

Fuel and Emissions

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Emission Control System

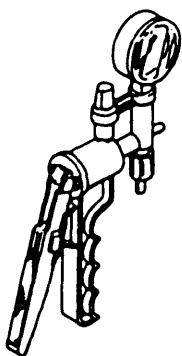
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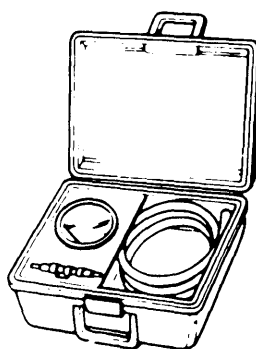
Special Tools

Special Tools

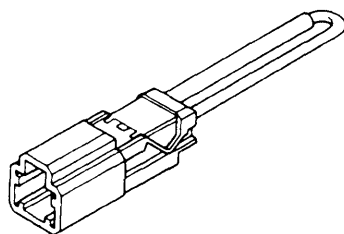
Ref. No.	Tool Number	Description	Qty	Page Reference
①	A973X - 041 - XXXXX	Vacuum Pump/Gauge, 0 - 30 in.Hg	1	11-132, 133
②	07JAZ - 001000B	Vacuum/Pressure Gauge, 0 - 4 in.Hg	1	11-132, 133
③	07PAZ - 0010100	SCS Service Connector	1	11-26, 45, 67, 127, 130
④	07SAZ - 001000A	Backprobe Set	2	11-28
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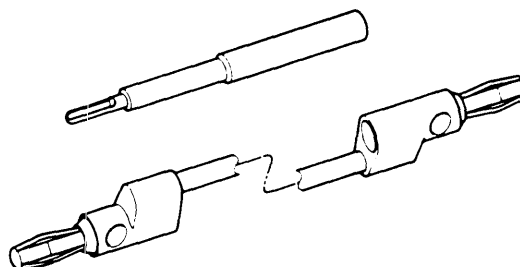
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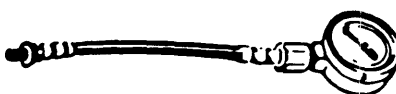
②



③



④

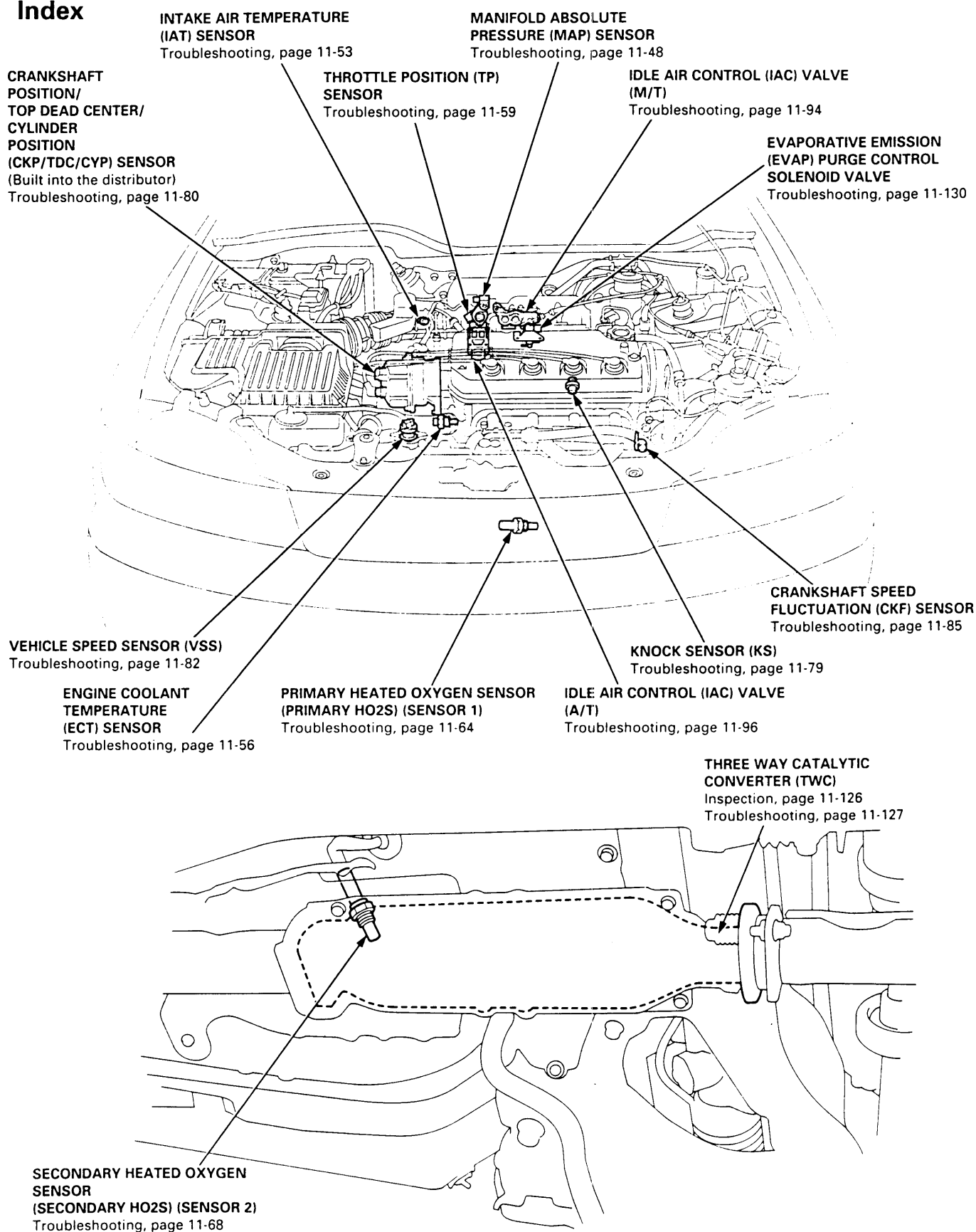


⑤



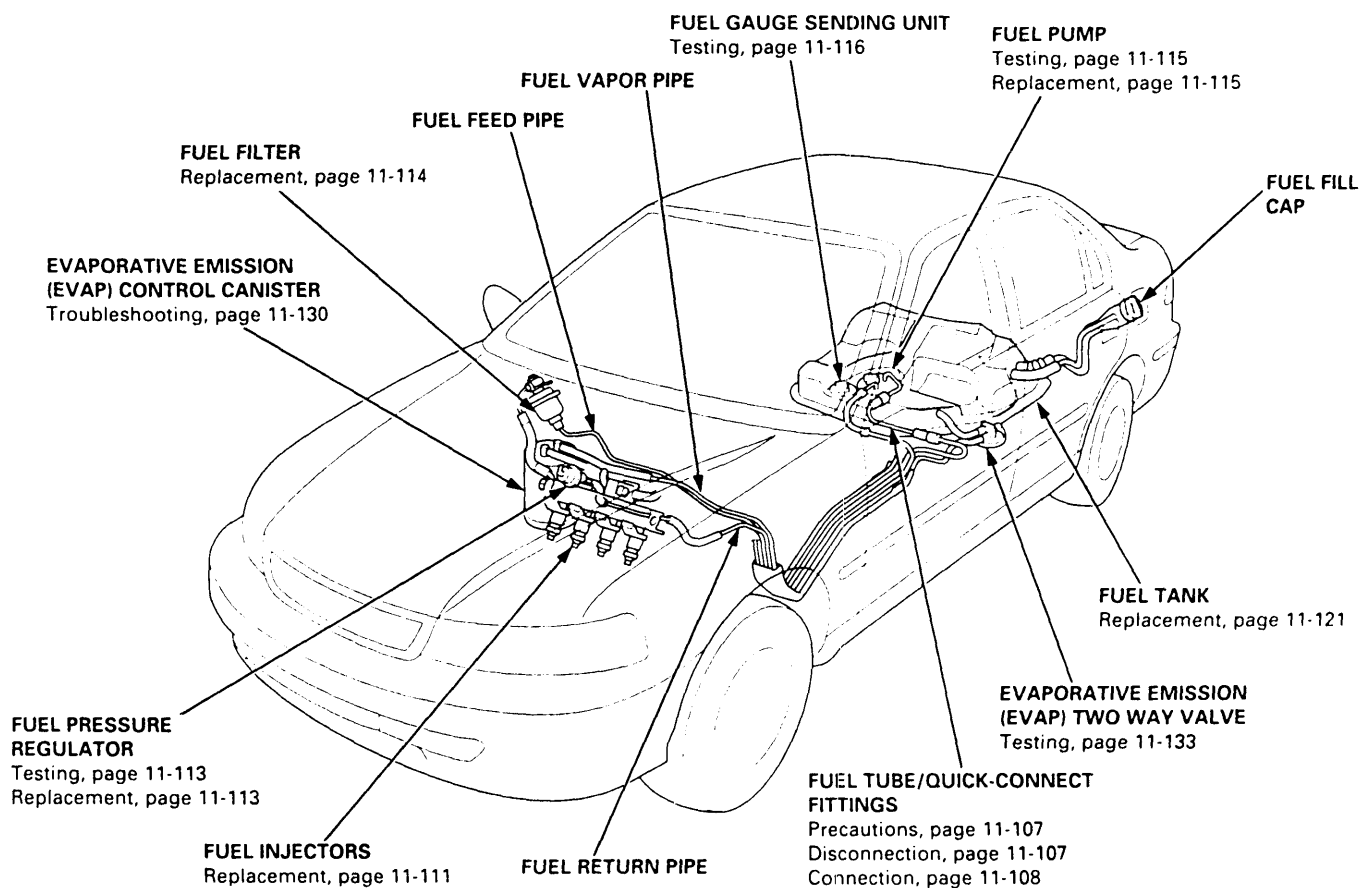
Component Locations

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Component Locations

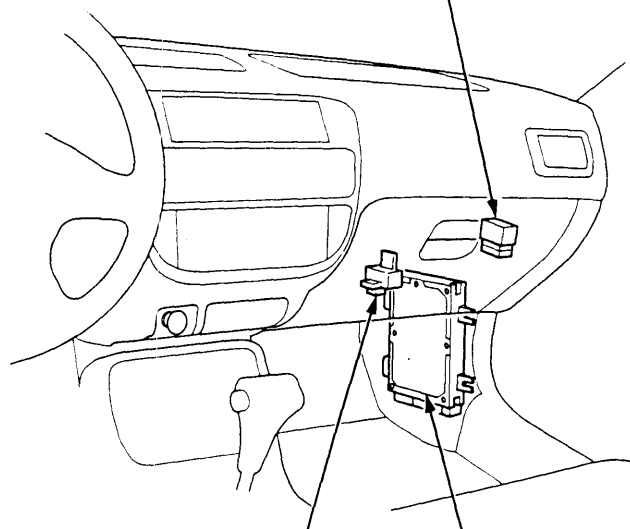
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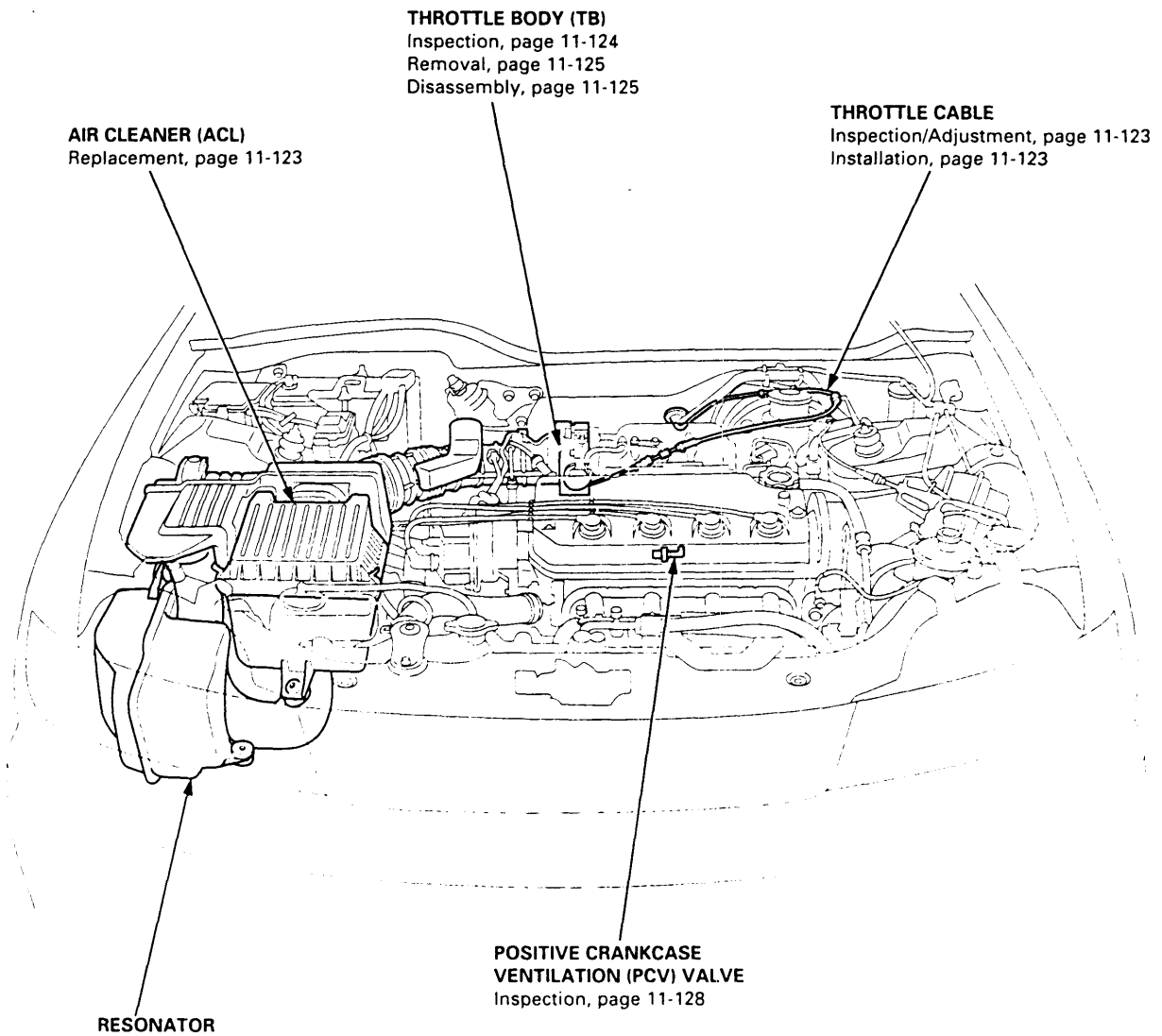


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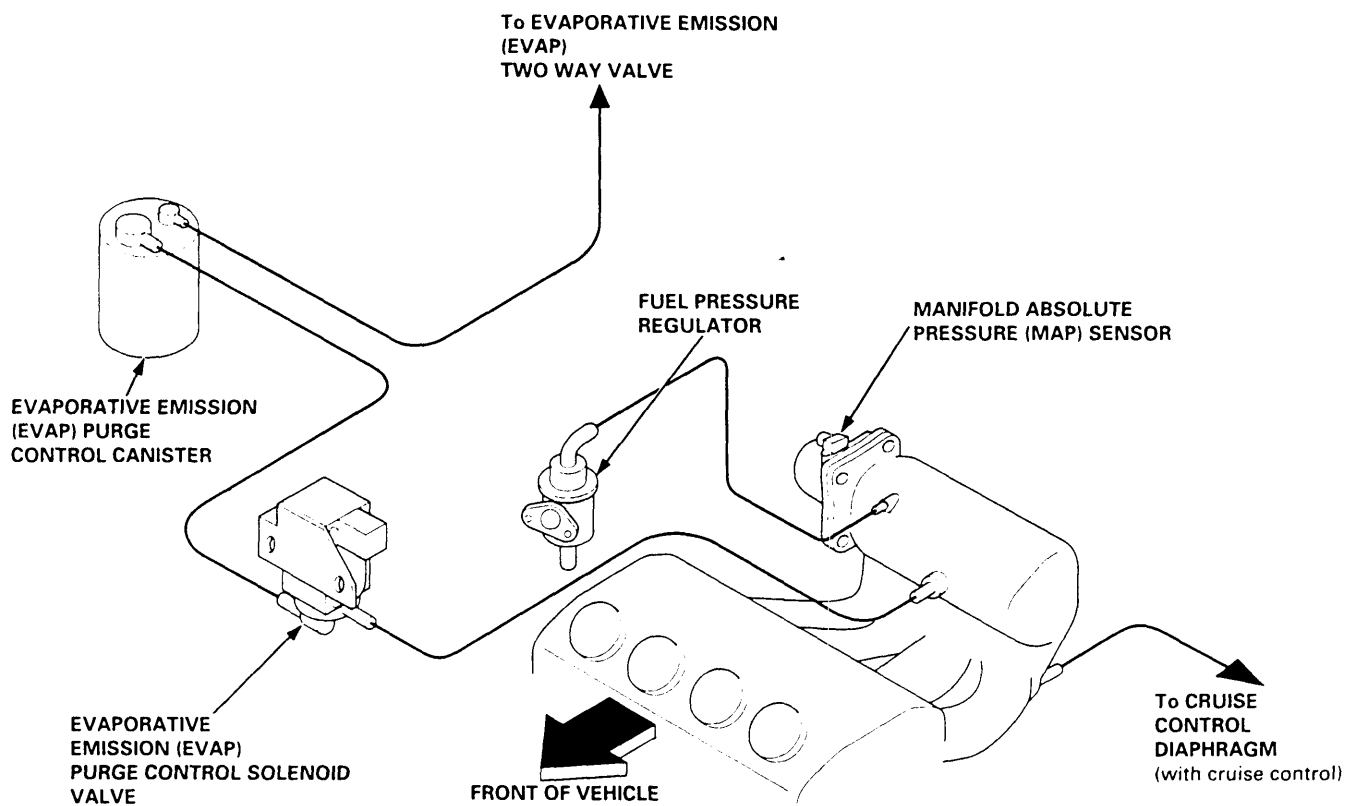
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(2P)
Self-diagnostic Procedures,
page 11-26

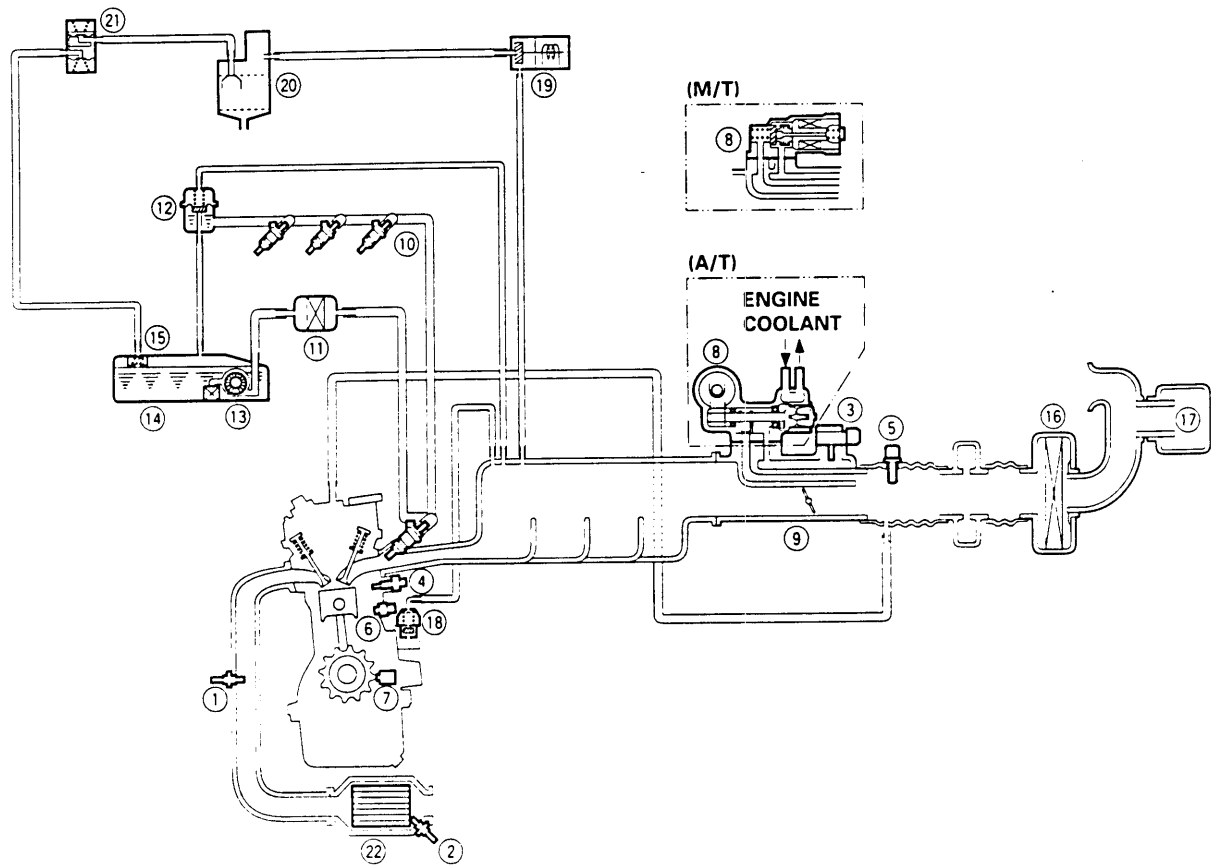
ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM)
Troubleshooting, page 11-44



System Description

Vacuum Connections



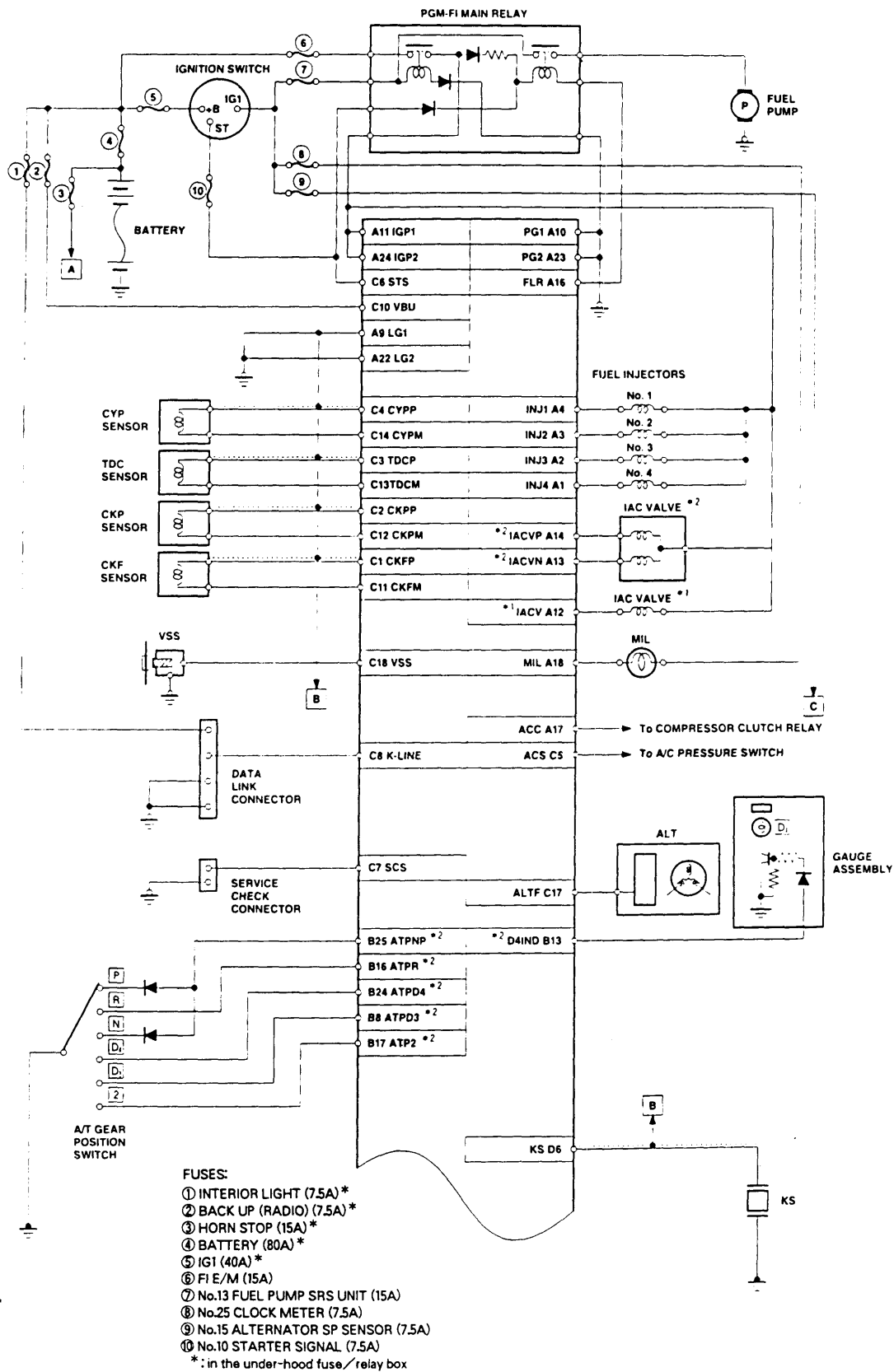


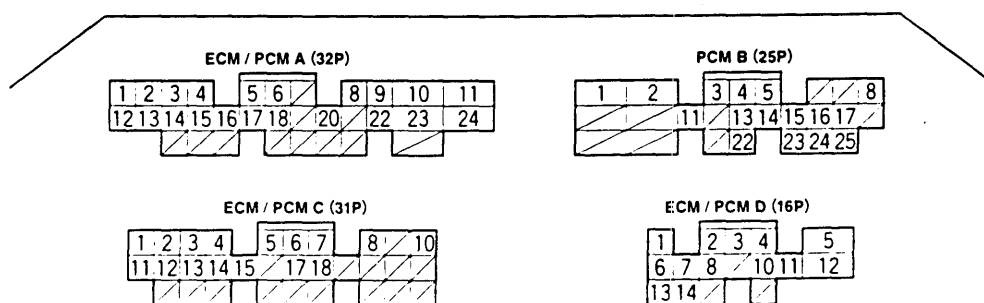
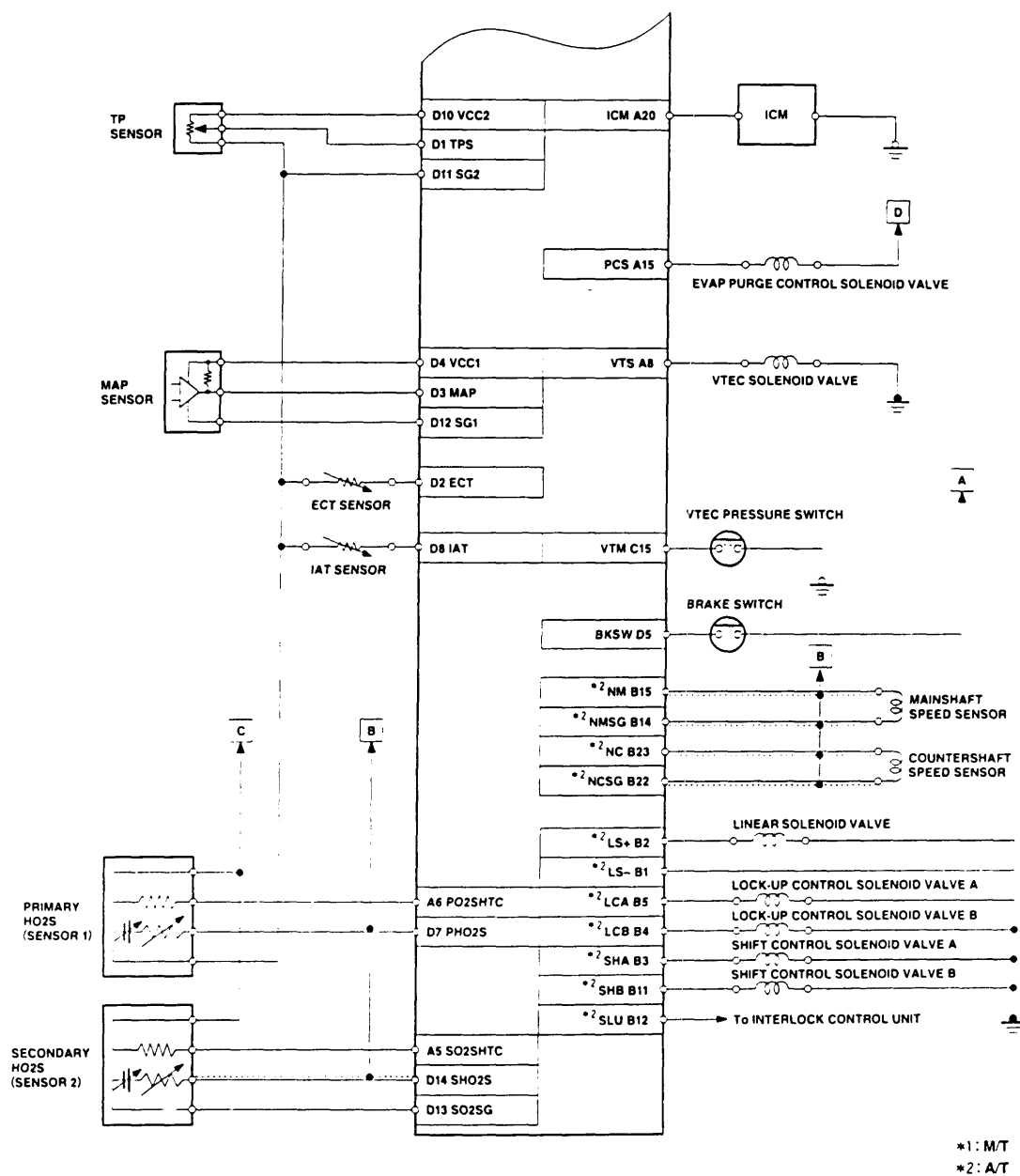
- ① PRIMARY HEATED OXYGEN SENSOR (PRIMARY HO₂S, SENSOR 1)
- ② SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO₂S, SENSOR 2)
- ③ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
- ④ ENGINE COOLANT TEMPERATURE (ECT) SENSOR
- ⑤ INTAKE AIR TEMPERATURE (IAT) SENSOR
- ⑥ KNOCK SENSOR (KS)
- ⑦ CRANKSHAFT SPEED FLUCTUATION (CKF) SENSOR
- ⑧ IDLE AIR CONTROL (IAC) VALVE
- ⑨ THROTTLE BODY (TB)
- ⑩ FUEL INJECTOR
- ⑪ FUEL FILTER

- ⑫ FUEL PRESSURE REGULATOR
- ⑬ FUEL PUMP (FP)
- ⑭ FUEL TANK
- ⑮ FUEL TANK EVAPORATIVE EMISSION (EVAP) VALVE
- ⑯ AIR CLEANER
- ⑰ RESONATOR
- ⑱ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
- ⑲ EVAPORATIVE EMISSION (EVAP) PURGE CONTROL SOLENOID VALVE
- ⑳ EVAPORATIVE EMISSION (EVAP) CONTROL CANISTER
- ㉑ EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE
- ㉒ THREE WAY CATALYTIC CONVERTER (TWC)

System Description

Electrical Connections

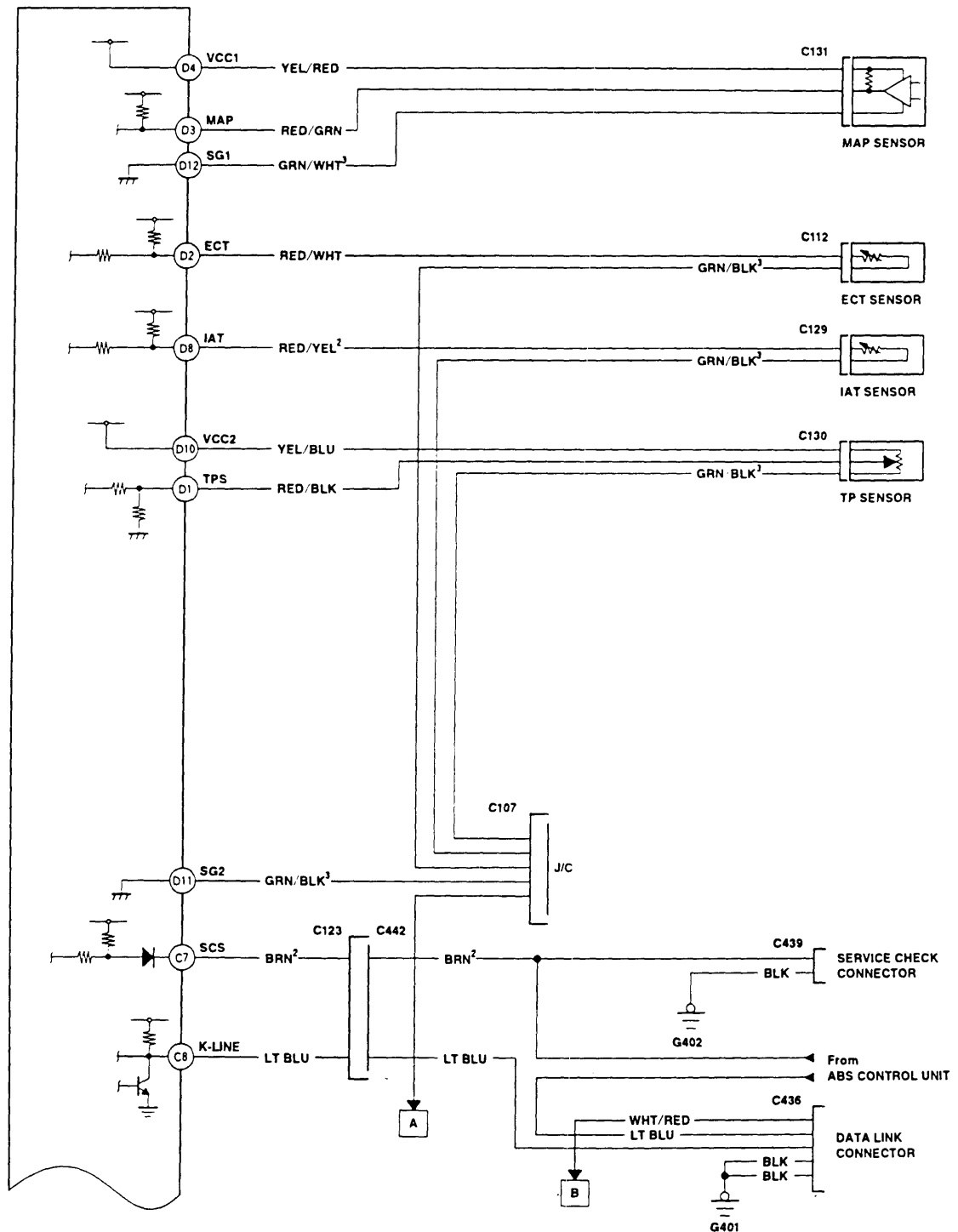


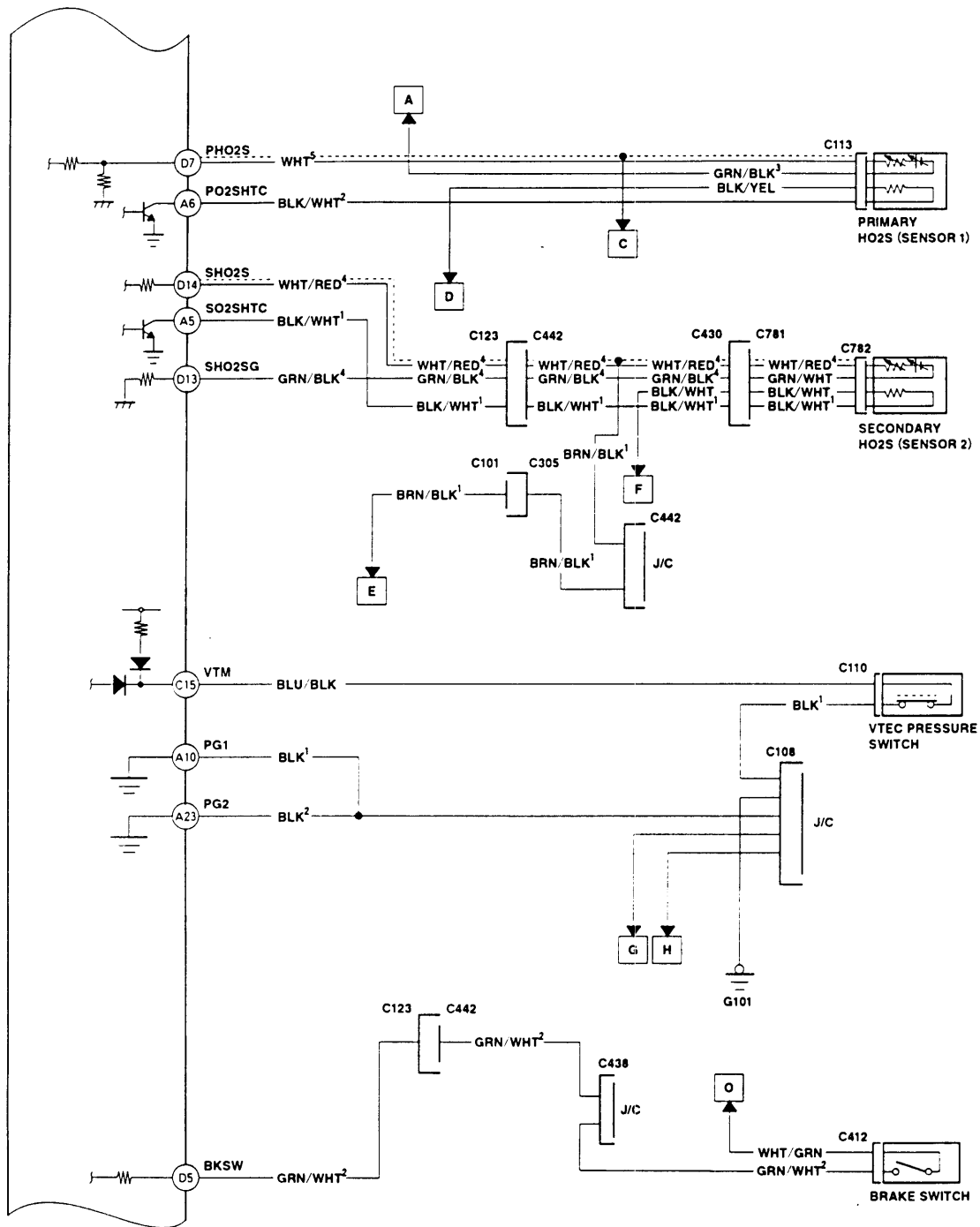


TERMINAL LOCATIONS

System Description

Electrical Connections

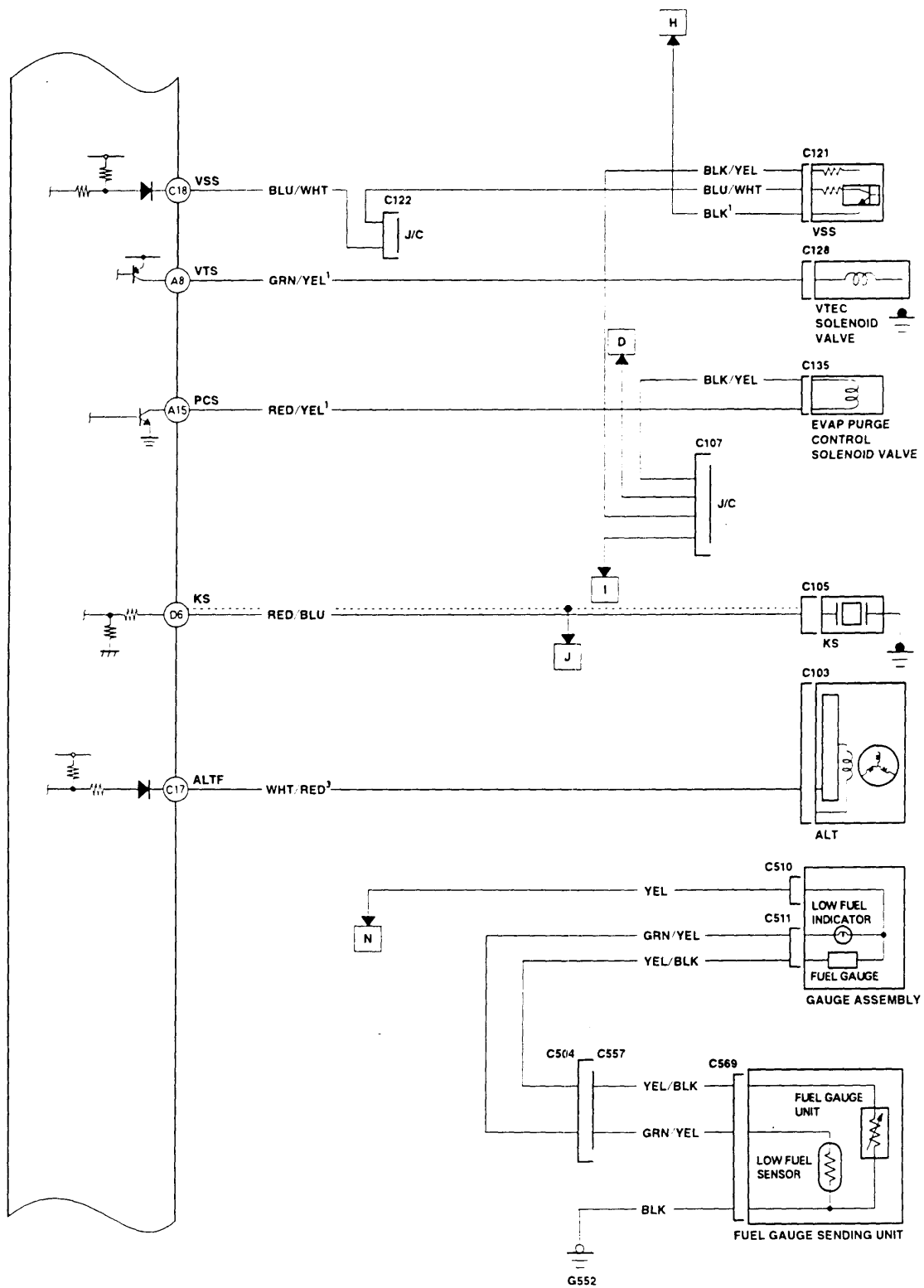


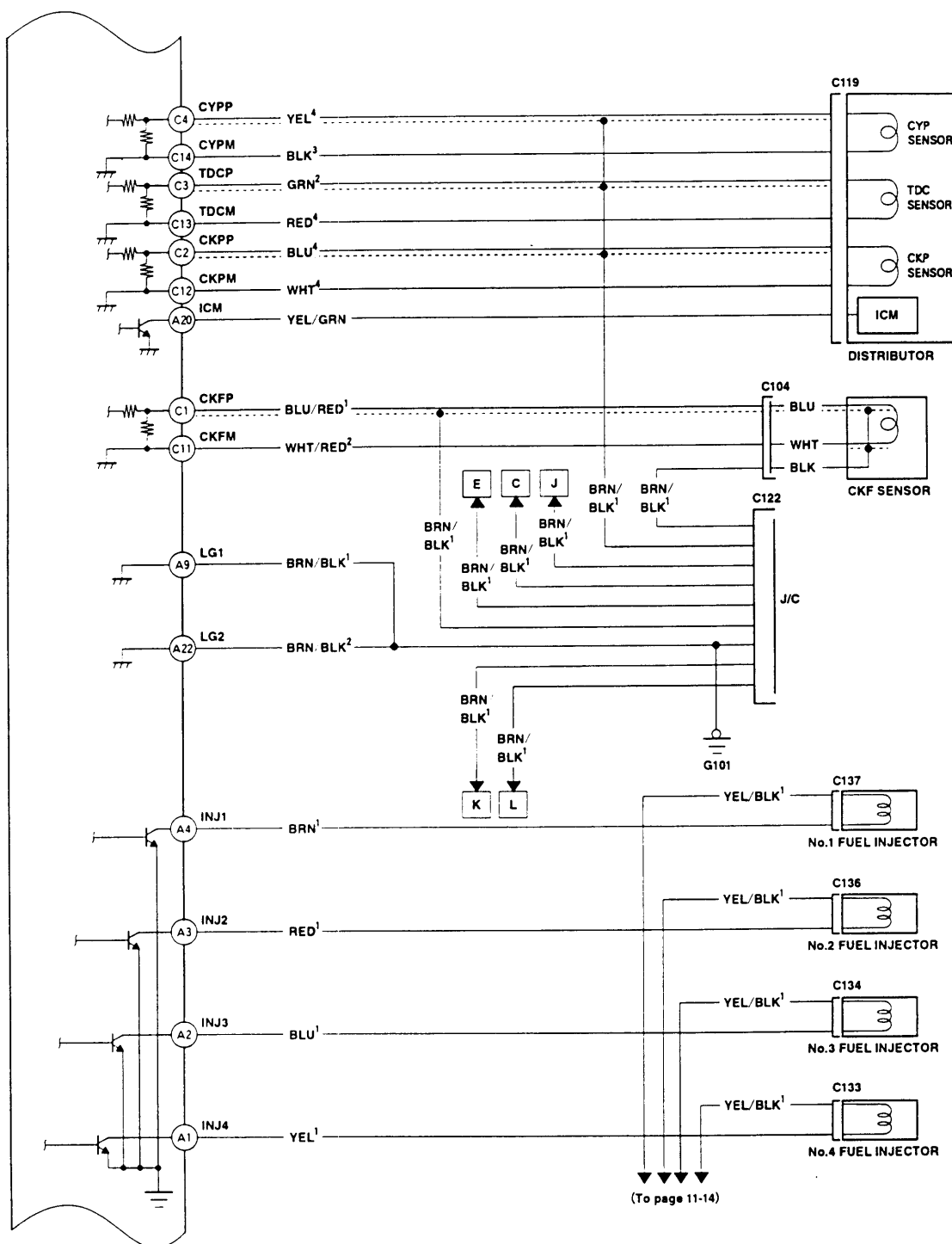


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System Description

Electrical Connections (cont'd)

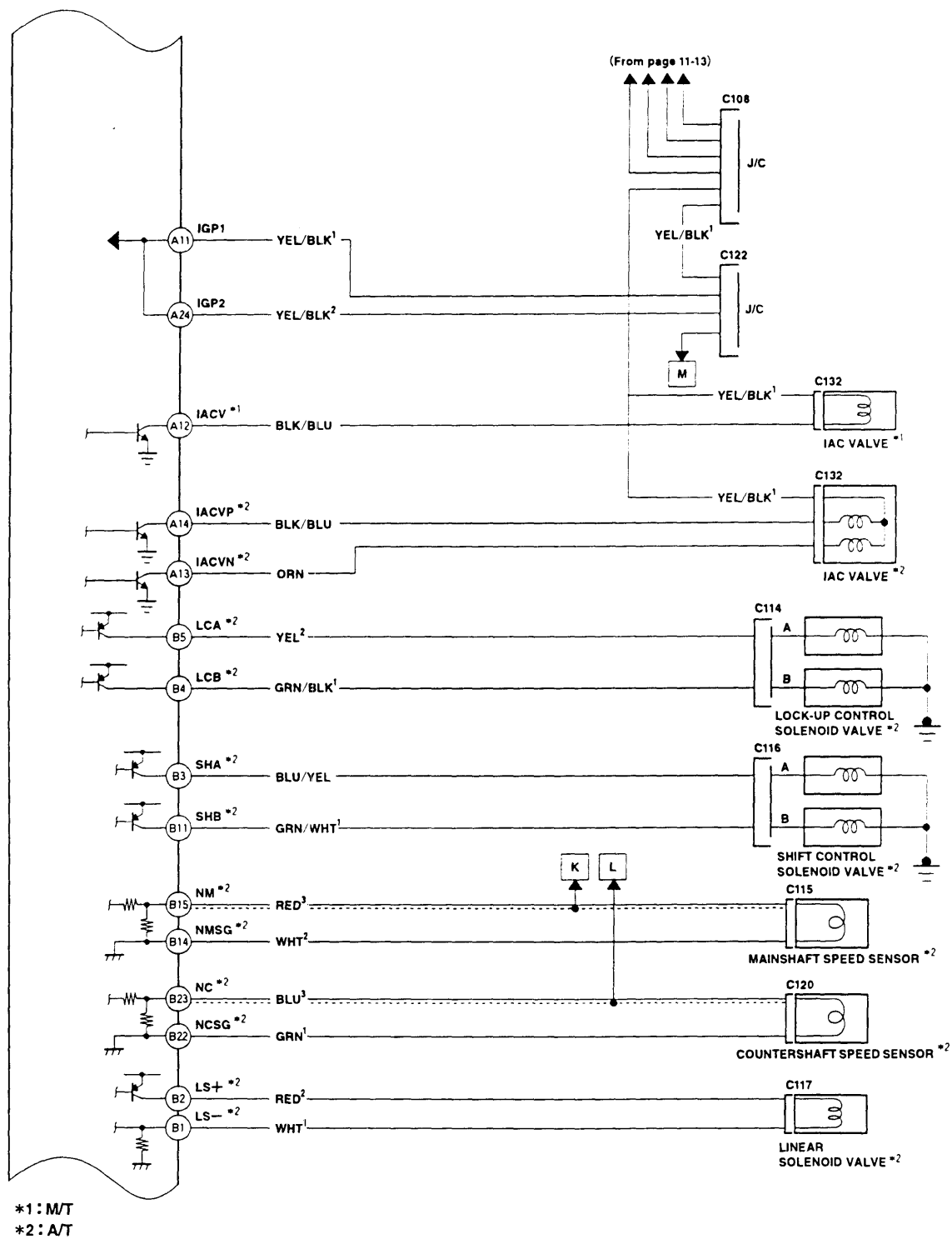


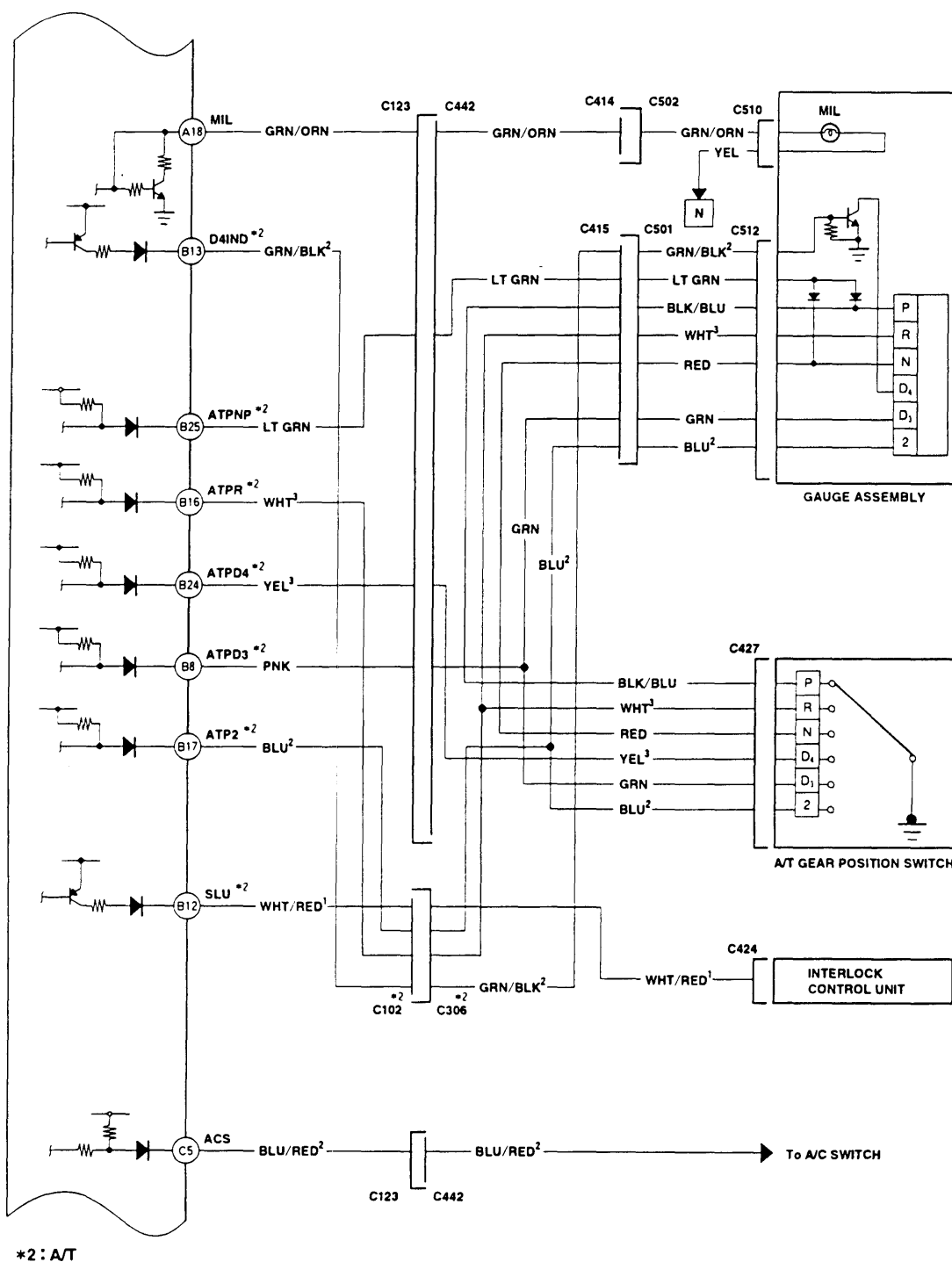


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System Description

Electrical Connections (cont'd)

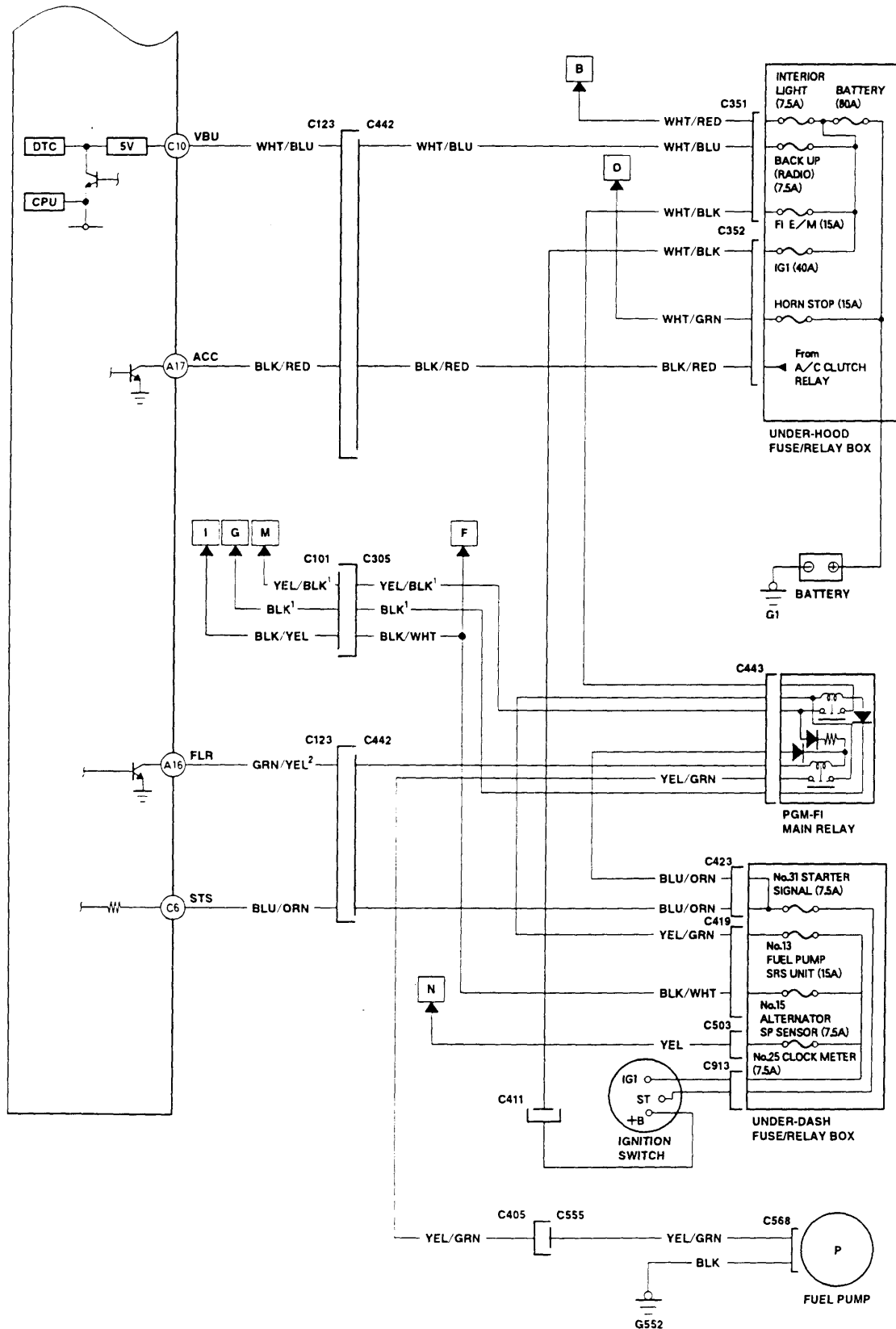




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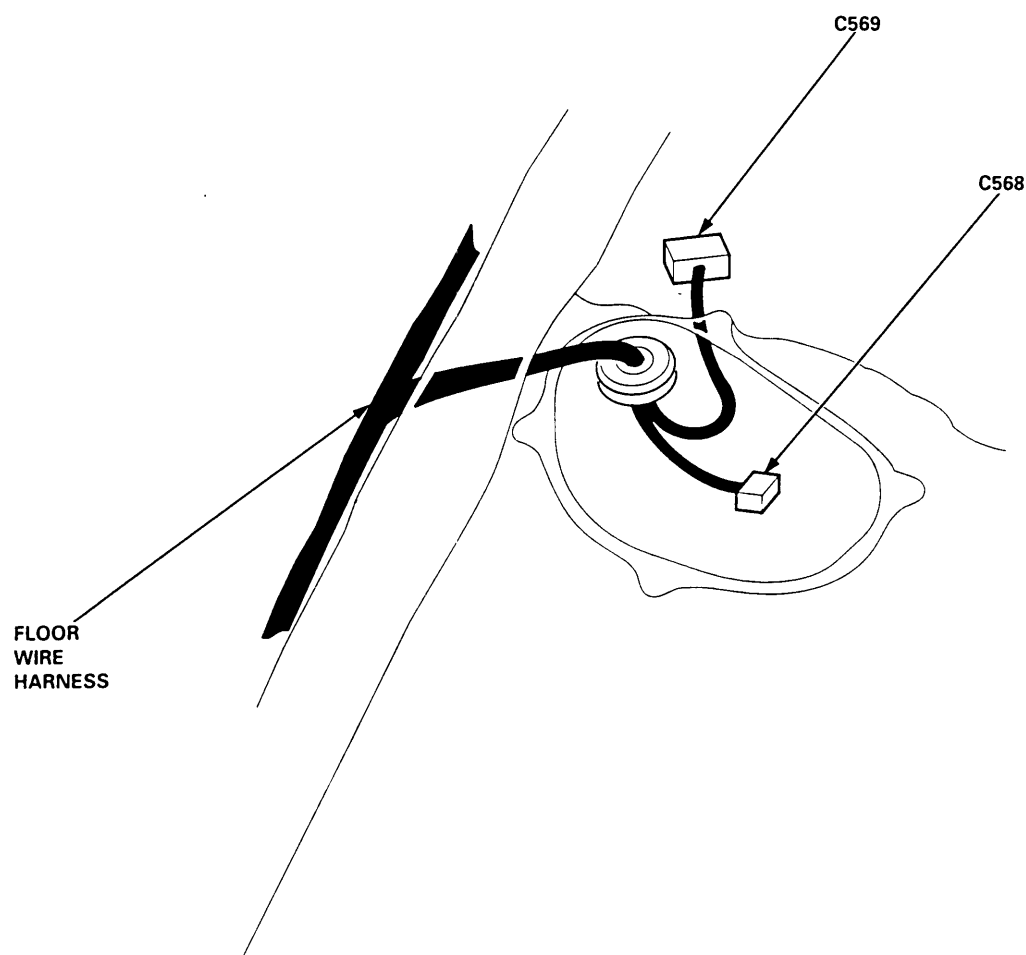
System Description

Electrical Connections (cont'd)





System Connectors (Fuel Pump)



C568



1	BLK
2	YEL/GRN

C569

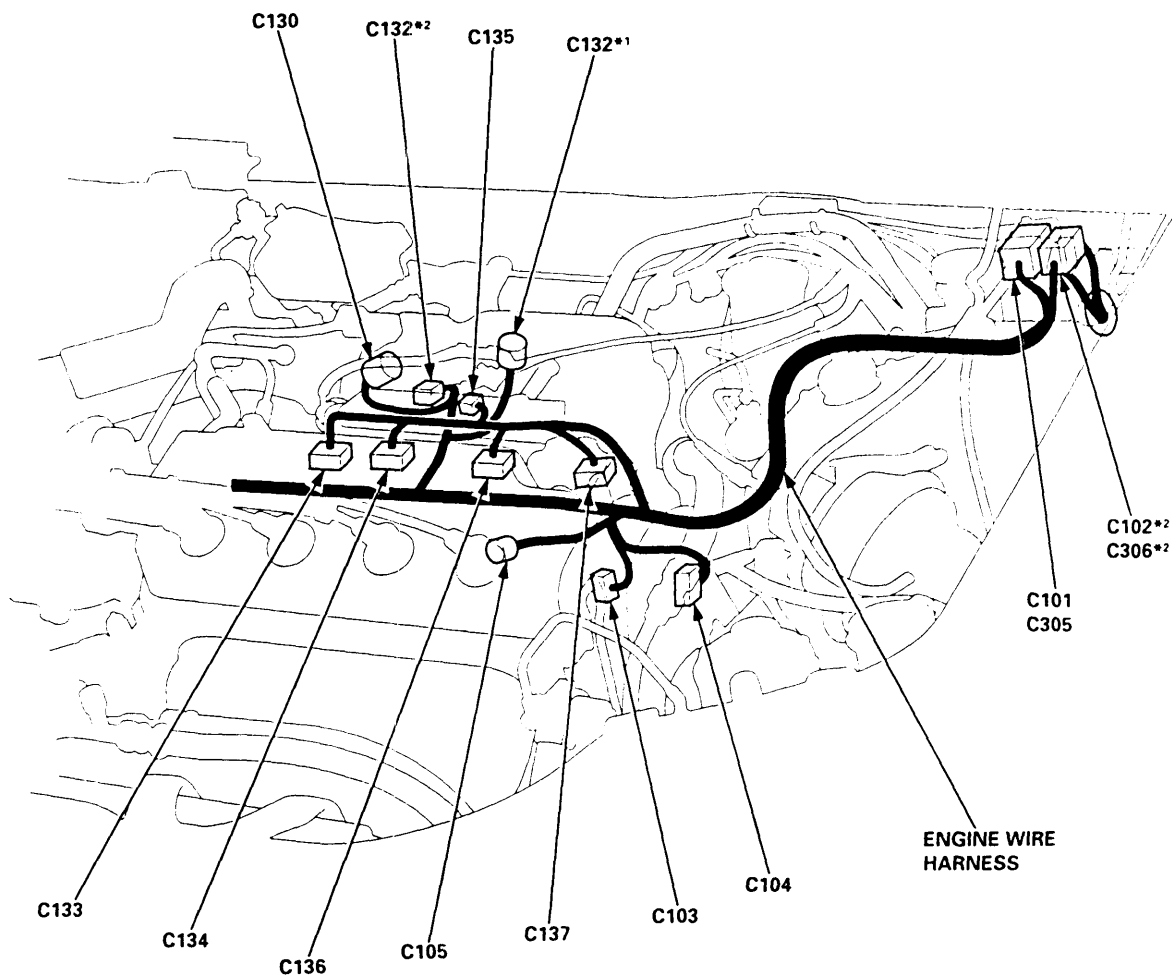


1	BLK
2	YEL/BLK
3	GRN/YEL

- NOTE:
- Different wires with the same color have been given a number suffix to distinguish them (for example, YEL/BLK¹ and YEL/BLK² are not the same).
 - : Related to Fuel and Emissions System.
 - Connector with male terminals (double outline): View from terminal side
 - Connector with female terminals (single outline): View from wire side

System Description

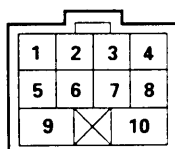
System Connectors (Engine Compartment)



*1: M/T
*2: A/T

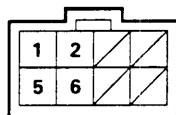


C101



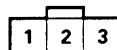
① BLK/YEL	6 WHT/BLU
② BLK ¹	7 YEL/GRN
3 YEL/RED	8 BLU
④ BRN/BLK ¹	9 BLK/WHT
⑤ YEL/BLK ¹	10 BLK/YEL

C102*2



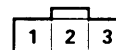
① GRN/BLK ²	⑤ WHT ²
② WHT/RED ¹	⑥ BLU ²
3 ———	7 ———
4 ———	8 ———

C103



① WHT/RED ³
2 BLK/YEL
3 WHT/BLU

C104



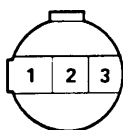
① WHT/RED ²
② BRN/BLK ¹
③ BLU/RED ¹

C105



① RED/BLU
2 ———

C130



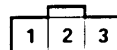
① GRN/BLK ¹
② RED/BLK
③ YEL/BLU

C132*1



① BLK/BLU
② YEL/BLK ¹

C132*2



① ORN
② YEL/BLK ¹
③ BLK/BLU

C133



① YEL/BLK ¹
② YEL ¹

C134



① YEL/BLK ¹
② BLU ¹

C135



① BLK/YEL
② RED/YEL ¹

C136



① YEL/BLK ¹
② RED ¹

C137



① YEL/BLK ¹
② BRN ¹

NOTE: • Different wires with the same color have been given a number suffix to distinguish them (for example, YEL/BLK¹ and YEL/BLK² are not the same).

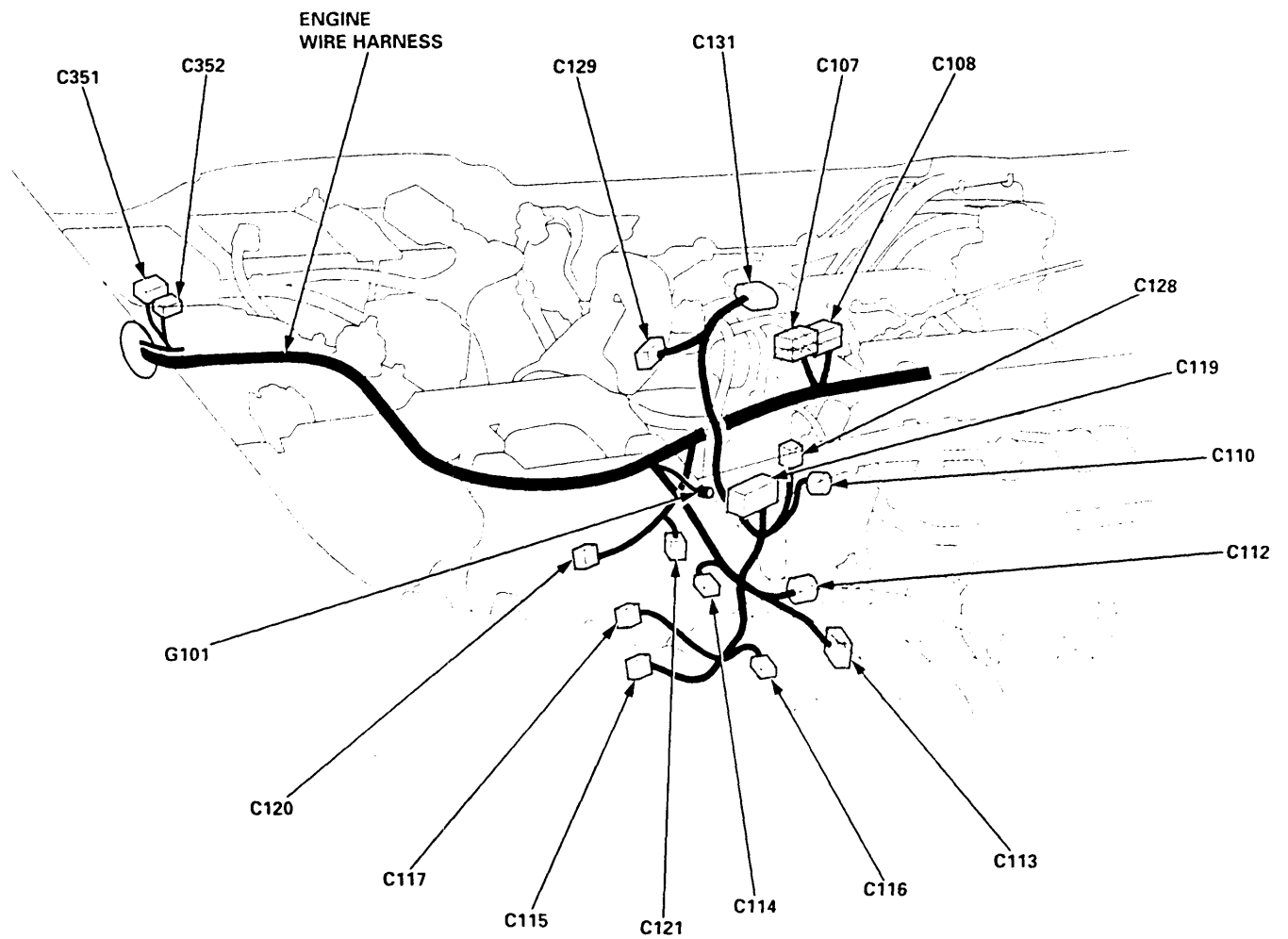
○: Related to Fuel and Emissions System.

- Connector with male terminals (double outline): View from terminal side
- Connector with female terminals (single outline): View from wire side

(cont'd)

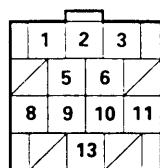
System Description

System Connectors (Engine Compartment) (cont'd)



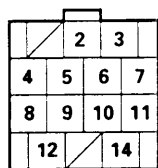


C107



1	BLK/YEL	8	GRN/BLK ³
2	BLK/YEL	9	GRN/BLK ³
3	BLK/YEL	10	GRN/BLK ³
4	—	11	GRN/BLK ³
5	BLK/YEL	12	—
6	BLK/YEL	13	GRN/BLK ³
7	—	14	—

C108



1	—	8	BLK
2	YEL/BLK ¹	9	BLK ¹
3	YEL/BLK ¹	10	BLK ¹
4	YEL/BLK ¹	11	BLK ¹
5	YEL/BLK ¹	12	BLK ¹
6	YEL/BLK ¹	13	—
7	YEL/BLK ¹	14	BLK ¹

C110



1	BLU/BLK
2	BLK ¹

C112



1	RED/WHT
2	GRN/BLK ³

C113



1	WHT ⁵
2	GRN/BLK ³
3	BLK/YEL
4	BLK/WHT ⁷

C114*2



1	GRN/BLK ¹
2	YEL ²

C115*2



1	WHT ²
2	RED ³

C116*2



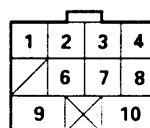
1	BLU/YEL
2	GRN/WHT ¹

C117*2



1	RED ²
2	WHT ¹

C119



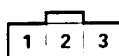
1	YEL/GRN	6	WHT ⁴
2	BLU ⁴	7	RED ⁴
3	GRN ²	8	BLK ³
4	YEL ⁴	9	BLU
5	—	10	BLK/YEL

C120*2



1	GRN ¹
2	BLU ³

C121



1	BLK ¹
2	BLK/YEL
3	BLU/WHT

C128



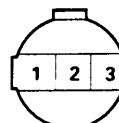
1	GRN/YEL ¹
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C129



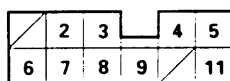
1	GRN/BLK ³
2	RED/YEL ²

C131



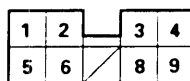
1	YEL/RED
2	GRN/WHT ³
3	RED/GRN

C351



1	—	7	WHT/BLK
2	WHT/BLU	8	WHT/BLU
3	WHT/GRN	9	WHT/GRN
4	BLK	10	—
5	WHT/RED	11	BLU/WHT
6	WHT/RED		

C352



1	GRN	6	BLK/YEL
2	BLU/WHT	7	—
3	WHT/BLK	8	WHT/GRN
4	WHT/BLK	9	WHT
5	BLK/RED		

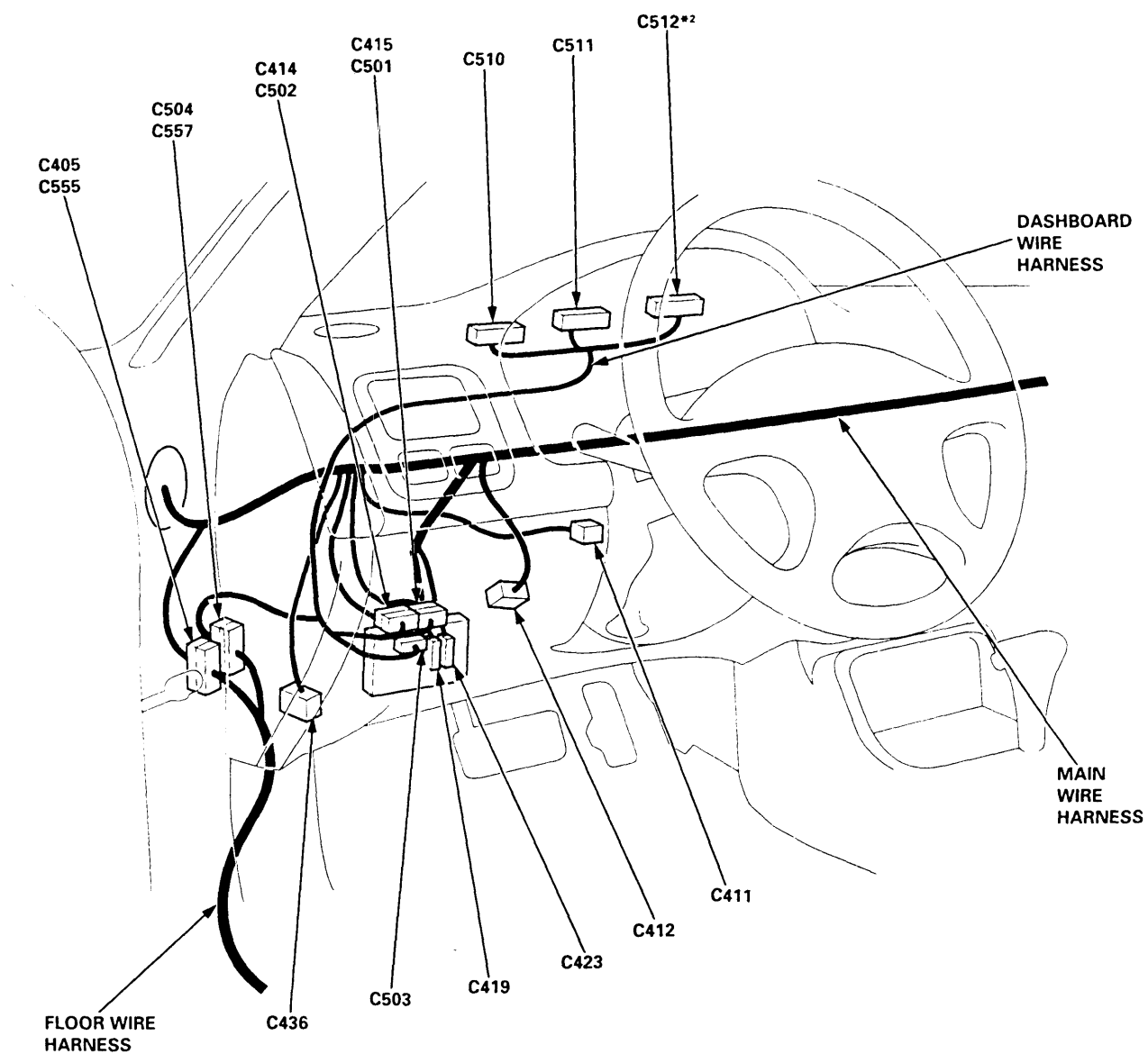
NOTE: • Different wires with the same color have been given a number suffix to distinguish them (for example, YEL/BLK¹ and YEL/BLK² are not the same).

○: Related to Fuel and Emissions System.

- Connector with male terminals (double outline): View from terminal side
- Connector with female terminals (single outline): View from wire side

System Description

System Connectors (Dash and Floor)



*2: A/T



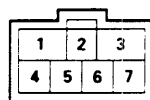
C405



1	BLU/RED	7	GRY
2	RED/GRN	8	GRN
3	YEL/RED*	9	LT GRN/RED
4	LT BLU	10	GRN/BLK
5	RED/BLU	11	GRN/WHT
6	WHT/GRN	12	YEL/GRN

*: ABS

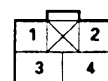
C411



1	BLK/WHT
2	BLU/RED
3	WHT/BLK
4	BLK
5	WHT*
6	WHT/BLU*
7	WHT/GRN*

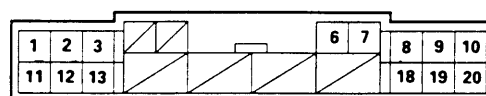
*: Security Alarm System

C412



1	LT GRN
2	GRY
3	GRN/WHT?
4	WHT/GRN

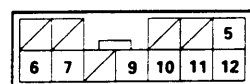
C414



1	YEL/RED	11	BLU/WHT
2	RED/BLU	12	BLU
3	WHT/BLU	13	WHT/BLK
4	---	14	---
5	---	15	---
6	YEL/RED*	16	---
7	BLU	17	---
8	GRN/ORN	18	YEL/GRN
9	RED/BLU	19	RED
10	LT GRN	20	BLU/RED*

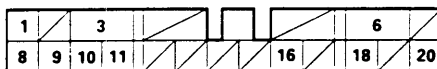
*: ABS

C415 (A/T)



1	---	7	BLK/BLU
2	---	8	---
3	---	9	BLU?
4	---	10	GRN
5	---	11	GRN/BLK?
6	RED	12	LT GRN

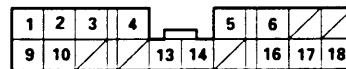
C419



1	RED/BLU	11	BLU/ORN
2	---	12	---
3	BLK	13	---
4	---	14	---
5	---	15	---
6	WHT/BLU	16	BLK/WHT
7	---	17	---
8	YEL/GRN	18	WHT/GRN*
9	BLK/YEL	19	---
10	BLU/ORN	20	WHT/RED

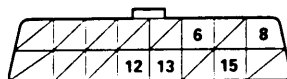
*: Security Alarm System

C423



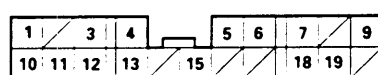
1	RED/YEL	10	GRN/YEL
2	BLK/BLU	11	---
3	RED/GRN	12	---
4	GRN/BLK	13	BLK/WHT
5	RED/BLU	14	GRN/RED
6	WHT/BLU	15	---
7	---	16	GRN/RED
8	---	17	RED/BLK
9	RED/WHT	18	RED/BLK

C436



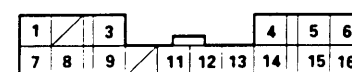
1	---	9	---
2	---	10	---
3	---	11	---
4	---	12	BLK
5	---	13	BLK
6	LT BLU	14	---
7	---	15	LT BLU
8	WHT/RED	16	---

C503



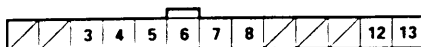
1	RED GRN	11	YEL/BLK
2	---	12	BLK/YEL
3	WHT/BLU	13	YEL/GRN
4	BLK	14	---
5	GRN/WHT	15	RED/BLK
6	GRN/RED	16	---
7	GRN/ORN	17	---
8	---	18	BLK/WHT
9	GRN/YEL	19	YEL/RED
10	YEL	20	---

C504



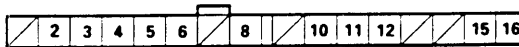
1	RED	9	GRY/WHT
2	---	10	---
3	GRN/RED	11	BRN/WHT
4	YEL/BLK	12	RED/YEL
5	GRN/YEL	13	GRY/BLK
6	BLU/BLK	14	BLU
7	BLU/YEL	15	BRN/BLK
8	YEL/BLK	16	RED/GRN

C510



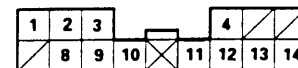
1	---	8	BLU
2	---	9	---
3	YEL/RED	10	---
4	YEL	11	---
5	GRN/ORN	12	RED
6	RED/GRN	13	RED/BLK
7	GRN/RED	14	---

C511



1	---	9	---
2	BLK	10	YEL/BLK
3	BLU/BLK	11	BLU/WHT
4	GRN/YEL	12	YEL/GRN
5	GRN/RED	13	---
6	RED/BLU	14	---
7	---	15	BLK/WHT
8	GRN/YEL	16	WHT/BLU

C512 (A/T)



1	YEL	8	BLK
2	RED/BLK	9	GRN/BLK?
3	RED	10	GRN
4	BLU?	11	RED
5	---	12	WHT?
6	---	13	BLK/BLU
7	---	14	LT GRN

NOTE: • Different wires with the same color have been given a number suffix to distinguish them (for example, YEL/BLK¹ and YEL/BLK² are not the same).

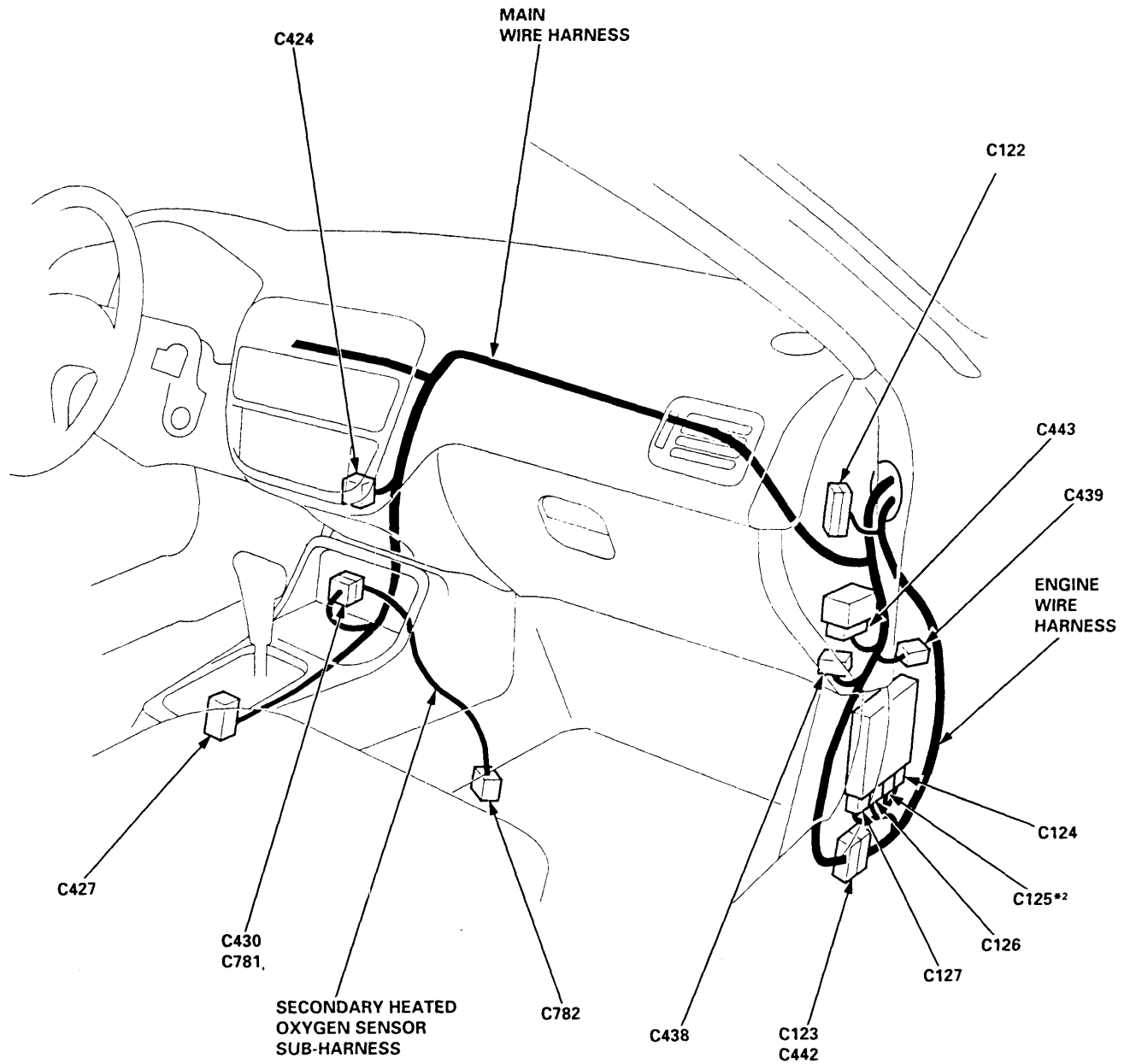
○: Related to Fuel and Emissions System.

- Connector with male terminals (double outline): View from terminal side
- Connector with female terminals (single outline): View from wire side

(cont'd)

System Description

System Connectors (Dash and Floor) (cont'd)



*2: A/T



C122



1	BRN/BLK ¹
2	BRN/BLK ¹
3	BRN/BLK ¹
4	YEL/BLK ¹
5	YEL/BLK ¹
6	YEL/BLK ¹
7	YEL/BLK ¹
8	BLU/WHT
9	BLU/WHT
10	BLU/WHT
11	BRN/BLK ¹
12	BRN/BLK ¹
13	BRN/BLK ¹
14	BRN/BLK ¹
15	BRN/BLK ¹
16	BRN/BLK ¹
17	BRN/BLK ¹
18	BRN/BLK ¹
19	BRN/BLK ¹
20	BRN/BLK ¹

C123



1	GRN/BLK ¹
2	WHT/RED ¹
3	LT GRN ²
4	GRN
5	BLU/RED ¹
6	GRN/ORN
7	BRN ¹
8	WHT/BLU
9	BLK/RED
10	GRN/YEL ¹
11	BLK/WHT ¹
12	GRN/YEL ¹
13	LT BLU
14	YEL ¹
15	GRN/BLK ¹
16	PNK ²
17	YEL ¹
18	BLU/ORN
19	GRN/WHT ¹
20	BLU/WHT

*1: M/T
*2: A/T

C124 (ECM/PCM-A)



1	YEL ¹
2	BLU ¹
3	RED ¹
4	BRN ¹
5	BLK/WHT ¹
6	BLK/WHT ¹
7	GRN/YEL ¹
8	BRN/BLK ¹
9	BLK ¹
10	YEL/BLK ¹
11	ORN ²
12	BLK/BLU ²
13	BLK/BLU ²
14	RED/YEL ¹
15	GRN/YEL ¹
16	BLK/RED
17	GRN/ORN
18	YEL/GRN
19	BRN/BLK ¹
20	BLK ¹
21	YEL/BLK ¹
22	GRN/RED
23	GRN/YEL ¹
24	BLK/WHT ¹
25	BLK/WHT ¹
26	GRN/YEL ¹
27	BLK/RED
28	GRN/ORN
29	YEL/GRN
30	BRN/BLK ¹
31	BLK ¹
32	YEL/BLK ¹

*1: M/T
*2: A/T

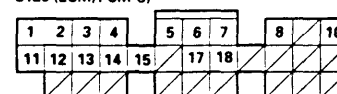
C125² (PCM-B)



1	WHT ¹
2	RED ¹
3	BLU/YEL
4	GRN/BLK ¹
5	YEL ¹
6	PNK
7	GRN/WHT ¹
8	WHT/RED ¹
9	GRN/BLK ¹
10	WHT ¹
11	GRN/WHT ¹
12	WHT/RED ¹
13	GRN/BLK ¹
14	WHT ¹
15	RED ¹
16	WHT ¹
17	BLU ¹
18	GRN
19	BLU ¹
20	LT GRN
21	GRN
22	BLU ¹
23	YEL ¹
24	LT GRN

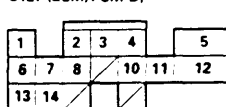
*2: A/T

C126 (ECM/PCM-C)



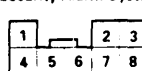
1	BLU/RED ¹
2	BLU ¹
3	GRN ¹
4	YEL ¹
5	BLU/RED ¹
6	BLU/ORN
7	BRN ¹
8	LT BLU
9	WHT/BLU
10	WHT/RED ¹
11	RED ¹
12	BLK ¹
13	BLU/BLK
14	WHT/RED ¹
15	BLU/WHT
16	BLU/WHT
17	WHT/RED ¹
18	BLU/WHT
19	BLU/WHT
20	BLU/WHT
21	BLU/WHT
22	BLU/WHT
23	BLU/WHT
24	BLU/WHT
25	BLU/WHT
26	BLU/WHT
27	BLU/WHT
28	BLU/WHT
29	BLU/WHT
30	BLU/WHT
31	BLU/WHT

C127 (ECM/PCM-D)



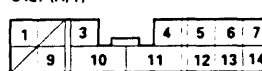
1	RED/BLK
2	RED/WHT
3	RED/GRN
4	YEL/RED
5	GRN/WHT ¹
6	RED/BLU
7	WHT ¹
8	RED/YEL ¹
9	YEL/BLU
10	GRN/BLK ¹
11	GRN/WHT ¹
12	GRN/BLK ¹
13	WHT/RED ¹
14	WHT/RED ¹
15	WHT/RED ¹
16	WHT/RED ¹

C424 (Security Alarm System)



1	WHT/BLU
2	YEL
3	YEL/BLK
4	BLK
5	WHT
6	BLK/BLU
7	WHT/RED
8	WHT/BLK

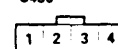
C427 (A/T)



1	BLK
2	YEL/RED
3	GRN/BLK
4	BLU ¹
5	GRN
6	YEL ¹
7	RED
8	PNK ²
9	ORN
10	BLU/BLK
11	BLK/BLU
12	BLK/BLU
13	WHT ¹
14	RED

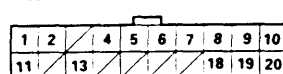
* Cruise control

C430



1	BLK/WHT
2	GRN/WHT ¹
3	WHT/RED ¹
4	BLK/WHT ¹

C438



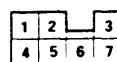
1	BRN/BLK ¹
2	BRN/BLK ¹
3	BLU/WHT
4	BLU/WHT
5	BLU/WHT
6	BLU/WHT
7	GRN/WHT ¹
8	GRN/WHT ¹
9	GRN/WHT
10	GRN/WHT
11	GRN/RED
12	GRN/RED
13	GRN/RED
14	GRN/RED
15	GRN/RED
16	GRN/RED
17	GRN/RED
18	GRN/RED
19	GRN/RED
20	GRN/RED

C439



1	BRN ¹
2	BLK

C443



1	GRN/YEL ¹
2	BLU/ORN
3	BLK ¹
4	YEL/GRN
5	YEL/GRN
6	YEL/BLK ¹
7	WHT/BLK

C782



1	WHT/RED ¹
2	GRN/WHT
3	BLK/WHT ¹
4	BLK/WHT

- NOTE: • Different wires with the same color have been given a number suffix to distinguish them (for example, YEL/BLK¹ and YEL/BLK² are not the same).
- : Related to Fuel and Emissions System.
- Connector with male terminals (double outline): View from terminal side
- Connector with female terminals (single outline): View from wire side

Troubleshooting

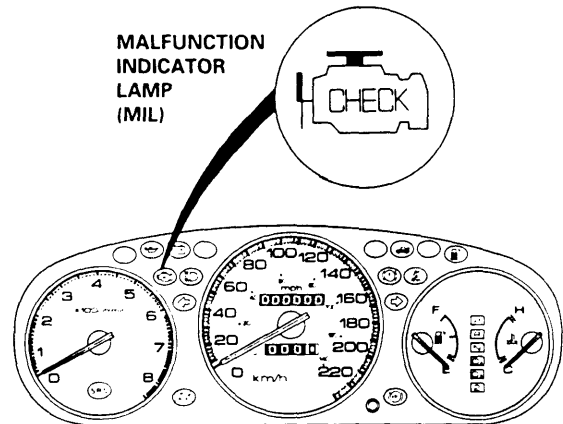
Troubleshooting Procedures

I. How To Begin Troubleshooting

When the Malfunction Indicator Lamp (MIL) has been reported on, or there is a driveability problem, use the appropriate procedure below to diagnose and repair the problem.

A. When the MIL has come on:

1. Connect the Honda PGM Tester or an OBD II scan tool to the 16P Data Link Connector (DLC) located near the left kick panel.
2. Turn the ignition switch ON (II).
3. Honda PGM Tester: Begin troubleshooting as indicated by the tester. The DTC troubleshooting flowcharts are not needed with the tester; follow the tester's prompts.
OBD II scan tool: Check the DTC and note it. Also check and note the freeze frame data. Refer to the Diagnostic Trouble Code Chart and begin troubleshooting.



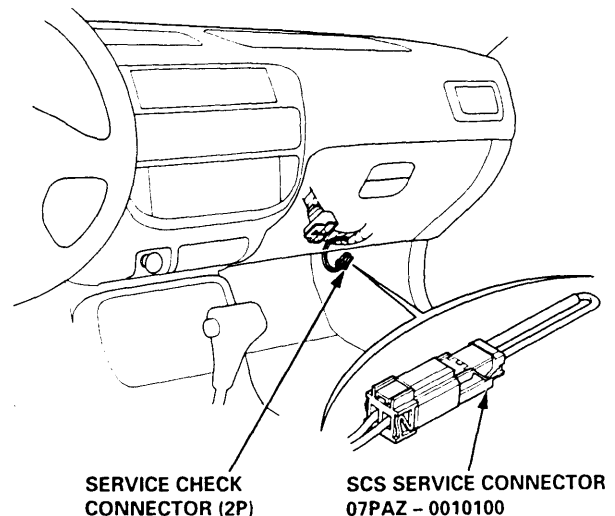
NOTE:

- See the OBD II scan tool or Honda PGM Tester user's manuals for specific operating instructions.
- The scan tool or tester can read the Diagnostic Trouble Codes (DTC), freeze frame data, current data, and other Engine Control Module (ECM)/Powertrain Control Module (PCM) data.
- Freeze frame data indicates the engine conditions when the first malfunction, misfire or fuel trim malfunction was detected. It can be useful information when troubleshooting.

B. When the MIL has not come on , but there is a driveability problem, refer to the Symptom Chart on page 11-30.

C. DTCs will be indicated by the blinking of the Malfunction Indicator Lamp (MIL) with the SCS service connector connected.

Connect the SCS service connector to Service Check Connector as shown (The 2P Service Check Connector is located under the dash on the passenger's side of the vehicle). Turn the ignition switch ON (II).





II. Engine Control Module (ECM)/Powertrain Control Module (PCM) Reset Procedure

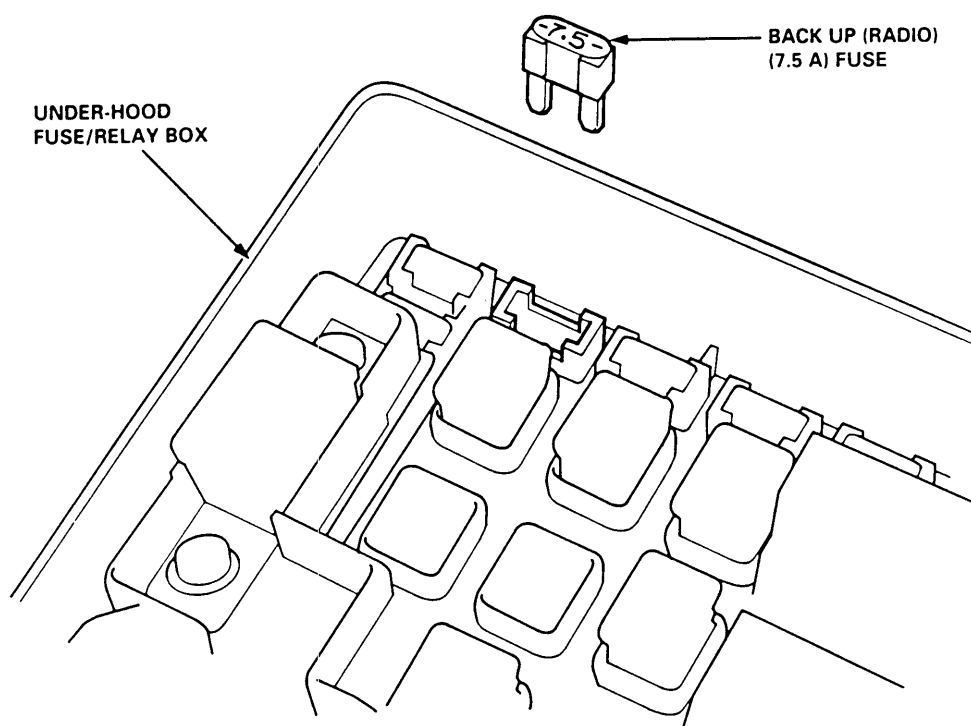
Either of the following actions will reset the ECM/PCM.

- Use the OBD II scan tool or Honda PGM Tester to clear the ECM's/PCM's memory.

NOTE: See the OBD II scan tool or Honda PGM Tester user's manuals for specific operating instructions.

- Turn the ignition switch OFF. Remove the BACK UP (RADIO) (7.5 A) fuse from the under-hood fuse/relay box for 10 seconds.

NOTE: Removing the BACK UP (RADIO) (7.5 A) fuse cancels the clock and the radio presets. Make note of the customer's presets so you can reset them.



III. Final Procedure (this procedure must be done after any troubleshooting)

1. Remove the SCS Service Connector if it is connected.

NOTE: If the SCS service connector is connected and there are no DTCs stored in the ECM/PCM, the MIL will stay on when the ignition switch is turned ON (II).

2. Do the ECM/PCM Reset Procedure.

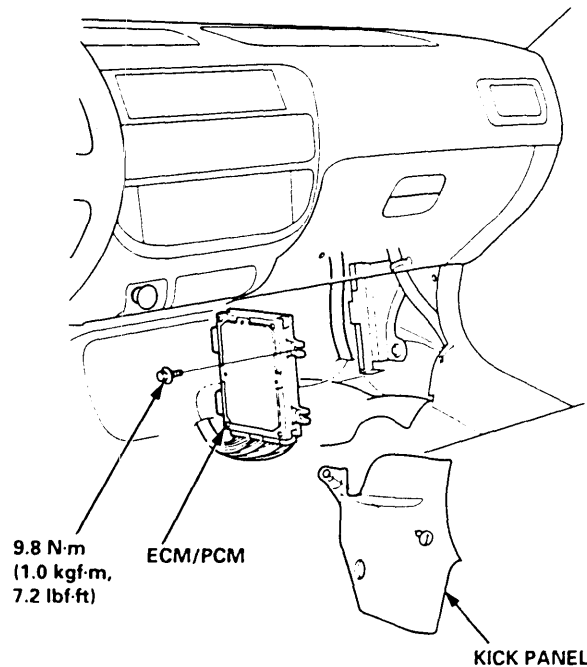
3. Turn the ignition switch OFF.

(cont'd)

Troubleshooting

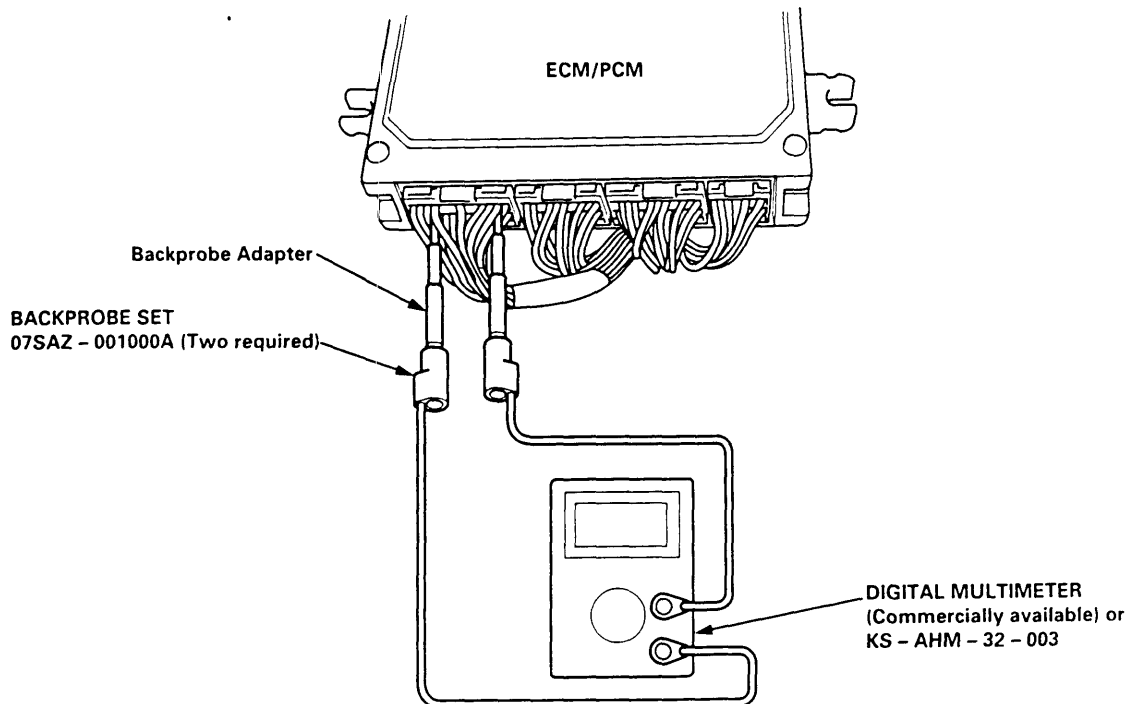
Troubleshooting Procedures (cont'd)

If the inspection for a particular code requires voltage or resistance checks at the ECM/PCM connectors, remove the right kick panel. Pull the carpet back to expose the ECM/PCM. Remove the ABS control unit if so equipped. Unbolt the ECM/PCM bolt. Turn the ignition switch OFF, and connect the backprobe sets and a digital multimeter as described below. Check the system according to the procedure described for the appropriate code(s) listed on the following pages.



How to Use the Backprobe Sets

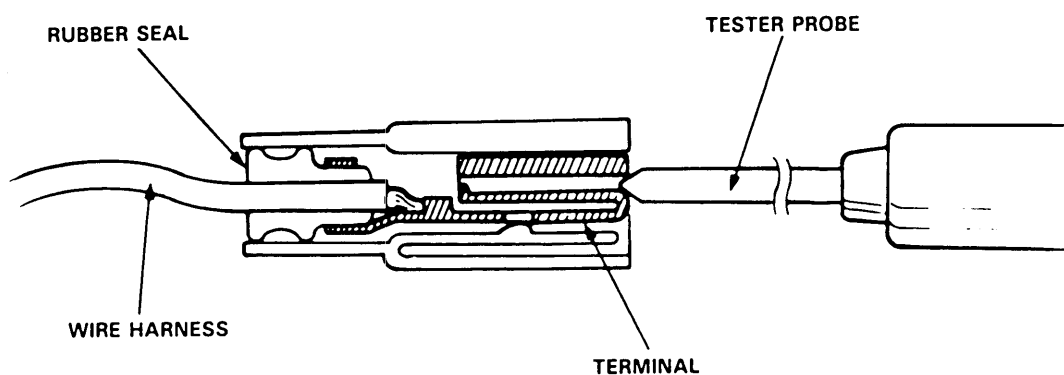
Connect the backprobe adapters to the stacking patch cords, and connect the cords to a multimeter. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it comes in contact with terminal end of the wire.





CAUTION:

- Puncturing the insulation on a wire can cause poor or intermittent electrical connections.
- Bring the tester probe into contact with the terminal from the terminal side of wire harness connectors in the engine compartment. For female connectors, just touch lightly with the tester probe and do not insert the probe.



(cont'd)

Troubleshooting

Troubleshooting Procedures (cont'd)

Symptom Chart

Listed below are symptoms and probable causes for problems that DO NOT cause the Malfunction indicator Lamp (MIL) to come on. If the MIL was reported on, go to page 11-26.

Troubleshoot each probable cause in the order listed (from left to right) until the symptom is eliminated.

The probable cause and troubleshooting page reference can be found below.

SYMPTOM	PROBABLE CAUSE
Engine will not start	4, 2, 3, 5, 20, 14, 1
Hard starting	2, 4, 11, 16, 13, 19
Cold fast idle too low	7, 8, 6, 16
Cold fast idle too high	7, 8, 10, 9
Idle speed fluctuates	7, 8, 10, 9
Misfire or rough running	Troubleshoot for misfire on pages 11-75, 78
Low power	2, 9, 10, 12, 17, 16, 18, 20
Engine stalls	2, 4, 11, 7, 20, 8, 5, 15

Other Probable Causes for an engine that will not start:

- Compression
- Starting system
- Intake air leakage
- Overheating
- Engine locked up
- Battery
- Timing belt

Probable Cause List (For the DTC Chart, see page 11-37)

Probable Cause	Page	System
1	11-44	Engine Control Module (ECM)/Powertrain Control Module (PCM)
2	11-110	Fuel pressure
3	11-118	PGM-FI main relay
4	Section 23	Ignition system
5	11-80, 85	Crankshaft Position/Top Dead Center/Cylinder Position sensor circuit, CKF sensor circuit
6	11-53	Intake Air Temperature (IAT) sensor circuit
7	11-94, 96	Idle Air Control Valve (IACV)
8	11-103, 104	Idle speed adjustment
9	11-124	Throttle body
10	11-123	Throttle cable
11	11-48	Manifold Absolute Pressure (MAP) sensor
12	11-59	Throttle Position (TP) sensor
13	11-83	Barometric pressure (BARO) sensor
14	Section 14	A/T gear position signal
15	11-102	Brake switch signal
16	11-123	Air Cleaner
17	—	Intake air pipe
18	11-126	Three Way Catalytic Converter (TWC)
19	11-130	Evaporative emission (EVAP) control
20	—	Contaminated fuel



ECM/PCM Data

By connecting the OBD II scan tool or the Honda PGM Tester to the 16P data link connector (DLC), various data can be retrieved from the ECM/PCM. The items listed in the table below conform to the SAE recommended practice.

The Honda PGM Tester also reads data beyond that recommended by SAE.

Understanding this data will help to find the causes of intermittent failures or engine problems.

NOTE:

- The “operating values” given below are approximate values and may be different depending on the environment and the individual vehicle.
- Unless noted otherwise, “at idle speed” means idling with the engine completely warmed up, A/T in position **P** or **N**, M/T in neutral, and the A/C and all accessories turned off.

Data	Description	Operating Value	Freeze Data
Diagnostic Trouble Code (DTC)	If the ECM /PCM detects a problem, it will store it as a code consisting of one letter and four numbers. Depending on the problem, an SAE-defined code (P0xxx) or a Honda-defined code (P1xxx) will be output to the tester.	If no problem is detected, there is no output.	○
Engine Speed	The ECM/PCM computes engine speed from the signals sent from the Crankshaft Position sensor. This data is used for determining the time and amount of fuel injection.	Nearly the same as tachometer indication.	○
Vehicle Speed	The ECM/PCM converts pulse signals from the Vehicle Speed Sensor (VSS) into speed data.	Nearly the same as speedometer indication	○
Manifold Absolute Pressure (MAP)	The absolute pressure caused in the intake manifold by engine load and speed.	With engine stopped: Nearly the same as atmospheric pressure At idle speed: 24 – 37 kPa (180 – 280 mmHg, 7.1 – 11.0 inHg)	○
Engine Coolant Temperature (ECT)	The ECT sensor converts coolant temperature into voltage and signals the ECM/PCM. The sensor is a thermistor whose internal resistance changes with coolant temperature. The ECM/PCM uses the voltage signals from the ECT sensor to determine the amount of injected fuel.	With cold engine: Same as ambient temperature and IAT With engine warmed up: 176 – 194°F (80 – 90°C)	○
Heated Oxygen Sensor (HO2S) (Primary, Sensor 1) (Secondary Sensor 2)	The Heated Oxygen Sensor detects the oxygen content in the exhaust gas and sends voltage signals to the ECM/PCM. Based on these signals, the ECM/PCM controls the air/fuel ratio. When the oxygen content is high (that is, when the ratio is leaner than the stoichiometric ratio), the voltage signal is lower. When the oxygen content is low (that is, when the ratio is richer than the stoichiometric ratio), the voltage signal is higher.	0.0 – 1.25 V At idle speed: about 0.1 – 0.9 V	× (Sensor 1)

(cont'd)

Troubleshooting

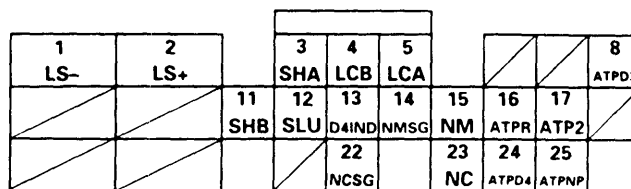
Troubleshooting Procedures (cont'd)

Data	Description	Operating Value	Freeze Data
HO2S Feedback Loop Status	Loop status is indicated as "open" or "closed". Closed: Based on the HO2S output, the ECM/PCM determines the air/fuel ratio and controls the amount of injected fuel. Open: Ignoring HO2S output, the ECM/PCM refers to signals from the TP, MAP, and ECT sensors to control the amount of injected fuel.	At idle speed: closed	○
Short Term Fuel Trim	The air/fuel ratio correction coefficient for correcting the amount of injected fuel when HO2S feedback is in the closed loop status. When the signal from the HO2S is weak, short term fuel trim gets higher, and the ECM/PCM increases the amount of injected fuel. The air/fuel ratio gradually gets richer, causing a higher HO2S output. Consequently, the short term fuel trim is lowered, and the ECM/PCM reduces the amount of injected fuel. This cycle keeps the air/fuel ratio close to the stoichiometric ratio when in closed loop status.	± 20%	○
Long Term Fuel Trim	Long term fuel trim is computed from short term fuel trim and indicates changes occurring in the fuel supply system over a long period. If long term fuel trim is higher than 1.00, the amount of injected fuel must be increased. If it is lower than 1.00, the amount of injected fuel must be reduced.	± 20%	○
Intake Air Temperature (IAT)	The IAT sensor converts intake air temperature into voltage and signals the ECM/PCM. When intake air temperature is low, the internal resistance of the sensor increases, and the voltage signal is higher.	With cold engine: Same as ambient temperature and ECT	○
Throttle Position	Based on the accelerator pedal position, the opening angle of the throttle valve is indicated.	At idle speed: approx. 10 %	○
Ignition Timing	Ignition timing is the ignition advance angle set by the ECM/PCM. The ECM/PCM matches ignition timing to the driving conditions.	At idle speed: 12° ± 2° BTDC with the SCS service connector connected.	×
Calculated Load Value (CLV)	CLV is the engine load calculated from the MAP data.	At idle speed: 15 – 35 % At 2,500 rpm with no load: 12 – 30%	○

Troubleshooting

Engine/Powertrain Control Module Terminal Arrangement (cont'd)

PCM CONNECTOR B (25P)



Wire side of female terminals

PCM CONNECTOR B (25P)*2

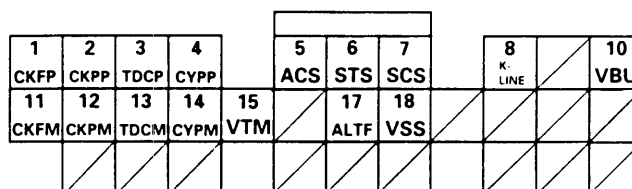
NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	WHT	LS- (LINEAR SOLENOID VALVE - SIDE)	Ground for linear solenoid valve.	With ignition switch ON (II): pulses
2	RED	LS+ (LINEAR SOLENOID VALVE + SIDE)	Drives linear solenoid valve.	With ignition switch ON (II): pulses
3	BLU/YEL	SHA (SHIFT CONTROL SOLENOID VALVE A)	Drives shift control solenoid valve A.	With engine running in 2nd, 3rd gears: battery voltage With engine running in 1st, 4th gears: about 0 V
4	GRN/BLK	LC B (LOCK-UP CONTROL SOLENOID VALVE B)	Drives lock-up control solenoid valve B.	With lock-up ON: battery voltage With lock-up OFF: 0 V
5	YEL	LC A (LOCK-UP CONTROL SOLENOID VALVE A)	Drives lock-up control solenoid valve A.	With lock-up ON: battery voltage With lock-up OFF: 0 V
8	PNK	ATPD3 (A/T GEAR POSITION SWITCH)	Detects A/T gear position switch signal.	In D₃ position: 0 V In any other position: battery voltage
11	GRN/WHT	SHB (SHIFT CONTROL SOLENOID VALVE B)	Drives shift control solenoid valve B.	With engine running in 1st, 2nd: battery voltage With engine running in 3rd, 4th: about 0 V
12	WHT/RED	SLU (INTERLOCK CONTROL UNIT)	Drives interlock control unit.	With ignition switch ON (II) and brake pedal depressed: 0 V
13	GRN/BLK	D4 IND (D4 INDICATOR LIGHT)	Drives D4 indicator light.	With D₄ indicator light turned ON: battery voltage With D₄ indicator light turned OFF: 0 V
14	WHT	NMSG (MAINSHAFT SPEED SENSOR GROUND)	Ground for mainshaft speed sensor.	
15	RED	NM (MAINSHAFT SPEED SENSOR)	Detects mainshaft speed sensor signal.	With engine running: pulses
16	WHT	ATPR (A/T GEAR POSITION SWITCH)	Detects A/T gear position switch signal.	In R position: 0 V In any other position: battery voltage
17	BLU	ATP2 (A/T GEAR POSITION SWITCH)	Detects A/T gear position switch signal.	In 2 position: 0 V In any other position: battery voltage
22	GRN	NCSG (COUNTERSHAFT SPEED SENSOR GROUND)	Ground for countershaft speed sensor.	
23	BLU	NC (COUNTERSHAFT SPEED SENSOR)	Detects countershaft speed sensor signal.	With ignition switch ON (II), and front wheels rotating: pulses
24	YEL	ATPD4 (A/T GEAR POSITION SWITCH)	Detects A/T gear position switch signal.	In D₄ position: 0 V In any other position: 5 V
25	LT GRN	ATPNP (A/T GEAR POSITION SWITCH)	Detects A/T gear position switch signal.	In N or P position: 0 V In any other position: battery voltage

*2: A/T



ECM/PCM CONNECTOR C (31P)



Wire side of female terminals

ECM/PCM CONNECTOR C (31P)

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLU/RED	CKFP (CKF SENSOR P SIDE)	Detects CKF sensor.	With engine running: pulses
2	BLU	CKPP (CKP SENSOR P SIDE)	Detects CKP sensor.	With engine running: pulses
3	GRN	TDCP (TDC SENSOR P SIDE)	Detects TDC sensor.	With engine running: pulses
4	YEL	CYPP (CYP SENSOR P SIDE)	Detects CYP sensor.	With engine running: pulses
5	BLU/RED	ACS (A/C SWITCH SIGNAL)	Detects A/C switch signal.	With A/C switch ON: 0 V With A/C switch OFF: battery voltage
6	BLU/ORN	STS (STARTER SWITCH SIGNAL)	Detects starter switch signal.	With starter switch ON (III): battery voltage With starter switch OFF: 0 V
7	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check connector signal (the signal causing a DTC indication)	With the connector connected: 0 V With the connector disconnected: 5 V
8	LT BLU	K-LINE (DLC)	Sends and receives scan tool signal.	With ignition switch ON (II): about 5 V
10	WHT/BLU	VBU (VOLTAGE BACK UP)	Power source for the ECM/ PCM control circuit. Power source for the DTC memory	Battery voltage at all times
11	WHT/RED	CKFM (CKF SENSOR M SIDE)	Ground for CKF sensor signal.	
12	WHT	CKPM (CKP SENSOR M SIDE)	Ground for CKP sensor signal.	
13	RED	TDCM (TDC SENSOR M SIDE)	Ground for TDC sensor signal.	
14	BLK	CYPM (CKP SENSOR M SIDE)	Ground for CYP sensor signal.	
15	BLU/BLK	VTM (VTEC PRESSURE SWITCH)	Detects VTEC pressure switch signal.	With engine at low engine speed: 0 V With engine at high engine speed: battery voltage
17	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal.	With fully warmed up engine running: 0 V – battery voltage (depending on electrical load)
18	BLU/WHT	VSS (VEHICLE SPEED SENSOR)	Detects VSS signal.	With ignition switch ON (II) and front wheels rotating: cycles 0 V – 5 V

*1: M/T

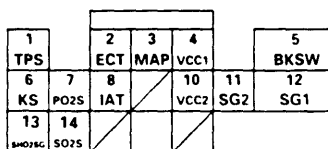
*2: A/T

(cont'd)

Troubleshooting

Engine/Powertrain Control Module Terminal Arrangement (cont'd)

ECM/PCM CONNECTOR D (16P)



Wire side of female terminals

ECM/PCM CONNECTOR D (16P)

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	RED/BLK	TPS (THROTTLE POSITION SENSOR)	Detects TP sensor signal.	With throttle fully open: about 4.8 V With throttle fully closed: about 0.5 V
2	RED/WHT	ECT (ENGINE COOLANT TEMPERATURE SENSOR)	Detects ECT sensor signal.	With ignition switch ON(II): about 0.1 – 4.8 V (depending on engine coolant temperature)
3	RED/GRN	MAP (MANIFOLD ABSOLUTE PRESSURE SENSOR)	Detects MAP sensor signal.	With ignition switch ON(II): about 3 V At idle: about 1.0 V (depending on engine speed)
4	YEL/RED	VCC1 (SENSOR VOLTAGE)	Power source for MAP sensor.	With ignition switch ON (II): about 5 V With ignition switch OFF: 0 V
5	GRN/WHT	BKSW (BRAKE SWITCH)	Detects brake switch signal.	With brake pedal released: 0 V With brake pedal depressed: battery voltage
6	RED/BLU	KS (KNOCK SENSOR)	Detects KS signal.	With engine knocking: pulses
7	WHT	PHO2S (PRIMARY HEATED OXYGEN SENSOR, SENSOR 1)	Detects primary heated oxygen sensor (sensor 1) signal.	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
8	RED/YEL	IAT (INTAKE AIR TEMPERATURE SENSOR)	Detects IAT sensor signal.	With ignition switch ON (II): about 0.1 – 4.8 V (depending on intake air temperature)
10	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage.	With ignition switch ON(II): about 5 V With ignition switch OFF: 0 V
11	GRN/BLK	SG2 (SENSOR GROUND)	Sensor ground.	Less than 1.0 V at all times
12	GRN/WHT	SG1 (SENSOR GROUND)	Ground for MAP sensor.	Less than 1.0 V at all times
13	GRN/BLK	SHO2SG (SECONDARY HEATED OXYGEN SENSOR, SENSOR 2 GROUND)	Ground for secondary heated oxygen sensor (sensor 2).	
14	WHT/RED	SO2S (SECONDARY HEATED OXYGEN SENSOR, SENSOR 2)	Detects secondary heated oxygen sensor (sensor 2) signal.	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V

*1: M/T

*2: A/T



Diagnostic Trouble Code (DTC) Chart

DTC (MIL indication*)	Detection Item	Probable Cause	Page
P0107 (3)	Manifold Absolute Pressure Circuit Low Input	• Open or short in MAP sensor circuit • MAP sensor • ECM/PCM	11-48
P0108 (3)	Manifold Absolute Pressure Circuit High Input	• Open in MAP sensor circuit • MAP sensor	11-50
P0111 (10)	Intake Air Temperature Circuit Range/Performance Problem	• IAT sensor	11-53
P0112 (10)	Intake Air Temperature Circuit Low Input	• Short in IAT sensor circuit • IAT sensor • ECM/PCM	11-54
P0113 (10)	Intake Air Temperature Circuit High Input	• Open in IAT sensor circuit • IAT sensor • ECM/PCM	11-55
P0116 (86)	Engine Coolant Temperature Circuit Range/Performance Problem	• ECT sensor • Cooling system	11-56
P0117 (6)	Engine Coolant Temperature Circuit Low Input	• Short in ECT sensor circuit • ECT sensor • ECM/PCM	11-57
P0118 (6)	Engine Coolant Temperature Circuit High Input	• Open in ECT sensor circuit • ECT sensor • ECM/PCM	11-58
P0122 (7)	Throttle Position Circuit Low Input	• Open or short in TP sensor circuit • TP sensor • ECM/PCM	11-59
P0123 (7)	Throttle Position Circuit High Input	• Open in TP sensor circuit • TP sensor • ECM/PCM	11-61
P0131 (1)	Primary Heated Oxygen Sensor Circuit Low Voltage (Sensor 1)	• Short in Primary HO2S (Sensor 1) circuit • Primary HO2S (Sensor 1) • Fuel supply system • ECM/PCM	11-64
P0132 (1)	Primary Heated Oxygen Sensor Circuit High Voltage (Sensor 1)	• Open in Primary HO2S (Sensor 1) circuit • Primary HO2S (Sensor 1) • ECM/PCM	11-66
P0133 (61)	Primary Heated Oxygen Sensor Slow Response (Sensor 1)	• Primary HO2S (Sensor 1) • Exhaust system	11-67
P0135 (41)	Primary Heated Oxygen Sensor Heater Circuit Malfunction (Sensor 1)	• Open or short in Primary HO2S (Sensor 1) heater circuit • ECM/PCM	11-71

*: These DTCs will be indicated by the blinking of the Malfunction Indicator Lamp (MIL) with the SCS service connector connected.

(cont'd)

Troubleshooting

Diagnostic Trouble Code (DTC) Chart (cont'd)

DTC (MIL indication)		Detection Item	Probable Cause	Page
P0137	(63)	Secondary Heated Oxygen Sensor Circuit Low Voltage (Sensor 2)	• Short in Secondary HO2S (Sensor 2) circuit • Secondary HO2S (Sensor 2) • ECM/PCM	11-68
P0138	(63)	Secondary Heated Oxygen Sensor Circuit High Voltage (Sensor 2)	• Open in Secondary HO2S (Sensor 2) circuit • Secondary HO2S (Sensor 2) • ECM/PCM	11-69
P0139	(63)	Secondary Heated Oxygen Sensor Slow Response (Sensor 2)	• Secondary HO2S (Sensor 2)	11-70
P0141	(65)	Secondary Heated Oxygen Sensor Heater Circuit Malfunction (Sensor 2)	• Open or short in Secondary HO2S (Sensor 2) heater circuit • ECM/PCM	11-71
P0171	(45)	System Too Lean	• Fuel supply system • Primary HO2S (Sensor 1) • MAP sensor • Contaminated fuel • Valve clearance • Exhaust leakage	11-73
P0172	(45)	System Too Rich	• Fuel supply system • Primary HO2S (Sensor 1) • MAP sensor • Contaminated fuel • Valve clearance	11-73
P0301 P0302 P0303 P0304	(71) (72) (73) (74)	— Cylinder 1 — Cylinder 2 — Cylinder 3 — Cylinder 4 Misfire Detected	• Fuel Injector • Fuel Injector circuit • Ignition system • Low compression • Valve clearance	11-75
P0325	(23)	Knock Sensor (KS) Circuit Malfunction	• Open or short in Knock Sensor (KS) circuit • Knock Sensor (KS) • ECM/PCM	11-79
P0335	(4)	Crankshaft Position Sensor Circuit Malfunction	• Crankshaft Position Sensor • Crankshaft Position Sensor circuit • ECM/PCM	11-80
P0336	(4)	Crankshaft Position Sensor Range/Performance	• Crankshaft Position Sensor • Timing belt skipped teeth	11-80
P0420	(67)	Catalyst System Efficiency Below Threshold	• Three Way Catalytic converter • Secondary HO2S	11-127

*1: M/T

*2: A/T



DTC (MIL indication)	Detection Item	Probable Cause	Page
P0441 (92)	Evaporative Emission Control System Insufficient Purge Flow	• EVAP Purge Control Solenoid Valve • Open or short in EVAP Purge Control Solenoid Valve circuit • EVAP Control Canister • Vacuum lines • ECM/PCM	11-130
P0500*1 (17)	Vehicle Speed Sensor Circuit Malfunction	• Vehicle Speed Sensor • Vehicle Speed Sensor circuit • ECM	11-82
P0501*2 (17)	Vehicle Speed Sensor Circuit Range/Performance	• Vehicle Speed Sensor • Vehicle Speed Sensor circuit • PCM	11-82
P0505 (14)	Idle Control System Malfunction	• IAC valve • Throttle Body	11-92
P0700*2 and some of P0715 P0720 P0730 P0740 P0753 P0758 (70)*	Automatic Transaxle	—	Section 14
P1106 (13)	Barometric Pressure Circuit Range/Performance Problem	• ECM/PCM (Baro sensor)	11-83
P1107 (13)	Barometric Pressure Circuit Low Input	• ECM/PCM (Baro sensor)	11-84
P1108 (13)	Barometric Pressure Circuit High Input	• ECM/PCM (Baro sensor)	11-84
P1121 (7)	Throttle Position Lower Than Expected	• TP sensor	11-62
P1122 (7)	Throttle Position Higher Than Expected	• TP sensor	11-63
P1128 (5)	Manifold Absolute Pressure Lower Than Expected	• MAP sensor	11-51
P1129 (5)	Manifold Absolute Pressure Higher Than Expected	• MAP sensor	11-52

*: The  indicator light and the Malfunction Indicator Lamp (MIL) may come on simultaneously.

*1: M/T

*2: A/T

(cont'd)

Troubleshooting

Diagnostic Trouble Code (DTC) Chart (cont'd)

DTC (MIL indication)	Detection Item	Probable Cause	Page
P1259 (22)	VTEC System Malfunction	• VTEC Solenoid Valve • Open or short in VTEC Solenoid Valve circuit • VTEC Pressure Switch • Open or short in VTEC Pressure Switch circuit • ECM/PCM	Section 6
P1300 or some of P0301 (71) P0302 (72) P0303 (73) P0304 (74)	Random Misfire	• Ignition system • Fuel supply system • Contaminated fuel • Lack of fuel	11-78
P1336 (54)	Crankshaft Speed Fluctuation Sensor Intermittent Interruption	• CKF sensor	11-85
P1337 (54)	Crankshaft Speed Fluctuation Sensor No Signal	• CKF sensor • CKF sensor circuit • ECM/PCM	11-85
P1359 (8)	Crankshaft Position/Top Dead Center Sensor Disconnected	• CKP/TDC sensor circuit	11-87
P1361 (8)	Top Dead Center Sensor Intermittent Interruption	• TDC sensor	11-80
P1362 (8)	Top Dead Center Sensor No Signal	• TDC sensor • TDC sensor circuit • ECM/PCM	11-80
P1381 (9)	Cylinder Position Sensor Intermittent Interruption	• CYP sensor	11-80
P1382 (9)	Cylinder Position Sensor No Signal	• CYP sensor • CYP sensor circuit • ECM/PCM	11-80
P1508*1 (14)	Idle Air Control Valve Circuit Failure	• IAC valve • IAC valve circuit • ECM	11-94
P1509*2 (14)	Idle Air Control Valve Circuit Failure	• Open or short in IAC valve circuit • IAC valve • PCM	11-96
P1607 (—)	Engine Control Module/Powertrain Control Module Internal Circuit Failure A	• ECM/PCM	11-88
P1705 P1706 P1753 P1758 P1768 P1785 P1790 P1791 P1793 (70)* P1870 P1873 P1879 P1885 P1886 P1888 P1890 P1891	Automatic Transaxle	—	Section 14

*: The D_L indicator light and the Malfunction Indicator Lamp (MIL) may come on simultaneously.

*1: M/T

*2: A/T



How to Read Flowcharts

A flowchart is designed to be used from start to final repair. It's like a map showing you the shortest distance. But beware: If you go off the "map" anywhere but a "stop" symbol, you can easily get lost.

START

(bold type)

Describes the conditions or situation to start a troubleshooting flowchart.

ACTION

Asks you to do something; perform a test, set up a condition etc.

DECISION

Asks you about the result of an action, then sends you in the appropriate troubleshooting direction.

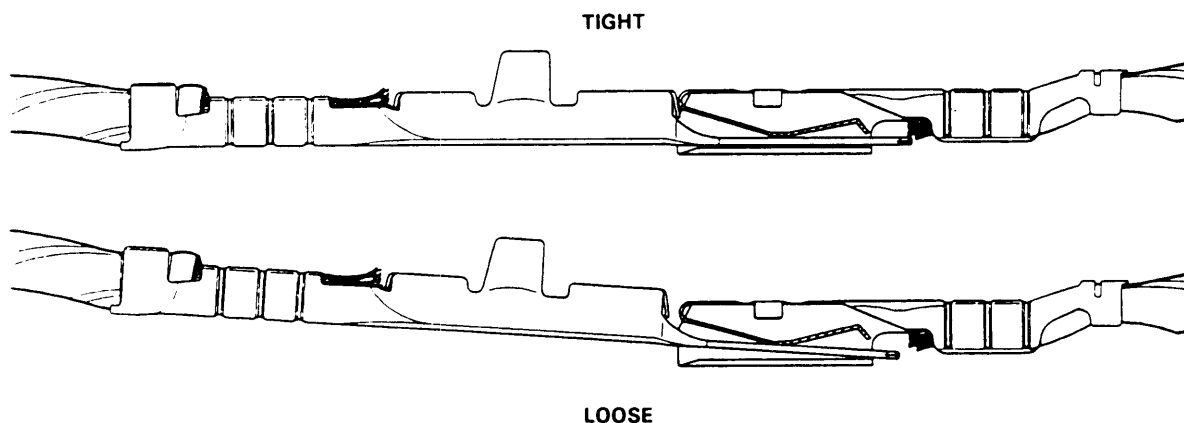
STOP

(bold type)

The end of a series of actions and decisions, describes a final repair action and sometimes directs you to an earlier part of the flowchart to confirm your repair.

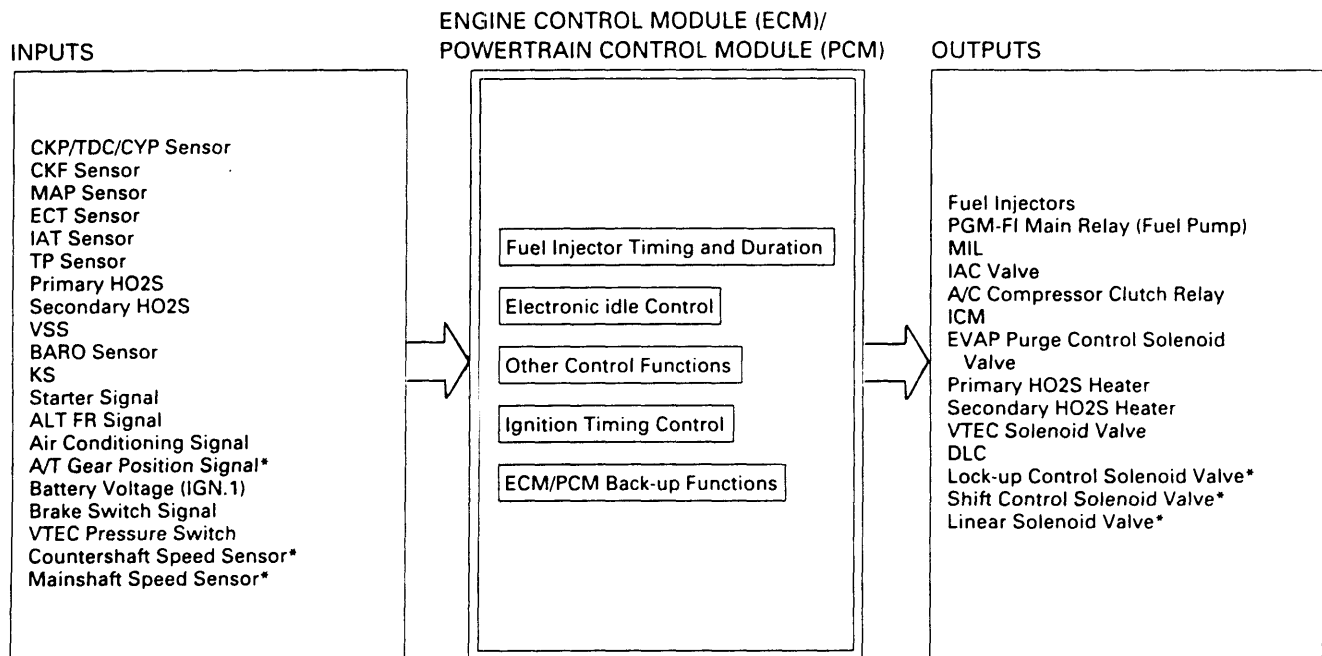
NOTE:

- The term "Intermittent Failure" is used in these charts. It simply means a system may have had a failure, but it checks out OK at this time. If the Malfunction Indicator Lamp (MIL) on the dash does not come on, check for poor connections or loose wires at all connectors related to the circuit that you are troubleshooting (see illustration below).
- Most of the troubleshooting flowcharts have you reset the Engine Control Module (ECM)/Powertrain Control Module (PCM) and try to duplicate the Diagnostic Trouble Code (DTC). If the problem is intermittent and you can't duplicate the code, do not continue though the flowchart. To do so will only result in confusion and, possibly, a needlessly replaced ECM/PCM.
- "Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. In complex electronics (like ECM's/PCM's), this can sometimes mean something works, but not the way it's supposed to.



PGM-FI System

System Description



*: A/T

PGM-FI System

The PGM-FI system on this model is a sequential multiport fuel injection system.

Fuel injector Timing and Duration

The ECM/PCM contains memories for the basic discharge durations at various engine speeds and manifold air flow rates. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

Idle Air Control

Idle Air Control Valve (IAC Valve)

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is depressed, or the alternator is charging, the ECM/PCM controls current to the IAC Valve to maintain the correct idle speed.

Ignition Timing Control

- The ECM/PCM contains memories for basic ignition timing at various engine speeds and manifold air flow rates. Ignition timing is also adjusted for engine coolant temperature.
- A knock control system was adopted which sets the ideal ignition timing for the octane rating of the gasoline used.

Other Control Functions

1. Starting Control

When the engine is started, the ECM/PCM provides a rich mixture by increasing fuel injector duration.

2. Fuel Pump Control

- When the ignition switch is initially turned on, the ECM/PCM supplies ground to the PGM-FI main relay that supplies current to the fuel pump for two seconds to pressurize the fuel system.
- When the engine is running, the ECM/PCM supplies ground to the PGM-FI main relay that supplies current to the fuel pump.
- When the engine is not running and the ignition is on, the ECM/PCM cuts ground to the PGM-FI main relay which cuts current to the fuel pump.



3. Fuel Cut-off Control
 - During deceleration with the throttle valve closed, current to the fuel injectors is cut off to improve fuel economy at speeds over the following rpm:
 - M/T: 1,000 rpm
 - A/T: 990 rpm
 - Fuel cut-off action also takes place when engine speed exceeds 7,000 rpm, regardless of the position of the throttle valve, to protect the engine from over-revving.
4. A/C Compressor Clutch Relay

When the ECM/PCM receives a demand for cooling from the air conditioning system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.
5. Evaporative Emission (EVAP) Purge Control Solenoid Valve

When the engine coolant temperature is above 154°F (68°C), the ECM/PCM controls the EVAP purge control solenoid valve which controls vacuum to the EVAP purge control canister.

ECM/PCM Fail-safe/Back-up Functions

1. Fail-safe Function

When an abnormality occurs in a signal from a sensor, the ECM/PCM ignores that signal and assumes a pre-programmed value for that sensor that allows the engine to continue to run.
2. Back-up Function

When an abnormality occurs in the ECM/PCM itself, the fuel injectors are controlled by a back-up circuit independent of the system in order to permit minimal driving.
3. Self-diagnosis Function [Malfunction Indicator Lamp (MIL)]

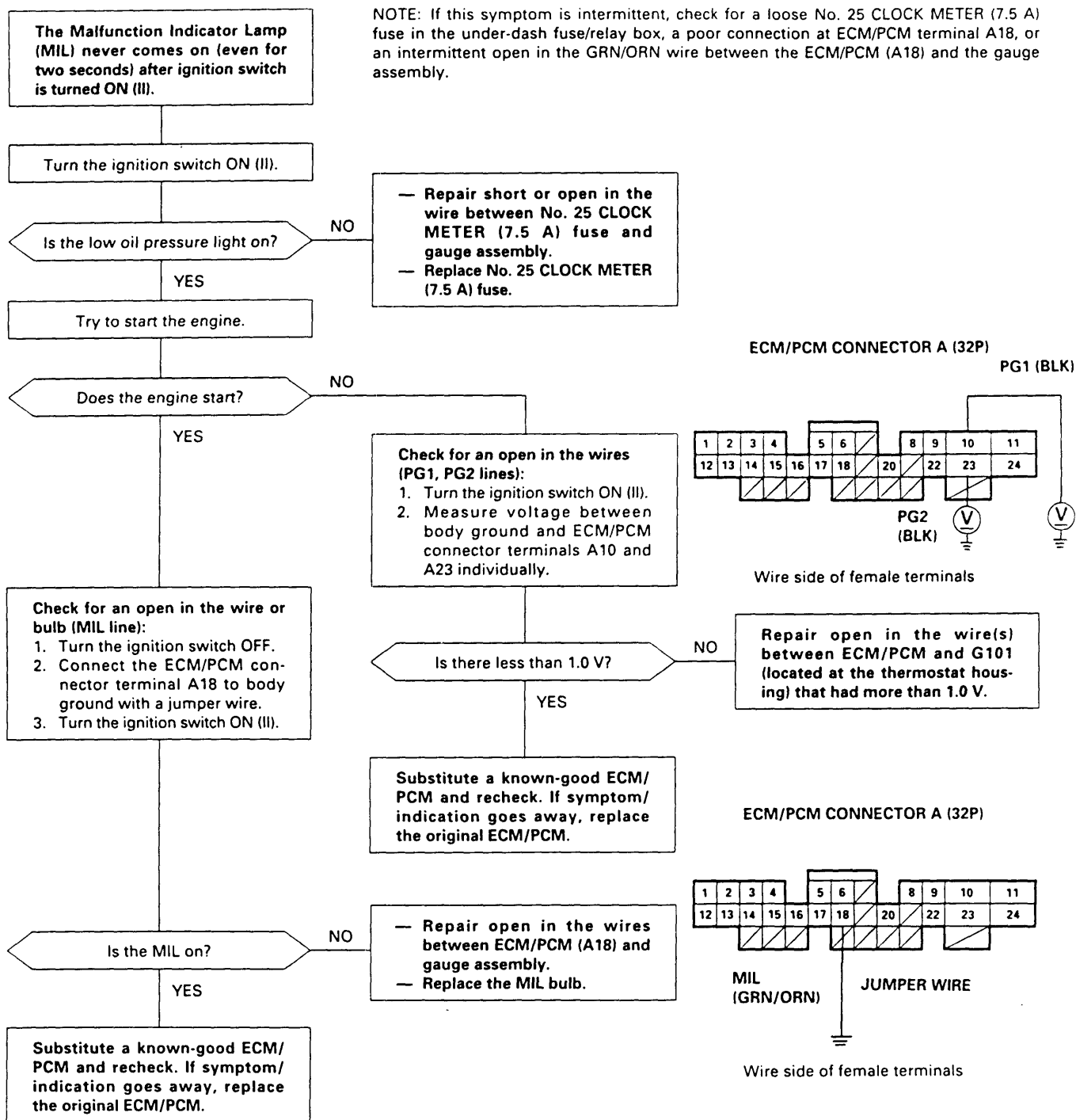
When an abnormality occurs in a signal from a sensor, the ECM/PCM supplies ground for the MIL and stores the DTC in erasable memory. When the ignition is initially turned on, the ECM/PCM supplies ground for the MIL for two seconds to check the MIL bulb condition.
4. Two Trip Detection Method

To prevent false indications, the Two Trip Detection Method is used for the HO₂S, fuel metering-related, idle control system, ECT sensor and EVAP control system self-diagnostic functions. When an abnormality occurs, the ECM/PCM stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON (II) again, the ECM/PCM informs the driver by lighting the MIL. However, to ease troubleshooting, this function is cancelled when you jump the service check connector. The MIL will then blink immediately when an abnormality occurs.
5. Two (or Three) Driving Cycle Detection Method

A "Driving Cycle" consists of starting the engine, beginning closed loop operation, and stopping the engine. If misfiring that increases emissions is detected during two consecutive driving cycles, or TWC deterioration is detected during three consecutive driving cycles, the ECM/PCM turns the MIL on. However, to ease troubleshooting, this function is cancelled when you jump the service check connector. The MIL will then blink immediately when an abnormality occurs.

PGM-FI System

Engine Control Module/Powertrain Control Module (ECM/PCM)





The Malfunction Indicator Lamp (MIL) stays on or comes on after two seconds.

Check the Diagnostic Trouble Code (DTC):

1. Connect a scan tool or Honda PGM Tester.
2. Turn the ignition switch ON (II).
3. Read the DTC with the scan tool or Honda PGM Tester.

Are any DTC(s) indicated?

YES

Go to Diagnostic Trouble Code (DTC) chart (see page 11-37).

NO

Check the DTC by MIL indication:

1. Turn the ignition switch OFF.
2. Connect the SCS service connector to the service check connector.
3. Turn the ignition switch ON (III).

Does the MIL indicate any DTC?

YES

- Repair open or short in wire between the ECM/PCM (C8) and Data Link Connector.
- Go to Diagnostic Trouble Code (DTC) chart (see page 11-37).

NO

Try to start the engine.

Does the engine start?

NO



(To page 11-46)

Check for a short in the wire (SCS line):

1. Disconnect the SCS service check connector.
2. Stop the engine and turn the ignition switch ON (II).
3. Measure voltage between the ECM/PCM connector terminal C7 and body ground.

Is there approx. 5 V?

NO

Repair short to body ground in the wire between ECM/PCM (C7) and service check connector.

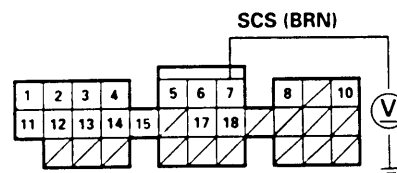
YES

(To page 11-46)

NOTE:

- When there is no Diagnostic Trouble Code (DTC) stored, the MIL will stay on if the SCS service connector is connected and the ignition switch is on.
- If this symptom is intermittent, check for:
 - A loose FI E/M (15 A) fuse in the under-hood fuse/relay box
 - A loose No. 13 FUEL PUMP SRS UNIT (15 A) fuse in the under-dash fuse/relay box
 - An intermittent short in the wire between the ECM/PCM (C7) and the service check connector
 - An intermittent short in the wire between the ECM/PCM (A18) and the gauge assembly
 - An intermittent short in the wire between the ECM/PCM (D4) and the MAP sensor
 - An intermittent short in the wire between the ECM/PCM (D10) and the TP sensor.
 - PGM-FI main relay
- See the OBD II scan tool or Honda PGM Tester user's manuals for specific operating instructions.

ECM/PCM CONNECTOR C (31P)



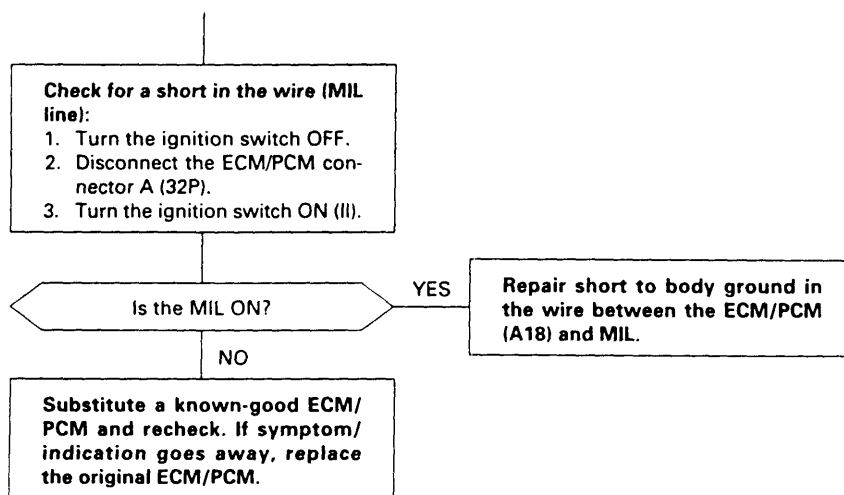
Wire side of female terminals

(cont'd)

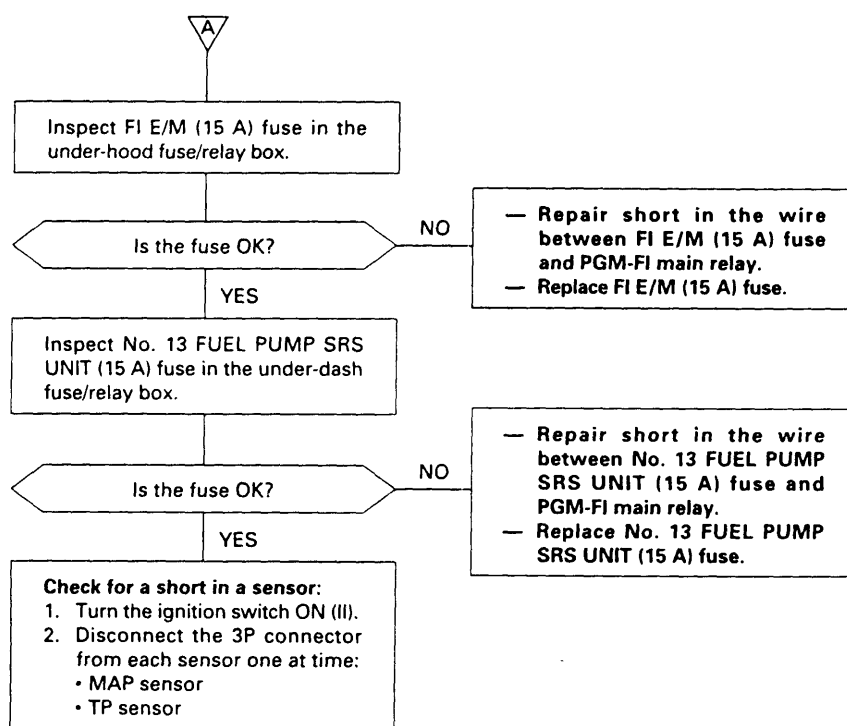
PGM-FI System

Engine Control Module/Powertrain Control Module (ECM/PCM) (cont'd)

(From page 11-45)



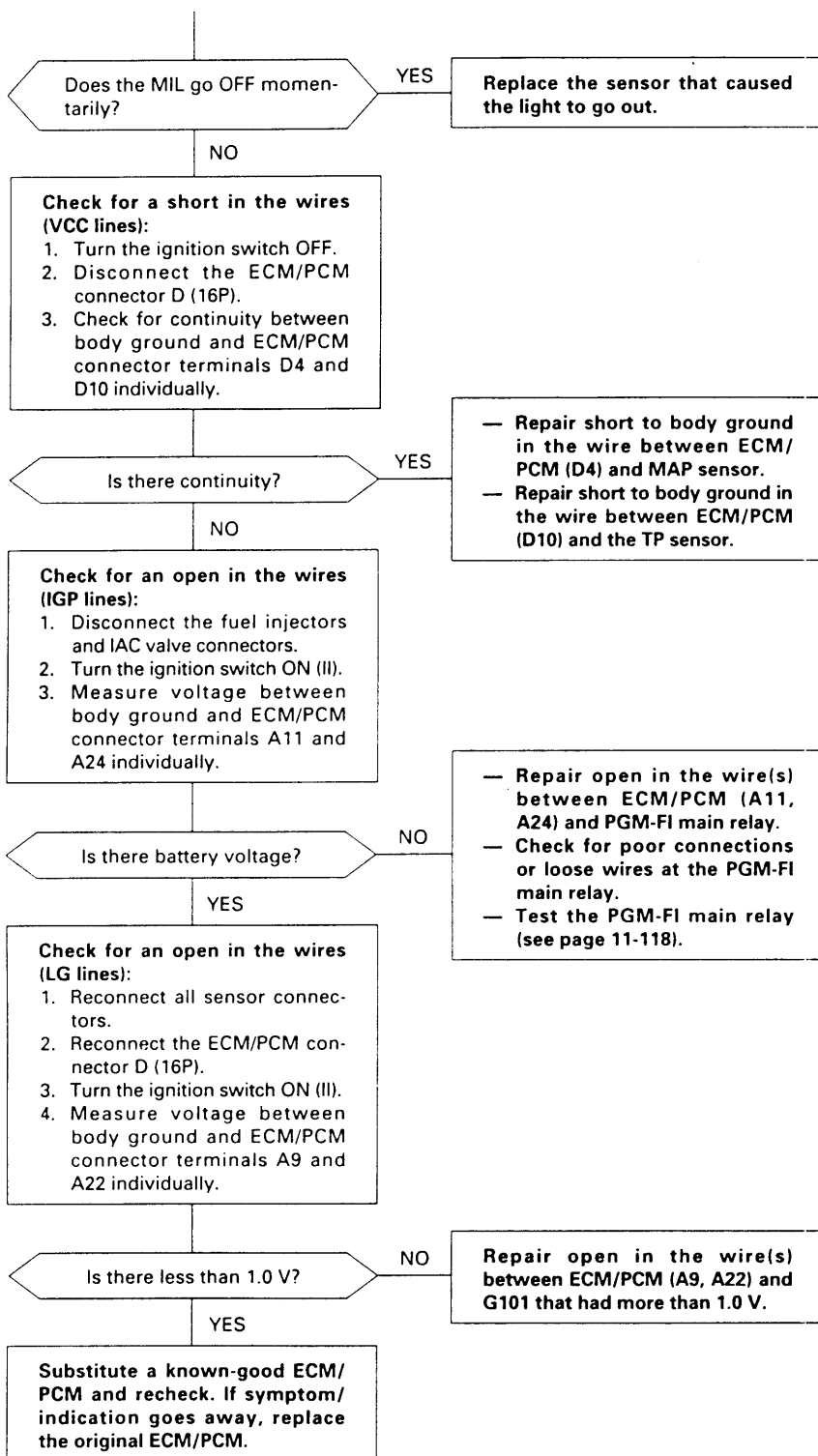
(From page 11-45)



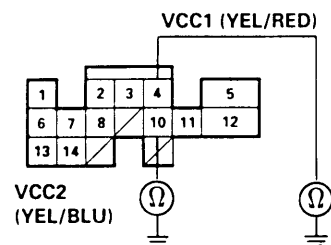
(To page 11-47)



(From page 11-46)

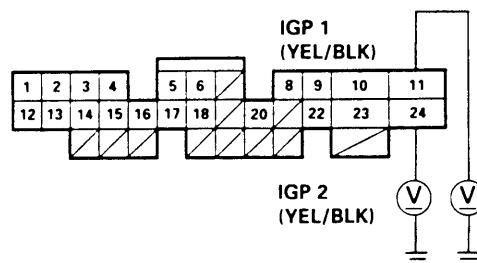


ECM/PCM CONNECTOR D (16P)

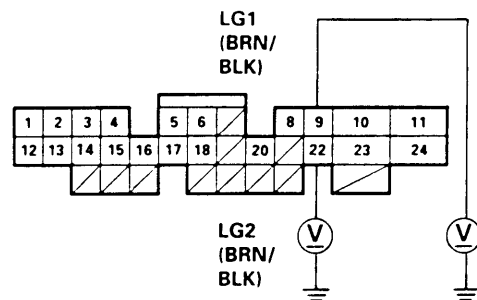


Wire side of female terminals

ECM/PCM CONNECTOR A (32P)



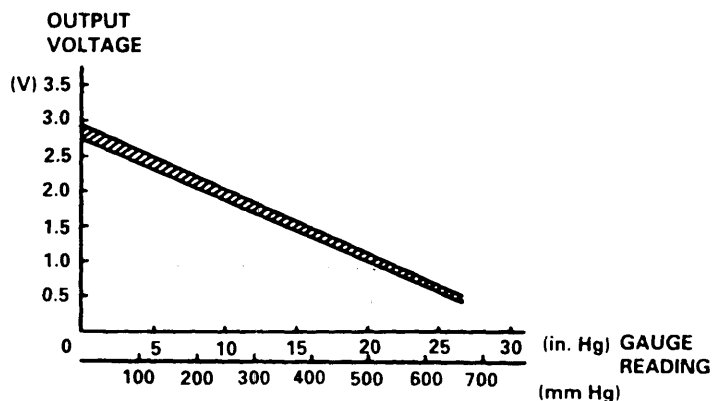
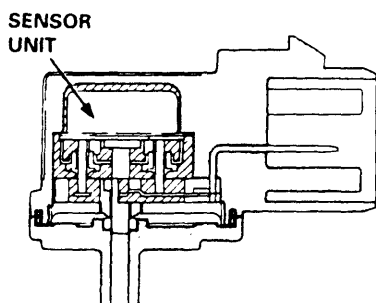
Wire side of female terminals



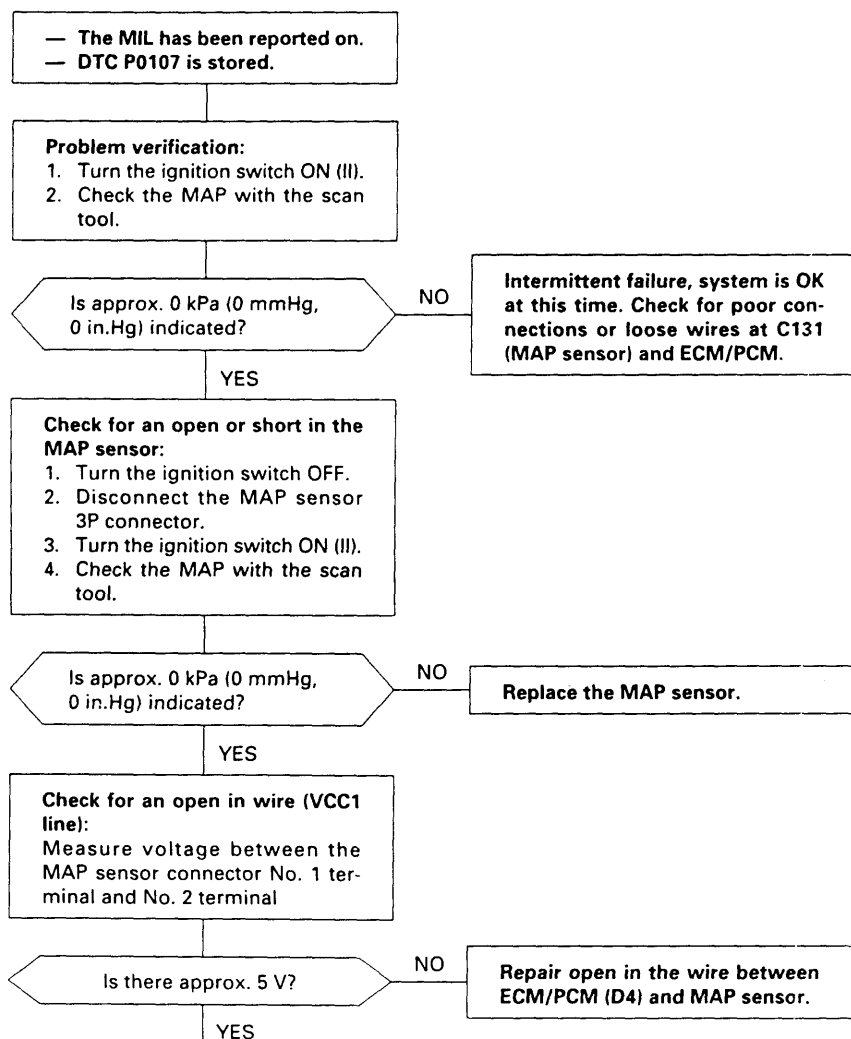
PGM-FI System

Manifold Absolute Pressure (MAP) Sensor

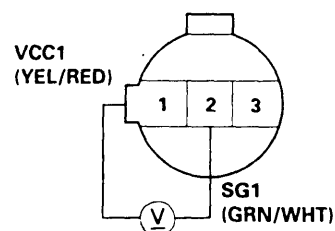
The MAP sensor converts manifold absolute pressure into electrical signals and inputs the ECM/PCM.



P0107 The scan tool indicates Diagnostic Trouble Code (DTC) P0107: A low voltage (high vacuum) problem in the Manifold Absolute Pressure (MAP) sensor.



MAP SENSOR 3P CONNECTOR (C131)



Wire side of female terminals

(To page 11-49)



(From page 11-48)

Check for a short in the wire (MAP line):
1. Turn the ignition switch OFF.
2. Disconnect the ECM/PCM connector D (16P).
3. Check for continuity between the MAP sensor connector No. 3 terminal and body ground.

Is there continuity?

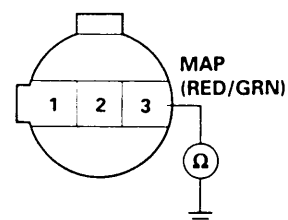
YES

Repair short in the wire between ECM/PCM (D3) and MAP sensor.

NO

Substitute a known-good ECM/PCM and recheck. If normal MAP is indicated, replace the original ECM/PCM.

MAP SENSOR 3P CONNECTOR (C131)



Wire side of female terminals

(cont'd)

PGM-FI System

Manifold Absolute Pressure (MAP) Sensor (cont'd)

P0108 The scan tool indicates Diagnostic Trouble Code (DTC) P0108: A high voltage (low vacuum) problem in the Manifold Absolute Pressure (MAP) sensor.

- The MIL has been reported on.
- DTC P0108 is stored.

Problem verification:

1. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then let it idle.
2. Check the MAP with the scan tool.

Is 101 kPa (760 mmHg, 30.0 in.Hg) or higher indicated?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C131 (MAP sensor) and ECM/PCM.

YES

Check for an open in the MAP sensor:

1. Turn the ignition switch OFF.
2. Disconnect the MAP sensor 3P connector.
3. Install a jumper wire between the MAP sensor 3P connector terminals No. 3 and No. 2.
4. Turn the ignition switch ON (II).
5. Check the MAP with the scan tool.

Is 101 kPa (760 mmHg, 30.0 in.Hg) or higher indicated?

NO

Replace the MAP sensor.

YES

Check for an open in the wire (SG1 line):

1. Remove the jumper wire.
2. Measure voltage between the MAP sensor 3P connector terminals No. 1 and No. 2.

Is there approx. 5 V?

NO

Repair open in the wire between ECM/PCM (D12) and MAP sensor.

YES

Check for an open in the wire (MAP line):

1. Turn the ignition switch OFF.
2. Install a jumper wire on the ECM/PCM connectors between D3 and D12.
3. Turn the ignition switch ON (III).
4. Check the MAP with the scan tool.

Is 101 kPa (760 mmHg, 30.0 in.Hg) or higher indicated?

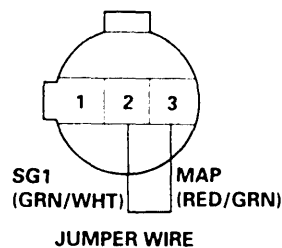
NO

Repair open in the wires between ECM/PCM (D3) and MAP sensor.

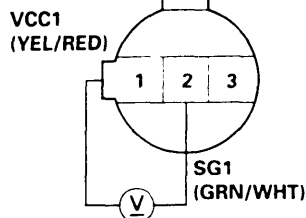
YES

Substitute a known-good ECM/PCM and recheck. If normal MAP is indicated, replace the original ECM/PCM.

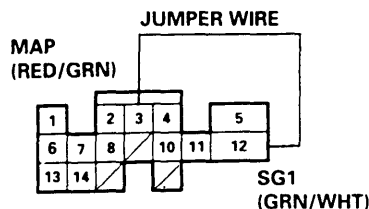
MAP SENSOR 3P CONNECTOR (C131)



Wire side of female terminals



ECM/PCM CONNECTOR D (16P)



Wire side of female terminals



P1128 The scan tool indicates Diagnostic Trouble Code (DTC) P1128: Manifold Absolute Pressure (MAP) lower than expected.

- The MIL has been reported on.
- DTC P1128 is stored.

Problem verification:

1. Turn the ignition switch ON (II).
2. Check the MAP with the scan tool.

Is 54.1 kPa (406 mmHg, 16.0 in.Hg) or higher indicated?

YES

Intermittent failure, system is OK at this time.

NO

Replace the MAP sensor.

(cont'd)

PGM-FI System

Manifold Absolute Pressure (MAP) Sensor (cont'd)

P1129 The scan tool indicates Diagnostic Trouble Code (DTC) P1129: Manifold Absolute Pressure (MAP) higher than expected.

- The MIL has been reported on.
- DTC P1129 is stored.

Problem verification:

1. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then let it idle.
2. Check the MAP with the scan tool.

Is 43.3 kPa (325 mmHg, 12.8 in.Hg) or less indicated?

YES

Intermittent failure, system is OK at this time.

NO

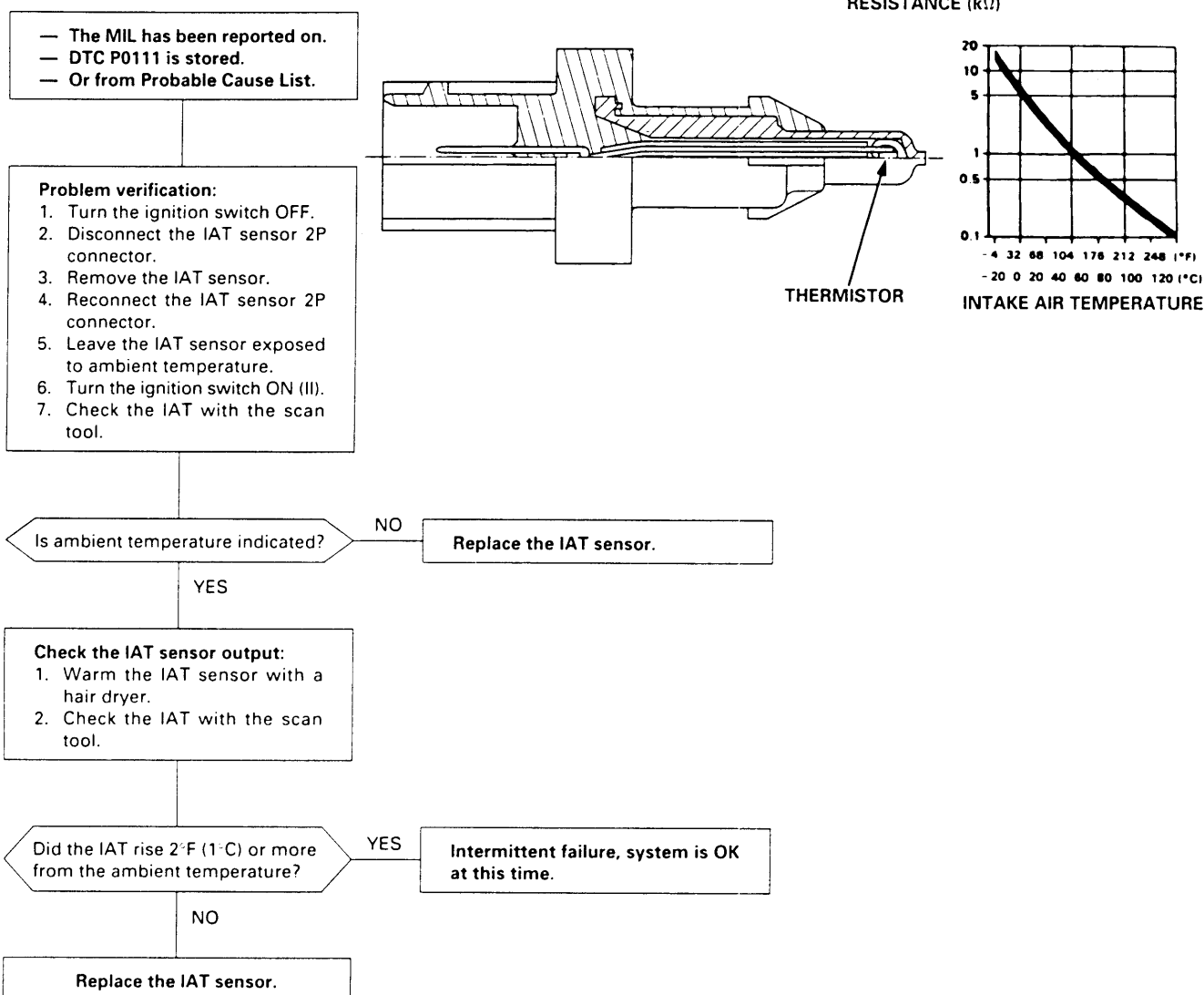
Replace the MAP sensor.



Intake Air Temperature (IAT) Sensor

P0111 The scan tool indicates Diagnostic Trouble Code (DTC) P0111: A range/performance problem in the Intake Air Temperature (IAT) Sensor circuit.

The IAT Sensor is a temperature dependant resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases as shown below.



(cont'd)

PGM-FI System

Intake Air Temperature (IAT) Sensor (cont'd)

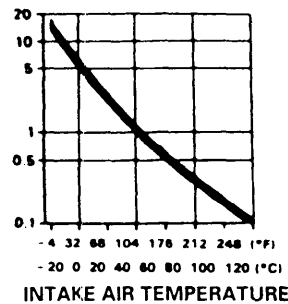
P0112 The scan tool indicates Diagnostic Trouble Code (DTC) P0112: A low voltage (high temperature) problem in the Intake Air Temperature (IAT) sensor circuit.

- The MIL has been reported on.
- DTC P0112 is stored.

Problem verification:

1. Turn the ignition switch ON (II).
2. Check the IAT with the scan tool.

RESISTANCE (k Ω)



Is 302°F (150°C) or higher indicated?

YES

NO

Is the correct ambient temperature indicated*?

NO

Replace the IAT sensor.

*: If the engine is warm, it will be higher than ambient temperature.

YES

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C129 (IAT sensor) and ECM/PCM.

Check for a short in the IAT sensor:

1. Disconnect the IAT sensor 2P connector.
2. Check the IAT with the scan tool.

Is 302°F (150°C) or higher indicated?

NO

Replace the IAT sensor.

YES

Check for a short in the wire (IAT line):

1. Turn the ignition switch OFF.
2. Disconnect the ECM/PCM connector D (16P).
3. Check for continuity between the IAT sensor 2P connector terminal No. 2 and body ground.

Is there continuity?

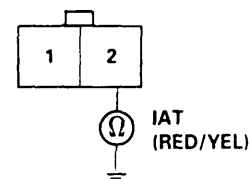
YES

Repair short in the wire between ECM/PCM (D8) and IAT sensor.

NO

Substitute a known-good ECM/PCM and recheck. If normal IAT is indicated, replace the original ECM/PCM.

IAT SENSOR 2P CONNECTOR (C129)



Wire side of female terminals

**P0113**

The scan tool indicates Diagnostic Trouble Code (DTC) P0113: A high voltage (low temperature) problem in the Intake Air Temperature (IAT) sensor circuit.

- The MIL has been reported on.
- DTC P0113 is stored.

Problem verification:

1. Turn the ignition switch ON (II).
2. Check the IAT with the scan tool.

Is -4°F (-20°C) or less indicated?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C129 (IAT sensor) and ECM/PCM.

YES

Check for an open in the IAT sensor:

1. Disconnect the IAT sensor 2P connector.
2. Connect the IAT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.
3. Check the intake air temperature with the scan tool.

Is -4°F (-20°C) or less indicated?

NO

Replace the IAT sensor.

YES

Check for an open in the wires (IAT, SG2 lines):

1. Turn the ignition switch OFF.
2. Connect ECM/PCM connector terminals D8 and D11 with a jumper wire.
3. Turn the ignition switch ON (II).
4. Check the IAT with the scan tool.

Is -4°F (-20°C) or less indicated?

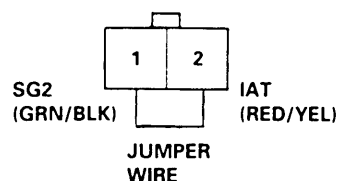
NO

Repair open in the wires between ECM/PCM (D8, D11) and IAT sensor.

YES

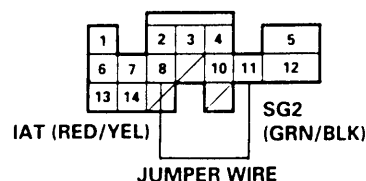
Substitute a known-good ECM/PCM and recheck. If normal IAT is indicated, replace the original ECM/PCM.

IAT SENSOR 2P CONNECTOR (C129)



Wire side of female terminals

ECM/PCM CONNECTOR D (16P)



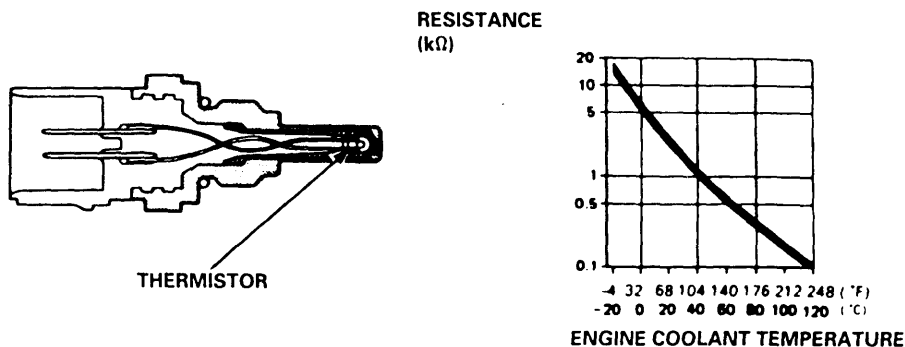
Wire side of female terminals

PGM-FI System

Engine Coolant Temperature (ECT) Sensor

P0116 The scan tool indicates Diagnostic Trouble Code (DTC) P0116: A range/performance problem in the Engine Coolant Temperature (ECT) Sensor circuit.

The ECT Sensor is a temperature dependant resistor (thermistor). The resistance of the thermistor decreases as the engine coolant temperature increases as shown below.

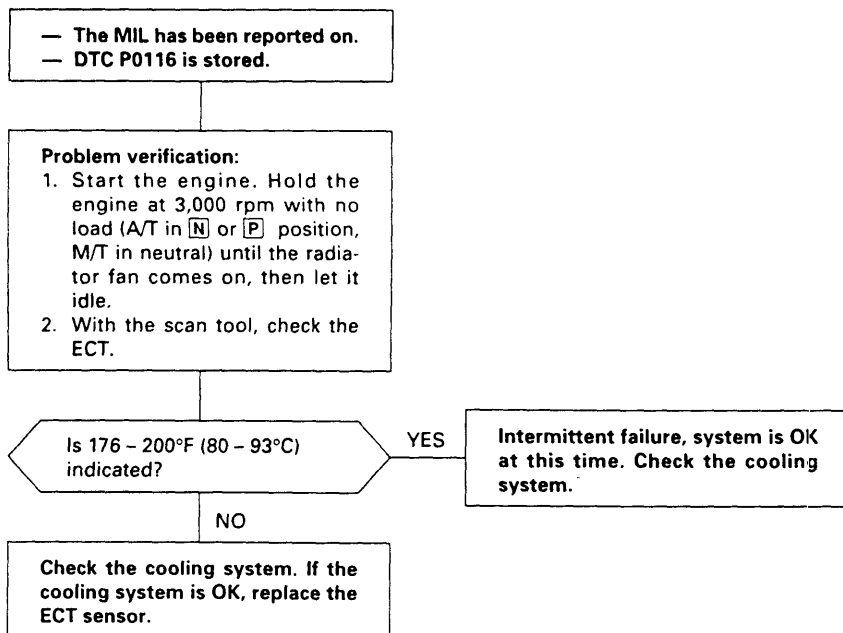


NOTE: If DTC P0117 and/or P0118 are stored at the same time as DTC P0116, troubleshoot those DTCs first, then troubleshoot DTC P0116.

Possible Cause

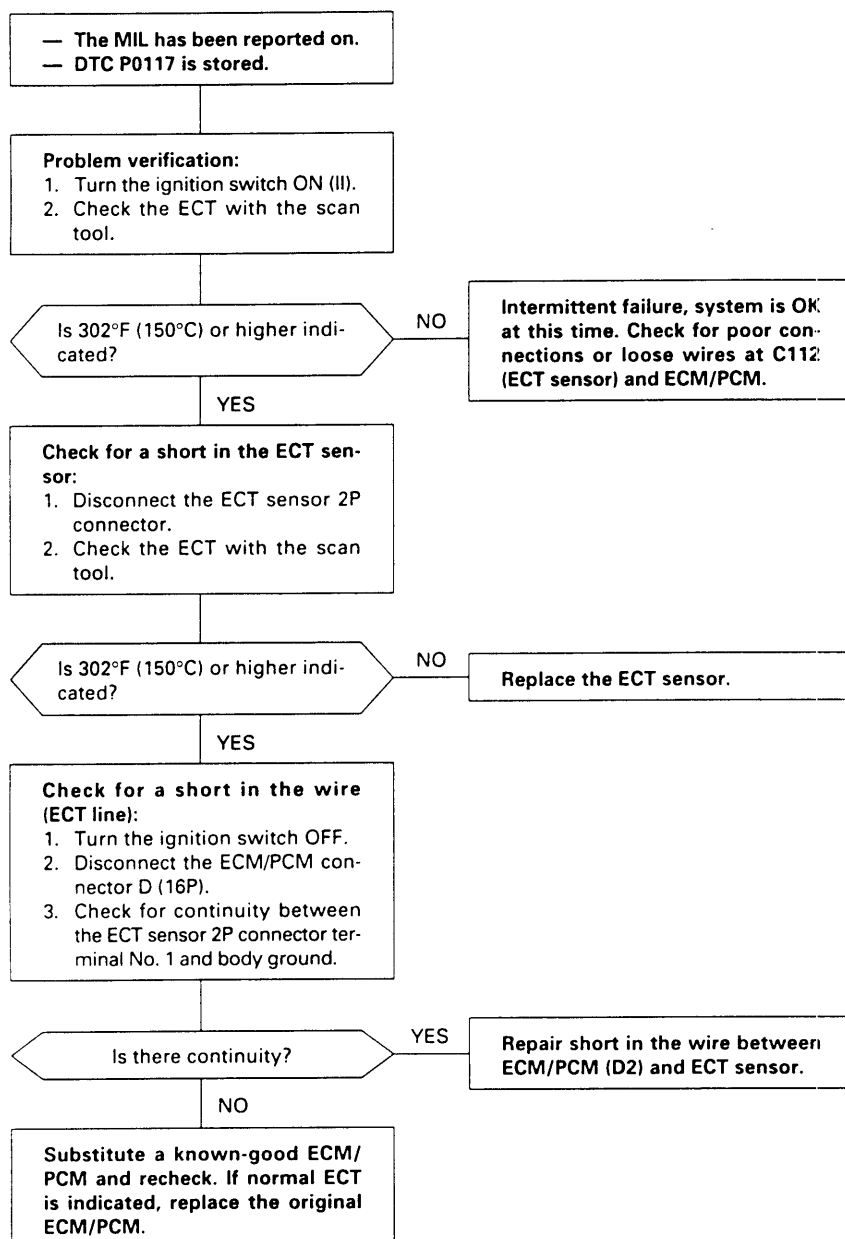
- ECT sensor deterioration
- Malfunction in the cooling system

Troubleshooting Flowchart

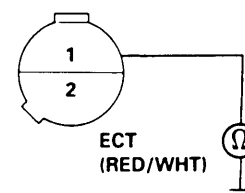




P0117 The scan tool indicates Diagnostic Trouble Code (DTC) P0117: A low voltage (high temperature) problem in the Engine Coolant Temperature (ECT) sensor circuit.



ECT SENSOR 2P CONNECTOR (C112)



Wire side of female terminals

(cont'd)

PGM-FI System

Engine Coolant Temperature (ECT) Sensor (cont'd)

P0118 The scan tool indicates Diagnostic Trouble Code (DTC) P0118: A high voltage (low temperature) problem in the Engine Coolant Temperature (ECT) sensor circuit.

- The MIL has been reported on.
- DTC P0118 is stored.

Problem verification:

1. Turn the ignition switch ON (II).
2. Check the ECT with the scan tool.

Is -4°F (-20°C) or less indicated?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C112 (ECT sensor) and ECM/PCM.

YES

Check for an open in the ECT sensor:

1. Disconnect the ECT sensor 2P connector.
2. Connect the ECT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.
3. Check the ECT with the scan tool.

Is -4°F (-20°C) or less indicated?

NO

Replace the ECT sensor.

YES

Check for an open in the wires (ECT, SG2 lines):

1. Turn the ignition switch OFF.
2. Connect ECM/PCM connector terminals D2 and D11 with a jumper wire.
3. Turn the ignition switch ON (II).
4. Check the ECT with the scan tool.

Is -4°F (-20°C) or less indicated?

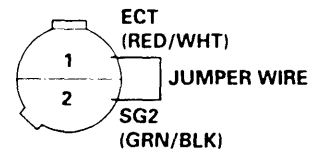
NO

Repair open in the wires between ECM/PCM (D2, D11) and ECT sensor.

YES

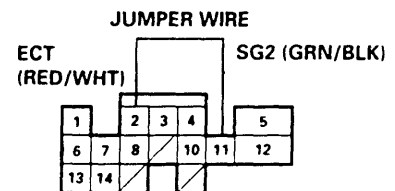
Substitute a known-good ECM/PCM and recheck. If normal ECT is indicated, replace the original ECM/PCM.

ECT SENSOR 2P CONNECTOR (C112)



Wire side of female terminals

ECM/PCM CONNECTOR D (16P)



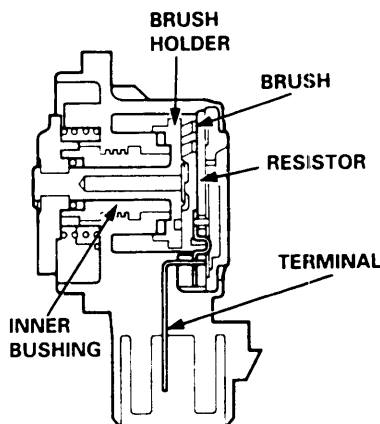
Wire side of female terminals



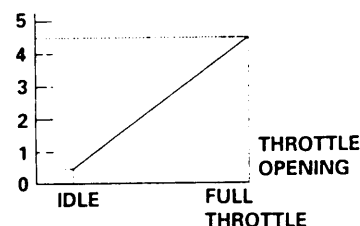
Throttle Position (TP) Sensor

P0122 The scan tool indicates Diagnostic Trouble Code (DTC) P0122: A low voltage problem in the Throttle Position (TP) sensor circuit.

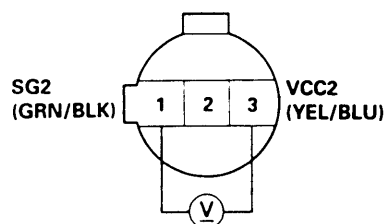
The TP Sensor is a potentiometer. It is connected to the throttle valve shaft. As the throttle position changes, the throttle position sensor varies the voltage signal to the ECM/PCM.



OUTPUT VOLTAGE (V)

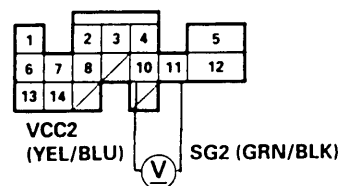


TP SENSOR 3P CONNECTOR (C130)



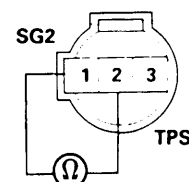
Wire side of female terminals

ECM/PCM CONNECTOR D (16P)



Wire side of female terminals

Repair open in the wire between ECM/PCM (D10) and TP sensor.



Terminal side of male terminals

— The MIL has been reported on.
— DTC P0122 is stored.

Problem verification:

1. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then turn the ignition switch OFF.
2. Turn the ignition switch ON (II).
3. Check the throttle position with the scan tool.

Is there approx. 10% when the throttle is fully closed and approx. 90% when the throttle is fully opened?

YES

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C130 (TP sensor) and ECM/PCM.

NO

Check for an open in the wire (VCC2 line):

1. Turn the ignition switch OFF.
2. Disconnect the TP sensor 3P connector.
3. Turn the ignition switch ON (II).
4. Measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.

Is there approx. 5 V?

NO

YES

Check for an open or short in TP sensor:

1. Turn the ignition switch OFF.
2. At the sensor side, measure resistance between the TP sensor terminals No. 1 and No. 2 with the throttle fully closed.

(To page 11-60)

Check for an open in wire (VCC2 line):
Measure voltage between ECM/PCM connector terminals D10 and D11.

Is there approx. 5 V?

YES

NO

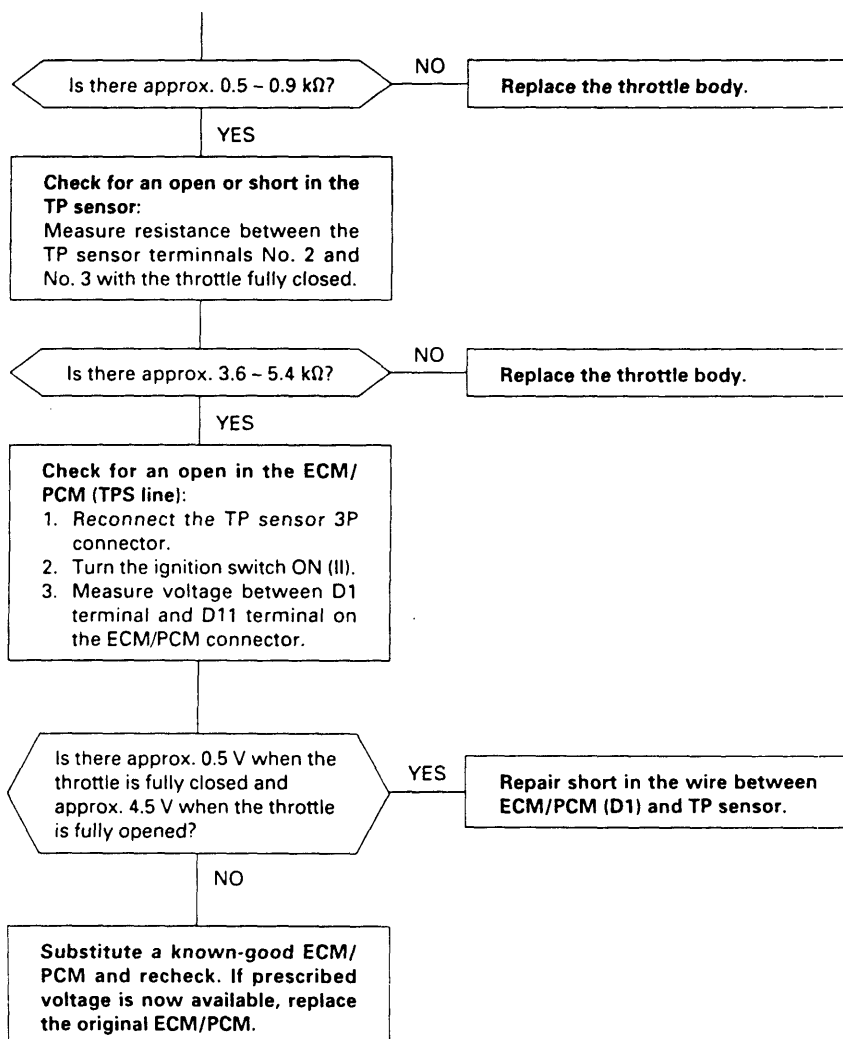
Substitute a known-good ECM/PCM and recheck. If prescribed voltage is now available, replace the original ECM/PCM.

(cont'd)

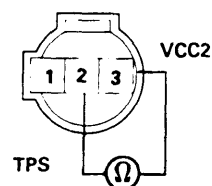
PGM-FI System

Throttle Position (TP) Sensor (cont'd)

(From page 11-59)

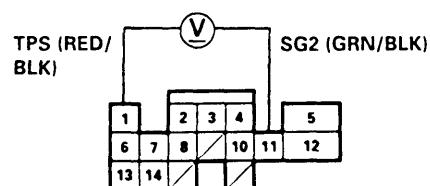


TP SENSOR 3P CONNECTOR



Terminal side of male terminals

ECM/PCM CONNECTOR D (16P)



Wire side of female terminals



P0123

The scan tool indicates Diagnostic Trouble Code (DTC) P0123: A high voltage problem in the Throttle Position (TP) sensor circuit.

- The MIL has been reported on.
- DTC P0123 is stored.

Problem verification:

1. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then turn the ignition switch OFF.
2. Turn the ignition switch ON (II).
3. Check the throttle position with the scan tool.

Is there approx. 10% when the throttle is fully closed and approx. 90% when the throttle is fully opened?

YES

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C130 (TP sensor) and ECM/PCM.

NO

Check for an open in the TP sensor:

1. Turn the ignition switch OFF.
2. Disconnect the TP sensor 3P connector.
3. Turn the ignition switch ON (II).
4. At the harness side, measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.

Is there approx. 5 V?

YES

Replace the throttle body.

NO

Check for an open in the wire (SG2 line):

Measure voltage between ECM/PCM connector terminals D10 and D11.

Is there approx. 5 V?

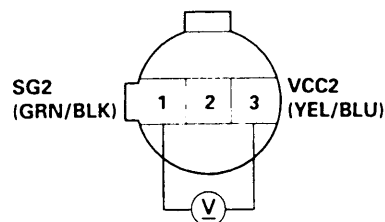
YES

Repair open in the wire between ECM/PCM (D11) and TP sensor.

NO

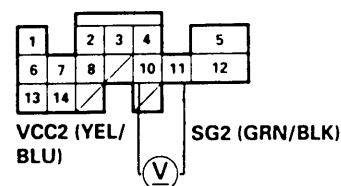
Substitute a known-good ECM/PCM and recheck. If prescribed voltage is now available, replace the original ECM/PCM.

TP SENSOR 3P CONNECTOR (C130)



Wire side of female terminals

ECM/PCM CONNECTOR D (16P)



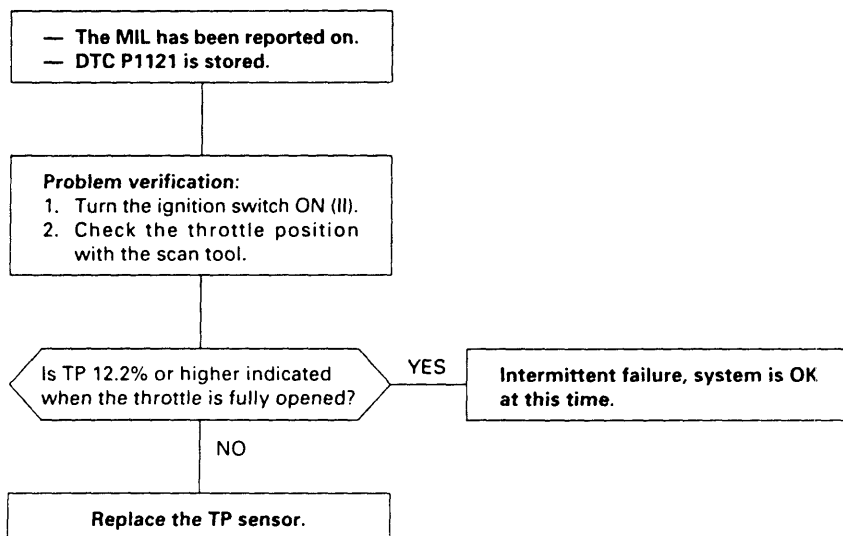
Wire side of female terminals

(cont'd)

PGM-FI System

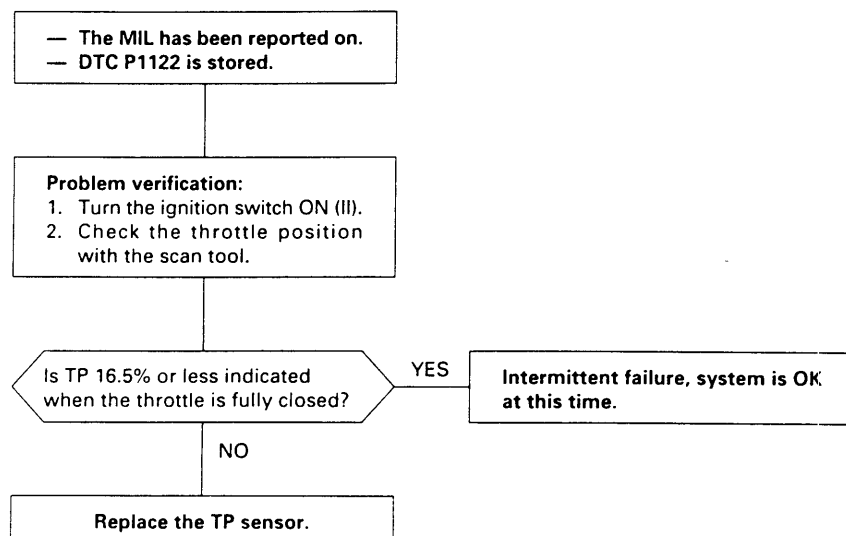
Throttle Position (TP) Sensor (cont'd)

P1121 The scan tool indicates Diagnostic Trouble Code (DTC) P1121: Throttle Position (TP) lower than expected.





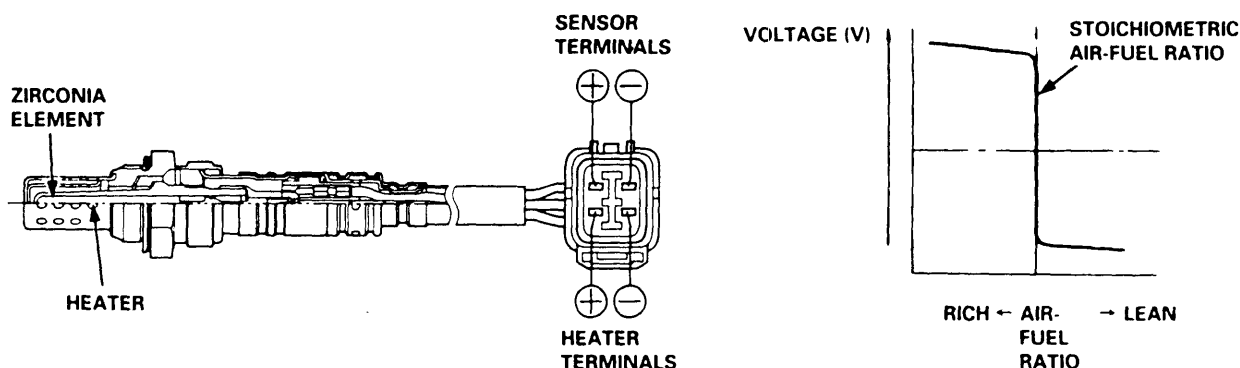
P1122 The scan tool indicates Diagnostic Trouble Code (DTC) P1122: Throttle Position (TP) higher than expected.



PGM-FI System

Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1)

The Heated Oxygen Sensor (HO2S) detects the oxygen content in the exhaust gas and signals the ECM/PCM. In operation, the ECM/PCM receives the signals from the sensor and varies the duration during which fuel is injected. To stabilize the sensor's output, the sensor has an internal heater. The Primary HO2S (Sensor 1) is installed in the exhaust manifold.



P0131 The scan tool indicates Diagnostic Trouble Code (DTC) P0131: A low voltage problem in the Primary Heated Oxygen Sensor (HO2S) (Sensor 1) circuit.

- The MIL has been reported on.
- DTC P0131 is stored.

Problem verification:

1. Do the ECM/PCM Reset Procedure.
2. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on.
3. Test-drive with the A/T in **2** position (M/T in 4th gear)
4. Check the Primary HO2S (Sensor 1) output voltage with the scan tool during acceleration using wide open throttle.

Does the voltage stay at 0.1 V or less?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C113 (Primary HO2S, sensor 1) and ECM/PCM.

YES

Check the fuel pressure.

Is it normal?

NO

Repair fuel supply system.

YES

(To page 11-65)



(From page 11-64)

Check for a short in the Primary HO2S:

1. Turn the ignition switch OFF.
2. Disconnect the Primary HO2S (Sensor 1) 4P connector.
3. Start the engine and let it idle.
4. Check the Primary HO2S (Sensor 1) output voltage with the scan tool.

Does it stay at 0.1 V or less?

NO

Replace the Primary HO2S (Sensor 1) (see page 11-89).

YES

PRIMARY HO2S (Sensor 1) 4P CONNECTOR (C113)

Check for a short in the wire (PHO2S line):

1. Turn the ignition switch OFF.
2. Disconnect the ECM/PCM connector D (16P).
3. Check for continuity between the Primary HO2S (Sensor 1) 4P connector terminal No. 1 and body ground.

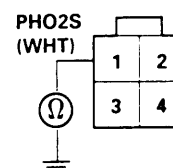
Is there continuity?

YES

Repair short in the wire between ECM/PCM (D7) and Primary HO2S (Sensor 1).

NO

Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.



Wire side of female terminals

(cont'd)

PGM-FI System

Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) (cont'd)

P0132 The scan tool indicates Diagnostic Trouble Code (DTC) P0132: A high voltage problem in the Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) circuit.

- The MIL has been reported on.
- DTC P0132 is stored.

Problem verification:

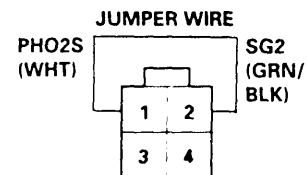
1. Do the ECM/PCM Reset Procedure.
2. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on.
3. Test-drive with the A/T in **2** position (M/T in 4th gear).
4. Check the Primary HO2S (Sensor 1) output voltage with the scan tool during deceleration using completely closed throttle.

Does the voltage stay at 1.0 V or more?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C113 (Primary HO2S, Sensor 1) and ECM/PCM.

PRIMARY HO2S (Sensor 1) 4P CONNECTOR



Wire side of female terminals

YES

Check for an open in the Primary HO2S:

1. Turn the ignition switch OFF.
2. Disconnect the Primary HO2S (Sensor 1) 4P connector.
3. Connect the Primary HO2S (Sensor 1) 4P connector terminals No. 1 and No. 2 with a jumper wire.
4. Turn the ignition switch ON (II).
5. Check the Primary HO2S (Sensor 1) output voltage with the scan tool.

Is there 1.0 V or more?

NO

Replace the Primary HO2S (Sensor 1) (see page 11-89).

YES

Check for an open in the wires (PHO2S, SG2 line):

1. Turn the ignition switch OFF.
2. Connect ECM/PCM connector terminals D7 and D11 with a jumper wire.
3. Turn the ignition switch ON (II).
4. Check the Primary HO2S (Sensor 1) output voltage with the scan tool.

Is there 1.0 V or more?

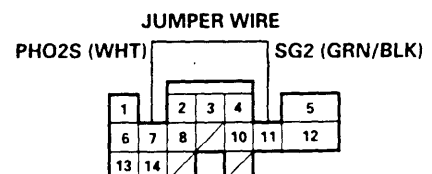
NO

Repair open in the wire between ECM/PCM (D7, D11) and Primary HO2S (Sensor 1).

YES

Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

ECM/PCM CONNECTOR D (16P)



Wire side of female terminals



P0133 The scan tool indicates Diagnostic Trouble Code (DTC) P0133: A slow response problem in the Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) circuit.

Description

By controlling the air/fuel ratio with a Primary HO2S (Sensor 1) and a Secondary HO2S (Sensor 2), the deterioration of the Primary HO2S (Sensor 1) can be evaluated by its feedback period. When the feedback period of the HO2S exceeds a certain value during stable driving conditions, the sensor will be judged as deteriorated.

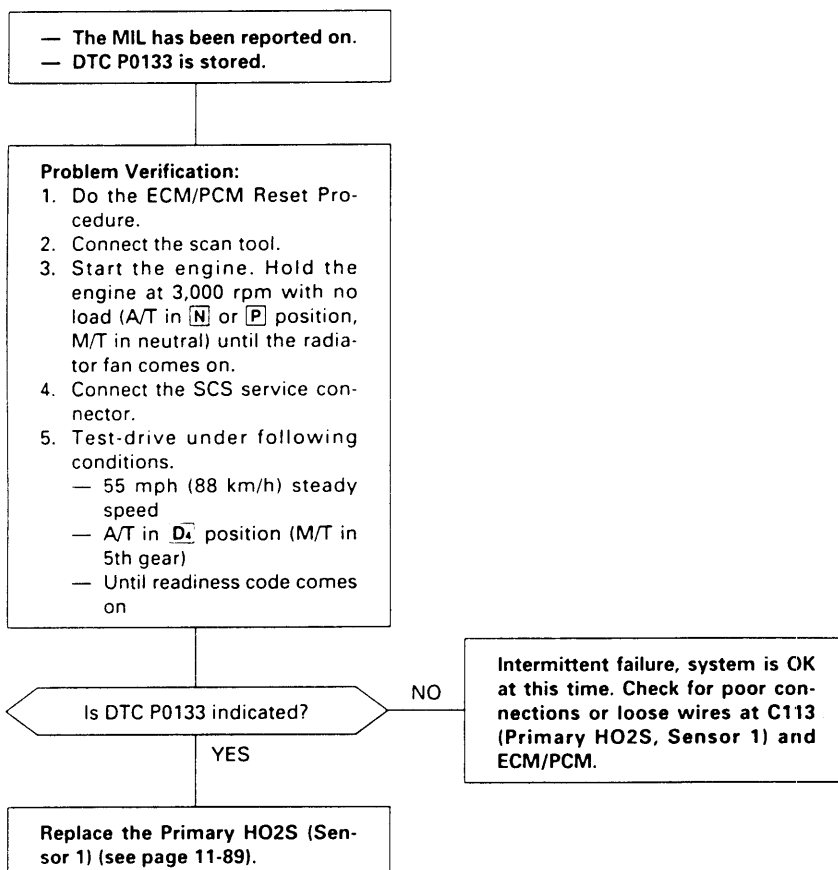
When deterioration has been detected during two consecutive trips, the MIL comes on and DTC P0133 will be stored.

NOTE: If DTC P0131, P0132 and/or P0135 are stored at the same time as DTC P0133, troubleshoot those DTCs first, then troubleshoot DTC P0133.

Possible Cause

- Primary HO2S (Sensor 1) Deterioration
- Primary HO2S Heater (Sensor 1) Deterioration
- Exhaust system leakage

Troubleshooting Flowchart



PGM-FI System

Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2)

P0137 The scan tool indicates Diagnostic Trouble Code (DTC) P0137: A low voltage problem in the Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) circuit.

- The MIL has been reported on.
- DTC P0137 is stored.

Problem verification:

1. Do the ECM/PCM Reset Procedure.
2. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on.
3. With the scan tool, check the Secondary HO2S (Sensor 2) output voltage at 3,000 rpm.

Does the voltage stay at 0.3 V or less?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C128 (located under right side of dash), C430 (located under middle of dash), C782 (Secondary HO2S) (Sensor 2) and ECM/PCM.

YES

Check for a short in the Secondary HO2S:

1. Turn the ignition switch OFF.
2. Disconnect the Secondary HO2S (Sensor 2) 4P connector.
3. Start the engine.
4. Check the Secondary HO2S (Sensor 2) output with the scan tool.

Does the voltage stay at 0.3 V or less?

NO

Replace the Secondary HO2S (Sensor 2) (see page 11-89).

YES

Check for a short in the wire (SHO2S line):

1. Turn the ignition switch OFF.
2. Disconnect the ECM/PCM connector D (16P).
3. Check for continuity between the Secondary HO2S (Sensor 2) 4P connector terminal No. 1 and body ground.

Is there continuity?

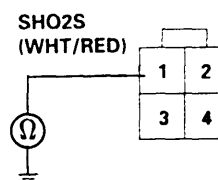
YES

Repair short in the wire between ECM/PCM (D14) and Secondary HO2S (Sensor 2).

NO

Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

SECONDARY HO2S (Sensor 2)
4P CONNECTOR (C782)



Wire side of female terminals



P0138 The scan tool indicates Diagnostic Trouble Code (DTC) P0138: A high voltage problem in the Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) circuit.

- The MIL has been reported on.
- DTC P0138 is stored.

Problem verification:

1. Do the ECM/PCM Reset Procedure.
2. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on.
3. With the scan tool, check the Secondary HO2S (Sensor 2) output voltage at 3,000 rpm.

Does the voltage stay at 0.6 V or more?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C123 (located under right side of dash), C430 (located under middle of dash), C782 (Secondary HO2S, Sensor 2) and ECM/PCM.

YES

Check for an open in the Secondary HO2S:

1. Turn the ignition switch OFF.
2. Disconnect the Secondary HO2S (Sensor 2) 4P connector.
3. Connect the Secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.
4. Turn the ignition switch ON (II).
5. Check the Secondary HO2S (Sensor 2) output voltage with the scan tool.

Is there 0.6 V or more?

NO

Replace the Secondary HO2S (Sensor 2) (see page 11-89).

YES

Check for an open in the wire (SHO2S, SHO2SG lines):

1. Turn the ignition switch OFF.
2. Connect ECM/PCM connector terminals D14 and D13 with a jumper wire.
3. Turn the ignition switch ON (III).
4. Check the Secondary HO2S (Sensor 2) output voltage with the scan tool.

Is there 0.6 V or more?

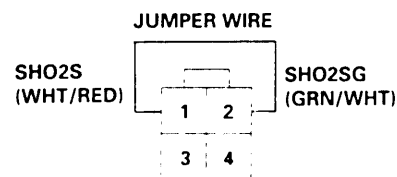
NO

Repair open in the wire between ECM/PCM (D13 and/or D14) and Secondary HO2S (Sensor 2).

YES

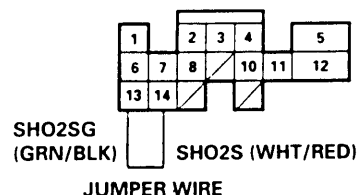
Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

**SECONDARY HO2S (Sensor 2)
4P CONNECTOR C782**



Wire side of female terminals

ECM/PCM CONNECTOR D (16P)



Wire side of female terminals

(cont'd)

PGM-FI System

Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) (cont'd)

P0139 The scan tool indicates Diagnostic Trouble Code (DTC) P0139: A slow response problem in the Secondary Heated Oxygen Sensor (HO2S) (Sensor 2) circuit.

- The MIL has been reported on.
- DTC P0139 is stored.

Problem verification:

1. Do the ECM/PCM Reset Procedure.
2. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on.
3. Check the Secondary HO2S (Sensor 2) output at 3,000 rpm with the scan tool.

Does the voltage stay within 0.3 – 0.6 V for two minutes?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C123 (located under right side of dash), C430 (located under middle of dash), C782 (Secondary HO2S, Sensor 2) and ECM/PCM.

YES

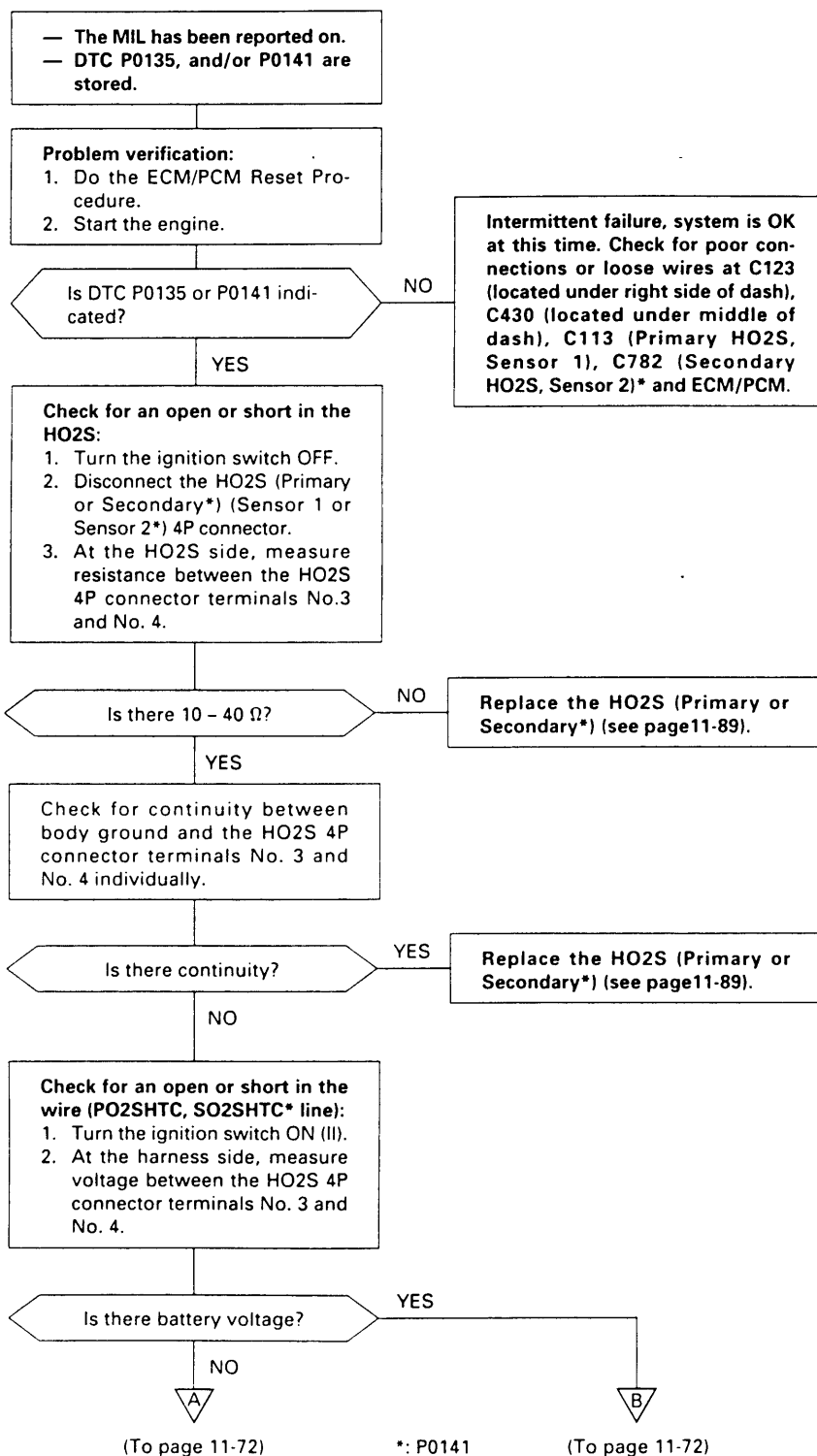
Replace the Secondary HO2S (Sensor 2) (see page 11-89).



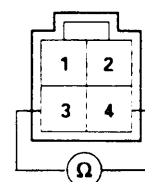
Heated Oxygen Sensor (HO2S) Heater

P0135 The scan tool indicates Diagnostic Trouble Code (DTC) P0135: An electrical problem in the Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1) Heater system.

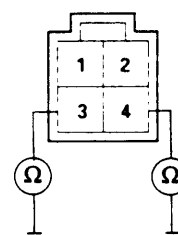
P0141 The scan tool indicates Diagnostic Trouble Code (DTC) P0141: A problem in the Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Heater circuit.



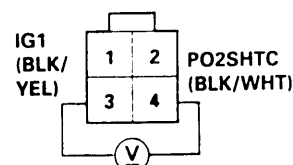
PRIMARY HO2S (Sensor 1) 4P CONNECTOR
SECONDARY HO2S (Sensor 2) 4P CONNECTOR*



Terminal side of male terminals

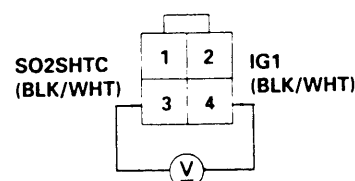


PRIMARY HO2S (SENSOR 1) 4P CONNECTOR (C113)



Wire side of female terminals

SECONDARY HO2S (SENSOR 2)
4P CONNECTOR (C782)*

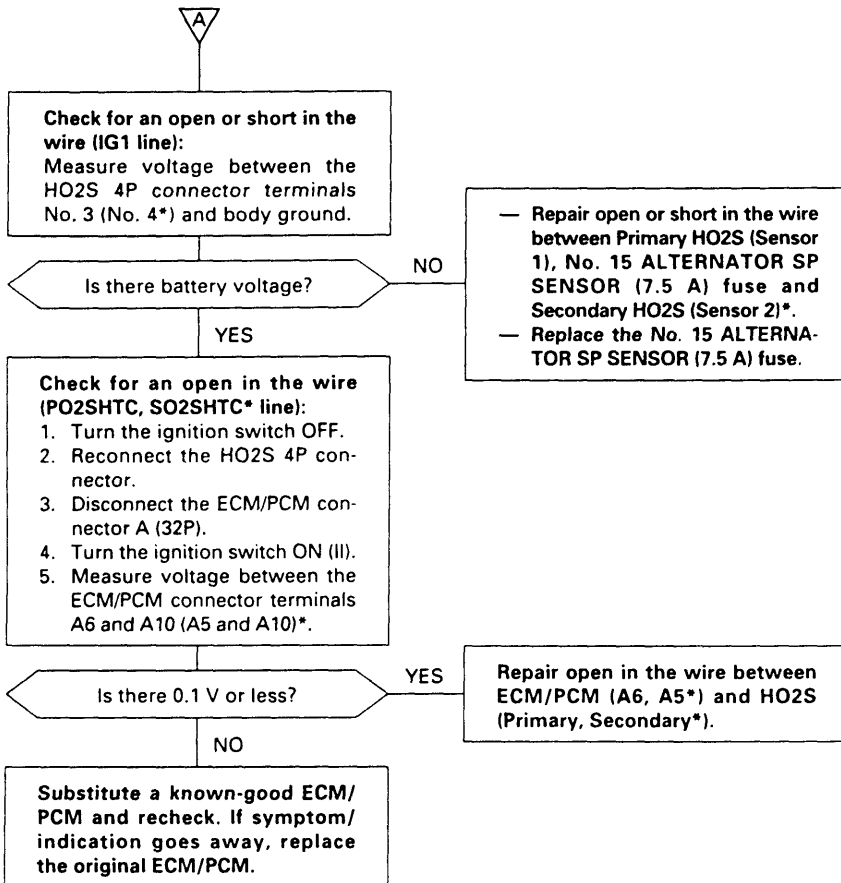


Wire side of female terminals
(cont'd)

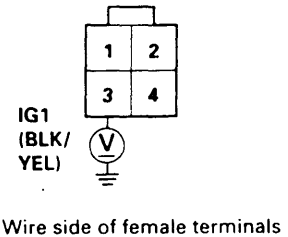
PGM-FI System

Heated Oxygen Sensor (HO2S) Heater (cont'd)

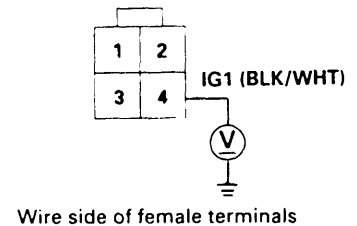
(From page 11-71)



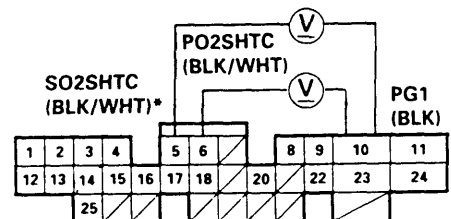
PRIMARY HO2S (SENSOR 1) 4P CONNECTOR (C113)



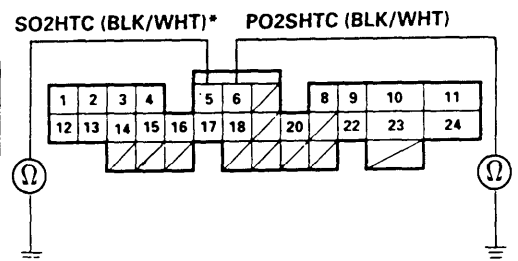
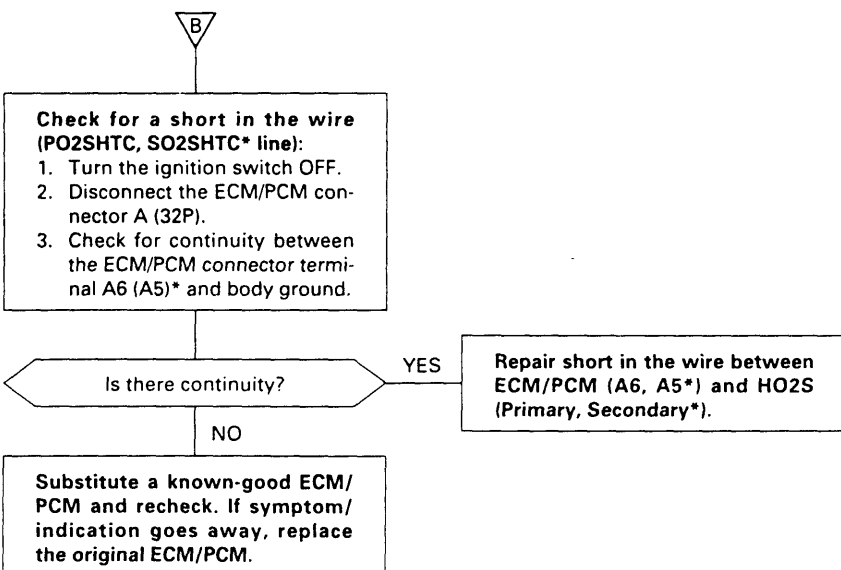
SECONDARY HO2S (SENSOR 2) 4P CONNECTOR (C782)*



ECM/PCM CONNECTOR A (32P)



(From page 11-71)



*: P0141



Fuel Supply System

P0171 The scan tool indicates Diagnostic Trouble Code (DTC) P0171: The fuel system is too lean.

P0172 The scan tool indicates Diagnostic Trouble Code (DTC) P0172: The fuel system is too rich.

Description

By monitoring the Long Term Fuel Trim, long term malfunctions in the fuel system will be detected.

If a malfunction has been detected during two consecutive trips, the MIL will come on and DTC P0171 and/or P0172 will be stored.

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then troubleshoot DTC P0171 and/or P0172.

P0107-8, P1128-9: MAP Sensor

P0135: Primary HO2S Heater

P0137-8: Secondary HO2S

P0141: Secondary HO2S Heater

P0441: EVAP System Insufficient Purge Flow

P1259: VTEC System

Possible Cause

DTC P0171
System too lean

- Fuel Pump insufficient flow/pressure
- Fuel Feed Line clogged, leaking
- Fuel Pressure Regulator stuck open
- Fuel Filter clogged
- Fuel Injector clogged, air inclusion
- Gasoline doesn't meet Owner's Manual spec.
- Primary HO2S (Sensor 1) deteriorated
- MAP Sensor range/performance
- Valve Clearance
- Exhaust leak

DTC P0172
System too rich

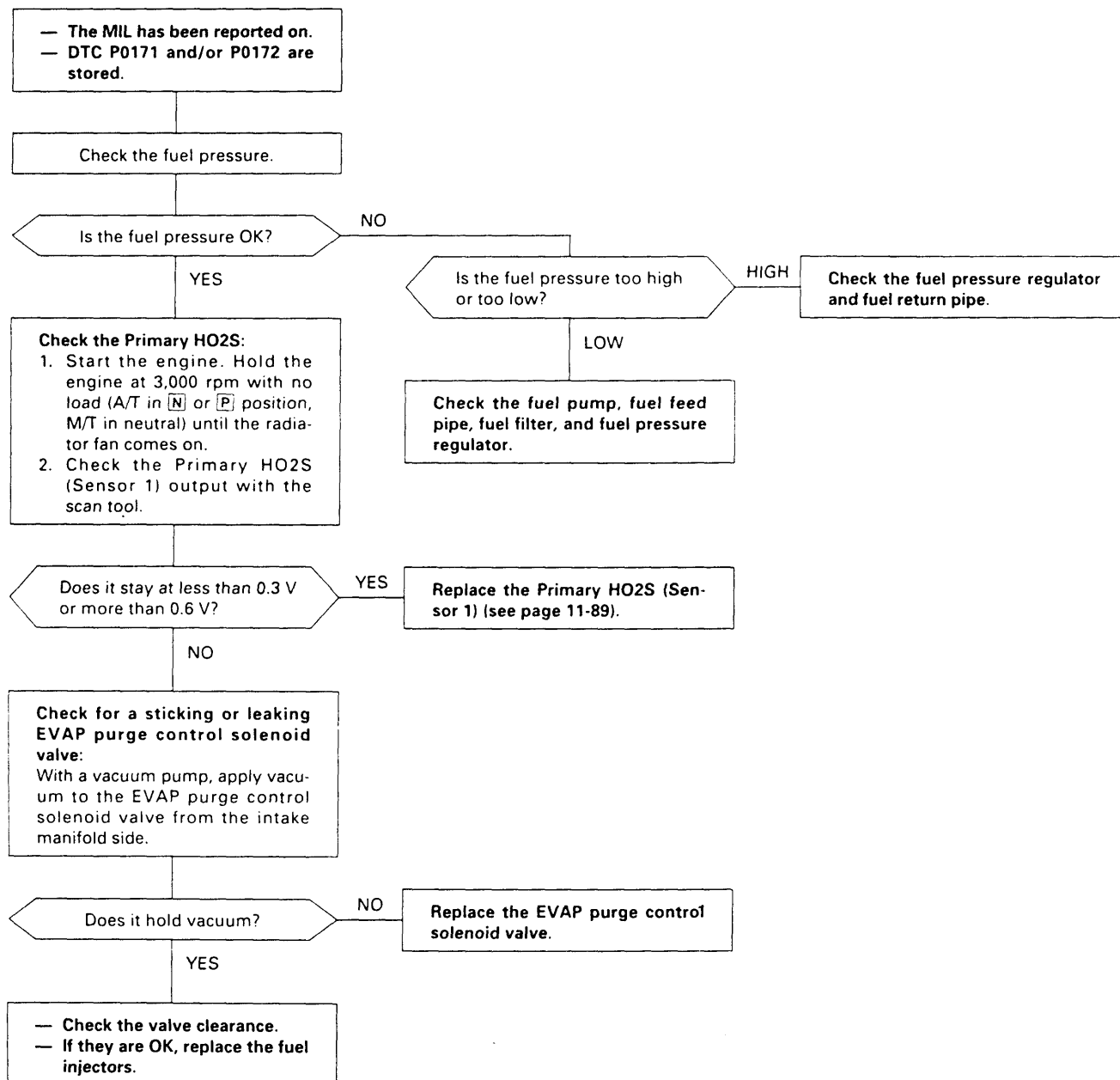
- Fuel Pressure Regulator clogged, stuck closed
- Fuel Return Pipe clogged
- Fuel Injector leaking
- Gasoline doesn't meet Owner's Manual spec.
- Primary HO2S (Sensor 1) deteriorated
- MAP Sensor range/performance
- EVAP Purge Control Solenoid Valve leaking, stuck opened
- Valve Clearance

(cont'd)

PGM-FI System

Fuel Supply System (cont'd)

Troubleshooting Flowchart





Misfire Detected in One Cylinder

P0301 The scan tool indicates Diagnostic Trouble Code (DTC) P0301: Cylinder 1 misfire detected.

P0302 The scan tool indicates Diagnostic Trouble Code (DTC) P0302: Cylinder 2 misfire detected.

P0303 The scan tool indicates Diagnostic Trouble Code (DTC) P0303: Cylinder 3 misfire detected.

P0304 The scan tool indicates Diagnostic Trouble Code (DTC) P0304: Cylinder 4 misfire detected.

Description

Misfire detection is accomplished by monitoring the crankshaft speed with the crankshaft speed fluctuation (CKF) sensor which is attached to the crankshaft.

If misfiring strong enough to damage the catalyst is detected, the MIL will blink during the time of its occurrence, and DTC P0301, P0302, P0303 and/or P0304 will be stored. Then, after the misfire has ceased, the MIL will come on.

If misfiring that increases emissions is detected during two consecutive driving cycles, the MIL will come on, and DTC P0301, P0302, P0303 and/or P0304 will be stored.

NOTE: If some of the DTCs listed below are stored at the same time as a misfire DTC, troubleshoot those DTCs first, then troubleshoot the misfire DTC.

P0106: MAP sensor

P0171, P0172: Fuel supply system

P0335, P0336: CKF sensor

P0441: EVAP Insufficient purge flow

P1359, P1361, P1362: TDC sensor

P1381, P1382: CYP sensor

Possible Cause

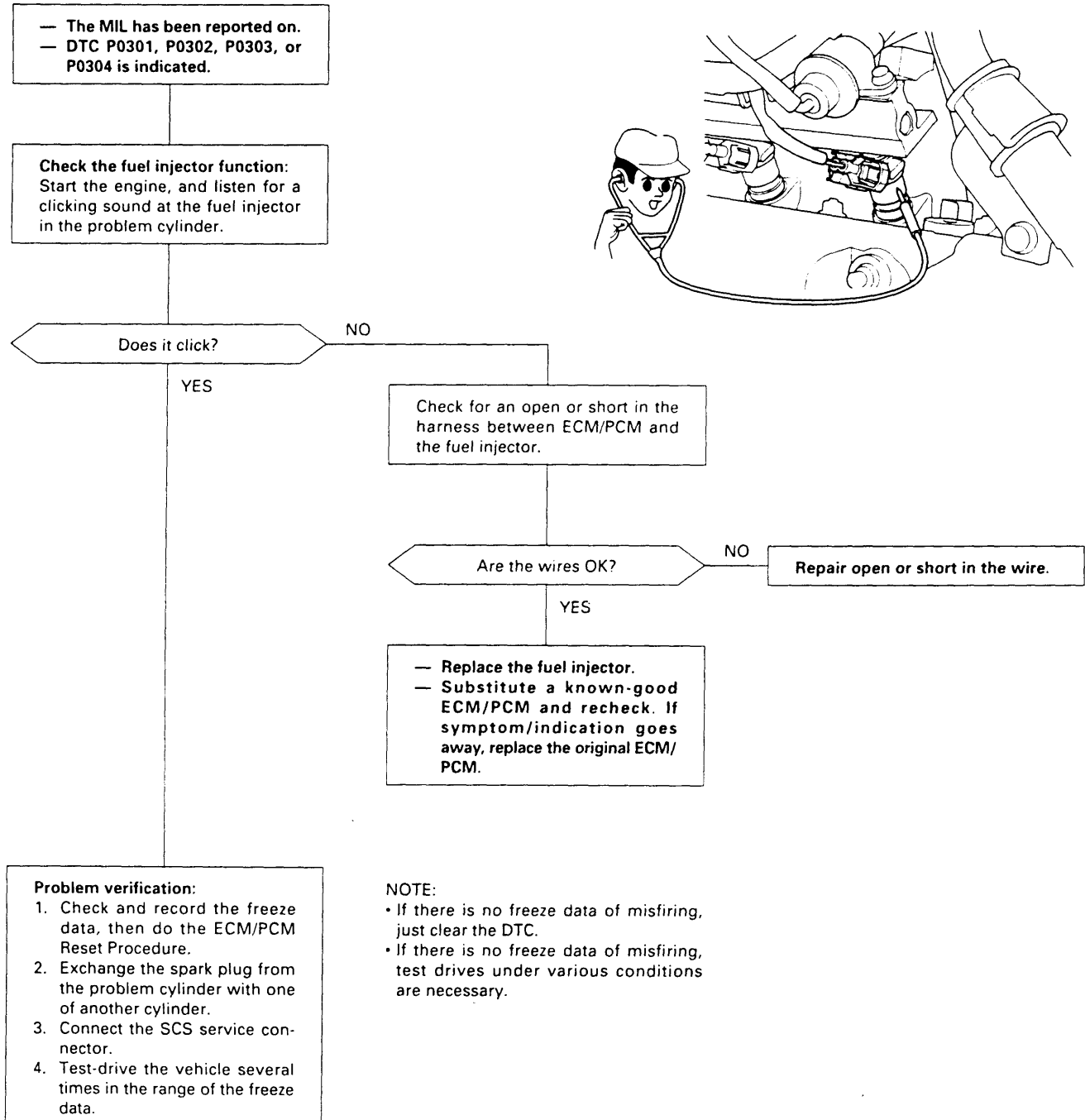
- Fuel injector clogging, fuel leakage, air leakage
- Fuel injector circuit open or shorted
- Spark plug carbon deposits, fouling, malfunction
- Ignition wires open, leaking
- Distributor malfunction
- Compression low
- Valve clearance out of spec
- VTEC system malfunction

(cont'd)

PGM-FI System

Misfire in Detected One Cylinder (cont'd)

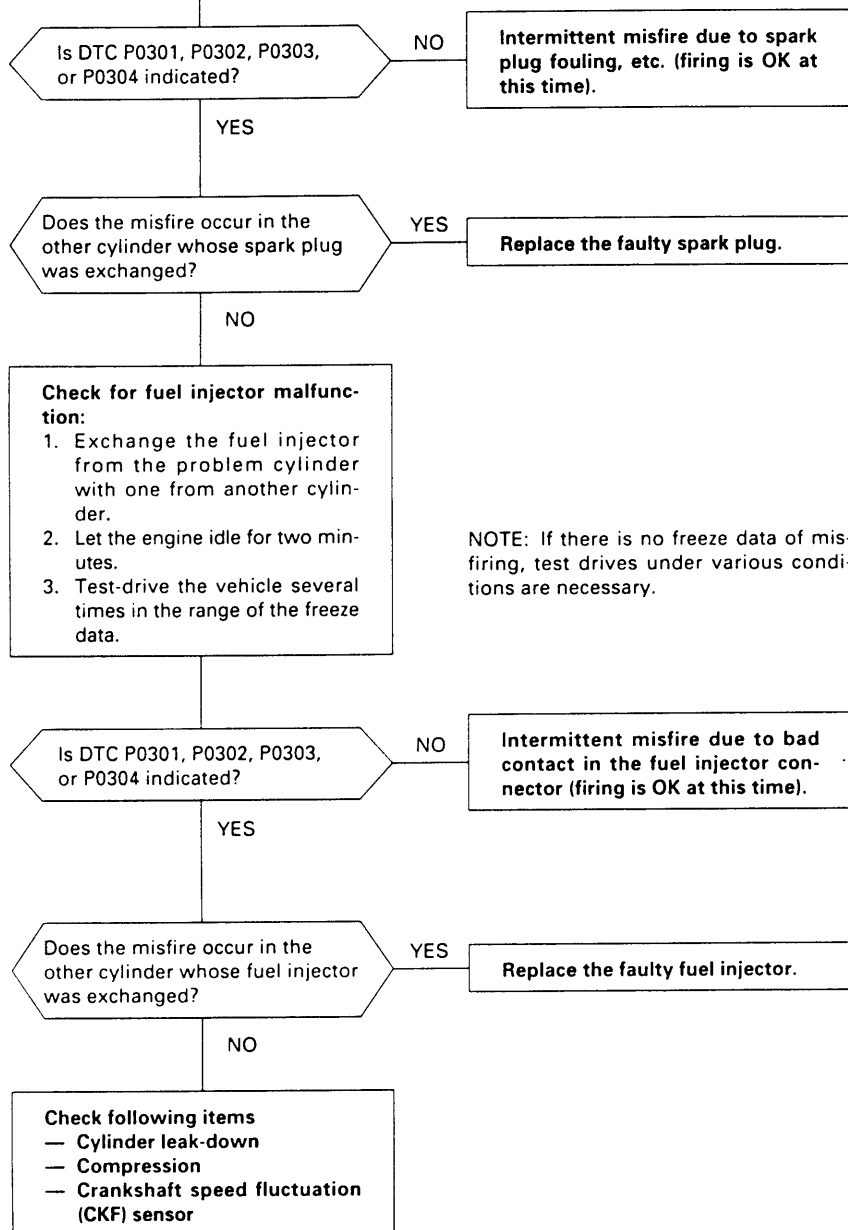
Troubleshooting Flowchart



(To page 11-77)



(From page 11-76)



PGM-FI System

Random Misfire

P1300 or **P0301 through P0304** The scan tool indicates Diagnostic Trouble Code (DTC) P1300 or some of P0301 – P0304: Random misfire.

Description

Misfire detection is accomplished by monitoring the crankshaft speed with the crankshaft speed fluctuation (CKF) sensor which is attached to the crankshaft.

If misfiring strong enough to damage the catalyst is detected, the MIL will blink during the time of its occurrence, and DTC P1300 or some of DTCs P0301 through P0304 will be stored. Then, after misfire has ceased, the MIL will come on.

If misfiring that increases emissions is detected during two consecutive driving cycles, the MIL will come on, and DTC P1300 or some of DTCs P0301 through P0304 will be stored.

NOTE: If some of the DTCs listed below are stored at the same time as a misfire DTC, troubleshoot those DTCs first, then troubleshoot the misfire DTC.

P1128-9 MAP sensor
P0171, P0172: Fuel metering
P0505: Idle Control System
P1253: VTEC System
P1361, P1362: TDC sensor
P1381, P1382: CYP sensor
P1508: IAC valve

Possible Cause

- Fuel pump insufficient fuel pressure, amount of flow
- Fuel line clogging, blockage, leakage
- Fuel filter clogging
- Fuel pressure regulator stuck open
- Distributor malfunction
- Ignition coil wire open, leakage
- Ignition control module malfunction
- Valves carbon deposit
- Compression low
- VTEC system malfunction
- Fuel does not meet Owner's Manual spec., lack of fuel

Troubleshooting

By test-driving, determine the conditions during which misfire occurs. Depending on these conditions, test in the order described in the table below.

Possible cause	Crankshaft position (CKP) sensor	Fuel pressure	Distributor and Ignition wires	ICM	Valve Clearance
Page					
Condition	section 6	11-110	section 4	section 4	section 6
Only low rpm and load	②	①			②
Only accelerating		②	①	③	
Only high rpm and load	④	①	②	③	④
Not specific	④	①	②	③	④

NOTE: If misfire doesn't recur, some possible causes are fuel that doesn't meet owner's manual spec, lack of fuel, carbon deposits on spark plug, etc.



Knock Sensor (KS)

P0325

The scan tool indicates Diagnostic Trouble Code (DTC) P0325: A malfunction in the circuit of the Knock Sensor (KS).

- The MIL has been reported on.
- DTC P0325 is stored.

Problem verification:

1. Do the ECM/PCM Reset Procedure.
2. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then let it idle.
3. Hold the engine at 3,000 – 4,000 rpm for at least 60 seconds.

Is DTC P0325 indicated?

NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires between C105 (knock sensor (KS)) and ECM/PCM.

YES

Check for a short in the wire (KS line):

1. Turn the ignition switch OFF.
2. Disconnect the knock sensor 2P connector.
3. Disconnect the ECM/PCM connector D (16P).
4. Check for continuity between ECM/PCM connector terminals D6 and body ground.

Is there continuity?

YES

Repair short in the wire between ECM/PCM (D6) and knock sensor.

NO

Check for an open in the wire (KS line):

Check for continuity between ECM/PCM connector terminal D6 and knock sensor 2P connector terminal No. 1.

Is there continuity?

NO

Repair open in the wire between ECM/PCM (D6) and knock sensor.

YES

Substitute a known-good knock sensor and recheck.

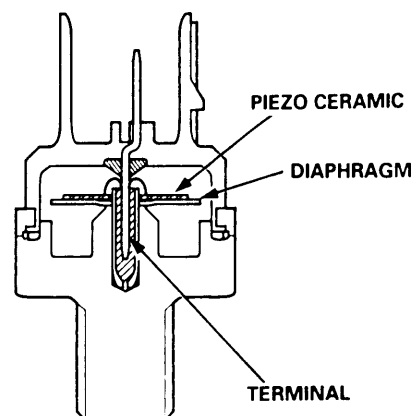
Is DTC P0325 indicated?

NO

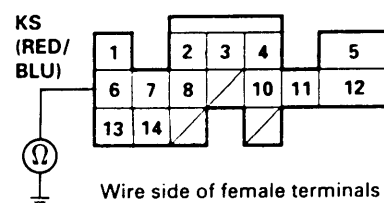
Replace the original knock sensor.

YES

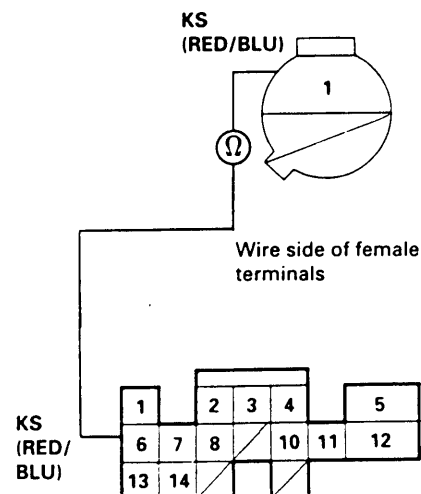
Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.



ECM/PCM CONNECTOR D (16P)



KS 2P CONNECTOR (C105)



PGM-FI System

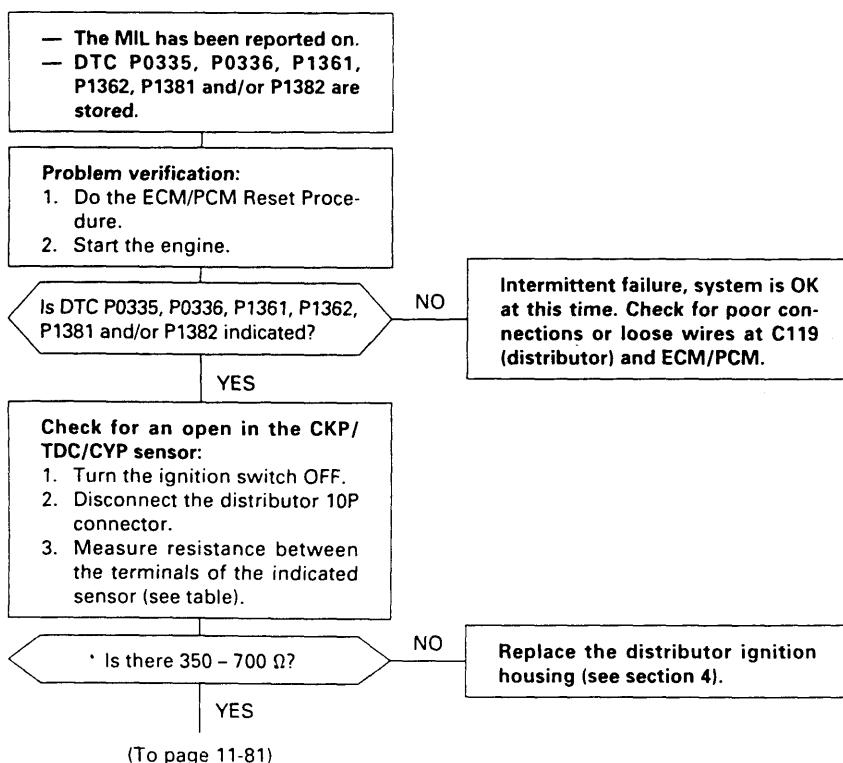
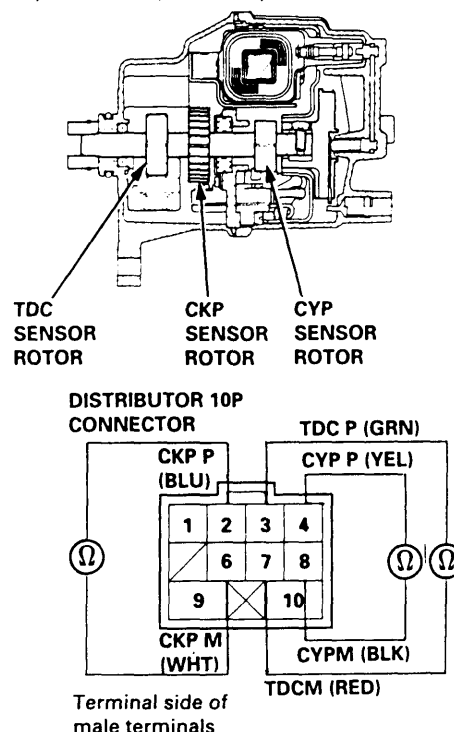
Crankshaft Position/Top Dead Center/Cylinder Position (CKP/TDC/CYP) Sensor

- P0335** The scan tool indicates Diagnostic Trouble Code (DTC) P0335: A malfunction in the Crankshaft Position (CKP) sensor circuit.
- P0336** The scan tool indicates Diagnostic Trouble Code (DTC) P0336: A range/performance problem in the Crankshaft Position (CKP) sensor circuit.
- P1361** The scan tool indicates Diagnostic Trouble Code (DTC) P1361: Intermittent interruption in the Top Dead Center (TDC) sensor circuit.
- P1362** The scan tool indicates Diagnostic Trouble Code (DTC) P1362: No signal in the Top Dead Center (TDC) sensor circuit.
- P1381** The scan tool indicates Diagnostic Trouble Code (DTC) P1381: Intermittent interruption in the Cylinder Position (CYP) sensor circuit.
- P1382** The scan tool indicates Diagnostic Trouble Code (DTC) P1382: No signal in the Cylinder Position (CYP) sensor circuit.

Description

The CKP Sensor determines timing for fuel injection and ignition of each cylinder and also detects engine speed. The TDC Sensor determines ignition timing at start-up (cranking) and when crank angle is abnormal. The CYP Sensor detects the position of No. 1 cylinder for sequential fuel injection to each cylinder. The CKP/TDC/CYP Sensor is built into the distributor.

NOTE: If DTC P1359 is stored at the same time as DTC P0335, P0336, P1361, P1362, P1381 and/or P1382, troubleshoot DTC P1359 first, then troubleshoot those DTCs.





(From page 11-80)

Check for a short in the CKP/TDC/CYP sensor:

Check for continuity to body ground on both terminals of the indicated sensor individually (see table).

Is there continuity?

YES

Replace the distributor ignition housing (see section 4).

NO

Check for an open in the wires (CKP/TDC/CYP lines):

1. Reconnect the distributor 10P connector.
2. Disconnect the ECM/PCM connector C (31P).
3. Measure resistance between the terminals of the indicated sensor on the ECM/PCM connector (see table).

Is there 350 – 700 Ω ?

NO

Repair open in the indicated sensor wires (see table).

YES

Check for a short in the wires (CKP/TDC/CYP lines):

Check for continuity between body ground and ECM/PCM connector terminals C2, C3 and/or C4 individually.

Is there continuity?

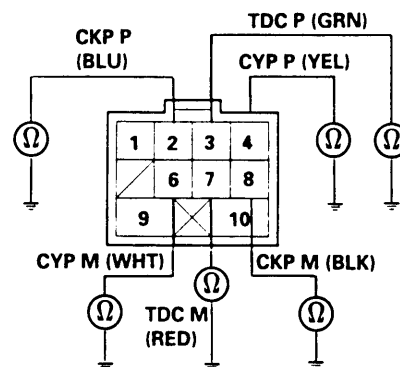
YES

Repair short in the indicated sensor wires (see table).

NO

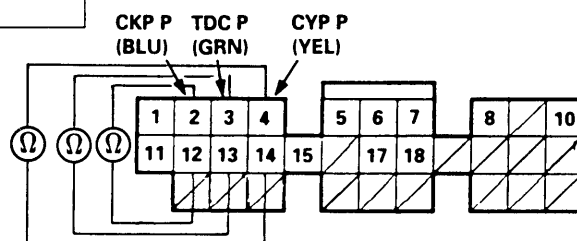
Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

DISTRIBUTOR 10P CONNECTOR

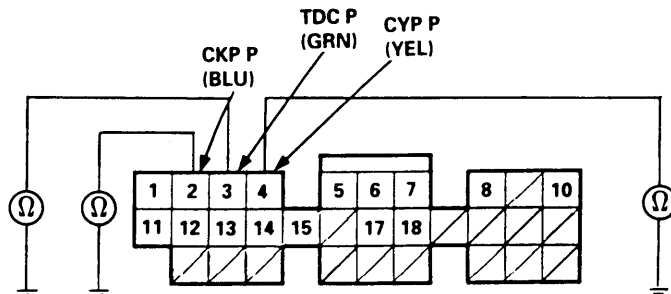


Terminal side of male terminals

ECM/PCM CONNECTORS C (31P)



Wire side of female terminals



PGM-FI System

Vehicle Speed Sensor (VSS)

P0500 The scan tool indicates Diagnostic Trouble Code (DTC) P0500: A malfunction problem in the Vehicle Speed Sensor (VSS) circuit (M/T).

P0501 The scan tool indicates Diagnostic Trouble Code (DTC) P0501: A range/performance problem in the Vehicle Speed Sensor (VSS) circuit (A/T).

- The MIL has been reported on.
- DTC P0500 or P0501 is stored.

Problem verification:

1. Test-drive the vehicle.
2. Check the vehicle speed with the scan tool.

Is the correct speed indicated?

YES

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C121 (VSS) and ECM/PCM.

NO

Check for an open in the ECM/PCM:

1. Turn the ignition switch OFF.
2. Block the rear wheels and set the parking brake.
3. Jack up the front of the vehicle and support it with safety stands.
4. Turn the ignition switch ON (II).
5. Block the right front wheel and slowly rotate the left front wheel.
6. Measure voltage between the ECM/PCM connector terminals C18 and A9.

Does the voltage pulse 0 V and 5 V?

YES

Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

NO

Check for a short in the ECM/PCM:

1. Turn the ignition switch OFF.
2. Disconnect the ECM/PCM connector C (31P).
3. Turn the ignition switch ON (II).
4. Block the right front wheel and slowly rotate the left front wheel.
5. Measure voltage between the ECM/PCM connector terminals C18 and A9.

Does the voltage pulse 0 V and 5 V?

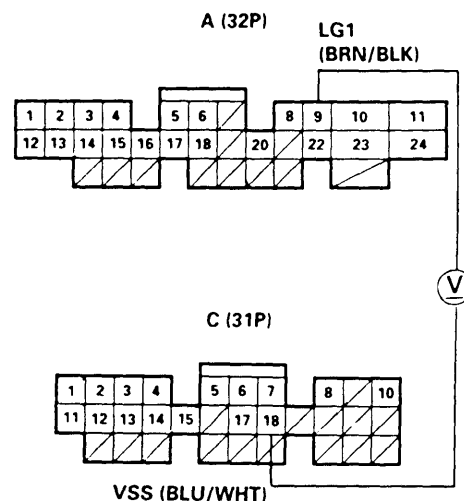
YES

Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

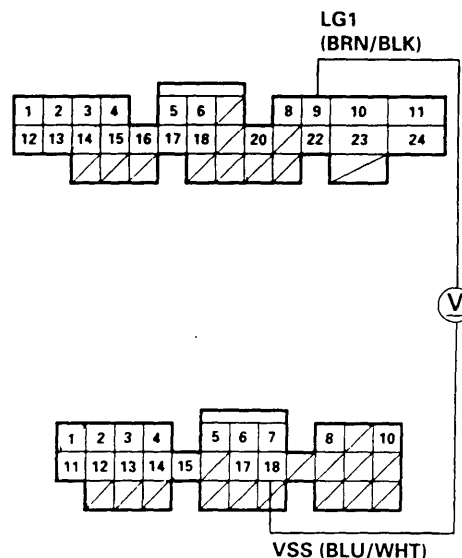
NO

- Repair short in the wire between ECM/PCM (C18) and VSS.
- Repair open in the wire between ECM/PCM (C18) and VSS.
- If wire is OK, test the VSS (see page 23-60).

ECM/PCM CONNECTORS



Wire side of female terminals





Barometric Pressure (Baro) Sensor

P1106 The scan tool indicates Diagnostic Trouble Code (DTC) P1106: A range/performance problem in the Barometric Pressure (Baro) Sensor circuit.

- The MIL has been reported on.
- DTC P1106 is stored.

Problem verification:

1. Do the ECM/PCM reset procedure.
2. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then let it idle.
3. Test-drive with the A/T in **2** position (M/T in 4th gear).
4. Accelerate for five seconds using wide open throttle.

Is DTC P1106 indicated?

NO

Intermittent failure, system is OK at this time.

YES

Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.

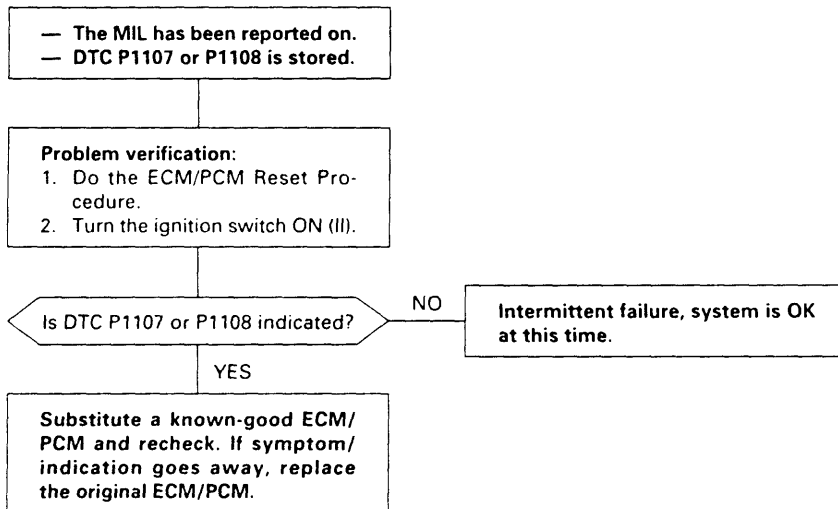
(cont'd)

PGM-FI System

Barometric Pressure (Baro) Sensor (cont'd)

P1107 The scan tool indicates Diagnostic Trouble Code (DTC) P1107: A low voltage problem in the Baro sensor circuit.

P1108 The scan tool indicates Diagnostic Trouble Code (DTC) P1108: A high voltage problem in the Baro sensor circuit.





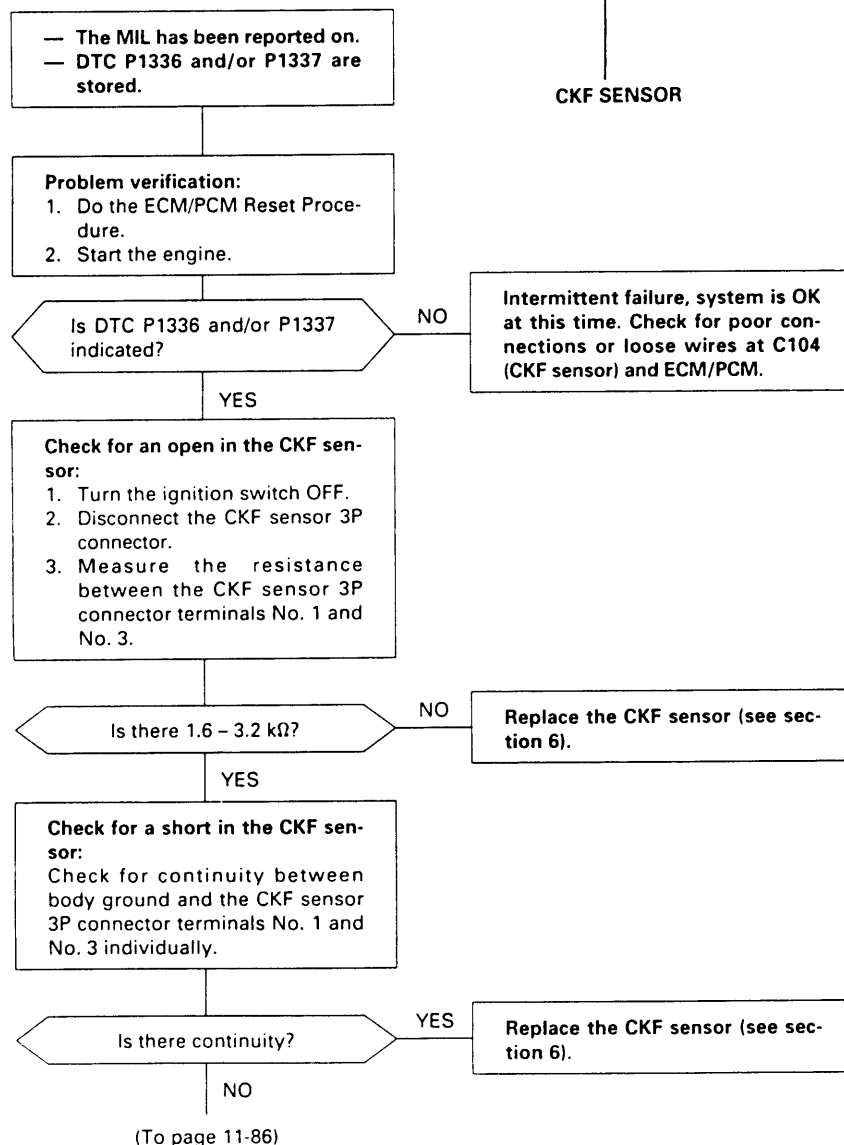
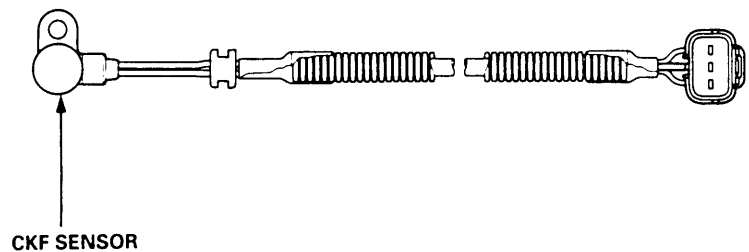
Crankshaft Speed Fluctuation (CKF) Sensor

P1336 The scan tool indicates Diagnostic Trouble Code (DTC) P1336: Intermittent interruption in the Crankshaft Speed Fluctuation (CKF) sensor circuit.

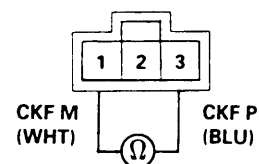
P1337 The scan tool indicates Diagnostic Trouble Code (DTC) P1337: No signal in the Crankshaft Speed Fluctuation (CKF) sensor circuit.

Description

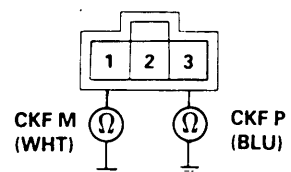
The diagnostic system has a pulser rotor on the crankshaft and a pulse pick-up sensor on the engine block. The ECM/PCM monitors the crankshaft speed fluctuation based on the CKF sensor signal, and judges that an engine misfire occurred if the fluctuation goes beyond a predetermined limit.



CKF SENSOR 3P CONNECTOR



Terminal side of male terminals

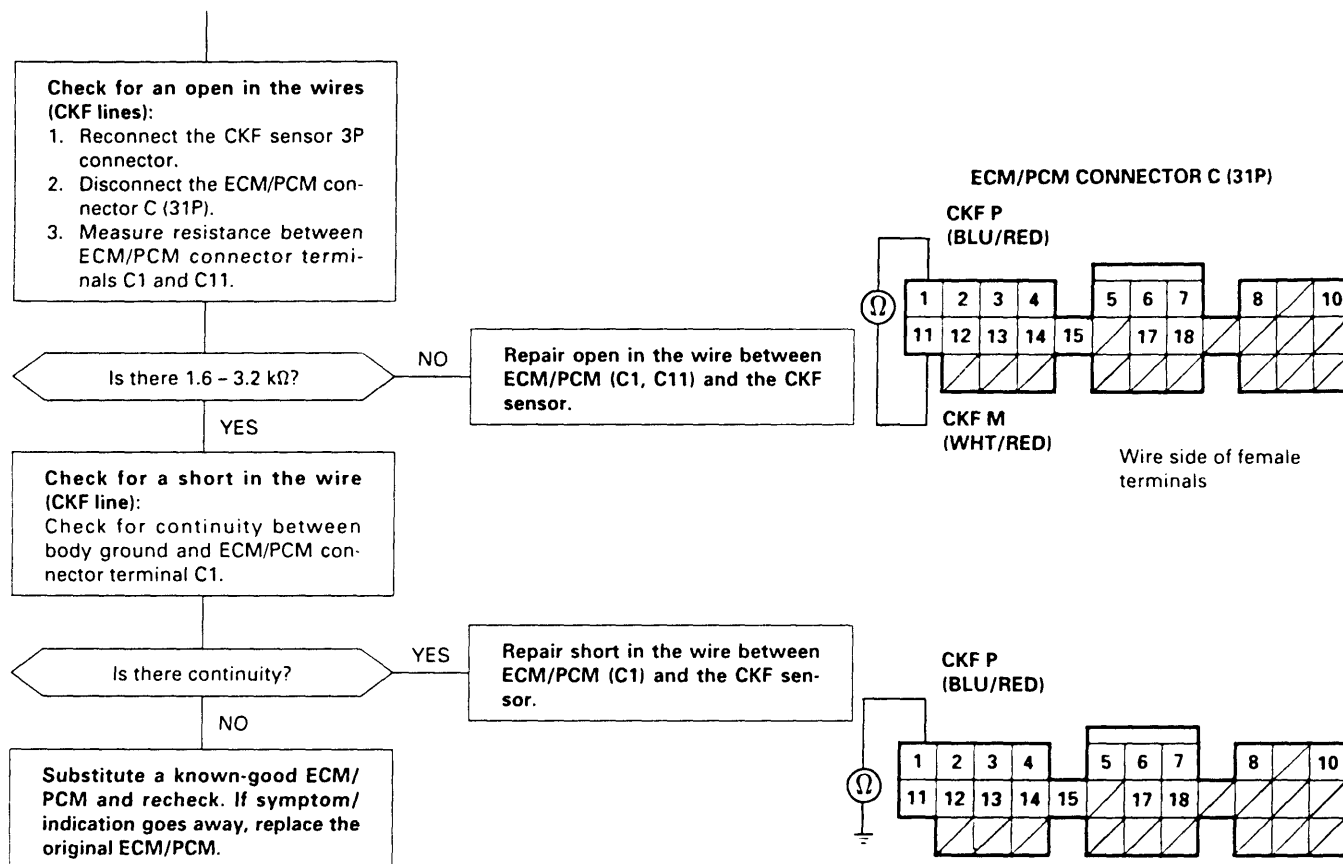


(cont'd)

PGM-FI System

Crankshaft Speed Fluctuation (CKF) Sensor (cont'd)

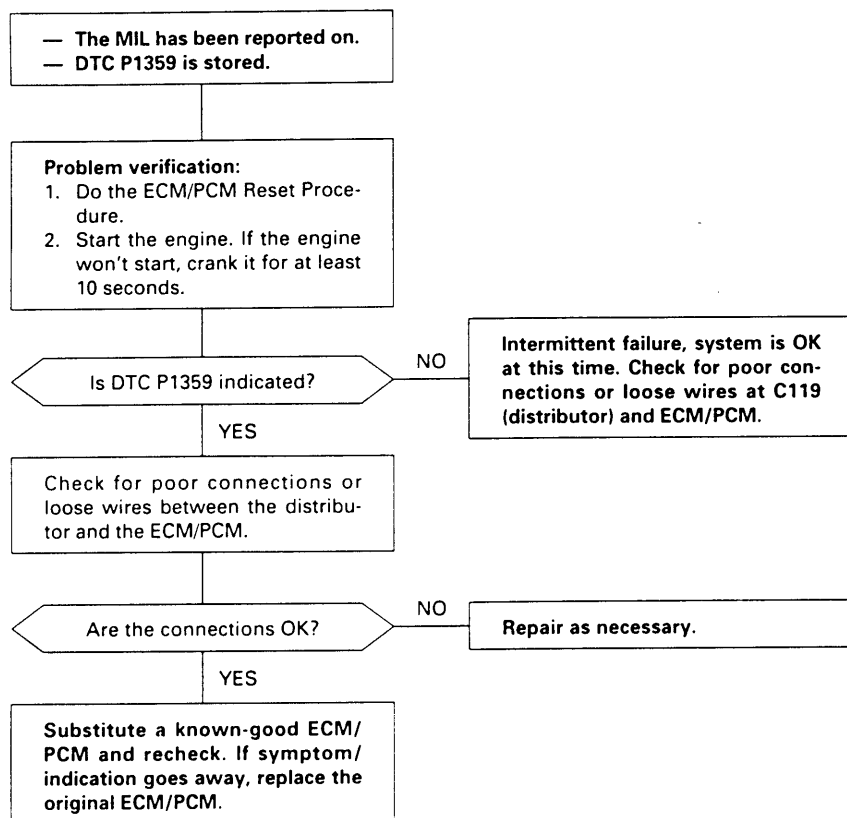
(From page 11-85)





Crankshaft Position/Top Dead Center/Cylinder Position (CKP/TDC/CYP) Sensor

P1359 The scan tool indicates Diagnostic Trouble Code (DTC) P1359: A problem in the Crankshaft Position/Top Dead Center/Cylinder Position (CKP/TDC/CYP) sensor circuit.



PGM-FI System

ECM/PCM Internal Circuit

P1607 The scan tool indicates Diagnostic Trouble Code (DTC) P1607: An ECM/PCM Internal Circuit Problem.

- The MIL has been reported on.
- DTC P1607 is stored.

Problem verification:

1. Do the ECM/PCM Reset Procedure.
2. Turn the ignition switch ON (II).
3. Wait 10 seconds.

Is DTC P1607 indicated?

NO

Intermittent failure, system is OK at this time.

YES

Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.



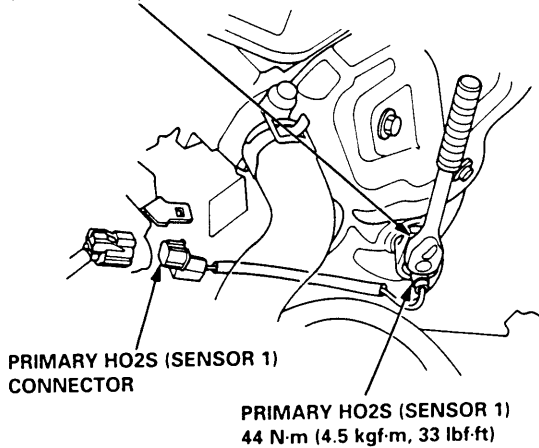
Heated Oxygen Sensor (HO2S)

Replacement

Primary Heated Oxygen Sensor (Primary HO2S) (Sensor 1):

1. Disconnect the primary HO2S (sensor 1) connector, then remove the primary HO2S (sensor 1).

O2 SENSOR WRENCH
SNAP-ON or SP Tools
P/N 88750 or 93750
(Commercially available)

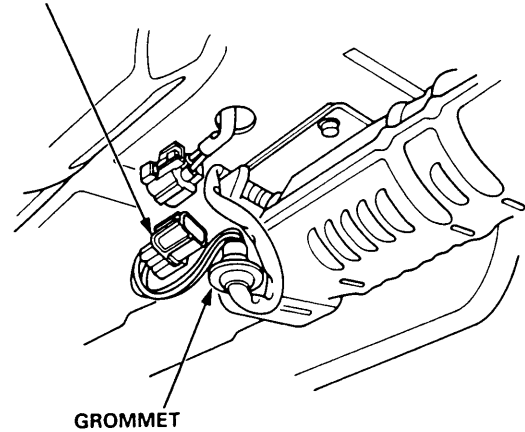


2. Install the primary HO2S (sensor 1) in reverse order of removal.

Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2):

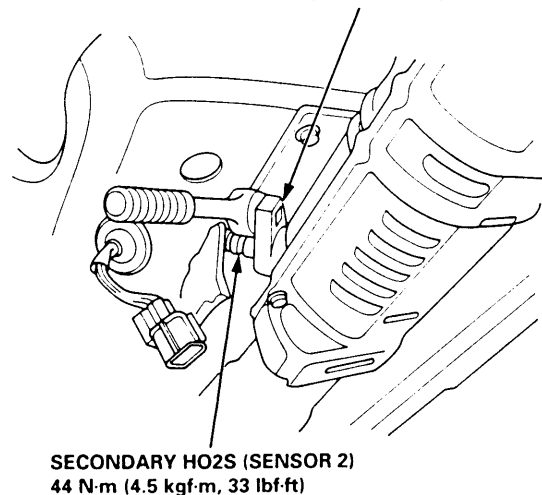
1. Remove the grommet, pull out the secondary HO2S (sensor 2) connector, then disconnect the secondary HO2S (sensor 2) connector.

SECONDARY HO2S (SENSOR 2) CONNECTOR



2. Remove the secondary HO2S (sensor 2).

O2 SENSOR WRENCH
SNAP-ON or SP Tools
P/N 88750 or 93750
(Commercially available)



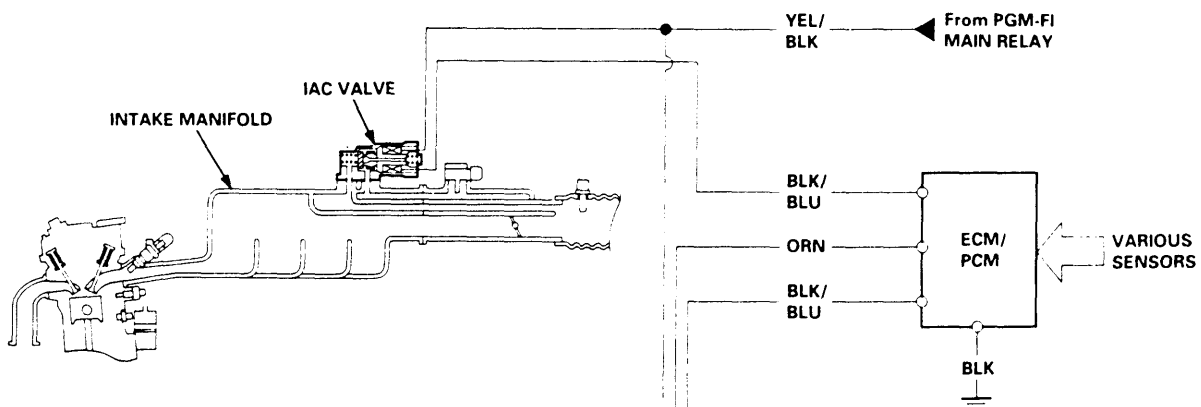
3. Install the secondary HO2S (sensor 2) in reverse order of removal.

Idle Control System

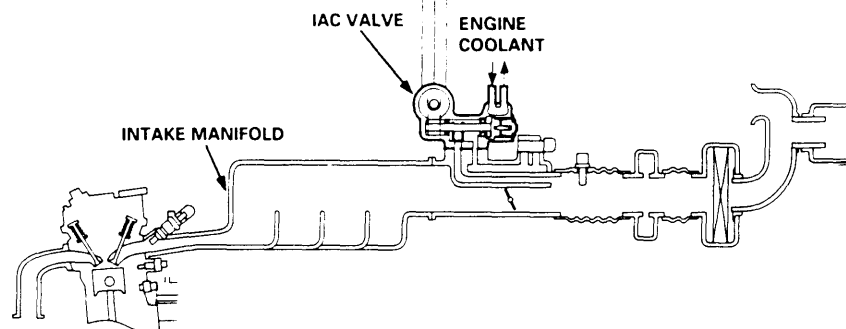
System Description

The idle speed of the engine is controlled by the Idle Air Control (IAC) Valve. The valve changes the amount of air bypassing into the intake manifold in response to electric current controlled by the ECM/PCM. When the IAC Valve is activated, the valve opens to maintain the proper idle speed.

M/T:

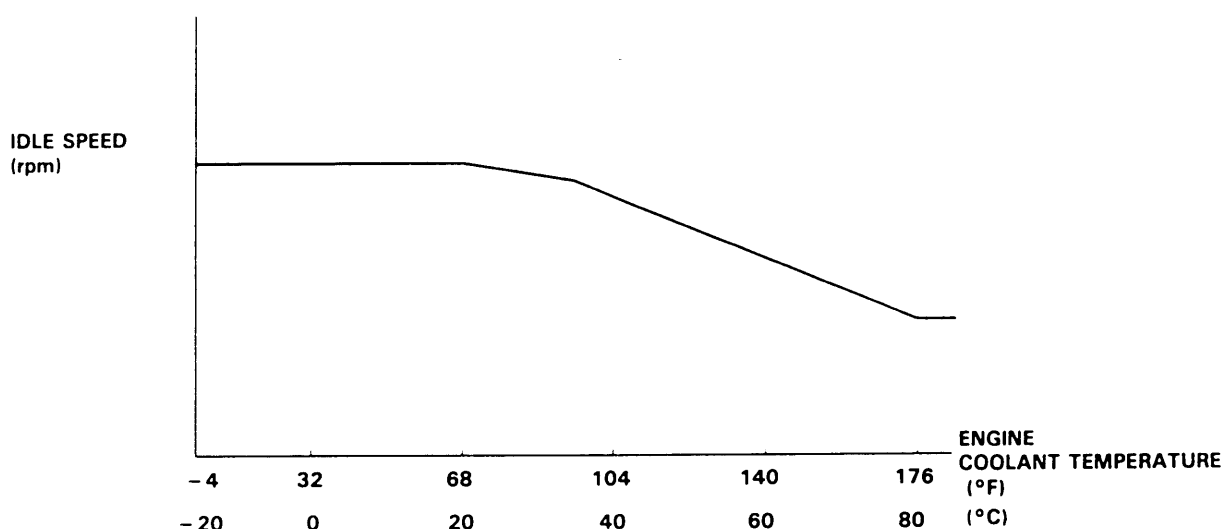


A/T:





1. After the engine starts, the IAC valve opens for a certain time. The amount of air is increased to raise the idle speed about 150 – 300 rpm.
2. When the coolant temperature is low, the IAC valve is opened to obtain the proper fast idle speed. The amount of bypassed air is thus controlled in relation to the engine coolant temperature.



3. When the idle speed is out of specification and the scan tool does not indicate Diagnostic Trouble Code (DTC) P0505 or P1508, check the following items:
 - Adjust the idle speed (see page 11-103)
 - Starter switch signal (see page 11-98)
 - Air conditioning signal (see page 11-99)
 - ALT FR signal (see page 11-101)
 - Brake switch signal (see page 11-102)
 - A/T gear position signal (see section 14)
 - Hoses and connections
 - IAC valve and its mounting O-rings
4. If the above items are normal, substitute a known-good IAC valve and readjust the idle speed (see page 11-103).

If the idle speed still cannot be adjusted to specification (and the scan tool does not indicate DTC P0505 or P1508) after IAC valve replacement, substitute a known-good ECM/PCM and recheck. If symptom goes away, replace the original ECM/PCM.

Idle Control System

Idle Control System

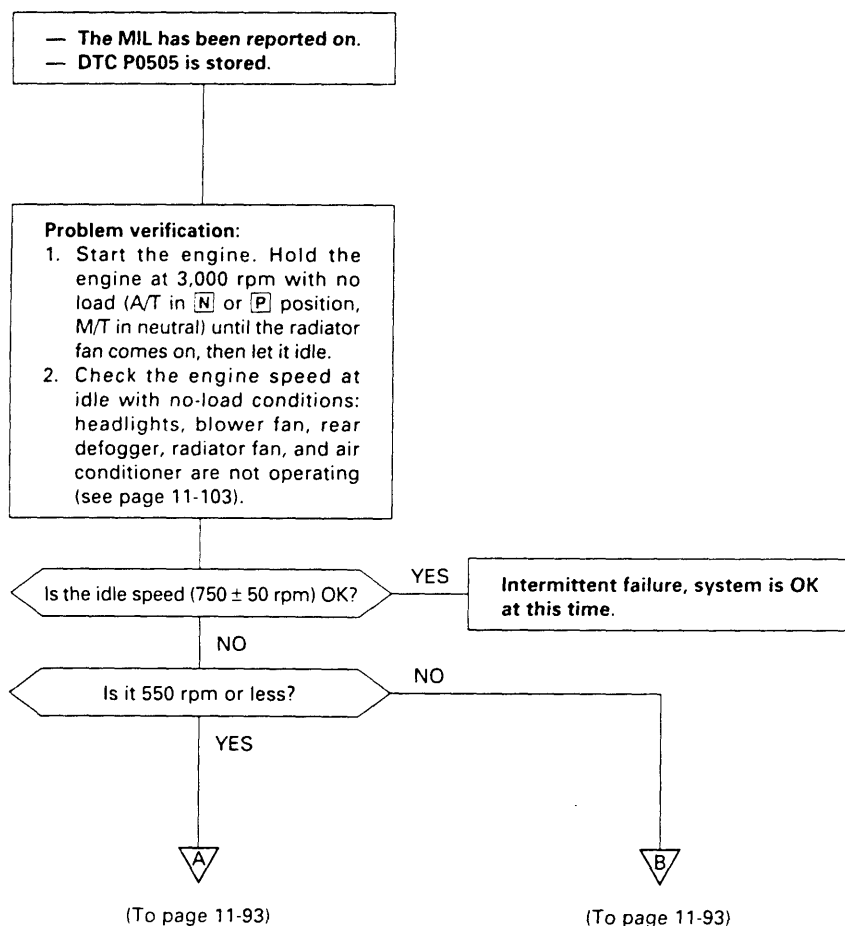
P0505 The scan tool indicates Diagnostic Trouble Code (DTC) P0505: Idle control system malfunction.

NOTE: If DTC P1508 or P1509 is stored at the same time as DTC P0505, troubleshoot DTC P1508 or P1509 first, then troubleshoot DTC P0505.

Possible Cause

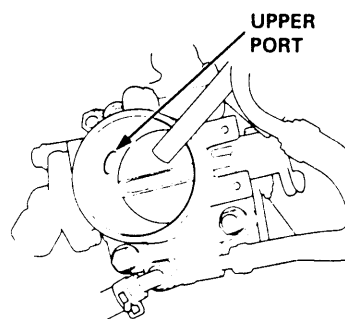
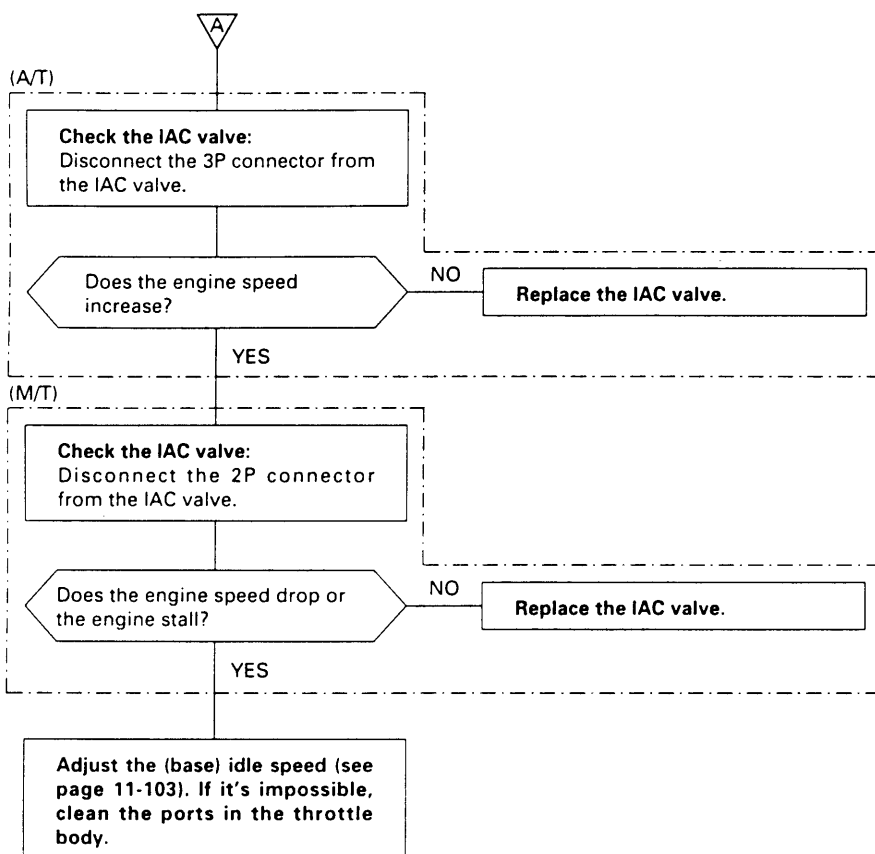
- IAC valve mechanical malfunction
- Throttle body clogged port, improper adjustment
- Intake manifold gasket leakage
- Intake air hose loose leakage
- Vacuum leak
- ECT sensor range/performance problem
- Throttle Position sensor range/performance problem

Troubleshooting Flowchart

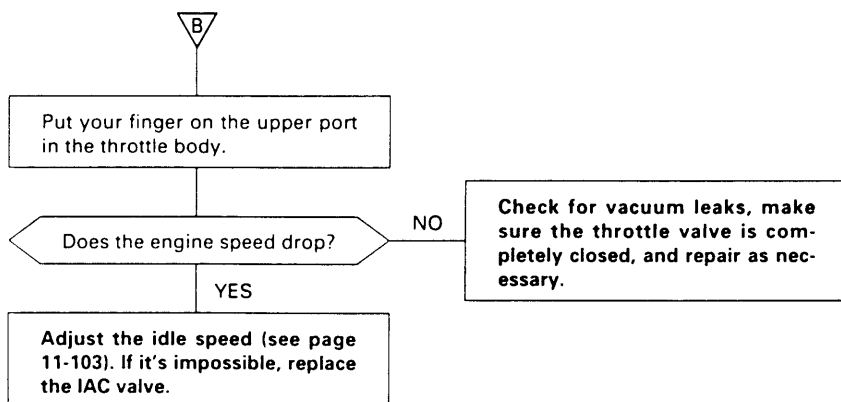




(From page 11-92)



(From page 11-92)

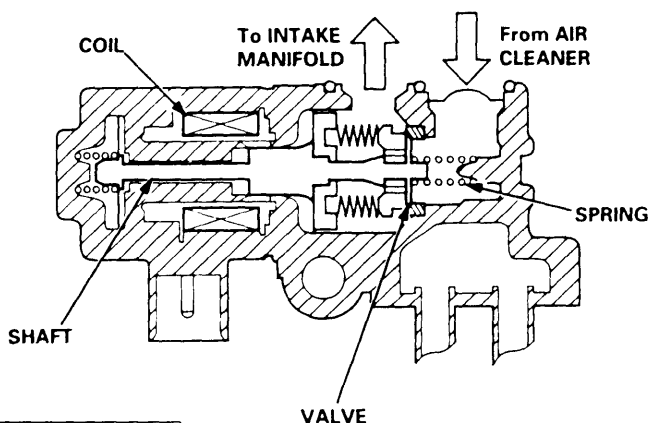


Idle Control System

Idle Air Control (IAC) Valve (M/T)

P1508 The scan tool indicates Diagnostic Trouble Code (DTC) P1508: A problem in the Idle Air Control (IAC) valve circuit.

The IAC Valve changes the amount of air bypassing the throttle body in response to a current signal from the ECM in order to maintain the proper idle speed.



— The MIL has been reported on.
— DTC P1508 is stored.

Problem verification:

1. Do the ECM/PCM Reset Procedure.
2. Start the engine, and warm it up to normal operating temperature.

Is DTC P1508 indicated?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C132 (IAC valve) and ECM.

YES

Check for an open in the wire (IGP1 line):

1. Turn the ignition switch OFF.
2. Disconnect the IAC valve 2P connector.
3. Turn the ignition switch ON (II).
4. Measure voltage between body ground and the IAC valve 2P connector terminal No. 2.

Is there battery voltage?

NO

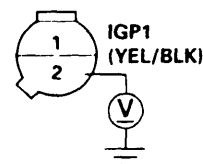
Repair open in the wire between IAC valve and PGM-FI main relay.

YES

Check for an open or short in the wire (IACV line):

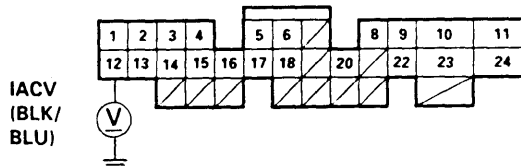
1. Turn the ignition switch OFF and reconnect the IAC valve connector.
2. Disconnect the ECM connector A (32P).
3. Turn the ignition switch ON (III).
4. Measure voltage between body ground and ECM connector terminal A12.

IAC VALVE 2P CONNECTOR (C132)



Wire side of female terminals

ECM CONNECTOR A (32P)

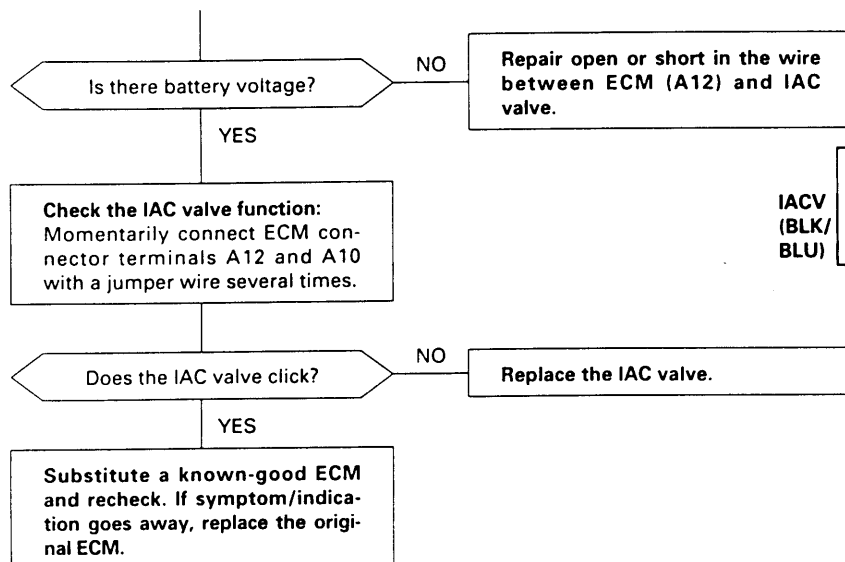


Wire side of female terminals

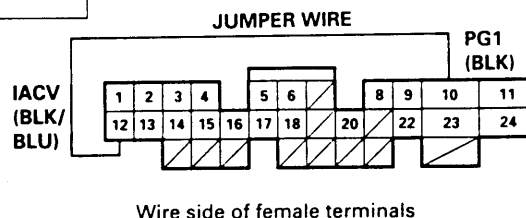
(To page 11-95)



(From page 11-94)



ECM CONNECTOR A (32P)

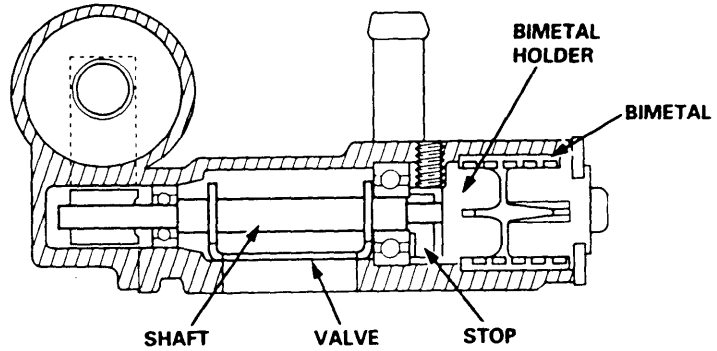


Idle Control System

Idle Air Control (IAC) Valve (A/T)

P1509 The scan tool indicates Diagnostic Trouble Code (DTC) P1509: A problem in the idle Air Control (IAC) valve circuit.

The IAC Valve changes the amount of air bypassing the throttle body in response to a current signal from the PCM in order to maintain the proper idle speed.



— The MIL has been reported on.
— DTC P1509 is stored.

Problem verification:

1. Do the ECM/PCM Reset Procedure.
2. Turn the ignition switch ON (II).

Is DTC P1509 indicated?

NO

Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C132 (IAC valve) and PCM.

YES

Check for open in the wires (PG lines):

Measure voltage between body ground and PCM connector terminals A10 and A23 individually.

Is there more than 1.0 V?

YES

Repair open in the wires between PCM and G101 (located at the thermostat housing).

NO

Check the PCM input voltage:

1. Turn the ignition switch OFF.
2. Disconnect PCM connector A (32P) from the PCM.
3. Turn the ignition switch ON (II).
4. Measure voltage between body ground and PCM connector terminals A14 and A13* individually.

Is there battery voltage?

NO

A (To page 11-97)

YES

Check the IAC valve:

1. Turn the ignition switch OFF.
2. Disconnect the IAC valve 3P connector.
3. Measure resistance between IAC valve 3P connector terminal No. 2 and terminals No. 1 and 3 individually.

Is there 16 – 28 Ω ?

NO

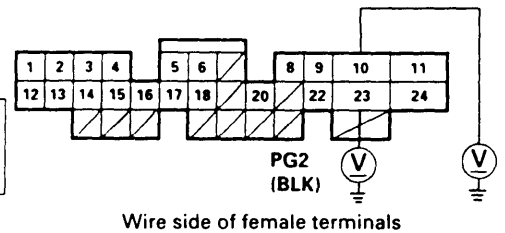
Replace the IAC valve.

YES

Substitute a known-good PCM and recheck. If symptom/indication goes away, replace the original PCM.

PCM CONNECTOR A (32P)

PG1 (BLK)



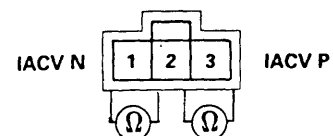
Wire side of female terminals

IACV N (ORN)*

IACV P (BLK/BLU)



IAC VALVE 3P CONNECTOR



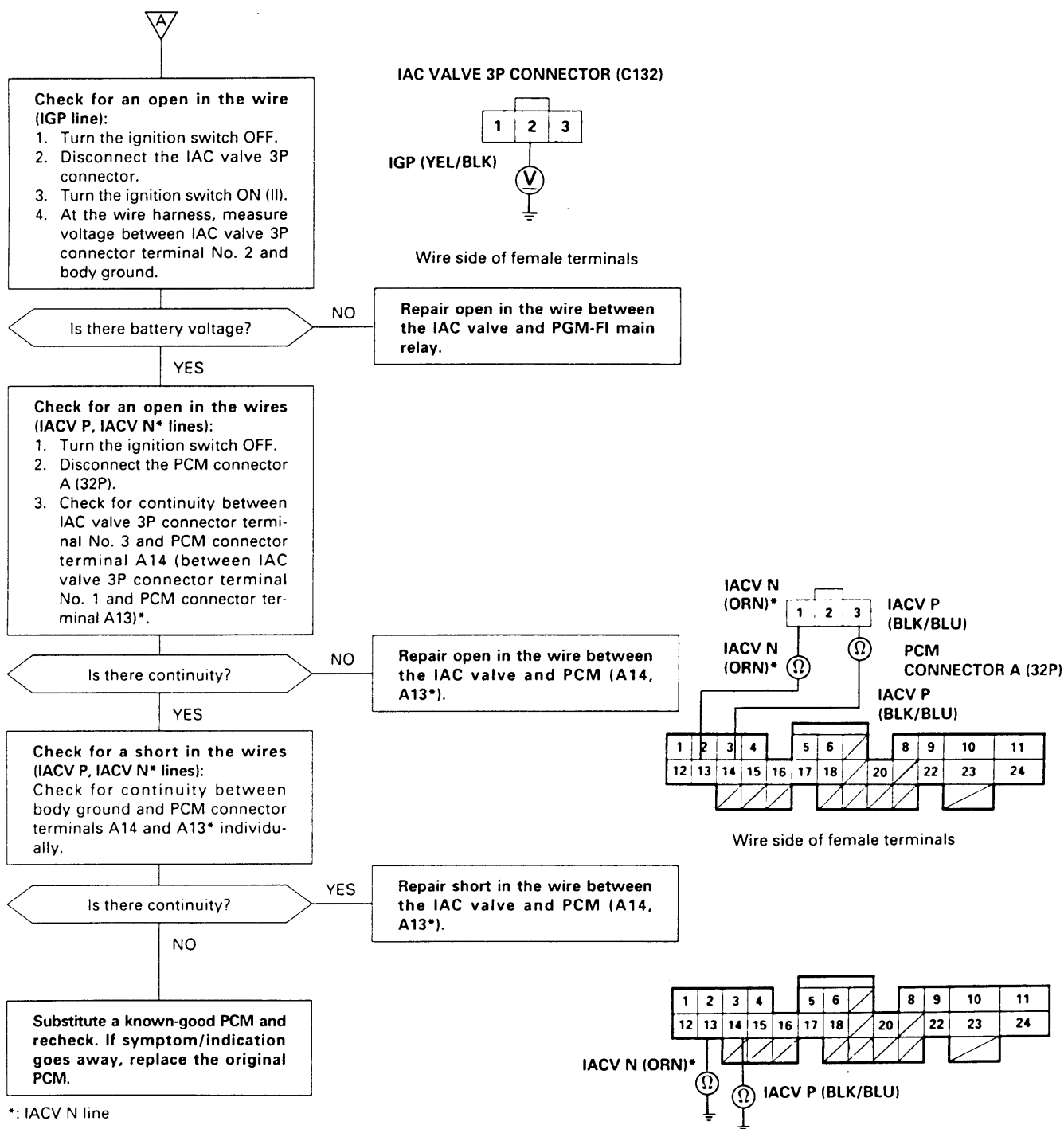
IGP

Terminal side of male terminals

*: IACV N line



(From page 11-96)



*: IACV N line

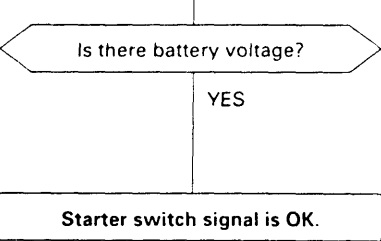
Idle Control System

Starter Switch Signal

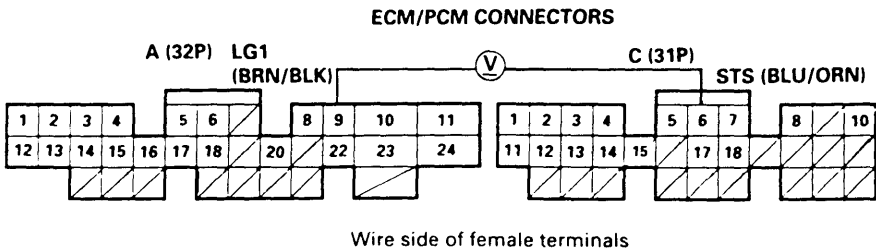
This signals the ECM/PCM when the engine is cranking.

Inspection of Starter Switch Signal.

Check for an open or short in the wire (STS line):
Measure voltage between ECM/PCM connector terminals A9 and C6 with the ignition switch in the start (III) position.

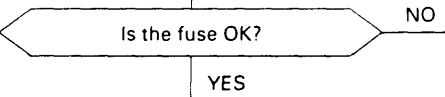


- NOTE:
- A/T: Transmission in **N** or **P** position.
 - M/T: in neutral



NO

Inspect the No. 31 STARTER SIGNAL (7.5 A) fuse in the under-dash fuse/relay box.



Repair open in the wire between the ECM/PCM (C6) and the No. 31 STARTER SIGNAL (7.5 A) fuse.

- NO
- Repair short in the wire between the ECM/PCM (C6) and the No. 31 STARTER SIGNAL (7.5 A) fuse or the PGM-FI main relay.
 - Replace the No. 31 STARTER SIGNAL (7.5 A) fuse.



Air Conditioning Signal

This signals the ECM/PCM when there is a demand for cooling from the air conditioning system.

Inspection of Air Conditioning Signal.

Check for a short in the wire (ACS line):

1. Turn the ignition switch OFF.
2. Disconnect the A/C pressure switch 2P connector (see section 22).
3. Turn the ignition switch ON (II).
4. Measure voltage between ECM/PCM connector terminals C5 and A9.

Is there approx. 5 V?

YES

Check for an open in the wire (ACC line):

1. Turn the ignition switch OFF.
2. Reconnect the A/C pressure switch 2P connector.
3. Turn the ignition switch ON (II).
4. Momentarily connect ECM/PCM connector terminals A9 and A17 with a jumper wire several times.

(To page 11-100)

Check for a short in the wire (ACS line):

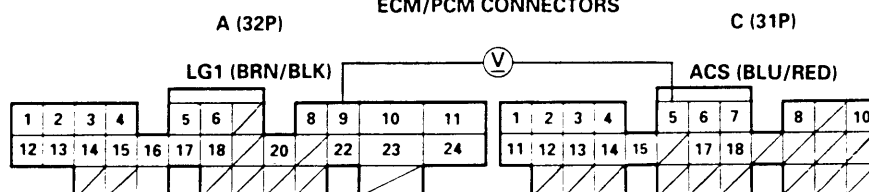
1. Turn the ignition switch OFF.
2. Disconnect the ECM/PCM connector C (31P).
3. Check for continuity between body ground and ECM/PCM connector terminal C5.

Is there continuity?

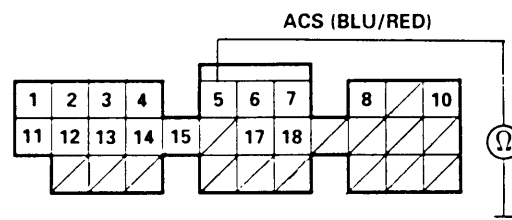
NO

- Substitute a known-good ECM/PCM and recheck. If prescribed voltage is now available, replace the original ECM/PCM.
- See the air conditioner inspection (see section 22).

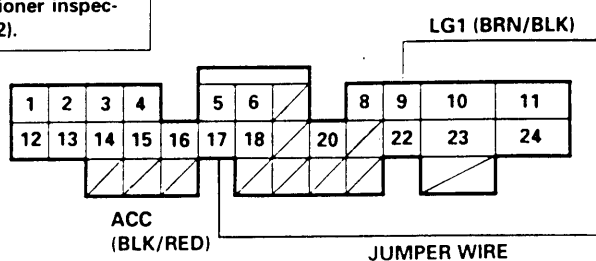
ECM/PCM CONNECTORS



Wire side of female terminals



Repair short in the wire between the ECM/PCM (C5) and the A/C pressure switch.

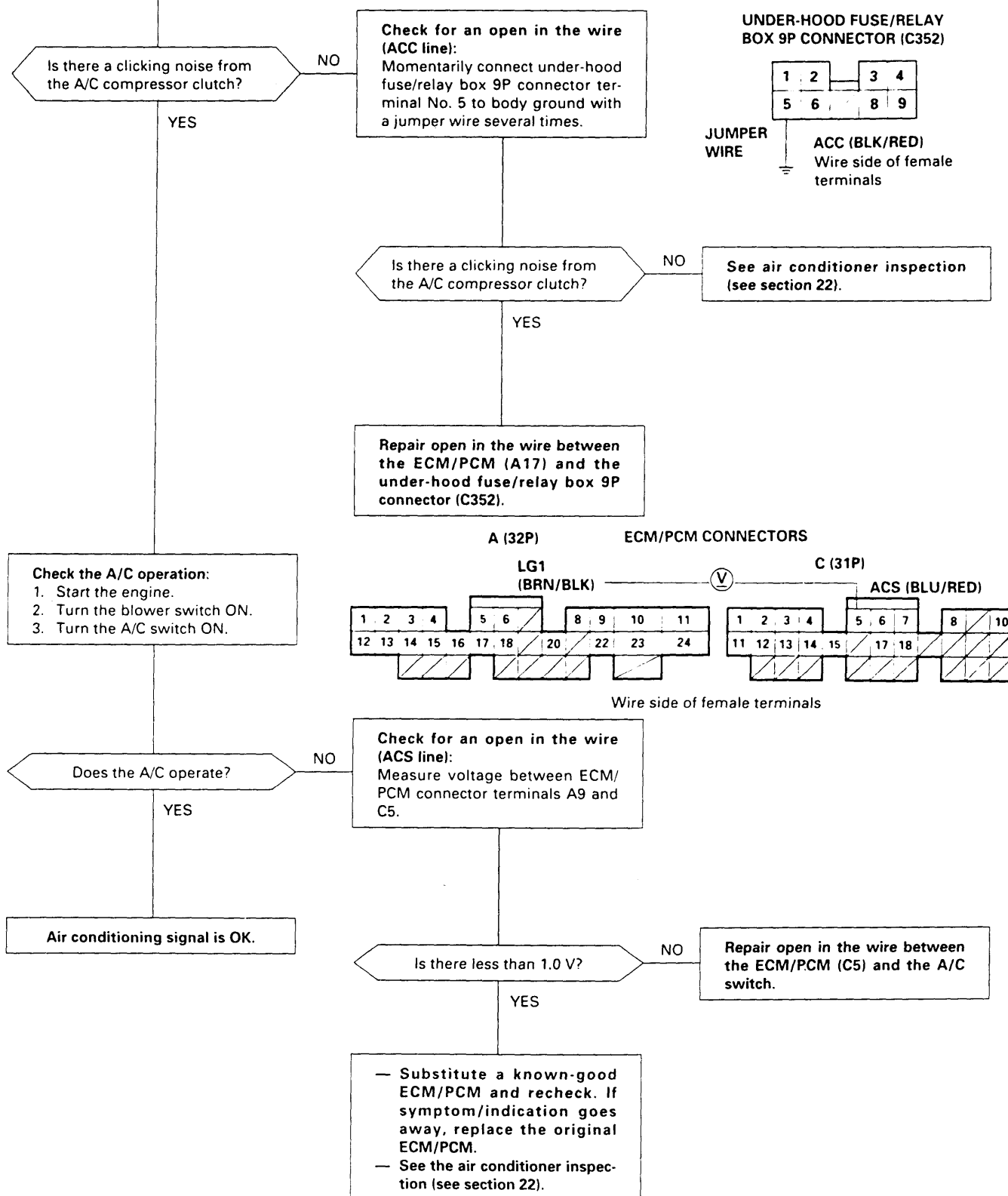


(cont'd)

Idle Control System

Air Conditioning Signal (cont'd)

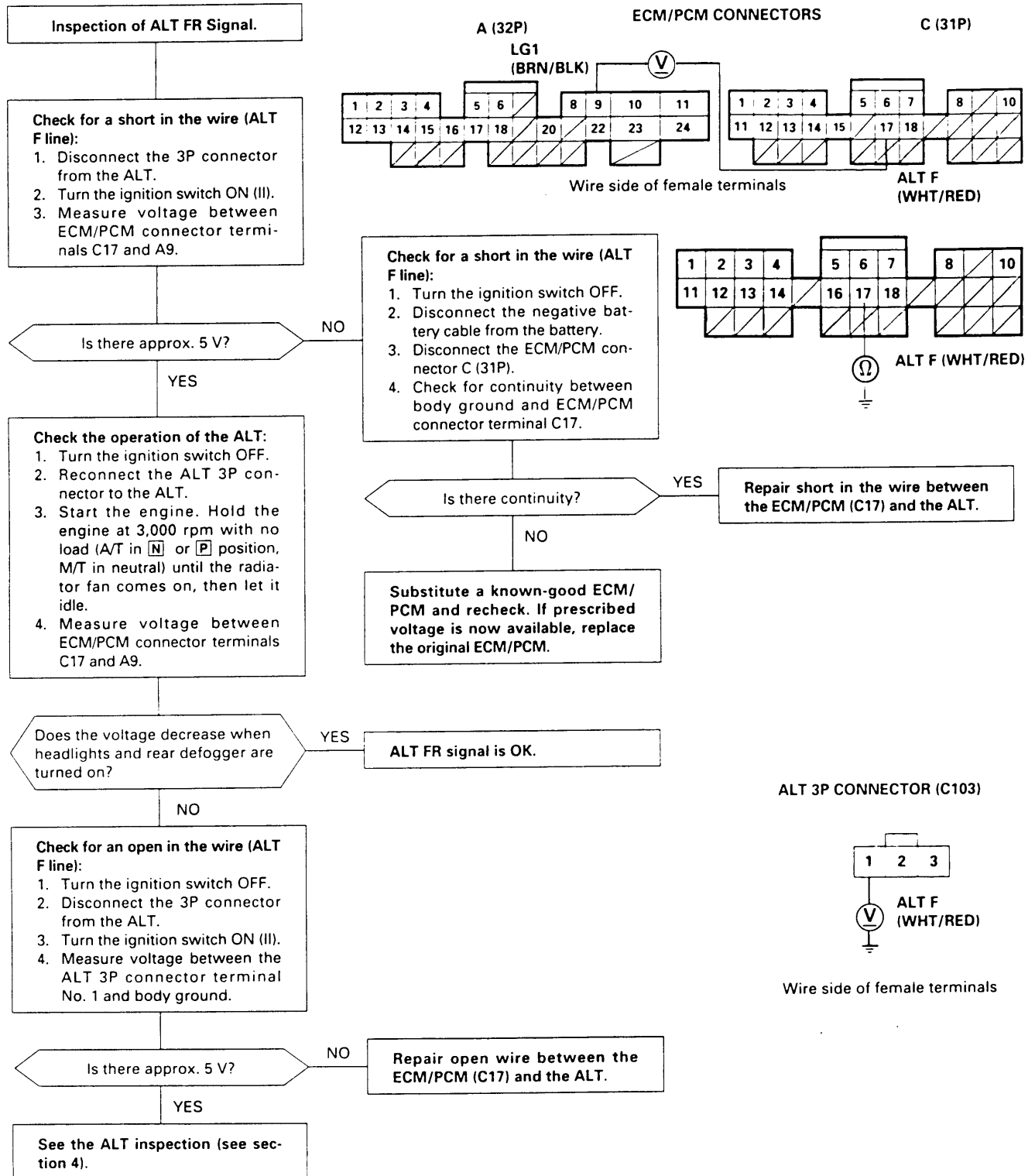
(From page 11-99)





Alternator (ALT) FR Signal

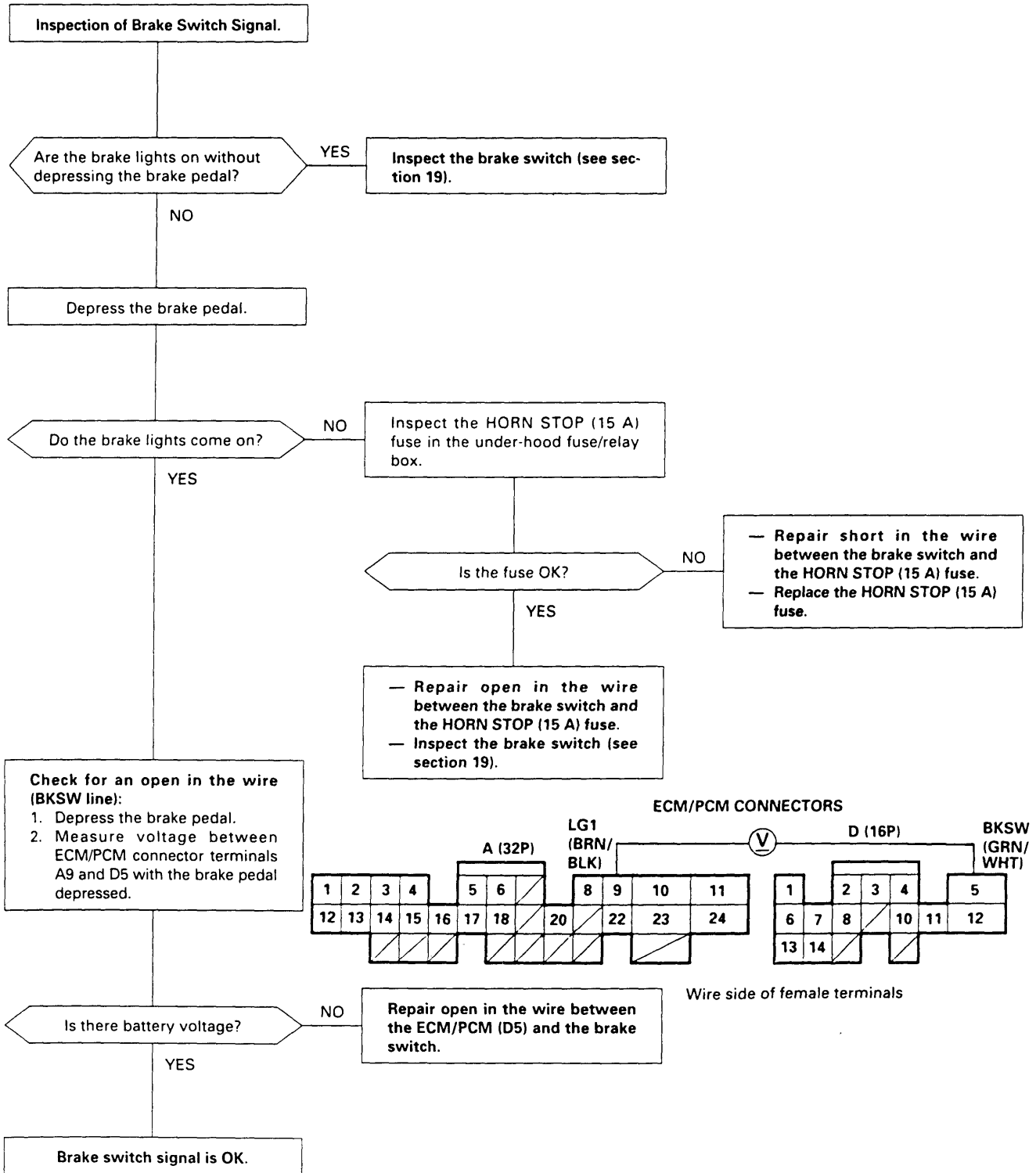
This signals the ECM/PCM when the Alternator (ALT) is charging.



Idle Control System

Brake Switch Signal

This signals the ECM/PCM when the brake pedal is depressed.





Idle Speed Setting

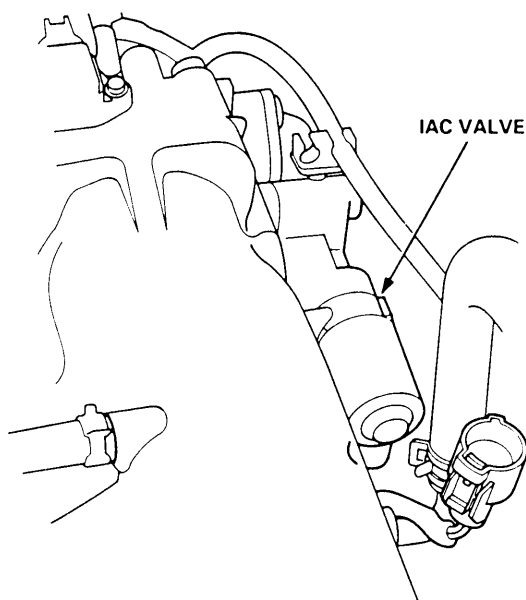
Inspection/Adjustment

M/T:

NOTE:

- Before setting the idle speed, check the following items:
 - The MIL has not been reported on.
 - Ignition timing
 - Spark plugs
 - Air cleaner
 - PCV system
- Pull the parking brake lever up. Start the engine, then check that the headlights are off.

1. Start the engine. Hold the engine at 3,000 rpm with no load (transmission in neutral) until the radiator fan comes on, then let it idle.
2. Connect a tachometer.
3. Disconnect the IAC valve connector.

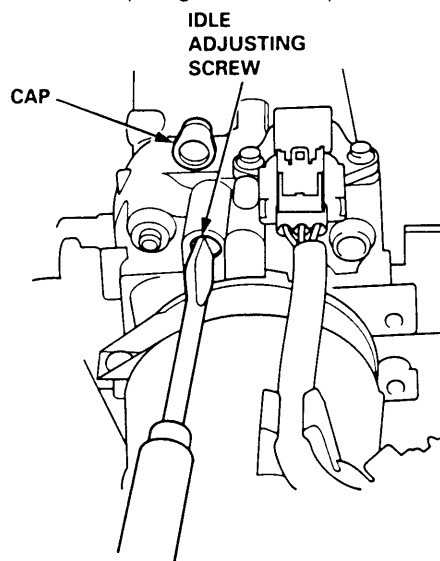


4. If the engine stalls, restart the engine with the accelerator pedal slightly depressed. Stabilize the rpm at 1,000, then slowly release the pedal until the engine idles.
5. Check idling in no-load conditions: headlights, blower fan, rear defogger, radiator fan, and air conditioner are not operating.

Idle speed should be:
450 ± 50 rpm

Adjust the idle speed, if necessary, by removing the cap and turning the idle adjusting screw.

NOTE: After adjusting the idle speed in this step, recheck the ignition timing (see section 4). If it is out of spec, go back to step 4.



6. Turn the ignition switch OFF.
7. Reconnect the 2P connector on the IAC valve, then do the ECM reset procedure.
8. Restart and idle the engine with no-load conditions for one minute, then check the idle speed.

NOTE: Pull the parking brake lever up. Start the engine, then check that the headlights are off.

Idle speed should be:
750 ± 50 rpm

9. Idle the engine for one minute with headlights (Low) ON, and check the idle speed.

Idle speed should be:
750 ± 50 rpm

10. Turn the headlights off. Idle the engine for one minute with heater fan switch at HI and air conditioner on, then check the idle speed.

Idle speed should be:
810 ± 50 rpm

NOTE: If the idle speed is not within specification, see Symptom Chart on page 11-30.

(cont'd)

Idle Control System

Idle Speed Setting (cont'd)

A/T:

Adjust the idle speed using a Honda PGM Tester if possible. If not, use the following procedure:

NOTE:

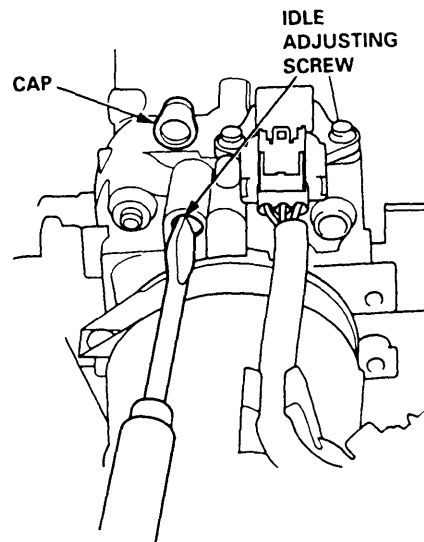
- Leave the IAC valve connected.
- Before setting the idle speed, check the following items:
 - The MIL has not been reported on.
 - Ignition timing
 - Spark plugs
 - Air cleaner
 - PCV system

1. Connect a tachometer.
2. Start the engine. Hold the engine at 3,000 rpm with no load (transmission in **N** or **P** position) until the radiator fan comes on, then let it idle.
3. Check the idle speed with no-load conditions: head-lights, blower fan, rear defogger, radiator fan, and air conditioner are not operating.

Idle speed should be:

750 ± 50 rpm (in **N or **P** position)**

4. Adjust the idle speed, if necessary, by removing the cap and turning the idle adjusting screw 1/2-turn clockwise or counterclockwise.



5. After turning the idle adjusting screw 1/2-turn, check the idle speed again. If it is out of spec, turn the idle adjusting screw 1/2-turn again.

NOTE: Do not turn the idle adjusting screw more than 1/2-turn without checking the idle speed.

6. Idle the engine for one minute with heater fan switch at HI and air conditioner on, then check the idle speed.

Idle speed should be:

810 ± 50 rpm (in **N or **P** position)**

NOTE:

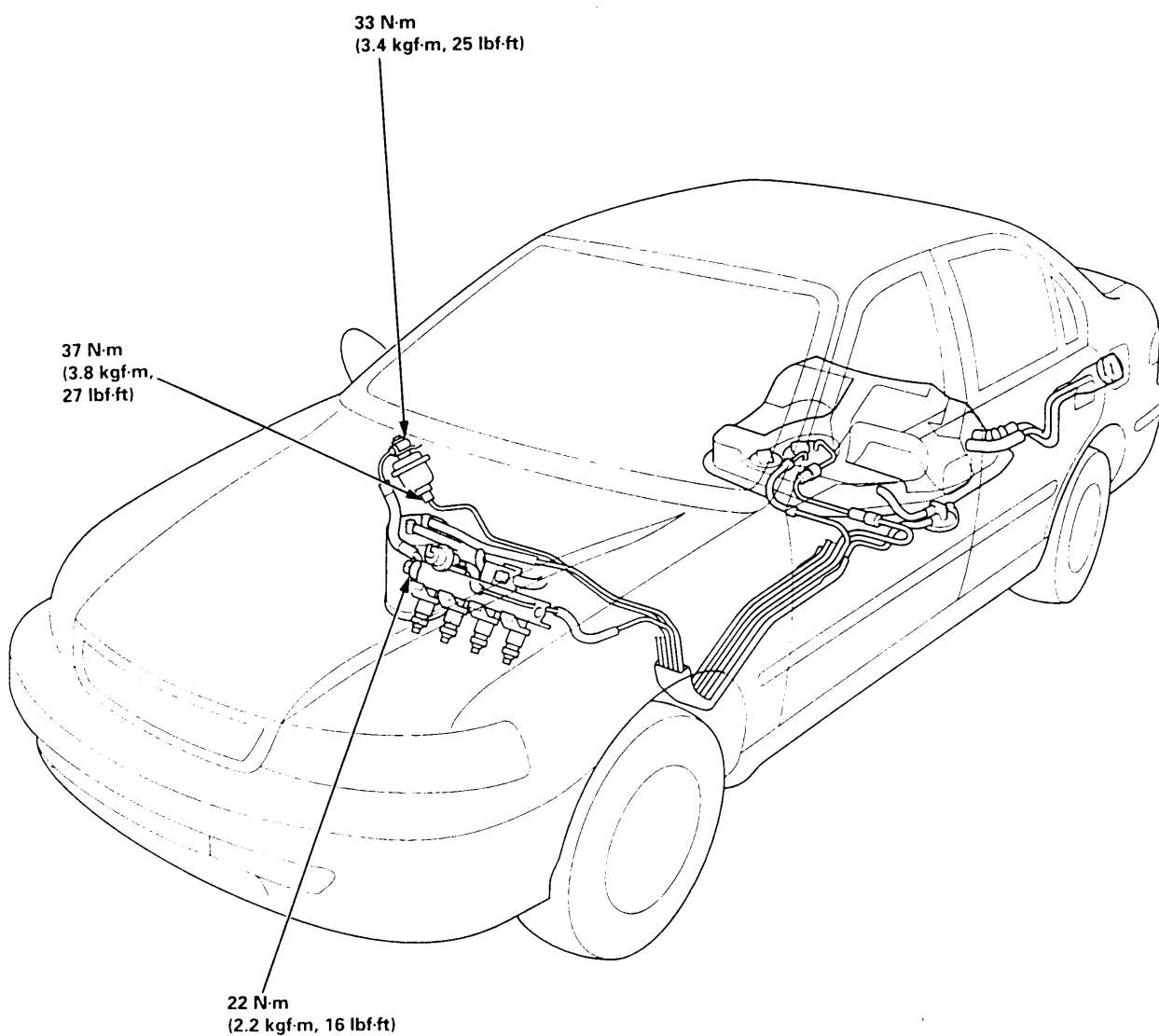
- Do not turn the idle adjusting screw when the air conditioner is on.
- If the idle speed is not within specification, see Symptom Chart on page 11-30.

Fuel Supply System



Fuel Lines

NOTE: Check fuel system lines, hoses, connections, fuel filter and other components for damage, leaks and deterioration, and replace if necessary.

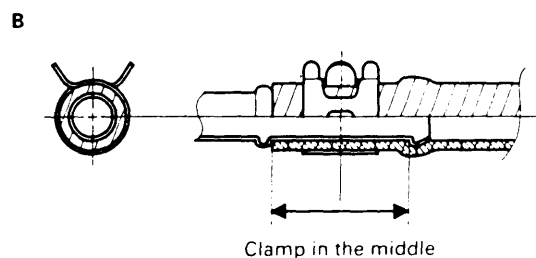
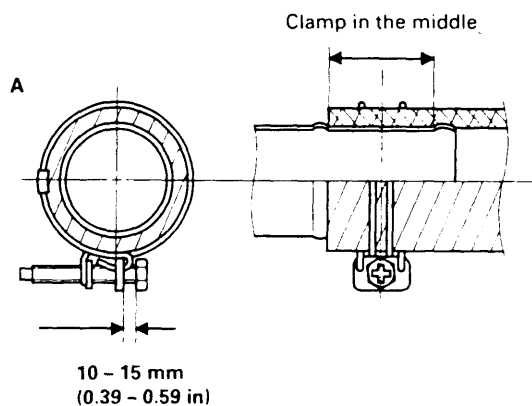
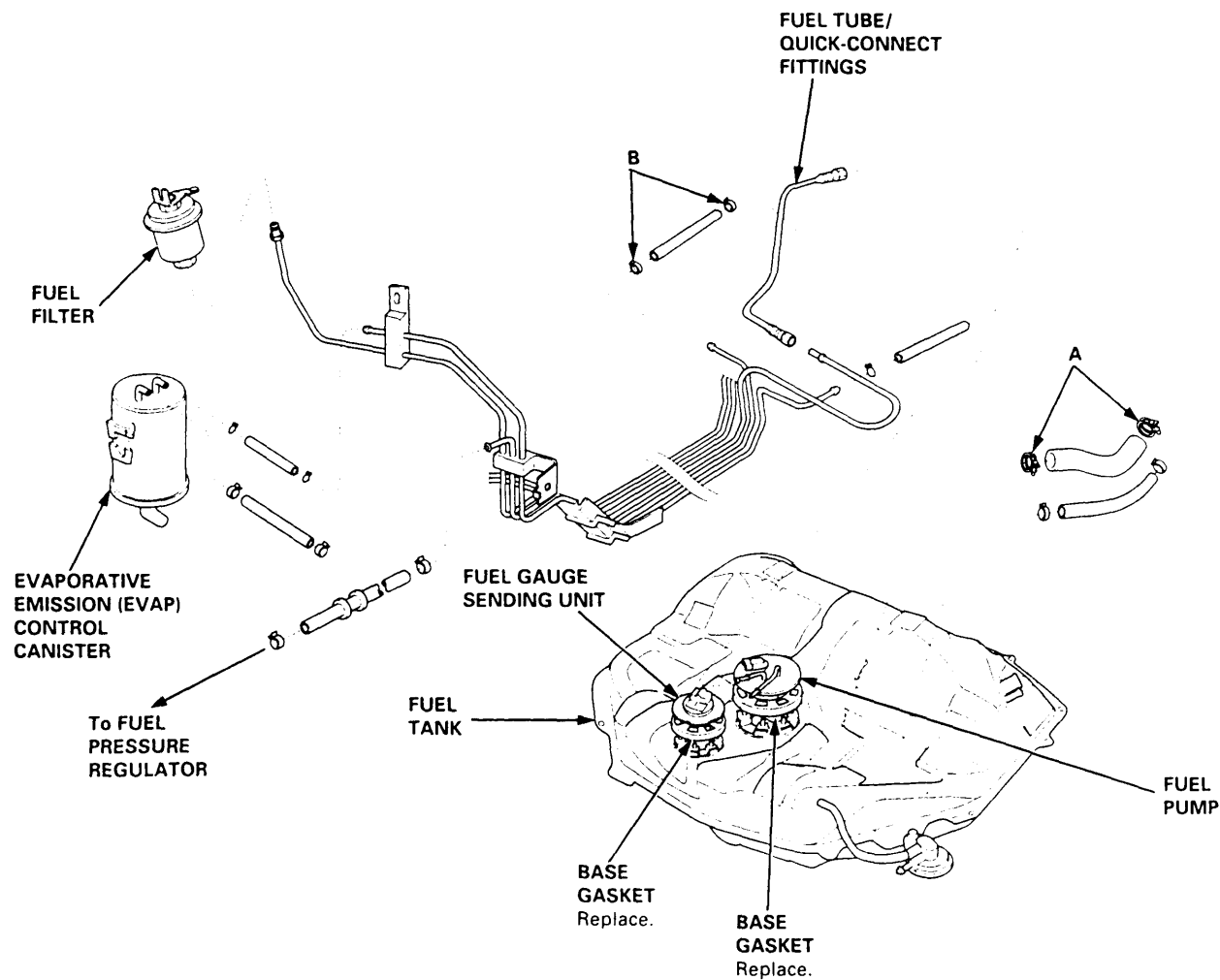


(cont'd)

Fuel Supply System

Fuel Lines (cont'd)

NOTE: Check all hose clamps and retighten if necessary.





Fuel Tube/Quick-Connect Fittings

Precautions

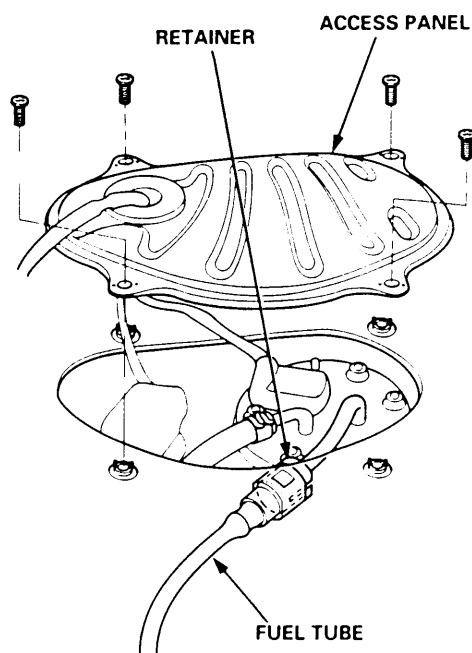
⚠ WARNING Do not smoke while working on the fuel system. Keep open flames away from your work area.

The fuel tube/quick-connect fittings assembly connects the in-tank fuel pump with the fuel feed pipe. For removing or installing the fuel pump and fuel tank, it is necessary to disconnect or connect the quick-connect fittings. Pay attention to following:

- The fuel tube/quick-connect fittings assembly is not heat-resistant; be careful not to damage it during welding or other heat-generating procedures.
- The fuel tube/quick-connect fittings assembly is not acid-proof; do not touch it with a shop towel which was used for wiping battery electrolyte. Replace the fuel tube/quick-connect fittings assembly if it came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel tube/quick-connect fittings assembly, be careful not to bend or twist it excessively. Replace it if damaged.

A disconnected quick-connect fitting can be reconnected, but the retainer on the mating pipe cannot be reused once it has been removed from the pipe. Replace the retainer when

- Replacing the fuel pump.
- Replacing the fuel feed pipe.
- It has been removed from the pipe.
- It is damaged.



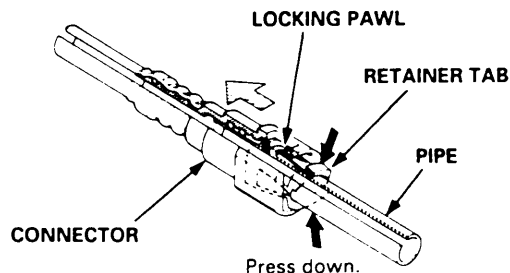
Disconnection

⚠ WARNING Do not smoke while working on the fuel system. Keep open flames away from your work area.

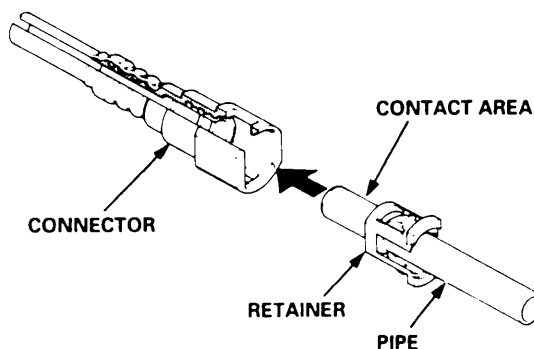
1. Relieve fuel pressure (see page 11-110).
2. Check the fuel quick-connect fittings for dirt, and clean if necessary.
3. Hold the connector with one hand and press down the retainer tabs with the other hand, then pull the connector off.

NOTE:

- Be careful not to damage the pipe or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the pipe; once removed, the retainer must be replaced with a new one.



4. Check the contact area of the pipe for dirt and damage.
 - If the surface is dirty, clean it.
 - If the surface is rusty or damaged, replace the fuel pump or fuel feed pipe.

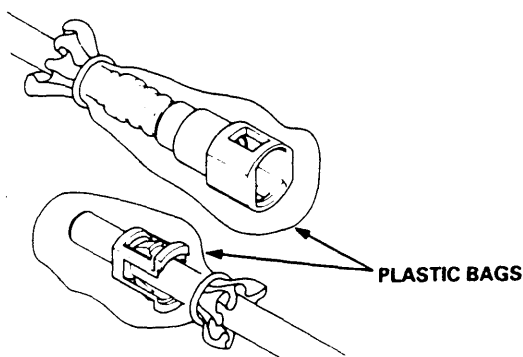


(cont'd)

Fuel Supply System

Fuel Tube/Quick-Connect Fittings (cont'd)

5. To prevent damage and keep out foreign matter, cover the disconnected connector and pipe end with plastic bags.



NOTE: The retainer cannot be reused once it has been removed from the pipe.

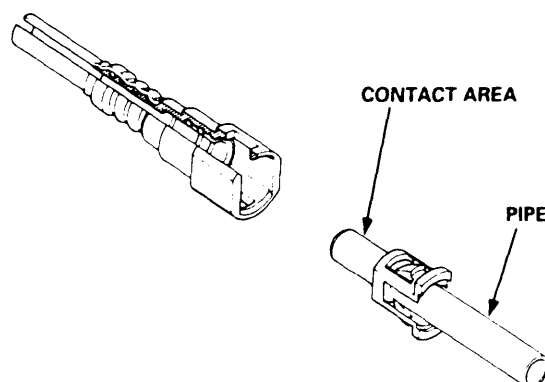
Replace the retainer when

- replacing the fuel pump.
- replacing the fuel feed pipe.
- it has been removed from the pipe.
- it is damaged.

Connection

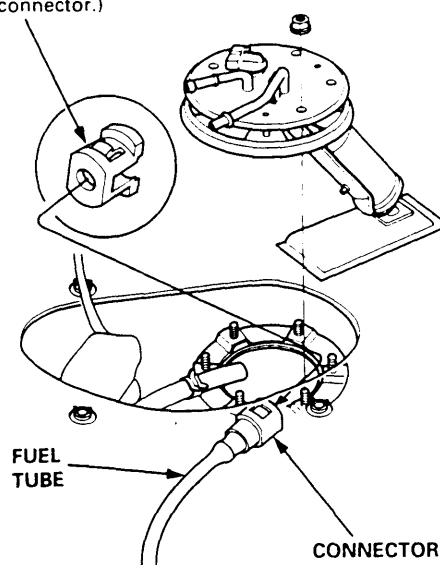
⚠ WARNING Do not smoke while working on the fuel system. Keep open flames away from your work area.

1. Check the pipe contact area for dirt and damage, and clean if necessary.



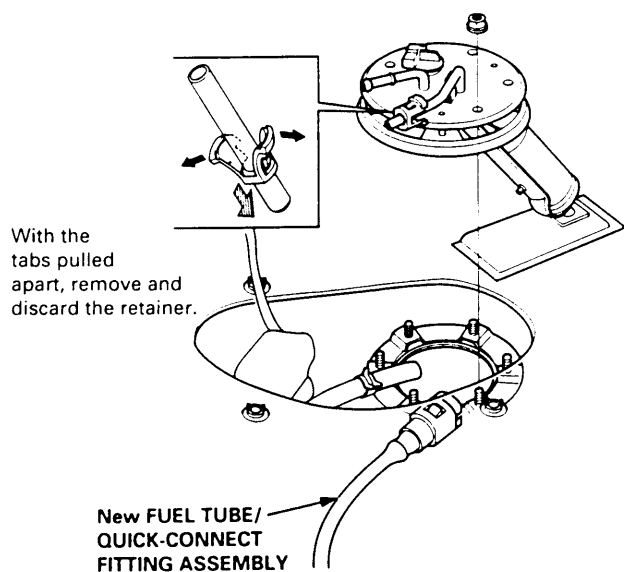
2. Insert a new retainer into the connector if the retainer is damaged, or after
 - replacing the fuel pump.
 - replacing the fuel feed pipe.
 - removing the retainer from the pipe.

New RETAINER
(Insert into the connector.)





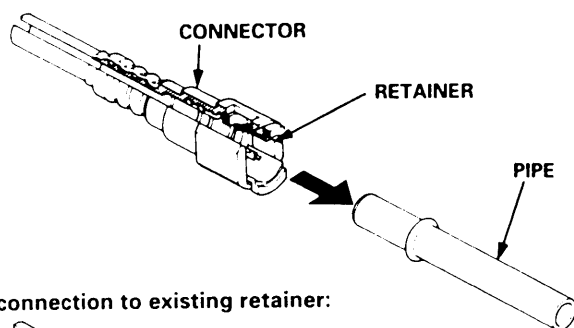
Before connecting a new fuel tube/quick-connect fitting assembly, remove the old retainer from the mating pipe.



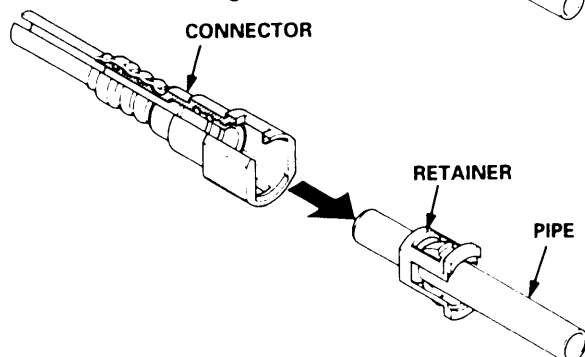
3. Align the quick-connect fittings with the pipe, and align the retainer locking pawls with the connector grooves. Then press the quick-connect fittings onto the pipe until both retainer pawls lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the pipe end.

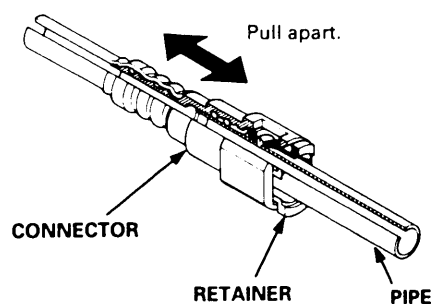
Connection with new retainer:



Reconnection to existing retainer:



4. Make sure the connection is secure and the pawls are firmly locked into place; check visually and by pulling the connector.



5. Reconnect the battery negative cable, and turn the ignition switch ON (II). The fuel pump will run for about two seconds, and fuel pressure will rise. Repeat two or three times, and check that there is no leakage in the fuel supply system.

Fuel Supply System

System Description

The fuel supply system consists of a fuel tank, in-tank high pressure fuel pump, PGM-FI main relay, fuel filter, fuel pressure regulator, fuel injectors, and fuel delivery and return lines. This system delivers pressure-regulated fuel to the fuel injectors and cuts the fuel delivery when the engine is not running.

Fuel Pressure

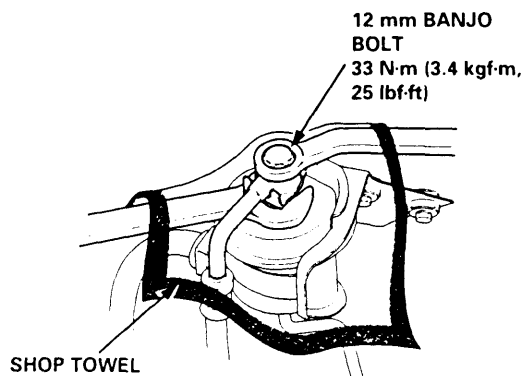
Relieving

Before disconnecting fuel pipes or hoses, release pressure from the system by loosening the 12 mm banjo bolt on top of the fuel filter.

⚠ WARNING

- Do not smoke while working on the fuel system. Keep open flames or sparks away from your work area.
- Be sure to relieve fuel pressure while the ignition switch is off.

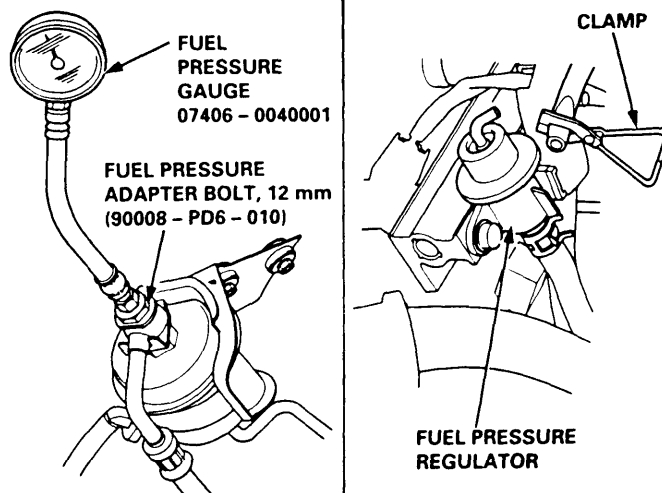
1. Write down the frequencies for the radio's preset buttons.
2. Disconnect the battery negative cable from the battery negative terminal.
3. Remove the fuel fill cap.
4. Use a box end wrench on the 12 mm banjo bolt at the fuel filter while holding the fuel filter with another wrench.
5. Place a rag or shop towel over the 12 mm banjo bolt.
6. Slowly loosen the 12 mm banjo bolt one complete turn.



NOTE: Replace the washers whenever the 12 mm banjo bolt is loosened or removed.

Inspection

1. Relieve fuel pressure.
2. Remove the 12 mm banjo bolt from the fuel filter while holding the fuel filter with another wrench. Attach the fuel pressure adapter bolt, 12 mm, and special tool.



3. Start the engine. Measure the fuel pressure with the engine idling and the vacuum hose of the fuel pressure regulator disconnected from the fuel pressure regulator and pinched. If the engine will not start, turn the ignition switch ON (II), wait for two seconds, turn it off, then back on again and read the fuel pressure.

Pressure should be:

260 - 310 kPa (2.7 - 3.2 kgf/cm², 38 - 46 psi)

4. Reconnect vacuum hose to the fuel pressure regulator.

Pressure should be:

200 - 250 kPa (2.0 - 2.5 kgf/cm², 28 - 36 psi)

If the fuel pressure is not as specified, first check the fuel pump (see page 11-115). If the fuel pump is OK, check the following:

- If the fuel pressure is higher than specified, inspect for:
 - Pinched or clogged fuel return hose or line.
 - Faulty fuel pressure regulator (see page 11-113).
- If the fuel pressure is lower than specified, inspect for:
 - Clogged fuel filter.
 - Faulty fuel pressure regulator (see page 11-113).
 - Fuel line leakage.



Fuel Injectors

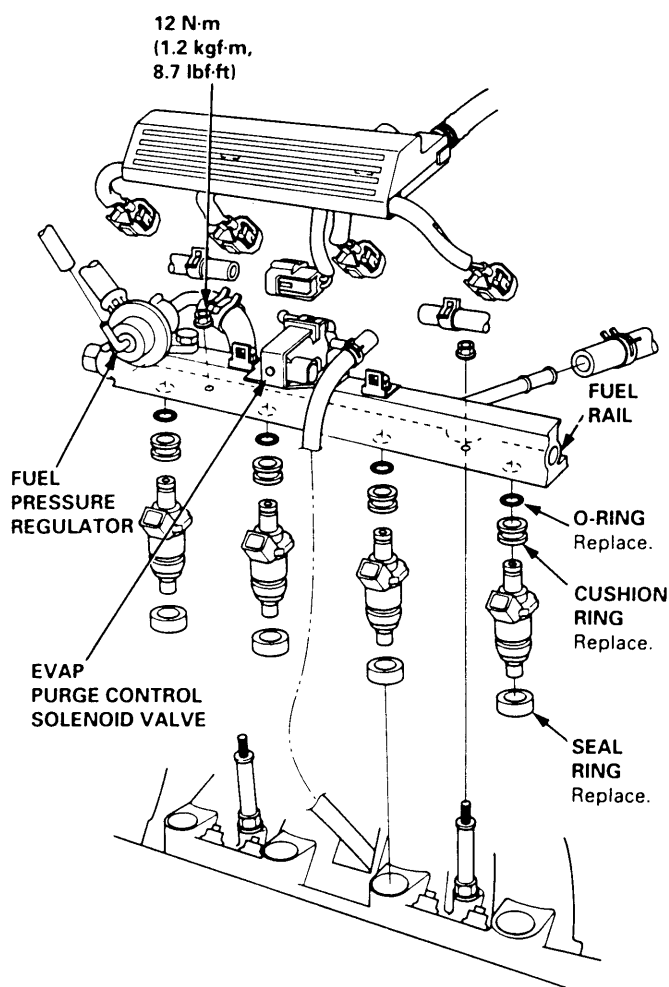
Replacement

⚠ WARNING Do not smoke when working on the fuel system. Keep open flames away from your work area.

1. Relieve the fuel pressure (see page 11-110).
2. Disconnect the connectors from the fuel injectors.
3. Disconnect the vacuum hoses and fuel return hose from the fuel pressure regulator. Disconnect the vacuum hoses and 2P connector from the EVAP purge control solenoid valve.

NOTE: Place a rag or shop towel over the hoses before disconnecting them.

4. Remove the retainer nuts on the fuel rail.
5. Disconnect the fuel rail.
6. Remove the fuel injectors from the intake manifold.



7. Slide new cushion rings onto the fuel injectors.
8. Coat new O-rings with clean engine oil, and put them on the fuel injectors.
9. Insert the fuel injectors into the fuel rail first.
10. Coat new seal rings with clean engine oil, and press them into the intake manifold.

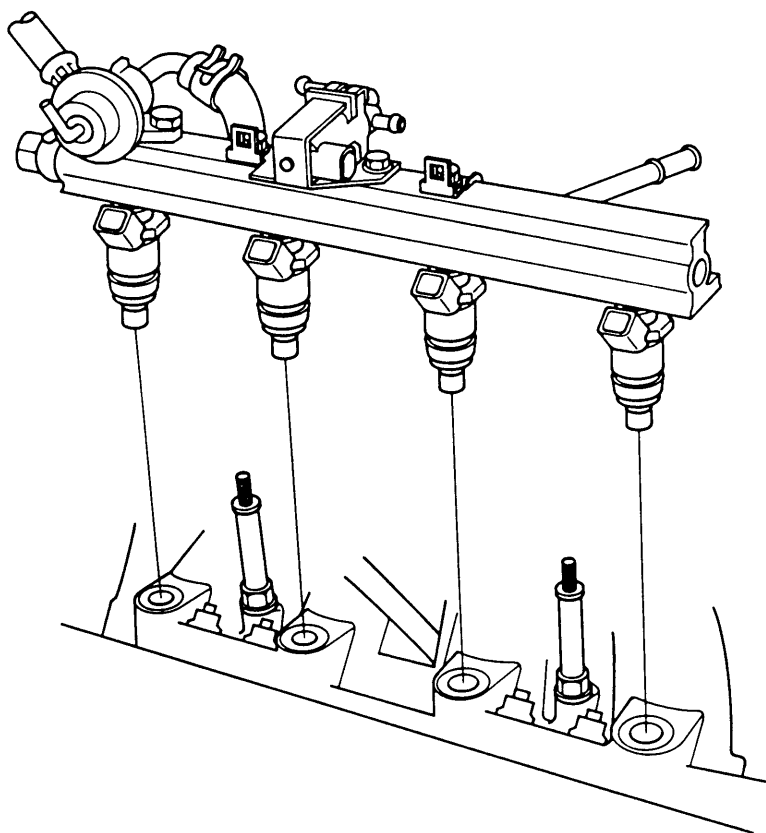
(cont'd)

Fuel Supply System

Fuel Injectors (cont'd)

11. Install the fuel injectors and fuel rail assembly in the intake manifold.

CAUTION: To prevent damage to the O-rings, install the fuel injectors in the fuel rail first, then install them in the intake manifold.



12. Install and tighten the retainer nuts.
13. Connect the vacuum hoses and fuel return hose to the fuel pressure regulator. Connect the vacuum hoses and 2P connector to the EVAP purge control solenoid valve.
14. Install the connectors on the fuel injectors.
15. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for approximately two seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check whether there is any fuel leakage.



Fuel Pressure Regulator

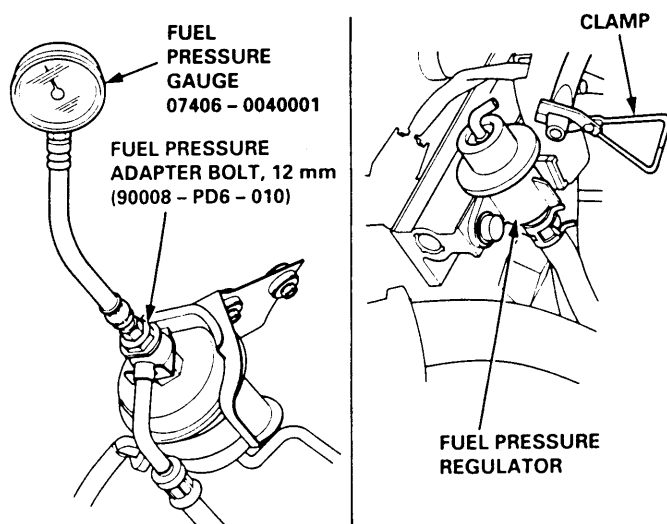
Testing

⚠ WARNING Do not smoke during the test. Keep open flames away from your work area.

1. Attach the special tool and the fuel pressure adapter bolt, 12 mm, (90008-PD6-010) on the fuel filter (see page 11-110).

Pressure should be:

260 – 310 kPa (2.7 – 3.2 kgf/cm², 38 – 46 psi)
(with the fuel pressure regulator vacuum hose disconnected and pinched)



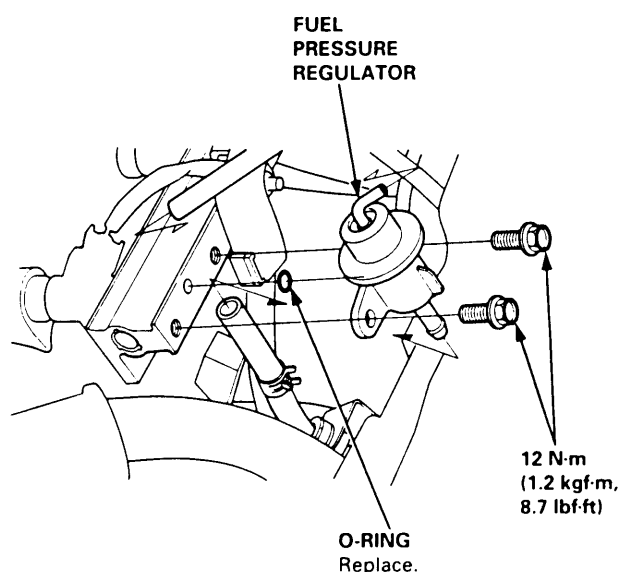
2. Reconnect the vacuum hose to the fuel pressure regulator.
3. Check that the fuel pressure rises when the vacuum hose from the fuel pressure regulator is disconnected again.

If the fuel pressure did not rise, replace the fuel pressure regulator.

Replacement

⚠ WARNING Do not smoke while working on fuel system. Keep open flame away from your work area.

1. Place a shop towel under the fuel pressure regulator, then relieve fuel pressure (see page 11-110).
2. Disconnect the vacuum hose and fuel return hose.
3. Remove the two 6 mm retainer bolts.



NOTE:

- Replace the O-ring.
- When assembling the fuel pressure regulator, apply clean engine oil to the O-ring and assemble it into its proper position, taking care not to damage the O-ring.

Fuel Supply System

Fuel Filter

Replacement

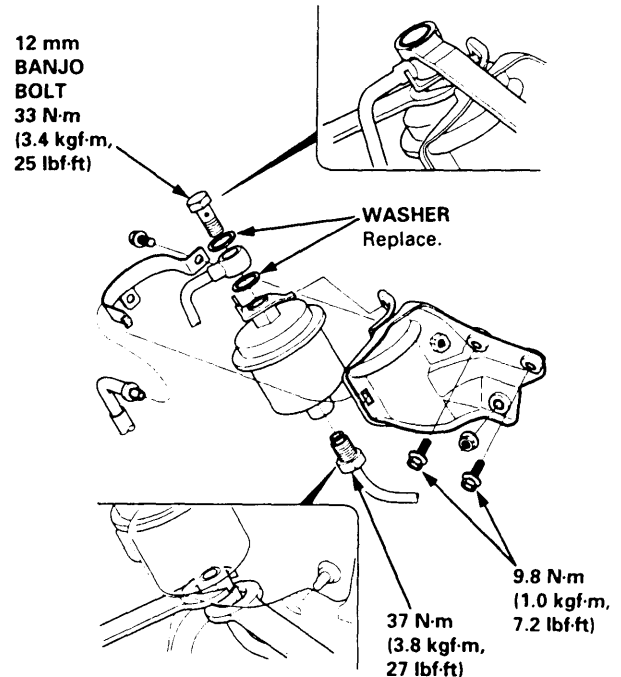
⚠ WARNING

- Do not smoke while working on fuel system. Keep open flame away from your work area.
- While replacing the fuel filter, be careful to keep a safe distance between battery terminals and any tools.

The fuel filter should be replaced whenever the fuel pressure drops below the specified value [260 – 310 kPa (2.7 – 3.2 kgf/cm², 38 – 46 psi) with the fuel pressure regulator vacuum hose disconnected and pinched] after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Place a shop towel under and around the fuel filter.
2. Relieve fuel pressure (see page 11-110).
3. Remove the 12 mm banjo bolt and the fuel feed pipe from the fuel filter, while supporting it with the another wrench, as shown.
4. Remove the fuel filter clamp and fuel filter.
5. When assembling, use new washers as shown.

NOTE: Clean the flared joint of high pressure hoses thoroughly before reconnecting them.





Fuel Pump

Testing

⚠ WARNING Do not smoke during the test. Keep open flame away from your work area.

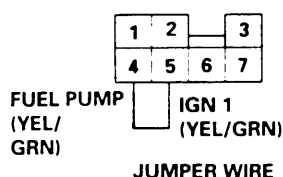
If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is ON (II), you will hear some noise if you hold your ear to the fuel fill port with the fuel fill cap removed. The fuel pump should run for two seconds when ignition switch is first turned ON (II). If the fuel pump does not make noise, check it as follows:

1. Remove the seat cushion (see section 20).
2. Remove the access panel from the floor.
3. Disconnect the fuel pump 2P connector.

CAUTION: Be sure to turn the ignition switch OFF before disconnecting the wires.

4. Connect the PGM-FI main relay 7P connector terminal No. 4 and No. 5 with a jumper wire.

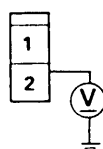
PGM-FI MAIN RELAY 7P CONNECTOR (C443)



Wire side of female terminals

5. Check that battery voltage is available between the fuel pump 2P connector terminal No. 2 and body ground when the ignition switch is turned ON (II).

FUEL PUMP 2P CONNECTOR (C568)



FUEL PUMP (YEL/GRN)

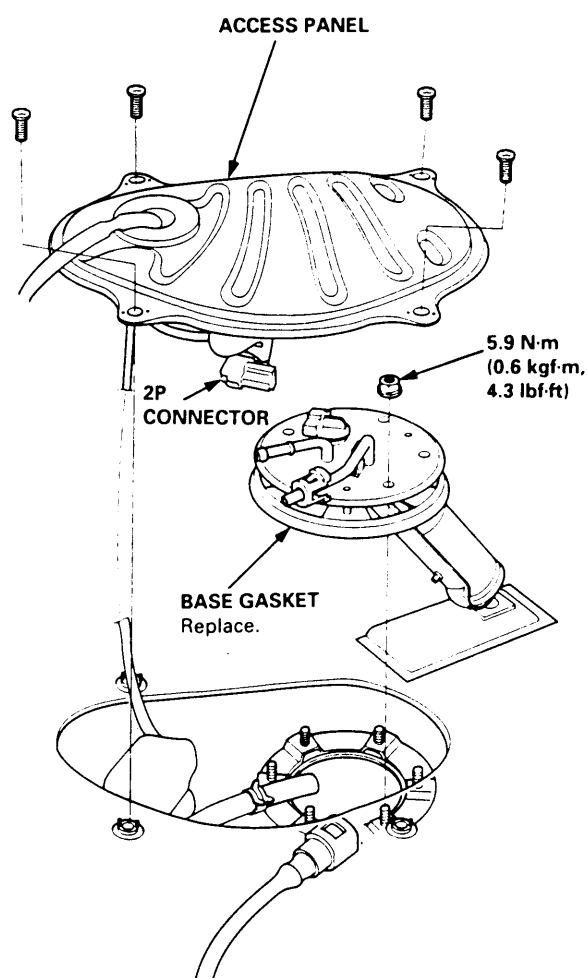
Wire side of female terminals

- If battery voltage is available, check the fuel pump ground. If the ground is OK, replace the fuel pump.
- If there is no voltage, check the wire harness (see page 11-119).

Replacement

⚠ WARNING Do not smoke while working on fuel system. Keep open flames away from your work area.

1. Remove the seat cushion (see section 20).
2. Remove the access panel from the floor.
3. Disconnect the 2P connector from the fuel pump.
4. Remove the fuel pump mounting nuts.
5. Remove the fuel pump from the fuel tank.
6. Install parts in the reverse order of removal.



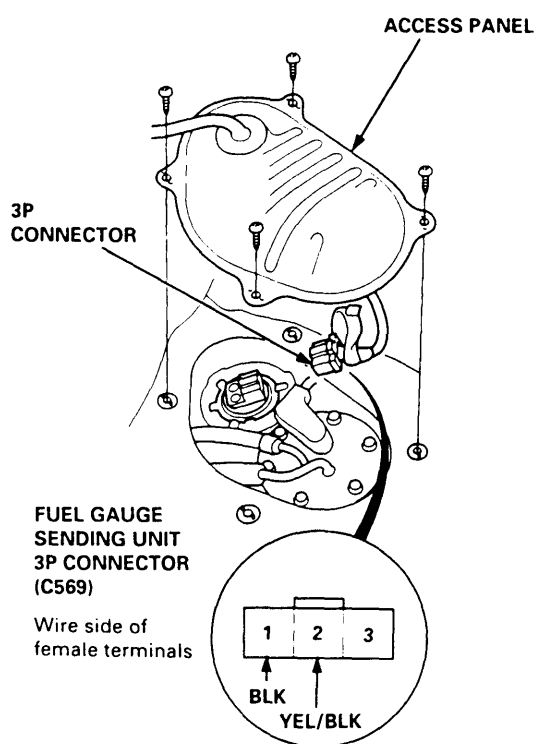
Fuel Supply System

Fuel Gauge/Fuel Gauge Sending Unit

Testing

⚠ WARNING Do not smoke while working on the fuel system. Keep open flame away from your work area.

1. Check the No. 25 CLOCK METER (7.5 A) fuse in the under-dash fuse/relay box before testing.
2. Remove the rear seat cushion (see section 20).
3. Remove the access panel from the floor.



4. Disconnect the 3P connector from the fuel gauge sending unit.
5. Connect the voltmeter positive probe to the No. 2 terminal and the negative probe to the No. 1 terminal, then turn the ignition switch ON (II). There should be between 5 and 8 V.
 - If the voltage is as specified, go to step 5.
 - If the voltage is not as specified, check for:
 - an open in the YEL/BLK or BLK wire.
 - poor ground (G552).
6. Turn the ignition switch OFF.
7. Attach a jumper wire between the No. 1 and No. 2 terminals, then turn the ignition switch ON (II).

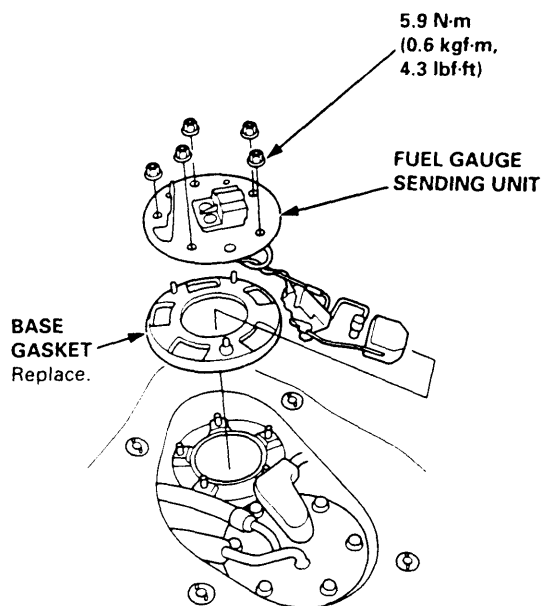
8. Check that the pointer of the fuel gauge starts moving toward the "F" mark.

CAUTION: Turn the ignition switch OFF before the pointer reaches "F" on the gauge dial. Failure to do so may damage the fuel gauge.

NOTE: The fuel gauge is a bobbin (cross-coil) type, hence the fuel level is continuously indicated even when the ignition switch is OFF, and the pointer moves more slowly than that of a bimetal type.

- If the pointer of the fuel gauge does not move at all, replace the gauge.
- If the gauge is OK, inspect the fuel gauge sending unit.

9. Remove the fuel gauge sending unit as shown.

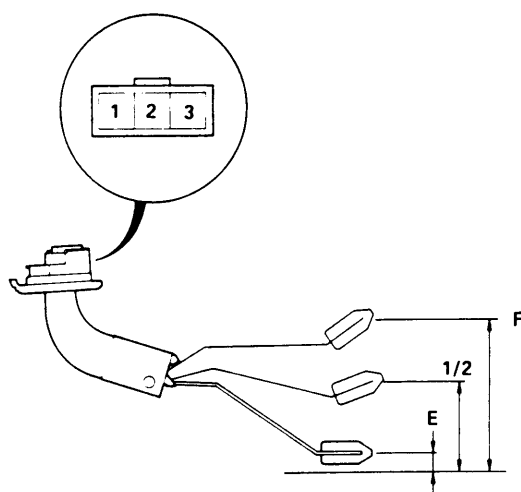




Low Fuel Indicator System

10. Measure the resistance between the No. 1 and No. 2 terminals at E (EMPTY), 1/2 (HALF FULL) and F (FULL) by moving the float.

Float Position	E	1/2	F
Resistance (Ω)	105 – 108	29.5 – 35.5	3.5 – 5



If the readings are beyond the range, replace the fuel gauge sending unit.

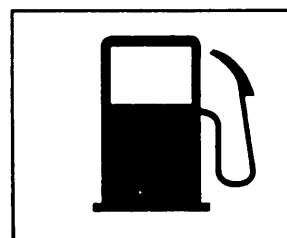
Indicator Light Testing

1. Check the No. 25 CLOCK METER (7.5 A) fuse in the under-dash fuse/relay box, and the gauge relay before testing.

2. Park the vehicle on level ground.

⚠ WARNING Do not smoke while working on the fuel system. Keep open flame away from the work area. Drain fuel only into an approved container.

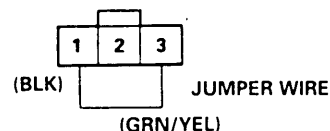
3. Drain the fuel into an approved container. Then install the drain bolt with a new washer.
4. Add less than 8.5 l (2.2 U.S. Gal. 1.8 Imp. Gal) of fuel, and turn the ignition switch ON (II). The low fuel indicator light should come on within five minutes.



LOW FUEL INDICATOR LIGHT

- If the light comes on within four minutes, go to step 8.
 - If the light does not come on within four minutes, go to step 5.
5. Remove the rear seat cushion (see section 20).
 6. Remove the access panel from the floor, and disconnect the 3P connector from the fuel gauge sending unit.
 7. Connect the No. 1 and No. 3 terminals with a jumper wire.
 - if the light comes on, check the sending unit.
 - If the light does not come on, check for:
 - an open in the GRN/YEL wire between the fuel unit and fuel gauge assembly.
 - blown bulb.
 - poor ground (G552).

FUEL GAUGE SENDING UNIT 3P CONNECTOR (C569)



Wire side of female terminals

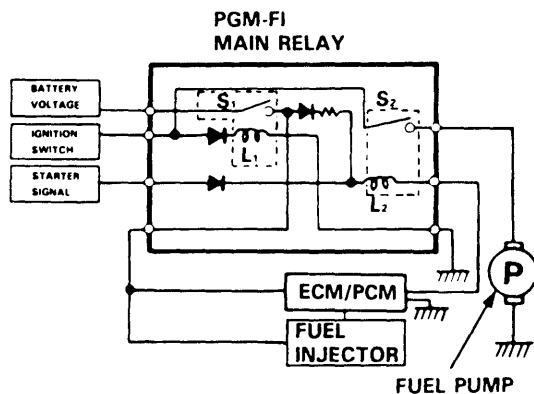
8. Add 4 l of fuel (1.1 U.S. Gal. 0.9 Imp. Gal). The light should go off within five minutes.

Fuel Supply System

PGM-FI Main Relay

Description

The PGM-FI main relay actually contains two individual relays. This relay is located at the right side of the cowl. One relay is energized whenever the ignition is on which supplies the battery voltage to the ECM/PCM, power to the fuel injectors, and power for the second relay. The second relay is energized for two seconds when the ignition is switched ON (II), and when the engine is running, to supply power to the fuel pump.



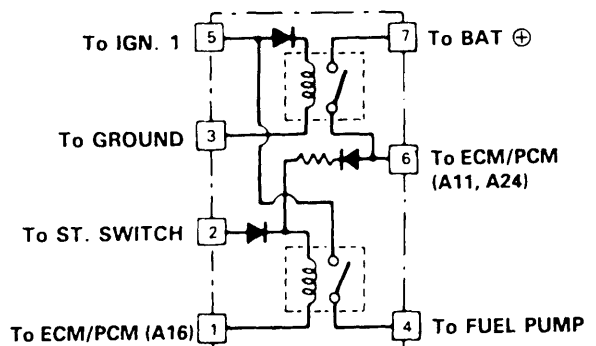
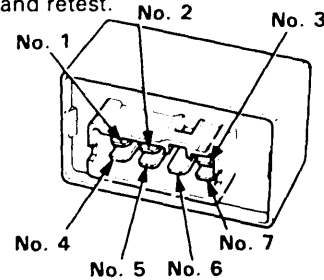
Relay Testing

NOTE:

- If the engine starts and continues to run, the PGM-FI main relay is OK.
- Use the terminal numbers below; ignore the terminal numbers molded into the relay.

1. Remove the PGM-FI main relay.
2. Attach the battery positive terminal to the No. 2 terminal and the battery negative terminal to the No. 1 terminal of the PGM-FI main relay. Then check for continuity between the No. 5 terminal and No. 4 terminal of the PGM-FI main relay.

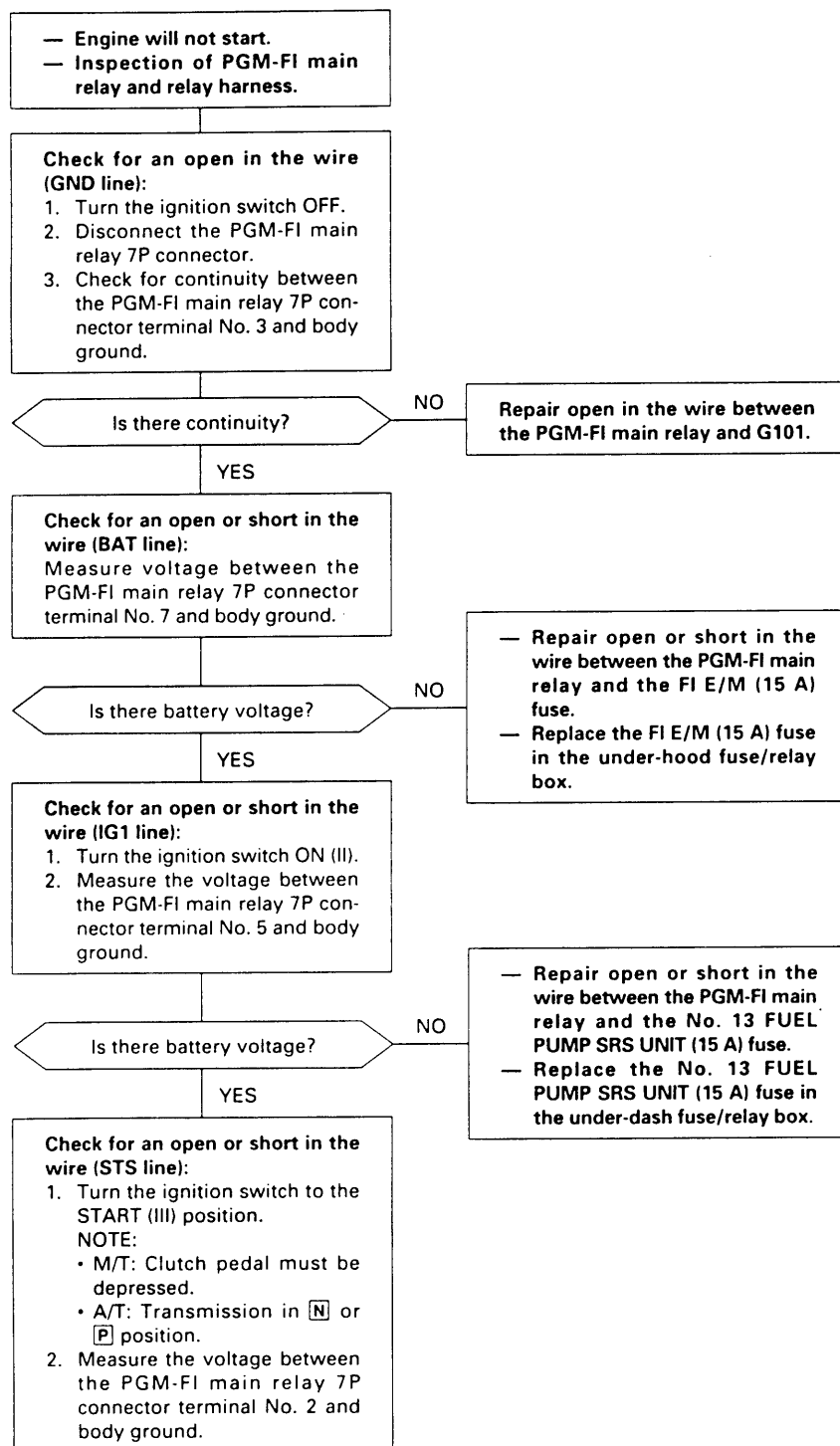
- If there is continuity, go on to step 3.
- If there is no continuity, replace the PGM-FI main relay and retest.



3. Attach the battery positive terminal to the No. 5 terminal and the battery negative terminal to the No. 3 terminal of the PGM-FI main relay. Then check that there is continuity between the No. 7 terminal and No. 6 terminal of the PGM-FI main relay.
- If there is continuity, go on to step 4.
- If there is no continuity, replace the PGM-FI main relay and retest.
4. Attach the battery positive terminal to the No. 6 terminal and the battery negative terminal to the No. 1 terminal of the PGM-FI main relay. Then check that there is continuity between the No. 5 terminal and No. 4 terminal of the PGM-FI main relay.
- If there is continuity, the PGM-FI main relay is OK. If the fuel pump still does not work, go to Harness Testing on the next page.
- If there is no continuity, replace the PGM-FI main relay and retest.

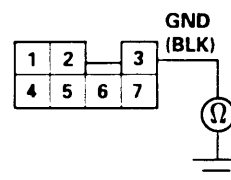


Troubleshooting

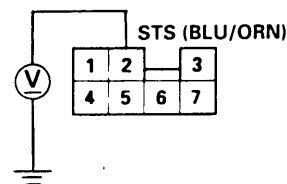
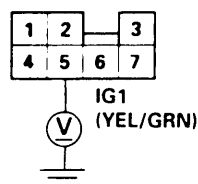
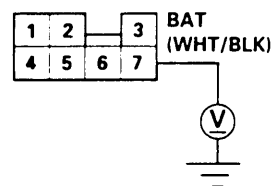


(To page 11-120)

PGM-FI MAIN RELAY 7P CONNECTOR (C443)



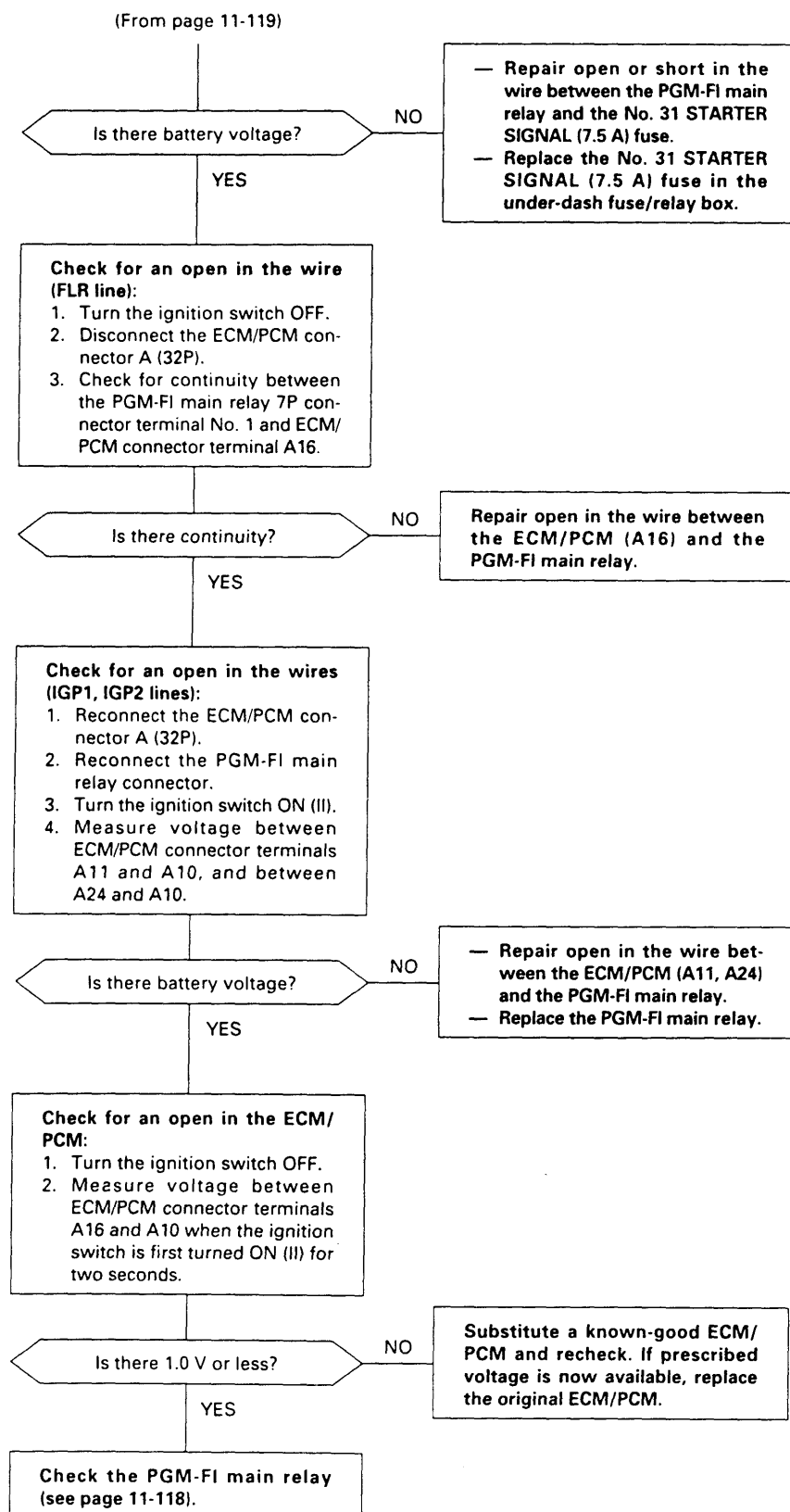
Wire side of female terminals



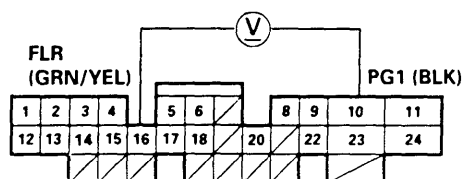
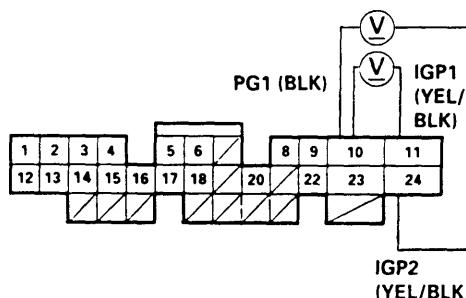
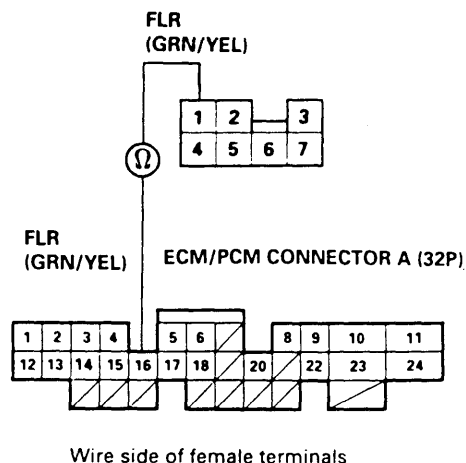
(cont'd)

Fuel Supply System

PGM-FI Main Relay (cont'd)



PGM-FI MAIN RELAY 7P CONNECTOR (C443)





Fuel Tank

Replacement

⚠ WARNING Do not smoke while working on fuel system. Keep open flame away from your work area.

1. Relieve the fuel pressure (see page 11-110).
2. Remove the seat cushion (see section 20).
3. Remove the access panel from the floor.
4. Disconnect the 2P (C568) and 3P (C569) connectors.
5. Disconnect the hose and quick-connect fittings (see pages 11-106, 107).
6. Jack up the vehicle, and support it with jackstands.
7. Remove the EVAP two way valve cover and the fuel hose joint protector.
8. Remove the drain bolt, and drain the fuel into an approved container.
9. Disconnect the hoses (see page 11-106).

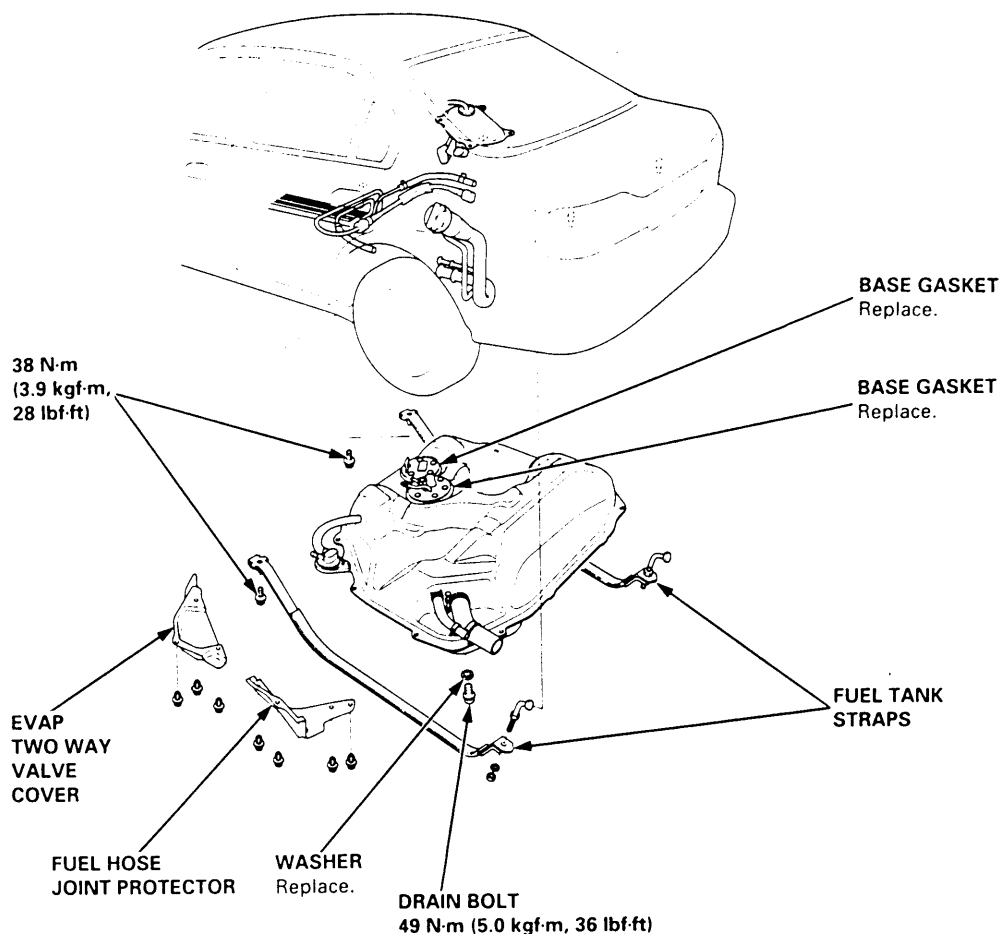
CAUTION:

- When disconnecting the hoses, slide back the clamps, then twist hoses as you pull, to avoid damaging them.
- Clean the flared joint of high pressure hoses thoroughly before reconnecting them.

10. Place a jack, or other support, under the tank.
11. Remove the strap nuts, and let the straps fall free.
12. Remove the fuel tank.

NOTE: The tank may stick on the undercoat applied to its mount. To remove, carefully pry it off the mount.

13. Install the drain bolt with a new washer, then coat the drain bolt with Noxrust 124B, Allow the Noxrust dry for 20 minutes.
14. Install the remaining parts in the reverse order of removal.

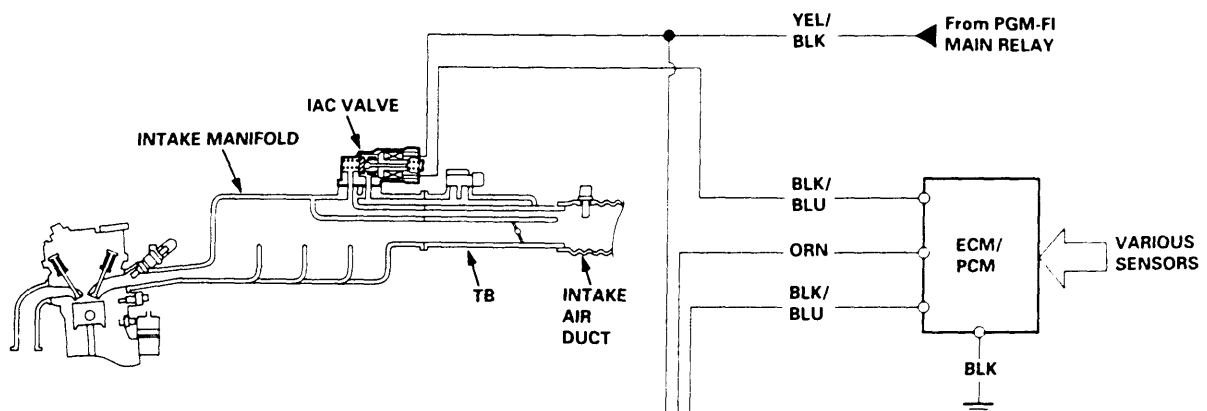


Intake Air System

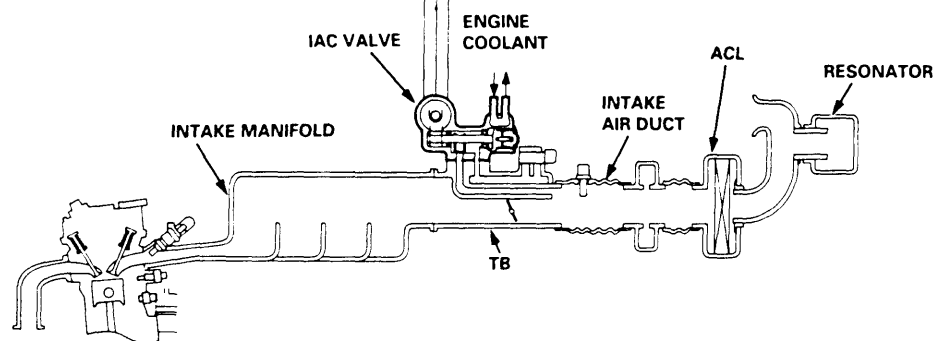
System Description

The system supplies air for all engine needs. It consists of the intake air pipe, Air Cleaner (ACL), intake air duct, Throttle Body (TB), Idle Air Control (IAC) Valve and intake manifold. A resonator in the intake air pipe provides additional silencing as air is drawn into the system.

M/T:



A/T:





Air Cleaner (ACL)

NOTE: Do not clean the ACL element by blowing it with compressed air.

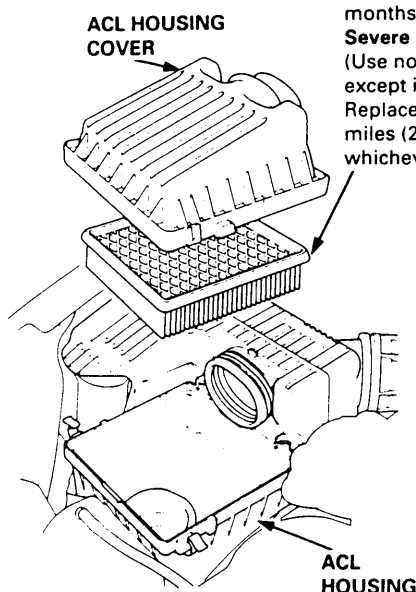
ACL ELEMENT

Normal conditions:

Replace air cleaner element every 30,000 miles (48,000 km) or 24 months whichever comes first.

Severe conditions:

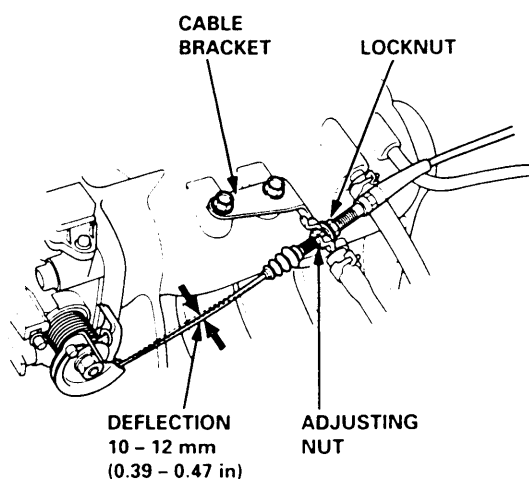
(Use normal schedule except in dusty conditions)
Replace every 15,000 miles (24,000 km) or 12 months whichever comes first.



Throttle Cable

Inspection/Adjustment

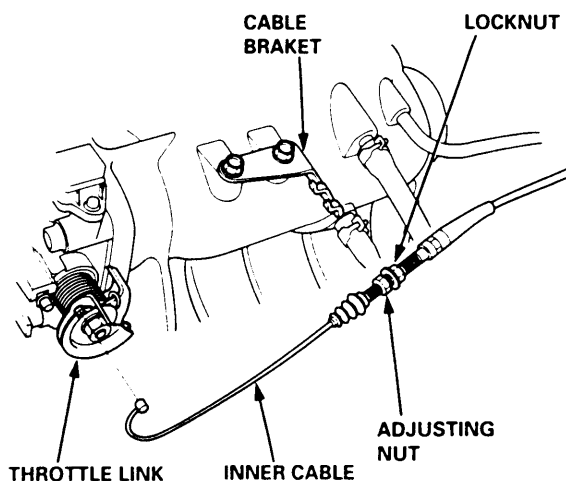
1. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then let it idle.
2. Check that the throttle cable operates smoothly with no binding or sticking. Repair as necessary.
3. Check cable free play at the throttle linkage. Cable deflection should be 10 – 12 mm (0.39 – 0.47 in.).



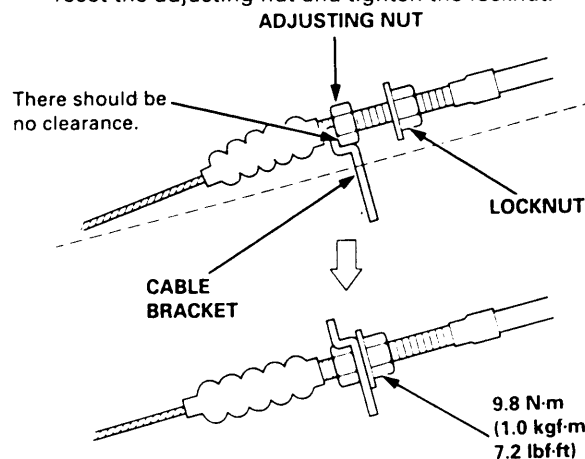
4. If deflection is not within specs, loosen the locknut, turn the adjusting nut until the deflection is as specified, then retighten the locknut.
5. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

Installation

1. Open the throttle valve fully, then install the throttle cable in the throttle linkage, and install the cable housing in the cable bracket.



2. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then let it idle.
3. Hold the cable sheath, removing all slack from the cable.
4. Set the locknut on the cable bracket. Adjust the adjusting nut so that its free play is 0 mm.
5. Remove the cable sheath from the throttle bracket, reset the adjusting nut and tighten the locknut.

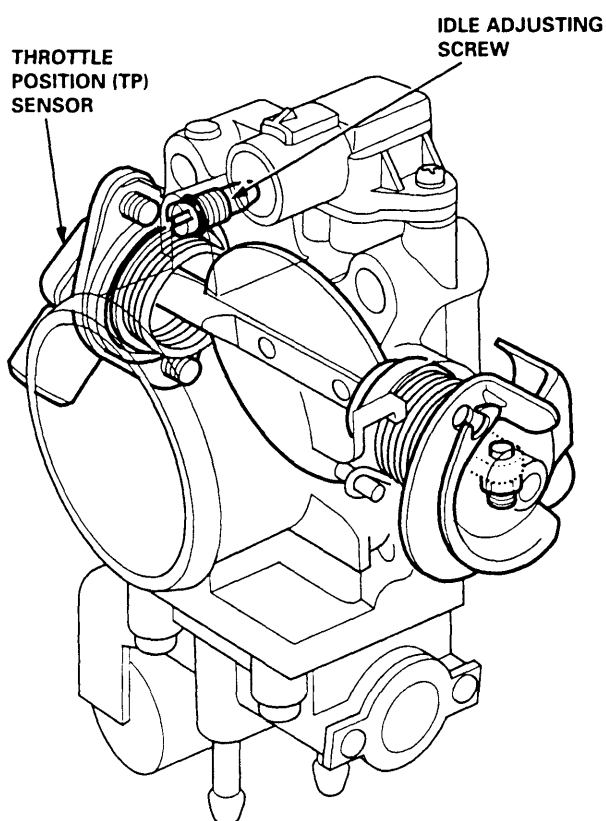


Intake Air System

Throttle Body

Description

The throttle body is a single-barrel side-draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head. The idle adjusting screw which regulates the bypass air is located on the top of the throttle body.

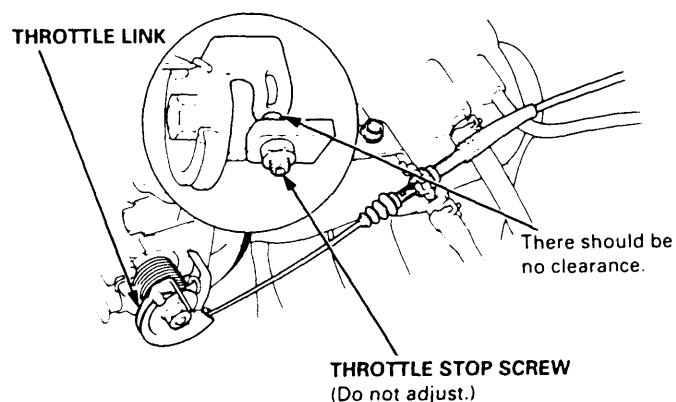


Inspection

1. Check that the throttle cable operates smoothly without binding or sticking.

If there are any abnormalities, check for:

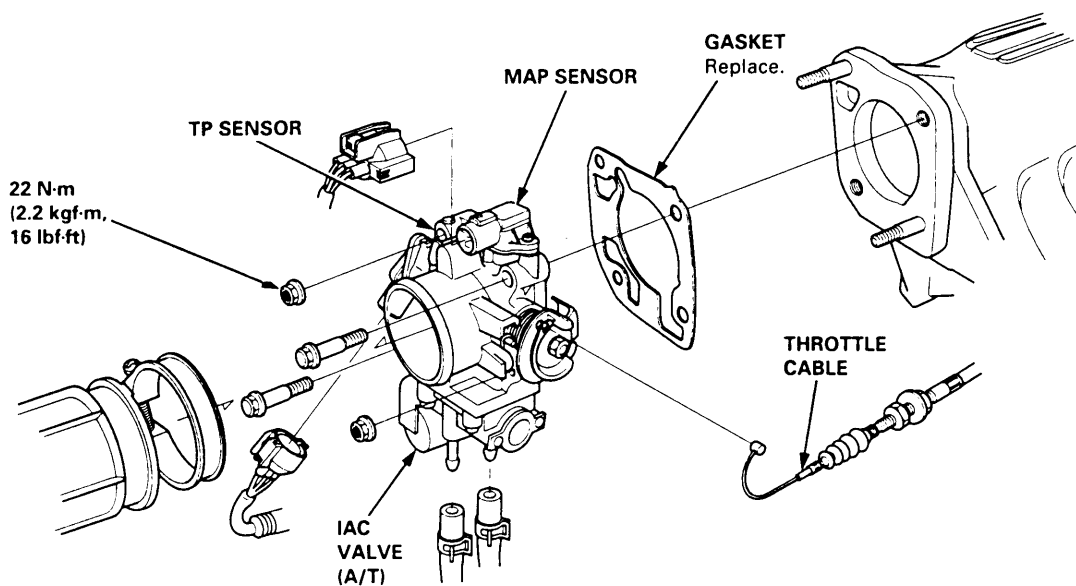
- Excessive wear or play in the throttle valve shaft.
- Sticky or binding throttle lever at the fully closed position.
- Clearance between throttle stop screw and throttle lever at the fully closed position.



Replace the throttle body if there is excessive play in the throttle valve shaft or if the shaft is binding or sticking.



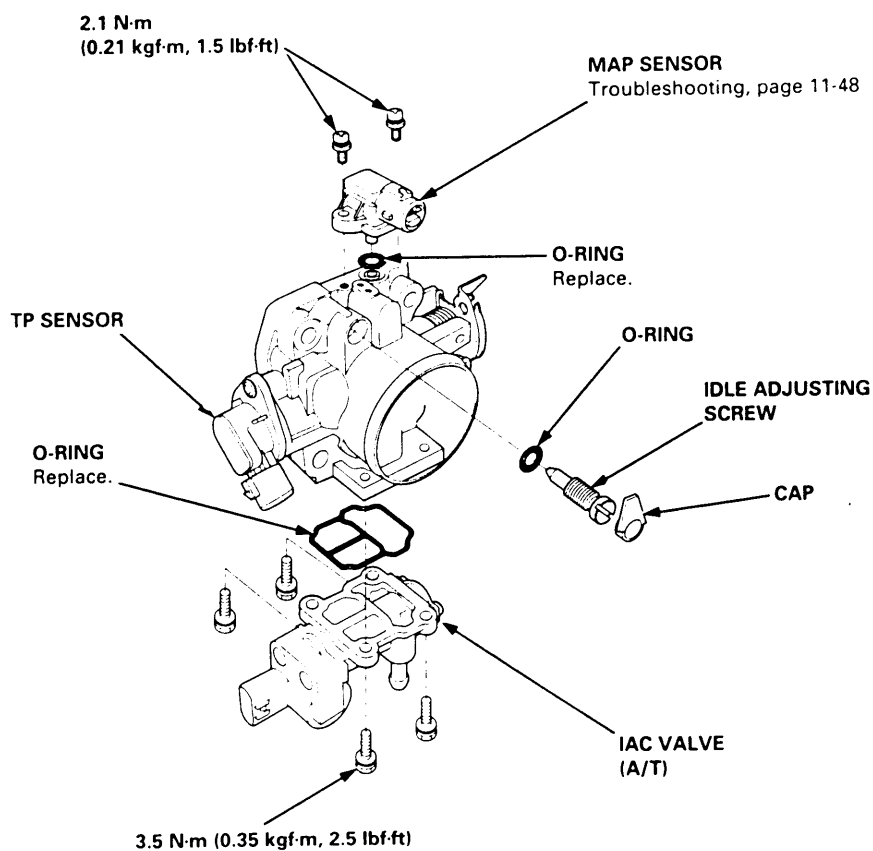
Removal



CAUTION:

- Do not adjust the throttle stop screw.
- After reassembly, adjust the throttle cable (see page 11-123).
- The TP sensor is not removable.

Disassembly



Emission Control System

System Description

The emission control system includes a Three Way Catalytic Converter (TWC), Positive Crankcase Ventilation (PCV) system and Evaporative Emission (EVAP) Control system.

Tailpipe Emission

Inspection

⚠ WARNING Do not smoke during this procedure. Keep any open flame away from your work area.

1. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then let it idle.
2. Connect a tachometer.
3. Check and, if necessary, adjust the idle speed (see page 11-103).
4. Warm up and calibrate the CO meter according to the meter manufacturer's instructions.
5. Check idle CO with the headlights, heater blower, rear window defogger, cooling fan, and air conditioner off.

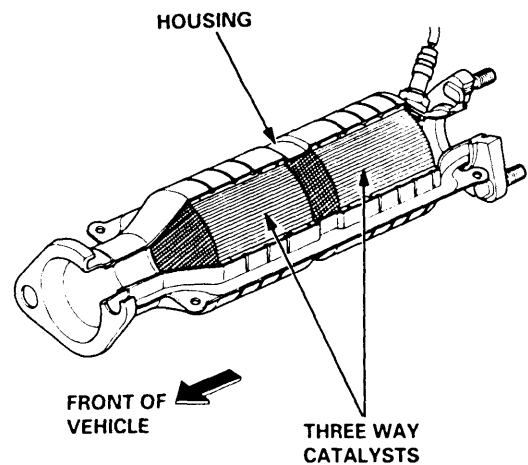
NOTE: Pull the parking brake lever up. Start the engine, then check that the headlights are off.

CO meter should indicate 0.1% maximum.

Three Way Catalytic Converter (TWC)

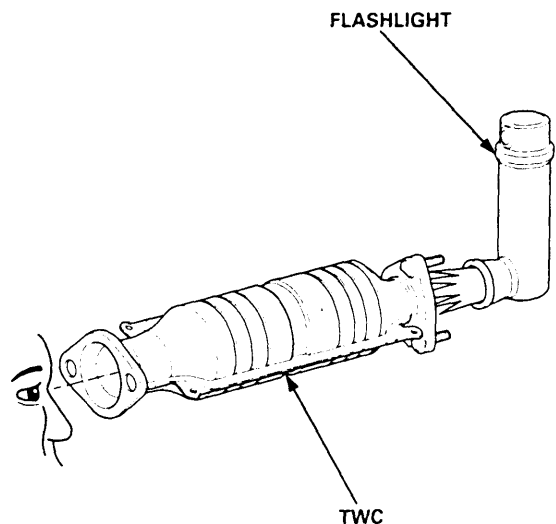
Description

The Three Way Catalytic Converter (TWC) is used to convert hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NO_x) in the exhaust gas to carbon dioxide (CO₂), dinitrogen (N₂) and water vapor.



Inspection

If excessive exhaust system back-pressure is suspected, remove the TWC from the car and using a flashlight, make a visual check for plugging, melting or cracking of the catalyst. Replace the TWC if any of the visible area is damaged or plugged.





P0420 The scan tool indicates Diagnostic Trouble Code (DTC) P0420: Catalyst system efficiency below threshold.

Description

This system evaluates the catalyst's capacity by means of the HO2S (Primary and Secondary) output during stable driving conditions. If deterioration has been detected during two consecutive driving cycles, the MIL comes on and DTC P0420 will be stored.

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0420, troubleshoot those DTCs first, then troubleshoot DTC P0420.

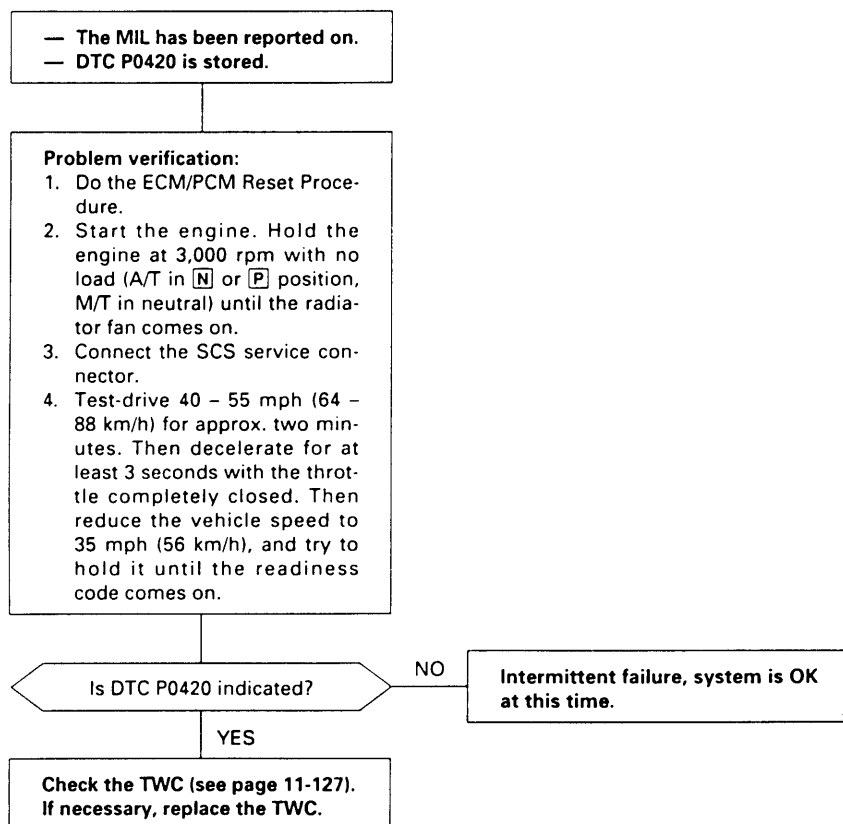
P0137, P0138: Secondary HO2S (Sensor 2)

P0141: Secondary HO2S (Sensor 2) Heater

Possible Cause

- TWC Deterioration
- Exhaust system leakage

Troubleshooting Flowchart

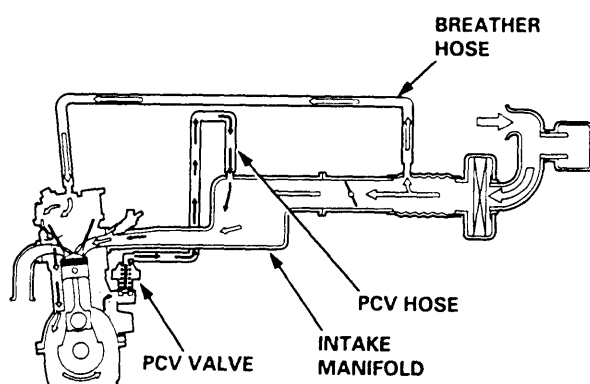


Emission Control System

Positive Crankcase Ventilation (PCV) System

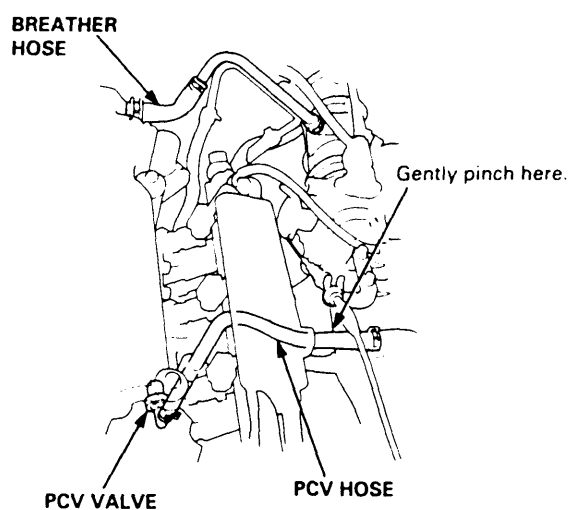
Description

The Positive Crankcase Ventilation (PCV) system is designed to prevent blow-by gas from escaping to the atmosphere. The PCV valve contains a spring-loaded plunger. When the engine starts, the plunger in the PCV valve is lifted in proportion to intake manifold vacuum and the blow-by gas is drawn directly into the intake manifold.



Inspection

1. Check the PCV hoses and connections for leaks and clogging.
2. At idle, make sure there is a clicking sound from the PCV valve when the hose between PCV valve and intake manifold is lightly pinched with your fingers or pliers.



If there is no clicking sound, check the PCV valve grommet for cracks and damage. If the grommet is OK, replace the PCV valve and recheck.



Evaporative Emission (EVAP) Controls

Description

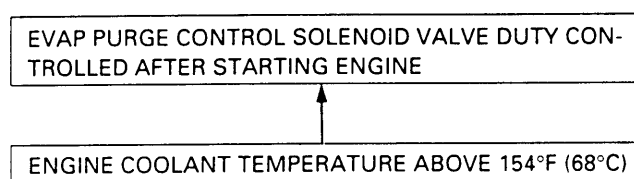
The evaporative emission controls are designed to minimize the amount of fuel vapor escaping to the atmosphere. The system consists of the following components:

A. Evaporative Emission (EVAP) Control Canister

An EVAP control canister is used for the temporary storage of fuel vapor until the fuel vapor can be purged from the EVAP control canister into the engine and burned.

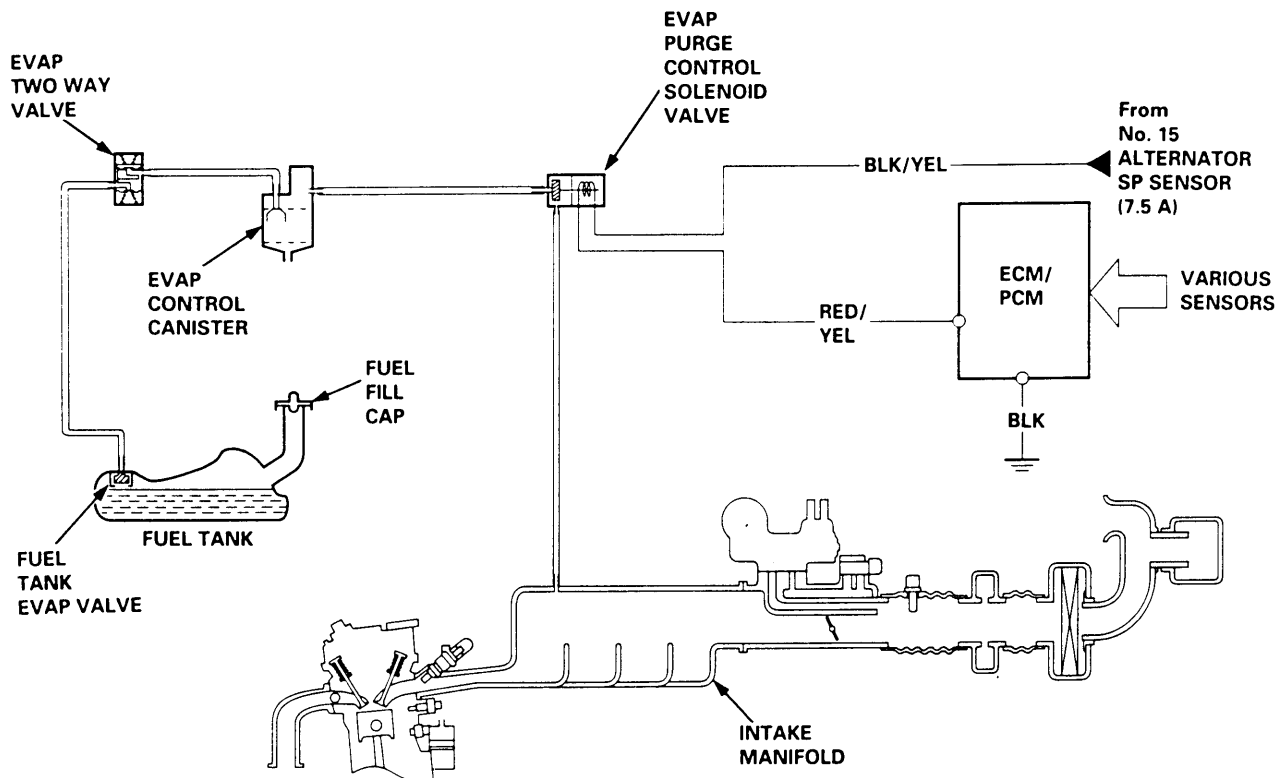
B. Vapor Purge Control System

EVAP control canister purging is accomplished by drawing fresh air through the EVAP control canister and into a port on the throttle body. The purging vacuum is controlled by the EVAP purge control solenoid valve.



C. Fuel Tank Vapor Control System

When fuel vapor pressure in the fuel tank is higher than the set value of the EVAP two way valve, the valve opens and regulates the flow of fuel vapor to the EVAP control canister.



(cont'd)

Emission Control System

Evaporative Emission (EVAP) Controls (cont'd)

P0441 The scan tool indicates Diagnostic Trouble Code (DTC) P0441: Evaporative Emission (EVAP) control system insufficient purge flow.

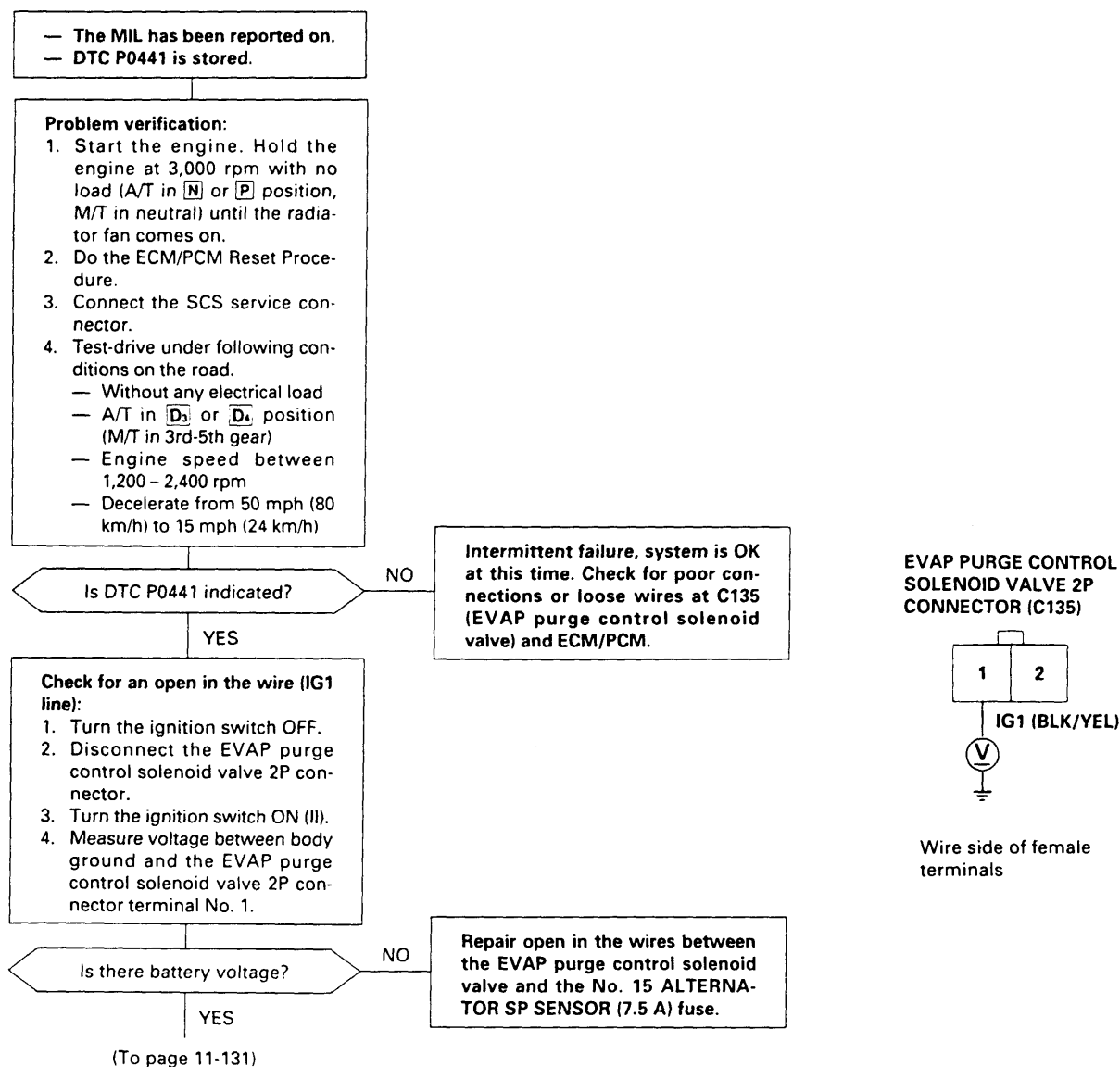
Description

By monitoring the purge line vacuum with the MAP sensor, the ECM/PCM can detect insufficient EVAP control system purge flow.

Possible Cause

- EVAP Purge Control Solenoid Valve
- EVAP Purge Control Solenoid Valve Circuit
- EVAP Control Canister
- Vacuum Lines
- ECM/PCM

Troubleshooting Flowchart





(From page 11-130)

Check the EVAP purge control solenoid valve:

1. Reconnect the EVAP purge control solenoid valve 2P connector.
2. Connect ECM/PCM connector terminals A15 and A10 with a jumper wire.

Does the solenoid valve click when the jumper is connected?

YES

Check the vacuum lines:
Check the vacuum lines of EVAP system for misrouting, leakage, breakage and clogging.

Are the vacuum lines OK?

YES

(To page 11-132)

NO

Check for an open or short in the wire (PCS line):
Measure voltage between ECM/PCM connector terminal A15 and body ground.

Is there battery voltage?

YES

Replace the EVAP purge control solenoid valve.

Repair short in the wires between the EVAP purge control solenoid valve and ECM/PCM (A15).

YES

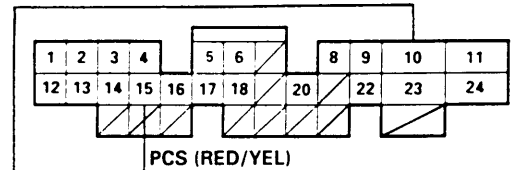
Is there continuity?

NO

Repair open in the wires between the EVAP purge control solenoid valve and ECM/PCM (A15).

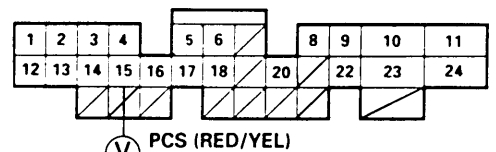
ECM/PCM CONNECTOR D (32P)

PG1 (BLK)



JUMPER WIRE

Wire side of female terminals

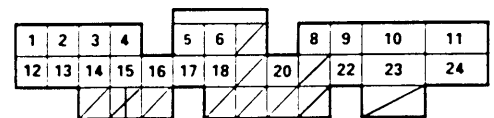


PCS (RED/YEL)

Check for a short in the wire (PCS line):

1. Turn the ignition switch OFF.
2. Disconnect the ECM/PCM connector A (32P).
3. Disconnect the EVAP purge control solenoid valve 2P connector.
4. Check for continuity between body ground and ECM/PCM connector terminal A15.

(cont'd)



PCS (RED/YEL)

Emission Control System

Evaporative Emission (EVAP) Controls (cont'd)

(From page 11-131)

Check the EVAP purge control solenoid valve:
 1. Disconnect the vacuum hose from the EVAP control canister.
 2. Connect the vacuum pump to the hose and apply vacuum.

Does it hold vacuum?

NO

Replace the EVAP purge control solenoid valve.

YES

Check the EVAP control canister:
 1. Reconnect the vacuum hose to the EVAP control canister.
 2. Connect the vacuum/pressure gauge to the purge air hose.
 3. Connect ECM/PCM connector terminals A15 and A10 with a jumper wire.
 4. Start the engine.
 5. Check the vacuum.

Does vacuum appear on the gauge?

NO

Replace the EVAP control canister.

YES

Check the EVAP two way valve (see page 11-133)

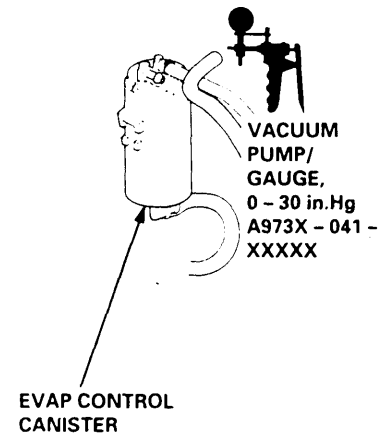
Does the EVAP two way valve work properly?

NO

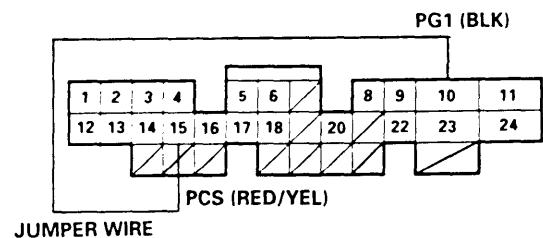
Replace the EVAP two way valve.

YES

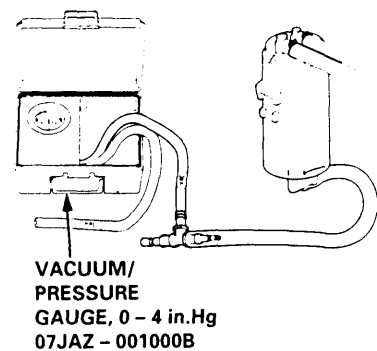
Substitute a known-good ECM/PCM and recheck. If symptom/indication goes away, replace the original ECM/PCM.



ECM/PCM CONNECTOR D (32P)



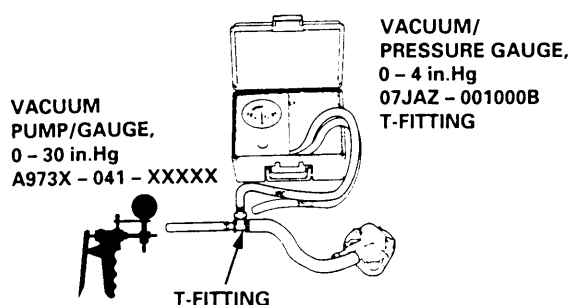
Wire side of female terminals



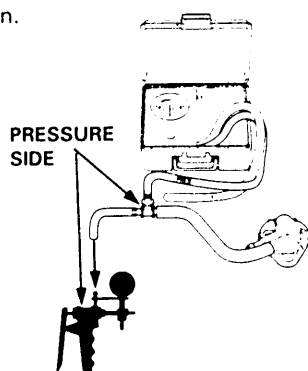


Evaporative Emission (EVAP) Two Way Valve Testing

1. Remove the fuel fill cap.
2. Remove the vapor line from the EVAP two way valve on the fuel tank, and connect it to a T-fitting from a vacuum gauge and a vacuum pump as shown.



3. Apply vacuum slowly and continuously while watching the gauge. The vacuum should stabilize momentarily at 0.7 - 2.0 kPa (5 - 15 mmHg, 0.2 - 0.6 in.Hg).
If the vacuum stabilizes (valve opens) below 0.7 kPa (5 mmHg, 0.2 in.Hg) or above 2.0 kPa (15 mmHg, 0.6 in.Hg), install a new valve and retest.
4. Move the vacuum pump hose from the vacuum fitting to the pressure fitting, and move the vacuum gauge hose from the vacuum side to the pressure side as shown.



5. Slowly pressurize the vapor line while watching the gauge. The pressure should stabilize at 1.3 - 4.7 kPa (10 - 35 mmHg, 0.4 - 1.4 in.Hg).
 - If the pressure momentarily stabilizes (valve opens) at 1.3 - 4.7 kPa (10 - 35 mmHg, 0.4 - 1.4 in. Hg), the valve is OK.
 - If the pressure stabilizes below 1.3 kPa (10 mmHg, 0.4 in.Hg) or above 4.7 kPa (35 mmHg, 1.4 in.Hg), install a new valve and retest.