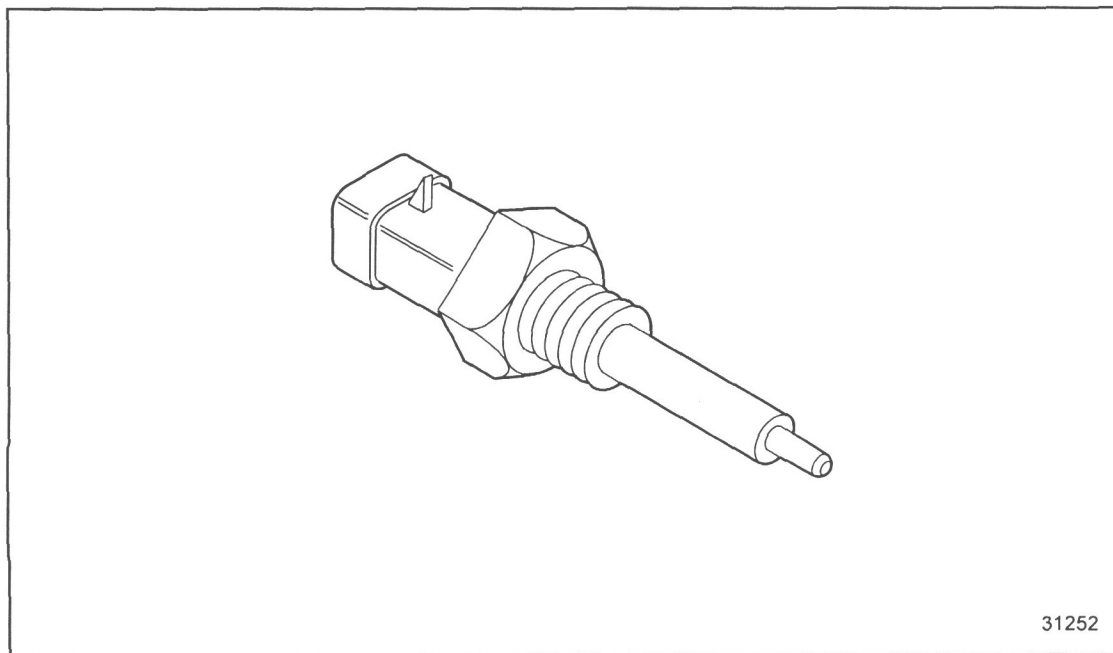


# 16 FLASH CODE 16 – CLS HIGH

Section	Page
16.1 DESCRIPTION OF FLASH CODE 16 .....	16-3
16.2 SAE J1587 EQUIVALENT CODE FOR FLASH CODE 16 .....	16-3
16.3 TROUBLESHOOTING FLASH CODE 16 .....	16-3



**Figure 16-1 Coolant Level Sensor**

## 16.1 DESCRIPTION OF FLASH CODE 16

Flash Code 16 indicates that the engine Coolant Level Sensor (CLS), see Figure 16-1, input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage.

This diagnostic condition is typically:

- Open sensor signal circuit
- Open sensor ground circuit

## 16.2 SAE J1587 EQUIVALENT CODE FOR FLASH CODE 16

The SAE J1587 equivalent code for Flash Code 16 is p 111 3, coolant level circuit high.

## 16.3 TROUBLESHOOTING FLASH CODE 16

The following procedure will troubleshoot Flash Code 16.

### 16.3.1 Sensor Check

Perform the following steps to check the sensor.

1. Turn ignition OFF.
2. Disconnect Coolant Level Sensor (CLS) connector and install a jumper between sockets A and B of the CLS harness connector.
3. Attempt to start and run engine at idle.
4. Read DDR for active codes.
  - [a] If active code 111/3 and any other codes except code 111/4 are logged, refer to section 16.3.2.
  - [b] If active code 111/4 and any other codes are logged, refer to section 16.3.4.
5. Stop engine.

### 16.3.2 Signal Circuit Check

Perform the following steps to check the signal circuit.

1. Turn ignition OFF.
2. Disconnect the CLS.
3. Disconnect the vehicle harness connector.
4. Measure resistance between socket H3 (#115) on the vehicle harness connector and A (#115 signal) of the CLS connector.
  - [a] If the resistance measurement is less than or equal to 5  $\Omega$ , refer to section 16.3.3.
  - [b] If the resistance measurement is greater than 5  $\Omega$ , or the signal line #115 is open, repair the open. Refer to section 16.3.7.

### 16.3.3 Ground Circuit Check

Perform the following steps to check the ground circuit.

1. Measure resistance between cavity B (battery ground) of the CLS connector and battery ground.
  - [a] If the resistance measurement is less than or equal to 5  $\Omega$ , refer to section 16.3.4.
  - [b] If the resistance measurement is greater than 5  $\Omega$ , or open, the ground circuit is open. Repair and refer to section 16.3.7.

### 16.3.4 Signal Short to Ignition Check

Perform the following steps to check for a signal short to ignition.

1. Disconnect the vehicle harness connector at the ECM.
2. Remove the jumper wire at the CLS harness connector.
3. Turn ignition ON.
4. Measure voltage at cavity A (#115 signal) of the CLS connector and battery ground. See Figure 16-2.
  - [a] If the voltage measurement is less than or equal to 6 volts, refer to section 16.3.5.
  - [b] If the voltage measurement is greater than 6 volts, the CLS signal line (#115) is shorted to the 12/24 volt DC line. Repair the short or replace the #115 wire. Refer to section 16.3.7.

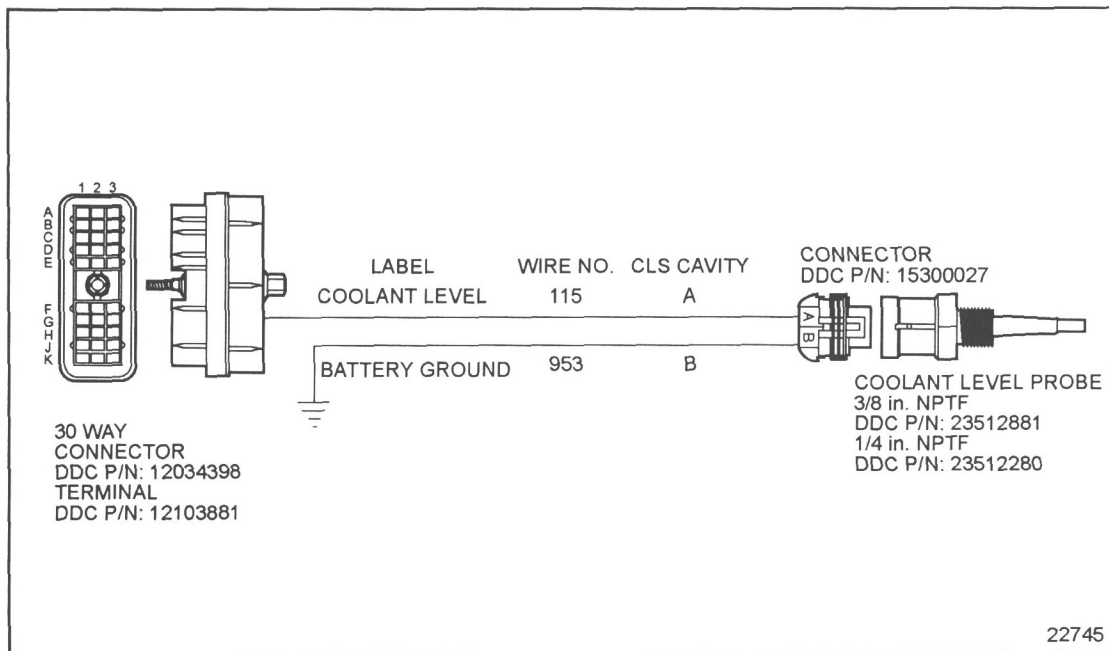


Figure 16-2 Coolant Level Sensor and Circuits

### 16.3.5 ECM Connectors Check

Perform the following steps to check the ECM connectors.

1. Inspect terminals at the vehicle harness connector (both the sensor and harness side) for bent, corroded and unseated pins or sockets. Check terminal and pin H3 at the ECM and all terminals and pins in the CLS connector. See Figure 16-3.
  - [a] If terminals and connectors are not damaged, replace the CLS. Refer to section 16.3.7. If this is a repeated failure of the CLS, refer to section 16.3.6.
  - [b] If terminals and connectors are damaged, repair both. Refer to section 16.3.7.

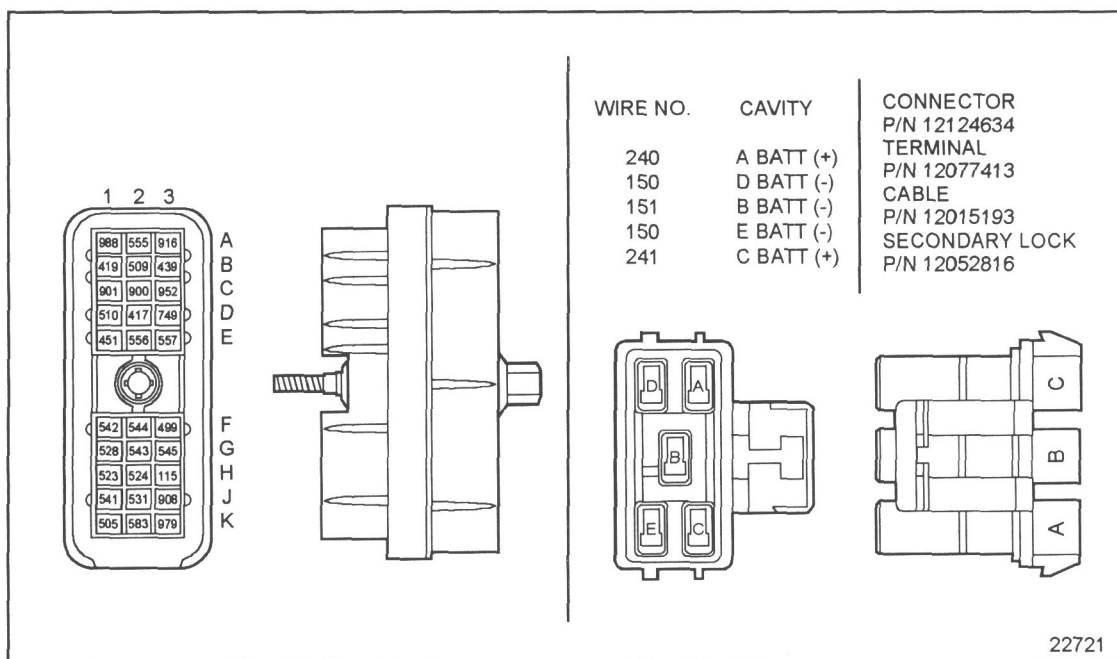


Figure 16-3 ECM Vehicle Interface Harness Connector

### 16.3.6 Alternator Ground Check

Perform the following steps to check the alternator ground.

1. Connect all connectors.
2. Remove alternator belt or disable alternator from charging.
3. Start and run the engine.
4. Read logged codes.
  - [a] If no codes are logged, repair the alternator ground circuit. Refer to section 16.3.7.
  - [b] If codes are logged, replace CLS. Refer to section 16.3.7.

### 16.3.7 Verify Repairs

Perform the following steps to verify the repairs.

1. Turn ignition OFF.
2. Reconnect all connectors.
3. Turn ignition ON.
4. Clear DDR codes.
5. Start and run the engine for one minute.
6. Stop the engine.
7. Check DDR for codes.
  - [a] If no codes are displayed, troubleshooting is complete.
  - [b] If code 111/3 is not logged, and other codes are logged, refer to section 9.1.
  - [c] If code 111/3 is logged, and other codes are logged, refer to section 16.3.1, and perform tasks.