Product: EXCAVATOR
Model: 340F EXCAVATOR RBD
Configuration: 340F Excavator RBD00001-UP (MACHINE) POWERED BY C9.3 Engine

Disassembly and Assembly
C9.3 Engines for Caterpillar Built Machines
Media Number -UENR0130-06 **Publication Date -01/08/2015** **Date Updated -22/05/2017**

i03897450

Fuel Lines - Remove and Install

SMCS - 1274-010

Removal Procedure

WARNING

Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these inspection, maintenance and service instructions may cause personal injury or death.

NOTICE

Contact with high pressure fuel may cause personal injury or death. Wait 60 seconds after the engine has stopped to allow fuel pressure to purge before any service or repair is performed on the engine fuel lines.

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.

Dispose of all fluids according to local regulations and mandates.

NOTICE

Cleanliness is an important factor. Clean the exterior of the engine before the removal procedure. Ensure the area around the Fuel Manifold and the Fuel Lines are thoroughly cleaned. This action will prevent contaminants from entering the internal mechanism. Before replacing any Fuel Lines, follow the instructions that are listed below. Replace the Fuel Lines with the correct Fuel Lines Group.

Note: The following procedures were written for the complete removal of all of the fuel lines and clamps. If only specific fuel lines need to be replaced then only remove the fuel lines and clamps that need replacement.

1. Turn the fuel supply to the OFF position.
2. Disconnect the battery. Refer to Operation and Maintenance Manual, "Battery or Battery Cable - Disconnect".
3. Remove all components in order to access to the wiring harness.

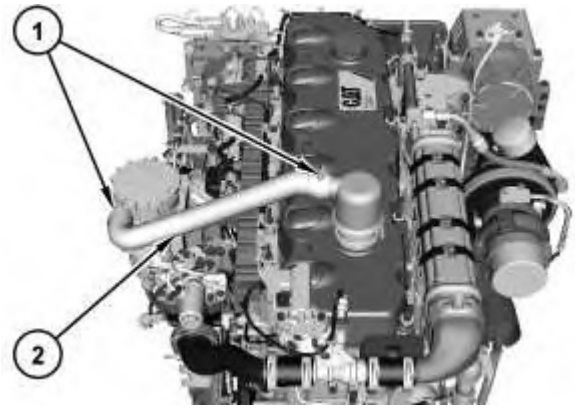

Illustration 1 g02140798

4. Loosen clamp assemblies (1) and remove hose (2).

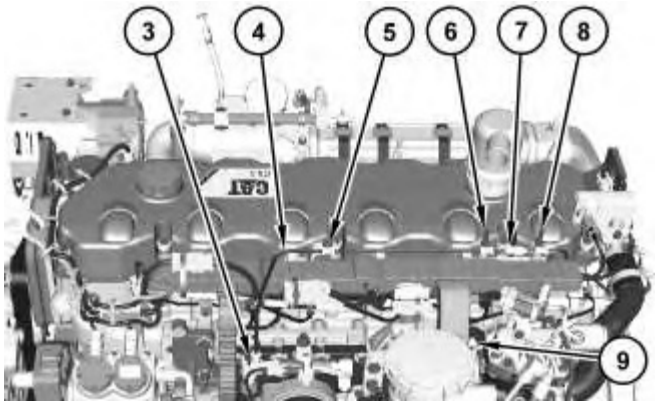

Illustration 2 g02140852

5. Disconnect fittings (3) and (7).
6. Remove bolts (5), (6), and (8) and remove tube assembly (4).
7. Remove bolt (9).

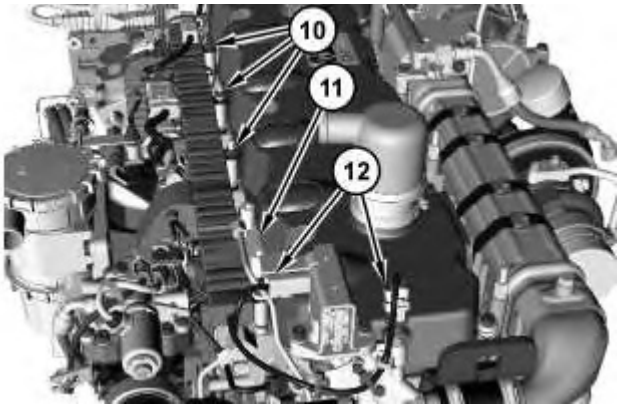

Illustration 3 g02140971

8. Remove nuts (10) and remove bracket (11).
9. Disconnect harness assemblies (12).

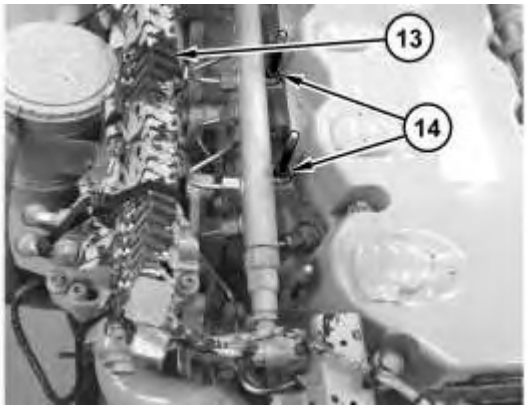

Illustration 4 g02141119

10. Position harness assembly (13) out of the way. Remove the spacers (not shown) from studs (14).

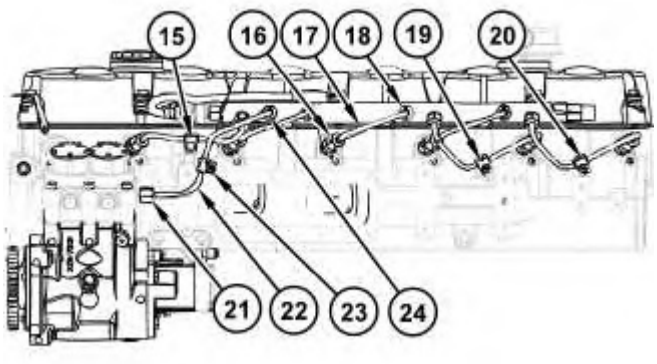

Illustration 5 g02141131

11. Remove the bolt (15) and remove the clamp assembly. Discard the clamp assembly.
12. Remove nuts (23), (19), and (20). Remove the corresponding clamp assemblies and discard the clamp assemblies.
13. Loosen nuts (16) and (18). Remove fuel line (17) and discard the fuel line. Repeat for the remaining fuel lines.
14. Loosen nuts (21) and (24). Remove fuel line (22) and discard the fuel line.

Installation Procedure

NOTICE

Fuel injection lines MUST only be used once. Discard all fuel injection lines after use.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: Make sure that the fuel line caps remain in position until the fuel line is positioned near the corresponding ports in order to prevent contamination. Ensure that the areas around the rail and fuel lines are thoroughly clean before continuing this procedure. If any parts are worn or damaged, use new parts for replacement. Cleanliness is an important factor. Ensure that no debris gets

introduced into the fuel system during the installation procedure. If any parts are worn or damaged, use new parts for replacement.

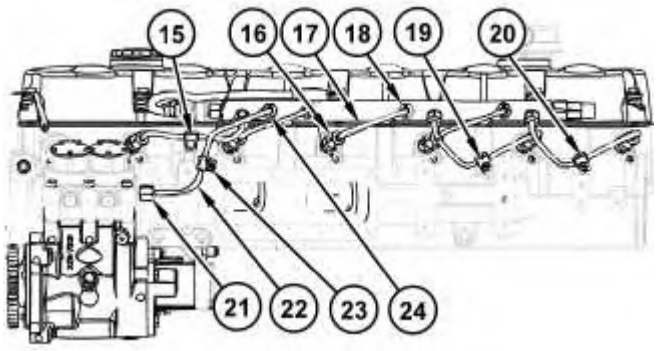

Illustration 6 g02141131

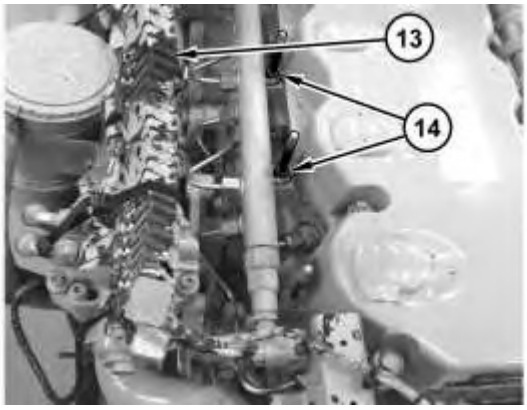

Illustration 7 g02141119

Note: Make sure that the fuel line caps remain in position until the fuel line is positioned near the corresponding ports in order to prevent contamination.

1. Install a new fuel line (17). Hand tighten nuts (16) and (18) on each end of the fuel line. Repeat for the remaining fuel lines.
2. Install a new fuel line (22). Hand tighten nuts (21) and (24).
3. Position the clamp assembly and install bolt (15). Hand tighten the bolt.**Failure to place the grommet correctly on the fuel line could result in a failed fuel line.**.
4. Position the clamp assembly and install nuts (23), (19), and (20). Hand tighten the nuts. **Failure to place the grommet correctly on the fuel line could result in a failed fuel line.**

   Note: Ensure that the fuel lines are centered in the nuts prior to tightening. Do not use excessive force or bending in order to assemble the fuel lines.
5. Tighten nuts (24) and (18) at the fuel rail to a torque of 27 ± 3 N·m (239 ± 27 lb in).
6. Tighten nuts (21) and (16) to a torque of 27 ± 3 N·m (239 ± 27 lb in).

7. Tighten bolt (15) and nuts (23), (19), and (20) to a torque of 12 ± 3 N·m (105 ± 27 lb in).
8. Position the spacers (not shown) and harness (13) onto studs (14).

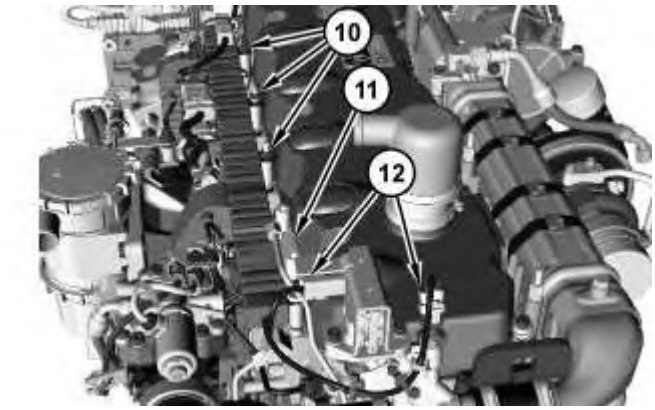

Illustration 8 g02140971

9. Install bracket (11) and install nuts (10).
10. Connect harness assemblies (12).

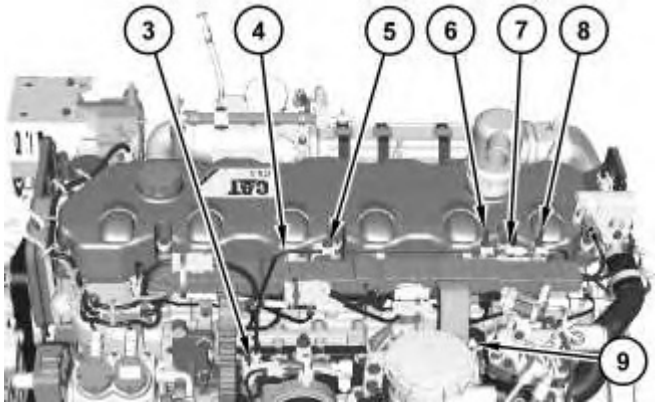

Illustration 9 g02140852

11. Position tube assembly (4). Connect fittings (3) and (7). Install bolts (5), (6), and (8).
12. Install bolt (9).

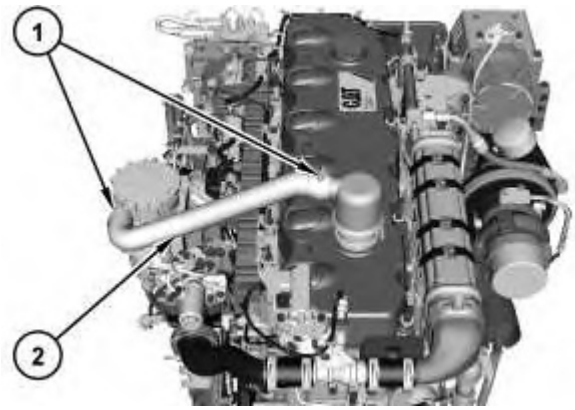

Illustration 10 g02140798

13. Position hose (2) and install clamp assemblies (1).
14. Connect the battery. Refer to Operation and Maintenance Manual, "Battery or Battery Cable - Connect".
15. Turn the fuel supply to the ON position.

Product: EXCAVATOR
Model: 340F EXCAVATOR RBD
Configuration: 340F Excavator RBD00001-UP (MACHINE) POWERED BY C9.3 Engine

Disassembly and Assembly
C9.3 Engines for Caterpillar Built Machines
Media Number -UENR0130-06 **Publication Date -01/08/2015** **Date Updated -22/05/2017**

i04679349

Fuel Transfer Pump - Remove and Install

SMCS - 1256-010

Removal Procedure

Start By:

a. Remove the fuel injection pump.

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.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

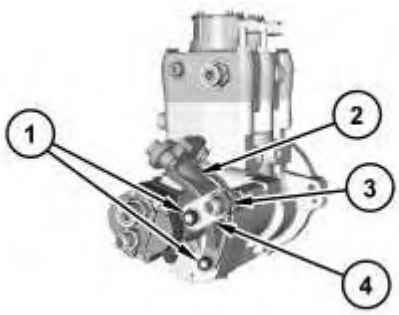

Illustration 1 g03348107

1. Remove nuts (1) and nut (3). Remove plate (4) and bracket assembly (2).

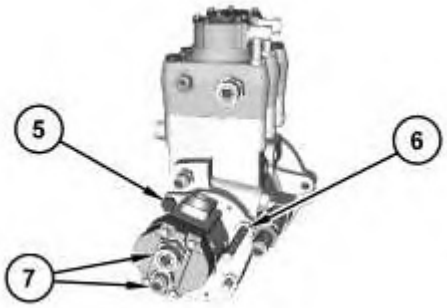

Illustration 2 g03348110

2. Remove bolts (5) and studs (6).
3. Remove connectors (7) and the O-ring seals.

Installation Procedure

Note: Check the O-ring seals, the gaskets, and the seals for wear or for damage. Replace the components, if necessary.

1. Install the fuel transfer pump in the reverse order of removal.
    a. Torque bolts (5) and studs (6) to a torque of 30 ± 4 N·m (22 ± 3 lb ft).

Product: EXCAVATOR
Model: 340F EXCAVATOR RBD
Configuration: 340F Excavator RBD00001-UP (MACHINE) POWERED BY C9.3 Engine

Disassembly and Assembly
C9.3 Engines for Caterpillar Built Machines
Media Number -UENR0130-06 **Publication Date -01/08/2015** **Date Updated -22/05/2017**

i04679613

Fuel Manifold - Remove and Install - Return

SMCS - 1702-010

Removal Procedure

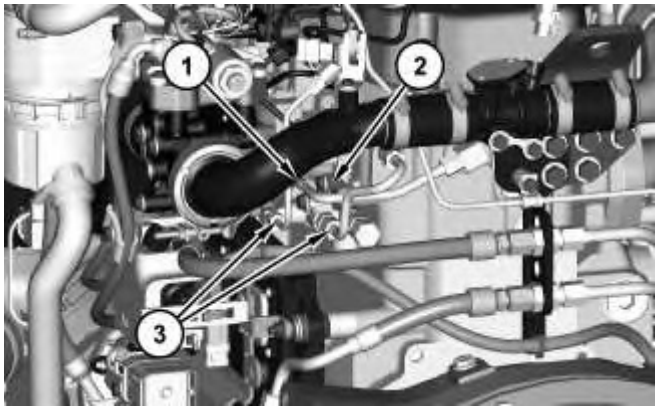

Illustration 1 g02796484

1. Remove tube assemblies (3) and remove clip (1).
2. Remove fuel manifold (2).

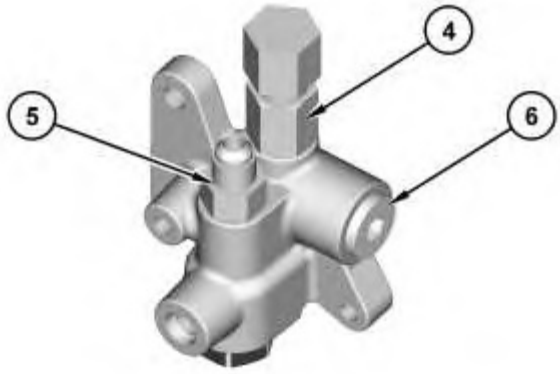

Illustration 2 g02796498

3. Remove connector (4) and the O-ring seal. Remove plug (6).
4. Remove check valve (5).

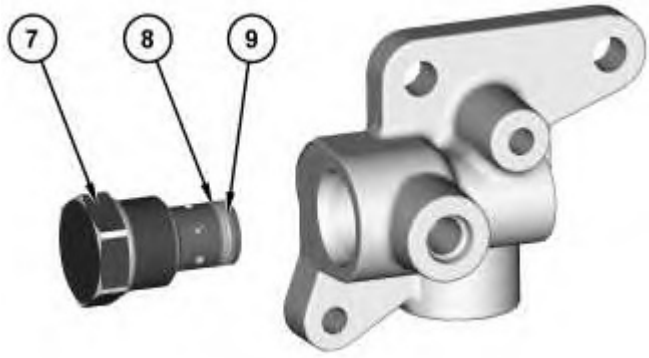

Illustration 3 g02796509

5. Remove check valve (7) and the O-ring seal. Remove O-ring seal (9) and backup ring (8).

Installation Procedure

1. Install fuel manifold (2) in the reverse order of removal.
    a. Tighten check valve (7) to a torque of 28 ± 3 N·m (21 ± 2 lb ft).

Product: EXCAVATOR
Model: 340F EXCAVATOR RBD
Configuration: 340F Excavator RBD00001-UP (MACHINE) POWERED BY C9.3 Engine

Disassembly and Assembly
C9.3 Engines for Caterpillar Built Machines
Media Number -UENR0130-06 **Publication Date -01/08/2015** **Date Updated -22/05/2017**

i04687849

Fuel Manifold - Remove and Install

SMCS - 1702-010

Removal Procedure

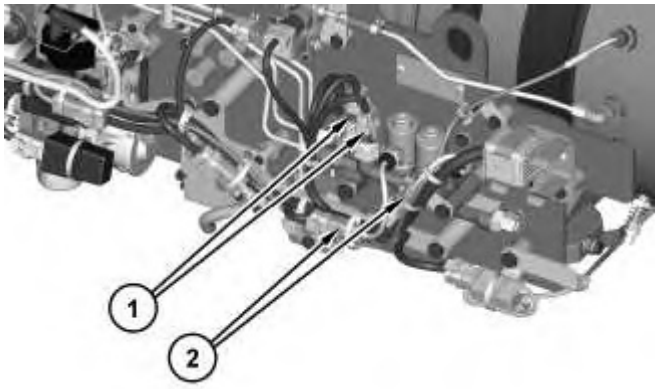

Illustration 1 g02798190

1. Disconnect harness assemblies (1) and (2).

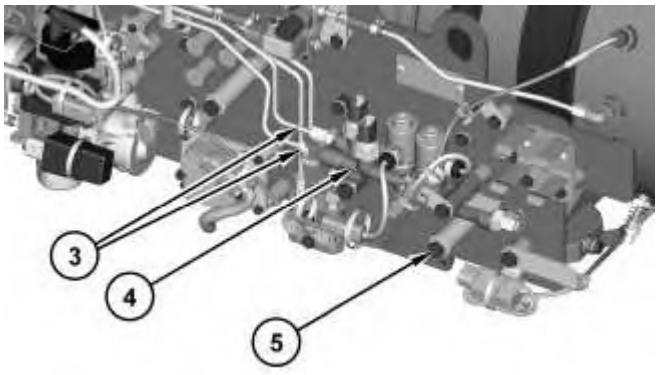

Illustration 2 g02798192

2. Disconnect tube assemblies (3).
3. Remove bolts (5) and remove fuel manifold (4).

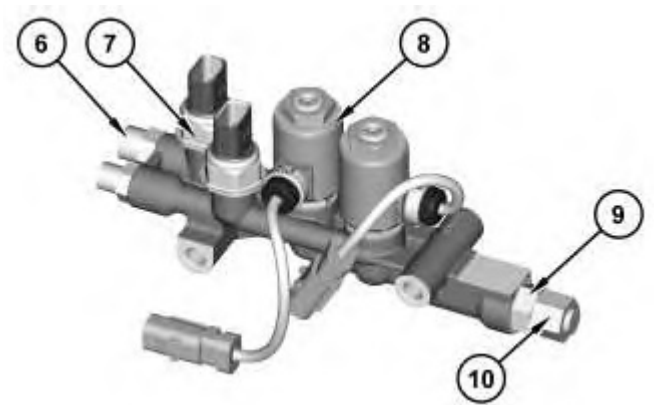

Illustration 3 g03356369

4. Remove adapter assemblies (6). Remove sensors (7) and the O-ring seals.
5. Remove solenoid valves (8).
6. Remove cap (10) and remove connector assembly (9).

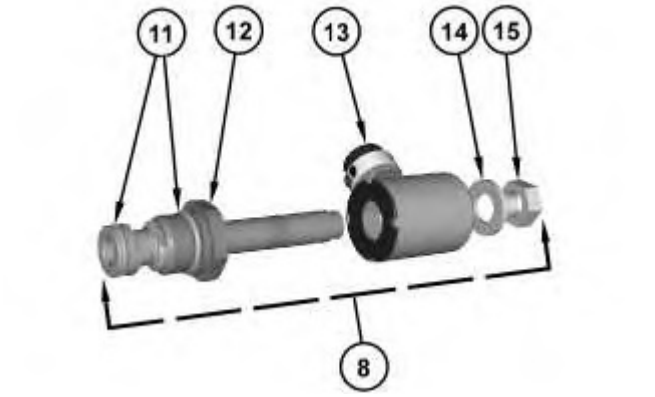

Illustration 4 g02798209

7. Remove nut (15), washer (14), and solenoid (13).
8. Remove cartridge assembly (12) and remove O-ring seals (11).

Installation Procedure

1. Install fuel manifold (4) in the reverse order of removal.
   a. Tighten nut (15) to a torque of 20 ± 2.5 N·m (177 ± 22 lb in).
   b. Tighten solenoid valve (8) to a torque of 50 ± 5 N·m (37 ± 4 lb ft).

c. Tighten connector assembly (9) to a torque of 30 ± 3 N·m (22 ± 2 lb ft).

d. Tighten cap (10) to a torque of 7.0 ± 2.5 N·m (62 ± 22 lb in).

e. Tighten sensors (7) to a torque of 30 ± 3 N·m (22 ± 2 lb ft).

f. Tighten adapter assemblies (6) to a torque of 17 ± 1.5 N·m (150 ± 13 lb in).

Product: EXCAVATOR
Model: 340F EXCAVATOR RBD
Configuration: 340F Excavator RBD00001-UP (MACHINE) POWERED BY C9.3 Engine

Disassembly and Assembly
C9.3 Engines for Caterpillar Built Machines
Media Number -UENR0130-06 **Publication Date -01/08/2015** **Date Updated -22/05/2017**

i05678358

Fuel Manifold (Rail) - Remove and Install

SMCS - 1702-010

Removal Procedure

WARNING

Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these inspection, maintenance and service instructions may cause personal injury or death.

NOTICE

Contact with high pressure fuel may cause personal injury or death. Wait 60 seconds after the engine has stopped to allow fuel pressure to purge before any service or repair is performed on the engine fuel lines.

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.

Dispose of all fluids according to local regulations and mandates.

NOTICE

Cleanliness is an important factor. Clean the exterior of the engine thoroughly before the removal procedure. Ensure the area around the Fuel Manifold and the Fuel Lines are thoroughly cleaned. This action will prevent contaminants from entering the internal mechanism. Before replacing any Fuel Lines, follow the instructions that are listed below. Replace the Fuel Lines with the correct Fuel Lines Group.

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1. Turn the fuel supply to the OFF position.
2. Disconnect the battery. Refer to Operation and Maintenance Manual, "Battery or Battery Cable - Disconnect".
3. Remove all components in order to access to the wiring harness.

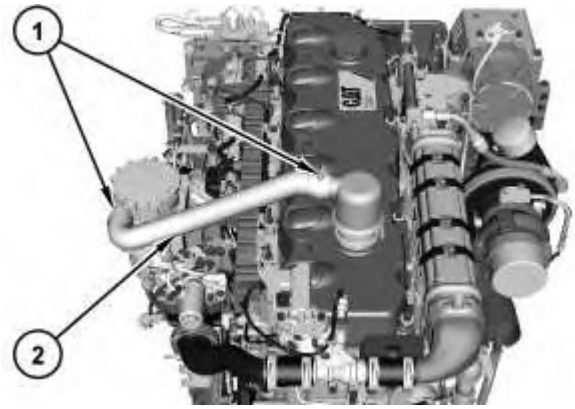

Illustration 1 g02140798

4. Loosen clamp assemblies (1) and remove hose (2) .

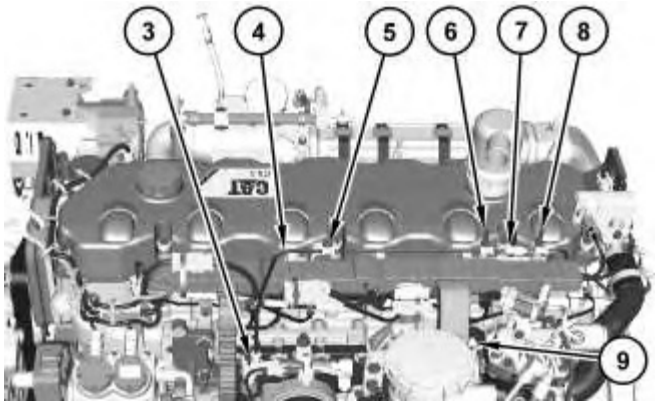

Illustration 2 g02140852

5. Disconnect fittings (3) and (7) .
6. Remove bolts (5) , (6) , and (8) and remove tube assembly (4) .
7. Remove bolt (9) .

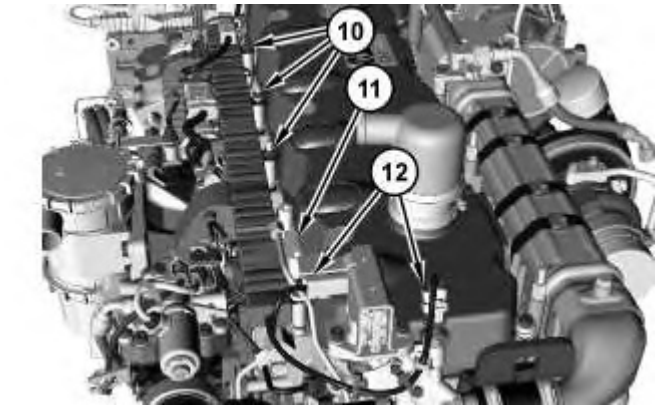

Illustration 3 g02140971

8. Remove nuts (10) and remove bracket (11) .
9. Disconnect harness assemblies (12) .

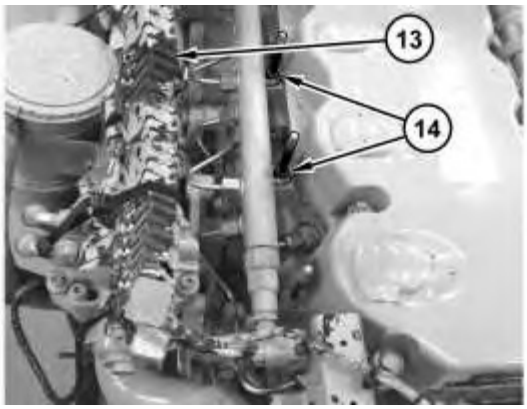

Illustration 4 g02141119

10. Position harness assembly (13) out of the way. Remove the spacers (not shown) from studs (14) .

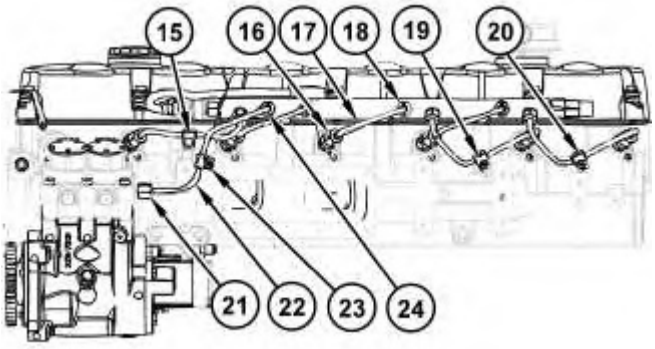

Illustration 5 g02141131

11. Remove the bolt (15) and remove the clamp assembly. Discard the clamp assembly.
12. Remove nuts (23) , (19) , and (20) . Remove the corresponding clamp assemblies and discard the clamp assemblies.
13. Loosen nuts (16) and (18) . Remove fuel line (17) and discard the fuel line. Repeat for the remaining fuel lines.
14. Loosen nuts (21) and (24) . Remove fuel line (22) and discard the fuel line.

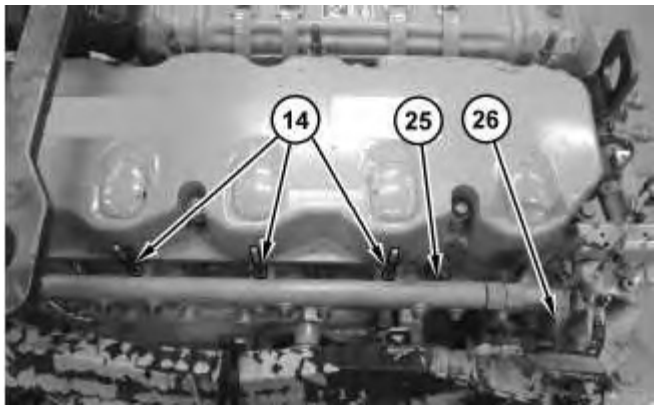

Illustration 6 g02147909

15. Disconnect tube assembly (26) .
16. Remove studs (14) and remove fuel manifold (25) .

Installation Procedure

NOTICE

Fuel injection lines MUST only be used once. Discard all fuel injection lines after use.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: Make sure that the caps for the fuel lines remain in position until the fuel line is positioned near the corresponding ports to prevent contamination. Ensure that the areas around the rail and fuel lines are thoroughly clean before continuing this procedure. If any parts are worn or damaged, use new parts for replacement. Cleanliness is an important factor. Ensure that no debris gets introduced into the fuel system during the installation procedure. If any parts are worn or damaged, use new parts for replacement.

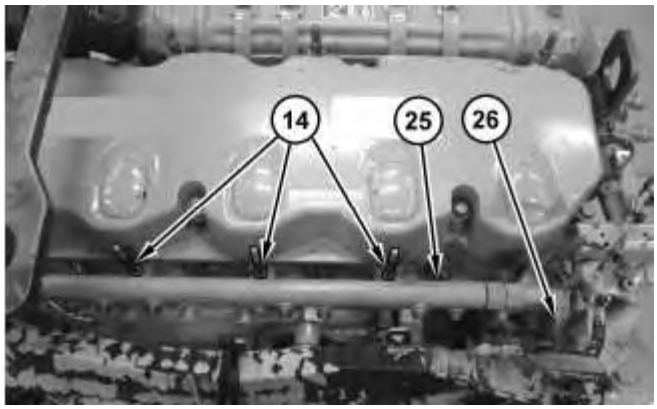

Illustration 7 g02147909

1. Position fuel manifold (25) and install studs (14) hand tight. Connect tube assembly (26) .

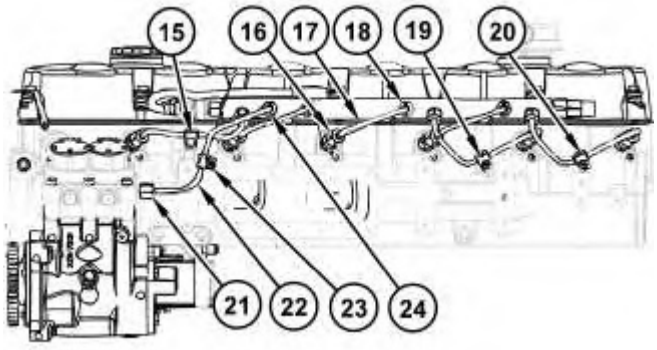

Illustration 8 g02141131

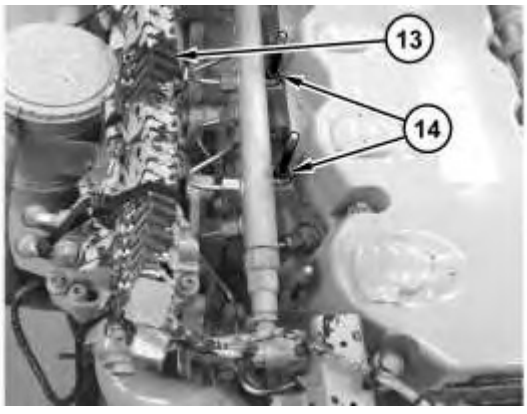

Illustration 9 g02141119

Note: During installation, make sure that the fuel line caps remain in position until the fuel line is positioned near the corresponding ports. This action will prevent contamination.

2. Install a new fuel line (17) . Hand tighten nuts (16) and (18) on each end of the fuel line. Repeat for the remaining fuel lines.
3. Install a new fuel line (22) . Hand tighten nuts (21) and (24) .
4. Position the clamp assembly and install bolt (15) . Hand tighten the bolt.**The fuel line could fail if the grommet is not correctly placed on the fuel line.**
5. Position the clamp assembly and install nuts (23) , (19) , and (20) . Hand tighten the nuts. **The fuel line could fail if the grommet is not correctly placed on the fuel line.**

   Note: Ensure that the fuel lines are centered in the nuts prior to tightening. Do not use excessive force or bending in order to assemble the fuel lines.
6. Tighten nuts (24) and (18) at the fuel rail to a torque of 27 ± 3 N·m (239 ± 27 lb in).
7. Tighten studs (14) to a torque of 28 ± 7 N·m (21 ± 5 lb ft).
8. Tighten nuts (21) and (16) to a torque of 15 ± 3 N·m (135 ± 27 lb in). Turn nuts (10) and (5) for an additional 60 ± 5 degrees.
9. Tighten bolt (15) and nuts (23) , (19) , and (20) to a torque of 12 ± 3 N·m (105 ± 27 lb in).
10. Position the spacers (not shown) and harness (13) onto studs (14) .

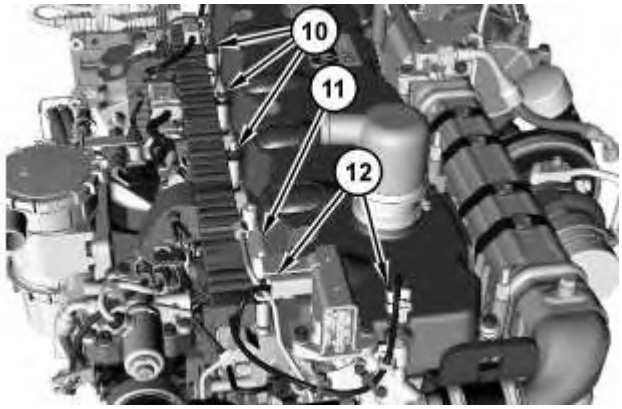

Illustration 10 g02140971

11. Install bracket (11) and install nuts (10) .
12. Connect harness assemblies (12) .

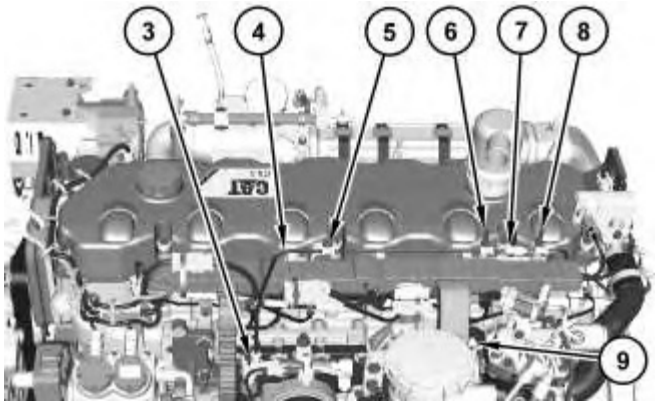

Illustration 11 g02140852

13. Position tube assembly (4) . Connect fittings (3) and (7) . Install bolts (5) , (6) , and (8) .
14. Install bolt (9) .

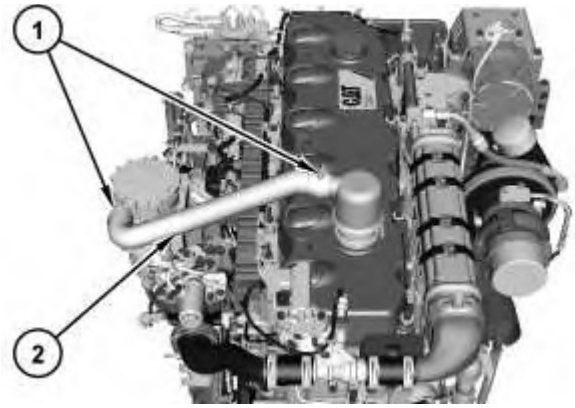

Illustration 12 g02140798

15. Position hose (2) and install clamp assemblies (1) .
16. Connect the battery. Refer to Operation and Maintenance Manual, "Battery or Battery Cable - Connect".
17. Turn the fuel supply to the ON position.

Product: EXCAVATOR
Model: 340F EXCAVATOR RBD
Configuration: 340F Excavator RBD00001-UP (MACHINE) POWERED BY C9.3 Engine

Disassembly and Assembly
C9.3 Engines for Caterpillar Built Machines
Media Number -UENR0130-06 **Publication Date -01/08/2015** **Date Updated -22/05/2017**

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Relief Valve (Fuel) - Remove and Install

SMCS - 1702-010-PV

Removal Procedure

Table 1

Required Tools			
Tool	**Part Number**	**Part Description**	**QTY**
A	5P-0332	Crowfoot Wrench	1
B	129-1966	Multipurpose Grease	1

Start By:

a. Remove the exhaust sensor lines.

NOTICE

Contact with high pressure fuel may cause personal injury or death. Wait 60 seconds after the engine has stopped to allow fuel pressure to purge before any service or repair is performed on the engine fuel lines.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

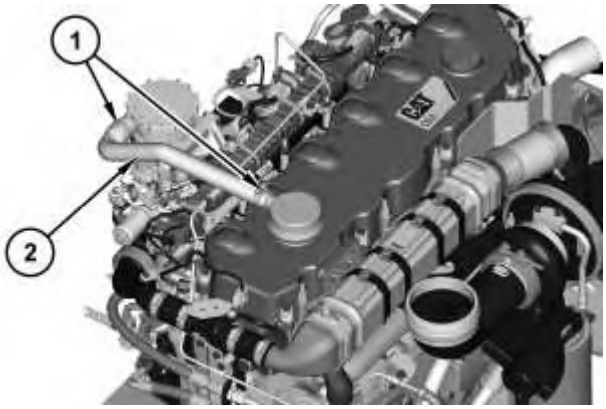
Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

WARNING

Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these inspection, maintenance and service instructions may cause personal injury or death.

1. Turn the fuel supply to the OFF position.
2. Disconnect the battery. Refer to Operation and Maintenance Manual, "Battery or Battery Cable - Disconnect".
3. Remove all components in order to access to the harness assembly.



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4. Loosen clamp assemblies (1) and remove hose (2).