KENR6932-00
May 2007

Disassembly and Assembly

1106C Genset

PK (Engine)

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Disassembly and Assembly Section

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Disassembly and Assembly Section

i02654356

Fuel Priming Pump - Remove and Install (Mechanical Priming Pump)

Removal Procedure

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, "General Hazard Information and High Pressure Fuel Lines" for safety information.

Refer to System Operation, Testing and Adjusting, "Cleanliness of Fuel System Components" for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Isolate the fuel supply.
2. Make a temporary identification mark on plastic tube assemblies (1) in order to show the correct position of the tube assemblies.
3. Place a suitable container below the fuel priming pump in order to catch any fuel that might be spilled. Drain the primary filter (7). Refer to Operation and Maintenance Manual, "Fuel System Primary Filter (Water Seperator) Element - Replace".

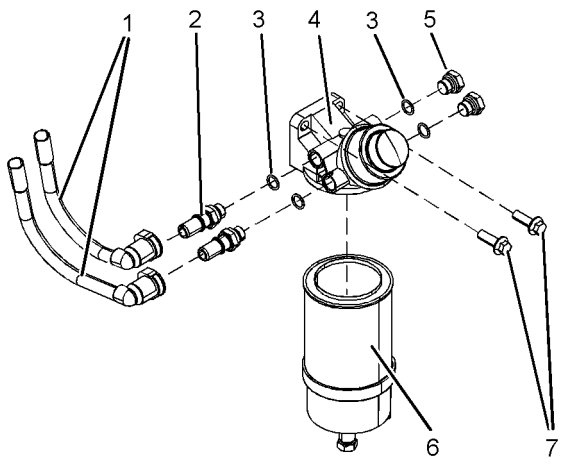

Illustration 1 g01334872

Typical example

4. Disconnect plastic tube assemblies (1). Plug the tube assemblies with new plugs. Cap open connectors (2) on the fuel priming pump with new caps.
5. Remove primary filter (6) from fuel priming pump (4). Refer to Operation and Maintenance, "Fuel System Primary Filter (Water Seperator) Element - Replace".
6. Remove bolts (7) from fuel priming pump (4). Remove fuel priming pump (4) from the mounting bracket.
7. If necessary, follow Steps 7.a through 7.c in order to disassemble fuel priming pump (4).
   a. Remove connectors (2) from fuel priming pump (4).
   b. Remove plugs (5) from fuel priming pump (4).
   c. Remove O-ring seals (3) from connectors (2) and plugs (5).

Installation Procedure (Manual Priming Pump)

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, "General Hazard Information and High Pressure Fuel Lines" for safety information.

Refer to System Operation, Testing and Adjusting, "Cleanliness of Fuel System Components" for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Ensure that fuel priming pump (4) is clean and free from wear or damage. If necessary, replace the fuel priming pump.

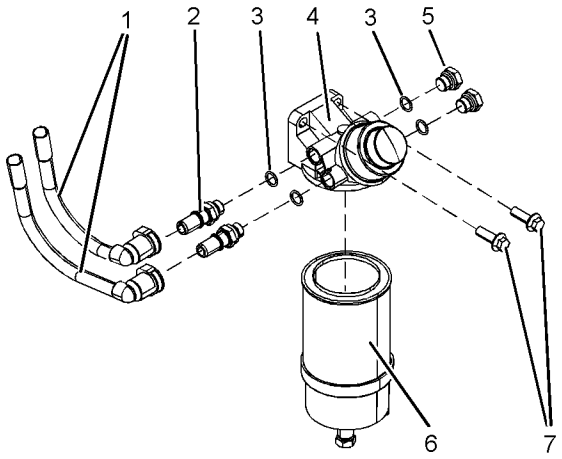

Illustration 2 g01334872

Typical example

2. If necessary, follow Steps 2.a through 2.d in order to assemble fuel priming pump (4).
   a. Install new O-ring seals (3) to connectors (2) and to plugs (5).
   b. Install connectors (2) to fuel priming pump (4).
   c. Install plugs (5) to fuel priming pump (4).
   d. Tighten the plugs and the connectors to a torque of 20 N·m (14 lb ft).
3. Position fuel priming pump (4) on the mounting bracket. Install bolts (7) to the fuel priming pump . Tighten the bolts to a torque of 44 N·m (32 lb ft).
4. Remove the plugs from the plastic tube assemblies. Remove the caps from the connectors.
5. Connect plastic tube assemblies (1) to connectors (2).

Note: Ensure that the plastic tube assemblies are installed in the original positions.

6. Install a new primary filter (6) to fuel priming pump (4). Refer to Operation and Maintenance Manual, "Fuel System Primary Filter (Water Seperator) Element - Replace".
7. Restore the fuel supply.
8. Prime the fuel system. Refer to Operation and Maintenance Manual, "Fuel System - Prime".

i02654355

Fuel Priming Pump - Remove and Install (Electrical Priming Pump)

Removal Procedure

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, "General Hazard Information and High Pressure Fuel Lines" for safety information.

Refer to System Operation, Testing and Adjusting, "Cleanliness of Fuel System Components" for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Isolate the fuel supply.

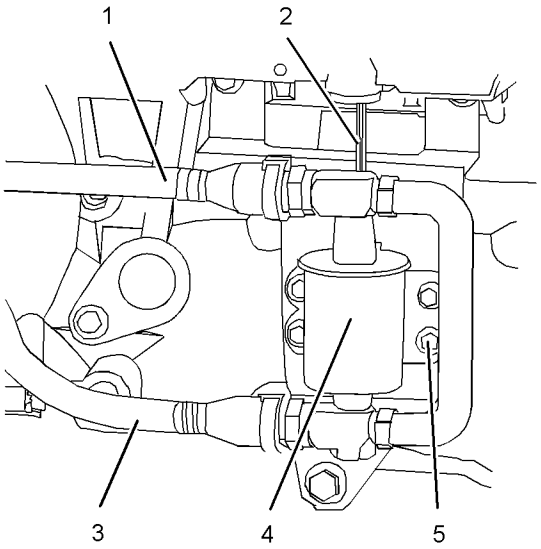

Illustration 3 g01334857
Typical example

2. Isolate the electrical supply.
3. Disconnect harness assembly (2) for electric priming pump (4).
4. Make a temporary identification mark on plastic tube assemblies (1) and (3) in order to show the correct position of the tube assemblies.
5. Disconnect plastic tube assemblies (1) and (3). Plug the tube assemblies with new plugs. Cap the ports in fuel priming pump (4) with new caps.
6. Remove bolts (5) from electric priming pump (4).
7. Remove electric priming pump (4) from the mounting bracket.

Installation Procedure (Electric Fuel Priming Pump)

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, "General Hazard Information and High Pressure Fuel Lines" for safety information.

Refer to System Operation, Testing and Adjusting, "Cleanliness of Fuel System Components" for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Ensure that electric priming pump (4) is clean and free from wear or damage. If necessary, replace the electric priming pump.

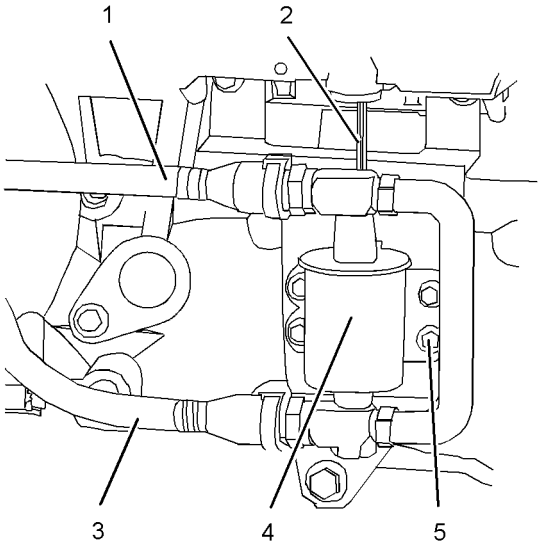

Illustration 4 g01334857
Typical example

2. Position electric priming pump (4) on the mounting bracket. Install bolts (5) to electric priming pump (4).
3. Tighten bolts (5) to a torque of 9 N·m (79 lb in).
4. Remove the plugs from the plastic tube assemblies. Remove the caps from the electric priming pump.
5. Connect plastic tube assemblies (1) and (3) to electric priming pump (4).

Note: Ensure that the plastic tube assemblies are installed in the original positions.

6. Connect harness assembly (2) for electric priming pump (4).
7. Restore the electrical supply.
8. Restore the fuel supply.
9. Prime the fuel system. Refer to Operation and Maintenance Manual, "Fuel System - Prime".

i02654496

Fuel Filter Base - Remove and Install (Secondary Fuel Filter)

Removal Procedure

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, “General Hazard Information and High Pressure Fuel Lines” for safety information.

Refer to System Operation, Testing and Adjusting, “Cleanliness of Fuel System Components” for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Isolate the fuel supply.

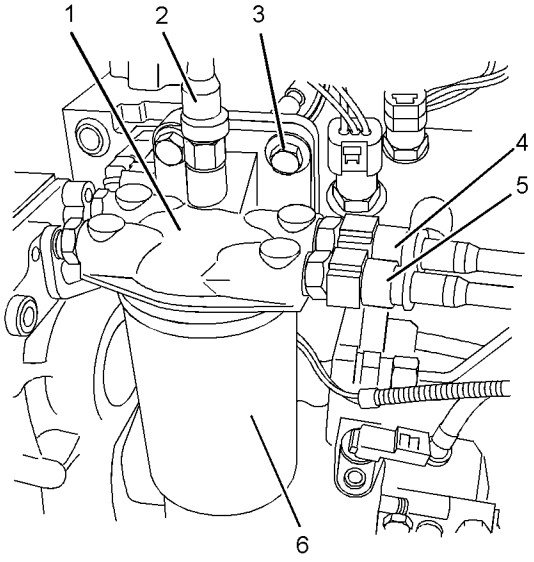

Illustration 5 g01334883

Typical example

2. Make temporary identification marks on plastic tube assemblies (2), (4) and (5) in order to show the correct position of the tube assemblies.

3. Place a suitable container below the fuel filter base in order to catch any fuel that might be spilled.

4. Disconnect plastic tube assemblies (2), (4) and (5) from fuel filter base (1). Plug the plastic tube assemblies with new plugs. Cap the ports in the fuel filter base with new caps.

5. Remove fuel filter (6). Refer to Operation and Maintenance Manual, “Fuel System Secondary Filter - Replace”.

6. Remove bolts (3) from fuel filter base (1). Remove the fuel filter base from the mounting bracket.

Note: Do not disassemble the fuel filter base.

Installation Procedure

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, “General Hazard Information and High Pressure Fuel Lines” for safety information.

Refer to System Operation, Testing and Adjusting , “Cleanliness of Fuel System Components” for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Ensure that fuel filter base (1) is clean and free from damage. If necessary, replace the complete fuel filter base and filter assembly.

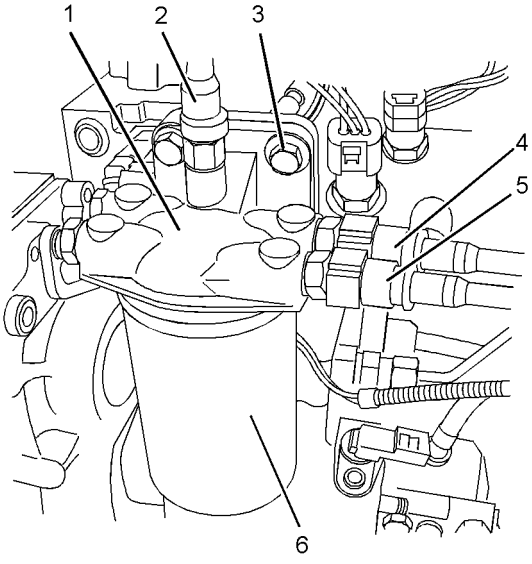

Illustration 6 g01334883

Typical example

2. Position fuel filter base (1) on the mounting bracket. Install bolts (3). Tighten the bolts to a torque of 44 N·m (32 lb ft).

3. Remove the plugs from the plastic tube assemblies. Remove the caps from the ports in the fuel filter base.

NOTICE
Ensure that the plastic tube assemblies are installed in the original positions. Failure to connect the plastic tube assemblies to the correct ports will allow contamination to enter the fuel system. Contaminated fuel will cause serious damage to the engine.

4. Connect plastic tube assemblies (2), (4) and (5) to fuel filter base (1).

5. If necessary, install a new fuel filter (6) to fuel filter base (1). Refer to Operation and Maintenance Manual, “Fuel System Secondary Filter - Replace” for the correct procedure.

6. Restore the fuel supply.

End By:

a. Remove the air from the fuel system. Refer to Operation and Maintenance Manual, “Fuel System - Prime”.

i02654514

Fuel Transfer Pump - Remove

Removal Procedure

NOTICE
Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, “General Hazard Information and High Pressure Fuel Lines” for safety information.

Refer to System Operation, Testing and Adjusting, “Cleanliness of Fuel System Components” for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Isolate the fuel supply.

2. Place a suitable container below fuel transfer pump (2) in order to catch any fuel that might be spilled.

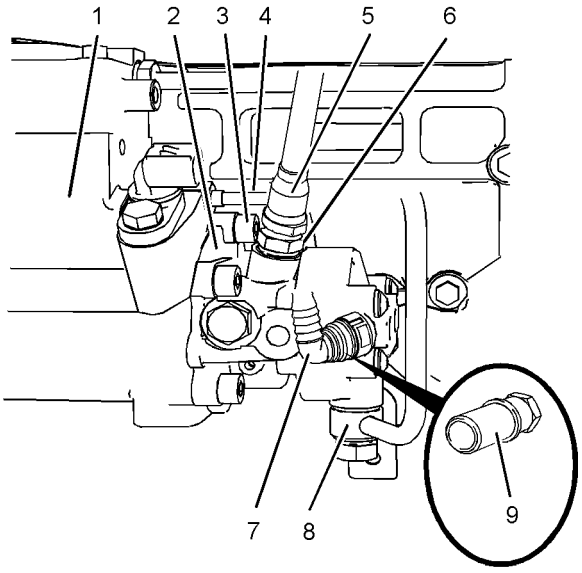

Illustration 7 g01334899
Typical example

3. Remove plastic tube assembly (7) from fuel transfer pump (2).

Note: If the tube assembly has quick fit connections, ensure that the connections are clean before the tube assembly is plugged.

4. Disconnect plastic tube assembly (5) from the outlet of fuel transfer pump (2).

Note: If the tube assembly has quick fit connections, ensure that the connections are clean before the tube assembly is plugged.

5. Remove connector (6) from fuel transfer pump (2). Remove the O-ring seal from connector (6).

   If necessary, remove connector (9) from fuel transfer pump (2). Remove the O-ring seal from the connector (9).

6. Remove tube assembly (8) for the fuel return from the fuel transfer pump and the cylinder head.

Note: Disconnect the tube assembly at the fuel transfer pump first in order to drain the fuel from the cylinder head.

7. Remove tube assembly (4) for the engine oil supply from fuel injection pump (1).

8. Plug or cap all open ports and tube assemblies immediately with new plugs or caps.

9. Use an allen wrench with a ball end in order to remove allen head screws (3) that secure the fuel transfer pump to fuel injection pump (1).

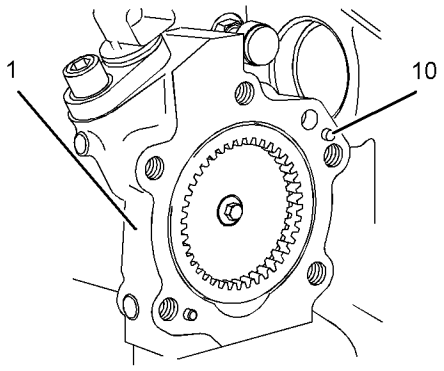

Illustration 8 g01335043

10. Remove fuel transfer pump (2) from fuel injection pump (1).

Note: Do not remove dowels (10) from the fuel injection pump.

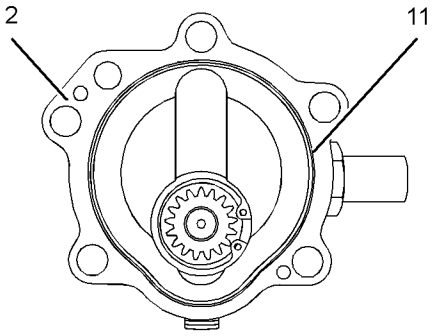

Illustration 9 g01335045

11. Remove O-ring seal (11) from fuel transfer pump (2).

i02654512

Fuel Transfer Pump - Install

Installation Procedure

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, "General Hazard Information and High Pressure Fuel Lines" for safety information.

Refer to System Operation, Testing and Adjusting, "Cleanliness of Fuel System Components" for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Ensure that the mating surfaces of fuel injection pump (1) and fuel transfer pump (2) are clean and free from damage.

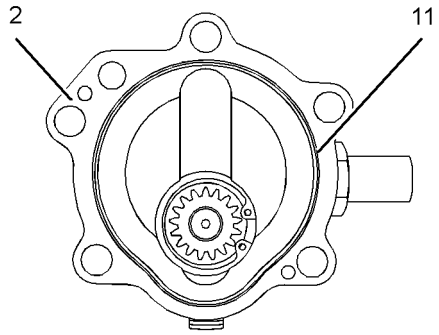

Illustration 10 g01335045

2. Install a new O-ring seal (11) to fuel transfer pump (2). Lubricate the O-ring seal with clean engine oil.

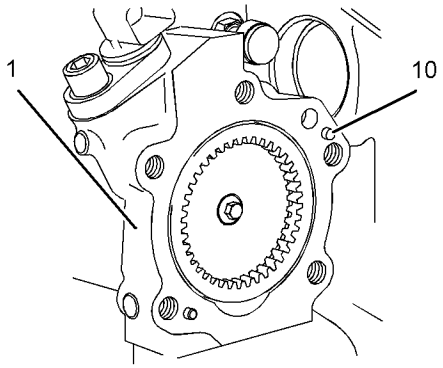

Illustration 11 g01335043

3. Align the holes in fuel transfer pump (2) with dowels (10) in fuel injection pump (1). Install the fuel transfer pump to the fuel injection pump.

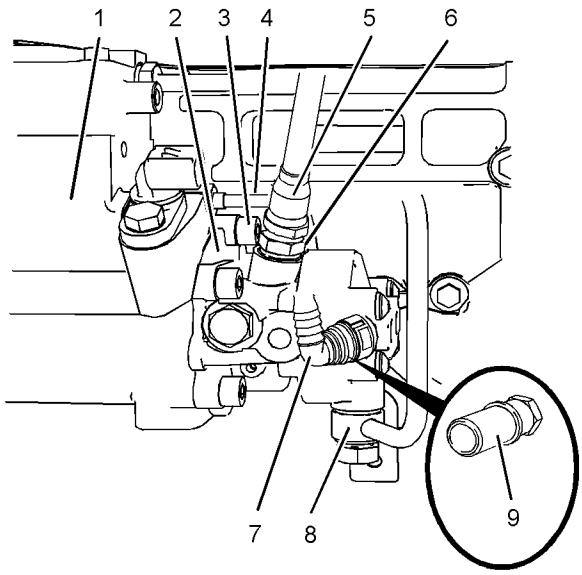

Illustration 12 g01334899

4. Use an allen wrench with a ball end to install the allen head screws (3). Tighten the allen head screws to a torque of 30 N·m (22 lb ft).

5. Remove the plugs and the caps from the ports and tube assemblies.

6. Install tube assembly (4) for the engine oil supply to fuel injection pump (1). Install new washers to the banjo bolt for oil supply tube assembly. Install the banjo bolt to the cylinder block. Tighten both connectors to a torque of 15 N·m (11 lb ft).

7. Install tube assembly (8) for the fuel return to fuel transfer pump (2) and to the cylinder head. Tighten both banjo bolts to a torque of 21 N·m (15 lb ft).

8. Install a new O-ring seal to connector (6). Install connector (6) to fuel transfer pump (2). Tighten the connector to torque of 15 N·m (11 lb ft).

9. If necessary, install a new O-ring seal to connector (9) and install connector (9) to fuel transfer pump (2). Tighten the connector to torque of 15 N·m (11 lb ft).

10. Connect plastic tube assembly (5) to the outlet of fuel transfer pump (2).

11. Install plastic tube assembly (7) to fuel transfer pump (2).

12. Restore the fuel supply.

13. Remove the air from the fuel system. Refer to System Operation, Testing and Adjusting, “Fuel System - Prime”.

i02654510

Fuel Manifold (Rail) - Remove and Install

Removal Procedure

Start By:

a. Remove the fuel injection lines. Refer to Disassembly and Assembly, “Fuel Injection Lines - Remove”.

b. If necessary, remove the fuel pressure sensor. Refer to Disassembly and Assembly, “Fuel Pressure Sensor - Remove and Install”.

⚠ 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

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, “General Hazard Information and High Pressure Fuel Lines” for safety information.

Refer to System Operation, Testing and Adjusting, “Cleanliness of Fuel System Components” for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. If the engine is equipped with a cover over the fuel system this will need to be removed.

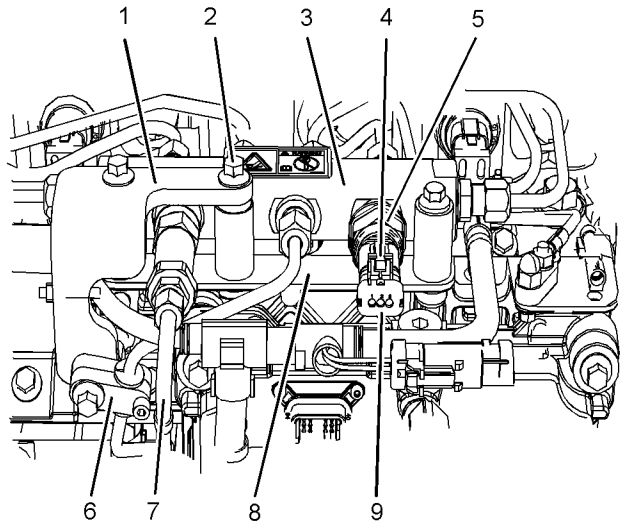

Illustration 13 g01335251

The fuel manifold is shown with fuel injection lines in position.

2. If fuel sensor (5) has not been removed from fuel manifold (3), slide locking tab (4) into the unlocked position. Disconnect the plug on harness assembly (9) from fuel pressure sensor (5).

3. Disconnect tube assembly (7) from the fuel pressure relief valve on fuel manifold (3). Immediately cap the open port in fuel manifold (3) with a new cap. Immediately plug the open end of tube assembly (7) with a new plug.

4. Remove bolts (2) from fuel manifold (3).

5. Remove the bolt from fuel injection line clamp (6). Remove clamp assembly from the bracket.

6. Remove bracket (1) from fuel manifold (3).

7. Remove fuel manifold (3) from mounting bracket (8).

Installation Procedure

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, “General Hazard Information and High Pressure Fuel Lines” for safety information.

Refer to System Operation, Testing and Adjusting, “Cleanliness of Fuel System Components” for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Ensure that all ports on the fuel manifold are capped. Ensure that the fuel manifold is externally clean and free from damage.

Note: Do not install a fuel manifold that has not been capped. All caps must be left in place until the fuel injection lines or the fuel pressure sensor are installed.

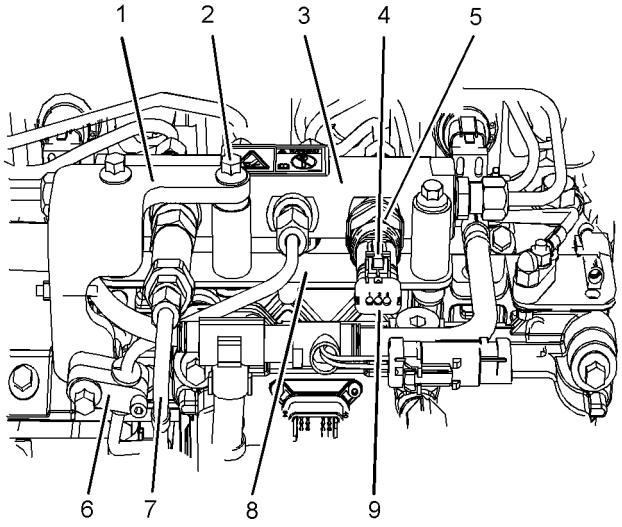

Illustration 14 g01335251

The fuel manifold is shown with fuel injection lines in position.

2. Position fuel manifold (3) on mounting bracket (8).

3. Install bracket (1) from fuel manifold (3).

4. Install bolts (2) to fuel manifold (3) finger tight.

5. Install the bolt to fuel injection line clamp (6). Tighten bolts (6) to a torque of 22 N·m (16 lb ft). Ensure that fuel injection line does not contact any other engine component.

6. Install a new set of fuel injection lines and seals. Refer to Disassembly and Assembly, “Fuel Injection Lines - Install” for more information.

7. Tighten bolts (2) to a torque of 22 N·m (16 lb ft).

8. Remove the plug from tube assembly (7). Remove the cap from the appropriate port in fuel manifold (3). Connect tube assembly (7) to the fuel pressure relief valve on fuel manifold (3). Tighten the connection to a torque of 30 N·m (22 lb ft).

9. If fuel pressure sensor (5) was not removed from fuel manifold (3), connect the plug on harness assembly (9) to fuel pressure sensor (5). slide locking tab (4) into the locked position.

   If fuel pressure sensor (5) was removed from fuel manifold (3), install fuel pressure sensor (5) and a new sealing washer. Refer to Disassembly and Assembly, “Fuel Pressure Sensor - Remove and Install” for more information.

10. Remove the air from the fuel system. Refer to Operation and Maintenance Manual, “Fuel System - Prime” for more information.

11. If the engine was equipped with a cover over the fuel system this will need to be installed.

i02654498

Fuel Injection Lines - Remove

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Name	Qty
A	U5MK1124	Cap Kit	1

⚠ 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

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, “General Hazard Information and High Pressure Fuel Lines” for safety information.

Refer to System Operation, Testing and Adjusting, “Cleanliness of Fuel System Components” for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

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.

Note: Put identification marks on all hoses on all hose assemblies and on wires and all tube assemblies for installation purposes. Plug all hose assemblies and tube assemblies. This will help to prevent fluid loss and this helps to keep contaminants from entering the system.

1. Isolate the fuel supply.

2. Isolate the electrical supply.

3. If the engine is equipped with a cover over the fuel system this will need to be removed.

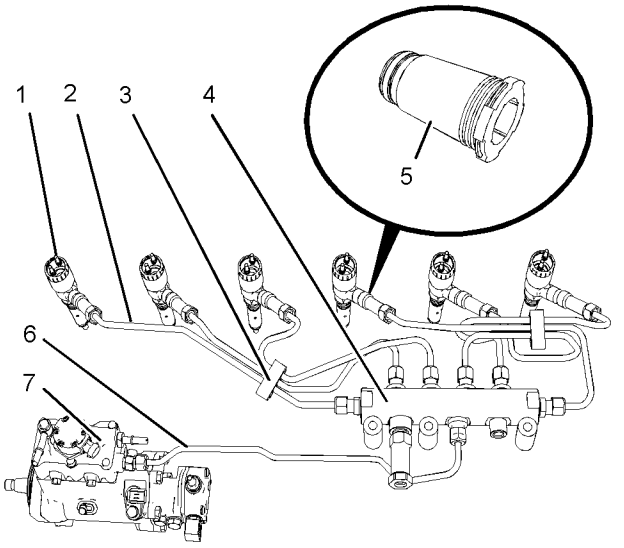

Illustration 15 g01335193

4. Remove plastic clamps (3) from the fuel injection lines (2).

5. Slide the dust seal from the nut on the fuel injection.

6. Disconnect fuel injection line (2) from electronic unit injector (1).

7. Disconnect fuel injection line (2) from fuel manifold (4).

8. Remove fuel injection line (2). Discard the fuel injection line.

9. Plug the open port in fuel manifold (4) immediately. Use Tooling (A) in order to plug the open port in the fuel manifold.

10. Remove seal (5) from electronic unit injector (1) and the base of the valve mechanism cover.

11. Plug the open port in electronic unit injector (1) immediately. Use Tooling (A) in order to plug the open port in the electronic unit injector.

12. Repeat Steps 5 through 12 in order to remove the remaining fuel injection lines from the fuel manifold to the electronic unit injectors.

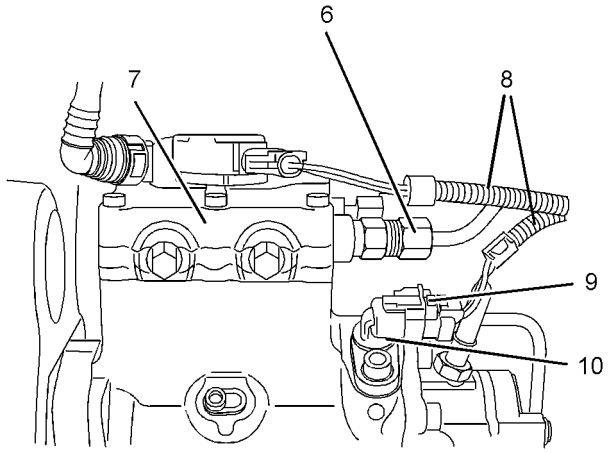

Illustration 16 g01335194
Typical Example

13. If necessary, disconnect harness assembly (8) from fuel injection pump (7). Slide locking tab (9) into the unlocked position. Disconnect harness assembly (8) from position sensor (10). Position harness assembly (8) so that the harness assembly is clear of fuel injection line (7).

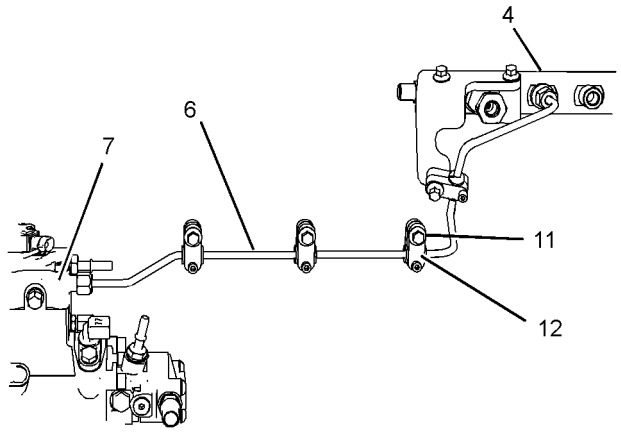

Illustration 17 g01335195

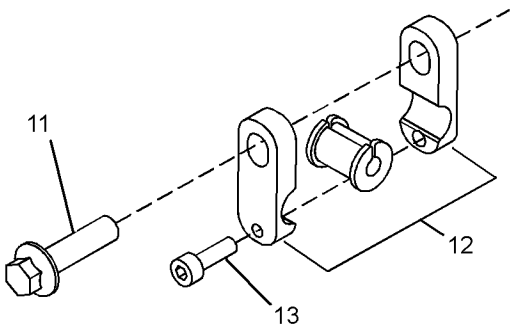

Illustration 18 g01335197

14. Remove bolts (11) from tube clips (12) that secure fuel injection line (6). Loosen allen head screws (13). Position the tube clips in order to allow removal of the fuel injection line.

15. Disconnect fuel injection line (6) at fuel injection pump (7).

16. Disconnect fuel injection line (6) at fuel manifold (4).

17. Plug all open ports immediately. Use Tooling (A) in order to plug the open ports in fuel manifold (4) and in fuel injection pump (7).

18. Remove fuel injection line (6).

19. Remove allen head screws (13) and tube clips (12) from fuel injection line (6). Discard the fuel injection line.

i02654497

Fuel Injection Lines - Install

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Name	Qty
A	27610294	Injector Pipe Nut Tool	1

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, "General Hazard Information and High Pressure Fuel Lines" for safety information.

Refer to System Operation, Testing and Adjusting, "Cleanliness of Fuel System Components" for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

Note: The following procedure should be adopted in order to install the fuel injection lines when the electronic unit injectors or the fuel manifold have not been removed. If the electronic unit injectors or the fuel manifold have been removed, refer to Disassembly and Assembly, "Electronic Unit Injector - Install" and Disassembly and Assembly, "Fuel Manifold - Install" for more information.

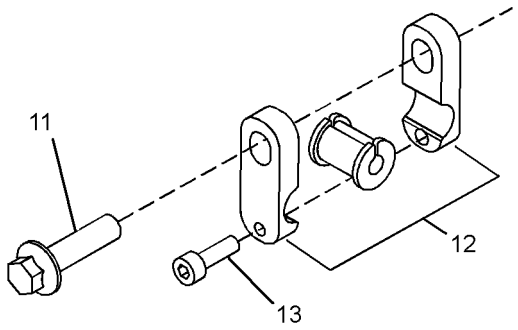

Illustration 19 g01335197

Assembly of the tube clip

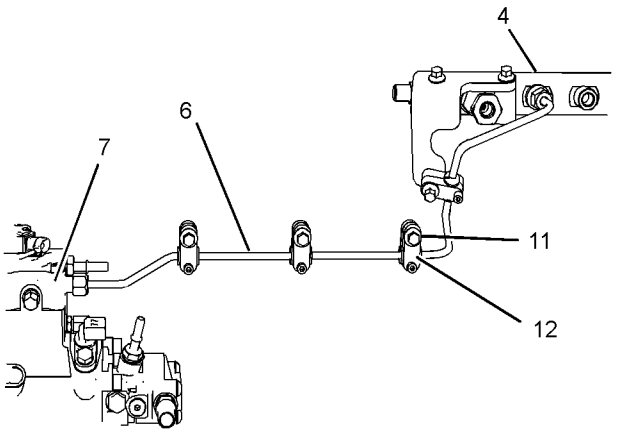

Illustration 20 g01335195

1. Loosely install tube clips (12) and the allen head screws (13) to the fuel injection line (6).
2. Place fuel injection line (6) in position.
3. Remove the caps from the port in fuel injection pump (7) and from the appropriate port in fuel manifold (4). Remove the caps from new fuel injection line (6).
4. Loosely connect the nuts at both ends of fuel injection line (6), to fuel manifold (4) and to fuel injection pump (7). Ensure that the ends of the fuel injection line are correctly seated in the fuel injection pump and in the fuel manifold.
5. Use Tooling (A) to tighten the nuts on fuel injection line (6) to a torque of 30 N·m (22 lb ft).
6. Install the bolts (11) for tube clips (12) that secure fuel injection line (6). Tighten bolts (11) to a torque of 22 N·m (16 lb ft). Tighten allen head screws (13) to a torque of 10 N·m (89 lb in). Ensure that fuel injection line does not contact any other engine component.

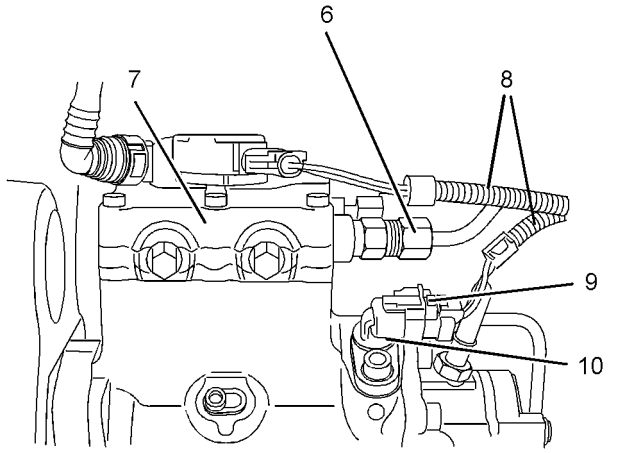

Illustration 21 g01335194
Typical example

7. Connect harness assembly (8) to position sensor (10). Slide locking tab (9) into the locked position. Connect harness assembly (8) to fuel injection pump (7).

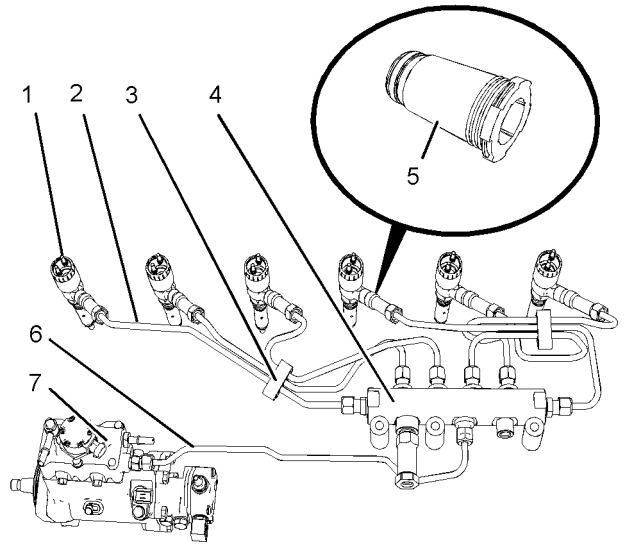

Illustration 22 g01335193
Typical example

8. Install a new seal (5) to electronic unit injector (1). Ensure that the flange on the seal is flush with the valve mechanism cover base.
9. Remove the caps from the port of electronic unit injector (1) and from the appropriate port in fuel manifold (4).

10. Loosely connect the nuts at both ends of fuel injection line (2), to electronic unit injector (1) and to the appropriate port in fuel manifold (4). Ensure that the ends of the fuel injection line are correctly seated in the electronic unit injector and in the fuel manifold.

11. Use Tooling (A) to tighten the nuts on fuel injection line (2) to a torque of 30 N·m (22 lb ft). Ensure that the dust seal is seated correctly against seal (5).

12. Follow Steps 8 through 11 in order to install the remaining fuel injection lines.

13. Install new clamps (3) to the fuel injection lines. Ensure that the clamps are fully closed in order to retain the fuel injection lines.

Note: Ensure that fuel injection lines do not contact any other engine component.

14. Restore the fuel supply.

15. Restore the electrical supply.

16. If the engine was equipped with a cover over the fuel system this will need to be installed.

17. Remove the air from the fuel system. Refer to Operations and Maintenance Manual, “Fuel System - Prime”.

i02654505

Fuel Injection Pump - Remove

Removal Procedure

Table 3

Required Tools			
Tool	**Part Number**	**Part Name**	**Qty**
A	21825576	Crankshaft Turning Tool	1
A	27610291	Barring Device Housing	1
	27610289	Gear	1
B	27610212	Camshaft Timing Pin	1
C	27610286	Crankshaft Timing Pin	1
	27610287	Adapter	1
D	-	Cap	2

Start By:

a. If necessary, remove the fuel filter base. Refer to Disassembly and Assembly, “Fuel Filter Base - Remove and Install”.

b. If necessary, remove the fuel priming pump. Refer to Disassembly and Assembly, “Fuel Priming Pump - Remove”.

c. Remove the front cover. Refer to Disassembly and Assembly, “Front Cover - Remove and Install”.

Note: Either Tooling (A) can be used. Use the Tooling that is most suitable.

⚠ 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

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, “General Hazard Information and High Pressure Fuel Lines” for safety information.

Refer to System Operation, Testing and Adjusting, “Cleanliness of Fuel System Components” for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

1. Isolate the fuel supply.

2. Isolate the electrical supply.

3. Use Tooling (A) in order to rotate the crankshaft so that number one piston is at top dead center on the compression stroke. Refer to System Operation, Testing and Adjusting, “Finding Top Centre Position for No.1 Piston”.

4. Use Tooling (B) in order to lock the camshaft in the correct position. Use Tooling (C) in order to lock the crankshaft in the correct position. Refer to Disassembly and Assembly, “Gear Group (Front) - Remove” for the correct procedure.

5. Remove the backlash from the fuel pump gear. Lock the fuel injection pump in the correct position and remove the fuel pump gear. Refer to Disassembly and Assembly, “Fuel Pump Gear - Remove and Install” for the correct procedure.

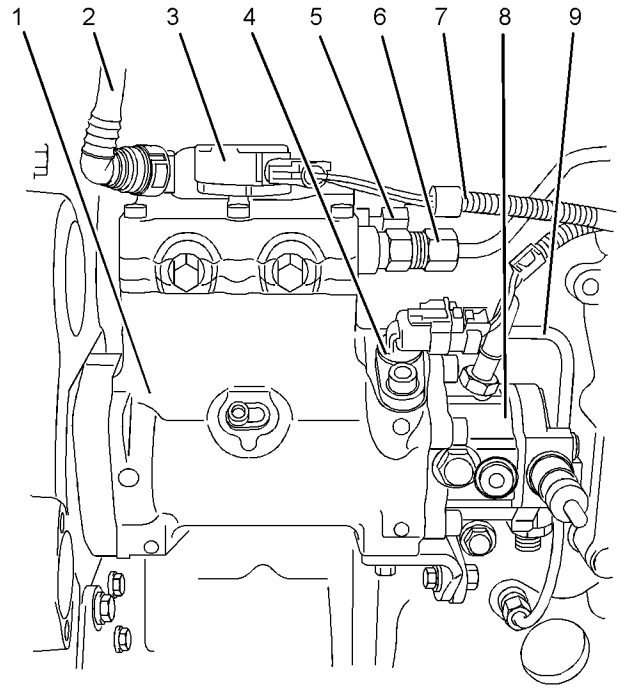

Illustration 23 g01335253
Typical example

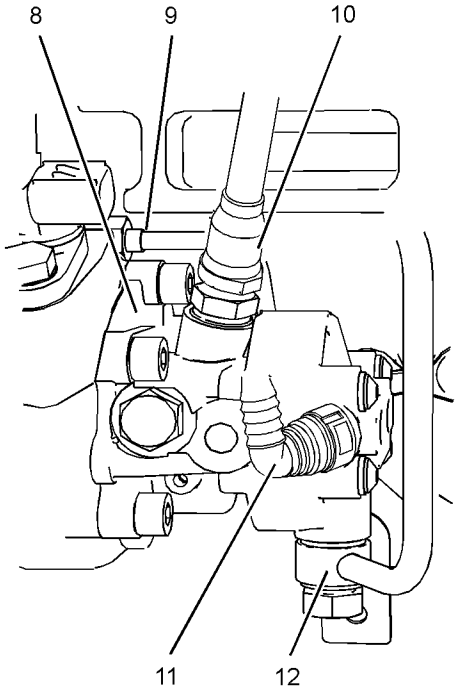

Illustration 24 g01335254
Typical example

6. Place a suitable container below fuel injection pump (1) in order to catch any fuel that might be spilled.

7. Disconnect plastic tube assembly (2) from fuel injection pump (1).

8. Disconnect harness assembly (7) from solenoid (3) of the fuel injection pump. Disconnect engine wiring harness (7) from position sensor (4) for the fuel injection pump.

Note: The harness assembly should be positioned in order to avoid an obstruction to the fuel injection pump.

9. Remove plastic tube assembly (11) from fuel transfer pump (8).

10. Disconnect plastic tube assembly (10) from the outlet of fuel transfer pump (8).

11. Disconnect plastic tube assembly (5) from fuel injection pump (1).

12. Remove tube assembly (12) for the fuel return from the fuel transfer pump and the cylinder head.

Note: Disconnect the tube assembly at the fuel transfer pump first in order to drain the fuel from the cylinder head.

13. Remove tube assembly (9) for the engine oil supply to fuel injection pump (1).

14. Plug or cap all open ports and tube assemblies immediately with new plugs or caps.

15. Remove fuel injection line (6) that connects the fuel injection pump to the fuel manifold. Refer to Disassembly and Assembly, “Fuel Injection Lines - Remove”. Use Tooling (D) in order to plug the open ports in the fuel injection pump and in the fuel manifold. Discard the fuel injection line.

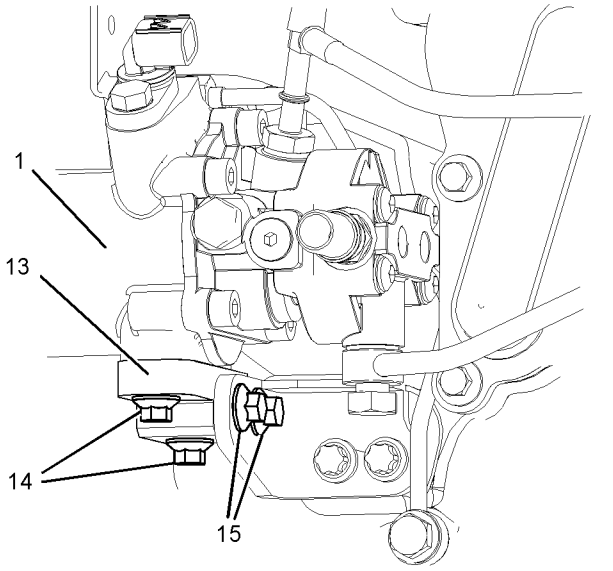

Illustration 25 g01335275
Typical example

16. Remove bolts (15). Remove bolts (14) and remove support bracket (13) from fuel injection pump (1).

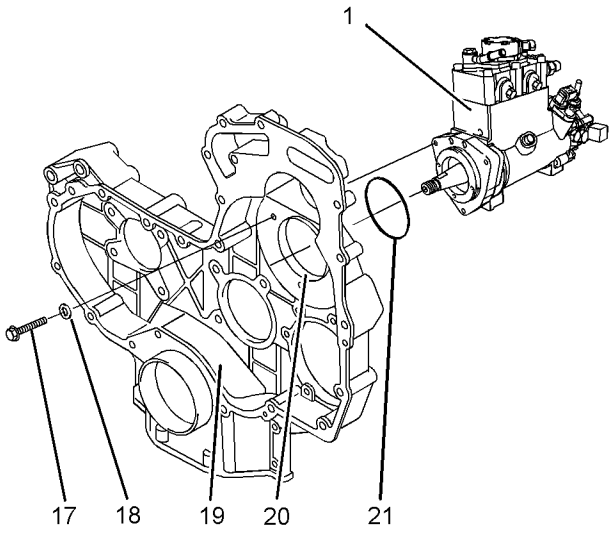

Illustration 26 g01335277
Typical example

17. Remove bolts (17) and sealing washers (18).

Note: The fuel injection pump should be supported by hand as the bolts are removed.

18. Carefully remove fuel injection pump (1) from front housing (19). Ensure that bore (20) in the front housing is not damaged as the fuel injection pump is removed.

19. Remove O-ring seal (21) from fuel injection pump (1).

20. If necessary, remove position sensor (4) from fuel injection pump (1). Refer to Disassembly and Assembly, “Position Sensor (Fuel Injection Pump) - Remove and Install”.

21. If necessary, remove fuel transfer pump (8) from fuel injection pump (1). Refer to Disassembly and Assembly, “Fuel Transfer Pump - Remove”.

i02654503

Fuel Injection Pump - Install

Installation Procedure

Table 4

Required Tools			
Tool	**Part Number**	**Part Description**	**Qty**
A	21825576	Crankshaft Turning Tool	1
A	27610291	Barring Device Housing	1
	27610289	Gear	1
B	27610212	Camshaft Timing Pin	1
C	27610286	Crankshaft Timing Pin	1
	27610287	Adapter	1
E	27610302	Fuel Injection Pump Timing Tool	1
F	21820221	POWERPART Rubber Grease	-

Note: Either Tooling (A) can be used. Use the Tooling that is most suitable.

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before begining ANY work on the fuel system, refer to Operation and Maintenance Manual, “General Hazard Information and High Pressure Fuel Lines” for safety information.

Refer to System Operation, Testing and Adjusting, “Cleanliness of Fuel System Components” for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.