

28 FLASH CODE 28 – AIR TEMP SENSOR LOW

Section	Page
28.1 DESCRIPTION OF FLASH CODE 28	28-3
28.2 SAE J1587 EQUIVALENT CODE FOR FLASH CODE 28	28-3
28.3 TROUBLESHOOTING FLASH CODE 28	28-3

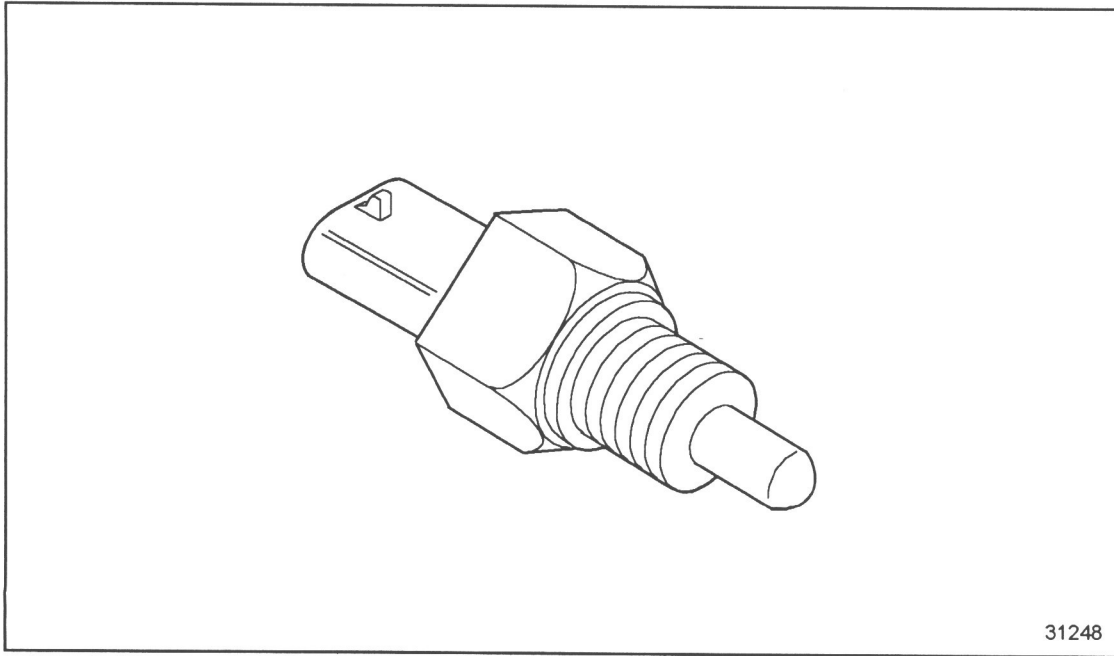


Figure 28-1 Air Temperature Sensor

28.1 DESCRIPTION OF FLASH CODE 28

Flash Code 28 indicates that the engine Air Temperature Sensor (ATS), see Figure 28–1, input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage.

This diagnostic condition is typically:

- Sensor signal circuit is shorted to sensor return
- Sensor signal circuit is shorted to ground

28.2 SAE J1587 EQUIVALENT CODE FOR FLASH CODE 28

The SAE J1587 equivalent code for Flash Code 28 is p 172 4, air temperature circuit low.

28.3 TROUBLESHOOTING FLASH CODE 28

The following procedure will troubleshoot Flash Code 28.

28.3.1 Multiple Code Check

Perform the following steps to check for multiple codes.

1. Turn vehicle ignition switch ON.
2. Plug in DDR.
3. Read active codes.
 - [a] If code 172/4 was logged and there are no other codes logged, refer to section 28.3.2.
 - [b] If code 172/4 and any of the following codes 110/3, 175/3, 174/3, 72/3 or 102/3 were logged, refer to section 90.1.
 - [c] If flash code 172/4 and any code except the following were logged, 110/3, 175/3, 174/3, 72/3 or 102/3, refer to section 28.3.2.

28.3.2 Sensor Check

Perform the following steps to check the sensor.

1. Turn vehicle ignition OFF.
2. Disconnect the ATS connector. See Figure 28-2.

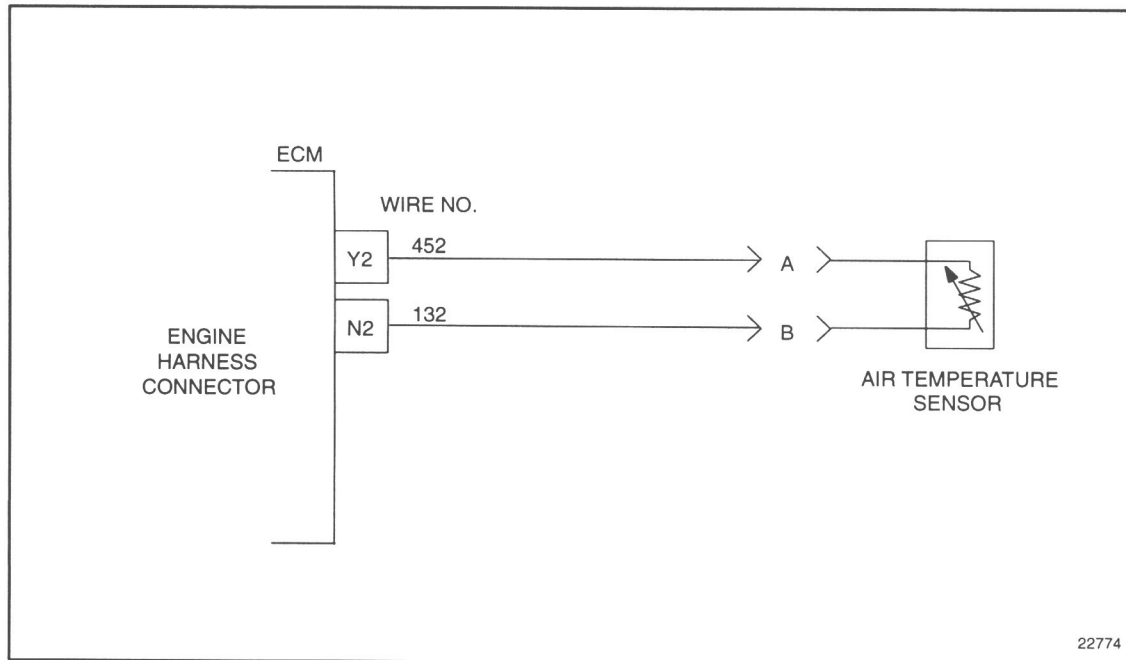


Figure 28-2 Engine Harness to Air Temperature Sensor Connector

3. Start engine and run until Check Engine light comes on, or for eight minutes.
4. With engine still running, read active codes.
 - [a] If code 172/4 and any other codes were logged, refer to section 28.3.4.
 - [b] If flash 172/3 and any other codes except 172/4 were logged, refer to section 28.3.3.

28.3.3 Check Air Temperature Sensor Connectors

Perform the following steps to check the ATS connector.

1. Check terminals at the ATS connector (both sensor and harness side) for damage; bent, corroded and unseated pins or sockets.
 - [a] If terminals and connectors are not damaged, replace ATS. Refer to section 28.3.6.
 - [b] If terminals and connectors are damaged, repair/replace wires and refer to section 28.3.6.

28.3.4 Check for Short

Perform the following steps to check for a short.

1. Turn the ignition OFF.
2. Disconnect the engine harness connector at the ECM.
3. Measure resistance between sockets N2 and Y2 on the engine harness connector. See Figure 28-3.
4. Measure resistance between socket N2 and a good ground.
 - [a] If the resistance measurement between sockets N2 and Y2 and between socket N2 and a good ground is greater than $10\ \Omega$ or open, refer to section 28.3.5.
 - [b] If the resistance measurement between sockets N2 and Y2, or N2 and battery negative, is less than or equal to $10\ \Omega$, the signal line #132 is shorted to the return line #452 or battery ground. Repair short. Refer to section 28.3.6.

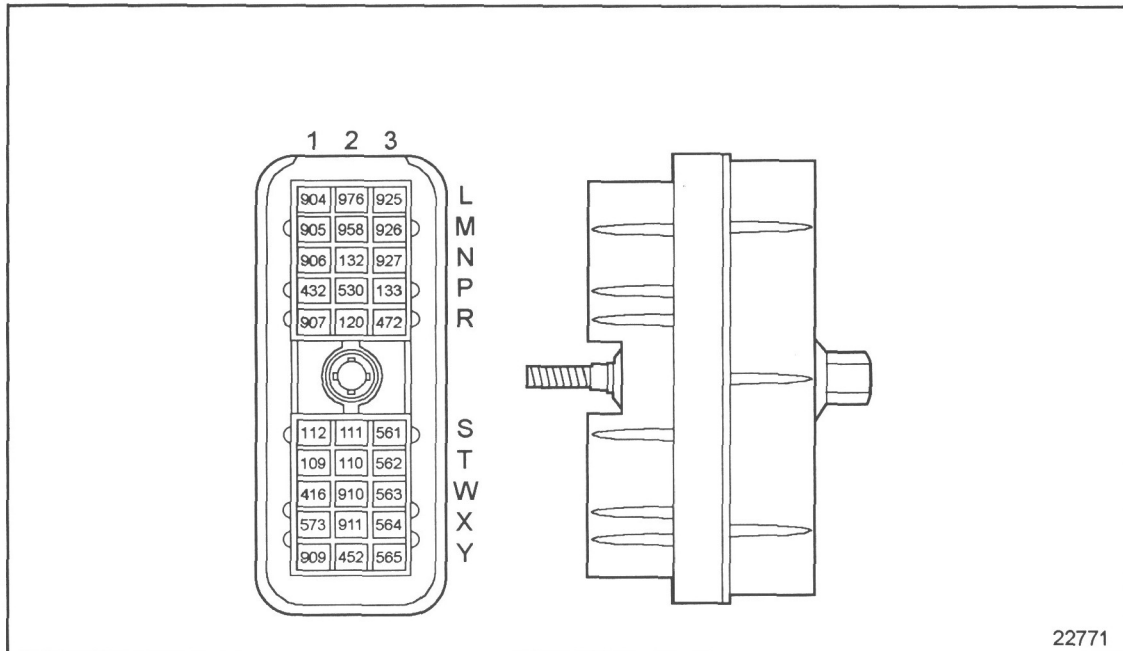


Figure 28-3 ECM Engine Harness Connector

28.3.5 Check ECM Connectors

Perform the following steps to check the ECM connectors.

1. Check terminals at the ECM harness connector (both ECM and harness side) for damage; bent, corroded and unseated pins or sockets, especially N2 and Y2 of the ECM connector.
 - [a] If terminals or connectors are not damaged, contact Detroit Diesel Technical Services and refer to section 28.3.6.
 - [b] If terminals and connectors are damaged, repair them. Refer to section 28.3.6

28.3.6 Verify Repairs

Perform the following steps to verify repairs.

1. Turn ignition OFF.
2. Reconnect all connectors.
3. Turn ignition ON.
4. Clear codes.
5. Start and run the engine for eight minutes.
6. Stop engine.
7. Read inactive codes.
 - [a] If no codes are displayed, troubleshooting is complete.
 - [b] If code 172/4 is logged with any other codes, all system diagnostics are complete. Review this section from the first step to find the error.
 - [c] If code 172/4 is not logged, but other codes are logged, refer to section 9.1.