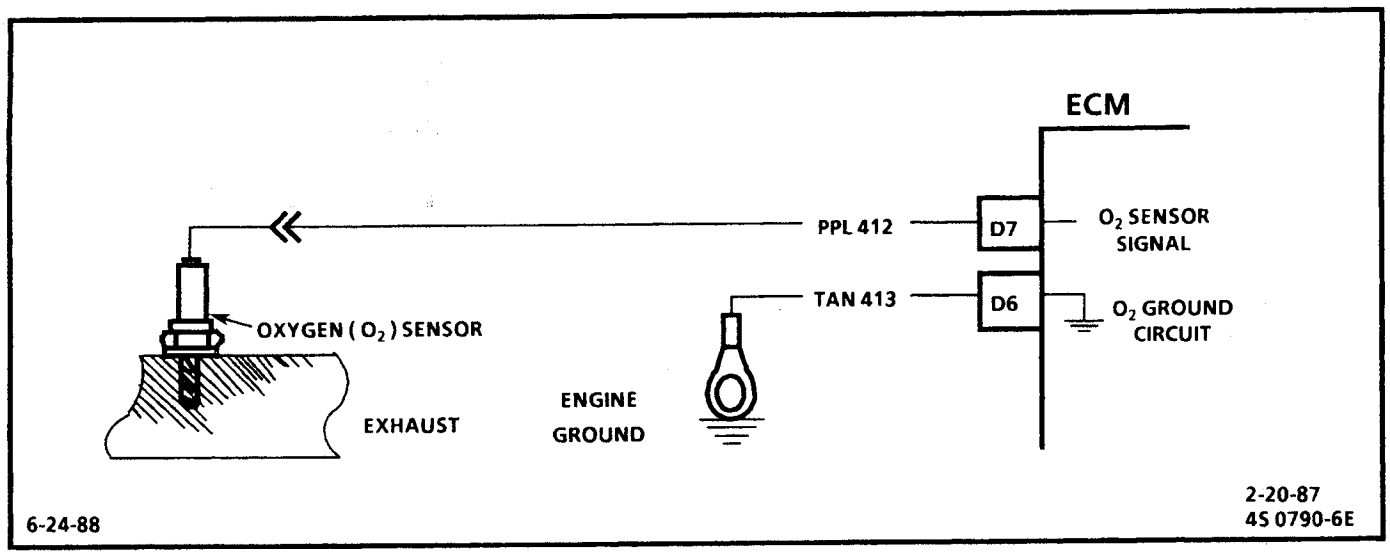


CODE 13

OXYGEN SENSOR CIRCUIT
(OPEN CIRCUIT)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (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 volt.) The O_2 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 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 13 WILL SET:
   - Engine at normal operating temperature (above 80°C/176°F).
   - At least 2 minutes engine time after start.
   - O_2 signal voltage steady between .35 and .55 volt.
   - Throttle position sensor signal above 5%. (about .3 volt above closed throttle voltage).
   - All conditions must be met for about 60 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. For this test use only a high impedance digital volt ohmmeter. This test checks the continuity of CKT 412 and CKT 413. If CKT 413 is open, the ECM voltage on CKT 412 will be over .6 volt (600 mV).

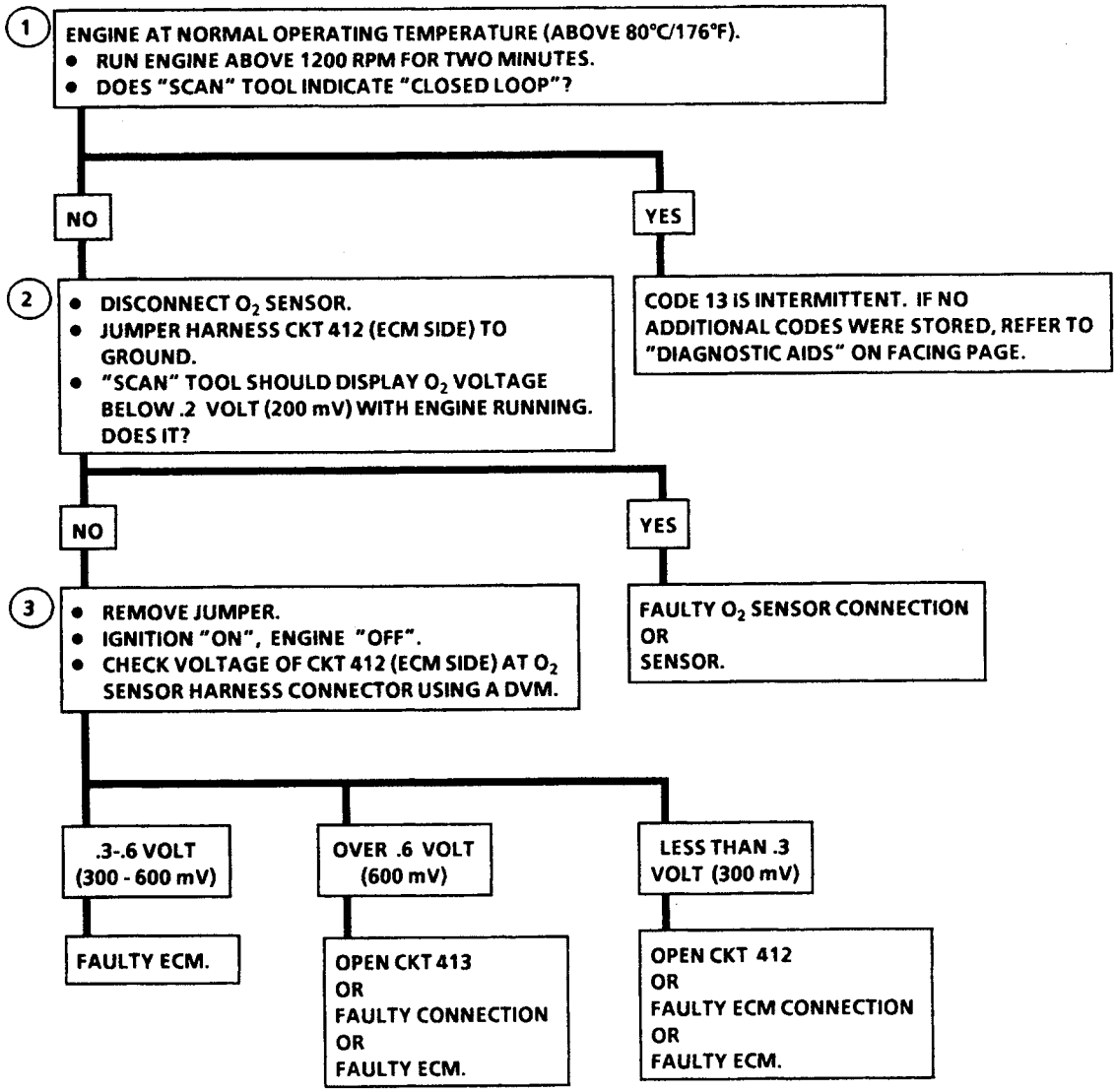
Diagnostic Aids:

Normal "Scan" voltage varies between 100mV to 999mV (.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".

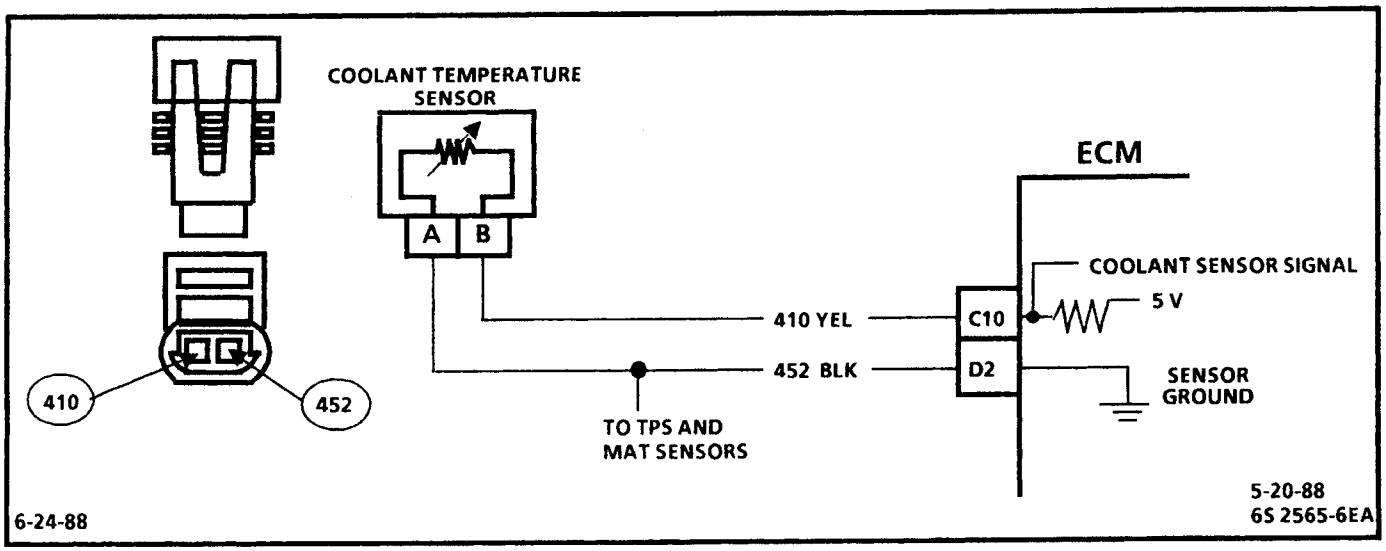
CODE 13

OXYGEN SENSOR CIRCUIT
(OPEN CIRCUIT)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



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

5-3-88
• 7S 3054-6E



CODE 14

COOLANT TEMPERATURE SENSOR CIRCUIT
(HIGH TEMPERATURE INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The coolant temperature sensor uses a thermistor to control the signal voltage to the ECM. The ECM applies a voltage on CKT 410 to the sensor. When the engine coolant is cold, the sensor (thermistor) resistance is high, therefore, the ECM will see high signal voltage.

As the engine coolant warms, the sensor resistance becomes less, and the voltage drops. At normal engine operating temperature (85°C to 95°C or 185°F to 203°F), the voltage will measure about 1.5 to 2.0 volts.

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

1. Code 14 will set if:
   - signal voltage indicates a coolant temperature above 130°C (266°F) for 3 seconds
2. This test will determine if CKT 410 is shorted to ground which will cause the conditions for Code 14.

Diagnostic Aids:

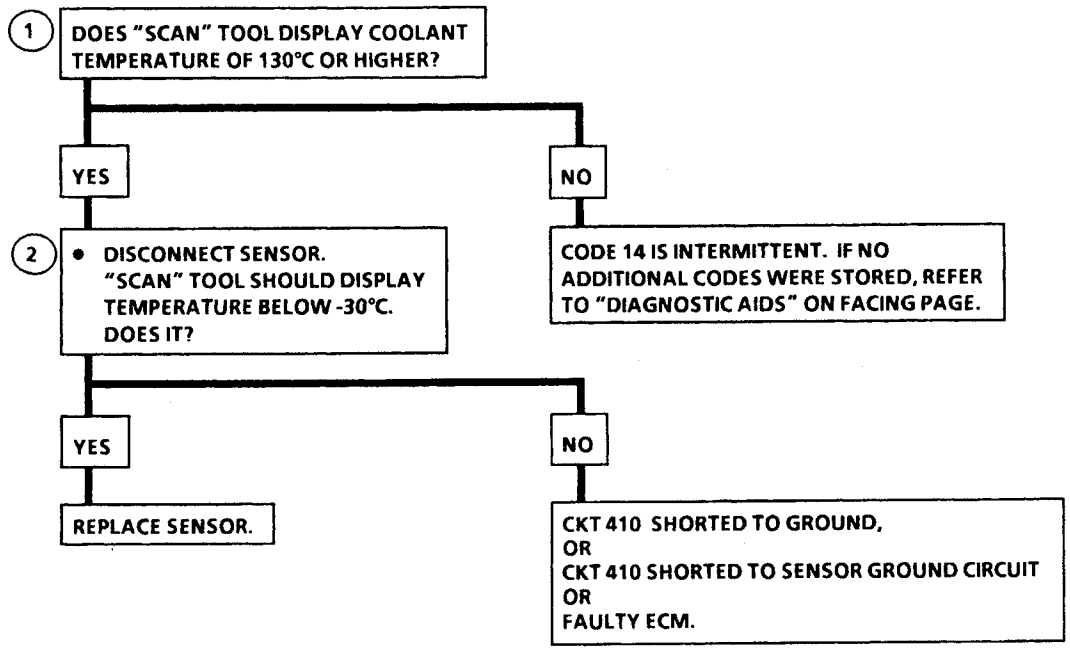
Check harness routing for a potential short to ground in CKT 410.

"Scan" tool displays engine temperature in degrees centigrade. After engine is started, the temperature should rise steadily to about 90°C (194°F), then stabilize when thermostat opens.

Refer to "Intermittents" in Section "B".

CODE 14

COOLANT TEMPERATURE SENSOR CIRCUIT
(HIGH TEMPERATURE INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

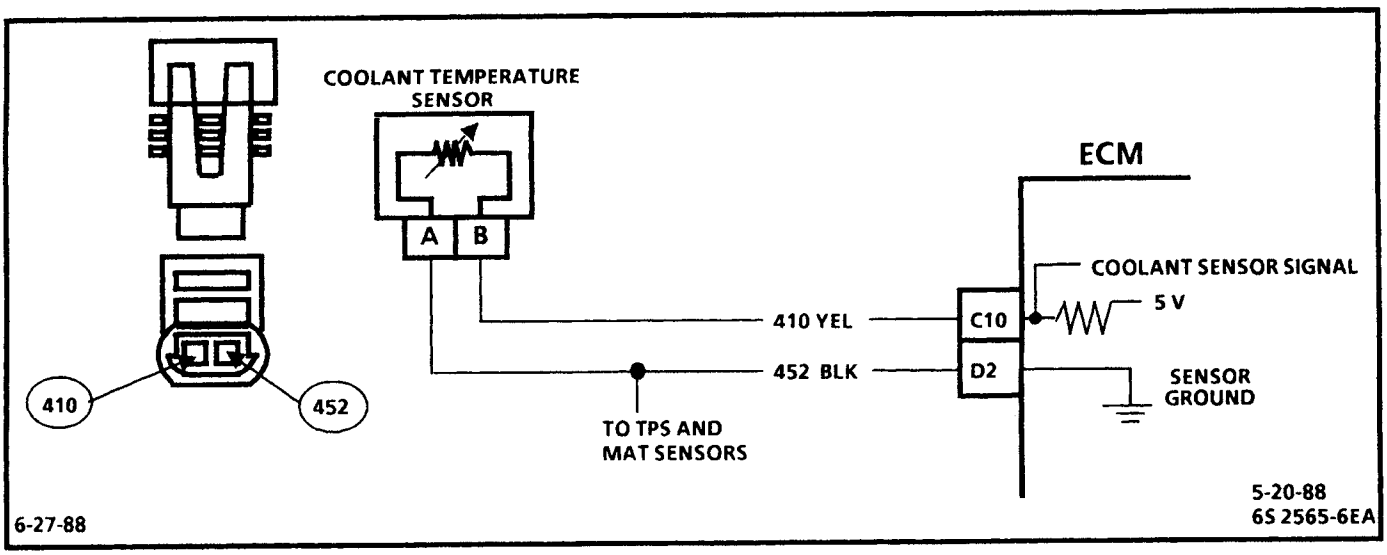


DIAGNOSTIC AID

COOLANT SENSOR		
TEMPERATURE VS. RESISTANCE VALUES (APPROXIMATE)		
°F	°C	OHMS
210	100	185
160	70	450
100	38	1,800
70	20	3,400
40	4	7,500
20	-7	13,500
0	-18	25,000
-40	-40	100,700

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

5-26-88
• 7S 3055-6E



CODE 15

COOLANT TEMPERATURE SENSOR CIRCUIT
(LOW TEMPERATURE INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The coolant temperature sensor uses a thermistor to control the signal voltage to the ECM. The ECM applies a voltage on CKT 410 to the sensor. When the engine coolant is cold, the sensor (thermistor) resistance is high, therefore, the ECM will see high signal voltage.

As the engine coolant warms, the sensor resistance becomes less, and the voltage drops. At normal engine operating temperature (85°C to 95°C or 185°F to 203°F), the voltage will measure about 1.5 to 2.0 volts at the ECM.

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

1. Code 15 will set if:
   - Engine coolant temperature less than -39° C (-38° F) for 3 seconds.
2. This test simulates a Code 14. If the ECM recognizes the low signal voltage, (high temperature) and the "Scan" reads 130°C (266°F) or above, the ECM and wiring are OK.
3. This test will determine if CKT 410 is open. There should be 5 volts present at sensor connector if measured with a DVM.

Diagnostic Aids:

A "Scan" tool reads engine coolant temperature in degrees centigrade. After engine is started the temperature should rise steadily to about 90°C (190°F) then stabilize when thermostat opens.

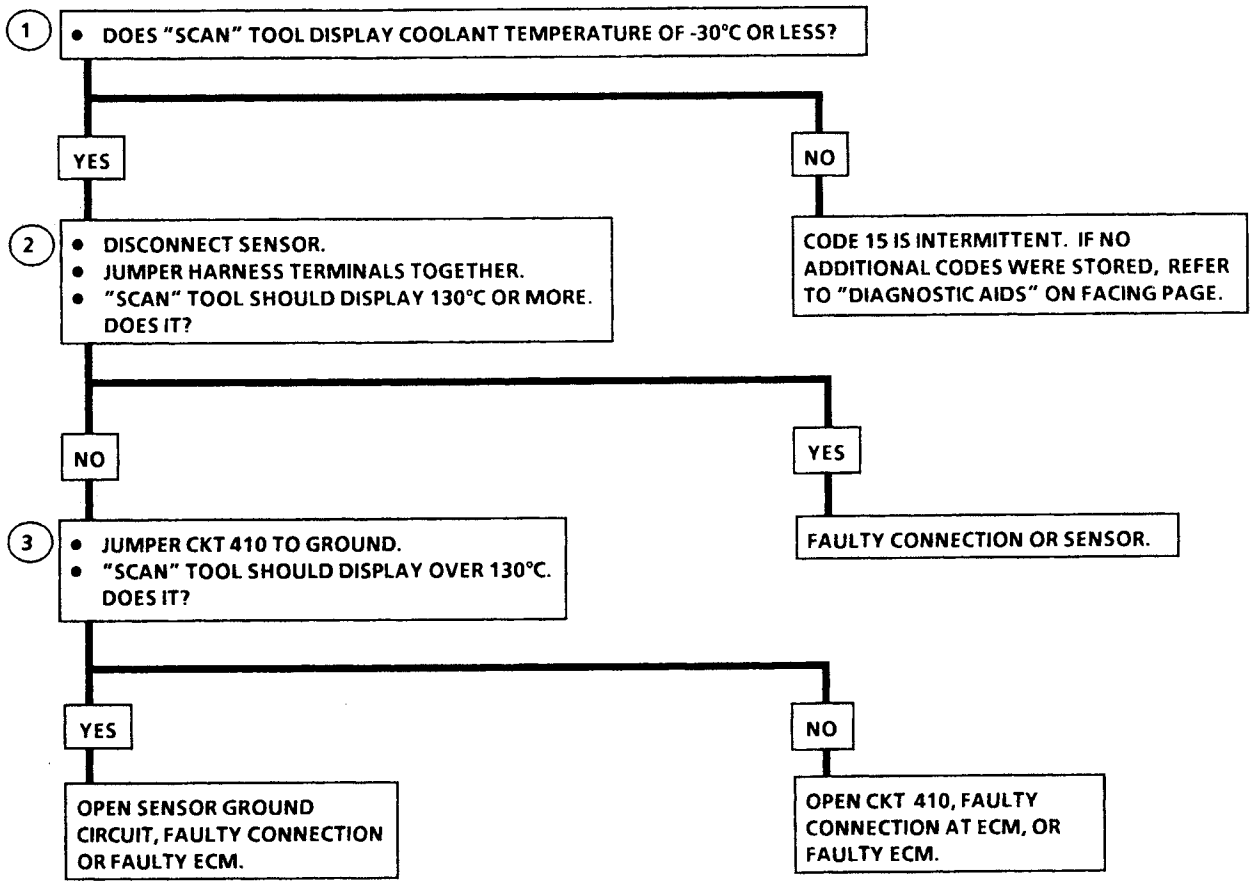
A faulty connection, or an open in CKT 410 or 452 will result in a Code 15.

If Code 21 or 23 is also set, check CKT 452 for faulty wiring or connections. Check terminals at sensor for good contact.

Refer to "Intermittents" in Section "B".

CODE 15

COOLANT TEMPERATURE SENSOR CIRCUIT
(LOW TEMPERATURE INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

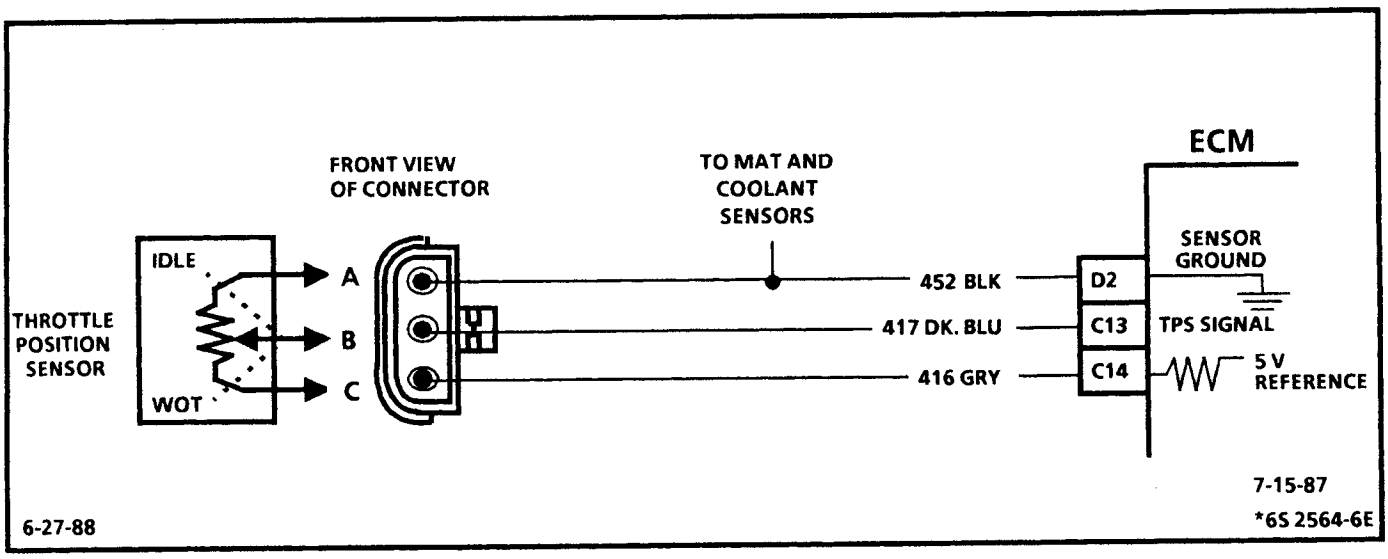


DIAGNOSTIC AID

COOLANT SENSOR		
TEMPERATURE TO RESISTANCE VALUES (APPROXIMATE)		
°F	°C	OHMS
210	100	185
160	70	450
100	38	1,800
70	20	3,400
40	4	7,500
20	-7	13,500
0	-18	25,000
-40	-40	100,700

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

5-26-88
• 7S 3261-6E



CODE 21

THROTTLE POSITION SENSOR (TPS) CIRCUIT
(SIGNAL VOLTAGE HIGH)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The throttle position sensor (TPS) provides a voltage signal that changes relative to the throttle blade. Signal voltage will vary from about .5 at idle to about 5 volts at wide open throttle.

The TPS signal is one of the most important inputs used by the ECM for fuel control and for most of the ECM controlled outputs.

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

1. Code 21 will set if:
   - TPS signal voltage is greater than 2.5 volts
   - Engine is running
   - Mass air flow is less than 12 GM/sec.
   - All conditions met for 3 seconds.

   OR
   - TPS signal voltage over about 4.8 volts with ignition "ON."

   With throttle closed, the TPS should read less than .62 volt. If it doesn't check adjustment.
2. With the TPS sensor disconnected, the TPS voltage should go low if the ECM and wiring are OK.
3. Probing CKT 452 with a test light checks the 5V return CKT, because a faulty 5 volts return will cause a Code 21.

Diagnostic Aids:

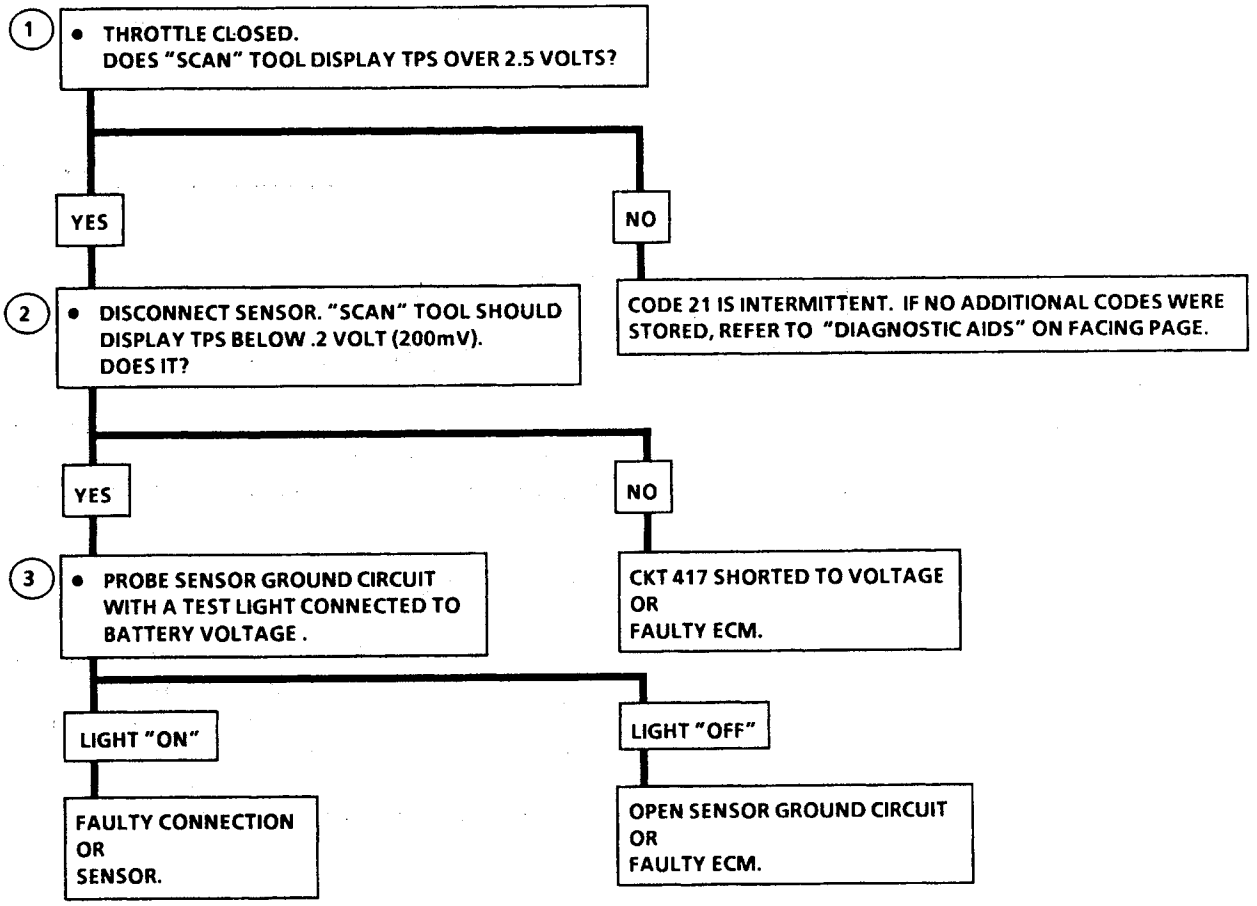
A "Scan" tool reads throttle position in volts. With ignition "ON" or at idle, voltage should read .54V ± .08V with throttle closed and increase at a steady rate as throttle is moved toward WOT.

An open in CKT 452 will result in a Code 21.

Refer to "Intermittents" in Section "B".

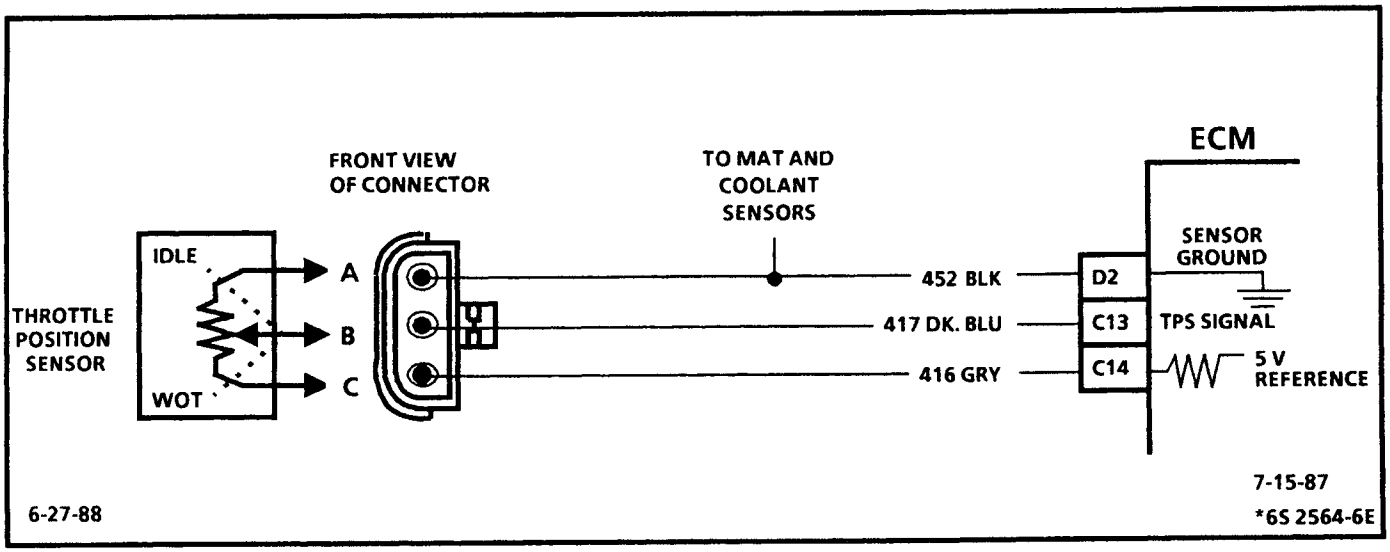
CODE 21

THROTTLE POSITION SENSOR (TPS) CIRCUIT
(SIGNAL VOLTAGE HIGH)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



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

3-9-88
• 7S 3057-6E



CODE 22

THROTTLE POSITION SENSOR (TPS) CIRCUIT
(SIGNAL VOLTAGE LOW)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The throttle position sensor (TPS) provides a voltage signal that changes relative to the throttle blade. Signal voltage will vary from about .5 at idle to about 5 volts at wide open throttle.

The TPS signal is one of the most important inputs used by the ECM for fuel control and for most of the ECM controlled outputs.

Test Description:

Numbers below refer to circled numbers on the diagnostic chart.

1. Code 22 will set if:
   - Engine running
   - TPS signal voltage is less than about .2 volt for 3 seconds.
2. Simulates Code 21: (high voltage) If the ECM recognizes the high signal voltage the ECM and wiring are OK.
3. TPS adjustment: With throttle closed, the TPS voltage reading should be .54V ± .08V.
4. This simulates a high signal voltage to check for an open in CKT 417.

Diagnostic Aids:

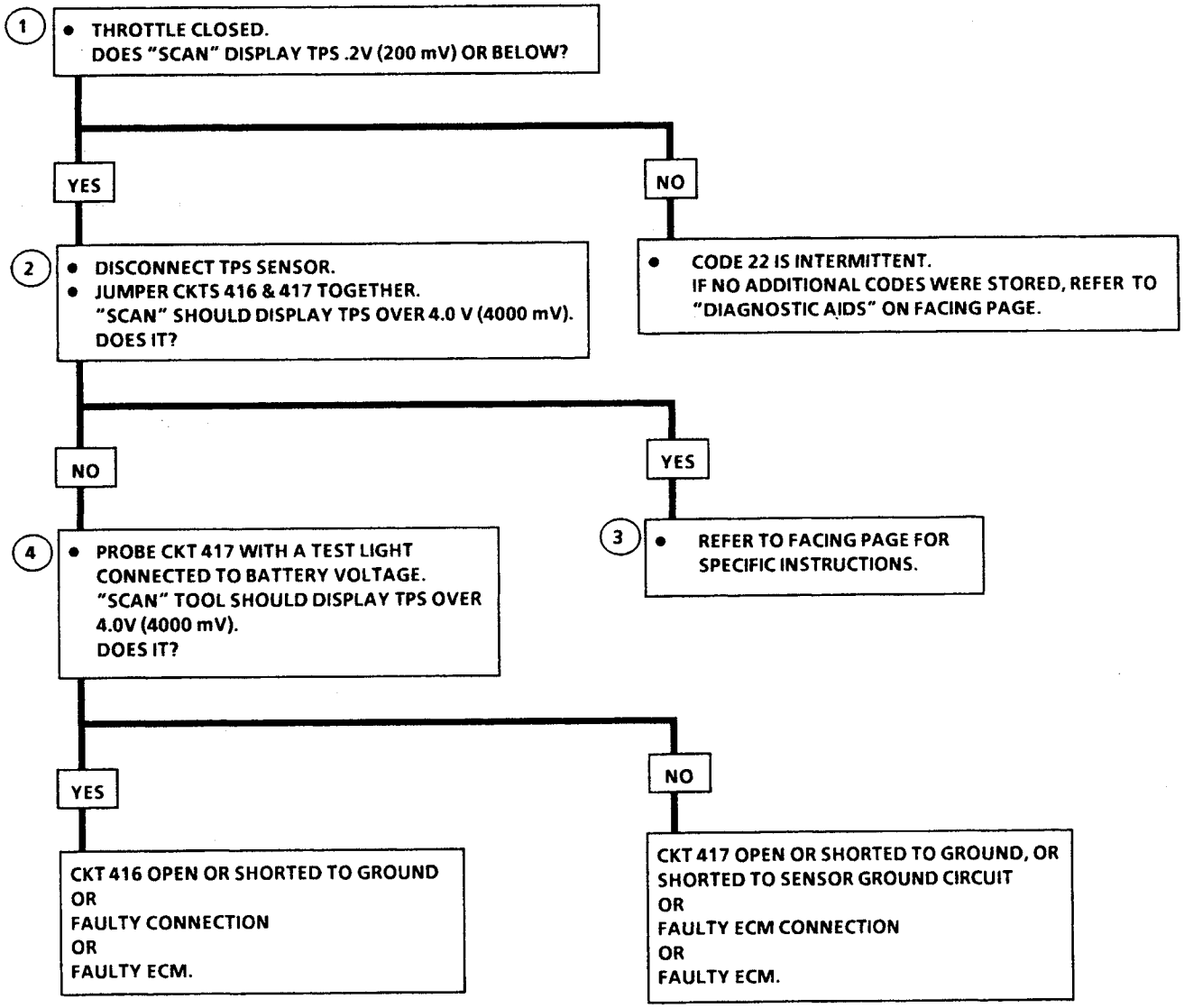
A "Scan" tool reads throttle position in volts. With ignition "ON" or at idle, voltage should read .54V ± .08V with throttle closed and increase at a steady rate as throttle is moved toward WOT.

An open or short to ground in CKTs 416 or 417 will result in a Code 22.

Refer to "Intermittents" in Section "B".

CODE 22

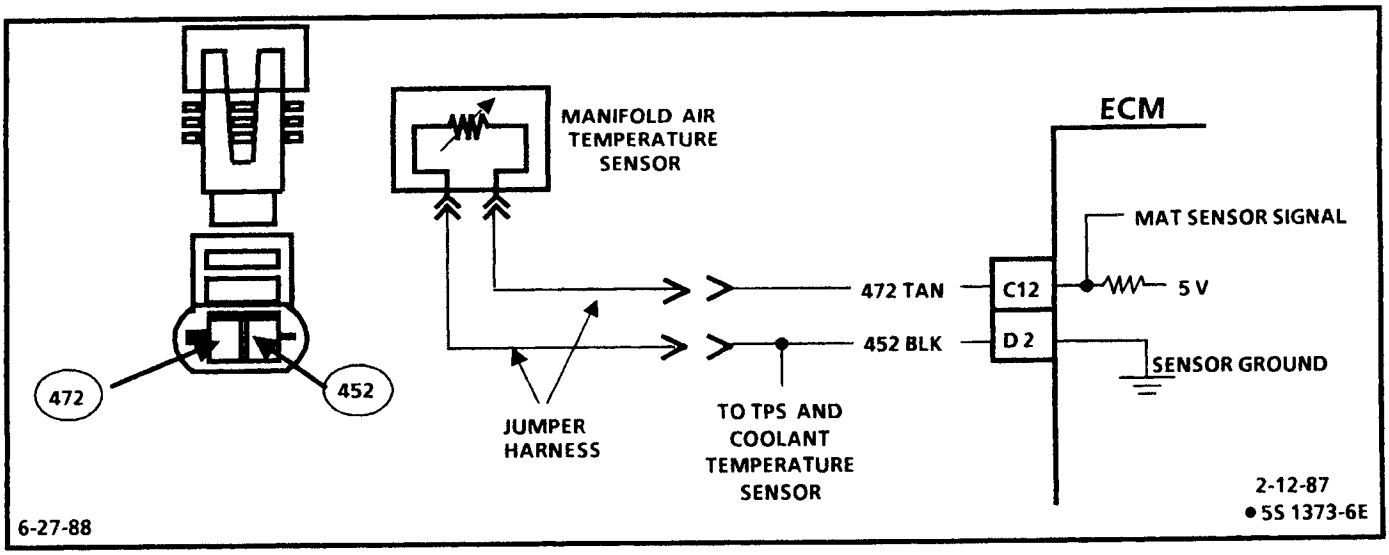
THROTTLE POSITION SENSOR (TPS) CIRCUIT
(SIGNAL VOLTAGE LOW)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



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

3-10-88

•7S 3365-6E



CODE 23

MANIFOLD AIR TEMPERATURE (MAT) SENSOR CIRCUIT
(LOW TEMPERATURE INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The manifold air temperature (MAT) sensor uses a thermistor to control the signal voltage to the ECM. The ECM applies a voltage (about 5 volts) on CKT 472 to the sensor. When the manifold air is cold, the sensor (thermistor) resistance is high, therefore, the ECM will see a high signal voltage. If the manifold air is warm, the sensor (thermistor) resistance is low, therefore, the ECM will see a low voltage.

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

1. Code 23 will set if:
   - A signal voltage indicates a manifold air temperature below −30°C (-22°F) for 12 seconds.
   - Time since engine start is 1 minute or longer.
   - No VSS (vehicle not moving)
2. A Code 23 will set, due to an open sensor, wire or connection. This test will determine if the wiring and ECM are OK. The MAT sensor is difficult to reach and this test can be performed by disconnecting the MAT jumper harness connector. If the "Scan" indicates a temperature of over 130°C (266°F) the jumper harness to the sensor should be checked before replacing the sensor.
3. This will determine if the signal CKT 472 or the 5V return CKT 452 is open.

Diagnostic Aids:

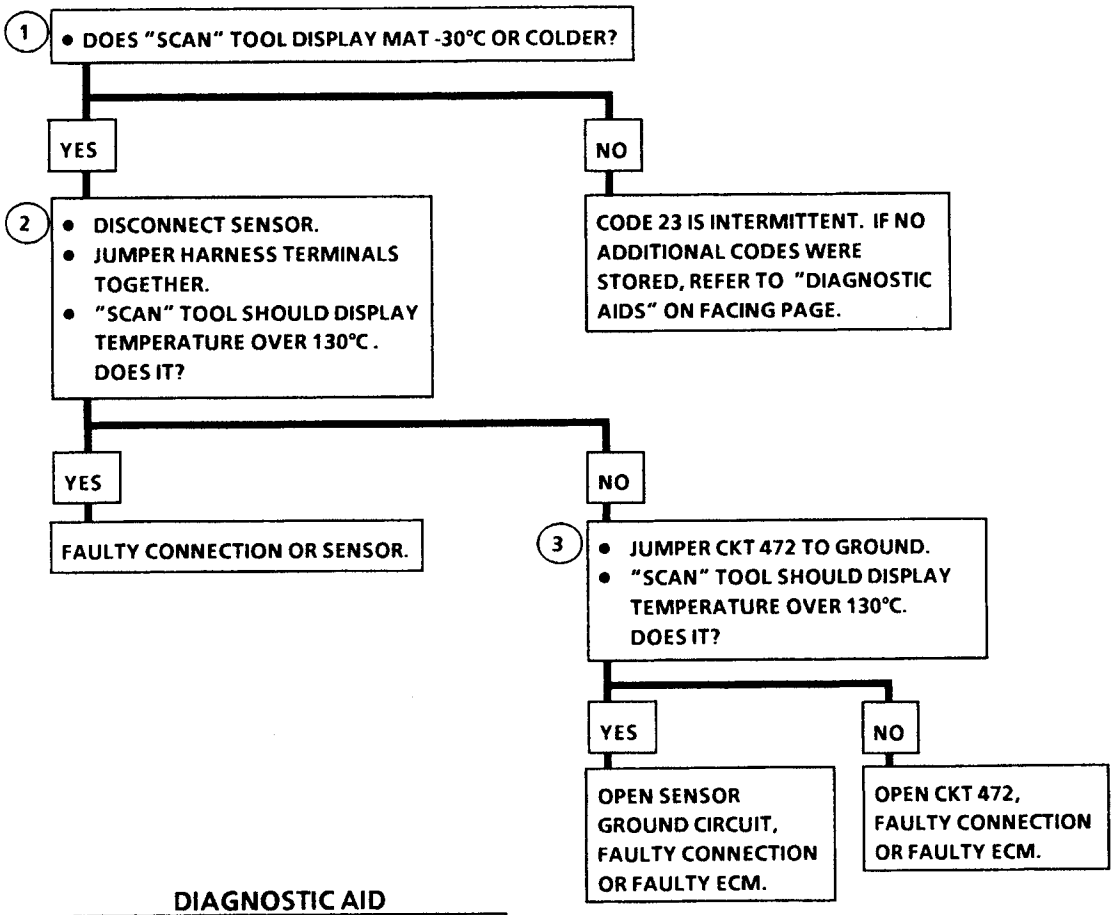
A "Scan" tool reads temperature of the air entering the engine and should read close to ambient air temperature when engine is cold, and rises as underhood temperature increases.

Carefully check harness and connections for possible open CKT 472 or CKT 452.

Refer to "Intermittents" in Section "B".

CODE 23

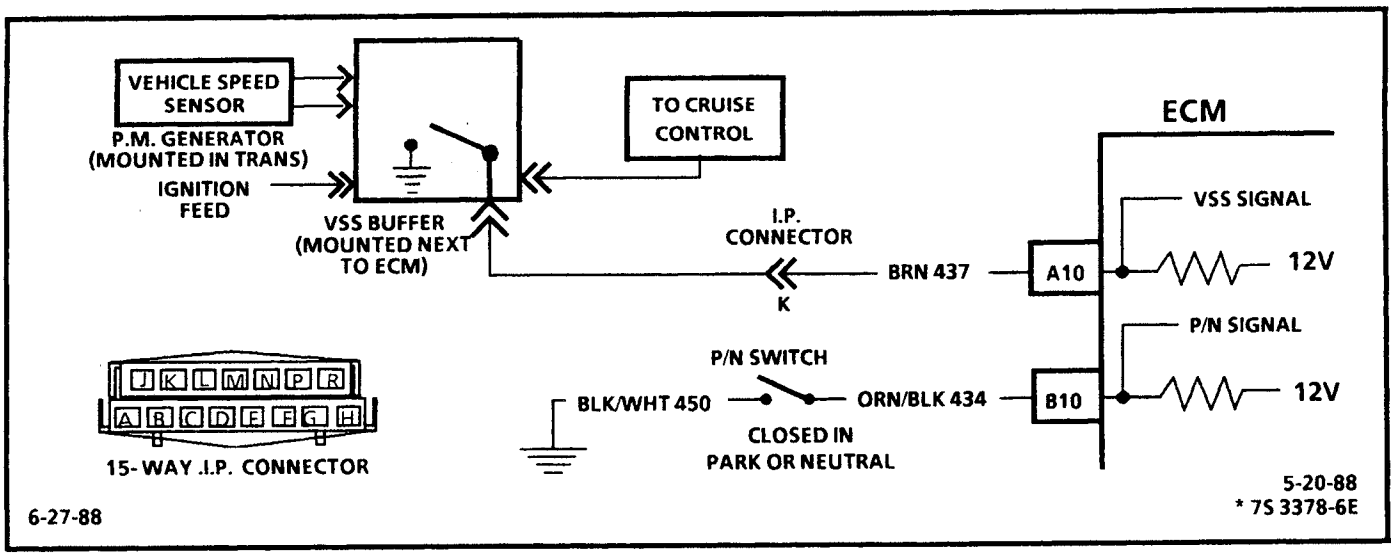
MANIFOLD AIR TEMPERATURE (MAT) SENSOR CIRCUIT
(LOW TEMPERATURE INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



DIAGNOSTIC AID

MAT SENSOR		
TEMPERATURE VS. RESISTANCE VALUES (APPROXIMATE)		
°F	°C	OHMS
210	100	185
160	70	450
100	38	1,800
70	20	3,400
40	4	7,500
20	-7	13,500
0	-18	25,000
-40	-40	100,700

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



CODE 24

VEHICLE SPEED SENSOR (VSS) CIRCUIT
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The ECM applies and monitors 12 volts on CKT 437. CKT 437 connects to the vehicle speed sensor buffer which alternately grounds CKT 437 when drive wheels are turning. This pulsing action takes place about 2000 times per mile and the ECM will calculate vehicle speed based on the time between "pulses."

A "Scan" tool reading should closely match with speedometer reading with drive wheels turning.

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

1. Code 24 will set if:
   - CKT 437 voltage is constant.
   - Engine speed between 1400 and 3600 rpm.
   - Less than 2% throttle opening, about .10V (100mV) above closed throttle.
   - Low load condition (low air flow).
   - Not in park or neutral.
   - All conditions must be met for 4 seconds.

   These conditions are met during a road load deceleration.
2. A voltage of less than 1 volt at the 15-way I/P connector indicates that the CKT 437 wire may be shorted to ground. Disconnect CKT 437 at the VSS buffer. If voltage now reads above 10 volts, the VSS buffer is faulty. If voltage remains less than 10 volt, then CKT 437 wire is grounded or open. If 437 is not grounded or open, check for a faulty ECM connector or ECM.

Diagnostic Aids:

If "Scan" displays vehicle speed, check park/neutral switch CHART C-1A on vehicle with auto transmission. If switch is OK, check for intermittent connections. An open or short to ground in CKT 437 will result in a Code 24. If the customer also complained about a loss of mph on the I.P., check the P.M. generator circuit. Refer to Section "8A" for complete wiring diagram.

Refer to "Intermittents" in Section "B".

CODE 24

VEHICLE SPEED SENSOR (VSS) CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

NOTE: TO PREVENT MISDIAGNOSIS, THE TECHNICIAN SHOULD REVIEW ELECTRICAL SECTION "8A" OR THE ELECTRICAL TROUBLESHOOTING MANUAL AND IDENTIFY THE TYPE OF VEHICLE SPEED SENSOR USED PRIOR TO USING THIS CHART. DISREGARD CODE 24 IF SET WHEN DRIVE WHEELS ARE NOT TURNING.

(1)
- ASSUMES SPEEDOMETER IS WORKING OK.
- RAISE DRIVE WHEELS.
- WITH ENGINE IDLING IN GEAR, "SCAN" SHOULD DISPLAY MPH ABOVE 0.
  DOES IT?

YES → CODE 24 IS INTERMITTENT. IF NO ADDITIONAL CODES WERE STORED, REFER TO " DIAGNOSTIC AIDS " ON FACING PAGE .

NO →
- ENGINE STILL IDLING IN GEAR.
- BACKPROBE CKT 437 AT IP CONNECTOR WITH VOLTMETER TO GROUND.
- IS VOLTAGE VARYING BETWEEN 1 AND 12 VOLTS ?

YES → FAULTY ECM

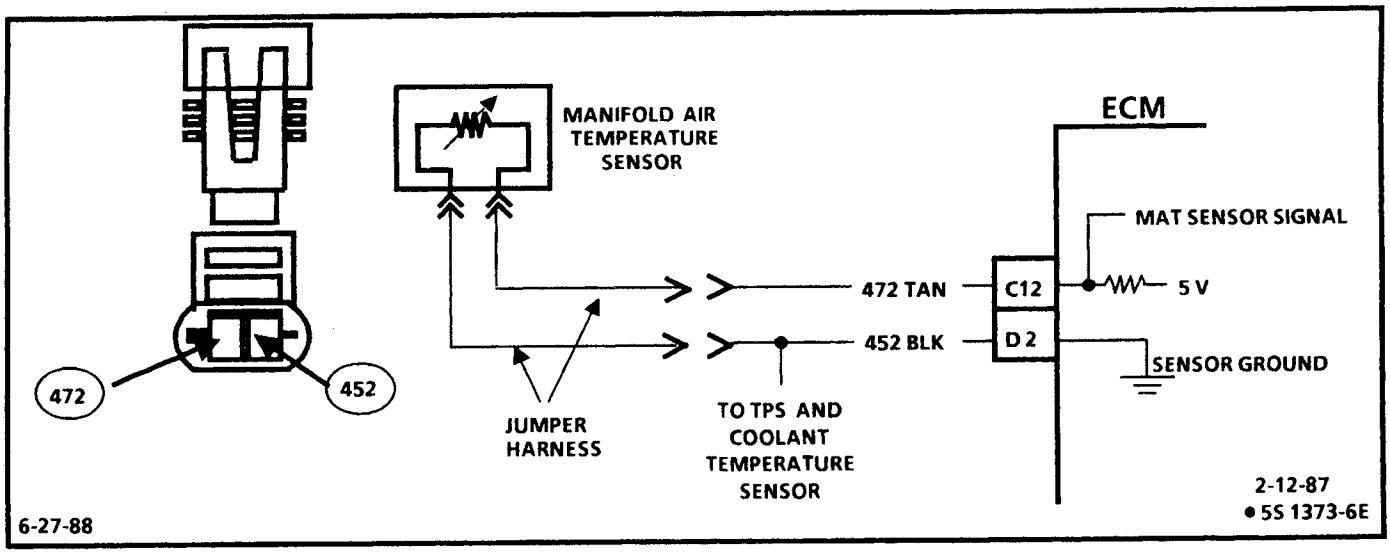
NO →

(2)
- IGNITION "OFF".
- DISCONNECT VSS BUFFER
- IGNITION "ON."
- BACK PROBE CKT 437 AT IP CONNECTOR WITH VOLTMETER TO GROUND.
- SHOULD DISPLAY 10 VOLTS OR MORE.
  DOES IT?

YES →
CKT 437 OPEN BETWEEN IP 15-WAY CONNECTOR AND VSS BUFFER CONNECTOR
OR
FAULTY BUFFER.

NO →
CKT 437 SHORTED TO GROUND, OPEN BETWEEN ECM AND IP 15-WAY CONNECTOR
OR
FAULTY ECM.

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



CODE 25

MANIFOLD AIR TEMPERATURE (MAT) SENSOR CIRCUIT
(HIGH TEMPERATURE INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The manifold air temperature (MAT) sensor uses a thermistor to control the signal-voltage to the ECM. The ECM applies a voltage (about 5 volts) on CKT 472 to the sensor. When manifold air is cold, the sensor (thermistor) resistance is high, therefore, the ECM will see a high signal voltage. If the manifold air is warm, the sensor (thermistor) resistance is low, therefore, the ECM will see a low signal voltage.

Test Description:

Numbers below refer to circled numbers on the diagnostic chart.

1. Code 25 will set if:
   - Signal voltage indicates a manifold air temperature greater than 150°C (302° F) for 2 seconds.
   - Time since engine start is 2 minutes or longer.
   - A vehicle speed is present, greater than 5 MPH.

Diagnostic Aids:

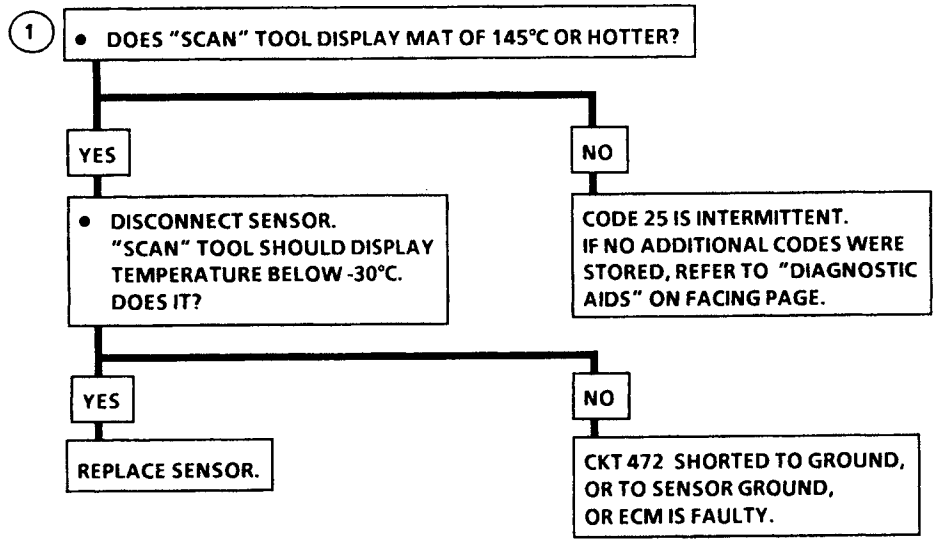
A "Scan" tool reads temperature of the air entering the engine and should read close to ambient air temperature when engine is cold, and rise as underhood temperature increases.

Check harness routing for possible short to ground in CKT 472.

Refer to "Intermittents" in Section "B".

CODE 25

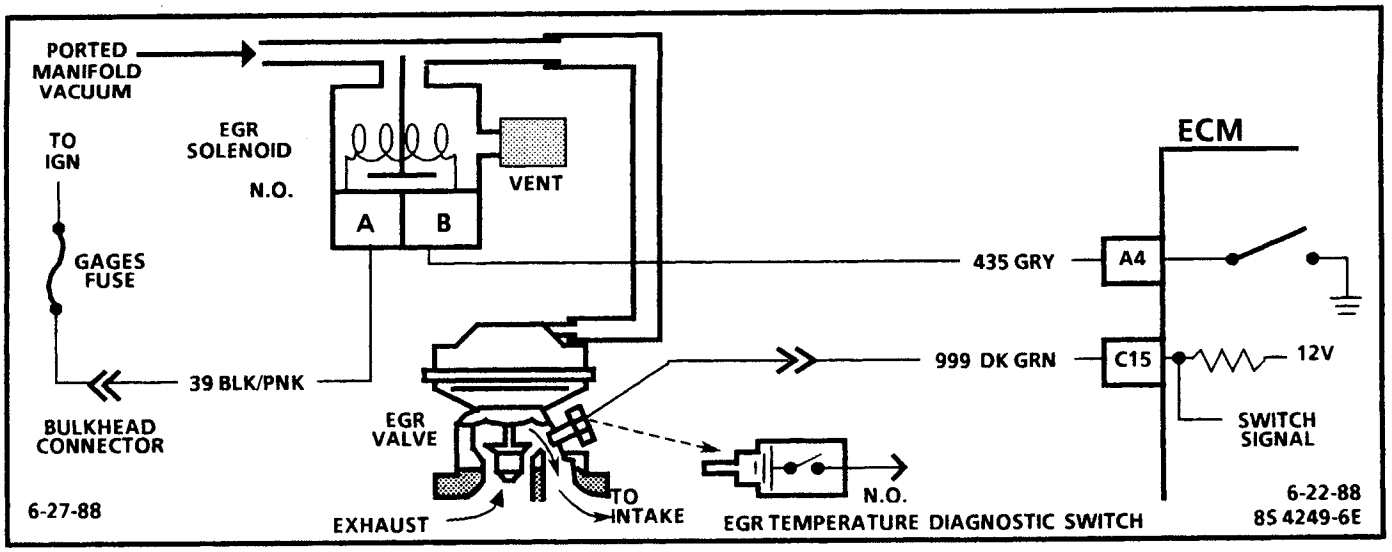
MANIFOLD AIR TEMPERATURE (MAT) SENSOR CIRCUIT
(HIGH TEMPERATURE INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



DIAGNOSTIC AID

MAT SENSOR		
TEMPERATURE VS. RESISTANCE VALUES (APPROXIMATE)		
°F	°C	OHMS
210	100	185
160	70	450
100	38	1,800
70	20	3,400
40	4	7,500
20	-7	13,500
0	-18	25,000
-40	-40	100,700

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



CODE 32

EXHAUST GAS RECIRCULATION (EGR) CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The EGR valve vacuum is controlled by an ECM controlled solenoid. The ECM will turn the EGR "ON" and "OFF" (Duty Cycle) by grounding CKT 435. The duty cycle is calculated by the ECM, based on information from the coolant and mass air flow sensor and engine rpms. There should be (NO EGR) when in park or neutral, TPS input below a specified value or TPS indicating wide open throttle (WOT).

With the ignition "ON," engine stopped, the EGR solenoid is de-energized and, by grounding the diagnostic "test" terminal, the solenoid is energized.

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

Code 32 means that the EGR diagnostic switch was closed during start-up or that the switch was not detected closed under the following conditions:

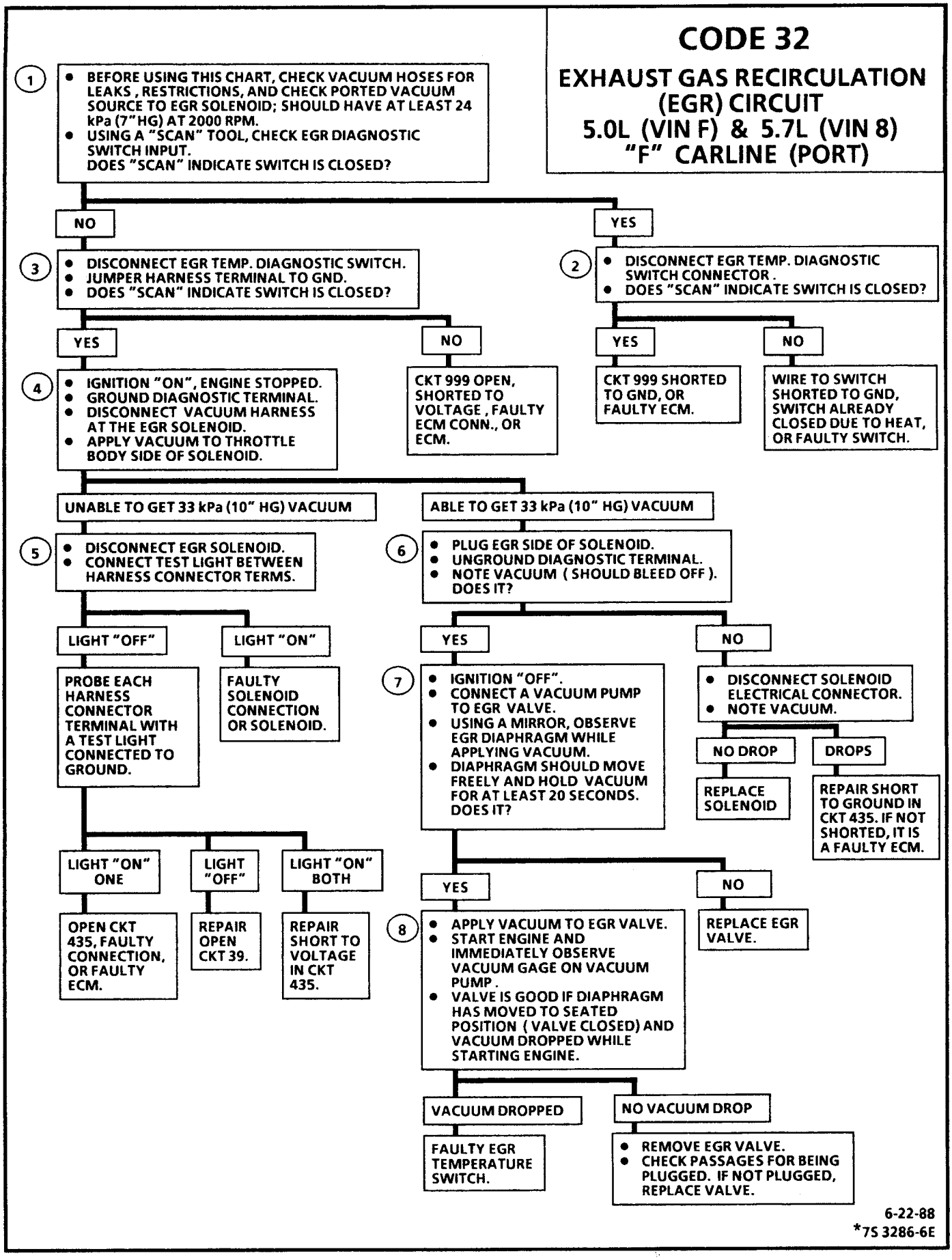
- Coolant temperature greater than 80°C (176°F).
- EGR duty cycle commanded by the ECM is greater than 48%.
- TPS less than wide open throttle (WOT), but not at idle.
- Codes 21,22,33,34 not present.
- All conditions above must be met for about 4 minutes.

If the switch is detected closed during start-up, or if the switch is detected open when the above conditions are met, the "Service Engine Soon" light will remain "ON" unless the switch changes state.

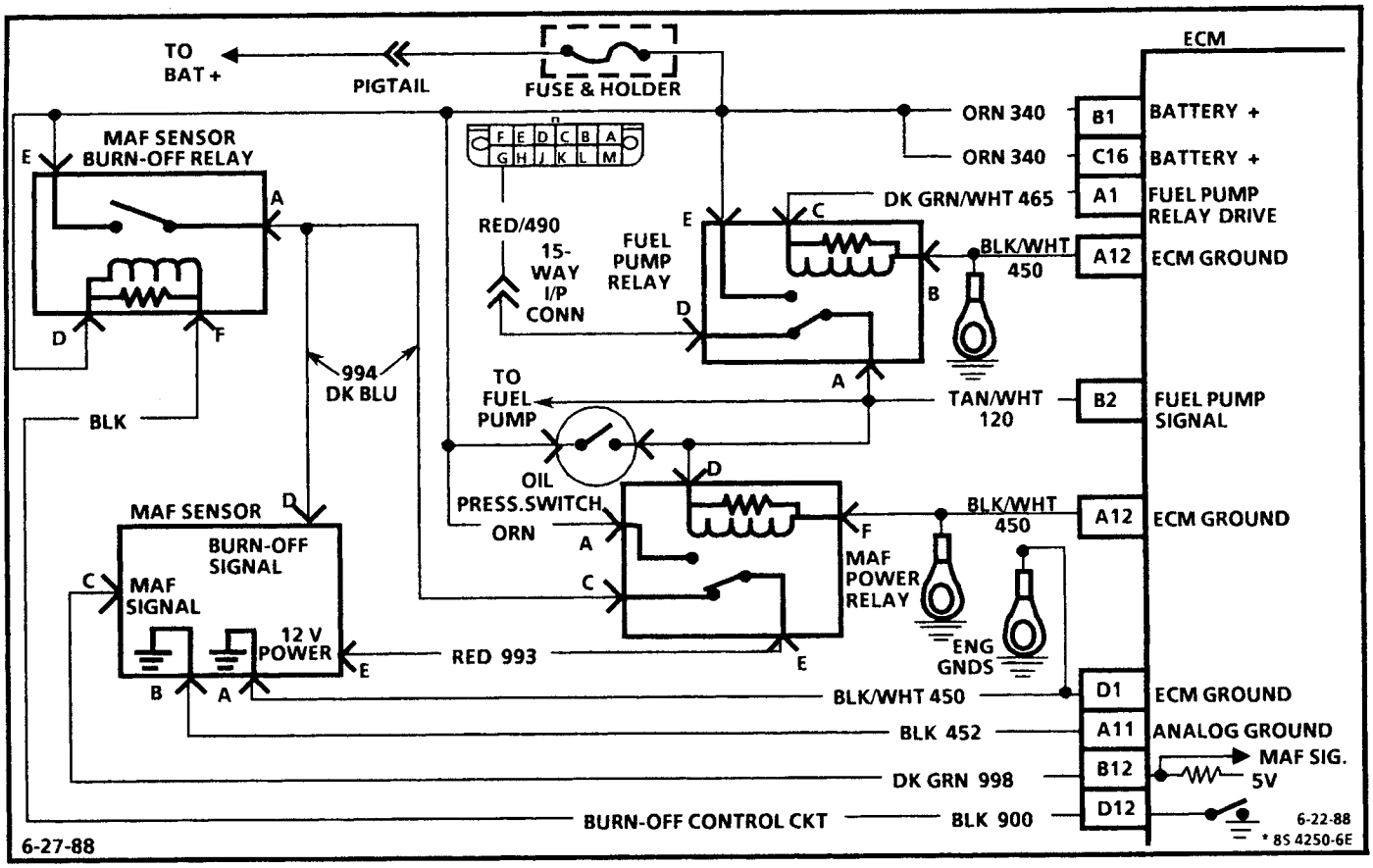
1. This test will determine if the ECM set the code due to CKT 999 being grounded on start-up. If the "Scan" does not indicate the switch is closed but the customer complained of a "Service Engine Soon" light after start-up, then this circuit should be checked carefully for an intermittent grounded condition.
2. If the "Scan" indicates the switch is no longer closed after disconnecting it, be sure the switch is not closed due to heat. (EGR being "ON" prior to test).
3. This test will check for a possible open in CKT 999. The ECM supplies 9-12 volts to CKT 999 and the "Scan" should indicate switch being closed when CKT 999 is grounded.
4. By grounding the diagnostic "test" terminal, the EGR solenoid should close, and allow vacuum to be applied and the vacuum should hold.
5. This test will determine if the electrical control part of the system is at fault or if the connector or solenoid are at fault.
6. By plugging the EGR valve side and ungrounding the diagnostic "test" terminal, the solenoid valve should open and allow vacuum to bleed off through the vent.
7. With the engine not running and vacuum is applied to the valve, the valve should move to the fully open position.
8. This engine uses a negative back pressure valve and the valve should close when the engine is cranked over.

CODE 32

EXHAUST GAS RECIRCULATION (EGR) CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



6-22-88
*7S 3286-6E



CODE 33

MASS AIR FLOW (MAF) SENSOR CIRCUIT
(GM/SEC HIGH)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The mass air flow (MAF) sensor measures the amount of air which passes through it. The ECM uses this information to determine the operating condition of the engine to control fuel delivery. For a detailed description of the MAF sensor operation refer to Section "C".

The oil pressure switch or the ECM, through control of the fuel pump relay, will provide 12 volts for the MAF power relay which provides the 12 volts needed by the MAF sensor.

The ECM provides a current limiting 5 volts on the signal line (CKT 998). The MAF sensor then changes the signal by dropping the voltage, so that with low air flow the ECM sees a low voltage and a high air flow will cause the ECM to see near the 5 volts supply.

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

Code 33 indicates: ECM has seen flow in excess of 45 grams per second (above about 2.2 volts) for one second when:

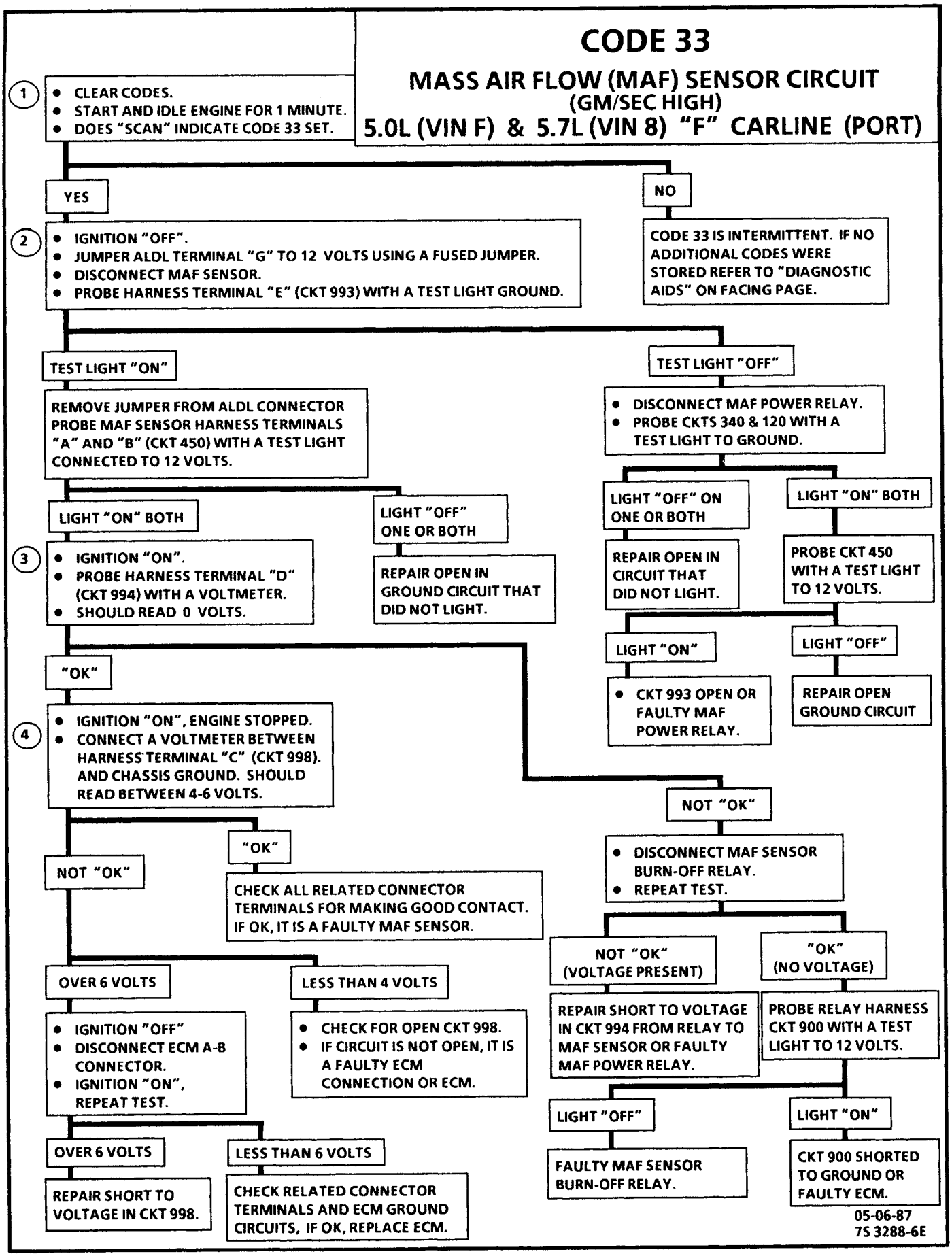
- Engine is first started
  OR
- TPS is less than $\frac{1}{4}$ throttle.
- RPM is less than 2000.

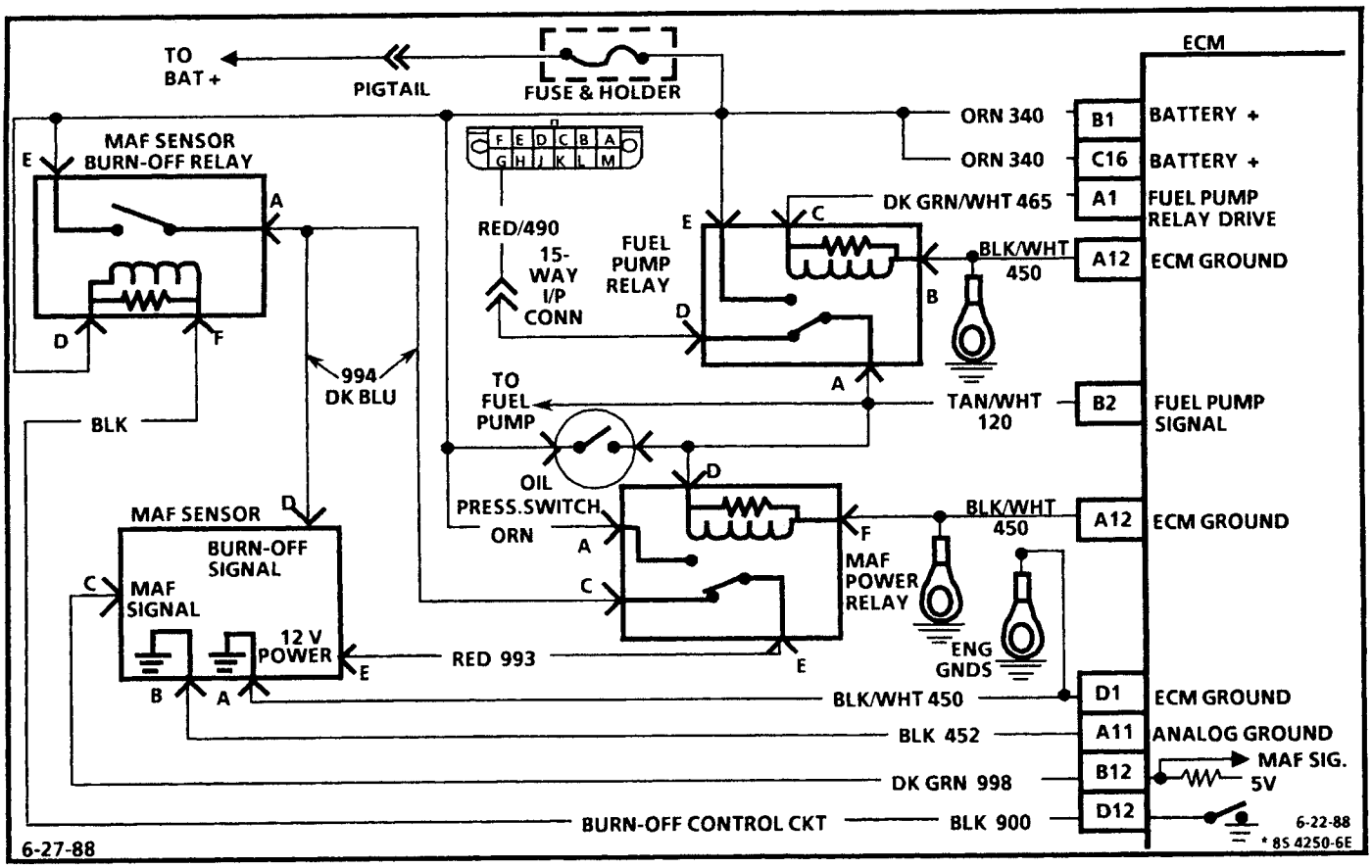
Due to the 5 volt pull-up resistor in the ECM if CKT 998 becomes open, the ECM will see a high voltage signal and set a Code 33.

1. This test will determine if the conditions to set the code still exist.
2. With the ALDL terminal "G" jumpered to 12 volts, there should be 12 volts at the sensor. If no voltage is present, make sure that the fuel pump is running. If not, repair fuel pump circuit.
3. If a burn-off signal is present at the MAF sensor with the engine running, a Code 33 will set. Be sure no voltage is present on CKT 994 for the first 2 seconds after the ignition is turned "ON," or after the 2 second period.
4. The ECM sources a voltage (about 5 volts) to the MAF sensor on CKT 998. This test checks for that voltage.

Diagnostic Aids:

Intermittent: By jumpering the fuel pump test terminal (G term. of ALDL) to 12 volts, the MAF sensor will stay powered up and the signal line should see a low voltage, less than 250 mV or low grams per second on a "Scan" tool. By wiggling the related wiring the intermittent may be detected. Also, an erratic signal with the engine running may indicate faulty wiring or components.


CODE 33
MASS AIR FLOW (MAF) SENSOR CIRCUIT
(GM/SEC HIGH)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)
1
• CLEAR CODES.
• START AND IDLE ENGINE FOR 1 MINUTE.
• DOES "SCAN" INDICATE CODE 33 SET.
YES
NO
CODE 33 IS INTERMITTENT. IF NO ADDITIONAL CODES WERE STORED REFER TO "DIAGNOSTIC AIDS" ON FACING PAGE.
2
• IGNITION "OFF".
• JUMPER ALDL TERMINAL "G" TO 12 VOLTS USING A FUSED JUMPER.
• DISCONNECT MAF SENSOR.
• PROBE HARNESS TERMINAL "E" (CKT 993) WITH A TEST LIGHT GROUND.
TEST LIGHT "ON"
TEST LIGHT "OFF"
REMOVE JUMPER FROM ALDL CONNECTOR PROBE MAF SENSOR HARNESS TERMINALS "A" AND "B" (CKT 450) WITH A TEST LIGHT CONNECTED TO 12 VOLTS.
• DISCONNECT MAF POWER RELAY.
• PROBE CKTS 340 & 120 WITH A TEST LIGHT TO GROUND.
LIGHT "ON" BOTH
LIGHT "OFF" ONE OR BOTH
LIGHT "OFF" ON ONE OR BOTH
LIGHT "ON" BOTH
3
• IGNITION "ON".
• PROBE HARNESS TERMINAL "D" (CKT 994) WITH A VOLTMETER.
• SHOULD READ 0 VOLTS.
REPAIR OPEN IN GROUND CIRCUIT THAT DID NOT LIGHT.
REPAIR OPEN IN CIRCUIT THAT DID NOT LIGHT.
PROBE CKT 450 WITH A TEST LIGHT TO 12 VOLTS.
LIGHT "ON"
LIGHT "OFF"
"OK"
• CKT 993 OPEN OR FAULTY MAF POWER RELAY.
REPAIR OPEN GROUND CIRCUIT
4
• IGNITION "ON", ENGINE STOPPED.
• CONNECT A VOLTMETER BETWEEN HARNESS TERMINAL "C" (CKT 998). AND CHASSIS GROUND. SHOULD READ BETWEEN 4-6 VOLTS.
NOT "OK"
"OK"
NOT "OK"
• DISCONNECT MAF SENSOR BURN-OFF RELAY.
• REPEAT TEST.
CHECK ALL RELATED CONNECTOR TERMINALS FOR MAKING GOOD CONTACT. IF OK, IT IS A FAULTY MAF SENSOR.
NOT "OK" (VOLTAGE PRESENT)
"OK" (NO VOLTAGE)
OVER 6 VOLTS
LESS THAN 4 VOLTS
REPAIR SHORT TO VOLTAGE IN CKT 994 FROM RELAY TO MAF SENSOR OR FAULTY MAF POWER RELAY.
PROBE RELAY HARNESS CKT 900 WITH A TEST LIGHT TO 12 VOLTS.
• IGNITION "OFF"
• DISCONNECT ECM A-B CONNECTOR.
• IGNITION "ON", REPEAT TEST.
• CHECK FOR OPEN CKT 998.
• IF CIRCUIT IS NOT OPEN, IT IS A FAULTY ECM CONNECTION OR ECM.
LIGHT "OFF"
LIGHT "ON"
OVER 6 VOLTS
LESS THAN 6 VOLTS
FAULTY MAF SENSOR BURN-OFF RELAY.
CKT 900 SHORTED TO GROUND OR FAULTY ECM.
REPAIR SHORT TO VOLTAGE IN CKT 998.
CHECK RELATED CONNECTOR TERMINALS AND ECM GROUND CIRCUITS, IF OK, REPLACE ECM.
05-06-87
7S 3288-6E



CODE 34

MASS AIR FLOW (MAF) SENSOR CIRCUIT
(GM/SEC LOW)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The mass air flow (MAF) sensor measures the amount of air which passes through it. The ECM uses this information to determine the operating condition of the engine to control fuel delivery. For a detailed description of the MAF sensor operation refer to Section "C."

The oil pressure switch or the ECM, through control of the fuel pump relay, will provide 12 volts for the MAF power relay which provides the 12 volts needed by the MAF sensor.

The ECM provides a current limiting 5 volts on the signal line (CKT 998). The MAF sensor then changes the signal by dropping the voltage so that with low air flow the ECM sees a low voltage and a high air flow will cause the ECM to see near the 5 volts supply.

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

Code 34 indicates: ECM has seen low air flow less than 2.5 gm/sec. (low voltage) for one second when:

- Engine is first started

  OR

- Rpm above 600
- TPS above 6%. To obtain 6%, the engine has to be running at about 2300 rpm in neutral.

1. A Code 34 may be caused by an engine that exhibits a low, rough, unstable or incorrect idle problem. If this condition exists, disconnect the MAF sensor. If the unstable idle still exists, refer to Symptoms in Section "B". (Rough, unstable, incorrect idle, or stalling.) If the idle improved with the sensor disconnected, replace it.
2. This test will determine if the conditions still exist to set a code or if the problem is intermittent.
3. With the MAF sensor disconnected, the ECM should see a high signal voltage and set a Code 33. If a Code 34 resets then the wiring or the ECM is at fault.

Diagnostic Aids:

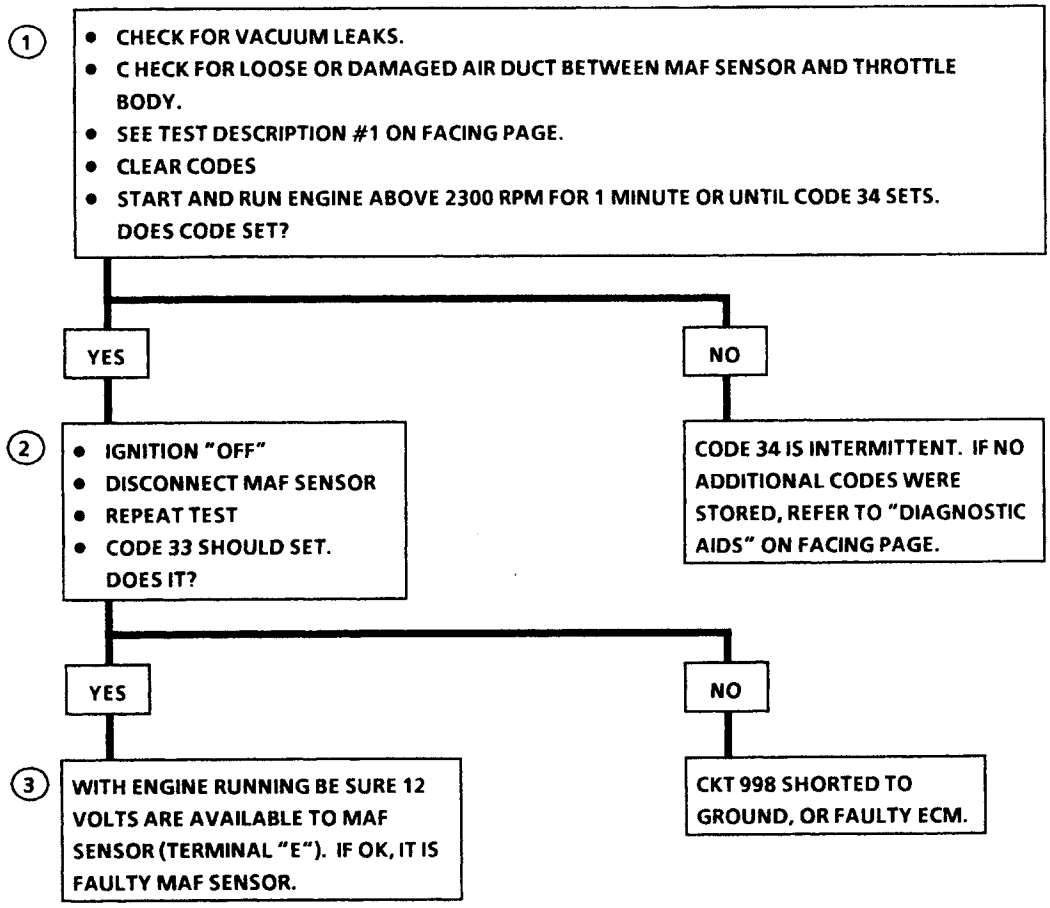
A low, rough or unstable idle could result in a Code 34. Be sure air ducts are tight and not cracked, throughly inspect the induction for vacuum leaks. Check CKT 998 for short to ground.

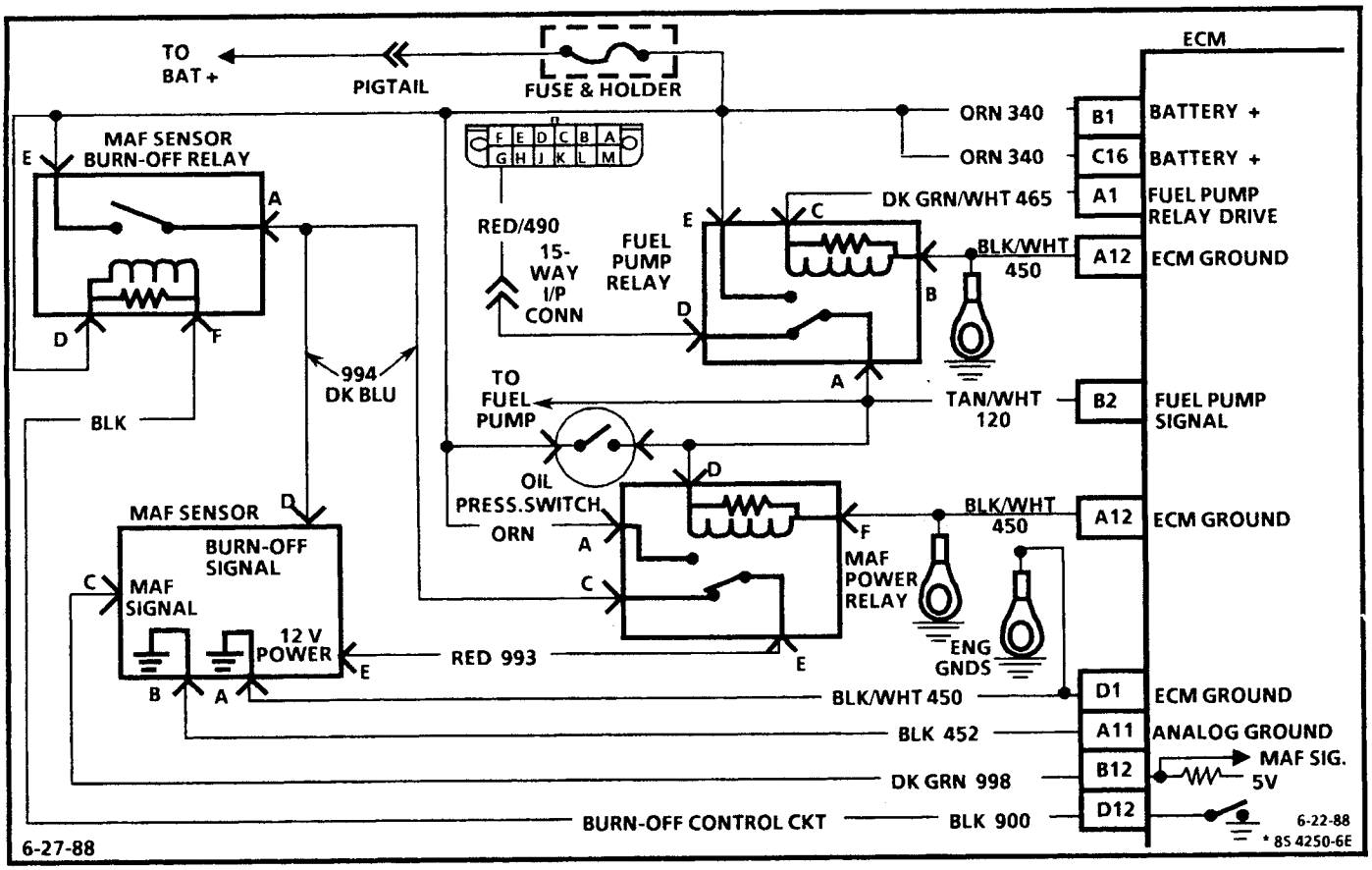
Code 34 could also result from a dirty or misadjusted throttle body. Refer to Section "C2" for minimum idle speed check.

CODE 34

MASS AIR FLOW (MAF) SENSOR CIRCUIT (GM/SEC LOW)

5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)





CODE 36

MASS AIR FLOW (MAF) BURN-OFF CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The mass air flow (MAF) sensor measures the amount of air which passes through it. The ECM uses this information to determine the operating condition of the engine to control fuel delivery. For a detailed description of the MAF sensor operation see Section "C".

Due to contaminates in the atmosphere, a residue may build up on the MAF sensor sensing wire. To maintain an accurate reading from the sensor, a "burn-off" cycle will occur when the ignition is turned "OFF" after the engine had been running a specified amount of time and engine warmed up. The burn-off function is enabled when the ECM grounds CKT 900 which energizes the MAF sensor burn-off relay. With the MAF sensor burn-off relay energized, voltage will be supplied to the MAF sensor terminal "D". Voltage will also be supplied through the normally closed set of contacts in the MAF power relay which will supply 12 volts to terminal "E" of the MAF sensor.

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

1. This test will determine if the burn-off function is operative or if the Code was set due to an intermittent condition.
2. Check for continuous 12 volt supply to burn-off relay.
3. Grounding CKT 900 should energize the relay and close the contacts. CKT 900 should be grounded by using a jumper wire at ECM connector "D12". If the test light is dim, check for corroded or faulty connections. If OK, replace relay.
4. With the burn-off relay energized there should be 12 volts supplied to the MAF sensor on terminal "D" & "E" (CKTs 993 and 994). If the test light is dim, check for corroded or faulty connections. If OK, replace relay.

Diagnostic Aids:

The Code 36 could have been set due to a poor connection at any of the relays or the MAF sensor. Be sure that these connections and terminals are OK. A faulty MAF sensor should not be considered as the cause if Code 36 is set.

Refer to "Intermittents" in Section "B".

CODE 36

MASS AIR FLOW (MAF) BURN-OFF CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

1. • IGNITION "OFF", CLEAR CODES.
   • START ENGINE AND RUN UNTIL SYSTEM GOES "CLOSED LOOP".
   • TURN IGNITION "OFF" AND WAIT 20 SECONDS.
   • START AND IDLE ENGINE FOR 30 SECONDS OR UNTIL S.E.S. LIGHT COMES "ON".
   IS CODE 36 SET?

- NO → CODE 36 IS INTERMITTENT. IF NO ADDITIONAL CODES WERE STORED, REFER TO "DIAGNOSTIC AIDS" ON FACING PAGE.
- YES →

2. • DISCONNECT MAF SENSOR BURN-OFF RELAY.
   • PROBE BOTH 340 CKTS WITH A TEST LIGHT TO GROUND.

- LIGHT "OFF" ON ONE OR BOTH → REPAIR OPEN IN CIRCUIT THAT DID NOT LIGHT.
- LIGHT "ON" BOTH →

3. • RECONNECT RELAY.
   • DISCONNECT MAF SENSOR.
   • GROUND BURN-OFF RELAY CKT 900.
   • PROBE MAF SENSOR HARNESS TERMINAL "D" WITH A TEST LIGHT TO GROUND.

- LIGHT "OFF" → CKT 900 OPEN, CKT 994 OPEN OR SHORTED TO GROUND, OR FAULTY CONNECTION OR FAULTY RELAY.
- LIGHT "ON" →

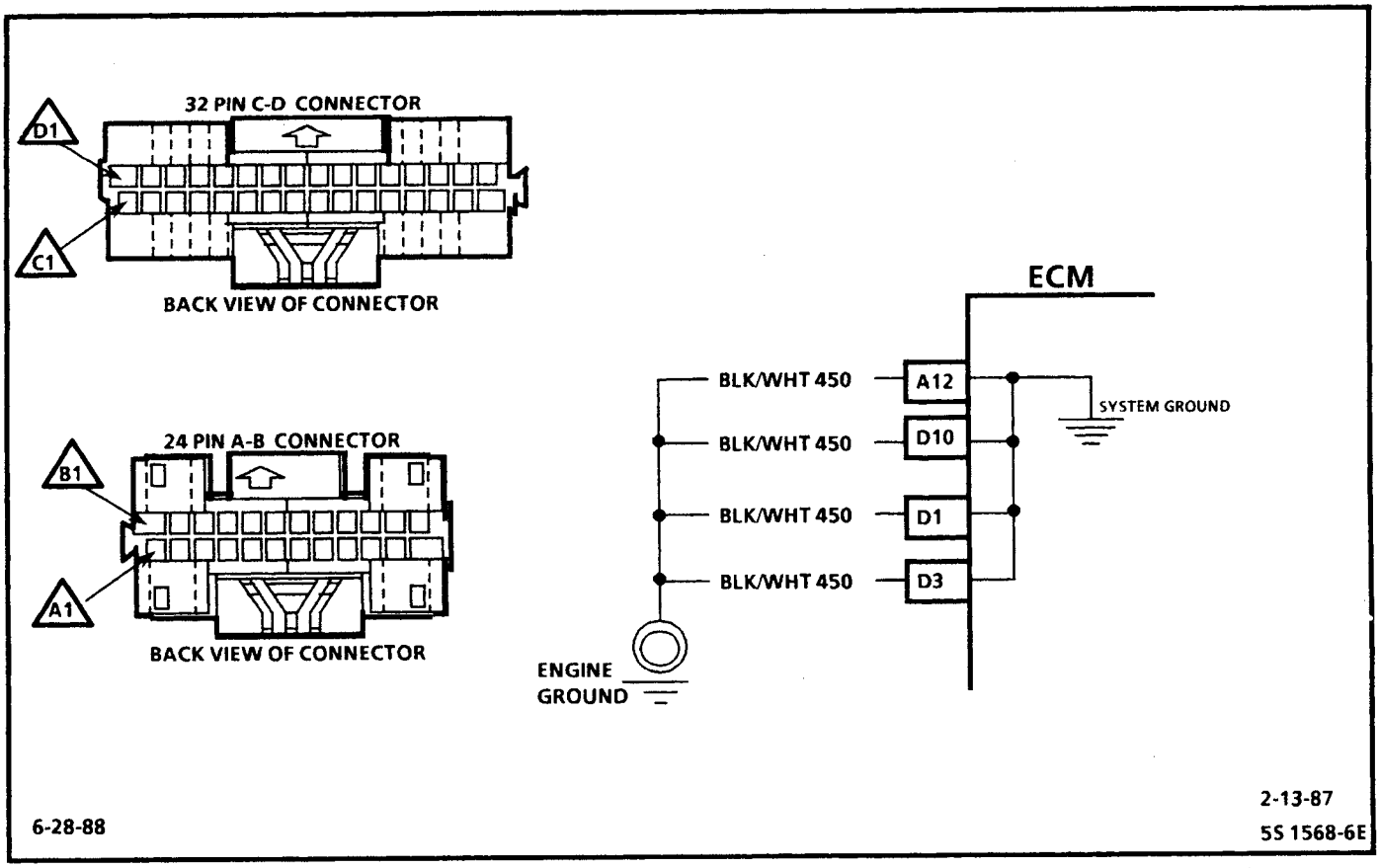
4. • CKT 900 STILL GROUNDED.
   • PROBE TERMINAL "E" (CKT 993) WITH A TEST LIGHT TO GROUND.

- LIGHT "OFF" → • OPEN CKT 993, OPEN CIRCUIT BETWEEN MAF SENSOR RELAY AND THE BURN-OFF RELAY, FAULTY CONNECTION, OR FAULTY MAF SENSOR POWER RELAY.
- LIGHT "ON" →

• DISCONNECT BURN-OFF RELAY.
• IGNITION "ON".
• PROBE CKT 900 WITH A TEST LIGHT TO GROUND.

- LIGHT "OFF" → FAULTY ECM CONNECTION OR ECM. CODE 36 CAN SET DUE TO A POOR CONNECTION AT ANY OF THE RELAYS OR THE MAF SENSOR, OR COULD BE CAUSED BY HIGH RESISTANCE IN THE RELAY CONTACTS OR CONNECTIONS. BE SURE THAT THESE CONNECTIONS AND TERMINALS ARE OK BEFORE REPLACING ECM.
- LIGHT "ON" → REPAIR SHORT TO VOLTAGE IN CKT 900

2-12-87
* 7S 3290-6E



CODE 41

CYLINDER SELECT ERROR
FAULTY OR INCORRECT MEM-CAL)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

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

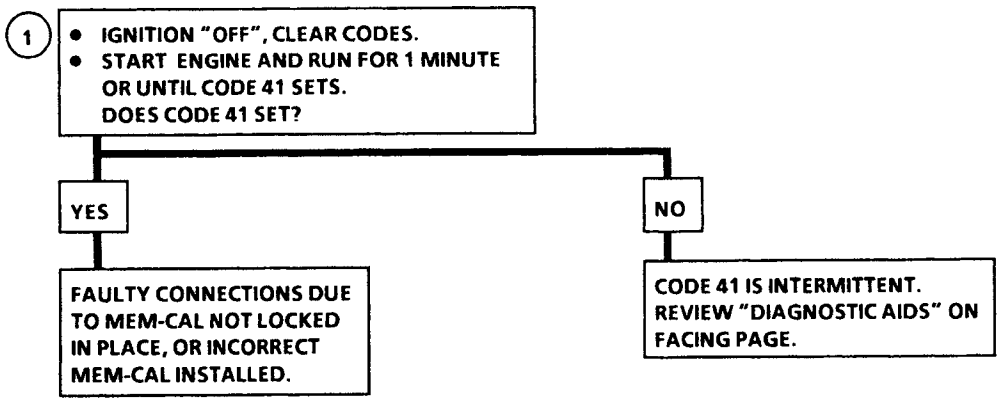
1. The ECM used for this engine can also be used for other engines, and the difference is in the Mem-Cal. If a Code 41 sets, the incorrect Mem-Cal has been installed, may not be installed properly, or it is faulty and it must be replaced.

Diagnostic Aids:

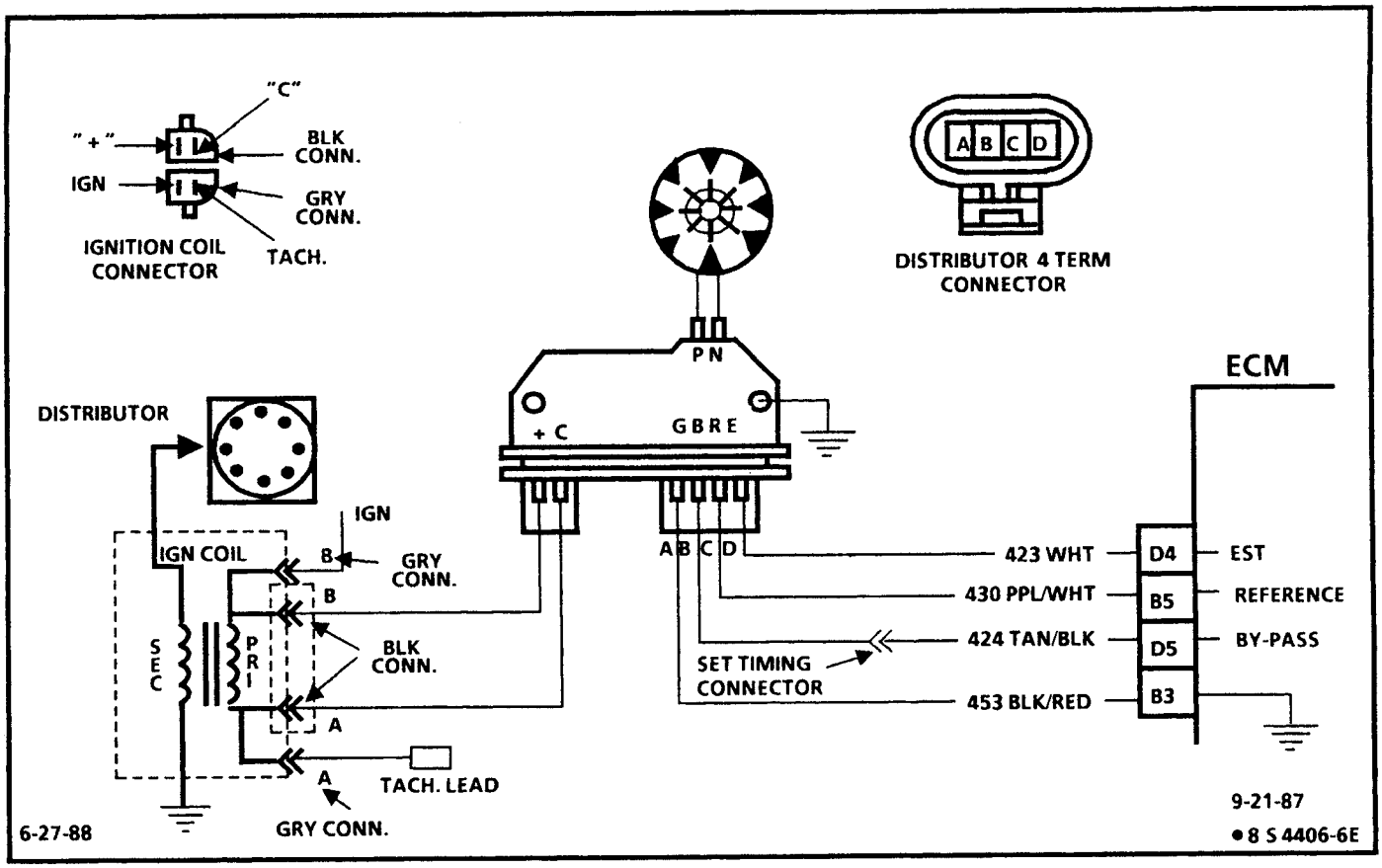
Check Mem-Cal to be sure locking tabs are secure. Also check the pins on both the Mem-Cal and ECM to assure they are making proper contact. Check the Mem-Cal part number to assure it is the correct part. If the Mem-Cal is faulty, it must be replaced. It is also possible that the ECM is faulty, however, it should not be replaced until all of the above have been checked. For additional information, refer to "Intermittents" in Section "B".

CODE 41

CYLINDER SELECT ERROR
(FAULTY OR INCORRECT MEM-CAL)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



9-21-87
•7S3152-6E



CODE 42

ELECTRONIC SPARK TIMING (EST) CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

When the system is running on the ignition module, that is, no voltage on the bypass line, the ignition module grounds the EST signal. The ECM expects to see no voltage on the EST line during this condition. If it sees a voltage, it sets Code 42 and will not go into the EST mode.

When the rpm for EST is reached (about 400 rpm), and bypass voltage applied, the EST should no longer be grounded in the ignition module, so the EST voltage should be varying.

If the bypass line is open or grounded, the ignition module will not switch to EST mode so the EST voltage will be low and Code 42 will be set.

If the EST line is grounded, the ignition module will switch to EST but, because the line is grounded there will be no EST signal. A Code 42 will be set.

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

1. Code 42 means the ECM has seen an open or short to ground in the EST or bypass circuits. This test confirms Code 42 and that the fault causing the code is present.
2. Checks for a normal EST ground path through the ignition module. An EST CKT 423 shorted to ground will also read less than 500 ohms; however, this will be checked later.
3. As the test light voltage touches CKT 424 the module should switch. The ohmmeter may "overrange" if the meter is in the 1000-2000 ohms position. The important thing is that the module "switched."
4. The module did not switch and this step checks for:
   - EST CKT 423 shorted to ground.
   - Bypass CKT 424 open.
   - Faulty ignition module connection or module.
5. Confirms that Code 42 is a faulty ECM and not an intermittent in CKTs 423 or 424.

Diagnostic Aids:

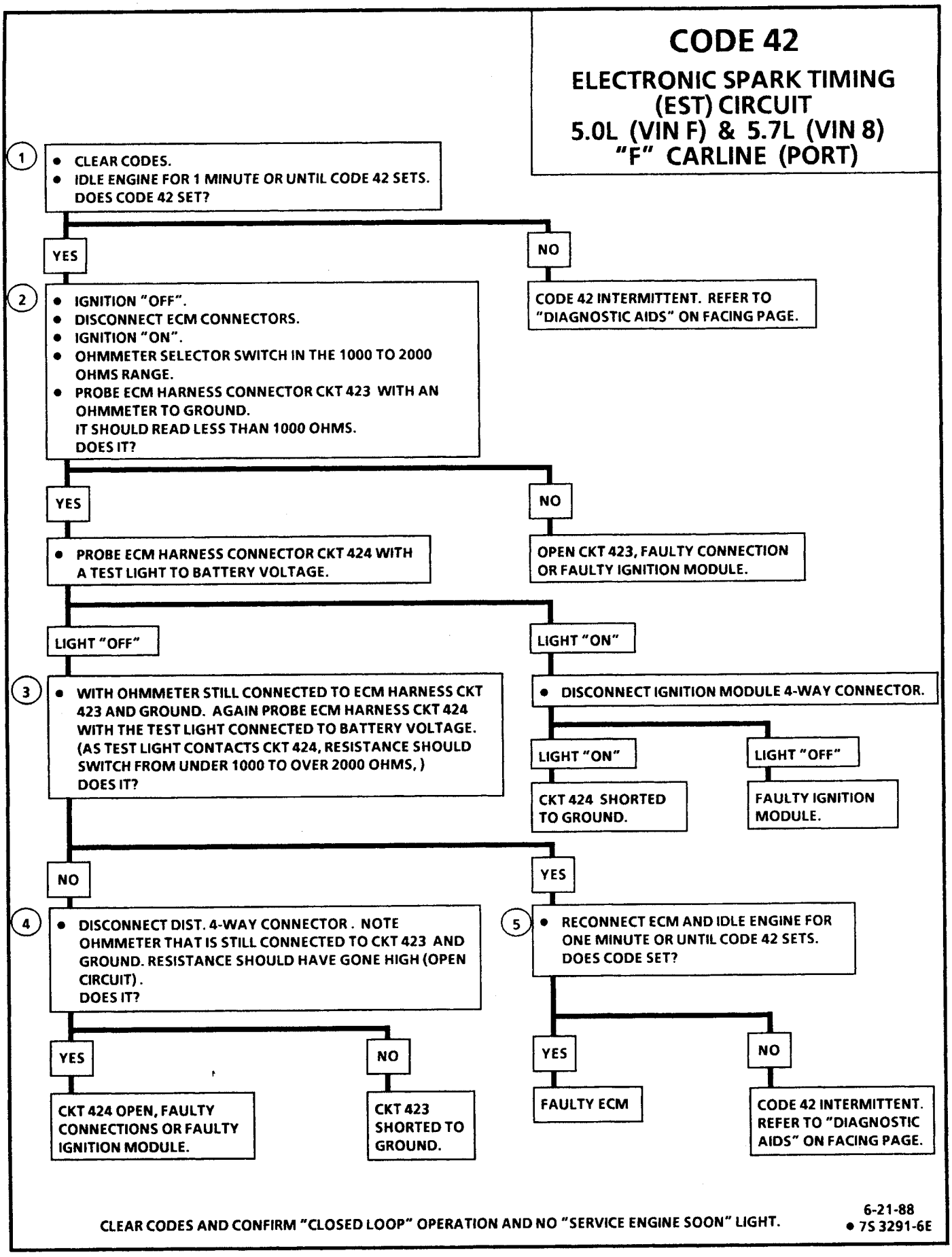
The "Scan" tool does not have any ability to help diagnose a Code 42 problem.

A Mem-Cal not fully seated in the ECM can result in a Code 42.

Refer to "Intermittents" in Section "B".

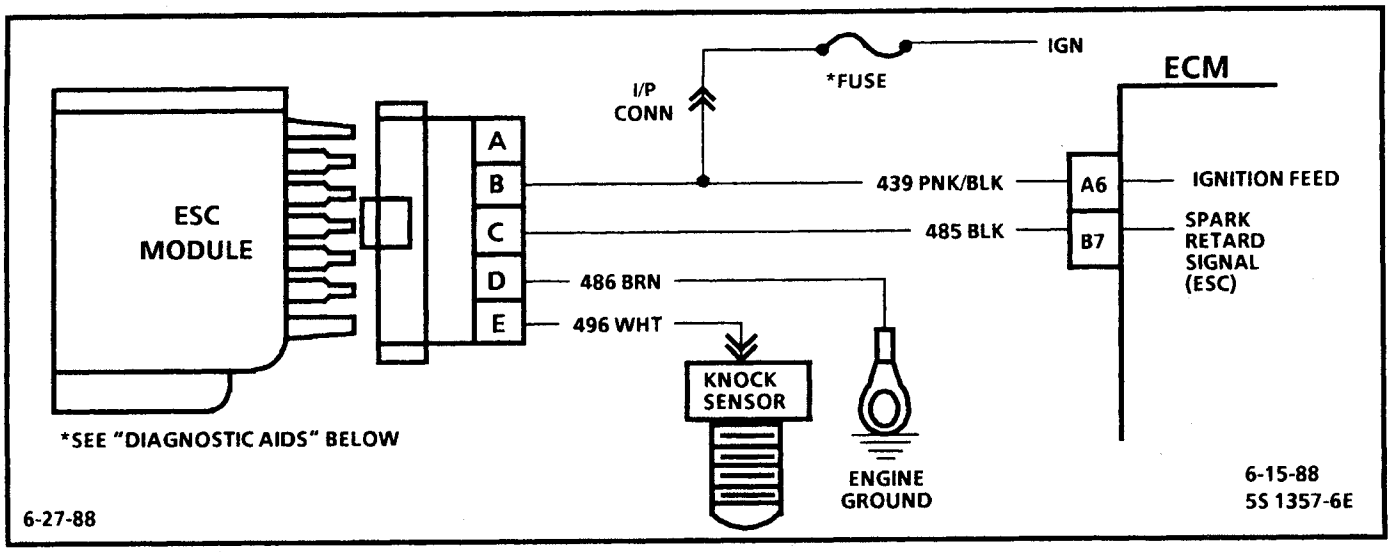
CODE 42

ELECTRONIC SPARK TIMING (EST) CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



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

6-21-88
• 7S 3291-6E



CODE 43

ELECTRONIC SPARK CONTROL (ESC) CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

Electronic spark control is accomplished with a module that sends a voltage signal to the ECM. As the knock sensor detects engine knock, the voltage from the ESC module to the ECM drops, and this signals the ECM to retard timing. The ECM will retard the timing when knock is detected and rpm is above about 900 rpm.

Code 43 means the ECM has read low voltage on CKT 485 for longer than 5 seconds, with the engine running, or the system has failed the functional check.

This system performs a functional check once per start up to check the ESC system. To perform this test the ECM will advance the spark when coolant is above 95°C (194°F) and at a high load condition (near WOT). The ECM then checks the signal on CKT 485 to see if a knock is detected. The functional check is performed once per start up, if knock is detected when coolant is below 95°C (194°F) the test has passed and the functional check will not be run. If the functional check fails, the "Service Engine Soon" light will remain "ON" until ignition is turned "OFF," or until a knock signal is detected.

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

1. If the conditions for a Code 43 are present, the "Scan" will always display "yes". There should not be a knock at idle unless an internal engine problem, or a system problem exists.
2. This test will determine if the system is functioning at this time. Usually a knock signal can be generated by tapping on the right exhaust manifold. If no knock signal is generated try tapping on block close to the area of the sensor.
3. Because Code 43 sets when the signal voltage on CKT 485 remains low, this test should cause the signal on CKT 485 to go high. The 12 volts signal should be seen by the ECM as "no knock" if the ECM and wiring are OK.
4. This test will determine if the knock signal is being detected on CKT 496 or if the ESC module is at fault.
5. If CKT 496 is routed to close to secondary ignition wires, the ESC module may see the interference as a knock signal.
6. This checks the ground circuit to the module. An open ground will cause the voltage on CKT 485 to be about 12 volts, which would cause the Code 43 functional test to fail.
7. Contacting CKT 496 with a test light to 12 volts should generate a knock signal. This will determine if the ESC module is operating correctly.

Diagnostic Aids:

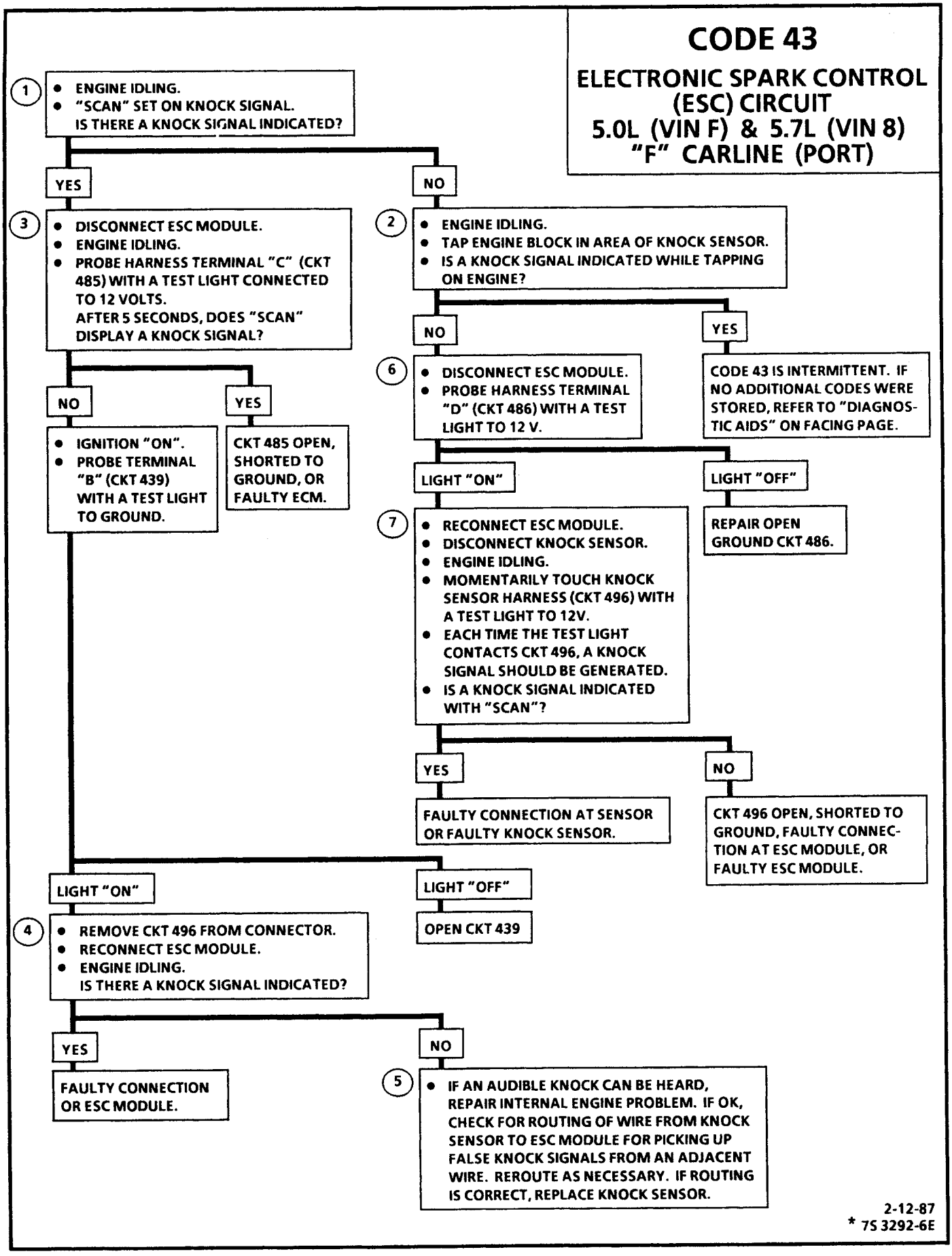
* = ECM/IGN fuse

Code 43 can be caused by a faulty connection at the knock sensor at the ESC module or at the ECM. Also check CKT 485 for possible open or short to ground.

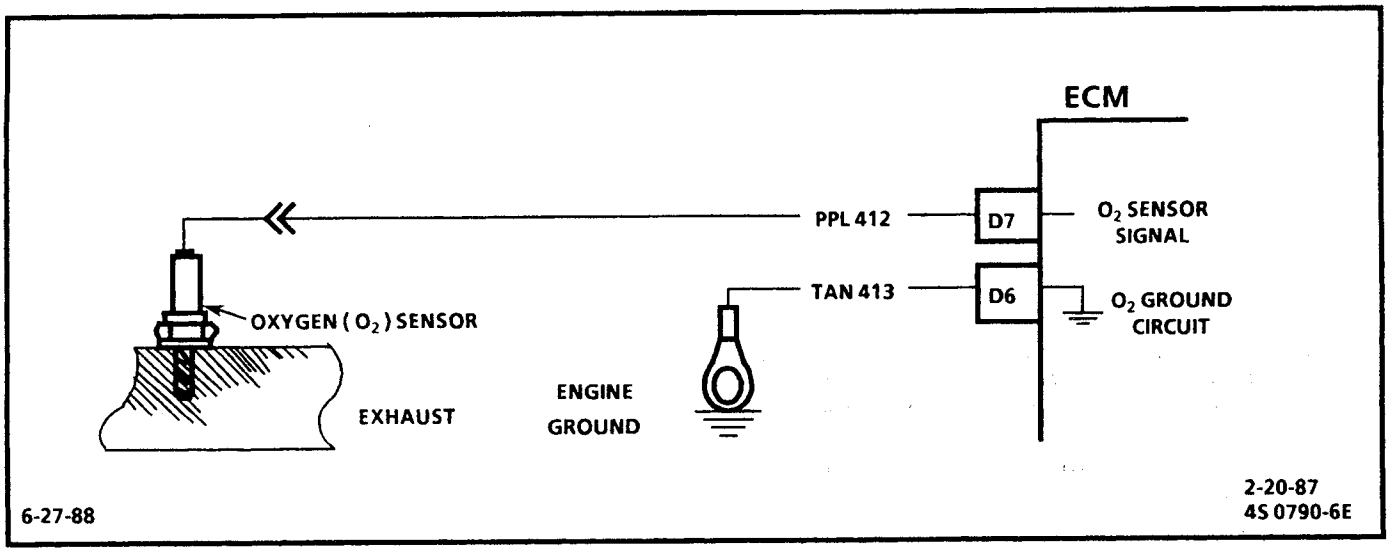
Refer to "Intermittents" in Section "B".

CODE 43

ELECTRONIC SPARK CONTROL (ESC) CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



2-12-87
* 7S 3292-6E



CODE 44

OXYGEN SENSOR CIRCUIT
(LEAN EXHAUST INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The ECM supplies a voltage of about .45 volt between terminals "D6" and "D7". (If measured with a 10 megohm digital voltmeter, this may read as low as .32 volt.) The O_2 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 44 is set when the O_2 sensor signal voltage on CKT 412.
   - Remains below .2 volt for 50 seconds.
   - And the system is operating in "Closed Loop."

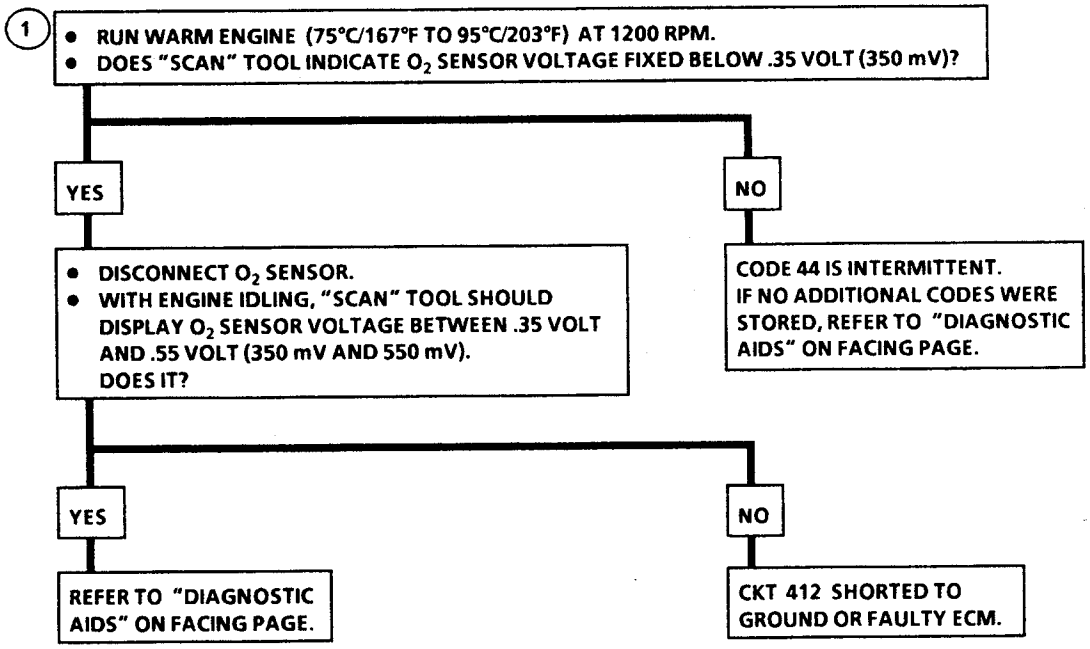
Diagnostic Aids:

Using the "Scan," observe the block learn values at different rpm and air flow conditions. The "Scan" also displays the block cells, so the block learn values can be checked in each of the cells to determine when the Code 44 may have been set. If the conditions for Code 44 exist, the block learn values will be around 150.

- O_2 Sensor wire. Sensor pigtail may be mispositioned and contacting the exhaust manifold.
- Check for intermittent ground in wire between connector and sensor.
- MAF Sensor. A mass air flow (MAF) sensor output that causes the ECM to sense a lower than normal air flow will cause the system to go lean. Disconnect the MAF sensor and, if the lean condition is gone, replace the MAF sensor.
- Lean Injector(s). Perform injector balance test CHART C-2A.
- Fuel Contamination. Water, even in small amounts, near the in-tank fuel pump inlet can be delivered to the injectors. The water causes a lean exhaust and can set a Code 44.
- Fuel Pressure. System will be lean if pressure is too low. It may be necessary to monitor fuel pressure while driving the car at various road speeds and/or loads to confirm. See "Fuel System Diagnosis" CHART A-7.
- Exhaust Leaks. If there is an exhaust leak, outside air can be pulled into the exhaust and past the sensor. Vacuum or crankcase leaks can cause a lean condition.
- AIR System. Be sure air is not being directed to the exhaust ports while in "Closed Loop." If the block learn value goes down while squeezing air hose to left side exhaust ports, refer to CHART C-6.
- If the above are OK, it is a faulty oxygen sensor.

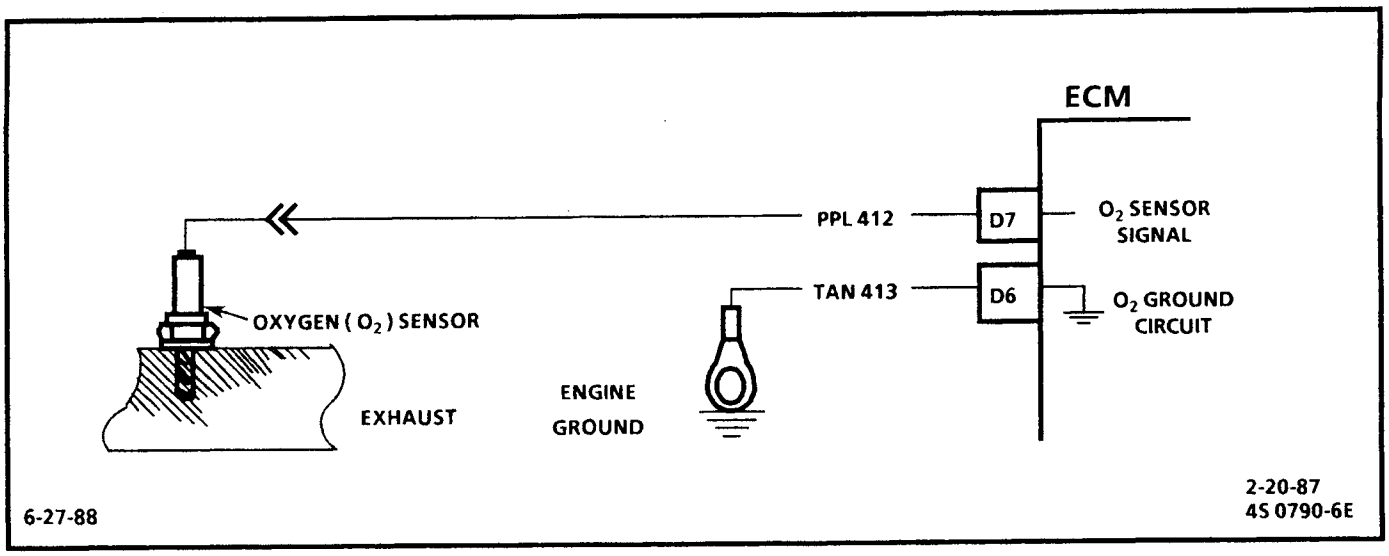
CODE 44

OXYGEN SENSOR CIRCUIT
(LEAN EXHAUST INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



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

5-3-88
• 7S 3191-6E



CODE 45

OXYGEN SENSOR CIRCUIT
(RICH EXHAUST INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The ECM supplies a voltage of about .45 volt between terminals "D6" and "D7". (If measured with a 10 megohm digital voltmeter, this may read as low as .32 volts.) The O_2 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_2 sensor signal voltage or CKT 412.
   - Remains above .7 volt for 50 seconds; and in "Closed Loop."
   - Engine time after start is 1 minute or more.
   - Throttle angle greater than 2% (about .2 volts above idle voltage)

Diagnostic Aids:

Using the "Scan," observe the block learn values at different rpm and air flow conditions. The "Scan" also displays the block cells, so the block learn values can be checked in each of the cells to determine when the Code 45 may have been set. If the conditions for Code 45 exists, the block learn values will be around 115.

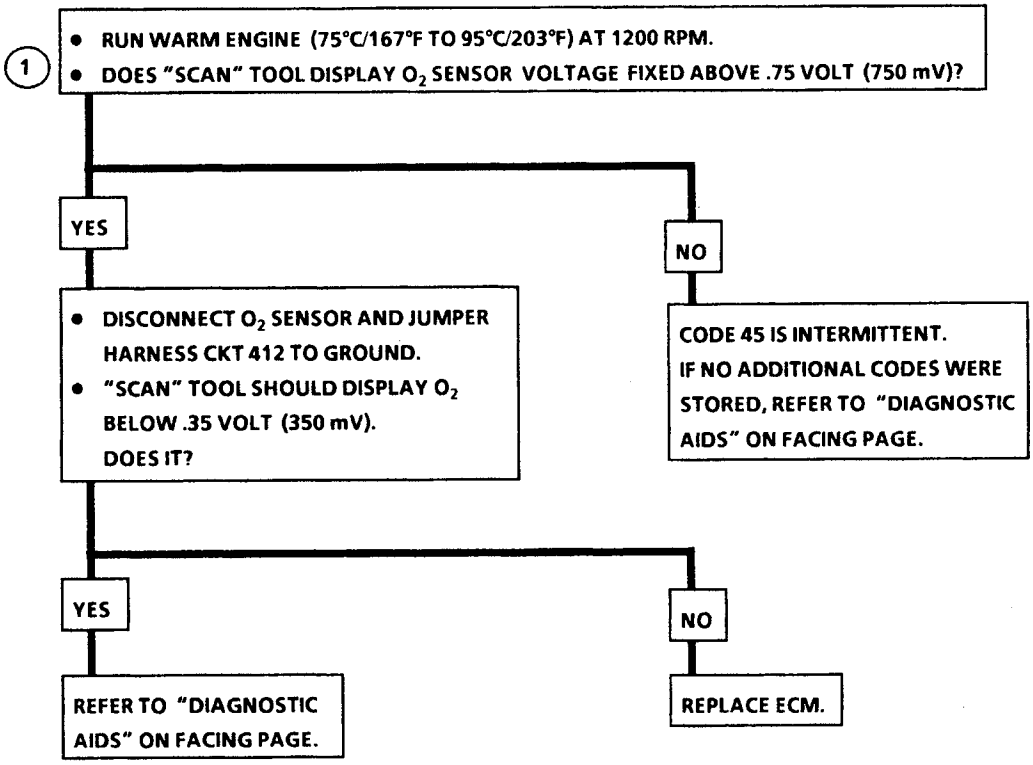
- Fuel Pressure. System will go rich if pressure is too high. The ECM can compensate for some increase. However, if it gets too high, a Code 45 may be set.

Use the Fuel System diagnosis CHART A-7.

- Rich injector. Perform injector balance test CHART C-2A.
- Leaking injector. See CHART A-7.
- Check for fuel contaminated oil.
- HEI Shielding. An open ground CKT 453 (ignition system reflow) 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".
- MAF sensor. An output that causes the ECM to sense a higher than normal airflow can cause the system to go rich. Disconnecting the MAF sensor will allow the ECM to set a fixed value for the sensor. Substitute a different MAF sensor if the the rich condition is gone while the sensor is disconnected.
- Check for leaking fuel pressure regulator diaphram by checking vacuum line to regulator for fuel.
- TPS. An intermittent TPS output will cause the system to go rich, due to a false indication of the engine accelerating.

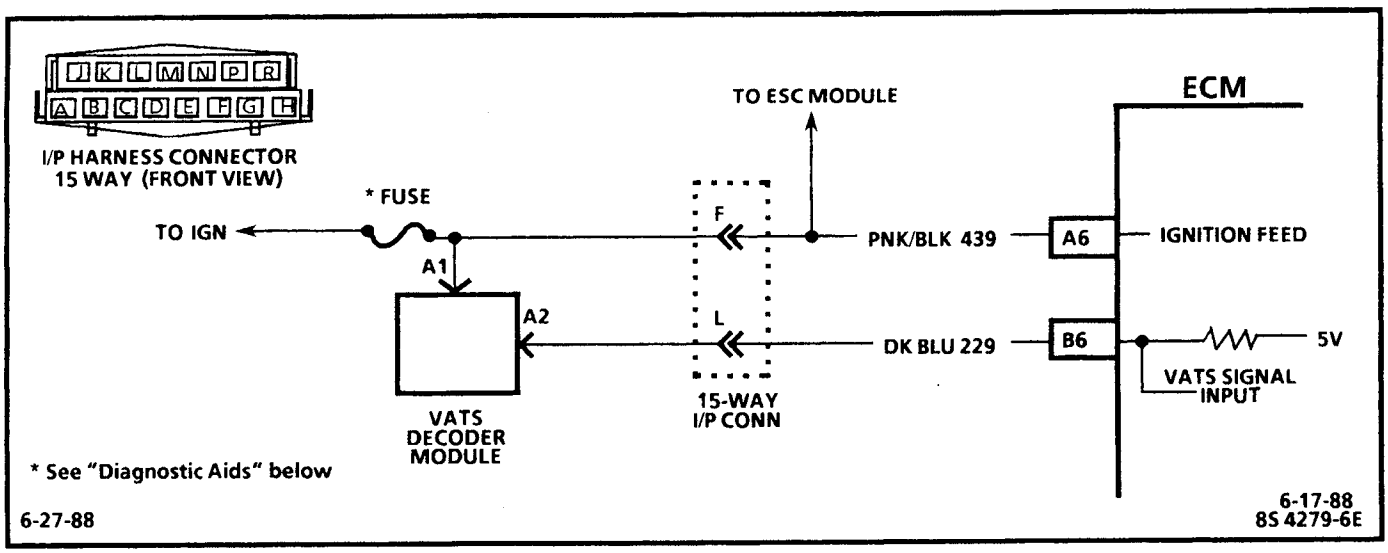
CODE 45

OXYGEN SENSOR CIRCUIT
(RICH EXHAUST INDICATED)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



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

5-3-88
• 7S 3192-6E



CODE 46

VEHICLE ANTI-THEFT SYSTEM (VATS) CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The VATS system is designed to disable vehicle operation if the incorrect key or starting procedure is used. The VATS decoder module sends a signal to the ECM if the correct key is being used. If the proper signal does not reach the ECM on CKT 229, the ECM will not pulse the injectors "ON" and thus not allow the vehicle to be started.

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

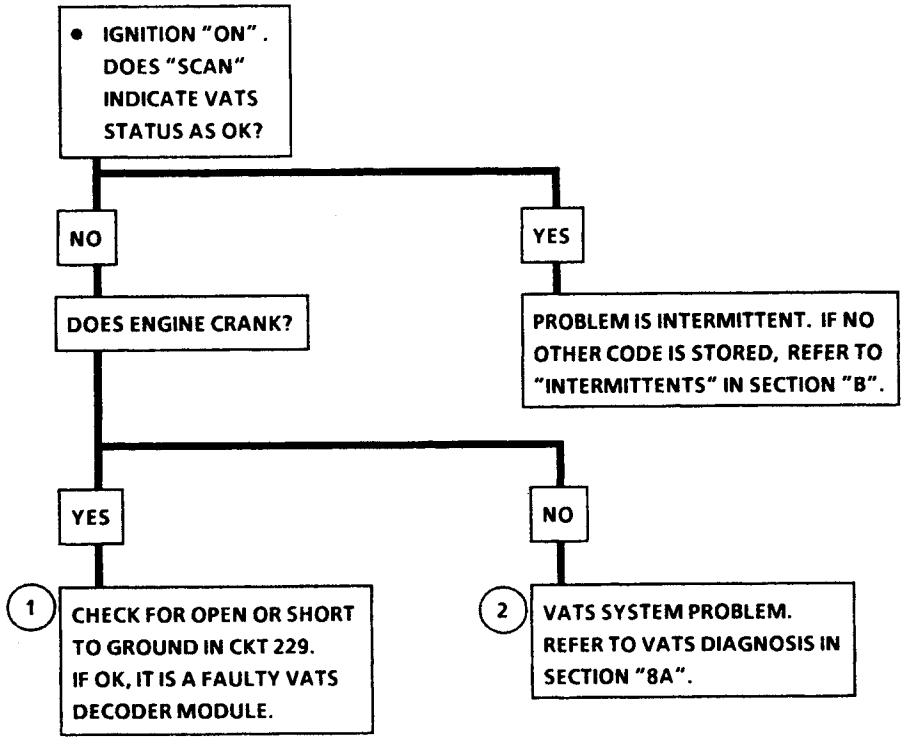
1. If the engine cranks, but doesn't start. It indicates that the portion of the module which generates the signal to the ECM is not operating or CKT 229 is open or shorted to ground. If the decoder module is found to be OK, as determined from Section "8A", the ECM may be at fault, but this is not a likely condition.
2. If the engine will not crank, it indicates that there is a VATS problem or an incorrect key or starting procedure is being used.

Diagnostic Aids:

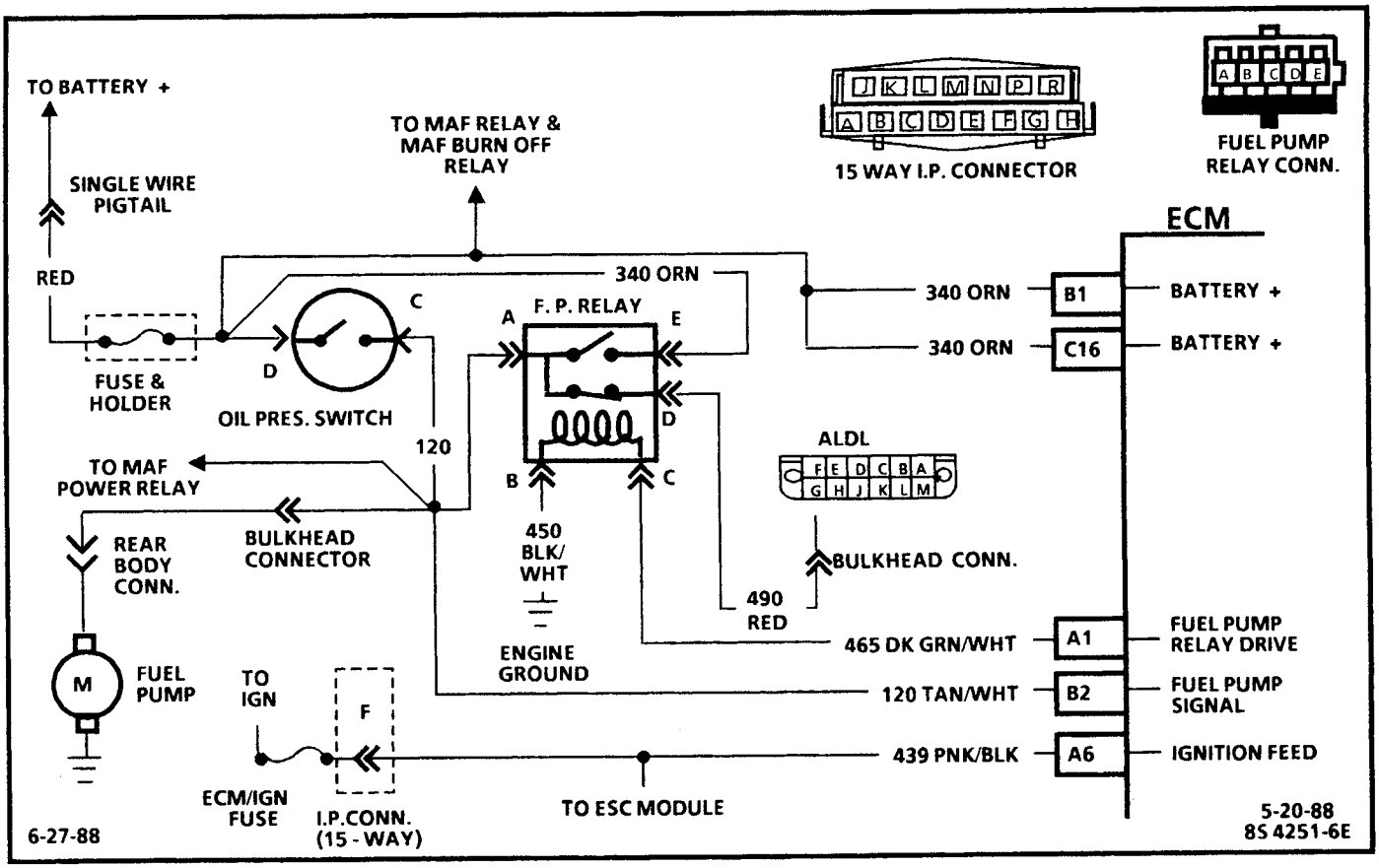
* The fuse for the VATS system is the ECM/IGN fuse.

CODE 46

VEHICLE ANTI-THEFT SYSTEM (VATS) CIRCUIT 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)



7-17-87
*6S 2700-6E



CODE 54

FUEL PUMP CIRCUIT
(LOW VOLTAGE)
5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

Circuit Description:

The status of the fuel pump CKT 120 is monitored for voltage by the ECM, and is used to compensate fuel delivery based on system voltage. This fuel pump signal is also used to store a trouble code if the fuel pump relay is defective or fuel pump voltage is lost while the engine is running. There should be about 12 volts on CKT 120 for 2 seconds after the ignition is turned "ON," or any time references pulses are being received by the ECM.

Code 54 will set, if the voltage on CKT 120 is less than 2 volts for 1.5 seconds since the last reference pulse was received. This code is designed to detect a faulty relay, causing extended crank time, and the code will help the diagnosis of an engine that "CRANKS BUT WILL NOT RUN."

If a fault is detected during start-up, the "Service Engine Soon" light will stay "ON" until the ignition is cycled "OFF." However, if the voltage is detected below 2 volts, with the engine running, the light will only remain "ON" while the condition exists.

CODE 54

FUEL PUMP CIRCUIT (LOW VOLTAGE) 5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

- IGNITION "OFF" FOR 10 SECONDS.
- IGNITION "ON".
- LISTEN FOR IN-TANK FUEL PUMP.
- PUMP SHOULD RUN FOR 2 SECONDS AFTER IGNITION "ON". DOES IT?

NO

- IGNITION "OFF".
- USING A FUSED JUMPER WIRE, CONNECT FUEL PUMP TEST CONNECTOR TO 12 VOLTS.
- DOES PUMP RUN?

YES

- IGNITION "OFF".
- DISCONNECT FUEL PUMP RELAY.
- PROBE CKT 340 WITH A TEST LIGHT TO GROUND.

LIGHT "ON"

CONNECT TEST LIGHT BETWEEN CKTS 340 & 450.

LIGHT "OFF"

REPAIR OPEN IN CKT 340.

NO

- DISCONNECT FUEL PUMP RELAY.
- USING THE FUSED JUMPER WIRE, CONNECT CKT 120 TO 12 VOLTS. DOES PUMP RUN?

YES

FAULTY RELAY.

NO

OPEN CKT 120, FAULTY IN-TANK PUMP OR FAULTY PUMP GROUND.

YES

- CLEAR CODES.
- START AND RUN ENGINE FOR 30 SECONDS OR UNTIL CODE 54 SETS. DOES CODE SET?

YES

- AT THE ECM, BACK PROBE CKT 120 WITH A TEST LIGHT TO GROUND.
- IGNITION "OFF" FOR 10 SECONDS.
- NOTE LIGHT WITHIN 2 SECONDS AFTER IGNITION "ON".

LIGHT "ON"

FAULTY CONNECTION AT ECM OR FAULTY ECM.

LIGHT "OFF"

OPEN CKT 120 TO ECM.

NO

CODE 54 IS INTERMITTENT. REFER TO "INTERMITTENTS" IN SECTION "B".

LIGHT "ON"

- CONNECT TEST LIGHT BETWEEN HARNESS CKT 465 AND GROUND.
- IGNITION "OFF" FOR 10 SECONDS.
- NOTE TEST LIGHT WITHIN 2 SECONDS AFTER IGNITION "ON".

LIGHT "ON"

- FAULTY RELAY.

LIGHT "OFF"

CKT 465 OPEN, SHORTED TO GROUND, OR FAULTY ECM.

LIGHT "OFF"

REPAIR OPEN CKT 450.

NOTE: IF ORIGINAL COMPLAINT WAS "CRANKS BUT WILL NOT RUN" MAKE THE FOLLOWING ADDITIONAL CHECKS:

- ENGINE IDLING AT NORMAL OPERATING TEMPERATURE.
- OIL PRESSURE NORMAL.
- DISCONNECT FUEL PUMP RELAY.
- ENGINE SHOULD CONTINUE TO RUN.
- DOES IT?

YES

- RECONNECT FUEL PUMP RELAY.
- IGNITION "OFF".
- PROBE FUEL PUMP TEST TERMINAL WITH A TEST TERMINAL WITH A TEST LIGHT TO GROUND.

LIGHT "OFF"

FUEL PUMP CIRCUIT OK

LIGHT "ON"

FAULTY OIL PRESSURE SWITCH

NO

FAULTY OIL PRESSURE SWITCH.

2-10-88
• 7S 3155-6E

CODE 51
CODE 52
CODE 53

5.0L (VIN F) & 5.7L (VIN 8) "F" CARLINE (PORT)

CODE 51

MEM-CAL ERROR
(FAULTY OR INCORRECT MEM-CAL)

CHECK THAT ALL PINS ARE FULLY INSERTED IN THE SOCKET AND THAT MEM-CAL IS PROPERLY LATCHED. IF OK, REPLACE MEM/CAL, CLEAR MEMORY, AND RECHECK. IF CODE 51 REAPPEARS, REPLACE ECM.

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

CODE 52

CALPAK ERROR
(FAULTY OR INCORRECT CALPAK)

CHECK THAT THE MEM-CAL IS FULLY SEATED AND LATCHED INTO THE MEM-CAL SOCKET. IF OK, REPLACE MEM-CAL, CLEAR MEMORY, AND RECHECK. IF CODE 52 REAPPEARS, REPLACE ECM.

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

CODE 53

SYSTEM OVER VOLTAGE

THIS CODE INDICATES THERE IS A BASIC GENERATOR PROBLEM.

- CODE 53 WILL SET, IF VOLTAGE AT ECM IGNITION INPUT PIN IS GREATER THAN 17.1 VOLTS FOR 2 SECONDS.
- CHECK AND REPAIR CHARGING SYSTEM. REFER TO SECTION "6D".

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