



Carburetor Information

U.S. CB750 Models 1969-1978

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Basic Carb Setup and Tuning (it's NOT Rocket Science) by Houndog750

There are a couple of things you'll need to do to tune the carbs to your engine's specific characteristics if you expect to realize the best performance possible. The first thing is setting the idle mixture adjustments. 99% of all the carb rebuilds I do are for modified setups such as pod, breadbox, or velocity stack intake, and open header or drag pipe exhaust. Both of these change the how the engine breathes. Free flow intake or air cleaners tend to affect everything from idle to wide open throttle where open headers or exhaust with only mild baffling affect the throttle from about 1/3 to wide open throttle.

Setting the idle mixture: It is very important to bring the bike to Normal Operating Temperature **BEFORE** setting the idle mixture or doing ANY carb tuning for that matter! There is no way around this, and shortcutting this step will result in a poorly running engine when it does reach normal operating temperature. Once the bike is up to temp set the RPMs to around 800-900 and one at a time turn the idle mixture screws in until the engine begins to stumble or until the screw gently seats (DON'T FORCE IT!!!). 71-76 carbs run rich at this point, 77/78 carbs will lean out at this point. **SLOWLY** turn the idle screw back out in about 1/8 turn increments and then wait 30 seconds or so for the change to take effect.

If the engine will not idle at all on the later style carbs or chokes out on the early style carbs bump the screws another 1/8th turn at a time until it will idle long enough to make changes. You may have to increase the idle speed with the idle set screw at first, but adjust back down to 800-900 RPMs again between each change since as the mixture gets closer the idle speed will increase and hold there so you will have to adjust accordingly. Continue tuning one step (1/8th turn) at a time until the idle no longer increases in RPM but then begins to drop again. Listen very closely for RPM changes and take your time, it will save you trouble and frustration. If you do not have a tachometer on the bike most dwell meters have a tach option. If neither of these options are available you will have to use your ears.

Now that the idle screw has gone past the point where the bike idles the fastest turn it back in 1/8 turn at a time until it returns to the spot where it idles fastest. **IMPORTANT!** As you make each change and when you move to the next carb be sure the idle is set BACK to 800-900 RPM before moving on to the next. Once this is done for all four carbs you can drop the idle down to a little more reasonable RPM.

NOTE: The reason I mention 800-900 RPM instead of the 900-1100 RPM most manuals recommend is that their number are for a STOCK bike, not one which "breathes easier". An engine that breathes easier will begin to use more than just the idle circuit at stock recommended RPMs as the air velocity through the carb is increased with free flow air cleaners and no back pressure.

Fine tuning from there is something that will take a little time as you ride. I keep a small screwdriver in my kit/pocket and listen to how the bike is idling and make changes as I go. If things are close it should have a little bit of a lobe but not load up or starve out and die. If it does starve out or load up after a while: To determine which (load up or starve) give all four screws just a 1/16 turn in or out, doesn't matter. If it then behaves better at idle or just off idle you're about as close as you will ever get. If it makes the idle and just off worse turn the idle mixture screws two 1/16 turns (1/8 turn) in the OPPOSITE direction you turned last that made the idle worse.

NOTE: These engines will only idle so low without causing problems, so keep this in mind. If the idle is too low snapping the throttle too fast will allow too much air through the carbs at once before the fuel can rise to the top of the mains and out the main nozzle, and plop, flat on it's face it will go. The 77/78 carbs are less prone to this since they are equipped with an accelerator pump that loads the carbs with a short blast of raw gas as you snap the throttle. Another symptom of an idle that is set too low is the engine will die with a quick blip of the throttle. The slides open, a blast of lean mixture flows through, and just as the fuel reaches the nozzle the slides come down and the spurt of fuel coming out of the main enters the engine as it's coming back down to idle and actually floods it.

Tuning the mids and top end is a matter of trial and error, but doing proper plug chops can eliminate a good bit of guess work and fewer adjustments. Doing a plug chop the right way makes all the difference in the world. Bring the engine to the desired speed under normal riding conditions and hold it there for 2 to 3 minutes. Without changing engine speed hit the kill switch or shut off the ignition and pull in the clutch as close to the same time as possible and coast to a stop (driveway, parking lot, off ramp, etc. so as not to be in the roadway if possible for safety's sake). Pull one outside plug and one inside and make note of the color of the strap and tip of the insulator in the middle. Don't worry about the outside ring too much or deep inside on the insulator. Just the strap and tip of the insulator.

I would suggest tuning the midrange first (35 to around 50 mph in 5th gear depending on your sprocket ratio). If the plug chop reads white or very light grey you will probably have to move the clip on the needles one notch down, raising the needle itself and allowing a little more fuel to pass through the needle jet nozzle. Dark brown or almost black move the clip up one notch lowering the needles allowing a little less fuel to flow past the needle jet nozzle. Once you are getting a consistent tan in the mids do a plug chop at higher rpms such as normal highway speeds. Unfortunately you will have to static synchronize the carbs after each needle change since getting to them undoes the previous static sync.

If possible pick a stretch of highway that will run you 2 to 3 minutes such as between exits where you will be able to maintain a consistent highway speed (65-70mph). This way you can coast up the off ramp out of harm's way. Again pull an inside and outside plug. If the plugs read white or very light grey you will probably need larger main jets. A quick and dirty test on mains is to choke just a little (about 1/3 choke or so) while you are at highway speed then roll the throttle on. If it responds better chances are the mains need to be bumped up.

There is no such animal as a bolt and go set of carbs no matter what sellers on eBay claim. Each bike runs differently. If you run into difficulties with upper midrange and highway plug chops or the chops don't seem to be consistent with the exact same settings a couple things you want to check for are leaks at the carb boots and cross drafting/wind turbulence around the pods or bread box air cleaners. Most types of free flow air cleaners can be affected by wind flow at even slower speeds. Things such as tank shape and wind flow around it, where your legs are while riding, type of pods or stacks, how air build up behind the intakes, and whether they are open enough on the sides to be subjected to side drafts (passing a semi at 70 for instance) can all have an appreciable impact.

To eliminate the possibility of air flow issues try wrapping a piece cardboard across the tops and sides of the pods or stacks so they can only draw air from between or below. You can substitute anything as long as it defelects the wind so the pods must draw air from the back or bottom only but not so much you actually end up choking them. Breadbox you can temporarily tape the sides and top to accomplish the same thing. One hint air flow issues are affecting tuning is if the carbs seem to demand mains larger than say 130 or less than 120 on a stock engine running pods/breadbox and unrestricted exhaust. You should be able to do consistent plug chops then, and tell you if you need to make a pod shield.

To eliminate the possibility of air leaks around the boots make sure there are no cracks, the clamps are not worn out and don't clamp well, and it also helps to re-cinch the clamps once the bike has been running for a while and the boots are warm and pliable.

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