



Tech Article

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Enriching Needle Jet setting for Constant Velocity Carburetors By Bruce Kauffman (Voyager Ninja)

If your bike seems a bit vague as you start to open the throttle or worse yet stumbles a bit, this fix is for you.

While some might want to try this with the carburetors on the bike, I strongly advise against it as reassembly can get a bit tricky and damage can easily result from impatience.

I have been riding Kawasaki sport bikes for over thirty years, building and tuning all the while. I have vast experience in maintaining and tuning Kawasaki motorcycles, yet keep in mind this info is coming from a guy who has lived all his life in the Golden State where we always get a "special" lean needle jet in our carburetors thanks to the California Air Resource Board (CARB). Those of you with the G needle taper (California has the leaner H taper) might not have the same issue which I explain how to fix below.

Back in the 70's, carburetors could be easily adjusted to produce a very smooth power band as the different circuits of the carb were transitioned. Two of the circuits which typically needed adjusting were the pilot jets for a good idle and the needle jet to strengthen the just off-idle power delivery.

The AVA tech tips already has a great article on accessing the plugged pilot jet screw, this write up discusses how to enrich the needle jet.

In the early days before CARB, needle jets had five adjustment slots for a clip, so one simply moved the clip up or down on the needle to make this circuit richer or leaner. To keep folks from fiddling with the extremely lean settings which hindered performance yet 'improved air quality', the needle jet became un-adjustable and is what now lives in our Voyagers.

Us tuners often found the old needle jet adjustments to be too large of a jump, leaving us wanting 'half-adjustments' for finer tuning. We found a thin 3mm washer fit nicely under the clip to create these smaller increments giving us the desired half steps of adjustment. This approach is how to enrich the fixed needle in the 80's CV carb.

The needle jet lives in the center of the vacuum piston which is located just under the top most cover of the carb. Four screws remove the cover to expose the rubber diaphragm, take care of the spring which holds the piston in the closed position.



Simply lift out the piston, the needle jet will come with it. The photo above shows the items in the order of assembly.

Inspect the vacuum piston rubber diaphragm which must be in A-1 condition or the assembly will need to be replaced at the cost of \$125 each, Ouch!

This thin rubber thingy is what actually opens the throat of the carb, not the throttle cable like in the old days. Air pressure pushes on the rubber when the butterfly plates are opened by the throttle, raising the slide to increase air flow, which pull in more gas.

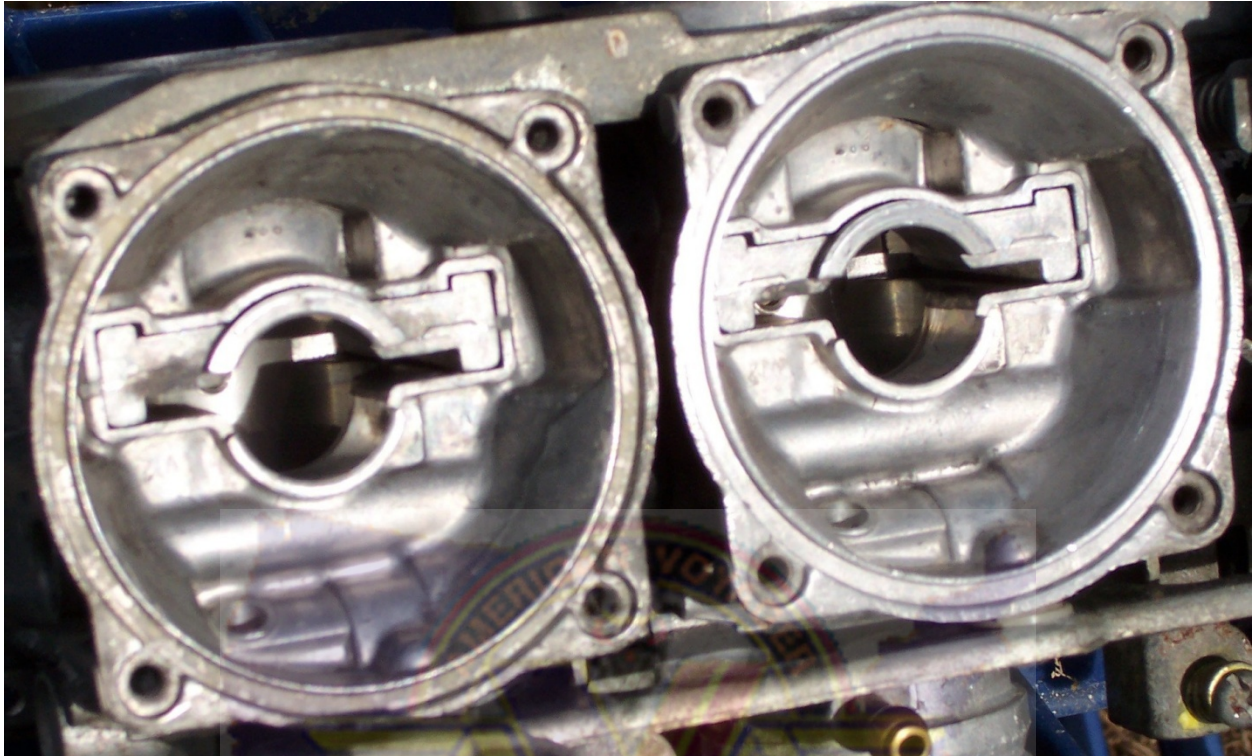
If the rubber diaphragm has any tears, it can dramatically affect performance! No, do not try glue to fix them.....

Push the needle jet and plastic retainer out of the vacuum piston. Simply put the needle through the washer, drop the needle back into the piston, and place the plastic retainer on the needle making sure not to block the vent port in the piston with a leg of the retainer.



Make sure the retainer is fully seated by pushing down, they sometimes hang up a tad which allows the needle to move which ain't a good thing....

Clean the groove in the top of the carb where the lip of the diaphragm seals. The photo shows the as found condition on the left, the cleaned version on the right.



This next part is where things get difficult when attempting this while blind if the carbs are on the bike.

Apply a very light coat of grease to the lip of the rubber diaphragm and drop the assembly into the carb with the vent port facing toward the output side (motor) making sure the needle drops into the main jet feed hole.

Once in place, make sure the rubber diaphragm is resting in the groove, place the spring over the needle retainer, and place the cap onto the carb CAREFULLY so as not to unseat the rubber lip. If you pinch the lip, it will tear, go get \$125 for a new one....

Walla! The lean CV carb has just been modified so as to allow more fuel in just as the slide starts to raise and the weakness or stumble will be gone, so long as you do not have any other issues....

Ride safe

Thank You again to Bruce Kaufman for this technical article. You can find more at the American Voyager Association website (www.amervoyassoc.org)- your headquarters for Kawasaki Voyagers!

