Adjusting valve clearance without the special tool

Please read this as an addendum to the excellent valve adjusting procedure for the Suzuki GS850 as compiled by BassCliff and posted on his BikeCliff website and also use Steve's calculator to calculate the size of the shims you may need. Steve will let you have a copy if you send him an email.
The idea for this tool comes from another forum and is not mine, but now that I have used it and proved to myself that it is very easy, in fact very much quicker and easier than using the special tool, I have decided to document it for my own use and to share with the forum. The photos are of my GS1000G and only show #4 intake as an example. NB Please note the cautionary note at the end of this hint.

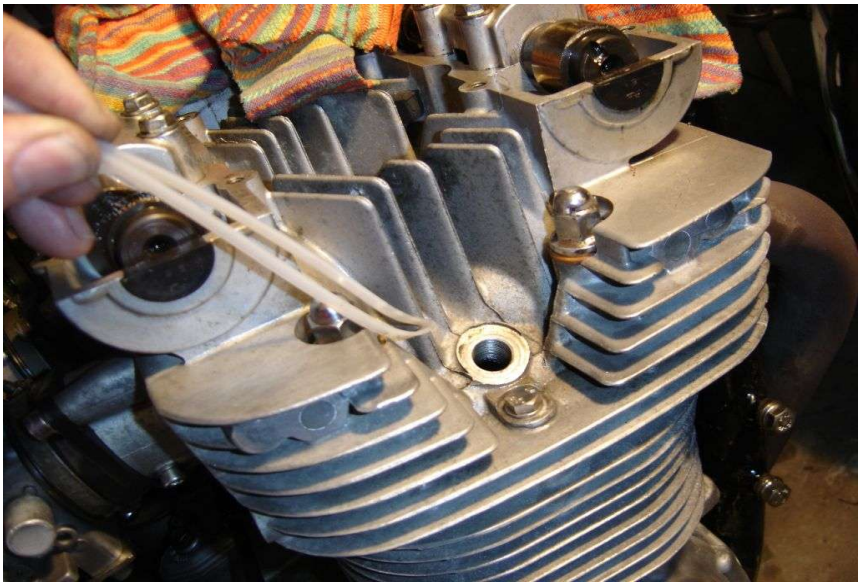
Fabricate your own tool:
Use two long cable ties and fold them in half and crimp the fold tightly with a pliers. Now bend the folded part about 13mm (1/2") from the front. Thats it, you now have two tools and can remove two shims at the same time and can use both hands to remove them!
The plastic cable tie will be used to lock a valve open by placing them under the open valve between the valve and its seat. The plastic is soft and will not damage or mark the valve. Inserting it is very quick and easy and leaves both hands free to handle the shims. You will never use your old valve shim tool again after using this method!

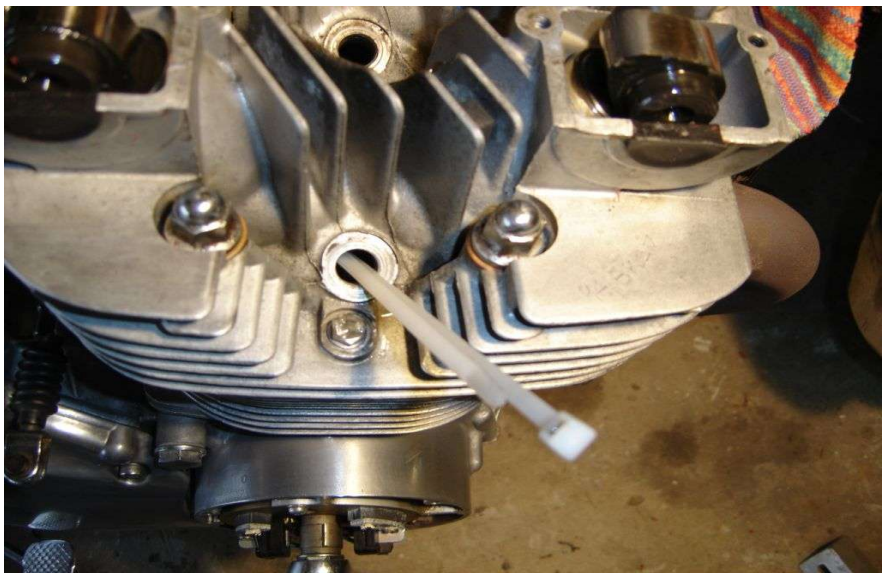
Now follow the BassCliff guide and have a piece of paper and pencil to take down the sizes of the shims fitted and the clearance measurements of each valve.

Remove tank, plugs, tie back plug leads, remove valve cover and timing cover.

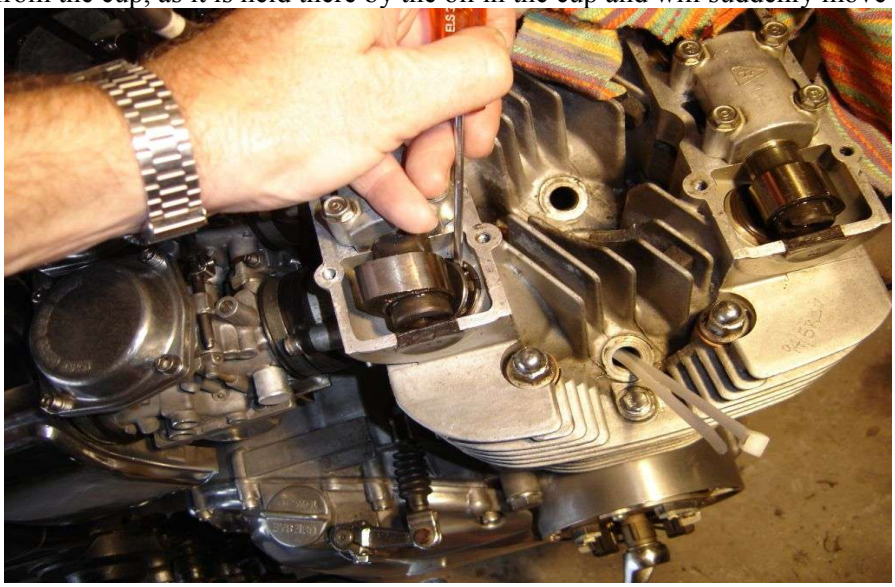
Use a 19mm spanner and turn the engine clockwise until the the highest part of the cam lobe on inlet #4 is perpendicular to the valve and it is thus fully opened.

Now insert the “valve tool” at about 10 o'clock in the spark plug hole and push the folded part of the cable tie between the open valve and the head. You should be able to see the edge of the valve once it is open, if you shine a light into the spark plug hole.





Now again turn the crank with the #19 spanner until the cam lobe above #4 inlet valve has the highest part facing away from the valve shim, closing the valve fully. There should now be a very noticeable gap between the shim and the bottom of the cam lobe. Rotate the shim cup until the notch faces the top and pry the shim from the cup, as it is held there by the oil in the cup and will suddenly move away.



Once you have lifted the side of the shim, hold it up with the tip of a screwdriver and use a small long nose pliers to remove the shim.
When you replace the shim, first put the screwdriver behind the shim at it lowest part to stop it sliding past the rim of the shim cup.
Repeat this for each valve

Note: The advantage here is that at certain times when one valve is open, you may also have another valve open at the same time, just check the cam lobe positions and you can lock two valves open simultaneously and thus remove/replace two shims at the same time.

Cautionary note: **NEVER** use a magnet to remove the shim as it may magnify it and cause metal particles to stick to it with disastrous consequences. On engines with carbon buildup, it may be easy for the cable tie to dislodge a tiny bit of carbon and when the cable tie is removed it may stop the valve from seating fully and may thereafter give a false (larger) valve clearance reading which usually cannot be removed easily just by turning the engine. In such cases do not rely on clearance measurements taken AFTER the valve was held open in this manner, to recheck the clearances in such cases, rather give then engine a short run and check the clearances the next day when the engine if fully cooled down. This does not always happen and sometimes only on one or two valves and also shows the importance of noting all the clearances before removing any shims, so that you immediately pick this up. Thanks to Steve for pointing this out.