TDC Offset Learn Procedure (6.5L Diesel)

You must perform a TDC Offset learn procedure if any of the following have been done or exist:

- Diagnostic Trouble Code (DTC) P1214.
- Engine has been replaced.
- Crankshaft position sensor or engine front cover has been replaced.
- Powertrain Control Module (PCM) and fuel injection pump have been replaced.

NOTE: DO NOT perform procedure unless sent here from DTC P1214 or one of the components listed above has been replaced.

1) The PCM has the ability to determine amount of offset required to bring the engine to TDC when TDC offset is not present or has been cleared. This procedure must be performed to allow PCM to be updated with the correct TDC offset for vehicle application.

2) Install the Scan Tool on Data Link Connector (DLC). Start engine and warm engine until engine coolant temperature is at least 170 Deg F. Using the scan tool, clear DTCs from PCM. Turn ignition on with engine off. Fully depress and hold throttle at full throttle for at least 45 seconds.

3) Turn ignition off for 30 seconds. Start engine. Verify the scan tool indicates TDC offset has been cleared to zero. If TDC offset has been cleared to zero, go to next step. If TDC offset has not been cleared to zero, repeat step 2) until TDC offset has been cleared to zero.

4) With engine running, use the scan tool to verify engine coolant temperature is greater than 170 Deg F. It may be necessary to drive vehicle to obtain correct engine coolant temperature if engine coolant temperature is less than specified.

5) As soon at engine coolant temperature is greater than 170 Deg F (77 Deg C) and engine speed is less than 1500 RPM, the PCM automatically learns a NEW TDC offset. The NEW TDC offset will overwrite the previous TDC offset. Using the scan tool, note NEW TDC offset. TDC offset should be -.25 to -.75.

6) Shut engine off. If TDC offset is not within specification, go to next step. If TDC offset is within specification, TDC offset learn procedure is complete.

7) Using Flange Nut Wrench (J41089), loosen fuel injection pump retaining nuts. Fuel injection pump must be rotated to change TDC offset. Rotating fuel injection pump .039" (1.00 mm) will change TDC offset about 2
degrees. Rotating fuel injection pump toward driver's side of vehicle will produce a positive (+) number and rotating fuel injection pump toward passenger's side of vehicle will produce a negative (-) number.


9) Repeat step 2) through 8) until TDC offset is within specification. If proper TDC offset cannot be obtained, check the following:

* Ensure engine coolant temperature is greater than 170 Deg F (77 Deg C).
* Electric connectors at PCM are properly installed.
* Electric connectors at injection timing stepper motor on side of fuel injection pump is correctly installed.
* Ensure latest Techline software was used.
* Check for proper base installation of fuel injection pump. The electric engine shutoff solenoid on top of fuel injection pump should be approximately straight up and down.
* Fuel injection pump may be defective, although manufacturer states this is highly unlikely.