



Precision Drilled Vase

Sue Harker adds decoration to this sycamore vase using a precision drilling jig



1 The completed precision drilled vase



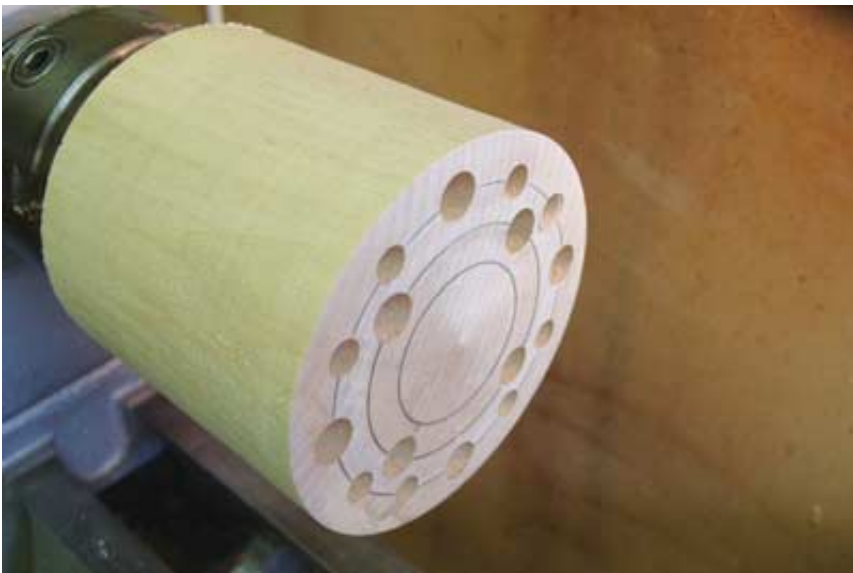
2 Mount your piece of timber between centres and turn in to round, then cut a chucking spigot at one end. Use the chucking spigot to mount the timber in the chuck then true up the end, using a 10mm (3/8in) standard grind bowl gouge



3 Mount a precision drilling jig into your banjo toolpost hole and secure at centre height. Set your indexer to position one and with a 12mm (1/2in) drill bit position the jig so the drill will cut on the outer line



4 Use a pair of callipers to measure the distance between the timber and the edge of the drill bush, then add an extra 32mm (1 1/4in). This will give you the required drilling depth. Wrap a piece of masking tape round the 12mm (1/2in) drill bit and drill four holes around this circumference



5 With all the holes drilled the vase is now ready for shaping



6 Use a 13mm (1/2in) fingernail profile spindle gouge to shape the vase. As you form the shape the outer circles will become elliptical



7 Hollow out the centre of the vase using a hollowing tool. Here I am using a Robert Sorby RS200 with the scraper tip attached



8 When the required depth and wall thickness is achieved cut a recess, to receive the neck, using a 13mm (1/2in) skew chisel laid on its side



9 The holes have been drilled into end grain timber so there will be grain tear-out. Clean this up, by hand, with some rolled up abrasive. Take care not to alter the shape of the holes



10 Use 120 180, 240, 320 and 400 grit abrasives to sand the outside of the vase. Apply a coat of sanding sealer, but take care not to coat the inside edges of the holes



11 Mount a piece of timber that measures 50mm x 50mm x 90mm (2 x 2 x 3 1/2in) long between centres and cut a chucking point the correct size for your chuck



12 Remove the surplus timber and cut a chucking recess in the end. This will enable the neck to be remounted on small jaws for finishing the top section



13 Remount the vase in the chuck and fit the turned neck section, pulling up the tailstock for support. Use a fingernail profile spindle gouge to blend the join and refine the shape. Sand the blended section and the neck, working through the grits, as before



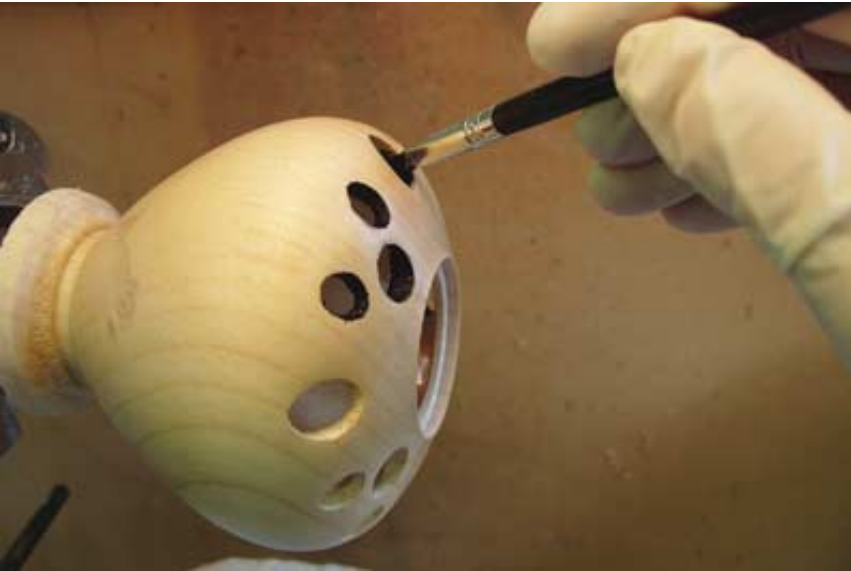
14 Remove the vase and with pin jaws fitted to the chuck, mount the neck. Using the tailstock for support, remove the excess timber and undercut the rim of the neck at the same time. Use a 10mm (3/8in) fingernail profile spindle gouge for this



15 When the hole drilled earlier is revealed, the tailstock is removed and the neck is opened out further. Gentle passes are required here to minimise vibration. Roll up some 120 grit abrasive and sand the opening



16 Use black acrylic paint to coat the neck of the vase, but leave the internal section as natural timber



17 Remount the vase and paint the edges of the holes and the inside. Any paint that overflows onto the outside surface of the vase can be removed with fine grit sanding when the paint has dried



18 Use a fluted parting tool to part off the vase. The fluted parting tool leaves a cleaner finish than a standard parting tool, which is needed here. Glue the neck to the vase and apply several coats of finishing oil until the required gloss finish is achieved

I saw a version of this vase in a book where sized dowels of branch wood were used to fill the holes. I wanted to be able to use the precision drilling technique for club demonstrations, but gluing dowels into the drilled holes would have resulted in too much preparation time, so I had to think of a viable alternative. Around this time I was experimenting with using resin to fill voids, cut patterns etc. so I filled the holes with coloured resin. This was successful and has been well received at club demonstrations.

As an alternative idea, I made the vase featured in this article and left the holes unfilled, which, as you can see, caused a problem with torn out grain. However, with some hand finishing and black paint the vase has turned out to be a very effective alternative.

There are numerous variations of patterns you can create with the precision drilling jig. If you drill the holes deeper they will break out lower down the vase. For this to be successful, however, great care needs to be taken with the drilling as a slight variation in the drilling angle will result in the patterns being out of shape and not matching. Likewise, if you do not drill the holes deep enough then the flat bottom the drill bit creates can be seen. It can be fun experimenting with precision drilling and you can produce some interesting and unique effects.

Tools used: 10mm (3/8in) standard-grind bowl gouge, 13mm (1/2in) fingernail-profile spindle gouge, 10mm (3/8in) fingernail-profile spindle gouge, Robert Sorby RS200 with scraper tip attached, 3mm (1/8in) parting tool and 2mm (5/64in) fluted parting tool

Step 1

Mount your piece of timber between centres and turn in to round, then cut a chucking spigot at one end. Use the chucking spigot to mount the timber in the chuck then true up the end, using a 10mm (3/8in) standard-grind bowl gouge. Draw three

concentric circles 12mm (1/2in), 22mm (7/8in) and 33mm (1 1/4in) in from the outer edge. These represent the positions for drilling and the size of the neck opening

Step 2

Mount a precision drilling jig into your banjo toolpost hole and secure at centre height. Set your indexer to position one and with a 12mm (1/2in) drill bit position the jig so the drill will cut on the outer line

Step 3

Use a pair of callipers to measure the distance between the timber and the edge of the drill bush, then add an extra 32mm (1 1/4in). This will give you the required drilling depth. Wrap a piece of masking tape round the 12mm (1/2in) drill bit and drill four holes around this circumference. These holes are drilled on indexing numbers 1:7:13 and 19. Set up the jig with a 9mm (11/32in) drill bit and around the same circle drill eight holes to the same depth using indexing numbers 2:6:8:12:14:18:20 and 24. Set up the drilling jig with the 12mm (1/2in) drill bit in line with the second circle and drill four holes using indexing numbers 4:10:16 and 22

Step 4

With all the holes drilled the vase is now ready for shaping

Step 5

Use a 13mm (1/2in) fingernail-profile spindle gouge to shape the vase. As you form the shape the outer circles will become elliptical. With the lathe speed at approximately 500rpm, drill a hole down the centre to the required depth for hollowing

Step 6

Hollow out the centre of the vase using a hollowing tool. Here I am using a Robert Sorby RS200 with the scraper tip attached

Step 7

When the required depth and wall thickness is achieved cut a recess, to receive the neck, using a 13mm (1/2in) skew chisel laid on its side

Step 8

The holes have been drilled into end grain timber so there will

be grain tear-out. Clean this up, by hand, with some rolled up abrasive. Take care not to alter the shape of the holes

Step 9

Use 120 180, 240, 320 and 400 grit abrasives to sand the outside of the vase. Apply a coat of sanding sealer, but take care not to coat the inside edges of the holes

Step 10

Mount a piece of timber that measures 50mm x 50mm x 90mm (2 x 2 x 3 1/2in) long between centres and cut a chucking point the correct size for your chuck. Mount in the chuck and cut a spigot to fit into the vase recess. Shape the neck, cut a return curve where the top of the neck will be, and drill a hole down the centre

Step 11

Remove the surplus timber and cut a chucking recess in the end. This will enable the neck to be re-mounted on small jaws for finishing the top section

Step 12

Re-mount the vase in the chuck and fit the turned neck section, pulling up the tailstock for support. Use a fingernail profile spindle gouge to blend the join and refine the shape. Sand the blended section and the neck, working through the grits, as before

Step 13

Remove the vase and with pin jaws fitted to the chuck, mount the neck. Using the tailstock for support, remove the excess timber and under-cut the rim of the neck at the same time. Use a 10mm (3/8in) fingernail profile spindle gouge for this

Step 14

When the hole drilled earlier is revealed, the tailstock is removed and the neck is opened out further. Gentle passes are required here to minimise vibration. Roll up some 120 grit abrasive and sand the opening, but take care not to put your fingers into the neck. Work through the remaining grits until you have the finish required

Step 15

Use black acrylic paint to coat the neck of the vase, but leave the internal section as natural timber

Step 16

Re-mount the vase and paint the edges of the holes and the inside. Any paint that overflows onto the outside surface of the vase can be removed with fine grit sanding when the paint has dried

Step 17

Use a fluted parting tool to part off the vase. The fluted parting tool leaves a cleaner finish than a standard parting tool, which is needed here. Glue the neck to the vase and apply several coats of finishing oil until the required gloss finish is achieved

ABOUT THE AUTHOR

Sue started woodturning in 2000. She is a member of the RPT and AWGB, teaches woodturning, demonstrates all over the country, writes for Woodturning magazine and has produced two DVDs.

Email: sueharker@talktalk.net

[Website](#)

MATERIALS USED

1. 110mm x 110mm x 110mm (4 1/4 x 4 1/4 x 4 1/4in) long piece of sycamore
2. 50mm x 50mm x 90mm (2 x 2 x 3 1/2in) piece of sycamore

TIME TAKEN & COST

Timber: Â£4.50 (approximately)

Time Taken: 3 hours (approximately)

HANDY HINTS

1. It is advisable to turn off your lathe when using an indexer, this will stop you accidentally turning on the lathe and

potentially damaging your indexer as a result

2. To avoid any errors occurring, always visually check that the position of the drill is correct before you actually commence the drilling

3. Other variations of indexed patterns can be drilled using the selection of drills available

Woodturning says...

The inset dowels work wonderfully. You could also try working with dowels made from branch wood that show the growth rings, yew is great for this. You can also try resins, metallic polymers, acrylics such as alternative ivory, horn etc. or pen blanks

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