

Valve maintenance procedure

This text and accompanying photographs are for the first stage valve and head assembly for 2P type boosters.

This level of maintenance is moderate and is considered routine for a booster that is in constant use. Reasons for repair include:

- Fouled valves
- O-ring leakage

Some considerations before getting started

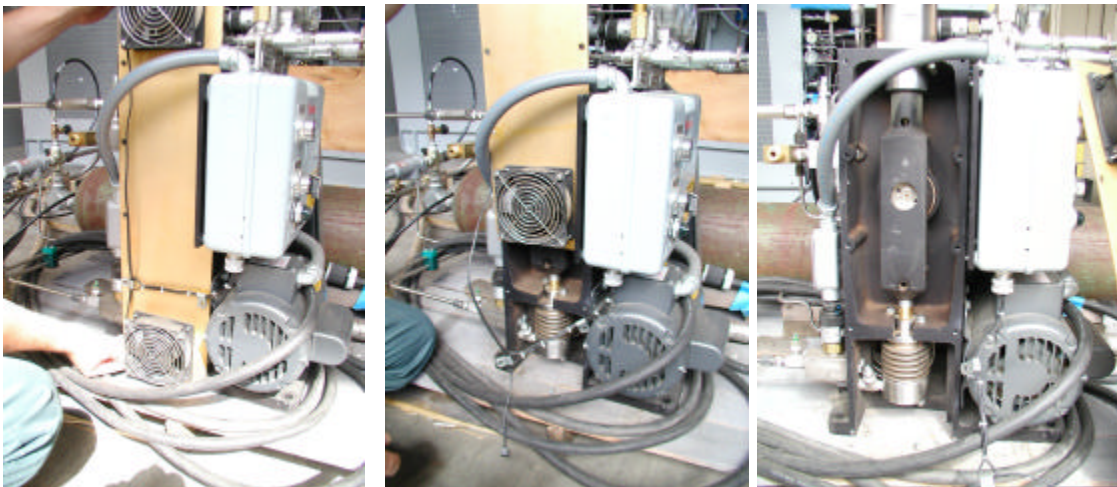
A person attending to this maintenance must possess a thorough understanding of the requirements for cleanliness of an oxygen system. Prior to starting, have on-hand all the necessary parts to complete this activity and the technical manual. At minimum, new o-rings should be available. Great care must be taken to protect the critical surfaces in the o-ring seal area.

During the cleaning phase of this operation:

- Use a mild detergent, "Joy" soap or the equivalent, and generous amounts of hot water (grade C, which is usually, tap water, or better).
- Rinse immediately, using generous amounts of hot water (grade C, which is usually tap water, or better).
- Dry all, cleaned parts thoroughly. Usually, clean, oil-free compressed air is sufficient. Alternately the parts can be "baked" at 250 (deg. F) for 30 minutes.
- Care must be taken to ensure that the area where the work is to be done does not contribute to further contamination.
- A clean part will be free of visibly detectable surface oils and particles. White light inspection is normally sufficient.

Tools

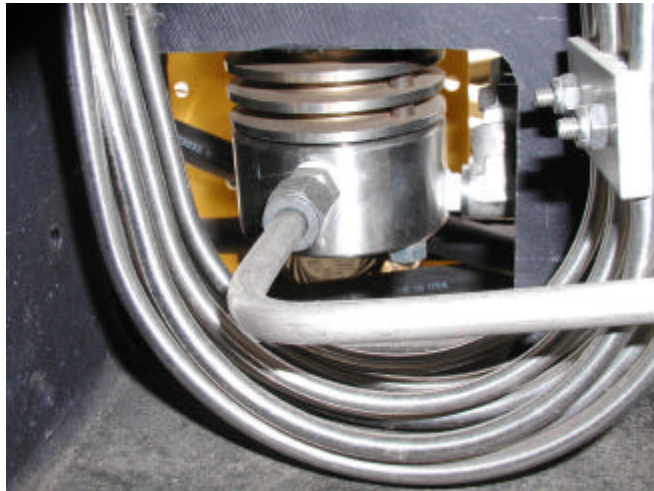
1. 1/2" Wrench (Qty 2) for nuts securing head to crankcase.
2. 9/16" Wrench for plug & discharge plumbing
3. 11/16" Wrench for inlet plumbing
4. 5/8" Wrench for inlet connector back-up
2. Pin punch, 5/16 or smaller
3. Hammer
4. Cleaning supplies (not shown)
5. Oxygen compatible grease



Head removal

1. Disconnect inlet tube using 11/16" wrench. Use of back-up wrench (5/8") may be required.
2. Disconnect discharge tubing using 9/16" wrench. Back-up

- wrench may needed.
3. Carefully cap or cover open tube ends to minimize potential for contamination.
 4. Using the two ½” wrenches, remove the nuts securing the head.
 5. Remove the head and compression cylinder as an assembly. Care must be taken to ensure that “paper” shims are not misplaced or damaged.
 6. The first stage compression rings are now exposed. Carefully cover to minimize potential for contamination.
 7. Separate head from cylinder.
 8. Set aside cylinder.



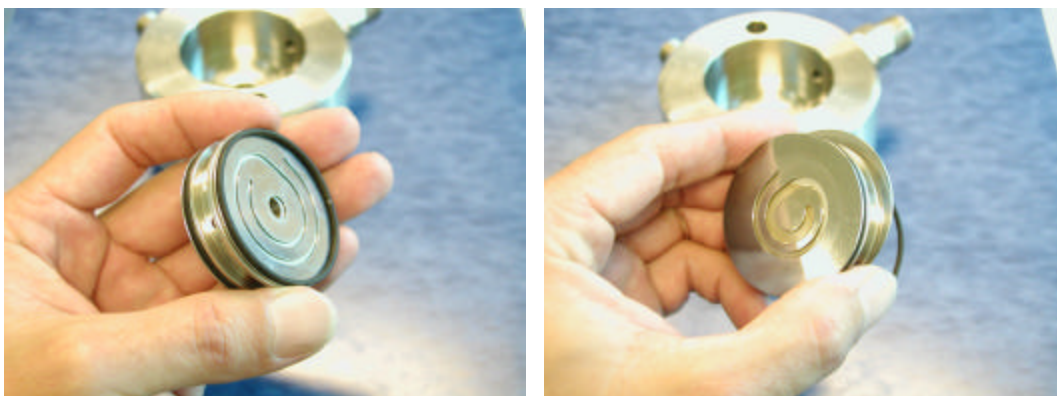
Disassembly

1. Remove plug to gain access to the backside of the valve assembly.
2. Support the head on wooden blocks or equivalent. Using a pin punch, 5/16" diameter or smaller. Take care to center the punch and avoid damaging the internal threads of the head.
3. Continue to drive the valve assembly until it is free of the head. Take care to ensure that all removed parts are recovered. Gently remove the valve assembly by tapping pin punch with a hammer. Excessive force is usually not required.

The valve assembly will come out as a complete unit.

5. This is what it looks like once removed. Notice the "roll pin" at the bottom of the photograph.

6. And here is how it looks once it has been laid out. This is the order, in which it has been disassembled, reverse the order to reassemble.



Cleaning

7. All parts, which come in contact with the gas stream, must be cleaned for oxygen service prior assembly. (Refer to appropriate procedures)

Inspection

8. After cleaning, carefully inspect all parts. Identify the sealing surfaces and inspect for signs of deterioration.

These areas are:

- Valve seat – Sealing edges around the suction and discharge ports O-ring seal surfaces
- Suction and discharge reed valves
- Internal bore of the head.
- Sealing surfaces must be free of scratches or deformations, which could provide a leak path.

Reassembly

10. Reassemble in reverse order.