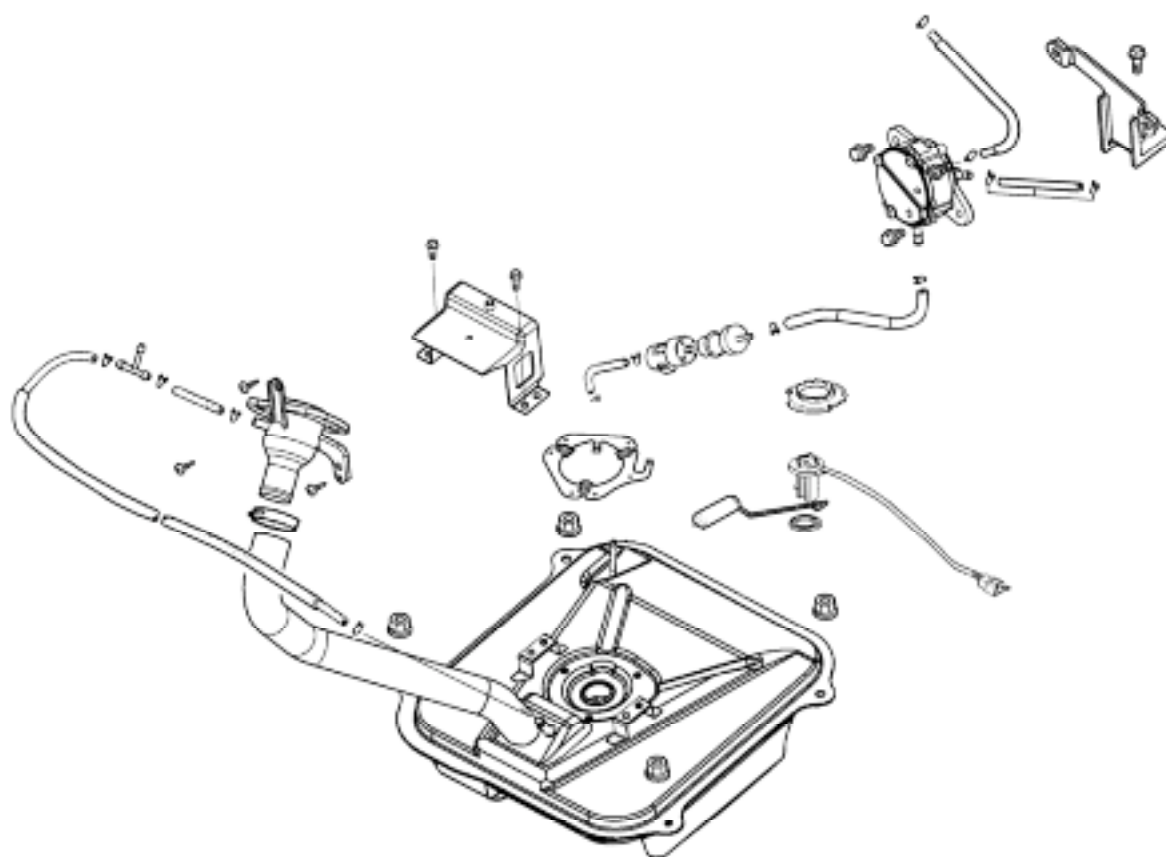


## FUEL SYSTEM/CARBURETOR/FUEL PUMP

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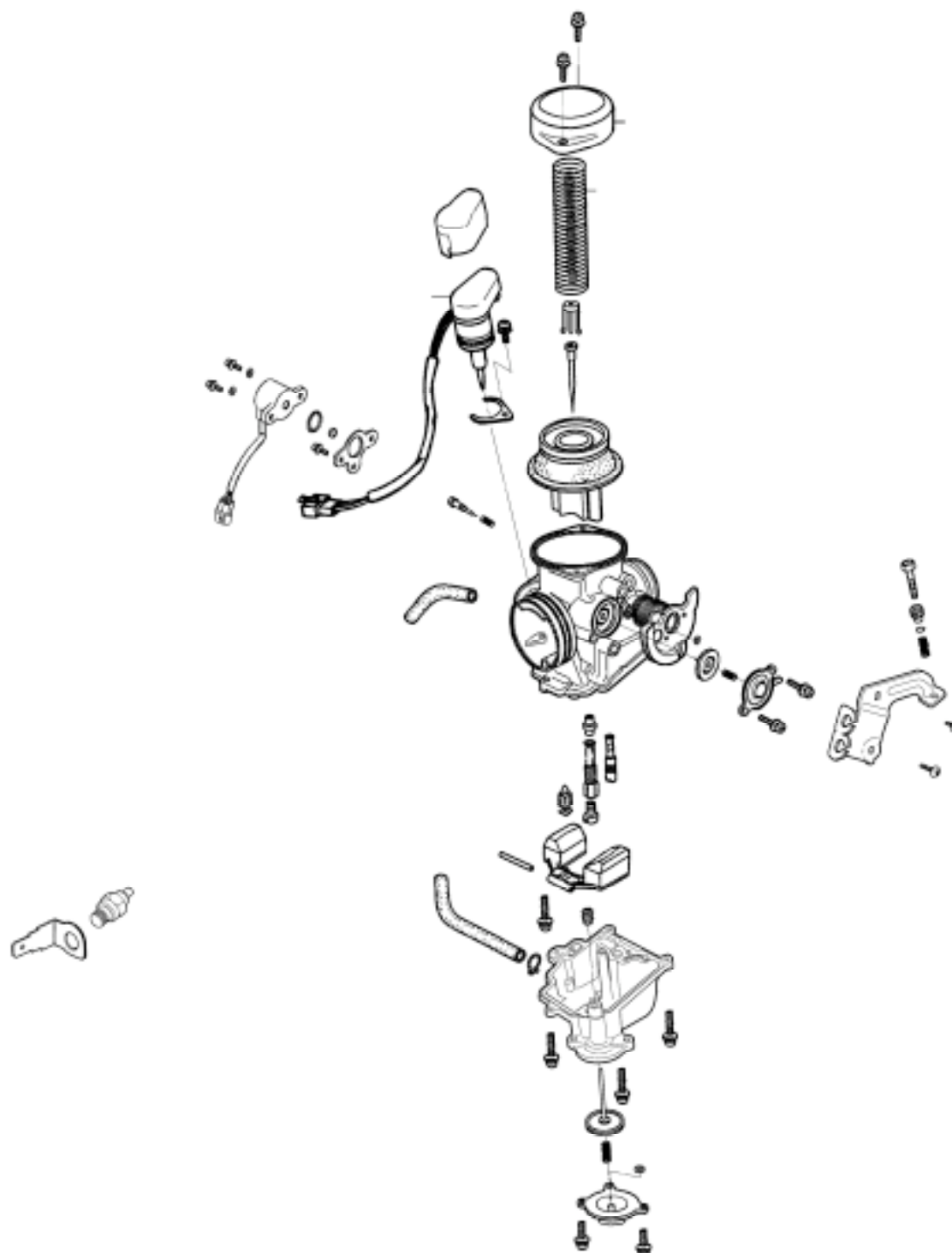
## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### FUEL SYSTEM



## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### SCHEMATIC DRAWING



## OPERATION OF CARBURETOR JETS

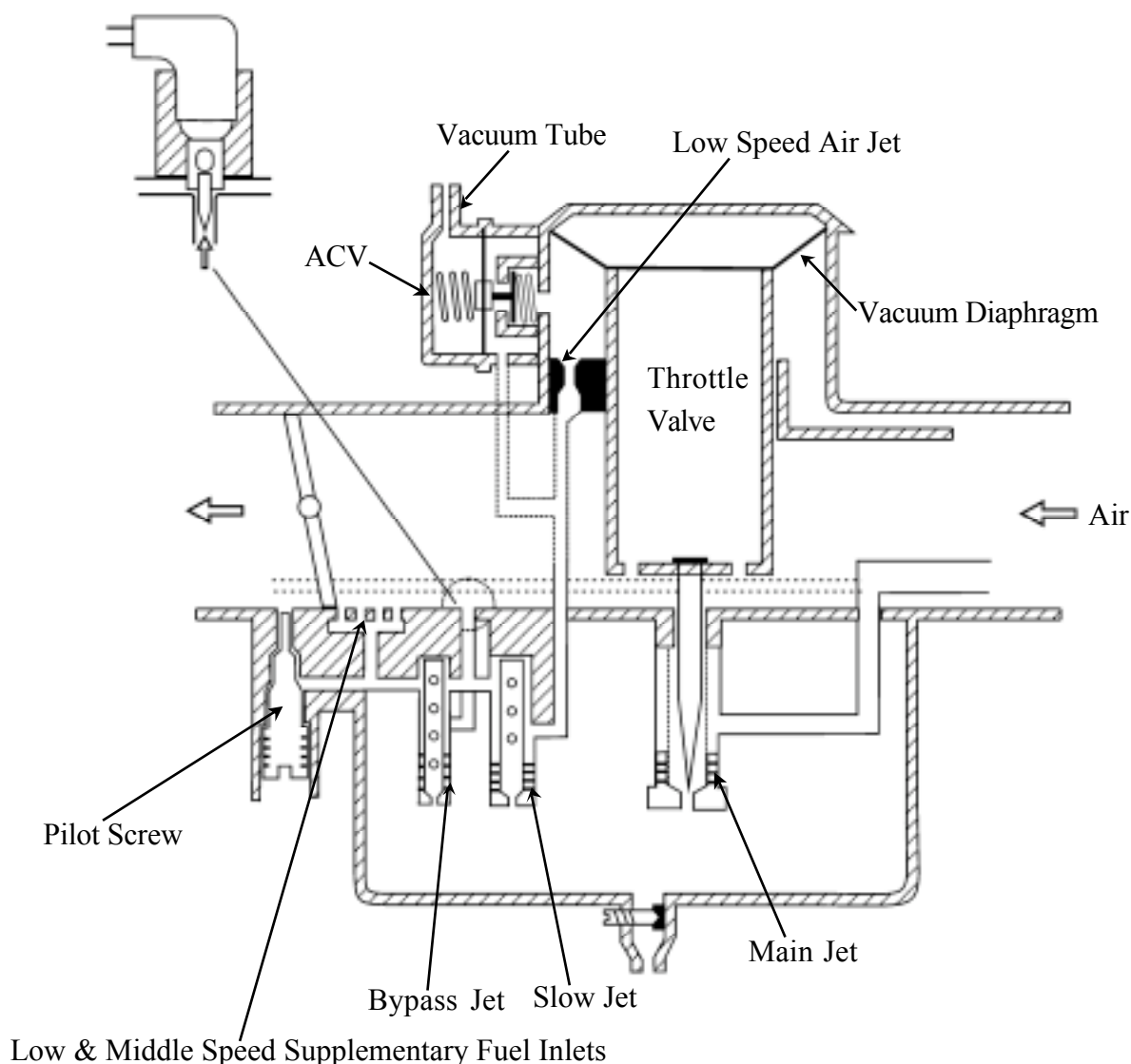
### 1. LOW SPEED

- ※ Air — [ Venturi (slightly opened throttle valve)  
Low Speed Air Inlet ] — Air Bleed Holes → Mixture.....
- ※ Fuel in Float Chamber → Slow Jet ————— Low Speed Small Jet Holes

### 2. MIDDLE SPEED

- ※ Air — [ Venturi (halfway opened throttle valve)  
High Speed Air Jet ] — Air Bleed Holes → Mixture.....
- ※ Fuel in Float Chamber → Main Jet ————— Main Jet (The slow jet also works.)

### Low & Middle Speed Supplementary Device:



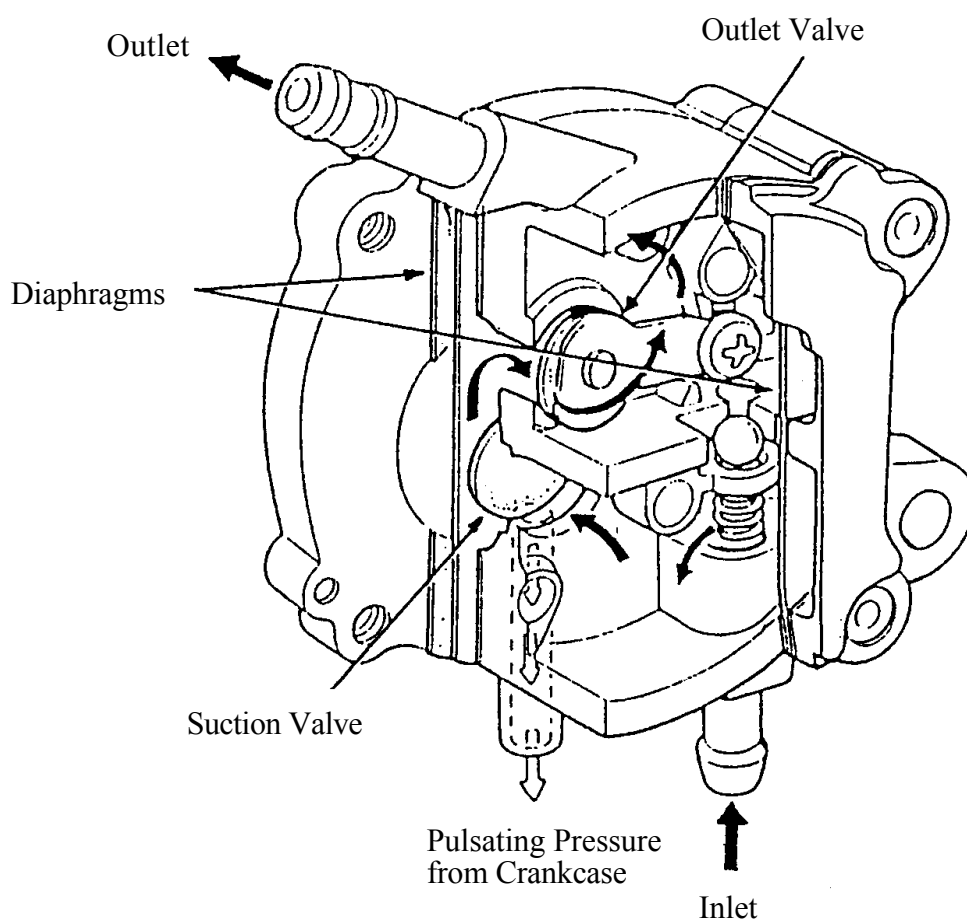
## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### FUEL PUMP

#### CONSTRUCTION:

The fuel pump adopted for this model is a vacuum-type fuel pump which utilizes the positive and negative pulsating pressures produced by the engine crankcase to control the oil pump diaphragms and deliver fuel from the fuel tank to the carburetor through the suction valve and outlet valve.

#### FUEL PUMP CONSTRUCTION



## SERVICE INFORMATION

### GENERAL INSTRUCTIONS

- When working with gasoline, keep away from sparks and flames.
- Note the locations of O-rings when disassembling and replace them with new ones during assembly.
- Before float chamber disassembly, drain the residual gasoline from the float chamber.
- Do not try to disassemble the auto bystarter.
- When assembling the vacuum chamber and air cut-off valve, be careful not to damage the diaphragms.
- All cables, fuel lines and wires must be routed and secured at correct locations.
- When removing the fuel tank, keep sparks and flames away from the working area.
- When removing the fuel tank, the remaining fuel in the tank must be lower than \_ of the fuel tank capacity to avoid gasoline overflowing.
- Fuel tank capacity: 10.5 liters

### SPECIFICATIONS

	SH50CA
Venturi dia. (mm)	CVK30
Identification number	CVK038B
Float level (mm)	18.5
Pilot screw opening	1/2~4
Main jet	108#
Slow jet	38#
Idle speed	1450
Fuel pump output	17L/Hr/7000rpm

### SPECIAL TOOLS

Float level gauge

Fuel unit remover

### TROUBLESHOOTING

#### Engine does not start

- No fuel in tank
- Restricted fuel line
- Too much fuel getting to cylinder
- Clogged air cleaner
- Contaminated fuel
- Faulty fuel pump

#### Engine idles roughly, stalls or runs poorly

- Incorrect idle speed
- Rich mixture
- Lean mixture
- Clogged air cleaner
- Intake air leak
- Contaminated fuel
- Faulty air-cut off valve
- Damaged vacuum tube and connectors
- Damaged carburetor insulator

#### Throttle does not open fully, so engine stalls

- Damaged vacuum piston diaphragm
- Clogged diaphragm hole

#### Lean mixture

- Clogged fuel jets
- Clogged fuel tank cap breather hole
- Clogged fuel filter
- Bent, kinked or restricted fuel line
- Faulty float valve
- Float level too low
- Faulty fuel pump or insufficient output

#### Rich mixture

- Auto bystarter valve opens excessively
- Faulty float valve
- Float level too high
- Clogged air jets
- Auto bystarter valve set plate installed in the wrong groove
- Clogged air cleaner

#### Engine is hard to start

- No fuel in tank
- Restricted fuel line
- Clogged fuel strainer
- Faulty fuel pump
- Broken or clogged vacuum tube
- Faulty or clogged charcoal canister

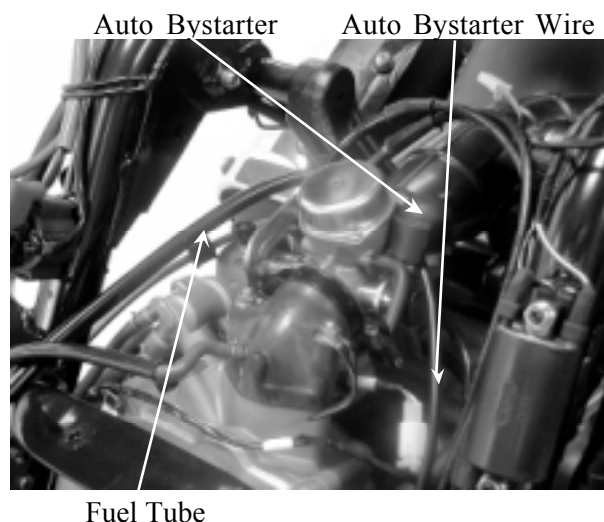
#### Lean mixture

- Clogged charcoal canister
- Bent, kinked or restricted fuel line
- Clogged fuel strainer
- Float level too low

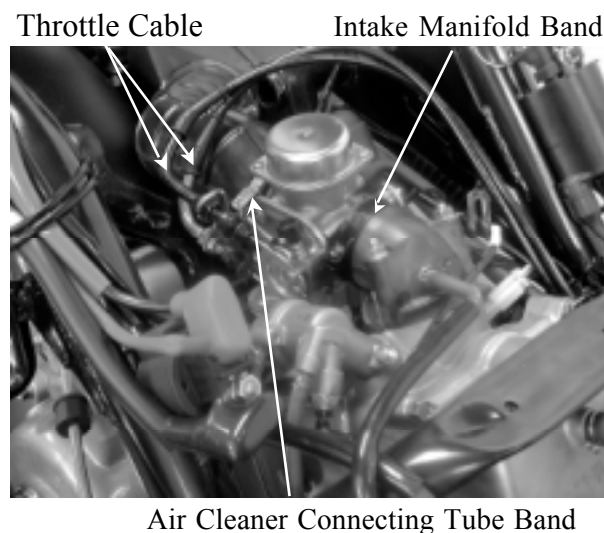
## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### CARBURETOR REMOVAL

Remove the seat, met-in box and center cover.  
Disconnect the fuel tube and vacuum tube at the carburetor.  
Disconnect the auto bystarter wire.



Loosen the throttle cable adjusting nut and lock nut, and disconnect the throttle cable from the carburetor.  
Loosen the air cleaner connecting tube band and carburetor intake manifold band and then remove the carburetor.



### VACUUM CHAMBER DISASSEMBLY

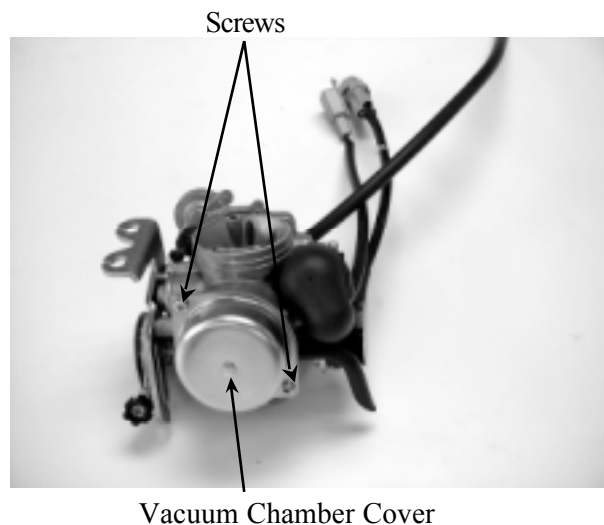
Loosen the drain screw and drain the fuel from the float chamber.



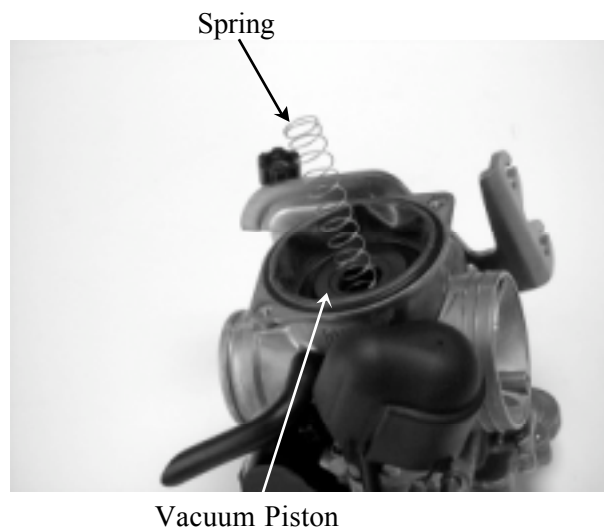


## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

Remove the two vacuum chamber cover screws and the cover.



Remove the compression spring and vacuum piston.

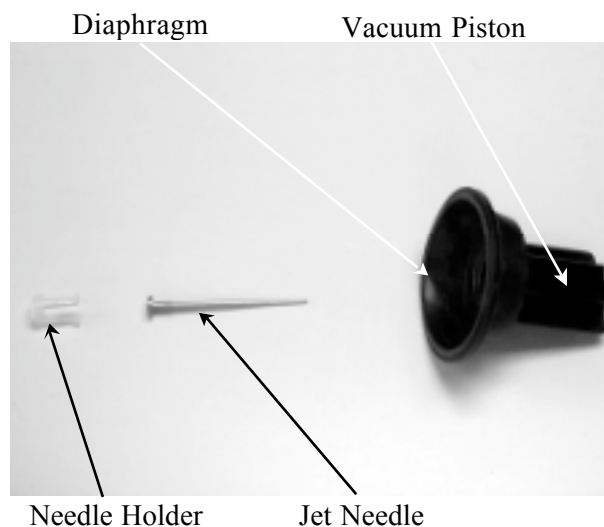


Remove the needle holder, spring and jet needle from the piston.

- \* Be careful not to damage the vacuum piston diaphragm.

### VACUUM PISTON INSPECTION

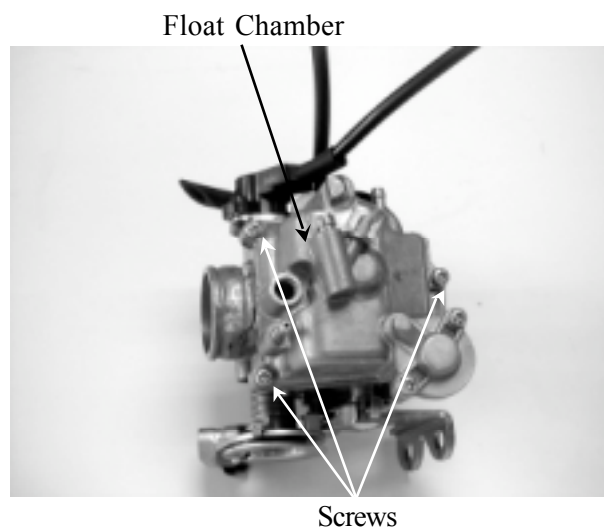
Inspect the vacuum piston and jet needle for wear or damage.  
Inspect the diaphragm for deterioration and tears.



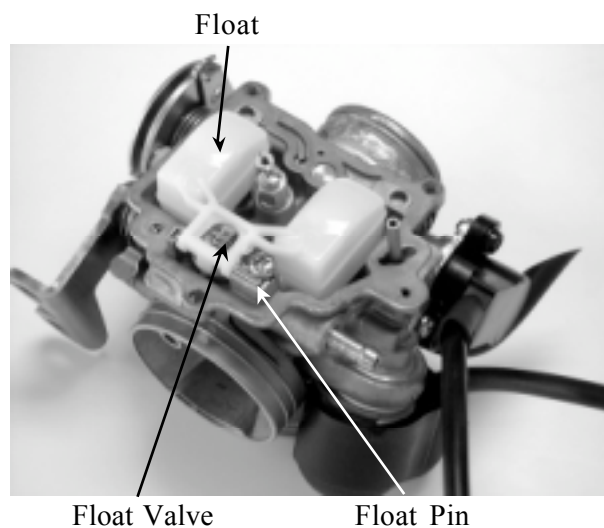
## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### FLOAT CHAMBER DISASSEMBLY

Remove the three float chamber screws and the float chamber.

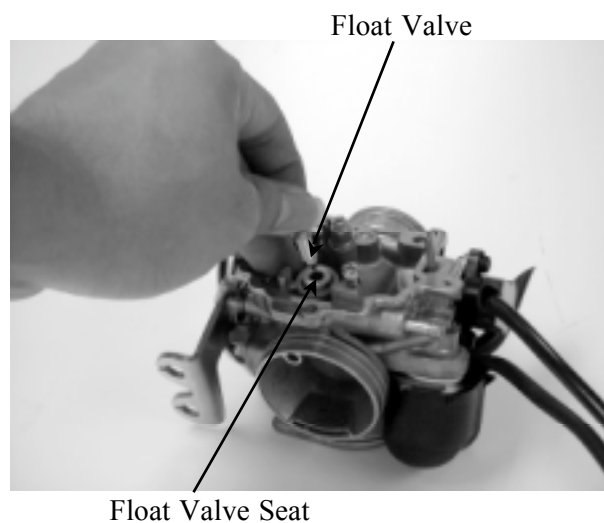


Remove the float pin, float and float valve.



### FLOAT VALVE INSPECTION

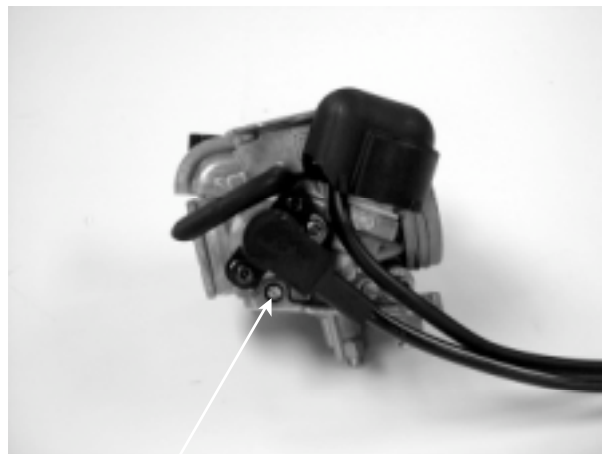
Inspect the float valve seat contact area for wear.



## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

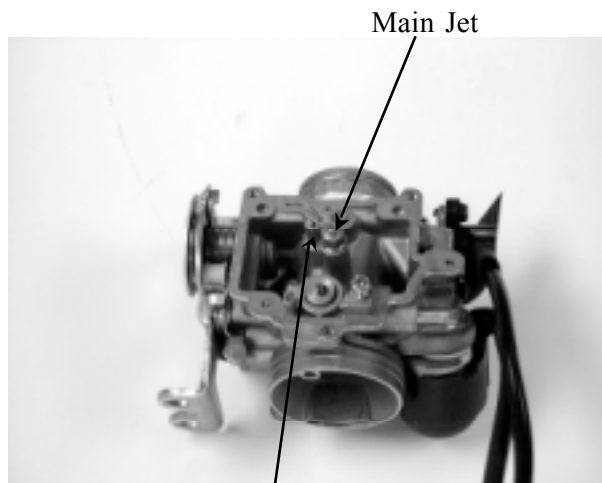
### JETS/SCREWS REMOVAL

- \* Before removing the pilot screw, turn the pilot screw clockwise until it seats lightly and record the rotating turns. Do not force the pilot screw against its seat to avoid seat damage.



Pilot Screw (P.S.)

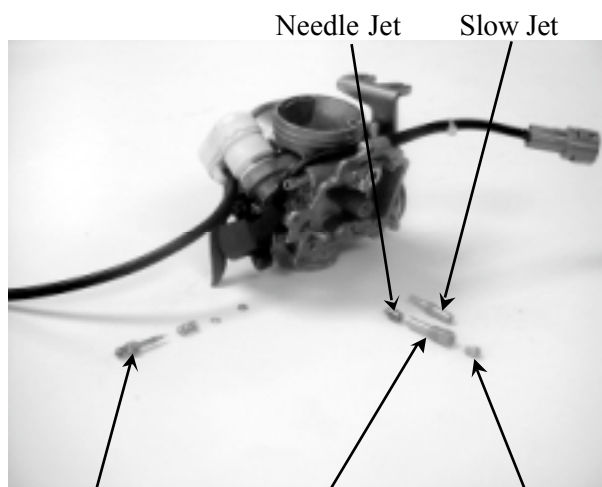
Remove the main jet, needle jet holder and needle jet.  
Remove the slow jet.



Slow Jet

Clean the removed the main jet, needle jet holder, needle jet and slow jet with detergent oil.

- \* Be sure to use clean detergent oil.



Pilot Screw

Needle Jet Holder

Main Jet

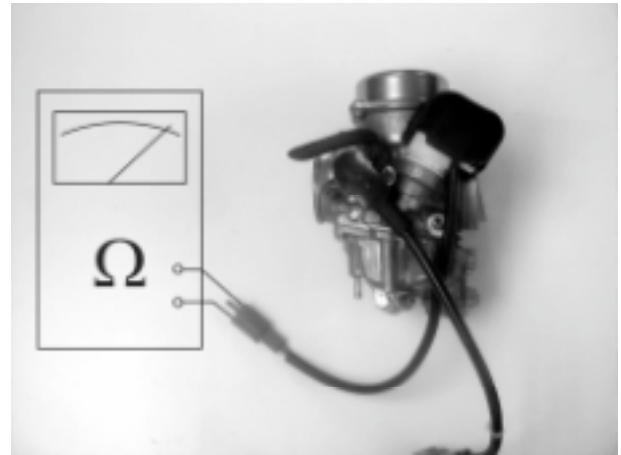
## AUTO BYSTARTER INSPECTION /REMOVAL

### AUTO BYSTARTER INSPECTION

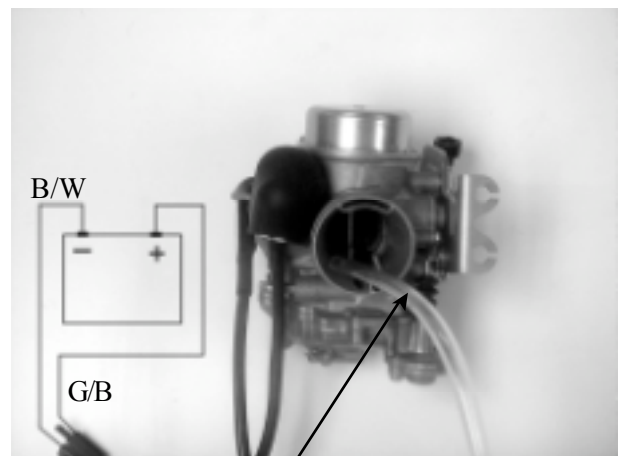
Measure the resistance between the auto bystarter wire terminals.

**Resistance:** 10 $\Omega$  (10 minutes minimum after stopping the engine)

If the reading is not within the limit, replace the auto bystarter with a new one.



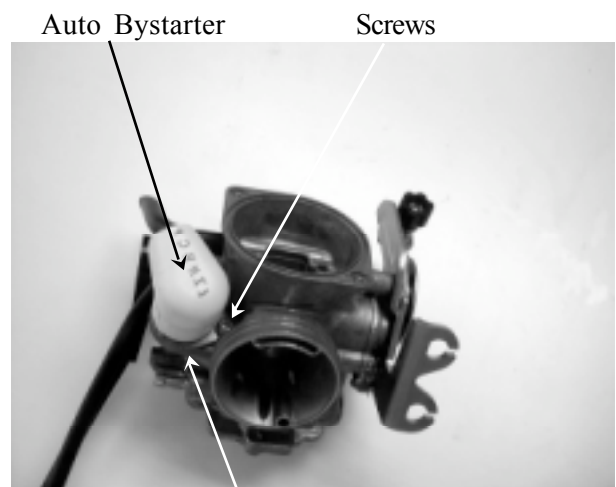
Connect a hose to the fuel enriching circuit of the carburetor. Connect the auto bystarter green/black wire to the positive (+) terminal of a battery and black/white wire to the negative (-) terminal. Wait 5 minutes and blow the hose with mouth. If the passage is blocked, the auto bystarter is normal. Disconnect the auto bystarter from the battery. Wait 30 minutes and blow the hose with mouth. If air can be blown into the hose, the auto bystarter is normal.



Hose

### AUTO BYSTARTER REMOVAL

Remove the one set plate screw and set plate and then remove the auto bystarter from the carburetor body.



Set Plate

## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### AUTO BYSTARTER INSPECTION

Check the auto bystarter valve and needle for nicks, wear or damage.  
If any faulty part is found, replace the auto bystarter with a new one.



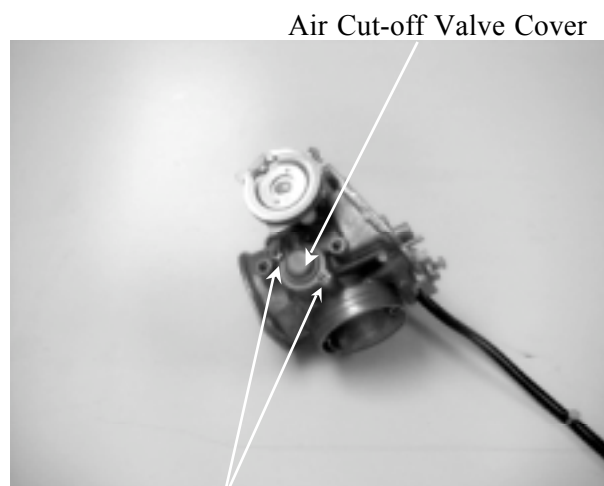
Bystarter Needle

Bystarter Valve

### AIR CUT-OFF VALVE (A.C.V.)

#### A.C.V. REMOVAL

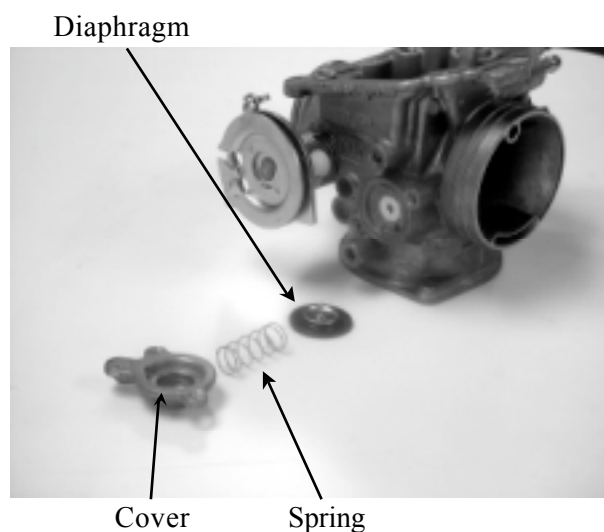
Remove the two screws and the air cut-off valve cover.



Air Cut-off Valve Cover

Screws

Remove the spring, diaphragm and O-rings.  
Inspect the diaphragm and spring for wear or damage.



Diaphragm

Cover

Spring

## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### CARBURETOR BODY CLEANING

Blow compressed air through all passages of the carburetor body.

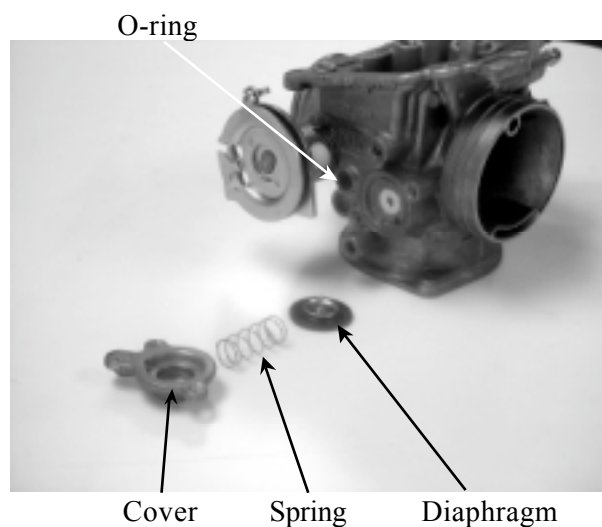
- \*
  - Make sure that no fuel jet is clogged.



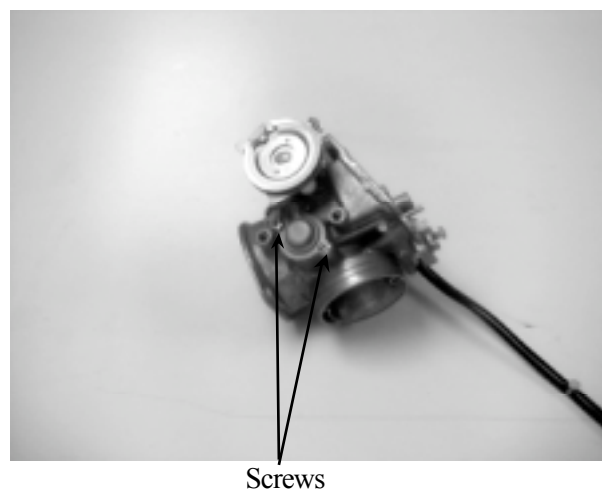
Install the O-ring onto the air-cut-off valve body securely.

- \*
  - Install the O-ring with the flat face toward the valve body side.

Install the diaphragm, spring, and cover.



Install and tighten the two screws attaching the air cut-off valve cover.  
Connect the hose.



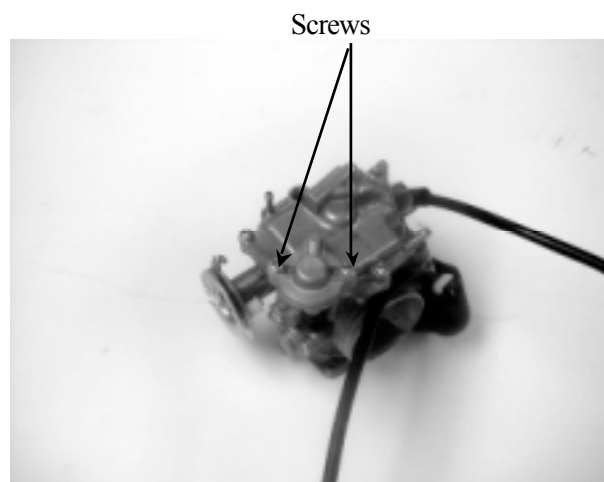
## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### ACCELERATING PUMP

#### DISASSEMBLY

Remove the two accelerating pump cover screws and accelerating pump cover.

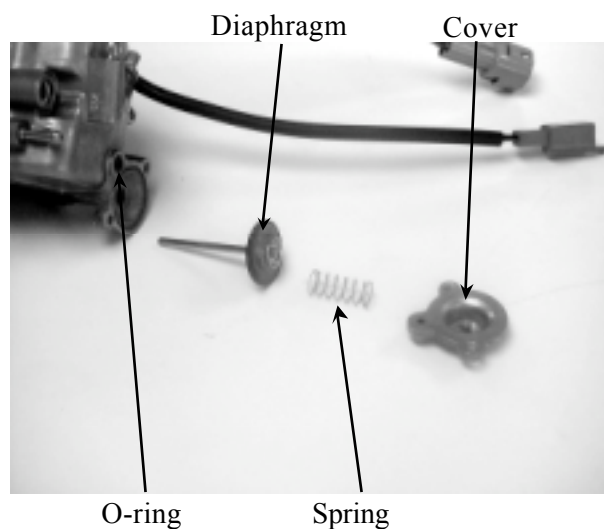
Remove the spring and accelerating pump diaphragm.



#### INSPECTION

Inspect the accelerating pump diaphragm for cracks, damage or deterioration. Replace if necessary.

Assemble the accelerating pump in the reverse order of disassembly.

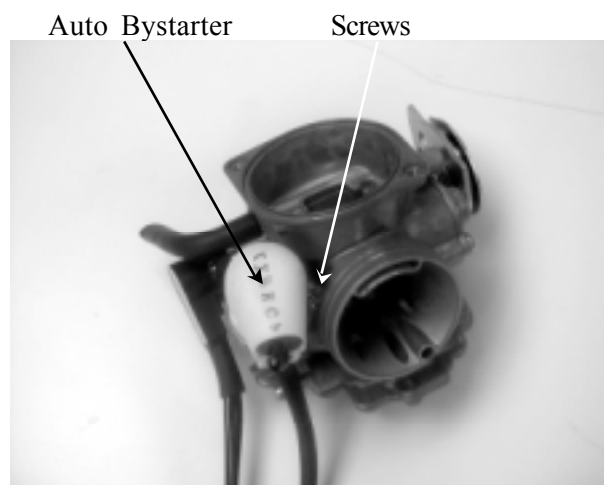


### AUTO BYSTARTER INSTALLATION

Install the auto bystarter and set plate.  
Install and tighten the two screws.

**\***

- Insert the auto bystarter into the carburetor body until it bottoms and position the set plate into the upper groove in the bystarter.
- Install the set plate with its round face facing down.

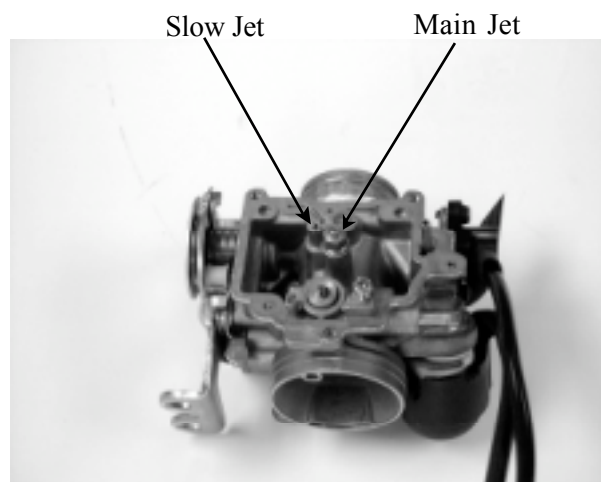




## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

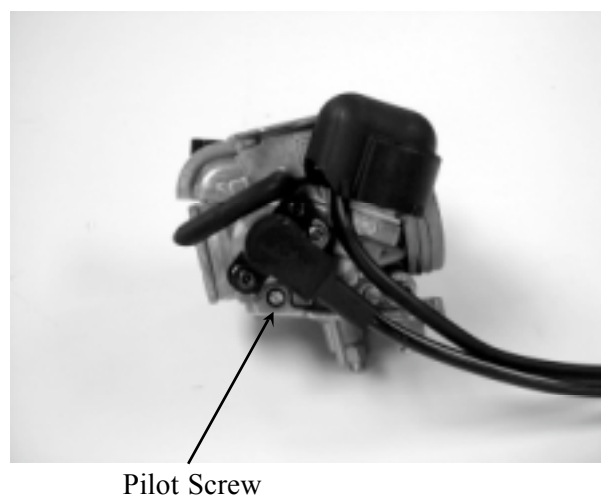
### FLOAT CHAMBER ASSEMBLY

Install the main jet.  
Install the slow jet.

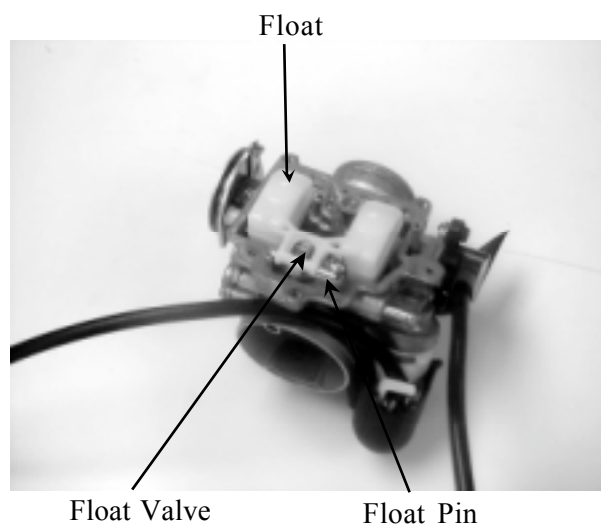


Install the pilot screw.

- \* Be sure to record the rotating turns when it is removed.



Install the float valve, float and float pin.





## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### FLOAT LEVEL INSPECTION

Measure the float level at the location of the main jet (just contacting the float valve).

**Float Level:**  $18.5 \pm 1.0\text{mm}$

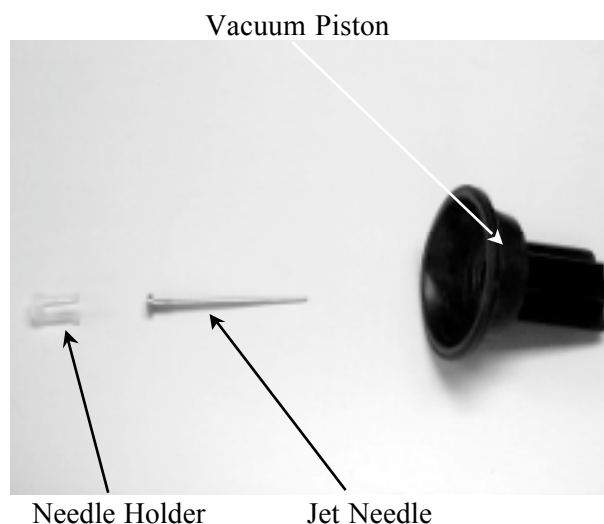
Replace the float if the level is incorrect.  
Check the operation of the float and then  
reinstall the float chamber.



Float

### VACUUM CHAMBER ASSEMBLY

First install the jet needle and spring into the  
vacuum chamber and then install the needle  
holder.



Needle Holder

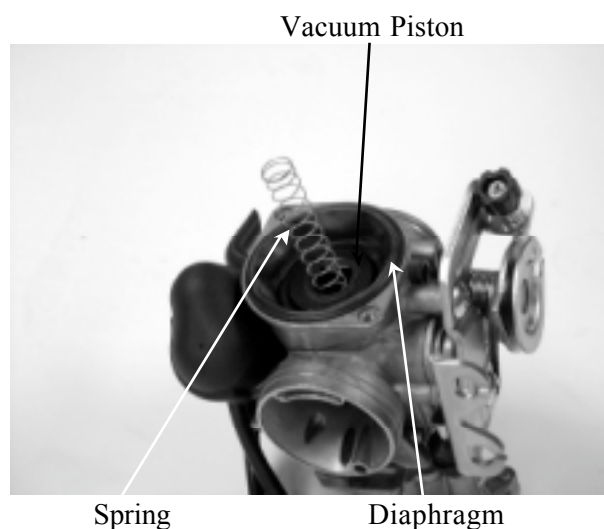
Jet Needle

Install the vacuum piston into the carburetor  
body.

Install the spring.

Install the vacuum chamber cover and tighten  
it with the two screws.

- \***
- Be careful not to let the diaphragm slip.
  - If the diaphragm cannot be positioned correctly because of expansion, dry the diaphragm before installation.



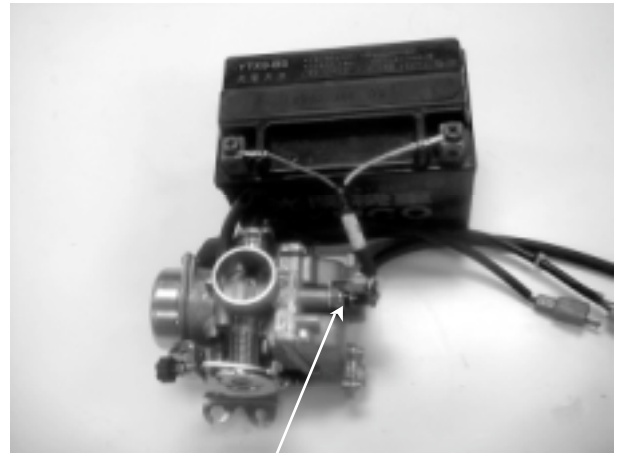
Spring

Diaphragm

## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

Check the heater with battery.

If the heater is getting hot, means the heater without problem, otherwise the heater has to be changed.



Heater

### CARBURETOR INSTALLATION

Tighten the drain screw.

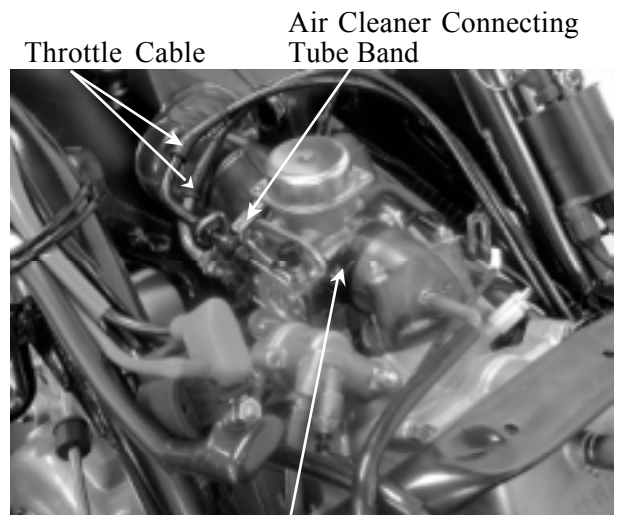
Install the carburetor onto the intake manifold and tighten the band.

Install the air cleaner connecting tube and tighten the band.

Connect the throttle cable to the carburetor.

\*

- After connecting the throttle cable, adjust the throttle grip free play to 2\_ 6mm.



Intake Manifold Band

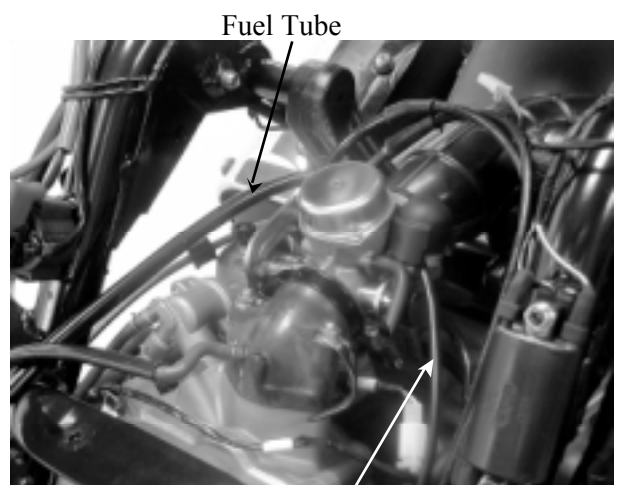
Connect the auto bystarter wire.

Connect the fuel tube and vacuum tube to the carburetor.

Perform the following inspections and adjustments:

- Throttle grip free play (⇒ 3-3)
- Idle speed (⇒ 3-6)

Install the seat, met-in box and frame center cover.

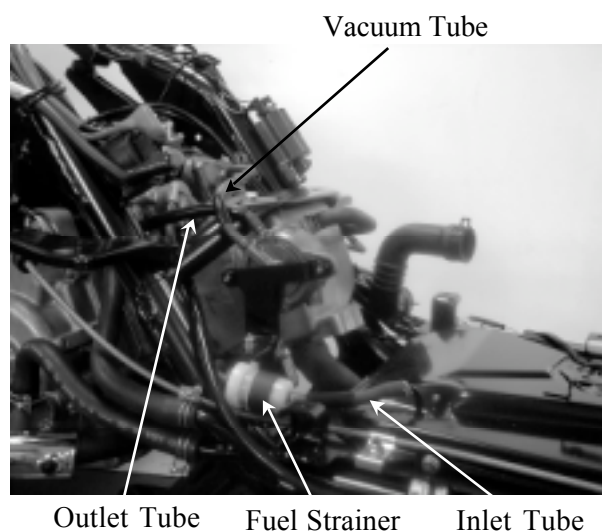


Auto Bystarter Wire

## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

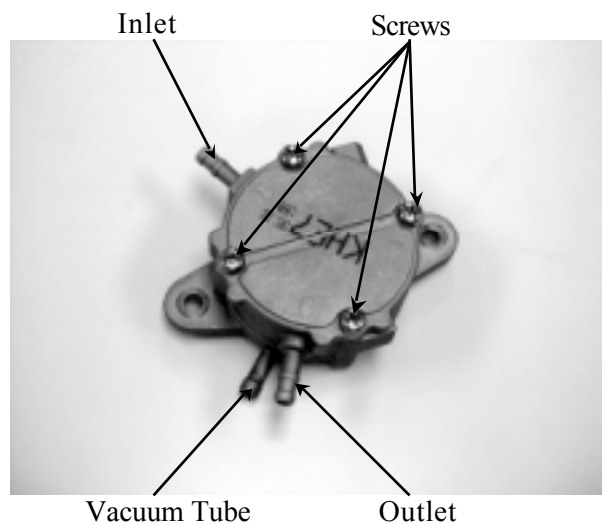
### FUEL PUMP REMOVAL

Remove the frame center cover.  
Disconnect the fuel pump inlet, outlet and vacuum tubes.  
Remove the two fuel pump attaching bolts and the fuel pump.



### FUEL PUMP DISASSEMBLY

Remove the four fuel pump body screws.



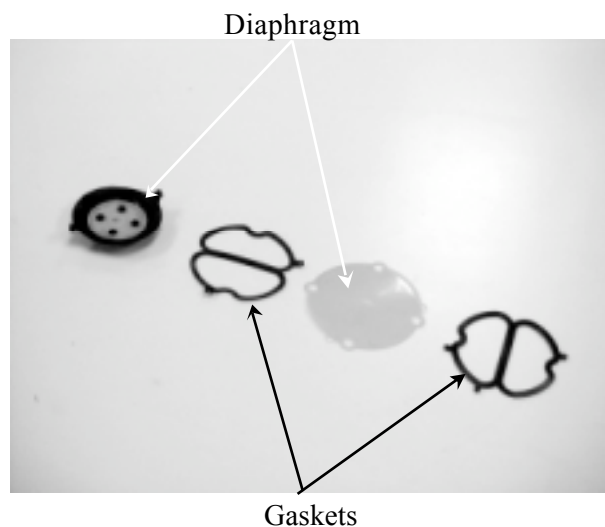
Disassemble the fuel pump.



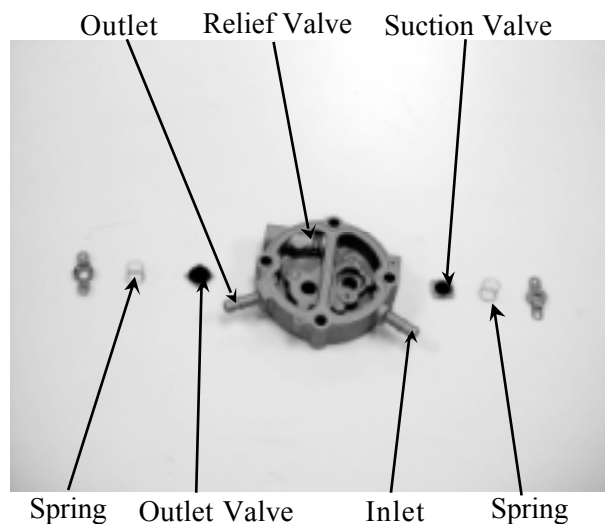
## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### FUEL PUMP INSPECTION

Inspect the fuel pump diaphragms A and B for damage.  
Inspect each gasket for damage.



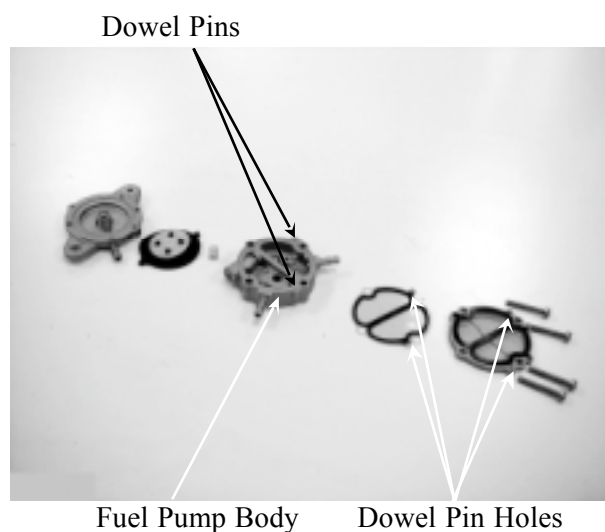
Inspect the suction valve, outlet valve and relief valve in the fuel pump body for damage, cracks or foreign matters.



### FUEL PUMP ASSEMBLY

Assemble the fuel pump in the reverse order of disassembly.

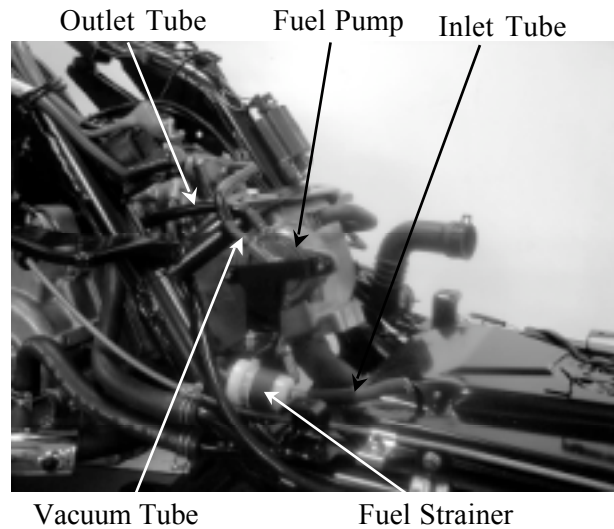
- \* During assembly, be sure to install the gaskets and diaphragms properly to avoid damage.
- \* Do not allow any foreign matter to enter the fuel pump during assembly.



## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

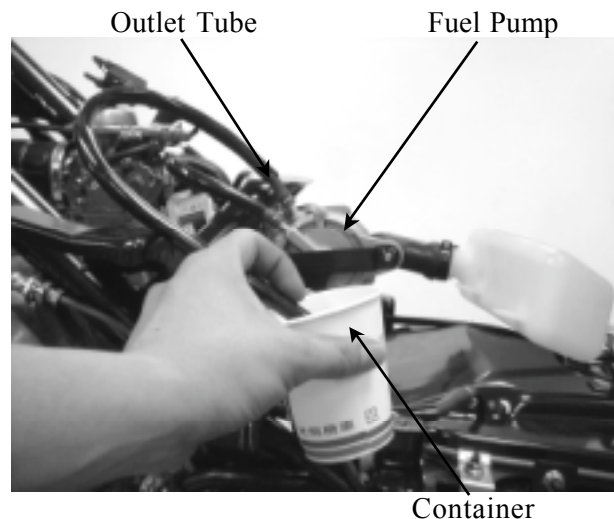
### FUEL PUMP INSTALLATION

Install the fuel pump and secure it with the two bolts.  
Connect the fuel pump inlet, outlet and vacuum tubes.  
Install the seat, met-in box and frame center cover.



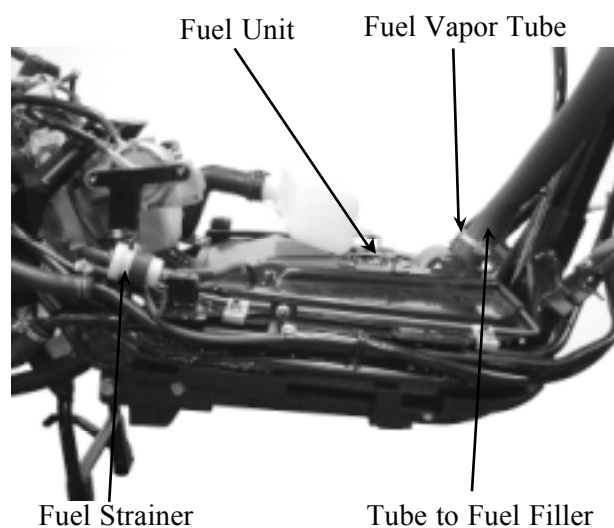
Measure the fuel pump output.  
Start the engine and disconnect the fuel outlet tube and place a clean container under the tube to check the fuel output.

**Output:** 40cc/1500rpm/10 seconds .



### FUEL TANK REMOVAL

Remove the floor board. (⇒2-4)  
Remove the leg shield . (⇒2-5)  
Disconnect the fuel unit wire connector.  
Remove the fuel tube between the fuel tank and the fuel filler.  
Disconnect the fuel vapor tube.  
Remove the fuel tank.  
The installation sequence is the reverse of removal.



## 13. FUEL SYSTEM/CARBURETOR/ FUEL PUMP/ FUEL TANK

### FUEL STRAINER REMOVAL

Remove the fuel strainer from the fuel tank.

#### INSPECTION

Inspect if the fuel strainer is clogged and clean it with compressed air.

- \* When removing the fuel strainer, do not allow flames or sparks near the working area and drain the residual gasoline into a container.



### INSTALLATION

Install the fuel strainer with its arrow mark toward the fuel pump.

