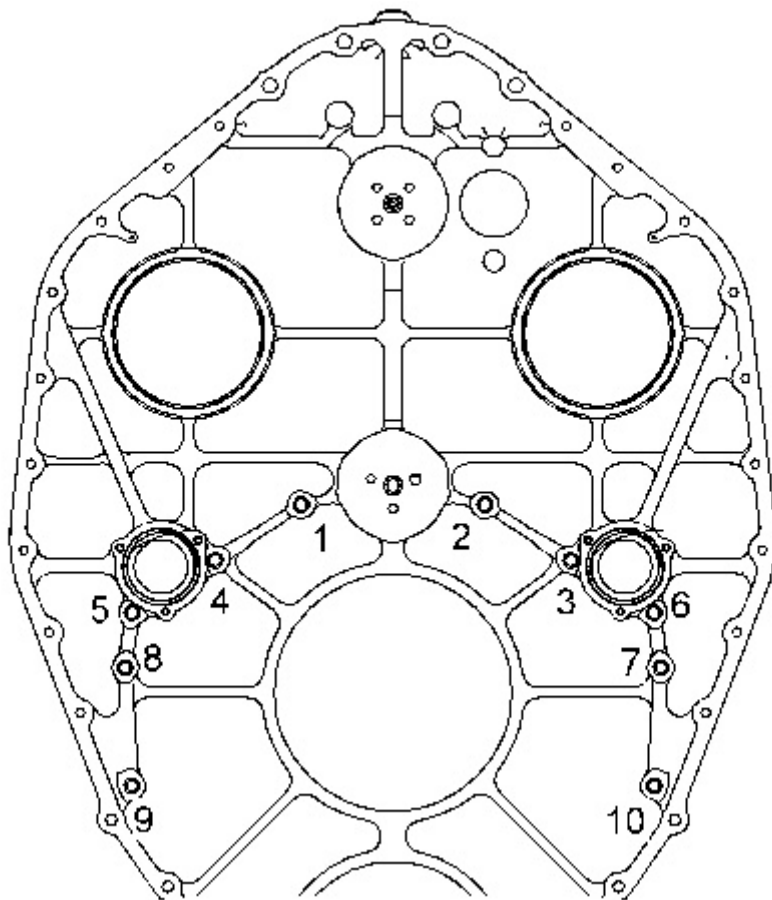


Illustration 2

g02223413

Bolt tightening sequence

2. Attach a suitable lifting device to rear housing (3). The weight of rear housing (3) is approximately 84 kg (185 lb).

3. Position the gasket on rear housing (3).
4. Position rear housing (3) on the cylinder block. Install bolts (6). Tighten bolts (3) in a numerical sequence to a torque of $55 \pm 10 \text{ N}\cdot\text{m}$ ($41 \pm 7 \text{ lb ft}$).
5. Trim the gasket between the rear housing and the cylinder block even with the bottom of the rear housing.

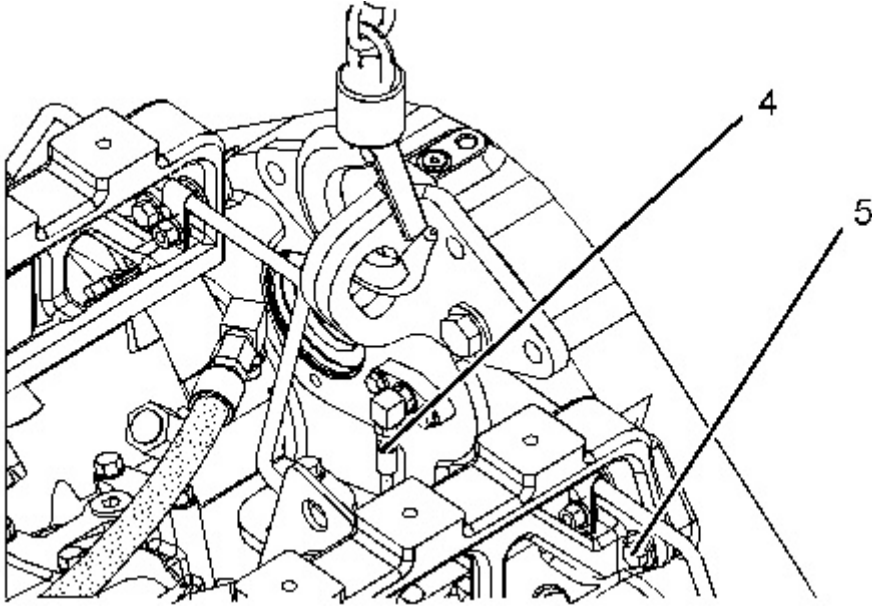


Illustration 3

g02223255

6. Install bolts (5).
7. Connect hose assembly (4).

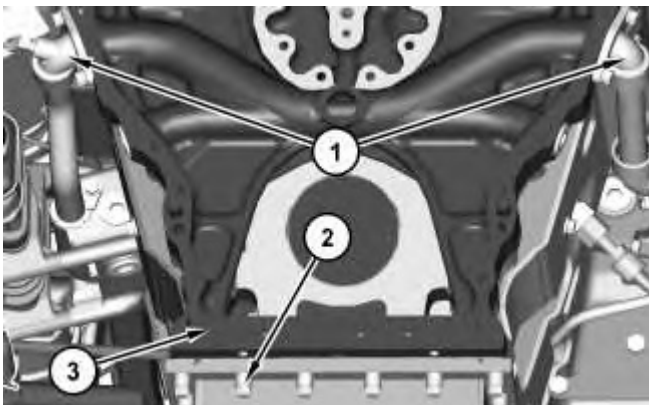


Illustration 4

g02223214

8. Install bolts (2) that hold the engine oil pan to rear housing (3).
9. Install elbow assemblies (1).

End By:



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a. Install the fuel transfer pump.

b. Install the rear gear group.

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