

KEIHIN

Three-Barrel Revisited

In our June issue, we looked at some of the components and quirks of the Honda CVCC system. This month we'd like to follow up with a return visit to the Keihin 3-barrel carburetor that feeds the CVCC system. When we talked to Honda technicians in preparation for the CVCC article, we found that there was a lot to know about the Keihin in addition to CVCC components. It just wouldn't fit in one article.

This article will point out some tips and hints about possible problem areas, general adjustment procedures, and things to look for if it still doesn't run just right when you're done. Also note that California specification cars require a special MAS tool to get you around an anti-tamper bracket.

General Information

Here are some general tips and info that may help you out.

- **Doing an overhaul? Take some extra time getting the Keihin squeaky clean.** The Keihin has some very tiny drillings that just won't tolerate dirt. If you think this sounds simple, just consider that a speck of dirt too small to see with the naked eye can haunt you later.
- **Watch those rebuild kits.** A good quality overhaul kit is very important. Some cheapie kits may look like

a bargain, but be careful. Poorly designed or inferior quality needle-valve seats just aren't worth the savings. If you're doing a complete overhaul and choose Honda OE gasket kits, one kit won't do the whole job. The Honda On-Car kits are nice because they include specific information about the carb in-hand. But you'll also need to buy a separate gasket set to get all the gaskets you need, and maybe even an accelerator pump kit.

- **There are three major adjustments on these carbs.** One, the float level adjustment, must be done correctly. Float levels "program" the entire operating range of the Keihin. Mixture adjustment is also very sensitive, and must be done correctly. The last adjustment, the Lambda screw adjustment for the auxiliary throat of the carburetor, is the one adjustment you *don't* do. It's set at the factory, and must not be tampered with.
- **Check those floats.** Solid floats can get fuel soaked and heavy after awhile. Some two piece plastic floats came apart on certain models, and caused flooding. Some of the hollow floats sprung a leak and sank like a rock. Since float levels are so critical, a float that won't is bad news.
- **Always replace the rubber o-rings** between the carburetor base and the insulator below it.
- **There was some disagreement among Honda technicians about whether or not you could adjust the mixture adjustment with a lean drop procedure.** The

majority said that lean drop might get you close, but that propane enrichment was a much more accurate method, and urged that it always be used to fine tune the finished overhaul.

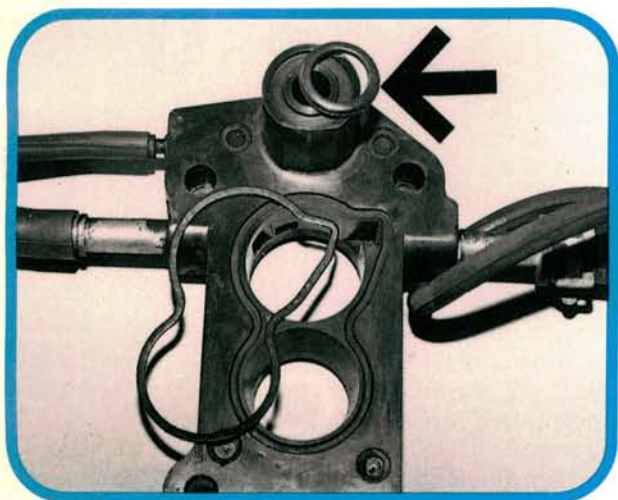
• **Propane enrichment can also be used on pre-catalyst cars for more accurate mixture adjustment. That way you don't need a CO machine to get things right.**

• **The Keihin has two float level adjustments.** One adjusts the float level for the carburetor main stages. The other sets the level for the auxiliary throat. Early on, Honda supplied special tools to set float levels on non-sight glass carbs. It was a messy and tedious affair. We'll show you an alternate method for setting floats on carbs without sight glasses; one that's faster and neater. Please refer to the chart at right when using the method outlined in our photo sequence.

—By Ralph Birnbaum

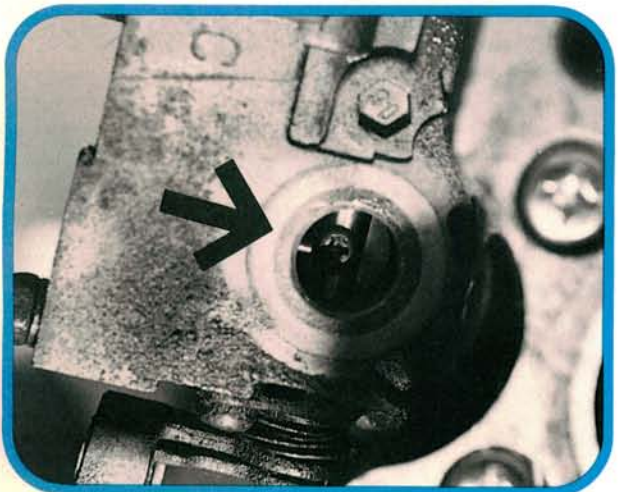
HONDA ALTERNATE FLOAT ADJUSTMENT
SPECIFICATIONS FOR
NON-SIGHT GLASS CARBURETORS

MODEL	YEAR	ENGINE	PRIMARY TURN	AUX. TURN
CIVIC	1975	1500	3/4	3/4
	1976/77	1500	5/8	5/8
	1978/79	1500	3/4	3/4
	1980	1300 1500	7/8	7/8
	1981	1300 1500	3/4	3/4
ACCORD and PRELUDE	1976/77	1600	5/8	5/8
	1978	1600	3/4	3/4
	1979/ 80/81	1800	3/4	3/4



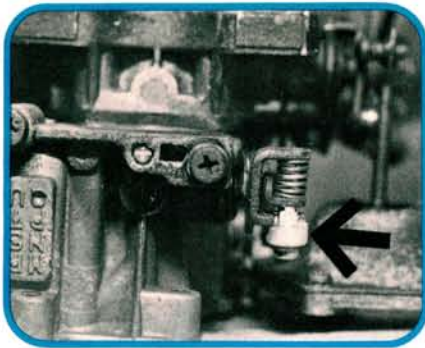
1

These rubber sealing rings should always be replaced if the carburetor is removed. The small ring at the top seals the insulator base against the auxiliary throat of the carburetor. It likes to stick to the carb. Then you install a new seal in the base. Two seals are not better than one!



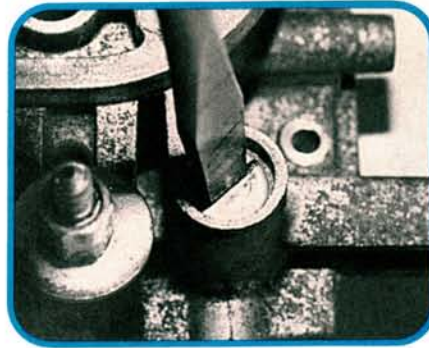
2

That o-ring seats around the throat of the auxiliary "barrel" of the carburetor. This tiny throat is the one that feeds fuel to the precombustion chambers. It's also the throat that's synchronized to the throttle opening by that never-ever-touch-it Lambda screw.



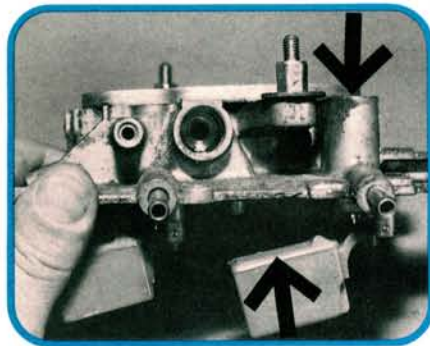
3

In our first article on the Keihin over a year ago, we cautioned you not to touch the Lambda screw. We're going to say it again, for those of you who missed the first article. This setting is made at the factory with special equipment you probably don't have. Tamper here at your own risk.



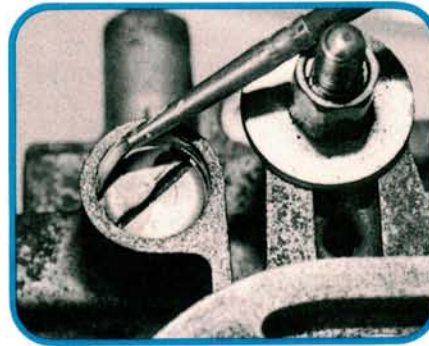
4

Honda used tools to set float levels on cars with no sight glasses, including a plexiglas viewer and a catch tray for all the gas you spilled. There's another, neater way to do this. Warm the engine and remove the air cleaner. Start turning the float adjusting screw counter-clockwise, $\frac{1}{8}$ turn at a time.



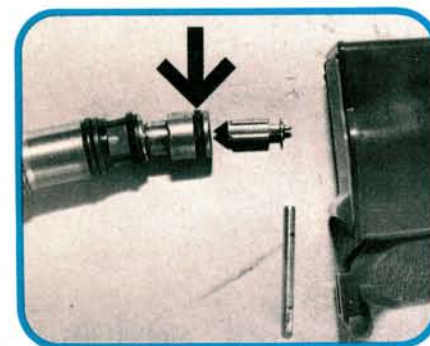
5

Turning this screw turns the needle seat, changing its height in the bowl cover. As you screw it counter-clockwise, the float level rises. Keep doing this in steps. Wait 15 or 20 seconds between each turn of the screw. Repeat this process until the car stalls.



6

When the engine dies, you're at the starting point for the float adjustment. Look at our chart. From the starting point, turn the screw clockwise as far as shown in our chart. The float is now set. Paint the screws. On cars with sight glasses, just view the float level through the glass.



7

The Keihin's needle and seat is just a bit different from your average bear. The adjusting collar at the left screws up and down in the bowl cover to raise and lower the needle seat. The o-ring (arrow) seals the seat inside a carefully machined bore in the bowl cover.



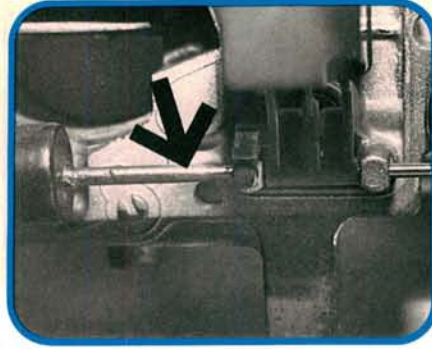
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It's a good idea during a rebuild to take a small, soft brush to the inside of that bore before installing a new seal. You don't want dirt or slight corrosion damaging that sealing ring on the needle seat. Lube the new o-ring before you install it.



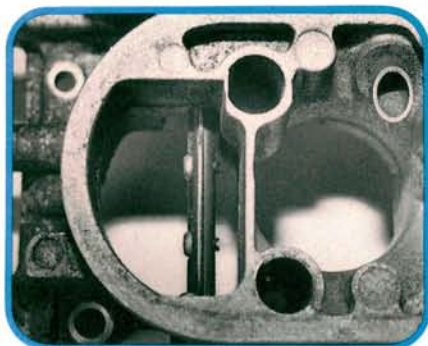
9

Occasionally, someone will overadjust things just a teeny bit. For whatever reason, if someone screws the needle valve seat down too far, the o-ring will pop through the opening on the bowl cover bore. Then, when they try to back it off, the o-ring catches and is torn and ruined in the process.



10

We intentionally used the wrong punch in this photo so you'll know what NOT to use. It's too big and will spread or maybe break the float pivot legs. Use a punch slightly smaller than the float pins to drive them out. When you reinstall the pins, they should be snug in the bore so they can't move.



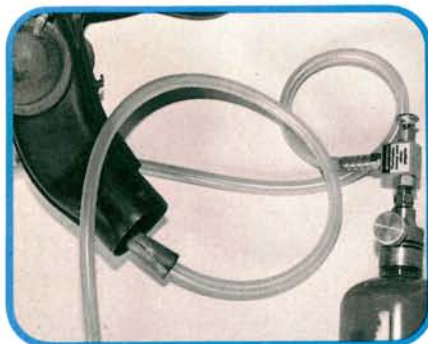
11

Mixture adjustment using propane enrichment should only be done on a fully warm engine. Run the engine until the cooling fan cycles twice. This ensures that the choke blade is open all the way. A partially closed choke blade will enrich the mixture and give you an improper final adjustment.



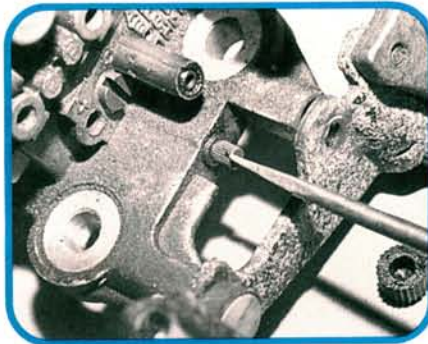
12

Make sure your tachometer is accurate down to 20 RPM or better. A digital tach is probably best for this job. Forget using the dashboard tach altogether. Set the warm, base idle to the middle of the idle speed specification on the underhood sticker. Pretty close isn't close enough.



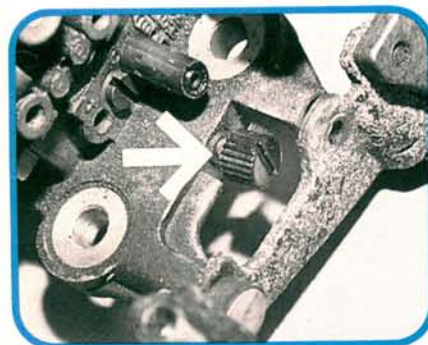
13

Maybe some of you have done propane enrichment on domestic cars using a tool like this one from Snap-on. Insert the tube about four inches into the air cleaner snorkle. Press the dead-man button and very slowly open the valve on the enrichment tool. Engine RPM will peak and then drop off.



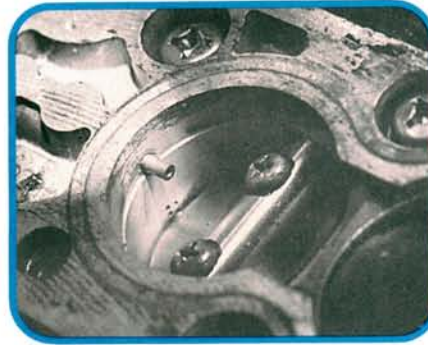
14

Note the highest RPM reading and compare it to the underhood specs. If peak RPM readings are lower than specs, the mixture is too lean. If they're higher than specified, the mixture is too rich. Turn the MAS screw in tiny steps. Rev the engine to normalize it between tests and adjustments.



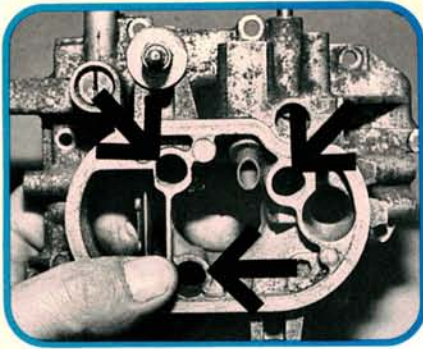
15

If you haven't done a complete overhaul, but are only fine tuning the mixture adjustment, you may be able to adjust the carburetor mixture without removing the limiter cap. Sometimes a fraction of a turn on the screw is enough to correct the mixture adjustment.



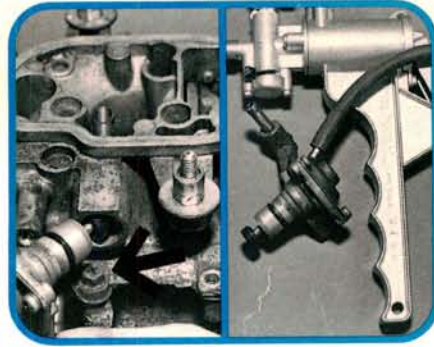
16

Sometimes, somebody will try to cover up other problems by reefing on the idle screw. Cranking up the idle doesn't cure anything. In fact, it makes more problems, throwing the relationship between the position of the closed throttle plate and these drillings out of whack.



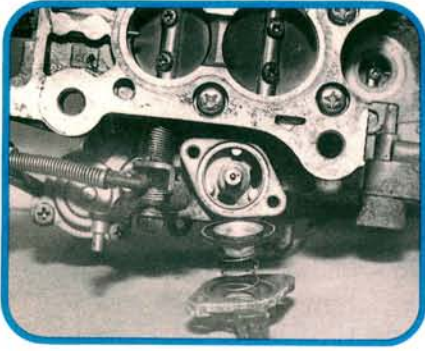
17

It shouldn't take a stick of dynamite to get the bowl cover off. If you think you've removed all the screws, but the cover still doesn't budge, look closer. There are more screws hiding down in these holes. There's also a bowl cover screw that's easy to miss beneath the bowl vent.



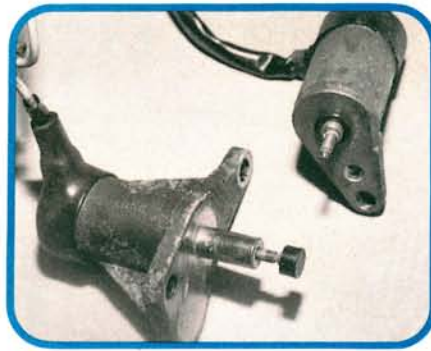
18

You ought to remove the bowl vent and check it anyhow. Once it's out of the way, that last bowl cover screw is easy. Hook your vacuum pump to the bowl vent while it's out and check the diaphragm for leaks. Also check for source vacuum with the engine at idle.



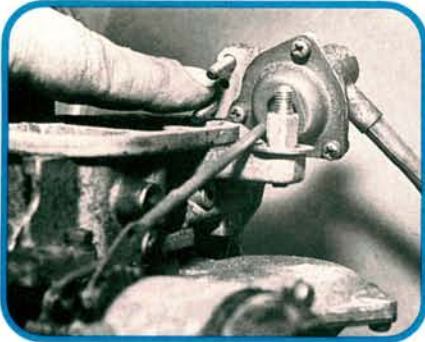
19

The power valve on the Keihin works like many others. Manifold vacuum at idle pulls on the diaphragm and the valve is off. Open the throttle, manifold vacuum disappears, and the spring overrides the diaphragm, opening the valve. There shouldn't be any fuel in the cover or the vacuum line.



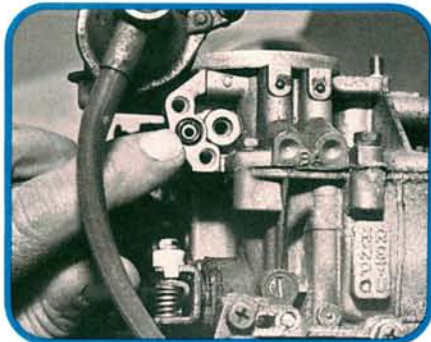
20

If the primary fuel cut-off solenoid (left) doesn't open, you'll have no-start or stalling. A dead primary slow mixture cut-off (right) can cause a rough idle. If either valve leaks, the engine will run-on at shut down. Check for voltage to the valves, solenoid operation, and valve sealing.



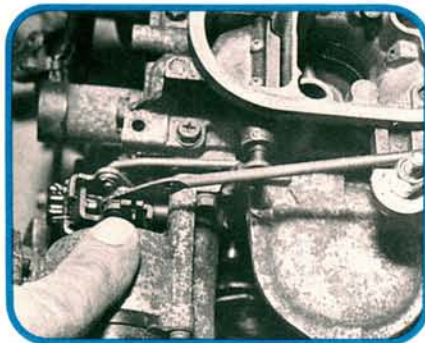
21

If the engine runs well warm, but still has the cold staggers, check the choke opener diaphragm and linkage adjustment. Remove the diaphragm and plug this hole with your finger. Then you can hook up the vacuum pump. If vacuum leaks off, the diaphragm is history.



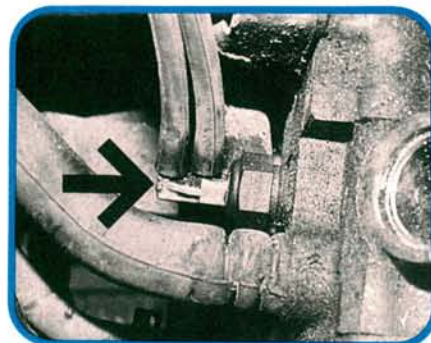
22

This carburetor port is the vacuum source for the choke opener. Be careful not to forget the o-ring. The rubber hose on the diaphragm cover is a vacuum bleed that is closed by the thermo valve as the engine warms. This slows choke opening during warm ups.



23

The tab on the choke linkage should not be seated on its stop when the engine is cold. If it is, either the thermo valve is stuck closed, or there's a restriction between the opener and the vent on the plastic emission box cover. You should be able to pull the hose and blow through it on a cold engine.



24

If the tab on the choke opener linkage is sitting on its stop when the engine's cold, that means that full vacuum is being applied to the opener diaphragm too soon. For smooth warm ups, the thermo valve should be open on a cold engine and close gradually as the engine warms.