2HP engine – Carburetor cleaning - 11/10/2010

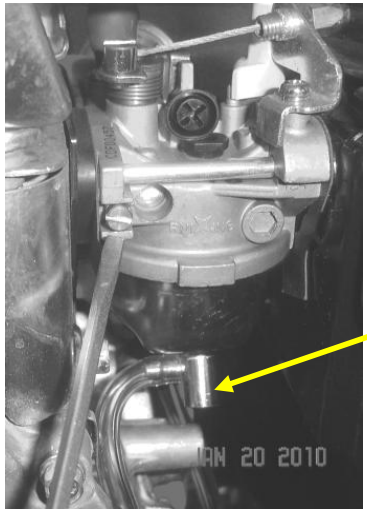
We've had a few instances where water has been found in the gas, and the use of 10% Ethanol gasoline has caused engine running problems.

Water in the gas typically effects high speed performance by preventing fuel from being pulled up thru the high speed jet, or by corroding the high speed jet, especially if the engine sits for a while with water in the gas.

Ethanol (and the use of carb or brake cleaners) can dissolve the carburetor gaskets which can then get sucked into the low speed circuits of the carb. These fluids can also destroy certain types of o-rings.

The following is a detailed cleaning procedure after the above occurs.

As a side note, an engine may also be running bad due to excessive coil gap. This however is usually found immediately when the engine is new, or when the engine in operated in very cold weather. For this issue, there is a procedure called "2HP engine tuning tips" which instructs how to adjust coil gap, but for problems caused by Ethanol or water, you need to do a good carb cleaning.

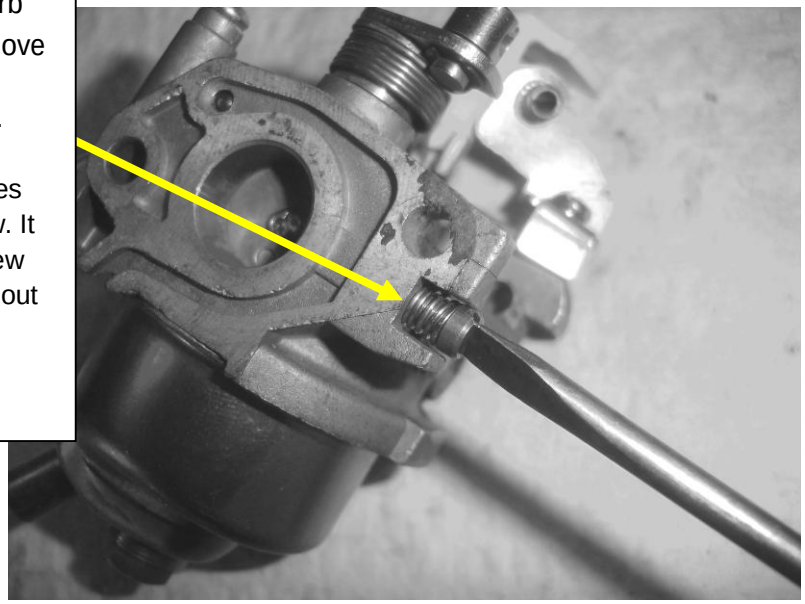


If water can be seen in the gas tank, remove the tank and completely drain it. You may want to change the fuel filter too, plus rinse the tank with fresh gasoline.

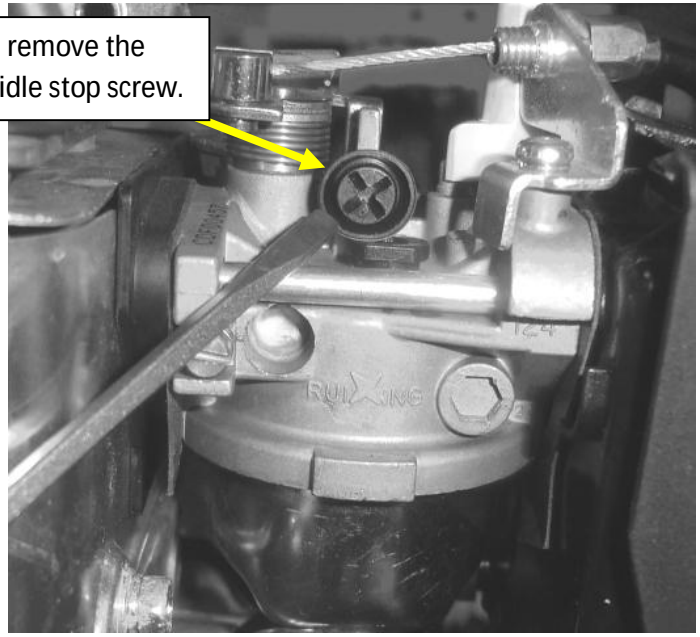
You must also drain the carburetor bowl. To do this, loosen the bowl drain screw inside the metal tube shown here (it is on the bottom of the bowl). If this won't loosen, remove the carb and take the bowl off (see detailed instructions below).

After drained, you can re-fill your gas tank and test, but if engine performance is still not good, remove the carb and continue with the following cleaning steps.

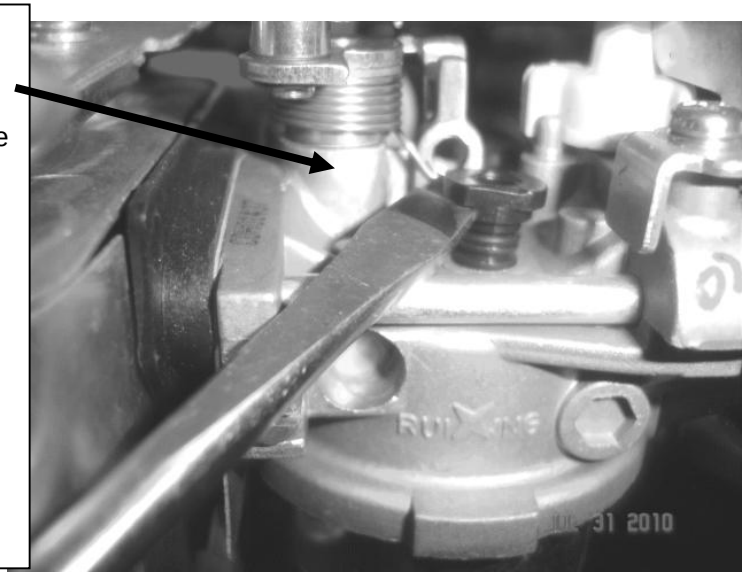
1. With the carb removed, remove the low speed mixture screw. Don't lose the spring that goes over the screw. It keeps the screw from vibrating out of adjustment during engine operation.



2. Next remove the plastic idle stop screw.

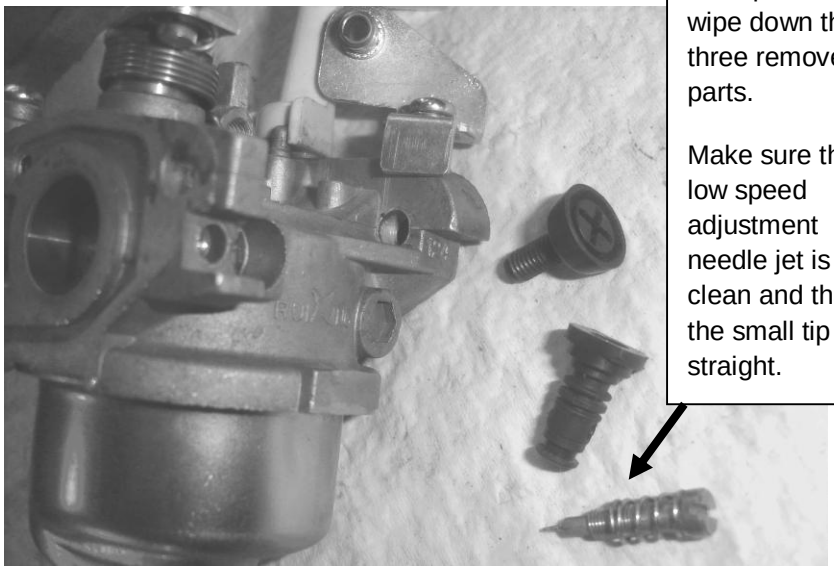


3. Now remove the black plastic plug that was located under the idle stop screw. Use a flat blade screw driver and carefully pry the plug up and out of its hole. It should slide out easily unless debris is trapped inside, so do this carefully.



4. Inspect and wipe down the three removed parts.

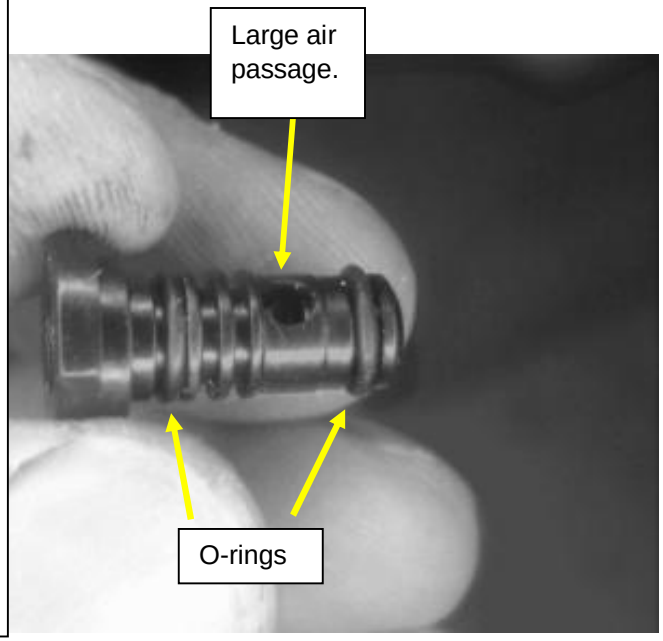
Make sure the low speed adjustment needle jet is clean and that the small tip is straight.



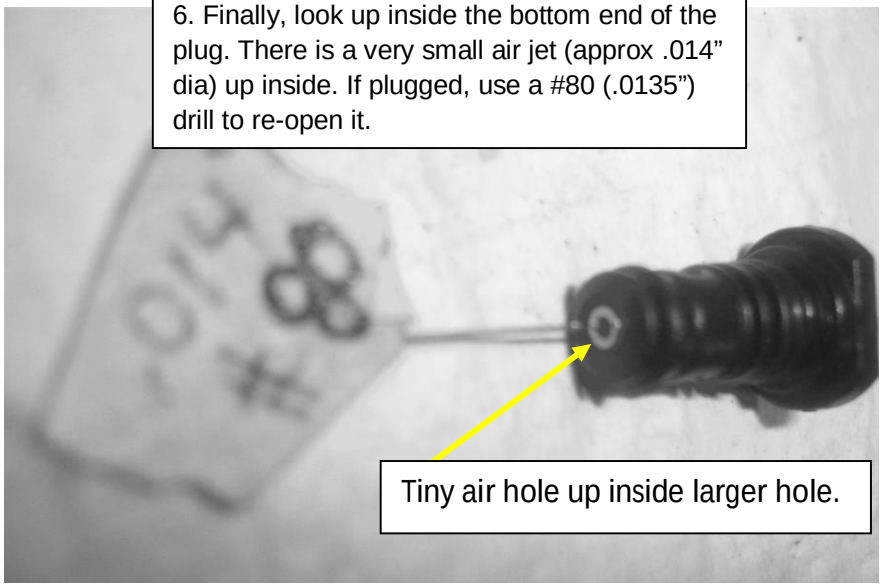
5. Look closely at the black plastic plug.

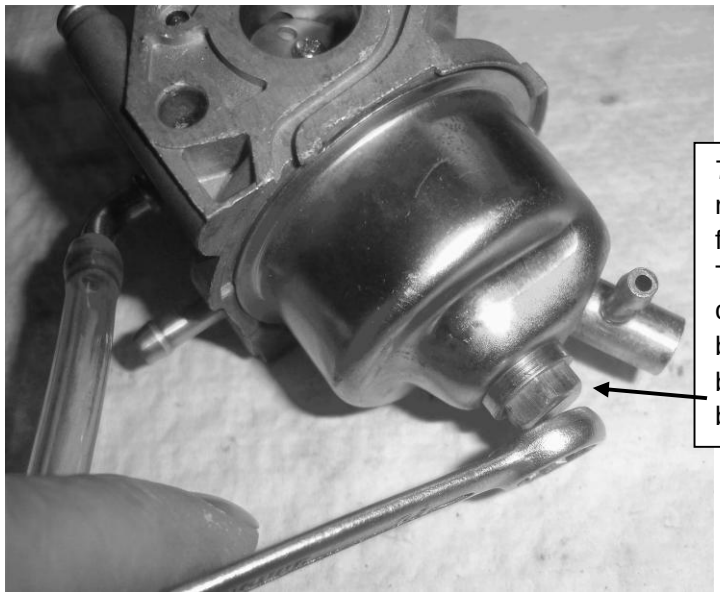
There should be two small o-rings in place as shown. They should also be clean, free of debris, and not deteriorated.

Also inspect the large air passage hole and be sure that is clear and clean of debris down inside. Blow out with compressed air if needed.



6. Finally, look up inside the bottom end of the plug. There is a very small air jet (approx .014" dia) up inside. If plugged, use a #80 (.0135") drill to re-open it.

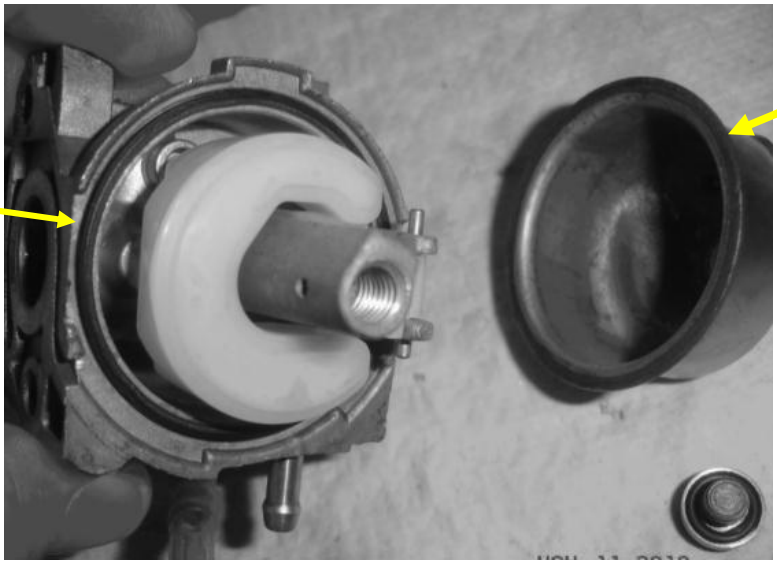




7. Next remove the float bowl. There is only one retaining bolt on the bottom of the bowl.

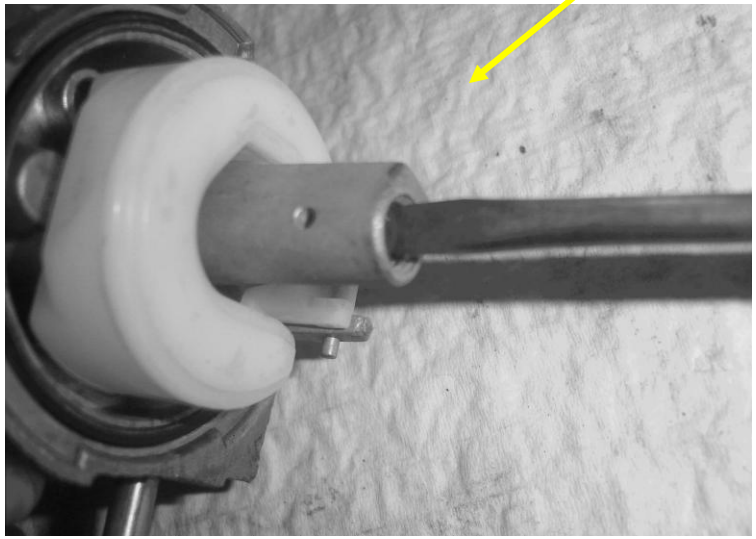
8. The retaining bolt has an o-ring located in a groove machined into the bottom of the bolt head. This seals around the mounting hole, so make sure it is in good condition and properly seated in the bolt groove.

9. To keep the top of the bowl from leaking fuel, the bowl seals against a rubber ring seated inside the carb casting. Make sure this ring is properly seated fully within the groove.

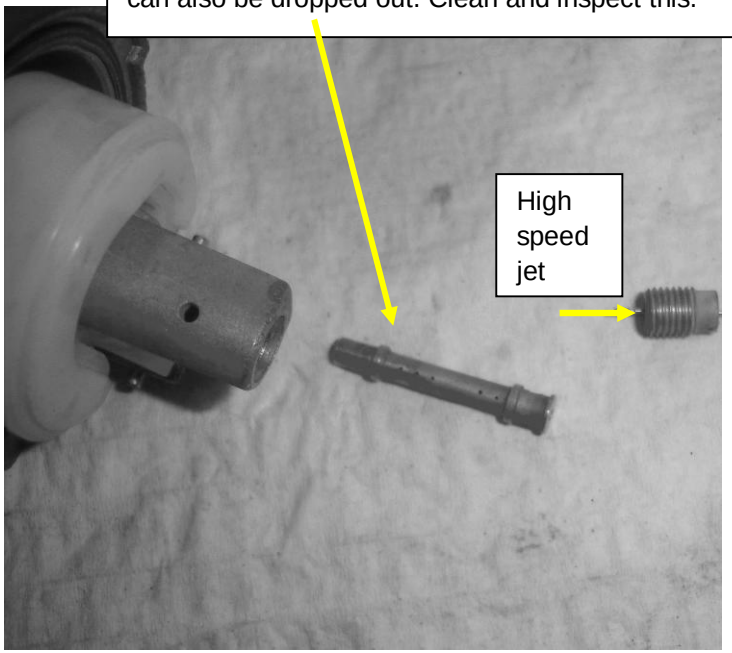


10. Next, wipe clean the inside and the rim of the float bowl. Make sure you scrub away any roughness and corrosion inside that could break lose and plug the jets, plus off the rim to prevent fuel leakage.

11. Now remove (unscrew) the high speed jet using a screwdriver that just fits inside the fuel pickup casting as shown. Use as wide a screwdriver as possible because the jet is made of soft brass.

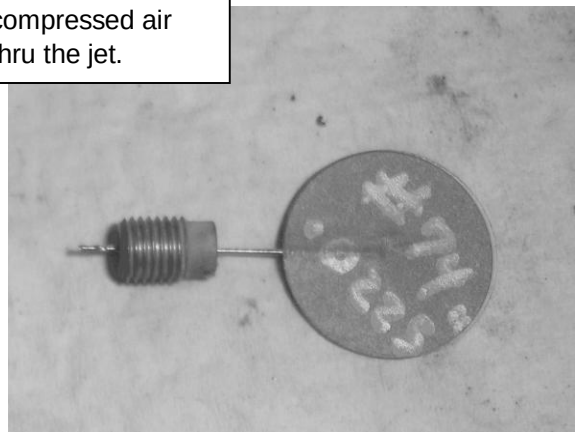


12. After the jet is removed, the upper siphon tube can also be dropped out. Clean and inspect this.



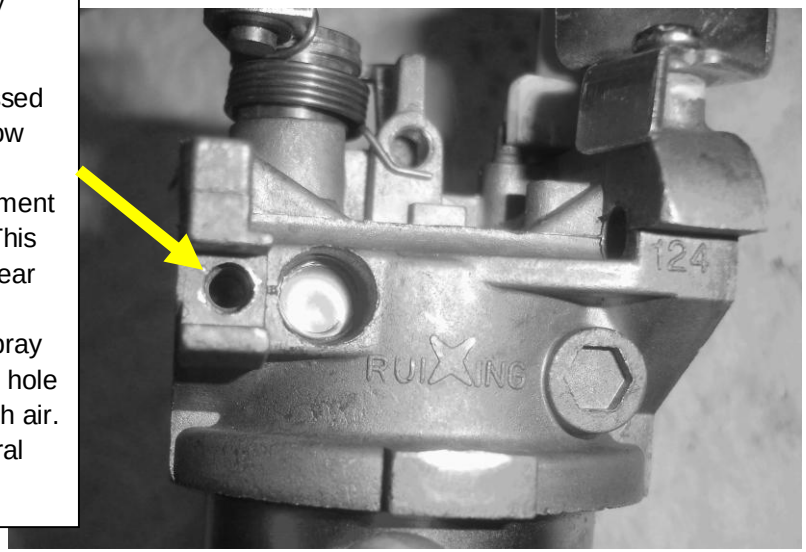
13. Make sure this fuel hole in the casting is clear. This is where the fuel must enter to get to the high speed jet.

14. Use a #74 (.0225") drill bit to clean the high speed jet. After cleaning, blow compressed air thru the jet.

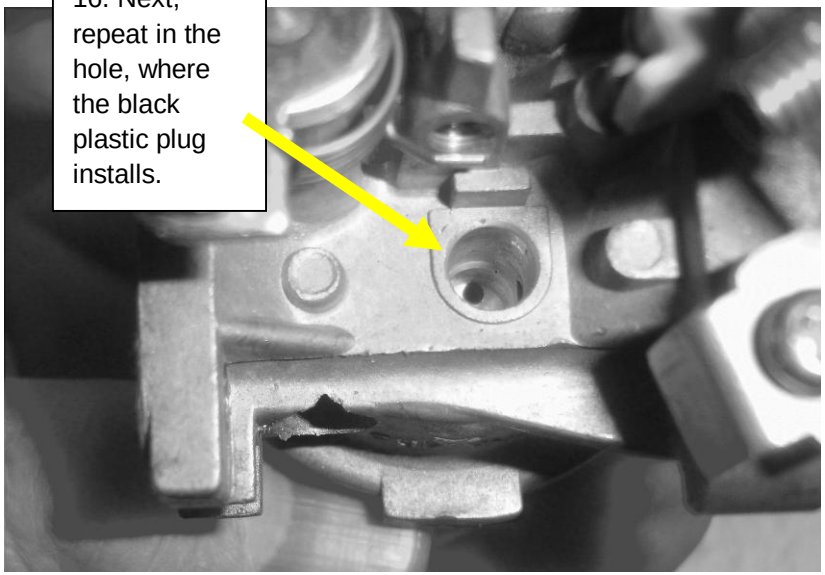


15. Now move to the carb body itself.

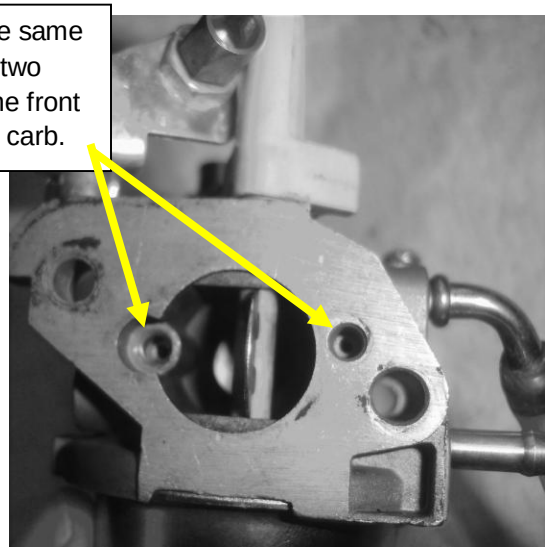
Use compressed air and 1st blow into the low speed adjustment screw hole. This will start to clear all the air passages. Spray WD-40 in the hole then blast with air. Repeat several times.

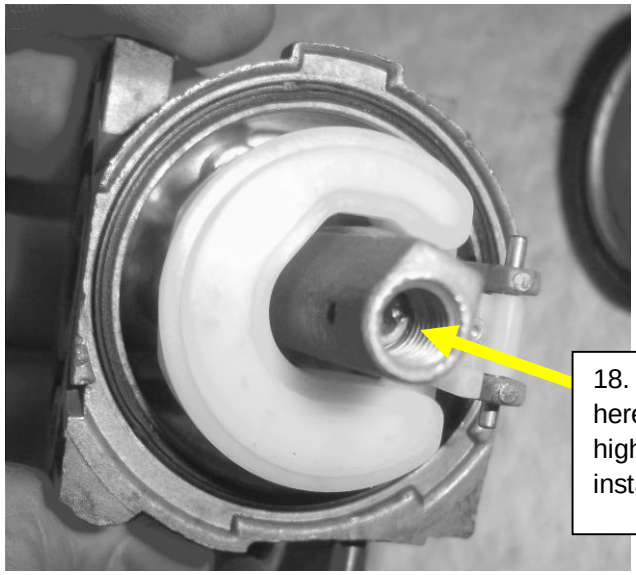


16. Next, repeat in the hole, where the black plastic plug installs.

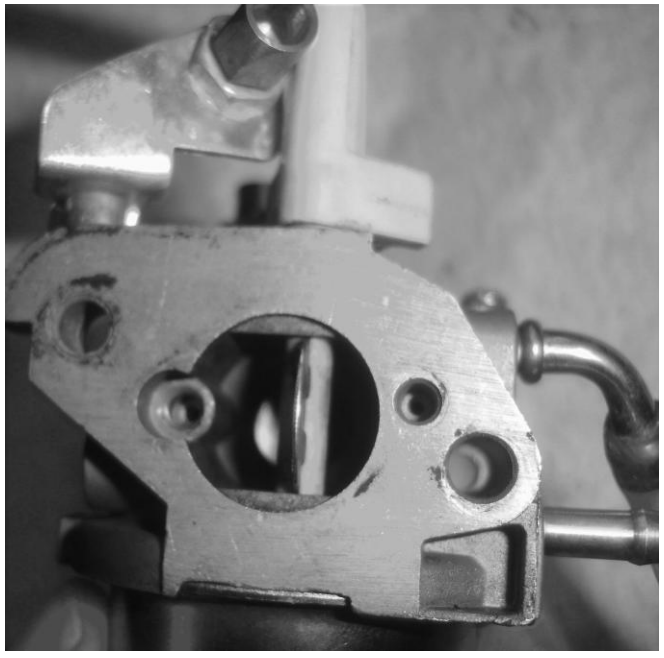


17. And the same thru these two holes on the front face of the carb.





18. and thru here where the high speed jet installs….



19. … and finally, blow air and WD-40 into the carb fuel line fitting.

After everything is complete above and wiped down clean, re-assemble as follows:

20. Slide the siphon tube back into the carb casting (facing like shown in above step # 12 picture). Then insert the high speed jet (threads first), then carefully start the threads, then screw the jet snug against the previously inserted siphon tube.

21. Now install the float bowl but first check to make sure the ring seal is located properly in its groove (picture in step #9). Rotate the bowl against the ring seal so you know it is seated properly, then while holding the bowl in position, install the bowl retaining bolt (with the o-ring) and tighten snug against the bottom of the bowl.

22. Finally, re-install the low speed mixture screw, then the black plastic plug (so that the flats are in line with the carb direction), then the idle stop screw. Screw the idle stop screw in until it just moves the throttle open about 1/16". Final adjustment must be made when the engine is running. Also, initially adjust the low speed screw all the way in, then back out 2 full turns (4 half turns). Once the engine is running and warmed up, slowly screw the low speed adjust in until the engine starts to rev up, then back it out about ¼ turn. This should provide good throttle response. You can play with this adjustment in or out to fine tune to your own liking. It should be about 1-1/2 to 1-3/4 turns open when the carb is operating like new.