CARB REBUILD 101

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Introduction

This guide has been prepared to assist fellow CB400F enthusiasts. Rebuilding the Keihin carbs can appear to be a daunting task, however it is not. If you take time and follow these instructions, the carbs should be close to being balanced when complete, with minor adjustments required for final tuning.

Assumptions

Ignition timing has at least been statically done for ***both*** 1&4 and 2&3 cylinders.

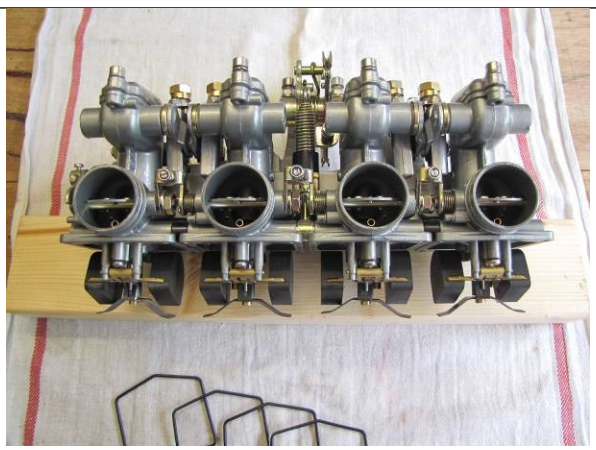
Comments

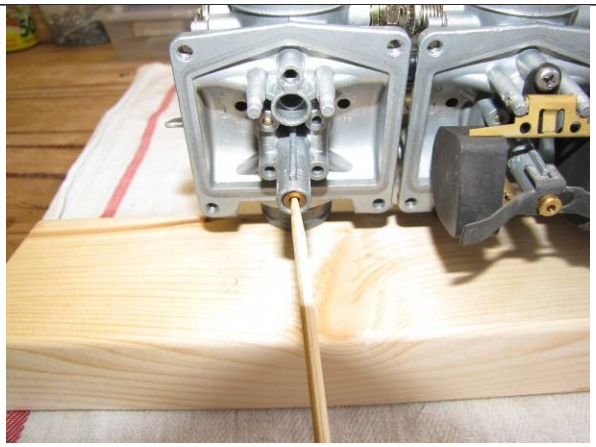
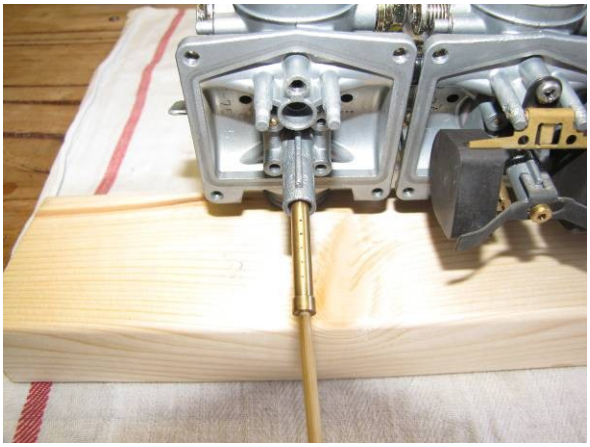
Make sure you have a clean work space to start with. Have some plastic containers and zip lock bags to keep individual carb parts together.

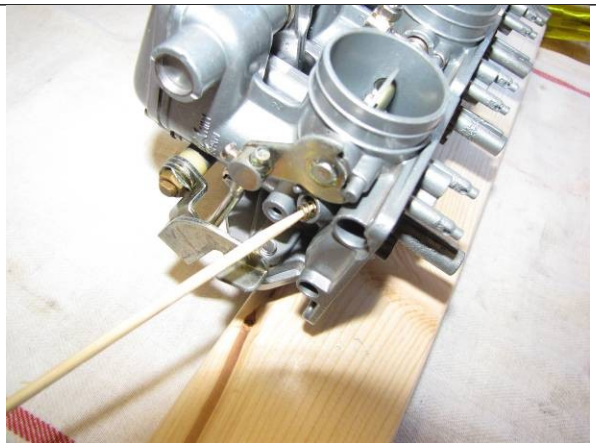
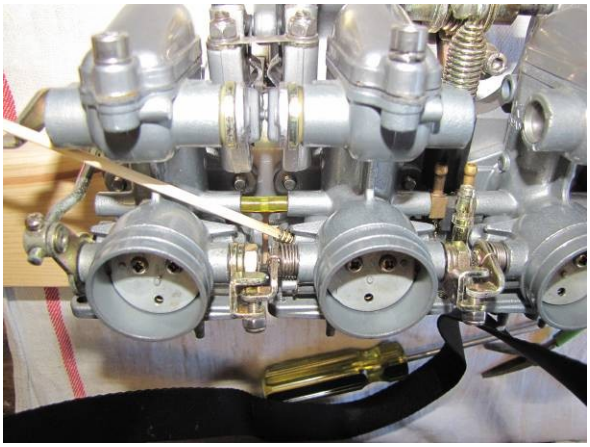
This guide is broken down into 3 parts (strip down, rebuild, final tuning).

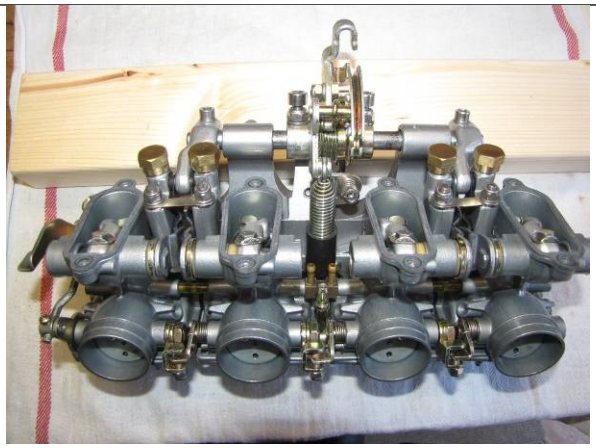
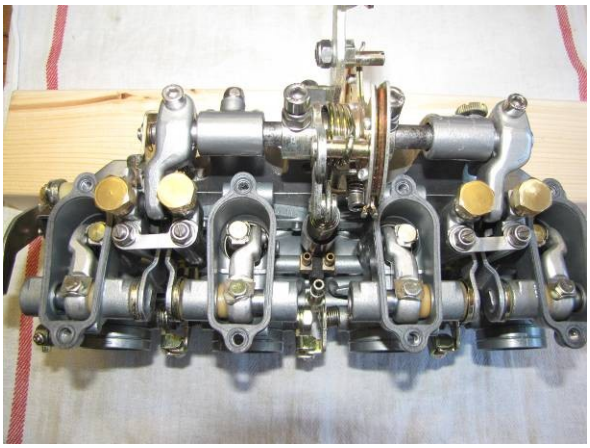
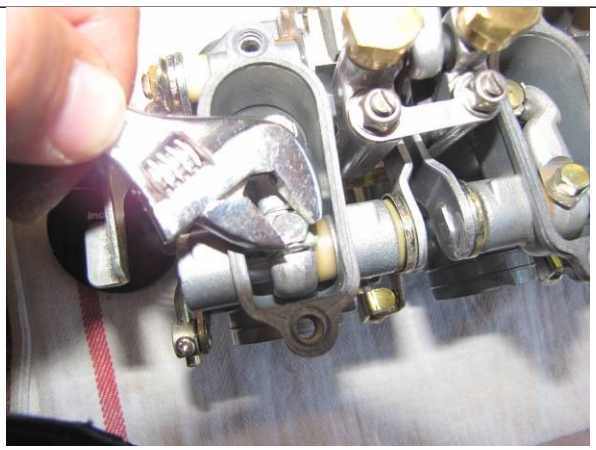
So let's get started.

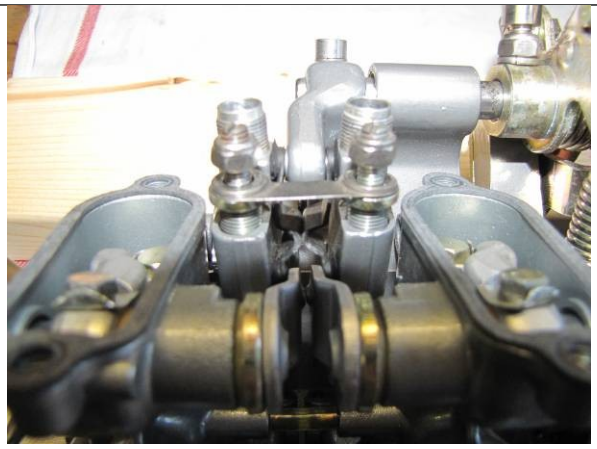
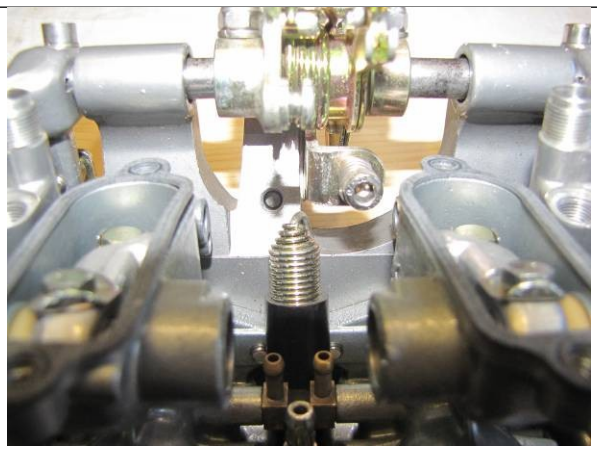
1. The Strip Down

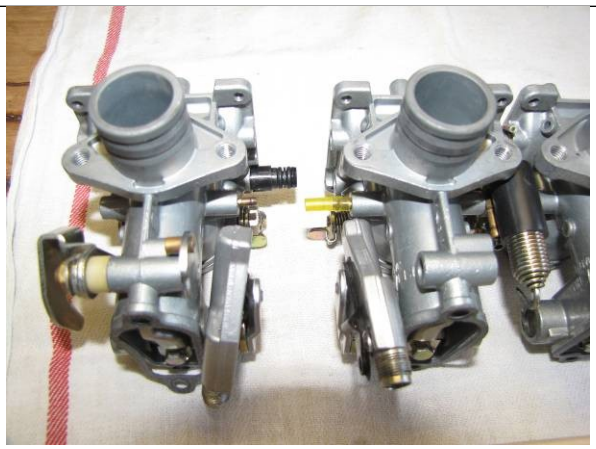
1.1	Make sure you have plenty of room for dismantling the carbs. I use an old tea towel and a piece of 1 ½ x 3 inch stud.	
1.2	Place carbs on chock of wood.	
1.3	Remove fuel and breather hoses. Replace the cover screws, but only do them up finger tight.	
1.4	Remove float bowls and float bowl gaskets. Note. Keyster gaskets tend to swell a lot. I bought two sets to make quick jet changes. They normally return back to original size after a day or two. You can boil them for a few minutes to speed up the process, though I am not sure if this will cause permanent damage.	

1.5	Remove the main jet retainer spring, the main jet, the float pin, the float, the fuel valve screw and tab, the fuel seat and valve and finally the pilot jet.	
1.6	Remove the needle jet using a bamboo meat skewer. If the needle jet is stuck and won't move, try pushing it down gently from inside the carb throat, by opening the needle slide and using the blunt end of the bamboo stick.	 
1.7	I used some numbered plastic containers to keep individual carb parts together.	

1.8	Repeat the process for the remaining carbs.	
1.9	Remove the air screws and springs.	 
1.10	Reposition the carbs on the chock of wood to work on the top covers.	

1.11	Remove the top covers.	 
1.12	This is a good time to **loosen** the bolts holding the slide linkage to the arm. Note. I found it easier to use a small shifter here rather than using a screw driver tip to pry the tab away from the bolt head. You only need to loosen the bolt a ½ turn.	
1.13	Remove the brass caps, springs and guides.	

1.14	Release the lock nuts and remove the balancing sets in one piece.	 
1.15	Release the main spring.	
1.16	Flip the carbs over to access the base screws.	

1.17	Remove the base screws.	
1.18	Slide the linkage and rubber guides off the arm.	
1.19	The base plate can now be removed.	
1.20	Separate the carbs using a slight twisting motion.	

The individual carbs can now be stripped down further. I have not gone into details here as this is fairly straight forward stuff.

Send parts away for cleaning and replating if required.

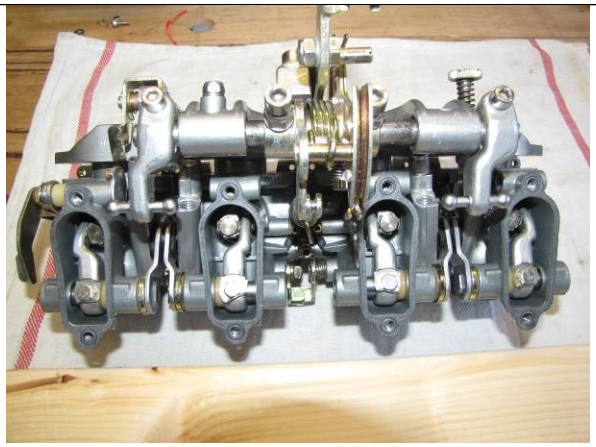
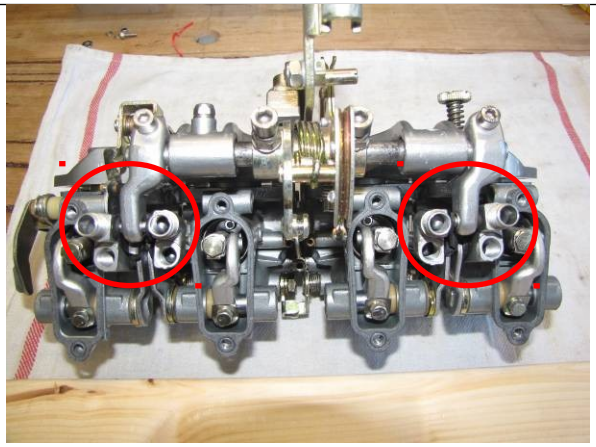
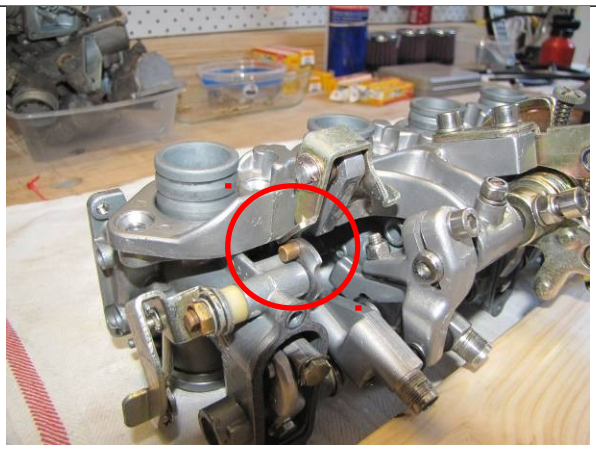
See my other document in the files section for making new felt washers.

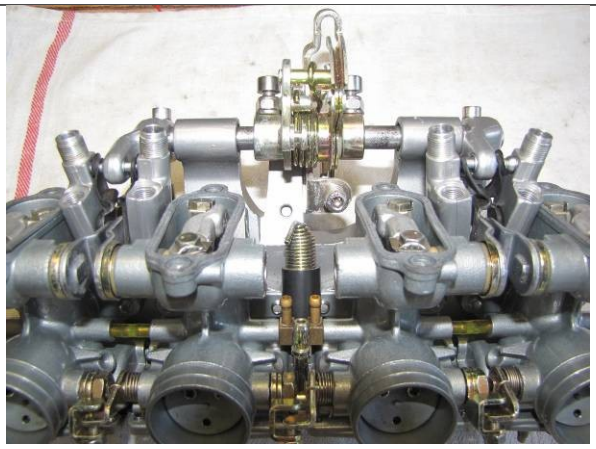
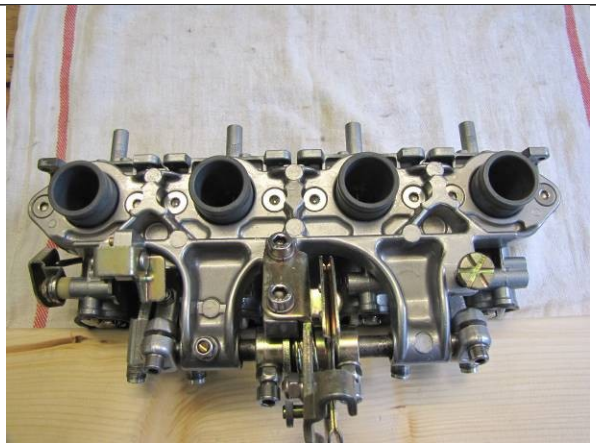
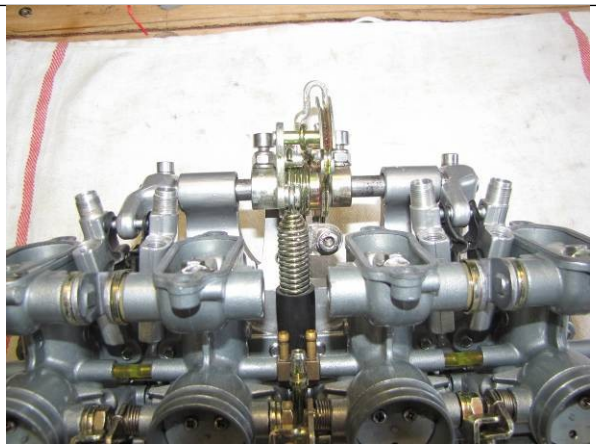
As I was testing needle heights, I replaced the Philips Head screws that hold the linkage arm to the needle slide with Allen Heads. Mainly because I ended up having to drill a few of the screws out, but the Allen Heads are far easier to tighten and remove.

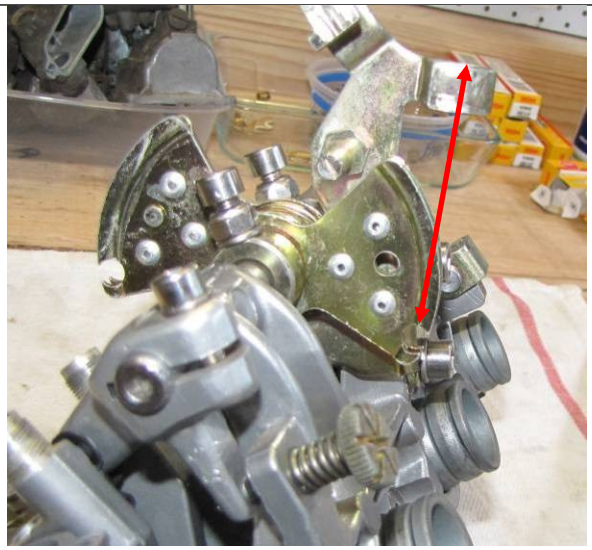
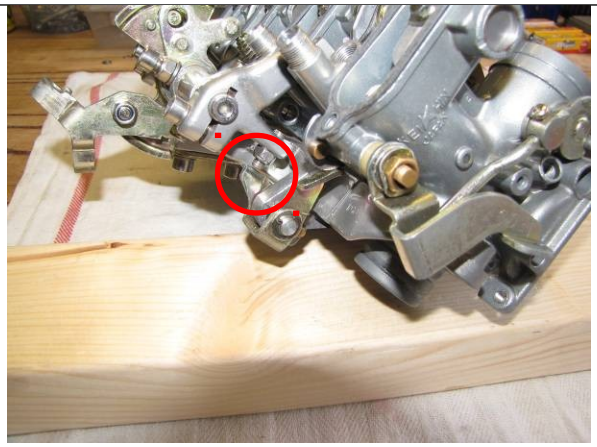
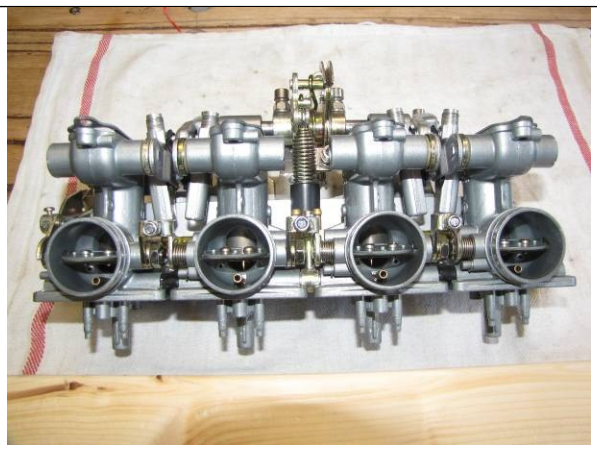
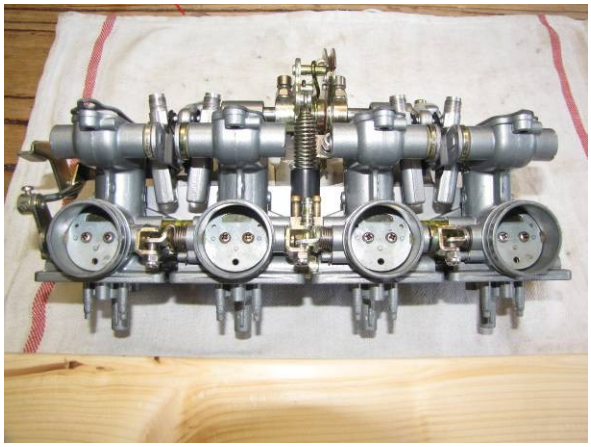
2. The Rebuild

Reassemble the carbs back to step 1.19

Important, do not tighten the bolts in step 1.12. Only do them up finger tight!!!!

2.1	Replace base plate back over the carbs.	
2.2	Slide the rubber guides and linkages back on the arms.	
2.3	Ensure fast idle plate is in right position.	

2.4	Ensure spring is free.	
2.5	Flip carbs over and screw on the base plate. Note. Finger tighten first, then come back and tighten all securely.	
2.6	Connect main spring.	
2.7	Adjust the idle screw so there is 56mm between the hole and the base plate.	

		
2.8	Ensure there is a good 2-3mm gap in the fast idle screw.	
2.9	Now is a good time to align the choke plates. Open and closed.	 

2.10

This is when the linkage bolts from step 1.12 are tightened.

Install the balance screw sets from step 1.14, and tighten the linkage bolts from step 1.12.

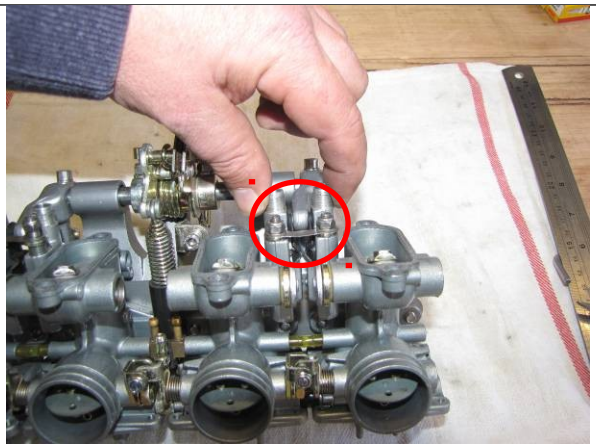
Note. Here is where you want to achieve the following ***after*** the bolts from step 1.12 are tightened.

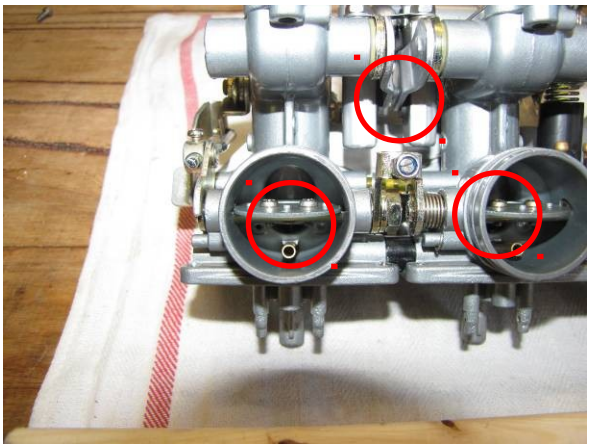
- all balancing screws are at a similar height
- all slides are bottomed in the carb throat
- and all carb linkage arms are in alignment.

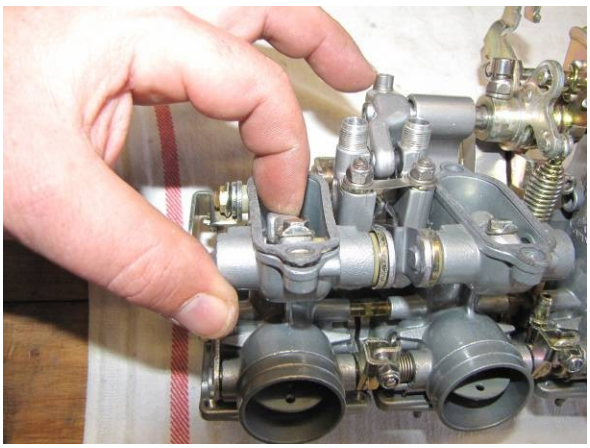
Spending time here getting this right is worth it. Use your finger to check all the needle slides are bottomed out.

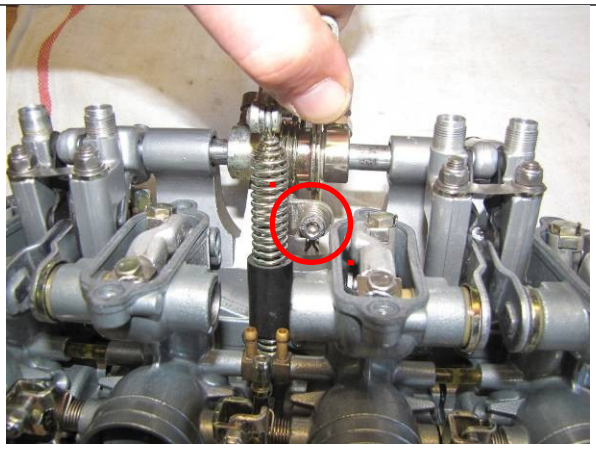
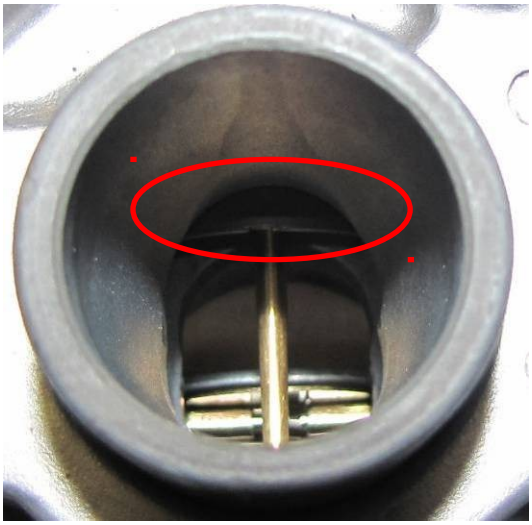
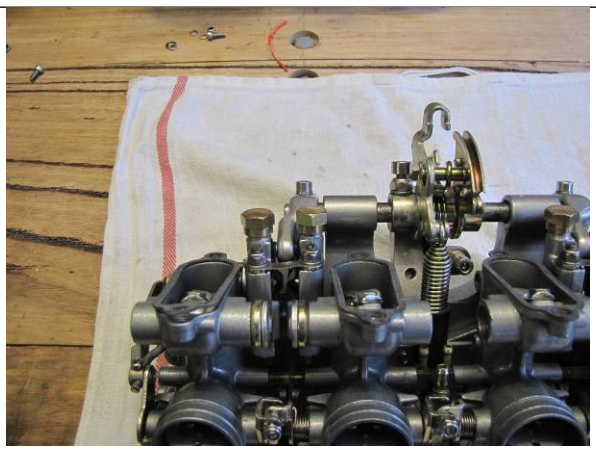
I had to loosen the linkage bolt, adjust the depth of one or both the balancing screws, lock the balancing screws in place, and then retighten the linkage bolt several times to get it right – for each pair of carbs!!!

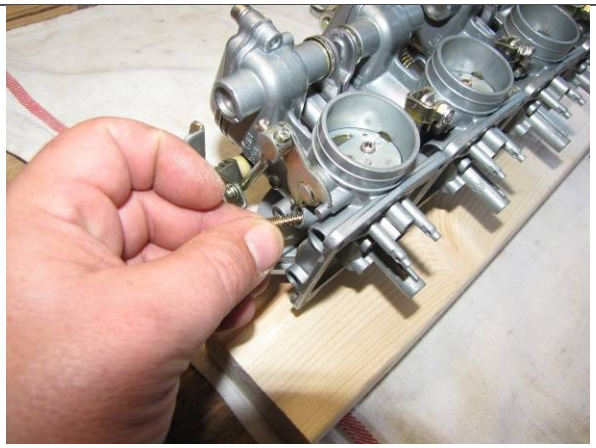
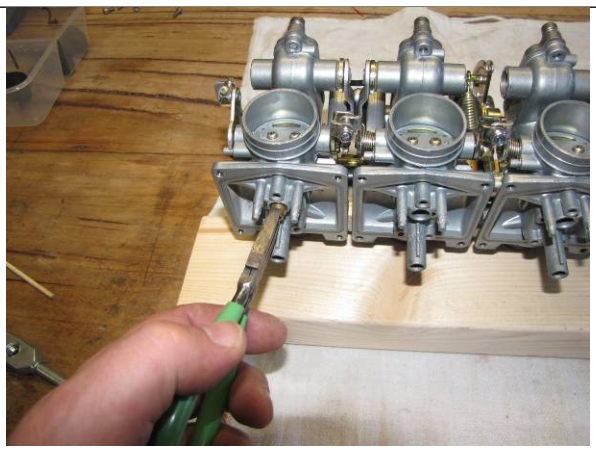
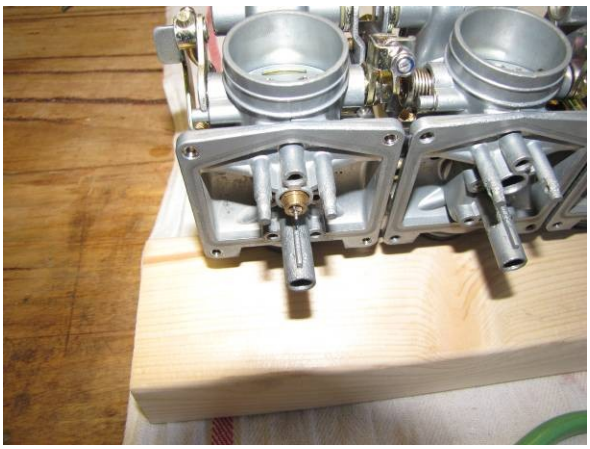
I also used a pair of pliers to press the tab washer against the linkage bolt head.

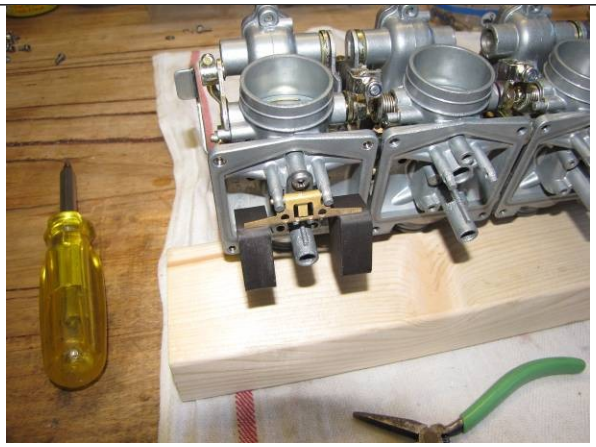
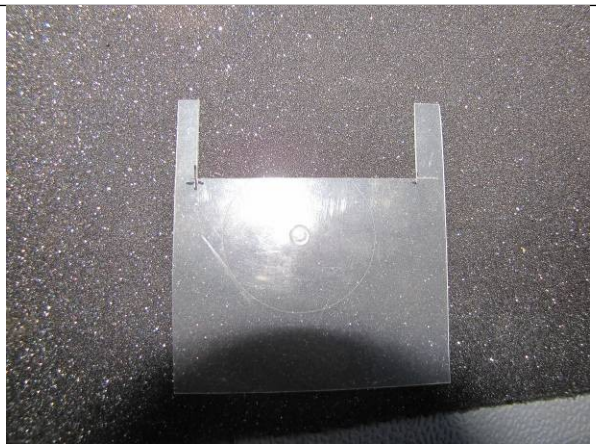


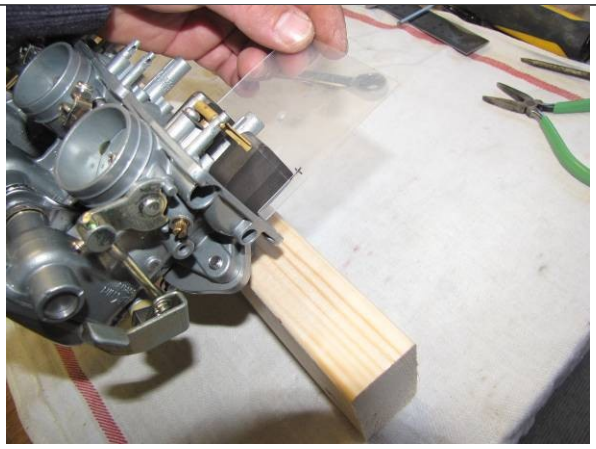
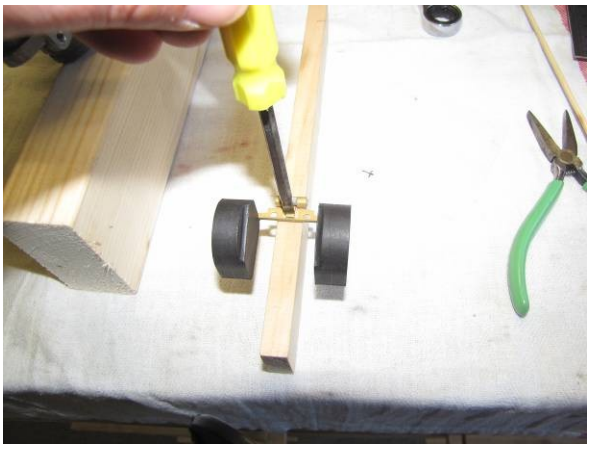
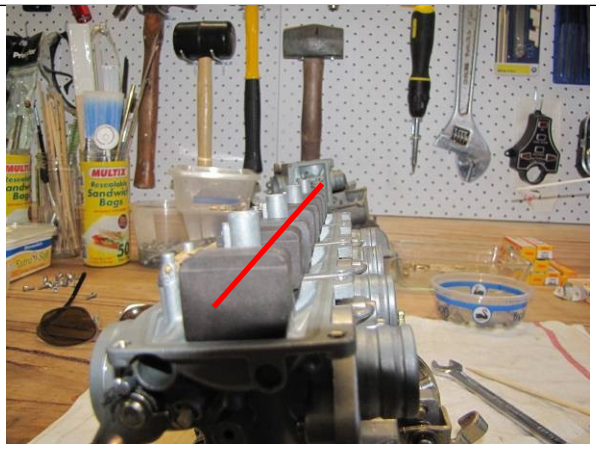


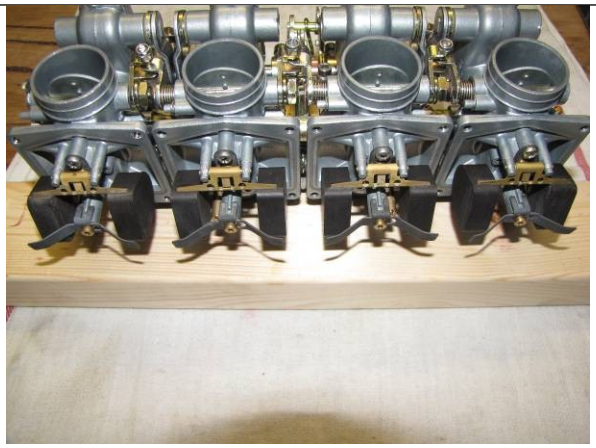


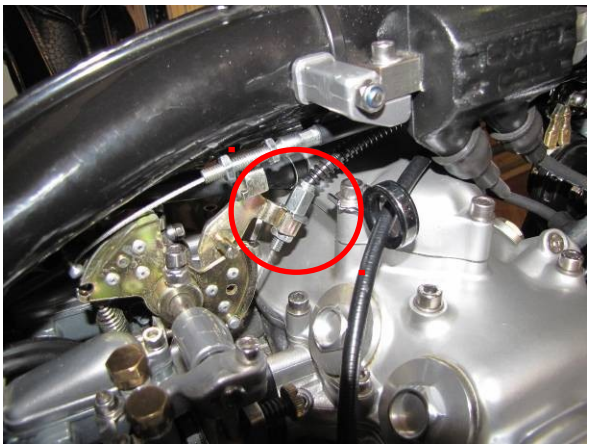
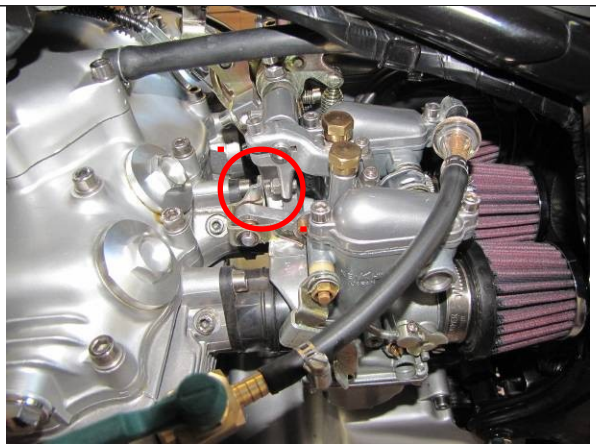
2.11	Adjust the max open screw show 1mm of the slide.	 
2.12	Install the brass caps, screws and guides. Note. Recheck settings from steps 2.8 , 2.10 and 2.11	
2.13	Install the covers.	

2.14	Install the air screws and springs. Screw them in until they seat nicely and then screw them back out 2 ½ turns.	 
2.15	Install the fuel seat and valve. Note. I use a flat bladed pair of pliers to do this. Use a twisting motion to seat the o-ring in place. It should not spring back out of place.	 

2.16	Install the float valve retaining screw and plate.	
2.17	Install the float and pin. Note. Ensure float moves freely.	
2.18	I made a template for checking float heights out of an ice cream lid.	
2.19	Check float height is 21mm when the float just touches the valve spring head. Make adjustments as required, and ensure floats are still even.	

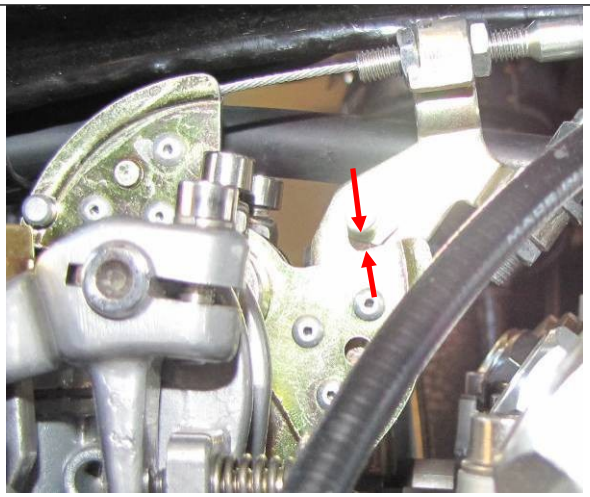
		  
2.20	Repeat for remaining carbs and then check floats, and valves are working the same. I had to replace a Keyster valve as it compressed more easily than the others.	

2.21	Install needle jets, main jets and retaining springs and pilot jets. Use a twisting motion to seat the main jet o-rings in place. They should also not spring back out of place.	
2.22	Install float bowls, gaskets and hoses. Note. Ensure float pins are properly inserted otherwise the float bowl won't fit properly.	
2.23	Install carbs.	
2.24	Check that there is plenty of thread for minor adjustments on the throttle cable.	

2.25	Install the bottom throttle cable first. Once in place, twist the throttle to get a good seating and then tighten.	 
2.26	Install the top throttle cable and adjust to have minimal play in the throttle grip when tightened.	
2.27	Install air box or pods, and recheck there is 2-3mm of gap in the fast idle plate.	

3. Final Tuning

3.1	Connect the fuel, give the carbs bowls enough time to fill and then start the engine. Let it run for a few minutes and then adjust the idle screw to 1200 RPM.	
3.2	Turn off the engine, connect the balancing kit, start the engine and check how well you did in steps 2.8, 2.10 and 2.11 ☺ ***Look at that, just about perfect!!!!*** Make adjustments to the balancing screws as required using this procedure. 1. Turn off engine. 2. Note the position of the balancing screw slot in relation to a clock (i.e., 11 o'clock). Loosen locking nut and adjust screw in or out as required. 3. Retighten and check new position of screw slot. 4. Give the throttle a few twists to reseat everything. 5. Start engine and check.	
3.3	Remove balancing kit and adjust fast idle screw to 0.0 to 0.3mm when the choke is off.	

3.4	Adjust screw in plate to have a 2mm gap.	

Done!!!