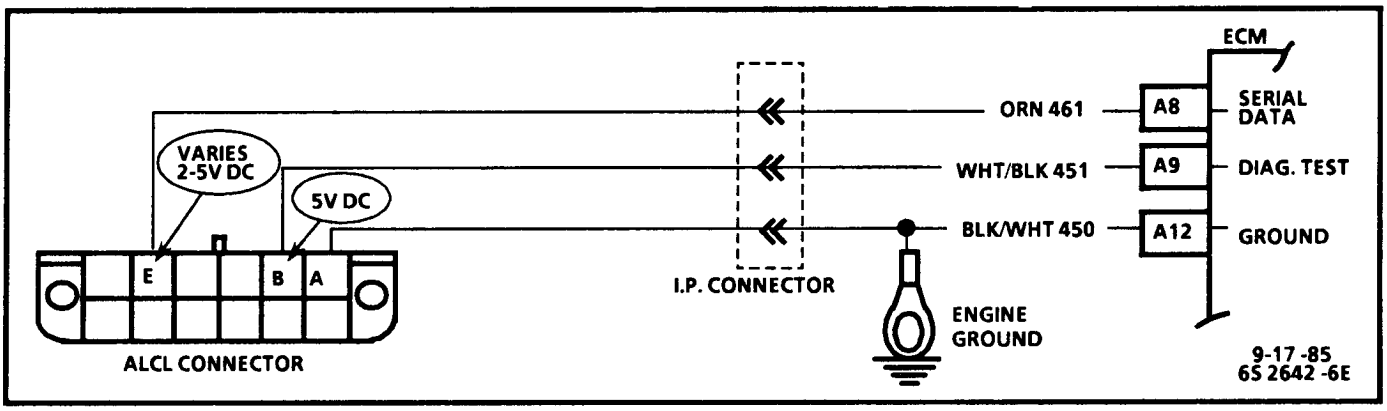


SCAN DIAGNOSTIC CIRCUIT CHECK

5.7L "Y" SERIES
FUEL INJECTION (PORT)

The "SCAN" Diagnostic Circuit Check is an organized approach for identifying fuel injection problems using an assembly line communication link (ALCL)*. This communication link can provide diagnostic information for display on any "SCAN" device or tool designed for this purpose.

The use of a "SCAN" device requires a good understanding of its operation as well as its limitation. A complete review of the instruction manual furnished with the tool as well as the Introduction and General Description in this section is very important.

The tool plugs into the ALCL connector located below the instrument panel. If a stored code is displayed, the code definitions beginning on page two will aid in determining if the fault is still present (hard failure) or the result of an intermittent condition not normally diagnosed using the code charts.

A hard failure will be diagnosed using charts that have been developed for both "SCAN" and "NON-SCAN" diagnostics. "SCAN" steps start with the arrow marked "Start Scan" and are identified by the larger type. The actual repair procedures, however, are the smaller type and apply to both methods of diagnosis.

The facing page of each chart will provide a general circuit description and in some instances, alternate diagnostic steps or other diagnostic aids specific to that chart.

1. **If the SCAN" tool is not operating, check on another vehicle. If OK, the cigar lighter socket should be checked for 12 volts and a good ground. If the "SCAN" tool reads "no data" or "no ALCL", with the ignition, on check the serial data wire for an open or short to ground between ALCL terminal "E" and the ECM.**

Also check for an open diagnostic test terminal from ALCL terminal "B" and ECM. With ignition on, the serial data line (ALCL terminal "E") should have a varying 2-5 volts and the diagnostic line (ALCL terminal "B") about 5 volts.

■ "SCAN" STEP ONLY

"SCAN" DIAGNOSTIC CIRCUIT CHECK

(Page 1 of 7)
FUEL INJECTION (PORT)

■ IGNITION "ON". ENGINE STOPPED
■ NOTE "SERVICE ENGINE SOON" LIGHT

STEADY LIGHT

1 ■ "SCAN" CODES" (IF ENGINE CRANKS BUT WILL NOT RUN, SEE CHART A3)

NO LIGHT

CHART A-1

FLASHING LIGHT

ERRATIC OR INTERMITTENT AT TIMES

SEE "INTERMITTENTS" SECTION "B"

FLASHING CODE 12

CHECK DIAGNOSTIC CKT. 451 FOR SHORT TO GROUND BETWEEN ALCL CONN. TERM "B" AND ECM.

NO CODES

■ START AND IDLE ENGINE
■ NOTE "SERVICE ENGINE SOON" LIGHT

LIGHT OFF

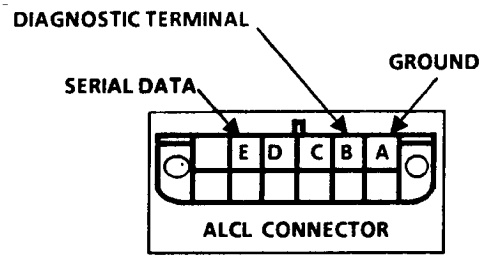
SEE SYMPTOMS SEC. B

CODE(s) STORED

SEE CODE DEFINITIONS ON FOLLOWING PAGES.
START WITH LOWEST CODE IF MORE THAN ONE CODE IS STORED.

LIGHT ON

SEE CHART A-2



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"SCAN" DIAGNOSTIC CIRCUIT CHECK

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5.7 "Y" SERIES - (CODE DEFINITIONS)

THE 'DIAGNOSTIC CIRCUIT CHECK' SCAN DATA IS TYPICAL OF THAT DISPLAYED BY A PROPERLY DESIGNED AND CALIBRATED ALCL SCAN DEVICE.

A SCAN DEVICE THAT DISPLAYS FAULTY DATA SHOULD NOT BE USED AND THE PROBLEM REPORTED TO THE DEVICE MANUFACTURER. THE USE OF A FAULTY SCAN DEVICE CAN RESULT IN MISDIAGNOSIS AND UNNECESSARY PARTS REPLACEMENT.

CODES	DEFINITION
CODE 13 • "SCAN" TOOL IN SPECIAL MODE • ENGINE IDLING AT 1000 RPM. • COOLANT 75° TO 95°C. • "SCAN" OXYGEN SENSOR VOLTAGE.	HARD FAILURE - VOLTAGE FIXED AT .35 TO .55 V. OPEN CIRCUIT CONDITION. SEE CODE CHART 13. INTERMITTENT CODE - NORMAL"SCAN" VOLTAGE VARIES BETWEEN 100MV TO 999 MV (.1 AND 1.0 VOLT). SEE "INTERMITTENTS" SECTION B.
CODE 14 • IGNITION ON. • ENGINE STOPPED. • "SCAN" COOLANT TEMPERATURE.	HARD FAILURE - "SCAN" TOOL READS ABOVE 135°C. CIRCUIT SHORTED TO GROUND OR FAULTY SENSOR. SEE CODE CHART 14. INTERMITTENT CODE - "SCAN" TOOL READS ENGINE TEMP. IN DEGREES CENTIGRADE. AFTER ENGINE IS STARTED, THE TEMPERATURE SHOULD RISE STEADILY TO ABOUT 90°C THEN STABILIZE WHEN THERMOSTAT OPENS. SEE "INTERMITTENTS" SECTION B.
CODE 15 • IGNITION ON. • ENGINE STOPPED. • "SCAN" COOLANT TEMPERATURE.	HARD FAILURE - "SCAN" TOOL READS BELOW -30°C. CIRCUIT OPEN OR FAULTY SENSOR. SEE CODE CHART 15. INTERMITTENT CODE - "SCAN" TOOL READS ENGINE COOLANT TEMPERATURE IN DEGREES CENTIGRADE. AFTER ENGINE IS STARTED, THE TEMPERATURE SHOULD RISE STEADILY TO ABOUT 90°C, THEN STABILIZE WHEN THERMOSTAT OPENS. SEE "INTERMITTENTS" SECTION B.

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"SCAN" DIAGNOSTIC CIRCUIT CHECK

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5.7L "Y" SERIES - (CODE DEFINITIONS)

	DEFINITION
CODE 21 • IGNITION "ON". • ENGINE STOPPED. • THROTTLE CLOSED. • "SCAN" TPS. OR • ENGINE IDLING. • THROTTLE CLOSED. • "SCAN" TPS.	**HARD FAILURE -** "SCAN" TOOL READS OVER 4.5 VOLTS WITH THROTTLE CLOSED. GROUND WIRE OPEN, SIGNAL LINE SHORTED TO SENSOR REF. LINE, OR FAULTY SENSOR. SEE CODE CHART 21. OR **HARD FAILURE -** "SCAN" TOOL READS OVER 2.5 VOLTS WITH THROTTLE CLOSED. GROUND WIRE OPEN OR FAULTY SENSOR. SEE CODE CHART 21. **INTERMITTENT CODE -** "SCAN" TOOL READS THROTTLE POSITION IN VOLTS. SHOULD READ .54 V ± .075 V. WITH THROTTLE CLOSED AND IGNITION ON OR AT IDLE. VOLTAGE SHOULD INCREASE AT A STEADY RATE AS THROTTLE IS MOVED TOWARD WOT. SEE "INTERMITTENTS" SECTION B.
CODE 22 • IGNITION "ON". • ENGINE STOPPED. • "SCAN" TPS.	**HARD FAILURE -** "SCAN" TOOL READS BELOW 0.20V (200 MV) OPEN OR SHORTED TO GROUND CIRCUIT IN 5V REFERENCE, SIGNAL CIRCUIT OR FAULTY SENSOR. SEE CODE CHART 22. **INTERMITTENT CODE -** "SCAN"TOOL READS THROTTLE POSITION IN VOLTS. SHOULD READ .54 V ± .075 V. WITH THROTTLE CLOSED AND IGNITION ON OR AT IDLE. VOLTAGE SHOULD INCREASE AT A STEADY RATE AS THROTTLE IS MOVED TOWARD WOT. SEE "INTERMITTENTS" SECTION B.
CODE 23 • IGNITION "ON". • ENGINE STOPPED. • "SCAN" MAT TEMPERATURE.	**HARD FAILURE -** "SCAN" TOOL READS BELOW -30°C. CIRCUIT OPEN OR FAULTY SENSOR. SEE CODE CHART 23. **INTERMITTENT CODE -** "SCAN"TOOL READS TEMPERATURE OF THE AIR ENTERING THE ENGINE. SHOULD READ CLOSE TO AMBIENT AIR TEMPERATURE WHEN ENGINE IS COLD, AND RISE AS TEMPERATURE INCREASES. SEE "INTERMITTENTS" SECTION B.

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"SCAN" DIAGNOSTIC CIRCUIT CHECK

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5.7L "Y" SERIES - (CODE DEFINITIONS)

CODES	DEFINITION
CODE 24 • ENGINE RUNNING. • DRIVE WHEELS TURNING. • "SCAN" MPH.	HARD FAILURE - "SCAN" TOOL READS 0 MPH. IF SPEEDOMETER IS WORKING OK, THEN THE VSS SIGNAL INPUT IS OPEN, SHORTED TO GROUND, OR THE BUFFER IS DEFECTIVE. SEE CODE CHART 24. INTERMITTENT CODE - "SCAN" TOOL READING SHOULD CLOSELY MATCH WITH SPEEDOMETER READING WITH DRIVE WHEELS TURNING. CHECK PARK NEUTRAL SWITCH. IF OK, SEE 'INTERMITTENTS' SECTION B.
CODE 25 • IGNITION "ON". • ENGINE STOPPED. • "SCAN" MAT TEMPERATURE.	HARD FAILURE - "SCAN" TOOL READS ABOVE 150° C. CIRCUIT SHORTED TO GROUND OR FAULTY SENSOR. SEE CODE CHART 25. INTERMITTENT CODE - "SCAN" TOOL READS TEMPERATURE OF THE AIR ENTERING THE ENGINE. SHOULD READ CLOSE TO AMBIENT AIR TEMPERATURE WHEN ENGINE IS COLD, AND RISE AS TEMPERATURE INCREASES. SEE "INTERMITTENTS" SECTION B.
CODE 32	HARD FAILURE - THE "SCAN" TOOL IS NOT USEFUL IN DIAGNOSING CODE 32 PROBLEMS. SEE CODE CHART 32 IF CODE WAS STORED IN MEMORY.
CODE 33 & 34 - • CLEAR CODES • START ENGINE AND RECHECK FOR "SERVICE ENGINE SOON" LIGHT. • LIGHT "ON - CODE 33 OR 34 - • SEE CODE CHART 33 OR 34. • LIGHT OFF - PROBLEM IS INTERMITTENT SEE SECTION B "INTERMITTENTS".	HARD FAILURE - "SCAN" TOOL READS DEFAULT VALUE BASED ON RPM AND TPS. DIFFICULT TO USE "SCAN" TO DIAGNOSE. INTERMITTENT CODE - "SCAN"TOOL READS AIR FLOW AND DISPLAYS IN GRAMS PER SECOND. SHOULD READ BETWEEN 5-8 ON A FULLY WARMED UP IDLING ENGINE. VALUES SHOULD CHANGE RATHER QUICKLY ON ACCELERATION, BUT VALUES SHOULD REMAIN FAIRLY STABLE AT ANY GIVEN RPM. SEE "INTERMITTENTS" SECTION B.
CODE 36	HARD FAILURE - THE "SCAN" TOOL IS NOT OF MUCH USE IN DIAGNOSING A CODE 36 PROBLEM. SEE CODE CHART 36 IF CODE 36 WAS STORED IN MEMORY.

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"SCAN" DIAGNOSTIC CIRCUIT CHECK

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5.7L "Y" SERIES - (CODE DEFINITIONS)

CODES	DEFINITION
CODE 41 • CLEAR CODES. START AND IDLE ENGINE FOR 1 MINUTE.	HARD FAILURE - "SERVICE ENGINE SOON" LIGHT ON. "SCAN" TOOL INDICATES CODE 41. SEE CODE CHART 41.
CODE 42 • CLEAR CODES. START AND IDLE ENGINE FOR 1 MINUTE. • IF NO "SERVICE ENGINE SOON " LIGHT, REFER TO INTERMITTENTS IN SECTION "B".	HARD FAILURE - "SERVICE ENGINE SOON" ON, SCAN TOOL INDICATES CODE 42. SEE CODE CHART 42. INTERMITTENT CODE - THE SCAN DOES NOT HAVE THE ABILITY TO HELP DIAGNOSE A CODE 42 PROBLEM. SEE "INTERMITTENTS" SECTION B.
CODE 43 • "SCAN" TOOL IN SPECIAL MODE. • ENGINE IDLING AT 1000 RPM. • "SCAN"KNOCK RETARD OR OLD PA3.	HARD FAILURE - KNOCK RETARD OR (OLD PA3) WILL DISPLAY NUMBERS THAT ARE CONSTANTLY CHANGING (OTO 255). FAULTY ESC CIRCUIT. SEE CODE CHART 43. INTERMITTENT CODE - NUMBERS SHOULD INCREASE WHEN KNOCK IS BEING DETECTED. SEE "INTERMITTENTS" SECTION B.
CODE 44 • "SCAN" TOOL IN SPECIAL MODE. • ENGINE IDLING AT 1000 RPM. • COOLANT 75° TO 95° C • "SCAN" OXYGEN SENSOR VOLTAGE.	HARD FAILURE - "SCAN" TOOL 0_2 VOLTAGE CONSISTENTLY BELOW .35V. CAUSED BY A LEAN EXHAUST OR SIGNAL CIRCUIT SHORTED TO GROUND. SEE CODE CHART 44. INTERMITTENT CODE - THE "SCAN" TOOL HAS SEVERAL POSITIONS THAT WILL INDICATE THE STATE OF THE EXHAUST GASES. CROSSCOUNTS, RICH-LEAN INDICATION, 0_2 VOLTAGE, INTEGRATOR, AND BLOCK LEARN. SEE "SCAN" POSITION INFORMATION IN INTRODUCTION.
CODE 45 • "SCAN" TOOL IN "SPECIAL" MODE. • ENGINE IDLING AT 1000 RPM. • COOLANT 75° TO 95° C • "SCAN" OXYGEN SENSOR VOLTAGE.	HARD FAILURE - "SCAN' 0_2 VOLTAGE CONSISTENTLY ABOVE .55V. RICH EXHAUST CAUSES A HIGH 0_2 VOLTAGE. SEE CODE CHART 45. INTERMITTENT CODE - THE "SCAN" HAS SEVERAL POSITIONS THAT WILL INDICATE THE STATE OF THE EXHAUST GASES. CROSSCOUNTS, RICH-LEAN INDICATION, 0_2 VOLTAGE, INTEGRATOR, AND BLOCK LEARN. SEE "SCAN" POSITION INFORMATION IN INTRODUCTION.

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"SCAN" DIAGNOSTIC CIRCUIT CHECK

5.7L "Y" SERIES - (CODE DEFINITIONS)

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CODES	DEFINITION
CODE 46 • CLEAR CODES • IGNITION "ON" • CHECK FOR CODE	**HARD FAILURE -** CODE INDICATES THAT THE VATS SIGNAL IS NOT REACHING THE ECM. THIS WILL CAUSE THE ECM TO DISABLE THE INJECTORS WHICH WILL RESULT IN NO SRART. IF CODE IS SET, REPAIR THE VATS SYSTEM. **INTERMITTENT CODE -** THE "SCAN" TOOL WILL NOT DISPLAY ANY INFORMATION TO HELP DIAGNOSE A CODE 46. SEE INTERMITTENTS IN SECTION B.
CODE 51 • CLEAR CODES • START ENGINE • CHECK FOR CODE	**HARD FAILURE -** CODE 51 RESETS WHICH INDICATES A FAULTY MEM/CAL. SEE CODE CHART 51.
CODE 53 • CLEAR CODES • START ENGINE • CHECK FOR CODE	**HARD FAILURE -** CODE 53 RESETS WHICH INDICATES GENERATOR VOLTAGE EXCEEDED 17.1 VOLTS REPAIR GENERATOR. **INTERMITTENT CODE -** THE "SCAN" TOOL DOES NOT HAVE THE ABILTIY TO READ BATTERY VOLTAGE. If CODE 53 DID NOT RESET , SEE INTERMITTENTS IN SECTION B.
CODE 54 • CLEAR CODES • START ENGINE • CHECK FOR CODE	**HARD FAILURE -** CODE 54 RESETS WHICH INDICATES LOW FUEL PUMP VOLTAGE. SEE CODE CHART 54.

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