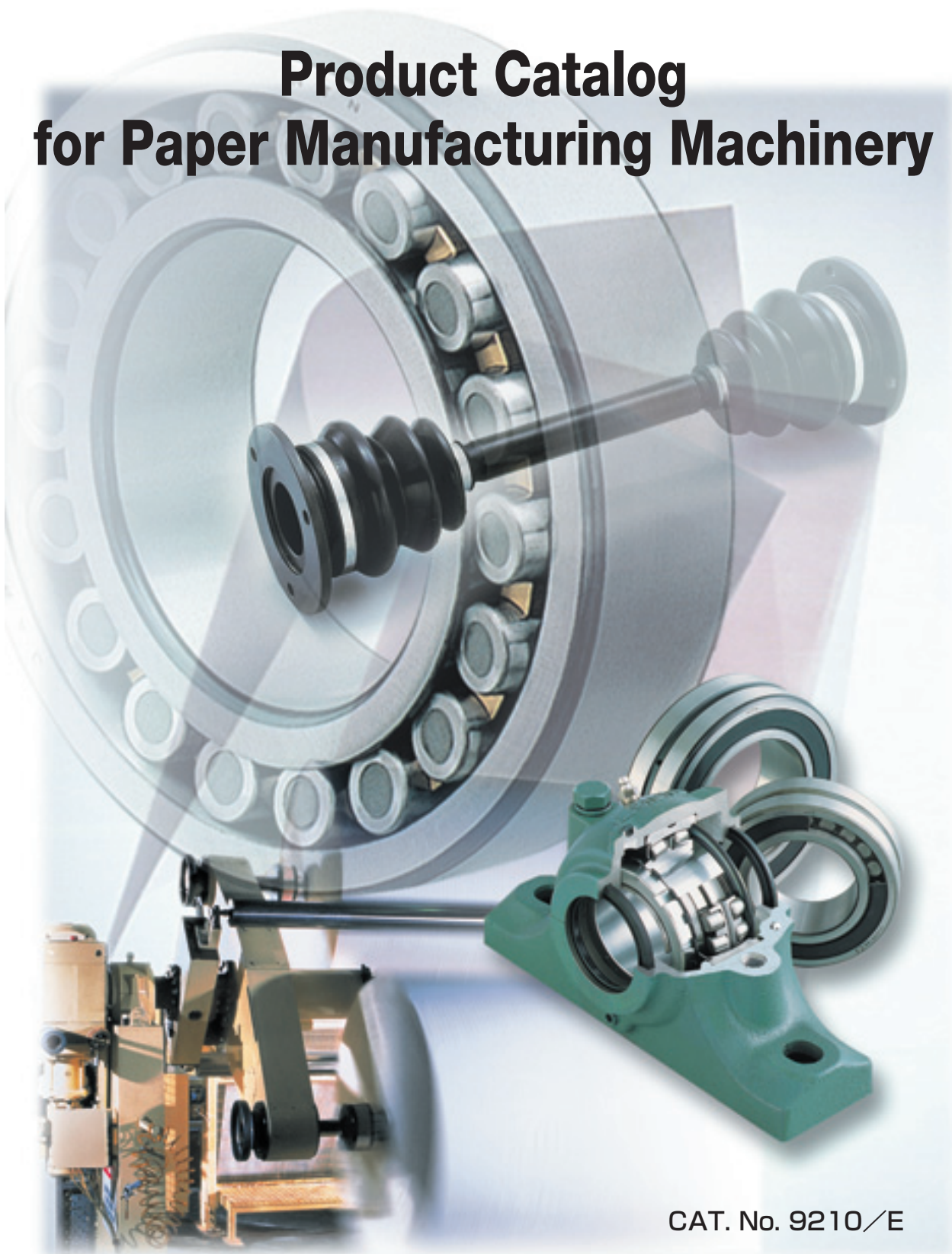


For New Technology Network

**NTN**®

# Product Catalog for Paper Manufacturing Machinery



CAT. No. 9210/E

# NTN Products for Paper Manufacturing Machinery

Various types of bearings are used for paper manufacturing machinery. Paper machines are extremely large, and the properties required of bearings differ significantly from section to section.

NTN offers a wide assortment of products designed to increase bearing life and reduce cost of replacement, while providing dimensional stability at high temperatures and higher speed capability for all parts.

## PAPER-MAKING PROCESS

### WIRE SECTION

- Paper layer forming

Main bearings used

Self-Aligning Roller Bearings

Sealed Self-Aligning Roller Bearings-  
WA Type

Constant Velocity Joints  
<BJ> <DOJ> <TBJ>

### PRESS SECTION

- Water wringing

Main bearings used

Self-Aligning Roller Bearings

Sealed Self-Aligning Roller Bearings-  
WA Type

Constant Velocity Joints  
<BJ> <DOJ> <TBJ>

### DRYER SECTION

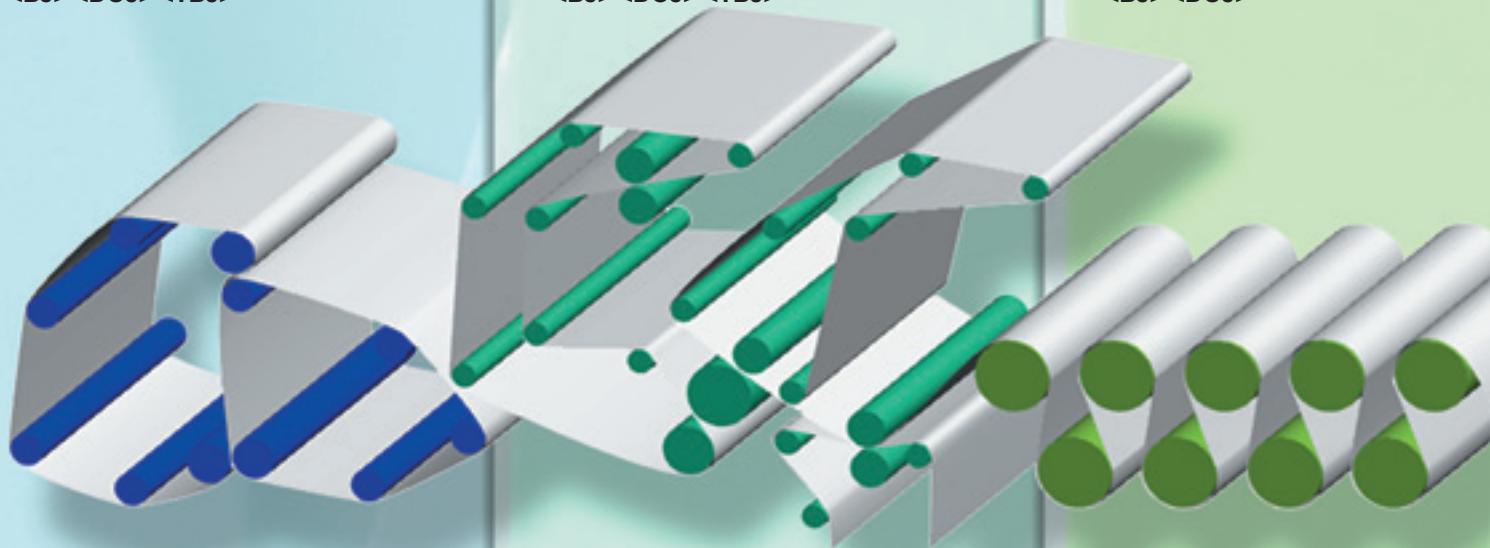
- Drying by steam

Main bearings used

Self-Aligning Roller Bearings  
LH Series

Bearings with solid grease

Constant Velocity Joints  
<BJ> <DOJ>



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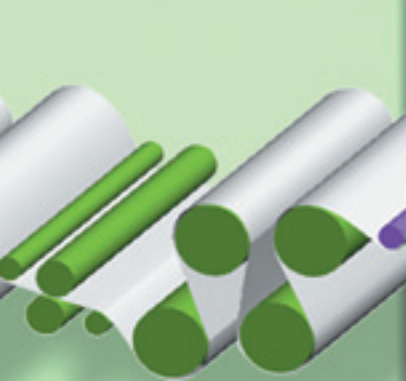
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## SIZE PRESS

- Applying of solution for sizing

Main bearings used

Self-Aligning Roller Bearings  
Constant Velocity Joints  
<BJ> <DOJ>



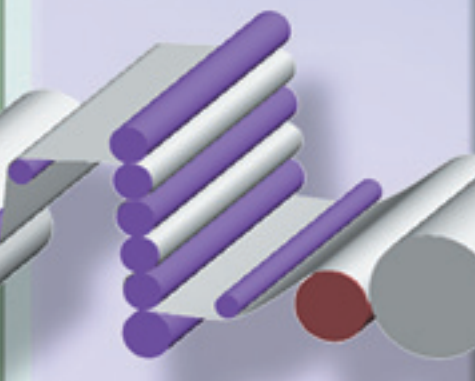
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## CALENDER

- Adding gloss

Main bearings used

Self-Aligning Roller Bearings  
LH Series  
Bearings with solid grease



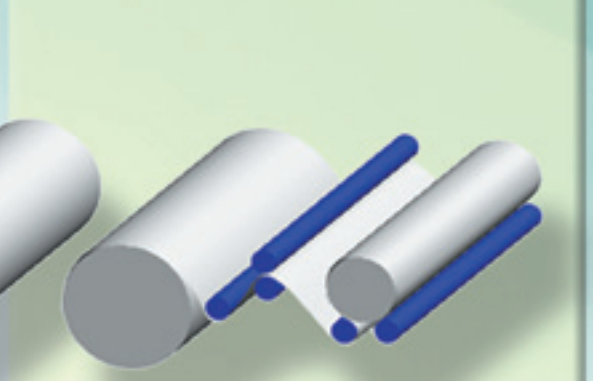
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## REEL & WINDER

- Winding and rewinding

Main bearings used

Self-Aligning Roller Bearings LH Series  
Large Self-Aligning Roller Bearings  
Constant Velocity Joints <BJ> <DOJ>



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## Wire section & Press section



## Wire section and press section

	Function of paper-making machine section	Required features of bearings	Main bearings used
<b>Wire section</b>	Filters raw materials Forms paper layer by removing moisture	<ul style="list-style-type: none"> <li>• Countermeasures against water penetration</li> <li>• Faster rolling</li> <li>• Larger load on roll</li> <li>• Higher precision rolling</li> </ul>	<ul style="list-style-type: none"> <li>• Large self-aligning roller bearings</li> <li>• Sealed self-aligning roller bearings</li> <li>• Constant velocity joints (BJ cupped type) (large DOJ) (TBJ)</li> </ul>
<b>Press section</b>	Compacts fibers of wet paper by wringing, improves paper quality		



### Large self-aligning roller bearing

CAT. NO. 2250/E

Ability to self-align and large load capacity makes these bearing suitable for places subject to vibration, impact or large loads.



### Sealed self-aligning roller bearing WA type

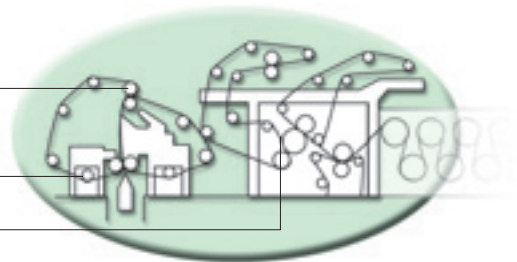
CAT. NO. 3702/E

- Effectively prevents penetration of foreign material.
- Can be mounted on standard plummer block.
- Although sealed, the bearing can still be greased.
- Sealing performance remains stable even when the bearing is aligning itself.

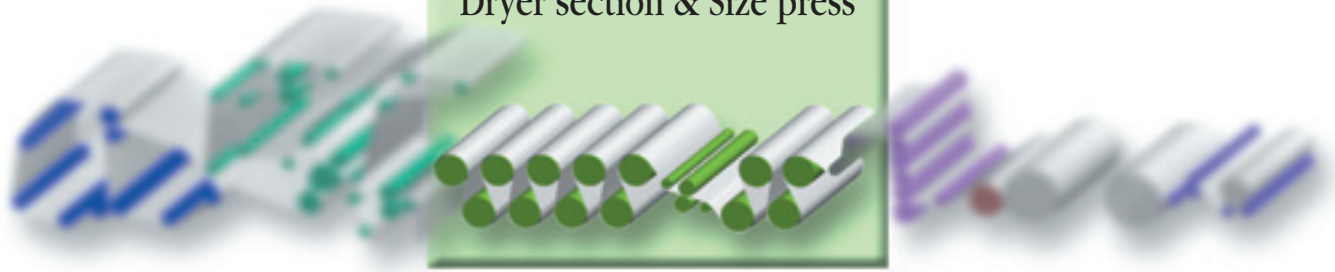


### Constant velocity joints CAT. NO. 5603/E

- Smooth rolling  
Realizes smooth and quiet rolling and movement with no fluctuation of angular velocity.
- Reliable sealing  
Sealed with grease and boots that offer superior endurance and sealing performance to maintain a cleaner, more sanitary environment.
- Doesn't require grease supply.  
Superior sealing performance of boots enables long-term use without maintenance such as supplying grease, without grease leakage or water penetration.



# Dryer section & Size press



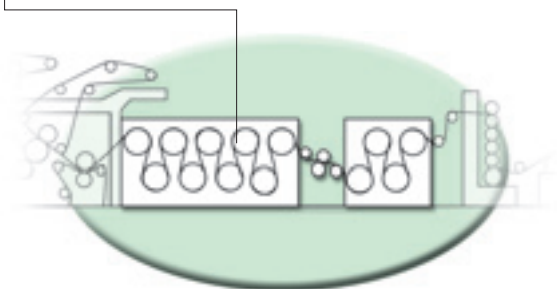
## Dryer section and size presses

	Function of paper-making machine section	Required features of bearings	Main bearings used
<b>Dryer section</b>	Drying by heat	<ul style="list-style-type: none"> <li>Heat resistance treatment and heating by steam passed through hollow shaft</li> <li>Intermittent operation</li> <li>Quick start-up and higher speed</li> </ul>	<ul style="list-style-type: none"> <li>Self-Aligning Roller Bearings LH Series</li> <li>Bearings with solid grease</li> <li>Constant velocity joints(BJ) (large DOJ)</li> </ul>
<b>Size presses</b>	Application of size liquid		

### Can be used in temperatures ranging from room temperature to 250°C

#### Self-aligning roller bearing LH Series CAT. NO. 3027/E

STJ2 is a new bearing material developed by NTN for longer life at higher temperatures. The temp. range is room temp. to 250°C. This material is now the standard material for most self-aligning roller bearings. The LH Series is a new series of self-aligning roller bearings using STJ2 to realize long life for high temperature use. Because it is used for high temperature applications, the LH Series is standardly equipped with pressed or machined cages as standard.



#### High temperature life

The results of testing at 200°C using thrust type specimens are given in **fig.1**. STJ2 specimens are 30 times more resistant to peeling than SUJ2.

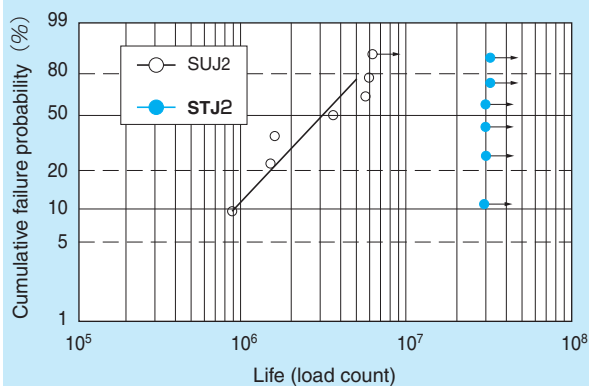


Fig. 1 Results of high temperature life test for thrust type specimens

#### High temperature dimension stability

**Fig. 2** shows dimension change rate when kept in high temperature of 250°C. After 2,500 hours, there was almost no change. This is the same for heat-treated SUJ2.

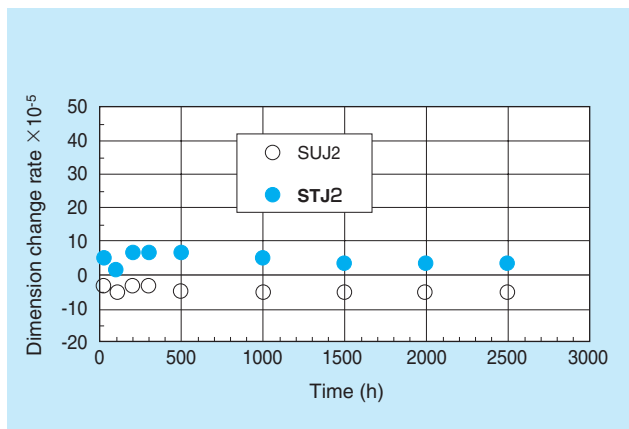
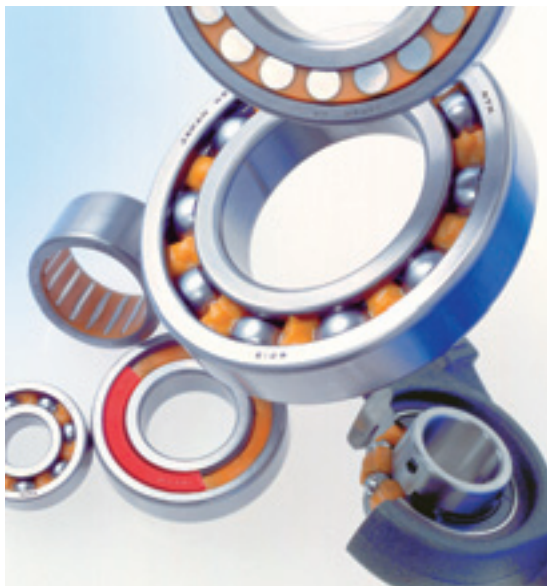


Fig. 2 Dimension change at high temperature



## Calenders

	Function of paper-making machine section	Features of bearings	Main bearings used
<b>Calenders</b>	Adds gloss to paper.	<ul style="list-style-type: none"> <li>• Faster rolling</li> <li>• Higher precision rolling</li> </ul>	<ul style="list-style-type: none"> <li>• Self-Aligning Roller Bearings LH Series</li> <li>• Bearings with solid grease</li> </ul>



**Bearings with solid grease** CAT. NO. 3022/E

• **Minimal lubrication leakage**

Because solid grease is a solid after heat treatment, a large quantity of lubricant can be kept inside. Lubricant leakage is minimal because the lubricant is gradually supplied to the rolling surface by heat from the bearing and centrifugal force.

• **Superior lubricating characteristics**

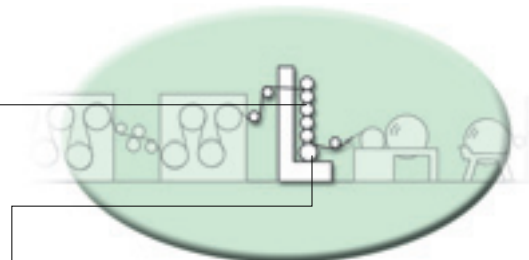
Lubricant doesn't tend to leak even when strong vibration or centrifugal force is applied to the bearing. Solid grease doesn't emulsify and flow out even if the bearing is penetrated by water. Lubrication characteristics are therefore superior to that of conventional lubricating grease.

• **Low bearing torque**

With spot-pack bearings with solid grease specifications, polyube is not stirred like grease, so there is little stirring resistance, thus producing minimal bearing torque.

• **Seal effect**

Solid grease forms a barrier against foreign material from outside (water, dust, etc.), but it is not enough to serve as a seal. We therefore recommend a directly applied rubber seal (deep groove ball bearing, bearing unit) or separate seal (other bearings) if used in a place requiring better sealing performance.



**Self-Aligning Roller Bearings LH Series**

CAT. NO. 3027/E

• **Long life at temperatures from room temperature to high temperature**

Life at room temperature is 3.5 times that of SUJ2.  
Life at high temperature (200°C) is 30 times that of SUJ2.

• **Resists surface damage**

Peeling resistance strength is 7 times that of SUJ2.  
Smearing resistance strength is 1.4 times that of SUJ2.  
Wear resistance strength is 2.5 times that of SUJ2.

• **Dimensional stability at high temperatures**

Almost no dimension change when temperature is maintained at 250°C.

• **Enhanced cracking fatigue strength**

Cracking fatigue strength under high temperature / high fitting stress is 2 times that of SUJ2.  
Rolling cracking fatigue strength is 2 times that of SUJ2.

• **Simplified repair/storage management**

Applications ranging from room temperature to high temperature (250°C) can be handled with a single type of standard bearing.



## Reels & winders

	Function of paper-making machine section	Features of bearings	Main bearings used
<b>Reels</b>	Winds paper.	<ul style="list-style-type: none"> <li>• Faster rolling</li> <li>• Higher precision rolling (prevents paper tearing)</li> </ul>	<ul style="list-style-type: none"> <li>• Self-Aligning Roller Bearings LH Series</li> <li>• Self-Aligning Roller Bearings</li> <li>• Bearings with solid grease</li> <li>• ECO-TOP Tapered Roller Bearings</li> <li>• Constant Velocity Joints &lt;BJ+DOJ&gt;</li> </ul>
<b>Winders</b>	Rewinds paper.		



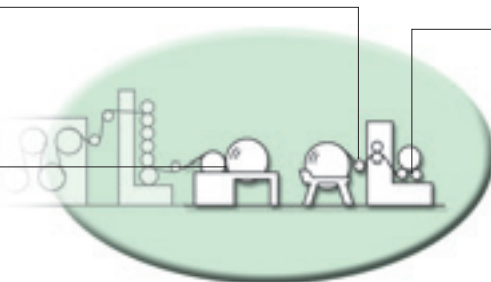
**Constant velocity joints** CAT. NO. 5603/E

Combination of BJ and DOJ enables joint expansion/contraction accompanying angle change during operation to be absorbed.



**Self-Aligning Roller Bearings**

CAT. NO. 2202/E



**ECO-Top tapered roller bearings** CAT. NO. 3026/E

- Under contaminated lubrication conditions, life is 10 times longer than standard bearings.
- Doubles life with clean lubrication.
- Realizes at least 10% lower torque in practical rolling range.
- 25% better seizure resistance
- Preload loss reduced by 50%.
- Assembly facilitated by 50% reduction in the number of rotations until bearing stand height stabilizes.





Howcroft Industrial Supplies Ltd., Unit 9B Brookfields Way, Manvers, Rotherham S63 5DL  
Tel: 01709 878282 • email: [sales@howcroft.co.uk](mailto:sales@howcroft.co.uk) • [www.howcroft.co.uk](http://www.howcroft.co.uk)