9. CARBURETOR

RL250

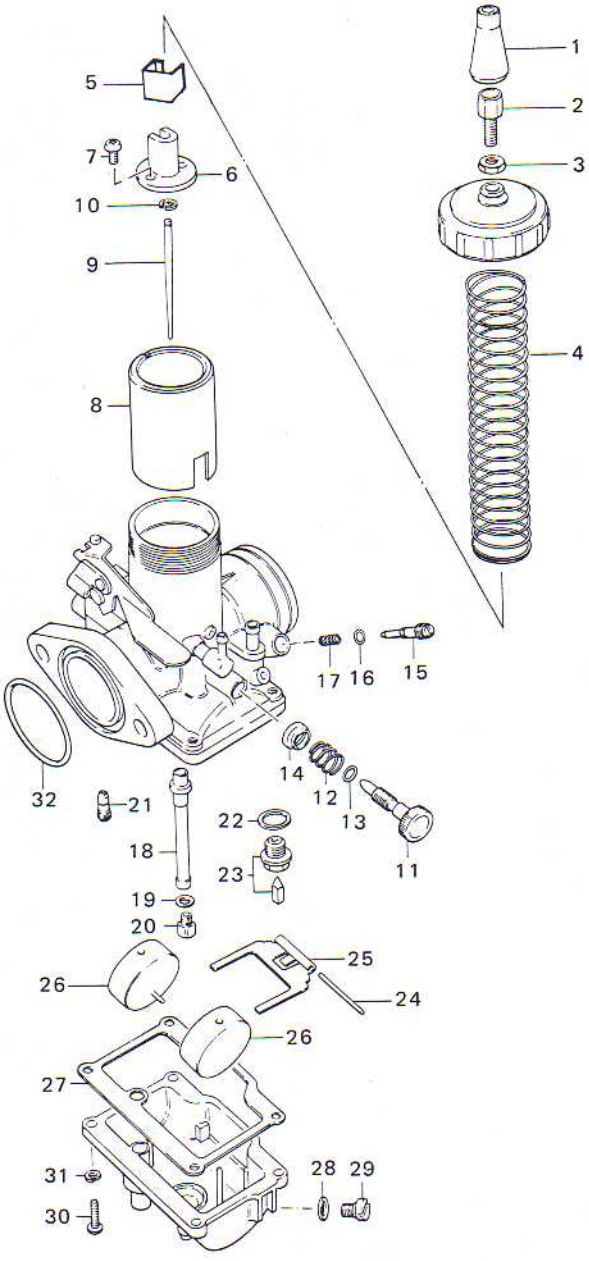

Fig. 9-1. Carburetor exploded view

1.	CABLE ADJUSTER COVER	
2.	CABLE ADJUSTER	
3.	NUT	
4.	THROTTLE VALVE SPRING	
5.	CONNECTOR COVER	
6.	CONNECTER	
7.	SCREW	
8.	THROTTLE VALVE	CA: 2.0
9.	JET NEEDLE	5CN6-3
10.	NEEDLE CLIP	
11.	THROTTLE STOP SCREW	
12.	STOP SCREW SPRING	
13.	O RING	
14.	STOP SCREW COVER	
15.	PILOT AIR SCREW	
16.	O RING	
17.	SPRING	
18.	NEEDLE JET	O-6
19.	WASHER	
20.	MAIN JET	# 145
21.	PILOT JET	# 30
22.	GASKET	
23.	NEEDLE VALVE	
24.	FLOAT PIN	
25.	FLOAT ARM	
26.	FLOAT	
27.	GASKET	
28.	GASKET	
29.	DRAIN PLUG	
30.	SCREW	
31.	LOCK WASHER	
32.	O RING	

OPT. MAIN TET	#140
	#150
	#160
	#170

9-1. Specifications

Main jet	# 145
Jet needle	5CN6-3
Needle jet	0-6
Throttle valve cutaway	# 2.0
Pilot jet	# 30
Pilot outlet	0.7 mm
Pilot air adjusting screw	1-1/2 turns back open
Starter jet	80
Needle valve seat	2.5 mm
Standard fuel level	13.7 mm

9-2. New mechanism

Main jet

The main jet is installed in such a manner as to provide quick and easy replacement from outside by merely removing the jet holder on the under of the carburetor float chamber bottom.

9-3. Overhauling carburetor

In overhauling the carburetor, remove all parts and after washing with clean gasoline, blow about the interior with compressed air. In cleaning out the jets, wire or other sharp objects must never be used as it will disturb the carburetor performance.

9-4. Adjusting carburetor

9-4-1. Idling adjustment

This adjustment must not be performed until the engine has been fully warmed up. First close the pilot air screw fully and at this state, adjust the throttle stop screw so that the engine will be maintaining its lowest speed. Next open the pilot air screw gradually from its fully closed position. This will cause the engine speed to rise, and when the engine reaches its highest speed, set the pilot air screw at this position. Then, drop the engine speed by turning the throttle stop screw, after which turn the pilot air screw and set it at the position where the engine rises once more to the highest speed. By repeating this operation two or three times, proper idling will be obtained.

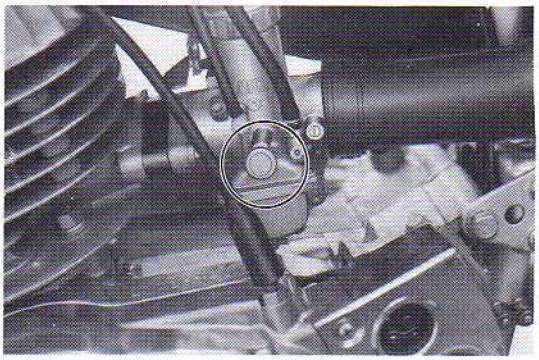

Fig. 9-2. Adjusting throttle valve adjusting screw

9-4-2. Air-fuel mixture adjustment

When the air and fuel are not in proper mixture ratio, the engine will develop following symptoms:

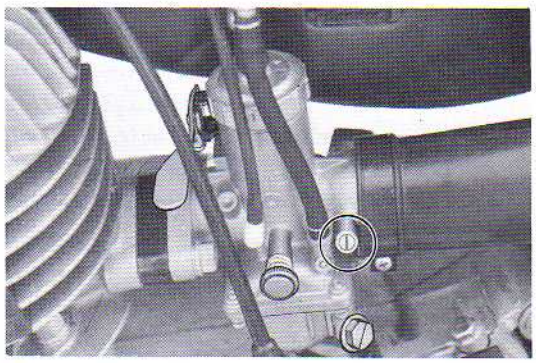

Fig. 9-3. Adjusting pilot air adjusting screw

Case of Excessive Fuel	Case of Excessive Air
Continuance of heavy engine noise	Engine tends to overheat
Exhaust gas becomes thicker	Engine condition improves when carburetor starter is operated
Engine does not revolve smoothly	Engine r.p.m. fluctuates even if the throttle grip is held steady
Spark plug fouled to black color	Spark plug tends to burn out
Engine runs better with air cleaner removed	

After checking whether the mixture is too rich or too lean by observing the engine running condition, examine by means of the throttle grip just the part of the throttle valve opening where the condition is bad. Since carburetor mechanism is such that each function of the carburetor inner parts change in accordance with the throttle valve opening, it is possible by the above method to narrow down on the possible location of the maladjustment and thereby, make adjustment easier.
The causes for inproper carburetion and adjustment methods shall be explained by dividing the throttle valve opening into four parts.

(1) Throttle valve opening 0–1/8 (idling speed)
At this opening the fuel metered by the pilot jet mixes with the air adjusted by the pilot air screw and forms a rich mixture, which discharges from the pilot outlet and mixes with the small amount of air flowing through the main bore, and supplied to the engine. The pilot jet is of fixed size, the richness of mixture being controlled by the pilot air screw adjusting the amount of air drawn in, and therefore, the correct adjustment of the pilot air screw becomes the most important point. Clogging by dirt will have many effects on carburetion. The mixture will become too rich if the pilot air inlet, the air passage to pilot jet, or pilot jet bleed hole should become clogged. The mixture may also become too lean if the pilot jet or pilot outlet should become clogged.
In case of clogging, the general correction method would be to wash with clean gasoline and then blow about with compressed air. In removing and installing the pilot jet, use a suitable small plain screwdriver. In cleaning out the jet inside, wire or similar object must never be inserted.

(2) Throttle valve opening 1/8–1/4 (low speed)
At this opening, the slow system and main system operate half and half. The slow system operates in manner similar to that described above, the fuel meterd by the pilot jet is mixing with the air adjusted by pilot air screw and discharged from pilot outlet.
In the main system, the amount of fuel discharge is determined by the clearance between the jet needle and needle jet and the size of throttle valve cut-away. Causes of improper carburetion at this opening must be checked at two sources since the fuel is supplied from two different system.
In the main system, the amount of fuel discharge is determined by the clearance between the jet needle and needle jet and the size of throttle valve cut-away.
Inspect the slow system by the same procedure described in (1) above. In the main system, dirt getting into the main jet or needle jet may cause the mixture to become too lean and create poor performance. Possible causes for the mixture becoming too rich and creating poor performance are clogging of air jet and its passage, clogging of needle jet bleed hole, and excessive clearance between needle jet and jet needle due to wear. In case of clogging, correct in same manner as described in (1) above, by washing with gasoline and blowing out with compressed air. If the needle jet and jet needle are worn, try changing the number of clips determining the jet needle position or replace.

(3) Throttle valve opening 1/4–3/4 (Cruising speed)
At this opening, the air metered by the air jet, enters into the needle jet bleed hole to form a suitable mixture in mixing with the fuel passing through the main jet. The mixture is then controlled in the clearance between the needle jet and jet needle and discharged into the main bore. Possible causes for

improper carburetion are clogging of air jet and its passage, clogging of needle jet bleed hole, wear in jet needle and needle jet, and loose main jet or needle jet, which will make the mixture too rich for proper performance. Poor performance due to mixture being too lean may be caused by the needle jet or main jet been clogged. Repair clogging by washing with gasoline and blowing through with compressed air.

(4) Throttle valve opening 3/4–full open (full speed)

At this opening the fuel is discharged from the needle jet. In (3) above, the fuel was controlled by the clearance between the jet needle and needle jet. But when the throttle valve is nearly full open, the jet needle is pulled up higher accordingly so that the clearance between the jet needle and needle jet becomes larger than the sectional area of the hole provided in the main jet, resulting in the fuel being metered by the main jet. Possible causes for poor performance are the clogging of the main or needle jet, making the mixture too lean for proper performance. Clogging of the air jet and needle jet bleed hole and loosening of main and needle jets would cause the mixture to become too rich and create poor performance. If proper carburetion cannot be attained even after checking up on the clogging and loosening adjust the main jet. If the mixture is too rich, replace with smaller size jet and if too lean replace with larger size jet.

In case the main or needle jet is to be removed and reinstalled for cleaning or other causes, the following precautions should be observed.

(a) In handling the needle jet and main jet, use care not to mar or injure their mounting surfaces. Before installing, inspect the O-ring on the needle jet and the needle seat in the float chamber to see that they are not damaged.

(b) Tighten the needle jet at 30–35 kg-cm torque. Take care not to overtighten as the inside diameter will be deformed and affect the performance.

(c) Tighten the main jet at 10–15 kg-cm torque as there will be danger of damages if tightened too strongly.

9-5. Adjusting fuel level

If the fuel in the float chamber is out of the specified height, the mixture may become too rich or too lean. So it is necessary to check and adjust fuel level if necessary, especially when the float and float arm were replaced. The carburetor fuel level of RL250 is adjusted in the following procedure. Hold the carburetor mixing chamber upside-down, while paying attention so that the float arm pin and the float arm may not come off.

If they should come off, fit float arm correctly as shown in Fig. 9-4.

Under this condition, measure the distance as shown in Fig. 9-4 with slide calipers. This measurement indicates float level, and if it differs from S.T.D. (137 mm, 0.54 in), adjustment is required.

When the distance measured is less than S.T.D., bent the tongue up. If it is greater, bend the tongue down by hand.

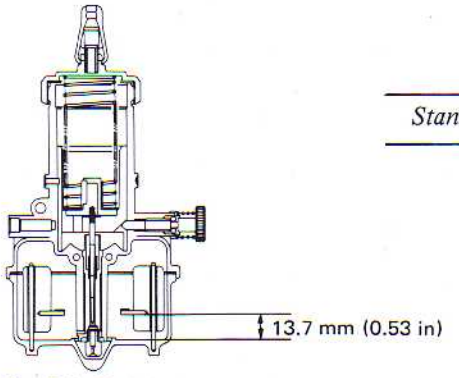

Fig. 9-4. Fuel level

Standard fuel level:	*13.7 mm (0.54 in.)*

9-6. Inspecting float chamber parts

9-6-1. Float

If gasoline should enter into the float while operating, the fuel level will become higher and will cause improper engine operation. Check the float by holding it in hand and seeing if there is any fuel inside. Replace if defective and also replace if deformed.

9-6-2. Needle valve

Inspect the needle valve visually to see if worn or damaged. If the defect cannot be detected visually hold carburetor mixing chamber body at the same level with its original position and turn it upside down with the needle valve installed and fuel pipe connected to the fuel tank. Allow the valve to close tightly on the valve seat by the weight of valve alone. Under this state, turn the fuel cock lever to "ON" position and if there is no leakage of fuel, the valve is still usable.

9-6-3. Valve spring

If the spring inside the needle should become weakened, gasoline may overflow from float chamber when running at specified speed under specified road conditions. In case such condition arises, replace the needle valve.

9-7. Overflowing

If overflow still continues to develop even after making the checks directed in (9-6.) above, there is a strong chance of dirt being caught between the needle valve and valve seat as shown in Fig. 9-5.

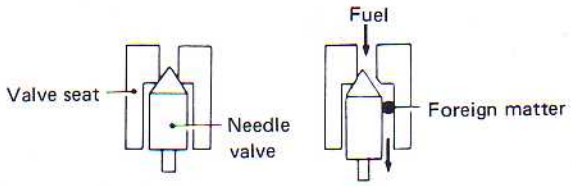

Fig. 9-5. Overflow caused by foreign matter

In such a case, close the fuel cock temporarily and run the engine so the fuel level inside the float chamber will drop. When the fuel level drops, the needle valve will drop correspondingly, causing the clearance between the valve seat and needle valve to grow larger. Under this state re-opening the fuel cock will allow the fuel to flow in through the valve seat with considerable force so that there is a good possibility of the dirt stuck at this part being washed away and the trouble remedied. However, this is merely an emergency measure. If the overflow trouble is to be remedied basically, the dirt must be removed completely from the fuel. At this time, the filter in the fuel cock should also be inspected carefully. Since a large part of the overflow trouble occurs too frequently, the fuel tank interior should be flushed out clean with gasoline.

The users should also be advised to always close the fuel cock whenever the motorcycle is to be parked for any length of time.

9-8. Air cleaner

If the air cleaner is clogged with dust intake resistance will be increased with a resultant decrease in output, increase in fuel consumption, and top of the piston and the inside of the cylinder head become dirty with carbon.

- ○ Unscrew the bolts of frame cover and remove it.
- ○ Unscrew the screw and take out the air cleaner cover. Dismantle the cleaner element.
- ○ Take off the polyurethane filter from the element. Wash the filter with gasoline.
- ○ After wringing gasoline out of the filter, soak it into the SUZUKI CCI oil or engine oil with around SEL #30.
- ○ Wring oil out of the filter and then fit it to the element.

Fig. 9-6. Unscrewing the bolts of frame cover

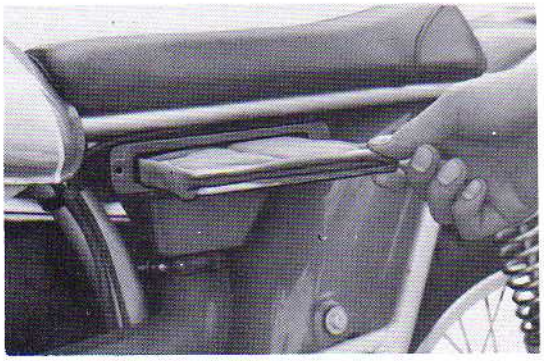

Fig. 9-7. Take off the polyurethane filter from the element.