

Procedure

Here is my recommended sequence and procedure for doing a basic Holley set-up:

1. Set the float level.

You'll be amazed how many people try tuning a Holley without ever checking the float level. An incorrect float level can give you all kinds of symptoms and problems, so get this one set right off the bat. Most Holleys have a sight plug on the side of the float bowls, and have externally adjustable floats. With the engine HOT and running (float level will change with engine temperature – make sure you're completely warmed up before setting this), put a rag under the sight plug area and pull the plug. Adjust the float level until fuel just barely starts to dribble out of the plug, then lower it until the dribble barely stops. The slotted screw in the center of the adjustment is the locking feature – loosen it and turn the hex nut CW to lower the float level, CCW to raise it.

2. Make sure your

Power Valve is in the ballpark. Most "stock" Holleys come with a power valve in the 6.5" range. This means that the power valve will open and start dumping fuel into the discharge when manifold vacuum hits 6.5" Hg (Mercury) of vacuum. A lot of cars with big overlap cams, single plane manifolds, or operating at high altitude will not pull 6.5" vacuum with the transmission in "drive." This means that the power valve is flooding the engine with fuel at idle, and you'll never get the tuning right unless you fix it.

Hook up a vacuum gauge to the intake manifold or to one of the vacuum ports at the base of the carb. With the transmission in "drive" (or in neutral on a manual car), note the vacuum reading. Your power valve should be rated at about 2" below the actual vacuum reading. On a car running at 6" of vacuum in drive, you will need a 4.5 or a 3.5 power valve.

3. Now get the main metering circuit in the ballpark.

Now that your power valve is not flooding you out, you can get the main metering jets tuned in. If your main metering circuit is either too lean or too rich, you will not be able to properly set up the accelerator pump circuit. Trying to fix a bog on acceleration with pump cams and discharge nozzles when the main metering is off is like chasing your tail. The main metering system also affects the idle circuit, so you need to get the main jets in line before going on to the other tuning parameters.

Pop a new set of spark plugs in the engine (don't use the new Platinum or other exotic metal plugs- they won't read right). Now take the car out for a drive around a few blocks. Get it up to steady-state cruise rpm, and make a few moderate accelerations. Pull the car back into the garage, allowing it to idle as little as possible. Shut it down and pull a few of the plugs. The plugs should have a very light, off-white or tan color around the nose of the insulator. If you're pure white (completely clean), you're probably running too lean. If you're picking up black soot, you're too rich. Raise or lower primary jet sizes by 2 sizes at a time and repeat this test until your plugs are showing the correct color.

4. Tweak your idle mixture screws.

Screw both of the screws in until they gently bottom out, and turn them both out 1-1/4 turns. This is a good starting point. With a tach on the engine to monitor rpm, start the engine and turn the screws 1/2 turn at a time, turning both screws the same amount, until the best rpm reading is observed. Then turn them in 1/8 to 1/4 turn to

lean it out just a tad. Once set, I like to shut the engine off and turn both of the screws all the way in, counting the turns, until they gently bottom out again. Just to make sure they're both set the same. Then back them out to the setting you had.

5. You're finally ready to fine-tune the accelerator pump circuit. Many people start by tuning this, and can never get the stumble tuned out of the car. By making sure that the other systems are approximately right, you can now set this system up so that it's not trying to compensate for other deficiencies.

There are two tuning parameters to the accelerator pump circuit: Pump Cam and Discharge Nozzle.

The pump cam, a little plastic, color-coded part located on the throttle shaft with a single screw, will determine the total volume of the pump shot.

The discharge nozzle, or "shooter," is available in different sizes, and determines the rate of discharge. In other words, it is possible to install a large-volume pump cam, and have a small-diameter "shooter" which "bleeds" the total volume in over a longer duration. Or you can install a big "shooter" which allows the entire pump shot to be dumped in almost immediately.

There is no real scientific way of coming up with the exact correct combination for these parts. As a rule, if the car stumbles, backfires, or hesitates on initial throttle opening, try a larger shooter (the size is stamped on the body, and they're available in .001" increments). If the car has a "lazy throttle," indicative of a rich condition, try a smaller pump cam at first.

6. The last step in the initial tuning process is to set the secondary opening rate. The secondary opening rate is determined by the spring in the secondary diaphragm. A soft spring will allow the secondaries to open sooner. Install softer springs until the car develops a slight stumble from the opening rate, then go back one spring level. This will allow the secondaries to open as quick as possible while avoiding a stumble.

A common mistake made by "performance" tuners is to remove the secondary diaphragm check ball. The check ball is installed in the secondary diaphragm housing, and helps to control the secondary opening rate. Removal of the ball will result in immediate opening of the secondaries with very little mass air flow through the primaries, with a resultant massive stumble upon acceleration.

You cannot normally get the vacuum secondaries to open by flicking the throttle and rev'ing the rpm with the car in neutral. This is not a valid test of the functionality of the secondaries.

7. Now, if you want to fine-tune the primary jetting, you can do one of three things: For maximum horsepower, you will need to run the car through a measured distance and note its speed at the end of the distance. Using one of the available performance computers, or running the car at a track, is best for this. The correct size jets are the jets which give the car the highest mph at the end of the measured distance (not the shortest elapsed time). Again, change jet sizes 2 sizes at a time to see if the speed increases or decreases.

For maximum economy, drop the jet size until the car develops a slight stumble upon acceleration, then go up two sizes.