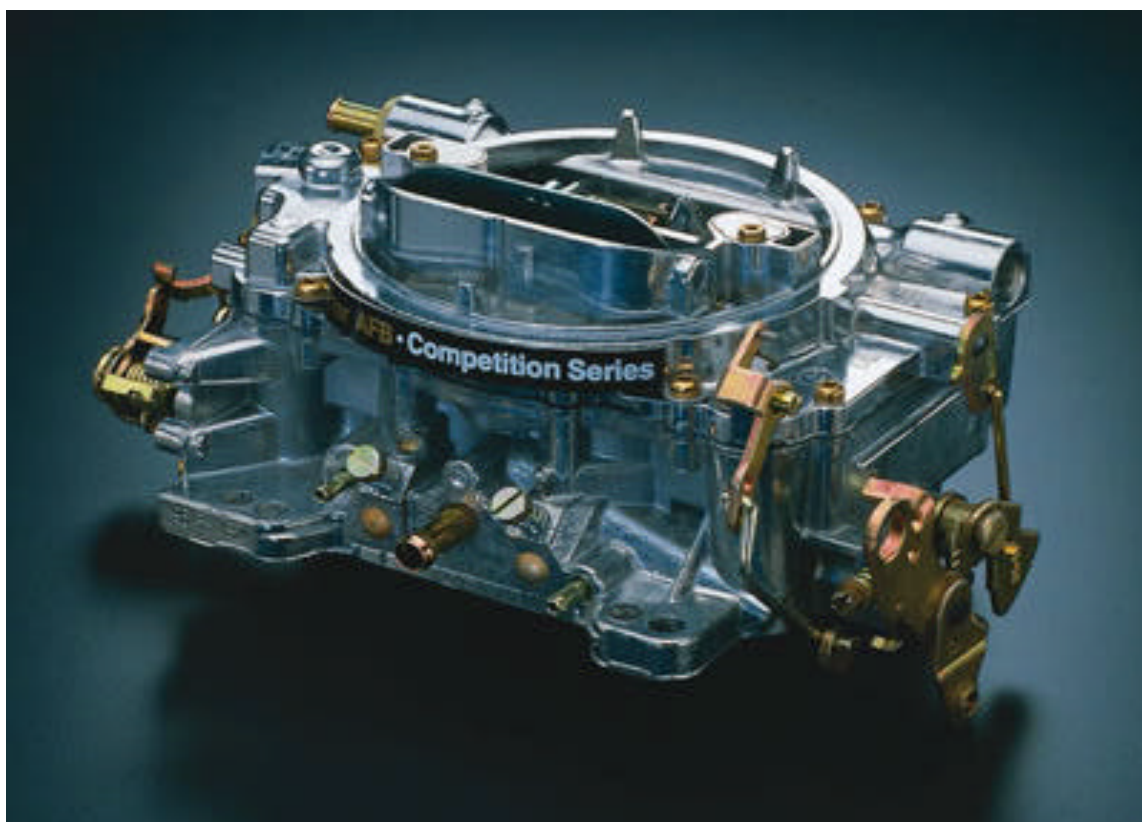


## *How to Overhaul and Tune your Carter AFB or Edelbrock EPS Four Barrel Carburetor*



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Welcome to the AFB/Edelbrock rebuild guide. I set this guide up in four sections. The first section, this one, is a FAQ type of section, and contains general carburetor and performance information. Section two is a parts diagram of Carter/Edelbrock 4-barrel carbs. Section three is a step-by-step guide to rebuilding your carburetor. Section four is a troubleshooting matrix that I have found to be very useful. The reason I set up this guide, and my Holley guide as well, is because I was never able to find what I was looking for when rebuilding carburetors. The literature that was out there had either too little info, as in the brochures that come with the rebuild kits, or way too much, as in some of the SA books available. I tried to come up with something in the middle. The goal of this guide is not to provide professional level instruction on carburetor theory, operation and maintenance, but simply to try to explain rebuilding and adjusting carburetors to the home do-it-yourselfer who might not have a lot of experience in dealing with carburetors.

Edelbrock Performer series carburetors are extremely popular, low maintenance carburetors that have a variety of applications both for street and strip use. Carter AFB carburetors are nearly identical, that is why I combined the two into a single guide. The real advantage to these carburetors is that they can be modified and upgraded with a minimum of disassembly.

### **Do I really need to rebuild my carb?**

Many times, I would even say most times, problems related to carburetors are actually problems with something else. Before you take your carb off and rebuild it, try the following adjustments and see if they solve the problem.

- a) Ignition Timing
- b) PCV system
- c) Distributor vacuum advance
- d) Idle mixture and speed
- e) Fuel and fuel filter condition
- f) Cylinder compression tests
- g) Manifold heat control valve
- h) Vacuum line connections

These are all easy checks and may save you quite a bit of work.

### **OK, OK, but I really do need to rebuild my carb, now what?**

If you do actually need to rebuild your carburetor, the most important thing you have to have is a large clear space on which to work. There are many, many parts that need to come off, and having a clean area in which to organize them will be crucial in not ending up with “extra pieces” at the end of the operation. In addition, you will need the following:

- a) A rebuild kit for your particular carburetor, found at your local auto parts store.
- b) A large container of solvent, for cleaning the parts.
- c) A couple of different sizes of needle nose pliers.
- d) A good set of screwdrivers, possibly with Torx heads.
- e) A compressed air source is nice to have to blow out hard to dry places on some parts.

When you rebuild your carburetor, take your time and follow the step-by-step instructions in Section 3. Clean parts as needed in your solvent, and make sure they are completely dry before reassembling them. Use all new gaskets when putting your carb back on the engine.

### **What kind of on engine adjustments can I make to my carburetor?**

There are several easy adjustments you can make while the carb is on the vehicle.

- a) Idle speed adjustment. Turn the curb idle speed adjustment screw (#58 in the diagram) to either slow down or speed up the engine RPM at idle. If you have a tachometer, a good rule of thumb is 750 RPM with the transmission in park. It should drop down to about 500 RPM when you shift into Drive. Go ahead and play with the idle speed and see what works best for you. It doesn't hurt anything to experiment. All

adjustments should be made with the engine at full operating temperature.

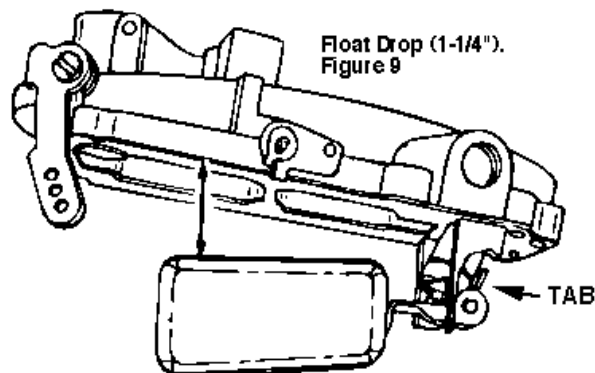
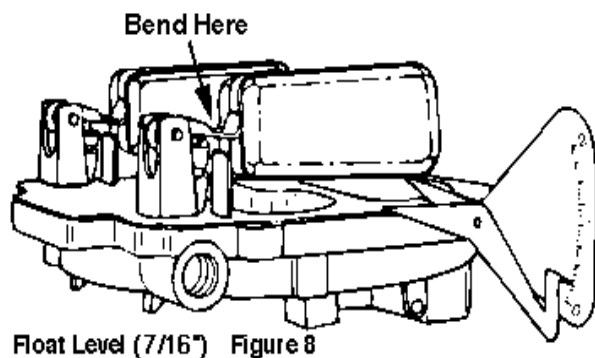
b) Idle mixture screws. Basically, idle mixture is adjusted by first seating the mixture screws lightly and then backing them out until a specified engine speed is reached. Turning the screws clockwise seats the screws and leans the idle mixture. Turning them counter clockwise backs them out and richens the mixture. Do not over tighten the screws when turning them clockwise or you will damage them and make proper adjustment impossible. What works best for me is leaning the idle mixture until you notice a drop in RPM, then back it out a quarter turn. Both screws should be backed out at the same level.

c) Choke. If you have an electric choke, adjust the choke by loosening the 3 screws around the choke housing and turning the entire housing either clockwise or counter-clockwise. This has the effect of determining how long the choke is engaged. You will probably have to adjust this from time to time over the course of the year as the weather changes.

d) Fast idle adjustment screw. Turn this screw (#53 on the diagram) to fine tune the idle RPM when the choke is engaged. A good Rule of Thumb is between 1500 and 2000 RPM.

e) Calibrating the Pump. If you encounter any hesitations or stumbles that do not seem to be related to the basic metering or have not responded to changes in the basic metering, move the pump drive link (#17 on the diagram) to one of the holes closer to the carburetor body. This will increase the stroke length of the plunger and result in more pump delivery.

e) Float level adjustment. Fuel control, or lack thereof, can make even a perfectly functioning carburetor seem like a candidate for the scrap heap. This adjustment on AFB's and Edelbrock EPS series carbs does require a little bit of disassembly. To properly adjust the floats in the EPS carburetor, two procedures must be followed. First, invert the air horn cover (Figure 8) holding the air horn gasket in place. There should be 7/16" between the air horn gasket and the top of the outer end of the float. To adjust the float level, bend the float lever until the recommended level is attained. DO NOT press the needle into the seat when adjusting the float lever. Next, you should check the float drop (Figure 9). Hold the air horn upright and let the floats hang down. There should be 1-1/4" ± 1/4" between the air horn gasket and the top of the outer end of the float. To adjust the float drop, bend the tab on the back until the recommended float drop is attained.



## **What are some easy ways to upgrade my carburetor?**

The beauty of these carbs is the ease of upgrading. There are two upgrades, or modifications that really make a difference. The first is changing the jets. To change the jets on these carburetors, simply remove the air horn, and unscrew the existing jets (#35 & 36 on the diagram) which are located at the bottom of the fuel bowl, and screw in the new ones. Go up or down one step at a time and test it to see whether the result is satisfactory or not. It is helpful to have a magnetic screwdriver for this operation. This has a huge effect on performance and gas mileage.

The metering rods and step up springs determine how much, and when, fuel is delivered during partial and wide open throttle. A thinner metering rod=more fuel. A lighter gauge spring = quicker fuel delivery. Metering Rod and Step-Up Spring changes can typically be made in less than five minutes and without removing the carburetor. First, loosen the Step-Up Piston Cover Screws (see diagram) and twist the Step-Up Piston Cover Plates to the side. The Metering Rods and Step-Up Springs can now be removed and replaced if necessary. Be sure to replace the Step-Up Piston Cover Plate and tighten the Step-Up Piston Cover Screw when finished. **CAUTION: Do not over tighten the Step-Up Piston Cover Screws!** They should only be tightened to **12 to 17 inch/pounds**. Excessive torque will weaken or snap off the screw heads. If this happens, they may fall into the carb causing serious engine damage. If an inch/pound torque wrench is not available, snug the screw until it just touches the plate, then tighten 1/16th turn more.

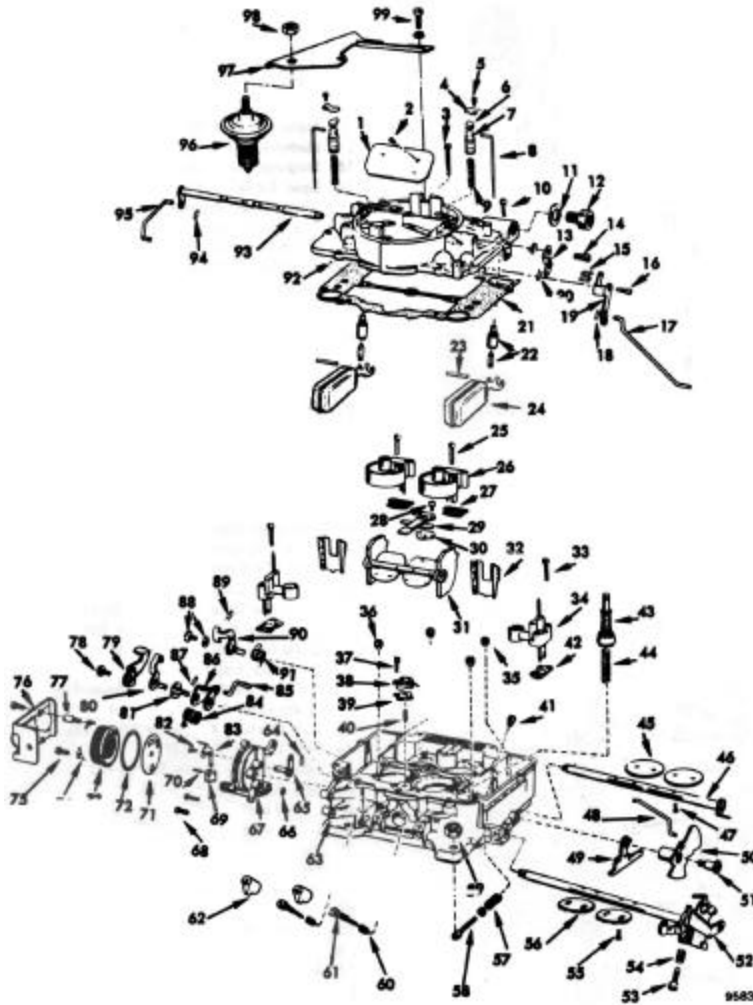
While not really an upgrade to your carburetor, one extremely easy upgrade that will have an enormous effect on the performance of your engine is replacing your stock air cleaner assembly with an open element air cleaner system with a K&N air filter. This allows a great deal more air flow and you will really feel the extra power during heavy acceleration.

Whenever doing any of these adjustments or upgrades it is a good idea to do one small adjustment at a time, and then test it's reaction to your engine performance. That way you know exactly what adjustment helped and what didn't.

## **Where can I get more information on these carburetors?**

SA design has a very good book on Carter carburetors. It is, however, very in depth, and digging up the information you need out of it can be a challenge. Edelbrock has a good deal of information available on it's website, [www.edelbrock.com](http://www.edelbrock.com). It also has alot of information on what other components such as intakes, cams, ect. work with your specific carburetor for various applications. Specifically, check out [http://www.edelbrock.com/automotive/eps\\_intro.html](http://www.edelbrock.com/automotive/eps_intro.html), for the EPS Carburetor performance guide.

In closing, I hope this helped. The goal of this guide is to take some of the mystery out of rebuilding and fine tuning Carter and Edelbrock carburetors. If you have feedback on this guide, feel free to email me at [davek1076@hotmail.com](mailto:davek1076@hotmail.com).

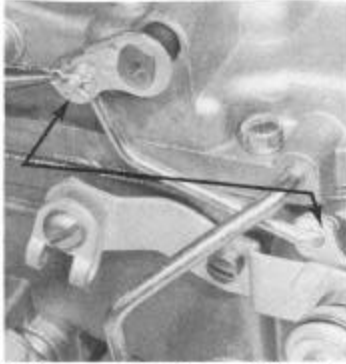


1. Choke Valve
2. Choke Valve Retaining Screw (2)
3. Air Horn Attaching Screw (Long)
4. Step-Up Rod Cover (2)
5. Step-Up Rod Cover Retaining Screw (2)
6. Step-Up Rod Retainer Spring (2)
7. Vacuum Piston (2)
8. Step-Up Rod (2)
9. Vacuum Piston Spring (2)
10. Air Horn Attaching Screw
11. Fuel Inlet Fitting Gasket
12. Fuel Inlet Fitting
13. Choke Cover
14. Choke Cover Retaining Screw
15. Pump Connector "S" Link

16. Pump Arm Retaining Screw
17. Accelerator Pump Rod
18. Clip
19. Pump Arm
20. Clip
21. Air Horn Gasket
22. Needle and Seat Assembly (2)
23. Float Lever Pin (2)
24. Float (2)
25. Secondary Venturi Retaining Screw (4)
26. Secondary Venturi Assembly (2)
27. Secondary Venturi Gasket (2)
28. Hot Idle Compensator Valve Retaining Screw (2)
29. Hot Idle Compensator Valve

30. Hot Idle Compensator Valve Gasket
31. Secondary Auxiliary Valve Assembly
32. Fuel Bowl Baffle (2)
33. Primary Venturi Retaining Screw (4)
34. Primary Venturi Assembly (2)
35. Secondary Metering Jet (2)
36. Primary Step-Up Rod Jet (2)
37. Pump Jet Housing Retaining Screw (2)
38. Pump Jet Housing Assembly
39. Pump Jet Housing Gasket
40. Pump Discharge Check Needle
41. Pump Inlet Check Valve
42. Primary Venturi Gasket (2)
43. Pump Plunger Assembly
44. Lower Pump Spring
45. Secondary Throttle Valve (2)
46. Secondary Throttle Shaft
47. Secondary Throttle Valve Retaining Screw (4)
48. Fast Idle Connector Rod
49. Lockout Dog
50. Fast Idle Cam
51. Fast Idle Cam Retaining Screw
52. Primary Throttle Shaft Lever Assembly
53. Fast Idle Adjusting Screw
54. Fast Idle Adjusting Screw Spring
55. Primary Throttle Valve Retaining Screw (4)
56. Primary Throttle Valve (2)
57. Curb Idle Adjusting Screw Spring
58. Curb Idle Adjusting Screw
59. Carburetor Hold-down Nut
60. Idle Mixture Screw Spring (2)
61. Idle Mixture Screw (2)
62. Idle Limiter Cap (2)
63. Main Body
64. Clip
65. Choke Shaft Lever
66. Choke Housing Gasket
67. Choke Housing
68. Choke Housing Attaching Screw (3)
69. Choke Piston
70. Choke Piston Pin
71. Choke Baffle
72. Choke Cover Gasket
73. Choke Cover
74. Choke Cover Retainer (3)
75. Choke Cover Retainer Screw (Short)
76. Choke Heat Shield
77. Choke Cover Retaining Screw (Long)
78. Lever Retaining Screw
79. Dashpot Arm
80. Primary Throttle Lever Shoe
81. Secondary Override Lever
82. Choke Piston Lever Retaining Screw
83. Choke Piston Lever and Link
84. Secondary Override Lever Spring
85. Throttle Connector Link
86. Primary Throttle Arm
87. Clip
88. Secondary Shoe Retaining Screw and Washer
89. Clip
90. Secondary Throttle Lever Shoe
91. Secondary Throttle Lever Shoe Spring
92. Air Horn Assembly
93. Choke Shaft and Lever Assembly
94. Clip
95. Choke Rod
96. Dashpot Assembly
97. Dashpot Mount Bracket
98. Dashpot Retaining Nut
99. Dashpot Bracket Attaching Screw

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1. Remove hairpin retaining clips which hold choke lever in place (arrows). If carburetor has well type choke, remove vacuum break diaphragm.



2. Remove retaining clip holding accelerator pump rod to pump arm. Disconnect fast-idle rod (arrow). Some models have dashpot here.



3. Remove 10 airhorn screws, tap airhorn to break seal if needed. Remove airhorn and turn over on workbench.



4. Mark each float for correct reassembly. Remove float hinge pin and lift float from airhorn. Repeat for other float.



5. Mark inlet needles and remove from valve seats. Mark valve seats and remove with wide-blade screwdriver. Discard gaskets.



6. Twist bowl vent lever, pry up rubber tip to remove. Vent lever can be removed, but is usually unnecessary.



7. Turn airhorn on its side and remove step-up piston cover on each side. Withdraw assembly from airhorn.



8. Remove screw holding accelerator pump rocker arm to casting. Disconnect S-link from pump plunger, remove arm and plunger.



9. Use box wrench to loosen fuel inlet fitting. Unscrew fitting and remove filter screen and gasket.



10. Remove accelerator pump cylinder spring. AFB internal design differs slightly according to model application and year.



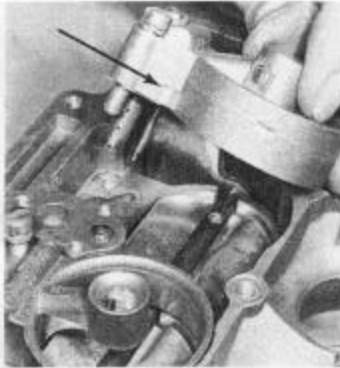
11. Unscrew and remove accelerator pump jet housing and discard gasket. Turn over main body to remove discharge check needle.



12. If fitted with hot-idle compensator valve, unscrew and remove. Peel gasket from bottom of valve and discard. Do not change valve adjustment.



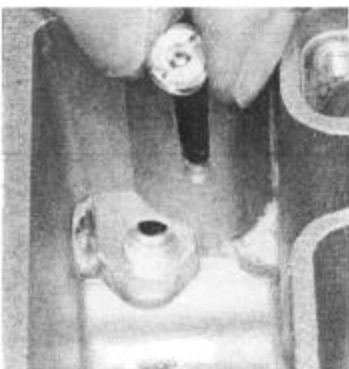
13. Remove two primary venturis. Peel off old gaskets and discard.



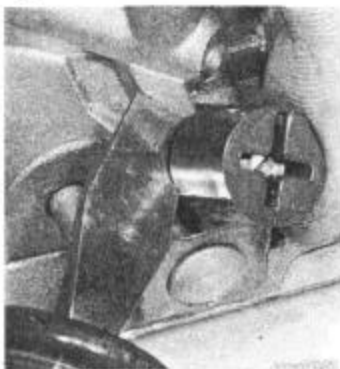
14. Remove two secondary venturis. Peel off old gasket from bottom of venturis and discard. Venturis are marked (arrow) for proper replacement.



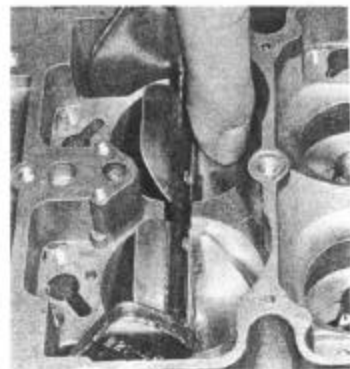
15. Some versions have air velocity valves. Lift these from the main body. Be careful not to damage valve or bend shaft.



16. Remove accelerator pump intake check valve from fuel bowl. Primary and secondary metering jets need not be removed for normal cleaning.

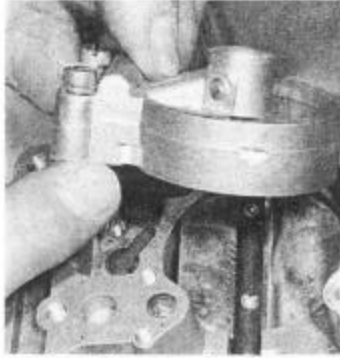


17. Pry limiter caps from idle mixture screws. Lightly screw in to seat, count turns, and back out completely.

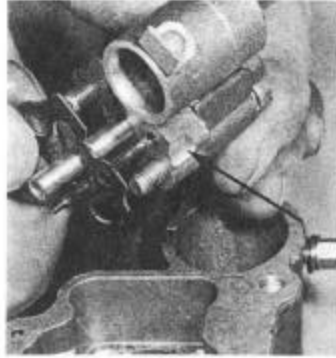


18. After cleaning, replace idle mixture screws. Install velocity valve. Check operation manually for correct installation.





19. Install new gaskets on secondary venturis. Note marked edge and install over velocity valve. Tighten screws.



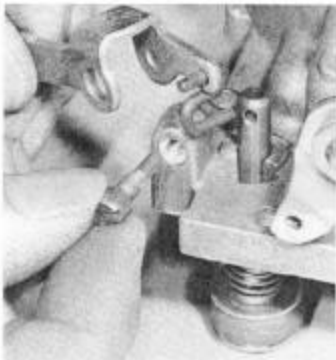
20. Put new gaskets on primary venturis. These are marked (arrow) for correct replacement. Tighten screws.



21. Drop check needle in discharge passage and replace pump housing jet and new gasket. Tighten screws.



22. Fit new gasket to bottom of hot-idle compensator valve and install valve between secondary venturis.



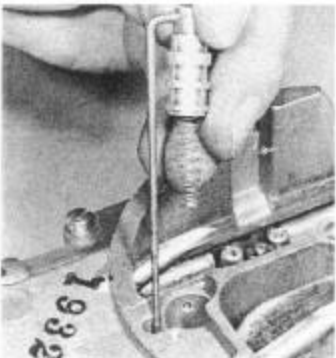
23. Install accelerator pump plunger through airhorn hole. Connect S-link and replace rocker arm. Tighten screw.



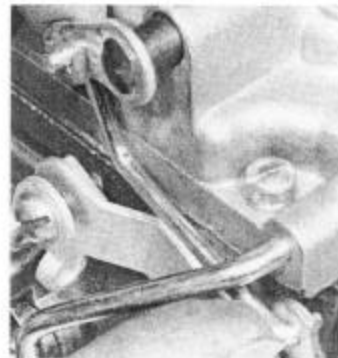
24. Install airhorn gasket before reassembling floats. Replace valve seats and new gaskets. Drop needles in seats and install floats.



25. Replace accelerator pump spring in main body. Lower airhorn in place. Replace attaching screws. Put brass (A) and extra-long screw (B) where shown.



26. Replace step-up piston assembly in airhorn and tighten cover plate screw. Repeat to install assembly on other side of airhorn.



27. Reconnect all linkage and replace retaining clips. Attach dashpot, vacuum diaphragm, or other assist devices, if removed.



