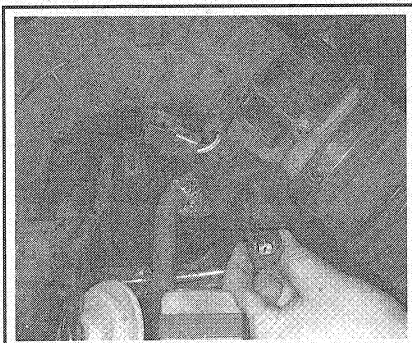


TESTING

See Figure 53

1. Using a multimeter, check for voltage by backprobing the MAF sensor connector.
2. With the key **ON**, and the engine **OFF**, verify that there is at least 10.5 volts between the VPWR and GND terminals of the MAF sensor connector. If voltage is not within specification, check power and ground circuits and repair as necessary.
3. With the key **ON**, and the engine **ON**, verify that there is at least 4.5 volts between the SIG and GND terminals of the MAF sensor connector. If voltage is not within specification, check power and ground circuits and repair as necessary.
4. With the key **ON**, and the engine **ON**, check voltage between GND and SIG RTN terminals. Voltage should be approximately 0.34–1.96 volts. If voltage is not within specification, the sensor may be faulty.



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Fig. 53 Unplugging the sensor connector below the MAF sensor, for testing purposes

REMOVAL & INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the air intake tube from the MAF sensor and the throttle body.
3. Detach the connector from the MAF sensor.
4. Remove the four sensor retaining screws and remove the sensor.
5. Remove the sensor gasket.

To install:

6. Installation is the reverse of removal.

Manifold Air Pressure (MAP) Sensor

OPERATION

The most important information for measuring engine fuel requirements comes from the pressure sensor. Using the pressure and temperature data, the PCM calculates the intake air mass. It is connected to the engine intake manifold through a hose and takes readings of the absolute pressure. A piezoelectric crystal changes a voltage input to a frequency output, which reflects the pressure in the intake manifold.

Atmospheric pressure is measured when the engine is started and when driving fully loaded,

then the pressure sensor information is adjusted accordingly.

The Manifold Absolute Pressure (MAP) sensor was used on the 3.8L & the 5.0L engines, until it was replaced by the Mass Air Flow (MAF). The MAP sensor operates as a pressure-sensing disc. It does not generate a voltage; instead its output is a frequency change. The sensor changes frequency according to intake manifold vacuum; as vacuum increases sensor frequency increases. This gives the Powertrain Control Module (PCM) information on engine load. The PCM uses the MAP sensor signal to help determine spark advance, EGR flow and air/fuel ratio.

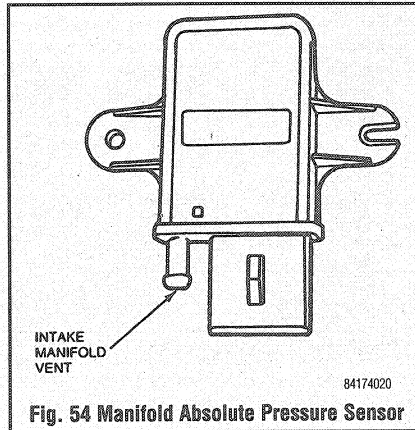


Fig. 54 Manifold Absolute Pressure Sensor

TESTING

See Figures 54, 55 and 56

➔ **Unusually high or low barometric pressures can generate a false DTC for the MAP sensor. If no driveability symptoms accompany the MAP code, do not replace it.**

1. Connect a MAP/BARO tester to the sensor connector and sensor harness connector. With ignition **ON** and engine **OFF**, use DVOM to measure voltage across tester terminals. If the tester's 4-6V indicator is ON, the reference voltage input to the sensor is okay.

➔ **The green light on the tester indicates that the VREF circuit is okay, 4–6 volts. A red light or no light indicates the VREF is either too low or too high.**

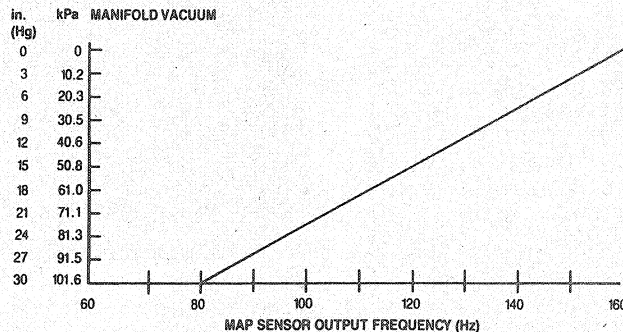
Approximate Altitude (Ft.)	Voltage Output (±.04 Volts)
0	1.59
1000	1.56
2000	1.53
3000	1.50
4000	1.47
5000	1.44
6000	1.41
7000	1.39

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Fig. 55 MAP sensor altitude/voltage output relationship

MAP Sensor Graph

NOTE: MAP sensor output frequency versus manifold vacuum data is based on 30.0 in-Hg barometric pressure.



MAP Sensor Data

Manifold Vacuum		Frequency
in-Hg	kPa	Hz
0	0	159
3	10.2	150
6	20.3	141
9	30.5	133
12	40.6	125
15	50.8	117
18	61.0	109
21	71.1	102
24	81.3	95
27	91.5	88
30	101.6	80

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Fig. 56 MAP sensor frequency data