

# Bearing Design Considerations

## How to install Thomson Nyliner bearings

Thomson Nyliner bearings should be installed in a housing bore that provides good support for the bearing. Some suggested retention methods are illustrated here.

**Shaft selection.** For normal applications, steel shafts with a minimum hardness of Rockwell C60 are recommended. Shaft finishes should be 16 microinches Ra. When Thomson Nyliner bearings are operated continuously, without lubrication at elevated speeds, shafts should be hardened or plated to minimize shaft wear. Thomson 60 Case™ hardened and ground steel shafts are ideal for these critical applications. Unhardened stainless steel shafting is not recommended. Where corrosion is a problem, hardened stainless steel shafts (Thomson 60 Case shafts), chrome-plated, or nickel-plated shafts are recommended.

**Establishing correct clearances.** It is essential that adequate operating clearance be maintained between the shaft and the working surface of the bearing. This helps promote even distribution of lubricants and reduces the mechanism's chances of seizure.

Diameters of housing bores should not be smaller than the diameters specified in this catalog unless shaft diameters are reduced accordingly. To check bearing I.D.s for clearance, the bearing should be installed in its housing bore. Plug gages with diameters corresponding to the minimum and maximum recommended I.D.s can then be used to establish whether or not clearance will be correct when the bearing is operated on a shaft. In applications where bearings operate in water, alcohol or chemical solutions, the absorption of liquid may cause the wall thickness of the bearing to increase. Bearing wall thickness may also increase in humid environments. In such cases, the initial clearance should be increased .001" by either reducing the maximum shaft diameter or increasing the housing bore diameter.

**Initial break-in.** If Thomson Nyliner bearings are to run without lubrication in service, performance will be improved if a few drops of oil are added to the surface and broken in on the shaft for a few hours.

**Lubrication.** In many applications, our bearings can be run without lubrication, as long as recommended loads and speeds for non-lubricated operation are not exceeded. If loads and speeds are high enough to generate damaging heat, lubrication is mandatory. A good motor oil is the best lubricant. When lubricants other than oil are used, load ratings for lubricated operations should be reduced 25% to 50%.

