



Viewer bellows alignment

1. Attach support rods to bellows
 - a. Rods modified for 2021 air cylinder: JL0109878-0002-01
 - b. Bellows: 103-55-5-1-1/3" CFFR, 2-3-4" CFFNR modified with 58432-C-0100
2. Install plunger weldment taking care not to tighten rotatable mini flange
 - a. Weldment: 58432-B-0126
 - b. Shaft: 58432-B-0123
 - c. Flange modification: 58432-B-0120
3. For 45 degree alignment, camera to the right of viewer: **Get print of alignment tool**
 - a. Support bellows flange with the 2.75 knife edge UP
 - b. Identify upstream leak check groove as the one with a support rod at the same position
 - c. Install 45 degree alignment tool with knife edge up, leak check groove aligned with upstream bellows flange leak check groove
 - d. Rotate mini conflat until rod flat matches alignment tool flat and secure with bolt
 - e. Tighten gasket
4. For 45 degree alignment, camera to the left of viewer:
 - a. Support bellows flange with the 2.75 knife edge DOWN
 - b. Identify upstream leak check groove as the one with a support rod at the same position
 - c. Install 45 degree alignment tool with knife edge up, leak check groove aligned with upstream bellows flange leak check groove
 - d. Rotate mini conflat until rod flat matches alignment tool flat and secure with bolt
 - e. Tighten gasket

Building full viewer assembly

1. Attach top plate (58432-B-0116) to three support rods (JL0109878-0002-01) using 10-32, 0.5" or 5/8" long using split ring lock washer
2. Attach air cylinder to top plate using 1/4-20 socket head bolts, 3/4" long using split ring lock washer
3. Screw turnbuckle onto air cylinder threaded rod 2.5 turns
 - a. JL0109878-0002-02
4. Use turnbuckle to draw in the rod and turnbuckle to desired insertion depth
 - a. Loosen 10/32 bolts and drive in set screw to split for turning. Back out setscrew and tighten bolts to secure at appropriate depth

Adding viewer screens

1. Viewer screens assy (JL0091130-0214)
 - a. Front plate: JL0091130-0214-01 **Modify to show 45 degree cutaway!**
 - b. Back Plate: JL0091130-0214-02
 - c. Top Hat: JL0091130-0219
 - d. Wire: Tungsten/Rhenium (W75/Re25) 0.05mm Goodfellow
 - e. Viewer string jig: **print?**
2. Assemble viewer flag
 - a. Place front plate in jig, front side down

- b. Secure one end of wire with hemostat clamp, run wire from bottom left screw around top right screw and back, secure under screw and washer at bottom left.
 - c. Repeat wire stringing from bottom right around top left and back
 - d. Make sure wires go on the outsides of bushings if present
 - e. Lay chromox screen on wires and center carefully (yag can be used too, but may not need wires)
 - f. Gently place back plate on screen, seat into position, and insert 2 screws at top loosely (4-40, 1/4" long, silver plated, button head)
 - g. Place top hat on bottom, insert two screws (4-40, 3/8" long, silverplated, button head)
 - h. Secure all screws snugly
 - i. Loosen wire clamp screws, checking carefully that tension remains on the wires with the frame screws. Adjust if necessary.
 - j. Remove from stringing jig and clip off ends of wires
3. Add shaft extension if needed
 - a. JL0091130-0227
4. Install on depth alignment cross and adjust insertion depth with turnbuckle
 - a. Set 6-way 2.75 conflat cross (or other size) on flat surface
 - b. Use pinhole center tool to align laser through middle of cross
 - c. Install viewer assy on centering cross
 - d. Adjust height with turnbuckle
 - e. Adjust any tilt with shims between bellows assy and air cylinder
 - f. Tighten and install