

# Special Application Conditions

Many bearing applications fall out of “the norm” and often there is no choice except to change the product or break the generally accepted rules of design to accommodate these difficult conditions. Here are some difficult conditions in which EDT bearings have been called upon, and suggestions to extend bearing life as long as possible. These recommendations are based on the premise that “ambient temperature” is 70 deg F.

## Abrasion

All moving parts (bearings, by their nature, allow parts to move) are affected by solid abrasives. It is impossible to predict the longevity of any specific product, including an EDT bearing, in a solid abrasive environment because there are so many unknown factors involved. Take, for example, salt. It is both hard and soft, smooth and rough-edged, and different colors. Typically, bearing seals are called upon to combat abrasives, but even the best bearing seals are a compromise because bearings need to allow parts to move against each other and in so doing, the seal is not tight. The best option for extending bearing life in abrasives is to cover up the bearing.

For this, EDT developed the Bearing Glove<sup>®</sup> that completely encapsulates the bearing and housing with a sealed plate on the bottom and a sealed cover on the top. This device is very effective and is even more effective if it is filled with grease. The stationary grease captured by the Glove<sup>®</sup> cover is nearly 100% effective. Any bearing mounted inside of a Glove<sup>®</sup> does not require lubrication for the life of the product. Like all of EDT’s products, the Glove<sup>®</sup> is designed to accommodate all other industry standard designs.



Fig 18-1

Gloves<sup>®</sup> are designed to mate with 2-bolt flanged housings. Since the diagonal distance across the bolt holes of a 4-bolt flange are the same as a 2-bolt flange, 2-bolt Gloves<sup>®</sup> can be used to retrofit 4-bolt locations. An optional stainless angle allows 2-bolt flange housings to be mounted upright, like pillow blocks, so the 2-bolt Glove<sup>®</sup> can also retrofit for pillow blocks. With the Glove<sup>®</sup>, three styles of bearings can accommodate complete exclusion of solid contaminants.

Fig 18-2



## Cold

Cold operations generally fall into the two categories of below -40 deg C (F) or above -40 deg C (F). If ammonia refrigerant is used, the application will never be below -40 deg. *Note that -40 deg F and -40 deg C are the same temperature.*

All of EDT’s standard catalog bearings can be used in freezers down to -40 deg. There are no material restrictions or bore changes required at this low temperature, but the Poly-Round<sup>®</sup> style of bearing is generally better unless there are other environmental considerations.

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## **Special Application Conditions - Cold** (continued)

For applications below -40 deg, it is important to inform EDT of the temperature requirement at time of order because changes in dimensions and materials may be necessary.

- No polymer bearing housings, including EDT's 'KG' material housing, should ever be used below -40 deg.
- No ALL-ROUND® style bearings should ever be used below -40 deg.
- Use only stainless steel housings.
- Use only Poly-Round® bearings with 'Below Temp' bore dimensions. Note this requirement in the part number of the bearing by adding suffix 'B' (i.e. NA2GC7-1**B**) for below temp installation.

Stainless housings and Poly-Round® bearings can be used with ALL kinds of refrigerants including carbon dioxide and nitrogen.

- It is NEVER wise to use a lubricant in a low temperature freezer (the congealed grease will shorten the life of the bearing). For high speed or high tension low temperature locations, consider EDT's low temperature solid lubricated ball bearings.
- ALWAYS use a threadlocker on all setscrews on rotating equipment.

EDT's Sales and Engineering staff can assist with selecting the right bearing product for your low temperature needs.

## **Heat**

Heated locations like dryers, ovens and fryers are very common in many industries as food is cooked, bulk chemicals dried, fiber glass baked, and heat-treated metal parts quenched, etc. In high temperature applications, the expansion of different materials relative to each other causes design difficulties and must be addressed in the bearings that allow these heated devices to move.

Materials expand with increasing levels of temperature and things that are fixed at both ends of an expanding material will break. It is for this reason that expansion bearings came about. EDT's plane bearings work very well in high temperature conditions with a fixed bearing on the drive side of a device and an expanding bearing on the opposite side (see diagram).

The **fixed bearing** should be an EDT Poly-Round® out of a high temperature material in a metal housing with a locking sleeve flange on one side of the bearing and a split set collar on the opposite side of the same bearing. This allows control of the lateral movement of the shaft to be contained by just the one bearing. The opposite **expansion bearing** should be a Poly-Round® insert with an extended length body locking sleeve. The locking sleeve fixed to the shaft now has a longer journal to accommodate the expansion of the shaft as temperature increases. The flange of the locking sleeve of the floating end bearing must be on the outboard side of the oven (see Fig 19-1). (Call EDT if space limitations require inside mount.)

Fryer bearings associated with food processing must, in most cases, be approved as a 'food ingredient.' EDT's FA bearing material makes the grade for temperature (operates to 500 deg F), for USDA/FDA criteria and for ease-of-maintenance. As with all other high-temperature applications, this must be in a Poly-Round® style.

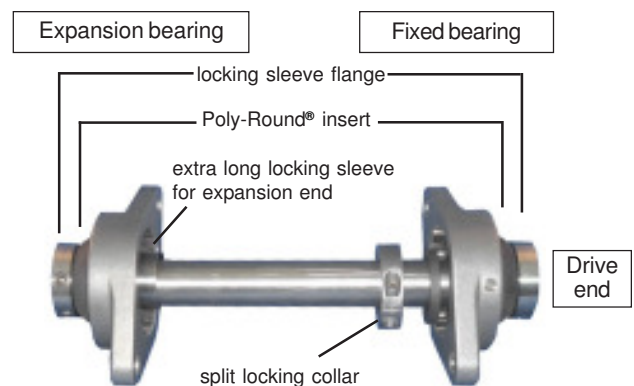


Fig 19-1

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