

# Set-up and tuning of the Bing 54 carburetor

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(<http://www.microlighters.co.za/viewtopic.php?f=13&t=6514&sid=9b9514d55e3d7c4f8ad08c34d786732e>)

The fuel delivery system on the Bing carb as used on our Rotaxes are basically divided into 3 mixture control circuits:

- 1) Idle circuit
- 2) Midrange circuit
- 3) Full throttle circuit

The idle circuit does just that. Controls the idling part. This ranges from 2000 rpm to just over 3000 rpm or so.

The midrange circuit has influence over the range from about 3000 rpm to 6000 rpm and

Full throttle range is over 6000 rpm

Now, which jets and hardware bits controls what? Not too difficult . . . here goes:

- 1) The idler jet controls the air mixture of the idling circuit. (That's the small jet on the side of the carb next to the BIG hex nut.
- 2) The jet needle (that's the dangly bit hanging out of the bottom of the slide) and the needle jet controls the midrange and
- 3) The main jet controls the full throttle setting.

Simple so far . . .

To set the fuel/air mixture on the idle circuit, I try to set the slides the same height with the hex nut screws to about 2200 - 2300 rpm and then slowly turn the idler jets out (anti-clockwise) This in effect leans the mixture by increasing the air intake (don't worry, you're NOT gonna burn a hole in the piston or seize the engine) By leaning the mixture it normally increases the rpm slightly and smooths the idling out. If you turn it out too far, the idling will get rough again. Turn it back (clockwise) about a ¼ - ½ turn. The idling mixture should be set correctly now. If you find you're turning the idling jet out and out and out and nothing is happening, then you could try a smaller (leaner) size idler jet. The Bing normally ship with a size .55 jet for the 582. You can replace this with a .50 or a .45 and start the procedure over again.

Once you've set the idling circuit, you can move onto the midrange.

If you find that whilst flying, your EGT's are too high or too low IN THE MID-RANGE (3000 - 6000 rpm) then you can try and change the clip at the top of the needle jet. It has 3 positions. The clip in the HIGHEST groove will give you HIGH EGT reading. In the LOWEST groove will give LOW EGT reading. Why? Because by moving the clip to the highest groove you're actually lowering the needle into the jet and restricting fuel flow thereby leaning the mixture and in the lowest groove you're raising the needle more out of the jet thereby enriching it a bit which gives a little lower EGT. You'll probably find that each clip position can change the EGT reading by about 10 - 15°C (50 - 70°F)

If this still doesn't give you satisfactory results, you can change the needle to another one with a different taper. I'll give an explanation at the end of this short tutorial as to what the numbers, that are stamped on the needles, mean.

Full throttle mixture is controlled mainly by the main jet. The jet needle clip settings have virtually no effect on this as by now, the slides are pulled up so far, that the needles are just about out of the jets and it makes no difference whether the clips are in the top, middle or bottom groove. Bigger main jets enrichen the mixture and you'll get a bit of lower EGT's. Smaller main jets leans the mixture with the resultant higher EGT's.

**NOTE:** Density altitude plays a role here. I'm not gonna elaborate. Suffice to say that at the coast the normal main jet size for a 582 is 165 and at altitude we use 158. I personally use 160s here at altitude.

I hope this will benefit someone who has perhaps been struggling with the settings of the carbs.

So what do those numbers mean that are stamped on the needles?

Rotax 582 DCDI, Bing 54 normally has 11G2 stamped on the needle. A higher NUMBER (higher than 11) gives a RICHER mixture in the mid-range ABOVE half throttle.

A higher LETTER (higher than G) gives a RICHER mixture in the mid-range BELOW half throttle

And the number 2, I hear you ask? I don't know.....never bothered to find out and I don't think it's relevant. Anyone know?

**PLEASE NOTE:** The above is as I understand the settings and mixture controls of the Bing 54 carb and as I have said, this is by no means exhaustive as there are other factors such as density altitude and prop loading that also have an effect on the EGT readings. This is merely a simplified explanation of the workings of the carb and how to do a simple tuning thereof.