SUZUKI

W TYPE CARBURETOR SERVICE MANUAL

For Model

GT 380
GT 550
GT 750

FOREWORD

This manual is published for the information and use of the personnel who are concerned in the maintenance of the BS40, VM24SC and VM28SC Carburetors used on the model 1974 Suzuki GT380L, GT550L and GT750L. The manual applies only to the carburetors and is prepared for use with the manuals published for the motorcycles.

It is arranged in two sections. The section I contains the information on BS40 carburetor used on GT750. The section II covers VM24SC and VM28SC offered for GT380 and GT550. Each section has its own index and contains a description of the major components and their functions as well as maintenance.

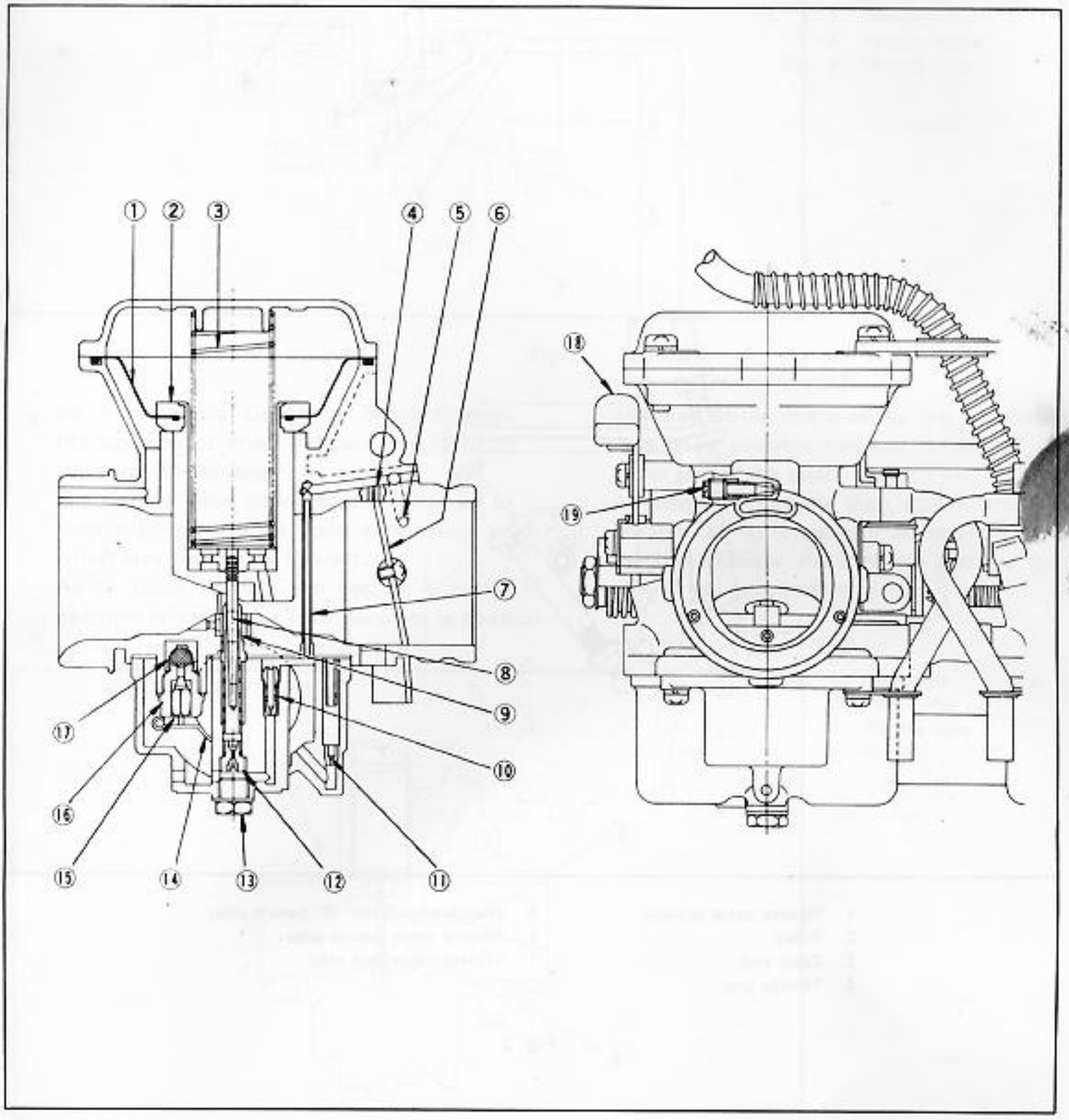
All information, illustrations and specifications contained in this manual are based on the products manufactured before Nov., 1974. Any changes, deletions or additions to this manual will be followed by the Service Bulletin.

Feb., 1974

SUZUKI MOTOR CO., LTD.

CHAPTER 1. DESCRIPTION

The Model BS40 Carburetor currently used on the Suzuki GT750L is an automatic variable-venturi carburetor which is controlled by vacuum caused by engine suction. It includes an independent starter system and a forced throttle-return system which consists of a pull cable on the return side and linkage to force the throttle valve to the closed position.

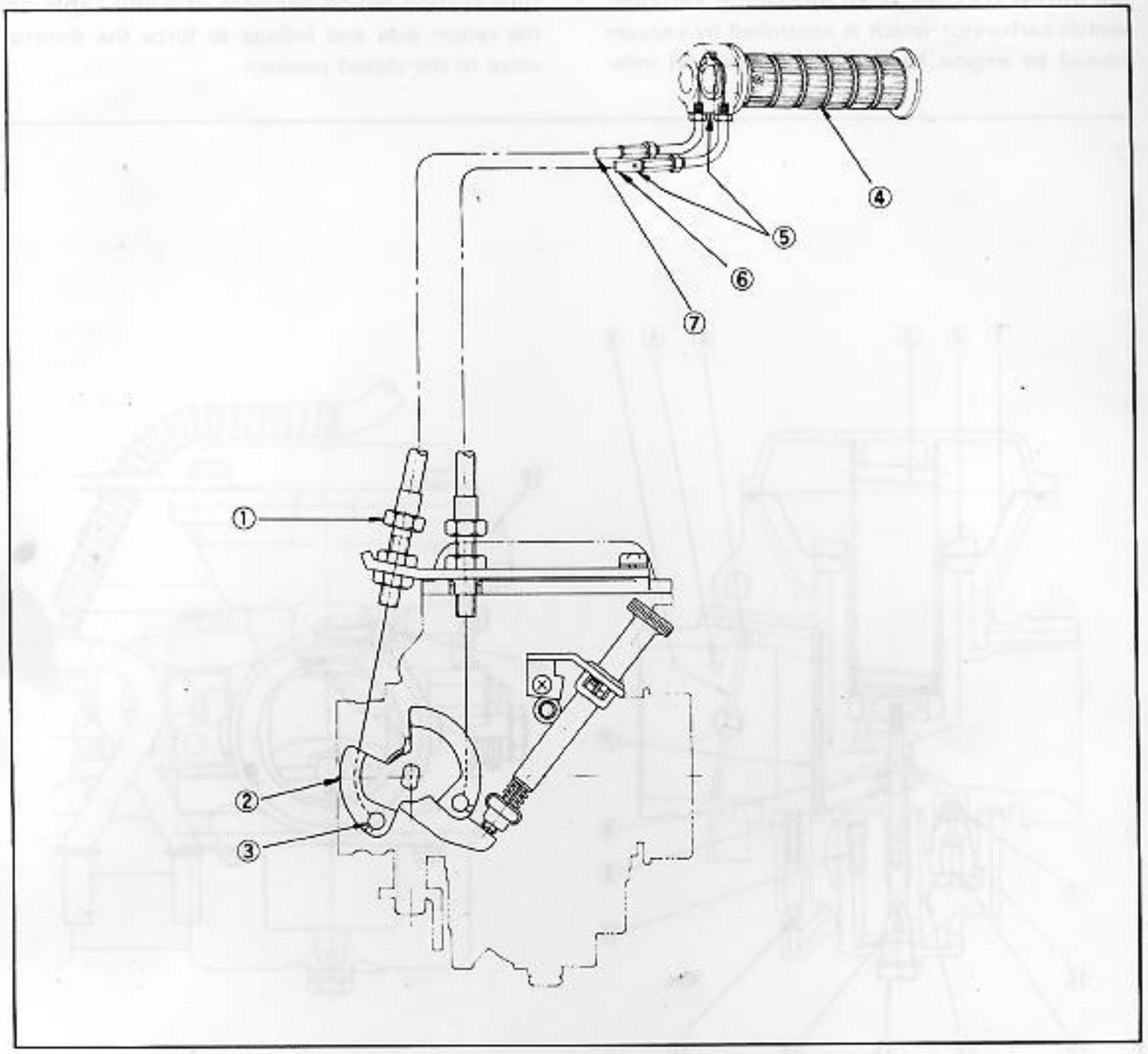


1. Diaphragm
2. Piston valve
3. Piston valve spring
4. Bypass
5. Pilot outlet
6. Throttle valve
7. Pilot pipe
8. Jet needle
9. Needle jet
10. Pilot jet
11. Starter jet
12. Main jet
13. Drain plug
14. Float
15. Needle valve
16. Valve seat
17. Fuel strainer
18. Choke lever
19. Pilot screw

Fig. 1

1. Operation

a) Forced throttle-return system



1. Throttle cable adjuster
2. Pulley
3. Cable end
4. Throttle grip
5. Identification letter "R" (return side)
6. Throttle cable (return side)
7. Throttle cable (pull side)

Fig. 2

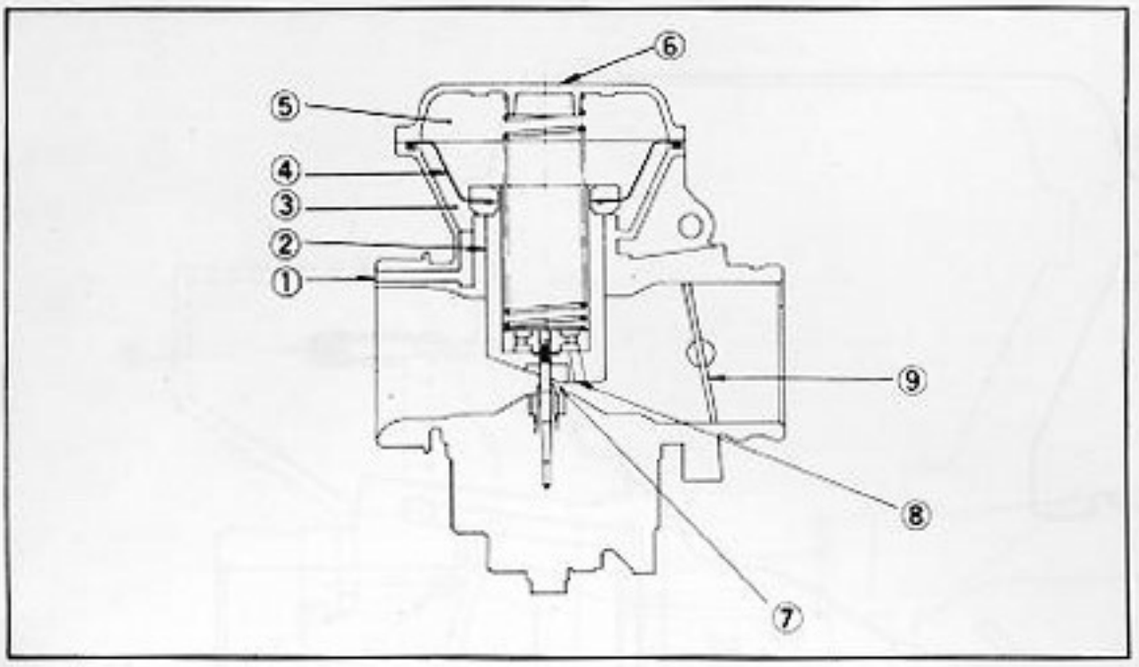
The forced throttle-return system provides an added means of returning the throttle valve to the closed position. Fig. 1 shows an exaggerated view of the system to understand the operation that takes place when the system is operated.

When the throttle grip is turned inward, the pulley is pulled up by a pull side cable. The throttle valve is opened.

Now, when the grip is twisted outward, a spring produces some further closing of the throttle valve and spring-loads it in the closed position.

The system forces the throttle valve toward the closed position by a return side cable in case the valve has stuck or the spring broken.

b) Piston valve action



1. Inlet
2. Piston valve
3. Air chamber
4. Diaphragm
5. Vacuum chamber
6. Mixing chamber top
7. Venturi
8. Vacuum intake
9. Throttle valve

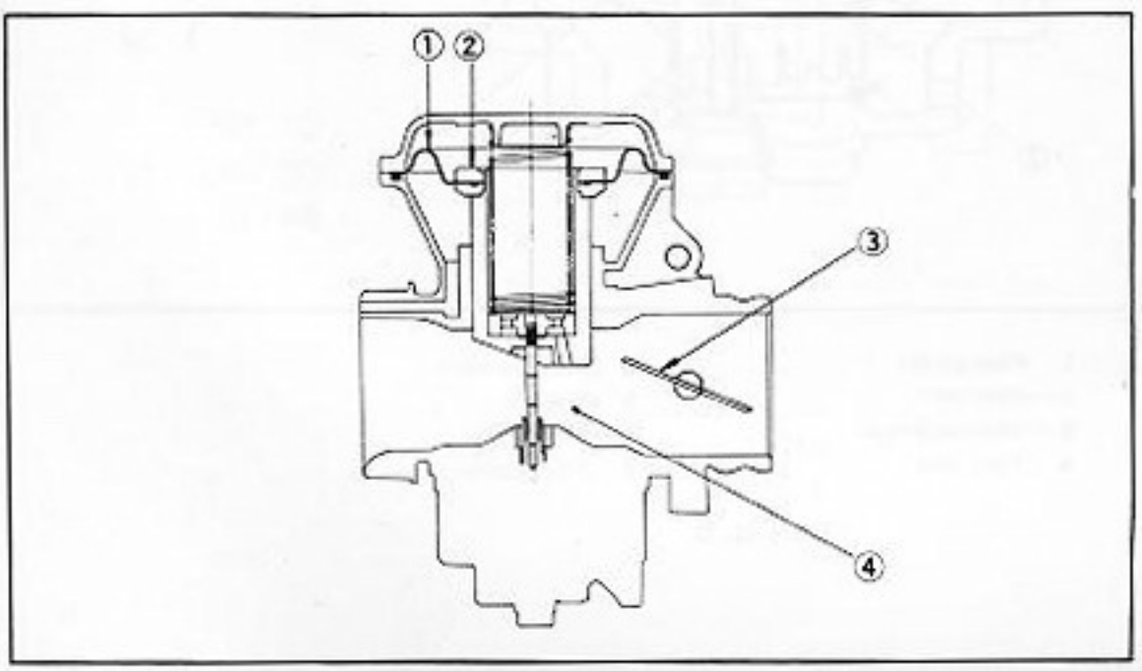
Fig. 3

Air from the air cleaner is drawn through the carburetor inlet, venturi, and throttle valve into the engine.

The throttle valve allows more or less air to flow through the air horn depending on which way the grip is twisted.

As air flows through the venturi, a partial vacuum is created. This vacuum is then admitted to the space above the diaphragm through a passage (vacuum intake) at the lower end of the piston valve.

Atmospheric pressure then acts on the diaphragm, lifting it up until an equilibrium is reached between the pressure and the tension of the piston valve spring.



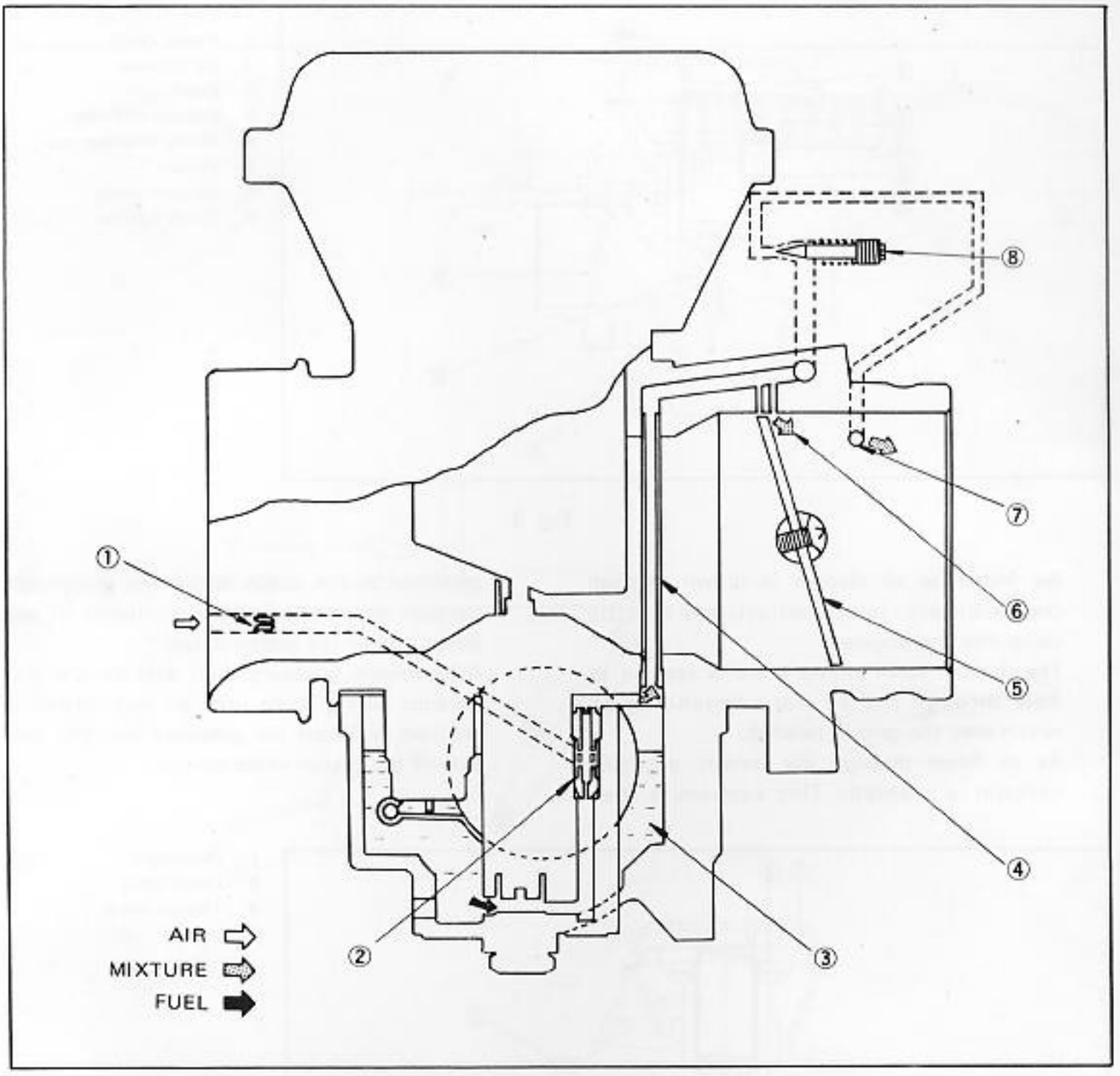
1. Diaphragm
2. Piston valve
3. Throttle valve
4. Venturi

Fig. 4

If the throttle is fully opened, the engine runs at its maximum speed; i.e., it draws the maximum amount of air through the carburetor. The speed of the air flowing through the venturi is also at the maximum, producing the maximum vacuum at the venturi. Under such condition, the piston valve is rested against the mixing chamber top, being prevented from taking further upward movement.

The diameter of the venturi will be at the maximum.

c) Slow system



1. Pilot air jet
2. Pilot jet
3. Float chamber
4. Pilot pipe
5. Throttle valve
6. Bypass
7. Pilot outlet
8. Pilot screw

Fig. 5

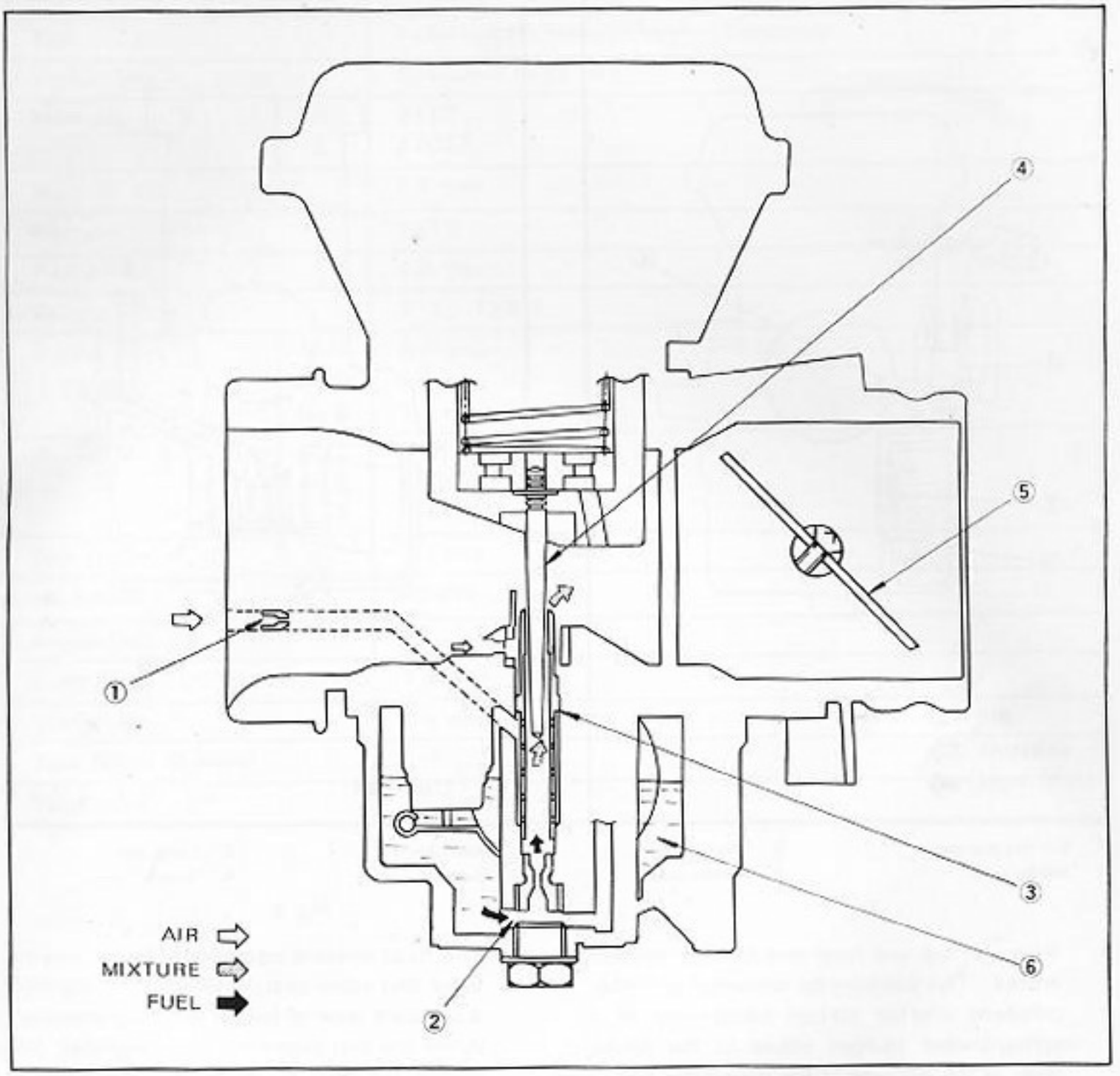
When the throttle valve is closed or only slightly opened, the speed of air flowing through the air horn is low. As the result, there will be very little vacuum at the venturi to draw fuel from the needle jet.

The slow system supplies fuel during operation with the throttle closed or slightly opened.

The fuel from the float chamber is first metered by the pilot jet where it enters air flowing through the pilot air jet.

This rich mixture then goes up through the pilot pipe to the pilot screw. A part of the mixture is discharged out of the bypass port before it reaches the pilot screw. The remaining mixture, after metered by the pilot screw, will discharge out through the pilot outlet into the carburetor main bore.

d) Main system



1. Main air jet
2. Main jet
3. Needle jet
4. Jet needle
5. Throttle valve
6. Float chamber

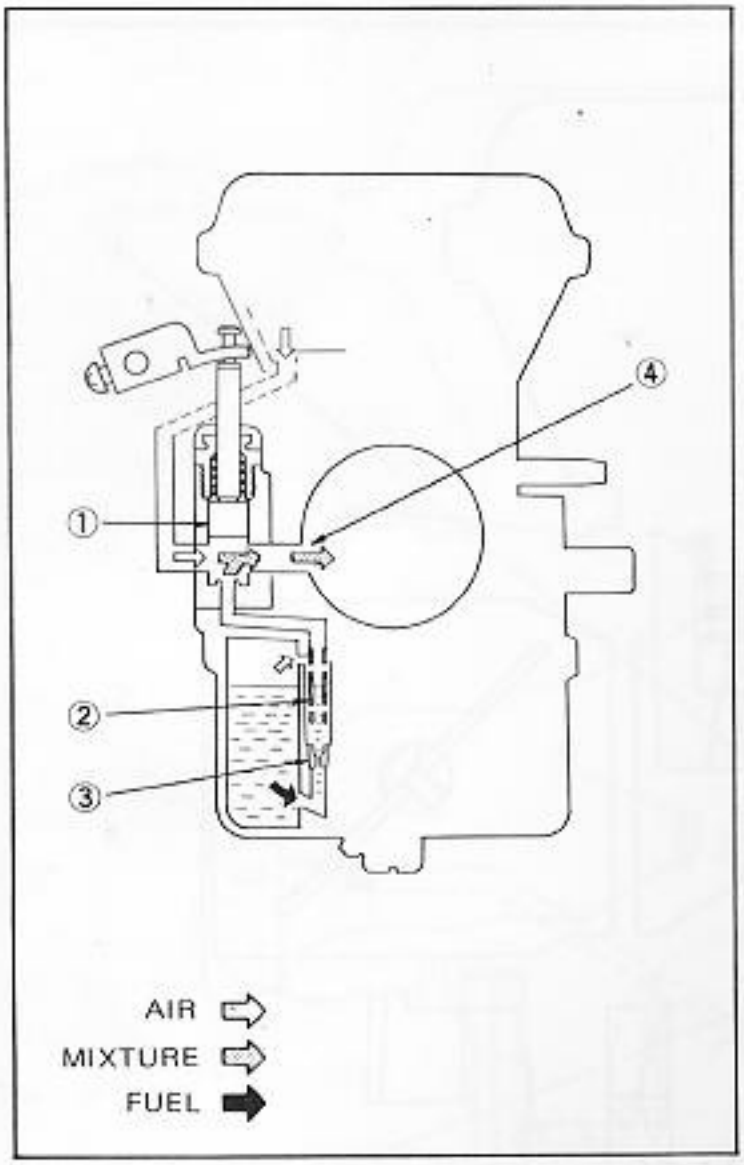
Fig. 6

When the throttle valve is opened, this gives rise to the speed of the engine. As a result, the vacuum at the venturi will be increased, causing the piston valve to move upward. Meanwhile, the fuel in the float chamber is metered by the main air jet, forming an emulsified fuel in the needle jet. The emulsified fuel then passes through the clearance between the needle jet and jet needle and is discharged into the venturi.

In the venturi, the emulsified fuel meets the main air stream and is drawn into the engine.

The fuel is given correct mixture proportions as it passes through the needle jet since the effective size of the needle jet depends on the throttle position.

e) Starter system



1. Starting plunger
2. Starter pipe
3. Starter jet
4. Starter outlet

Fig. 7

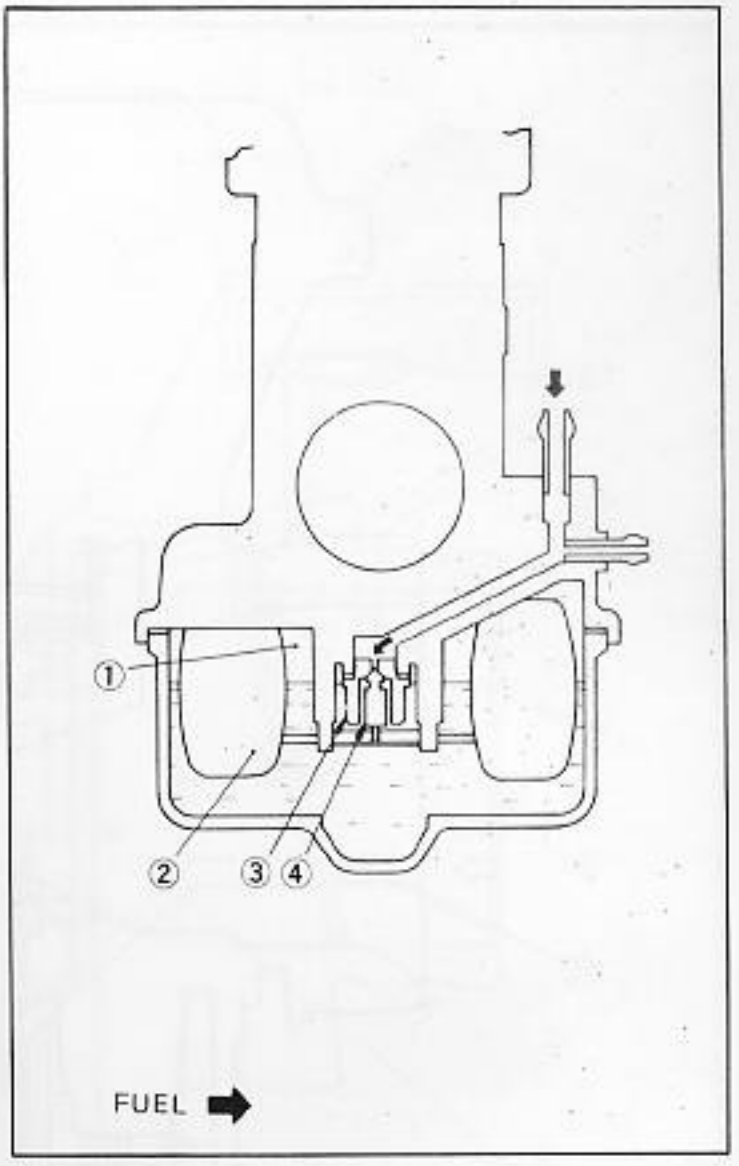
Now, let us see how the starter system works. The carburetor includes an independent starter circuit consisting of a spring-loaded plunger linked to the choke lever at the left side of the carburetor body. When the choke lever is pushed down, the starter plunger is pushed up. The action allows the fuel to bleed into the starter circuit.

The starter jet is supplied with fuel directly from the float chamber.

The fuel is first metered by the starter jet and passes into the starter pipe where it meets air in the float chamber.

This rich mixture, when it reaches the starter plunger, again enters air flowing through a passage from behind the diaphragm, providing correct air/fuel ratio for starting. Finally, it is discharged through the starter outlet into the engine directly.

f) Float system



1. Float chamber
2. Float
3. Valve seat
4. Needle valve

Fig. 8

The float system consists of float, needle valve and valve seat, assembled to maintain a constant level of fuel in the float chamber. When the fuel enters the float chamber, this causes the float to move up. The valve is so designed that, if the float moves up, it is pushed up into the valve seat. This shuts off the fuel inlet so that no fuel can enter.

If the float level lowers, the float moves down; i.e., fuel can now enter since this releases the needle valve.

The same sequence of events takes place to maintain a constant level of fuel in the float chamber.

2. Specifications

Type		Automatically Variable Venturi Carburetor
Venturi Size		Equivalent to 32 mm
Main Jet	R & L C	#110 #107.5
Main Air Jet		0.5 mm
Pilot Jet		#47.5
Pilot Air Jet		1.0 mm
Throttle Valve		#120 (12.0°)
Bypass	No.1 No.2 No.3	0.8 mm 0.9 mm 1.0 mm
Bypass Pitch	No.1 No.2 No.3	3.98 mm 4.95 mm 5.90 mm
Pilot Outlet		0.7 mm
Jet Needle		4DN18 — 3rd
Needle Jet		Z — O
Valve Seat		2.3 mm
Starter Jet		0.6 mm
Pilot Screw Opening		1/4
Float Level		27.6 mm

3. Troubleshooting Guide

Symptom	Probable Cause	Remedy
Erratic idling or slow speed	1. Clogged or loose pilot jet	Clean or retighten
	2. Clogged pilot air jet	Clean
	3. Leaky float chamber gasket	Retighten or replace
	4. Carburetor balance out of adjustment	Adjust
	5. Improper float level	Adjust. Check needle valve and float; if necessary, replace
		Clean fuel strainer
	6. Pilot screw improperly adjusted	Adjust (1/4 turns)
	7. Clogged bypass hole	Clean
Improper part- and full-throttle operation	1. Clogged or loose main jet	Clean or retighten
	2. Clogged main air jet	Clean
	3. Needle jet O-ring broken	Replace
	4. Carburetor balance out of adjustment	Adjust
	5. Defective piston valve	Check diaphragm, piston valve and valve spring. Replace if necessary
	6. Improper float level	Adjust. Check needle valve and float; replace if necessary. Clean fuel strainer
Engine will not start (with choke lever operated)	1. Faulty starter plunger	Retighten starter rod screw. Check choke lever stop spring and, if necessary, replace
	2. Clogged or loose starter jet	Clean or retighten
	3. Leaky starter plunger body gasket	Retighten or replace

4. Special Tools and Adhesive

a) Throttle valve adjust tool
This tool is designed to adjust carburetor without removing it from the motorcycle. It is a combination of a 10mm box wrench and plane head screwdriver.

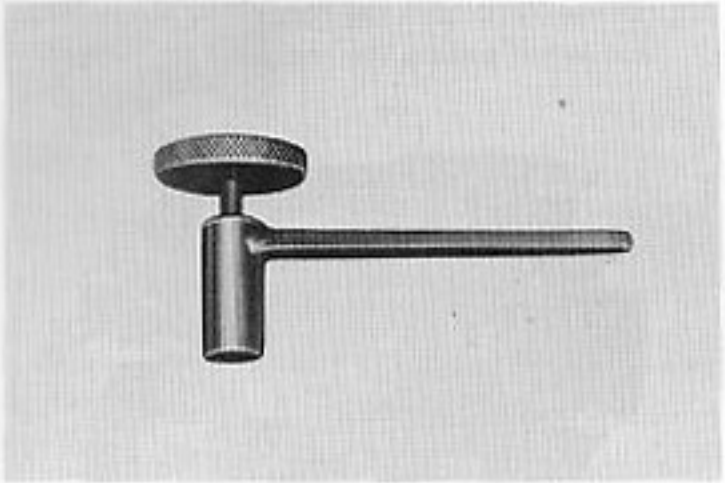


Fig. 9

Part Name	Throttle Valve Adjust Tool
Part No.	09913-13110

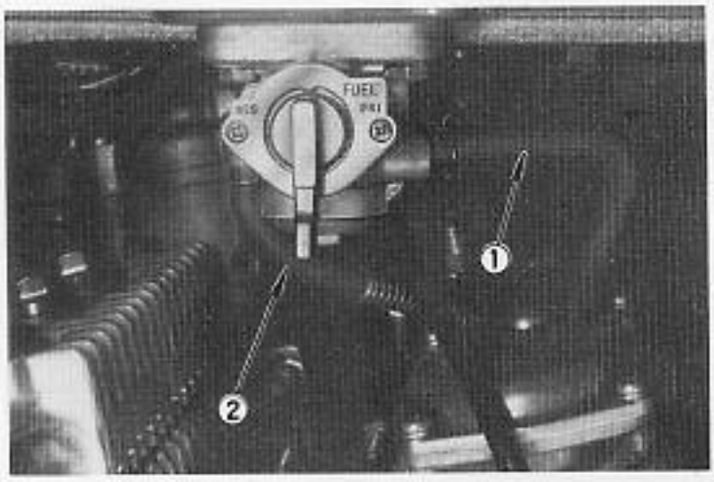
b) Thread Lock Cement
The thread lock cement is used to lock the starter rod screw.

Fig. 10

Part Name	Thread Lock Cement "103K"
Part No.	99000-32030

1. Disassembly

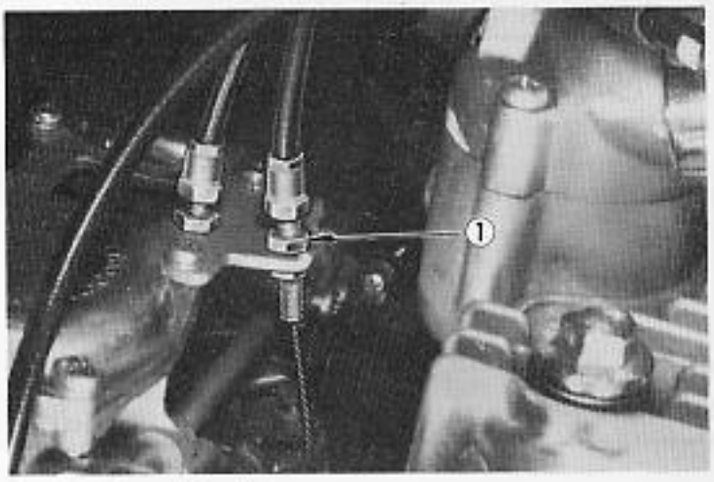
a) Remove the fuel hose and vacuum hose; take out the fuel tank. Remove the air cleaner.



1. Fuel hose 2. Vacuum hose

Fig. 2-1

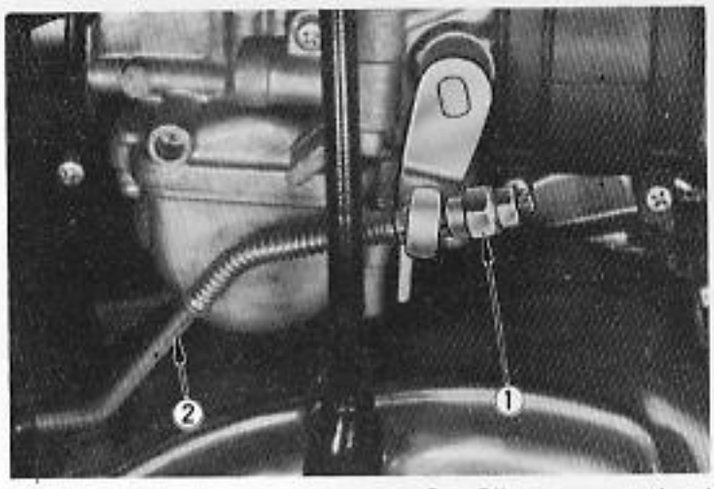
b) Loosen the throttle cable adjuster; free the cable end from the pulley.



1. Throttle cable adjuster

Fig. 2-2

c) Loosen the adjusting nut at the oil pump control rod. Disconnect the rod from the oil pump control lever.

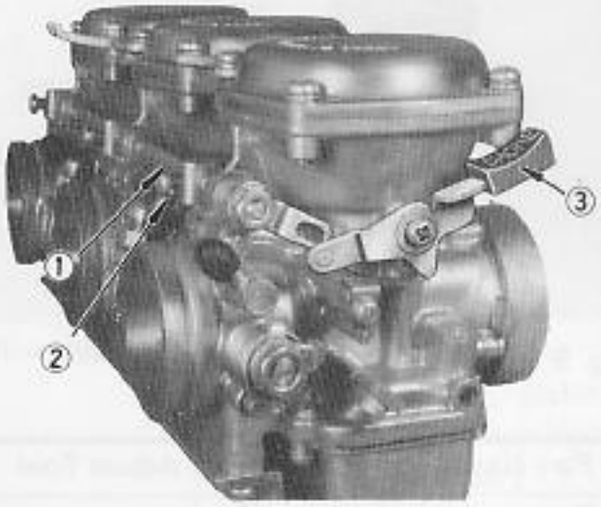


1. Adjusting nut 2. Oil pump control rod

Fig. 2-3

d) Loosen the clamp at the carburetor inlet side; remove the carburetor.

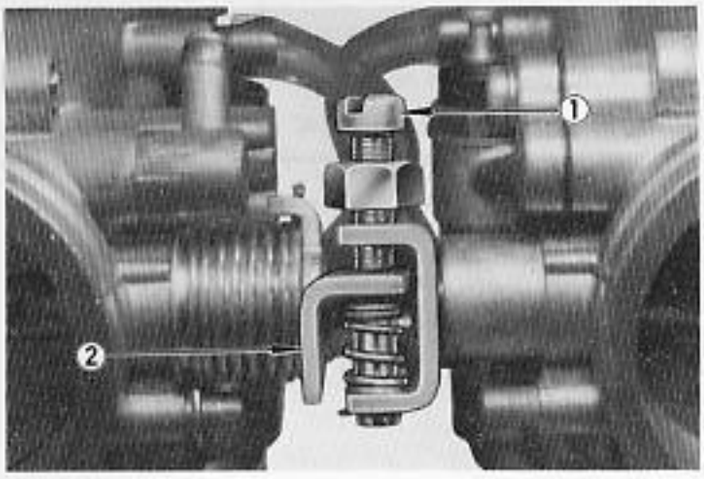
e) Loosen a total of three screws at the starter rod. While pushing the rod toward the inside slightly, withdraw the starter rod. It is necessary to turn the rod in the arrow direction when pulling the rod out.



1. Starter rod 3. Choke lever
2. Starter rod screw

Fig. 2-4

f) Turn out the throttle valve adjust screw just enough to cause a clearance between the throttle valve lever and end of the screw.

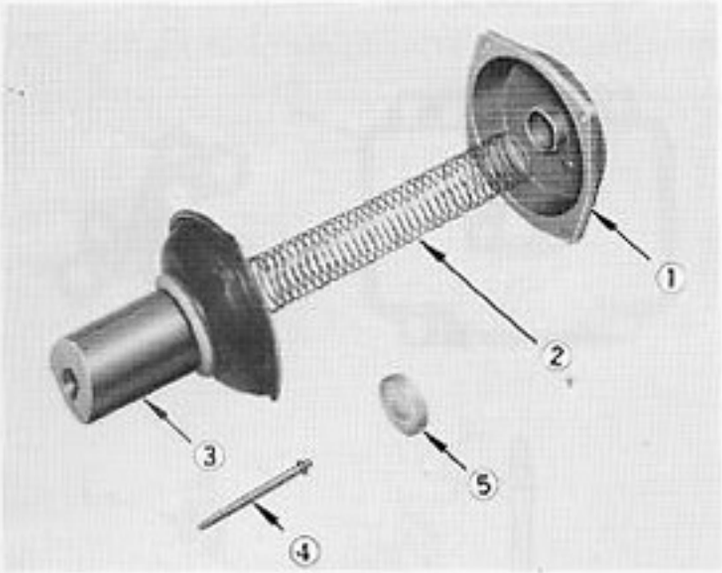


1. Throttle valve adjust screw 2. Throttle valve lever

Fig. 2-5

g) Loosen the screws securing the carburetor upper bracket and L-shaped bracket at the bottom.

h) Remove the mixing chamber top and take out the piston valve spring and piston valve.



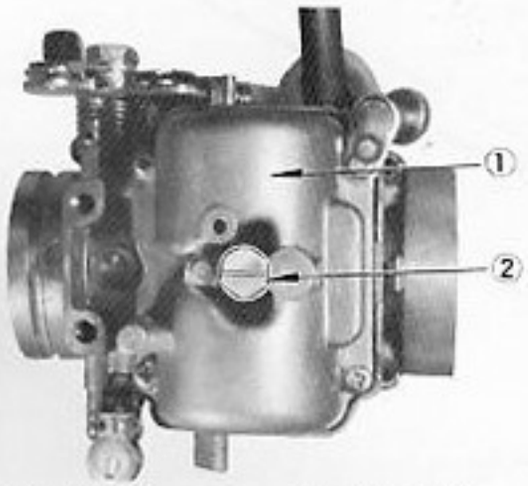
1. Mixing chamber top
2. Piston valve spring
3. Piston valve
4. Jet needle
5. Jet needle set plate

Fig. 2-6

Note:

Place the piston valves in order in a part rack so that they can be placed back to their original locations or carburetors with which they were mated. Neglecting this caution could result in faulty piston valve.

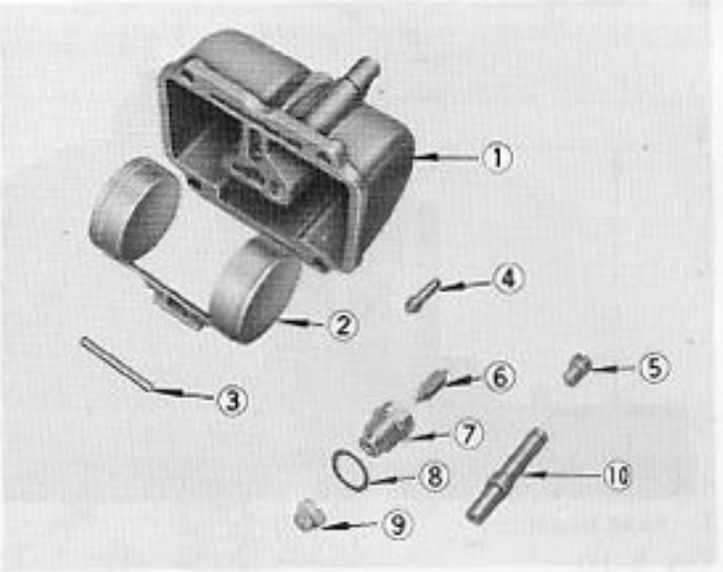
i) Remove the drain plug at the bottom of the float chamber. With the use of a suitable screwdriver, turn off the main jet.



1. Float chamber
2. Drain plug

Fig. 2-7

j) Loosen the float chamber attaching screw. Remove the float chamber. Using a pair of pliers, remove the pin from the float arm. Take out the float and needle valve.
With help of a suitable screwdriver, turn off the pilot jet from the float chamber. Pull out by hand the needle jet from the carburetor body. After removing the valve seat, separate the fuel strainer from the seat.



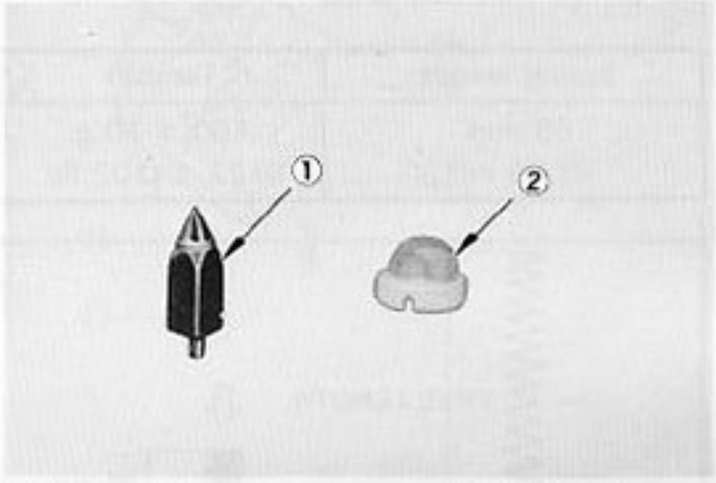
1. Float chamber
2. Float
3. Float arm pin
4. Pilot jet
5. Main jet
6. Needle valve
7. Valve seat
8. Valve seat gasket
9. Fuel strainer
10. Needle jet

Fig. 2-8

2. Inspections

a) Piston valve
Examine the diaphragm and piston valve, particularly on its sliding surfaces. Replace the piston valve if the diaphragm is broken, or if its edge is weakened. Replace the carburetor as an assembled unit if the piston valve is scored or worn excessively.

b) Needle valve, valve seat and fuel strainer

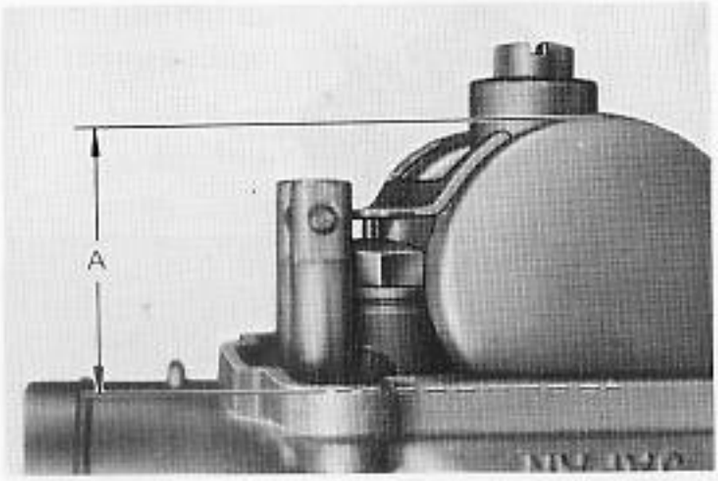


1. Needle valve
2. Fuel strainer

Fig. 2-9

Be sure that the tapered point of the needle valve is not worn. Replace the needle valve and valve seat as a matched set if the point is stepped. Be sure that all residue is washed from the strainer. Discard the strainer if broken.

c) Float level



1. Float height

Fig. 2-10

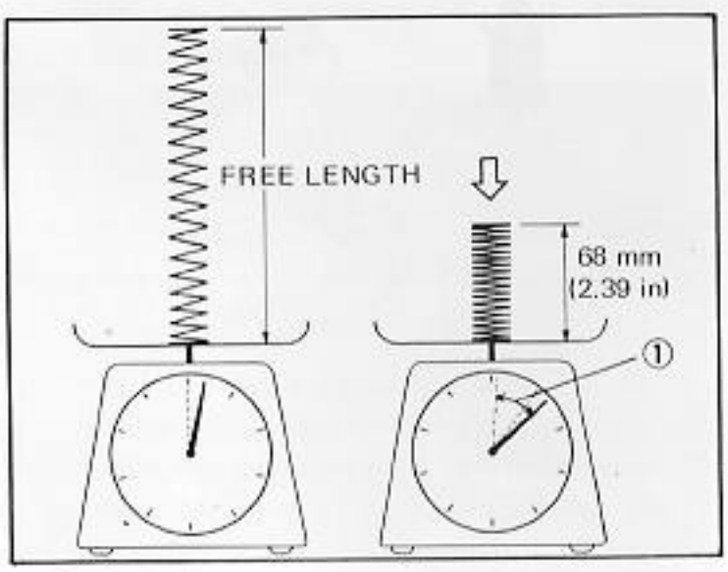
Assemble the valve seat, needle valve and float in the float chamber. Tilt the chamber at 10° ~ 30° from vertical. Without disturbing the above setup, measure the distance between the chamber attaching face and top of the float (without thickness of gasket). Adjustment can be made by bending the float arm.

Standard float height	27.6 ± 1 mm (1.09 ± 0.04 in)

d) Piston valve spring

Check the tension of the piston valve spring. This can be made by compressing the spring to 68 mm (2.39 in). Springs that exceed the following limits should be replaced with new ones.

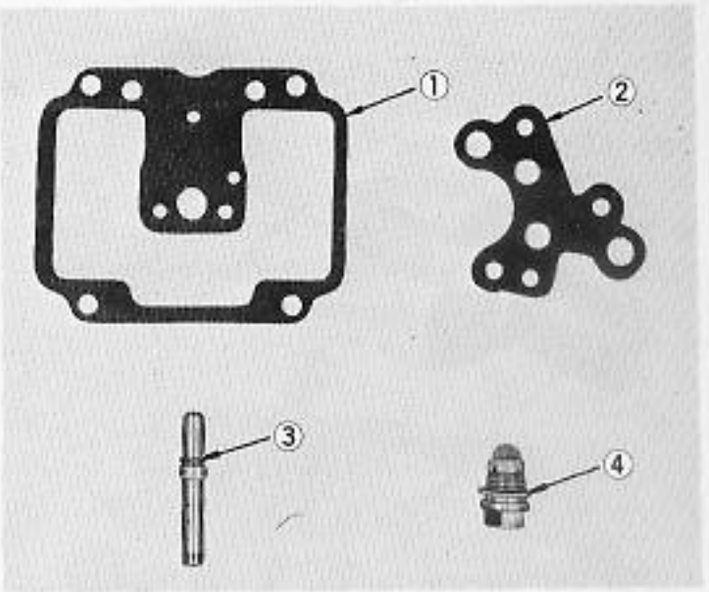
Spring length	Tension
68 mm (1.39 in)	100 ± 10 g (0.22 ± 0.02 lb)



1. Spring tension

Fig. 2-11

e) Gasket and O-ring



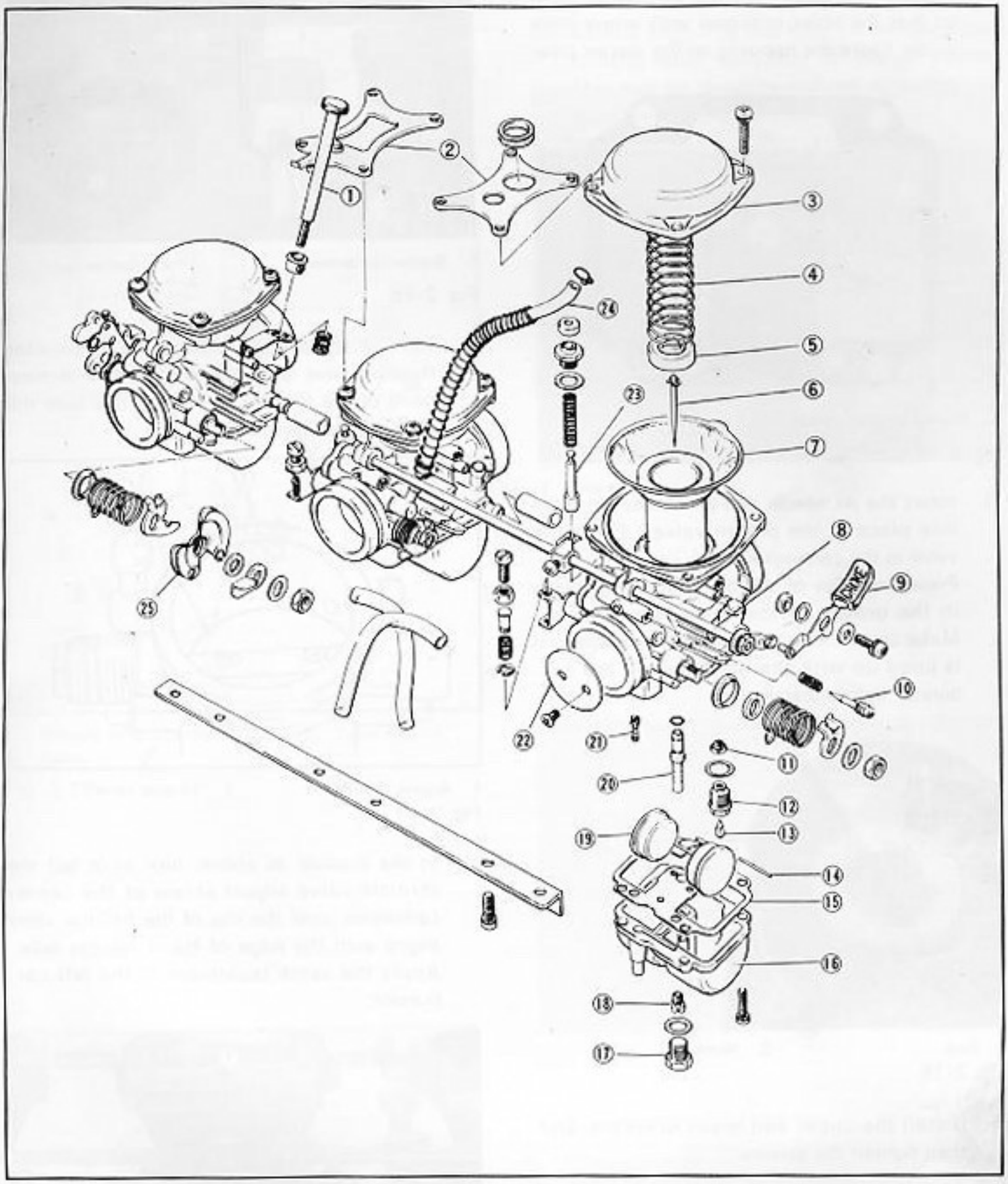
1. Float chamber gasket
2. Starter plunger body gasket
3. Needle jet O-ring
4. Valve seat gasket

Fig. 2-12

Examine all gaskets and O-ring, and make sure that they are in perfect condition. Broken or deteriorated gaskets or O-ring should be discarded, and new ones installed.

3. Assembly and Adjustment

Wash all parts in clean solvent and dry with compressed air.

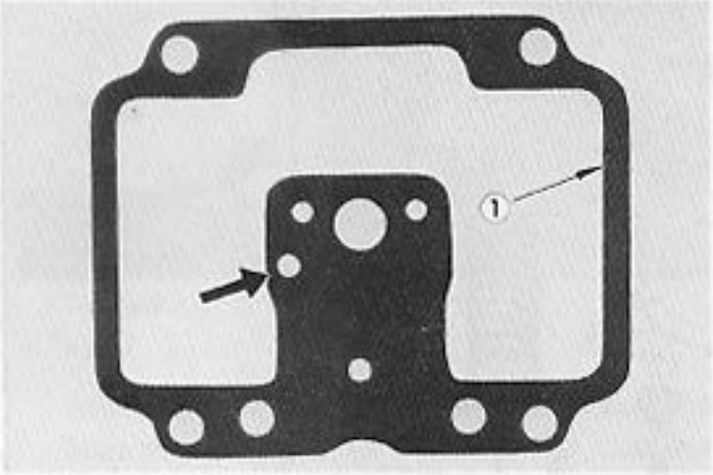


1. Throttle valve stop screw
2. Bracket
3. Mixing chamber top
4. Piston valve spring
5. Jet needle set plate
6. Jet needle
7. Piston valve
8. Starter rod
9. Choke lever
10. Pilot screw
11. Fuel strainer
12. Valve seat
13. Needle valve
14. Float arm pin
15. Float chamber gasket
16. Float chamber
17. Drain plug
18. Main jet
19. Float
20. Needle jet
21. Pilot jet
22. Throttle valve
23. Starter plunger
24. Fuel hose
25. Pulley

Fig. 2-13

a) Assemble the main jet, pilot jet and needle jet as they should.

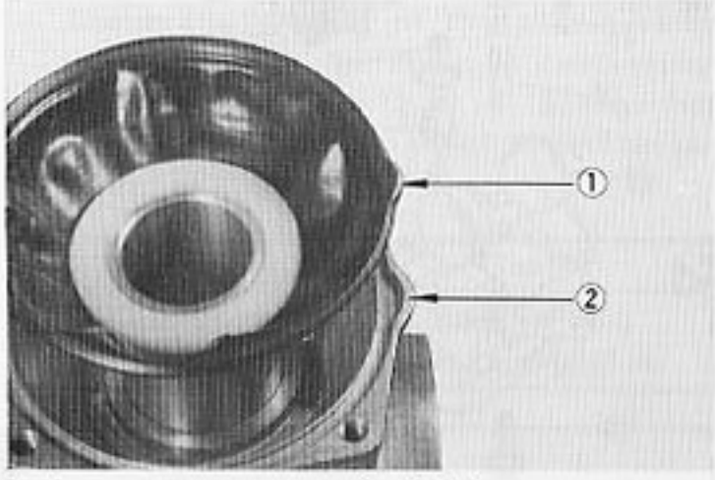
b) Position the gasket on the carburetor body so that the holes indicated with arrow mark in the figure are opposite to the starter pipe.



1. Mixing chamber gasket

Fig. 2-14

c) Insert the jet needle and jet needle set plate into place in the piston valve. Enter the valve in the carburetor body.
Press the edge of the diaphragm into place in the groove in the carburetor snugly. Make certain that the lug of the diaphragm is lined up with the notch cut in the carburetor before installation.

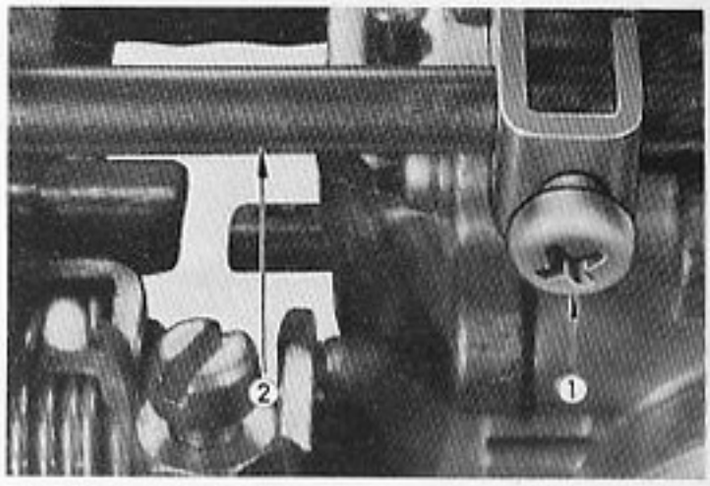


1. Lug 2. Notch

Fig. 2-15

d) Install the upper and lower brackets, and then tighten the screws.

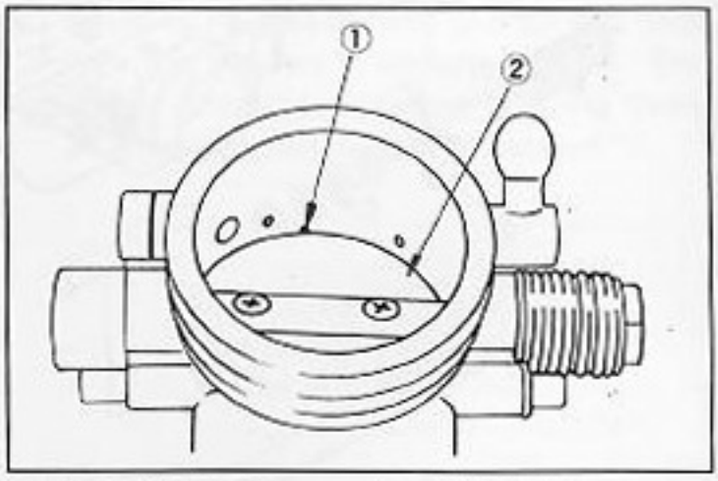
e) With the starter plunger lever placed on the end of the plunger, run the starter rod starting with the left carburetor. Apply a coating of Thread Lock Cement, No. 99000-32030, to the threaded part of the starter rod screws and tighten the screws securely.



1. Starter rod screw 2. Starter rod

Fig. 2-16

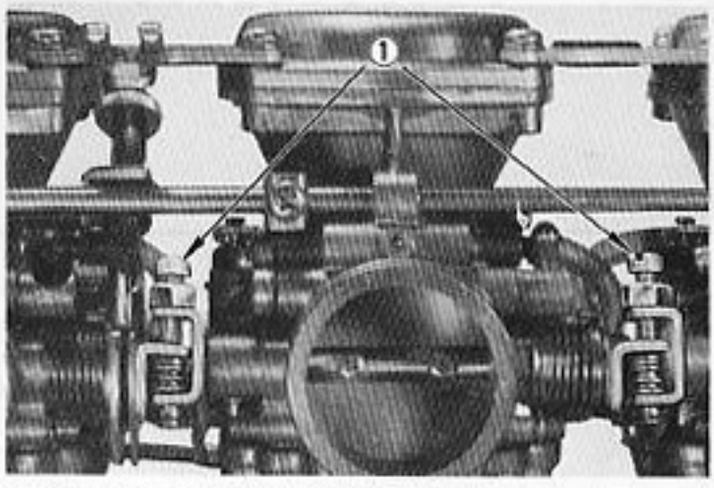
f) Turn in or out the right side carburetor throttle valve stop screw until the highest point of the throttle valve is in line with the edge of No.1 bypass hole.



1. Bypass hole (No.1) 2. Throttle valve

Fig. 2-17

g) In like manner as above, turn in or out the throttle valve adjust screw at the center carburetor until the top of the throttle valve aligns with the edge of No. 1 bypass hole. Apply the same technique to the left carburetor.



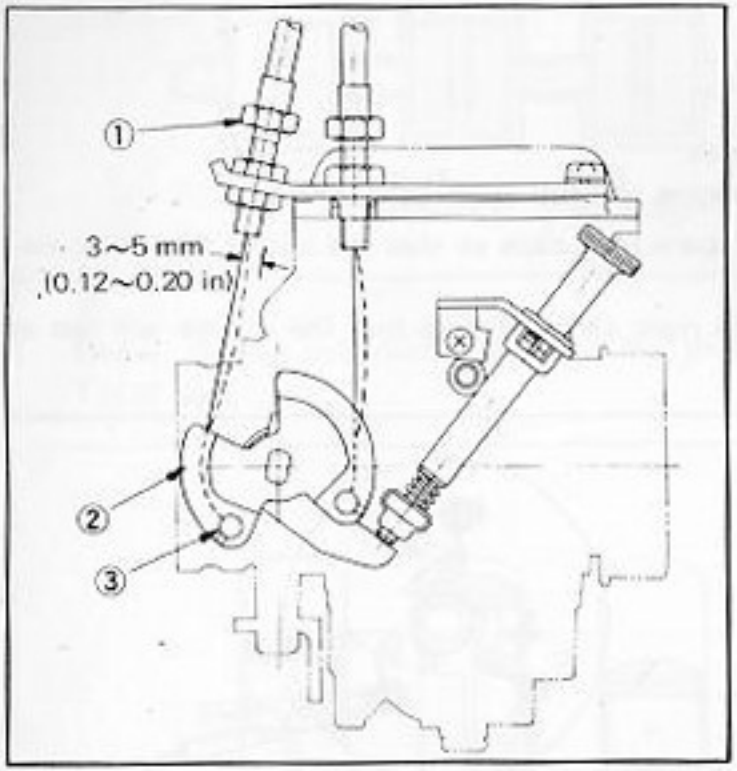
1. Throttle valve adjust screw

Fig. 2-18

h) Gently turn in the pilot screw until they seat; then turn them out 1/4 turn each.

i) Install the carburetor in the reverse order of the removal.

j) Adjust the throttle cables (pull side and return side) so that the deflections are 3 ~ 5 mm (0.12 ~ 0.20 in) when a thumb pressure 100 ~ 200 g (0.22 ~ 0.44 lb) is applied between the cable adjuster and cable end.

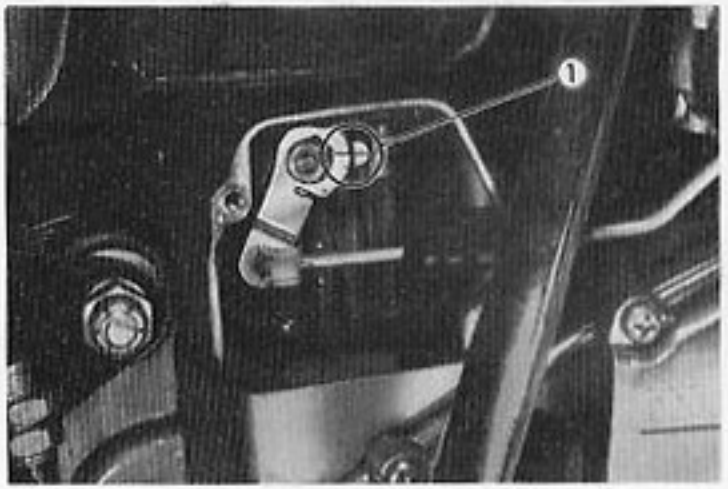


1. Throttle cable adjuster
2. Pulley
3. Cable end

Fig. 2-19

k) Start and warm up the engine for about five minutes. Turn out the throttle valve stop screw until the engine runs at 1,000 rpm.

l) Finally align the marking on the oil pump control lever with that on the oil pump. This can be done by turning in or out the adjust nut as necessary.



1. Aligning mark

Fig. 2-20

4. Carburetor Adjustment

Observe either of the following procedures when making a throttle-opening (balance) adjustment during periodic maintenance, etc.

Off-motorcycle adjustment:

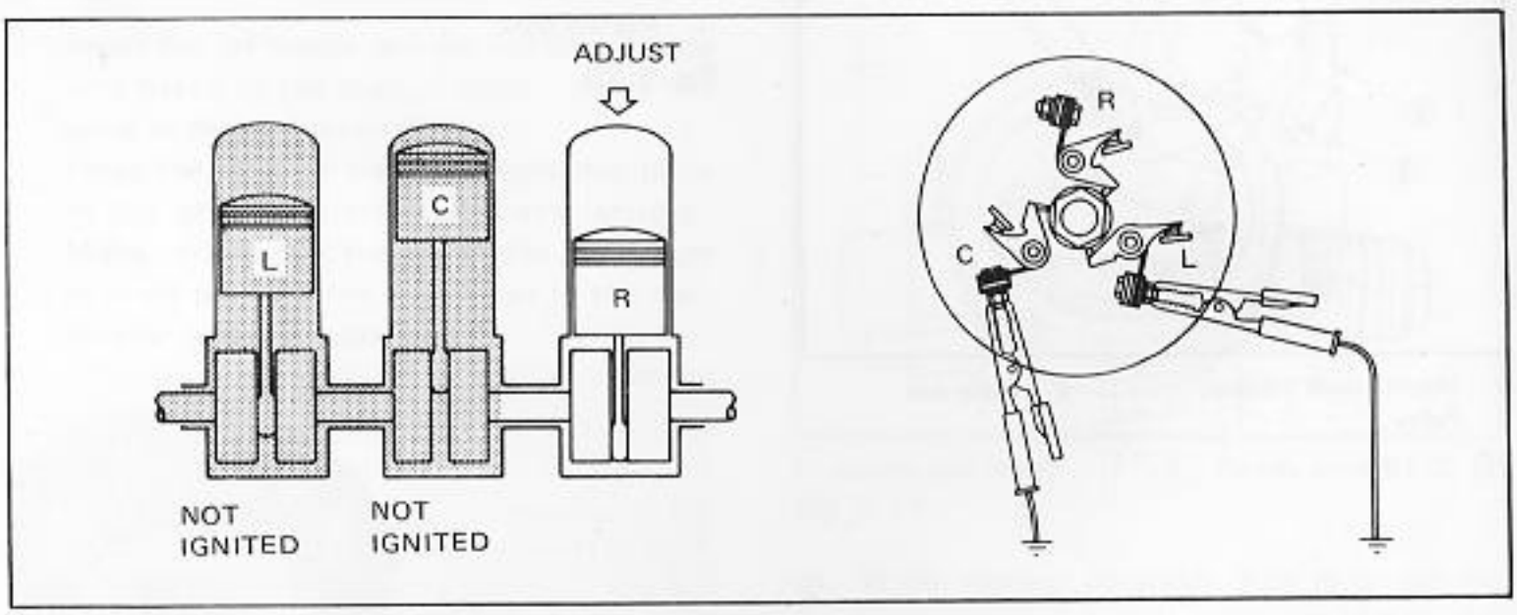
Follow the steps "f" thru "m" under Assembly in Chapter 3 above.

On-motorcycle adjustment:

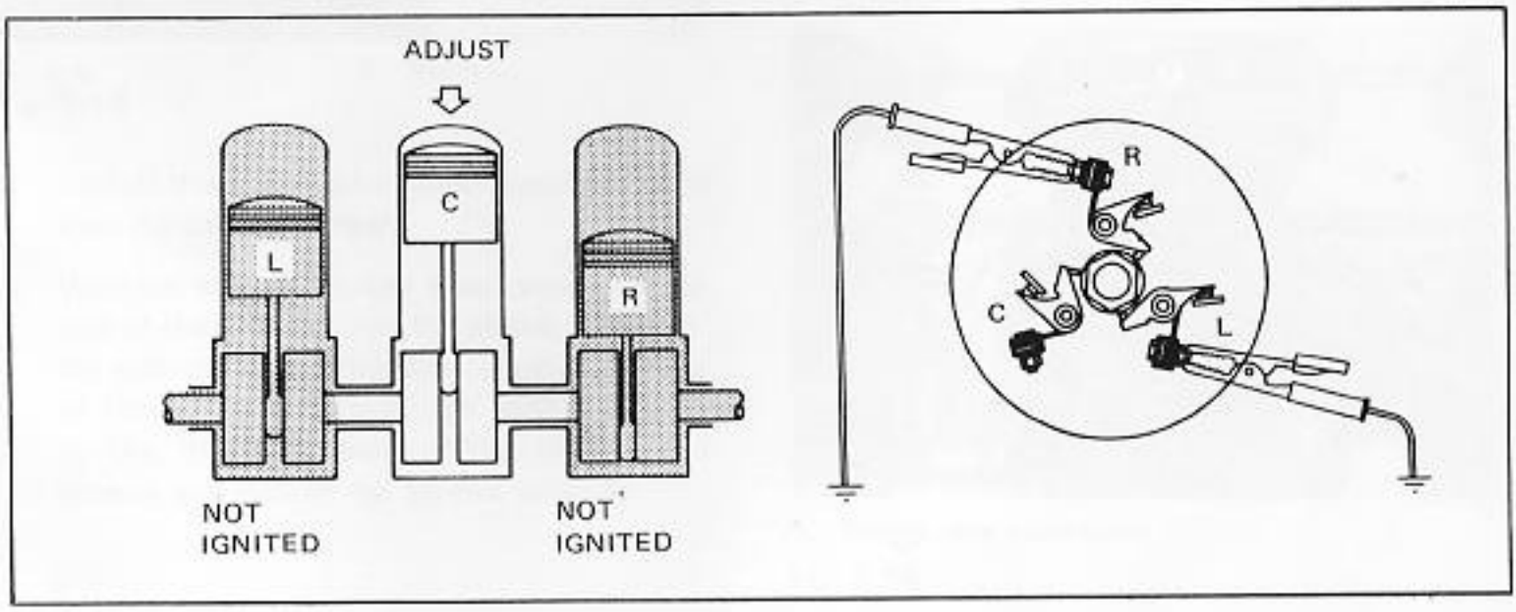
Proper procedure for adjustment of carburetor on motorcycle is as follows. However, carburetor should not be adjusted unless the following items or parts are properly adjusted.

- Contact breaker point gap
- Spark plug gap
- Ignition timing
- Pilot screw opening
- Throttle cable deflection

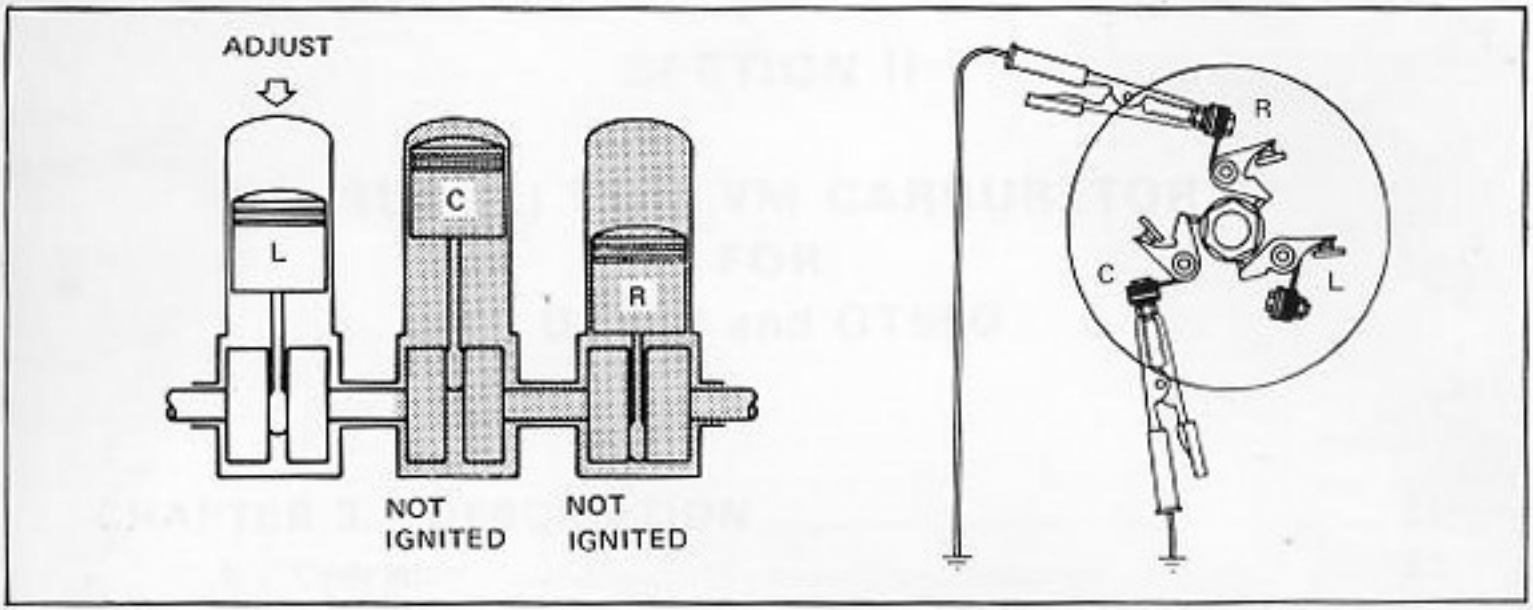
1. Start and warm up the engine for about five minutes.
2. Turn in the throttle valve stop screw so that the engine will run at about 3,000 rpm.
3. Ground the contact breaker points or remove the spark plug caps so that the center and left cylinders will not fire.
   Turn in or out the throttle valve stop screw at the right carburetor so that the engine will run at 1,000 rpm.



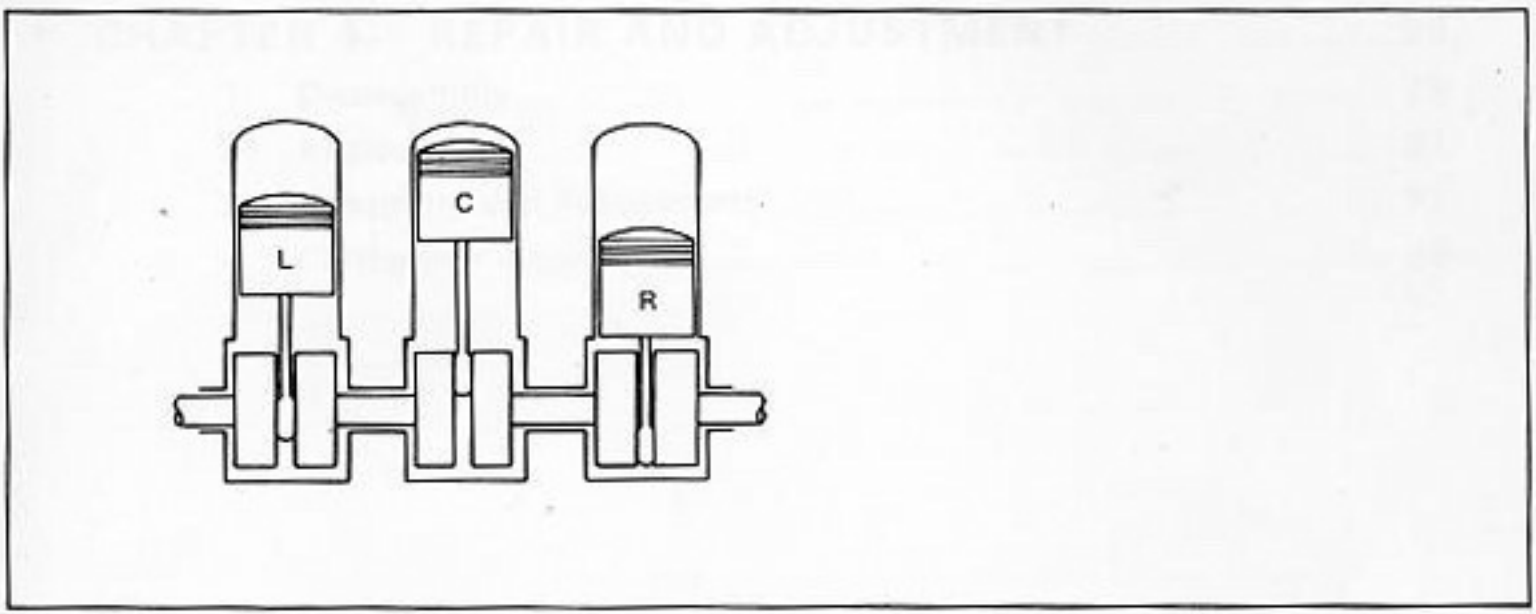
4. In like manner as above, disable the right and left cylinders. Using tool "Valve Adjust Tool No. 09913-13110", rotate the throttle valve adjust screw at the center carburetor until the engine runs at 1,000 rpm.



5. At this point, turn the throttle valve adjust screw at the left side carburetor as necessary. Stop turning the screw when the engine runs at 1,000 rpm.

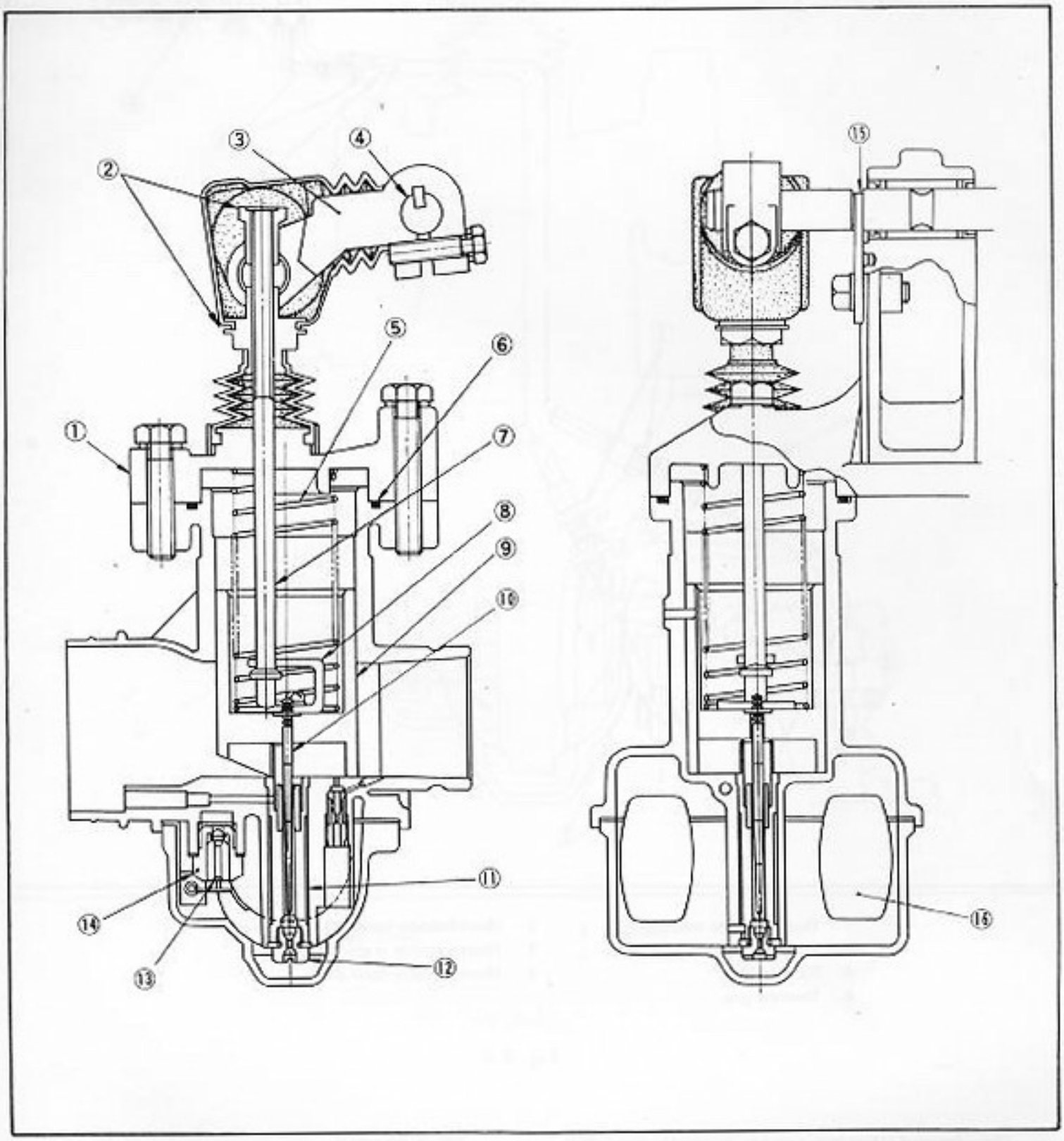


6. Finally, fire all cylinders. Turn out the throttle valve stop screw so that the engine will run at 1,000 rpm.



CHAPTER 3. DESCRIPTION

The Model VM24SC and VM28SC Carburetors currently used on the Suzuki GT380L and GT550L are of an AMAL type carburetor with an independent starting circuit. It also includes an additional system of linkage to force the throttle valve to the closed position to provide for sticky valve or broken valve return spring.

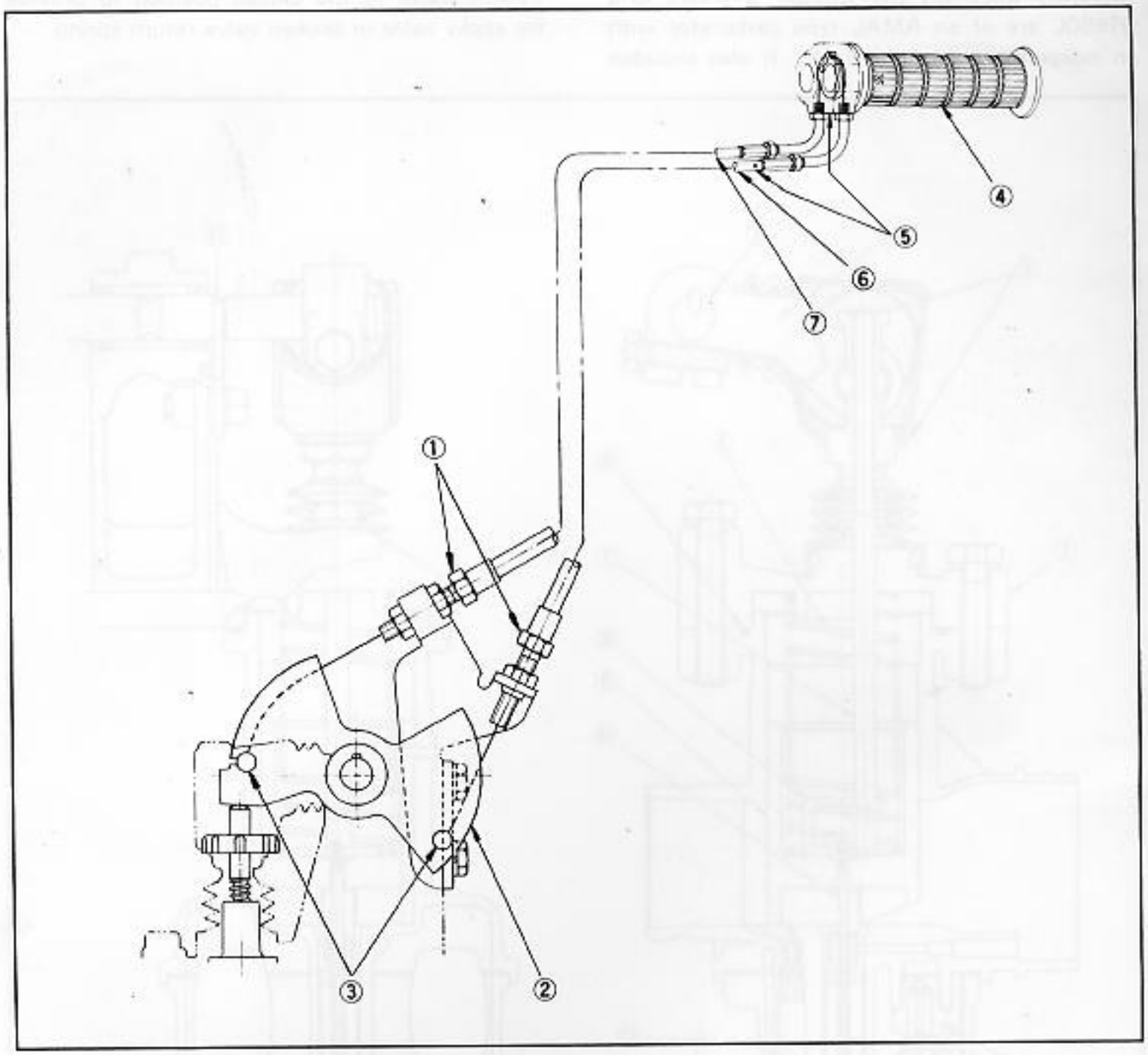


1. Mixing chamber top
2. Throttle valve adjust nut
3. Throttle valve arm
4. Throttle valve shaft
5. Throttle valve spring
6. O-ring
7. Throttle valve rod
8. Jet needle set plate
9. Throttle valve
10. Jet needle
11. Needle jet
12. Main jet
13. Needle valve
14. Valve seat
15. Shaft stop plate
16. Float

Fig. 3-1

1. Operation

a) Forced throttle-return system



1. Throttle cable adjuster
2. Pulley
3. Cable end
4. Throttle grip
5. Identification letter "R" (return side)
6. Throttle cable (return side)
7. Throttle cable (pull side)

Fig. 3-2

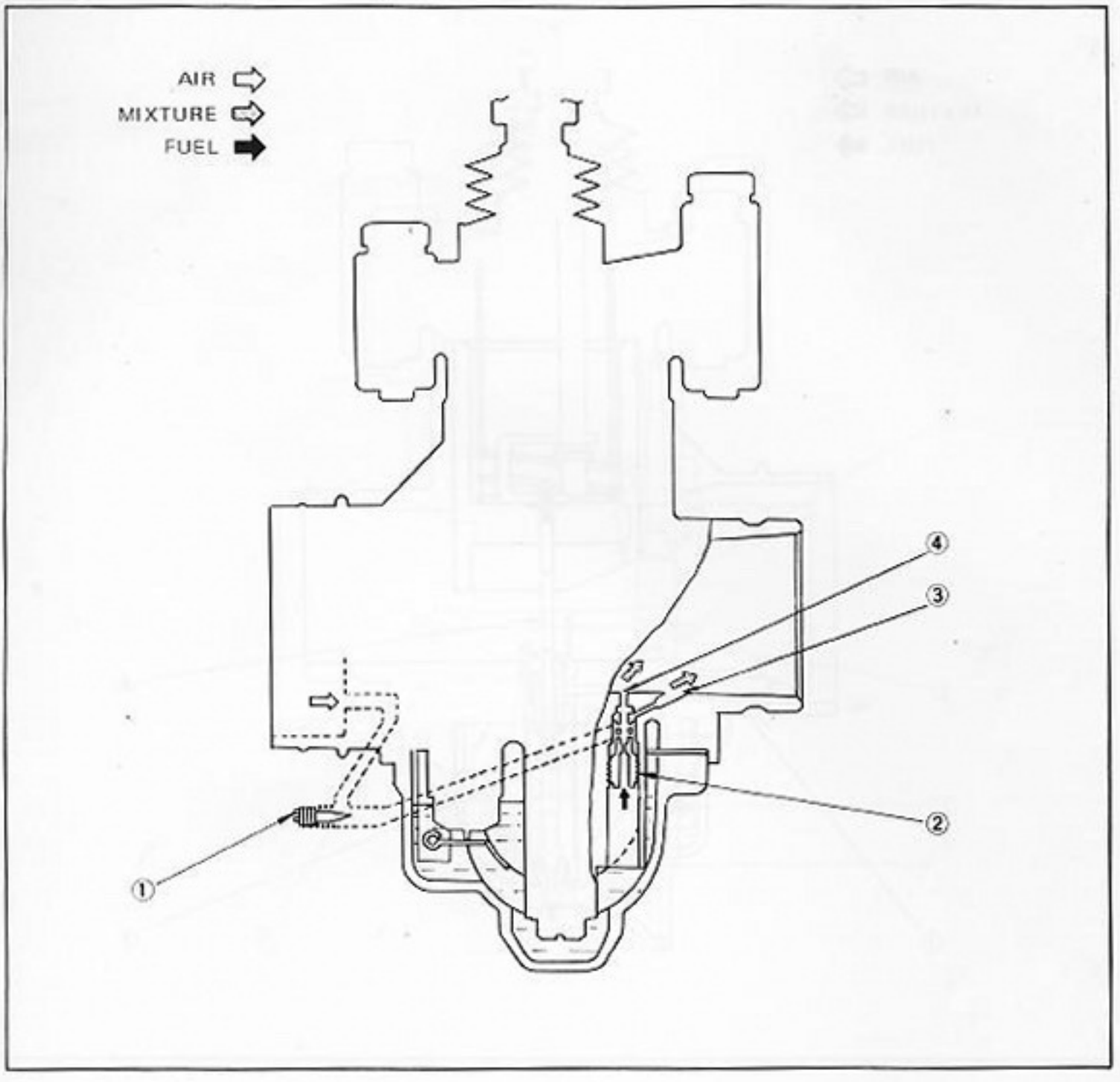
The forced throttle-return system provides an added means of returning the throttle valve to the closed position. Fig. 1 shows an exaggerated view of the system to understand the operation that takes place when the system is operated.

When the throttle grip is turned inward, the pulley is pulled up by a cable; i.e., the throttle is opened.

Now, when the grip is twisted outward, a spring produces some further closing of the throttle valve and spring-loads it in the closed position.

The system forces the throttle valve toward the closed position even when the valve has suck or the spring has been broken.

b) Slow system



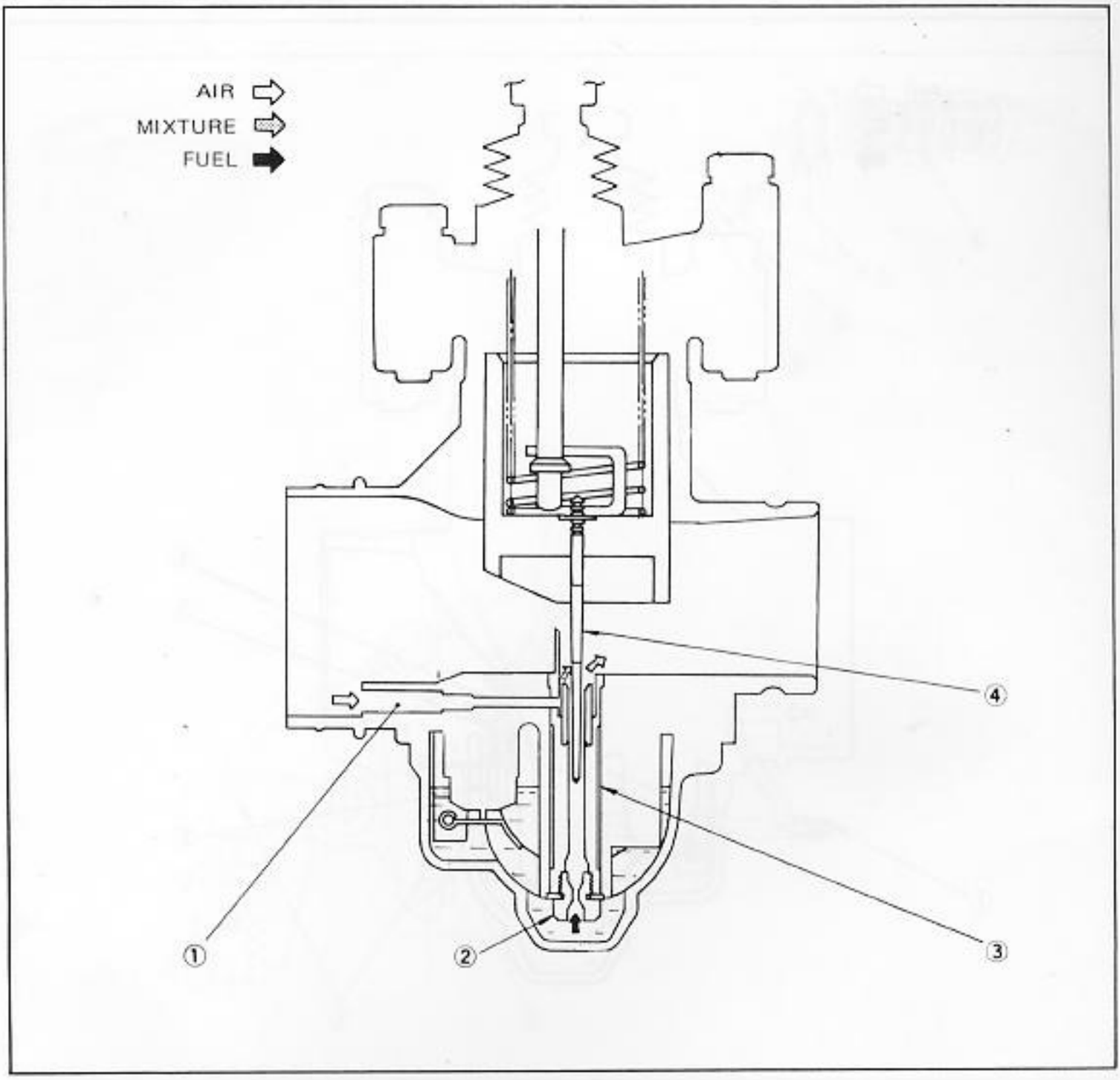
1. Pilot air screw
2. Pilot jet
3. Bypass
4. Pilot outlet

Fig. 3-3

When the throttle valve is closed or only slightly opened, the speed of air flowing through the air horn is low. As a result, there will be very little vacuum at the venturi to draw fuel from the needle jet. The slow system supplies fuel during operation with the throttle closed or almost closed.

The fuel from the float chamber is first metered by the pilot jet, where it mixes with air passing by the pilot air screw. The resultant mixture will then discharge out into the carburetor air horn through the pilot outlet and bypass port where it is to be mixed with the main incoming air stream passing through the throttle valve.

c) Main system



1. Main air passage
2. Main jet
3. Needle jet
4. Jet needle

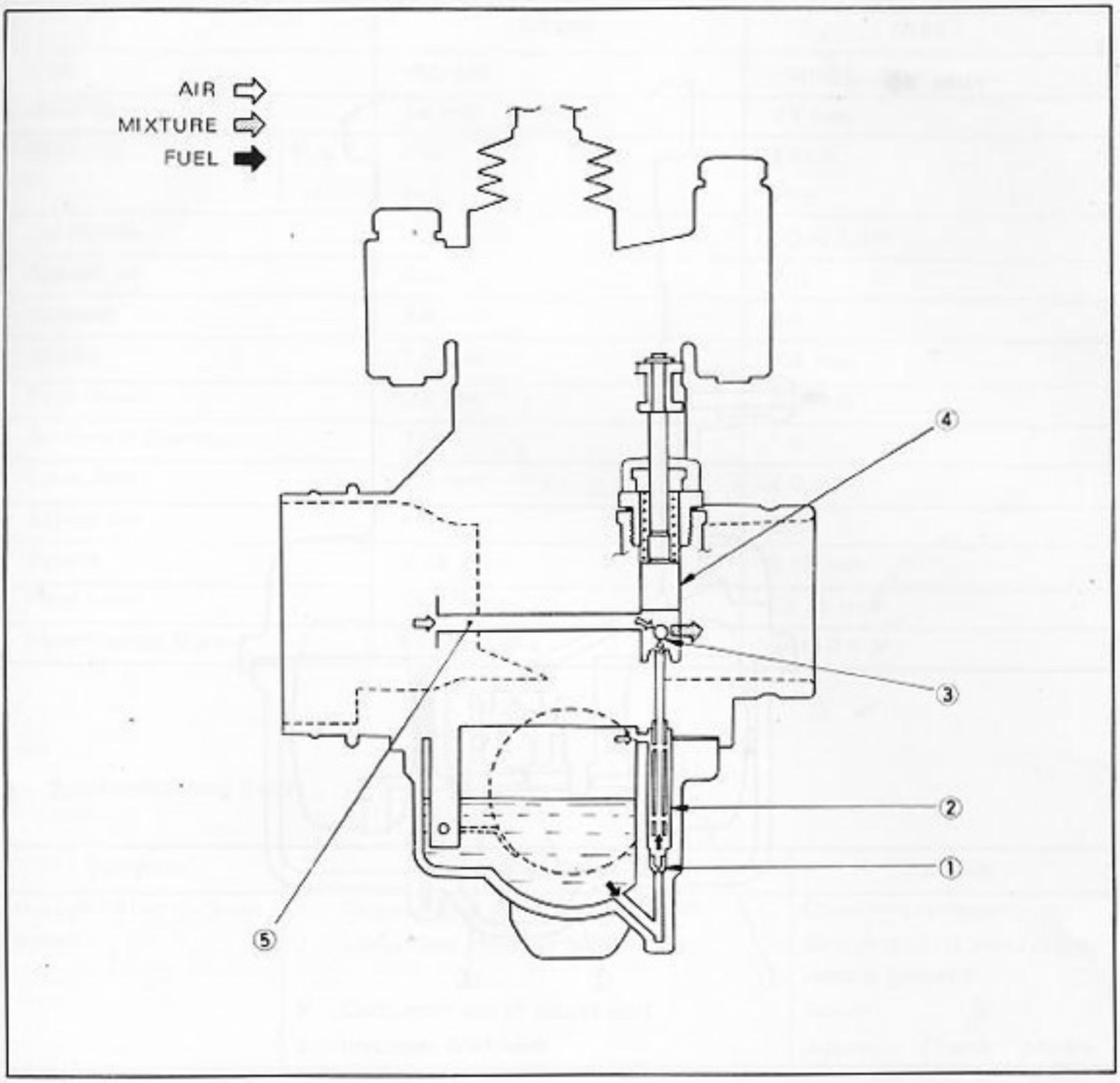
Fig. 3-4

When the throttle is opened, the fuel in the float chamber is subject to strong engine suction since the vacuum at the venturi is increased.

The fuel in the float chamber is then metered by the main jet as it passes through it. The fuel is again metered by the clearance between the needle jet and jet needle, being mixed with air flowing from the main air passage. The mixture will then be discharged into the carburetor venturi. At the venturi, the mixture meets another air flowing from the main bore, being drawn into the engine.

The fuel is given correct mixture proportions as it passes through the needle jet since the effective size of the needle jet depends on the throttle position.

d) Starter system



1. Starter jet
2. Starter pipe
3. Starter outlet
4. Starter plunger
5. Starter air passage

Fig. 3-5

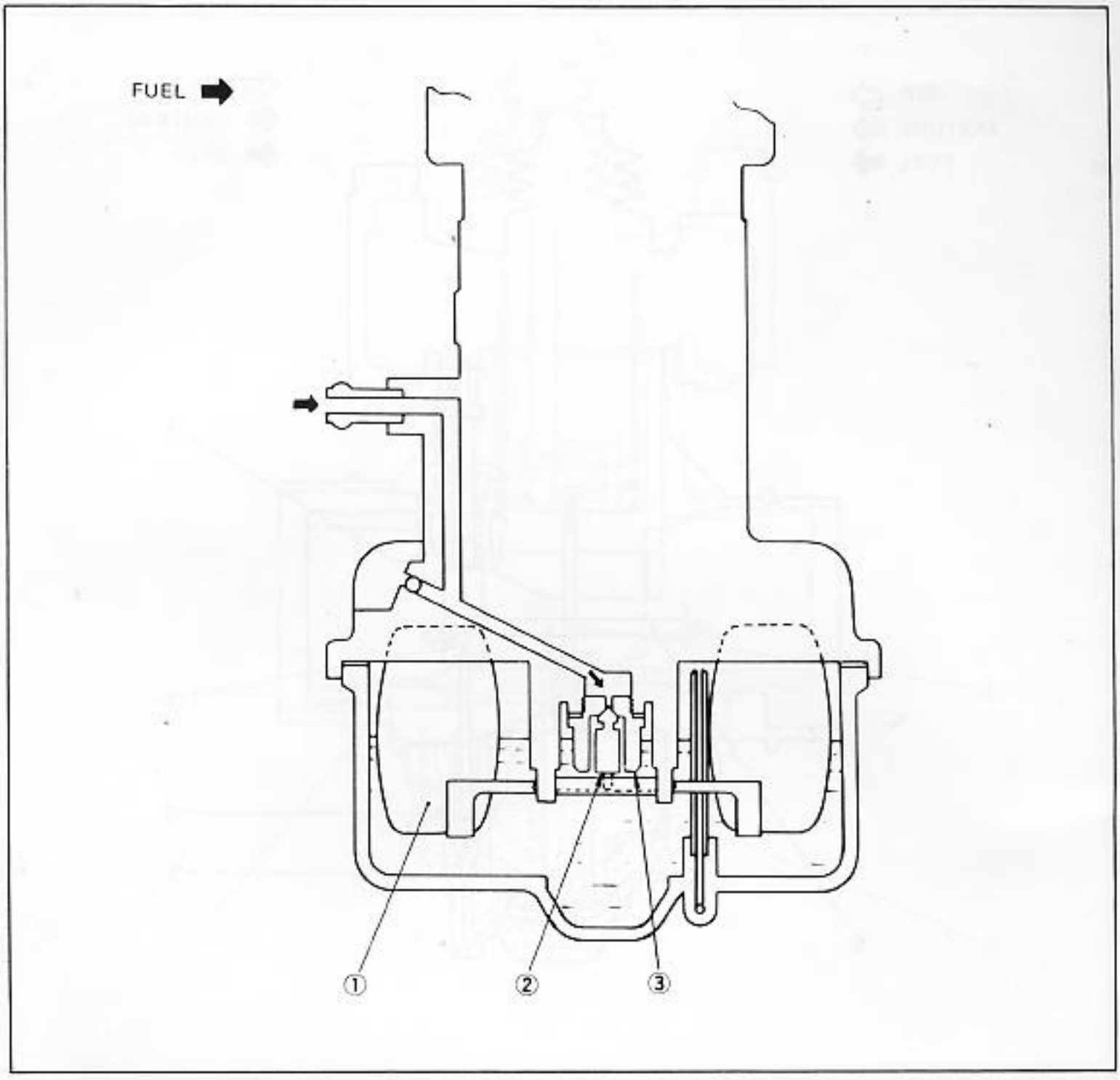
When the choke lever at the left side of the carburetor is pulled up, the starter plungers are pushed up by the starter rod. The action allows the fuel to bleed into the starter circuit.

The starter jet is supplied with fuel directly from the float chamber. The fuel is first metered by the starter jet as it passes through it. The metered fuel then goes up into the starter pipe where it enters air from the float chamber.

This rich mixture meets air flowing from the starter air passage when it reaches the starter plunger chamber and is discharged through the starter outlet into the engine directly.

The right side carburetor receives the mixture from the starter system of the main carburetor through a pipe.

e) Float system



1. Float
2. Needle valve
3. Valve seat

Fig. 3-6

The float system consists of float, needle valve and valve seat, assembled to maintain a constant level of fuel in the float chamber. When fuel enters the float chamber, this causes the float to move up. The valve is so designed that, if the float moves up, it is pushed up into the valve seat. This shuts off the fuel inlet so that no fuel can enter.
If the float level lowers, the float moves down; i.e., fuel can now enter since this releases the needle valve.
The same sequence of events takes place to maintain a constant level of fuel in the float chamber.

2. Specifications

		GT380	GT550
Type		VM24SC	VMI8SC
Bore Size		24 mm	28 mm
Main Jet	R & L	#80	#97.5
	C	#80	#95
Jet Needle		4DH7-2nd	5DH21-4th
Needle Jet		O-2	P-0
Cutaway		3.0	2.5
Bypass		1.4 mm	1.4 mm
Pilot Outlet		0.8 mm	0.8 mm
Air Screw Opening		1¼	1½
Valve Seat		2.0 mm	2.0 mm
Starter Jet		#80	#90
Bypass		3.75 mm	5.15 mm
Float Level		25.75 mm	25.75 mm
Identification Mark		33110 R,M,L	34110 R,M,L

3. Troubleshooting Guide

Symptom	Probable Cause	Remedy
Rough idling or slow speed	1. Clogged pilot jet or loose pilot jet	Clean and retighten
	2. Leaky float chamber gasket	Retighten. If necessary, replace gasket
	3. Carburetor out of adjustment	Adjust
	4. Improper float level	Adjust. Check needle valve and float and, if necessary, replace
	5. Pilot air screw out of adjustment	Adjust
	6. Clogged bypass and pilot outlet	Clean
Improper part- and full-throttle operation	1. Clogged main jet	Clean or retighten
	2. Carburetor out of adjustment	Adjust
	3. Improper float level	Adjust. Check needle valve and float and, if necessary, replace
Hard starting (with choke lever in operation)	1. Improper throttle valve opening	Adjust
	2. Clogged starter jet	Clean
	3. Starter plunger out of order	Retighten starter rod screw

4. Special Tools, Adhesive and Grease

a) Throttle valve adjust tool
This tool is designed to adjust carburetor without removing it from the motorcycle. It is a combination of a 10 mm box wrench and plane head screwdriver.

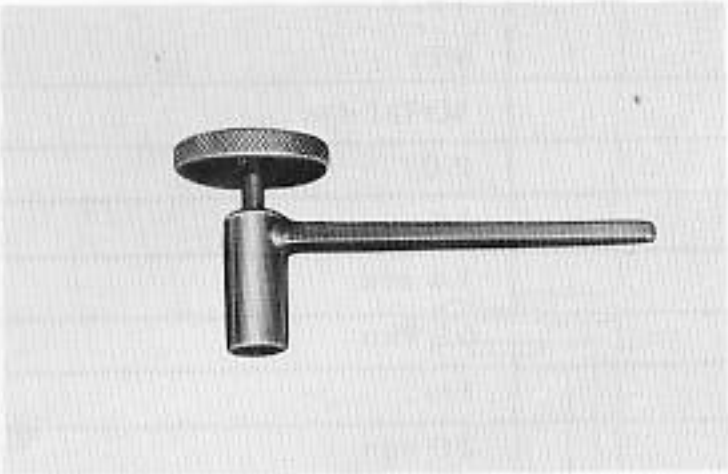


Fig. 3-6

Part Name	Throttle Valve Adjust Screw
Part No.	09913-13110

b) Thread lock cement

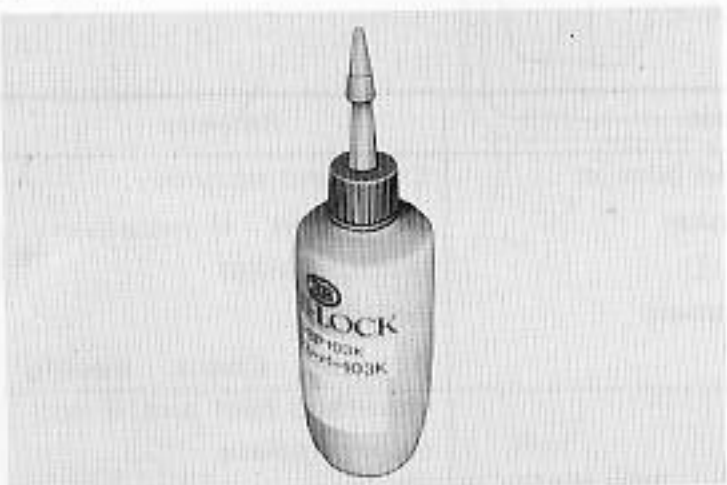


Fig. 3-7

Part Name	Thread Lock Cement "103K"
Part No.	99000-32030

The thread lock cement is used to lock the starter rod screw.

c) Grease

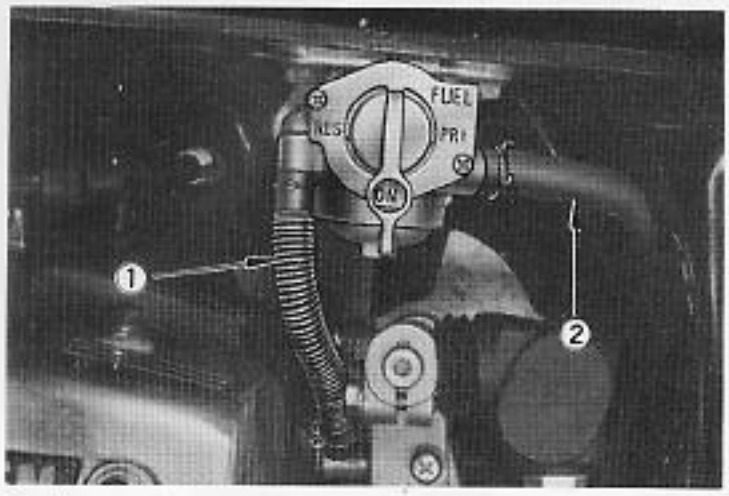
Fig. 3-8

Part Name	Suzuki Super Grease "C"
Part No.	99000-25030

Suzuki Super Grease "C" is used to lubricate the throttle valve rod and throttle valve arm.

1. Disassembly

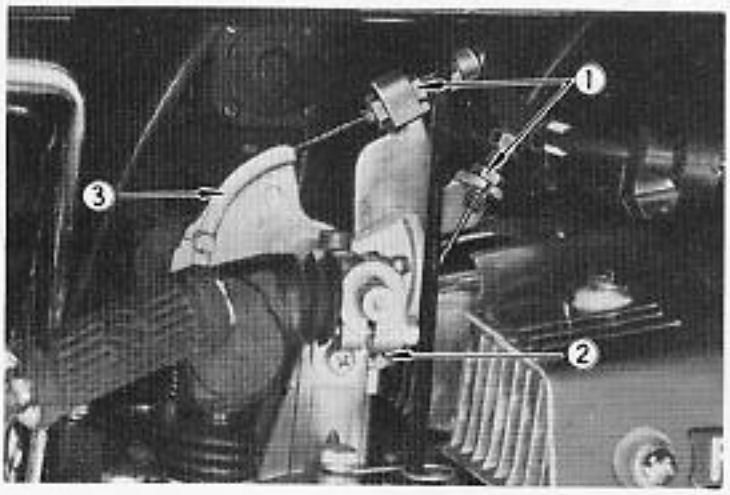
a) Remove the fuel and vacuum hoses; take out the fuel tank. Remove the air cleaner.



1. Vacuum hose
2. Fuel hose

Fig. 4-1

b) Loosen the throttle cable adjuster and disconnect the cable end from the pulley.

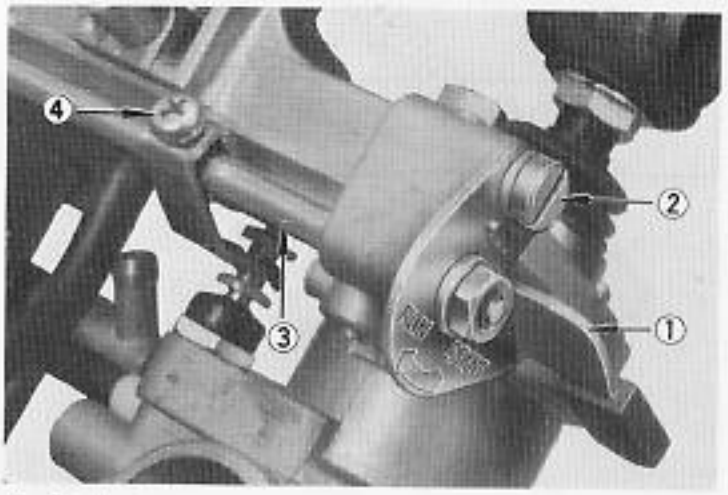


1. Throttle cable adjuster
2. Cable end
3. Pulley

Fig. 4-2

c) Loosen the clamp at the carburetor inlet and take out the carburetor.

d) Unscrew screw securing the choke lever in place to the carburetor.
Be careful when removing the lever since the steel ball is spring-loaded. Loosen the starter rod screws and pull off the starter rod.

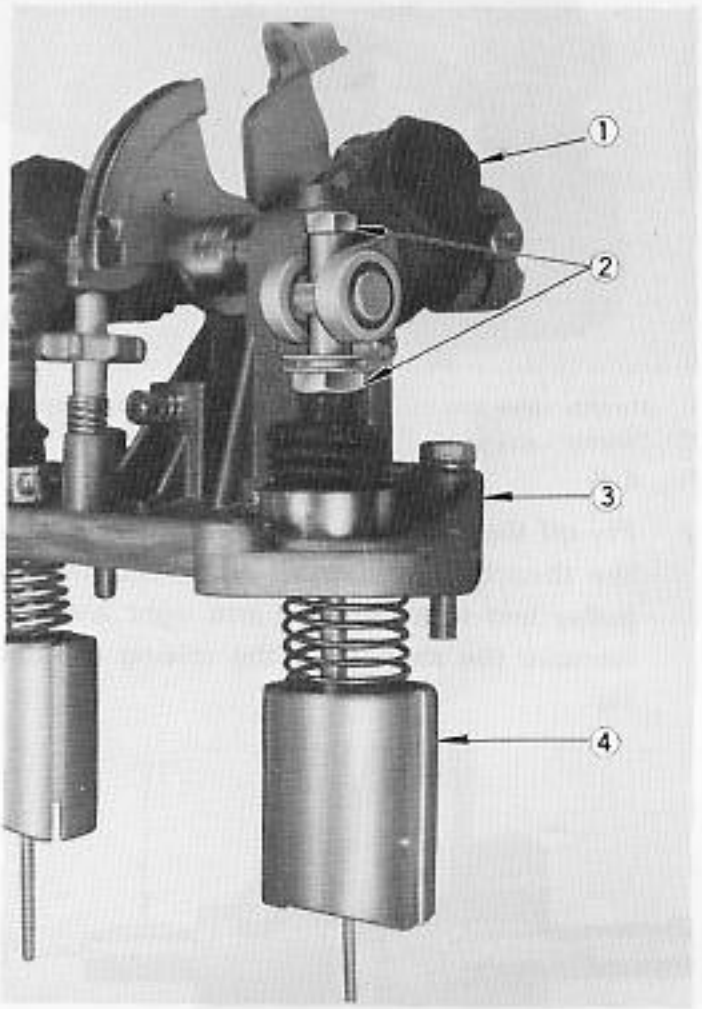


1. Choke lever
2. Choke lever screw
3. Starter rod
4. Starter rod screw

Fig. 4-3

e) Remove the mixing chamber top complete with the throttle valve.

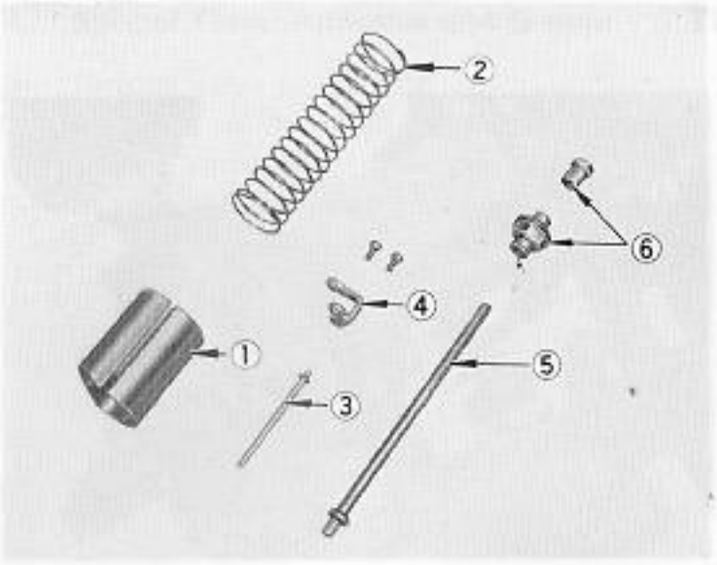
f) Remove the boot; loosen and upper and lower throttle valve adjust nuts. Separate the throttle valve from the chamber.



1. Boot
2. Throttle valve adjust nut
3. Mixing chamber top
4. Throttle valve

Fig. 4-4

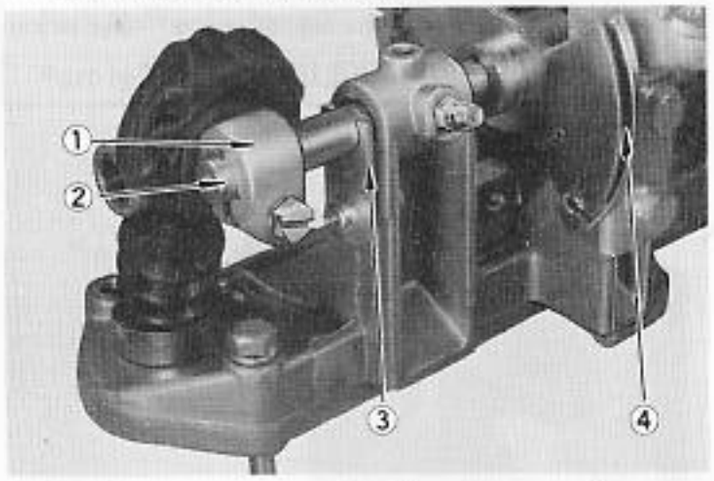
g) Loosen the jet needle set plate screw inside the throttle valve.



1. Throttle valve
2. Throttle valve spring
3. Jet needle
4. Jet needle set plate
5. Throttle valve rod
6. Throttle valve adjust nut

Fig. 4-5

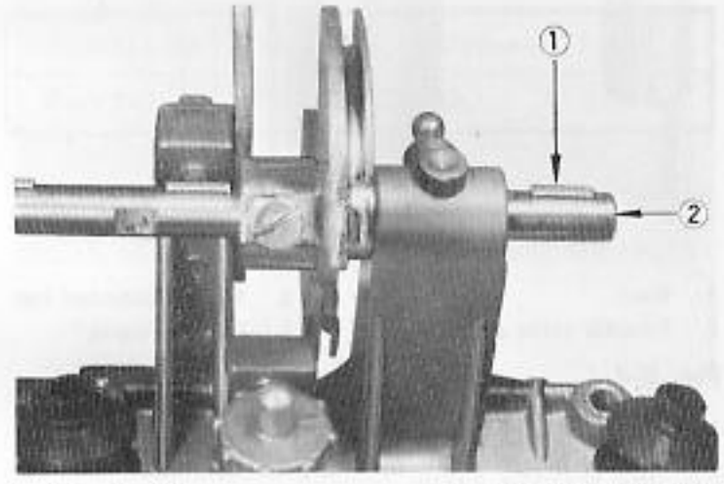
h) Unscrew bolts securing the throttle valve arm and pulley in place; back off the throttle valve shaft stopper screw.



1. Throttle valve arm
2. Throttle valve shaft
3. Throttle valve shaft stopper
4. Pulley

Fig. 4-6

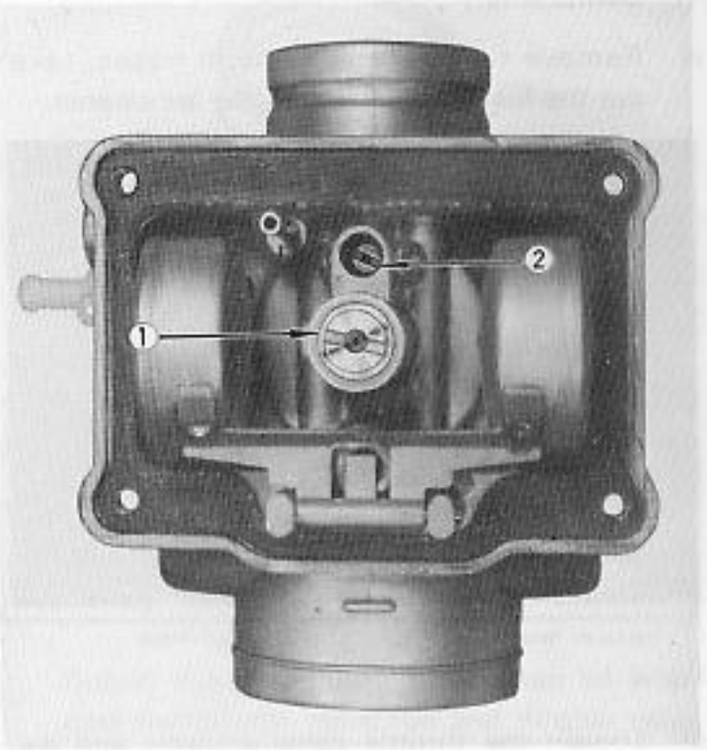
i) Pry off the woodruff key from the keyway in the throttle valve shaft while moving the pulley and throttle valve arm right and left. Remove the shaft from the mixing chamber top.



1. Woodruff key
2. Throttle valve shaft

Fig. 4-7

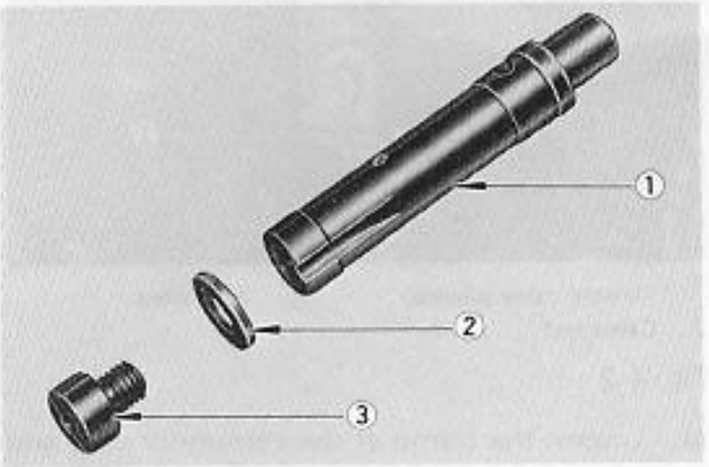
j) Remove the float chamber; take out the main and pilot jets.



1. Main jet
2. Pilot jet

Fig. 4-8

k) Remove the main jet washer. Carefully drive out the needle jet toward the mixing chamber by tapping it on the bottom.



1. Needle jet
2. Main jet washer
3. Main jet

Fig. 4-9

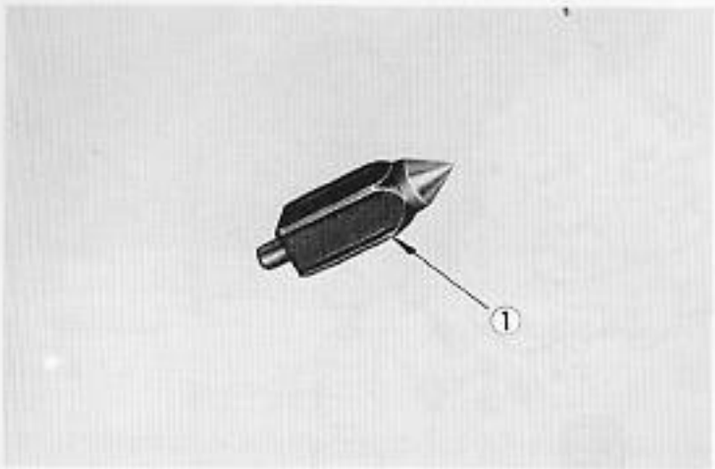
2. Inspections

a) Throttle valve

Examine the throttle valve, and make sure that it is in good condition, particularly on its sliding surface.

Replace the carburetor as an assembled unit if the valve is scored or stepped excessively.

b) Needle valve and valve seat

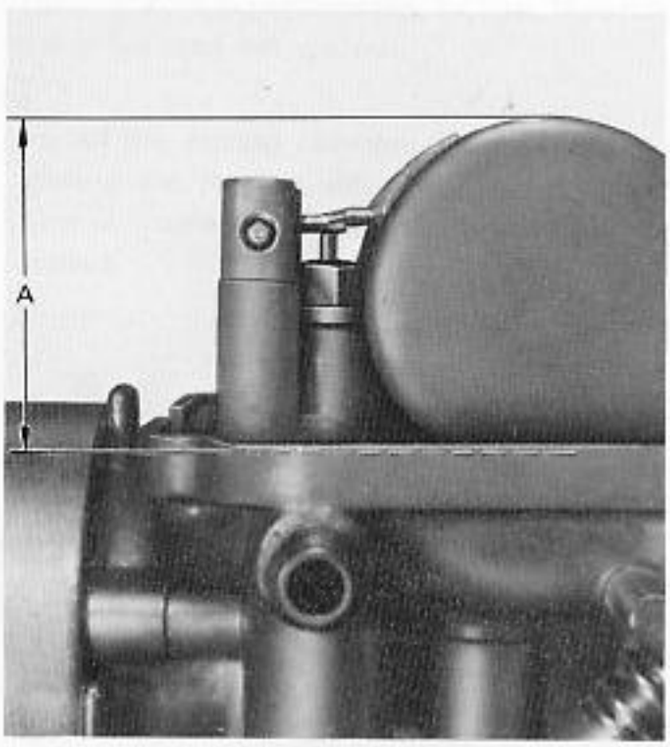


1. Needle valve

Fig. 4-10

Check the tapered point of the needle valve to see if it is not worn. If otherwise, replace the needle valve and valve seat as a set.

c) Float level

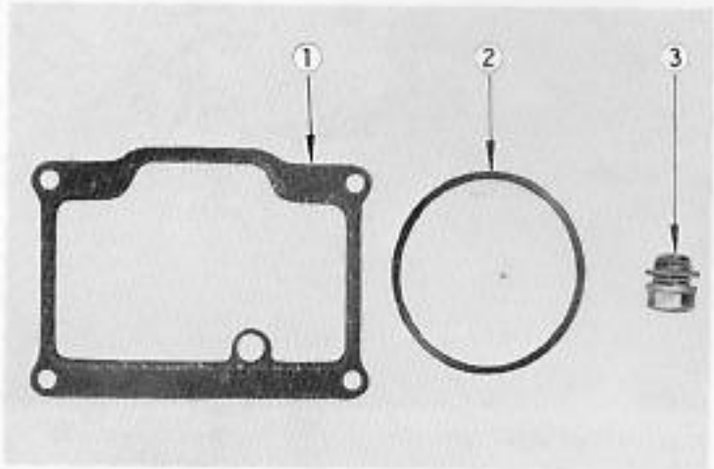


A. Float height

Fig. 4-11

Remove the float chamber and gasket. With the carburetor tilted at 10-30° from vertical, measure the distance from the gasket surface and top of the float. Adjustment can be made by bending the float arm as necessary.

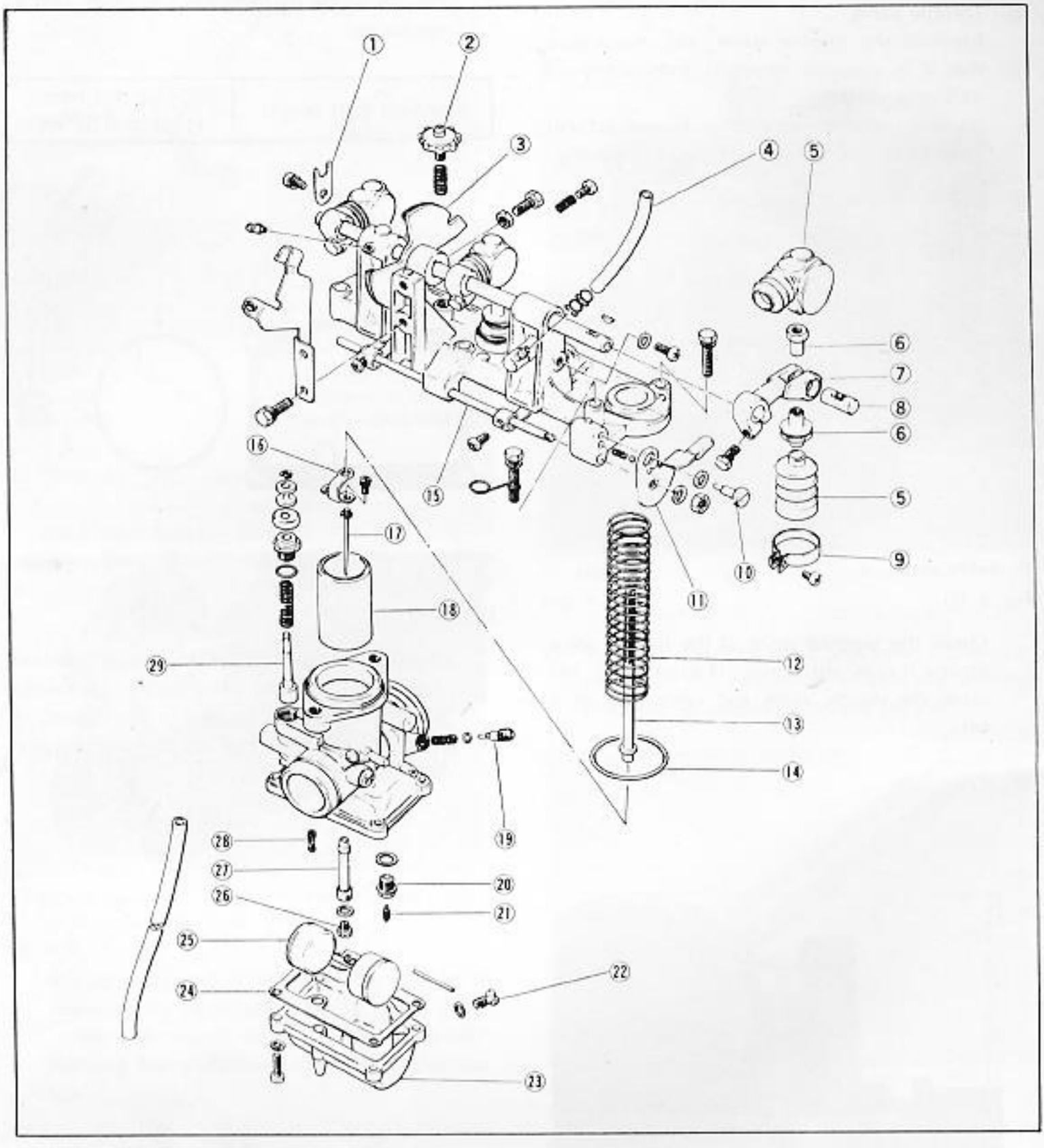
Standard float height	25.75 ± 1 mm (1.01 ± 0.04 in)



1. Float chamber gasket
2. Mixing chamber top O-ring
3. Valve seat gasket

Fig. 4-12

Check the float chamber gasket, mixing chamber O-ring and valve seat to be certain that these are not broken or weakened. If otherwise, discard the old ones and install new ones.

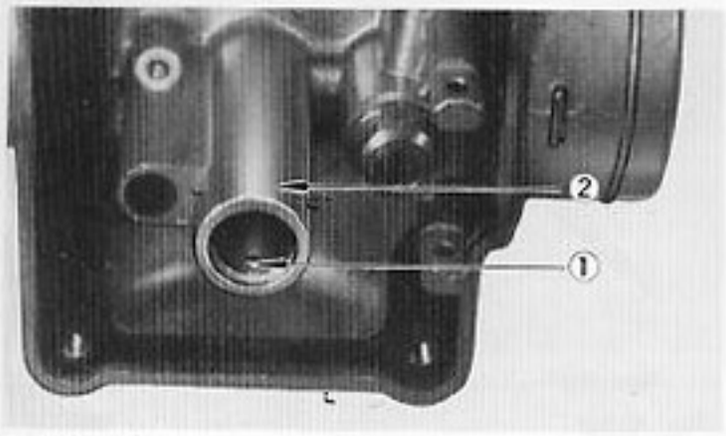


1. Throttle valve shaft stopper
2. Throttle valve stop screw
3. Pulley
4. Vacuum hose
5. Boot
6. Throttle valve adjust nut
7. Throttle valve arm
8. Arm shaft
9. Clamp
10. Choke lever screw
11. Choke lever
12. Throttle valve spring
13. Throttle valve rod
14. Mixing chamber top O-ring
15. Starter rod
16. Jet needle set plate
17. Jet needle
18. Throttle valve
19. Pilot air screw
20. Valve seat
21. Needle valve
22. Drain plug
23. Float chamber
24. Float chamber gasket
25. Float
26. Main jet
27. Needle jet
28. Pilot jet
29. Starter plunger

Fig. 4-13

Wash all parts in clean solvent and dry with compressed air.

a) Reaching from the mixing chamber side, install the needle jet in place.
Make sure that the needle jet groove aligns with the needle jet holder dowel pin.



1. Dowel pin
2. Needle jet holder

Fig. 4-14

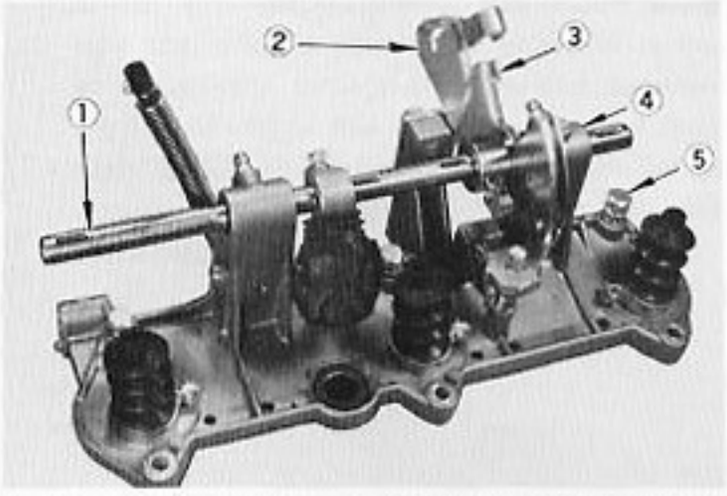
b) Install the main and pilot jets in their respective positions.

c) Install the needle valve and float; place the float chamber in position.

d) Install the jet needle in the throttle valve; assemble the needle valve set plate and throttle valve rod with the throttle valve.

e) Position the pulley between the right mixing chamber top column and throttle cable bracket. Run the throttle valve shaft through the right column, pulley, throttle valve arm and left column.

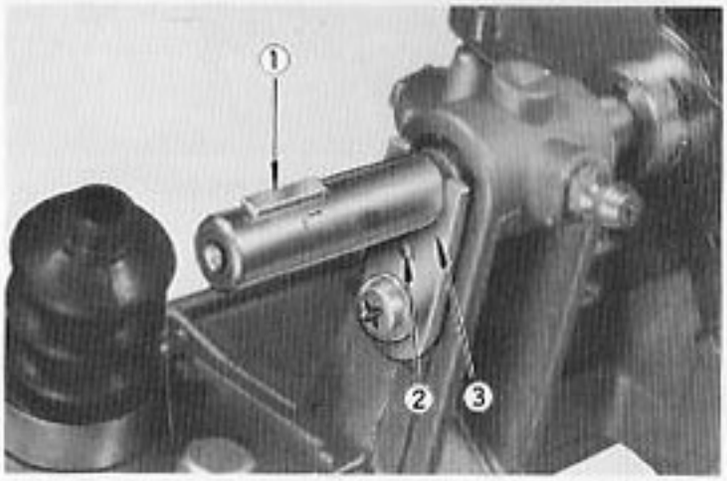
Note:
Install the mixing chamber bolts before installing the throttle valve arm. If this caution is neglected, the bolt cannot be installed.



1. Throttle valve shaft
2. Throttle cable bracket
3. Pulley
4. Mixing chamber top column
5. Mixing chamber top bolt

Fig. 4-15

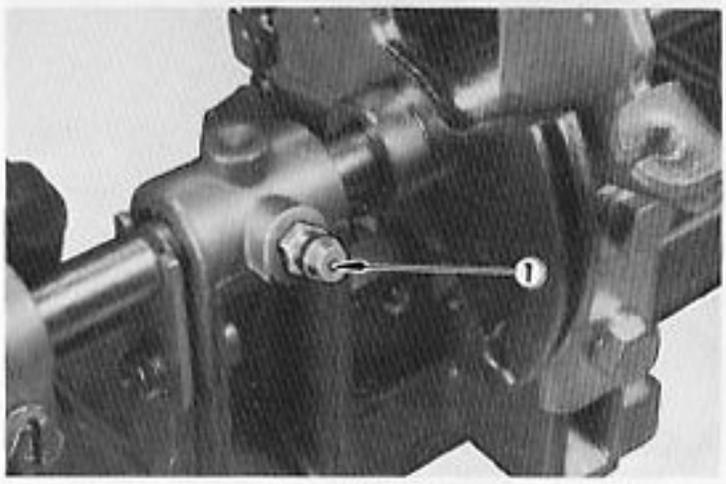
f) Press three woodruff keys in to place in the keyways in the throttle valve shaft. Install the pulley, being careful that the groove in the pulley is lined with the keys. Align lug of the throttle valve shaft stopper and hole in the mixing chamber top column; secure the throttle valve shaft.



1. Wooderuff key
2. Lug
3. Throttle valve shaft stopper

Fig. 4-16

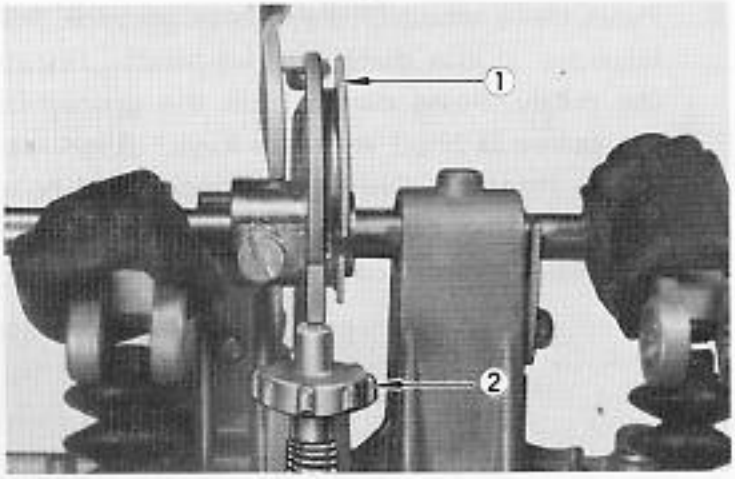
g) Pump "Suzuki Super Grease C" through the grease fitting at the top column until excess grease shows out on the throttle vale shaft.



1. Grease fitting

Fig. 4-17

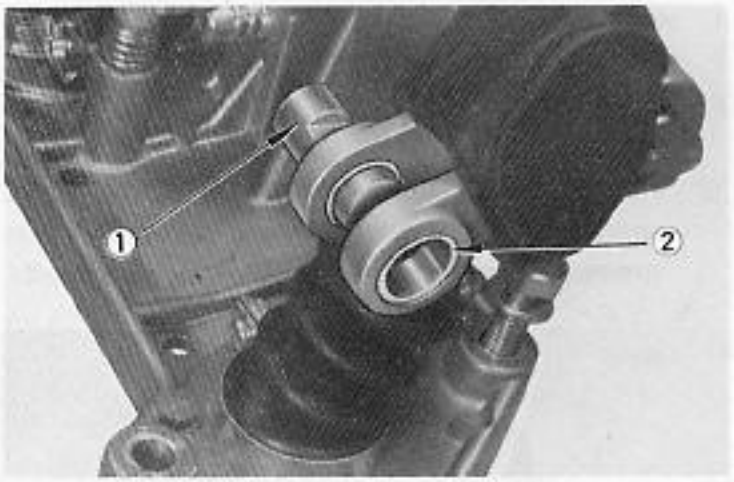
h) Approximate the pulley so that the thicker area is in line with the throttle valve stop screws. Secure the pulley with the pulley bolt, being careful not to disturb the above setup.



1. Pulley 2. Throttle valve stop screw

Fig. 4-18

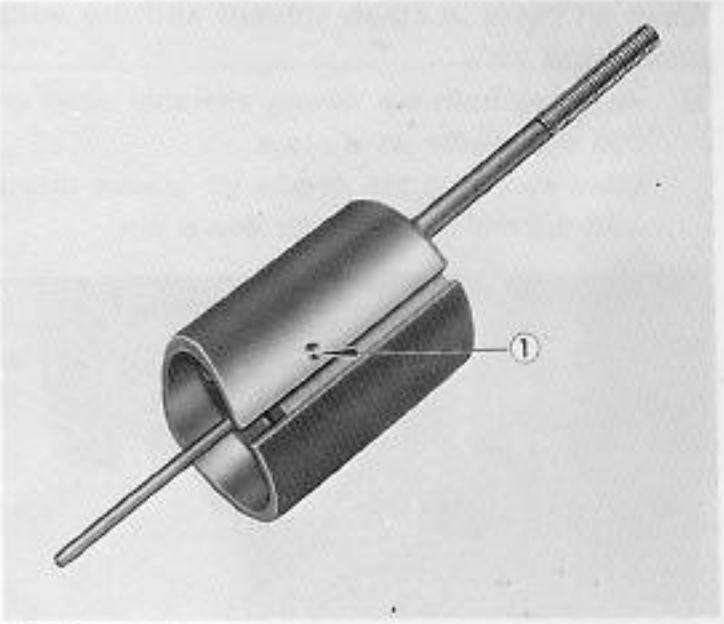
i) Apply a coating of "Suzuki Super Grease C" to the bearing surfaces of the throttle valve arm. Enter the throttle valve arm shaft through the holes in the arm.



1. Throttle valve arm shaft 2. Throttle valve arm

Fig. 4-19

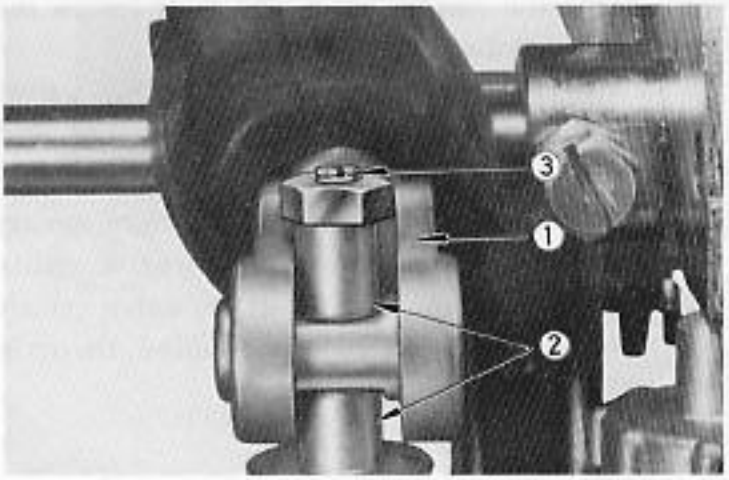
j) Enter the throttle valve into place in the carburetor body. Be sure to line up the groove in the valve with the dowel on the carburetor. Be extremely careful that the throttle valve be installed in the night side carburetor when it carries a marking (dent) on the left side of the groove as shown.



1. Dent mark

Fig. 4-20

k) Put the mixing chamber top on the carburetor body and screw in the throttle valve adjust nut until the end of the throttle valve rod comes out from the nut slightly.



1. Throttle valve arm 3. Throttle valve rod
2. Throttle valve adjust nut

Fig. 4-21

l) Tighten the throttle valve arm on the shaft with the arm bolt as per the instruction given in the accompanying sketch below.

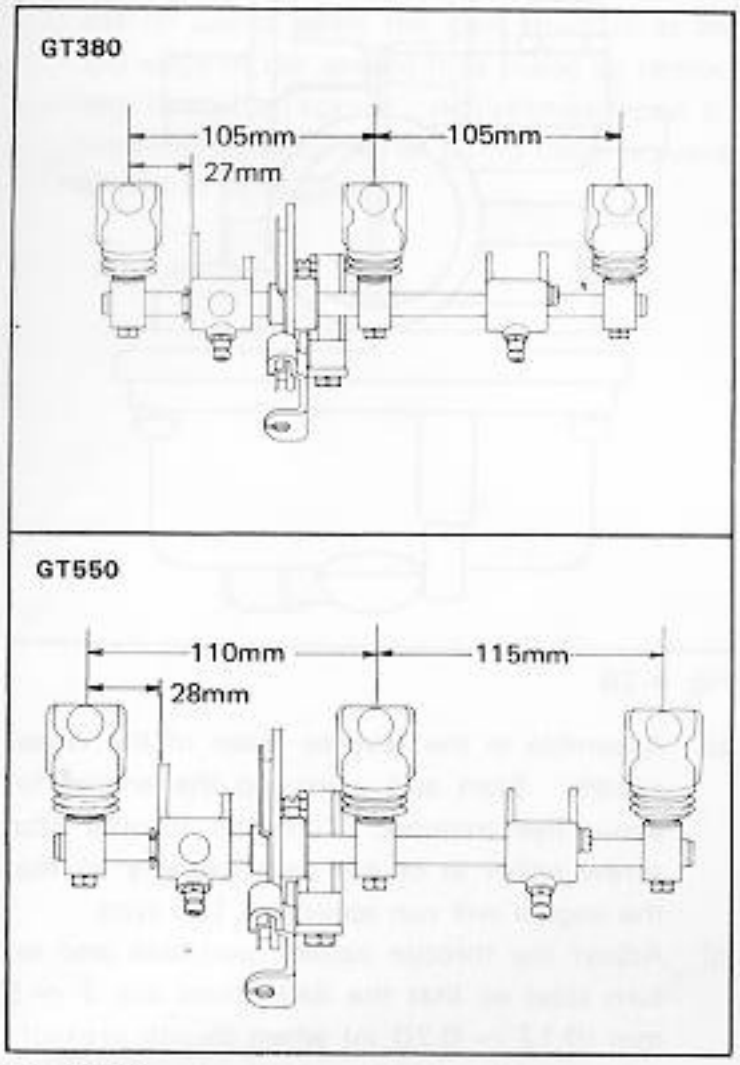


Fig. 4-22

After the above step has been completed, move the pulley several times to make sure that the arm is not interfering with the throttle valve adjust nut. If otherwise, relocate the arm on the shaft.

m) Turn in the throttle valve stop screw all the way until it bottoms; turn it out 1-1/2 turns. Without disturbing the above setup, turn the throttle adjust nut either in or out as necessary until the clearance between the lower end of the throttle valve and main bore is 0.8 ~ 1 mm (0.03 ~ 0.04 in) as viewed from the carburetor outlet (on each carburetor).

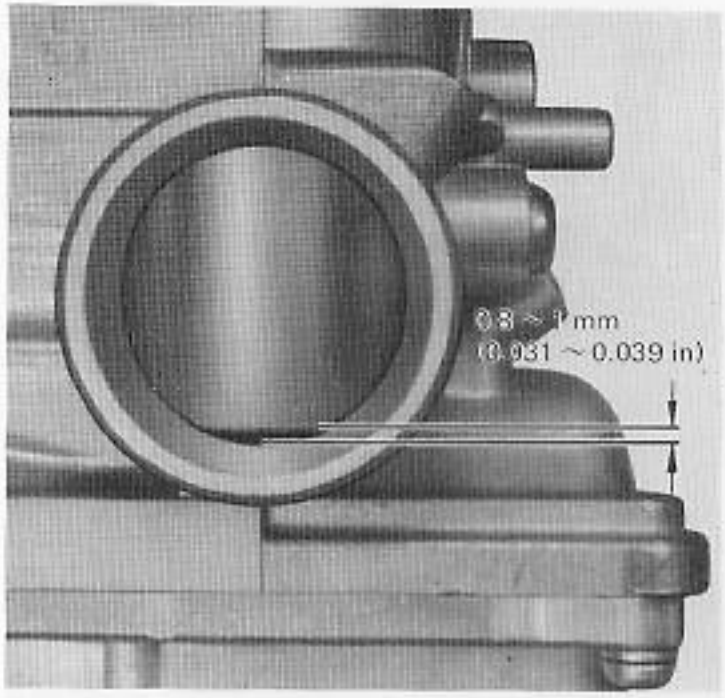


Fig. 4-23

n) Turn in or out the throttle valve full-open stop screw so that the lower end of the throttle valve is 0.5 ~ 1 mm (0.02 ~ 0.04 in) above the main bore as viewed from the carburetor inlet. Be sure to keep the throttle fully open during operation.

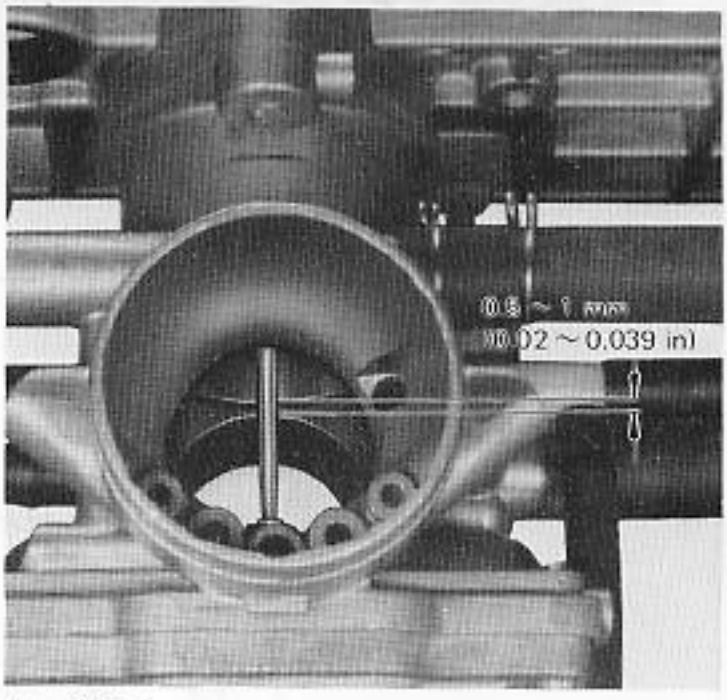
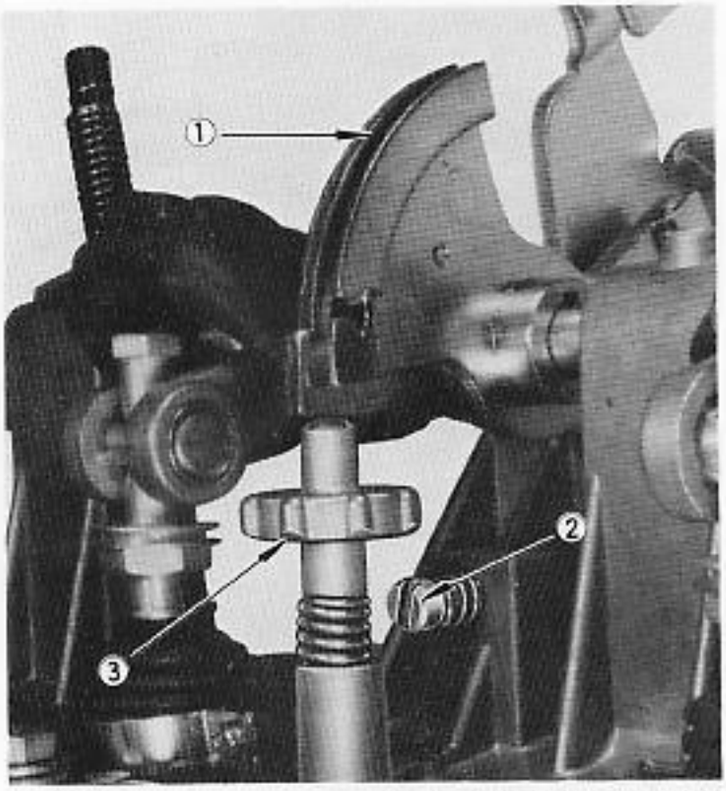


Fig. 4-24



1. Pulley
2. Throttle valve full-open stop screw
3. Throttle valve stop screw

Fig. 4-25

o) Hold any throttle valve so that it is in line with the edge of the main bore as viewed from the inlet. Using this valve as a reference, line up the remaining valves with throttle valve adjust nut. Tighten the throttle adjust nuts securely.

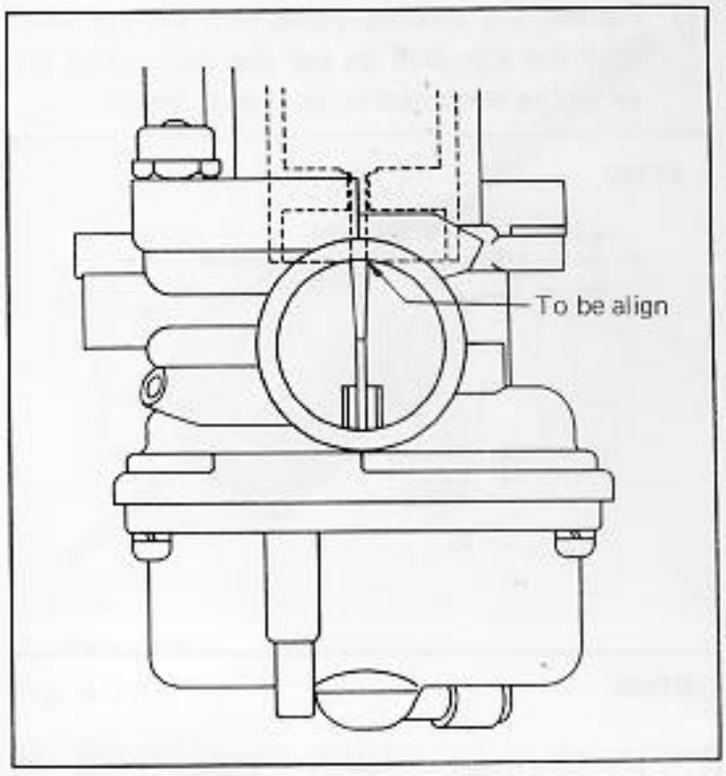
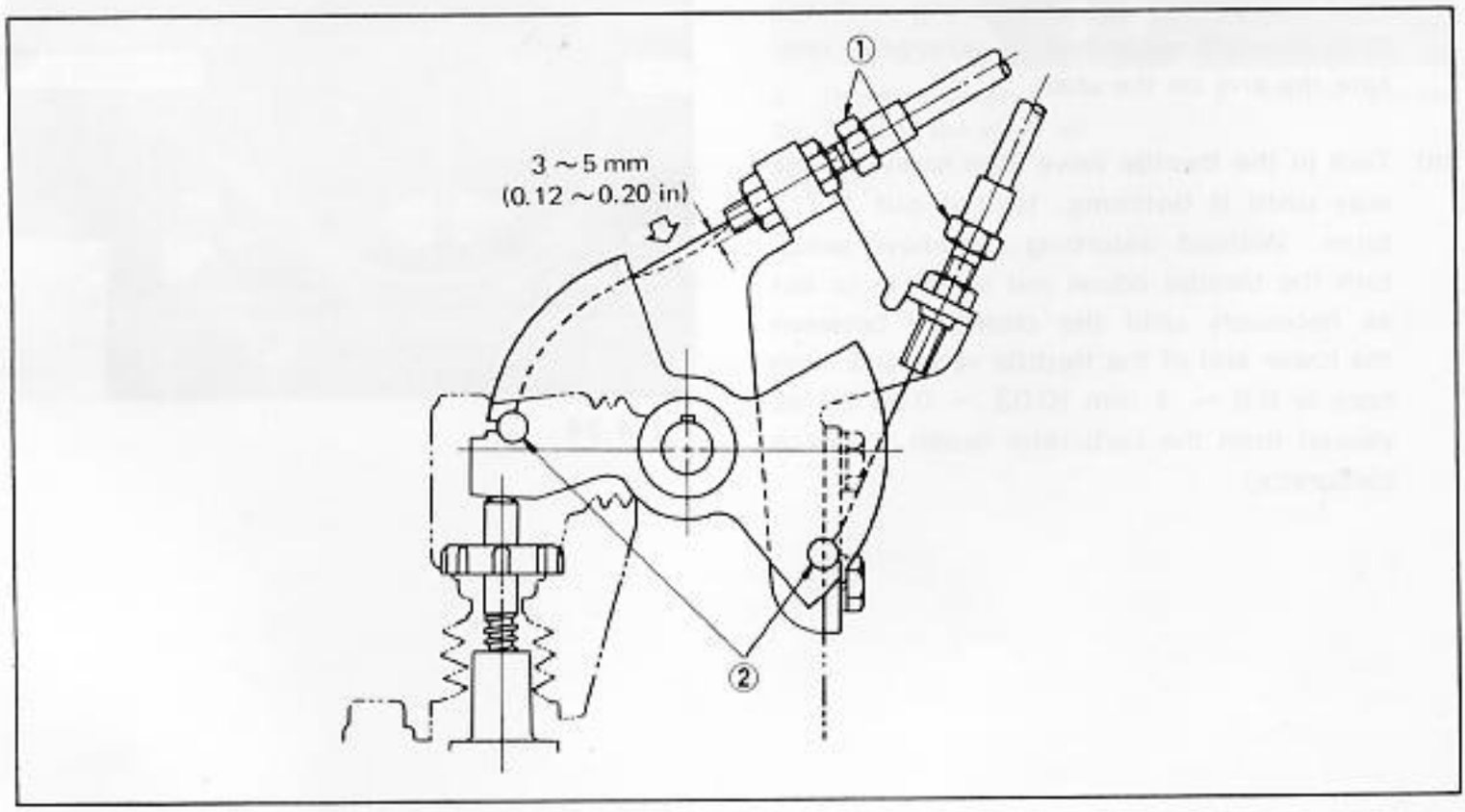


Fig. 4-26

p) Assemble in the reverse order of the disassembly. Start and warm up the engine for about five minutes. Turn the throttle stop screw either in or out as necessary so that the engine will run approx. 1,100 rpm.

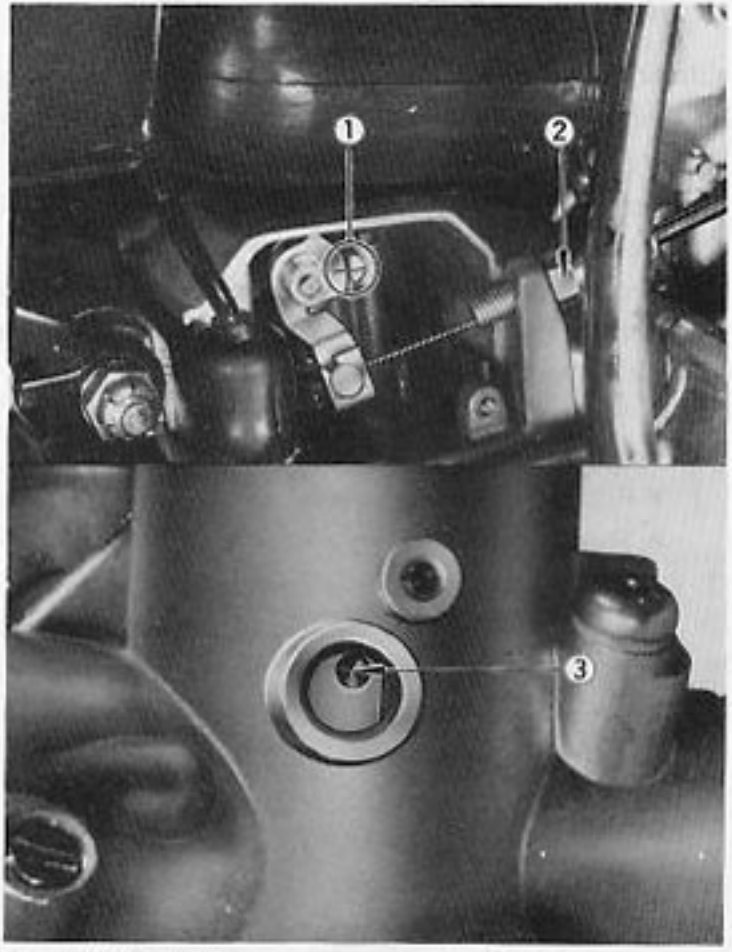
q) Adjust the throttle cables (pull side and return side) so that the deflections are 3 ~ 5 mm (0.12 ~ 0.20 in) when thumb pressure 100 ~ 200 g (0.22 ~ 0.44 lb) is applied at a point midway between the cable end and cable adjuster.



1. Throttle cable adjuster
2. Cable end

Fig. 4-27

Remove the plug screw from the right carburetor. Make sure that the marking on the oil pump control lever aligns with that on the oil pump when the dent mark is at the top edge of the vacant hole made by removing the plug screw. Adjustment can be made by turning the oil pump cable adjuster in or out as required.



1. Aligning mark
2. Oil pump cable adjuster
3. Dent mark

Fig. 4-28

4. Carburetor Adjustment

Observe either of the following procedures when it becomes necessary to make a throttle-opening (carburetor balance) adjustment during periodic maintenance service etc.

Off-motorcycle adjustment:

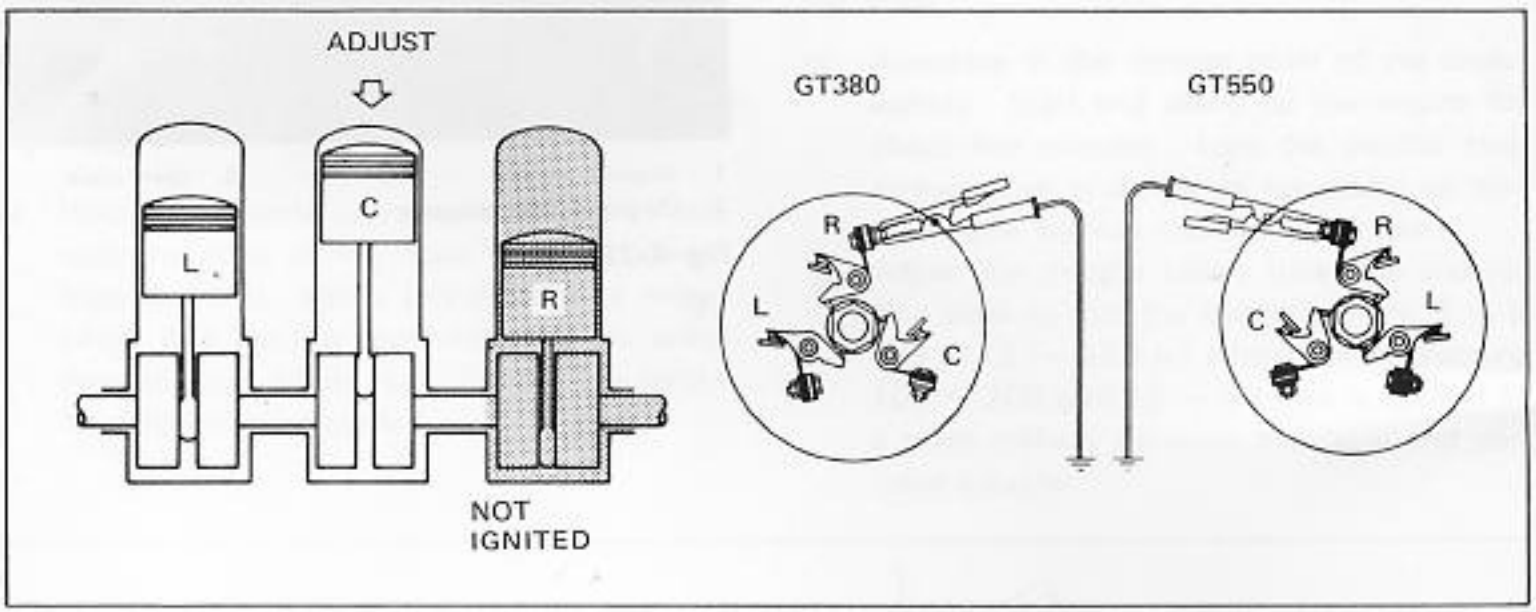
Follow the steps "o" thru "h" under ASSEMBLY in Chapter 3.

On-motorcycle adjustment:

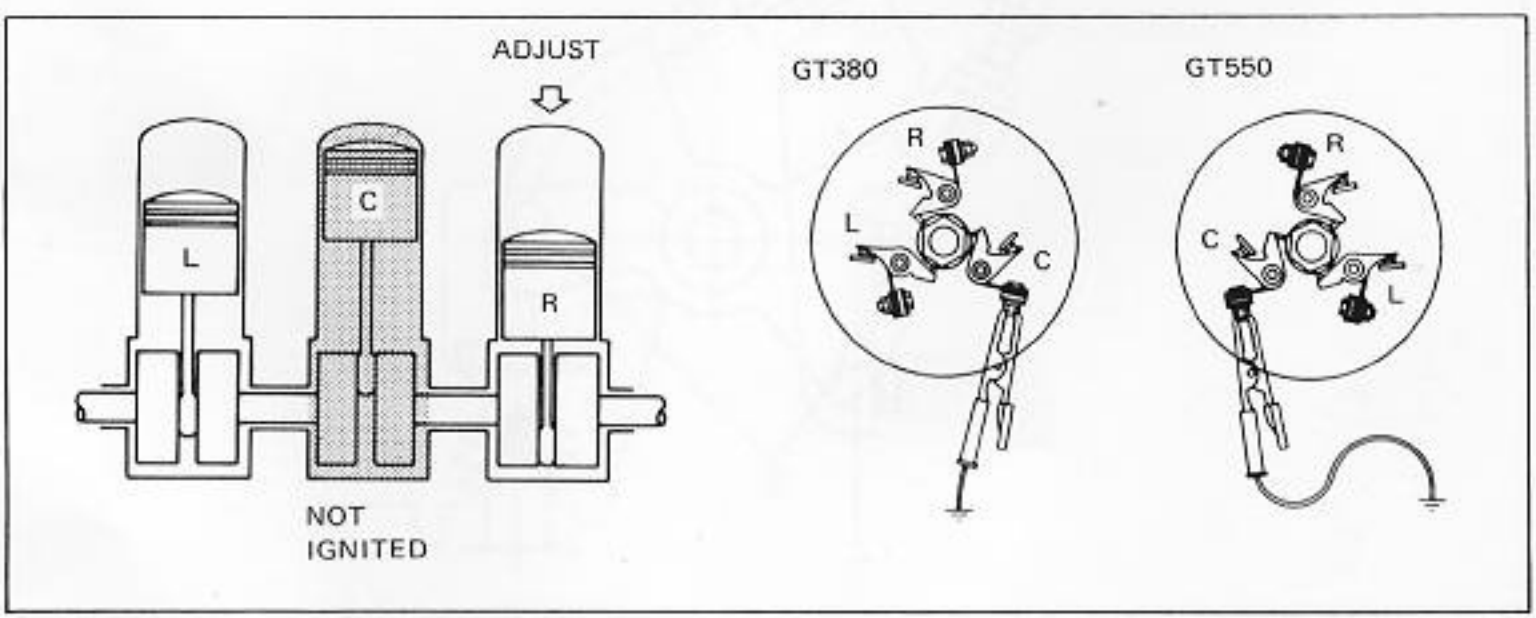
Proper procedure for adjustment of carburetor on motorcycle is as follows. However, carburetor should not be adjusted unless the following items are properly adjusted.

- Contact breaker point gap
- Spark plug gap
- Ignition timing
- Pilot air screw opening
- Throttle cable play

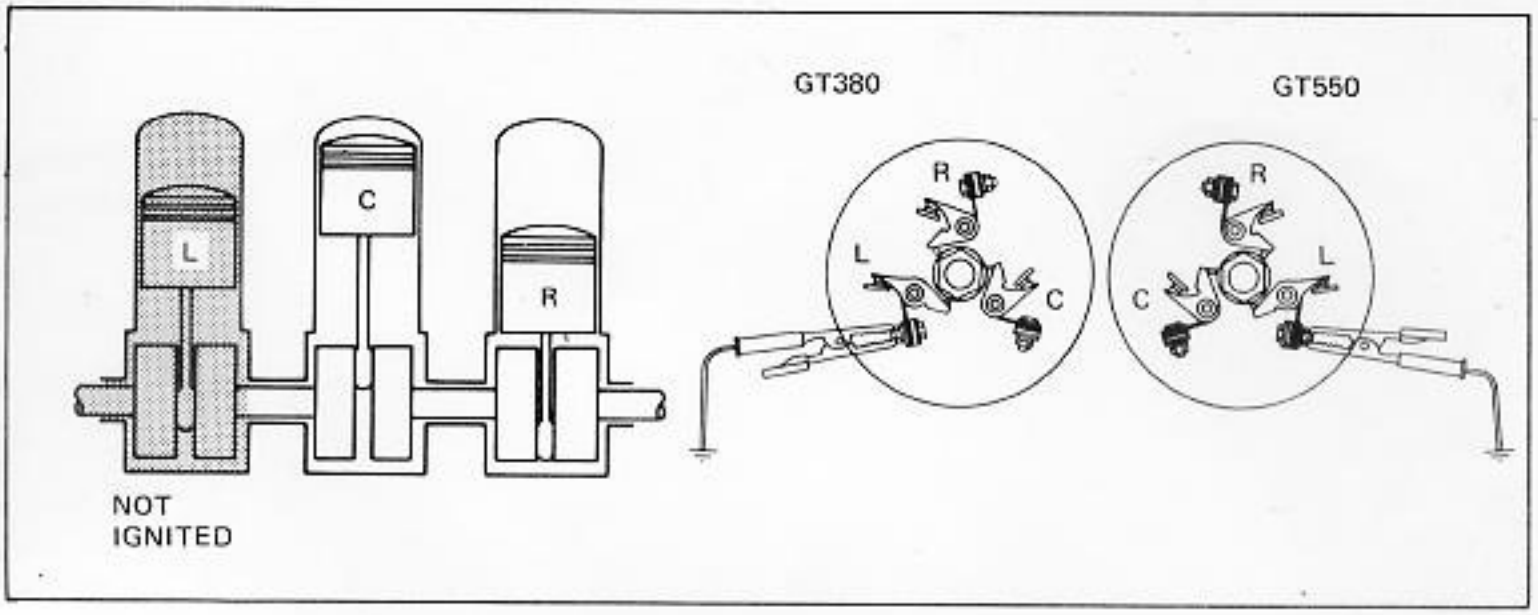
1. Start and warm up the engine for about five minutes.
2. Turn in the throttle valve stop screw so that the engine will run at approx. 1,500 rpm.
3. Ground the breaker point or remove the spark plug cap so that the right cylinder will not fire. Turn the center throttle valve adjust nut so that the engine will run at 1,000 rpm. Use tool "Throttle Valve Adjust Tool No. 09913-13110" to turn the adjust nut and screw.



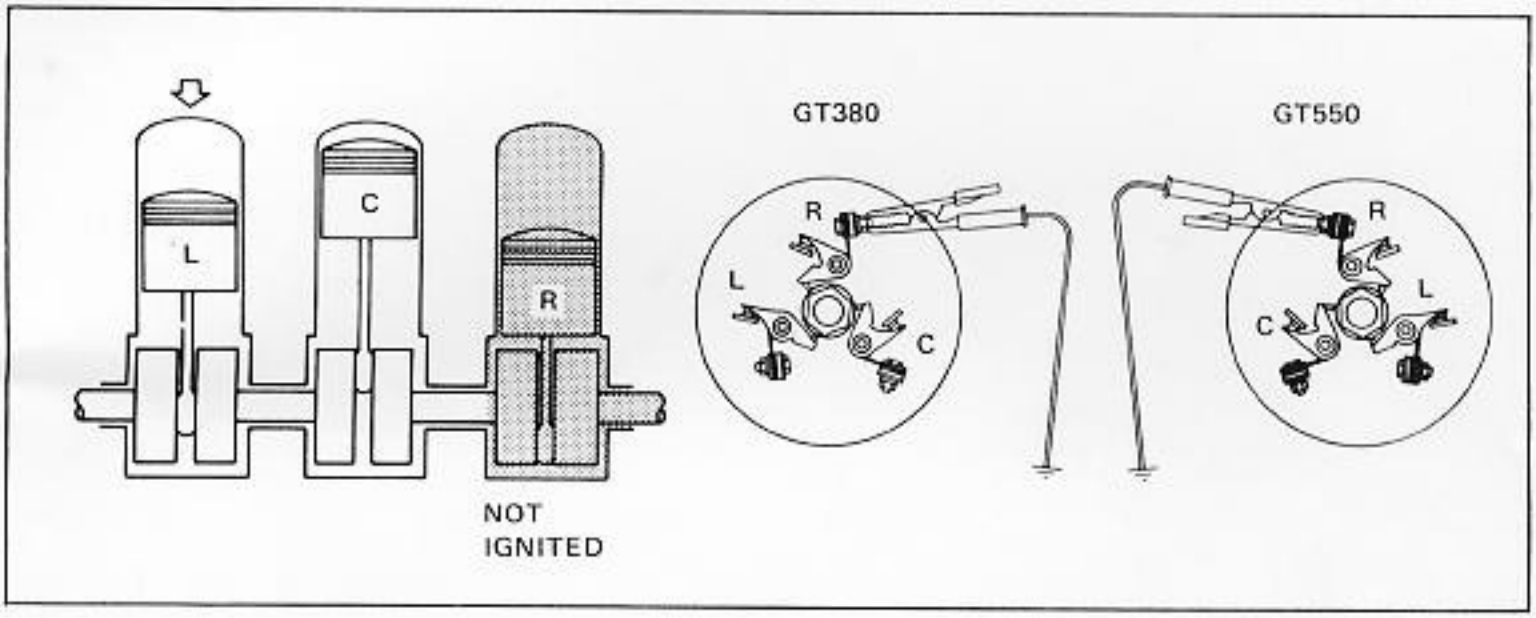
4. In like manner as above, disable the center cylinder. Adjust the engine speed to 1,000 rpm by means of the right carburetor throttle valve adjust nut.



5. Disable the left cylinder. Read the engine speed.



6. Disable the right cylinder. Rotate the left carburetor throttle valve adjust nut so that the engine will run at the same speed as that taken in Step (5) above.



7. Finally, fire all cylinders. Turn out the throttle stop screw so that the engine will run at 1,100 rpm.