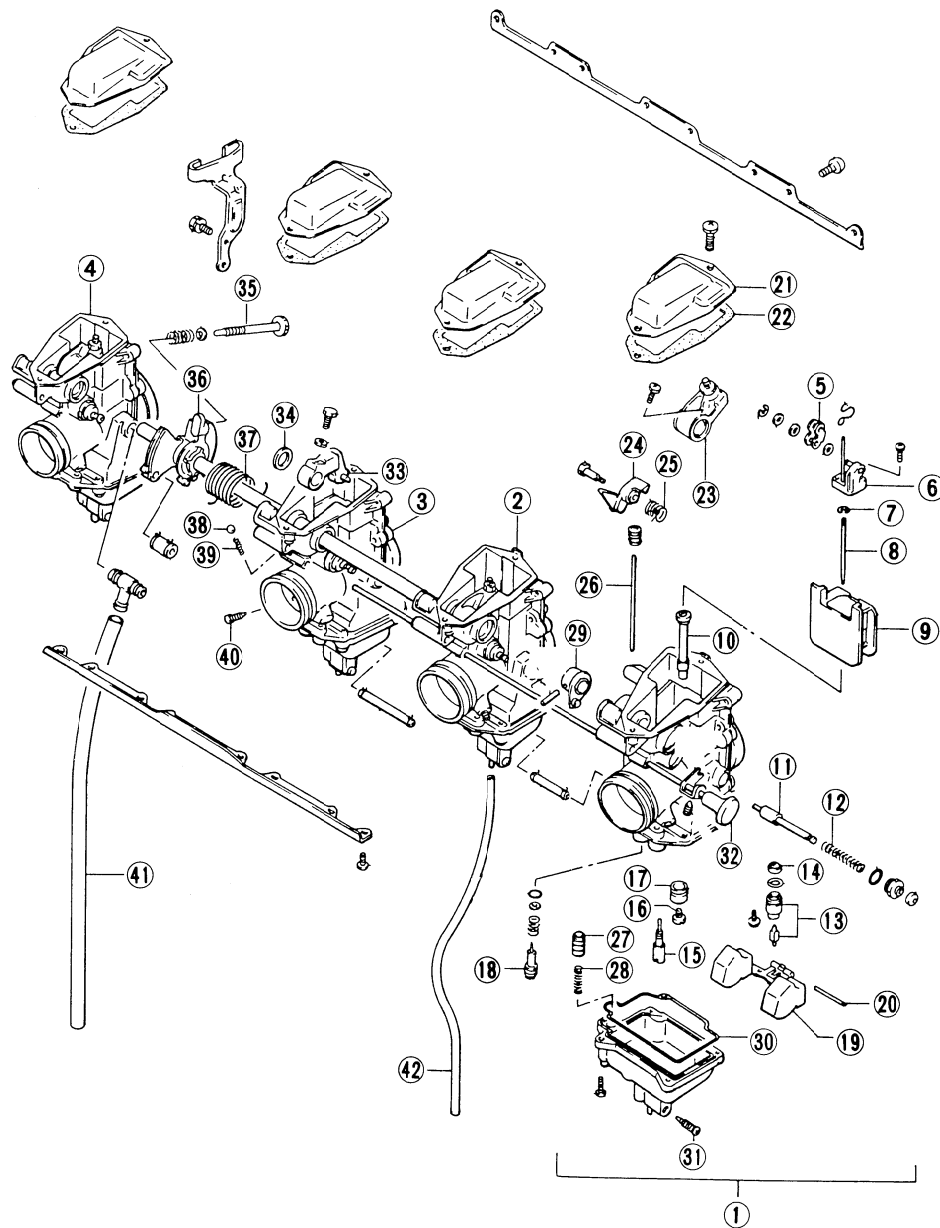


CARBURETOR

CARBURETOR CONSTRUCTION



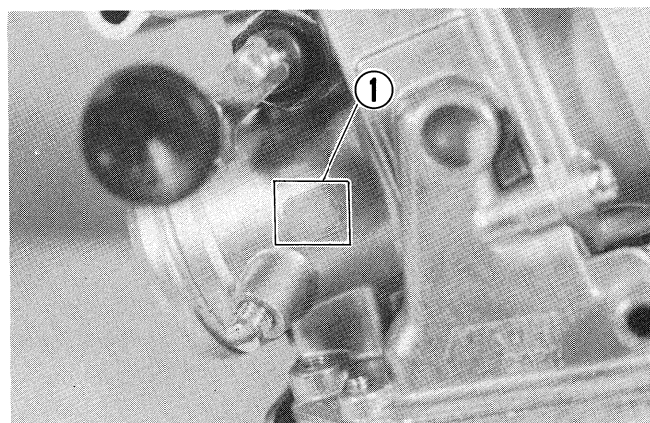
- | | | |
|-----------------------------|----------------------------|---------------------------------|
| ① Carburetor assembly No. 1 | ⑬ Needle valve | ③① Fuel drain screw |
| ② Carburetor assembly No. 2 | ⑭ Filter | ③② Starter shaft |
| ③ Carburetor assembly No. 3 | ⑮ Pilot jet | ③③ Throttle lever |
| ④ Carburetor assembly No. 4 | | ③④ Washer |
| ⑤ Plate | | ③⑤ Throttle stop screw |
| ⑥ Connector | | ③⑥ Throttle shaft lever |
| ⑦ E-ring | | ③⑦ Throttle valve return spring |
| ⑧ Jet needle | | ③⑧ Steel ball |
| ⑨ Throttle valve | | ③⑨ Spring |
| ⑩ Needle jet | | ④① Screw |
| ⑪ Starter plunger | | ④② Over flow hose |
| ⑫ Spring | ⑯ Main jet | |
| ⑬ Needle valve | ⑰ Main jet holder | |
| ⑭ Filter | ⑱ Pilot screw | |
| ⑮ Pilot jet | ⑲ Float | |
| | ⑲① Carburetor top cap | |
| | ⑲② Gasket | |
| | ⑲③ Throttle lever assembly | |
| | ⑲④ Accelerator lever | |
| | ⑲⑤ Spring | |
| | ⑲⑥ Accelerator rod | |
| | ⑲⑦ Accelerator plunger | |
| | ⑲⑧ Spring | |
| | ⑲⑨ Throttle shaft assembly | |
| | ⑲⑩ Seal ring | |

SPECIFICATION

ITEM		SPECIFICATION
Type		MIKUNI VM29SS
I.D. No.		27A01
Bore		29 mm
Idle r/min		1 100 ± 100 r/min.
Fuel level		2.0 ± 0.5 mm
Float height		14.2 ± 1.0 mm
Main jet	(M.J.)	# 97.5
Main air jet	(M.A.J.)	0.5 mm
Jet needle	(J.N.)	6DP2-3rd
Cut-away	(C.A.)	1.5 mm
Needle jet	(N.J.)	P-5
Pilot jet	(P.J.)	# 32.5
By-pass	(B.P.)	1.0 mm
Pilot outlet	(P.O.)	0.6 mm
Valve seat	(V.S.)	2.0 mm
Starter jet	(G.S.)	# 42.5
Pilot screw	(P.S.)	PRE-SET (½ turn back)
Pilot air jet	(P.A.J.)	1.6 mm
Throttle cable play		2.0 – 3.0 mm

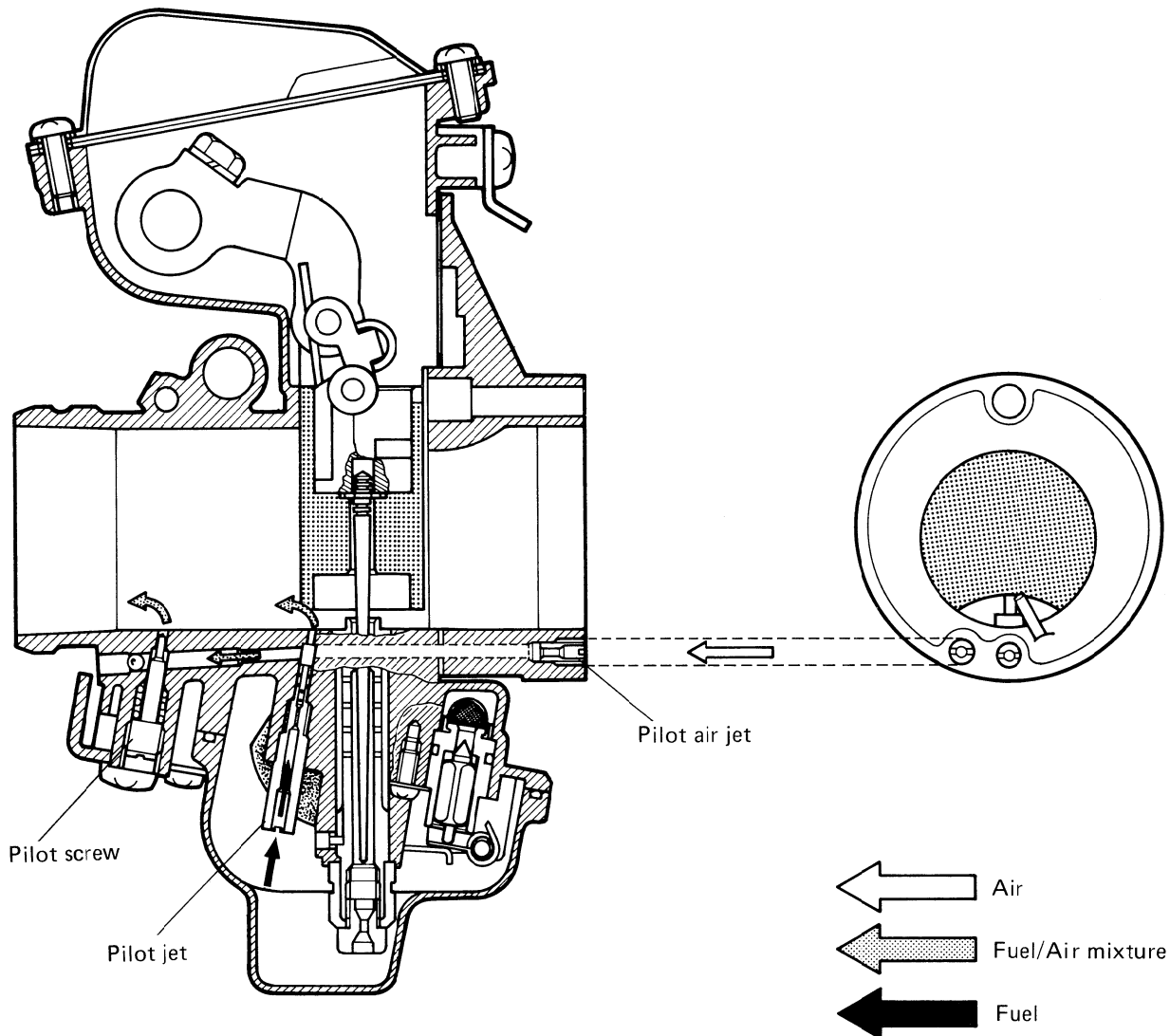
I.D. NO. LOCATION

Each carburetor has I.D. Number ① stamped on the carburetor body according to its specifications.



SLOW SYSTEM

This system supplies fuel during engine operation with throttle valve closed or slightly opened. The fuel metered by the pilot jet is mixed with the proper amount of air metered by pilot air jet. This mixture, rich with fuel, then goes up through pilot pipe to pilot screw. A part of the mixture is discharged into main bore out of by-pass port. The remainder is then metered by pilot screw and sprayed out into the main bore through pilot outlet.

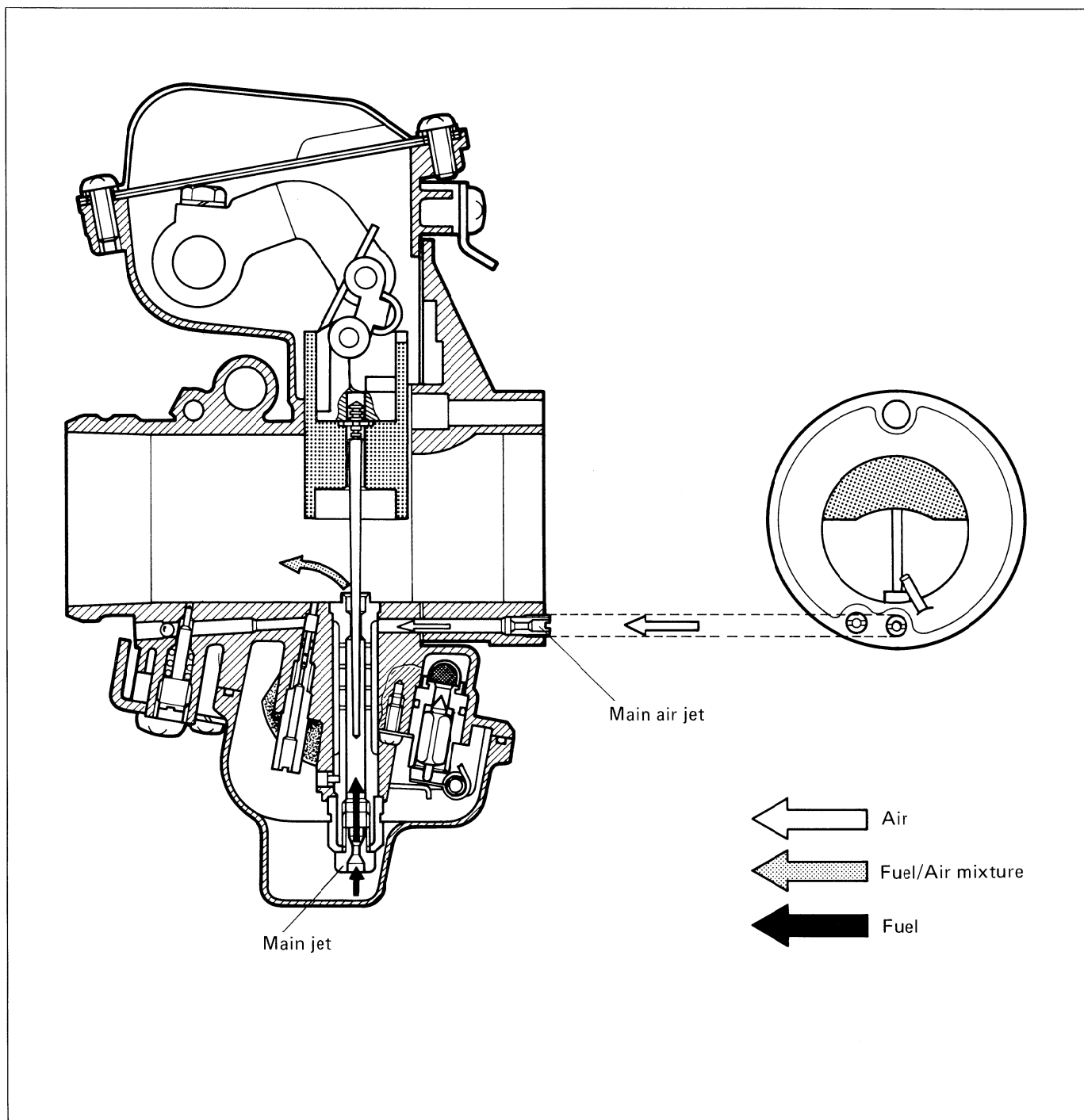


MAIN SYSTEM

This system supplies mixture during engine operation when the throttle valve is 1/4-Full open. The fuel in float chamber is metered by main jet, and the metered fuel enters needle jet, in which it mixes with air admitted through main air jet to form an emulsion.

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

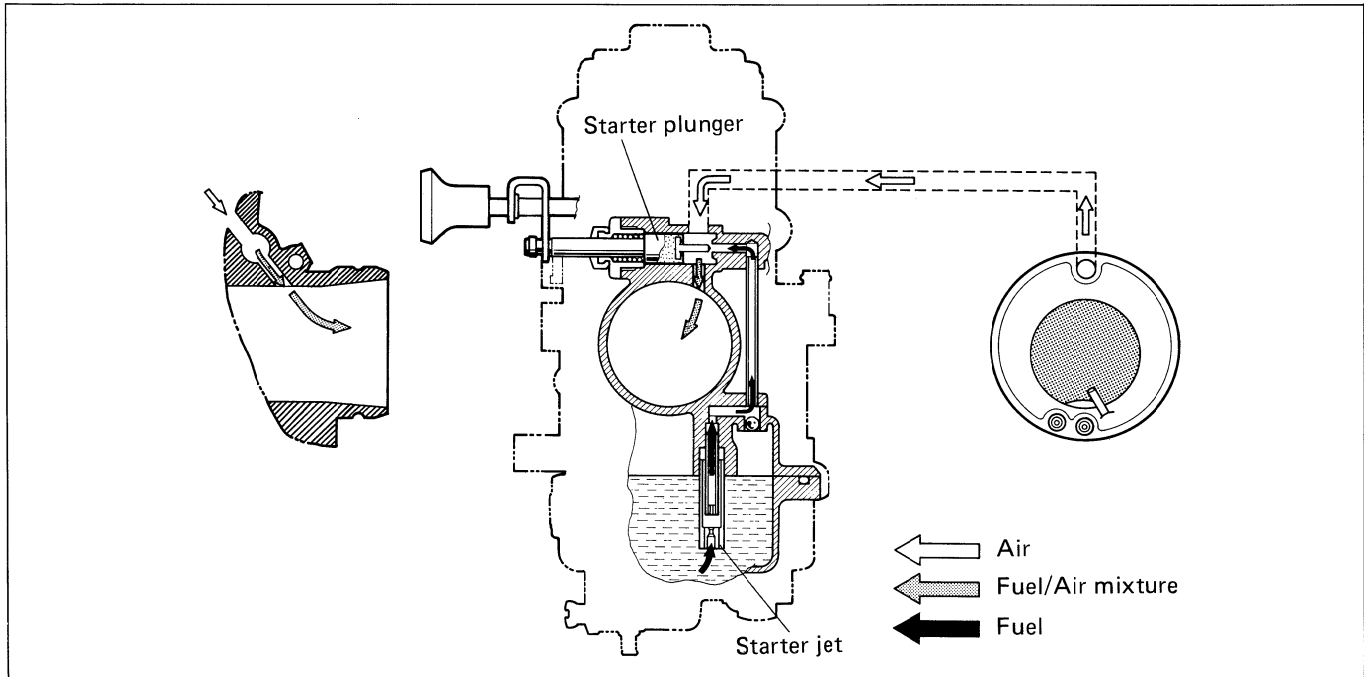
Mixture proportioning is accomplished in needle jet; the clearance through which the emulsified fuel must flow is large or small, depending ultimately on throttle valve position.



STARTER SYSTEM

When the starter plunger is slid, the fuel metered by the starter jet is mixed with air coming from the starter air passage.

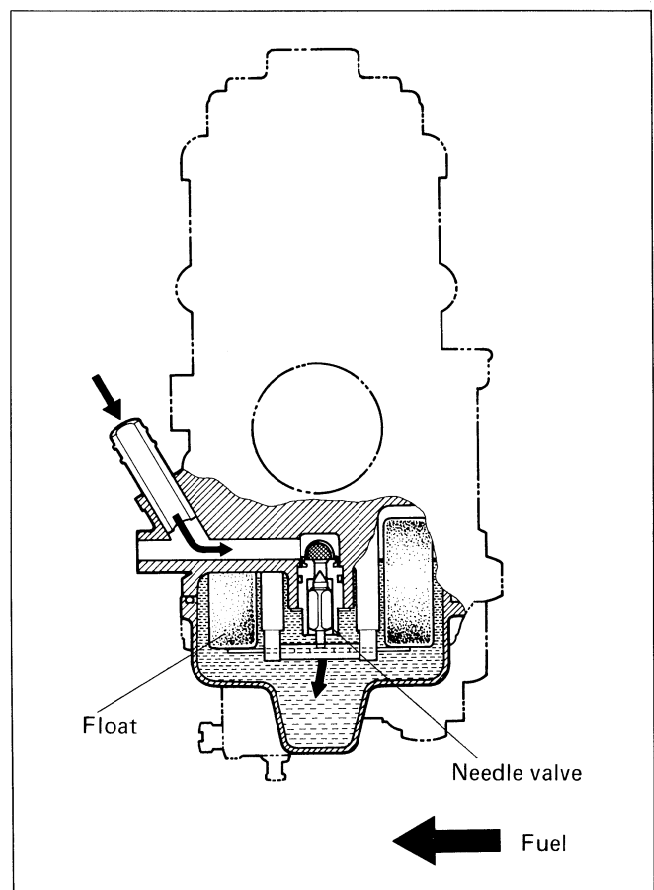
The successive mixing of fuel with air is such that a proper fuel/air mixture for starting is produced when the mixture is sprayed out through starter outlet into the main bore.



FLOAT SYSTEM

Floats and needle valve are associated with the same mechanism, so that, as the floats move up and down, the needle valve also moves likewise when fuel level is up in float chamber, floats are up and needle valve remains pushed up against valve seat. Under this condition, no fuel enters the float chamber.

As the fuel level falls, floats go down and needle valve unseat itself to admit fuel into the chamber. In this manner, needle valve admits and shuts off fuel alternately to maintain a practically constant fuel level inside the float chamber.



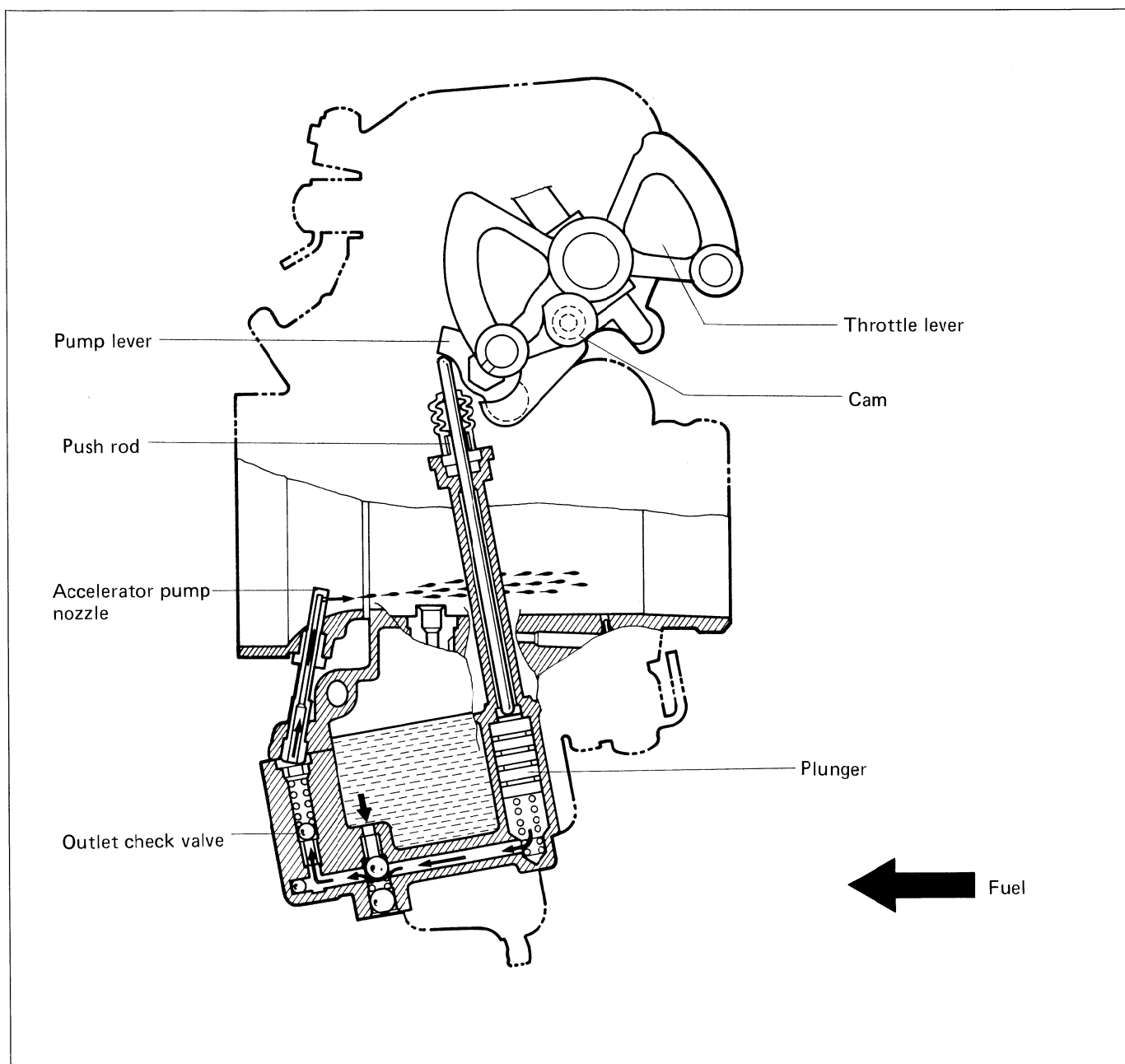
ACCELERATOR PUMP

When the throttle grip is suddenly and sharply opened, an excessive amount of air is intaken and the fuel/air mixture will transiently become lean or thin. The function of the acceleration pump is to provide an additional fuel flow in order to compensate for the lean fuel/air mixture, thereby attaining a proper fuel/air mixture and improving the engine response.

As illustrated below, when the throttle valve is suddenly opened, the cam of the throttle valve shaft push down the push rod via the pump lever. Consequently, the fuel in the pump chamber is fed through the outlet passage and the outlet check valve (by pushing it up) to the accelerator pump nozzle which injects the fuel into the main bore.

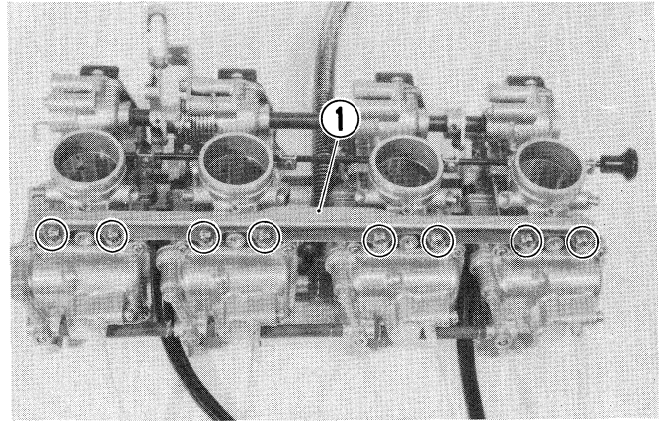
The outlet passage of the No. 1 and No. 3 carburetors is connected to the outlet passages of the other carburetors with rubber pipes.

When the throttle grip is closed, the plunger return spring pushes up the plunger, the fuel of the float chamber is filled with fuel.

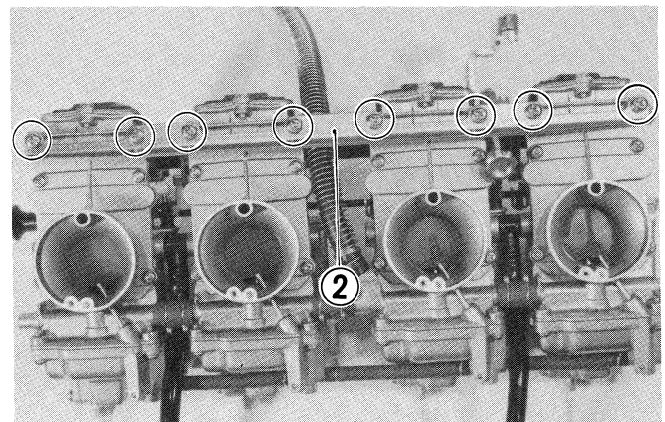


DISASSEMBLY

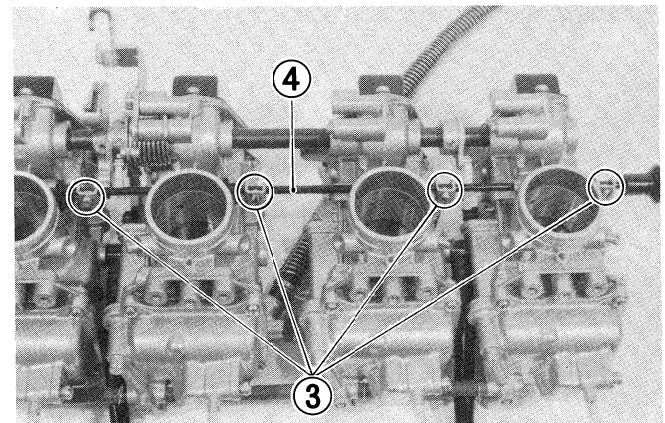
- Remove the carburetor set lower plate ① by unscrewing eight bolts.



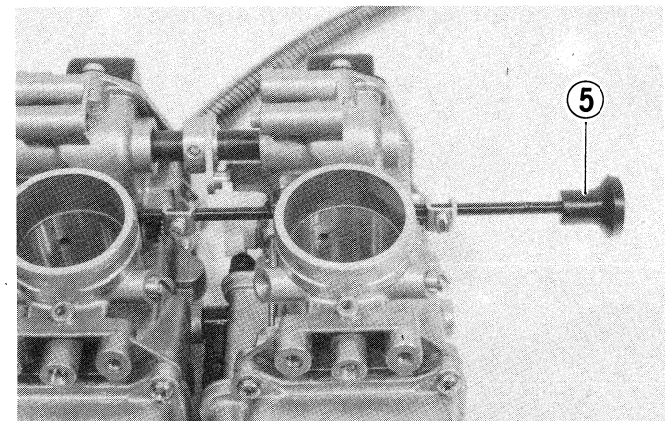
- Remove the carburetor set upper plate ② by unscrewing eight bolts.



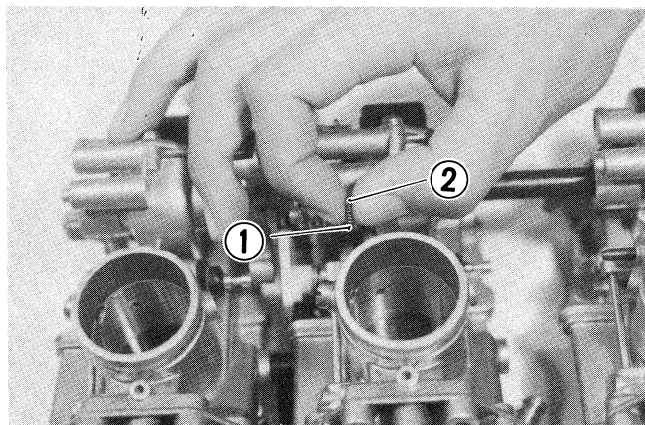
- Loosen the four screws ③ holding the starter shaft ④.



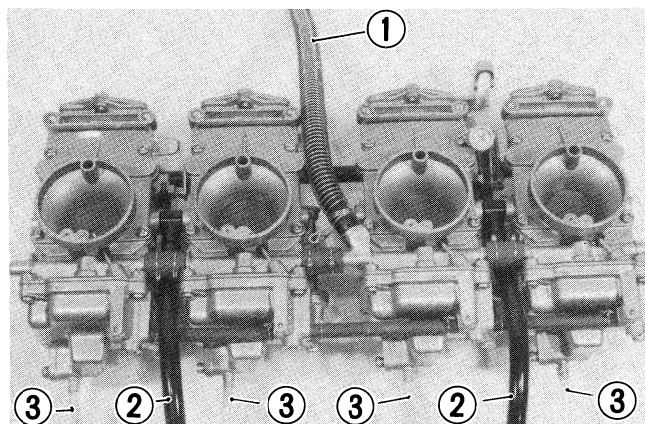
- Pull out the starter knob ⑤.



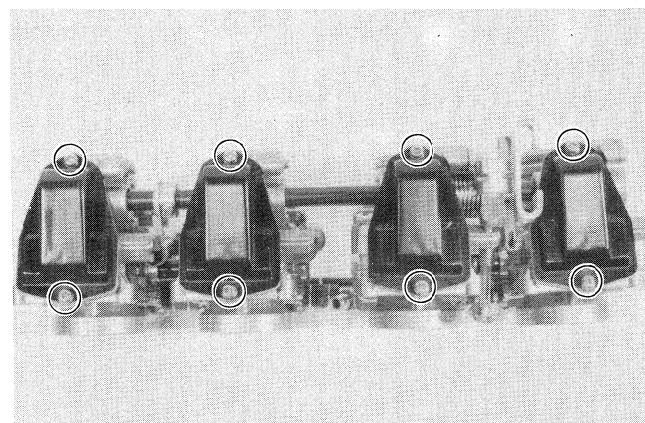
- Take out the spring ① and steel ball ② from the No. 1 and No. 3 carburetors.



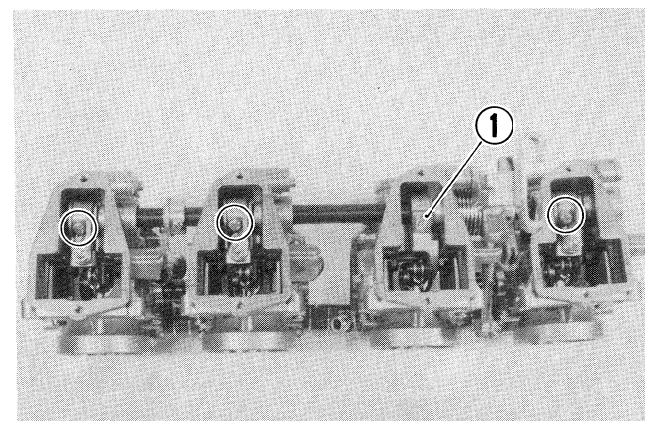
- Disconnect the three hoses (fuel ①, air vent ② and overflow ③).



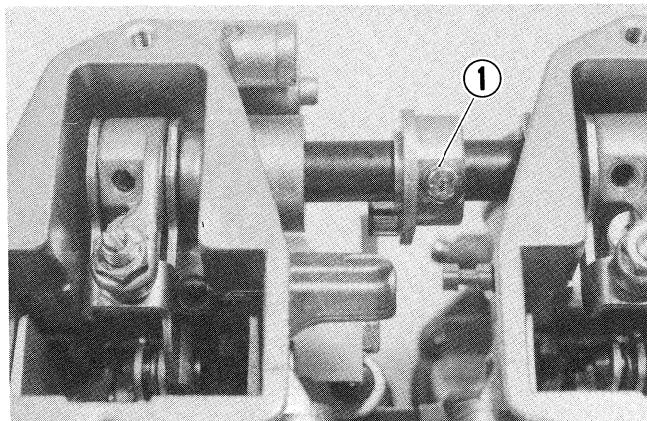
- Remove the four top caps by unscrewing eight screws.



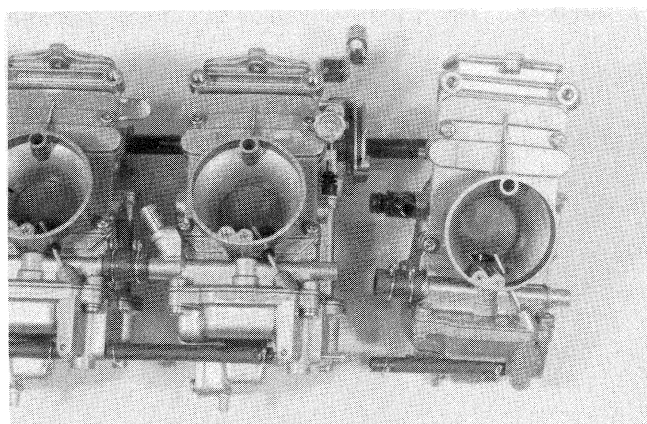
- Remove the three screws and one bolt ①.



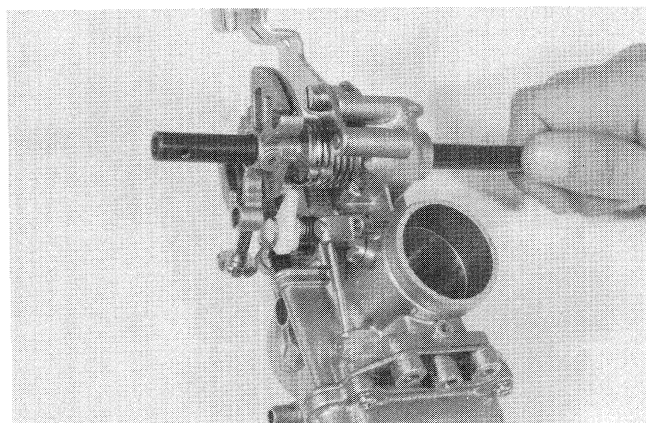
- Remove a screw ① holding the throttle shaft.



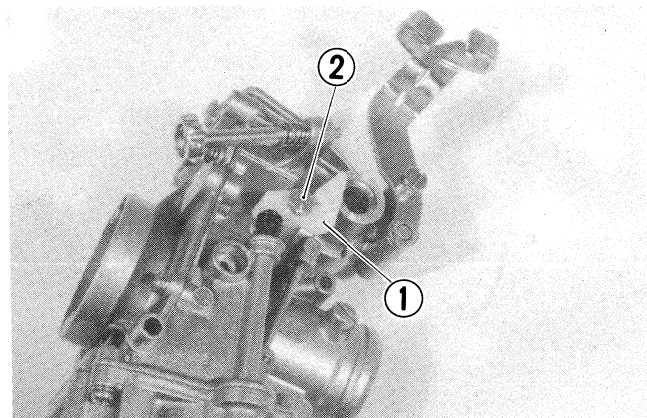
- Separate the four carburetors by disconnecting the hoses.



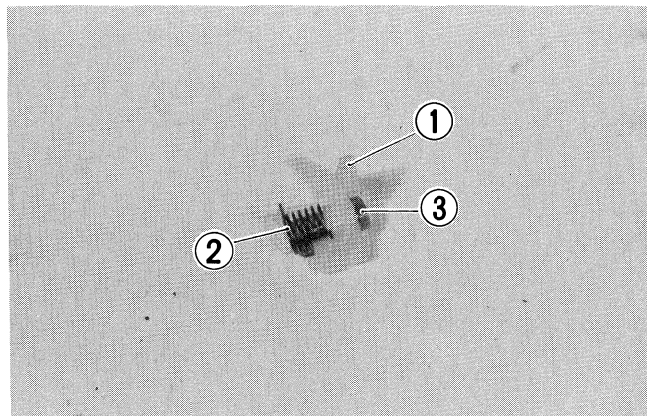
- Pull out the throttle valve shaft from the No. 3 carburetor.



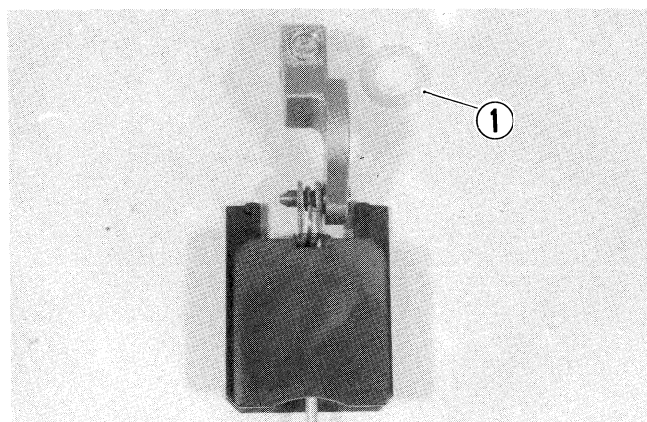
- Remove the accelerator pump lever ① by unscrewing the bolt ②.



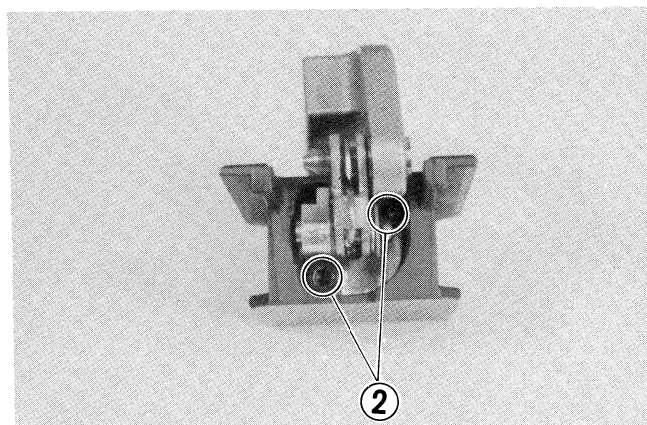
- ① Accelerator pump lever
- ② Spring
- ③ Bolt



- Take out the throttle valve assembly and the plastic washer ①.

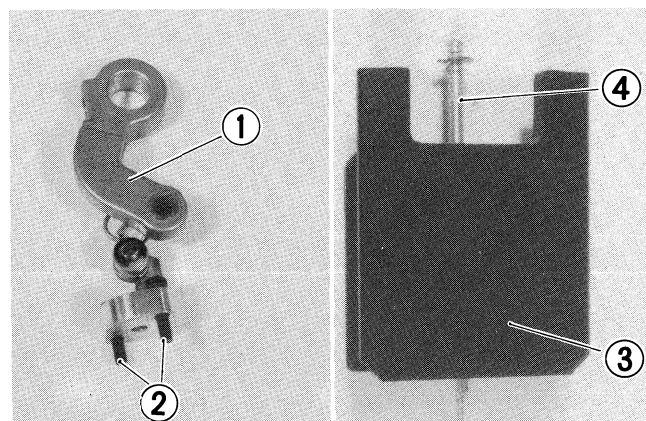


- Remove the two allen screws ②.

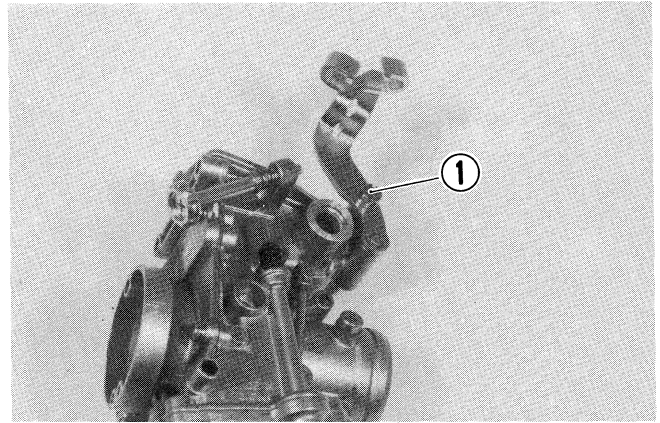


- Separate the throttle valve related parts.

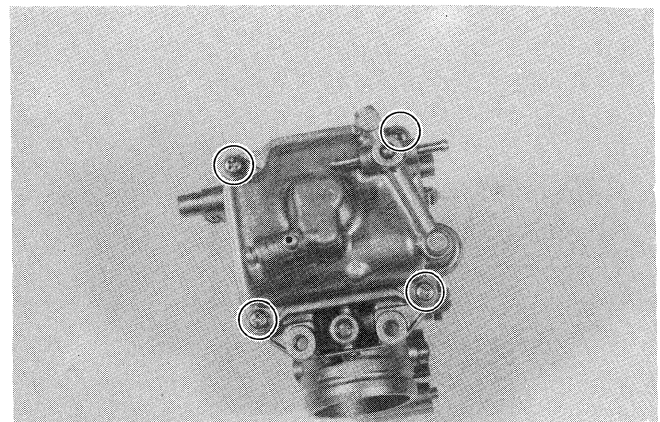
- ① Throttle valve holder
- ② Allen screw
- ③ Throttle valve
- ④ Jet needle



- Remove the throttle lever bracket by unscrewing the screw ①.

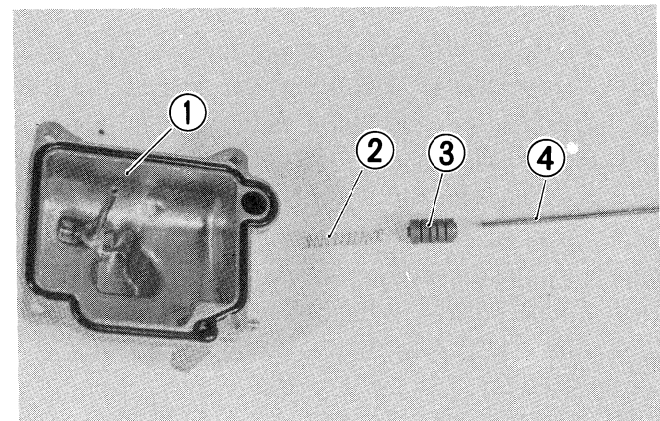


- Remove the float chamber body by unscrewing four screws.



- Separate the accelerator parts from the float chamber body.

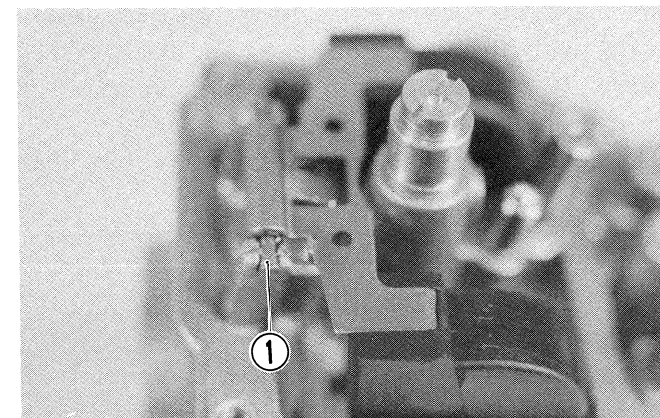
- ① Float chamber body
- ② Spring
- ③ Plunger
- ④ Rod



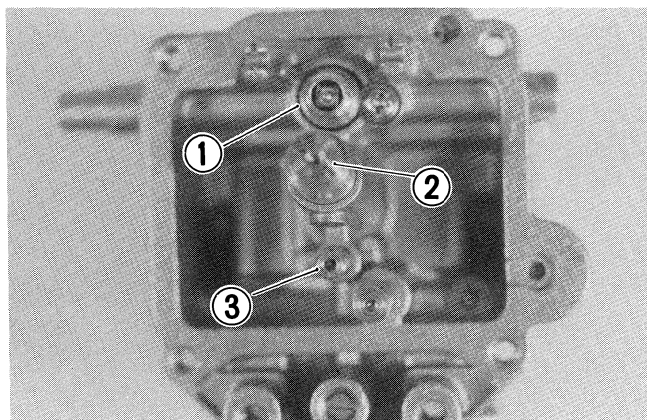
- Pull out the float pin ① and remove the float.

CAUTION:

When removing the float pin, be careful not to damage the carburetor body.



- Remove the needle valve ①, main jet ② and pilot jet ③.



- Check following items for any damage or clogging.

- * Pilot jet
- * Main jet
- * Main air jet
- * Pilot air jet
- * Needle jet air bleeding holes
- * Float
- * Needle valve mesh and O-ring
- * Gasket and O-ring
- * Pilot outlet and bypass hole

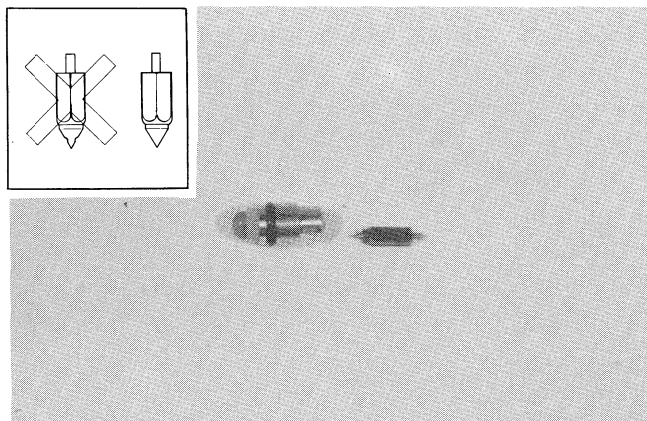
- * Fuel pipe O-rings
- * Accelerator pump

NOTE:

Identity the four throttle valves removed as No. 1 through No. 4, in order to make sure each will be restored to the carburetor from which it was taken out.

NEEDLE VALVE INSPECTION

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

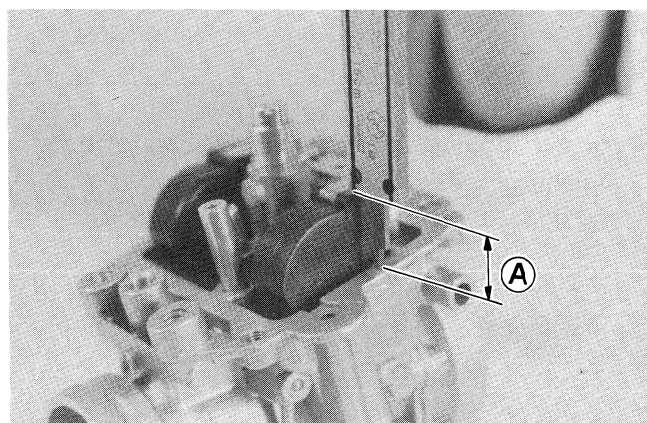


FLOAT HEIGHT ADJUSTMENT

To check the float height, invert the carburetor body, with the float arm kept free, measure the height ① while float arm is just in contact with needle valve by using calipers.

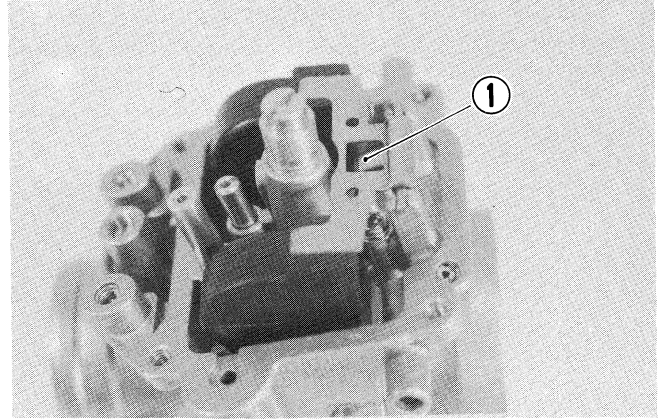
Bend the tongue ① as necessary to bring the height ① to this value.

Float height ①	14.2 ± 1.0 mm
09900-20102	Vernier calipers

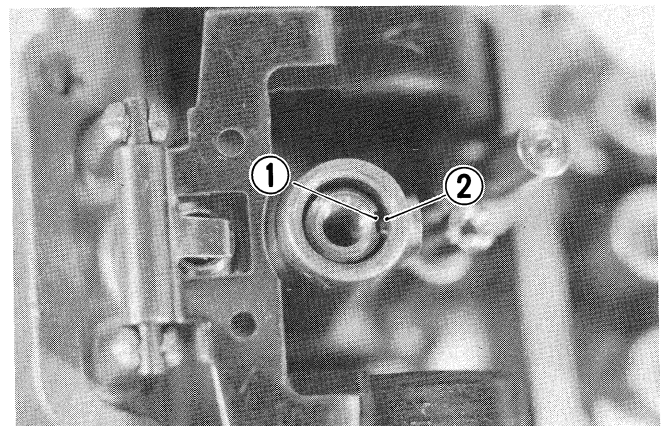


NOTE:

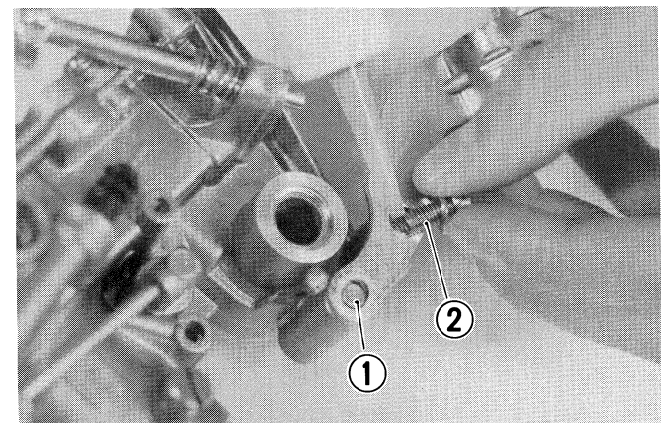
Be sure not to compress the spring in the needle valve.

**REASSEMBLY**

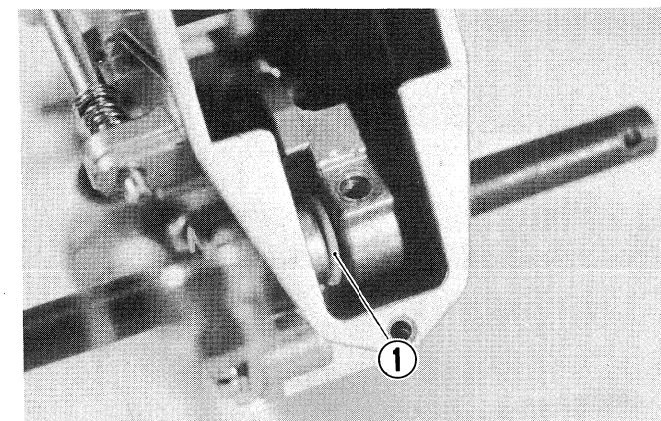
- Align the groove ① of the needle jet with the pin ②.



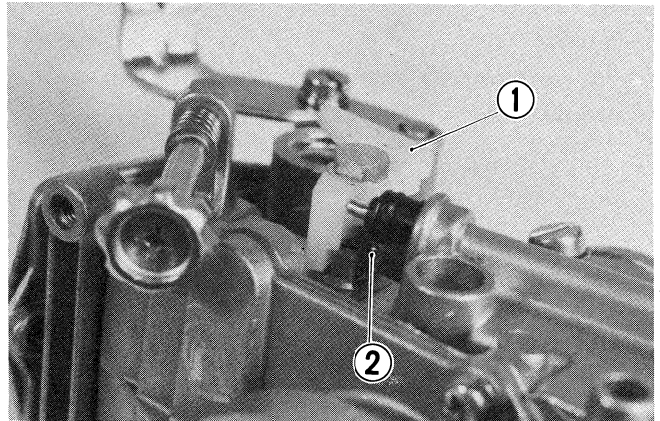
- When installing the throttle lever bracket, align the hole ① and apply thread lock cement to the screw ②.



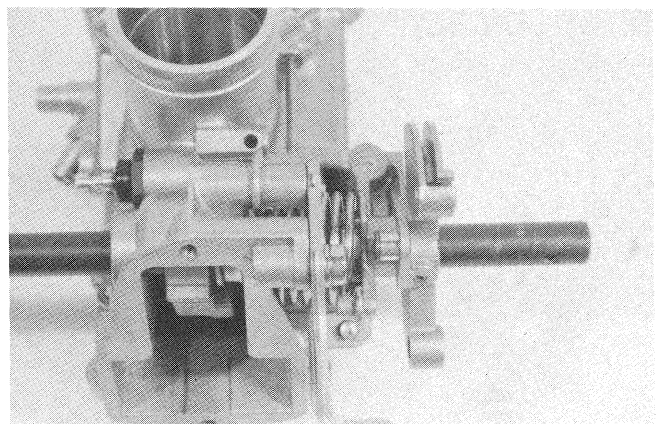
- When inserting the throttle shaft to the throttle valve bracket of the No. 3 carburetor, be sure to install the plastic washer ①.



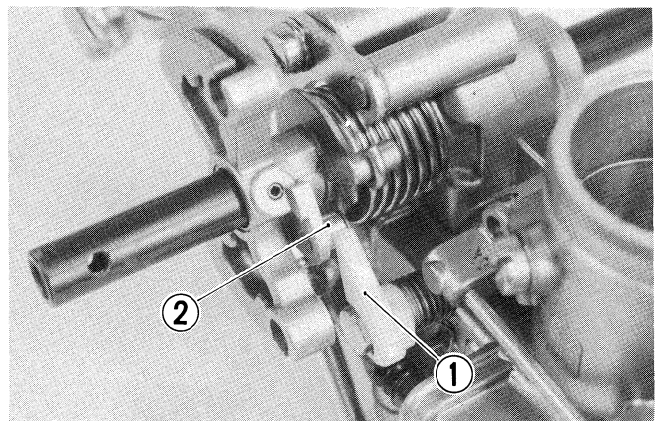
- Correctly install the accelerator pump lever ① and spring ② for the No. 1 and No. 3 carburetor.



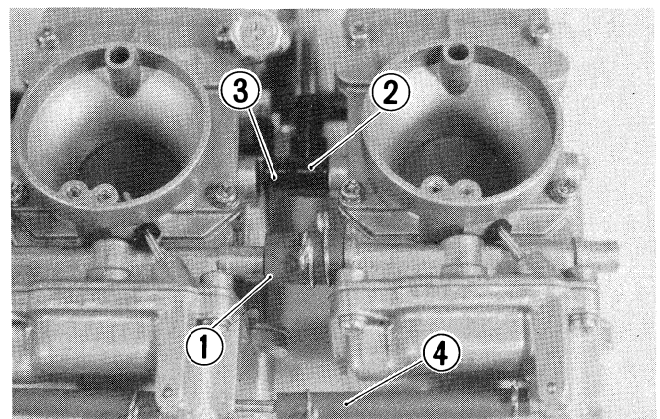
- Correctly install the throttle lever return spring for the No. 3 carburetor.



- Correctly position the accelerator pump lever ① on the cam ② of the throttle lever for the No. 1 and No. 3 carburetor.



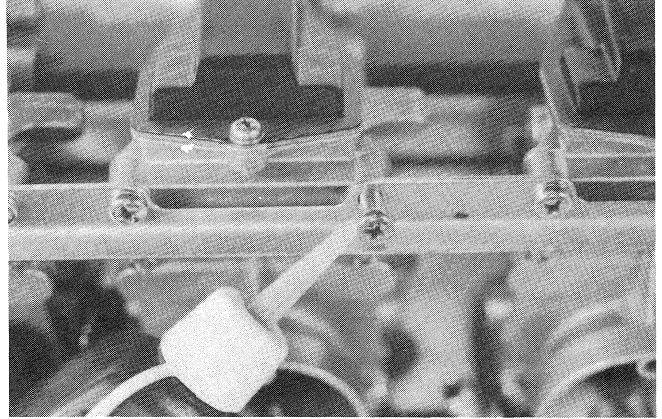
- When engaging four carburetors, be sure to fix fuel pipe ① with clips, air vent connector ② with O-rings ③ and accelerator pipe ④ with clips properly.



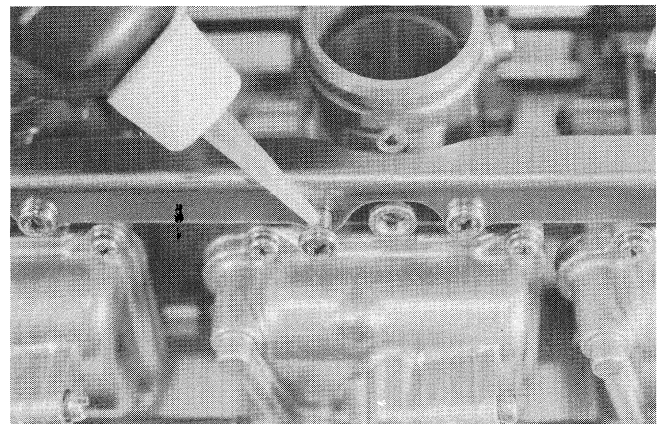
- Apply thread lock "1342" to the upper and lower plate screws.

99000-32050

Thread lock "1342"



- After all work is completed, mount the carburetors on the engine and the following adjustments are necessary.
- * Engine idle r/min Page 2-10
- * Throttle cable play Page 2-10
- * Balancing carburetors Page 4-17

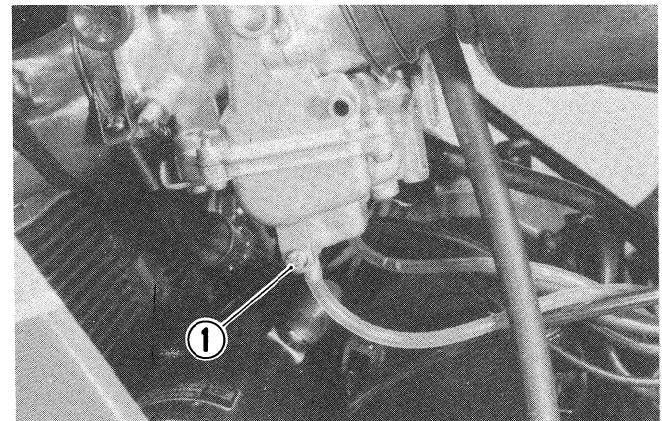


FUEL LEVEL INSPECTION

- Remove carburetor drain plug ① and install the fuel level gauge ②.

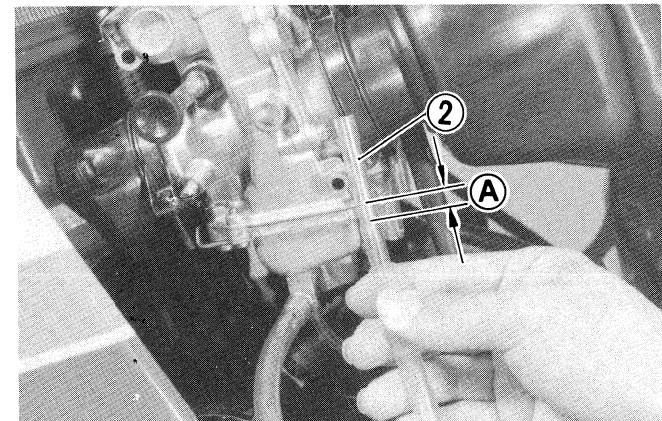
09913-14511

Fuel level gauge



- Run the engine at the idling speed (1 000—1 200 r/min), and measure the distance ③ with the middle line of the level gauge aligned with the mating surface of float bowl as shown in photo. ③ should be within the specified range.

Distance ③

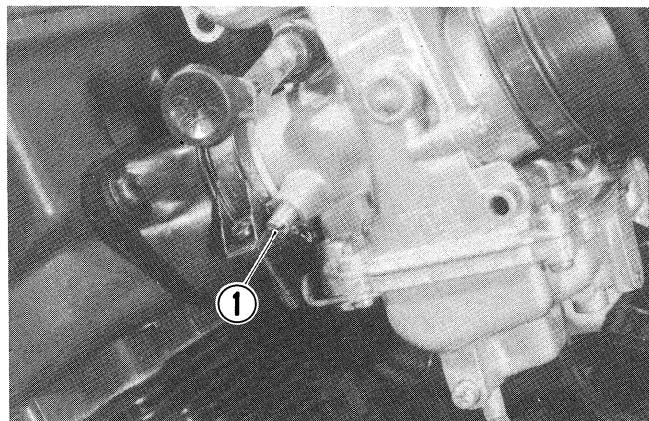
 $2.0 \pm 0.5 \text{ mm}$ 

BALANCING CARBURETORS

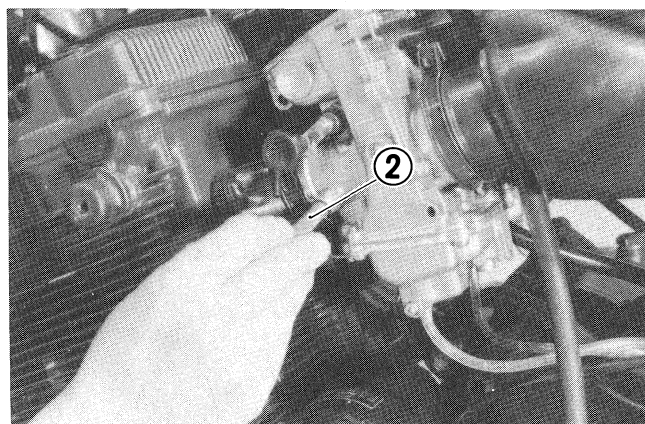
Check the four carburetors for balancing according to the following procedures.

As the first step, calibrate the carburetor balancer gauge as follows.

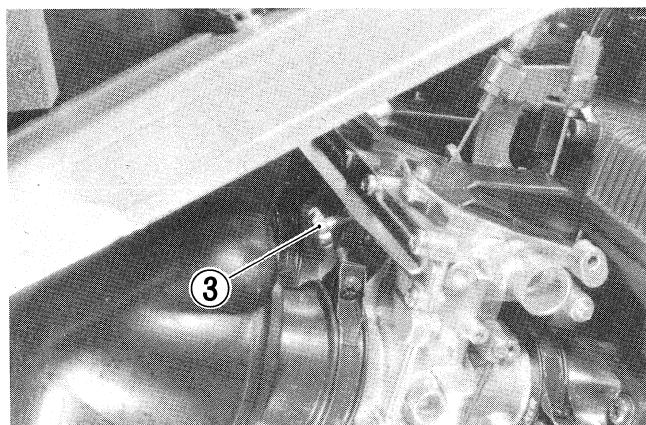
09913-13121	Carburetor balancer
09913-12710	Adaptor



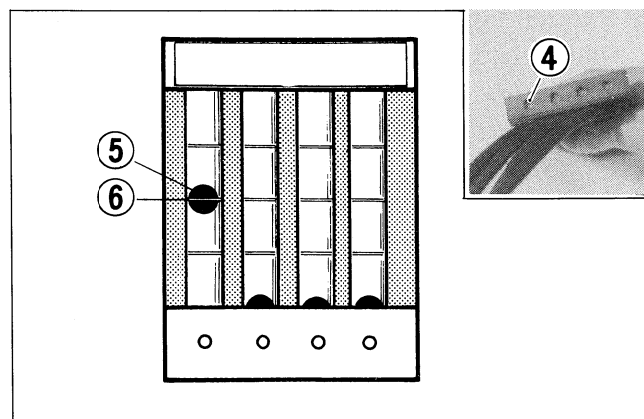
- Start up the engine and run it in idling condition for warming up.
- Stop the warmed-up engine. Remove the vacuum inlet screw ① for No. 1 or No. 4 cylinder and install adaptor ② with O-ring.



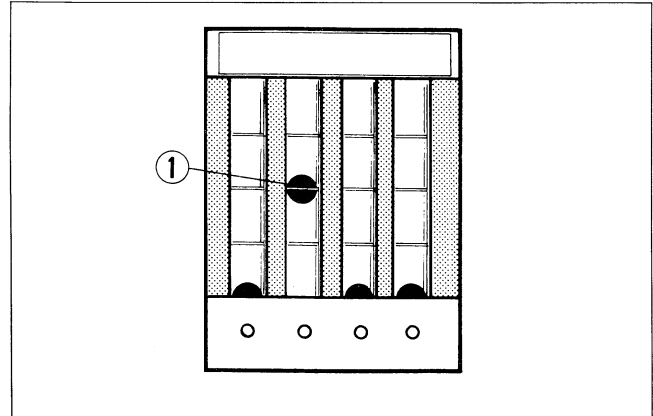
- Connect one of the four rubber hoses of the balancer gauge to this adaptor, and start up the engine, and keep it running at 1750 r/min by turning throttle stop screw ③.



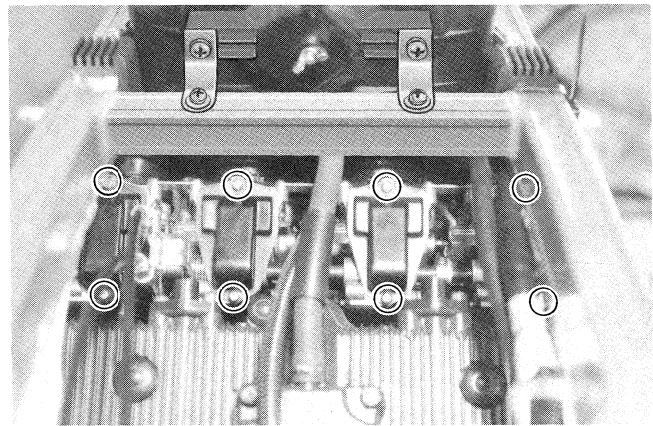
- Turn the air screw ④ of the gauge so that the vacuum acting on the tube of that hose will bring the steel ball ⑤ in the tube to the center line ⑥.



- After making sure that the steel ball stays steady at the center line, disconnect the hose from the adaptor and connect the next hose to the adaptor. Turn air screw to bring the other steel ball ① to the center line.
- Repeat the process on the third and fourth tubes. The balancer gauge is now ready for use in balancing the carburetors.

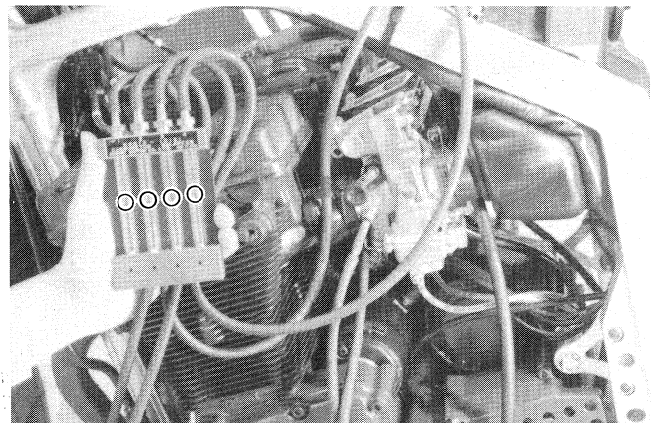


- Remove the four carburetor top caps by unscrewing respective screws.



Remove the respective vacuum inlet screws and insert the adaptor in the holes. Connect the balancer gauge hoses to these adaptors, and balance the four carburetors as follows.

- Start up the engine, and keep it running at 1750 r/min.
- A correctly adjusted carburetor has the steel balls in the Nos. 1 through 4 tubes at the same level, as shown.
- If the steel balls are not in correct positions, loosen the lock nut and adjust the throttle valve adjusting screw correctly. After adjusting, tighten the lock nut securely.

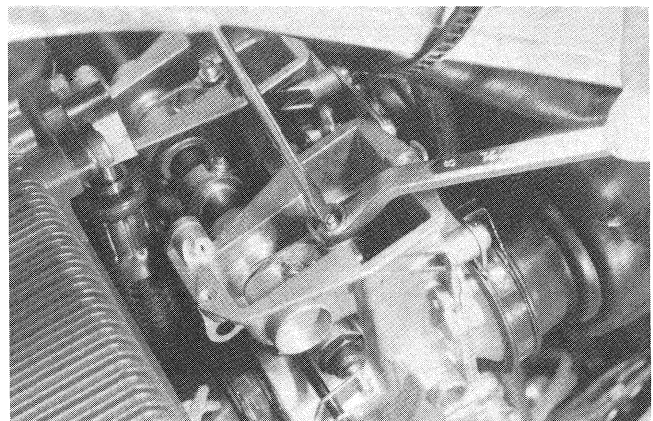


Adjusting order:

No. 2 carb. → No. 1 carb. → No. 4 carb.

NOTE:

When removing the vacuum inlet screws, be careful not to drop them.



- After balancing the carburetors, set its speed between 1 000 and 1 200 r/min by turning the throttle stop screw ①.

CAUTION:

Do not disturb the pilot screw. This component is pre-set at the factory by the very specialized equipment.

NOTE:

- * If an adjustment is required, it is suggested that the fuel tank is removed, and fuel should be supplied by a separate fuel tank.

LUBRICATION SYSTEM

OIL PRESSURE

Start the engine and check if the oil pressure indicator light is turned on. If it keeps on lighting, check the oil pressure indicator light circuit. If it is in good condition, check the oil pump pressure in the following manner:

- Install the oil pressure gauge in the position shown in the figure: (at the oil pan)
- Warm up the engine as follows:
Summer 10 min. or so at 2000 r/min
Winter 20 min. or so at 2000 r/min
- After warming up operation, increase the engine speed to 3000 r/min, and read the oil pressure gauge.

Oil pressure specification

Above 300 kPa (3.0 kg/cm²)
Below 600 kPa (6.0 kg/cm²)
at 3000 r/min. Oil temp. at 60°C (140°F)

09915-74510

Oil pressure gauge

NOTE:

Engine oil must be warmed up to 60°C (140°F) when checking the oil pressure.

If checking the oil pressure at the main gallery of the engine right side, use the adaptor.

09915-74540

Adaptor

