SMCS - 1290 i09415420
This procedure covers the following codes:

Table 1

Diagnostic Codes for Injector Data Incorrect			
J1939 Code	**CDL Code**	**Code Description** (code descriptions may vary)	**Comments**
651-2	1-2	Engine Injector Cylinder #01 : Erratic, Intermittent, or Incorrect	The Electronic Control Module (ECM) detects an injector code that is incorrect for the engine. The warning lamp will come on.
652-2	2-2	Engine Injector Cylinder #02 : Erratic, Intermittent, or Incorrect	
653-2	3-2	Engine Injector Cylinder #03 : Erratic, Intermittent, or Incorrect	
654-2	4-2	Engine Injector Cylinder #04 : Erratic, Intermittent, or Incorrect	
655-2	5-2	Engine Injector Cylinder #05 : Erratic, Intermittent, or Incorrect	
656-2	6-2	Engine Injector Cylinder #06 : Erratic, Intermittent, or Incorrect	

The following background information is related to this procedure:

The engine has electronic unit injectors that are controlled by the ECM. The Electronic Control Module (ECM) sends a pulse to each injector solenoid. The pulse is sent at the correct time and for the correct duration for a given engine load and engine speed. Use this procedure to identify the cause of the diagnostic code. Use this procedure to repair the system.

If an injector is replaced, then the correct trim file for the injector must be programmed into the ECM. The trim files for the injectors allow each individual injector to be fine tuned for optimum performance. The ECM will generate the following diagnostic code if the injector codes are not programmed:

- 630-2 (268-2) Programmed Parameter Fault erratic, intermittent, or incorrect

Refer to Troubleshooting, "Injector Trim File" for further information.

If the ECM is replaced then the replacement ECM must be correctly programmed. Refer to Troubleshooting, "Replacing the ECM" for further information.

Use the electronic service tool in order to perform the "Fuel System Verification Test". The "Fuel System Verification Test" is used to check that the system operates correctly after a

repair has been made.

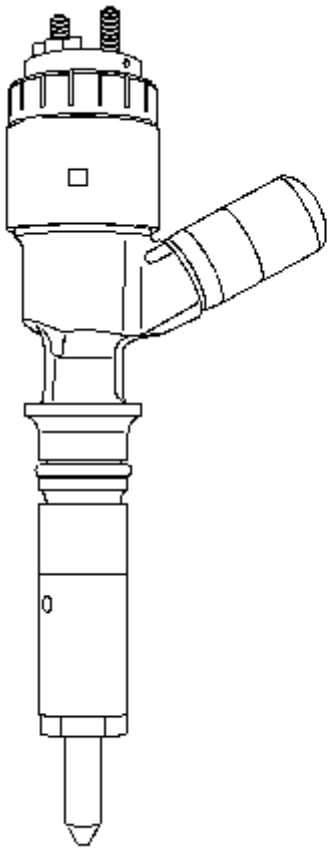

Illustration 1 g01336666
Typical example of the electronic unit injector

During the following procedure, refer to the electrical schematic for the application.

Complete the procedure in the order in which the steps are listed.

Table 2

Troubleshooting Test Steps	**Values**	**Results**
1. Check for Diagnostic Codes that are Related to this Procedure **A.** Connect the electronic service tool to the diagnostic connector. **B.** Turn the keyswitch to the ON position. **C.** Check for active diagnostic codes or recently logged diagnostic codes.	Diagnostic codes	**Result:** One or more of the diagnostic codes in Table 1 is active. Proceed to Test Step 2. **Result:** On four cylinder engines, two injectors that share a common supply indicate a diagnostic code. **Note:** Injectors 1 and 4 share a common injector driver circuit in the ECM. Injectors 2 and 3 share a common driver circuit in the ECM. If two injectors that share a common supply indicate a diagnostic code then this is probably caused by a faulty ECM.

		Proceed to Test Step 3. **Result:** On six cylinder engines, three injectors that share a common supply indicate a diagnostic code. **Note:** Injectors 1, 2 and 3 share a common injector driver circuit in the ECM. Injectors 4, 5 and 6 share a common driver circuit in the ECM. If three injectors that share a common supply indicate a diagnostic code then this is probably caused by a faulty ECM. Proceed to Test Step 3.
2. Check the Faulty Cylinder Numbers **A.** Use the electronic service tool in order to identify the diagnostic codes. **B.** Use the diagnostic codes in order to check the cylinders for faulty injectors.	Diagnostic code	**Result:** The diagnostic codes indicate the cylinder numbers that have faulty injectors. **Repair:** Replace the faulty injectors. Use the electronic service tool in order to program the trim file for the replacement injector . Refer to Troubleshooting, "Injector Trim File" for further information. Use the electronic service tool in order to clear the logged codes. Turn the keyswitch to the ON position. Start the engine. Use the electronic service tool in order to perform the "Fuel System Verification Test". If the cylinders indicate "PASS", then the fault has been cleared. Verify that the repair eliminates the fault.
3. Check the ECM **A.** Make sure that the latest flash file for the application is installed in the ECM. Refer to Troubleshooting, "ECM Software - Install". **B.** Contact the Dealer Solutions Network (DSN). **C.** If the DSN recommends the use of a test ECM, install a test ECM. Refer to Troubleshooting, "ECM - Replace".	Injector codes	**Result:** The test ECM clears the fault. **Repair:** Perform the following procedure: Reconnect the suspect ECM. Use the electronic service tool in order to perform the "Fuel System Verification Test". If the fault returns with the suspect ECM, replace the ECM. Use the electronic service tool in order

D. Use the electronic service tool in order to perform the "Fuel System Verification Test" Verify that the test eliminates the fault. **Note:**The "Fuel System Verification Test" will indicate if the cylinder has a "Pass" or "Fail". If the cylinders indicate "Pass" then the fault has been cleared. **E.** If the test ECM eliminates the fault, reconnect the suspect ECM. **F.** Use the electronic service tool in order to perform the "Fuel System Verification Test".		to clear all logged diagnostic codes and then verify that the repair eliminates the fault. **Result:** The test ECM did not eliminate the fault. **Repair:** Repeat this test procedure from Test Step 1.