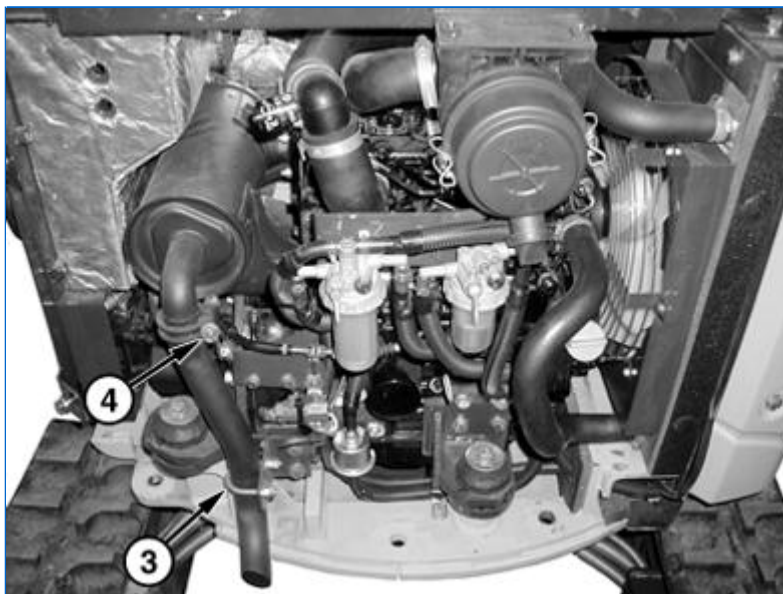


TM10259 - 17D Excavator Muffler Remove and Install

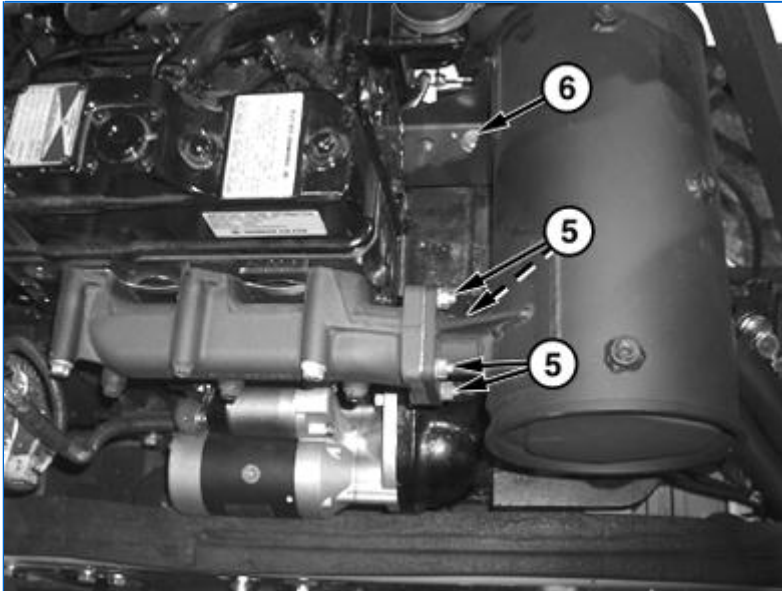
Muffler Remove and Install



1. TX1018155A-UN: Side Panels



TX1018156A-UN: Exhaust Pipe



T207372A-UN: Muffler

LEGEND:

- 1 - Side Panel
- 2 - Side Panel
- 3 - Exhaust Pipe Clamp
- 4 - Exhaust Pipe-to-Muffler Clamp
- 5 - Muffler-to-Exhaust Manifold Nut (4 used)
- 6 - Muffler Bracket Cap Screw

Park machine on level surface.

2. Remove side panels (1 and 2).
3. Remove counterweight. [See Counterweight Remove and Install](#) . (Group 1749.)

4. **NOTE:**

If exhaust pipe needs to be replaced, remove exhaust pipe-to-muffler clamp (4).

Remove exhaust pipe clamp (3).

5. Remove four muffler-to-exhaust manifold nuts (5) and washers.
6. Remove muffler bracket cap screw (6) and remove muffler.
7. Install muffler gasket and muffler.
8. Install muffler bracket cap screw (6).
9. Install muffler-to-exhaust manifold nuts (5) and tighten.

10. **NOTE:**

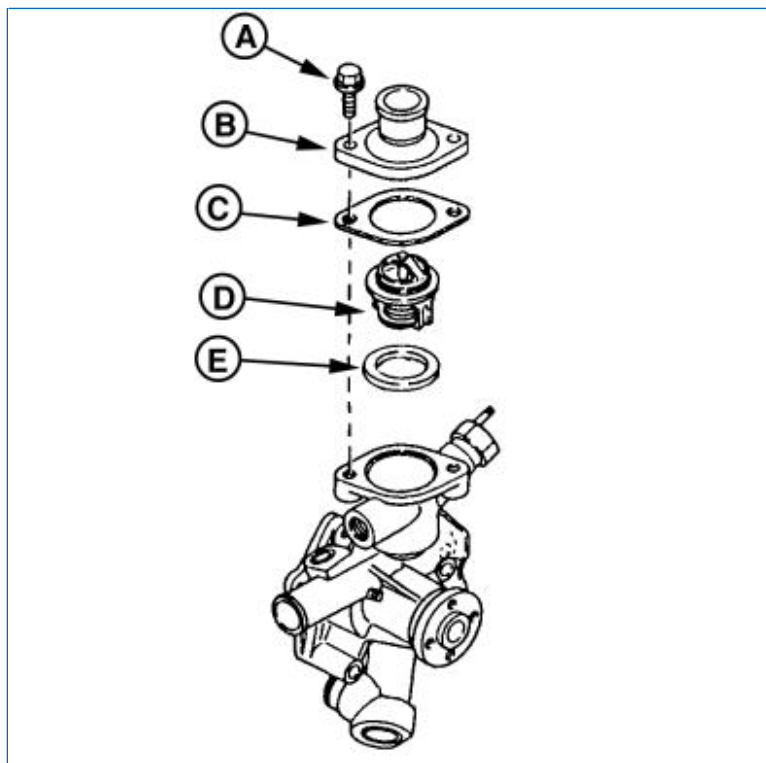
If removed, tighten exhaust pipe-to-muffler clamp (4).

Install exhaust pipe clamp (3).

11. Install counterweight and left-side panels. [See Counterweight Remove and Install](#) . (Group 1749.)

TM10259 - 17D Excavator Thermostat Remove and Install

Thermostat Remove and Install



M82315A-UN: Thermostat

LEGEND:

- A - Thermostat Cover Cap Screw (2 used)
- B - Thermostat Cover
- C - Cover Gasket
- D - Thermostat
- E - Gasket

1. Remove counterweight. [See Counterweight Remove and Install](#) . (Group 1749.)
2. Drain cooling system into an appropriate container for storage or disposal. [See Draining Cooling System](#) . (Operator's Manual.)
3. Remove air cleaner assembly. [See Air Cleaner Assembly Remove and Install](#) . (Group 0400.)
4. Remove thermostat cover cap screws (A).
5. Remove thermostat cover (B), cover gasket (C), thermostat (D), and gasket (E).
6. Test thermostat. [See Engine Thermostat Test](#) . (Group 9010-25.)
7. At installation, replace gaskets.
8. Install thermostat, gaskets, thermostat cover, and thermostat cover cap screws and tighten to specification.

Item	Measurement	Specification
Thermostat Cover Cap Screw	Torque	20 N·m 15 lb-ft

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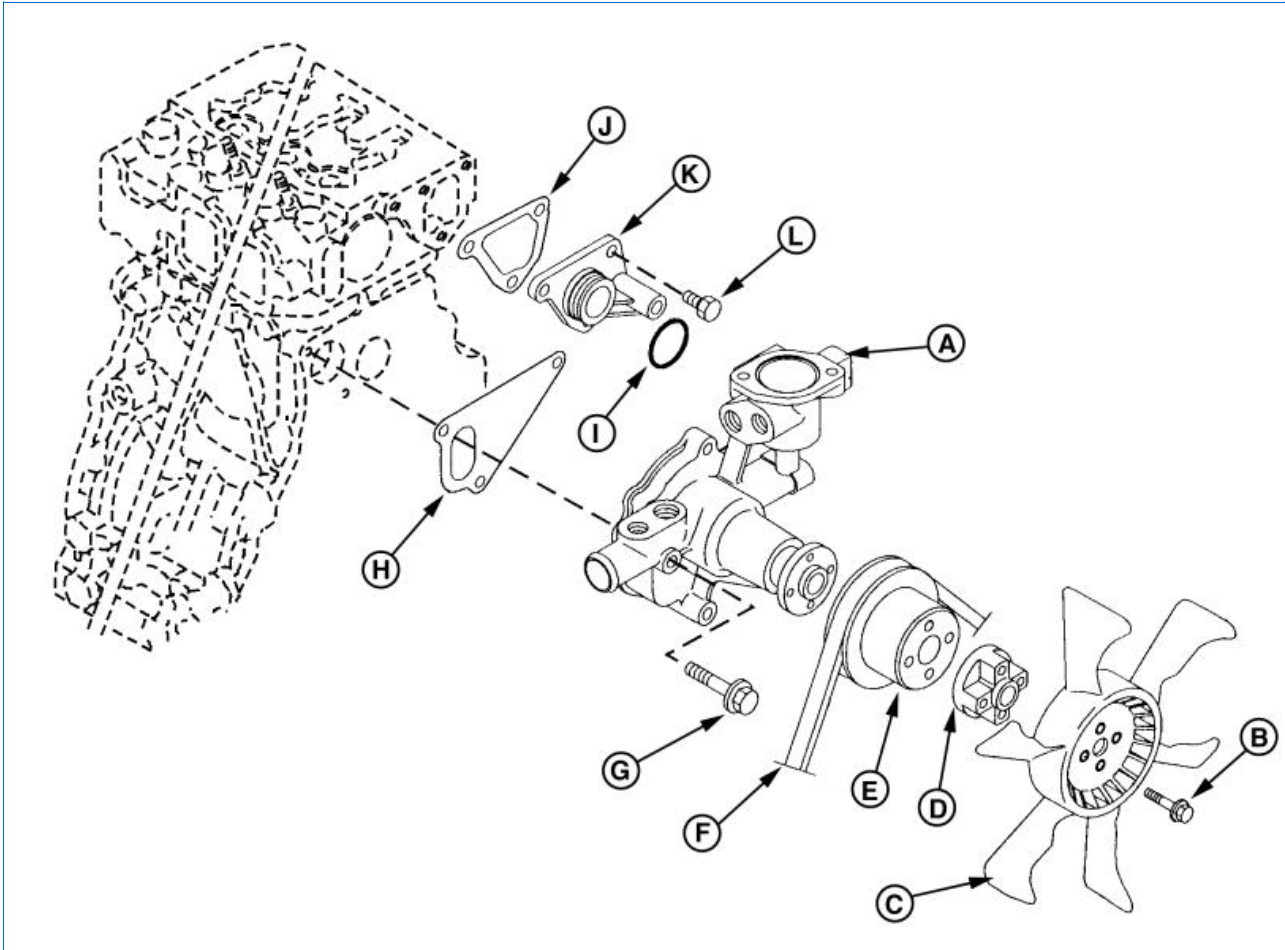
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9. Fill cooling system. [See Cooling System Fill and Deaeration](#) . (Operator's Manual.)
10. Install counterweight. [See Counterweight Remove and Install](#) . (Group 1749.)

TM10259 - 17D Excavator Water Pump Remove and Install

Water Pump Remove and Install



RG8583A-UN: Water Pump

LEGEND:

- A - Water Pump
- B - Fan-to-Water Pump Cap Screw (4 used)
- C - Fan
- D - Spacer
- E - Pulley
- F - Fan Belt
- G - Water Pump-to-Cylinder Head Cap Screw (4 used)
- H - Gasket
- I - O-Ring
- J - Gasket
- K - Ball Joint
- L - Cap Screw (3 used)

1. Drain cooling system into appropriate container for storage or disposal. [See Draining Cooling System](#) . (Operator's Manual.)

Item	Measurement	Specification
Cooling System	Capacity	2.9 L 3.0 qt

2. Remove counterweight. [See Counterweight Remove and Install](#) . (Group 1749.)
3. Remove radiator. [See Radiator Remove and Install](#) . (Group 0510.)
4. Remove thermostat and cover. [See Thermostat Remove and Install](#) . (Group 0400.)
5. Disconnect coolant temperature sensor leads.
6. Remove fan belt (F).

7. Remove cap screws (B), fan (C), spacer (D), and pulley (E).
8. Remove water pump-to-cylinder head cap screws (G), water pump (A), and gasket (H).
9. Remove cap screws (L), ball joint (K), gasket (J), and O-ring (I).

10. **IMPORTANT:**

At installation, replace all gaskets and O-ring.

Install parts (A—L). Tighten cap screws to specification.

Item	Measurement	Specification
Water Pump Mounting Cap Screws	Torque	26 N·m 230 lb-in.
Water Pump-to-Fan Mounting Cap Screws	Torque	11 N·m 97 lb-in.

11. Adjust fan belt tension. [See Inspect Fan Belt, Check and Adjust Tension](#) . (Operator's Manual.)

IMPORTANT:

Air must be expelled from cooling system when system is being filled. Loosen coolant temperature sender or water pump plug in thermostat housing to allow air to escape when filling system. Tighten sender or plug when all the air has been expelled.

12. Close drain valve and remove coolant temperature sender or water pump plug from thermostat housing. Fill radiator with proper coolant until coolant is present at temperature sender hole. Install temperature sender or plug and tighten to specification, continue to fill radiator to top of filler neck.

Item	Measurement	Specification
Water Pump Plug	Torque	15 N·m 132 lb-in.

13. Deaerate cooling system. [See Cooling System Fill and Deaeration](#) . (Operator's Manual.)

TM10259 - 17D Excavator

Fuel Injection Pump Remove and Install

Fuel Injection Pump Remove and Install

1. Remove engine. [See Engine Remove and Install](#) . (Group 0400.)

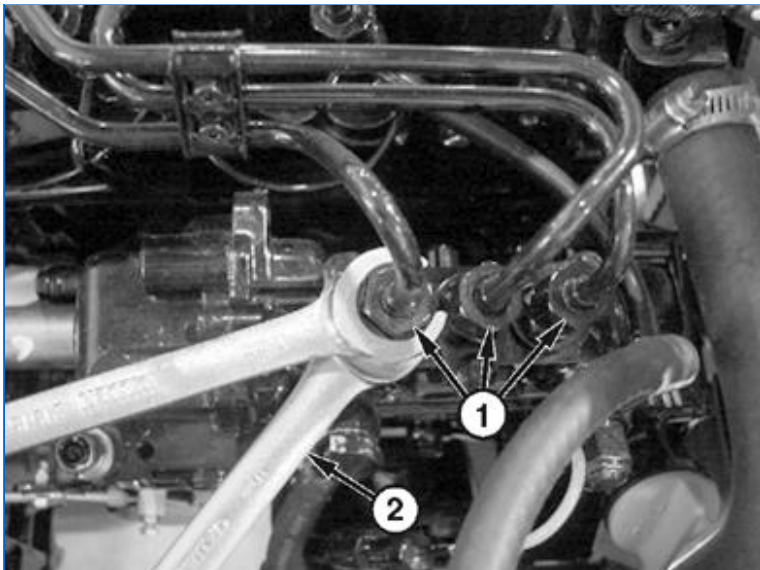
2. **IMPORTANT:**

Never steam clean or pour cold water on injection pump while the pump is running or warm. Doing so can damage the pump.

Clean injection lines and area around the injection pump with cleaning solvent or a steam cleaner.

3. **IMPORTANT:**

When loosening fuel supply line connector nuts, use a backup wrench (2) to prevent fuel supply lines from turning.



TX1018421A-UN: Fuel Injector Supply Lines at Injection pump

LEGEND:

- 1 - Fuel Supply Line Connector Nut (3 used)
- 2 - Backup Wrench

Loosen fuel supply line connector nuts (1) at fuel injection pump.

4. **IMPORTANT:**

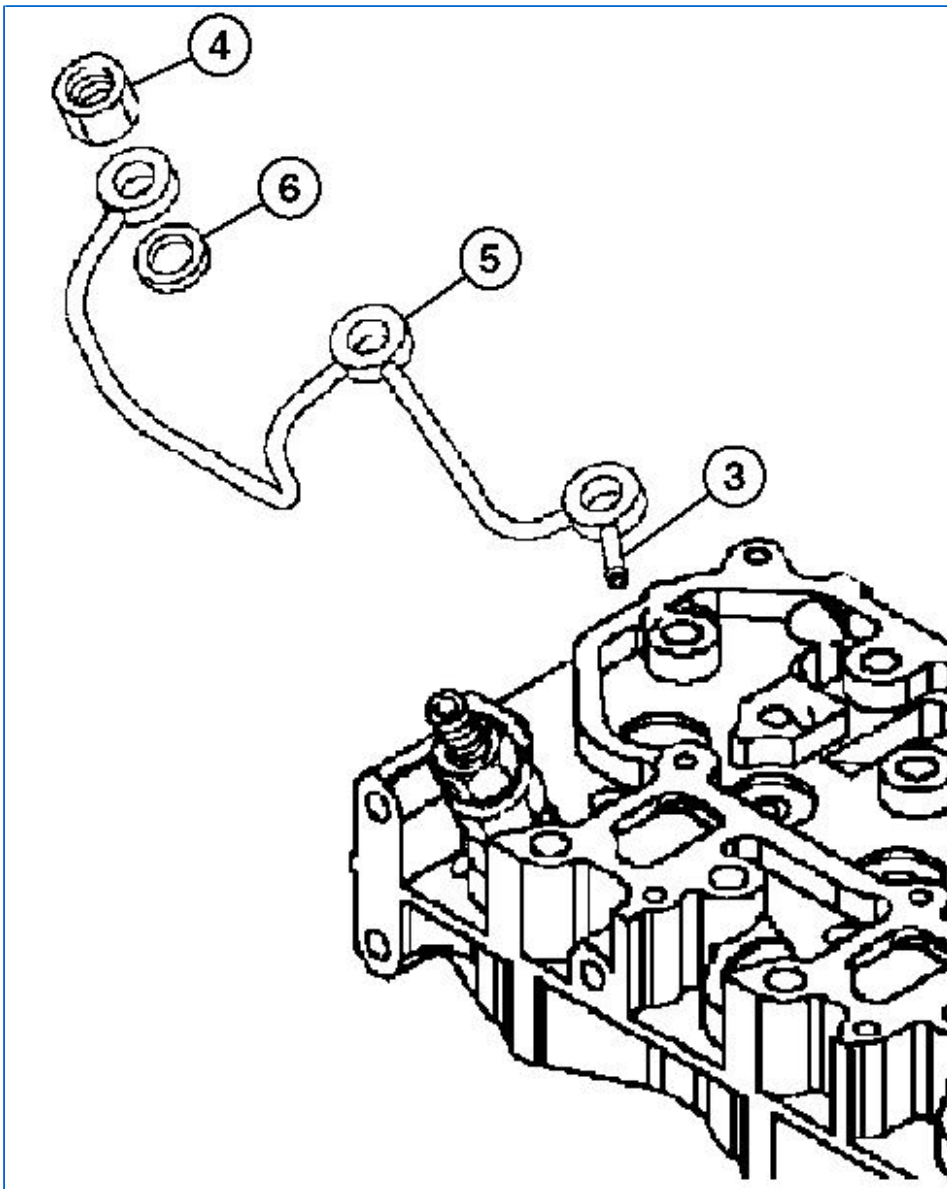
When loosening fuel supply line connector nuts at fuel injector nozzles, use a backup wrench (2) to prevent fuel leak-off lines from turning.

Loosen fuel supply line connector nuts at fuel injector nozzles and remove fuel supply lines. Close all openings using caps and plugs.

5. **IMPORTANT:**

Fuel leak-off lines are a one-piece assembly connected to all three fuel injectors. Do not bend or twist the

fuel leak-off lines when removing.



TX1018427-UN: Fuel Leak-Off Line

LEGEND:

- 3 - End of Fuel Leak-Off Return Line Assembly
- 4 - Fuel Leak-Off Return Line Nut (3 used)
- 5 - Fuel Leak-Off Return line
- 6 - Bronze Washer (3 used)

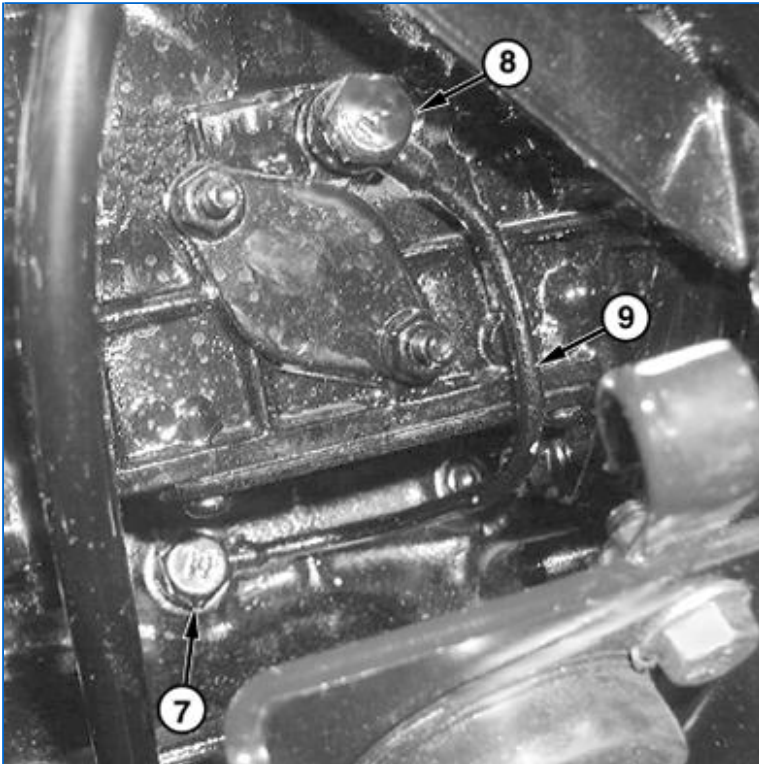
Disconnect fuel leak-off return hose from the end of the fuel leak-off return line assembly (3).

6. Remove fuel leak-off return line nuts (4) from each injector.
7. Carefully remove fuel leak-off line (5). Close all openings using caps and plugs.
8. Remove throttle cable from fuel injection pump.
9. Separate the stop solenoid wiring connector.

10. **IMPORTANT:**

The oil supply line has a sealing washer on each side of the fittings. DO NOT lose the sealing washers

when removing the banjo bolts. Do not reuse sealing washers. Always replace sealing washers with new.



TX1019391A-UN: Oil Supply Line

LEGEND:

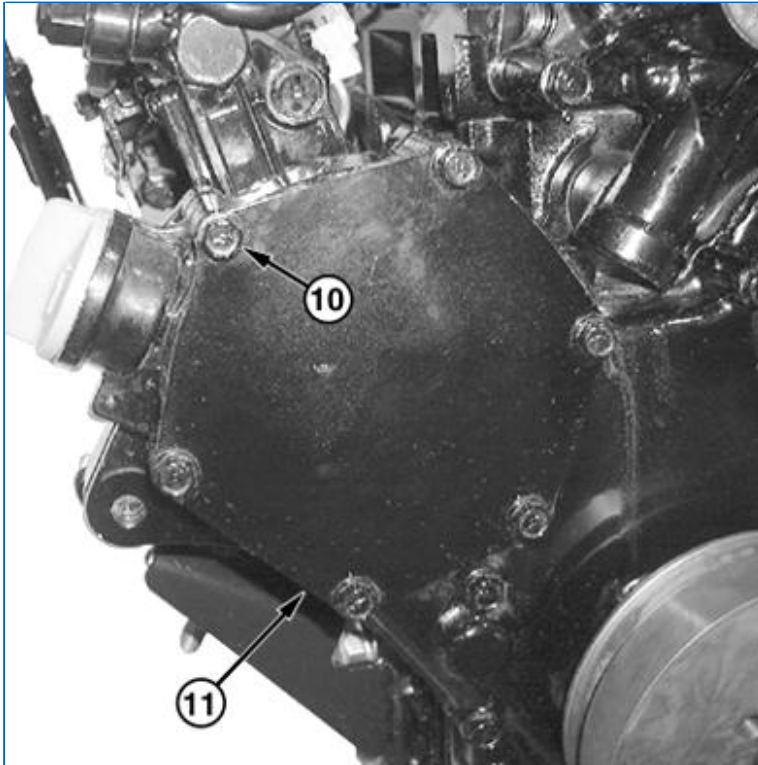
- 7 - Banjo Bolt for Oil Fitting (cylinder block)
- 8 - Banjo Bolt for Oil Fitting (injection pump)
- 9 - Oil Supply Line

Remove the banjo bolts for the oil fitting on the cylinder block (7) and on the injection pump (8). Remove oil supply line (9). Discard sealing washers.

11.

NOTE:

The fuel injection pump gear cover is secured with an adhesive sealant. Use a gasket scraper to separate the fuel injection pump gear cover from the gear case cover.



TX1019393A-UN: Fuel Injection Pump Gear Cover

LEGEND:

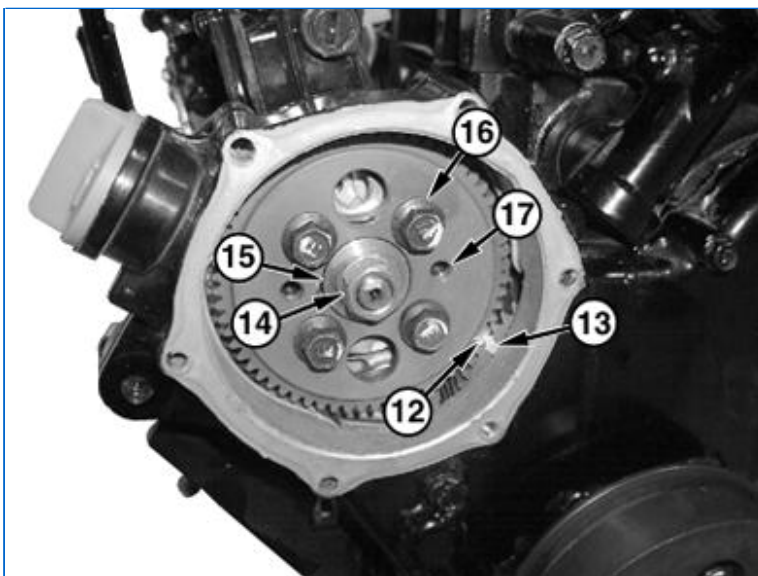
- 10 - Cap Screws (6 used)
- 11 - Fuel Injection Pump Gear Cover

Remove cap screws (10) and fuel injection pump gear cover (11).

12.

NOTE:

For all the timing marks to become aligned the engine may need to be rotated up to fifty-two times.



TX1019400A-UN: Fuel Injection pump Gear Remove

LEGEND:

- 12 - Pump Gear Timing Mark
- 13 - Idler Gear Timing Mark

- 14 - Timing Gear Retaining Nut
- 15 - Washer
- 16 - Cap Screw (4 used)
- 17 - Threaded Puller Holes

Rotate the engine in the direction of rotation until the pump gear timing mark (12) aligns with the idler gear timing mark (13). Use chalk or paint to highlight both timing marks.

13. **IMPORTANT:**

Do not loosen or disturb cap screws (16) securing the timing gear to the hub. Gear to hub adjustment is preset to comply with strict EPA emissions requirements and is not adjustable. This procedure is done at the pump manufacturer and cannot be duplicated in the field.

Hold the gear train stationary using a large socket wrench on the crankshaft pulley bolt. Loosen the timing gear retaining nut (14) and turn it out to the end of the fuel injection pump shaft, but DO NOT remove.

14. **IMPORTANT:**

Engine must not be rotated when timing gear is removed from injection pump shaft. Engine should only be rotated when timing gear is securely fastened to the pump or engine damage could result.

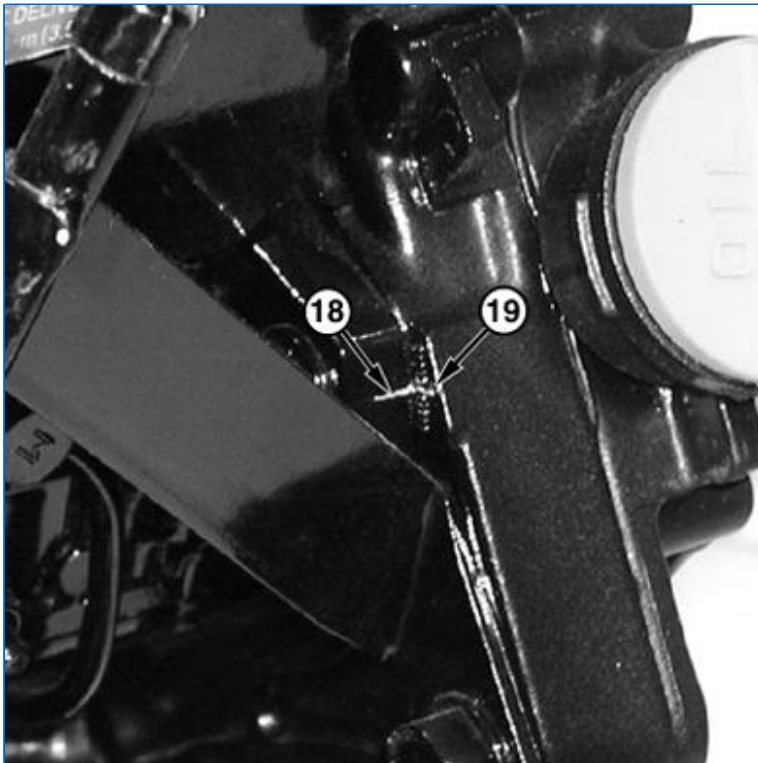
NOTE:

The injection pump drive gear and hub can be removed from the gear case; however it is best to let it remain in the gear case, meshed with the idler gear.

Remove the fuel injection pump drive gear and hub from the injection pump drive shaft as an assembly using the appropriate puller. Once the fuel injection pump drive gear and hub assembly have "popped" loose from the tapered fuel injection pump drive shaft, carefully remove the timing gear retaining nut and washer.

15. **IMPORTANT:**

Marks must be made on the injection pump and the gear cover mounting plate to correctly install the pump. If marks are not made, there will be no way to properly time the injection pump.



TX1019414A-UN: Timing Marks

LEGEND:

- 18 - Injection Pump Timing Mark
- 19 - Gear Cover Mounting Plate Timing Mark

Note position of timing marks on injection pump (18) and gear cover mounting plate (19). Pump must be installed at the exact same timing mark as when removed. Scribe a line as accurately and straight as possible, transferring the pump flange mark onto the gear cover mounting plate.

16. **IMPORTANT:**

DO NOT attempt to service the injection pump or governor. If unit is in need of repair, it must be serviced by a qualified EPA/CARB certified fuel injection repair shop. If replacement is necessary, replace entire unit. Do not rotate engine while injection pump is removed. If engine is rotated, the timing gear cover must be removed to ensure correct timing.

Remove the three cap screws fastening the fuel injection pump to the gear case. Remove the fuel injection pump. Leave the fuel injection pump drive gear and hub assembly in the gear case, meshed with the idler gear.

17. Install a new O-ring on the injection pump.

18. **IMPORTANT:**

Ensure that the fuel injection pump gear and idler gear timing marks are still in alignment.

Install fuel injection pump onto back of gear cover mounting plate. Align key on fuel injection pump drive shaft with keyway in gear hub, ensure that the fuel injection pump drive gear and idler gear timing marks are still aligned. Install three mounting nuts. Do not tighten.

19. Install nut and washer on pump shaft. Hold the gear train stationary using a large socket wrench on the crankshaft pulley bolt. Tighten the timing gear retaining nut to specification.

Item	Measurement	Specification
Fuel Injection Pump Drive Gear	Torque	59—69 N·m
Hub-to-Shaft Retaining Nut		44—51 lb-ft

20. Align timing mark on injection pump (18) with scribed mark on gear cover mounting plate.

21. Tighten fuel injection pump mounting nuts to specification.

Item	Measurement	Specification
Fuel Injection Pump Mounting Nuts	Torque	23—28 N·m 17—21 lb-ft.

22. Apply a thin bead of PM38655 Flexible Form-In-Place Gasket to the fuel injection pump gear cover prior to installation. Install pump gear cover and tighten cap screws securely.

23. **IMPORTANT:**

The oil supply line has a sealing washer on each side of the fittings. DO NOT reuse old sealing washers. Always replace with new when removed.

Fill the fuel injection pump with clean oil through the external oil supply line port until oil runs out. Install the oil supply line using new sealing washers on both sides of the oil supply line fittings. Install banjo bolts and tighten to specification.

Item	Measurement	Specification
Oil Supply Line Banjo Bolt	Torque	29—34 N·m 22—25 lb-ft.

24. **IMPORTANT:**

Fuel leak-off lines are a one-piece assembly connected to all three fuel injectors. DO NOT bend or twist the fuel leak-off lines when installing.

Attach the fuel leak-off return hose to the end of the fuel leak-off return line assembly.

25. Install and tighten fuel leak-off return line nuts at each injector.

26. Install throttle cable to fuel injection pump

27. Reconnect the stop solenoid wiring connector.

28. **IMPORTANT:**

When tightening the fuel supply line connector nuts at the fuel injection pump, use a backup wrench to prevent delivery lines from turning.

Tighten fuel supply line connector nuts at fuel injection pump.

29. **IMPORTANT:**

When tightening fuel supply line connector nuts at fuel injector nozzles, use a backup wrench to prevent fuel leak-off lines from turning.

Tighten fuel supply line connector nuts at fuel injector nozzles.

30. Install engine. [See Engine Remove and Install](#) . (Group 0400.)



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TM10259 - 17D Excavator

Fuel Injection Pump Timing Procedure for New, Rebuilt, or Recalibrated Pumps

Fuel Injection Pump Timing Procedure for New, Rebuilt, or Recalibrated Pumps

1. **NOTE:**

The following procedure is performed on the No. 1 cylinder. Checking and adjusting fuel injection timing using the No. 1 cylinder is sufficient; the same procedure may be performed on any or all cylinders.

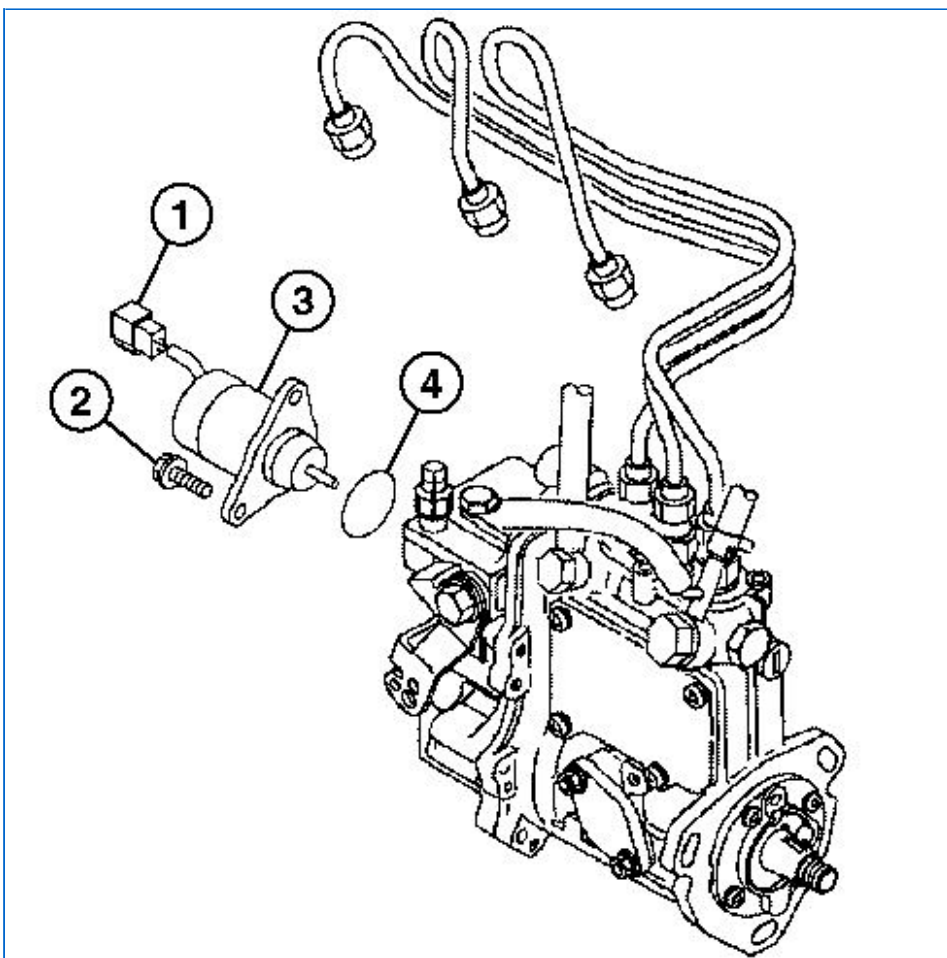
NOTE:

Some fuel may drain from the fuel injection pump during this procedure. Contain and dispose of any such fuel spillage.

Thoroughly clean the area around the fuel injection pump.

2. **NOTE:**

The stop solenoid must be removed to allow fuel to flow through the fuel injection pump.



TX1019517-UN: Stop Solenoid Remove

LEGEND:

1 - Stop Solenoid Electrical Connector

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