

Product: INDUSTRIAL ENGINE
Model: 3512C INDUSTRIAL ENGINE MLM
Configuration: 3512C Engine MLM00001-UP

Disassembly and Assembly 3512C Industrial Engine

Media Number -KENR6393-04

Publication Date -01/09/2018

Date Updated -14/09/2018

i02077619

Engine Oil Pump - Disassemble

SMCS - 1304-015

Disassembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-0510	Driver Gp	1
B	156-7100	Slide Hammer Puller Gp	1

Start By:

- Remove the engine oil pump. Refer to the Disassembly and Assembly Manual, "Engine Oil Pump - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



Illustration 1

g01005273

1. Remove adapter (1).

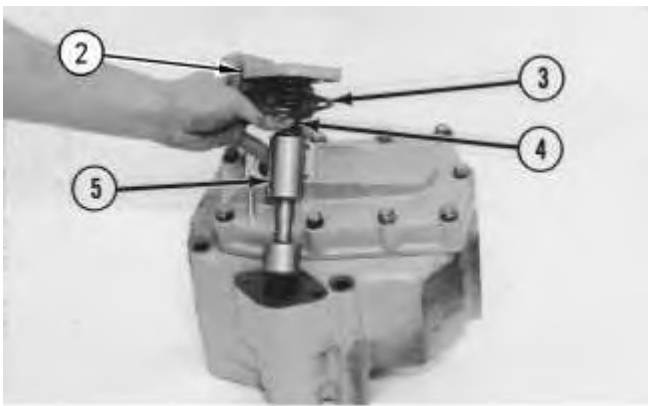


Illustration 2

g01005318



Personal injury can result from parts and/or covers under spring pressure.

Spring force will be released when covers are removed.

Be prepared to hold spring loaded covers as the bolts are loosened.

2. Remove cover (2). Remove gasket (3), spring (4), and valve spool (5).



Illustration 3

g00591932

3. Remove cover assembly (6) and the gasket.



Illustration 4

g00591936

4. Remove cover assembly (7).

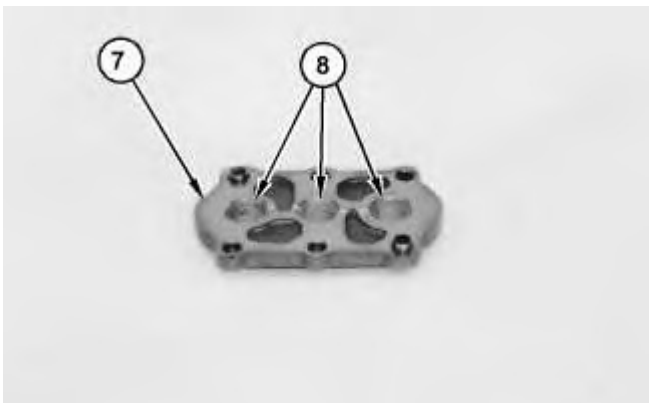


Illustration 5

g01050749

5. Use Tooling (A) in order to remove bearings (8) from cover assembly (7).
-

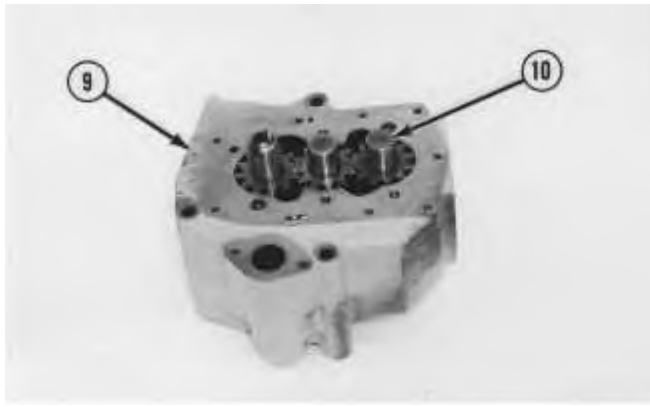


Illustration 6

g00591963

6. Remove shaft assemblies (10) from body (9).

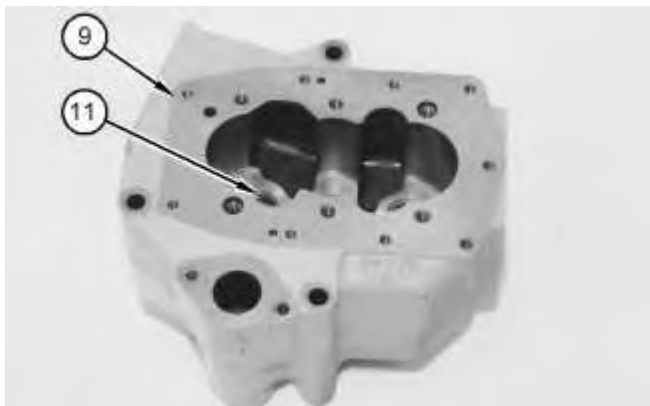


Illustration 7

g01057505

7. Use Tooling (A) in order to remove two of the three bearings (11) from body (9).
 8. Use Tooling (B) in order to remove the remaining bearing.
-

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i02063530

Engine Oil Pump - Assemble

SMCS - 1304-016

Assembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1P-0510	Driver Group	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

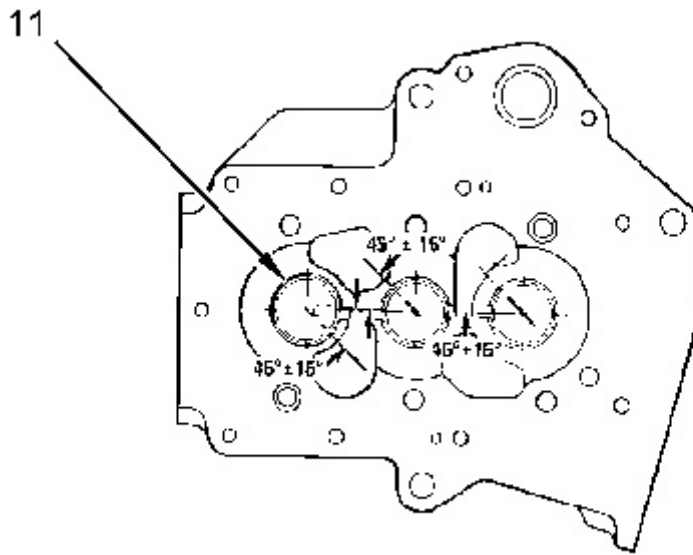


Illustration 1

g01057511

1. Align bearings (11) in the body of the engine oil pump. Align the joints of the bearings to 45 ± 15 degrees from the centerline of the bearing bores.
2. Use Tooling (A) in order to install bearings (11). The bearings must be 1.5 ± 0.5 mm (0.06 ± 0.02 inch) below the gear bore.

Measure the inside diameter of the bearings after installation. The inside diameter of the bearings must be 31.811 ± 0.013 mm (1.2524 ± 0.0005 inch) after installation. Machine the bearing, if necessary.



Illustration 2

g00591963

3. Install shaft assemblies (10) in body (9).
-

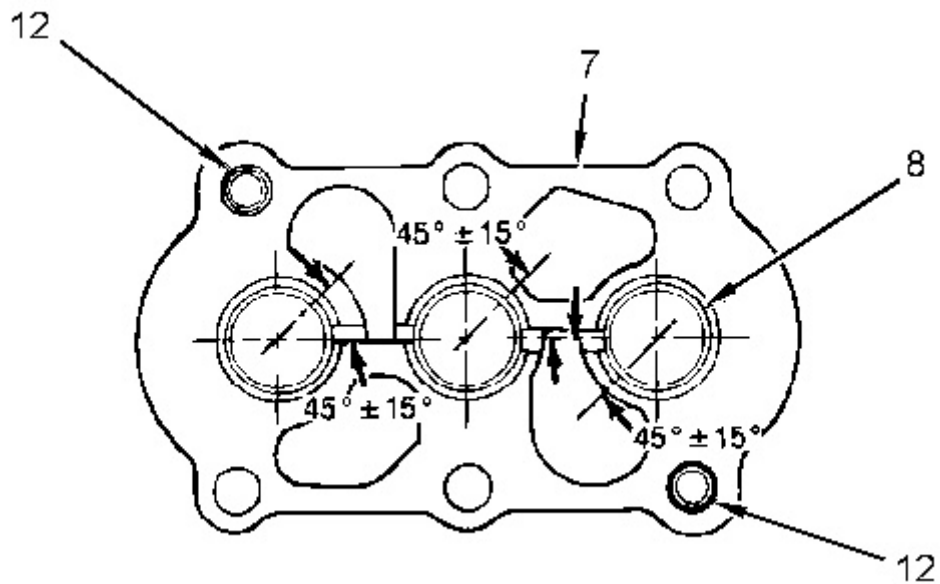


Illustration 3

g01057514

4. Ensure that dowels (12) are installed in cover assembly (7) at a distance of 6.0 ± 0.5 mm (0.24 ± 0.02 inch) above the surface of the cover.
5. Use Tooling (A) in order to install bearings (8) in cover assembly (7) with the bearing joints in the correct position.



Illustration 4

g00591936

6. Place cover assembly (7) into position and install the bolts.



Illustration 5

g00591932

7. Ensure that the two pins in cover assembly (6) are installed at a distance of 6.0 ± 1.0 mm (0.24 ± 0.04 inch) above the surface of the cover. Install cover assembly (6).

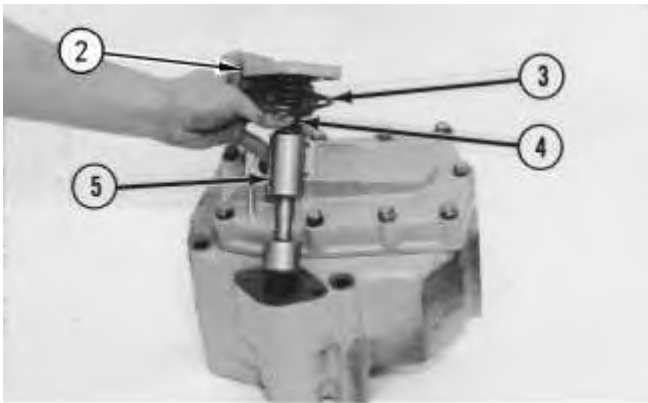


Illustration 6

g01005318

! WARNING

Improper assembly of parts that are spring loaded can cause bodily injury.

To prevent possible injury, follow the established assembly procedure and wear protective equipment.

8. Place clean engine oil on valve spool (5). Install valve spool (5), spring (4), gasket (3), cover (2), and the bolts.

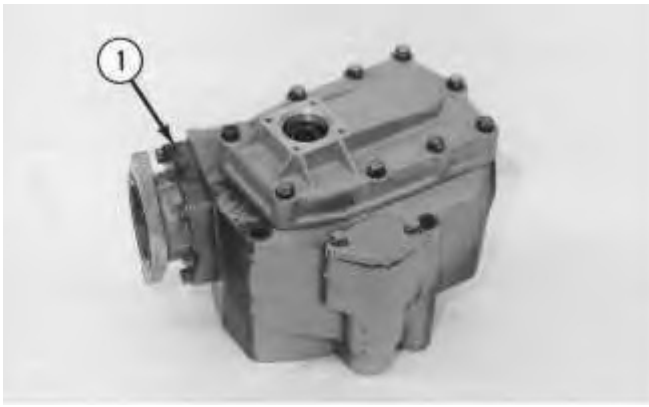


Illustration 7

g01005273

9. Install the gasket and adapter (1).

Note: Refer to Specifications, "Engine Oil Pump" for more information.

End By:

- a. Install the engine oil pump. Refer to Disassembly and Assembly, "Engine Oil Pump - Install".
-

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i02772985

Engine Oil Pump - Install

SMCS - 1304-012

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

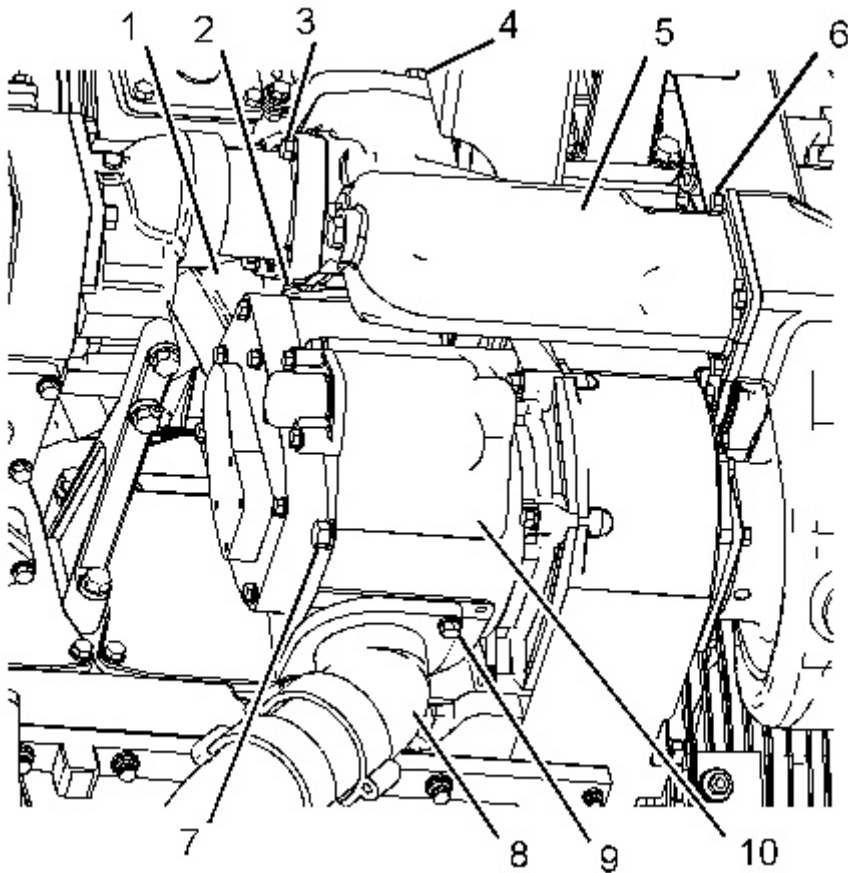


Illustration 1

g01386297

1. Ensure that the O-ring seal is in position on elbow (8). Coat the O-ring seal with clean engine oil.

Note: Before you install the engine oil pump, make sure that the shaft of the pump will turn by hand. The pump must have oil for lubrication before the pump is installed.

2. Use two people in order to install engine oil pump (10). The weight of engine oil pump (10) is approximately 36 kg (79 lb). Place engine oil pump (10) and elbow (8) into position. Make sure that the splines of the engine oil pump are properly meshed with the splines of the drive for the engine oil pump. Install bolts (9) that secure engine oil pump (10) and elbow (8).
3. Install bolts (7) to secure engine oil pump (10).
4. Make sure that the O-ring seal is in position on the tube and elbow (1). Coat the O-ring seals with clean engine oil. Install bolts (2).
5. Position adapter (5). Ensure that the gasket is in place and install bolts (3). Install bolts (4) and (6).
6. Fill the cooling system. Refer to the Operation and Maintenance Manual, "Refill Capacities".

End By:

- a. Install the fuel transfer pump. Refer to Disassembly and Assembly, "Fuel Transfer Pump - Install".
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i02773285

Engine Oil Filter Base - Remove - Spin-on Filters

SMCS - 1306-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	2P-8250	Strap Wrench Assembly	1
B	138-7575	Link Bracket	2

1. Remove the bolts that hold the clips for the harness assembly. Move the harness assembly out of the way.
-

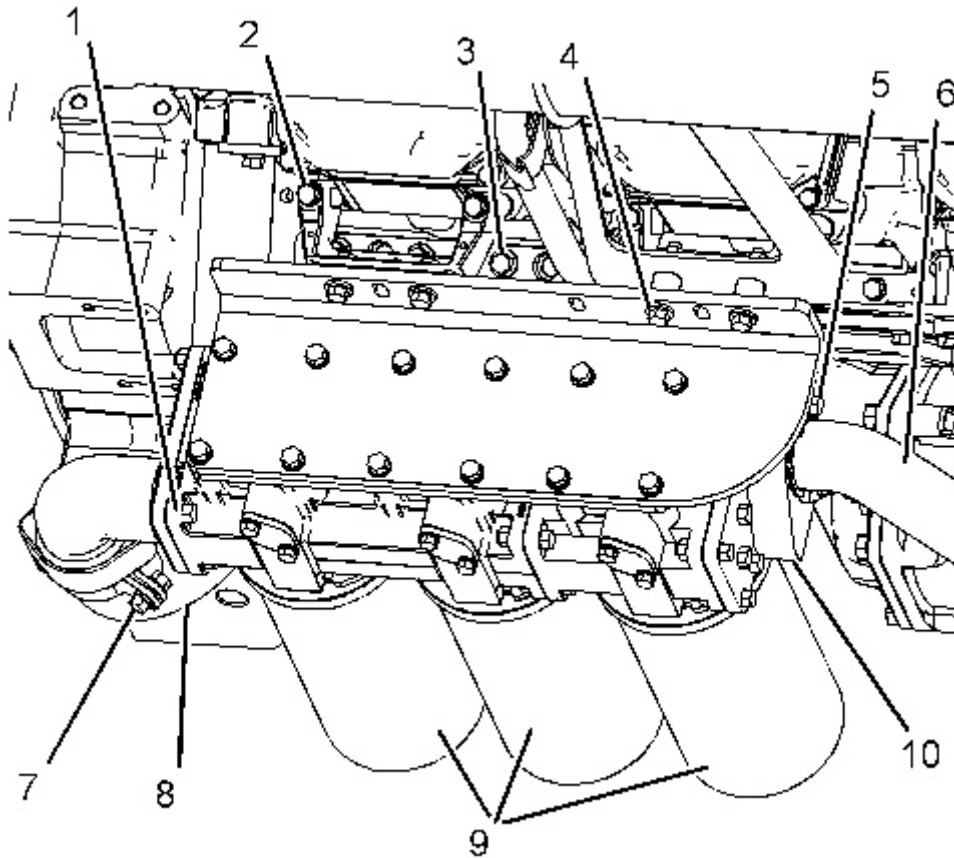


Illustration 1

g01386630

2. Remove filters (9) with Tooling (A).
 3. Remove bolts (5) that hold the retainers. Remove tube assembly (6). Remove adapter (10) from oil filter base (1).
 4. Remove bolts (7) from the clamp assembly and relocate tube assembly (8). Remove the retainer and the O-ring seal from tube assembly (8).
 5. Attach Tooling (B) to oil filter base (1). Attach a suitable lifting device to Tooling (B). The weight of oil filter base (1) is approximately 39 kg (86 lb).
 6. Remove bolts (2) and (4) with the washers. Remove bolts (3) that hold oil filter base (1) to the engine. Remove oil filter base (1).
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i02774078

Engine Oil Filter Base - Disassemble - Spin-on Filters

SMCS - 1306-015

Disassembly Procedure

Start By:

- a. Remove the oil filter base. Refer to Disassembly and Assembly, "Engine Oil Filter Base - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

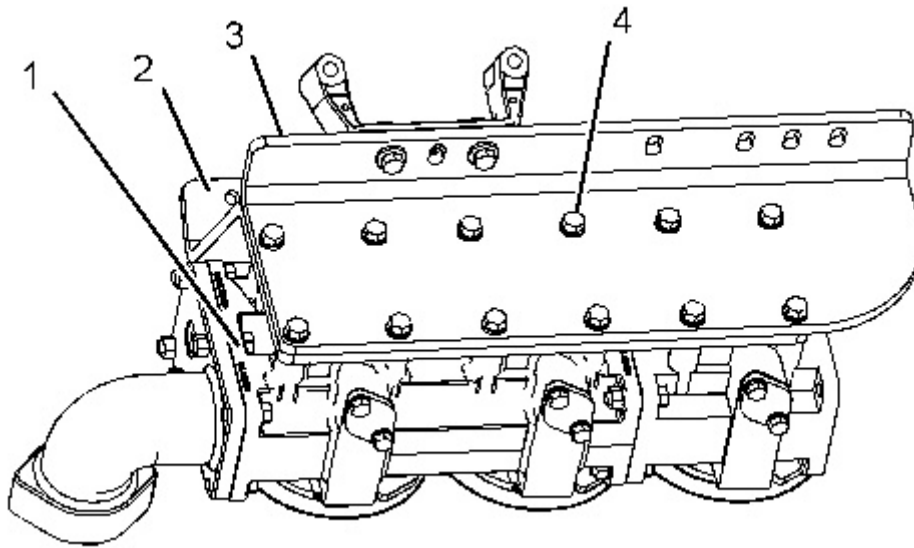


Illustration 1

g01386758

1. Remove bolts (4) and the washers.
2. Remove bracket (3) and support (2) from oil filter base (1).

 **WARNING**

Personal injury can result from parts and/or covers under spring pressure.

Spring force will be released when covers are removed.

Be prepared to hold spring loaded covers as the bolts are loosened.

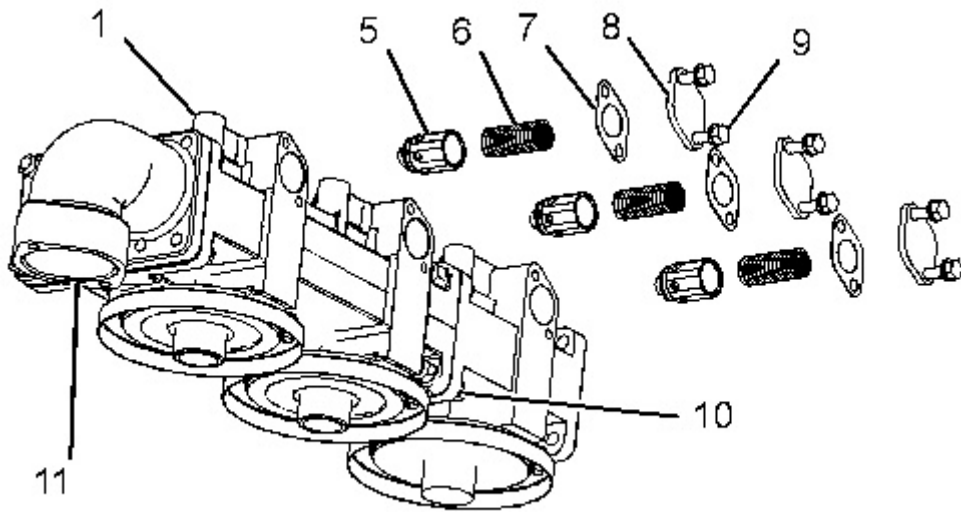


Illustration 2

g01386759

3. Remove the bolts and elbow (11) with the gasket.
 4. Remove bolts (9) and the washers. Remove cover (8), gasket (7), spring (6), and plunger (5) from each base assembly.
 5. Remove bolts (10), the washers, and the nuts that hold the base assemblies together.
 6. If necessary, remove the studs from oil filter base (1).
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i02774609

Engine Oil Filter Base - Assemble - Spin-on Filters

SMCS - 1306-016

Assembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	9S-3263	Thread Lock Compound	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Use the following procedure if the filter element studs were removed from the base assemblies:
 - a. Apply Tooling (A) to the tapered end of the studs for a distance of 10.2 ± 1.5 mm (0.40 ± 0.06 inch).
 - b. Install the studs in the base assemblies. Tighten the studs to a torque of 80 ± 14 N·m (60 ± 10 lb ft).
-

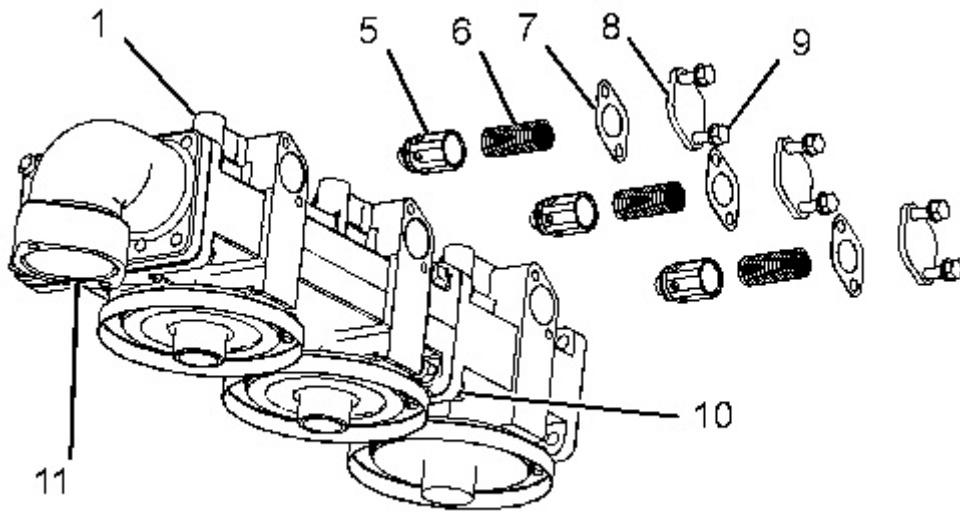


Illustration 1

g01386759

 **WARNING**

Improper assembly of parts that are spring loaded can cause bodily injury.

To prevent possible injury, follow the established assembly procedure and wear protective equipment.

2. Place the gaskets in position between base assemblies. Install bolts (10), the washers, and the nuts that hold the base assemblies together.
 3. Place the gaskets and elbow (11) into position. Install the bolts.
 4. Install plunger (5) and spring (6) into each of the base assemblies.
 5. Place gaskets (7) and covers (8) into position. Install bolts (9) and the washers into oil filter base (1).
-

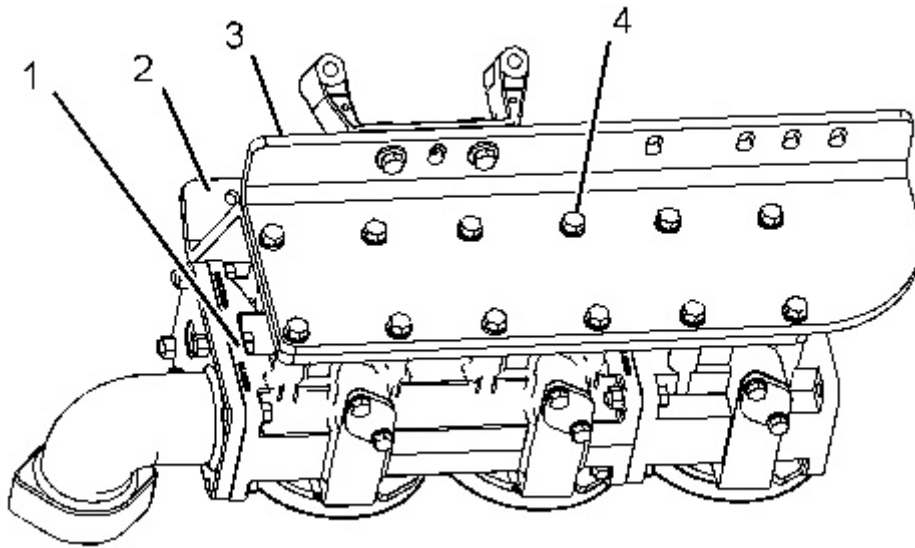


Illustration 2

g01386758

6. Position support (2) and bracket (3). Install bolts (4) and the washers into oil filter base (1).

End By:

- a. Install the oil filter base. Refer to Disassembly and Assembly, "Engine Oil Filter Base - Install".
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i02774688

Engine Oil Filter Base - Install - Spin-on Filters

SMCS - 1306-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
B	138-7575	Link Bracket	2

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

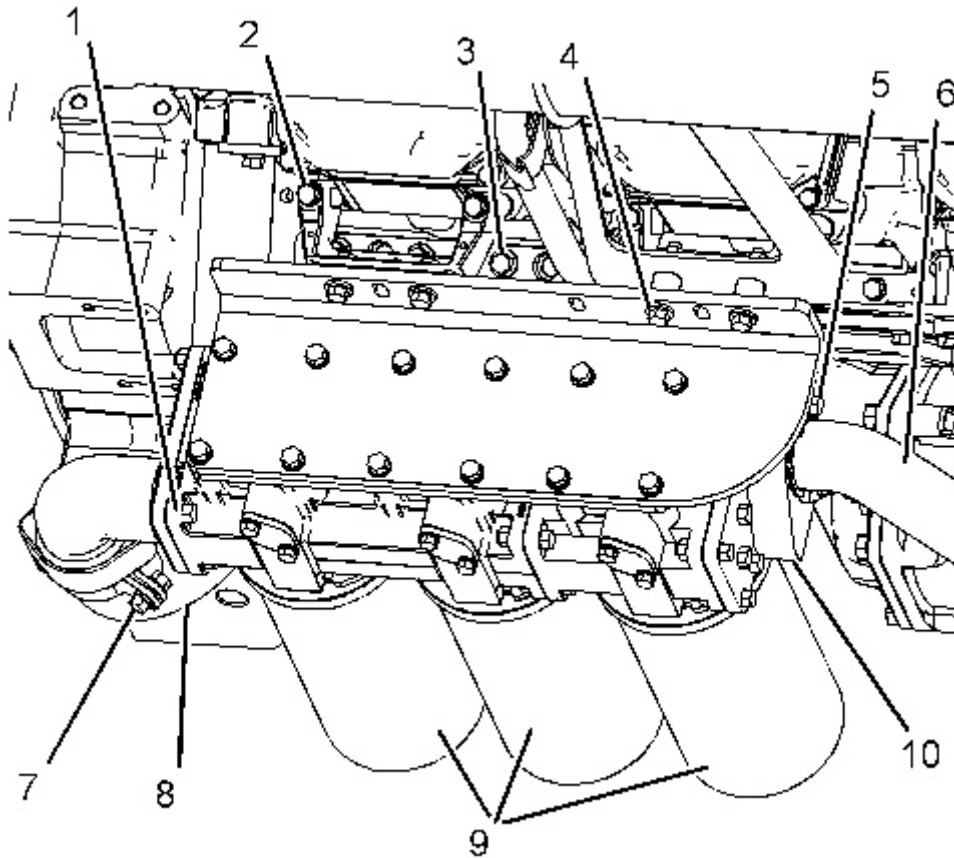


Illustration 1

g01386630

1. Attach Tooling (B) and a suitable lifting device to oil filter base (1). The weight of oil filter base (1) is approximately 39 kg (86 lb). Lift oil filter base (1) into position. Install bolts (2) that hold oil filter base (1) to the engine.
 2. Install bolts (2) and (4) with the washers.
 3. Position the gaskets and adapter (10) and install the bolts. Position tube assembly (6) and install bolts (5) with the retainers.
 4. Position tube assembly (8) and install the clamp assembly with bolts (7), the washers, and the nuts.
 5. Ensure that the mounting surface for the oil filters is clean. Apply clean engine oil to the seals of the filters. Install filters (9) according to the instructions that are shown on the filters. Do not overtighten the filters.
 6. Place the clips for the harness assembly into position. Install the bolts into the clips.
 7. Fill the engine with oil. Refer to the Operation and Maintenance Manual, "Refill Capacities".
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i02047059

Engine Oil and Water Pump Drive - Remove

SMCS - 1313-011

Removal Procedure

Start By:

- a. Remove the engine oil pump. Refer to Disassembly and Assembly, "Engine Oil Pump - Remove".
- b. 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, "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.

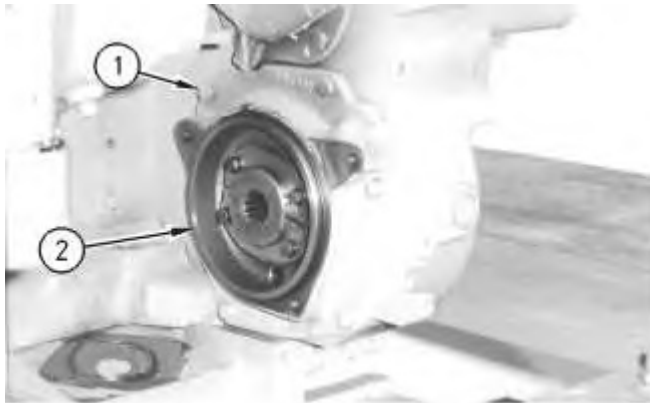


Illustration 1

g00921410

1. Remove bolts (1) and rear adapter assembly (2).

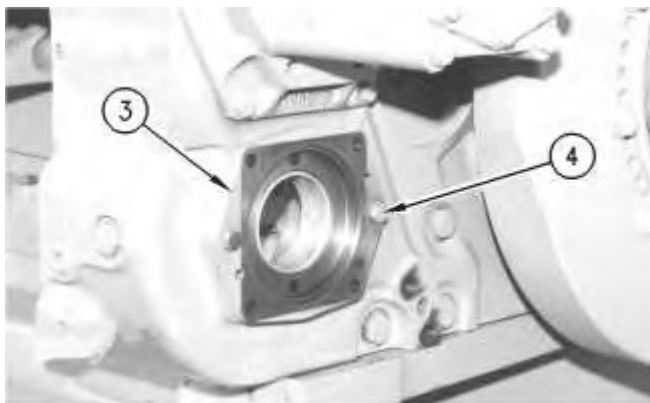


Illustration 2

g00921411

2. Remove bolts (4) and front adapter assembly (3).
-

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