



18SP607* – Series 60[®] EGR DDEC[®] V Fuel Pump, Combination Pressure Regulator / Check Valve, and N3 Injector O-ring and Washer Kit

*Revision4 – 5/13/09

KIT DESCRIPTION

A new service kit (P/N: R23535776) is now available for replacement of fuel pump (P/N: 23532874) on Series 60 EGR DDEC V engines with unit serial numbers 06R0755298 through 06R0814265, and N3 injector o-rings, washer, and the injector hold-down clamp washer and bolt.

KIT CONTENTS

The replacement kit contains the following parts listed in Table 1.

Part Number	Quantity	Description
R23535207 or R23535540	1	Fuel Pump Assembly (Includes fuel pump, inlet and outlet fittings, and mounting O-ring)
23535129	1	Combination Pressure Regulator / Check Valve
23535130	1	90-Degree Elbow
F00HN34702	6	Injector O-ring (Orange)
F00HN37331	6	Injector O-ring (Blue)
F00HN37860	6	Injector O-ring (Purple)
F00H410609	6	Injector Washer
8929393	6	Injector Hold-Down Clamp Bolt M10 1.5 x 70
23535699	6	Injector Hold-Down Clamp Washer
18SP607	1	Instruction Sheet

Table 1 Contents for Service Kit (P/N: R23535776)

INSTALLATION PROCEDURE

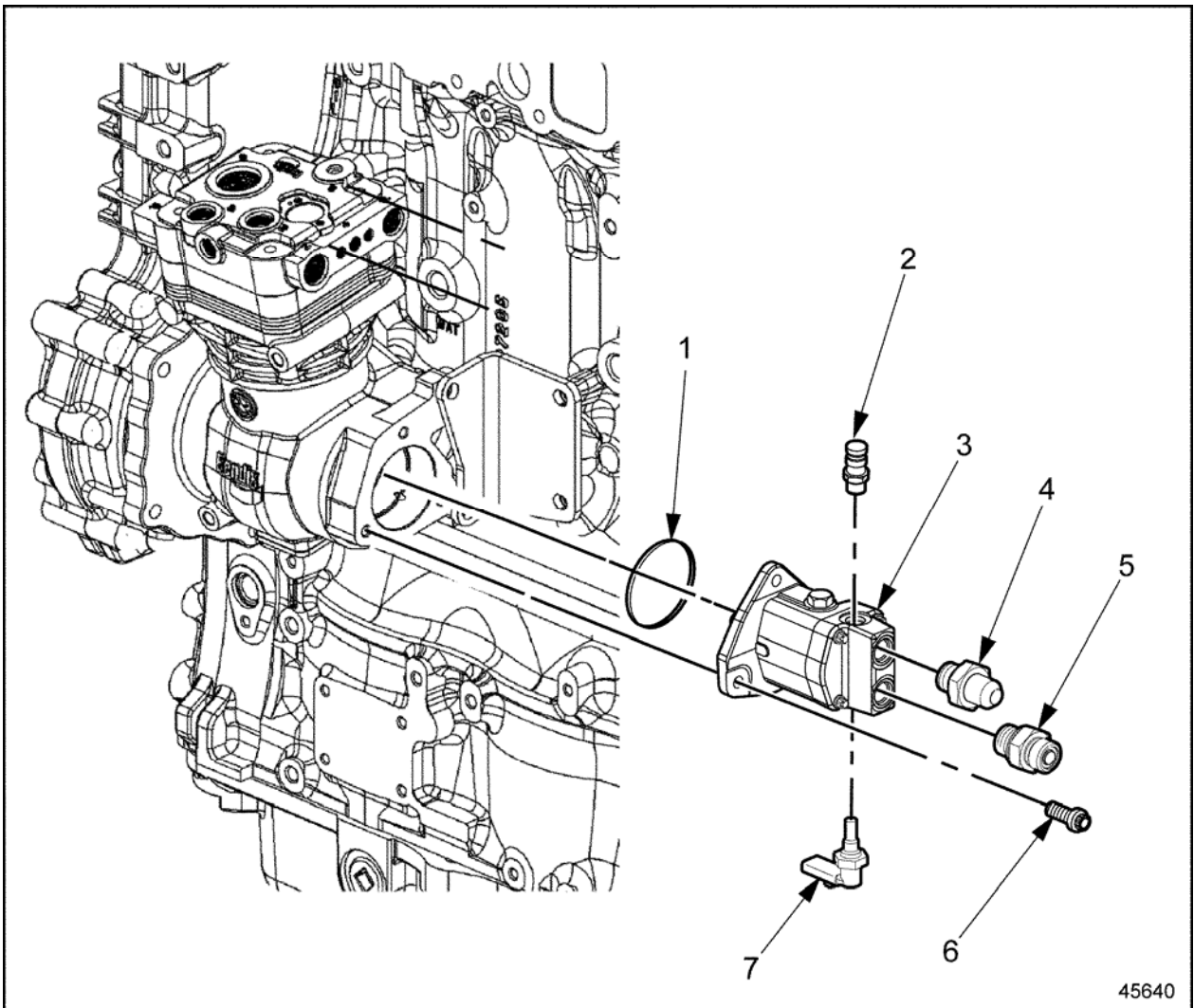
NOTICE:

- The new fuel pump and combination pressure regulator/check valve **MUST NOT** be mixed with the former components. Installing a new combination pressure regulator/check valve with the former fuel pump can cause high fuel inlet restriction, reduced fuel filter life, and performance issues. Installing a new fuel pump with the former R80 elbow and check valve can cause failure of N3 injectors.
- On the few number of engines with a DDC-installed primary fuel filter, the fuel tube connecting the primary filter to the fuel pump **MUST** be replaced with a larger diameter tube. The fuel pump inlet fitting will also change and is included with the fuel pump assembly.
 - On single cylinder air compressor applications, new tube (P/N: 23535197) replaces former tube (P/N: 23530108).
 - On twin cylinder air compressor applications, new tube (P/N: 23535198) replaces former tube (P/N: 23531052).
 - New support clip (P/N: 02236474) replaces former clip (P/N: 23534169).
 - New primary fuel filter outlet fitting (P/N: 23530394) replaces former fitting (P/N: 5244760424).
- The new tube, clip, and fitting are **NOT** included in service kit (P/N: R23535776) and must be ordered separately if needed.
- Do **NOT** install this kit on any DDEC IV engine.

FUEL PUMP INSTALLATION

Install the fuel pump as follows (see Figure 1):

1. Install fuel inlet and outlet fittings in the rear cover of the fuel pump. Do not use Teflon tape or paste on the fittings. Torque the fittings to 30 N·m (22 lb·ft).
2. Install a new O-ring into the groove of the fuel pump mounting flange. The use of Hi-Tack grease can be helpful in holding the O-ring in place. Make sure the O-ring is seated correctly in the groove and is not rolled or twisted.
3. Index the splined fuel pump drive shaft with the splined drive hub on the end of the air compressor crankshaft and align the pump mounting holes with those in the air compressor rear cover.
4. Seat the fuel pump squarely against the air compressor. Install three fuel pump mounting bolts and torque them to 30-38 N·m (22-28 lb·ft).
5. Connect the fuel pump outlet tube to the fuel pump and tighten to 40 N·m (30 lb·ft). Use a wrench on the fuel pump fittings to prevent them from turning.
6. For engines with a DDC-installed primary fuel filter, install the new fitting in the primary filter head and the larger diameter fuel tube between the filter and fuel pump. Tighten the nut on the tube to 80 N·m (59 lb·ft). Use a wrench on the fuel pump fittings to prevent them from turning. Install the new support clip from the tube to the block.



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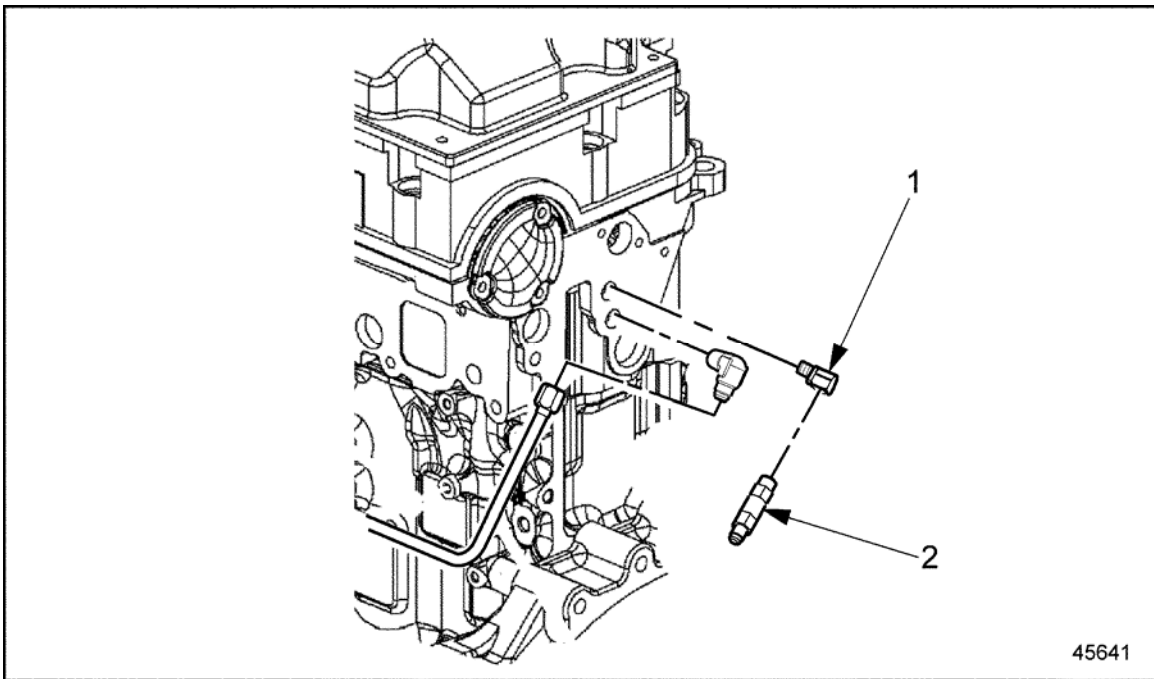
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| 1. Fuel Pump Mounting O-ring | 5. Fuel Pump Outlet Fitting |
| 2. Valve | 6. Fuel Pump Mounting Bolts (3 -reuse from engine) |
| 3. Fuel Pump | 7. Fuel Temperature Sensor (reuse from engine) |
| 4. Fuel Pump Inlet Fitting | |

Figure 1 Fuel Pump Installation

COMBINATION PRESSURE REGULATOR / CHECK VALVE INSTALLATION

Install the combination pressure regulator/check valve as follows (see Figure 2):

1. Install plain 90-degree elbow in the upper fuel return hole in the back of the cylinder head. Torque to 35 N·m (26 lb·ft) and orient to the proper angle to match the angle of the vehicle fuel return line.



1. 90-Degree Elbow
2. Pressure Regulator/Check Valve

Figure 2 Combination Pressure Regulator/Check Valve Installation

INSTALLATION OF N3 INJECTORS

Install the N3 injector washers and O-rings as follows (see Figures 3 and 4):

1. Disconnect battery power before servicing the N3 injector to prevent failure of the DDEC V ECU.
2. Remove the N3 injector and identify injector cylinder positions. Refer to the *Series 60 Service Manual* 6SE483 for full procedures on the proper removal and installation of the N3 injector. Use Kent-Moore tool J-47372 if the injector cannot be removed by hand.
3. Carefully clean (remove carbon, soot, etc.) the injector body and the injector sleeve in the cylinder head.

NOTICE:

Avoid cleaning (wire brushing, etc.) the injector tip spray holes to prevent damage and plugging.

NOTICE:

Take extra precautions when cleaning the injector sleeves in the cylinder head to ensure that debris does not enter into the fuel supply or return galleries. Do NOT use powered tools to clean the injector sleeves – use a hand brush such as Kent-Moore J-47374 and a rag. Do NOT use compressed air to blow out debris in the sleeves.

4. Replace the three O-rings on the injector by applying a thin coat of clean fuel to the injector O-rings and installing them in the injector nut ring grooves. Make sure the O-rings are properly seated. See Figure 3.

5. Replace the former copper seal on the bottom of the injector with the new washer. The flat side of the washer must face down into the cylinder head. The stepped side of the washer must face up to the injector. See Figure 3.
6. Install the injector and hold-down clamp as an assembly into its original cylinder position, taking care not to damage the O-rings. See Figure 4.
7. Replace the injector hold-down clamp washer with the new washer in the kit. The curved side of the washer fits into a corresponding curved cup in the injector hold-down clamp.
8. Replace the injector hold-down clamp bolt with the new bolt in the kit. Align the hold-down clamp over the retaining stud and install the new bolt into the injector clamp and torque using the procedure below. No additional torque of the bolt is necessary. See Figure 4.
 - a. Torque the bolt to 50 N·m (37 lb-ft).
 - b. Loosen the bolt 60 degrees (1/6 of a turn, or one bolt flat). Do not fully loosen the bolt.
 - c. Torque the bolt to 35 N·m (26 lb-ft).
 - d. Tighten the bolt 90 degrees (1/4 of a turn).

NOTICE:

Injector O-ring seals, injector washers, and the injector hold-down crab bolt are considered one-use items and cannot be reused. Any time an injector is removed, all three injector O-ring seals, injector washers, and the injector hold-down crab bolt must be replaced with new parts. Failure to replace O-ring seals, injector washers, and the injector hold-down crab bolt can result in leakage.

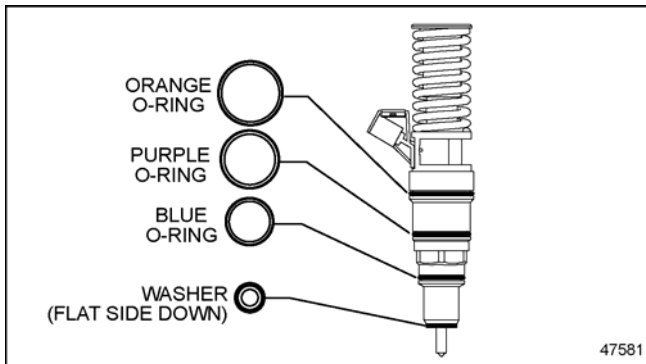
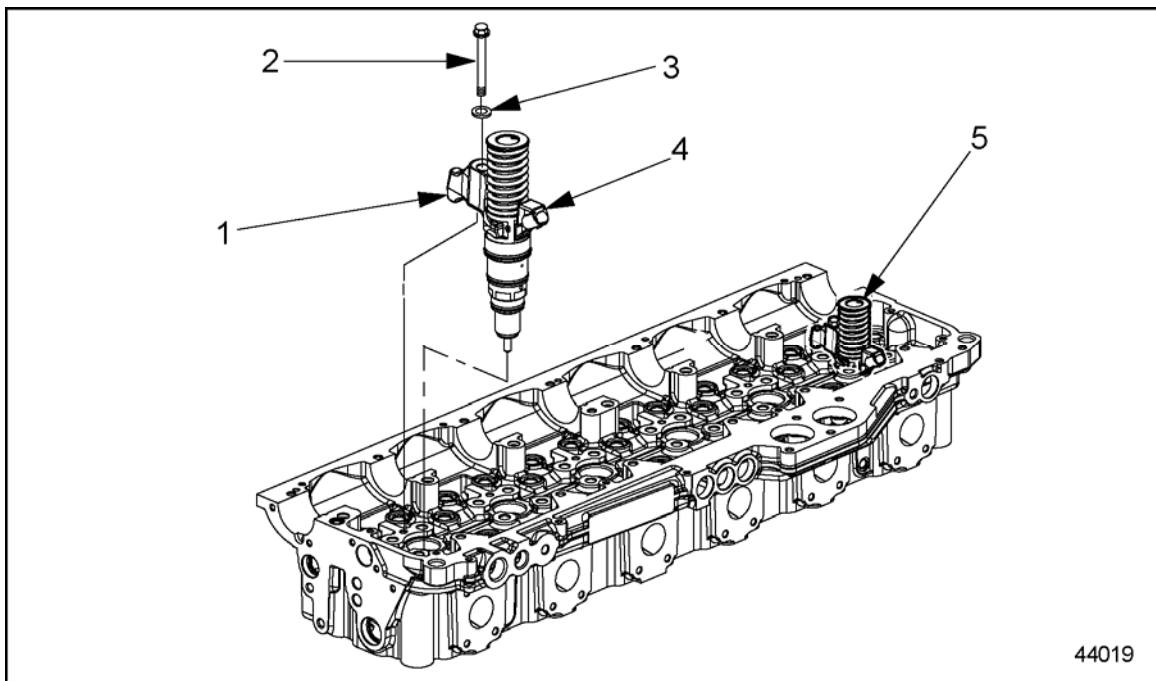


Figure 3 Injector Washer and O-ring Installation



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| 1. Injector Hold-Down Clamp (Re-use From engine) | 4. N3 Injector (Re-Use From Engine) |
| 2. Bolt | 5. N3 Injector Installed |
| 3. Injector Hold-Down Clamp Washer | |

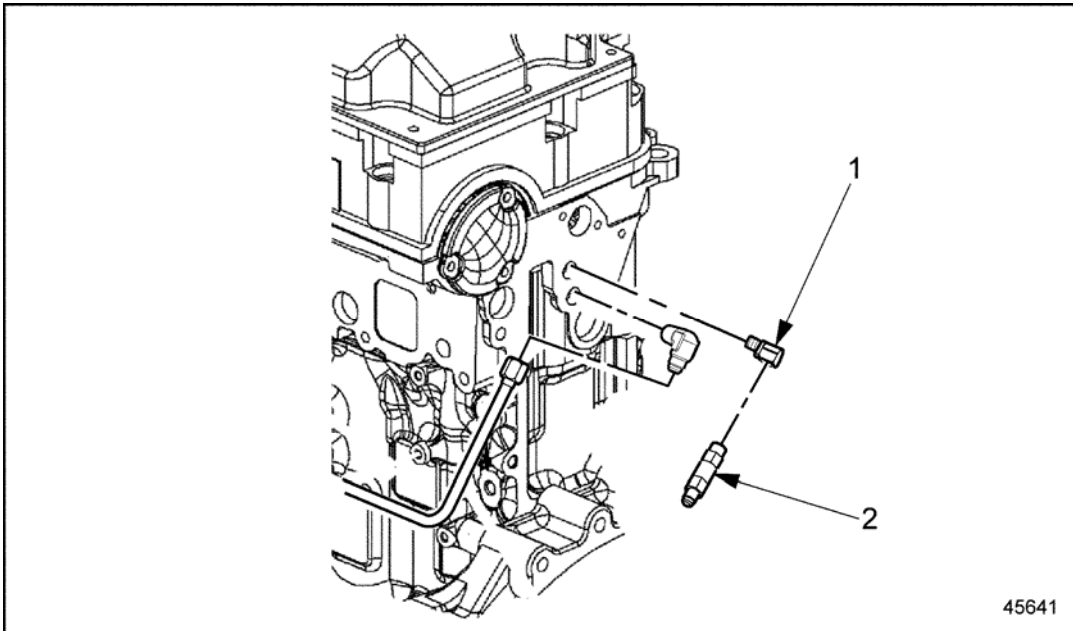
Figure 4 Injector Hold-Down Clamp And Washer Installation

INSTALLATION (CONTINUED)

Complete the installation as follows:

1. Prime the fuel system.
2. Refer to the "General Information" section in the *Series 60 Service Manual* (6SE483) for the necessary caution warnings before proceeding.
3. Flush the injectors and cylinder head fuel passages by connecting a fuel line to the 90 degree elbow and route it to a separate container.
4. Disconnect the Engine Harness 68-pin connector from the ECU or remove the fuse/breaker in the vehicle that powers the ECU.
5. Reconnect battery power to allow use of the starter.
6. Using the starter, crank the engine three times for 15 seconds each time. Allow sufficient time between cranking periods to allow the starter to cool. Note that fuel should be flowing out of the return line into the container.
7. Remove the fuel line from the 90 degree elbow in the cylinder head fuel return port.
8. Install the pressure regulator/check valve and torque to 23 N·m (17 lb·ft). See Figure 5.
9. Disconnect battery.
10. Connect the Engine Harness to the ECU or install the fuse/breaker in the vehicle that powers the ECU.

11. Reconnect battery.
12. Complete any other required installation of components (I.E: valve cover, etc.).
13. Start and run the engine. Visually observe the fuel pump, lines, elbow, and combination pressure regulator/check valve for any leaks. Repair as necessary.
14. Shut down the engine upon completion of the test.



1. 90° Elbow
2. Pressure Regulator/ Check Valve

Figure 5 Pressure Regulator/Check Valve



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