Hollow Turning Techniques

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Finger Lakes Woodturners
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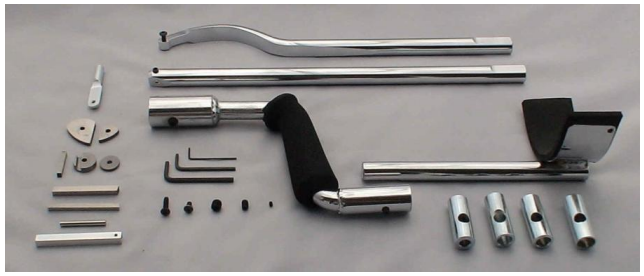
Hollow Turning

- Turning a closed or semi-closed form through a small opening
- Developed and popularized by David Ellsworth as “blind turning” in 1974
- Hollow turning is *generally* a scraping activity
- Can be accomplished as a hand-held operation or a captive operation depending on tooling. Handheld can offer more design flexibility
- Material & Approach
  - Can use green or dry wood
  - Can turn to final thickness in one setting and allow to dry and move
  - Can turn to rough thickness, allow to dry and then re-turn to round
    - Much like a twice-turned bowl
- General Techniques
  - Always start between centers for rough shaping
  - Shape outside and form a tenon for chucking
  - Reverse onto chuck and re-true outside shape
  - Drill depth hole close to desired finish depth
  - Hollow inside to desired thickness
  - Using padded friction or vacuum chuck, finish turning vessel bottom and sand

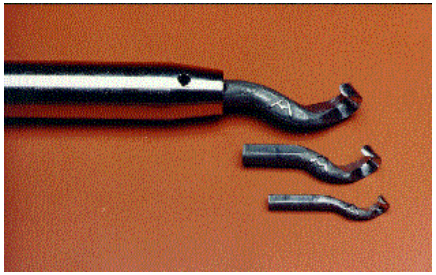
Hollow Turning Tool Examples

Ellsworth
(Scraping)

Pencil
(Scraping)

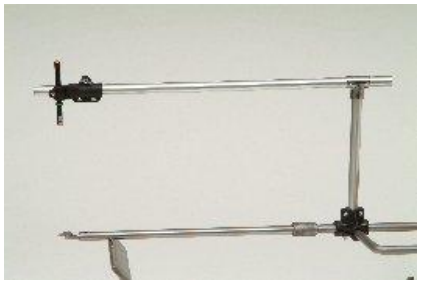


Martel
(Cutting)



Munro
(Cutting)

Jameson
(Scraping)

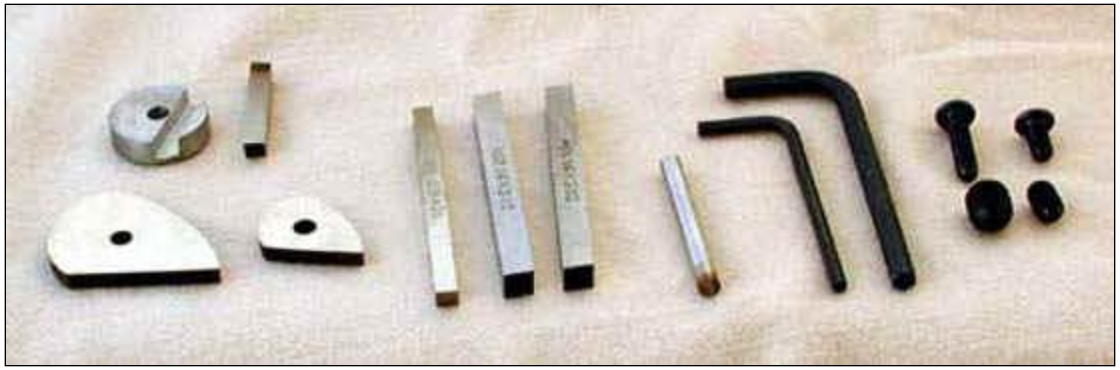


Monster
(Scraping)

- Some examples of hand-held and captive hollowing tools
- Not meant as an exhaustive list

Hollow Turning Cutter Examples

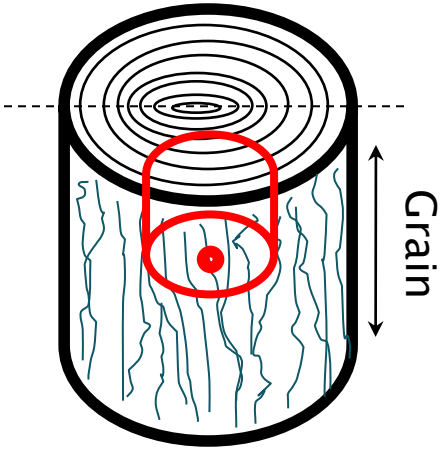
Scraping (straight or teardrop)

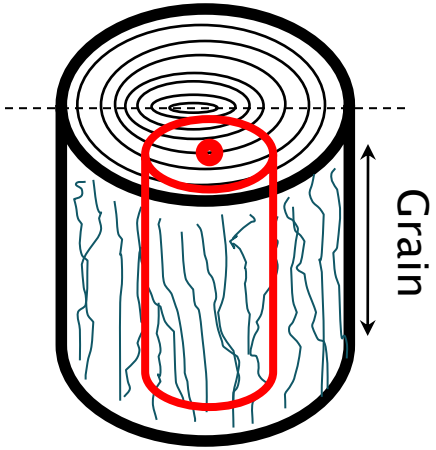


Cutting (round with shield)

Face and End Grain Orientation

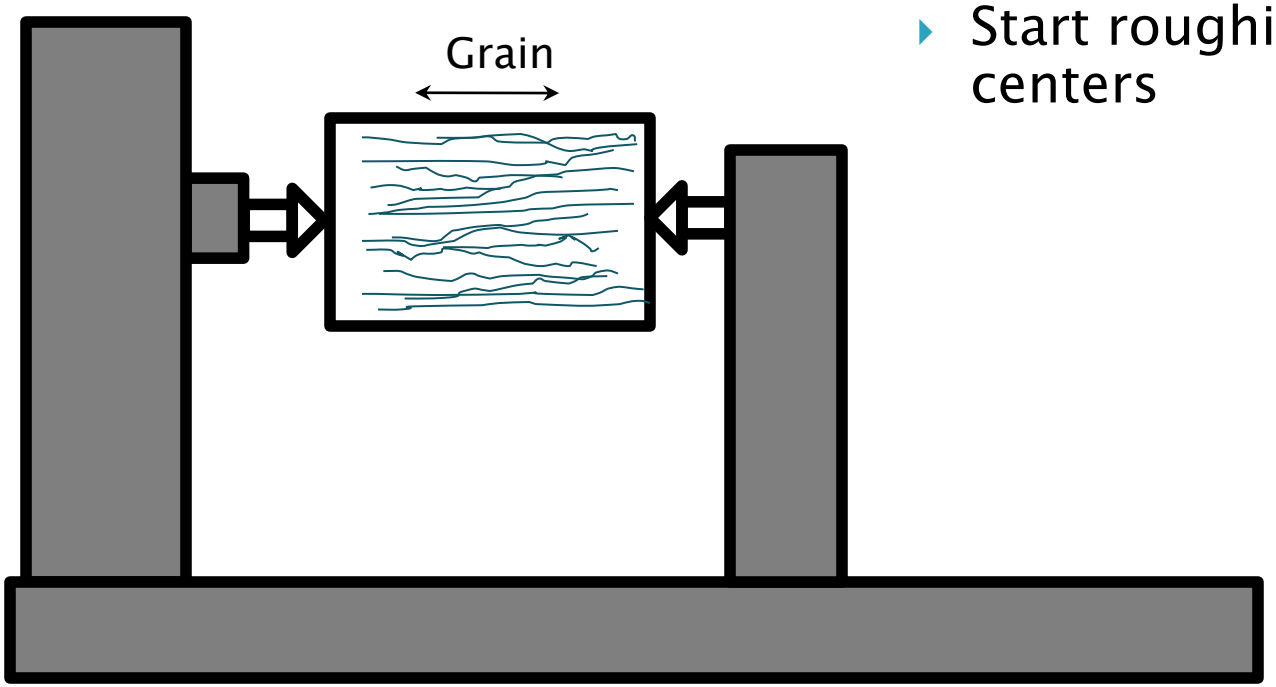
- Face Grain
  - Grain orientation on the lathe is perpendicular to the lathe ways
  - Vessel will dry slightly oval
- End Grain
  - Grain orientation on the lathe is parallel to the lathe ways
  - Vessel will dry more round (especially if centered on pith)





End Grain Hollowing

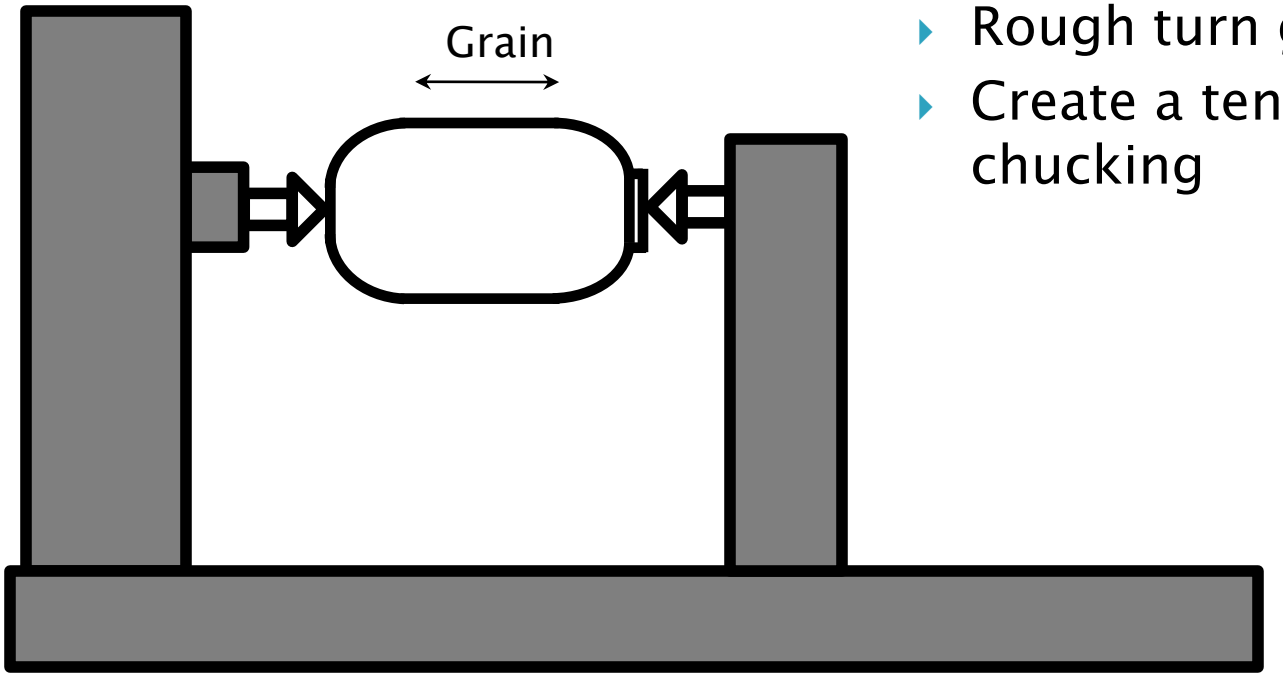
Hollow Turning Technique
End Grain Orientation



Step #1:

- Start roughing between centers

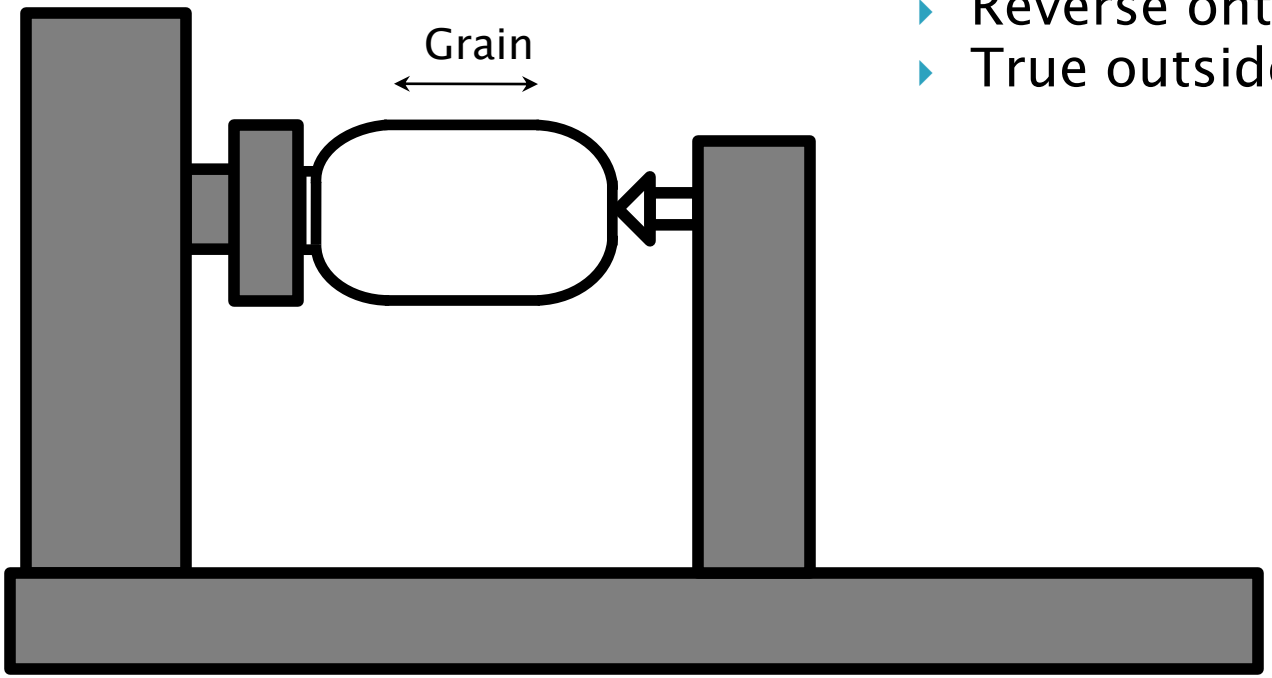
Hollow Turning Technique
End Grain Orientation



Step #2:

- Rough turn general shape
- Create a tenon for reverse chucking

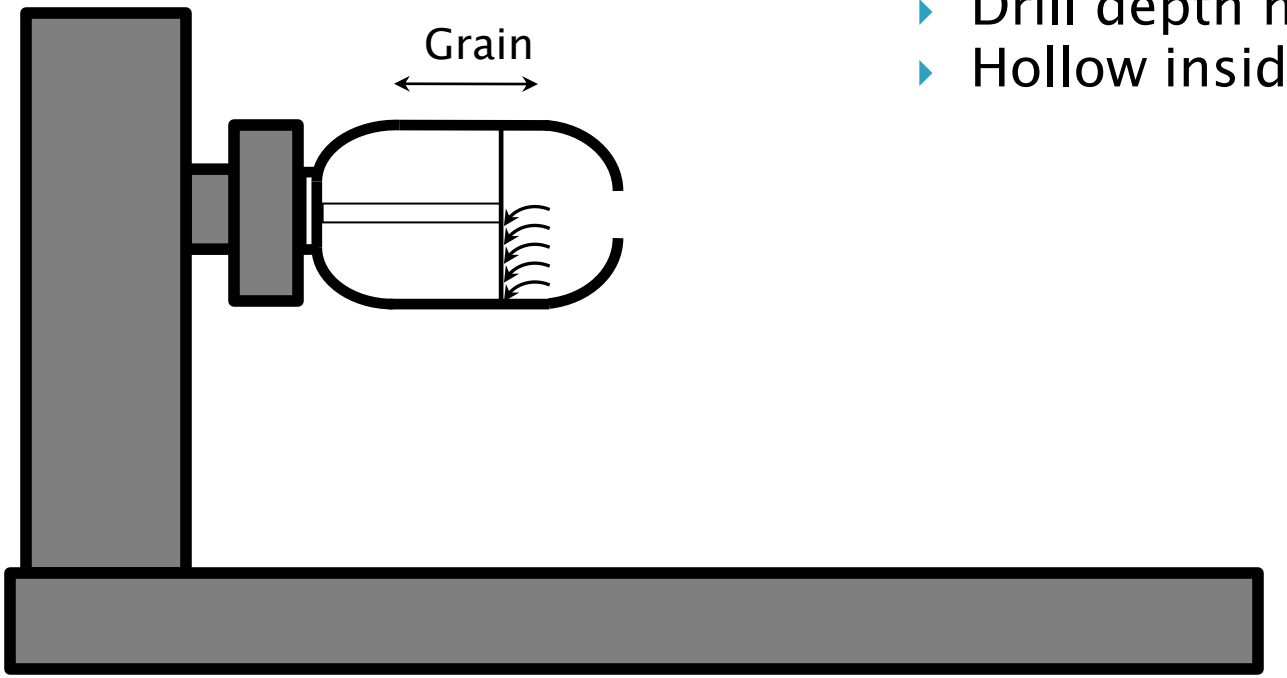
Hollow Turning Technique
End Grain Orientation



Step #3:

- Reverse onto chuck
- True outside shape

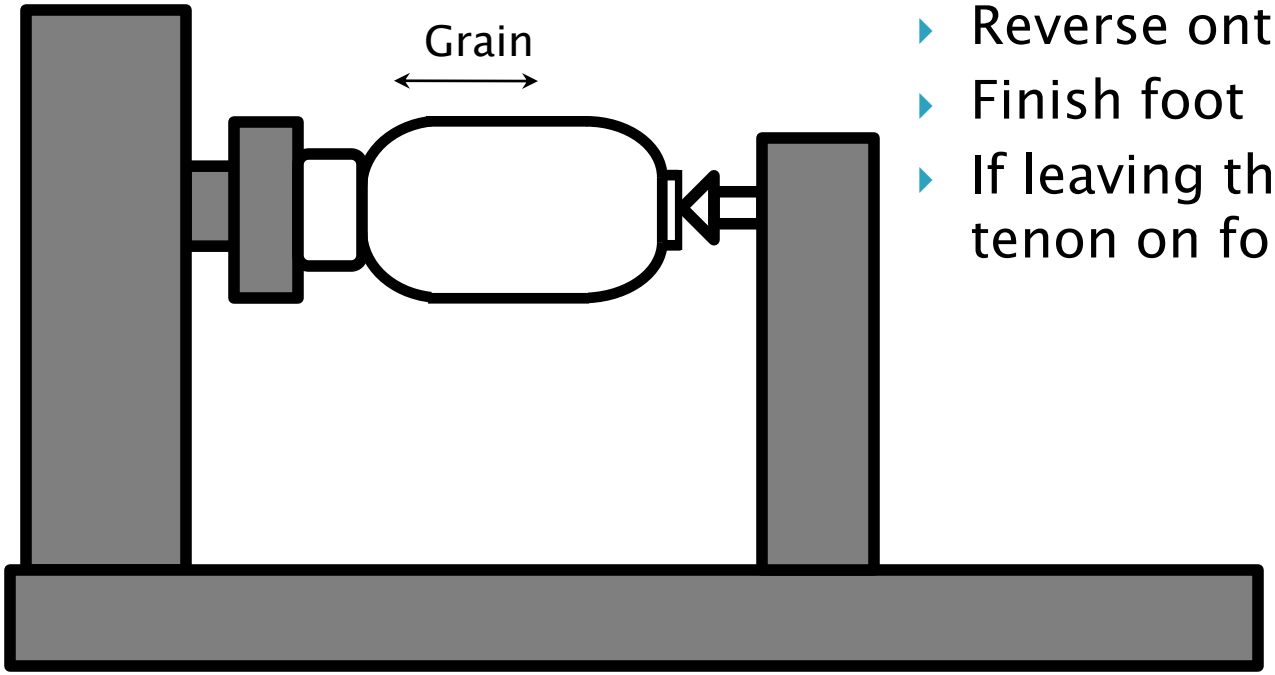
Hollow Turning Technique
End Grain Orientation



Step #4:

- Drill depth hole
- Hollow inside

Hollow Turning Technique
End Grain Orientation



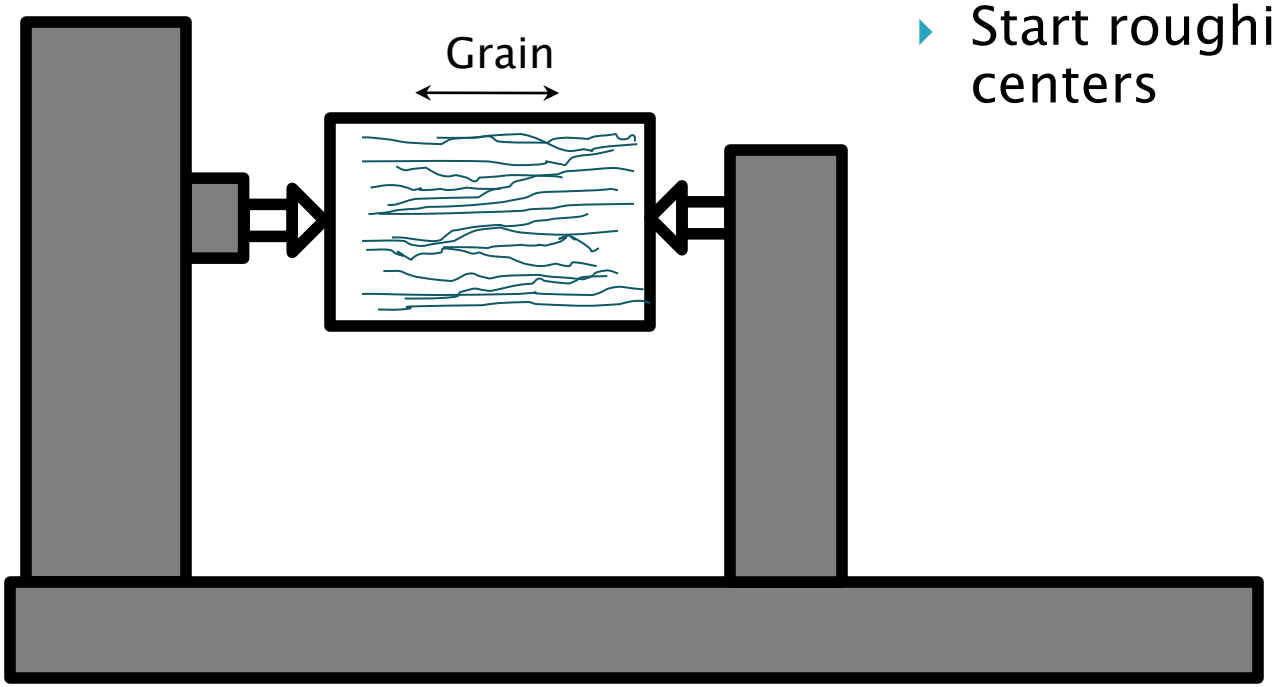
Step #5:

- Reverse onto friction chuck
- Finish foot
- If leaving thick to dry, leave tenon on for later chucking

Face Grain orientation follows same general principles

Ellsworth Style Hollowing

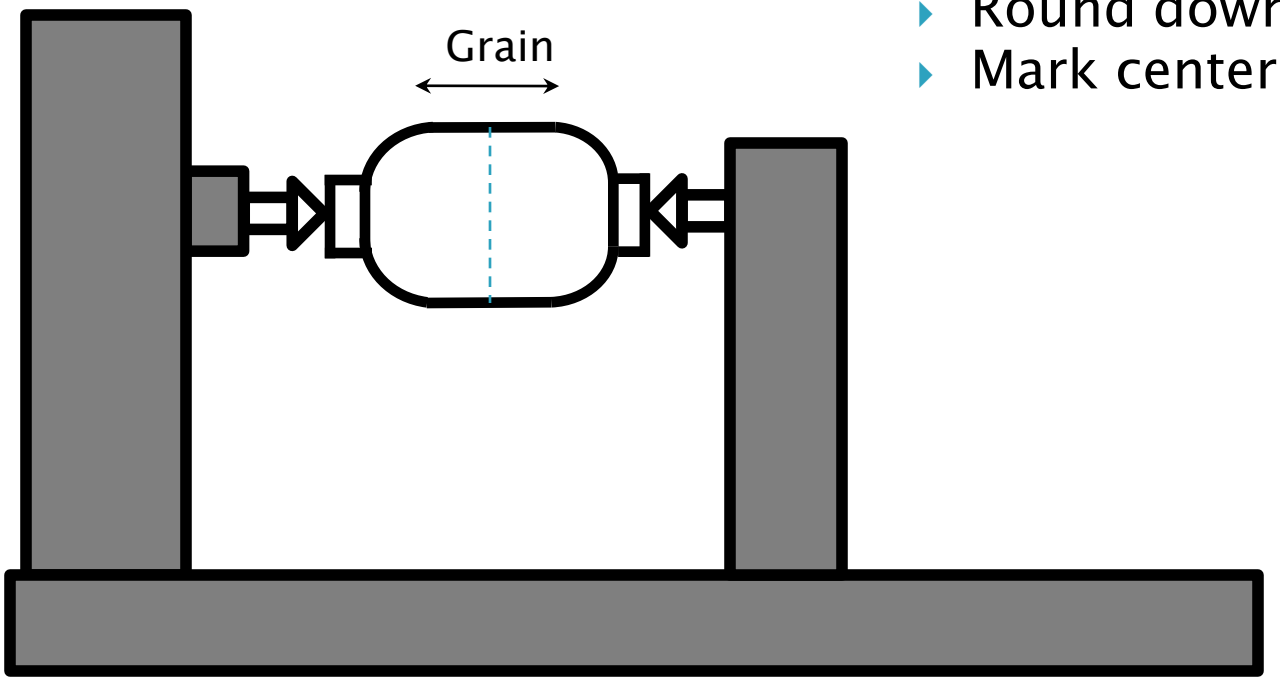
Hollow Turning Technique
Ellsworth Style



Step #1:

- Start roughing between centers

Hollow Turning Technique
Ellsworth Style

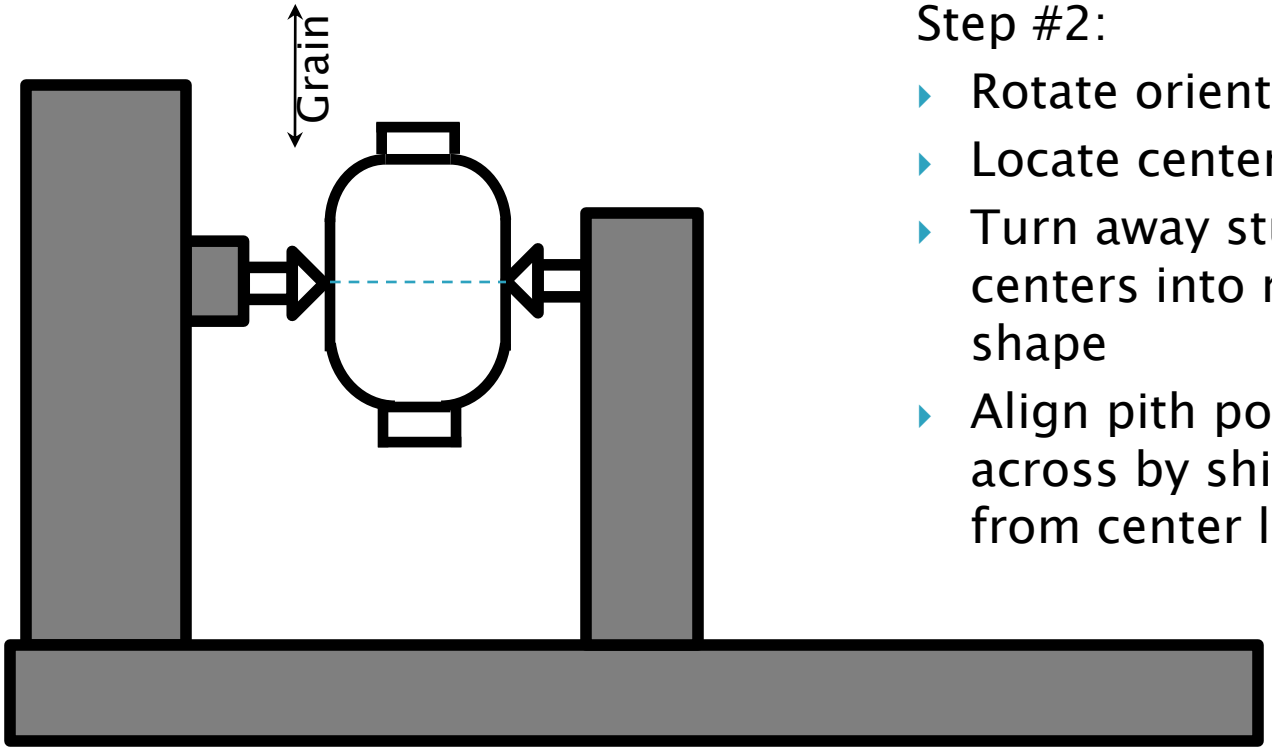


Step #2:

- Round down ends
- Mark center with pencil line

Hollow Turning Technique

Ellsworth Style

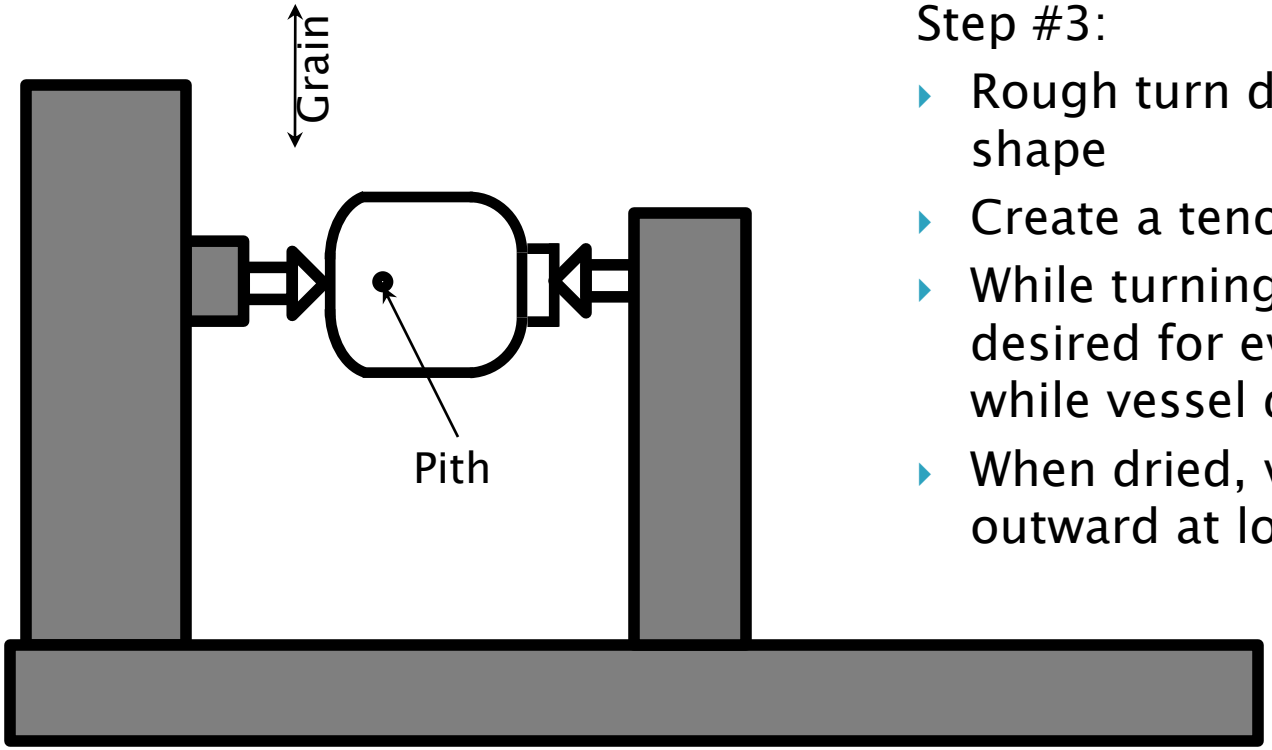


Step #2:

- Rotate orientation of piece
- Locate centers along pencil line
- Turn away stubs from old centers into rough spherical shape
- Align pith points straight across by shifting centers away from center line

Hollow Turning Technique

Ellsworth Style

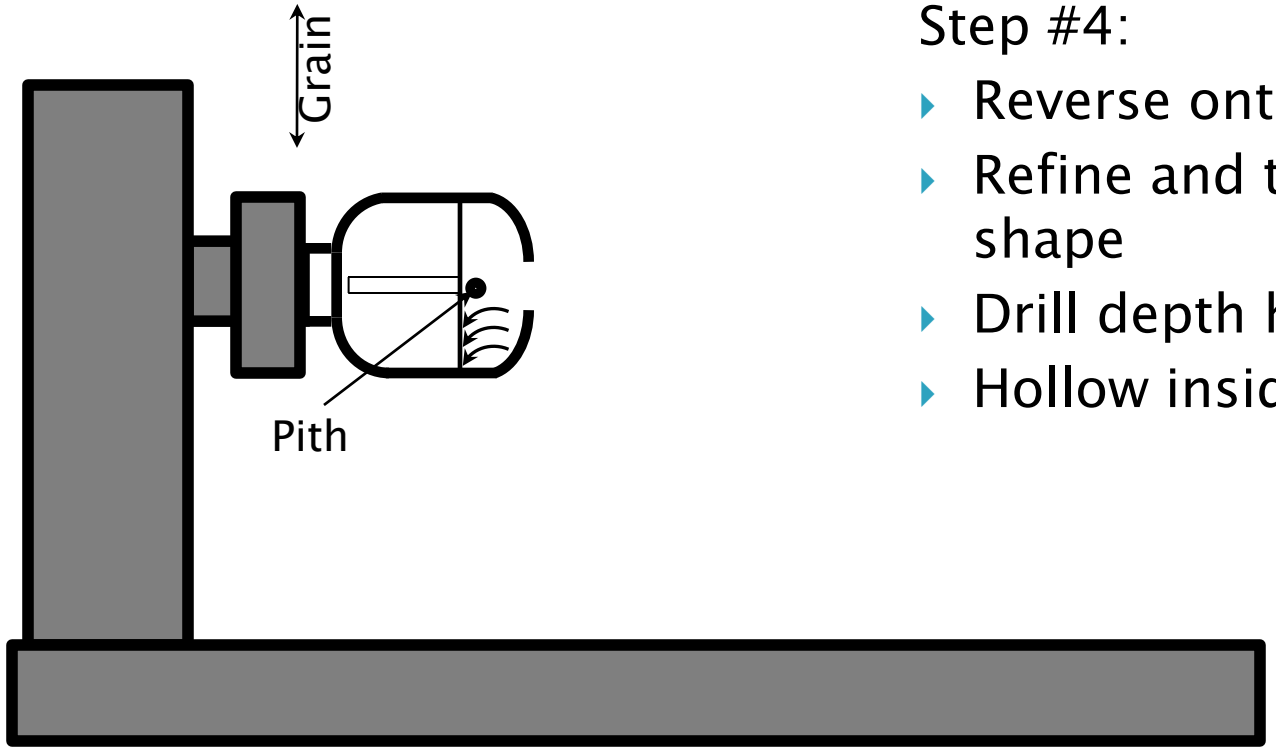


Step #3:

- Rough turn desired outside shape
- Create a tenon for chucking
- While turning, locate pith where desired for eventual warping while vessel dries
- When dried, vessel will bulge outward at location of pith

Hollow Turning Technique

Ellsworth Style

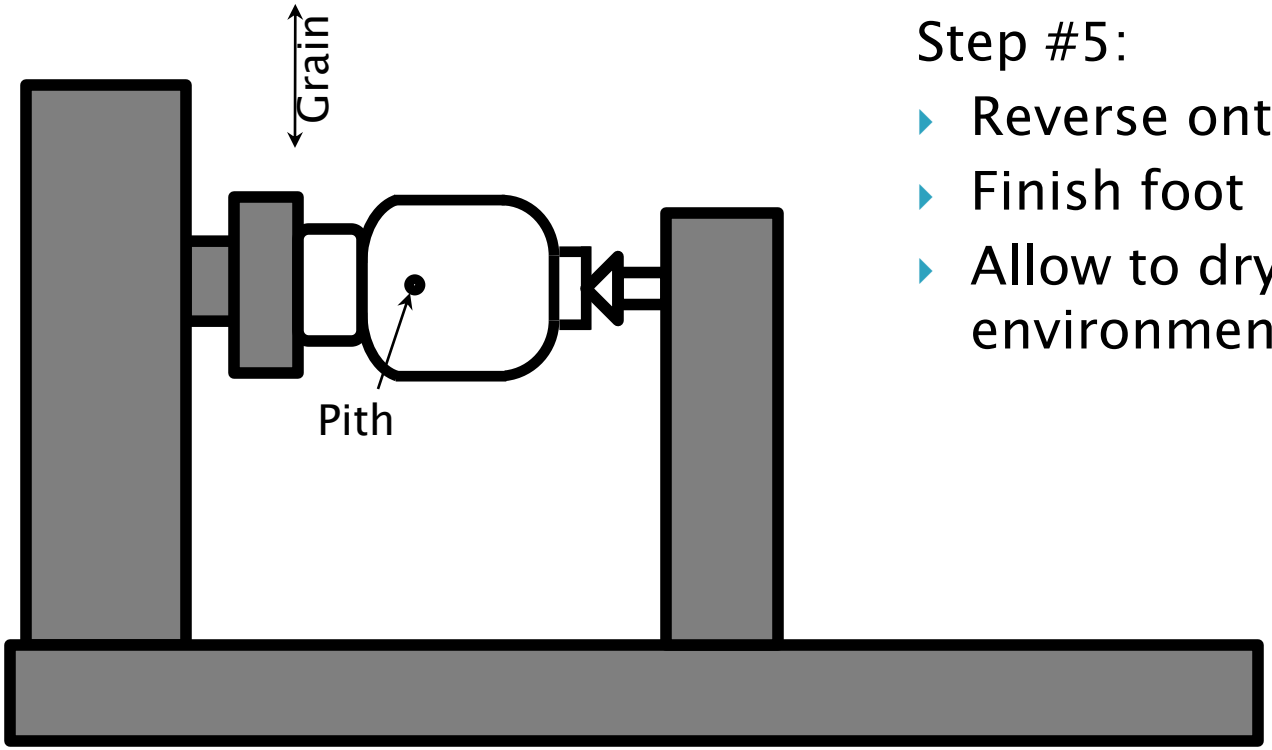


Step #4:

- Reverse onto chuck
- Refine and true outside shape
- Drill depth hole
- Hollow inside

Hollow Turning Technique

Ellsworth Style

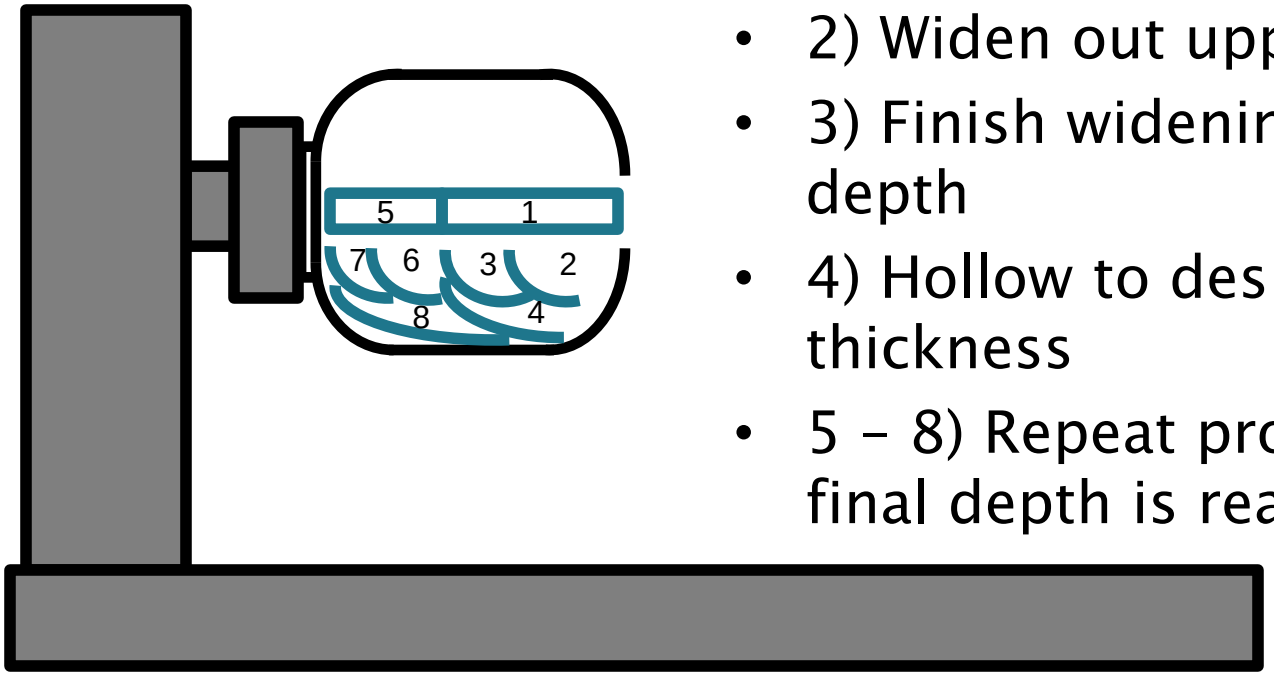


Step #5:

- Reverse onto friction chuck
- Finish foot
- Allow to dry in a controlled environment (i.e. paper bag)

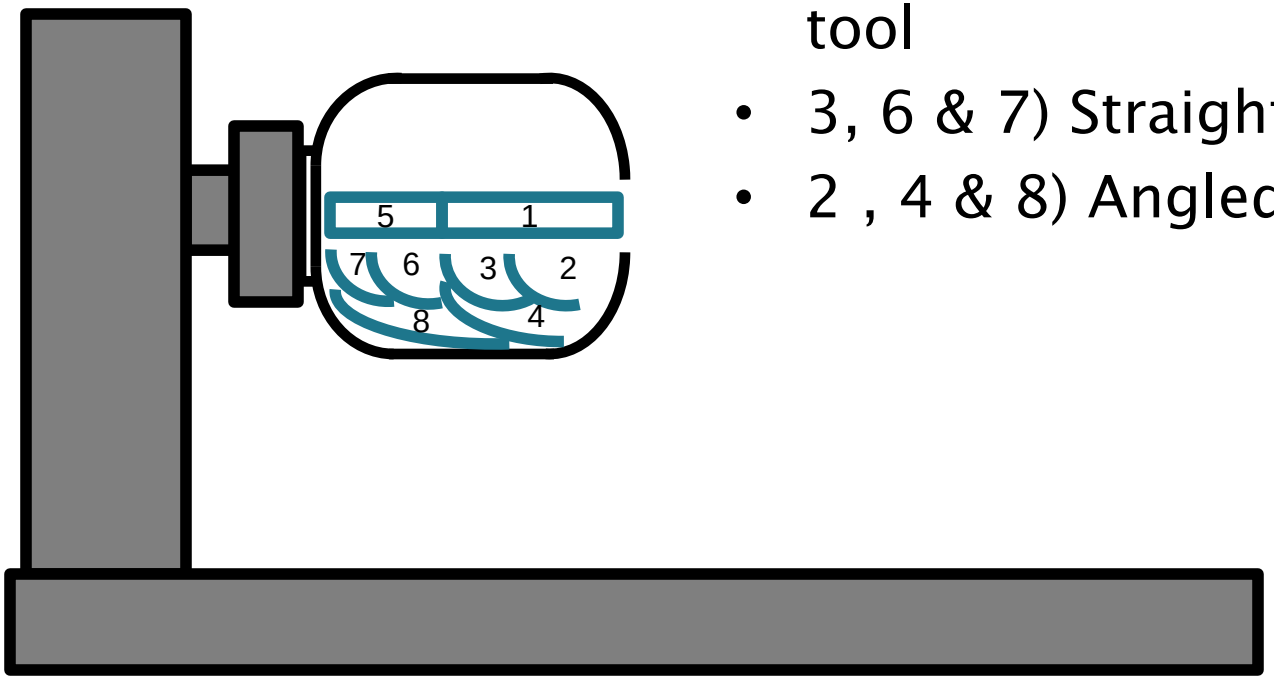
Hollowing Turning Sequence & Tool Choice

Hollow Turning: Sequence



- 1) Hollow center
- 2) Widen out upper section
- 3) Finish widening to hollowed depth
- 4) Hollow to desired wall thickness
- 5 – 8) Repeat process until final depth is reached

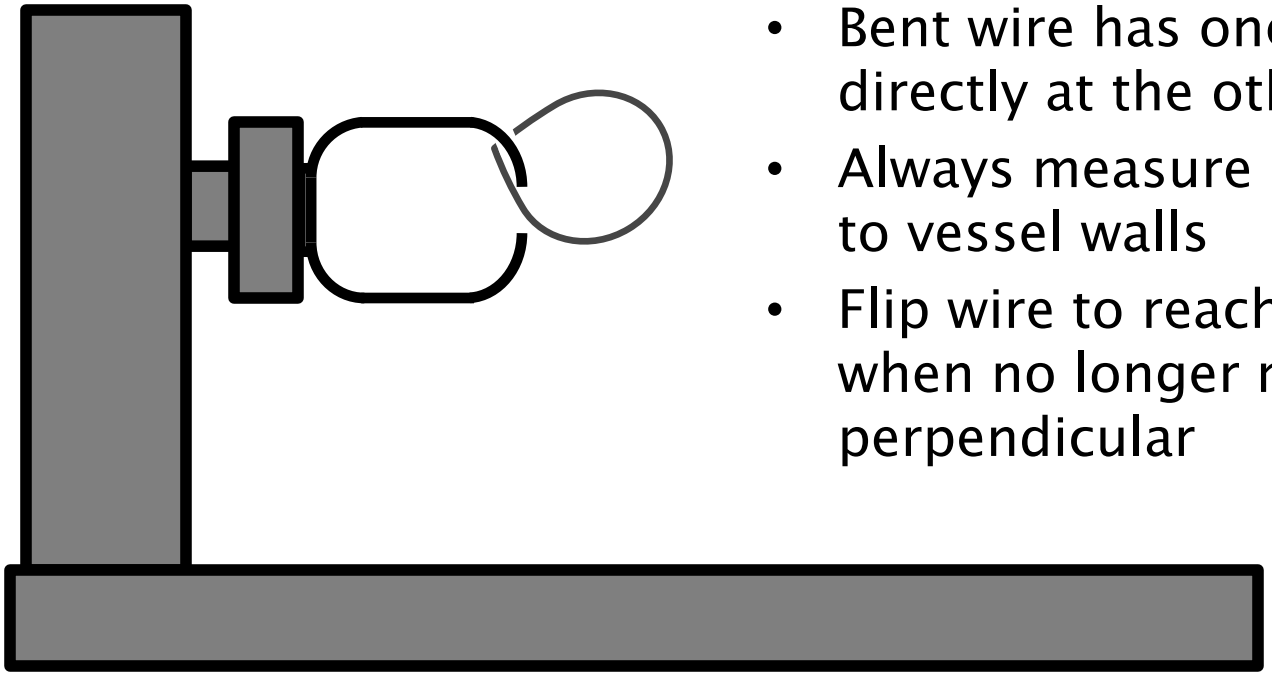
Hollow Turning: Tool Choice



- 1 & 5) Drill and/or straight tool
- 3, 6 & 7) Straight tool
- 2 , 4 & 8) Angled/Curved tool

Measuring Wall Thickness

Hollow Turning: Measuring



- Use calipers or bent wire
- Bent wire has one end pointing directly at the other end
- Always measure perpendicular to vessel walls
- Flip wire to reach deeper and when no longer measuring perpendicular