

## GM 6.5L DS Injection Pump Installation Tips



Perform a fuel system inspection prior to installation of a replacement injection pump. If rust, contamination, or metal particles are found, the fuel system must be cleaned including the tank, filter housing, and supply lines. **Failure to completely clean the complete fuel system can result in immediate or repeated short-term failures.**

**Application Caution:** 1994 Heavy Duty vehicles with the engine RPO L65 require use of the DT650004R injection pump. Some L65 vehicles had the Powertrain Control Module (PCM) calibration Programmable Read-Only Memory (PROM) changed to use the DT650003R injection pump. Refer to GM bulletin 08-06-04-31 for information on how to determine which pump should be installed. Use of the incorrect pump will cause driveability issues.

DTech does not recommend removal of the Pump Mounted Driver (PMD) from a DTech remanufactured pump to allow the PMD to be remote mounted. Remote mounting is the cause of many driveability issues and incorrect diagnosis of a failed injection pump or PMD.

### INSTALLATION TIPS

1. DTech injection pumps have tolerances measured in microns. It is important to work in a clean manner to prevent contamination of the fuel system to prevent premature failures. Clean the engine area around the fuel system prior to removing any fuel system components. Before assembly inspect each component for dirt, grease, or other contaminants and clean as necessary.
2. Do not use the starter motor to rotate the engine when the injection pump is removed as the pump drive gear may jam in the front housing resulting in a sheared crankshaft or camshaft gear key.
3. Replacement of the rubber hose from the fuel filter to the injection pump is recommended. Many of these hoses are breaking down due to their age on the inside diameter, shedding rubber particles that enter and damage the injection pump.
4. Remove the injection pump wire harness in the engine valley, inspect the wiring for worn insulation and check all connectors. Most harnesses will require repairs.
5. Install a new fuel filter and do not fill it with fuel prior to installation.
6. Adjust the locating pin on the injection pump drive hub to the proper position to match with the slotted/elongated hole in the drive gear.
7. Install the injection pump making sure the drive hub locating pin is positioned within the slotted / elongated hole in the drive gear.
8. Position the pump with the ESO solenoid pointed straight up. Torque the pump flange nuts to 30 ft-lb (40 Nm).
9. Install all drive gear bolts hand tight, then torque to 18 ft-lb (25 Nm).
10. Install the injection lines. Torque the injection line pump nuts to 28 ft-lb (36 Nm). Leave the line nuts loose at the injectors.
11. Bleed the system of air. Open the air bleed valve on top of the fuel filter. Crank the engine in 10 to 15 second intervals until clear fuel is observed at the air bleed hose (Wait for one minute between cranking intervals). Close the air bleed valve.

*(Continued on reverse side.)*

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## **PRODUCT INFORMATION**

*(Continued from front side.)*

12. Crank the engine in 10 to 15 second intervals until clear fuel is discharged from injection lines at the injector connections. (Wait for one minute between cranking intervals.)
13. Torque the injection line injector nuts to 28 ft-lb (36 Nm).
14. Start the engine and bring to operating temperature.
15. Set the injection pump timing using a scan tool. The timing values will fluctuate, set to an average of 3.5 degrees. Turn the engine off before loosening the pump flange nuts to adjust the timing. If the engine stalls during the procedure rotate the injection pump 1mm towards the driver's side of the vehicle to advance the timing.

### **TROUBLESTARTING INFORMATION**

1. No start or start and die conditions can be caused by the vehicle's anti theft system. Check the vehicle theft deterrent parameters with a scan tool while cranking the engine.
2. The oil pressure sensor includes a switch to operate the supply pump once oil pressure comes up when cranking or after starting. Supply pressure should be 5-7 PSI at idle. Supply pressure is measured before the fuel filter and a dirty fuel filter will restrict supply pressure to the injection pump.
3. Black smoke on an engine with exhaust gas recirculation (EGR) is usually caused by a missing EGR or incorrectly installed EGR tower gasket.
4. Stepper motor Diagnostic Trouble Code (DTC) 034 and P0216 are commonly caused by a bad crankshaft sensor (CKP) or wiring. Perform a snap acceleration of the engine to check the stepper motor for movement, if there is movement the motor is ok.
5. Top dead center (TDC) offset error DTC 088 or P1214 are commonly caused by a bad crankshaft sensor (CKP) or wiring. The TDC offset learn procedure only needs to be done when the CKP sensor and / or PCM is replaced, or if the front cover has been removed. To perform the TDC offset learn, the injection pump base timing must first be set.
6. The PMD is on a quad driver circuit. False PMD failures are often caused by issues with the other items on that circuit or the related wiring harness and connectors. The PMD circuit includes the EGR vent and control solenoids, turbocharger wastegate control solenoids, and transmission solenoids.

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