Ball Race Bearing Maintenance

Background, hints and tips

Steel types

Stainless steel is a generic term describing a range of steels that have resistance to corrosion. Each has different advantages and the use of one or the other will depend on the particular purpose.

Marine grade stainless steel

This is also a generic term that includes several grades used in marine environments. They differ from ordinary stainless steel by virtue of a higher Molybdenum content which makes them resistant to high concentrations of salt.

Generally known as 316 Marine Grade or A4.

Laser cut steel parts sold by SAILSetc are generally of this grade. The majority of other stainless steel parts sold by SAILSetc are also of this grade. Some of the fastenings used by SAILSetc are of this grade. However, not all sizes and types of small fastenings are available in 316/A4 grade.

Other grades of stainless steel

The grades of stainless steel found in the majority of non-marine applications have been developed to enhance other properties/advantages – typically strength, formability, cost. In non-marine environments they are sufficiently corrosion resistant to maintain a bright finish for many years. In a high salt environment they will develop a rust red surface, may stain other parts, but will not rapidly corrode like ordinary, high carbon steel.

Generally known as 304 Grade, A2 or 18/8.

Some of the fastenings used by SAILSetc are of this grade.

High carbon steel

These grades of steel are used where corrosion is not a consideration, low cost may be essential, and/or other properties not provided by stainless steels are essential to have.

Typically the steel used for ball bearings is of this type as it has greater hardness and wear resistance than other steels. Stainless steels, by virtue of their high alloy content, are not capable of reaching the same level of hardness.

Ball race bearings

Ball race bearings give low resistance to rotation because of their design and especially because of the low contact area between surfaces. This low contact area creates high loads per unit area and high local compression and wear of the surfaces in contact. In order to resist this compression and wear, the best bearings use the hardest grades of steel. These are, therefore, not stainless quality.

The bearings used by SAILSetc are all 'stainless steel' grade. Typically these are made for use in food processing industries and general outdoor applications where corrosion resistance is essential and the use of non-marine grade stainless steel is unnecessary. Ball bearings made of stainless steels do not have the high hardness of carbon steel ball bearings so their wear resistance is lower. However, they will outlast carbon steel ball bearing races as they will not corrode in use.

Inevitably, when used in a marine environment, stainless steel ball race bearings will exhibit corrosion. This does not mean they are not made of stainless steel, only that they are not of marine grade stainless steel. As marine grade stainless steel ball race bearings are not available in the sizes we need, the only option to avoid corrosion is to not use a ball race bearing.

Maintenance of SAILSetc product with ball race bearings

SAILSetc products that comprise ball race bearings do so in order to reduce resistance to rotation, a virtue that we appreciate because the item functions better as a result. The continued better function of the component depends on occasional maintenance of the bearing – generally this is straightforward – and the following notes give some hint and tips.

Regular maintenance

Wash the equipment with fresh water at the end of each use. If this is not practical or convenient, use a fresh water or fresh water/soap spray to rinse salt water or dried salt off equipment before storage.

Add a drop of low viscosity oil to all ball race bearings once a month during the racing season.

Check for resistance to rotation and carry out the annual maintenance if excessive.

Pay particular attention to ball race goosenecks as their construction traps water around the bearings.

Annual maintenance

At the end of season dismantle the component fully. Remove the ball race bearings from other parts and clean them using an old toothbrush and methylated spirit (methyl alcohol). Badly clogged bearings can be left to soak in methylated spirit in a small container with lid and cleaned when the deposits have softened.

Clean any corrosion off other parts using fine wire wool or abrasive paper if necessary.

Where the bearing is running freely it can be re-oiled and re-assembled into the component. Where the bearing shows signs of not running freely it is probably because the ball bearings or the cages they run against have pitting in the surfaces. Resistance will be higher and the bearing will be more likely to fail. Replacing the bearing is the best path.

Replacement bearings

Replacement bearings for all SAILSetc fittings that use ball race bearings are available. Look under the 'Spares' section under 'Products by Category'. Ball race bearings with flanges are coded BF- and plain bearings (no flange) are coded BP-. Typically a replacement ball race bearing for the SAILSetc product coded xxx-yyy will be coded BF-xxx-yyy or BP-xxx-yyy.

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