The BST-40 Bible

-Well, I sit here once again with obviously nothing better to do than spend hours writing another maintenance post for a bunch of guys I don□t know, never met, and probably never will. All in hope of getting some groupies and reaching the mythical, world renown, god-like status of Creeper. Some may think I'm crazy, some may think I set the bar to high, some may wonder what the hell I□m talking about, but to all of you who may doubt, all I have to say is..... 

-so once again, here we go !!!!! grab your beer, your bike, some tools, and let's have some fun!!!!

-couple things before we begin;

1- if your carb is not out of your bike yet, don□t go any farther until it is. if you don□t know how to do that, refer to the carb removal section of THIS (it might also help explain the groupies and obsession with Creeper thing) 

2- once again, if you are scared to do this after reading and studying all the info available PLEASE STOP NOW!!! I don□t not want to be responsible for your carb because you rushed, didn't listen, didn't fully understand something, or didn't bother to ask a question. the process is pretty easy to follow, if you got the carb out of the bike, we should be fine.

3- you need a clean, dirt free, environment to perform this job. it is also a good idea to have good ventilation to remove fumes. you will be using cleaning agents on the carb. combine the fumes with the beer we are going to drink and you may start seeing things!

-OK, here we go!!!

-I□m going to assume that you have one of these.....

BST-40 CLEANING

TOOL LIST

- #4 Allen Head
- Larger, flat head screwdriver
- long, thin, flat head screwdriver
- cleaning towel
- Q-tips
- carburator cleaner

-the first thing your going to want to do is get out your first beer. it is very important that this procedure be undertaken while under the influence of beer. that way when you mess up and

your bike runs like crap, you can blame it on the beer..... -just kidding, remember this is easy.

-the first thing you are going to do is remove the top of the carb. this will grant you access to the slide and needle. the carb comes stock with some phillips head screws. I highly recommend that you replace these with a higher grade, allen head. the screws can and will strip out. don□t worry if they do or already have though, grab them with a pair of vice grips and out they come.

-in this pic, you can see I have already replaced these with the allen heads. either way, remove these 2 bolts....

-once those 2 bolts are out, carefully lift up on the top of the carb. be careful not to let the spring get away from ya.

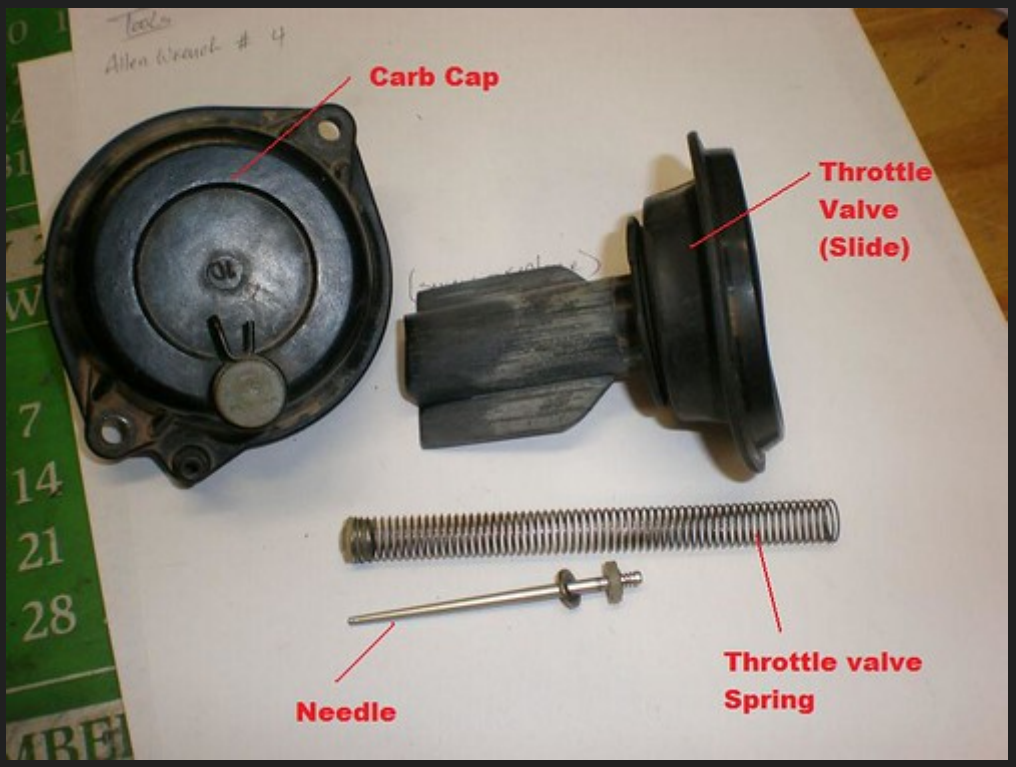
-remove the cap and spring from the carb. you will now be able to see the diaphragm on top of the slide. this is the reason they call this carb a "CV" carb. this carb lifts its slide by a vacuum. it is not directly connected to the throttle. *(if you look down into the slide, you will see the top of the needle and the 2 holes that are used to transfer the high/low pressure back and forth, this is what lifts the slide. one of the mods done later in this post involves increasing the size of these 2 holes to allow the transfer to happen quicker, there by increasing throttle response. it is often referred to as "drilling the slide".)*

-pull up on the diaphragm to remove the slide from the carb.

-once the slide is removed, remove the needle by turning the slide to an angle.

- make sure to set the needle in a safe place. I usually have a plastic case or baggie that I put all of the small pieces of my carb into. this way, nothing gets lost...

- so now you should have something that looks like this sitting in your work area.

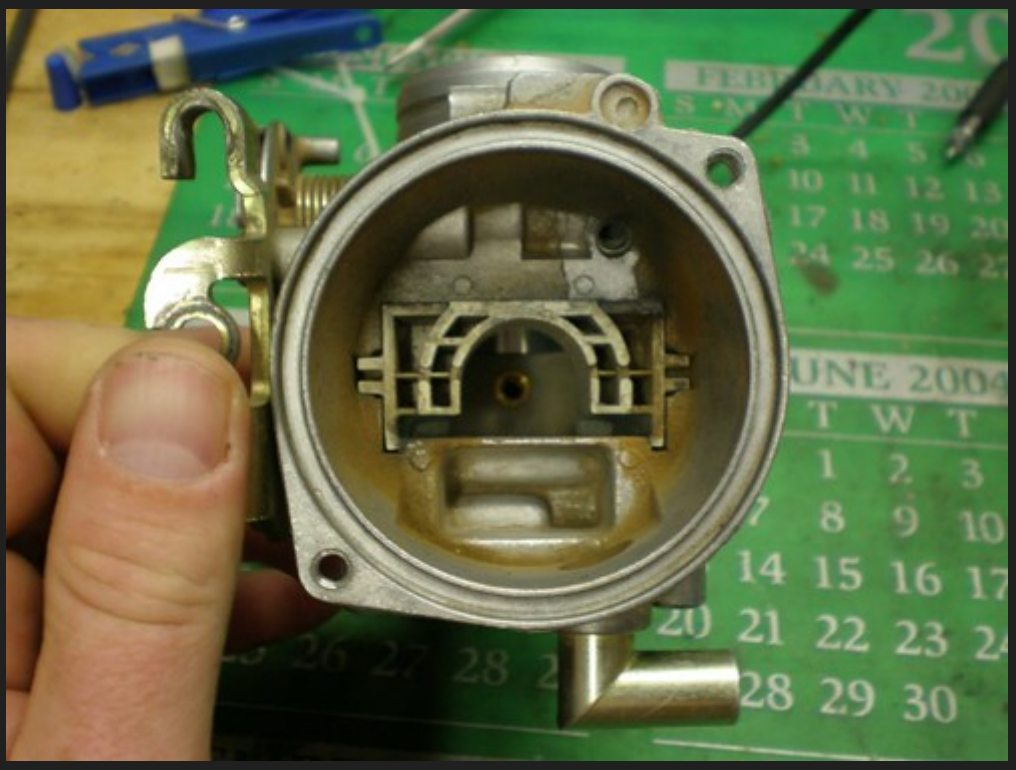


congratulations, I told you this was going to be easy. lets have a beer and celebrate !!!!

-now that you have the top end off the carb, there are a few things to inspect.

1-Inspect the top of carb. chances are if you have never pulled your carb, or do lots of off-

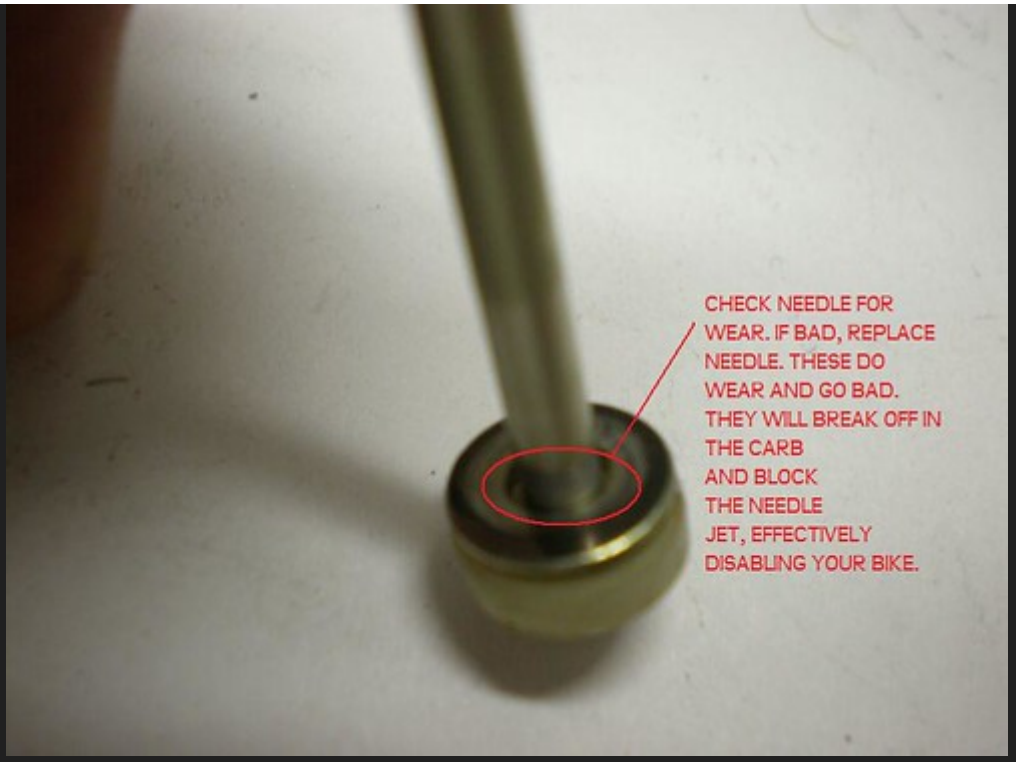
road riding, the top of your carb is full of dirt! don□t freak out, this happens. it is also the major reason you need to be cleaning your carb often. As usual though, our Buddy Creeper has already solved this problem. I would HIGHLY RECOMEND that everyone reads THIS, and follow his instructions. if you do you will eliminate many of the issues that this carb can develop over time. this is what my carb looked like. I clean it every oil change and ride in extremely dusty conditions. if yours looks worse that this, you need to clean it way more often....



2- check that your cap-sealing surface is flat. (there have been some people who have found that their cap became warped due to the stupid 2 bolt design. this allowed even more dirt to enter the carb and started causing problems.) to check if it is flat, find any level straight surface (small piece of glass is the best) and check. you can also use a straight edge to check for flatness as well. If you find your cap is warped, sorry but ya gotta buy a new one....

3- check the diaphragm and slide for any wear or damage. unroll the diaphragm and look at the inside and out, check the seal edge for tears, cracks, or anything else that doesn't look good. check the face of the slide for wear and gouging. once again, as a result of venting to atmosphere without filters, the slide takes a beating from the dirt that gets into the top of the carb. a small amount of wear is to be expected, but serious gouges or slots in the slide are a sign of wear and you need to replace the slide.

4- check the needle for wear. believe it or not, these needles have been known, due to vibration, to wear themselves to the point of breaking. when this happens the needle falls into the needle jet and plugs all the fuel flow. this basically disables your bike. so make sure you check. sorry for the bad picture but once you see the second one of a damaged needle you will understand.



-an extremely worn needle that is close to failure...

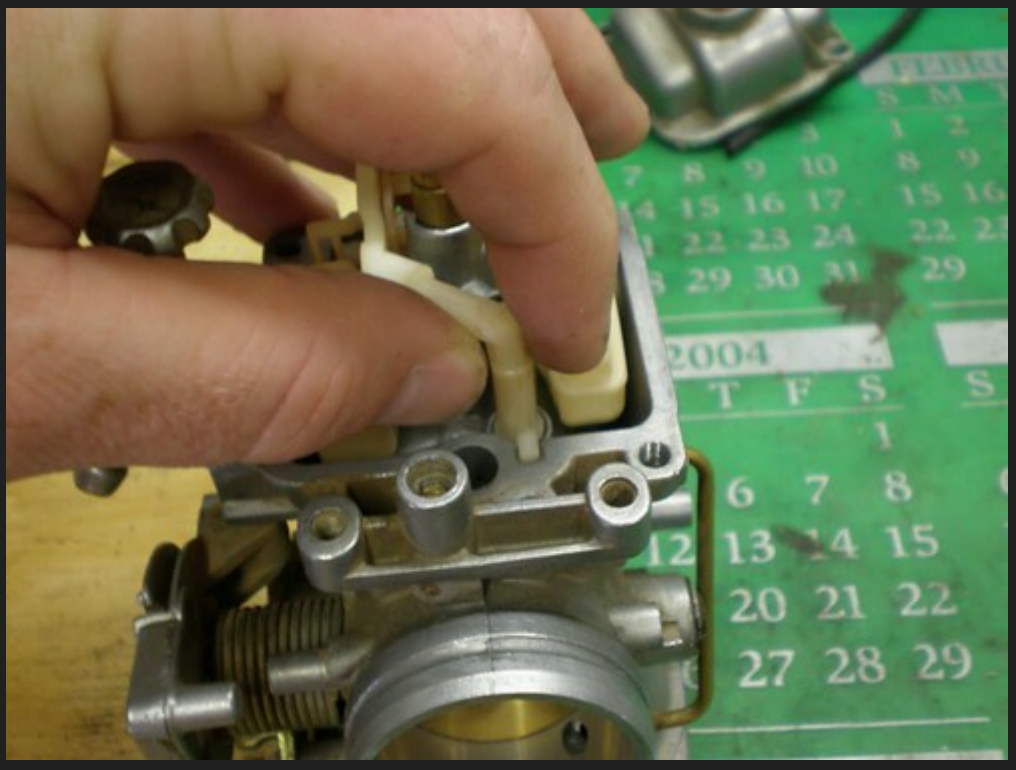
-OK, so far so good. if you are still with me I think we are going to make it. you should be done with your last beer by know, so it would be a good time to grab another....

-now we move onto the bottom of the carb and removal of the float bowl. this is where we really get to the heart of the carb and gain access to the jets and the float. the first thing you need to do is remove the 2 allen head screws.

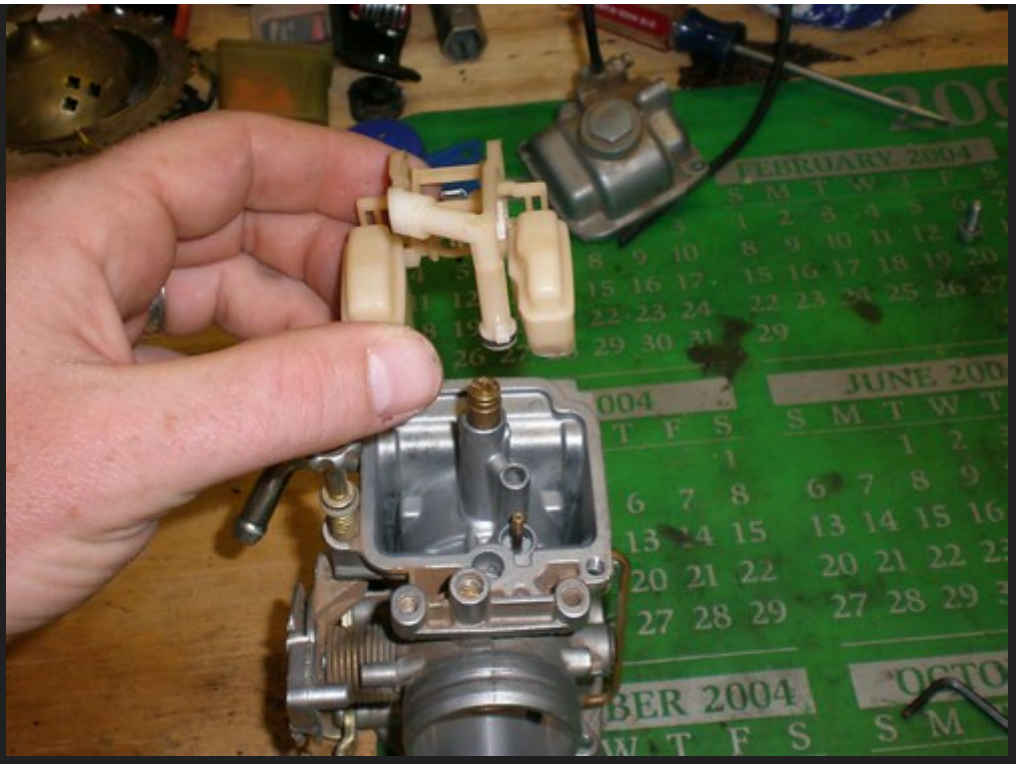
- once those 2 bolts are removed you can lift up on the float bowl and expose the floats and main jet.

-set the float bowl aside and take a look inside the carb. you should be able to see just about everything now. take the time to locate the float needle before proceeding to the next step.

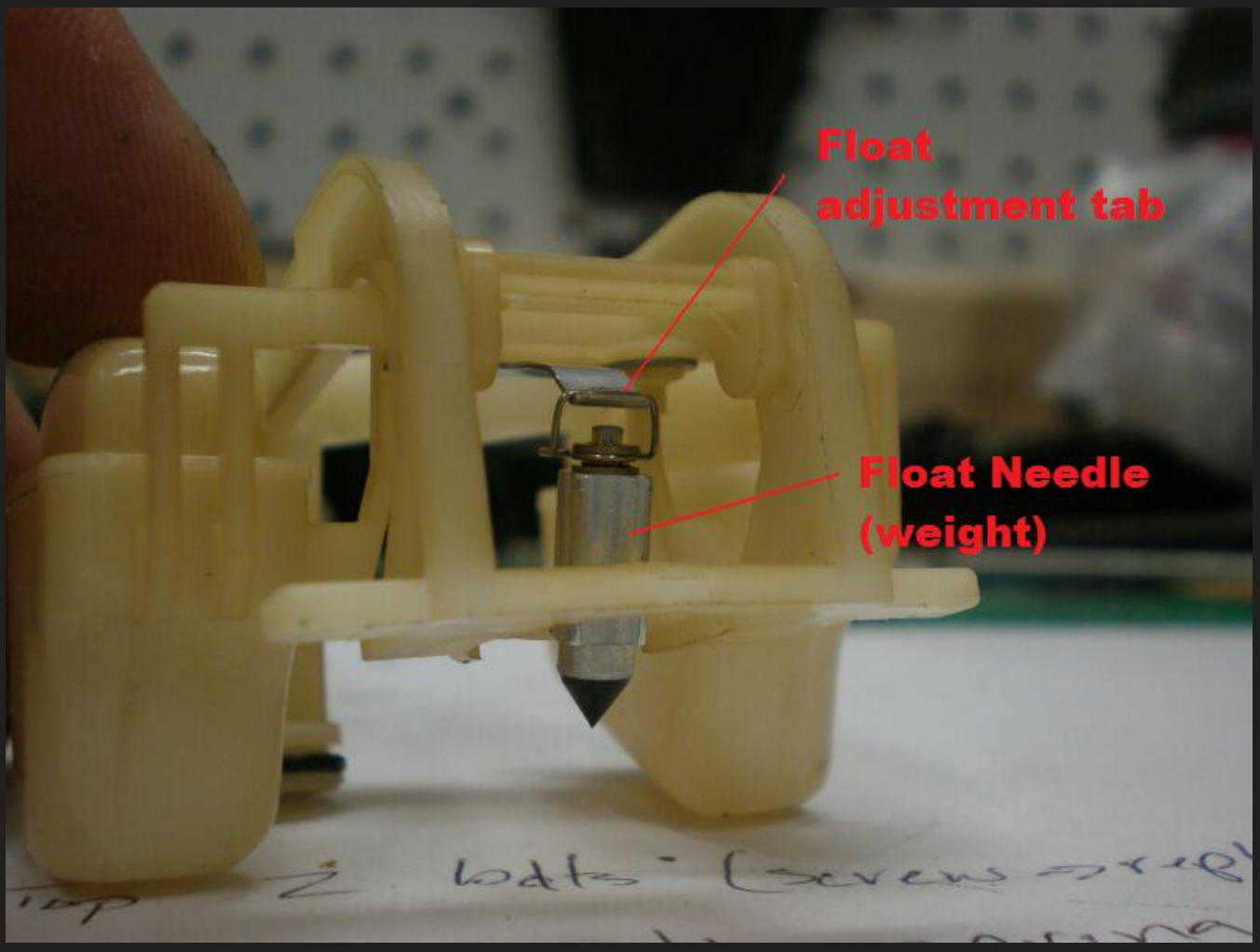
-to remove the floats, pinch with your fingers and pull up. BE EXTREMELY CAREFUL NOT TO LOOSE THE FLOAT NEEDLE!!!



-lift the float up and out of the carb.

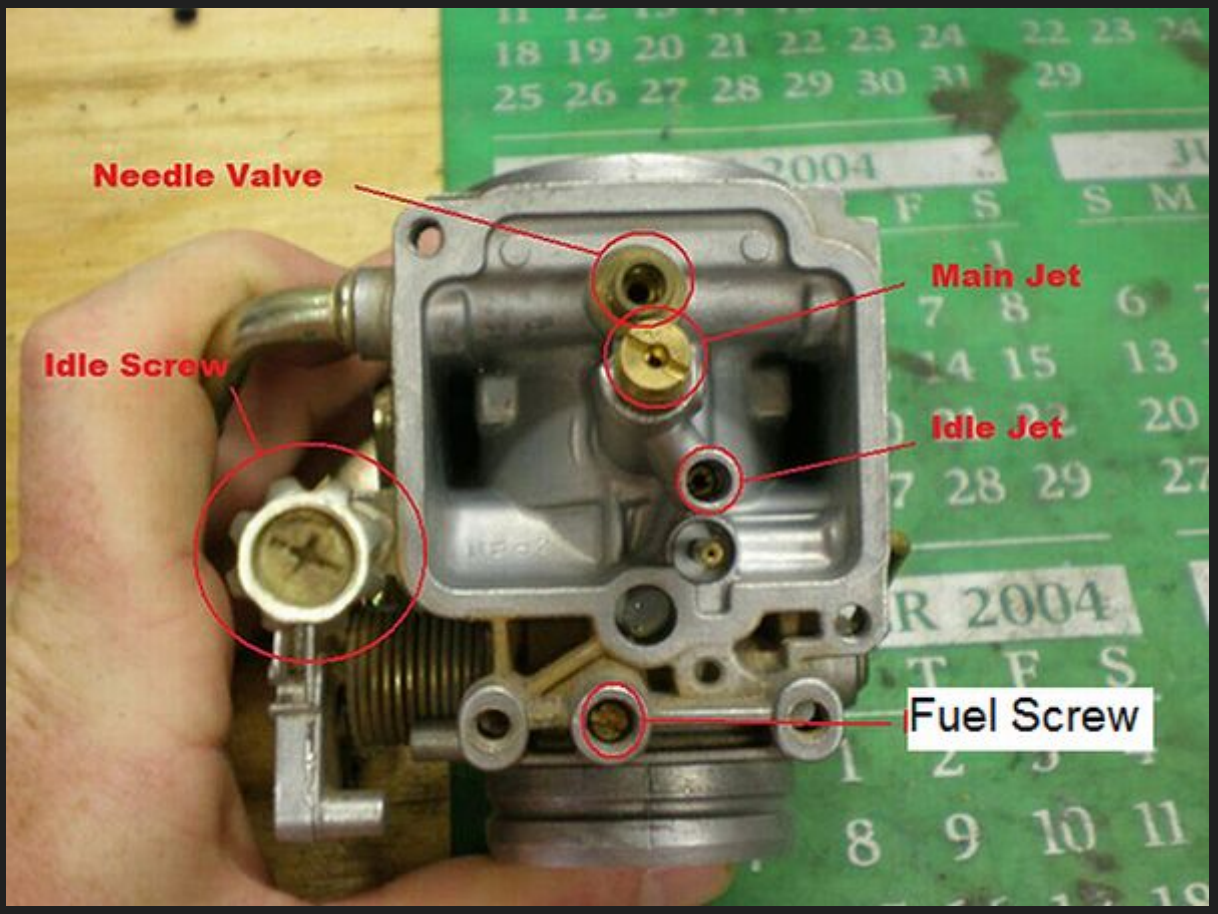


-once the float is removed, inspect it for integrity, check the o-ring for wear, and place the weight someplace safe....



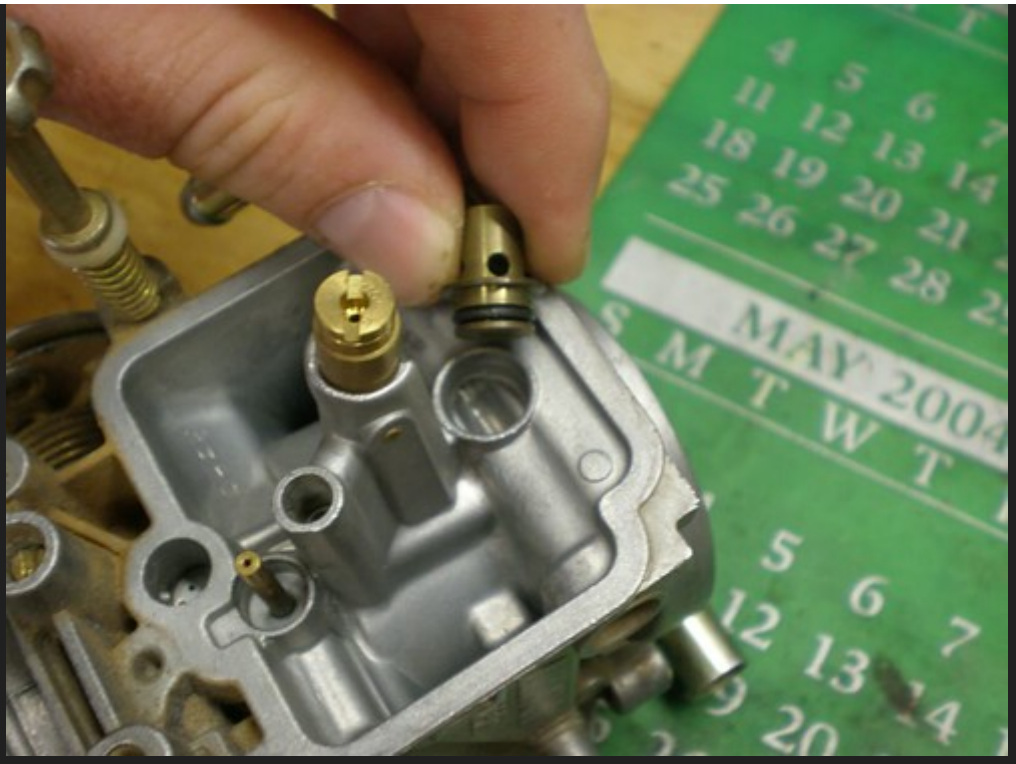
- now with the float out of the carb you should be able to locate all of the major components inside of the float bowl. take the time and find; the main jet, idle jet, fuel screw, the needle

valve, and idle screw.



- Ok, lets keep on moving. if you need, go grab another beer. I think I'm going to....

- the next step is for you to remove the needle valve. all you have to do is pull up on it and it will come out. it is only held in-place by tension from an o-ring around its base. once removed, inspect that o-ring to make sure it seals well enough, isn□t flattened, or showing signs of cracking. if it is, replace before you reinstall it in the carb. chances are, if you have a good hardware store near you can find an o-ring that size to match and save the hassle of ordering one. just make sure that the one you buy is rated for fuel systems.

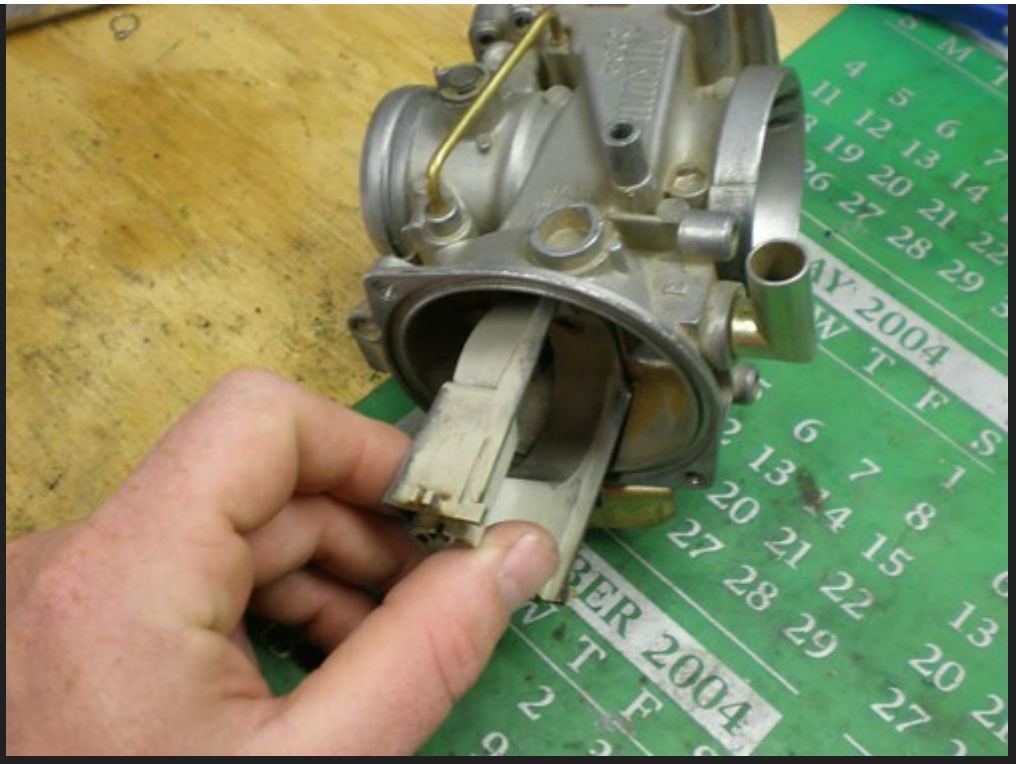


- now we will remove the main jet. use a large, fat screwdriver to remove this jet. be careful, there is more than just the jet !!!!

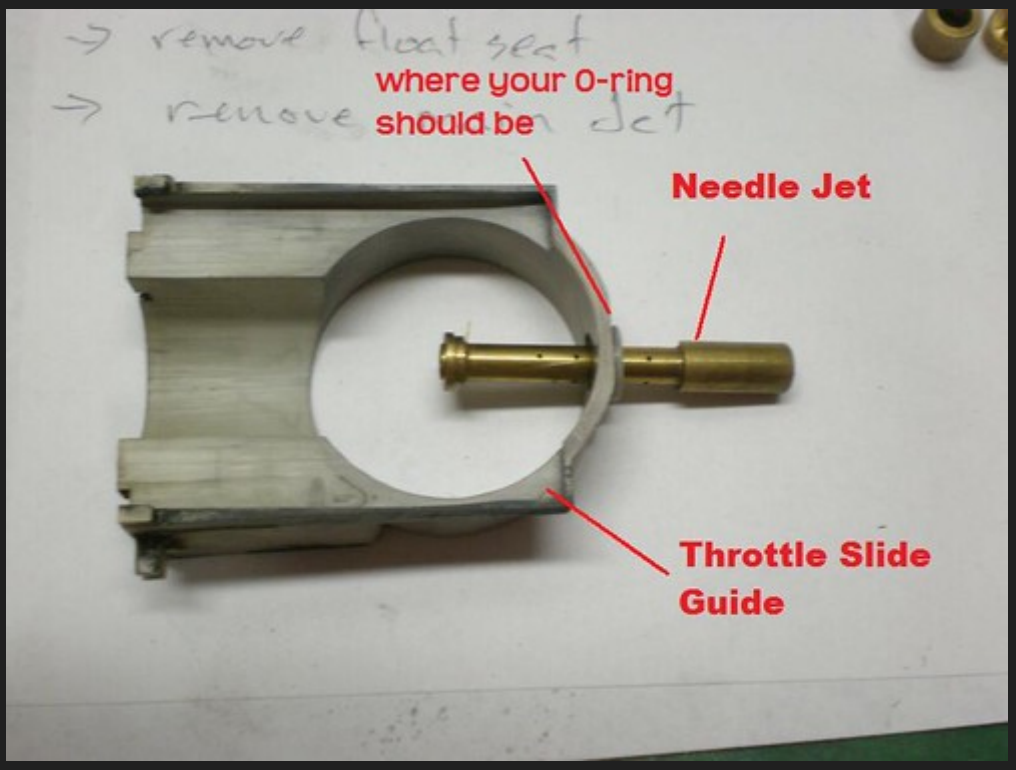
- you should now have the main jet and the brass spacer in your hands. once again, DO NOT LOOSE THE SPACER!!! put it in the baggie with all the other small pieces.

- now with the main jet removed you will be able to remove the slide support and the needle jet. the slide support is a plastic piece that holds the slide in position inside the bell of the carb. it also houses the top of the needle jet. to remove, press downward on the place the main jet just came off of.

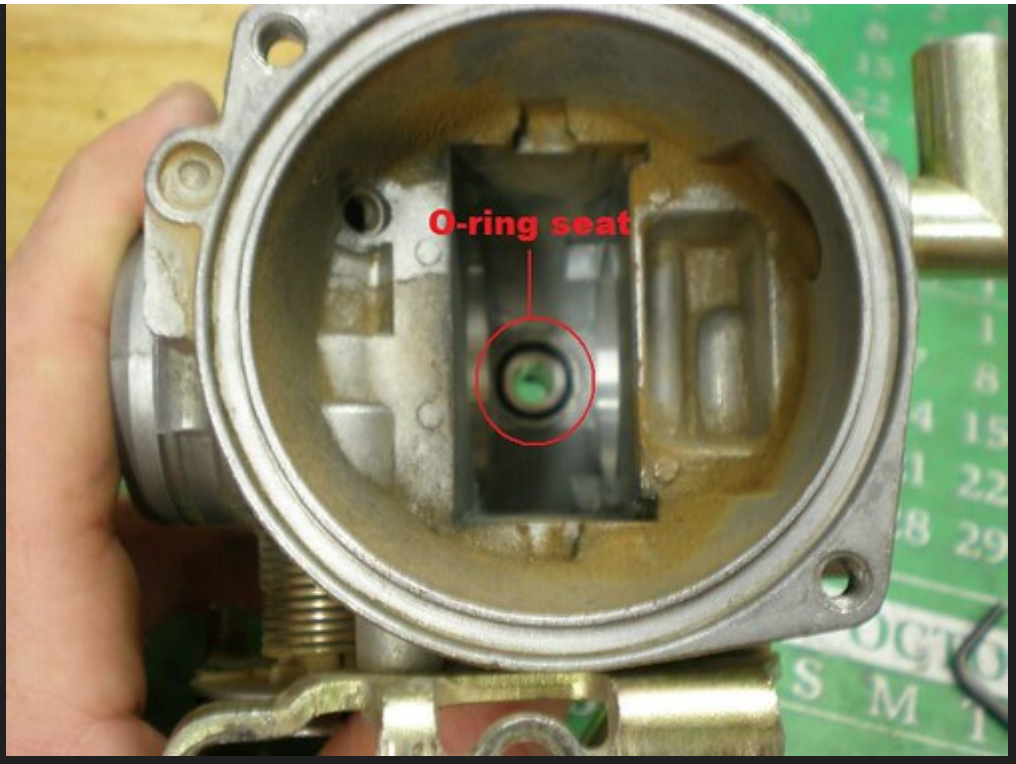
-this will push the slide support out the other side (top) of the carb.



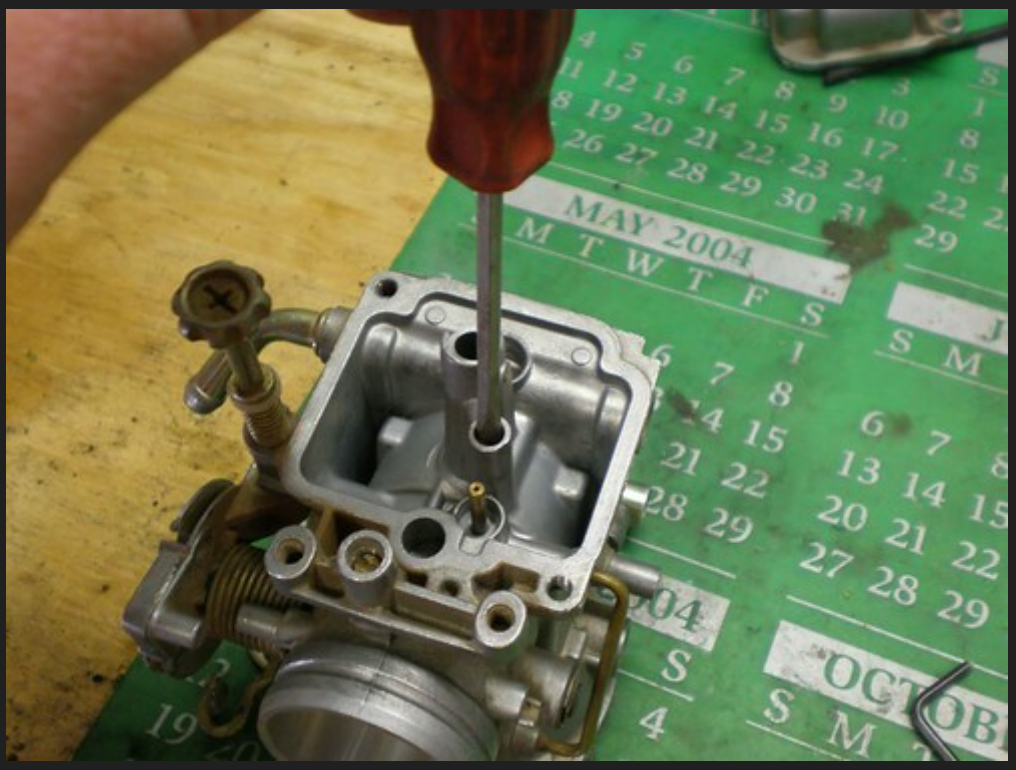
-you should now have the slide support and needle jet sitting on your workspace.



-while you are looking at your slide support, check to make sure that their is an O-ring seated at the topside, if not it is still in the carb and needs to be pulled out. mine likes to stick so I usually end up fishing it out...



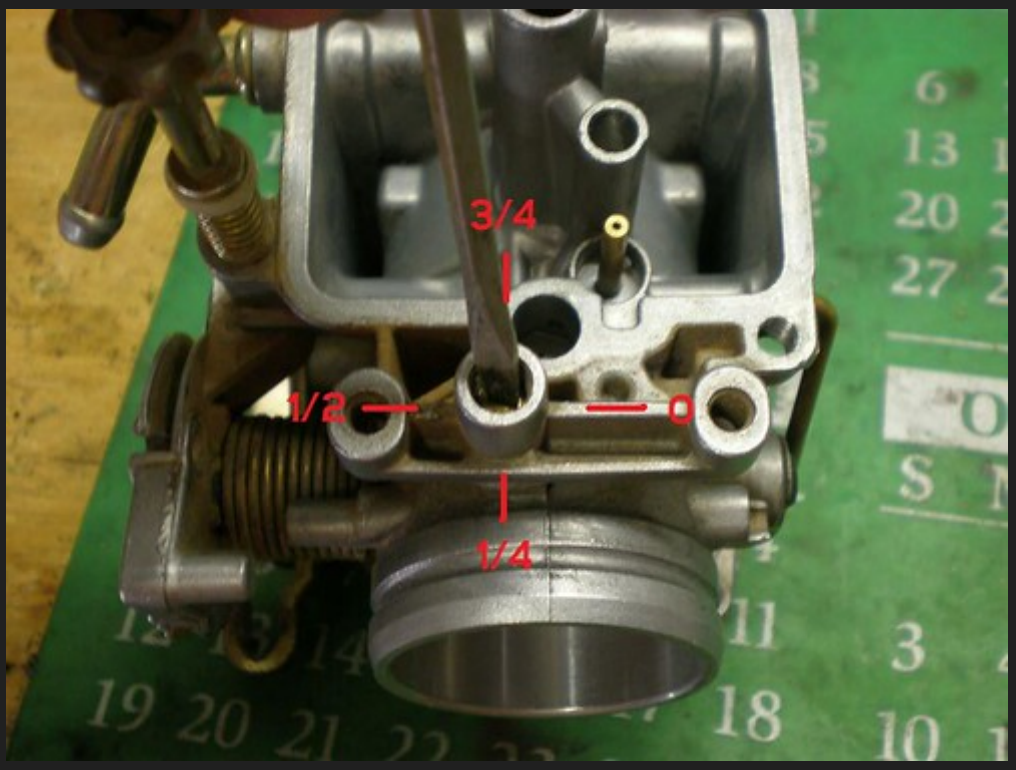
-alrighty then!!! now we are having some fun! next step is the removal of the idle jet. you will need a small, thin, flat-head screwdriver to get this one out. be careful you don□t try and force anything. (and of course, its righty-tighty and lefty-loosy)



-you should now have one of these sitting in front of you. there are basically 2 idle jets for this carb and these bikes. the stock is a 45, the other is a 47.5. if you have opened your airbox and have an aftermarket exhaust, chances are you should be running the larger jet.

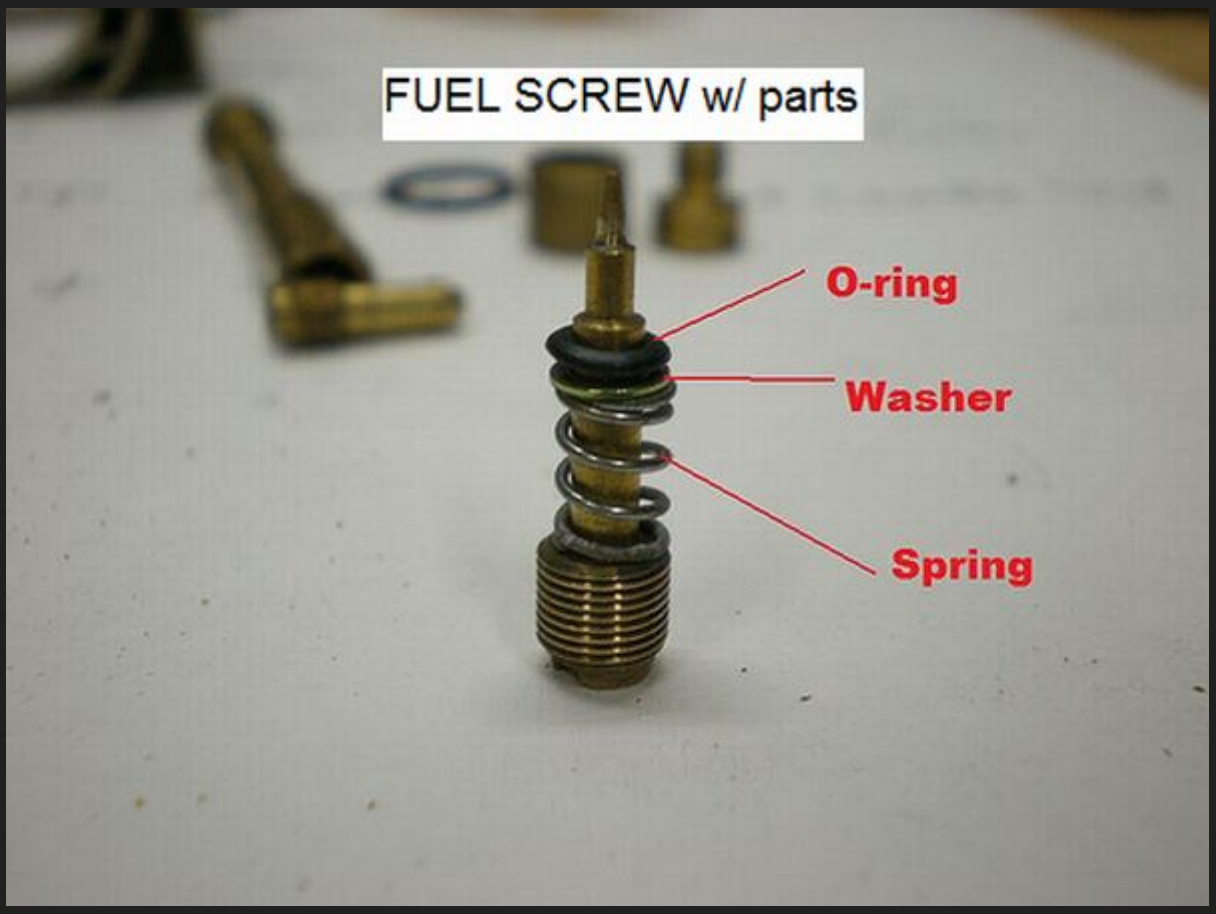
-remember to put that idle jet in your safe place with all the other small pieces.

-the next thing we will remove is the fuel screw. to remove this screw you first need to find out how many **"turns out"** you are. this tells you how to re-set the screw when your done cleaning and putting the carb back together. so use the same small screwdriver you used on the idle jet and begin counting the turns in (righty tighty). you will probably end up with something in the 2-1/4 to 2-3/4. when you have you number, write it down somewhere so you don't forget.



- once you have the number written down, you may now reverse directions and remove the

screw from the carb. be careful not to loose the spring, washer, or O-ring from the screw.



-i would also like to add that replacing this fuel screw with a custom made, and much easier to adjust Stenhouse Fuel screw would be a good idea. one can be purchased from Loaded at the following link. - http://www.stenhouseracing.com

- if you do purchase one of thse new screws, the only change in proceedure will be that it has to come out before you are able to remove the float bowl and will be the last thing installed when re-assembling the bottom of the carb.

- finally, the last step you need in stripping down the carb is the float bowl gasket. depending upon how you are cleaning the carb, you may or may not need to remove this. I plan on a long soak in cleaning solvent for this one, so I□m taking out the O-ring to save it. if you do choose to remove it, just be careful.

- and that my friend is that! you have just finished taking your carb a part!!! I think we should have another beer in celebration. plus now, we get to start playing with the cleaners....

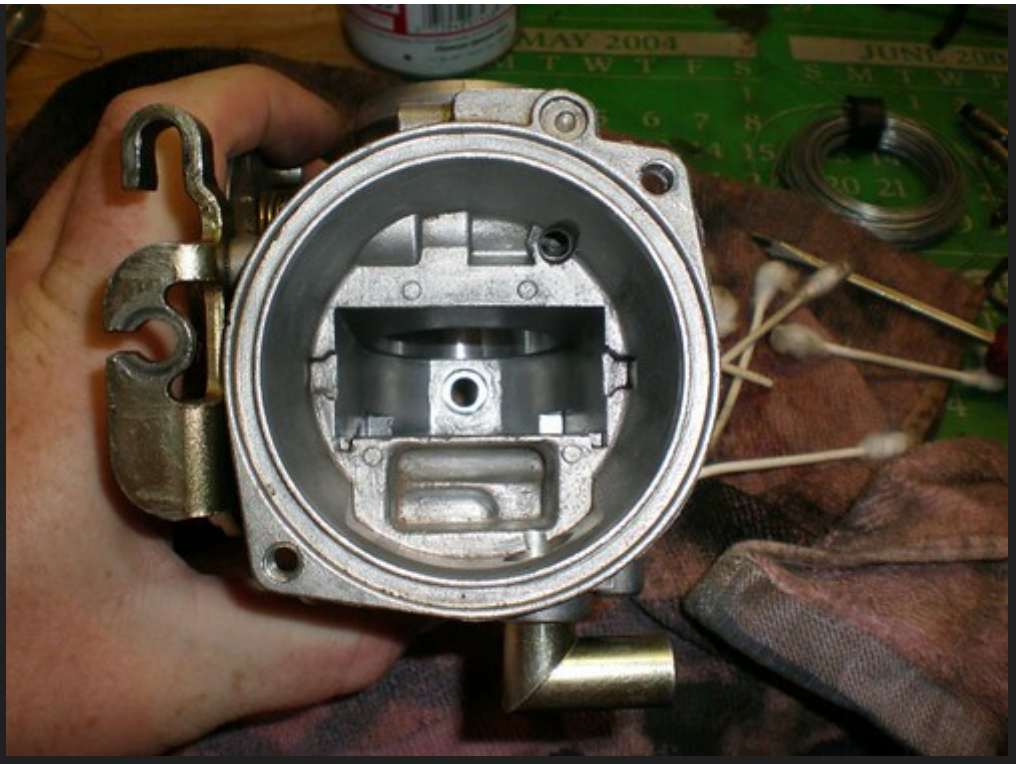
-CLEANING THE CARB-

-depending upon how you choose to clean your carb there are a few things that you will need to make sure of. 1) spray out all jets and confirm their passage is clear of dirt and debris. 2) spray out all parts and passages of the carb body. 3) clean all plastic parts in hot, soapy water with cleaner. I have a tendency to be a little lazy and usually just deposit the carb body in a bowl of cleaning solvent overnight, then clean the insides the next day. I usually use a clean, new, shop towel and some Q-tips for the hard to reach places.

-while cleaning, remember to keep and eye on everything. your not just cleaning, you□re inspecting. make sure that everything looks good. if something is odd or out of place, stop and check. chances are you can find a pic or something that will help you out. you can also just ask a question, chances are someone will answer pretty quickly.

-when you are done, the carb should look nice and new....

-the top....



- the bottom.....

-the sides...

- and all the parts....

-at this point in the juncture if all you□re doing is cleaning, then your done. just follow the instructions in reverse to reinstall everything. I told you it wouldn□t be that bad.

-the only real thing you need to know to put things all together is the needle jet. when you

reinstalled the slide support and needle jet (with O-ring) you have to make sure that the slot in the needle jet lines up with the pin on the carb body. once it is, it will slide right in. if you do not line this up properly, the slide support and needle jet will not fit in the carb.

-CARB MODIFICATIONS-

-the following modifications have been done by numerous individuals (including myself) with great success. most focus on the ability of the carburetor to "lift" the slide faster, there by increasing throttle response. One of the big gripes people have about the CV carb is that it doesn□t have an accelerator pump., and therefore cannot have the same throttle response. to respond to this you need to understand the purpose of the accelerator pump and what a CV carb actually does.

-CARB 101-

-what happens when you quickly open your throttle ????? the answer to that question is both the reason for the accel pump on the FCR carbs and the idea behind the CV carb.

-when you quickly open the throttle in the carb, a large increase in airflow passes through the carb to match the throttle position. this creates an extreme lean condition momentarily because the fuel delivery system has not been able to keep up with the rapid increase in airflow. the accel pump covers this by directly injecting (squirting) a stream of fuel into the airflow on rapid throttle opening. the CV carb on the other hand, does not allow the slide to open quickly enough to create this condition due to the fact that the slide is **NOT** directly connected to the throttle and instead relies on a change in atmospheric pressure (the fast moving air in the carb creates a high pressure) to lift the slide. this process takes a moment in

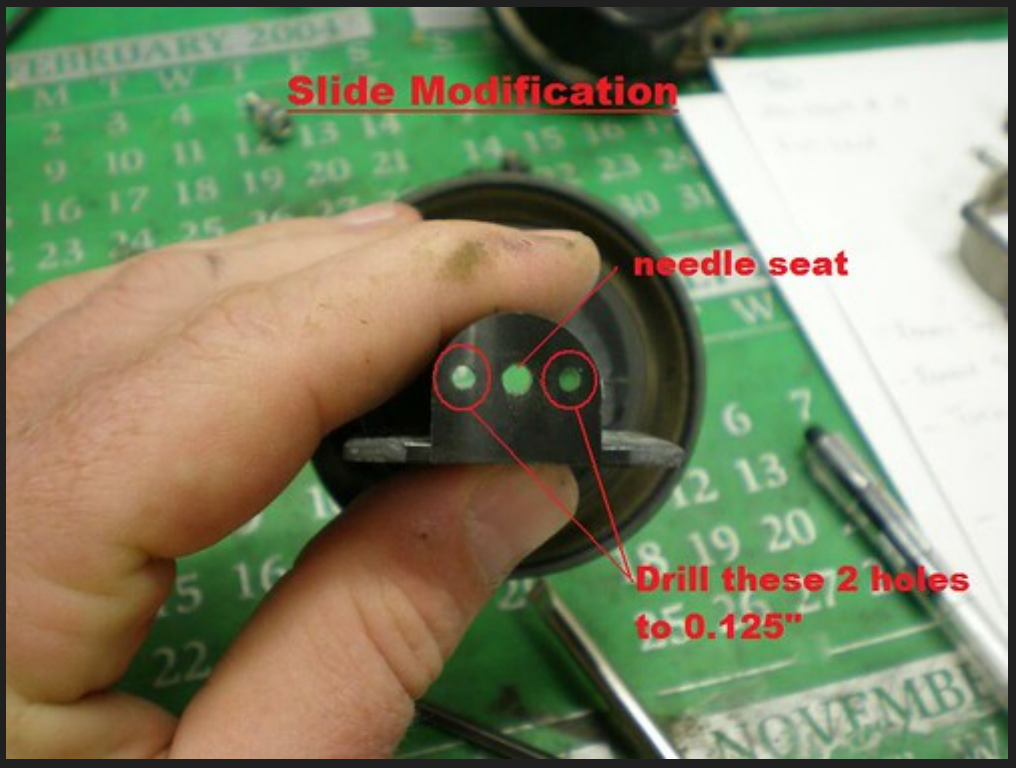
which the lean condition is avoided.

-for more info on basic carburetor principals, please read the FOLLOWING. this is for a KX, but all the principles are the same.

-DRILLING THE SLIDE-

-one of the ways in which to reduce the amount of time for the atmospheric pressure to equalize is to increase the size of the holes through which it passes. this is a balance between to large of holes equals no vacuum, and to little equals slow throttle response. it is the general consensus that the best size for these holes is 0.125"

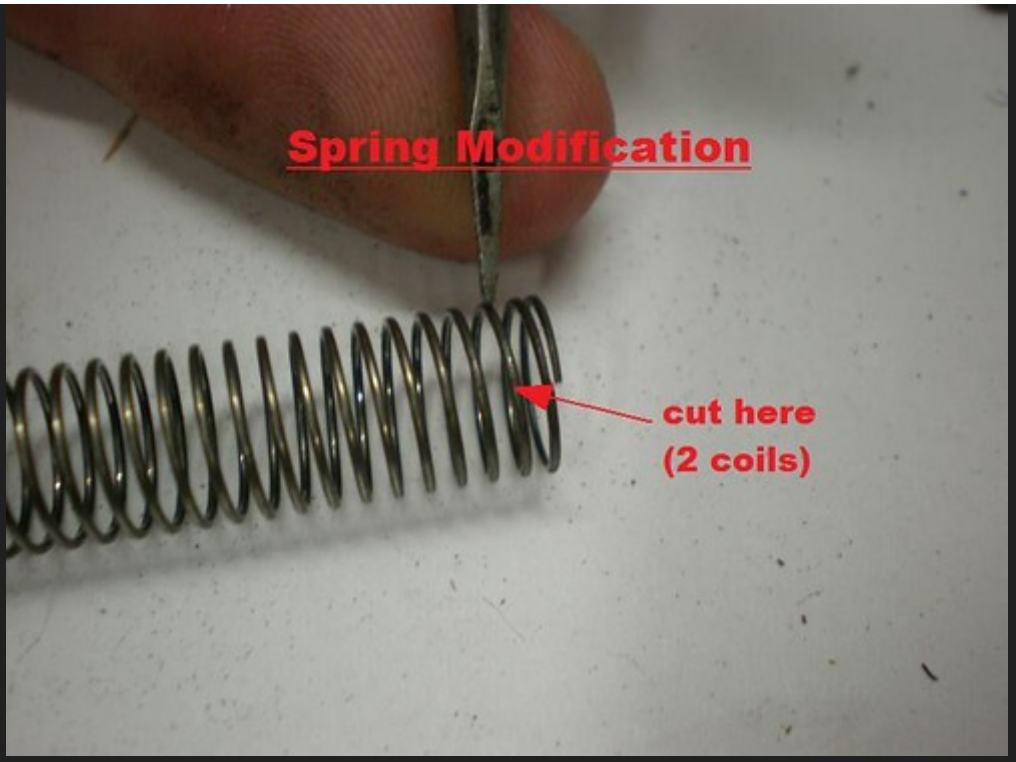
- to perform this mod find the correct sized drill bit, then carefully drill these 2 holes. make sure not to drill the center needle hole!!!!



-CLIPPING THE SPRING-

-the second way in which to increase throttle (slide) speed is to reduce the pressure placed upon the slide by the spring. this is referred to as "clipping the spring and involves cutting off 2 coils of the spring. the thought behind this is that the reduced spring rate will allow quicker opening resulting in sharper throttle response.

- to perform this mod simply cut 2 coils off the end of the spring.



-the cutting of the spring mod is a hotly contested mod. some do it, some don't. I personally never did but felt that since many had, and had reported positive results that it needed to be included, for more information about the spring dilemma, visit ADVRIDER where there is a thorough discussion which culminates in Creeper giving his $.02. well worth the read...

-AIRBOX MODIFICATIONS-

- now that you have increase the ability of your carb to get fuel into the system more rapidly, you need to make sure your getting enough air as well. one of the things KTM does to these bikes to make them meet California Emissions is choke them up in the airbox and lean factory jetting. you've taken care of the jetting, now its time to open the airbox.
-there are 2 ways to open the airbox; 1) remove the snorkel from the top of the airbox. this is located just under the seat and will pull out with a tug. *-this is once again a hotly debated topic. some say leave the snorkel on, some remove it. I say try it both ways and see what you think, after all, isn't that what its all about ????* 2) remove the left side panel from the bike and remove the plastic cover. replace this cover with the KTM Racing Airbox Cover (pn#58406003200). this I believe is one of the best mods that can be done to this bike. the smile vs. dollar factor heavily favors the smiles.

-this is a very simple mod that consists of removing one piece, and replacing it with the other. I have also seen many people run with just the airbox cover and no side plastic piece. this is just another possible option for you. I chose against it due to the high dust areas here, but maybe for you.... ????

-I feel at this point in our juncture that I should probably have another beer and take a leak. I will be right back.....

-JETTING THE BST-40-

-if you have just done the above-mentioned mods or have just bought your bike and need to remedy the horrible lean factory settings, this is the place for you. this carb is soooooooooooooo forgiving with it settings. once you find the sweet spot, your good for almost anywhere. one of the real advantages to having this carb is that you can set off for your adventure at 4,000ft and end at 11,000ft and still have the same jetting. I dare you to try that with an FCR carb, it would be dying before it hit 8,500ft.

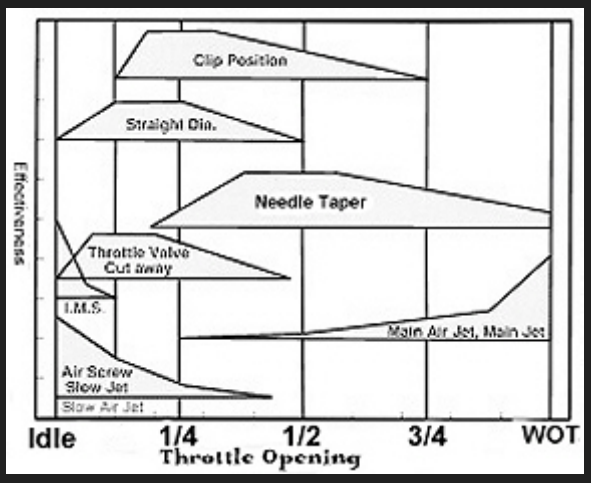
- the main jets for the mikuni BST-40 carb work in increments of 2.5. my bike came stock at 142.5. from there they increase by 2.5, example 145, 147.5, 150, 152.5, ... I spent most of my time jetted at 157.5.

- I will not sit here and tell you which Main Jet is best for your conditions. invest some time and read, I promise you that others have had the same issues. if you cant find anything, ask. chances are we can get ya really close. so, enough about the main jet.

-the idle jet has already been discussed. if you have done the airbox mods, slide mod, and spring, then you need to be using the larger 47.5. pretty simple and straight forward.

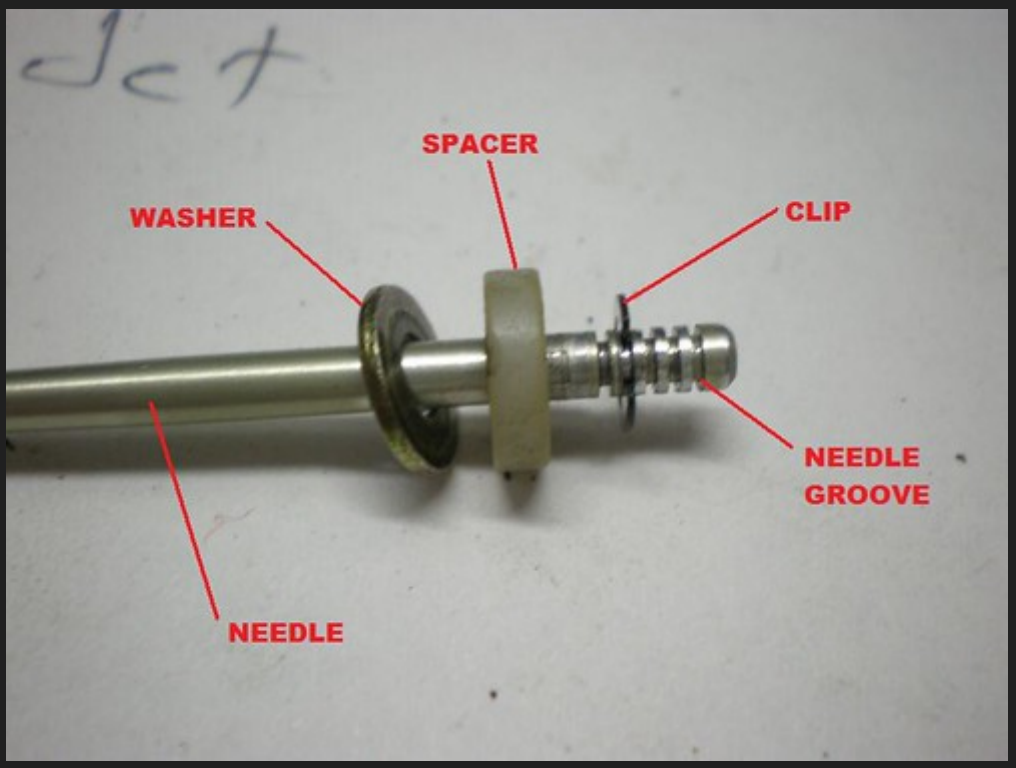
-the only other option is the needle. this is responsible for the throttle range from 1/4-3/4 throttle. it is a big deal having the correct needle and clip position. most LC4's come stock in the 3rd clip. to richen the flow, lower the clip. this allows more space around the needle in the needle jet, which allows more fuel into the air. to lean the needle, raise the clip. make sure that while you do this, you don□t loose any parts....

as for jetting and its effects on certain throttle ranges....

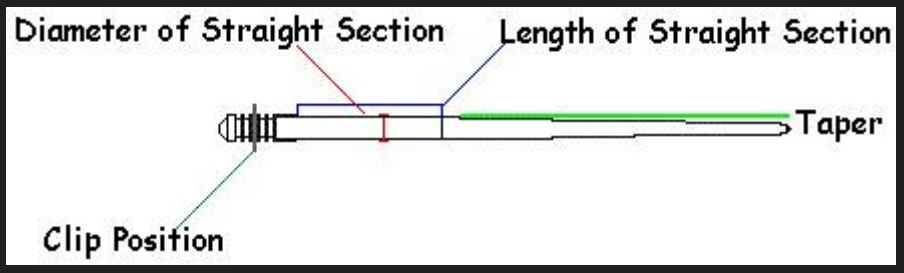


air screw = 0 - 1/8 throttle
pilot jet = 1/8 - 1/4 throttle
slide valve = 1/8 - 1/2 throttle
needle = 1/4 - 3/4 throttle
main jet = 3/4 - full throttle

-now where did that beer go ??????
.
.
.
.
.
.
- ok, there it is. now let's talk about needles....



-The jet needle Has the greatest effect between 1/4 and 3/4 throttle. It□s attached directly to the throttle valve. As the throttle is rolled open or closed the jet needle moves through the needle jets bore exposing different sections of the jet needle□s profile to the needle jet□s inner bore.

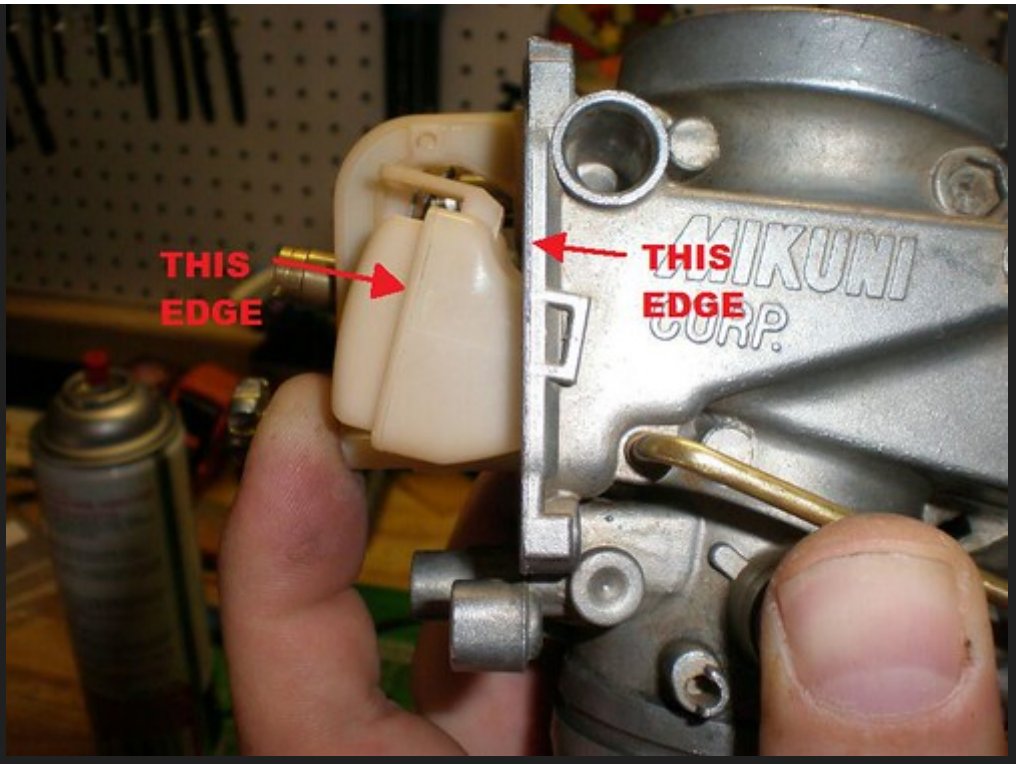


-Six major elements determine the jet needle□s effect on fuel delivery - the diameter of the straight section, the length of the straight section, the jet needle□s taper, the clip position, and the number of tapers and the length of each tapered section. The number of tapers is normally not changed from what was supplied from the factory.

-FLOAT HEIGTH-

- one of the other major factors that can cause problems with the BST-40 carb is an improperly set float height. this results in bogging, poor performance, and poor gas mileage.

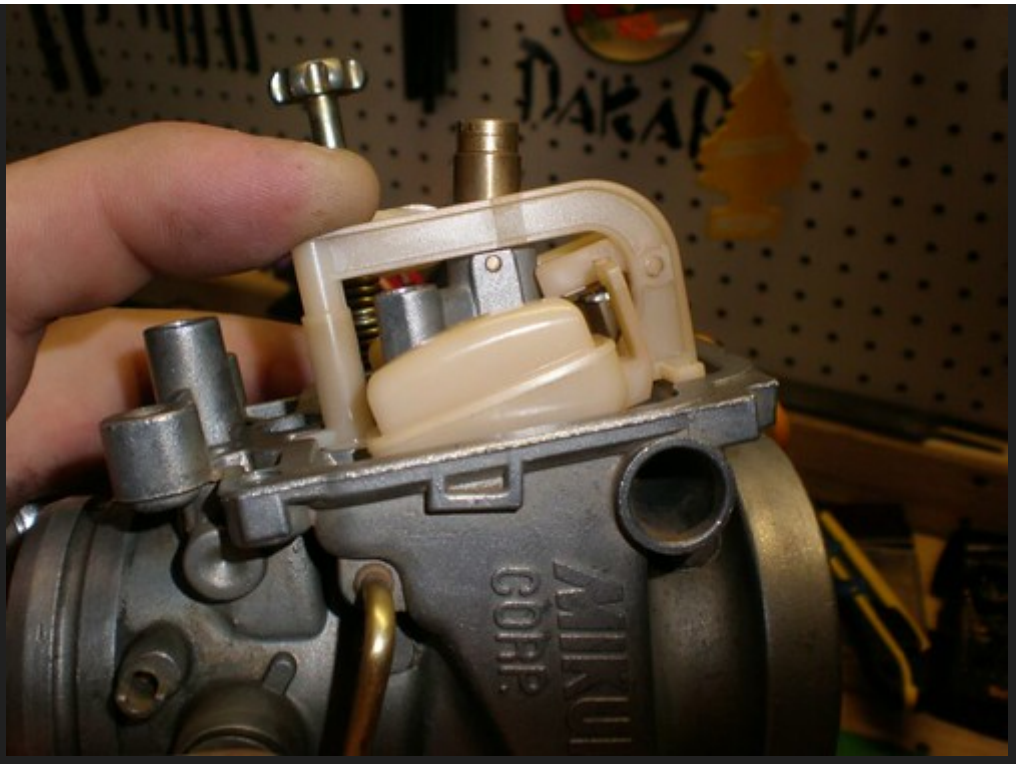
-to set the float height you need to hold the carb inverted with the float and float needle installed. you will be trying to align 2 edges to form a parallel line.



-as you slowly rotate the carb vertically, the float will drop into the bowl. when this happens you want these 2 edges to be straight.

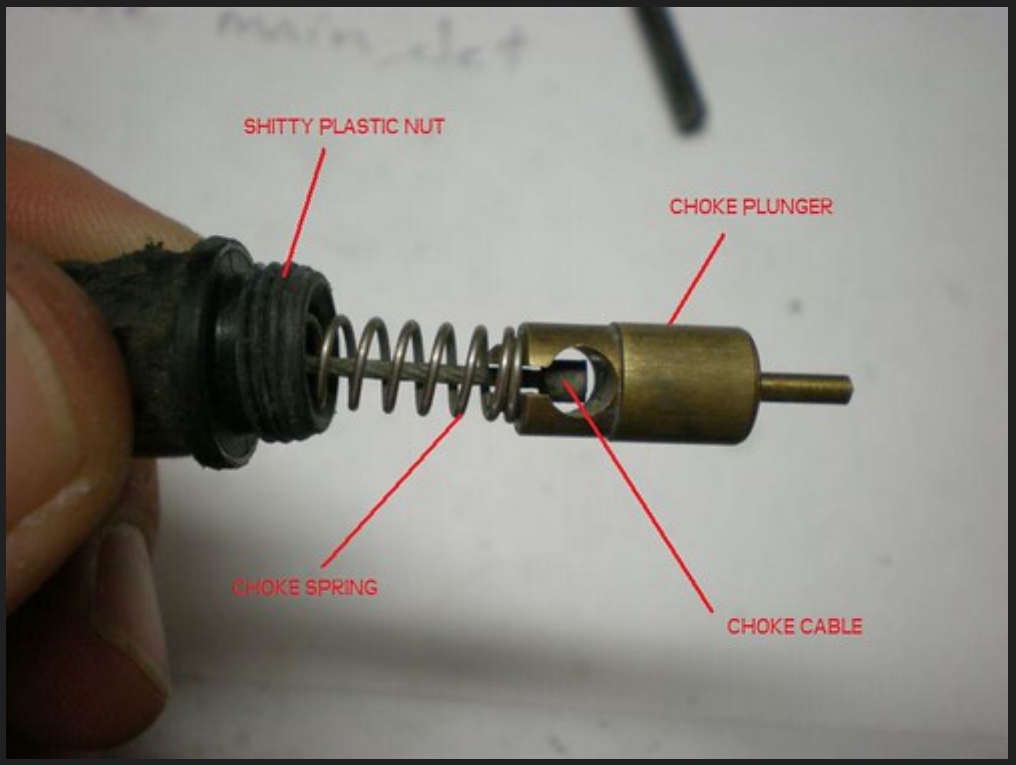
-if yours doesn□t look straight, adjust the tab that the float weight is resting on and then try again. this can be frustrating. take your time and make sure you do it right. if not you will be doing it all over again.....

-be careful that you don□t freak out when the float drops all the way in. if you turn the carb all the way, it will sink in like this...



-THE CHOKE-

- the choke on the BST-40 is NOTORIOUS for stripping out. the shitty plastic nut strips if you even look at it funny. the problem is that if this is not sealed well, it can create a problem. make sure that you are getting yours to seal correctly and fully when reinstalled.



- if you are one of those that do strip out that nut, don□t worry. you can buy a new one, but of course the price keeps going up...

Part Number: 58431050000