

Product: TRACK LOADER

Model: 933C TRACK LOADER 5JS

Configuration: 933C & 933C LGP Hystat Track Loader 5JS00001-UP (MACHINE) POWERED BY 3046 Engine

Disassembly and Assembly 3046 Engine For Caterpillar Built Machines

Media Number -SEN6458-05

Publication Date -01/04/2004

Date Updated -22/04/2004

i01019546

Inlet and Exhaust Valves - Remove and Install

SMCS - 1105-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	8S-6691	Cylinder Head Repair Stand	1
B	1P-3527	Valve Spring Compressor	1
C	5S-1322	Valve Keeper Installer	1
D	8S-2263	Spring Tester	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.

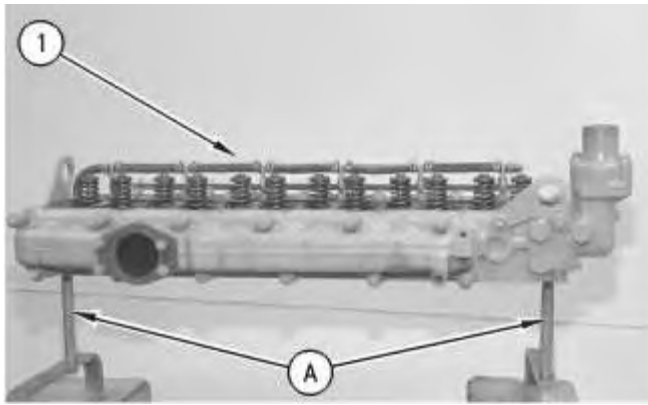


Illustration 1

g00558252

1. Support cylinder head assembly (1) on Tool (A) .

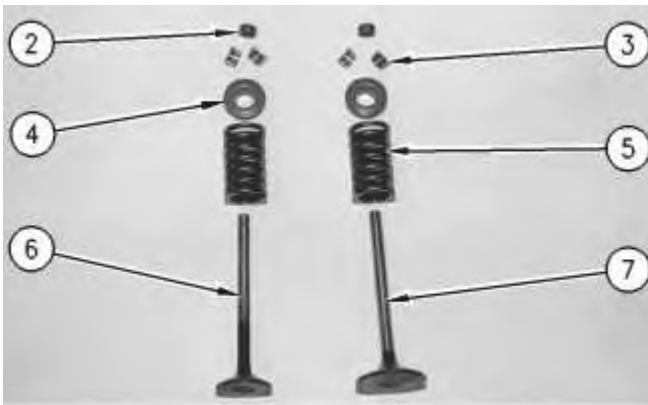


Illustration 2

g00558255

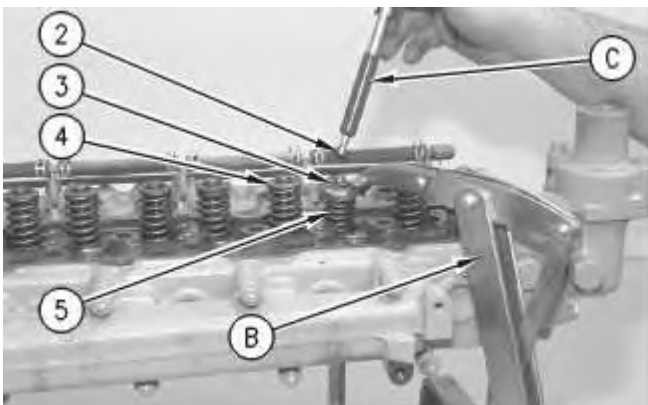


Illustration 3

g00558260

2. Use tool (B) to compress valve spring (5) .

3. Use the magnetic end of tool (C) to remove cap (2) and valve keepers (3). Slowly release the pressure on tool (B) and remove tool (B) .
4. Remove retainer (4) and remove spring (5) .



Illustration 4

g00525271

5. Check the valve spring force with Tool (D). Refer to the Specifications Module, "Cylinder Head Valves" for information on the valve springs.
6. Remove exhaust valve (6) and inlet valve (7) through the bottom of the cylinder head assembly. Put identification marks on the valves for installation purposes.
7. Perform Steps 2 through 6 for the removal of the remaining inlet and exhaust valves from the cylinder head assembly.

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	8S-6691	Cylinder Head Repair Stand	1
B	1P-3527	Valve Spring Compressor	1
C	5S-1322	Valve Keeper Installer	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Support cylinder head assembly on Tool (A). Lubricate the inlet and exhaust valves with clean engine oil. Install the inlet and exhaust valves in the original location in the cylinder head.

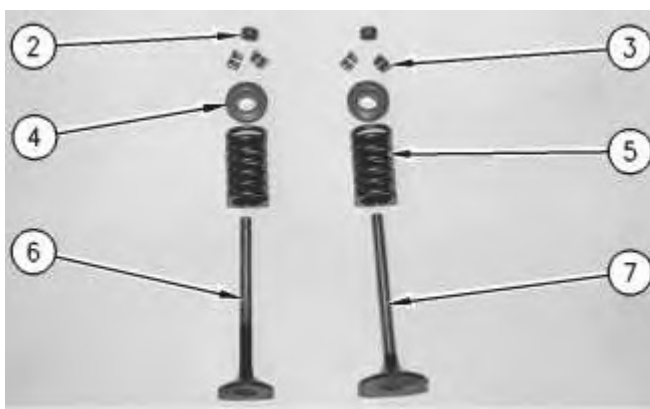


Illustration 5

g00558255

2. Install spring (5) and retainer (4) .
3. Use Tool (B) to compress spring (5). Install valve keepers (3) and cap (2) on the valve stem with Tool (C) .

 **WARNING**

The valve keepers can be thrown from the valve when the valve spring compressor is released. Ensure that the valve keepers are properly installed on the valve stem. To help prevent personal injury, keep away from the front of the valve keepers and valve springs during the installation of the valves.

4. Carefully remove Tool (B). Tap the top of exhaust valve (6) or inlet valve (7) with a soft faced hammer in order to ensure that the valve keepers are properly installed.
5. Repeat Steps 2 through 4 for the installation of the remaining inlet and exhaust valves.

End By: Install the cylinder head. Refer to Disassembly and Assembly, "Cylinder Head - Remove and Install".

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i01573613

Inlet and Exhaust Valve Guides - Remove and Install

SMCS - 1104-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	4C-6366	Valve Guide Driver	1

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.

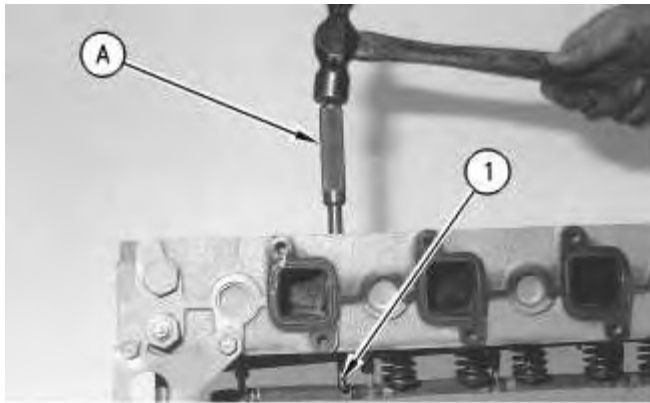


Illustration 1

g00523738

1. Use Tool (A) to remove the inlet and exhaust valve guides (1) from the cylinder head.
2. Repeat Step 1 in order to remove the remaining inlet and exhaust valve guides.

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	4C-6366	Valve Guide Driver	1
B	4C-6370	Valve Guide Collar	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Put clean engine oil on the outside diameter of the valve guide. Install the valve guide with Tool (A) and Tool (B). The valve guide is driven from the top of the cylinder head.
-

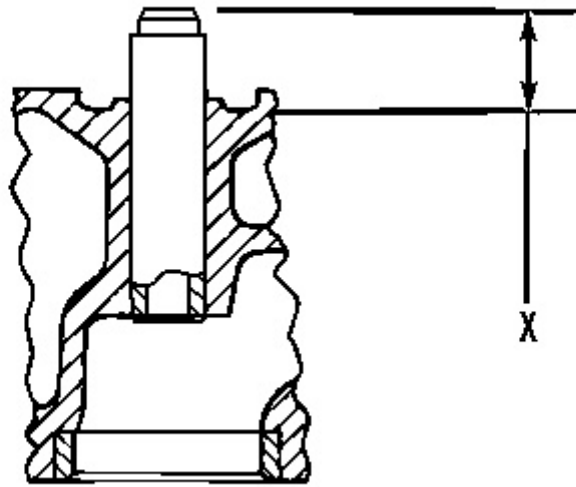


Illustration 2

g00508601

Typical Example

2. The counterbore in Tool (B) installs the valve guide to the correct height. Height (X) from the top of the valve guide to the cylinder head must be 14.00 ± 0.10 mm (0.551 ± 0.004 inch). For more information on the inlet and exhaust valve guides, refer to the Specifications Module, "Cylinder Head Valves".

Note: In order to help prevent damage to the valve guides, Tool (B) must be used during installation.

3. Repeat Steps 1 and 2 for the remaining inlet and exhaust valve guides.

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

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i02063397

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	166-7441	Valve Seat Extractor Tool	1

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

g00524540

Typical Example

1. Use the valve seat grinder of Tool (A) in order to notch the valve seat.

Note: For more information on the use of Tool (A), refer to Special Instruction, SMHS7935.



Illustration 2

g00524545

Typical Example

2. Use the valve seat extractor of Tool (A) to remove the inlet and exhaust valve seats.
3. Clean the valve seat in the cylinder head. Remove any rough areas from the valve seat in the cylinder head.
4. Repeat Steps 1 through 3 for the remaining inlet valve seat inserts and exhaust valve seat inserts.

Installation Procedure

Required Tools

Tool	Part Number	Part Description	Qty
B	4C-6371	Inlet Valve Seat Driver	1
C	4C-6372	Exhaust Valve Seat Driver	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



Illustration 3

g00524547

1. Lower the temperature of the new inlet valve seat inserts. Use Tool (B) to install the new inlet valve seat insert in the cylinder head.



Illustration 4

g00524548

2. Lower the temperature of the new exhaust valve seat inserts. Use Tool (C) to install the new exhaust valve seat insert in the cylinder head.
3. Repeat Step 1 and 2 for the remaining inlet valve seat inserts and exhaust valve seat inserts.

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

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i01021908

Inlet and Exhaust Valve Seals - Remove and Install

SMCS - 1104-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-7600	Slide Hammer Puller	1
B	4C-8134	Seal Remover	1

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.

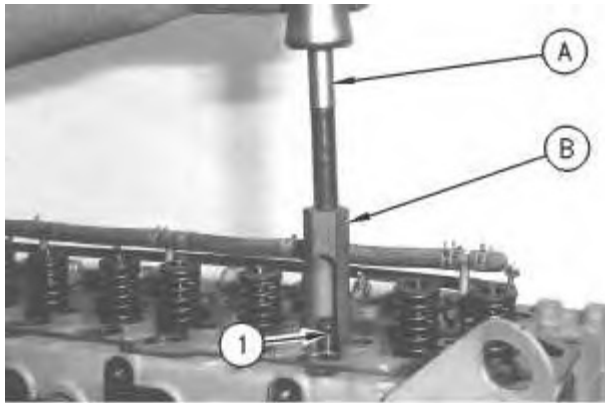


Illustration 1

g00524665

1. Use Tool (A) and Tool (B) to remove valve stem seal (1) .

Installation Procedure

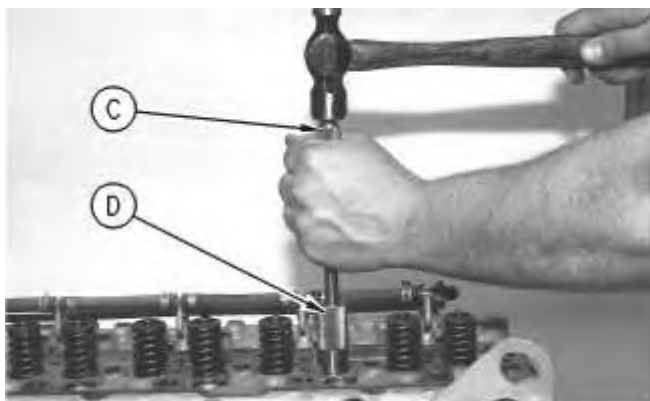
Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
C	4C-6366	Valve Guide Driver	1
D	4C-6373	Valve Seal Installer	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



1. Place the new valve stem seal in position on the valve guide.
2. Use Tool (C) and Tool (D) to install the new valve stem seal.

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

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i01646267

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, "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.

Note: A remote mounted engine oil filter base is used in some excavator models.

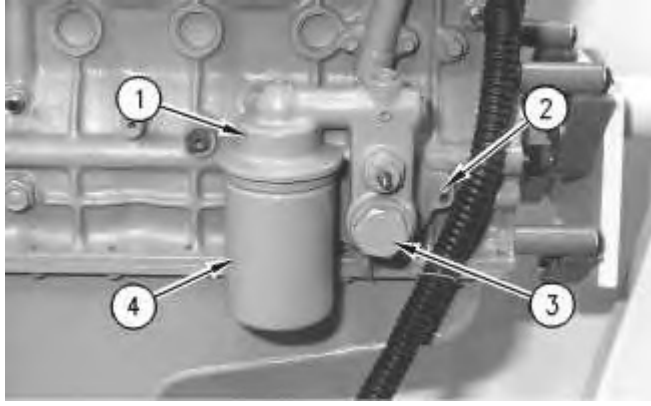


Illustration 1

g00525348

Raised type of base for engine oil filter

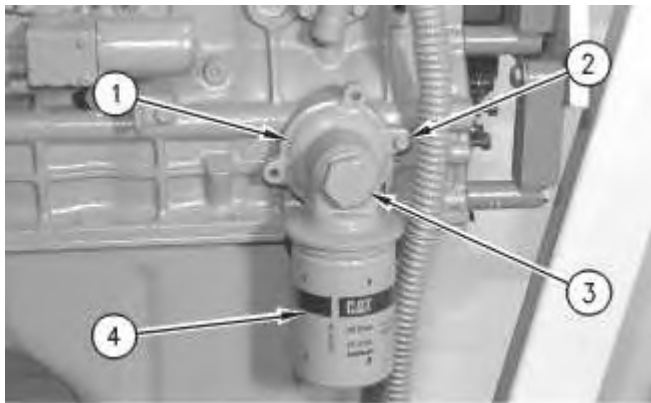


Illustration 2

g00558715

1. Use Tool (A) and remove oil filter (1) .
 2. Remove bolt (2) from the cylinder block.
 3. Remove bolt (3) .
 4. Remove engine oil filter base (1) .
-



Illustration 3

g00525453

Raised type of base for engine oil filter



Illustration 4

g00558949

5. Check the condition of O-ring seals (5) and (6). Replace the O-ring seals, if necessary.

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Publication Date -01/04/2004

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i01022785

Engine Oil Filter Base - Install

SMCS - 1306-012

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: A remote mounted engine oil filter base is used in some excavator models.



Illustration 1

g00525453

Raised type of base for engine oil filter



Illustration 2

g00558949

1. Check the condition of O-ring seals (5) and (6). Replace the O-ring seals, if necessary.

Note: Coat all of the O-ring seals with clean engine oil prior to installation.

2. Install the O-ring seals on engine oil filter base (1) .

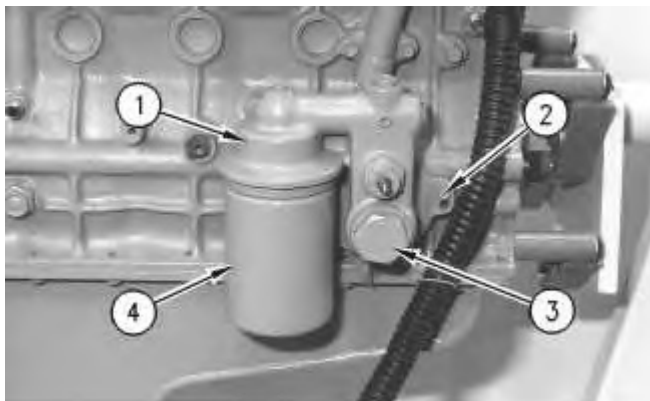


Illustration 3

g00525348

Raised type of base for engine oil filter

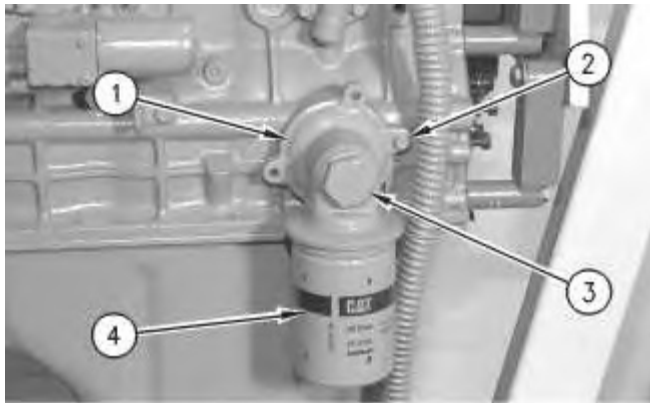


Illustration 4

g00558715

3. Install engine oil filter base (1) .
4. Install bolt (3) .
5. Install bolt (2) onto the cylinder block.
6. Use Tool (A) and install engine oil filter (1) .

Note: Follow the installation procedure on the engine oil filter in order to install the engine oil filter on the engine oil filter base.

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i01034982

Engine Oil Cooler - Remove

SMCS - 1378-011

Removal Procedure

Start By:

- A. Remove the fuel injection pump. Refer to Disassembly and Assembly, "Fuel Injection Pump Housing and Governor - 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 machine. 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 in Caterpillar machines.

Dispose of all fluids according to local regulations and mandates.

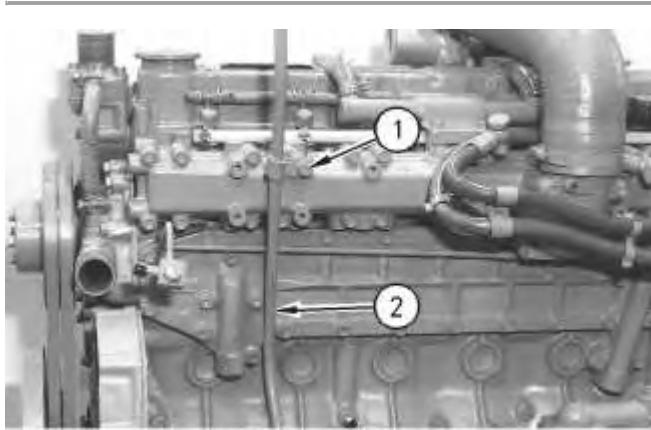


Illustration 1

g00533637

1. If necessary, remove bolt (1) and the washer from the air inlet manifold.

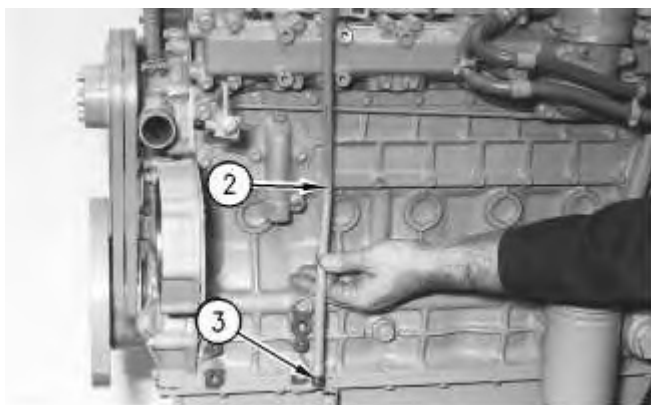


Illustration 2

g00533639

2. If equipped, remove oil tube assembly (2) from the cylinder block.
 3. Check O-ring seal (3) for wear or damage. Replace the O-ring seals, if necessary.
-

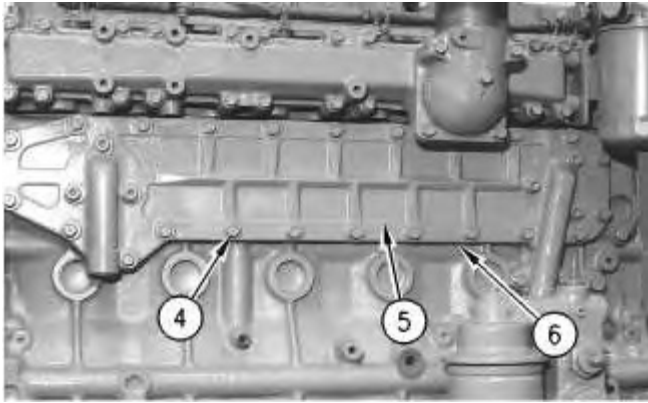


Illustration 3

g00533640

4. Remove 24 bolts (4) from engine oil cooler (5). Remove engine oil cooler (5) and gasket (6) (not shown).
-

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i01035114

Engine Oil Cooler - Install

SMCS - 1378-012

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

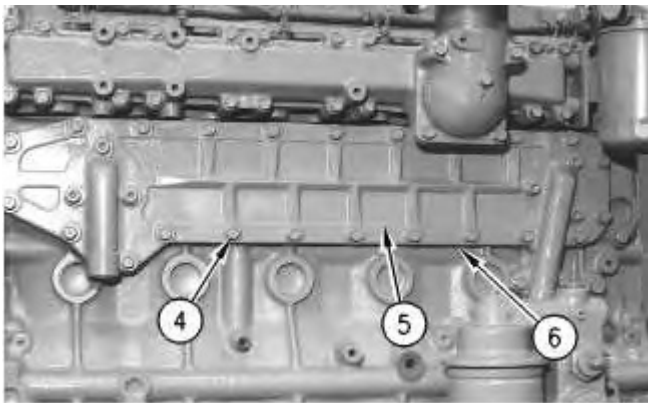


Illustration 1

g00533640

1. Install engine oil cooler (5) and new gasket (6) (not shown). Ensure that all mating surfaces are clean. Install 24 bolts (4) in order to secure the engine oil cooler.

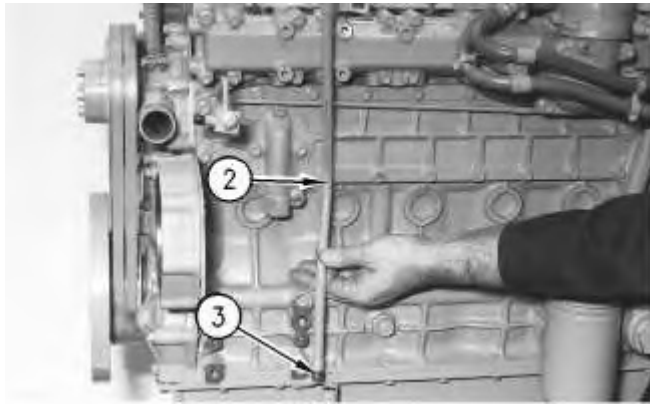


Illustration 2

g00533639

2. If equipped, install oil tube assembly (dipstick) (2) into the cylinder block.

Note: Apply clean engine oil to the O-ring seal (3) before installation.

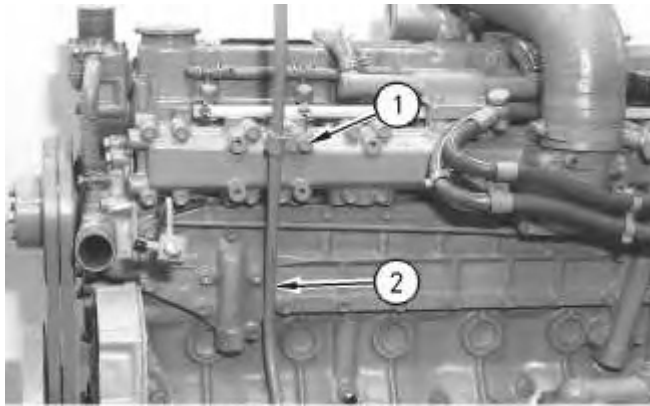


Illustration 3

g00533637

3. If necessary, install bolt (1) and the washer to the air inlet manifold.

End By: Install the fuel injection pump. Refer to Disassembly and Assembly, "Fuel Injection Pump Housing and Governor - Install".

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