

## CHAPTER SEVEN

# FUEL, EMISSION CONTROL AND EXHAUST SYSTEMS

The fuel system consists of the fuel tank, the shutoff valve, fuel pump, 2 carburetors and a separate air filter assembly for each carburetor. The exhaust system consists of 2 exhaust pipes and 2 mufflers.

The emission controls consist of crankcase emission system and on California models the Evaporative Emission Control System.

This chapter includes service procedures for all parts of the fuel system and exhaust system. Air filter service is covered in Chapter Three.

Carburetor specifications are covered in **Table 1** located at the end of this chapter.

### NOTE

*Where differences occur relating to the United Kingdom (U.K.) models they are identified. If there is no (U.K.) designation relating to a procedure, photo or*

*illustration it is identical to the United States (U.S.) models.*

## CARBURETOR OPERATION

For proper operation, a gasoline engine must be supplied with fuel and air mixed in proper proportions by weight. A mixture in which there is an excess of fuel is said to be rich. A lean mixture is one which contains insufficient fuel. A properly adjusted carburetor supplies the proper mixture to the engine under all operating conditions.

Each carburetor consists of several major systems. A float and float valve mechanism maintains a constant fuel level in the float bowl. The pilot system supplies fuel at low speeds. The main fuel system supplies fuel at medium and high speeds. A

starter (choke) system supplies the very rich mixture needed to start a cold engine.

### CARBURETOR SERVICE

Major carburetor service (removal and cleaning) should be performed if the engine performs poorly, hesitates and there is little or no response to mixture adjustment is observed. Alterations in jet size, throttle slide cutaway, and changes in jet needle position, etc., should be attempted only if you're experienced in this type of "tuning" work; a bad guess could result in costly engine damage or, at least, poor performance. If, after servicing the carburetor and making the adjustments described in this chapter, the bike does not perform correctly (and assuming that other factors affecting performance are correct, such as ignition component condition, etc.), the bike should be checked by a dealer or a qualified performance tuning specialist.

### CARBURETOR ASSEMBLY

#### Removal/Installation

Remove the 2 carburetors and the throttle cable assembly that is attached to both carburetors as an assembled unit.

1. Remove the seat(s) as described under *Seat Removal/Installation* in Chapter Thirteen.
2. Remove the fuel tank as described in this chapter.
3. Disconnect the battery negative lead as described in Chapter Three.
4. Remove the screws securing both the right- and left-hand frame head side covers (**Figure 1**). Remove both side covers.





5. Remove the bolts securing the fuel tank mounting bracket (**Figure 2**) and remove the bracket.
6. Remove the screw (**Figure 3**) securing the throttle cable joint to the air filter housing and remove the joint from the clip on the air filter housing.
7. Separate the throttle cable joint and disconnect the 2 carburetor throttle cables (**Figure 4**) from the plastic fitting of the throttle grip throttle cable, then move the throttle grip throttle cable out of the way.
8. Loosen the clamping band screws (A, **Figure 5**) at each end of the front air filter inlet pipe. Slide the clamping bands onto the inlet pipe and remove the inlet pipe (B, **Figure 5**).
9. Remove the screw (A, **Figure 6**) securing the choke knob assembly to the frame, then move the choke knob assembly (B, **Figure 6**) out of the way. Do not try to disconnect the choke cable from the carburetor at this time.
10. Loosen the screws on the clamping bands securing carburetors to the intake tubes (**Figure 7**). Slide the clamping bands away from the carburetors.
11. Remove the clamp (**Figure 8**) securing the throttle cables and hoses together. Separate the cables and hoses.
12. Unhook the clamps and move the carburetor breather hose (A, **Figure 9**) from the inlet pipe.
13. Loosen the clamping band screws (B, **Figure 9**) at each end of the rear air filter inlet pipe. Slide the clamping bands onto the inlet pipe and remove the inlet pipe (C, **Figure 9**).
14. On California models, disconnect the evaporation hose from each carburetor.
15. On the rear carburetor, open the hose clamps and move the hose (**Figure 10**) out of the way.
16. Move the rear carburetor assembly partially up and out of the frame area, then perform the follow-



- a. Unscrew and disconnect the choke cable (Figure 11) from the rear carburetor. Move the cable out of the way.
  - b. Loosen the locknuts on the throttle cable at the rear carburetor. Remove the throttle cable from the bracket (A, Figure 12) on the carburetor and disconnect the cable end (B, Figure 12) from the throttle wheel.
17. Carefully remove the carburetor assembly and attached cables. Make sure all cables and hoses necessary for carburetor removal, are disconnected. Take the assembly to a workbench for disassembly and cleaning.
18. Install by reversing these removal steps, noting the following:
- a. Make sure the carburetors are fully seated in the rubber holders attached to the cylinder head. You should feel a solid "bottoming out" when they are correctly seated.
  - b. Make sure the screws on the clamping bands are tight to avoid a vacuum loss and possible valve damage due to a lean fuel mixture.
  - c. Adjust the throttle cable as described under *Throttle Cable Adjustment* in Chapter Three.

### CARBURETOR SERVICE

Carburetor disassembly and assembly is separated into three different procedures. The piston valve assembly and coasting valve are basically the same on both the front and rear carburetor and is covered in one procedure. The components in the float chamber area, floats and jets, vary considerably between the front and rear carburetors and are covered separately to avoid confusion.

#### Piston Valve Assembly and Coasting Valve

Refer to the following illustrations for this procedure:

- a. **Figure 13:** front carburetor.
- b. **Figure 14:** rear carburetor.

It is recommended to disassemble only one carburetor at a time to prevent accidental interchange of parts. *Disassembly*

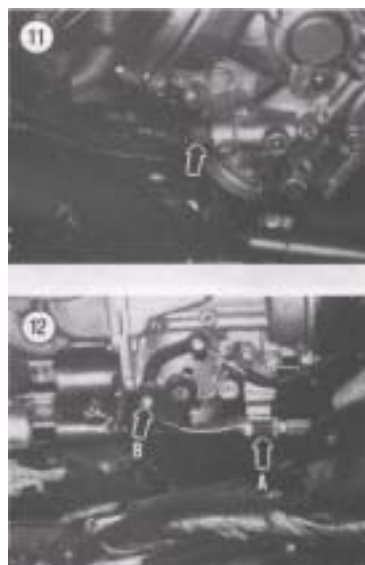
1. Remove the screws (A, Figure 15) securing the top cover and remove the cover (B, Figure 15). Note

the location of any hose clamps, that must be reinstalled in the same location.

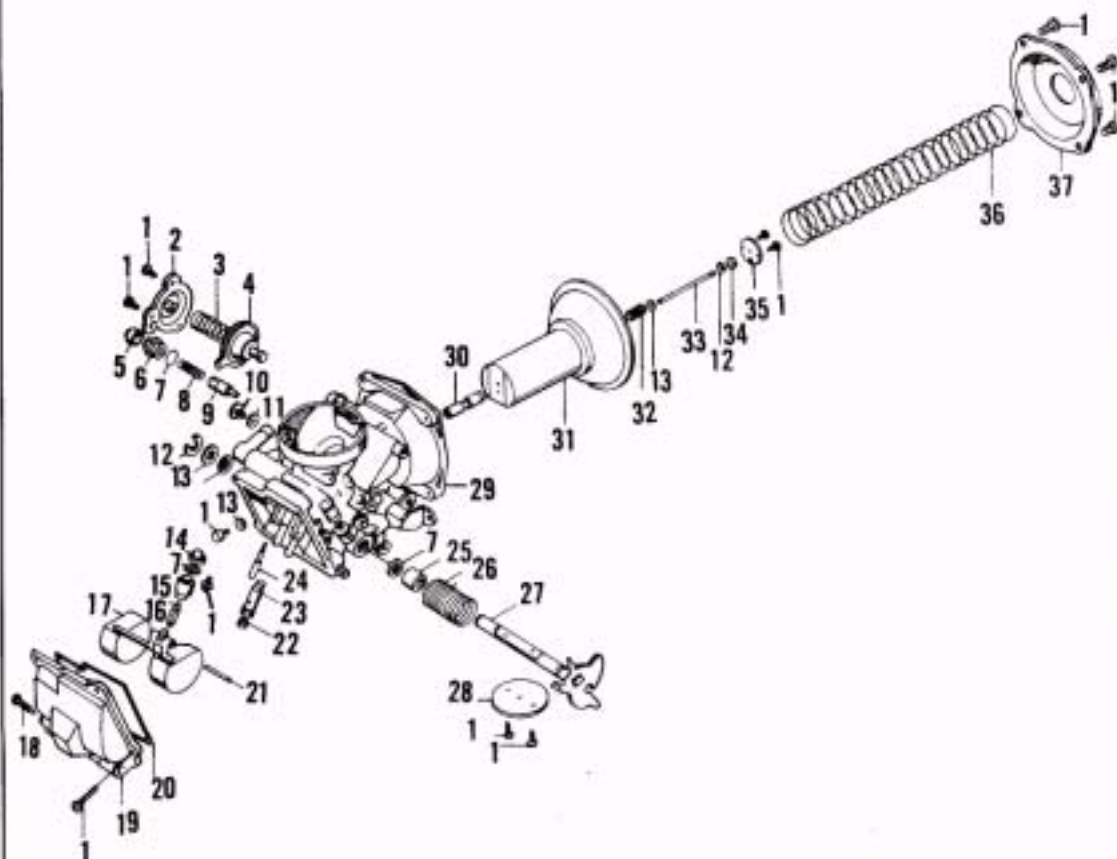
2. Remove the spring and the piston valve/diaphragm from the carburetor.
3. Loosen the screws (Figure 16) securing the jet needle stopper plate.
4. Use needlenose pliers and remove the stopper plate from the piston valve (Figure 17).
5. Turn the assembly over and remove the jet needle and spring.
6. Remove the screws securing the coasting valve cover and remove the cover (Figure 18).
7. Remove the spring (Figure 19) and the diaphragm (A, Figure 20) from the carburetor.

#### Assembly

1. Install the coasting valve diaphragm (A, Figure 20) onto the carburetor. Align the hole in the diaphragm with the hole in the carburetor body (B, Figure 20).



## FRONT CARBURETOR ASSEMBLY



- 1. Screw
- 2. Cover
- 3. Spring
- 4. Coasting valve
- 5. Boot
- 6. Nut
- 7. O-ring
- 8. Spring
- 9. Choke plunger

- 14. Filter screen
- 15. Needle valve seat
- 16. Needle valve
- 17. Float
- 18. Drain screw
- 19. Float bowl
- 20. O-ring gasket
- 21. Float pivot pin
- 22. Main Jet

- 26. Spring
- 27. Throttle valve shaft
- 28. Throttle valve
- 29. Body
- 30. Needle jet
- 31. Piston valve/diaphragm
- 32. Spring
- 33. Jet needle
- 34. Spacer

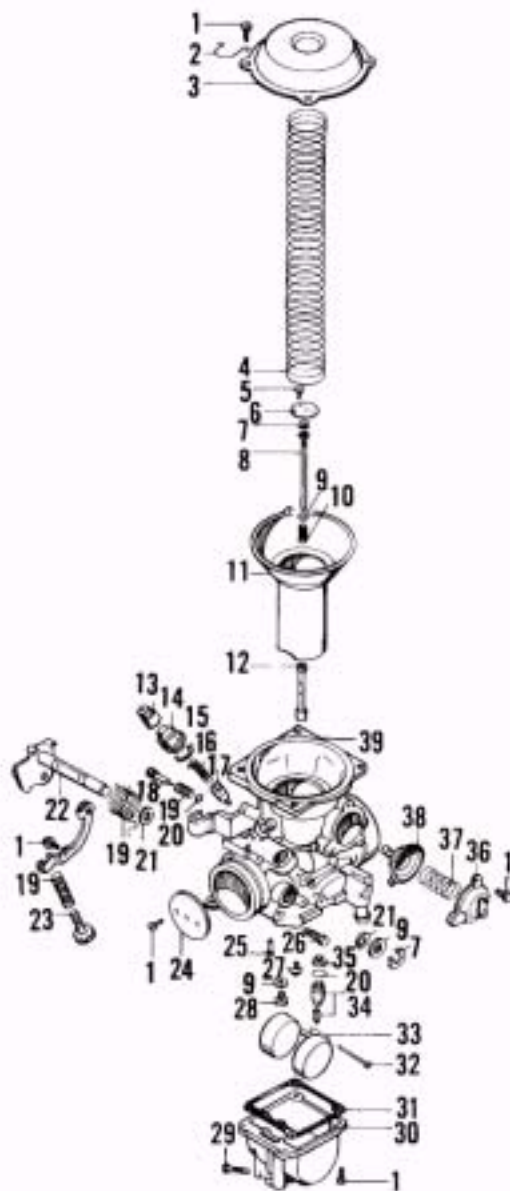
10. Balance screw  
11. Washer  
12. E-clip  
13. Washer

23. Main jet holder  
24. Pilot jet  
25. Bushing

35. Stopper plate  
36. Spring  
37. Cover

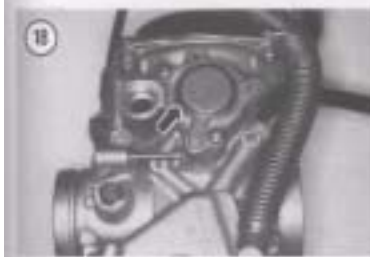
# REAR CARBURETOR ASSEMBLY

1. Screw
2. Clip
3. Cover
4. Spring
5. Screw
6. Stopper plate
7. **Spacer**
8. Jet needle
9. Washer



10. Spring
11. Piston valve/diaphragm
12. Needle jet
- 13. Boot**
14. Nut
15. O-ring
16. Spring
17. Choke plunger
18. Pilot screw
19. Spring
20. O-ring
21. Washer
22. Throttle valve shaft
23. Throttle stop screw
24. Throttle valve
- 25. Pilot jet**
26. Balance screw
27. Needle valve  
stopper screw
28. Main jet
29. Drain screw
30. Float bowl
31. Gasket
- 32. Float pivot pin**
- 33. Float**
34. Needle valve assembly
35. Filter screen
- 36. Cover**
37. Spring
38. Coasting valve
39. Body





2. Install the spring (**Figure 19**) onto the diaphragm.
3. Install the coasting valve cover (**Figure 18**) and screws. Tighten the screws securely.
4. Install the spring (**Figure 21**) into the piston valve.
5. Install the jet needle (**Figure 22**) through the spring and into the hole in the bottom of the piston valve.
6. Use needle-nose pliers and install the stopper plate and screws into the piston valve (**Figure 17**).



Align the screw holes and tighten the screws securely.

7. Install the piston valve/diaphragm into the carburetor (Figure 23). Be sure to align the tab hole in the diaphragm with the hole in the carburetor body (Figure 24).

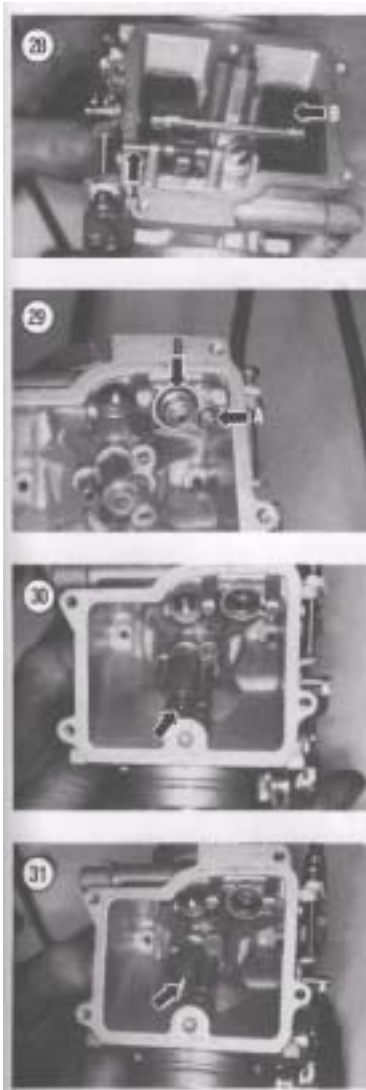
8. Insert your finger into the carburetor venturi and hold the piston valve up so the diaphragm is in the raised position. This will lessen the chances of it getting pinched when the top cover is installed.

9. Install the spring (A, Figure 25) into the piston valve and install the top cover (B, Figure 25). Make sure the diaphragm tab hole is still aligned with the hole in the body.

10. Push the cover down while guiding the jet needle into the needle jet (Figure 26). Push the cover all the way down and install the screws and any hose clamps in the correct location.

11. Tighten the screws (A, Figure 15) securely.

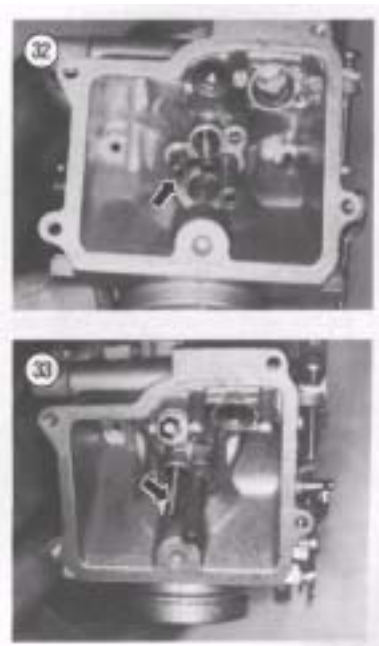




# **Front Carburetor** **Float Chamber and Carburetor Body** **Disassembly**

Refer to **Figure 13** for this procedure.

1. Remove the screws (**Figure 27**) securing the float bowl and remove the float bowl and O-ring seal.
2. Push the float pin (A, **Figure 28**) out of the mounting boss and remove it.
3. Remove the float (B, **Figure 28**) and needle valve assembly.
4. Remove the screw (A, **Figure 29**) securing the needle valve seat and filter assembly. Remove the needle valve seat and filter assembly (B, **Figure 29**).
5. Unscrew the main jet (**Figure 30**) and the main jet holder (**Figure 31**).
6. Unscrew the pilot jet (**Figure 32**).
7. Remove the needle jet (**Figure 33**).
8. Remove the O-ring seal (**Figure 34**) from the



float bowl.

9. Remove the drain screw (**Figure 35**) from the float bowl.

**NOTE**

*Further disassembly is neither necessary nor recommended. If throttle shaft, choke shaft or butterfly (**Figure 36**) is damaged, take the carburetor body to a dealer for replacement.*

10. Clean and inspect all parts as described under *Cleaning and Inspection* in this chapter.

**Front Carburetor  
Float Chamber and Carburetor Body  
Assembly**

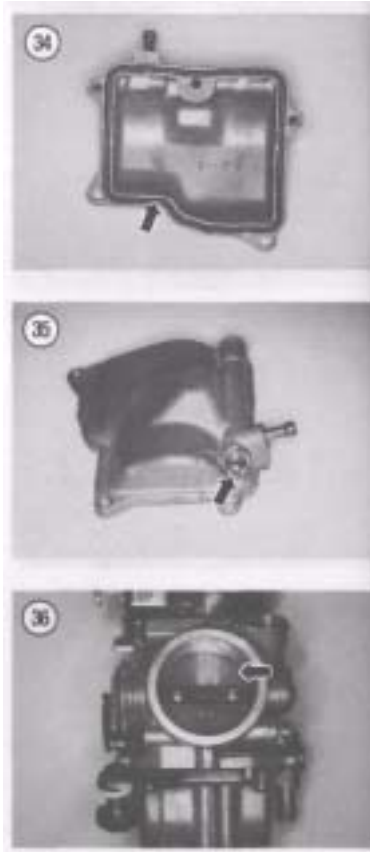
Refer to **Figure 13** for this procedure.

1. Install the drain screw (**Figure 35**) into the float bowl and tighten securely.
2. Install the needle jet and carefully push it in until it seats (**Figure 37**).
3. Install the pilot jet (**Figure 32**) and tighten securely.
4. Install the main jet holder (**Figure 31**) and tighten securely.
5. Install the main jet (**Figure 30**) and tighten securely.
6. Make sure the O-ring seal is on needle valve and install the needle valve seat and filter assembly (B, **Figure 29**). Push the assembly down until it is completely seated.
7. Install the screw (A, **Figure 29**) securing the needle valve seat and filter assembly and tighten securely.
8. Install the needle valve assembly (**Figure 38**) onto the float tang and install the float (B, **Figure 28**).
9. Install the float pin (A, **Figure 28**) through the mounting boss, float and other mounting boss. Push the pin in until it is completely seated. Move the float up and down to make sure it moves freely.
10. Check the float height and adjust if necessary as described in this chapter.
11. Make sure the float bowl seal is correctly seated in the float bowl groove (**Figure 34**).
12. Install the float bowl and screws (**Figure 27**) and tighten securely.
13. After the carburetor have been disassembled the idle speed should be adjusted and the carburetors synchronized as described in this chapter.

**Rear Carburetor  
Float Chamber and Carburetor Body  
Disassembly**

Refer to **Figure 39** for this procedure.

1. Remove the screws (**Figure 40**) securing the float bowl and remove the float bowl and gasket.
2. Unscrew the main jet (**Figure 41**).
3. To remove the needle jet (A, **Figure 42**); turn the carburetor body on it side and tap on die other side



of the carburetor body. Once the needle jet is loose, withdraw it through the piston valve portion of the carburetor body with needle nose pliers (**Figure 43**).

4. Unscrew the pilot jet (**Figure 44**).

5. Push the float pin out of the mounting boss and remove it.

6. Remove the float and needle valve assembly (A, **Figure 45**).

7. Remove the screw (B, **Figure 45**) securing the needle valve seat and filter assembly.

8. Remove the gasket (**Figure 46**) from the float bowl.

9. Remove the drain screw (**Figure 47**) from the float bowl.

#### NOTE

*Further disassembly is neither necessary nor recommended. If throttle or choke shafts or butterfly (**Figure 36**) is*



*damaged, take the carburetor body to a dealer for replacement.*

10. Clean and inspect all parts as described under *Cleaning and Inspection* in this chapter.

#### Rear Carburetor Float Chamber and Carburetor Body Assembly

Refer to **Figure 39** for this procedure.

1. Install the drain screw (**Figure 47**) into the float bowl and tighten securely.

2. Make sure the O-ring seal is on needle valve and install the needle valve seat and filter assembly. Push the assembly down until it is completely seated.

3. Install the screw (B, **Figure 45**) securing the needle valve seat and filter assembly and tighten securely.

4. Install the needle valve assembly onto the float tang and install the float (A, **Figure 45**).

5. Install the float pin through the mounting boss, float and other mounting boss. Push the pin in until it is completely seated. Move the float up and down to make sure it moves freely.

6. Check the float height and adjust if necessary as described in this chapter.

7. Install the pilot jet (**Figure 48**) and tighten securely.

#### CAUTION

*In the next step, make sure that the flat portion on the needle jet is correctly aligned with the protrusion in the main jet stantion. If alignment is not correct, you will be unable to screw the main jet into the needle jet.*

8. Position the needle jet so the flat portion (A, **Figure 49**) aligns with the protrusion (B, **Figure 49**) in the main jet stantion of the carburetor body.

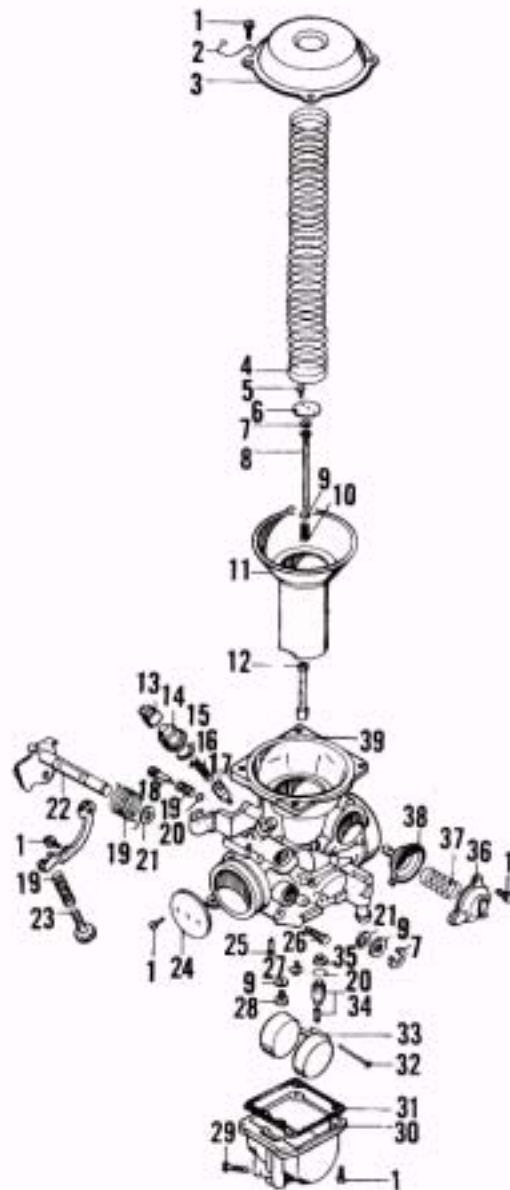
9. Using needle nose pliers, install the needle jet in through the piston valve portion of the carburetor body (**Figure 43**).

10. Observe the float bowl end of the needle jet to make sure alignment is still correct, then carefully push the needle jet in until it bottoms out (B, **Figure 42**).

11. Install the main jet (**Figure 50**) and tighten securely (**Figure 41**).

# REAR CARBURETOR ASSEMBLY

1. Screw
2. Clip
3. Cover
4. Spring
5. Screw
6. Stopper plate
7. Spacer
8. Jet needle
9. Washer



10. Spring
11. Piston valve/diaphragm
12. Needle jet
13. Gasket
14. Nut
15. O-ring
16. Spring
17. Choke plunger
18. Pilot screw
19. Spring
20. O-ring
21. Washer
22. Throttle valve shaft
- 23. Throttle stop screw**
24. Throttle valve
25. Pilot jet
26. Balance screw
27. Needle valve  
stopper screw
28. Main jet
29. Drain screw
30. Float bowl
31. Gasket
32. Float pivot pin
33. Float
34. Needle valve assembly
35. Filter screen
36. Cover
37. Spring
38. Coasting valve
39. Body





12. Install the gasket (**Figure 46**) into the float bowl. Make sure it seats completely.
13. Install the float bowl and screws (**Figure 40**). Tighten the screws securely.
14. After the carburetors have been disassembled the idle speed should be adjusted and the carburetors synchronized as described in this chapter.

#### **Cleaning and Inspection (Both Front and Rear Carburetors)**

##### *NOTE*

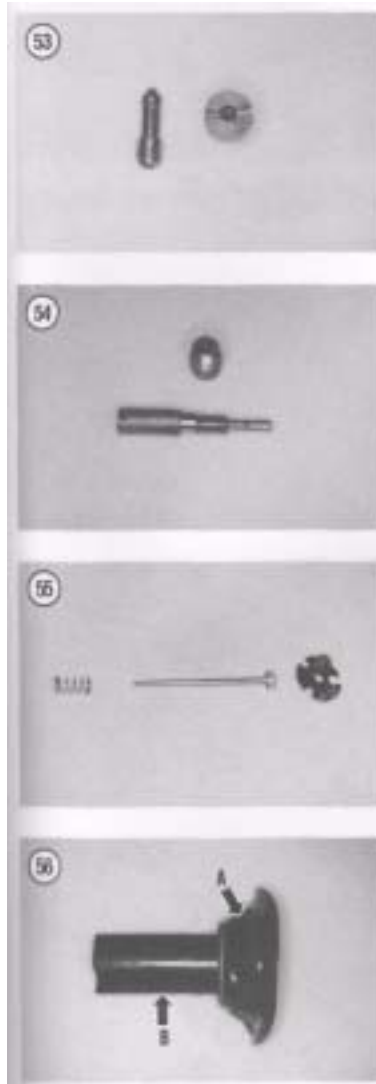
*Figures accompanying these procedures show components for both the front and rear carburetor assemblies.*

1. Thoroughly clean and dry all parts. Suzuki does not recommend the use of a caustic carburetor cleaning solvent. Instead, clean carburetor parts in a petroleum based solvent. Then rinse in clean water.
2. Allow the carburetor to dry thoroughly before assembly and blow dry with compressed air. Blow out the jets and needle jet holder with compressed air.
3. Inspect all O-ring seals. O-ring seals (**Figure 51**) tend to become hardened after prolonged use and heat and therefore lose their ability to seal properly.

##### *CAUTION*

*If compressed air is not available, allow the parts to air dry or use a clean lint-free cloth. Do **not** use a paper towel to dry carburetor parts, as small paper particles may plug openings in the carburetor body or jets.*

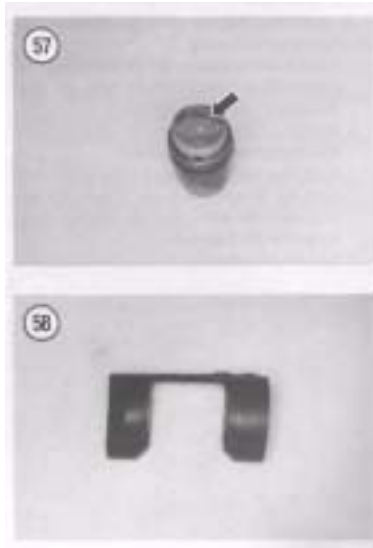




#### CAUTION

*Do **not** use a piece of wire to clean openings or jets, because minor gouges can alter flow rate and upset the fuel/ air mixture.*

4. Make sure the holes in the needle jet (**Figure 52**) are clear. Clean out if they are plugged in any way. Replace the needle jet if you cannot unplug the holes.
5. Make sure the holes in the main jet and pilot screw are clear. Refer to **Figure 53** and **Figure 54**. Clean out if they are plugged in any way. Replace the main jet or pilot screw if you cannot unplug the holes.
6. Examine the jet needle parts (**Figure 55**) of the piston valve/diaphragm assembly for wear or damage. Make sure the diaphragm (A, **Figure 56**) is not torn or cracked. Replace any damaged or worn parts.
7. Inspect the piston valve (B, **Figure 56**) portion of the piston valve/diaphragm assembly for wear or damage. Replace the assembly if necessary.
8. Clean and inspect the filter screen (**Figure 57**) of the needle valve. Replace if any area is broken or starting to deteriorate.
9. Inspect the float (**Figure 58**) for deterioration or damage. If the float is suspected of leakage, place it



in a container of non-caustic solution and push it down. If the float sinks or if bubbles appear (indicating a leak); replace the float assembly.

10. Make sure all openings (**Figure 59**) in the carburetor body are clear. Clean out if they are plugged in any way.

11. Inspect the choke plunger (A, **Figure 60**) and spring (B, **Figure 60**) for wear or damage. Replace if necessary.

### Carburetor Separation

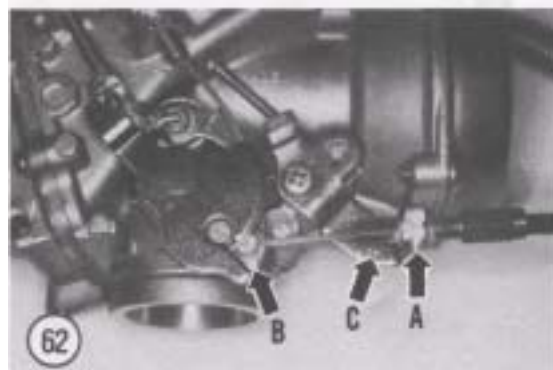
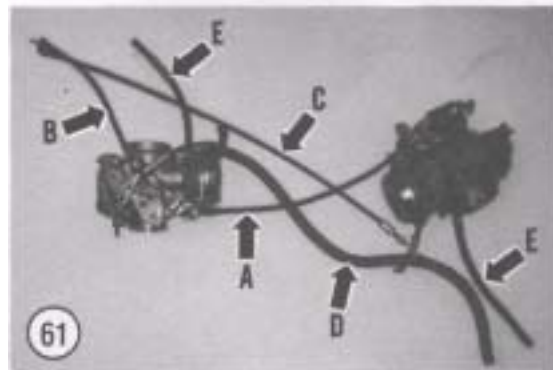
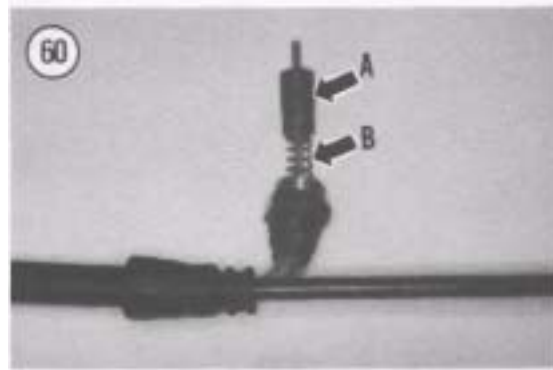
The carburetors can be removed, disassembled, cleaned, assembled and reinstalled without disconnecting any of the cables or lines from either carburetor. If necessary, they can be separated, but first tag each cable and connector prior to removal for ease of re-assembly.

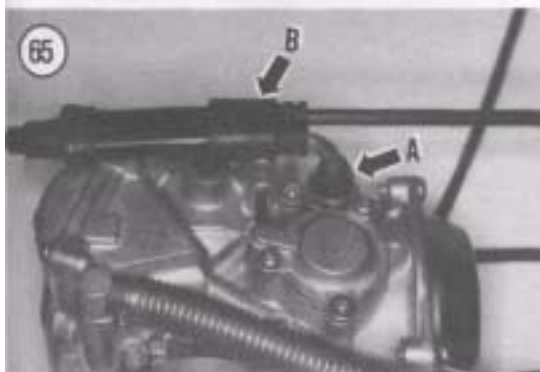
Refer to **Figure 61** for the identification of the cables and fuel and vent lines:

- a. A: Synchronizing cable.
- b. B: No. 2 throttle cable (front carburetor).
- c. C: No. 1 Throttle cable (rear carburetor).
- d. D: Fuel line.
- e. E: Vent lines.

1. To disconnect the carburetor synchronizing cable, perform the following:

- a. At the front carburetor, loosen the locknut (A, **Figure 62**) and disconnect the cable end from the throttle wheel (B, **Figure 62**).
- b. Disconnect the cable from the bracket on the front carburetor (C, **Figure 62**).
- c. At the rear carburetor, disconnect the cable end from the throttle wheel (A, **Figure 63**) and disconnect the cable from the bracket on the carburetor (B, **Figure 63**).
- d. Remove the cable.





2. To disconnect the No. 2 throttle cable, perform the following:

- a. Loosen the locknut (A, **Figure 64**) and disconnect the cable end from the throttle wheel (B, **Figure 64**).
- b. Remove the No. 2 throttle cable (C, **Figure 64**) along with the No. 1 throttle cable (D, **Figure 64**) that was disconnected during carburetor removal.
- c. Remove the throttle cable assembly.

3. To remove the choke cable, perform the following:

- a. Unscrew the nut (A, **Figure 65**) securing the choke cable to the front carburetor.
- b. Remove the choke cable assembly (B, **Figure 65**) from the front carburetor.

4. If necessary, remove the fuel line (**Figure 66**) from the fitting on the front carburetor.

5. If necessary, remove the vent line (**Figure 67**) from the fitting on the front carburetor.

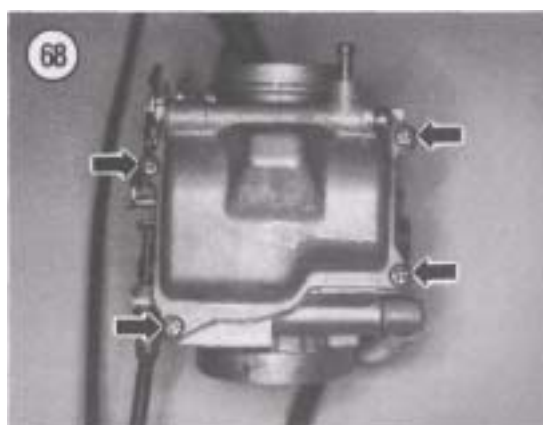
6. Install all vent lines, the fuel line, choke and throttle cable assemblies by reversing these removal steps. Synchronize the carburetors as described in Chapter Three.

## CARBURETOR ADJUSTMENTS

### Float Adjustment

The carburetor assembly has to be removed and partially disassembled for this adjustment. 1. Remove the carburetor assembly as described in this chapter.

2A. On the front carburetor, remove the screws (**Figure 68**) securing the float bowl and remove the float bowl and O-ring seal.



2B. On the rear carburetor, remove the screws (**Figure 69**) securing the float bowl and remove the float bowl and gasket.

3. Hold the carburetor assembly with the carburetor inclined until the float arm is just touching the float needle—not pushing it down. Use a float level gauge, vernier caliper or small ruler and measure the distance from the carburetor body to the bottom surface of the float body. Refer to **Figure 70** for the front carburetor and **Figure 71** for the rear carburetor. The correct height is listed in **Table 1**.

4. Adjust by carefully bending the tang (**Figure 72**) on the float arm. If the float level is too high, the result will be a rich fuel/air mixture. If it is too low, the mixture will be too lean.

5. Reassemble and install the carburetors.

### Rejetting The Carburetors

Do not try to solve a poor running engine problem by rejetting the carburetors if all of the following conditions hold true:

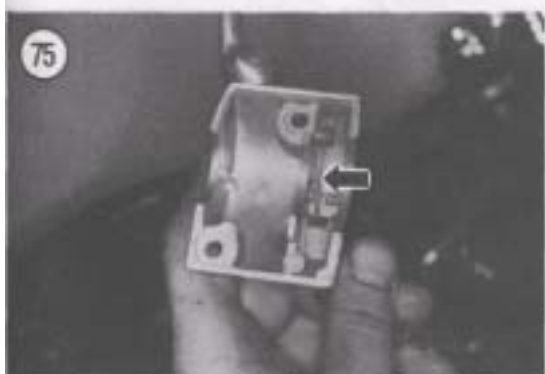
- a. The engine has held a good tune in the past with the standard jetting.
- b. The engine has not been modified.
- c. The motorcycle is being operated in the same geographical region under the same general climatic conditions as in the past.
- d. The motorcycle was and is being ridden at average highway speeds.

If those conditions all hold true, the chances are that the problem is due to a malfunction in the carburetor or in another component that needs to be repaired. Changing carburetor jet size probably won't solve the problem. Rejetting the carburetors may be necessary if any of the following conditions hold true:

- a. Non-standard type of air filter elements are being used.
- b. A non-standard exhaust system is installed on the motorcycle.
- c. Any of the top end components in the engine (pistons, camshafts, valves, compression ratio, etc.) have been modified.
- d. The motorcycle is in use at considerably higher or lower altitudes or in a considerably hotter or colder climate than in the past.
- e. The motorcycle is being operated at considerably higher speeds than before and changing to colder spark plugs does not solve the problem.







- f. Someone has previously changed the carburetor jetting.
- g. The motorcycle has never held a satisfactory engine tune.

If it is necessary to re-jet the carburetors, check with a dealer or motorcycle performance tuner for recommendations as to the size of jets to install for your specific situation.

If you do change the jets do so only one size at a time. After rejetting, test ride the bike and perform a spark plug test; refer to *Reading Spark Plugs* in Chapter Three.

## THROTTLE CABLE REPLACEMENT

This procedure describes the replacement of the throttle cable from the throttle grip to the throttle cable connector at the carburetor assembly. Replacement of the throttle cables attached to both carburetors is covered under *Carburetor Separation* in this chapter.

1. Remove the seat(s) as described under *Seat Removal/Installation* in Chapter Thirteen.
2. Remove the fuel tank as described in this chapter.
3. Disconnect the battery negative lead as described in Chapter Three.
4. Loosen the throttle cable locknut (A, **Figure 73**) at the throttle grip. Turn the adjuster (B, **Figure 73**) to achieve the maximum amount of slack in the throttle cable.
5. Remove the screws securing the right-hand switch assembly (**Figure 74**) together and separate the switch halves.
6. Disengage the throttle cable from the throttle grip.
7. Remove the throttle cable (**Figure 75**) from the upper half of the right-hand switch assembly.
8. Remove the bolts securing the fuel tank mounting bracket (**Figure 76**) and remove the bracket.
9. Remove the screw (**Figure 77**) securing the throttle cable joint to the air filter housing and remove the joint from the clip on the air filter housing.
10. Separate the throttle cable joint (**Figure 78**) and disconnect the 2 carburetor throttle cables (**Figure 79**) from the plastic fitting on the throttle grip throttle cable.

### NOTE

*The piece of string attached in the next step will be used to pull the new throttle*

*cable back through the frame so it will be routed in exactly the same position as the old one was.*

11. Tie a piece of heavy string or cord (approximately 3 ft. [1 m long]) to the throttle cable joint end of the throttle cable. Wrap this end with masking or duct tape. Tie the other end of the string to the frame in the adjacent area.
12. At the throttle grip end of the cable, carefully pull the cable (and attached string) out through the frame. Make sure the attached string follows the same path as the cable through the frame.
13. Remove the tape and untie the string from the old cable.
14. Lubricate the new cable as described under *Control Cable* in Chapter Three.
15. Tie the string to the new throttle cable and wrap it with tape.
16. Carefully pull the string back through the frame routing the new cable through the same path as the old cable.
17. Remove the tape and untie the string from the cable and the frame.
18. Connect the 2 carburetor throttle cables (**Figure 79**) onto the plastic fitting on the throttle grip throttle cable.
19. Connect the throttle cable joint and make sure both halves are securely attached together (**Figure 78**).
20. Install the throttle cable joint into the clip on the air filter housing and install the screw (**Figure 77**) securing the throttle cable joint. Tighten the screw securely.
21. Install the fuel tank mounting bracket (**Figure 76**) and bolts. Tighten the bolts securely.
22. Insert the throttle cable into the upper half of the right-hand switch assembly (**Figure 75**).
23. Engage the throttle cable with the receptacle of the throttle grip.
24. Install the upper half and install the screws securing the right-hand switch assembly (**Figure 74**) together.
25. Connect the battery negative lead as described in Chapter Three.
26. Install the fuel tank as described in this chapter.
27. Install the seat(s) as described in Chapter Thirteen.
28. Adjust the throttle cable as described under *Throttle Cable Adjustment* Chapter Three.

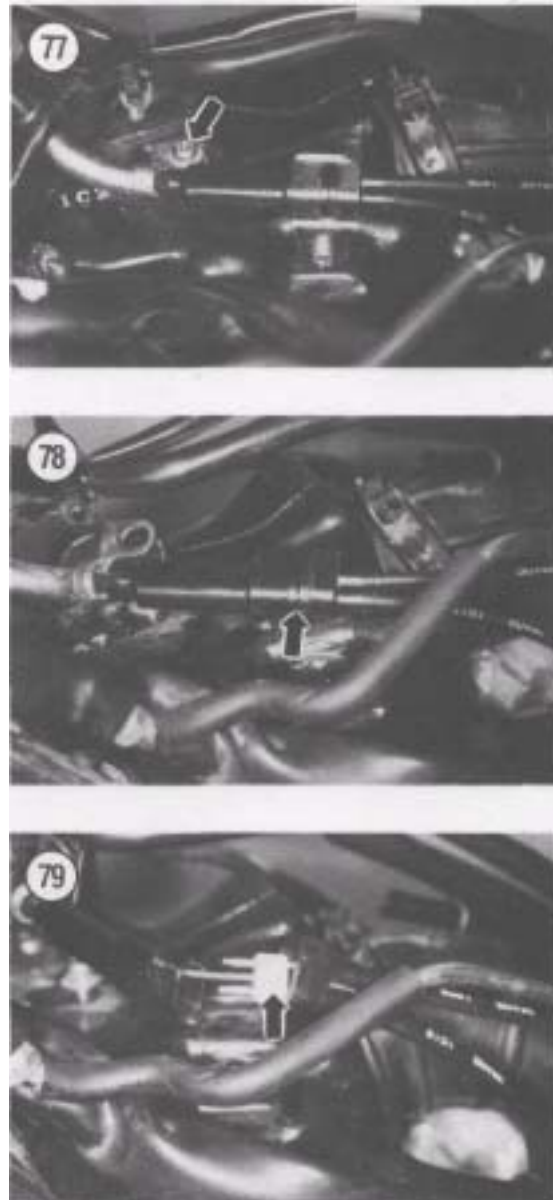
29. Synchronize the throttle cables as described under *Carburetor Synchronization* in Chapter Three.

30. Test ride the bike slowly at first and make sure the throttle is operating correctly.

## FUEL TANK

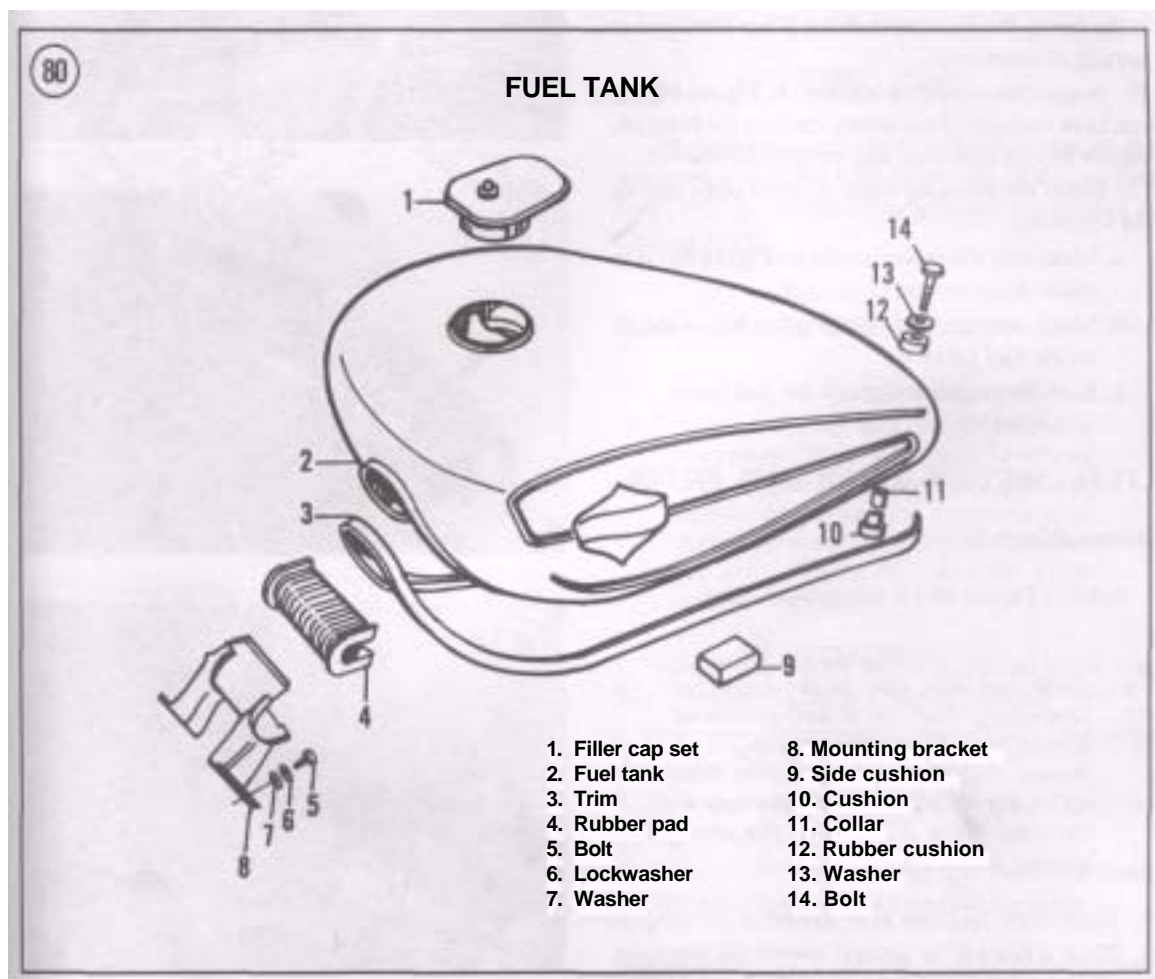
**Removal/Installation** Refer to **Figure 80**

for this procedure.



1. Remove the rider's seat as described under *Seat Removal/Installation* in Chapter Thirteen.
2. Disconnect the battery negative lead as described in Chapter Three.
3. Turn the fuel shutoff valve (**Figure 81**) to the OFF position.

4. Disconnect the fuel line (**Figure 82**) from the fuel valve. Plug the end of the line with a golf tee to prevent the entry of foreign matter and prevent any loss of any residual fuel in the line.
5. Remove the bolt and washer (**Figure 83**) securing the rear of the fuel tank.





6. Pull the fuel tank partially up at the rear.
7. On California models, disconnect the evaporative emission system vent line from the fuel tank.
8. Lift up and pull the tank (**Figure 84**) to the rear to remove the fuel tank from the frame.
9. Inspect the rubber cushion (**Figure 85**) in the front mounting bracket where the fuel tank attaches to the frame. Replace the cushion if it is damaged or starting to deteriorate.
10. Inspect the mounting bracket (A, **Figure 86**) for cracks or damage. If necessary, remove the bolts (B, **Figure 86**) on each side and remove the bracket.
11. Install by reversing these removal steps, noting the following:
  - a. Make sure the rubber cushion (**Figure 85**) is in place in the mounting bracket.
  - b. Make sure the fuel line (**Figure 82**) is secure on the fuel valve.
  - c. Start the engine and check for fuel leaks.

## FUEL SHUTOFF VALVE AND FILTER

**Removal/Installation** Refer to **Figure**

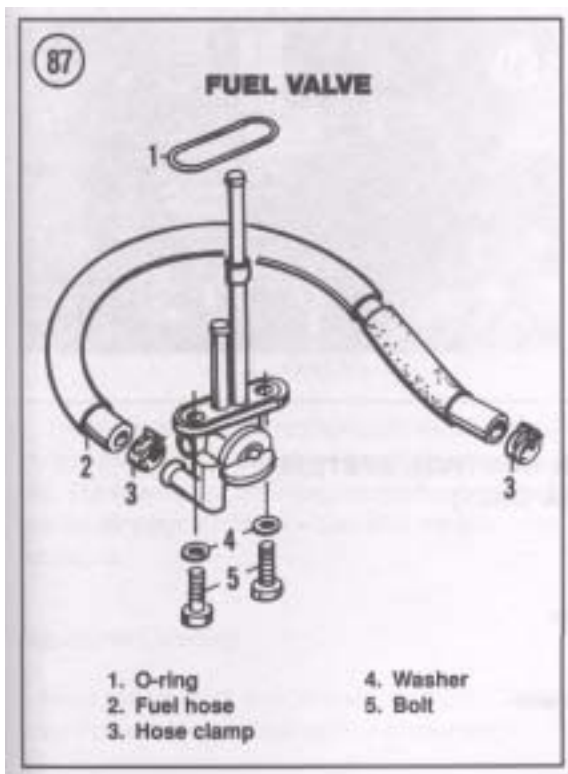
87 for this procedure.

### WARNING

*Some fuel may spill in the following procedure. Work in a well-ventilated area at least 50 feet from any sparks or flames, including gas appliance pilot lights. Do not allow anyone to smoke in the area. Keep a BC rated fire extinguisher handy.*

1. Remove the fuel tank as described in this chapter.
2. Place a blanket or several towels on the work bench to protect the surface of the fuel tank.
3. Turn the fuel tank on its side (**Figure 88**) with the fuel shutoff valve side up.
4. Remove the bolts and washers (A, **Figure 89**) securing the shutoff valve to the fuel tank and remove the valve (B, **Figure 89**).
5. After removing the valve, insert the corner of a lint-free cloth into the opening in the tank to prevent the entry of foreign matter or tape it closed.
6. Inspect the shutoff valve mounting O-ring; replace if necessary.
7. Clean the filter portion of the valve with a medium soft toothbrush and blow out with compressed





air. Replace the filter if it is broken in any area or starting to deteriorate.

8. Install by reversing the removal steps. Pour a small amount of gasoline in the tank after installing the valve and check for leaks. If a leak is present, solve the problem immediately—do not reinstall the fuel tank with a leaking valve.

## FUEL PUMP

The electromagnetic fuel pump is located on the left-hand side of the bike below one of the ignition coils. Fuel pump testing procedures are located in Chapter Eight.

### Removal/Installation

#### WARNING

*Some fuel may spill in the following procedure. Work in a well-ventilated area at least 50 feet from any sparks or flames, including gas appliance pilot lights. Do not allow anyone to smoke in the area. Keep a BC rated fire extinguisher handy.*

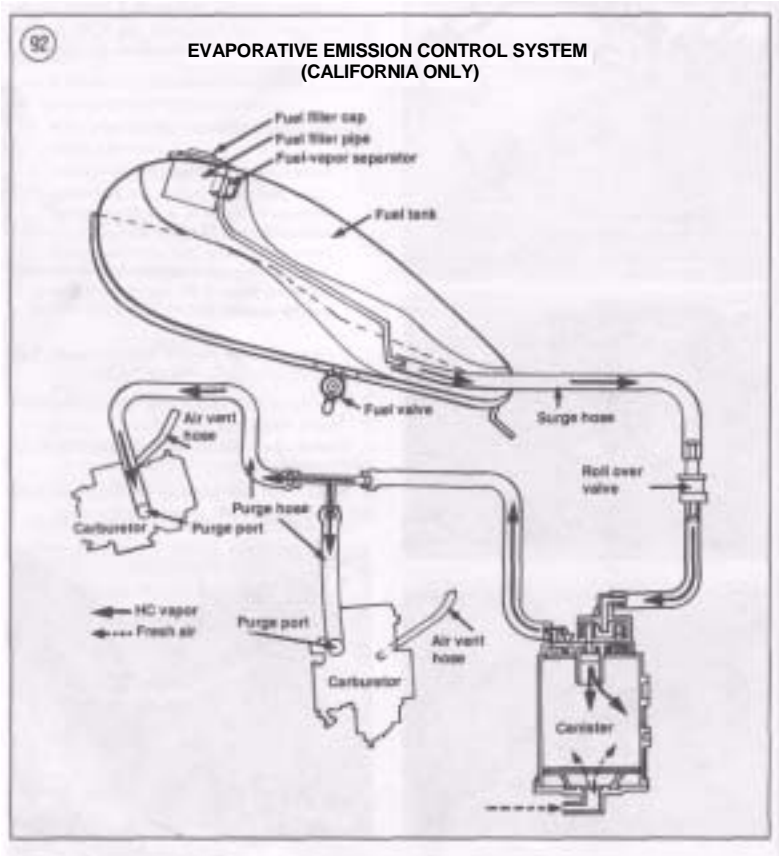
1. Remove the rider's seat as described under *Seat Removal/Installation* in Chapter Thirteen.
2. Disconnect the battery negative lead as described in Chapter Three.
3. Turn the fuel shutoff valve (**Figure 81**) to the OFF position.
4. Remove the bolt securing the frame left-hand side cover (**Figure 90**) and remove the cover.



5. Disconnect both fuel lines (A, **Figure 91**) from the base of the fuel pump. Plug the end of the lines with golf tees to prevent the entry of foreign matter and prevent loss of residual fuel in the lines.

6. Loosen the clamping bolt and nut (B, **Figure 91**) on the mounting bracket.

7. Pull the fuel pump (C, **Figure 91**) down and out of the mounting bracket and disconnect the 2-pin electrical connector on 1986 models or 4-pin electrical connector on 1987-on models.



8. Install by reversing these removal steps, noting the following:

- a. Make sure the electrical connector is free of corrosion and is tight.
- b. Prior to installing the frame side cover, reconnect the battery negative lead and start the engine to check for a fuel leak. If a leak is present, solve the problem immediately.

### CRANKCASE BREATHER SYSTEM (U.S. ONLY)

To comply with air pollution standards, all models are equipped with a closed crankcase breather system. The system routes the engine combustion gases into the air filter air boxes where they are burned in the engine.

#### Inspection/Cleaning

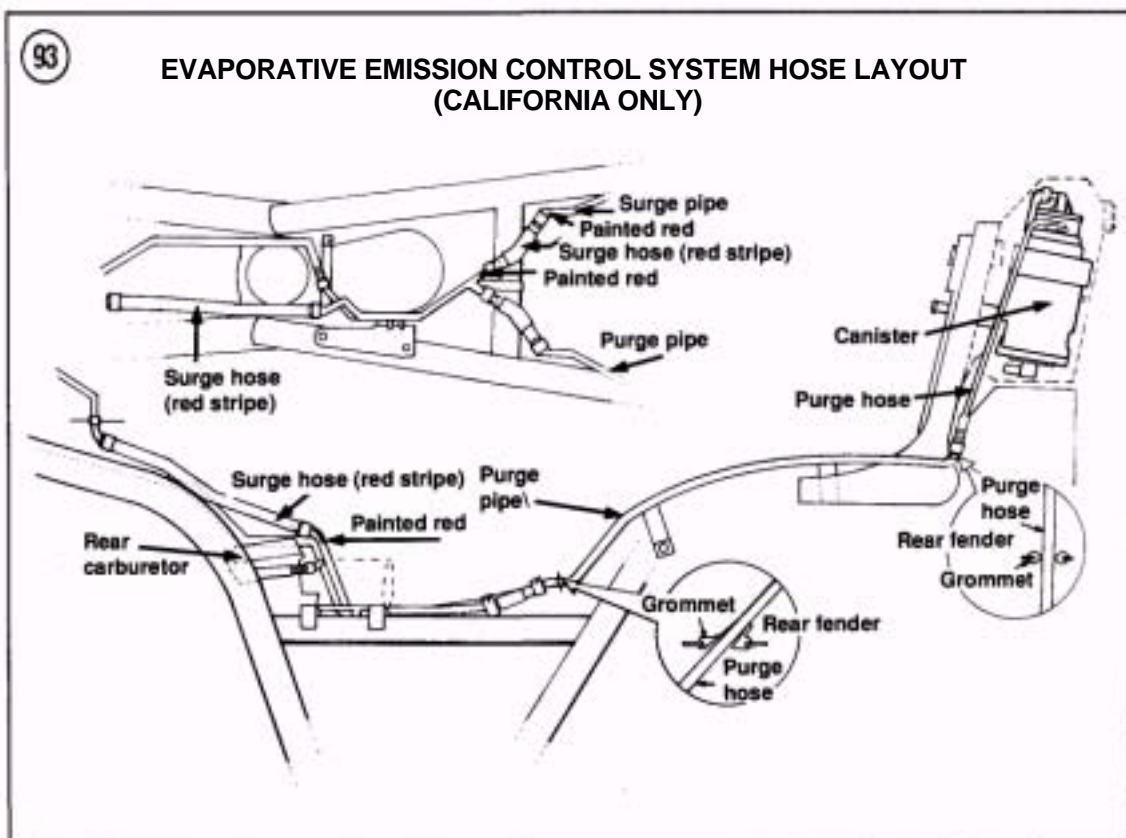
Make sure that all hose clamps are tight. Check hoses for deterioration and replace if necessary.

Open the end of each drain tube attached to each air filter air case and drain out all residue. This cleaning procedure should be done more frequently if a considerable amount of riding is done at full throttle or in the rain.

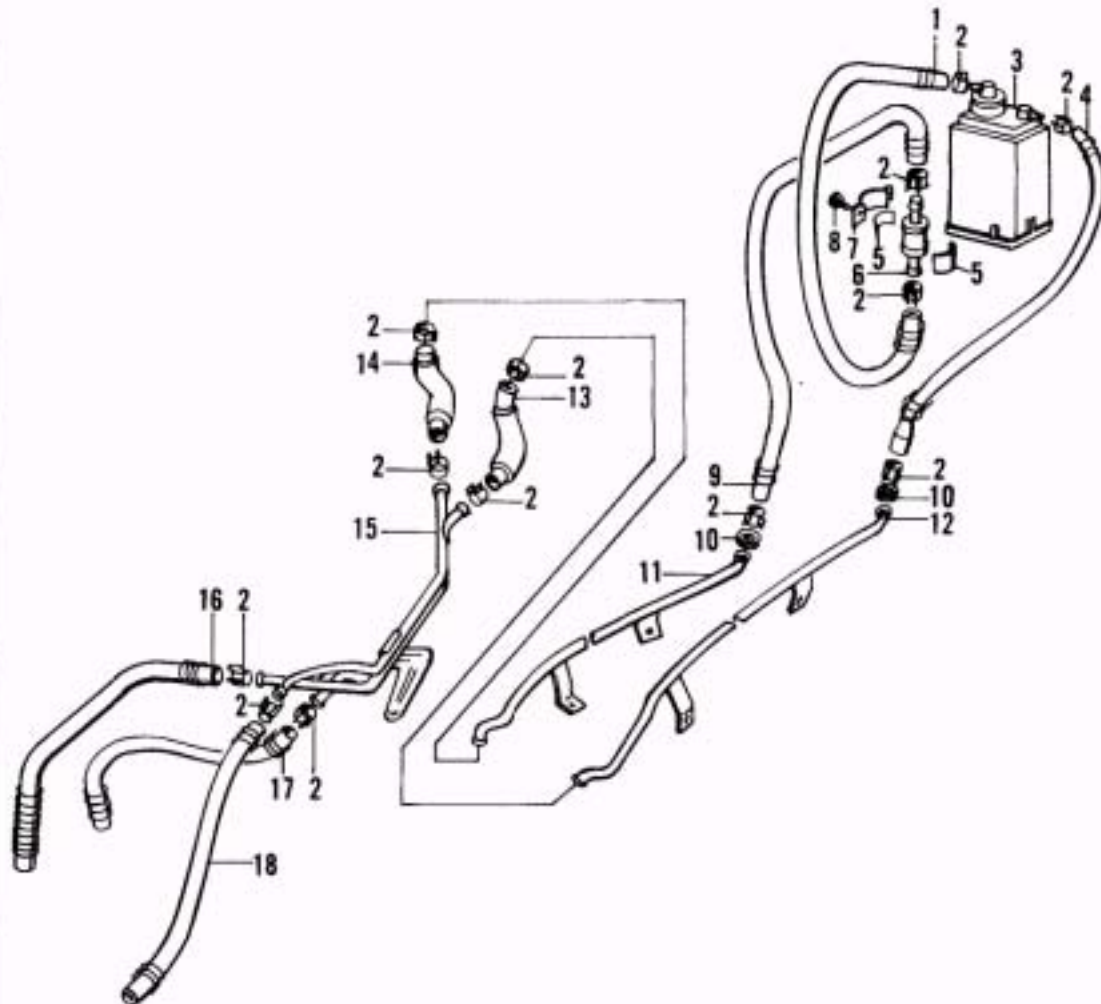
### EVAPORATIVE EMISSION CONTROL SYSTEM (CALIFORNIA MODELS ONLY)

To comply with the California Air Resources Board, an evaporative emission control system is installed on all models sold in California.

Fuel vapor from the fuel tank is routed into a charcoal canister. This vapor is stored when the engine is not running. When the engine is running these vapors are drawn through a purge control valve and into the carburetors to be burned. **Figure 92** is a basic schematic layout of the system. **Figure 93** and **Figure 94** show the hose routing and components of the system.



# EVAPORATIVE EMISSION CONTROL SYSTEM (CALIFORNIA ONLY)



- |                        |                      |   |
|------------------------|----------------------|---|
| 1. No. 4 surge hose    | 8. Screw             | 15. Front pipe assembly                       |
| 2. Hose clamp          | 9. No. 3 surge hose  | 16. No. 1 purge hose<br>(to front carburetor) |
| 3. Charcoal canister   | 10. Grommet          | 17. No. 2 purge hose<br>(to rear carburetor)  |
| 4. Canister purge hose | 11. Rear surge pipe  | 18. No. 1 surge hose<br>(from fuel tank)      |
| 5. Pad                 | 12. Rear purge pipe  |   |
| 6. Breather valve      | 13. No. 6 purge hose |   |
| 7. Clamp               | 14. NO. 2 surge hose |   |



Make sure all hose clamps are tight. Check all hoses for deterioration and replace as necessary.

Prior to removing the hoses from any of the parts of this system, mark each hose and fitting with a piece of masking tape to identify where the hose goes. There are so many vacuum hoses on these models it can be very confusing where each one is supposed to be attached.

The charcoal canister is located behind the pillion seat back rest.

### Purge Control Valve and Charcoal Canister Removal/Installation

1. Carefully pry the pillion seat back rest off the tool box cover.
2. Insert the ignition key in the tool box cover (**Figure 95**) and remove the cover.
3. Remove the screws and nuts securing the charcoal canister cover and remove the cover.

#### NOTE

*Prior to removing the hoses from the purge control valve and the charcoal canister, mark each hose and fitting with a piece of masking tape to identify where each hose goes.*

4. Unhook the rubber strap and remove the charcoal canister from the mounting bracket. Remove the canister from the bracket and disconnect the hoses from it.
5. Disconnect the hoses from the control valve.



6. Remove the screws securing the control valve to the right-hand side of the canister mounting bracket and remove control valve.

7. Install by reversing these removal steps, noting the following:

- a. Be sure to attach the hoses to the correct fitting of the charcoal canister and the purge control valve.
- b. Make sure the hoses are not kinked, twisted or in contact with any sharp surfaces.

## EXHAUST SYSTEM

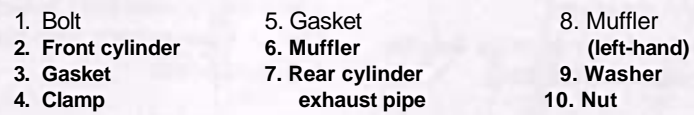
The exhaust system is a vital performance component and frequently, because of its design, it is a vulnerable piece of equipment. Check the exhaust system for deep dents and fractures and repair or replace them immediately. Check the muffler frame mounting flanges for fractures and loose bolts. Check the cylinder head mounting flanges for tightness. A loose exhaust pipe connection can rob the engine of power.

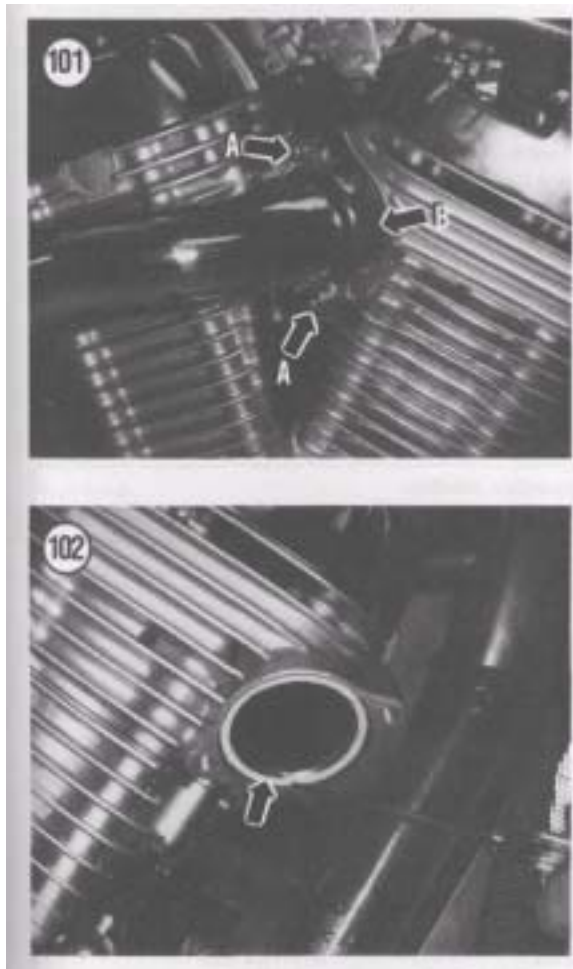
### Removal/Installation

Refer to **Figure 96** for the following procedure.

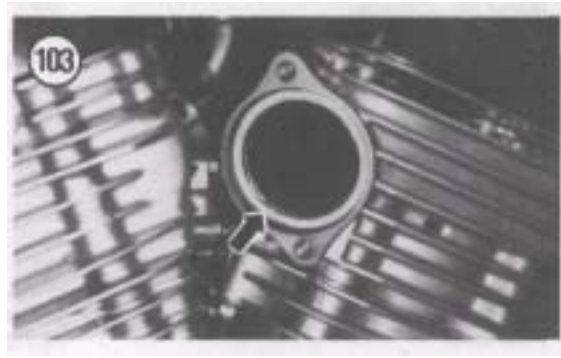
1. Loosen the clamping bolt where both mufflers attach at the common connector just forward of the rear wheel.
2. Loosen the clamping bolts where the exhaust pipes connect to the mufflers. Refer to **Figure 97** for the right-hand side or **Figure 98** for the left-hand side.
3. Remove the bolt, washer and nut (**Figure 99**) securing the muffler to the frame mounting bracket.
4. Disengage the muffler from the common connector of the other muffler, then remove the muffler.
5. Repeat Step 3 for the other muffler, then remove that muffler.
6. On the front cylinder, perform the following:
  - a. Remove the bolts (A, **Figure 100**) securing the exhaust pipe clamp (B, **Figure 100**) to the cylinder head.
  - b. Pull the exhaust pipe off the cylinder head and remove it from the engine and frame.
7. On the rear cylinder, perform the following:
  - a. Remove the bolts (A, **Figure 101**) securing the exhaust pipe clamp (B, **Figure 101**) to the cylinder head.
  - b. Pull the exhaust pipe off the cylinder head and remove it from the engine and frame.

## EXHAUST SYSTEM





8. Inspect the gaskets at all joints; replace as necessary.
9. Be sure to install a new gasket in each exhaust port. Refer to **Figure 102** for the front cylinder or **Figure 103** for the rear cylinder.
10. Attach the exhaust pipes to the engine.
11. Install the exhaust pipe cylinder head bolts, but tighten only finger-tight until the rest of the exhaust system is installed.
12. Install both mufflers and mounting bolts, washers and nuts; do not tighten at this time. Make sure the exhaust pipes are correctly seated in the exhaust ports.
13. Tighten the exhaust pipe cylinder head bolts first to minimize exhaust leaks at the cylinder head. Tighten the bolts securely.
14. Tighten the rest of the exhaust system bolts securely.
15. After installation is complete, start the engine and make sure there are no exhaust leaks.



**Table 1 CARBURETOR SPECIFICATIONS**

	1986-1991 U.S. & Canadian Models Rear cylinder	Front cylinder
Carburetor type	Mikuni BS34SS	Mikuni BDS34SS
Model No. (U.S.)		
1986		
1987-1991		
California	38A70	38A70
49-state	38A40	38A40
Model No. (Canada)		
1986	38A20	38A20
1987-1991	38A80	38A80
Venturi diameter	34.0 mm (1.34 in.)	34.0 mm
Needle clip position	fixed	(1.34 in.)
Main jet No. Main air jet	132.5 0.7mm	fixed 132.5 0.7mm
	(continued)	



**Table 1 CARBURETOR SPECIFICATIONS (continued)**

1986-1991 U.S. & Canadian Models (continued)		
	Rear cylinder	Front cylinder
Jet needle		
U.S.	5D23	5D21
Canada	5D22	5D22
Throttle valve	110	110
Pilot jet	40	32.5
Starter jet	40	37.5
Needle jet		
U.S.	P-1	P-0
Canada	P4	P-3
Pilot screw	pre-set	pre-set
Pilot air jet	pre-set	pre-set
Float level	26.7-28.7 mm (1.05-1.13 in.)	10.5-12.5 mm (0.41-0.49 in.)
1992-on U.S. and Canadian Models		
Carburetor type	Mikuni BS36SS	Mikuni BDS36SS
Model No. (U.S.)		
California	38E5	38E5
49-state	38E1	38E1
Model No. (Canada)	38E4	38E4
Venturi diameter	36.0 mm (1.41 in.)	36.0 mm (1.41 in.)
Needle clip position	fixed	fixed
Main jet No.	132.5	127.5
Main air jet	1.6 mm	1.6 mm
Jet needle	5D35	5D47
Throttle valve	125	110
Pilot jet	45	40
Starter jet	25	22.5
Needle jet	P-7	P-2
Pilot screw	pre-set	pre-set
Pilot air jet	pre-set	pre-set
Float level	26.7-28.7 mm (1.05-1.13 in.)	10.1-11.1 mm (0.32-0.40 in.)
1985-1991 U.K. Models		
Carburetor type	Mikuni BS34SS	Mikuni BDS34SS
Model No.		
1985	38A20	38A20
1986	38A80	38A80
1987-1991	38A90	38A90
Venturi diameter	34.0 mm (1.34 in.)	34.0 mm (1.34 in.)
Needle clip position	fixed	fixed
Main jet No.	132.5	132.5
Main air jet	0.7 mm	0.07 mm
Jet needle	5D22	5D22
Throttle valve	110	110
Pilot jet	40	32.5
Starter jet	40	37.5
Needle jet	P-4	P-3
Pilot screw	pre-set	pre-set
Pilot air jet	pre-set	pre-set
Float level	26.7-28.7 mm (1.05-1.13 in.)	10.5-12.5 mm (0.41-0.49 in.)
(continued)		

**Table 1 CARBURETOR SPECIFICATIONS (continued)**

	1992-on U.K. Models Rear cylinder	Front cylinder
Carburetor type	Mikuni BS36SS	Mikuni BDS36SS
Model No.	38EO	38EO
Venturi diameter	36.0 mm	
Needle clip position	36.0 mm	(1.41 in.)(1.41 in.)
Main jet No. Main air	fixed	fixed 95
jet Jet needle	107.5	1.8mm 5F109
	1.8mm	
	5F109	
Throttle valve	115	115
Pilot jet	42.5 25 P-3 pre-	40 22.5 P-4
Starter jet	set pre-set	pre-set pre-
Needle jet	26.7-28.7 mm	set 10.1-11.1
Pilot screw		mm
Pilot air jet		
Float level	(1.05-1.13 in.)	(0.32-0.40 in.)