

CARBURETION

Problem Diagnosis

Fuel system diagnosis should follow a specific path, first examining the fuel tank, then the filters, fuel lines, vent lines, fuel pump, impulse hose, air box, exhaust system and finally the carburetors.

The following troubleshooting information assumes that the general mechanical condition of the engine (pistons, rings, bearings, etc.) is good.

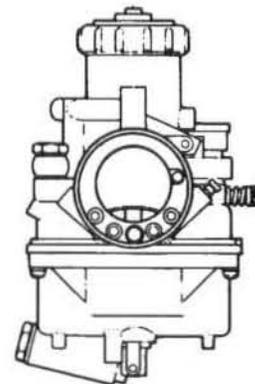
When the fuel/air mixture is diagnosed as improper due to spark plug readings, clean the carburetor and blow its passages clear with compressed air. Use the spark plug firing end condition as a guide for further determination of whether the mixture is too rich or too lean.

Next, use the throttle lever to determine at what degree of throttle valve opening the problem exists.

CONDITION	SYMPTOMS
Mixture Too Rich	-Black spark plug tip -Heavy exhaust smoke -Engine runs worse after warm up -Runs better without air silencer -Combustion chamber has heavy deposits of carbon
Mixture Too Lean	-Spark plug electrodes white -Fluctuation in engine speed -Power loss -Engine overheats -Cylinder scoring -Backfiring - detonation -Throttle diagnostic opening check points
Poor Fuel Mileage	-Incorrect ignition timing -Improper track tension (too tight) -Incorrect carburetor jetting -Fuel leaks (lines, fittings, fuel pump) -Needle and seat leaks -Plugged exhaust -Carburetor vent line problems -Clutching incorrect for conditions

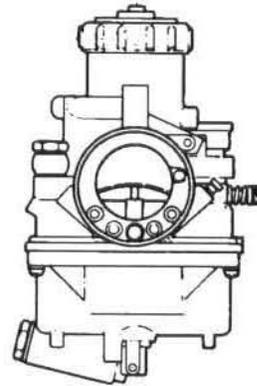
Troubleshooting Tips, 0-1/4 Throttle:

- Pilot air screw misadjusted
- Pilot jet of wrong size
- Obstruction of pilot jet
- Pilot jet loose
- Choke plunger not seating (rich)
- Carburetor mounting air leak (lean)
- Crankshaft seal air leak (lean)
- Fuel pump diaphragm damaged (rich)
- Float level incorrect



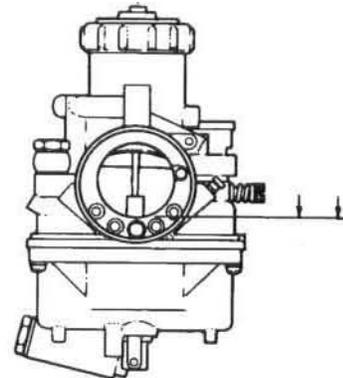
Troubleshooting Tips, 1/4-3/8 Throttle:

- Obstruction in main jet or needle jet
- Jet needle worn or out of adjustment
- Pilot system malfunction
- Incorrect throttle valve cutaway



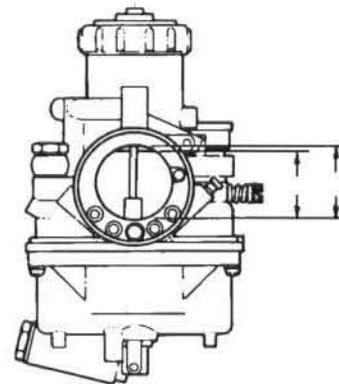
Troubleshooting Tips, 3/8-3/4 Throttle:

- Main jet incorrect size or clogged (lean)
- Needle jet setter O-Ring damaged or loose
- Needle jet/jet needle worn (rich)



Troubleshooting Tips, Full Throttle:

- Main jet size (rich or lean)
- Fuel filter blocked (lean)
- Fuel vent lines or check valves plugged
- Exhaust system plugged
- Air box restricted
- Fuel pump weak
- Exhaust leaking into engine compartment (rich)
- Water in float bowl (lean)



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Problem Diagnosis

Explanation of Gasoline Volatility

In order for an engine to start easily and run properly, gasoline must be able to burn without causing detonation, vapor lock, flooding, or icing of fuel lines, fuel pumps, or carburetors. One of the sometimes misunderstood properties of gasoline is its volatility, or ability to atomize at different ambient temperatures and altitudes during the year.

When gasoline is blended, it is given a Reid Vapor Pressure number which reflects its ability to vaporize or mix with air at a given temperature range. Gasoline vapor pressure is measured by putting a sample of fuel inside a closed container and applying a specified amount of heat to the container for a certain amount of time. This pressure will vary from about 9.0 PSI during the summer to approximately 15.0 PSI during the coldest months. Service stations selling a large volume of fuel will normally have the correct blend to work well at all times throughout the year.

When the weather is very cold, gasoline must be able to atomize very quickly in order for an engine to start and warm up properly. If summer blend fuel, which has a low Reid Vapor number, is being used, little or no vaporization will occur. Droplets will form causing flooding and very hard starting.

During the summer months, if winter blend fuel is being used it may cause vapor lock (boiling fuel) inside the fuel lines, pump, or carburetor. This will cause warm engine driveability problems and hard starting when warm. Some states are limiting the Reid Vapor number to 9.0 PSI year around to help meet evaporative emissions standards.

Warm Weather ↑ ↓ Cold Weather	Maximum Reid Vapor		Ambient Air Temp. Range		Low Vaporization Rate ↑ ↓ High Vaporization Rate
	Class	Pressure	Low	High	
	A	9.0 PSI	60° F	110° F +	
	B	10.0 PSI	50° F	110° F	
	C	11.5 PSI	40° F	97° F	
	D	13.5 PSI	30° F	85° F	
	E	15.0 PSI	20° F	69° F	

Add 2.4° F for each 1000 feet above seal level.

CARBURETION Optional Water Trap Installation

⚠ WARNING

Fuel spillage will occur during this installation. *Gasoline is extremely flammable and explosive under certain conditions.*

- ⚠** Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored.
- ⚠** Do not weld or operate a torch near the fuel system. Remove fuel tank before any chassis welding is performed.
- ⚠** If you get gasoline in your eyes or if you swallow gasoline, see your doctor immediately.
- ⚠** If you spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing.
- ⚠** Never start the engine or let it run in an enclosed area. Gasoline powered engine exhaust fumes are poisonous and can cause loss of consciousness and death in a short time.

Following are instructions for optional water trap installation for 34 and 38mm carbs (Kit PN 2870688). **NOTE:** Not available on side jet type carburetors.

1. Turn fuel valve off.
2. Remove air silencer. (600 only)
3. Position a shop cloth or container below drain plug and loosen drain plug.
4. Remove drain plug and sealing O-Ring.
5. Install removed O-Ring onto drain plug and water trap assembly.
6. Install water trap assembly into bottom of float bowl and tighten.
7. Turn fuel on, start engine and check for possible fuel leaks.
8. Reinstall air box.

The water traps should be periodically inspected and drained. Draining frequency will depend upon fuels purchased and riding conditions. Once a week is a fairly good rule of thumb.

