

Carb Rebuilding Honda DOHC-4's



MacGregor Carb Cleaning Services

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BOLT-ON AND GO!

Carburetor cleaning and rebuild services for all Honda 4 cylinder double-overhead cam models (1979-1983)

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Purpose

The purpose of this booklet is to de-mystify the 4-ganged carburetor banks used on the '79-'83 Honda DOHCs (750cc – 1100cc). Having some basic tools, plus a few inexpensive specialty tools, a modicum of mechanical capability and common sense - you can tear down, clean and rebuild your carbs in a short weekend. This booklet will show you how. The pictures shown are for a CB900, but will be nearly identical for CB750, CB1000 and CB1100 with slight differences, which will be noted. The process is in 6 steps:

1. Bank breakdown
2. Carb breakdown
3. Clean
4. Carb rebuild
5. Bank rebuild
6. Adjustment, testing and troubleshooting

Basic Carb Terms

The carbs are numbered the same way as the cylinders on the bike – 1 through 4 left to right as you sit on the bike. The fronts of the carbs have the silver-colored throttle plates (butterflies), and the rear of the carbs have the brass-colored choke plates. The round tops are called caps and the square bottoms are called bowls.

Getting Started

First, get yourself an area to work – it can be a good-and-proper shop workbench, or even a simple table (appropriately covered and protected from spilled liquids and solvents) and a comfy chair. My downstairs basement is set up with



just a large coffee table covered with thick cardboard. You need to have enough room to set up your tools, layout the parts of the carbs and a cleaning area to clean the parts. You'll want a plastic pan such as those used for oil changes for cleaning the individual parts prior to assembly. It should be impervious to the chemicals used in spray carb-cleaner or brake-cleaner.

Additionally, you'll want a copy of the Factory Service Manual to refer to as you go. The FSM is the bible by which all work on our bikes should be validated.

Finally, make sure you read through this booklet all the way through at least twice to familiarize yourself with the procedures BEFORE you start disassembly. Nothing worse than ending up with a pile of really important looking parts after it's all back together! If you don't feel completely confident in what you find in this booklet, by all means grab a digital camera, a bunch of plastic sandwich bags and a Sharpie® pen and document your work as you go.

Basic tools

In addition to your workbench and cleaning tray, here's what I recommend for basic tools:

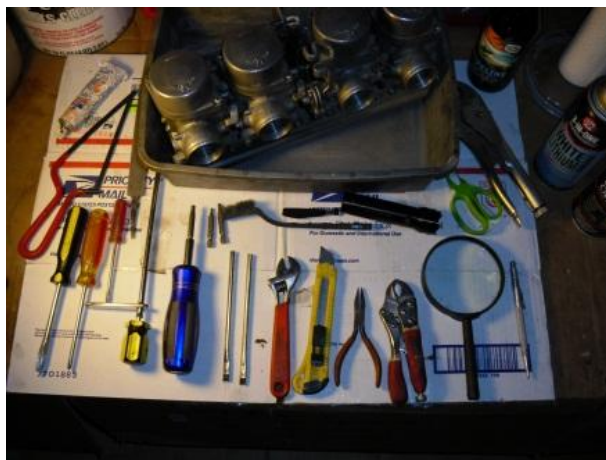
- Medium flat-blade screwdriver
- Medium Phillips-head screwdriver
- Large Phillips-head screwdriver
- Small flat-blade screwdriver
- Vice-Grips®
- 4" Crescent wrench
- 1" wire brush (1 each steel and brass)
- Needle nose pliers
- Package of 4" acid brushes (sometimes called solder-flux brushes) with the bristles trimmed to ¼" length
- Paper towels & Q-Tips®

Additional tools that you might need:

- Flat file
- Flashlight
- Magnifying glass
- Box-knife
- Ultrasonic cleaner (Harbor Freight has them for about \$60)

or

- Large bucket to soak your carbs in

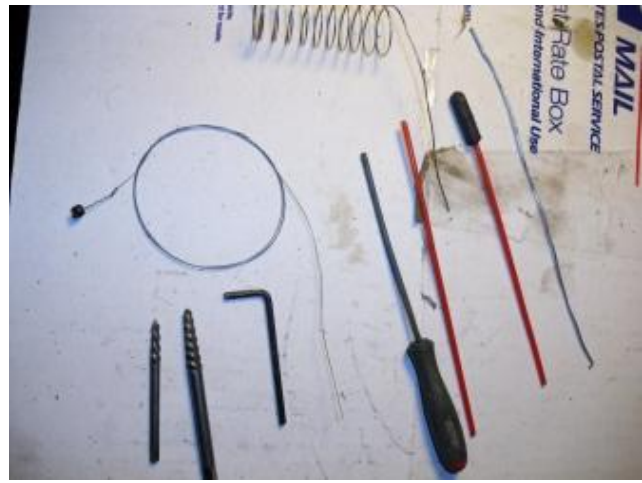


Specialty tools

Over and above the tools noted previously, here are some specialty tools that will make the job a snap (and some you'll need for other jobs on the bike anyway):

- Motion-Pro carb sync tool (shown at the top of page 36)
- High E-string from an old guitar (approx .012" diameter)

- Paperclip (straightened out) with 1/8" 90° bend at the end (on the right in the picture)
- Center-punch (not shown)
- Hand drill and assorted drill bits from 1/32" to 1/8" (not shown)
- Small EZ-Outs®
- Special spray-straw taped up to fit in slow-speed jet hole (just to the left of the paperclip)



without **Chemicals**, life itself would be impossible...

In addition to the tools, you'll need some wet-stuff to make the cleaning job go easier.

- ¾ Gallon can of carb-degreaser (with small-parts basket)
- and/or

- Gallon jug of Pine-Sol® or other ammonia-based pine cleaner
- Carb (or brake) cleaner spray with straw spray nozzle
- WD-40 or a can of your favorite spray lube (I use white lithium spray grease)
- PB Blaster to loosen corroded screws and parts
- Nitrile or Latex gloves – these chemicals can be pretty nasty on the skin (not to mention carcinogenic)
- Wrap-around eye protection (required safety equipment to protect your eyes from the spray chemicals!)
- Kona Pipeline Porter or other adult beverage (optional)



Parts List

So you got your carbs and your carb rebuild kits – well done. If you bought the Randakk kits, you're golden – everything you need is in those kits - but here are some parts that are left out of most after-market rebuild kits, as well as some niceties that make the job go smoothly.

Hardware

Allen head screws to replace those ridiculous Phillips head screws that come stock on the carbs:

- Qty 8 3mm x .5 x 6mm socket button-head screws (for the choke plates)
- Qty 12 4mm x .7 x 16mm socket-head screws (bowl screws)
- Qty 11 4mm x .7 x 10mm socket-head screws (air cut covers and accel pump cover)
- Qty 16 5mm x .8 x 16mm socket-head screws (top caps and rear frame)
- Qty 8 6mm x 1.0 x 12mm socket-head screws (front frame)
- Qty 23 4mm split washers
- Qty 16 5mm split washers
- Qty 8 6mm split washers

I like Bolt Depot for my hardware (<http://www.boltdepot.com/>), but you can also try other on-line places. Try to get stainless grade A-2 (also known as 18-8).

“Software”

As I said, the Randakk kits give you all the soft parts you'll need (gaskets, O-rings, air cut valves, passage plugs, float needles, etc., etc.). But if you get any of the myriad rebuild kits from flea-Bay vendors, make sure you buy 4 new air cutoff kits, a new accel pump kit and a set of 4 rubber passage plugs. All that being said, you may need a couple of other items.

Often, the flea-Bay rebuild kits are short on the O-rings. O-rings for our carbs come in standard AS568 sizes that are called dash #'s (-xxx). So here's what you need for a full complement to complete the carbs:

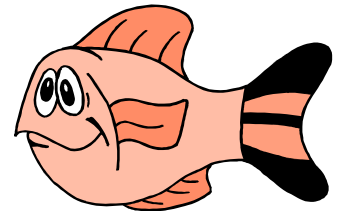
- Qty 6 -010 Fuel rail O-rings
- Qty 6 -007 Accel pump O-rings
- Qty 4 -003 Pilot screw O-rings
- Qty 4 -006 Float bowl drain screw O-rings
- Qty 1 -901 Float bowl #2 accel pump O-ring
- Qty 1 1/8" rubber cap for the #2 vacuum "tit" (if carbs have a vacuum-actuated petcock, and you're bypassing it)

I use Marco Rubber (www.marcorubber.com), but there are other on-line suppliers. Remember to get Nitrile O-rings (also called Buna-N), as these won't deteriorate from contact with fuel or fuel additives like regular neoprene rubber ones do from your local hardware store (HomeDepotLowesAceTrueValueMenards).

Step 1 – Bank Breakdown

OK, let's dive in – you've got all your parts, tools, chemicals and the star of the show – your filthy, misbehaving carb bank. We gotta break this bank down to its individual parts so we can get everything squeaky clean and inspected.

Make sure the carbs are drained beforehand by unscrewing the bowl drains 2 full turns and draining the fuel into an appropriate container. Dispose of properly (NOT down the drain!).



Split the Bank



Remove all hoses from the bowls and any fuel lines from the carbs. If your bike has the vacuum-assisted petcock on it (AKA Spawn of Satan or SOS), remove it, but keep all the tubes connected to it. Start with the carbs facing down - smaller diameter ends on the table, and choke plates facing you. Remove the eight 5mm screws holding the top/rear rail on. If reusing the screws, set them aside. If using new Allen-heads, toss these Phillips screws.



Turn the carbs on their tops and remove the eight 6mm screws from the front rail (you may need a pair of Vice-grips® to loosen these). At this point the carbs are very unstable, so carefully reposition them as one unit face down. Don't pull the bank apart, yet, or you'll damage the light spring that's on the choke shafts between carbs 2 & 3.



Down to Single Carbs

Carefully unhook the small spring from the hook on the #3/4 choke shaft – it will unwind around the #1/2 shaft (that's OK). Split the bank in half with 1&2 as one set and 3&4 as the other set.

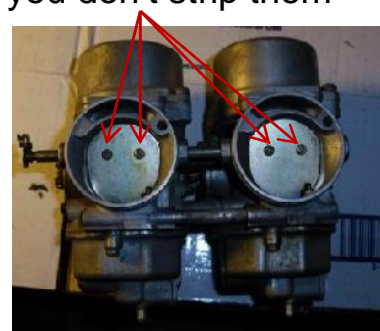
Pop out the fuel rail tube (larger of two aluminum tubes with O-rings on it), and the accel pump rail tube (smaller of 2), as well as the vent "T" and rubber tubes that are on it.

Set aside the vent "T" and rubber tubes – you don't want nor need to clean these with the chemical process you'll use on the carbs, since the chemicals you'll use



might damage them. Set them aside where you can find them later. Place the fuel and accel pump rail tubes in your tray for cleaning. Note: if this is a CB1000 or CB1100 bank, there won't be a fuel rail tube between 2 & 3.

Start with the 3/4 set – rotate the choke shaft so that the 4 choke plate screws are accessible. Carefully and slowly, unscrew them making sure you don't strip them out (drilling these out can be problematic). The screws are flared on the backside to keep them from rattling loose from normal bike vibration (and getting sucked into the intake), so they take some work to remove. Here is where you might want the larger Phillips screwdriver to get a good bite on the screws.



Set aside the screws if reusing - though I **strongly** recommend using new stainless 3mm socket button-head screws here. The old screws are very difficult to get restarted in the shaft holes once they've been flared, so if you can, use new 3mm screws and throw these old ones away.

Place the 2 choke plates in the small parts tray for later cleaning.

Slide the choke shaft out and put with the other parts in the small-parts tray. Pull the 3 & 4 carbs apart and remove the fuel rail and accel pump tubes as well as the vent rubber tube. Don't lose the little throttle spring that pops out from between the 2 carbs, you'll need it later! Set aside the rubber tube and put the rail tubes, choke plates and throttle spring in the small parts tray. Note: if this is a CB1000 or CB1100 bank, there won't be a fuel rail tube between 3 & 4, but this will be a small brass T-fitting with O-rings.



Now move on to the carb 1 & 2 set – this set is a bit trickier to break apart because you have to hold the choke arm closed with one hand while you remove the choke plate screws with the other. Take your time, and again, make sure you're getting a good bite with the screwdriver – you don't want to strip out those screw-heads.

Once you've removed the 4 choke screws,



carefully remove the choke shaft and choke spring (it will be hooked to the main choke arm).



Before popping 1 & 2 apart, remove the rear cap screw off #1 – this holds a clip —————→ that keeps the brass fuel source “T” from moving around.

Again, set aside the rubber vent tube, and place the fuel “T”, accel pump tube, choke plates and throttle spring in the small parts tray.

Parts set aside:

- Vent T with rubber connection tubes
- 2 rubber vent tubes



Parts in the cleaning tray:

- Eight 5mm screws and eight 6mm screws (unless replacing w/Allen heads)
- Front and rear rails
- Two 1” throttle springs
- 4 choke plates
- 2 choke shafts & 1 choke shaft spring
- Fuel “T” and 2 fuel rails (may be 2 fuel “T’s” only if this is a 1000 or 1100 bank)
- 2 short and one long accel pump rail tubes



Step 2 –Individual Carb Breakdown

OK, so you should be gaining confidence in your ability to work with these convoluted creatures – heck, you’ve successfully taken the bank apart, and nothing’s broken yet! Now it’s time to get jiggy with the carbs themselves. Fortunately, each one is a copy of the others (with the notable exception of carb #2). We’ll start with carb #1 and move on to #3 & #4. Pay attention to your first one and the other two will go just like it! Carb #2 will be the last one we do since it’s more complicated; it may look scary, but we’ll get you through it.

Sync Screws

Before we dig into the guts of the carbs, let’s remove one last external item – the synchronizing screws off carbs 1, 3 & 4. Here’s where you’ll want that specialized Motion-Pro tool (see picture on page 36) to loosen the locknuts and remove the sync screws themselves. If you don’t have the good-and-proper tool, you can use a

4" crescent wrench, or an 8mm socket to loosen the locknuts. The screws are removed from their tabs by screwing them **INTO** the tabs (clockwise). There are 2 flat washers and a small spring on each one – don't lose them. Add them to the small parts tray (cinch the locknut down on the spring first, though, so you don't lose any little parts).



Top End

OK, let's remove the easy stuff – the top-caps, springs and vacuum needle "pucks". Again, if reusing the screws, set them in with the small parts tray; otherwise toss 'em.

Once you have the top-cap, spring and puck removed, remove the plastic seal-ring and the kidney-shaped



plastic air jet cover. Put the springs, seal-rings and air jet covers (with screws) in the small parts tray.



Air Cutoffs



Carefully remove the 2 screws holding the air cutoff cover while holding the cover down (there's a strong spring under the cover). Before putting the cover and the spring in the small parts tray, inspect the cover and body to make sure the small O-ring isn't stuck in it (it's usually in the body) – either way, remove it and set it aside. Remove the air cut diaphragm and inspect with strong backlighting to ensure

it isn't cracked, worn, perforated or otherwise compromised. It is possible to reuse these or bypass them altogether. We'll get to that in the rebuild section. If you've already bought new ones, just toss the old diaphragms, springs and O-rings – your new kits should have all these parts. Put the screws in the small parts tray, unless replacing with new socket heads.



Special Carb #2 parts to remove



Remove the throttle cable mount (held in place by a 5mm Phillips screw), high idle knob, washer and spring, and the choke idler arm, spring and washers (be gentle with the spring - it's delicate).

Place all these parts in the small parts tray.



Bottom End (the scary stuff)

OK, let's dive into the "scary stuff" (it's really not that scary). Remove the bowl drain screws and put them in the small parts tray. Then remove the three 4mm screws holding the float bowl in place and pull the bowl off – you may have to rap on the bowl with the handle-end of the screwdriver to break it free. Set the bowl



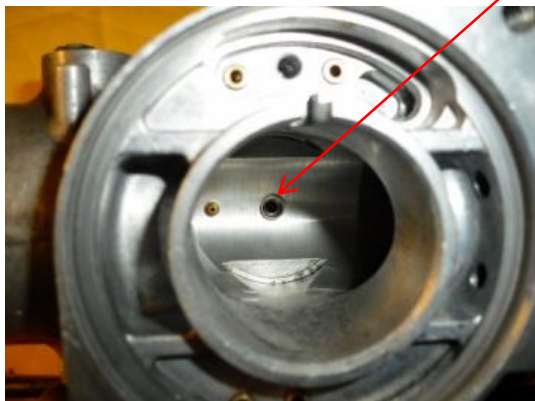
aside, and put the screws (if reusing) in the small parts tray.

Inside, you'll see the jets, the float and the passage plug. Next we'll remove the float. Take that straightened out paperclip you made in the tools section above and push the float pin out; the float and float valve will come out together. Set the float and valve aside, and put the pin in the small parts tray.

Remove and toss the rubber passage plugs (you'll be installing new ones later).

Use a medium flat-blade screwdriver to remove the primary main jet (screwed directly into the body of the carb). Use your crescent wrench to remove the brass secondary main jet emulsion tube (it has the secondary main jet screwed into it). Put both these into the small parts tray.

Special note – the silver needlejet is held in place by the secondary main jet



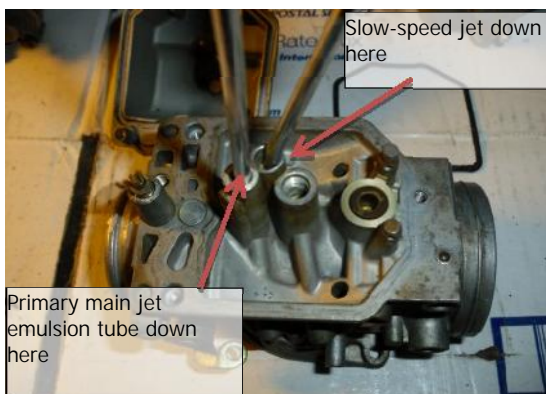
emulsion tube, and MAY fall out when you remove the tube. If so, put it in the small parts tray as well. Now take a look down the pipe that the rubber passage plug came out of. Look to see if the slow-speed jet has a slot in it for a flat blade screwdriver (later '81s through the '83s had removable slow-

speed jets; earlier ones were press-in and not removable). If the slow-speed jet has a slot in it, remove it by unscrewing it with a small flat blade.

Remove the primary main jet emulsion tube by using the screwdriver part of the Motion-Pro sync tool (it fits perfectly in the hole). Get a good bite on the slot and don't force it. These get

corroded in sometimes and you can

do more damage to the thing by stripping out the screw slot. If it's stuck in there, try spraying some PB-Blaster down the hole and let it sit overnight. Worse case, you can clean the carbs with the emulsion tube still installed – don't damage it unnecessarily trying to remove it if it's good-and-



truly stuck. If you were able to remove the emulsion tube and if the slow-speed jet was removable, place both in the small parts tray.

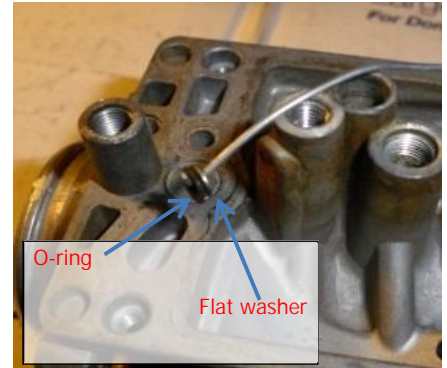
Remove the pilot screws by unscrewing them counter-clockwise. Inspect it to ensure it has a 1/8" needle tip to it as shown in the pics. When removing the pilot screws, they may come out with the spring, or the spring may remain in the body – here's where you want the other end of the paperclip. Use the 90° "hook" to fish out the spring (if it didn't come out with the pilot screw), and the



flat washer and O-ring. Here's where your flashlight will help. Put the pilot screw, spring and flatwasher in the parts tray – toss the O-ring.



If your old pilot screws had the silver stop tabs on them, you can remove them by using a heat gun or a hairdryer on high temp setting. A pair of needle nose pliers will suffice to take them off.



There should be enough glue still inside the cap to heat up when you're ready to put them on your new pilot screws.

Accelerator Pump in Carb 2



Carb #2 is special in a number of ways, as you've already seen. The last special thing we'll work with is the accelerator pump – a small diaphragm, spring and set of special check-valves that squirt fuel directly into the throat of each carb when the throttle is twisted briskly. This is meant to overcome the "turbo-lag" of the heavy vacuum needle pucks that make these CV carbs so unique.

You'll notice when you removed the #2 carb bowl, there were 3 other screws on the base of it – this houses the pump. Be careful with the shaft that pokes up out of the bowl – don't bend it! Remove the three screws (**hold on to the cap** as there's a strong spring underneath). Remove the cap, the spring and the diaphragm/shaft. While the diaphragm and spring can be reused, it's better to replace 'em – usually only about \$25 from most e-Bay vendors. Place the screws (if reusing), accel pump cap and spring in the small parts tray.



Set the diaphragm/shaft aside after inspecting for stiffness/brittleness/holes/cracks/thin-spots with a back-light. You hopefully still have a small rubber bellows that fits in the #2 carb body that the accel pump shaft went through. Check its condition and set aside with the other rubber parts. Special note about foreign carbs: Not all carbs sold by Honda are the same. Many of our UK-associated bikes (Britain, South Africa, Australia, etc.) do NOT have an accel pump. Instead, carb #2's bowl looks just like carb #1's bowl. So IF you have a set of these simpler carbs, just ignore all references to accel pump in the document.



Throttle Butterflies

I don't recommend removing the throttle butterflies and throttle linkages. A couple of reasons for that: You risk damaging or tweaking the shafts unless you remove the parts in the right order, you risk losing or damaging the small felt washers that are inside the bronze inserts (these parts were not offered by Honda, so you'd have to make new ones if you lose/damage one), and there's a high probability of getting the fiber and metal washer sequence bugged up on re-installation and creating paths for an air-leak. Frankly, the risks don't warrant the additional cleaning you could get on those parts, so I say – leave 'em on. OK, now on to cleaning...

Step 3 – Off to the Cleaners

OK – You're a third of the way there, and the parts tray is getting pretty full! In addition to the parts I detailed in the bank breakdown section above, you should have:

- 3 sync screws with springs, locknuts and flat washers
- 4 primary main jets
- 4 secondary main jets in their emulsion tubes
- 4 float pins
- 4 pilot screws/springs/flat washers
- 4 top-cap springs
- 4 float-bowl drain screws
- 4 top-cap plastic seal rings
- 4 top-cap plastic air-jet covers and screws
- 1 throttle cable support bracket and 5mm screw
- 1 high-idle screw/knob/washer/spring
- 1 choke idler arm with spring, bolt, flat and split washers

- 4 air cutoff springs, covers and screws
- 1 accel pump cover, spring and screws
- 4 primary main jet emulsion tubes (if you were successful in removing them)
- 4 slow-speed jets (if the removable type)
- 1 or more silver needle-jets (if they came out with the secondary jet emulsion tubes)

Set aside should be:

- 4 air cutoff diaphragms
- 4 air cutoff diaphragm O-rings
- 4 floats
- 4 float valves
- 1 accel pump diaphragm/shaft and rubber bellows

And of course the big parts:

- 4 carb bodies
- 4 carb caps
- 4 vacuum “pucks”
- 4 float bowls

OK, it's time to clean this stuff up!

Cleaning the big parts

As seen in this pic, I use both the Carburetor and Small Parts Cleaner Dip from Gunk® and a 3-quart ultrasonic cleaner. The Dip comes in a 3-quart can and has a nice perforated small-parts basket, which can safely hold even the smallest of all the parts in your parts tray. The ultrasonic cleaner is the same size and can take a full carburetor (body, cap, puck and bowl). Used together, they'll



clean off nearly all your caked on oil and grime from the outside of the carb, as well as the varnished gasoline throughout all internal surfaces of the carb bodies. Now others will swear by a simple 2-gallon pail, and a gallon of Pine-Sol®. It's up to you – both methods work well.

I place the carb body face down in the basket and lower it into the Dip, then (after

removing the float-bowl gasket) position the other 3 major pieces around it so they're all covered in the thick liquid. Let it sit in there anywhere from 15 minutes to overnight depending on how nasty your parts are. Usually 30 minutes is plenty. Remove the parts and put in the ultrasonic – I use Pine-Sol® as the liquid for the ultrasonic. I run 'em for 15 to 20 minutes, then put them in the cleaning pan and repeat the whole process for the next carb. You may have to turn the bodies in the ultrasonic, so all the surfaces are well vibrated.

If you use the simple Pine-sol®-n-bucket method, place all the parts in the bucket, fill with Pine-sol® and let sit overnight. Don't let them sit for more than a day though without rinsing, as the Pine-Sol® may attack the aluminum.

After you get them out and rinsed/dried, it's time to put on the eye protection as we clean the carb body.

Take a couple of the acid brushes, trim the bristles down to about ¼" and use the spray carb cleaner to clean out those nooks and crannies on the bodies. Use the carb cleaner generously throughout the carb body, and use the acid brushes to attack any dirt that the Dip and ultrasonic cleaner didn't remove – you want the bodies spotless on the inside.

Clean the top-cap with the carb spray, and use a paper towel stuffed loosely in the center tube to buff it clean, as well as the inside of the top-cap itself – any schmutz inside here will impede the puck's vacuum movement and affect the bike's operation. Take the straw and spray through the little hole on the side of the top-cap inner tube – it should spray into the inner tube.

Spray down the vacuum puck and use the acid brush to clean off any varnished gas on it or the needle. Stick some of the paper towel down between the inner edges of the puck and its center shaft – just like the top-cap, any schmutz here will impede the puck in its travels.

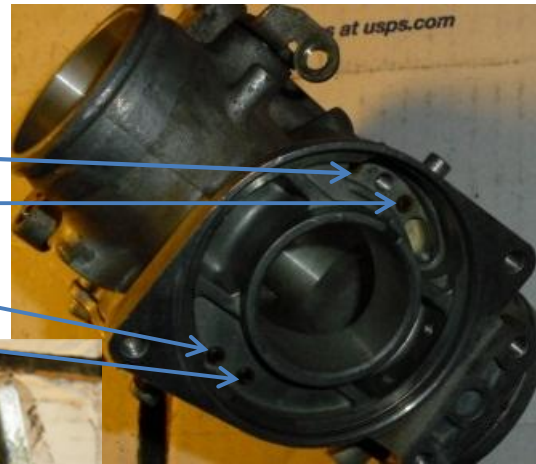


Use the carb cleaner spray and the acid brushes to clean out any residual gunk in the bottom of the float bowl. Use a Q-Tip® to clean out the seat of the float bowl drain screw. Start with a full tip, and then pull off enough of the cotton off the end of the Q-Tip® to go all the way through into the base of the float bowl. Trust me; they'll be black with goo – keep using the Q-Tips® and carb spray until they are clean.

Take the spray straw and an Exacto®-type knife and whittle the tip to a more conical shape so it fits better into some of the holes you'll be spraying into (this will keep the back-spray into your face to a minimum – don't ask me how I know this...).

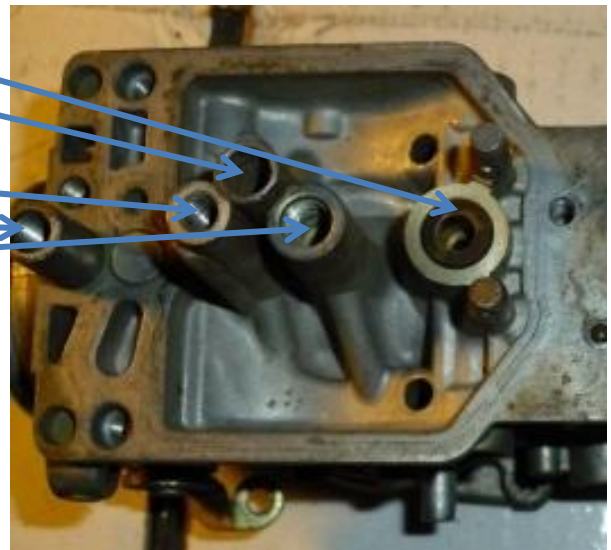
Spray a good shot into each hole as follows:

- Primary main air jet
- Secondary main air jet
- Secondary slow air jet
- Primary slow air jet
- Air cutoff feed
- Air bypass



Also

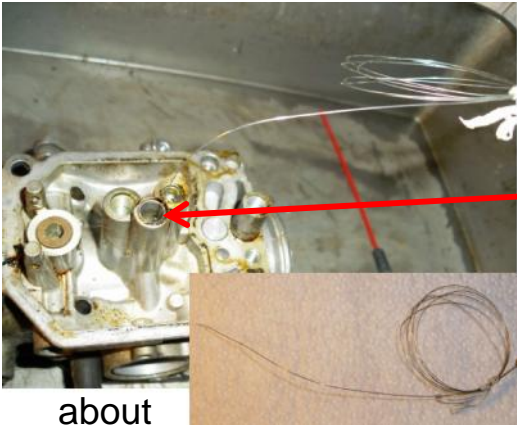
- Float valve seat
- Slow-speed jet
- Accel pump feed hole (shown later)
- Primary main jet
- Pilot screw
- Secondary main jet



Cleaning the Slow Speed Jets

There's nothing more important for proper carb operation than having clean slow-speed jets, so I'm going to dedicate several pix to help you.

If the jets were removable, you're golden - just blow them out with some carb cleaner before reinstalling, but if the slow-speed jets were the pressed-in variety, and you could not remove them in the carb breakdown section, you need to prep them for spray-down:



Take that E-string we had you get, and push it through the center hole down in the center tube – don't force it; you may need to twist it as you go, but you want to be able to push down

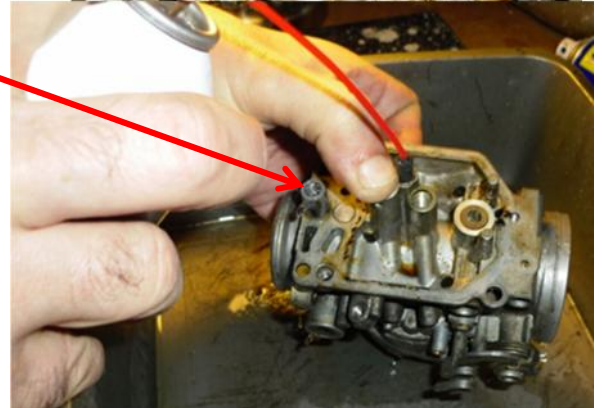
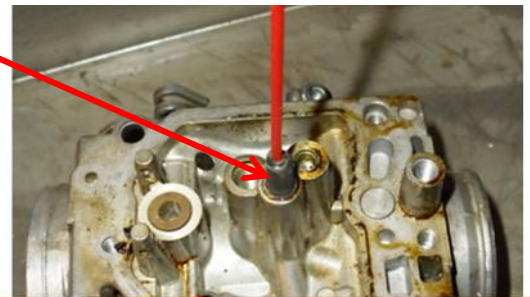
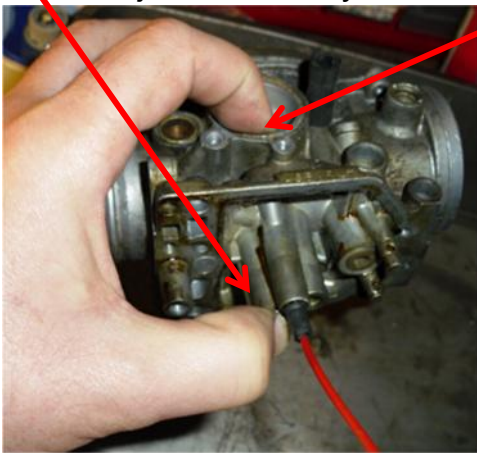
about 1-1/2" of the E-string down the hole to be sure you've cleared the slow-speed jet.

They gunk up easily and will cause no end of grief if you don't get them cleared. **Don't short-change this step – it's critical.**

Once cleared with the E-string, here is where you want to modify the straw. Take enough electrical tape and wrap it around the end so that it will fit fairly snug in the slow-



speed jet tube. Hold a thumb over the primary main-jet hole and your index finger over the lower air cutoff hole and spray. If the slow-speed jet is truly clear, you'll get a bubbling (or stream) of carb spray out the pilot screw hole. Don't consider the carb cleaned until you can do that!



Cleaning the Accelerator Pump Nozzles

Finally, check that the accel pump nozzle is clear by setting the carb down on its front, carefully place the conical nozzle of the straw into the accel pump rail hole and watch the pump nozzle as you spray you should get a nice clear stream out the pump nozzle tip. On carb #1, the rail hole is on the right side of the carb. On #4 it's on the left. On carb #3 you can go from either side, just cover the other rail hole with your finger so the spray goes out the nozzle. Clearing that nozzle is a bugger, as it's a blind hole on the carb-body side of the nozzle. You can use your needle-nose pliers to hold the E-string and blindly search for the hole – once you've found it, wiggle the string in there, and try again. You may have to soak the carb body and run it through the ultrasonic cleaner again to clear this nozzle.



That should take care of all the big parts – drop the puck into the top cap and make sure it slides effortlessly – polish the inside of the cap and the puck again with a paper towel, if you get any hesitation. Also polish the vertical sides of the carb body where the puck goes with a paper towel to further ensure proper carb operation.

If you want to polish your carb caps and bowls to a chrome-bright shine, now would be the right time to get that done.

Cleaning carb #2

Everything you did on carbs 1, 3 & 4 will be done on carb #2, but there are more nooks-'n-crannies to deal with – take the time to clean the body well with the acid brushes and carb cleaner.



To clear the accel pump nozzle on carb 2, the hole is accessed from the bottom of the carb, with your thumb and forefinger covering both rail holes. Also, the float bowl has a check-valve that

needs to be cleared. Spraying into this hole should result in a jet of spray out each of the 4 sides of the square brass insert. You may have to soak the bowl further if this check-valve is clogged.

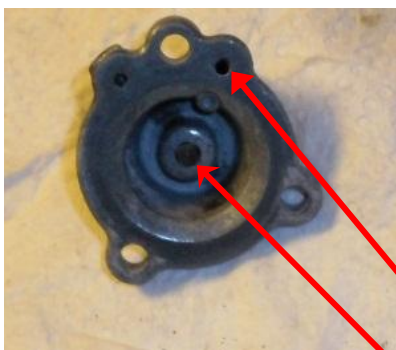


Cleaning the little parts

The easiest way to clean the little parts is to soak them in the Dip tank for 30 minutes, then ultrasonically clean them for 30 minutes. Spray them down with carb cleaner, touch 'em up with the acid brushes, and dry them in preparation for rebuild.

3 parts you'll want to do some extra effort on: choke shaft 1/2, choke shaft 3/4, and the accel pump cap.

Use a brass brush to get the residual crud off the choke shafts and get 'em shiny-bright (they need to be able to spin easily in the choke shaft bushings in the carb bodies). Be careful not to bend the shafts.



And just like in the #2 float bowl, there's a check-valve in the accel pump cap that needs to be cleared. The carb spray nozzle should fit down the larger of the two holes in the cap, and the spray should come briskly out each

of the 4 sides of the square brass insert. If it doesn't, you'll need to soak the cap longer and run it through the ultrasonic again.



Sometimes you can soak just the check-valve, by setting the cap right side up in the spray-can cap, and fill it with carb spray. Let it sit for an hour or so, and try again. Run spray through each jet and emulsion tube, paying special attention to the aeration holes on the sides (make sure they're clear).

Special things to look for

There've been a few parts that have been set aside that now need to be looked at. Take each float and hold it near your ear and shake it back and forth – if you hear ANY sloshing about, you need to replace it, as it developed a leak where fuel is getting inside, and it won't work right for you. If the carbs have been sitting for a while, the fuel may have evaporated out of an otherwise leaking float, so you might want to put each of them in a cup of water, with something to hold them down. Let 'em sit for an hour or so and check again with the shake test.

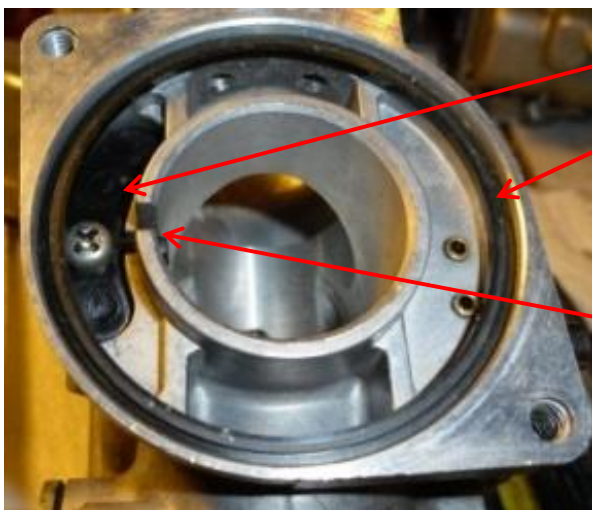
If you didn't get new float valves with your rebuild kit, it is possible to reuse your old ones – look closely at the rubber tip with a magnifying glass and make sure it's conical, a bit pliable and doesn't have a groove worn into it. Also, make sure the silver tip on the other end can be pushed in, and springs back easily when released. Take a look at the pilot screws under the magnifying glass and make sure the tips are not damaged or bent. If you get new ones with your rebuild kits, you can chuck the old ones (actually it's probably better to save 'em as spares!).

Step 4 – Rebuild – Getting it Together

OK, we'll go through this just like the disassembly and cleaning; carb #s 1, 3, 4 then carb #2.

We'll build up each individual carb, then gang them together in 2's then hook the 2 gangs up. Nothin' to it, eh?

Individual Carb Assembly



Start at the top of the carb. Install the plastic airjet cover and screw in snugly (not tightly – you don't want to break the cover). Then install the seal ring – the inner lip should be facing up. Take the vacuum “puck” and drop it down into the top of the carb. The groove in the side of the vacuum puck fits neatly on the tab sticking out from the airjet cover. Look through the rear of the carb as you drop the puck in, so the needle fits into the needle jet (sticking up above the bottom of the throat of the carb), and the groove fits onto the tab of the airjet cover. If the needlejet came out with the needlejet holder (back on step 2 middle of page 12),



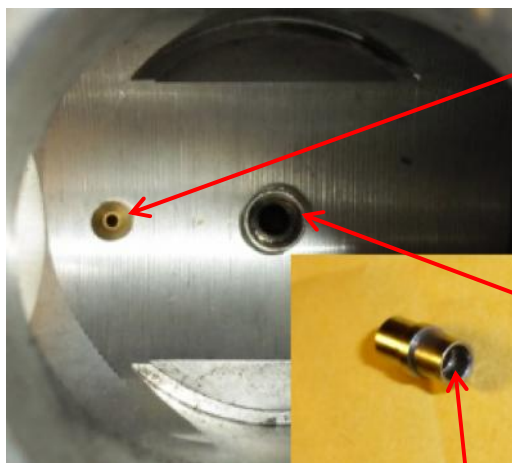
you won't see it in the carb throat – we'll install it in the next step – don't worry.

Now install the spring onto the already installed puck and install the carb cap on the spring (make sure the spring fits around the outside of the brass center tube of the carb cap). Snug it all together with two 5mm screws.

(Benny and the) Jets

Take your magnifying glass and look along the edges of all 4 primary main jets and secondary main jets. There should be some markings on them like K68 or K105. Make sure all the primaries are the same number, and all the secondaries (in their emulsion tubes) are the same number. Invariably during a previous clean/rebuild, the owner will have removed the secondaries from their emulsion tubes and mixed them up with the primaries on reinstall. That's why I recommend removing the secondary emulsion tube while leaving the jet installed in it – keeps this mix-up from happening. Stock jetting (with airbox) for our bikes is as follows:

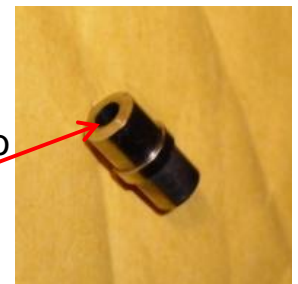
- 750 – 68 primaries and 100 or 102 secondaries
- 900 – 68 primaries and 105 secondaries
- 1000 – 68 primaries and 110 secondaries
- 1100 – no primaries (and no rubber passage plug!) and 122 secondaries.



Install the primary main jet emulsion tube (if you were able to successfully remove them before), and the

primary main jet. Check for the silver needle jet sticking up above the bottom of the carb throat in the center of the carb body. If it's missing, and you have one or more in the clean tray, install it now. It will only go in one way, so

don't force it – The conical end goes up, and the rounded end goes down.





Install the secondary main jet emulsion tube (this will hold the needle jet in). Now, if you removed the slow-speed jet, install it now and put in a fresh rubber passage plug – make sure it fits snugly and doesn't fall out when you turn



the carb over.

Float Valve Seats (Shine on you crazy diamond)



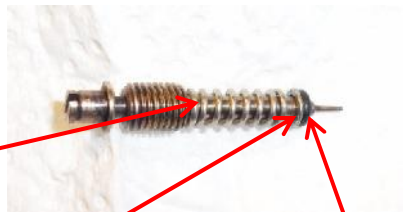
Without a doubt, the second most important thing about your carb cleaning process (right after the slow-speed jet and passage cleanliness) is the float valve seats. More people complain about their carbs pissing fuel out the overflow tubes, and it's almost always caused by dirty float valve seats. Get yourself a handful of Q-Tips® and some Brasso®,

or other metal polish (or even some toothpaste, if you don't have any polish). Polish those seats until they shine. Examine them with a magnifying glass and flashlight to make sure there are no pits, grooves or damage down near the edge of the fuel entrance hole of the seats.



Pilot Screws

Slide the spring on the pilot screw, followed by the flat washer then a new O-ring. Screw the whole assembly into the body of the carb. Screw it all the way in until you feel



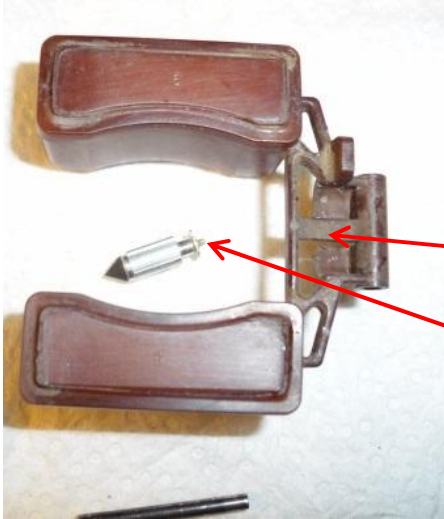
resistance – DON'T force it, or the little neck below the threads will give way, and you'll be getting out the drill and EZ-Outs®. Once the flat section below the thin neck is even with the bottom of the pilot screw hole, you'll be bottomed out. On the 900, 1000, and 1100 carbs, you will see a bit of the pilot screw tip sticking up through the bottom of the



carb throat; you won't be able to see that on the 750's. Now back the pilot screw out the following amount:

- 750's – 3 turns
- 900's – 2-1/2 turns
- 1000's and 1100's – 3-1/2 turns

Float & Valve



You've tested your floats and they float! Clean 'em up and reinstall them with either new or cleaned-up-and-tested old valves. Install the valve onto the float and slide the valve into the seat while aligning the float for the pin. Slide the pin all the way in so no part of the pin can be seen on either side of the float holders. Turn the carb on its nose until the float just touches the silver tip of the valve and measure the distance between the bottom of the float and the bottom of the carb body. It should be within the specs of the Factory Service Manual (15.5mm +/- 1mm). The brown plastic floats on the '80s and later

bikes are not adjustable as far as float height – if you have a float level issue with these floats, it's likely your valve is bad or the wrong one for that model. On the '79 CB750's, you'll find black floats – the valves are slightly different (they have a wire clip on them) and the floats have a metal tang on them that **IS** adjustable.



Finishing out the Bottom End (1, 3 & 4)

Alright, we are getting close to buttoning up our carbs. Next step is to install new O-rings on the bowl drain screws. While it's a good idea to replace all the old O-rings with new, these screws can probably be used with the old O-rings; the rings don't prevent leakage out the overflow, but just keep the fuel from coming out the side when the drain screw is loosened. But it **IS** a good idea to check the screw tips for damage. They should not be pitted, gouged or missing. Often, water collecting in the bottom of the bowls will corrode the tips (bad screw on top, good screw on bottom).

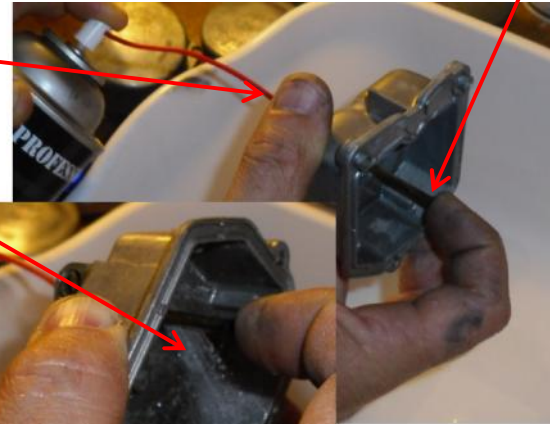


Before installing the bowl onto the carb, fill the bowl with water to within 1/8" of the top of the bowls and make sure you get no leaks – nothing worse than dealing with a leaky bowl AFTER you've assembled everything and installed the carbs on the bike.

Sometimes, the drain tube will get a crack in it, or the drain screw seat is damaged. You can fix the tube with some solder or J.B. Weld™.



The only way to fix a damaged drain seat is to replace the bowl. To check for a cracked drain tube, screw in the drain screw and snug it down, then hold your finger over the upper end of the tube and spray carb cleaner into the drain nipple— if there's a crack, you'll see carb cleaner spraying out through it, otherwise, it'll only come out as back-spray out the drain nipple.



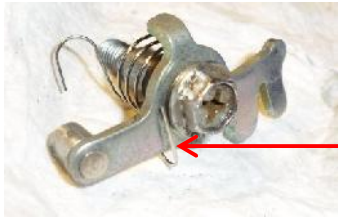
Split drain tube repaired with J.B. Weld™



All that's left now to the bottom end is to install the float bowl with new gasket. Dry out the bowls well from your leak test.

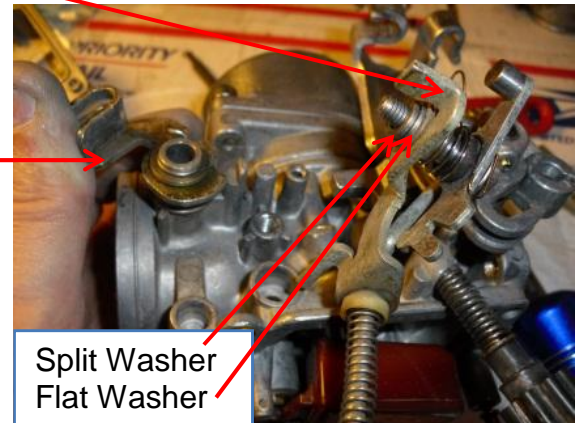
I find I have to stretch the bowl gasket gently through my fingers a few times to get it to seat right in the groove. I don't use gasket seal or any adhesive, as the stretching usually works fine. Place the carb body onto the bowl (with everything upright) so the gasket stays in place. Place strong pressure on the bowl to hold it in place while you flip it over and install the three 4mm screws. Loosely install the screws, and then snug them down evenly before tightening them all up. The passage plug will be forced completely into the slow-speed jet tube once these screws are fully tightened up. Now's a good time to reinstall the pilot-screw cap that you removed before – just hold it with a pair of needle nose pliers, heat it up with a heat gun or hair dryer and soften the glue. Align it straight ahead of the tab on the bowl and push on to the top of the pilot screw. By having it aligned straight ahead, you can still adjust it 1/3 of a turn in or out without hitting the bowl tab (you may need to adjust the final setting of the pilot screws on the bike to get the right mixture level).

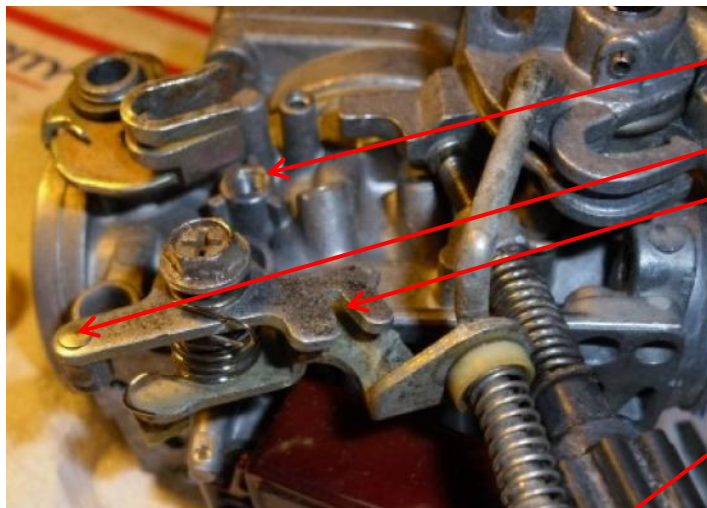
Special Carb 2 Assembly



Carb 2 assembly takes a bit more. After installing the top-cap, you need to install the mechanisms on the side. Place the choke idler spring on the idler (skinny long hook on the bottom of the idler – round hook towards the back of the idler). Slip the screw-bolt through the hole and the spring. Install the entire assembly onto the face of the throttle idler with the screw-bolt going through the hole in the throttle idler.

Install the flat washer and split washer in that order onto the screw-bolt. Lift the choke actuator arm to gain room and carefully install the throttle/choke idler & washer assembly onto the carb body (this takes some careful finger manipulations and patience).





Start the screw-bolt into the hole on the body (the idler's round end should be towards the back of the carb, and the forked tines should be towards the front. Before tightening down, make sure the round part rides under the choke actuator arm, and the tines fit under the throttle actuator arm, and the round hook of the spring should fit over the solid stud just

forward of the choke actuator arm.

The whole thing should end up looking like this:



Now install the throttle cable mount with the 5mm screw (the hole on the left goes onto the small stud just below and back of the screw hole).

While the picture shows it installed, it's best to hold off installing the high-idle knob/spring/washer until you've got the bowl installed.

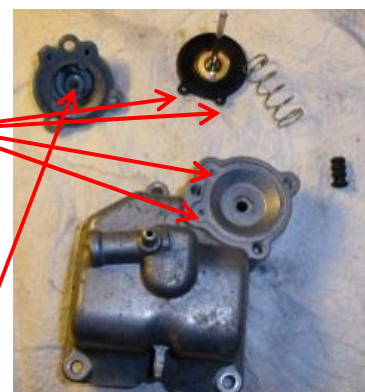


Accel Pump and Bowl Install

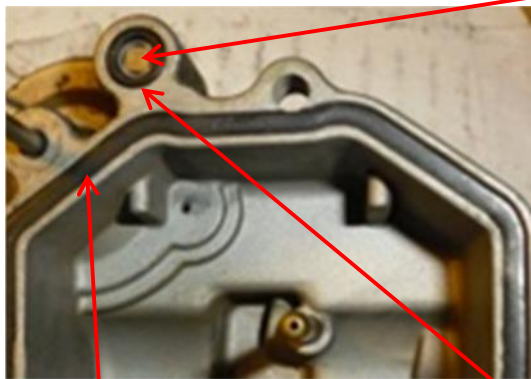
Before you install the float bowl on carb #2, you should install and test the accel pump. Slide the diaphragm shaft through the hole in the center of the accel pump housing on the bowl and align the holes on the side of the diaphragm with the holes in the housing. While maintaining that hole alignment, install the spring and screw down the cover with three 4mm short screws.



Make sure the spring fits over the check-valve "lump" in the bottom of the cover. Snug the screws down evenly, and then tighten them up. Take the whole assembly out in the garage, and over a large catch pan fill the bowl about half full with fuel and test the pump operation. Obviously do this in a safe environment (garage door open, eye



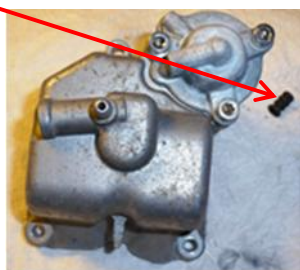
protection on, gloves on, plenty of shop rags around, no open flames). You should get a 6-18" fountain of gas squirt out the square brass diffuser when you press down on the diaphragm shaft (it may take a couple of priming shots). If you don't, you need to troubleshoot – it's usually a reused diaphragm that's shot, or a check-valve that's not clear.



I recommend using gas, as water can end up being left in the pump chamber - since it's the lowest point on the carbs – it'll corrode your newly cleaned accel pump. Gas won't do that.

Once tested and drained/cleaned up, install a

bowl gasket and the 901-sized O-ring over the bowl diffuser depression. Install the dust-protector bellows up through the carb body (thicker/wider end of the rubber at the bottom). Hold the bowl and install the bowl onto in place as you guide the gasket and O-ring stay in body. Hold the bowl 4mm long screws – tighten down.



bowl and carb in their upright position the carb, carefully holding the bellows shaft through it and make sure the place as you mate the bowl to the firmly to the body and install the three again snug them up evenly, then

Now you can install the high idle knob/screw/spring/washer – the washer should go between the knob and the spring. Screw it in until it touches the throttle actuator arm, and then give it another full turn.

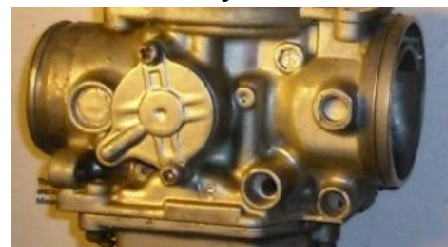


Air Cuts



Take the air cutoff cover, place the conical tip of the straw into the hole in the corner and spray – you should get a jet out the side hole just beside it. If you got new diaphragm kits, install the diaphragm (make sure the brass tip easily slides into the hole, and the diaphragm lip fits securely in the groove). Place the rubber O-

ring in the hole in the lower left corner of the air cutoff hole in the body of the carb. The flat side should go against the body. Install the spring (small end towards you), and install the cover. Make sure the small "tit" on the cover fits into the small end of the spring. Secure with two 4mm short screws. Make sure nothing has moved out of place (diaphragm still in its groove, O-ring still in its spot, spring still in the diaphragm) and tighten down the screws.



Step 5 – Building up the Carb Bank

Whoo Hoo! Two-thirds there. Let's review the parts you have on the table, so we can rectify it before we go any farther:

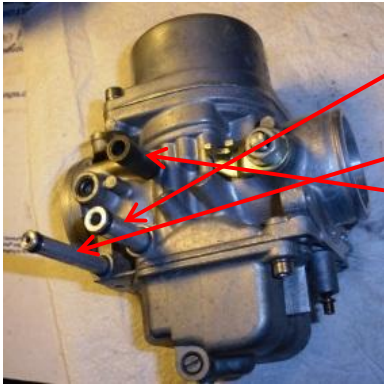
- 4 complete carbs with tops, bowls and air-cuts installed
- 2 choke shafts with spring
- 2 throttle springs
- 3 sync screws with spring, washers and locknuts
- 1 brass fuel "T" (Maybe 2 "T's" if these are 1000 or 1100 carbs)
- 2 short and 1 long accel pump tubes
- 1 short and 1 long fuel tube (or none if 1000 or 1100 carbs)
- 4 choke plates
- 1 Fuel "T" clip
- 1 Vent "T" and rubber joiners
- 2 rubber vent tubes
- Front rail and rear rail with choke cable clip
- 8 each 5mm and 6mm screws

If you have ANY other parts than these, go back through the step 4 and see where you left anything out.

Go ahead now and replace the oldie-moldy O-rings on the fuel and accel pump rail tubes and fuel "T(s)". A touch of petroleum jelly or WD-40 makes these go on easily as well as lube them for easy installation into the carb bodies themselves.



Right Side (Carbs 3&4)

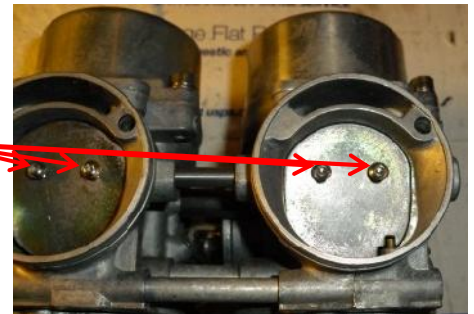


Like we did in section 2, we'll start with the easy ones first. Insert the short fuel rail (or short brass "T" if 1000 or 1100 carbs) in the fuel port on carb 3. Install the short accel pump tube in the accel pump port on carb 3. Install one of the 2 rubber vent tubes on the vent port on carb 3. Placing carbs 3 and 4 face down, mate up carb 4 to carb 3's tubes. Twist the accel pump and fuel rails as you press the carbs together so you get a firm seating of the O-rings in their ports. Make sure carb 4's throttle sync tab is over the top

of carb 3's sync tab.

Slide the choke shaft through the 2 carbs from the carb 3 side – make sure it goes all the way into the right side of the carb 4 body. The shaft you want is the one with the two small tines sticking off of it (one tine

has a notch in it). Twist the shaft so the reliefs cut into the shaft are facing you (slightly facing down) and install a choke plate on each relief, and install new 3mm x .5 x 6mm screws into the choke shaft – tighten them down, then back them off 1 full turn – we'll cinch 'em down later in the build. Make sure the choke shaft can turn 90° easily – if it binds, you may have to recheck that the tubes are fully seated in their ports.



Left Side (Carbs 1&2)

OK, we do the same thing with carbs 1&2, but you need to be a bit more of a contortionist for this set.

Install the brass fuel "T" into carb 1's fuel port (the longer of the 2 ends of the T should go into carb 1). Install the short accel pump tube in carb 1's accel pump port. Install the second of the 2

rubber vent tubes on the vent port on carb 1. Placing carbs 1 and 2 face down, and mate up carb 2 to carb 1's tubes. Twist the accel pump and fuel "T" as you press the carbs together so you get a firm seating of the O-rings in their ports. Make sure carb's sync tab is over the top of carb 2's.



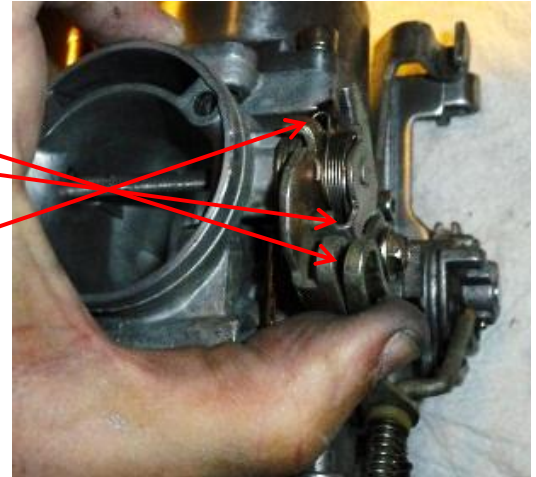


Now is where it gets tricky. Slide the choke spring onto the choke shaft. Note that there's two hooks on this spring – one is vertical (bent in the same plane as the coils of the spring itself), and the other is horizontal.



Put the vertical hook side of the spring on first – it should be up against the tabs of the shaft. Slide the shaft into the pair from the carb #2 side. As you get the tip close to the left side of the carb #1 body, you'll have to lift the choke actuating mechanism on carb #2 to slip the horizontal tab of the shaft under it.

At the same time, you want to hook the horizontal hook of the spring onto the choke actuating mechanism. Here, a picture is worth a thousand words. Don't worry about the vertical hook of the spring; we'll get to that in a bit.



Make sure the shaft is fully seated against the choke actuator, and the tip is fully engaged in the left side of carb #1. The horizontal tab of the shaft should be just under the choke actuator. Here's where a 3rd hand would help. Use one hand to lift the actuator and the choke shaft together,



so the choke plate reliefs are pointed towards you. Place a choke plate on #2's relief and loosely install two 3mm x .5 x 6mm screws. Snug them up and back them off 1 full turn. Repeat for carb #1.

Work the choke mechanism a few times and make sure the choke plates move easily without binding – as with carbs 3/4, make sure

the fuel T and accel pump tubes are fully seated in their ports, and that the rubber vent tube isn't binding.



We'll use that bent paperclip again here, as we set up the spring to receive the right half bank. Turn the 1 / 2 half bank on its carb #1 side. Use your thumb and forefinger to turn the spring counterclockwise to get that horizontal hook onto the choke actuator tab. The vertical hook will be barely showing just above or below the shaft tab – you may have to twist the spring counterclockwise to get the vertical hook to show itself BELOW the tab.



Once you do that, grab it with the hook with the paperclip, and bring it around counterclockwise and hook it to the vertical tab of the choke shaft (here's where the pics help).



Now, install the long fuel tube (unless these are 1000 or 1100 carbs), and the long accel pump tube, as well as the vent "T" on carb #3 in preparation for bringing the two halves together.

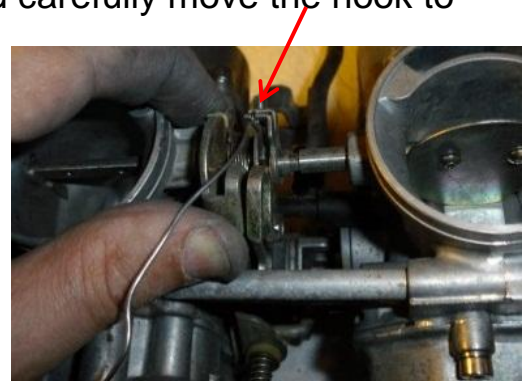
Making them whole (Left & Right)



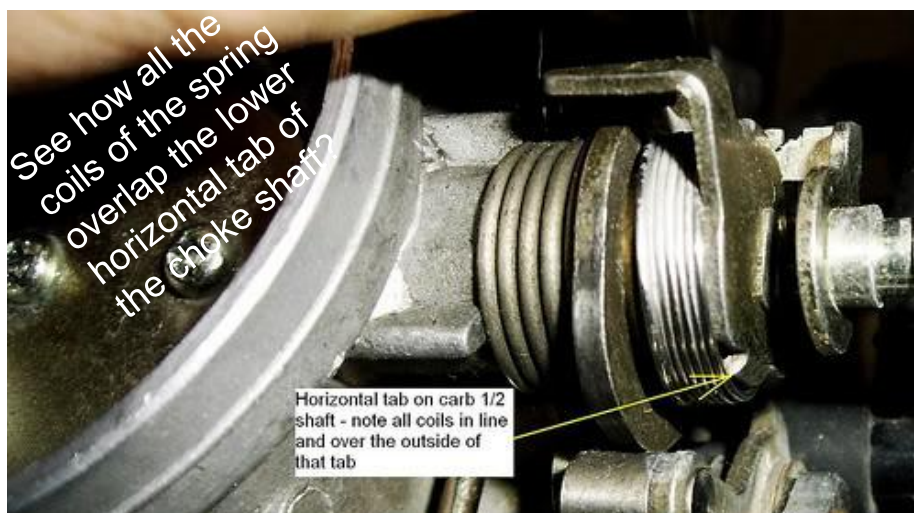
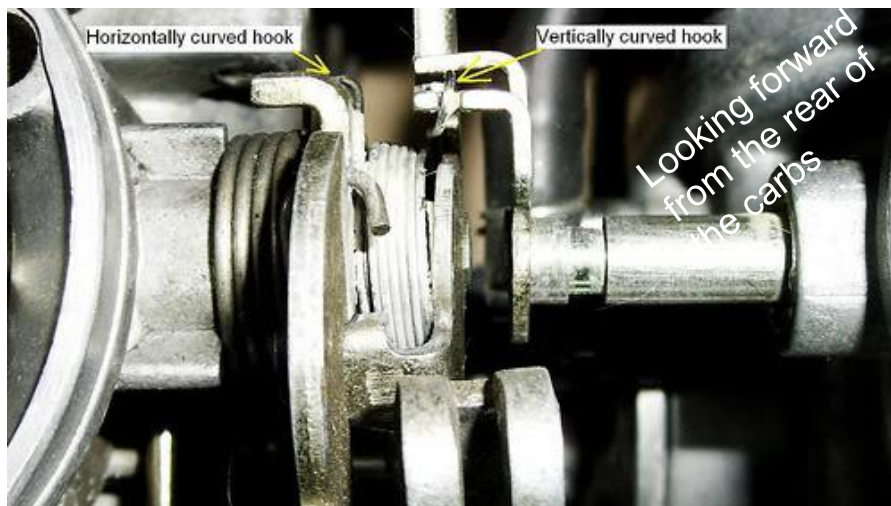
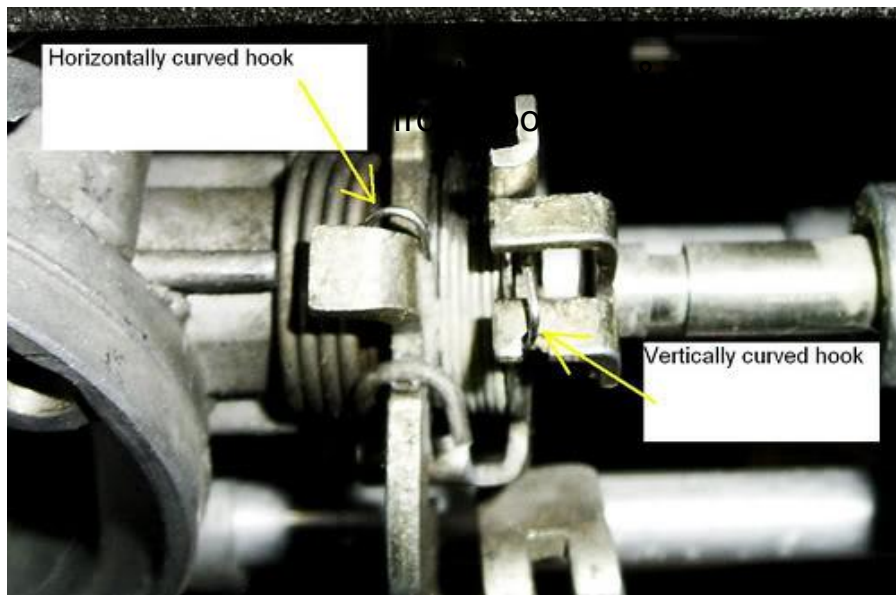
OK, one last tricky part (here's where I usually swear like a sailor). As you connect the two halves together, be careful not to bump the vertical hook of the choke spring off of its perch on the vertical tab of the choke shaft. You want to loosely insert the left sides of the vent tube, fuel tube and accel tube into/onto their respective ports of carb 2, but watch carefully as the tines from the 3 / 4 choke shaft get close to the choke spring. When it's right up against the spring, take either

a pair of needle-nose pliers, or the bent paperclip and carefully move the hook to the notch in the rear tine of the 3 / 4 choke shaft.

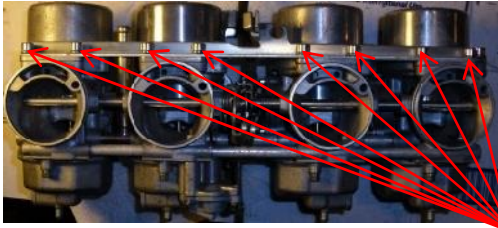
The forward tine should now rest upon the vertical tab of the 1 / 2 shaft. It's likely you'll bump the spring the first couple of times you try this, and the spring will unwind. Go back and rewind it with the bent paperclip and try again. Once you have it hooked up, double check that the throttle sync tab of carb #3 is ON TOP of the one on #2. Then press the two halves together, spin the accel and fuel tubes to ensure they're well seated, give another good shove together and you're nearly done!



Some more pictures that will help you:



Final Assembly



OK, go grab a glass of your favorite adult beverage and congratulate yourself! We're nearly done; a few more screws, a little more swearing, and your carbs will be ready to rock and roll.

Start with the rear rail – install with the 8 remaining 5mm screws. Snug them up only finger tight – we'll

tighten them during the alignment phase.

Flip the carbs on their tops and install the front rail with the 8 remaining 6mm screws. Again, only snug them up finger tight.

Check that the throttle sync tabs are as follows:

- 1 on top of 2
- 4 on top of 3
- 3 on top of 2

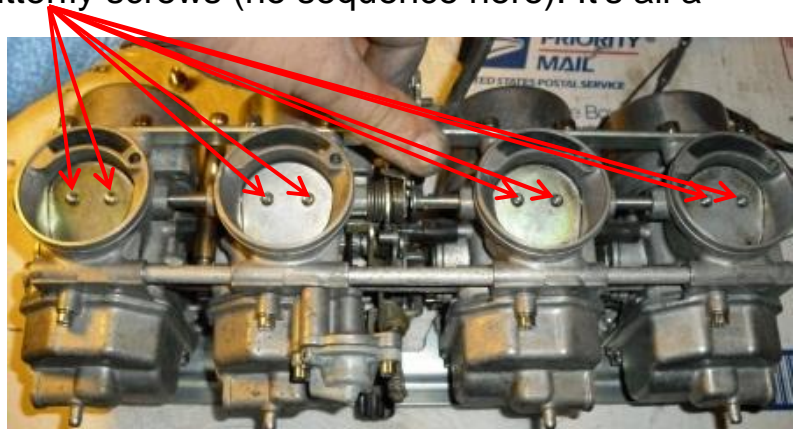


Step 6 – Adjustment, Testing & Troubleshooting

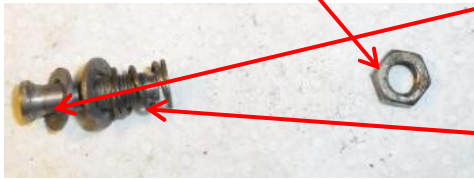
Alignment

Place the carb bank on its front (face down) on a flat surface – you may want to bang ‘em lightly against the surface to make sure the faces are aligned and flat. Jiggle the carb bodies around enough that you get them all to lay flat on the surface. Now start working the choke mechanism and make sure the butterflies close consistently and together – they’re loose, so they should close easily, if not floppily. If you can do this, then with the choke closed, tighten the top rail screws per the sequence on page 4-14 of the FSM to hold the bank together well - not torqued, but tight. Recheck the choke mechanism operation. If it’s still good, flip the carbs up on their tops and (again with the choke closed) snug up the front rail screws following sequence on page 4-13 of the FSM (you can’t put the carbs flat on the back side, since the choke arm gets in the way of them lying flat). Recheck choke operation. Now retighten the top rail screws as tight as you can reasonably get them per sequence 4-14. Each time you tighten either the front or rear screws, recheck your choke mechanism for proper operation. Now tighten the front rail screws as tight as you can reasonably get them. Once all the rail screws are tight, with the choke closed, you can tighten the choke butterfly screws (no sequence here). It’s all a matter of alignment. If the carbs aren’t aligned just right, those choke butterflies won’t close (more weeping and gnashing of teeth, as you have to loosen all 24 screws and realign and tighten in the proper sequence).

Once the choke is working properly, it’s a good idea to remove the choke plate screws one at a time and put a dab of blue Loc-Tite® on the end and reinstall – repeat for the other 7. You don’t want these critters loosening up while driving down the road – they’ll get sucked into the intake and make a mell-of-a-hess of your motor!

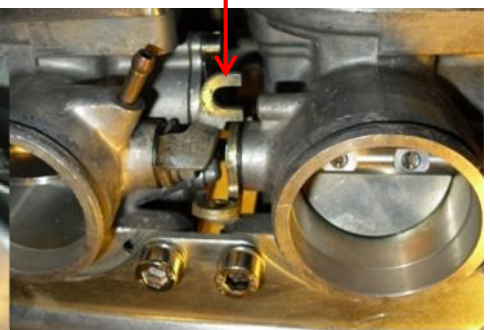
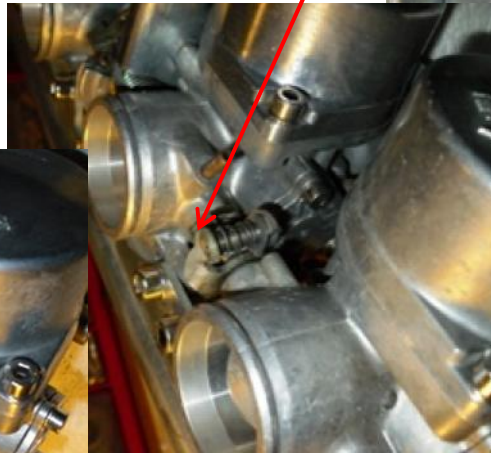


Now it's time to install the sync screws. Open the throttle mechanism full open, and wedge it open with a large screwdriver down the inside of the throttle cable mounting bracket holding the throttle arm up. This will allow you easy access to the throttle tabs. Start at carbs 1 and 2. Remove the locknut and make sure the



small washer is on the bottom followed by the large washer and finally the spring. Lift the large washer and spring up enough to slide the screw into the clip on carb #2's

throttle tab, and bring carb #1's threaded tab down on the top of the screw and unscrew it into that tab

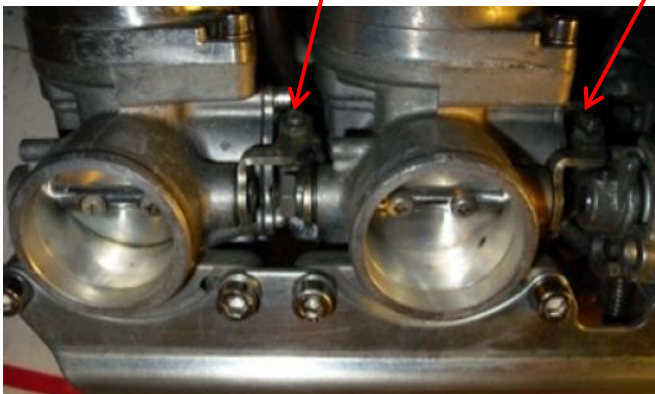


(counterclockwise screws it into the tab – yeah, it's backwards from what you'd think). VERY IMPORTANT:

it should unscrew easily into the threaded tab – if it binds or gives you any resistance, don't force it –

realign the screw and try again – you may have to press the two tabs together a bit to get the alignment of the screw and threads right. If you cross-thread it, you'll never be able to get the carbs to sync, and you'll have ruined all the good work you just did cleaning them up.

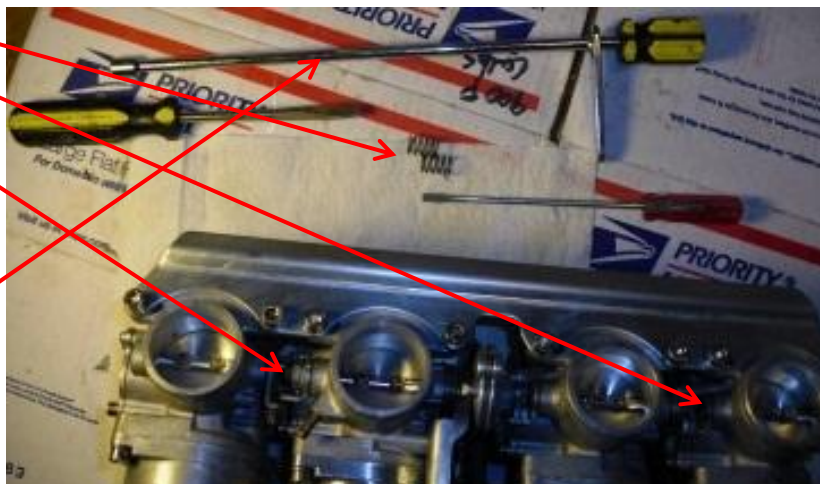
Repeat with carb 4 / 3 and finally with 3 / 2 each time installing the screw from the bottom up and being careful to not cross-thread the screws. Once the screws are in, go ahead and install the locknuts finger-tight.



Now it's time to bench-sync the carbs. This gets the throttle butterflies open an equal amount so then final syncing on the running motorcycle will be quicker. Often, if the engine valves are already adjusted to their .004"-.006" specs, the carbs will bolt on and run with no significant touchup required!

First, install the two 1" throttle springs between carbs 3 & 4 and between carbs 1 & 2. They fit over the shaft that has the nut on it, and onto the flat part of the opposite throttle tab.

Here's where you want the special Motion-Pro sync tool – it allows you to hold the locknut while adjusting the sync screw. While the throttle is still wedged open fully, adjust each sync

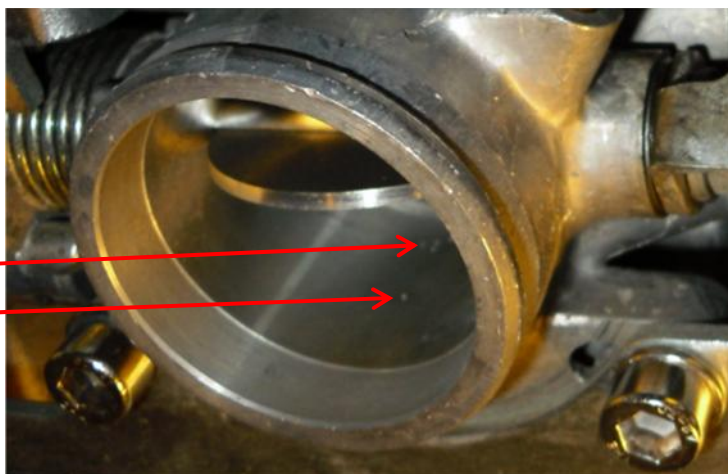


screw so its throttle butterfly matches (as closely as you can eyeball it) to carb #2's butterfly (carb 2 is the base carb, and it isn't adjusted – the other 3 are adjusted to it). Now un-wedge the throttle and let 'em close. Turn the high idle knob (black knob under and below carbs 2 & 3) in until all 4 butterflies are uncovering at least 1 of the little holes at the base of the butterflies – you don't want your throttle plates binding on the carb bodies at this point.



Turn the high-idle knob so you can just slip the E-string between the bottom of the throttle plate on carb 2 and the bottom of the carb throat. You may have to adjust the carb sync screws on 1, 3 and/or 4 so that their carb

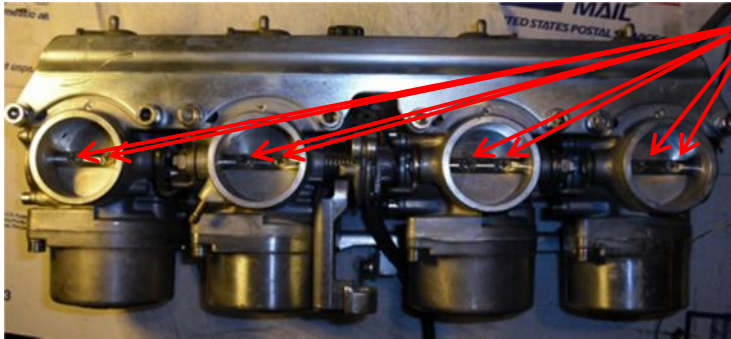
butterflies are more open than #2's (again, you want no binding). Now slide out the E-string from under carb #2's butterfly and put it under each of the other carbs one at a time and adjust that carb's sync screw so its butterfly also just touches the E-string. Once you get them close, remove the E-string altogether and close the high idle knob enough so carb #2's butterfly just covers the front-most hole (don't confuse it with the pilot-screw hole – you can't cover that!). The other three carbs' butterflies should also just be covering their front-most hole. Cycle the throttle several times to make sure nothing binds and they snap back to the same spot.



Holding the sync screws still with the screwdriver portion of the Motion-Pro tool, use the outside of the tool to cinch down the locknuts – no need to torque ‘em, just snug. Make sure the throttle butterflies didn’t change positions. Cycle the throttle mechanism a couple of times to verify. That’s it – your carbs are basically ready to go! Undoubtedly, you’ll need to touch up your sync on the bike once it’s running, but if your valves are in spec (.004” - .006” cold), it shouldn’t be much.

Final Touches

A couple of things before you rush off and install these. Loosen the 8 throttle



butterfly screws a half turn, and work the throttle mechanism several times to get the throttle butterflies to settle in and then retighten those screws (the throttle butterflies have some play in them just for this). The butterflies should snap closed even from a slightly open position. If they don’t, they’re binding because they’re not aligned

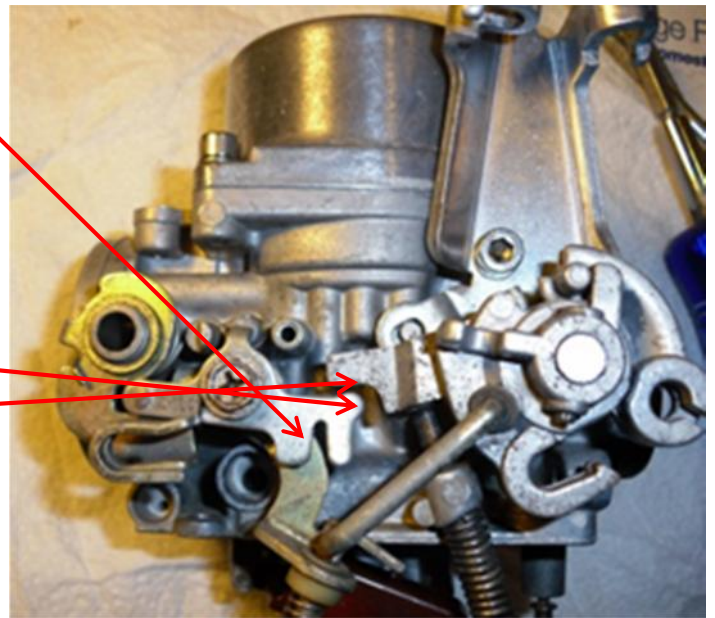
properly and should be re-adjusted. Once they do that, go ahead and tighten up those 8 throttle butterfly screws nice and snug (don’t strip the screw head – use a big bit here). The choke idler arm should be adjusted so it opens the throttle when the choke is fully engaged. To do this,

turn the high idle knob down until all 4 throttle butterflies just cover up the forward hole completely – this is full closed for the butterflies. Now flip the carbs on their tops and stick a flat blade screwdriver in between the tines of the idler and bend the forward tab forward until the nub on the front tine just touches the bottom of the throttle arm.

Now screw the high-idle knob in until the butterflies half expose the front holes. This will be your setting for starting up and testing on the bike. By adjusting these tines, the throttle will open slightly when the choke is fully engaged. This keeps you from having to feather the throttle during cold starts. Be careful not to over-spread those

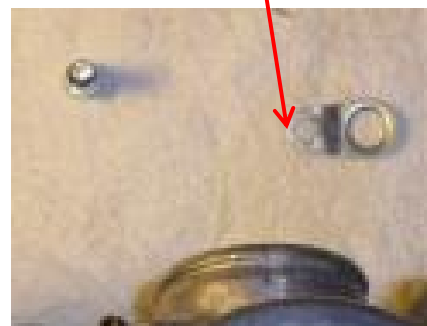
tines, as you basically have to break the bank apart to get to the idler to bend them back together – just get that nub touching

the underneath of the throttle actuator arm.



Showing this in “cut-away” with just carb #2 showing, so it’s easier to see the detail I’m talking about...

Also, remove the rear screw from carb #1's top-cap and slide the fuel "T" clip onto the "T" and screw it down with the removed screw. Hold the "T" as far forward as you can as you tighten the screw, to give you maximum space between the "T" and the rear rail – that way the rear rail won't get in the way when you're installing your fuel line.



If your carbs had the Spawn of Satan installed, and you want to keep it, just reconnect the fuel line to the T, the vacuum tube to the vacuum "tit" on the front of carb #2, and install the mechanism on top by removing 2 of the rear rail screws and reinstalling it. On a bank of CB1000 or CB1100 carbs, you'll have to do this as the SOS also acts as a fuel-splitter to go to carbs 1&2 and 3&4.

If you've got a post '80 set of carbs and you want to bypass the SOS, just don't reinstall it. All you have to do to complete the carbs is to cap off the vacuum "tit" on the front of carb #2 with a rubber cap.



Always use a good-quality in-line filter between your tank's petcock and the carbs, and replace it regularly. Also, drain your float



bowls if you're going to winter the bike, or leave it un-ridden for

more than a few weeks – the fuel in the bowls will turn to varnish otherwise. Finally after you drain the bowls, twist the throttle 3-4 times to get any residual gas out of the accelerator pump housing.

Now go and install your freshly cleaned carbs and go for a ride. Always change your oil regularly, and don't neglect your valve adjustments (every 4000 miles whether you need it or not!)

Bypassing the air cutoffs

Some folks don't want to spend the extra \$60 to get a set of air cutoff kits, and their existing ones are in sad shape. Well, fear not! You can bypass them. These little critters were an early answer to the EPA that allowed Honda engineers to run the bike lean at idle (actually lean across the board), but not create the annoying popping and backfiring on deceleration that a lean bike would exhibit.



To bypass them, get a piece of rubber inner-tube and a leather-punch. Punch out a piece the same diameter as the little O-ring under the air cutoff cover.

Place the rubber "plug" you just cut under the O-ring on the body. I use some pretty thick rubber, so it fits inside the O-ring and stays put. Some folks prefer thinner material and put it between the O-ring and the body of the carb – whatever



way, you want to block off the angled vacuum port coming from the inside of the carb throat. Now just reinstall everything; make sure to install the old air cutoff diaphragm – no matter its condition – along with the spring, since the nub on the diaphragm holds the internal carb circuit open. The final step is to turn your pilot screws **out** an additional ½ turn to richen the idle up, and you're ready to go! You may get some popping on decel but it'll be minimal (and as an added bonus, you're \$60 richer!).



Removing Bugged-up Pilot Screws

OK, you went and did it: You broke off the screw-tip of the pilot screws, and you can't get the thing out – whatyado? Well, I'll tell you what to do. You need to get out your 3/8" drill, some drill bits, a center-punch, and a #2 EZ-Out™.

Start with your center-punch, and carefully mark the very center of the pilot screw. You may need to take a flat file and file down what's left of the end of the pilot screw so you have a nice flat area to mark on. The more centered that mark is, the better this whole thing will go – trust me!



Take a 1/16" drill bit, and drill straight down on the pilot screw about ¼". A bit of electrical tape wrapped around the drill bit at the ¼" point will help you to not drill too far. This gets more important as we go bigger on the hole, though. The pilot screw is brass, so it drills easily – let the drill do the work, and don't force it.

Clean off the brass shavings. Now enlarge that hole with a 3/32" bit – as before, only about ¼" down. Again, clean off the brass shavings. Finally finish it off with a 1/8" bit – make certain you're



drilling absolutely vertical, or you'll end up drilling into the body of the carb, and that won't be good. ¼" to 5/16" is as deep as you want to go. No deeper or you'll be into the carb body. Give the carb a good washing with carb cleaner to clean all the brass shavings off – you don't want them getting stuck in the slow-speed jet – they're just the right size to plug

it up.

If the pilot screw is broken off because it was corroded into the body, it's a good idea to spray some PB-Blaster™ onto the top of the screw and let that soak in for a couple of

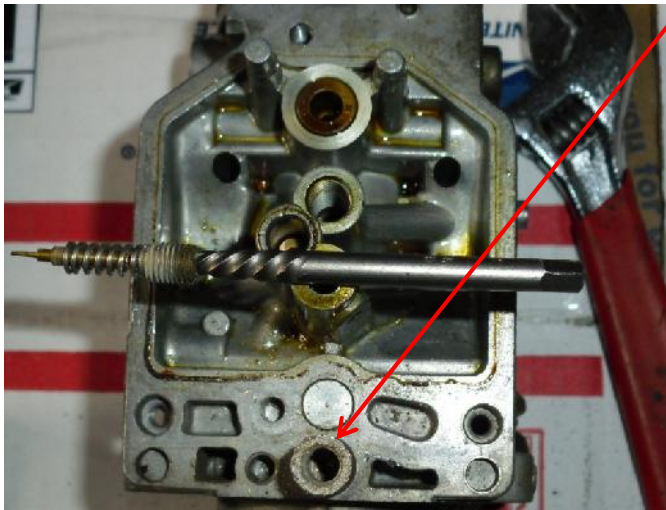
hours (you may need to respray 2-3 times to ensure enough has gotten in to loosen the corrosion).

Now take your #2 EZ-Out™ (7/64"), fit it into the hole you drilled, give it a couple of smacks with the end of your crescent wrench to get those edges cutting into the brass, and start to untwist the pilot screw. If the PB-Blaster™ did its job, it should break free easily and come right out. Worst case, you'll crack the boss that the pilot



screw screws into, and that can be fixed with J.B. Weld™ with no loss of performance to the pilot circuit.

Now that the screw is out, make sure you get the spring, washer, and O-ring out as detailed on Page 13 above. Install a new pilot screw with fresh O-ring, and you're golden. Easy Peasy!



Services offered

“FULL MEAL DEAL”

If after reading through this booklet, you feel this work is beyond you, or you just don't have the time or inclination, we would be happy to provide our rebuild services to you. We'll tear your carbs down to their individual parts, ultrasonically clean them, and rebuild with fresh parts (gaskets, float valves, O-rings, passage plugs, pilot screws, air cuts, accel pump, etc.). If the set has the vacuum-assist petcock installed on it, We bypass it so it doesn't become a source of problems (makes starting easier, too).

We use stainless steel Allen screws in place of the old Phillips hardware, and bench-sync them, then test and do a final sync on our bike. If your valves and compression are within tolerances, the carbs come ready to bolt on and run. Worst case - you might need to touch up the sync a bit to match your valve/compression settings, but it would be minor.

The work comes with a 90-day warranty against parts and labor.

Contact us for up-to-date pricing.

Turn-time is 2 weeks from when we receive your carbs on our doorstep.

“SOFTWARE-ONLY”

If all you need is the O-rings, we sell a full set:

- Qty 7 -010 Fuel rail O-rings (one spare)
- Qty 7 -007 Accel pump O-rings (one spare)
- Qty 5 -003 Pilot screw O-rings (one spare)
- Qty 5 -006 Float bowl drain screw O-rings (one spare)
- Qty 2 -901 Float bowl #2 accel pump O-ring (one spare)

**Price: \$5.00 USPS shipped anywhere within the US
Overseas shipping quoted separately**

“HARDWARE-ONLY”

If you need fasteners, we sell a full set:

- Qty 8 – 3mm x 0.5mm x 6mm – choke plates
- Qty 11 – 4mm x 0.7mm x 10mm – air cutoff & accel pump cover
- Qty 12 – 4mm x 0.7mm x 16mm – float bowls
- Qty 8 – 5mm x 0.8mm x 16mm – top caps
- Qty 8 – 5mm x 0.7mm x 12mm – top rail
- Qty 8 – 6mm x 1.0mm x 12mm – front rail
- Qty 23 – 4mm split washers
- Qty 16 – 5mm split washers
- Qty 8 – 6 mm split washers

**Price: \$20.00 USPS shipped anywhere within the US
Overseas shipping quoted separately**

We ship within 1 business day from when we receive your payment!

We give you easy ways to order:

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