Pen Blanks and Moulds

Made in the UK by Paul & Jackie Buckley

3D Printed Core Blanks - Description

Available in a variety of colours and patterns including Pinstripe, Helix, Honeycomb and Diamond.

These blanks have a 3D printed core of coloured filament which have been cast in Epoxy resin. They need a little more care and knowledge to turn (see instructions below) and can create some unique and stunning pens. However, if you are like a bull in a china shop and want to knock out numerous pens an hour, these blanks may not be for you!

To help with the release of air bubbles when casting, our 3D core blanks (excluding pinstripes) have what I call a 'jacket' on them ie the 18.5mm blanks have a 16mm core and the 20.8mm blanks have a 18.3mm core, once this 1.25mm 'jacket' is turned off, the core pattern will be revealed. Also to further minimise the risk of air bubbles, we usually limit these blanks to a one or two colour pour and pour the resin sooner which results in a more subtle effect with less colour separation than our standard blanks, as using more colours and leaving the resin to thicken for longer to get more colour separation substantially increases the risk of air bubbles.

3D Printed Core Blanks - Instructions

Below are a few guidelines to aid successful drilling and turning of our 3D core blanks. This is the technique I use, it's not necessarily the best or the only technique and some steps may be a bit OTT, but it works for me.

Be very careful clamping and drilling (in particular the Pinstripe blanks) because the vertical stripes make the blank quite fragile especially once drilled, making them quite easy to crush. This is especially the case if drilling 10mm or larger holes. This is due to most pen drilling chucks/vices having only 4 narrow pressure points to hold the blank (note: our other blanks such as Helix, Honeycomb and Diamond etc are a little stronger but care still needs to be taken). If using a collet chuck, (which I would recommend) you shouldn't have these issues as collets hold the blank with equal pressure across the entire circumference, not just 4 points. You can get ER32 collet chucks to fit most woodworking lathes, either as a morse taper or versions that directly thread onto the headstock. And contrary to popular belief ER32 collets can go up to 25mm, (All ER32 collet sets only seem to go to 20mm, but you can buy individual collets separately up to 25mm). As they are quite hard to get hold of, we have 21-20mm collets available on our website for our 20.8mm blanks. If drilling on a drill press a ER32 collet block and collets would be very handy for drilling these (or any other round) blanks.

Because of the 1.25mm 'jacket' I can't see exactly where the pattern is, so I cut the blanks quite a bit longer than the tube to allow for adjustment in pattern matching. If I was to remove the 'jacket' before drilling, the blanks would possibly be too thin and fragile for drilling (for reasons described above). After drilling I can usually see enough pattern inside the drilled hole for tube placement, if I want to see the outside pattern, I will carefully mount the oversized blank with a loose tube on a mandrel with bushes (warning do not put a blank with a unglued and untrimmed tube between centres, as it will just split the blank!).

When drilling take care not to generate too much heat, as the filaments used in the core have a lower melting point than the resins. I drill on the lathe with either a ER32 collet chuck or pen blank jaws with a small piece of sacrificial wood in the chuck to prevent breakout. I use a very sharp drill bit, drilling at about 500 rpm and regularly withdraw the bit and clear the waste.

After drilling, I drizzle thin CA glue down the centre of the blank (my theory is it soaks into the 3D core and helps to strengthen the bond to the resin), I then apply standard CA glue to the tube to glue it into the blank. If you don't like using CA glue I would still recommend soaking the inside of the blank with thin CA glue and letting it dry before using your preferred glueing method.

When turning, as with all acrylic blanks, I crank the lathe to it's fastest speed (just under 4000 rpm) and carefully take light cuts with very sharp tools.

When sanding make sure you don't have the lathe spinning too fast (about 400 rpm) as the 3D printed cores like heat even less than acrylic/resin. I carefully sand to 600 grit with Abranet abrasive sheets.

For a glossy hard wearing finish (like most Hybrid blanks) I apply a coat of thin CA glue (again my theory is it soaks into the filament and binds/stabilises the blank) followed by a few coats of medium CA, then once hardened I lightly sand with 400 and 600 grit Abranet, then finish with Yorkshire Grit Microfine Abrasive Paste. Alternatively you could possibly use melamine lacquer instead of CA glue or even just sand and polish with Abranet and microfine paste or some other finishing technique.

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