

Q: As a newcomer to ornamental turning, how do I sand and polish my work without destroying the facets of the patterns?

A: The simple answer is: you don't.

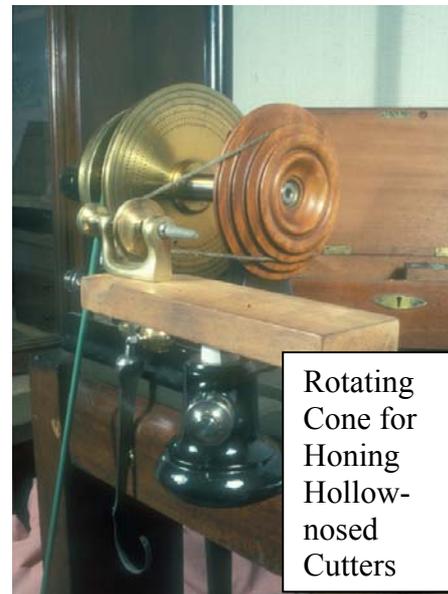
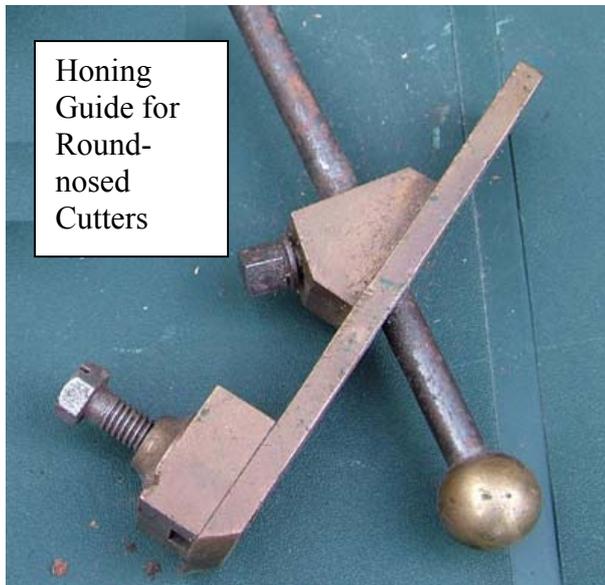
You should not need to use abrasives at all. First: you should use only very hard woods like African Blackwood, Boxwood, Lignum Vitae, etc., for if you use soft woods, the cutter will tear at the surface, after which you will only be able to get a smooth finish by using abrasives; and they will destroy the crisp points and facets of your ornamental patterns.

Second: you must use extremely sharp cutters. The edge of the cutter copies its profile onto the work, so if you used a jagged edge to cut, you will get a jagged finish. Think of a saw blade: if you drag a saw blade across a piece of wood it will make a series of jagged scratches. This is what your cutter will do on a smaller scale if it is not honed to a mirror finish. The easiest way to do this is with a Goniostat; this is a jig with two legs and a slot that holds the cutter at a compound angle. The edge of the cutter forms a third leg to form a tripod. The straight cutters for ornamental turning have various forms: square, bevelled, pointed or side-cutting. The desired compound angle is adjusted by two sectors, one in the horizontal plane and one in the vertical. Clamp the cutter, place the three legs on a flat sighting board, hold up to the light; look at where the cutter edge touches the board and set each angle by adjusting the two sectors until the cutter edge is resting flat on the sighting board in both planes. Now, if you rest the two back legs on a flat board and the edge of the cutter on the abrasive surface at the same level, you can hone the cutter to precisely the same angle at which it was previously sharpened. Stroke the cutter on the lap, in line with, but not across its edge; as the latter would produce a jagged, saw-toothed edge which would give a poor finish to the work. This is because sharpening and polishing are abrasive processes which always produce a series of scratches, however fine. If these scratches run along the edge of the cutter instead of across it, they are less likely to be visible on the surface of the finished work. It is a good idea to examine the sharpened edge of your cutter with a jeweller's loupe or strong magnifying glass (15:1 is generally adequate, but a microscope is even better). You should see a smooth, almost invisible line, not a jagged one, and with no high spots.



The best results come from using diamond paste (diamond dust mixed with grease) on a flat ceramic lap (ceramic laps are expensive so you might try a very flat ceramic wall tile); any softer surface will soon become abraded and no longer flat. I start with a coarse diamond impregnated lap, then a fine one, then the ceramic lap, using a range

of grits: 6 micron, followed by 3, 2 and 1 micron, sometimes ½ micron; being careful to clean the cutter after each grit to avoid cross-contamination.



For round-edged cutters a honing jig with a single leg is used; the leg rolls on the flat surface and the cutter is stroked along its edge on the abrasive lap. Hollow-nosed cutters are sharpened with rotating cones charged with abrasive paste.

Now, if you go to all this trouble you should succeed; but there is a third problem to consider. Wood is made up of fibres and if you cut against the grain your cutter will tear the fibres apart; so think first about the direction of cut and the sequence of cuts you choose for building your pattern. For example: in Rose Engine work using a horizontal cutter for a series of cuts on a surface (end grain); if you start at the outer rim, cutting progressively towards the centre, your cutter will go in cleanly at the rim and emerge leaving a feather-edge nearer the centre; then your second and subsequent cuts will remove the feather-edges of the previous cuts; and your final cut will cross over the centre, leaving no feather edge. If, when cutting, you notice a dull patch caused by the cutter crossing an area of twisted grain, it can sometimes be remedied by reversing the direction of the cutter. To be sure that all cuts are to the same depth, reverse the cutter but leave the clamp screw slack, then push the cutter into the previous cut before clamping it so as to repeat the position precisely.

Whilst you should not use abrasives (which destroy the pattern), nor sealers, nor lacquers, nor varnishes (which clog the pattern), there is no reason why you should not use a soft brush with a tiny amount of wax polish to make your work shine. Many of the examples of my work on the Gallery Page are polished in this way.