



5. FUEL SYSTEM (Programmed Fuel Injection)

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SERVICE INFORMATION

GENERAL

- Be sure to relieve the fuel pressure with the engine 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.

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- 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 fully open to fully 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 hose and return hose, 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 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.
- 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 system is equipped with the Self-Diagnostic System described on page 5-6. 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 5-10).
- The PGM-FI system is provided with fail-safe function to secure a minimum running capability even when there is trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is secured by making use of the numerical values of a situation preset in advance in the simulated program map. It must be remembered, however, that when any abnormality is detected in four injectors and/or the CKP and CMP sensor, the fail safe function stops the engine to avoid engine damage.
- For PGM-FI system location, see page 5-4.
- A faulty PGM-FI system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- For fuel reserve sensor inspection, see section 19.
- The vehicle speed sensor sends digital pulse signals to the ECM (PGM-FI unit) for computation. For vehicle speed sensor inspection, see section 19.
- 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 hoses, 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	Except California type	GQ90C
	California type	GQ90B
Starter valve vacuum difference		20 mm Hg
Base throttle valve for synchronization		No.1
Idle speed		1,300 ± 100 rpm
Throttle grip free play		2 – 6 mm (1/16 – 1/4 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 injector resistance (at 20°C/68°F)		11.1 – 12.3 Ω
PAIR solenoid valve resistance (at 20°C/68°F)		20 – 24 Ω
CMP sensor peak voltage (at 20°C/68°F)		0.7 V minimum
CKP sensor 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 12 V)		188 cm ³ (6.4 US oz, 6.6 Imp oz) minimum/10 seconds

TORQUE VALUES

ECT/thermo sensor	23 N•m (2.3 kgf•m, 17 lbf•ft)	
Throttle body insulator band screw	See page 1-14.	
Throttle cable bracket mounting screw	3 N•m (0.35 kgf•m, 2.5 lbf•ft)	
Starter valve synchronization plate screw	1 N•m (0.09 kgf•m, 0.7 lbf•ft)	
Starter valve lock nut	2 N•m (0.18 kgf•m, 1.3 lbf•ft)	
Fast idle wax unit link plate screw	1 N•m (0.09 kgf•m, 0.7 lbf•ft)	
Fast idle wax unit mounting screw	5 N•m (0.5 kgf•m, 3.6 lbf•ft)	
Pressure regulator mounting bolt	10 N•m (1.0 kgf•m, 7 lbf•ft)	
Vacuum joint for synchronization	3 N•m (0.3 kgf•m, 2.2 lbf•ft)	
Fuel filler cap bolt	2 N•m (0.2 kgf•m, 1.4 lbf•ft)	
Service check bolt	15 N•m (1.5 kgf•m, 11 lbf•ft)	
Fuel 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)	See page 5-54 for tightening sequence.
O ₂ sensor (California type only)	25 N•m (2.6 kgf•m, 19 lbf•ft)	

TOOLS

Fuel pressure gauge	07406-0040003	or 07406-0040002
Peak voltage tester (U.S.A. only) or Peak voltage adaptor	07HGJ-0020100 (not available in U.S.A.) with Commercially available digital multimeter (impedance 10 MΩ/DCV minimum)	
ECU test harness	07YMZ-0010100	(two required)

TROUBLESHOOTING**Engine won't start**

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

Engine stall, 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

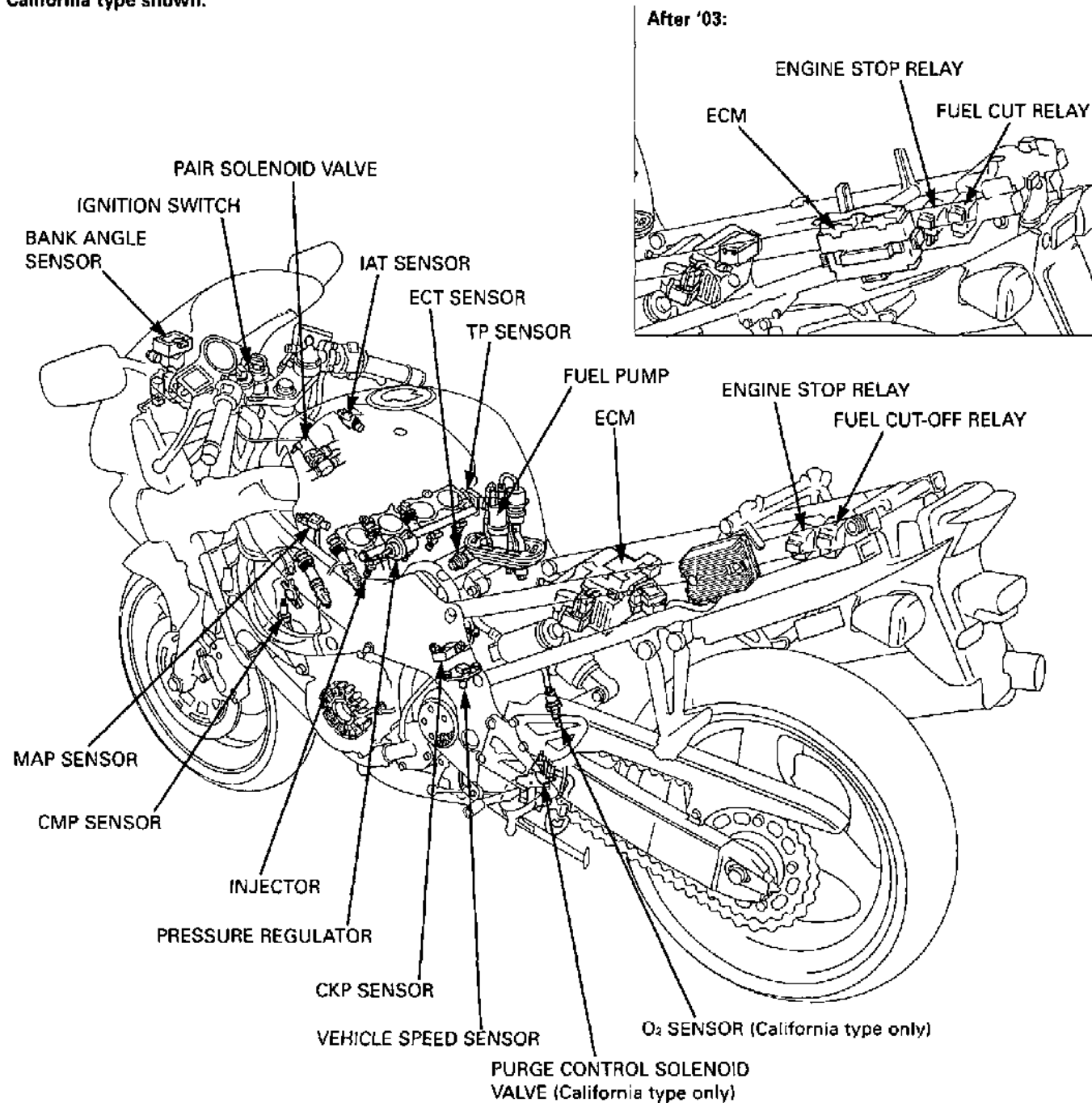
Poor performance (driveability) and poor fuel economy

- Pinched or clogged fuel hose
- Faulty pressure regulator

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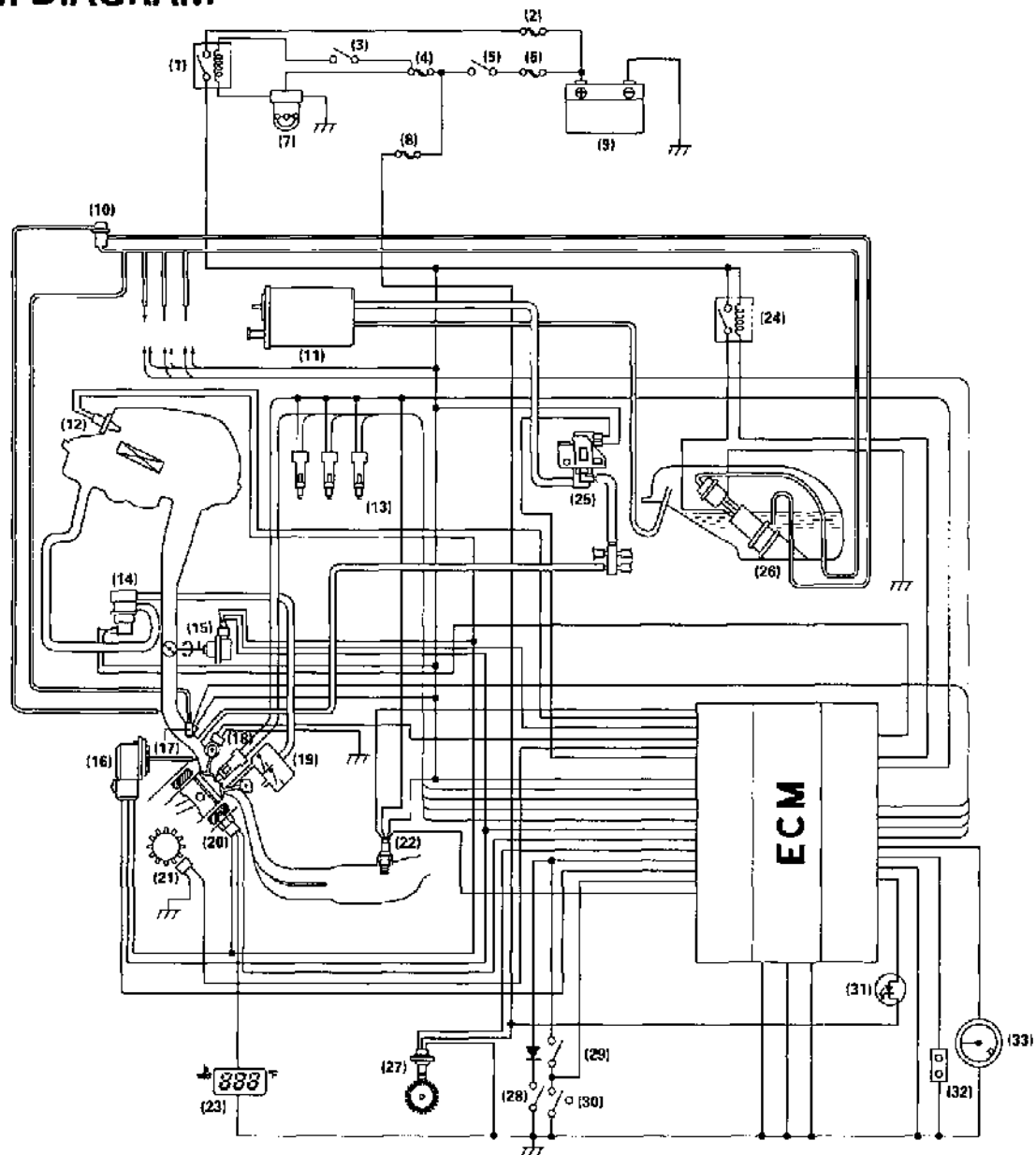
SYSTEM LOCATION

California type shown:



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
Camshaft position sensor	CMP sensor
Crankshaft position sensor	CKP sensor

SYSTEM DIAGRAM



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

PGM-FI (PROGRAMMED FUEL INJECTION) SYSTEM

SELF-DIAGNOSTIC PROCEDURES

Place the motorcycle on its side stand.
Start the engine and let it idle.

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

The malfunction indicator lamp (MIL) will start blinking only with the side stand down and with the engine off (engine stop switch turned to run) or engine revs are below 5,000 rpm. In any other conditions, the MIL will illuminate and stay on.

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, and determine the cause of the problem (page 5-10 through 5-49).

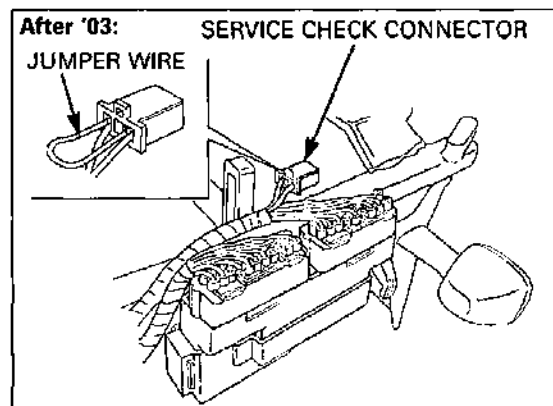
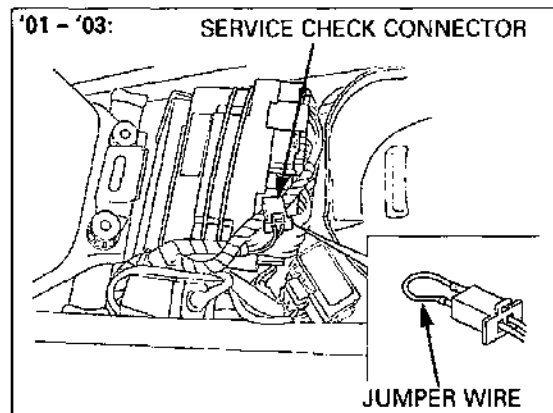
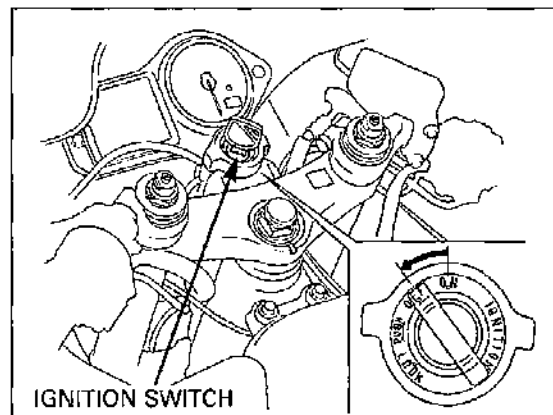
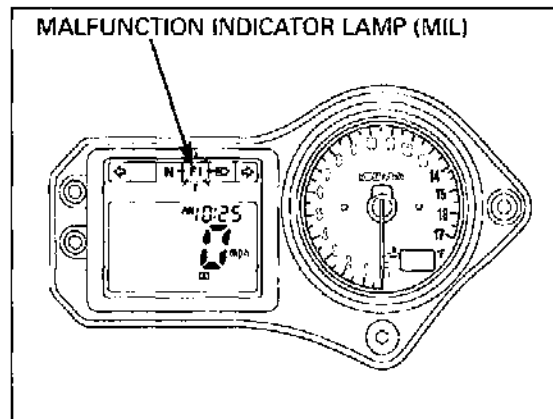
If you wish to read the PGM-FI memory for trouble data, perform the following:

Turn the ignition switch to "OFF".

'01 - '03: Remove the seat (page 2-2).

After '03: Remove the rear cowl (page 2-5).

Short the PGM-FI system service check connector terminals using a jumper wire.



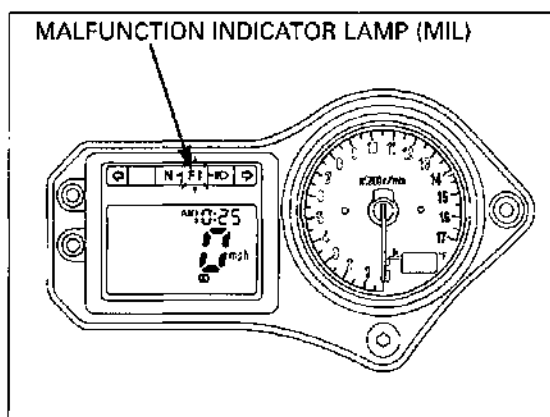
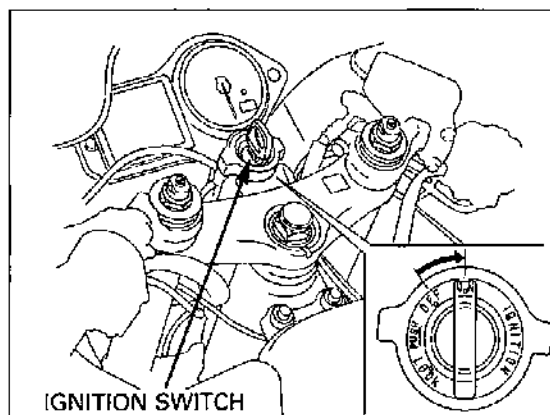
Turn the ignition switch to "ON" and the engine stop switch to "RUN".

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 to "ON".

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

Note how many times the MIL blinks, and determine the cause of the problem (page 5-10 through 5-49).

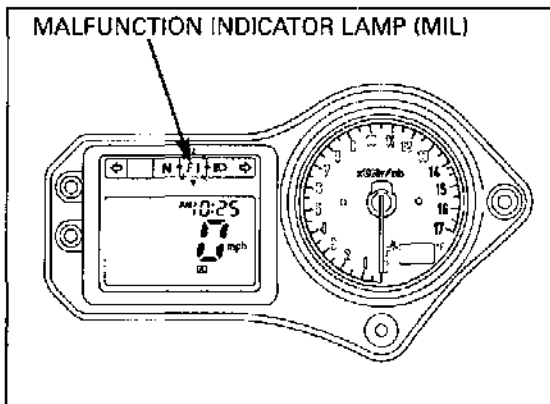
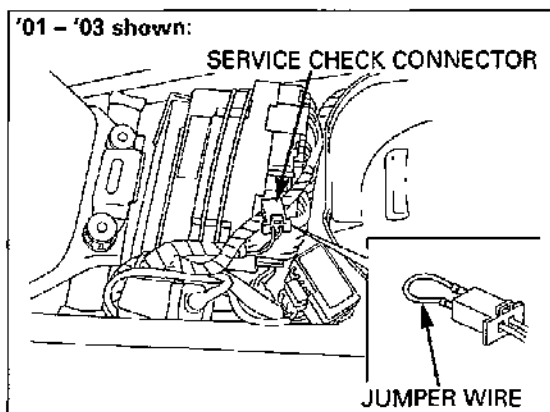


SELF-DIAGNOSIS RESET PROCEDURE

1. Turn the engine stop switch to "RUN" and the ignition switch to "OFF".
2. Short the service check connector of the PGM-FI system using a jumper wire.
3. Turn the ignition switch to "ON".
4. Remove the jumper wire from the service check connector.
5. The MIL lights about 5 seconds.
While the indicator lights, short the service check connector again with the jumper wire.
Self diagnosis memory data is erased if the MIL turns off and then starts blinking.

- The service check connector must be jumped while the indicator lights. 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.



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PEAK VOLTAGE INSPECTION PROCEDURE

- Use this procedure for the CKP sensor and CMP sensor 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 a commercially available digital multimeter with an impedance of 10 M Ω /DCV minimum.
- If the Peak Voltage Tester (U.S.A. only) 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.

Open and support the front end of fuel tank (page 3-4).

Disconnect the fuel pump/reserve sensor 3P (Black) connector.

Connect the peak voltage adaptor to the digital multimeter.

TOOLS:

Ignition Mate peak voltage tester MTP07-0286
(U.S.A. only) or
Peak voltage adaptor 07HGJ-0020100
(not available in U.S.A.)
with commercially available digital multimeter
(impedance 10 M Ω /DCV minimum)

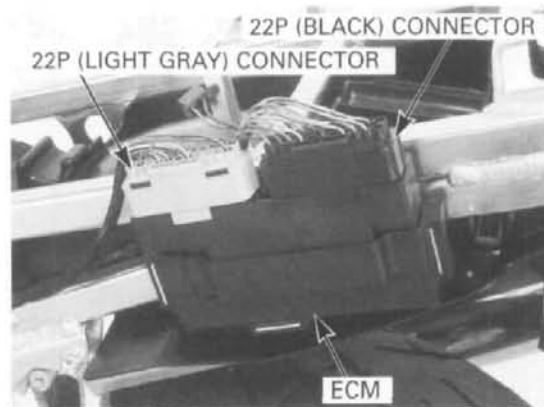
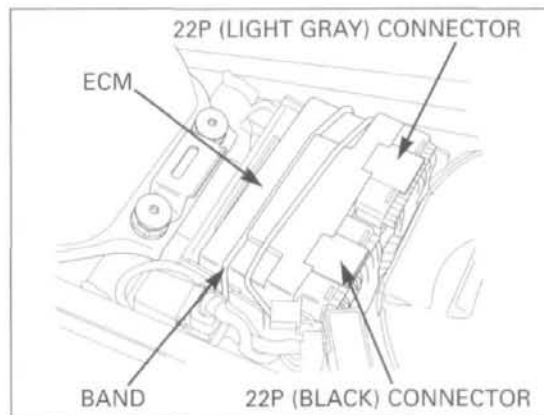
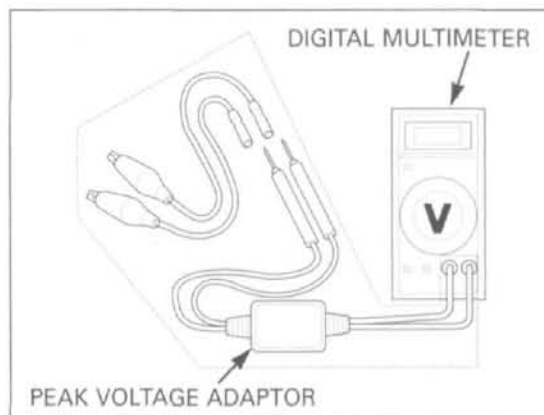
TEST HARNESS CONNECTION

'01 - '03: Remove the seat (page 2-2).

Remove the ECM holder band and remove the ECM from the battery tray cover.
Disconnect the ECM 22P (Black) and 22P (Light gray) connectors.

After '03: Remove the rear cowl (page 2-5).

Disconnect the ECM 22P (Black) and 22P (Light gray) connectors.
Remove the ECM from the seat rail.

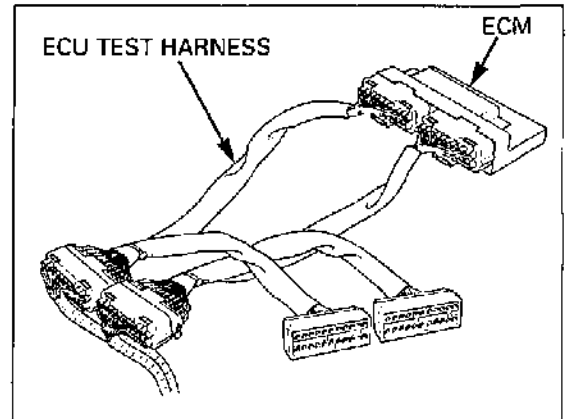


Connect the ECU test harnesses between the main wire harness and the ECM.

TOOL:

ECU test harness

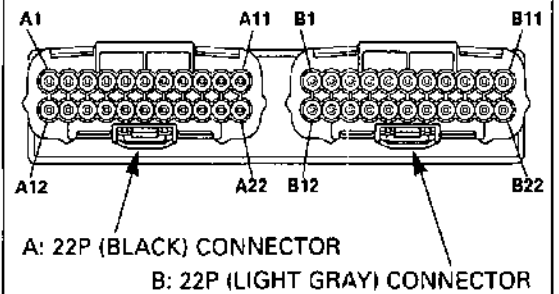
07YMZ-0010100
(two required)



TEST HARNESS TERMINAL LAYOUT

The ECM connector terminals are numbered as shown in the illustration.

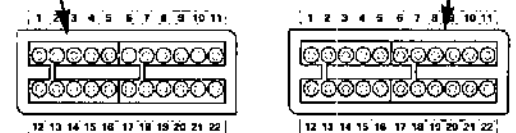
VIEW FROM WIRE HARNESS SIDE:



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









FOR 22P (BLACK) CONNECTOR











FOR 22P (LIGHT GRAY) CONNECTOR



PGM-FI SELF-DIAGNOSIS MALFUNCTION INDICATOR LAMP (MIL) FAILURE CODES

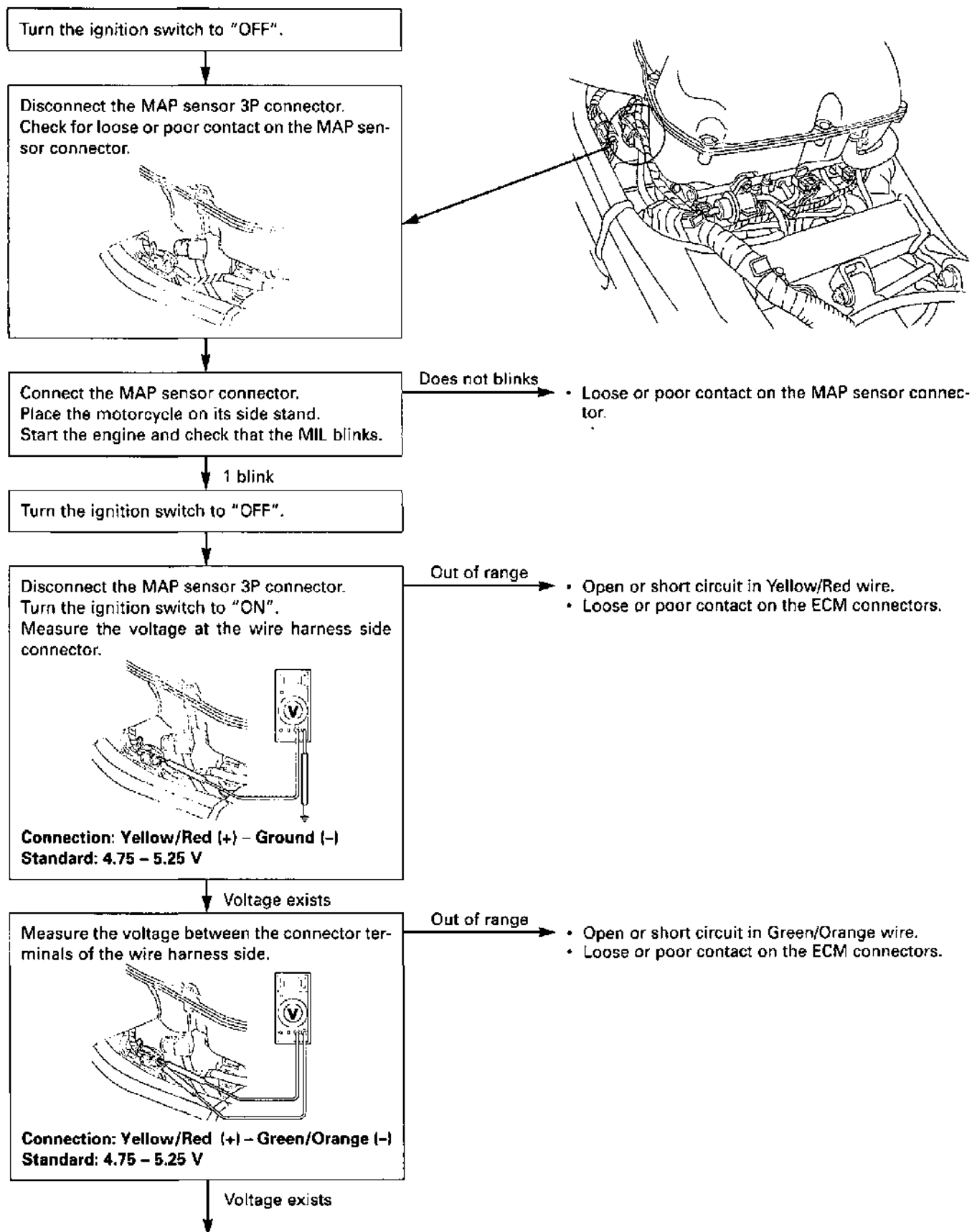
- The PGM-FI MIL denotes the failure codes (the number of blinks from 0 to 33). When the indicator lights for 1.3 seconds it is equivalent to 10 blinks. For example, a 1.3 second illumination and two blinks (0.5 second X 2) of the indicator equals 12 blinks. Follow code 12 on page 5-26.
- When more than 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 and 2 on page 5-12.

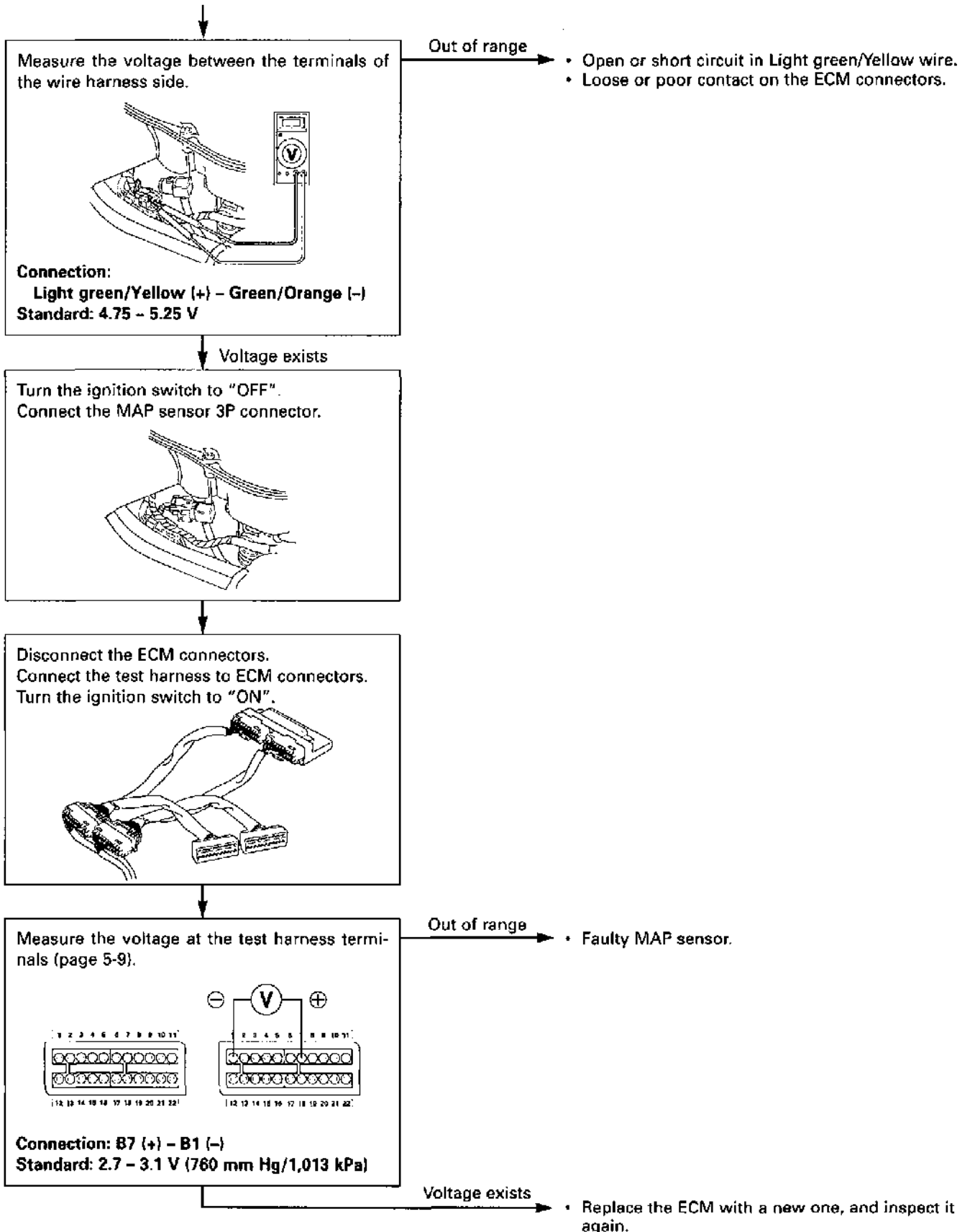
Number of PGM-FI MIL blinks		Causes	Symptoms (Fail-safe contents)	Refer to page
0	 No blinks	<ul style="list-style-type: none"> • Open circuit at the power input wire of the ECM • Faulty bank angle sensor • Open circuit in bank angle sensor related circuit • Faulty engine stop relay • Open circuit in engine stop relay related wires • Faulty engine stop switch • Open circuit in engine stop switch related wires • Faulty ignition switch • Faulty ECM • Blown PGM-FI fuse (20 A) • Open circuit in engine stop switch ground • Blown sub-fuse (10 A) (Starter/ignition) 	• Engine does not start	5-85
	 No blinks	<ul style="list-style-type: none"> • Open or short circuit in MIL wire • Faulty ECM 	• Engine operates normally	5-9
	 Stay lit	<ul style="list-style-type: none"> • Short circuit in service check connector • Faulty ECM • Short circuit in service check connector wire 	• Engine operates normally	—
1	 Blinks	<ul style="list-style-type: none"> • Loose or poor contacts on MAP sensor connector • Open or short circuit in MAP sensor wire • Faulty MAP sensor 	• Engine operates normally	5-12
2	 Blinks	<ul style="list-style-type: none"> • Loose or poor connection of the MAP sensor vacuum hose • Faulty MAP sensor 	• Engine operates normally	5-14
7	 Blinks	<ul style="list-style-type: none"> • Loose or poor contact on ECT sensor • Open or short circuit in ECT sensor wire • Faulty ECT sensor 	• Hard start at a low temperature (simulate using numerical values; 90°C/194°F)	5-16
8	 Blinks	<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 	• Poor engine response when operating the throttle quickly (simulate using numerical values; Throttle opens 0°)	5-18
9	 Blinks	<ul style="list-style-type: none"> • Loose or poor contact on IAT sensor • Open or short circuit in IAT sensor wire • Faulty IAT sensor 	• Engine operates normally (simulate using numerical values; 25°C/77°F)	5-22

Number of PGM-FI malfunction indicator blinks		Causes	Symptoms (Fail-safe contents)	Refer to page
11	 Blinks	<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 	• Engine operates normally	5-24
12	 Blinks	<ul style="list-style-type: none"> • Loose or poor contact on No.1 injector connector • Open or short circuit in No.1 injector wire • Faulty No.1 injector 	• Engine does not start	5-26
13	 Blinks	<ul style="list-style-type: none"> • Loose or poor contact on No.2 injector connector • Open or short circuit in No.2 injector wire • Faulty No.2 injector 	• Engine does not start	5-29
14	 Blinks	<ul style="list-style-type: none"> • Loose or poor contact on No.3 injector connector • Open or short circuit in No.3 injector wire • Faulty No.3 injector 	• Engine does not start	5-32
15	 Blinks	<ul style="list-style-type: none"> • Loose or poor contact on No.4 injector connector • Open or short circuit in No.4 injector wire • Faulty No.4 injector 	• Engine does not start	5-35
18	 Blinks	<ul style="list-style-type: none"> • Loose or poor contact on CMP sensor connector • Open or short circuit in CMP sensor • Faulty CMP sensor 	• Engine does not start	5-38
19	 Blinks	<ul style="list-style-type: none"> • Loose or poor contact on CKP sensor connector • Open or short circuit in CKP sensor • Faulty CKP sensor 	• Engine does not start	5-40
21	 Blinks	• Faulty O ₂ sensor (California type only)	• Engine operates normally	5-42
23	 Blinks	• Faulty O ₂ sensor heater (California type only)	• Engine operates normally	5-44
33	 Blinks	• Faulty E ² -PROM in ECM	<ul style="list-style-type: none"> • Engine operates normally • Does not hold the self-diagnosis data 	5-48

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 1 BLINK (MAP SENSOR)



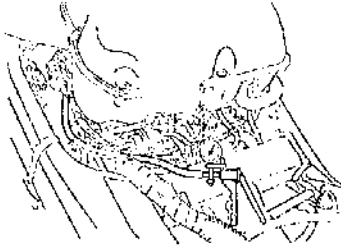


FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 2 BLINKS (MAP SENSOR)

Turn the ignition switch to "OFF".

Disconnect the vacuum hose from the MAP sensor.
Connect the vacuum gauge between the throttle body and the MAP sensor using a 3-way joint.
Start the engine and measure the manifold absolute pressure at idle speed.

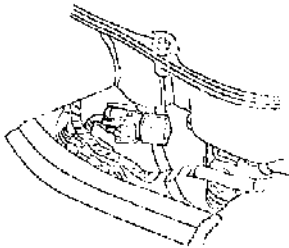


Standard: 150 - 250 mm Hg

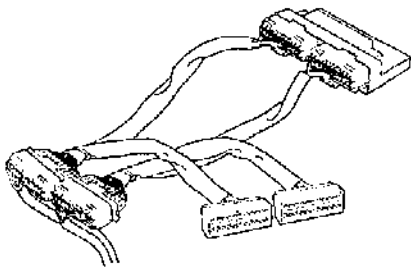
Out of range →

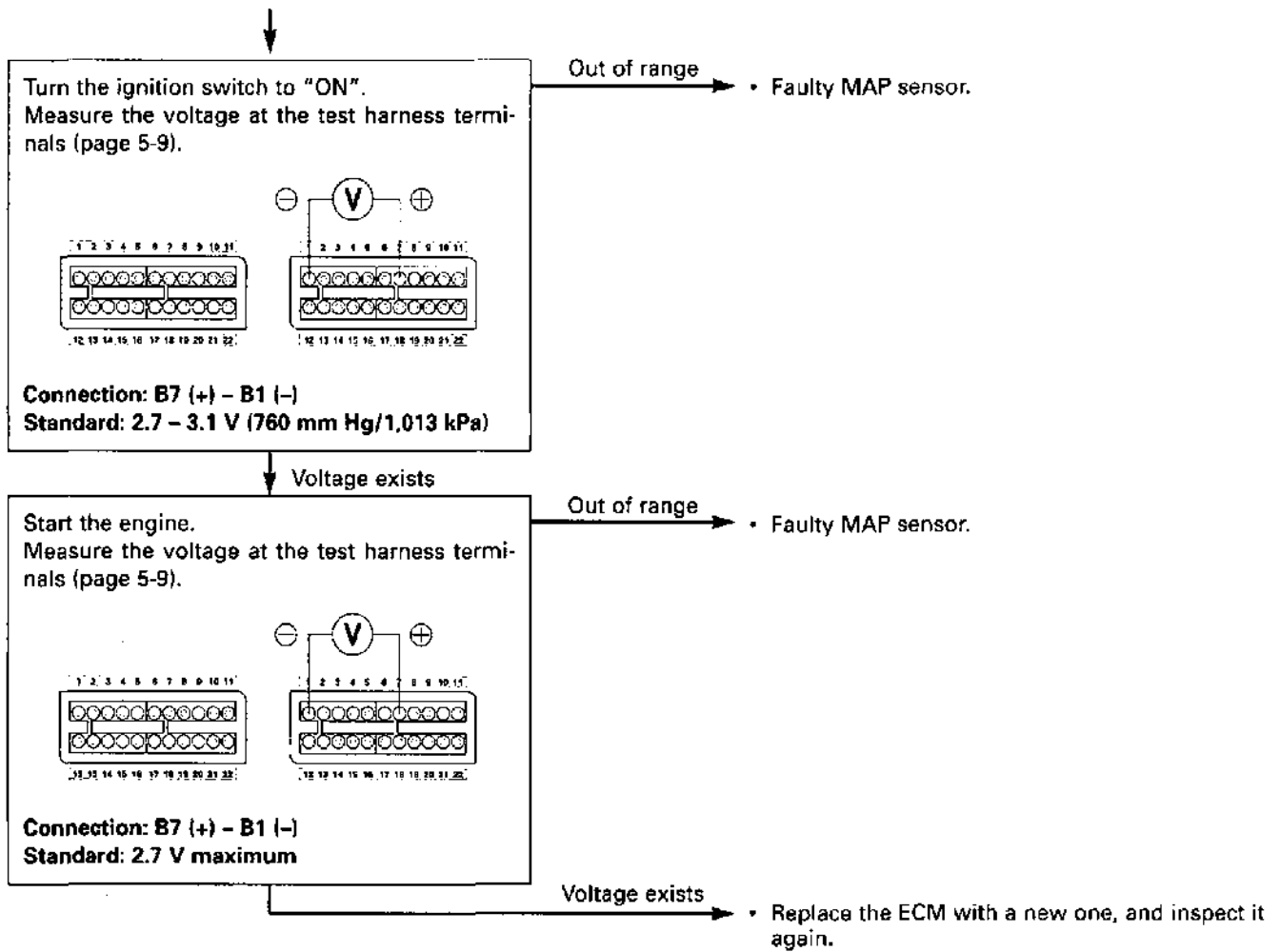
• Check hose installation.

Disconnect the vacuum gauge and connect the hose to the MAP sensor.



Disconnect the ECM connectors.
Connect the test harness to the ECM connector.



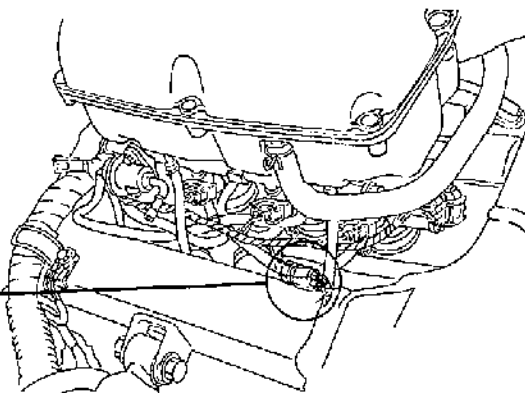
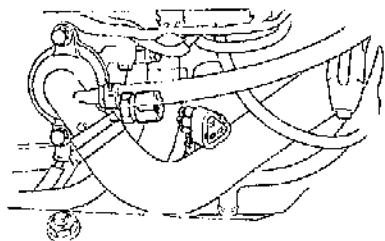


FUEL SYSTEM (Programmed Fuel Injection)

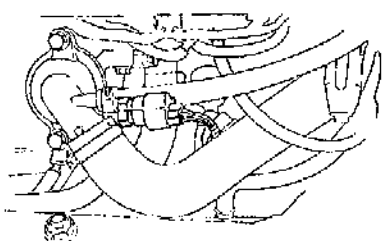
PGM-FI MIL 7 BLINKS (ECT SENSOR)

Turn the ignition switch to "OFF".

Disconnect the ECT sensor 3P connector.
Check for loose or poor contact on the ECT sensor connector.



Connect the ECT sensor connector.
Place the motorcycle on its side stand.
Turn the ignition switch to "ON".



Check that the MIL blinks.

No blinks

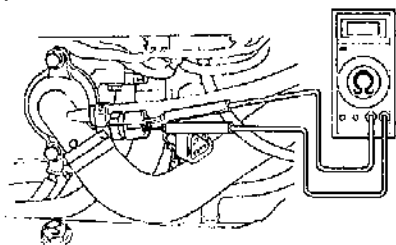
- Loose or poor contact on the ECT sensor connector.

7 blinks

Abnormal

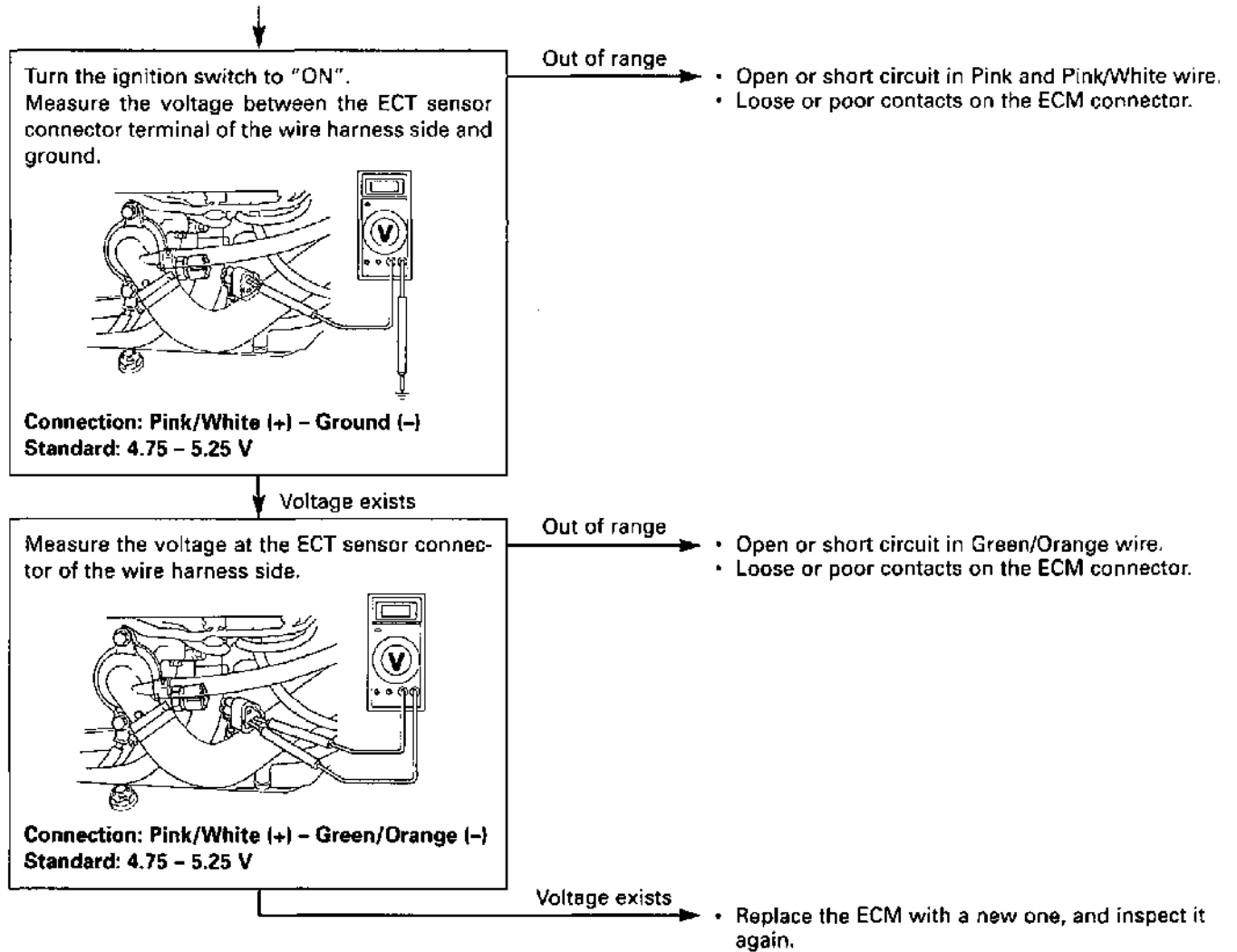
- Faulty ECT sensor.

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



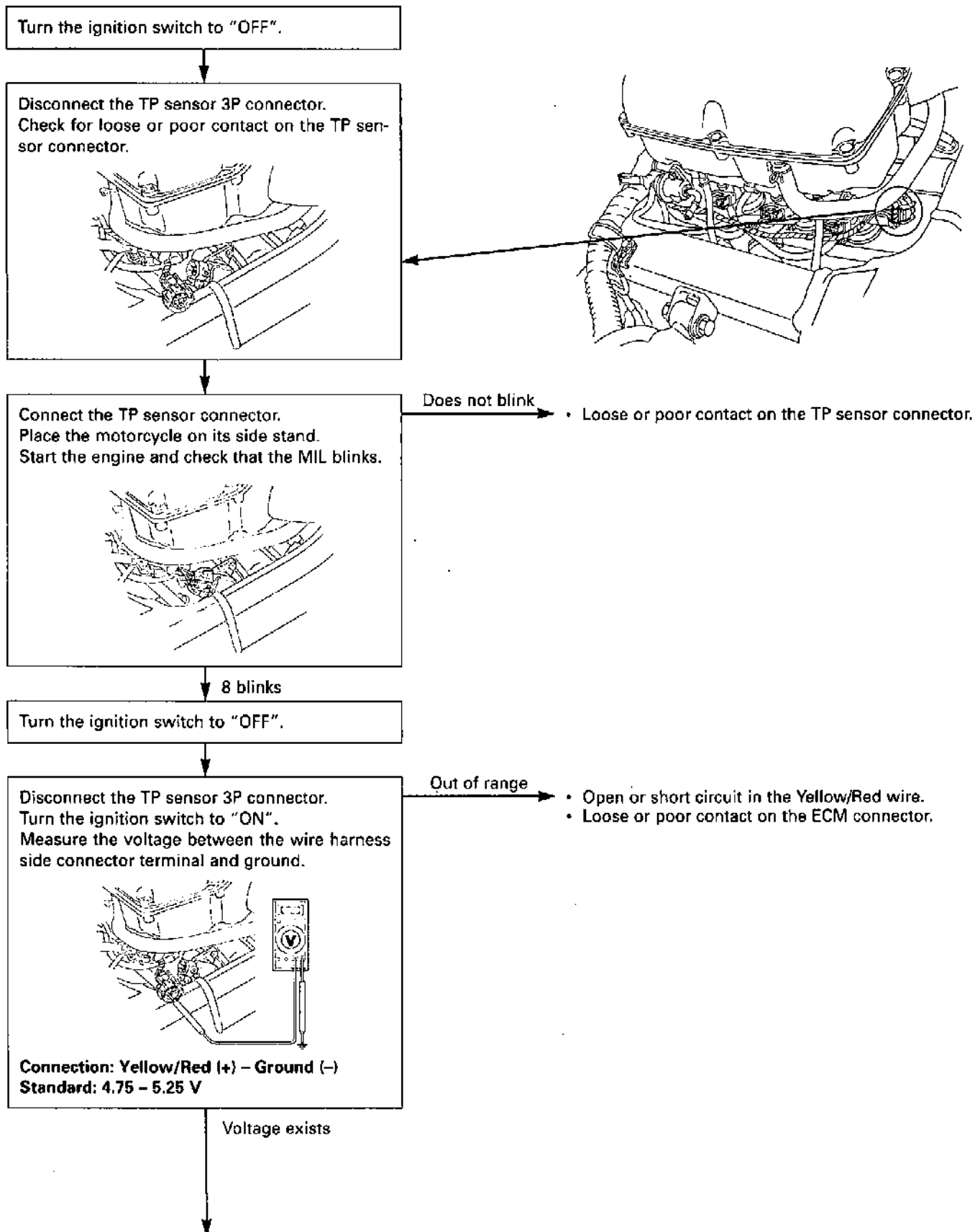
Connection: Pink (+) – Green/Orange (–)
(sensor side terminals)
Standard: 2.3 – 2.6 k Ω (20°C/68°F)

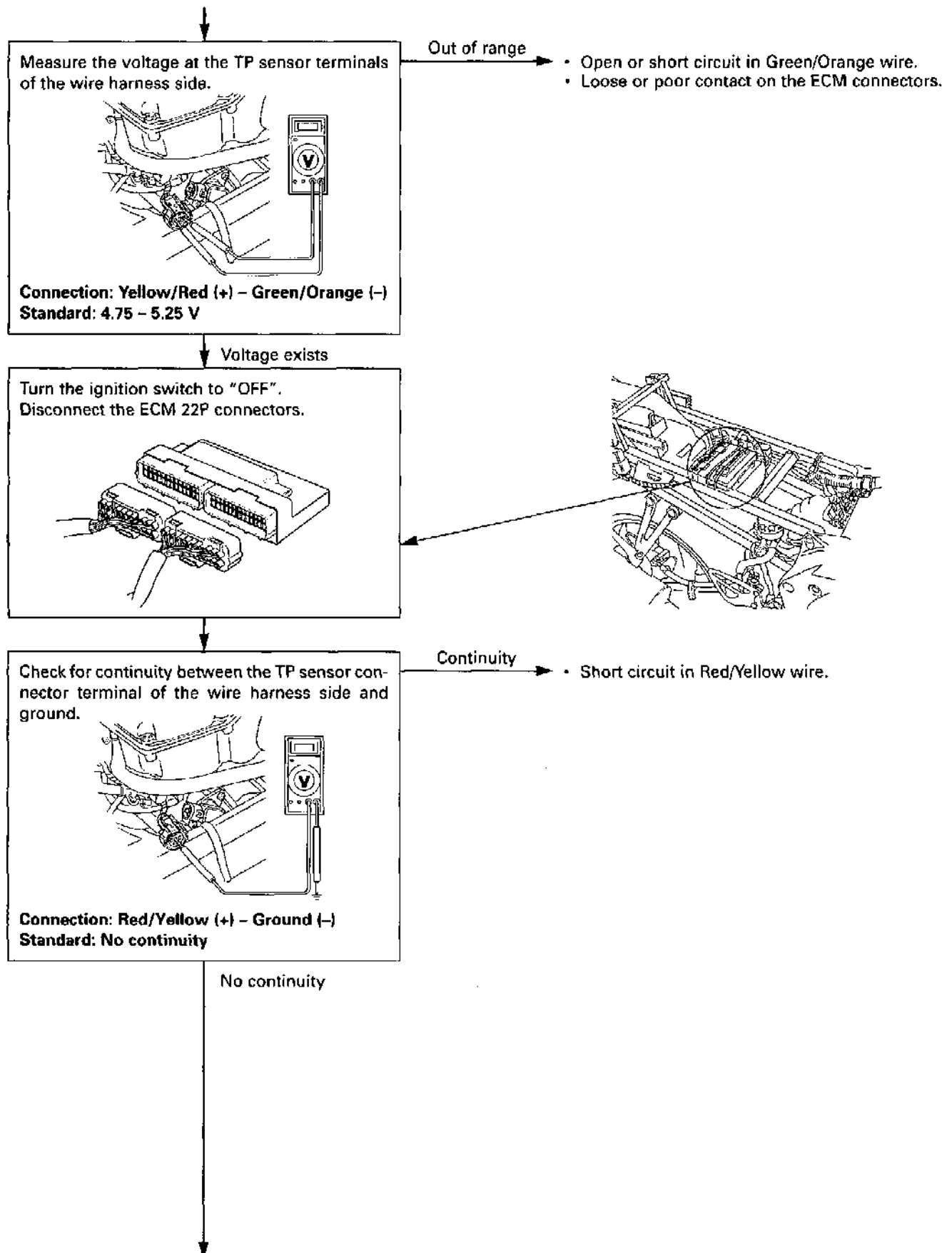
Normal



FUEL SYSTEM (Programmed Fuel Injection)

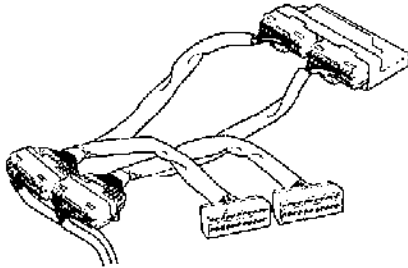
PGM-FI MIL 8 BLINKS (TP SENSOR)





FUEL SYSTEM (Programmed Fuel Injection)

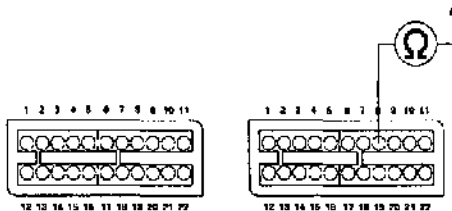
Connect the test harness to the ECM connectors.



Check for continuity between the test harness terminal and the TP sensor connector terminal.

No continuity

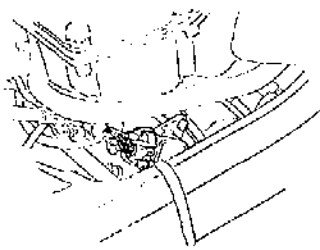
- Open or short circuit in Red/Yellow wire.



Connection: Red/Yellow - B8
Standard: Continuity

Continuity

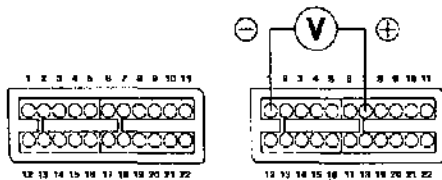
Connect the TP sensor 3P connector.



Turn the ignition switch to "ON".
Measure the voltage at the test harness terminals.

Normal

- Replace the ECM with a new one, and inspect it again.



Connection: B8 (+) - B1 (-)
Standard: *0.4 - 0.6 V (throttle fully closed)
*4.2 - 4.8 V (throttle fully open)

Out of range

- Faulty TP sensor.

A voltage marked * refers to the value when the voltage reading at the TP sensor 3P connector (page 5-19) shows 5 V. When the reading shows other than 5 V, derive a voltage at the test harness as follows:

In the case of a voltage of 4.75 V at the TP sensor 3P connector:

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

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

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

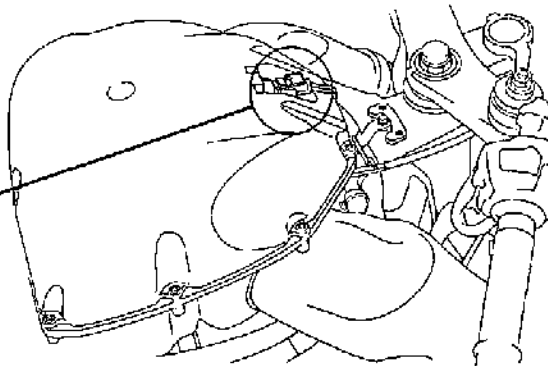
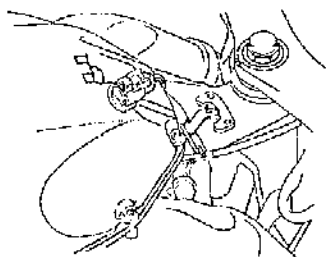
Replace 0.4 and 0.6 with 4.2 and 4.8 respectively, in the above equations to determine the throttle fully open range.

FUEL SYSTEM (Programmed Fuel Injection)

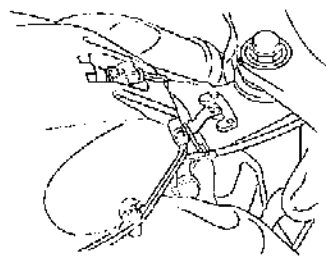
PGM-FI MIL 9 BLINKS (IAT SENSOR)

Turn the ignition switch to "OFF".

Disconnect the IAT sensor 2P connector.
Check for loose or poor contact on the IAT sensor connector.



Connect the IAT sensor 2P connector.
Place the motorcycle on its side stand.
Turn the ignition switch to "ON".
Check that the MIL blinks.



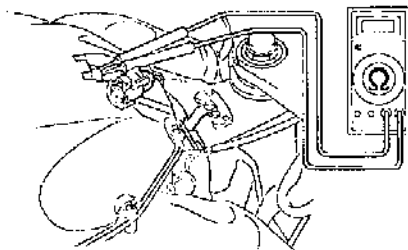
Does not blink

• Loose or poor contact on the IAT sensor connector.

9 blinks

Turn the ignition switch to "OFF".

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



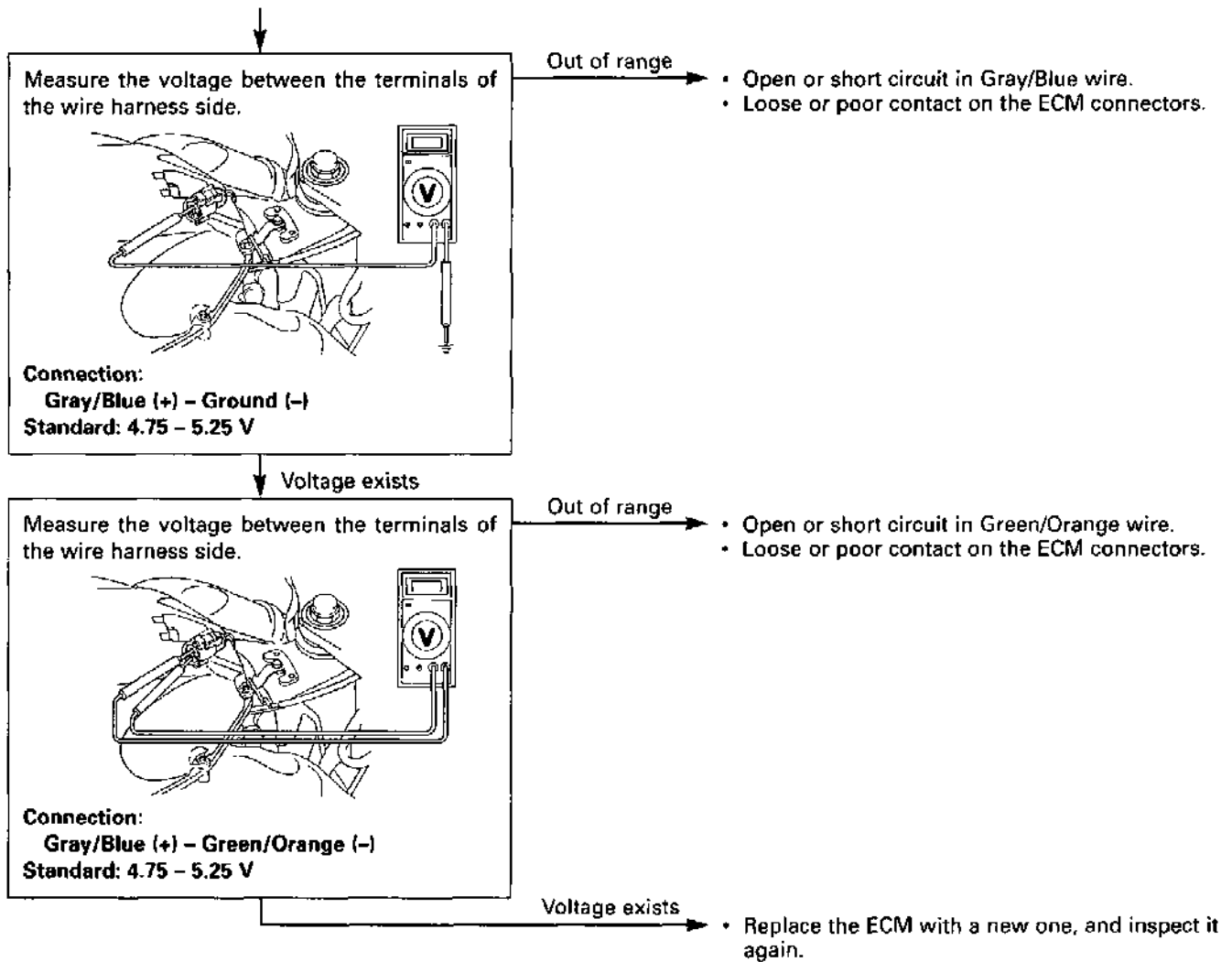
Standard: 1 - 4 k Ω

Abnormal

• Faulty IAT sensor.

Normal

Turn the ignition switch to "ON".

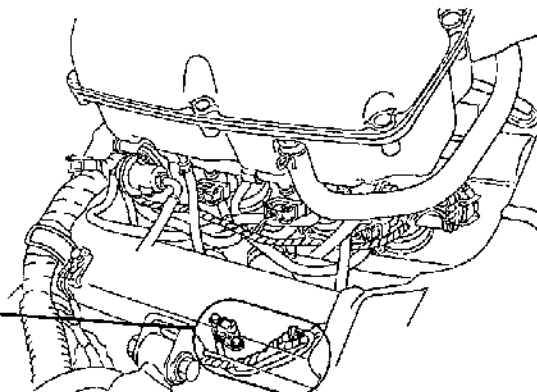
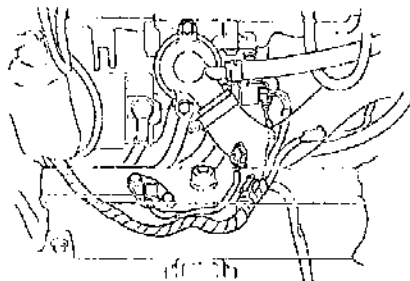


FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 11 BLINKS (VEHICLE SPEED SENSOR)

Turn the ignition switch to "OFF".

Disconnect the vehicle speed sensor 3P connector.
Check for loose or poor contact on the vehicle speed sensor connector.



Connect the vehicle speed sensor 3P connector.
Start the engine.
Ride the motorcycle and keep the engine revs more than 5,000 rpm for 20 seconds or more.
Put the side stand down and check that the MIL blinks.

Does not blink

- Loose or poor contact on the vehicle speed sensor connector.

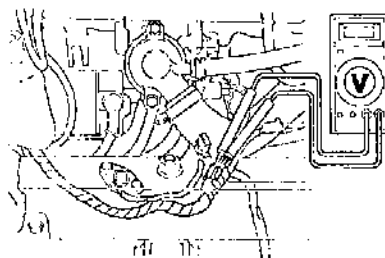
11 blinks

Turn the ignition switch to "OFF".

Disconnect the vehicle speed sensor 3P connector.
Turn the ignition switch to "ON".
Measure the voltage at the wire harness side connector.

Out of range

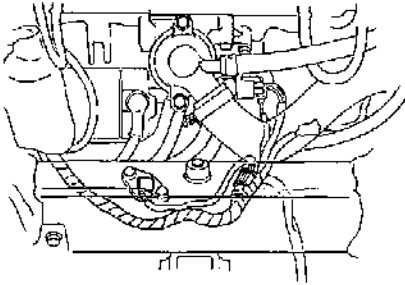
- Open or short circuit in Black wire of the engine sub-harness.
- Open or short circuit in Black/Brown wire of the main wire harness.



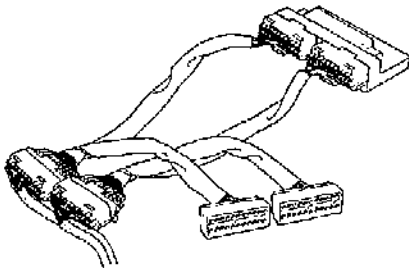
Connection: Black (+) – Green (–)
Standard: 12 V

Voltage exists

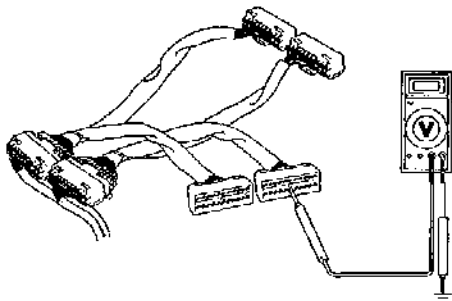
Connect the speed sensor 3P connector.



Disconnect the ECM connectors.
Connect the test harness to the wire harness connectors.



Support the motorcycle securely and place the rear wheel off the ground.
Shift the transmission into 1st gear.
Measure the voltage at the test harness terminals with the ignition switch is turned to "ON" while slowly turning the rear wheel by hand.



CONNECTION: Pink/Green (+) – Ground (–)
STANDARD: Repeat 0 to 5V

Abnormal

- Open or short circuit in Pink wire of the engine sub-harness.
- Open or short circuit in Pink/Green wire of the main wire harness.

Normal

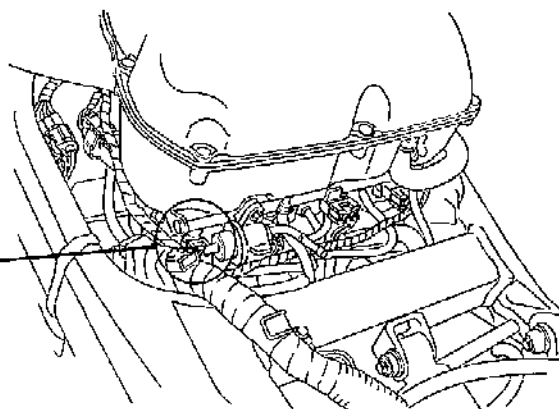
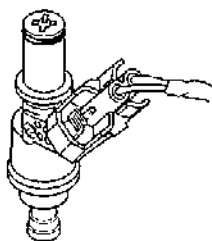
- Replace the ECM with a new one, and inspect it again.

FUEL SYSTEM (Programmed Fuel Injection)

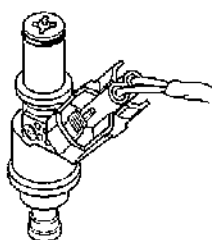
PGM-FI MIL 12 BLINKS (No.1 INJECTOR)

Turn the ignition switch to "OFF".

Disconnect the No.1 injector 2P connector.
Check for loose or poor contact on the No.1 injector 2P connector.



Connect the No.1 injector 2P connector.
Place the motorcycle on its side stand.
Turn the ignition switch to "ON".
Check that the MIL blinks.

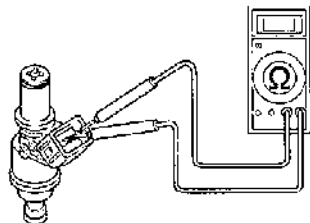


Does not blink

- Loose or poor contact on the No.1 injector connector.

12 blinks

Turn the ignition switch to "OFF".
Disconnect the No.1 injector 2P connector and
measure the resistance of the No.1 injector.



Abnormal

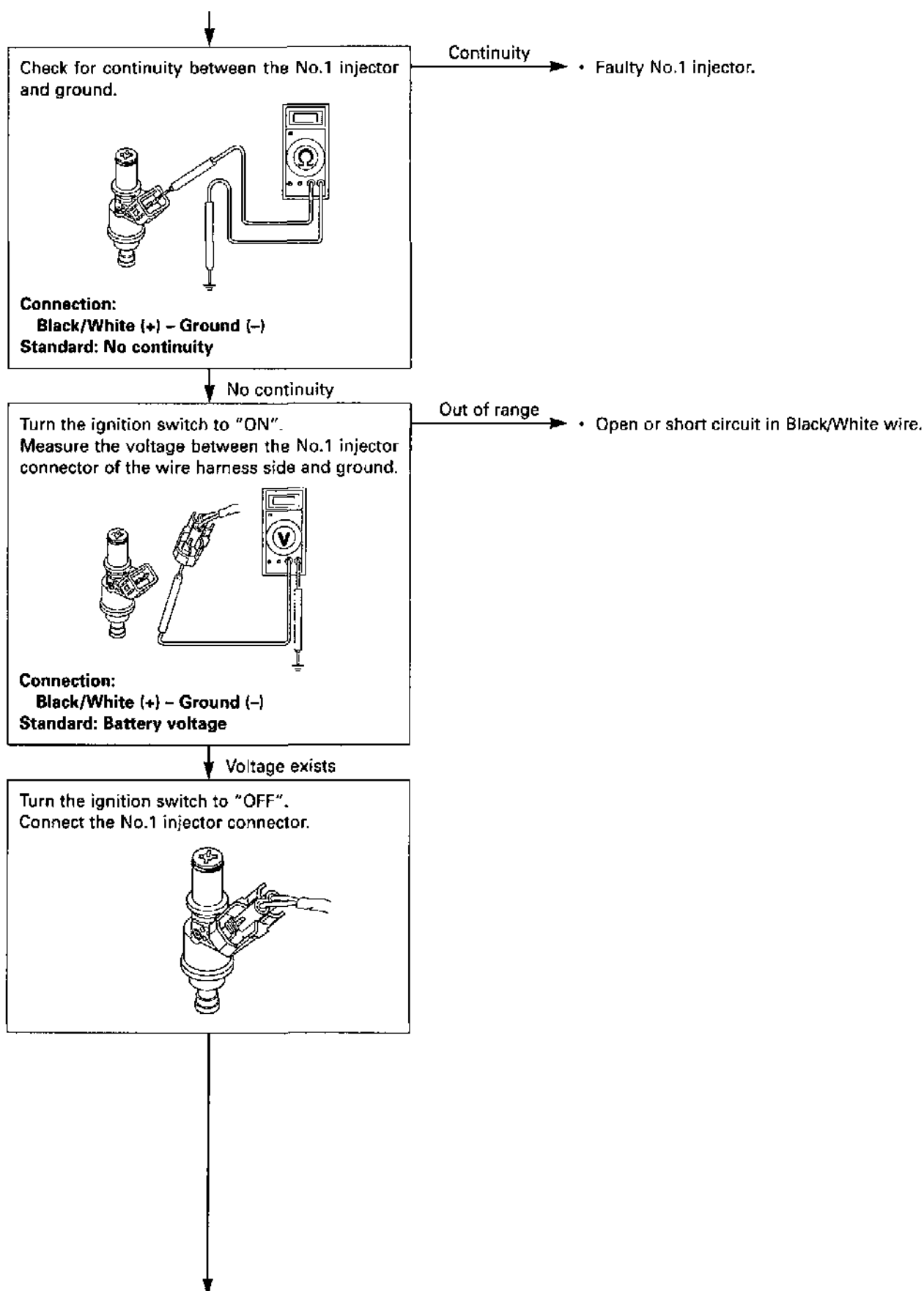
- Faulty No.1 injector.

Connection:

Black/White (+) – Pink/Yellow (–)

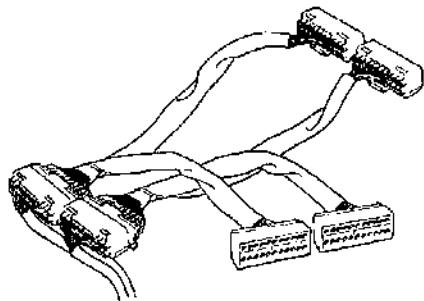
Standard: 11.1 – 12.3 Ω (20°C/68°F)

Normal

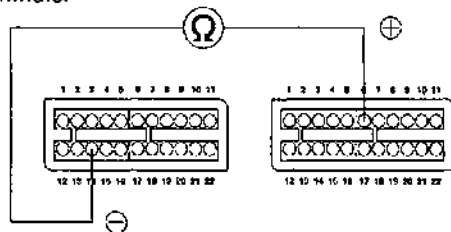


FUEL SYSTEM (Programmed Fuel Injection)

Disconnect the ECM connectors.
Connect the test harness to the wire harness connectors.



Measure the resistance at the test harness terminals.



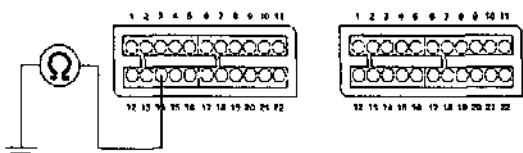
Connection: A14 (-) - B6 (+)
Standard: 9 - 15 Ω (20°C/68°F)

Out of range

- Open circuit in Black/White and/or Pink/Yellow wire.

Normal

Check for continuity between the test harness terminal and ground.



Connection: A14 - Ground
Standard: No continuity

Continuity

- Short circuit in Pink/Yellow wire.

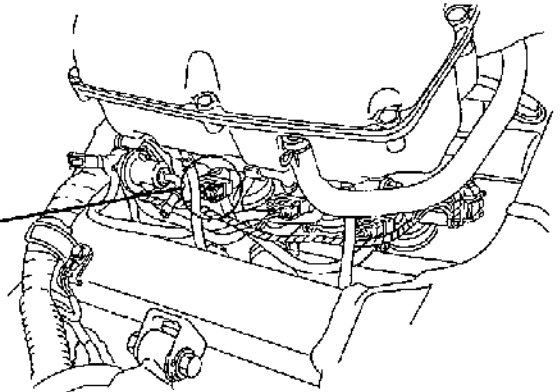
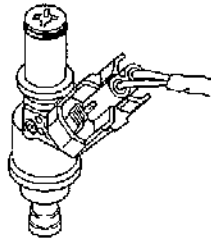
No continuity

- Replace the ECM with a new one, and inspect it again.

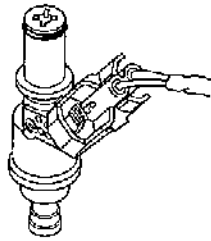
PGM-FI MIL 13 BLINKS (No.2 INJECTOR)

Turn the ignition switch to "OFF".

Disconnect the No.2 injector 2P connector.
Check for loose or poor contact on the No.2 injector 2P connector.



Connect the No.2 injector 2P connector.
Place the motorcycle on its side stand.
Turn the ignition switch to "ON".
Check that the MIL blinks.

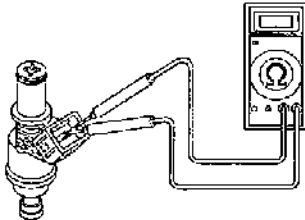


Does not blink

- Loose or poor contact on the No.2 injector connector.

13 blinks

Turn the ignition switch to "OFF".
Disconnect the No.2 injector 2P connector and measure the resistance of the No.2 injector.



Abnormal

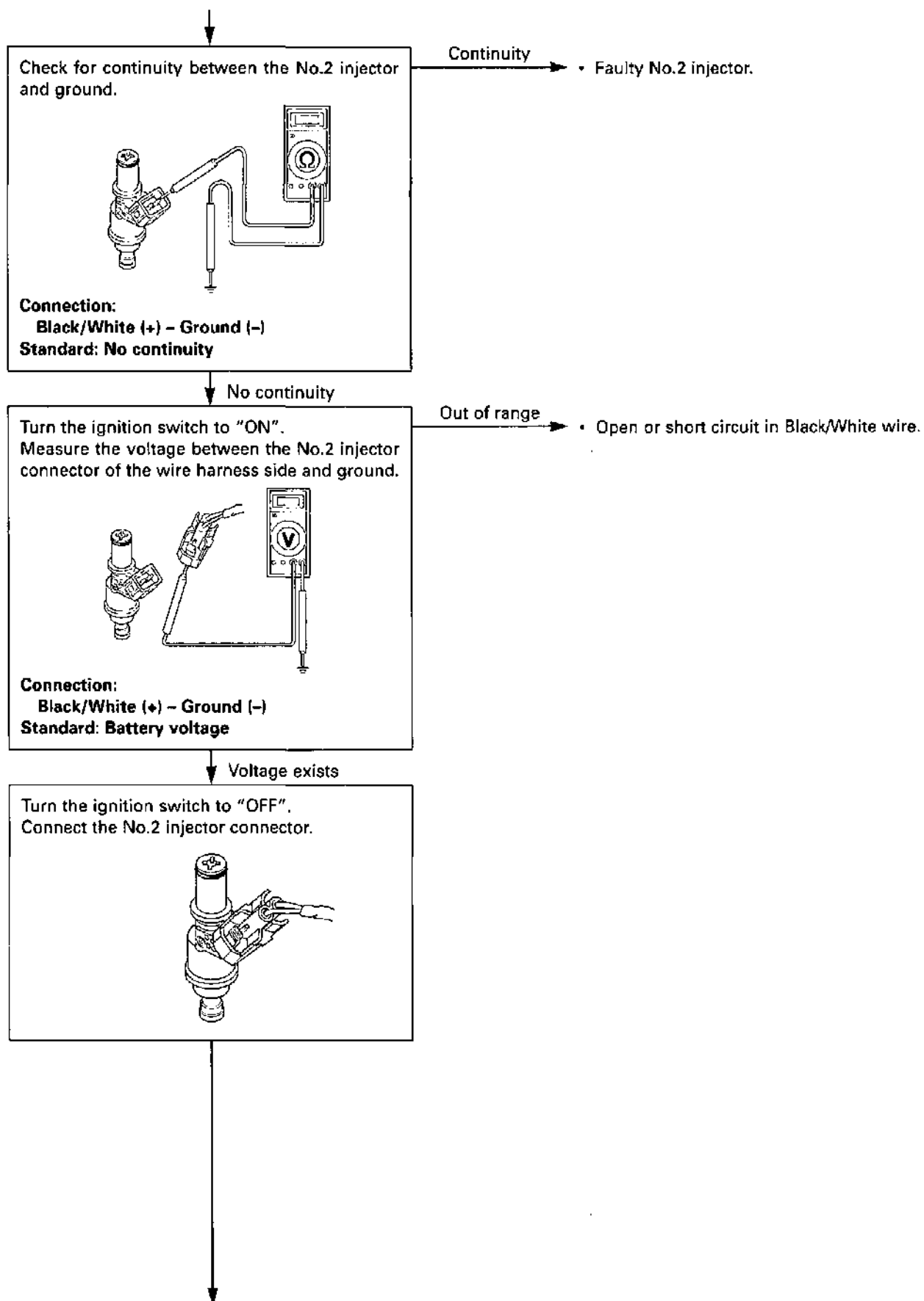
- Faulty No.2 injector.

Connection:

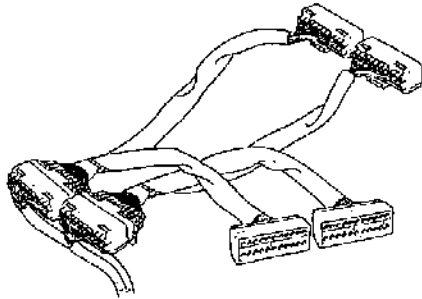
Black/White (+) – Pink/Blue (–)
Standard: 11.1 – 12.3 Ω (20°C/68°F)

Normal

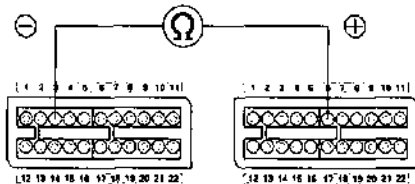
FUEL SYSTEM (Programmed Fuel Injection)



Disconnect the ECM connectors.
Connect the test harness to the wire harness connectors.



Measure the resistance at the test harness terminals.



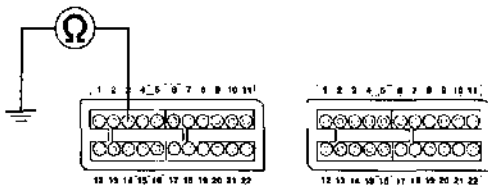
Connection: A3 (-) - B6 (+)
Standard: 9 - 15 Ω (20°C/68°F)

Out of range

- Open circuit in Black/White and/or Pink/Blue wire.

Normal

Check for continuity between the test harness terminal and ground.



Connection: A3 - Ground
Standard: No continuity

Continuity

- Short circuit in Pink/Blue wire.

No continuity

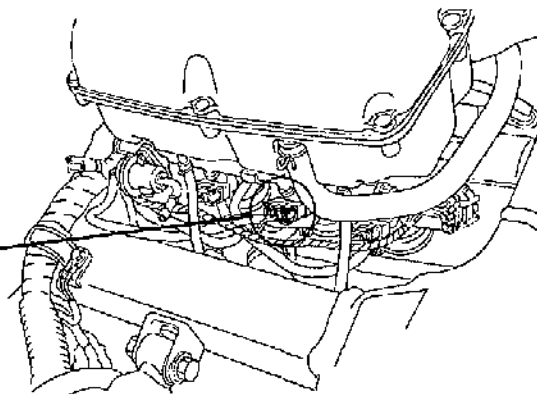
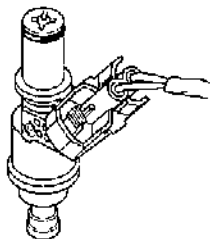
- Replace the ECM with a new one, and inspect it again.

FUEL SYSTEM (Programmed Fuel Injection)

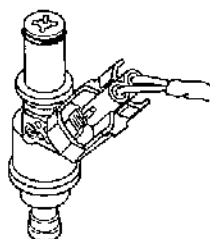
PGM-FI MIL 14 BLINKS (No.3 INJECTOR)

Turn the ignition switch to "OFF".

Disconnect the No.3 injector 2P connector.
Check for loose or poor contact on the No.3 injector 2P connector.



Connect the No.3 injector 2P connector.
Place the motorcycle on its side stand.
Turn the ignition switch to "ON".
Check that the MIL blinks.

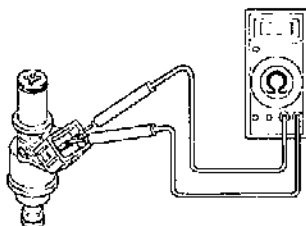


Does not blink

- Loose or poor contact on the No.3 injector connector.

14 blinks

Turn the ignition switch to "OFF".
Disconnect the No.3 injector 2P connector and
measure the resistance of the No.3 injector.



Abnormal

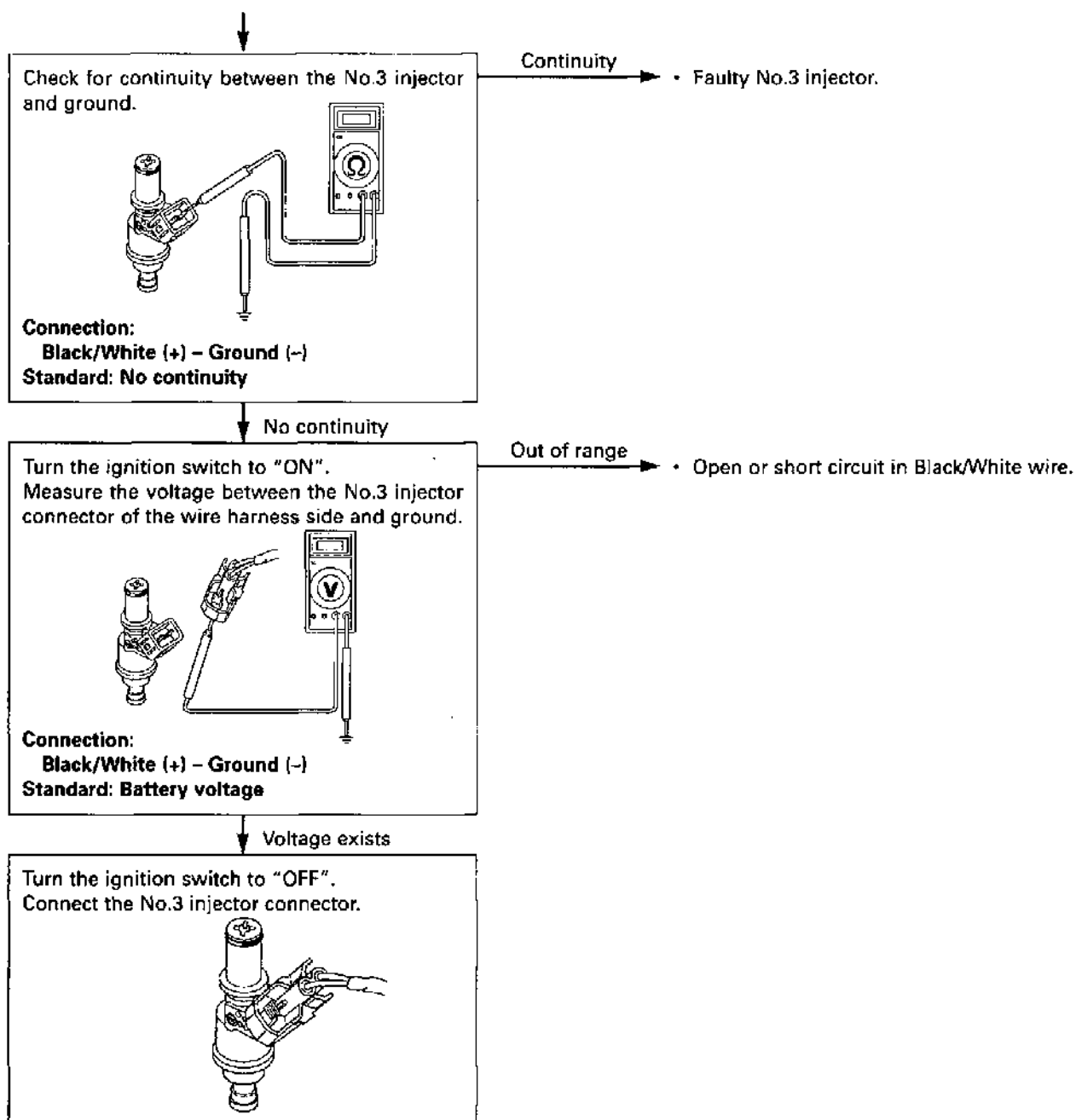
- Faulty No.3 injector.

Connection:

Black/White (+) – Pink/Green (–)

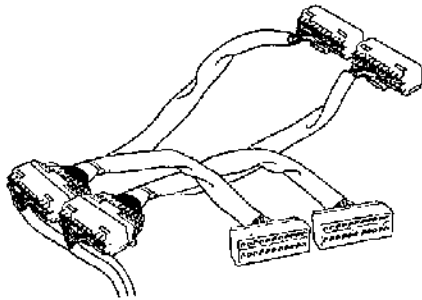
Standard: 11.1 – 12.3 Ω (20°C/68°F)

Normal

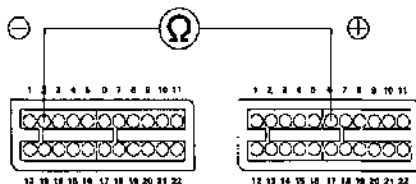


FUEL SYSTEM (Programmed Fuel Injection)

Disconnect the ECM connectors.
Connect the test harness to the wire harness connectors.



Measure the resistance at the test harness terminals.



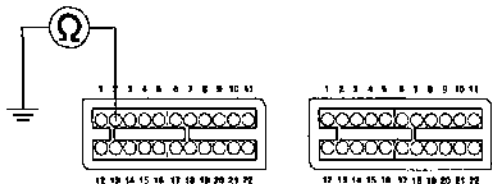
Connection: A2 (-) - B6 (+)
Standard: 9 - 15 Ω (20°C/68°F)

Out of range

- Open circuit in Black/White and/or Pink/Green wire.

Normal

Check for continuity between the test harness terminal and ground.



Connection: A2 - Ground
Standard: No continuity

Continuity

- Short circuit in Pink/Green wire.

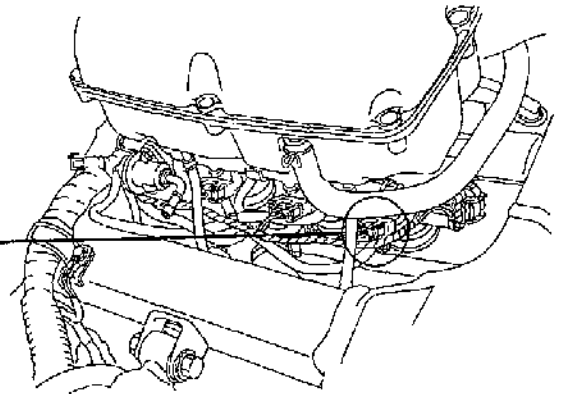
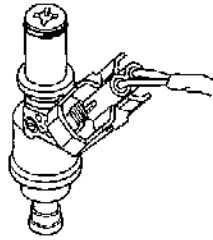
No continuity

- Replace the ECM with a new one, and inspect it again.

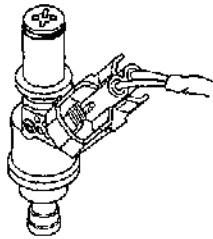
PGM-FI MIL 15 BLINKS (No.4 INJECTOR)

Turn the ignition switch to "OFF".

Disconnect the No.4 injector 2P connector.
Check for loose or poor contact on the No.4 injector 2P connector.



Connect the No.4 injector 2P connector.
Place the motorcycle on its side stand.
Turn the ignition switch to "ON".
Check that the MIL blinks.

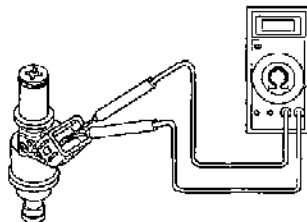


Does not blink

- Loose or poor contact on the No.4 injector connector.

15 blinks

Turn the ignition switch to "OFF".
Disconnect the No.4 injector 2P connector and
measure the resistance of the No.4 injector.



Abnormal

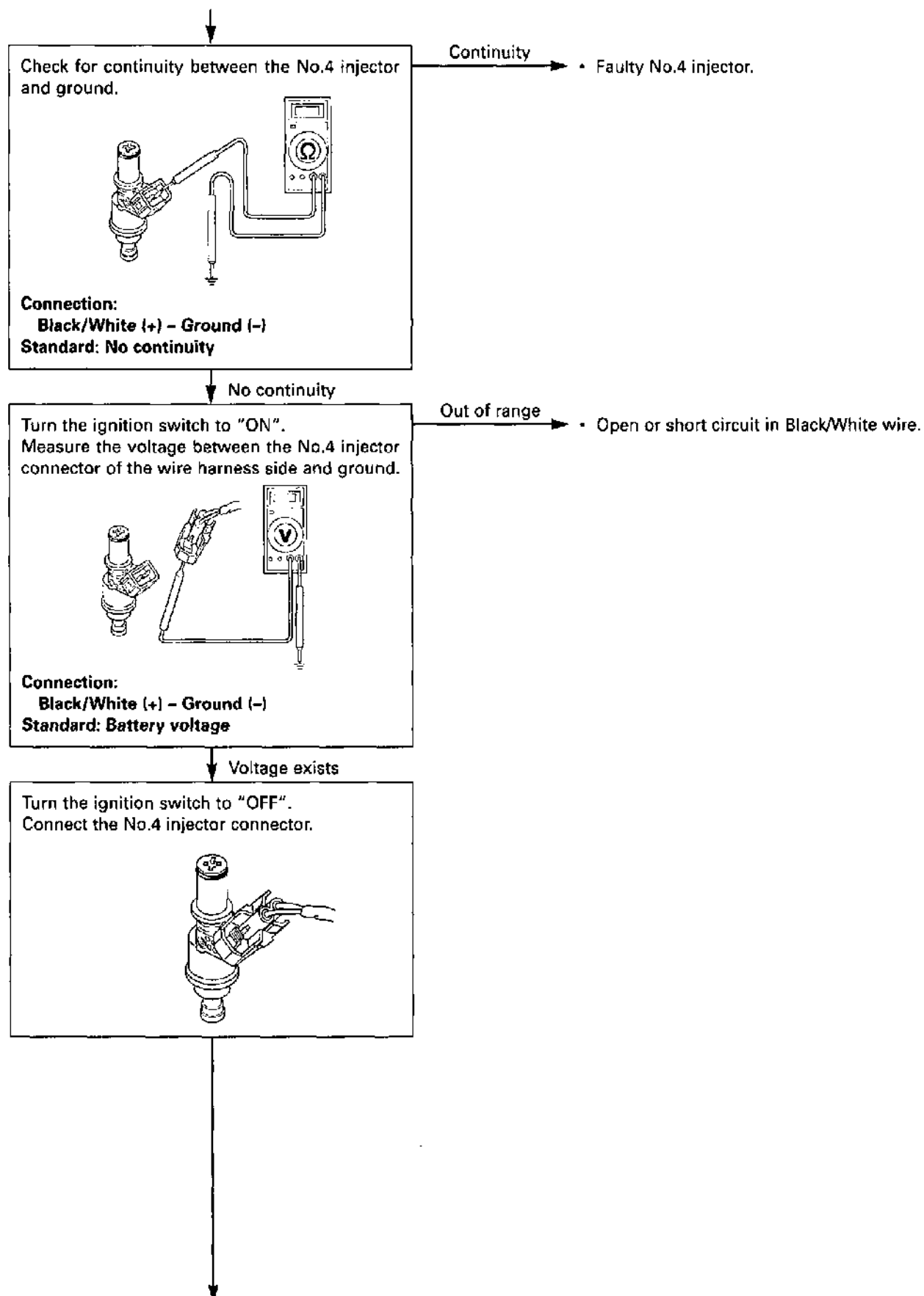
- Faulty No.4 injector.

Connection:

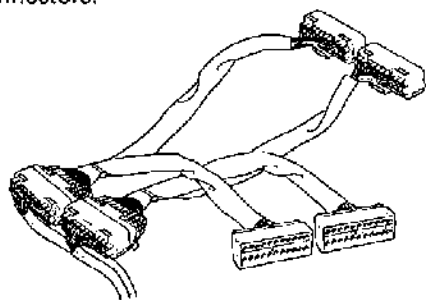
Black/White (+) – Pink/Black (–)
Standard: 11.1 – 12.3 Ω (20°C/68°F)

Normal

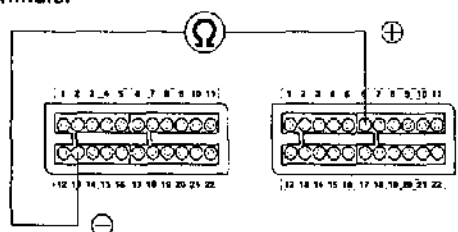
FUEL SYSTEM (Programmed Fuel Injection)



Disconnect the ECM connectors.
Connect the test harness to the wire harness connectors.



Measure the resistance at the test harness terminals.



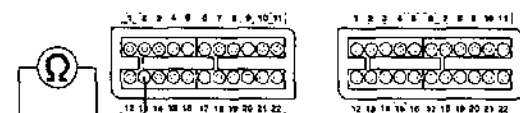
Connection: A13 (-) - B6 (+)
Standard: 9 - 15 Ω (20°C/68°F)

Out of range

- Open circuit in Black/White and/or Pink/Black wire.

Normal

Check for continuity between the test harness terminal and ground.



Connection: A13 - Ground
Standard: No continuity

Continuity

- Short circuit in Pink/Black wire.

No continuity

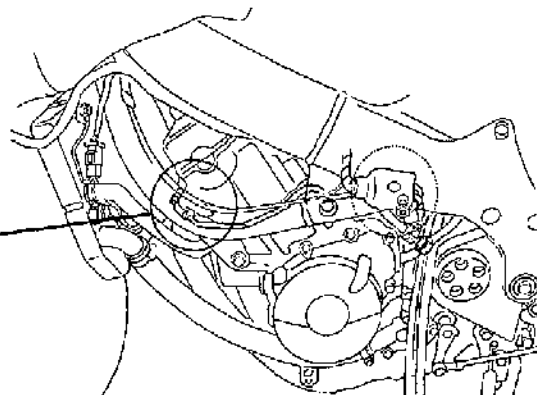
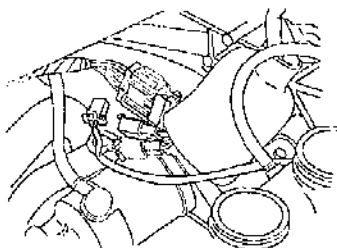
- Replace the ECM with a new one, and inspect it again.

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 18 BLINKS (CMP SENSOR)

Turn the ignition switch to "OFF".

Disconnect the CMP sensor 2P connector.
Check for loose or poor contact on the CMP sensor 2P connector.



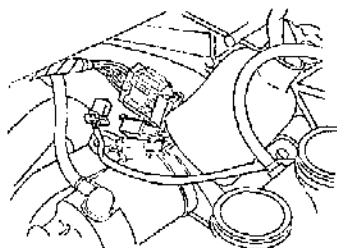
Connect the CMP sensor 2P connector.
Place the motorcycle on its side stand.
Turn the starter motor for more than 10 seconds
and then check that the MIL blinks.

Does not blink

- Loose or poor contact on the CMP sensor 2P connector.

18 blinks

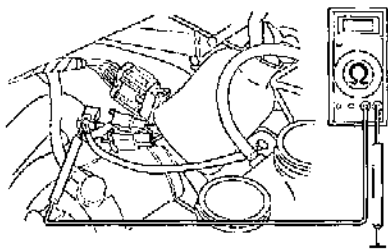
Turn the ignition switch to "OFF" and the
engine stop switch to "OFF".
Disconnect the CMP sensor 2P connector.



Check the continuity between the CMP sensor
connector terminal and ground.

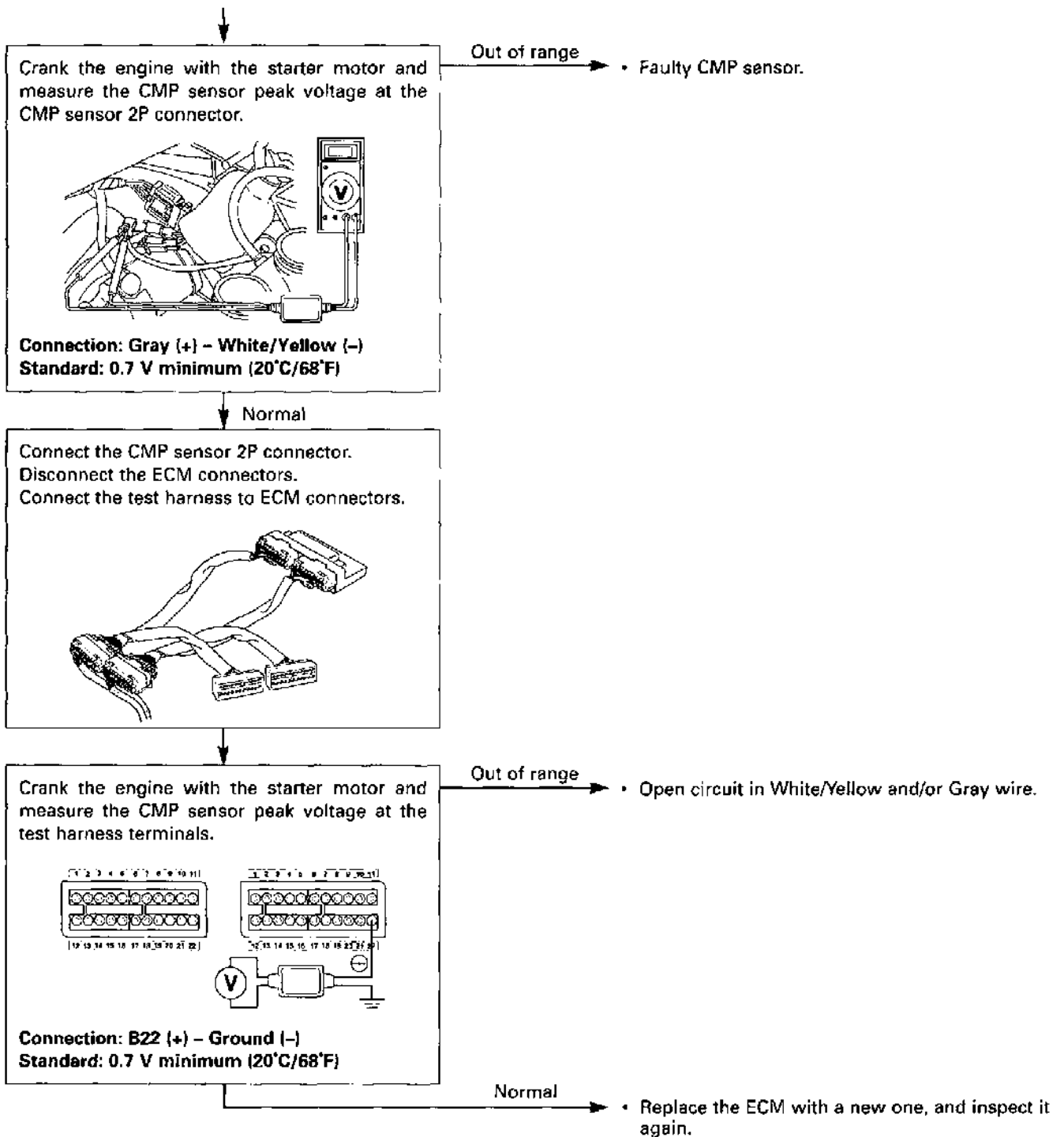
Continuity

- Faulty CMP sensor.



Connection: White/Yellow - Ground
Standard: No continuity

No continuity

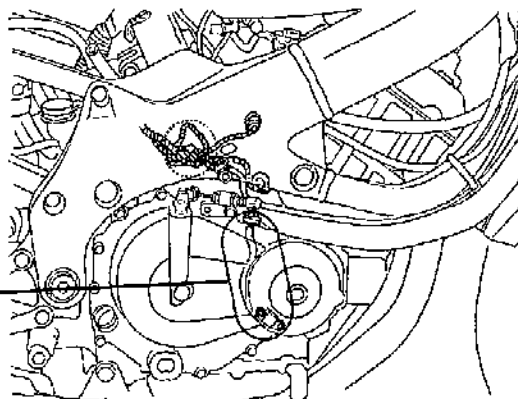
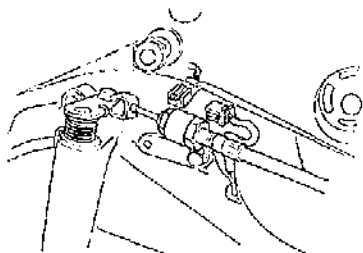


FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 19 BLINKS (CKP SENSOR)

Turn the ignition switch to "OFF".

Disconnect the CKP sensor 2P connector.
Check for loose or poor contact on the CKP sensor 2P connector.



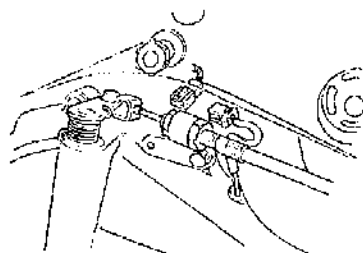
Connect the CKP sensor 2P connector.
Place the motorcycle on its side stand.
Turn the starter motor for more than 10 seconds
and then check that the MIL blinks.

Does not blink

• Loose or poor contact on the CKP sensor 2P connector.

19 blinks

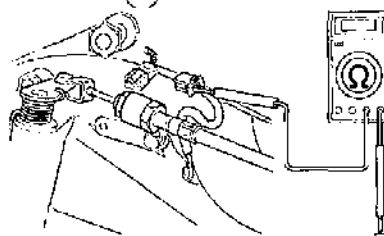
Turn the ignition switch to "OFF" and the
engine stop switch to "OFF".
Disconnect the CKP sensor 2P connector.



Check the continuity between the CKP sensor
connector terminal and ground.

Abnormal

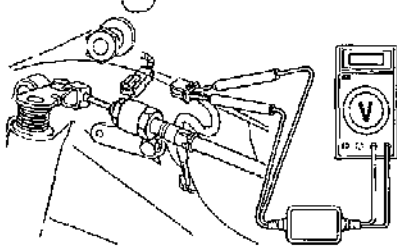
• Faulty CKP sensor.



Connection: White/Yellow - Ground
Standard: No continuity

No continuity

Crank the engine with the starter motor and measure the CKP sensor peak voltage at the CKP sensor 2P connector.



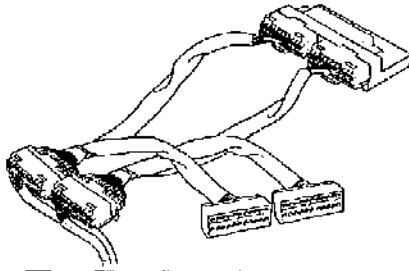
Connection: Yellow (+) - Yellow/White (-)
Standard: 0.7 V minimum (20°C/68°F)

Out of range

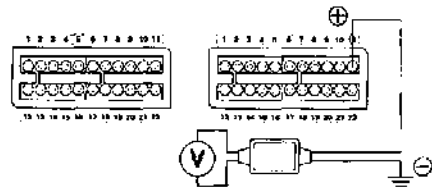
- Faulty CKP sensor.

Normal

Connect the CKP sensor 2P connector.
 Disconnect the ECM connectors.
 Connect the test harness to ECM connectors.



Crank the engine with the starter motor and measure the CKP sensor peak voltage at the test harness terminals.



Connection: B11 (+) - Ground (-)
Standard: 0.7 V minimum (20°C/68°F)

Out of range

- Open circuit in White/Yellow wire.
- Open circuit in Yellow wire.

Normal

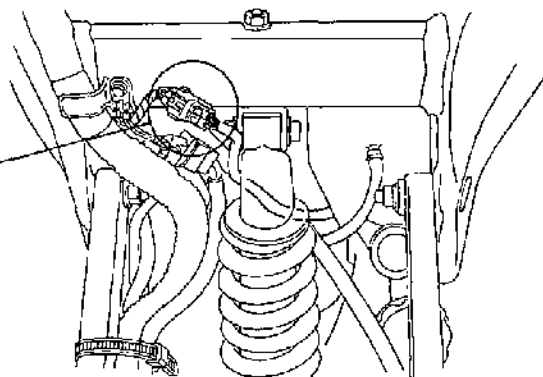
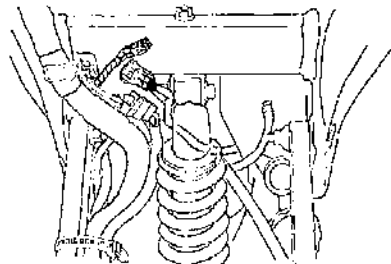
- Replace the ECM with a new one, and inspect it again.

FUEL SYSTEM (Programmed Fuel Injection)

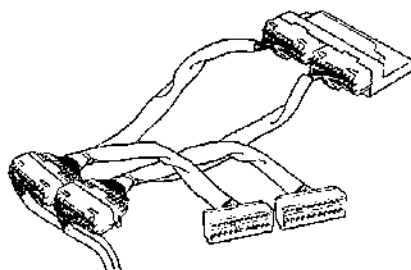
PGM-FI MIL 21 BLINKS (O₂ SENSOR/CALIFORNIA TYPE ONLY)

Turn the ignition switch to "OFF".

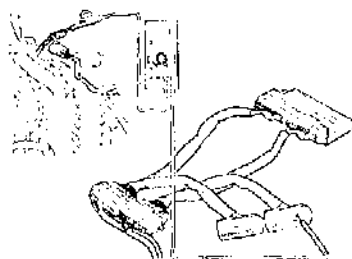
Disconnect the O₂ sensor connector.
Check for loose or poor contact on the O₂ sensor connector.



Disconnect the ECM connectors.
Connect the test harness to ECM connectors.



Check the continuity between the test harness terminal and O₂ sensor connector terminal.

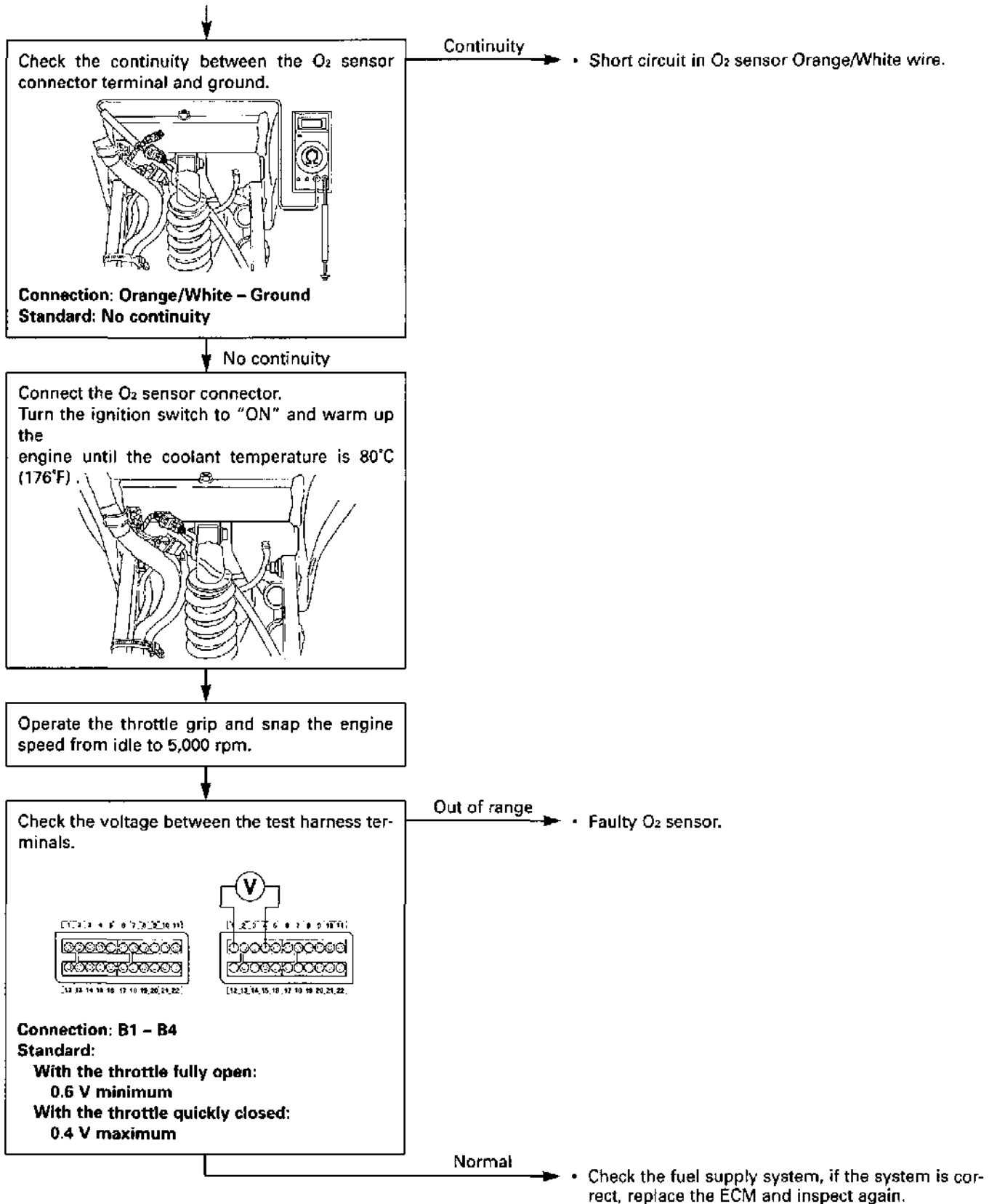


Connection: Orange/White - A5
Standard: Continuity

No continuity →

• Open circuit in O₂ sensor Orange/White wire.

Continuity

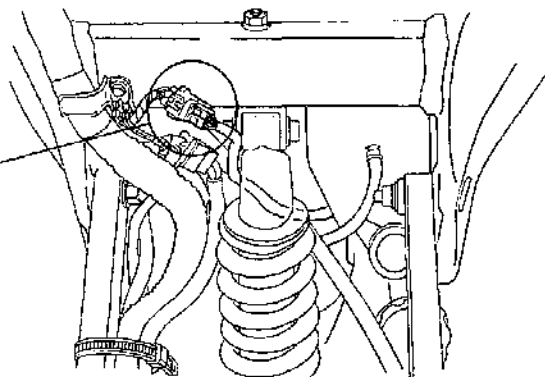
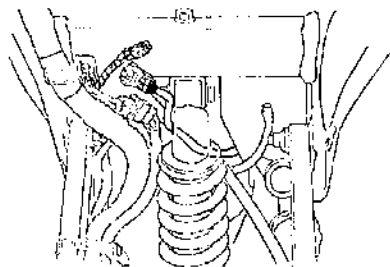


FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 23 BLINKS (O₂ SENSOR HEATER/CALIFORNIA TYPE ONLY)

Turn the ignition switch to "OFF".

Disconnect the O₂ sensor connectors.
Check for loose or poor contact on the O₂ sensor connector.



Connect the O₂ sensor connector.
Place the motorcycle on its side stand.
Start the engine and check that the MIL blinks.

Does not blink

• Loose or poor contact on the O₂ sensor connector.

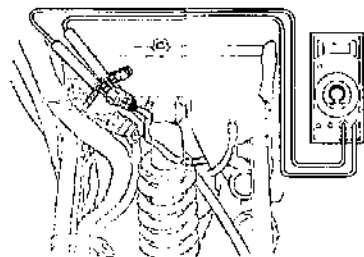
23 blinks

Turn the ignition switch to "OFF".

Disconnect the O₂ sensor 4P connector.
Measure the resistance at the sensor side connector White terminals.

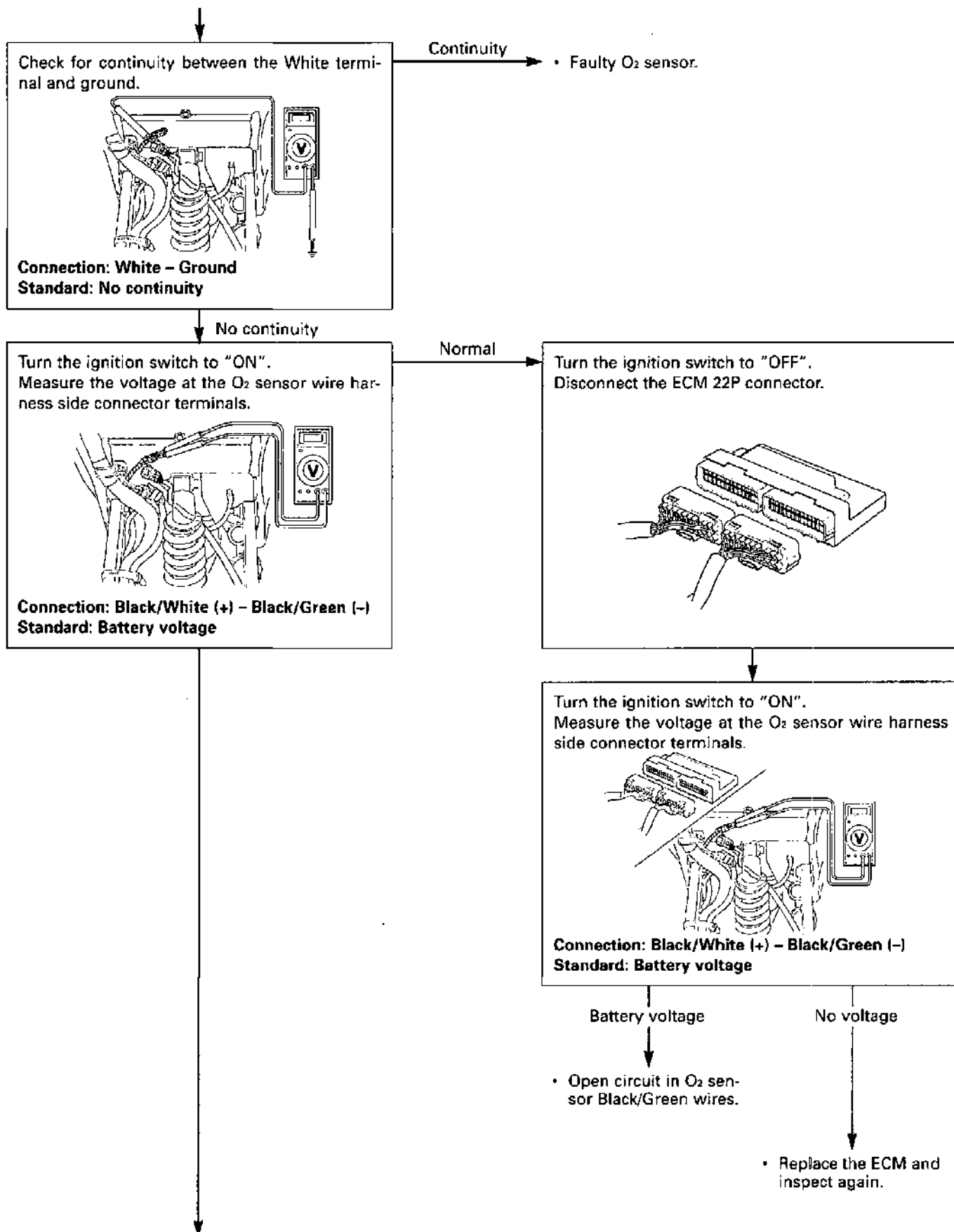
Out of range

• Faulty O₂ sensor.

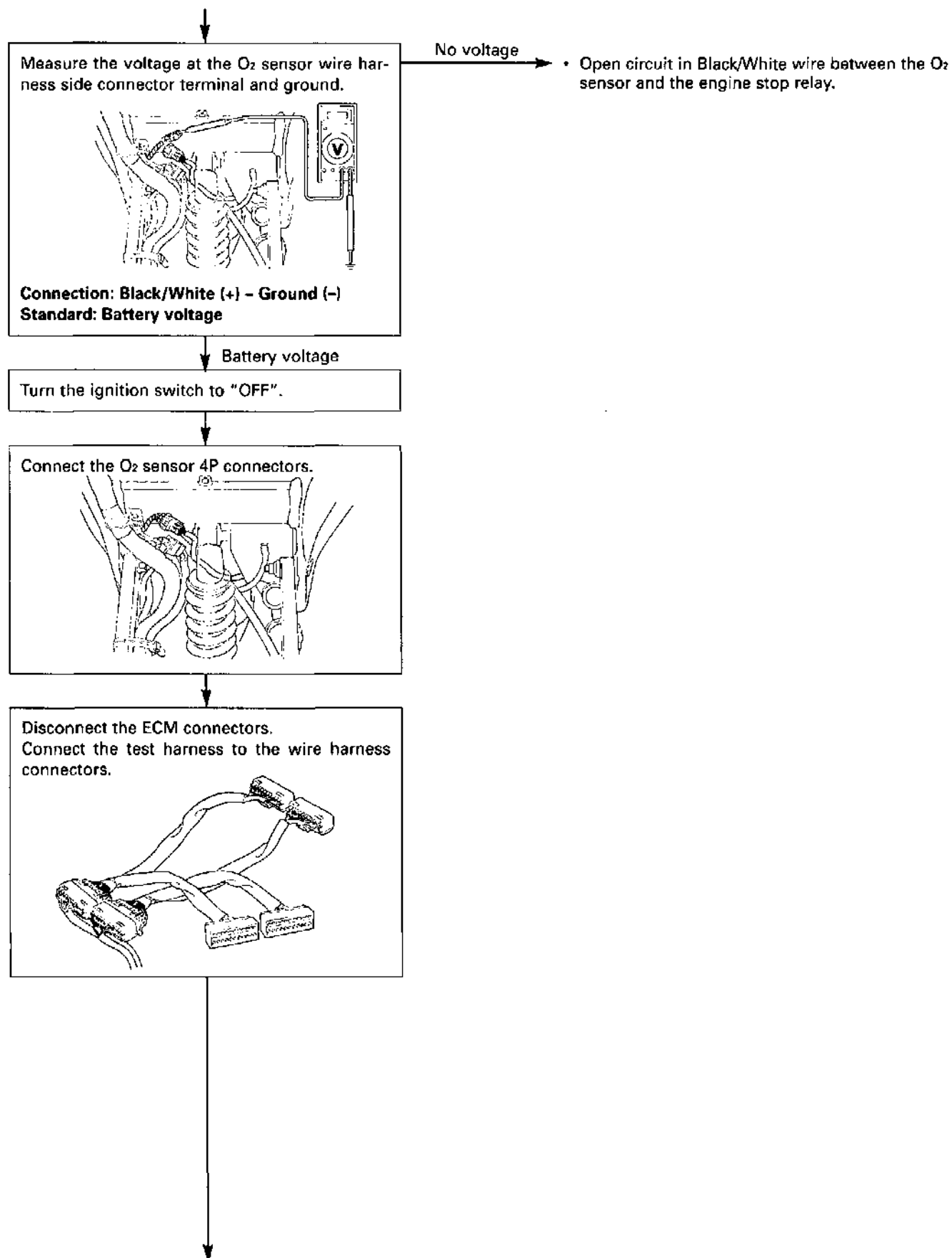


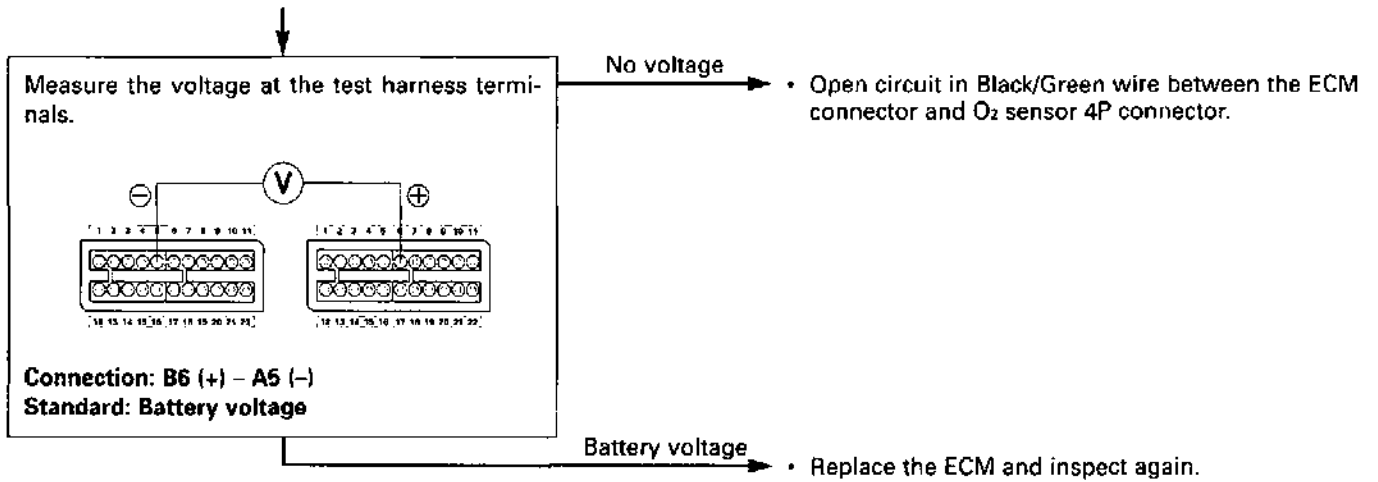
Connection: White - White
Standard: 10 - 40 Ω

Normal



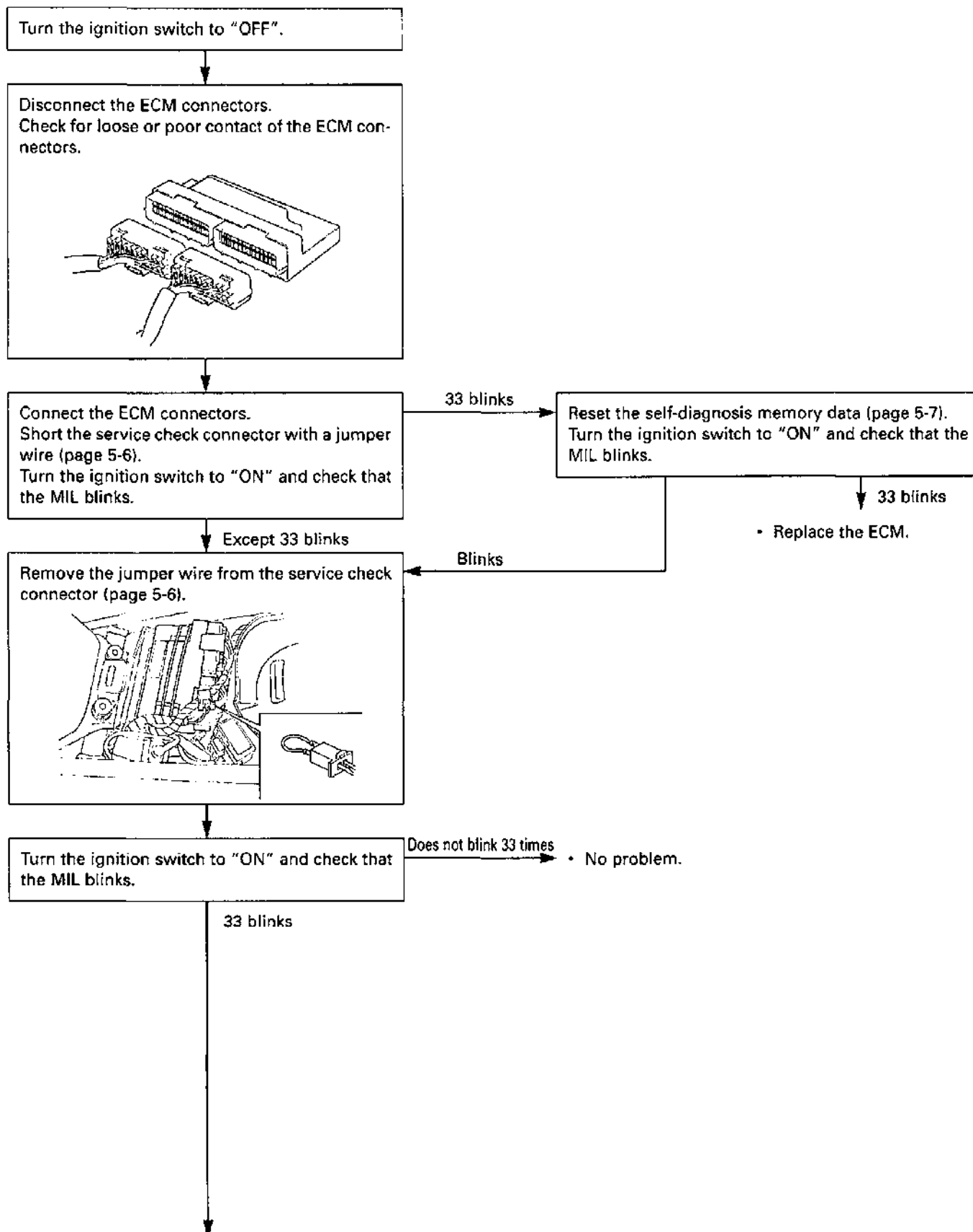
FUEL SYSTEM (Programmed Fuel Injection)

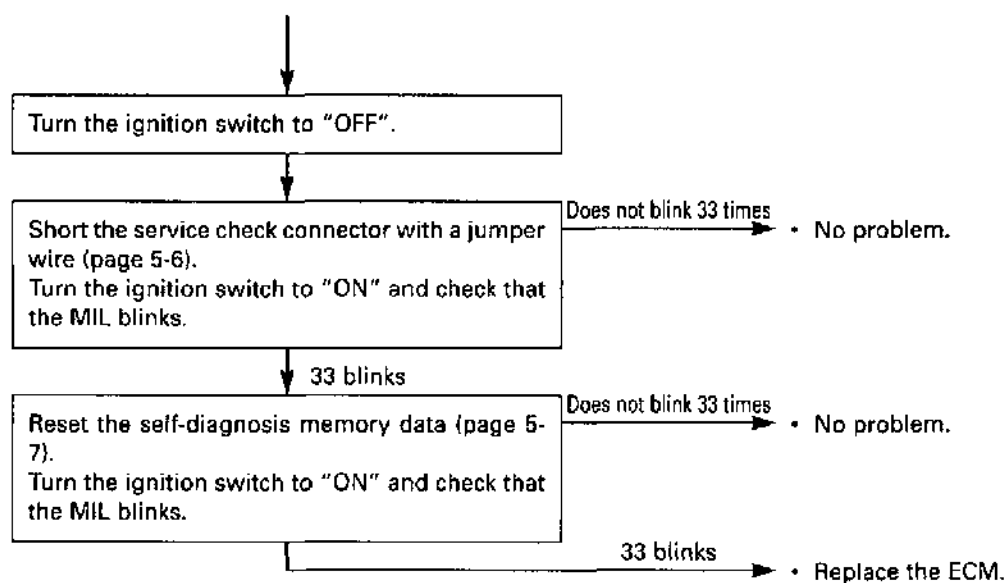




FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 33 BLINKS (E²-PROM)





FUEL LINE INSPECTION

FUEL PRESSURE INSPECTION

NOTICE

- Before disconnecting the fuel hoses, release the fuel pressure by loosening the service check bolt at the fuel tank.
- Always replace the sealing washers when the service check bolt is removed or loosened.

Remove the seat (page 2-2).

Remove the ECM holder band and remove the ECM from the battery cover.

Unhook the battery cover retainers, then open the battery cover.

Disconnect the battery negative cable from the battery terminal.

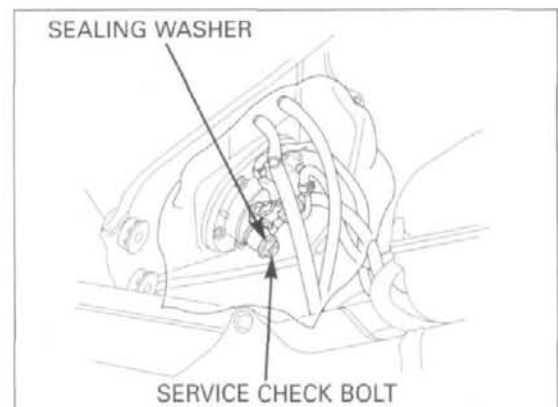
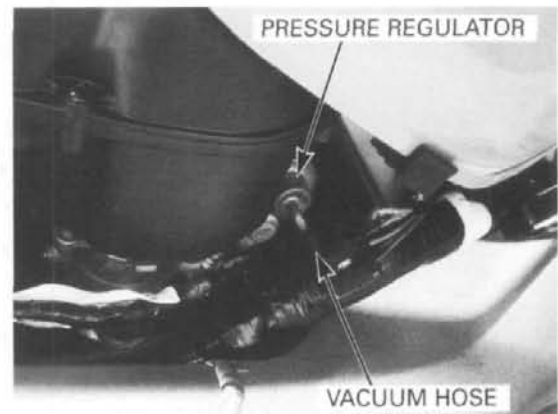
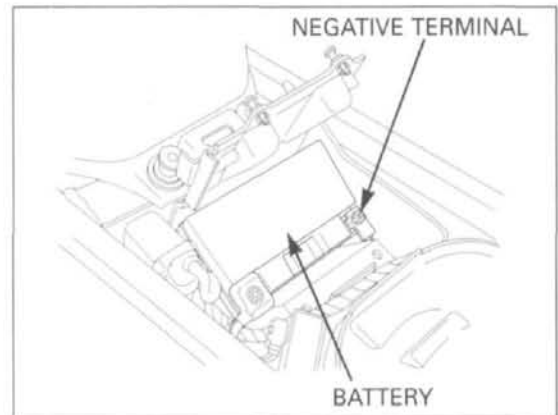
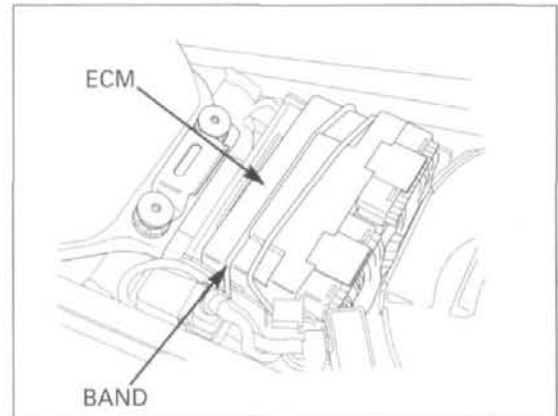
Lift the fuel tank slowly, being careful not to overextend the fuel hose.

Support the front end of fuel tank (page 3-4).

Disconnect the pressure regulator vacuum hose and plug the vacuum hose.

Cover the service check bolt with a rag or shop towel.

Slowly loosen the service check bolt and drain the remaining fuel into an approved gasoline container.

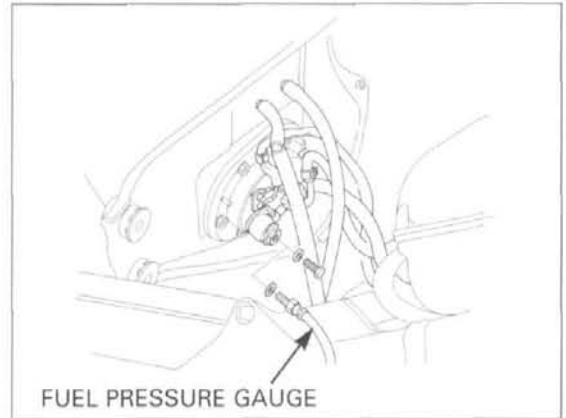


Remove the service check bolt and attach the fuel pressure gauge.

TOOL:

Fuel pressure gauge

07406-0040003 or
07406-0040002



Connect the battery negative cable.
Start the engine.
Read 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, inspect the following:

- Pinched or clogged fuel return hose
- Pressure regulator
- Fuel pump (page 5-53)

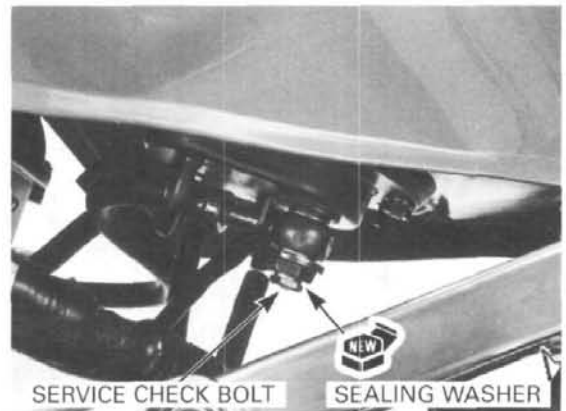
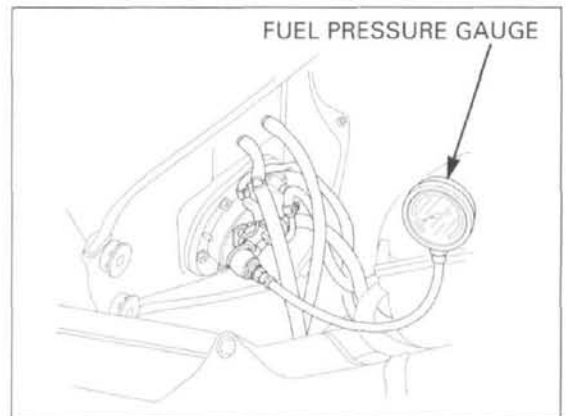
If the fuel pressure is lower than specified, inspect the following:

- Fuel line leaking
- Clogged fuel filter
- Pressure regulator
- Fuel pump (page 5-53)

Always replace the sealing washer when the service check bolt is removed or loosened.

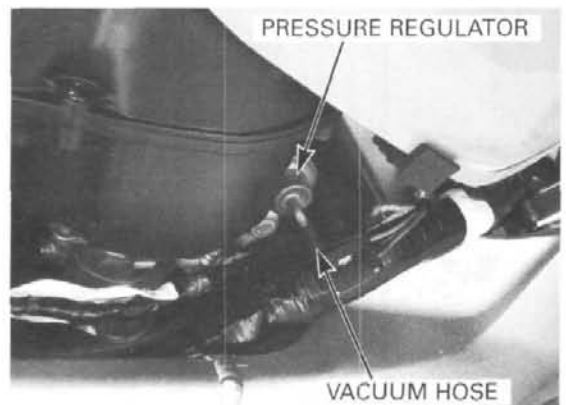
After inspection, remove the fuel pressure gauge and reinstall and tighten the service check bolt using the new sealing washer.

TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)



Connect the pressure regulator vacuum hose.

Install the removed parts in the reverse order of removal.

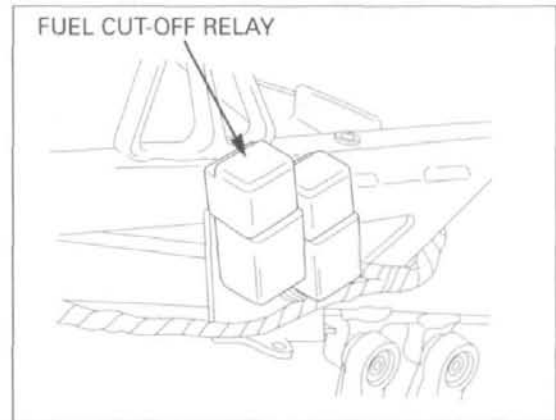


FUEL SYSTEM (Programmed Fuel Injection)

FUEL FLOW INSPECTION

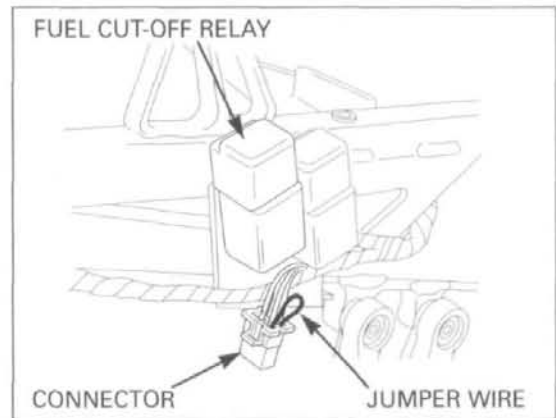
Remove the rear cowl (page 2-3).
Support the front end of fuel tank (page 3-4).

Disconnect the fuel cut-off relay connector.



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

- When the fuel return hose is disconnected, gasoline may spill out from the hose. Place an approved gasoline container under the hose and drain the gasoline.
- Wipe off any spilled out gasoline.



Disconnect the fuel return hose at the fuel tank and plug the fuel tank inlet joint.

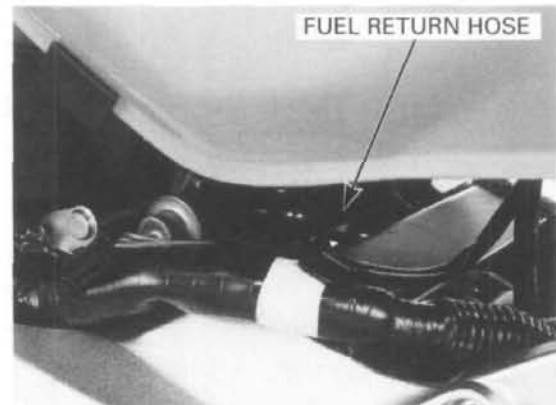
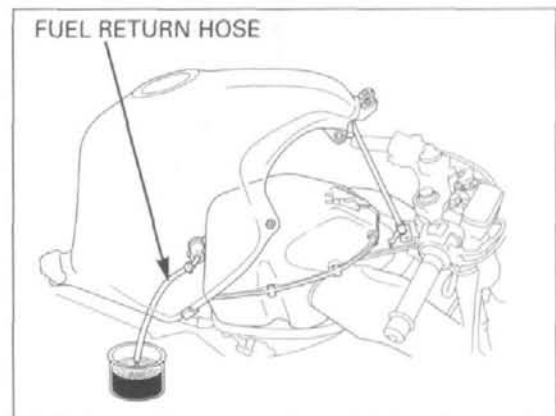
Turn the ignition switch to "ON" for 10 seconds.
Measure the amount of fuel flow.

Amount of fuel flow:
Minimum 188 cm³ (6.4 US oz, 6.6 Imp oz) for 10 seconds at 12 V

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

- Pinched or clogged fuel hose and fuel return hose
- Clogged fuel filter
- Pressure regulator
- Fuel pump (page 5-53)

After inspection, connect the fuel return hose.
Start the engine and check for leak.



FUEL PUMP

INSPECTION

Turn the ignition switch to "ON" and confirm that the fuel pump operates for a few seconds.
If the fuel pump does not operate, inspect as follows:

Support the front end of fuel tank (page 3-4).

Disconnect the fuel pump 3P (Black) connector.

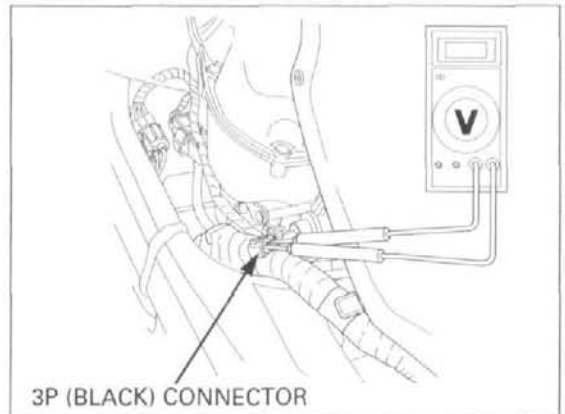
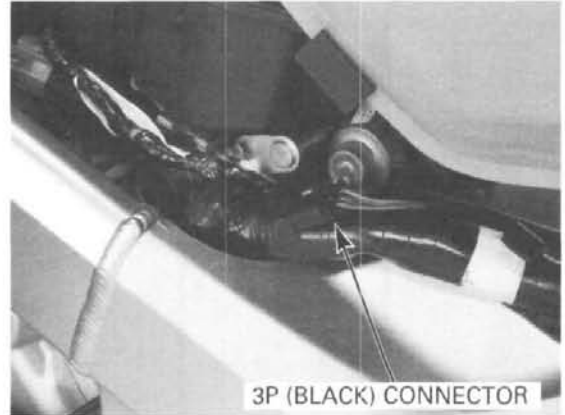
Turn the ignition switch to "ON" and measure the voltage between the terminals.

Connection: Brown (+) – Green (–)

There should be battery voltage for a few seconds.

If there is battery voltage, replace the fuel pump.
If there is no battery voltage, inspect the following:

- Main fuse 30A
- Sub fuse 10A
- Engine stop switch (page 19-19)
- Fuel cut-off relay (page 5-54)
- Engine stop relay (page 5-84)
- Bank angle sensor (page 5-83)
- ECM (page 5-85)



REMOVAL

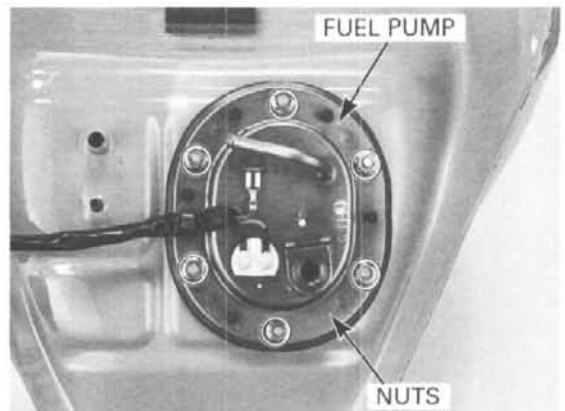
NOTICE

- Before disconnecting the fuel hose, release the fuel pressure by loosening the service check bolt at the fuel tank.
- Always replace the sealing washers when the service check bolt is removed or loosened.

Remove the fuel tank (page 5-55).

Remove the fuel pump mounting nuts.

Remove the fuel pump assembly and packing.



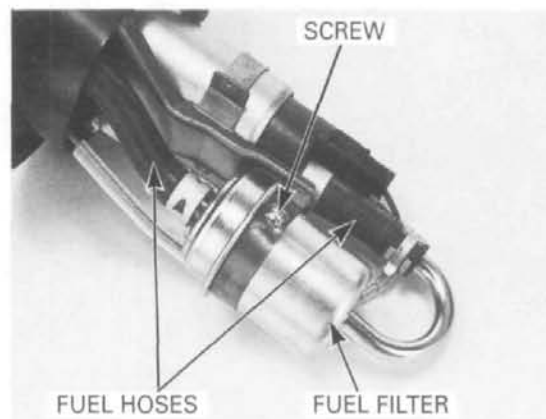
FUEL SYSTEM (Programmed Fuel Injection)

FUEL FILTER REPLACEMENT

Disconnect the fuel hoses from the fuel filter.
Remove the screws and fuel filter.

*Note the direction
of the fuel filter.*

Install the fuel filter in the reverse order of removal.



INSTALLATION

*Always replace
the packing with a
new one.*

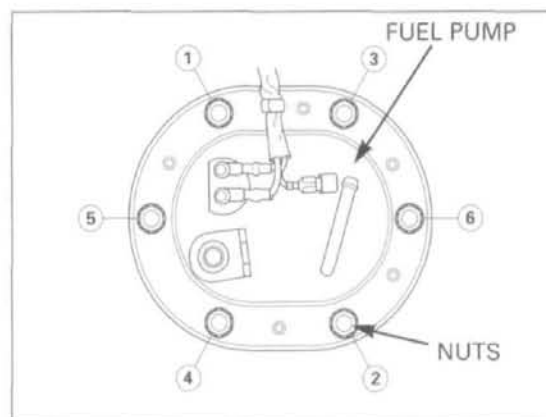
Place a new packing onto the fuel tank.

Install the fuel pump being careful not to damage the
fuel pump wire.



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

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

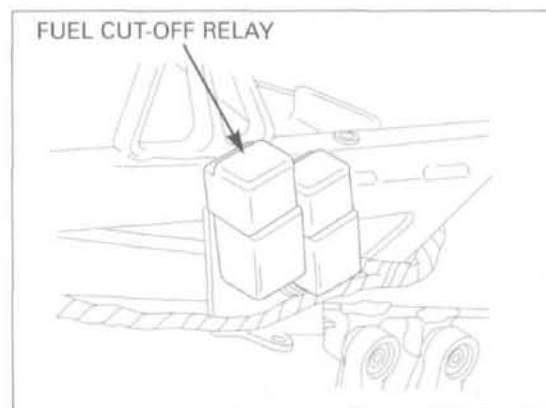


FUEL CUT RELAY

INSPECTION

Remove the rear cowl (page 2-3).

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



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

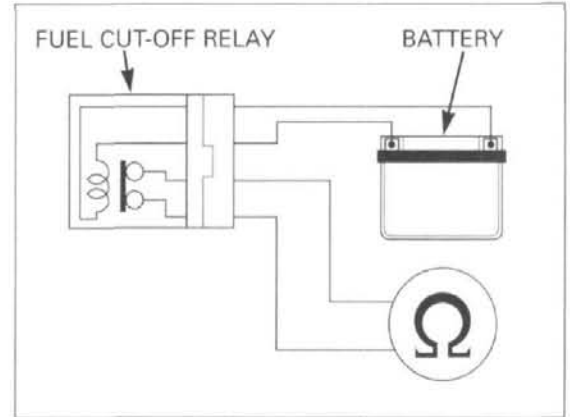
CONNECTION: Black/White – Brown

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

CONNECTION: Brown/Black – Black/White

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 fuel cut-off relay.

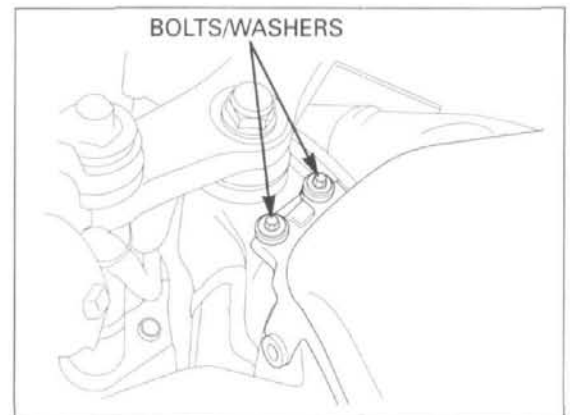


FUEL TANK

REMOVAL

Remove the air duct cover (page 2-9).

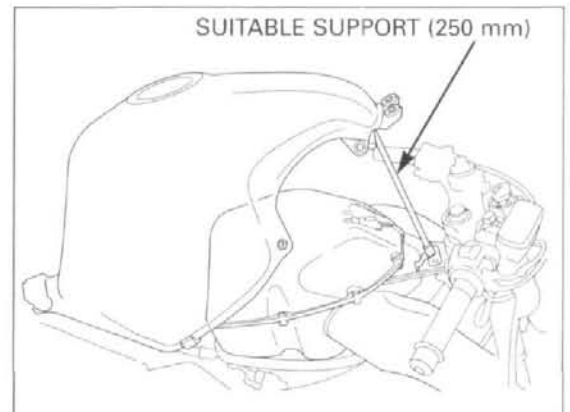
Remove the fuel tank front mounting bolts and washers.



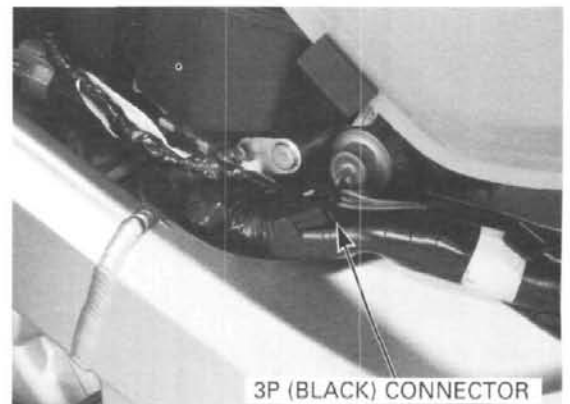
Lift the fuel tank slowly, being careful not to overextend the fuel tank.

Support the front end of fuel tank and support it using a suitable support (250 mm).

Release the fuel pressure (page 5-50).

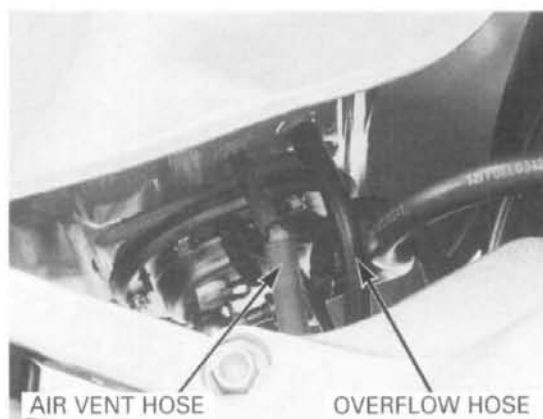


Disconnect the fuel pump/reserve sensor 3P (Black) connector.



FUEL SYSTEM (Programmed Fuel Injection)

Disconnect the fuel tank air vent hose and overflow hose.

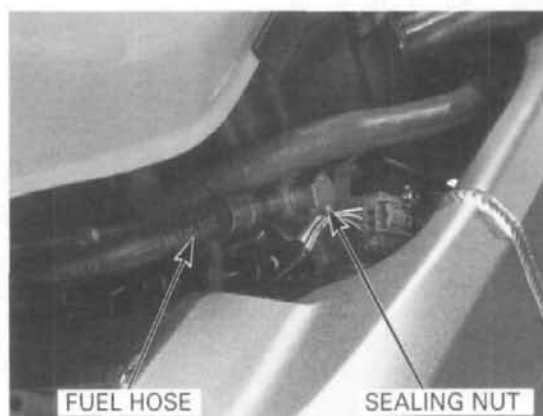


Hold the fuel pipe nut and remove the fuel hose sealing nut and sealing washers, then disconnect the fuel hose.

NOTICE

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

Temporarily install a 12 x 30 mm bolt (pitch 1.25) and sealing washers to the fuel hose banjo, then tighten the sealing nut.



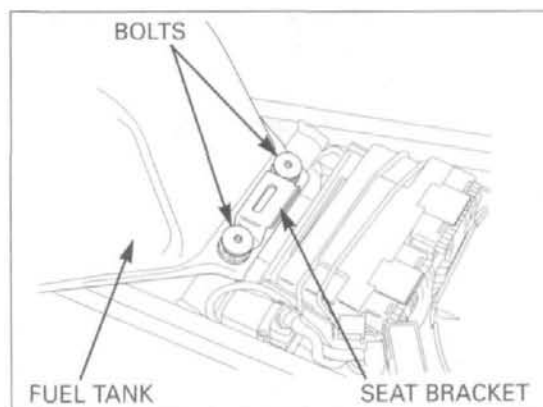
Disconnect the fuel return hose at the pressure regulator.

NOTICE

Do not apply excessive force to the fuel pipe.



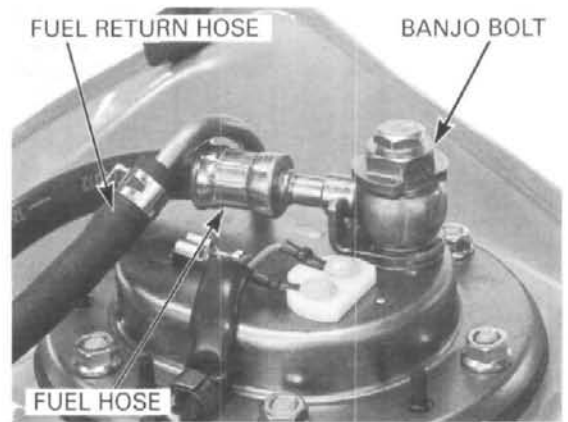
Close the fuel tank.
Remove the fuel tank rear mounting bolts, seat bracket and fuel tank.



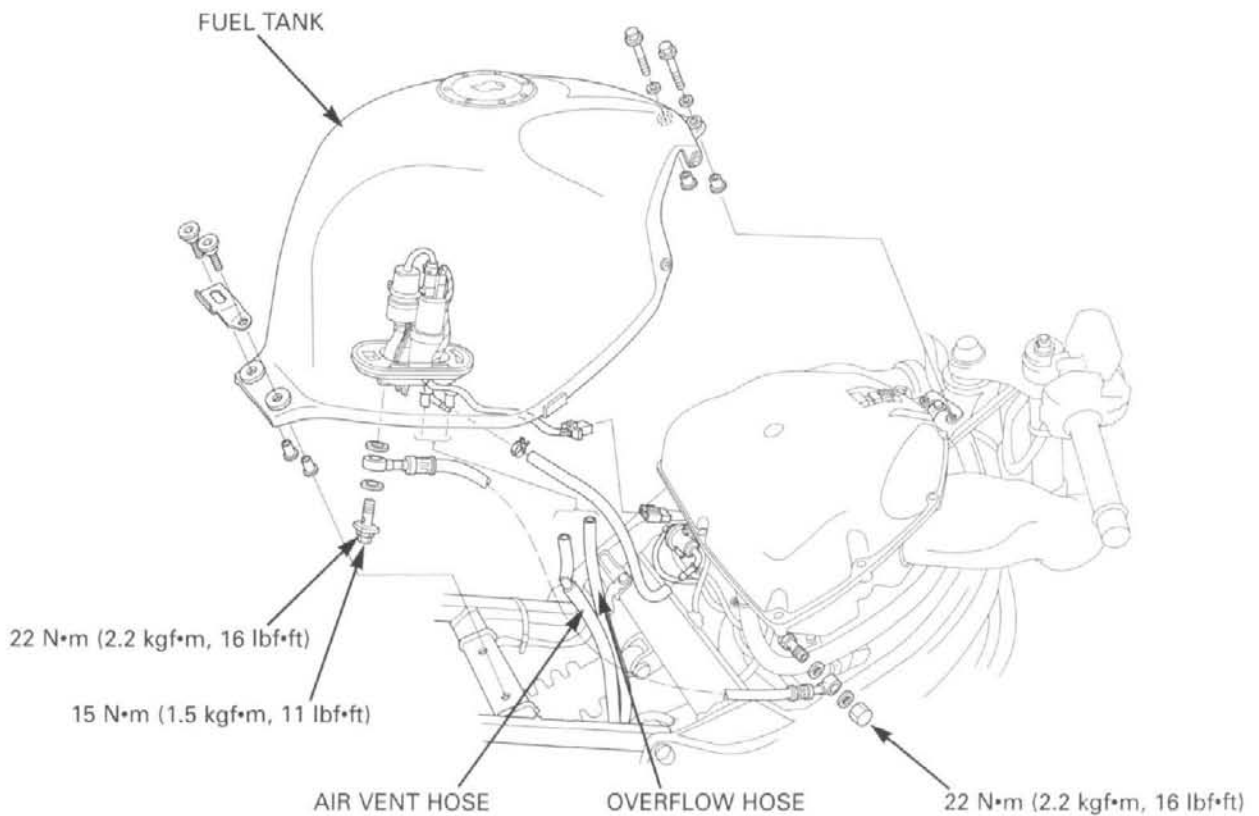
Place the fuel tank upside down.
Be careful not to damage the fuel tank.

Disconnect the fuel return hose from the fuel pump.
Remove the fuel hose banjo bolt and sealing washers,
then remove the fuel hose from the fuel pump.

Refer to page 5-53 for fuel pump removal.



INSTALLATION



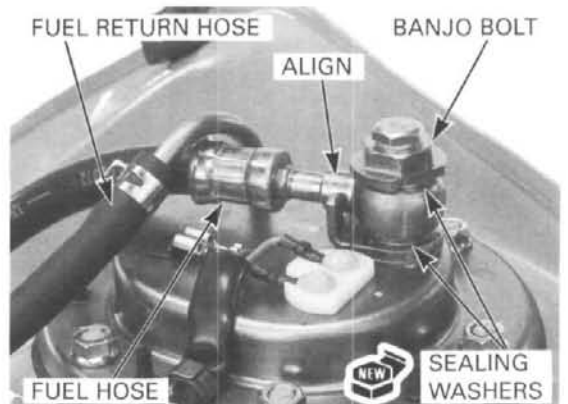
*Align the fuel
hose eyelet joint
with the stopper
on the fuel pump.*

Connect the fuel hose to the fuel pump with new seal-
ing washers.

Install and tighten the fuel hose banjo bolt to the spec-
ified torque.

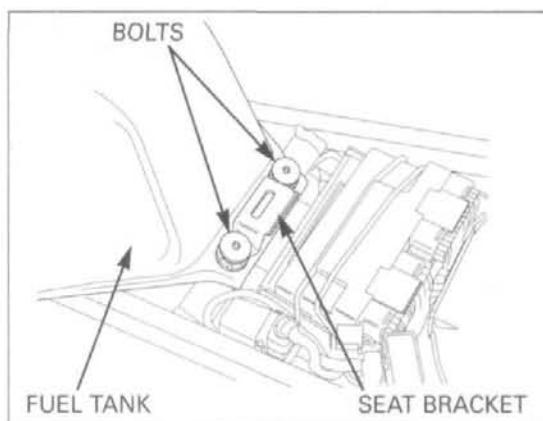
TORQUE: 22 N•m (2.2 kgf•m, 16 lbf•ft)

Connect the fuel return hose to the fuel pump.

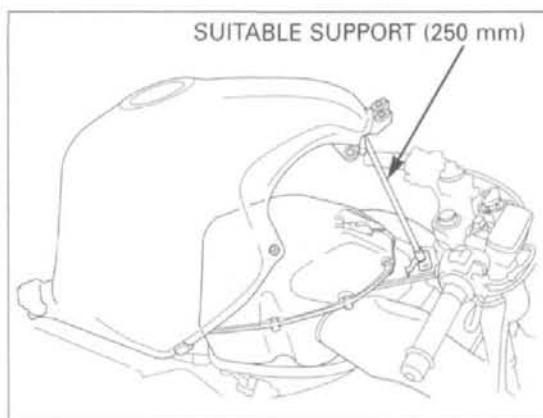


FUEL SYSTEM (Programmed Fuel Injection)

Install the fuel tank onto the frame.
Install the seat bracket and fuel tank rear mounting bolts.



Support the front end of the fuel tank with a suitable support (250-mm).



Connect the fuel return hose to the pressure regulator.

NOTICE

Do not apply excessive force to the fuel pipe.



Connect the fuel hose banjo to the throttle body with new sealing washers.
While pushing the fuel hose banjo stopper to the throttle body, install and tighten the sealing nut to the specified torque.

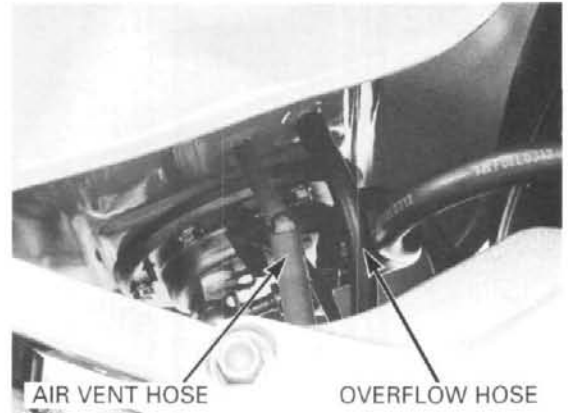
NOTICE

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

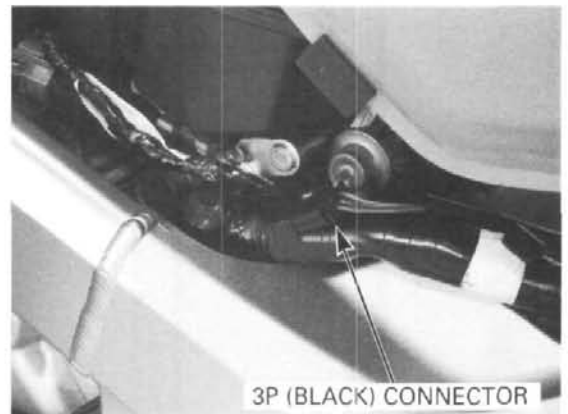
TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



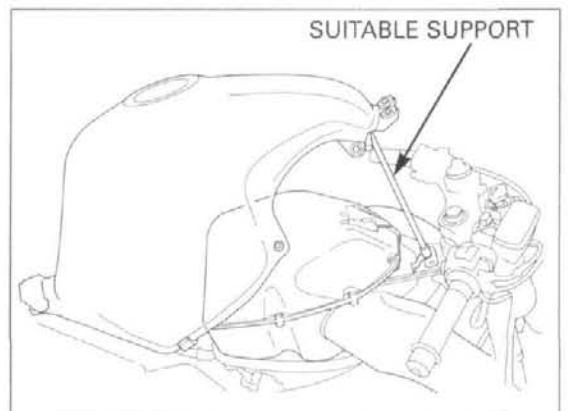
Connect the fuel tank air vent hose and overflow hose to the fuel tank.



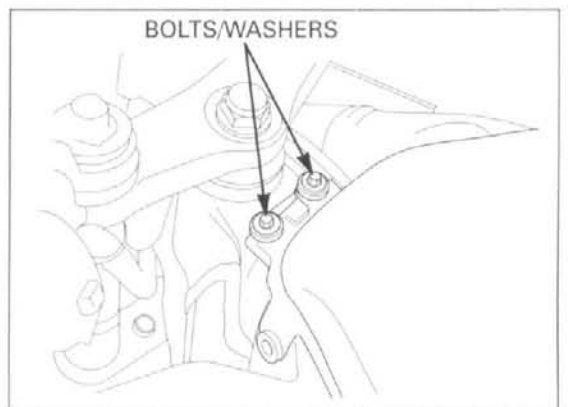
Connect the fuel pump/reserve sensor 3P (Black) connector.



Remove the support and close the fuel tank.



Install the fuel tank front mounting bolts and washers, then tighten the front and rear fuel tank mounting bolts.

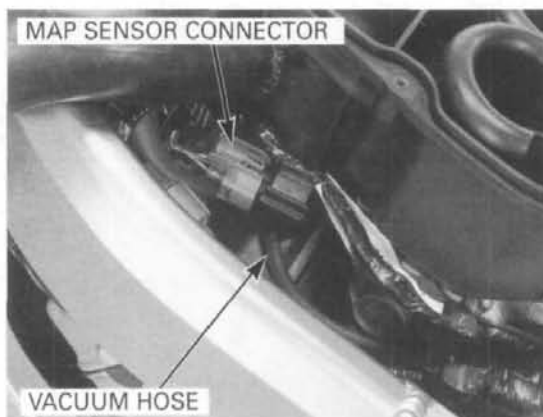


AIR CLEANER HOUSING

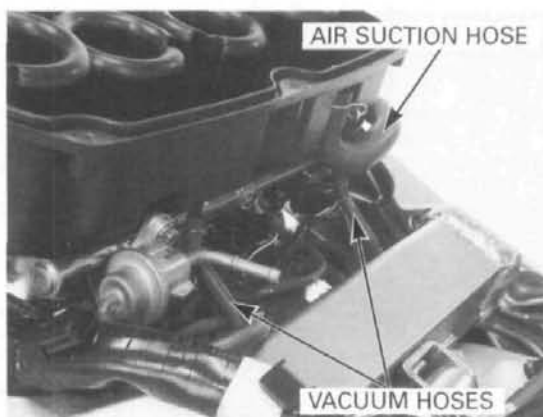
REMOVAL

Remove the air cleaner element (page 3-5).

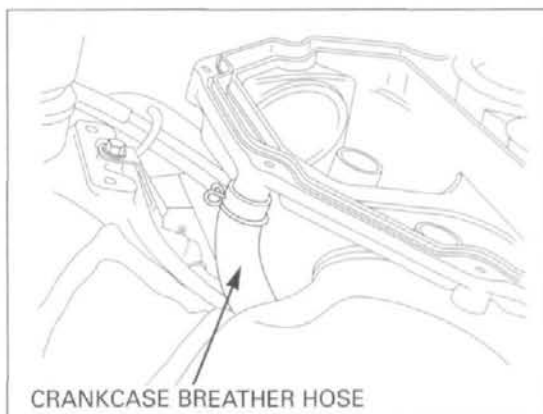
Disconnect the MAP sensor connector and vacuum hose.



Disconnect the PAIR control valve air suction hose and intake vacuum hoses from the air cleaner housing.

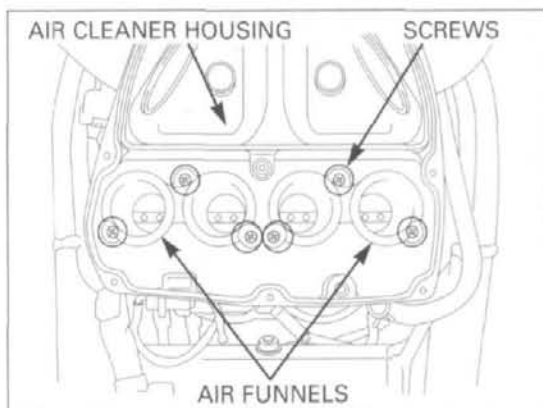


Disconnect the crankcase breather hose from the air cleaner housing.



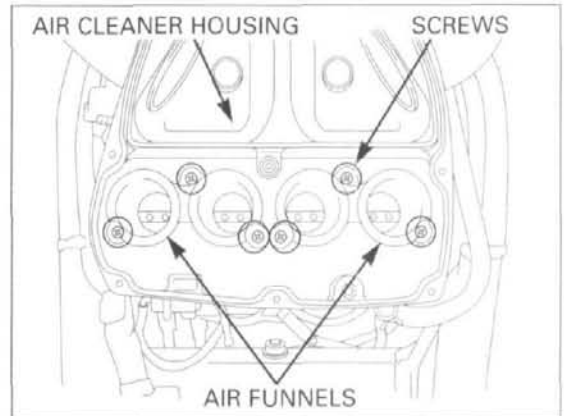
Remove the air funnel/air cleaner housing mounting screws, then remove the air funnels.

Remove the air cleaner housing.

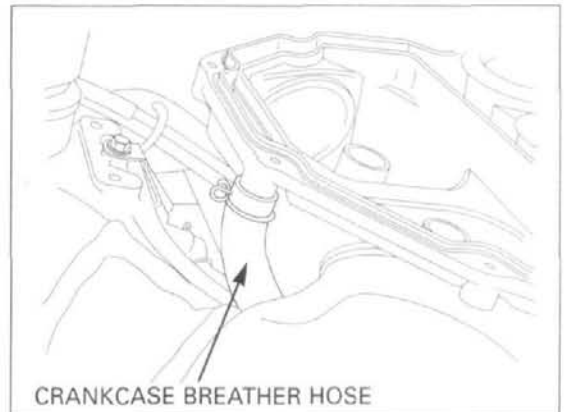


INSTALLATION

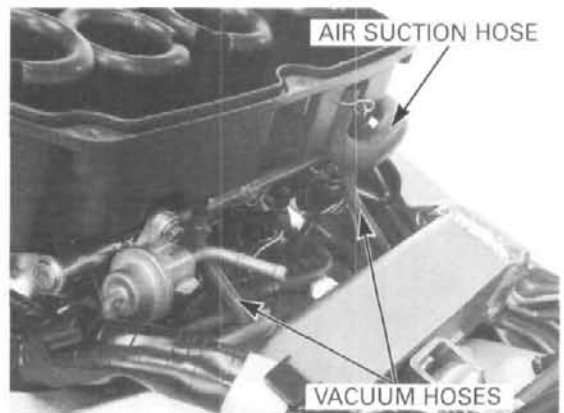
Install the air cleaner housing onto the throttle body. Install the air funnels in their proper locations. Install and tighten the air funnel/air cleaner housing mounting screws.



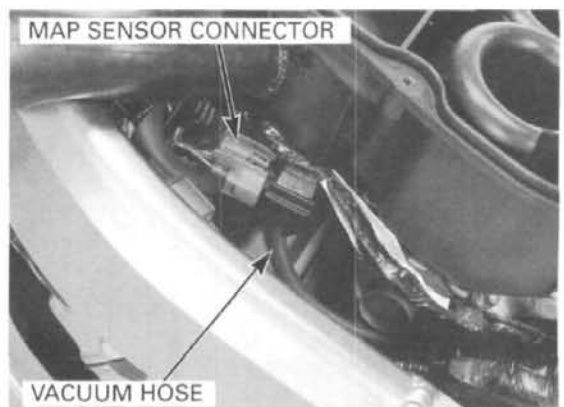
Connect the crankcase breather hose to the air cleaner housing.



Connect the PAIR control valve air suction hose and intake vacuum hoses to the air cleaner housing.



Connect the MAP sensor connector and vacuum hose. Install the air cleaner element (page 3-5).



THROTTLE BODY

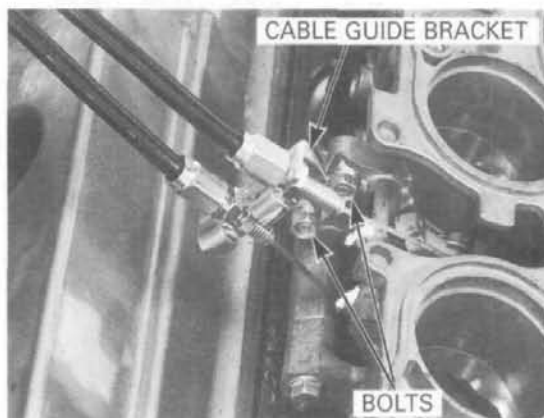
REMOVAL

- Before disconnecting the fuel hose, release the fuel pressure by loosening the service check bolt.
- Always replace the sealing washer when the service check bolt is removed or loosened.

Drain the coolant from the cooling system (page 6-4).

Remove the following:

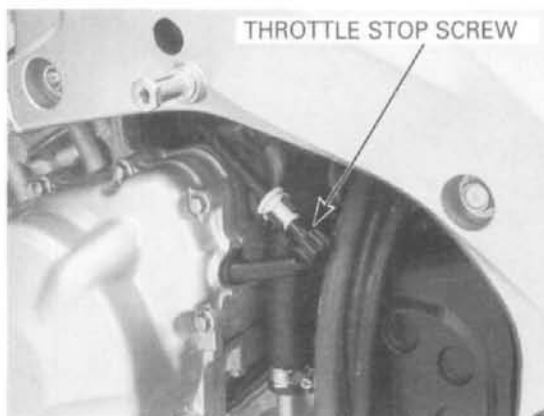
- Fuel tank (page 5-55)
- Air cleaner housing (page 5-60)



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.

Remove the throttle cable bracket mounting bolts. Disconnect the throttle cable ends from the throttle drum.

Remove the throttle stop screw knob from the clamp.

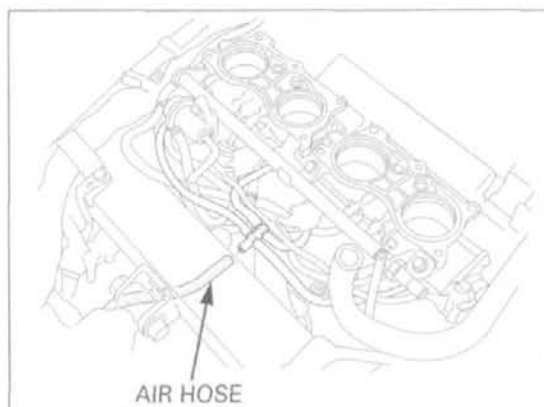


Disconnect the throttle body sub-harness 10P (Gray) connector.



California type only:

Disconnect the throttle body-to-EVAP purge control solenoid valve hose.

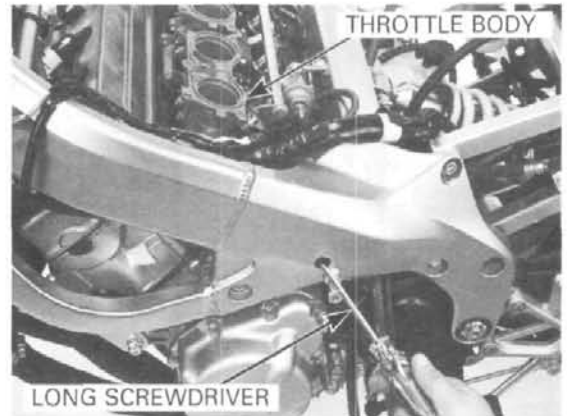


Loosen the engine side insulator band screws using a long type phillips screwdriver through the frame hole.

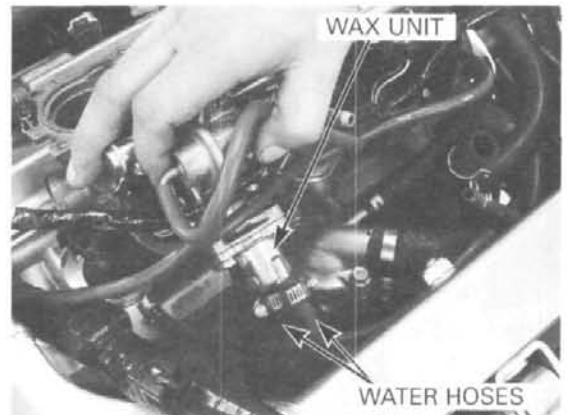
Remove the throttle body from the cylinder head.

NOTICE

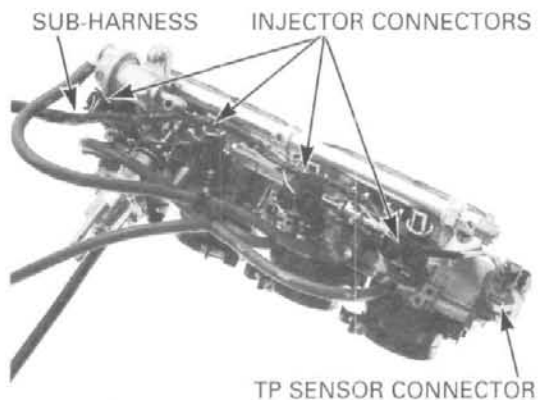
Do not hold the fuel pipe on the throttle body while removing the throttle body.



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

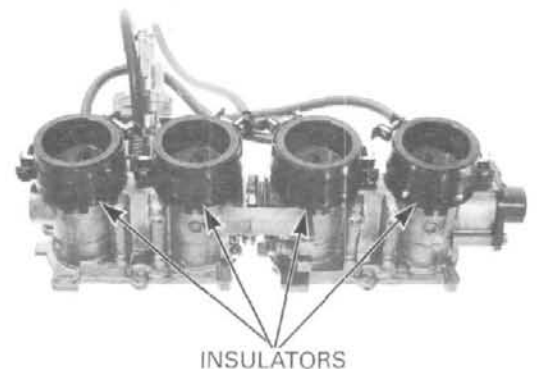


Disconnect the TP sensor connector and injector connectors, then remove the throttle body sub-harness.



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.

Remove the insulators from the throttle body.

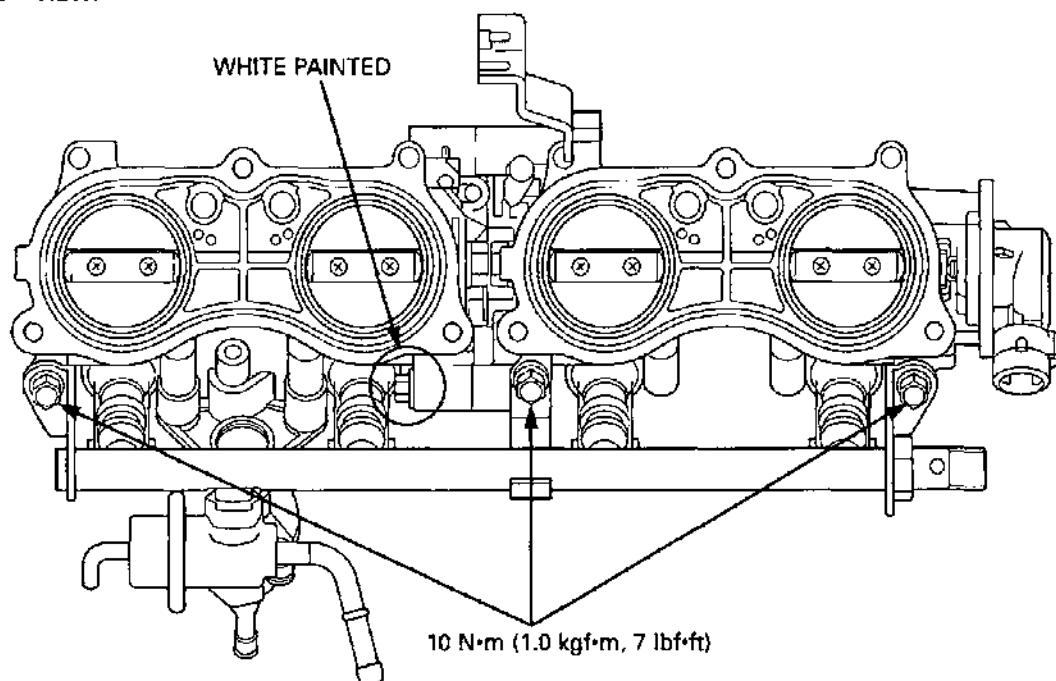


FUEL SYSTEM (Programmed Fuel Injection)

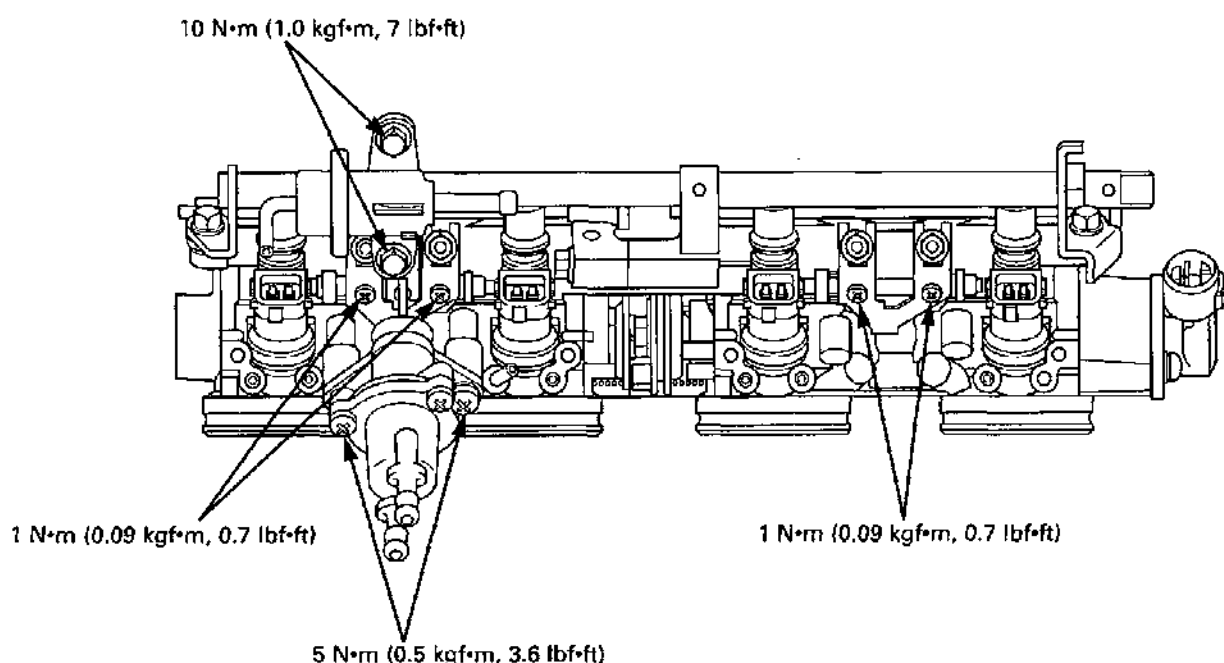
NOTICE

- Do not damage the throttle body, this may cause incorrect throttle and idle valve synchronization.
- The throttle body is factory pre-set, do not disassemble it 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.

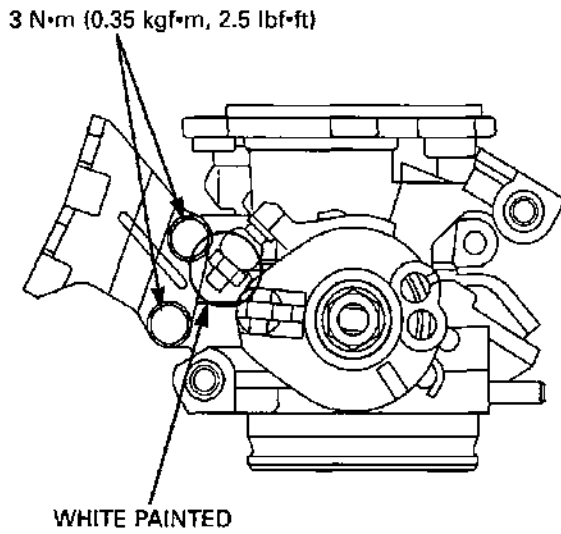
TOP VIEW:



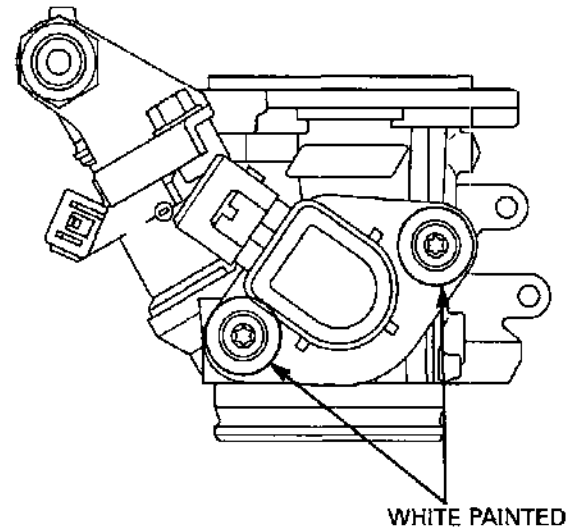
REAR VIEW:



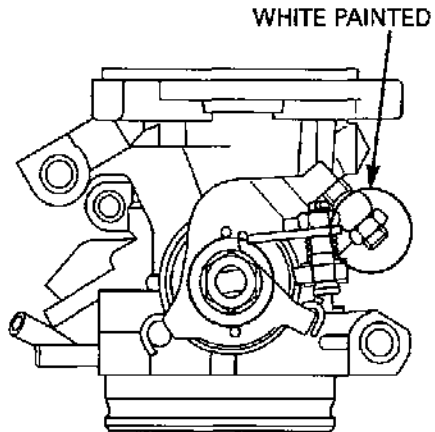
THROTTLE DRUM VIEW:



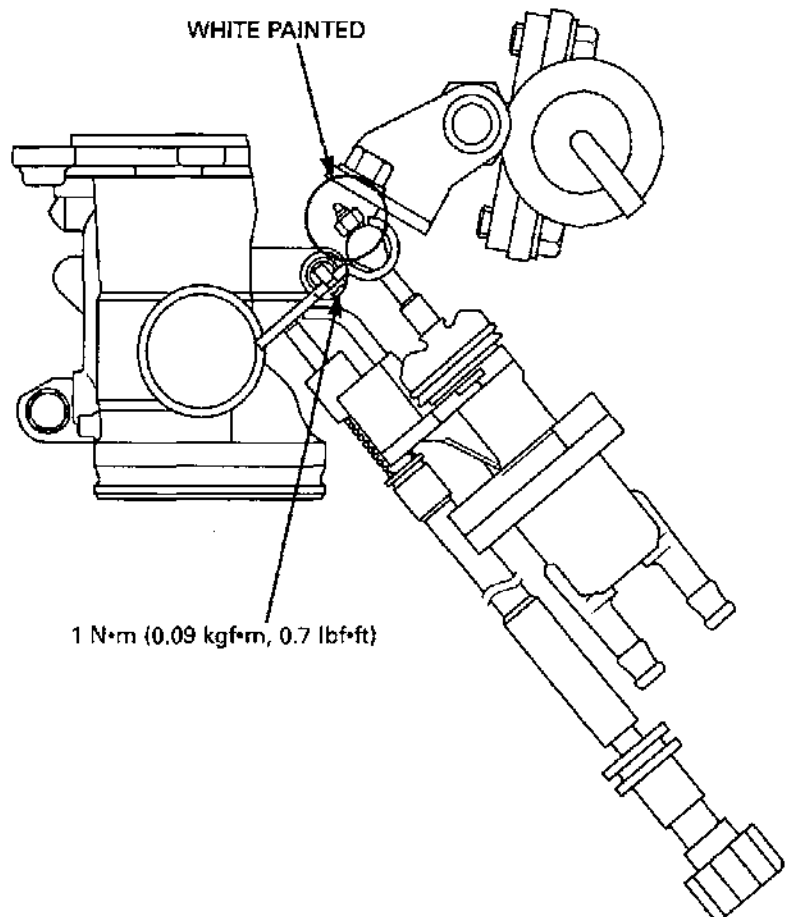
RIGHT SIDE VIEW:



THROTTLE LINK VIEW:

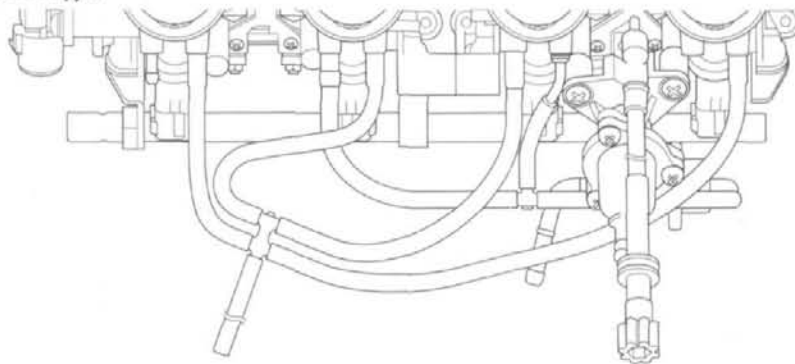


STARTER VALVE LINK VIEW:

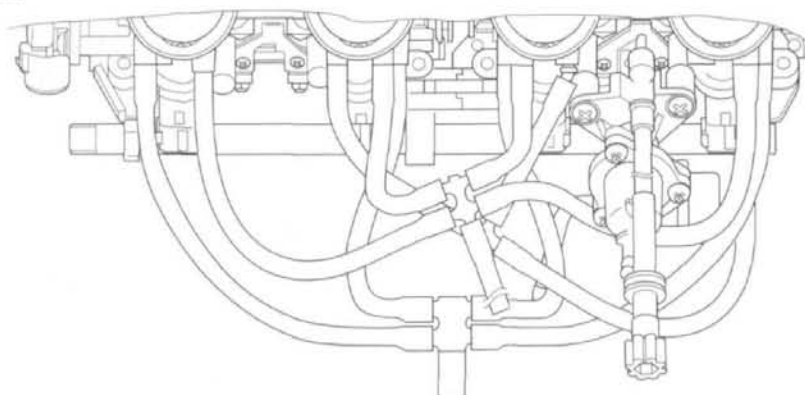


THROTTLE BODY VACUUM HOSE ROUTING

Except California type:

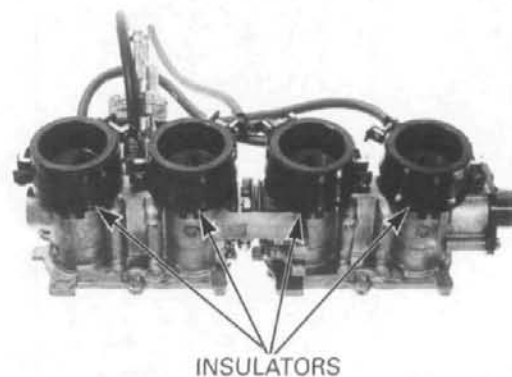


California type:



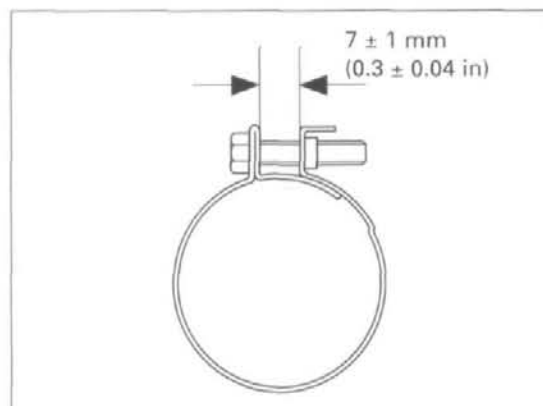
INSTALLATION

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



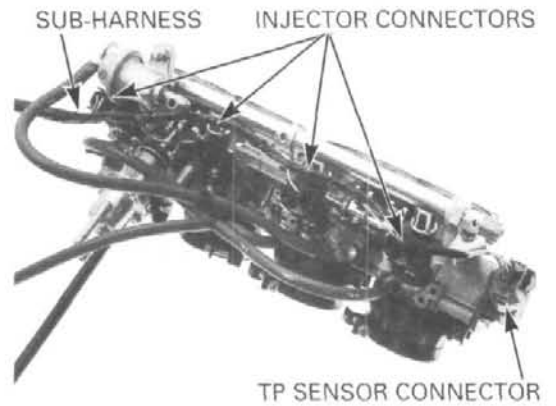
Tighten the throttle body side insulator band so that the insulator band distance is 7 ± 1 mm (0.3 ± 0.04 in).

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

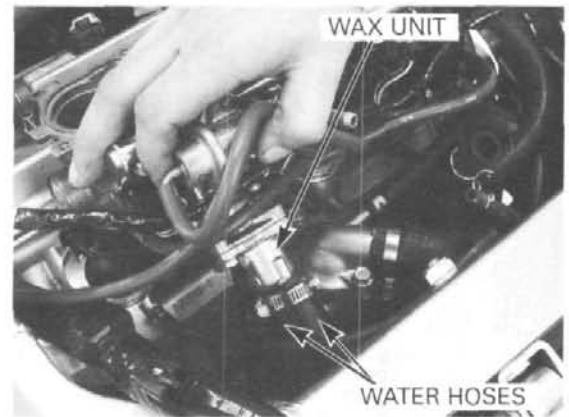


FUEL SYSTEM (Programmed Fuel Injection)

Route the throttle body sub-harness properly and connect the injector connectors and TP sensor connector.



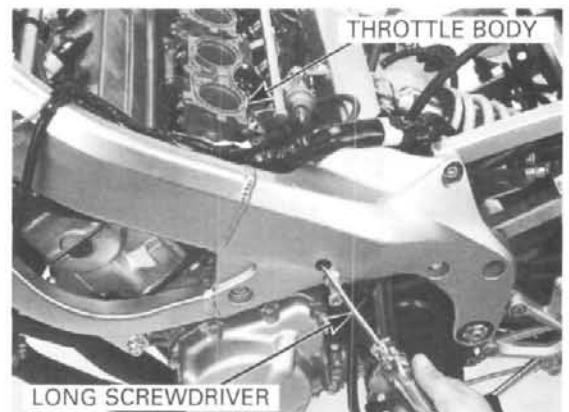
Connect the fast idle wax unit water hoses to the unit, then tighten the hose bands securely.



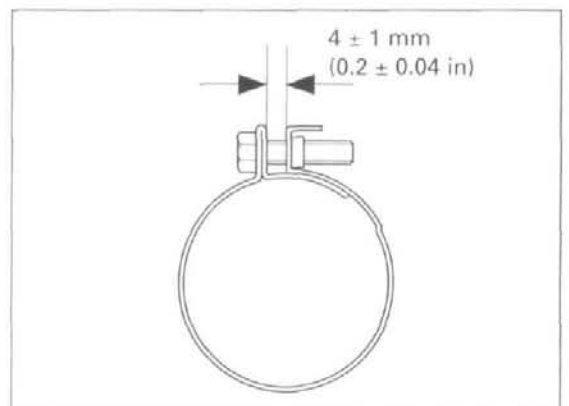
Install the throttle body onto the cylinder head.

NOTICE

Do not hold the fuel pipe on the throttle body while installing the throttle body.



Tighten the cylinder head side insulator band so that the insulator band distance is 4 ± 1 mm (0.2 ± 0.04 in).



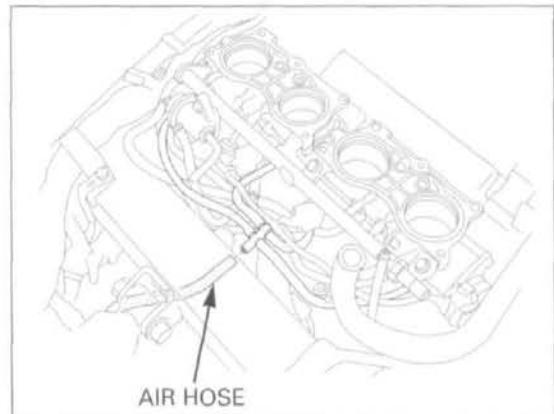
FUEL SYSTEM (Programmed Fuel Injection)

Route the injector sub-harness referring the cable and harness routing (page 1-23).
Connect the throttle body sub-harness 10P (Gray) connector.



California type only;

Connect the throttle body-to-EVAP purge control solenoid valve hose.



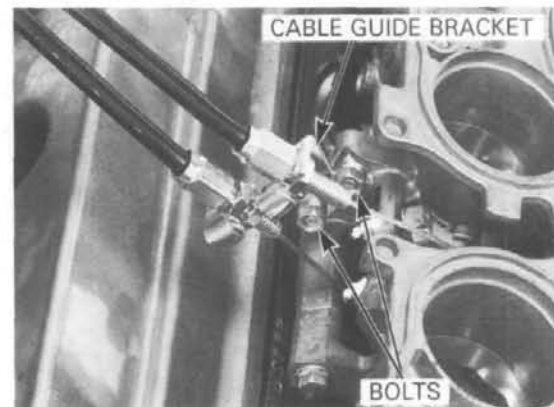
Route the throttle stop control cable properly, install the control knob to the clamp on the bypass hose.



Connect the throttle cable ends to the throttle drum. Install the throttle cable guide bracket to the throttle body, then tighten the bolts to the specified torque.

TORQUE: 3 N·m (0.35 kgf·m, 2.5 lbf·ft)

Install the removed parts in the reverse order of removal.

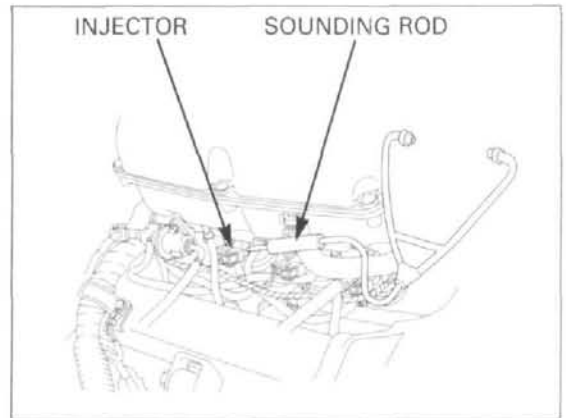


INJECTOR

INSPECTION

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

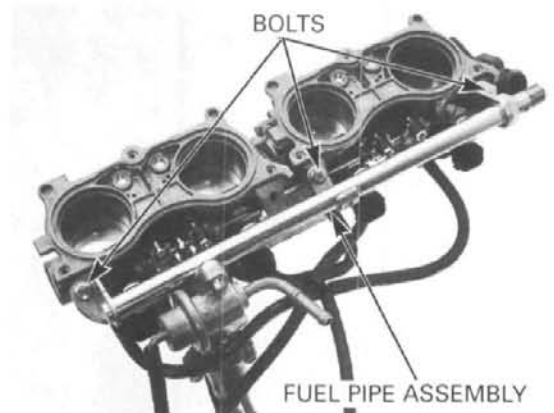
If the injector does not operate properly, replace it.



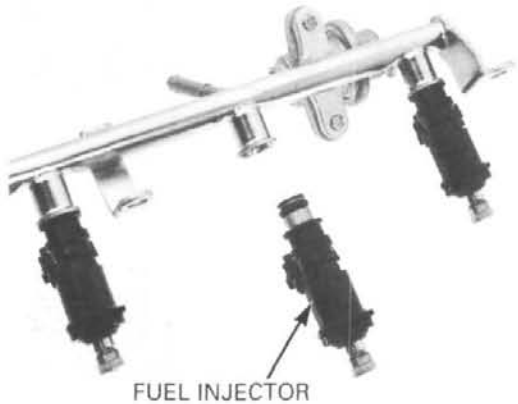
REMOVAL

Remove the throttle body (page 5-62).

Remove the bolts and fuel pipe assembly.



Remove the injectors from the fuel pipe.

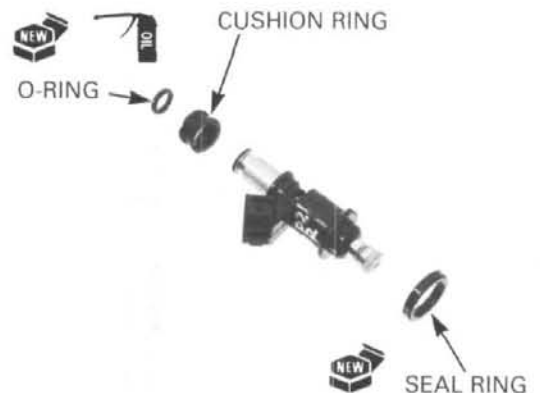


Remove the seal ring, O-ring and cushion ring.

INSTALLATION

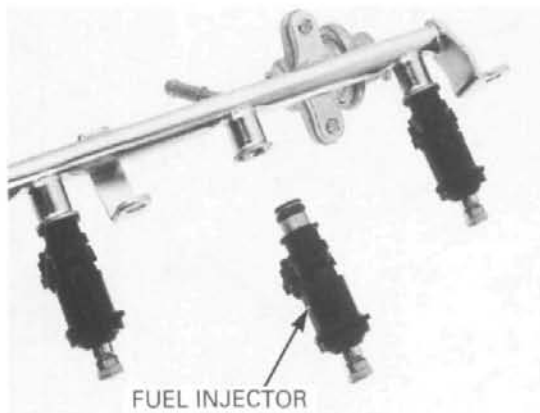
Apply oil to the new O-ring.
Install the new seal ring, cushion ring and O-ring,
being careful not to damage the O-ring.

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

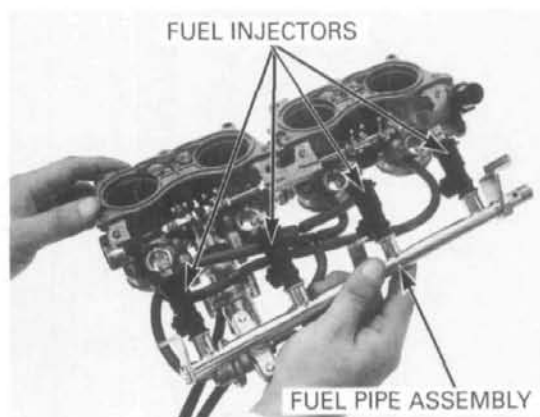


FUEL SYSTEM (Programmed Fuel Injection)

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

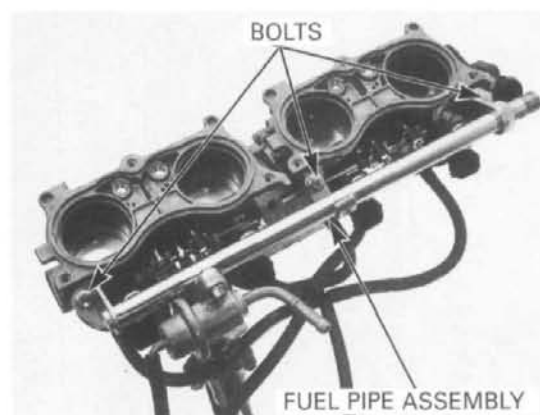


Install the fuel pipe assembly onto the throttle body, being careful not to damage the seal rings.



Install and tighten the fuel pipe mounting bolts.

Install the throttle body (page 5-66).



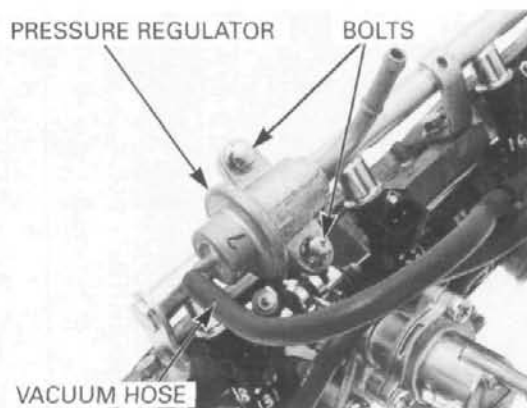
PRESSURE REGULATOR

REMOVAL/INSTALLATION

NOTICE

Do not apply excessive force to the fuel pipe.

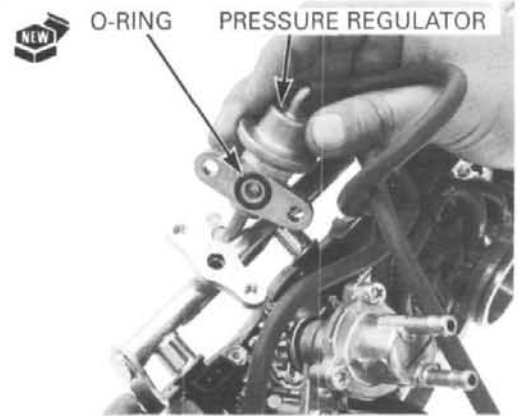
Hold the fuel pipe securely, remove the pressure regulator mounting bolts, then remove the pressure regulator.



Disconnect the vacuum hose from the pressure regulator.

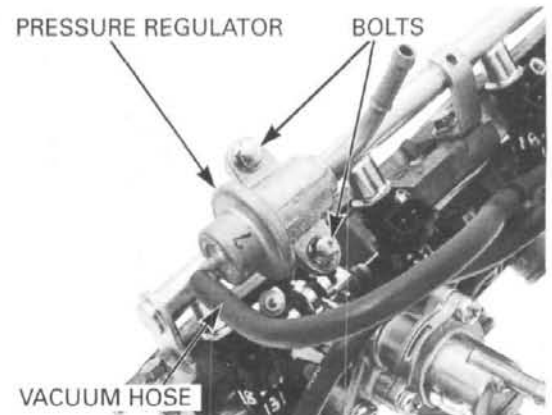
Install a new O-ring into the pressure regulator body. Install the pressure regulator onto the fuel pipe.

Connect the vacuum hose to the pressure regulator.



Hold the fuel pipe securely, tighten the pressure regulator mounting bolts to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

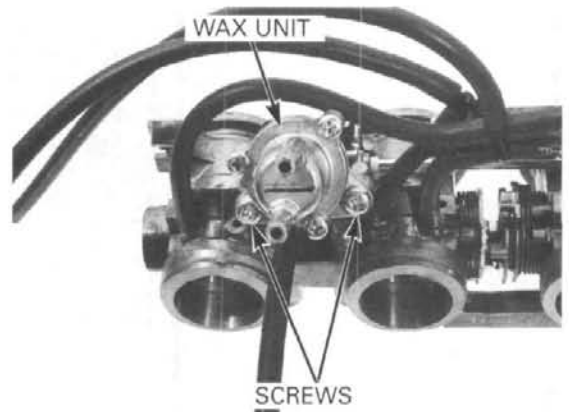


FAST IDLE WAX UNIT

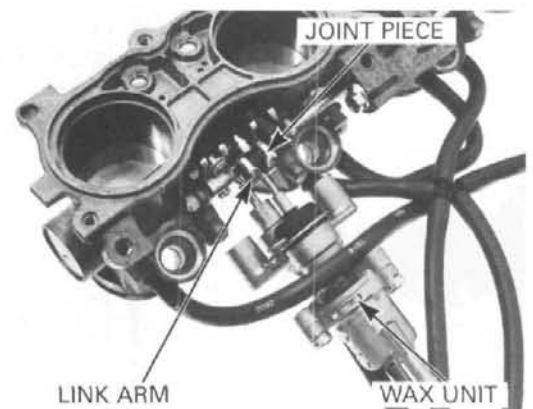
Do not loosen or remove the wax unit shaft lock nut and adjusting nut.

DISASSEMBLY

Remove the wax unit mounting screws.

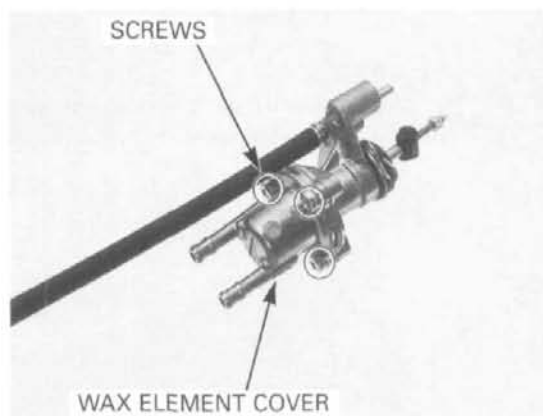


Release the wax unit shaft joint piece from the wax unit link arm, then remove the wax unit assembly.

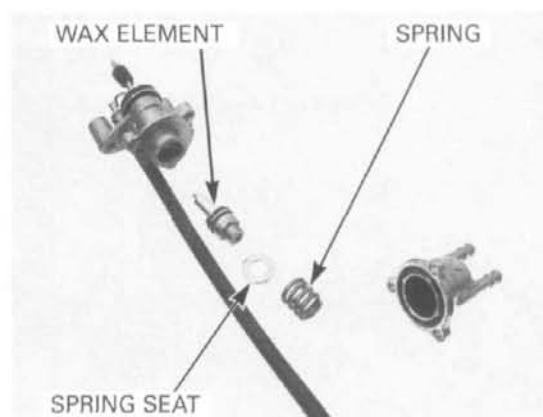


FUEL SYSTEM (Programmed Fuel Injection)

Remove the three wax element cover mounting screws in a criss-cross pattern in two to three steps.



Remove the wax element, spring seat and compression spring.



INSPECTION

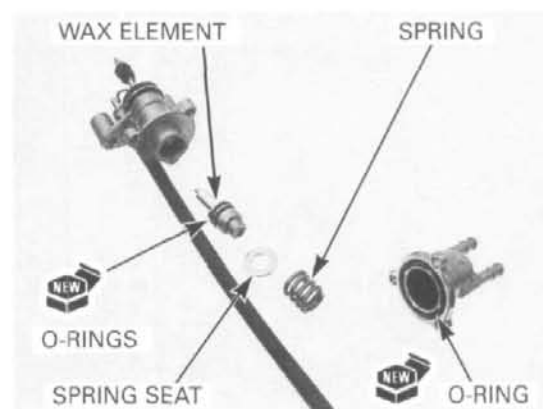
Visually inspect the wax element for damage and the return spring for fatigue or damage.



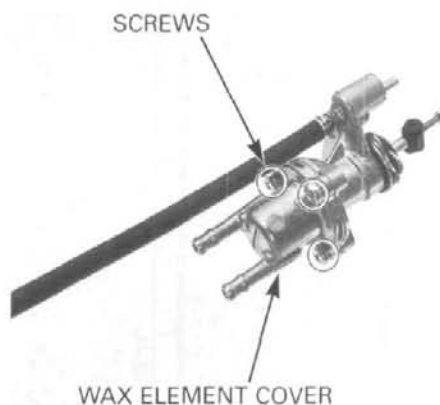
ASSEMBLY

Install new O-rings onto the wax element grooves. Install a new O-ring into the groove of the wax element cover.

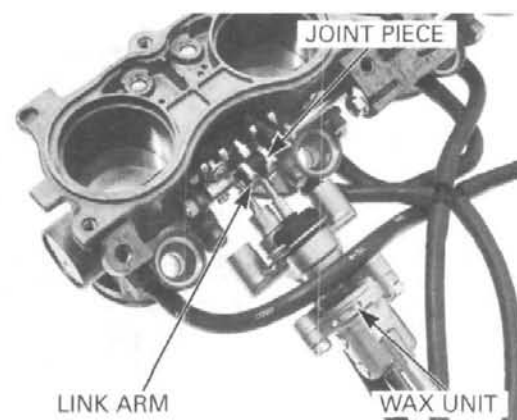
Install the wax element, spring seat and compression spring.



Install the wax element cover and mounting screws. Tighten the screws in a criss-cross pattern in two to three steps.

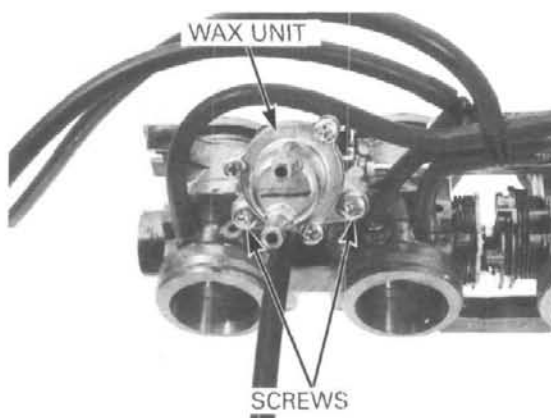


Install the wax unit shaft joint piece to the wax unit link arm.



Install and tighten the wax unit mounting screws to the specified torque.

TORQUE: 5 N·m (0.5 kgf·m, 3.6 lbf·ft)

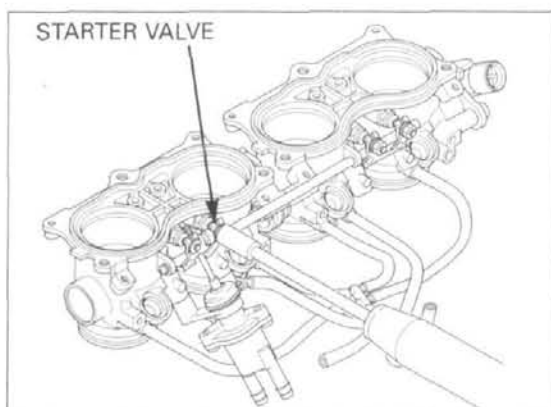


STARTER VALVE

DISASSEMBLY

Remove the fuel pipe and injectors (page 5-69).

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

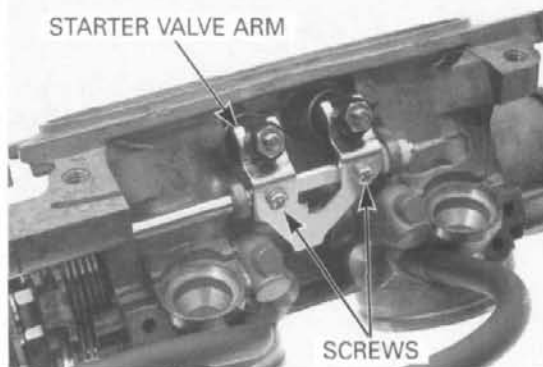


FUEL SYSTEM (Programmed Fuel Injection)

No.3/4 starter valve:

Remove the starter valve arm screws and starter valve arm.

No.3/4 STARTER VALVE:



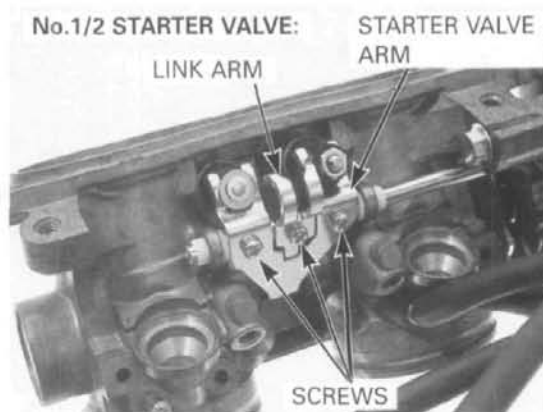
No.1/2 starter valve:

Remove the fast idle wax unit (page 5-71).

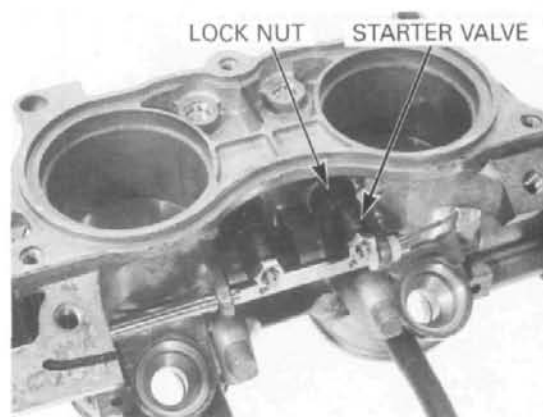
Remove the starter valve arm screws and starter valve arms.

Remove the screw and fast idle wax unit link arm.

No.1/2 STARTER VALVE:

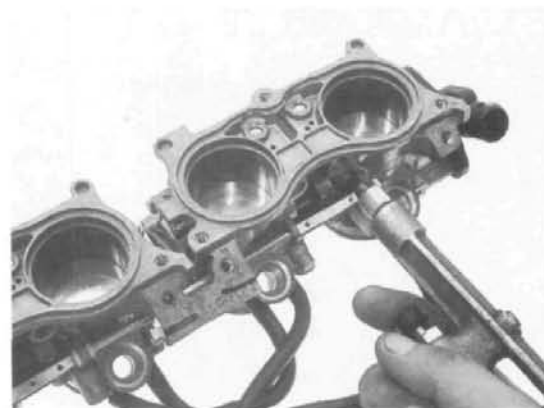


Loosen the lock nut and remove the starter valve assembly.



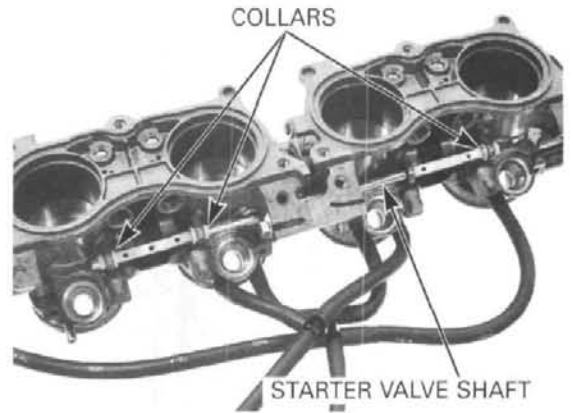
Do not apply commercially available carburetor cleaners to the inside of the throttle bore, which is coated with molybdenum.

Clean the starter valve bypass using compressed air.

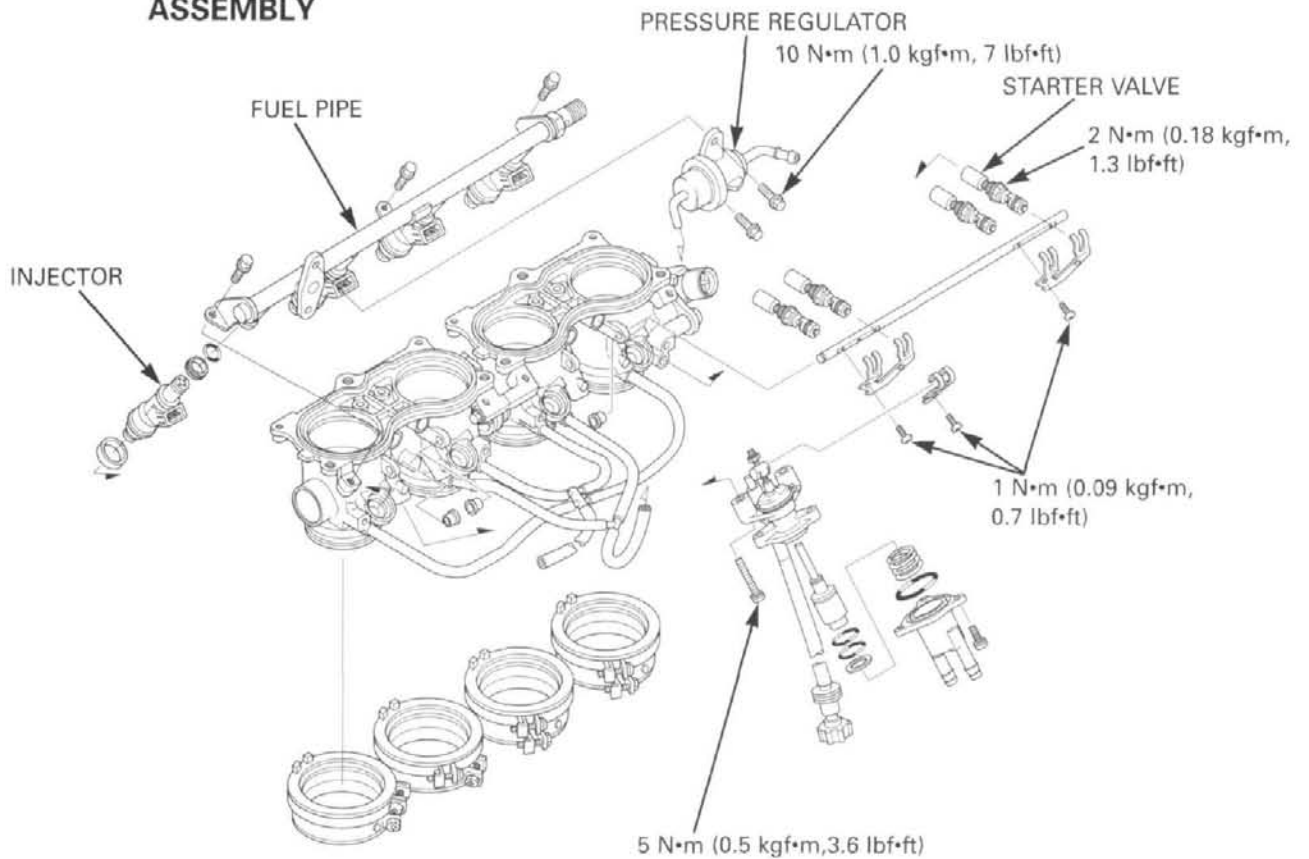


FUEL SYSTEM (Programmed Fuel Injection)

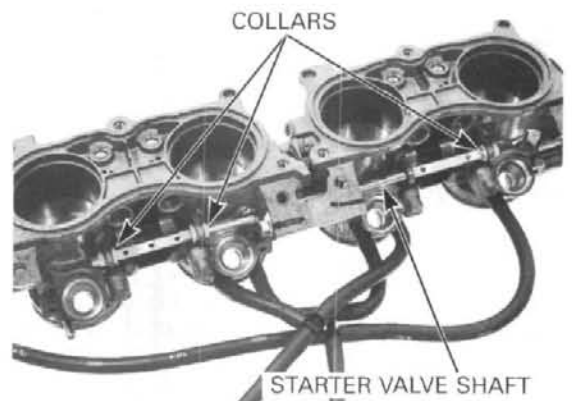
Remove the starter valve shaft and three collars.



ASSEMBLY

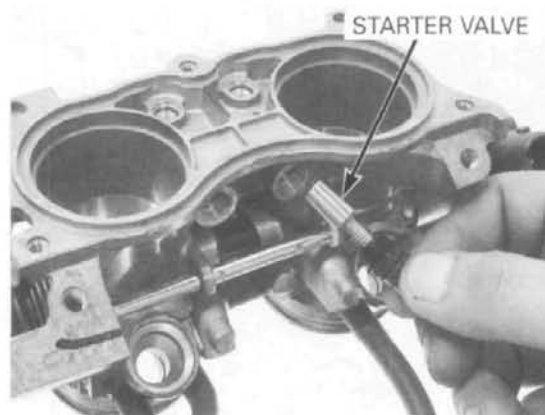


Install the three collars and starter valve shaft.



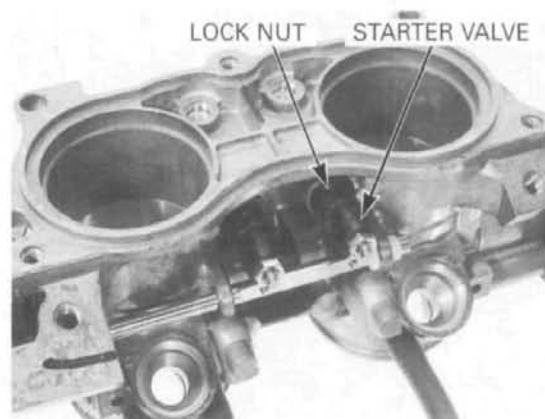
FUEL SYSTEM (Programmed Fuel Injection)

Install the starter valve assembly into the valve hole.



Tighten the starter valve lock nut to the specified torque.

TORQUE: 2 N·m (0.18 kgf·m, 1.3 lbf·ft)

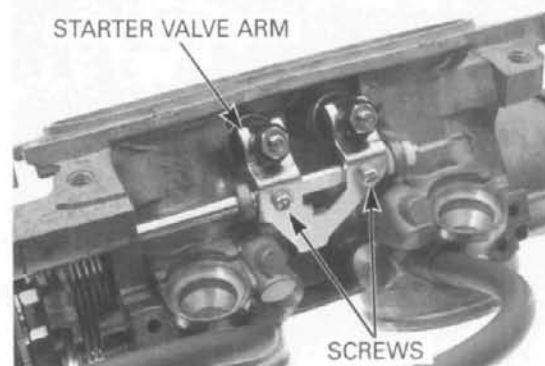


No.3/4 starter valve:

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: 1 N·m (0.09 kgf·m, 0.7 lbf·ft)

No.3/4 STARTER VALVE:



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.

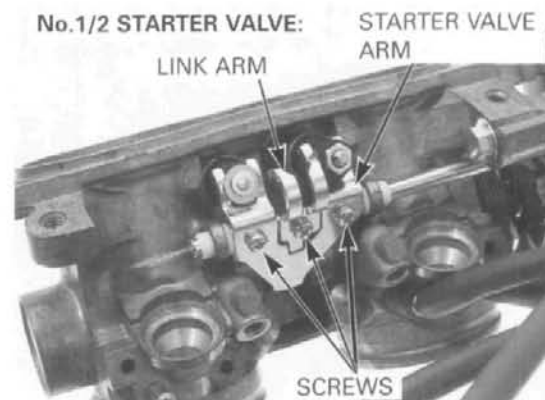
TORQUE: 1 N·m (0.09 kgf·m, 0.7 lbf·ft)

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

TORQUE: 1 N·m (0.09 kgf·m, 0.7 lbf·ft)

Install the fast idle wax unit (page 5-73).

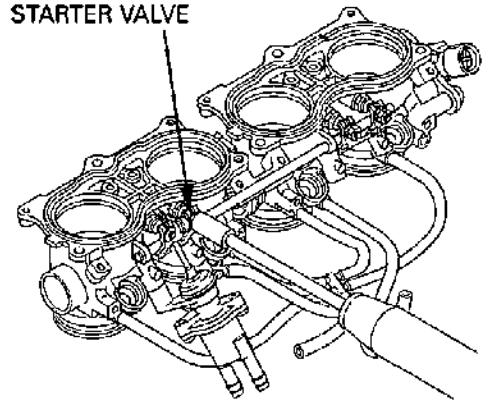
No.1/2 STARTER VALVE:



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

Install the throttle body (page 5-66).

STARTER VALVE



STARTER VALVE SYNCHRONIZATION

- Synchronize the starter valve with the engine at the 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.

Support the front end of fuel tank (page 3-4).

Remove the No.1 and No.4 vacuum hoses from the air cleaner housing.

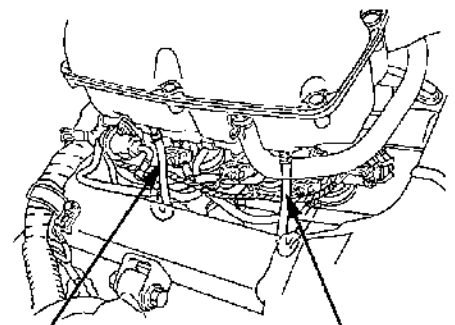
Disconnect the pressure regulator vacuum hoses at the 3-way joint.

Connect the hoses to the vacuum gauge.

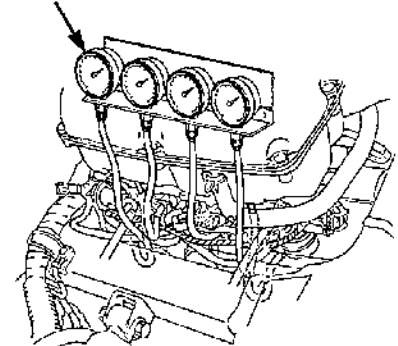
Connect the tachometer.

No.1 HOSE

No.4 HOSE



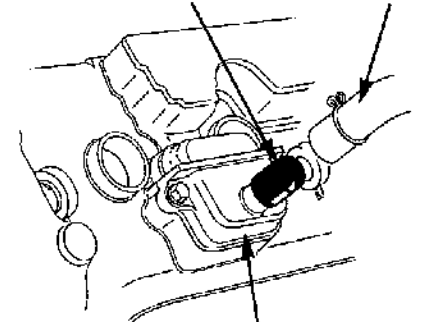
VACUUM GAUGE



Disconnect the PAIR air suction hoses from the reed valve covers and plug the cover.

PLUG AIR SUCTION HOSE

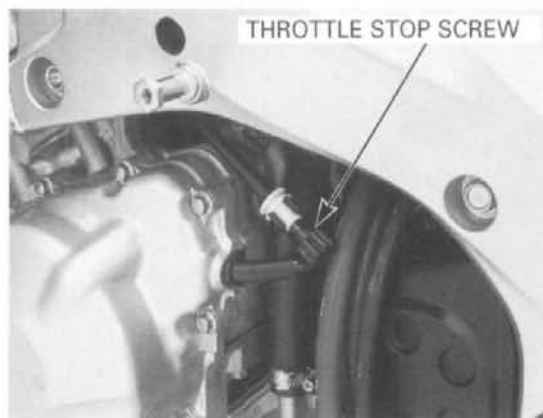
PAIR REED VALVE COVER



FUEL SYSTEM (Programmed Fuel Injection)

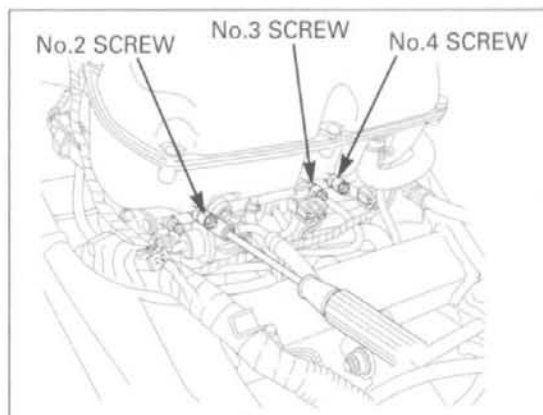
Start the engine and adjust the idle speed.

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

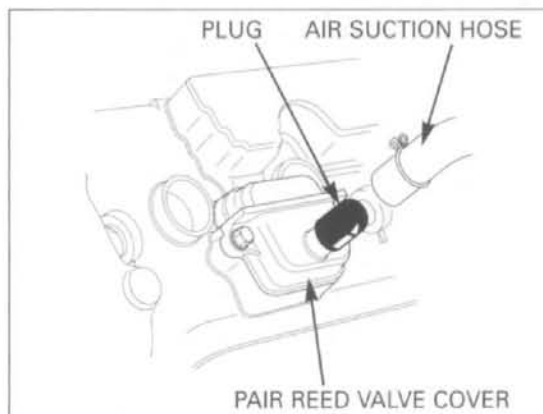


The No.1 starter valve cannot be adjusted, it is the base starter valve.

Adjust each intake vacuum pressure with the No.1 cylinder.

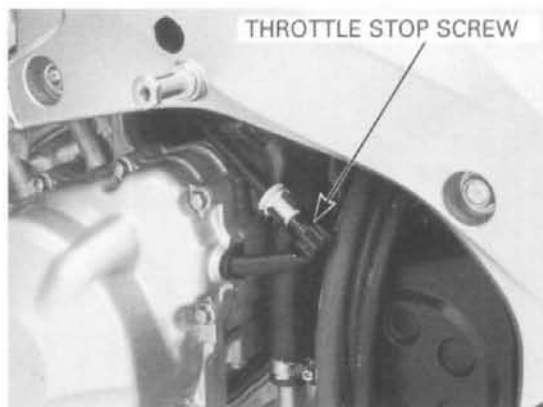


Remove the plugs and connect the PAIR air suction hoses to the reed valve covers.

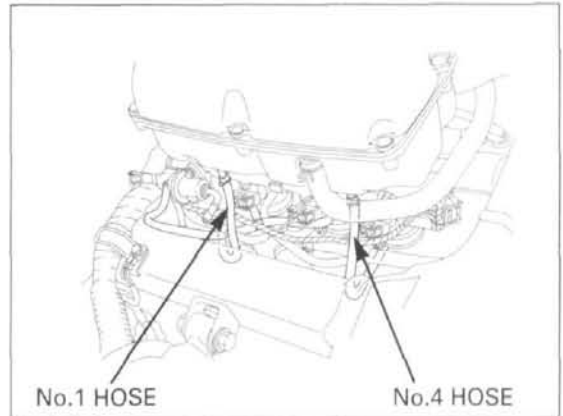


Adjust the idle speed if the idle speed differs from the specified speed.

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



Remove the vacuum gauge from the vacuum hoses.
Connect the pressure regulator vacuum hoses to the 3-way joint.
Connect the No.1 and No.4 cylinder vacuum hose to the air cleaner housing.



MAP SENSOR

OUTPUT VOLTAGE INSPECTION

Connect the test harness to the ECM (page 5-8).

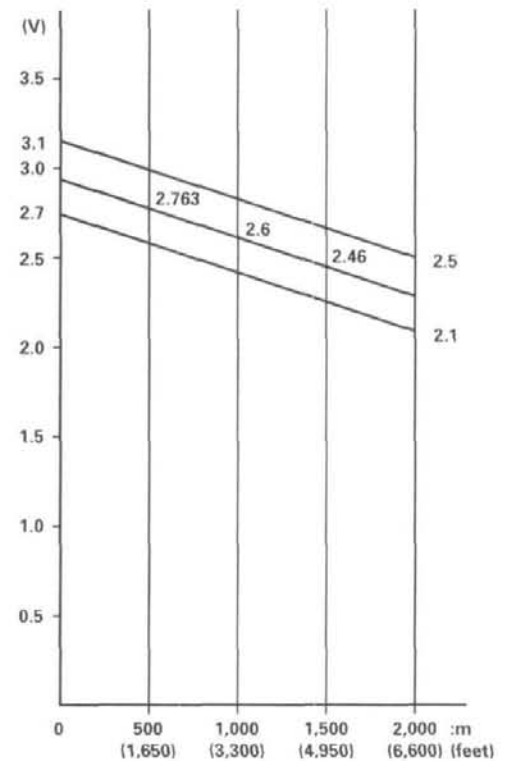
Measure the voltage at the test harness terminals (page 5-9).

CONNECTION: B7 (+) – B1 (–)

STANDARD: 2.7 – 3.1 V

The MAP sensor output voltage (above) is measured under the standard atmosphere (1 atm = 1,030 hPa). The MAP sensor output voltage is affected by the distance above sea level, because the output voltage is changed by atmosphere.

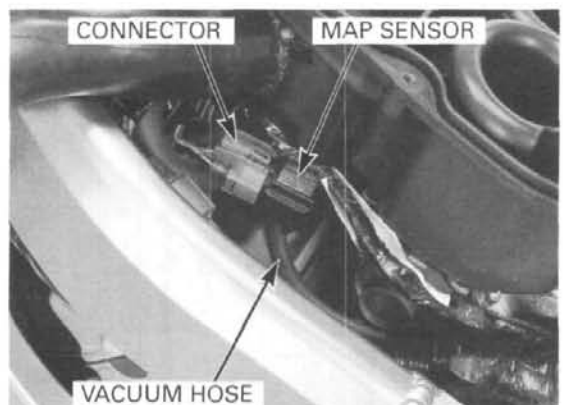
Check the sea level measurement and be sure that the measured voltage falls within the specified value.



MAP SENSOR REMOVAL/INSTALLATION

Support the front end of fuel tank (page 3-4).

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

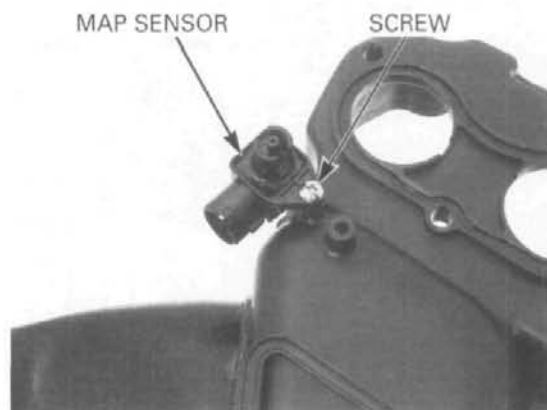


FUEL SYSTEM (Programmed Fuel Injection)

Remove the air cleaner housing (page 5-60).

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

Installation is in the reverse order of removal.

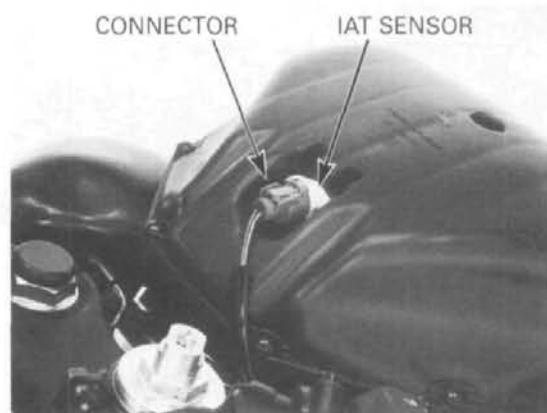


IAT SENSOR

REMOVAL/INSTALLATION

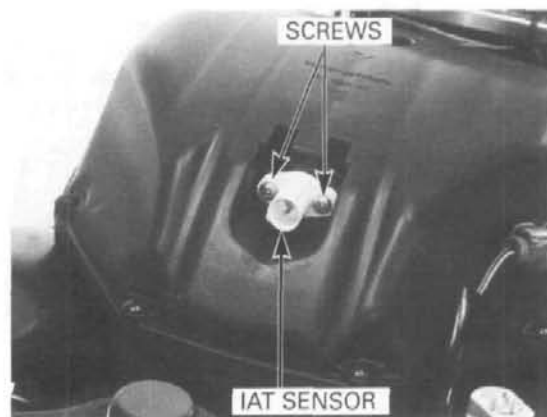
Support the front end of fuel tank (page 3-4).

Disconnect the IAT sensor connector.



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

Installation is in the reverse order of removal.



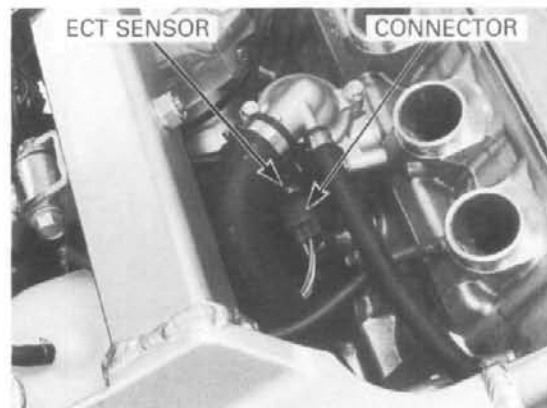
ECT SENSOR

Replace the ECT sensor while the engine is cold.

REMOVAL/INSTALLATION

Drain the coolant from the system (page 6-5).
Remove the throttle body (page 5-62).

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 the 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 the recommended coolant (page 6-5).

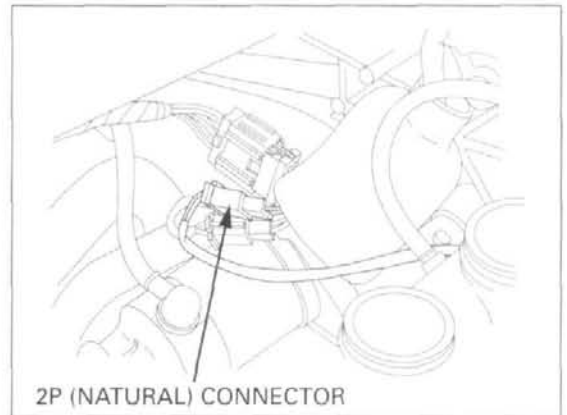


CMP SENSOR

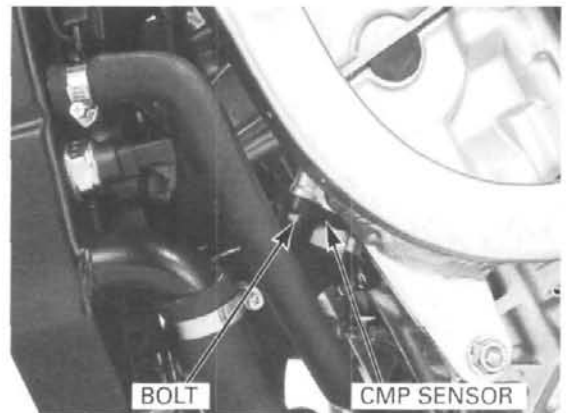
REMOVAL/INSTALLATION

Remove the air cleaner housing (page 5-60).

Disconnect the CMP sensor 2P (Natural) connector.

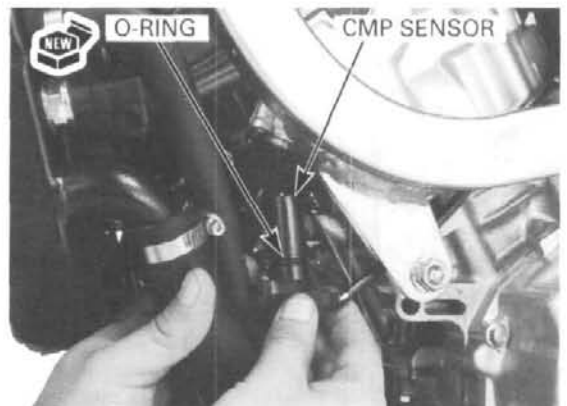


Remove the bolt and CMP sensor from the cylinder head.



Install the new O-ring onto the CMP sensor. Install the CMP sensor into the cylinder head.

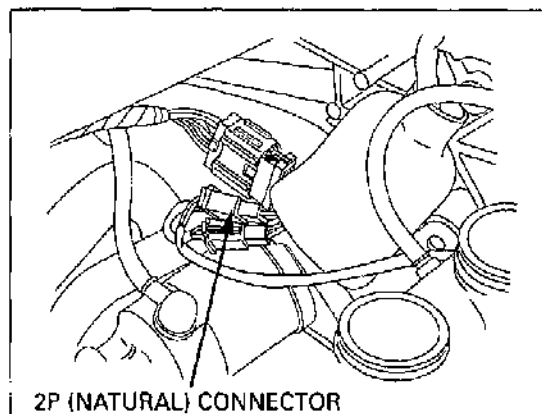
Install and tighten the mounting bolt securely.



FUEL SYSTEM (Programmed Fuel Injection)

Route the CMP sensor wire properly, connect the 2P (Natural) connector.

Install the removed parts in the reverse order of removal.



TP SENSOR

INSPECTION

Remove the rear cowl (page 2-3).

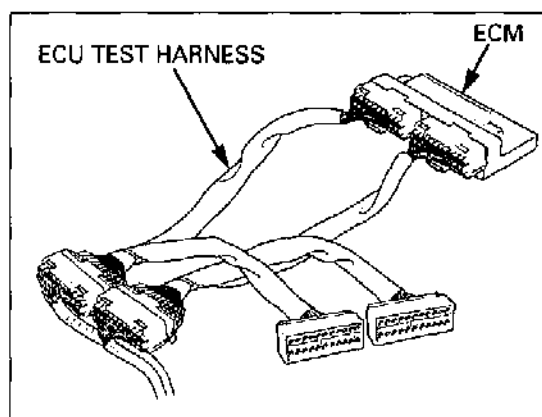
Disconnect the ECM 22P (Black) and 22P (Light gray) connectors.

Check the connector for loose or corroded terminals. Connect the ECU test harness between the ECM and main wire harness.

TOOL:

ECU test harness

07YMZ-0010100
(two required)



1. INPUT VOLTAGE INSPECTION

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

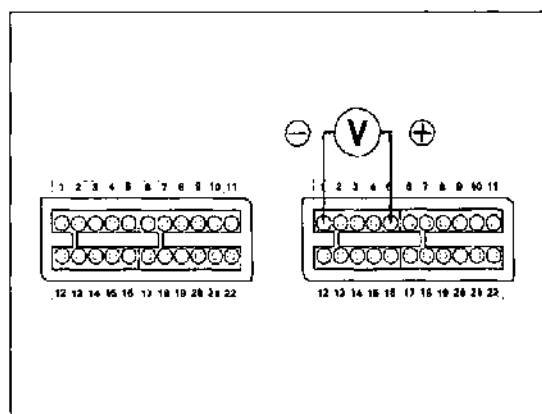
CONNECTION:

B5 (+) - B1 (-)

Standard: 4.5 - 5.5 V

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

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



2. OUTPUT VOLTAGE INSPECTION WITH THROTTLE FULLY OPEN

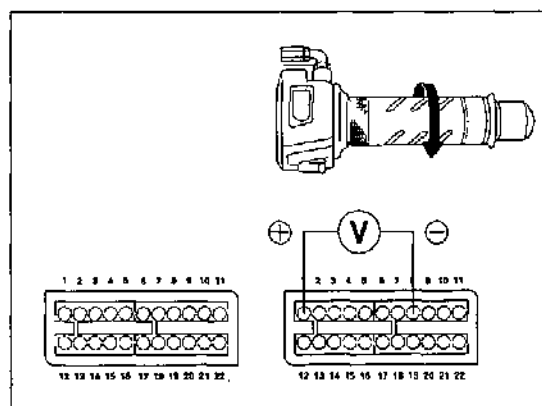
Turn the ignition switch to "ON" and measure and record the output voltage at the test harness terminals.

CONNECTION:

B8 (+) - B1 (-)

MEASURING CONDITION:

At throttle fully open



3. OUTPUT VOLTAGE INSPECTION WITH THROTTLE FULLY CLOSED

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

CONNECTION:

B8 (+) – B1 (–)

MEASURING CONDITION:

At throttle fully closed

4. CALCULATE RESULT COMPARISON

Compare the measurement to the result of the following calculation.

With the throttle fully open:

Measured input voltage x 0.824 = Vo

The sensor is normal if the measurement output voltage measured in step 2 is within 10% of Vo.

With the throttle fully closed:

Measured input voltage x 0.1 = Vc

The sensor is normal if the throttle closed output voltage measured in step 3 is within 10% of Vc.

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

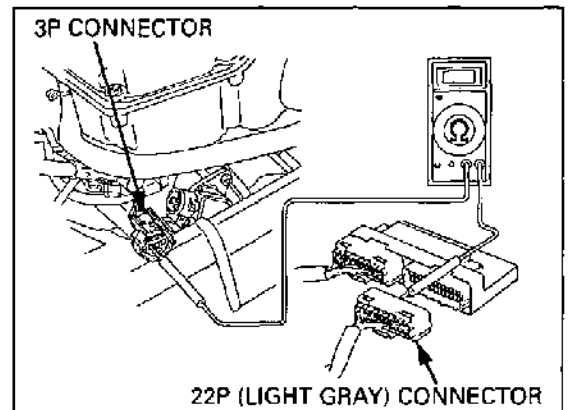
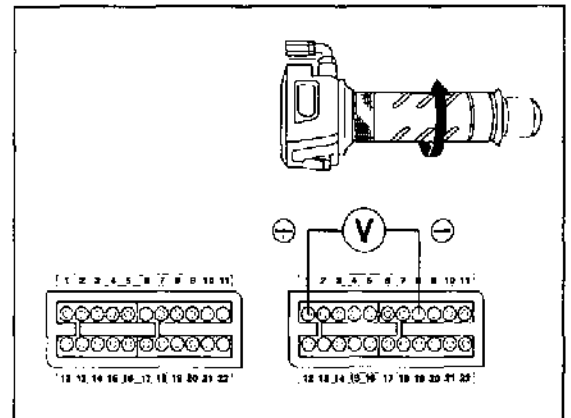
CONTINUITY INSPECTION

Support the front end of fuel tank (page 3-4).

Disconnect the ECM 22P (Light gray) connector and the TP sensor 3P connector.

Check for continuity between the ECM and TP sensor.

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



BANK ANGLE SENSOR

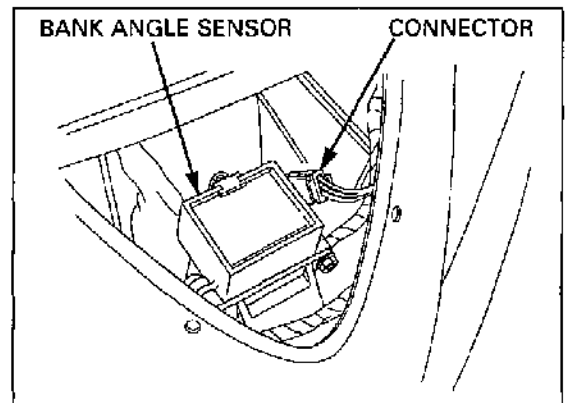
INSPECTION

Support the motorcycle level surface.

Remove the windscreen (page 2-10).

Turn the ignition switch to "ON" and measure the voltage between the following terminals of the bank angle sensor connector with the connector connected.

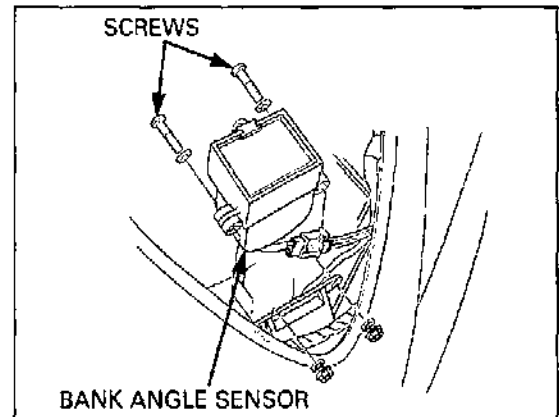
TERMINAL	STANDARD
White/Black (+) – Green (–)	Battery voltage
Red/White (+) – Green (–)	0 – 1 V



FUEL SYSTEM (Programmed Fuel Injection)

Do not disconnect the bank angle sensor connector during inspection.

Turn the ignition switch to "OFF".
Remove the screws and bank angle sensor.



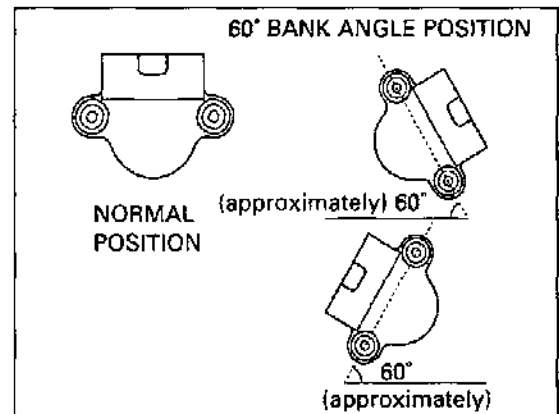
Place the bank angle sensor horizontal as shown, and turn the ignition switch to "ON".

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 turned to "ON".

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

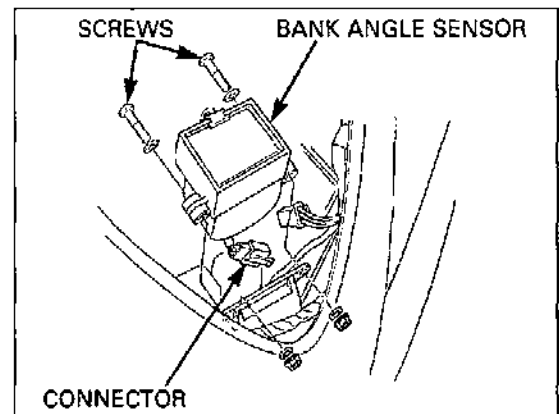
If you repeat this test, first turn the ignition switch to "OFF", then turn the ignition switch to "ON".



REMOVAL/INSTALLATION

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

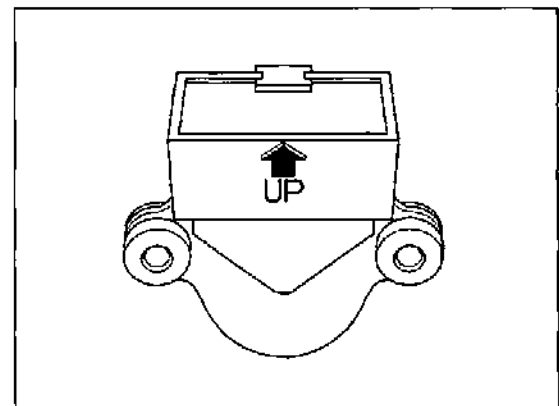
Remove the two screws, nuts and bank angle sensor.



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

Installation is in the reverse order of removal.

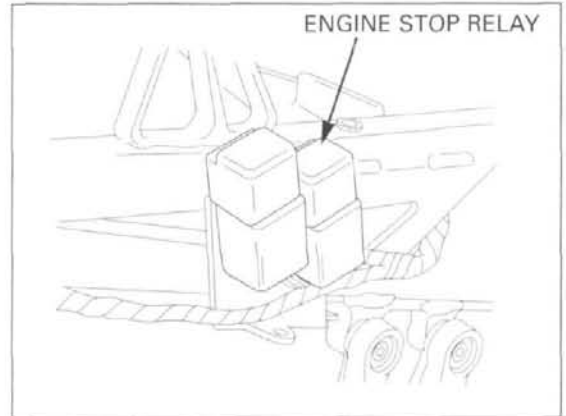
Tighten the mounting screws securely.



ENGINE STOP RELAY

INSPECTION

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



Connect the ohmmeter to the engine stop relay connector terminals.

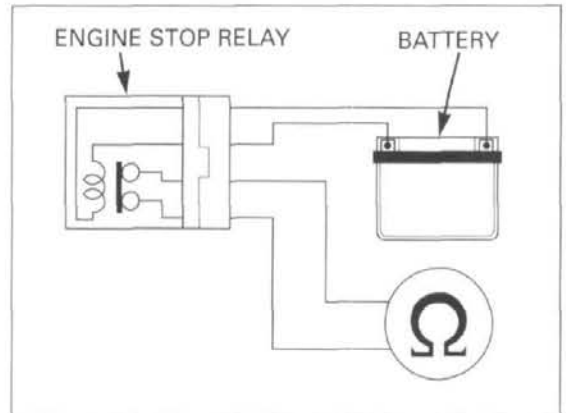
CONNECTION: Red/White – Black/White

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

CONNECTION: Red/White – Black

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.

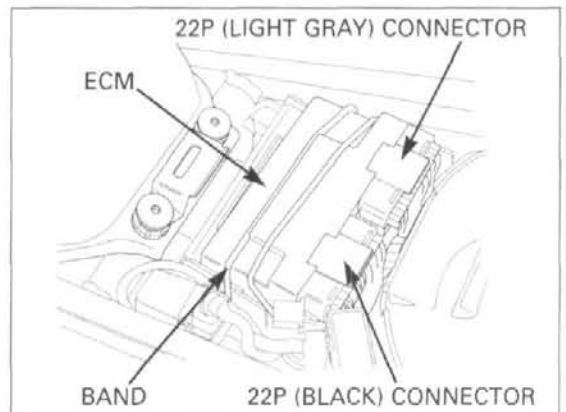


ECM (ENGINE CONTROL MODULE)

REMOVAL/INSTALLATION

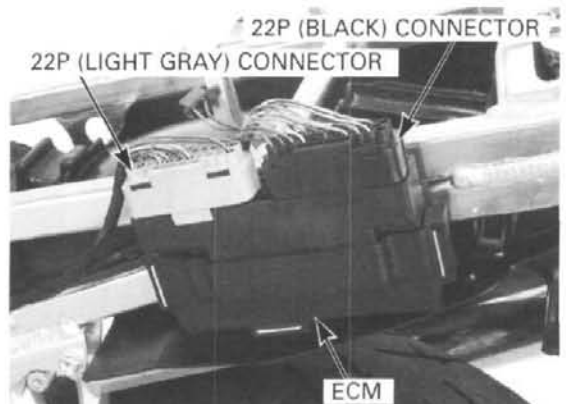
'01 – '03: Remove the rear cowl (page 2-3).

Remove the ECM holder band and remove the ECM from the battery tray cover. Disconnect the ECM 22P (Black) and 22P (Light gray) connectors.



After '03: Remove the rear cowl (page 2-5).

Disconnect the ECM 22P (Black) and 22P (Light gray) connectors. Remove the ECM from the seat rail.



FUEL SYSTEM (Programmed Fuel Injection)

POWER/GROUND LINE INSPECTION

Connect the test harness between the main wire harness and ECM (page 5-8).

TOOL:

ECU test harness

07YMZ-0010100
(two required)

GROUND LINE

Check for continuity between the ECM test harness connector A9 terminal and ground, between the A20 terminal and ground, and between the B12 terminal and ground.

There should be continuity at all times.

If there is no continuity, check for an open circuit in the Green/Pink wire and Green wire.

POWER INPUT LINE

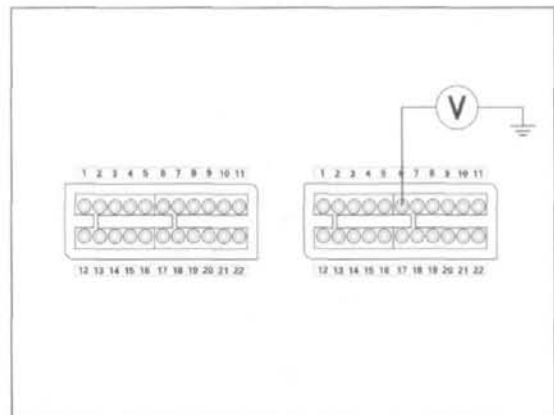
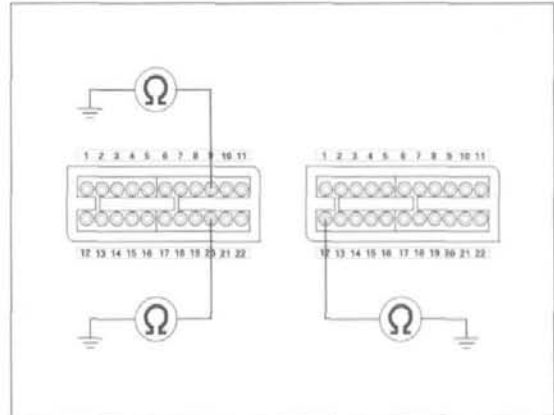
Turn the ignition switch to "ON" with the engine stop switch in the "RUN" position.

Measure the voltage between the ECM test harness connector B6 terminal (+) and ground.

There should be battery voltage.

If there is no voltage, check for an open circuit in the Black/White wire between the ECM and bank angle sensor/relay.

If the wire is OK, check the bank angle sensor/relay (page 5-83).



PAIR SOLENOID VALVE

REMOVAL/INSTALLATION

Remove the air cleaner housing (page 5-60).

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



Disconnect the PAIR air suction hoses.
Remove the bolt and PAIR solenoid valve.

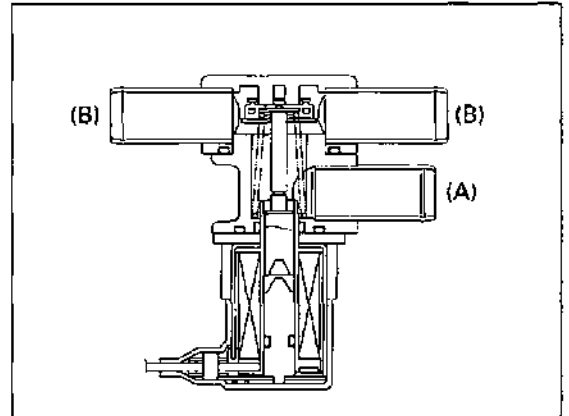
Installation is in the reverse order of removal.



INSPECTION

Remove the PAIR solenoid valve.

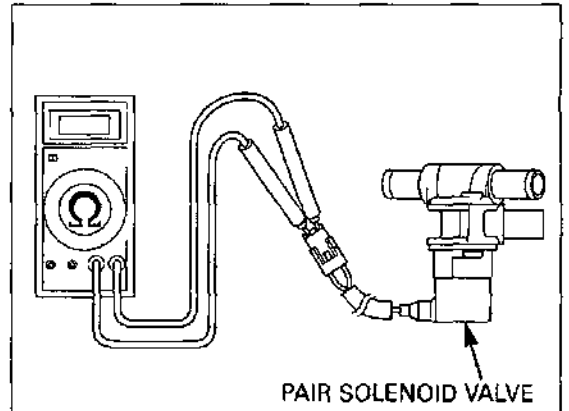
Check that the air should not flow (A) to (B), only when the 12-V battery is connected to the PAIR solenoid valve terminals.



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

STANDARD: 20 – 24 Ω (20 °C/68°F)

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

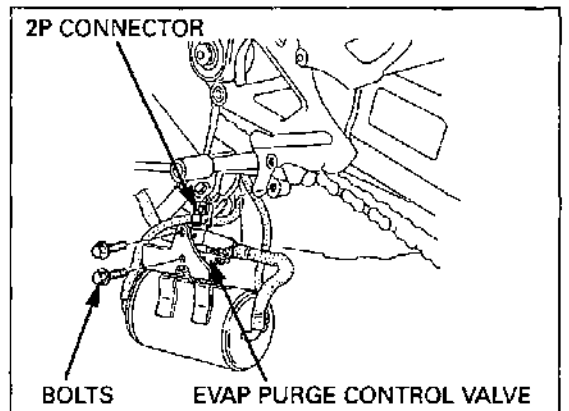


EVAP PURGE CONTROL VALVE (CALIFORNIA TYPE ONLY)

REMOVAL

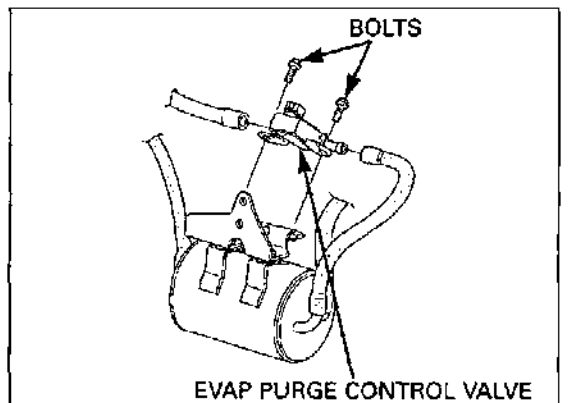
Remove the bolt and EVAP canister/EVAP purge control valve bracket assembly.

Disconnect the EVAP purge control valve 2P connector.



Disconnect the air hoses from the EVAP purge control valve.
Remove the bolts and EVAP purge control solenoid valve.

Installation is in the reverse order of removal.

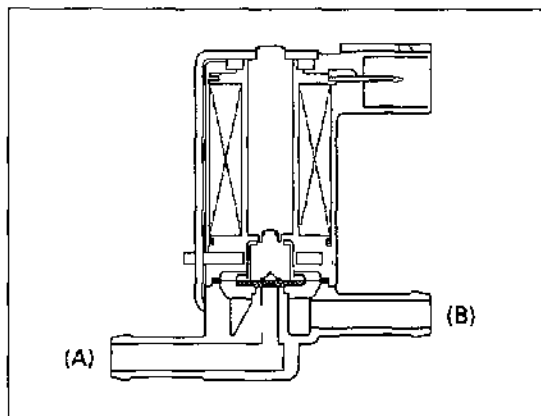


FUEL SYSTEM (Programmed Fuel Injection)

INSPECTION

Remove the EVAP purge control valve.

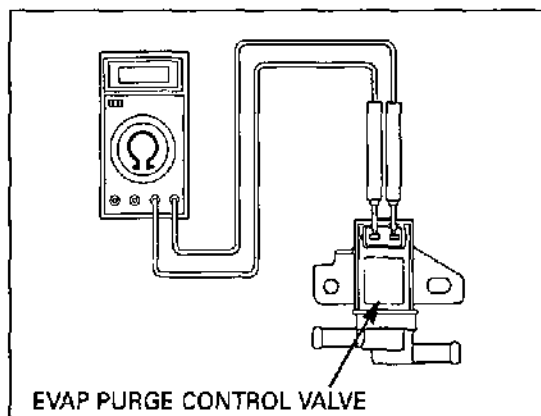
Check that air should not flow (A) to (B), only when the 12-V battery is connected to the EVAP purge control valve terminals.



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

STANDARD: 30 – 34 Ω (20 °C/68°F)

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



O₂ SENSOR (CALIFORNIA TYPE ONLY)

Do not service the O₂ sensor while it is hot.

REMOVAL

NOTICE

- Handle the O₂ sensor with care.
- Do not get grease, oil or other materials in the O₂ sensor air hole.

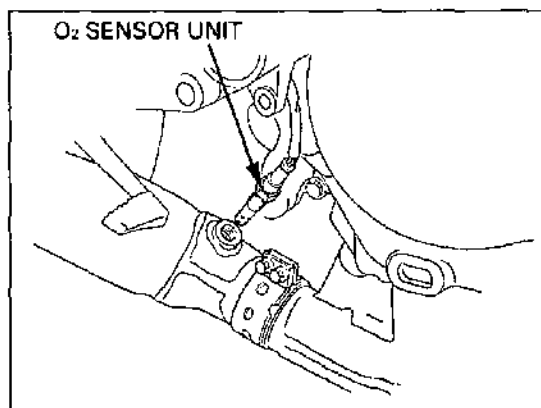
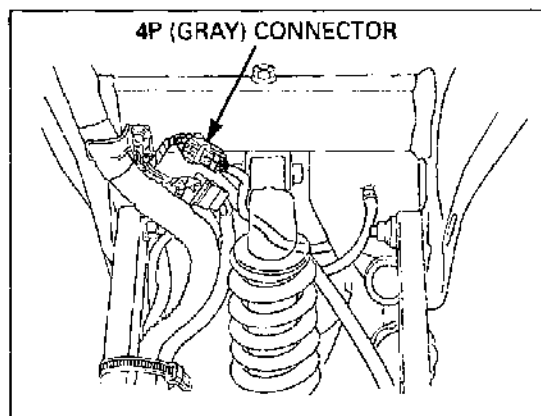
Remove the seat (page 2-2).

Disconnect the O₂ sensor 4P (Gray) connector.
Remove the O₂ sensor wire from the frame.

Remove the O₂ sensor unit.

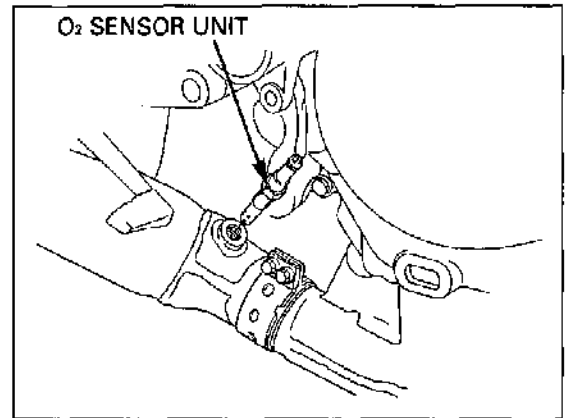
NOTICE

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



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 (Gray) connector.

