

Product Review

JASPER CIRCLE CUTTER

Reviewed by Philip E. Bamberg

Jasper Circle Jig Model 200 for cutting circles, mortises, and arcs with a plunge router. \$49.95 plus shipping. Jasper Audio, 3612 Mangum Rd. #101, Houston, TX 77092, 713-681-9912, FAX 713-681-0576, E-mail jaspera@flash.net, Web site www.jasperaudio.com.

CUTTING CIRCLES THE OLD WAY

Speaker building requires a router, which is indispensable for flush trimming, contouring, and circle cutting. For years I have used a Porter Cable #690 router for these operations. For cutting circles I used the Porter Cable Magic Circle and Edge guide, which was quick to set up and easy to adjust. But it had its drawbacks.

To set the radius, I first measured the distance from the guide pin to the bit. For cutting an inside circle, I measured from the outside of the bit to the center of the guide pin. For an outside circle, I measured to the inside of the bit. Next I set the cutting depth to only about $\frac{1}{16}$ " for the first test cut. (This was because I wasn't sure that the diameter would be correct. In fact, I usually drew the circle in place to make it obvious when I made a big mistake.)

After measuring the actual diameter cut by the router, I fine-tuned the radius again. I also checked the depth of cut, then set the depth gauge to match. Only when I was confident of the diameter and depth would I continue with the actual routing of the circle. Even then, things could change without notice; for example, the thumbscrews could loosen and change the radius.

Since the router was suspended above the circle guide a little, the cutting depth might not be consistent. I developed the technique of swinging the



guide around the hole, and not the router itself. Otherwise, the depth might be too deep. Needless to say, I also always cut holes starting from the backside of the piece.

ENTER THE JASPER JIG

Always on the lookout for a better mousetrap, I decided to give the Jasper Jig a try. Here is why it is so much better than my previous circle guide:

1. The large jig plate bolts onto the bottom of the router base. No more "springy" depth uncertainty.
2. All the circle diameters are marked on the bottom of the plate. What you see is what you get. No more measuring the radius to the bit, and no more test cuts required. You may not be able to obtain a diameter to $\frac{1}{32}$ " accuracy, but you'll find that every $\frac{1}{16}$ " diameter is more than sufficient.

I decided to try the jig with a Black & Decker $\frac{1}{4}$ " collet router that was not getting much use. Because the plate holes are calibrated for a $\frac{1}{4}$ " diameter router bit, I bought a new $\frac{1}{4}$ " spiral bit for \$18. Now this old $\frac{1}{4}$ " collet B&D router was not looking so useless after all!

The Jasper Jig fits many different routers, but the B&D, unfortunately, is not one of them. Undaunted, I decided to adapt the plate to the bottom of its base anyway. By studying the pattern of the mounting holes while rotating the plate around the router base, I discovered a combination of two holes that match the threaded holes in the base, yet

still keep the plate centered. I screwed the plate in place at these two holes, then verified that the collet was perfectly centered to the plate by measuring. Once I was satisfied that this would work, I marked, punched, drilled, and tapped the third mounting hole into the router base.

Note that Jasper only recommends using its jig on routers for which they have an existing mounting-hole pattern, and only for plunge routers. Having experience with the Porter Cable guide, I was willing to try the Jasper jig on my non-plunge router and adapt it to its base. And the results were good.

TEST DRIVE

Although I usually have someone else cut all my cabinets for me, I still need to cut circles for woofer test boxes and for other custom speaker cabinets. The first cuts I made were for a few test boxes for measuring T/S parameters with the delta-compliance method.

Did you know that Black & Decker also makes two other indispensable tools for speaker building? These are their cordless screwdriver and Workmate. First I secured the medium-density fiberboard (MDF) panel in the Workmate and drilled the $\frac{1}{8}$ " center hole. (It is best to drill this hole with a drill press, because the guide pin fits the accurate and perpendicular holes in the jig plate perfectly. If the centering hole through the material is not exactly perpendicular, the guide pin will bind in the plate or may wobble out the plate hole. A hand drill with built-in bubble is a viable alternative.)

I set the cutting depth to one-third the thickness of the material. Next I pushed the guide pin into the appropriate hole marked for the circle diameter. I made sure the pin stuck out from the plate more than the bit did.

Finally, I turned on the router and eased the guide pin into the hole in the panel. From there it was just a matter of

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swinging the router around to cut the circle. Near the end of the cut, I maintained a slight twisting backpressure against the router back to ensure that the bit cut into the scrap disc piece instead of the work piece. Once the disc was free, I ground off the little nub that remained where the bit began and ended around the circle.

Lately, I set the final cutting depth to leave a wafer-thin amount of material, thus holding the scrap disc in place. (If I'm careful, I dial-down the final cutting depth while the router is running, because the depth is set by a rack and pinion.) Then I just break out the disc and touch up the hole with sandpaper.

THE JASPER MANUAL

This is the same method I use for the Porter Cable guide, but is not recommended by Jasper when using a plunge router. Jasper's 10-page instruction manual explicitly describes how to secure the work piece with double-sided carpet tape against a large scrap piece of MDF that is ready to accept the guide pin. Next, the manual explains how to calculate the proper pivot-hole selection, including if mortising (flush mounting) will be required. Finally, it describes the procedure to switch on the router and plunge it into the work to route the circle.

Obviously, the Jasper-recommended method features much more control and safety. But for test-box holes or other less critical jobs, my quick-and-dirty method works fine.

For those who wonder whether $\frac{1}{16}$ " increments in circle diameter are sufficient for accuracy, let me assure you they are. The excellent Jasper manual provides a terrific example of routing in the cuts for flush-mounting a 104.5mm diameter Scan-Speak tweeter.

First, convert the flange diameter to English units. Next choose a mortising bit of 1.25" diameter. The manual determined that the $\frac{3}{8}$ " pivot-hole circle provides clearance for the tweeter flange, but by only 0.005" all around the flange. The $\frac{3}{16}$ " pivot hole yields 0.037" clearance all around, which is realistically better for tolerances, paint buildup, and so on. For typical woofer holes, tolerance is even less of an issue.

You are reminded to consider the compressed gasket thickness when setting the mortise depth. The manual even describes in detail how to make clearance cut for the asymmetrical piece that protects the tweeter's terminals. Finally, the Appendix describes how to calcu-

late the pivot hole for router bits other than $\frac{1}{4}$ ".

There is no reason for you not to leave the Jasper jig on the router most of the time, even for non-circle routing operations. I found that the large flat base can even help with some special jobs such as when you need to route on a minimum-size baffle that already has driver holes and rounded edges. There is not much flat surface left from which to guide the router without tipping. The large overhanging Jasper base just gives you another means of control during these precarious operations.

Since the pivot holes are all silk-screened onto the upper side and protected with a durable coat of paint, there is no risk of them ever wearing off. Some users may complain that they cannot see the pivot holes from the topside. This is a minor inconvenience compared to the prospect of the silk-screening wearing off over time.


I found it helpful to put a small piece of masking tape on the jig's upper side, next to the selected pivot hole. With a pen mark pointing to the correct hole, I can leave the guide pin in the work, but not make a fundamental mistake when starting to cut the circle.

All in all, the Jasper jig simplifies one of the most common operations required for building speakers, while other guides make this procedure tricky. With the time you save and the accuracy you gain, you'll regard Jasper's jig a required tool for your collection.

Manufacturer's response:

The Jasper Circle Jig Model 200 was designed specifically to make speaker cutouts. The jig mounts to 20 different models of plunge routers, including Porter Cable 7539, 693, 7529, DeWalt 621, 625, Skil 1823, 1835, Bosch 1613, 1615, Hitachi M8V, TR12, M12V, all Sears, Ryobi, Makita, and Freud plunge routers.

The jig was designed for use with plunge routers. We do not recommend using a non-plunged router with this product. The Model 200 is manufactured on a CNC machine to insure that the router mounting holes and the array of pivot hole are located precisely with respect to each other. The accuracy of the jig relies on precise location of the router mounting holes and the pivot holes.

Jasper Audio would like to thank Mr. Bamberg for taking time to write this article. 

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