



Service Repair Manual

Model

320C, 320C L 320CL, 320C LN

320CLN, 320C S 320CS Excavator

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Product: EXCAVATOR

Model: 320C EXCAVATOR BCN

Configuration: 320C, 320C L, 320C LN, 320C S Excavators BCN00001-UP (MACHINE) POWERED BY 3066 Engine

Disassembly and Assembly

3064 and 3066 Engines for Caterpillar Built Machines

Media Number -SEN5553-10

Publication Date -01/05/2012

Date Updated -15/05/2012

i01564836

Fuel Filter Base - Remove and Install

SMCS - 1262-010

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

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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.

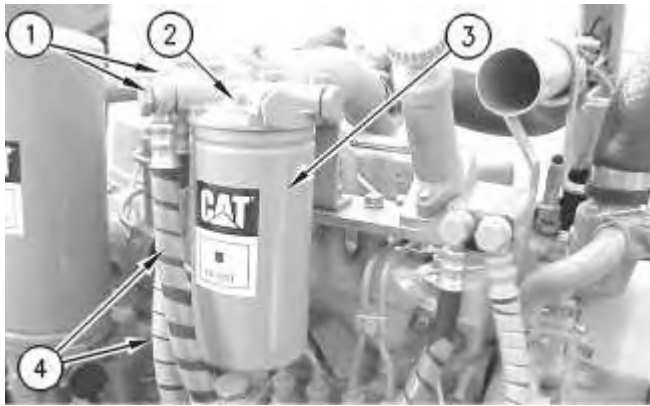


Illustration 1

g00813127

1. Use Tool (A) to remove fuel filter (3) from fuel filter base (2) .

Note: It is not necessary to remove the fuel filter in order to remove the fuel filter base.

2. Remove banjo bolts (1) and copper washers in order to disconnect the fuel lines (4) from the fuel filter base (2).

Note: Cap all openings or plug all openings immediately in order to prevent contamination of the fuel system.

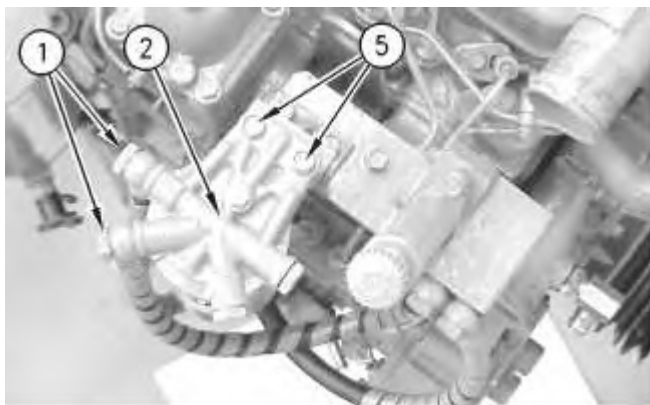


Illustration 2

g00813147

3. Remove two bolts (5) and the washers that secure the fuel filter base (2) to the air inlet manifold. Remove the fuel filter base (2) from the fuel filter bracket.

Installation Procedure

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NOTICE

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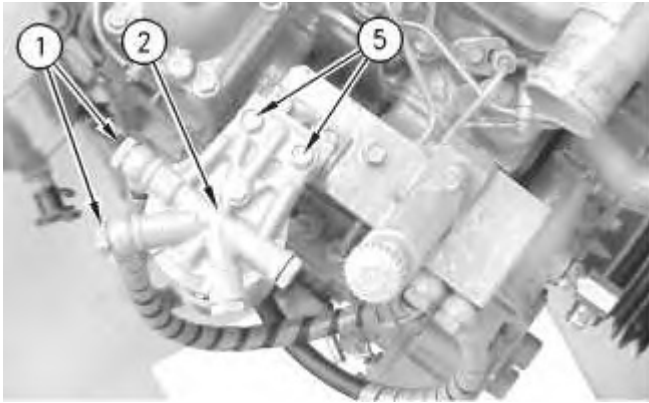


Illustration 3

g00813147

1. Place the fuel filter base (2) in position on the fuel filter bracket. Install the washers and two bolts (5) that secure the fuel filter base to the fuel filter bracket.

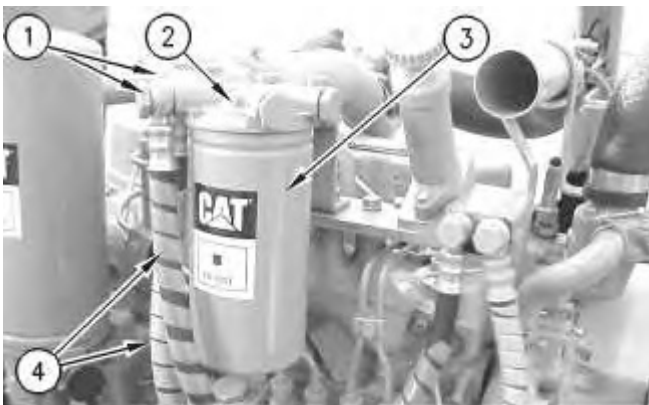


Illustration 4

g00813127

2. Install the banjo bolts (1) and install new copper washers in order to connect the fuel lines (4) to the fuel filter base (2).
 3. If the fuel filter was removed, install the fuel filter (3) to the fuel filter base (2). Tighten the fuel filter by hand according to the instructions that are shown on the fuel filter. Do not overtighten the fuel filter.
-

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Configuration: 320C, 320C L, 320C LN, 320C S Excavators BCN00001-UP (MACHINE) POWERED BY 3066 Engine

Disassembly and Assembly**3064 and 3066 Engines for Caterpillar Built Machines**

Media Number -SEN5553-10

Publication Date -01/05/2012

Date Updated -15/05/2012

i01565021

Fuel Injection Lines - Remove and Install

SMCS - 1252-010

Removal Procedure

Start By:

- A. Remove the fuel filter base. Refer to Disassembly and Assembly, "Fuel Filter Base - Remove and Install".

NOTICE

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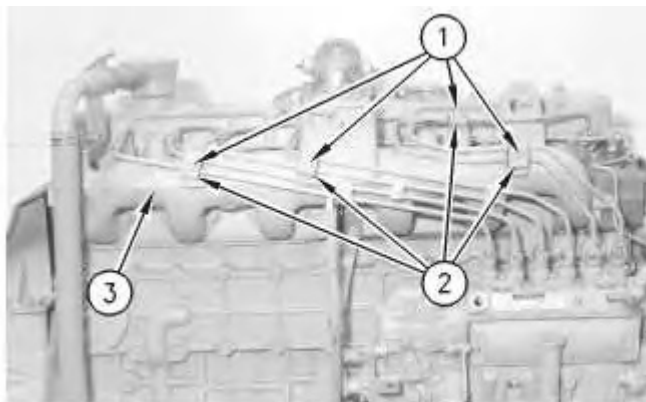


Illustration 1

g00606301

The 3066 Engine is shown.

1. Remove the bolts (1), the washers, and the clamps (2), which secure the fuel lines to the inlet manifold (3) .

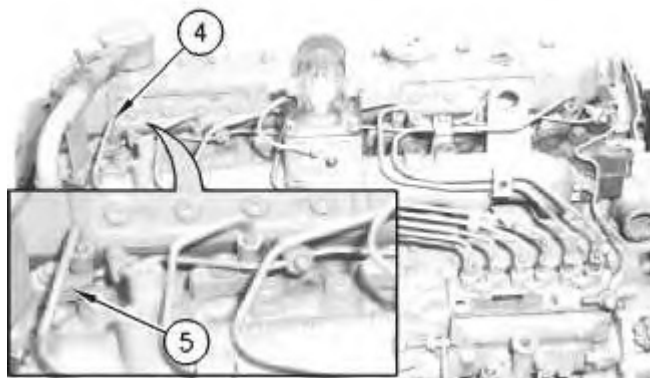


Illustration 2

g00606310

2. Disconnect the fuel injection lines (4) from the fuel injection nozzles (5) .

Note: Cap all openings or plug all openings immediately in order to prevent contamination of the fuel system.

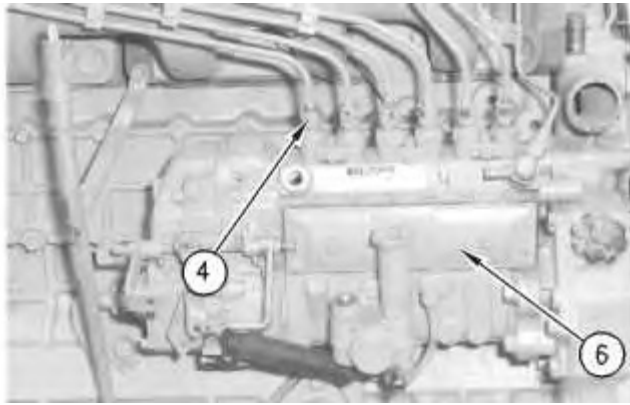


Illustration 3

g00606314

Fuel injection pump for a 3066 Engine

3. Disconnect the end of the fuel injection lines (4) from the fuel injection pump (6) .

Note: Cap all openings or plug all openings immediately in order to prevent contamination of the fuel system.

4. Remove the fuel injection lines (4) from the engine.

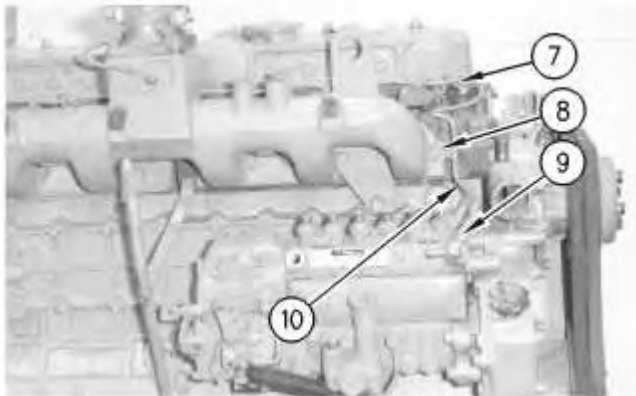


Illustration 4

g00606317

5. Loosen the acorn nuts (7), which secure the fuel return line to the fuel injection nozzles.
6. Remove one bolt (8) and the washer from the clamp that secures the fuel return line to the intake manifold.

Note: The clamp will remain with the fuel return line, when the fuel return line is removed from the engine.

7. Disconnect fitting (9). Remove fuel return line (10) from the engine.

Note: Cap all openings or plug all openings immediately in order to prevent contamination of the fuel system.

Installation Procedure

NOTICE

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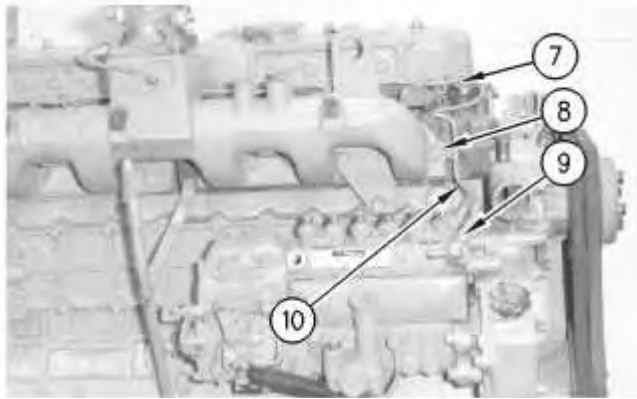
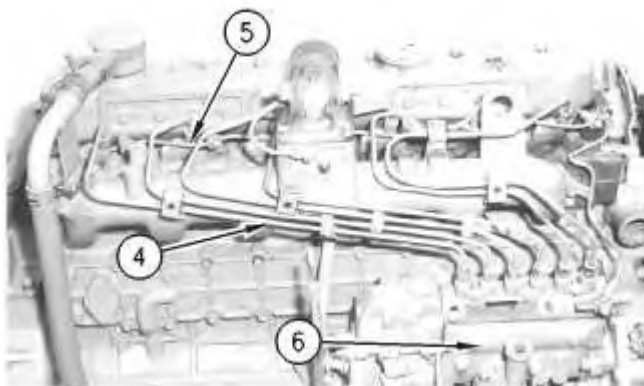


Illustration 5

g00606317

1. Place the fuel return line (10) in position on the engine. Connect fitting (9) of the fuel return line to the fuel injection pump.
2. Install the washer and bolt (8) through the clamp in order to secure the fuel return line to the inlet manifold.
3. Install the fuel return line (10) to the fuel injection nozzles. Secure the fuel return line to the fuel injection nozzle with acorn nuts (7) .



Fuel injection pump for a 3066 Engine

4. Place the fuel injection lines (4) on the engine.
5. Connect the fuel injection lines (4) to the fuel injection pump (6) .
6. Connect the fuel injection lines (4) to the fuel injection nozzles (5) .

Note: The fuel lines (4) should be connected at the fuel injection nozzle (5) and at the fuel injection pump (6) before tightening the nuts for the fuel injection line.

7. Tighten the nuts for the fuel injection line to a torque of 25 N·m (18 lb ft).

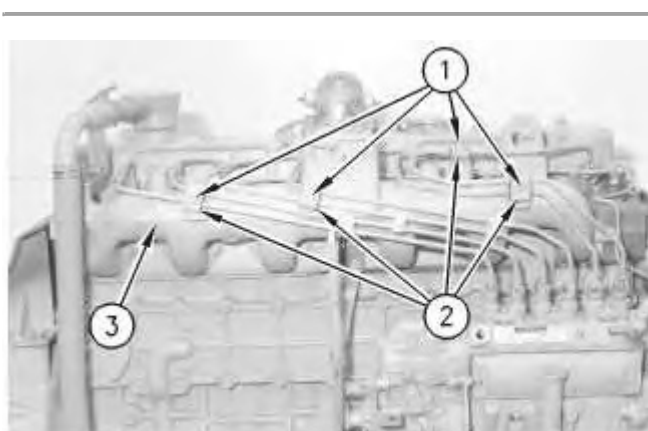


Illustration 7

g00606301

Fuel lines for a 3066 Engine

8. Install the clamps (2), the washers, and the bolts (1), which secure the fuel lines to the inlet manifold (3) .

End By: Install the fuel filter base. Refer to Disassembly and Assembly, "Fuel Filter Base - Remove and Install".

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Product: EXCAVATOR

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Configuration: 320C, 320C L, 320C LN, 320C S Excavators BCN00001-UP (MACHINE) POWERED BY 3066 Engine

Disassembly and Assembly

3064 and 3066 Engines for Caterpillar Built Machines

Media Number -SEN5553-10

Publication Date -01/05/2012

Date Updated -15/05/2012

i01151321

Fuel Injection Nozzles - Remove

SMCS - 1254-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-7600	Slide Hammer Puller	1
B	9U-6278	Adapter	1

Start By:

- Remove the fuel injection lines. Refer to Disassembly and Assembly, "Fuel Injection Lines - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

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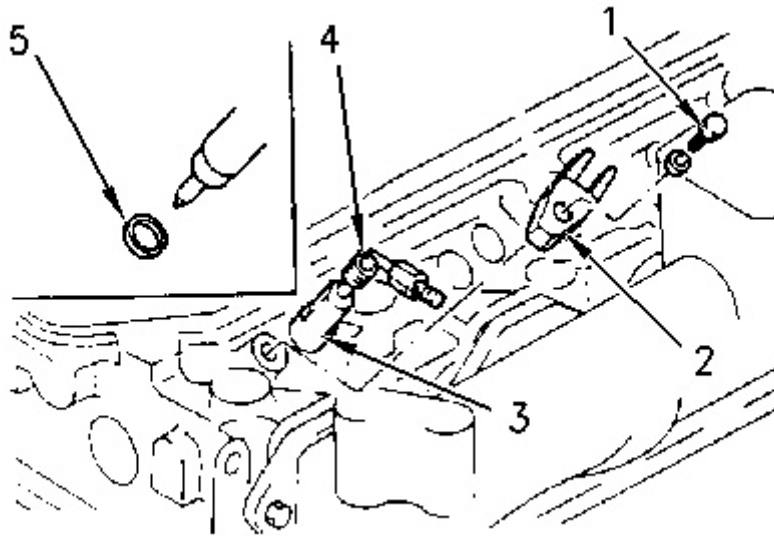


Illustration 1

g00652319

1. Remove bolt (1) and the washer that secures the clamp (2) to the cylinder head assembly.
2. Remove the clamp (2) that secures the fuel injection nozzle (3) in position in the cylinder head assembly.

Note: Put caps or plugs on all openings immediately in order to prevent contamination in the fuel system.

Note: Mark the clamp for later installation.

3. Install Tool (B) (not shown) to the fuel injection nozzle.

Note: Tool (B) is installed at the connection (4) for the fuel injection lines.

4. Connect Tool (A) (not shown) to Tool (B) in order to carefully remove fuel injection nozzle (3) .

Note: Align the centerline of Tool (A) with the extended centerline of fuel injection nozzle (3). This procedure will help prevent distortion of the fuel injection nozzle which can cause the fuel injection nozzle to bend or break.

5. Remove the seat washer from the fuel injection nozzle.

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3064 and 3066 Engines for Caterpillar Built Machines

Media Number -SEN5553-10

Publication Date -01/05/2012

Date Updated -15/05/2012

i01151648

Fuel Injection Nozzles - Install

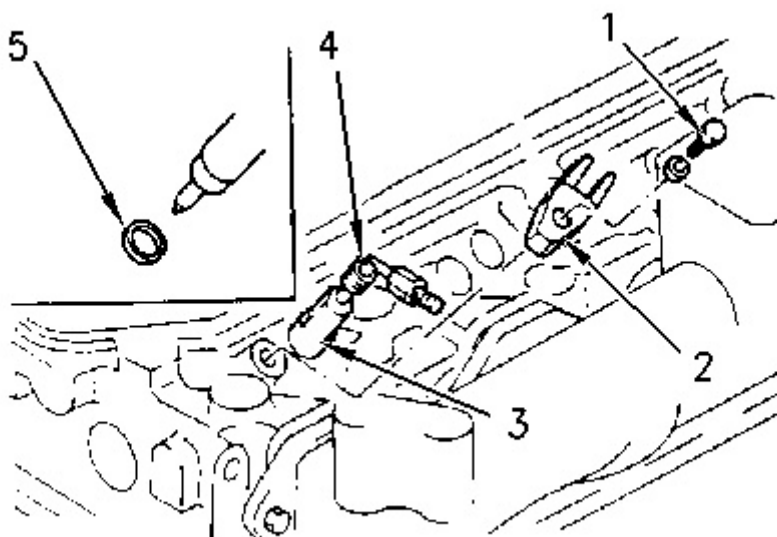
SMCS - 1254-012

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



1. Install a new seat washer (5) .
2. Install fuel injection nozzle (3).
3. Install clamp (2), the washer, and bolt (1) that secures the fuel injection nozzle to the cylinder head assembly.
4. Tighten bolt (1), that secures the fuel injection nozzle, to a torque of 22 N·m (16 lb ft).

End By: Install the fuel injection lines. Refer to Disassembly and Assembly, "Fuel Injection Lines - Remove and Install".

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Disassembly and Assembly 3064 and 3066 Engines for Caterpillar Built Machines

Media Number -SEN5553-10

Publication Date -01/05/2012

Date Updated -15/05/2012

i01615152

Fuel Shutoff Solenoid - Remove and Install

SMCS - 1259-010

Removal Procedure

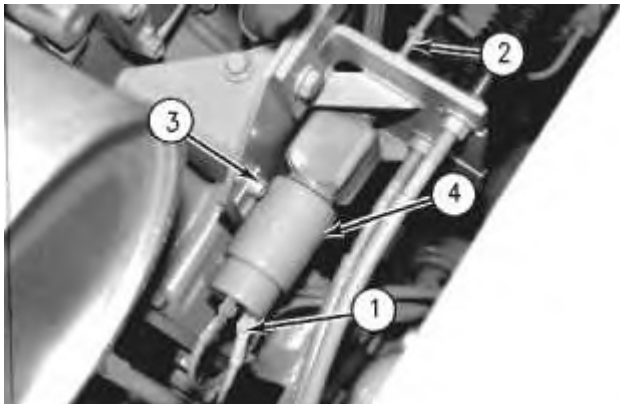


Illustration 1

g00618938

1. Disconnect two wire leads (1). Mark the wires for later installation.
2. Disconnect actuator lever (2) from the governor lever.
3. Remove two bolts (3) and washers that secure the fuel shutoff solenoid to the bracket.
4. Remove shutoff solenoid (4) from the bracket.

Installation Procedure

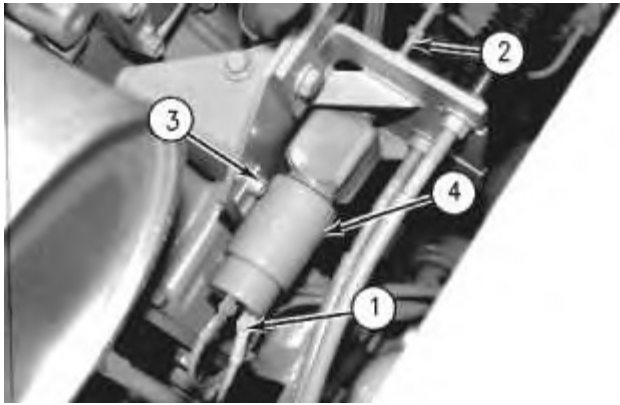


Illustration 2

g00618938

1. Place the shutoff solenoid (4) in position on the bracket.
2. Install the two washers and bolts (3) that secure the fuel shutoff solenoid to the bracket.
3. Connect actuator lever (2) to the governor lever.
4. Connect two wire leads (1) to the fuel shutoff solenoid. Ensure that the wires are properly connected.

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3064 and 3066 Engines for Caterpillar Built Machines

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Publication Date -01/05/2012

Date Updated -15/05/2012

i01565175

Fuel Injection Pump - Remove

SMCS - 1251-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	9U-6124	Universal Metric Socket Set	1
B	9U-6128	Universal Metric Socket ⁽¹⁾	1

⁽¹⁾ Part of the Universal Metric Socket Set

Start By:

- Remove the fuel injection lines. Refer to Disassembly and Assembly, "Fuel Injection Lines - Remove and Install".

NOTICE

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NOTICE

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Dispose of all fluids according to local regulations and mandates.

1. Ensure that the engine is the top center position on number one piston. Refer to Testing and Adjusting, "Finding Center Position for No. 1 Piston".



Illustration 1

g00813442

2. Remove bolts (1) and washers that secure the cover (2) to the engine front housing.
3. Remove the access cover. Note the timing marks on the fuel injection pump drive gear and the idler gear for later installation.

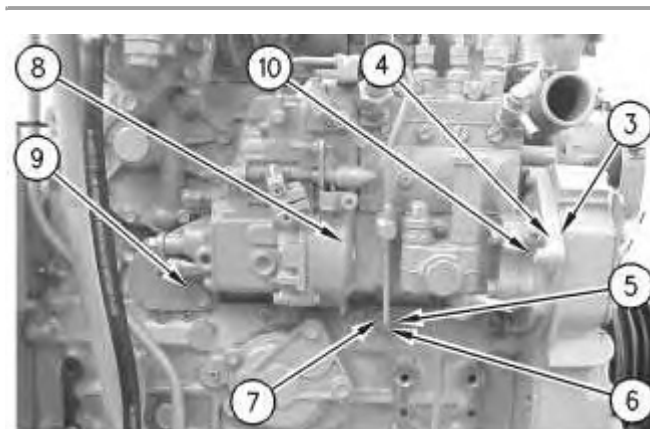


Illustration 2

g00813430

4. Scribe a line across the front plate (3) and the mounting flange for the fuel injection pump (4). This ensures proper alignment for the installation of fuel injection pump (8) .
5. Loosen fitting (5) for oil line (6) .
6. Remove oil line (6) from nipple (7) (not shown).

Note: Put caps or plugs on all openings immediately in order to prevent contamination.

7. Use a lifting sling and a hoist in order to secure the fuel injection pump. The weight of the fuel injection pump is 13 kg (29 lb).

Note: Use Tool (B) to remove the bolts and the washers that mount the fuel injection pump (8) .

8. Remove bolt (9) and the washer from the cylinder block.
9. Remove four bolts (10) and the washers that secure the fuel injection pump to the front housing.

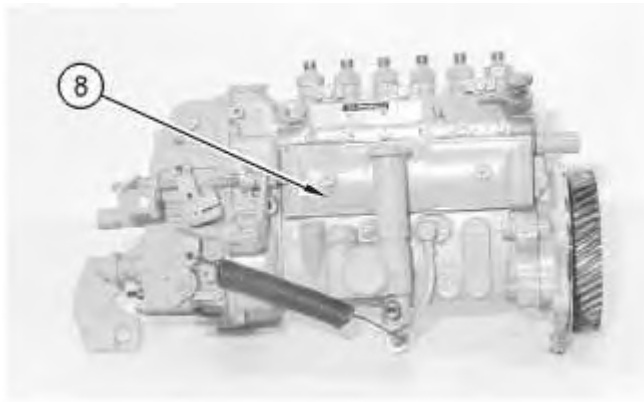


Illustration 3

g00813593

10. Remove the fuel injection pump (8). The gear and the mounting flange will remain with the fuel injection pump.

Note: The fuel injection pump must be mounted to the engine in order to loosen the nut for the drive gear.

Note: Do not rotate the engine after the fuel injection pump is removed.

11. Ensure that the old gasket material is removed from all mating surfaces of the pump mounting flange and the face of the fuel injection pump flange.

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Media Number -SEN5553-10

Publication Date -01/05/2012

Date Updated -15/05/2012

i01565619

Fuel Injection Pump - Install

SMCS - 1251-012

Installation Procedure

Table 1

Required Tools			
Tool	Part number	Part Description	Qty
A	9U-6124	Universal Metric Socket Set	1
B	9U-6128	Universal Metric Socket ⁽¹⁾	1

⁽¹⁾ Part of the Universal Metric Socket Set

NOTICE

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Note: If the nut for the fuel injection pump drive gear is removed, you must tighten the nut for the fuel injection pump drive gear to $88 \pm 5 \text{ N}\cdot\text{m}$ ($65 \pm 4 \text{ lb ft}$).

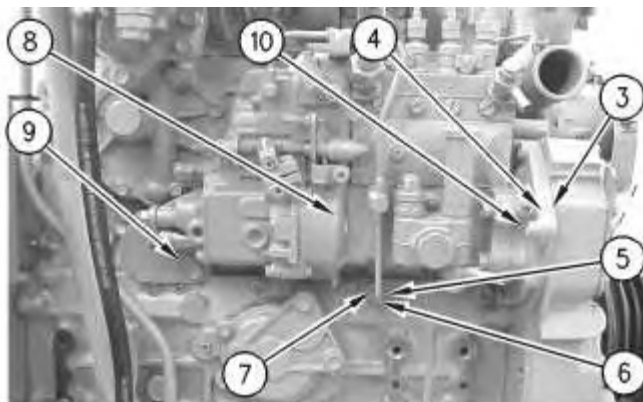


Illustration 1

g00813430

1. Use a lifting sling and a hoist in order to secure the fuel injection pump (8). The weight of the fuel injection pump is 13 kg (29 lb).
2. Install a new gasket and install fuel injection pump (8) .
3. Ensure that the engine is in the top center position on No. 1 piston. Refer to Testing and Adjusting, "Finding Top Center Position for No. 1 Piston".
4. Ensure that the mark on the front plate (3) and the mark on the fuel injection pump flange (4) are aligned.

Refer to Testing and Adjusting, "Fuel Injection Timing-Check" for more information on fuel injection pump timing.

Note: Use Tool (B) to install the bolts and washers that secure the fuel injection pump to the cylinder block.

5. Install the washers and bolts (9) that secure the fuel injection pump to the engine cylinder block.
6. Remove the sling from the fuel injection pump.
7. Connect oil line (6) to nipple (7) (not shown).
8. Tighten fitting (5) for oil line (6) .

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Media Number -SEN5553-10

Publication Date -01/05/2012

Date Updated -15/05/2012

i01564499

Turbocharger - Remove

SMCS - 1052-011

Removal Procedure

NOTICE

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Dispose of all fluids according to local regulations and mandates.

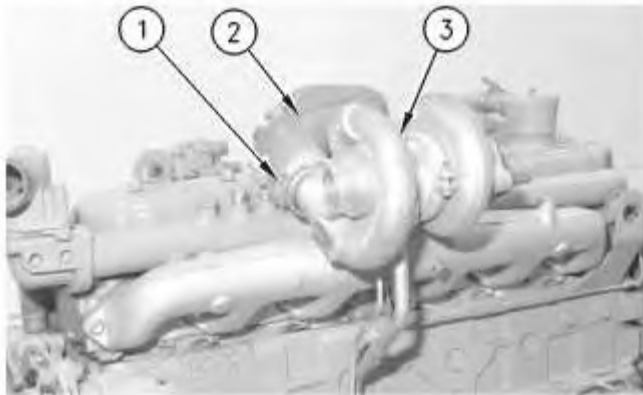


Illustration 1

g00608136

1. Loosen the hose clamp (1) on hose (2) .
2. Remove hose (2) from the turbocharger (3) .

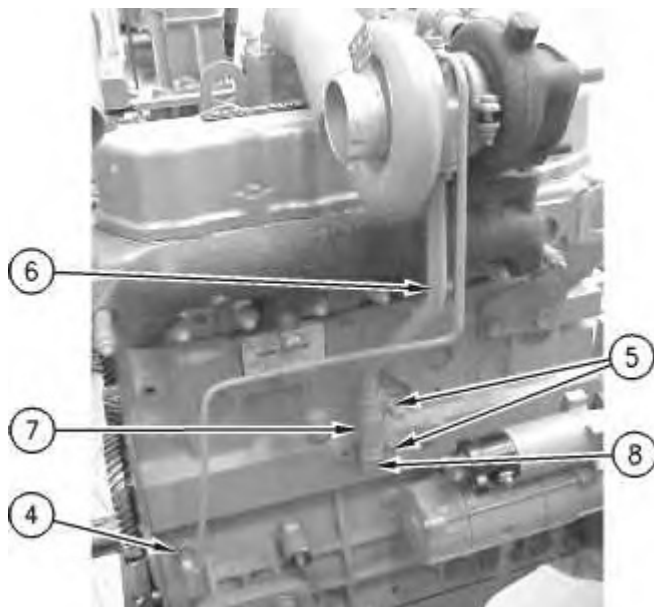


Illustration 2

g00812846

3. Disconnect oil supply line (4) from the cylinder block.
 4. Loosen two clamps (5) on hose (7) .
 5. Slide hose (7) off fitting (8) onto oil return line (6) .
-

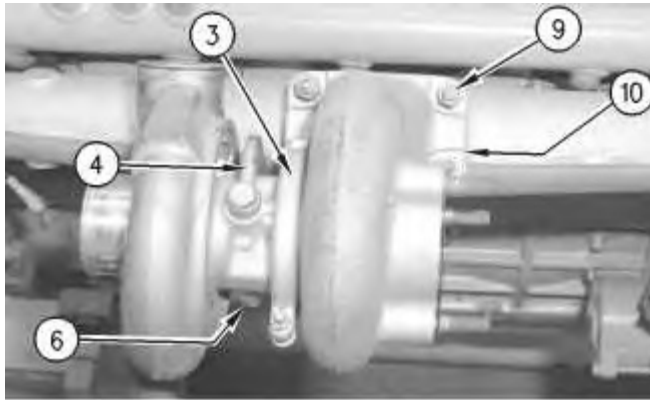


Illustration 3

g00608177

6. Remove eight nuts (9) from the studs on the exhaust manifold.

Note: The four studs have two nuts for a total of eight nuts.

7. Remove turbocharger (3), oil supply line (4), and oil return line (6) as an unit.
8. Remove metal gasket (10) (not shown). Check the gasket for wear or damage. Replace the gasket, if necessary.

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Date Updated -15/05/2012

i01615171

Turbocharger - Disassemble

SMCS - 1052-015

Disassembly Procedure

Start By:

- A. Remove the turbocharger. Refer to Disassembly and Assembly, "Turbocharger - Remove".

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1. Place an index mark on all of the components. The marks will help to align the components during the assembly procedure.

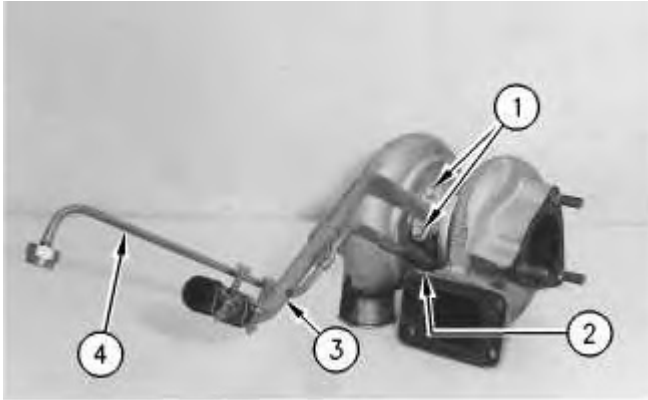


Illustration 1

g00608212

2. Remove two bolts (1) from the oil return line. Remove bolt (2) from the oil supply line.
3. Remove oil return line (3) from the cartridge.
4. Remove oil supply line (4) from the cartridge.

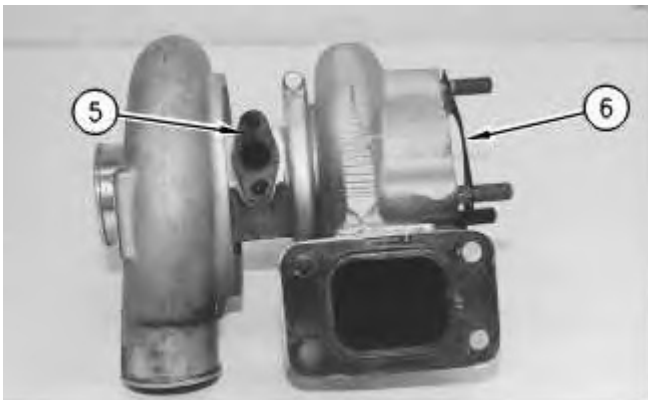


Illustration 2

g00608210

5. Remove gasket (5) from the cartridge.
 6. Remove gasket (6) from the turbine housing.
-



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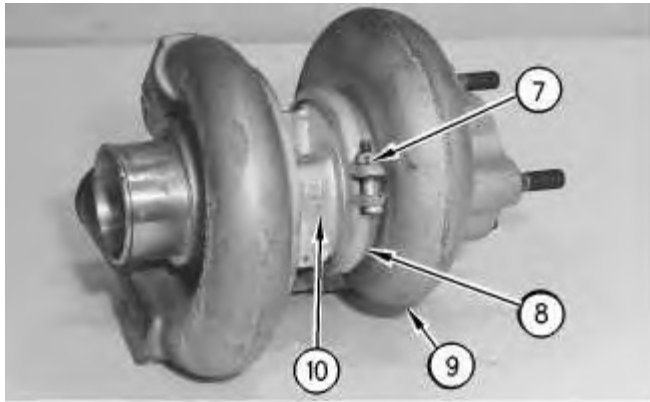


Illustration 3

g00608342

7. Remove the bolt and nut (7) from clamp (8). Remove clamp (8) that secures the turbine housing (9) to the cartridge (10) .
8. Separate turbine housing (9) from the cartridge (10) .

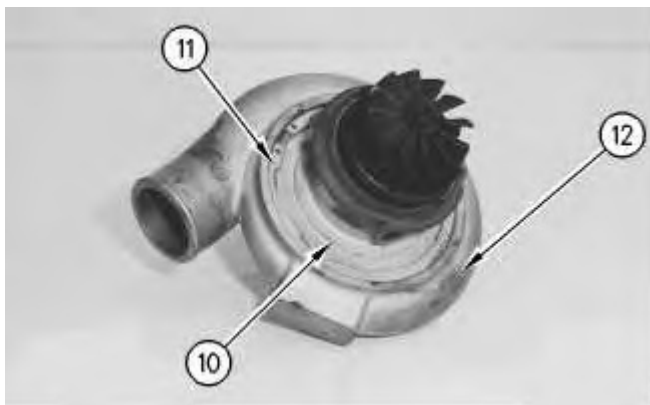


Illustration 4

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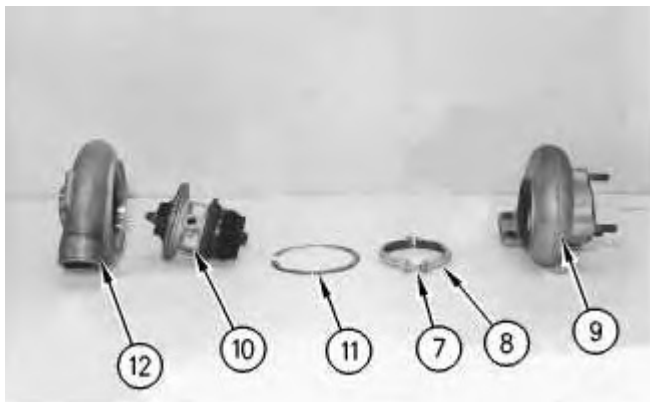


Illustration 5

g00608452

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