

"NON-SCAN" DIAGNOSTIC CIRCUIT CHECK

The Diagnostic Circuit Check is an organized approach for identifying a problem caused by the Fuel Injection System.

Driver comments normally fall into one of the following areas:

- Steady "SERVICE ENGINE SOON" light
- Driveability Problem
- Engine "Cranks But Will Not Run"

Understanding the chart and using it correctly will reduce diagnosis time and prevent the unnecessary replacement of parts. Many Charts have been changed to include "Scan" diagnostic procedures which are shown in large type. "Non-Scan" is the smaller type and always begins at the top of each Chart.

1. A steady "SERVICE ENGINE SOON" light with the ignition "ON" and engine stopped confirms battery and ignition voltage to the Electronic Control Module (ECM).
 - B. "Open loop" indicates that oxygen sensor voltage signal is not usable to the ECM. Signal voltage is at a constant value between .35 and .55 volts.

System will flash "open loop" from 30 seconds to 2 minutes after engine starts or until sensor reaches normal operating temperature. If system fails to go "closed loop", see Code 13 chart.
 - C. "SERVICE ENGINE SOON" light "OUT" indicates that exhaust is lean. O2 sensor signal voltage will be less than .35 volts and steady. See Code 44 chart.
 - D. "SERVICE ENGINE SOON" light "on" steady indicates that exhaust is rich. Sensor signal voltage will be above .55 volts and steady. See Code 45 chart.
2. Ground diagnosis terminal by jumpering terminal "A" to "B" in the ALCL connector located below the instrument panel. The ECM will cause the "SERVICE ENGINE SOON" light to flash Code 12, indicating that the ECM diagnostics are working. Code 12 will flash three (3) times, followed by any other trouble codes stored in the memory. Each additional code will flash three (3) times, starting with the lowest code, and then start over again with Code 12. If there are no other codes, Code 12 will flash until the diagnostic terminal jumper is disconnected or the engine is started.
3. Record all stored codes except for Code 12. If the problem is "Engine Cranks But Will Not Run", go to Chart A-3.
4. If no additional codes were recorded, see Section B for driveability symptoms and recommended service procedures. Depending on the severity of the problem, the "Field Service Mode" may be helpful in diagnosis.

With the engine running and the diagnostic terminal grounded, the ECM will respond to the oxygen sensor signal voltage and use the "SERVICE ENGINE SOON" light to display this information as follows:

 - A. "Closed loop" confirms that the oxygen sensor signal is being used by the ECM to control fuel delivery and that the system is working normally. Signal voltage will swing quickly from below .35 to above .55 volts.
 - Acceleration - Light may be "ON" too long due to acceleration enrichment.
 - Deceleration - Light may be "OFF" too long due to decel enleanment or fuel cut-off.
 - Idle - Light may be "ON" too long with idle below 1200 RPM.
5. Road test of the system using the "Field Service Mode" should be done only at steady road speeds. Because the vehicle operates differently in the "Field Service Mode", the following conditions may be observed and should be considered normal.
 - Acceleration - Light may be "ON" too long due to acceleration enrichment.
 - Deceleration - Light may be "OFF" too long due to decel enleanment or fuel cut-off.
 - Idle - Light may be "ON" too long with idle below 1200 RPM.
6. Clearing codes. Ignition off. Disconnect ECM battery pigtail, near battery, for 30 seconds.

"NON-SCAN" DIAGNOSTIC CIRCUIT CHECK

5.7L "Y" SERIES FUEL INJECTION (PORT)

①

- IGNITION "ON" AND ENGINE STOPPED.
- NOTE "SERVICE ENGINE SOON" LIGHT.

STEADY LIGHT

LIGHT "OFF"

FLASHING LIGHT

②

GROUND
DIAGNOSTIC
TERMINAL

SEE CHART A-1

FLASHING
CODE 12.ERRATIC OR
INTERMITTENT AT TIMES

FLASHES CODE 12

DOES NOT FLASH CODE 12

CHECK DIAGNOSTIC CKT.
451 FOR SHORT TO
GROUND BETWEEN ALCL
CONN. TERM 'B' AND ECM.SEE SYMPTOMS IN
SECTION 'B',
'INTERMITTENTS'

SEE CHART A-2.

③

NOTE AND RECORD ANY ADDITIONAL CODES. IF
ENGINE CRANKS BUT WILL NOT RUN, SEE CHART A-3

NO ADDITIONAL CODES

ADDITIONAL CODES

PERFORM "FIELD SERVICE
MODE" CHECK.SEE APPLICABLE CHART. IF MORE THAN ONE CODE IS
STORED, START WITH THE LOWEST CODE.

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- ENTER "FIELD SERVICE MODE" BY RUNNING ENGINE WITH DIAGNOSTIC TERMINAL STILL GROUNDING.
- WITH ENGINE AT NORMAL OPERATING TEMP, RUN AT 1200 TO 1600 RPM FOR ONE MINUTE AND NOTE 'SERVICE ENGINE SOON' LIGHT.

DIAGNOSTIC TERMINAL

GROUND



ALCL CONNECTOR

A

LIGHT FLASHES AT RATE OF 1
PER SEC., CONFIRMING
'CLOSED LOOP' OPERATION.

B

LIGHT FLASHES AT A
RATE OF 2.5 PER SEC.
INDICATING 'OPEN
LOOP' OPERATION.

C

LIGHT IS OFF ALL
OR MOST OF THE
TIME. INDICATES
A LEAN EXHAUST.

D

LIGHT IS ON ALL OR
MOST OF THE TIME.
INDICATES RICH
EXHAUST.FUEL SYSTEM OPERATING
NORMALLY. SEE SYMPTOMS IN
SECTION 'B'.

SEE CODE 13 CHART

SEE CODE 44 CHART

SEE CODE 45 CHART

⑤

VEHICLE MAY BE DRIVEN IN THE FIELD SERVICE MODE AND EVALUATED AT ANY STEADY SPEED. THIS CAN BE HELPFUL IN DIAGNOSING DRIVEABILITY PROBLEMS WHERE THE SYSTEM IS RICH OR LEAN TOO LONG.

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CLEAR CODES AND CONFIRM 'CLOSED LOOP' OPERATION AND NO 'LIGHT'.

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