

4-22 DRIVEABILITY AND EMISSIONS CONTROLS

the fuel delivery to bring the air/fuel mixture towards a centered or 14.7:1 ratio. This compensating shift is stored in a non-volatile memory which is retained by battery power even with the ignition switched **OFF**. The correction factor is then available the next time the vehicle is operated.

Malfunction Indicator Lamp

The Malfunction Indicator Lamp (MIL) is located on the instrument panel. The lamp is connected to the PCM and will alert the driver to certain malfunctions within the EEC-V system. When the lamp is illuminated, the PCM has detected a fault and stored a DTC in memory.

The light will stay illuminated as long as the fault is present. Should the fault self-correct, the MIL will extinguish but the stored code will remain in memory.

Under normal operating conditions, the MIL should illuminate briefly when the ignition key is turned **ON**. This is commonly known as a prove-out. As soon as the PCM receives a signal that the engine is cranking, the lamp should extinguish. The lamp should remain extinguished during the normal operating cycle.

Data Link Connector

The Data Link Connector (DLC) may be found in the following location:

- Under the driver's side dashboard, near the steering column.

The DLC is rectangular in design and capable of allowing access to 16 terminals. The connector has keying features that allow easy connection. The test equipment and the DLC have a latching feature to ensure a good mated connection.

ELECTRICAL TOOLS

The most commonly required electrical diagnostic tool is the Digital Multimeter, allowing voltage, resistance, and amperage to be read by one instrument.

The multimeter must be a high impedance unit, with 10 megaohms of impedance in the voltmeter. This type of meter will not place an additional load on the circuit it is testing; this is extremely important in low voltage circuits. The multimeter must be of high quality in all respects. It should be handled carefully and protected from impact or damage. Replace the batteries frequently in the unit.

Reading Codes

▶ See Figure 82

The EEC-V equipped engines utilize On Board Diagnostic II (OBD-II) DTC's, which are alphanumeric (they use letters and numbers). The letters in the OBD-II DTC's make it highly difficult to convey the codes through the use of anything but a scan tool. Therefore, to read the codes on these vehicles it is necessary to utilize an OBD-II compatible scan tool.

Since each manufacturer's scan tool is different, please follow the manufacturer's instructions for connecting the tool and obtaining code information.

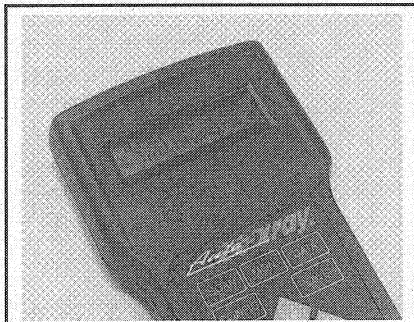


Fig. 82 When using a scan tool, make sure to follow all of the manufacturer's instructions carefully to ensure proper diagnosis

Clearing Codes

CONTINUOUS MEMORY CODES

These codes are retained in memory for 40 warm-up cycles. To clear the codes for the purposes of testing or confirming repair, perform the code reading procedure. When the fault codes begin to be displayed, de-activate the test by either disconnecting the jumper wire (meter, MIL or message center) or releasing the test button on the hand scanner. Stopping the test during code transmission will erase the Continuous Memory. Do not disconnect the negative battery cable to clear these codes; the Keep Alive memory will be cleared and a new code, 19, will be stored for loss of PCM power.

KEEP ALIVE MEMORY

The Keep Alive Memory (KAM) contains the adaptive factors used by the processor to compensate for component tolerances and wear. It should not be routinely cleared during diagnosis. If an emissions related part is replaced during repair, the KAM must be cleared. Failure to clear the KAM may cause severe driveability problems since the correction factor for the old component will be applied to the new component.

To clear the Keep Alive Memory, disconnect the negative battery cable for at least 5 minutes. After the memory is cleared and the battery reconnected, the vehicle must be driven at least 10 miles so that the processor may relearn the needed correction factors. The distance to be driven depends on the engine and vehicle, but all drives should include steady-throttle cruise on open roads. Certain driveability problems may be noted during the drive because the adaptive factors are not yet functioning.

EEC-V Diagnostic Trouble Codes (DTC's)

- P0000** No Failures
- P0100** Mass or Volume Air Flow Circuit Malfunction
- P0101** Mass or Volume Air Flow Circuit Range/Performance Problem
- P0102** Mass or Volume Air Flow Circuit Low Input
- P0103** Mass or Volume Air Flow Circuit High Input

P0104 Mass or Volume Air Flow Circuit Intermittent

P0105 Manifold Absolute Pressure/Barometric Pressure Circuit Malfunction

P0106 Manifold Absolute Pressure/Barometric Pressure Circuit Range/Performance Problem

P0107 Manifold Absolute Pressure/Barometric Pressure Circuit Low Input

P0108 Manifold Absolute Pressure/Barometric Pressure Circuit High Input

P0109 Manifold Absolute Pressure/Barometric Pressure Circuit Intermittent

P0110 Intake Air Temperature Circuit Malfunction

P0111 Intake Air Temperature Circuit Range/Performance Problem

P0112 Intake Air Temperature Circuit Low Input

P0113 Intake Air Temperature Circuit High Input

P0114 Intake Air Temperature Circuit Intermittent

P0115 Engine Coolant Temperature Circuit Malfunction

P0116 Engine Coolant Temperature Circuit Range/Performance Problem

P0117 Engine Coolant Temperature Circuit Low Input

P0118 Engine Coolant Temperature Circuit High Input

P0119 Engine Coolant Temperature Circuit Intermittent

P0120 Throttle/Pedal Position Sensor/Switch "A" Circuit Malfunction

P0121 Throttle/Pedal Position Sensor/Switch "A" Circuit Range/Performance Problem

P0122 Throttle/Pedal Position Sensor/Switch "A" Circuit Low Input

P0123 Throttle/Pedal Position Sensor/Switch "A" Circuit High Input

P0124 Throttle/Pedal Position Sensor/Switch "A" Circuit Intermittent

P0125 Insufficient Coolant Temperature For Closed Loop Fuel Control

P0126 Insufficient Coolant Temperature For Stable Operation

P0130 O2 Circuit Malfunction (Bank 1 Sensor 1)

P0131 O2 Sensor Circuit Low Voltage (Bank 1 Sensor 1)

P0132 O2 Sensor Circuit High Voltage (Bank 1 Sensor 1)

P0133 O2 Sensor Circuit Slow Response (Bank 1 Sensor 1)

P0134 O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 1)

P0135 O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 1)

P0136 O2 Sensor Circuit Malfunction (Bank 1 Sensor 2)

P0137 O2 Sensor Circuit Low Voltage (Bank 1 Sensor 2)

P0138 O2 Sensor Circuit High Voltage (Bank 1 Sensor 2)

P0139 O2 Sensor Circuit Slow Response (Bank 1 Sensor 2)

P0140 O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 2)

P0141 O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 2)

P0142 O2 Sensor Circuit Malfunction (Bank 1 Sensor 3)

P0143 O2 Sensor Circuit Low Voltage (Bank 1 Sensor 3)