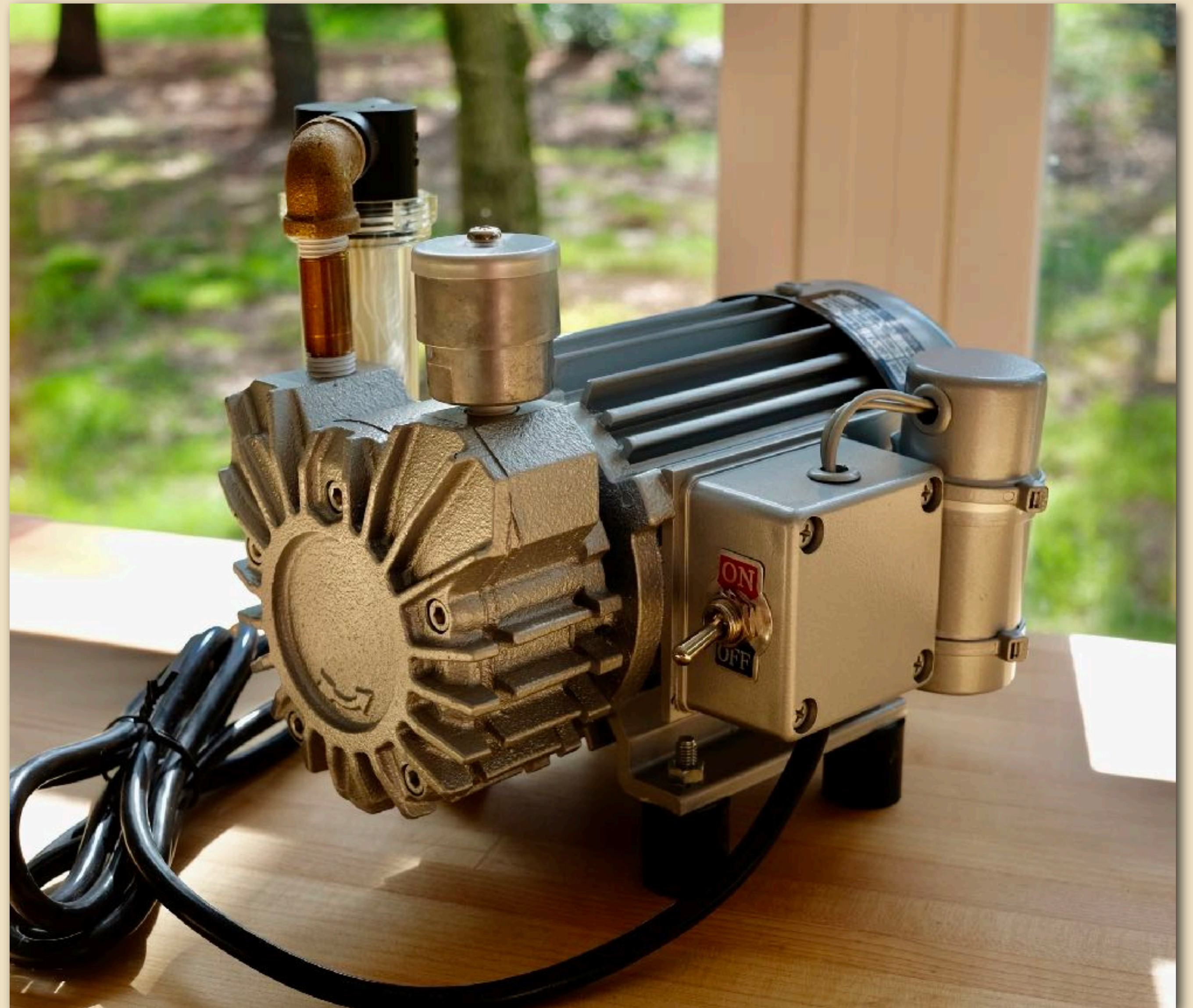


HOW I DID IT:

VACUUM CHUCKING SET-UP

JOE NESTLERODE
FSW, BUCKS, DELVAL
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PROJECT GOALS & PARAMETERS

- Safe and Effective
- Clean, Compact, & Quiet
 - 30 yrs experience with pressure and vacuum systems at DuPont R&D Labs
 - Those vacuum pumps were generally not clean, compact, or quiet
- Quality Components
- Aesthetics

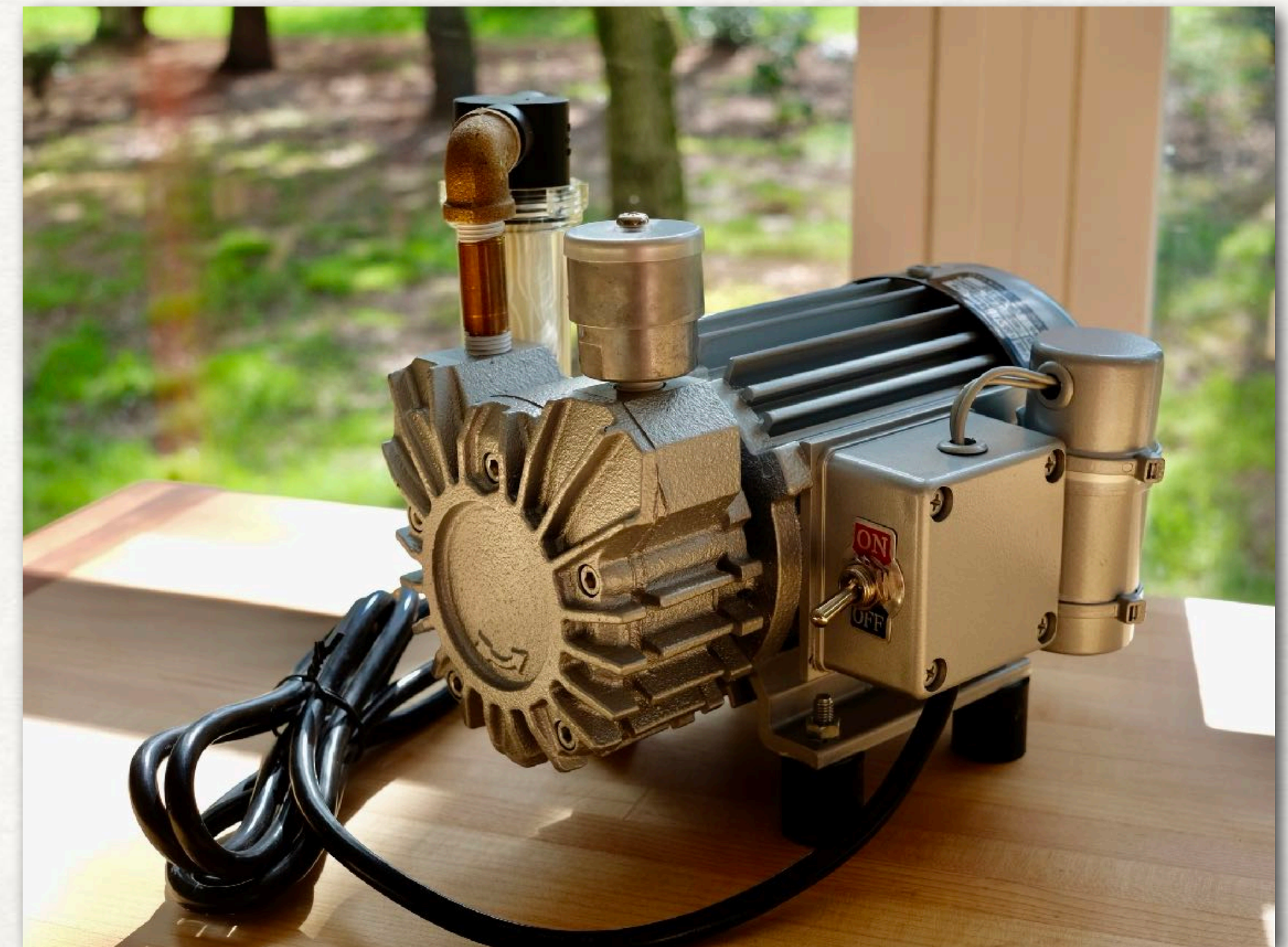


VACUUM CHUCKING SET-UP

PARTS & EQUIPMENT

Vacuum Pump: Dry Carbon Vane style

- Model DV-5N from frugalvacuumchuck.com
- Compact size: 8.5" x 6" x 5"
- Pulls 27" Hg, 3.9 CFM
- 110V, 400 watt
- Quiet 60 dB
- Made in Taiwan



VACUUM CHUCKING SET-UP

PARTS & EQUIPMENT

Machined Rotary Vacuum Adapter

- Purchased from [Craft Supplies USA](#)
- Machined from solid aluminum
- Two single-row, dual thrust bearings
- Three O-rings form seal
 - *Use petroleum jelly to lubricate*
- Slides inside headstock spindle
- Unfortunately, item is being discontinued...



VACUUM CHUCKING SET-UP

PARTS & EQUIPMENT

Hold Fast 3.5" Vacuum Chuck Head

- Purchased from [Craft Supplies USA](#)
- Machined aluminum collar, threaded for 1-1/4 x 8 TPI spindle
- Also available in 1" x 8 TPI
- Two closed-cell foam O-rings form the seal



VACUUM CHUCKING SET-UP

PARTS & EQUIPMENT

In-line Vacuum Filter

- Model PVF.25L-10PP from vacmotion.com
- Polypropylene body, clear polyacetate bowl
- 1/4 NPT female inlet / outlet
- 10 micron pleated paper filter element
- Buna-N gasket



VACUUM CHUCKING SET-UP

PARTS & EQUIPMENT

Assorted Fittings, Tubing, Valve

- Mostly purchased from [Amazon](#)
- Careful to maintain minimum 3/8" ID
- 1/4" NPT brass fittings
- Glycerin-filled 2.5" vacuum gauge*
- Steel wire-reinforced 3/8" ID tubing
- 1/4" NPT ball valve

**the gauge I purchased is -30 to 0 inHg, not -30 to 30 as shown*



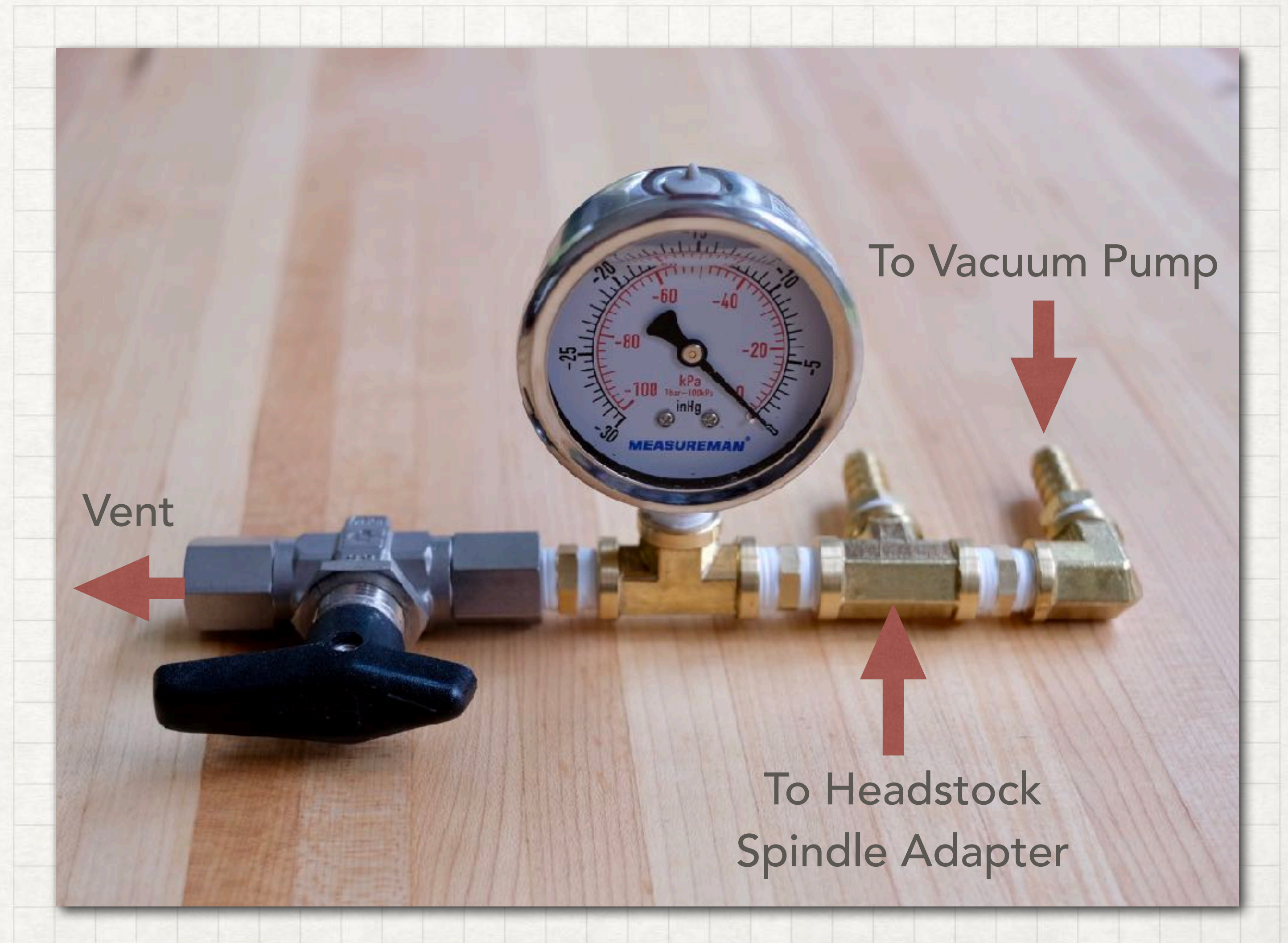
VACUUM CHUCKING SET-UP

PARTS & EQUIPMENT

Item	Source	Cost	Comments
Vacuum Pump	frugalvacuumchuck.com	\$265	Shipping was \$20.
In-line Filter	vacmotion.com	\$19.50	Also purchased replacement filter for \$9.
3.5" Vacuum Chuck	Craft Supplies USA	\$60	Threaded for 1-1/4" x 8 TPI spindle
Machined Vacuum Adapter	Craft Supplies USA	\$65	Item is being discontinued; supply limited.
Vacuum Tubing	Amazon	\$9	3/8" ID x 10'
Liquid-Filled Vacuum Gauge	Amazon	\$15	2.5" dial, 1/4" NPT, -30-0 inHg
Assorted brass fittings	Amazon	\$30	1/4" NPT female elbows, tees, nipples, etc.
Ball valve	Amazon	varies	1/4" NPT female (<i>I had one on hand...</i>)

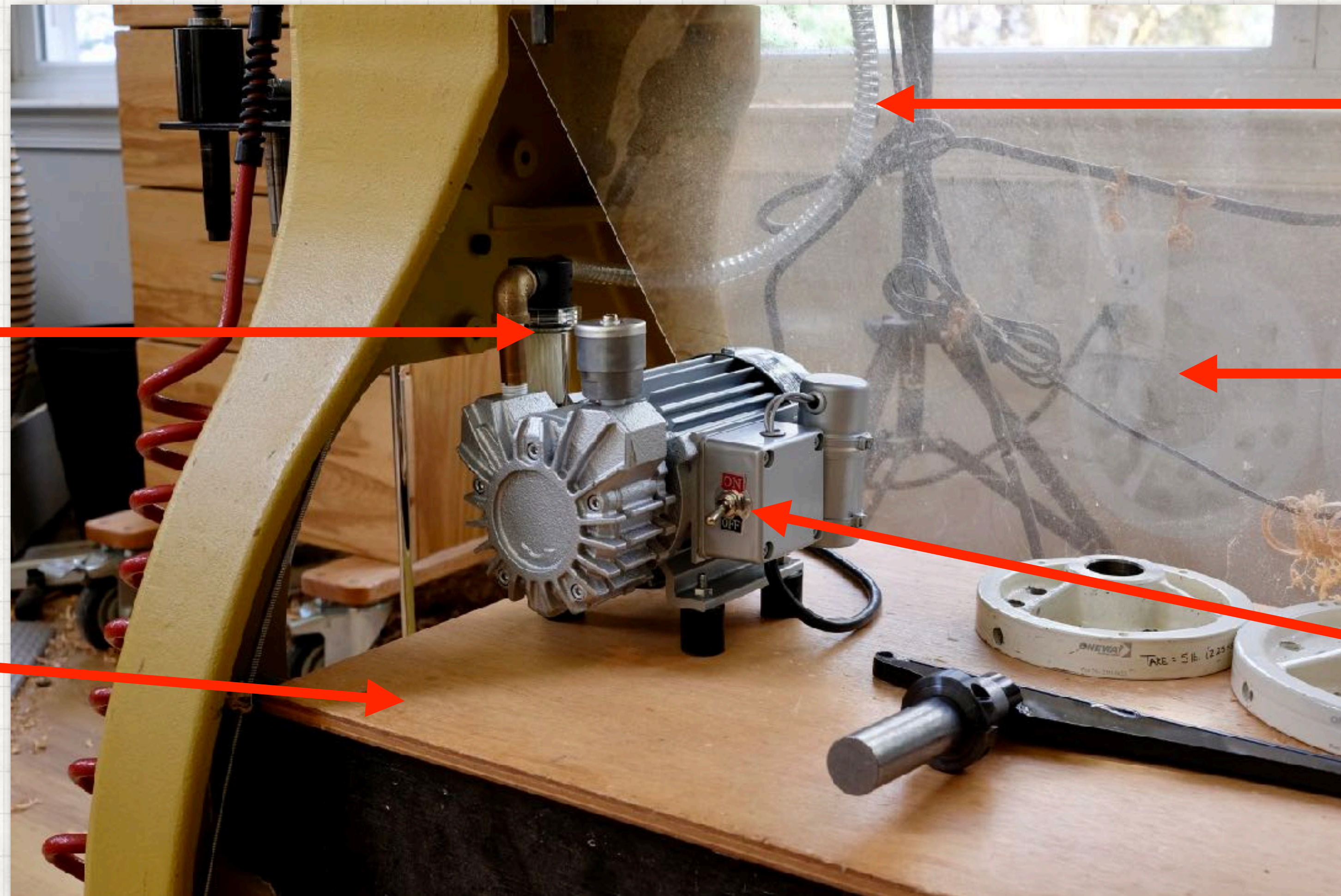
MANIFOLD ASSEMBLY

- Two 3/8" hose barb fittings to attach vacuum tubing
- 1/4" NPT brass tees & elbow
- 1/4" NPT ball valve
- Minimum ID is 3/8" throughout, except vent valve, where ID doesn't matter
- Vent valve can be cracked open to lessen vacuum while centering the piece on the chuck, if necessary



VACUUM PUMP POSITIONED UNDER LATHE

SITS ON TOP OF BALLAST BOX



In-line Filter

Tubing to
Manifold

Plexiglass diverts
shavings

Ballast Box / Shelf

On/Off
Switch

MOUNTING THE MANIFOLD ONTO POWERMATIC 3520B HEADSTOCK

- Fabricated platform for on top of lathe headstock
- Took advantage of Powermatic's flat-top headstock
- Solid oak construction
- Routed channel to fit original rubber mat



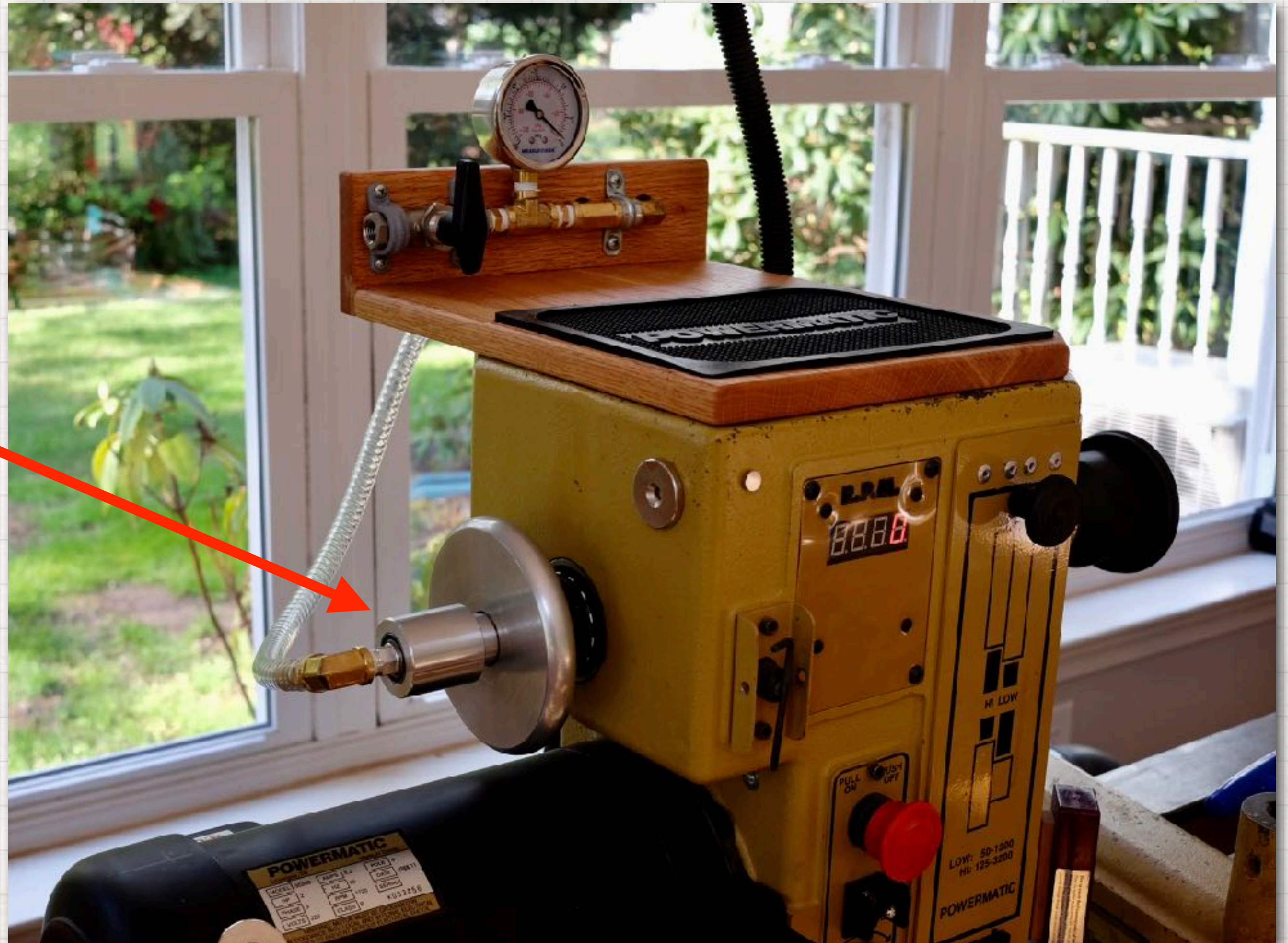
MOUNTING THE MANIFOLD ONTO POWERMATIC 3520B HEADSTOCK

- Attachment of vacuum tubing to 3/8" barb fittings
- Hose clamps not needed



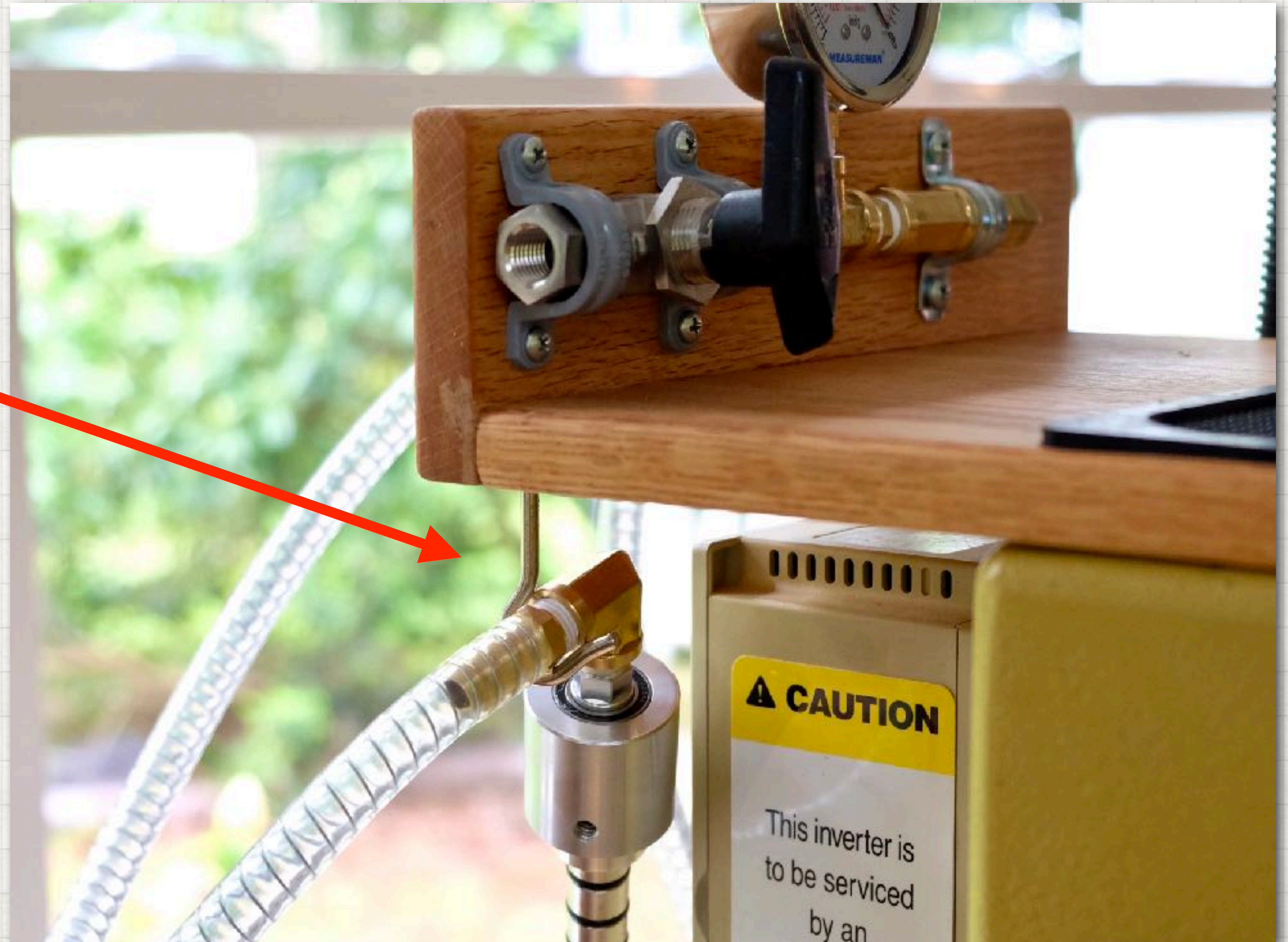
MOUNTING THE MANIFOLD ONTO POWERMATIC 3520B HEADSTOCK

Vacuum spindle adapter in place



MOUNTING THE MANIFOLD ONTO POWERMATIC 3520B HEADSTOCK

Hook for adapter when not in use



CUSTOM HEADSTOCK PLATFORM

POWERMATIC 3520B LATHE

Construction details

- Routed channel for rubber mat



CUSTOM HEADSTOCK PLATFORM

POWERMATIC 3520B LATHE

Construction details

- Powerful rare-earth magnets
- Small oak rails register into channel on headstock

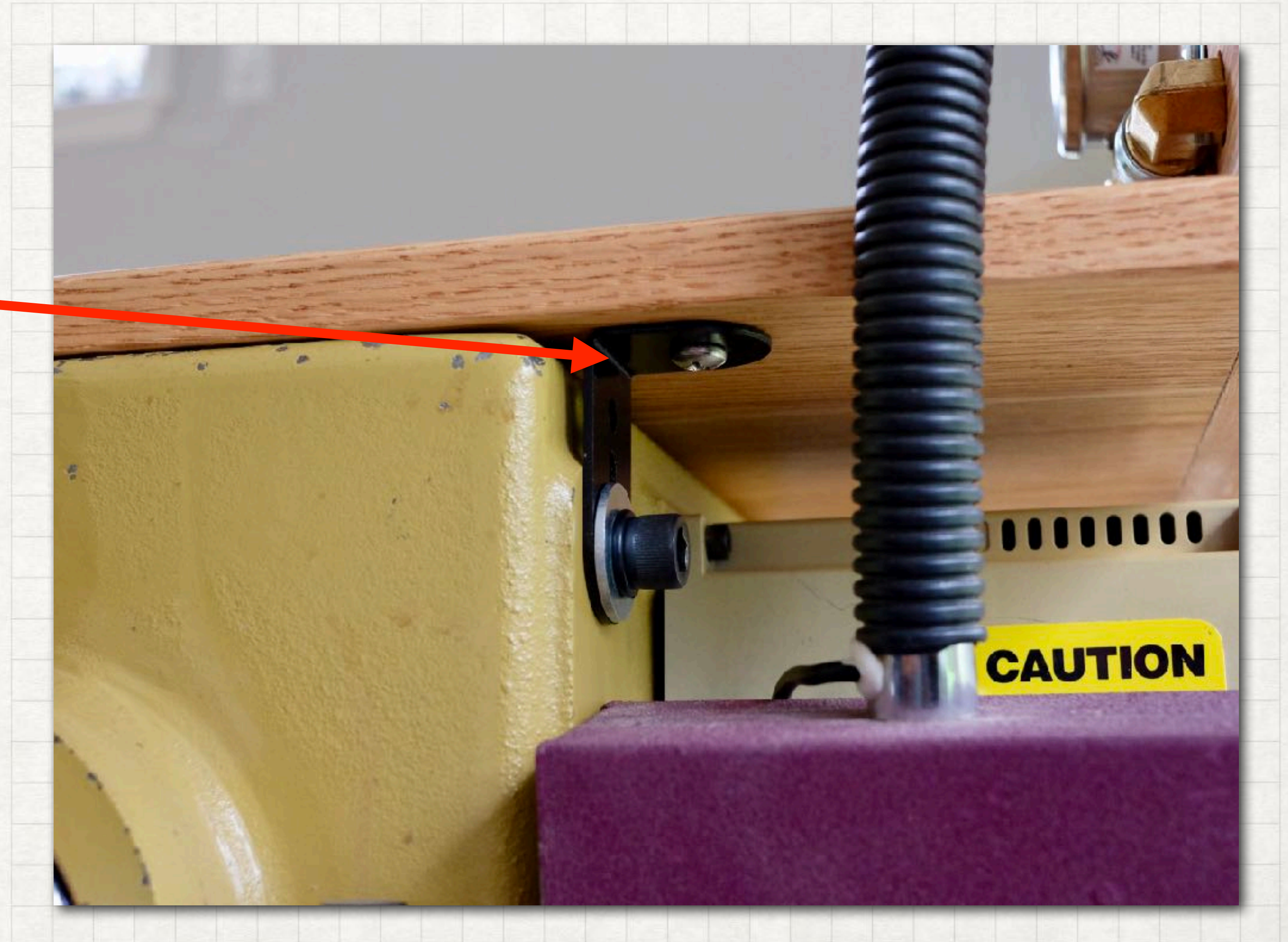


CUSTOM HEADSTOCK PLATFORM

POWERMATIC 3520B LATHE

Construction details

- L-bracket in back further secures platform
- Used existing 3/8" bolt hole on headstock (*originally meant for attaching duplicating arm...*)

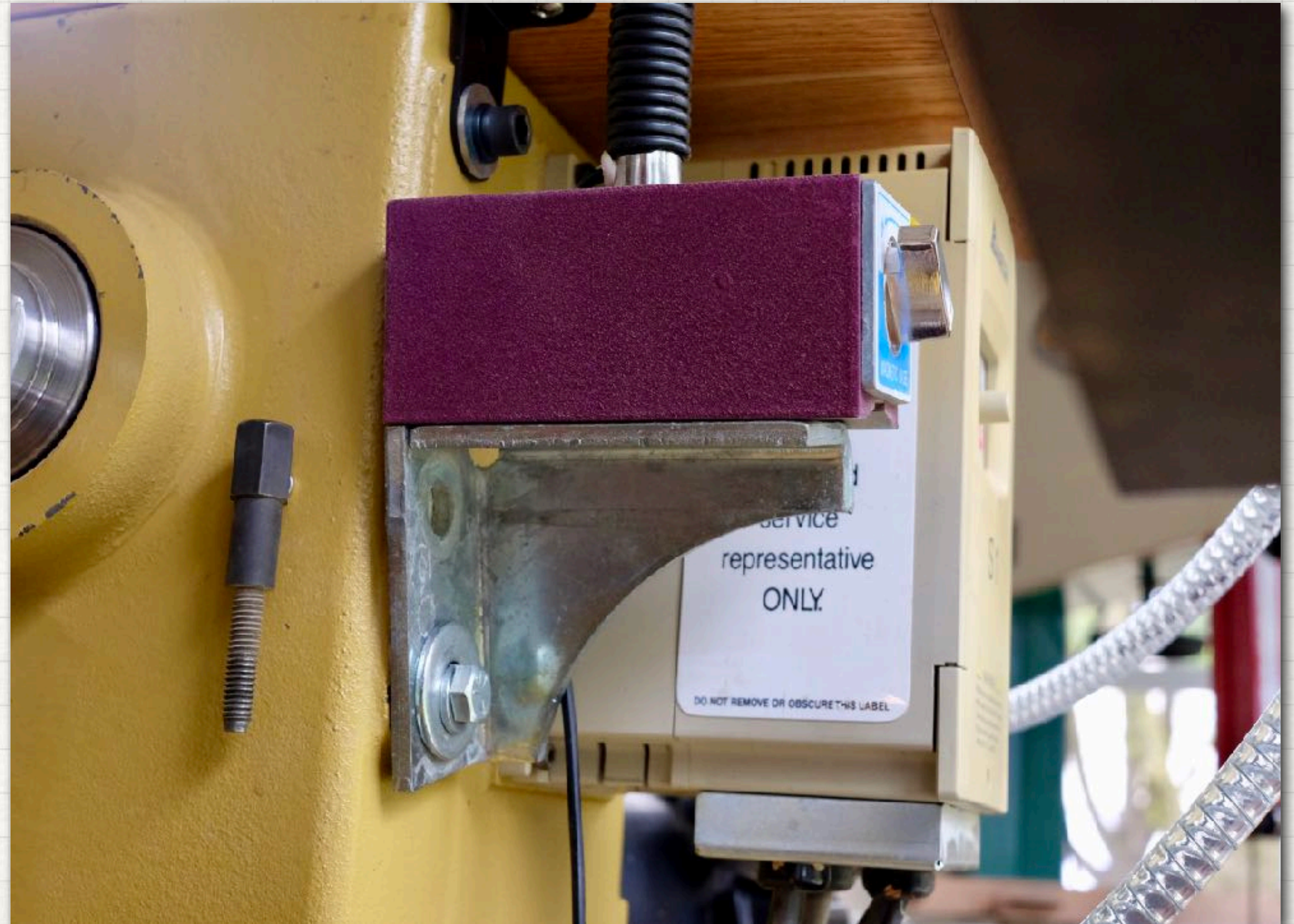


CUSTOM HEADSTOCK PLATFORM

POWERMATIC 3520B LATHE

Construction details

- Attached Unistrut shelf bracket at other 3/8" tapped hole on headstock
- To secure magnetic task light



AND THAT'S HOW I DID IT

QUESTIONS?

