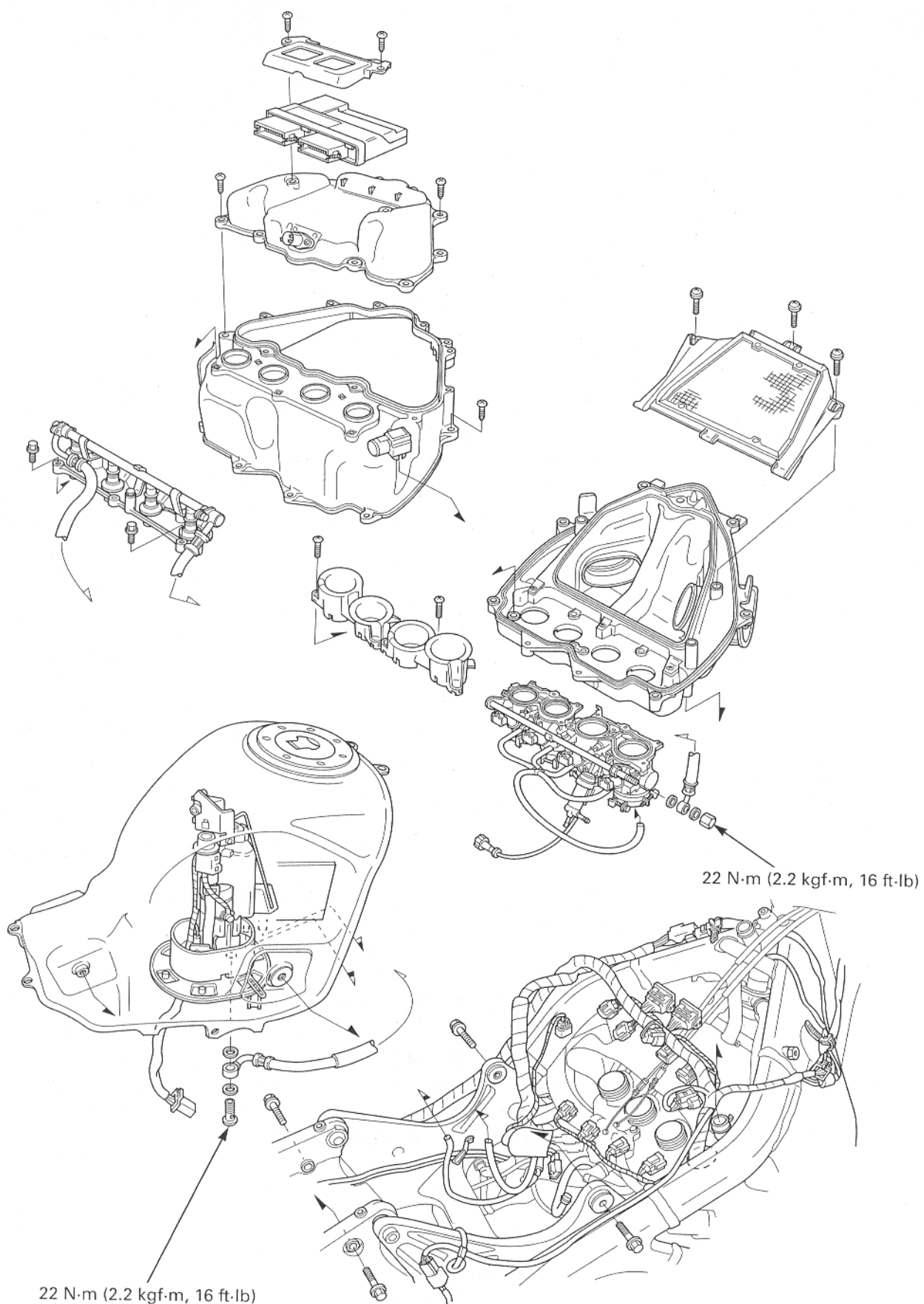


6. FUEL SYSTEM (Programmed Fuel Injection)

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COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- Be sure to relieve the fuel pressure while the engine is OFF.
- Bending or twisting the control cables will impair smooth operation and could cause the cables to stick or bind, resulting in loss of vehicle control.
- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.
- Do not apply commercially available carburetor cleaners to the inside of the throttle bore, which is coated with molybdenum.
- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect idle operation.
- Seal the cylinder head intake ports with tape or a clean cloth to keep dirt and debris from entering the intake ports after the throttle body has been removed.
- Do not apply excessive force to the fuel pipe on the throttle body while removing or installing the throttle body.
- Do not damage the throttle body. It may cause incorrect throttle and idle valve synchronization.
- Prevent dirt and debris from entering the throttle bore, fuel tube and return tube, clean them using compressed air.
- The throttle body is factory pre-set. Do not disassemble in a way other than shown in this manual.
- Do not push the fuel pump base under the fuel tank when the fuel tank is stored.
- Always replace the packing when the fuel pump is removed.
- The programmed fuel injection (PGM-FI) system is equipped with the Self-Diagnostic System described (page 6-8). If the malfunction indicator lamp (MIL) blinks, follow the Self-Diagnostic Procedures to remedy the problem.
- When checking the PGM-FI, always follow the steps in the troubleshooting flow chart (page 6-15)(page 6-37).
- The PGM-FI system is provided with fail-safe function to secure a minimum running capability even when there is any trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is secured by using numerical values preset in advance in the program map. It must be remembered, however, that when any abnormality is detected in 8 injectors and/or the ignition and cam pulse generator, the fail safe function stops the engine to protect it from damage.
- Refer to PGM-FI system location (page 6-6).
- A faulty PGM-FI system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- Refer to procedures for fuel level sensor inspection (page 20-18).
- The vehicle speed sensor sends digital pulse signal to the ECM (PGM-FI unit) and computation. Refer to procedures for vehicle speed sensor inspection (page 20-13).
- When disassembling the programmed fuel injection parts, note the location of the O-rings. Replace them with new ones upon reassembly.
- Before disconnecting the fuel hose, release the fuel pressure by loosening the fuel hose banjo bolt at the fuel tank.
- Always replace the sealing washers when the fuel hose banjo bolt is removed or loosened.
- Use a digital tester for PGM-FI system inspection.

SPECIFICATIONS

ITEM		SPECIFICATIONS
Throttle body identification number	49 states, Canada type:	GQ63C
	California type:	GQ63B
Starter valve vacuum difference		20mm Hg
Base throttle valve for synchronization		No. 3
Idle speed		1,300 ± 100 rpm
Throttle grip free play		2 – 4 mm (1/16 – 1/8 in)
Intake air temperature sensor resistance (at 20°C/68°F)		1 – 4 kΩ
Engine coolant temperature sensor resistance (at 20°C/68°F)		2.3 – 2.6 kΩ
Fuel injection resistance (at 20°C/68°F)	Secondary injector	10.5 – 14.5 Ω
	Primary injector	10.5 – 14.5 Ω
PAIR control solenoid valve resistance (at 20°C/68°F)		20 – 24 Ω
Cam pulse generator peak voltage (at 20°C/68°F)		0.7 V minimum
Ignition pulse generator peak voltage (at 20°C/68°F)		0.7 V minimum
Manifold absolute pressure at idle		150 – 250 mm Hg
Fuel pressure at idle		343 kPa (3.5 kgf/cm ² , 50 psi)
Fuel pump flow (at 12V)		189 cm ³ (6.4 US oz, 6.7 Imp oz) minimum/10 seconds

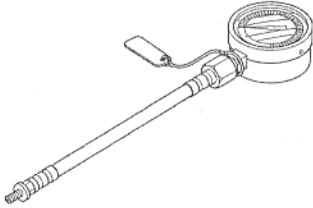
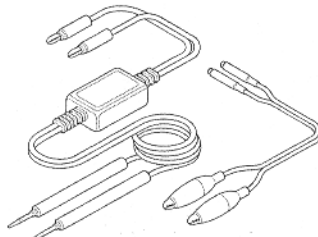
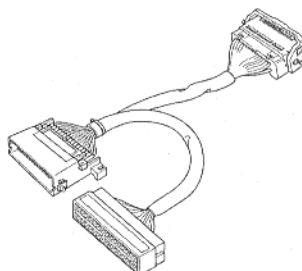
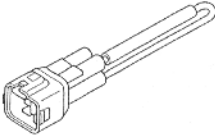
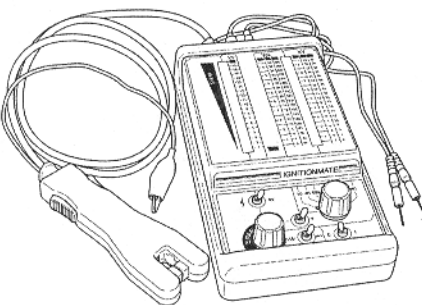
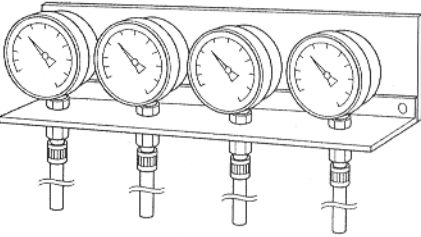
FUEL SYSTEM (Programmed Fuel Injection)

TORQUE VALUES

ECT (Engine Coolant Temperature) sensor	23 N·m (2.3 kgf·m, 17 lbf·ft)
Throttle body insulator band screw	See page 1-15
Starter valve synchronization plate screw	0.9 N·m (0.09 kgf·m, 0.7 lbf·ft)
Starter valve lock nut	1.8 N·m (0.18 kgf·m, 1.3 lbf·ft)
Fast idle wax unit link plate screw	0.9 N·m (0.09 kgf·m, 0.7 lbf·ft)
Fast idle wax unit mounting screw	4.9 N·m (0.5 kgf·m, 3.6 lbf·ft)
Fuel filler cap socket bolt	1.8 N·m (0.18 kgf·m, 1.3 lbf·ft)
Secondary injector bracket mounting bolt	5.4 N·m (0.55 kgf·m, 4 lbf·ft)
Fuel rail mounting bolt	9.8 N·m (1.0 kgf·m, 7 lbf·ft)
Fuel feed hose banjo bolt (fuel tank side)	22 N·m (2.2 kgf·m, 16 lbf·ft)
Fuel hose sealing nut (throttle body side)	22 N·m (2.2 kgf·m, 16 lbf·ft)
Fuel pump mounting nut	12 N·m (1.2 kgf·m, 9 lbf·ft)
O ₂ sensor (California type only)	25 N·m (2.6 kgf·m, 19 lbf·ft)

See page 1-16 for tightening sequence

TOOLS

<p>Fuel pressure gauge, 100 psi 07406-0040003</p>  <p>or 07406-0040002 or 07406-004000A (U.S.A. only)</p>	<p>Peak voltage adaptor 07HGJ-0020100 (not available in U.S.A.)</p>  <p>with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)</p>	<p>ECM test harness 070MZ-0010200</p>  <p>(two required)</p>
<p>SCS service connector 070PZ-ZY30100</p> 	<p>Ignition Mate peak voltage tester MTP07-0286 (U.S.A. only)</p> 	<p>Vacuum gauge set 07LMJ-001000A</p> 

TROUBLESHOOTING

Engine won't start

- Intake air leak
- Fuel contaminated/deteriorated
- Pinched or clogged fuel hose
- Faulty fuel pump unit
- Clogged fuel filter/strainer
- Clogged fuel injector filter
- Sticking fuel injector needle
- Faulty fuel pump operating system

Engine stalls, hard to start, rough idling

- Intake air leak
- Fuel contaminated/deteriorated
- Pinched or clogged fuel hose
- Idle speed misadjusted
- Starter valve synchronization misadjusted

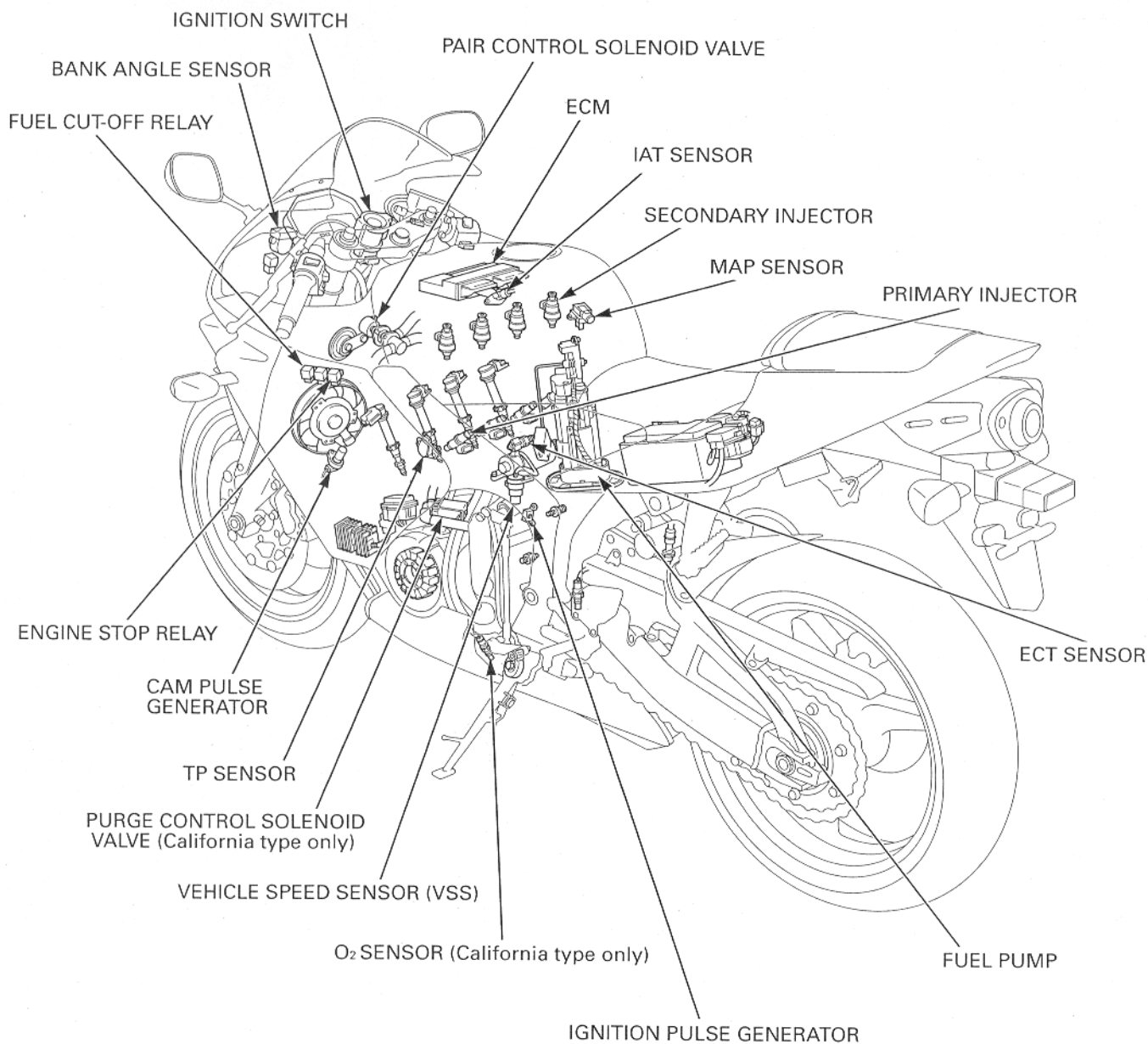
Backfiring or misfiring during acceleration

- Ignition system malfunction

Poor performance (drive ability) and poor fuel economy

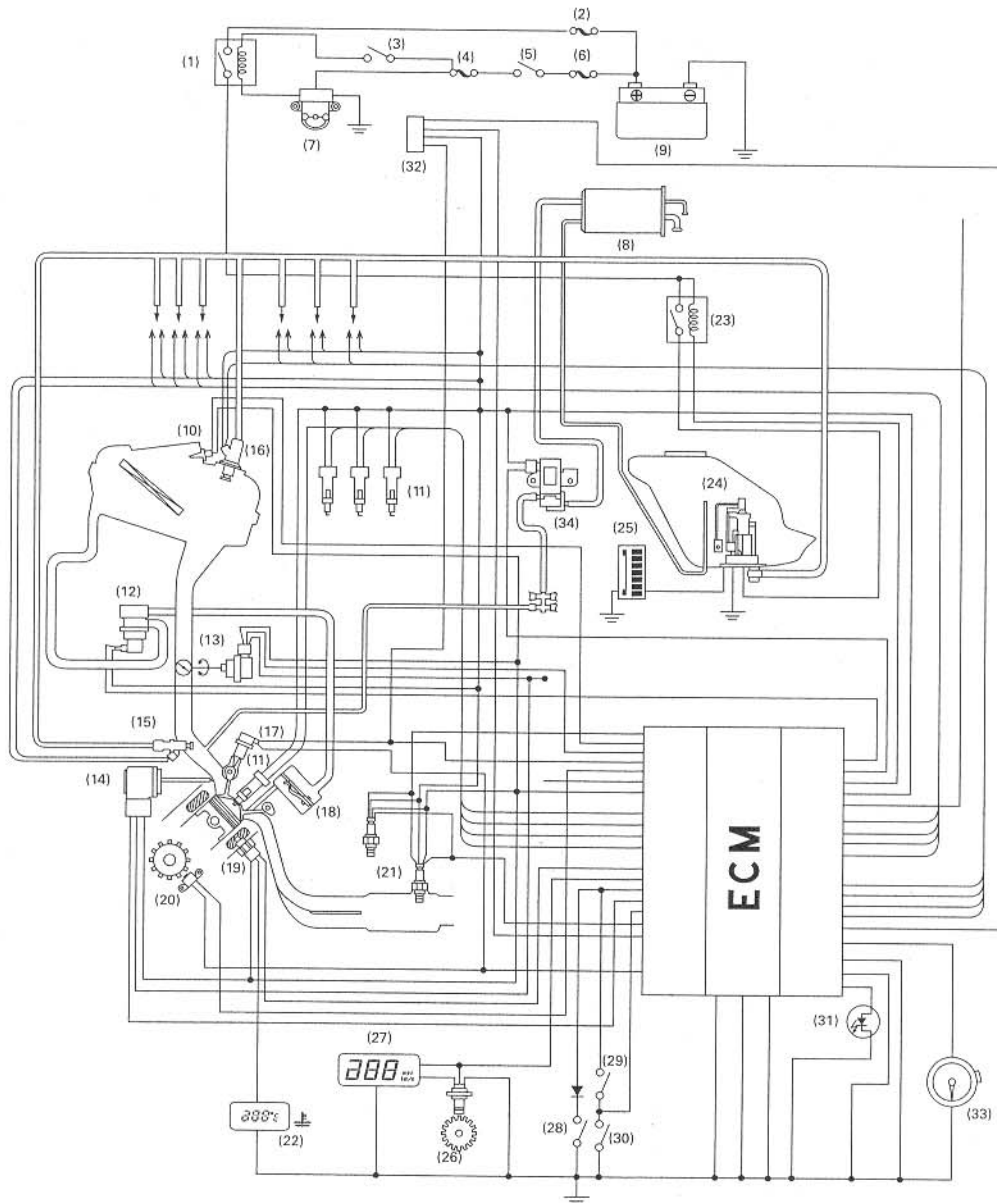
- Pinched or clogged fuel hose
- Faulty pressure regulator

SYSTEM LOCATION



FULL NAME	ABBREVIATIONS
Manifold absolute pressure sensor	MAP sensor
Throttle position sensor	TP sensor
Intake air temperature sensor	IAT sensor
Engine coolant temperature sensor	ECT sensor
Engine control module	ECM

SYSTEM DIAGRAM



- | | |
|--------------------------------------|---|
| (1) Engine stop relay | (19) ECT sensor |
| (2) PGM-FI fuse (20A) | (20) Ignition pulse generator |
| (3) Engine stop switch | (21) O ₂ sensor (California type only) |
| (4) Sub-fuse (10A) | (22) Water temperature LCD |
| (5) Ignition switch | (23) Fuel cut-off relay |
| (6) Main fuse A (30A) | (24) Fuel pump unit |
| (7) Bank angle sensor | (25) Fuel indicator |
| (8) EVAP canister (California type) | (26) Vehicle speed sensor |
| (9) Battery | (27) Speedometer |
| (10) IAT sensor | (28) Neutral switch |
| (11) Direct ignition coil/spark plug | (29) Clutch switch |
| (12) PAIR control solenoid valve | (30) Side stand switch |
| (13) TP sensor | (31) Malfunction indicator lamp (MIL) |
| (14) MAP sensor | (32) Data link connector |
| (15) Primary injector | (33) Tachometer |
| (16) Secondary injector | (34) EVAP purge control solenoid valve (California type only) |
| (17) Cam pulse generator | |
| (18) PAIR check valve | |

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI SELF-DIAGNOSIS INFORMATION

SELF-DIAGNOSTIC PROCEDURE

Place the motorcycle on its side stand.

Start the engine and let it idle.

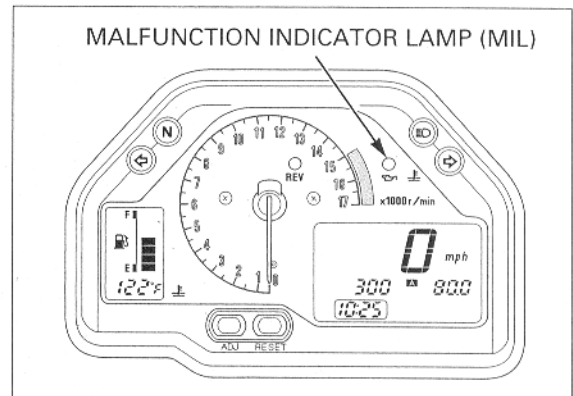
NOTE:

If the engine will not start, turn the starter motor for more than 10 seconds and check that the MIL blinks.

If the malfunction indicator lamp (MIL) does not light or blink, the system has no memory of problem data.

If the malfunction indicator blinks, note how many times the MIL blinks or read the Diagnosis Trouble Code (DTC) with the Honda Diagnosis System (HDS) Pocket Tester, and determine the cause of the problem (page 6-12, page 6-37).

If you wish to read the PGM-FI memory for trouble data, perform the following:



MALFUNCTION INDICATOR LAMP (MIL)

The MIL will blink only with the side stand down and with the engine off (engine stop switch is RUN) or engine revs are below 5,000 rpm. In any other condition, the MIL will illuminate and stay on.

DTC (With the HDS Pocket Tester)

Turn the ignition switch OFF.

Remove the seat (page 3-4).

Connect the HDS Pocket Tester to the Data Link Connector (DLC).

Turn the ignition switch ON and engine stop switch "Q".

Check the Diagnostic Trouble Code (DTC) and note it. Also check the freeze data.

Refer to the DTC index (page 6-33) and begin the appropriate troubleshooting procedure.

NOTE:

For specific operations, refer to the user's manual that came with the HDS Pocket Tester.

MIL CODE (Without the HDS Pocket Tester)

Turn the ignition switch OFF.

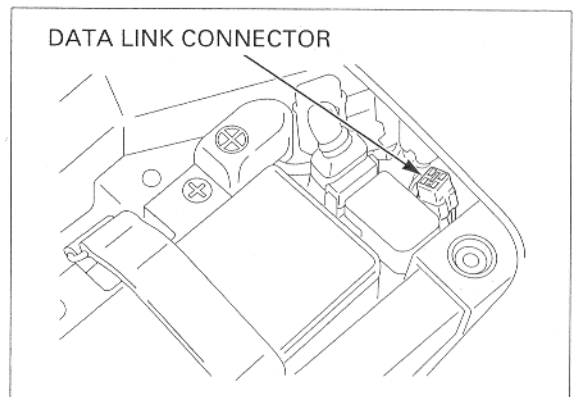
Remove the seat (page 3-4).

Short the Data Link Connector (DLC) terminals using the special tool.

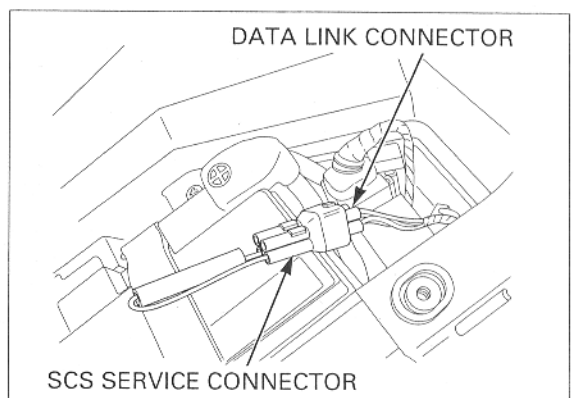
TOOL:

SCS service connector 070PZ-ZY30100

Turn the ignition switch ON and engine stop switch "Q".



DATA LINK CONNECTOR



DATA LINK CONNECTOR

SCS SERVICE CONNECTOR

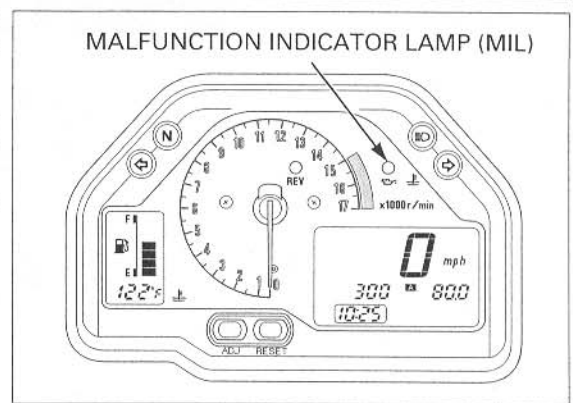
FUEL SYSTEM (Programmed Fuel Injection)

Even if the PGM-FI has memory data, the MIL does not blink when the engine is running.

If the ECM has no self diagnosis memory data, the MIL will illuminate, when you turn the ignition switch ON.

If the ECM has self diagnosis memory data, the MIL will start blinking when you turn the ignition switch ON.

Note how many times the MIL blinks, and determine the cause of the problem (page 6-12).



SELF-DIAGNOSIS RESET PROCEDURE

Reset the self-diagnosis memory data in either of 2 ways;

With the HDS

Use the HDS Pocket Tester to clear the ECU memory. See the HDS Pocket Tester user's manual for specific instruction.

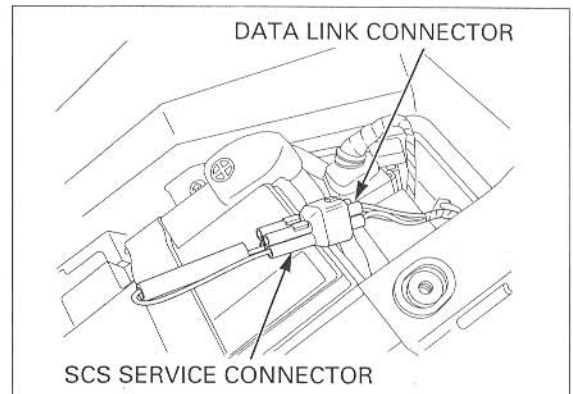
Without the HDS

1. Turn the engine stop switch "Q" and ignition switch OFF.
2. Short the Data Link Connector (DLC) terminals using a special tool.

TOOL:

SCS service connector 070PZ-ZY30100

3. Turn the ignition switch ON.
4. Remove the special tool from the Data Link Connector (DLC).

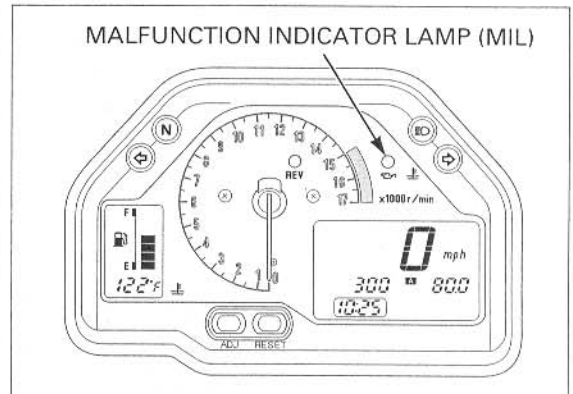


5. The MIL lights about 5 seconds. While the indicator lights, short the Data Link Connector (DLC) again with the special tool.

Self-diagnosis memory data is erased, if the MIL turns off and starts blinking.

- The Data Link Connector (DLC) must be jumped while the indicator is lit. If not, the MIL will not start blinking.
- Note that the self diagnosis memory data cannot be erased if you turn off the ignition switch before the MIL starts blinking.

If the MIL blinks 20 times, the data has not been erased, so try again.



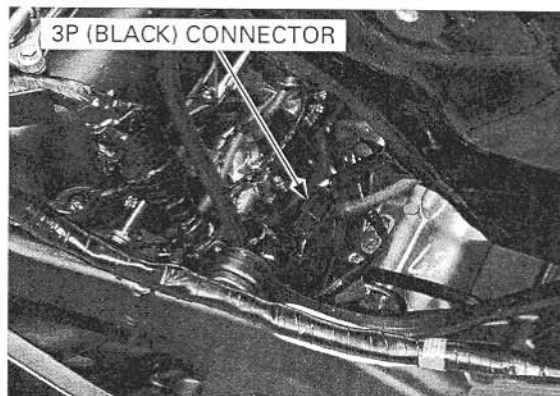
FUEL SYSTEM (Programmed Fuel Injection)

PEAK VOLTAGE INSPECTION PROCEDURE

- Use this procedure for the ignition pulse generator and cam pulse generator inspection.
- Check all system connections before inspection. If the system is disconnected, incorrect peak voltage might be measured.
- Check cylinder compression and check that all spark plugs are installed correctly.
- Use the recommended digital multimeter or commercially available digital multimeter with an impedance of 10 M Ω /DCV minimum.
- If the Imrie diagnostic tester (model 625) is used, follow the manufacturer's instruction.
- The display value differs depending upon the internal impedance of the multimeter.
- Disconnect the fuel pump connector before checking the peak voltage.

Lift and support the fuel tank (page 6-61).

Disconnect the fuel pump unit 3P (Black) connector.



Avoid touching the tester probes to prevent electric shock.

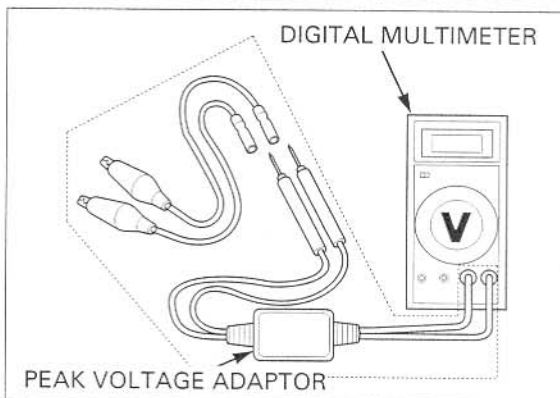
Connect the peak voltage adaptor to the digital multimeter.

TOOLS:

IgnitionMate peak voltage tester MTP07-0286
(U.S.A. only) or
07HGJ-0020100
(not available in
U.S.A.)

Peak voltage adaptor

with commercially available digital multimeter
(impedance 10 M Ω /DCV minimum)

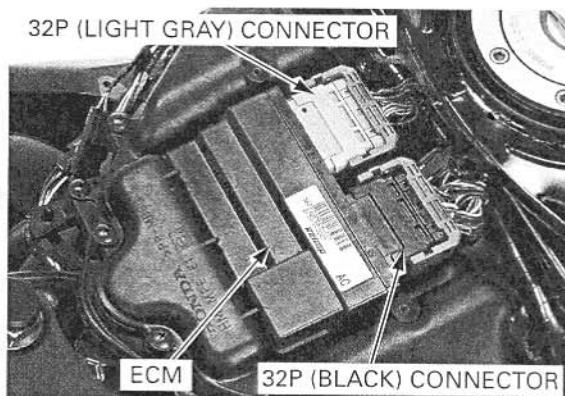


TEST HARNESS CONNECTION

Remove the following:

- Fuel tank cover (page 3-15)
- ECM cover (page 6-94)

Disconnect the ECM 32P (Black) and 32P (Light gray) connectors from the ECM.



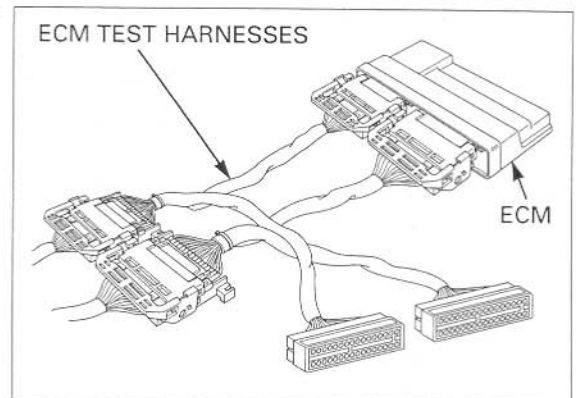
FUEL SYSTEM (Programmed Fuel Injection)

Connect the ECM test harnesses between the main wire harness and the ECM.

TOOLS:

ECM test harness

070MZ-0010200
(two required)

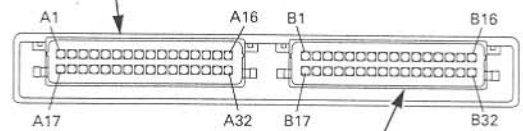


TEST HARNESS TERMINAL LAYOUT

The ECM connector terminals are numbered as shown.

VIEW FROM WIRE HARNESS SIDE:

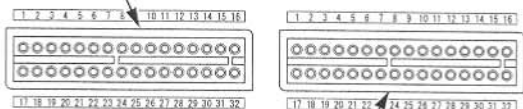
A: 32P (BLACK) CONNECTOR



B: 32P (LIGHT GRAY) CONNECTOR

The ECM test harness terminals are same layout as for the ECM connector terminals as shown.

FOR 32P (BLACK) CONNECTOR



FOR 32P (LIGHT GRAY) CONNECTOR

FUEL SYSTEM (Programmed Fuel Injection)

MIL CODE INDEX

- The PGM-FI MIL denotes the failure codes (the number of blinks from 0 to 49). When the indicator lights for 1.3 seconds, it is equivalent to ten blinks. For example, a 1.3 second illumination and two blinks (0.5 second x 2) of the indicator equals 12 blinks. Follow code 12 troubleshooting (page 6-24).
- When more than one failure occurs, the MIL shows the blinks in the order of lowest number to highest number. For example if the indicator blinks once, then two times, two failures have occurred. Follow codes 1 (page 6-15) and 2 (page 6-16) troubleshooting.

MIL	Function Failure	Causes	Symptoms	Refer to
No blinks	ECM malfunction	<ul style="list-style-type: none"> • Faulty ECM 	<ul style="list-style-type: none"> • Engine does not start 	6-94
No blinks	ECM power/ground circuits malfunction	<ul style="list-style-type: none"> • Open circuit at the power input wire of the ECM • Faulty bank angle sensor • Open circuit in bank angle sensor related circuit • Faulty engine stop relay • Open circuit in engine stop relay related wires • Faulty engine stop switch • Open circuit in engine stop switch related wires • Faulty ignition switch • Blown PGM-FI fuse (20 A) • Blown sub-fuse (10A) (Starter, Bank angle sensor) 	<ul style="list-style-type: none"> • Engine does not start 	6-94
No blinks	ECM output line malfunction	<ul style="list-style-type: none"> • ECM output voltage line (Yellow/red wire) short circuit 	<ul style="list-style-type: none"> • Engine does not start 	–
No blinks	MIL circuit malfunction	<ul style="list-style-type: none"> • Faulty ECM • Open or short circuit in MIL wire 	<ul style="list-style-type: none"> • Engine operates normally 	6-8
Stays lit	Data link circuit malfunction	<ul style="list-style-type: none"> • Short circuit in data link connector • Faulty ECM • Short circuit in data link connector wire 	<ul style="list-style-type: none"> • Engine operates normally 	–
1 Blink	MAP sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on MAP sensor connector • Open or short circuit in MAP sensor wire • Faulty MAP sensor 	<ul style="list-style-type: none"> • Engine operates normally 	6-15
2 Blinks	MAP sensor performance problem	<ul style="list-style-type: none"> • Loose or poor connection of the MAP sensor vacuum hose • Faulty MAP sensor 	<ul style="list-style-type: none"> • Engine operates normally 	6-16
7 Blinks	ECT sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on ECT sensor • Open or short circuit in ECT sensor wire • Faulty ECT sensor 	<ul style="list-style-type: none"> • Hard start at a low temperature (Simulate using numerical values; 90 °C/ 194 °F) 	6-17
8 Blinks	TP sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on TP sensor connector • Open or short circuit in TP sensor wire • Faulty TP sensor 	<ul style="list-style-type: none"> • Poor engine performance response and when operating the throttle quickly (Simulate using numerical values; Throttle opens 0°) 	6-19
9 Blinks	IAT sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on IAT sensor • Open or short circuit in IAT sensor wire • Faulty IAT sensor 	<ul style="list-style-type: none"> • Engine operates normally (Simulate using numerical values; 25 °C/ 77 °F) 	6-21
11 Blinks	Vehicle speed sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on vehicle speed sensor connector • Open or short circuit in vehicle speed sensor wire • Faulty vehicle speed sensor 	<ul style="list-style-type: none"> • Engine operates normally 	6-22

FUEL SYSTEM (Programmed Fuel Injection)

MIL	Function Failure	Causes	Symptoms	Refer to
12 Blinks	No.1 Primary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.1 Primary injector connector Open or short circuit in No.1 Primary injector wire Faulty No.1 Primary injector 	<ul style="list-style-type: none"> Engine does not start 	6-24
13 Blinks	No.2 Primary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.2 Primary injector connector Open or short circuit in No.2 Primary injector wire Faulty No.2 Primary injector 	<ul style="list-style-type: none"> Engine does not start 	6-25
14 Blinks	No.3 Primary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.3 Primary injector connector Open or short circuit in No.3 Primary injector wire Faulty No.3 Primary injector 	<ul style="list-style-type: none"> Engine does not start 	6-25
15 Blinks	No.4 Primary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.4 Primary injector connector Open or short circuit in No.4 Primary injector wire Faulty No.4 Primary injector 	<ul style="list-style-type: none"> Engine does not start 	6-25
16 Blinks	No.1 Secondary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.1 Secondary injector connector Open or short circuit in No.1 Secondary injector wire Faulty No.1 Secondary injector 	<ul style="list-style-type: none"> Engine does not start 	6-25
17 Blinks	No.2 Secondary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.2 Secondary injector connector Open or short circuit in No.2 Secondary injector wire Faulty No.2 Secondary injector 	<ul style="list-style-type: none"> Engine does not start 	6-25
18 Blinks	Cam pulse generator, no signal	<ul style="list-style-type: none"> Loose or poor contact on cam pulse generator Open or short circuit in cam pulse generator Faulty cam pulse generator 	<ul style="list-style-type: none"> Engine does not start 	6-26
19 Blinks	Ignition pulse generator, no signal	<ul style="list-style-type: none"> Loose or poor contact on ignition pulse generator Open or short circuit in ignition pulse generator Faulty ignition pulse generator 	<ul style="list-style-type: none"> Engine does not start 	6-27
21 Blinks	No.1 O ₂ sensor circuit malfunction (California type only)	<ul style="list-style-type: none"> Loose or poor contact on O₂ sensor connector Short circuit in O₂ sensor Faulty O₂ sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-28
22 Blinks	No.2 O ₂ sensor circuit malfunction (California type only)	<ul style="list-style-type: none"> Loose or poor contact on O₂ sensor connector Short circuit in O₂ sensor Faulty O₂ sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-29
23 Blinks	No.1 O ₂ sensor heater malfunction (California type only)	<ul style="list-style-type: none"> Loose or poor contact on O₂ sensor connector Open or short circuit in O₂ sensor heater Faulty O₂ sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-30
24 Blinks	No.2 O ₂ sensor heater malfunction (California type only)	<ul style="list-style-type: none"> Loose or poor contact on O₂ sensor connector Open or short circuit in O₂ sensor heater Faulty O₂ sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-31

FUEL SYSTEM (Programmed Fuel Injection)

MIL	Function Failure	Causes	Symptoms	Refer to
33 Blinks	E ² -PROM in ECM malfunction	<ul style="list-style-type: none"> Faulty ECM 	<ul style="list-style-type: none"> Engine operates normally Does not hold the self-diagnosis data 	6-32
48 Blinks	No.3 Secondary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.3 Secondary injector connector Open or short circuit in No.3 Secondary injector wire Faulty No.3 Secondary injector 	<ul style="list-style-type: none"> Engine does not start 	6-25
49 Blinks	No.4 Secondary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.4 Secondary injector connector Open or short circuit in No.4 Secondary injector wire Faulty No.4 Secondary injector 	<ul style="list-style-type: none"> Engine does not start 	6-25

MIL TROUBLESHOOTING

MIL 1 BLINK (MAP SENSOR)

- Before starting the inspection, check for loose or poor contact on the MAP sensor connector and recheck the MIL blinking.

1. MAP Sensor Output Voltage Inspection

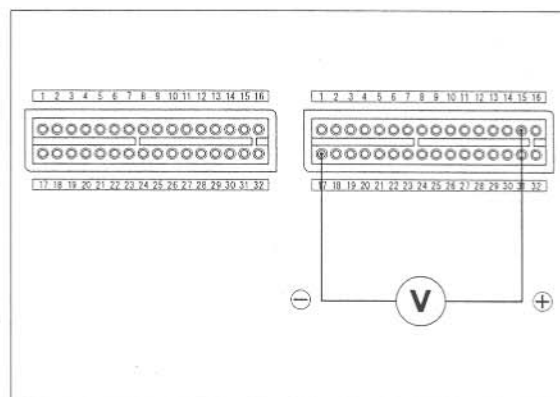
Turn the ignition switch OFF.
Connect the ECM test harness to ECM connectors (page 6-10).

Turn the ignition switch ON and engine stop switch "Q".

Measure the voltage at the test harness terminals.

Is the voltage within 2.7 – 3.1V?

- YES** –
- Intermittent failure
 - Loose or poor contact on the ECM connectors
- NO** –
- About 5 V
GO TO STEP 2.
 - About 0 V
GO TO STEP 3.



2. MAP Sensor Output Line Inspection

Turn the ignition switch OFF.
Disconnect the MAP sensor 3P connector.

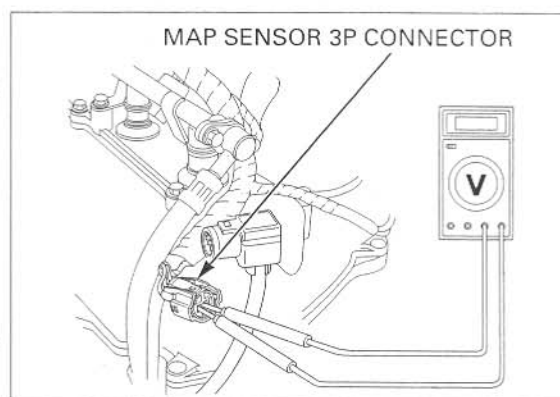
Turn the ignition switch ON and engine stop switch "Q".

Measure the voltage at the wire harness side.

Connection: Light green/yellow (+) – Green/orange (–)

Is the voltage within 4.75 – 5.25V?

- YES** – Faulty MAP sensor
- NO** –
- Open circuit in Light green/yellow wire
 - Open circuit in Green/orange wire



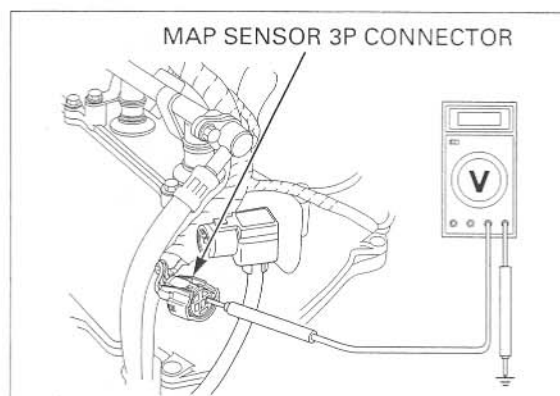
3. MAP Sensor Input Voltage Inspection

Measure the voltage at the wire harness side.

Connection: Yellow/red (+) – Ground (–)

Is the voltage within 4.75 – 5.25V?

- YES** – GO TO STEP 4.
- NO** – GO TO STEP 5.



FUEL SYSTEM (Programmed Fuel Injection)

4. MAP Sensor Output Line Short Circuit Inspection

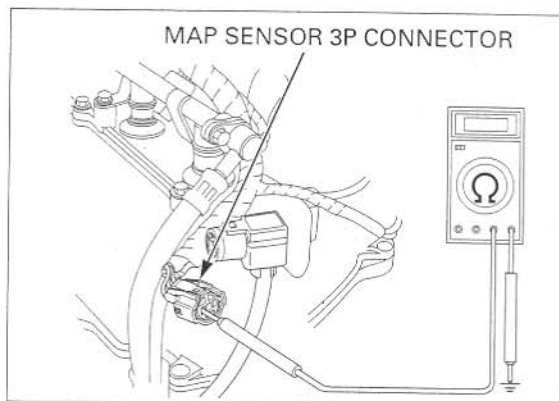
Check for continuity between the MAP sensor 3P connector terminal of the wire harness side and ground.

Connection: Light green/yellow – Ground

Is there continuity?

YES – Short circuit in Light green/yellow/yellow wire

NO – Faulty MAP sensor



5. MAP Sensor Input Line Inspection

Turn the ignition switch OFF.
Disconnect the ECM 32P connectors.

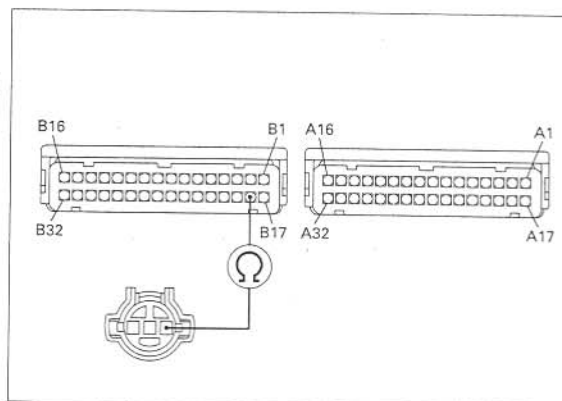
Check for continuity at the Yellow/red wire between the MAP sensor 3P connector terminal and the ECM 32P (Light gray) connector.

Connection: B18 – Yellow/red

Is there continuity?

YES – Replace the ECM with a known good one, and recheck.

NO – Open circuit in Yellow/red wire



MIL 2 BLINKS (MAP SENSOR)

- Before starting the inspection, check for loose or poor contact on the MAP sensor connector and recheck the MIL blinking.

1. MAP Sensor Hose Inspection

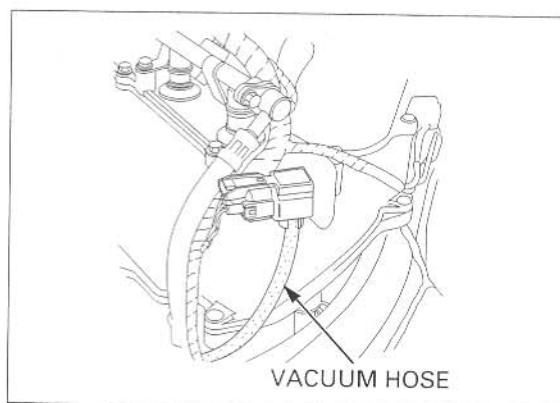
Turn the ignition switch OFF

Check for connection and installation of the MAP sensor vacuum hose.

Is the MAP sensor hose connection correct?

YES – GO TO STEP 2.

NO – Correct the hose connection or installation



FUEL SYSTEM (Programmed Fuel Injection)

2. MAP Sensor Output Voltage Inspection

Connect the ECM test harness to ECM connectors (page 6-10).

Turn the ignition switch ON and engine stop switch "Q".

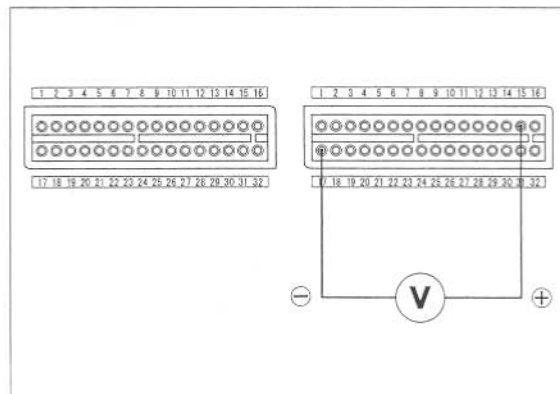
Measure the voltage at the test harness terminals.

Connection: B15 (+) -B17 (-)

Is the voltage within 2.7 – 3.1 V?

YES – GO TO STEP 3.

NO – Faulty MAP sensor



3. MAP Sensor Output Voltage Inspection At Idle

Start the engine.

Measure the voltage at the test harness terminals.

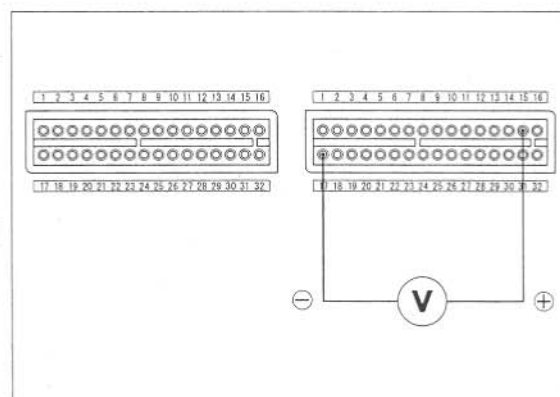
Connection: B15 (+) -B17 (-)

Standard: 2.7 V maximum

Is the voltage less than 2.7 V?

YES – Replace the ECM with a known good one, and recheck

NO – Faulty MAP sensor



MIL 7 BLINKS (ECT SENSOR)

- Before starting the inspection, check for loose or poor contact on the ECT sensor connector and recheck the MIL blinking.

1. ECT Sensor Output Voltage Inspection

Turn the ignition switch OFF.

Connect ECM the test harness to ECM connectors (page 6-10).

Turn the ignition switch ON and engine stop switch "Q".

Measure the voltage at the ECM test harness terminals.

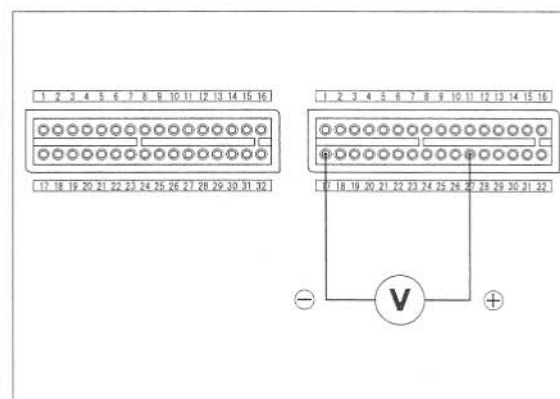
Connection: B27 (+) -B17 (-)

Standard: 2.7 – 3.1 V (20°C/68°F)

Is the voltage within 2.7 – 3.1 V?

YES – • Intermittent failure
• Loose or poor contact on the ECM connectors

NO – GO TO STEP 2.



FUEL SYSTEM (Programmed Fuel Injection)

2. ECT Sensor Input Voltage Inspection

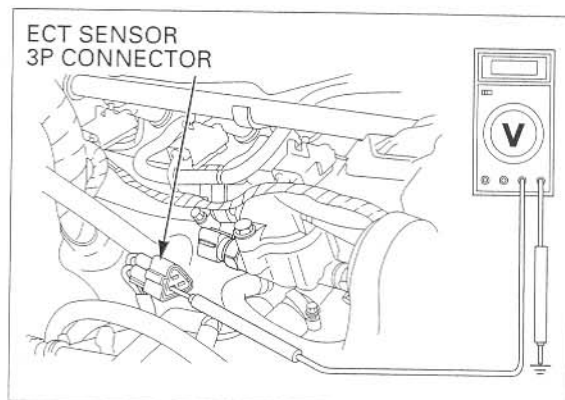
Turn the ignition switch OFF.
Disconnect the ECT sensor 3P connector.
Turn the ignition switch ON and engine stop switch "Q".
Measure the voltage at the wire harness side of ECT sensor connector.

Connection: Pink (+) – Ground (–)

Is the voltage within 4.75 – 5.25V?

YES – Inspect the ECT sensor (page 20-16)

NO – GO TO STEP 3.



3. ECT Sensor Resistance Inspection

Turn the ignition switch OFF.
Disconnect the ECT sensor connector.
Measure the resistance at the ECT sensor terminals.

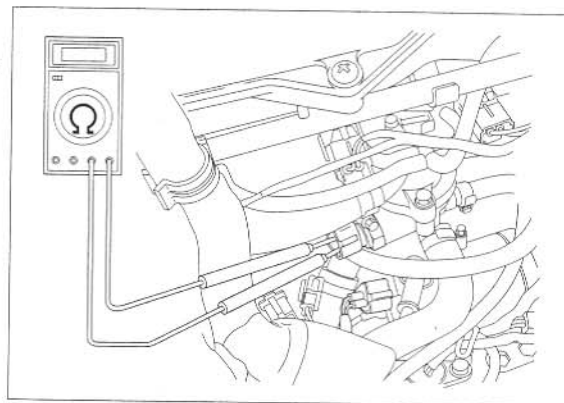
Connection: Pink (+) – Green/orange (–) (sensor side terminals)

Standard: 2.3 – 2.6 Ω (20 °C/68 °F)

Is the resistance within 2.3 – 2.6 Ω 20 °C/68 °F?

NO – Faulty ECT sensor.

YES – GO TO STEP 4.



4. ECT Sensor Open Circuit Inspection

Turn the ignition switch OFF.
Check for continuity at the Pink and Green/orange wires between the ECT sensor 3P connector terminal and the ECM 32P (Light gray) connector terminal.

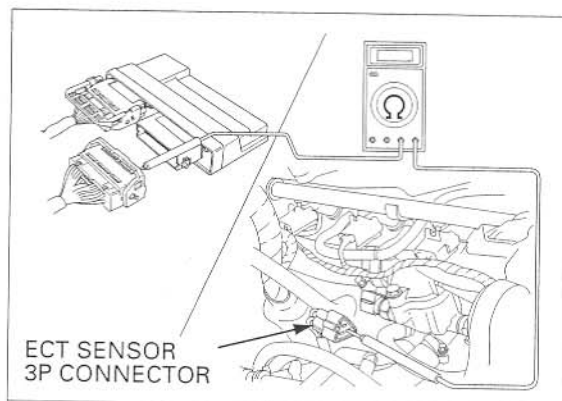
Connection: B17 – Pink

B27 – Green/orange

Is there continuity?

YES – GO TO STEP 5.

NO – • Open circuit in Pink or Pink/white wire
• Open circuit in Green/orange wire



5. ECT Sensor Output Line Short Circuit Inspection

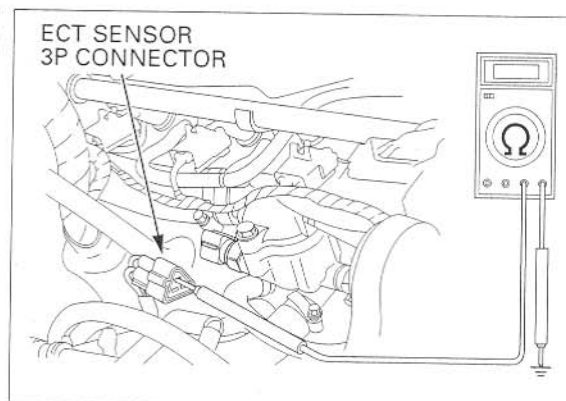
Check for continuity between the ECT sensor 3P connector terminal of the wire harness side and ground.

Connection: Pink – Ground

Is there continuity?

YES – Short circuit in Pink wire

NO – Replace the ECM with a known good one, and recheck.



MIL 8 BLINKS (TP SENSOR)

- Before starting the inspection, check for loose or poor contact on the TP sensor connector and recheck the MIL blinking.

1. TP Sensor Output Voltage Inspection

Turn the ignition switch OFF.

Connect the ECM test harness to ECM connectors (page 6-10).

Turn the ignition switch ON and engine stop switch "Q".

Measure the TP sensor output voltage at the test harness terminals.

Connection: B14 (+) – B17 (–)

Standard: *0.4 – 0.6 V (throttle fully closed)

*4.2 – 4.8 V (throttle fully opened)

NOTE:

- A voltage marked * refers to the value of the ECM output voltage (STEP 1) when the voltage reading shows 5 V.

When the ECM output voltage reading shows other than 5 V, derive the TP sensor output voltage at the test harness as follows:

In the case of the ECM output voltage is 4.75 V:

$$0.4 \times 4.75 / 5.0 = 0.38 \text{ V}$$

$$0.6 \times 4.75 / 5.0 = 0.57 \text{ V}$$

Thus, the solution is "0.38 – 0.57 V" with the throttle fully closed.

Replace 0.4 and 0.6 with 4.2 and 4.8 respectively, in the above equations to determine the throttle fully opened range.

Is there standard voltage?

- YES** –
- Intermittent failure
 - Loose or poor contact on the ECM connectors

NO – GO TO STEP 2.

2. TP Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the TP sensor 3P connector.

Turn the ignition switch ON and engine stop switch "Q".

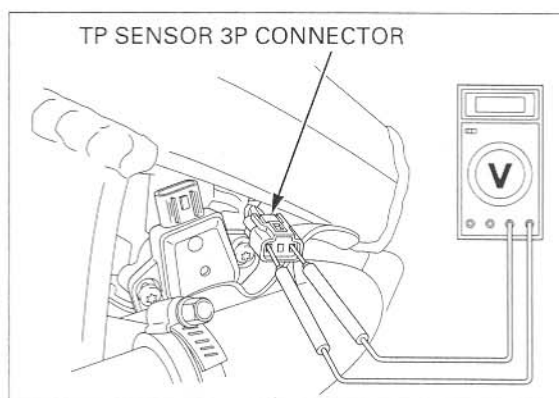
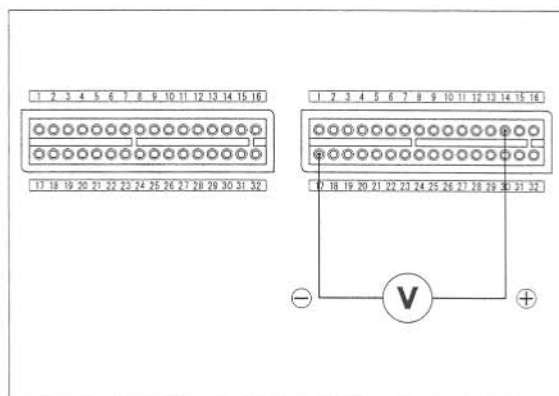
Measure the voltage at the wire harness side.

Connection: Yellow/red (+) – Green/orange (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



FUEL SYSTEM (Programmed Fuel Injection)

3. ECM Output Voltage Inspection

Turn the ignition switch OFF.
Connect the ECM test harness to ECM connectors (page 6-10).

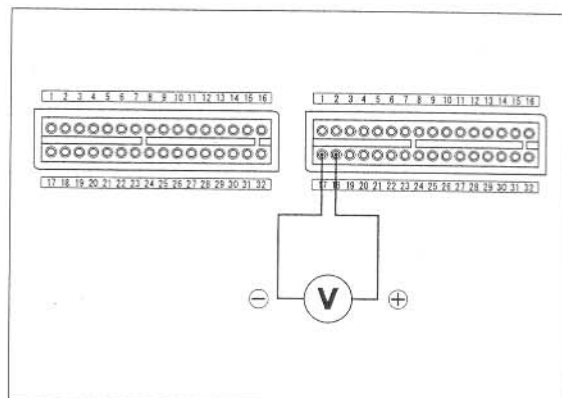
Turn the ignition switch ON and engine stop switch "○".
Measure the voltage at the test harness terminals.

Connection: B18 (+) -B17 (-)

Is the voltage within 4.75 – 5.25V?

YES – • Open circuit in Yellow/red wire
• Open circuit in Green/orange wire

NO – Replace the ECM with a known good one, and recheck.



4. TP Sensor Output Line Inspection

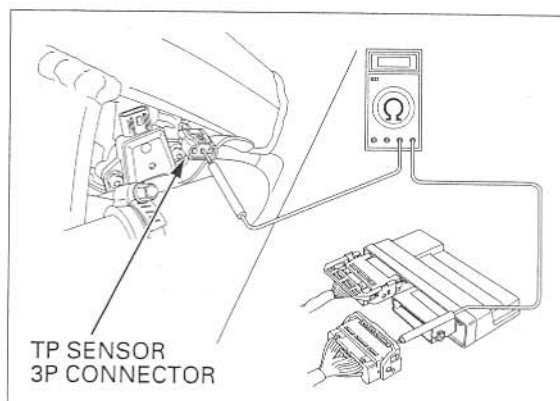
Check for continuity between the TP sensor 3P connector terminal of the wire harness side and ECM 32P (Light gray) connector.

Connection: Red/yellow – B14

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Red/yellow wire



5. TP Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

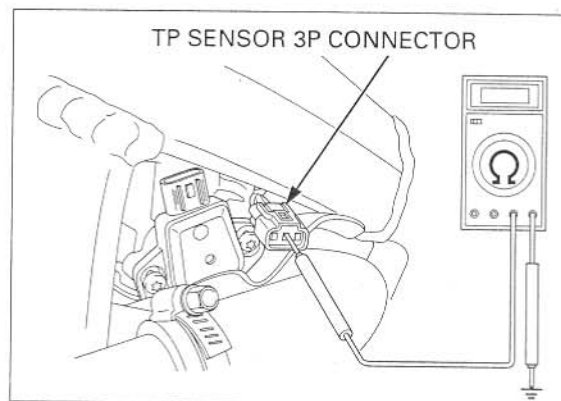
Check for continuity between the TP sensor 3P connector terminal of the wire harness side and ground.

Connection: Red/yellow (+) – Ground (-)

Is there continuity?

YES – Short circuit in Red/yellow wire

NO – Faulty TP sensor



MIL 9 BLINKS (IAT SENSOR)

- Before starting the inspection, check for loose or poor contact on the IAT sensor connector and recheck the MIL blinking.

1. IAT Sensor Output Voltage Inspection

Turn the ignition switch OFF.
Connect the ECM test harness to ECM connectors (page 6-10).

Turn the ignition switch ON and engine stop switch "O".
Measure the voltage at the test harness terminals.

Connection: B30 (+) - B17 (-)

Standard: 2.7 - 3.1 V (20°C/68°F)

Is the voltage within 2.7 - 3.1 V?

YES -

- Intermittent failure
- Loose or poor contact on the ECM connectors

NO - GO TO STEP 2.

2. IAT Sensor Input Voltage Inspection

Turn the ignition switch OFF.
Disconnect the IAT sensor 2P connector.

Turn the ignition switch ON and engine stop switch "O".
Measure the voltage at the wire harness side of IAT sensor connector.

Connection: Gray/blue - Green/orange

Is the voltage within 4.75 - 5.25V?

YES - GO TO STEP 3.

NO - GO TO STEP 4.

3. IAT Sensor Resistance Inspection

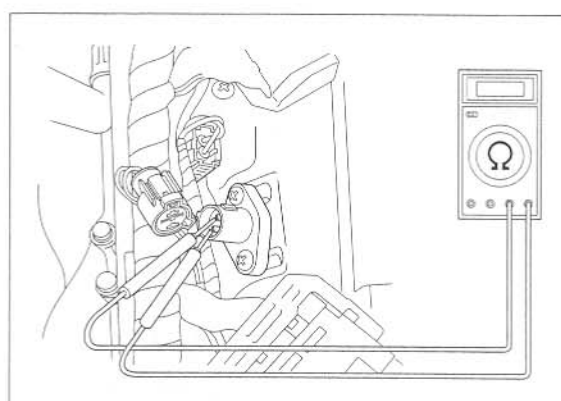
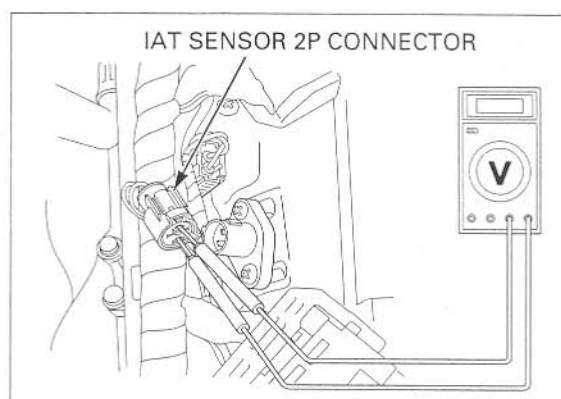
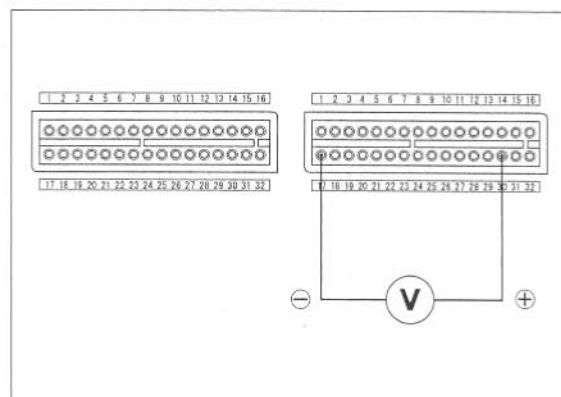
Turn the ignition switch OFF.
Disconnect the IAT sensor 2P connector.
Measure the resistance at the IAT sensor terminals (at 20 - 30 °C/68 - 86 °F).

Standard: 1 - 4 kΩ (20 - 30 °C/68 - 86 °F)

Is the resistance within 1 - 4 kΩ?

NO - Faulty IAT sensor

YES - GO TO STEP 4.



FUEL SYSTEM (Programmed Fuel Injection)

4. IAT Sensor Open Circuit Inspection

Turn the ignition switch OFF.

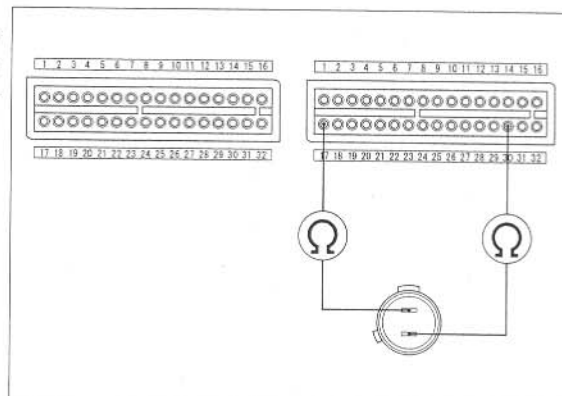
Check for continuity at the Gray/blue and Green/orange wires between the IAT sensor 2P connector terminal and the ECM 32P (Light gray) connector.

Are there continuity?

YES – GO TO STEP 5.

NO –

- Open circuit in Gray/blue wire
- Open circuit in Green/orange wire



5. IAT Sensor Output Line Short Circuit Inspection

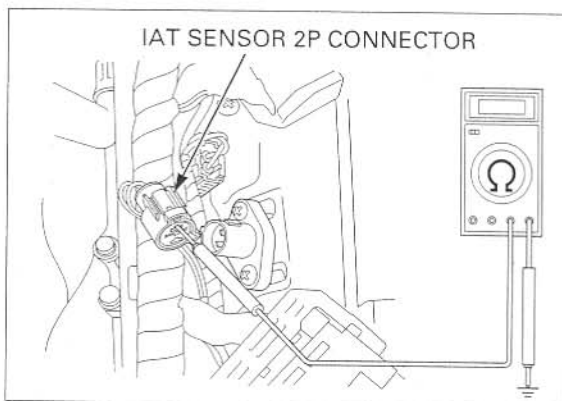
Check for continuity between the IAT sensor 2P connector terminal of the wire harness side and ground.

Connection: Gray/blue – Ground

Is there continuity?

YES – Short circuit in Gray/blue wire

NO – Replace the ECM with a known good one and recheck.



MIL 11 BLINKS (VEHICLE SPEED SENSOR)

- Before starting the inspection, check for loose or poor contact on the vehicle speed sensor connector and recheck the MIL blinking.

1. Vehicle Speed Sensor Pulse Inspection

Turn the ignition switch OFF.

Connect the ECM test harness to the ECM connectors (page 6-10).

Support the motorcycle securely and place the rear wheel off the ground.

Shift the transmission into gear.

Measure the voltage at the test harness terminals with the ignition switch ON and engine stop switch "Q" while slowly turning the rear wheel by hand.

Connection: B25 (+) – A4 (–)

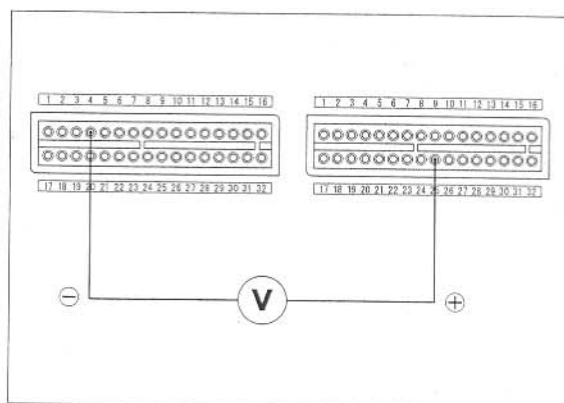
Standard: Repeat 0 to 5 V

Is there standard voltage?

YES –

- Intermittent failure
- Loose or poor contact on the ECM connectors

NO – GO TO STEP 2.



FUEL SYSTEM (Programmed Fuel Injection)

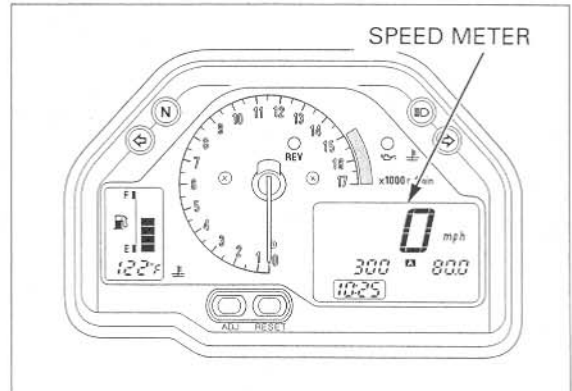
2. Combination Meter Inspection

Check for operation of speed meter.

Does the speed meter operate normally?

YES – Open or short circuit in the Pink/green wire

NO – GO TO STEP 3.



3. Vehicle Speed Sensor Input Voltage Inspection

Turn the ignition switch OFF.
Disconnect the vehicle speed sensor 3P connector.

Turn the ignition switch ON and engine stop switch "Q".

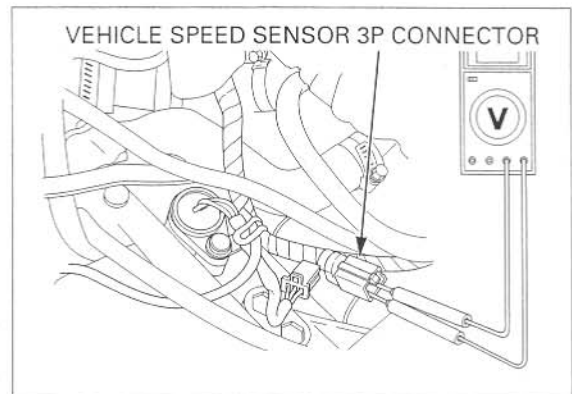
Measure the voltage at the wire harness side.

Connection: Black (+) – Green (-)

Is there battery voltage?

YES – GO TO STEP 4.

NO – • Open circuit in the Black or Black/brown wire
• Open circuit in the Green or Green/black wire



4. Vehicle Speed Sensor Signal Line Short Circuit Inspection

Turn the ignition switch OFF.

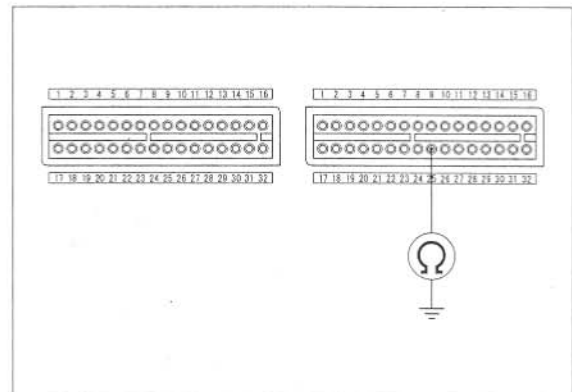
Check for continuity between the test harness and the ground.

Connection: B25 – Ground

Is there continuity?

YES – Short circuit in the Pink or Pink/green wire

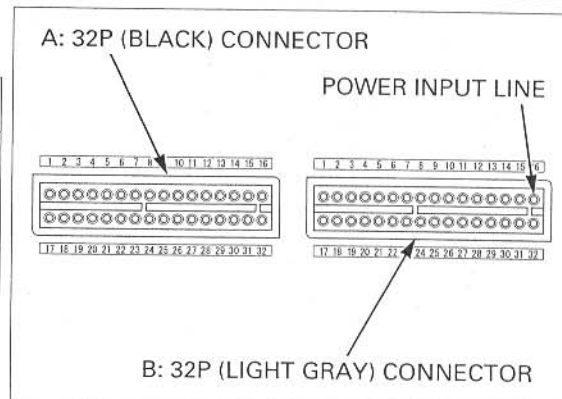
NO – Inspect the vehicle speed sensor (page 20-13)



FUEL SYSTEM (Programmed Fuel Injection)

MIL 12 BLINKS (No.1 PRIMARY INJECTOR)

MIL	INJECTOR	POWER INPUT LINE	SIGNAL LINE	SIGNAL AT ECM
12	No.1 Primary	Black/white	Pink/yellow	A11
13	No.2 Primary	Black/white	Pink/blue	A12
14	No.3 Primary	Black/white	Pink/green	A13
15	No.4 Primary	Black/white	Pink/black	A14
16	No.1 Secondary	Black/white	Pink/yellow	B1
17	No.2 Secondary	Black/white	Pink/blue	B2
48	No.3 Secondary	Black/white	Pink/green	B3
49	No.4 Secondary	Black/white	Pink/black	B4



1. Injector Circuit Resistance Inspection

Turn the ignition switch OFF.

Connect the ECM test harness to the ECM connectors (page 6-10).

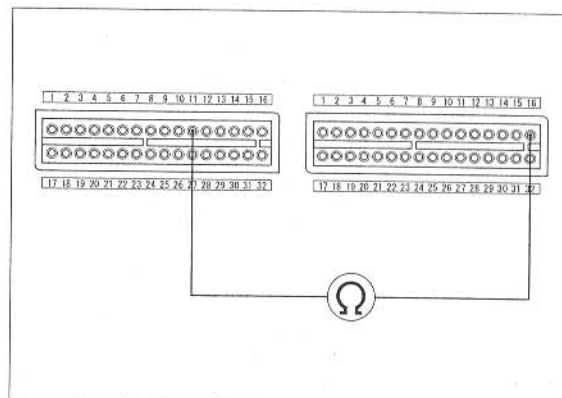
Measure the resistance at the test harness terminals.

Connection: POWER INPUT LINE – SIGNAL AT ECM

Is there continuity?

YES – GO TO STEP 4.

NO – GO TO STEP 2.



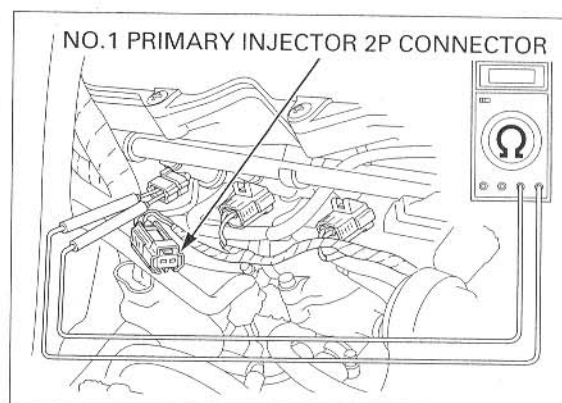
2. Injector Resistance Inspection

Disconnect the No.1 primary injector 2P connector and measure the resistance of the No.1 primary injector 2P connector terminals.

Is the resistance within 11.1 – 12.3 Ω (20°C/68°F)?

YES – GO TO STEP 3.

NO – Faulty injector



FUEL SYSTEM (Programmed Fuel Injection)

3. Injector Input Voltage Inspection

Turn the ignition switch ON and engine stop switch " \odot ".

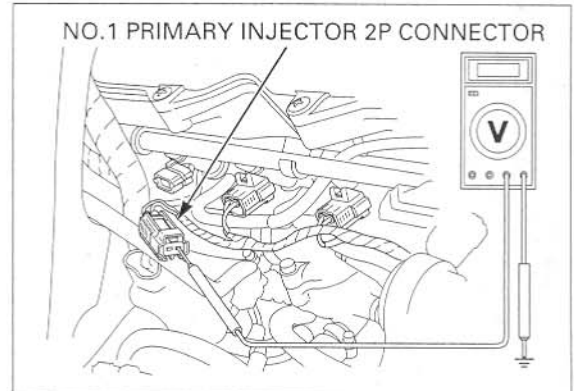
Measure the voltage between the No. 1 primary injector connector of the wire harness side and ground.

Connection: POWER INPUT LINE (+) – Ground (–)

Is there battery voltage?

YES – Open circuit in SIGNAL LINE wire

NO – Open circuit in POWER INPUT LINE wire



4. Injector Signal Line Short Circuit Inspection

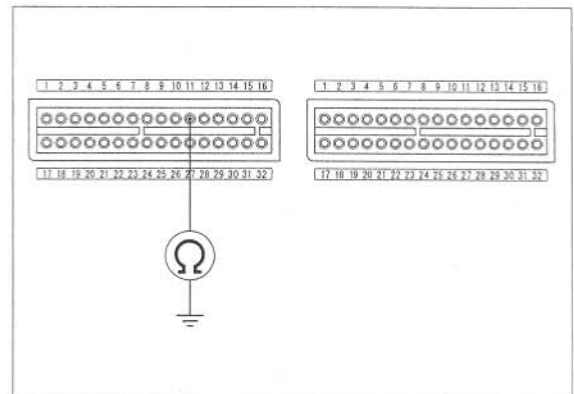
Check for continuity between the test harness terminals and ground.

Connection: SIGNAL AT ECM – Ground

Is there continuity?

YES – • Short circuit in the SIGNAL LINE wire
• Faulty injector

NO – Replace the ECM with a known good one, and recheck



MIL 13 BLINKS (No.2 PRIMARY INJECTOR)

(page 6-24)

MIL 14 BLINKS (No.3 PRIMARY INJECTOR)

(page 6-24)

MIL 15 BLINKS (No.4 PRIMARY INJECTOR)

(page 6-24)

MIL 16 BLINKS (No.1 SECONDARY INJECTOR)

(page 6-24)

MIL 17 BLINKS (No.2 SECONDARY INJECTOR)

(page 6-24)

MIL 48 BLINKS (No.3 SECONDARY INJECTOR)

(page 6-24)

MIL 49 BLINKS (No.4 SECONDARY INJECTOR)

(page 6-24)

FUEL SYSTEM (Programmed Fuel Injection)

MIL 18 BLINKS (CAM PULSE GENERATOR)

- Before starting the inspection, check for loose or poor contact on the cam pulse generator connector and recheck the MIL blinking.

1. Cam Pulse Generator Peak Voltage Inspection at ECM

Turn the ignition switch OFF.

Connect the ECM test harness to the ECM connectors (page 6-10).

Turn the ignition switch ON and engine stop switch "Q".

Crank the engine with the starter motor, and measure the cam pulse generator peak voltage at the test harness terminals.

Connection: B10 (+) – A31 (–)

Is the voltage more than 0.7 V (20 °C/68 °F)?

- YES** –
- Intermittent failure
 - Loose or poor contact on the ECM connectors

NO – GO TO STEP 2.

2. Cam Pulse Generator Peak Voltage Inspection

Turn the ignition switch OFF.

Disconnect the cam pulse generator 2P connector.

Turn the ignition switch ON and engine stop switch "Q".

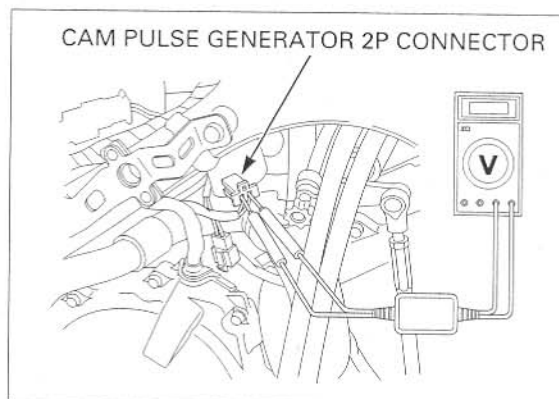
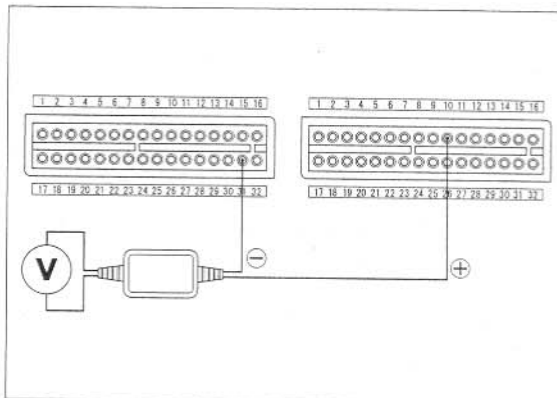
Crank the engine with the starter motor, and measure the cam pulse generator peak voltage at the cam pulse generator 2P connector.

Connection: Gray (+) – White/yellow (–)

Is the voltage more than 0.7 V (20 °C/68 °F)?

- YES** –
- Open or short circuit in the Green/orange wire or Gray wire

NO – Faulty cam pulse generator



MIL 19 BLINKS (IGNITION PULSE GENERATOR)

- Before starting the inspection, check for loose or poor contact on the ignition pulse generator connector and recheck the MIL blinking.

1. Ignition Pulse Generator Peak Voltage Inspection at ECM

Turn the ignition switch OFF.

Connect the ECM test harness to the ECM connectors (page 6-10).

Turn the ignition switch ON and engine stop switch "Q".

Crank the engine with the starter motor, and measure the ignition pulse generator peak voltage at the test harness terminals.

Connection: B9 (+) – A31 (–)

Is the voltage more than 0.7 V (20 °C/68 °F)?

- YES** –
- Intermittent failure
 - Loose or poor contact on the ECM connectors

NO – GO TO STEP 2.

2. Ignition Pulse Generator Peak Voltage Inspection

Turn the ignition switch OFF.

Lift and support the fuel tank (page 6-61).

Disconnect the ignition pulse generator 2P (Red) connector.

Turn the ignition switch ON and engine stop switch "Q".

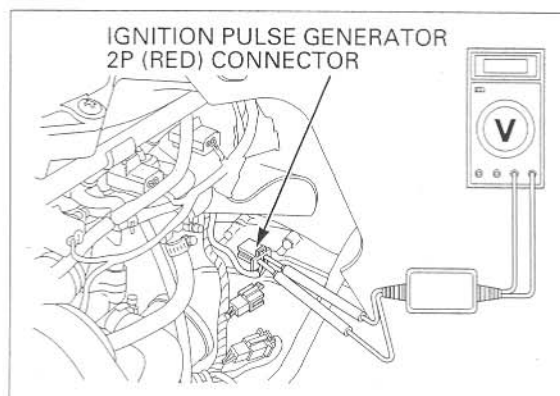
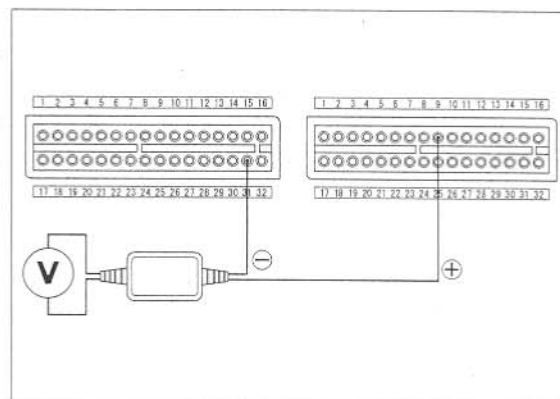
Crank the engine with the starter motor, and measure the ignition pulse generator peak voltage at the ignition pulse generator 2P (Red) connector.

Connection: Yellow (+) – Yellow/white (–)

Is the voltage more than 0.7 V (20 °C/68 °F)?

- YES** –
- Open or short circuit in the Yellow, Green/orange or Yellow/white wire

NO – Faulty ignition pulse generator

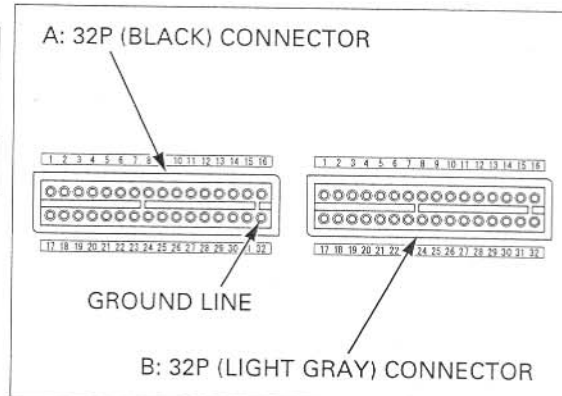


FUEL SYSTEM (Programmed Fuel Injection)

MIL 21 BLINKS (No.1 O₂ SENSOR): California type only

- Before starting the inspection, check for loose or poor contact on the O₂ sensor connector and recheck the MIL blinking.

MIL	O ₂ SEN- SOR	GROUND LINE	SIGNAL LINE	SIGNAL AT ECM
21	No.1 O ₂ Sensor	Green/ orange	Black/red	B13
22	No.2 O ₂ Sensor	Green/ orange	Black/ orange	B28



1. O₂ Sensor Output Voltage Inspection

Turn the ignition switch OFF.
Connect the ECM test harness to the ECM connectors (page 6-10).

Turn the ignition switch ON and engine stop switch "⏏".
Warm the engine until the coolant temperature is 80 °C (176 °F).

Check the voltage at the test harness terminal.

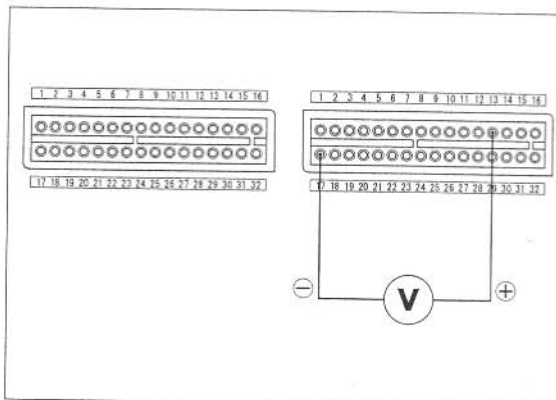
Connection: SIGNAL AT ECM (+) – B17 (–)

Standard: 0.1 – 0.3 V

Is the voltage as specified?

YES – Check the fuel pressure (page 6-56). If the system is correct, GO TO STEP 4.

NO – GO TO STEP 2.



2. O₂ Sensor Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the O₂ sensor 4P connector.

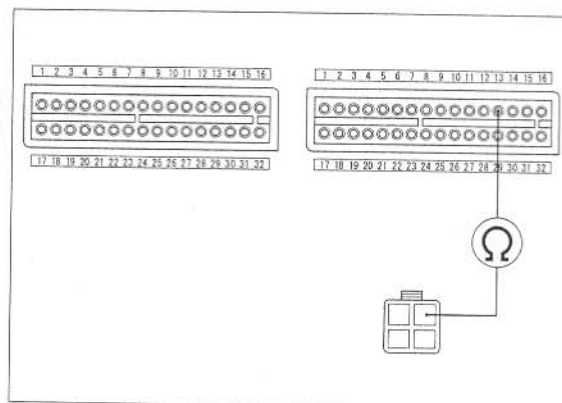
Check the continuity between the test harness connector terminals and the O₂ sensor 4P connector.

Connection: SIGNAL LINE – SIGNAL AT ECM

Is there continuity?

YES – GO TO STEP 3.

NO – Open circuit in the SIGNAL wire



FUEL SYSTEM (Programmed Fuel Injection)

3. O₂ Sensor Short Circuit Inspection

Connect the O₂ Sensor 4P connector.

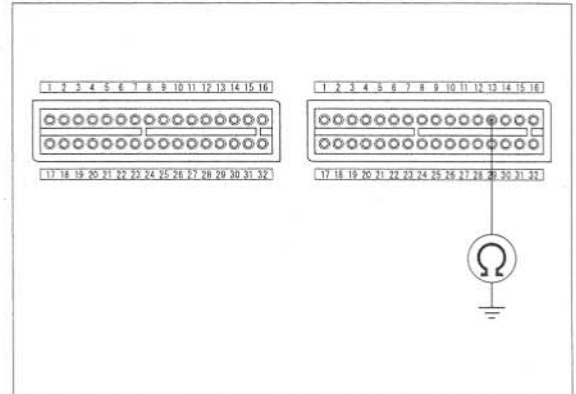
Check the continuity between the ECM connector terminal and ground.

Connection: SIGNAL AT ECM – Ground

Is there continuity?

YES – Short circuit in the SIGNAL wire

NO – GO TO STEP 4.



4. O₂ Sensor Inspection

Replace the O₂ sensor with a known good one (page 6-99).

Reset the ECM (page 6-9).

Turn the ignition switch ON and engine stop switch "Q".

Warm the engine until the coolant temperature is 80 °C (176 °C).

Check the voltage at the test harness terminal.

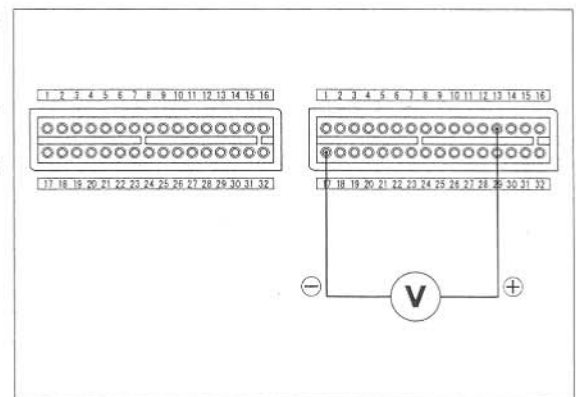
Connection: SIGNAL AT ECM (+) – B17 (-)

Standard: 0.1 – 0.3 V

Is the voltage as specified?

YES – Faulty O₂ sensor

NO – Check the fuel supply system (page 2-2).



MIL 22 BLINKS (No.2 O₂ SENSOR): California type only

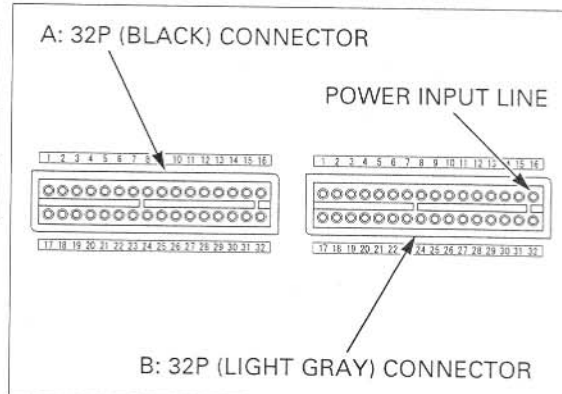
(page 6-28)

FUEL SYSTEM (Programmed Fuel Injection)

MIL 23 BLINKS (No. 1 O₂ SENSOR HEATER): California type only

- Before starting the inspection, check for loose or poor contact on the O₂ sensor connector and recheck the MIL blinking.

MIL	O ₂ Sensor	POWER INPUT LINE	SIGNAL LINE	SIGNAL AT ECM
23	No.1 O ₂ Sensor	Black/white	White	A10
24	No.2 O ₂ Sensor	Black/white	White	A9



1. O₂ Sensor Heater Resistance Inspection

Turn the ignition switch OFF.

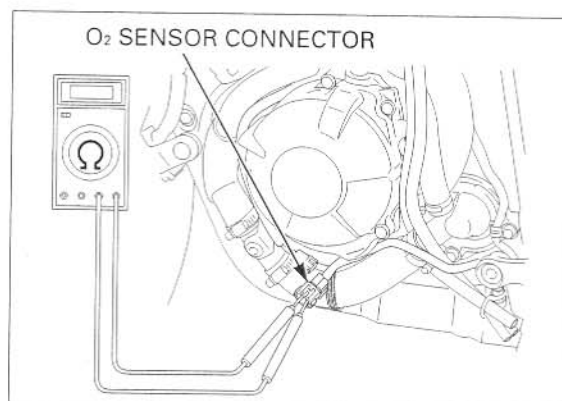
Disconnect the O₂ sensor connector and measure the resistance at the sensor side connector white wire terminal and Green/orange terminal.

Connection: White – Green/orange

Is the resistance within 10 – 40 Ω (20°C/68°F)?

YES – GO TO STEP 2.

NO – Faulty O₂ sensor



2. O₂ Sensor Heater Open circuit Inspection

Connect the O₂ sensor connector.

Measure the resistance at the test harness terminals.

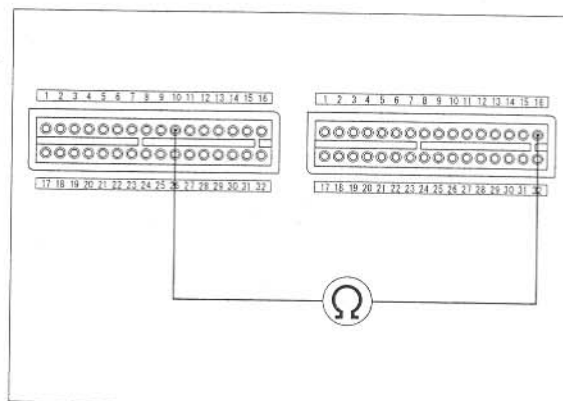
Connection: POWER INPUT LINE – SIGNAL AT ECM

Is the resistance within 10 – 40 Ω (20°C/68°F)?

YES – GO TO STEP 3.

NO –

- Open circuit in the Black/white wire
- Open circuit in the SIGNAL LINE wire



FUEL SYSTEM (Programmed Fuel Injection)

3. O₂ Sensor Heater Short Circuit Inspection 1

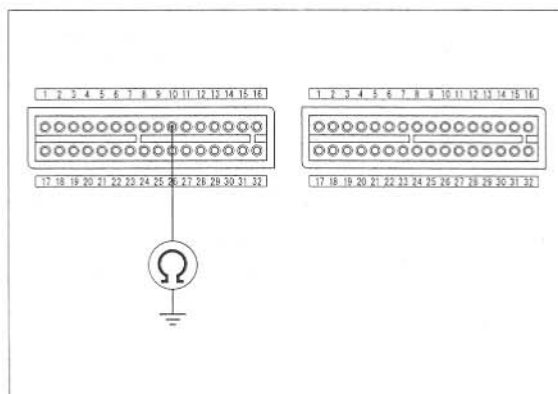
Disconnect the O₂ sensor connector.
Check for continuity between the SIGNAL LINE wire terminal at test harness and ground.

Connection: SIGNAL AT ECM – Ground

Is there continuity?

YES – Short circuit in the SIGNAL LINE wire

NO – GO TO STEP 4.



4. O₂ Sensor Heater Short Circuit Inspection 2

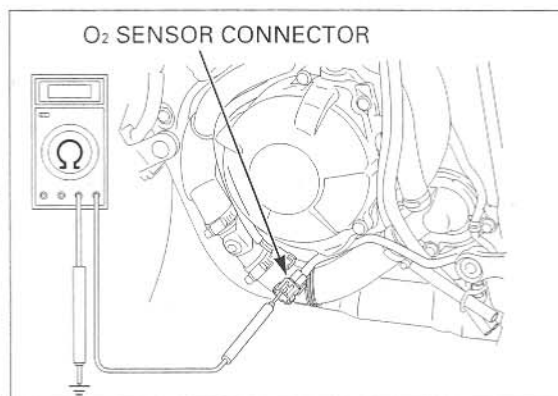
Check for continuity between the O₂ sensor connector terminals and ground.

Connection: White – Ground

Is there continuity?

YES – Faulty O₂ sensor

NO – Replace the ECM with a known good one, and recheck.



**MIL 24 BLINKS (No.2 O₂ SENSOR):
California type only**

(page 6-30)

FUEL SYSTEM (Programmed Fuel Injection)

MIL 33 BLINKS (E²-PROM)

1. Recheck MIL Blinks 1

Reset the self-diagnosis memory data (page 6-9).
Turn the ignition switch ON and engine stop switch "Q".
Check that the MIL blinks.

Does the MIL blink 33 times?

YES – Replace the ECM with a known good one, and recheck.

NO – GO TO STEP 2.

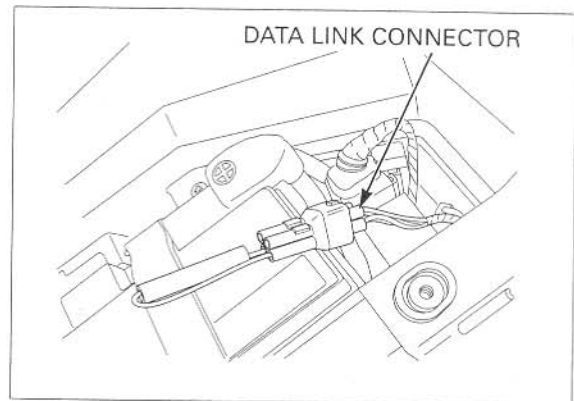
2. Recheck MIL Blinks 2

Turn the ignition switch OFF.
Short the data link connector with the SCS service connector (070PZ-ZY30100).
Turn the ignition switch ON and engine stop switch "Q".
Check that the MIL blinks.

Does the MIL blink 33 times?

YES – GO TO STEP 3.

NO – Intermittent failure



3. Recheck MIL Blinks 3

Reset the self-diagnosis memory data (page 6-9).
Turn the ignition switch ON and engine stop switch "Q".
Check that the MIL blinks.

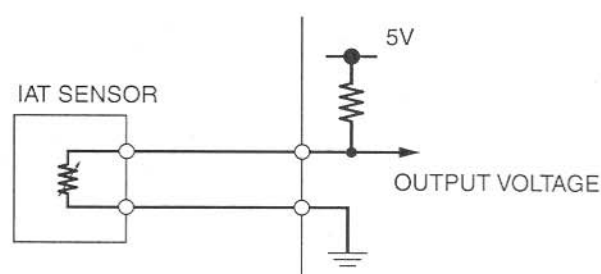
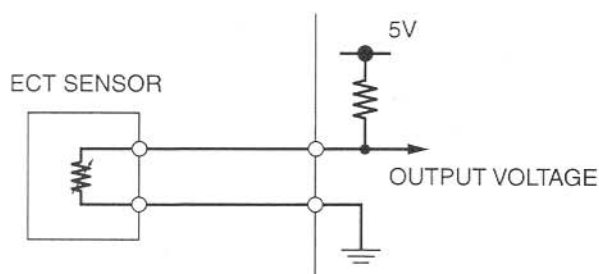
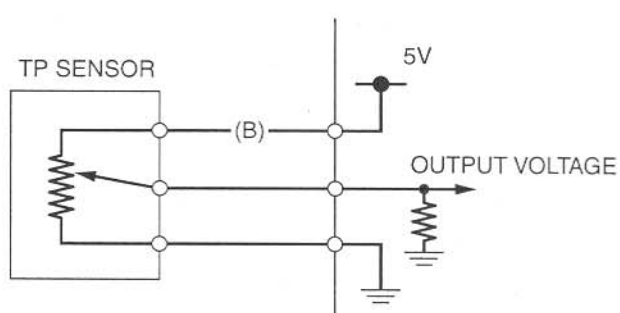
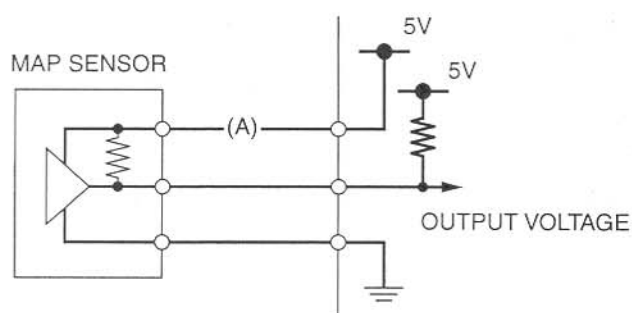
Does the MIL blink 33 times?

YES – Replace the ECM with a known good one, and recheck.

NO – Intermittent failure

DTC CODE INDEX

- The Diagnostic Trouble Codes (DTC) are based upon Malfunction Indicator Lamp (MIL) codes and are displayed as hyphenated numbers. The digits in front of the hyphen are equal to an MIL code and indicate the Function Failure. The digit behind the hyphen details the symptom. For example, in the case of the TP sensor, the ECM stores two levels of information, a function failure and a detail of the symptom:
(08 - 1) = TP sensor voltage - *lower* than the specified value
or
(08 - 2) = TP sensor voltage - *higher* than the specified value.
- The MAP, ECT, TP and IAT sensor diagnoses will be made according to the voltage output of the affected sensor. If a failure occurs, the ECM determines the Function Failure, compares the sensor voltage output to the standard value, and then outputs the corresponding DTC to the HDS Pocket Tester
For example:
 - If the input voltage line (A) on the MAP sensor is opened, the ECM detects the output voltage is about 5 V, then the DTC 1-2 (MAP sensor circuit high voltage) will be displayed.
 - If the input voltage line (B) on the TP sensor is opened, the ECM detects the output voltage is 0 V, then the DTC 8-1 (TP sensor circuit low voltage) will be displayed.



FUEL SYSTEM (Programmed Fuel Injection)

DTC	Function Failure	Causes	Symptoms	Refer to
–	ECM malfunction	<ul style="list-style-type: none"> Faulty ECM 	<ul style="list-style-type: none"> Engine does not start MIL does not blink 	6-94
–	ECM power input circuit malfunction	<ul style="list-style-type: none"> Open circuit at the power input wire of the ECM Faulty bank angle sensor Open circuit in bank angle sensor related circuit Faulty engine stop relay Open circuit in engine stop relay related wires Faulty engine stop switch Open circuit in engine stop switch related wires Faulty ignition switch Blown PGM-FI fuse (20 A) Blown sub-fuse (10 A) (Starter, Bank angle sensor) 	<ul style="list-style-type: none"> Engine does not start MIL does not blink 	6-94
–	ECM output line malfunction	<ul style="list-style-type: none"> ECM output voltage line (Yellow/red wire) short circuit 	<ul style="list-style-type: none"> Engine does not start 	–
–	MIL circuit malfunction	<ul style="list-style-type: none"> Faulty ECM Open or short circuit in MIL wire 	<ul style="list-style-type: none"> Engine operates normally MIL does not blink 	6-8
–	Data link circuit malfunction	<ul style="list-style-type: none"> Short circuit in data link connector Faulty ECM Short circuit in data link connector wire 	<ul style="list-style-type: none"> Engine operates normally MIL stays lit 	–
1-1	MAP sensor circuit low voltage	<ul style="list-style-type: none"> Open or short circuit in MAP sensor wire Faulty MAP sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-37
1-2	MAP sensor circuit high voltage	<ul style="list-style-type: none"> Loose or poor contact on MAP sensor connector Open circuit in MAP sensor wire Faulty MAP sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-38
2-1	MAP sensor performance problem	<ul style="list-style-type: none"> Loose or poor connection of the MAP sensor vacuum hose Faulty MAP sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-39
7-1	ECT sensor circuit low voltage	<ul style="list-style-type: none"> Short circuit in ECT sensor wire Faulty ECT sensor 	<ul style="list-style-type: none"> Hard start at a low temperature (Simulate using numerical values; 90 °C/ 194 °F) 	6-40
7-2	ECT sensor circuit high voltage	<ul style="list-style-type: none"> Loose or poor contact on ECT sensor Open circuit in ECT sensor wire Faulty ECT sensor 	<ul style="list-style-type: none"> Hard start at a low temperature (Simulate using numerical values; 90 °C/ 194 °F) 	6-40
8-1	TP sensor circuit low voltage	<ul style="list-style-type: none"> Loose or poor contact on TP sensor connector Open or short circuit in TP sensor wire Faulty TP sensor 	<ul style="list-style-type: none"> Poor engine performance and response when operating the throttle quickly (Simulate using numerical values; Throttle opens 0°) 	6-42
8-2	TP sensor circuit high voltage	<ul style="list-style-type: none"> Open circuit in TP sensor wire Faulty TP sensor 	<ul style="list-style-type: none"> Poor engine performance and response when operating the throttle quickly (Simulate using numerical values; Throttle opens 0°) 	6-43
9-1	IAT sensor circuit low voltage	<ul style="list-style-type: none"> Short circuit in IAT sensor wire Faulty IAT sensor 	<ul style="list-style-type: none"> Engine operates normally (Simulate using numerical values; 25 °C/ 77 °F) 	6-44
9-2	IAT sensor circuit high voltage	<ul style="list-style-type: none"> Loose or poor contact on IAT sensor Open circuit in IAT sensor wire Faulty IAT sensor 	<ul style="list-style-type: none"> Engine operates normally (Simulate using numerical values; 25 °C/ 77 °F) 	6-45

FUEL SYSTEM (Programmed Fuel Injection)

DTC	Function Failure	Causes	Symptoms	Refer to
11-1	Vehicle speed sensor no signal (circuit malfunction)	<ul style="list-style-type: none"> Loose or poor contact on vehicle speed sensor connector Open or short circuit in vehicle speed sensor connector Faulty vehicle speed sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-46
12-1	No.1 Primary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.1 Primary injector connector Open or short circuit in No.1 Primary injector wire Faulty No.1 Primary injector 	<ul style="list-style-type: none"> Engine does not start 	6-47
13-1	No.2 Primary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.2 Primary injector connector Open or short circuit in No.2 Primary injector wire Faulty No.2 Primary injector 	<ul style="list-style-type: none"> Engine does not start 	6-49
14-1	No.3 Primary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.3 Primary injector connector Open or short circuit in No.3 Primary injector wire Faulty No.3 Primary injector 	<ul style="list-style-type: none"> Engine does not start 	6-49
15-1	No.4 Primary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.4 Primary injector connector Open or short circuit in No.4 Primary injector wire Faulty No.4 Primary injector 	<ul style="list-style-type: none"> Engine does not start 	6-49
16-1	No.1 Secondary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.1 Secondary injector connector Open or short circuit in No.1 Secondary injector wire Faulty No.1 Secondary injector 	<ul style="list-style-type: none"> Engine does not start 	6-49
17-1	No.2 Secondary injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.2 Secondary injector connector Open or short circuit in No.2 Secondary injector wire Faulty No.2 Secondary injector 	<ul style="list-style-type: none"> Engine does not start 	6-49
18-1	Cam pulse generator no signal	<ul style="list-style-type: none"> Loose or poor contact on cam pulse generator Open or short circuit in cam pulse generator Faulty cam pulse generator 	<ul style="list-style-type: none"> Engine does not start 	6-50
19-1	Ignition pulse generator no signal	<ul style="list-style-type: none"> Loose or poor contact on ignition pulse generator Open or short circuit in ignition pulse generator Faulty ignition pulse generator 	<ul style="list-style-type: none"> Engine does not start 	6-51
21-1	No.1 O ₂ sensor circuit malfunction (California type only)	<ul style="list-style-type: none"> Loose or poor contact on O₂ sensor connector Short circuit in O₂ sensor Faulty O₂ sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-52
22-1	No.2 O ₂ sensor circuit malfunction (California type only)	<ul style="list-style-type: none"> Loose or poor contact on O₂ sensor connector Short circuit in O₂ sensor Faulty O₂ sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-53
23-1	No.1 O ₂ sensor heater malfunction (California type only)	<ul style="list-style-type: none"> Loose or poor contact on O₂ sensor connector Open or short circuit in O₂ sensor heater Faulty O₂ sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-54
24-1	No.2 O ₂ sensor heater malfunction (California type only)	<ul style="list-style-type: none"> Loose or poor contact on O₂ sensor connector Open or short circuit in O₂ sensor heater Faulty O₂ sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-55

FUEL SYSTEM (Programmed Fuel Injection)

DTC	Function Failure	Causes	Symptoms	Refer to
33-1	E ² -PROM in ECM malfunction	<ul style="list-style-type: none">Faulty ECM	<ul style="list-style-type: none">Engine operates normallyDoes not hold the self-diagnosis data	6-55
48-1	No.3 Secondary injector circuit malfunction	<ul style="list-style-type: none">Loose or poor contact on No.3 Secondary injector connectorOpen or short circuit in No.3 Secondary injector wireFaulty No.3 Secondary injector	<ul style="list-style-type: none">Engine does not start	6-49
49-1	No.4 Secondary injector circuit malfunction	<ul style="list-style-type: none">Loose or poor contact on No.4 Secondary injector connectorOpen or short circuit in No.4 Secondary injector wireFaulty No.4 Secondary injector	<ul style="list-style-type: none">Engine does not start	6-49

DTC TROUBLESHOOTING

DTC 1-1 (MAP SENSOR LOW VOLTAGE)

1. MAP Sensor System Inspection

Turn the ignition switch ON and engine stop switch " \odot ".
Check the MAP sensor with the HDS.

Is about 0 V or below indicated?

YES – GO TO STEP 2.

NO – • Intermittent failure
• Loose or poor contact on the MAP sensor connector

2. MAP Sensor Input Voltage Inspection

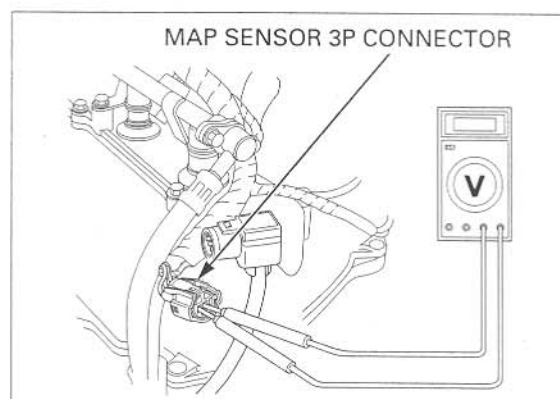
Turn the ignition switch OFF.
Disconnect the MAP sensor 3P connector.
Turn the ignition switch ON and engine stop switch " \odot ".
Measure the voltage at the wire harness side.

Connection: Yellow/red (+) – Green/orange (–)

Is the voltage within 4.75 – 5.25V?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



3. MAP Sensor Input Line Inspection

Turn the ignition switch OFF.
Disconnect the ECM 32P connectors.

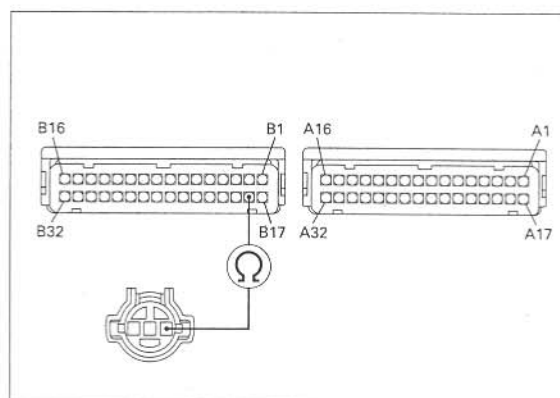
Check for continuity at the Yellow/red wire between the MAP sensor 3P connector terminal and the ECM 32P (Light gray) connector.

Connection: B18 – Yellow/red

Is there continuity?

YES – Replace the ECM with a known good one, and recheck.

NO – Open circuit in Yellow/red wire



4. MAP Sensor Output Line Short Circuit Inspection

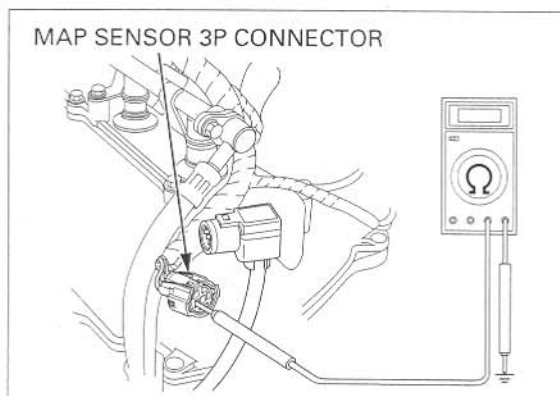
Check for continuity between the MAP sensor 3P connector terminal of the wire harness side and ground.

Connection: Light green/yellow – Ground

Is there continuity?

YES – Short circuit in Light green/yellow wire

NO – GO TO STEP 5.



FUEL SYSTEM (Programmed Fuel Injection)

5. MAP Sensor Inspection

Replace the MAP sensor with a known good one (page 6-88).

Reset the ECM (page 6-9).

Turn the ignition switch ON and engine stop switch "Q".

Check the MAP sensor with the HDS.

Is DTC 1-1 indicated?

YES – Replace the ECM with a known good one, and recheck

NO – Faulty original MAP sensor

DTC 1-2 (MAP SENSOR HIGH VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the MAP sensor connector and recheck the DTC.

1. MAP Sensor System Inspection 1

Turn the ignition switch ON and engine stop switch "Q".

Check the MAP sensor with the HDS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – • Intermittent failure
• Loose or poor contact on the MAP sensor connector

2. MAP Sensor System Inspection 2

Turn the ignition switch OFF.

Disconnect the MAP sensor 3P connector.
Connect the MAP sensor terminals at the wire harness side with a jumper wire.

Connection: Light green/yellow – Green/orange

Turn the ignition switch ON and engine stop switch "Q".

Check the MAP sensor with the HDS.

Is about 0 V indicated?

YES – Faulty MAP sensor

NO – GO TO STEP 3.

3. MAP Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Remove the jumper wire.

Turn the ignition switch ON and engine stop switch "Q".

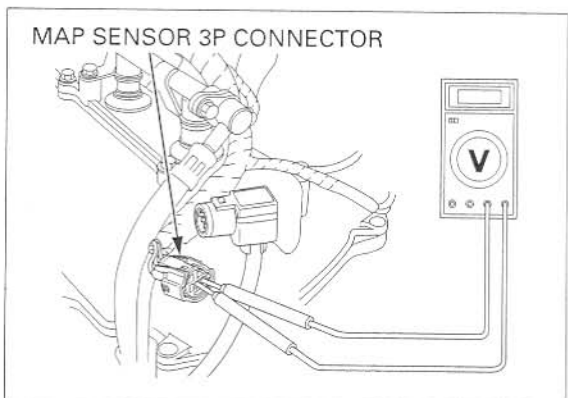
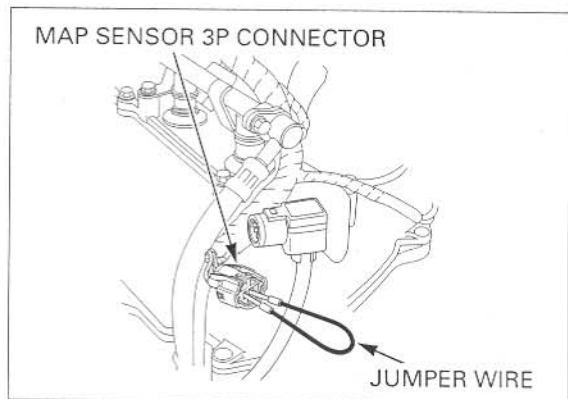
Measure the voltage at the wire harness side.

Connection: Yellow/red (+) – Green/orange (–)

Is the voltage within 4.75 – 5.25V?

YES – GO TO STEP 4.

NO – Open circuit in Green/orange wire



4. MAP Sensor Output Line Open Circuit Inspection

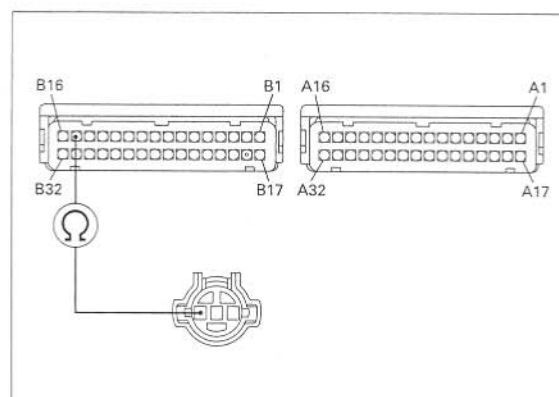
Disconnect the ECM 32P connectors.
Check for continuity at the Light green/yellow wire between the MAP sensor 3P connector terminal and the ECM 32P (Light gray) connector.

Connection: B15 – Light green/yellow

Is there continuity?

YES – Replace the ECM with a known good one, and recheck

NO – Open circuit in Light green/yellow wire



DTC 2-1 (MAP SENSOR)

- Before starting the inspection, check for loose or poor contact on the MAP sensor connector and recheck the DTC.

1. MAP Sensor System Inspection

Turn the ignition switch ON and engine stop switch "Q".

Start the engine and check the MAP sensor with the HDS at idle speed.

Is 1.6 V indicated?

YES – Intermittent failure

NO – GO TO STEP 2.

2. Manifold Absolute Pressure Test

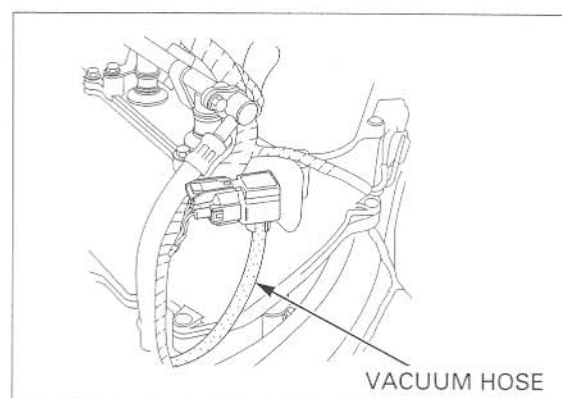
Turn the ignition switch OFF.

Check for connection and installation of the MAP sensor vacuum hose.

Is the MAP sensor vacuum hose connection correct?

YES – GO TO STEP 3.

NO – Correct the hose installation



3. MAP Sensor System Inspection

Replace the MAP sensor with a known good one (page 6-88).

Turn the ignition switch ON and engine stop switch "Q".

Start the engine and check the MAP sensor with the HDS at idle speed.

Is 1.6 V indicated?

YES – Faulty original MAP sensor

NO – Replace the ECM with a known good one, and recheck.

FUEL SYSTEM (Programmed Fuel Injection)

DTC 7-1 (ECT SENSOR LOW VOLT-AGE)

1. ECT Sensor System Inspection

Turn the ignition switch ON and engine stop switch " \odot ".

Check the ECT sensor with the HDS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – • Intermittent failure
• Loose or poor contact on the ECT sensor connector

2. ECT Sensor Inspection

Turn the ignition switch OFF.
Disconnect the ECT sensor 3P connector.

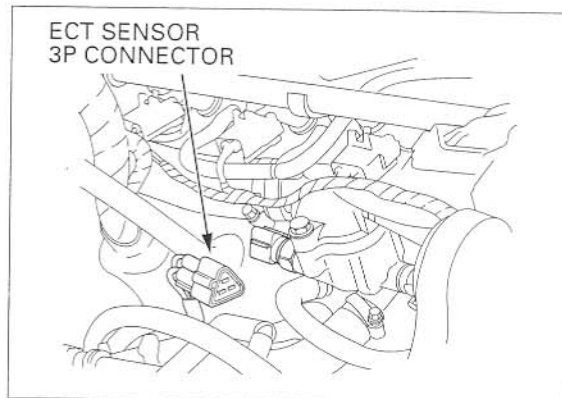
Turn the ignition switch ON and engine stop switch " \odot ".

Check the ECT sensor with the HDS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty ECT sensor



3. ECT Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

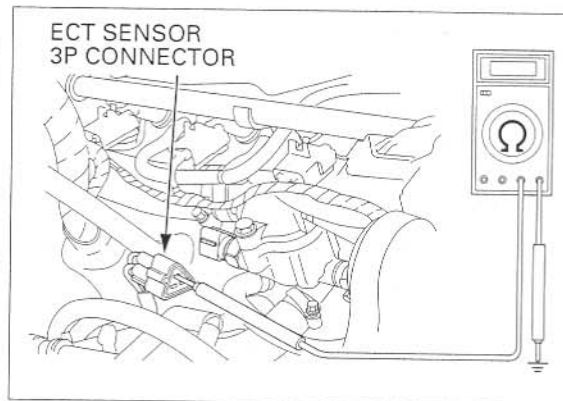
Check for continuity between the ECT sensor 3P connector terminal of the wire harness side and ground.

Connection: Pink – Ground

Is there continuity?

YES – Short circuit in Pink wire

NO – Replace the ECM with a known good one, and recheck.



DTC 7-2 (ECT SENSOR HIGH VOLT-AGE)

- Before starting the inspection, check for loose or poor contact on the ECT sensor connector and recheck the DTC.

1. ECT Sensor System Inspection

Turn the ignition switch ON and engine stop switch " \odot ".

Check the ECT sensor with the HDS.

Is about 5 V indicated?

YES – GO TO STEP 2.


NO – • Intermittent failure
• Loose or poor contact on the ECT sensor connector

2. ECT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the ECT sensor 3P connector.
Connect the ECT sensor terminals with a jumper wire.

Connection: Pink – Green/orange

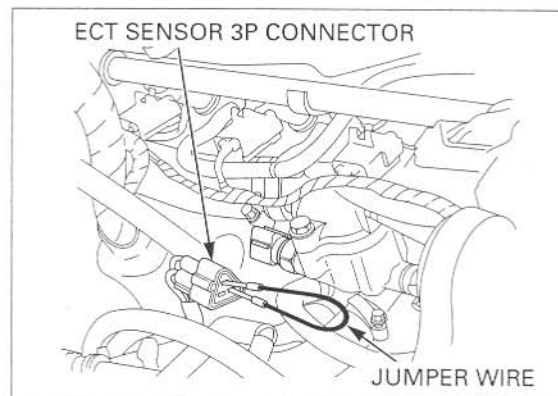
Turn the ignition switch ON and engine stop switch " ".

Check the ECT sensor with the HDS.

Is about 0 V indicated?

YES – Inspect the ECT sensor (page 20-16)

NO – GO TO STEP 3.



3. ECT Sensor Output Line Inspection

Turn the ignition switch OFF.

Remove the jumper wire.

Disconnect the ECM 32P connectors.

Check for continuity at the Pink (ECM side: Pink/white) and Green/orange wires between the ECT sensor 3P connector terminal and the ECM 32P (Light gray) connector.

Connection: B27 – Pink

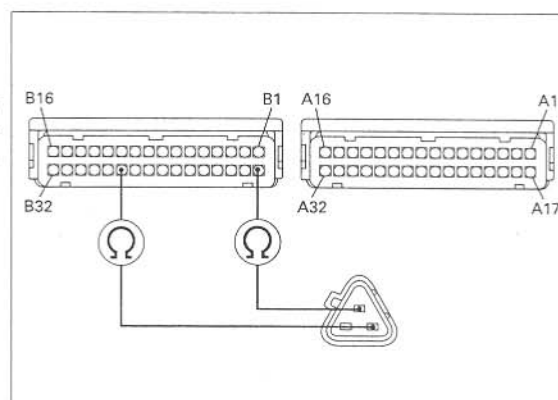
B17 – Green/orange

Are there continuity?

YES – Replace the ECM with a known good one, and recheck

NO –

- Open circuit in Pink or Pink/white wire
- Open circuit in Green/orange wire



FUEL SYSTEM (Programmed Fuel Injection)

DTC 8-1 (TP SENSOR LOW VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the TP sensor connector and recheck the DTC.

1. TP Sensor System Inspection

Turn the ignition switch ON and engine stop switch "○".

Check the TP sensor with the HDS when the throttle fully closed.

Is about 0 V indicated?

- YES** – • Intermittent failure
• Loose or poor contact on the MAP sensor connector

NO – GO TO STEP 2.

2. TP Sensor Input Voltage Inspection

Turn the ignition switch OFF.
Disconnect the TP sensor 3P connector.

Turn the ignition switch ON and engine stop switch "○".

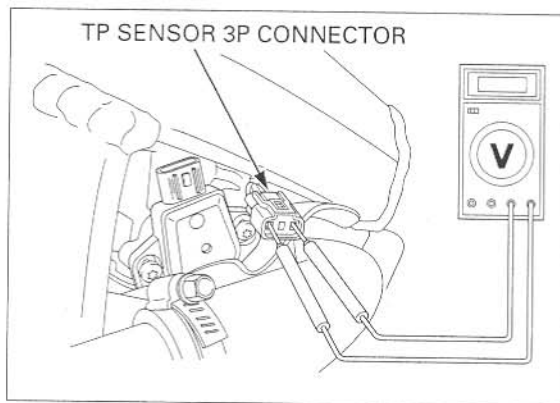
Measure the voltage at the wire harness side.

Connection: Yellow/red (+) – Green/orange (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



3. TP Sensor Circuit Inspection

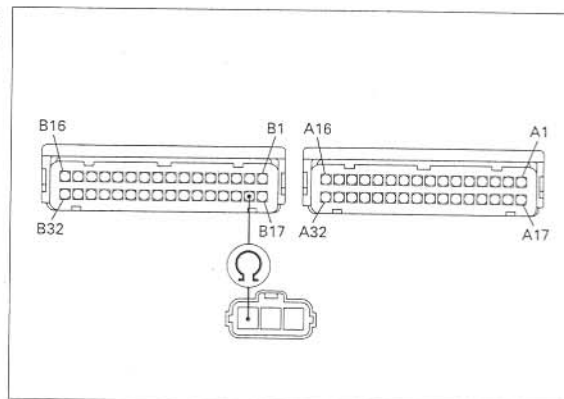
Disconnect the ECM 32P connectors.
Check for continuity at the Yellow/red wire between the TP sensor 3P connector terminal and the ECM 32P (Light gray) connector.

Connection: B18 – Yellow/red

Is there continuity?

YES – Replace the ECM with a known good one, and recheck

NO – Open circuit in Yellow/red wire



FUEL SYSTEM (Programmed Fuel Injection)

4. TP Sensor Output Line Open Circuit Inspection

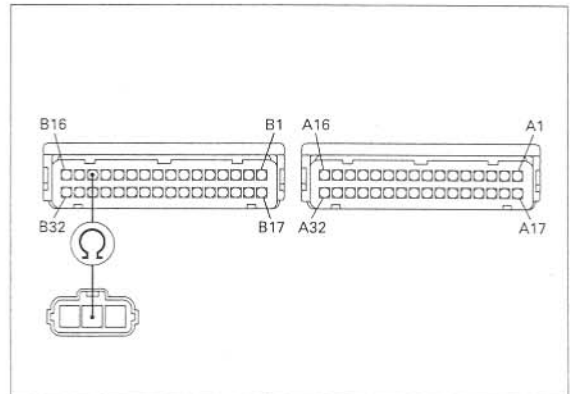
Check for continuity at the Red/yellow wire between the TP sensor 3P connector terminal and the ECM 32P (Light gray) connector.

Connection: B14 – Red/yellow

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Red/yellow wire



5. TP Sensor Output Line Short Circuit Inspection

Disconnect the TP sensor 3P connector.

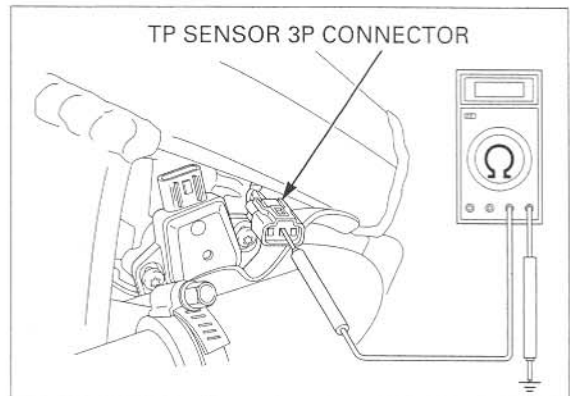
Check for continuity between the TP sensor 3P connector terminal of the wire harness side and ground.

Connection: Red/yellow – Ground

Is there continuity?

YES – Short circuit in Red/yellow wire

NO – GO TO STEP 6.



6. TP Sensor Inspection

Replace the TP sensor with a known good one.
Reset the ECM (page 6-9).
Turn the ignition switch ON and engine stop switch "Q".

Check the TP sensor with the HDS.

Is DTC 8-1 indicated?

YES – Replace the ECM with a known good one, and recheck

NO – Faulty original TP sensor

DTC 8-2 (TP SENSOR HIGH VOLTAGE)

1. TP Sensor System Inspection

Turn the ignition switch ON and engine stop switch "Q".

Check the TP sensor with the HDS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO –

- Intermittent failure
- Loose or poor contact on the TP sensor connector

FUEL SYSTEM (Programmed Fuel Injection)

2. TP Sensor Resistance Inspection

Turn the ignition switch OFF.

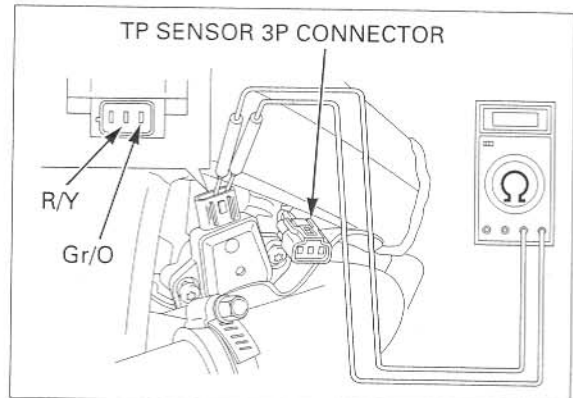
Disconnect the TP sensor 3P connector.
Measure the resistance at the TP sensor side.

Connection: Red/yellow – Green/orange

Is the resistance within 0.4 - 0.6 Ω ?

YES – GO TO STEP 3.

NO – Faulty TP sensor



3. TP Sensor Input Voltage Inspection

Turn the ignition switch ON and engine stop switch " Ω ".

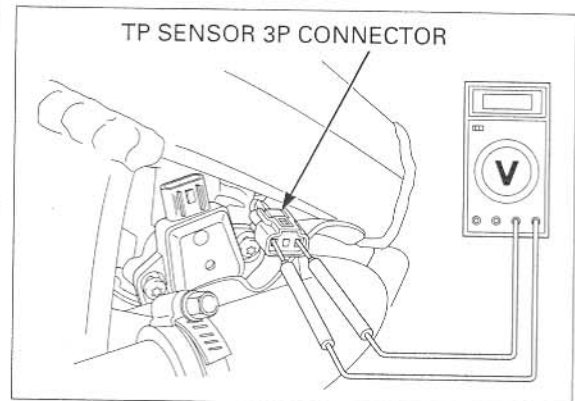
Measure the voltage at the wire harness side.

Connection: Yellow/red (+) – Green/orange (-)

Is the voltage within 4.75 – 5.25 V?

YES – Replace the ECM with a known good one, and recheck

NO – Open circuit in Green/orange wires



DTC 9-1 (IAT SENSOR LOW VOLTAGE)

1. IAT Sensor System Inspection

Turn the ignition switch ON and engine stop switch " Ω ".

Check the IAT sensor with the HDS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – • Intermittent failure
• Loose or poor contact on the IAT sensor connector

2. IAT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the IAT sensor 2P connector.

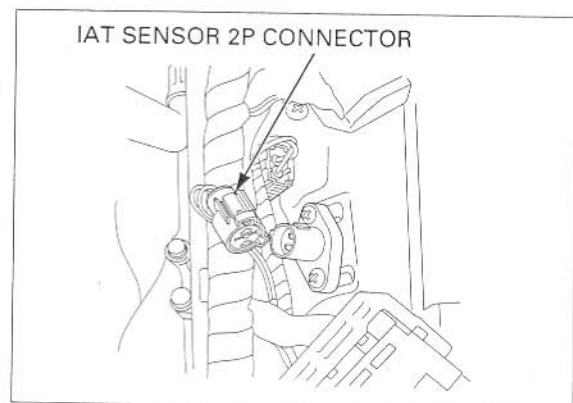
Turn the ignition switch ON and engine stop switch " Ω ".

Check the IAT sensor with the HDS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty IAT sensor



3. IAT Sensor Output Line Short Circuit Inspection

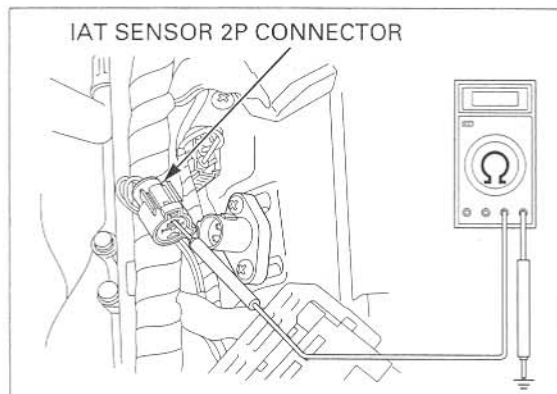
Check for continuity between the IAT sensor 2P connector terminal of the wire harness side and ground.

Connection: Gray/blue – Ground

Is there continuity?

YES – Short circuit in Gray/blue wire

NO – Replace the ECM with a known good one, and recheck



DTC 9-2 (IAT SENSOR HIGH VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the IAT sensor connector and recheck the DTC.

1. IAT Sensor System Inspection

Turn the ignition switch ON and engine stop switch "Q".

Check the IAT sensor with the HDS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – • Intermittent failure
• Loose or poor contact on the IAT sensor connector

2. IAT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the IAT sensor 2P connector. Connect the IAT sensor terminals with a jumper wire.

Connection: Gray/blue – Green/orange

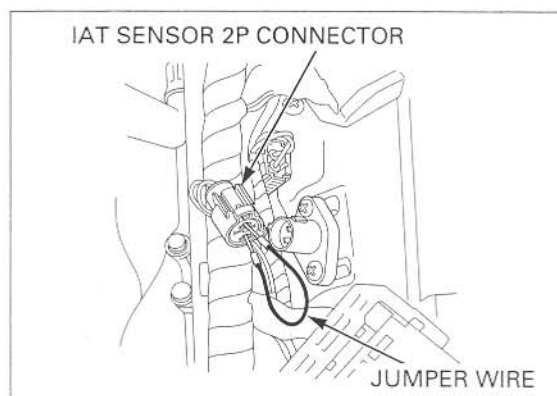
Turn the ignition switch ON and engine stop switch "Q".

Check the IAT sensor with the HDS.

Is about 0 V indicated?

YES – Faulty IAT sensor

NO – GO TO STEP 3.



3. IAT Sensor Output Line Inspection

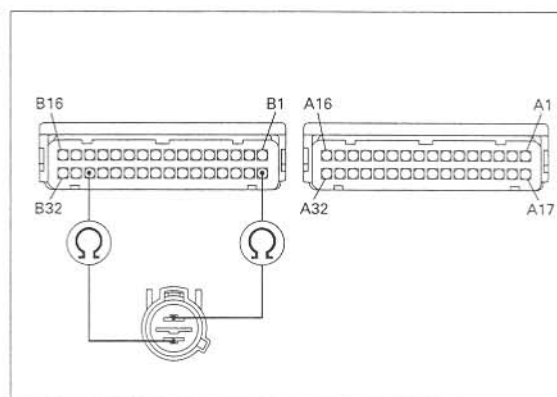
Disconnect the ECM 32P connectors. Check for continuity at the Gray/blue and Green/orange wire between the IAT sensor 2P connector terminals and the ECM 32P (Light gray) connector.

Connection: B17 – Gray/blue
B30 – Green/orange

Are there continuity?

YES – Replace the ECM with a known good one, and recheck.

NO – • Open circuit in Gray/blue wire
• Open circuit in Green/orange wire



FUEL SYSTEM (Programmed Fuel Injection)

DTC 11-1 (VEHICLE SPEED SENSOR)

- Before starting the inspection, check for loose or poor contact on the vehicle speed sensor connector and recheck the DTC.

1. Vehicle Speed Sensor System Inspection

Support the motorcycle securely and place the rear wheel off the ground.
Start the engine and shift the transmission into gear.

Check the vehicle speed sensor with the HDS at 10 km/h.

Is 10 km/h indicated?

- YES** –
- Intermittent failure
 - Loose or poor contact on the vehicle speed sensor connector

NO – GO TO STEP 2.

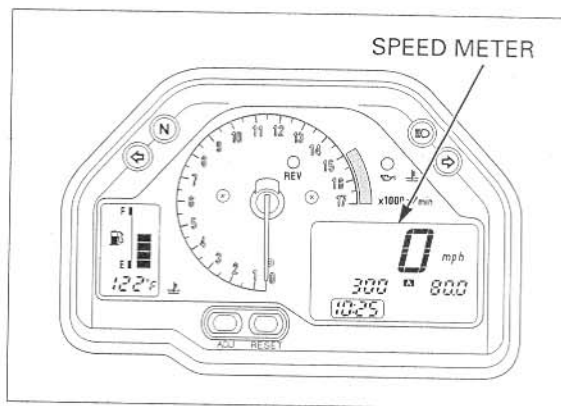
2. Combination Meter Inspection

Check for operation of speed meter.

Does the speed meter operate normally?

- YES** – Open or short circuit in the Pink/green wire

NO – GO TO STEP 3.



3. Vehicle Speed Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the vehicle speed sensor 3P connector.

Turn the ignition switch ON and engine stop switch "Q".

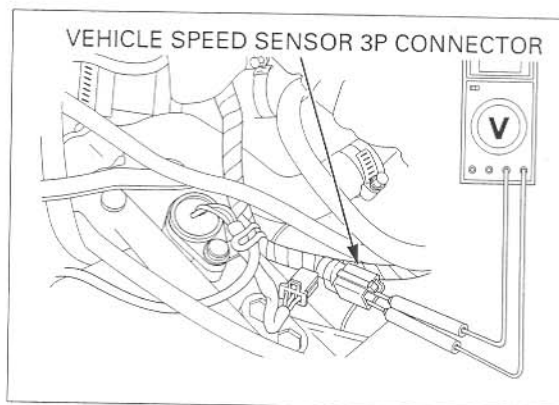
Measure the voltage at the wire harness side.

Connection: Black (+) – Green (–)

Is there battery voltage?

YES – GO TO STEP 4.

- NO** –
- Open circuit in the Black or Black/brown wire
 - Open circuit in the Green or Green/black wire



FUEL SYSTEM (Programmed Fuel Injection)

4. Vehicle Speed Sensor Signal Line Short Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ECM 32P connectors.

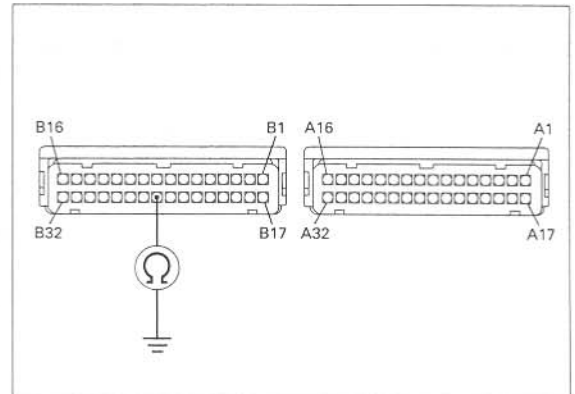
Check for continuity between the ECM 32P (Light gray) connector terminal and the ground.

Connection: B25 – Ground

Is there continuity?

YES – Short circuit in the Pink or Pink/green wire

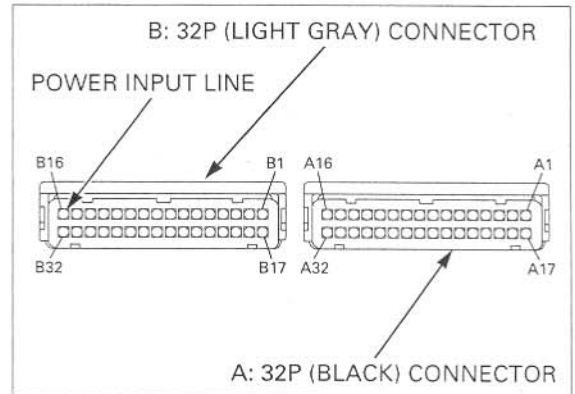
NO – Inspect vehicle speed sensor (page 20-13)



DTC 12-1 (No.1 PRIMARY INJECTOR)

- Before starting the inspection, check for loose or poor contact on the Primary injector connectors and recheck the DTC.

DTC	INJECTOR	POWER INPUT LINE	SIGNAL LINE	SIGNAL AT ECM
12-1	No.1 Primary	Black/white	Pink/yellow	A11
13-1	No.2 Primary	Black/white	Pink/blue	A12
14-1	No.3 Primary	Black/white	Pink/green	A13
15-1	No.4 Primary	Black/white	Pink/black	A14
16-1	No.1 Secondary	Black/white	Pink/yellow	B1
17-1	No.2 Secondary	Black/white	Pink/blue	B2
48-1	No.3 Secondary	Black/white	Pink/green	B3
49-1	No.4 Secondary	Black/white	Pink/black	B4



1. Injector System Inspection

Reset the ECM (page 6-9).
Start the engine and check the injector with the HDS.

Is the DTC 12-1 indicated?

YES – GO TO STEP 2.

NO – • Intermittent failure
• Loose or poor contact on the injector connector

FUEL SYSTEM (Programmed Fuel Injection)

2. Injector Circuit Resistance Inspection

Turn the ignition switch OFF.

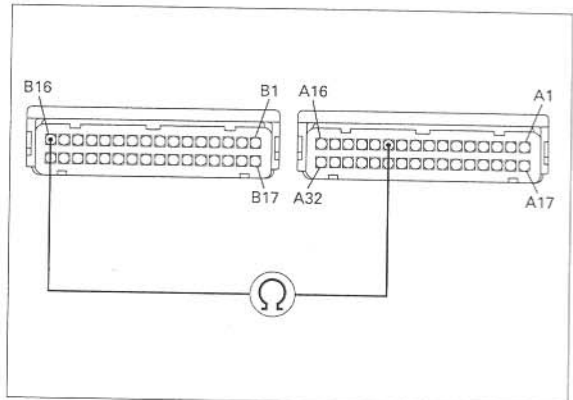
Disconnect the ECM 32P connectors and measure the resistance of the ECM 32P connector terminals.

Connection: POWER INPUT LINE – SIGNAL AT ECM

Is there continuity?

YES – GO TO STEP 5.

NO – GO TO STEP 3.



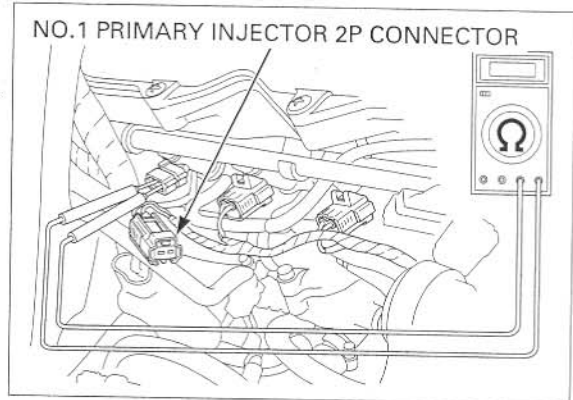
3. Injector Resistance Inspection

Disconnect the primary injector 2P connector and measure the resistance of the primary injector 2P connector terminals.

Is the resistance within 10.5 – 14.5 Ω (20°C/68°F)?

YES – GO TO STEP 4.

NO – Faulty injector



4. Injector Input Voltage Inspection

Turn the ignition switch ON and engine stop switch "Q".

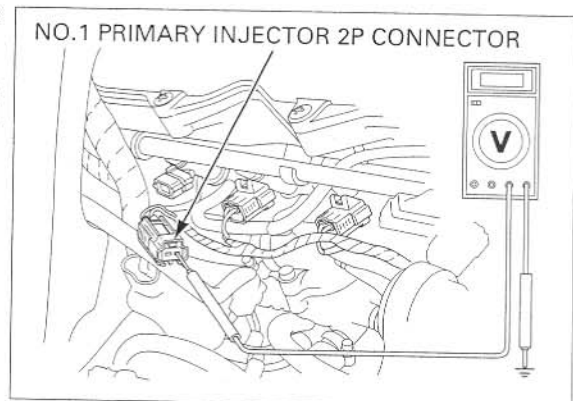
Measure the voltage between the primary injector connector of the wire harness side and ground.

Connection: POWER INPUT LINE (+) – Ground (-)

Is there battery voltage?

YES – Open circuit in SIGNAL LINE wire

NO – Open circuit in POWER INPUT LINE wire



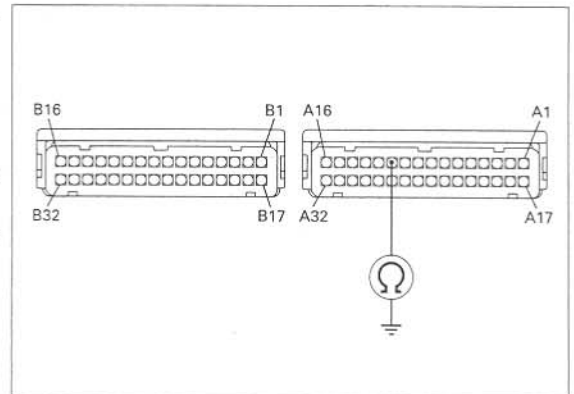
5. Injector Signal Line Short Circuit Inspection

Check for continuity between the ECM 32P connector terminal and ground.

Connection: SIGNAL AT ECM – Ground

Is there continuity?

- YES** – • Short circuit in the SIGNAL LINE wire
• Faulty injector
- NO** – Replace the ECM with a known good one, and recheck



**DTC 13-1
(No.2 PRIMARY INJECTOR)**

(page 6-47)

**DTC 14-1
(No.3 PRIMARY INJECTOR)**

(page 6-47)

**DTC 15-1
(No.4 PRIMARY INJECTOR)**

(page 6-47)

**DTC 16-1
(No.1 SECONDARY INJECTOR)**

(page 6-47)

**DTC 17-1
(No.2 SECONDARY INJECTOR)**

(page 6-47)

**DTC 48-1
(No.3 SECONDARY INJECTOR)**

(page 6-47)

**DTC 49-1
(No.4 SECONDARY INJECTOR)**

(page 6-47)

FUEL SYSTEM (Programmed Fuel Injection)

DTC 18-1 (CAM PULSE GENERATOR)

- Before starting the inspection, check for loose or poor contact on the cam pulse generator connector and recheck the DTC.

1. Cam Pulse Generator Peak Voltage Inspection

Turn the ignition switch OFF.

Disconnect the cam pulse generator 2P connector.

Turn the ignition switch ON and engine stop switch "Q".

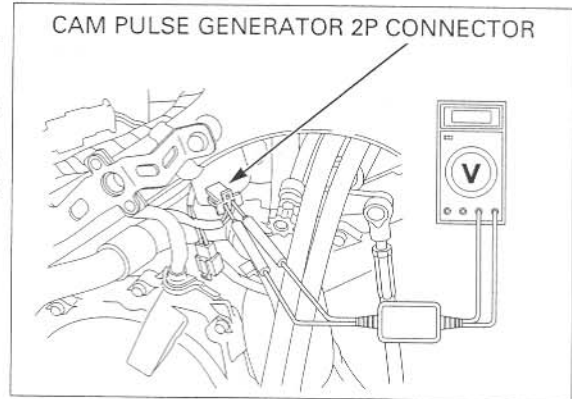
Crank the engine with the starter motor, and measure the cam pulse generator peak voltage at the cam pulse generator 2P connector.

Connection: Gray (+) – White/yellow (–)

Is the voltage more than 0.7 V (20 °C/68 °F)?

YES – GO TO STEP 2.

NO – Faulty cam pulse generator



2. Cam Pulse Generator Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 32P connectors.

Check for continuity at the Grey and Green/orange wire between the cam pulse generator 2P connector terminals and the ECM 32P connectors terminals.

Connection: B10 – Gray

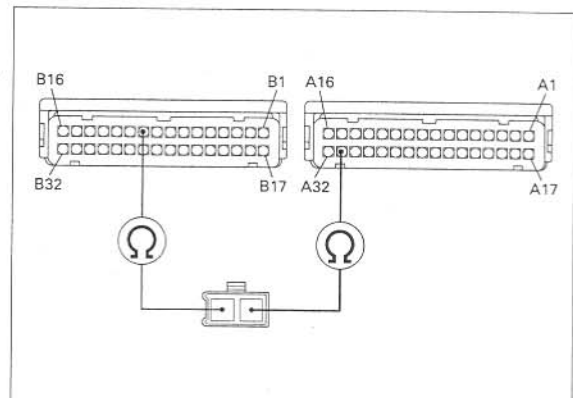
A31 – Green/orange

Is there continuity?

YES – Short circuit in the Gray wire

NO –

- Open circuit in the Green/orange wire
- Open circuit in the Gray wire



DTC 19-1 (IGNITION PULSE GENERATOR)

- Before starting the inspection, check for loose or poor contact on the ignition pulse generator connector and recheck the DTC.

1. Ignition Pulse Generator Peak Voltage Inspection

Turn the ignition switch OFF.

Lift and support the fuel tank (page 6-61).

Disconnect the ignition pulse generator 2P (Red) connector.

Turn the ignition switch ON and engine stop switch " Ω ".

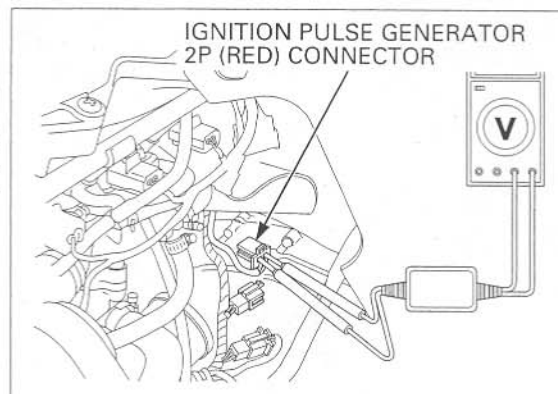
Crank the engine with the starter motor, and measure the ignition pulse generator peak voltage at the ignition pulse generator 2P (Red) connector.

Connection: Yellow (+) – Yellow/white (–)

Is the voltage more than 0.7 V (20 °C/68 °F)?

YES – GO TO STEP 2.

NO – Faulty ignition pulse generator



2. Ignition Pulse Generator Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 32P connectors.

Check for continuity at the Yellow and Green/orange wire between the ignition pulse generator 2P (Red) connector terminals and the ECM connector terminals.

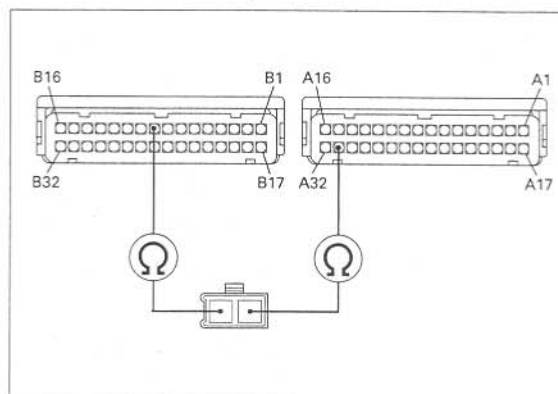
Connection: B9 – Yellow

A31 – Yellow/white

Is there continuity?

YES – Short circuit in the Yellow wire

NO – • Open circuit in the Yellow wire
• Open circuit in the Green/orange wire

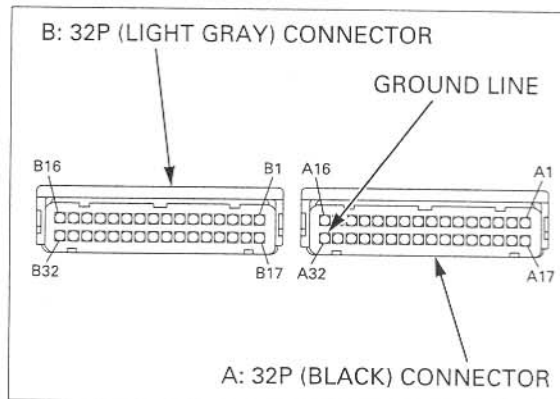


FUEL SYSTEM (Programmed Fuel Injection)

DTC 21-1 (No.1 O₂ SENSOR): California type only

- Before starting the inspection, check for loose or poor contact on the O₂ sensor connector and recheck the DTC.

DTC	O ₂ SEN- SOR	GROUND LINE	SIGNAL LINE	SIGNAL AT ECM
21-1	No.1 O ₂ Sensor	Green/ orange	Black/red	B13
22-1	No.2 O ₂ Sensor	Green/ orange	Black/ orange	B28



1. O₂ Sensor System Inspection 2

Turn the ignition switch ON and engine stop switch "Q".

Warm the engine until the coolant temperature is 80 °C (176 °F).

Check the O₂ sensor with the HDS.

Standard: 0.1 – 0.3 V

Is the voltage as specified?

YES – Check the fuel pressure (page 6-56). If the system is correct, GO TO STEP 4.

NO – GO TO STEP 2.

2. O₂ Sensor Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the O₂ sensor 4P connector and the ECM connectors.

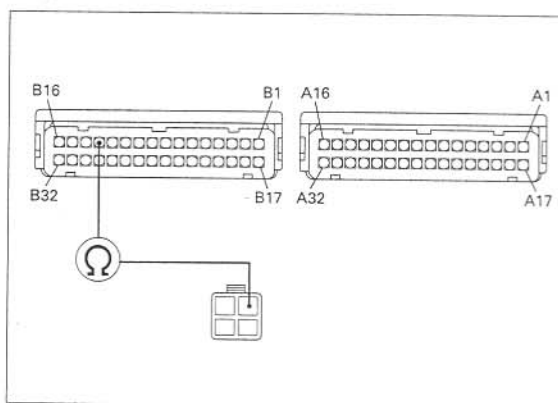
Check the continuity between the ECM connector terminals and the O₂ sensor 4P connector.

Connection: SIGNAL LINE – SIGNAL AT ECM

Is there continuity?

YES – GO TO STEP 3.

- NO** –
- Open circuit in the at SIGNAL LINE wire
 - Open circuit in the GROUND LINE wire



FUEL SYSTEM (Programmed Fuel Injection)

3. O₂ Sensor System Short Circuit Inspection

Connect the O₂ sensor 4P connector and disconnect the ECM connectors.

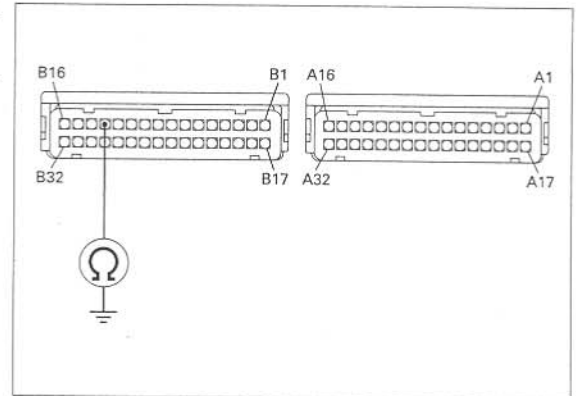
Check the continuity between the ECM connector terminals and ground.

Connection: SIGNAL AT ECM – Ground

Is there continuity?

YES – Short circuit in the SIGNAL LINE wire

NO – GO TO STEP 4.



4. O₂ Sensor Inspection

Replace the O₂ sensor with a known good one (page 6-99).

Reset the ECM (page 6-9).

Turn the ignition switch ON and engine stop switch "Q".

Warm the engine until the coolant temperature is 80 °C (176 °C).

Check the voltage at the test harness terminal.

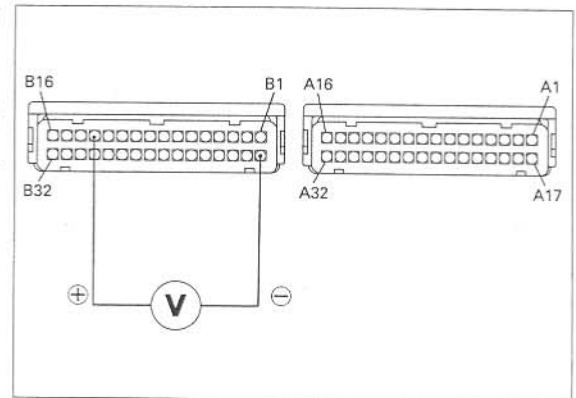
Connection: SIGNAL AT ECM (+) – B17 (-)

Standard: 0.1 – 0.3 V

Is the voltage as specified?

YES – Faulty O₂ sensor

NO – Check the fuel supply system (page 2-2).



DTC 22-1 (No.2 O₂ SENSOR): California type only

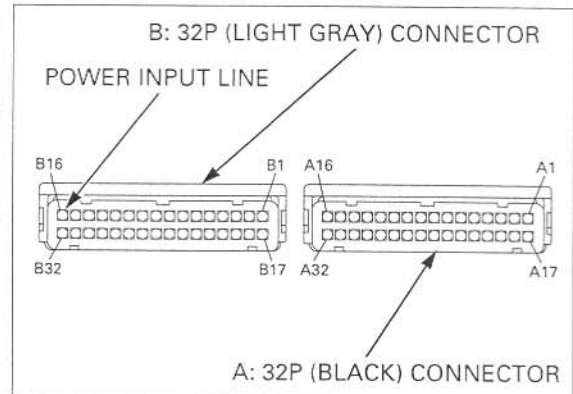
(page 6-52)

FUEL SYSTEM (Programmed Fuel Injection)

DTC 23-1 (No.1 O₂ SENSOR HEATER): California type only

- Before starting the inspection, check for loose or poor contact on the O₂ sensor connector and recheck the DTC.

DTC	O ₂ Sensor	POWER INPUT LINE	SIGNAL LINE	SIGNAL AT ECM
23-1	No.1 O ₂ Sensor	Black/white	White	A10
24-1	No.2 O ₂ Sensor	Black/white	White	A9



1. O₂ Sensor System Inspection

Reset the ECM (page 6-9).

Start the engine and check the O₂ sensor heater with the HDS.

Is the DTC 23-1 indicated?

YES – GO TO STEP 2.

NO –

- Intermittent failure
- Loose or poor contact on the O₂ sensor connector

2. O₂ Sensor Heater Resistance Inspection

Turn the ignition switch OFF.

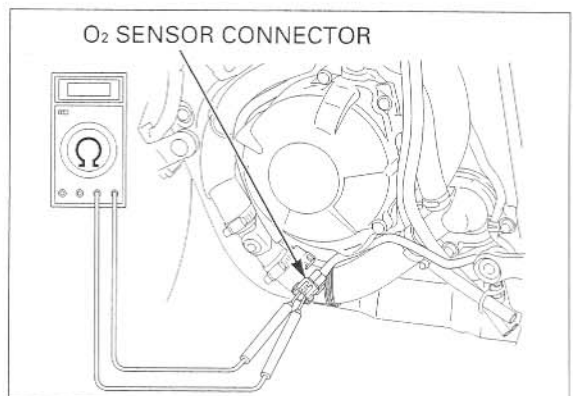
Disconnect the O₂ sensor connector and measure the resistance at the sensor side connector white and Green/orange wire terminals.

Connection: White – White

Is the resistance within 10 – 40 Ω (20°C/68°F)?

YES – GO TO STEP 3.

NO – Faulty O₂ sensor



3. O₂ Sensor Heater Open circuit Inspection

Connect the O₂ sensor connector.

Disconnect the ECM 32P connectors and measure the resistance at the ECM terminals.

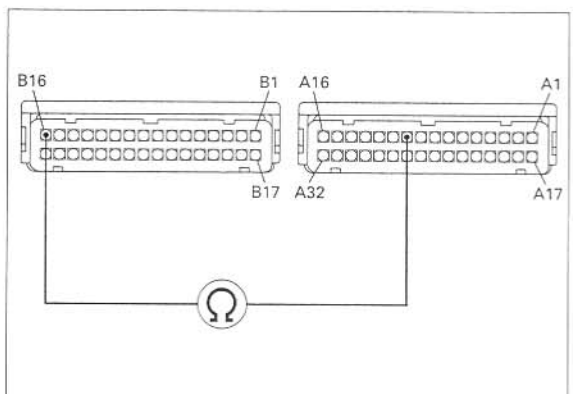
Connection: POWER INPUT LINE – SIGNAL

Is the resistance within 10 – 40 Ω (20°C/68°F)?

YES – GO TO STEP 4.

NO –

- Open circuit in the Black/white wire
- Open circuit in the SIGNAL LINE wire



FUEL SYSTEM (Programmed Fuel Injection)

4. O₂ Sensor Heater Short Circuit Inspection 1

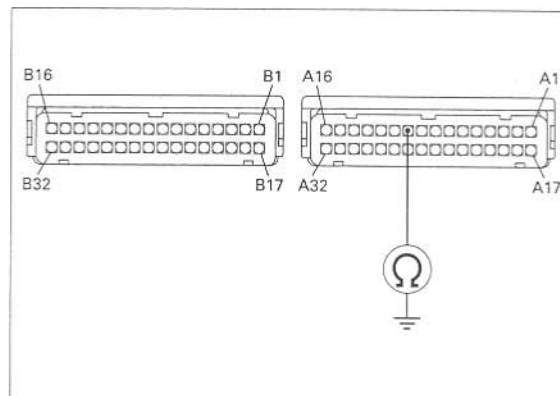
Disconnect the O₂ sensor connector.
Check for continuity between the SIGNAL LINE wire terminal at ECM 32P connectors and ground.

Connection: SIGNAL AT ECM – Ground

Is there continuity?

YES – Short circuit in the SIGNAL LINE wire

NO – GO TO STEP 5.



5. O₂ Sensor Heater Short Circuit Inspection 2

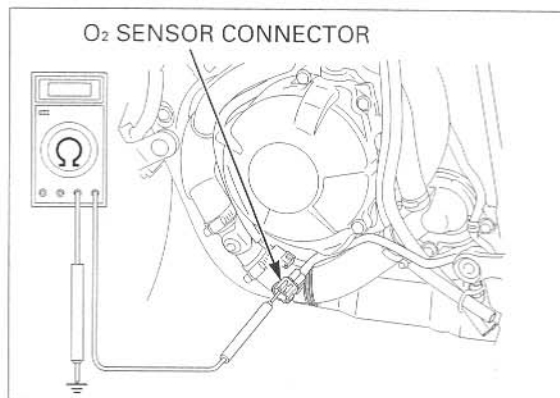
Check for continuity between the O₂ sensor heater connector terminal and ground.

Connection: White – Ground

Is there continuity?

YES – Faulty O₂ sensor

NO – Replace the ECM with a known good one, and recheck.



DTC 24-1 (No.2 O₂ SENSOR HEATER): California type only

(page 6-54)

DTC 33-1 (E²-PROM)

1. Recheck DTC

Reset the ECM (page 6-9).
Turn the ignition switch ON and engine stop switch " ⏻ ".

Recheck the ECM E²-PROM

Is the DTC 33-1 indicated?

YES – Replace the ECM with a known good one, and recheck.

NO – Intermittent failure

FUEL SYSTEM (Programmed Fuel Injection)

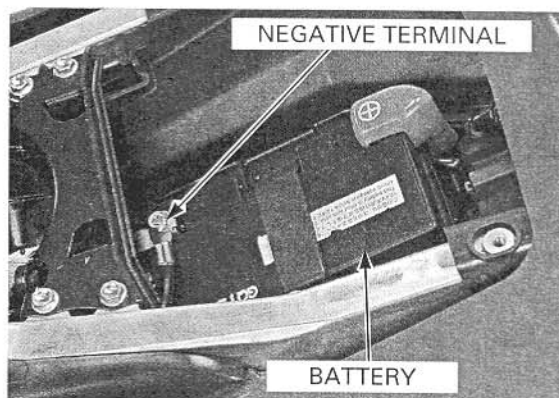
FUEL LINE INSPECTION

FUEL PRESSURE INSPECTION

- Before disconnecting fuel hoses, release the fuel pressure by loosening the fuel feed hose banjo bolt at the fuel tank.
- Failure to release the fuel pressure could result in fuel spilling onto painted or plastic parts, which will be damaged.
- Always replace the sealing washers when the fuel feed hose banjo bolt is removed or loosened.

Remove the seat (page 3-4).

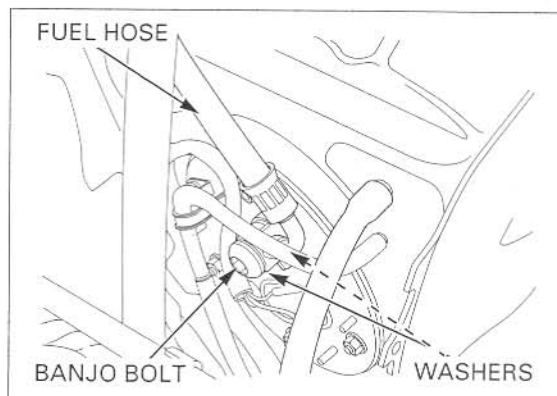
Disconnect the battery negative cable from the battery terminal.



Lift and support the fuel tank (page 6-61).

Cover the fuel hose banjo bolt with a rag or shop towel.

Slowly loosen the fuel hose banjo bolt and catch the remaining fuel using an approved gasoline container.



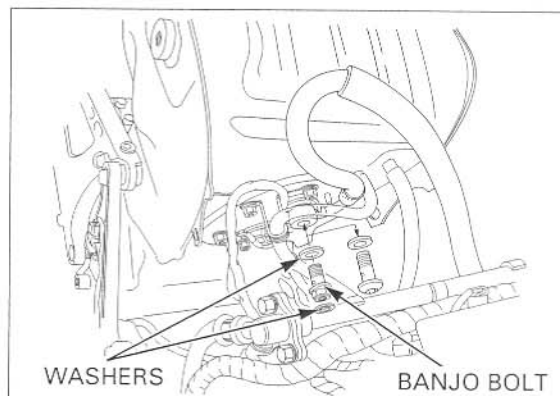
Remove the fuel hose banjo bolt and attach the fuel pressure gauge with the following Honda genuine parts.

Banjo bolt, 12 mm
Part No. 90008-PD6-010
Sealing washer, 12 mm
Part No. 90428-PD6-003
Sealing washer, 6 mm
Part No. 90430-PD-003

TOOL:

Fuel pressure gauge, 100 psi

07406-0040003 or
07406-0040002 or
07406-004000A
(U.S.A. only)



FUEL SYSTEM (Programmed Fuel Injection)

Connect the battery negative cable.
Start the engine.
Measure the fuel pressure at idle speed.

IDLE SPEED: $1,300 \pm 100$ rpm

STANDARD: 343 kPa (3.5 kgf/cm², 50 psi)

If the fuel pressure is higher than specified, replace the fuel pump unit (page 6-59).

If the fuel pressure is lower than specified, inspect the following:

- Fuel line leaking
- Fuel strainer (page 6-60)

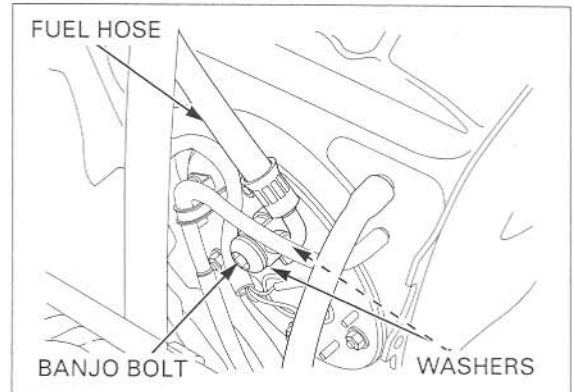
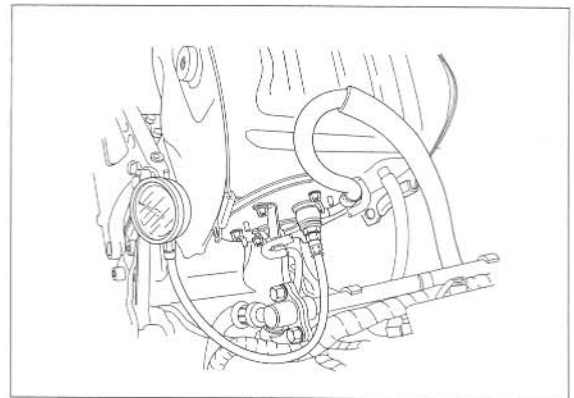
Always replace the sealing washer when the fuel feed hose banjo bolt is removed or loosened.

After inspection, remove the banjo bolt and reinstall and tighten the original fuel hose banjo bolt using new sealing washers.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Remove the suitable support and close the fuel tank (page 6-63).

Install the removed parts in the reverse order of removal.

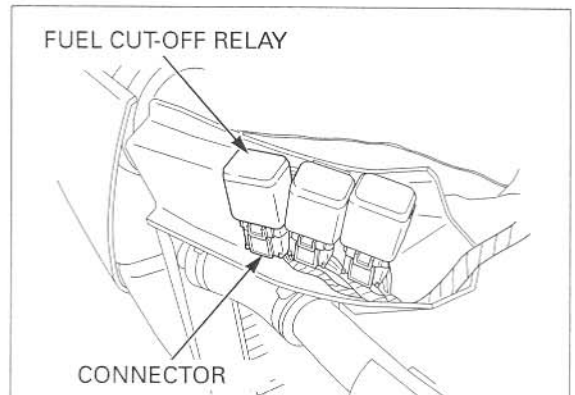


FUEL FLOW INSPECTION

Remove the following:

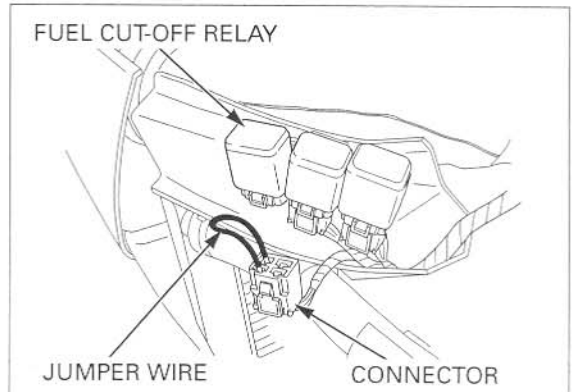
- Lower cowls (page 3-6)
- Middle cowls (page 3-7)

Disconnect the fuel cut-off relay connector.



Jump the Brown and Black/white wire terminals of the wire harness side using a jumper wire.

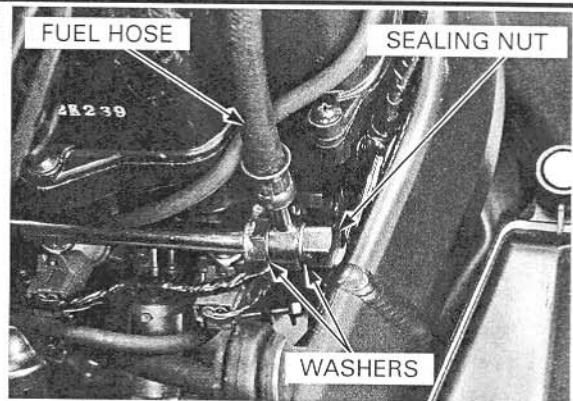
- Place an approved gasoline container and drain the gasoline.
- Wipe off spilled out gasoline.



FUEL SYSTEM (Programmed Fuel Injection)

Do not apply excessive force or the fuel rail may be damaged.

Hold the fuel pipe nut and remove the fuel hose sealing nut and sealing washers, then disconnect the fuel hose.



Turn the ignition switch ON for 10 seconds. Measure the amount of fuel flow.

Amount of fuel flow:

189 cm³ (6.4 US oz, 6.7 Imp oz) minimum /10 seconds at 12 V

If the fuel flow is less than specified, inspect the following:

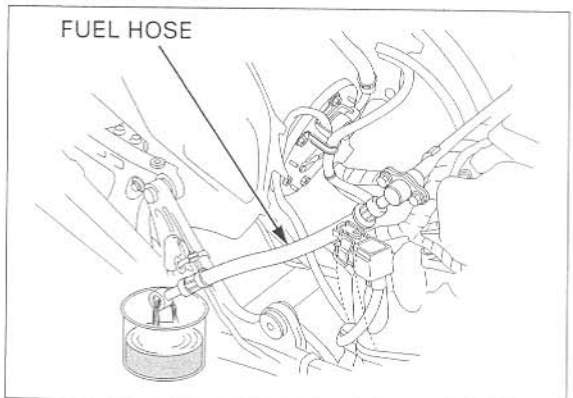
- Pinched or clogged fuel hose
- Fuel pump unit (page 6-58)

After inspection, install a new sealing washers, fuel hose sealing nut and connect the fuel hose.

TORQUE:

Fuel hose sealing nut: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Start the engine and check for leaks.



FUEL PUMP UNIT

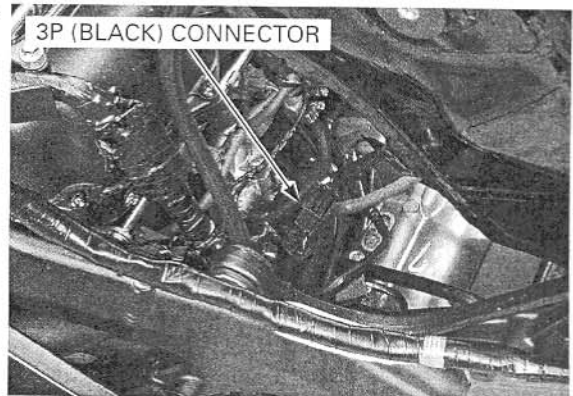
INSPECTION

Turn the ignition switch ON and confirm that the fuel pump operates for a few seconds.

If the fuel pump does not operate, inspect as follow:

Lift and support the fuel tank (page 6-61).

Disconnect the fuel pump unit 3P (Black) connector.



FUEL SYSTEM (Programmed Fuel Injection)

Turn the ignition switch ON and measure the voltage between the terminals.

Connection: Brown (+) – Green (–)

There should be battery voltage for a few seconds.

If there is battery voltage a few seconds, replace the fuel pump unit.

If there is no battery voltage, inspect the following:

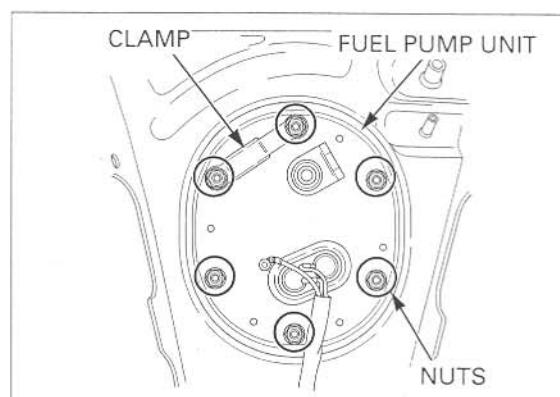
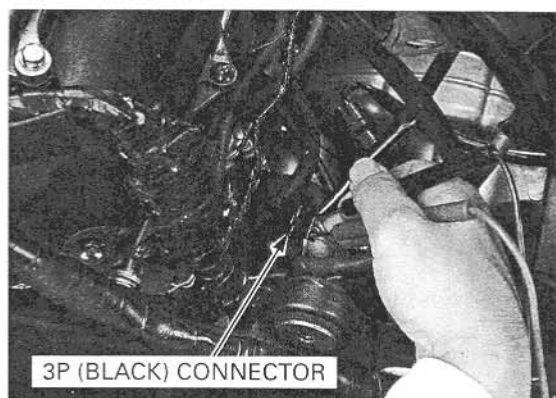
- Main fuse 30A
- Sub fuse 10A
- Engine stop switch (page 20-20)
- Fuel cut-off relay (page 6-60)
- Engine stop relay (page 6-94)
- Bank angle sensor (page 6-93)
- ECM (page 6-95)

REMOVAL

- Before disconnecting the fuel line, release the fuel pressure by loosening the fuel hose banjo bolt at the fuel tank.
- Failure to release the fuel pressure could result in fuel spilling onto painted or plastic parts, which will be damaged.
- Always replace the sealing washers when the fuel hose banjo bolt is removed or loosened.

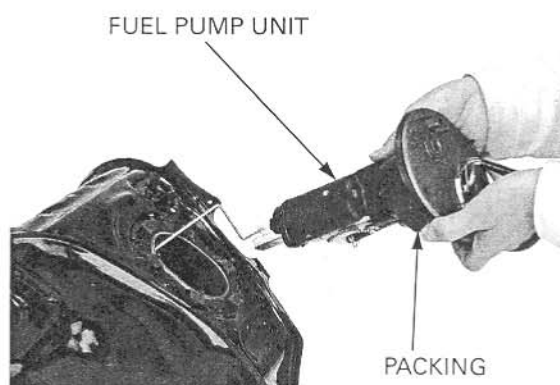
Remove the fuel tank (page 6-61).

Remove the fuel pump unit mounting nuts and clamp.



Be careful not to damage the pump wire and fuel level gauge.

Remove the fuel pump unit and packing.

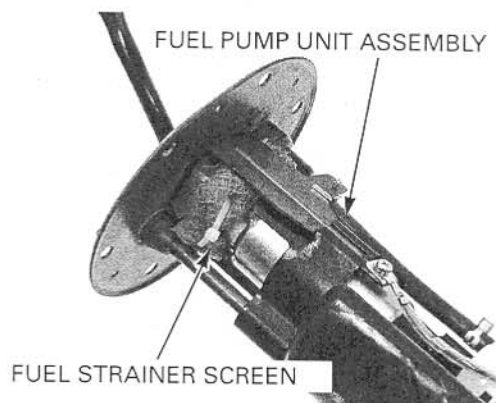


FUEL SYSTEM (Programmed Fuel Injection)

INSPECTION

Check the fuel pump unit for wear or damage, replace it if necessary.

Clean the fuel strainer screen with non-flammable or high flash point solvent.



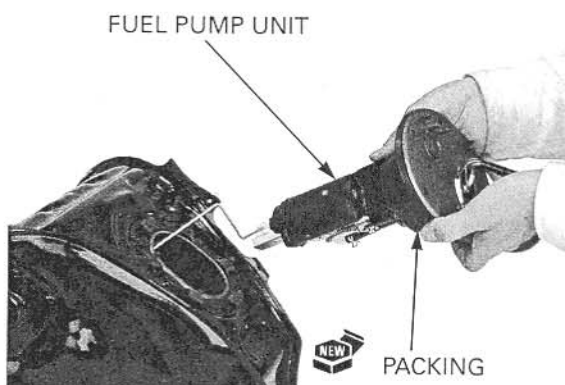
INSTALLATION

Always replace the packing with a new one.

Be careful not to damage the pump wire and fuel level gauge.

Place a new packing onto the fuel pump unit.

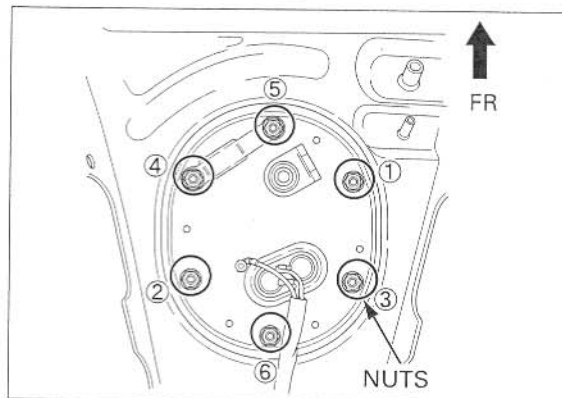
Install the fuel pump unit into the fuel tank.



Install the clamp and tighten the fuel pump mounting nuts in the specified sequence as shown.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the fuel tank (page 6-62).



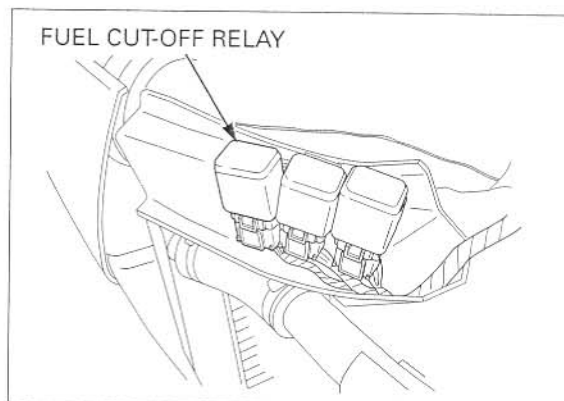
FUEL CUT-OFF RELAY

INSPECTION

Remove the following:

- Lower cowls (page 3-6)
- Middle cowls (page 3-7)

Disconnect the fuel cut-off relay 4P connector, remove the fuel cut-off relay.



FUEL SYSTEM (Programmed Fuel Injection)

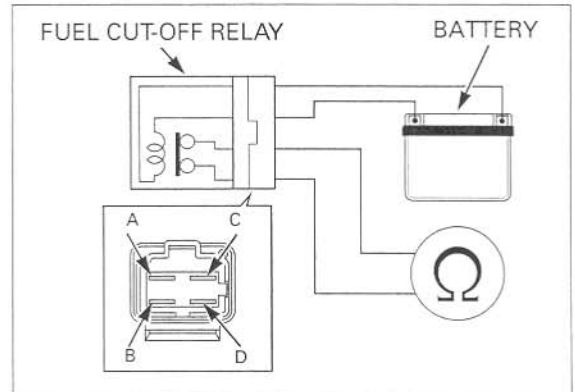
Connect the ohmmeter to the fuel cut-off relay connector terminals.

Connection: A – B

Connect the 12V battery to the following fuel cut-off relay connector terminals.

Connection: C (+) – D (–)

There should be continuity only when the 12V battery is connected. If there is no continuity when the 12V battery is connected, replace the fuel cut-off relay.

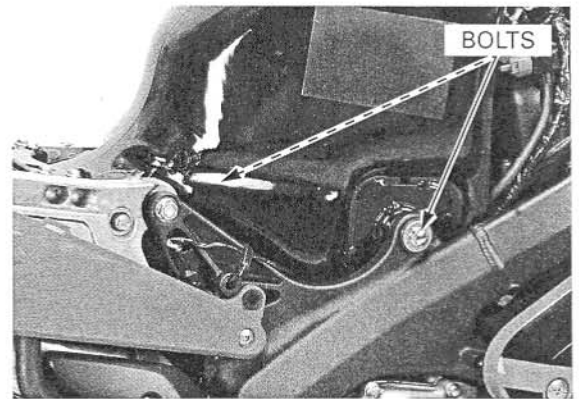


FUEL TANK

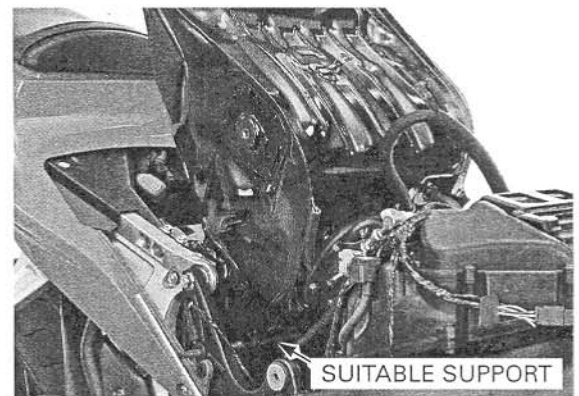
REMOVAL

Remove the fuel tank cover (page 3-15).

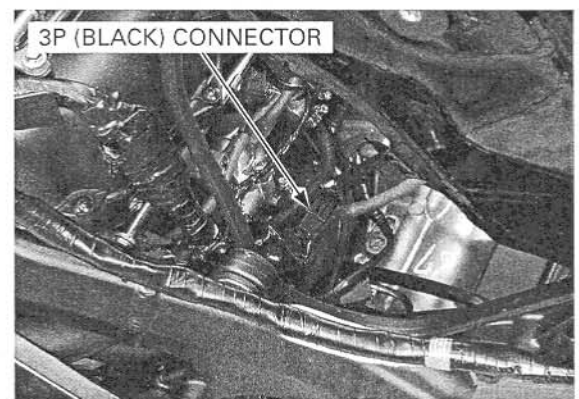
Remove the fuel tank mounting bolts.



Lift the fuel tank and support it using a suitable support.



Disconnect the fuel pump unit 3P (Black) connector.



FUEL SYSTEM (Programmed Fuel Injection)

Disconnect the fuel tank air vent and overflow hoses.

Cover the fuel hose banjo bolt with a rag or shop towel.

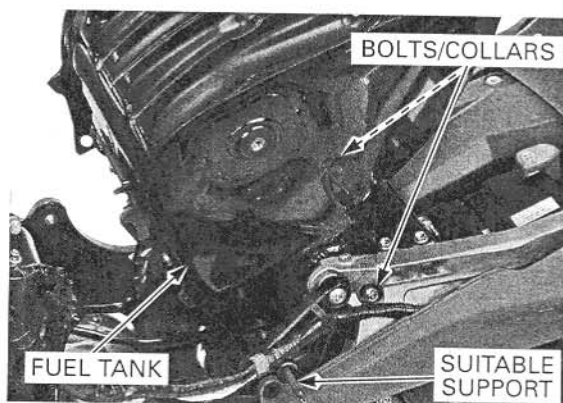
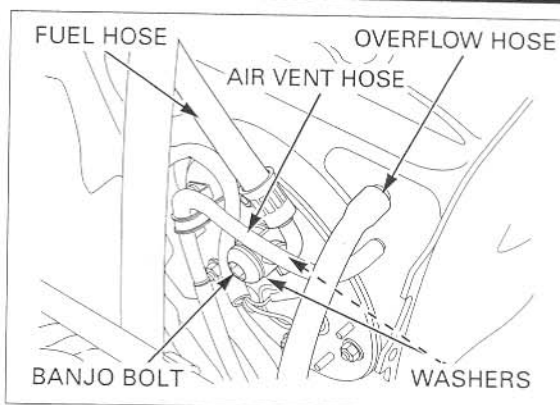
Slowly loosen the banjo bolt and catch the remaining fuel using a approved gasoline container.

Remove the fuel hose banjo bolt and sealing washers, then disconnect the fuel hose.

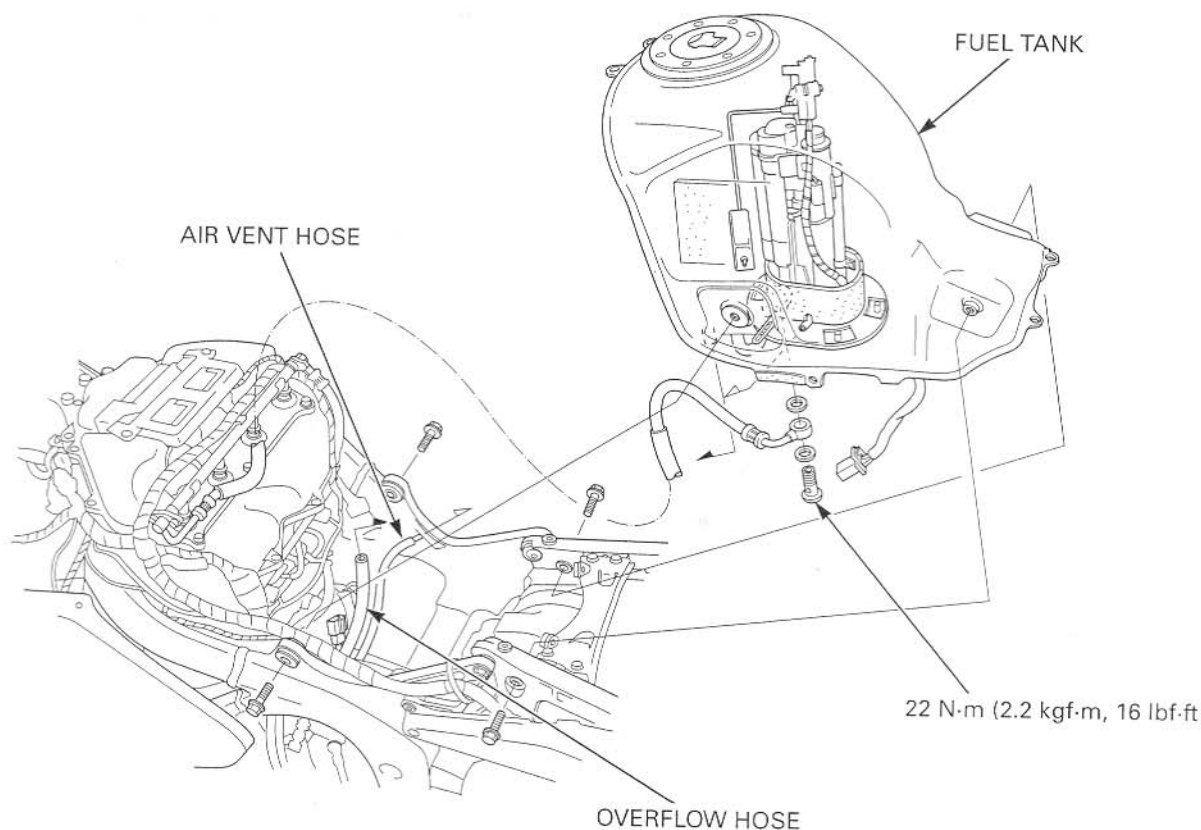
- Before disconnecting fuel hoses, release the fuel pressure by loosening the fuel hose banjo bolt at the fuel tank.
- Failure to release the fuel pressure could result in fuel spilling onto painted or plastic parts, which will be damaged.
- Always replace the sealing washers when the fuel hose banjo bolt is removed or loosened.

Remove the fuel tank pivot bolts, collars and fuel tank.

Refer to procedures for fuel pump unit removal (page 6-59).



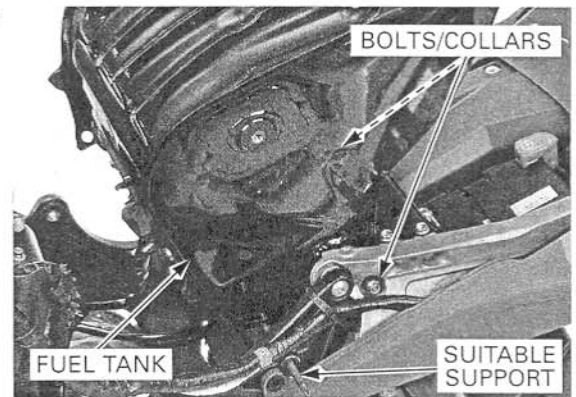
INSTALLATION



FUEL SYSTEM (Programmed Fuel Injection)

Install the fuel tank, collars and pivot bolts into the frame and tighten the bolts securely.

Support the fuel tank using a suitable support.



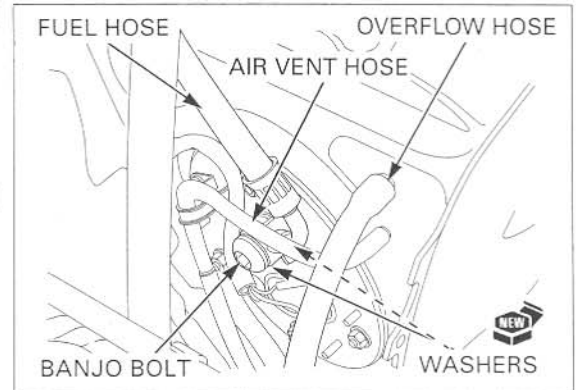
Align the fuel hose eyelet joint with the stopper on the fuel pump mounting stay.

Install the new sealing washers and tighten the fuel hose banjo bolt to the specified torque.

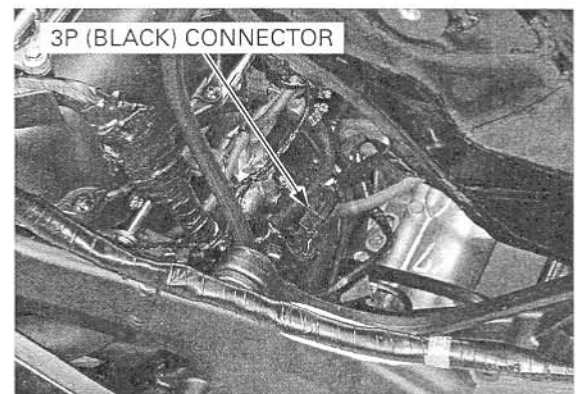
TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Route the hoses properly (page 1-22).

Connect the air vent and overflow hoses to the fuel tank.



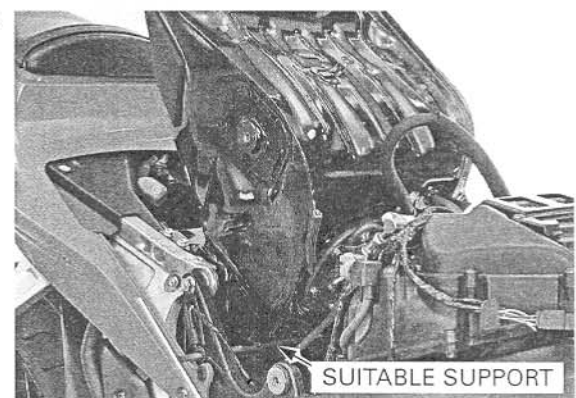
Connect the fuel pump unit 3P (Black) connector.



Be careful not to damage the wire harness, fuel feed hose, overflow hose and air vent hose.

Remove the suitable support and close the fuel tank on the frame.

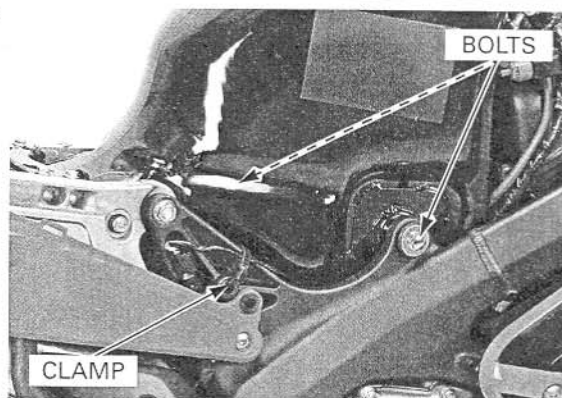
Route the harness, wires and hoses properly (page 1-22).



FUEL SYSTEM (Programmed Fuel Injection)

Install and tighten the mounting bolts and wire clamp.

Install the fuel tank cover (page 3-15).



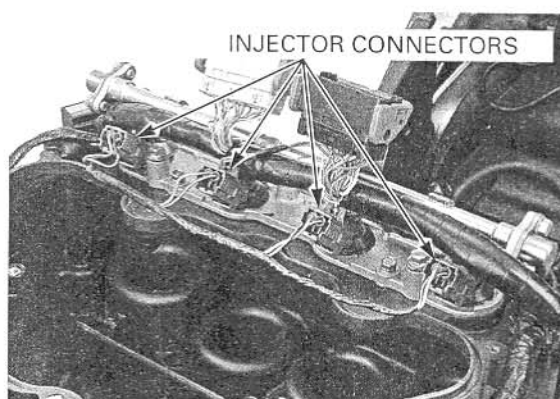
AIR CLEANER HOUSING

REMOVAL

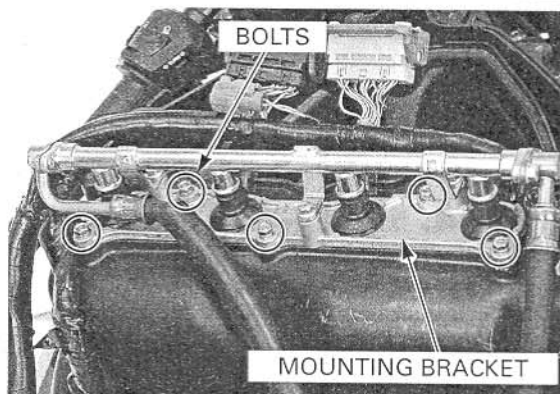
Remove the following:

- Fuel tank (page 6-61)
- ECM (page 6-94)
- Air cleaner cover (page 4-6)

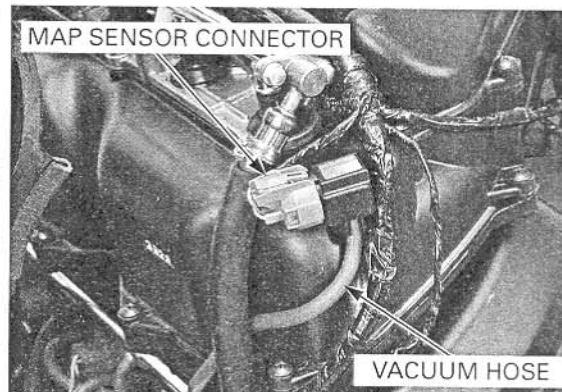
Disconnect the secondary injector connectors.



Remove the five bolts and secondary injector mounting bracket from the air cleaner housing.

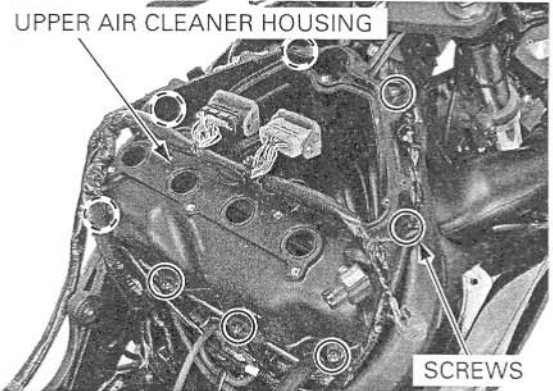


Disconnect the MAP sensor connector and vacuum hose.

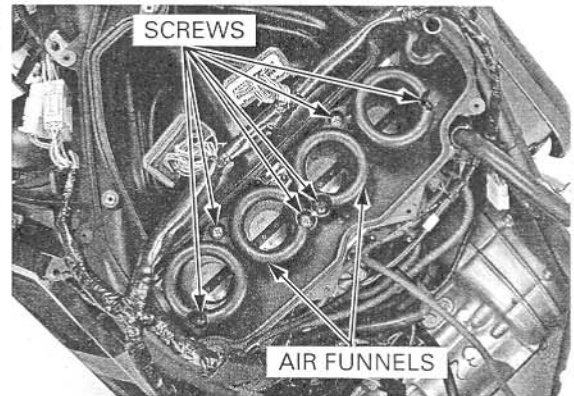


FUEL SYSTEM (Programmed Fuel Injection)

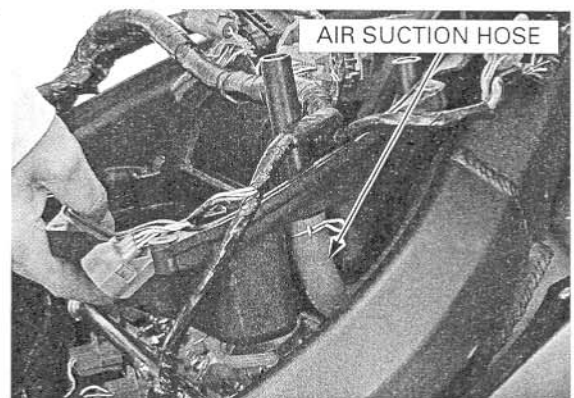
Remove the eight screws and upper air cleaner housing.



Remove the air funnel/air cleaner housing mounting screws, then remove the air funnels.



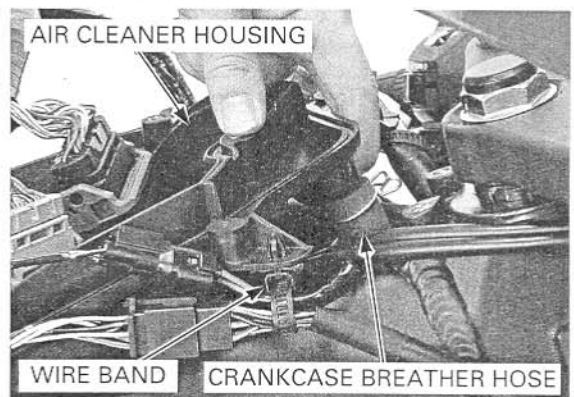
Disconnect the PAIR air suction hose from the air cleaner housing.



Disconnect the crankcase breather hose from the air cleaner housing.

Remove the wire band clamp from the air cleaner housing.

Remove the air cleaner housing.

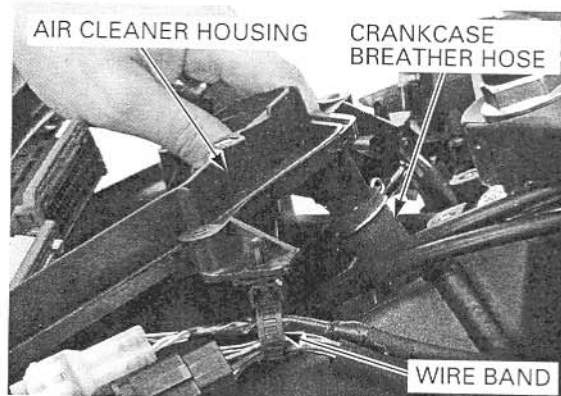


FUEL SYSTEM (Programmed Fuel Injection)

INSTALLATION

Connect the crankcase breather hose to the air cleaner housing.

Install the wire band and secure the wires.

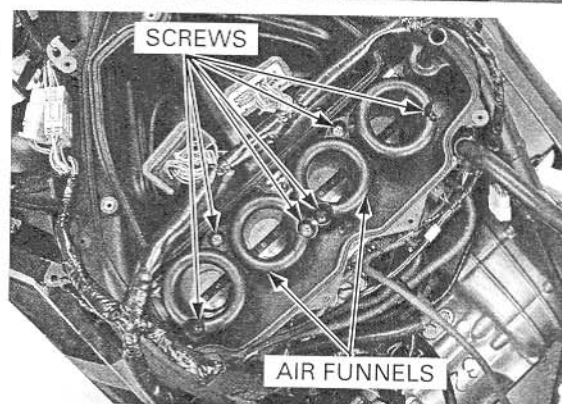


Connect the PAIR air suction hose to the air cleaner housing.

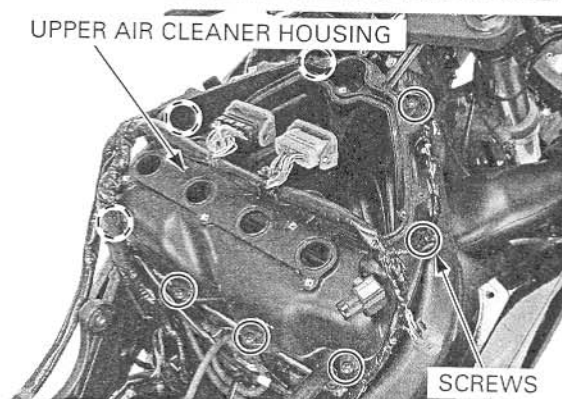
Install the air cleaner housing onto the throttle body.



Install the air funnels in their proper locations.
Install and tighten the air funnel/air cleaner housing mounting screws.

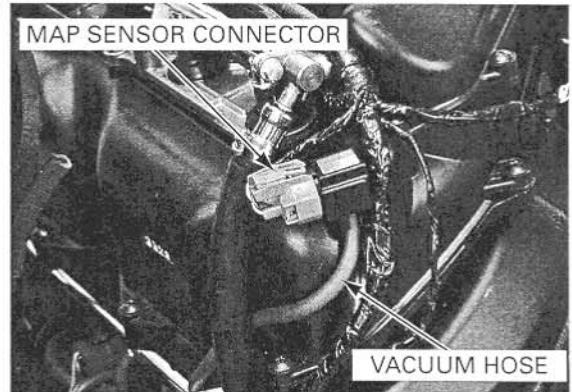


Install the upper air cleaner housing and eight screws.
Tighten the screws securely.



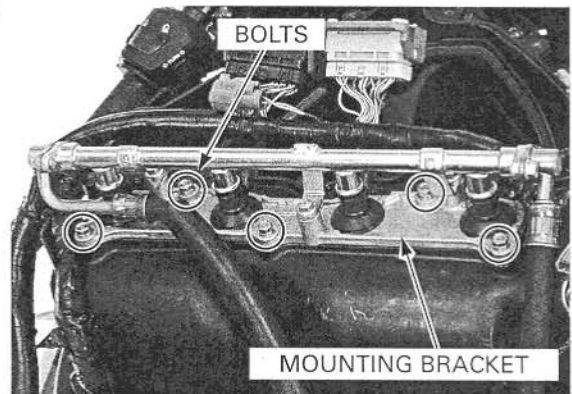
FUEL SYSTEM (Programmed Fuel Injection)

Connect the MAP sensor connector and vacuum hose.



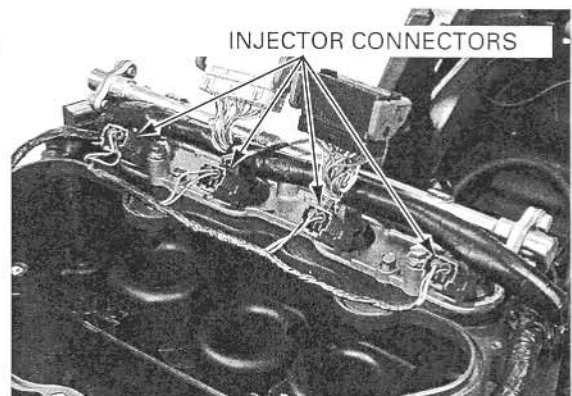
Install the secondary injector mounting bracket onto the air cleaner housing.
Tighten the bolts to the specified torque.

TORQUE: 5.4 N·m (0.55 kgf·m, 4 lbf·ft)



Connect the secondary injector connectors.

Install the removed parts in the reverse order of removal.



SECONDARY INJECTOR

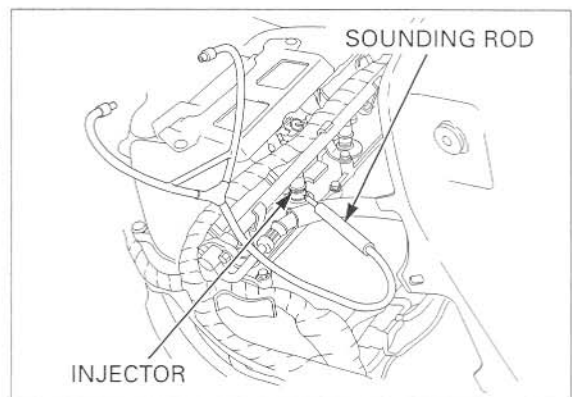
INSPECTION

Start the engine and let it idle.
Confirm the injector operating sounds with a sounding rod or stethoscope.

NOTE:

The secondary injectors operate with following conditions.

- Engine speed is over 5,500 rpm
- Throttle opening is over 50°



FUEL SYSTEM (Programmed Fuel Injection)

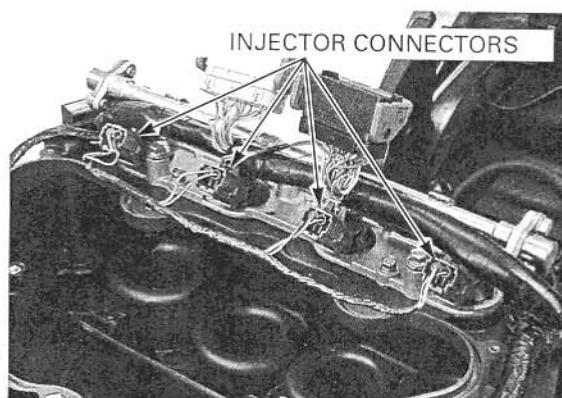
REMOVAL

- Before disconnecting the fuel line, release the fuel pressure by loosening the fuel hose banjo bolt.
- Failure to release the fuel pressure could result in fuel spilling onto painted or plastic parts, which will be damaged.
- Always replace the sealing washer when the fuel hose banjo bolt is removed or loosened.

Remove the following:

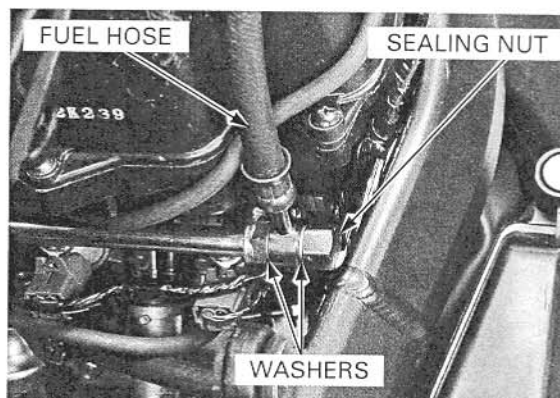
- Fuel tank (page 6-61)
- ECM (page 6-94)
- Air cleaner cover (page 4-6)

Disconnect the secondary injector connectors.

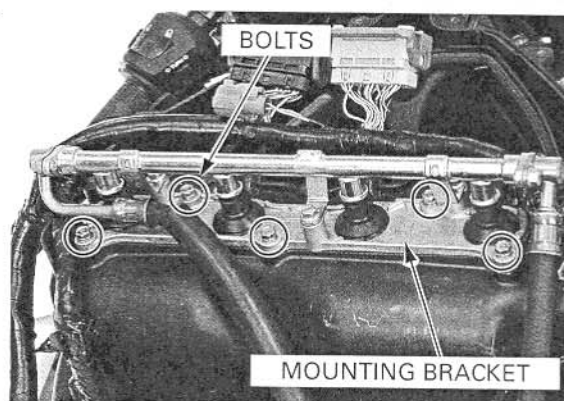


Do not apply excessive force the fuel rail.

Hold the fuel rail nut and remove the fuel hose sealing nut and sealing washers, then disconnect the fuel hose.

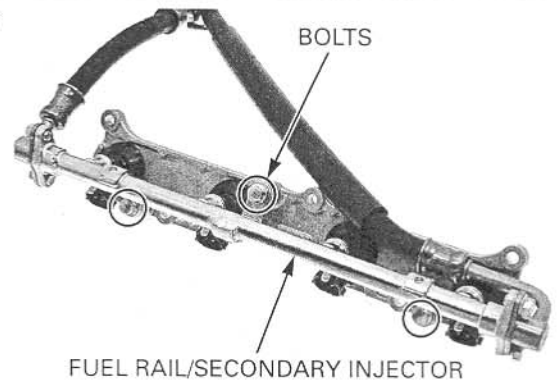


Remove the five bolts and secondary injector mounting bracket from the air cleaner housing.

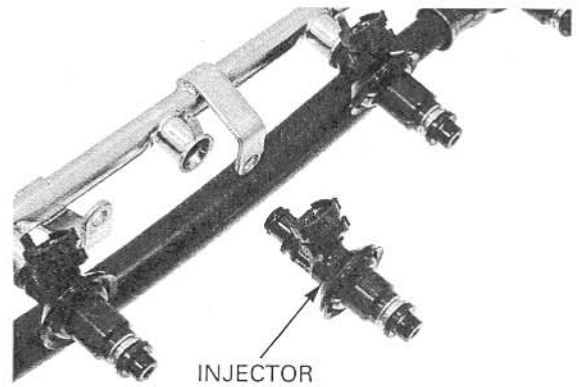


FUEL SYSTEM (Programmed Fuel Injection)

Remove the bolts and fuel rail/secondary injector assembly from the mounting bracket.



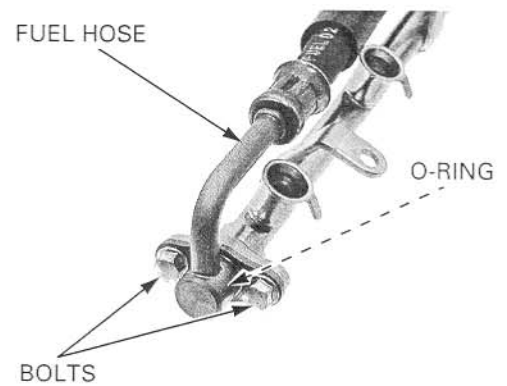
Remove the injectors from the fuel rail.



Remove the O-ring, seal ring, cushion ring and dust seal.



Remove the two bolts, fuel hose and O-ring.

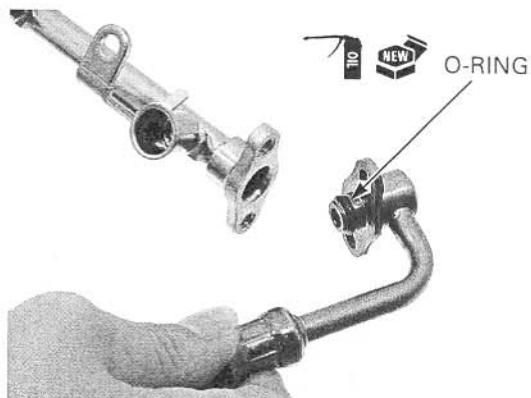


FUEL SYSTEM (Programmed Fuel Injection)

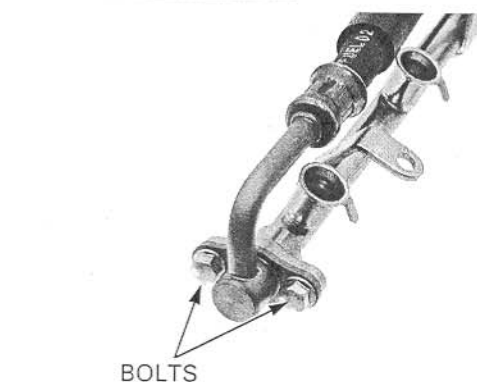
INSTALLATION

Apply oil to new O-ring and install it into the fuel rail.

Install the fuel hose into the fuel rail.



Tighten the bolts securely.



Apply oil to a new O-ring.

Replace the seal ring, cushion ring and O-ring with new ones as a set.

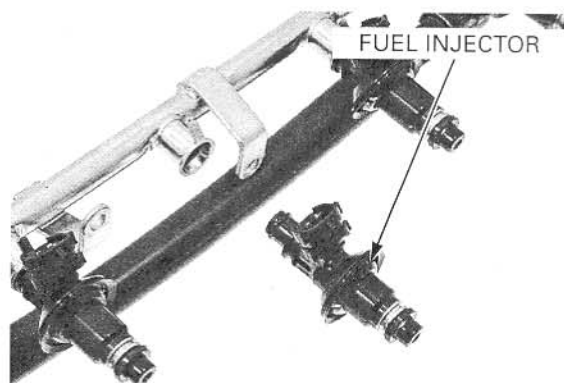
Install the new seal ring, cushion ring and O-ring, being careful not to damage the O-ring.

Check the dust seal for wear or damage, replace it if necessary.

Install the dust seal.



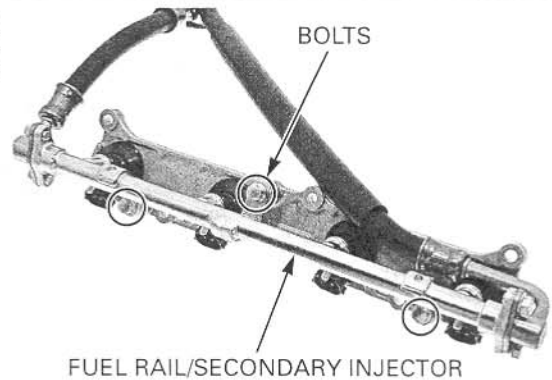
Install the fuel injectors into the fuel rail, being careful not to damage the O-ring and cushion ring.



FUEL SYSTEM (Programmed Fuel Injection)

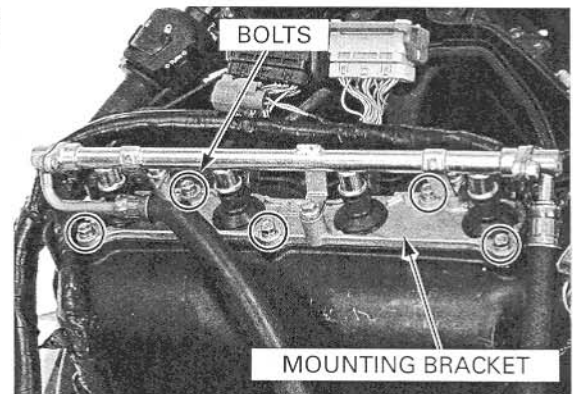
Install the fuel rail/secondary injector assembly onto the mounting bracket, being careful not to damage the seal rings and tighten the bolts to the specified torque.

TORQUE: 9.8 N·m (1.0 kgf·m, 7 lbf·ft)



Install the secondary injector mounting bracket onto the air cleaner housing and tighten the bolts to the specified torque.

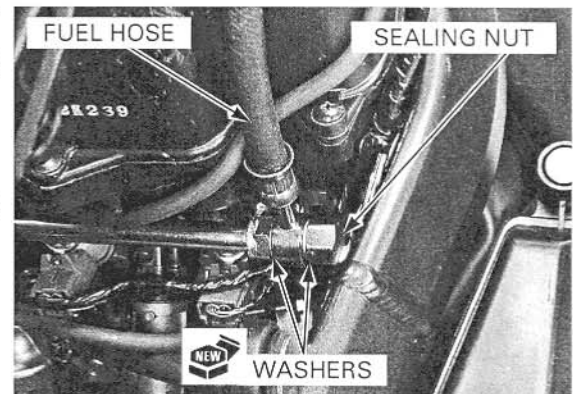
TORQUE: 5.4 N·m (0.55 kgf·m, 4 lbf·ft)



Connect the fuel hose to the fuel rail with new sealing washers. Install and tighten the sealing nut to the specified torque.

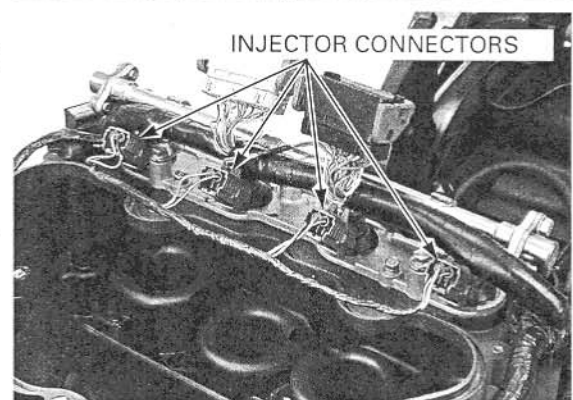
TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

- Do not apply excessive force to the fuel rail.
- Always hold the fuel rail nut while tightening the fuel hose sealing nut.



Connect the secondary injector connectors.

Install the removed parts in the reverse order of removal.



FUEL SYSTEM (Programmed Fuel Injection)

THROTTLE BODY

REMOVAL

- Before disconnecting the fuel line, release the fuel pressure by loosening the fuel hose banjo bolt.
- Failure to release the fuel pressure could result in fuel spilling onto painted or plastic parts, which will be damaged.
- Always replace the sealing washer when the fuel hose banjo bolt is removed or loosened.

Drain the coolant from the cooling system (page 7-6).

Remove the following:

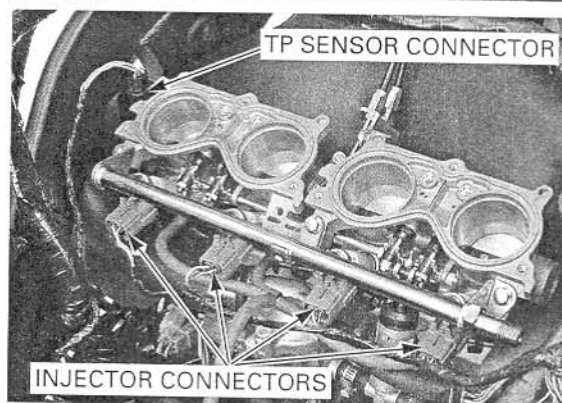
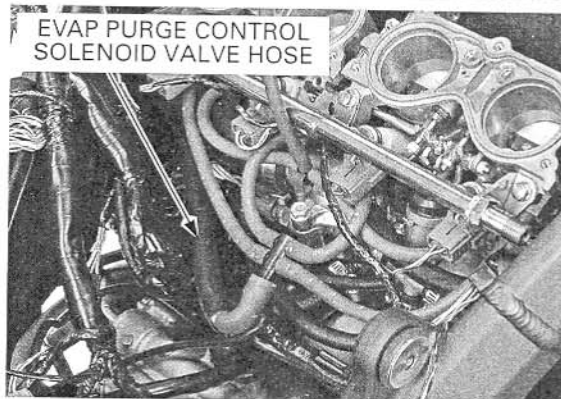
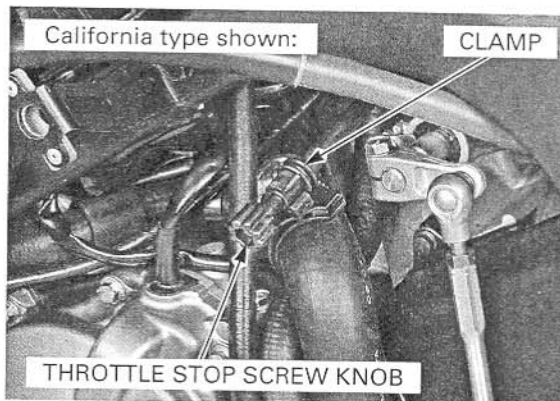
- Lower cowls (page 3-6)
- Middle cowls (page 3-7)
- Fuel tank (page 6-61)
- Air cleaner housing (page 6-64)

Release the throttle stop screw knob from the clamp.

California type only: Disconnect the EVAP purge control solenoid valve hose from the 5-way joint.

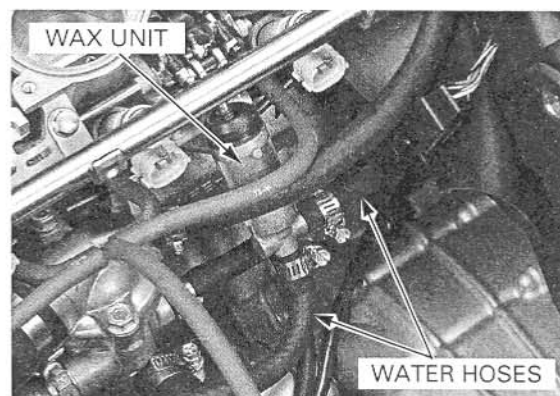
Disconnect the primary injector connectors.

Disconnect the TP sensor connector.

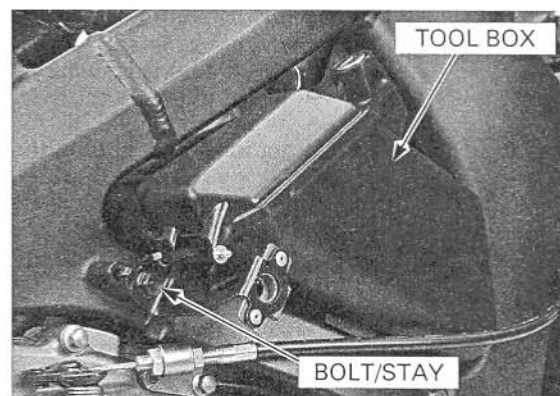


FUEL SYSTEM (Programmed Fuel Injection)

Loosen the hose clamp screws and disconnect the fast idle wax unit water hoses from the wax unit.



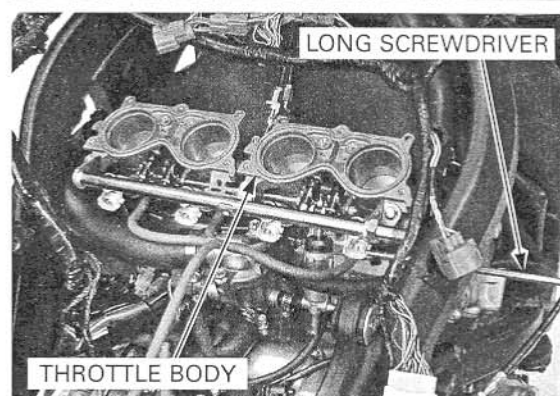
Remove the bolt, stay and tool box from the frame.



Do not hold the fuel rail on the throttle body to remove the throttle body, or it may be damaged.

Loosen the engine side insulator band screws using a long type phillips screwdriver.

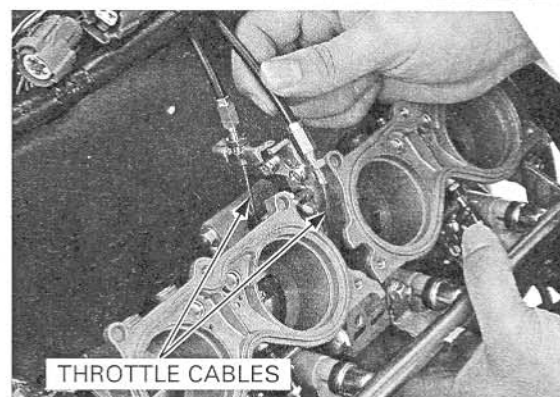
Remove the throttle body from the cylinder head.



Do not snap the throttle valve from fully open to fully closed after the throttle cable has been removed. It may cause incorrect idle operation.

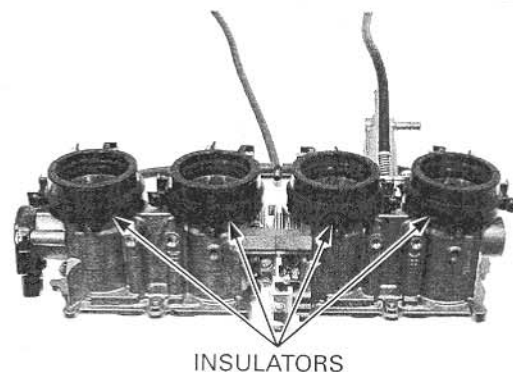
Loosen the lock nuts and disconnect the throttle cable ends from the throttle drum.

- Seal the cylinder head intake ports with tape or a clean cloth to keep dirt and debris from entering the intake ports after the throttle body has been removed. If debris is allowed to enter the ports the engine may be damaged.



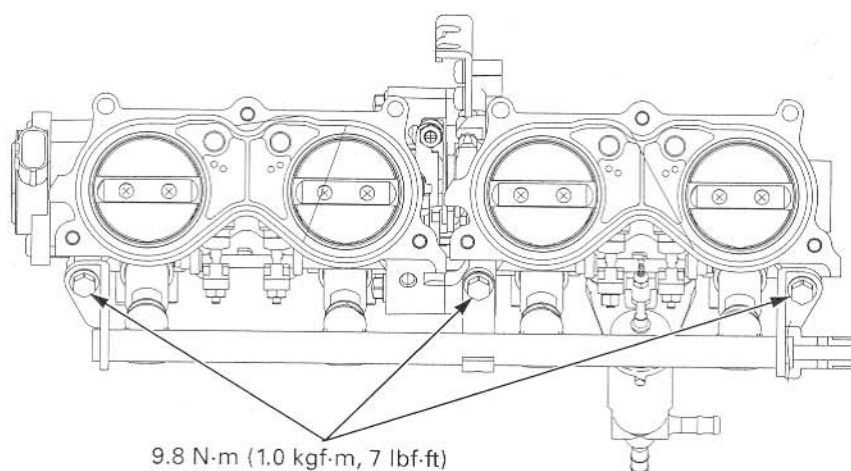
FUEL SYSTEM (Programmed Fuel Injection)

Loosen the insulator band screws and remove the insulators from the throttle body.

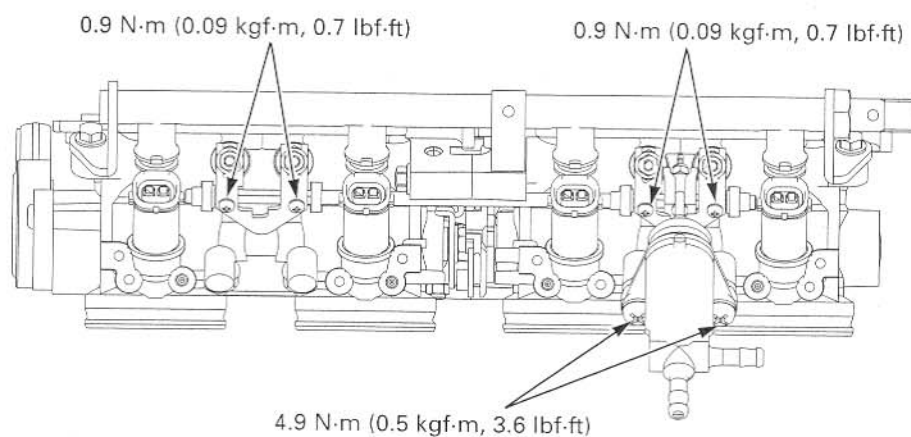


- Do not damage the throttle body. It may cause incorrect throttle and idle valve synchronization.
- The throttle body is factory pre-set. Do not disassemble in a way other than shown in this manual.
- Do not loosen or tighten the white painted bolts and screws of the throttle body. Loosening or tightening them can cause throttle and idle valve synchronization failure.

TOP VIEW:

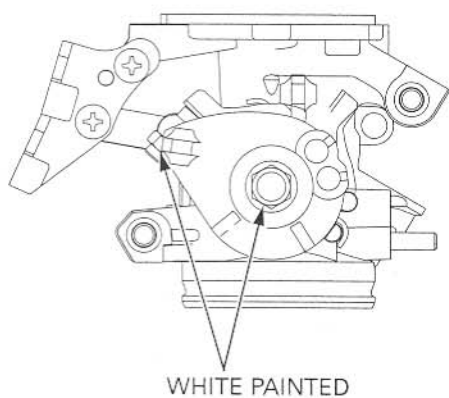


REAR VIEW:

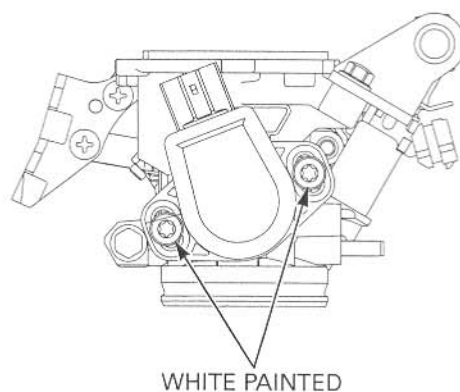


FUEL SYSTEM (Programmed Fuel Injection)

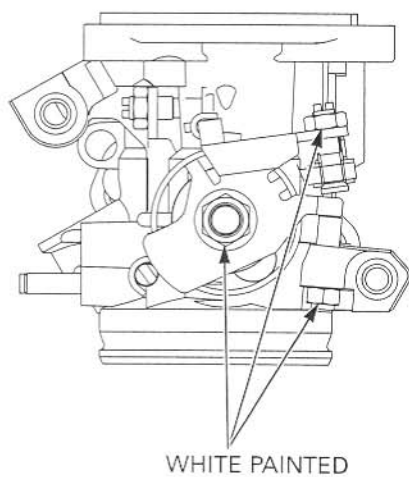
THROTTLE DRUM VIEW:



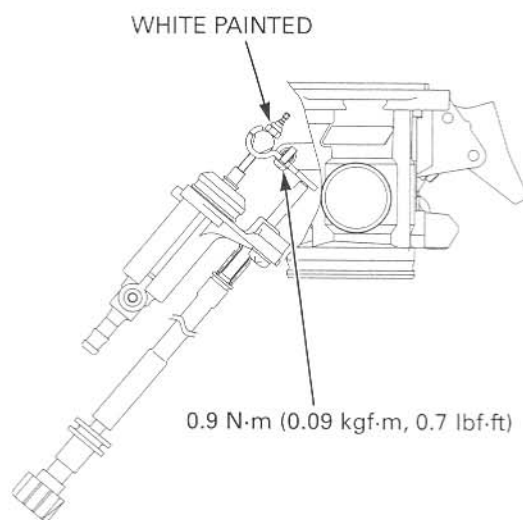
RIGHT SIDE VIEW:



THROTTLE LINK VIEW:



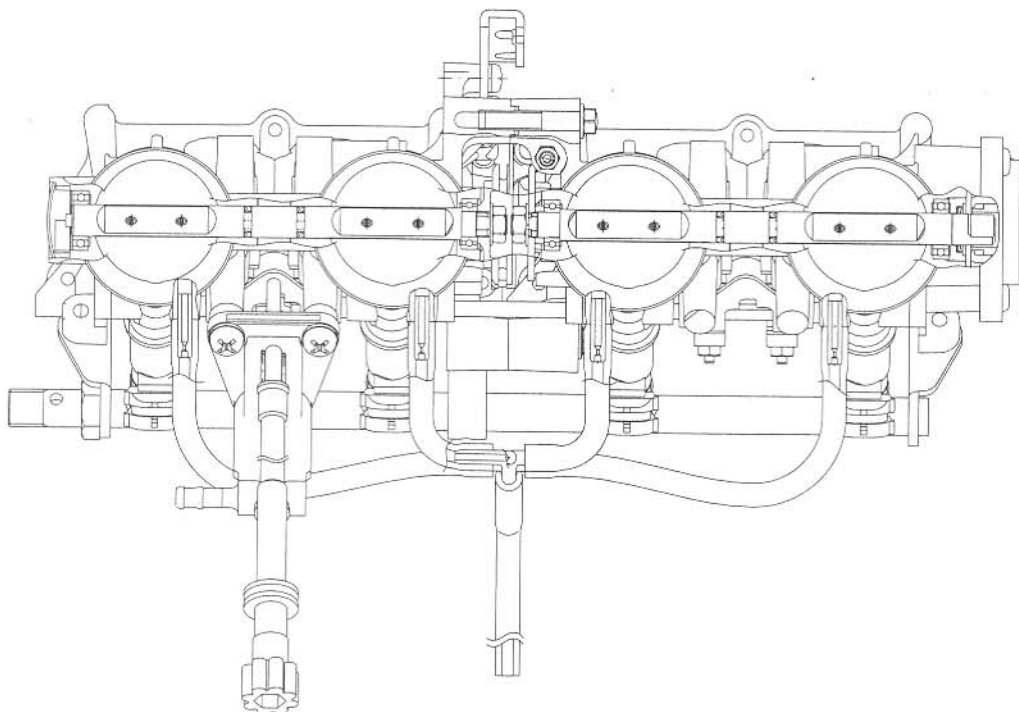
STARTER VALVE LINK VIEW:



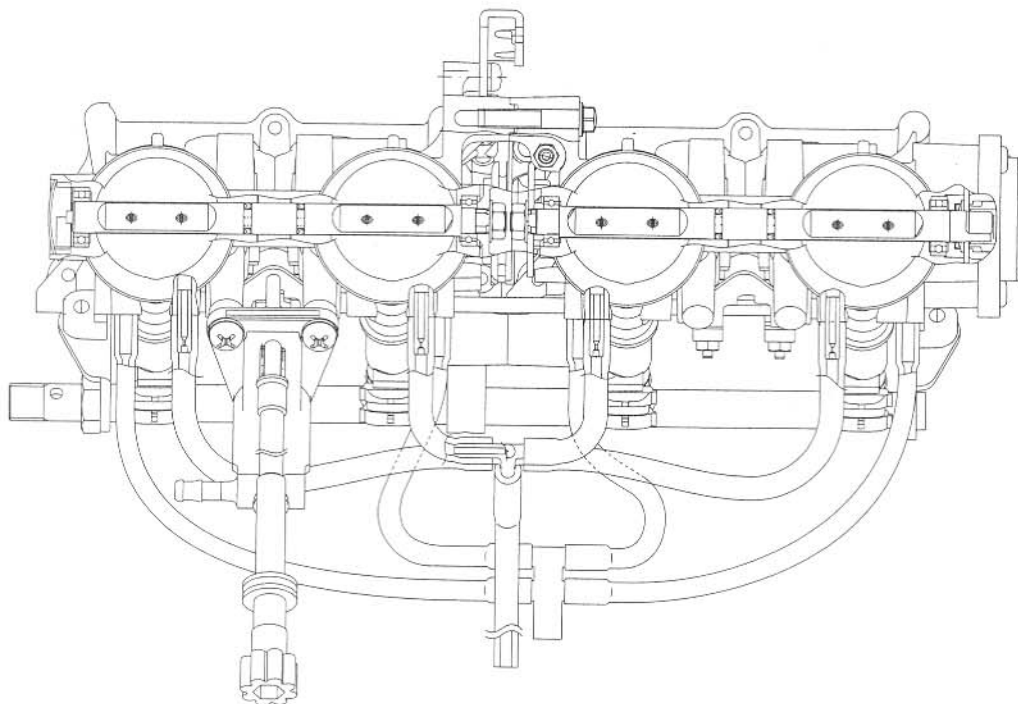
FUEL SYSTEM (Programmed Fuel Injection)

THROTTLE BODY VACUUM HOSE ROUTING

Except California type:

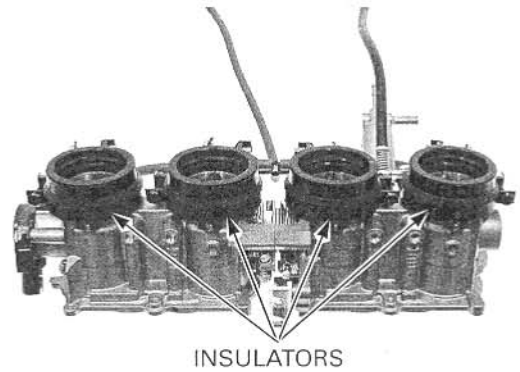


California type:



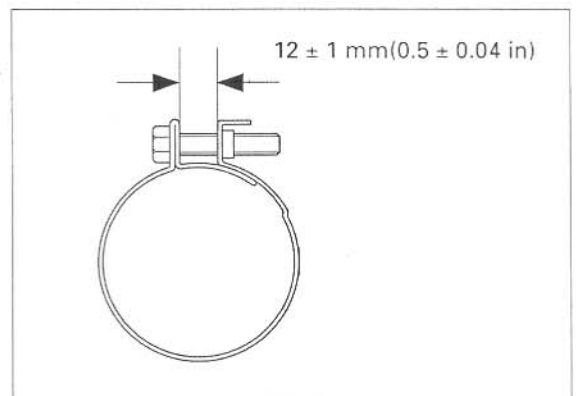
INSTALLATION

Check the insulator band angle.
Install the insulators onto the throttle body.



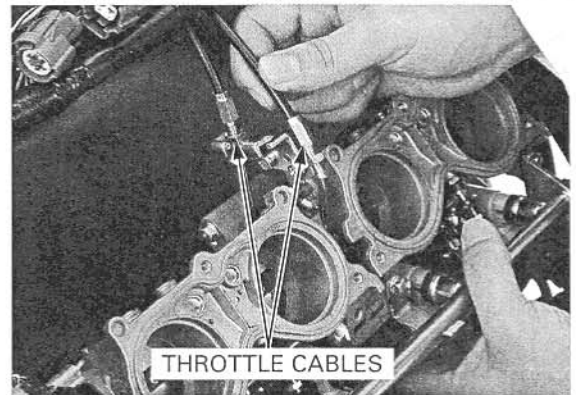
Tighten the throttle body side insulator band screw so that the insulator band distance is 12 ± 1 mm (0.5 ± 0.04 in).

Apply oil to the insulator inside surfaces for ease of throttle body installation.



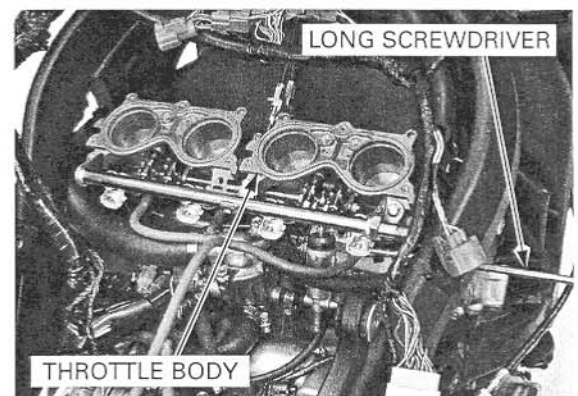
Route the throttle cables properly (page 1-22).

Connect the throttle cable ends to the throttle drum.



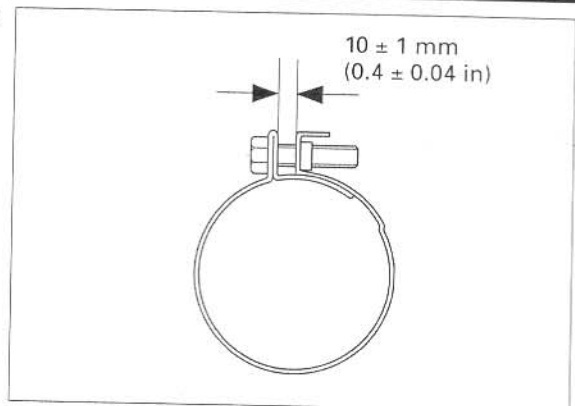
Do not hold the fuel pipe on the throttle body to install the throttle body.

Install the throttle body onto the cylinder head.

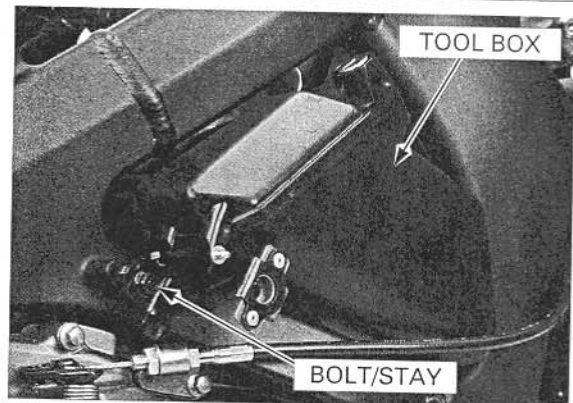


FUEL SYSTEM (Programmed Fuel Injection)

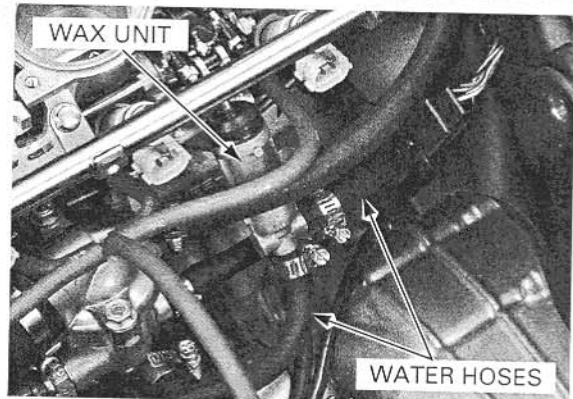
Tighten the engine side insulator band so that the insulator band distance is 10 ± 1 mm (0.4 ± 0.04 in).



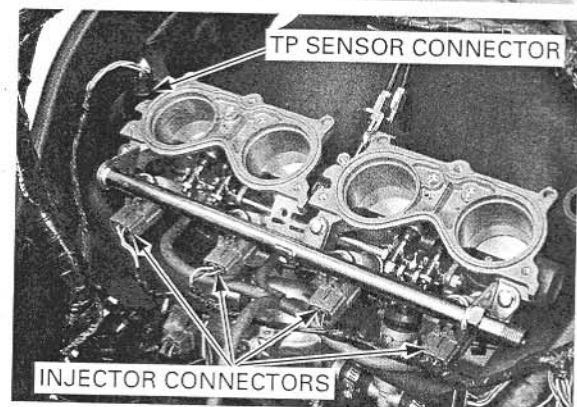
Install the tool box, stay and tighten the bolt securely.



Connect the fast idle wax unit water hoses to the wax unit and tighten the hose clamp screws.

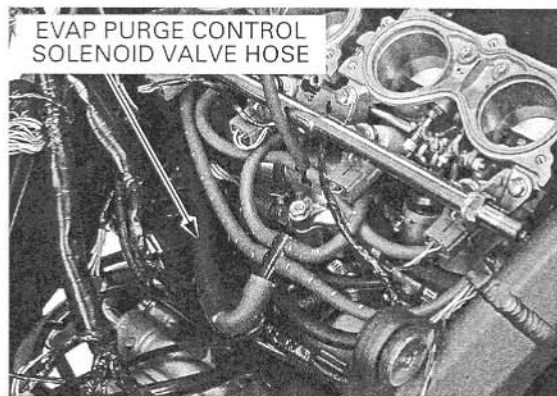


Connect the TP sensor connector and primary injector connectors.



FUEL SYSTEM (Programmed Fuel Injection)

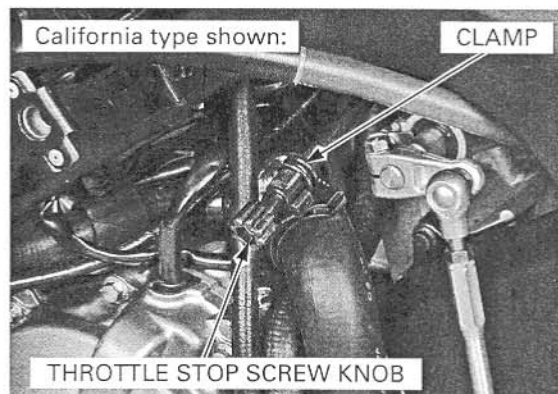
California type only: Connect the EVAP purge control solenoid valve hose from the 5-way joint.



Route the throttle stop screw properly, install the throttle stop screw knob to the clamp on the bypass hose.

Install the removed parts in the reverse order of removal.

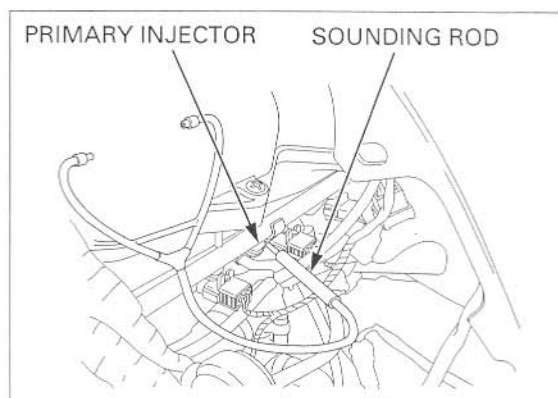
After installation, adjust the throttle grip free play (page 4-6).



PRIMARY INJECTOR

INSPECTION

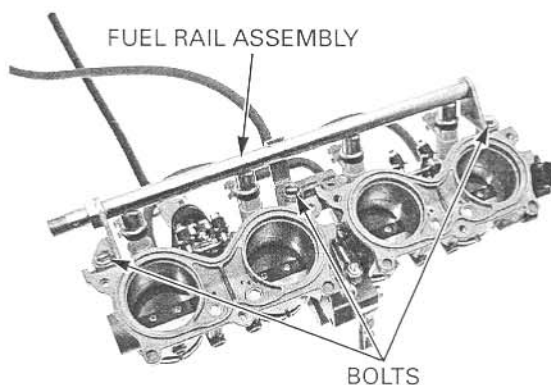
Start the engine and let it idle.
Confirm the injector operating sounds with a sounding rod or stethoscope.



REMOVAL

Remove the throttle body (page 6-72).

Remove the bolts and fuel rail/primary injector assembly.



FUEL SYSTEM (Programmed Fuel Injection)

Remove the injectors from the fuel rail.



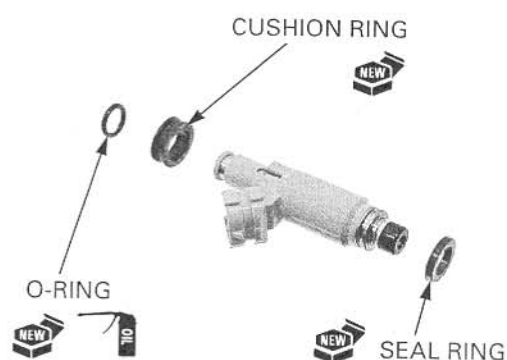
Remove the seal ring, O-ring and cushion ring.

INSTALLATION

Apply oil to the new O-ring.

Replace the seal ring, cushion ring and O-ring with new ones as a set.

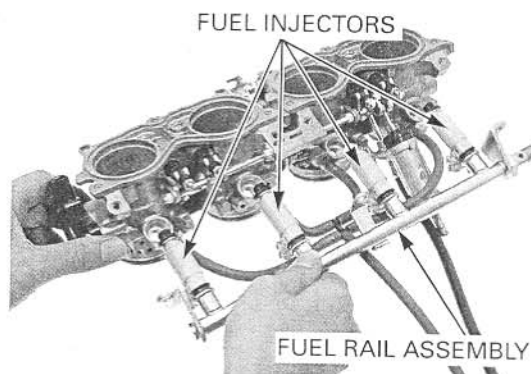
Install the new seal ring, cushion ring and O-ring, being careful not to damage the O-ring.



Install the fuel injectors into the fuel rail, being careful not to damage the O-ring and cushion ring.



Install the fuel rail/primary injector assembly onto the throttle body, being careful not to damage the seal rings.

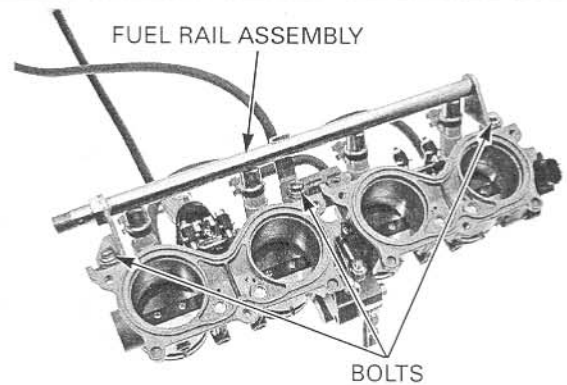


FUEL SYSTEM (Programmed Fuel Injection)

Tighten the fuel rail mounting bolts to the specified torque.

TORQUE: 9.8 N·m (1.0 kgf·m, 7 lbf·ft)

Install the throttle body (page 6-77).



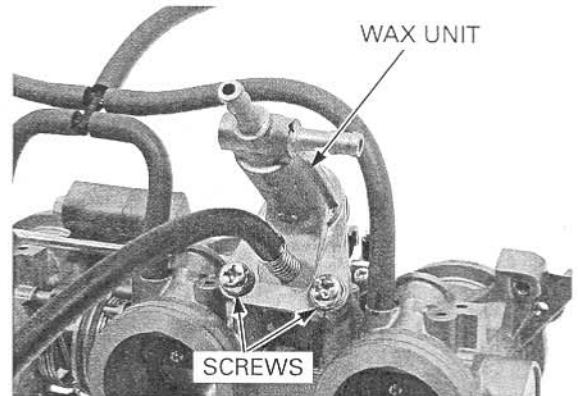
FAST IDLE WAX UNIT

REMOVAL/INSTALLATION

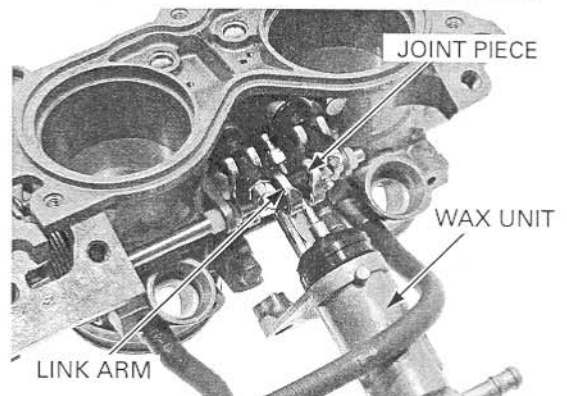
Do not loosen or remove the wax unit shaft lock nut and adjusting nut.

Remove the throttle body (page 6-72).

Remove the wax unit mounting screws.

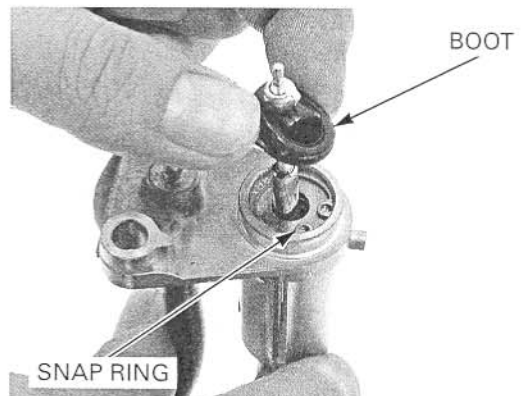


Release the wax unit shaft joint piece from the wax unit link arm, then remove the wax unit assembly.



Remove the boot.

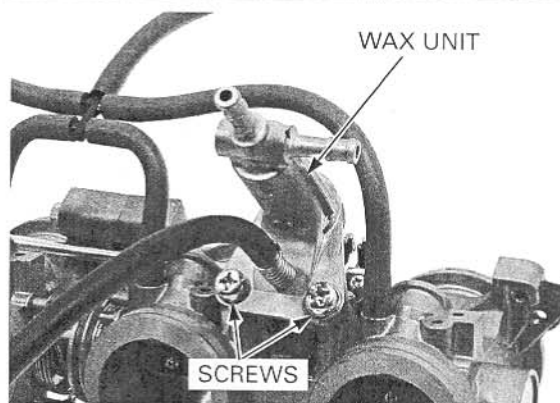
Remove the snap ring from the wax unit assembly.



FUEL SYSTEM (Programmed Fuel Injection)

Tighten the wax unit mounting screws to the specified torque.

TORQUE: 4.9 N·m (0.5 kgf·m, 3.6 lbf·ft)



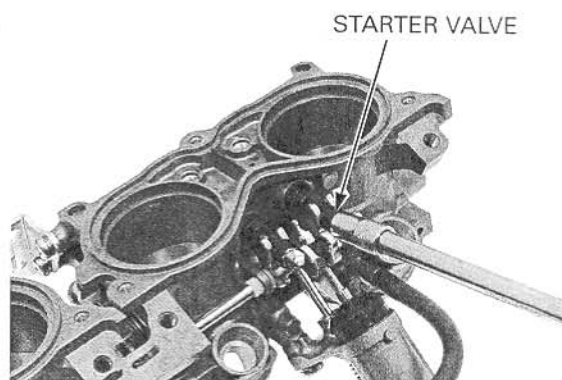
STARTER VALVE

DISASSEMBLY

Remove the throttle body (page 6-72).

Remove the fuel rail and primary injectors (page 6-79).

Turn each starter valve adjusting screw in, recording the number of turns until it seats lightly.



No.1/2 starter valve:

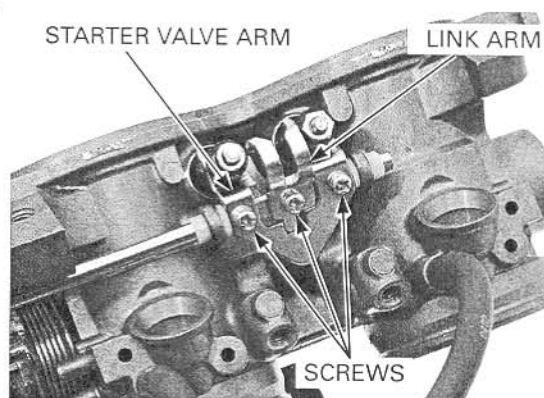
Remove the starter valve arm screws and starter valve arms.

No.3/4 starter valve:

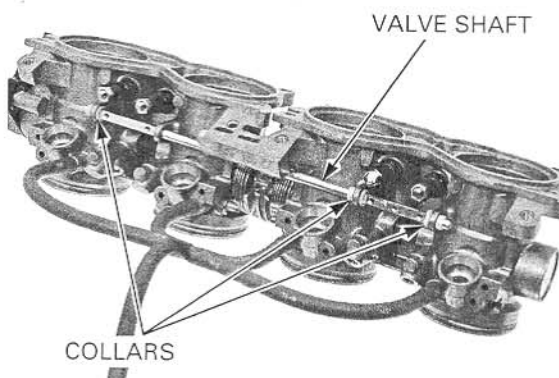
Remove the fast idle wax unit (page 6-81).

Remove the starter valve arm screws and starter valve arm.

Remove the screw and fast idle wax unit link arm.



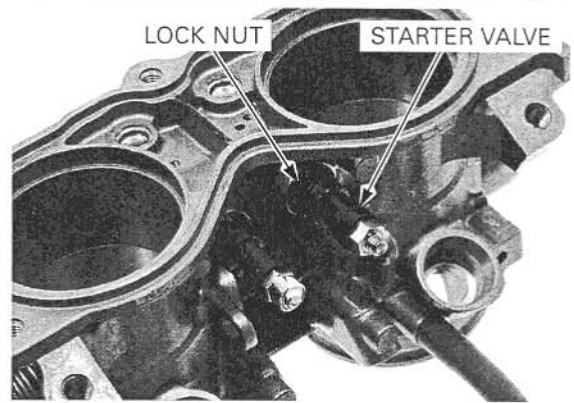
Remove the starter valve shaft and three collars.



FUEL SYSTEM (Programmed Fuel Injection)

Mark the starter valves during disassembly so they can be placed back in their original locations.

Loosen the lock nut and remove the starter valves.



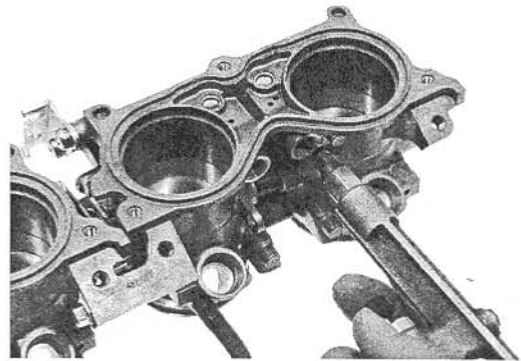
Check the starter valve for scratches, scoring or other damage, replace it if necessary.

STARTER VALVE



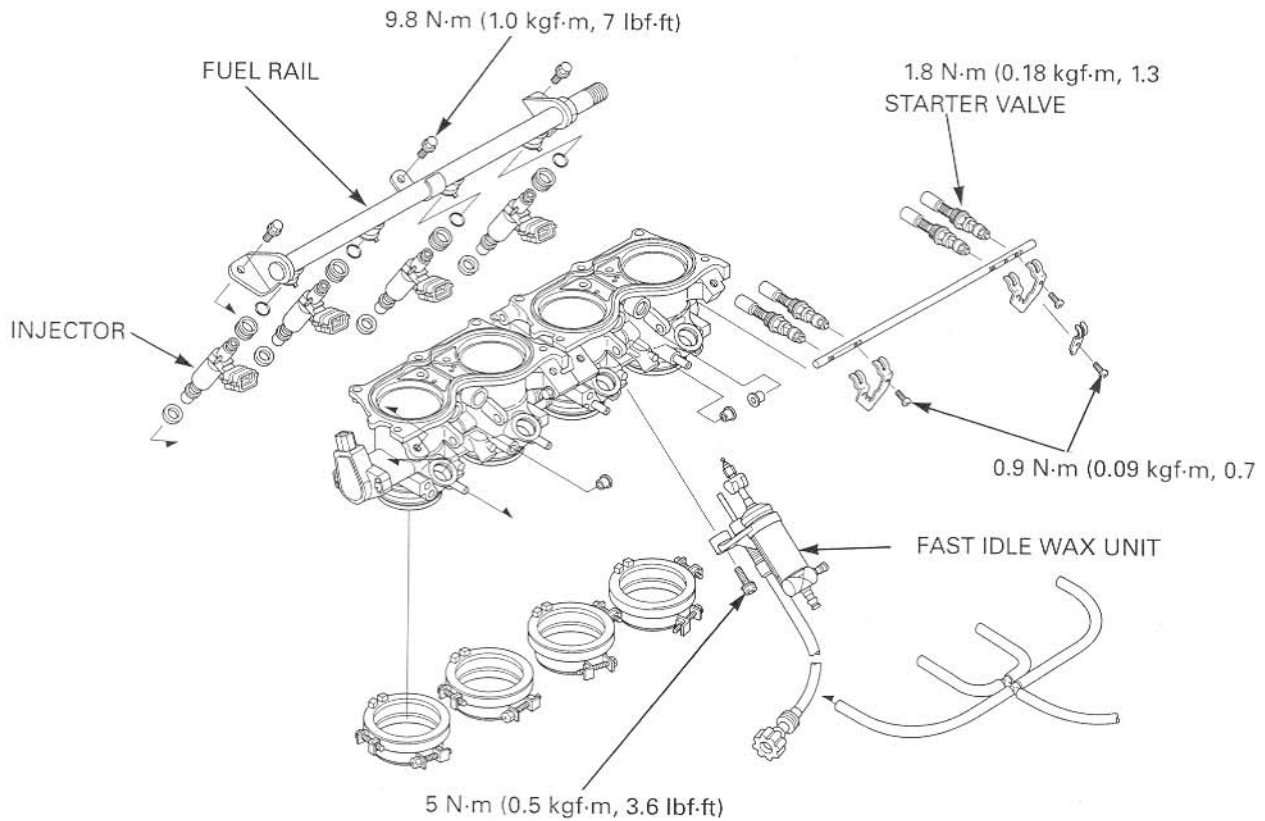
Do not apply commercially available carburetor cleaners to the inside of the throttle bore, which is coated with molybdenum.

Clean the starter valve bypasses using compressed air.

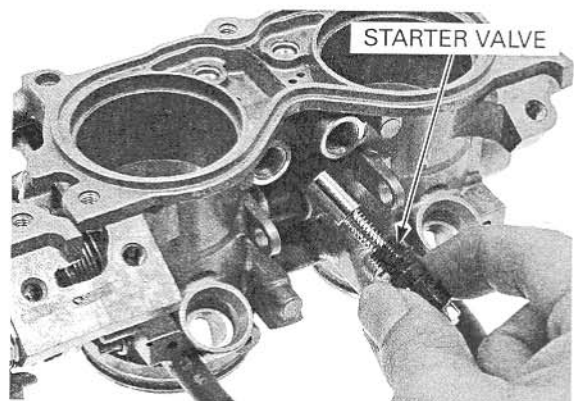


FUEL SYSTEM (Programmed Fuel Injection)

ASSEMBLY

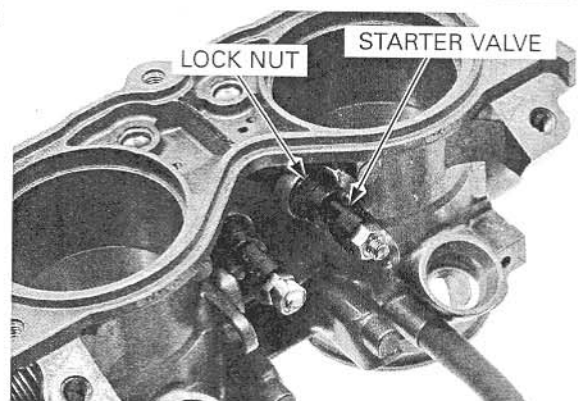


Install the starter valves into the valve holes.



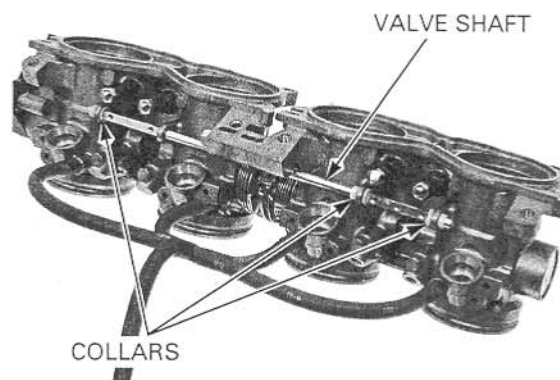
Tighten the starter valve lock nut to the specified torque.

TORQUE: 1.8 N·m (0.18 kgf·m, 1.3 lbf·ft)



FUEL SYSTEM (Programmed Fuel Injection)

Install the three collars and starter valve shaft.



No.1/2 starter valve:

Install the No.1/2 starter valve arm to the starter valves.

Install and tighten the starter valve arm mounting screws to the specified torque.

TORQUE: 0.9 N·m (0.09 kgf·m, 0.7 lbf·ft)

No.3/4 starter valve:

Compress the thrust spring and install the No.3/4 starter valve arm onto the starter valves.

Install and tighten the starter valve arm mounting screws to the specified torque.

TORQUE: 0.9 N·m (0.09 kgf·m, 0.7 lbf·ft)

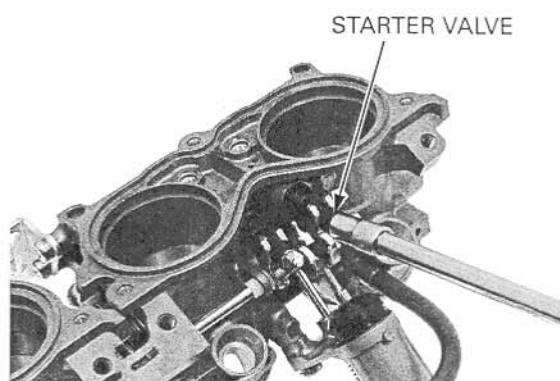
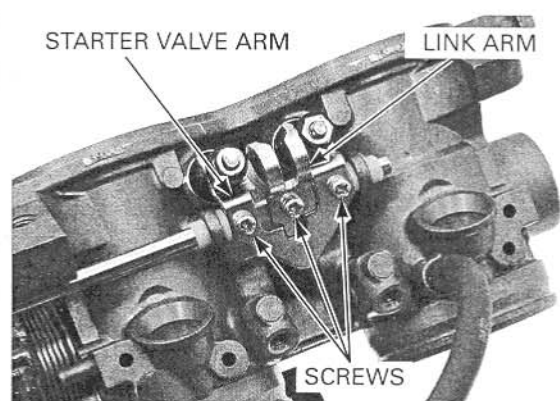
Install the fast idle wax unit link arm and tighten the screw to the specified torque.

TORQUE: 0.9 N·m (0.09 kgf·m, 0.7 lbf·ft)

Install the fast idle wax unit (page 6-81).

Turn the starter valve screw until it seats lightly, then back it out as noted during removal.

Install the throttle body (page 6-77).



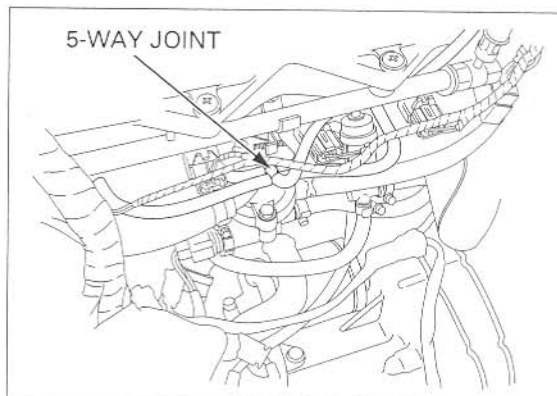
FUEL SYSTEM (Programmed Fuel Injection)

STARTER VALVE SYNCHRONIZATION

- Synchronize the starter valve with the engine at normal operating temperature and with the transmission in neutral.
- Use a tachometer with graduations of 50 rpm or smaller that will accurately indicate 50 rpm change.

Lift and support the fuel tank (page 6-61).

Disconnect the each vacuum hose from the 5-way joint.



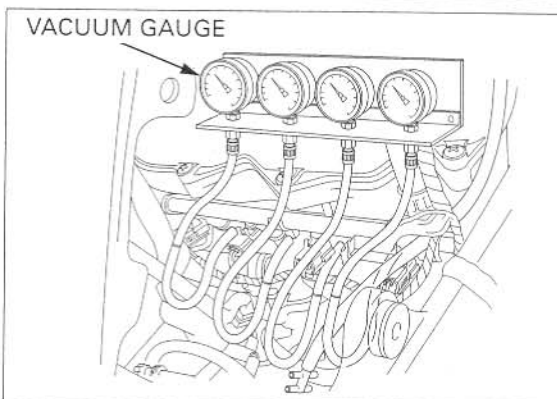
Connect the vacuum hoses to the vacuum gauge.

Connect a tachometer.

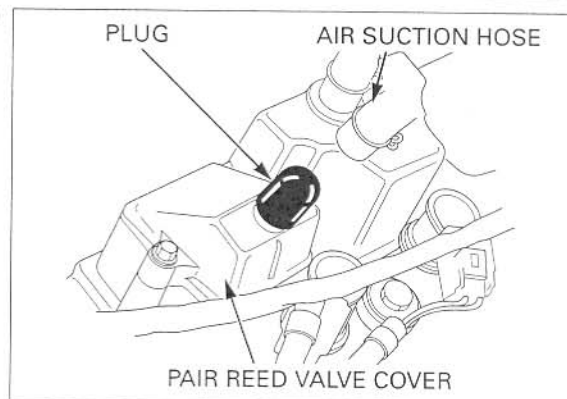
TOOL:

Vacuum gauge set

07LMJ-001000A



Disconnect the PAIR air suction hoses from the reed valve covers, then plug the covers.



FUEL SYSTEM (Programmed Fuel Injection)

Start the engine and adjust the idle speed with the throttle stop screw.

IDLE SPEED: $1,300 \pm 100$ rpm

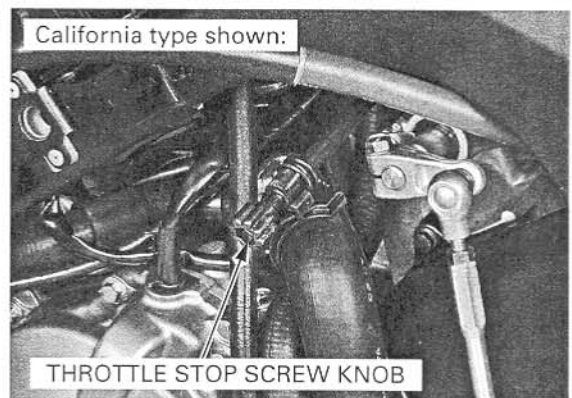
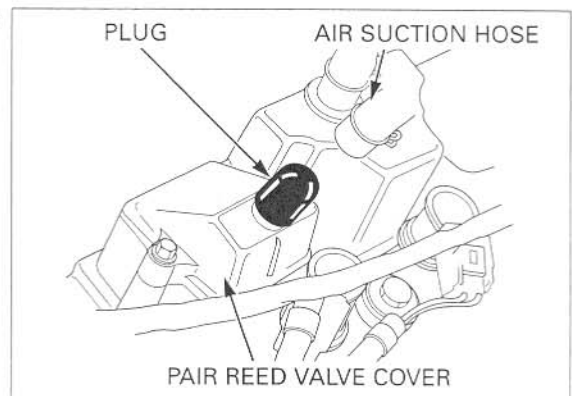
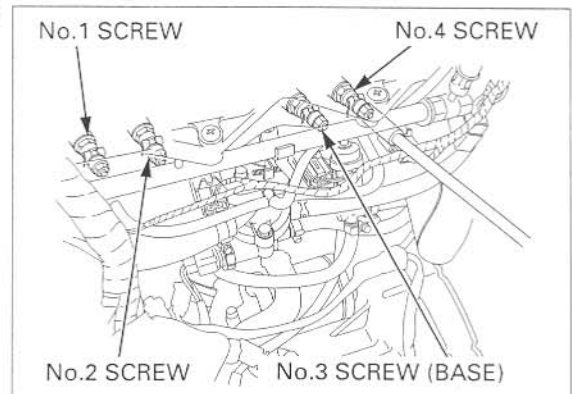
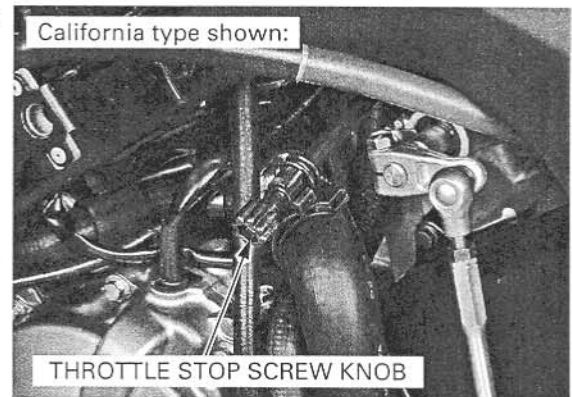
The No.3 starter valve cannot be adjusted, it is the base starter valve. Match each intake vacuum pressure with the No.3 starter valve.

STARTER VALVE VACUUM DIFFERENCE:
20 mmHg

Remove the plugs and connect the PAIR air suction hoses to the reed valve covers.

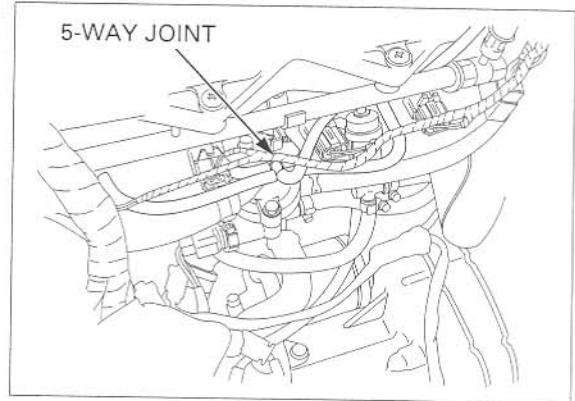
Adjust the idle speed if the idle speed differs from the specified speed.

IDLE SPEED: $1,300 \pm 100$ rpm



FUEL SYSTEM (Programmed Fuel Injection)

Remove the vacuum gauge from the vacuum hoses.
Connect the each vacuum hoses to the 5-way joint.
Reset the ECM failure code (page 6-9).



MAP SENSOR

OUTPUT VOLTAGE INSPECTION

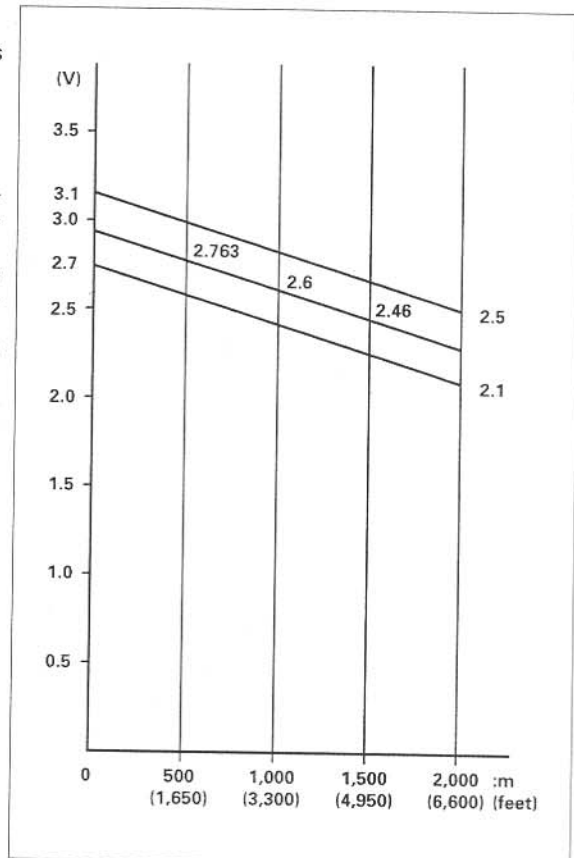
Connect the test harness to the ECM (page 6-10).
Measure the voltage at the test harness terminals (page 6-11).

Connection: B15 (+) – B17 (–)
STANDARD: 2.7 – 3.1 V

The MAP sensor output voltage (above) is measured under the standard atmosphere (1 atm = 1,013 hPa).

The MAP sensor output voltage is affected by the distance above sea level, because the output voltage is changed by atmosphere.

Check the sea level measurement and be sure that the measured voltage falls within the specified value.



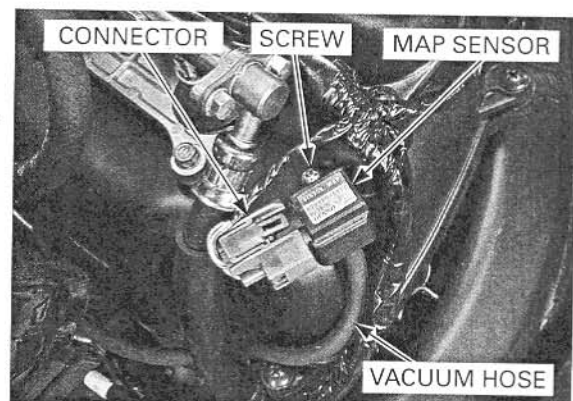
REMOVAL/INSTALLATION

Lift and support the fuel tank (page 6-61).

Disconnect the MAP sensor connector.
Disconnect the vacuum hose from the MAP sensor.

Remove the screw and MAP sensor from the air cleaner housing.

Installation is in the reverse order of removal.



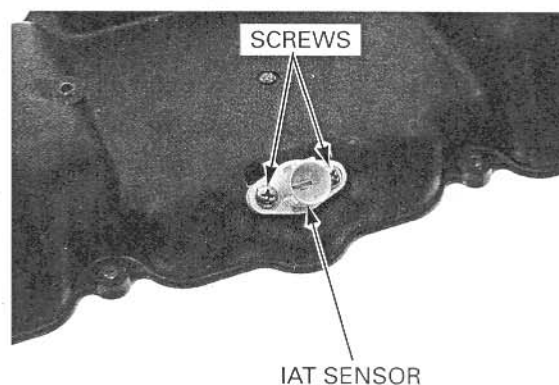
IAT SENSOR

REMOVAL/INSTALLATION

Remove the air cleaner housing cover (page 4-6).

Remove the screws and IAT sensor from the air cleaner housing cover.

Installation is in the reverse order of removal.



ECT SENSOR

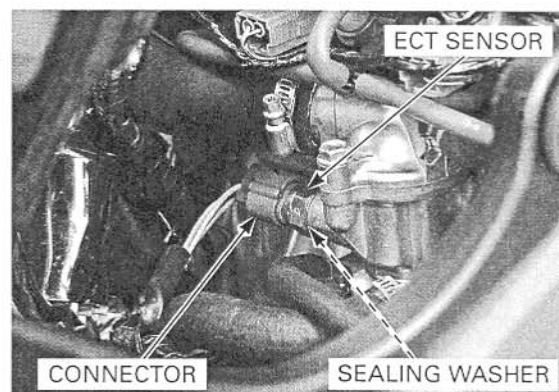
Replace the ECT sensor while the engine is cold.

REMOVAL/INSTALLATION

Drain the coolant from the system (page 7-6).

Disconnect the ECT sensor connector from the sensor.

Remove the ECT sensor and sealing washer.



Always replace a sealing washer with a new one.

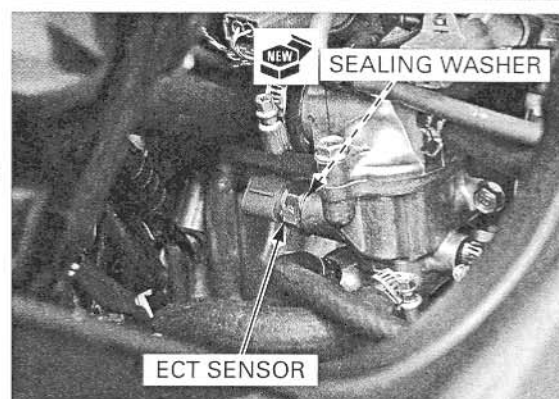
Install a new sealing washer and ECT sensor.

Tighten the ECT sensor to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Connect the ECT sensor connector.

Fill the cooling system with recommended coolant (page 7-6).



FUEL SYSTEM (Programmed Fuel Injection)

CAM PULSE GENERATOR

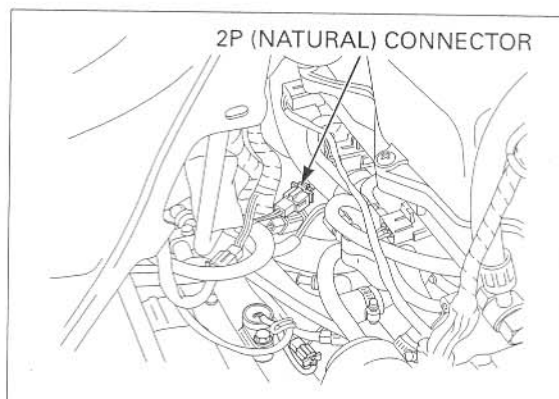
REMOVAL/INSTALLATION

Remove the following:

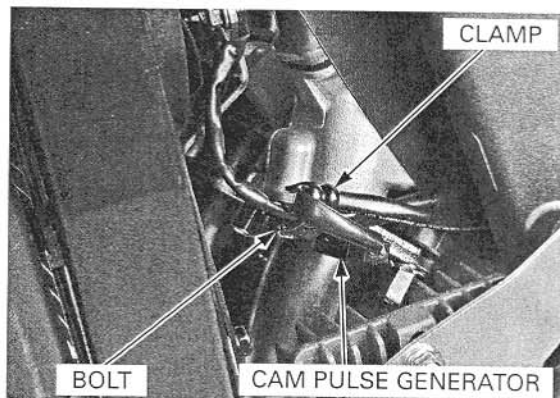
- Lower cowls (page 3-6)
- Middle cowls (page 3-7)

Lift and support the fuel tank (page 6-61).

Disconnect the cam pulse generator 2P (Natural) connector.

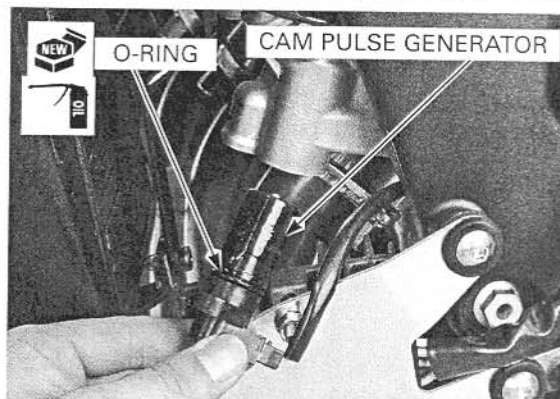


Remove the bolt, clamp and cam pulse generator from the cylinder head.



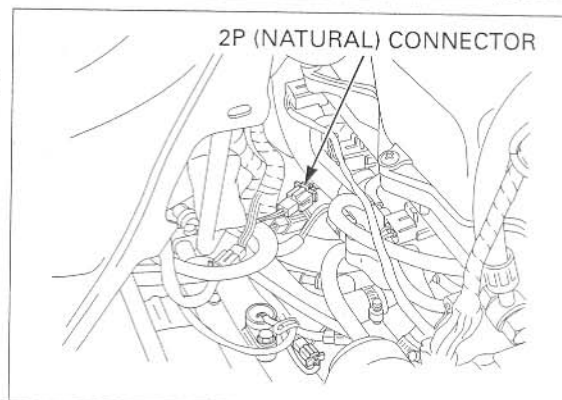
Apply oil to a new O-ring and install it onto the cam pulse generator.
Install the cam pulse generator into the cylinder head.

Tighten the mounting bolt securely.



Route the cam pulse generator wire properly, connect the 2P (Natural) connector.

Install the removed parts in the reverse order of removal.



TP SENSOR

INSPECTION

Remove the fuel tank cover (page 3-15).

Disconnect the ECM 32P (Black) and 32P (Light gray) connectors.

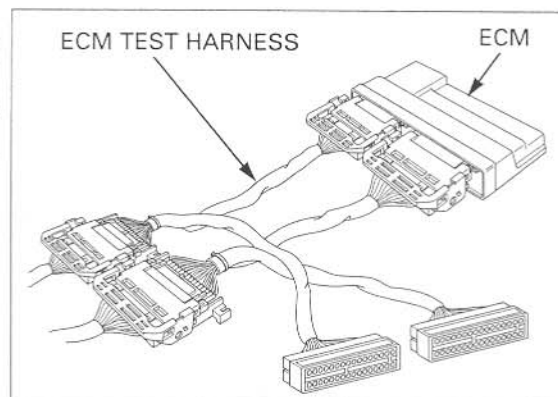
Check the connector for loose or corroded terminals.

Connect the ECM test harness between the ECM and main wire harness.

TOOL:

ECM test harness

070MZ-0010200
(two required)



INPUT VOLTAGE INSPECTION

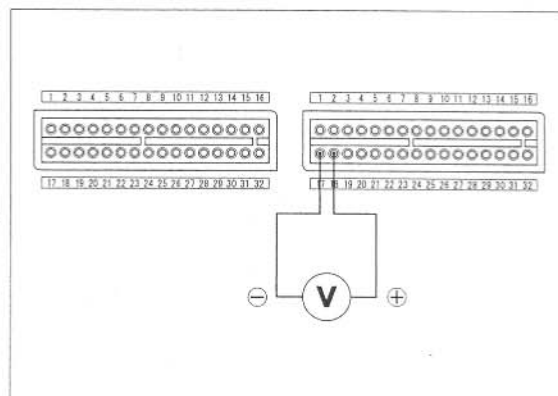
Turn the ignition switch ON and measure and record the input voltage at the test harness terminals using a digital multimeter.

Connection: B18 (+) – B17 (–)

Standard: 4.2 – 4.8 V

If the measurement is out of specification, check the following:

- Loose connection of the ECM multi-connector
- Open circuit in wire harness



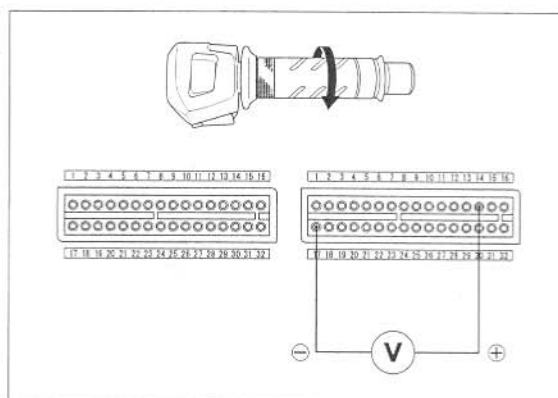
OUTPUT VOLTAGE INSPECTION WITH THE THROTTLE FULLY OPENED

Turn the ignition switch ON and measure and record the output voltage at the test harness terminals.

Connection: B14 (+) – B17 (–)

Measuring condition:

At throttle fully opened



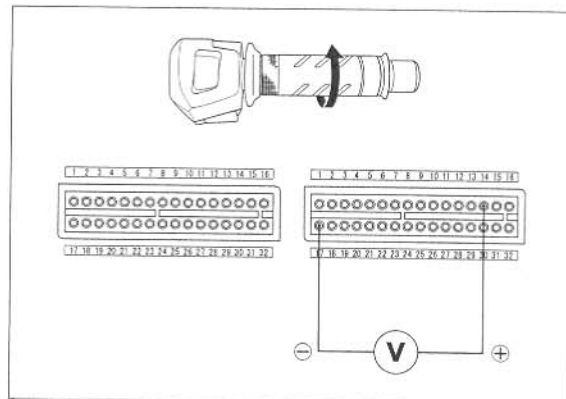
FUEL SYSTEM (Programmed Fuel Injection)

OUTPUT VOLTAGE INSPECTION WITH THE THROTTLE FULLY CLOSED

Turn the ignition switch ON and measure and record the output voltage with the throttle fully closed.

Connection: B14 (+) – B17 (–)

Measuring condition:
At throttle fully closed



CALCULATE RESULT COMPARISON

Compare the measurement to the result of the following calculation.

With the throttle fully opened:

Measured input voltage X 0.824 = V_o

The sensor is normal if the measurement output voltage is within 10% of V_o .

With the throttle fully closed:

Measured input voltage X 0.1 = V_c

The sensor is normal if the throttle closed output voltage is within 10% of V_c .

Using an analog meter, check that the needle of the voltmeter swings slowly when the throttle is opened gradually.

CONTINUITY INSPECTION

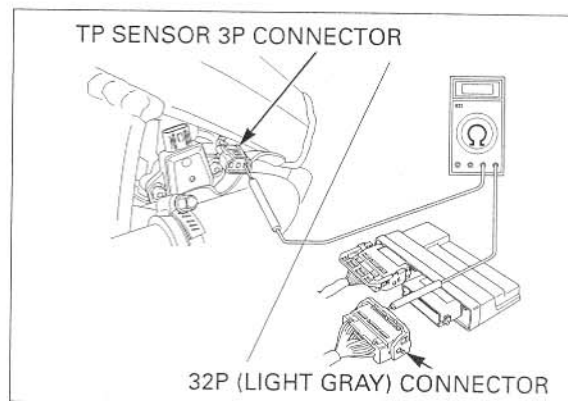
Lift and support the fuel tank (page 6-61).

Disconnect the ECM 32P connectors and the TP sensor 3P connector.

Check for continuity between the ECM 32P (Light gray) connector and TP sensor 3P connector terminal of the wire harness.

Connection: Yellow/red – B14

If there is no continuity, check the open or short circuit in wire harness.



BANK ANGLE SENSOR

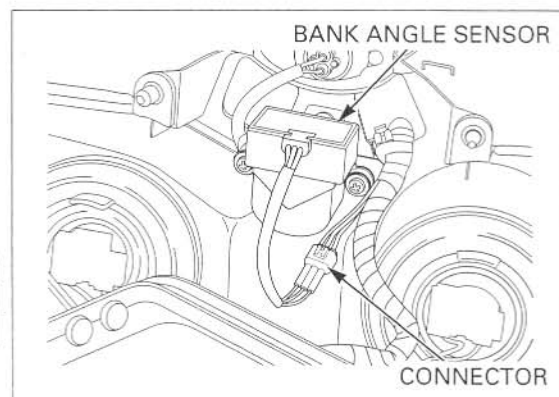
INSPECTION

Remove the upper cowl (page 3-9) with the connectors connected.

Turn the ignition switch ON and engine stop switch "O".

Measure the voltage between the following terminals of the bank angle sensor connector with the connector connected.

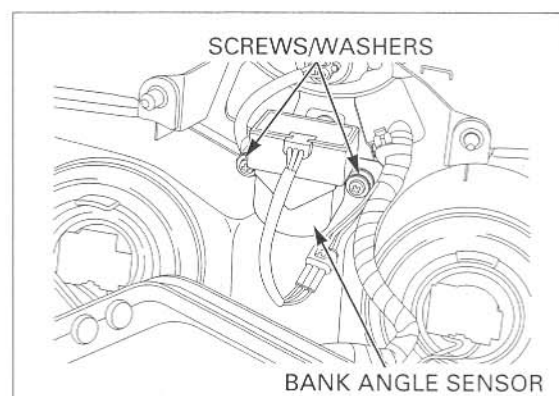
TERMINAL	STANDARD
White/black (+) – Green (-)	Battery voltage
Red/white (+) – Green (-)	0 – 1 V



Do not disconnect the bank angle sensor connector during inspection.

Turn the ignition switch OFF.

Remove the screws, washer and bank angle sensor.



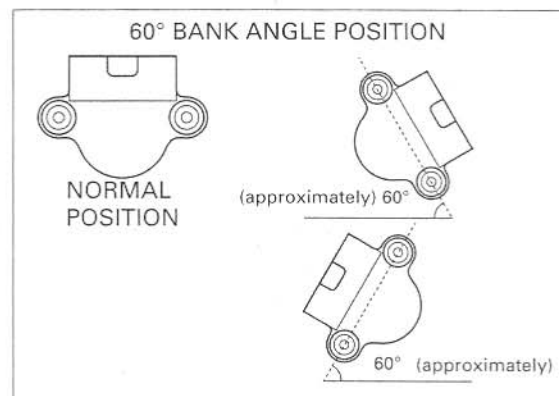
Place the bank angle sensor horizontal as shown, and turn the ignition switch ON.

The bank angle sensor is normal if the engine stop relay clicks and power supply is closed.

Incline the bank angle sensor approximately 60 degrees to the left or right with the ignition switch ON.

The bank angle sensor is normal if the engine stop relay clicks and power supply is open.

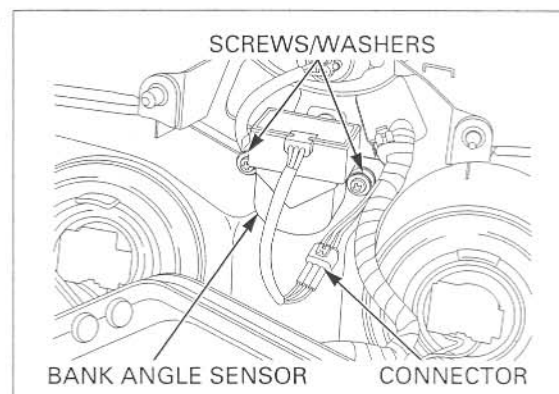
If you repeat this test, first turn the ignition switch OFF, then turn the ignition switch ON.



REMOVAL/INSTALLATION

Disconnect the bank angle sensor 3P (Black) connector.

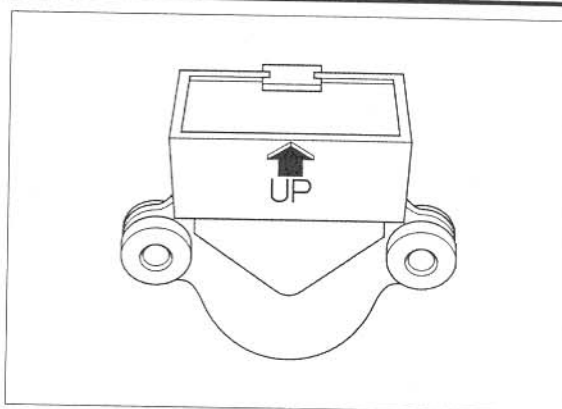
Remove the two screws, washers and bank angle sensor.



FUEL SYSTEM (Programmed Fuel Injection)

Install the bank angle sensor with its "UP" mark facing up.

Installation is in the reverse order of removal.
Tighten the mounting screws securely.



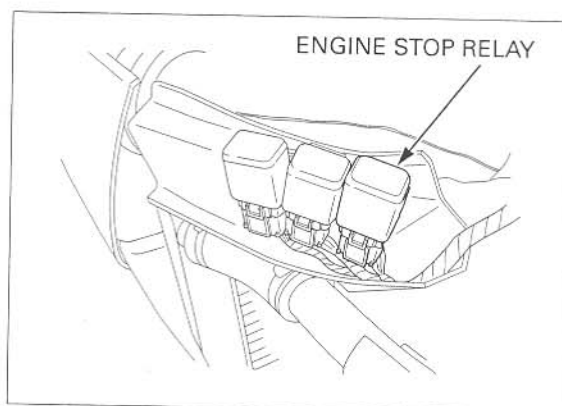
ENGINE STOP RELAY

INSPECTION

Remove the following:

- Lower cowls (page 3-6)
- Middle cowls (page 3-7)

Disconnect the engine stop relay 4P connector, remove the engine stop relay.



Connect the ohmmeter to the engine stop relay connector terminals.

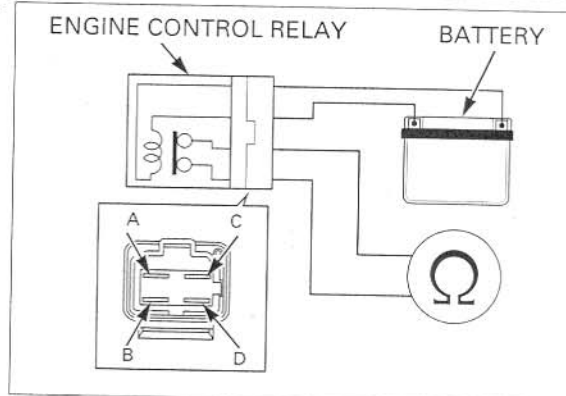
Connection: A - B

Connect a 12 V battery to the following engine stop relay connector terminals.

Connection: C (+) - D (-)

There should be continuity only when the 12 V battery is connected.

If there is no continuity when the 12 V battery is connected, replace the engine stop relay.

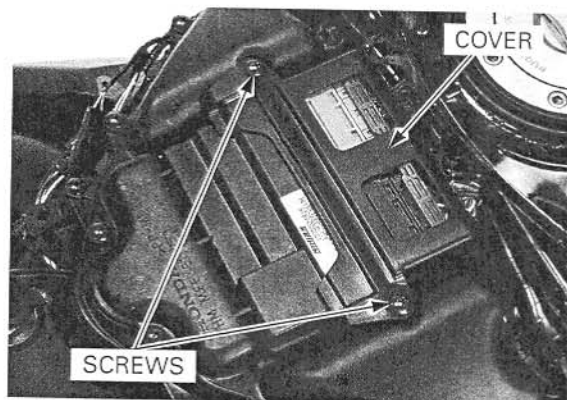


ENGINE CONTROL MODULE (ECM)

REMOVAL/INSTALLATION

Remove the fuel tank cover (page 3-15).

Remove the two screws and ECM cover.

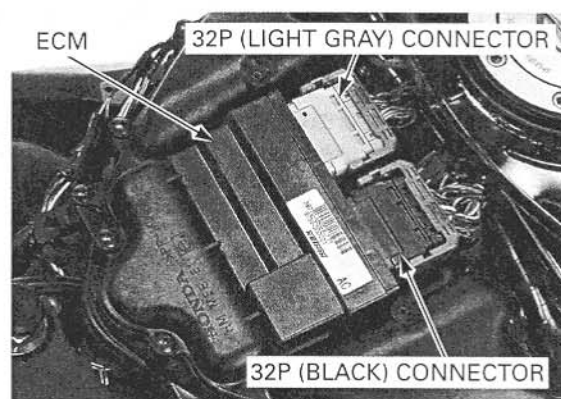


FUEL SYSTEM (Programmed Fuel Injection)

Disconnect the ECM 32P (Black) and 32P (Light gray) connectors.

Remove the ECM.

Installation is in the reverse order of removal.



ECM POWER/GROUND LINE INSPECTION

ENGINE DOES NOT START (MIL DOES NOT BLINK)

1. ECM Power Input Voltage Inspection

Disconnect the ECM 32P (Black) and 32P (Light gray) connectors.

Turn the ignition switch ON and engine stop switch "Q".

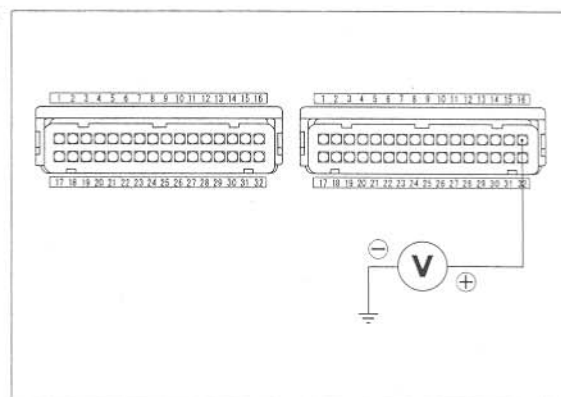
Measure the voltage at the ECM 32P (Light gray) connector terminal and ground.

Connection: B16 (+) – Ground (-)

Is there battery voltage?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. ECM Ground Line Inspection

Turn the ignition switch OFF.

Check for continuity between the ECM 32P (Black) connector terminals and ground.

Connection: A4 (+) – Ground (-)

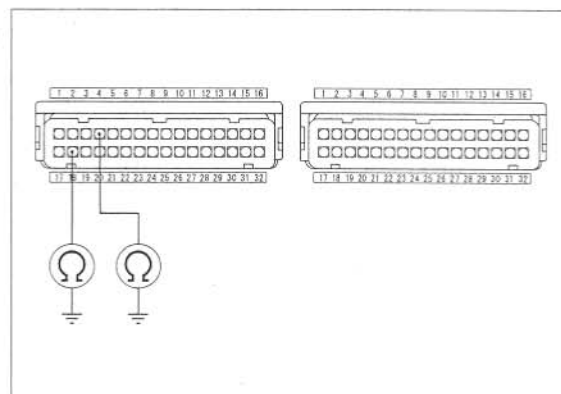
A18 (+) – Ground (-)

Are there continuities?

YES – Replace the ECM with a know good one, and recheck.

NO –

- Open circuit in the Green/Pink (A18) wire
- Open circuit in the Green /Pink (A4) wire



FUEL SYSTEM (Programmed Fuel Injection)

3. Engine Stop Relay Inspection 1

Turn the ignition switch OFF.
Disconnect the engine stop relay connector.

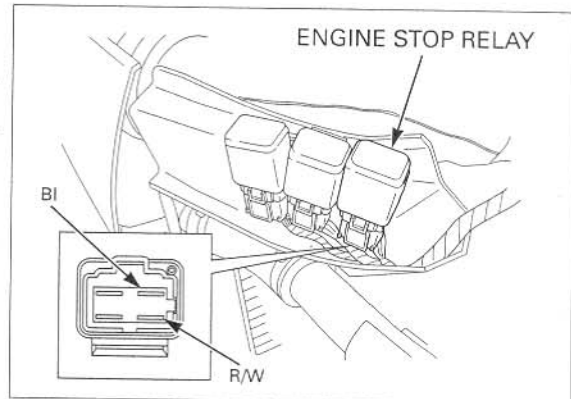
Turn the ignition switch ON and engine stop switch "Q".
Measure the voltage at the engine stop relay connector terminals.

Connection: Black (+) – Red/white (–)

Is there battery voltage?

YES – GO TO STEP 4.

NO – Inspect the bank angle sensor (page 6-93)



4. Engine Stop Relay Inspection 2

Turn the ignition switch OFF.
Jump the engine stop relay connector terminals.

Connection: Red/white – Black/white

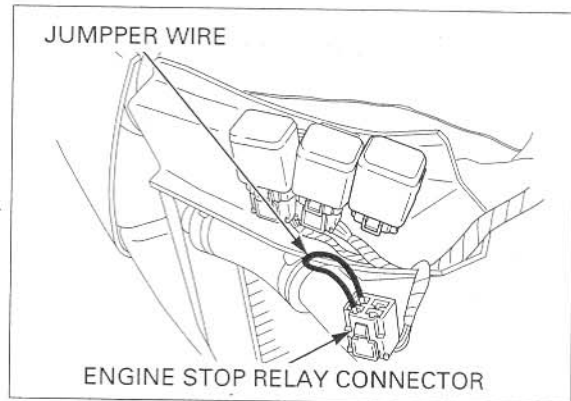
Turn the ignition switch ON.
Measure the voltage at the ECM connector terminal and ground.

Connection: B16 (+) – Ground (–)

Is there battery voltage?

YES – Inspect the engine stop relay (page 6-94)

NO – Open circuit in power input line (Black/white or Red/white) between the battery and the ECM



PAIR CONTROL SOLENOID VALVE

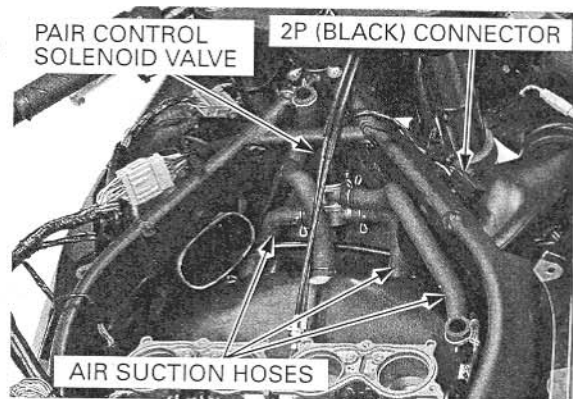
REMOVAL/INSTALLATION

Remove the air cleaner housing (page 6-64).

Disconnect the PAIR control solenoid valve 2P (Black) connector.

Disconnect the PAIR air suction hoses.

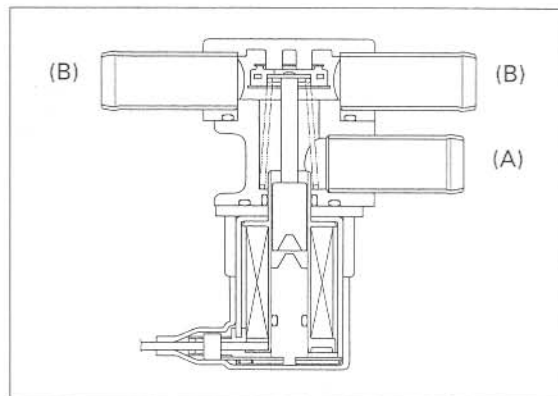
Installation is in the reverse order of removal.



INSPECTION

Remove the PAIR control solenoid valve.

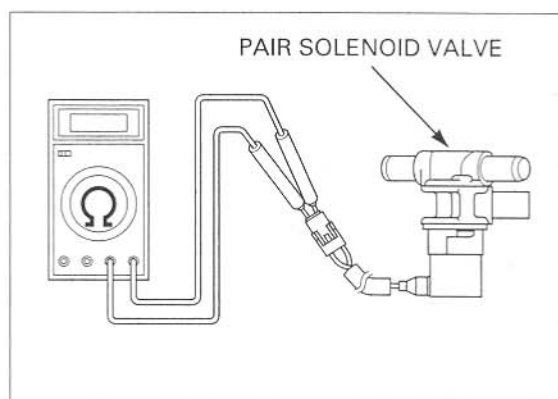
Check that air flows (A) to (B) when the 12 V battery is connected to the PAIR control solenoid valve terminals. Air should not flow (A) to (B) when there is no voltage applied to the PAIR valve terminals.



Check the resistance between the terminals of the PAIR control solenoid valve.

STANDARD: 20 – 24 Ω (20 °C/68 °F)

If the resistance is out of specification, replace the PAIR control solenoid valve.



EVAP PURGE CONTROL SOLENOID VALVE

(California type only)

REMOVAL/INSTALLATION

Remove the following:

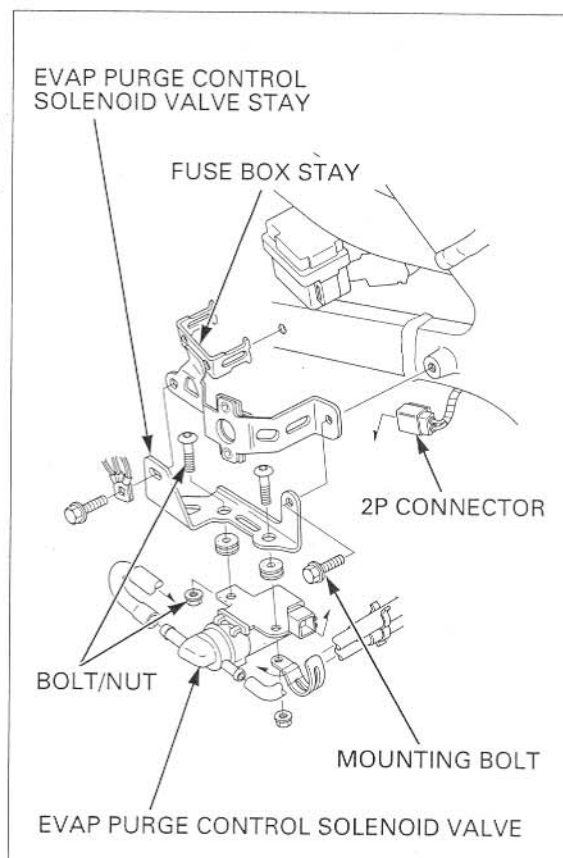
- Lower cowls (page 3-6)
- Middle cowls (page 3-7)

Remove the mounting bolts, fuse box stay and EVAP purge control solenoid valve stay.

Disconnect the hoses and 2P connector from the EVAP purge control solenoid valve.

Remove the bolts/nuts and EVAP purge control solenoid valve from the stay.

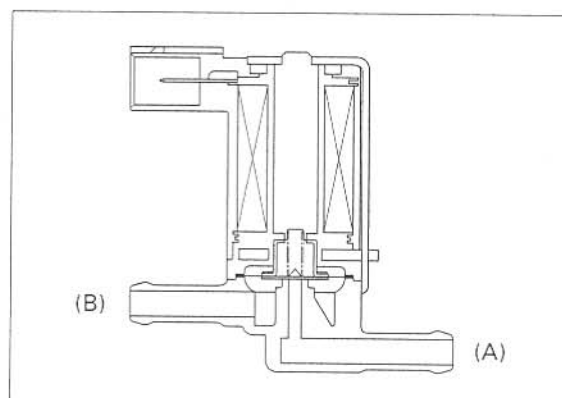
Installation in the reverse order of removal.



INSPECTION

Remove the EVAP purge control solenoid valve.

Check that air should not flow (A) to (B), only when the 12V battery is connected to the EVAP purge control valve terminals.

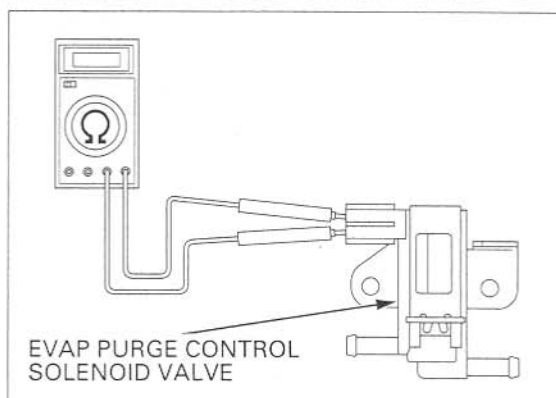


FUEL SYSTEM (Programmed Fuel Injection)

Check the resistance between the terminals of the EVAP purge control solenoid valve.

STANDARD: 30 – 34 Ω (20 °C/68 °F)

If the resistance is out of specification, replace the EVAP purge control solenoid valve.



O₂ SENSOR (California type only)

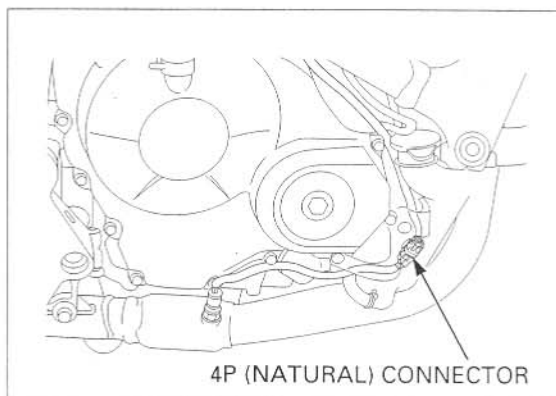
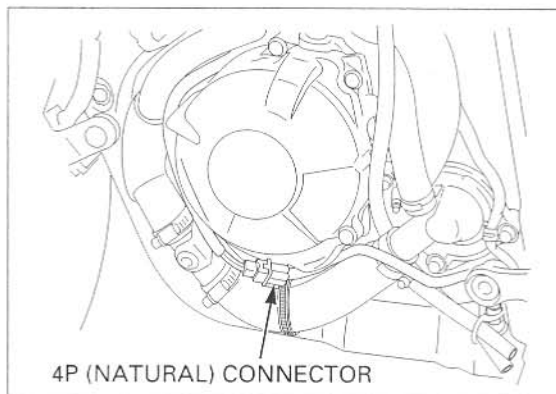
REMOVAL

- Handle the O₂ sensor with care.
- Do not get grease, oil or other materials in the O₂ sensor air hole, or it may be damaged.
- Do not service the O₂ sensor while it is hot.

Remove the lower cowls (page 3-6).

Disconnect the O₂ sensor 4P (Natural) connector.

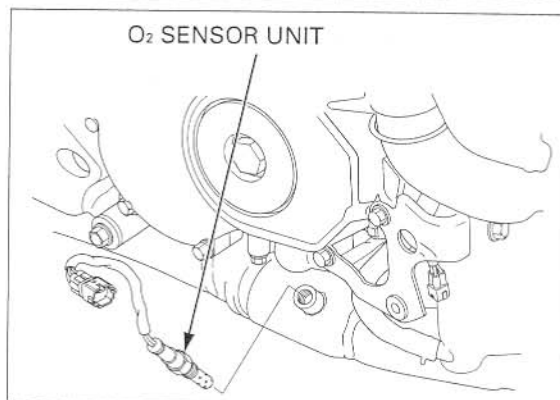
Remove the O₂ sensor wire from the frame.



FUEL SYSTEM (Programmed Fuel Injection)

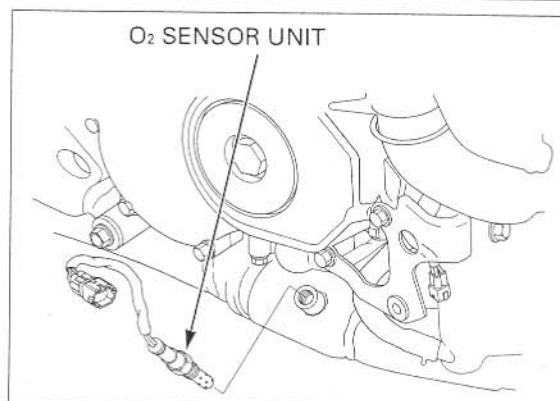
Remove the O₂ sensor unit.

- Be careful not to damage the sensor wire.
- Do not use an impact wrench while removing or installing the O₂ sensor, or it may be damaged.



Install the O₂ sensor unit.
Tighten the unit to the specified torque.

TORQUE: 25 N·m (2.6 kgf·m, 19 lbf·ft)



Route the O₂ sensor wire into the frame.
Connect the O₂ sensor 4P (Natural) connector.

