

Mastered Models II

Modifying a two-part ring in milled wax

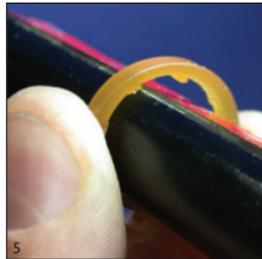
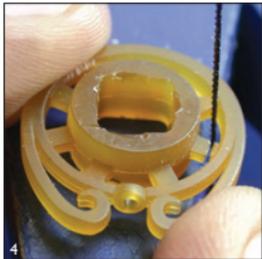
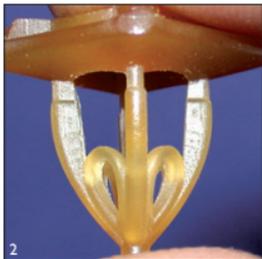
BY KATE WOLF *Editor's Note: This article is the second in a series on evaluating and revising CAD/CAM models for production. The first installment appeared in the March 2009 issue. Kate Wolf would like to thank Marc Williams of MarcCo Jewelers in Luzerne, Pennsylvania, for supplying an assortment of CAD/CAM-generated models that Wolf could revise aesthetically and use to address production concerns.*

When this two-part ring came off the mill (1), the surface of the wax looked good. But it did have some issues that needed to be addressed to ensure the highest quality casting. We'll take a look at those issues here.

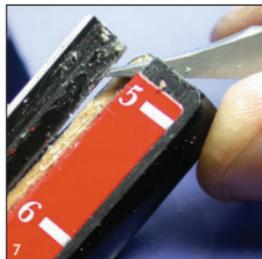
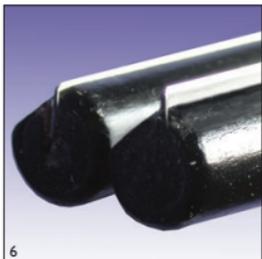
- Let's start with the four-prong setting (2). Cast metal is quite different from metal that has been rolled, drawn, and/or die struck: Cast prongs are spongier; they don't have the ductility and tear strength that die struck prongs have. It would be wise to output this file two ways: one with the prongs as they are, and another with the prongs concave in shape and terminated down low to the base (3). After the setting is cast, fabricated prongs that have been rounded at the bottom can be soldered or welded to it.

- Now let's work on the ring. The milling support inside the ring needs to be removed to get a good casting. Some jewelers wait until the piece is cast, then saw, grind, and file the inside of the ring smooth; however, doing this in wax is quicker and saves on scrap metal that would have to go to the refiner.

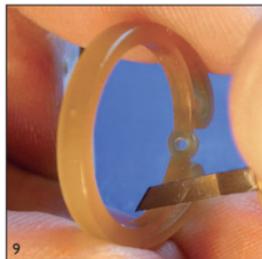
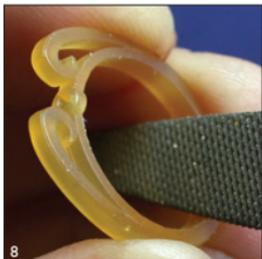
- Using a jeweler's saw and a coarse blade, saw through the spokes (4). Ease up on the pressure at the end of each cut to avoid cutting into the shank. I don't use spiral blades for this because they tend to wander. This wax is thin enough to use a conventional blade.



- To ream the inside of the ring, grab a Wax Ring Sizer (5). This is one of the most useful, time-saving tools on my bench. Priced under \$25, it's a bargain. Like most of the tools I use, it gets modified. I prefer the blade to be much lower, so only the beveled edge of the blade is above the surface of the wood (6, left). This results in less grab and a smoother wax surface. Fortunately this is a very easy modification. Use an onglette graver to cut away the silicone glue on both sides of the blade. Insert a graver into the end of the sizer under the blade, prying it up (7). Excavate the silicone glue out of the slot and glue the blade in deeper.

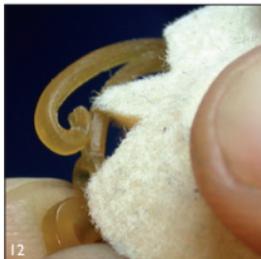
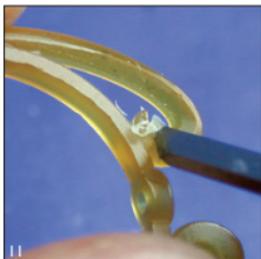
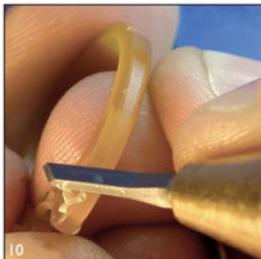


Use this tapered Wax Ring Sizer to take down the spokes inside the ring. Use very little pressure and remove a sliver of wax with each turn. By turning the sizer counterclockwise, you can take a smaller "bite" out of the wax, reducing the chance of cracking the ring. After a few passes, flip over the ring and continue reaming. Now you can gently turn the sizer in a clockwise motion on both sides. I'd prefer to have about 0.25 mm extra material inside the shank, then I could ream the spokes off completely and take a few more passes around on both sides until the ring is the correct size. (Warning: Do not rely on the numbers printed on the Wax Ring Sizer, as they are far from accurate.)



- Since this ring doesn't allow for extra material to ream it all the way around evenly, file the last bits of the spokes down (8). Afterward, use the corner of the detailing or carving knife to scrape smooth the file marks (9).

- I'm often asked how I avoid breaking a wax when doing all this work. The key is to support the wax and don't squeeze it while you are working on it. I support the wax gently wherever I am applying pressure. Figure 9 shows how I hold the ring while I am scraping it. I also use very sharp tools at



an angle that easily remove a shaving of wax with every stroke. It's all about finesse; brute force will get you into trouble fast.

- Use the knife to round the edges of the shank (10) and bevel the inside of the scroll (11). Rub a knife-edge felt wheel on the wax to smooth out tool marks (12). I cut a few notches out of the felt wheel to enable it to reach into smaller areas.

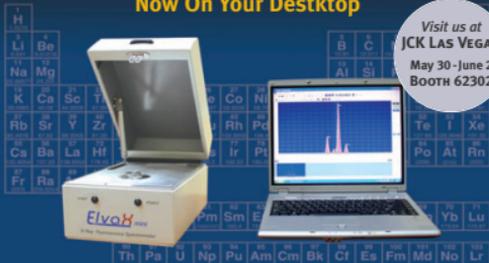
- Use a brush marker found in art supply stores to paint the wax (13). Wipe the brush marker on a bar of soap to make the ink stick to the wax. Wipe excess ink off the wax. This makes it easy to see the tool marks and surface imperfections that can be touched up before casting.

- The right side of the ring (14) shows how rounding and beveling changes the look. (Normally, I work both sides simultaneously.)

This exercise shows how helpful it can be to mill a few extra waxes from your CAD files and play with them. Carve away and change the look and feel of the piece. Making revisions by hand to the wax patterns will help you envision your designs on the computer in new ways while expanding your design vocabulary—and it's fun! ♦

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