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THROTTLE POSITION (TP) SENSORS

Figure 73-1 A typical TP sensor mounted on the throttle plate of this port-injected engine.

Figure 73-2 The signal voltage from a throttle position increases as the throttle is opened because the wiper arm is closer to the 5-volt reference. At idle, the resistance of the sensor winding effectively reduces the signal voltage output to the computer.

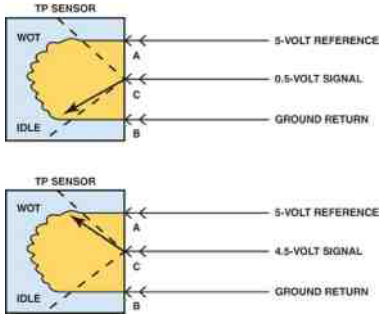
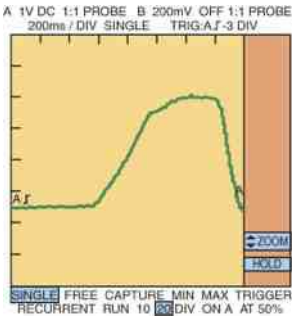


Figure 73-3 A meter lead connected to a T-pin that was gently pushed along the signal wire of the TP sensor until the point of the pin touched the metal terminal inside the plastic connector.

Figure 73-4 A typical waveform of a TP sensor signal as recorded on a DSO when the accelerator pedal was depressed with the ignition switch on (engine off). Clean transitions and the lack of any glitches in this waveform indicate a good sensor. *(Courtesy of Fluke Corporation)*



TECH TIP

Check Power and Ground Before Condemning a Bad Sensor

Most engine sensors use a 5-volt reference and a ground. If the 5 volts to the sensor is too high (shorted to voltage) or too low (high resistance), then the sensor output will be **skewed** or out of range. Before replacing the sensor that did not read correctly, measure both the 5-volt reference and ground. To measure the ground, simply turn the ignition on (engine off) and touch one test lead of a DMM set to read DC volts to the sensor ground and the other to the negative terminal of the battery. Any reading higher than 0.2 volt (200 mV) represents a poor ground. ● **SEE FIGURES 73–5 AND 73–6.**

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Figure 73-5 Checking the 5-volt reference from the computer being applied to the TP sensor with the ignition switch on (engine off). The reading for this vehicle (5.02 volts DC) is within the normal range for the 5-volt reference voltage of 4.9 to 5.1 volts.

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Figure 73-6 Checking the voltage drop between the TP sensor ground and a good engine ground with the ignition on (engine off). A reading of greater than 0.2 volt (200 mV) represents a bad computer ground.