

# FUEL SYSTEM

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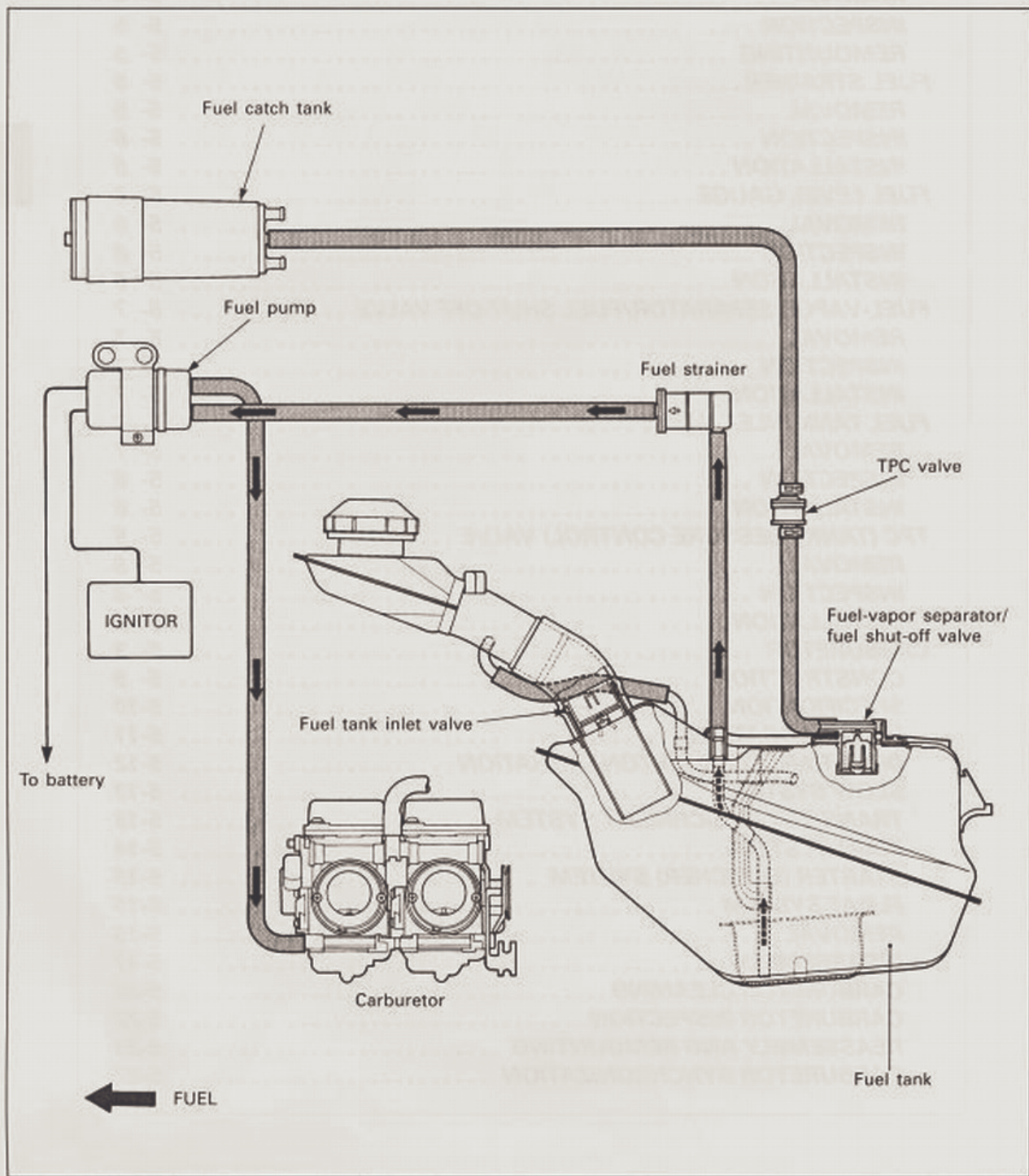
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## FUEL SYSTEM

The fuel system consists of the fuel tank, fuel pump, fuel strainer, fuel tank inlet valve, fuel-vapor separator/fuel shut-off valve, fuel catch tank, TPC (Tank Pressure Control) valve and carburetors. The fuel pump located behind the left side upper cover runs on electricity from the battery. When the engine stop switch "RUN" position and turning the ignition switch ON, the fuel pump operates to pump up the carburetor float chamber. (After a few seconds, the fuel pump will stop unless depressing the starter button.)

The fuel inlet valve located inside of the fuel tank prevents sudden rising of the fuel level when refueling. The fuel-vapor separator/fuel shut-off valve separate fuel from vapor. And also it prevents fuel from flowing out the fuel tank when rising the fuel level because of acceleration, deceleration or falling down.

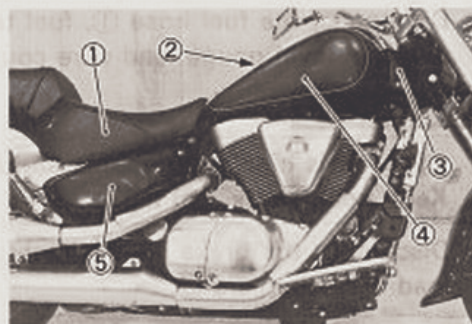




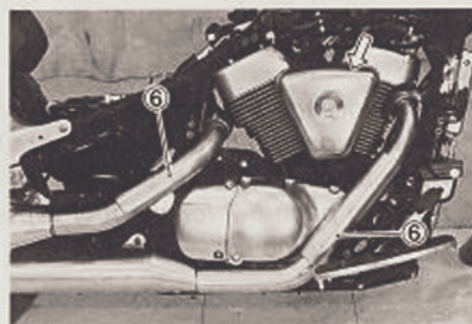
## FUEL TANK

### REMOVAL

- Remove the seat ①. (See p. 6-2.)
- Remove the meter and fuel inlet cover ②. (See pp. 6-3 and -4.)
- Remove the frame head covers ③ and the upper covers ④. (See p. 6-3.)
- Remove the frame covers ⑤. (See p. 6-2.)



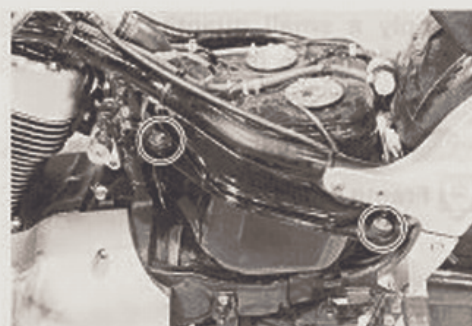
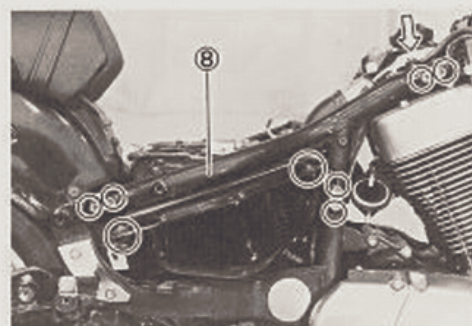
- Remove the engine side box. (See p. 3-3.)
- Remove the exhaust pipes and mufflers ⑥. (See p. 3-5.)



- Remove the frame handle grip ⑦.



- Remove the fuel tank mounting bolts.
- Remove the heat shield bolt.
- Remove the seat frame ⑧ by removing its mounting bolts and nuts.





- Disconnect the fuel hose ①, fuel tank breather hose ② and fuel level gauge lead wire coupler ③.

**⚠ WARNING**

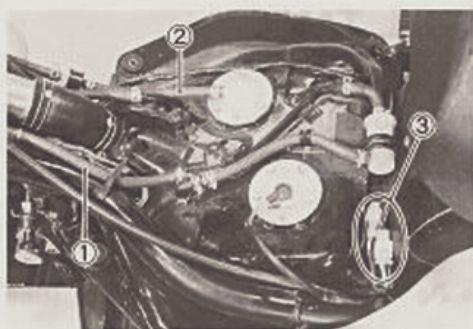
**Gasoline is highly flammable and explosive.  
Keep heat, spark and flame away.**

- Disconnect the brake light/Taillight and turn signal light lead wire couplers ③.

- Remove the fuel tank.

**NOTE:**

- \* Refer to page 5-6 for the fuel level gauge removal.
- \* Refer to page 5-5 for the fuel strainer removal.
- \* Refer to pages 5-7 for the fuel tank inlet valve removal.
- \* Refer to page 5-7 for the fuel-vapor separator/fuel shut-off valve removal.

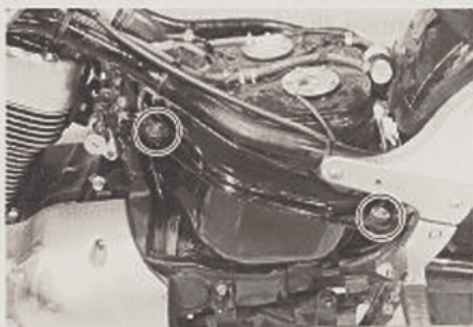
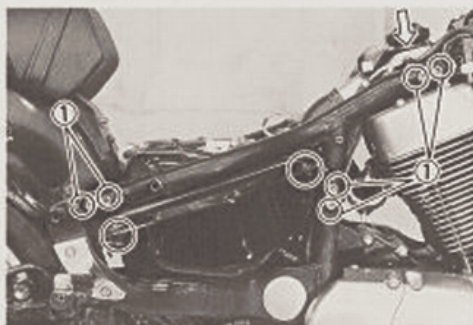
**REMOUNTING**

Remount the fuel tank in the reverse order of removal. Pay attention to the following points.

- Tighten right side seat frame mounting bolts and nut ① to the specified torque.

**U** Frame mounting bolt and nut ①: 50 N·m  
(5.0 kg-m, 36.0 lb-ft)

- Tighten the fuel tank mounting bolts securely.



- Apply a small quantity of the THREAD LOCK SUPER "1303" to the frame handle grip bolts and tighten them to the specified torque.

**1303** 99000-32030: THREAD LOCK SUPER "1303"

**U** Frame handle grip mounting bolt: 50 N·m  
(5.0 kg-m, 36.0 lb-ft)





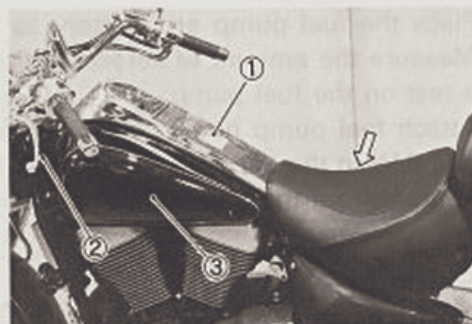
- Install the exhaust pipes and mufflers. (See p. 3-15.)



## FUEL PUMP

### REMOVAL

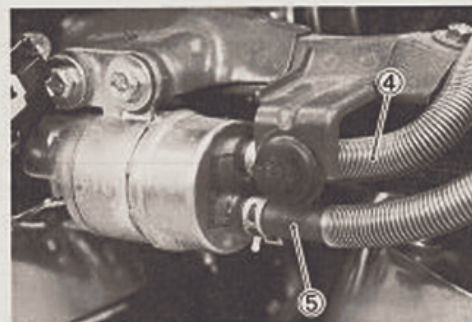
- Remove the seat. (See p. 6-2.)
- Remove the meter and fuel inlet cover ①. (See pp. 6-3 and -4.)
- Remove the left side frame head cover ② and upper cover ③. (See p. 6-3.)



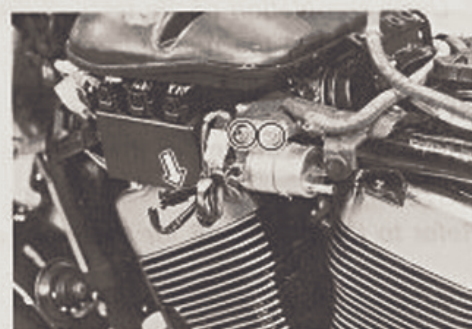
- Disconnect the fuel hoses (④, ⑤) from the fuel pump.  
④: Outlet hose  
⑤: Inlet hose

### ⚠ WARNING

Gasoline is highly flammable and explosive.  
Keep heat, spark and flames away from gasoline.



- Disconnect the fuel pump lead wire coupler.
- Remove the fuel pump by removing its mounting bolts.





## INSPECTION

Measure the resistance between the fuel pump lead wires. If the resistance noted to show infinity or too low a resistance value, it must be replaced.

### Standard

**Fuel pump resistance: 1–2.5  $\Omega$**

### NOTE:

When making this test, it is not necessary to remove the combination meter.

Place the fuel pump and battery as shown in the figure. Measure the amount of kerosene discharged and conduct a test on the fuel pump.

Attach fuel pump harness Br/B to the battery  $\oplus$  terminal and B/W to the battery  $\ominus$  terminal. Measure the discharge amount from the fuel pump for 1 minute using a measuring cylinder.

### Standard

**Discharge amount: Over 600 ml (1.27/1.06 US/Imp pt)**

If the discharge amount is less than the specification, it means that the fuel pump is defective. Replace the fuel pump with a new unit.

### ⚠ WARNING

**Do not use gasoline, which is extremely flammable and explosive.**

### NOTE:

- \* The battery must be fully charged.
- \* Upon completion of the test, all the kerosene should be drained from the fuel pump.

## REMOUNTING

Remount the fuel tank in the reverse order of removal.

### NOTE:

Refer to the page 8-16 for the fuel system hose routing.

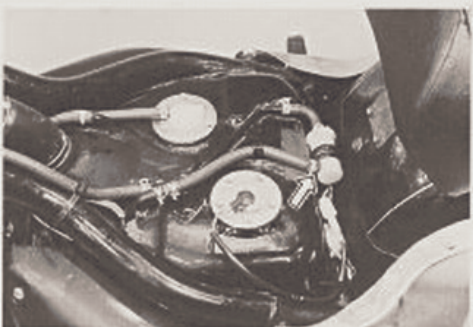
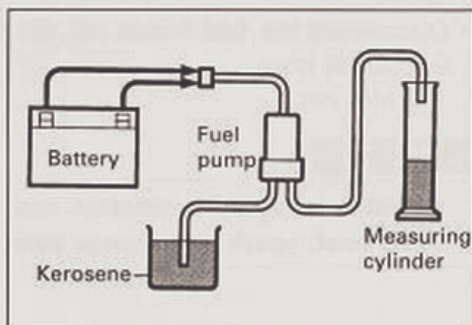
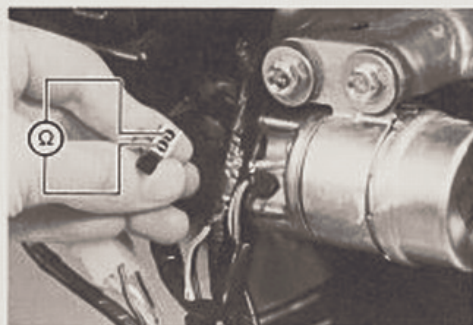
## FUEL STRAINER

### REMOVAL

- Remove the seat. (See p. 6-2.)
- Remove the rear fender. (See p. 6-4.)
- Remove the fuel strainer

### ⚠ WARNING

**Gasoline is highly flammable and explosive. Keep heat, spark and flames away from gasoline.**





## INSPECTION

Inspect the fuel strainer for any damage or clogging. If the fuel strainer is dirty with sediment or rust, fuel will not flow smoothly and loss in engine power may result. Replace it with a new one.

## INSTALLATION

Install the fuel strainer in the reverse order of removal.

### NOTE:

When installing the fuel strainer, be sure to face the arrow mark **A** on it to the fuel pump side.

- Install the rear fender. (See p. 6-4.)

### NOTE:

Refer to the page 8-16 for the fuel system hose routing.



## FUEL LEVEL GAUGE

### REMOVAL

- Remove the seat. (See p. 6-2.)
- Disconnect the fuel level gauge lead wire.
- Remove the fuel level gauge by removing its mounting bolts.

### ⚠ WARNING

Gasoline is highly flammable and explosive.  
Keep heat, spark and flames away from gasoline.

## INSPECTION

### NOTE:

Refer to page 7-31 for the fuel level gauge inspection.

## INSTALLATION

Install the fuel level gauge in the reverse order of removal. When installing the fuel level gauge, lightly tighten all the fuel level gauge mounting bolts and then tighten them to the specified torque in the ascending order of numbers.

- Fuel level gauge mounting bolt: 4 N·m  
(0.4 kg-m, 3.0 lb-ft)

### NOTE:

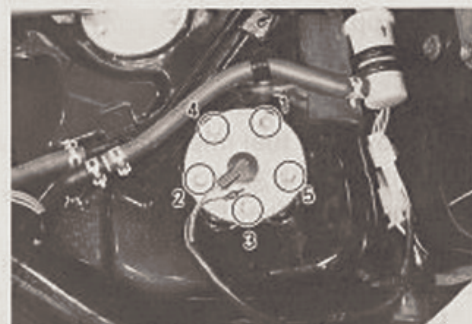
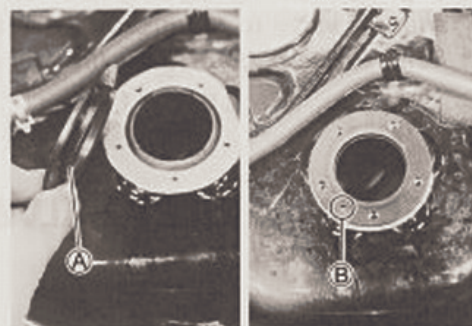
- \* The flange portion **A** of the gasket faces to the fuel tank side.
- \* The hole **B** of the gasket faces right side as shown.

### ⚠ CAUTION

Use a new gasket to prevent fuel leakage.

### NOTE:

Refer to the page 8-16 for the fuel system hose routing.





## FUEL-VAPOR SEPARATOR/ FUEL SHUT-OFF VALVE

### REMOVAL

- Remove the seat. (See p. 6-2.)
- Disconnect the fuel tank breather hose.
- Remove the fuel-vapor separator/fuel shut-off valve by removing its mounting bolts.

### ⚠ WARNING


Gasoline is highly flammable and explosive.  
Keep heat, spark and flames away from gasoline.

### INSPECTION

- Check the fuel-vapor separator/fuel shut-off valve for damage.
- Put the fuel-vapor separator/fuel shut-off valve in kerosene and check that the float ① moves smoothly to contact valve seat.  
If the float ① does not move smoothly, replace it with a new one.

### INSTALLATION

When installing the fuel-vapor separator/fuel shut-off valve, lightly tighten all its mounting bolts and tighten them to the specified torque.

-  Fuel-vapor separator/fuel shut-off valve mounting bolt:  
4 N·m (0.4 kg-m, 3.0 lb-ft)

#### NOTE:

- \* Align the portion ② on the fuel-vapor separator/fuel shut-off valve to the groove ③ of the gasket.
- \* Refer to the page 8-16 for the fuel system hose routing.

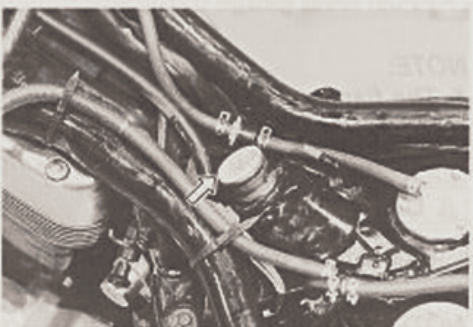
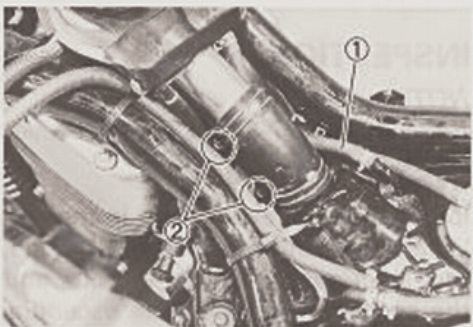
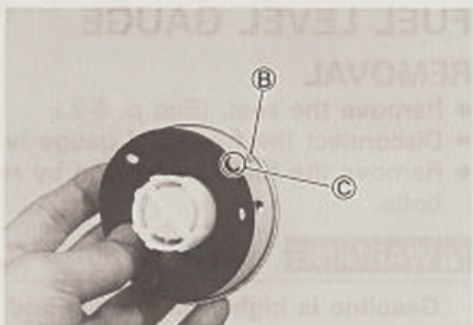
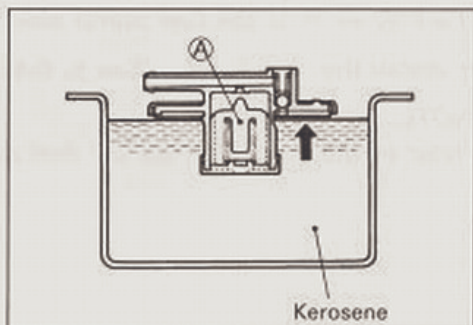
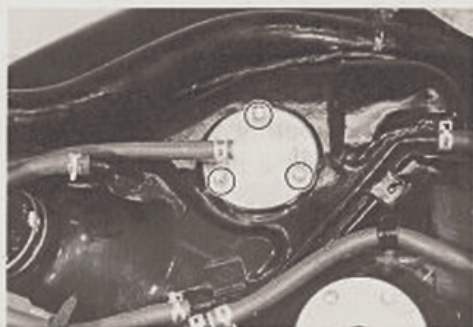
## FUEL TANK INLET VALVE

### REMOVAL

- Remove the seat. (See p. 6-2.)
- Remove the meter and fuel inlet cover and upper cover. (See pp. 6-3 and 6-4.)
- Remove the frame cover. (See p. 6-2.)
- Disconnect the air vent hose ①.
- Remove the fuel inlet hose from the fuel tank by loosening the clamp ②.
- Remove the fuel tank inlet valve.

### ⚠ WARNING

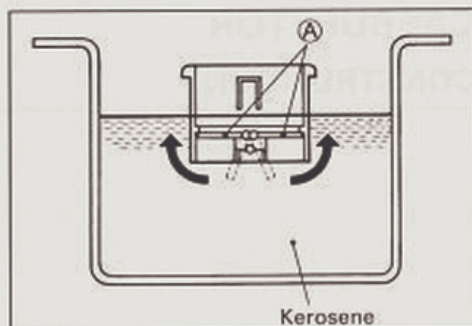
Gasoline is highly flammable and explosive.  
Keep heat, spark and flames away from gasoline.





## INSPECTION


- Check the fuel tank inlet valve for damage.
- Put the fuel tank inlet valve in kerosene and check that the butterflies **A** move smoothly, if the butterflies **A** do not move smoothly, replace it with a new one.



## INSTALLATION

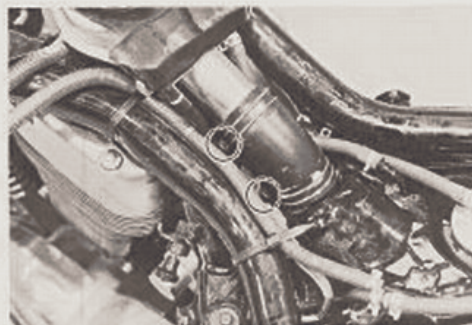
Install the fuel tank inlet valve in the reverse order of removal. Pay attention to the following point.

- Tighten the fuel inlet hose clamp to the specified torque.

 Fuel inlet hose clamp: 2 N·m (0.2 kg-m, 1.5 lb-ft)

### NOTE:

- \* The ends of the clamp faces down.
- \* Refer to the page 8-16 for the fuel system hose routing.



## TPC (TANK PRESSURE CONTROL) VALVE

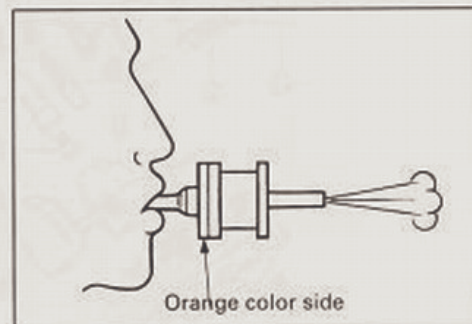
### REMOVAL

- Remove the seat. (See p. 6-2.)
- Remove the meter and fuel inlet cover and upper cover. (See pp. 6-3 and -4.)
- Remove the TPC valve **①**.



## INSPECTION

- Blow the TPC valve from the orange color side. If air flow out, it is in sound condition.
- Also, blow the TPC valve from opposite side. If you feel large resistance, the check valve in sound condition.
- If the operation is in correct, replace the check valve with a new one.

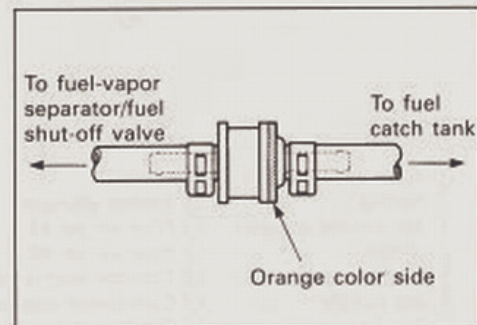


## INSTALLATION

When installing the TPC valve, the orange color side faces to the catch tank side.

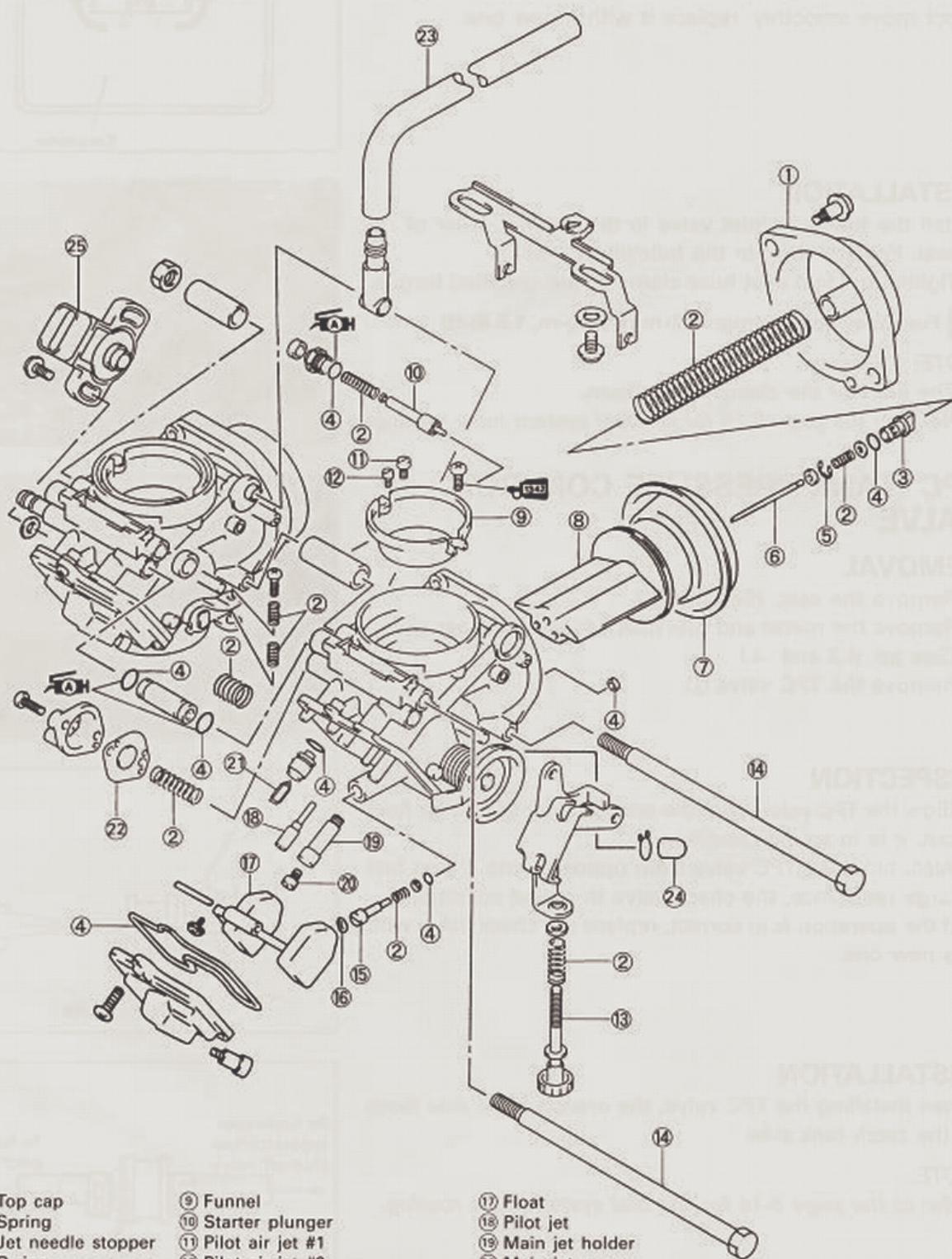
### NOTE:

Refer to the page 8-16 for the fuel system hose routing.





# CARBURETOR CONSTRUCTION



- |                      |                              |                            |
|----------------------|------------------------------|----------------------------|
| ① Top cap            | ⑨ Funnel                     | ⑰ Float                    |
| ② Spring             | ⑩ Starter plunger            | ⑱ Pilot jet                |
| ③ Jet needle stopper | ⑪ Pilot air jet #1           | ⑲ Main jet holder          |
| ④ O-ring             | ⑫ Pilot air jet #2           | ⑳ Main jet                 |
| ⑤ E-ring             | ⑬ Throttle stop screw        | ㉑ Needle valve             |
| ⑥ Jet needle         | ⑭ Carburetor connecting bolt | ㉒ Coasting valve           |
| ⑦ Diaphragm          | ⑮ Pilot screw                | ㉓ Air vent hose            |
| ⑧ Piston valve       | ⑯ Plug (For E-18, 33)        | ㉔ Inlet cap                |
|                      |                              | ㉕ Throttle position sensor |



## SPECIFICATIONS

ITEM	SPECIFICATION	
	E-02, 04, 25, 34	E-03, 28
Carburetor type	BDSR36	←
Bore size	36.5 mm	←
I.D. No.	10F0	10F1
Idle r/min.	1 000 ± 100 r/min.	←
Float height	7.0 ± 0.5 mm (0.28 ± 0.02 in)	←
Main jet (M.J.)	F: #112.5 R: #110	F: #112.5 R: #110
Jet needle (J.N.)	F: 5D94-56-3 R: 5E8-56-3	F: 5D95-56 R: 5E9-56
Needle jet (N.J.)	P-0	P-0M
Throttle valve (Th.V.)	#90	←
Pilot jet (P.J.)	#32.5	#32.5
Pilot screw (P.S.)	PRE-SET (F: 2 turns back) (R: 2 turns back)	PRE-SET
Throttle cable play	2.0–4.0 mm (0.08–0.16 in)	←

ITEM	SPECIFICATION	
	E-17, 22, 24	E-18
Carburetor type	BDSR36	←
Bore size	36.5 mm	←
I.D. No.	10F2	10F3
Idle r/min.	1 000 ± 100 r/min.	1 000 ± 50 r/min.
Float height	7.0 ± 0.5 mm (0.28 ± 0.02 in)	←
Main jet (M.J.)	F: #112.5 R: #110	←
Jet needle (J.N.)	F: 5D94-56-3 R: 5E8-56-3	←
Needle jet (N.J.)	P-0	←
Throttle valve (Th.V.)	#90	←
Pilot jet (P.J.)	#32.5	←
Pilot screw (P.S.)	PRE-SET (F: 2 turns back) (R: 2 turns back)	PRE-SET (F: 2 1/2 turns back) (R: 2 5/8 turns back)
Throttle cable play	2.0–4.0 mm (0.08–0.16 in)	←



ITEM	SPECIFICATION	
	E-33	
Carburetor type	BDSR36	
Bore size	36.5 mm	
I.D. No.	10F4	
Idle r/min.	1 000 ± 100 r/min.	
Float height	7.0 ± 0.5 mm (0.28 ± 0.02 in)	
Main jet (M.J.)	F: #112.5 R: #110	
Jet needle (J.N.)	F: 5D95-56 R: 5E9-56	
Needle jet (N.J.)	P-DM	
Throttle valve (Th.V.)	#90	
Pilot jet (P.J.)	#32.5	
Pilot screw (P.S.)	PRE-SET	
Throttle cable play	2.0–4.0 mm (0.08–0.16 in)	

### I.D. NO. LOCATION

Each carburetor has I.D. Number (A) stamped on the carburetor body according to its specifications.

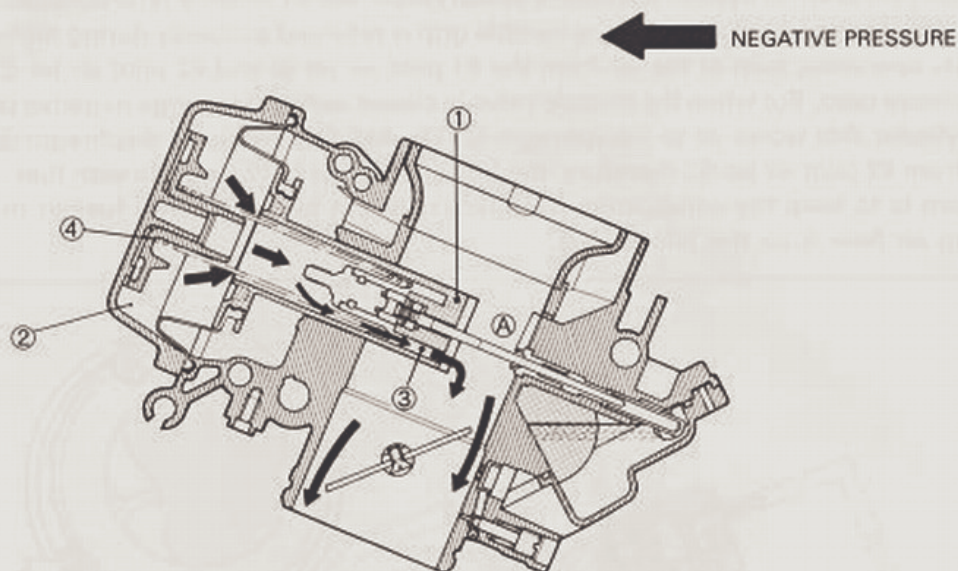




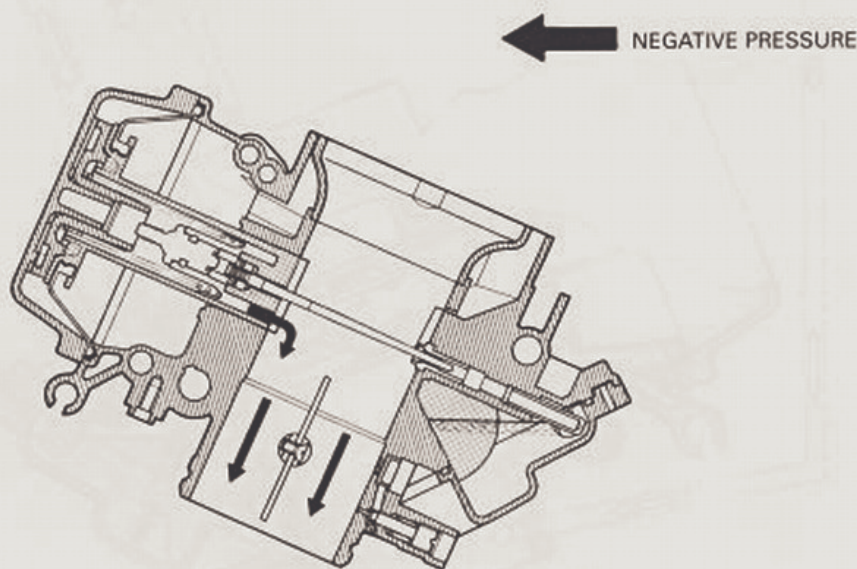
## DIAPHRAGM AND PISTON OPERATION

The carburetor is a variable-venturi type, whose venturi cross sectional area is increased or decreased automatically by the piston valve ①. The piston valve moves according to the negative pressure present on the downstream side of the venturi (A). Negative pressure is admitted into the diaphragm chamber ② through an orifice ③ provided in the piston valve ①.

Rising negative pressure overcomes the spring ④ force, causing the piston valve ① to rise into the diaphragm chamber and prevent the air velocity from increasing. Thus, air velocity in the venturi passage is kept relatively constant for improved fuel atomization and the precise air/fuel mixture.



LOWER POSITION OF THE PISTON VALVE



UPPER POSITION OF THE PISTON VALVE



## SLOW SYSTEM

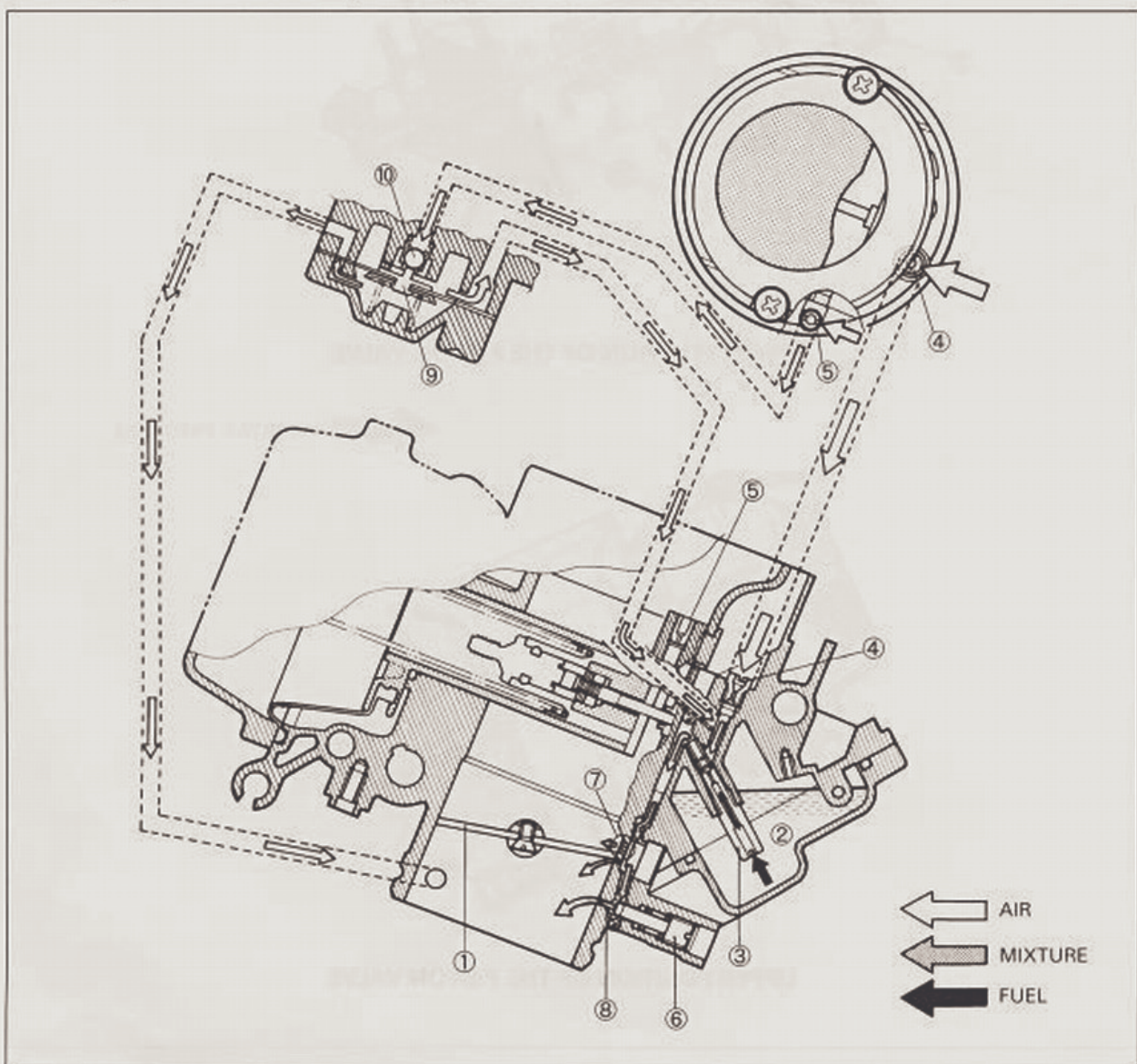
This system supplies fuel to the engine during engine operation with throttle valve ① closed or slight opened. The fuel from the float chamber ② is first passage and metered by the pilot jet ③ where it mixes with air coming in through #1 pilot air jet ④ and #2 pilot air jet ⑤.

This mixture, rich with fuel, then goes up through pilot pipe to pilot screw ⑥. A part of the mixture is discharged into the main bore out of by-pass ports ⑦. The remainder is then metered by pilot screw and sprayed out into the main bore through pilot outlet ⑧.

## TRANSIENT ENRICHMENT SYSTEM

The transient enrichment system is a device which keeps fuel/air mixture ratio constant in order not to generate unstable combustion when the throttle grip is returned suddenly during high speed driving. For normal operation, sum of the air from the #1 pilot air jet ④ and #2 pilot air jet ⑤ keeps proper fuel/air mixture ratio. But when the throttle valve is closed suddenly, a large negative pressure generated on cylinder side works on to a diaphragm ⑨. The ball ⑩ held by the diaphragm ⑨ closes the air passage from #2 pilot air jet ⑤, therefore, the fuel/air mixture becomes rich with fuel.

This system is to keep the combustion condition constant by varying the fuel/air mixture ratio by controlling air flow from the pilot air jet.





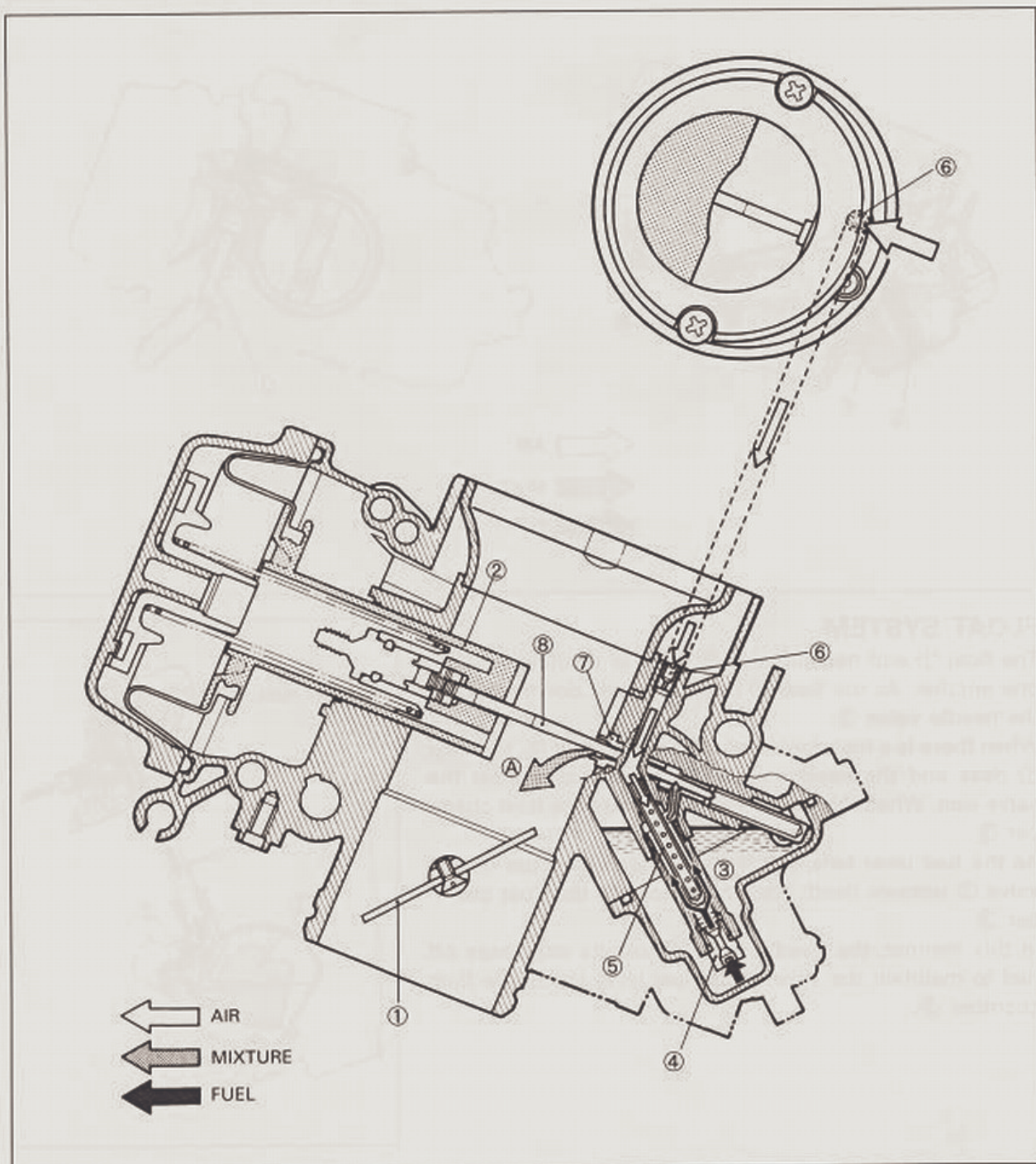
## MAIN SYSTEM

As the throttle valve ① is opened, engine speed rises and negative pressure in the venturi ⑨ increases. This causes the piston valve ② to move upward.

The fuel in the float chamber ③ is metered by the main jet ④. The metered fuel passes around main air bleed pipe ⑤, mixes with the air admitted through main air jet ⑥ to form an emulsion and emulsion fuel enters needle jet ⑦.

The emulsified fuel then passes through the clearance between the needle jet ⑦ and jet needle ⑧ and is discharged into the venturi ⑨, where it meets the main air stream being drawn by the engine.

Mixture proportioning is accomplished in the needle jet ⑦. The clearance through which the emulsified fuel must flow ultimately depends on throttle position.





## STARTER (ENRICHER) SYSTEM

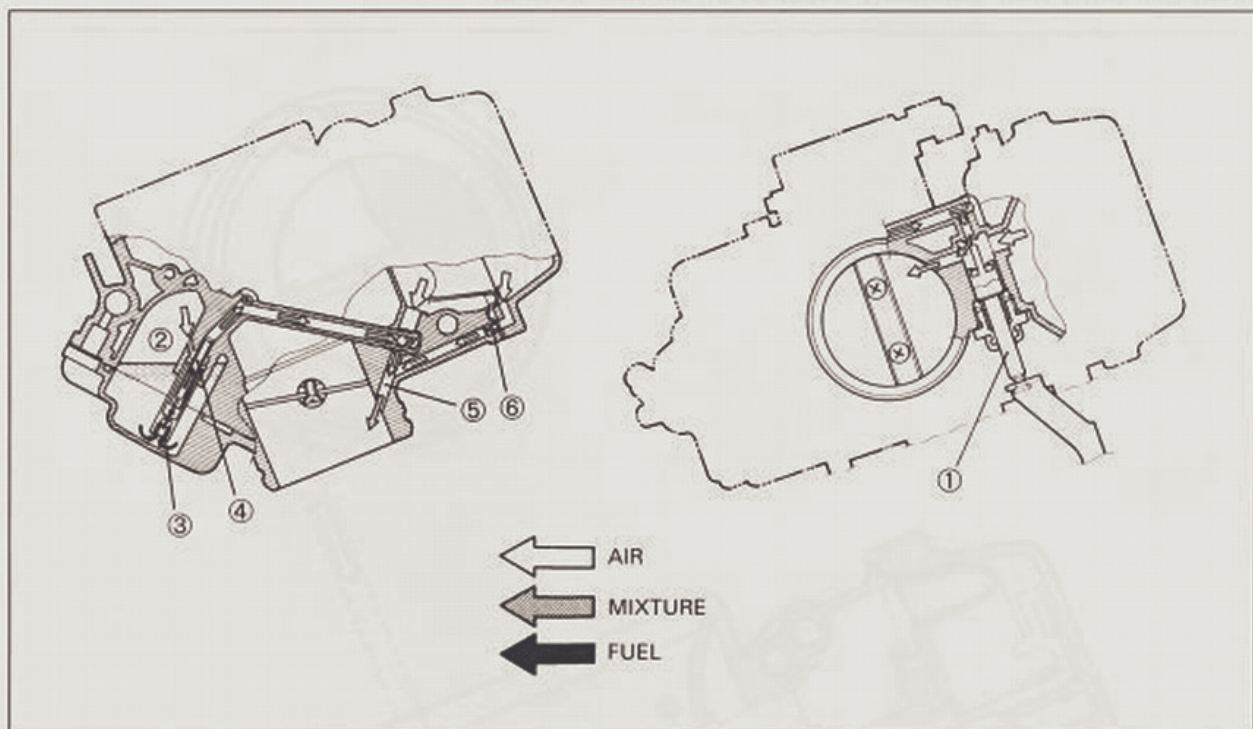
Pulling the starter (enricher) plunger ① causes fuel to be drawn into the starter circuit from the float chamber ②.

The starter jet ③ meters this fuel. The fuel then flows into the fuel pipe ④ and mixes with the air coming from the float chamber ②. The mixture, rich in fuel, reaches starter plunger ① and mixes again with the air coming through starter air jet ⑥ from the diaphragm chamber.

The three successive mixings of the fuel with the air provided the proper fuel/air mixture for starting. This occurs when the mixture is sprayed through the starter outlet port ⑤ into the main bore.

### NOTE:

A starter (enricher) system is operated almost the same way as a choke.



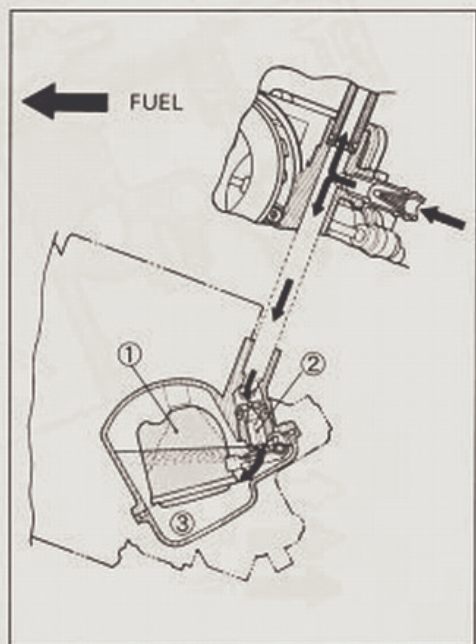
## FLOAT SYSTEM

The float ① and needle valve ② work in conjunction with one another. As the float ① moves up and down, so does the needle valve ②.

When there is a high fuel level in float chamber ③, the float ① rises and the needle valve ② pushes up against the valve seat. When this occurs, no fuel enters the float chamber ③.

As the fuel level falls, the float ① lowers and the needle valve ② unseats itself; admitting fuel into the float chamber ③.

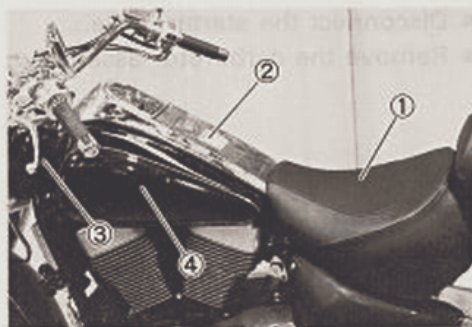
In this manner, the needle valve ② admits and shuts off fuel to maintain the appropriate fuel level inside the float chamber ③.



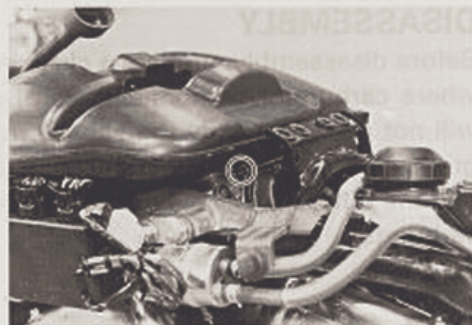


## REMOVAL

- Remove the seat ①. (See p. 6-2.)
- Remove the meter and fuel inlet cover ②. (See pp. 6-3 and -4.)
- Remove the frame head covers ③ and the upper covers ④. (See pp. 6-2 and -3.)



- Loosen the carburetor clamp screws (air cleaner side).



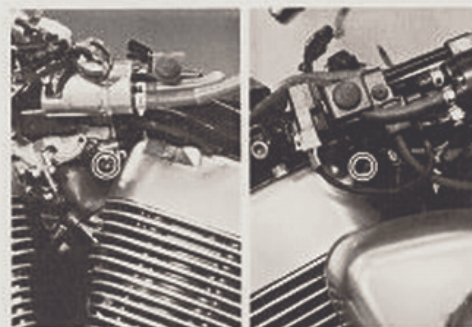
- Disconnect the breather hose.
- Remove the air cleaner box.



- Disconnect the fuel hose and the throttle position sensor coupler.
- Remove the throttle cables.

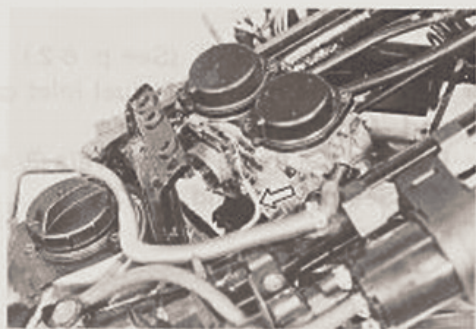


- Loosen the carburetor clamp screws (Engine side).





- Disconnect the starter cable.
- Remove the carburetor assembly.



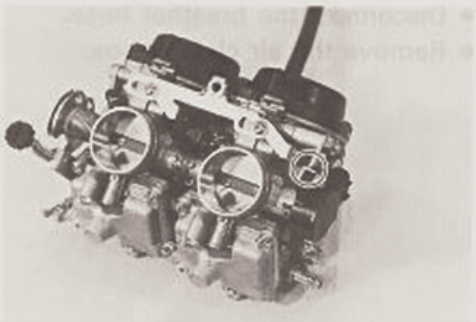
## DISASSEMBLY

Before disassembly, prepare a clean and well lit work place where carburetor components can be laid out neatly and will not get lost. Study the service manual carburetor diagram and familiarize yourself with component locations and the different fuel circuits and their routing through the carburetor.

### ▲ CAUTION

Prior to disassembly, mark with a paint or notch the initial position of the throttle sensor which is PRE-SET accurately at the factory.

Avoid removing the throttle position sensor from the carburetor body unless you really need to do so.

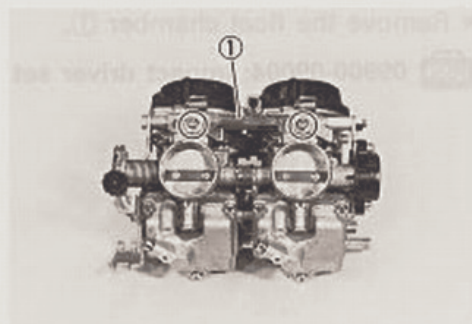


- Disconnect the air vent hoses ①.

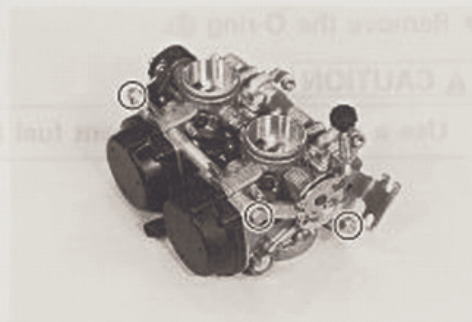




- Remove the starter (enricher) plate ① by removing the fitting screws.



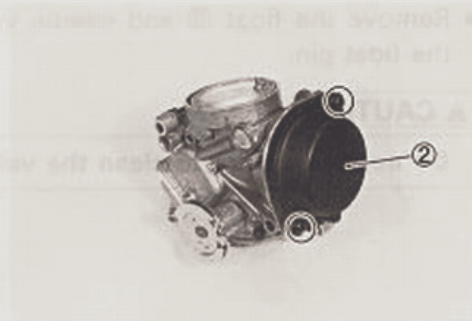
- Remove the upper and lower carburetor connecting bolts and nut.
- Separate the carburetor assembly.



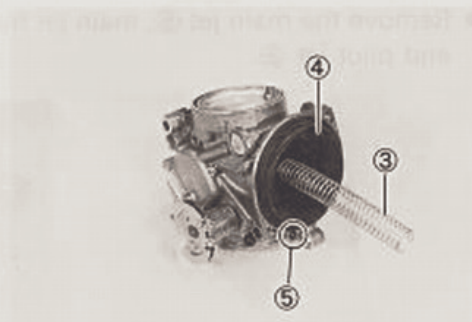
- Remove the carburetor top cap ②.

#### ▲ CAUTION

Do not use compressed air on the carburetor body, before removing the diaphragm; this may damage the diaphragm.

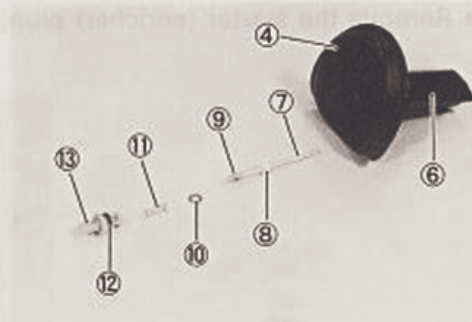


- Remove the spring ③ and the piston valve along with its diaphragm ④.
- Remove the O-ring ⑤.



- Remove the jet needle from the piston valve.

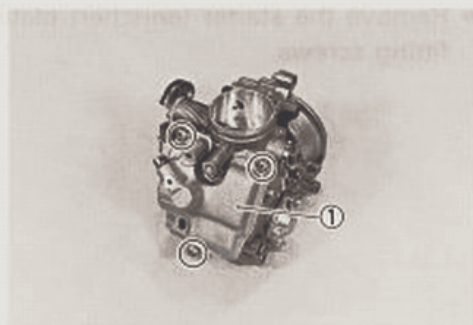
- ⑥ Piston valve
- ⑦ Jet needle
- ⑧ Spacer
- ⑨ E-ring
- ⑩ Washer
- ⑪ Spring
- ⑫ O-ring
- ⑬ Jet needle stopper





- Remove the float chamber ①.

**TOOL** 09900-09004: Impact driver set



- Remove the O-ring ②.

**CAUTION**

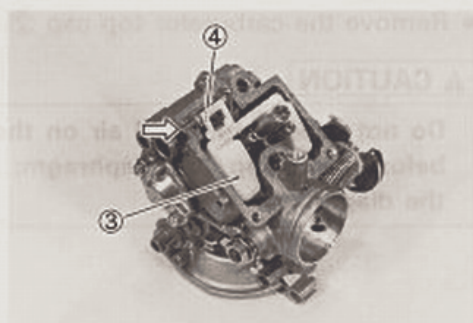
Use a new O-ring to prevent fuel leakage.



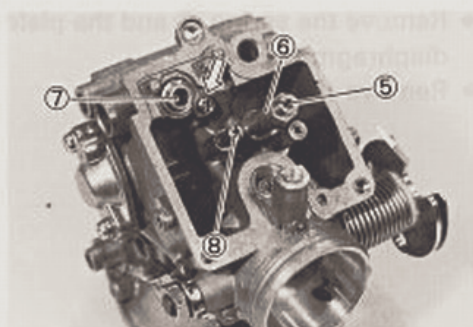
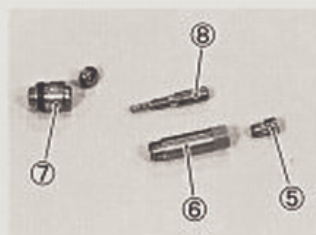
- Remove the float ③ and needle valve ④ by removing the float pin.

**CAUTION**

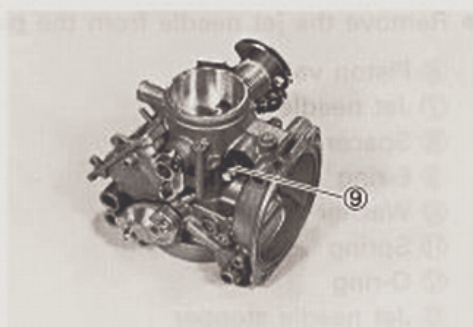
Do not use a wire to clean the valve seat.



- Remove the main jet ⑤, main jet holder ⑥, valve seat ⑦ and pilot jet ⑧.



- Remove the starter (enricher) plunger assembly ⑨.





- Use a 1/8" size drill bit with a drill-stop to remove the pilot screw plug. Set the drill-stop 6 mm from the end of the bit to prevent drilling into the pilot screw. Carefully drill through the plug. Thread a self-tapping sheet metal screw into the plug. Pull on the screw head with pliers to remove the plug. Carefully clean any metal shavings from the area. (For E-18 and 33 models)

**CAUTION**

Replace the plug with a new one.

- Slowly turn the pilot screw ① in clockwise and count the number of turns until the screw is lightly seated. Make a note of how many turns were made so the screw can be reset correctly after cleaning.

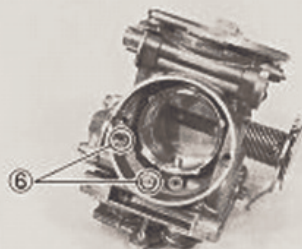
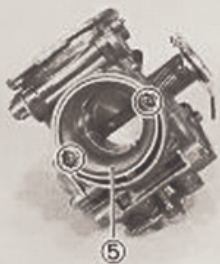
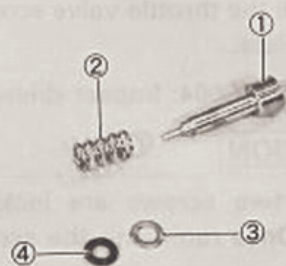
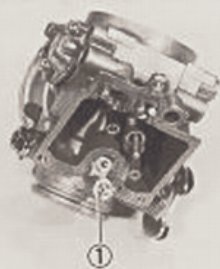
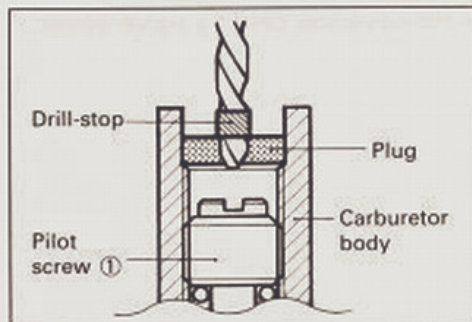
- Remove the pilot screw ① with the spring ②, washer ③, and O-ring ④.

- Remove the funnel ⑤.

- Remove the pilot air jets ⑥.

**CAUTION**

Do not use a wire for cleaning the passage and jets.





- Remove the casting valve cover.



- Remove the casting valve ① and the spring ②.

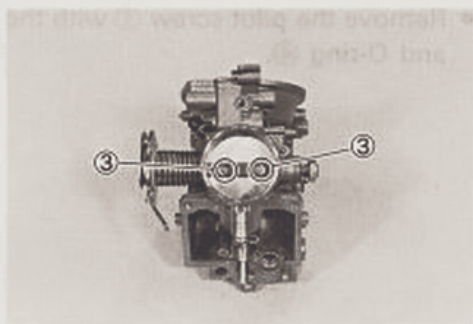


- Remove the throttle valve screws ③ and pull out throttle valve plate.

**TOOL** 09900-09004: Impact driver set

# **CAUTION**

These two screws are locked by punching these ends. Once removing the screws, they will be damaged.





## CARBURETOR CLEANING

### ▲ WARNING

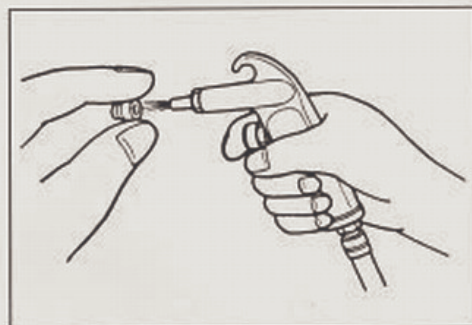
Some carburetor cleaning chemicals, especially dip-type soaking solutions, are very corrosive and must be handled carefully. Always follow the chemical manufacturer's instructions on proper use, handling and storage.

- Clean all jets with a spray-type carburetor cleaner and dry them using compressed air.
- Clean all circuits of the carburetor thoroughly – not just the perceived problem area. Clean the circuits in the carburetor body with a spray-type cleaner and allow each circuit to soak if necessary to loosen dirt and varnish. Blow the body dry using compressed air.

### ▲ CAUTION

Do not use a wire to clean the jets or passageways. A wire can damage the jets and 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 carburetor components.

- After cleaning, reassemble the carburetor with new seals and gaskets.



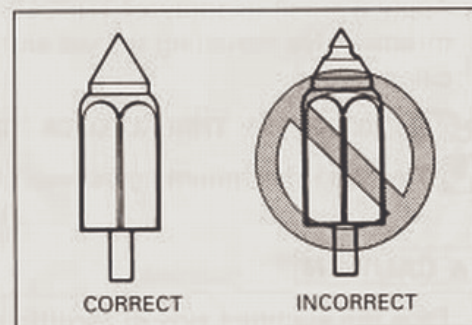
## CARBURETOR INSPECTION

Check the following items for any damage or clogging.

- |                                |                |                                  |
|--------------------------------|----------------|----------------------------------|
| * Pilot jet                    | * Float        | * Starter (enricher) jet         |
| * Main jet                     | * Needle valve | * Gasket and O-ring              |
| * Main air jet                 | * Jet needle   | * Throttle shaft oil seal        |
| * Pilot air jets               | * Valve seat   | * Pilot outlet and by-pass ports |
| * Needle jet air bleeding hole | * Piston valve | * Coasting valve                 |

### NEEDLE VALVE INSPECTION

If foreign matter is caught between the valve seat and the needle valve, the gasoline will continue flowing and overflow. If the valve seat and needle valve are worn beyond the permissible limits, similar trouble will occur. Conversely, if the needle valve sticks, the gasoline will not flow into the float chamber. Clean the float chamber and float parts with gasoline. If the needle valve is worn, as shown in the illustration, replace it along with a new valve seat. Clean the fuel passage of the mixing chamber using compressed air.



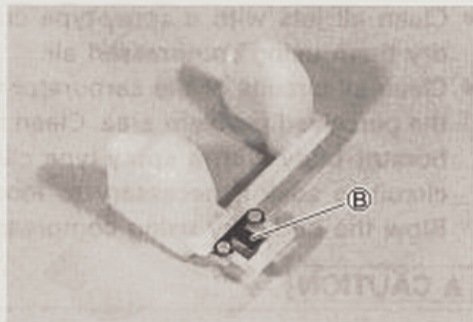
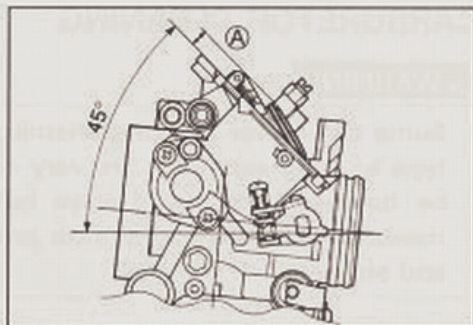


## FLOAT HEIGHT ADJUSTMENT

- Measure the float height (A) by using a calipers with the carburetor slanting at an angle of 45° (as shown in the right illustration) and the float arm just contacting the needle valve.
- Bend the tongue (B) of the float arm as necessary to bring the height (A) to the specified value.

Float height (A):  $7.0 \pm 0.5$  mm ( $0.28 \pm 0.02$  in)

 09900-20102: Vernier calipers



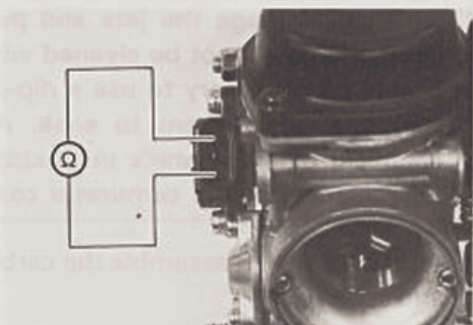
## THROTTLE POSITION SENSOR INSPECTION

Using a tester, measure the resistance between the terminals as shown in the right illustration.

Throttle position sensor resistance: 3.5–6.5 kΩ

## NOTE:

When making above test, it is not necessary to remove the throttle position sensor.




## REASSEMBLY AND REMOUNTING

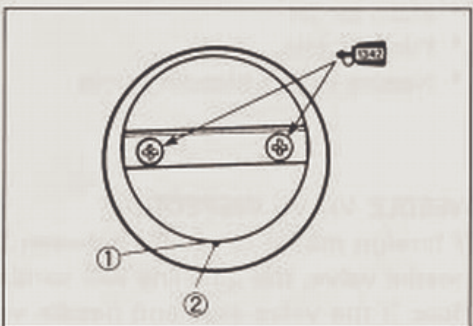
Reassemble and remount the carburetors in the reverse order of disassembly and removal. Pay attention to the following points:

## THROTTLE VALVE

- Set each throttle valve in such a way that its bottom end (1) meets the foremost by-pass (2). This is accomplished by turning the throttle stop screw and throttle valve balance screw.
- Apply a small quantity of THREAD LOCK "1342" to the throttle valve mounting screws and tighten it to the specified torque.

 99000-32050: THREAD LOCK "1342"

 Throttle valve mounting screw: 1.0 N·m  
(0.1 kg·m, 0.7 lb-ft)

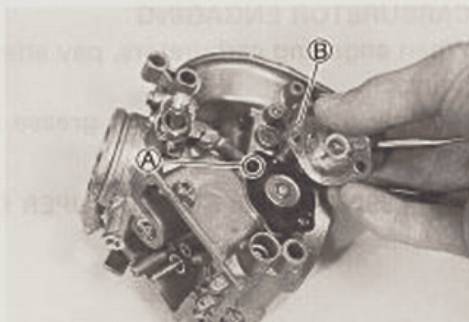
**CAUTION**

Face the stamped side of throttle valve to outside.



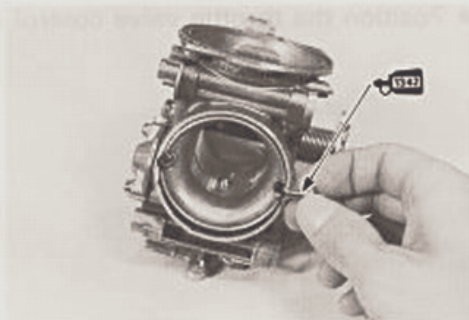
**COASTING VALVE**

- When installing the coasting valve to the body, align the hole **A** of the diagram and air hole **B** of the cover.

**FUNNEL**

- Apply a small quantity of THREAD LOCK "1342" to the funnel stopper screws and tighten them.

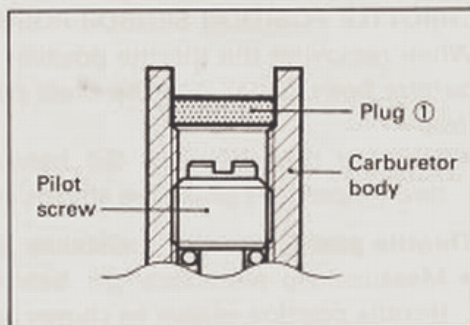
 99000-32050: THREAD LOCK "1342"

**PILOT SCREW**


- After cleaning, reinstall the pilot screw to the original setting by turning the screw in until it lightly seats, and then backing it out the same number of turns counted during disassembly.
- Install new plug **1** by tapping it into place with a punch. (For E-18 and 33 models.)

**CAUTION**

Replace the O-ring with a new one.

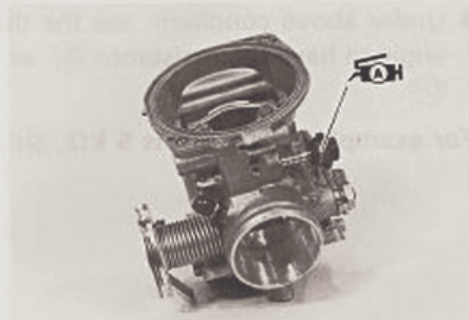
**STARTER PLUNGER**

Apply a small quantity of grease to the starter plunger O-ring.

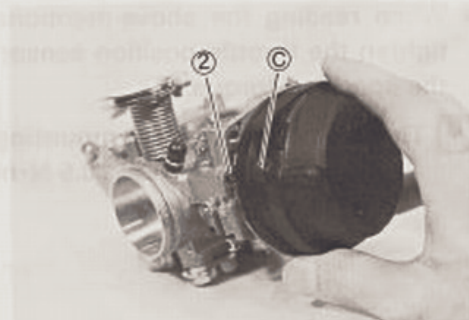
 99000-25030: SUZUKI SUPER GREASE "A"

**CAUTION**

Replace the O-rings with new ones.

**CARBURETOR TOP CAP**

- Before installing the carburetor top cap, install the O-ring **2**.
- Align the protrusion **C** of the carburetor top cap with the O-ring **2**.





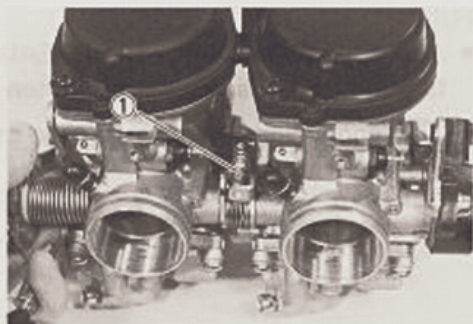
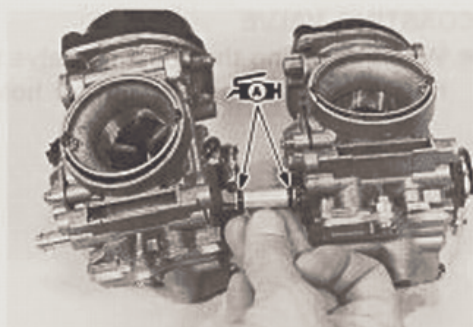
**CARBURETOR ENGAGING**

When engaging carburetors, pay attention to the following points:

- Apply a small quantity of grease to the fuel joint pipe O-rings.

 99000-25030: SUZUKI SUPER GREASE "A"

- Position the throttle valve control lever ① correctly.

**THROTTLE POSITION SENSOR POSITIONING**

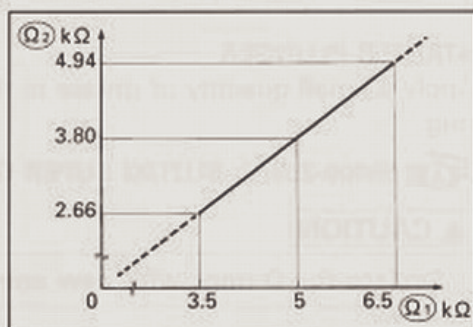
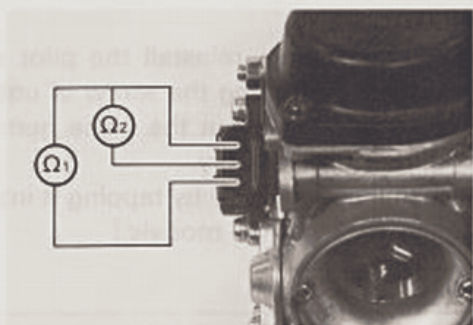
When removing the throttle position sensor from the carburetor body, install it to the exact position mentioned below;

- Measure the resistance  $\Omega_1$  between terminals of the throttle position sensor as shown in the right illustration.


**Throttle position sensor resistance  $\Omega_1$ : 3.5–6.5 k $\Omega$**

- Measure the resistance  $\Omega_2$  between terminals of the throttle position sensor as shown in the right illustration.
- Open the throttle valve fully by turning the throttle lever.
- Under above condition, see the throttle position sensor angle to have the resistance  $\Omega_2$  as 76% of the resistance  $\Omega_1$ .

**For example: When  $\Omega_1$  is 5 k $\Omega$ ,  $\Omega_2$  should be 3.8 k $\Omega$ .**



- When reading the above-mentioned resistance as  $\Omega_2$ , tighten the throttle position sensor mounting screws to the specified torque.

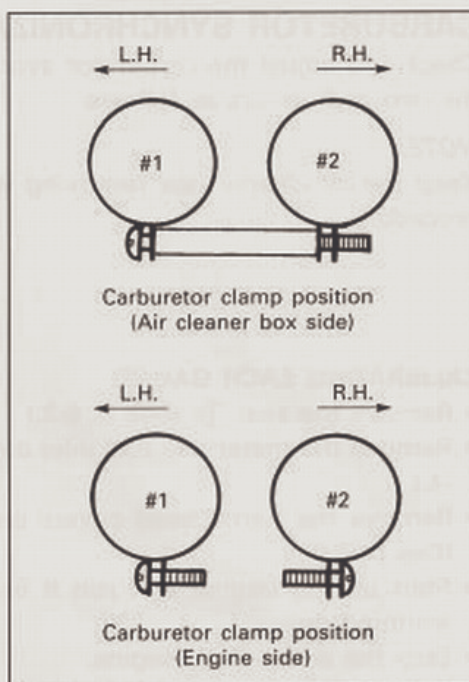
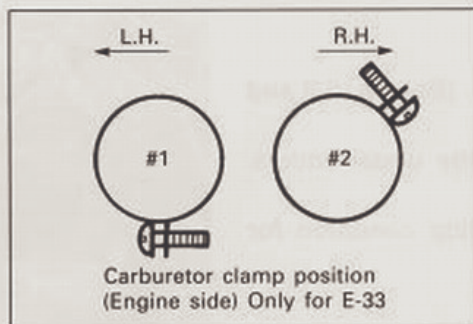
 **Throttle position sensor mounting screw:**  
3.5 N·m (0.35 kg-m, 2.5 lb-ft)





**CARBURETOR CLAMPS**

Locate the carburetor clamps as shown in the right illustrations.



- After all of the work has been completed, install the carburetor assembly onto the engine and perform the following adjustments.
  - \* Engine idle speed ..... See p. 2-8.
  - \* Throttle cable play ..... See p. 2-10.
  - \* Carburetor synchronization ..... See pp. 5-27 to -29.



## CARBURETOR SYNCHRONIZATION

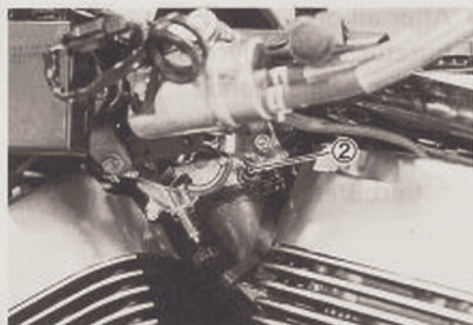
Check and adjust the carburetor synchronization between the two carburetors as follows.

### NOTE:


Keep the air cleaner box removing while performing this procedure.

### CALIBRATING EACH GAUGE

- Remove the seat ①. (See p. 6-2.)
- Remove the meter and fuel inlet cover. (See pp. 6-3 and -4.)
- Remove the frame head covers and the upper covers. (See p. 6-3.)
- Start up the engine and run it in idling condition for warming up.
- Stop the warmed-up engine.
- Remove the air cleaner box. (See p. 5-16.)
- Remove the vacuum inlet cap ② from the carburetor (#1).



- Connect one of the four rubber hoses of carburetor balancer gauge to this inlet.

 09913-13121: Carburetor balancer



- Start up the engine and keep it running at 1 750 r/min by turning throttle stop screw ③.

### NOTE:

The engine speed can be observed by using the multi circuit tester.

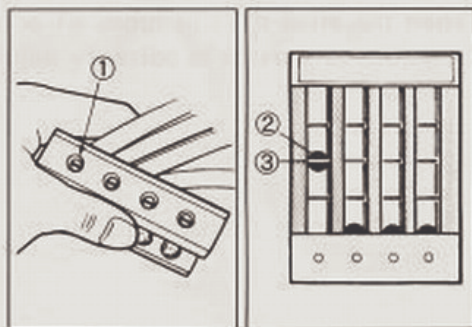
 09900-25008: Multi circuit tester set.

### CAUTION

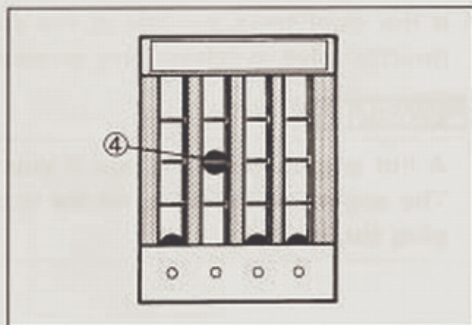
Avoid drawing dirt into the carburetor while running the engine without air cleaner box. Dirt drawn into the carburetor will damage the internal engine parts.



- Turn the air screw ① of the gauge so that the vacuum acting on the tube of that hose will bring the steel ball ② in the tube to the center line ③.



- After making sure that the steel ball stays steady at the center line, disconnect the hose from nipple and connect the next hose to the inlet.
- Turn air screw to bring the other steel ball ④ to the center line.
- The balancer gauge is now ready for use in balancing the carburetors.

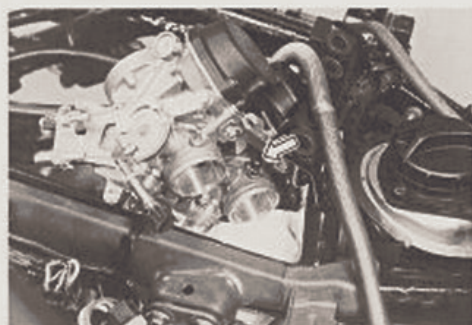


#### CARBURETOR SYNCHRONIZATION

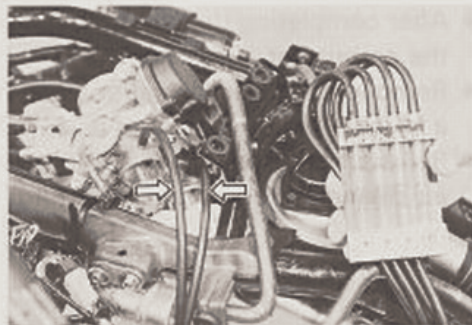
- Remove the carburetor assembly to connect carburetor balancer hoses to carburetor vacuum inlets.
- Remove the vacuum inlet cap from the carburetor (#2).

#### NOTE:

Place a rag over the intake pipes to prevent any parts dropping into the combustion chamber.



- Connect the balancer gauge hoses to vacuum inlets respectively.
- Install the carburetor assembly properly.



Adjust the balance of four carburetors as follows:

- Start the engine and keep it running at 1 750 r/min.

#### NOTE:

The engine speed can be observed by using the multi circuit tester.

 09900-25008: Multi circuit tester set

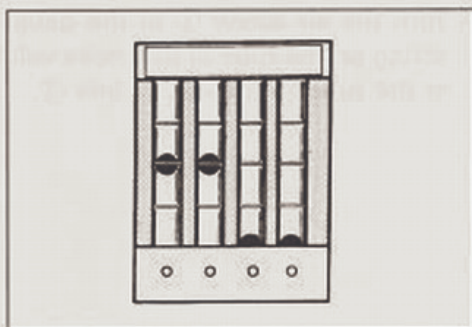
#### CAUTION

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





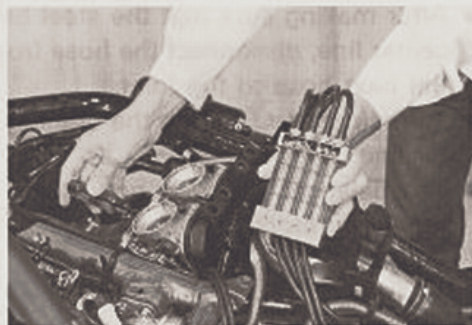
When the steel balls in tubes #1 and #2 are at the same level, the carburetor is correctly adjusted.



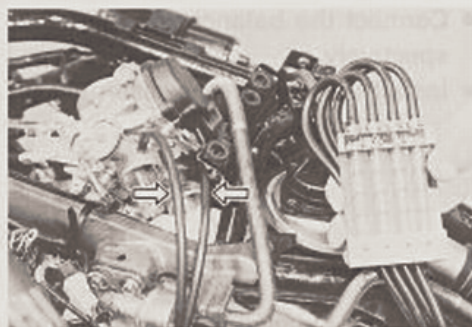
- If the steel balls are not at the same level, adjust the throttle valve synchronizing screws ①.

#### **⚠ WARNING**

A hot engine can burn you if you touch the engine. The engine will still be hot for sometime after stopping the engine.



- After completing the carburetor synchronization, remove the carburetor assembly.
- Remove the balancer gauge hose from carburetor inlets and install inlet caps and vacuum hose respectively.
- Reinstall the carburetor assembly onto the engine and air cleaner box onto the carburetor assembly respectively.



- Adjust the engine idle speed by turning the throttle stop screw.

#### **Engine idle speed**

1 000 ± 50 r/min ..... for E-18 model

1 000 ± 100 r/min ..... for the other models

