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Instructional Handout for **Piercing and Negative Space**

Creating an interesting pattern can include the use of negative space, or piercing. The best tool to use for piercing is a dental lab handpiece.

1. While you can remove wood using a slower speed rotary carver, it will be hard for you to control exactly where the bit/bur will go. Using a rotary powered carver running between 15,000 and even up to 50,000 the burr will follow the path of least resistance. And that is rarely where you want it to go. So, your piercing pattern will be some very large, somewhat misshapen holes.

2. Air powered dental lab handpieces can run between 325,000- 400,000 rpm. These tools are not designed for heavy stock removal. They are intended for small, delicate, and detailed work.

NSK Presto Dental Lab handpiece and Regulator, available at [Treeline USA](#)



3. The NSK Presto holds bits that are 1/16th shank only. The handpiece requires an air compressor that delivers at least 2.0 CFM at 35 PSI. It does not require oil and will run the bits at around 320,000 rpms.

4. Dental bits that I use are:

699L Long cross cut taper for piercing (image below)



And No. 2 and No. 3 ball tip for adding texture (image below)



5. When piercing, your wall thickness should be between $3/16^{\text{th}}$ and $1/16^{\text{th}}$ inches thick. If your walls are thicker than that, you need to cut down in several passes before breaking through. If you try to force the cut in a single pass, you will snap your piercing bit and damage the turbine in your NSK. That is a very expensive piece of equipment to replace.

If your turned work will be thicker than the ideal, consider using different tools. A carving drill can be used in a micromotor handpiece to drill holes. An example is this one from MDI Woodcarver's Supply: [Carver's Drill](#)

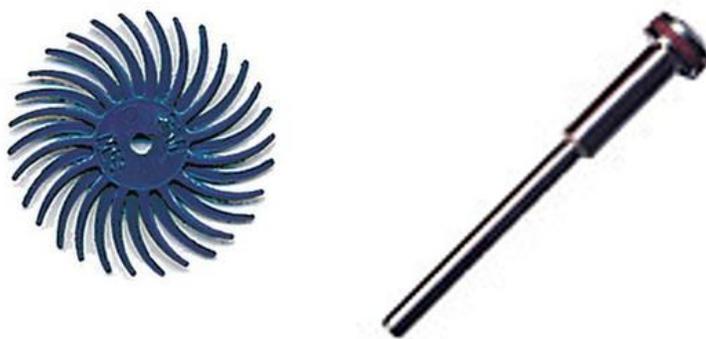


After creating a few holes, you can use carving bits to open up the space and refine the edges using quality rasps and rifflers. My preferred tools for this after the carving drill, are Saburr Tooth bits in various sizes, followed by #49 Nicholson Patternmaker's rasp, and Aurio needle rasps. [Highland Woodworking Rasps](#) Note, this method is very labor intensive.

6. Back to the dental lab handpiece, the NSK Presto: Move your handpiece in a clockwise position to pierce. Your wood will not only be cut, but there will be burned or charred edges. You will need to deal with that. Either leave room for cleaning up each edge with a final pass, with the bit now moving counter-clockwise, or use interference paint (covered in Applying Paint demo).

7. When texturing and piercing is finished, clean up fuzz using an old soft-bristle toothbrush and/or a 220 or 400 grit radial bristle disc (between 3 and 6 stacked and secured on a mandrel) held in a variable speed rotary carver. Keep the speed under 15,000 rpm or you risk breaking the bristle discs.

Radial Bristle disc and mandrel



8. Use compressed air to blow out any debris left from the piercing, texturing and cleaning.

9. Re-burn your original outlined pattern! You will have marred the original outline during the texturing. Re-burning the original lines cleans up the rough edges and gives the leaves that crisp clean appearance.

10. If necessary, you can use Acetone, or Nail Polish Remover on a soft cloth to remove any dark brown staining of the wood where your heat may have been too high.

11. Allow sufficient time for the acetone to dry, or outgas before proceeding to the next steps – applying color!

Tools and supplies used

- Acetone/Nail Polish Remover
- Toothbrush and 3M Radial Bristle Discs
- Slow variable speed carver or Dremel, capable of speeds between 12,000 and 15,000
- For piercing and negative space, air-powered dental drill, like the NSK Presto
- Air compressor that will deliver 2.0 CFM running at 35 PSI
- Over-the-head magnifier
- 1/16th shank dental bits