and all parts cleaned and found to be functioning properly. For example, the quantity of air entering the carburetor bore is less at high altitude due to the lower atmospheric pressure. To obtain the proper carburetor fuel/air mixture, it may be necessary to raise the clip on the jet needle and to exchange the main jet for one a size smaller. In particularly cold weather, the increased density of the air may necessitate a lower clip position on the jet needle and a size larger main jet.

Since the carburetor regulates and mixes fuel and air going to the engine, there are two general types of carburetor trouble: too rich a mixture (too much fuel);
or too lean a mixture (too little fuel). Such trouble can be caused by dirt, wear, maladjustment, or improper fuel level in the float chamber. A dirty or damaged air cleaner can also alter the fuel-to-air ratio.

Table 9 Mixture Trouble Symptoms

Mixture too rich	Mixture too lean
Engine is sluggish	Engine overheats
Smoky exhaust	Runs better with choke lever pulled up
Runs worse when warm	Spark plug burned white
Spark plug fouled black	Running is unstable
Runs better without air cleaner	Loss of power

The following explanation of the functioning and maintenance of the carburetors covers the four main systems for fuel regulation and supply.

Table 10 Carburetor Systems

System	FUNCTION
Starter System	Supplies the necessary rich mixture for starting a cold engine.
Pilot System	Supplies fuel at idling and low speeds.
Main System	Supplies fuel at medium and high speeds.
Float System	Maintains the fuel at a constant level in the float chamber.

Caution 1. Remove the diaphragm before cleaning the carburetor with compressed air, or it will be damaged.

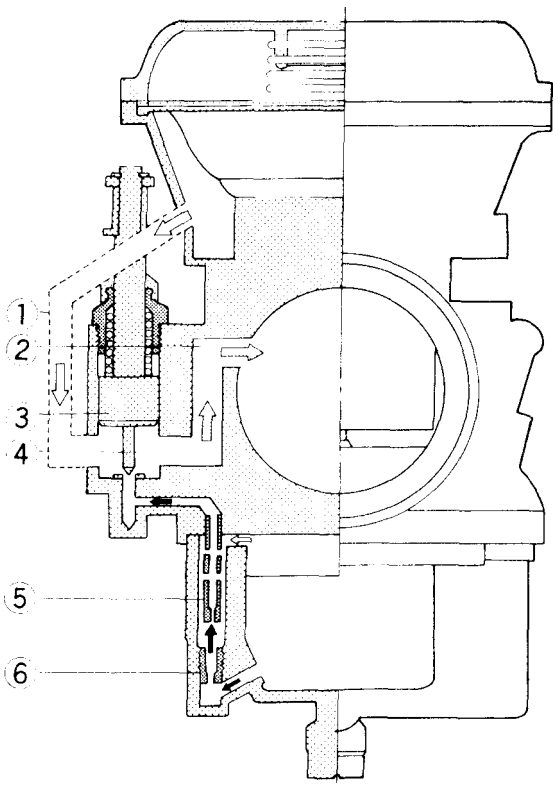
2. The carburetor body has plastic parts that cannot be removed. DO NOT use a strong carburetor cleaning solution which could attack these parts; instead, use a mild cleaning solution safe for plastic parts.

3. Do not use wire for cleaning as this could damage the jets.

Starter System

Fig. 396 shows the starter system, which includes the starter jet 6 , starter pipe 5 , starter plunger 3 , starter air passage 1 , plunger chamber '4, and mixture passage *2* .

Starter System



1. Air Passage
2. Mixture Passage
3. Starter Plunger
4. Plunger Chamber
5. Starter Pipe
6 . Starter Jet

The starter system provides the exceptionally rich 1:1 fuel/air ratio that is necessary to enable easy starting when the engine is cold. When starting the engine, the throttle is left closed, and the starter plunger is pulled fully open by pulling up the choke lever. Since the butterfly valve is closed, a high intake vacuum (suction or low pressure) is developed at the engine side of the

Table 11 Carburetor Specifications

Type	Main jet	Main Air Jet	Needle Jet Badge #	jet Needle	Pilot Jet	Pilot Screw	Starter Jet	Fuel level (from bore center)
BS38	125	1.0	Z-4	4JN19-4	45	*11/2 + - 1/2t* turns out	110	31 ± 1 mm