

Bellows replacement on Finnigan MAT 252

1. Place bellows at 10%
2. Remove four-valve block assembly (4 nuts & washers, 8 mm or 5/16"), and place to left on a 1" roll of tape. Be careful that you don't pinch any of the compressed air lines. (see bel-valve.jpg)
3. Disconnect the round cable at the lower left back of the bellows block. Mark the top of the bellows and bellows assembly and note the orientation of the gold 'O' ring. It is located off center to the right.
4. Remove 2 large allen head bolts from below. You will have to rotate the entire assembly so that you can take the unit out and to a workbench.
5. Part #8 as pictured in the Finnigan manual (see bel-side.jpg, part #8 is the assembly marked with a 'T' on the top and a 'B' on the bottom) can now be slid off by:
 - a. Remove nut from below using 7/32 inch nut driver
 - b. Remove threaded rod pin using .1 mm screw driver
 - c. remove 4 nuts (8 mm, they keep the shaft from spinning)
 - d. lift part #8 away
 - e. **DO NOT ADJUST ALLEN SCREW AT END OF ROD**
6. The bellows rod is now exposed (see bel-top2.jpg).
 - a. Remove set pin on top of collar by pushing down on the rod while unscrewing pin. You may have to tilt the assembly to allow air into the bellows from below so the rod can be depressed. Once unscrewed, you will have to pull the pin out with pliers.
7. Remove 8 Allen head screws from face plate of bellows assembly to free the bellows assembly (see bel-face.jpg).
8. Slide bellows assembly away from face plate (see bellows.jpg)
9. Inspect rod for burrs or deformation, gently file if necessary.
******DO NOT REMOVE SET SCREW AT END OF ROD******
10. Remove 4 screws from assembly and reattach rod to the new bellows and reassemble entire bellows assembly in the reverse order

Before Reassembly, check the following

If the stepping motor makes noise and is slow to move, do the following before reassembly:

1. Disassemble the gears (see bel-top2.jpg)
2. Remove part #3 (Idler gear) by taking off nut
3. Remove the four studs and unscrew from tube
4. Remove part #4 (bearing assembly)
5. Screw out Stainless Steel bushing
6. Clean threads
7. Re-grease
8. Reassemble
9. Move the bellows to 0% and check the VDC on the potentiometer. It should read around 9.2. If the VDC is incorrect, disconnect the black o-ring and move the potentiometer until the correct voltage is obtained. Reattach the o-ring and proceed to Calibrate Bellows.

Calibrate Bellows

When the bellows are replaced they must be recalibrated as follows:

1. Go to Cnf-D Supp-D Calibrate Inlet
2. Choose to calibrate either volume 1 (SA side) or volume 2 (ST side)
This autodrives the bellows over the entire range from 0-100%
Do this two times. Save AFTER the second time.
3. Do a manual reference gas refill, check mbar and voltages at 0, 70 and 100% bellows and change the reference refill time in the method, record as necessary.
4. Reboot computer for the changes to take place!