When the intake manifold pressure is low (high vacuum) sensor voltage output is 0.25-1.8 volts at the ECM. When the intake manifold pressure is high due to turbo boost, sensor voltage output is 2.0-4.7 volts. The sensor receives a 5-volts reference from the ECM. Sensor ground is also provides by the ECM. The ECM uses boost pressure combined with intake air temperature to determine the volume of air entering the engine (Fig. 2).

**DIAGNOSIS AND TESTING - BOOST PRESSURE SENSOR**

If the boost pressure sensor fails, the ECM records a DTC into memory and continues to operate the engine in one of the three limp-in modes. When the ECM is operating in this mode, a loss of power will be present, as if the turbocharger was not operating. The best method for diagnosing faults with the boost pressure sensor is with the DRB III® scan tool. Refer to the Diesel Powertrain Diagnostic Manual for more information.

Refer to On-Board Diagnostics in Emissions Control System for a list of Diagnostic Trouble Codes (DTC's) for certain fuel system components.

**REMOVAL**

1. Disconnect the negative battery cable.
2. Unplug the electrical connector.
3. Remove the sensor retaining bolts, remove the sensor and O-ring.

**INSTALLATION**

1. Inspect boost pressure sensor O-ring for cuts or abrasions, replace as necessary.

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**Fig. 1 ACCELERATOR PEDAL POSITION SENSOR**

**Fig. 2 BOOST PRESSURE SENSOR**

**Fig. 3 BOOST PRESSURE SENSOR**
BOOST PRESSURE SENSOR (Continued)

(2) Position the boost pressure sensor above access hole in the charge air pipe and push down to fit flush (Fig. 3).
(3) Install the bolts and tighten to 44 lbs. in. (5 N·m) (Fig. 3).
(4) Reconnect the sensor electrical connector (Fig. 3).
(5) Connect negative battery cable

CAMSHAFT POSITION SENSOR

DESCRIPTION
The camshaft position sensor is mounted on the cylinder head cover toward the rear of the engine. The camshaft sensor utilizes a non contact method on one segment of the camshaft to record the camshaft position. When the ECM receives the signal from this sensor, it can then detect TDC of cylinder number one. The signal from the camshaft sensor is only required during engine starting. Injection timing is synchronized by means of the camshaft signal and the crankshaft signal.

OPERATION
On the camshaft sensor’s signal line, a high signal corresponds to a voltage of 11–14V. If the segment machined into the exhaust camshaft sprocket is positioned opposite the camshaft sensor, the camshaft signal is low, approximately 0V. This signal is used by the engine control module (ECM) for detecting ignition TDC of cylinder 1 as the engine rotates. If no signal is supplied by the camshaft position sensor, the vehicle will not start because cylinder order cannot be detected (Fig. 4).

REMOVAL
(1) Disconnect negative battery cable.
(2) Remove engine cover
(3) Disconnect camshaft position sensor electrical connector (Fig. 5).
(4) Remove retaining bolt and remove sensor (Fig. 5).

INSTALLATION
(1) Install camshaft position sensor and tighten bolt (Fig. 5).
(2) Reconnect electrical connector (Fig. 5).
(3) Install engine cover.
(4) Reconnect negative battery cable.