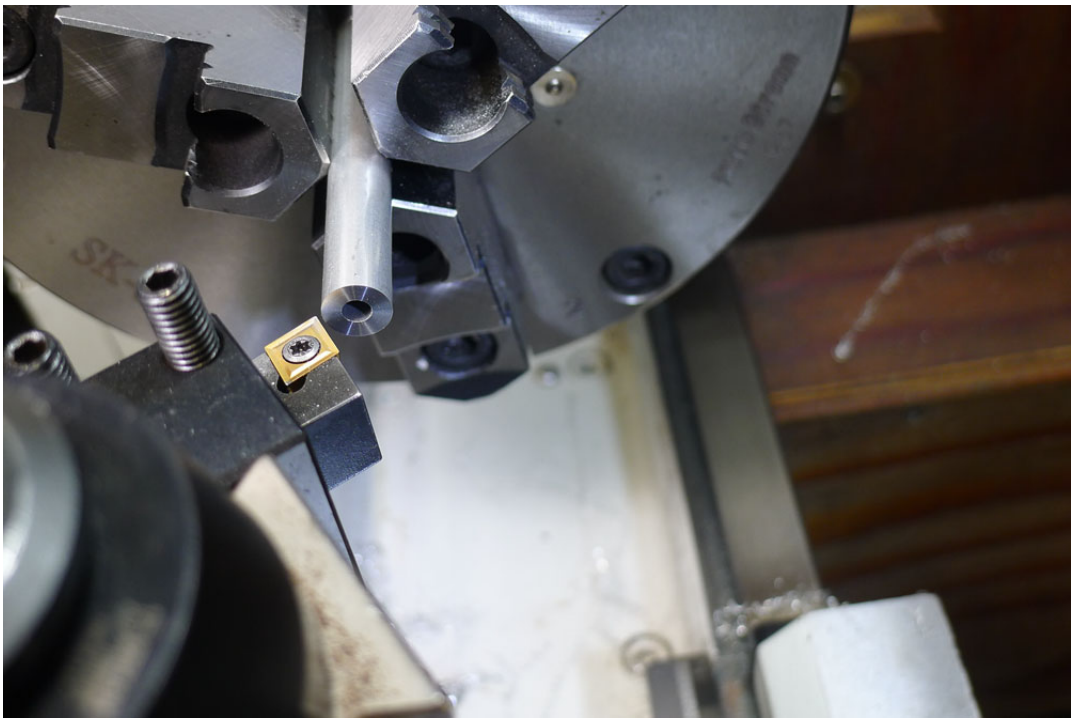
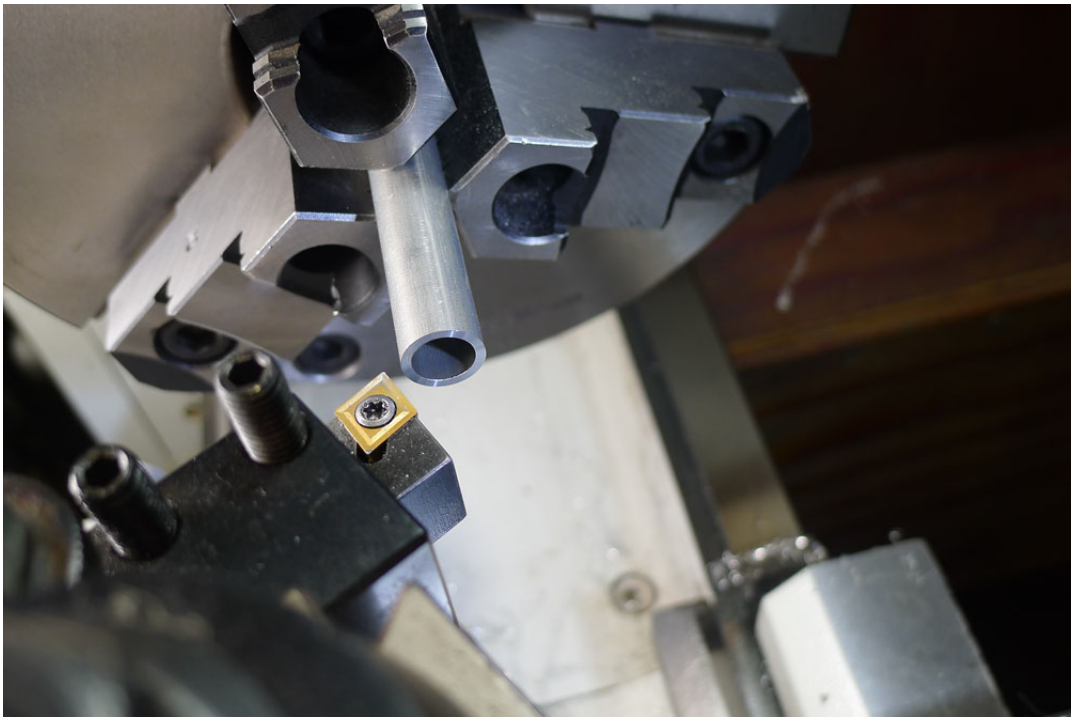
Glassdance Manual #3

Machining Glass Stem Tubes and Sleeve Tubes

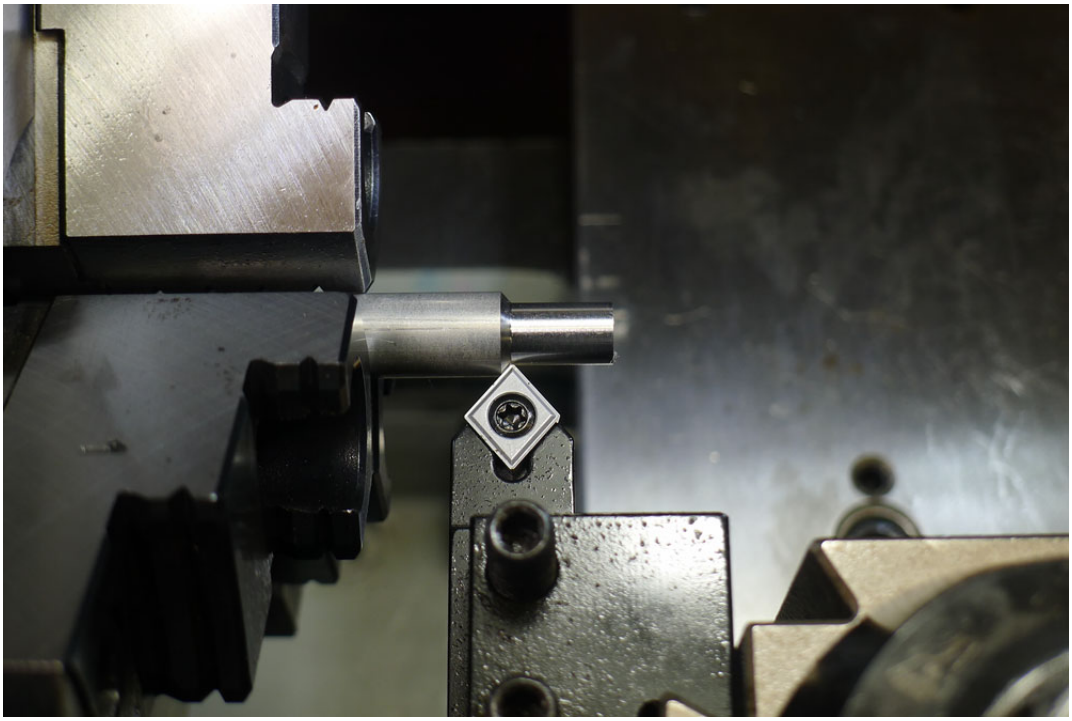
1. Face the ends of the aluminum glass stem tubes: 7⁄16 in. OD × 0.198 in. ID × 0.120 in. Wall, and precision turn to a length of 3 1⁄16 in.



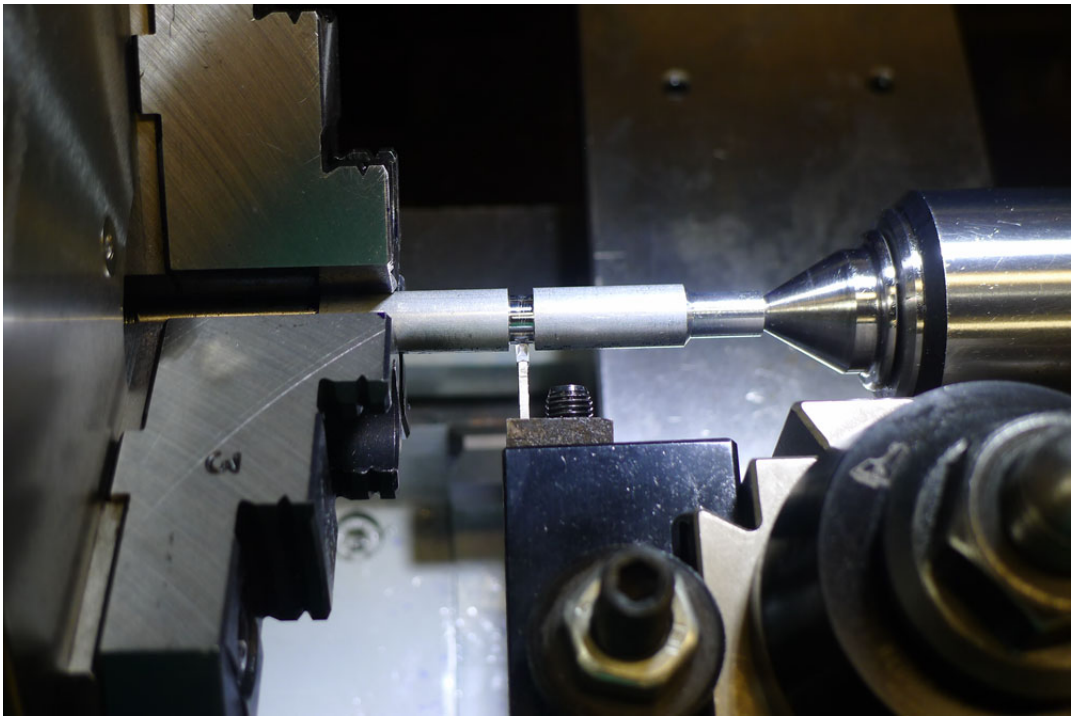
2. Face the ends of the aluminum sleeve tubes: ½ in. OD × 0.402 in. ID × 0.049 in. Wall, and precision turn to a length of 3 5⁄32 in.



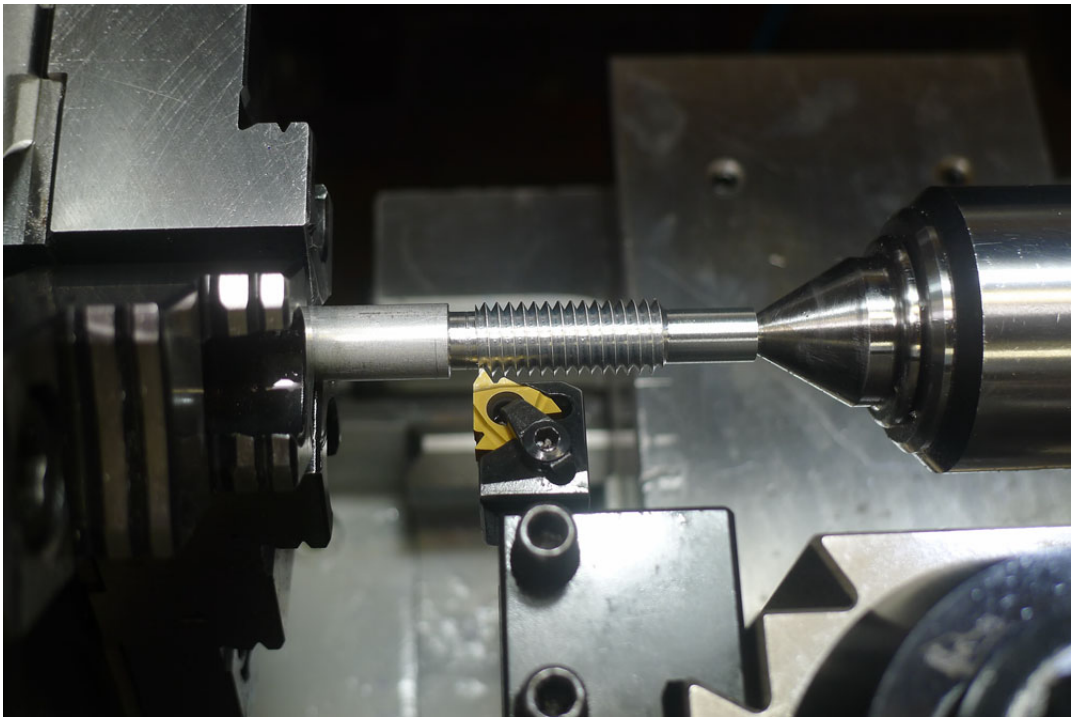
3. At the interior ends of the glass stem tubes, undercut the grip lengths: 0.320 in. OD × 0.500 in. Wide.



4. At a distance of 1.281 in. from the external ends of the glass stem tubes, undercut the thread clearance grooves: 0.340 in. OD × 5⁄32 in. Wide.

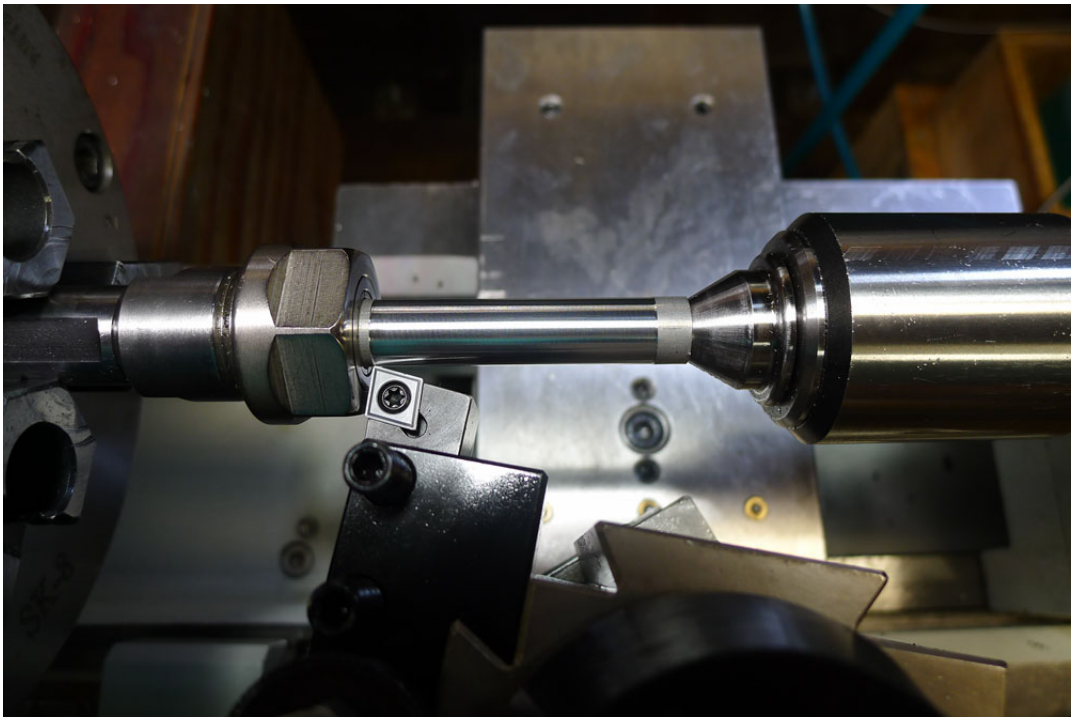


5. Cut the 7⁄16-14 external threads with a length of 1 1⁄8 in.

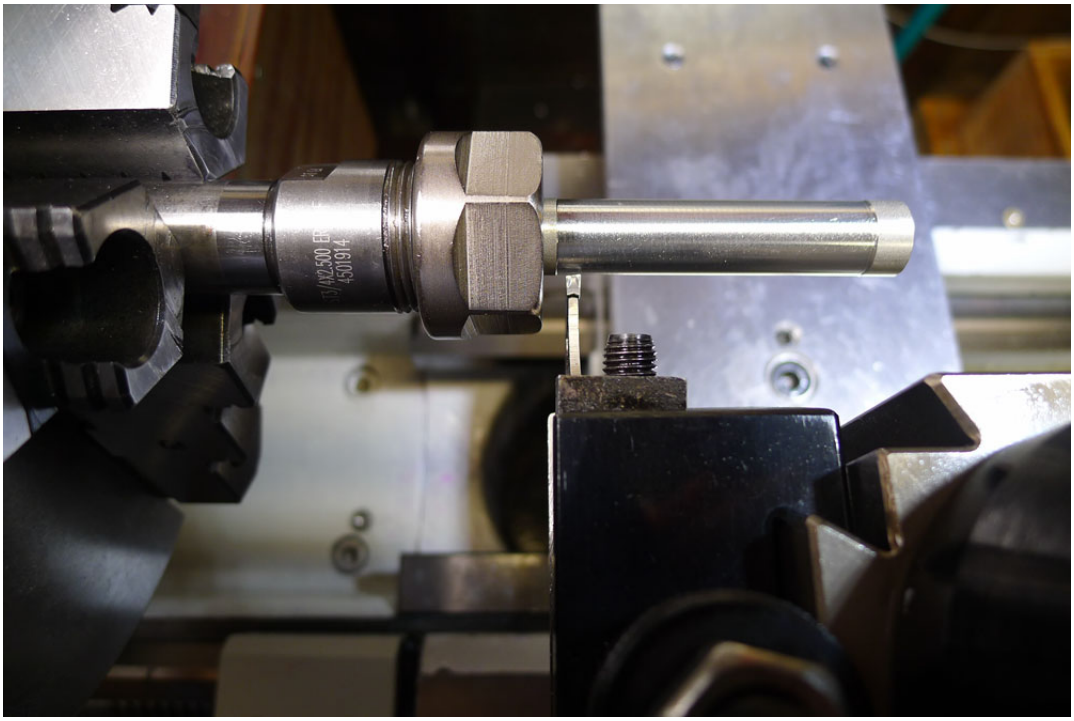


6. Regarding the aluminum sleeve tubes with a manufactured ID: 0.402 in., to slide them over the machined aluminum glass stem tubes with a manufactured OD: 0.438 in., increase the sleeve tubes ID with successive passes of three drill bits: 13⁄32, 27⁄64, and 7⁄16. Finish enlarging the sleeve tube bores with a 0.4390 in. reamer.

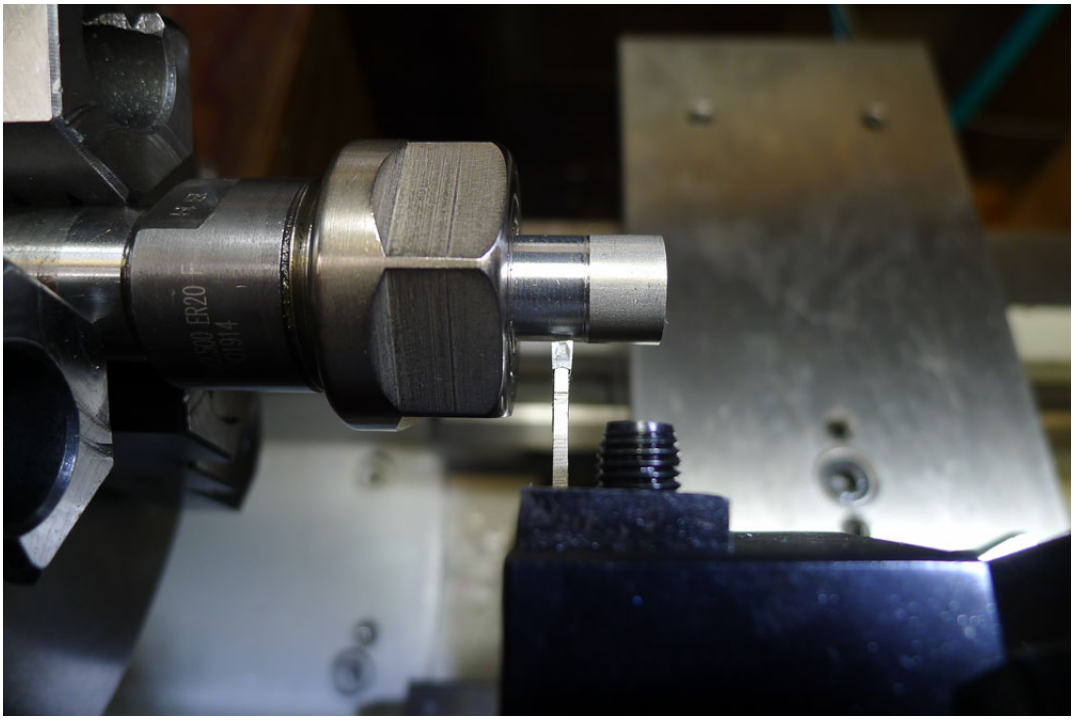
7. Turn the 1⁄2 in. OD sleeve tubes down to 0.490 in. OD.



8(a). First sleeve tube cut-off location.



8(b). Second sleeve tube cut-off location.



9. Sleeve tubes with a length of 1.610 in. deburred at the cut-off locations with 320-grit wet/dry paper.

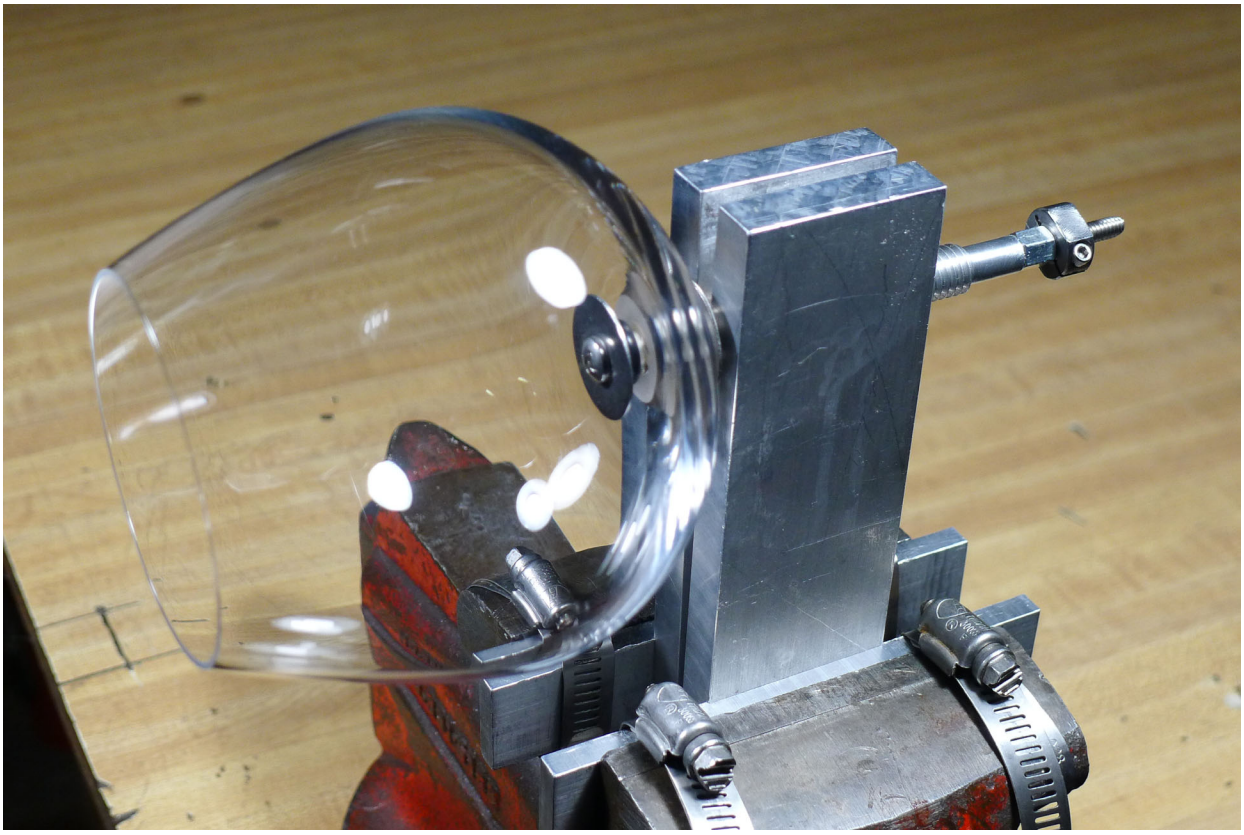
10. Bonded stem tubes and sleeve tubes. Bonding agent: Loctite #271.

11. Very lightly face the exterior ends of the bonded tubes. Please note, I will now refer to all bonded tubes as aluminum glass stems, or simply as glass stems.

12. To fasten a glass to an aluminum glass stem, (1) attach the glass holder jig to the vice jaws with four hose clamps; (2) open the vice; (3) place a glass stem into two half-holes at the top of the jig; (4) close the vice to hold the glass stem securely in the jig; (5) assemble the glass to the stem with various mechanical components.

See: Glassdance_Components_Manual-1.pdf, pp. 7–8.

Glassdance_GlassHolderJig.jpg



In the graphic below, (1) the thread clearance groove with a width of 5⁄32 in. is in green; and (2) the aluminum sleeve tube with a length of 1.610 in. is in magenta.

Glassdance_AluminumGlassStemAssemblyDimensions.jpg