

# FUEL SYSTEM AND THROTTLE BODY

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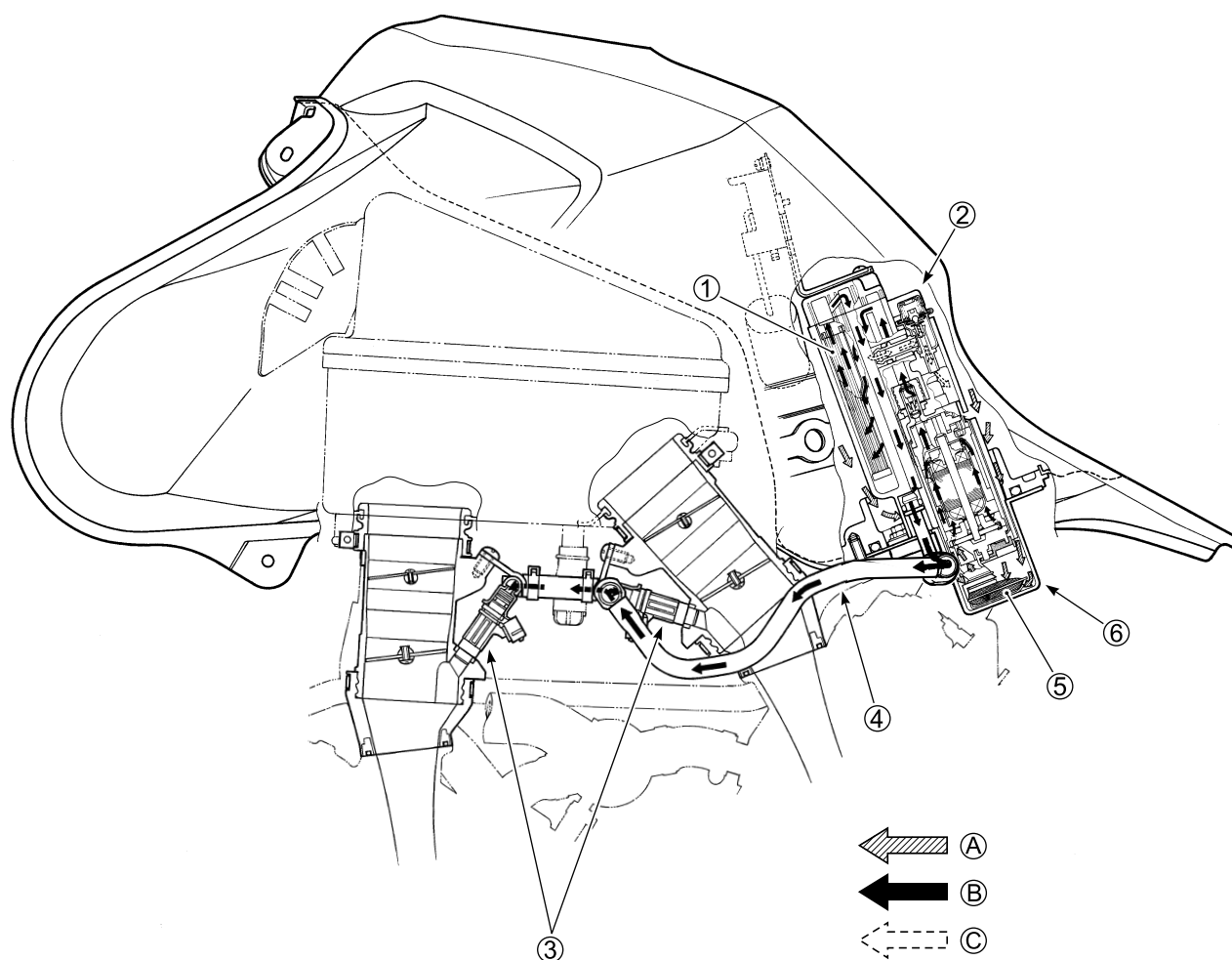
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## FUEL SYSTEM

### FUEL DELIVERY SYSTEM

The fuel delivery system consists of the fuel tank, fuel pump, fuel filters, fuel feed hose, fuel delivery pipe (including fuel injectors) and fuel pressure regulator. There is no fuel return hose. The fuel in the fuel tank is pumped up by the fuel pump and pressurized fuel flows into the injector installed in the fuel delivery pipe. Fuel pressure is regulated by the fuel pressure regulator. As the fuel pressure applied to the fuel injector (the fuel pressure in the fuel delivery pipe) is always kept at absolute fuel pressure of 300 kPa (3.0 kgf/cm<sup>2</sup>, 43 psi), the fuel is injected into the throttle body in conic dispersion when the injector opens according to the injection signal from the ECM.

The fuel relieved by the fuel pressure regulator flows back to the fuel tank.

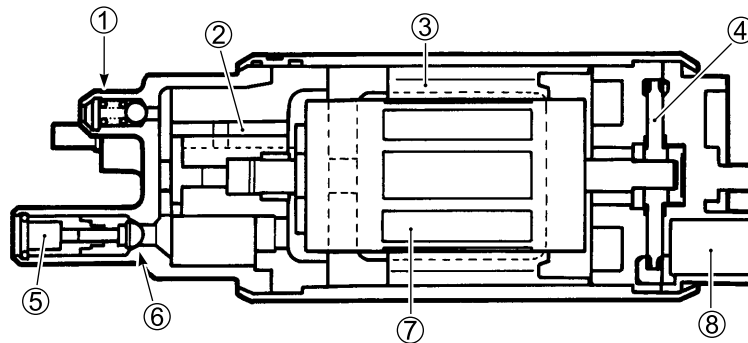


①	Fuel filter (For high pressure)	Ⓐ	BEFORE-PRESSURIZED FUEL
②	Fuel pressure regulator	Ⓑ	PRESSURIZED FUEL
③	Fuel injector	Ⓒ	RELIEVED FUEL
④	Fuel feed hose		
⑤	Fuel mesh filter (For low pressure)		
⑥	Fuel pump		

## FUEL PUMP

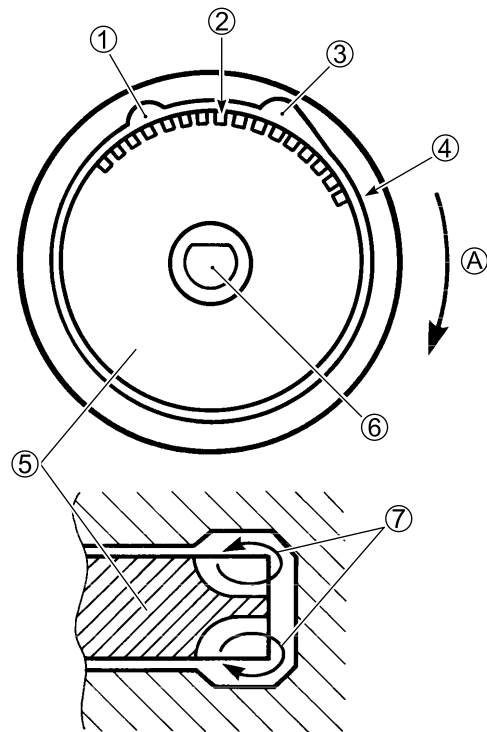
The electric fuel pump is mounted at the bottom of the fuel tank, which consists of the armature, magnet, impeller, brush, check valve and relief valve. The ECM controls its ON/OFF operation as controlled under the FUEL PUMP CONTROL SYSTEM.

When electrical energy is supplied to the fuel pump, the motor in the pump runs and together with the impeller. This causes a pressure difference to occur on both sides of the impeller as there are many grooves around it. Then the fuel is drawn through the inlet port, and with its pressure increased, it is discharged through the outlet port. The fuel pump has a check valve to keep some pressure in the fuel feed hose even when the fuel pump is stopped. Also, the relief valve is equipped in the fuel pump, which releases pressurized fuel to the fuel tank when the outlet of the fuel pressure has increased up to 450 – 600 kPa (4.5 – 6.0 kgf/cm<sup>2</sup>, 64 – 85 psi).



①	Relief valve	⑤	Outlet port
②	Brush	⑥	Check valve
③	Magnet	⑦	Armature
④	Impeller	⑧	Inlet port

When the impeller is driven by the motor, pressure differential occurs between the front part and the rear part of the blade groove as viewed in angular direction due to fluid friction. This process continuously takes place causing fuel pressure to be built up. The pressurized fuel is then let out from the pump chamber and discharged through the motor section and the check valve.

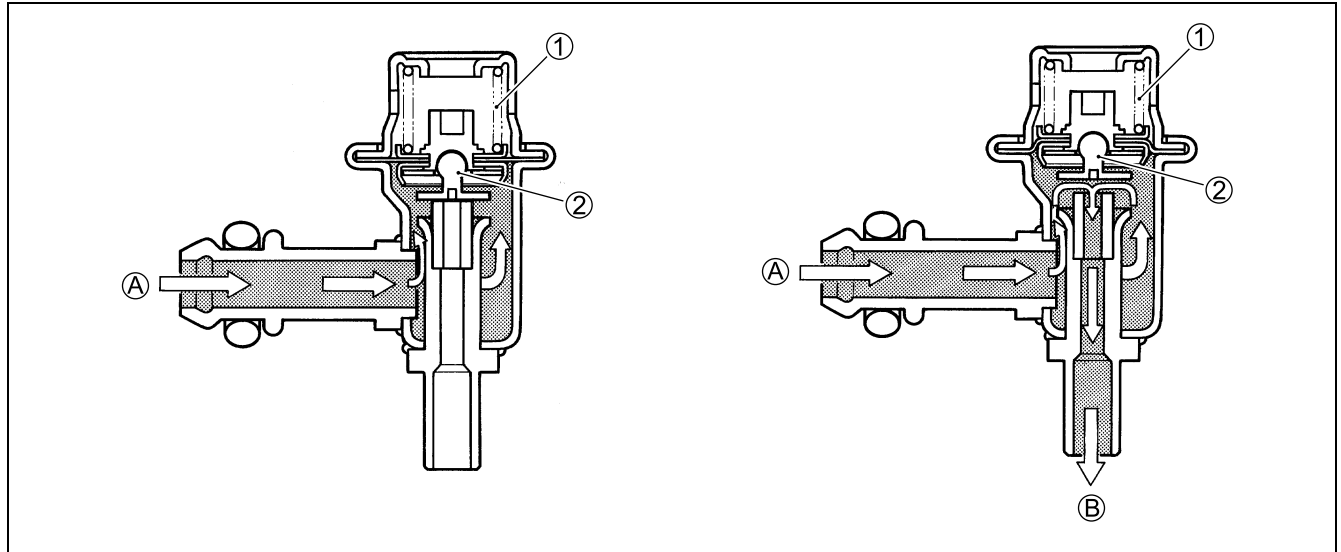


①	Outlet	⑤	Impeller
②	Blade groove	⑥	Motor shaft
③	Inlet	⑦	Vortex flow
④	Flow clearance	Ⓐ	Turning direction

## FUEL PRESSURE REGULATOR

The fuel pressure regulator consists of the spring and valve. It keeps absolute fuel pressure of 300 kPa (3.0 kgf/cm<sup>2</sup>, 43 psi) to be applied to the injector at all times.

When the fuel pressure rises more than 300 kPa (3.0 kgf/cm<sup>2</sup>, 43 psi), the fuel pushes the valve in the regulator open and excess fuel returns to the fuel tank.



① Spring

② Valve

Ⓐ Fuel from fuel pump

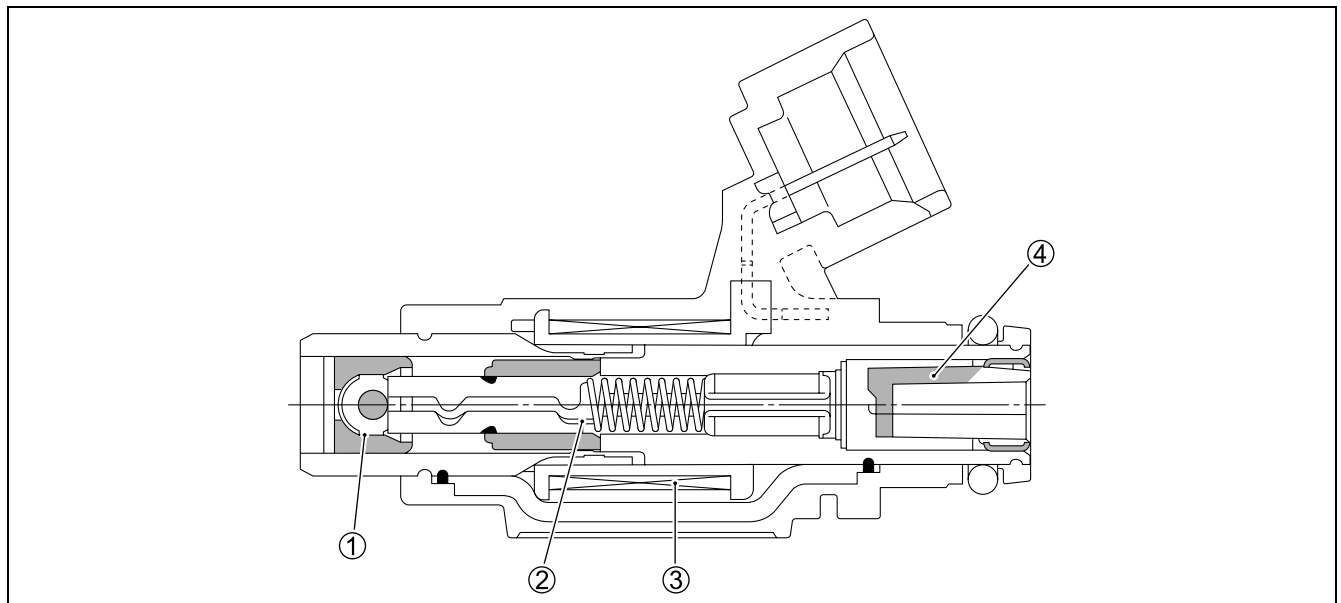
Ⓑ Fuel returns to the fuel tank

## FUEL INJECTOR

The fuel injector consists of the solenoid coil, plunger, needle valve and filter.

It is an electromagnetic type injection nozzle which injects fuel in the throttle body according to the signal from the ECM.

When the solenoid coil of the injector is energized by the ECM, it becomes an electromagnet and attracts the plunger. At the same time, the needle valve incorporated with the plunger opens and the injector which is under the fuel pressure injects fuel in conic dispersion. As the lift stroke of the needle valve of the injector is set constant, the volume of the fuel injected at one time is determined by the length of time during which the solenoid coil is energized (injection time).



① Needle valve

② Plunger

③ solenoid coil

④ Filter

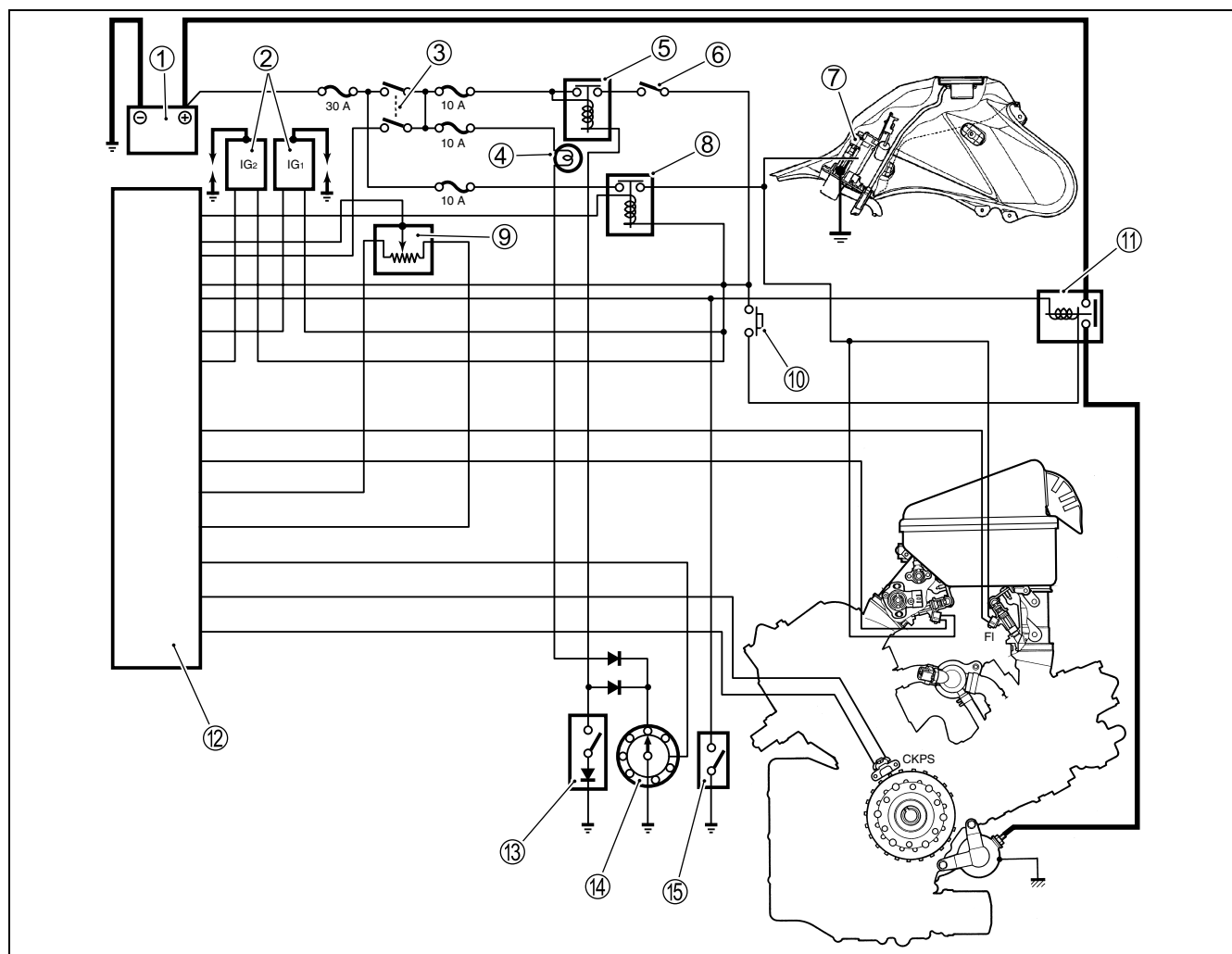
## FUEL PUMP CONTROL SYSTEM

When the ignition switch is turned on, current from the battery flows to the fuel pump motor through the side-stand relay and the fuel pump relay causing the motor to turn.

Since the ECM has a timer function, the fuel pump motor stops turning in three seconds after the switch has been turned on.

Thereafter, when the crankshaft is turned by the starter motor or the engine has been started, the engine revolving signal is input to the ECM. Then, current flows to the fuel pump motor from the battery through the side-stand relay and the fuel pump relay so that the pump continues to function.

A tip over sensor is provided in the fuel pump control circuit. By this provision, anytime the motorcycle tips over, the tip over sensor sends a signal to the ECM to turn off power to the fuel pump relay, causing the fuel pump motor to stop. At the same time, current to the fuel injectors as well as the ignition coil is interrupted, which then stops the engine.

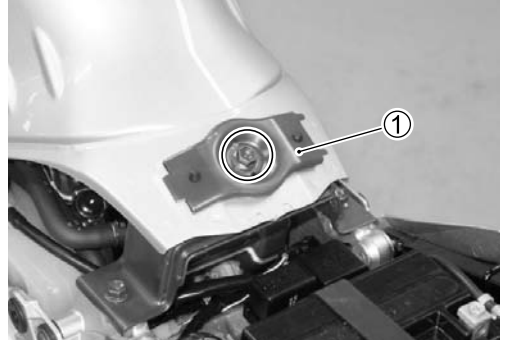


① Battery	⑨ Tip over sensor
② Ignition coil	⑩ Starter button
③ Main switch	⑪ Starter relay
④ Neutral lamp	⑫ ECM
⑤ Side-stand relay	⑬ Side-stand switch
⑥ Engine stop switch	⑭ Gear position switch
⑦ Fuel pump	⑮ Clutch switch
⑧ Fuel pump relay	

## FUEL SYSTEM

### FUEL TANK LIFT-UP

- Remove the seat. (☞ 7-4)
- Remove the coving. (☞ 7-5)
- Remove the fuel tank mounting bolt and fuel tank mount stay ①.



- Lift and support the fuel tank with the fuel tank mount stay.



### FUEL TANK REMOVAL

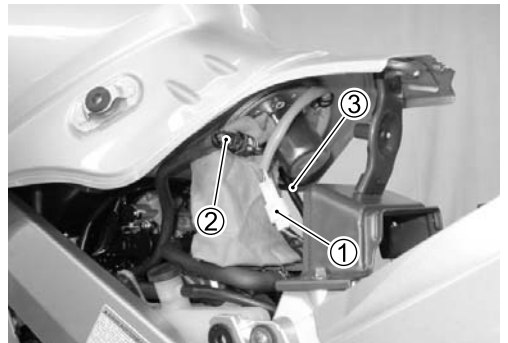
- Lift and support the fuel tank. (☞ 5-7)
- Disconnect the fuel pump lead wire coupler ①.
- Place a rag under the fuel feed hose and disconnect the fuel feed hose ② from the fuel tank.
- Disconnect the fuel tank drain hose ③.

#### CAUTION

When removing the fuel tank, do not leave the fuel feed hose ② on the fuel tank side.

#### ⚠ WARNING

Gasoline is highly flammable and explosive.  
Keep heat, spark and flame away.



- Remove the fuel tank mounting bolt and nut.
- Remove the fuel tank.



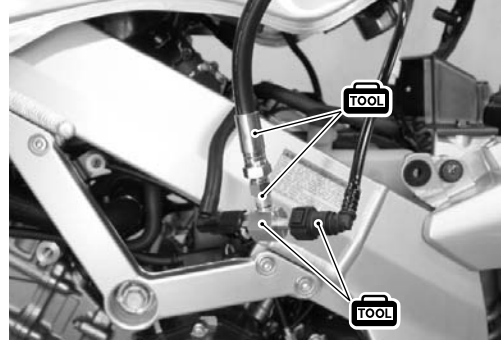
### FUEL TANK INSTALLATION

- Installation is in the reverse order of removal.

## FUEL PRESSURE INSPECTION

- Lift and support the fuel tank. (☞ 5-7)
- Place a rag under the fuel feed hose.
- Remove the fuel feed hose and install the special tools between the fuel tank and fuel delivery pipe.

**TOOL** 09940-40211: Fuel pressure gauge adaptor  
 09940-40220: Fuel pressure gauge hose attachment  
 09915-74511: Oil pressure gauge set



Turn the ignition switch ON and check the fuel pressure.

**DATA** Fuel pressure: Approx. 300 kPa (3.0 kgf/cm<sup>2</sup>, 43 psi)

If the fuel pressure is lower than the specification, inspect the following items:

- \* Fuel hose leakage
- \* Clogged fuel filter
- \* Pressure regulator
- \* Fuel pump



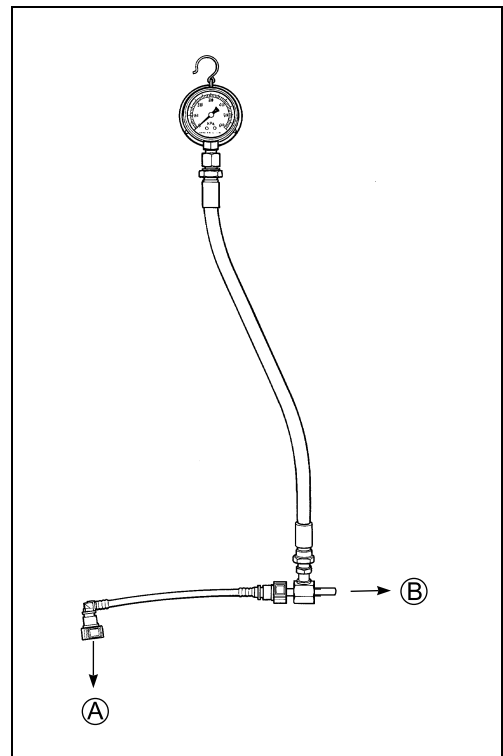
If the fuel pressure is higher than the specification, inspect the following items:

- \* Fuel pump check valve
- \* Pressure regulator

### ⚠ WARNING

- \* Before removing the special tools, turn the ignition switch to OFF position and release the fuel pressure slowly.
- \* Gasoline is highly flammable and explosive. Keep heat, sparks and flame away.

Ⓐ To fuel delivery pipe.      Ⓑ To fuel feed hose.





## FUEL PUMP INSPECTION

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

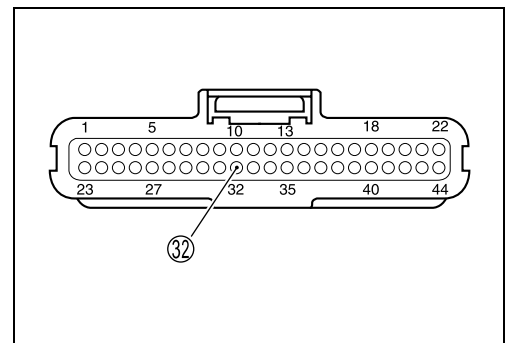
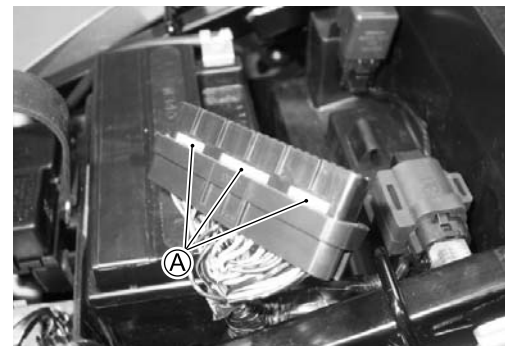
If the fuel pump motor does not make operating sound, replace the fuel pump assembly or inspect the fuel pump relay and tip over sensor.

## FUEL DISCHARGE AMOUNT INSPECTION

### ⚠ WARNING

**Gasoline is highly flammable and explosive.  
Keep heat, spark and flame away.**

- Lift and support the fuel tank. (☞ 5-7)
- Disconnect the fuel feed hose from the fuel tank.
- Connect a proper fuel hose to the fuel pump.
- Place the measuring cylinder and insert the fuel hose end into the measuring cylinder.
- Disconnect the ECM lead wire coupler from the ECM.
- Push the lock Ⓐ to pull out the power source lead wire (Yellow with black tracer Ⓒ).
- Connect the ECM to the ECM lead wire coupler.



- Apply 12 volts to the fuel pump for 10 seconds and measure the amount of fuel discharged.

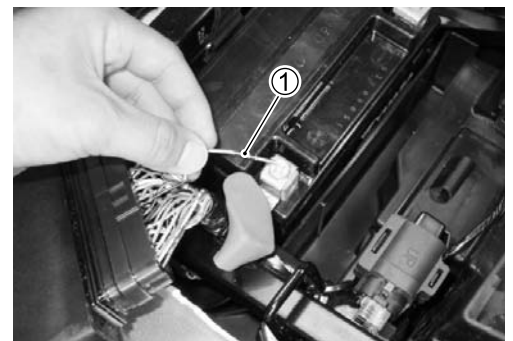
Battery ⊕ terminal — Power source lead wire ①  
(Yellow with black tracer)

If the pump does not discharge the amount specified, it means that the fuel pump is defective or that the fuel filter is clogged.

**DATA** Fuel discharge amount: MIN. 168 ml  
(5.7/5.9 US/Imp oz)/10 sec.

**NOTE:**

*The battery must be in fully charged condition.*



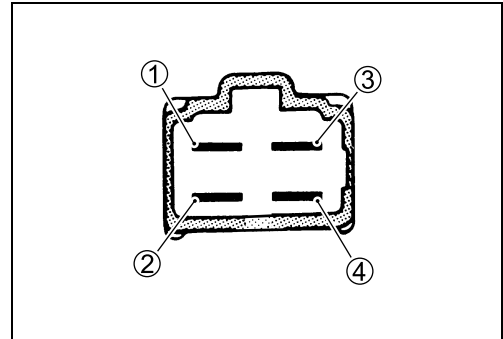
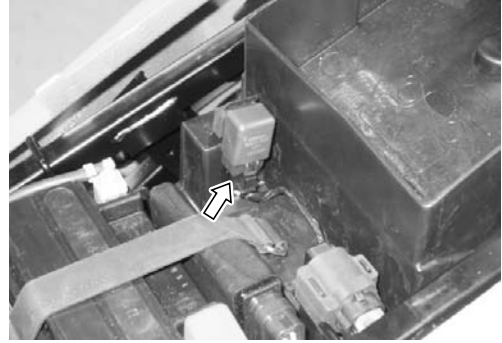
## FUEL PUMP RELAY INSPECTION

Fuel pump relay is located behind the ECM.

- Remove the seat. (🔧 7-4)
- Remove the fuel pump relay.

First, check the insulation between ① and ② terminals with pocket tester. Then apply 12 volts to ③ and ④ terminals,  $+$  to ③ and  $-$  to ④, and check the continuity between ① and ②.

If there is no continuity, replace it with a new one.



## FUEL PUMP AND FUEL FILTER REMOVAL

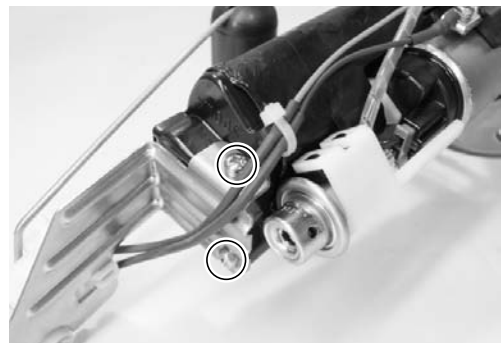
- Remove the fuel tank. (🔧 5-7)
- Remove the fuel pump assembly by removing its mounting bolts diagonally.

### ⚠ WARNING

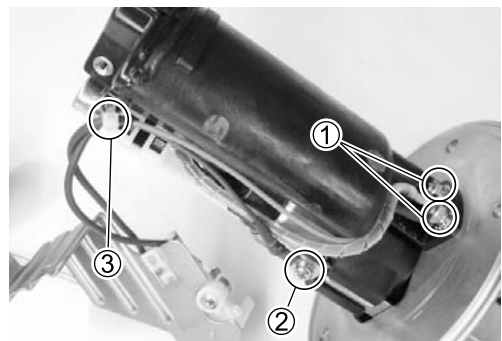
**Gasoline is highly flammable and explosive.  
Keep heat, spark and flame away.**



- Remove the screws.



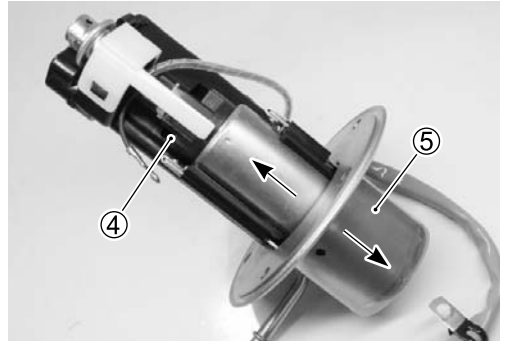
- Remove the nuts ① and screw ②.
- Disconnect the clamp ③.
- Remove the fuel level gauge.



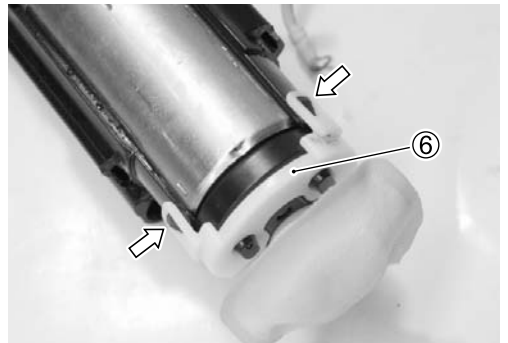
- Remove the screws.



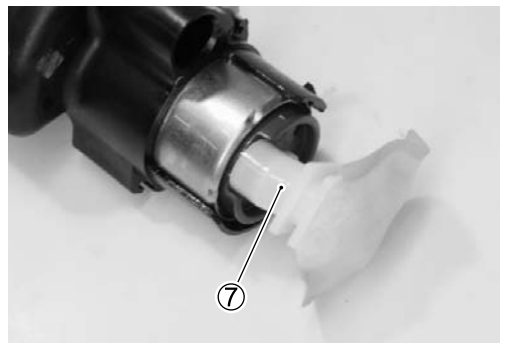
- Remove the fuel pump assy ④ from the fuel pump plate ⑤.



- Remove the fuel pump holder ⑥.



- Remove the fuel mesh filter ⑦.



- Remove the fuel pressure regulator holder ⑧ and the fuel pressure regulator ⑨.



## FUEL MESH FILTER INSPECTION AND CLEANING

If the fuel mesh filter is clogged with sediment or rust, fuel will not flow smoothly and loss in engine power may result. Blow the fuel mesh filter with compressed air.

### NOTE:

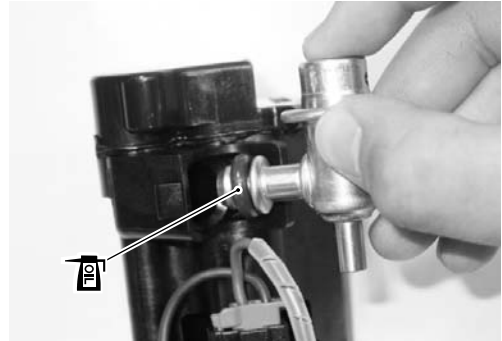
*If the fuel mesh filter is clogged with many sediment or rust, replace the fuel filter cartridge with a new one.*



## FUEL PUMP AND FUEL MESH FILTER INSTALLATION

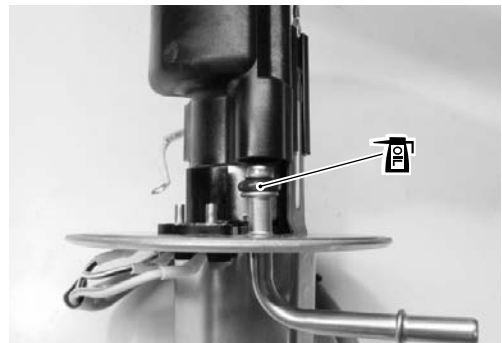
Install the fuel pump and fuel mesh filter in the reverse order of removal. Pay attention to the following points:

- Install the new O-rings to the fuel pressure regulator and fuel pipe.
- Apply thin coat of the engine oil to the O-rings.



### CAUTION

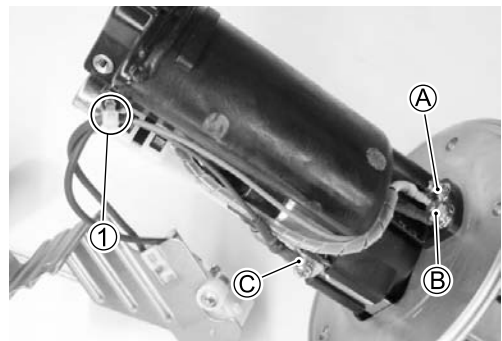
**Use the new O-rings to prevent fuel leakage.**



- Tighten the screw together with the lead wire terminal.



- Tighten the nuts together with the lead wire terminals.
  - Ⓐ .....⊕ terminal for fuel pump
  - Ⓑ .....⊕ terminal for fuel level gauge
  - Ⓒ .....⊖ terminal for fuel level gauge
- Connect the clamp ①.
- Install the fuel level gauge.



- Install the new O-ring and apply SUZUKI SUPER GREASE to it.

**⚠ WARNING**

The O-ring must be replaced with a new one to prevent fuel leakage.

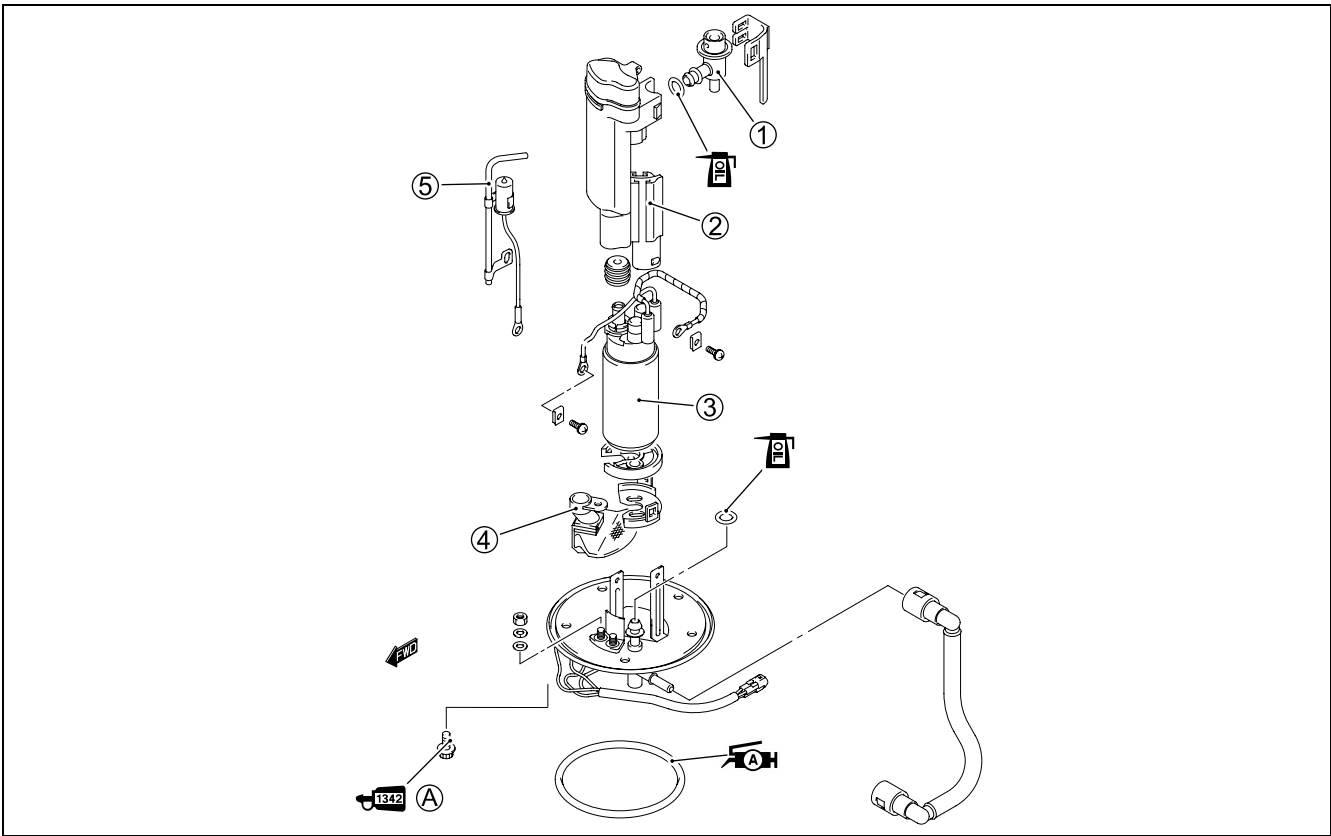
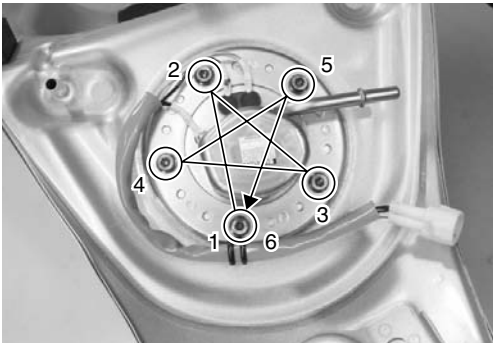
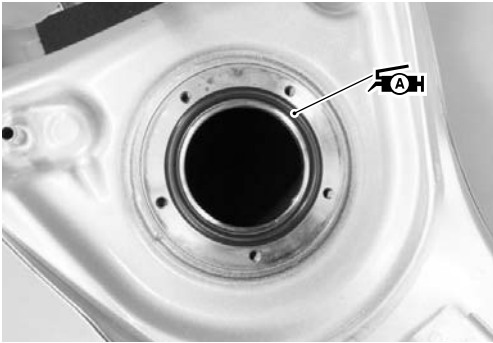
- 🔧 **99000-25030: SUZUKI SUPER GREASE “A” (USA)**  
**99000-25010: SUZUKI SUPER GREASE “A” (Others)**

- When installing the fuel pump assembly, first tighten all the fuel pump assembly mounting bolts lightly in the ascending order of numbers, and then tighten them to the specified torque in the above tightening order

**🔧 Fuel pump mounting bolt: 10 N·m (1.0 kgf·m, 7.3 lb·ft)**

**NOTE:**  
Apply a small quantity of the **THREAD LOCK** to the thread portion of the fuel pump mounting bolt.

- 🔧 **1342 99000-32050: THREAD LOCK “1342”**

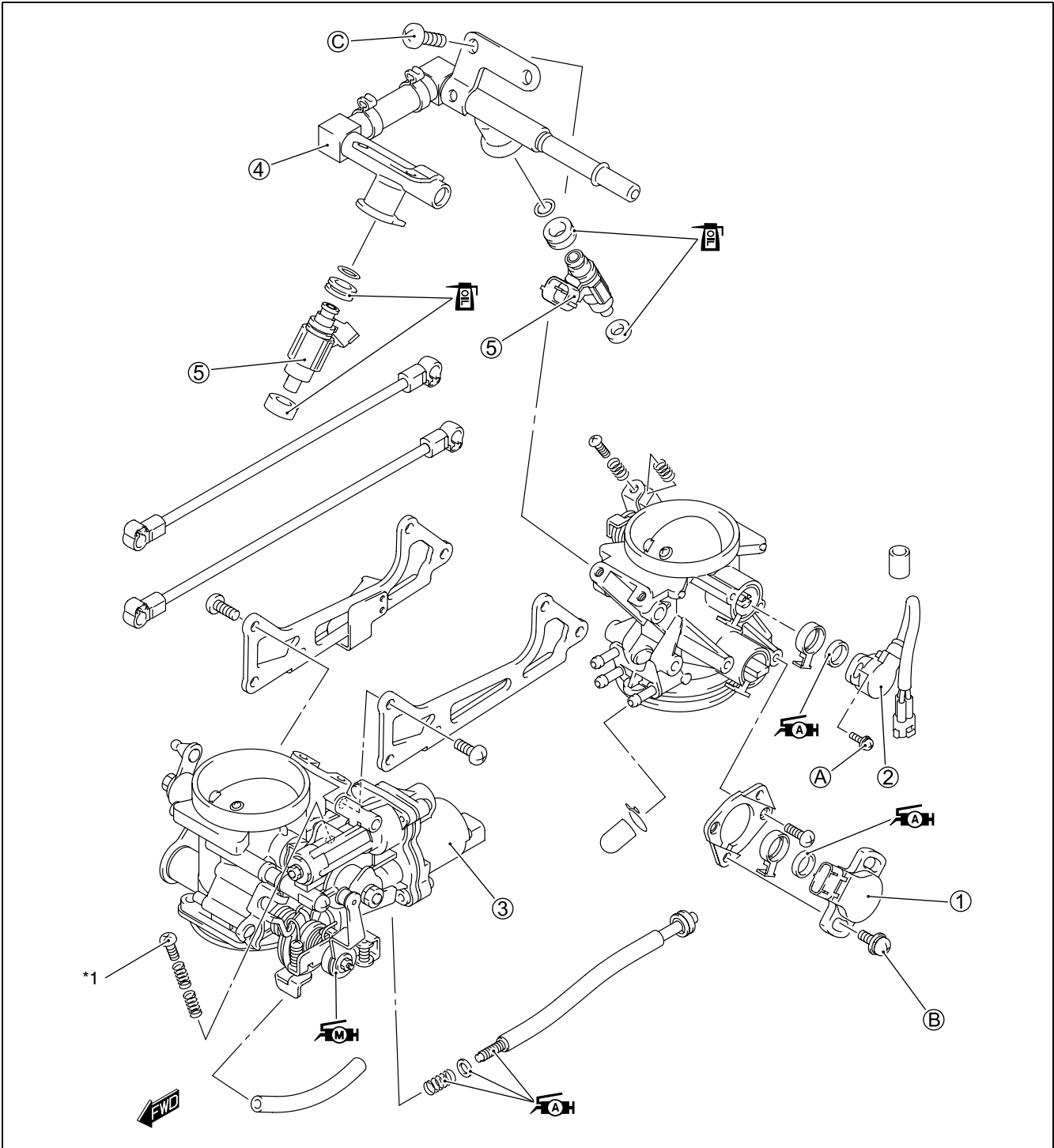


①	Fuel pressure regulator	④	Fuel mesh filter (For low pressure)
②	Fuel pump case/Fuel filter cartridge (For high pressure)	⑤	Fuel level gauge
③	Fuel pump	A	Fuel pump mounting bolt



ITEM	N·m	kgf·m	lb·ft
A	10	1.0	7.3

# THROTTLE BODY AND STV ACTUATOR CONSTRUCTION



①	TP sensor	Ⓐ	STP sensor mounting screw
②	STP sensor	Ⓑ	TP sensor mounting screw
③	STVA	Ⓒ	Fuel delivery pipe mounting screw
④	Fuel delivery pipe	*1	Do not turn the screw.
⑤	Injector		

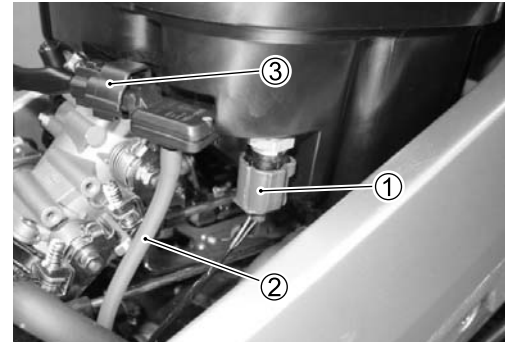


ITEM	N·m	kgf·m	lb·ft
Ⓐ	2.0	0.2	1.5
Ⓑ	3.5	0.35	2.5
Ⓒ	5.0	0.5	3.7

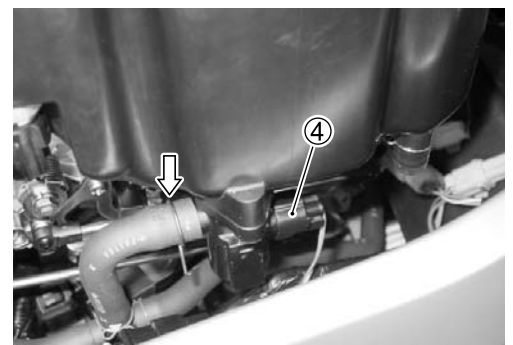
## AIR CLEANER AND THROTTLE BODY REMOVAL

### AIR CLEANER BOX

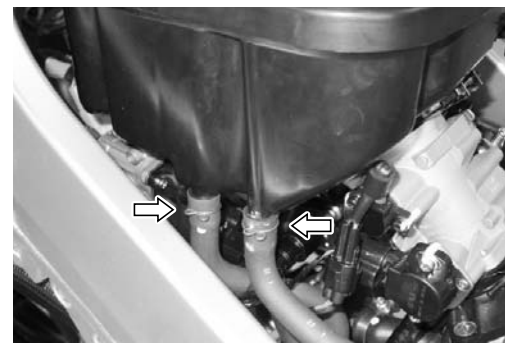
- Remove the fuel tank. (☞ 5-7)
  - Disconnect the IAT sensor coupler ①.
  - Remove the IAP sensor vacuum hose ②.
  - Disconnect the IAP sensor coupler ③.
- 
- Loosen the throttle body clamp screws.



- Disconnect the PAIR hose.
- Disconnect the PAIR lead wire coupler ④.

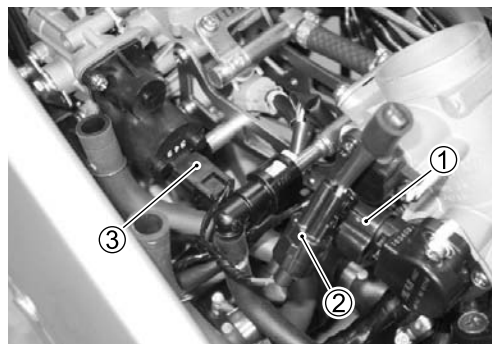


- Disconnect the crankcase breather hoses.
- Remove the air cleaner box.

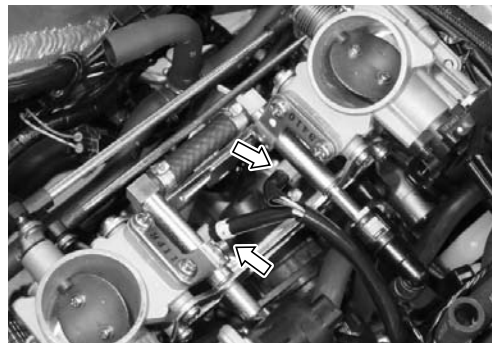


## THROTTLE BODY

- Remove the fuel tank. (☞ 5-7)
- Remove the air cleaner box. (☞ 5-15)
- Disconnect the various lead wire couplers.
  - ① TP sensor
  - ② STP sensor
  - ③ STVA motor



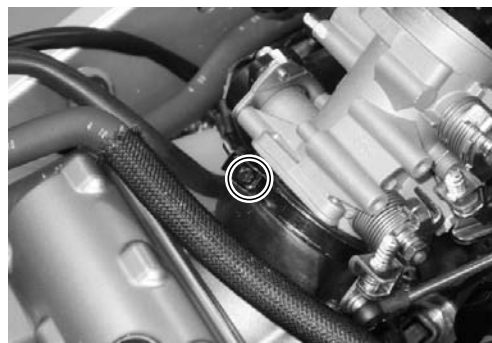
- Remove the injector lead wire coupler.



- Disconnect the idle stop screw.



- Loosen the throttle body clamp screws.

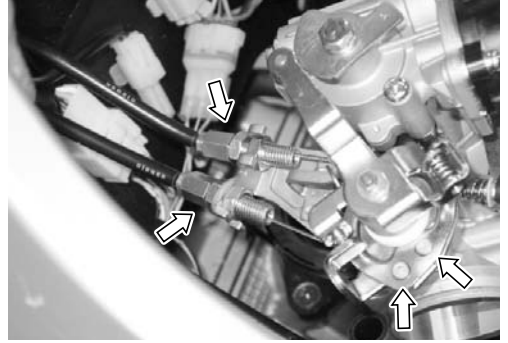




- Disconnect the throttle cables from their drum.
- Dismount the throttle body assembly.

**CAUTION**

- \* Be careful not to damage the throttle cable bracket and fast idle lever when dismounting or remounting the throttle body assembly.
- \* After disconnecting the throttle cables, do not snap the throttle valve from full open to full close. It may cause damage to the throttle valve and throttle body.

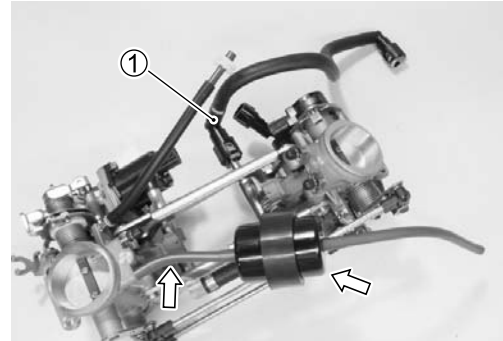


## THROTTLE BODY DISASSEMBLY

### CAUTION

- \* Be careful not to damage the throttle lever when disassembling the throttle body.
- \* The throttle body is assembled precisely in factory. Do not disassemble it other than shown in this manual.

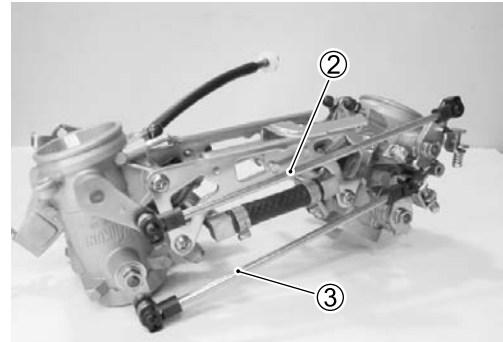
- Remove the IAP sensor vacuum damper and its hose.
- Disconnect the fuel feed hose ①.



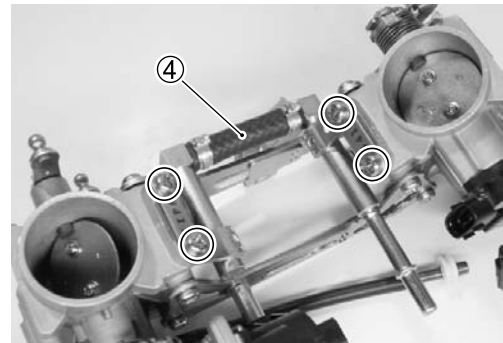
- Remove the throttle link rod ② and secondary throttle link rod ③.

### NOTE:

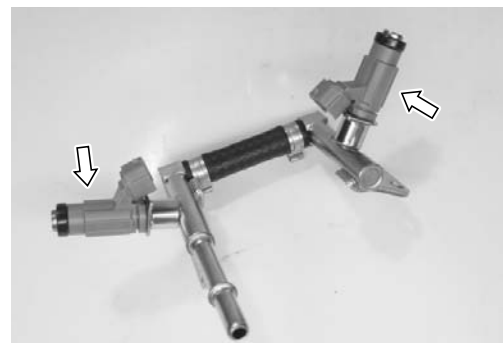
*The throttle link rod ② is longer than the secondary throttle link rod ③.*



- Remove the fuel delivery pipe ④.



- Remove the fuel injectors.



- Remove the TPS ⑤ and STPS ⑥ with the special tool.

**TOOL** 09930-11950: Torx wrench (TH 25)  
09930-11960: Torx wrench (TH 20)

**NOTE:**

Prior to disassembly, mark each sensor's original position with a paint or scribe for accurate reinstallation.

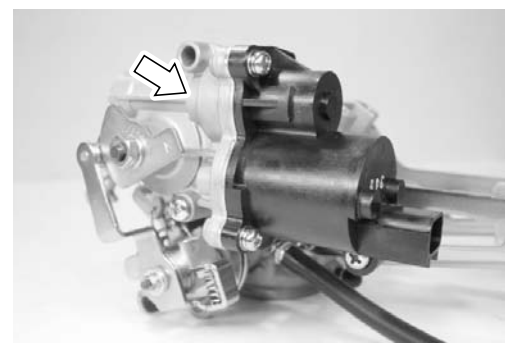
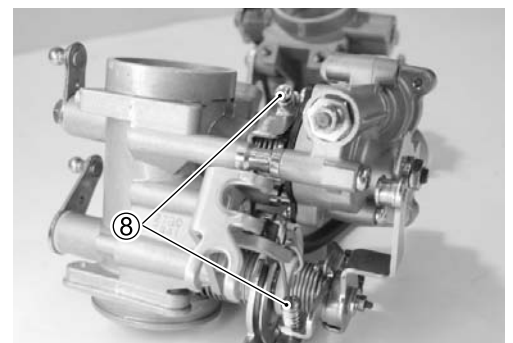
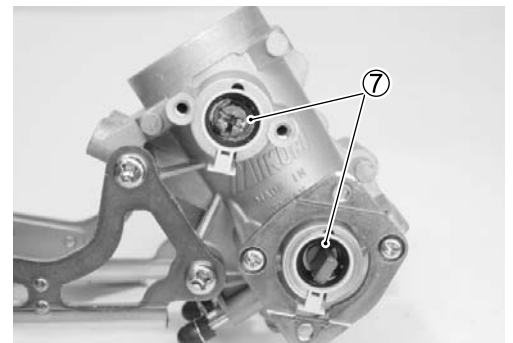
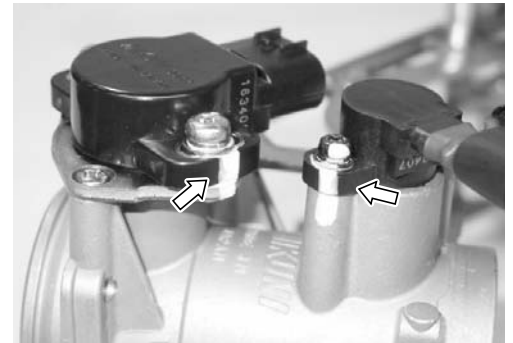
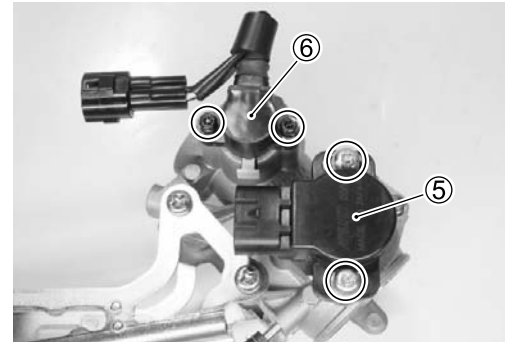
- Remove the oil seals ⑦.

**CAUTION**

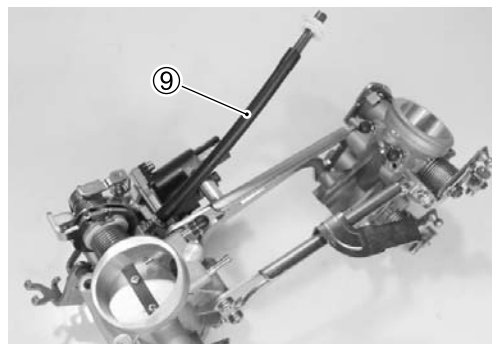
Do not turn the screws ⑧.

**CAUTION**

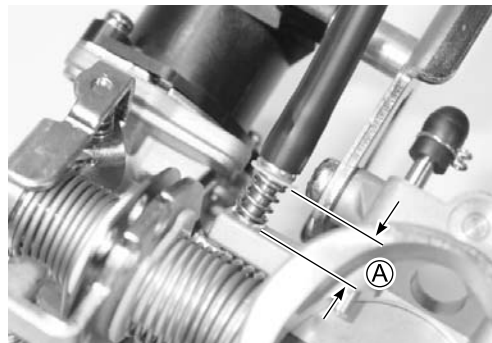
Never remove the STVA.



- Remove the throttle stop screw ⑨.

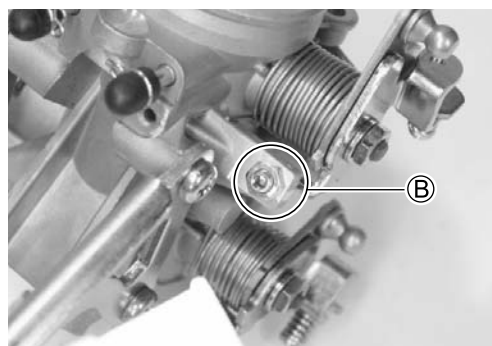


**NOTE:**  
Measure the length ① for accurate reinstallation.



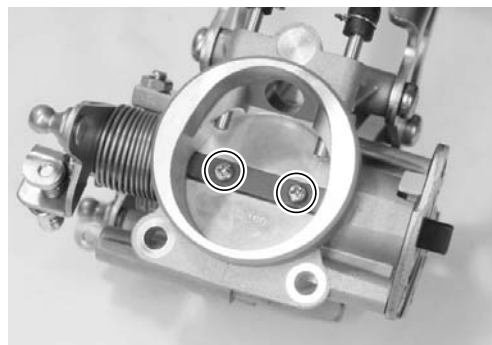
**CAUTION**

Never loosen the throttle stop screw ② on the No.2 throttle body.



**CAUTION**

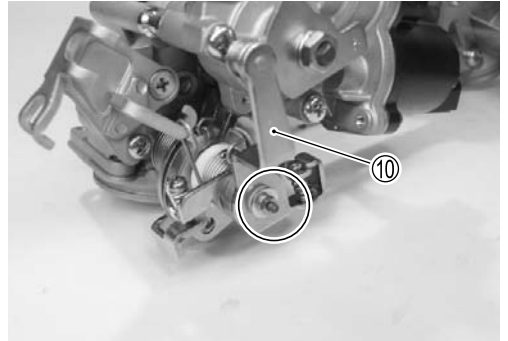
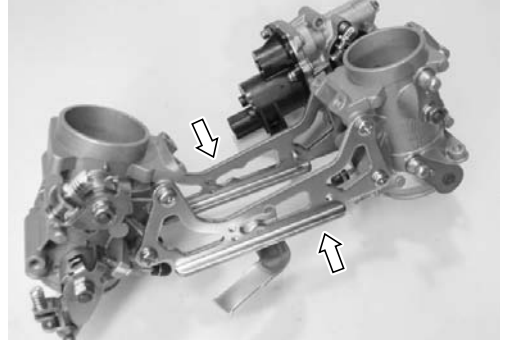
Never remove the throttle valve and secondary throttle valve.



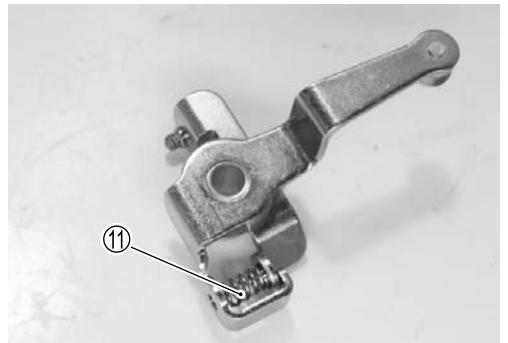
**CAUTION**

Never remove the throttle body link plates.

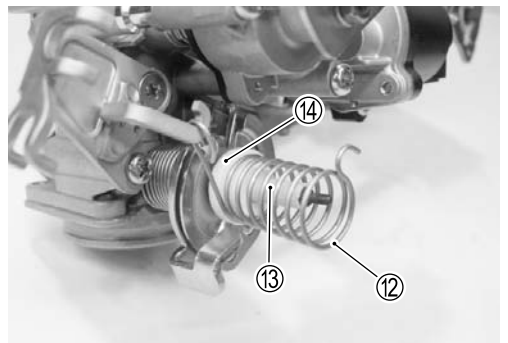
- Remove the fast idle link lever ⑩.



- Remove the spring ⑪.



- Remove the spring ⑫, bushing ⑬ and plastic washer ⑭.



## THROTTLE BODY CLEANING

### ⚠ WARNING

Some carburetor cleaning chemicals, especially dip-type soaking solutions, are very corrosive and must be handled carefully. Always follow the chemical manufacturer's instructions on proper use, handling and storage.

- Clean all passageways with a spray type carburetor cleaner and blow dry with compressed air.

### CAUTION

Do not use wire to clean passageways. Wire can damage passageways. If the components cannot be cleaned with a spray cleaner it may be necessary to use a dip-type cleaning solution and allow them to soak. Always follow the chemical manufacturer's instructions for proper use and cleaning of the throttle body components. Do not apply carburetor cleaning chemicals to the rubber and plastic materials.

## THROTTLE BODY INSPECTION

- Check following items for any damage or clogging.
  - \* O-ring
  - \* Secondary throttle valve
  - \* Throttle shaft bushing and seal
  - \* Injector cushion seal
  - \* Throttle valve
  - \* Vacuum hose

Check the fuel injector filter for evidence of dirt and contamination. If present, clean and check for presence of dirt in the fuel lines and fuel tank.



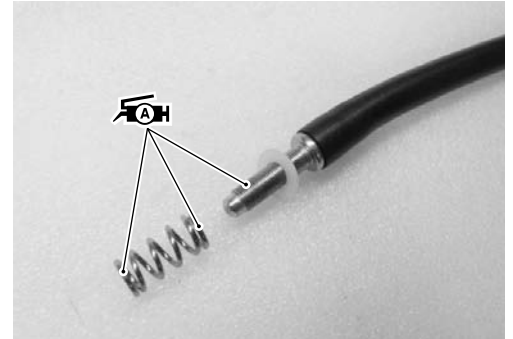
## THROTTLE BODY REASSEMBLY

Reassemble the throttle body in the reverse order of disassembly.

Pay attention to the following points:

- Apply SUZUKI SUPER GREASE to the throttle stop screw tip and the both ends of a spring.

 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**  
**99000-25010: SUZUKI SUPER GREASE "A" (Others)**

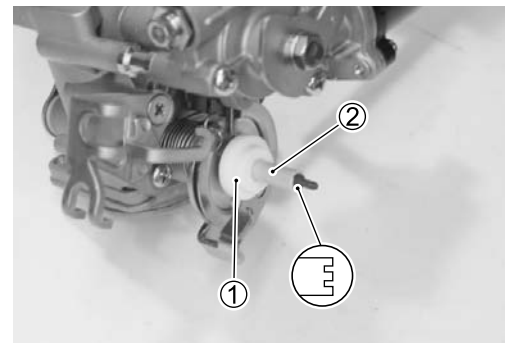


- Install the plastic washer ① and bushing ②.

**NOTE:**

*The concave of a bushing is faced outside.*

- Install the spring ③.

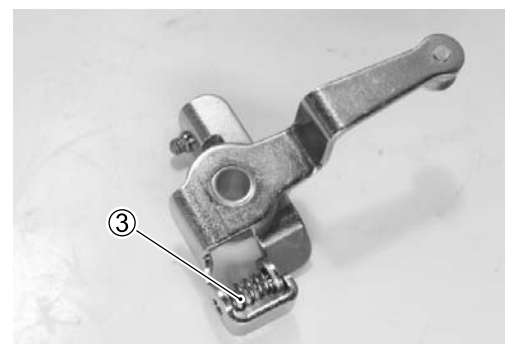


- Apply SUZUKI MOLY PASTE to the fast idle link lever.

 **99000-25140: SUZUKI MOLY PASTE**



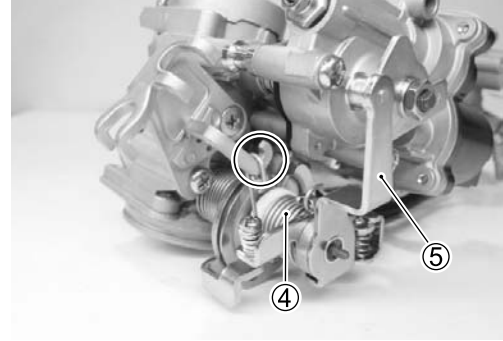
- Install the spring ③.



- Install the spring ④ and fast idle link lever ⑤.

**NOTE:**

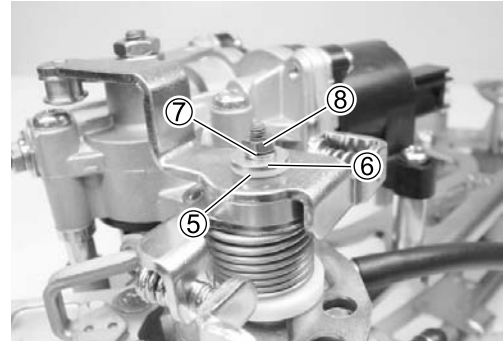
*Make sure that the spring ends are hooked correctly.*




- Install the washers ⑤, ⑥, spring washer ⑦ and nut ⑧.

**NOTE:**

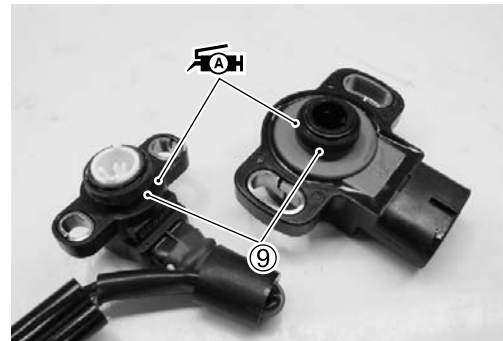
*The washer ⑤ is inserting in the axis certainly.*



- Apply SUZUKI SUPER GREASE to the seal lips.

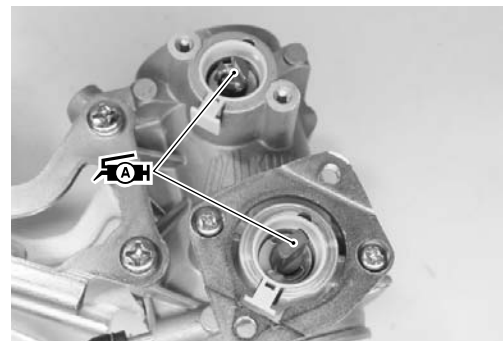
 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**  
**99000-25010: SUZUKI SUPER GREASE "A" (Others)**

- Install the seal ⑨.



- Apply a small quantity of SUZUKI SUPER GREASE to the shaft ends and seal lips.

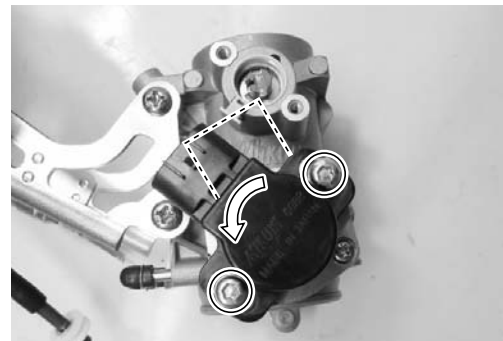
 **99000-25030: SUZUKI SUPER GREASE "A" (USA)**  
**99000-25010: SUZUKI SUPER GREASE "A" (Others)**



- Turn the TP sensor counterclockwise and install the mounting screws.
- Tighten the TP sensor mounting screws.

 **09930-11950: Torx wrench**

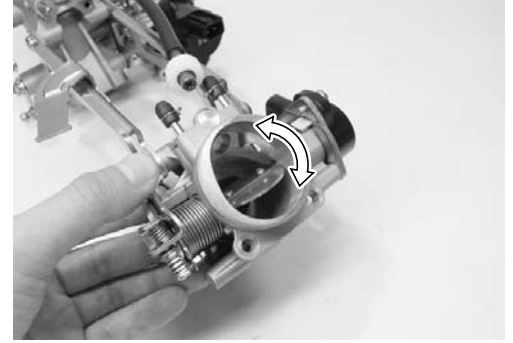
 **TP sensor mounting screw: 3.5 N·m (0.35 kgf-m, 2.5 lb-ft)**



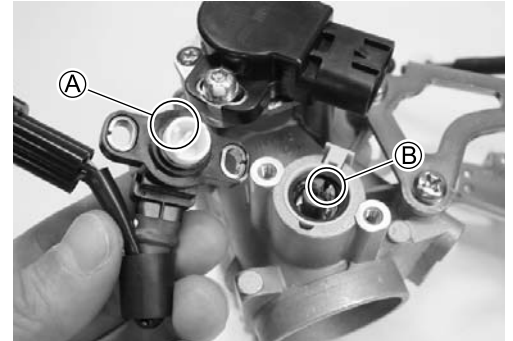


**NOTE:**

*Make sure the throttle valve open or close smoothly.*



- Align the boss ① of the STP sensor with the groove ② of the ST valve shaft.
- Install the STP sensor.



- Tighten the STP sensor mounting screws.



**09930-11960: Torx wrench**

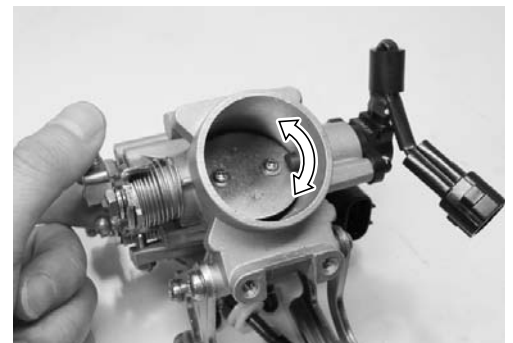


**STP sensor mounting screw:**

**2.0 N·m (0.2 kgf-m, 1.5 lb-ft)**

**NOTE:**

*Make sure the ST valve open or close smoothly.*

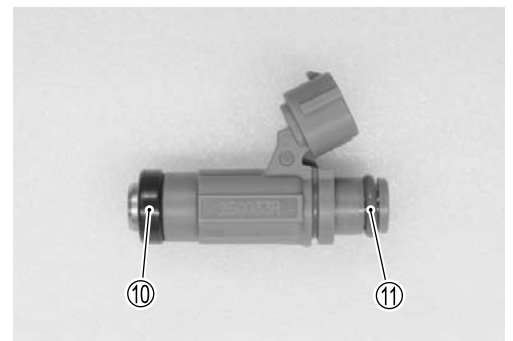


- Apply thin coat of the engine oil to the new fuel injector cushion seal ⑩, and install it to the fuel injector.

**CAUTION**

**Replace the cushion seal and O-ring with a new one.**

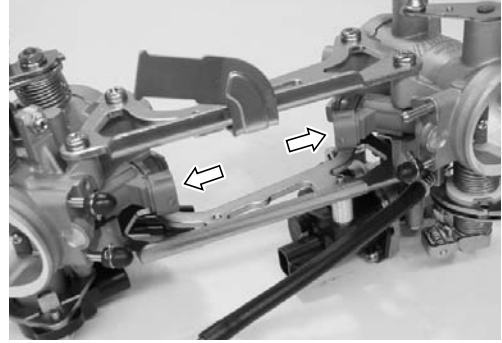
- Install the O-ring ⑪ to the fuel injector.
- Apply thin coat of the engine oil to the new O-ring ⑪.



- Install the fuel injectors by pushing them straight to each throttle body.

**CAUTION**

**Never turn the injector while pushing it.**



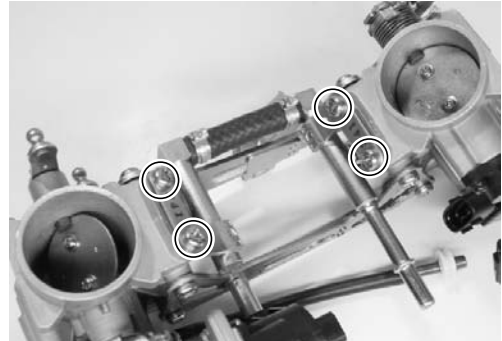
- Install the fuel delivery pipe assembly to the throttle body assembly.

**CAUTION**

**Never turn the fuel injectors while installing them.**

- Tighten the fuel delivery pipe mounting screws.

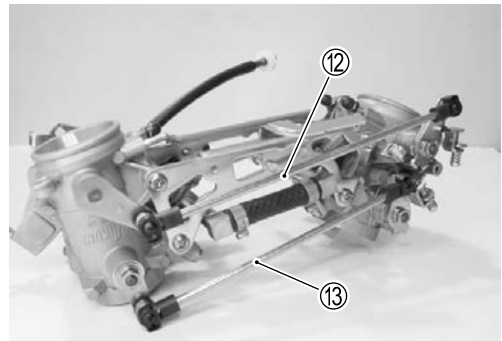
 **Fuel delivery pipe mounting screw:**  
5.0 N·m (0.5 kgf-m, 3.7 lb-ft)



- Install the throttle link rod ⑫ and secondary throttle link rod ⑬.

**NOTE:**

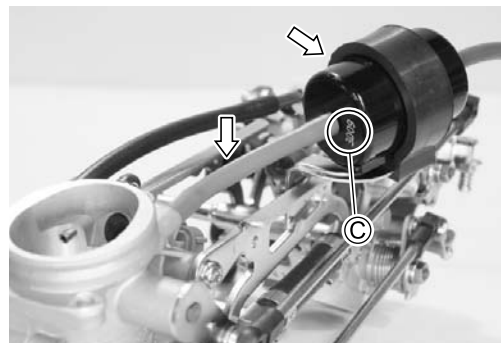
*The throttle link rod ⑫ is longer than the secondary throttle link rod ⑬.*



- Install the IAP sensor vacuum damper and hose.

**CAUTION**

**The stamp © of the IAP sensor vacuum damper faces into the throttle body side.**



## STV SYNCHRONIZATION

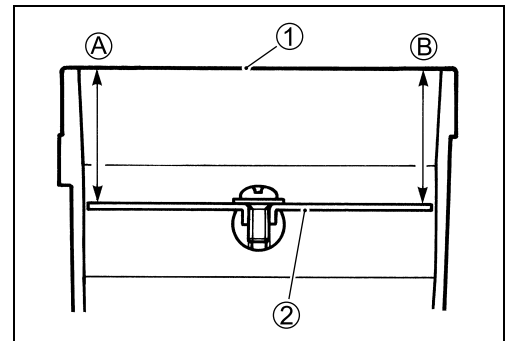
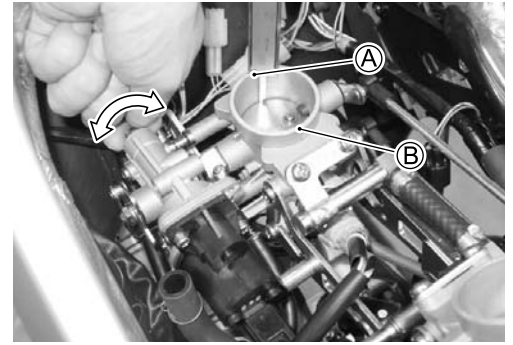
- Install the throttle body. (➡ 5-27)
- Turn the ignition switch OFF, if STV synchronization is performed on the vehicle.
- Turn the STVA shaft with a finger so that the throttle valve height ① will be same as ②.

### CAUTION

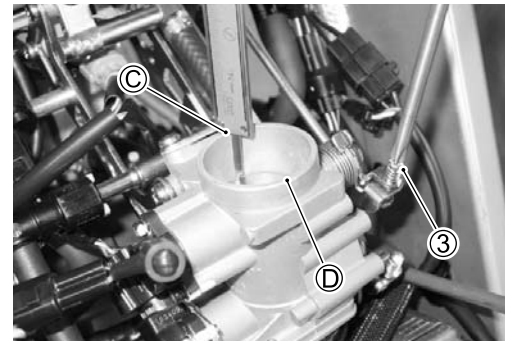
**Do not use the tool for turning the STVA shaft to prevent breakdown.**

### NOTE:

Measure the throttle valve height ①, ② from top of the throttle body ① to the throttle valve ②.



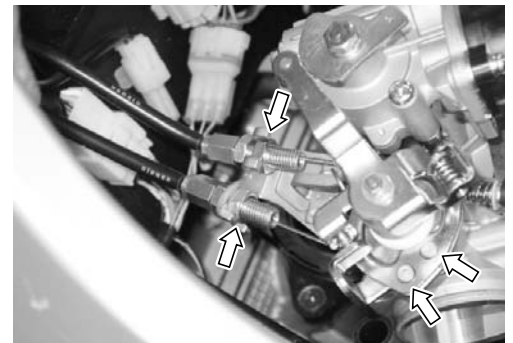
- While holding above No.1 STV position, turn the adjust screw ③ so that the throttle valve height ③ will be same as ④.



## THROTTLE BODY INSTALLATION

Installation is in the reverse order of removal. Pay attention to the following points:

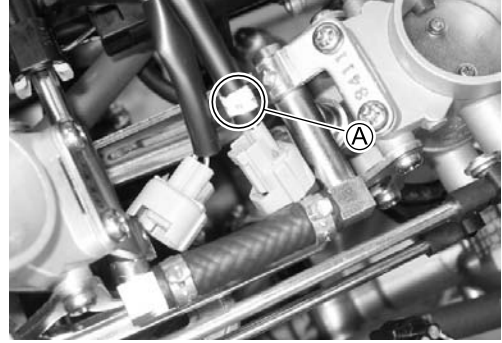
- Connect the throttle pulling cable and throttle returning cable to the throttle cable drum.



- Connect the fuel injector couplers to the fuel injectors.

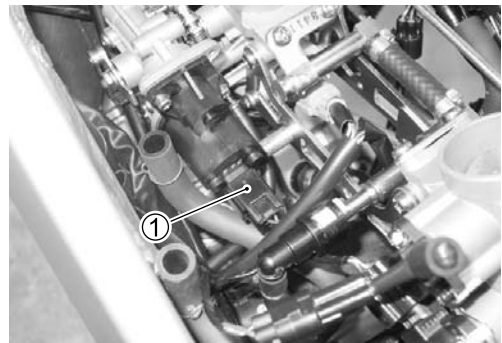
**NOTE:**

- \* The fuel injector coupler No.1 (FRONT) can be distinguished from that of the No.2 (REAR) by the "F" mark (A).
- \* Adjust the throttle cable play with the cable adjusters. Refer to page 2-15 for details.

**STP SENSOR ADJUSTMENT**

If the STP sensor adjustment is necessary, measure the sensor resistance and adjust the STP sensor positioning as follows:

- Disconnect the STVA coupler ① and turn the ignition switch ON.



- To set the ST valve to fully open position.
- Measure the STP sensor voltage at fully open position.

**DATA** STP sensor voltage

ST valve is fully opened: Approx. 4.38 V and more  
(Yellow – Black)

**TOOL** 09900-25008: Multi circuit tester set  
09900-25009: Needle pointed probe set

**TESTER** Tester knob indication: Voltage (V)

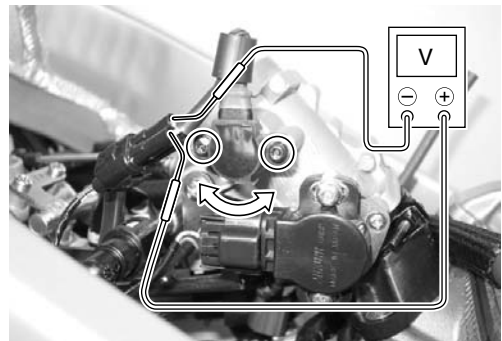
**CAUTION**

**Do not use the tool for turning the STVA shaft to prevent breakdown.**

- Loosen the STP sensor mounting screws.
- Adjust the STP sensor until voltage is within specification and tighten the STP sensor mounting screws.

**TOOL** 09930-11960: Torx wrench

**WRENCH** STP sensor mounting screw:  
2.0 N·m (0.2 kgf-m, 1.5 lb-ft)

**AIR CLEANER BOX INSTALLATION**

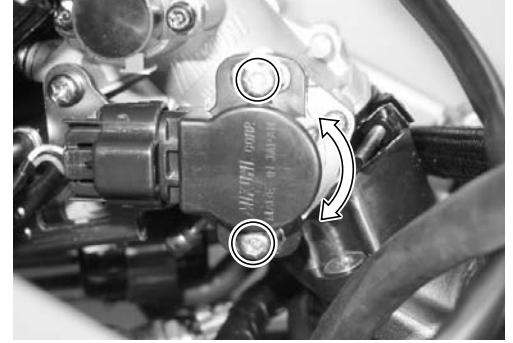
Installation is in the reverse order of removal.

## TP SENSOR ADJUSTMENT


After checking or adjusting the throttle valve synchronization, adjust the TP sensor positioning as follows:

- After warming up engine, adjust the idling speed to 1 300 rpm.
- Stop the warmed-up engine and connect the special tool to the dealer mode coupler. (☞ 5-20)

 **09930-82720: Mode select switch**

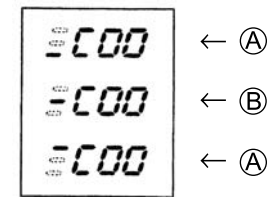


- If the TP sensor adjustment is necessary, loosen the TP sensor mounting screws.
- Turn the TP sensor and bring the line to middle.
- Tighten the TP sensor mounting screws.

 **09930-11950: Torx wrench**

 **TP sensor mounting screw: 3.5 N·m (0.35 kgf-m, 2.5 lb-ft)**

- Ⓐ Incorrect
- Ⓑ Correct position



## FAST IDLE INSPECTION

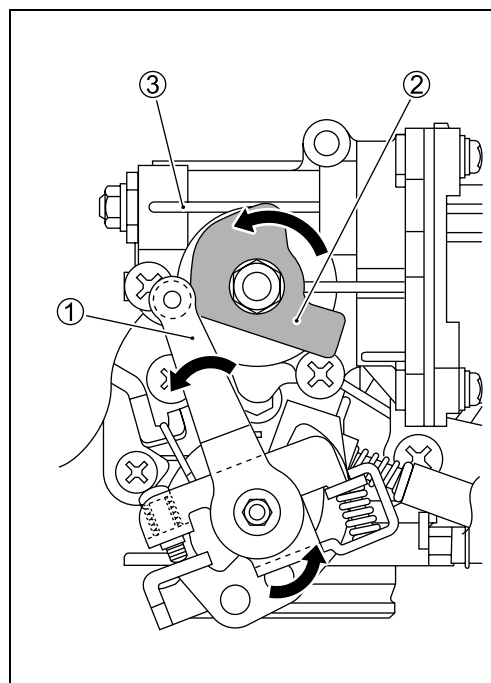
The fast idle system is automatic type.

When the fast idle cam is turned by the secondary throttle valve actuator, the cam pushes the lever on the throttle valve shaft causing the throttle valve to open and raise the engine speed. When the engine has warmed up, depending on the water temperature and ambient temperature as shown in the following table, the fast idle is cancelled allowing the engine to resume idle speed.

- ① Fast idle link lever
- ② Fast idle cam
- ③ STVA

### NOTE:

*The fast idle link lever opens throttle valve a little to increase the engine speed.*



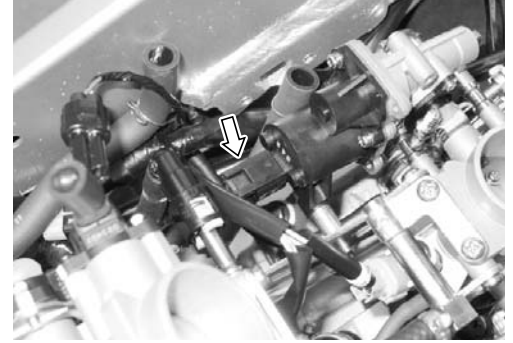
### DATA

Fast idle rpm	Fast idle cancelling Water Temp.
1 500 – 2 000 rpm	40 – 50 °C (104 – 122 °F)

If, under the above conditions, the fast idle cannot be cancelled, the cause may possibly be short-circuit in the ECT sensor or wiring connections or maladjusted fast idle.

## FAST IDLE ADJUSTMENT

- Remove the fuel tank. (☞ 5-7)
- Remove the air cleaner box. (☞ 5-15)
- Disconnect the STVA lead wire coupler and turn the ignition switch ON.



- Open the STV fully with a finger. Measure the output voltage of the TP sensor.

### CAUTION

**Do not use the tool for turning the STVA shaft to prevent breakdown.**

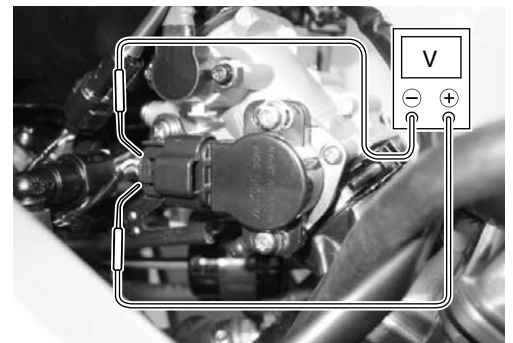


- If the TP sensor output voltage is out of specification, turn the fast idle adjusting screw ① and adjust the output voltage to specification.

**DATA** TP sensor output voltage: 1.21 V  
(Red – B/Br)

**TOOL** 09900-25008: Multi circuit tester set  
09900-25009: Needle pointed probe set

**Tester knob indication: Voltage (V)**



- After adjusting the fast idle speed, set the idle speed to 1 300 rpm by turning the throttle stop screw ②.



## THROTTLE VALVE SYNCHRONIZATION

Check and adjust the throttle valve synchronization between two cylinders.

### CALIBRATING EACH GAUGE (For vacuum balancer gauge)

- Start up the engine and run it in idling condition for warming up.
- Stop the warmed-up engine.
- Remove the fuel tank. (☞ 5-7)
- Remove the air cleaner box. (☞ 5-15)
- Install the fuel tank.
- Connect the IAT and PAIR control valve sensor couplers.
- Connect the IAP sensor coupler and vacuum hose.
- Connect the PAIR hose.
- Remove the rubber cap ① from the No.1 throttle body.



- Connect one of the four rubber hoses of the vacuum balancer gauge to the nipple on the No.1 throttle body.

**TOOL** 09913-13121: Vacuum balancer gauge



- Start up the engine and keep it running at 1 300 rpm by turning throttle stop screw ③.

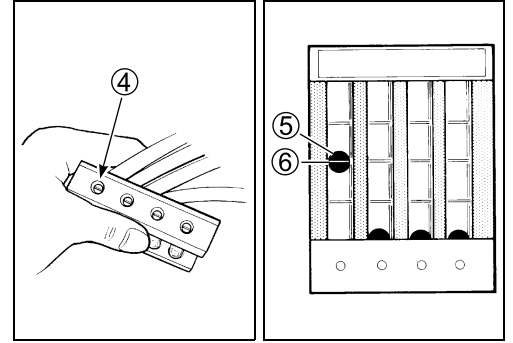
### CAUTION

**Avoid drawing dirt into the throttle body while running the engine without air cleaner box. Dirt drawn into the engine will damage the internal engine parts.**



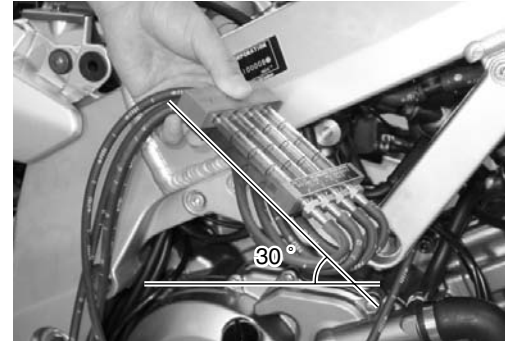


- Turn the air screw ④ of the gauge so that the vacuum acting on the tube of that hose will bring the steel ball ⑤ in the tube to the center line ⑥.



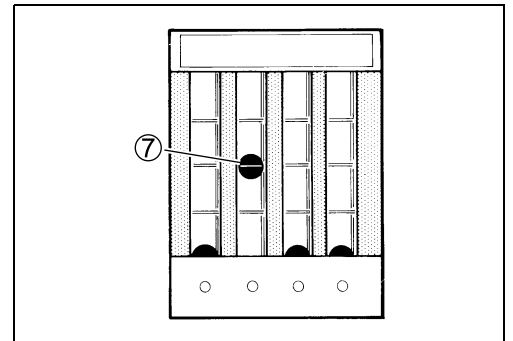
**NOTE:**

*The vacuum gauge is positioned approx. 30 ° from the horizontal level.*



- After making sure that the steel ball stays steady at the center line, disconnect the hose from the No.1 throttle body nipple and connect the next hose of the gauge to this nipple.
- Turn air screw to bring the other steel ball ⑦ to the center line.

The balancer gauge is now ready for use in balancing the throttle valves.



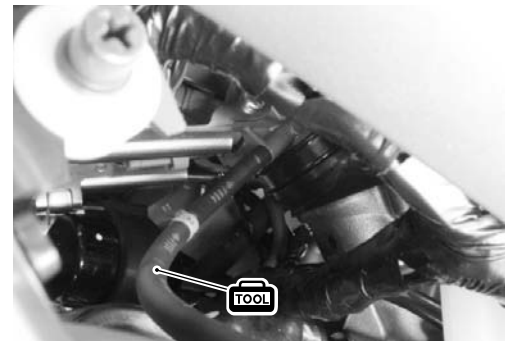
### THROTTLE VALVE SYNCHRONIZATION

- To synchronize throttle valves, remove the rubber caps ① from each vacuum nipples on No.1 and No.2 throttle body.



- Connect the vacuum balancer gauge hoses to the vacuum nipples respectively.

 **09913-13121: Vacuum balancer gauge**



- Connect a tachometer and start up the engine.
- Bring the engine rpm to 1 300 rpm by the throttle stop screw.
- Check the vacuum of the two cylinders and balance the two throttle valves with the synchronizing screw ② on the No.2 throttle body.



**NOTE:**

- \* During balancing the throttle valves, always set the engine rpm at 1 300 rpm, using throttle stop screw.
- \* After balancing the two valves, set the idle rpm to 1 300 rpm.

**CAUTION**

**Avoid drawing dirt into the throttle body while running the engine without the air cleaner box. Dirt drawn into the engine will damage the internal engine parts.**

**NOTE:**

Make sure that the throttle lever should have a gap ① (between the throttle lever and throttle lever stopper screw) during synchronization.

**DATA** Throttle lever gap ①: 0.17 mm (0.007 in)

