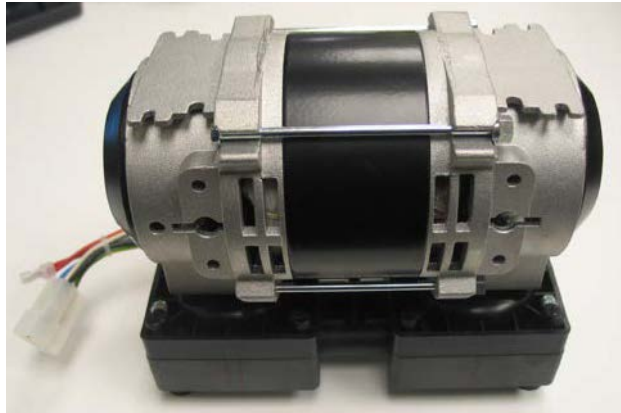


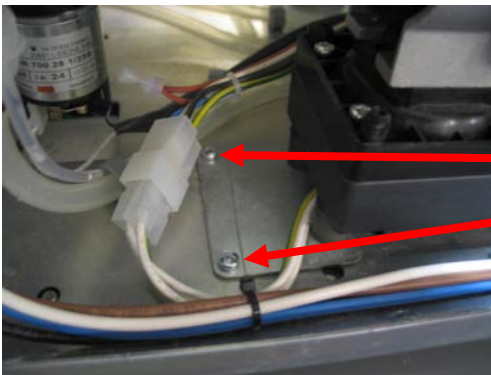
Bravo 17V & 21V Vacuum Pump EVO10

Rebuild Instructions

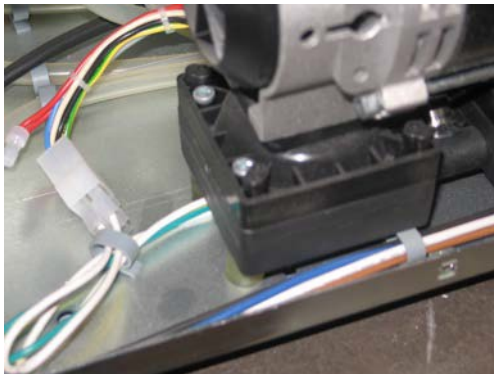
Repair Kit #SCI-900-40



1. Remove the EVO10 vacuum pump from the Bravo chassis; it is located on the right side of the unit (when looking at the Bravo from the front). The pump will be mounted to the frame in one of two ways, with or without small mounting plates (see pictures below).



Pump with mounting plates shown here. Remove these two screws on both sides respectively.

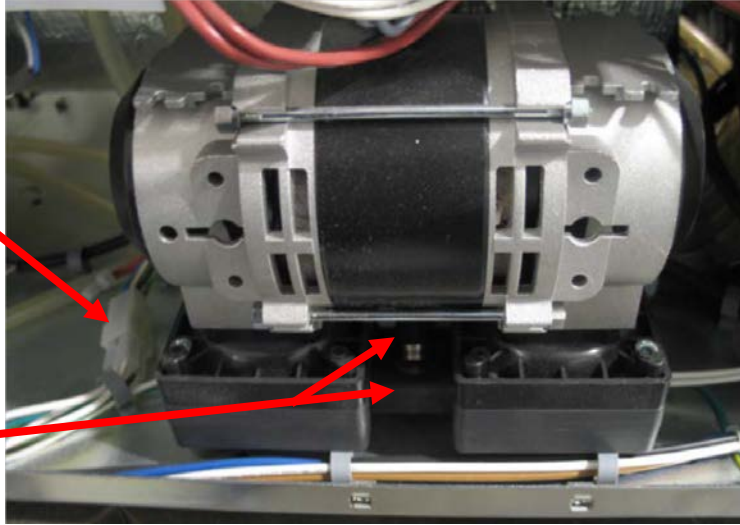


Pump without mounting plates shown here. Remove the four screws by accessing from beneath the Bravo's frame (sliding unit slightly off the edge of the work surface will allow access).

2. Disconnected wire connections on the left of the pump and slide off the two black, insulated tubes from between the two pump heads. The hose clamps do not have to be removed: the tubes will slide off with a firm pull.

Wire connections

Black, insulated tubes



3. The vacuum pump should now be free of the Bravo frame. If your unit employed the small mounting plates (shown below), remove the four screws attaching the plates.

Screws

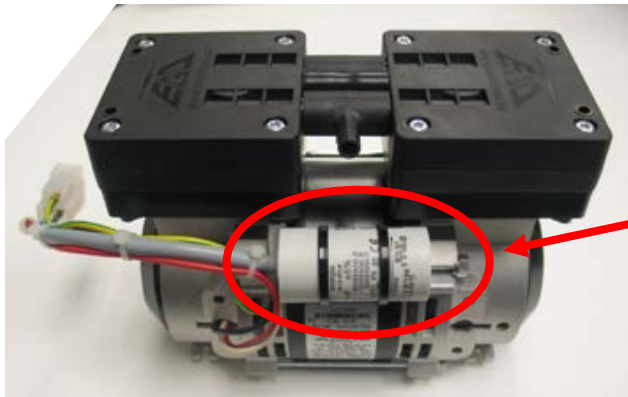
Screws



4. Next, remove the four rubber mounting posts from the base of the pump (two on each side).

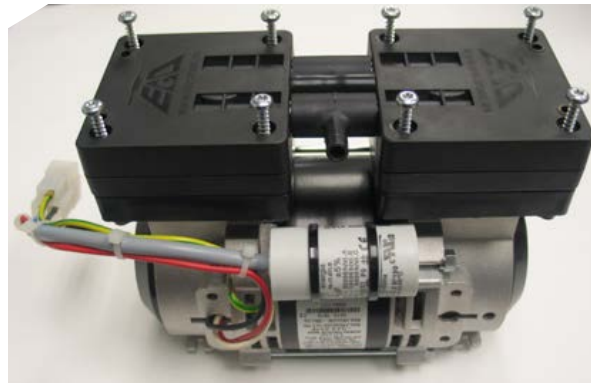


5. Now flip the vacuum pump fully upside down as shown below. Take note of the large white capacitor facing you in the photo. The capacitor will be away from view (facing the inside of the Bravo) when the pump is mounted back into place, but will be used as a visual reference for these instructions (so we know which way is front and back).

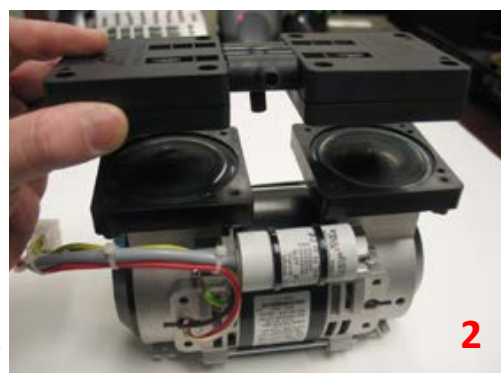


Large white capacitor for reference

6. Now we can disassemble the head units of the vacuum pump. First, remove the four screws on each head as shown below (8 screws total).



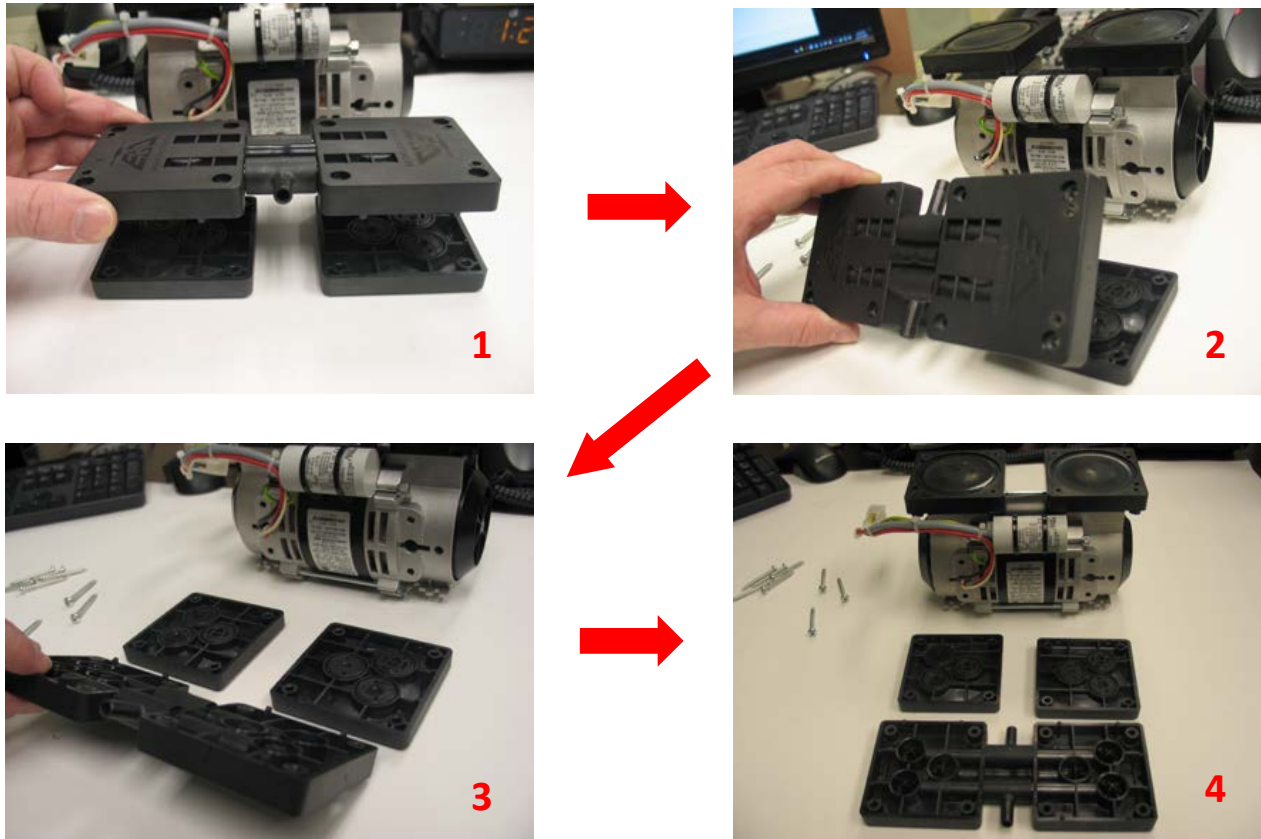
7. Now we can lift the head assembly off of the pump proper, maintaining orientation as shown below. Use both hands to prevent head sections from falling off while moving.



8. Looking downward at the head assembly you just removed, note the two input/output posts in between the two square heads. The output post will likely be out of view as shown below. For ease of recognition, rotate the post into view as shown below. Both direction arrows will now point in the same direction (away from you).



9. Now lift up and flip over the top section, maintaining orientation as shown.

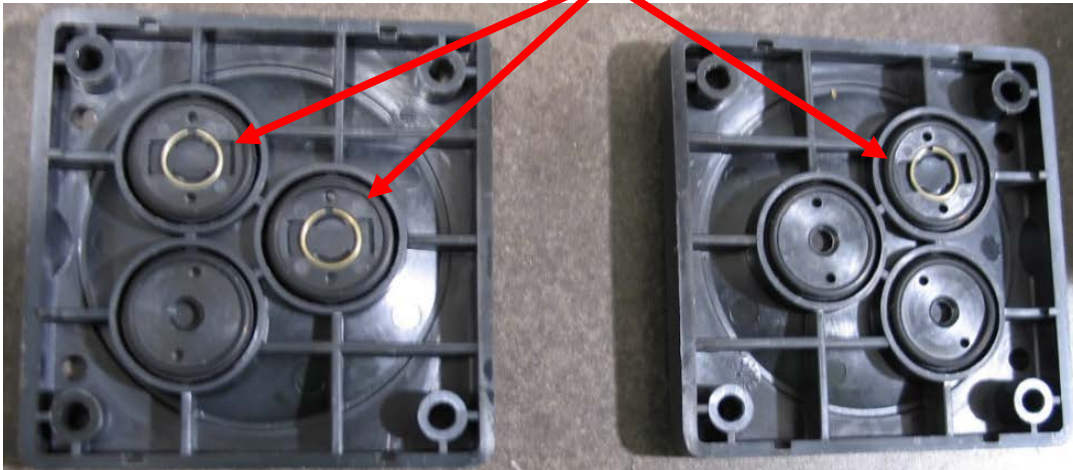


10. Now we can replace the primary o-rings and shutter-disks of the two heads. Note the asymmetrical layout of these disks as shown below. (If the disks appear different, see next step)



11. In some older style vacuum pumps, the shutter-disks used small c-clips to hold the shutters in place. If your pump has these older shutter-disks with c-clips, no need to worry, simply replace them with the new shutter-disks provided with your rebuild kit.

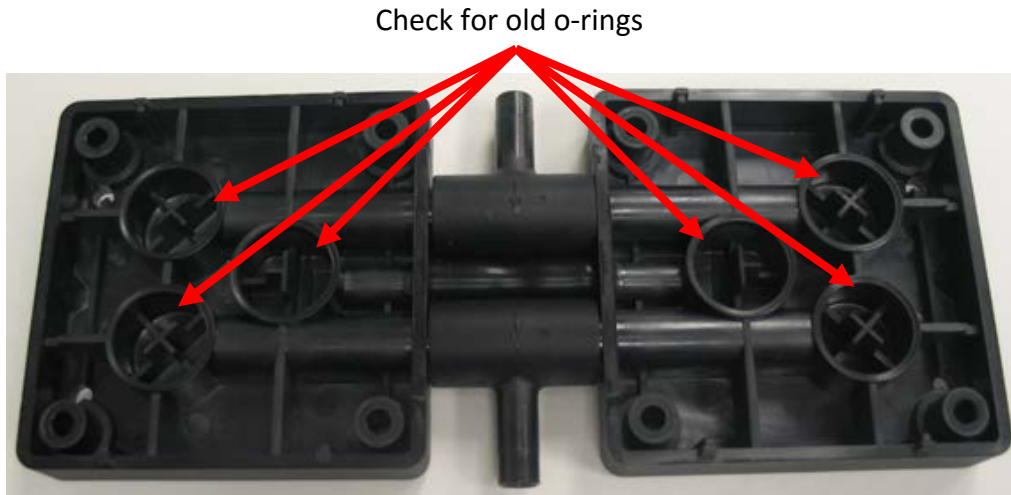
C-Clip style shutter-disks



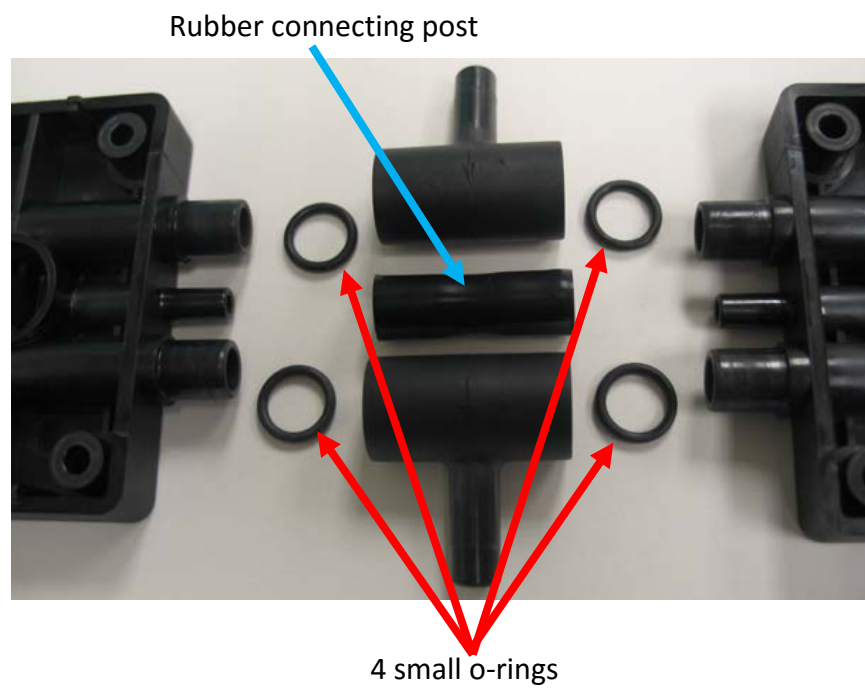
12. Remove all shutter-disks and o-rings (6 disks, 12 o-rings total). Each disk has two o-rings around its outer edge (one on each side), be sure to remove them all. Place two new o-rings on each new shutter-disk and set them in place, oriented the same as they were (as shown below).



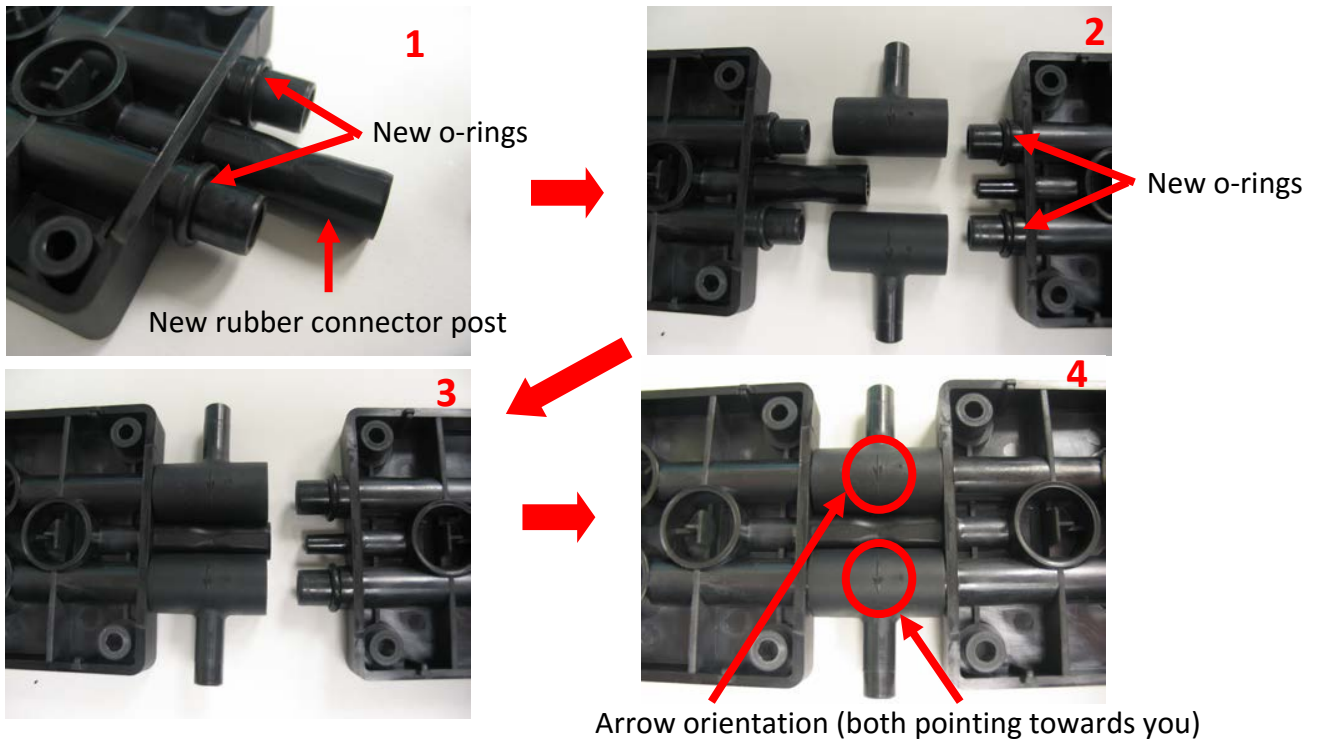
13. Now we can address the other section of the head units that we removed in step 9. Make sure there are no o-rings left behind from the old shutter-disks in any of the six round fittings



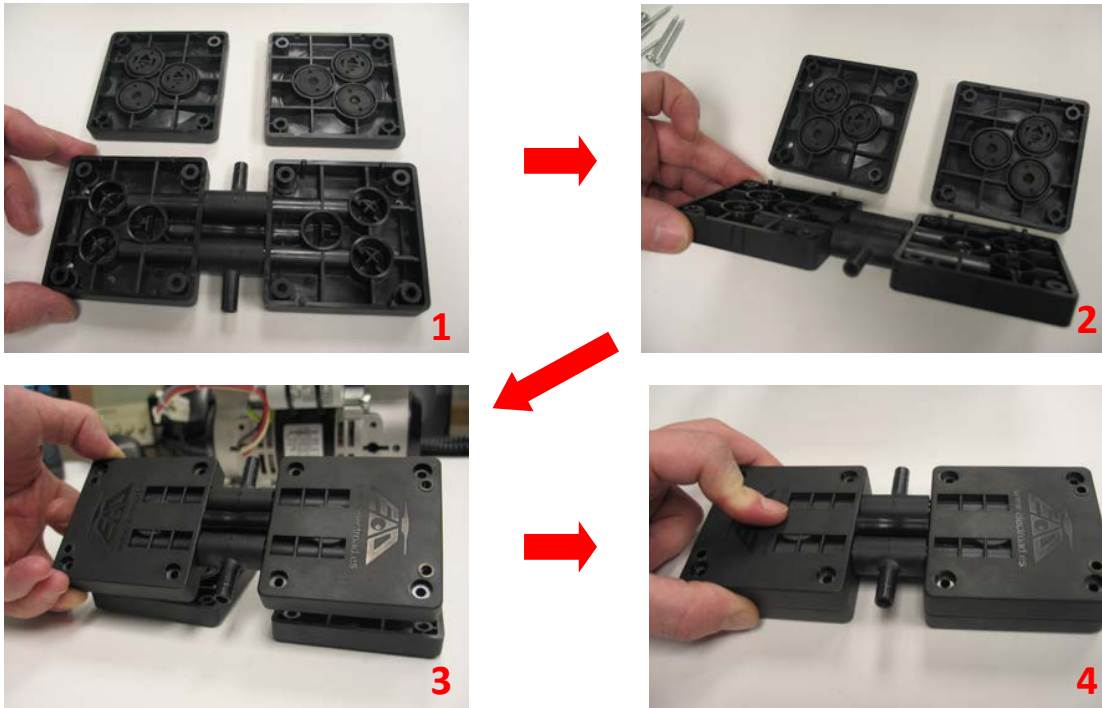
14. To separate the two head housings, simply pull them firmly apart from one another to expose the last four (smaller) o-rings and rubber central connecting post shown below.



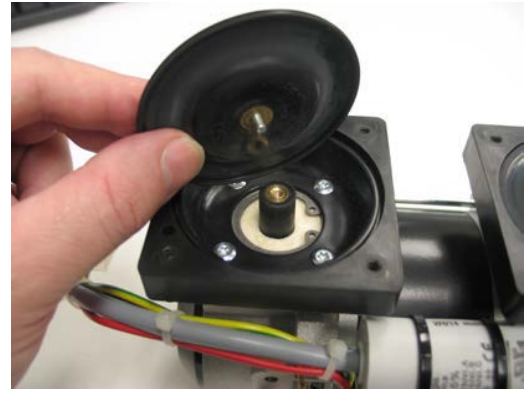
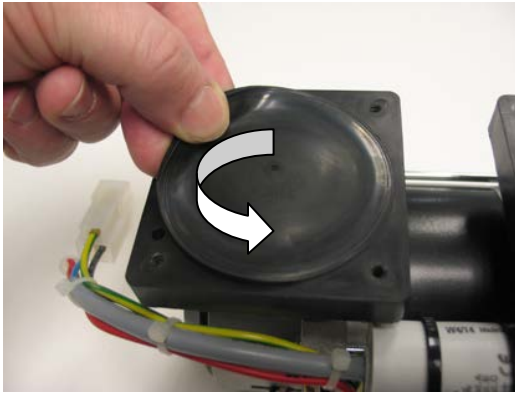
15. Replace the four small o-rings by sliding them onto the posts of the heads. Slide the new rubber central connector onto one of the heads, then press the two heads together as shown, maintaining the same orientation. At this point, the two black arrows on the barb connection pieces will be pointing towards you.



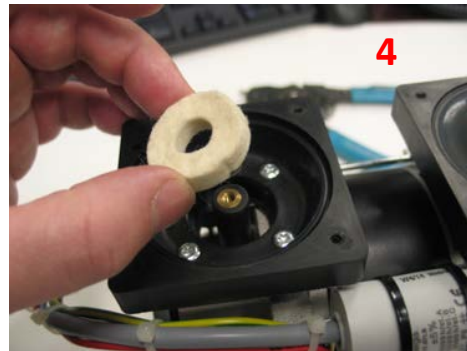
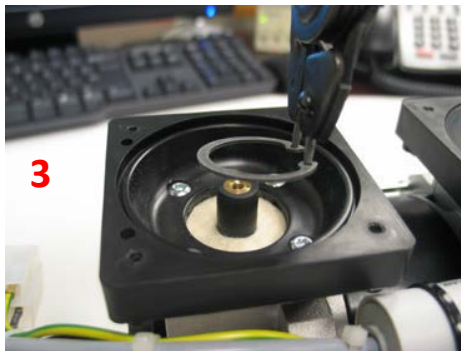
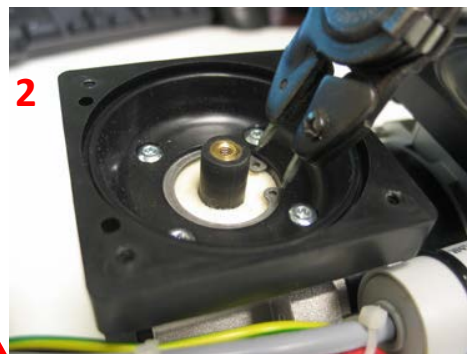
16. Now we can mate the head sections back together with one another as shown below.



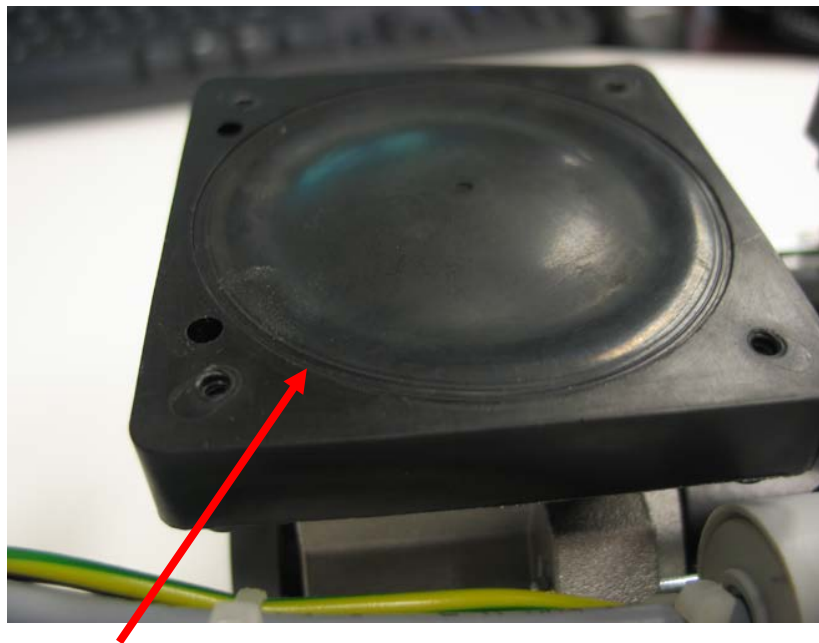
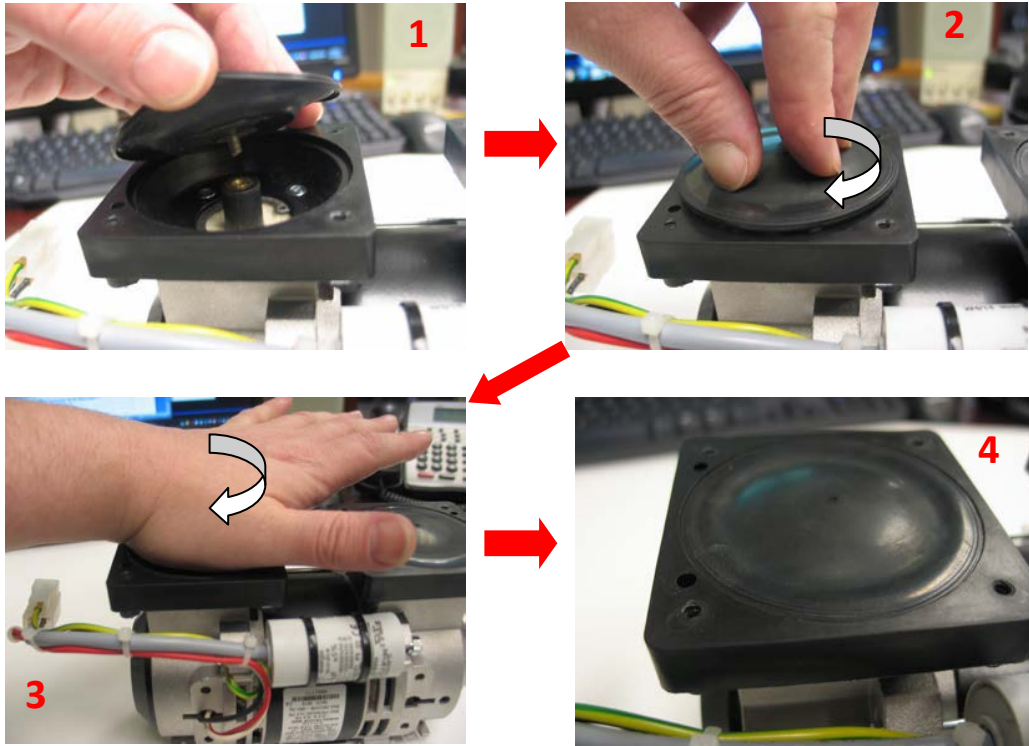
17. Now to replace the two main large membranes on the vacuum pump proper. To remove the membranes, lift up one edge and unscrew the membrane from the vacuum's piston (counter-clockwise to loosen). If the membrane is difficult to remove, gripping with a pair of pliers to help unscrew is fine (the old membranes will be discarded).



18. We can now see the firm cotton bushing surrounding the piston. Remove the c-clip using a pair of snap-ring pliers (aka clip-ring pliers) and remove the old bushing. Replace with the new bushing included in your rebuild kit.

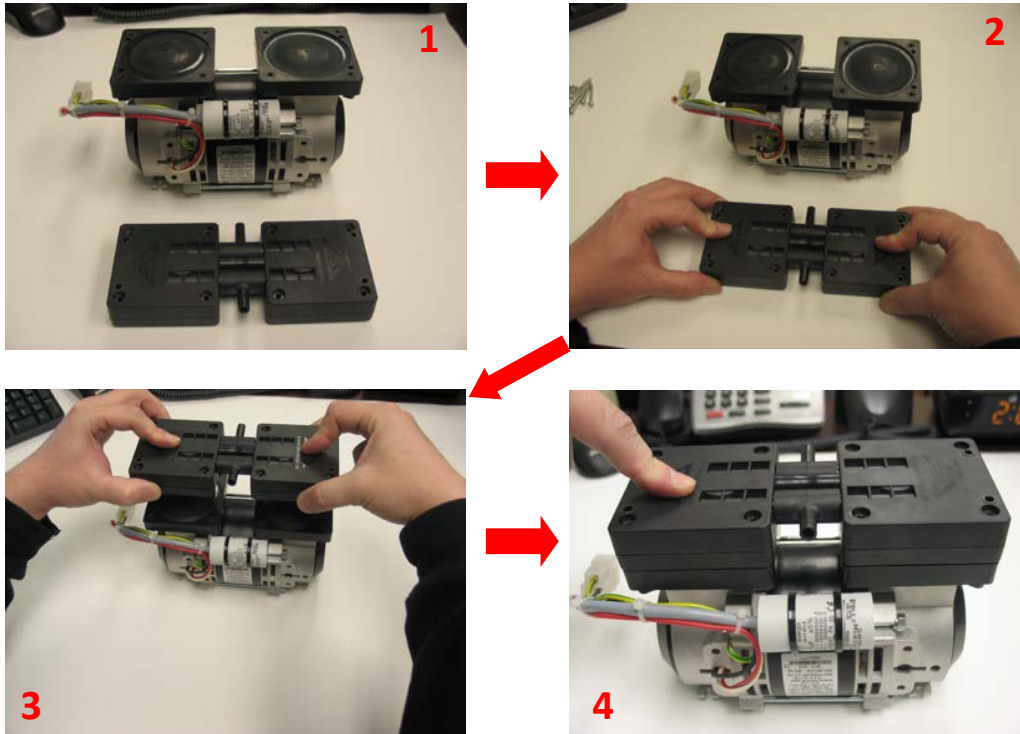


19. After installing the new bushings, we may now install the main diaphragm membrane to the pump's piston. Simply screw the central threaded post of the membrane into the end of the piston. The black flywheels on either side of the vacuum pump can be manually rotated to position the piston so it is protruding upward as far as it will go; this will assist us in getting the new membrane's post threaded properly, and help to ensure the membrane is fully screwed into place. Be sure to screw the membrane down completely flush to the end of the piston. Pressing down firmly with the palm of your hand while turning clockwise should work, as we do not want to use any tools that could tear/damage the new membrane. If the membrane is not screwed down entirely the vacuum pump will not rotate properly and will be very noisy when operating, or may not rotate at all.



New membrane nice and flush

20. Finally we may now replace the head units back onto the vacuum proper. With two hands (to prevent the heads from falling apart) place the head unit back onto the pump and replace the eight screws to secure them in place.



21. After the eight fastening screws that were removed in step 6 are replaced to secure the head units to the vacuum pump proper, replace the rubber feet and mounting plates (if applicable). Your vacuum pump is now rebuilt and ready for reinstallation into the Bravo.