



Tuning the Stromberg 3x2 Progressive Linkage

It's all about WOT. When, where and what if...

The Stromberg progressive linkage is hugely flexible in operation, so you can tune it for many different outcomes. One setting does not fit all applications, and the weight of the car, gearing and rearend ratios, engine tune and drivability, your favored freeway cruising speed, and more, can all play a part.

The Stromberg 3x2 progressive is delivered with the sliding rod from center (primary) to outer (secondary) carburetors fixed at the top hole on the center lever, and set to push the rear carburetor open. (You can see pictures of the linkage on the Stromberg website.) In this configuration, the linkage will start to open the outer carburetors just after half throttle (ie. when the center arm is just past vertical). This is good because the center 97 is just opening its power valve (to enrich the mixture) as the secondaries start to open.

We also fix the sliding rod so it slides at the secondary (outer) carburetor end, not in the center swivel. Why? If you fix it at the front carb, and slide through the centre swivel, the rod will hit the S-jet on the back carb. And the other way round, it will hit the center fuel hose.

The Stromberg linkage can also be configured to pull the front carburetor open, though many users will have no choice and here's why:

Pushing the rear carburetor: DO NOT configure it this way if you are using a stock Ford flathead fuel pump. The sliding rod will hit the fuel pump.

Pulling the front carburetor: DO NOT configure it this way if you are using separate fuel hoses to, say, a firewall-mounted fuel block. The center carburetor fuel hose will interfere with the sliding rod if you use it in the top hole of the center carb lever.

Use with banjos fittings! If you want to use a 3x2 progressive linkage with Stromberg banjo fittings, the long lever on the center carburetor wants the same space as the banjo fuel hose. But we do have a smart solution to this age-old problem. Our Banjo Fitting Spacer (9086K) moves the banjo fuel line out one inch from the inlet fitting, providing instant clearance for all tripower progressive linkages. Some people get round this with extended throttle shafts, but we do not recommend them, as even standard shafts flex in use. Extended shafts make them even harder to control.

If you don't mind the secondary carbs coming in early or you're not concerned about hitting WOT on the secondaries (and read below before you shake your head), another solution is to cut the center lever down so the middle hole becomes the new top hole, so it doesn't hit the banjo line.

Warning! Do not use the linkage in any configuration that will cause sticking and binding, which could result in uncontrolled engine speed, property damage, serious personal injury or death.

Installation. Linkage installation is covered in our How-To Section. You can find it under the How-To tab in our website Tech Center.

Throttle rotation. Stromberg 97 throttle shafts rotate through approximately 80 degrees. That's why we recommend starting the levers (ie at idle) at 40 degs before the vertical (around 10 o'clock) for optimum efficiency. It's basically 90 degs less the small angle on the edge of the throttle plates (5 to 7 degrees) less a few more degrees because you should leave all three carbs slightly open for a balanced idle.

How to hit Wide Open Throttle (WOT). Most people will tell you that any progressive linkage needs all of the carburetors to hit WOT at the same time. This isn't necessarily the case for road use, but we'll open that can of worms later. If you want to do this, here's how.

Push linkage (pushing the rear carburetor open): Have a helper hold all three carburetors at wide open throttle. Slide the tapered throttle stop between the two carburetors up to the swivel on the rear carburetor and tighten it up. Return the carburetors to idle, then slide the other throttle stop to meet the same swivel, but from the other direction. Lock that one off too.

Pull linkage (pulling the front carburetor open): Have a helper hold all three carburetors at wide open throttle. Slide the tapered throttle stop on the far end of the rod up to the front carburetor swivel and tighten it up. Lock the other stop as above.

Throttle shaft flex. Any 97 3x2 linkage, with all its springs, puts huge strain on the center Stromberg throttle shaft causing it to twist in operation – by as much as 3 degrees of rotation. In some applications, you may need to adjust the throttle stop even further along the sliding rod to push or pull the outer carburetors to WOT.

How do I open the secondaries earlier?

With any progressive linkage for 97s, if you want all three carbs to reach WOT at the same time, you're never going to open those secondaries much later than just past 50% throttle. Believe us, we've done the geometry. So first, let's look at how to open those secondaries earlier. Sit tight because we're going to get technical. We can't upload pictures to the tech area at the moment, but those on the linkage website pages will help!

1. Pull, not push... If everything else is the same, progressive linkages that pull the front carb, open the secondaries earlier than those that push the rear carb open – over 6 degrees of throttle rotation different, in some instances.
2. A lower hole... Switching the swivel to a lower hole in the center carb lever (with all three carbs hitting WOT at the same time) will bring the secondaries in earlier. The Edelbrock flathead intake, for example (when pushing the rear carb open) starts the secondaries opening 3.3 degrees after half throttle using the top hole. But 2.6 degrees before half throttle using the middle hole, and 10.4 degs before using the bottom hole.
3. Switch manifolds... Different intake manifolds have different carb mounting centers, which also affects the secondary carb opening point. Not a lot of use if you've already bought the intake, but it does make a difference. eg. Using the center carb top adjustment hole, (again, when pushing the rear carb open and aiming for WOT on all three carbs) the Offenhauser 3x2 intakes start the secondaries at 3.9 degrees past half throttle. But for Edelbrock (carbs further apart), it's 3.3 degs past, and for the Chevy intake (carbs even further apart), it's 3.1 degs. Like we said – not much difference, but something to benchmark about all the same!
4. Move the rod stops... Sounds simple, but if you open the secondaries earlier this way, you'll hit WOT on the outer carbs before WOT on your primary, and therefore your pedal. So something might break. Not recommended.

How do I open the secondaries later?

You could do the opposite of the above, of course, but that's not much help if you can't change your intake or the way it pushes/pulls. So in reality the only way to open those secondaries much later is to give up on the idea that the secondaries will ever hit WOT. But don't worry. Unless you're racing, this might not be the end of the world. With all but the biggest inch Ford flathead motors, for example, for road use, you could easily trade a later secondary carb opening point for less cfm at the top end. And all you have to do is move the stops on the sliding rod. Open the primary lever to where you want the secondaries to start, then move the rod stop to start pushing or pulling them open.

An alternative view.

Let's throw another curve ball at you. Many people will tell you that a Ford flathead engine runs best with two 97s on a solid linkage. So what about setting up your progressive with the two outer carbs as the primaries (so you fix the pedal linkage to the rear carb and pull the front one at the same time), then bring in the center carb when required as a single secondary?

As with all our Tech articles, we welcome customer feedback and other input. Email us with your thoughts and if it adds to the debate, we can add it in.tech@stromberg-97.com



