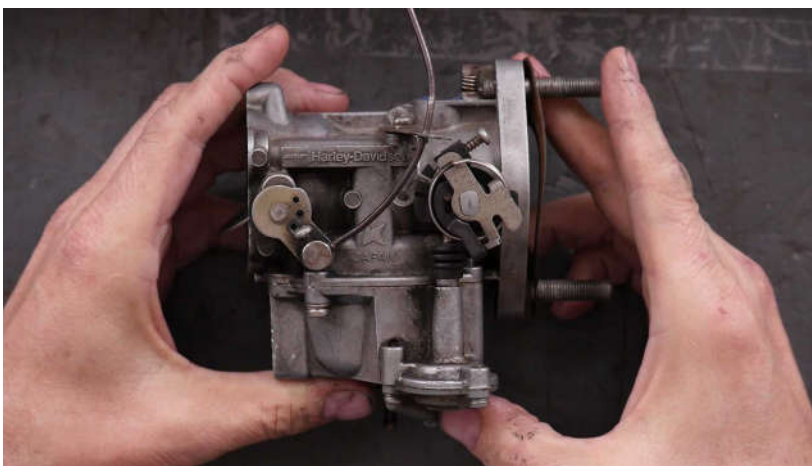


Keihin carburator repair #1

A 4-part video series guides you through the process. Part #1, nine tips and tricks.

The tips and tricks:

1. Replace the craptastic plastic fuel inlet with brass.
2. There are check-balls in the float bowl and accel pump cap.
3. Don't forget the rubber plug over the intermediate jet.
4. Choke headaches
 - a. Braze a loose choke lever to the shaft.
 - b. Put an 0-80 screw in the choke lever to keep it open.
 - c. Assemble to the choke cable with the screw pointing up.
5. Use silicone on the Welch plugs. Clean the idle circuit.



The Keihin butterfly carb was used on 1976 to 1987 Sportsters, but will fit earlier models (click for video).

6. Use a rebuild kit with Viton rubber.
7. Choke and adjustments
 - a. Use the factory choke cable, not a coat hanger.
 - b. Adjust accel pump volume.
 - c. Dial in idle speed and idle mixture screws.
8. Manifold headaches
 - a. Use support bracket on rubber-band style manifold.
 - b. Use S&S style manifold clamps.
 - c. O-rings come in Viton too.
 - d. Put manifold on by itself before mounting the carb.
 - e. Tighten manifold clamps before head and cylinder.
9. Use a Fram CA77 in the early Harley air filter.

Hi. I'm SportsterPaul. Today we're gonna rebuild a Keihin butterfly carburetor. I've got one of them here along with six others, we're gonna rebuild them all, get them going, show you the tricks. This is the Keihin butterfly carb. This isn't to be confused with the CV constant velocity carb. That was '88 and later. This one's about '76 to '87. Here's the CV carb. And you can see, I'll put them next to each other down here, it's bigger. The CV is a fantastic carb, no argument there, but it's bigger, it's taller. It's got a big dome on the top for the venturi to slide up and down. The problem with that is if you've got custom tanks, like I do on two of my Sportsters, the dome bangs in. Whereas this one you can see, let's try to put them equal. This one you could see, yeah, it's a lot lower. So if the gas tanks swoops down.... This one I've customized with putting the choke up here. I decided after ten years that's Mickey Mouse and I don't do that anymore. I'm gonna put a conventional choke.

But let's go through the tricks first. You're gonna wanna learn all the tricky things. I'll get that right up front. Then I'll take this one apart, clean it, rebuild them all, show you-- compare-- the accelerator pumps. This time I'm actually gonna put a tube on the outlet of the float bowl accelerator pump right here. And I'm gonna take that and I'm gonna put the tube on, here I'll do it now. Put the tube on, squirt, squirt, squirt, with the accelerator pump and see how much fluid, use water, I don't wanna kill myself.

So it's big project, we're gonna go through it all. Next, tips. Okay, tricks. First thing is they all leak, they leak through the fuel inlet fitting right here.

So you've got to drill that out, put in a solid brass fitting. I've done that with all seven of these, plus a couple more that are on bikes out in the garage. They crack up at the top. I'll put some pictures up so you can see. There's white ones, white plastic over brass, those crack. There's black plastic over brass, those crack. You drill it out, I think a size Q drill. I'll put the, I'll put the bottom third to show you, drill it out, tap it, little bit of Teflon tape on the fitting. Let's see, I gotta couple fittings here. Here's a couple fittings, so you can get a straight fitting. I prefer the right angles. You can get them long, you can get short, and then the fuel just comes between the jugs usually, or up under the carb and then into here. So that's trick number one.

Okay, trick number two. The float's accelerator pump. Here's the flow bowl. Here's the little cap that goes on it. There's a diaphragm that goes on it. The diaphragm's ribbed on one side, for your pleasure, smooth on the other. Make sure the rib goes down into the groove, like that.

There's a spring that goes against this metal cup on the diaphragm. And the cap comes and goes over the whole mess. There's two short screws that hold the cap to the float bowl, and a long screw that goes all the way through.

There's two O-rings, one goes in this pocket, two little tiny O-rings, one goes in that pocket. Be sure to put those O-rings in. But the big trick that everybody screws up, you'll see it, I'll assemble it, you'll see me do that. It's a little pump, it's an accelerator pump, a little diaphragm pump.

So it's got two valves, an inlet valve and an outlet valve. One's in the cap this little cap, and if the check valve is stuck with grunge or corrosion, the carb will never run right 'cause you won't have an accelerator pump. You'll never see it squirt when you give it a handful. You can hear the check ball, [rattling sound in the background], hear that? So, if that's not happening, back in the carb cleaner, back in the ultrasonic cleaner till you can hear it rattle. Same, there's a check valve in the float bowl. There, [rattling sound in the background], there, hear it? OK. If you don't have that, give up, get back in carb cleaner, get back in the ultrasonic cleaner till you can hear them rattle. So check valves, check number two.

Okay, trick number three. It's a better carb than the Bendix 'cause it's got an intermediate circuit. It's not quite as good as a CV carb but it's smaller, cheaper, all those things. But this intermediate circuit, let's see if I can find one. There's this little rubber plug, comes in the rebuild kits, should be in the carb when you take it apart. It goes right here. You know you screw, you screw in the intermediate jet. You screw in the velocity tube here, and the main jet. But after you do that, you've got to put this rubber cap on or the carb will never run right. It has to draw through the main jet into the intermediate. So that's trick, what are we up to, three? Trick number three.

All right, trick number four. The chokes, let's find one, ah, there's one I fixed. The choke, where it attaches to the shaft right here, let's put them down. You can see, you see this one's all brazed up. That's because they get loose.

Here, I'll hold the choke shut with my thumb and I'll... see that big motion? Not good, sloppy. You can just braze them up. That's trick number four. Trick number 4a, equally important, this little 8... 0-80 screw, it doesn't even screw into, these holes are for a ball detent, there's a little check ball. But putting a little 0-80 screw right there does, it means when the bike backfires, and they always do, the choke only closes that much. It doesn't slap it all the way shut, then you kick it 5,000 times wondering what's wrong, you've flooded it, the plug's get wet, push it. So that little 0-80 screw and one of these, in this particular detent hole, that limits the choke travel. In Florida here, I don't even use a choke at all. I just leave them on, or just leave them off, whatever you call it. So that little screw will save you a lot of grief.

Another little trick I guess four, 4, what are we up to, c? This screw, when the choke cable goes in, if you put the screw down you can't get the air filter on. You gotta tighten it with the screw pointing up, at least the after-market air filters that I've been using. That chrome back plate, when it slips on there's not enough clearance down here if the screw points down. That's trick 4, a, b, and c.

All right, trick five, we're up to five now. The idle jet circuit, well, it's not an idle jet, the idle circuit that's part of the intermediate jet comes up through here, ends up up here. There's a little needle that goes in right here. That's what you adjust to get the idle speed just right. So the idle circuit, they've got a, what we call it in the auto business, a Welsh plug, like they use on radiators plugs or what do you call it? Water jacket plugs in a V8 Chevy,

just a little cup that presses in. They leak and then your idle's never right because there's air leaking in there. Some guys take a little silicone, I'll have to clean this silicone out 'cause it's old and grungy. Some guys put a little dab of silicone there just to make sure no air's leaking. Same thing, you can put some pipe dope or Teflon tape on the needle itself to make sure air is not leaking. The important thing is to get it clean. Here's one that some guy had a cut-apart penny. Literally. He ground down a penny and stuck in there and then glommed stuff over it. Probably not the smart thing to do, but you can see the construction. There's four little holes drilled in this slot that feed gas as you crack the throttle open off of idle. That's gotta be smooth. You can see from the underside, we'll flip it over here. One hole for the idle jet itself, the needle, then the four holes.

So where's the main intermediate come from the bottom, the idle circuit goes all the way up through these passages, goes up here, goes across, goes here, and then you adjust the screw and the idle falls from the top, which kinda makes sense, you don't have a lot of velocity. That's the problem with the butterfly carb compared to the constant velocity carb. So that's trick number five. Clean the daylight's out of it, make sure it's really clean, spray carb cleaner in there. I've got an ultrasonic cleaner I'll show when we tear this one down and that does a fantastic job. If it's missing one, of course you're gonna have to fix it and put it back together. And I don't know, I'm of a mixed mind, is it better to have it missing so you can really get down there and make sure it's immaculately clean. Any junk in there

could cause you all kinds of grief, a little piece of particle that falls into one of the holes. So then sometimes when you roll it on, it stumbles, other times it doesn't. So I guess what, we're up to trick five, that's trick five.

All right, trick number six. The rebuild kit, you want a rebuild kit that uses Viton rubber, V-I-T-O-N. It's a particular kind of rubber that doesn't swell. This new gas has got all kinds of crap in it, alcohol, you name it, additives, and that swells it. And some of the problems you get with old gaskets made originally in the '70s, once you pull the flow bowl, maybe you're gonna change jets, get the bike tweaked in, the O-ring that seals the flow bowl pops, and 'cause it's swollen from alcohol in the gas and then you can't get it back on or you pinch it and it leaks and it's misery and you don't need that. With a Viton, this is a Custom Chrome, this is one I got on eBay. The add showed the little bullet points and one of them was Viton. This might be \$11.00 because it was pre-Viton, I don't know if all of Custom Chrome's are Viton or not, we'll find out the hard way. So that's trick, what are we up to? Six, all right.

Okay, trick seven. See how this choke is sloppy? That's why my little chopper-style thing, I figured oh, just take a coat hanger or piece of welding rod and do that. That's pretty good because just, it's so Kludgey it gives it a little resistance. But what really works is the old factory choke rod and the steel thing and the wire 'cause that one, when the bike backfires it resists slapping the choke shut. So trick seven, I guess we're up to, aren't we? I don't know, anyway tricks for days.

All right, that's another trick, what other set up tricks? Right here, this is an accelerator pump volume limit. So you screw this screw in and it, and as you do the throttle, let's see if I can do it here, like that, it limits how far forward the pump goes. This, this is the one that came off the '79. This was on for a couple months and already it's screwed up. The accelerator pump doesn't work, I mean oh, there, finally it's starting to go down. I don't know if it's gummed up. When we take this one apart I'll show how to clean them, a lot of the tools you need, we'll get into that, and you can see what's going on with this screwed up one. But get the choke right, get the accelerator pump, this is the idle mixture, rich or lean. You usually want it to make the bike idle as fast as it can, then maybe a quarter turn open, unscrewed, untighty. This is the idle speed right here. So this is the one you turn to get the idle down, get under the advanced... in the bike, the ignition advances then it idles really fast. You gotta get under that. And then you can use this to get it down, then you can mess with the mixture, that's why I always drive the bike for a few days with no air cleaner on, so you can reach your hand in here at a stop light and adjust these just the way you need. So that's trick seven.

Okay, trick eight, not really a carburetor, it's the manifold. There are two types after '79, they went to this style manifold, before that they had the O-ring. This type takes a whole rubber band that goes around this and the carburetor. Oh, we don't have any cylinder heads to show you, duh. So the tip is if you've got the rubber band style, you've got to have that ugly little bracket that supports the air cleaner and keeps

the carb from flopping. No matter how tight you make the clamps for these, you're still risking tearing these O-rings. Once you get an air leak, you'll burn a piston, like I did back 20 years ago, and you'll get to rebuild your entire motor because the aluminum goes everywhere in the oil system and ruins everything. So tip eight, if you got the rubber-band style, which some guys prefer, be sure to have that little ugly bracket that goes down to the valve lifter block. And in that strap, that's what supports the whole carb from flopping up and down. Put these down here you can see the difference between an O-ring style. You know the O-ring's got a little groove here and it's just an O-ring that snaps in there. Now if you do have the O-ring style, the tip there is here's the factory strap, it's not too bad, it's simple. Let me tighten it with a Phillips head, number two Phillips head screwdriver. It does okay but if you wanna be a chopper guy and not have that strap, have some cool little carb hopefully with a filter that's not too heavy what you can do is get S&S style, here's a couple. I know S&S makes them, I think a lot of after-market people make them now but S&S was the first to figure it out. You can see the difference, I mean for crying out loud, look at this.

You can put a socket wrench or a nut driver on this thing and really reef these tight. If you reef them tight enough then you might get away, if you have an O-ring style manifold, you might get away without using the strap that supports the carb and air filter from flopping. What else? There was something else about strapping stuff. It'll come to me. I'll mention it later. Maybe I'll put it in a little bottom third description.

So what are we up to, eight, nine? A whole bunch of tricks. It's really a manifold thing but it keeps you from blowing up your bike. Air leaks, I assume you know the air leak discovery trick where you take some carb cleaner and spray it, make careful it's not spraying into the air filter 'cause the bike'll speed up or slow down because of that. But you spray it around here and around here and if anything changes, it means you got a leak there, a vacuum leak and it will burn a piston so get in there and make sure that's okay. If you got an unknown bike or a bike you haven't messed with for years, might be worth it just to yank it off. Side tip, what are we, a, b, c? Never put the carb and manifold on as a unit, you know, like this. It's, you wanna just put the manifold on separate. You can get your finger in, feel that the O-ring isn't pinched, make sure it's lined up - oh, now I remember the other tip. When you put the heads on, you don't tighten the heads until you put the manifold on, hopefully with these big beautiful S&S clamps, and that rotates them to the perfect 45-degree angle that matches the manifold, then you tighten the head bolts. When, and same thing with the cylinder base nuts, you may get everything so, 'cause it's sloppy, it's old-school Harley, so then you let this control the rotation of the cylinder and the heads within the limits, you know you don't get a lot of motion but at least it'll get you closer so that, and you'll be able to see, you'll rock it back and forth and when everything's flushed up tighten the heads, tighten the cylinder base nuts. Then you can either take this off and put the O-rings in or, you know, go and do final assembly. One of the many little miseries of assembling a Sportster.

Okay, tip nine, the early model Harley air filter, carb goes here, this is the little pocket, why you have to have that choke cable screw pointed up instead of down otherwise it interferes here. There's a vent, there's some other stuff, not a big deal. The trick, if I can open it up. You don't wanna use these wino fiber... they're more like a grate than a filter. You can get a Fram CA77 air filter, meant for go-karts or ATVs or gosh knows what, and it squeezes on. It does get a little dented here, a little pushed out, but that doesn't matter 'cause everything goes on, it's just wide enough so that it actually seals on the inside, a good thing. And then you have a decent air filter instead of some oil-soaked copper strainer or some, somethings that look more like a grate than a paper air filter. You can see this one came off the '79, that carb had on, you see how much dirt is on the filter. So I got the new one ready to go when we get one of the carbs, one out of seven's gotta start running right, we'll get it on the '79 and hopefully a happy ending. So that's tip nine.

Now we're gonna go and tear into, tear into disassembly. This'll be the end of this video, don't wanna make them all too long. We'll do the next video will be disassembly of this carb off the '79, figuring out what went wrong with the accelerator pump. Part of it, we're gonna measure all these, I won't bore you with that but we'll see that all the accelerator pumps work, we'll play around. And then we'll show you the tools you need, get it apart, get it clean, and then probably with time we'll probably do subsequent videos about the particular little assembly tricks.

I'm not sure, we'll see how that works out.
So nine tricks, nine tips, hopefully that'll
get you right up front, some things to look
out for in your Keihin butterfly carb rebuild.
Next, disassembly and cleaning.
