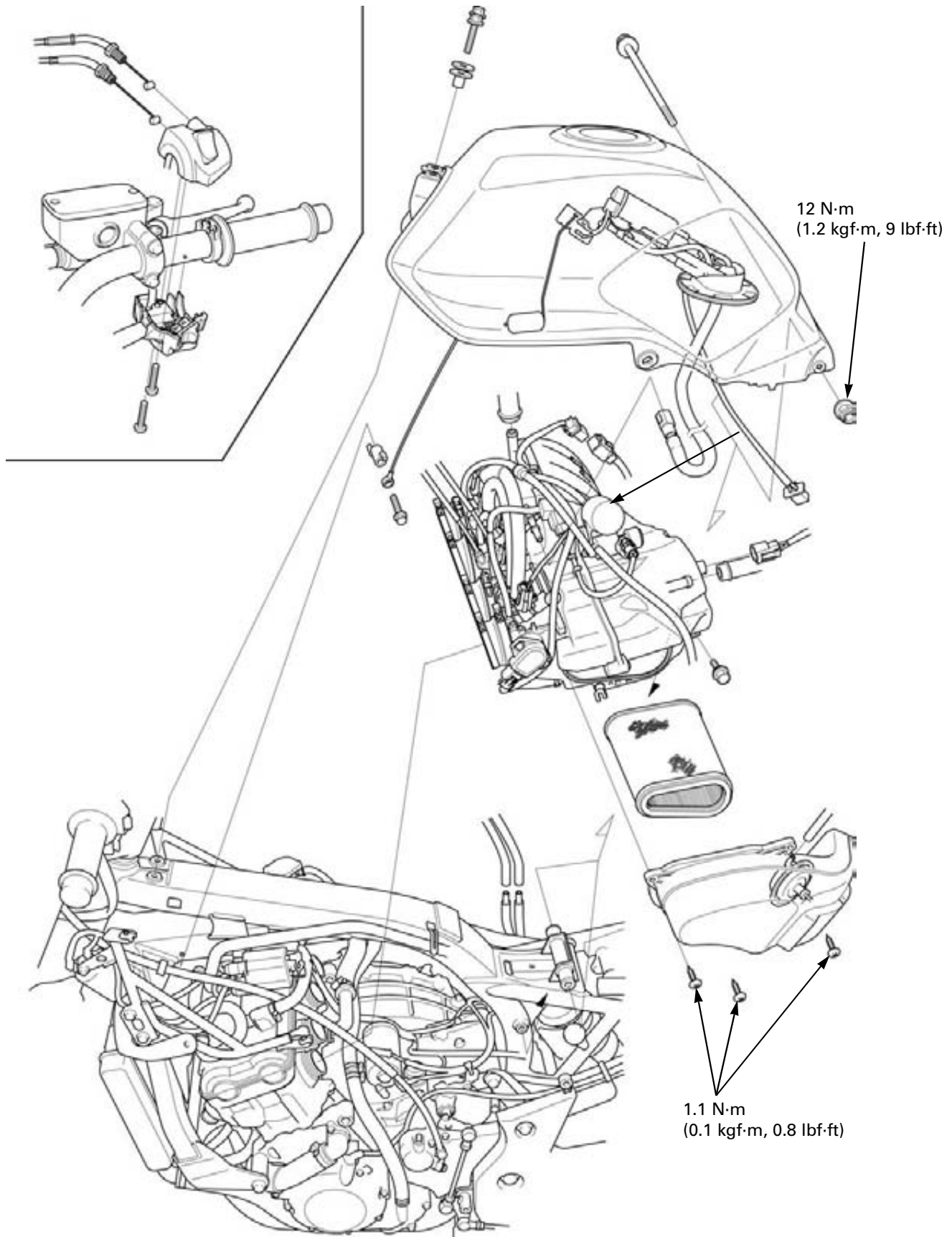


6. FUEL SYSTEM (PGM-FI)

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COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- 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.
- Before disconnecting the fuel feed hose, relieve fuel pressure from the system by disconnecting the quick connect fitting of the throttle body.
- 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.
- Do not apply commercially available carburetor cleaners to the inside of the throttle bore.
- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect idle operation.
- Seal the intake manifold ports with tape or a clean cloth to keep dirt and debris from entering the engine after the throttle body has been removed.
- Do not damage the throttle body. It may cause incorrect throttle and idle valve synchronization.
- Prevent dirt and debris from entering the throttle bore and air passages after the throttle body has been removed. Clean them using compressed air if necessary.
- 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, nuts and screws of the throttle body. Loosening or tightening them can cause throttle and idle valve synchronization failure.
- The parts of the throttle body not shown in this manual should not be disassembled.
- Always replace the packing when the fuel pump is removed.
- A faulty PGM-FI system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- The VS sensor sends digital pulse signal to the ECM and computation. Refer to procedures for VS sensor inspection.
 - DTC troubleshooting
 - MIL troubleshooting
- When disassembling the fuel system parts, note the location of the O-rings. Replace them with new ones upon reassembly.
- Always replace the sealing washers when the banjo bolt in the fuel pump is removed or loosened.
- Use a digital tester for PGM-FI system inspection.
- Refer to the fuel level sensor inspection (page 21-20).

SPECIFICATIONS


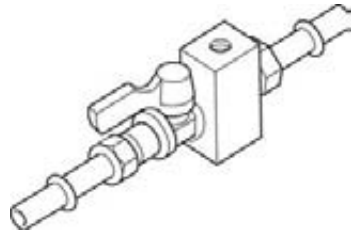


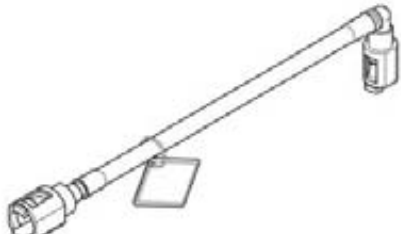


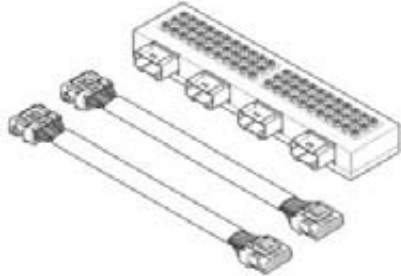
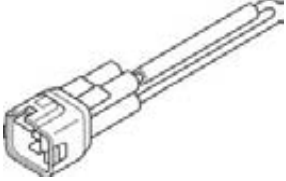


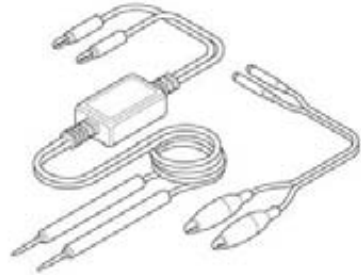
ITEM	SPECIFICATIONS
Throttle body identification number	GQ3BA
Idle speed	1,200 ± 100 min ⁻¹ (rpm)
Throttle grip free play	2 – 6 mm (1/12 – 1/4 in)
Intake air temperature sensor resistance (at 20°C/68°F)	1 – 4 kΩ
ECT sensor resistance (at 20°C/68°F)	2.3 – 2.6 kΩ
Fuel injector resistance (at 20°C /68°F)	11.1 – 12.3 Ω
PAIR control solenoid valve resistance (at 20°C/68°F)	23 – 27 Ω
CKP sensor peak voltage (at 20°C/68°F)	0.7 V minimum
Manifold absolute pressure at idle	29 – 32 kPa (0.30 – 0.33 kgf/cm ² , 4.3 – 4.7 psi)
Fuel pressure at idle	343 kPa (3.5 kgf/cm ² , 50 psi)
Fuel pump flow (at 12 V)	189 cm ³ (6.4 US oz, 6.7 Imp oz) minimum/10 seconds

TORQUE VALUES

Fuel rail mounting bolt	5.1 N·m (0.5 kgf·m, 3.8 lbf·ft)
ECT sensor	23 N·m (2.3 kgf·m, 17 lbf·ft)
O ₂ sensor	44 N·m (4.5 kgf·m, 32 lbf·ft)
Fuel feed hose banjo bolt	22 N·m (2.2 kgf·m, 16 lbf·ft)
Fuel pump mounting nut	12 N·m (1.2 kgf·m, 9 lbf·ft)

FUEL SYSTEM (PGM-FI)

TOOLS

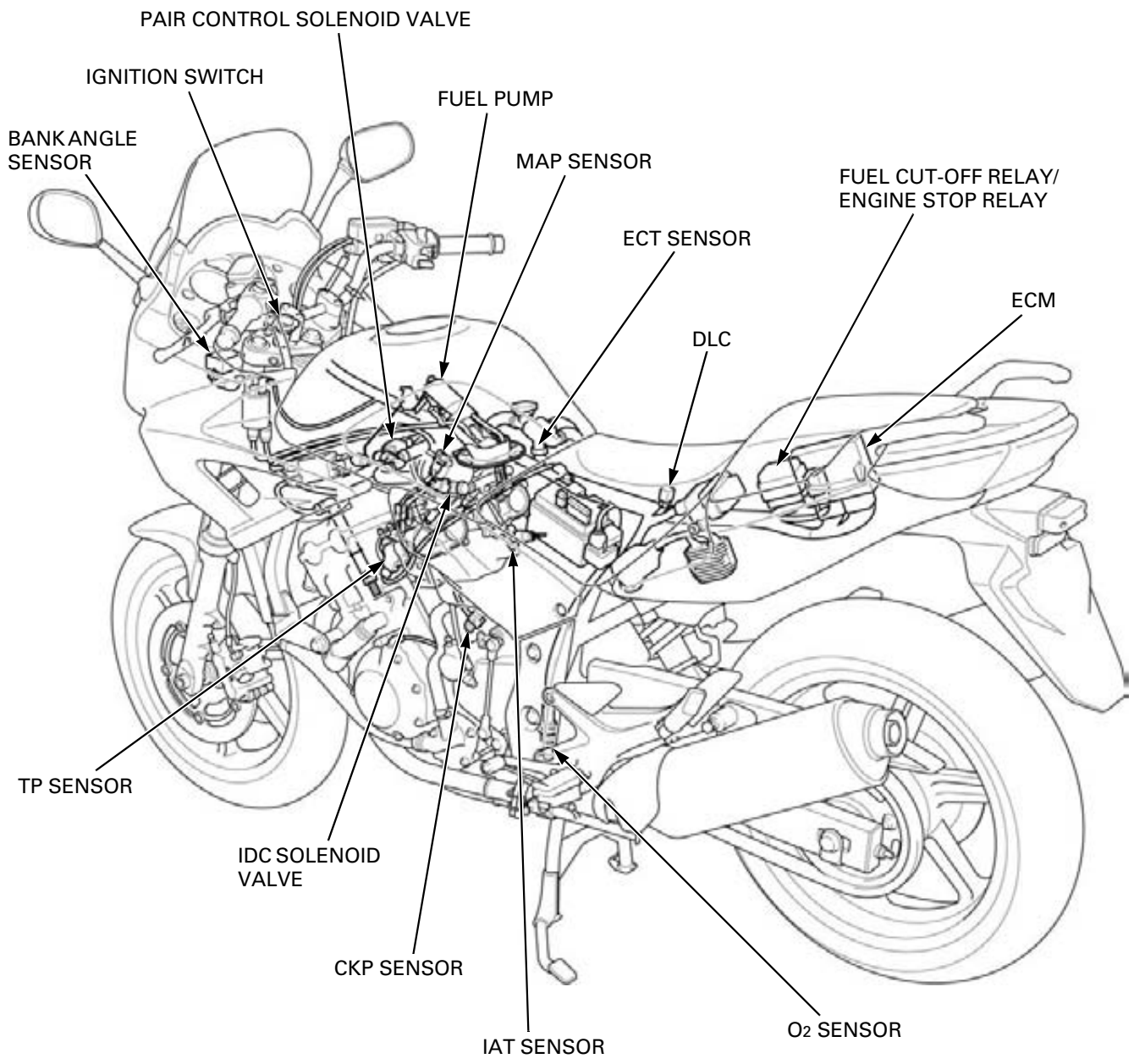
<p>Fuel pressure gauge 07406-0040004</p> 	<p>Pressure gauge manifold 07ZAJ-S5A0110</p> 	<p>Pressure gauge hose attachment C 07ZAJ-S7C0100</p> 
<p>Pressure gauge hose attachment A 07ZAJ-S5A0120</p> 	<p>Pressure gauge hose attachment B 07ZAJ-S5A0130</p> 	<p>Fuel attachment joint A 07ZAJ-S5A0150</p> 
<p>Fuel attachment joint B 07ZAJ-S7C0200</p> 	<p>ECM test harness 33P 070MZ-MCA0100</p> 	<p>SCS connector 070PZ-ZY30100</p> 
<p>Inspection test harness 07GMJ-ML80100</p> 	<p>Test probe 07ZAJ-RDJA110</p> 	<p>Imrie diagnostic tester (model 625) or Peak voltage adaptor 07HGJ-0020100</p>  <p>with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)</p>

PGM-FI SYMPTOM TROUBLESHOOTING

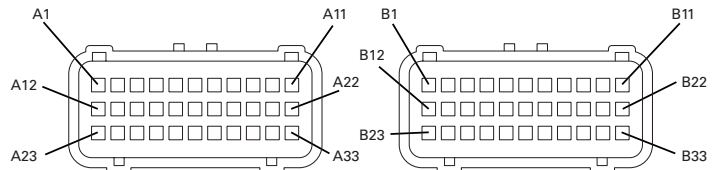
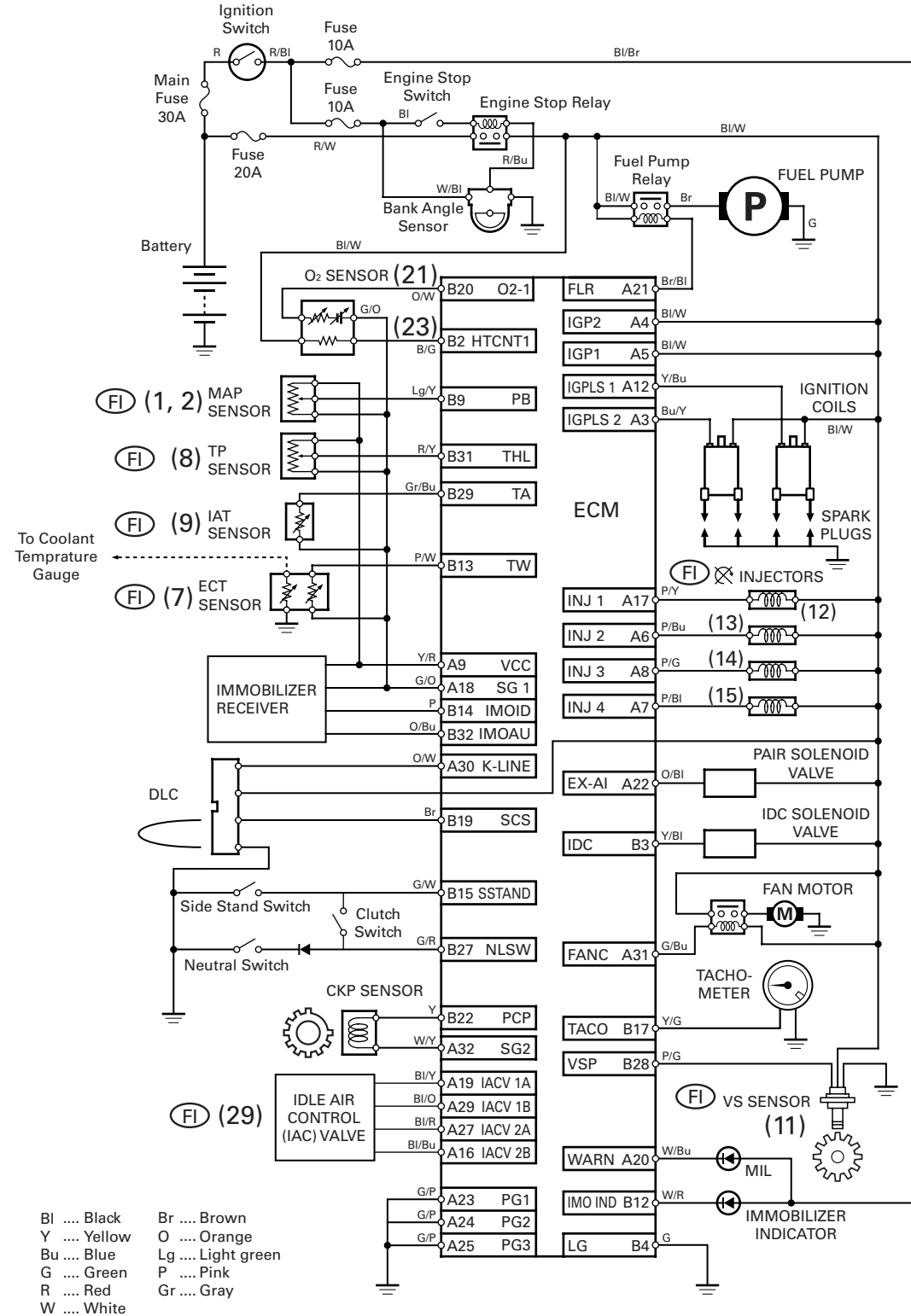
When the motorcycle has one of these symptoms, check the DTC or MIL blinking, refer to the DTC index (page 6-16) and begin the appropriate troubleshooting procedure. If there are no DTC/MIL blinking stored in the ECM memory, do the diagnostic procedure for the symptom, in sequence listed below, until you find cause.

Symptom	Diagnosis procedure	Also check for
Engine cranks but won't start (No DTC and MIL blinking)	<ol style="list-style-type: none"> 1. Crank the starter for more than ten seconds and check the DTC (page 6-13) and execute the troubleshooting according to the DTC. 2. Inspect the fuel supply system (page 6-51). 	<ul style="list-style-type: none"> • No fuel to injector <ul style="list-style-type: none"> – Clogged fuel filter – Pinched or clogged fuel feed hose – Pinched or clogged fuel tank breather tube – Faulty fuel pump – Faulty fuel pump circuits • Intake air leak • Contaminated/deteriorated fuel • Faulty fuel injector • IACV stuck • Faulty ignition system
Engine cranks but won't start (No fuel pump operation sound when the turning the ignition ON)	<ol style="list-style-type: none"> 1. ECM power/ground circuits malfunction (page 6-82) 2. Inspect the fuel supply system (page 6-51). 	<ul style="list-style-type: none"> • Open circuit in the power input and/or ground wire of the ECM • Faulty bank angle sensor or related circuit • Faulty FI/IGN relay or related circuit • Faulty engine stop switch or related circuit • Blown FI/IGN fuse (20 A) • Blown STARTER/BANK ANGLE SENSOR fuse (10 A)
Engine stalls, hard to start, rough idling	<ol style="list-style-type: none"> 1. Check the idle speed. 2. Check the IACV. 3. Inspect the fuel supply system (page 6-51). 	<ul style="list-style-type: none"> • Restricted fuel feed hose • Contaminated/deteriorated fuel • Intake air leak • Faulty IACV • Restricted fuel tank breather tube • Faulty ignition system
Afterburn when engine braking is used	Check the PAIR system (page 6-84).	<ul style="list-style-type: none"> • Faulty pulse secondary air injection (PAIR) system <ul style="list-style-type: none"> – Faulty PAIR control solenoid valve – Faulty PAIR check valve – Clogged hose of the PAIR system • Faulty ignition system
Backfiring or misfiring during acceleration	Check the ignition system.	<ul style="list-style-type: none"> • Faulty ignition system
Poor performance (driveability) and poor fuel economy	<ol style="list-style-type: none"> 1. MAP sensor and its hoses connection 2. Inspect the fuel supply system 	<ul style="list-style-type: none"> • Pinched or clogged fuel feed hose • Faulty pressure regulator (fuel pump) • Faulty injector • Faulty ignition system • MAP sensor • MAP sensor hose
Idle speed is below specifications or fast idle too low (No DTC and MIL blinking)	<ol style="list-style-type: none"> 1. Check the idle speed 2. Check the IACV 	<ul style="list-style-type: none"> • IACV stuck closed • Faulty fuel supply system • Faulty ignition system
Idle speed is above specifications or fast idle too high (No DTC and MIL blinking)	<ol style="list-style-type: none"> 1. Check the idle speed 2. Check the throttle operation and lever free play 3. Check the IACV 	<ul style="list-style-type: none"> • IACV stuck opened • Faulty ignition system • Intake air leak • Engine top end problem • Air cleaner condition
MIL stays ON but no DTCs set, or MIL never comes ON at all	Troubleshoot the MIL circuit (page 6-50).	<ul style="list-style-type: none"> • Faulty MIL circuit
MIL stays ON at all (No DTC set)	Inspect the DLC circuit.	<ul style="list-style-type: none"> • Short circuit in the DLC related wire

PGM-FI SYSTEM LOCATION



PGM-FI SYSTEM DIAGRAM

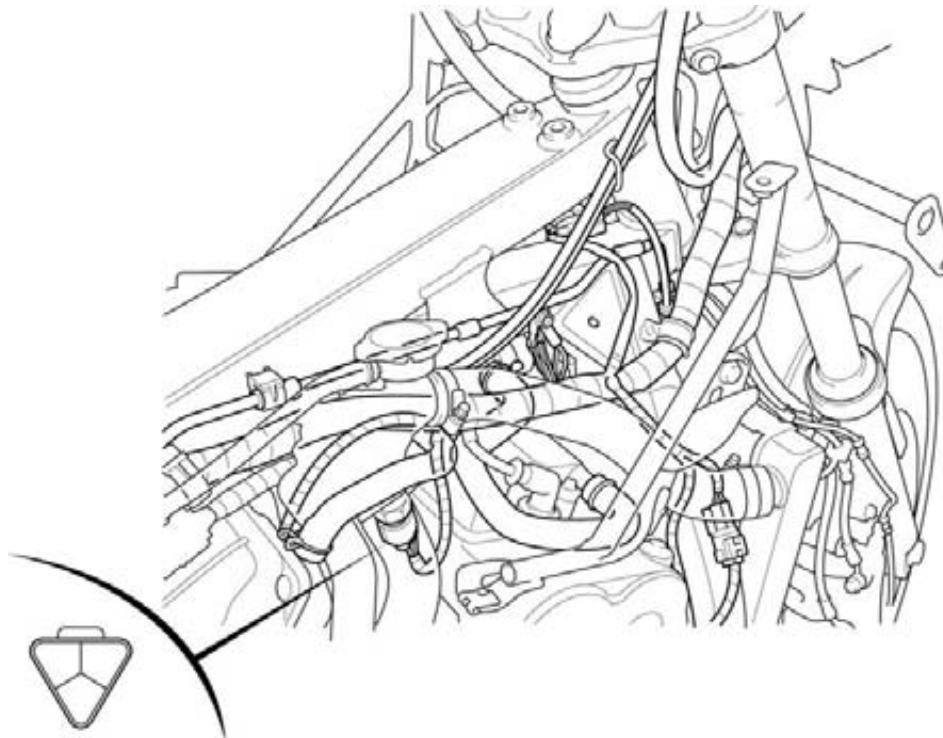


ECM side of male terminals

FUEL SYSTEM (PGM-FI)

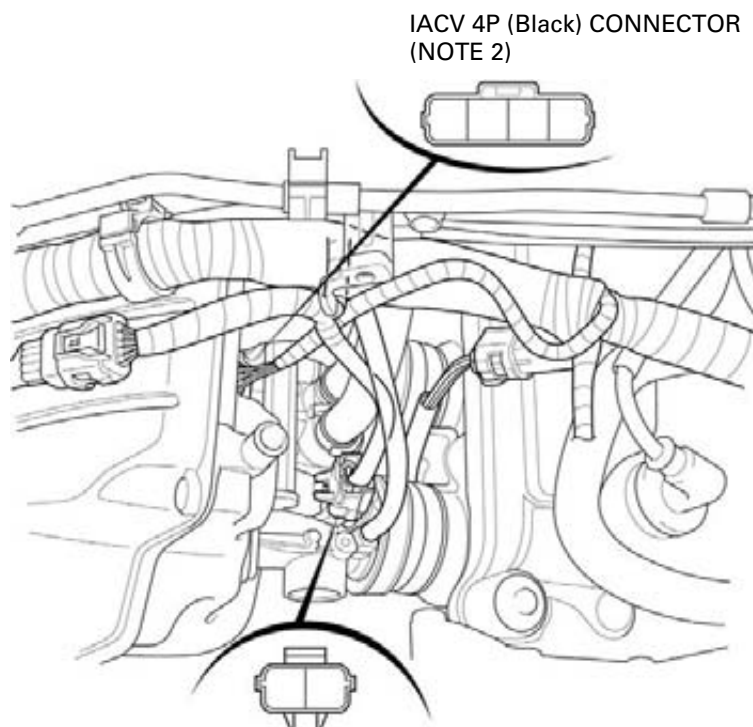
PGM-FI CONNECTOR LOCATIONS

NOTE 1: Lift and support the fuel tank (page 4-5), then remove the thermostat case mounting bolt.



ECT SENSOR 3P (Gray) CONNECTOR
(NOTE 1)

NOTE 2: Remove the fuel tank (page 6-57).

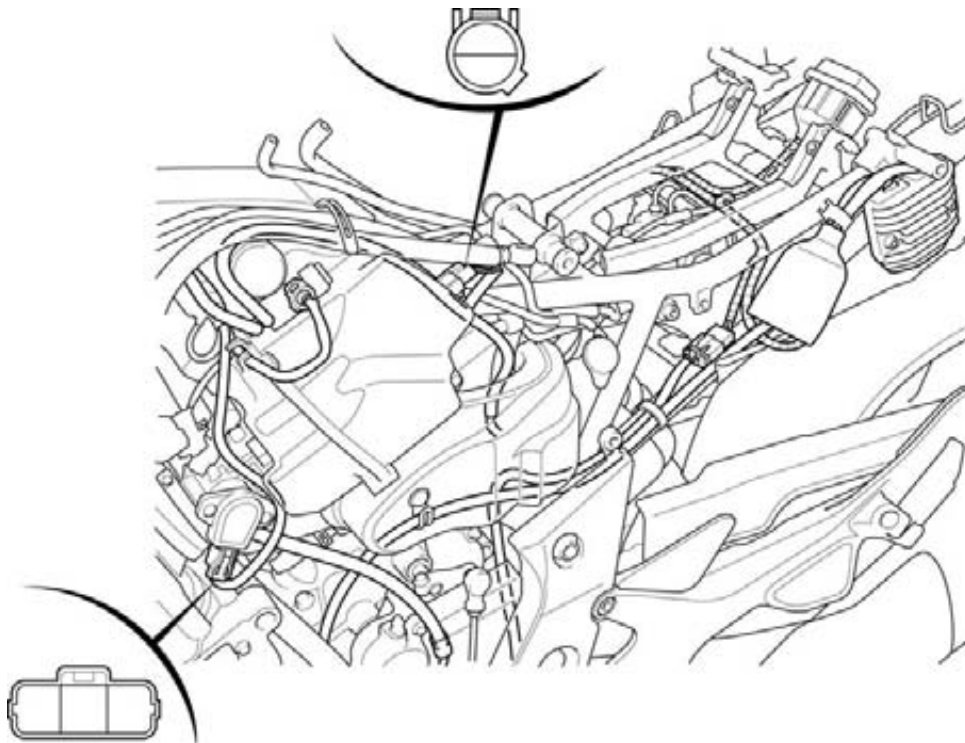


IACV 4P (Black) CONNECTOR
(NOTE 2)

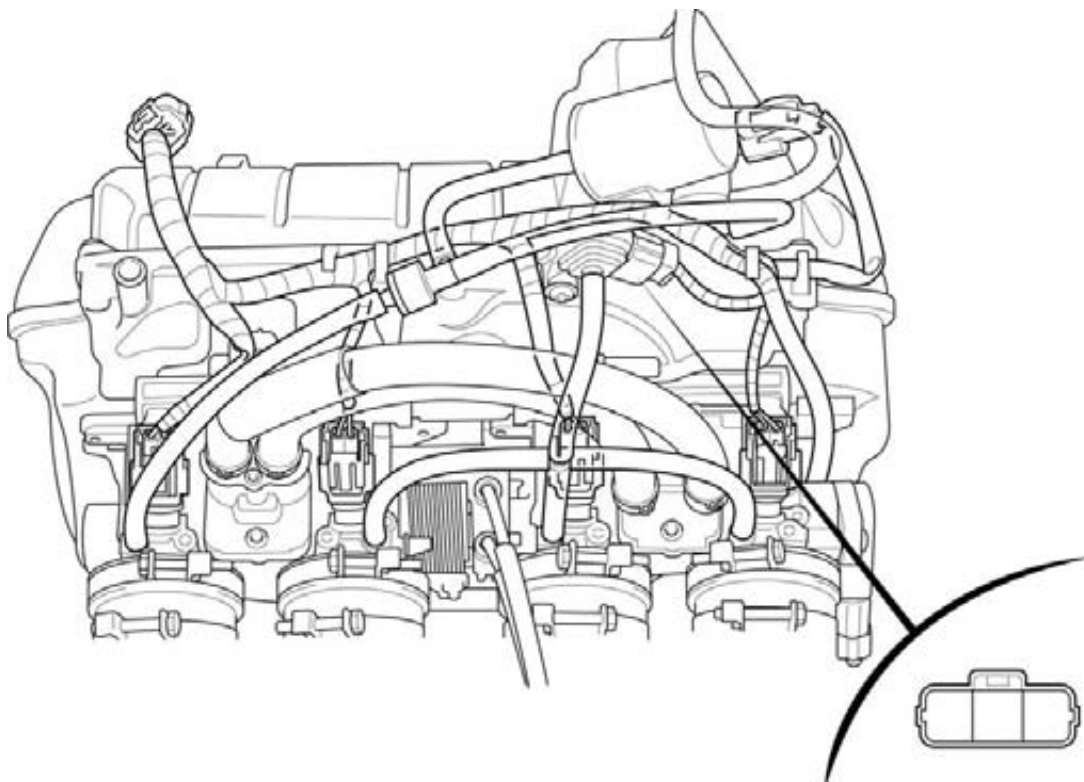
INJECTOR 2P (Gray) CONNECTORS
(NOTE 2)

NOTE 1: Remove the fuel tank (page 6-57).

TP SENSOR 2P (Gray) CONNECTOR
(NOTE 1)



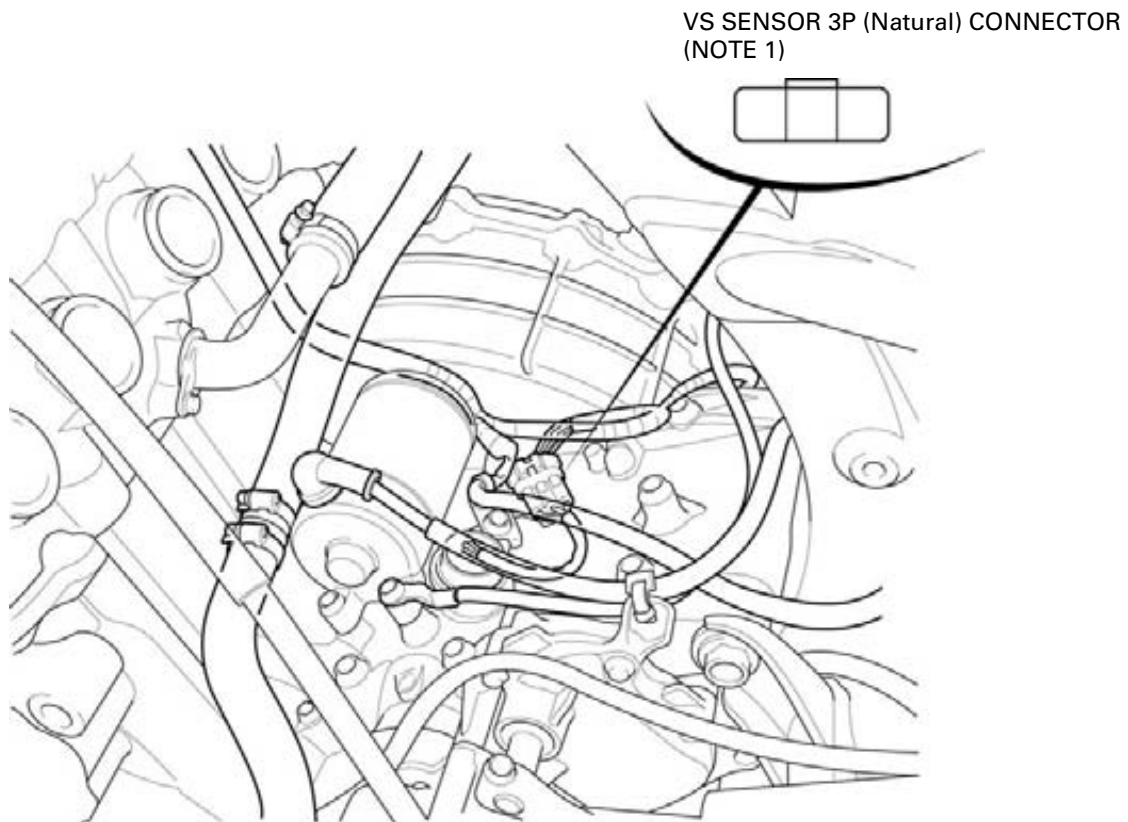
TP SENSOR 3P (Black) CONNECTOR



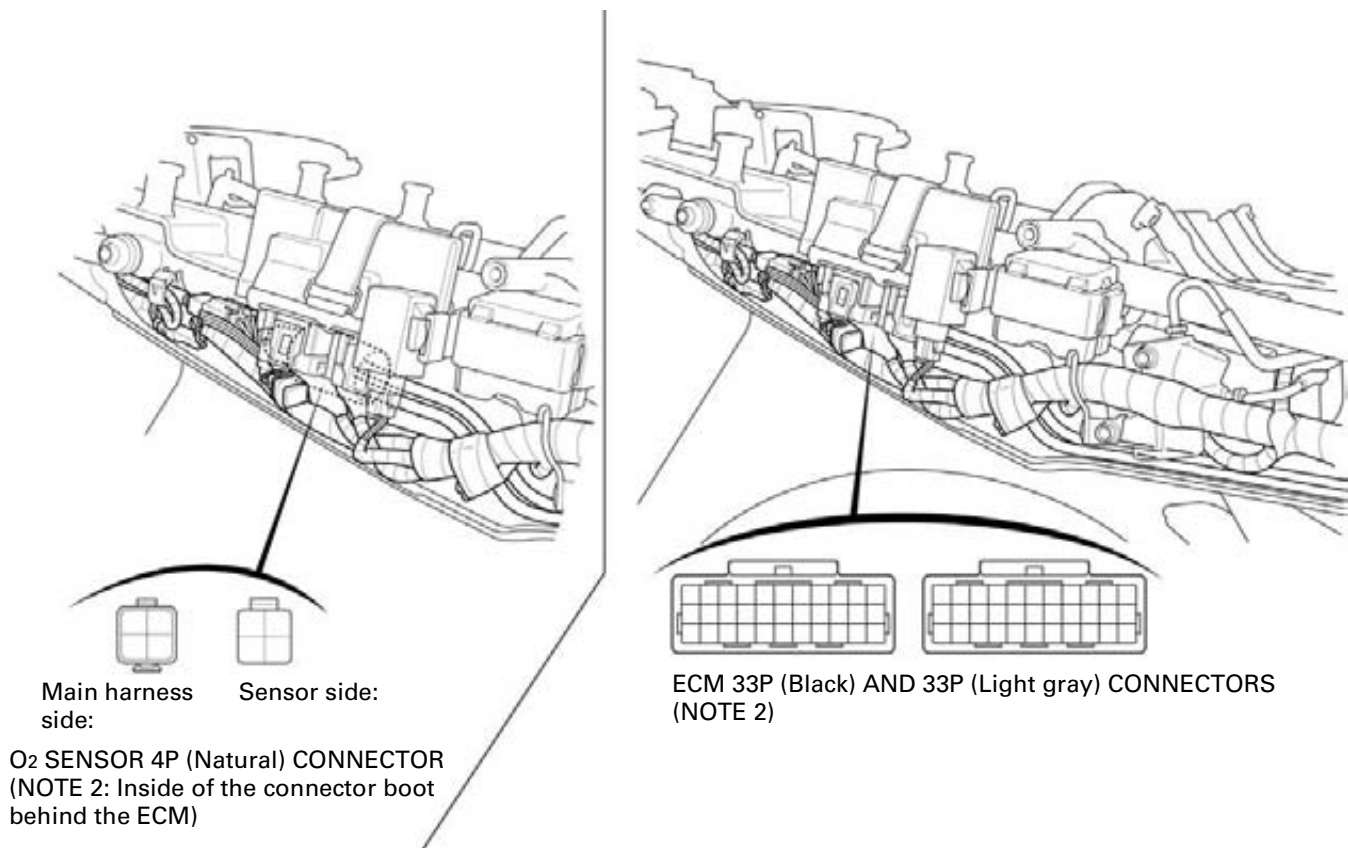
MAP SENSOR 3P (Black) CONNECTOR
(NOTE 1)

FUEL SYSTEM (PGM-FI)

NOTE 1: Remove the air cleaner housing (page 6-60).



NOTE 2: Remove the right rear cowl (page 3-8).



PGM-FI TROUBLESHOOTING INFORMATION

GENERAL TROUBLESHOOTING

Intermittent Failure

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the MIL does not come on, check for poor contact or loose pins at all connectors related to the circuit that of the troubleshooting. If the MIL was on, but then went out, the original problem may be intermittent.

Opens and Shorts

"Opens" and "Shorts" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something will not work at all. With ECMs this can something mean something work, but not the way it's supposed to.

If the MIL has come on

Refer to DTC READOUT (page 6-13).

If the MIL did not stay on

If the MIL did not stay on, but there is a driveability problem, do the SYMPTOM TROUBLESHOOTING (page 6-5).

SYSTEM DESCRIPTION

SELF-DIAGNOSIS SYSTEM

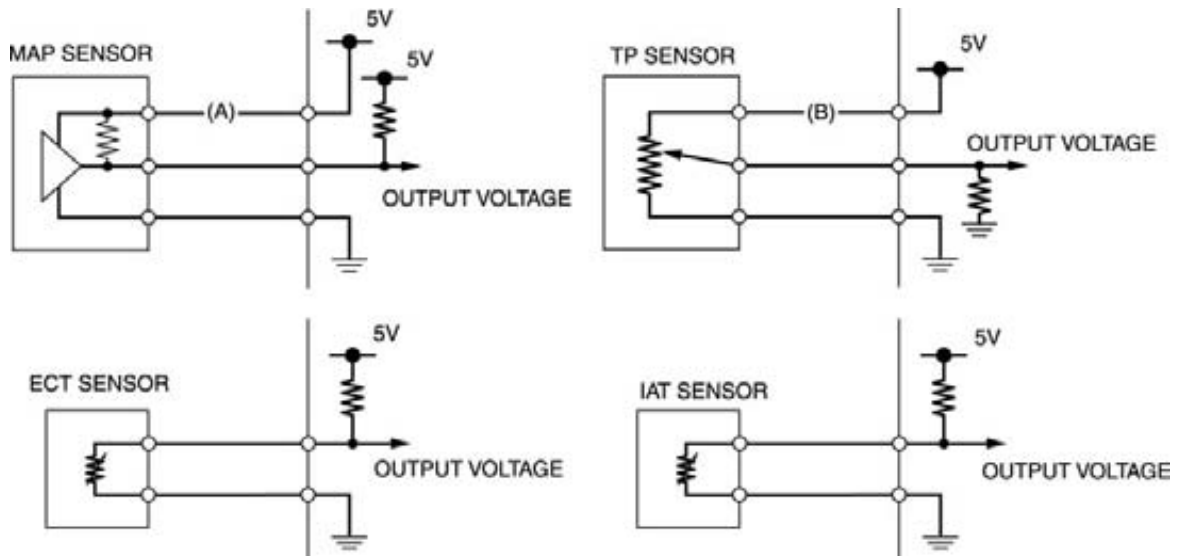
The PGM-FI system is equipped with the self-diagnostic system. When any abnormality occurs in the system, the ECM turns on the MIL and stores a DTC in its erasable memory.

FAIL-SAFE FUNCTION

The PGM-FI system is provided with a 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 maintained by pre-programmed value in the simulated program map. When any abnormality is detected in the injector(s) and/or crankshaft position (CKP) sensor, the fail-safe function stops the engine to protect it from damage.

DTC (Diagnostic Trouble Code)

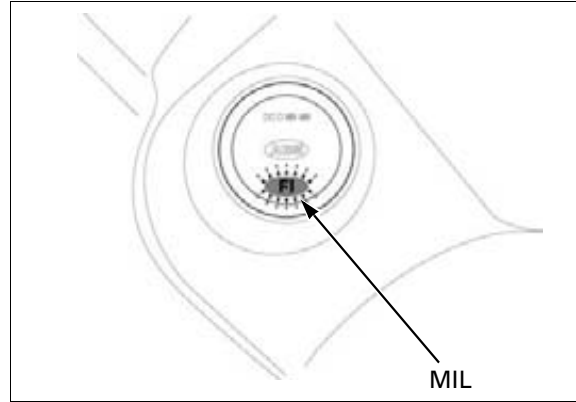
- The DTC is composed of a main code and a sub code and it is displayed as a hyphenated number when retrieved from the ECM with the HDS pocket tester.
 - The digits in front of the hyphen are the main code, they indicate the component of function failure.
 - The digits behind the hyphen are the sub code, they detail the specific symptom of the component or function failure.
 For example, in the case of the TP sensor:
 - DTC 08 - 1 = (TP sensor voltage) - (lower than the specified value)
 - DTC 08 - 2 = (TP sensor voltage) - (higher than the specified value).
- The MAP, BARO, ECT, TP and IAT sensor diagnosis will be made according to the voltage output of the affected sensor. If a failure occurs, the ECM determines the Function Failure, compares the sensor voltage output to the standard value, and then outputs the corresponding DTC to the HDS Pocket Tester.
 - For example:
 - If the input voltage line (A) on the MAP sensor is opened, the ECM detects the output voltage is about 5 V, then the DTC 1-2 (MAP sensor circuit high voltage) will be displayed.
 - If the input voltage line (B) on the TP sensor is opened, the ECM detects the output voltage is 0 V, then the DTC 8-1 (TP sensor circuit low voltage) will be displayed.



FUEL SYSTEM (PGM-FI)

MIL Blink Pattern

- If the HDS pocket tester is not available, DTC can be read from the ECM memory by the MIL blink pattern.
- The number of MIL blinks is the equivalent of the main code of the DTC (the sub code cannot be displayed by the MIL).
- The MIL will blink the current DTC, in case the ECM detects the problem at present, when the ignition switch ON or idling with the side stand down. The MIL will stay ON when the engine speed is over 5,000 min⁻¹ (rpm) or with the side stand up.
- The MIL has two types of blinks, a long blink and short blink. The long blinking lasts for 1.3 seconds, the short blinking lasts for 0.5 seconds. One long blink is the equivalent of ten short blinks. For example, when two long blinks are followed by five short blinks, the MIL is 25 (two long blinks = 20 blinks, plus five short blinks).
- When the ECM stores more than one DTC, the MIL will indicate them by blinking in the order from the lowest number to highest number.



MIL Check

When the ignition switch is turned ON and engine stop switch "⏻", the MIL will stay on for a few seconds, then go off. If the MIL does not come on, troubleshoot the MIL circuit (page 6-50).

CURRENT DTC/FREEZE DTC

The DTC is indicated in two ways according to the failure status.

- In case the ECM detects the problem at present, the MIL will come on and the MIL will start to blink as its DTC when the side stand is lowered. It is possible to readout the MIL blink pattern as the current DTC.
- In case the ECM does not detect any problem at present but has a problem stored in its memory, the MIL will not light and blink. If it is necessary to retrieve the past problem, readout the freeze DTC by following the DTC readout procedure (page 6-13).

HDS POCKET TESTER INFORMATION

- The HDS can readout the DTC, freeze data, current data and other ECM condition.

How to connect the HDS Pocket Tester

Turn the ignition switch to OFF.
Remove the seats (page 3-3).

Remove the dummy connector from the DLC.
Connect the HDS pocket tester to the DLC.

Turn the ignition switch ON and engine stop switch "C", check the DTC and freeze data.

NOTE:

- Freeze data indicates the engine conditions when the first malfunction was detected.

ECM reset

The HDS can reset the ECM data including the DTC, freeze data and some learning memory.

DTC READOUT

Start the engine and check the MIL.

- If the engine will not start, turn the starter motor for more than 10 seconds and check that the MIL blinks.
- When the ignition switch is turned ON, the MIL will stay on for a few seconds, then go off.

If the MIL stays on or blinks, connect the HDS Pocket Tester to the DLC (page 6-13).

Read the DTC, freeze data and follow the troubleshooting index (page 6-16).

To read the DTC with the MIL blinking, refer to the following procedure.

Reading DTC with the MIL

Turn the ignition switch to OFF.
Remove the seats (page 3-3).

Remove the dummy connector and short DLC terminals using the special tool.

TOOL:

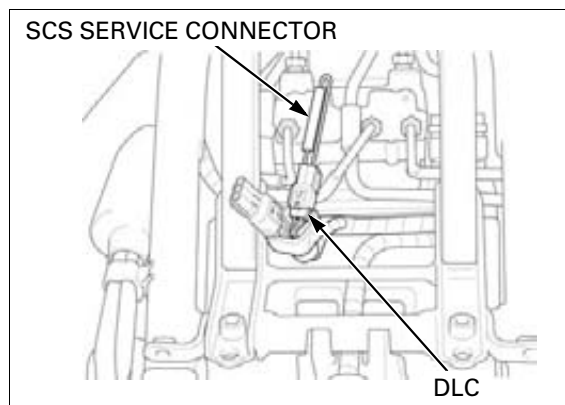
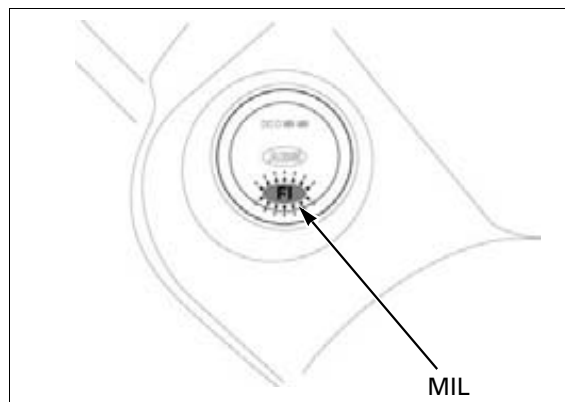
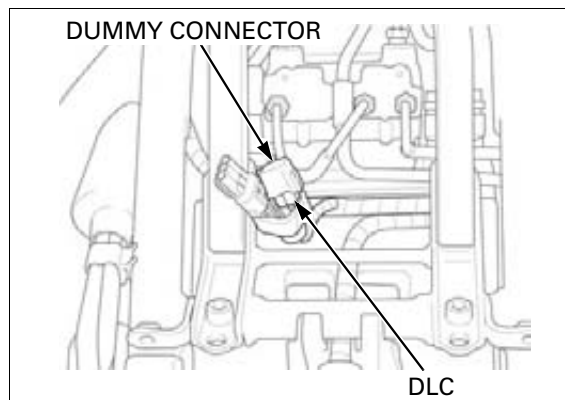
SCS connector **070PZ-ZY30100**

CONNECTION: Brown – Green

Turn the ignition switch ON, read, note the MIL blinks and refer to the troubleshooting index (page 6-16).

NOTE:

If the ECM has any DTC in its memory, the MIL will start blinking.



FUEL SYSTEM (PGM-FI)

CLEARING DTC

Connect the HDS Pocket Tester to the DLC (page 6-13).

Clear the DTC with the HDS while the engine is stopped.

To clear the DTC without HDS, refer to the following procedure.

How to clear the DTC with SCS connector

1. Remove the seats (page 3-3).
2. Turn the ignition switch to OFF.
3. Remove the dummy connector and short the Brown and Green wire terminals of the DLC using the special tool.

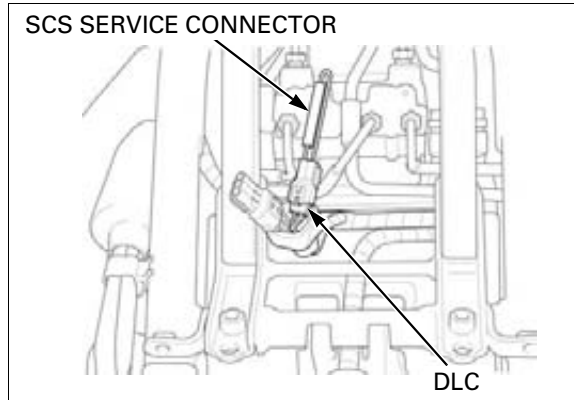
Make sure the engine stop switch is turned to "C".

TOOL:

SCS connector 070PZ-ZY30100

CONNECTION: Brown – Green

4. Turn the ignition switch to ON.
5. Remove the special tool wire from the DLC.
6. The MIL will light for approximately 5 seconds. While the MIL lights, short the DLC terminals again with the special tool. The self-diagnostic memory is erased if the malfunction indicator goes off and starts blinking.



NOTE:

- The DLC must be jumped while the MIL lights. If not, the MIL will not start blinking.
- Note that the self-diagnostic memory cannot be erased if the ignition switch is turned to "OFF" before the MIL starts blinking.

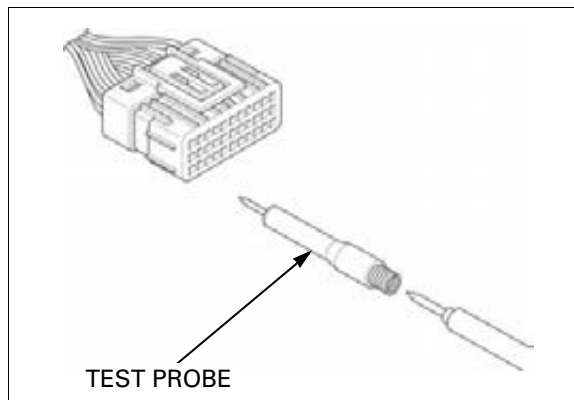
CIRCUIT INSPECTION

INSPECTION AT ECM CONNECTOR

- Always clean around and keep any foreign material away from the ECM connector before disconnecting it.
- A faulty PGM-FI system is often related to poorly connected or corroded terminals. Check those connections before proceeding.
- In testing at ECM connector (wire harness side) terminal, always use the test probe. Insert the test probe into the connector terminal, then attach the digital multimeter probe to the test probe.

TOOL:

Test probe 07ZAJ-RDJA110

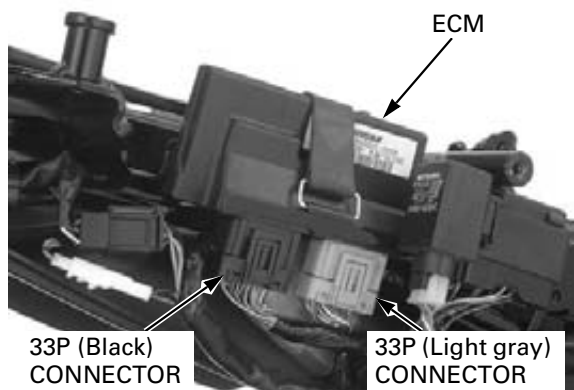


TEST HARNESS CONNECTION

Remove the right rear cowl (page 3-8).

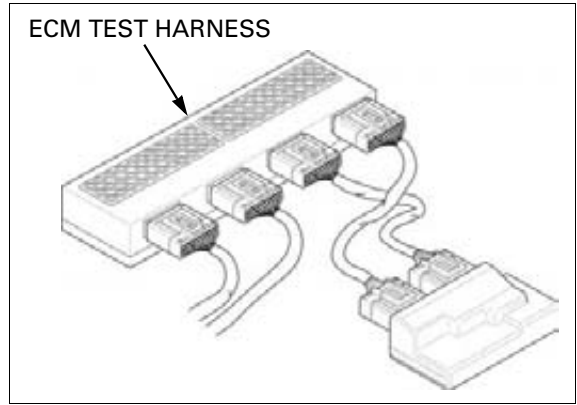
Turn the ignition switch to "OFF".

Disconnect the 33P connectors from the ECM.



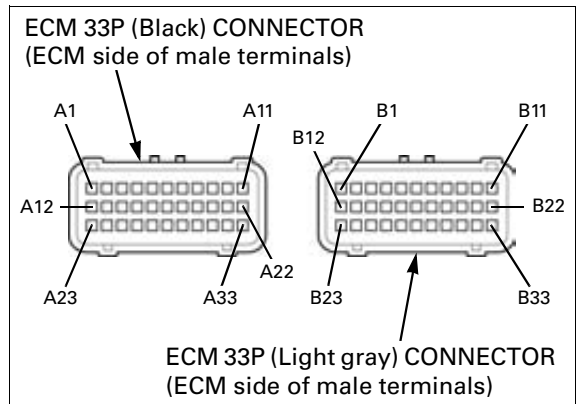
Connect the ECM test harness between the main wire harness and the ECM.

TOOL:
ECM test harness 33P 070MZ-MCA0100

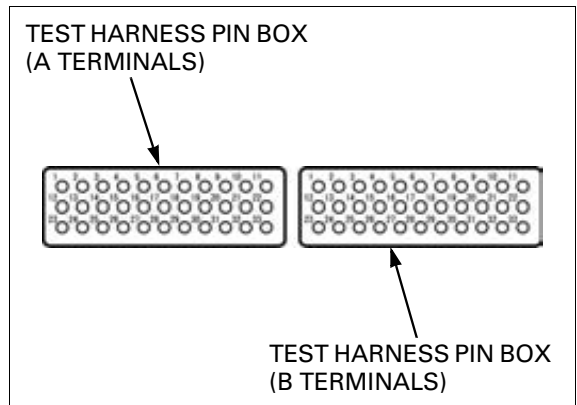


TEST HARNESS TERMINAL LAYOUT

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



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



FUEL SYSTEM (PGM-FI)

DTC INDEX

DTC (MIL blinks)	Function Failure	Symptom/Fail-safe function	Refer to (DTC)	Refer to (MIL)
1-1 (1)	MAP sensor circuit low voltage (less than 0.2 V) • MAP sensor or its circuit malfunction	• Engine operates normally • Fail-safe value: 760 mmHg/1,013 hPa	6-17	6-35
1-2 (1)	MAP sensor circuit high voltage (more than 3.9 V) • Loose or poor contact of the MAP sensor connector • MAP sensor or its circuit malfunction	• Engine operates normally • Fail-safe value: 760 mmHg/1,013 hPa	6-18	
2-1 (2)	MAP sensor hose connection • Disconnection or poor connection of the MAP sensor hoses	• Engine operates normally	6-19	6-37
7-1 (7)	ECT sensor circuit low voltage (less than 0.07 V) • ECT sensor or its circuit malfunction	• Hard start at a low temperature • Fail-safe value: 85°C/185°F • Cooling fan turns on	6-20	6-38
7-2 (7)	ECT sensor circuit high voltage (more than 4.93 V) • Loose or poor contact of the ECT sensor connector • ECT sensor or its circuit malfunction	• Hard start at a low temperature • Fail-safe value: 85°C/185°F • Cooling fan turns on	6-21	
8-1 (8)	TP sensor circuit low voltage (less than 0.3 V) • TP sensor or its circuit malfunction	• Poor engine acceleration • Fail-safe value: 0°	6-23	6-40
8-2 (8)	TP sensor circuit high voltage (more than 4.93 V) • Loose or poor contact of the TP sensor connector • TP sensor or its circuit malfunction	• Poor engine acceleration • Fail-safe value: 0°	6-25	
9-1 (9)	IAT sensor circuit low voltage (less than 0.07 V) • IAT sensor or its circuit malfunction	• Engine operates normally • Fail-safe value: 28°C/82°F	6-26	6-42
9-2 (9)	IAT sensor circuit high voltage (more than 4.93 V) • Loose or poor contact of the IAT sensor connector • IAT sensor or its circuit malfunction	• Engine operates normally • Fail-safe value: 28°C/82°F	6-27	
11-1 (11)	VS sensor no signal • Loose or poor contact of the VS sensor connector • VS sensor or its circuit malfunction	• Engine operates normally	6-28	6-43
12-1 (12)	No. 1 injector circuit malfunction • Loose or poor contact of the injector connector • Injector or its circuit malfunction	• Engine does not start • Injectors, fuel pump and ignition shut down	6-29	6-45
13-1 (13)	No. 2 injector circuit malfunction • Loose or poor contact of the injector connector • Injector or its circuit malfunction	• Engine does not start • Injectors, fuel pump and ignition shut down	6-30	6-46
14-1 (14)	No. 3 injector circuit malfunction • Loose or poor contact of the injector connector • Injector or its circuit malfunction	• Engine does not start • Injectors, fuel pump and ignition shut down	6-30	6-46
15-1 (15)	No. 4 injector circuit malfunction • Loose or poor contact of the injector connector • Injector or its circuit malfunction	• Engine does not start • Injectors, fuel pump and ignition shut down	6-30	6-46
21-1 (21)	O ₂ sensor malfunction • Loose or poor contact of the O ₂ sensor connector • O ₂ sensor or its circuit malfunction	• Engine operates normally	6-31	6-47
23-1 (23)	O ₂ sensor heater circuit malfunction • Loose or poor contact of the O ₂ sensor heater connector • O ₂ sensor heater or its circuit malfunction	• Engine operates normally	6-32	6-48
29-1 (29)	IACV circuit malfunction • Loose or poor contact of the IACV connector • IACV or its circuit malfunction	• Engine stalls, hard to start, rough idling	6-33	6-49

DTC TROUBLESHOOTING

DTC 1-1 (MAP SENSOR LOW VOLTAGE)

1. MAP Sensor System Inspection

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

Check the MAP sensor with the HDS pocket tester.

Is about 0 V indicated?

YES - GO TO STEP 2.

NO -

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

2. MAP Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the MAP sensor 3P (Black) connector.

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

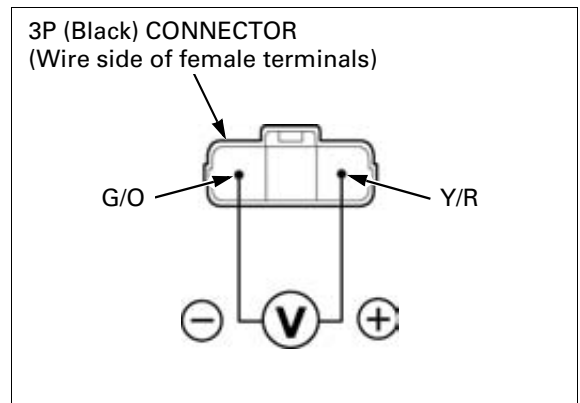
Measure the voltage at the wire harness side.

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

Is the voltage within 4.75 – 5.25 V?

YES - GO TO STEP 4.

NO - GO TO STEP 3.



3. MAP Sensor Input Line Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P connectors.

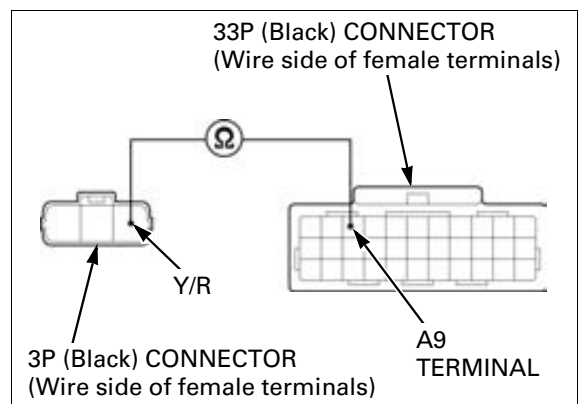
Check for continuity at the Yellow/red wire between the MAP sensor 3P (Black) connector terminal and the ECM 33P (Black) connector.

Connection: A9 – Yellow/red

Is there continuity?

YES - Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

NO - Open circuit in Yellow/red wire



4. MAP Sensor Output Line Short Circuit Inspection

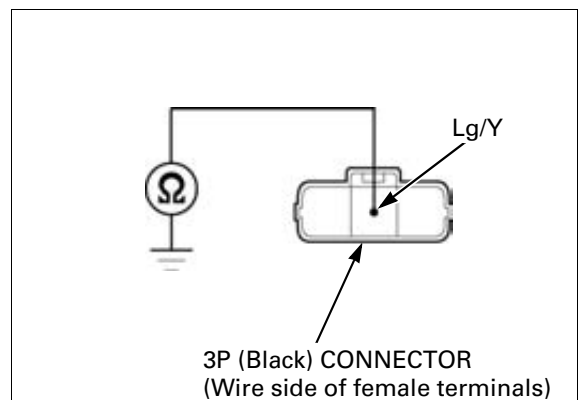
Check for continuity between the MAP sensor 3P (Black) connector terminal of the wire harness side and ground.

Connection: Light green/yellow – ground

Is there continuity?

YES - Short circuit in Light green/yellow wire

NO - GO TO STEP 5.



FUEL SYSTEM (PGM-FI)

5. MAP Sensor Inspection

Replace the MAP sensor with a known good one (page 6-78).

Reset the ECM (page 6-14).

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

Check the MAP sensor with the HDS pocket tester.

Is DTC 1-1 indicated?

YES – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

NO – Faulty original MAP sensor

DTC 1-2 (MAP SENSOR HIGH VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the MAP sensor 3P (Black) connector and recheck the DTC.

1. MAP Sensor System Inspection 1

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

Check the MAP sensor with the HDS pocket tester.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO –

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

2. MAP Sensor System Inspection 2

Turn the ignition switch OFF.

Disconnect the MAP sensor 3P (Black) connector.

Connect the MAP sensor terminals at the wire harness side with a jumper wire.

Connection: Light green/yellow – Green/orange

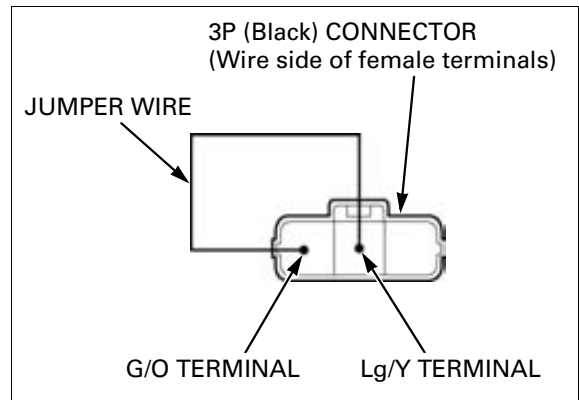
Turn the ignition switch ON and engine stop switch "⏻".

Check the MAP sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – Faulty MAP sensor

NO – GO TO STEP 3.



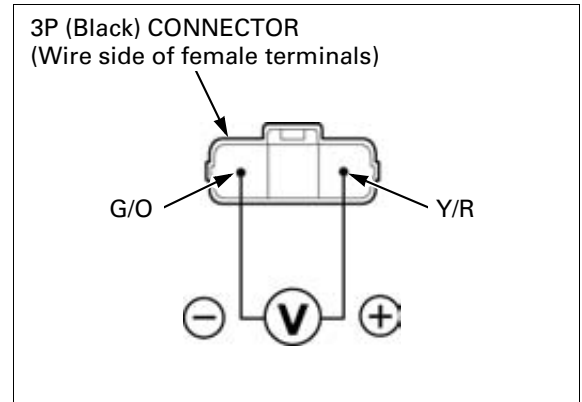
3. MAP Sensor Input Voltage Inspection

Turn the ignition switch OFF.
Remove the jumper wire.
Turn the ignition switch ON and engine stop switch "⏻".
Measure the voltage at the wire harness side.

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

Is the voltage within 4.75 – 5.25 V?

- YES** – GO TO STEP 4.
- NO** – Open circuit in Gray/black wire



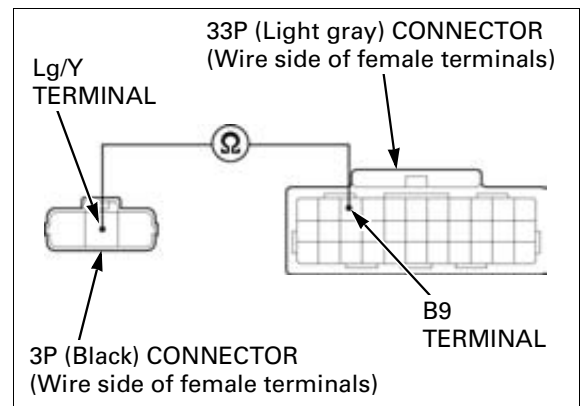
4. MAP Sensor Output Line Open Circuit Inspection

Disconnect the ECM 33P connectors.
Check for continuity at the Light green/yellow wire between the MAP sensor 3P (Black) connector terminal and the ECM 33P (Light gray) connector.

Connection: B9 – Light green/yellow

Is there continuity?

- YES** – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)
- NO** – Open circuit in Light green/yellow wire



DTC 2-1 (MAP SENSOR HOSE CONNECTION)

- Before starting the inspection, check for loose or poor contact on the MAP sensor 3P (Black) connector and recheck the DTC.

1. MAP Sensor System Inspection

Turn the ignition switch ON and engine stop switch "⏻".
Start the engine and check the MAP sensor with the HDS.
The MAP sensor voltage should be changed after engine started.

Is the MAP sensor voltage indicated normally?

- YES** – Intermittent failure
- NO** – GO TO STEP 2.

FUEL SYSTEM (PGM-FI)

2. MAP sensor hose inspection

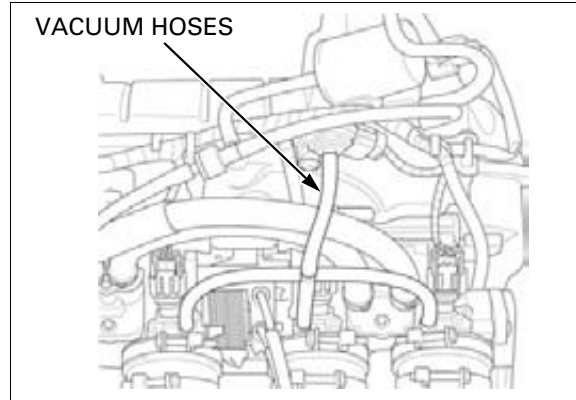
Turn the ignition switch OFF.

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

Is the MAP sensor vacuum hose connection correct?

YES – GO TO STEP 3.

NO – Correct the hose installation



3. MAP Sensor System Inspection

Replace the MAP sensor with a known good one (page 6-78).

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

Start the engine and check the MAP sensor with the HDS.

The MAP sensor voltage should be changed after engine started.

Is the MAP sensor voltage normally?

YES – Faulty original MAP sensor

NO – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

DTC 7-1 (ECT SENSOR LOW VOLTAGE)

1. ECT Sensor System Inspection

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

Check the ECT sensor with the HDS pocket tester.

Is about 0 V indicated?

NO – Intermittent failure

YES – GO TO STEP 2.

2. ECT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the ECT sensor 3P (Gray) connector.

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

Check the ECT sensor with the HDS pocket tester.

Is about 0 V indicated?

NO – GO TO STEP 3.

YES – GO TO STEP 4.



3. ECT Sensor Resistance Inspection

Turn the ignition switch OFF.

Measure the resistance at the ECT sensor terminals.

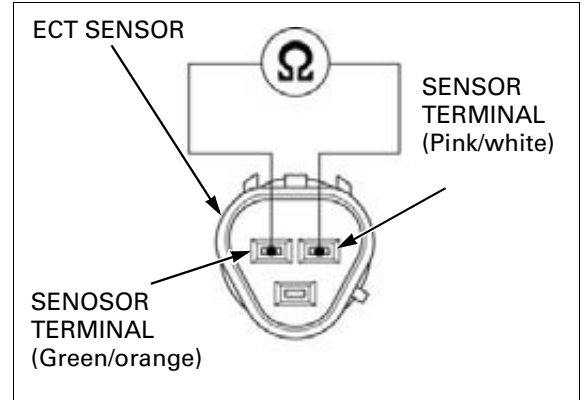
CONNECTION: Pink/white – Green/orange

STANDARD: 2.3 – 2.6 kΩ (20°C/68°F)

Is the resistance within 2.3 – 2.6 kΩ?

YES – Replace the ECM with a new one, and recheck; refer to Key Registration Procedures (page 22-6)

No – Faulty ECT sensor.



4. ECT Sensor Short Circuit Inspection

Disconnect the ECM 33P connectors from the module.

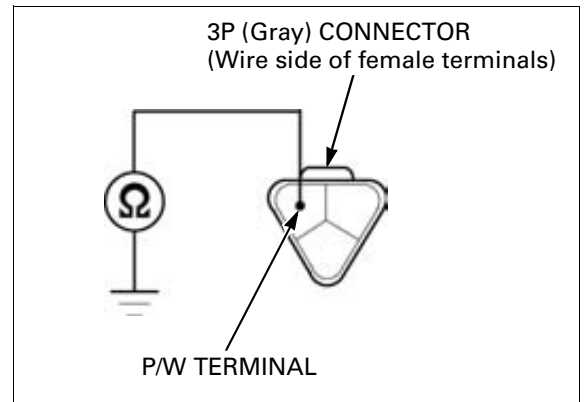
Check for continuity between the ECT sensor 3P (Gray) connector terminal of the wire harness side and ground.

Connection: Pink/white – ground

Is there continuity?

YES – Short circuit in Pink/white wire

NO – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)



DTC 7-2 (ECT SENSOR HIGH VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the ECT sensor 3P (Gray) connector and recheck the DTC.

1. ECT Sensor System Inspection

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

Check the ECT sensor with the HDS pocket tester.

Is about 5 V indicated?

NO – • Intermittent failure
• Loose or poor contact on the ECT sensor 3P (Gray) connector

YES – GO TO STEP 2.

FUEL SYSTEM (PGM-FI)

2. ECT Sensor Inspection

Turn the ignition switch OFF.

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

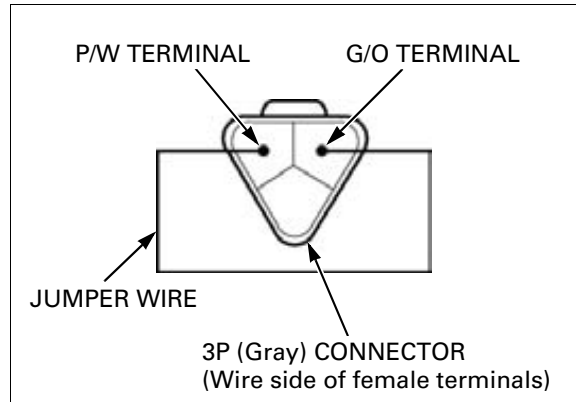
Connection: Pink/white – Green/orange

Turn the ignition switch ON and engine stop switch "G". Check the ECT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – Inspect the ECT sensor (page 21-16).

NO – GO TO STEP 3.



3. ECT Sensor Output Line Inspection

Turn the ignition switch OFF.

Remove the jumper wire.

Disconnect the ECM 33P connectors. Check the continuity between the ECM connectors and ECT sensor connector of the wire harness side.

**Connection: B13 – Pink/white
A18 – Green/orange**

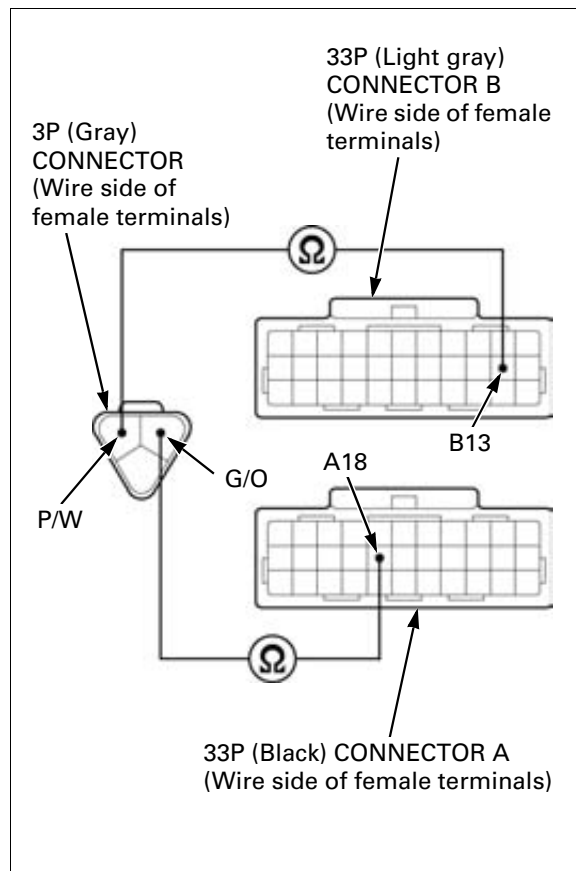
TOOL:

Test probe 07ZAJ-RDJA110

Are there continuity?

YES – Replace the ECM with new one, and recheck; refer to Key Registration Procedures (page 22-6)

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



DTC 8-1 (TP SENSOR LOW VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the TP sensor 3P (Black) connector and recheck the DTC.

1. TP Sensor System Inspection

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

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

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – GO TO STEP 2.

2. TP Sensor Inspection

Check the TP sensor voltage is increasing uninterrupted when moving the throttle from fully closed to fully opened using the data list menu of the HDS pocket tester.

Does the voltage increase continuously?

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

NO – Faulty TP sensor

3. TP Sensor Input Voltage Inspection

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

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

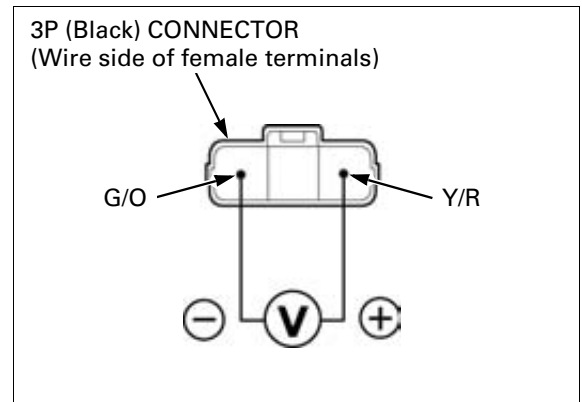
Measure the voltage at the wire harness side.

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

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 5.

NO – GO TO STEP 4.



4. TP Sensor Circuit Inspection

Disconnect the ECM 33P connectors.

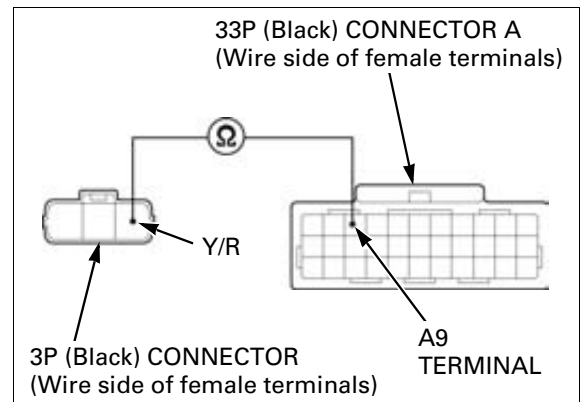
Check the continuity at the Yellow/red wire between the TP sensor 3P (Black) connector terminal and the ECM 33P (Black) connector.

Connection: A9 – Yellow/red

Is there continuity?

- YES** – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

NO – Open circuit in Yellow/red wire



FUEL SYSTEM (PGM-FI)

5. TP Sensor Output Line Open Circuit Inspection

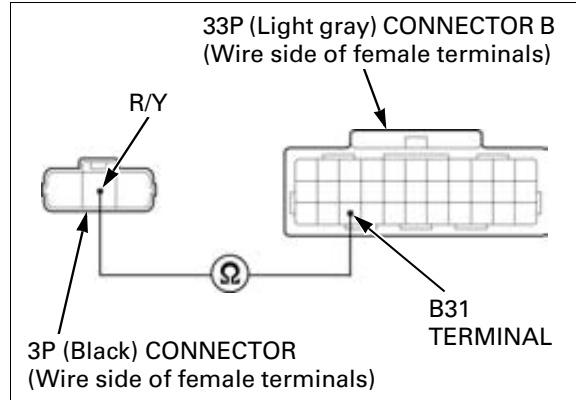
Check for continuity at the Red/yellow wire between the TP sensor 3P (Black) connector terminal and the ECM 33P (Light gray) connector.

Connection: B31 – Red/yellow

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in Red/yellow wire



6. TP Sensor Output Line Short Circuit Inspection

Disconnect the TP sensor 3P (Black) connector.

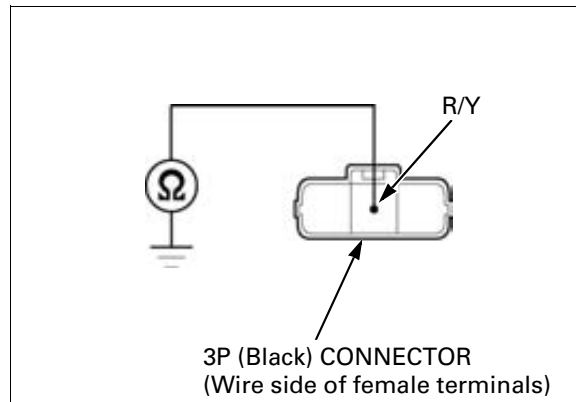
Check for continuity between the TP sensor 3P connector terminal of the wire harness side and ground.

Connection: Red/yellow – ground

Is there continuity?

YES – Short circuit in Red/yellow wire

NO – GO TO STEP 7.



7. TP Sensor Inspection

Replace the TP sensor with a known good one.

Reset the ECM (page 6-14).

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

Check the TP sensor with the HDS pocket tester.

Is DTC 8-1 indicated?

YES – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

NO – Faulty original TP sensor

DTC 8-2 (TP SENSOR HIGH VOLTAGE)

1. TP Sensor System Inspection

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

Check the TP sensor with the HDS pocket tester.

Is about 5 V indicated?

YES – GO TO STEP 3.

NO – GO TO STEP 2.

2. TP Sensor Inspection

Check the TP sensor voltage is increasing uninterrupted when moving the throttle from fully closed to fully opened using the data list menu of the HDS pocket tester.

Does the voltage increase continuously?

YES – • Intermittent failure
• Loose or poor contact on the TP sensor connector

NO – Faulty TP sensor

3. TP Sensor Resistance Inspection

Turn the ignition switch OFF.

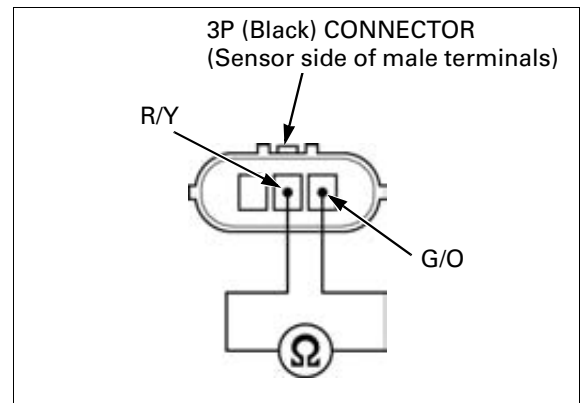
Disconnect the TP sensor 3P (Black) connector. Measure the resistance at the TP sensor side.

Connection: Red/yellow – Green/orange

Is the resistance within 0.5 – 1.5 kΩ?

YES – GO TO STEP 4.

NO – Faulty TP sensor



4. TP Sensor Input Voltage Inspection

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

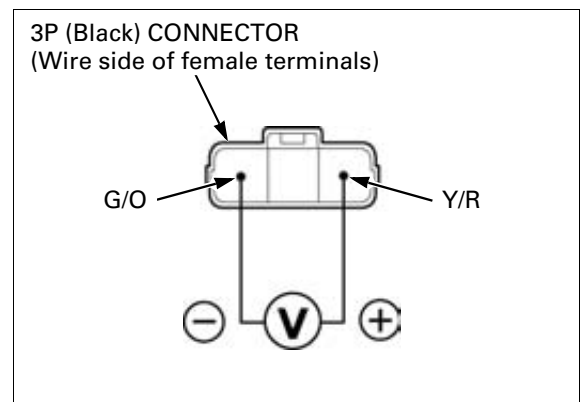
Measure the voltage at the wire harness side.

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

Is the voltage within 4.75 – 5.25 V?

YES – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

NO – Open circuit in Gray/black or wires



DTC 9-1 (IAT SENSOR LOW VOLTAGE)

1. IAT Sensor System Inspection

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

Check the IAT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO –

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

2. IAT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the IAT sensor 2P (Gray) connector.

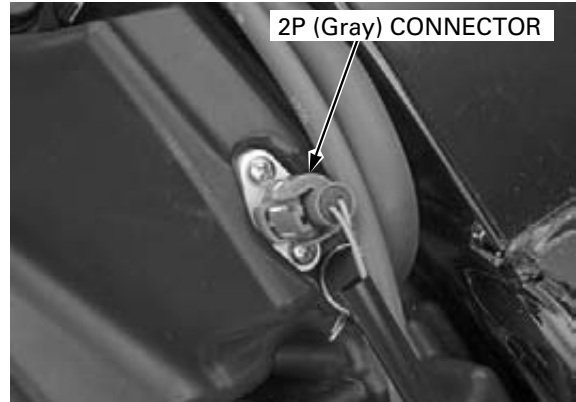
Turn the ignition switch ON and engine stop switch "G".

Check the IAT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty IAT sensor



3. IAT Sensor Output Line Short Circuit Inspection

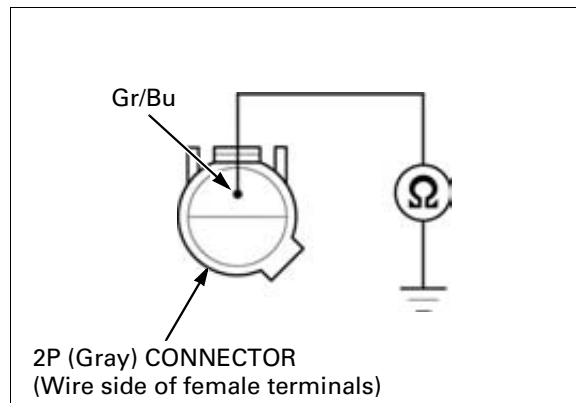
Check for continuity between the IAT sensor 2P (Gray) connector terminal of the wire harness side and ground.

Connection: Gray/blue – ground

Is there continuity?

YES – Short circuit in Gray/blue wire

NO – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)



DTC 9-2 (IAT SENSOR HIGH VOLTAGE)

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

1. IAT Sensor System Inspection

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

Check the IAT sensor with the HDS pocket tester.

Is about 5 V indicated?

YES – GO TO STEP 2.

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

2. IAT Sensor Inspection

Turn the ignition switch OFF.

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

Connection: Gray/blue – Green/orange

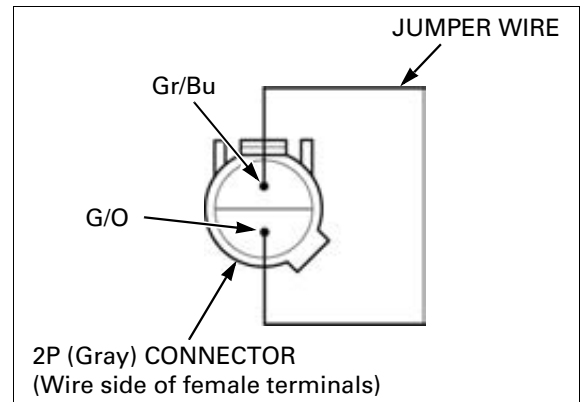
Turn the ignition switch ON and engine stop switch "G".

Check the IAT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – Faulty IAT sensor

NO – GO TO STEP 3.



3. IAT Sensor Output Line Inspection

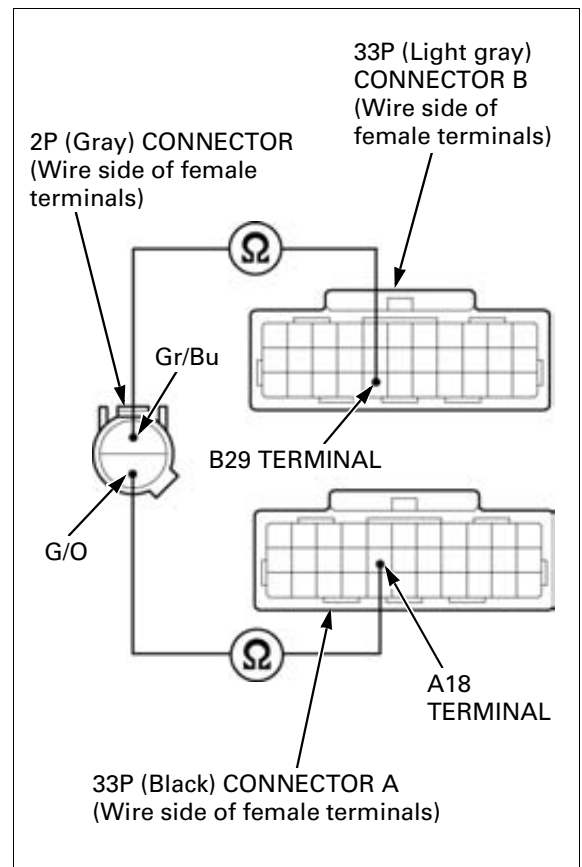
Disconnect the ECM 33P connectors.

Check the continuity at the Gray/blue and Green/orange wire between the IAT sensor 2P (Gray) connector terminals and the ECM 33P (Light gray) connectors.

Is there continuity?

YES – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

- NO** –
- Open circuit in Gray/blue wire
 - Open circuit in Green/orange wire



DTC 11-1 (VS SENSOR)

- Before starting the inspection, check for loose or poor contact on the VS sensor 3P connector and recheck the DTC.
- If there is failure in the speed meter indication, check the VS sensor (page 21-14).

1. VS Sensor System Inspection

Test-ride the motorcycle and check the VS sensor with the HDS pocket tester.

Is the vehicle speed indicated normally?

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

NO – GO TO STEP 2.

2. VS Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the VS sensor 3P connector.

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

Measure the voltage at the VS sensor connector of the wire harness side.

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

Is there battery voltage?

- NO** – • Open or short circuit in the Yellow/red wire
• Open circuit in the Green/black wire

YES – GO TO STEP 3.

3. VS Sensor Pulse Line Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P connectors.

Check the continuity between the ECM 33P (Light gray) connector terminal and VS sensor 3P connector terminal of the wire harness side.

Connection: B28 – Pink/green

TOOL:

Test probe 07ZAJ-RDJA110

Is there continuity?

- NO** – Open circuit in Pink/green wire

YES – GO TO STEP 4.

4. VS Sensor Pulse Line Short Circuit Inspection

Disconnect the combination meter connector.

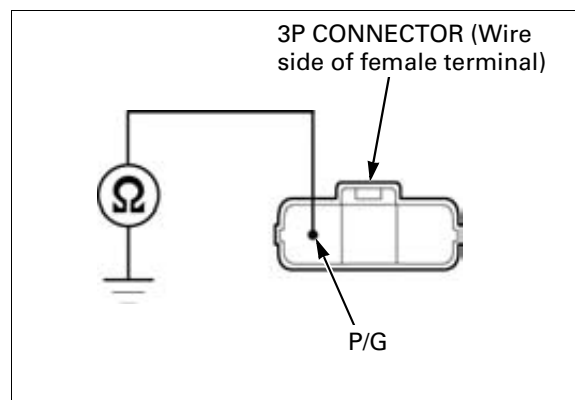
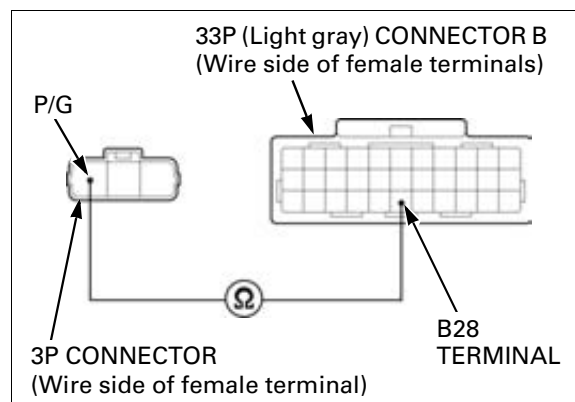
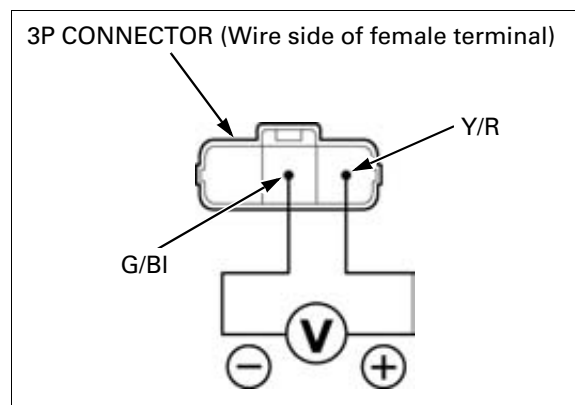
Check for continuity between the VS sensor 3P connector of the wire harness side and body ground.

Connection: Pink/green – ground

Is there continuity?

- YES** – Short circuit in Pink/green wire

NO – Faulty VS sensor



DTC 12-1 (No.1 INJECTOR)

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

DTC	INJECTOR	POWER INPUT LINE	SIGNAL LINE	SIGNAL AT ECM
12-1	No.1	Black/White	Pink/yellow	A17
13-1	No.2	Black/White	Pink/blue	A6
14-1	No.3	Black/White	Pink/green	A8
15-1	No.4	Black/White	Pink/black	A7

1. Injector System Inspection

Reset the DTC (page 6-14).
Turn the ignition switch ON and engine stop switch "⏻", then start the engine and check the injector with the HDS pocket tester.

Is the DTC 12-1 indicated?

- NO** – • Intermittent failure
• Loose or poor contact on the injector 2P (Gray) connector

YES – GO TO STEP 2.

2. Injector Input Voltage Inspection

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

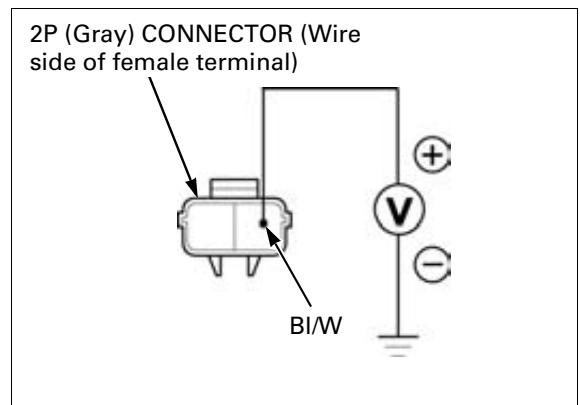
Disconnect the injector 2P (Gray) connectors. Measure the voltage between the injector 2P (Gray) connector of the wire harness side and ground.

Connection: Black/white (+) – Ground (-)

Does the battery voltage exist?

- NO** – Open or short circuit in Black/white wire

YES – GO TO STEP 3.



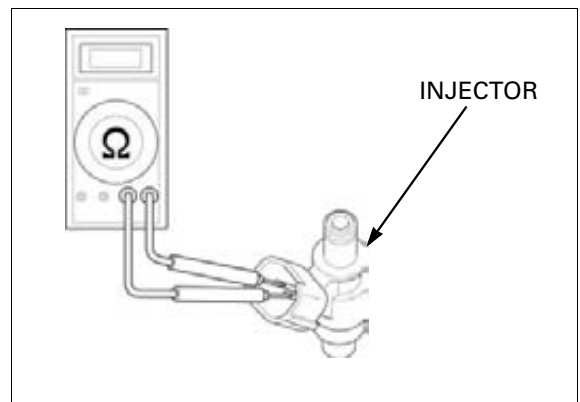
3. Injector Resistance Inspection

Measure the resistance of the injector connector terminals.

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

- NO** – Faulty injector

YES – GO TO STEP 4.



FUEL SYSTEM (PGM-FI)

4. Injector Signal Line Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P (Black) connector.
Check the continuity between the ECM 33P (Black) connector and injector 2P (Gray) connector of the wire harness side.

Connection: SIGNAL LINE – SIGNAL LINE

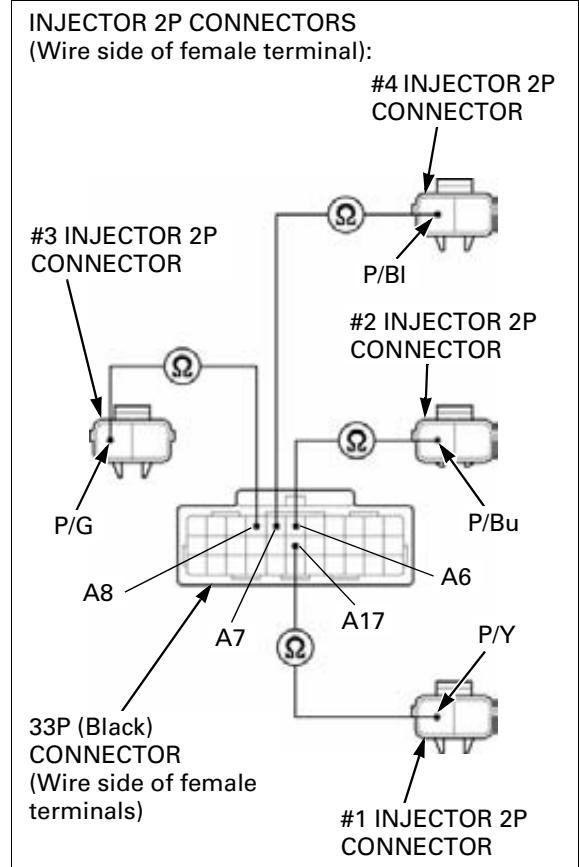
TOOL:

Test probe 07ZAJ-RDJA110

Is there continuity?

NO – Open circuit in SIGNAL line wire

YES – GO TO STEP 5.



5. Injector Signal Line Short Circuit Inspection

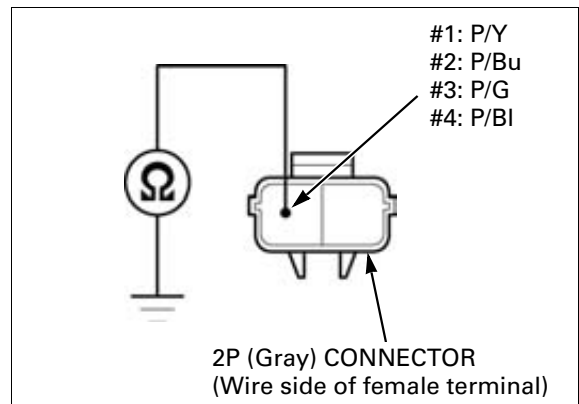
Check for continuity between the injector 2P (Gray) connector and ground.

Connection: SIGNAL LINE – Ground

Is there continuity?

YES – Short circuit in SIGNAL LINE wire

NO – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)



DTC 13-1 (No.2 INJECTOR)

(page 6-29)

DTC 14-1 (No.3 INJECTOR)

(page 6-29)

DTC 15-1 (No.4 INJECTOR)

(page 6-29)

DTC 21-1 (O₂ SENSOR)

- Before starting the inspection, check for loose or poor contact on the O₂ sensor 4P connector and recheck the DTC.

1. O₂ Sensor System Inspection

Start the engine and warm up the engine up to coolant temperature is 80 °C (176 °F).

Test-ride the motorcycle and check the O₂ sensor with the HDS pocket tester.

Is the DTC 21-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. O₂ Sensor Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P connectors and O₂ sensor 4P connector.

Check the continuity between the ECM 33P connector of the wire harness side and O₂ sensor 4P connector of the wire harness side.

Connection: A18 – Green/orange
B20 – Orange/white

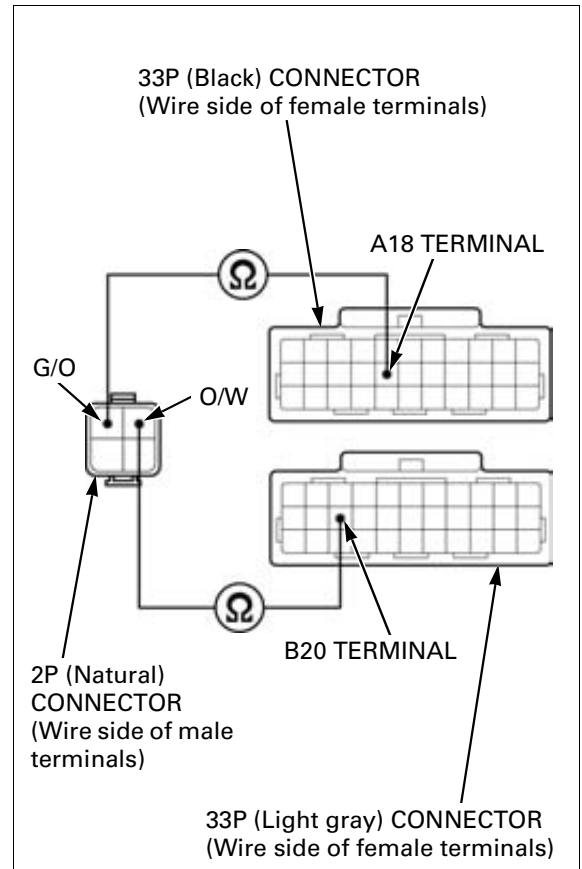
TOOL:

Test probe 07ZAJ-RDJA110

Are there continuity?

YES – GO TO STEP 3.

- NO** –
- Open circuit in Green/orange wire
 - Open circuit in Orange/white wire



3. O₂ Sensor Short Circuit Inspection

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

Check for continuity between the ECM 33P (Light gray) connector of the wire harness side and ground.

Connection: B20 – Ground

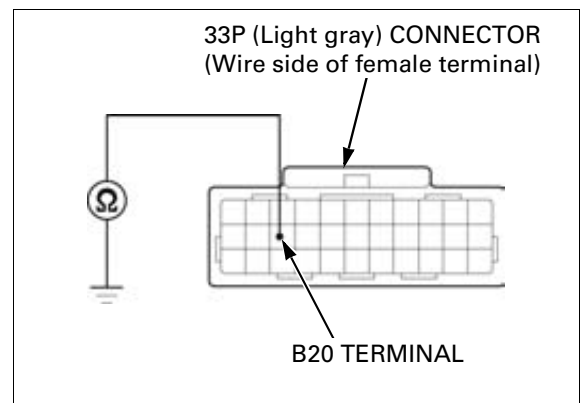
TOOL:

Test probe 07ZAJ-RDJA110

Is there continuity?

YES – Short circuit in the Orange/white wire

NO – GO TO STEP 4.



FUEL SYSTEM (PGM-FI)

4. O₂ Sensor Inspection

Replace the O₂ sensor with a known good one (page 6-86) and clear the DTC.

Start the engine and warm the engine up to coolant temperature is 80 °C (176 °C).

Test-ride the motorcycle and check the O₂ sensor with the HDS pocket tester.

Is the DTC 21-1 indicated?

YES – Faulty ECM. Replace it with new one and recheck

NO – Faulty original O₂ sensor

DTC 23-1 (O₂ SENSOR HEATER)

- Before starting the inspection, check for loose or poor contact on the O₂ sensor 4P connector and recheck the DTC.

1. O₂ Sensor Heater System Inspection

Reset the DTC (page 6-14).

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

Is the DTC 23-1 indicated?

YES – GO TO STEP 2.

NO –

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

2. O₂ Sensor Heater Resistance Inspection

Turn the ignition switch OFF.

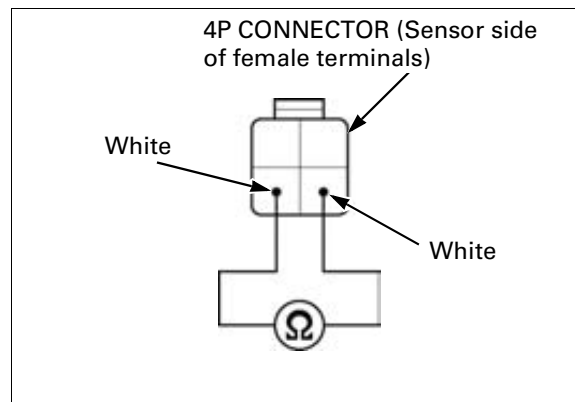
Disconnect the O₂ sensor 4P connector and measure the resistance at the O₂ sensor 4P connector terminals of the sensor side.

Connection: White – White

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

YES – GO TO STEP 3.

NO – Faulty O₂ sensor



3. O₂ Sensor Heater Power Input Line Inspection

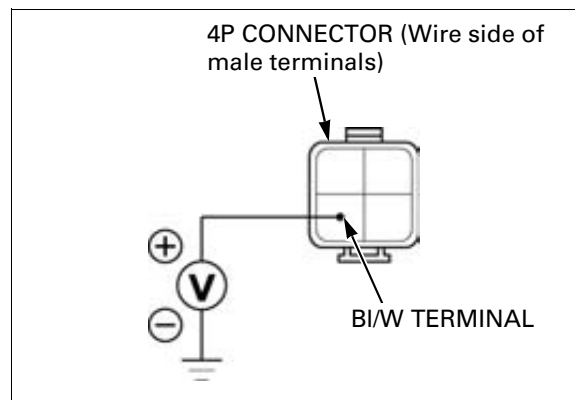
Turn the ignition switch ON, then measure the voltage between O₂ sensor 4P connector of the wire harness side and ground.

Connection: Black/white (+) – Ground (-)

Does the battery voltage exist?

YES – GO TO STEP 4.

NO – Open circuit in the Black/white wire



4. O₂ Sensor Heater Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P (Gray) connector. Check the continuity between the ECM 33P (Gray) connector and O₂ sensor 4P connector of the wire harness side.

Connection: B2 – Black/green

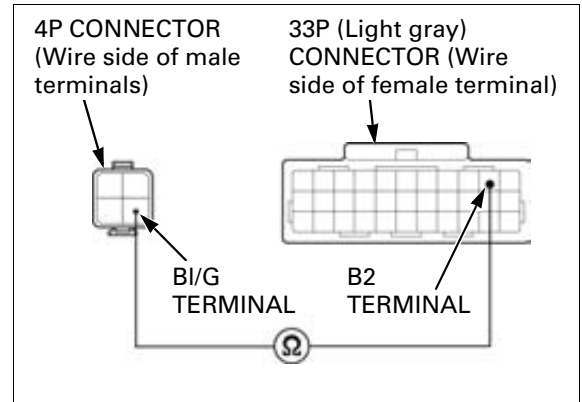
TOOL:

Test probe **07ZAJ-RDJA110**

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Black/green wire



5. O₂ Sensor Heater Short Circuit Inspection 2

Connect the ECM 33P (Gray) connector.

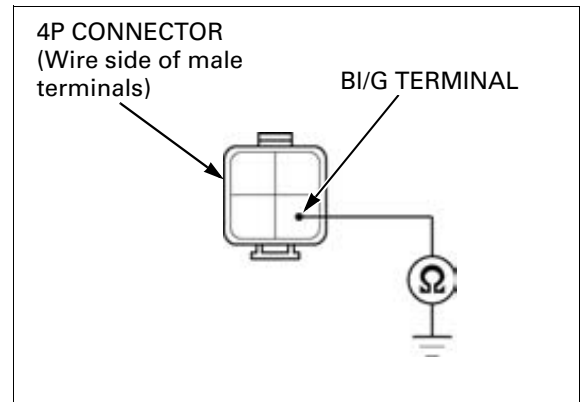
Check for continuity between the O₂ sensor heater 4P connector of the wire harness side and ground.

Connection: Black/green – Ground

Is there continuity?

YES – Short circuit in Black/green wire

NO – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)



DTC 29-1 (IACV)

- Before starting the inspection, check for loose or poor contact on the IACV 4P (Black) connector and recheck the DTC.

1. Recheck DTC

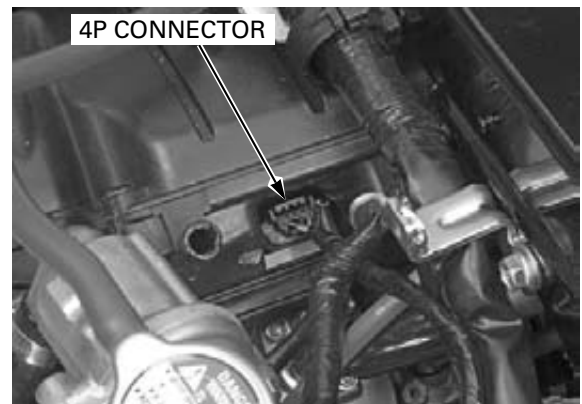
Clear the DTC.

Start the engine and recheck the DTC.

Is the DTC 29-1 indicated?

- NO** –
- Intermittent failure
 - Loose or poor contact on the IACV 4P (Black) connector

YES – GO TO STEP 2.



FUEL SYSTEM (PGM-FI)

2. IACV Short Circuit Inspection

Turn the ignition switch OFF.
Disconnect the IACV 4P connector.

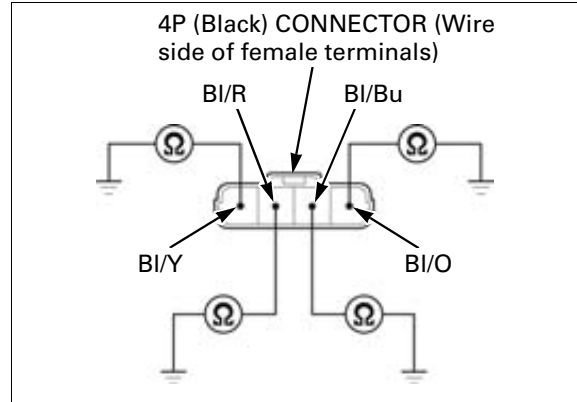
Check for continuities between the IACV 4P connector and ground.

Connection: **Black/yellow – Ground**
Black/red – Ground
Black/blue – Ground
Black/orange – Ground

Are there continuities?

YES – • Short circuit in Black/yellow or Black/orange wire
• Short circuit in Black/red or Black/blue wire

NO – GO TO STEP 3.



3. IACV Circuit Continuity Inspection

Disconnect the ECM 33P (Black) connector.
Check the continuities between the ECM 33P (Black) connector terminals and the IACV 4P connector terminals.

Connection: **A19 – Black/yellow**
A27 – Black/red
A16 – Black/blue
A29 – Black/orange

TOOL:

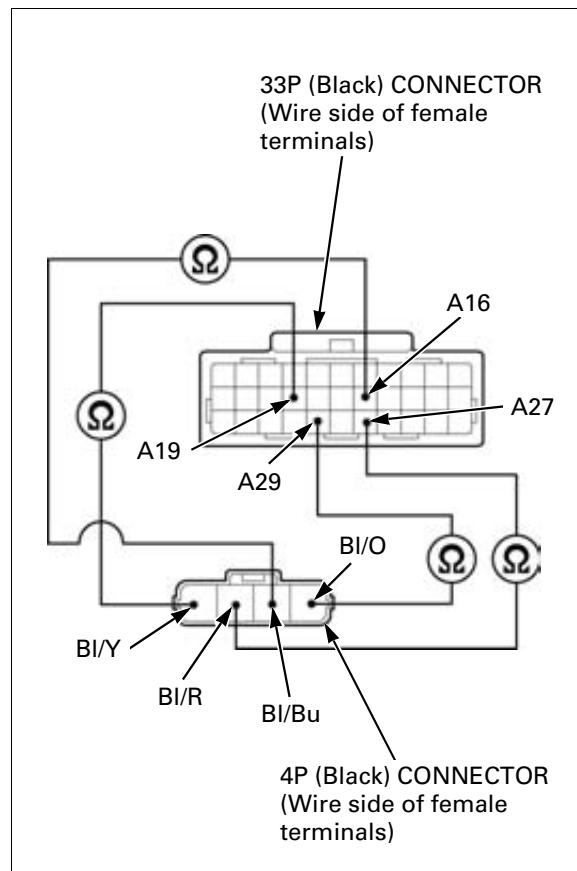
Test probe

07ZAJ-RDJA110

Are there continuities?

YES – GO TO STEP 4.

NO – • Open or loose contact in Black/yellow or Black/red wire
• Open or loose contact in Black/blue or Black/orange wire



4. IACV Resistance Inspection

Measure the resistance at the IACV 4P connector terminals.

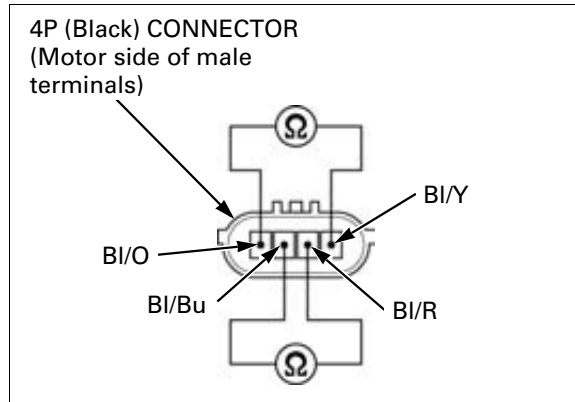
Connection: Black/yellow – Black/orange
Black/red – Black/blue

STANDARD: 120 – 140 Ω (20 °C/68 °F)

Is the resistance within 120 – 140 Ω (20°C/68°F)?

YES – Replace the ECM with new one, and recheck; refer to Key Registration Procedures (page 22-6)

NO – Faulty IACV



MIL TROUBLESHOOTING

MIL 1 BLINK (MAP SENSOR)

- Before starting the inspection, check for loose or poor contact on the MAP sensor 3P (Black) connector and recheck the MIL blinking.

1. MAP Sensor Output Voltage Inspection

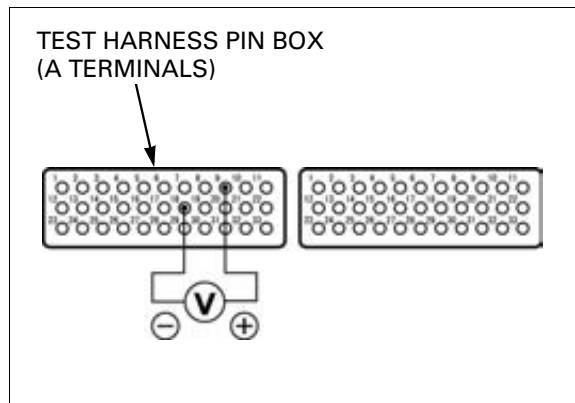
Turn the ignition switch OFF.
 Connect the ECM test harness to ECM connectors (page 6-14).
 Turn the ignition switch ON and engine stop switch "G".
 Measure the voltage at the test harness terminals.

Connection: A9 (+) – A18 (-)

Is the voltage within 1.7 – 2.4 V?

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

NO – • About 5 V
 GO TO STEP 2.
 • About 0 V
 GO TO STEP 3.



2. MAP Sensor Output Line Inspection

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

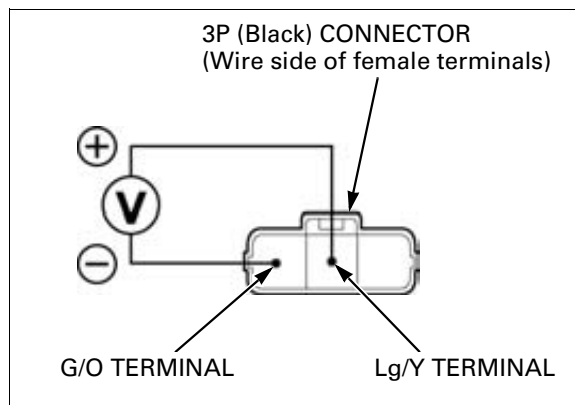
Turn the ignition switch ON and engine stop switch "G".
 Measure the voltage at the wire harness side.

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

Is the voltage within 4.75 – 5.25 V?

YES – Faulty MAP sensor

NO – • Open circuit in Light green/yellow wire
 • Open circuit in Green/orange wire



FUEL SYSTEM (PGM-FI)

3. MAP Sensor Input Voltage Inspection

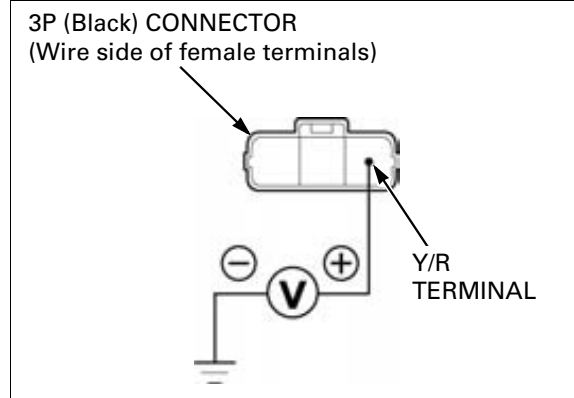
Measure the voltage at the wire harness side.

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

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – GO TO STEP 5.



4. MAP Sensor Output Line Short Circuit Inspection

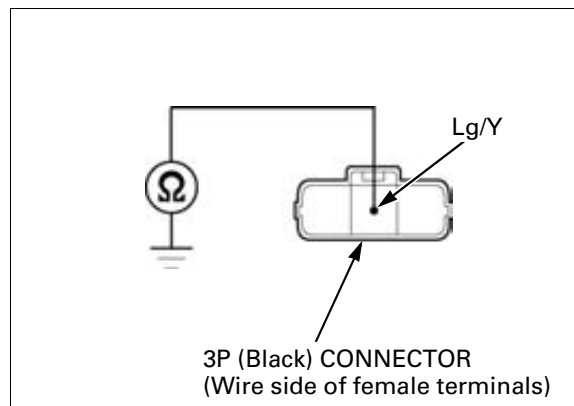
Check for continuity between the MAP sensor 3P (Black) connector terminal of the wire harness side and ground.

Connection: Light green/yellow – Ground

Is there continuity?

YES – Short circuit in Light green/yellow wire

NO – Faulty MAP sensor



5. MAP Sensor Input Line Inspection

Turn the ignition switch OFF.
Disconnect the ECM 33P connectors.

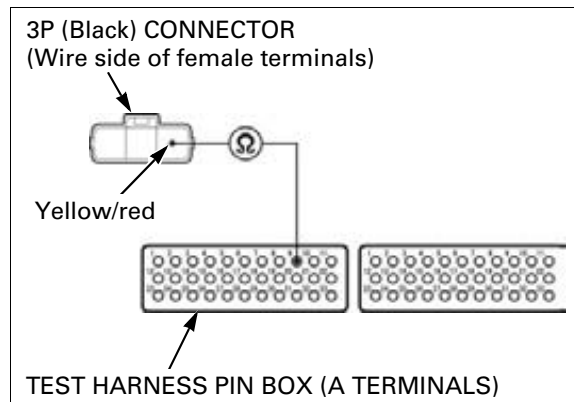
Check the continuity at the Yellow/red wire between the MAP sensor 3P (Black) connector terminal and test harness terminal.

Connection: A9 – Yellow/red

Is there continuity?

YES – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

NO – Open circuit in Yellow/red wire



MIL 2 BLINKS (MAP SENSOR HOSE CONNECTION)

- Before starting the inspection, check for loose or poor contact on the MAP sensor 3P (Black) connector and recheck the MIL blinking.

1. MAP Sensor Hose Inspection

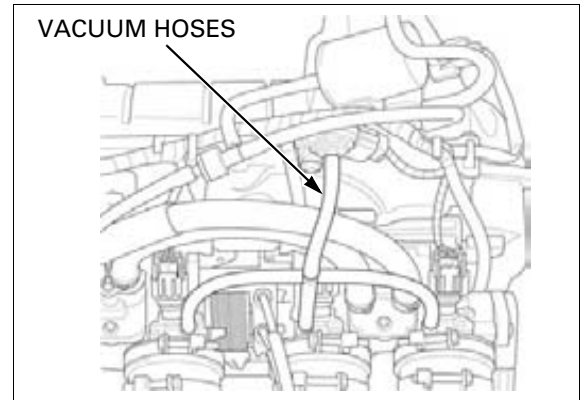
Turn the ignition switch OFF.

Check the connection and installation of the MAP sensor vacuum hoses.

Is the MAP sensor hose connection correct?

YES – GO TO STEP 2.

NO – Correct the hose connection or installation



2. MAP Sensor Output Voltage Inspection

Connect the ECM test harness to ECM connectors (page 6-14).

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

Measure the voltage at the test harness terminals.

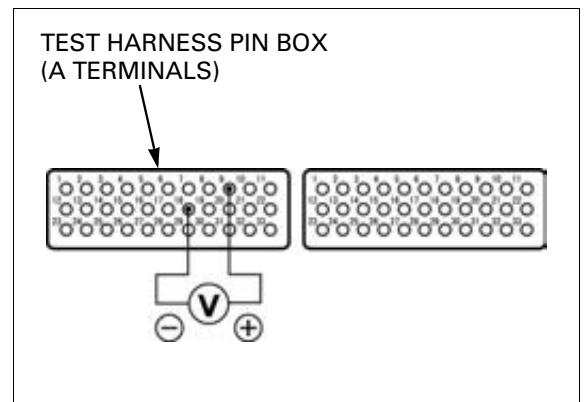
The MAP sensor voltage should be changed after engine started.

Connection: A9 (+) – A18 (-)

Is the MAP sensor voltage indicated normally?

YES – GO TO STEP 3.

No – Faulty MAP sensor



3. MAP Sensor Inspection

Replace the MAP sensor with a known good one (page 6-78).

Measure the voltage at the test harness terminals.

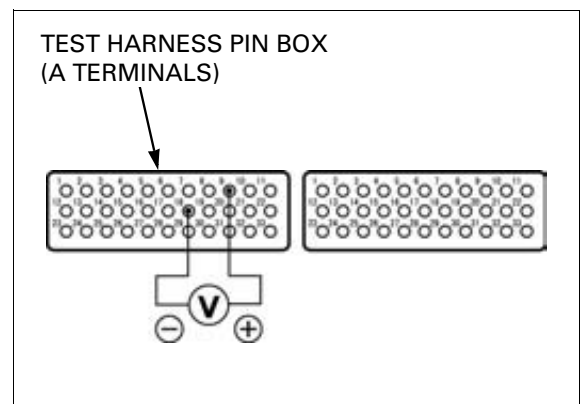
The MAP sensor voltage should be changed after engine started.

Connection: A9 (+) – A18 (-)

Is the MAP sensor voltage indicated normally?

YES – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

NO – Faulty MAP sensor



MIL 7 BLINKS (ECT SENSOR)

- Before starting the inspection, check for loose or poor contact on the ECT sensor 3P (Gray) connector and recheck the MIL blinking.

1. ECT Sensor Output Voltage Inspection

Turn the ignition switch OFF.
Connect the test harness to ECM 33P connectors (page 6-14).

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

Connection: B13 (+) – A18 (-)

Standard: 2.7 – 3.1 V (20°C/68°F)

Is the voltage within 2.7 – 3.1 V?

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

No – GO TO STEP 2.

2. ECT Sensor Input Voltage Inspection

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

Turn the ignition switch ON and engine stop switch "⏻".
Measure the voltage at the test harness terminal and ground.

Connection: B13 (+) – Ground (-)

Is the voltage within 4.75 – 5.25 V?

NO – Faulty ECT sensor

YES – GO TO STEP 3.

3. ECT Sensor Resistance Inspection

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

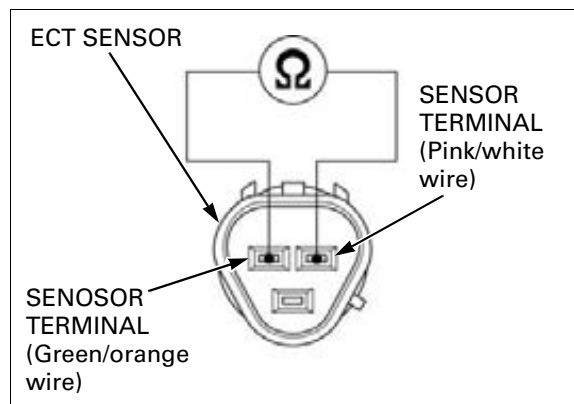
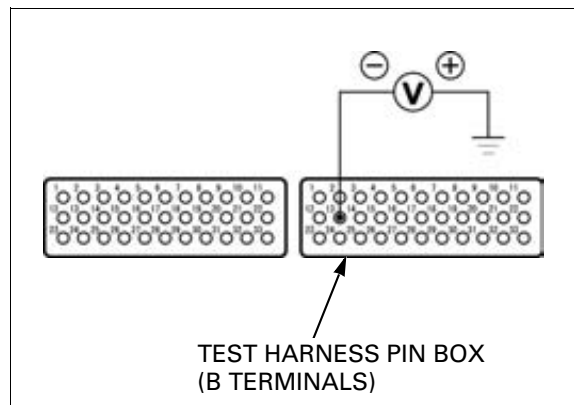
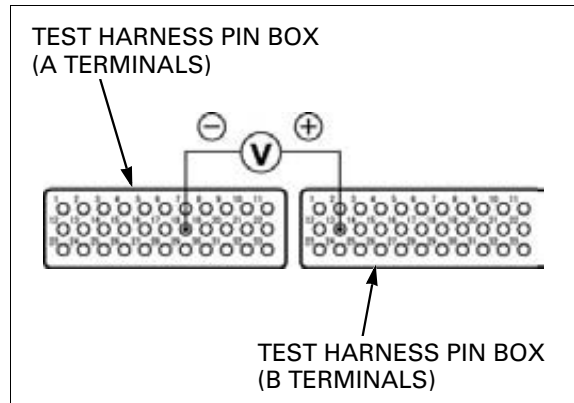
Connection: Pink/white – Green/orange
(Sensor side terminals)

Standard: 2.3 – 2.6 k Ω (20°C/68°F)

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

NO – Faulty ECT sensor.

YES – GO TO STEP 4.



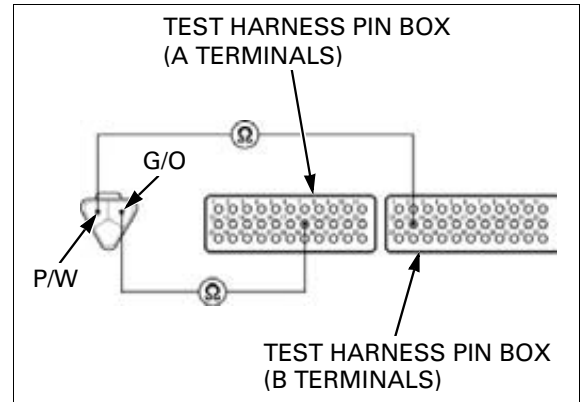
4. ECT Sensor Open Circuit Inspection

Check the continuity between the test harness terminals and ECT sensor connector of the wire harness side.

**Connection: B13 – Pink/white
A18 – Green/orange**

Is there continuity?

- NO** – • Open circuit in Pink/white wire
• Open circuit in Green/orange wire
- YES** – GO TO STEP 5.



5. ECT Sensor Short Circuit Inspection

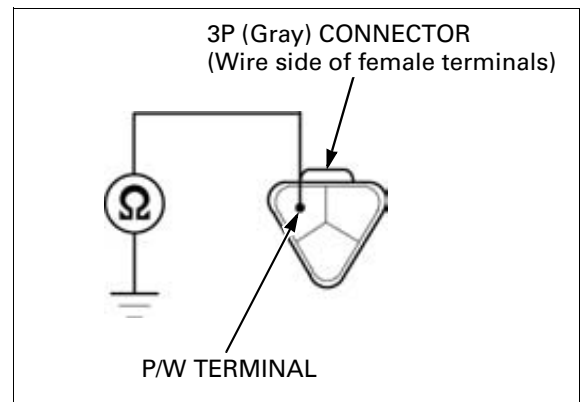
Disconnect the test harness and ECM 33P connectors disconnected.

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

Connection: Pink/white – Ground

Is there continuity?

- YES** – Short circuit in Pink/white wire
- NO** – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)



MIL 8 BLINKS (TP SENSOR)

- Before starting the inspection, check for loose or poor contact on the TP sensor 3P (Black) connector and recheck the MIL blinking.

1. TP Sensor Output Voltage

Turn the ignition switch OFF.
Connect the ECM test harness to ECM connectors (page 6-14).

Turn the ignition switch ON and engine stop switch "⏻".
Measure the TP sensor output voltage at the test harness terminals.

Connection: B31 (+) – A18 (-)

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

*4.2 – 4.8 V (throttle fully opened)

NOTE:

- A voltage marked * refers to the value of the ECM output voltage (STEP 3) when the voltage reading shows 5 V.

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

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

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

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

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

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

Is there standard voltage?

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

NO – GO TO STEP 2.

2. TP Sensor Input Voltage Inspection

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

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

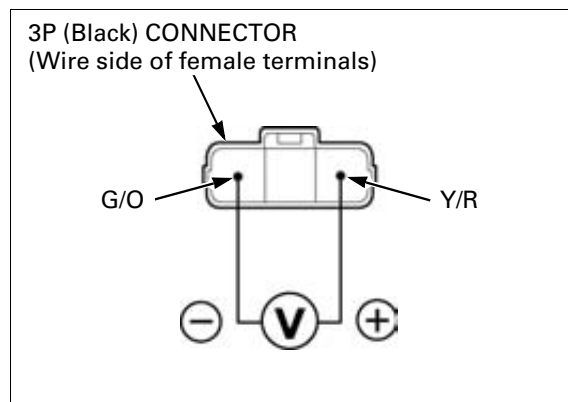
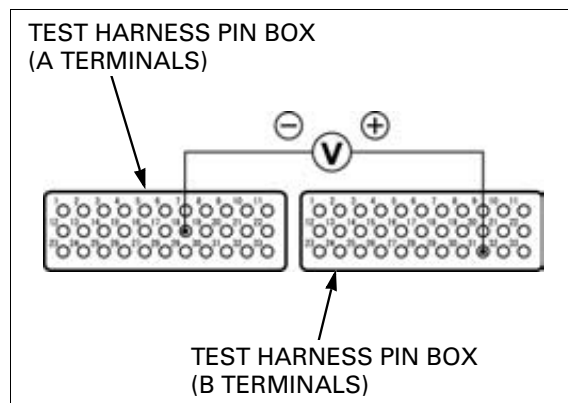
Measure the voltage at the wire harness side.

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

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



3. ECM Output Voltage Inspection

Turn the ignition switch OFF.
Connect the ECM test harness to ECM connectors (page 6-14).

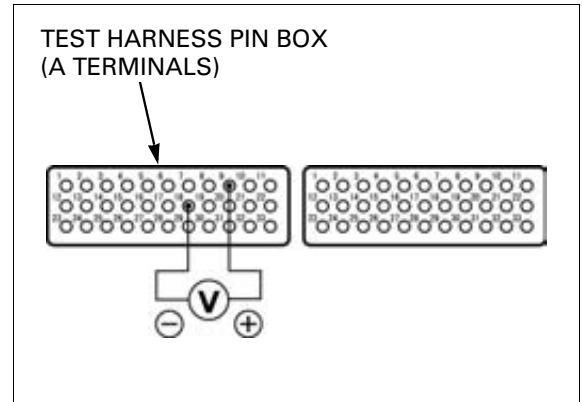
Turn the ignition switch ON and engine stop switch "⏻".
Measure the voltage at the test harness terminals.

Connection: A9 (+) – A18 (-)

Is the voltage within 4.75 – 5.25 V?

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

NO – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)



4. TP Sensor Output Line Inspection

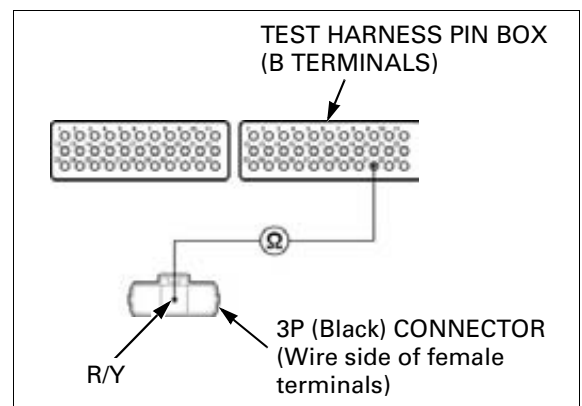
Check the continuity between the TP sensor 3P (Black) connector terminal of the wire harness side and the test harness terminal.

Connection: Red/yellow – B31

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Red/yellow wire



5. TP Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

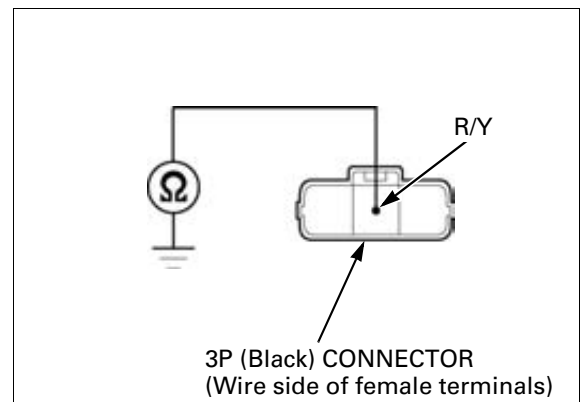
Check for continuity between the TP sensor 3P (Black) connector terminal of the wire harness side and ground.

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

Is there continuity?

YES – Short circuit in Red/yellow wire

NO – Faulty TP sensor



MIL 9 BLINKS (IAT SENSOR)

- Before starting the inspection, check for loose or poor contact on the IAT sensor 2P (Gray) connector and recheck the MIL blinking.

1. IAT Sensor Output Voltage Inspection

Turn the ignition switch OFF.
Connect the ECM test harness to ECM connectors (page 6-14).

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

Connection: B29 (+) – A18 (-)

Standard: 2.7 – 3.1 V (20°C/68°F)

Is the voltage within 2.7 – 3.1 V?

YES –

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

NO – GO TO STEP 2.

2. IAT Sensor Input Voltage Inspection

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

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

Connection: Gray/blue – Green/orange

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 3.

NO – GO TO STEP 4.

3. IAT Sensor Resistance Inspection

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

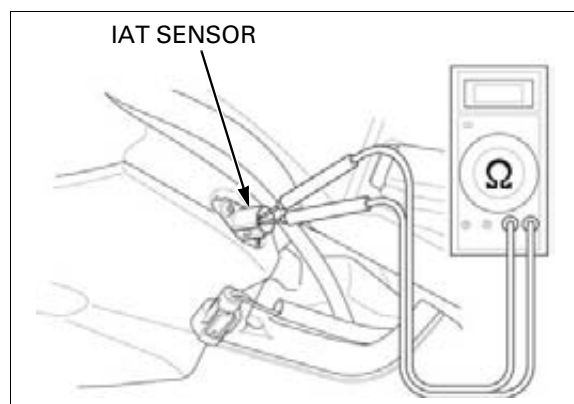
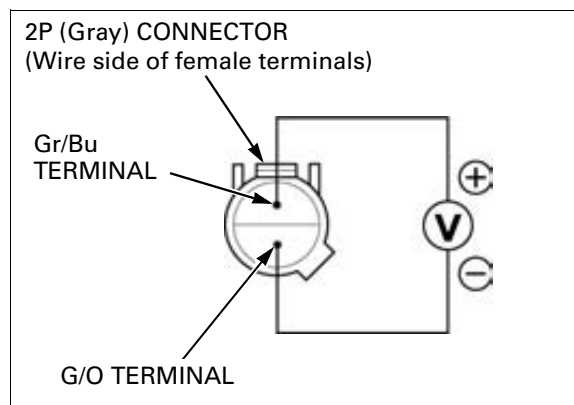
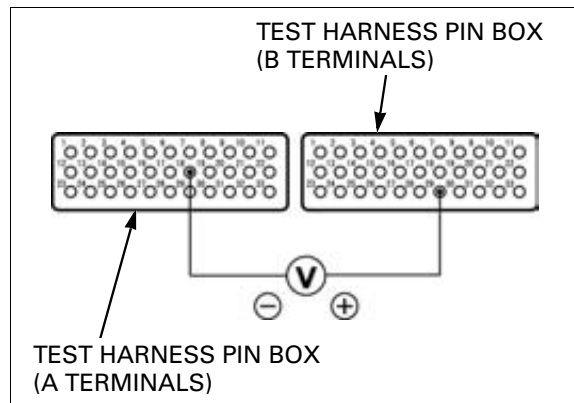
Measure the resistance at the IAT sensor terminals (at 20 – 30°C/68 – 86°F).

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

Is the resistance within 1 – 4 kΩ?

NO – Faulty IAT sensor.

YES – GO TO STEP 4.



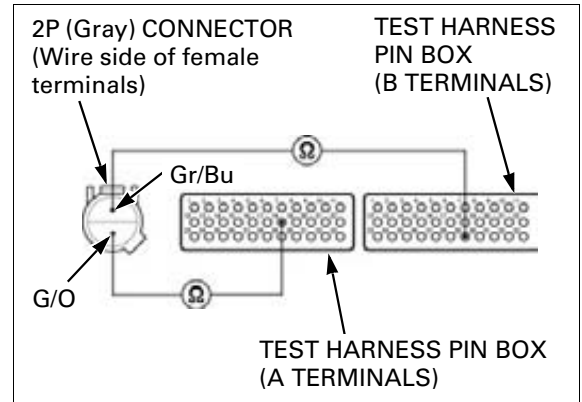
4. IAT Sensor Open Circuit Inspection

Turn the ignition switch OFF.
Check for continuity at the Gray/blue and Green/orange wires between the IAT sensor 2P (Gray) connector terminal and the test harness terminals.

Are there continuity?

YES - GO TO STEP 5.

- NO** -
- Open circuit in Gray/blue wire
 - Open circuit in Green/orange wire



5. IAT Sensor Output Line Short Circuit Inspection

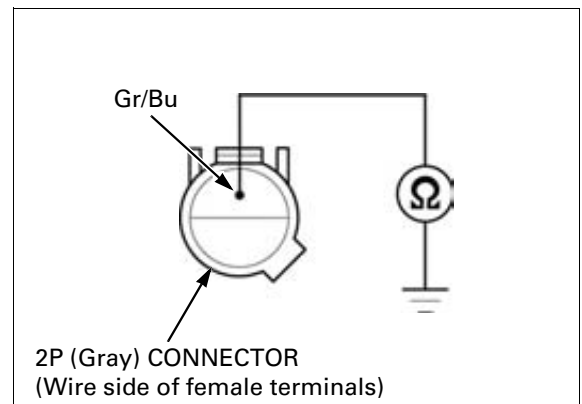
Check for continuity between the IAT sensor 2P (Gray) connector terminal of the wire harness side and ground.

Connection: Gray/blue - Ground

Is there continuity?

YES - Short circuit in Gray/blue wire

- NO** - Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)



MIL 11 BLINKS (VS SENSOR)

- Before starting the inspection, check for loose or poor contact on the VS sensor connector and recheck the MIL blinking.
- If there is failure in the speed meter indication, check the VS sensor (page 21-14).

1. VS Sensor Pulse Inspection At ECM

Turn the ignition switch OFF.
Connect the ECM test harness to the ECM connectors (page 6-14).

Raise the rear wheel off the ground using the center stand (CBF1000A) or other support tool.

Shift the transmission into gear.

Measure the voltage between the test harness terminal and ground with the ignition switch "ON" and engine stop switch "C" while slowly turning the rear wheel by hand.

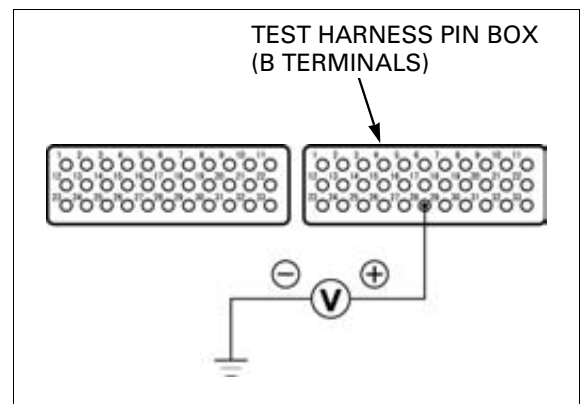
Connection: B28 (+) - Ground (-)

Standard: Repeat 0 to 5 V

Is the voltage at the standard value?

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

NO - GO TO STEP 2.



FUEL SYSTEM (PGM-FI)

2. VS Sensor Input Voltage Inspection

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

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

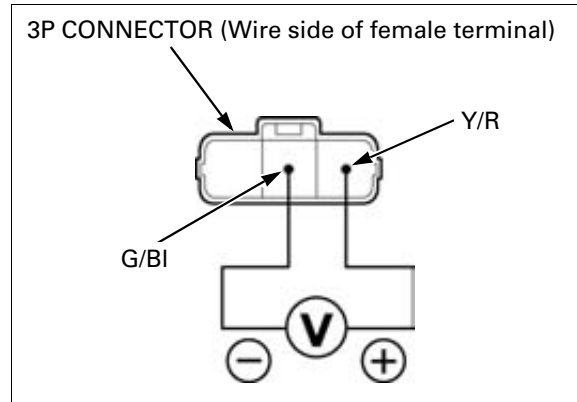
Measure the voltage at the VS sensor connector of the wire harness side.

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

Is there battery voltage?

- NO** – • Open or short circuit in Yellow/red wire
• Open circuit in Green/black wire

YES – GO TO STEP 3.



3. VS Sensor Pulse Line Open Circuit Inspection

Turn the ignition switch OFF.

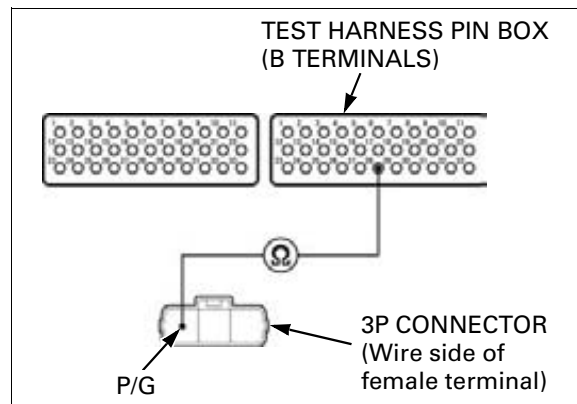
Check the continuity between the test harness terminal and VS sensor connector of the wire harness side.

Connection: B28 – Pink/green

Is there continuity?

- NO** – Open circuit in Pink/green wire

YES – GO TO STEP 4.



4. VS Sensor Pulse Line Short Circuit Inspection

Disconnect the test harness and ECM 33P connectors disconnected.
Disconnect the combination meter 16P connector.

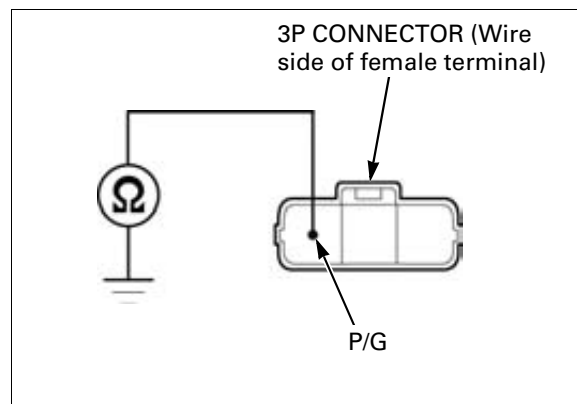
Check for continuity between the VS sensor connector and the ground.

Connection: Pink/green – Ground

Is there continuity?

- YES** – Short circuit in the Pink/green wire

NO – Inspect the VS sensor (page 21-14)



MIL 12 BLINKS (No.1 INJECTOR)

- Before starting the inspection, check for loose or poor contact on the injector 2P (Gray) connector and recheck the MIL blinking.

MIL	INJECTOR	POWER INPUT LINE	SIGNAL LINE	SIGNAL AT ECM
12	No.1	Black/white	Pink/yellow	A17
13	No.2	Black/white	Pink/blue	A6
14	No.3	Black/white	Pink/green	A8
15	No.4	Black/white	Pink/black	A7

1. Injector Input Voltage Inspection

Disconnect the injector 2P (Gray) connector.

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

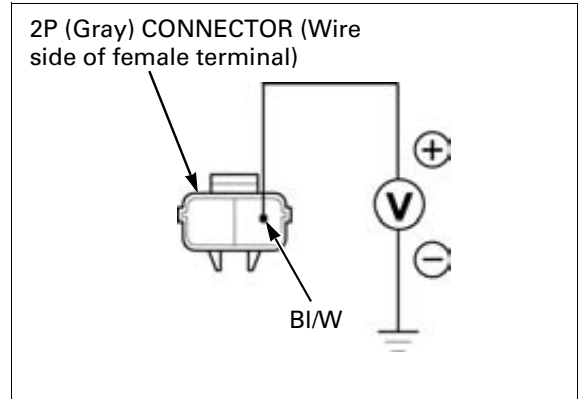
Measure the voltage between the injector 2P (Gray) connector of the wire harness side and ground.

Connection: Black/white (+) – Ground (-)

Does the battery voltage exist?

NO – Open or short circuit in Black/white wire

YES – GO TO STEP 2.



2. Injector Resistance Inspection

Turn the ignition switch OFF.

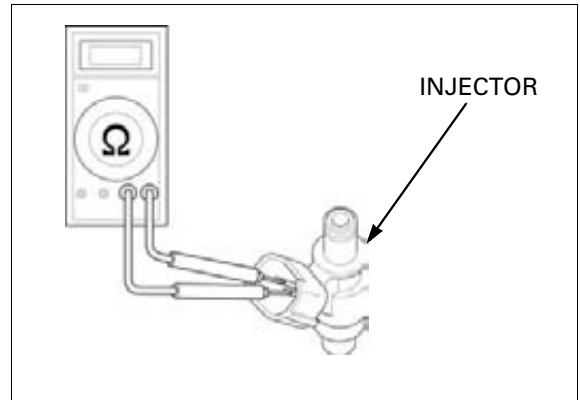
Measure the resistance of the injector connector terminals.

STANDARD: 11.1 – 12.3 Ω (20 °C/68 °F)

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

NO – Faulty injector

YES – GO TO STEP 3.



FUEL SYSTEM (PGM-FI)

3. Injector Circuit Resistance Inspection

Connect the test harness to the ECM 33P connector.

Connect the continuity between the test harness terminal and injector 2P (Gray) connector of the wire harness side.

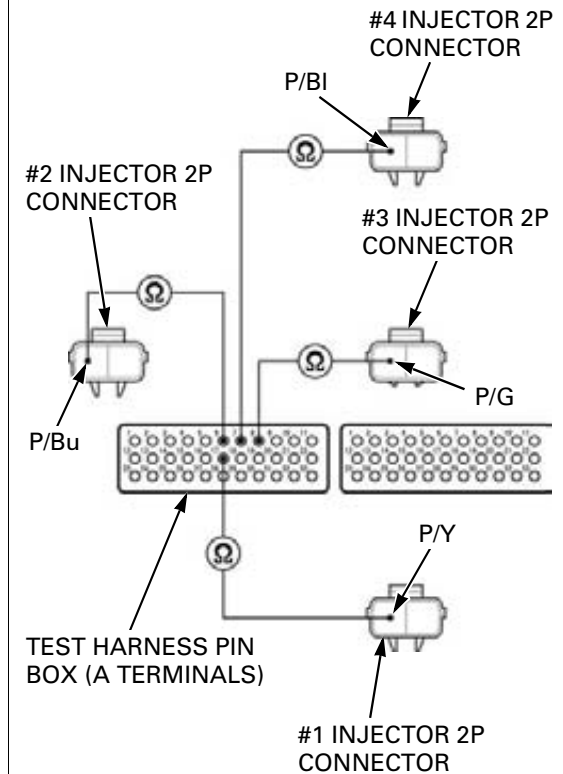
Connection: SIGNAL LINE – SIGNAL LINE

Is there continuity?

NO – Open circuit in SIGNAL line wire

YES – GO TO STEP 4.

INJECTOR 2P CONNECTORS
(Wire side of female terminal):



4. Injector Signal Line Short Circuit Inspection

Disconnect the test harness and ECM 33P (Black) connector disconnected.

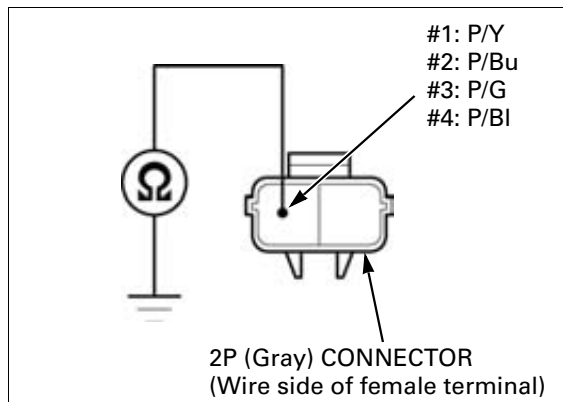
Check for continuity between the injector 2P (Gray) connector of the wire harness side and ground.

Connection: SIGNAL LINE – Ground

Is there continuity?

YES – Short circuit in SIGNAL line wire

NO – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)



MIL 13 BLINKS (No.2 INJECTOR)

(page 6-45)

MIL 14 BLINKS (No.3 INJECTOR)

(page 6-45)

MIL 15 BLINKS (No.4 INJECTOR)

(page 6-45)

MIL 21 BLINKS (O₂ SENSOR)

- Before starting the inspection, check for loose or poor contact on the O₂ sensor 4P connector and recheck the MIL blinking.

1. O₂ Sensor System Inspection

Start the engine and warm it up to coolant temperature is 80 °C (176 °F).

Test-ride the motorcycle and recheck the MIL blinking.

Is the MIL 21 blinks?

YES – GO TO STEP 2.

NO – Intermittent failure

2. O₂ Sensor Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the O₂ sensor 4P connector.

Check the continuity between the test harness terminals and the O₂ sensor connector terminals of the wire harness side.

Connection: B20 – Orange/white

A18 – Green/orange

Is there continuity?

- NO** –
- Open circuit in Orange/white wire
 - Open circuit in Green/black wire

YES – GO TO STEP 3.

3. O₂ Sensor Short Circuit Inspection

Connect the O₂ Sensor 4P (Black) connector.

Check for continuity between the ECM connector terminal and ground.

Connection: B20 – Ground

Is there continuity?

YES – Short circuit in the Orange/white wire

NO – GO TO STEP 4.

4. O₂ Sensor Inspection

Replace the O₂ sensor with a known good one (page 6-86).

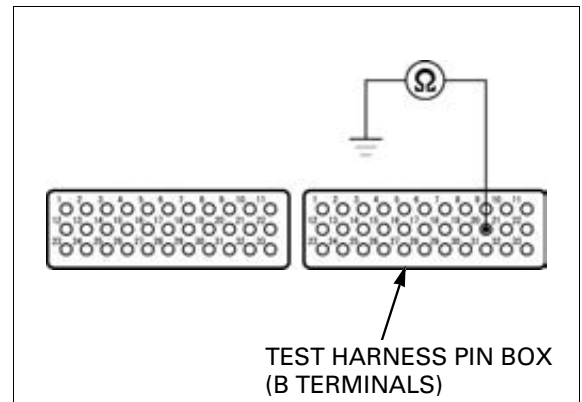
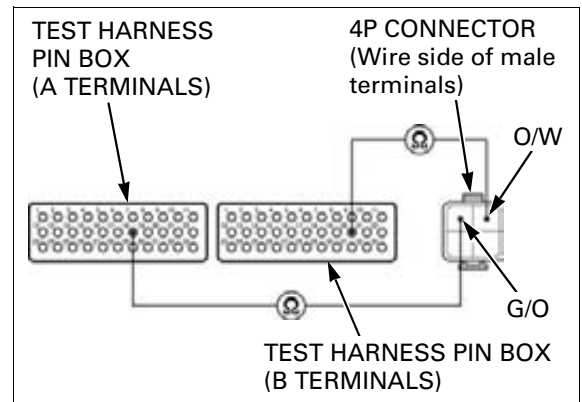
Start the engine and warm it up until the coolant temperature is 80 °C (176 °F).

Test-ride the motorcycle and recheck the MIL blinking.

Is the MIL 21 blinks?

YES – Faulty ECM. Replace it with new one and recheck

NO – Faulty original O₂ sensor



MIL 23 BLINKS (O₂ SENSOR HEATER)

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

1. O₂ Sensor Heater Resistance Inspection

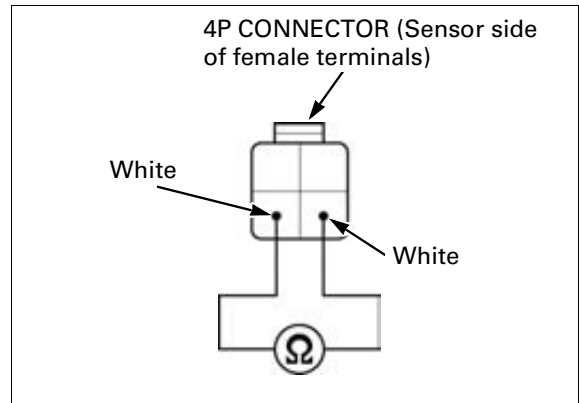
Turn the ignition switch OFF.

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

Connection: White – White

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

- NO** – Faulty O₂ sensor
YES – GO TO STEP 2.



2. O₂ Sensor Heater Open Circuit Inspection 1

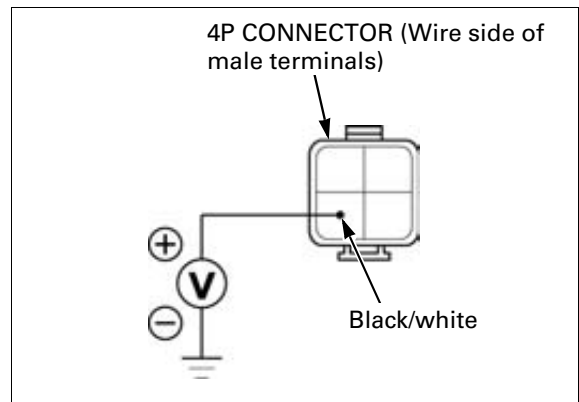
Turn the ignition switch ON.

Measure the voltage at the O₂ sensor 4P connector of the wire harness side.

Connection: Black/white (+) – Ground (-)

Does the battery voltage exist?

- NO** – Open or short circuit in Black/white wire
YES – GO TO STEP 3.



3. O₂ Sensor Heater Open Circuit Inspection 2

Turn the ignition switch OFF.

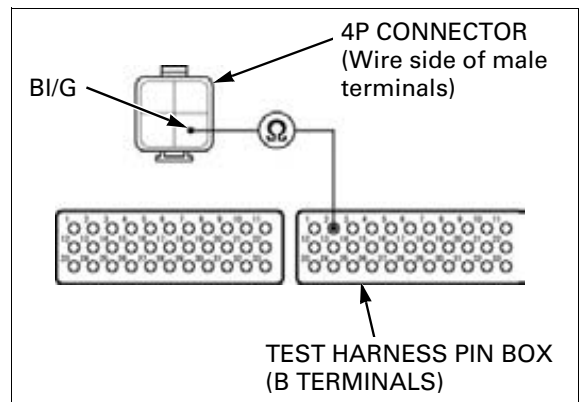
Connect the ECM test harness to the ECM connectors.

Check the continuity between the test harness terminal and O₂ sensor 4P connector of the wire harness side.

Connection: B2 – Black/green

Is there continuity?

- NO** – Open circuit in Black/green wire
YES – GO TO STEP 4.



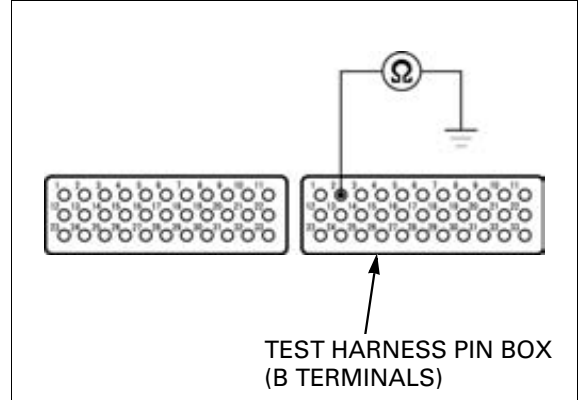
4. O₂ Sensor Heater Short Circuit Inspection

Check for continuity between the test harness terminals and ground.

Connection: B2 – Ground

Is there continuity?

- YES** – Short circuit in the Black/green wire
- NO** – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)



MIL 29 BLINKS (IACV)

1. IACV Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the IACV 4P connector. Check the connector for loose contacts or corroded terminals.

Check for continuities between the IACV 4P connectors and ground.

- Connection: Black/yellow – Ground**
Black/red – Ground
Black/blue – Ground
Black/orange – Ground

Are there continuities?

- YES** – • Short circuit in Black/yellow or Black/orange wire
 • Short circuit in Black/red or Black/blue wire

NO – GO TO STEP 2.

2. IACV Circuit Continuity Inspection

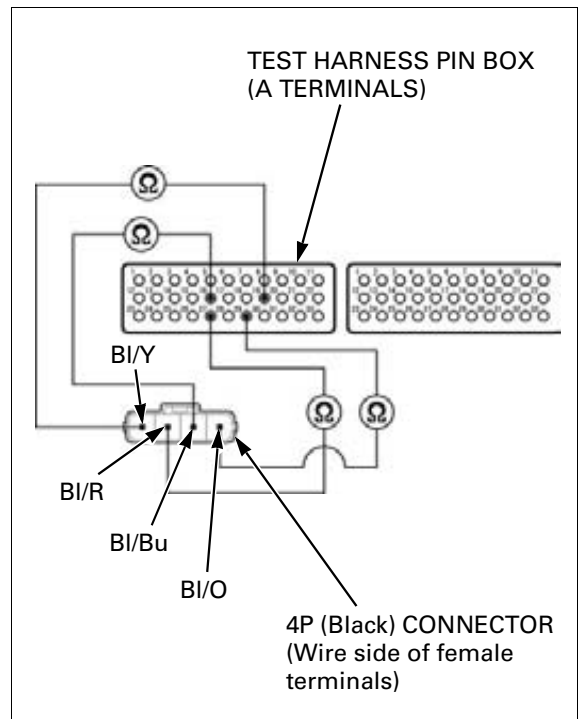
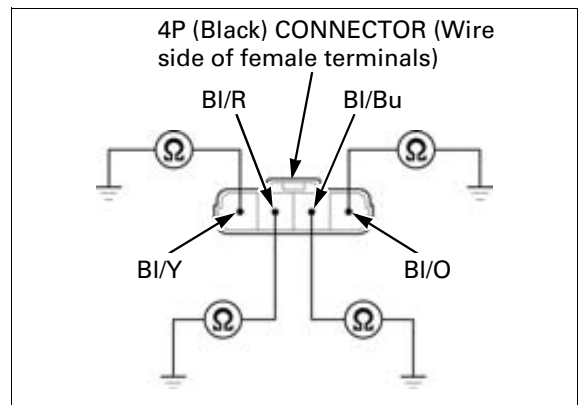
Connect the ECM test harness to ECM connectors.

Check the continuities between the test harness and the IACV 4P connector.

- Connection: A19 – Black/yellow**
A27 – Black/red
A16 – Black/blue
A29 – Black/orange

Are there continuities?

- YES** – GO TO STEP 3.
- NO** – • Open or loose contact in Black/yellow or Black/orange wire
 • Open or loose contact in Black/red or Black/blue wire



FUEL SYSTEM (PGM-FI)

3. IACV Resistance Inspection

Connect the IACV 4P connector.
Measure the resistance at the test harness terminals.

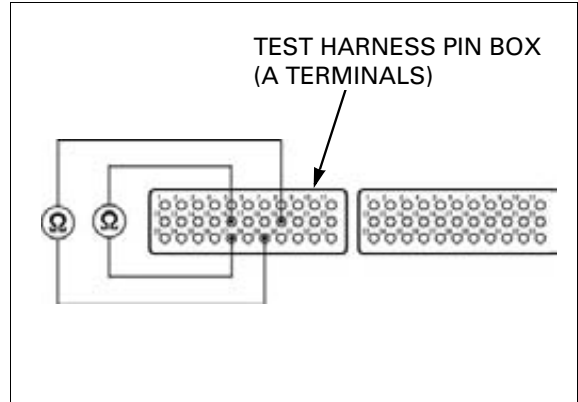
Connection: A19 – A29
A16 – A27

STANDARD: 120 – 140 Ω (20 °C/68 °F)

Is the resistance within 120 – 140 Ω (20 °C/68 °F)?

YES – Replace the ECM with a new one, and recheck; refer to Key Registration Procedures (page 22-6)

NO – Faulty throttle body (IACV)



MIL CIRCUIT TROUBLESHOOTING

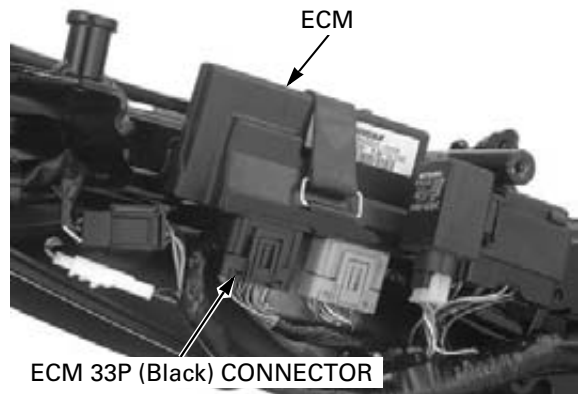
If the engine can be started but the MIL does not come on when the ignition switch is turned "ON" and the engine stop switch is in "OFF", check as follows:

Check other indicators function properly.

- If they do not function, check the combination meter power input line (page 21-12).
- If they function properly, check as follows:

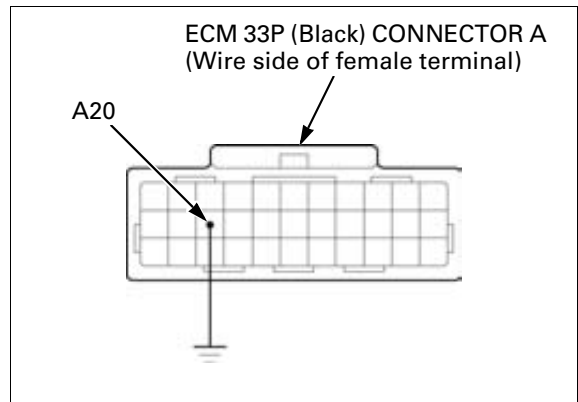
Remove the right rear cowl (page 3-8).

Turn the ignition switch to "OFF", disconnect the ECM 33P (Black) connector.



Ground the White/blue wire terminal of the wire harness side connector with a jumper wire. Turn the ignition switch to "ON", the MIL should come on.

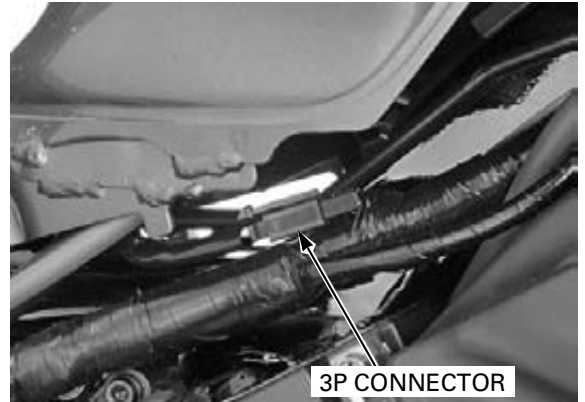
- If the MIL comes on, replace the ECM with a new one and recheck the MIL indication. Refer to Key Registration Procedures (page 22-6)
- If the MIL does not come on, check for open circuit in the White/blue wire between the combination meter and ECM. If the wire is OK, replace the combination meter.



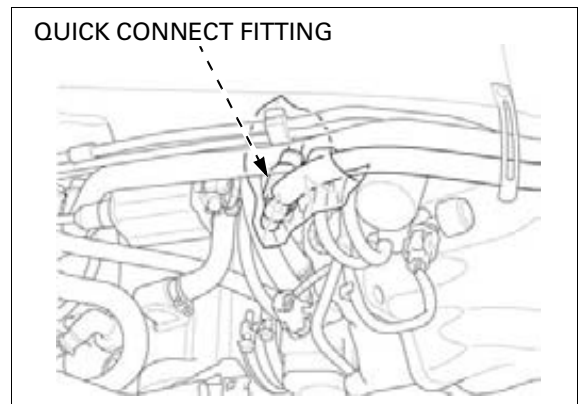
FUEL LINE INSPECTION

FUEL PRESSURE RELIEVING/QUICK CONNECT FITTING REMOVAL

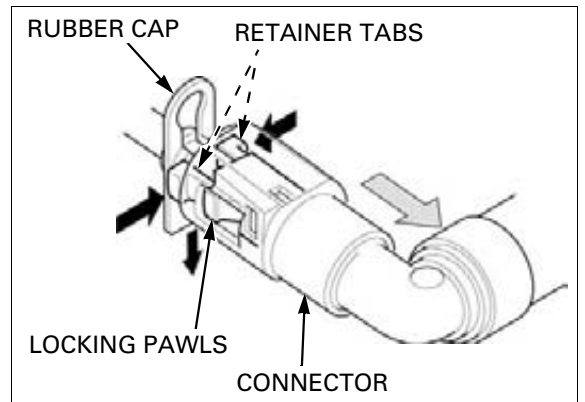
- Before disconnecting fuel feed hose, relieve pressure from the system as following procedures.
1. Turn the ignition switch OFF.
Lift and support the fuel tank (page 4-5).
 2. Disconnect the fuel pump 3P (Black) connector.
 3. Start the engine, and let it idle until the engine stalls.
 4. Turn the ignition switch OFF.
 5. Disconnect the battery cable (page 18-6).



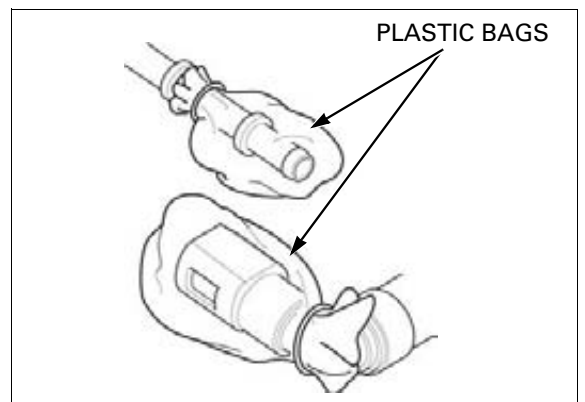
6. Check the fuel quick connect fitting for dirt, and clean if necessary.
Place a shop towel over the quick connect fitting.



7. Pull and release the rubber cap from the retainer.
 8. Hold the connector with one hand and squeeze the retainer tabs with the other hand to release them from the locking pawls.
Pull the connector off and remove the rubber cap from the fuel pipe.
- Prevent the remaining fuel in the fuel feed hose from following out with a shop towel.
 - Be careful not to damage the hose or other parts.
 - Do not use tools.
 - If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.

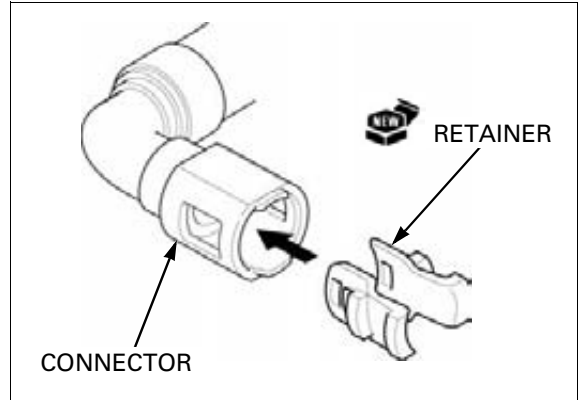


9. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with the plastic bags.



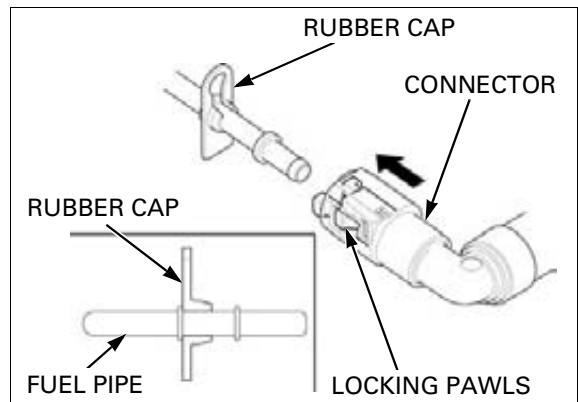
QUICK CONNECT FITTING INSTALLATION

- Always replace the retainer of the quick connect fitting when the fuel feed hose is disconnected.
 - If any damage or cut-out on the rubber cap, replace it with a new one.
 - Do not bent or twist fuel feed hose.
1. Insert a new retainer into the connector.

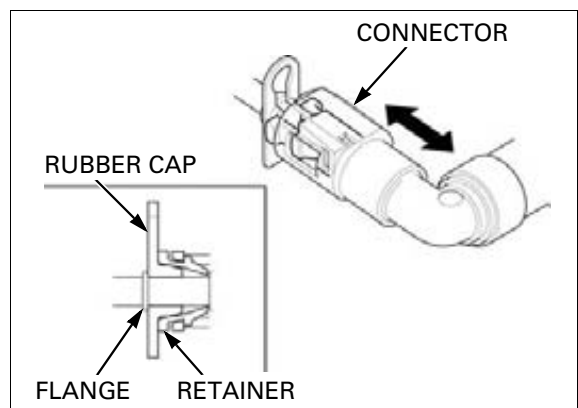


2. Install the rubber cap and seat it onto the fuel pipe flange as shown.
Align the quick connect fitting with the pipe and align the new retainer locking pawls with the connector grooves.
Then press the quick connect fitting onto the pipe until both retainer pawls lock with a "CLICK".

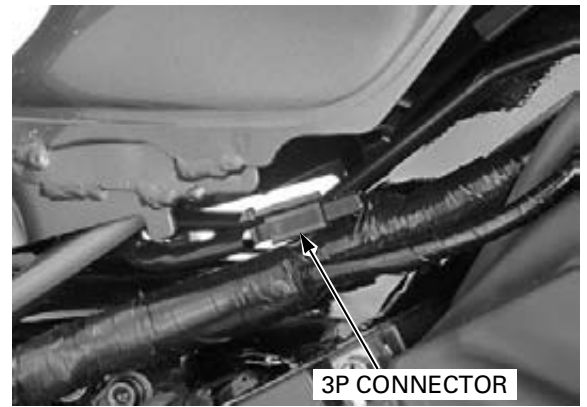
If it is hard to connect, put a small amount of engine oil on the pipe end.



3. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector.
4. Make sure the rubber cap is in place (between the flange and retainer tab).



- Connect the fuel pump 3P (Black) connector and clamp the wire.



- Connect the battery cables to the battery.

Do not start the engine.

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

The fuel pump will run for about 2 seconds, and fuel pressure will rise.

Repeat 2 or 3 times, and check that there is no leakage in the fuel supply system.

Installation is in the reverse order of removal.



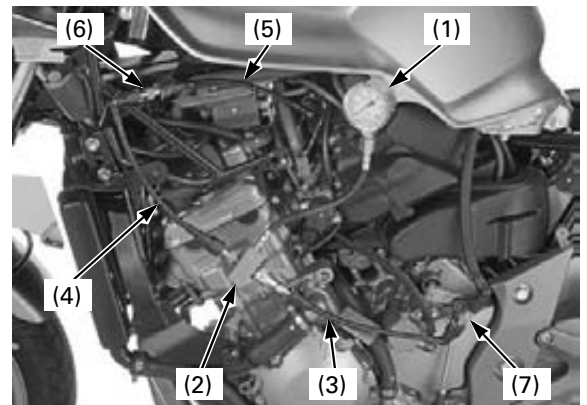
FUEL PRESSURE TEST

Relieve the fuel pressure and disconnect the quick connect fitting (page 6-51).

Attach the fuel pressure gauge, attachments and manifold.

TOOLS:

- | | |
|---------------------------------------|---------------|
| (1): Fuel pressure gauge | 07406-0040004 |
| (2): Pressure gauge manifold | 07ZAJ-S5A0110 |
| (3): Pressure gauge hose attachment A | 07ZAJ-S5A0120 |
| (4): Pressure gauge hose attachment B | 07ZAJ-S5A0130 |
| (5): Pressure gauge hose attachment C | 07ZAJ-S7C0100 |
| (6): Fuel attachment joint A | 07ZAJ-S5A0150 |
| (7): Fuel attachment joint B | 07ZAJ-S7C0200 |



Temporarily connect the positive cable and negative cable to the battery.

Start the engine and let it idle.

Read the fuel pressure.

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

If the fuel pressure is higher than specified, replace the fuel pump assembly (faulty fuel pump or fuel pressure regulator).

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

- Fuel line leaking
- Pinched or clogged fuel feed hose or fuel tank breather hose
- Fuel pump (page 6-55)
- Clogged fuel filter (Assembly of the fuel pump: page 6-55)

FUEL SYSTEM (PGM-FI)

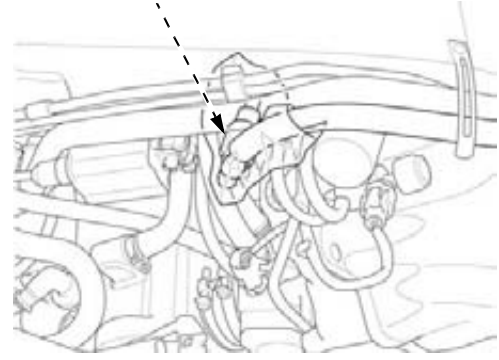
Wrap a shop towel around the attachment to soak up any spilled fuel.

After inspection, relieve the fuel pressure by starting the engine and let it idle until it stalls.

Remove the fuel pressure gauge, attachment and manifold from the fuel pump.

Connect the quick connect fitting (page 6-52).

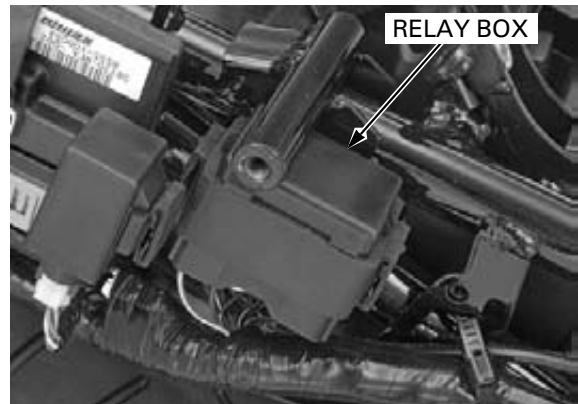
QUICK CONNECT FITTING



FUEL FLOW INSPECTION

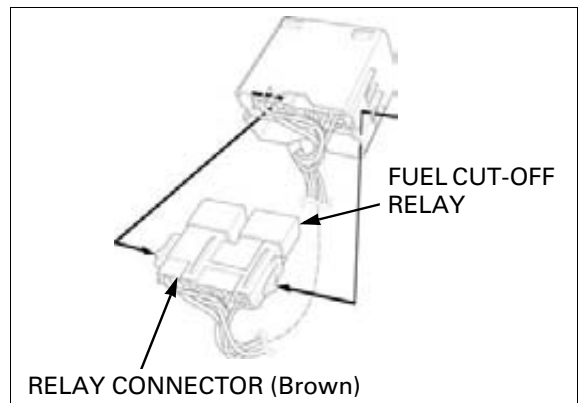
Remove the right rear cowl (page 3-8).

Remove the relay box from the bracket.



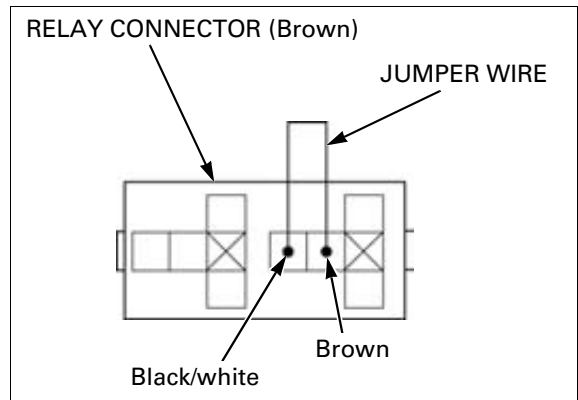
Release the retainers and remove the relay connector (Brown) from the relay box.

Remove the fuel cut-off relay from the connector.



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

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

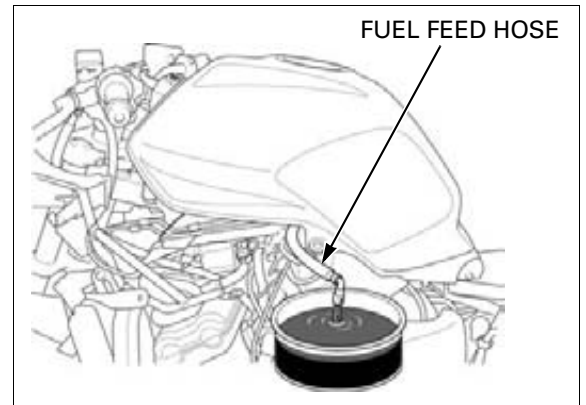


Turn the ignition switch ON for 10 seconds.
Measure the amount of fuel flow.

Amount of fuel flow:
189 cm³ (6.4 US oz, 6.7 Imp oz) minimum
/10 seconds at 12 V

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

- Pinched or clogged fuel hose
- Fuel pump unit (page 6-55)



FUEL PUMP

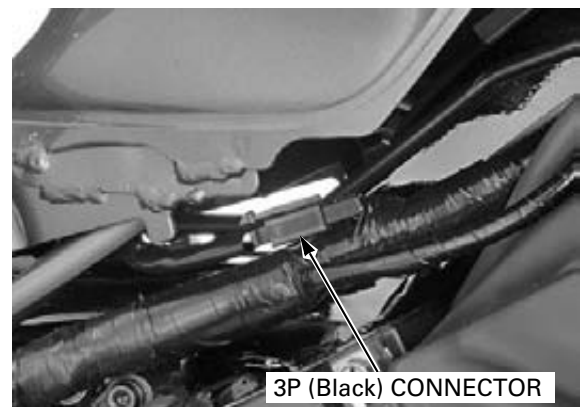
INSPECTION

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

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

Open and support the fuel tank (page 4-5).

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



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

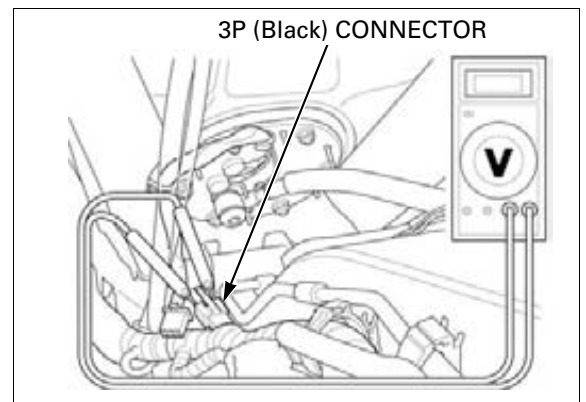
Connection: Brown (+) – Green (-)

There should be battery voltage for a few seconds.

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

If there is no battery voltage, inspect the following:

- Main fuse 30A
- Sub fuse 10A
- Engine stop switch (page 21-21)
- Fuel cut-off relay (page 6-57)
- Engine stop relay (page 6-81)
- Bank angle sensor (page 6-79)
- ECM (page 6-82)

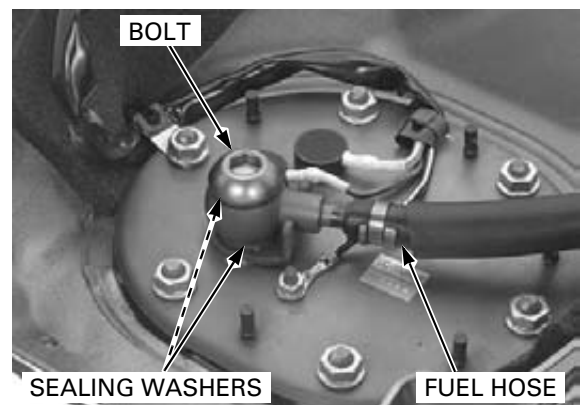


REMOVAL

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

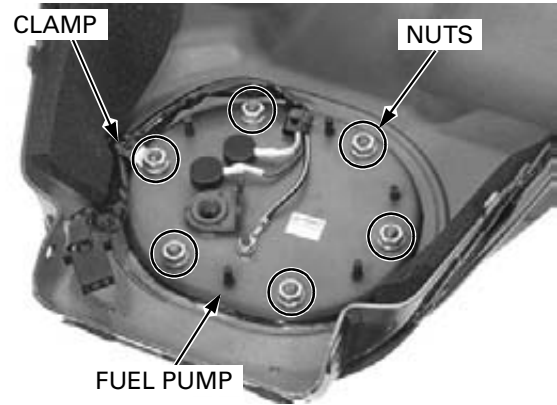
Remove the fuel tank (page 6-57).

Remove the banjo bolt, sealing washers and fuel hose.



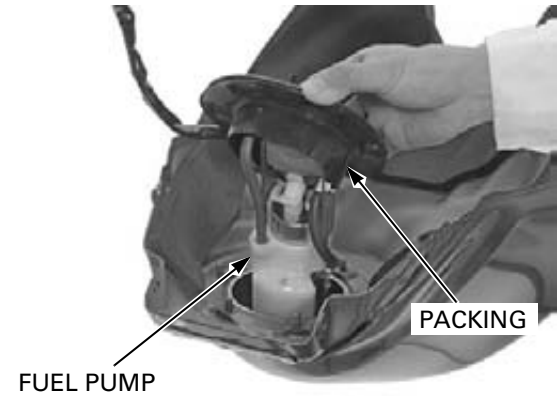
FUEL SYSTEM (PGM-FI)

Remove the nuts and wire clamp.



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

Remove the fuel pump unit and packing.

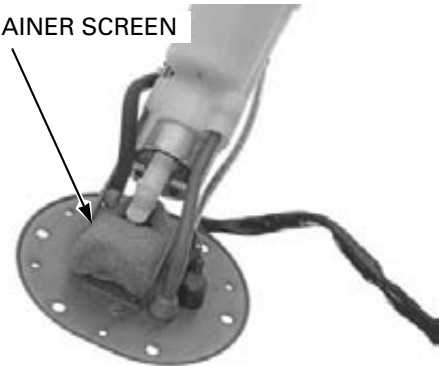


INSPECTION

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

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

FUEL STRAINER SCREEN



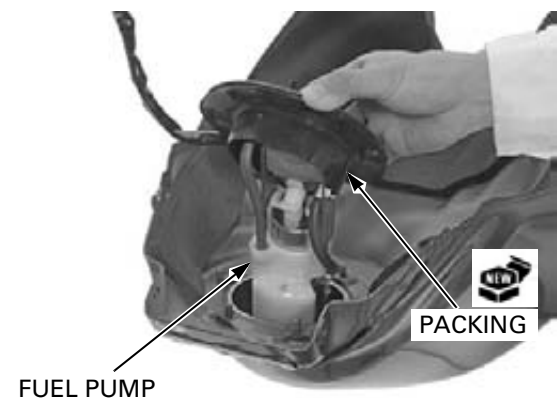
INSTALLATION

Always replace the packing with a new one.

Place a new packing onto the fuel pump unit.

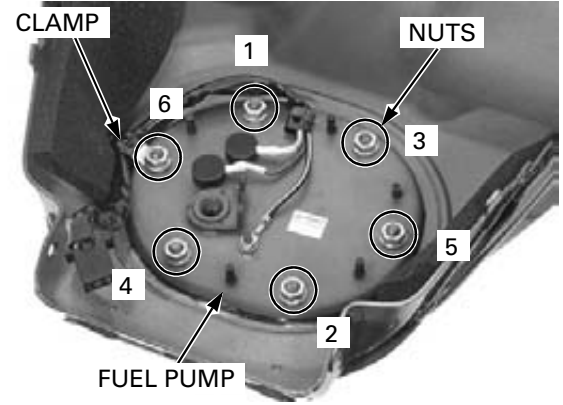
Be careful not to damage the pump wire and fuel level gauge.

Install the fuel pump unit into the fuel tank.



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

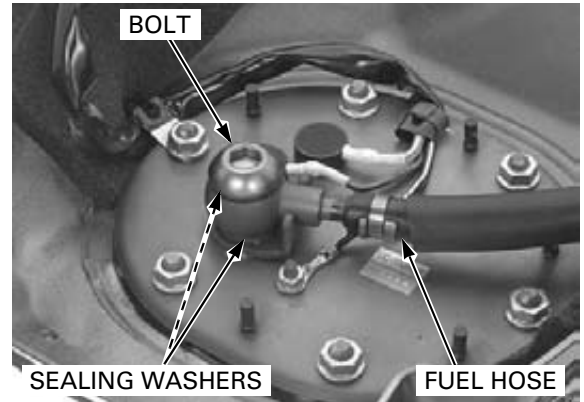
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Connect the fuel feed hose to the fuel pump with banjo bolt and new sealing washers.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Install the fuel tank (page 6-59).



FUEL CUT-OFF RELAY

INSPECTION

Remove the fuel cut-off relay from the relay box (page 6-54).

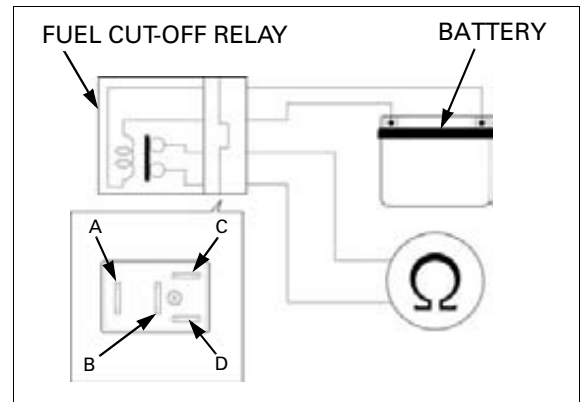
Connect the ohmmeter to the fuel cut-off relay connector terminals.

Connection: A – B

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

Connection: C – D

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



FUEL TANK

REMOVAL

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

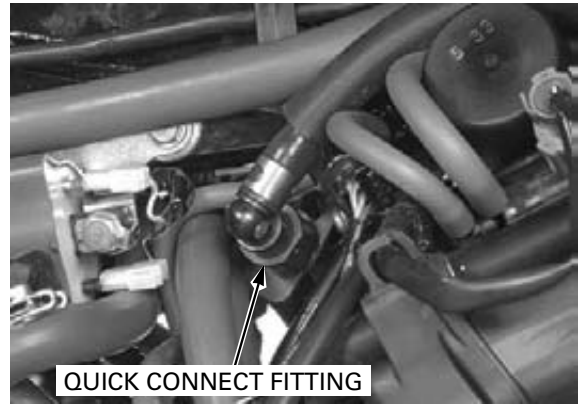
Lift and support the fuel tank.

Disconnect the fuel pump 3P (Black) connector.

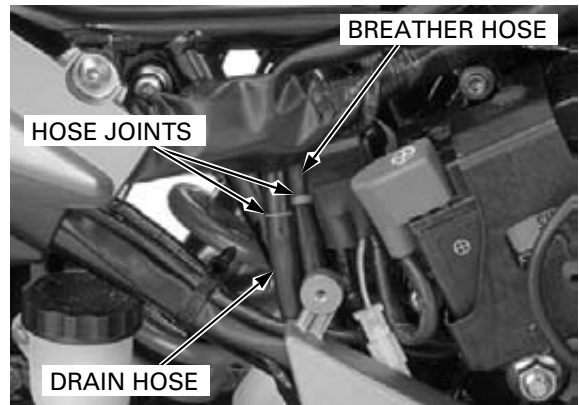


FUEL SYSTEM (PGM-FI)

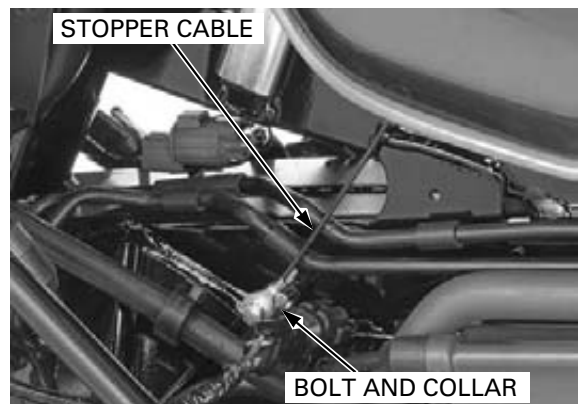
Relieve the fuel pressure (page 6-51).



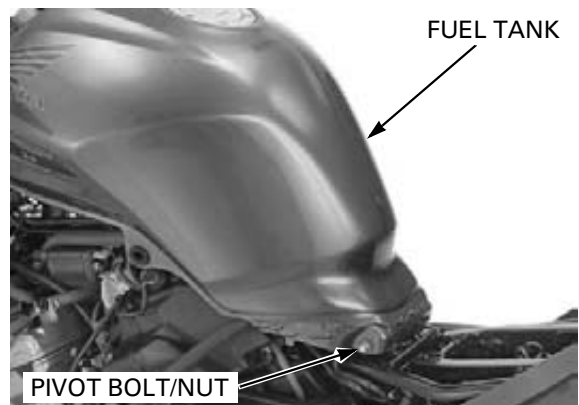
Disconnect the fuel tank drain hose and breather hose from the hose joints.



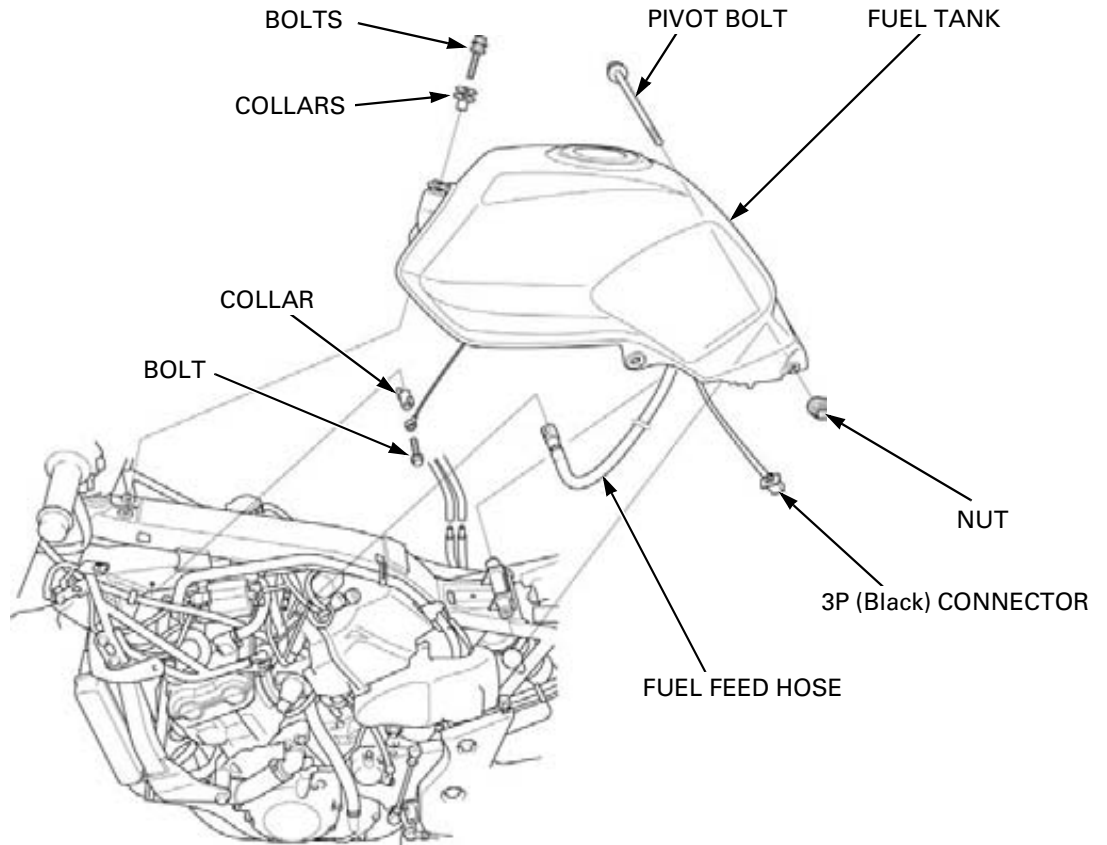
Remove the bolt and fuel tank stopper cable collar.



Remove the nut and pivot bolt, then remove the fuel tank.



INSTALLATION

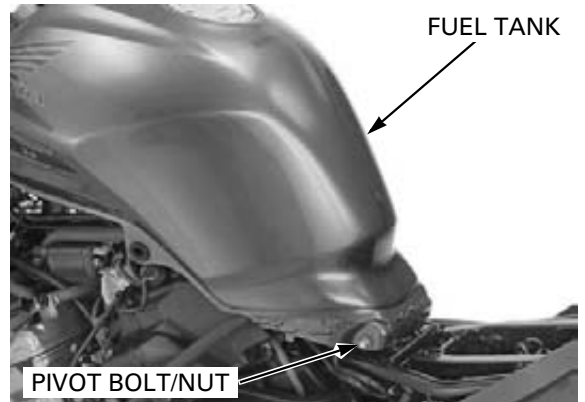


Install the fuel tank onto the frame, then install the pivot bolt and nut.

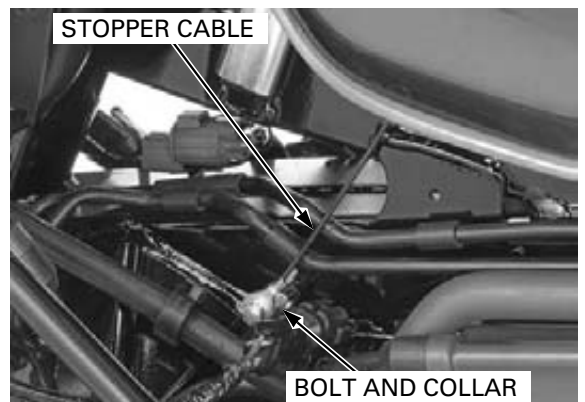
Hold the pivot bolt and tighten the nut to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Lift and support the fuel tank (page 4-5).

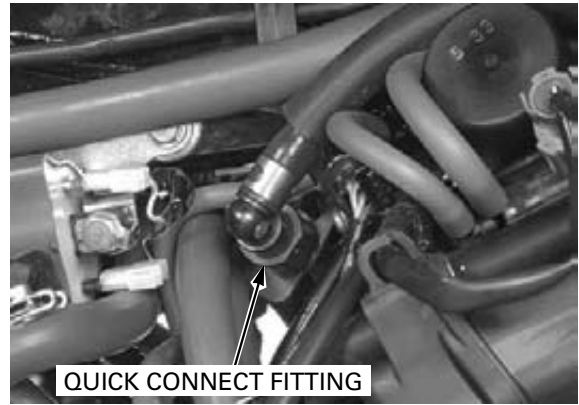


Connect the fuel tank stopper cable to the frame with the collar and bolt.



FUEL SYSTEM (PGM-FI)

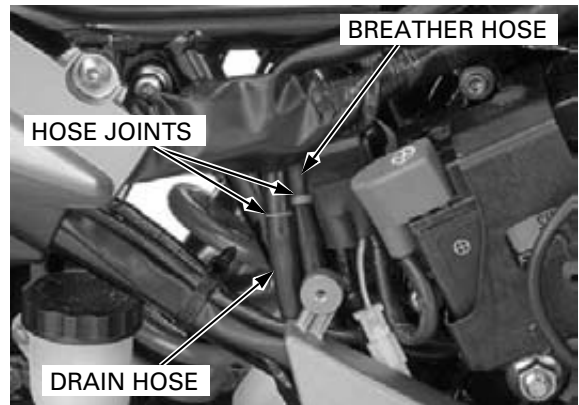
Connect the fuel feed hose (page 6-52).



Connect the fuel tank drain hose and breather hose to the hose joints.

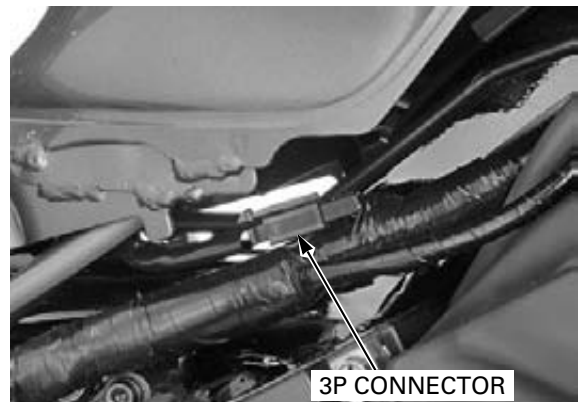
NOTICE

- Route the hoses, wires and harness properly (page 1-23).
- Be careful not to damage the harness and hoses.
- After installing the fuel tank, make sure the drain, breather and fuel hoses are not kinked or bound.



Connect the fuel pump 3P (Black) connector.

Remove the support tool, then install and tighten the fuel tank front mounting bolts and rear pivot nut (page 4-6).



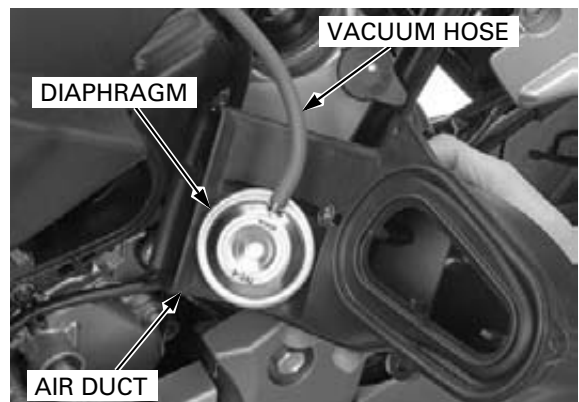
AIR CLEANER HOUSING

REMOVAL

Remove the fuel tank.

Remove the air cleaner element (page 4-7).

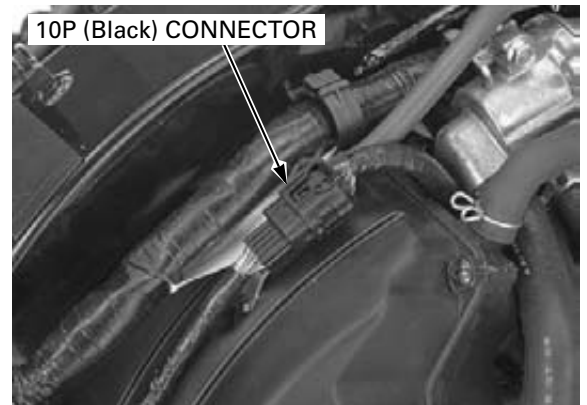
Disconnect the vacuum tube from the element cover diaphragm.



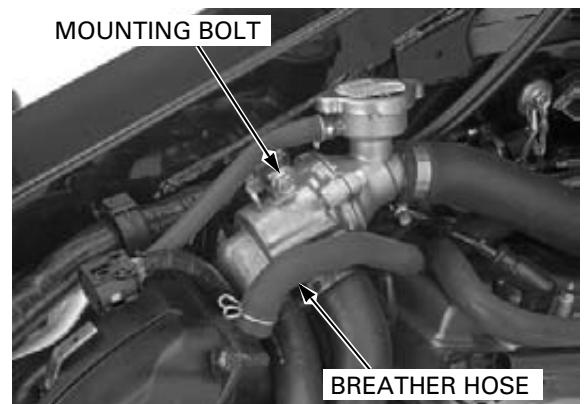
Disconnect the IAT sensor 2P connector.
Disconnect the PAIR air hose from the air cleaner housing.



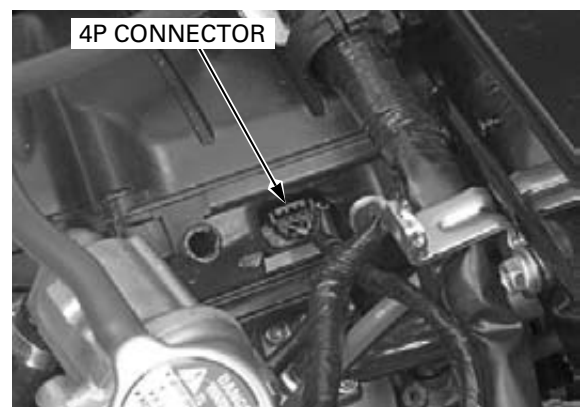
Disconnect the injector sub-harness 10P (Black) connector.



Disconnect the crankcase breather hose from the air cleaner housing.
Remove the thermostat housing mounting bolt.

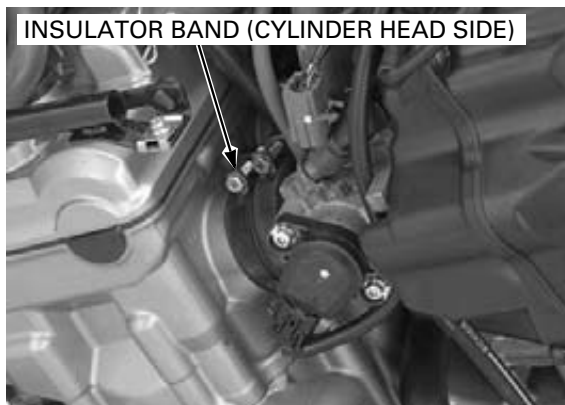


Disconnect the IACV 4P (Black) connector.



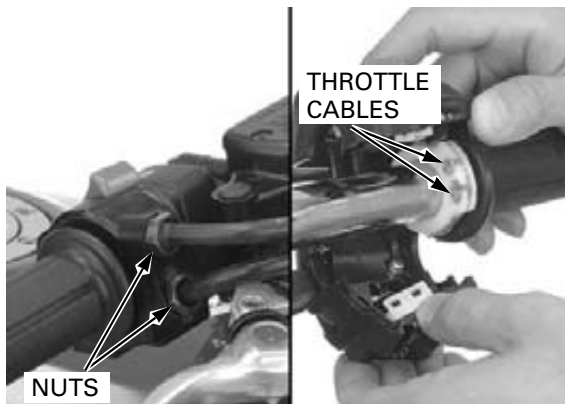
FUEL SYSTEM (PGM-FI)

Loosen the throttle body insulator bands (cylinder head side).

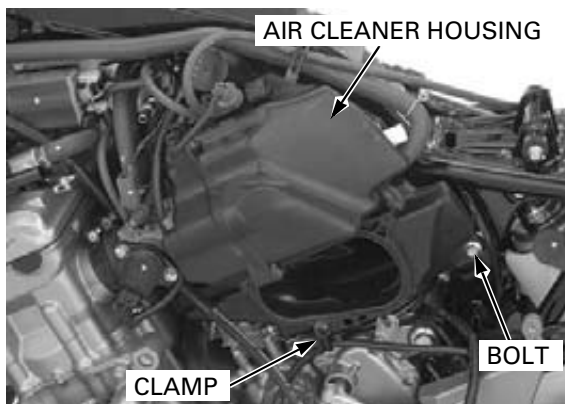


Make the throttle cable free play at the handlebar side (page 4-6).

Loosen the throttle cable nuts fully.
Disconnect the throttle cables from the throttle pipe.

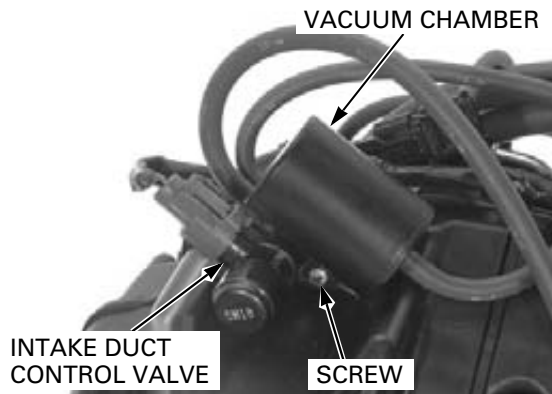


Release the alternator wire from the clamp.
Remove the air cleaner housing mounting bolt, then pull the housing backward and remove it.



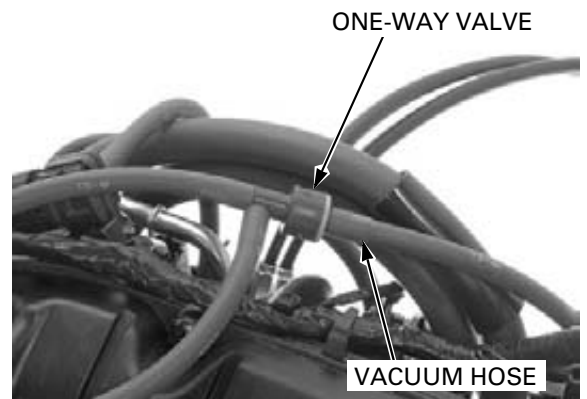
DISASSEMBLY

Remove the screw and intake duct control valve with the vacuum chamber.

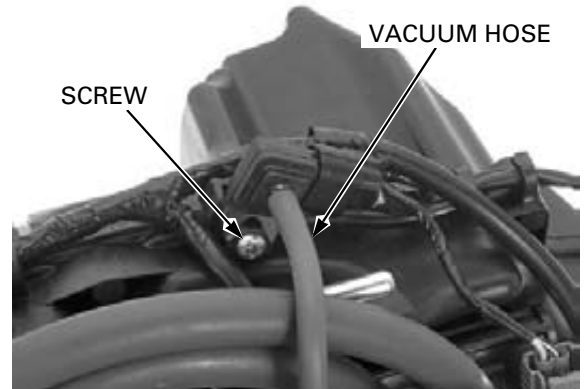


FUEL SYSTEM (PGM-FI)

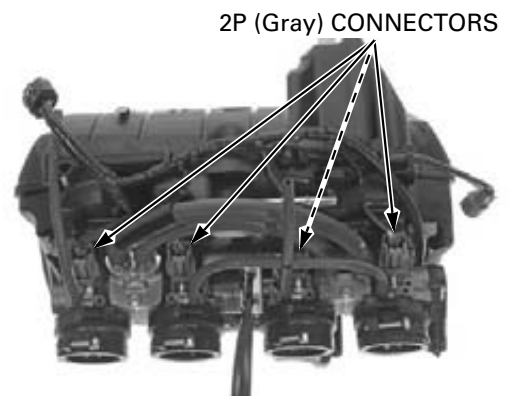
Remove the vacuum hose from the one-way valve.



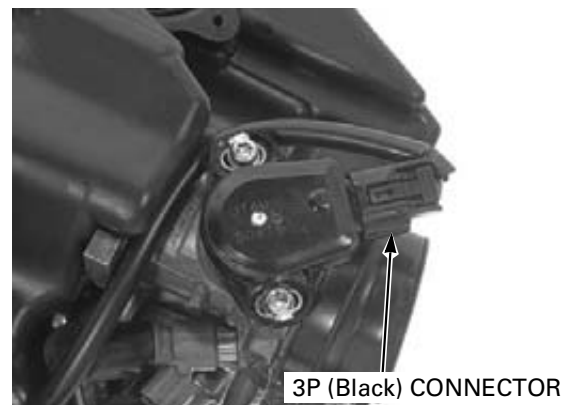
Disconnect the MAP sensor vacuum hose.
Remove the screw and MAP sensor from the air cleaner housing.



Disconnect the injector 2P (Gray) connectors.

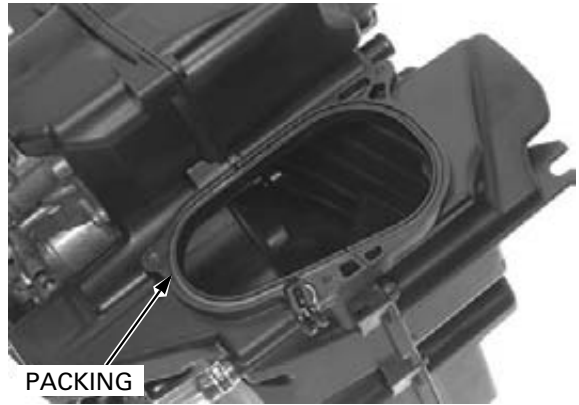


Disconnect the TP sensor 3P (Black) connector.
Remove the injector sub-harness from the air cleaner housing and throttle body.



FUEL SYSTEM (PGM-FI)

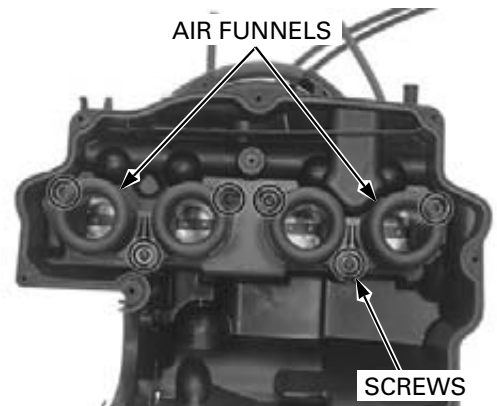
Remove the air cleaner duct packing.



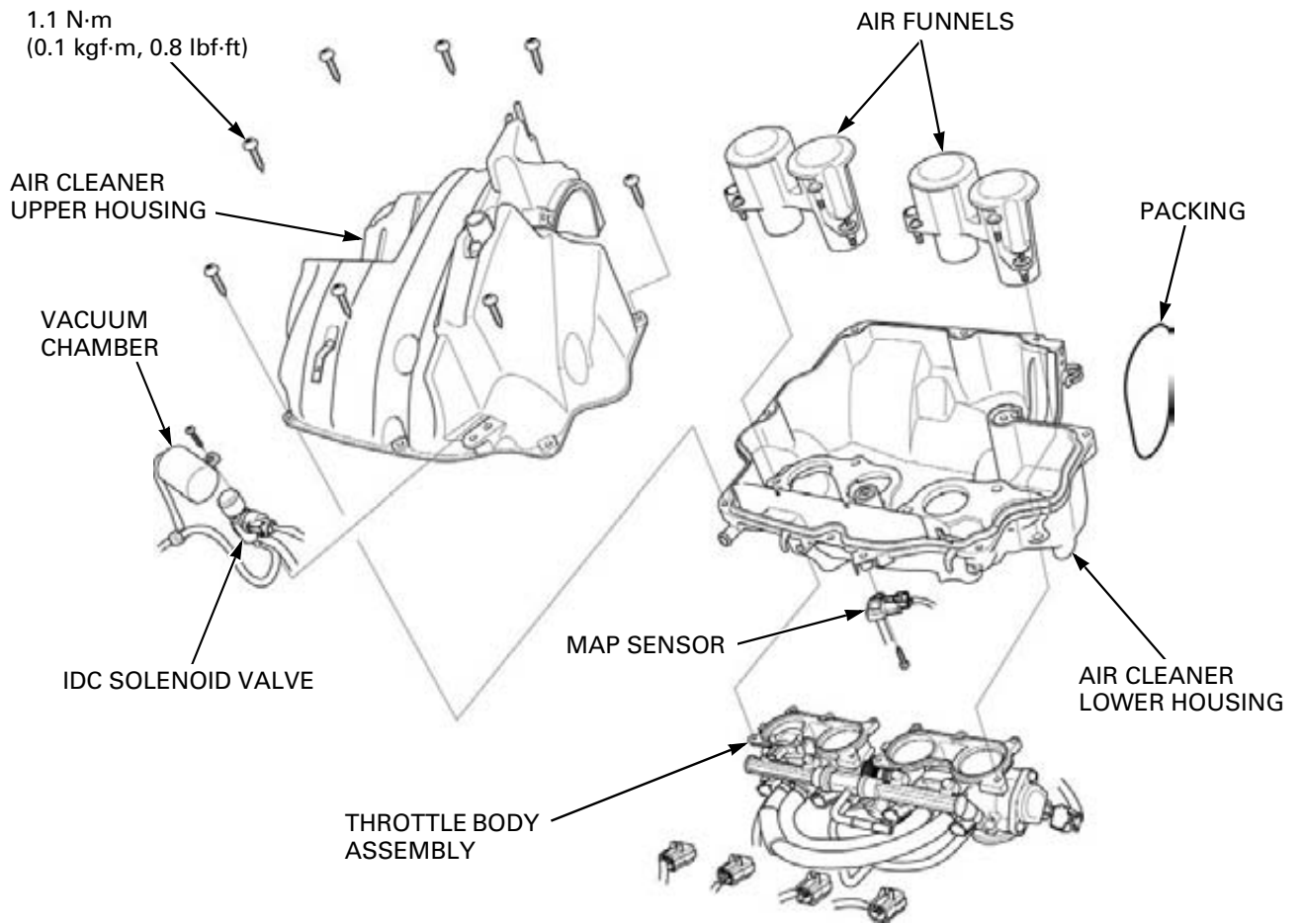
Remove the screws and air upper air cleaner housing.



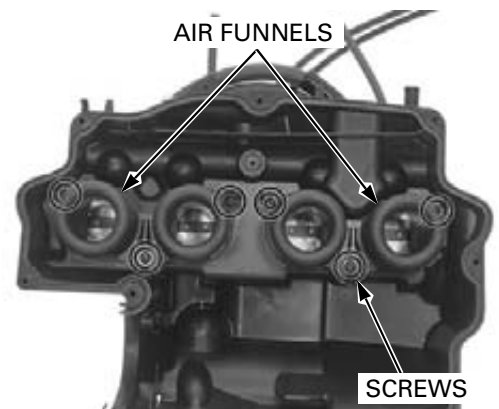
Loosen the screws, then remove the air funnels and throttle body from the lower air cleaner housing.



ASSEMBLY



Install the lower air cleaner housing onto the throttle body, then install the air funnels.
Tighten the air funnel screws securely.

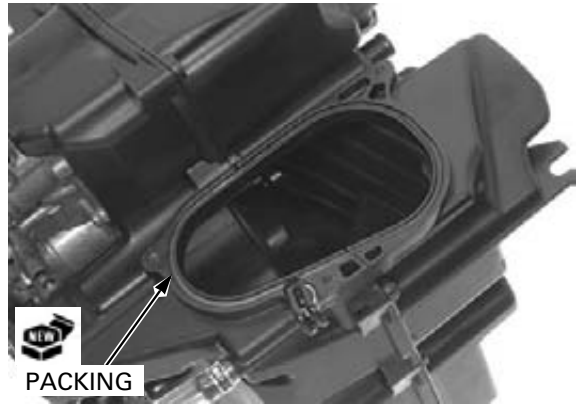


Install the upper air cleaner housing onto the lower housing.
Install and tighten the screws securely.

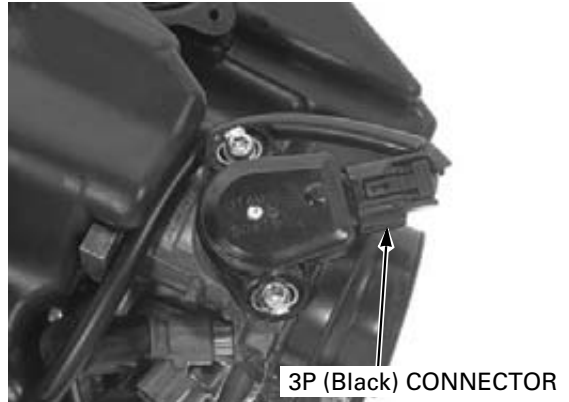


FUEL SYSTEM (PGM-FI)

Install the new air cleaner duct packing into the groove on the housing.

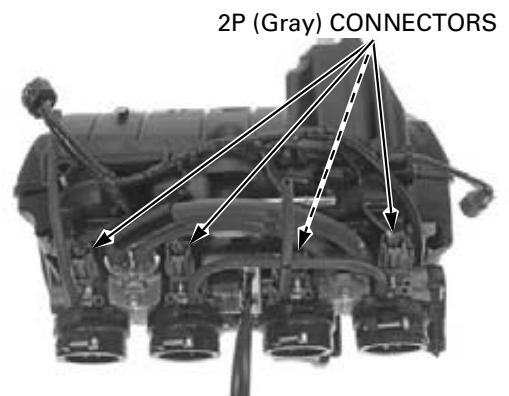


Connect the TP sensor 3P (Black) connector of the injector sub-harness.



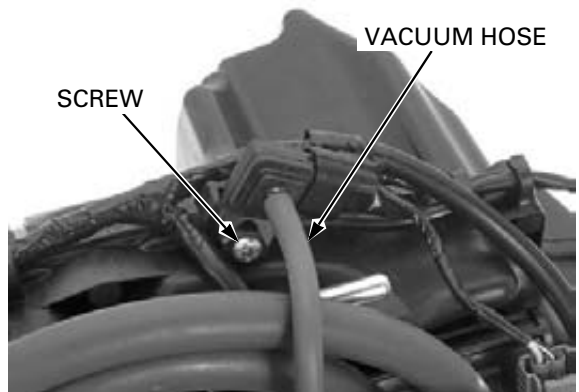
Route the injector sub-harness through the clamps of the air cleaner housing.

Connect the injector 2P (Gray) connectors.

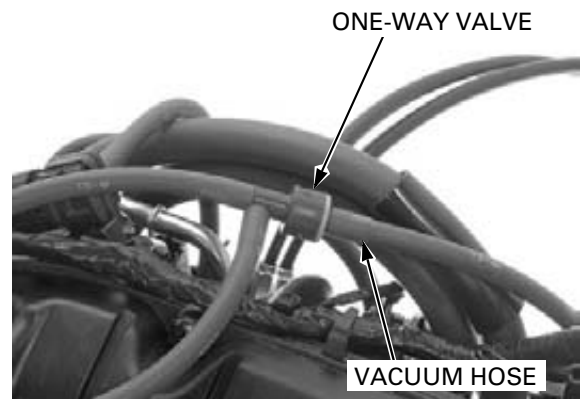


Install the MAP sensor and tighten the screw securely.

Connect the MAP sensor vacuum hose.

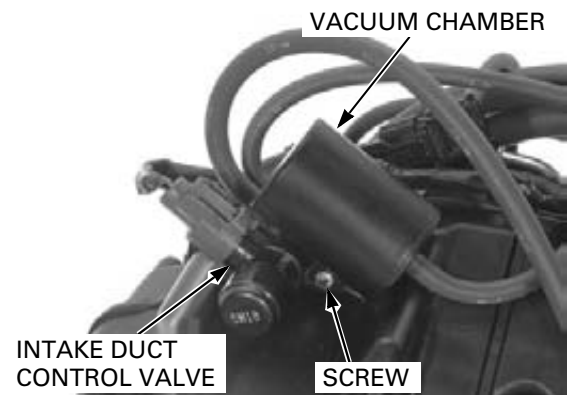


Connect the vacuum hose to the one-way valve.



Install the intake duct control valve with the vacuum chamber.

Install and tighten the screw securely.

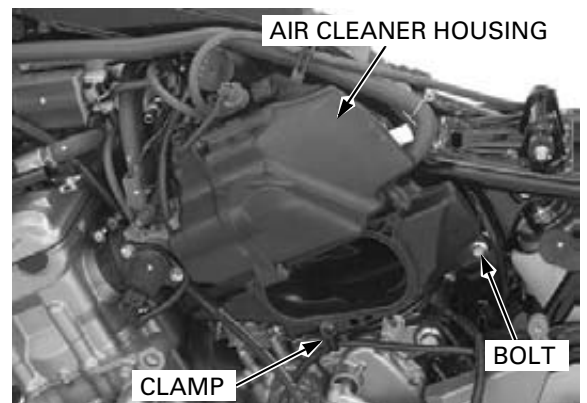


INSTALLATION

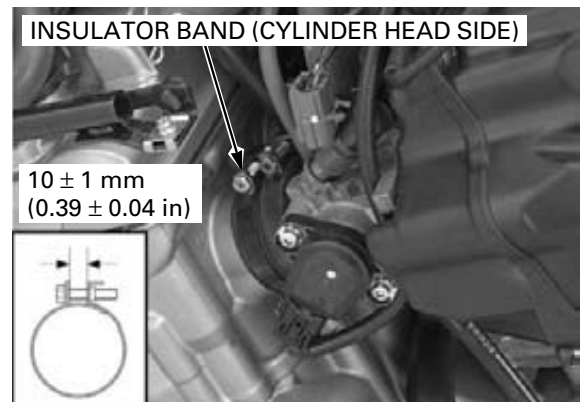
Install the air cleaner housing with the throttle body.

NOTE:

Make sure each insulator is firmly installed to the intake port.



Tighten the insulator band screws (cylinder head side) so that the interval of the band ends is 10 ± 1 mm (0.39 ± 0.04 in).

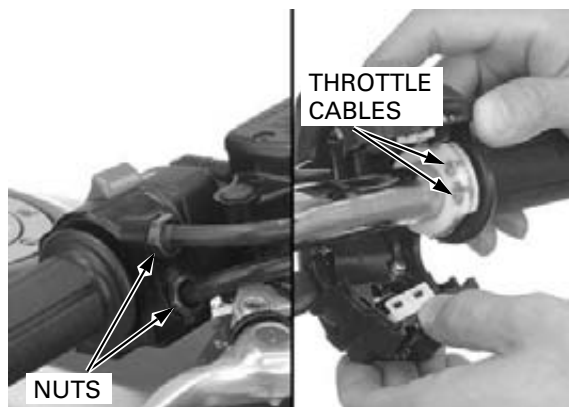


FUEL SYSTEM (PGM-FI)

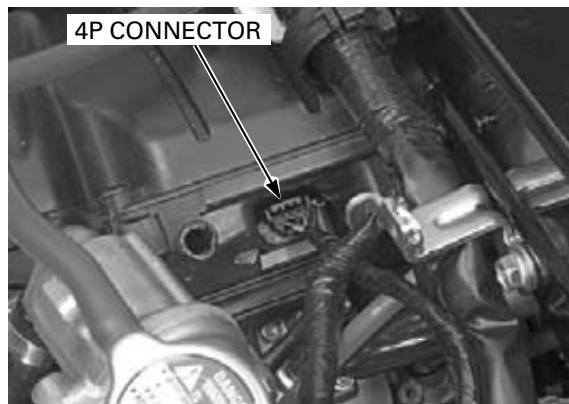
Connect the throttle cables to the throttle pipe.

Install the right handlebar switch housing (page 14-8).

Tighten the nuts securely.

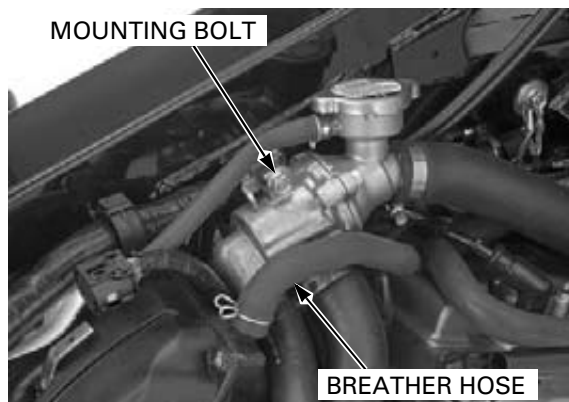


Connect the IACV 4P (Black) connector.

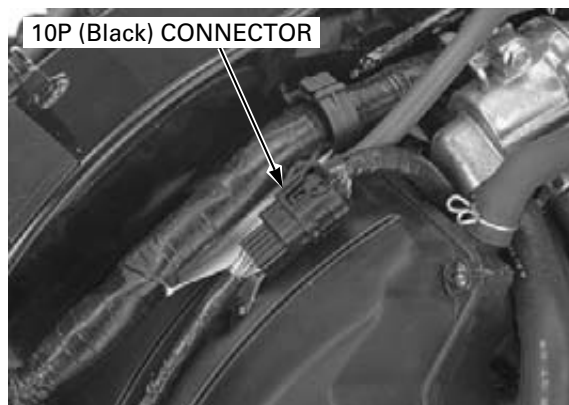


Install the thermostat housing to the frame and tighten the mounting bolt securely.

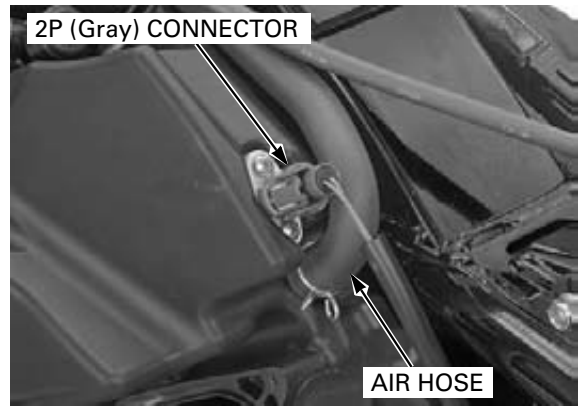
Connect the crankcase breather hose to the air cleaner housing.



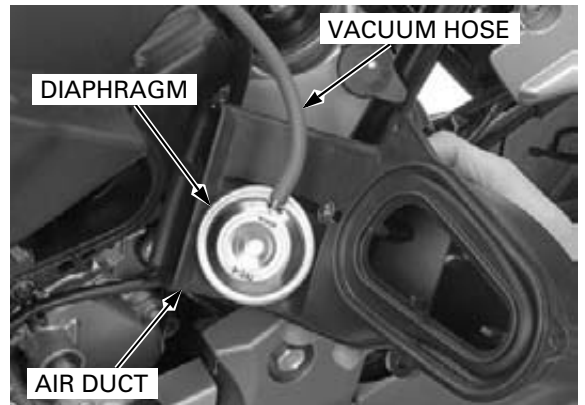
Connect the injector sub-harness 10P (Black) connector.



Connect the IAT sensor 2P (Gray) connector.



Connect the vacuum hose to the diaphragm.
Install the air cleaner element (page 4-7).

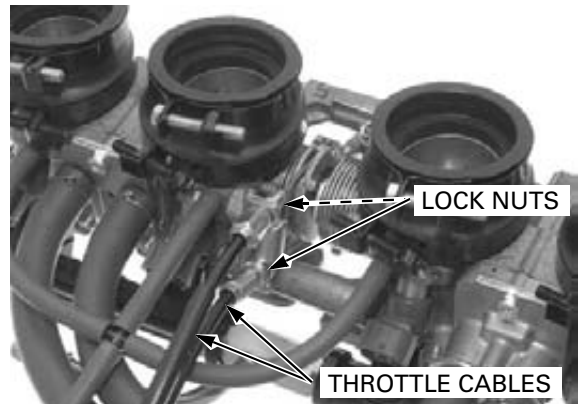


THROTTLE BODY

REMOVAL

Remove the throttle body from the air cleaner housing (page 6-62).

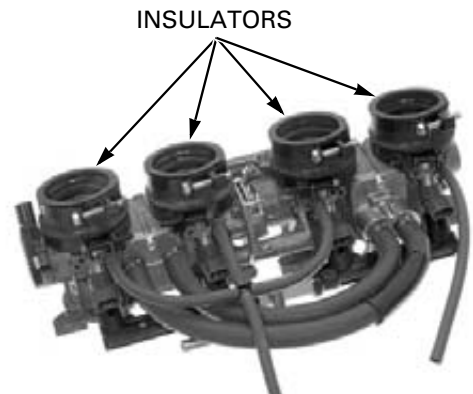
Loosen the lock nuts and disconnect the throttle cables from the throttle drum.



Loosen the insulator band screws and remove the insulators.

NOTE:

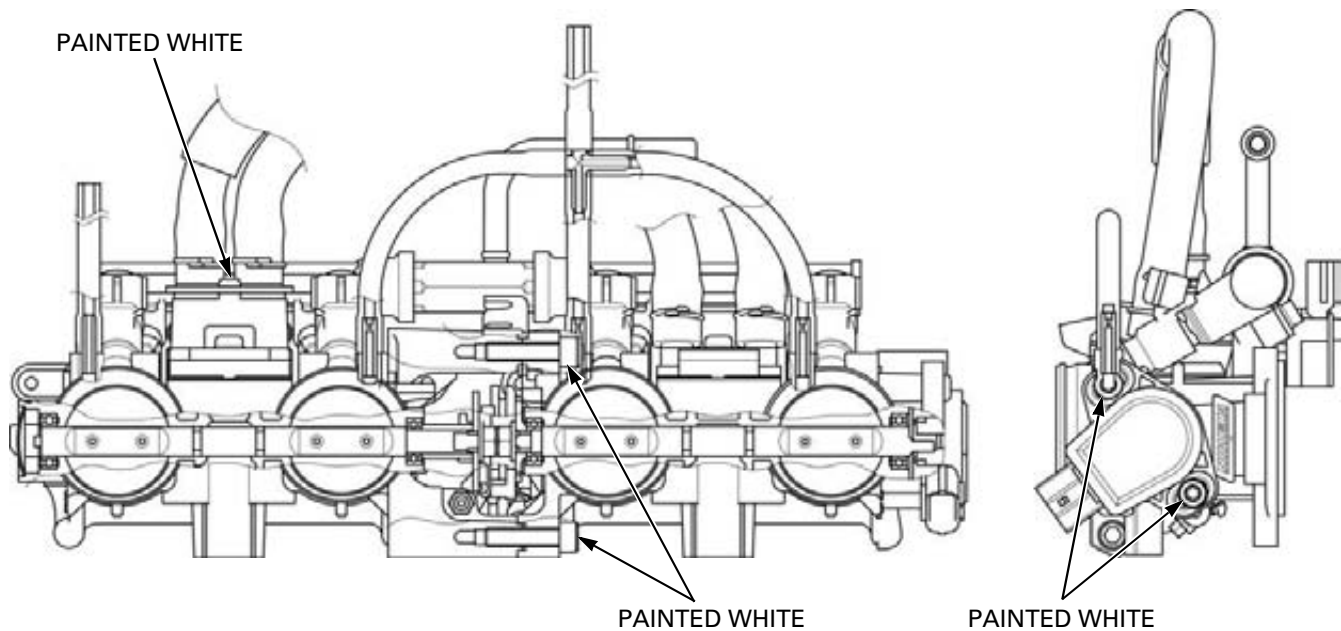
Mark each insulator to be sure of their insulator bands direction for reassembly.



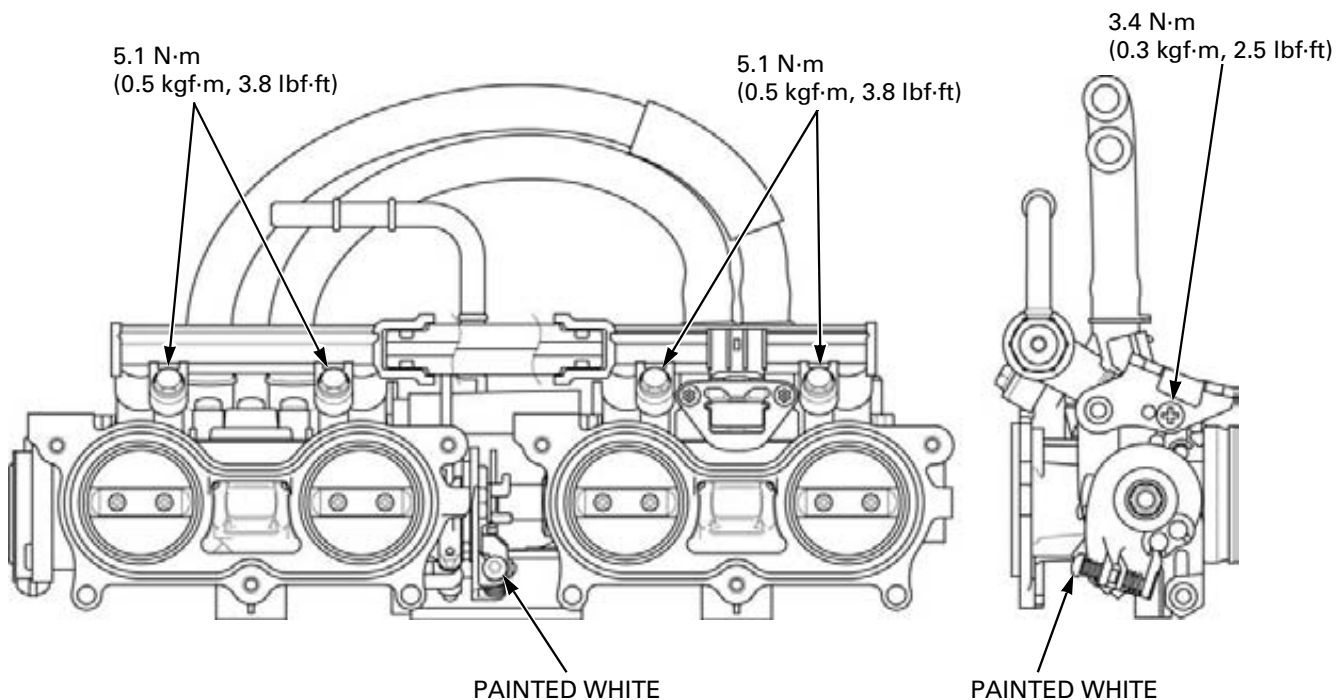
FUEL SYSTEM (PGM-FI)

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

Viewed from cylinder head side and throttle sensor side:

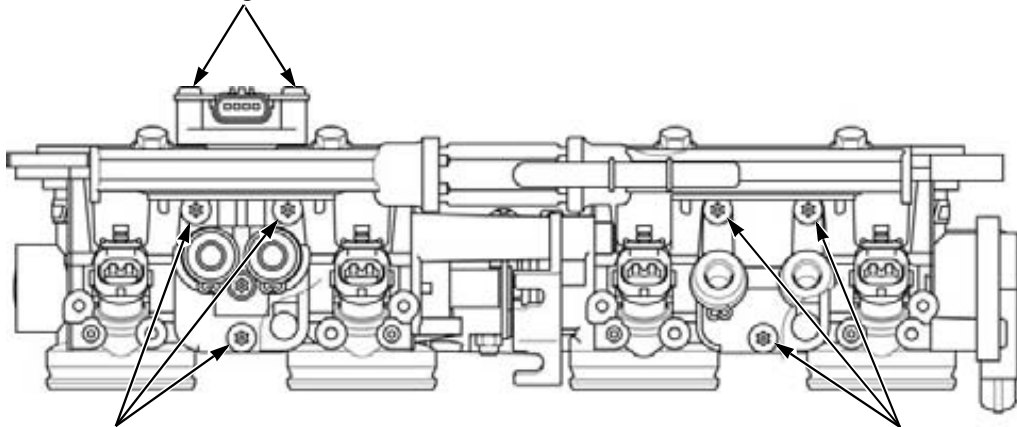


Viewed from air cleaner housing side and throttle drum side:



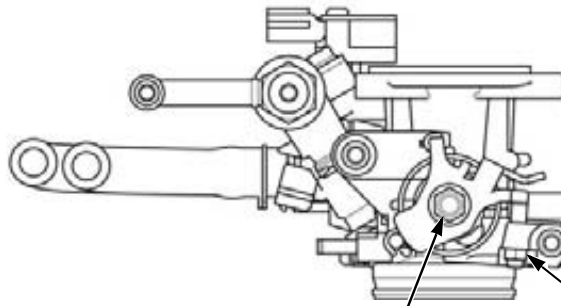
Viewed from top and throttle drum side:

3.4 N·m (0.3 kgf·m, 2.5 lbf·ft)



Do not loosen or remove

Do not loosen or remove

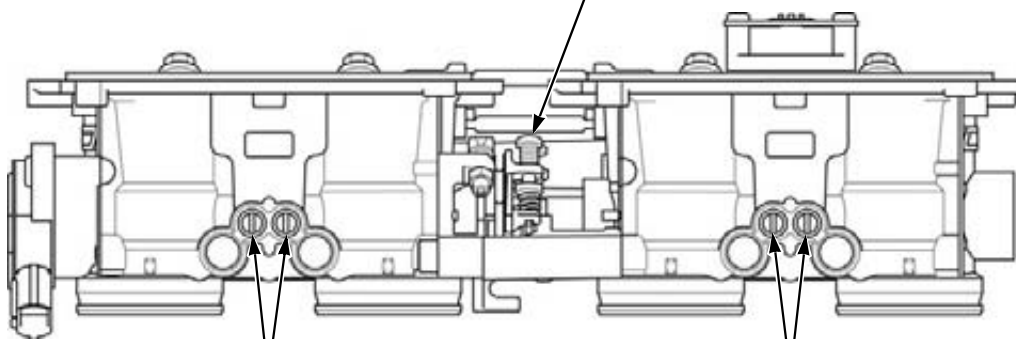


PAINTED WHITE

PAINTED WHITE

Viewed from bottom:

PAINTED WHITE



Do not loosen or tighten

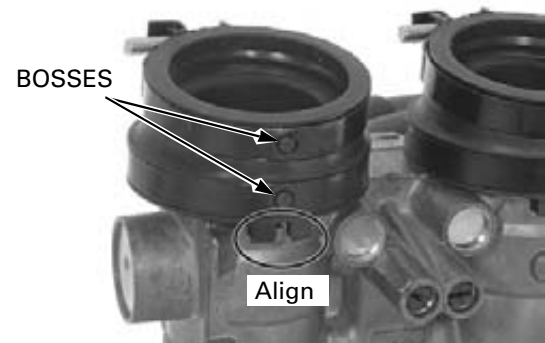
Do not loosen or tighten

FUEL SYSTEM (PGM-FI)

INSTALLATION

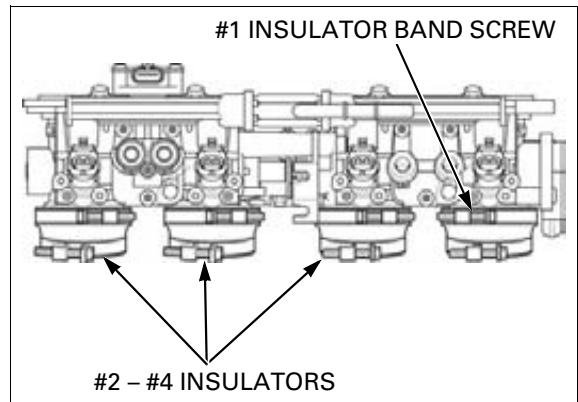
Install each insulator onto the throttle body while aligning its groove with the lug on the throttle body.

Align the hole on each insulator band with the boss on the insulator.

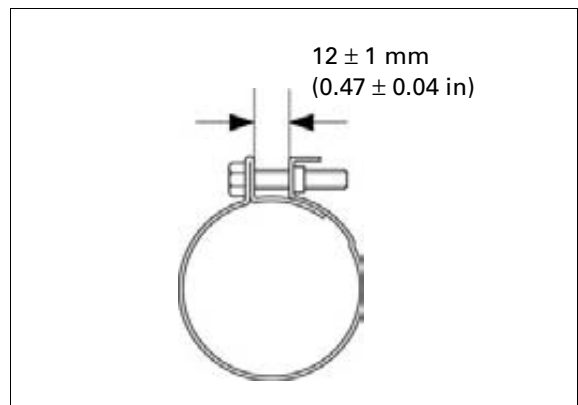


Confirm the direction of the insulator band screws according to the illustration.

#1 insulator band of the throttle body side is different from the others.

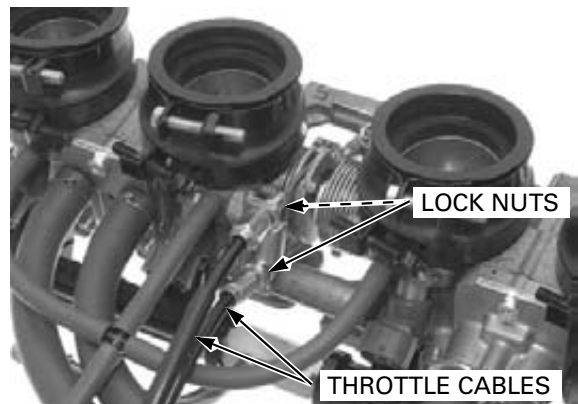


Tighten the throttle body side insulator band screws so that the width between the band ends is 12 ± 1 mm (0.47 ± 0.04 in).



Connect the throttle cables and tighten the lock nuts.

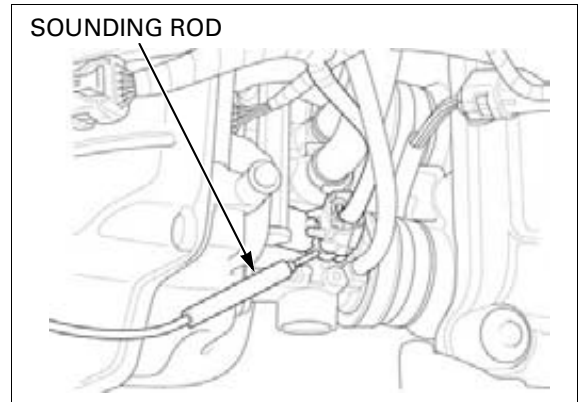
Install the throttle body onto the air cleaner housing (page 6-65).



INJECTOR

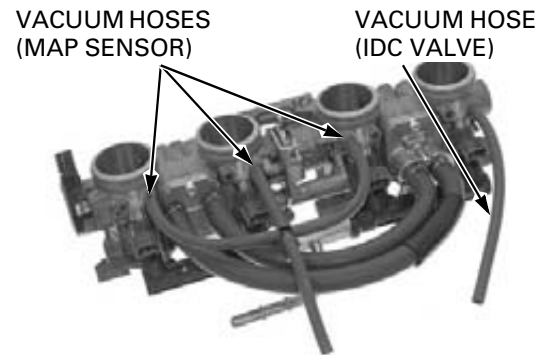
INSPECTION

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

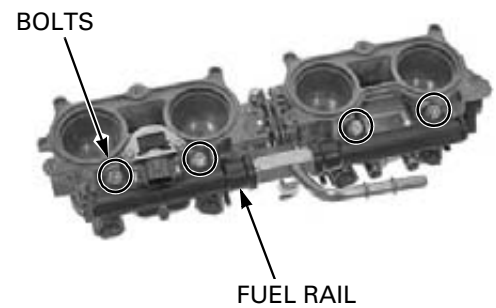


REMOVAL

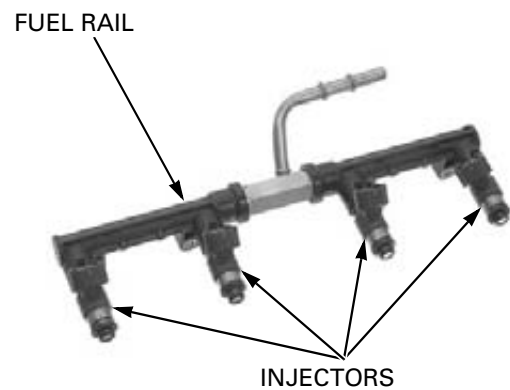
Remove the throttle body (page 6-69).
 Disconnect the MAP sensor vacuum hoses and IDC (Intake Duct Control) valve vacuum hose.



Remove the bolts and fuel rail.

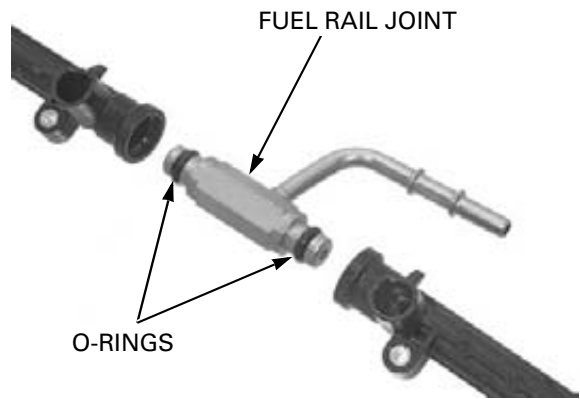


Remove the injectors from the fuel rail.

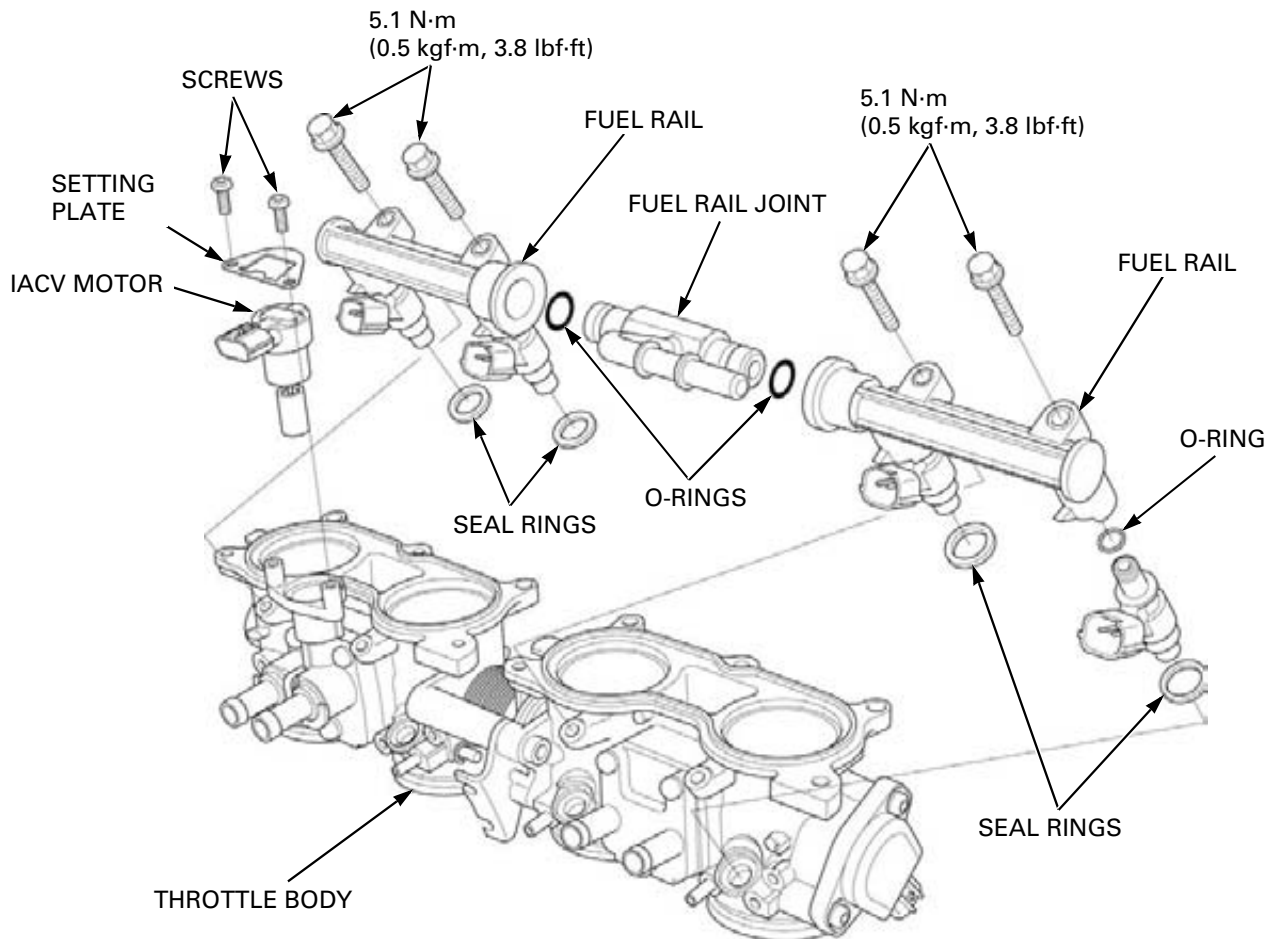


FUEL SYSTEM (PGM-FI)

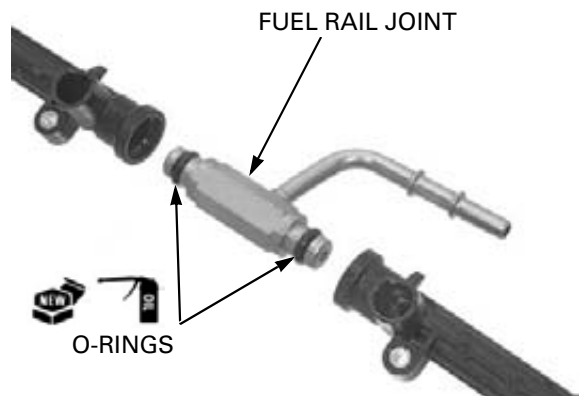
Remove the fuel rail joint.
Remove the O-rings from the fuel rail joint.



INSTALLATION

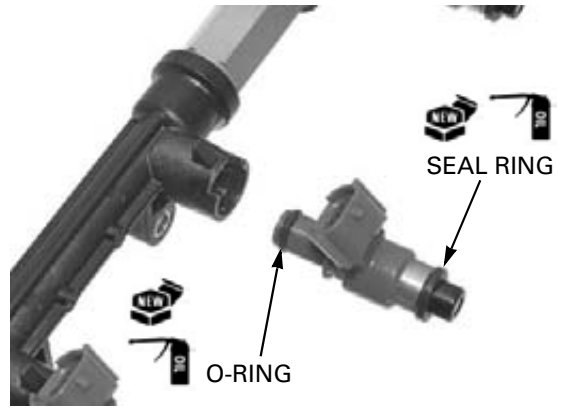


Apply oil to new O-rings of the fuel rail joint.
Install the O-rings onto the fuel rail joint.

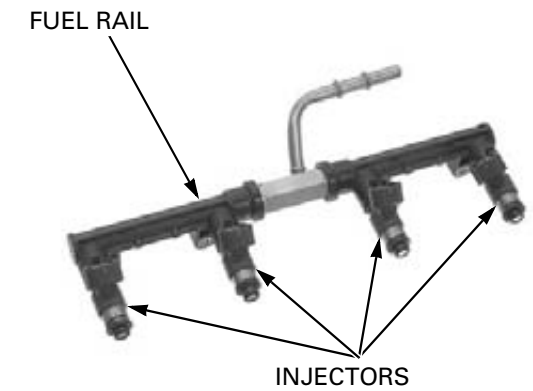


Apply small amount of engine oil to new seal rings and O-rings.

Install the seal ring and O-ring to each injector.

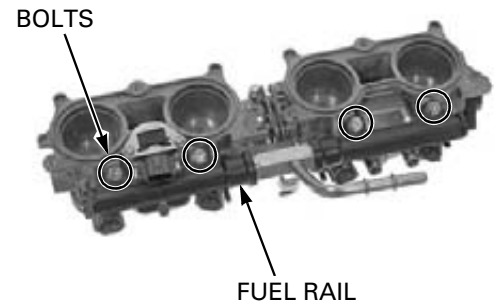


Install the injectors to the fuel rail.



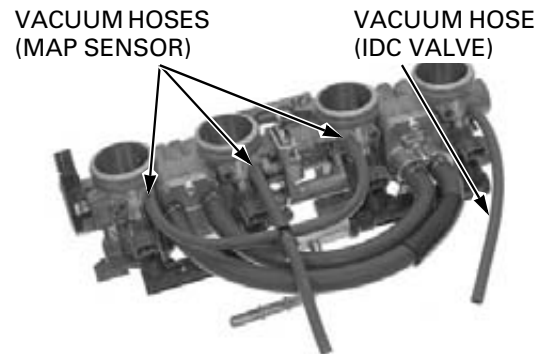
Install the injectors with the fuel rail.

Install and tighten the bolts to the specified torque.



Connect the MAP sensor vacuum hoses and IDC valve air hoses.

Install the throttle body to the air cleaner housing.



ENGINE IDLE SPEED

IDLE SPEED INSPECTION

NOTE:

- Inspect the idle speed after all other engine maintenance items have been performed and are within specifications.
- Before checking the idle speed, inspect the following items.
 - No DTC and MIL blinking.
 - Spark plug condition (page 4-8).
 - Air cleaner condition (page 4-7).
- The engine must be warm for accurate idle speed inspection.
- This system eliminates the need for manual idle speed adjustment compared to previous designs.
- Use a tachometer with graduations of 50 min⁻¹ (rpm) or smaller that will accurately indicate a 50 min⁻¹ (rpm) change.

Lift and support the fuel tank (page 4-5).

Start the engine and warm it up to coolant temperature 80 °C (176 °F).

Stop the engine and connect a tachometer according to the tachometer manufacturer's operating instructions.

Start the engine and let it idle. Check the idle speed.

ENGINE IDLE SPEED: 1,200 ± 100 min⁻¹ (rpm)

If the idle speed is out of the specification, check the following:

- Throttle operation and throttle grip free play (page 4-6).
- Intake air leak or engine top-end problem (page 9-3).
- IACV operation (page 6-76).

IACV

INSPECTION

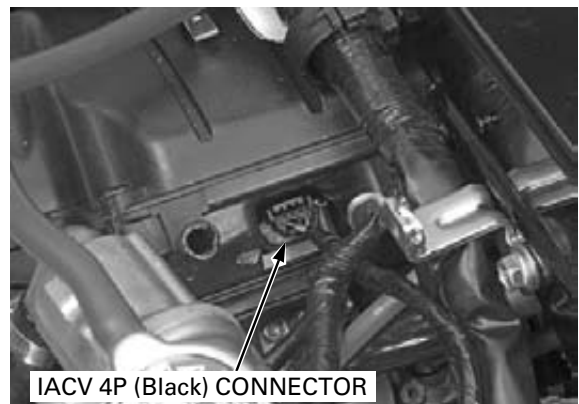
The IACV is installed on the throttle body and is operated by the step motor. When the ignition switch is turned ON, the IACV operates for a few seconds.

Check the step motor operating (beep) sound with the ignition switch turned ON.

NOTE:

The IACV operation can be checked visually as follows:

- Remove the IACV (page 6-77). Connect the 4P (Black) connector to the IACV, then turn the ignition switch ON.

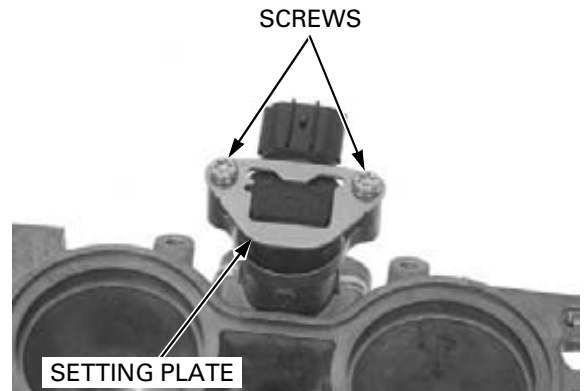


REMOVAL

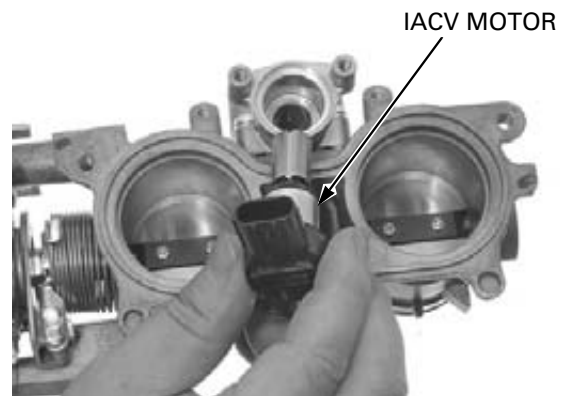
- Always clean the throttle body before the IACV removal to prevent dirt and debris from entering the IACV passage.

Remove the throttle body, then the fuel rail (page 6-73).

Remove the screws and setting plate.

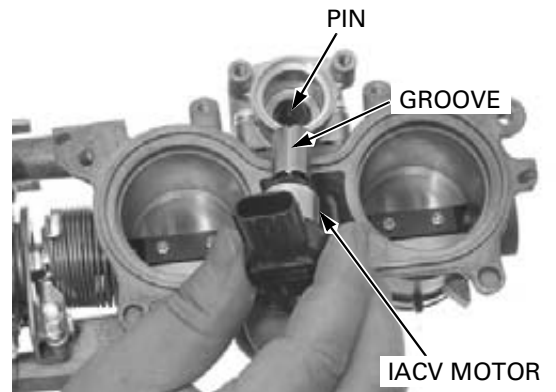


Remove the IACV motor.

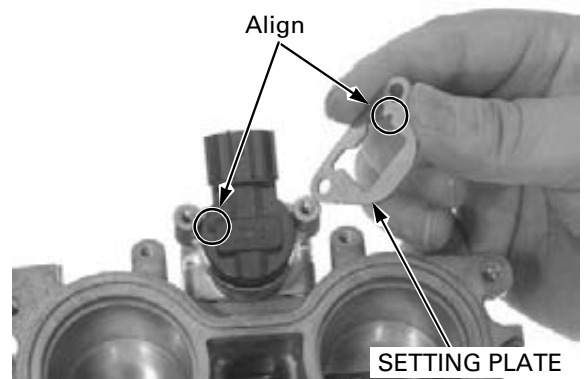


INSTALLATION

Install the IACV motor, aligning its groove with the pin inside the motor housing.

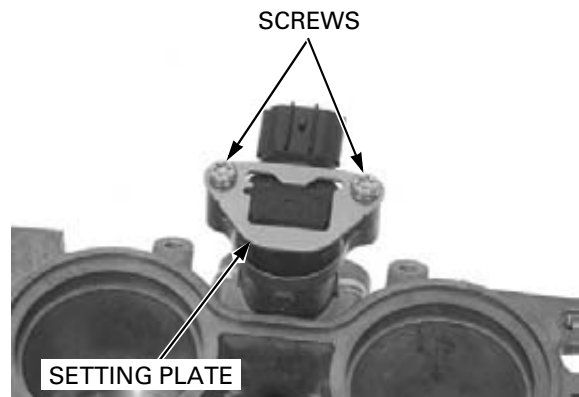


Install the setting plate while aligning the cut-out with the lug on the IACV motor.



FUEL SYSTEM (PGM-FI)

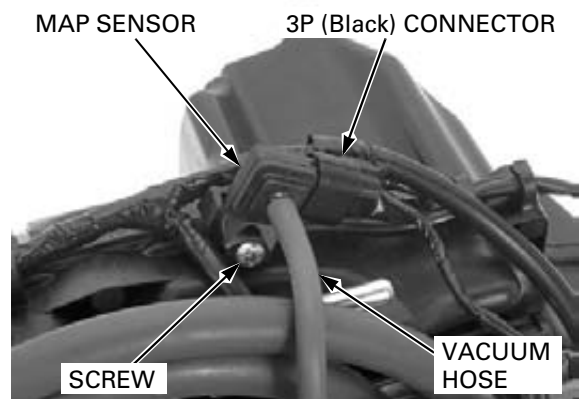
Install the screws and tighten them to the specified torque.



MAP SENSOR

REMOVAL/INSTALLATION

Remove the air cleaner housing (page 6-60).
Disconnect the MAP sensor 3P (Black) connector.
Disconnect the vacuum hose from the MAP sensor.
Remove the screw and MAP sensor.
Installation is in the reverse order of removal.



IAT SENSOR

REMOVAL/INSTALLATION

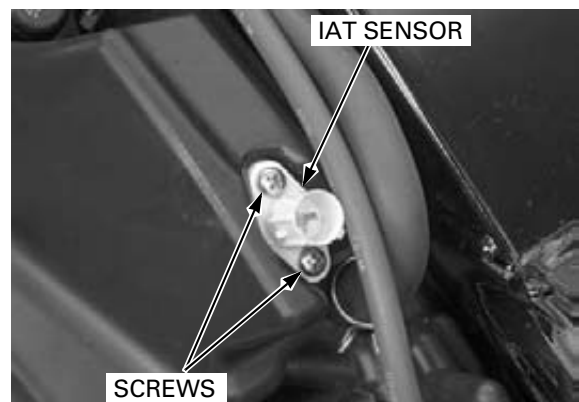
Remove the fuel tank.
Disconnect the IAT sensor 2P (Gray) connector.



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

Installation is in the reverse order of removal.

TORQUE: 1.2 N·m (0.12 kgf·m, 0.9 lbf·ft)



ECT SENSOR

Replace the ECT sensor while the engine is cold.

REMOVAL/INSTALLATION

Drain the coolant from the system (page 7-7).
 Disconnect the crankcase breather hose.
 Remove the thermostat case mounting bolt.

Disconnect the 3P (Gray) connector from the ECT sensor.

Remove the ECT sensor and sealing washer.

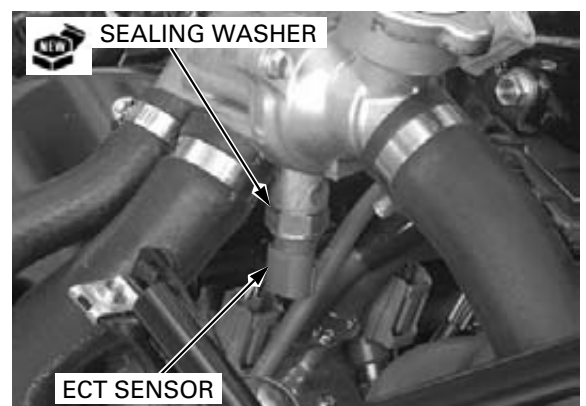
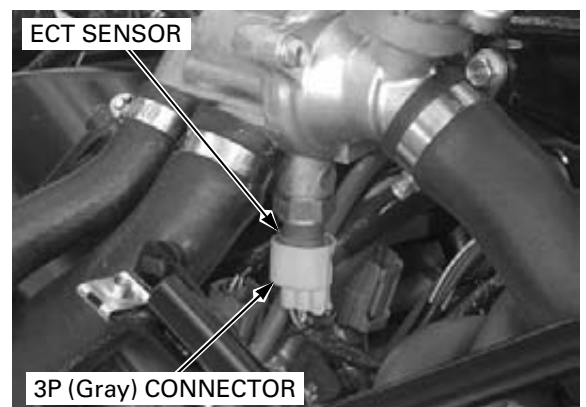
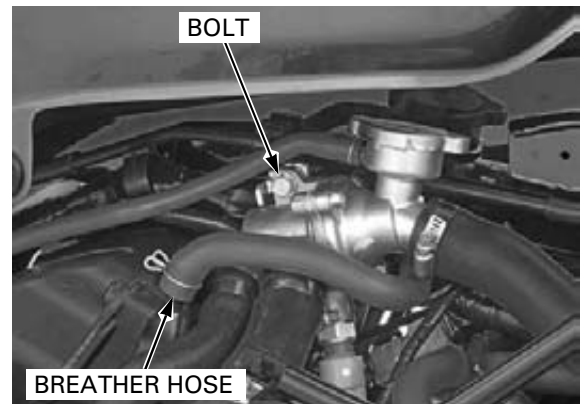
Always replace a sealing washer with a new one.

Install a new sealing washer and ECT sensor.
 Tighten the ECT sensor to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Connect the ECT sensor 3P (Gray) connector.

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

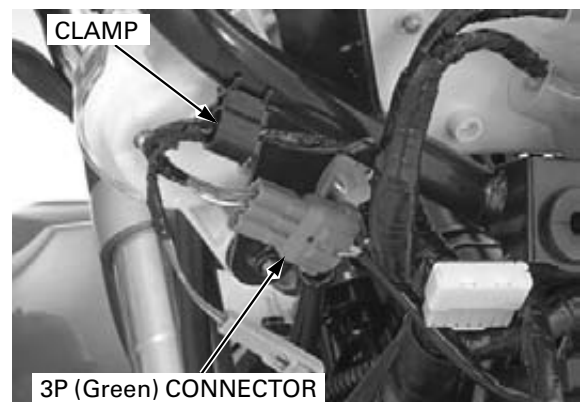


BANK ANGLE SENSOR

REMOVAL/INSTALLATION

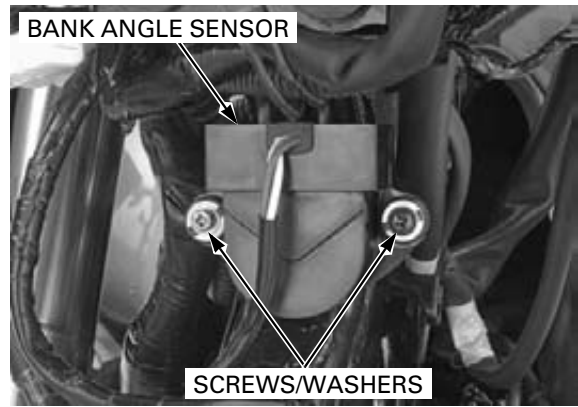
Remove the front center cowl (page 3-7).

Release the bank angle sensor wire from the harness clamp and disconnect the 3P (Green) connector.



FUEL SYSTEM (PGM-FI)

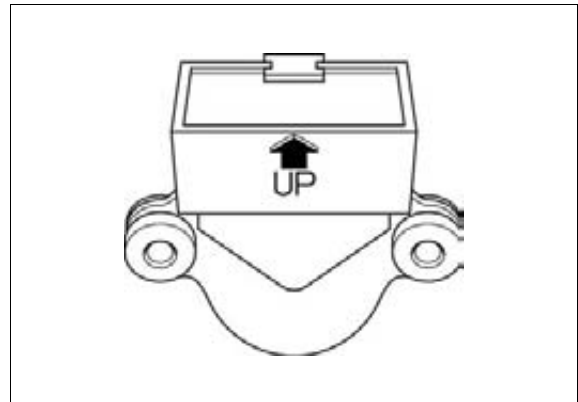
Remove the screws, washers and the bank angle sensor.



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

Installation is in the reverse order of removal.

Tighten the mounting screws securely.



INSPECTION

Remove the front center cowl (page 3-7).

Disconnect the bank angle sensor 3P (Green) connector and connect the special tool between the connectors.

TOOL:

Inspection test harness 07GMJ-ML80100

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

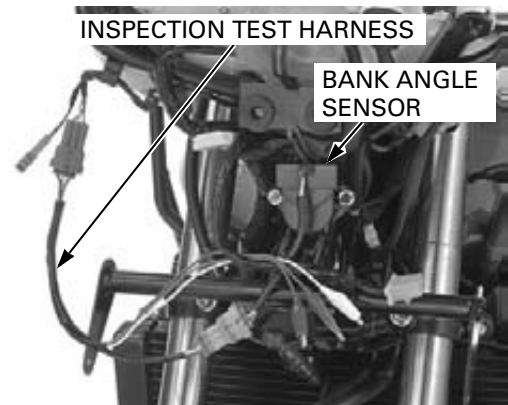
Measure the voltage between the following terminals of the test harness.

TERMINAL	STANDARD
White clip (+) – Red clip (-)	Battery voltage
Green clip (+) – Red clip (-)	0 – 1 V

Turn the ignition switch OFF and remove the inspection test harness.

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

Remove the screws, washers and the bank angle sensor.



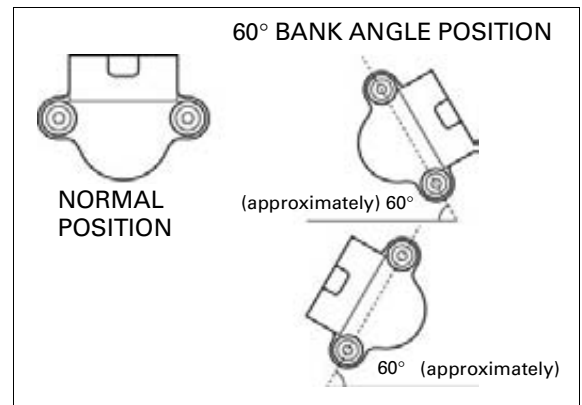
Place the bank angle sensor horizontal as shown, and turn the ignition switch ON and engine stop switch "⏻".

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

Incline the bank angel sensor approximately 60 degrees to the left or right with keeping the ignition switch ON and engine stop switch "⏻".

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

If you repeat this test, first turn the ignition switch OFF, then turn the ignition switch ON and engine stop switch "⏻".

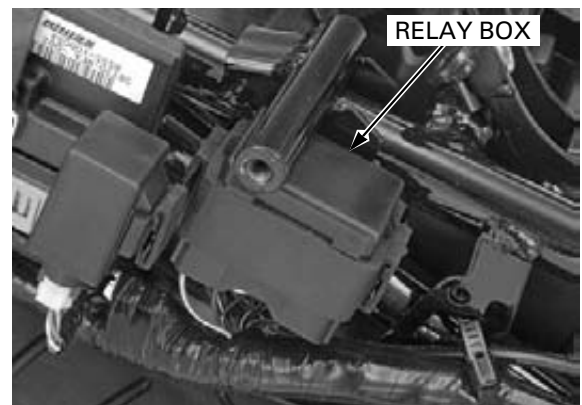


ENGINE STOP RELAY

INSPECTION

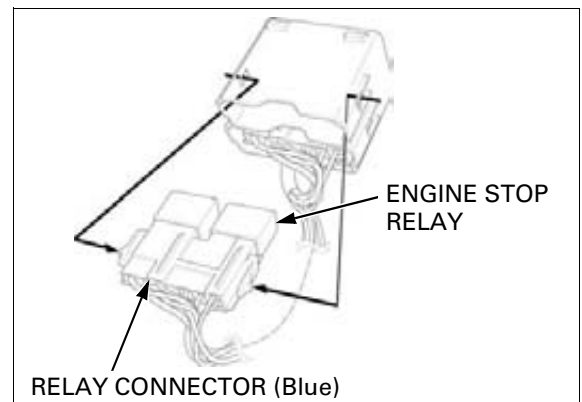
Remove the right rear cowl (page 3-8).

Remove relay box from the bracket.



Release the retainers and remove the relay connector (Blue) from the relay box.

Remove the engine stop relay from the connector.



Connect the ohmmeter to the engine stop relay connector terminals.

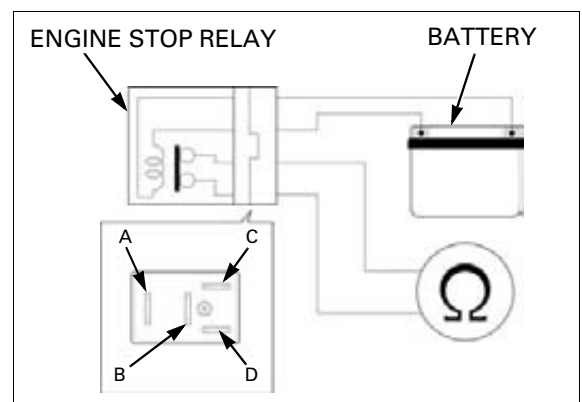
Connection: A – B

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

Connection: C (+) – D (-)

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

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



ENGINE CONTROL MODULE (ECM)

REMOVAL/INSTALLATION

Remove the right rear cowl (page 3-8).

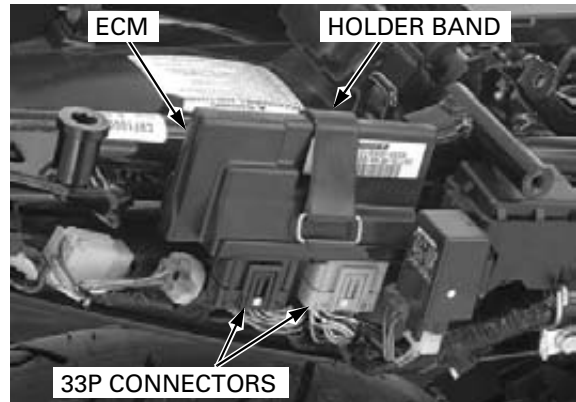
Disconnect the ECM 33P (Black) and 33P (Light gray) connectors.

Remove the holder band and the ECM.

Installation is in the reverse order of removal.

NOTE:

After replacing the ECM, register the new transponder keys (page 22-6).



ECM POWER/GROUND LINE INSPECTION

ENGINE DOES NOT START (No DTC and MIL blinking)

1. ECM Power Input Voltage Inspection

- Before starting the inspection, check for loose or poor contact on the ECM 33P connectors and recheck the MIL blinking.

Disconnect the ECM 33P (Black) connector.

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

Measure the voltage at the ECM 33P (Black) connector terminal and ground.

TOOL:

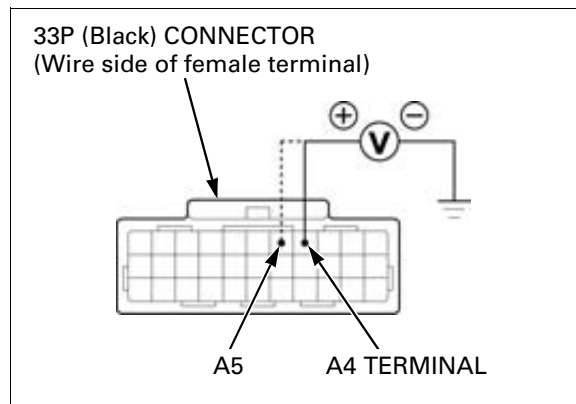
Test probe 07ZAJ-RDJA110

Connection: A4 (+) – Ground (-)
A5 (+) – Ground (-)

Is there battery voltage?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. ECM Ground Line Inspection

Turn the ignition switch OFF.

Check the continuity between the ECM 33P (Black) connector terminals and ground.

TOOL:

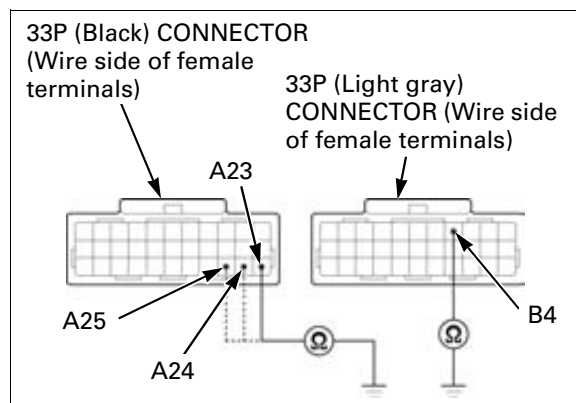
Test probe 07ZAJ-RDJA110

Connection: A23 – Ground
A24 – Ground
A25 – Ground

Are there continuities?

YES – Replace the ECM with a known good one, and recheck; refer to Key Registration Procedures (page 22-6)

NO – Open circuit in Green/pink (A23, A24 or A25) wires or Green wire (B4)



3. Engine Stop Relay Inspection 1

Turn the ignition switch OFF.
Remove the engine stop relay from the relay connector (Blue) (page 6-81).

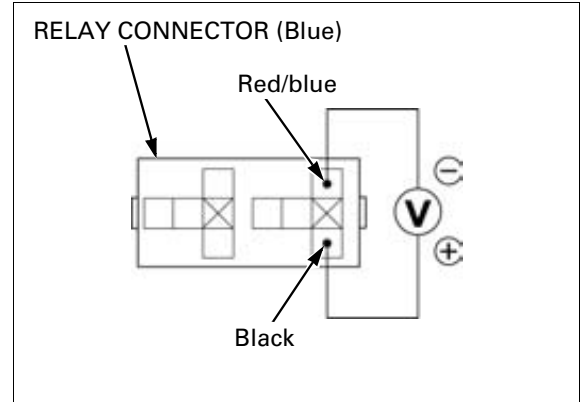
Turn the ignition switch ON and engine stop switch "⏻".
Measure the voltage at the engine stop relay connector terminals.

Connection: Black (+) – Red/blue (-)

Is there battery voltage?

YES – GO TO STEP 4.

- NO** –
- Blown sub-fuse
 - Open circuit in Black or Red/blue wire



4. Engine Stop Relay Inspection 2

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

Connection: Red/white – Black/white

Turn the ignition switch ON and engine stop switch "⏻".
Measure the voltage at the ECM 33P connector terminal and ground.

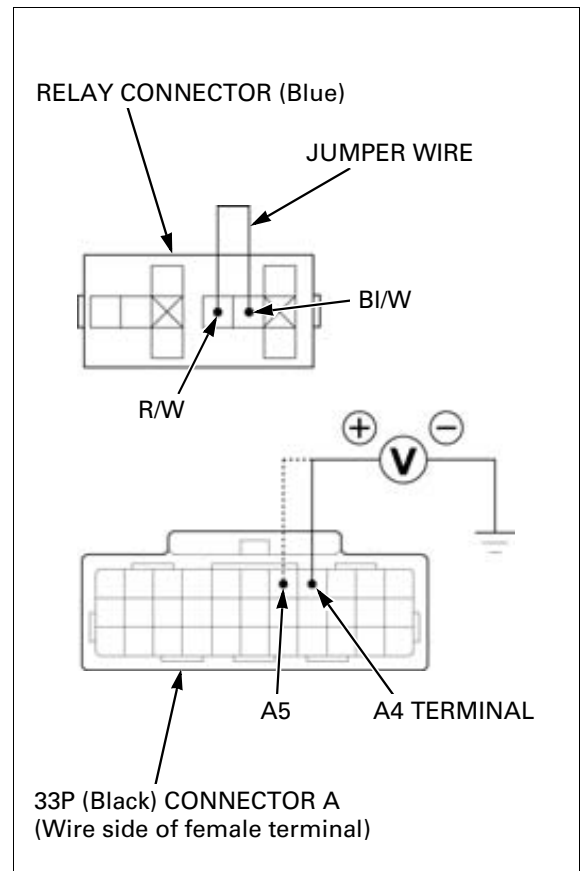
Connection: A4 (+) – Ground (-)

A5 (+) – Ground (-)

Is there battery voltage?

- YES** –
- Inspect the engine stop relay (page 6-81)
 - Inspect the engine stop switch (page 21-21)
 - Inspect the bank angle sensor (page 6-80)

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



SECONDARY AIR SUPPLY SYSTEM

SYSTEM INSPECTION

Start the engine and warm it up until the coolant temperature is 80 °C (176 °F).

Stop the engine.

Remove the fuel tank (page 6-57).

Disconnect the air supply hose from the air cleaner housing.

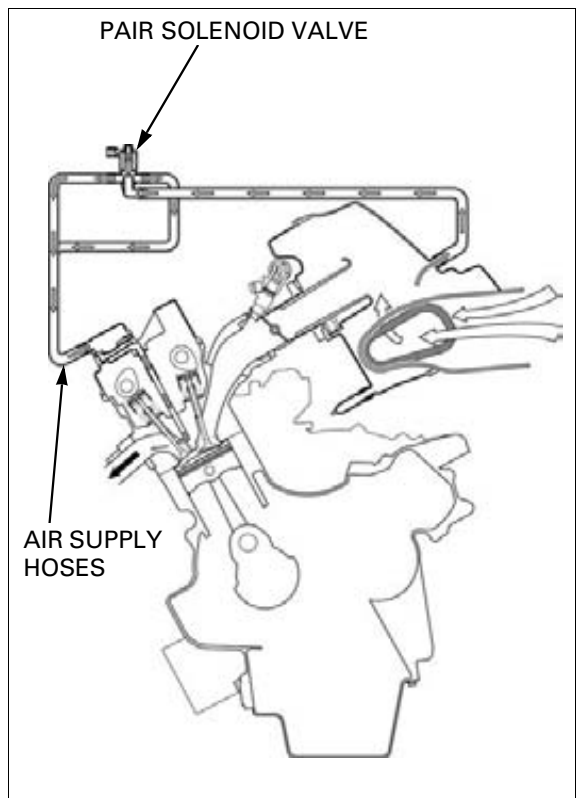
Check that the secondary air intake port is clean and free of carbon deposits.

Check the pulse secondary air injection (PAIR) check valves if the port is carbon fouled (page 9-6).



Start the engine and open the throttle slightly to be certain that the air sucked in through the air supply hose.

If the air is not drawn in, check the air supply hoses for clogs and the PAIR solenoid valve.

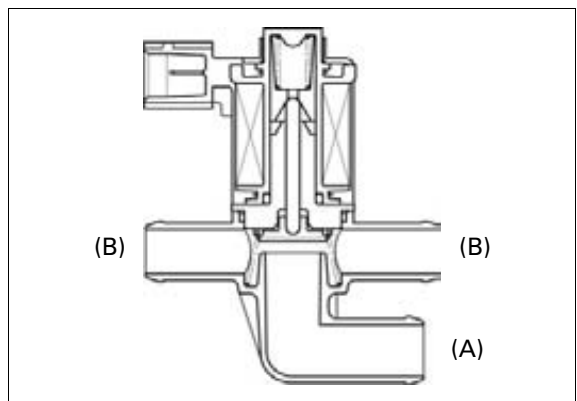


PAIR CONTROL SOLENOID VALVE

Inspection

Remove the PAIR control solenoid valve.

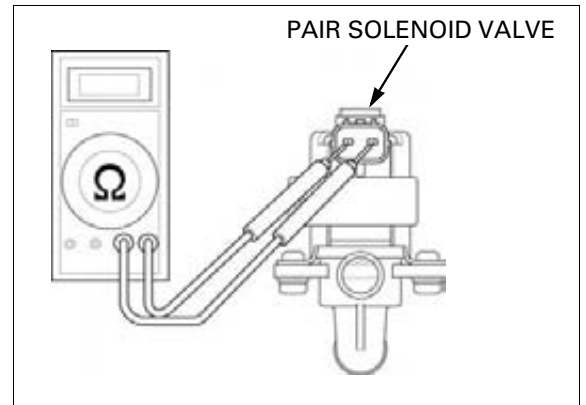
Check that air flows (A) to (B) when the 12 V battery is connected to the PAIR control solenoid valve terminals. Air should not flow (A) to (B) when the battery is disconnected.



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

STANDARD: 23 – 27 Ω (20 °C/68 °F)

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



Removal/Installation

Lift and support the fuel tank (page 4-5).

Disconnect the right and left PAIR air hoses from the cylinder head cover.

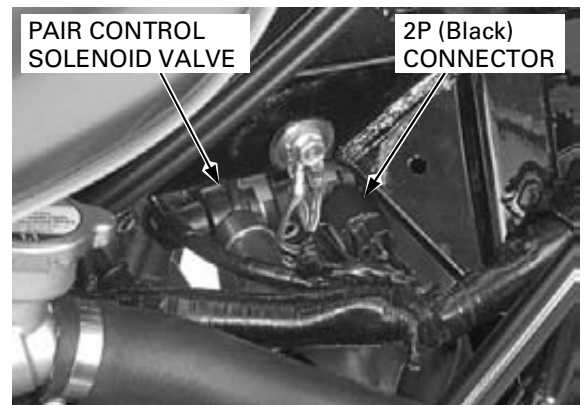


Remove the radiator mounting bolts and release the bosses from the grommet (page 7-11).

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

Remove the PAIR control solenoid valve from the stay.

Installation is in the reverse order of removal.

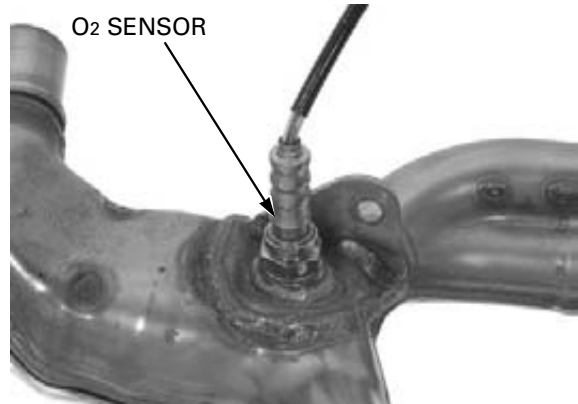


O₂ SENSOR

REMOVAL

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

Remove the exhaust pipe (page 3-13).



Remove the O₂ sensor using the special tool.

TOOL:

O₂ sensor wrench **07LAA-PT50101**

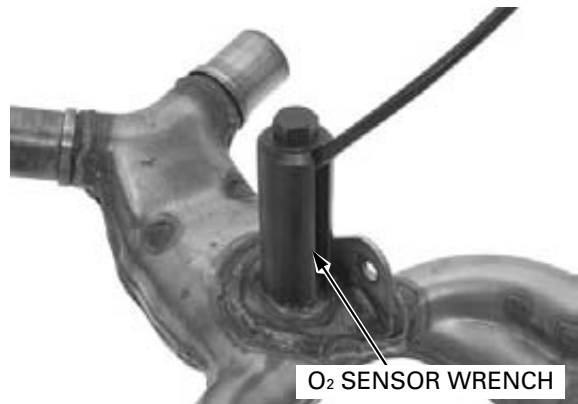
- Be careful not to damage the sensor wire.
- Do not use an impact wrench while removing or installing the O₂ sensor, or it may be damaged.

Install the O₂ sensor onto the exhaust pipe.

Tighten the unit to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 33 lbf·ft)

Install the exhaust pipe (page 3-13).



INTAKE AIR DUCT

INTAKE DUCT VALVE DIAPHRAGM

Inspection

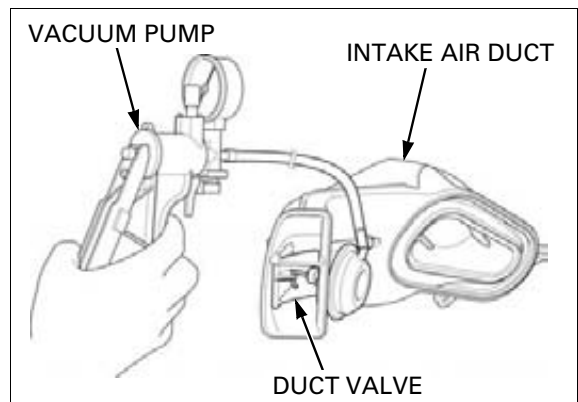
Remove the intake air duct from the air cleaner housing (page 4-7).

Disconnect the vacuum tube from the diaphragm.

Connect a vacuum pump to the diaphragm and apply specified vacuum.

SPECIFIED VACUUM: 250 mm Hg (9.8 in Hg)

The vacuum should hold and the duct valve should remain open.



Removal/Installation

Remove the intake air duct from the air cleaner housing (page 4-7).

Disconnect the vacuum hose from the diaphragm. Turn the diaphragm counterclockwise and unhook the diaphragm rod from the duct valve.

Installation is in the reverse order of removal.



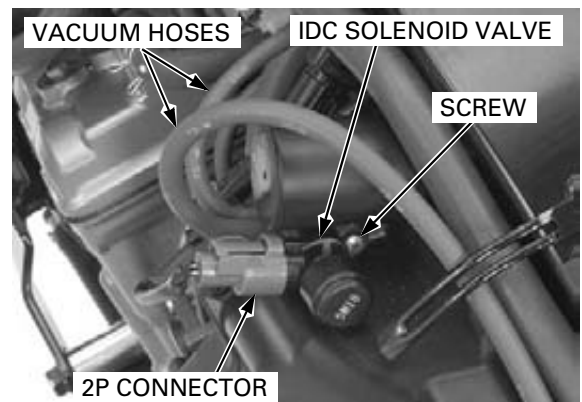
INTAKE DUCT CONTROL (IDC) SOLENOID VALVE

Removal/Installation

Remove the fuel tank (page 6-57).

Disconnect the vacuum hoses and 2P connector from the IDC solenoid valve.

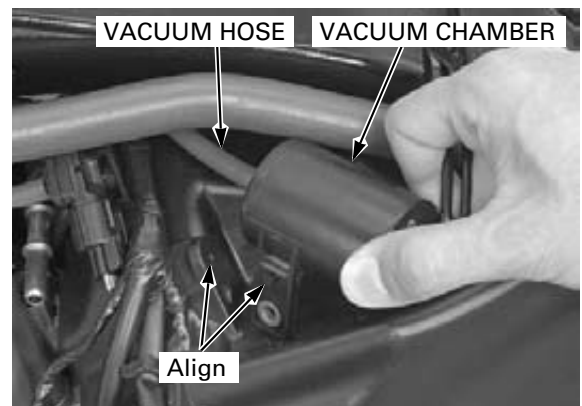
Remove the screw and IDC solenoid valve.



Disconnect the vacuum hose from the chamber.

Installation is in the reverse order of removal.

Align the vacuum chamber boss with the hole on the air cleaner housing.



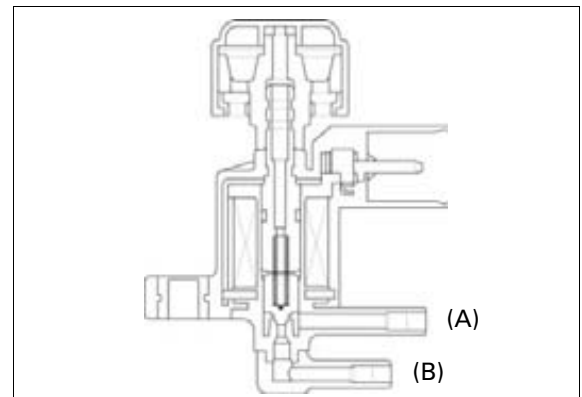
Inspection

Remove the IDC solenoid valve.

Check that the air should flow (A) to (B), only when the 12 V battery is connected to the IDC solenoid valve terminals.

CONNECTION:

- Battery (+) terminal – Black/white terminal**
- Battery (-) terminal – Yellow/black terminal**

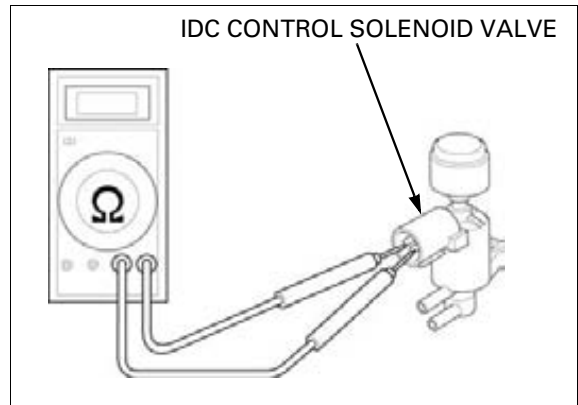


FUEL SYSTEM (PGM-FI)

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

STANDARD: 28 – 32 Ω (20 °C/68 °F)

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



ONE-WAY VALVE

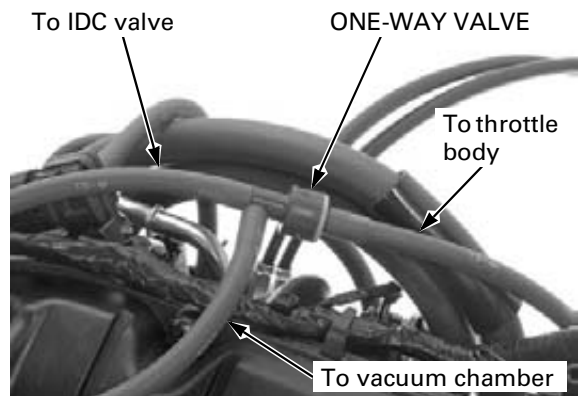
Removal/Installation

Remove the air cleaner housing (page 6-60).

Remove the one-way valve by disconnecting the vacuum hoses.

Installation is in the reverse order of removal.

Route the vacuum hoses correctly.



Inspection

Check the one-way valve operation as follows:

- Air should flow (A) to (B)
- Air should flow (A) to (C)
- Air should not flow (B) to (A)
- Air should not flow (B) to (C)

If the operation is incorrect, replace the one-way valve.

