

SKILL-BUILDING PROJECT

Getting Started in WEARABLE RINGS—PART 2

Kurt Hertzog

This article is Part 2 in a series. The first article, which appeared in the February 2022 issue of *AW* (vol 37, no 1), covered turning a ring from scratch and the importance of accurately sizing it for the end user. In this follow-up, we'll cover a few of the specialized ring cores, mandrels, cutting tools, and alternate methods available for creating rings.

Ring cores

The old adage, “measure twice, cut once,” is particularly true when sizing a ring made from scratch. When using purchased ring cores, the saying could be “measure twice, buy once,” as little can be done to resize them. If possible, it's a good idea to have the recipient try on the core before you make the ring.

Ring cores are available in a variety of metals, ceramics, and composites. As the name implies, a ring core is fundamentally a base ring that can be adorned with a variety of materials. The obvious advantage is that the ring size is already established, so you don't have to spend any time tuning the size.



Ring cores come in a variety of configurations, including the flat single piece, two-piece with friction-fit assembly, two-piece with threaded assembly, and single piece with a channel (or channels) that can accept inlay materials (*Photo 1*). To illustrate this article, I'm using a solid single-piece core, as it is the easiest to use and illustrates the fundamentals very well. In this process, the ring core is glued into a carefully sized piece of wood, whose outer surface is then turned to final shape. All ring cores, regardless of configuration,

add mechanical strength to the ring, since there is a metal or ceramic core supporting the outer material.

Material selection

When you select wood for your ring body material, think grain. Bowl turners quickly learn the effects of wood movement, grain orientation, and cutting characteristics. Ring turners, too, should be aware of the moisture content of the wood, as well as the grain density and orientation. Remember, a ring core, whether metal or ceramic, will never change in size or shape due to moisture or temperature changes. As with any woodworking project, wood cladding on a ring will be subject to some movement. I prefer to use stabilized burl material, not only for its density and strength, but also for its natural beauty.

Fit ring core inside body material

There are several different workholding needs when turning a ring. To start, you'll need to hold the ring body material

Ring cores



1 Ring cores come in a variety of materials and configurations. Add wood or inlay material to make a beautiful custom ring.

Size the body material



2 Stabilized burl is a good choice, as it won't move much with humidity changes. Size the wood so there will be enough thickness all around the ring core, then cut off a slice slightly wider than the height of the ring core.

Mount and drill



The ring body material can be mounted to a wasteblock fitted with double-sided tape. The author first uses a hole saw to cut away excess wood and round the blank, then a Forstner bit slightly smaller than the outside diameter of the ring core.

for flattening, facing, drilling, and sizing prior to gluing in the ring core. The easiest and most straightforward method is to use a sacrificial block mounted in a chuck or on a faceplate.

To save time and minimize waste, I cut my ring blank slightly oversized. Not much more than 1" (25mm) diameter of wood will be needed (*Photo 2*). Cut off a square of material large enough for easy handling and mounting without too much extra. Flatten one face of ring body blank on a sanding block, and attach that flattened face to the wasteblock using double-sided mounting tape (*Photo 3*). You can use your tailstock quill to apply pressure for good adhesion. Once the ring blank is attached, flatten its exposed face using a gouge or scraper. This step is not critical, but it makes the drilling and sizing easier.

I remove the excess material by drilling with a hole saw (*Photo 4*). This rounds the blank while leaving it larger than the finished outside diameter. I then drill a hole with a Forstner bit just smaller than the required inside diameter (*Photo 5*). I find that these two actions

save time and help to prevent wood breakage while removing excess stock.

With the bulk of the inner portion of the ring material removed, sneak up on the final fit of the ring core. A parting tool can be used to widen the inside diameter. The goals are to have a tight fit, allowing room for glue, and a truly perpendicular cut. Any angle on the inside cut could result in a visible gap between the ring core and the ring blank material. For those willing to buy another “gizmo,” there is a specialty tool that is perfect for this job—a boring-head tool mounted in the lathe’s tailstock (*Photo 6*). This tool, from the metalworking industry, is perfect since it allows for minute adjustment and by design cuts perpendicular to the axis of rotation throughout the depth of the cut.

Remember, it is easier to remove stock than to add it back, so stop and test the fit often, using the actual ring core as a gauge (*Photos 7, 8*). When the inside diameter allows for a snug “slip fit,” stop removing material. A slip fit should allow enough room for adhesive yet be tight enough for proper assembly.

Glue in the ring core

Most metal or ceramic ring cores come with a high-gloss finish. I scuff the polished outer surface to provide some “tooth” for the adhesive. With metal cores, you can simply use a piece of abrasive flat on a table and abrade all around the surface by hand. With a ceramic core, the material is so hard that it takes diamond to cut it. In this case, mount the core on a ring-turning mandrel, run the lathe at a slow speed, and abrade the core with a diamond wheel-dressing tool.

I prefer to glue in the ring core on a horizontal surface such as my workbench or lathe bed (protected with wax paper). It is possible to leave the body material mounted on the lathe during gluing, but I think the gap around the ring core is more equalized when gluing takes place with the blank horizontal. The wood blank can be removed from the wasteblock easily. I usually remove it by hand, but if needed, you can use a thin knife to separate it from the tape mount.

Many ring turners use cyanoacrylate (CA) adhesive to bond the ring core into the body material, but I favor epoxy for ▶

Fine-tune ring core fit



(6) For precision cutting to widen the inside diameter of the body material, the author uses a metalworking boring-head tool mounted in the lathe’s tailstock.

(7-8) Carefully sneak up on the perfect fit of the ring core in the wood.

Glue ring core into wood cladding



Before gluing the ring core into the wood, scuff up its surface with sandpaper to improve adhesion.

this job. Prior to glue-up, clean the ring blank's inside diameter and the scuffed ring core's outside diameter with denatured alcohol or acetone to remove any contaminants that could hinder adhesion (Photo 9). Mix the epoxy and lightly coat both gluing surfaces. Not much adhesive is needed, but complete coverage will ensure maximum surface bonding. Work on an easy-release surface such as a piece of wax paper or disposable plastic bag, inserting the ring core into the wood blank with a slight twisting motion. Leave the ring core centered in the width of the body material and clean off any epoxy that has squeezed onto the ring core's inside diameter (Photo 10). Allow the glue to cure; I let it dry overnight at a minimum.

Turn the ring

In addition to the shopmade mandrel noted in the first article in this series, there are several excellent commercially available ring mandrels. Some purchased mandrels thread directly onto the lathe spindle, while others can be gripped by a scroll or collet chuck (Photos 11-13). Regardless of your mounting method, proper alignment on the ring core axis is critical. Even with care in gluing, there can be some misalignment. Accurate mounting means your turning will be concentric to the ring core axis, resulting in even thickness of the turned wood.

With the ring mounted on a mandrel, turn the wood to size and shape. Turning at a high speed with sharp tools and a

light touch works every time. I use a combination of cutting tools and sanding. I find nothing is needed beyond a spindle-roughing gouge, although I often use a box scraper to square the ring material to the ring-core edges (Photos 14, 15). With both sides of the ring blank trimmed flush to the ring core, shape the contour of the outer surface as desired.

Remember that sandpaper is a cutting tool, too, and it may be all you need for final shaping, considering that the ring body material is turned very thin. Fresh sandpaper used at a modest speed can cut very nicely and remove stock in small increments (Photo 16). The note about modest speed is critical. Epoxy softens with heat, so any excess heat from fast sanding can loosen the adhesive bond to the ring core.

Finish the ring

Finishes for rings are quite varied, from nothing at all, depending on the ring blank material, to the toughest you can find. A well-worn ring will endure a brutal life—from hot to cold and wet to dry, and it will be clanked against virtually everything. I typically use one of

Ring mandrels



A variety of precision ring mandrels is available commercially. You can also make your own shopmade version, as shown in Part 1 of this article series (February 2022 AW).

Turn ring



(14-15) The author turns the diameter to size using a spindle-roughing gouge, then uses a scraper to trim the sides flush with the ring core.

(16) Sand through the grits at a moderate speed to avoid generating excess heat.

Try UV-Curing Resin

Since most turners know about lacquer and CA finishes, I'll shed a bit of light on UV-curing resin, which may be a less-familiar finishing technique. I use a product made by Alumilite called Alumi-UV. Rather than an A/B mix of chemicals that creates a catalytic reaction and curing, this resin is sensitive to ultraviolet light, particularly in the 460nm range. While UV-curing resins are rather pricey, they go a long way and have a good shelf life, provided you store them properly.

I apply the resin with a disposable art brush in light coats, cure the resin by exposing it to UV light, and then repeat the process until I have achieved a sufficient build. There are small "flashlights" available that emit the proper wavelength of UV light, but I find it easier to put the turning into a UV-fingernail-polish-curing chamber. The chamber is a small, low-cost desktop device with several UV-emitting tubes inside. Rings, pens, and



other small turnings coated with UV-curing resin fit nicely inside.

Once the resin is cured, any drips can be sanded away, and the sheen can be punched up on a buffing wheel.



Apply a finish

(17) The author applies several coats of CA glue as a finish.

(18-19) A quick rub on some Micro-Mesh™ smooths the outer edges.

three finishes that I find are durable and beautiful: lacquer, ultraviolet (UV)-curing resin, or CA adhesive. For this demo ring, I used thin CA to build a multi-coat finish. I apply each coat with the corner of a paper towel as I spin the lathe by hand. After sufficient build, I clean up the edges on a piece of Micro-Mesh™ abrasive and call the ring complete (Photos 17-19).

Where to next?

The example shown in this article is the simplest of the ring core rings. You can use these fundamentals to explore the wide variety of ring cores, which come in many sizes, shapes, and materials. You can cast blanks, create laminated veneer rings, explore different finishes, and more. As with pens, the basics are simple, but you can also take it to the highest-level art. Enjoy the journey as you explore the possibilities. ■

Kurt Hertzog is a past president of the AAW, past chairman of the Rochester Woodworkers Society, and a council member of the Pen Makers Guild. He has written about woodturning and woodworking extensively for various publications. For more, visit kurthertzog.com.

Channel Ring Cores

Other than the solid single-piece core shown in this article, the main choices involve a core with a channel (or channels) to fill with some type of cladding before turning. Channel-type cores come in single piece or two-piece configurations that fit together. In addition to ceramic and metal, some cores are made from carbon fiber.



Wood-clad two-piece core



A two-piece ring core can be clad with a wood ring that is dimensioned correctly prior to the pieces being pressed or threaded closed. The two parts of the ring core sandwich and support the wood, which is then turned and sanded.

Inlay-filled one-piece core



There is little reason to use a two-piece core for inlay, since a single-piece channel works well. Glue your choice of inlay material, such as crushed turquoise, into the channel, then turn and sand it flush with the ring core. Some alternate materials turn best using carbide tools.