Installation Instructions

MHV mechanical seal conversion kit (MHV P/N SK-0243)
for Stokes 3-inch blowers (306 & 310) with lip seals on input shaft

November 2017

Part List

SK-0243 consists of the following parts:

1 SK-0244 COVER
1 SK-0248 FUNNEL
1 SK-0245, SLINGER
1 SK-0246 ADAPTER COVER
1 F-1523-30-3.00 5/16-18X3 LG HHS
10 F-1523-30-5.50 5/16-18 X 5-1/2 LG HHS
2 F-2522-25-.38 1/4-20 X 3/8 LG SSS-CUP PT
1 MES-310MECH MECH SEAL
1 FHY-7237X4 1/4 SAE PLUG
2 F-4022-038-.75 3/8 DIAX0.75 LG SOC HD SHLD BOLT
1 OEY-S54H SIGHT PORT
1 ORS-912-BV90
1 FHY-7237X12 SAE PLUG
2 DWLP-038-100 3/8 DIA X 1.O LG DOWEL
2 FHY-7237X6 SAE PLUG
2 F-2022-21-1.00 #10-32 X 1.0 LG SHCS
1 ORS-367-BN70 ORING
2 HF-02B0404 HOSE FITTING
2 FHY-C5315X4 CONNECTOR 1/4 TUBE X 1/4 STRT THRD

(not in kit)
1 Loc-Tite 620 Retaining Compound
1 Loc-Tite 242 Thread Locker (Removable – blue)
1 Sealant (Gasket Eliminator)

Special Tools

1 P/N ST-1050 for pressing mechanical seal seat (stationary part, with carbon face) into the cover

Metallurgical High Vacuum Corporation
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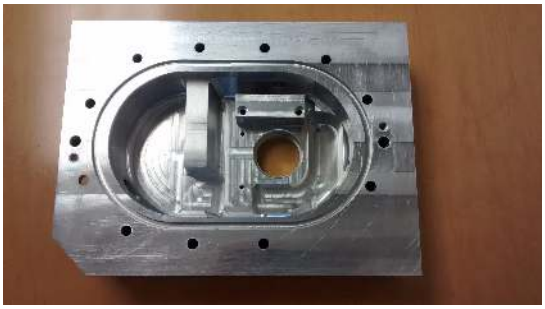
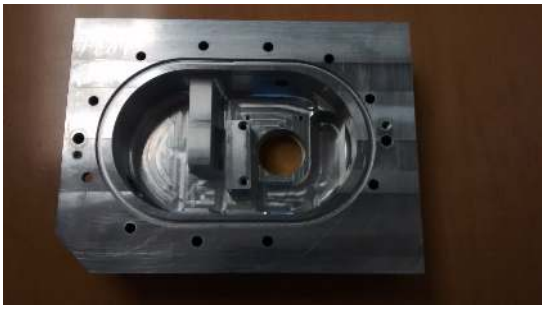
Notes:
- Plugs, oil eyes, and belt guard bracket may be pre-installed on the end cover. Make sure there are o-rings under the plug heads, and use vacuum grease on all o-rings.
- Vertical flow (pipe flanges on top and bottom) vs horizontal flow blowers (pipe flanges on sides): The aluminum oil funnel must be mounted differently for vertical flow blowers than for horizontal flow blowers.

Vertical flow



Horizontal flow



Caution: when handling the mechanical seal, do not touch the seal faces with fingers or any hard object. The seal may fail due to very small amounts of contamination or minute damage to the faces. If any oil or dirt accidentally gets onto a seal face, it may be carefully cleaned, using alcohol on a lint-free cloth.

1. Be sure the blower and related equipment are properly disconnected from power and locked out.
2. Drain the oil from the drive end of the blower. There are two reservoirs on this end of the blower. Oil can be left in the reservoir on the other end of the blower.
3. Remove drive hardware:
    a.) Direct drive units: Remove the motor, coupling housing, coupling, and key from the blower.
    b.) Belt-drive units: Remove the belts, sheave, key, and back of the belt guard from the blower.
4. Check that there are screws holding the drive-end bearing housing (end plate) to the center casting (there should be 4 of them). The center casting has the inlet & outlet flanges. The heads of these screws will be “inboard”: these screws are installed through an ear on the center casting, into the end plate. They’ll hold the end plate in place while the other screws are removed from the “outboard” end of the blower, and prevent a possible leak after reassembly.
5. Remove the other screws from the end cover. Carefully pry the end cover off the dowel pins and remove it from the blower. Remove the shaft sleeve.
6. Check the radial movement on the shaft – it should be no more than .004” perpendicular to the axis of the shaft. If the movement is greater, the blower should be rebuilt with new bearings, to prevent early seal failure.

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7. Remove the clamp collar and round oil slinger from the shaft.
8. Clean the shaft and gasket surfaces of any debris.
9. Install the oil slinger from the kit. Be sure it seats against the shoulder on the shaft. Loc-Tite 242 should be applied to the screws. The face runout should be less than .001 inch.
10. Install the rotating ring (has an o-ring in its inside diameter) of the mechanical seal on the shaft, with its polished side facing outboard. The plastic packaging may be used to prevent finger prints on the polished face. If any fingerprints or other contamination get on the polished face, clean it with alcohol.
11. Press the mechanical seal seat (o-ring on its outside diameter) into the aluminum cover with special tool ST-1050, taking care not to touch the carbon seal face. Again, this face may be cleaned with alcohol. Then place a few drops of oil onto the seal face.
12. Make sure the sealing / gasket surface of the bearing housing is clean and dry. After applying a thin film of vacuum grease on the O-ring, install the large O-ring into the groove of the cover (large aluminum piece that comes with the kit).
13. Taking care not to ding the seal face on the shaft, slide the cover into place over the shaft and the dowel pins on the end plate, and then remove it. Look for the print, or contact mark, of the o-ring on the end plate, all around. Sometimes the hole in the bearing housing meets the o-ring, and then the O-ring will not seal all around. If so, use gasket eliminator on the bearing housing and remove the o-ring from the aluminum cover.
14. Install the m-seal end cover over the dowel pins, using care not to ding the seal face or muck up the sealant. Insert the screws and tighten them. There will be one long screw left over, because it is blocked by the oil sight glass at the lower right of the end cover.
15. Fill the oil reservoirs with MHV Formula H blower oil and install the fill plugs.
16. Reinstall the drive components and replace all guards.
17. Do a helium leak check to verify vacuum integrity.

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