



Service Repair Manual

Models

3054 Industrial Engine

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◀ Product: INDUSTRIAL ENGINE
 Model: 3054 INDUSTRIAL ENGINE 6FK
 Configuration: 3054 Industrial Engine 6FK00001-UP

Disassembly and Assembly

3054 and 3056 Industrial and Generator Set Engines

Media Number -SEN5547-04

Publication Date -01/02/2004

Date Updated -25/02/2004

i01092432

Engine Oil Pump - Remove

SMCS - 1304-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-1855	Retaining Ring Pliers	1

Start By:

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

Note: The engine oil pump is mounted on the No. 1 crankshaft main bearing cap. The engine oil pump can be removed without removing the front housing if the No. 1 crankshaft main bearing cap is removed. Use a **9U-6282** Torque Wrench Extension in order to remove the No. 1 crankshaft main bearing cap. The engine oil pump is then removed from the No. 1 crankshaft main bearing cap.

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.

Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

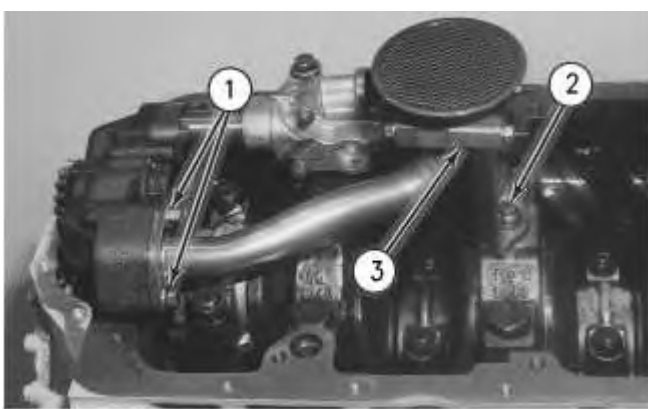


Illustration 1

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1. Remove two bolts (1) from suction pipe (3) .
2. Remove bolt (2) from the mounting bracket.
3. Remove the strainer, suction pipe (3), and the gasket.
4. Remove the engine oil relief valve. Refer to Disassembly and Assembly, "Engine Oil Relief Valve - Remove".



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5. Use Tool (A) to remove retaining ring (4) .
6. Remove idler gear (5) from the gear drive of the engine oil pump. Inspect the shaft of the idler gear for wear or damage. Use the following steps if the shaft needs to be replaced.
 - a. Use a suitable press in order to remove the shaft for the idler gear from a 3054 Engine.

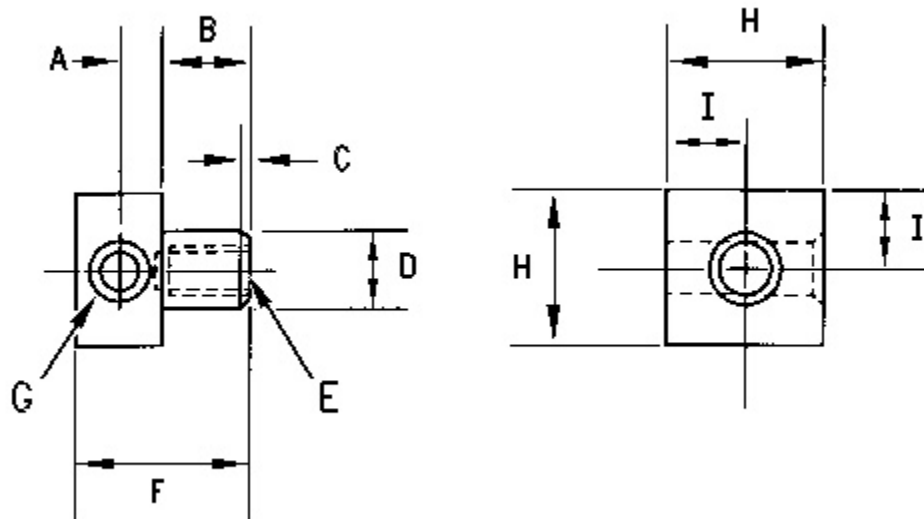


Illustration 3

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Idler gear shaft

(A) 8.3 mm (0.33 inch)

(B) 20.0 mm (0.79 inch)

(C) 1.0 mm (0.04 inch)

(D) 16.25 ± 0.15 mm (0.640 ± 0.006 inch)

(E) The bore has a diameter of 6.9 mm (0.27 inch). The bore has a depth of 22.0 mm (0.87 inch). The hole is for a 5/16-24 UNF and an 18 millimeter thread.

(F) 36.0 mm (1.42 inch)

(G) The bore has a diameter of 6.55 ± 0.05 mm (0.258 ± 0.002 inch). The bore must be countersunk 9.0 millimeters.

(H) 31.75 mm (1.250 inch)

(I) 15.9 mm (0.63 inch)

- b. The shaft for the idler gear on a 3056 Engine is retained with a pin. Make a drill guide with the dimensions listed above in order to remove the pin.

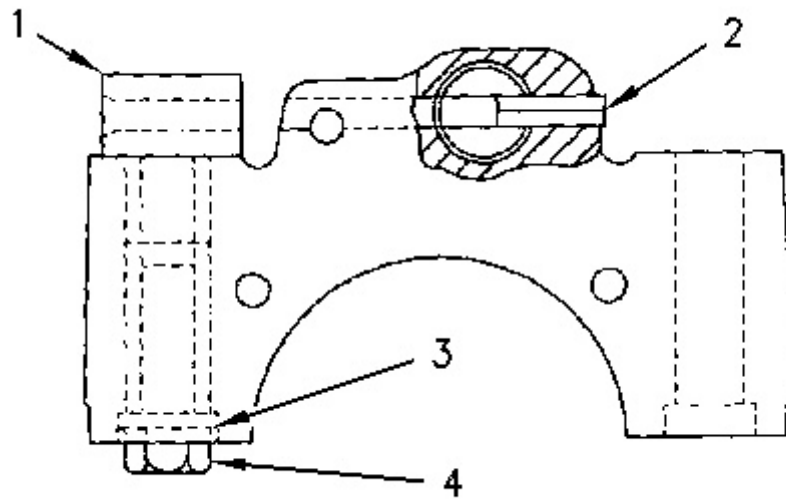


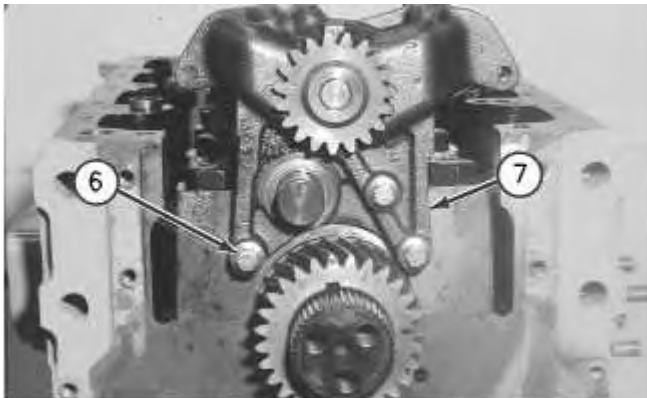
Illustration 4

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- c. Place drill guide (1) into position on the opposite side of pin (2) on the main bearing cap.

Note: Ensure that the countersink in the guide faces outward. Also ensure that the edge of the guide is aligned with the front edge of the main bearing cap. Use a 5/16 inch UNF (4) and a flat washer (3) to retain the guide.

- d. Drill a hole with a 6.4 mm (0.25 inch) diameter in the main bearing cap. The hole should be 47.0 mm (1.85 inch) deep.
- e. Remove drill guide (1) .
- f. Use a suitable drift to drive pin (2) from the main bearing cap.
- g. Press the shaft for the idler gear out of the main bearing cap.



7. Remove three bolts (6) that hold engine oil pump (7) on the front of the engine.
8. Remove engine oil pump (7) .

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Product: INDUSTRIAL ENGINE
 Model: 3054 INDUSTRIAL ENGINE 6FK
 Configuration: 3054 Industrial Engine 6FK00001-UP

Disassembly and Assembly 3054 and 3056 Industrial and Generator Set Engines

Media Number -SEN5547-04

Publication Date -01/02/2004

Date Updated -25/02/2004

i01092600

Engine Oil Pump - Install

SMCS - 1304-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-1855	Retaining Ring Pliers	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

If any of the parts on the engine oil pump are worn or damaged, the entire pump must be replaced.

Note: If the No. 1 crankshaft main bearing cap was removed, install the No. 1 crankshaft main bearing cap with the engine oil pump. Tighten the bolts for the No. 1 crankshaft main bearing cap to a torque of 265 ± 40 N·m (195 ± 30 lb ft).

1. If the shaft for the idler gear on the engine oil pump of a 3054 Engine was removed, remove the old sealant. Apply a fresh layer of Loctite 603 to the bore in the main bearing cap and use a suitable press to install the shaft.
2. If the shaft for the idler gear on the engine oil pump of a 3056 Engine was removed, use the following steps to install the shaft.

Note: If the shaft on the 3056 Engine was not originally installed with a pin, the pin must be installed.

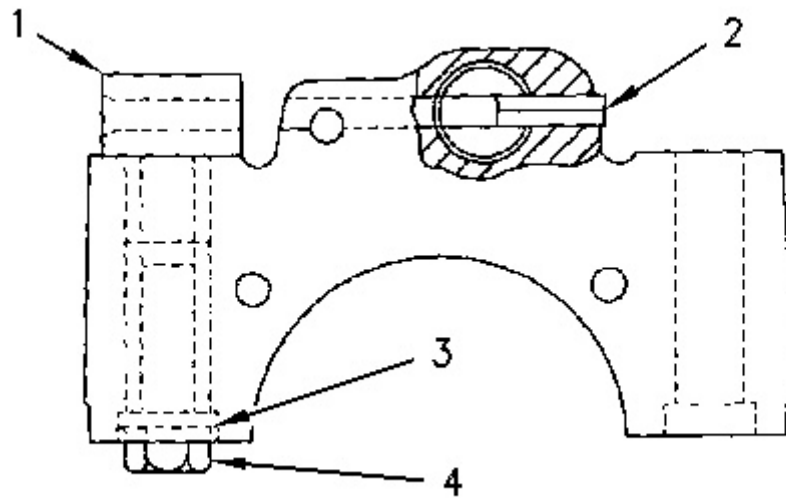


Illustration 1

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- a. Ensure that the bore in the main bearing cap is clean and that the main bearing cap has no burrs. Apply Loctite 603 to the bore and use a suitable press to install the shaft.
- Note:** Ensure that the shaft is at 90 degrees to the main bearing cap.
- b. Use the original hole for the pin in the main bearing cap. Drill the hole to a new diameter of 6.35 mm (0.250 inch). The depth of the hole is 9.5 mm (0.37 inch).
 - c. Install new pin (2) into the main bearing cap and the shaft. Remove the excess Loctite 603.
 - d. Remove bolt (4), flat washer (3), and drill guide (1) .
-

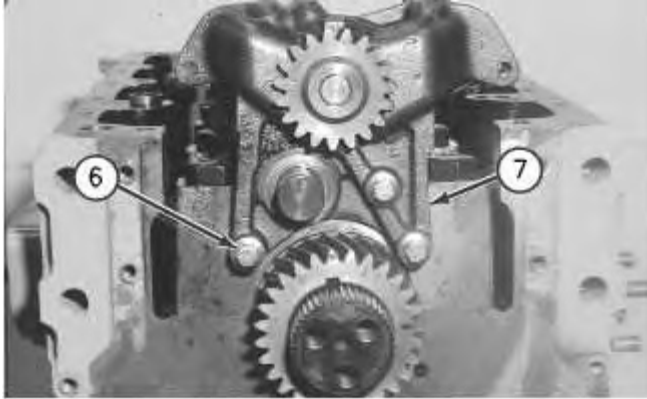


Illustration 2

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3. Fill engine oil pump (7) with clean engine oil. Install engine oil pump (7) on the engine.
4. Install three bolts (6). Tighten the bolts to a torque of 22 N·m (16 lb ft).

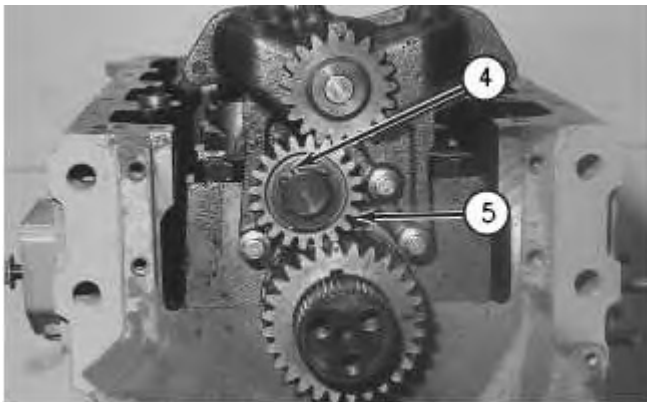


Illustration 3

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5. Install idler gear (5) .
6. Use Tool (A) to install retaining ring (4) on idler gear (5) .

Note: After you install the engine oil pump and the idler gear, ensure that there is a minimum of 0.08 mm (0.003 inch) backlash between the gear on the engine oil pump and the idler gear.

7. Install the engine oil relief valve. Refer to Disassembly and Assembly, "Engine Oil Relief Valve - Install".



Illustration 4

g00552238

8. Install the strainer, suction pipe (3), and the gasket.
9. Install bolt (2) on the mounting bracket. Tighten the bolt to a torque of 22 N·m (16 lb ft).
10. Install two bolts (1) in suction pipe (3). Tighten the bolts to a torque of 22 N·m (16 lb ft).

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

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Product: INDUSTRIAL ENGINE
Model: 3054 INDUSTRIAL ENGINE 6FK
Configuration: 3054 Industrial Engine 6FK00001-UP

Disassembly and Assembly 3054 and 3056 Industrial and Generator Set Engines

Media Number -SEN5547-04

Publication Date -01/02/2004

Date Updated -25/02/2004

i01644325

Water Pump - Remove

SMCS - 1361-011

Removal Procedure

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.

Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

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.

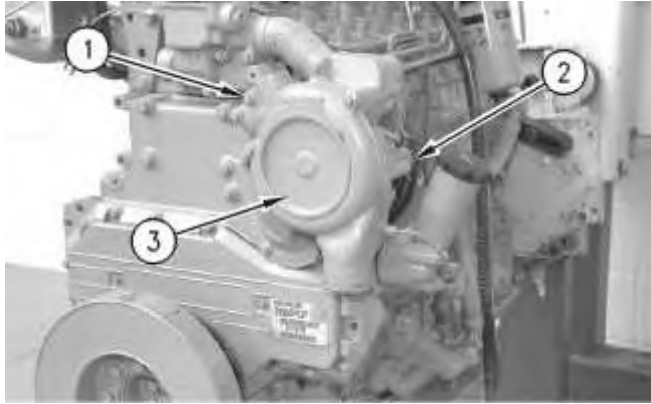


Illustration 1

g00556675

Typical example

2. Remove eight bolts (1) and two nuts (2) that fasten the water pump to the front housing.
3. Tap water pump (3) with a soft hammer in order to loosen water pump (3) .
4. Remove water pump (3) and the gasket.

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Product: INDUSTRIAL ENGINE
 Model: 3054 INDUSTRIAL ENGINE 6FK
 Configuration: 3054 Industrial Engine 6FK00001-UP

**Disassembly and Assembly
 3054 and 3056 Industrial and Generator Set Engines**

Media Number -SEN5547-04

Publication Date -01/02/2004

Date Updated -25/02/2004

i01052998

Water Pump - Disassemble

SMCS - 1361-015

Disassembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	6V-3009	Crossbar	1
	5H-9976	Screw	1
	9S-9152	Bearing Puller	1
	7X-0290	Bolt	2

Start By:

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

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.

Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

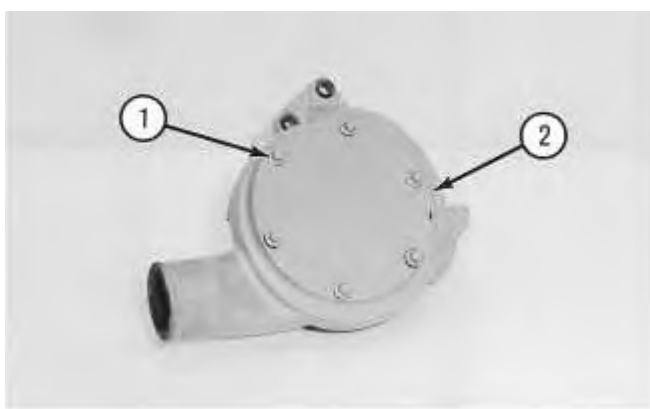


Illustration 1

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1. Remove six bolts (1) from cover (2). Remove cover (2) and the gasket.

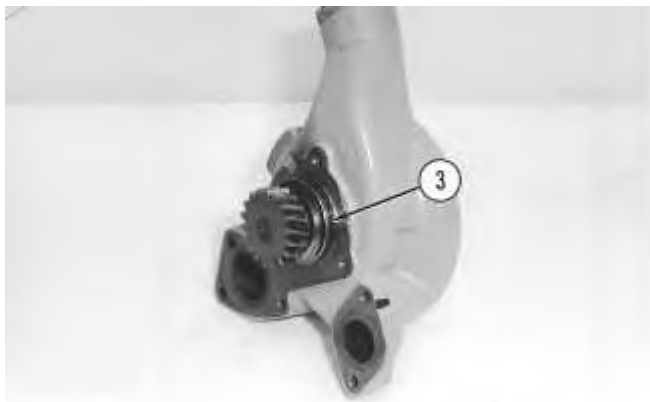


Illustration 2

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2. Remove O-ring seal (3) from the rear of the water pump housing.
-

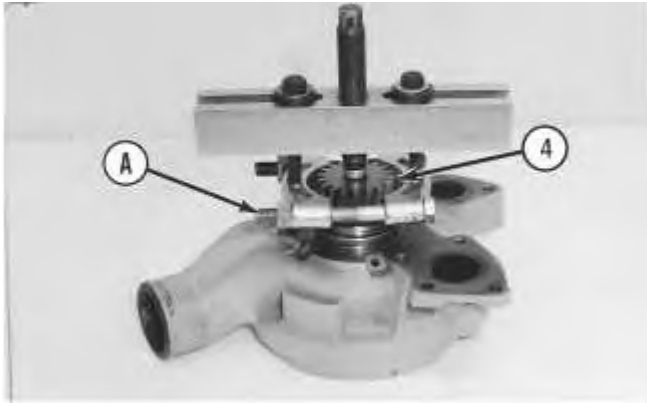


Illustration 3

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3. Install Tool (A). Remove gear (4) .

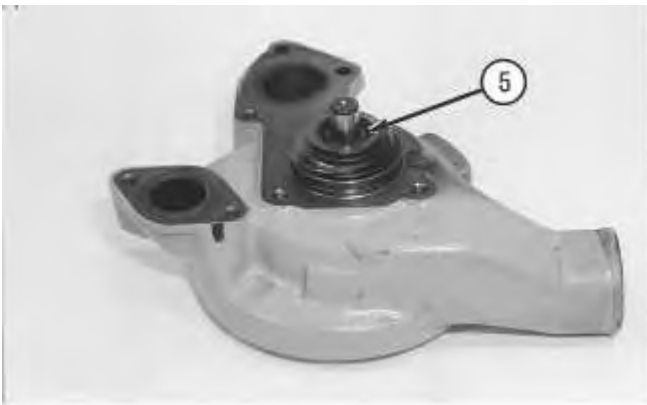


Illustration 4

g00546127

4. Use a suitable lever in order to remove seal (5) .

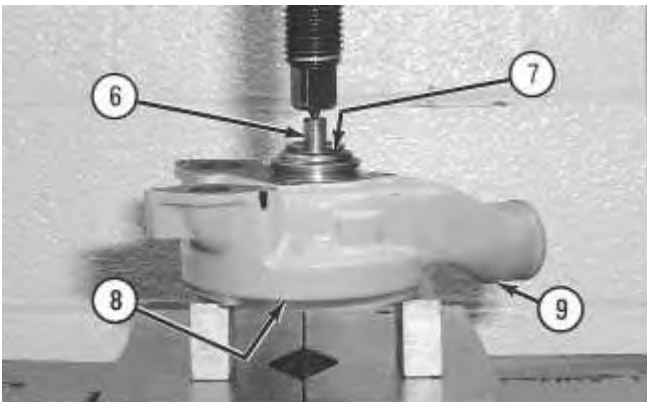


Illustration 5

g00546128

5. Use a suitable press to remove shaft (6), seal (7), and impeller (8) from housing (9) .

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Product: INDUSTRIAL ENGINE
Model: 3054 INDUSTRIAL ENGINE 6FK
Configuration: 3054 Industrial Engine 6FK00001-UP

Disassembly and Assembly 3054 and 3056 Industrial and Generator Set Engines

Media Number -SEN5547-04

Publication Date -01/02/2004

Date Updated -25/02/2004

i01053681

Water Pump - Assemble

SMCS - 1361-016

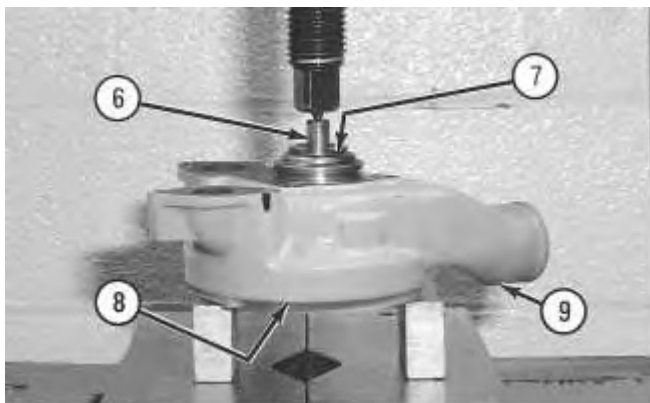
Assembly Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Clean the inside of the pump body. Ensure that the bearing bore and the counterbore for the water seal are particularly clean.
2. Apply **4C-9507** Retaining Compound to the outer surface of the bearing. Keep the compound away from the ends of the bearing.



3. Support the gear end of the water pump body.
4. Place the bearing and shaft (6) square in the pump body. Ensure that the shortest end of shaft (6) is in housing (9) .
5. Use a suitable press and a suitable adapter that will apply force to the bearing. The adapter should not apply force to the shaft. Press the bearing onto the shaft until the end of the bearing is level with the bottom of the counterbore for the water seal.

Note: Remove the excess compound from the end of the bearing.

6. Install seal (7) on the rear of water pump housing.

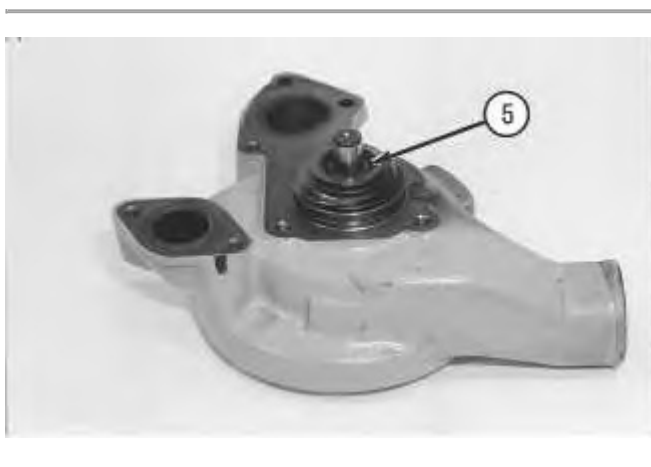


Illustration 2

NOTICE

Ensure that the water seal is not contaminated by oil or grease. Hold the seal only by the edge of the flange. Do not damage the ring of green sealant that is applied to the body of the water seal behind the flange.

7. Hold water seal (5) by the edge of the flange. Push the seal onto shaft (6) until the seal is against the chamfer of the counterbore. Only apply force to the outer flange of the seal.
Note: Ensure that the wide end of the seal is toward the bearing and that the seal is square with the counterbore.
8. Continue to apply force and hold water seal (5) for ten seconds. This ensures that the seal will remain in place.
9. Hold the pump with the gear end of the shaft on a suitable support. Use a flat bar in order to press impeller (8) onto shaft (6) to a depth of 8.30 ± 0.20 mm (0.320 ± 0.010 inch). After installation, ensure that the impeller will turn freely.

Note: Apply **4C-9507** Retaining Compound to impeller (8) if the original impeller is used. Remove excess compound after assembly.

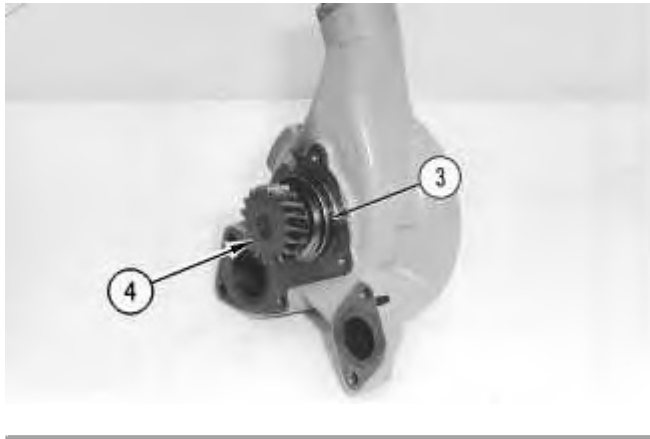


Illustration 3

g00546587

10. Lubricate oil seal (3) with clean engine oil. Install oil seal (3) with the flat surface toward the bearing. Press oil seal (3) into the body with a suitable adapter until the rear of the seal is level with the end of the pump.
11. Continue to apply force and hold oil seal (3) in position for ten seconds. This ensures that the seal will remain in place.
12. Press gear (4) onto shaft (6) at a distance of 1.60 ± 1.00 mm (0.015 ± 0.005 inch) .

Note: Apply **4C-9507** Retaining Compound to gear (4) if the original gear is used. Remove excess compound after assembly.

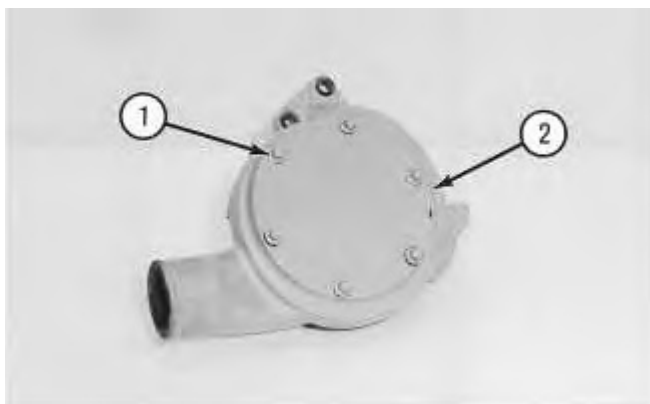


Illustration 4

g00546103

13. Install a new gasket and cover (2) on the pump body.
14. Install six bolts (1) in cover (2). Tighten the bolts to a torque of 9 N·m (80 lb in).

End By: Install the water pump. Refer to Disassembly and Assembly, "Water Pump - Install".

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Product: INDUSTRIAL ENGINE
Model: 3054 INDUSTRIAL ENGINE 6FK
Configuration: 3054 Industrial Engine 6FK00001-UP

Disassembly and Assembly 3054 and 3056 Industrial and Generator Set Engines

Media Number -SEN5547-04

Publication Date -01/02/2004

Date Updated -25/02/2004

i01644338

Water Pump - Install

SMCS - 1361-012

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Inspect the condition of the gasket. Replace the gaskets, if necessary.

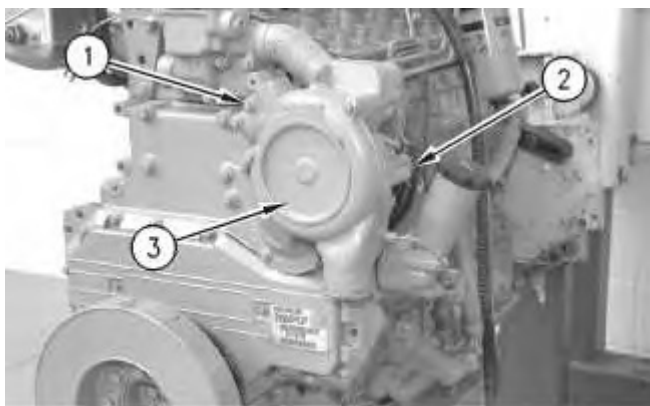


Illustration 1

g00556675

Typical example



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2. Install the gasket and water pump (3) to the front housing.
3. Install eight bolts (1) and install two nuts (2) that fasten the water pump (3) to the front housing.
4. Fill the cooling system. If the engine uses diesel engine antifreeze/coolant, refer to Operation and Maintenance Manual, "Cooling System Coolant (DEAC) - Change". If the engine uses extended life coolant, refer to Operation and Maintenance Manual, "Cooling System Coolant (ELC) - Change".

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