What size jet size should I use?

This is the most 'Frequently Asked Question' for us here at Stromberg Carburetor. It's about the hardest one to answer. And the only person who can truly answer it is you. So please read this before you email us your full engine spec, zip code and cam timing sheet.

The Stromberg 97 - old and new - comes with 0.045 inch main jets and a Number 65 power valve for sea level use. But gasoline is not what it used to be, and even single Stromberg carb applications can benefit from a change of main jet and and/or power valve for optimum running. Most multiple carb applications will certainly benefit, too (we have covered that in a different article).

Yet the selection of main jet and power valve sizes has never been trickier. Your local elevation, engine tune, ambient temperature and humidity, your performance and economy expectations, and more, can all have a bearing on what jets are best, but the most important nowadays is your local gasoline (petrol) formulation. So it is all but impossible for us to answer jetting questions accurately.

So where does that leave you? To be honest, our best recommendation is to get the car running on what you have got (hopefully near to the standard factory jetting), then tune your jets by reading the plugs or get the car on a rolling road (preferably one who knows your engine and Strombergs carbs and is near to where you live so you get the same gas, elevation etc etc). They can analyze the exhaust, read the computer and optimize it electronically. Ask other local 97 users what they use, too. Either way, there may well be some jet swapping along the way. We can provide some guidelines, but in the end, each application will be different.

However you analyze your mixture, remember that the Stromberg 97 main jets come in almost immediately you touch the throttle off idle and, in partnership with the fixed idle and transition ports in the base casting, they control the mixture pretty much on their own up to about 50% throttle when the power valve comes in, adding further fuel enrichment at the top end. So work on the main jets first. If you are reading the spark plugs, start with the main jet tuning by cruising at less than 50% throttle. Or just remove the carburetor accelerator pump links so the pumps cannot open the power valves. Ride around a while with a clean stop and then read the plugs. If you are rich you can go for smaller jets. Then when you have the main jets dialed in, you can reconnect the accelerator pump rods and give it a little more freeway speed - ie over 50% throttle - ideally without sudden heavy acceleration so you don't engage the accelerator pump discharge jets (ie squirt raw gas into the engine) if possible. That will then allow you to see what is happening when the power valve add enrichment at the top end. Most multiple carburetor systems end up with smaller power valves.

Local Gasoline.
There are apparently at least 100 different gas formulations on sale in the US at any one time and it varies with altitude, the typical local temperature/humidity range (summer, winter etc), state laws, ethanol content (growing all the time) and other factors. In California, for example, there are many different formulas mandated by the local air quality authorities, and these are changed throughout the year. It is not a problem for modern engines as fuel injection automatically compensates. Carburetors don't have electronic brains, but that is why we like them, right?

Blended fuel (high ethanol content) is another problem. Although the pump may not indicate that the fuel is blended, it is always advisable to verify the type of fuel the station carries (or stick to a station you know). Larger jets (a richer mixture) may help

when running on fuels with high ethanol content. But, remember too that blended fuels are more volatile than gasoline, so difficult hot starting and poor hot weather driveability may result.

Stromberg 97 expert Jere Jobe once told us that his late model Ford Explorer V8, equipped with Montana smog devices averaged 23.5 miles per gallon on the highway on Montana gasoline. Under nearly identical conditions the same vehicle would average 17.5 miles per gallon on California gasoline. That fact alone says a lot about the efficiency of the various fuels. And why your hot rod feels like it has lost a cylinder when you drive out of State!

Altitude. As a rule, if you live at altitude, you need to look towards smaller jets and power valves because the air is thinner with less oxygen, so you need less fuel to maintain a good air/fuel mixture. Original Ford specification called for 0.043" main jets for 5000-10,000ft, 0.041" for 10,000 to 15,000 and ...wait for it...0.039 for '15,000ft and over'!

Engine tune.
Higher capacity engines and those with bigger cams/higher volumetric efficiency will generally flow more air or flow the same air faster. So bigger jets may be required. Just remember though, that on the road you need low end tractability and that does not necessarily mean jetting for max top end power at the expense of everything else. Less power. More torque!

S or W?
Stromberg 97 and 81 carburetors (not 48) have Summer and Winter settings for the accelerator pump rod link (at the bottom end). This adjusts the volume of fuel squirted into the intake manifold if you accelerate quickly - W gives you more gas - but it should not change the idle setting nor the point at which the power valve is opened. Just be aware though that it can change the way your engine behaves on the road.

Changing jets.
There is no easy way to change the jets in a Stromberg 97 (and its brothers the Stromberg 48, 40, 81 LZ etc). You get at them from underneath, so you are going to have to take the carbs off to do it. The power valves are replaced from the top - they are under the accelerator pump. You'll find full instructions, with safety notes, under the 'How To' tab in our Tech Center for jets (9533k) and power valves (9594k). And here is a time-saving tip. Leave the carb base or bases fixed to the intake (so you do not disturb the linkage set-up), and just remove the three big screws that fix the bowl section to the base. Oh, and buy a Genuine Stromberg Premium Jet wrench (9071K).

A final note.
The art to Stromberg jet tuning is to make small changes and most people move just 0.002inch difference in main jets (eg. from 0.045 to 0.043) and one or two 'numbers' in power valves (eg from 65 to 64 or 63) at a time. Remember too, that Power Valves use engineer's number drill sizes, so a smaller valve has a higher number. With a single carburetor, even if you move to Colorado, if you need to change more than say 0.004inch (main jets) and four numbers (power valve) from standard, you may have ignition or carburetor problems that need your attention first. Bigger jets will not solve those air-leaking throttle shafts, for example.

And remember, while neither is good, too rich is better than too lean. Detonation can wreck your engine in seconds.

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