

Product: INDUSTRIAL ENGINE
Model: C7 INDUSTRIAL ENGINE JTF
Configuration: C7 Industrial Engine JTF00001-UP

Disassembly and Assembly C7 Industrial Engines

Media Number -REN9578-02

Publication Date -01/02/2014

Date Updated -26/02/2014

i02954085

Inlet and Exhaust Valve Springs - Remove and Install

SMCS - 1108-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5S-1330	Valve Spring Compressor	1

Start By:

- Remove the cylinder head. Refer to Disassembly and Assembly, "Cylinder Head - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

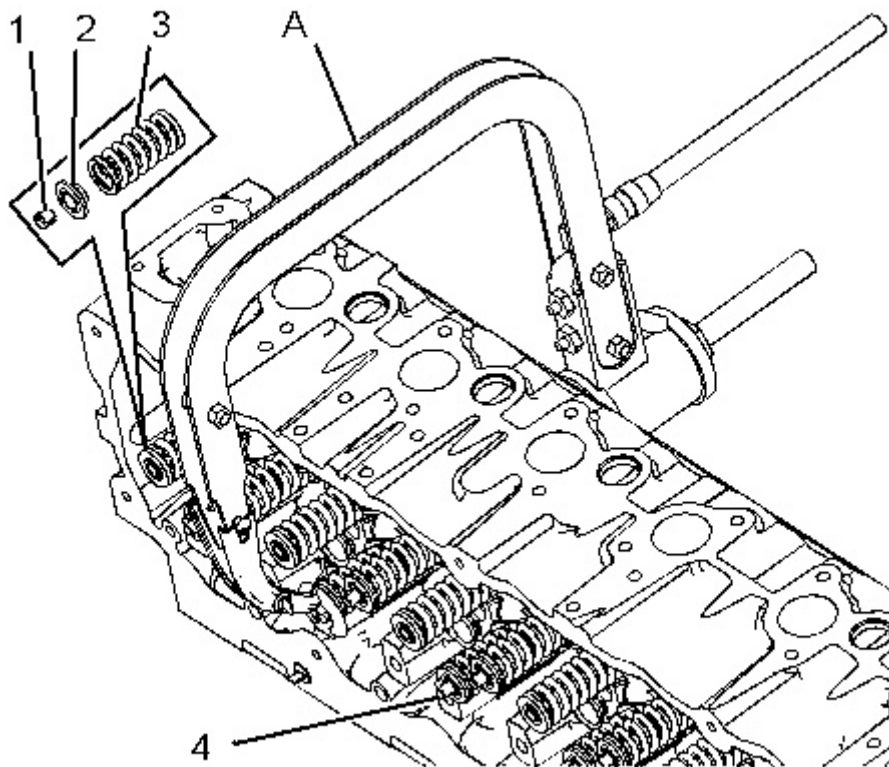


Illustration 1

g01256779

WARNING

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

1. Use Tooling (A) in order to compress the inlet valve springs and the exhaust valve springs.
2. Remove retainer locks (1).
3. Remove Tooling (A).
4. Remove spring retainer (2).
5. Remove valve spring (3) from each valve (4).

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	5S-1330	Valve Spring Compressor	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

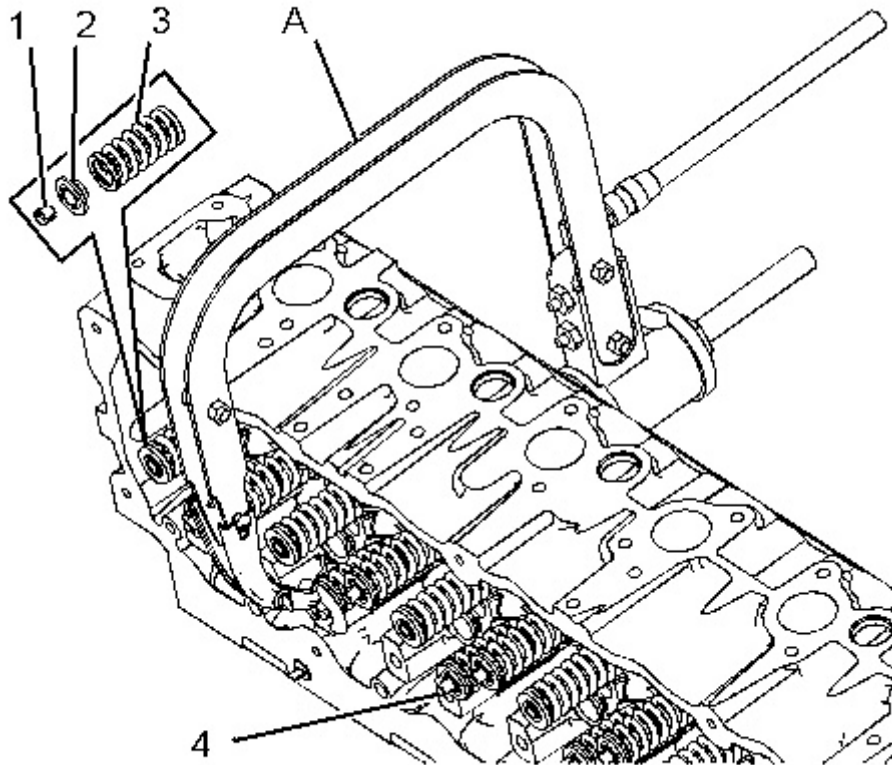


Illustration 2

g01256779

! 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.

1. Install valve spring (3) on each valve (4).
2. Install spring retainer (2).
3. Use Tooling (A) in order to compress the inlet valve springs and the exhaust valve springs.
4. Install retainer locks (1).

End By:

- a. Install the cylinder head. Refer to Disassembly and Assembly, "Cylinder Head - Install".
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i02954127

Inlet and Exhaust Valves - Remove and Install

SMCS - 1105-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5S-1330	Valve Spring Compressor	1

Start By:

- a. Remove the cylinder head. Refer to Disassembly and Assembly, "Cylinder Head - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

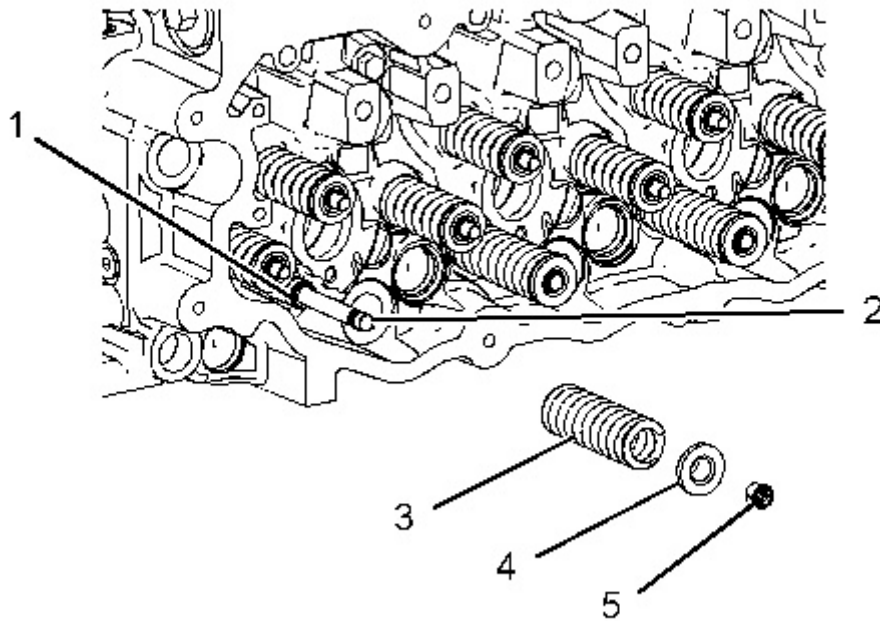


Illustration 1

g01256834

WARNING

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

1. Use Tooling (A) to compress valve spring (3). Remove retainer locks (5).
2. Remove Tooling (A). Remove spring retainer (4) and valve spring (3).
3. Remove valve seal (1) and valve (2).
4. Repeat Steps 1 through 3 in order to remove the remaining inlet valves and exhaust valves.

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	5S-1330	Valve Spring Compressor	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

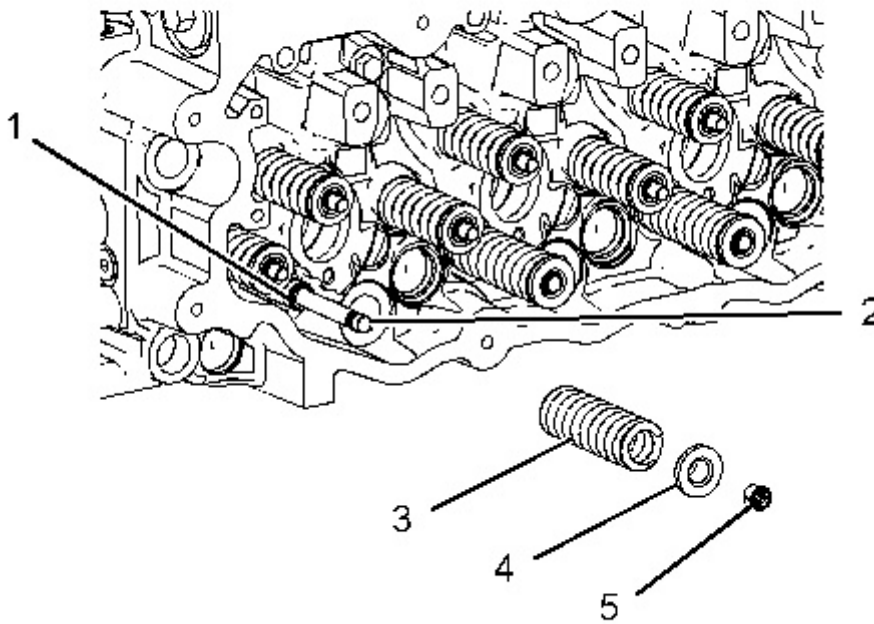


Illustration 2

g01256834

! WARNING

The valve spring keepers can be thrown from the valve when the valve spring compressor is released. Ensure that the valve spring keepers are

properly installed on the valve stem. To help prevent personal injury, keep away from the front of the valve spring keepers and valve springs during the installation of the valves.

1. Lubricate valve (2) with clean engine oil. Install valve (2) in the cylinder head assembly. Install new valve seal (1) onto the valve guide.

2. Place the following items on the valve stem: valve spring (3) and spring retainer (4).

Note: A small amount of grease can be used to hold retainer locks (5) in position during installation.

3. Use Tooling (A) to compress valve spring (3). Install retainer locks (5).

4. Repeat Steps 1 through 3 in order to install the remaining inlet valves and exhaust valves.

End By:

a. Install the cylinder head. Refer to Disassembly and Assembly, "Cylinder Head - Install".

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i01979506

Inlet and Exhaust Valve Guides - Remove and Install

SMCS - 1104-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-7793	Valve Guide Driver	1
B	9U-6895	Valve Guide Driver	1

Start By:

- Remove the inlet and exhaust valves. Refer to Disassembly and Assembly, "Inlet and Exhaust Valves - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

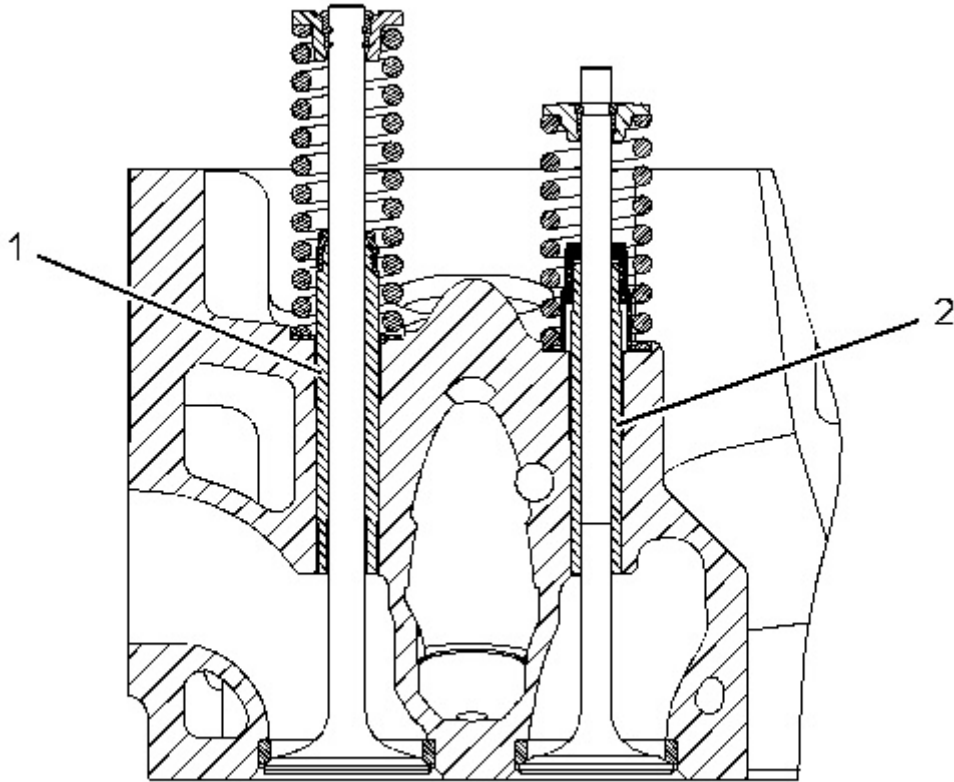


Illustration 1

g01029395

1. Use Tooling (A) to remove inlet valve guides (2) from the cylinder head assembly. Use Tooling (B) to remove exhaust valve guides (1) from the cylinder head assembly.

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-7793	Valve Guide Driver	1
B	9U-6895	Valve Guide Driver	1
C	1U-7792	Guide Collar	1
D	149-4008	Guide Collar	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

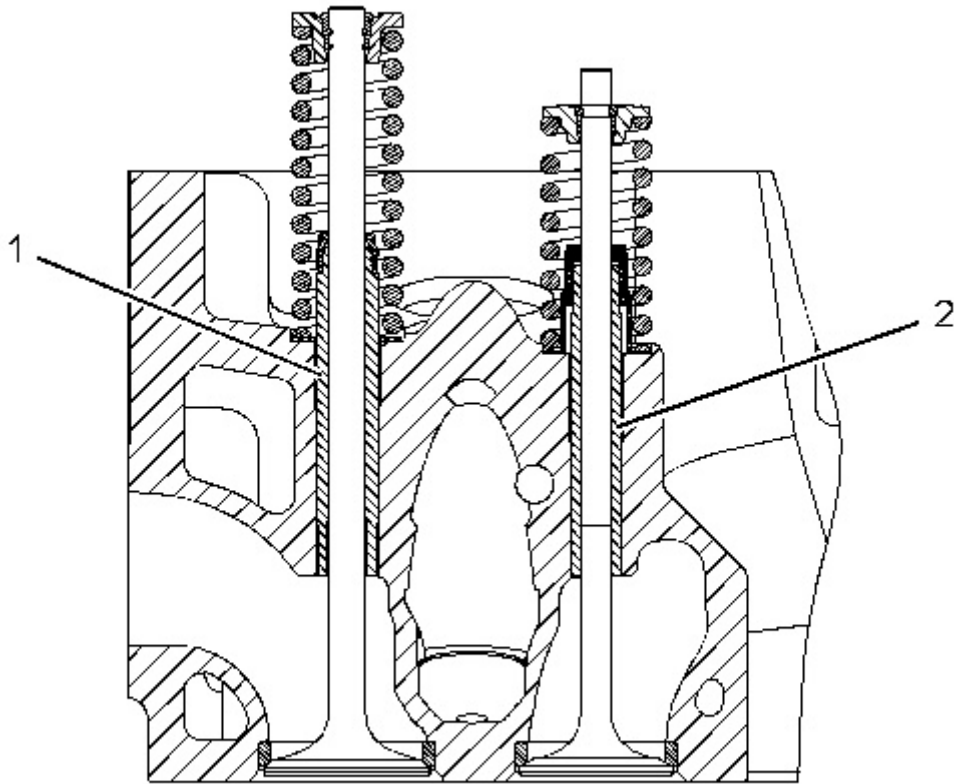


Illustration 2

g01029395

1. Position inlet valve guide (2) and tap on the top of inlet valve guide (2).
2. Use Tooling (A) and Tooling (C) to install inlet valve guide (2). Install inlet valve guides (2) until the protrusion is 23.0 ± 0.5 mm (0.90 ± 0.02 inch) above the cylinder head assembly.
3. Use Tooling (B) and Tooling (D) to install exhaust valve guide (1). Install exhaust valve guide (1) until the protrusion is 17.8 ± 0.5 mm (0.70 ± 0.02 inch) above the cylinder head assembly.

End By:

- a. Install the inlet and exhaust valves. Refer to Disassembly and Assembly, "Inlet and Exhaust Valves - Remove and Install".
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i02954230

Inlet and Exhaust Valve Seat Inserts - Remove and Install

SMCS - 1103-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A ⁽¹⁾	6V-4194	Valve Seat Extractor ⁽²⁾	1
	165-5647	Valve Seat Extractor ⁽³⁾	1
	6V-4804	Handle	1
	6V-4192	Shaft	1
	6V-4199	Lifting Bracket	1

⁽¹⁾ Part of the **166-7441** Valve Seat Extractor Tool Group

⁽²⁾ Use for removal of the exhaust valve seats

⁽³⁾ Use for removal of the inlet valve seats

Start By:

- a. Remove the inlet and exhaust valves. Refer to Disassembly and Assembly, "Inlet and Exhaust Valves - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

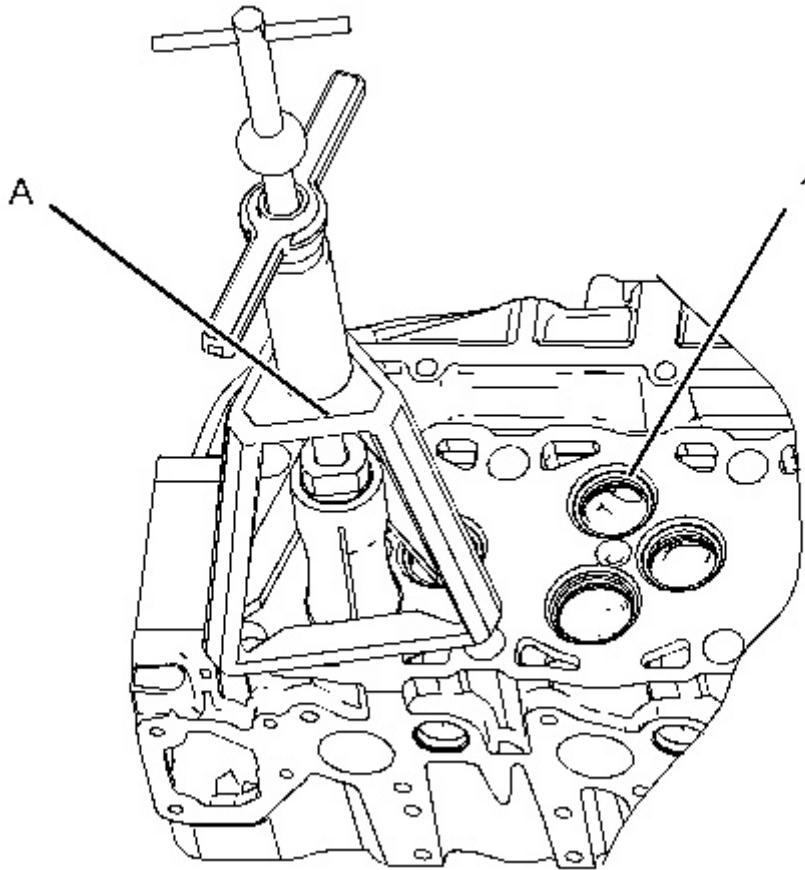


Illustration 1

g01124436

1. Use Tooling (A) to remove valve seat inserts (1).

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
B	149-6115	Installer	1
	133-9306	Valve Guide	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

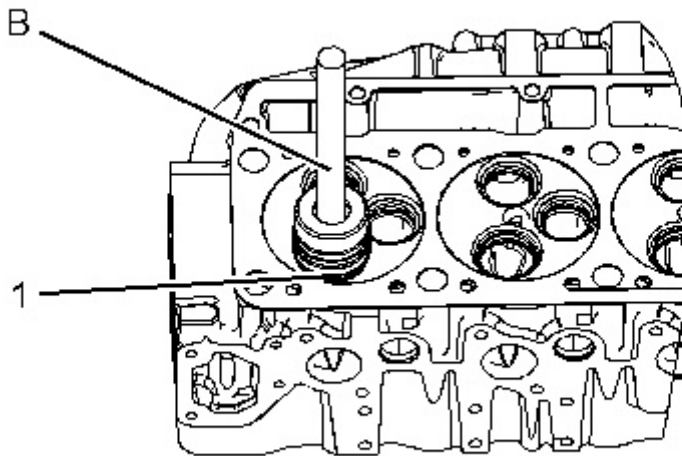


Illustration 2

g01475612

1. Lower the temperature of new valve seat inserts (1).
2. Use Tooling (B) and a suitable press to install the new valve seat inserts in the cylinder head.

Note: Do not machine the prefinished valve seat inserts in order to correct the valve stem projection. An excessive valve stem projection indicates that the valve seat insert is not seated or material was not cleaned from the bottom of the counterbore.

End By:

- a. Install the inlet valves and exhaust valves. Refer to Disassembly and Assembly, "Inlet and Exhaust Valves - Remove and Install".
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i02510721

Engine Oil Filter Base - Remove

SMCS - 1306-011

Removal Procedure

Table 1

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

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.

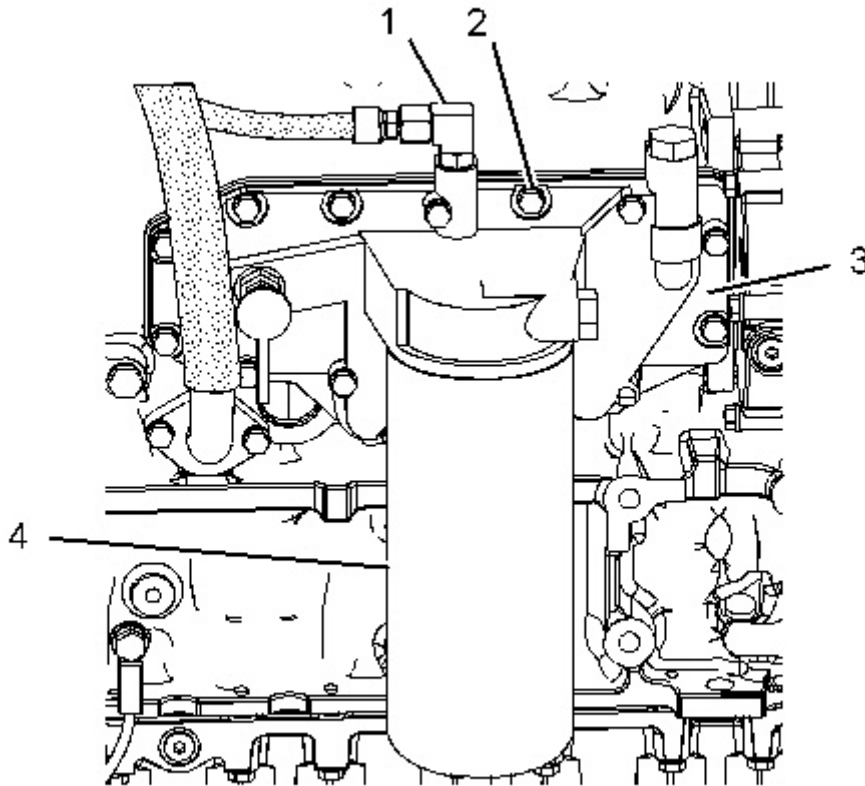


Illustration 1

g01256974

1. Remove oil filter (4) with Tooling (A).
 2. Disconnect hose assembly (1).
 3. Remove bolts (2) and the washers that hold engine oil filter base (3) to the cylinder block. Remove engine oil filter base (3).
-

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i02511025

Engine Oil Filter Base - Disassemble

SMCS - 1306-015

Disassembly Procedure

Start By:

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

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

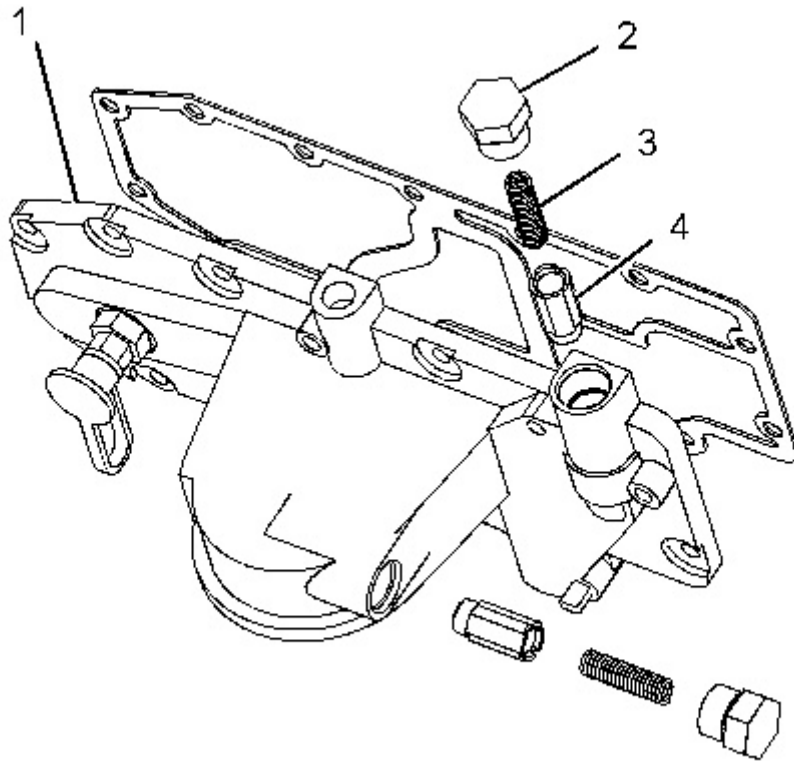


Illustration 1

g01257067

 **WARNING**

Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

-
1. Remove plugs (2) and the O-ring seals from engine oil filter base (1).
 2. Remove valve springs (3) and valves (4) from engine oil filter base (1).
-

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i02511120

Engine Oil Filter Base - Assemble

SMCS - 1306-016

Assembly Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

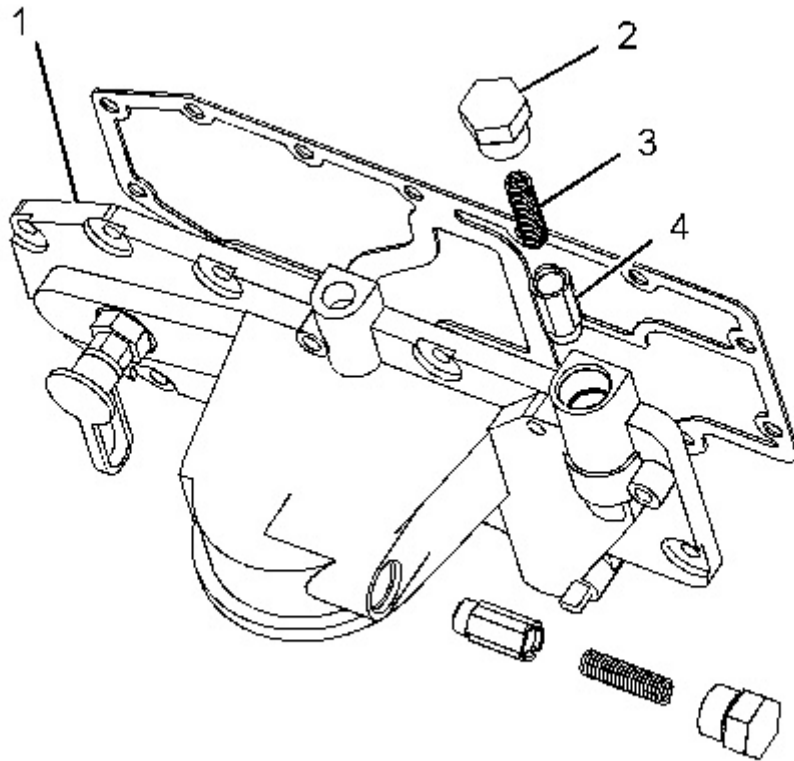


Illustration 1

g01257067

! 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.

1. Install valves (4) and valve springs (3) into engine oil filter base (1).
2. Install the O-ring seals on plugs (2). Install plugs (2) into engine oil filter base (1).

End By:

- a. Install the engine oil cooler. Refer to Disassembly and Assembly, "Engine Oil Cooler - Install".
- b. Install the engine oil filter base. Refer to Disassembly and Assembly, "Engine Oil Filter Base - Install".

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