

FIGURE 15-1 (a) As an engine is accelerated under a load, the engine vacuum drops. This drop in vacuum is actually an increase in absolute pressure in the intake manifold. A MAP sensor senses all pressures greater than that of a perfect vacuum.

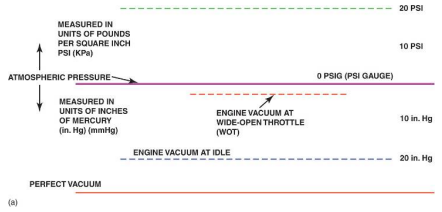


FIGURE 15-1 (CONTINUED) (b) The relationship between absolute pressure, vacuum and gauge pressure.

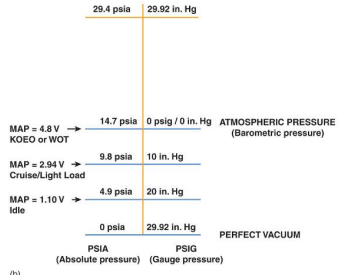


FIGURE 15-2 A plastic MAP sensor used for training purposes showing the electronic circuit board and electrical connections.

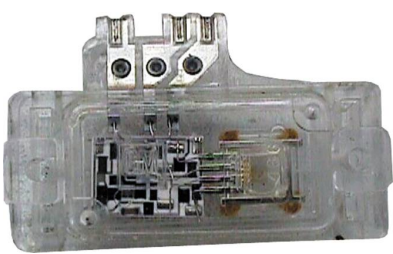


FIGURE 15-3 MAP sensors use three wires: 1. 5-volt reference from the PCM 2. Sensor signal (output signal) 3. Ground. A DMM set to test a MAP sensor: (1) Connect the red meter lead to the V meter terminal and the black meter lead to the COM meter terminal. (2) Select DC volts. (3) Connect the test leads to the sensor signal wire and the ground wire. (4) Slightly back (pull) the MAP sensor hoses until a varying frequency, otherwise, hold it on DC volts. (5) Read the change of voltage (frequency) as the vacuum is applied to the sensor. Compare the vacuum reading and the frequency (or voltage) reading to the specifications. (Courtesy of Fluke Corporation).

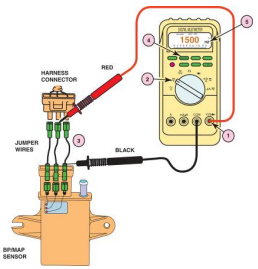


FIGURE 15-4 A waveform of a typical digital MAP sensor.

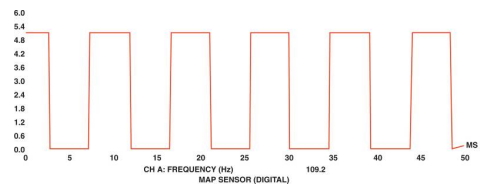


FIGURE 15-5 Shown is the electronic circuit inside a ceramic disc MAP sensor used on many Chrysler engines. The black areas are carbon resistors that are applied to the ceramic, and lasers are used to cut lines into these resistors during testing to achieve the proper operating calibration.

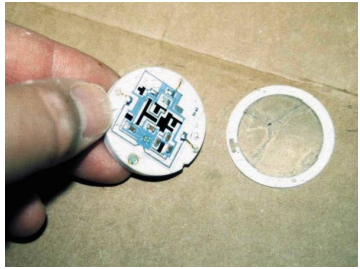
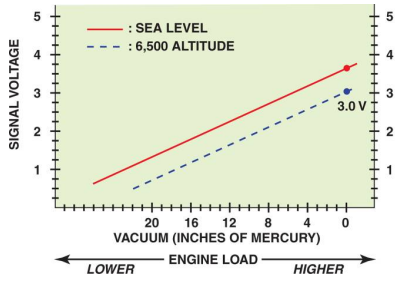


FIGURE 15-6 Altitude affects the MAP sensor voltage.



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FIGURE 15-7 A typical hand-operated vacuum pump.



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