Removal of the High Pressure Fuel Pump

Adding a notice to install the high pressure fuel feed line kit.
2 Removal of the High Pressure Fuel Pump

Remove as follows:

1. Disconnect the batteries.
2. Drain the fuel system. Refer to section "Draining the Fuel System Using J-48710 Prior to Repairs".
3. Remove the two bolts from the inspection cover on the bottom of the flywheel housing.
4. Install an engine barring tool (J-46392) to the flywheel housing (3).

5. Rotate the flywheel until the dot located on the inside tooth (2) of the flywheel is aligned with the edge of pointer (1). The engine should now be at TDC for cylinder one.
6. Remove the Crankshaft Position (CKP) sensor.
7. Install the crankshaft locking tool (W470589001500) into the CKP hole. The tool should sit flush to the flywheel housing. If not, slowly rotate engine using barring tool until the tool is flush with the flywheel housing.
8. Remove the W470589001500 tool from the CKP hole.
9. Remove the needle return fuel line, Pressure Limiting Valve (PLV) fuel line, and the amplifier return fuel line from the fuel filter module. Refer to section "Removal of the Needle, Amplifier, and Pressure Limiting Valve Return Lines".
10. Disconnect the needle return fuel line from the high pressure pump flange.
11. Disconnect the Hydrocarbon (HC) fuel doser supply line from the high pressure pump flange.
12. Remove the fuel filter module. Refer to section "Removal of the Fuel Filter Module".
13. Remove the three bolts and remove the high pressure pump flange.
14. Remove the three bolts and remove the low pressure pump flange.
15. Disconnect the quantity control valve electrical harness connector. Disconnect the plastic clip from the high pressure fuel flange.
16. Remove the high pressure fuel pump mounting bracket.
17. Using HP pressure offset wrench tool (J-48770), remove the high pressure fuel lines from the high pressure fuel pump to the fuel rail.

**NOTICE:** The high pressure fuel rail feed lines, vibration dampers, mounting bracket and hardware are one-time-use components and MUST be replaced any time they are removed.

Service kit P/N: A4720707132 contains all of the necessary parts to replace the high pressure fuel feed lines on EPA07/10 DD13 engines and service kit P/N: 4720707032 contains all of the necessary parts to replace the high pressure fuel feed lines on EPA07/10 DD15/16 engines.

18. Remove the four bolts attaching the high pressure fuel pump to the cylinder block.
19. Remove the high pressure fuel pump from the block.
3 Installation of the High Pressure Fuel Pump

Install as follows:

1. Ensure flywheel is positioned at Top Dead Center (TDC) on cylinder number one.
2. Inspect the high-pressure fuel pump:
   a. If the fuel pump drive gear is installed from the factory, Go to step 11.
   b. If the fuel pump drive gear is being replaced (or new) or exchanged from the old pump, Go to step 3.
3. Remove the O-ring from the high-pressure fuel pump flange.
4. Install the high-pressure fuel pump into the high-pressure pump holding device tool (W470589014000) then remove locking tooth from the tool.
5. Install the half-moon key (1) onto the fuel pump shaft using a brass hammer.
6. Use a suitable de-greaser to remove all oil/grease, etc., from the high-pressure pump shaft and gear mating surfaces prior to gear installation; install the fuel pump drive gear onto the fuel pump shaft.
7. Prior to installing the nut, mark the gear with paint (1) to show the location of the key way.
   a. EPA07 Fuel Pump Driven Gear
b. EPA10 Fuel Pump Driven Gear

8. Install the nut and locking tooth for tool WE470589014000. Using the high-pressure fuel pump nut socket tool J-48669, torque the nut to 250 N·m (184 lb-ft).

9. Remove the locking tooth from the tool and install the eyebrow plate over the gear. Position eyebrow plate to align hash mark on plate to paint mark on gear.
   a. EPA07 Fuel Pump Eyebrow Plate

   b. EPA10 Fuel Pump Eyebrow Plate
10. Install three eyebrow mounting bolts:
   a. For EPA07 engines, torque the three bolts to 30 N·m (22 lb·ft).
   b. For EPA10 engines, torque the three bolts to 8 N·m (6 lb·ft).

11. Using a non-marring strap wrench, rotate the gear until the hash mark is at the 12 o'clock position (1) and lined up with the dot on the housing.
   a. EPA07 Fuel Pump Eyebrow Plate Aligned with Dot
   b. EPA10 Fuel Pump Eyebrow Plate Aligned with Dot
12. Remove the strap from the high-pressure fuel pump.
13. Clean mounting surface of fuel pump and O-ring groove. If a new fuel pump is being installed, Go to step 16.
14. Remove the fuel pump from the tool and install a new O-ring.
15. Lubricate new O-ring lightly with clean engine oil.
16. Clean the flywheel housing bore. Inspect for burrs or other sharp edges.

**NOTE:** The pump should slide into the flywheel housing without binding. The bolt hole on the pump housing should align very close with the mounting hole on the flywheel housing.

**NOTE:** If the high-pressure pump binds when being installed or if there is misalignment in the bolt holes, remove the pump and verify the timing mark is at the 12 o’clock position and the engine is at TDC; and reinstall.

17. Install the high-pressure fuel pump to the cylinder block.
NOTICE: Ensure the correct bolt length is used when the high-pressure pump is installed. If an incorrect bolt length (long) is used, the cup plugs installed in the cylinder block can be pushed out into the gear train causing severe damage to the gear train. The correct bolt length is M10X35 mm (1.37 in.).

18. Install the four bolts securing the high-pressure pump to the engine block and torque to 60 N·m (44 lb·ft).
19. Loosely install the high-pressure pump bracket, and install the two nuts securing the high-pressure fuel pump to the bracket; torque to 30 N·m (22 lb·ft).
20. Install the two bolts securing the high-pressure fuel pump bracket to the cylinder block and torque to 100 N·m (74 lb·ft).
21. Connect the quantity control valve connector.
22. Install the fuel filter module. Refer to section "Installation of the Fuel Filter Module".
23. Using a new gasket, install the high-pressure pump flange onto the high-pressure pump. Torque to 30 N·m (22 lb·ft).
24. Using a new gasket, install the low pressure pump flange onto the high-pressure pump. Torque to 30 N·m (22 lb·ft).
25. Install the fuel supply line to doser block assembly. Torque to 25 N·m (18 lb·ft).
26. Install two high-pressure lines from the high-pressure pump to the fuel rail.
   Refer to section "Installation of the DD13 High Pressure Fuel Rail Feed Lines"
   Refer to section "Installation of the DD15 and DD16 High Pressure Fuel Rail Feed Lines"
27. Prime the fuel system. Refer to section "Priming of the Fuel System Using ESOC 350 Fuel Priming Pump"

WARNING: ENGINE EXHAUST (i)(eov34)
To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

WARNING: PERSONAL INJURY
To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

28. Start and run the engine.

WARNING: FIRE
To avoid injury from fire, contain and eliminate leaks of flammable fluids as they occur. Failure to eliminate leaks could result in fire.
29. When the engine has reached operating temperature 60°C (140°F), observe pump for any performance problems or leaks.