

Turning a Multi-Axis Vase

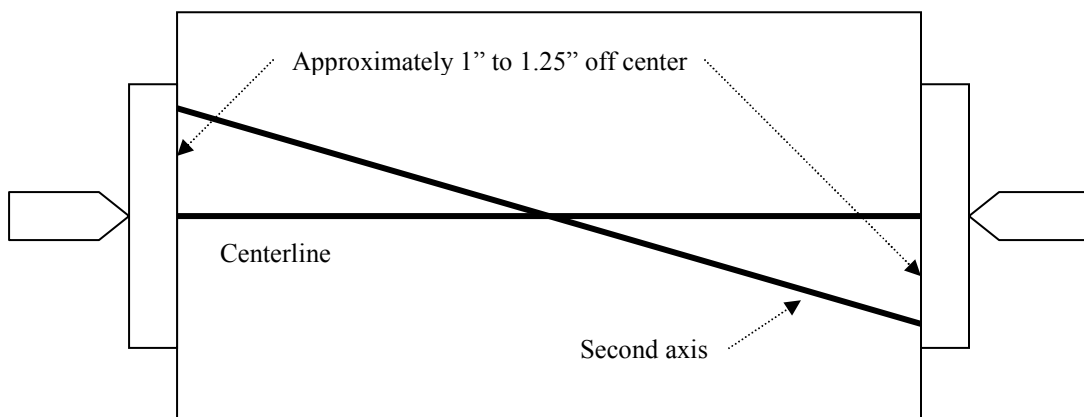
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Introduction

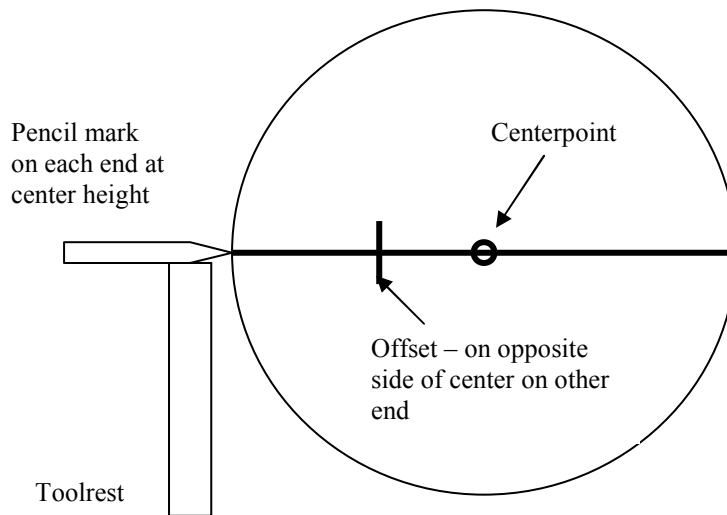
- Turning a multi-axis vase
 - Inspired by Virginia woodturner, Tom Crabb
 - The techniques used in making this style are the basis of the other multi-axis vessels/vases I turn
 - Because of how the axis are set for this piece, I think it is the best multi-axis style to try for a first time.
- Requirements
 - Tailstock that is hollow all the way through
 - Live center that you can take the point out of
 - Carving tools -- something that can hog off material quickly is useful
 - Carving stand is useful to have

Mounting and marking out the piece

- Rough out the stock to a cylinder and put tenon on each end.
 - The tenon on the top end will be used when hollowing the base, so make sure it is a robust one.
- Mark top for neck opening
 - The area you want to highlight should be 90° off from where neck is
 - That way the neck angle will be clearly visible
 - Rotate piece so face to highlight is pointing up
 - Mark the centerline using mounting points of lathe as guide
 - From the centerline mark desired offset
 - Start with 1" to the right of the centerline at the top and 1" to the left of the centerline at the bottom
 - Draw a line between these two points



- With tool rest at the centerline, mark a point on both ends at this point
 - Remove blank from lathe and draw line across top and bottom from this point to thru the center of the cylinder
 - Transfer the offset to this line—this will be actual second axis mounting point.



Turning the base

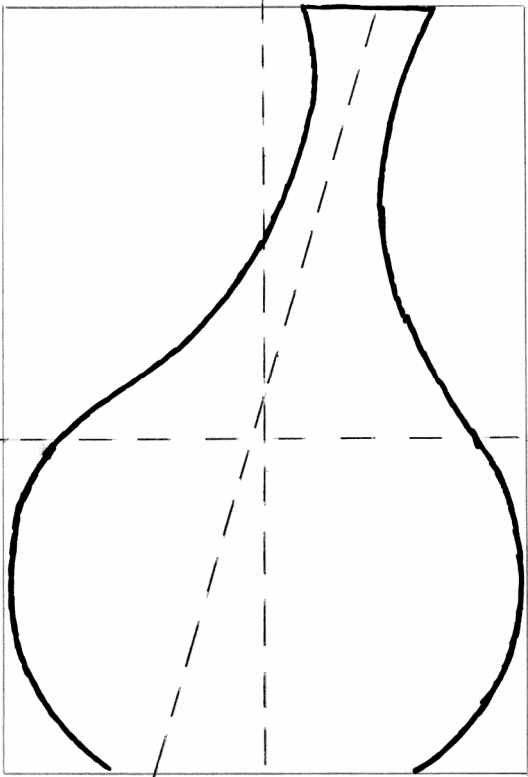
- Mount the piece in your chuck using the tenon on the top end
- Rough out the bottom of the vase, leaving at least 1" of stock at the bottom
 - Don't cut in too far on the top end or it might make it harder to blend the top into the bottom – see the sample diagrams on next page
 - Bottom 1" provides stock for the hole plug
- Part off the bottom
 - Mark two lines for be use for lining up the bottom when reattaching it
 - Leave 1/8" on vase bottom for easier grain matching and extra glue area
- Make sure bottom surface is flat

Hollowing from the bottom

- Line up the vase along the centering line drawn on the vase
- Using the angled line you drew,
 - Draw sample neck on the remaining stock – see diagrams on the next page
- Use the centering line to determine how deep of a pilot hole to drill for hollowing
- Hollow vessel as you normally would
- How do you know where to stop hollowing?
 - Can just hollow a uniform space, without worrying about neck
 - Problem with that is it leaves a lot of excess wood and can cause piece to be top heavy or the piece can crack there later
 - Use that sketched area to determine how far to go and try to actual hollow up into the neck itself
- Prior to removing the vase from the chuck, open the hollowing hole using a bedan
 - Make sure sides are parallel

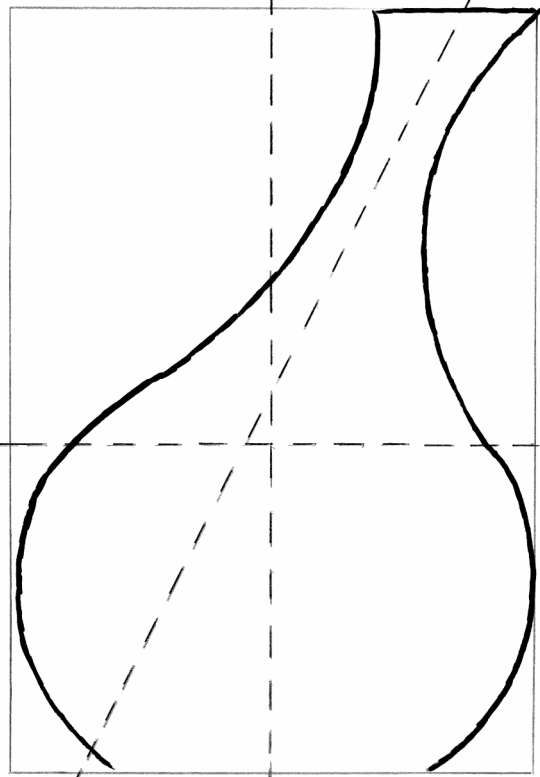
Plugging the bottom

- Chuck the bottom waste piece
- Cut tenon to match hole in bottom, make sure rest is flat
- Glue to vase using CA or epoxy, using marked lines as guides
- Use tailstock as clamp



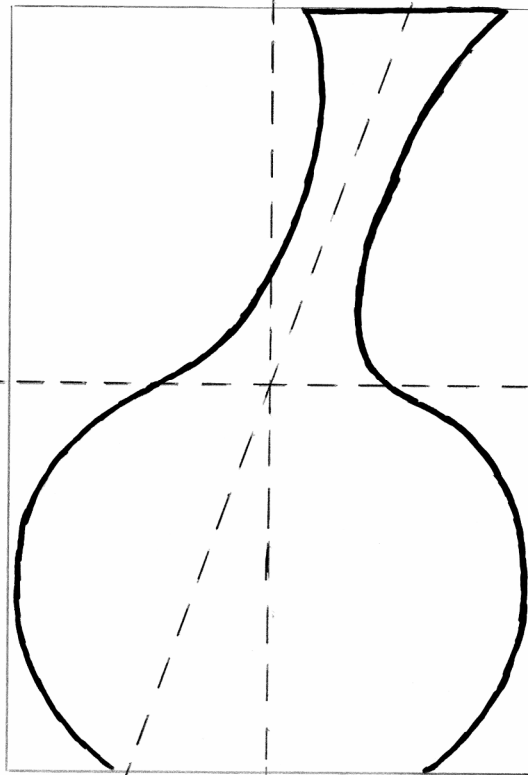
1" off center

Horizontal line indicates where bottom was turned

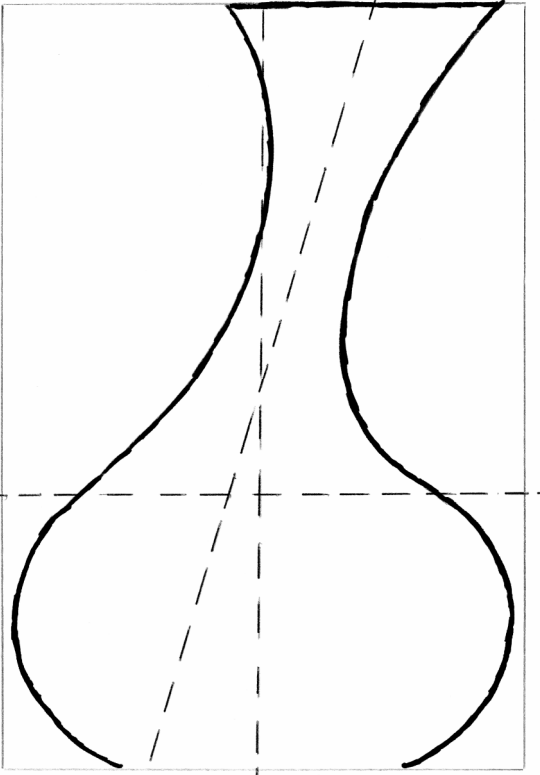


1.75" off center

Horizontal line indicates where bottom was turned



1" off center, note bottom cut in more



1" off center, short, squat bottom

Switching to second axis

- Use rotary tool to cut recesses for spur drive and live center
- Mount piece between centers with bottom now at headstock end
- Live center end must make mark for outside ring
 - Flatten top with rotary tool as needed to make that contact

Forming the top

- Turn away excess stock at top, until top is “solid”
- Start forming neck shape
 - First determine neck opening diameter
 - Then start blending from bottom to that diameter
- Careful of where top of the vase bottom is closest to you
 - This determines how close you can get to the bottom
 - Mark a line around the piece if that will help you see how far you can go
- When you have a nice, flowing arc between the top and the bottom, it’s time to stop.

Drilling the hole in the neck

- Remove point from your live center and remount the piece between centers
- Take long drill bit, with small diameter (whatever your live center will allow) and drill the neck opening thru the tailstock
 - Go slow, there is not much space for chips to go
- Remove piece from lathe and finish drilling, if needed, with power drill
- Chuck a drill bit with larger diameter in drill and enlarge the hole

Manually blending the neck into the bottom area

- One tool that works well is an Arbortech Grinder or Mini-Arbortech grinder with standard woodcarver blade.
- Rough out form with the Arbortech
- When done with Arbortech, switch to rotary tool
 - Prefer right-angle, air, die-grinder
 - Foredom-style tool also works well
 - Dremel-style tool can be used, but will be slow
- Refine the shape with the rotary tool
 - Be careful not to gouge the surface
 - Turn the piece often. Pay attention to the curve.
 - Don’t want any “flats”

Sanding

- Can move from aggressive to less aggressive rotary tool bits to reduce tool marks
- Start off sanding using more aggressive sanding disks
 - E.g. Power-loc disks, 60-80 grit
- Then move to regular pad, low grits
 - Sand up to 120 grit this way
- Then switch to soft pad or soft interface pads
 - These won’t gouge the neck
- Make sure all tool marks are removed, sand to desired level

Parting off the bottom

- Remount the piece on bottom tenon
- Turn or part off bottom
 - Can turn more if there is more material between chuck and vase bottom
- Don’t try to part all the way off—just cut the final bit with saw and use rotary tool to smooth.