HOW TO

Clean and Rebuild a Walbro Carb

10 STEPS TO RESTORE YOUR GAS ENGINE'S PERFORMANCE

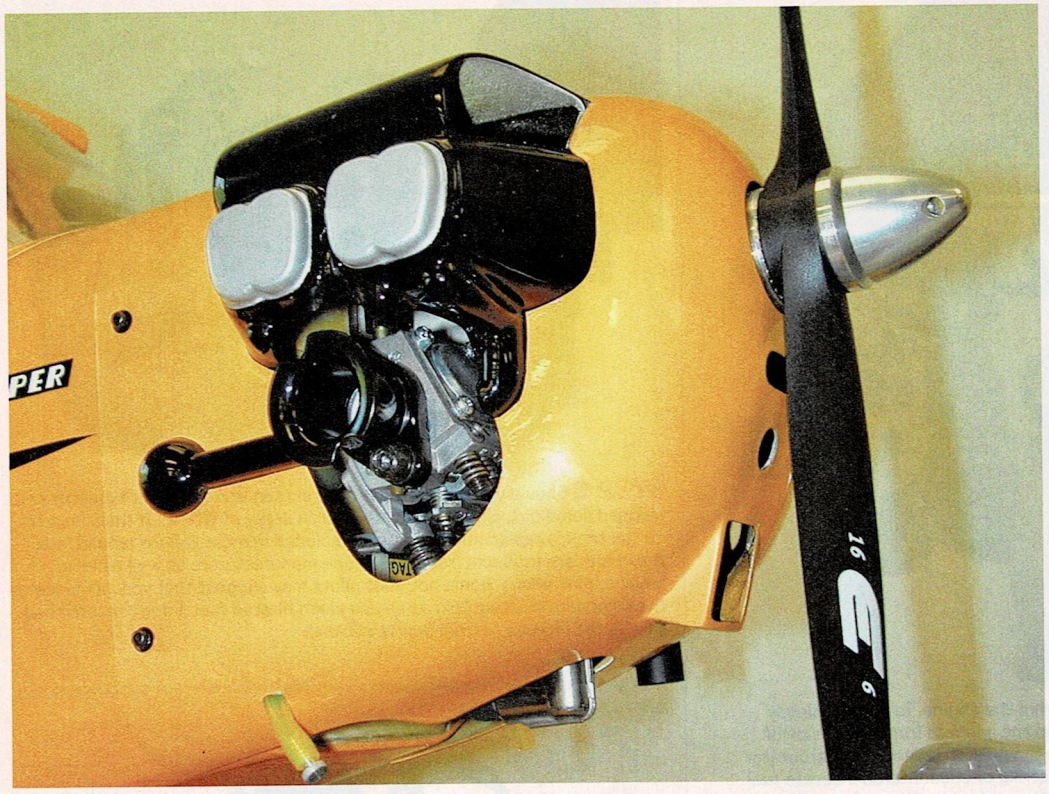
TEXT & PHOTOS BY **GERRY YARRISH**

One of the great features that makes big airplanes so popular is the bulletproof, user-friendly nature of the Walbro carburetors with which most gas engines are equipped. After a gas engine has been adjusted, its carburetor won't need to be tweaked for most of—if not the entire—flying season. As an example, my Hangar 9 quarter-scale Piper J-3 Cub PNP is powered by a Zenoah G-20 gas engine, and in its many years of operation, I have never needed to adjust the high- or low-end needle valves. To maintain optimal engine operation, however, you should do some basic engine maintenance and cleaning.

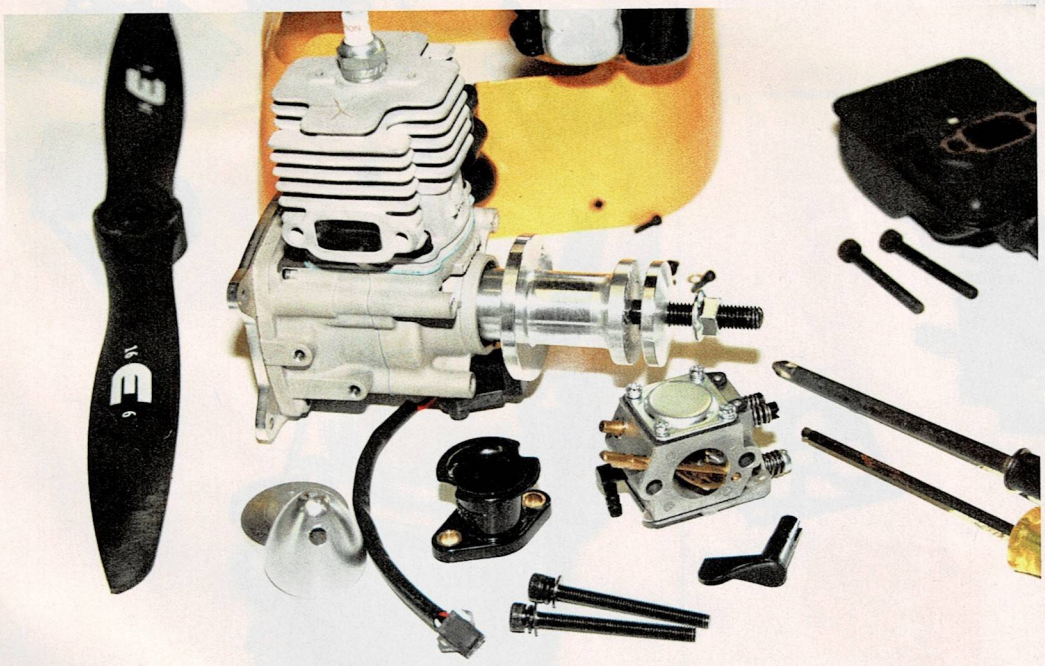
There are a few things that can affect the performance of your Walbro carburetor, including unfiltered fuel; debris ingested at the flying field; and water, which can cause internal corrosion. No matter what the cause, whenever you see obvious dirt or mud in your carburetor or if you notice a distinct decline in your engine's performance, the first thing you should do is open up the carburetor and take a look inside; this takes a minimum of tools and time. This article will demonstrate how I keep my Zenoah engine and Walbro carburetor happy.

What You Need

To get inside the Walbro carburetor, you'll need common head and Phillips head screwdrivers; an Allen wrench or hex driver; a mild spray solvent, like WD-40; some bamboo BBQ skewers; and some Q-tips. Don't use a high-pressure air gun to clean the carburetor as this can drive dirt deeper into the fuel passages, not to mention scatter a bunch of the smaller rebuild parts and pieces. Covering your work surface with a soft cotton rag or towel is also a good idea.



STEP 1 Start by draining the fuel from your model, then remove the engine cowl so that you can disconnect the throttle linkage and fuel line. You can do this job with the engine attached to the model, or you can remove the engine and work on it that way. If you remove the engine, you'll have to disconnect the spark-plug lead, the ignition-timing-sensor lead, and the engine-attachment bolts. You might as well remove the muffler also so that you can give the entire engine a good cleaning before reinstalling it on your model.



STEP 2 Here's the engine removed from the Piper Cub. I prefer to do this job away from the model to give me plenty of elbow room. Place the engine on top of a paper plate or a disposable foil tray so that you can keep your work area as clean as possible.

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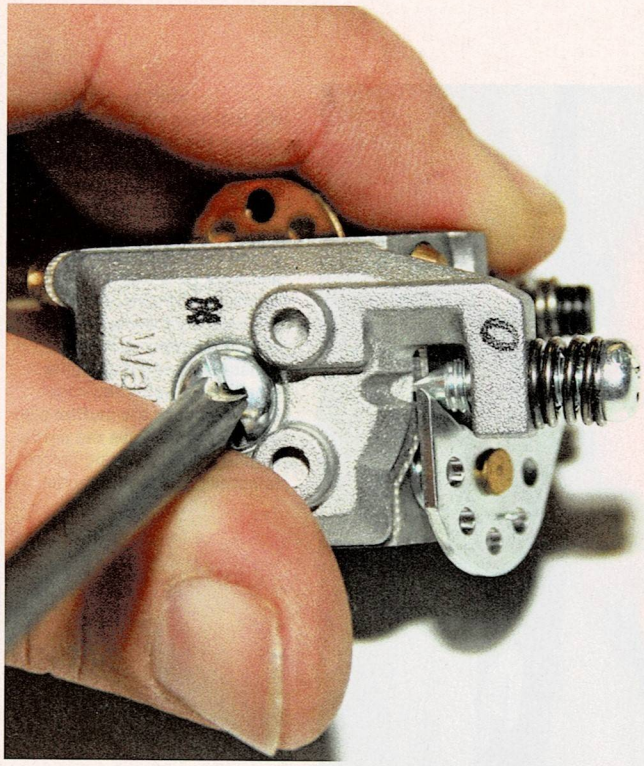
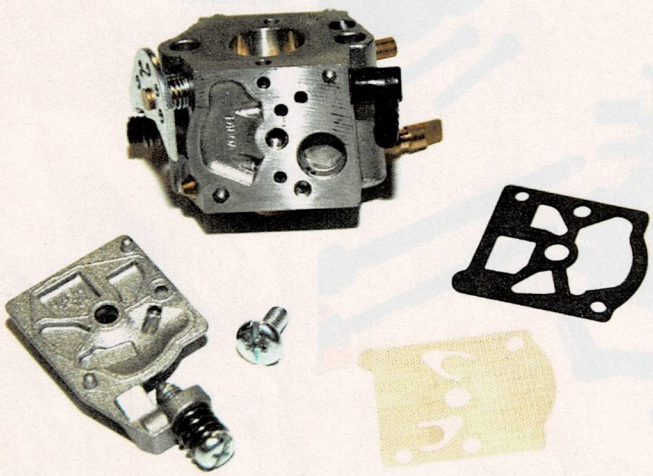
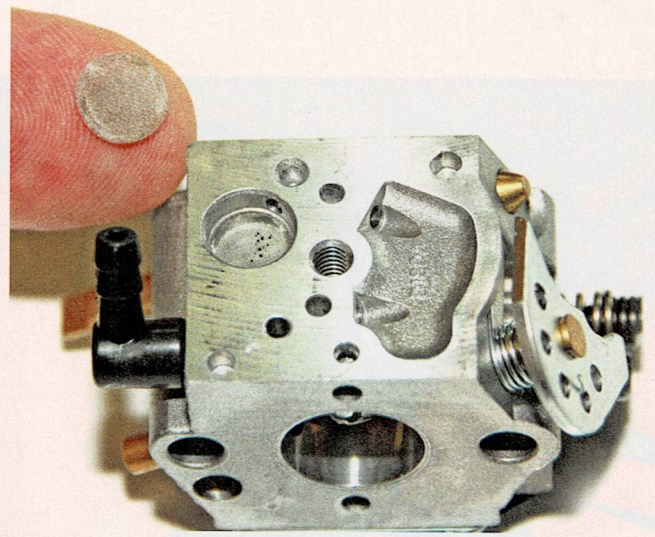


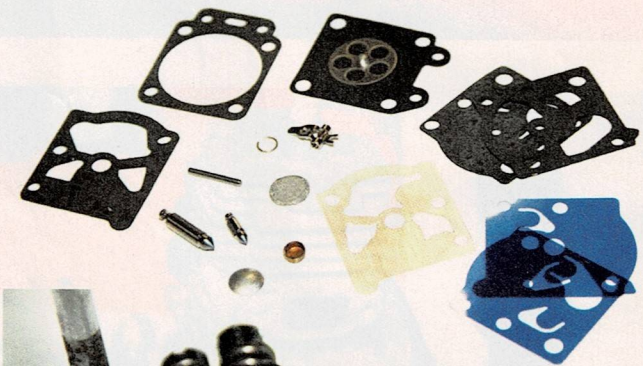
STEP 3 Remove the carburetor from the engine. To do this, simply remove the two attachment bolts and the spacers from either side of the intake. Be careful not to damage the gasket. Unless your carburetor has suffered a major, muddy ground strike or encountered a severe fuel blockage, all you'll need to do is give the carburetor a good cleaning and possibly rinse out the main-filter screen.



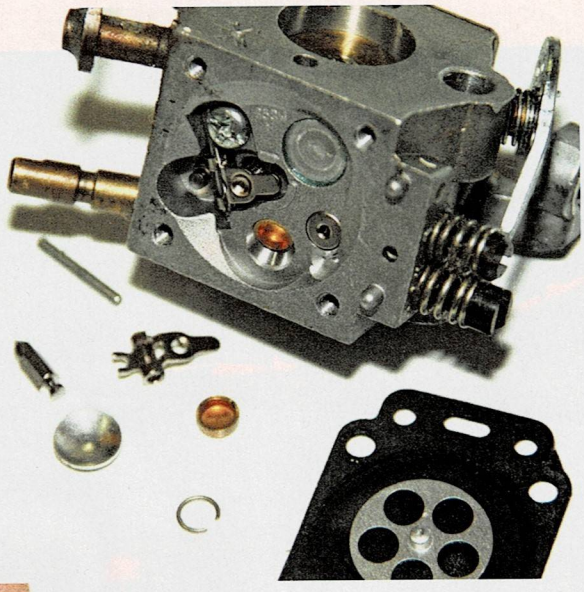
STEP 4 On the inlet side of the carburetor body, removing the single center screw gives you access to the fuel-pump diaphragm, the gasket, and the unit's fuel-filter screen. Remove the screw and side cover, then inspect the thin diaphragm and the flapper tabs to make sure there is no deterioration. Clean out any obvious debris using the BBQ skewer. Don't use a sharp tool or a hobby knife as these can damage the surface of the passages.

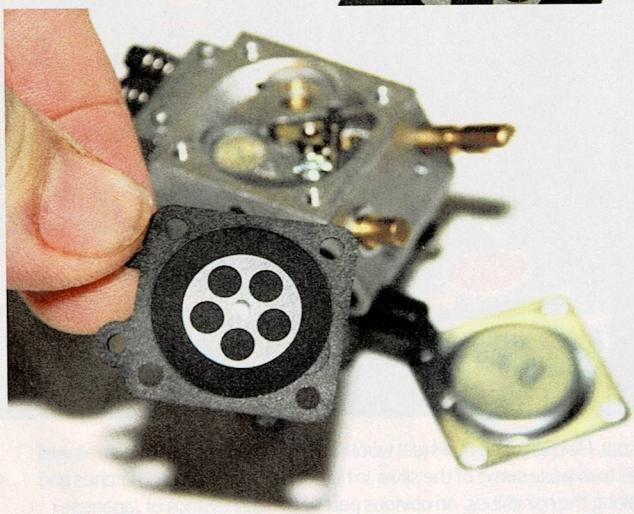


STEP 5 Should you find that the filter screen is blocked with gunk or has trapped some dirt, clean it out with a quick spray of WD-40. If that doesn't do the trick, a replacement screen is included in most Walbro rebuild kits; these kits are available from gas-engine manufacturers as well as local small-engine shops. Some hot-shot pilots may suggest that you can discard the filter screen altogether, then use clean filtered fuel. I don't recommend this as the increase in fuel flow is minimal.

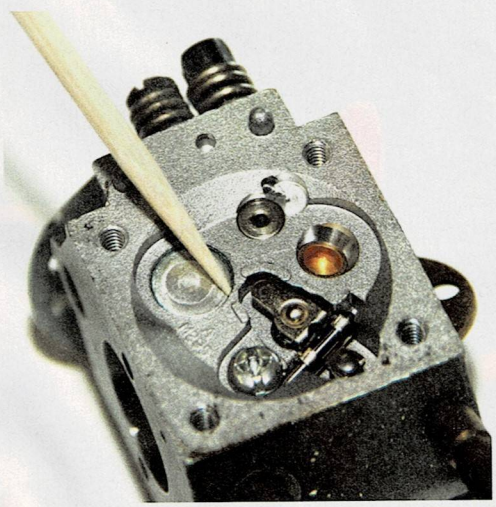


STEP 6 In most cases, a good cleaning of the inlet side and possibly the replacement of the gaskets are all that's required to restore proper engine operation. If, however, that doesn't help, you can check the fuel-metering section by removing the other side cover that's held in place by four corner screws. Again, check for any obvious debris and give it a light spray of WD-40.

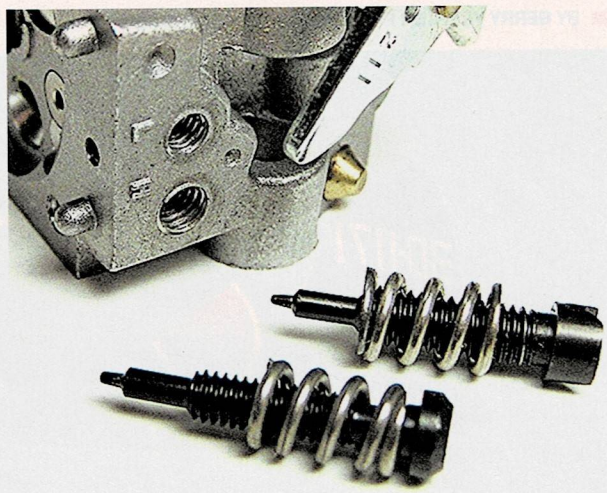




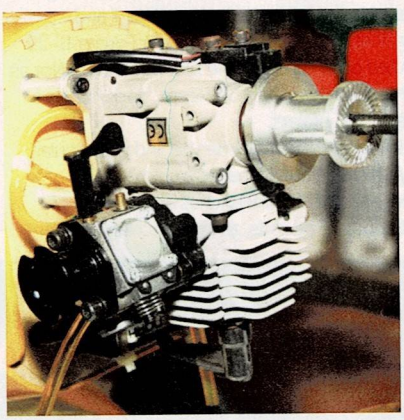
STEP 7 Held in place with a small screw, the inner metering needle, spring, and lever arm can wear over an extended period. These parts automatically adjust the fuel flow to maintain proper fuel flow relative to outside atmospheric pressure. If these parts show wear, carefully replace them with the rebuild-kit parts. Use care, and don't force anything in place.



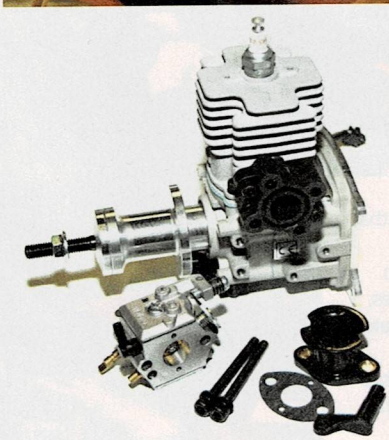
STEP 8 To avoid damage to the carburetor components, it's important to clean using only soft, nonmetal tools. Gasket scrapers, razor blades and any other sharp utensil can seriously harm the relatively soft aluminum that comprise the carburetor body and cover plates. Using them can lead to air leaks, which are not a good thing.



STEP 9 The last parts to clean are the high- and low-end needle valves. Give them a good external cleaning before removing them from the threaded mixture ports. Before removing completely, gently screw them in (clockwise) and count the number of turns it takes before they bottom out. When replacing, the high-end needle should be screwed in completely and then adjusted about 1 1/2 turns out. The low-end needle should be close to 1 1/8 turns out. Make sure the needles and threads are clean, give them a light shot of WD-40, and reinstall.



STEP 10 With your carburetor properly cleaned and flushed of any debris, reinstall the components using either the undamaged original parts or the needed replacement parts from your rebuild kit. When you reattach the carburetor to the engine, replace the intake gasket between the carburetor and the engine. If the gasket leaks air, it will cause the engine to run lean. Check the alignment of the carburetor's pressure holes, and make sure they line up properly with the holes in the attachment block. They allow crankcase pressure into the carburetor to activate the fuel-pumping diaphragms. If they do not line up, the engine won't start.



FINAL THOUGHTS

Being able to remove, inspect, clean, and rebuild your Walbro carburetor will ensure a smooth-running engine and will save you a few bucks from not having to send your engine in for service. Glitches with Walbro carburetors are far and few between, but should something come up, you're now ready to fix it yourself.