Servicing Welch DRYFAST ULTRA Pump Models 2032

Welch-Ilmvac
Gardner Denver Thomas
March 27, 2013

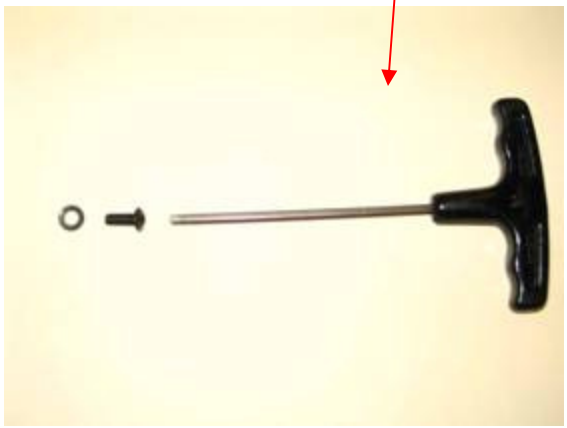
Dissassembly of Pump

Caution: Obtain clearance from customers concerning chemicals and wear protective gloves and operate in a fume hood.

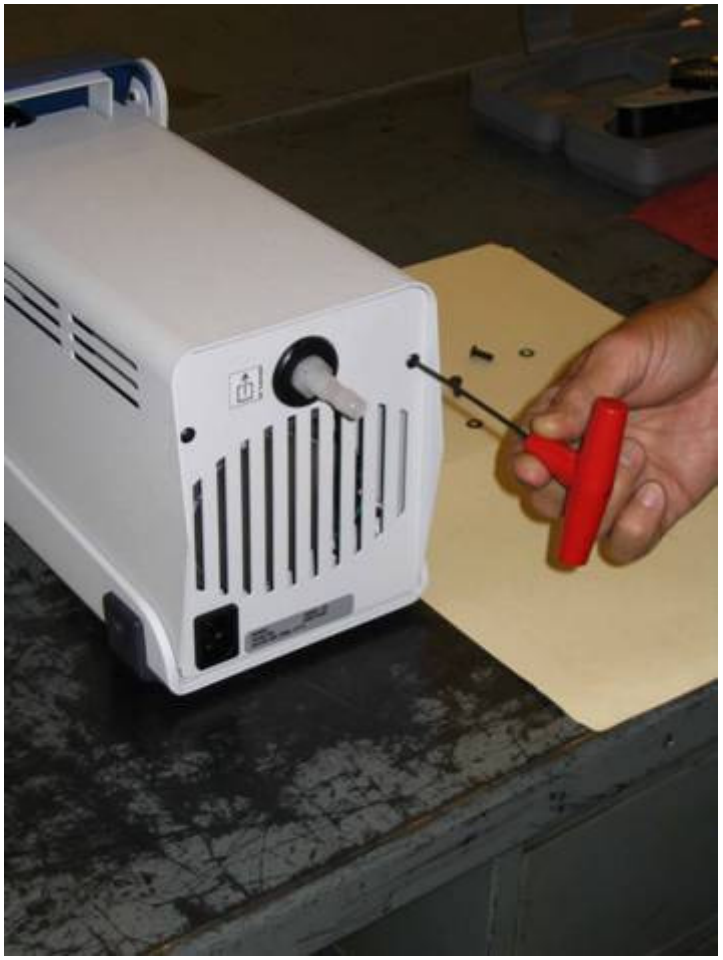
- Removing cover to reach internal pump
- Removing diaphragm(s)
- Removing exhaust valve(s)
- Removing intake valve(s)

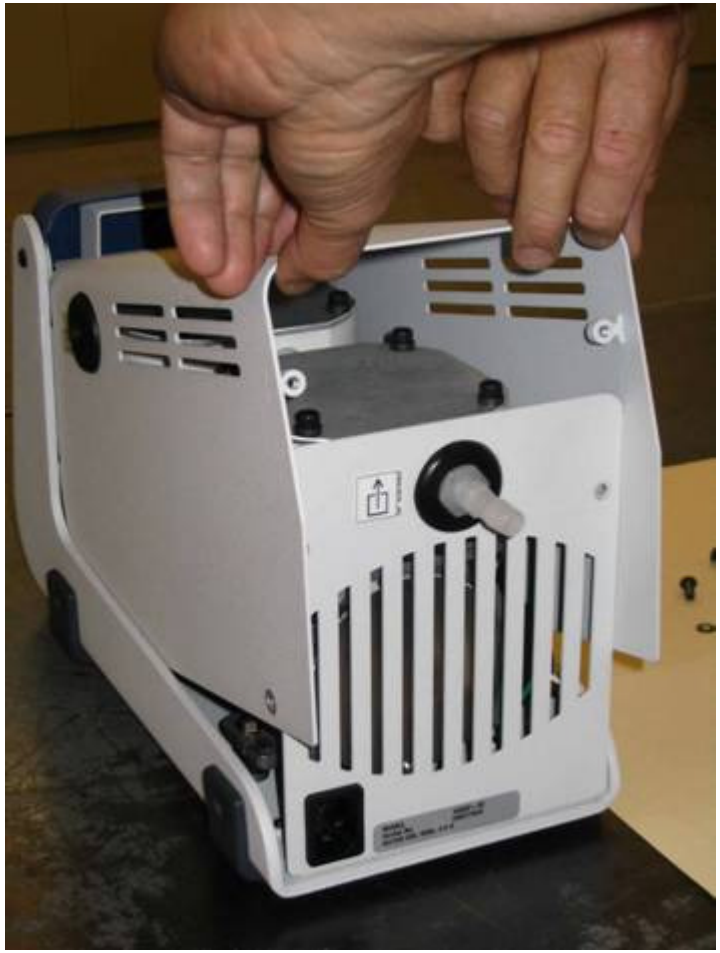
1. Remove Inlet Fitting with 17 mm Wrench.

2. Remove 4 screws holding feet using 3.2 mm(1/8 in.) Allen Wrench.



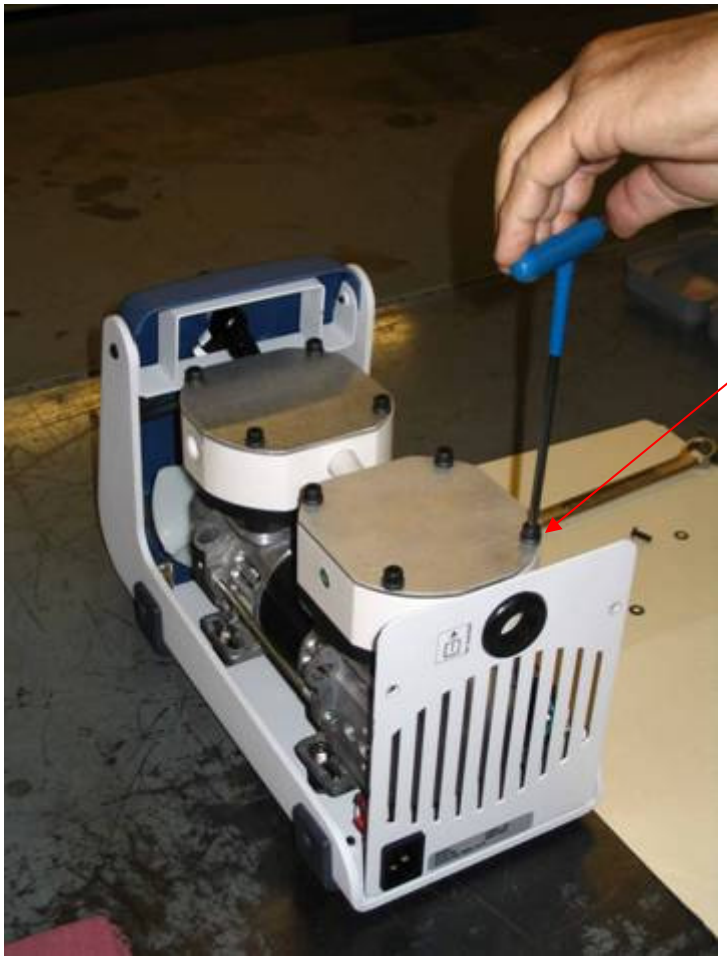
3. Remove 2 screws with 2.4 mm (3/32 in.) Allen wrench and elevate cover.



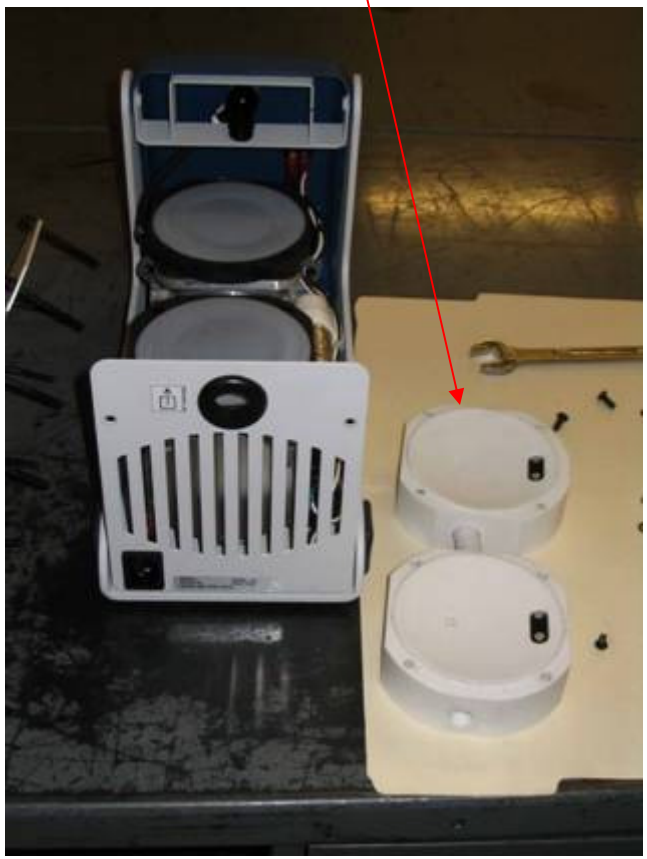


4. Place cover on side and remove exhaust fitting with 17 mm wrench.

5. Remove 8 screws from heads loosening with 4 mm Allen wrench (Important: keep washers on screws).

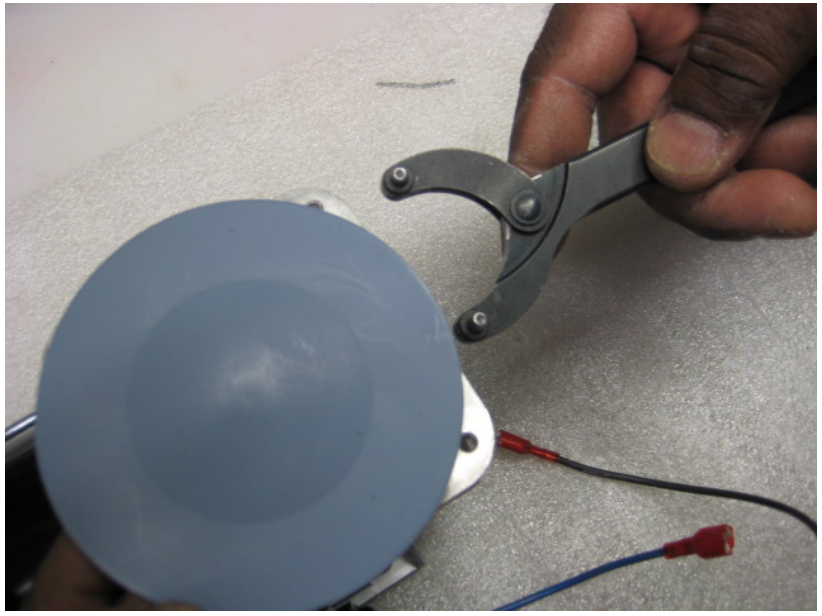


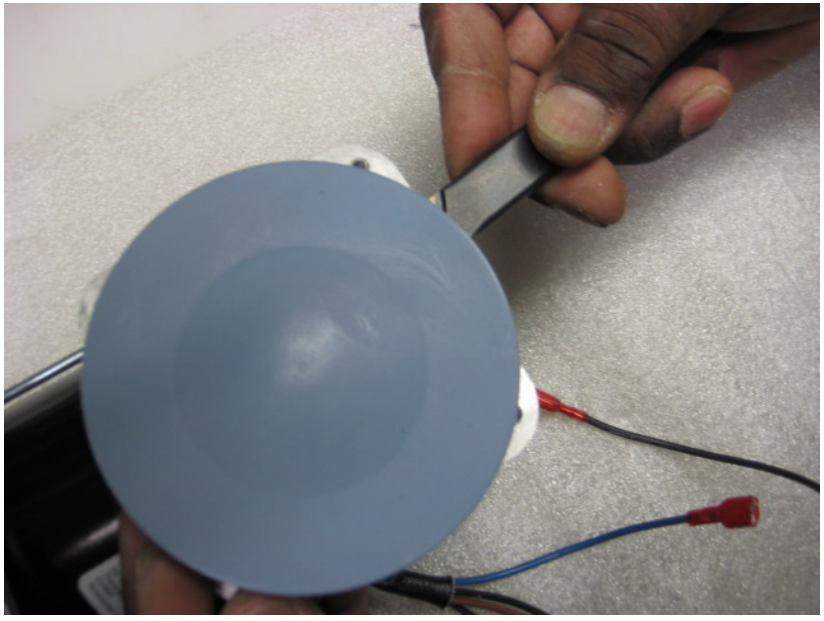
6. Remove hose from barb and remove PTFE heads.



7. Remove diaphragm support ring and use span tool # 826801-16 to unscrew diaphragm turning counter-clockwise.

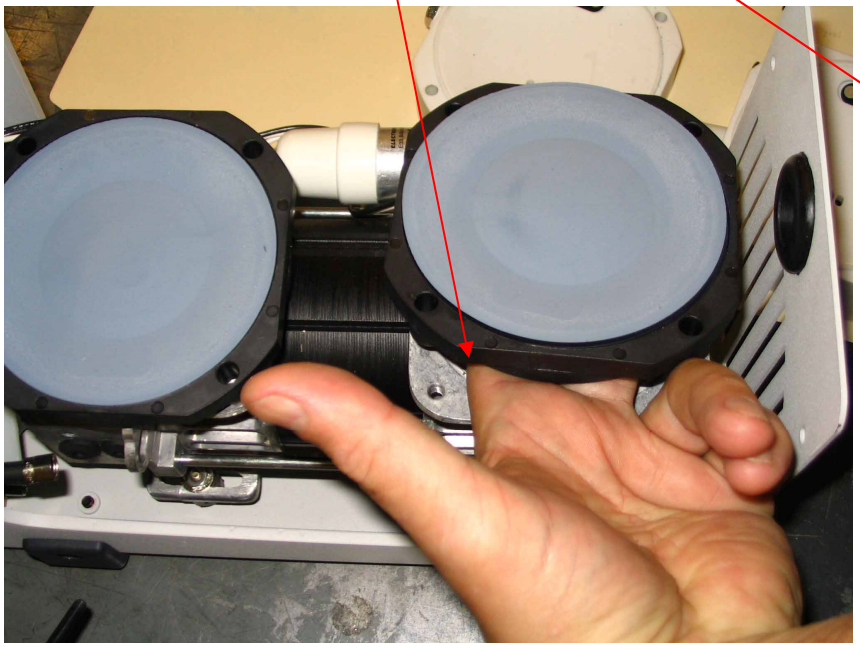
Tool part no. 826801-16



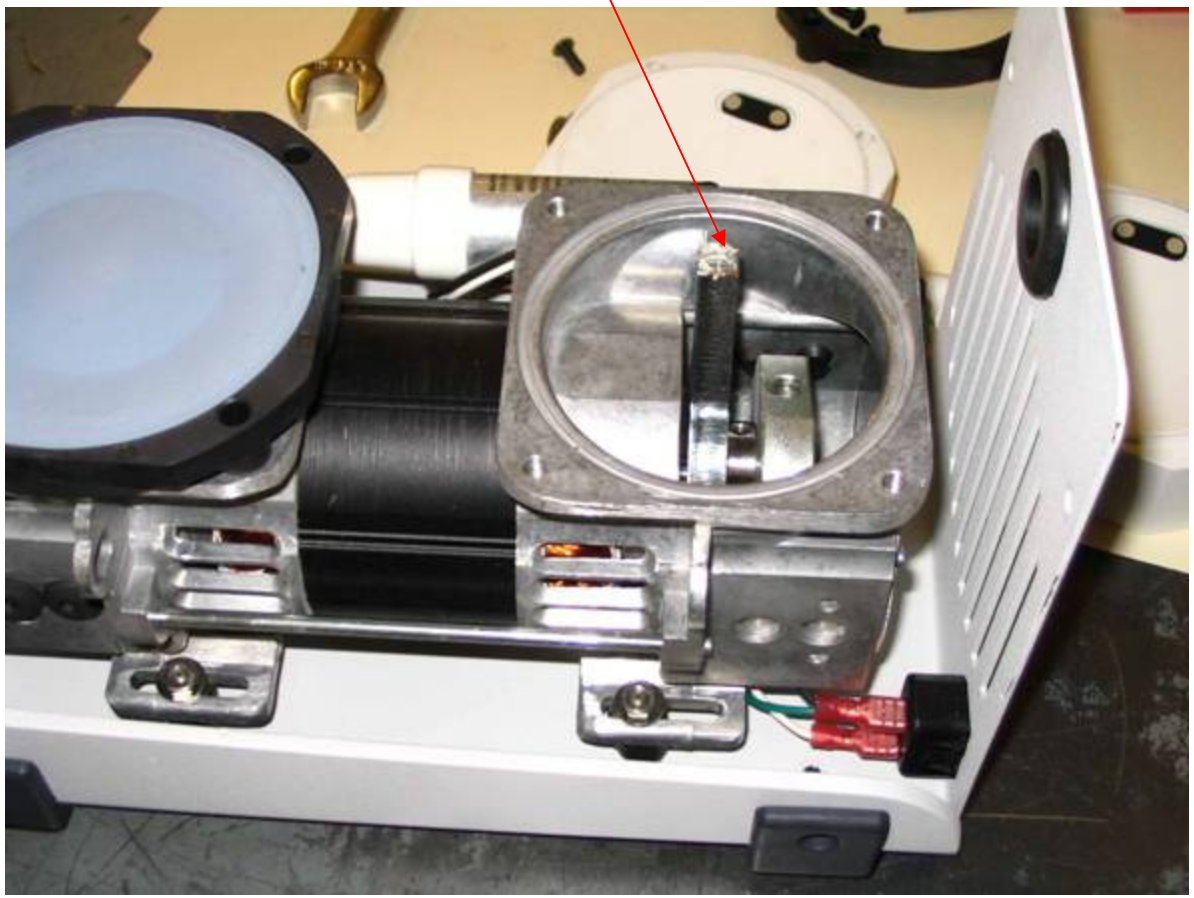


8. Careful not to drop shims under diaphragm during final loosening of diaphragm by placing two fingers under diaphragm.

9. Carefully turn off the diaphragm from connecting rod assembly. Shims are located between diaphragm and connecting rod assembly. Retain shims.

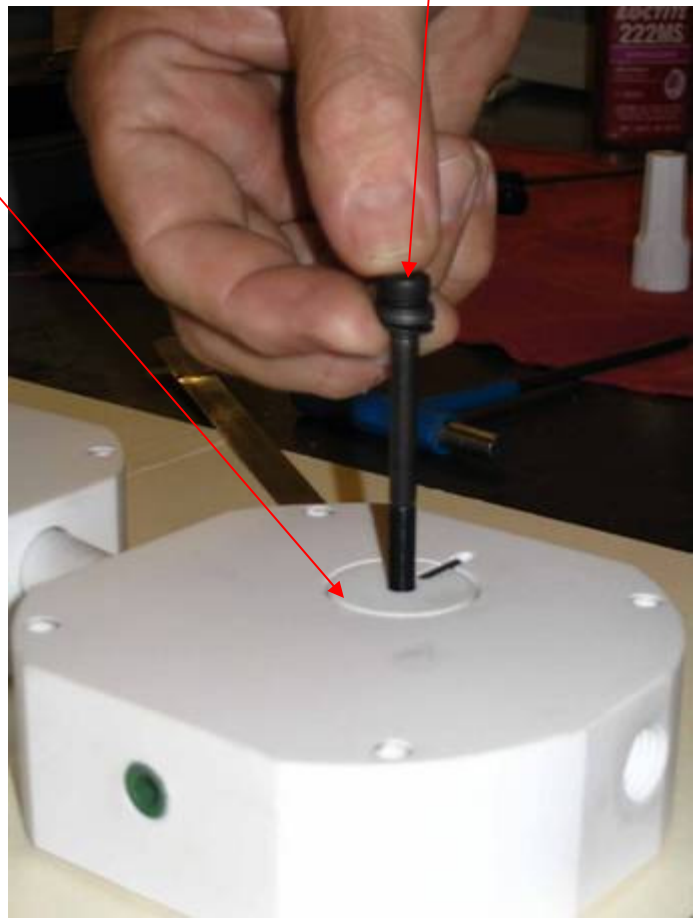


10. View of connecting rod assembly from which diaphragm is unthreaded.

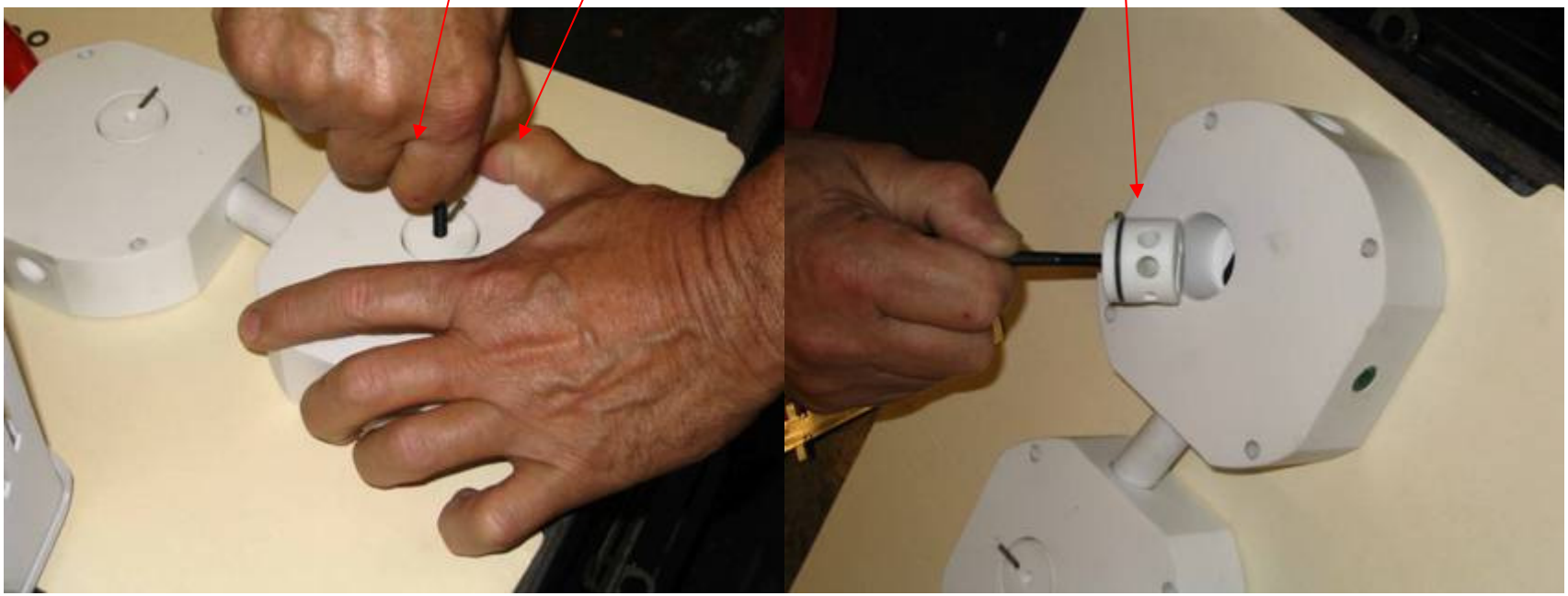


11. Remove exhaust valves located under PTFE exhaust valve holder.

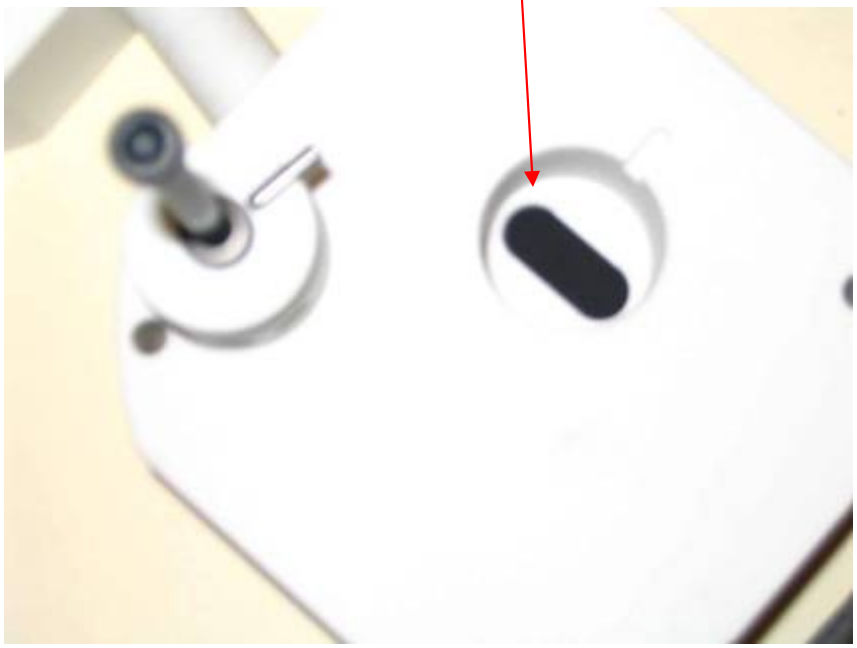
12. Take one bolt from head plate and tighten bolt into PTFE exhaust valve holder.



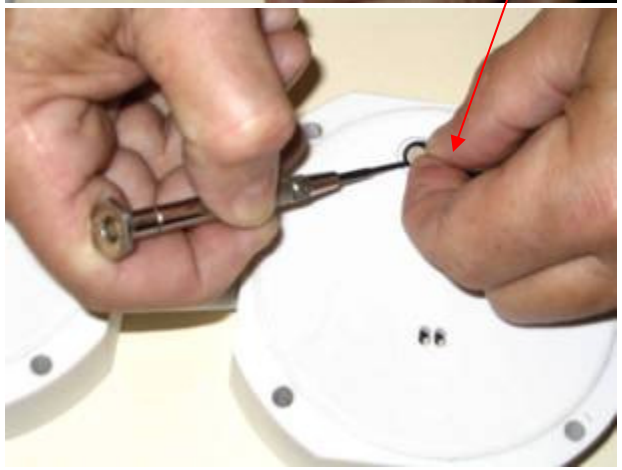
13. Grab hold of screw and head and lift out in smooth upward motion the PTFE exhaust valve holder.



14. The exhaust valve is visible after removing holder and the valve can be lift out of the PTFE head with your fingers.

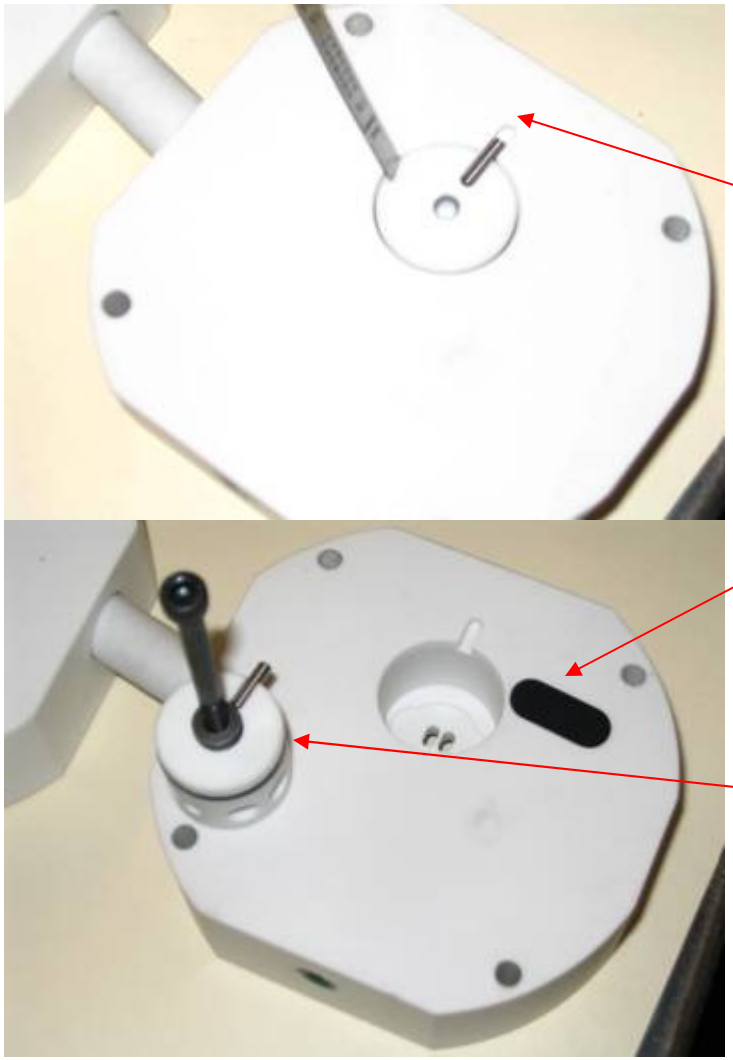


15. On other side of head, there is an intake valve. To remove use a fine flat head screw driver to elevate intake valve, hold valve with fingers and using screw driver, ……lift off intake valve from pin.



Inspection of disassembled parts

16. Cleaning parts and selecting good parts for reassembly and identifying damaged parts.



<u>Caution</u> - Use protective gloves and operate in fume hood when chemicals present.

- Clean off PTFE head surfaces and diaphragms with cotton balls moistened with isopropyl alcohol (minimum of 91% alcohol).

2. Check intake and exhaust valves if pliable. If stiff, replace. Stiff valves do not work properly.

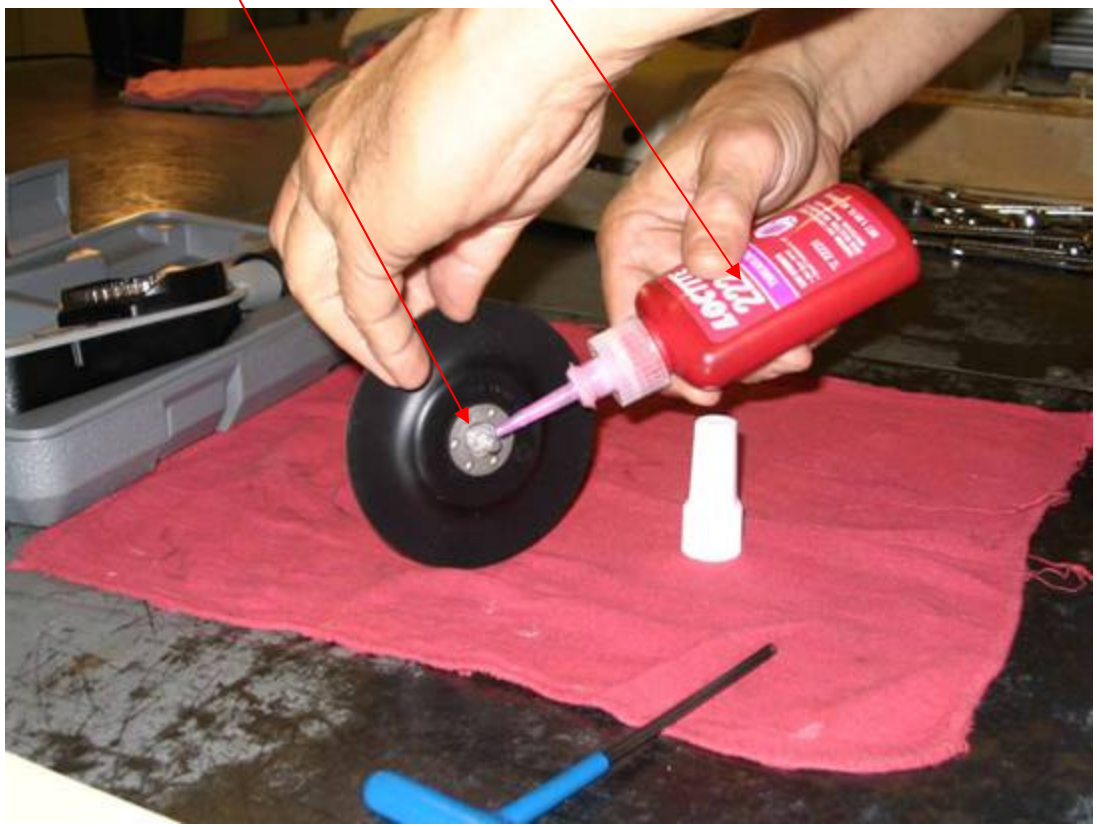
3. Replace o-rings if damaged.

4. Replace diaphragms if damaged.

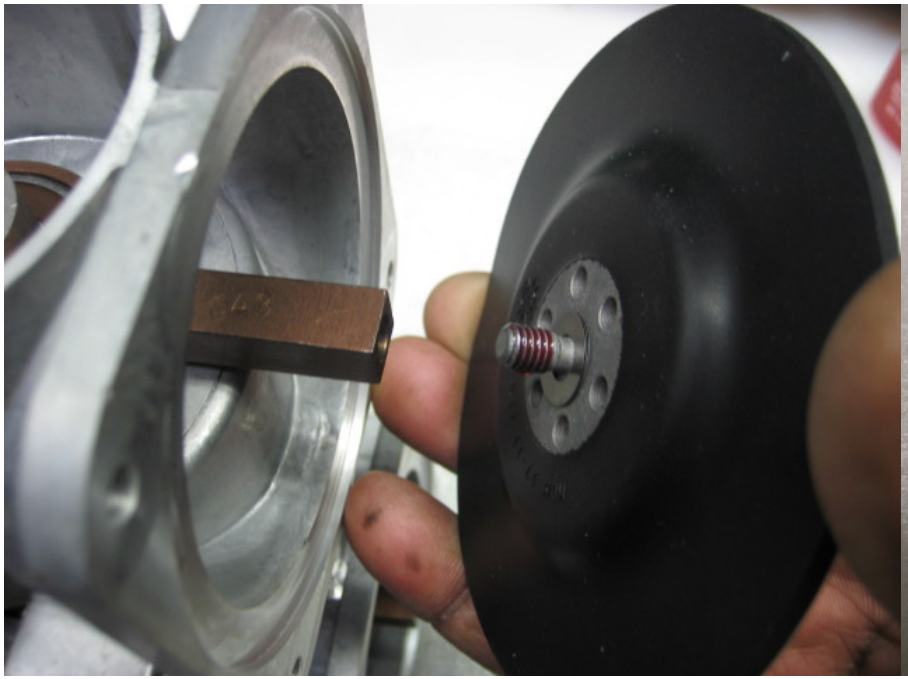
Reassembly

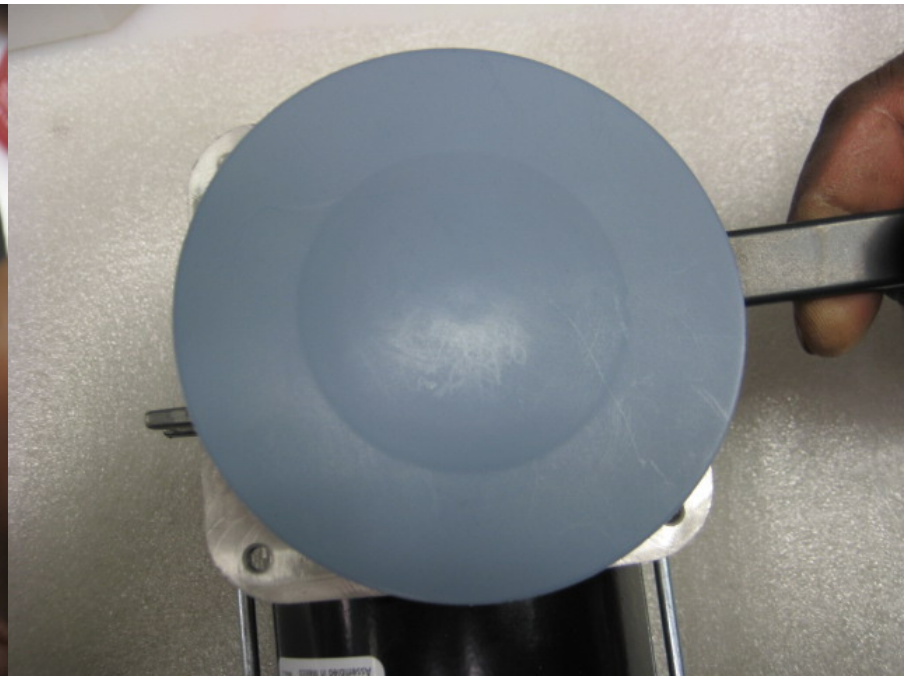
- Attach diaphragm(s)
- Insert exhaust valve(s)
- Insert intake valve(s)
- Attach PTFE heads
- Attach exhaust fitting
- Attach cover
- Attach intake fittings
- Test pump

17. Applying Loctite® 242 to thread on new diaphragm after putting on shims.



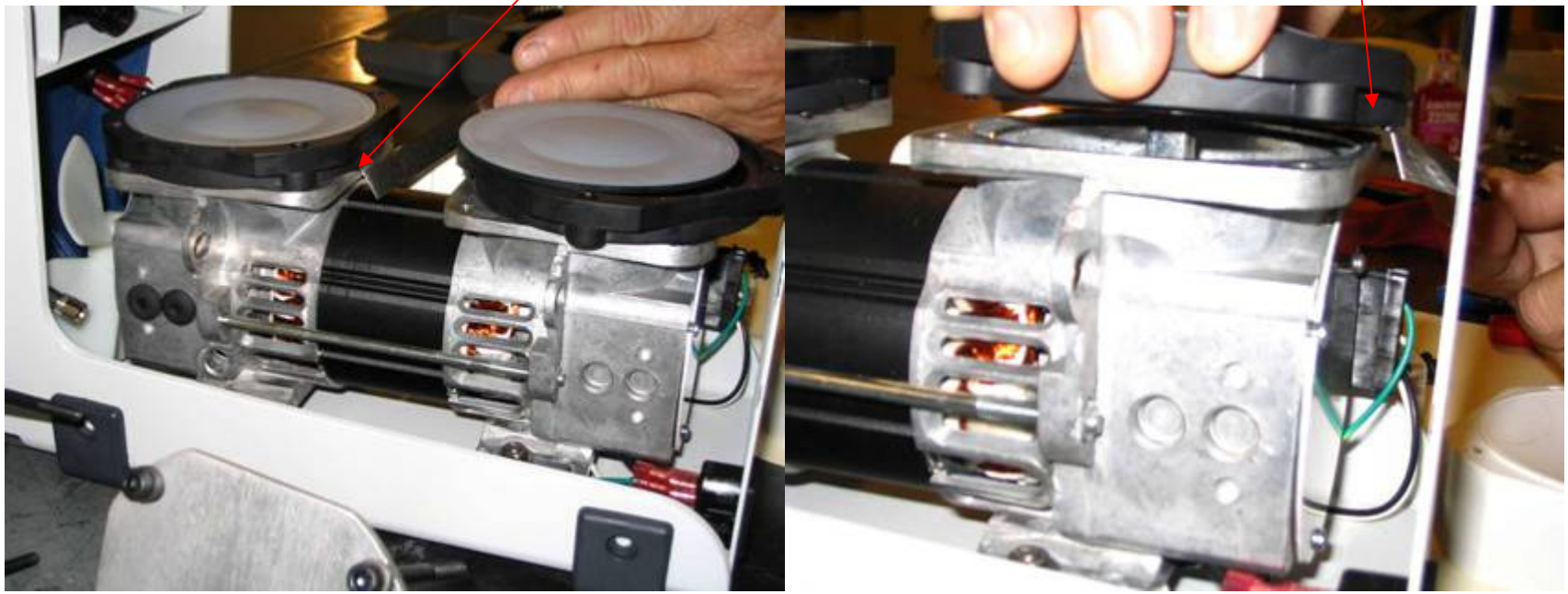
18. Position connecting rod assembly at its highest center position by turning fan until into position and attached diaphragm. Use tool 826801-16 to firmly tighten.



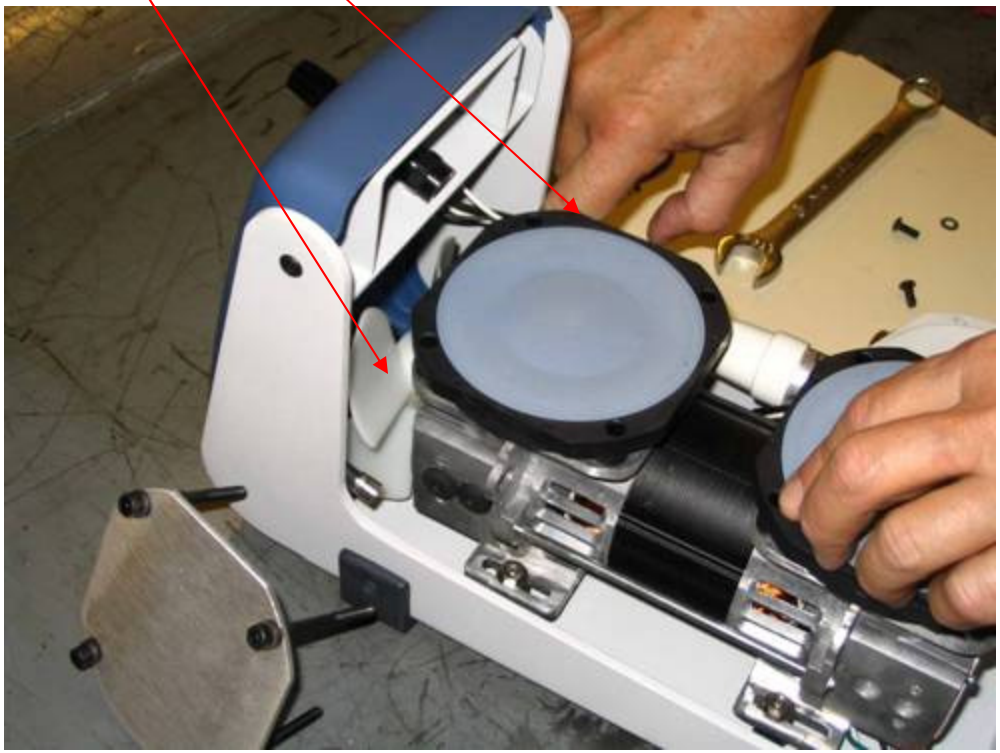


19. Install diaphragm base under diaphragm

20. Identify position of locating pin to line up other pin in same spot during tightening of the other diaphragm retainer.

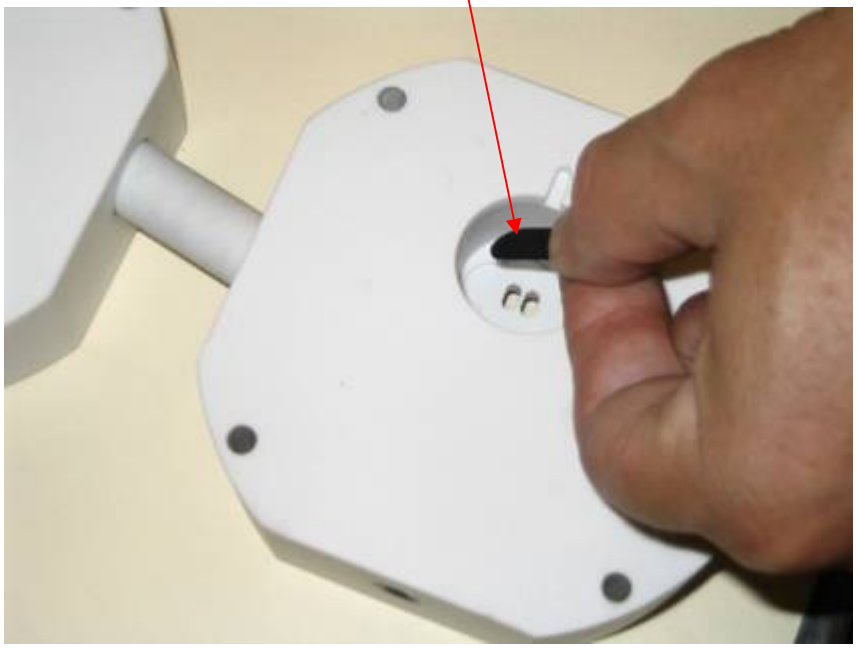


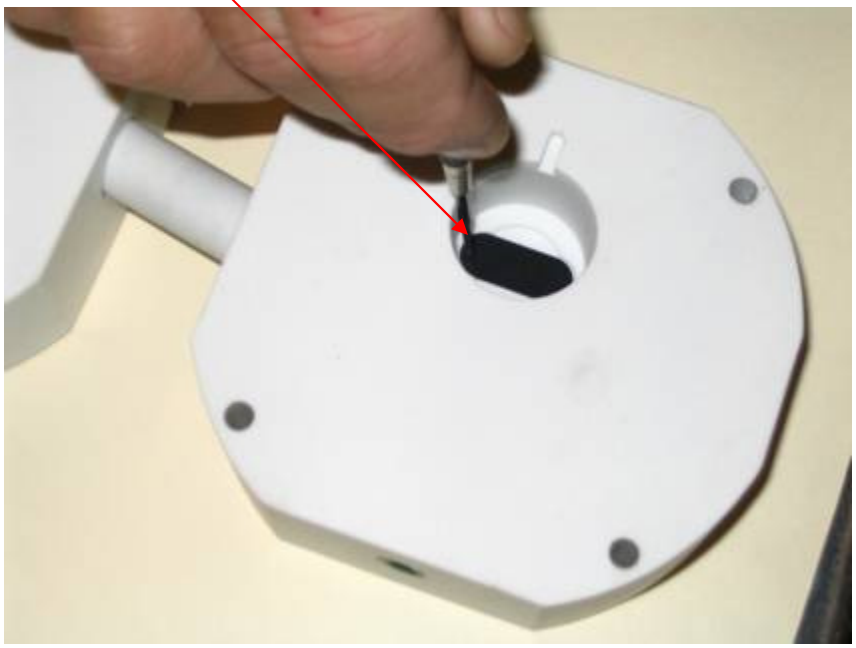
21. After tightening diaphragm and retainer until pin lined up, rotate motor fan until both diaphragms are flat.



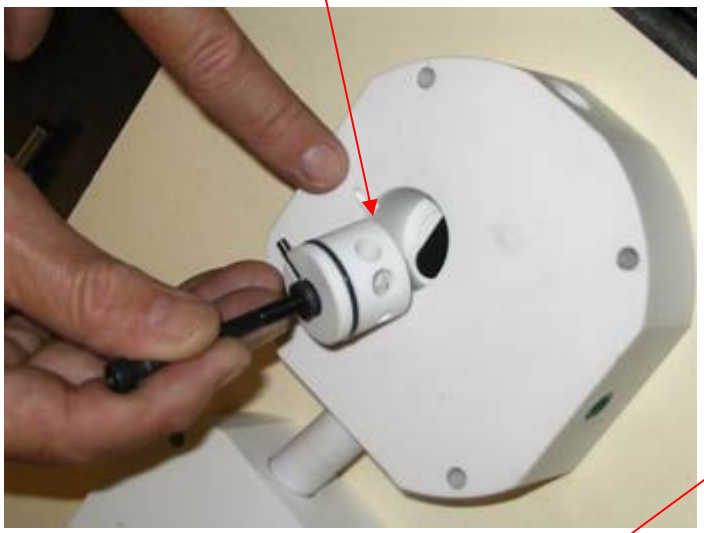
22. To re-attach intake valve, first install one end of intake valve on pin. Use finger to massage other end onto pin using lateral finger movements. Check for lateral movement of intake valve with small screw driver or finger.

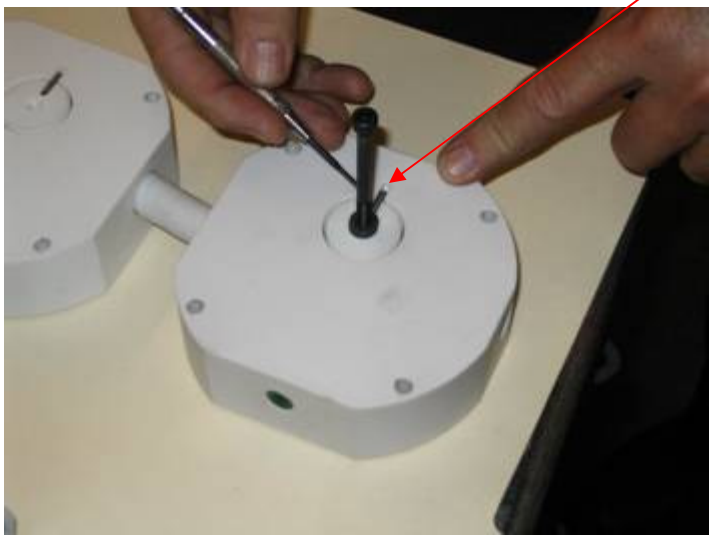
23. Insert exhaust valve into PTFE head and position with small screw driver to move freely in slot.



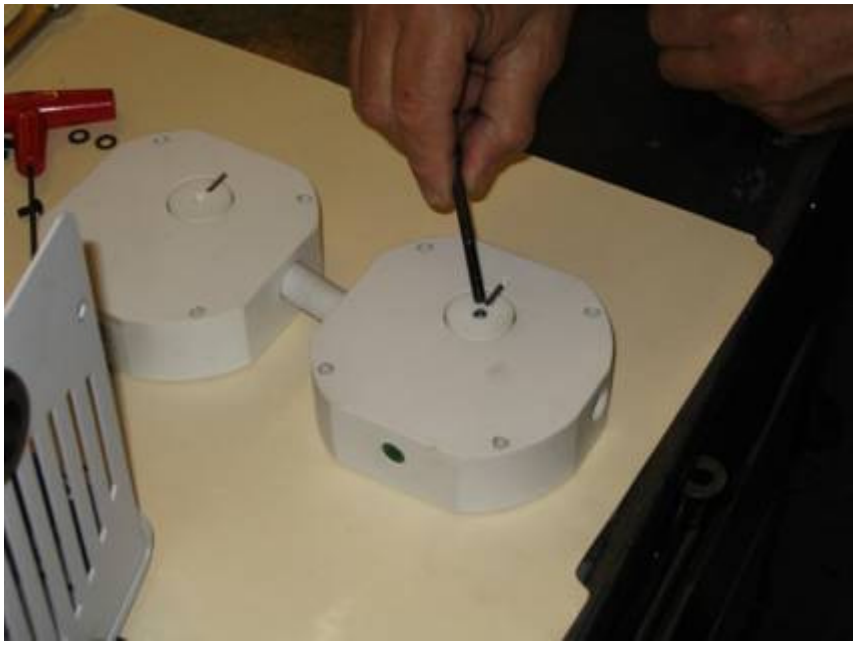


24. Position exhaust holder in place, drop in alignment pin, and press holder into place.

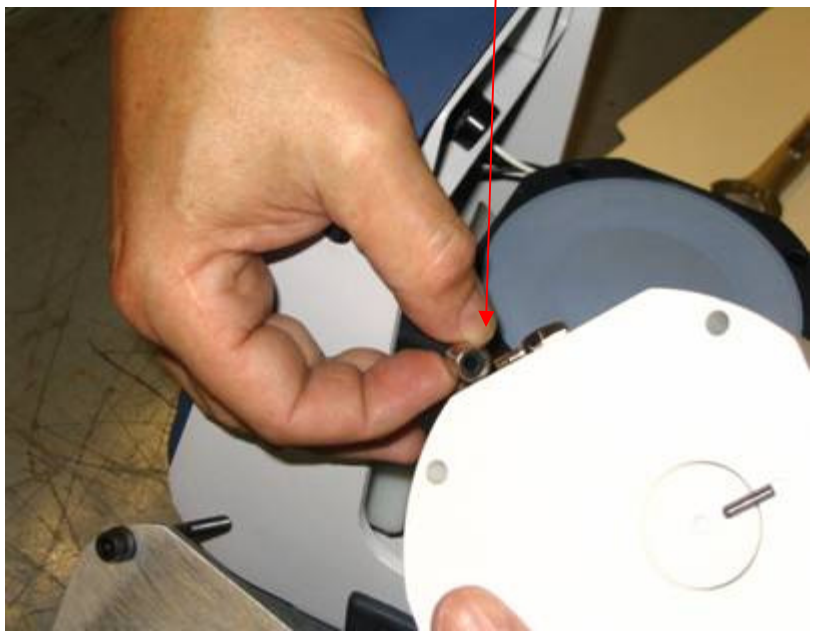




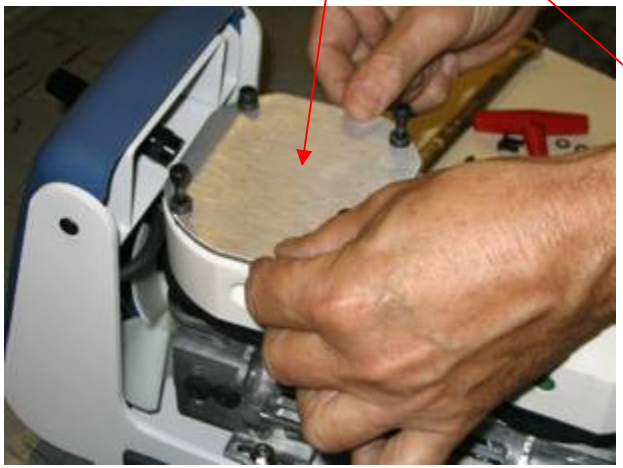
25. Remove screw.

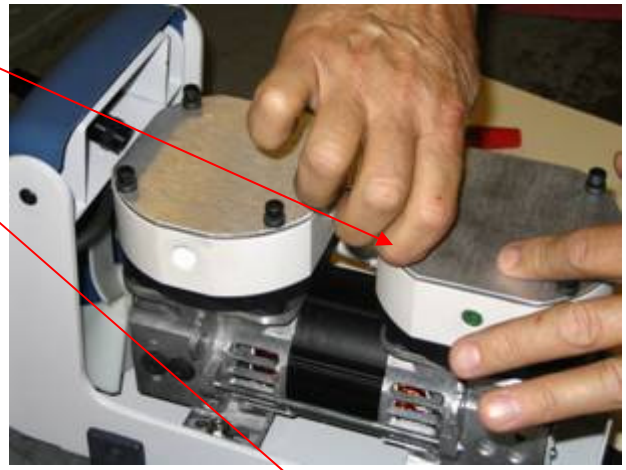


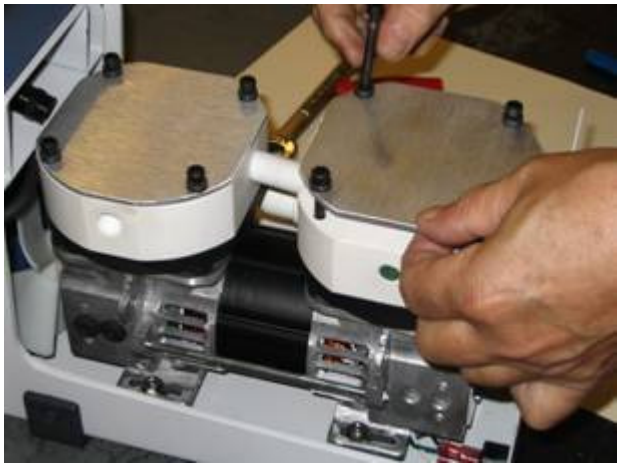
26. Attach hose to barb on PTFE head and lay down PTFE heads, intake valve side down, atop diaphragms.

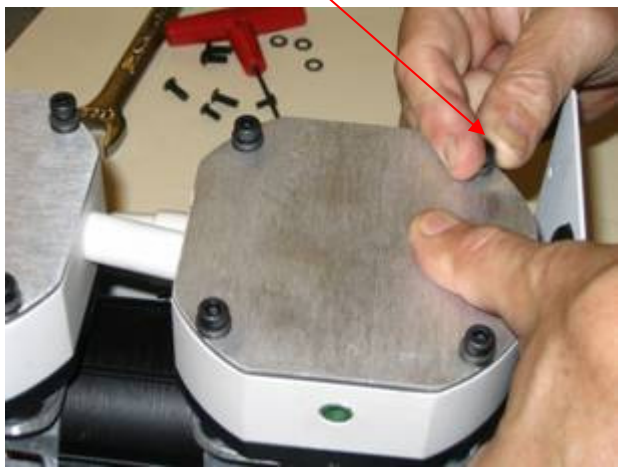


27. Put on metal covers, install screws with washers finger tight in a crisscross pattern.



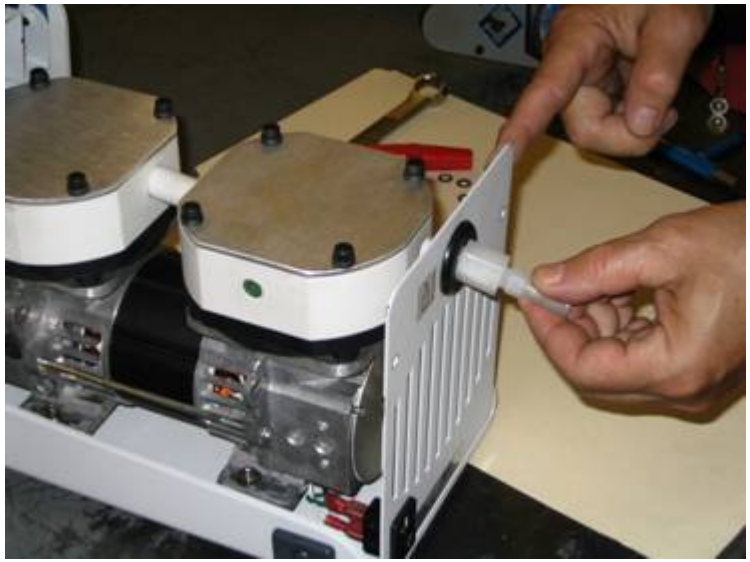


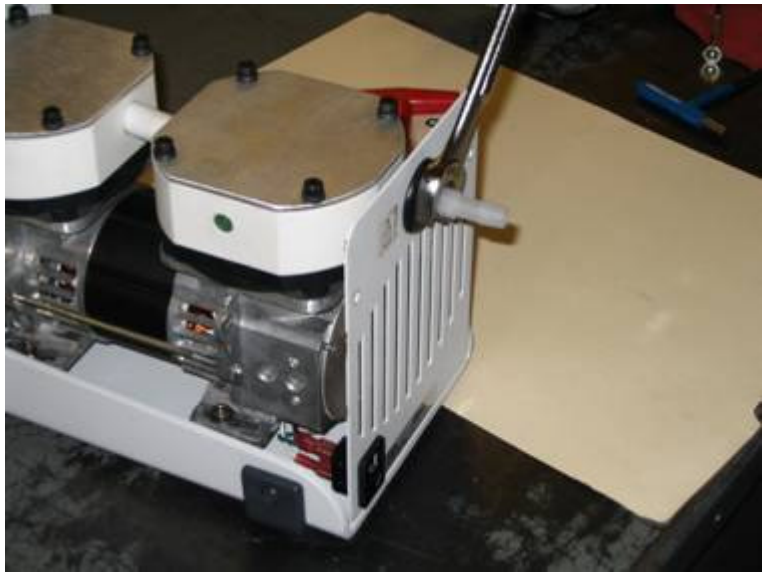




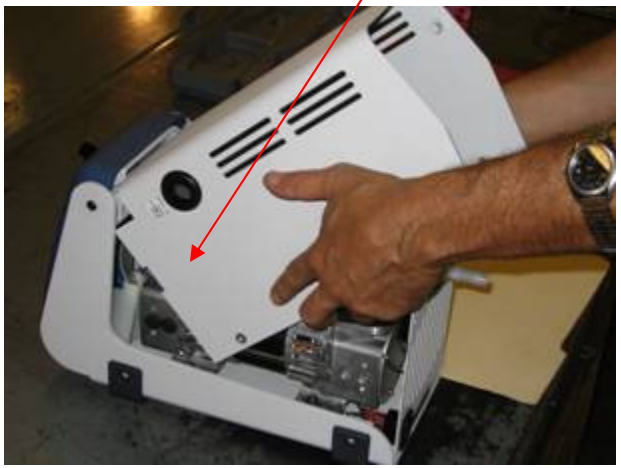
28. Use a torque wrench set at 2.26 N·m and tighen bolts down in a crisscross pattern. Tighten each bolt to 2.26 N·m prior to tightening next bolt. Finish tightening bolts on one head before moving to next head

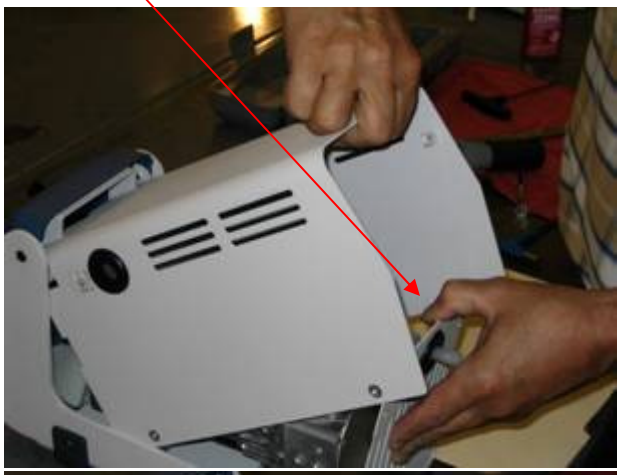
29. Install exhaust fitting.



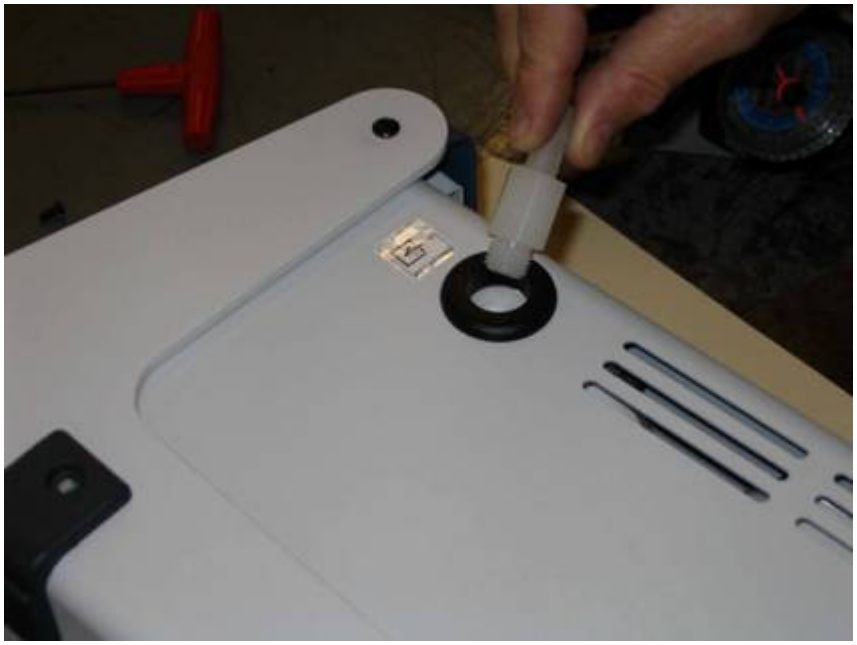


30. Install cover by first positioning forward. Drop down cover by pulling back panel outward slightly. Don’t force on cover.





31. Insert inlet barb and tighten.



32. Insert screws into feet and tighten.

33. Insert and two screws on back panel.

Leave pump for 6 hours to fully cure Loctite 242 before run the pump.

34. Plug in, attach hose to absolute vacuum gauge, turn on, and allow pump to warm-up prior to taking vacuum reading.

Break-in Time to Maximum Vacuum

- Diaphragms not changed

  -60 minutes to 2 mbar*

- Two new diaphragms

  - 24 hrs to reach 2 mbar*

  * Dependent on part condition.