



CODE 13

OXYGEN SENSOR CIRCUIT (OPEN CIRCUIT) 2.8L "P" SERIES (PORT)

Circuit Description:

The ECM supplies a voltage of about .45 volt between terminals "D7" and "D6". (If measured with a 10 megohm digital voltmeter, this may read as low as .32 volts.) The O₂ 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 315°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 13 WILL SET:
 - Engine at normal operating temperature
 - At least 2 minutes engine time after start
 - O₂ signal voltage steady between .35 and .55 volts
 - RPM above 1600
 - Throttle position sensor signal above 12% (about .5 volts above closed throttle voltage)
 - All conditions must be met for about 20 seconds.

If the conditions for a Code 13 exist, the system will not go "Closed Loop".

2. This will determine if the sensor is at fault, or the wiring or ECM is the cause of the Code 13.
3. In doing this test, use only a high impedance digital volt ohm meter. This test checks the continuity of CKT's 412 and 413, because if CKT 413 is open the ECM voltage on CKT 412 will be over .6 volts (600 mV).

Diagnostic Aids:

Normal "Scan" voltage varies between 100 mV to 999 mV (.1 and 1.0 volt) while in "Closed Loop". Code 13 sets in one minute if voltage remains between .35 and .55 volts, but the system will go "Open Loop" in about 15 seconds.

Refer to "Intermittents" in Section "B".

CODE 13
OXYGEN SENSOR CIRCUIT
(OPEN CIRCUIT)
2.8L "P" SERIES (PORT)

1 ENGINE AT NORMAL OPERATING TEMPERATURE (ABOVE 80°C).
 • RUN ENGINE ABOVE 1200 RPM FOR TWO MINUTES.
 DOES "SCAN" INDICATE "CLOSED LOOP"?

NO

YES

2 • DISCONNECT O₂ SENSOR.
 • JUMPER HARNESS CKT 412 TO GROUND.
 • "SCAN" SHOULD DISPLAY O₂ VOLTAGE BELOW .2 VOLTS (200 mV) WITH ENGINE RUNNING.
 DOES IT?

CODE 13 IS INTERMITTENT. IF NO ADDITIONAL CODES WERE STORED, REFER TO "DIAGNOSTIC AIDS" ON FACING PAGE.

NO

YES

3 • IGNITION "ON", ENGINE "OFF".
 • CHECK VOLTAGE OF CKT 412 (ECM SIDE) AT O₂ SENSOR HARNESS CONNECTOR USING A DVM.
 IT SHOULD BE .3-.6 VOLTS (300 - 600 mV).

FAULTY O₂ SENSOR CONNECTION OR SENSOR.

.3-.6 VOLTS
(300 - 600 mV)

OVER .6 VOLT
(600 mV)

LESS THAN .3
VOLT (300 mV)

FAULTY ECM

OPEN CKT 413,
FAULTY CONNECTION
OR FAULTY ECM.

OPEN CKT 412, FAULTY
ECM CONNECTION OR ECM.

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