

## Technical Bulletin AL-219

### Cleaning Procedures for Kugelrohr® Vacuum Drive Unit

#### Overview:

The Aldrich Kugelrohr vacuum drive unit is designed to provide reliable service for many years with minimal maintenance. The only service procedure that may be required is an occasional cleaning of the vacuum seal unit.



During use, untrapped chemical vapors may pass through the rotating drive shaft of the vacuum drive unit, depositing solids in the small vacuum orifice that is located on the shaft just above the vacuum hose connection. A plugged orifice will reduce vacuum performance significantly. Usually this problem can be remedied by simply washing out the drive shaft with an appropriate solvent to remove the obstruction in the vacuum orifice.

**Always try the Simple Cleaning Procedure first** if vacuum performance is not up to specification. If the simple cleaning procedure does not improve vacuum performance, then a thorough cleaning of the rotating shaft and vacuum seals is needed, as described in the **Comprehensive Cleaning Procedure**.

#### Simple Cleaning Procedure

The object of this procedure is to dissolve any solid chemical contaminants that may be plugging the small vacuum orifice on the rotating drive shaft. This is accomplished by repeatedly squirting a suitable solvent, using a wash bottle, into the open end of the drive shaft. The solvent will pass over the vacuum orifice in the shaft and dissolve any solids that may be present.



1. Unplug the Kugelrohr vacuum drive unit and place into a fume hood.
2. Place the tip of a wash bottle containing acetone, methanol or other suitable solvent into the open end of the drive shaft and flush thoroughly. Be prepared with toweling to catch the waste solvent as it runs out of the shaft or the vacuum hose connection.
3. Repeat the flushing procedure several times to ensure that any chemical solids plugging the vacuum orifice have been removed.
4. Test the vacuum performance of the drive to see if the cleaning procedure was effective. If not, proceed to the Comprehensive Cleaning Procedure.

#### Comprehensive Cleaning Procedure

The object of this procedure is to remove any solid chemical contaminants that may be causing leaks between the left and right vacuum seal inserts and the rotating drive shaft. To perform this cleaning procedure, complete disassembly of the vacuum seal unit is required.

1. Remove the black metal cover located just behind the silver-colored vacuum seal unit. This cover protects the drive coupling which will now be accessible.
2. Remove the silver-colored vacuum seal unit from the drive housing.
  - a. Loosen the 3/32 inch Allen head set screw from drive coupling.
  - b. Remove the four 3/16 inch Allen head screws located on top of the drive housing.





This is the vacuum seal unit after removal from the drive housing. Note the orientation of the drive end (solid side) of the shaft which is on the left.

3. Loosen the set screw on the collar of the drive end of the drive shaft (solid side of shaft) and remove nut and plastic spacer.



4. Remove left side threaded end cap (may need pliers) by rotating counterclockwise.

- a. Securely grip the vacuum seal unit as shown.



- b. Pull the drive shaft to the right.



- c. Push drive shaft back in to remove the left seal insert.



5. Pull the drive shaft out of the unit.



6. Remove right side threaded end cap (may need pliers) by rotating counterclockwise.

7. Remove the 4 seals from the left and right inserts. **Caution:** use care to prevent damage to the seals during removal. Clean\* the seals, seal inserts, and shaft with an appropriate solvent. **Inspect the drive shaft:** If the shaft is corroded where the seals come in contact with it, then the shaft must be replaced in order to attain a good seal. Contact Aldrich Technical Service for information about component replacement and factory overhaul service.

\***Cleaning tip:** choose a solvent that will effectively remove any chemical residue on the shaft, inserts, and seals. Use lubricant, such as Amogel, sparingly during reassembly to avoid contamination.

8. The seals can be pressed back into the inserts with a finger once the inserts have been cleaned. The olive colored seals must face each other when reinstalled on the shaft.
9. Reassemble the vacuum seal unit by performing steps 1 through 6 in reverse order.
10. Test the vacuum performance of the drive to see if the cleaning procedure was effective.

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