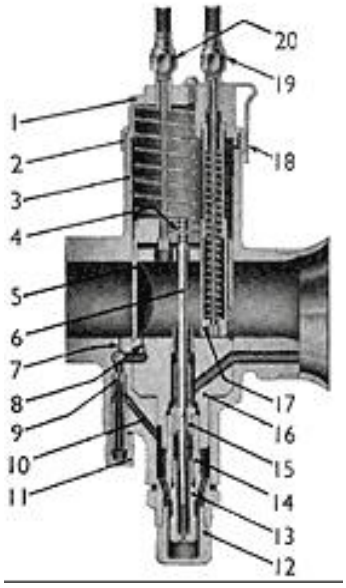
AMAL Monobloc 389 Pilot Jets & Holes Measurements. 18th March 2019

Musings.

It is raining today for a change – Idle hands and all that.!

I have just watched three videos on U-Pipe on strip and clean of the Monobloc carburettor, none of which mentioned how to check that the two throat orifices (Holes 7 & 8) are clean.



So decided to measure them and run a cleaning rod through them using microdrills as cleaning rods.

Note of Warning.

I have 3 sets of microdrills, each purchased for a relatively small sum of about A$20 on Evilharbour.

They are labeled only in mm. Many are unbranded but they all look like they came out of the same factory.

None of these sets had accurate drill diameters as indicated on each drill slot. That is why I ended up with 3 sets – hoping to get an accurate set at low cost. Anyway non-standard diameters can be an advantage if you need a diameter slightly different to standard size.

It is essential that any drill be measured with a micrometer to ensure true diameter is known before use.

	Nominal Drill Size mm	Microdrill Measured			
Jet or Hole	**mm**	**Inches**	**mm**	**Equivalent Number Drill**	**Fit**
#25 Pilot Jet (Old)	**0.40**	**0.0160**	**0.406**	**78**	**Good**
#30 Pilot Jet (New)	**0.50**	**0.0185**	**0.470**	**77**	**Firm**
Slow Idle Pilot Hole 7 - Exit side of slide	**0.65**	**0.0250**	**0.635**	**72**	**Good**
Fast Idle Pilot Hole 8 - Entry side of Slide	**1.00**	**0.0390**	**0.991**	**61**	**Good**

Note: Good means not too tight, but won't wobble either.

For the two pilot Outlet Orifices (Orifi??) visible from the carburettor throat, the microdrills were too long to enable the drill to align with the orifice, so they were snapped to shorten. (They are cheap afterall). Use thin-nose pliers to hold the drills. I placed the drills in the hole as you were going to drill a hole ie. cutting end first, as the tapered point helps locate the shaft. Don't use force.!

You can clean the smaller orifice through the pilot jet from below with the jet removed, but it is necessary to fashion a small – diameter holder for the drill.

The larger orifice can only be approached from above.

I did find some fine crud in Orifice 8. A 0.95mm drill (measured at 0.94mm) gave a slight resistance so some crud was evident. The 1.00mm drill went through with slightly firm pressure. So it was a worthwhile exercise. There had been a hesitation just above Idle, so at least I can now eliminate orifi.

Outlet Orifice Area

The orifices 7 & 8 are larger than the pilot jet diameters, presumably to allow for the greater volume of the fuel / air mixture than the neat fuel passing through the pilot jet.

The area ratio of Pilot Jet to Outlet Orifice is as follows:

Pilot Jet	Area (x 10^{-4} sq inches)	Area Ratio Slow Idle – Side Shut	Area Ratio Fast Idle - assumes mixture escaping through both Orifices
#25	**2.010624**	**2.441406**	**8.383**
#30	**2.688032**	**1.826150**	**6.270**
Small Orifice	**4.908750**		
Large Orifice	**11.94593**		

My Thoughts.

This is all a bit academic I know, and I am sure two decimal places would be adequate.!

It was useful for me to know how large the orifi are so they can be cleaned when doing the pilot jets.

The Orifice diameters are considerably larger than the common Pilot Jet sizes, so probably can tolerate some buildup of crud before affecting idle performance significantly. Nevertheless clean orifi must be better.

As the slide opens, the suction downstream of the slide leading edge decreases rapidly and so presumably does the fuel flow from the pilot jet. But the suction upstream of the slide leading edge also starts to increase from zero. Thus the fuel flow from the pilot jet is probably maintained at a similar flowrate as for the slow idle.

The air/fuel ratio probably weakens as the slide opens, but the Needle Jet will soon be coming into play.

I did have some fun and also learnt something, so it wasn't a total waste of time.!!!