

Farm Carburetor Tuning Guide

The C5 Performance Farm carburetor is a precisely designed agricultural carburetor using modern technology to replace many original models. The flow data is approximately 250 cfm @ 20.4" and 305 cfm @ 28" and has been tested on 275-475 cubic inch tractors. This carburetor is universal in design and may not fit your intended use. Under NO circumstances is this intended for aircraft or DOT street applications!

Overview:

List of adjustable parts for tuning:

- 1) Idle mixture screw. Located just below the vacuum port.
- 2) Idle rpm adjuster. Located on the throttle arm.
- 3) Fuel level. The bowl is a Holley type with an externally adjustable needle.
- 4) Fuel/Air circuits. There are three circuits for low/mid/high rpm.
- 5) Accelerator pump. This is mechanical and fully adjustable.

This carburetor is designed for 5-6 psi of regulated fuel pressure.

The following parts have worked well:

Holley "red top" 12-801-1 fuel pump

Holley 4.5-9.0 psi 12-803 regulator

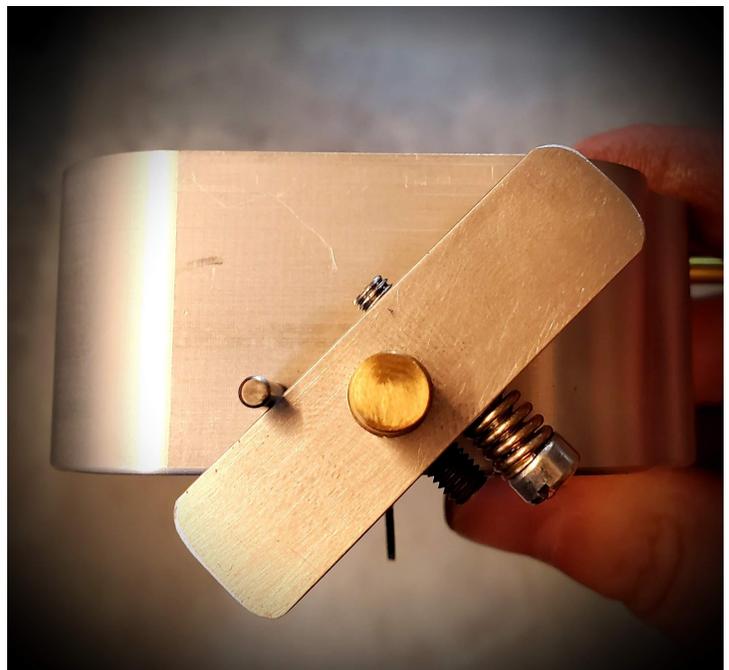
Napa brand 3003 fuel filter or WIX 33003 (same filter)

First Steps:

Determine the proper location of your throttle rod connector hole. It can be located above or below the pivot but verify it will not bind.

****You can also install your own throttle lever or purchase one (many LP throttle levers fit) if you wish to place the throttle lever on the same side as the accelerator pump arm.**

Carefully remove the throttle arm to drill the hole. When reinstalling, be sure the arm operates freely and the throttle arm does not contact the idle stop pin before the butterfly is fully open. The idle stop pin IS NOT a wide open throttle stop!



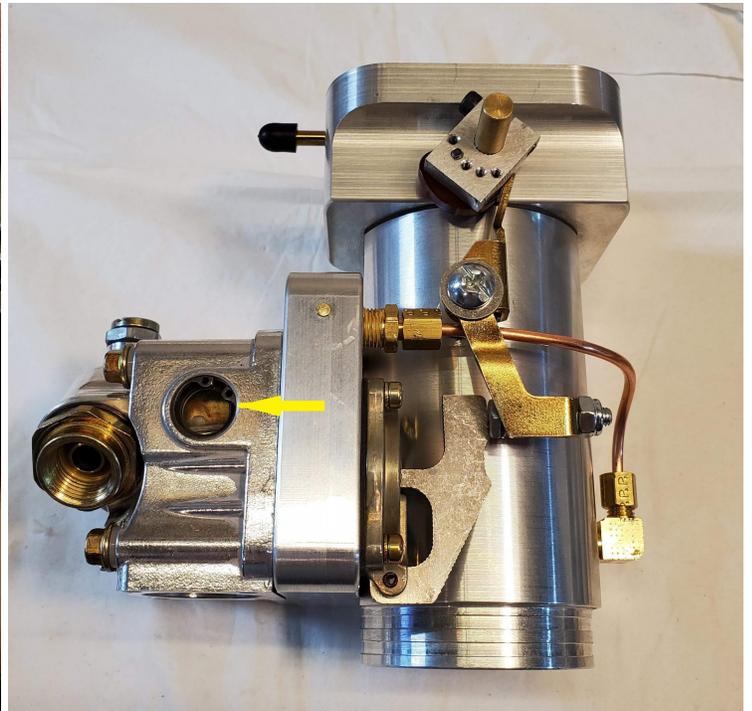
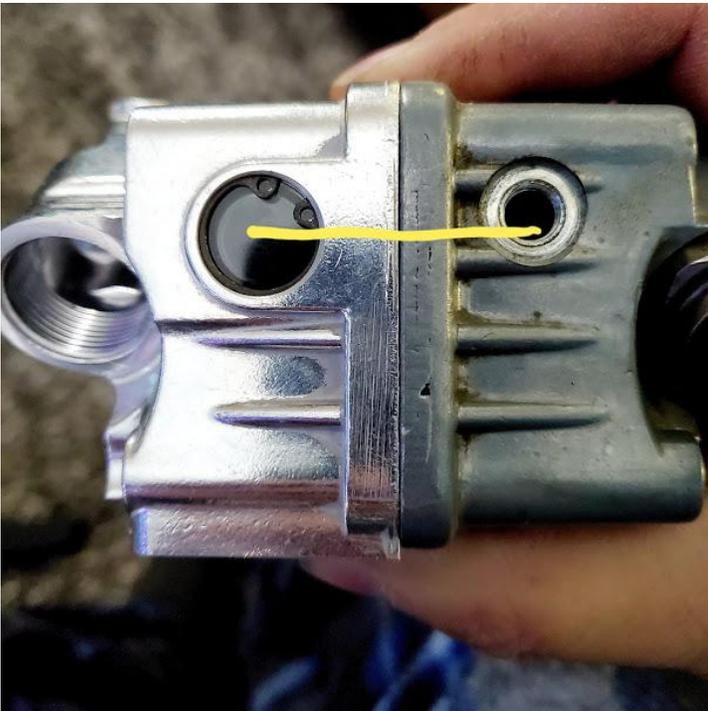
You must have a mechanical “full throttle” stop on the vehicle to prevent over rotation of the throttle plate.

After installation is complete, verify the butterfly fully opens as it should. An easy way to verify is to place a dot on the throttle shaft when the butterfly is fully open and visually inspect during tuning on the vehicle.

Set fuel pressure first, then fuel level with the engine RUNNING.

View the glass window located on the side of the bowl. There should be fuel NO HIGHER than midway up the window. If you need to drain out some fuel, loosen one of the lower bowl screws and drain excess fuel into a suitable container. If no leaks are present, start the engine.

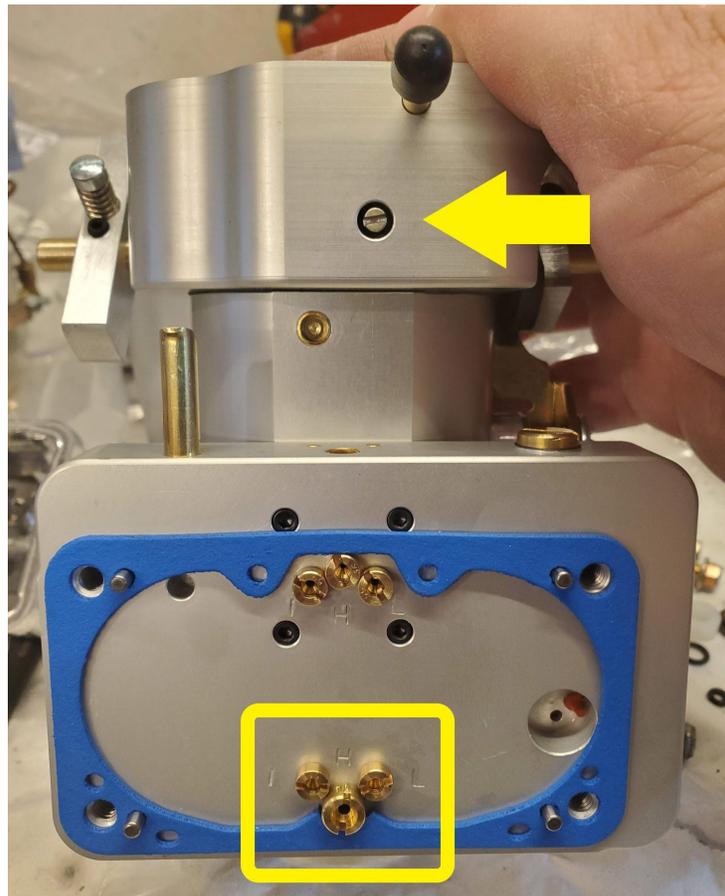
1. Adjust fuel pressure with engine running to 5-6 psi
2. Set fuel level with engine running to the bottom of a threaded bowl inspection hole or HALF WAY up a glass sight window.
3. Adjust idle using the idle adjustment screw.



Use the lock nut and screw located on the bowl if needed to adjust the fuel level after the fuel pressure has been properly adjusted. This must be done with the engine running! Be sure to tighten the lock nut when you are finished.

Verify idle rpm. Carefully adjust the idle if necessary. If your idle mixture screw is overly sensitive or idle is very low (without using the screw to raise idle) there is a modification that can be done. Since each engine is different, we will explain in the “advanced tips” section at the end of this guide.

Set idle mixture screw. Located just below the vacuum port on the throttle body (see yellow arrow). This mixture screw generally should be 1.0-1.5 turns out from a lightly seated position. There is an o-ring sealing the screw that will provide slight tension as you turn it. By turning slowly in either direction until idle rpm drops, you can find the spot where idle is the highest and the engine should run smoothly.



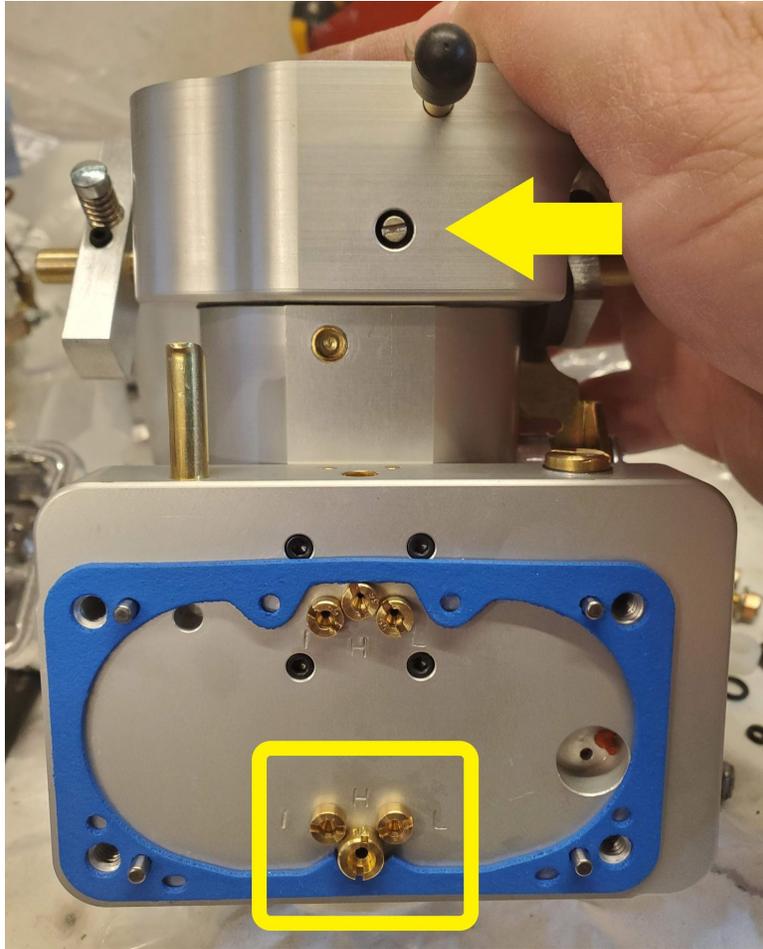
Jetting changes.

****Do yourself a favor and write down everything as you go! This will save frustration later if you need to start over. Also, never change more than one thing at a time!**

Many things affect carburetor function. Temperature, fuel type, humidity, elevation, air filter type, manifold vacuum, and engine displacement are just a few things that can change your “tune”. For this reason we suggest thoroughly warming the engine and manifold up to operating temperature and test running under a medium load before changing jets.

The jets have been carefully selected to compliment the carburetor construction. The stock jetting is a solid starting point for most applications.

Each jet (low, mid, high) will control fuel at a particular rpm range. Do not make more than ONE change at a time. We suggest you tune using fuel screws first before touching the air bleeds (the fuel screws are highlighted in yellow). Air bleeds generally do not need changing except perhaps for fine tuning when all else is done.



Jets are marked L = low, I = Intermediate, and H = High

The large center fuel jet is a Holley style main jet and the five smaller ones are Holley 4500 HP style air bleed jets. There is a conversion chart for Holley main jets. The air bleed number corresponds to thousandths of an inch (#38 = 0.038")

Always jet from low rpm to high because the fuel circuits "stack up".

Adjust Low speed, then Intermediate, and finally High rpm circuit in that order!

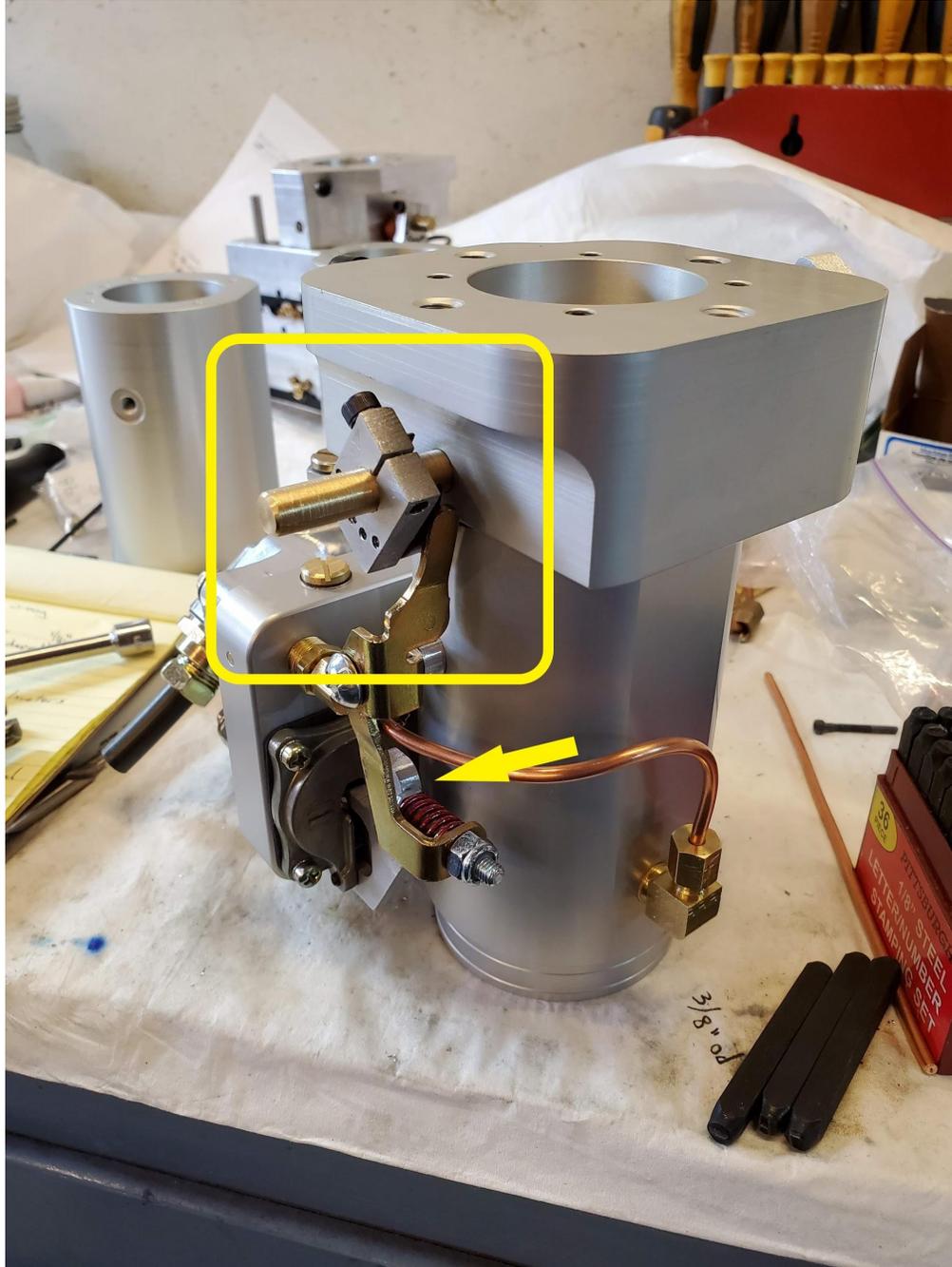
A good rule of thumb is to aim for 0.83-0.86 Lambda (12.0-12.5:1 ratio on gasoline) for peak power under a load using a wide band O2 sensor. Idle can be around 0.90-1.0 on

most engines. Once you dial in the carburetor under load you can make any minor timing adjustments as needed. Timing and AF ratios affect one another!

Accelerator pump. The pump should be set with zero freeplay. When you begin to open the throttle plate, the pump arm should begin to climb the colored “cam” and begin to pump fuel. There are five threaded holes for cam positioning and there are several cam profiles if you choose to try a different one. Since this is a universal carburetor, we chose a cam that has a moderate curve.

Any time you make an adjustment, verify there is 0.020” clearance between the actuator arm and the accel pump cam arm at full throttle (manually push down to be sure the pump isn’t bottoming out). The yellow arrow indicates the area to check clearance.

If you are uncertain about these adjustments there are great online articles or books explaining more, or contact us for further discussion.



Storage. This carburetor is made from billet aluminum and internal parts are brass. It has a press fit emulsion tube and precise passages that cannot be removed for cleaning. Although the three main parts have been anodized for corrosion protection, we do NOT recommend using fuel with alcohol/methanol. Use StarTron or similar

products (or in-tank water separator which we offer) to prevent damage or operational problems. These carburetors are not designed for alcohol fuels.

During storage we suggest the carb be completely drained and kept in a dry location. If you have compressed air, you can remove the bowl and carefully blow air in each jet before long term storage. Spray the exterior with corrosion protectant and wrap up if the vehicle will be subject to high moisture.

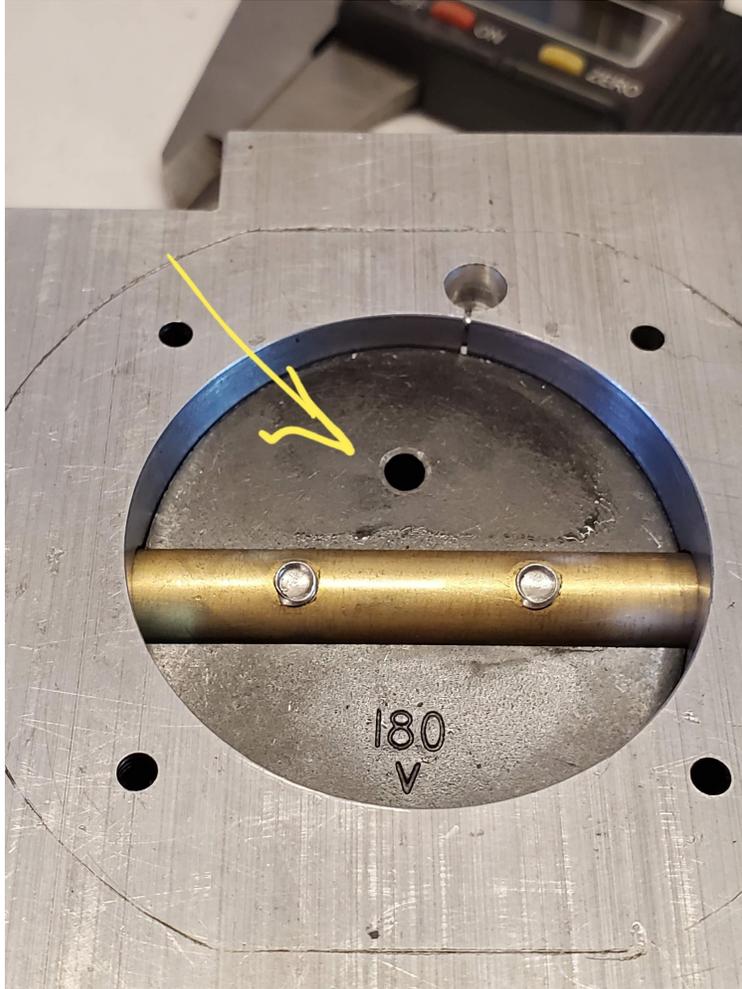
Advanced Tips

Idle rpm adjustment. The throttle plate has a small hole drilled in it. This allows air to bypass the closed plate at idle. The perfect size of the hole is largely determined by the intake vacuum. If you have a very low idle, or if the idle mixture screw is less than ½ turns out, you can increase the size of the hole to “fine tune” the idle circuit.

Warning! If you drill the hole too large the engine will idle too high and you will have to replace the butterfly and start over.

We began using a 0.100-0.120” hole depending on application but have since found most tractors start and idle best with a hole around 0.190-210” diameter. For that reason we now ship with a 0.200” hole.

If your application requires a larger hole (most likely a large cubic inch engine) we suggest 0.010-0.20” steps. Each time you drill the hole larger you will probably have to turn the idle mixture screw counter clockwise to richen the mixture for a smooth idle. Your target for the idle mixture screw should be 1.0-1.5 turns out.



As you begin to reach the perfect size, the engine idle rpm will RISE. This is where you must be cautious. Stop drilling when you reach a point where you are about 500 rpm below what you need. Use the idle screw to make final rpm adjustments. Once you go too far there is no way to lower your idle except by replacing the throttle plate.