

## CODE 45

### OXYGEN SENSOR CIRCUIT (RICH EXHAUST INDICATED) 2.5L "P" SERIES (TBI)

#### Circuit Description:

The ECM supplies a voltage of about .45 volt between terminals "B2" and "B23". (If measured with a 10 megohm digital voltmeter, this may read as low as .32 volts.) The O<sub>2</sub> sensor varies the voltage within a range of about 1 volt, if the exhaust is rich, down through about .10 volt, if exhaust is lean.

The sensor is like an open circuit and produces no voltage, when it is below about 360°C (600°F). An open sensor circuit, or cold sensor, causes "Open Loop" operation.

**Test Description:** Numbers below refer to circled numbers on the diagnostic chart.

1. Code 45 is set, when the O<sub>2</sub> sensor signal voltage on CKT 412:
  - Remains above .7 volt for 30 seconds or more; and in "Closed Loop".
  - Engine time after start is 1 minute or more.
  - Throttle angle between 3% and 45%.

#### Diagnostic Aids:

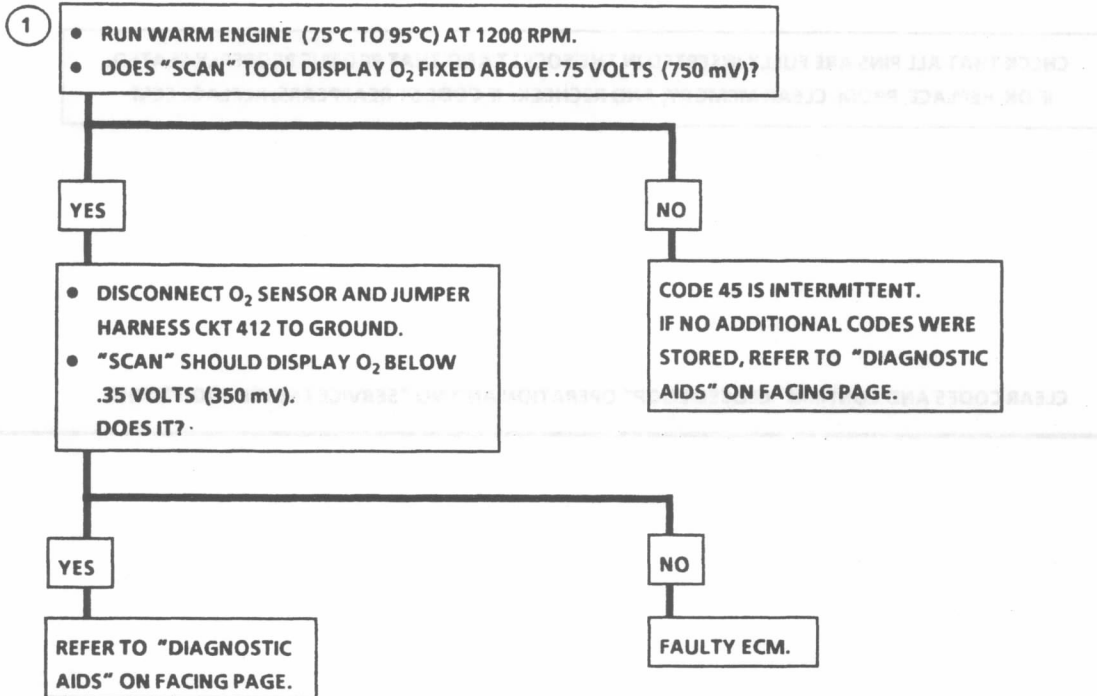
The Code 45, or rich exhaust, is most likely caused by one of the following:

- **Fuel Pressure** - System will go rich, if pressure is too high. The ECM can compensate for some increase. However, if it gets too high, a Code 45 will be set. See Fuel System diagnosis CHART A-7.
- **Leaking Injector** - See CHART A-7.
- **HEI Shielding** - An open ground CKT 453 may result in EMI, or induced electrical "noise". The ECM looks at this "noise" as reference pulses. The additional pulses result in a higher than actual engine speed signal. The ECM then delivers too much fuel, causing system to go rich. Engine tachometer will, also, show higher than actual engine speed, which can help in diagnosing this problem.

- **Canister Purge** - Check for fuel saturation. If full of fuel, check canister control and hoses. See Canister Purge, Section "C3".
- **MAP Sensor** - An output that causes the ECM to sense a higher than normal manifold pressure (low vacuum) can cause the system to go rich. Disconnecting the MAP sensor will allow the ECM to set a fixed value for the MAP sensor. Substitute a different MAP sensor, if the rich condition is gone while the sensor is disconnected.
- **TPS** - An intermittent TPS output will cause the system to go rich, due to a false indication of the engine accelerating.
- **O<sub>2</sub> Sensor Contamination** - Inspect Oxygen Sensor for silicone contamination from fuel, or use of improper RTV sealant. The sensor may have a white, powdery coating and result in a high, but false signal voltage (rich exhaust indication). The ECM will then reduce the amount of fuel delivered to the engine, causing a severe surge driveability problem.
- **EGR Valve** - An EGR staying open at idle usually accompanied by a rough idle complaint. If Code 45 is intermittent, refer to Section "B".

# CODE 45

## OXYGEN SENSOR CIRCUIT (RICH EXHAUST INDICATED) 2.5L "P" SERIES (TBI)



CLEAR CODES AND CONFIRM "CLOSED LOOP" OPERATION AND NO "SERVICE ENGINE SOON" LIGHT.