

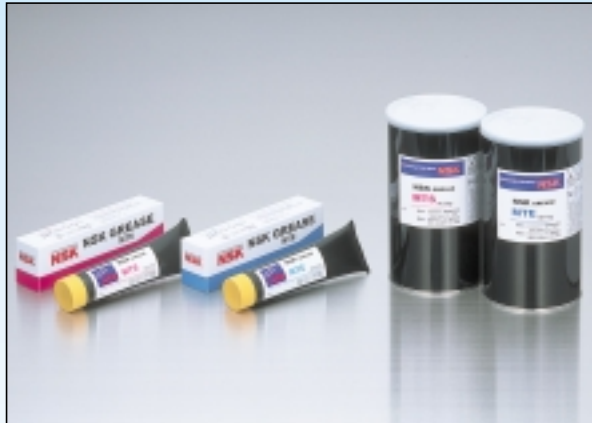
Super Precision Sealed Angular Contact Ball Bearings

Five reasons to up-grade to sealed angular contact bearings

- Time saving for the end user, no grease fill operation
- Reduce down time, eliminate contamination through poor handling
- Improved spindle performance
- Higher accuracy due to reduced contamination
- Longer grease life



1 Time saving to end user, no grease fill operation Bearings pre-greased by NSK



- NSK high-speed and high performance grease used throughout range.

Ensures

- Correct grease is used
 - Correct grease quantity is used
 - The grease is put in the correct position
 - Contamination does not enter the bearing during the greasing process
 - The grease is in date
- Saves the end user valuable time by eliminating an extra process.

These benefits ensure the bearing is in the best possible condition and optimum performance can be achieved.

2 Reduced down time Eliminate contamination though poor handling



When an unsealed bearing is removed from its protective box and plastic bag it is open to differing environments. In a Class One clean room this would not be a concern, however most workshops are a long way from this ideal.



Grease in an unsealed bearing can attract dirt and dust, both hard and soft fibres. If hard particles get into the bearing, the grease will use them as a grinding paste. This would result in:

During the period of taking an ultra clean precision bearing from its original packaging to the machine mounting there are many opportunities for external contamination for ingress.

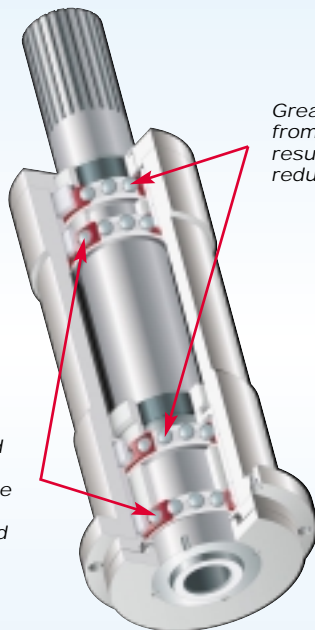
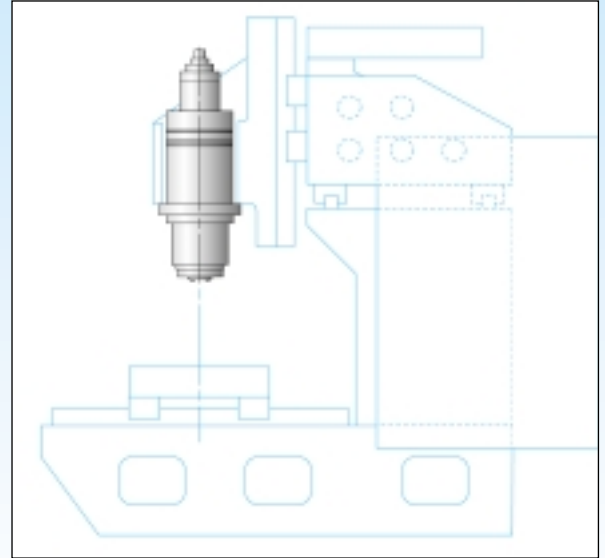
- Sealed bearings prevent contamination entering the bearing from hands and equipment
- Sealed bearings prevent debris being transferred from the fitting table to the bearing
- Sealed bearings can prevent down time and warranty claims due to premature failure

- Raceway wear
- Ball surface wear
- Noise, vibration
- Breakdown of lubricant
- Inaccuracies of product produced
- Premature failure

These benefits ensure that the bearings are in the best possible condition with no contamination present before use in the application.

3 Better Spindle performance Prevents grease migration in vertical spindles

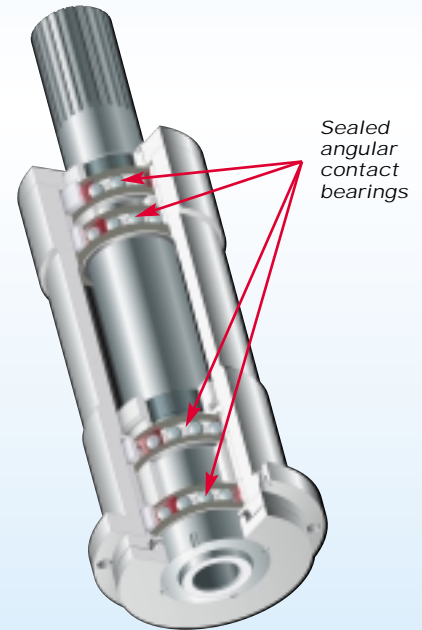
The majority of machining centres use spindles in the vertical orientation and more recent trends show that 5-axis machines can perform with the spindle in many positions, from horizontal to vertical. This movement of the spindle and working in the vertical position can cause the grease to drop/slump from one bearing to the next. This can increase the temperature of some bearings and possibly starve others of lubricant.



Grease can drop from the bearings resulting in reduced life

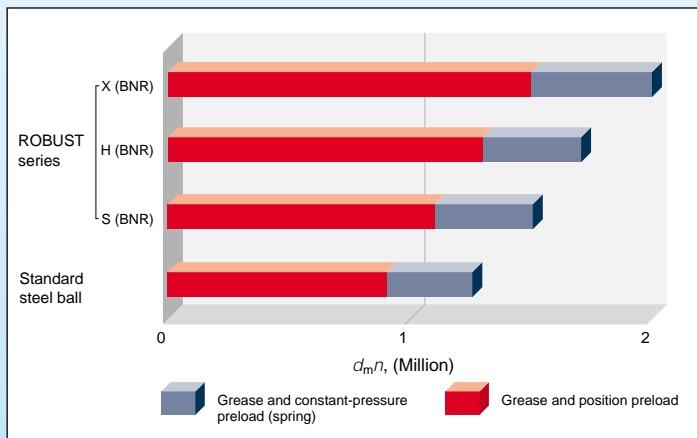
Grease is added to the bearings causing increase in bearing temperature and preload and possible failure

The use of sealed bearings prevents grease migrating from the upper to lower bearings



Sealed angular contact bearings

No speed compromise



- Sealed bearings in operation prevent starvation of some bearings and temperature rises in others
- They allow the spindle to run at a stable temperature whatever its orientation
- Better machining accuracies can be achieved due to less temperature variation

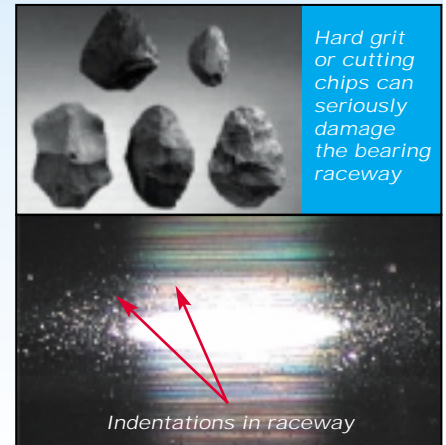
These benefits ensure the best possible machining performance in the application.

4 Higher accuracy due to reduced contamination Prevents entry of contaminants in operation



While a non-contacting seal cannot always prevent the ingress of water it can prevent the ingress of solid contaminants that could enter the spindle either from the work end (cutting end) or from the rear end.

Labyrinth seals usually offer less protection to the rear end of the spindle and debris from drive belt material can sometimes enter. The use of sealed bearings gives extra protection.



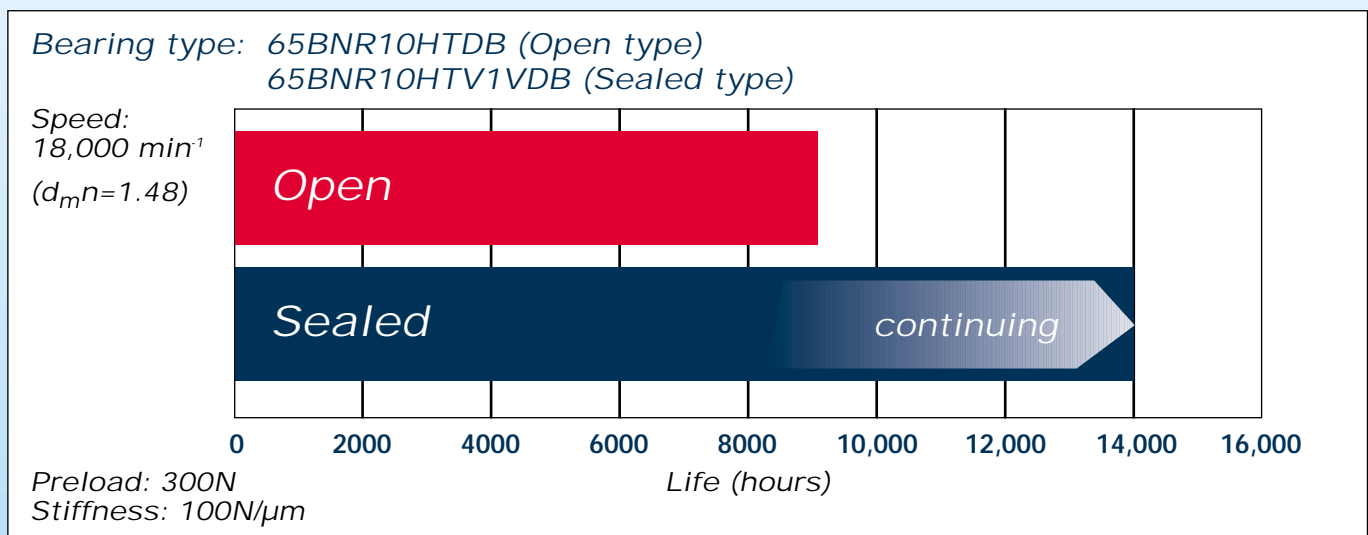
Hard grit or cutting chips can seriously damage the bearing raceway

Indentations in raceway

- Sealed bearings prevent the entry of most contamination both before and after machine build and also during operation
- Used in combination with existing external sealing arrangements, sealed bearings provide maximum protection
- The elimination of external contamination prevents noise and vibration.

5 Longer grease life Seals prevent loss of grease and reduce ageing

Tests have shown that the use of sealed bearings as a replacement for open bearings have resulted in an increase grease life of up to 50%. This is because the grease is maintained in the optimum position, reducing grease loss and the reduction of airflow that can cause drying of a greased open bearing.



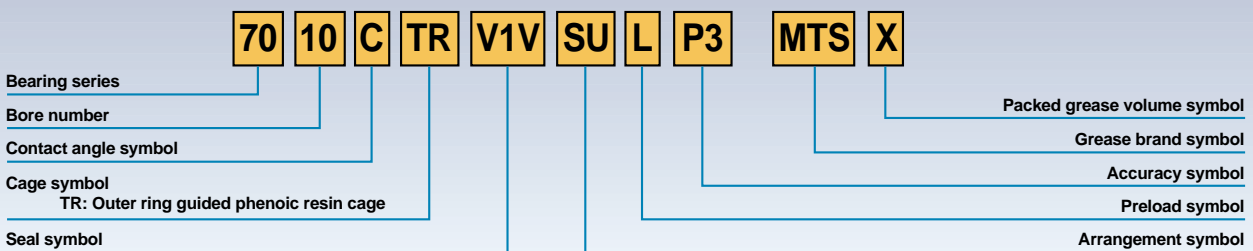
5 reasons to upgrade to Sealed Angular Contact Bearings...

- 1** Grease in optimum quantity and position
- Time Saving for end user
- 2** Clean handling
- Eliminates downtime
- 3** No grease migration in application
- Improved performance
- 4** Reduced external contamination in application
- Higher accuracy
- 5** Longer grease life
- 1.5 times the life of an open greased bearing

Sealed bearings can replace existing open bearings because the external dimensions are identical.
They are available in standard and high speed series.

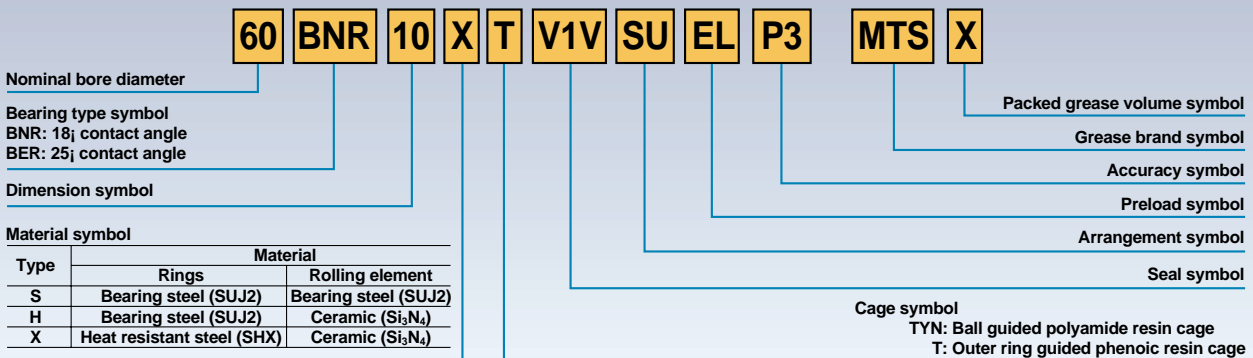
Standard series

Example of bearing number: 7010CTR V1V SU L P3 MTS X



Ultra high-speed Robust series

Example of bearing number: 60BNR10XTV1V SU EL P3 MTS X



Bearings available with seals

Dimension series	Bearing bore
BNR10, BER10, BNR19, BER19, 70xx, 79xx	Ø 30 to Ø 100mm



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