

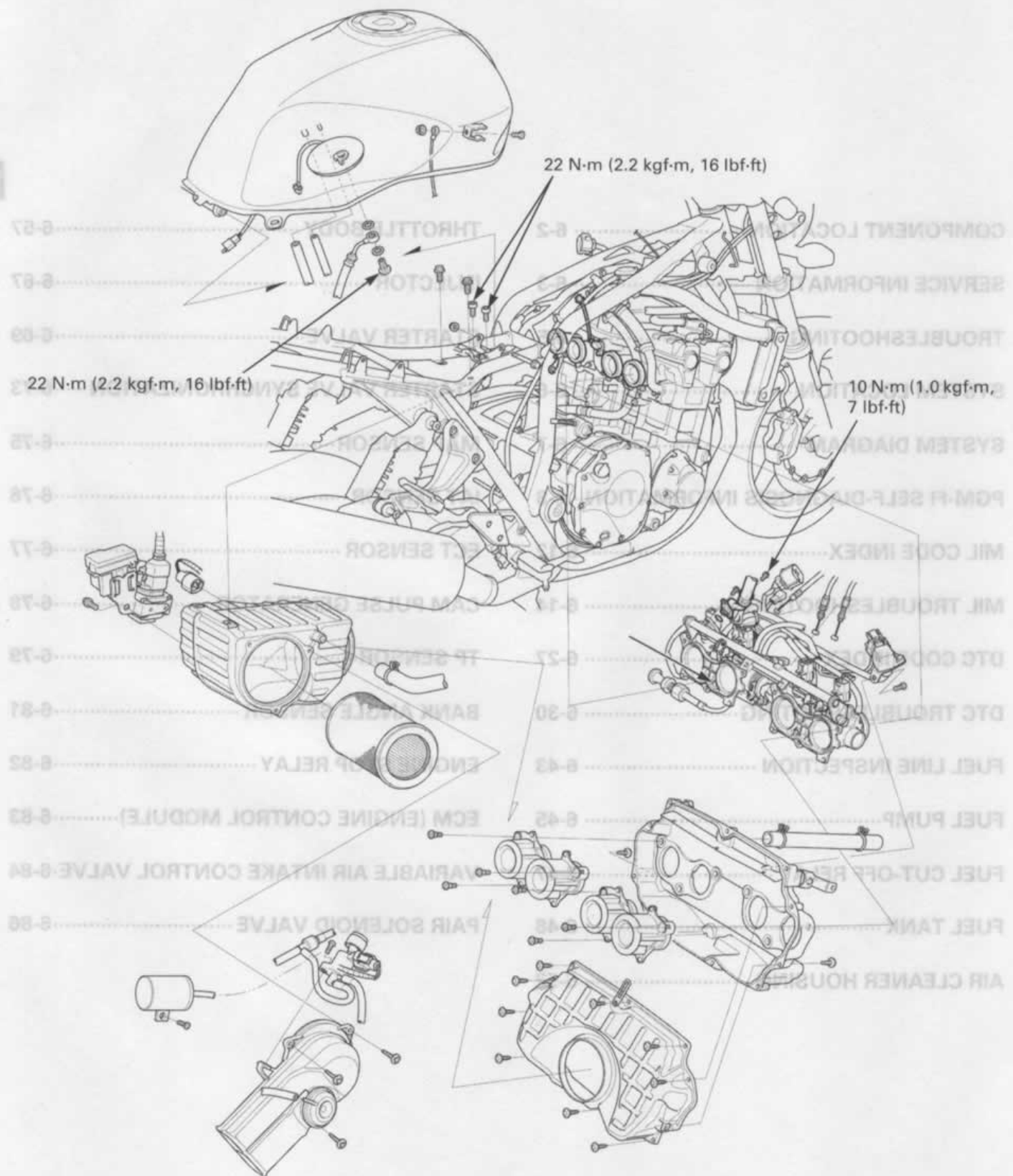
6. FUEL SYSTEM (Programmed Fuel Injection)

COMPONENT LOCATION

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COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- Be sure to relieve the fuel pressure while the engine is OFF.
- Bending or twisting the control cables will impair smooth operation and could cause the cables to stick or bind, resulting in loss of vehicle control.
- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.
- Do not apply commercially available carburetor cleaners to the inside of the throttle bore, which is coated with molybdenum.
- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect idle operation.
- Seal the cylinder head intake ports with tape or a clean cloth to keep dirt and debris from entering the intake ports after the throttle body has been removed.
- Do not apply excessive force to the fuel pipe on the throttle body while removing or installing the throttle body.
- Do not damage the throttle body. It may cause incorrect throttle and idle valve synchronization.
- Prevent dirt and debris from entering the throttle bore, fuel hose, clean them using compressed air.
- The throttle body is factory pre-set. Do not disassemble in a way other than shown in this manual.
- Always replace the sealing rubber when the fuel pump is removed.
- The programmed fuel injection system is equipped with the Self-Diagnostic System described (page 6-8). If the malfunction indicator lamp (MIL) blinks, follow the Self-Diagnostic Procedures to remedy the problem.
- When checking the PGM-FI, always follow the steps in the troubleshooting flow chart (page 6-12).
- The PGM-FI system is provided with fail-safe function to secure a minimum running capability even when there is any trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is secured by making use of the numerical values of a situation preset in advance in the simulated program map. It must be remembered, however, that when any abnormality is detected in two injectors and/or the ignition and cam pulse generator, the fail safe function stops the engine from the standpoint of protecting it.
- Refer to PGM-FI system location (page 6-6).
- A faulty PGM-FI system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- Refer to procedures for fuel level sensor inspection (page 19-22).
- The vehicle speed sensor sends digital pulse signal to the ECM (PGM-FI unit) and computation. Refer to procedures for vehicle speed sensor inspection (page 19-15).
- When disassembling the programmed fuel injection parts, note the location of the O-rings. Replace them with new ones upon reassembly.
- Before disconnecting the fuel hose, release the fuel pressure by loosening the fuel hose banjo bolt at the fuel tank.
- Always replace the sealing washers when the fuel hose banjo bolt is removed or loosened.
- Use a digital tester for PGM-FI system inspection.
- When replacing the ECM, always follow the step in the IMMOBILIZER SYSTEM (page 20-6).

SPECIFICATIONS



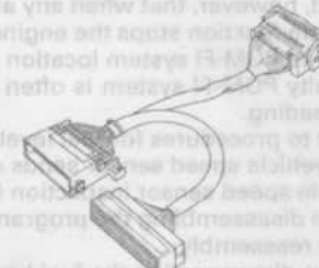
ITEM	SPECIFICATIONS
Throttle body identification number	GQ36A
Starter valve vacuum difference	20 mm Hg
Base throttle valve for synchronization	No.1
Idle speed	$1,000 \pm 100 \text{ min}^{-1} \text{ (rpm)}$
Throttle grip free play	2 – 4 mm (1/16 – 3/16 in)
Intake air temperature sensor resistance (at 20°C/68°F)	1 – 4 k Ω
Engine coolant temperature sensor resistance (at 20°C/68°F)	2.3 – 2.6 k Ω
Fuel injection resistance (at 20°C/68°F)	10.5 – 14.5 Ω
PAIR solenoid valve resistance (at 20°C/68°F)	20 – 24 Ω
Cam pulse generator peak voltage (at 20°C/68°F)	0.7 V minimum
Ignition pulse generator peak voltage (at 20°C/68°F)	0.7 V minimum
Manifold absolute pressure at idle	150 – 250 mm Hg
Fuel pressure at idle	343 kPa (3.5 kgf/cm ² , 50 psi)
Fuel pump flow (at 12V)	188 cm ³ (6.4 US oz, 6.6 Imp oz) minimum/10 seconds

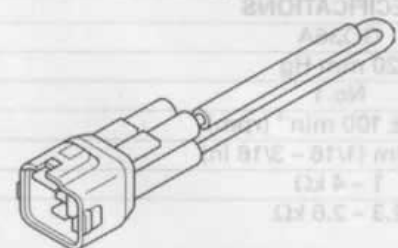
FUEL SYSTEM (Programmed Fuel Injection)

TORQUE VALUES

ECT (Coolant temperature sensor)/thermo sensor	23 N·m (2.3 kgf-m, 17 lbf-ft)
Throttle body insulator band screw	12 N·m (1.2 kgf-m, 9 lbf-ft)
Fuel rail mounting bolt	10 N·m (1.0 kgf-m, 7 lbf-ft)
Service check bolt	12 N·m (1.2 kgf-m, 9 lbf-ft)
Starter valve lock nut	2 N·m (0.18 kgf-m, 1.3 lbf-ft)
Starter valve synchronization plate screw	1 N·m (0.09 kgf-m, 0.7 lbf-ft)
Choke link plate screw	1 N·m (0.09 kgf-m, 0.7 lbf-ft)
Choke cable/throttle stop screw bracket mounting screw	5 N·m (0.5 kgf-m, 3.6 lbf-ft)
Fuel hose banjo bolt (fuel pump side)	22 N·m (2.2 kgf-m, 16 lbf-ft)
Fuel hose mounting bolt (throttle body side)	10 N·m (1.0 kgf-m, 7 lbf-ft)
Fuel pump mounting nut	See page 1-17
Fuel tank rear bracket mounting bolt	22 N·m (2.2 kgf-m, 16 lbf-ft)

TOOLS

Fuel pressure gauge 07406-0040003 	Peak voltage adaptor 07HGJ-0020100  <p>with commercially available digital multimeter (impedance 10 MΩDCV minimum)</p>	ECU test harness 32P 070MZ-0010201  <p>Two required</p>
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SCS short connector 070PZ-ZY30100 
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SPECIFICATIONS

188 cm ³ (8.4 US oz. 8.8 imp oz.) minimum/10 seconds	243 kPa (3.5 kgf/cm ² , 50 psi)	180 – 250 mm Hg	0.7 V minimum	0.7 V minimum	30 – 34 Ω	10.5 – 14.5 Ω	2.3 – 2.6 kΩ	1 – 4 kΩ	2 – 4 mm (V16 – 3/16 in.)	1,000 ± 100 min.	20 mm Hg	Throttle body identification number
Fuel pressure at idle	Manifold absolute pressure at idle	Ignition pulse generator peak voltage (at 20°C/68°F)	Cam pulse generator peak voltage (at 20°C/68°F)	PAIR solenoid valve resistance (at 20°C/68°F)	Fuel injection resistance (at 20°C/68°F)	Engine coolant temperature sensor resistance (at 20°C/68°F)	Intake air temperature sensor resistance (at 20°C/68°F)	Throttle grip free play	Idle speed	Base throttle valve for synchronization	Starter valve vacuum difference	Throttle body identification number

TROUBLESHOOTING

Engine won't start

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

Engine stall, hard to start, rough idling

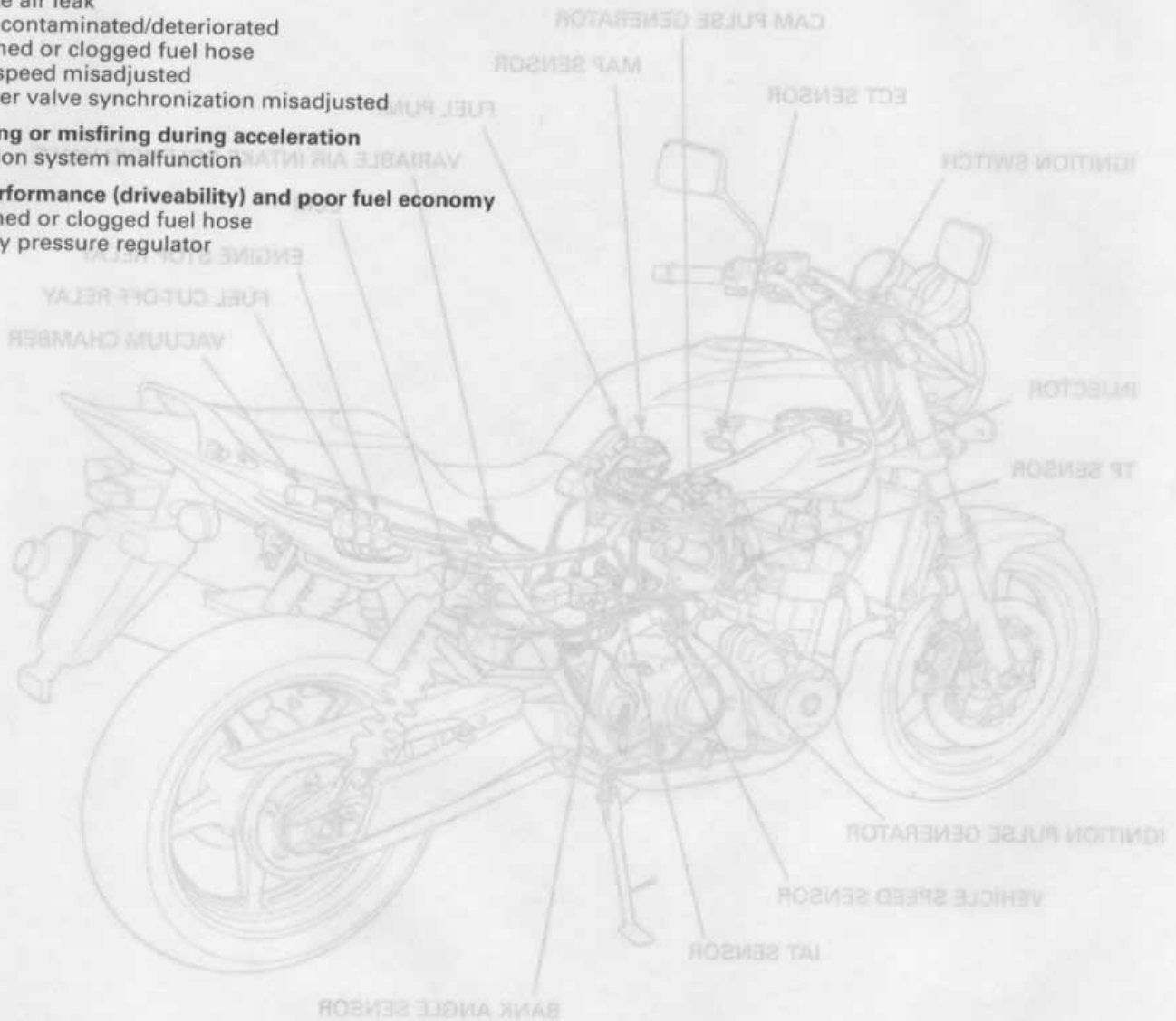
- Intake air leak
- Fuel contaminated/deteriorated
- Pinched or clogged fuel hose
- Idle speed misadjusted
- Starter valve synchronization misadjusted

Backfiring or misfiring during acceleration

- Ignition system malfunction

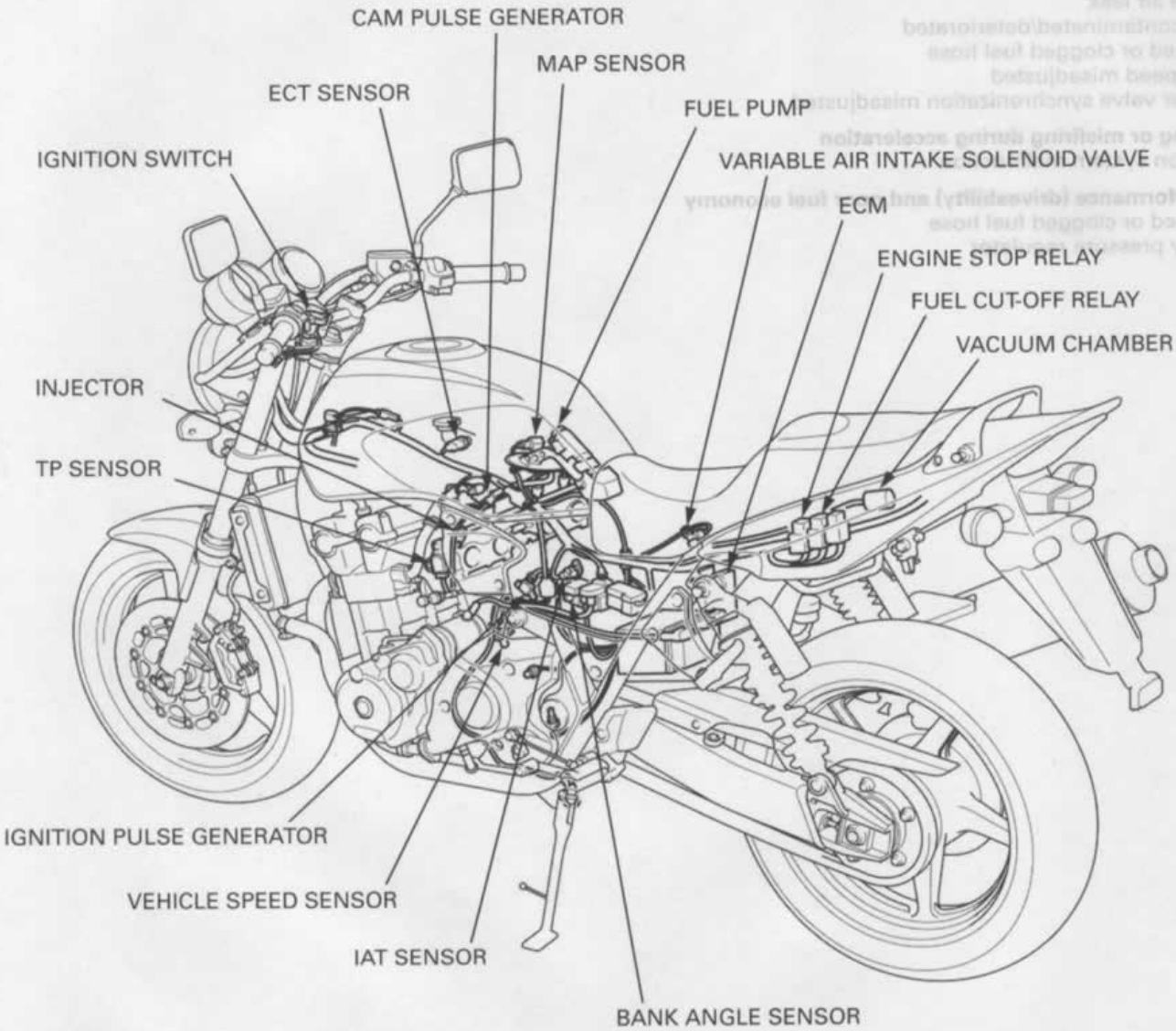
Poor performance (driveability) and poor fuel economy

- Pinched or clogged fuel hose
- Faulty pressure regulator



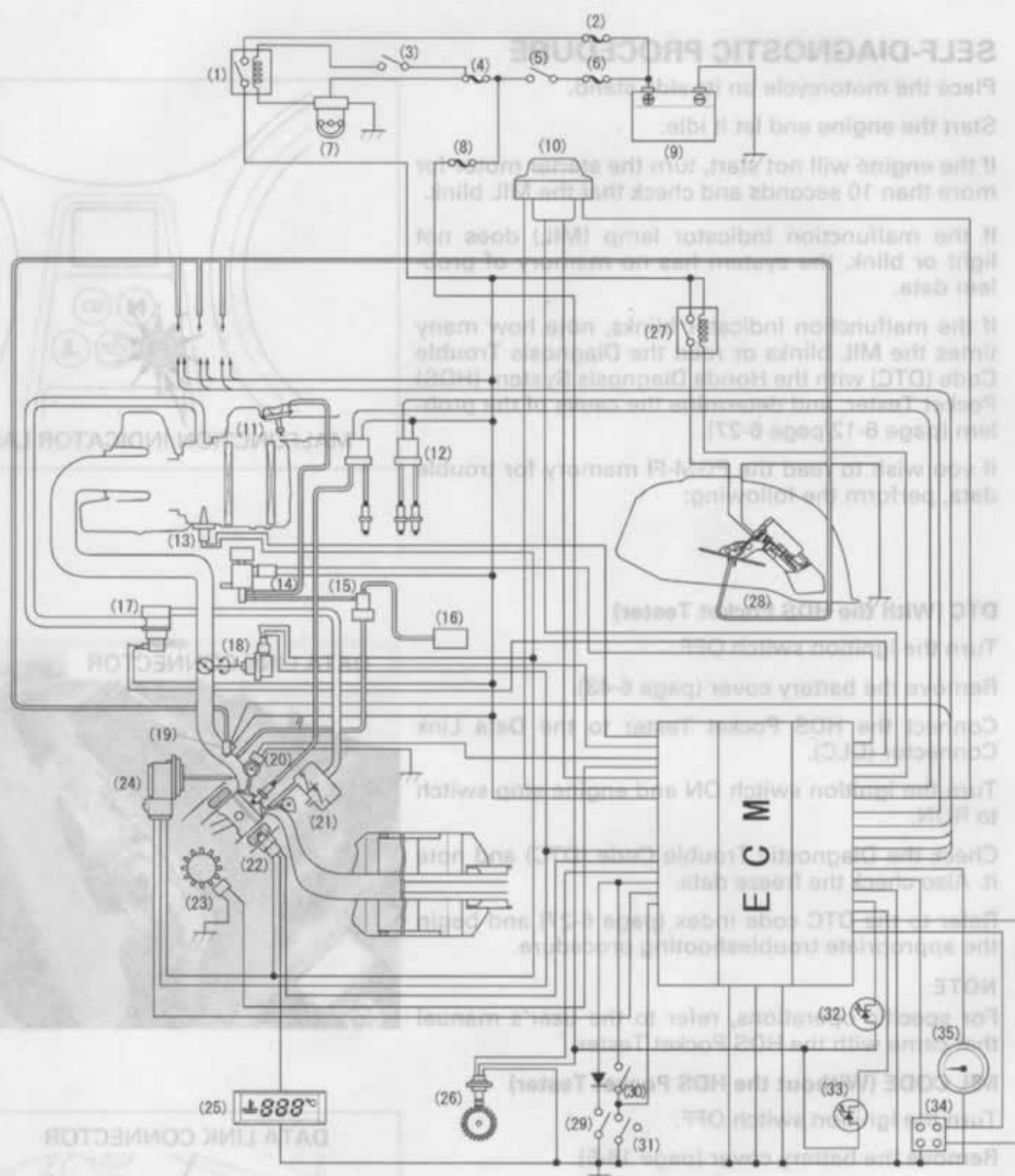
ABBREVIATIONS	FULL NAME
MAP sensor	Manifold absolute pressure sensor
TP sensor	Throttle position sensor
IAT sensor	Intake air temperature sensor
ECT sensor	Engine coolant temperature sensor
ECM	Engine control module

SYSTEM LOCATION



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

SYSTEM DIAGRAM



(1)	Engine stop relay	(19)	Injector
(2)	Sub-fuse (20A)	(20)	Cam pulse generator
(3)	Engine stop switch	(21)	PAIR check valve
(4)	Sub-fuse (10A)	(22)	ECT sensor
(5)	Ignition switch	(23)	Ignition pulse generator
(6)	Main fuse A (30A)	(24)	MAP sensor
(7)	Bank angle sensor	(25)	Coolant temperature indicator
(8)	Sub-fuse (10A)	(26)	Vehicle speed sensor
(9)	Battery	(27)	Fuel cut-off relay
(10)	Immobilizer receiver	(28)	Fuel pump
(11)	Variable intake port diaphragm	(29)	Neutral switch
(12)	Ignition coil	(30)	Clutch switch
(13)	IAT sensor	(31)	Side stand switch
(14)	Bypass control solenoid valve	(32)	Malfunction indicator lamp (MIL)
(15)	One-way valve	(33)	Immobilizer indicator
(16)	Vacuum chamber	(34)	Service check connector
(17)	PAIR solenoid valve	(35)	Tachometer
(18)	TP sensor		

PGM-FI SELF-DIAGNOSIS INFORMATION

SYSTEM DIAGRAM

SELF-DIAGNOSTIC PROCEDURE

Place the motorcycle on its side stand.

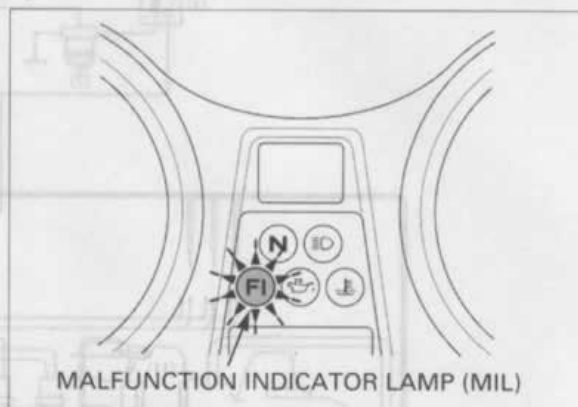
Start the engine and let it idle.

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

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

If the malfunction indicator blinks, note how many times the MIL blinks or read the Diagnosis Trouble Code (DTC) with the Honda Diagnosis System (HDS) Pocket Tester, and determine the cause of the problem (page 6-12/page 6-27).

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



MALFUNCTION INDICATOR LAMP (MIL)

The MIL will start blink only with the side stand down and with the engine off (engine stop switch is RUN) or engine revs are below 5,000 min⁻¹ (rpm). In any conditions, the MIL will illuminate and stay on.

DTC (With the HDS Pocket Tester)

Turn the ignition switch OFF.

Remove the battery cover (page 6-43).

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

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

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

Refer to the DTC code index (page 6-27) and begin the appropriate troubleshooting procedure.

NOTE:

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

MIL CODE (Without the HDS Pocket Tester)

Turn the ignition switch OFF.

Remove the battery cover (page 16-5).

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

CONNECTION: Brown - Green

TOOL:

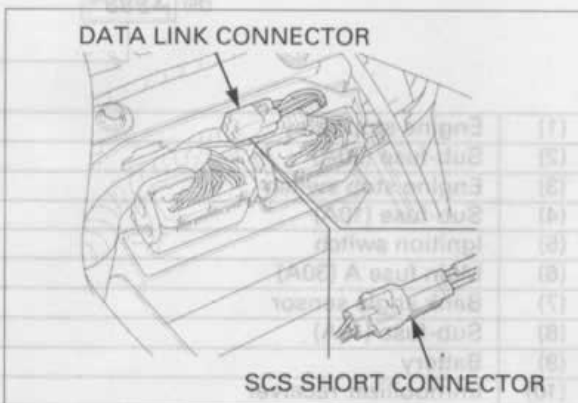
SCS short connector 070PZ-ZY30100

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

DATA LINK CONNECTOR



DATA LINK CONNECTOR



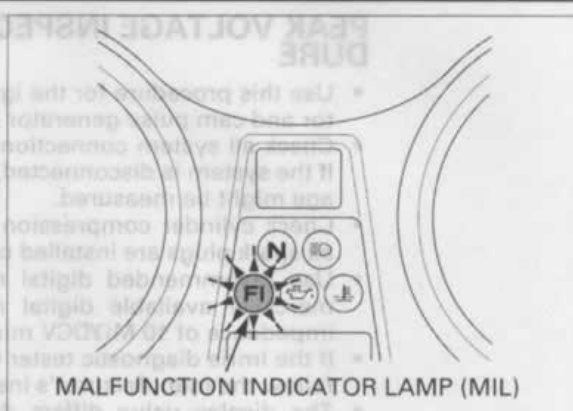
SCS SHORT CONNECTOR

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

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

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

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



MALFUNCTION INDICATOR LAMP (MIL)

SELF-DIAGNOSIS RESET PROCEDURE

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

With the HDS Pocket Tester

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

Without the HDS Pocket Tester

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

CONNECTION: Brown – Green

TOOL:

SCS short connector 070PZ-ZY30100

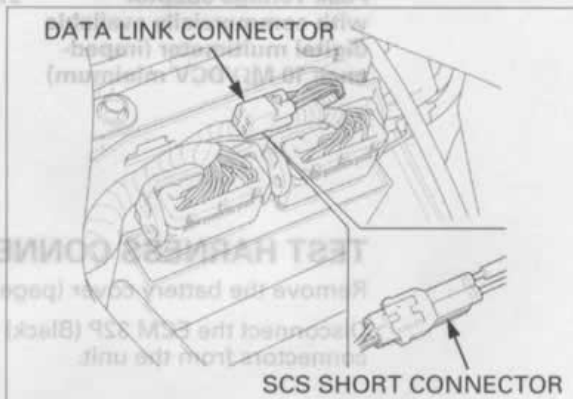
3. Turn the ignition switch ON.
4. Remove the special tool from the Data Link Connector (DLC).

5. The MIL lights about 5 seconds.

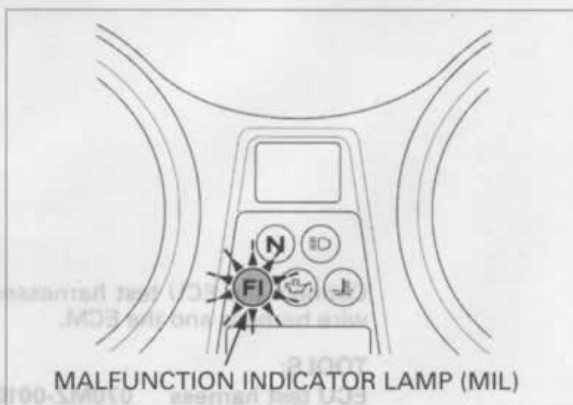
While the indicator lights, short the Data Link Connector (DLC) again with the special tool.

Self-diagnosis memory data is erased, if the MIL turn off and start blinking (0.3 second cycle).

- The data link connector must be jumped while the indicator lights. If not, the MIL will not start blinking.
- Note that the self diagnosis memory data cannot be erased if you turn off the ignition switch before the MIL starts blinking.
- If the MIL blinks 33 times, the data has not been erased, so try again.
- And yet, if the MIL still blinks 33 times, check the E²-PROM (page 6-26).



SCS SHORT CONNECTOR



MALFUNCTION INDICATOR LAMP (MIL)

PEAK VOLTAGE INSPECTION PROCEDURE

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

Avoid touching the tester probes to prevent electric shock.

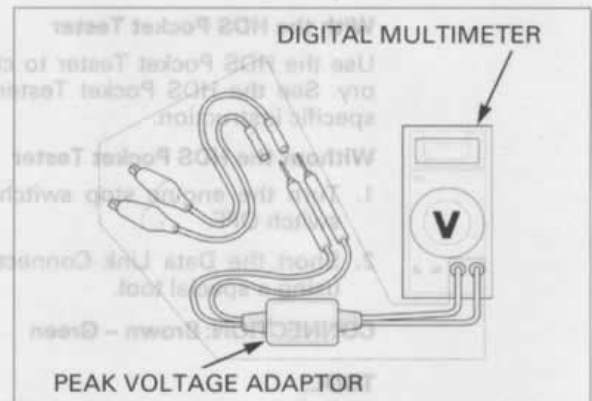
Connect the peak voltage adaptor to the digital multimeter.

TOOLS:

Imrie diagnostic tester (model 625) or

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

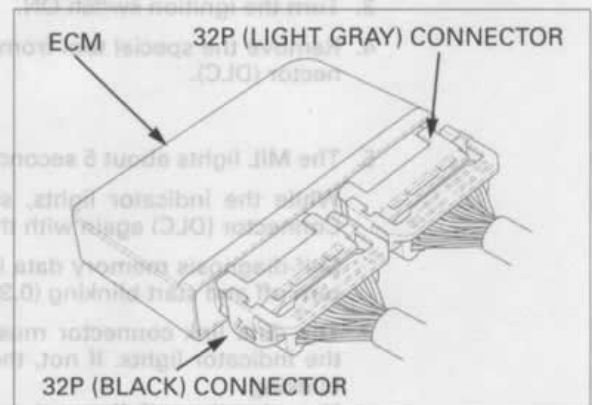
07HGJ-0020100



TEST HARNESS CONNECTION

Remove the battery cover (page 6-43).

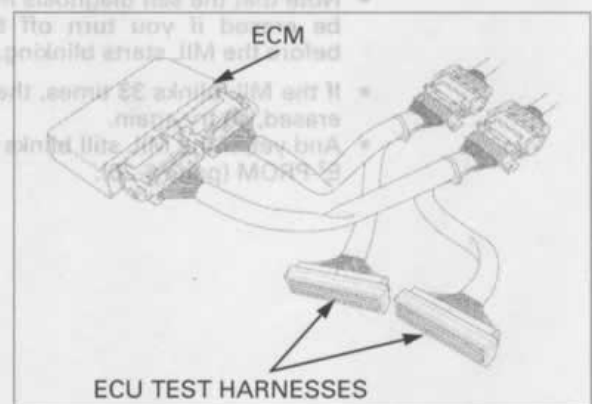
Disconnect the ECM 32P (Black) and 32P (Light gray) connectors from the unit.



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

TOOLS:

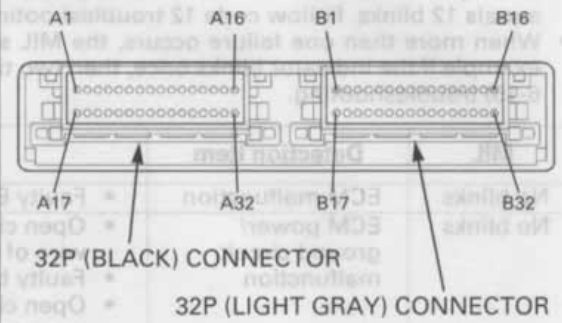
ECU test harness 070MZ-0010201 (two required)



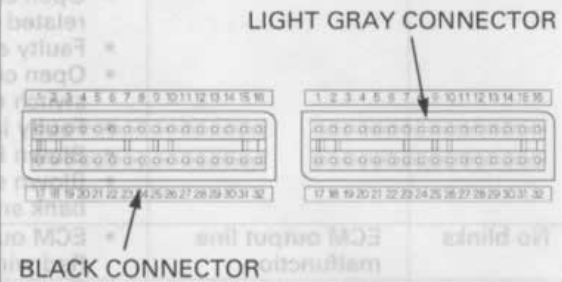
TEST HARNESS TERMINAL LAYOUT

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

VIEW FROM WIRE HARNESS SIDE:



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



Refer to	Symptoms	Causes	No blinks	1 Blink	2 Blinks	3 Blinks	4 Blinks	5 Blinks	6 Blinks	7 Blinks	8 Blinks	9 Blinks	10 Blinks
B-83	* Engine does not start	* Faulty ECM	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-83	* Engine does not start	* Open circuit at the power input to the ECM	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Faulty crank angle sensor	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Open circuit in crank angle sensor related circuit	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Faulty engine stop switch	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Open circuit in engine stop switch related wires	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Ignition switch	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Faulty ECM	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Open circuit in MIL wire	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Open or short circuit in MIL wire	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Short circuit in data link connector	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Faulty ECM	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
		* Short circuit in data link connector for	No blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-14	* Engine operates normally	* Loose or poor contact on MAP sensor connector	1 Blink	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-14	* Engine operates normally	* Open or short circuit in MAP sensor wire	1 Blink	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-15	* Engine operates normally	* Faulty MAP sensor	2 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-15	* Engine operates normally	* Loose or poor connection of the MAP sensor vacuum tube	2 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-16	* Hard start at a low temperature (simulate using numerical values; 90 °C (194 °F))	* Faulty MAP sensor	3 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-16	* Hard start at a low temperature (simulate using numerical values; 90 °C (194 °F))	* Loose or poor contact on ECT sensor	3 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-16	* Hard start at a low temperature (simulate using numerical values; 90 °C (194 °F))	* Open or short circuit in ECT sensor wire	3 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-17	* Poor engine response and performance when operating the throttle quickly (simulate using numerical values; Throttle opens 0°)	* Faulty ECT sensor	4 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-17	* Poor engine response and performance when operating the throttle quickly (simulate using numerical values; Throttle opens 0°)	* Loose or poor contact on TP sensor connector	4 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-17	* Poor engine response and performance when operating the throttle quickly (simulate using numerical values; Throttle opens 0°)	* Open or short circuit in TP sensor wire	4 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-20	* Engine operates normally (simulate using numerical values; 35 °C (77 °F))	* Faulty TP sensor	5 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-20	* Engine operates normally (simulate using numerical values; 35 °C (77 °F))	* Loose or poor contact on IAT sensor	5 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-20	* Engine operates normally (simulate using numerical values; 35 °C (77 °F))	* Open or short circuit in IAT sensor wire	5 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-21	* Engine operates normally (simulate using numerical values; 2 km/h)	* Faulty IAT sensor	6 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-21	* Engine operates normally (simulate using numerical values; 2 km/h)	* Loose or poor contact on vehicle speed sensor connector	6 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-21	* Engine operates normally (simulate using numerical values; 2 km/h)	* Open or short circuit in vehicle speed sensor connector	6 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				
B-21	* Engine operates normally (simulate using numerical values; 2 km/h)	* Faulty vehicle speed sensor	6 Blinks	MAP sensor circuit malfunction	MAP sensor performance problem	ECT sensor circuit malfunction	TP sensor circuit malfunction	IAT sensor circuit malfunction	Vehicle speed sensor circuit malfunction				

MIL CODE INDEX

- The PGM-FI MIL denotes the failure codes (the number of blinks from 0 to 33). When the indicator lights for 1.2 seconds it is equivalent to ten blinks. For example, a 1.2 second illumination and two blinks (0.4 second x 2) of the indicator equals 12 blinks. Follow code 12 troubleshooting.
- When more than one failure occurs, the MIL shows the blinks in the order of lowest number to highest number. For example if the indicator blinks once, then two times, two failures have occurred. Follow codes 1 (page 6-14) and 2 (page 6-15) troubleshooting.

MIL	Detection Item	Causes	Symptoms	Refer to
No blinks	ECM malfunction	<ul style="list-style-type: none"> • Faulty ECM 	<ul style="list-style-type: none"> • Engine does not start 	6-83
No blinks	ECM power/ground circuit malfunction	<ul style="list-style-type: none"> • Open circuit at the power input wire of the ECM • Faulty bank angle sensor • Open circuit in bank angle sensor related circuit • Faulty engine stop relay • Open circuit in engine stop relay related wires • Faulty engine stop switch • Open circuit in engine stop switch related wires • Faulty ignition switch • Blown PGM-FI fuse (20 A) • Blown sub-fuse (10A) (starter, bank angle sensor) 	<ul style="list-style-type: none"> • Engine does not start 	6-83
No blinks	ECM output line malfunction	<ul style="list-style-type: none"> • ECM output voltage line (Yellow/Red wire) short circuit 	<ul style="list-style-type: none"> • Engine does not start 	—
No blinks	MIL circuit malfunction	<ul style="list-style-type: none"> • Faulty ECM • Open or short circuit in MIL wire 	<ul style="list-style-type: none"> • Engine operates normally 	6-8
Stay lit	Data link circuit malfunction	<ul style="list-style-type: none"> • Short circuit in data link connector • Faulty ECM • Short circuit in data link connector wire 	<ul style="list-style-type: none"> • Engine operates normally 	—
1 Blink	MAP sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on MAP sensor connector • Open or short circuit in MAP sensor wire • Faulty MAP sensor 	<ul style="list-style-type: none"> • Engine operates normally 	6-14
2 Blinks	MAP sensor performance problem	<ul style="list-style-type: none"> • Loose or poor connection of the MAP sensor vacuum tube • Faulty MAP sensor 	<ul style="list-style-type: none"> • Engine operates normally 	6-15
7 Blinks	ECT sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on ECT sensor • Open or short circuit in ECT sensor wire • Faulty ECT sensor 	<ul style="list-style-type: none"> • Hard start at a low temperature (Simulate using numerical values; 90 °C/ 194 °F) 	6-16
8 Blinks	TP sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on TP sensor connector • Open or short circuit in TP sensor wire • Faulty TP sensor 	<ul style="list-style-type: none"> • Poor engine response and performance when operating the throttle quickly (Simulate using numerical values; Throttle opens 0°) 	6-18
9 Blinks	IAT sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on IAT sensor • Open or short circuit in IAT sensor wire • Faulty IAT sensor 	<ul style="list-style-type: none"> • Engine operates normally (Simulate using numerical values; 25 °C/ 77 °F) 	6-20
11 Blinks	Vehicle speed sensor circuit malfunction	<ul style="list-style-type: none"> • Loose or poor contact on vehicle speed sensor connector • Open or short circuit in vehicle speed sensor connector • Faulty vehicle speed sensor 	<ul style="list-style-type: none"> • Engine operates normally (Simulate using numerical values; 5 km/h) 	6-21

MIL	Detection Item	Causes	Symptoms	Refer to
12 Blinks	No.1 injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.1 injector connector Open or short circuit in No.1 injector wire Faulty No.1 injector 	<ul style="list-style-type: none"> Engine does not start 	6-22
13 Blinks	No.2 injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.2 injector connector Open or short circuit in No.2 injector wire Faulty No.2 injector 	<ul style="list-style-type: none"> Engine does not start 	6-24
14 Blinks	No.3 injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.3 injector connector Open or short circuit in No.3 injector wire Faulty No.3 injector 	<ul style="list-style-type: none"> Engine does not start 	6-24
15 Blinks	No.4 injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.4 injector connector Open or short circuit in No.4 injector wire Faulty No.4 injector 	<ul style="list-style-type: none"> Engine does not start 	6-24
18 Blinks	Cam pulse generator no signal	<ul style="list-style-type: none"> Loose or poor contact on cam pulse generator Open or short circuit in cam pulse generator Faulty cam pulse generator 	<ul style="list-style-type: none"> Engine does not start 	6-24
19 Blinks	Ignition pulse generator no signal	<ul style="list-style-type: none"> Loose or poor contact on ignition pulse generator Open or short circuit in ignition pulse generator Faulty ignition pulse generator 	<ul style="list-style-type: none"> Engine does not start 	6-25
33 Blinks	E ² -PROM in ECM malfunction	<ul style="list-style-type: none"> Faulty ECM 	<ul style="list-style-type: none"> Engine operates normally Does not hold the self-diagnosis data 	6-26



MIL TROUBLESHOOTING

MIL 1 BLINK (MAP SENSOR)

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

1. MAP Sensor Output Voltage Inspection

Turn the ignition switch OFF.

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

Turn the ignition switch ON and engine stop switch RUN.

Measure the voltage at the test harness terminals.

Connection: B15 (+) – B17 (–)

Is the voltage within 2.7 – 3.1V?

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

2. MAP Sensor Output Line Inspection

Turn the ignition switch OFF.

Disconnect the MAP sensor 3P connector.

Turn the ignition switch ON and engine stop switch RUN.

Measure the voltage at the wire harness side.

Connection: Light green/Yellow (+) – Green/Orange (–)

Is the voltage within 4.75 – 5.25V?

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

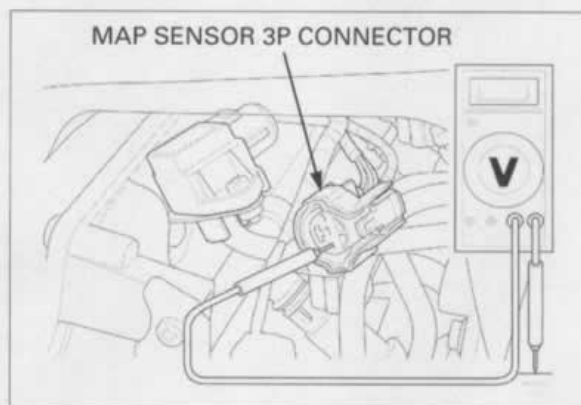
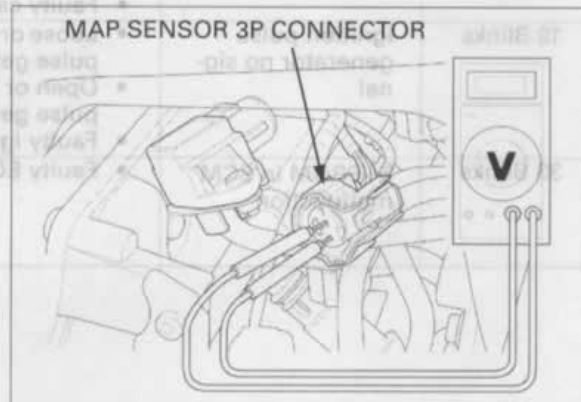
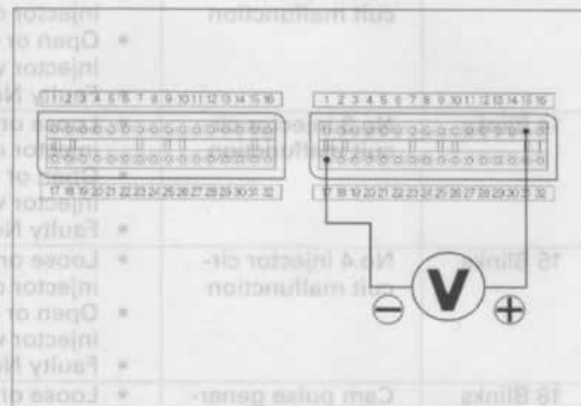
3. MAP Sensor Input Voltage Inspection

Measure the voltage at the wire harness side.

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

Is the voltage within 4.75 – 5.25V?

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



4. MAP Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

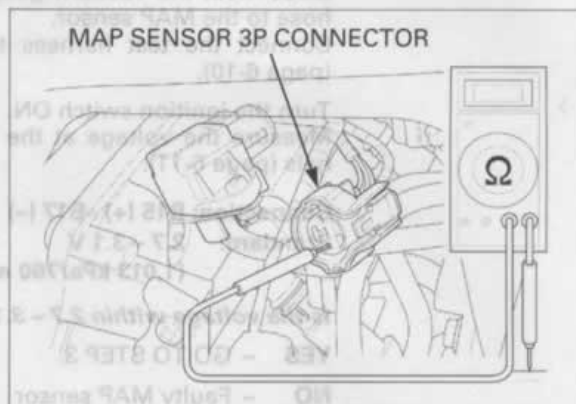
Check for continuity between the MAP sensor 3P connector terminal of the wire harness side and ground.

Connection: Light green/Yellow – Ground

Is there continuity?

YES – Short circuit in Light green/Yellow wire

NO – Faulty MAP sensor



5. MAP Sensor Input Line Inspection

Turn the ignition switch OFF.

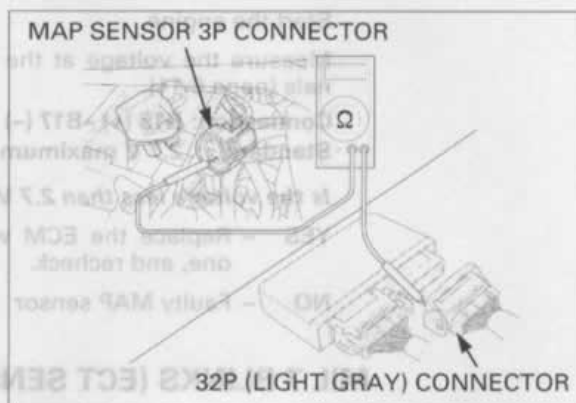
Disconnect the ECM connectors.

Check for continuity at the Yellow/Red wire between the MAP sensor 3P connector terminal and the ECM connectors.

Is there continuity?

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

NO – Open circuit in Yellow/Red wire



MIL 2 BLINKS (MAP SENSOR)

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

1. MAP Sensor Hose Inspection

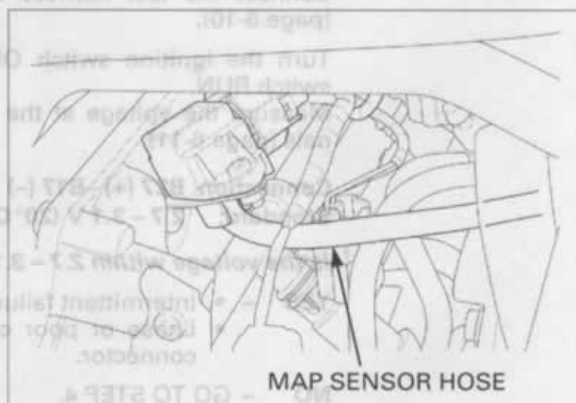
Turn the ignition switch OFF.

Check for connection and installation of the MAP sensor hoses.

Is the MAP sensor hoses connection correct?

YES – GO TO STEP 2.

NO – Correct the hose connection or installation



2. MAP Sensor Output Voltage Inspection

Disconnect the vacuum gauge and connect the hose to the MAP sensor.
Connect the test harness to ECM connectors (page 6-10).

Turn the ignition switch ON.
Measure the voltage at the test harness terminals (page 6-11).

Connection: B15 (+) –B17 (–)

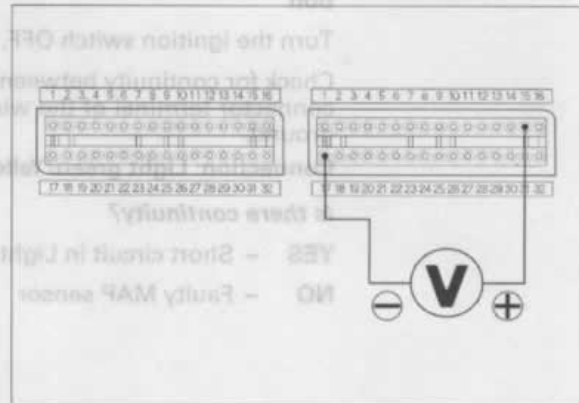
Standard: 2.7 – 3.1 V

(1,013 kPa/760 mmHg)

Is the voltage within 2.7 – 3.1 V?

YES – GO TO STEP 3.

NO – Faulty MAP sensor



3. MAP Sensor Output Voltage Inspection At Idle

Start the engine.

Measure the voltage at the test harness terminals (page 6-11).

Connection: B15 (+) –B17 (–)

Standard: 2.7 V maximum

Is the voltage less than 2.7 V?

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

NO – Faulty MAP sensor

MIL 7 BLINKS (ECT SENSOR)

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

1. ECT Sensor Output Voltage Inspection

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

Turn the ignition switch ON and engine stop switch RUN.

Measure the voltage at the test harness terminals (page 6-11).

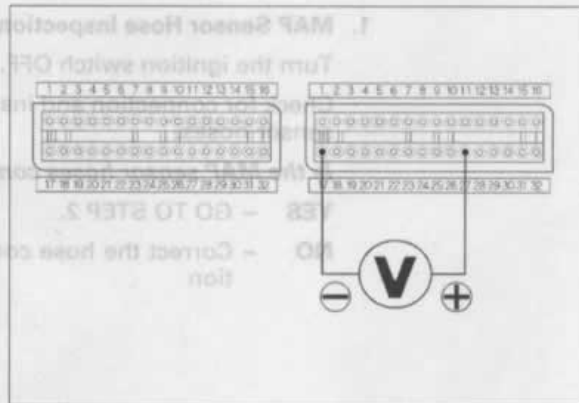
Connection: B27 (+) –B17 (–)

Standard: 2.7 – 3.1 V (20° C/68° F)

Is the voltage within 2.7 – 3.1 V?

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

NO – GO TO STEP 4.



2. ECT Sensor Input Voltage Inspection

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

Turn the ignition switch ON and engine stop switch RUN.

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

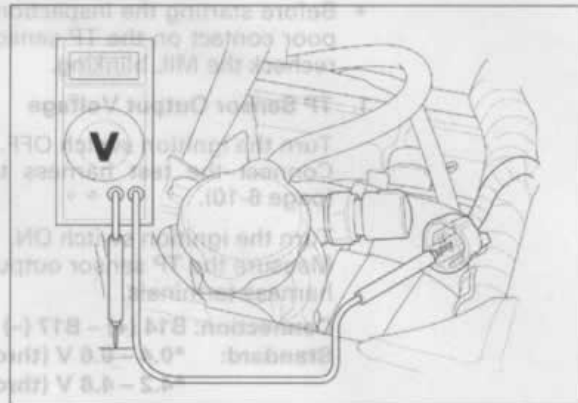
Connection: Pink/white (+) – Ground (–)

Standard: 4.75 – 5.25 V (20°C/68°F)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 3.

No – GO TO STEP 4.



3. ECT Sensor Resistance Inspection

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

Measure the resistance at the ECT sensor terminals.

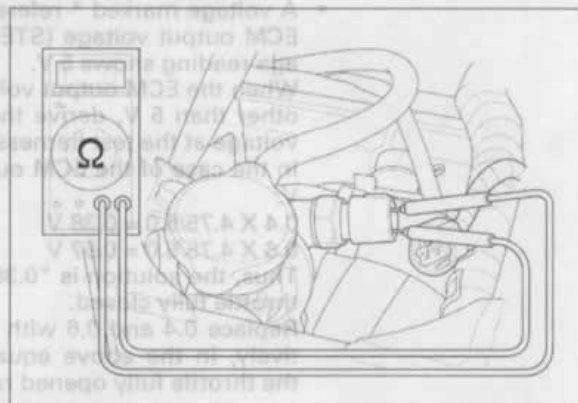
Connection: Pink (+) – Green/Orange (–) (sensor side terminals)

Standard: 2.3 – 2.6 kΩ (20°C/68°F)

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

YES – GO TO STEP 4.

No – Faulty ECT sensor



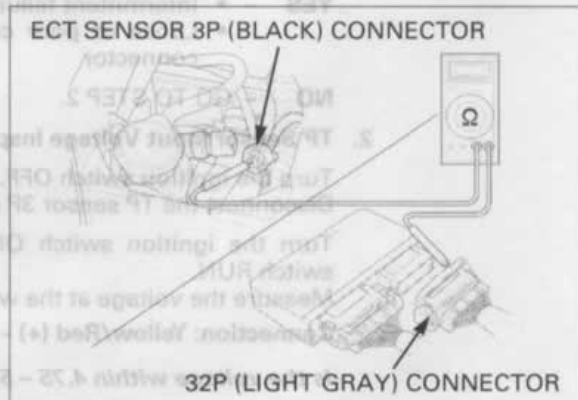
4. ECT Sensor Open Circuit Inspection

Check for continuity at the Pink/White and Green/Orange wire between the ECT sensor 3P (Black) connector terminal and the ECM connector.

Are there continuity?

YES – GO TO STEP 5.

NO – • Open circuit in Pink/White wire
• Open circuit in Green/Orange wire



5. ECT Sensor Output Line Short Circuit Inspection

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

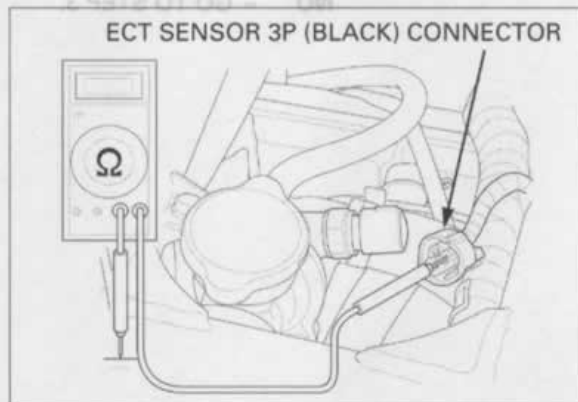
Check for continuity between the ECT sensor 3P (Black) connector terminal of the wire harness side and ground.

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



MIL 8 BLINKS (TP SENSOR)

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

1. TP Sensor Output Voltage

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

Turn the ignition switch ON.
Measure the TP sensor output voltage at the test harness terminals.

Connection: B14 (+) – B17 (–)

**Standard: *0.4 – 0.6 V (throttle fully closed)
*4.2 – 4.8 V (throttle fully opened)**

NOTE:

- A voltage marked * refers to the value of the ECM output voltage (STEP 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 the voltage at the standard value?

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

NO – GO TO STEP 2.

2. TP Sensor Input Voltage Inspection

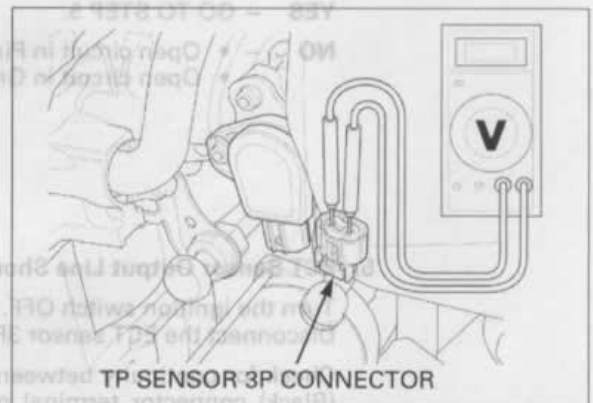
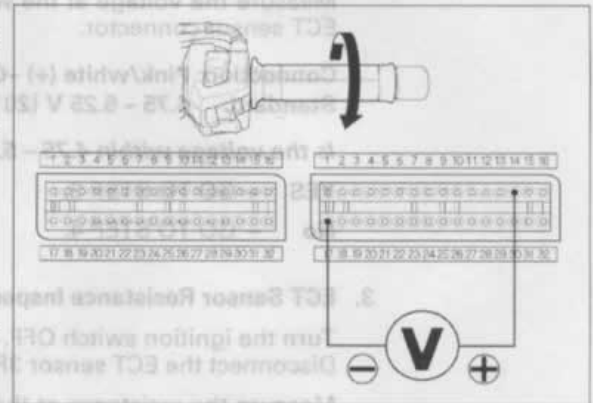
Turn the ignition switch OFF.
Disconnect the TP sensor 3P connector.
Turn the ignition switch ON and engine stop switch RUN.
Measure the voltage at the wire harness side.

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

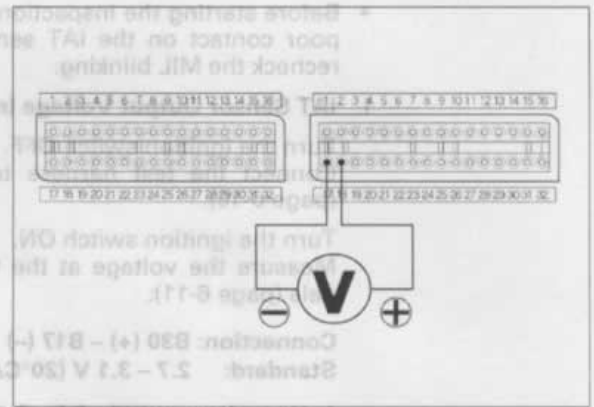
Measure the voltage at the test harness terminals.

Connection: B18 (+) – B17 (–)

Is the voltage within 4.75 – 5.25V?

YES – • Open circuit in Yellow/Red wire
• Open circuit in Green/Orange wire

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



4. TP Sensor Output Line Inspection

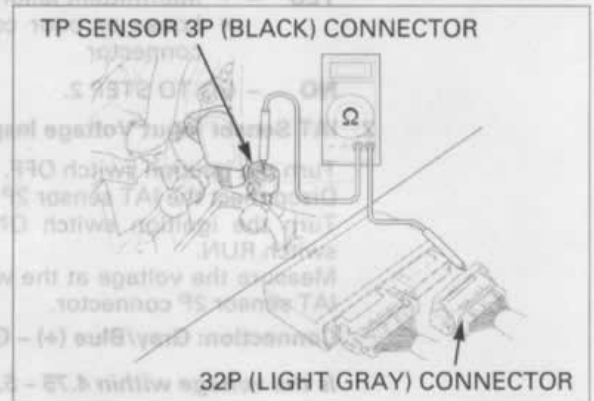
Check for continuity between the TP sensor 3P connector terminal of the wire harness side and ECM 32P (Light gray) connector.

Connection: Red/Yellow – B14

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Red/Yellow wire



5. TP Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

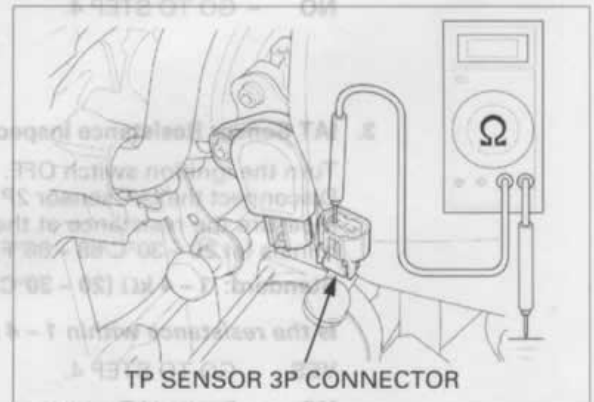
Check for continuity between the TP sensor 3P connector terminal of the wire harness side and ground.

Connection: Red/Yellow – Ground

Is there continuity?

YES – Short circuit in Red/Yellow wire

NO – Faulty TP sensor



MIL 9 BLINKS (IAT SENSOR)

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

1. IAT Sensor Output Voltage Inspection

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

Turn the ignition switch ON.
Measure the voltage at the test harness terminals (page 6-11).

Connection: B30 (+) – B17 (–)

Standard: 2.7 – 3.1 V (20°C/68°F)

Is the voltage within 2.7 – 3.1 V?

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

NO – GO TO STEP 2.

2. IAT Sensor Input Voltage Inspection

Turn the ignition switch OFF.
Disconnect the IAT sensor 2P connector.
Turn the ignition switch ON and engine stop switch RUN.
Measure the voltage at the wire harness side of IAT sensor 2P connector.

Connection: Gray/Blue (+) – Green/Orange (–)

Is the voltage within 4.75 – 5.25V?

YES – GO TO STEP 3.

NO – GO TO STEP 4.

3. IAT Sensor Resistance Inspection

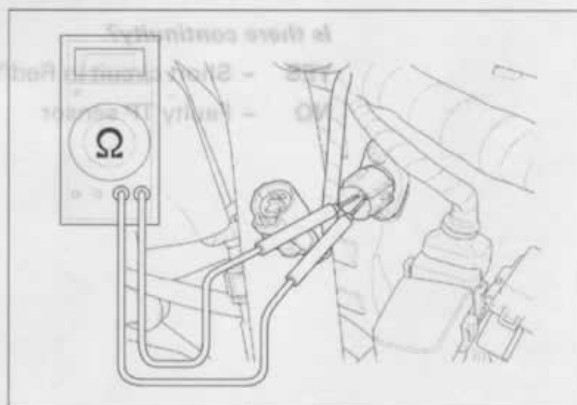
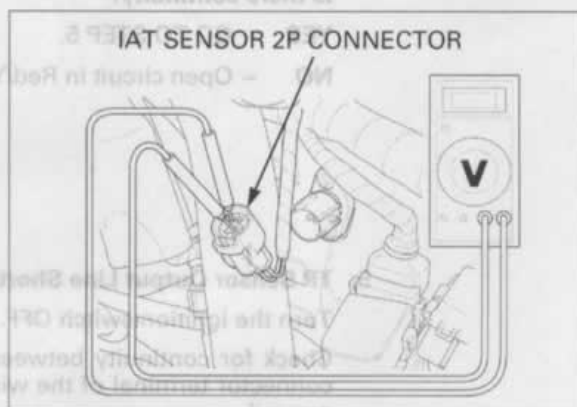
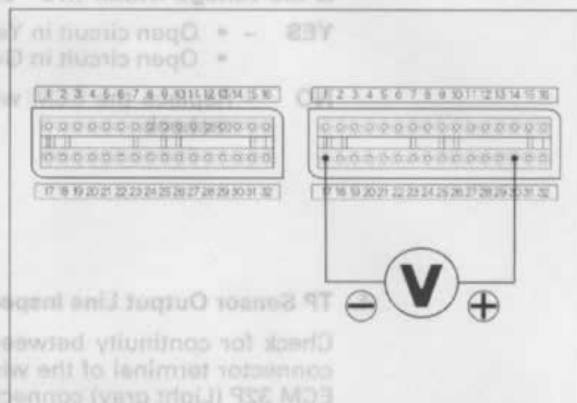
Turn the ignition switch OFF.
Disconnect the IAT sensor 2P connector.
Measure the resistance at the IAT sensor 2P terminals (at 20 – 30°C/68 – 86°F).

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

Is the resistance within 1 – 4 k Ω ?

YES – GO TO STEP 4.

NO – Faulty IAT sensor.



4. IAT Sensor Open Circuit Inspection

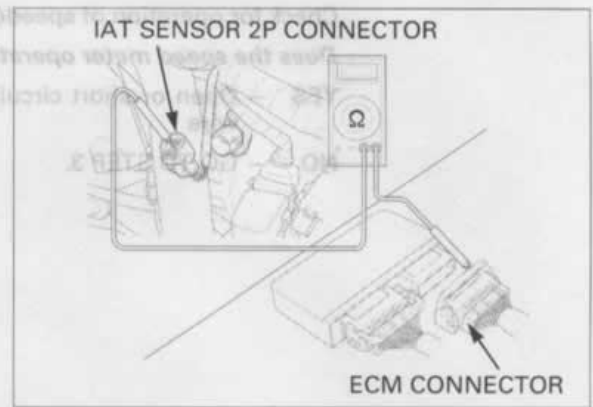
Check for continuity at the Gray/Blue and Green/Orange wire between the IAT sensor 2P connector terminal and the ECM connector.

Are there continuity?

YES – GO TO STEP 5.

NO –

- Open circuit in Gray/Blue wire
- Open circuit in Green/Orange wire



5. IAT Sensor Output Line Short Circuit Inspection

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

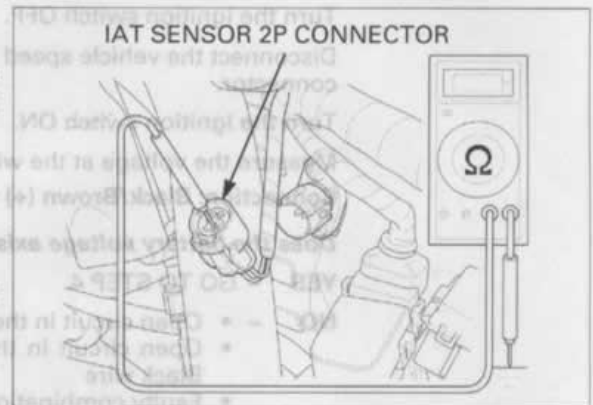
Check for continuity between the IAT sensor 2P connector terminal of the wire harness side and ground.

Connection: Gray/Blue – Ground

Is there continuity?

YES – Short circuit in Gray/Blue wire

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



MIL 11 BLINKS (VEHICLE SPEED SENSOR)

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

1. Vehicle Speed Sensor Pulse Inspection

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

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

Shift the transmission into gear.

Measure the voltage at the test harness terminals with the ignition switch is ON while slowly turning the rear wheel by hand.

Connection: B25 (+) – A4 (-)

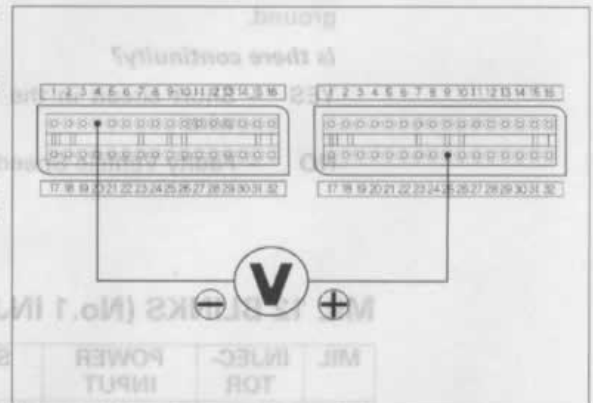
Standard: Repeat 0 to 5 V

Is the voltage at the standard value?

YES –

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

NO – GO TO STEP 2.



2. Combination Meter Inspection

Check for operation of speedometer.

Does the speed meter operate normal?

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

NO – GO TO STEP 3.

SPEEDOMETER



3. Vehicle Speed Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the vehicle speed sensor 3P (Natural) connector.

Turn the ignition switch ON.

Measure the voltage at the wire harness side.

Connection: Black/Brown (+) – Green/Black (–)

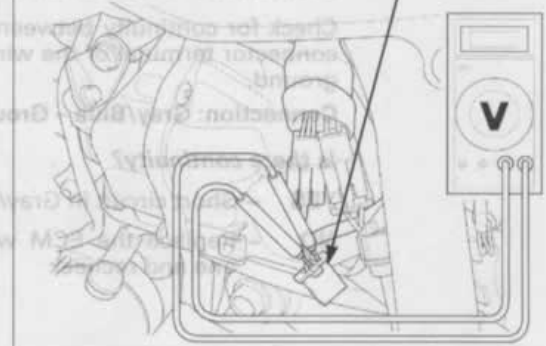
Does the battery voltage exist?

YES – GO TO STEP 4.

NO –

- Open circuit in the Black/Brown wire
- Open circuit in the Green or Green/Black wire
- Faulty combination meter

3P (NATURAL) CONNECTOR



4. Vehicle Speed Sensor Signal Line Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM connectors.

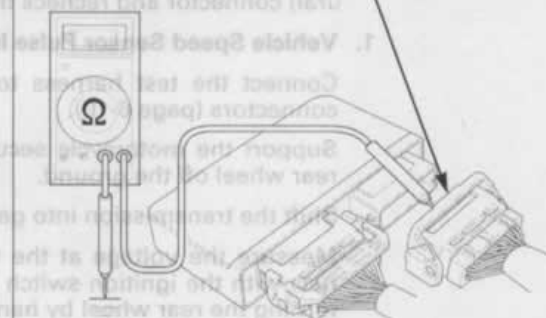
Check for continuity at the Pink/Green wire between the ECM connector terminal and the ground.

Is there continuity?

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

NO – Faulty Vehicle Speed Sensor

ECM (LIGHT GRAY) CONNECTOR



MIL 12 BLINKS (No.1 INJECTOR)

MIL	INJECTOR	POWER INPUT	SIGNAL	SIGNAL AT ECM
12	No.1	Black/White	Pink/Yellow	A11
13	No.2	Black/White	Pink/Blue	A12
14	No.3	Black/White	Pink/Green	A13
15	No.4	Black/White	Pink/Black	A14

LIGHT GRAY CONNECTOR



BLACK CONNECTOR

1. Injector Circuit Resistance Inspection

Turn the ignition switch OFF.

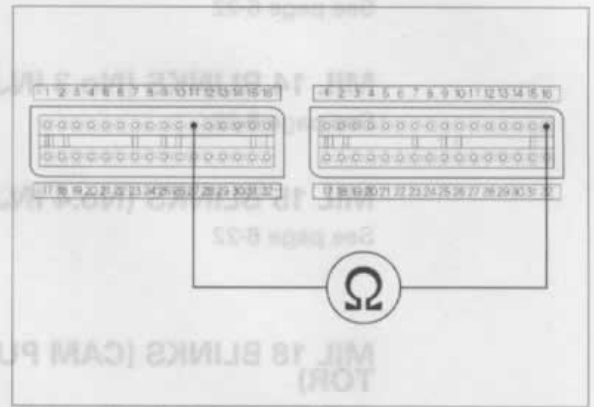
Connect the test harness to the wire harness connectors (page 6-10).
Measure the resistance of the ECM connector terminals.

Connection: POWER INPUT – SIGNAL AT ECM

Is there continuity?

YES – GO TO STEP 4.

NO – GO TO STEP 2.



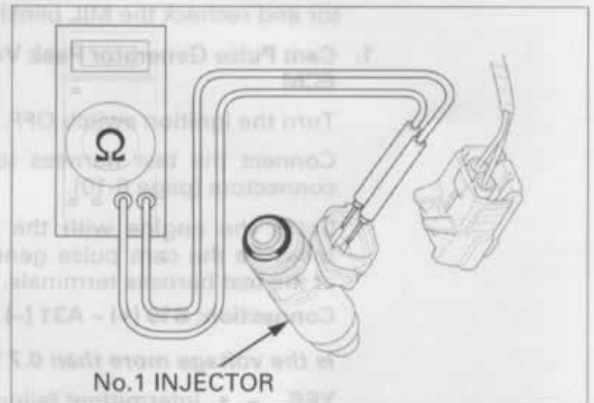
2. Injector Resistance Inspection

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

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

YES – GO TO STEP 3.

NO – Faulty injector



3. Injector Input Voltage Inspection

Turn the ignition switch ON.

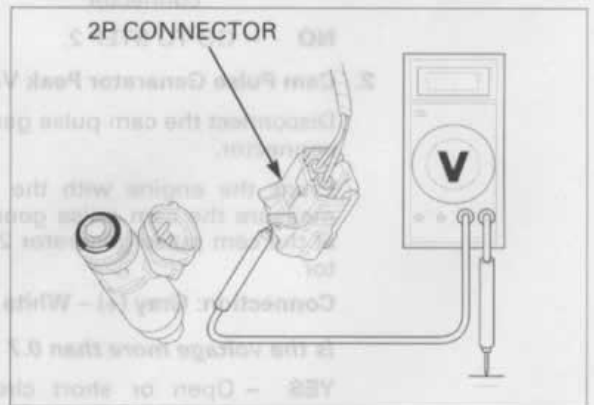
Measure the voltage between the No. 1 injector 2P connector of the wire harness side and ground.

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

Does the battery voltage exist?

YES – Open circuit in SIGNAL line wire

NO – Open circuit in POWER INPUT line wire



4. Injector Signal Line Short Circuit Inspection

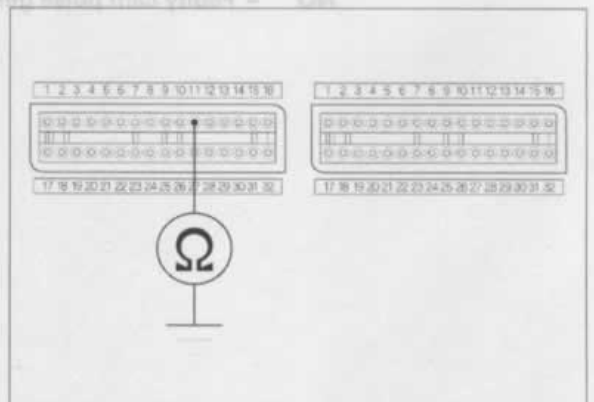
Check for continuity between the ECM connector terminal and ground.

Connection: SIGNAL AT ECM – Ground

Is there continuity?

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

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



MIL 13 BLINKS (No.2 INJECTOR)

See page 6-22

MIL 14 BLINKS (No.3 INJECTOR)

See page 6-22

MIL 15 BLINKS (No.4 INJECTOR)

See page 6-22

MIL 18 BLINKS (CAM PULSE GENERATOR)

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

1. Cam Pulse Generator Peak Voltage Inspection at ECM

Turn the ignition switch OFF.

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

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

Connection: B10 (+) – A31 (–)

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

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

NO – GO TO STEP 2.

2. Cam Pulse Generator Peak Voltage Inspection

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

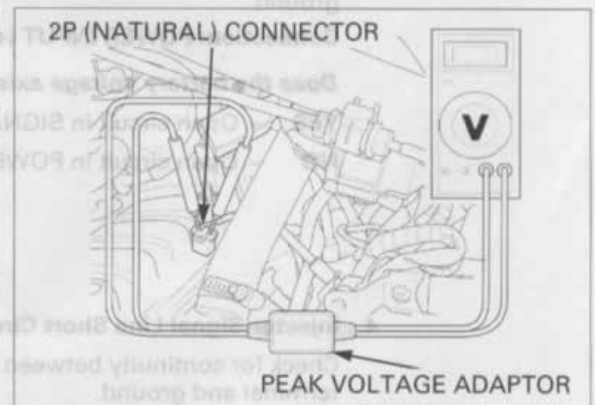
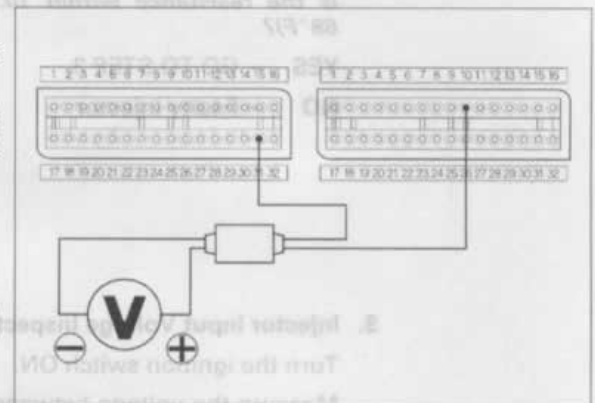
Crank the engine with the starter motor, and measure the cam pulse generator peak voltage at the cam pulse generator 2P (Natural) connector.

Connection: Gray (+) – White (–)

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

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

NO – Faulty cam pulse generator



3. Cam Pulse Generator Short Circuit Inspection

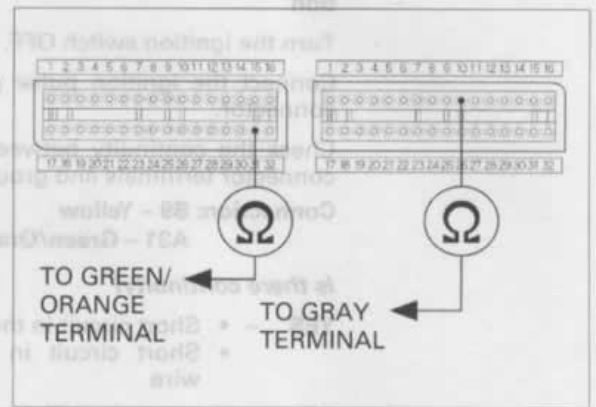
Turn the ignition switch OFF.

Check the continuity between the ECM connector terminals and the cam pulse generator 2P (Natural) connector.

**Connection: B10 – Gray
A31 – Green/Orange**

Is there continuity?

- YES** –
- Short circuit in the Gray wire
 - Short circuit in the Green/Orange wire
- NO** –
- Open circuit in the Green/Orange wire
 - Open circuit in the Gray wire



MIL 19 BLINKS (IGNITION PULSE GENERATOR)

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

1. Ignition Pulse Generator Peak Voltage Inspection at ECM

Turn the ignition switch OFF.

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

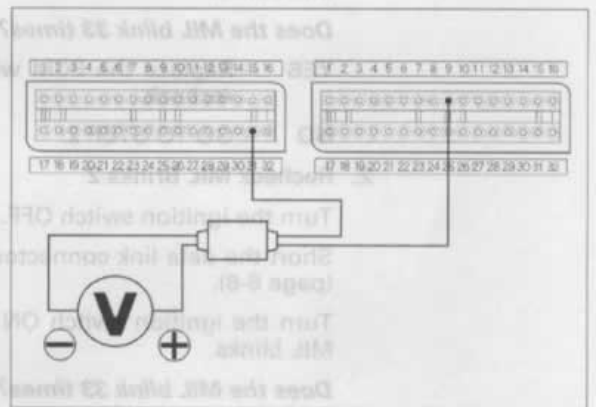
Crank the engine with the starter motor, and measure the ignition pulse generator peak voltage at the test harness terminals.

Connection: B9 (+) – A31 (–)

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

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

NO – GO TO STEP 2.



2. Ignition Pulse Generator Peak Voltage Inspection

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

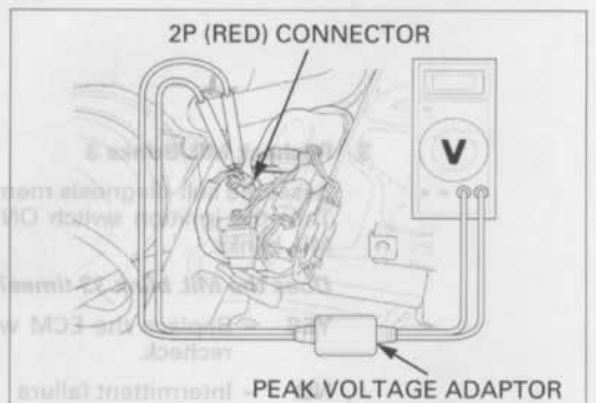
Crank the engine with the starter motor, and measure the ignition pulse generator peak voltage at the ignition pulse generator 2P (Red) connector.

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

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

- YES** –
- Open or short circuit in the Yellow, Green/Orange or White/Yellow wire

NO – Faulty ignition pulse generator



FUEL SYSTEM (Programmed Fuel Injection)

3. Ignition Pulse Generator Short Circuit Inspection

Turn the ignition switch OFF.

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

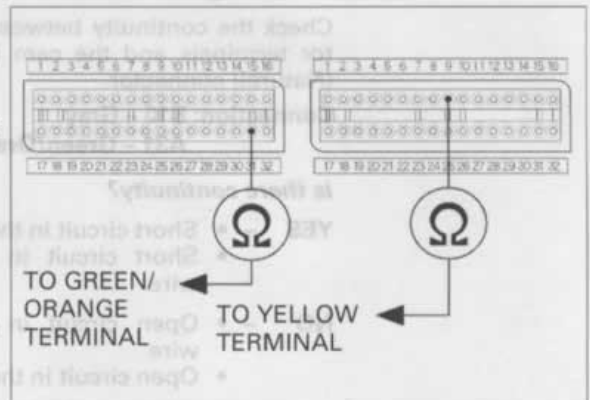
Check the continuity between the test harness connector terminals and ground.

Connection: B9 – Yellow

A31 – Green/Orange

Is there continuity?

- YES** –
- Short circuit in the Yellow wire
 - Short circuit in the Green/Orange wire
- NO** –
- Open circuit in the Yellow wire
 - Open circuit in the Green/Orange wire



MIL 33 BLINKS (E²-PROM)

1. Recheck MIL Brinks 1

Reset the self-diagnosis memory data (page 6-9).
Turn the ignition switch ON and check that the MIL blinks.

Does the MIL blink 33 times?

- YES** – Replace the ECM with a new one, and recheck.
- NO** – GO TO STEP 2.

2. Recheck MIL Brinks 2

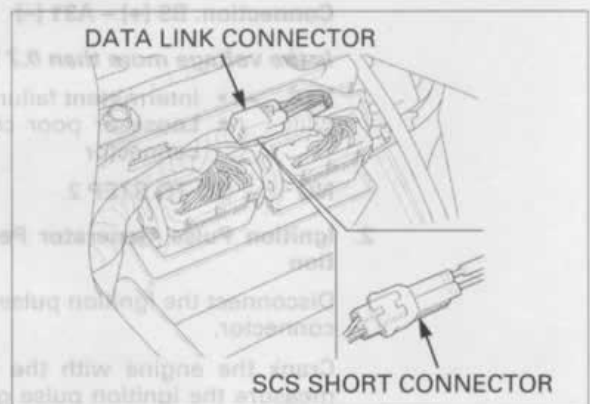
Turn the ignition switch OFF.

Short the data link connector with a special tool (page 6-8).

Turn the ignition switch ON and check that the MIL blinks.

Does the MIL blink 33 times?

- YES** – GO TO STEP 3.
- NO** – Intermittent failure



3. Recheck MIL Brinks 3

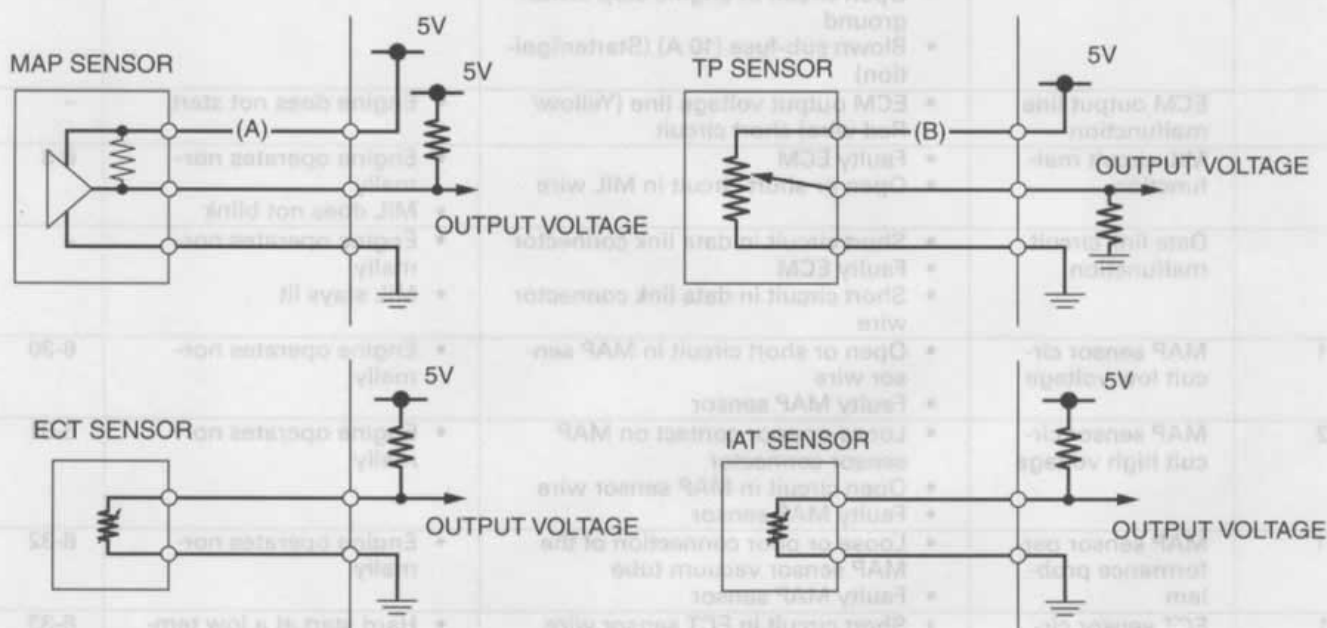
Reset the self-diagnosis memory data (page 6-9).
Turn the ignition switch ON and check that the MIL blinks.

Does the MIL blink 33 times?

- YES** – Replace the ECM with a new one, and recheck.
- NO** – Intermittent failure

DTC CODE INDEX

- The Diagnostic Trouble Codes (DTC) are based upon Malfunction Indicator Lamp (MIL) codes and are displayed as hyphenated numbers. The digits in front of the hyphen are equal to an MIL code and indicate the Function Failure. The digit behind the hyphen details the symptom. For example, in the case of the TP sensor, the ECM stores two levels of information, a function failure and a detail of the symptom:
(08 - 1) = TP sensor voltage - *lower* than the specified value
or
(08 - 2) = TP sensor voltage - *higher* than the specified value.
- The MAP, ECT, TP and IAT sensor can be made diagnoses according to the sensor output voltage value. If the failure occurs, the ECM determines the failure function, the output voltage is high or low compared to the standard voltage, then read out the 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 read out.
 - 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 read out.



FUEL SYSTEM (Programmed Fuel Injection)

DTC	Detection Item	Causes	Symptoms	Refer to
-	ECM malfunction	<ul style="list-style-type: none"> Faulty ECM 	<ul style="list-style-type: none"> Engine does not start MIL does not blink 	6-83
-	ECM power input circuit malfunction	<ul style="list-style-type: none"> Open circuit at the power input wire of the ECM Faulty bank angle sensor Open circuit in bank angle sensor related circuit Faulty engine stop relay Open circuit in engine stop relay related wires Faulty engine stop switch Open circuit in engine stop switch related wires Faulty ignition switch Blown PGM-FI fuse (20 A) Open circuit in engine stop switch ground Blown sub-fuse (10 A) (Starter/ignition) 	<ul style="list-style-type: none"> Engine does not start MIL does not blink 	6-83
-	ECM output line malfunction	<ul style="list-style-type: none"> ECM output voltage line (Yellow/Red wire) short circuit 	<ul style="list-style-type: none"> Engine does not start 	-
-	MIL circuit malfunction	<ul style="list-style-type: none"> Faulty ECM Open or short circuit in MIL wire 	<ul style="list-style-type: none"> Engine operates normally MIL does not blink 	6-8
-	Data link circuit malfunction	<ul style="list-style-type: none"> Short circuit in data link connector Faulty ECM Short circuit in data link connector wire 	<ul style="list-style-type: none"> Engine operates normally MIL stays lit 	-
1-1	MAP sensor circuit low voltage	<ul style="list-style-type: none"> Open or short circuit in MAP sensor wire Faulty MAP sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-30
1-2	MAP sensor circuit high voltage	<ul style="list-style-type: none"> Loose or poor contact on MAP sensor connector Open circuit in MAP sensor wire Faulty MAP sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-31
2-1	MAP sensor performance problem	<ul style="list-style-type: none"> Loose or poor connection of the MAP sensor vacuum tube Faulty MAP sensor 	<ul style="list-style-type: none"> Engine operates normally 	6-32
7-1	ECT sensor circuit low voltage	<ul style="list-style-type: none"> Short circuit in ECT sensor wire Faulty ECT sensor 	<ul style="list-style-type: none"> Hard start at a low temperature (Simulate using numerical values; 90 °C/ 194 °F) 	6-33
7-2	ECT sensor circuit high voltage	<ul style="list-style-type: none"> Loose or poor contact on ECT sensor Open circuit in ECT sensor wire Faulty ECT sensor 	<ul style="list-style-type: none"> Hard start at a low temperature (Simulate using numerical values; 90 °C/ 194 °F) 	6-33
8-1	TP sensor circuit low voltage	<ul style="list-style-type: none"> Loose or poor contact on TP sensor connector Open or short circuit in TP sensor wire Faulty TP sensor 	<ul style="list-style-type: none"> Poor engine performance and response when operating the throttle quickly (Simulate using numerical values; Throttle opens 0°) 	6-34
8-2	TP sensor circuit high voltage	<ul style="list-style-type: none"> Open circuit in TP sensor wire Faulty TP sensor 	<ul style="list-style-type: none"> Poor engine performance and response when operating the throttle quickly (Simulate using numerical values; Throttle opens 0°) 	6-36
9-1	IAT sensor circuit low voltage	<ul style="list-style-type: none"> Short circuit in IAT sensor wire Faulty IAT sensor 	<ul style="list-style-type: none"> Engine operates normally (Simulate using numerical values; 25 °C/ 77 °F) 	6-36
9-2	IAT sensor circuit high voltage	<ul style="list-style-type: none"> Loose or poor contact on IAT sensor Open circuit in IAT sensor wire Faulty IAT sensor 	<ul style="list-style-type: none"> Engine operates normally (Simulate using numerical values; 25 °C/ 77 °F) 	6-37

DTC	Detection Item	Causes	Symptoms	Refer to
11-1	Vehicle speed sensor no signal (circuit malfunction)	<ul style="list-style-type: none"> Loose or poor contact on vehicle speed sensor connector Open or short circuit in vehicle speed sensor connector Faulty vehicle speed sensor 	<ul style="list-style-type: none"> Engine operates normally (Simulate using numerical values; 5 km/h) 	6-38
12-1	No.1 injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.1 injector connector Open or short circuit in No.1 injector wire Faulty No.1 injector 	<ul style="list-style-type: none"> Engine does not start 	6-39
13-1	No.2 injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.2 injector connector Open or short circuit in No.2 injector wire Faulty No.2 injector 	<ul style="list-style-type: none"> Engine does not start 	6-40
14-1	No.3 injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.3 injector connector Open or short circuit in No.3 injector wire Faulty No.3 injector 	<ul style="list-style-type: none"> Engine does not start 	6-40
15-1	No.4 injector circuit malfunction	<ul style="list-style-type: none"> Loose or poor contact on No.4 injector connector Open or short circuit in No.4 injector wire Faulty No.4 injector 	<ul style="list-style-type: none"> Engine does not start 	6-40
18-1	Cam pulse generator no signal	<ul style="list-style-type: none"> Loose or poor contact on cam pulse generator Open or short circuit in cam pulse generator Faulty cam pulse generator 	<ul style="list-style-type: none"> Engine does not start 	6-41
19-1	Ignition pulse generator no signal	<ul style="list-style-type: none"> Loose or poor contact on ignition pulse generator Open or short circuit in ignition pulse generator Faulty ignition pulse generator 	<ul style="list-style-type: none"> Engine does not start 	6-41
33-1	E ² -PROM in ECM malfunction	<ul style="list-style-type: none"> Faulty ECM 	<ul style="list-style-type: none"> Engine operates normally Does not hold the self-diagnosis data 	6-42



4 MAP Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the MAP sensor 3P connector and ECM connector.

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

Connection: Light green/Yellow - Ground

Is there continuity?

YES - Short circuit in Light green/Yellow wire

NO - GO TO STEP 2

DTC TROUBLESHOOTING

DTC 1-1 (MAP SENSOR LOW VOLT-AGE)

1. MAP Sensor System Inspection

Turn the ignition switch ON and engine stop switch RUN.
Check the MAP sensor with the HDS.

Is about 0 V or below indicated?

YES – GO TO STEP 2.

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

2. MAP Sensor Input Voltage Inspection

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

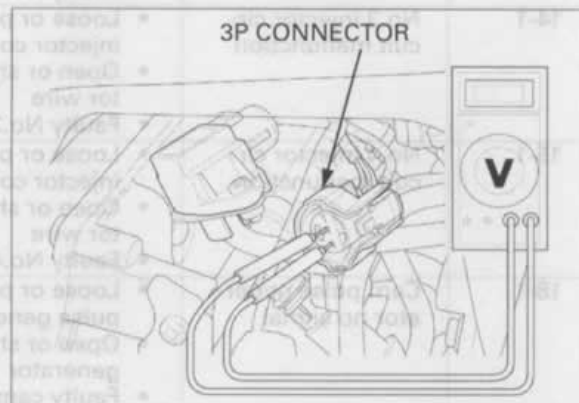
Turn the ignition switch ON.
Measure the voltage at the wire harness side.

Connection: Yellow/Red (+) – Green/Orange (-)

Is the voltage within 4.75 – 5.25V?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



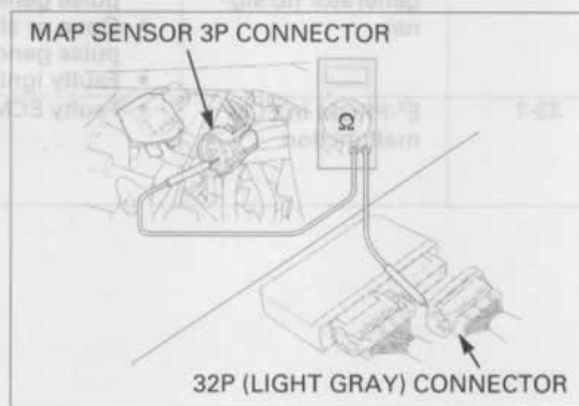
3. MAP Sensor Input Line Inspection

Turn the ignition switch OFF.
Disconnect the ECM connectors.
Check for continuity at the Yellow/Red wire between the MAP sensor 3P connector terminal and the ECM connectors.

Is there continuity?

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

NO – Open circuit in Yellow/Red wire



4. MAP Sensor Output Line Short Circuit Inspection

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

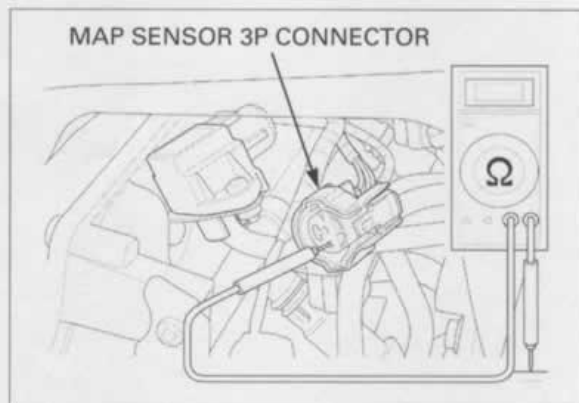
Check for continuity between the MAP sensor 3P connector terminal of the wire harness side and ground.

Connection: Light green/Yellow – Ground

Is there continuity?

YES – Short circuit in Light green/Yellow wire

NO – GO TO STEP 5.



5. MAP Sensor Inspection

Replace the MAP sensor with a new one (page 6-75).
Reset the ECM (page 6-9).
Turn the ignition switch ON.

Check the MAP sensor with the HDS.

Is DTC 1-1 indicated?

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

NO – Faulty original MAP sensor

DTC 1-2 (MAP SENSOR HIGH VOLT-AGE)

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

1. MAP Sensor System Inspection 1

Turn the ignition switch ON.

Check the MAP sensor with the HDS.

Is about 5 V indicated?

YES – GO TO STEP 2.

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

2. MAP Sensor System Inspection 2

Turn the ignition switch OFF.

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

Connection: Light green/Yellow – Green/Orange

Turn the ignition switch ON and engine stop switch RUN.

Check the MAP sensor with the HDS.

Is about 0 V indicated?

YES – Faulty MAP sensor

NO – GO TO STEP 3.

3. MAP Sensor Input Voltage Inspection

Turn the ignition switch OFF.
Remove the jumper wire.

Turn the ignition switch ON and engine stop switch RUN.

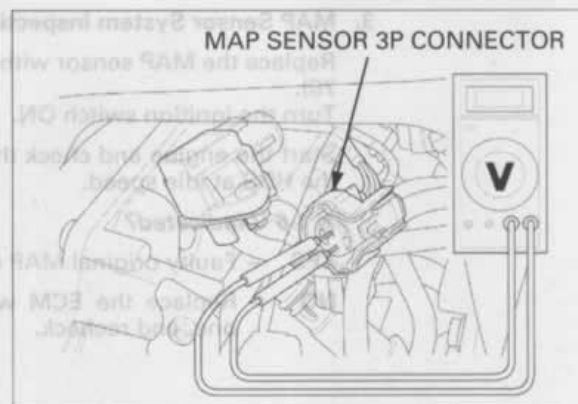
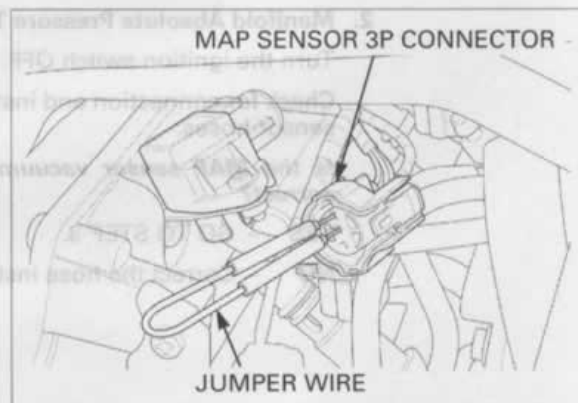
Measure the voltage at the wire harness side.

Connection: Yellow/Red (+) – Green/Orange (-)

Is the voltage within 4.75 – 5.25V?

YES – GO TO STEP 4.

NO – Open circuit in Green/Orange wire



4. MAP Sensor Output Line Open Circuit Inspection

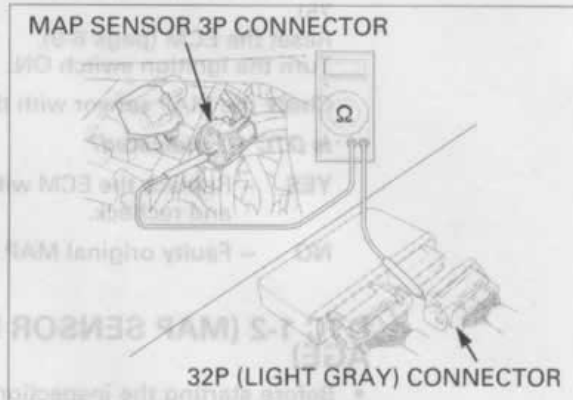
Disconnect the ECM connectors.
Check for continuity at the Light green/Yellow wire between the MAP sensor 3P connector terminal and the ECM connector.

Connection: B15 (+) – Light green/Yellow (-)

Is there continuity?

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

NO – Open circuit in Light green/Yellow wire



DTC 2-1 (MAP SENSOR)

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

1. MAP Sensor System Inspection

Turn the ignition switch ON.

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

Is 1.6 V indicated?

YES – Intermittent failure

NO – GO TO STEP 2.

2. Manifold Absolute Pressure Test

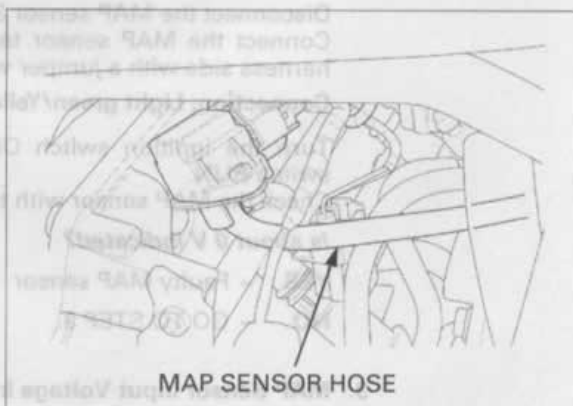
Turn the ignition switch OFF.

Check for connection and installation of the MAP sensor hoses.

Is the MAP sensor vacuum hoses connection correct?

YES – GO TO STEP 3.

NO – Correct the hose installation



3. MAP Sensor System Inspection

Replace the MAP sensor with a new one (page 6-75).

Turn the ignition switch ON.

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

Is 1.6 V indicated?

YES – Faulty original MAP sensor

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

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

1. ECT Sensor System Inspection

Turn the ignition switch ON and engine stop switch RUN.

Check the ECT sensor with the HDS.

Is about 0 V indicated?

YES – GO TO STEP 2.

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

2. ECT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the ECT sensor 3P (Black) connector.

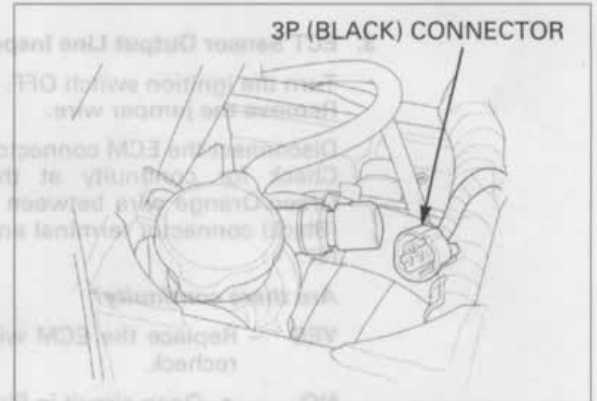
Turn the ignition switch ON.

Check the ECT sensor with the HDS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty ECT sensor



3. ECT Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECT sensor 3P (Black) connector.

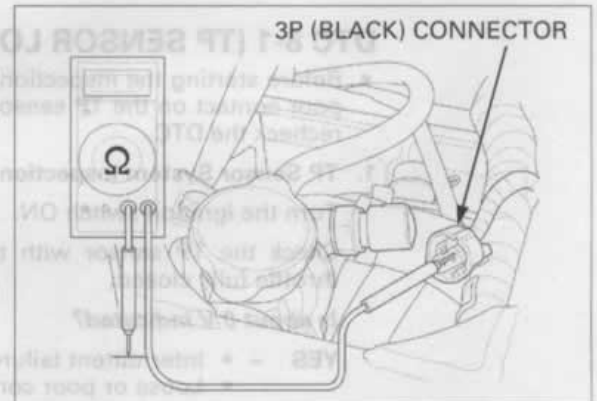
Check for continuity between the ECT sensor 3P (Black) connector terminal of the wire harness side and ground.

Connection: Pink/White – Ground

Is there continuity?

YES – Short circuit in Pink/White wire

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



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

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

1. ECT Sensor System Inspection

Turn the ignition switch ON.

Check the ECT sensor with the HDS.

Is about 5 V indicated?

YES – GO TO STEP 2.

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

2. ECT Sensor Inspection

Turn the ignition switch OFF.

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

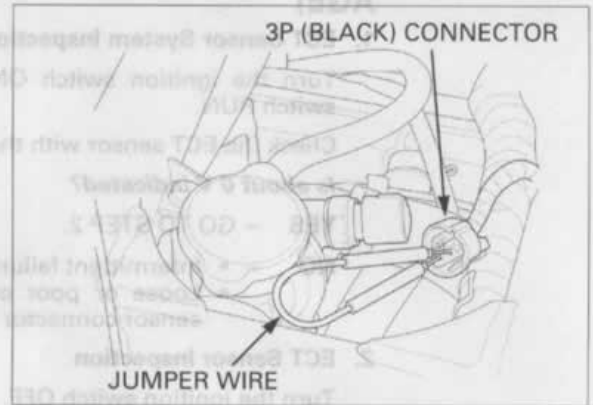
Connection: Pink/White – Green/Orange

Turn the ignition switch ON.
Check the ECT sensor with the HDS.

Is about 0 V indicated?

YES – Faulty ECT sensor

NO – GO TO STEP 3.



3. ECT Sensor Output Line Inspection

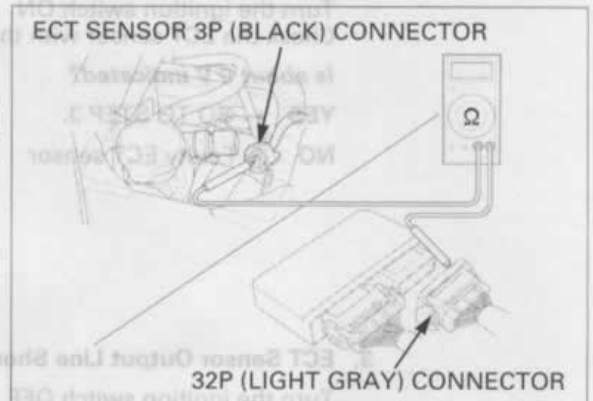
Turn the ignition switch OFF.
Remove the jumper wire.

Disconnect the ECM connector.
Check for continuity at the Pink/White and Green/Orange wire between the ECT sensor 3P (Black) connector terminal and the ECM connector.

Are there continuity?

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

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 connector and recheck the DTC.

1. TP Sensor System Inspection

Turn the ignition switch ON.

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

Is about 0 V indicated?

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

NO – GO TO STEP 2.

2. TP Sensor Input Voltage Inspection

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

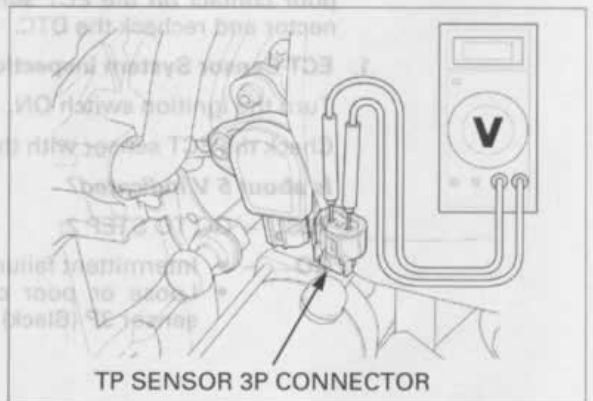
Turn the ignition switch ON.
Measure the voltage at the wire harness side.

Connection: Yellow/Red (+) – Green/Orange (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



3. TP Sensor Circuit Inspection

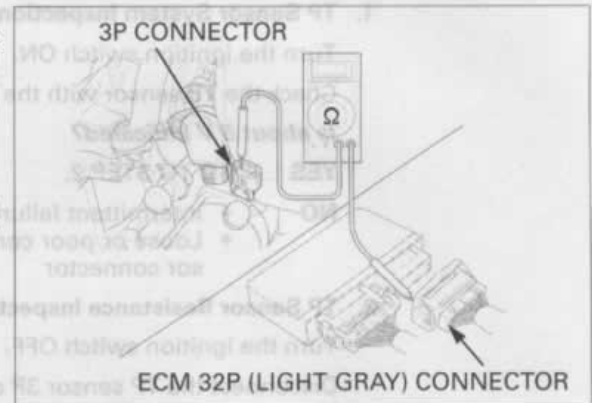
Disconnect the ECM connector.
Check for continuity at the Yellow/Red wire between the TP sensor 3P connector terminal and the ECM connector.

Connection: B18 (+) – Yellow/Red (–)

Is there continuity?

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

NO – Open circuit in Yellow/Red wire



4. TP Sensor Output Line Open Circuit Inspection

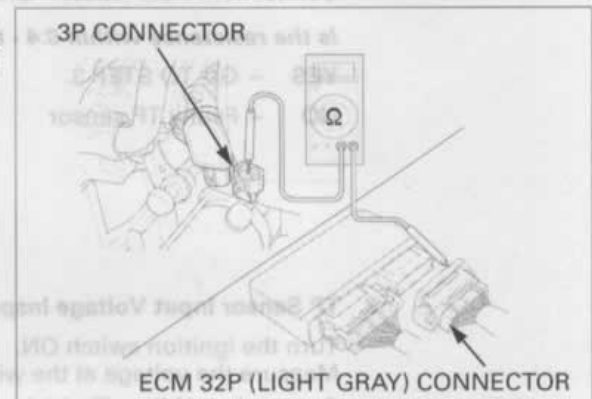
Turn the ignition switch OFF.
Check for continuity at the Red/Yellow wire between the TP sensor 3P connector terminal and the ECM connector.

Connection: B14 (+) – Red/Yellow (–)

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Red/Yellow wire



5. TP Sensor Output Line Short Circuit Inspection

Disconnect the TP sensor 3P connector.

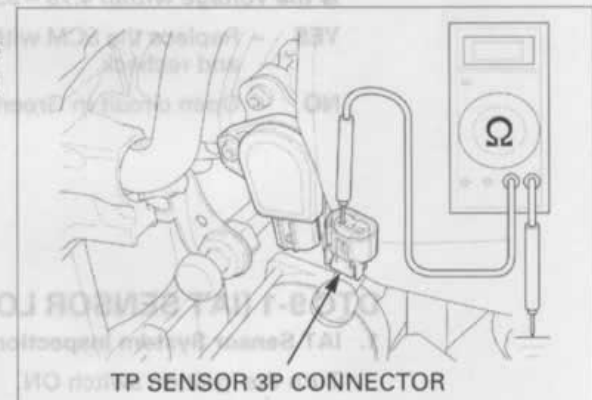
Check for continuity between the TP sensor 3P connector terminal of the wire harness side and ground.

Connection: Red/Yellow – Ground

Is there continuity?

YES – Short circuit in Red/Yellow wire

NO – GO TO STEP 6.



6. TP Sensor Inspection

Replace the TP sensor with a new one.
Turn the ignition switch ON.

Reset the ECM (page 6-9).

Check the TP sensor with the HDS.

Is DTC 8-1 indicated?

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

NO – Faulty original TP sensor

DTC 8-2 (TP SENSOR HIGH VOLTAGE)

1. TP Sensor System Inspection

Turn the ignition switch ON.

Check the TP sensor with the HDS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO –

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

2. TP Sensor Resistance Inspection

Turn the ignition switch OFF.

Disconnect the TP sensor 3P connector.

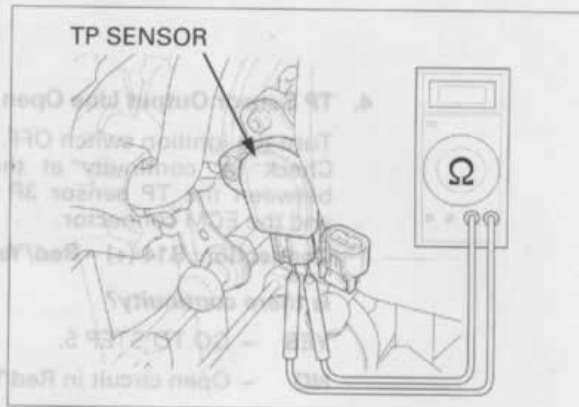
Measure the resistance at the TP sensor side.

Connection: Red/Yellow – Green/Orange

Is the resistance within 0.4 - 0.6 Ω ?

YES – GO TO STEP 3.

NO – Faulty TP sensor



3. TP Sensor Input Voltage Inspection

Turn the ignition switch ON.

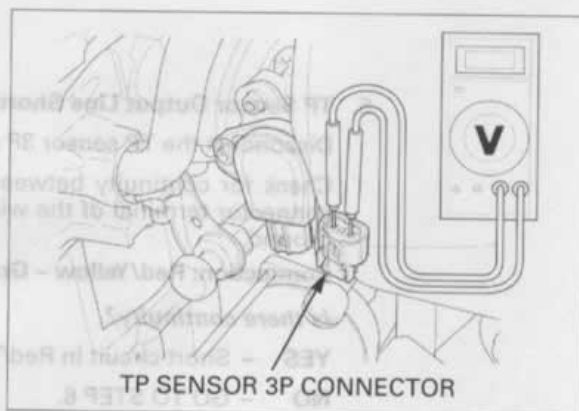
Measure the voltage at the wire harness side.

Connection: Yellow/Red (+) – Green/Orange (-)

Is the voltage within 4.75 – 5.25 V?

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

NO – Open circuit in Green/Orange wire



DTC 9-1 (IAT SENSOR LOW VOLTAGE)

1. IAT Sensor System Inspection

Turn the ignition switch ON.

Check the IAT 2P sensor with the HDS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO –

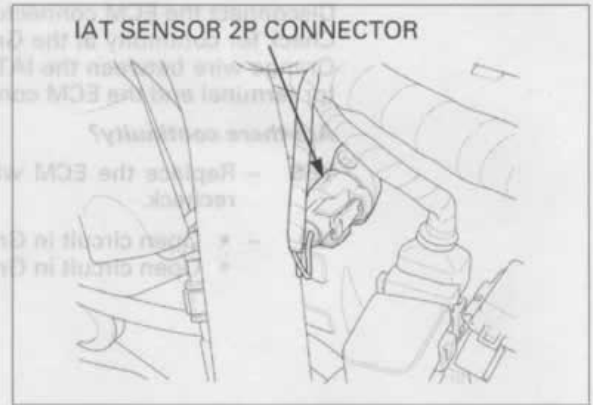
- Intermittent failure
- Loose or poor contact on the IAT sensor 2P connector

2. IAT Sensor Inspection

Turn the ignition switch OFF.
Disconnect the IAT sensor 2P connector.
Turn the ignition switch ON.
Check the IAT sensor with the HDS.

Is about 0 V indicated?

- YES** – GO TO STEP 3.
NO – Faulty IAT sensor



3. IAT Sensor Output Line Short Circuit Inspection

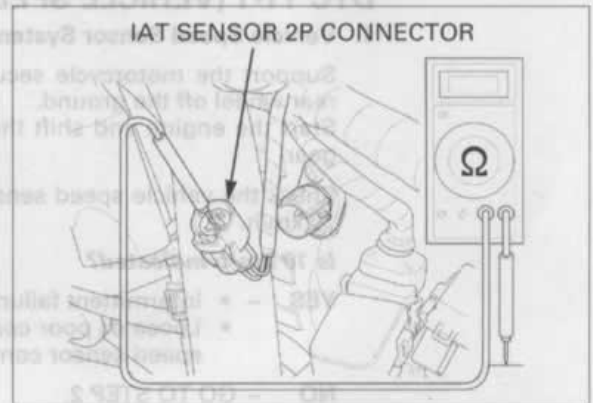
Turn the ignition switch OFF.
Disconnect the IAT sensor 2P connector.

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

Connection: Gray/Blue – Ground

Is there continuity?

- YES** – Short circuit in Gray/Blue wire
NO – Replace the ECM with a known good one, and recheck.



DTC 9-2 (IAT SENSOR HIGH VOLTAGE)

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

1. IAT Sensor System Inspection

Turn the ignition switch ON.
Check the IAT sensor with the HDS.

Is about 5 V indicated?

- YES** – GO TO STEP 2.
NO – • Intermittent failure
• Loose or poor contact on the IAT sensor 2P connector

2. IAT Sensor Inspection

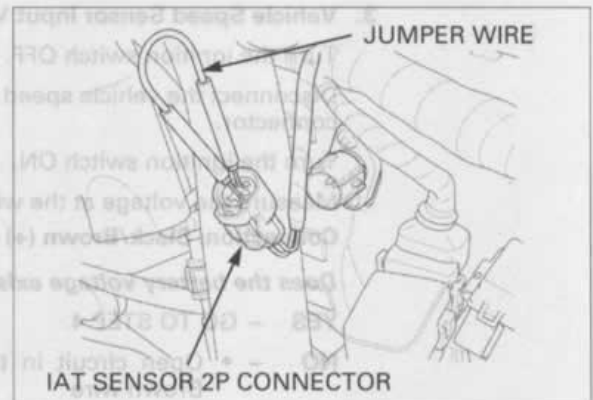
Turn the ignition switch OFF.
Disconnect the IAT sensor 2P connector.
Connect the IAT sensor terminals with a jumper wire.

Connection: Gray/Blue – Green/Orange

Turn the ignition switch ON.
Check the IAT sensor with the HDS.

Is about 0 V indicated?

- YES** – Faulty IAT sensor
NO – GO TO STEP 3.



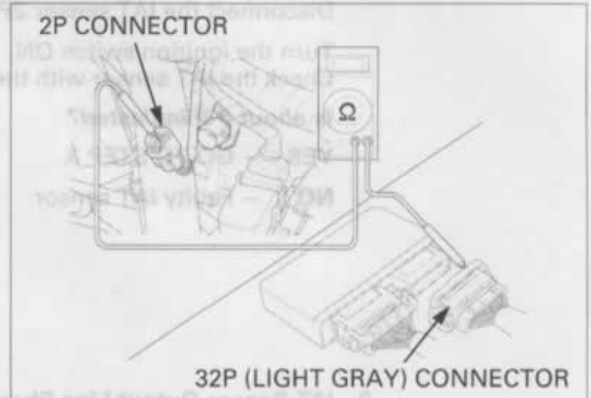
3. IAT Sensor Output Line Inspection

Disconnect the ECM connector.
Check for continuity at the Gray/Blue and Green/Orange wire between the IAT sensor 2P connector terminal and the ECM connector.

Are there continuity?

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

NO – • Open circuit in Gray/Blue wire
• Open circuit in Green/Orange wire



DTC 11-1 (VEHICLE SPEED SENSOR)

1. Vehicle Speed Sensor System Inspection

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

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

Is 10 km/h indicated?

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

NO – GO TO STEP 2.

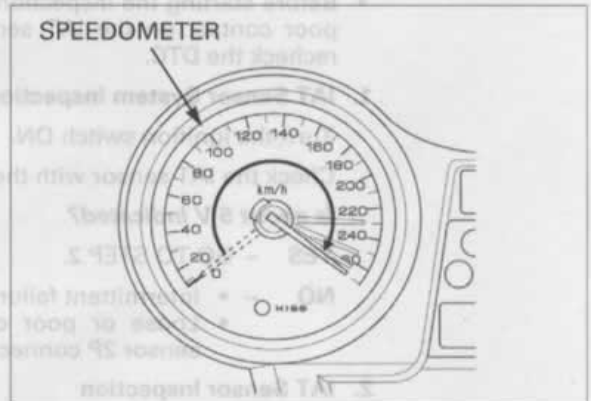
2. Combination Meter Inspection

Check for operation of speedometer.

Does the speed meter operate normally?

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

NO – GO TO STEP 3.



3. Vehicle Speed Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the vehicle speed sensor 3P (Natural) connector.

Turn the ignition switch ON.

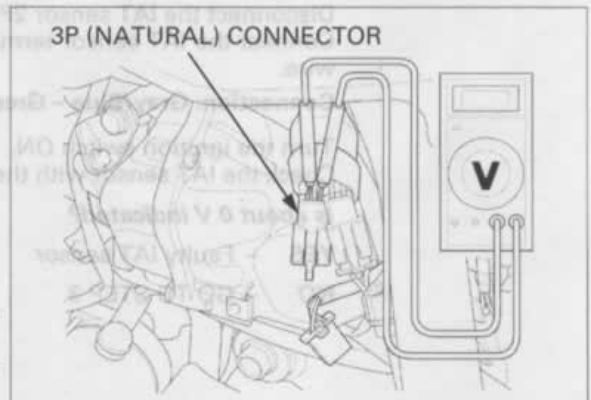
Measure the voltage at the wire harness side.

Connection: Black/Brown (+) – Green/Black (–)

Does the battery voltage exist?

YES – GO TO STEP 4.

NO – • Open circuit in the Black or Black/Brown wire
• Open circuit in the Green or Green/Black wire
• Faulty combination meter



4. Vehicle Speed Sensor Signal Line Short Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ECM connector.

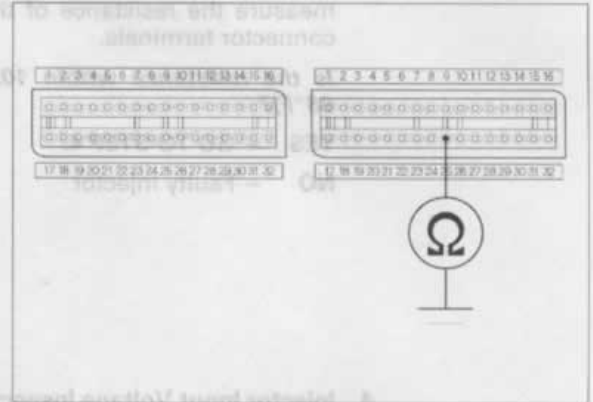
Check for continuity at the Pink/Green wire between the ECM connector terminal and the ground.

Connection: B25 – Ground

Is there continuity?

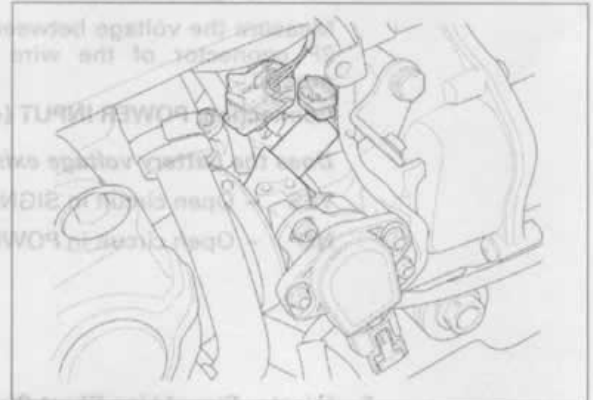
YES – Short circuit in the Pink or Pink/Green wire

NO – Inspect vehicle speed sensor (page 19-15)



DTC 12-1 (No.1 INJECTOR)

DTC	INJECTOR	POWER INPUT	SIGNAL	SIGNAL AT ECM
12-1	No.1	Black/White	Pink/Yellow	A11
13-1	No.2	Black/White	Pink/Blue	A12
14-1	No.3	Black/White	Pink/Green	A13
15-1	No.4	Black/White	Pink/Black	A14



1. Injector System Inspection

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

Is the DTC 12-1 indicated?

YES – GO TO STEP 2.

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

2. Injector Circuit Resistance Inspection

Turn the ignition switch OFF.

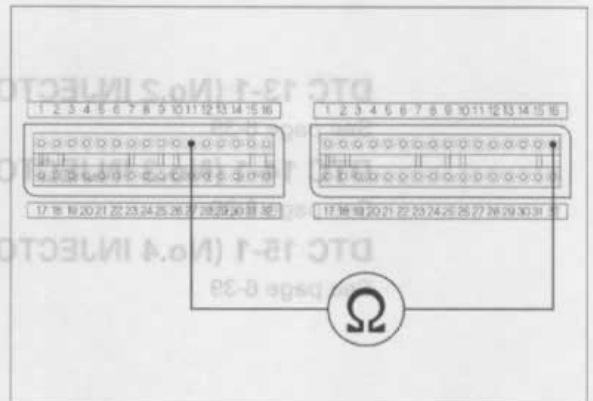
Disconnect the ECM connector and measure the resistance of the ECM connector terminals.

Connection: POWER INPUT – SIGNAL AT ECM

Is there continuity?

YES – GO TO STEP 5.

NO – GO TO STEP 3.



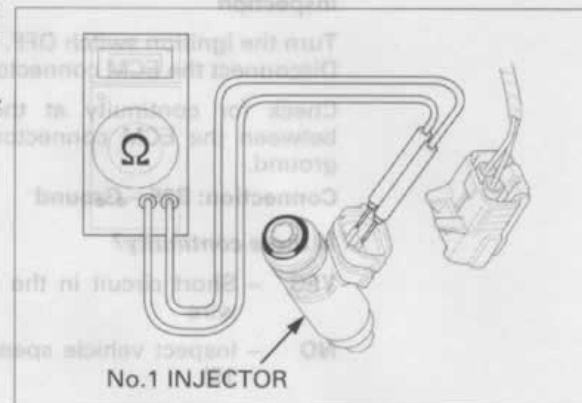
3. Injector Resistance Inspection

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

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

YES – GO TO STEP 4.

NO – Faulty injector



4. Injector Input Voltage Inspection

Turn the ignition switch ON.

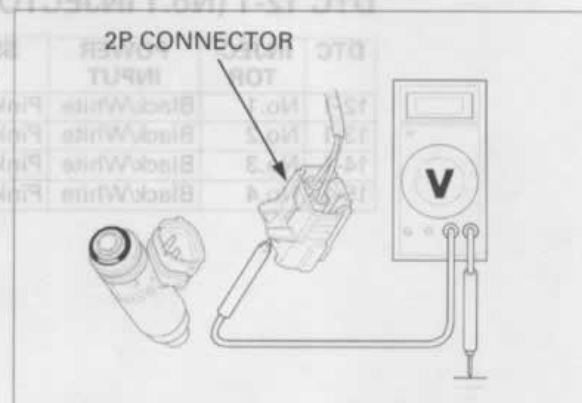
Measure the voltage between the No. 1 injector 2P connector of the wire harness side and ground.

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

Does the battery voltage exist?

YES – Open circuit in SIGNAL line wire

NO – Open circuit in POWER INPUT line wire



5. Injector Signal Line Short Circuit Inspection

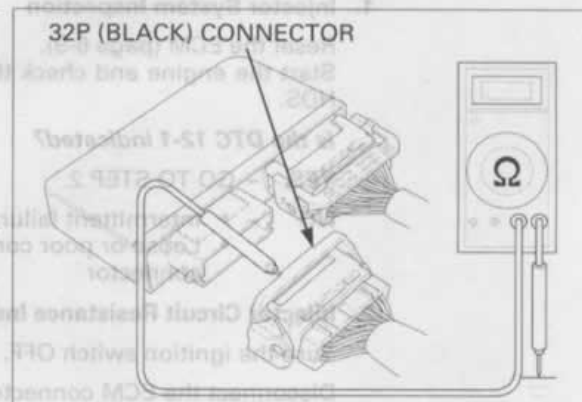
Check for continuity between the ECM connector terminal and ground.

Connection: SIGNAL AT ECM – Ground

Is there continuity?

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

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



DTC 13-1 (No.2 INJECTOR)

See page 6-39

DTC 14-1 (No.3 INJECTOR)

See page 6-39

DTC 15-1 (No.4 INJECTOR)

See page 6-39

DTC 18-1 (CAM PULSE GENERATOR)

- Before starting the inspection, check for loose or poor contact on the cam pulse generator 2P (Natural) connector and recheck the DTC.

1. Cam Pulse Generator Peak Voltage Inspection

Turn the ignition switch OFF.
Disconnect the cam pulse generator 2P (Natural) connector.

Turn the ignition switch ON and engine stop switch RUN.

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

Connection: Gray (+) – White (–)

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

YES – GO TO STEP 2.

NO – Faulty cam pulse generator

2. Cam Pulse Generator Circuit Inspection

Turn the ignition switch OFF.
Disconnect the cam pulse generator 2P (Natural) connector and the ECM connector.

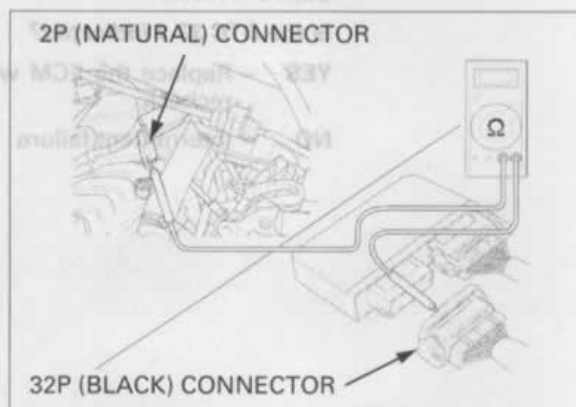
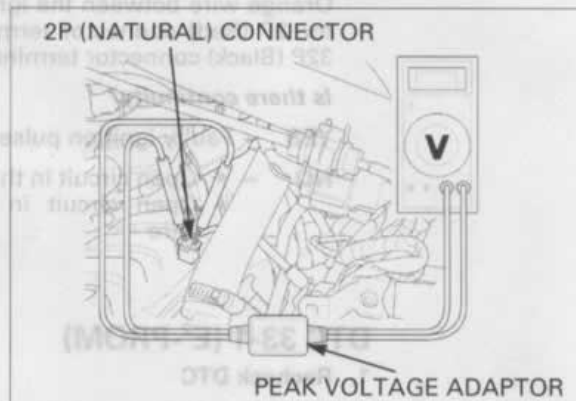
Check for continuity at the Grey and Green/Orange wire between the cam pulse generator 2P (Natural) connector terminals and the ECM 32P (Black) connector terminals.

Is there continuity?

YES – Faulty cam pulse generator

NO –

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

**DTC 19-1 (IGNITION PULSE GENERATOR)**

- Before starting the inspection, check for loose or poor contact on the ignition pulse generator 2P (Red) connector and recheck the DTC.

1. Ignition Pulse Generator Peak Voltage Inspection

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

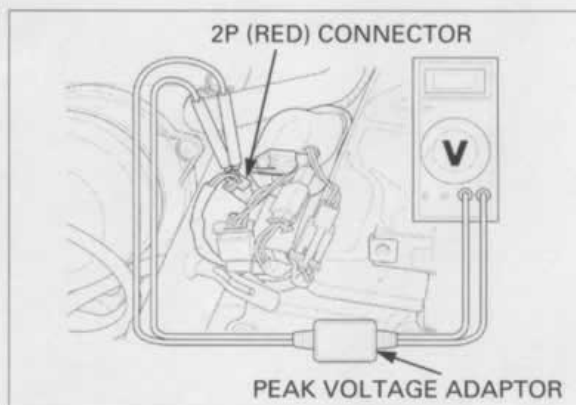
Crank the engine with the starter motor, and measure the ignition pulse generator peak voltage at the ignition pulse generator 2P (Red) connector.

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

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

YES – GO TO STEP 2.

NO – Faulty ignition pulse generator



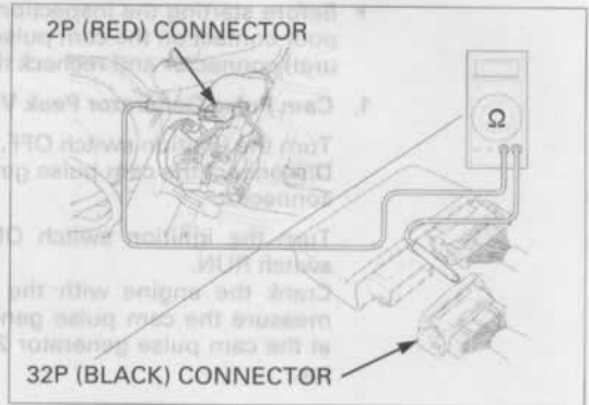
2. Ignition Pulse Generator Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ignition pulse generator 2P (Red) connector and the ECM connector.

Check for continuity at the Yellow and Green/Orange wire between the ignition pulse generator 2P (Red) connector terminals and the ECM 32P (Black) connector terminals.

Is there continuity?

- YES** – Faulty ignition pulse generator
- NO** –
- Open circuit in the Yellow wire
 - Open circuit in the Green/Orange wire



DTC 33-1 (E²-PROM)

1. Recheck DTC

Reset the ECM (page 6-9).
Turn the ignition switch ON and recheck the ECM E²-PROM.

Is the DTC 33-1 indicated?

- YES** – Replace the ECM with a new one, and recheck.
- NO** – Intermittent failure

DTC 18-1 (IGNITION PULSE GENERATOR)

- Before starting the inspection, check for loose or poor contact on the ignition pulse generator 2P (Red) connector and recheck the DTC.

1. Ignition Pulse Generator Peak Voltage Inspection

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

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

Connection: Yellow (+) – White/Yellow (-)

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

YES – GO TO STEP 2.

NO – Faulty ignition pulse generator



FUEL LINE INSPECTION

FUEL PRESSURE INSPECTION

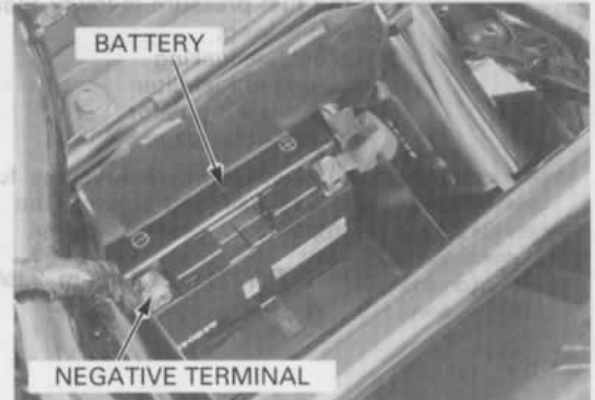
NOTICE

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

Remove the seat (page 3-4) and battery cover (page 16-5).

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

Disconnect the battery negative cable from the battery terminal.



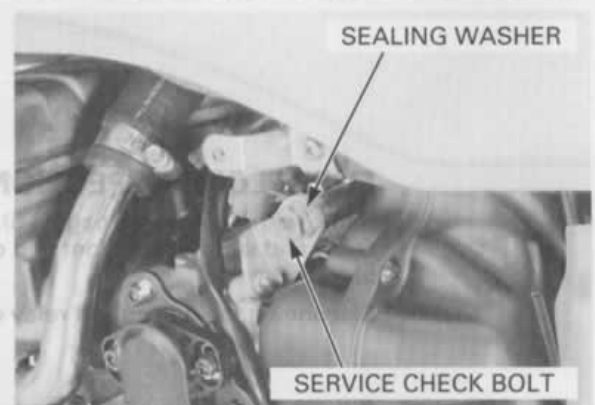
BATTERY

NEGATIVE TERMINAL

Remove the left air cleaner side cover (page 3-5).

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

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



SEALING WASHER

SERVICE CHECK BOLT

Remove the service check bolt and sealing washer, then attach the fuel pressure gauge.

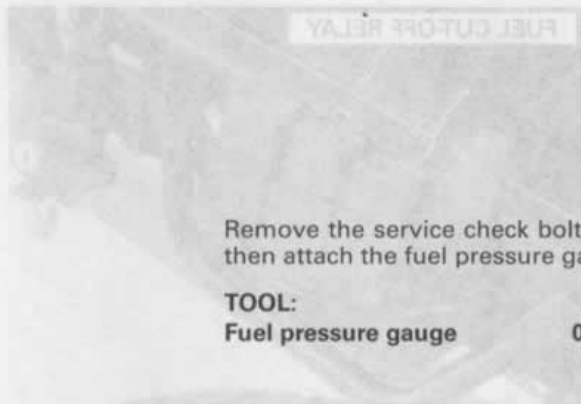
TOOL:

Fuel pressure gauge

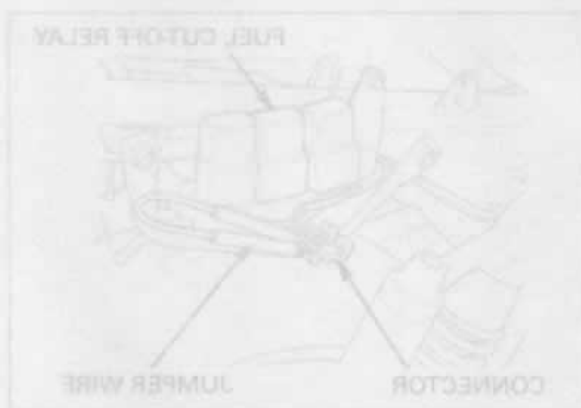
07406-0040003



FUEL PRESSURE GAUGE



FUEL CUTOFF RELAY



FUEL CUTOFF RELAY

JUMPER WIRE

CONNECTOR

FUEL SYSTEM (Programmed Fuel Injection)

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

IDLE SPEED: $1,000 \pm 100 \text{ min}^{-1} \text{ (rpm)}$

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

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

- Pressure regulator
- Fuel pump (page 6-45)

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

- Fuel line leaking
- Clogged fuel filter
- Pressure regulator
- Fuel pump (page 6-45)

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

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

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

FUEL PRESSURE GAUGE



SEALING WASHER



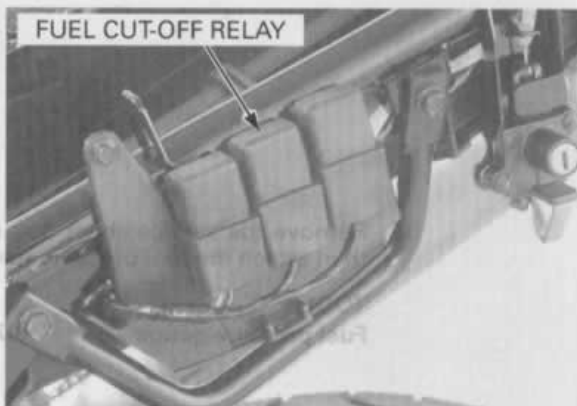
SERVICE CHECK BOLT

FUEL FLOW INSPECTION

Remove the rear cowl (page 3-5).
Open and support the front end of fuel tank (page 4-5).

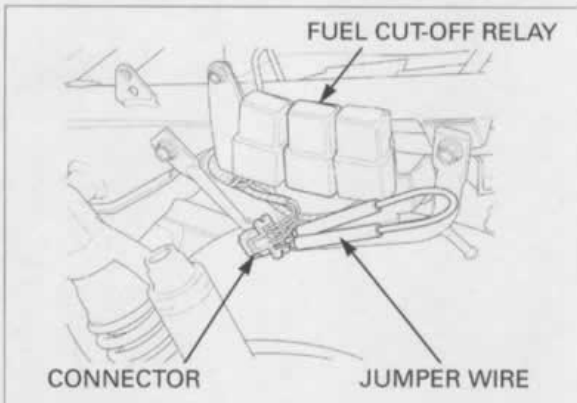
Disconnect the fuel cut-off relay connector.

FUEL CUT-OFF RELAY



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

FUEL CUT-OFF RELAY



Remove the service check bolt.

Place a measuring cup or equivalent to the service check bolt hole.

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

Amount of fuel flow:

**188 cm³ (6.4 US oz, 6.6 Imp oz) minimum
/10 seconds at 12 V**

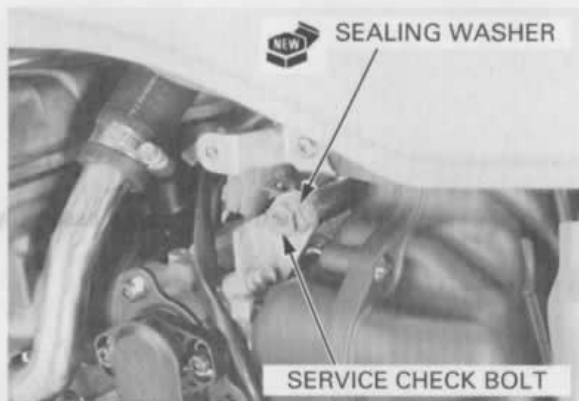
If the fuel flow is less than specified, inspect the following:

- Pinched or clogged fuel hose
- Clogged fuel filter
- Pressure regulator
- Fuel pump (page 6-45)

After inspection, install the service check bolt with the new sealing washer, tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Start the engine and check for leak.



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 follows:

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

Disconnect the fuel pump 2P (Black) connector.



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

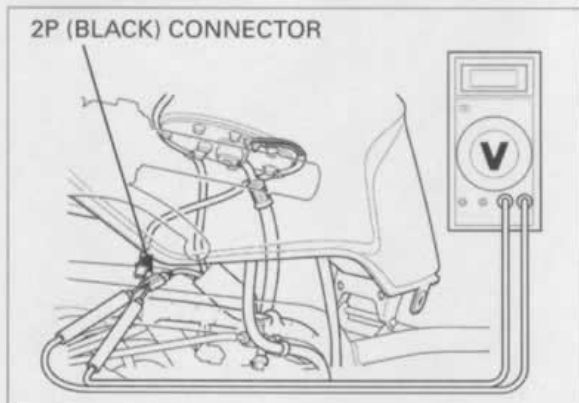
Connection: Brown (+) – Green (–)

There should be battery voltage for a few seconds.

If there is battery voltage, replace the fuel pump.

If there is no battery voltage, inspect the following:

- Main fuse 30A
- Sub fuse 10A
- Engine stop switch (page 19-24)
- Fuel cut relay (page 6-47)
- Engine stop relay (page 6-82)
- Bank angle sensor (page 6-81)
- ECM (page 6-83)



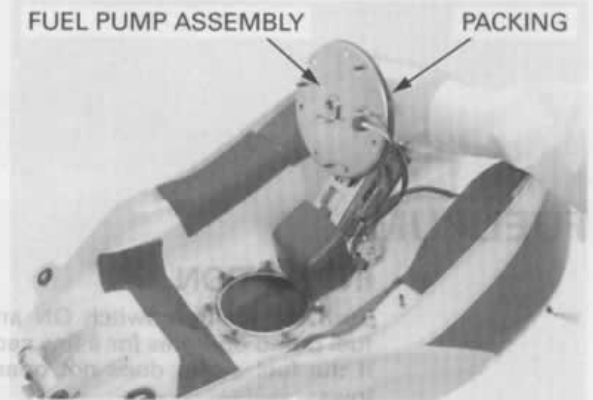
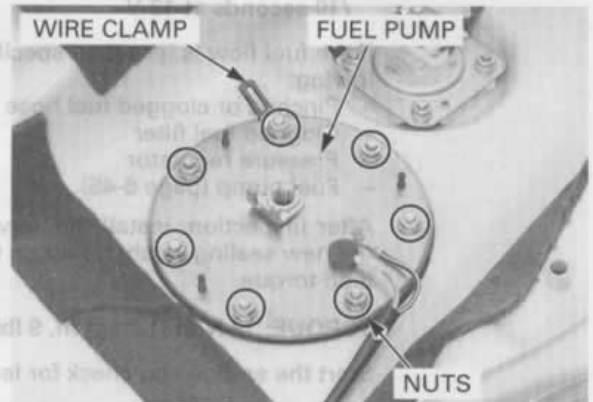
REMOVAL

NOTICE

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

Remove the fuel tank (page 6-48).

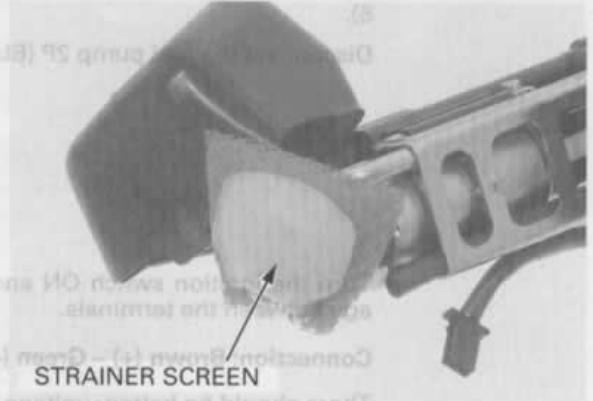
Remove the fuel pump mounting nuts and wire clamp.



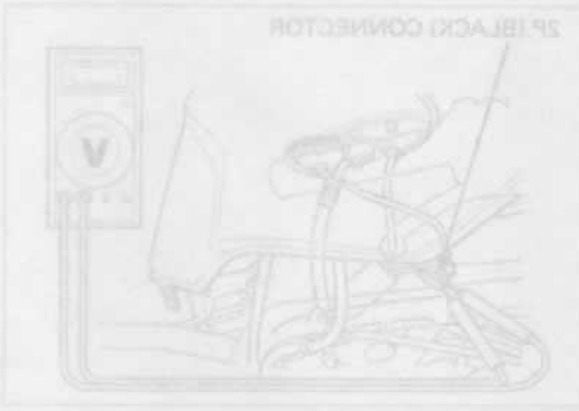
Remove the fuel pump assembly and packing.

INSTALLATION

Clean the fuel strainer screen.

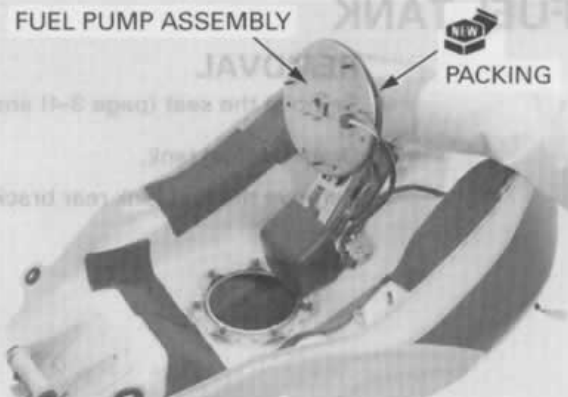


STRAINER SCREEN



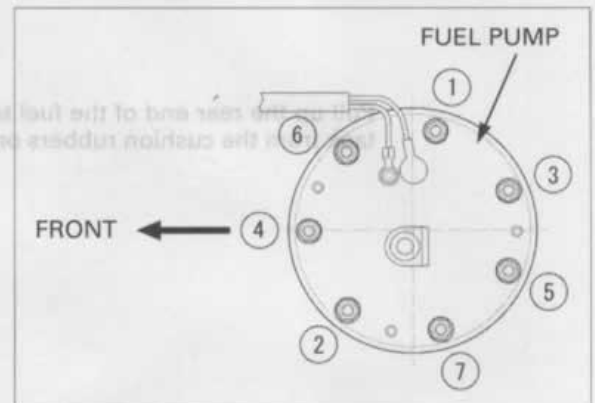
Always replace packing with a new one.

Place a new packing onto the fuel pump.
Install the fuel pump being careful not to damage the fuel pump wire.



Install the wire clamp and fuel pump mounting nuts.
Tighten the fuel pump mounting nuts in the sequence shown.

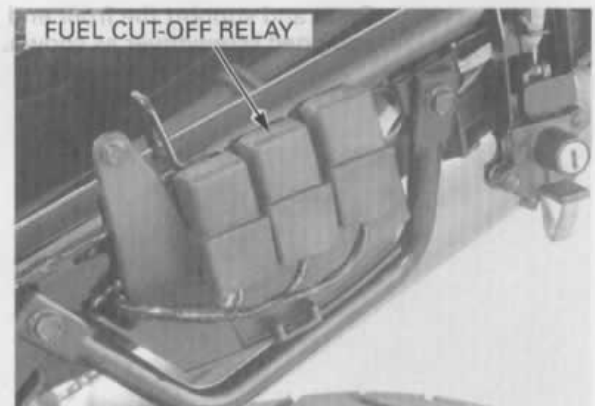
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



FUEL CUT-OFF RELAY

INSPECTION

Remove the rear cowl (page 3-5).
Disconnect the fuel cut-off relay 4P connector, remove the fuel cut-off relay.



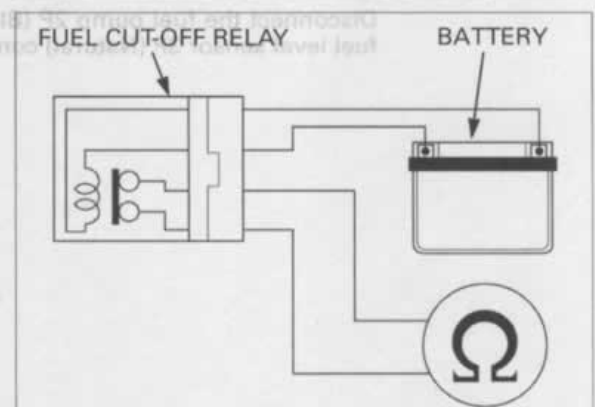
Connect the ohmmeter to the fuel cut-off relay connector terminals.

Connection: Black/White – Brown

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

Connection: Brown/Black – Black/White

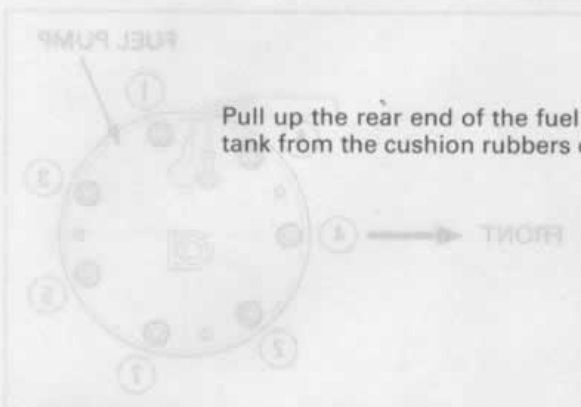
There should be continuity only when the 12V battery is connected. If there is no continuity when the 12V battery is connected, replace the fuel cut-off relay.



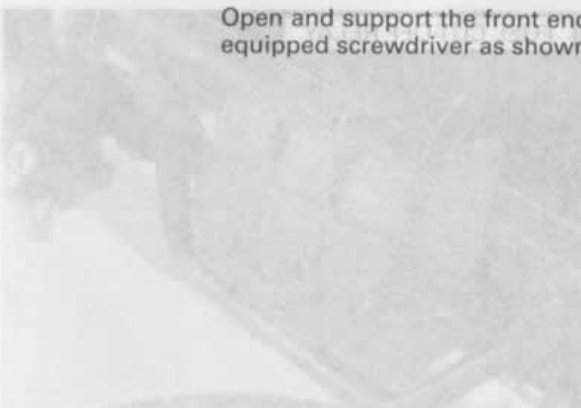
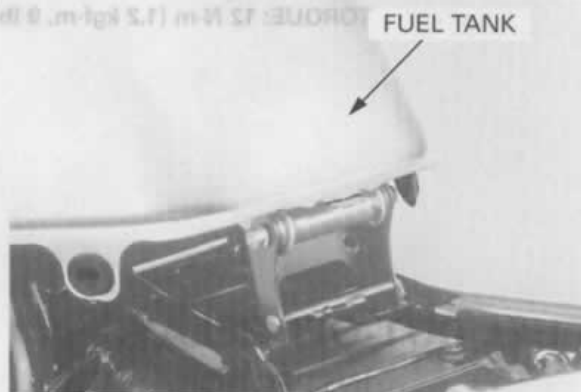
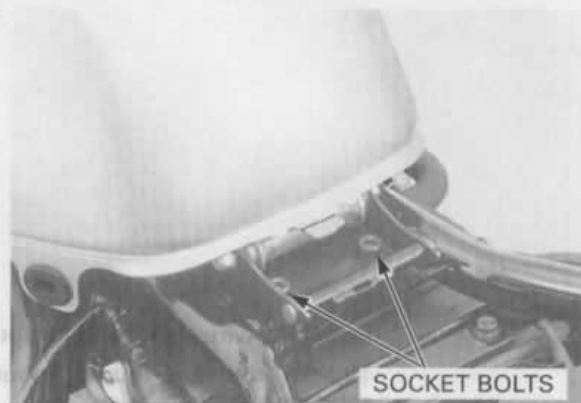
FUEL TANK

REMOVAL

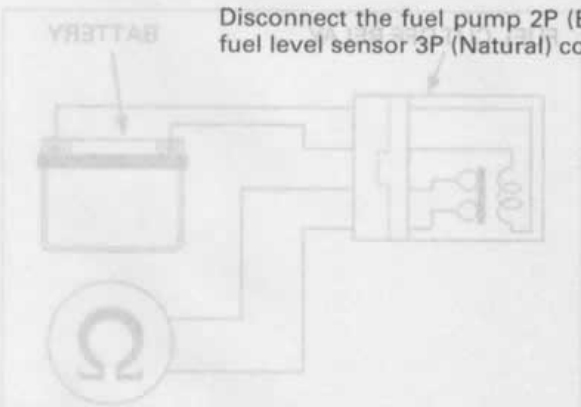
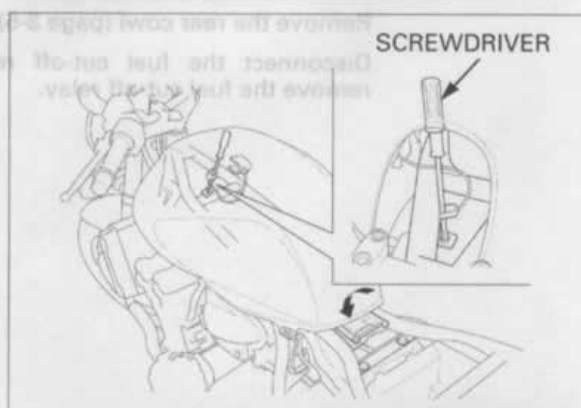
- Remove the seat (page 3-4) and side cover (page 3-4).
- Drain the fuel tank.
- Remove the fuel tank rear bracket socket bolts.



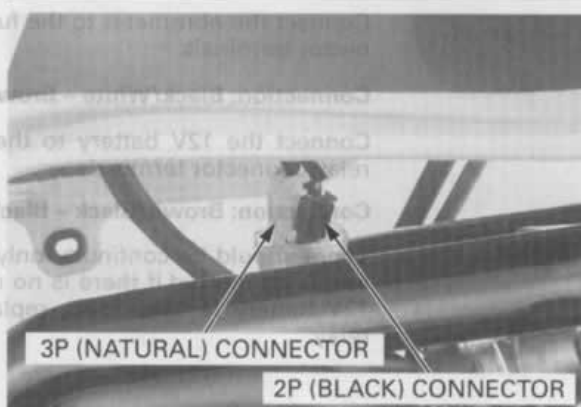
Pull up the rear end of the fuel tank and release the tank from the cushion rubbers on the frame.



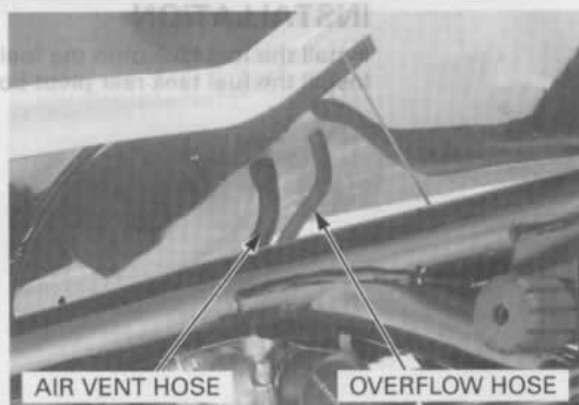
Open and support the front end of fuel tank using a equipped screwdriver as shown.



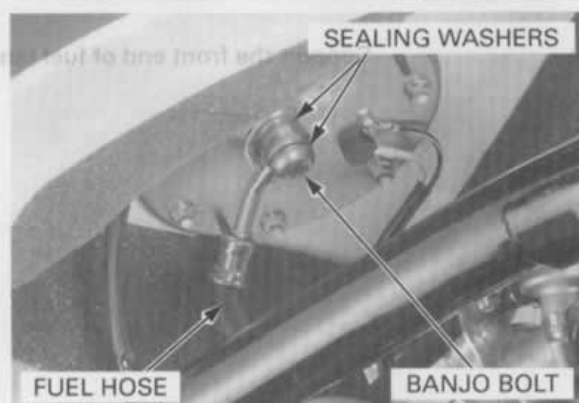
Disconnect the fuel pump 2P (Black) connector and fuel level sensor 3P (Natural) connector.



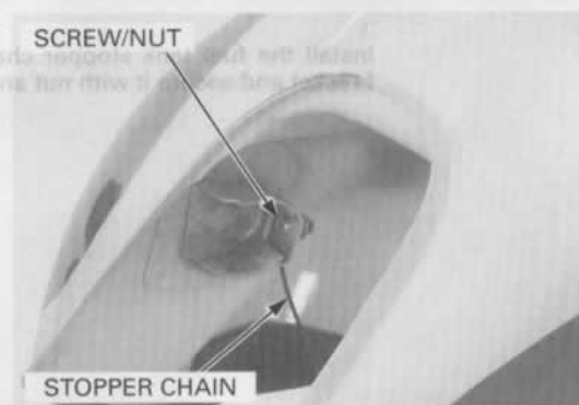
Disconnect the fuel tank air vent hose and overflow hose.



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



Remove the screw and nut, then remove the fuel tank stopper chain from the fuel tank bracket.

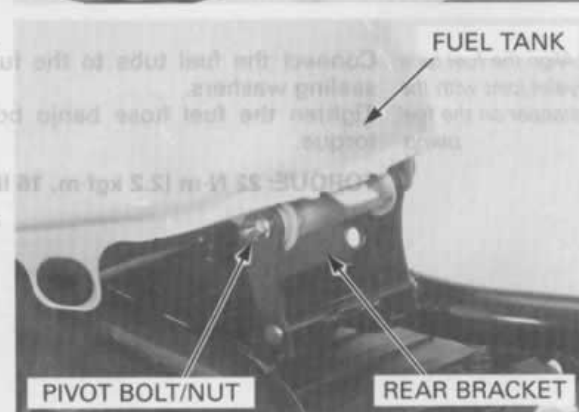


Remove the support tools and lower the fuel tank. Remove the fuel tank rear pivot bolt and nut, and then remove the fuel tank.

NOTICE

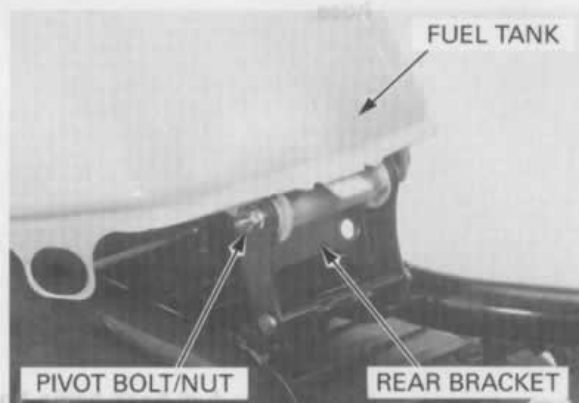
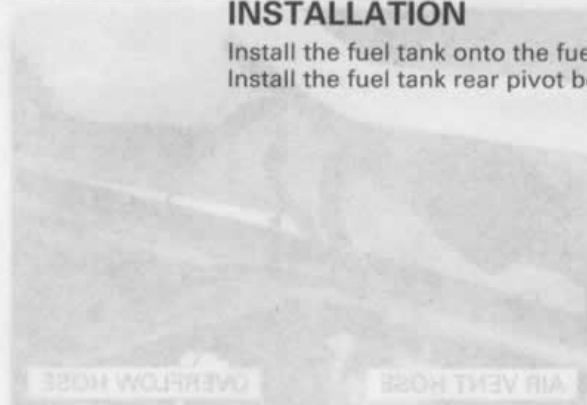
Be careful not to damage the fuel tank.

Refer to procedures for fuel pump removal (page 6-46).

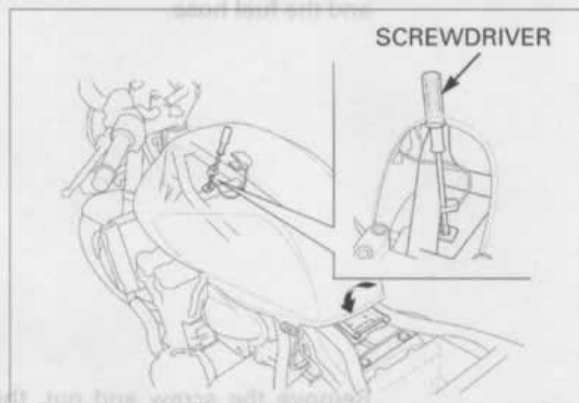
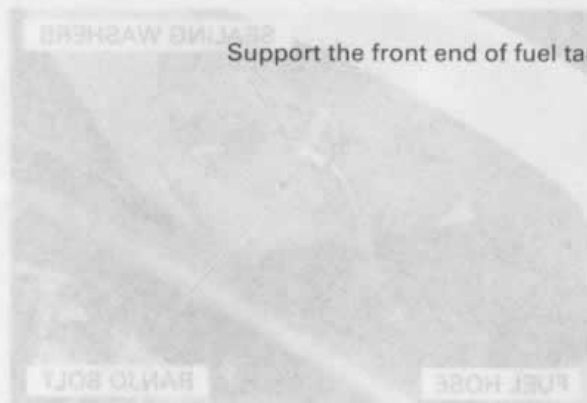


INSTALLATION

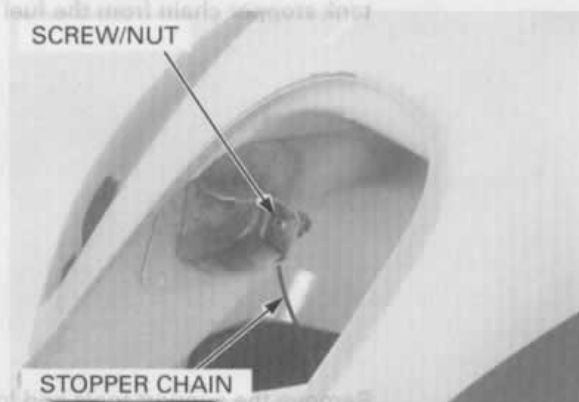
Install the fuel tank onto the fuel tank rear bracket.
Install the fuel tank rear pivot bolt and nut.



Support the front end of fuel tank.



Install the fuel tank stopper chain to the fuel tank bracket and secure it with nut and screw.



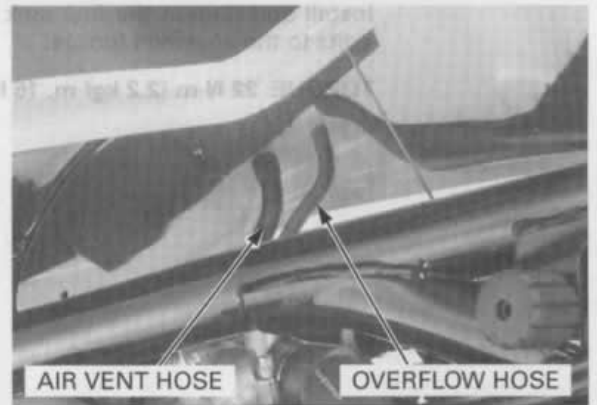
Align the fuel tube eyelet joint with the stopper on the fuel pump.

Connect the fuel tube to the fuel pump with new sealing washers.
Tighten the fuel hose banjo bolt to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



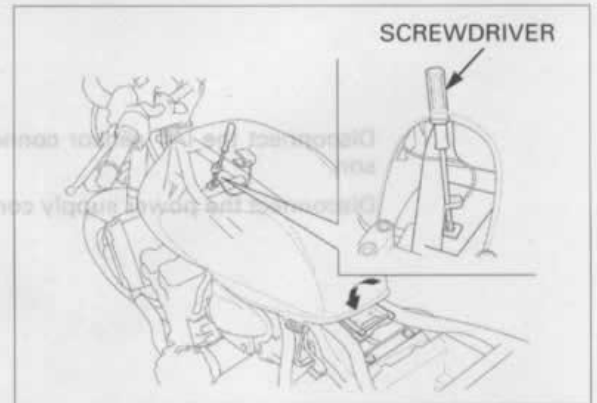
Connect the fuel tank air vent hose and overflow hose to the fuel tank.



Connect the fuel pump 2P (Black) connector and fuel level sensor 3P (Natural) connector.

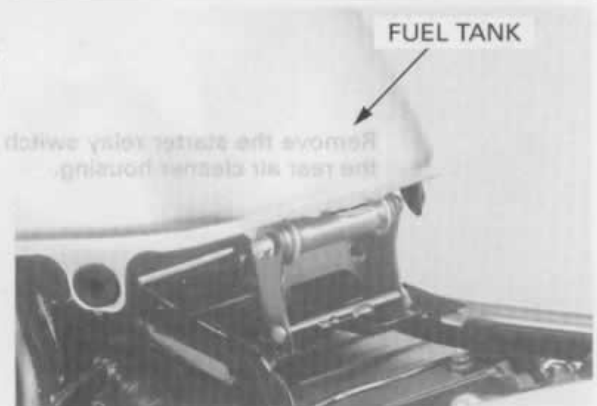


Remove the supporting tool and close the fuel tank.



Pull up the rear end of the fuel tank.

Press the tank forward and install the cushion rubbers on the frame into the hooks inside the fuel tank.



FUEL SYSTEM (Programmed Fuel Injection)

Install and tighten the fuel tank rear bracket socket bolts to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



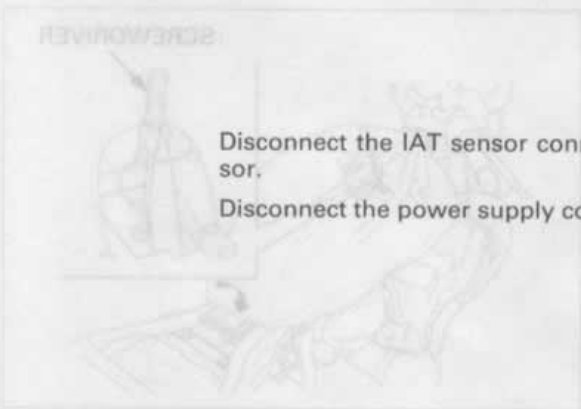
AIR CLEANER HOUSING

REAR AIR CLEANER HOUSING REMOVAL

Remove the following:

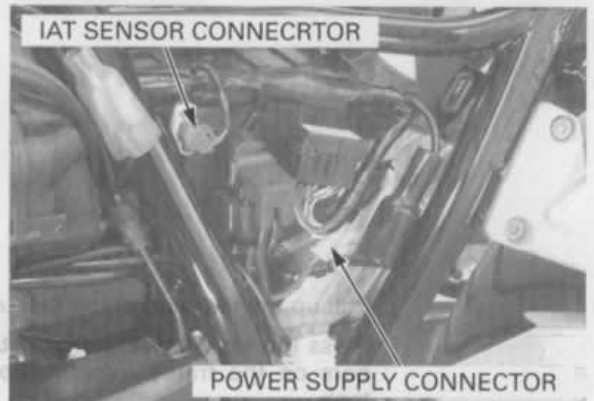
- Rear fender A and B (page 3-8)
- Air cleaner element (page 4-7)

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

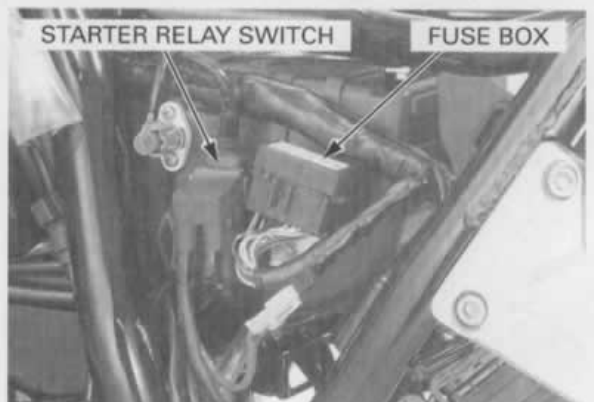


Disconnect the IAT sensor connector from the sensor.

Disconnect the power supply connector.



Remove the starter relay switch and fuse box from the rear air cleaner housing.



Loosen the air cleaner case connecting boot band screw.

Remove the air cleaner housing.



Remove the rear air cleaner housing mounting bolts and rear air cleaner housing.



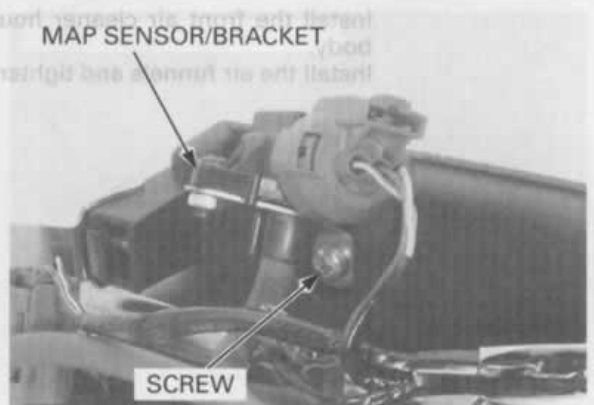
FRONT AIR CLEANER HOUSING REMOVAL

Remove the throttle body/front air cleaner housing assembly (page 6-57).

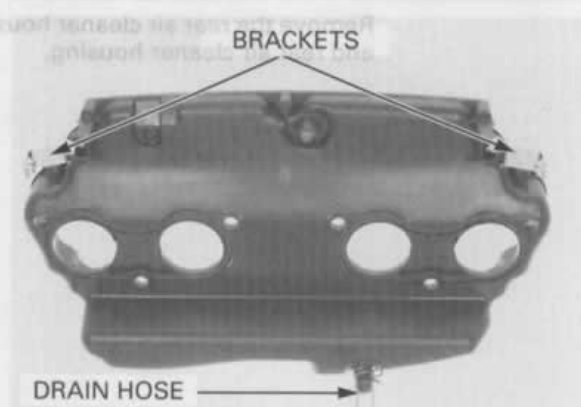
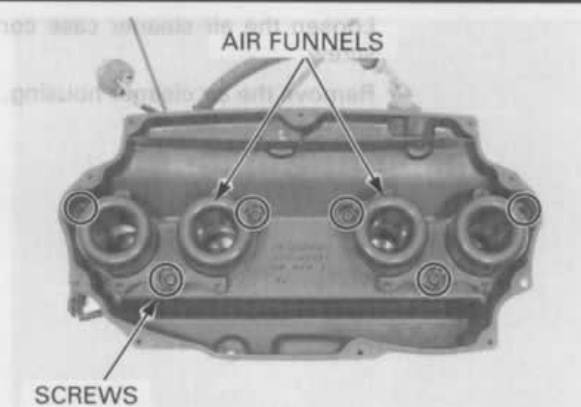
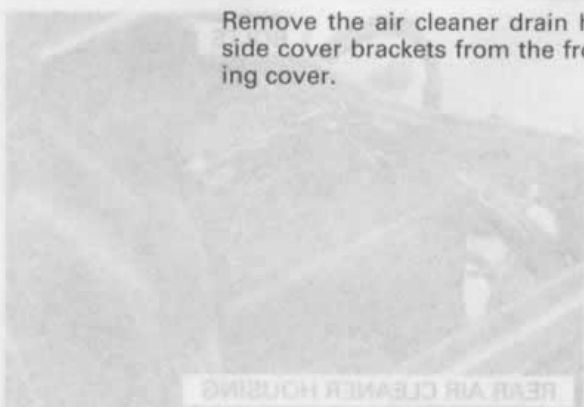
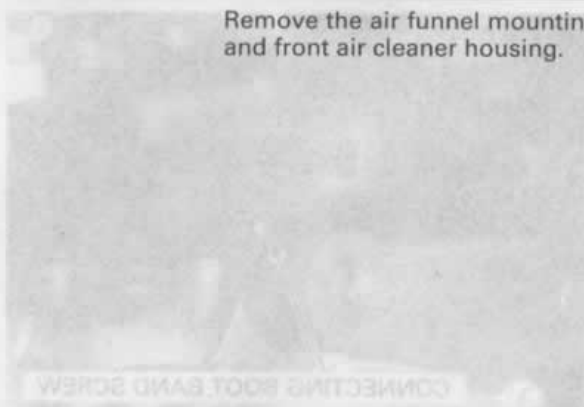
Remove the screws and front air cleaner housing cover.



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



Remove the air funnel mounting screws, air funnels and front air cleaner housing.

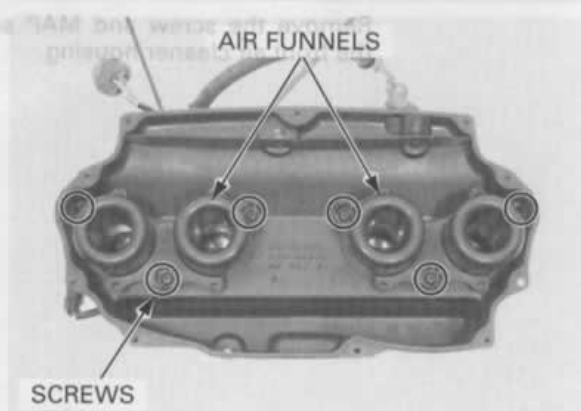


FRONT AIR CLEANER HOUSING INSTALLATION

Check the sealing rubber in the air cleaner housing is in good condition, replace if necessary.



Install the front air cleaner housing to the throttle body.
Install the air funnels and tighten the screws.



Install the MAP sensor bracket onto the front air cleaner housing, tighten the screw.

MAP SENSOR/BRACKET



SCREW

Install the front air cleaner housing cover and tighten the screws.

Install the throttle body/front air cleaner housing assembly (page 6-63).

SCREWS



FRONT AIR CLEANER HOUSING COVER

REAR AIR CLEANER HOUSING INSTALLATION

Install the connecting tube band to the rear air cleaner housing connecting tube.

Install the rear air cleaner housing into the frame. Install and tighten the rear air cleaner housing mounting bolts.

BOLTS



REAR AIR CLEANER HOUSING

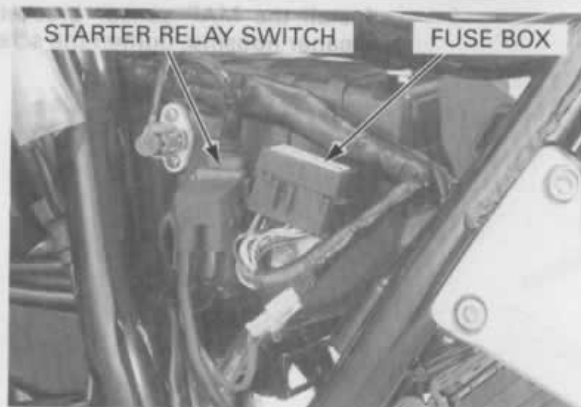
Tighten the connecting boot band screw.

CONNECTING BOOT BAND SCREW

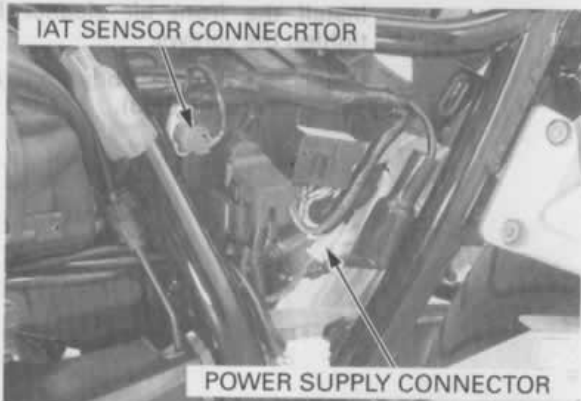


FUEL SYSTEM (Programmed Fuel Injection)

Install the fuse box and starter relay switch to the rear air cleaner housing.



Connect the power supply connector and IAT sensor connector.

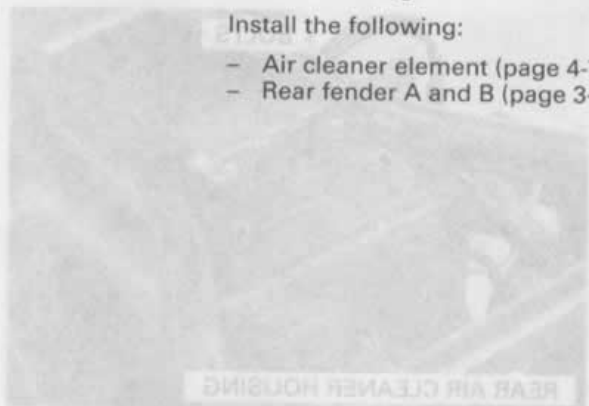


Connect the PAIR air suction hose to the rear air cleaner housing.



Install the following:

- Air cleaner element (page 4-7)
- Rear fender A and B (page 3-10)



THROTTLE BODY

REMOVAL

NOTICE

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

Remove the following:

- Fuel tank (page 6-48)
- Rear air cleaner housing (page 6-52)

Be careful not to damage the main wire harness.

Remove the main wire harness between the front air cleaner housing and frame.

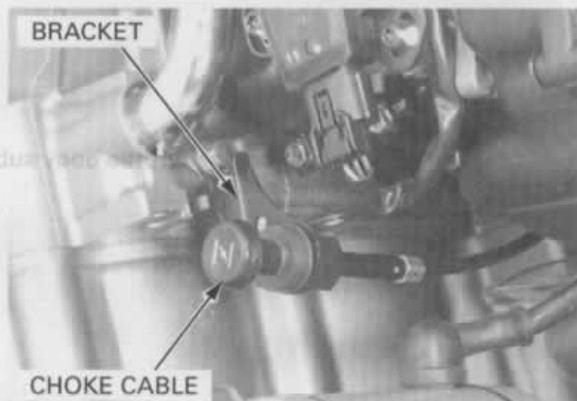
Disconnect the choke cable from the cable bracket.

Disconnect the crankcase breather hose.

MAIN WIRE HARNESS



BRACKET



CHOKE CABLE

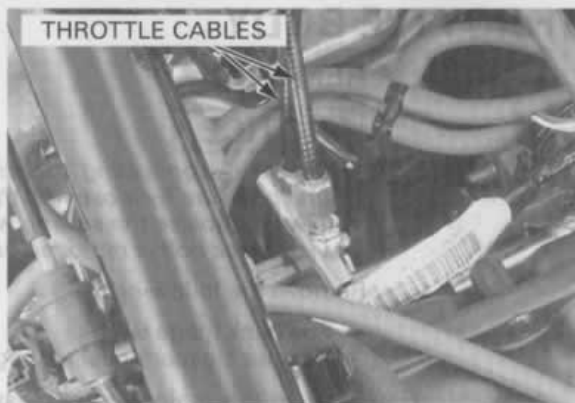


CRANKCASE BREATHER HOSE

FUEL SYSTEM (Programmed Fuel Injection)

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

Disconnect the throttle cable ends from the throttle drum.



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



Disconnect the throttle body sub-harness 14P (Gray) connector.



Loosen the throttle body side insulator band screws.

Remove the throttle body/front air cleaner housing as an assembly.

NOTICE

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



Loosen the engine side insulator band screws and remove the insulators from the cylinder head.

NOTICE

Seal the cylinder head intake ports with tape or a clean cloth to keep dirt and debris from entering the intake ports after the throttle body has been removed.

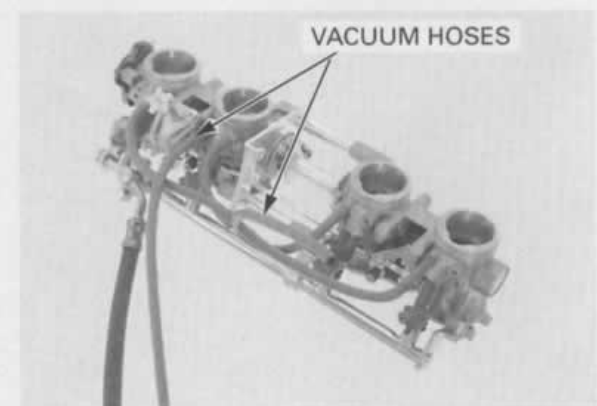
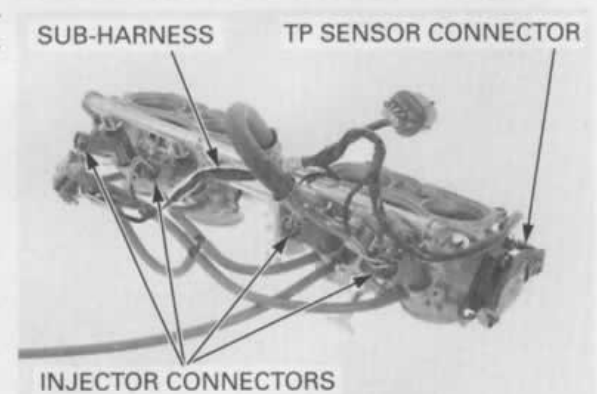
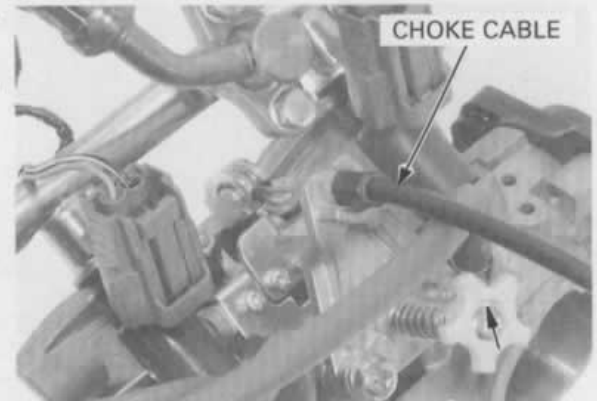
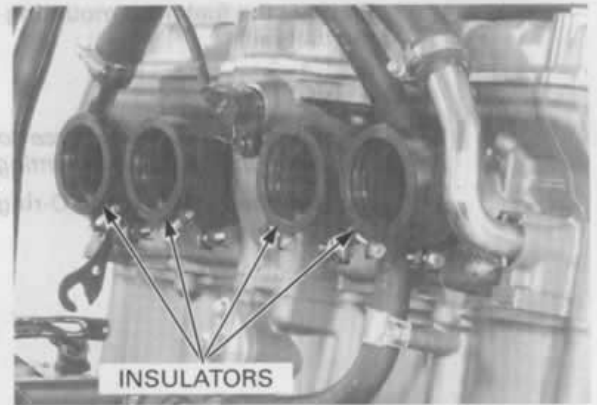
Remove the front air cleaner housing from the throttle body (page 6-53).

Remove the choke cable from the choke/throttle stop screw bracket.

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.

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

Disconnect the vacuum hoses.



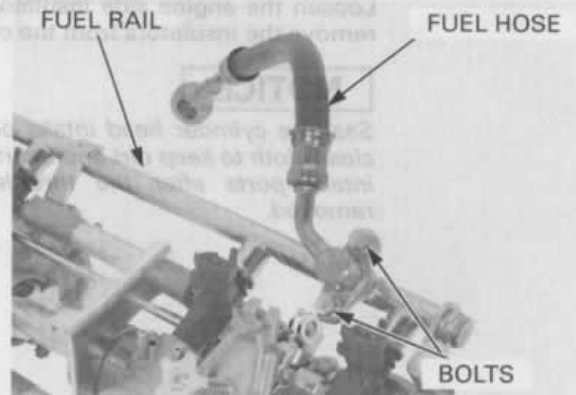
FUEL SYSTEM (Programmed Fuel Injection)

Remove the fuel hose mounting bolts while holding the fuel rail.

NOTICE

Do not apply excessive force to the fuel rail while removing the fuel pipe mounting bolts.

Remove the fuel hose and O-ring from the fuel rail.



Remove the front air cleaner housing from the throttle body (page 6-53).

Remove the choke cable from the choke throttle stop screw bracket.

Do not use the throttle cable from the stock after the throttle cable has been removed. It may be damaged and cause the engine to stall.



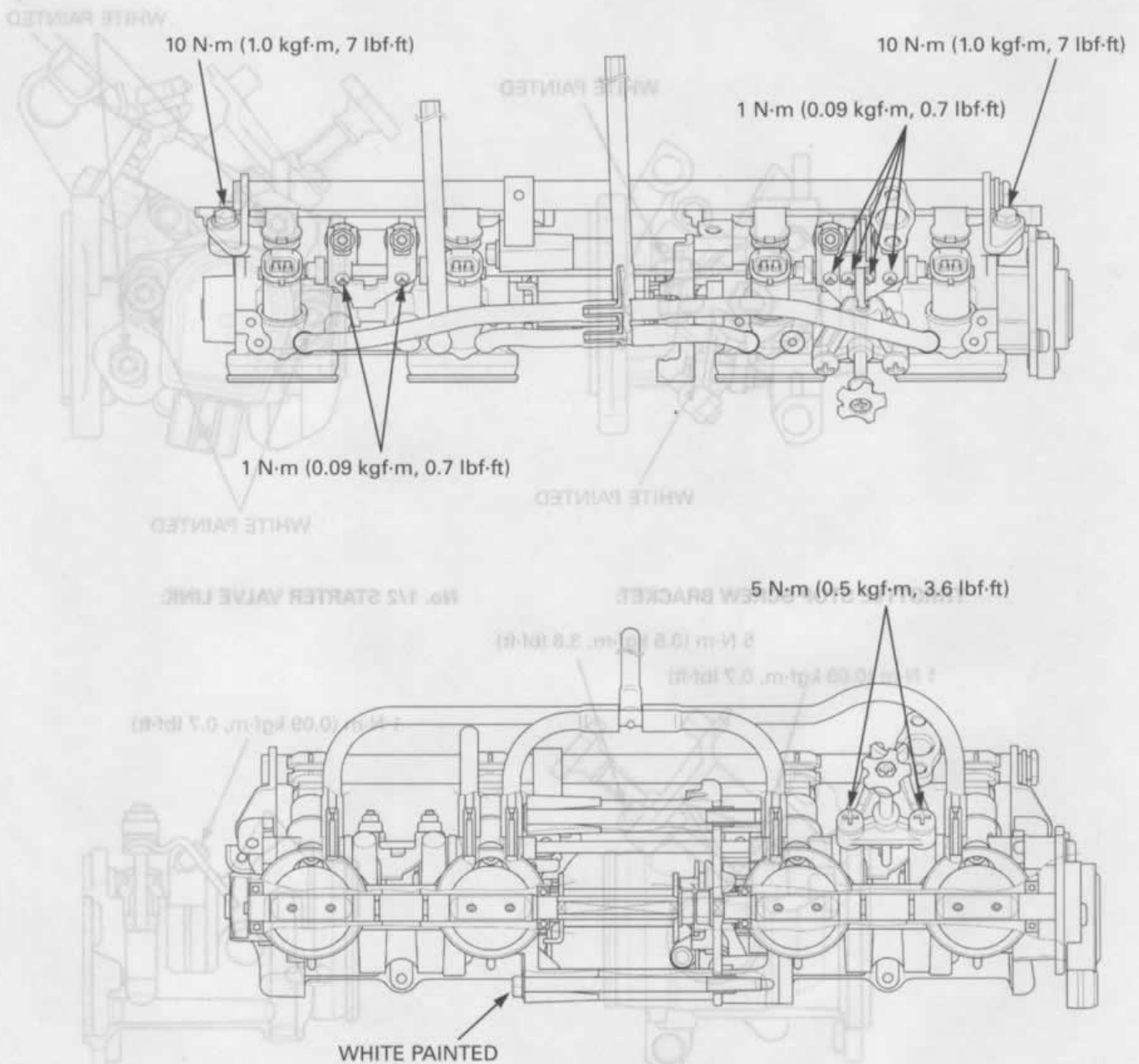
Disconnect the injector connectors and TP sensor connector, then remove the throttle body sub-harness.



Disconnect the vacuum hoses.

NOTICE

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

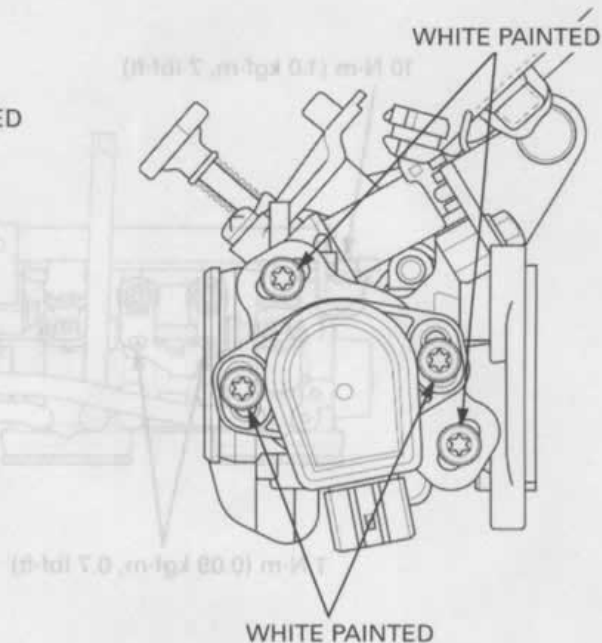
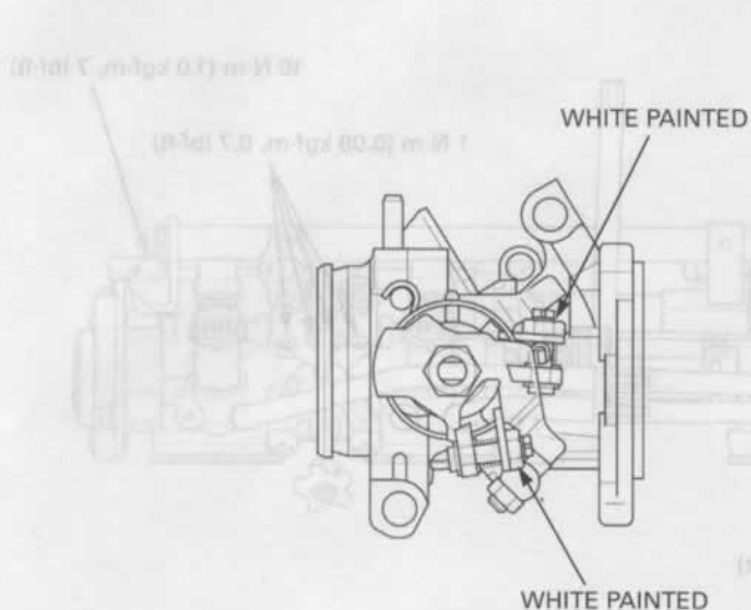


NOTICE

- Do not damage the throttle body. If any screw loosens throttle and idle valve synchronization. The throttle will not operate properly. Do not disassemble the throttle body. Do not use any oil or grease on the throttle body. Do not use any oil or grease on the throttle body. Do not use any oil or grease on the throttle body.
- Do not touch the throttle cable and screws of the throttle body. Loosening or tightening them can cause throttle and idle valve synchronization failure.

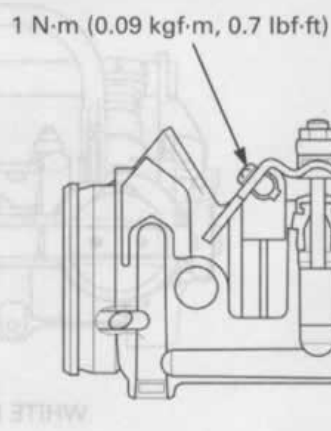
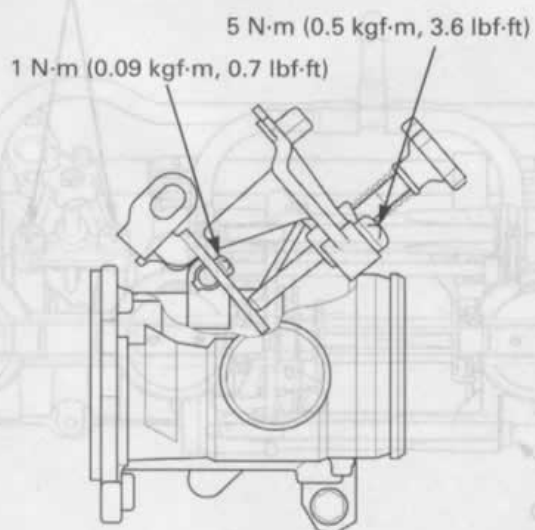
No. 3/4 THROTTLE LINK:

THROTTLE SENSOR:

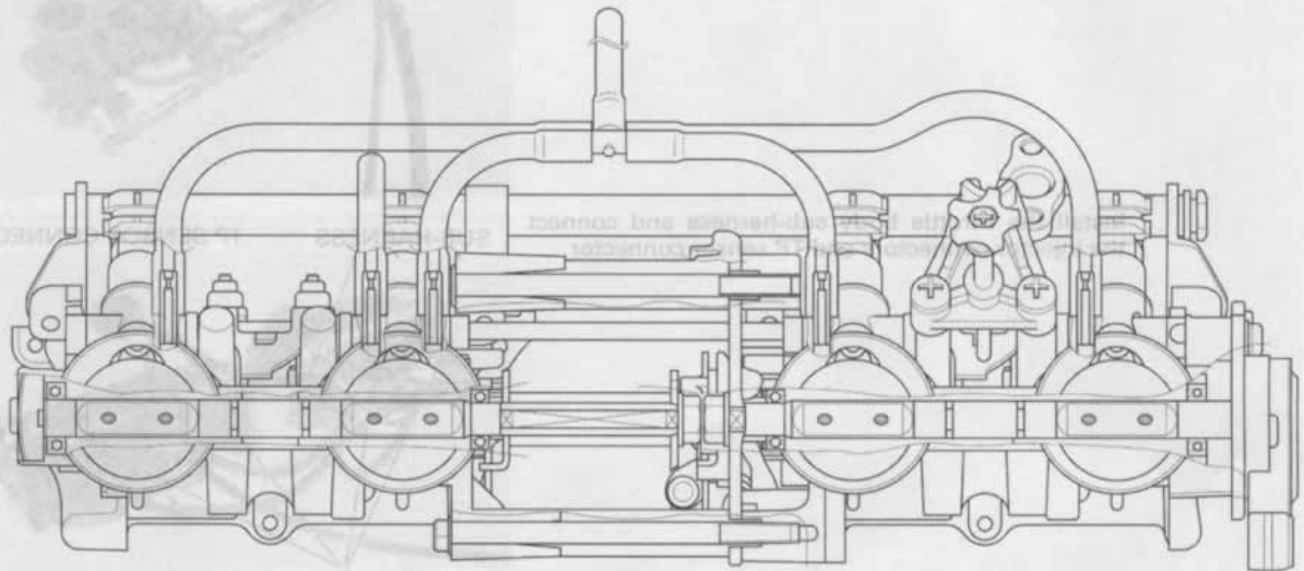


THROTTLE STOP SCREW BRACKET:

No. 1/2 STARTER VALVE LINK:



THROTTLE BODY VACUUM HOSE ROUTING



INSTALLATION

Apply oil to a new O-ring and install it into the groove of the fuel hose joint.

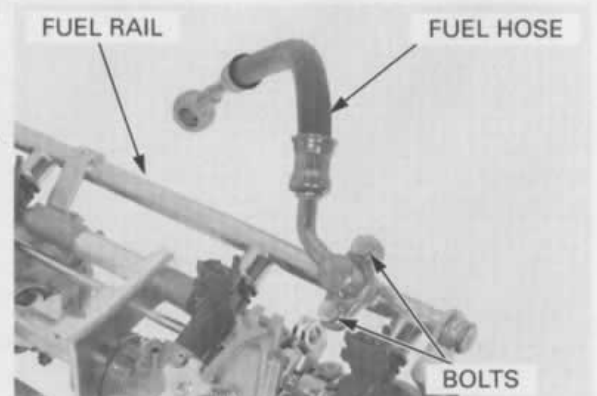
Install the fuel hose to the fuel rail.

Install and tighten the fuel hose mounting bolts while holding the fuel rail.

NOTICE

Do not apply excessive force to the fuel rail while tightening the fuel pipe mounting bolts.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

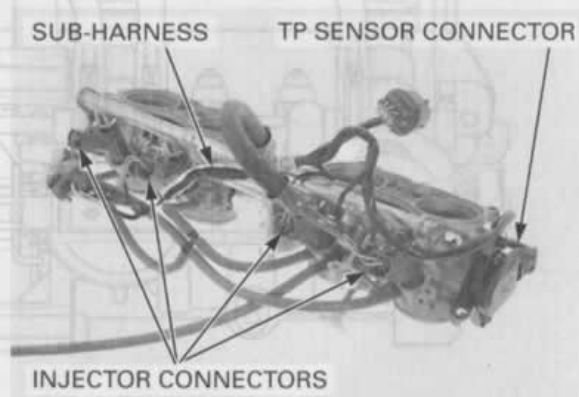


FUEL SYSTEM (Programmed Fuel Injection)

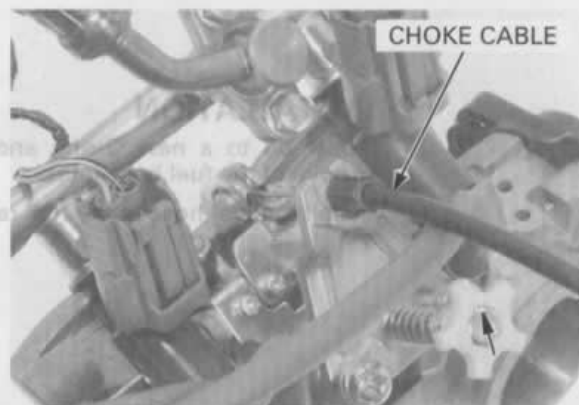
Connect the vacuum hoses to the throttle body.



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

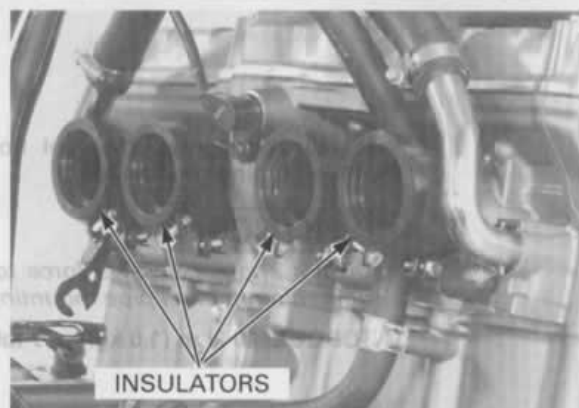


Hook the choke cable end to the choke cable link bracket.
Install the choke cable to the choke cable/throttle stop screw bracket.

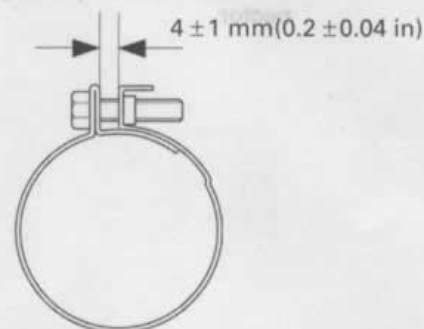


Install the front air cleaner housing to the throttle body (page 6-54).

Check the insulator band angle.
Install the insulators onto the cylinder head.



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

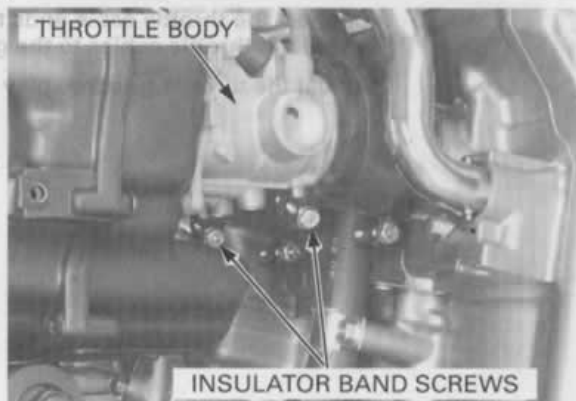


Apply oil to the insulator inside surfaces for ease of throttle body installation.

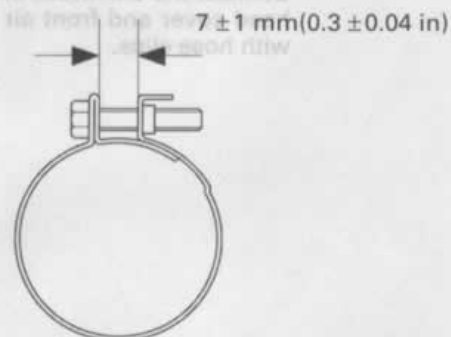
Place the throttle body/front air cleaner housing assembly into the frame, then install the throttle body into the insulators.

NOTICE

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



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



Route the injector sub-harness referring the cable and harness routing (page 1-23). Connect the throttle body sub-harness 14P (Gray) connector.



FUEL SYSTEM (Programmed Fuel Injection)

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

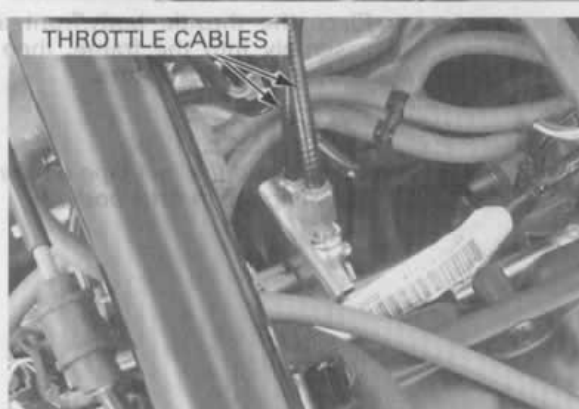
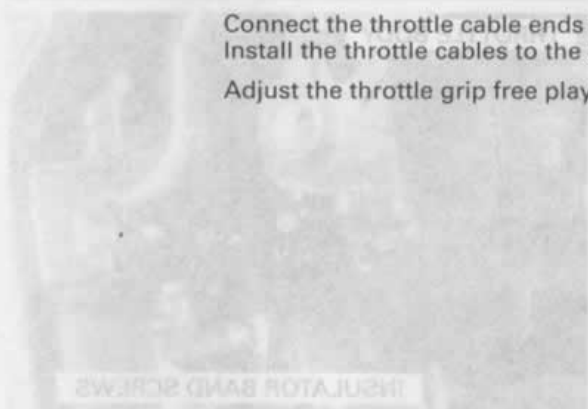


2P (NATURAL) CONNECTOR



Connect the throttle cable ends to the throttle drum. Install the throttle cables to the guide bracket.

Adjust the throttle grip free play (page 4-6).



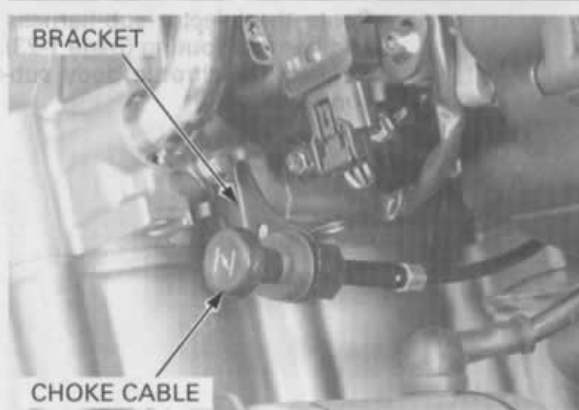
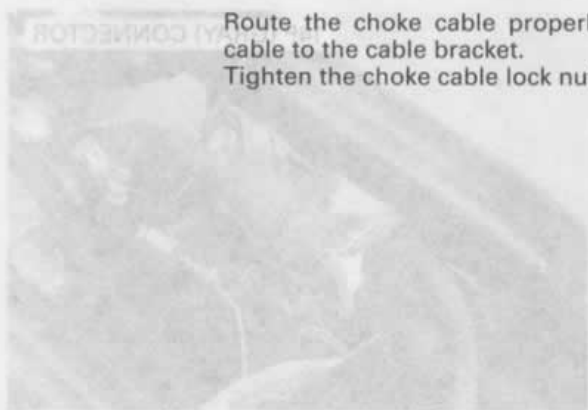
THROTTLE CABLES

Connect the crankcase breather hose to the cylinder head cover and front air cleaner housing, secure it with hose clips.



CRANKCASE BREATHER HOSE

Route the choke cable properly, install the choke cable to the cable bracket. Tighten the choke cable lock nut securely.



BRACKET

CHOKE CABLE

Be careful not to damage the main wire harness.

Route the main wire harness between the front air cleaner housing and frame.

Install the following:

- Rear air cleaner housing (page 6-52)
- Fuel tank (page 6-50)

MAIN WIRE HARNESS



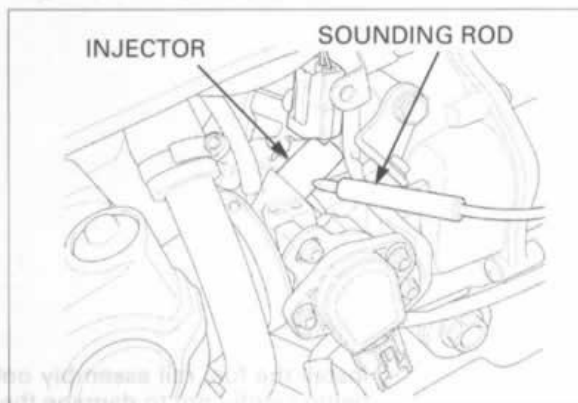
INJECTOR

INSPECTION

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

INJECTOR

SOUNDING ROD



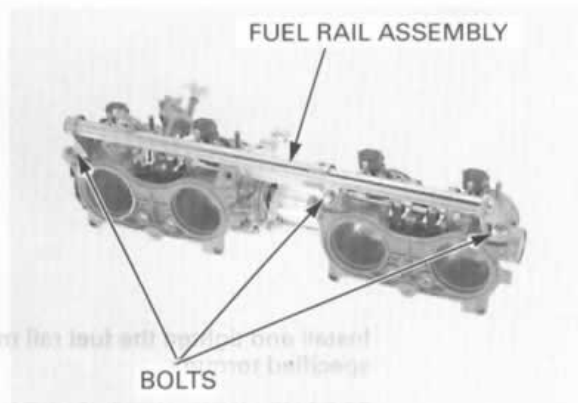
REMOVAL

Remove the throttle body (page 6-57).

Remove the bolts and fuel pipe assembly.

FUEL RAIL ASSEMBLY

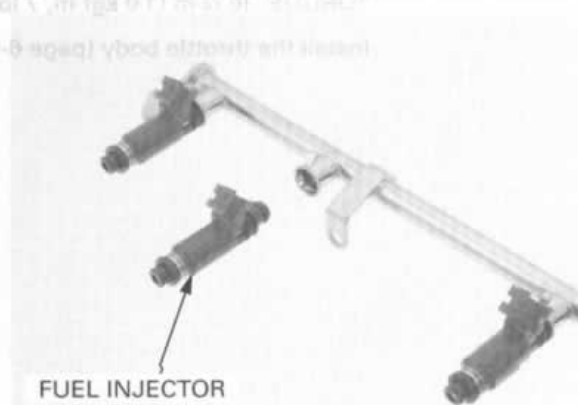
BOLTS



Remove the injectors from the fuel pipe.

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

FUEL INJECTOR



FUEL SYSTEM (Programmed Fuel Injection)

INSTALLATION

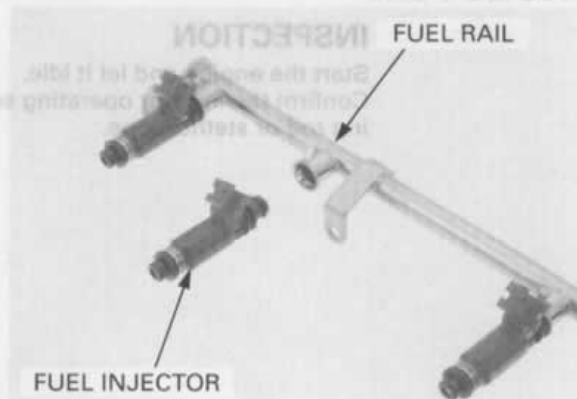
Apply oil to the new O-ring.

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

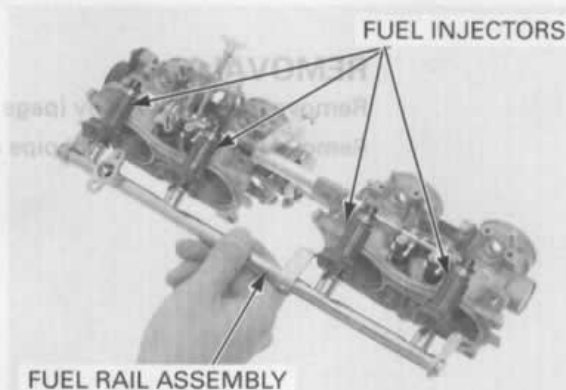
Install the new seal ring, cushion ring and O-ring, being careful not to damage the O-ring.



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



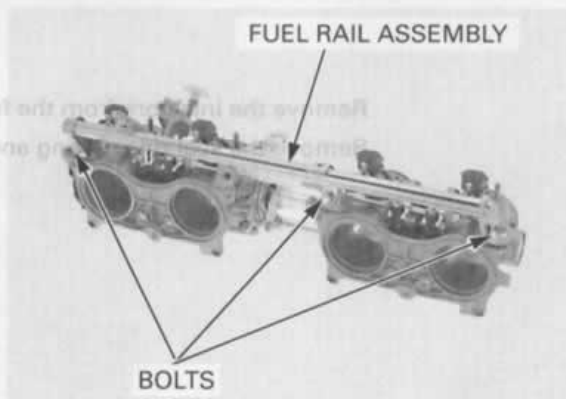
Install the fuel rail assembly onto the throttle body, being careful not to damage the seal rings.



Install and tighten the fuel rail mounting bolts to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the throttle body (page 6-63).

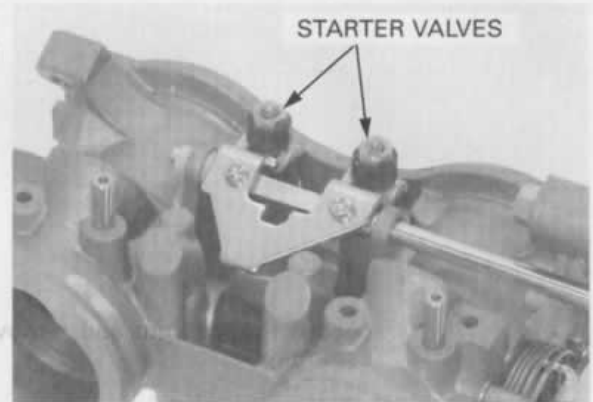


STARTER VALVE

DISASSEMBLY

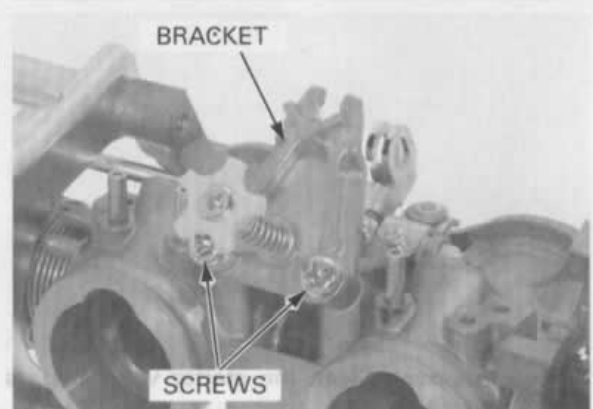
Remove the fuel rail and injectors (page 6-67).

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

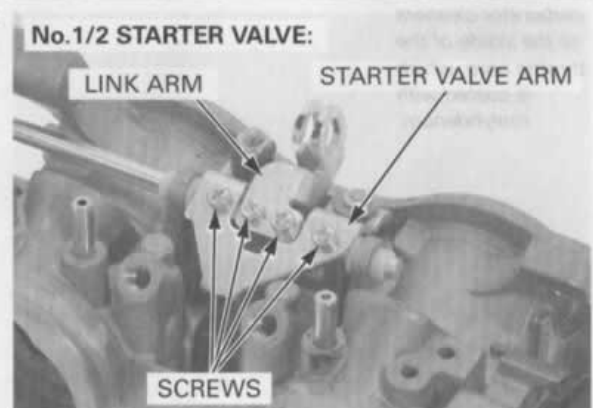


No.1/2 starter valve:

Remove the screws and choke cable/throttle stop screw bracket from the throttle body.

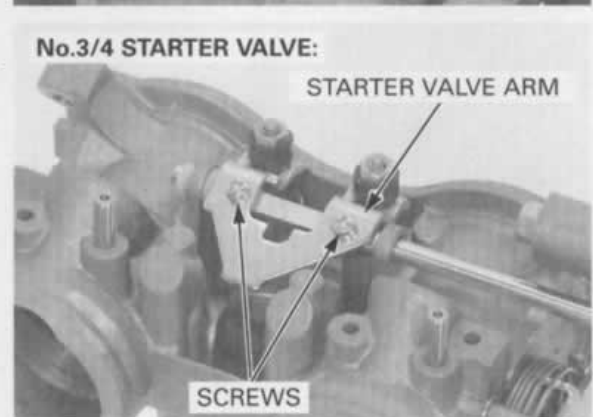


Remove the starter valve arm screws and starter valve arms.
Remove the screw and choke cable link arm.



No.3/4 starter valve:

Remove the starter valve arm screws and starter valve arm.

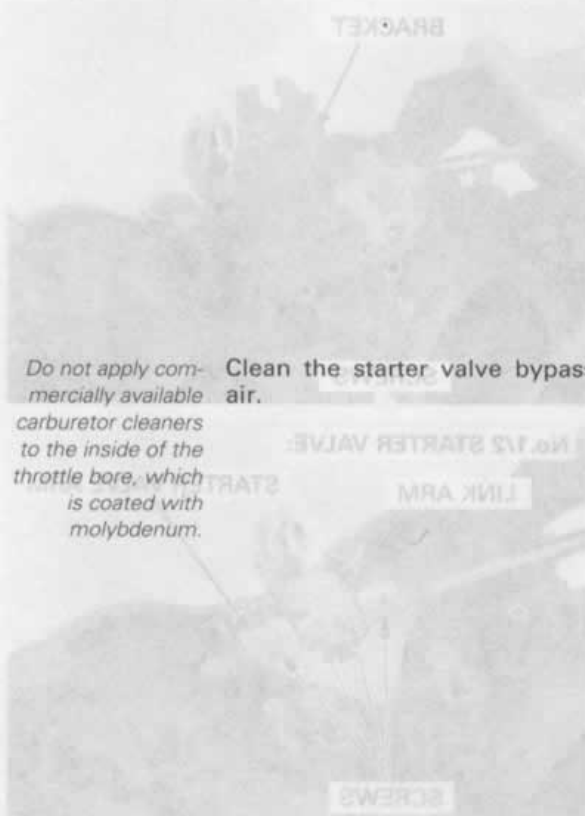
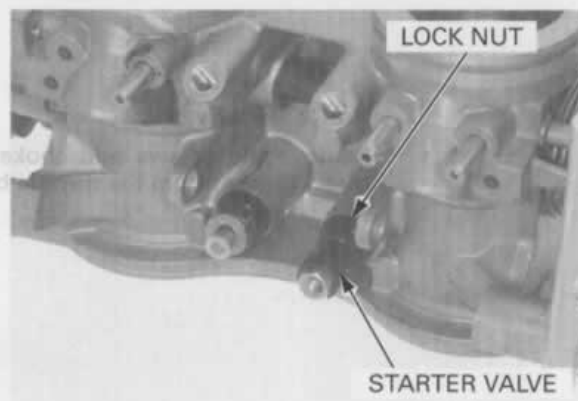
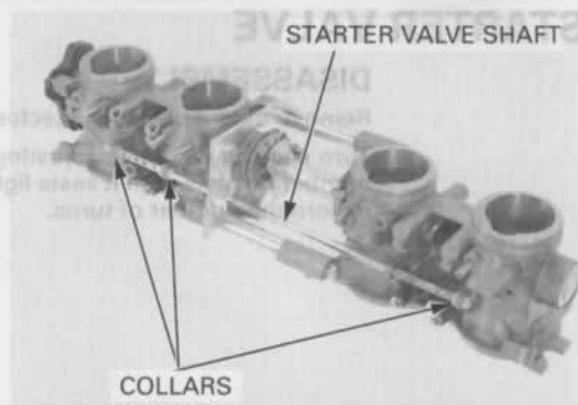


FUEL SYSTEM (Programmed Fuel Injection)

Remove the starter valve shaft and three collars.



Loosen the lock nut and remove the starter valve assembly.

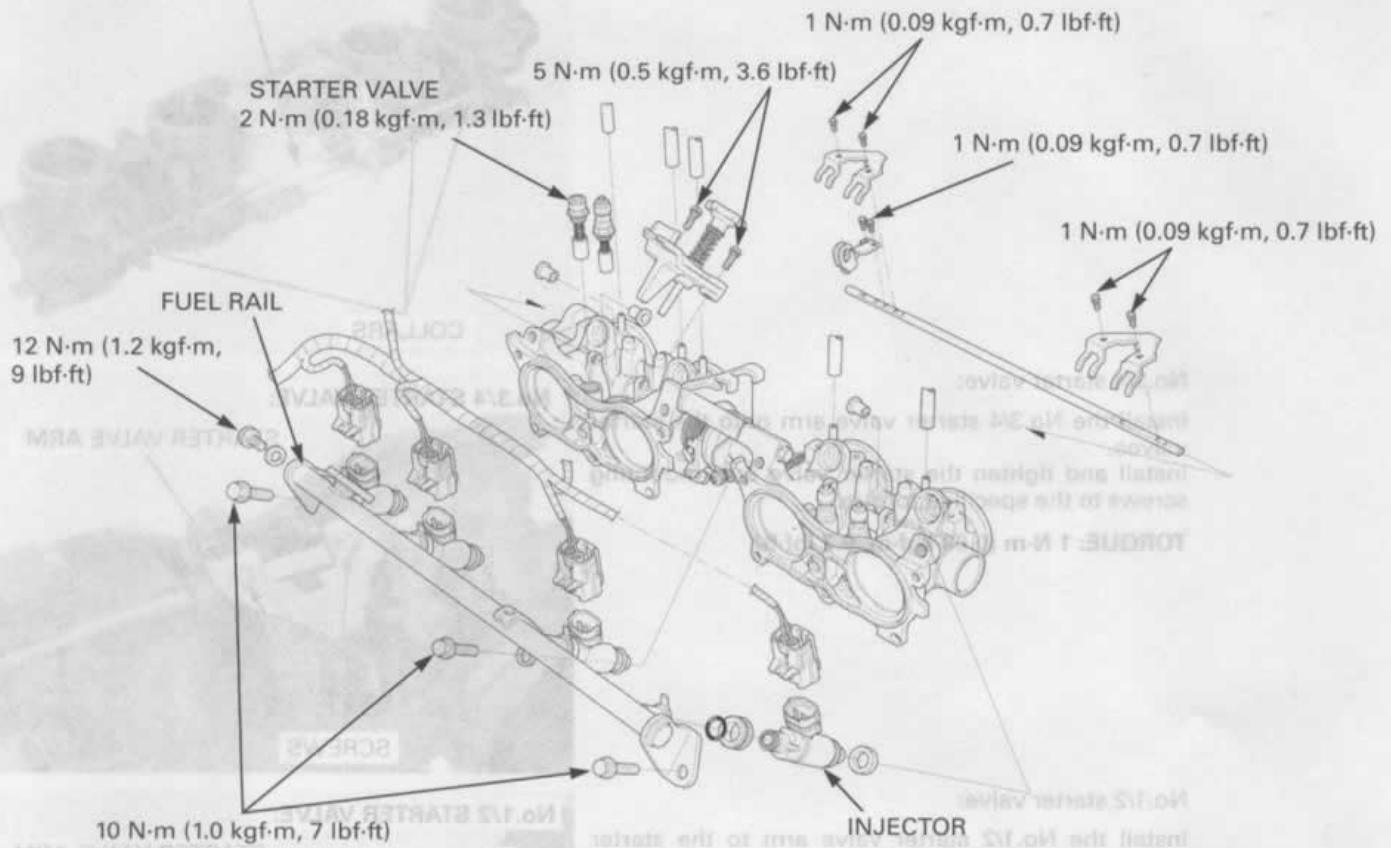


Do not apply commercially available carburetor cleaners to the inside of the throttle bore, which is coated with molybdenum.

Clean the starter valve bypass using compressed air.



ASSEMBLY

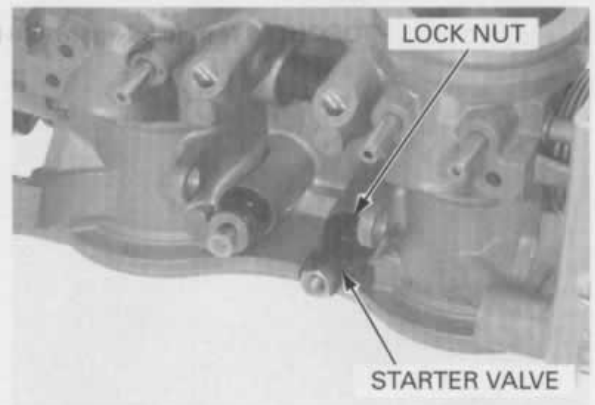


Install the starter valve assembly into the valve hole.



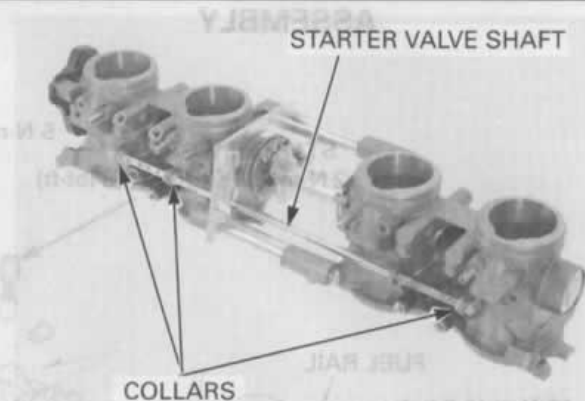
Tighten the starter valve lock nut to the specified torque.

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



FUEL SYSTEM (Programmed Fuel Injection)

Install the three collars and starter valve shaft.



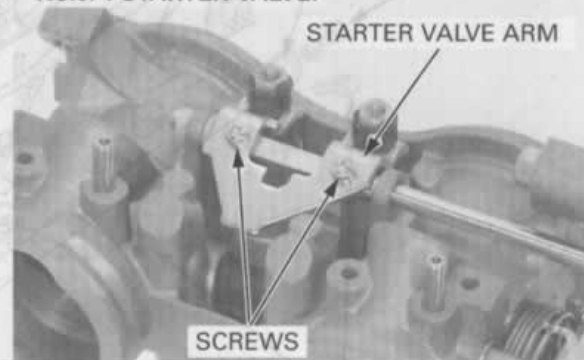
No.3/4 starter valve:

Install the No.3/4 starter valve arm onto the starter valves.

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

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

No.3/4 STARTER VALVE:



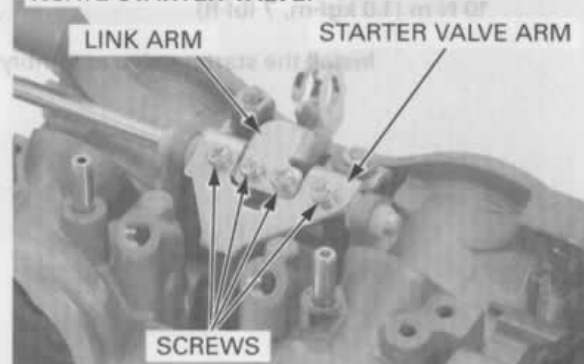
No.1/2 starter valve:

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

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

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

No.1/2 STARTER VALVE:

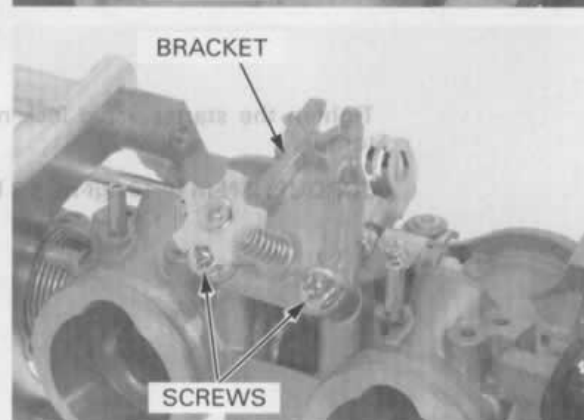


Install the choke cable link arm and tighten the screw to the specified torque.

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

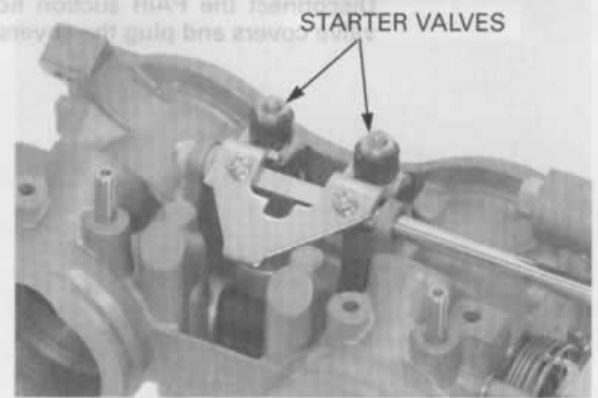
Install the choke cable/throttle stop screw bracket onto the throttle body, tighten the screws to the specified torque.

TORQUE: 5 N·m (0.50 kgf·m, 3.6 lbf·ft)



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

Install the injectors and fuel rail (page 6-68).



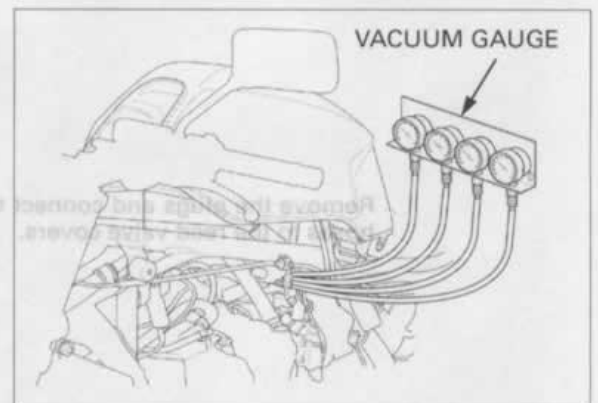
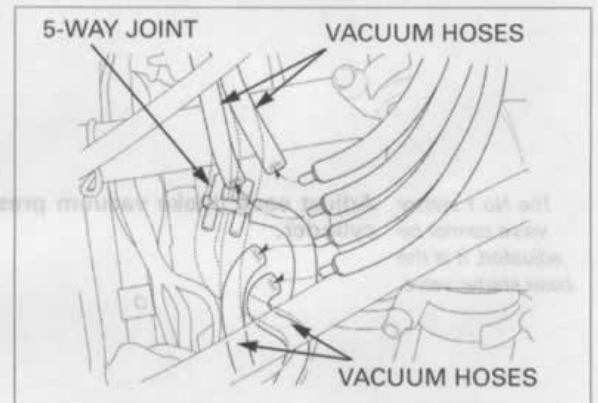
STARTER VALVE SYNCHRONIZATION

- Synchronize the starter valve with the engine at the normal operating temperature and with the transmission in neutral.
- Use a tachometer with graduations of 50 min⁻¹ (rpm) or smaller that will accurately indicate 50 min⁻¹ (rpm) change.

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

Disconnect the each cylinder vacuum hoses from the 5-way joint.

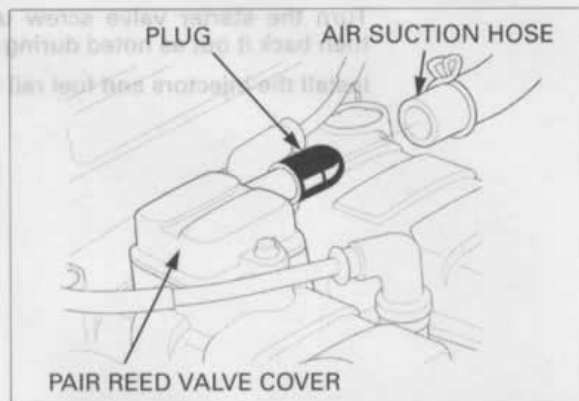
Start the engine and hold the engine speed above 2,000 min⁻¹ (rpm) for 5 seconds or more, so that the MAP sensor failure code is input into the ECM.



Connect the hoses to the vacuum gauge.
Connect the tachometer.

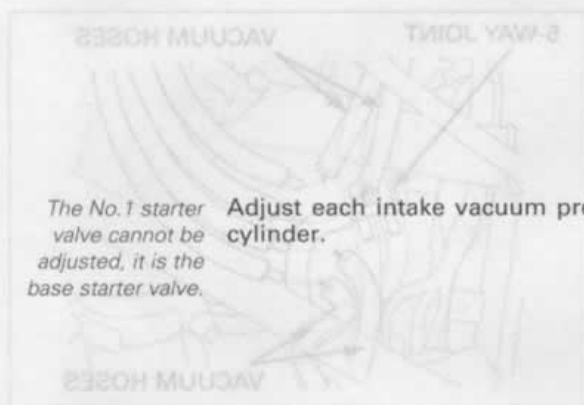
FUEL SYSTEM (Programmed Fuel Injection)

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

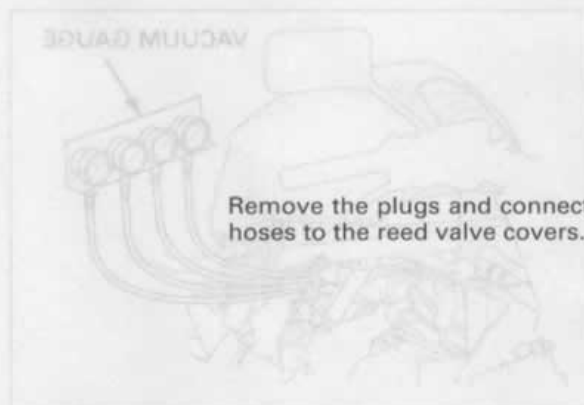


Start the engine and adjust the idle speed.

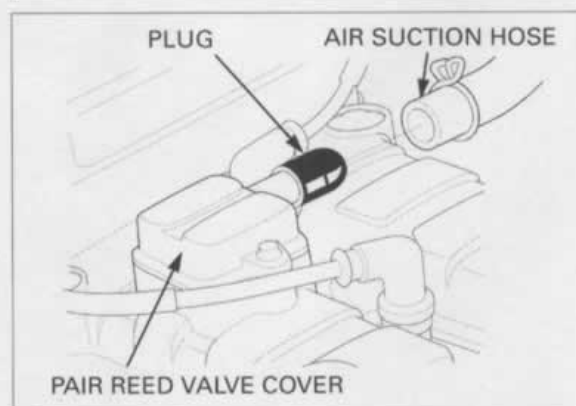
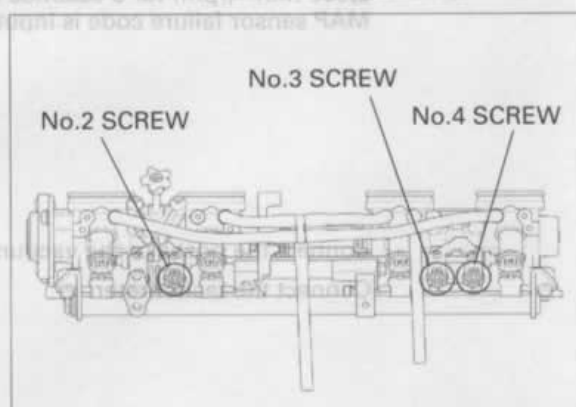
IDLE SPEED: $1,000 \pm 100 \text{ min}^{-1} \text{ (rpm)}$



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



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



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

IDLE SPEED: $1,000 \pm 100 \text{ min}^{-1}$ (rpm)

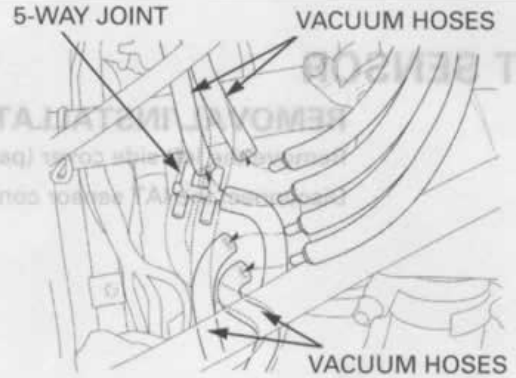
THROTTLE STOP SCREW



Remove the vacuum gauge from the vacuum tubes. Connect the each cylinder vacuum hoses to the 5-way joint.

Reset the ECM failure code (page 6-9).

Close the fuel tank.



MAP SENSOR

OUTPUT VOLTAGE INSPECTION

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

Measure the voltage at the test harness terminals ((page 6-14).

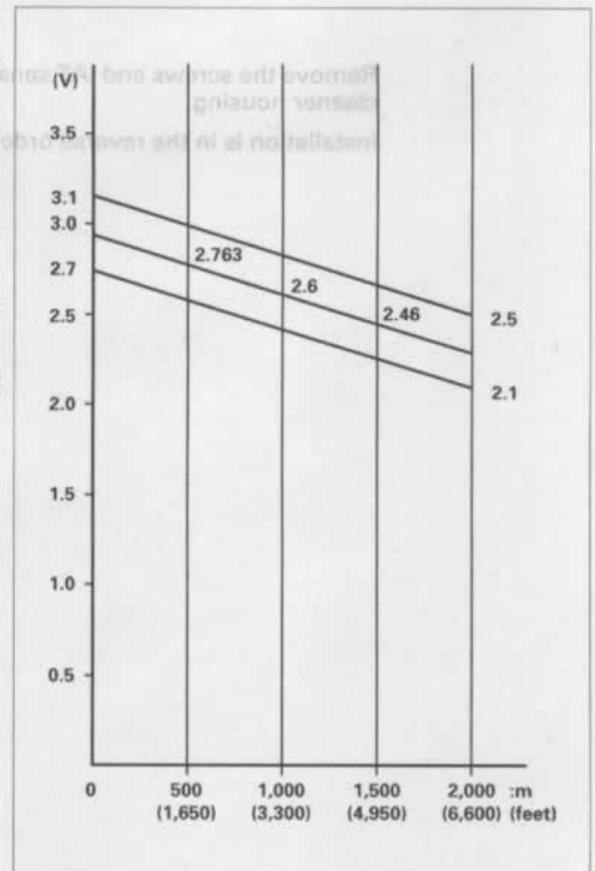
Connection: B15 (+) – B17 (–)

STANDARD: 2.7 – 3.1 V

The MAP sensor output voltage (above) is measured under the standard atmosphere (1 atm = 1,030 hPa).

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

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



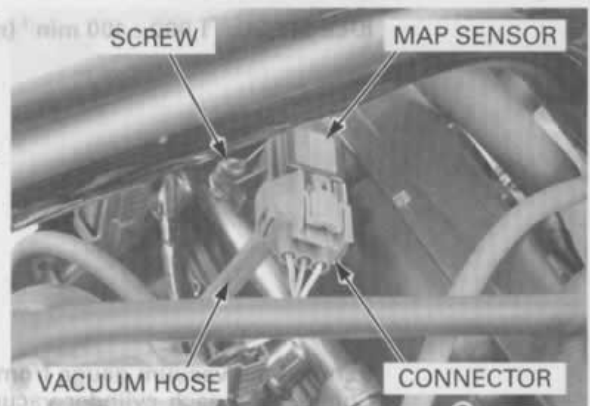
MAP SENSOR REMOVAL/INSTALLATION

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

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

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

Installation is in the reverse order of removal.

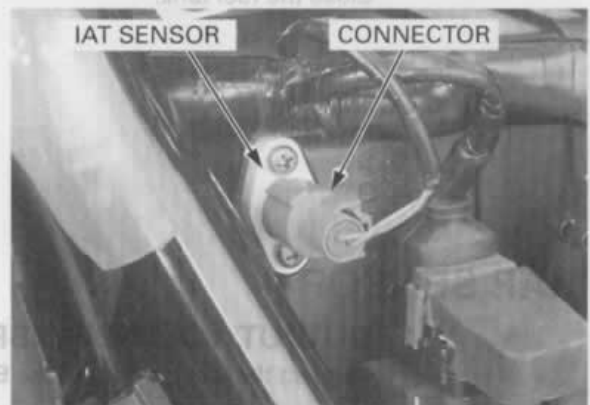


IAT SENSOR

REMOVAL/INSTALLATION

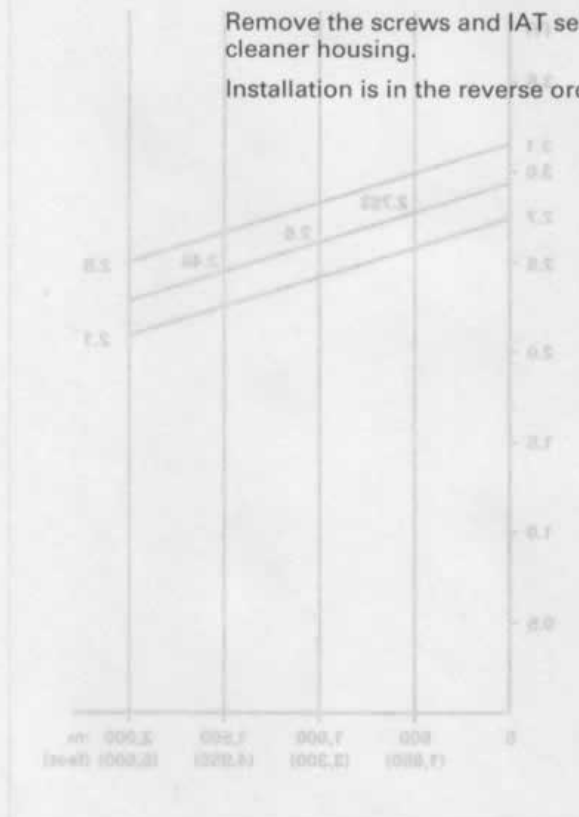
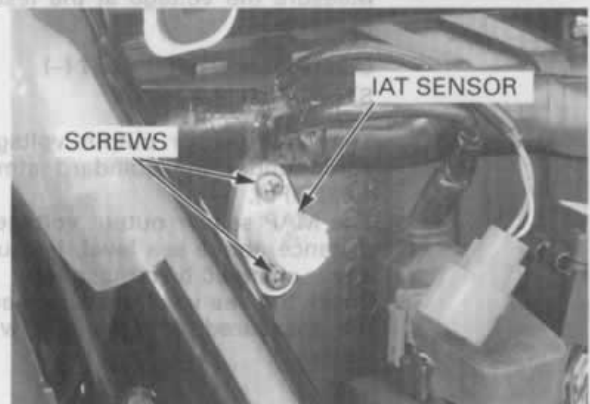
Remove the left side cover (page 3-4).

Disconnect the IAT sensor connector.



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

Installation is in the reverse order of removal.



ECT SENSOR

Replace the ECT sensor while the engine is cold.

REMOVAL/INSTALLATION

Drain the coolant from the system (page 7-6).
Open and support the front end of fuel tank (page 4-5).

Disconnect the ECT sensor connector from the sensor.

Remove the ECT sensor and sealing washer.

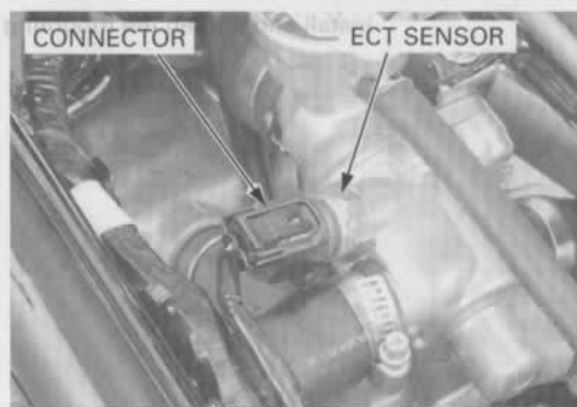
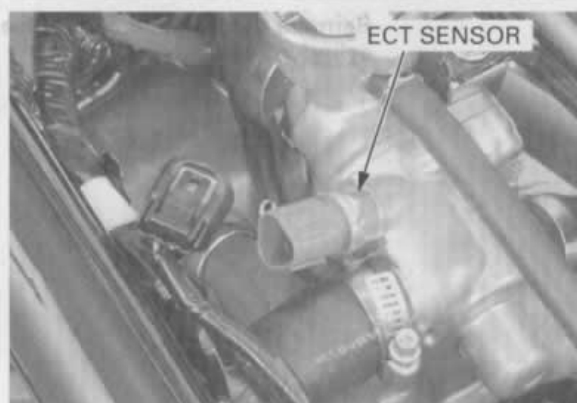
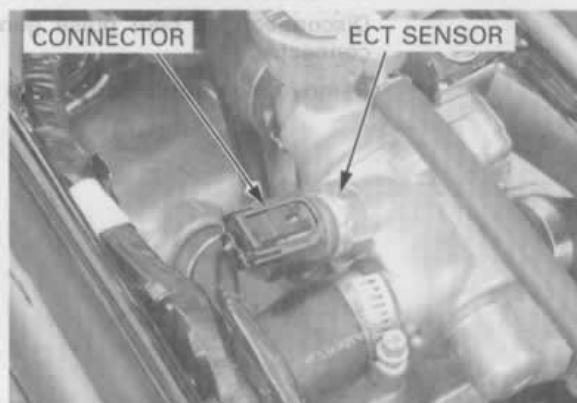
Always replace a sealing washer with a new one.

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

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Connect the ECT sensor connector.

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

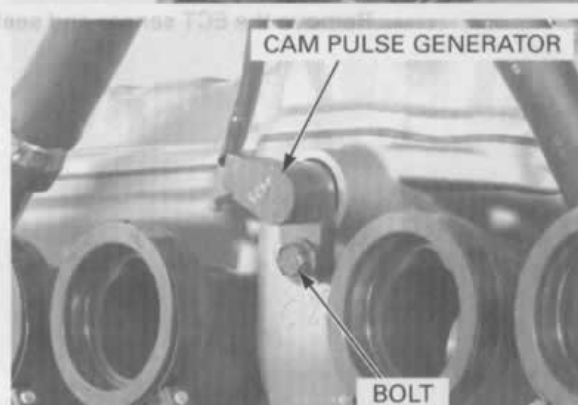
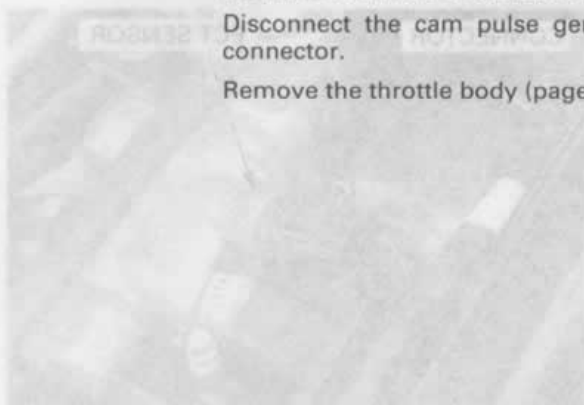


CAM PULSE GENERATOR

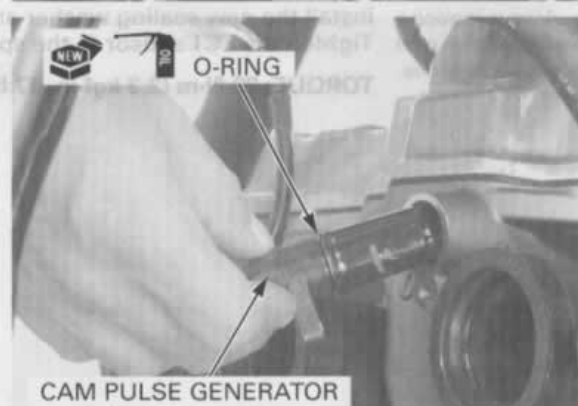
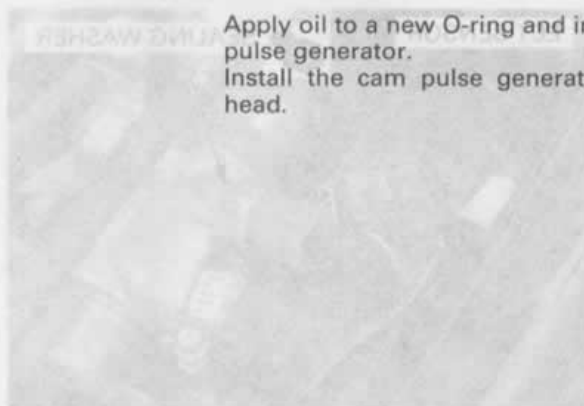
REMOVAL/INSTALLATION

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

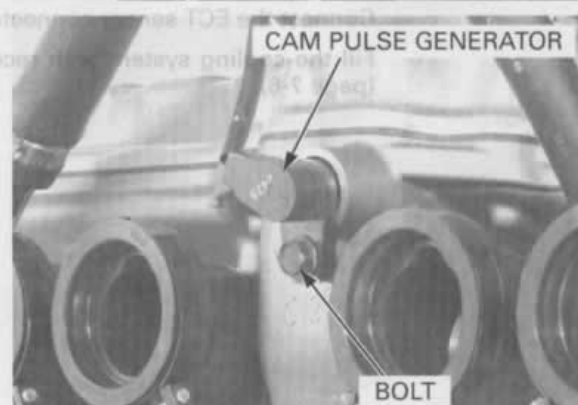
Remove the throttle body (page 6-57).



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



Install and tighten the mounting bolt securely.



Install the throttle body (page 6-63).

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

Install the removed parts in the reverse order of removal.

2P (NATURAL) CONNECTOR

TP SENSOR

INSPECTION

Remove the battery cover (page 16-5).

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

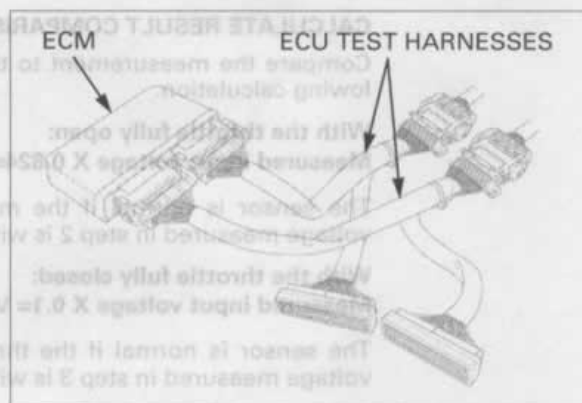
Check the connector for loose or corroded terminals.

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

TOOL:

ECU test harness 32P

070MZ-0010201
(two required)



INPUT VOLTAGE INSPECTION

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

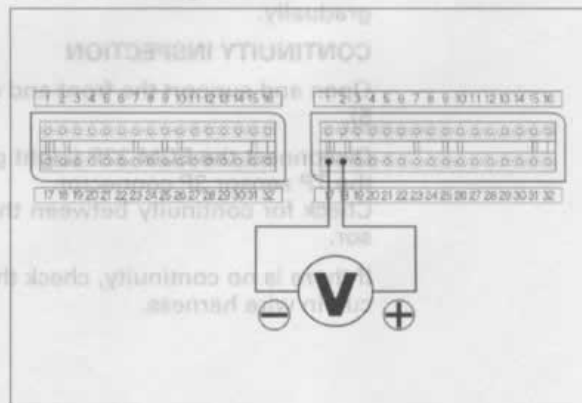
Connection:

B18 (+) - B17 (-)

Standard: 4.5 - 5.5 V

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

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



OUTPUT VOLTAGE INSPECTION WITH THROTTLE FULLY OPEN

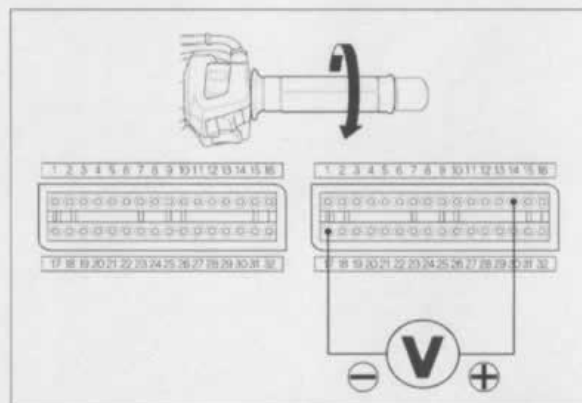
Turn the ignition switch ON and measure and record the output voltage at the test harness terminals.

Connection:

B14 (+) - B17 (-)

MEASURING CONDITION:

At throttle fully open



FUEL SYSTEM (Programmed Fuel Injection)

OUTPUT VOLTAGE INSPECTION WITH THROTTLE FULLY CLOSED

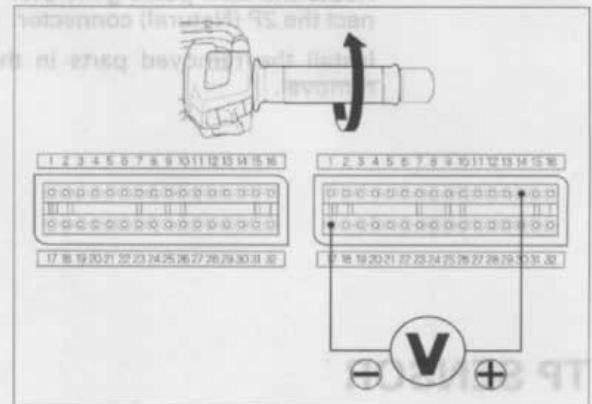
Turn the ignition switch ON and measure and record the output voltage with the throttle fully closed.

Connection:

B14 (+) – B17 (–)

MEASURING CONDITION:

At throttle fully close



CALCULATE RESULT COMPARISON

Compare the measurement to the result of the following calculation.

With the throttle fully open:

Measured input voltage X 0.824 = V_o

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

With the throttle fully closed:

Measured input voltage X 0.1 = V_c

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

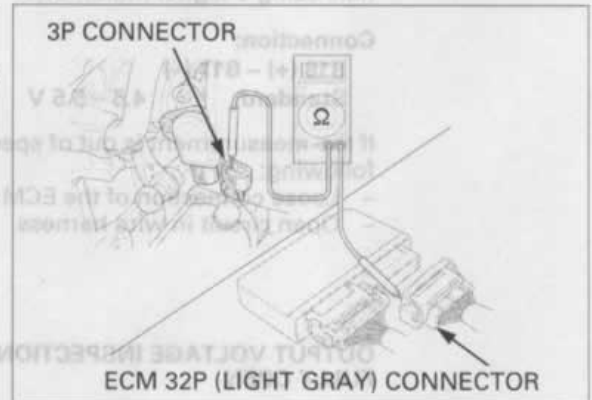
Using an analog meter, check that the needle of the voltmeter swings slowly when the throttle is opened gradually.

CONTINUITY INSPECTION

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

Disconnect the ECM 32P (Light gray) connector and the TP sensor 3P connector. Check for continuity between the ECM and TP sensor.

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



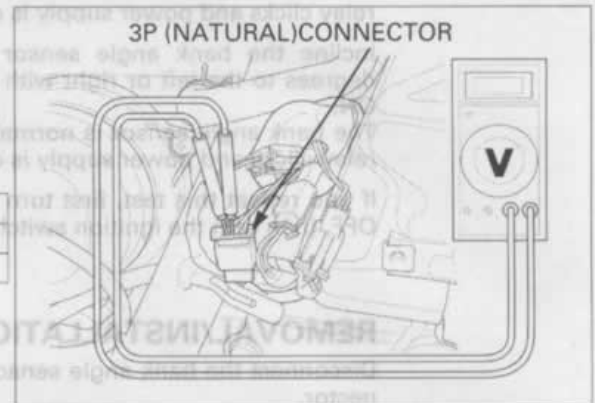
BANK ANGLE SENSOR

INSPECTION

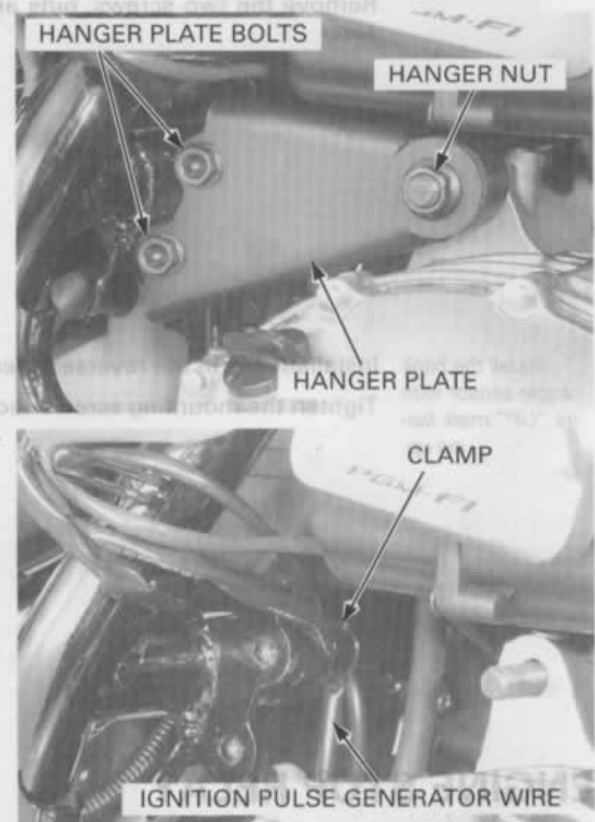
Support the motorcycle level surface.
Remove the right side cover (page 3-4).

Turn the ignition switch ON and measure the voltage between the following terminals of the bank angle sensor 3P (Natural) connector with the connector connected.

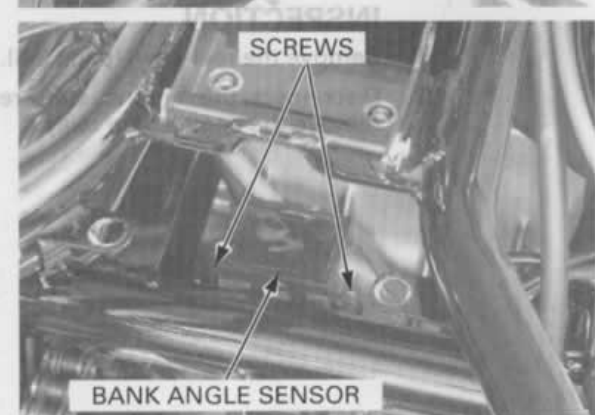
TERMINAL	STANDARD
White/Black (+) - Green (-)	Battery voltage
Red/Orange (+) - Green (-)	0 - 1 V



Remove the rear upper engine hanger nut, special washer, hanger plate bolts and hanger plate.



Release the bank angle sensor wire from the frame clamp.



Do not disconnect the bank angle sensor connector during inspection. Remove the screws and bank angle sensor.

FUEL SYSTEM (Programmed Fuel Injection)

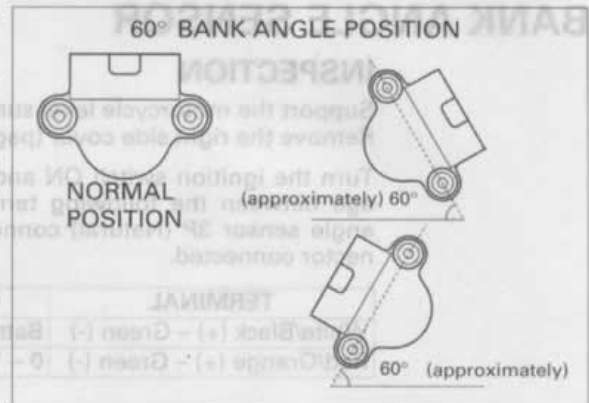
Place the bank angle sensor horizontal as shown, and ignition switch ON.

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

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

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

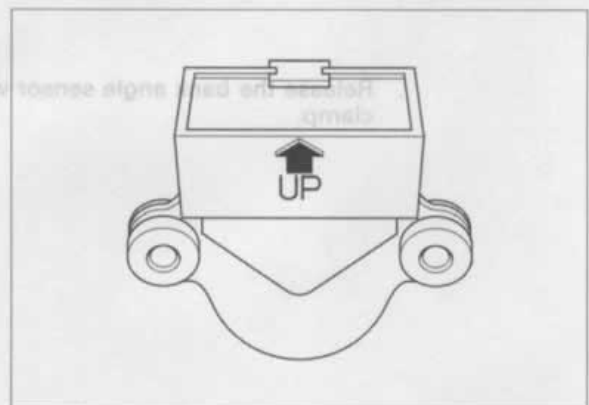
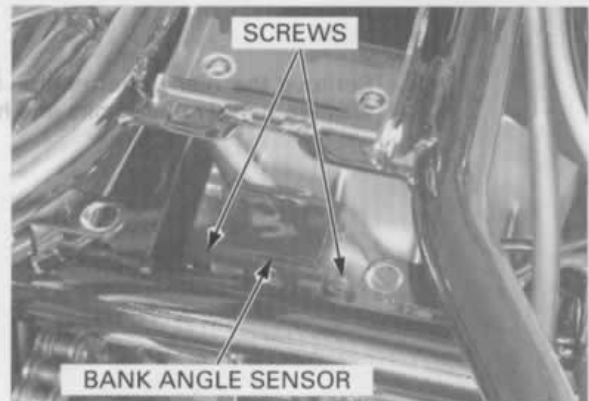
If you repeat this test, first turn the ignition switch OFF, then turn the ignition switch ON.



REMOVAL/INSTALLATION

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

Remove the two screws, nuts and bank angle sensor.



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

Installation is in the reverse order of removal.

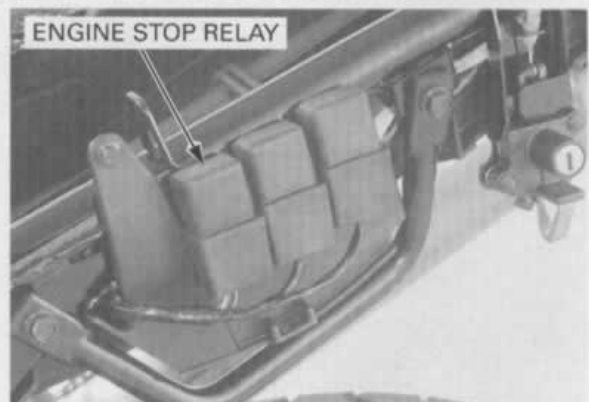
Tighten the mounting screws securely.

ENGINE STOP RELAY

INSPECTION

Remove the rear cowl (page 3-5).

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



Connect the ohmmeter to the engine stop relay connector terminals.

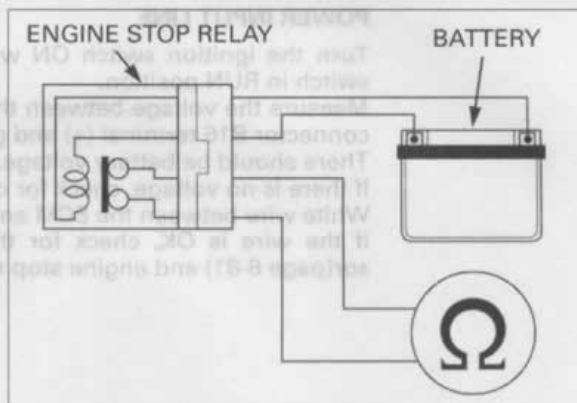
Connection: Red/White – Black/White

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

Connection: Red/Orange – Black

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

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

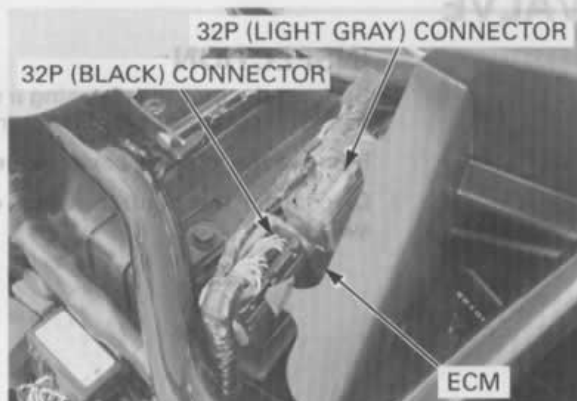


ECM (ENGINE CONTROL MODULE)

REMOVAL/INSTALLATION

Remove the battery cover (page 16-5).

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



POWER/GROUND LINE INSPECTION

Connect the test harness between the main wire harness and ECM (page 6-10).

TOOL:

ECU test harness 32P

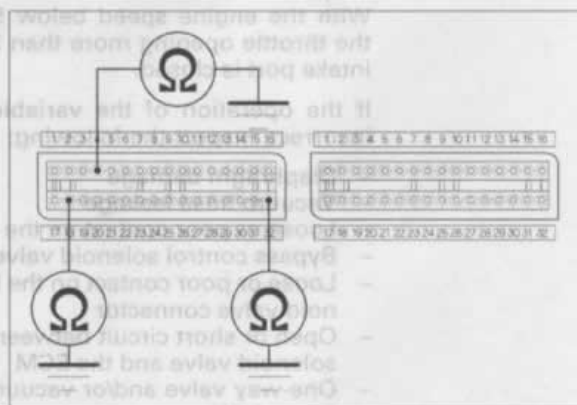
070MZ-0010201
(two required)

GROUND LINE

Check for continuity between the ECM test harness connector A4 terminal and ground, between the A18 terminal and ground, and between the A32 terminal and ground.

There should be continuity at all times.

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



FUEL SYSTEM (Programmed Fuel Injection)

POWER INPUT LINE

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

Measure the voltage between the ECM test harness connector B16 terminal (+) and ground.

There should be battery voltage.

If there is no voltage, check for open circuit in Black/White wire between the ECM and engine stop relay.

If the wire is OK, check for the bank angle sensor (page 6-81) and engine stop relay (page 6-82).

VARIABLE AIR INTAKE CONTROL VALVE

INSPECTION

Support the motorcycle using a safety stand or hoist with the transmission in neutral.

Remove the left side cover (page 3-4).

Disconnect the neutral switch connector from the switch.

NEUTRAL SWITCH CONNECTOR



Start the engine.

Check the operation of the variable air intake port.

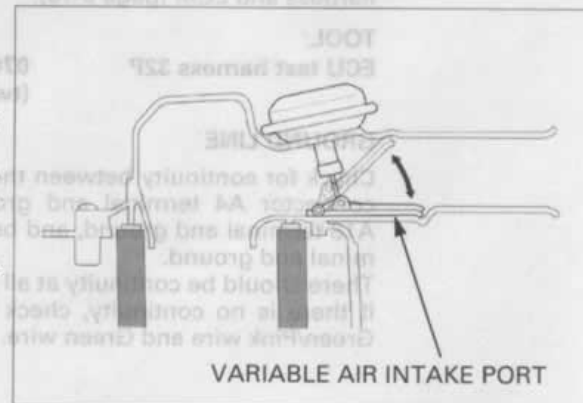
With the engine speed above 5,100 rpm or the throttle opening less than 30°, the variable air intake port is open.

With the engine speed below 5,100 rpm and also the throttle opening more than 30°, the variable air intake port is closed.

If the operation of the variable air intake port is incorrect, inspect the following:

- Diaphragm damage
- Vacuum hose leakage
- Loose or poor contact on the vacuum hose
- Bypass control solenoid valve (page 6-85)
- Loose or poor contact on the bypass control solenoid valve connector
- Open or short circuit between the bypass control solenoid valve and the ECM
- One-way valve and/or vacuum chamber damage (page 6-85)

VARIABLE AIR INTAKE PORT



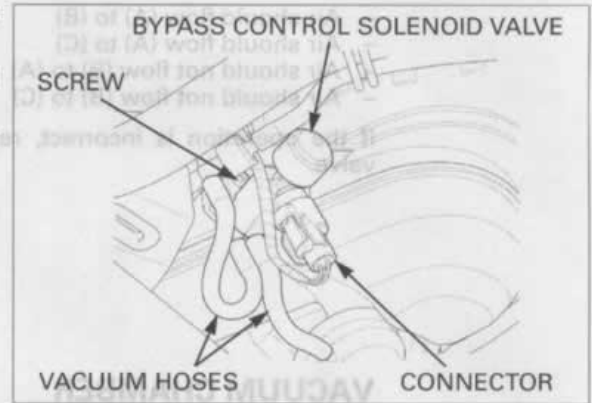
BYPASS CONTROL SOLENOID VALVE

Removal/Installation

Remove the seat (page 3-4) and left side cover (page 3-4).

Remove the screw and bypass control solenoid valve from the rear air cleaner housing.

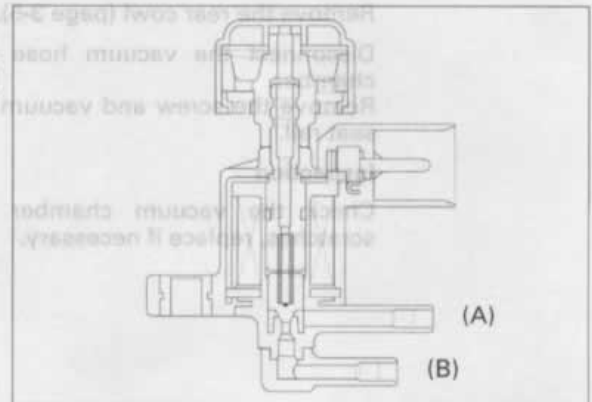
Disconnect the vacuum hoses from the bypass control solenoid valve.



Inspection

Remove the bypass control solenoid valve.

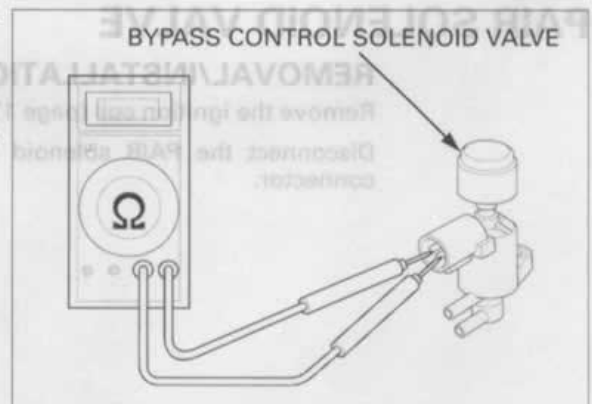
Check that the air should flow (A) to (B), only when the 12V battery is connected to the bypass control solenoid valve terminal.



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

STANDARD: 28 – 32 Ω (20 °C/68 °F)

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



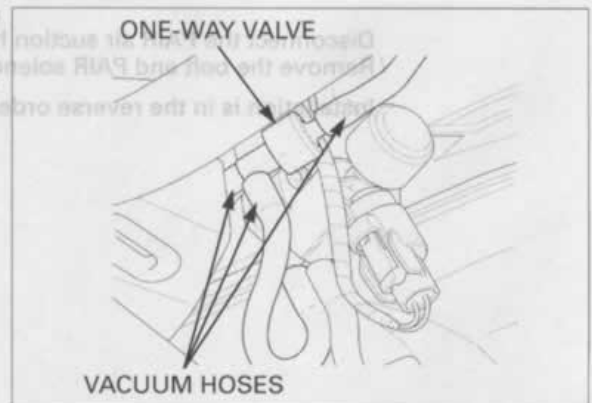
ONE-WAY VALVE

Removal/Installation

Remove the seat (page 3-4) and left side cover (page 3-4).

Disconnect the vacuum hose and the one-way valve.

Installation is in the reverse order of removal.



Route the vacuum hoses correctly.

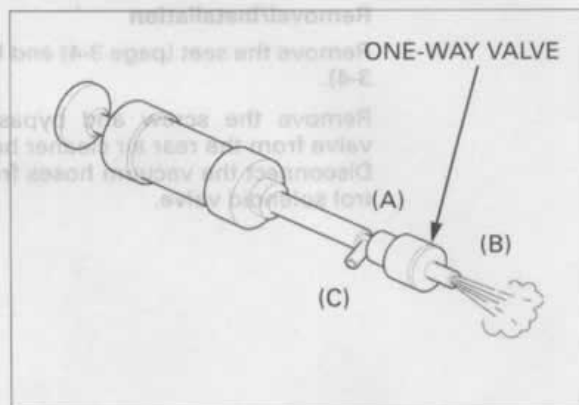
FUEL SYSTEM (Programmed Fuel Injection)

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.



VACUUM CHAMBER

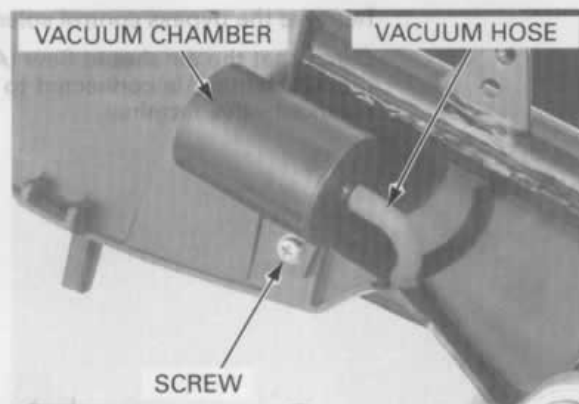
Removal/Installation

Remove the rear cowl (page 3-5).

Disconnect the vacuum hose from the vacuum chamber.
Remove the screw and vacuum chamber from the seat rail.

Inspection

Check the vacuum chamber for damage and scratches, replace if necessary.



PAIR SOLENOID VALVE

REMOVAL/INSTALLATION

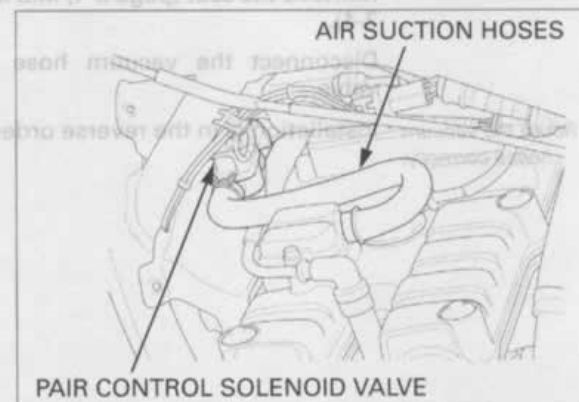
Remove the ignition coil (page 17-7).

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



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

Installation is in the reverse order of removal.



INSPECTION

Remove the PAIR solenoid valve.

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

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

STANDARD: 20 – 24 Ω (20 °C/68 °F)

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

