SPECIALIST TOOLING TECHNOLOGIES LTD

Unit 2, Park 32, Park Road, Pontefract, WF8 4PS,
West Yorkshire, U.K.
Tel: - +44 (0)1977 511799
e-mail;- sales@spectooling.com
website;- www.spectooling.com

MAGDRIVE

The MAGDRIVE has been developed as a drop in replacement to an obsolete fan drive system being used in sterilization chambers at Steris.

The chamber is a long tunnel sealed at one end and a heavy door at other. Pallets of components are wheeled into the chamber and then the door is sealed.

Ethylene Oxide is pumped into the chamber and pressurised to 50mbar.

The chamber has 2 air circulation fans (one at each end). The new drive assemblies are replacing older units that have plain carbon bushings and are no longer available.

Referring to the attached assembly Drawing 41005-900:-

An SEW ATEX rated 1.5kW motor is mounted onto a Stainless Steel flange Plate via an aluminium spacer ring.

On the motor shaft we have a drive coupling that has a series of North / South polarity magnets embedded in it's face.

The flange plate will be bolted to the outside of the chamber with the motor side within a ZONE 2 area whilst the fan and drive shaft etc. sits within the ZONE 0 chamber.

The flange plate will have an inset PEEK plastic plate with a Klinger Top-Chem 2003 gasket seal under.

An Aluminium flanged bearing housing will be bolted to the underside of the main flange plate and will be sealed by a Klinger Top-Chem 2003 gasket as with the PEEK blanking plate above.

A drive shaft will have a pulley mounting to it with a series of North /South polarity magnets embedded around it's face.

These magnets will interact with the motor pulley magnets mounted outside the flange plate and create a magnetic lock between the 2 pulleys.

In the event of a bearing failure or any other high resistance the magnetic lock between the motor pulley and drive pulley will be broken and the drive shaft will stop rotating.

The bearing housing will have upper and lower Deep Groove Ball Bearing with rotating lubricant flinger / reservoirs underneath to throw any lost lubricant back into the bearings.

A bearing spacer sleeve incorporating the upper flinger will space the bearing inner races that will in turn be locked in place by a nut, incorporating a second flinger under the lower bearing.

The lock nut will also clamp the assembly axially to the top bearing location face of the shaft.

Both bearings will be a close sliding fit on the shaft and in the housing. The inner rings being locked axially as described above and the outer rings being controlled by the axial force applied by of a wave spring. This pulls the top bearing outer ring against the top bearing face of the housing by applying a force to the top of the lower bearing outer face to securely locate the bearings and apply the minimum load required for the bearings to roll correctly without reducing bearing and grease life due to skidding of rolling elements.

Both bearings will be packed with “Nyogel” 758g electrically conductive grease, to dissipate static through the bearings.

There is a sealing plate arrangement at the bottom of the bearing housing that consists of primary and secondary “Turcon Roto Variseal” rotary seals (manufactured from Trelleborg M1 electrically conductive material). These seals are sandwiched between stainless steel plates together with a Klinger Top-Chem 2003 gasket seal and secondary ‘O’ ring manufactured from FFKM.

The fan drive shaft will have a keyed fan boss location diameter with a threaded bottom end to locate and secure the aluminium fan wheel as per the original unit with a self-locking nut. The existing customer supplied fan has two grubscrews in the mounting bus to clamp onto the key and shaft for additional security.

The motor is inverter driven and runs at 1450 rpm.

The inverter being located outside the ZONE 2 area.