

# NTN Technical Presentation

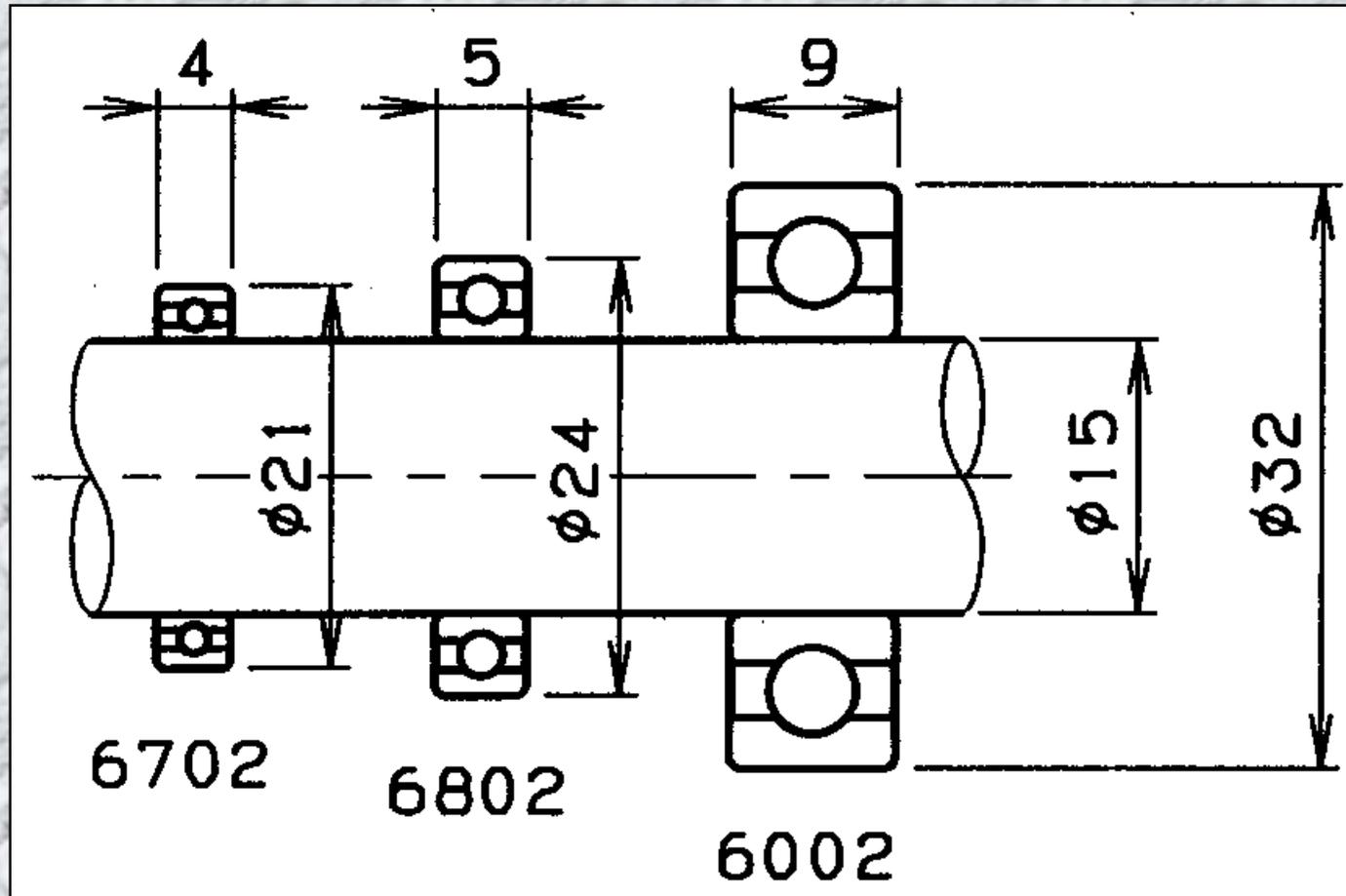


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## THIN TYPE BALL BEARINGS

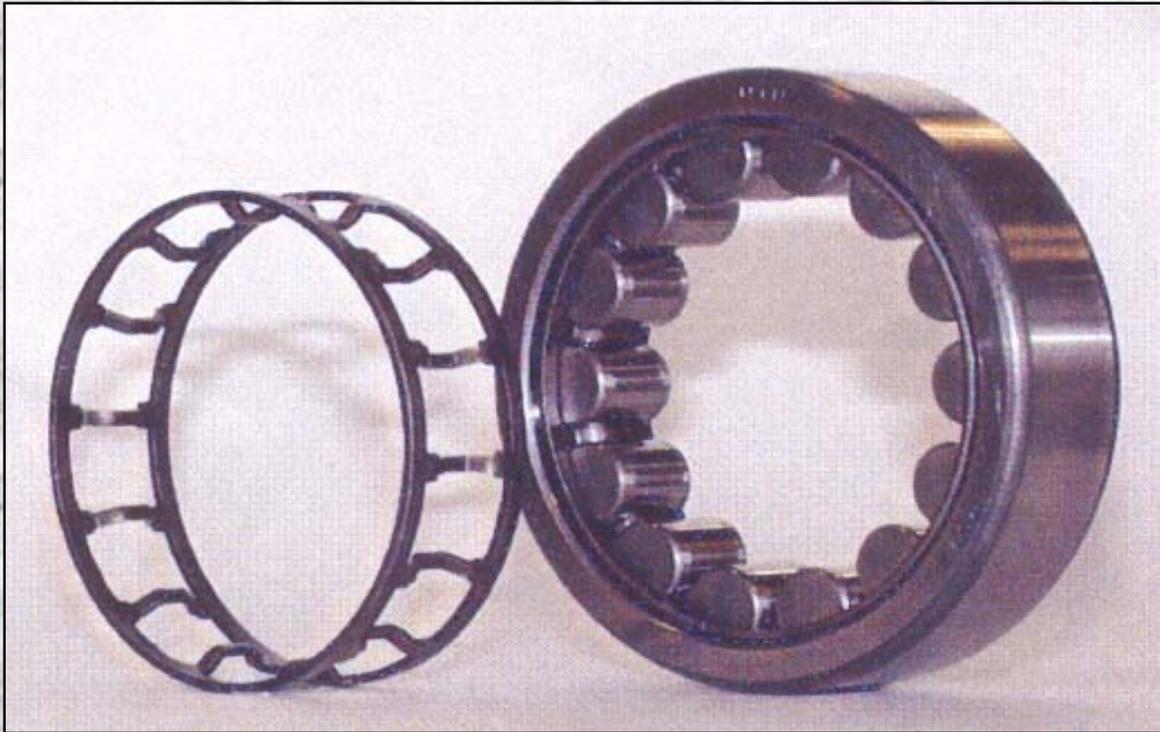


### FEATURES

> Compact Size

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## CYLINDRICAL ROLLER BEARINGS WITH WELDED STEEL PRESSED CAGE



### FEATURES

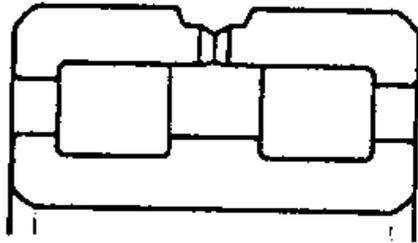
- > E type cylindrical roller bearing
- > Welded steel pressed cage with low cost
- > High temperature application

Cylindrical Roller Bearings with Welded Steel Pressed Cage

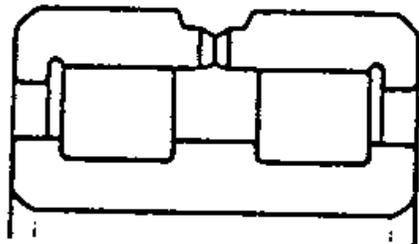
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## SL TYPE CYLINDRICAL ROLLER BEARINGS

Open type

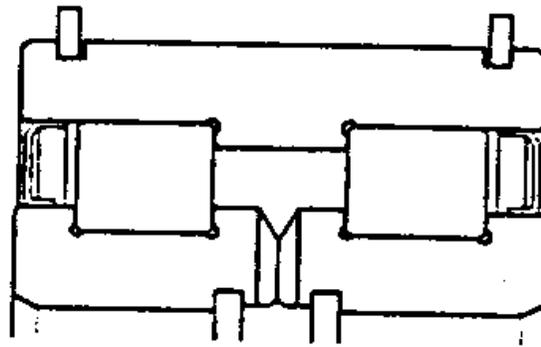


Model SL01



Model SL02

Enclosed type



Model SL04

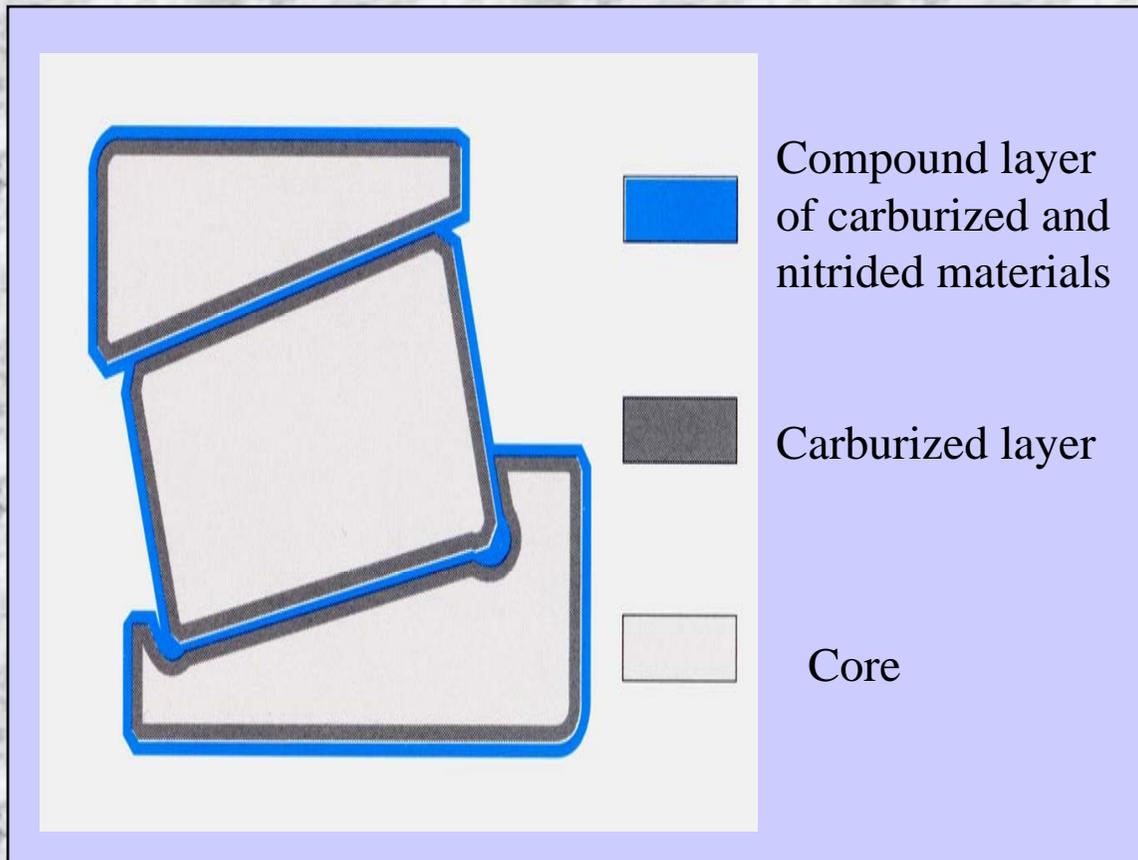
### FEATURES

- > Double row,  
full complement
- > Thin section
- > Heavy duty application

SL Type Cylindrical Roller Bearing

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## ETA TAPERED ROLLER BEARINGS



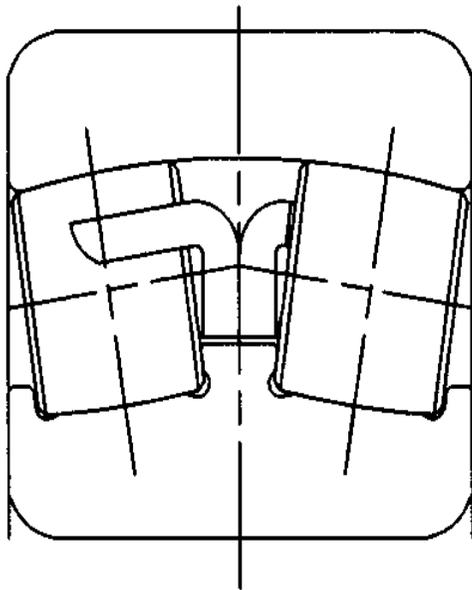
### FEATURES

- > ETA bearings are produced by a special heat treating process of carburized steel
- > ETA bearings have 9 times longer life under contaminated lubrication than standard bearings(4T-) and 5 times longer life than ET bearings

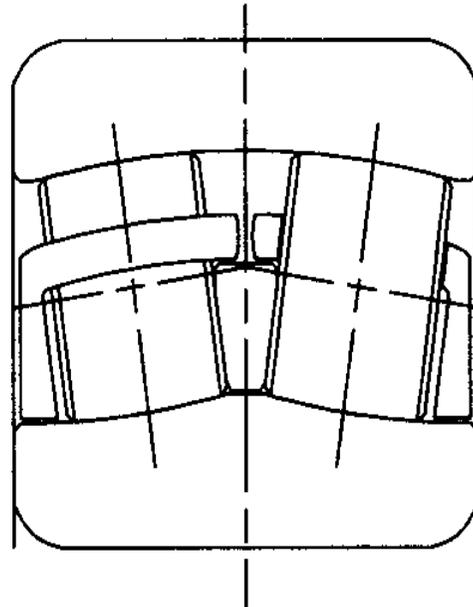
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## SELF-ALIGNING ROLLER BEARINGS

Type B



Type C



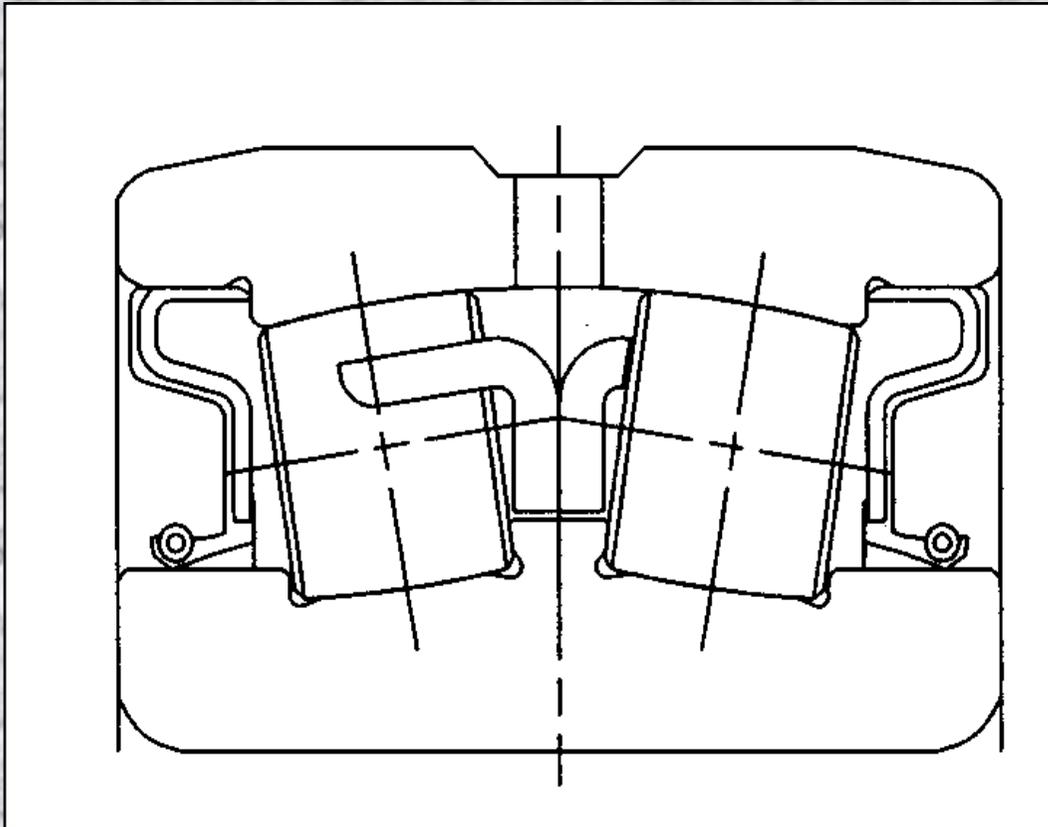
Self-aligning Roller Bearing

### FEATURES

- > Allowable misalignment angle  
Normal loads :  $0.5^{\circ}$   
Light loads :  $2.0^{\circ}$
- > Well suited for applications with radial and axial loads
- > Well suited for applications with vibration and/or impact forces

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## SEALED SELF-ALIGNING ROLLER BEARINGS W TYPE



### FEATURES

- > Efficiently preventing contaminants from entering
- > Although bearings are factory sealed, relubrication is available
- > Seals remain secure even under conditions of misalignment

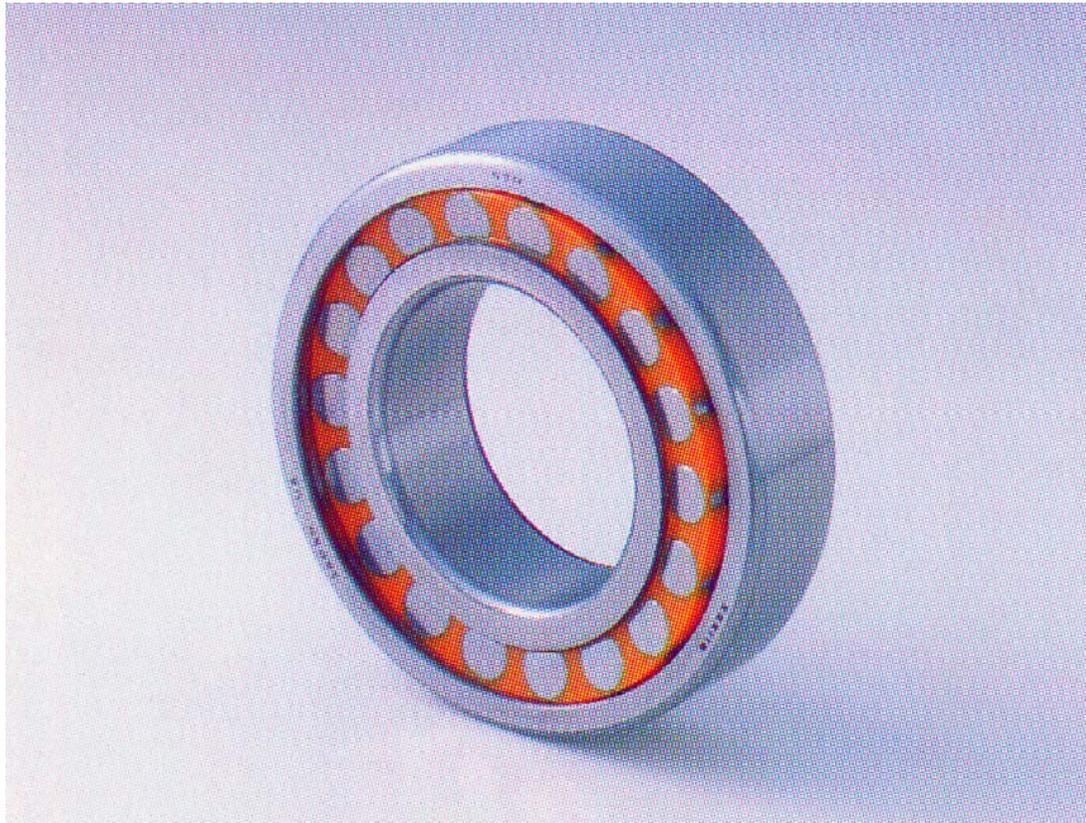
Sealed Self-aligning Roller Bearings (W type)

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## SOLID GREASE BEARINGS

### FEATURES

- > Reduce lubricant leakage
- > Superior lubrication
- > Reduce grease leakage under centrifugal or oscillating conditions



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## SEALED SELF - ALIGNING ROLLER BEARINGS WA TYPE SPLIT TYPE



Sealed Self-aligning Roller Bearing (WA type)

### FEATURES

- > Prolonged life as a result of a high resistance to dust
- > Extended maintenance frequency
- > Reduced amount of grease replenishment and reduced regreasing frequency

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## LARGE SIZE LONG OPERATING LIFE BEARINGS - EA TYPE



### FEATURES

- > Operating life in contaminated lubrication is over **5 times** longer than conventional bearings
- > Operating life in clean lubrication is more than **2 times** longer than conventional bearings
- > Anti peeling strength is **3 times** longer than conventional bearings [ Rate of incidence is 1/3 ]

Large Size Long Operating Life Bearing ( EA type )

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## CYLINDRICAL ROLLER BEARINGS WITH WATER - COOLING JACKET TYPE HOUSINGS FOR C.C.M.



**Split Type Cylindrical Roller Bearing  
and Water-cooling Jacket Type Housing**

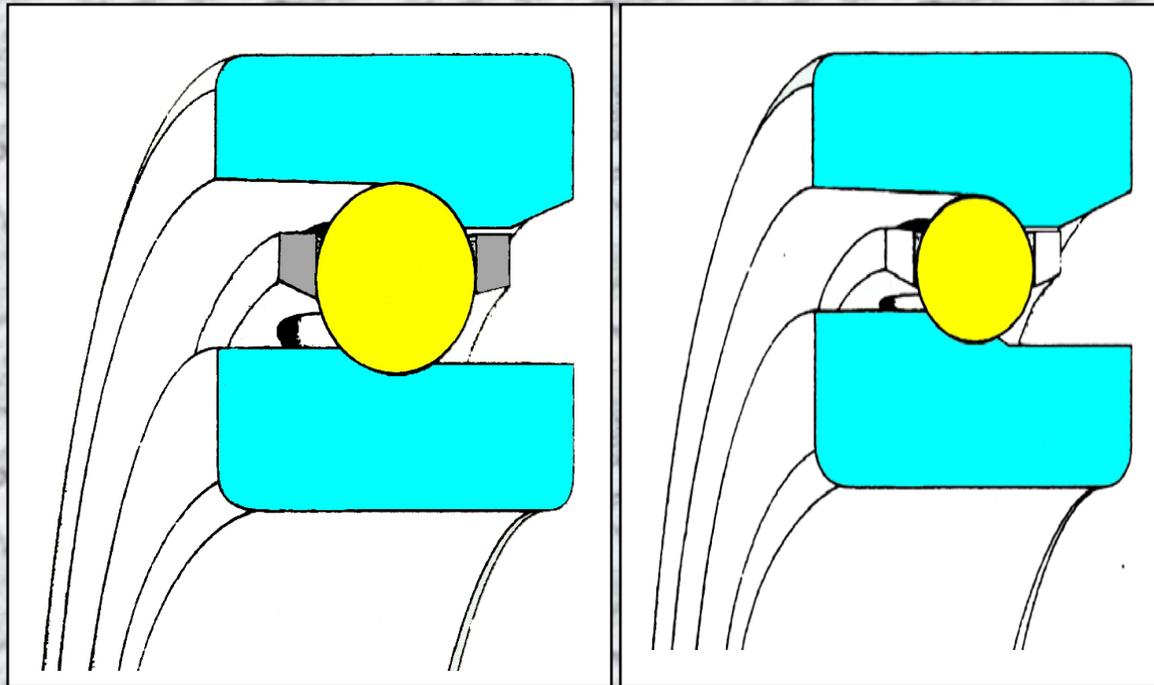
### *FEATURES*

- > Since bearings and housings are split type, it is possible to mount the bearings in places where mounting from the shaft end is impossible

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## HSC BEARINGS

(ULTRA HIGH SPEED CERAMIC BALL ANGULAR CONTACT BEARING)



**Current bearing  
( HSB )**

**New bearing  
( HSC )**

### FEATURES

- >  $dn=210 \times 10^4$   
under the air oil lubrication
- > Low temperature rise  
(vs. current bearing)
- > Same rigidity  
(vs. current bearing)

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## ADJUSTABLE PRELOAD BEARINGS UNIT

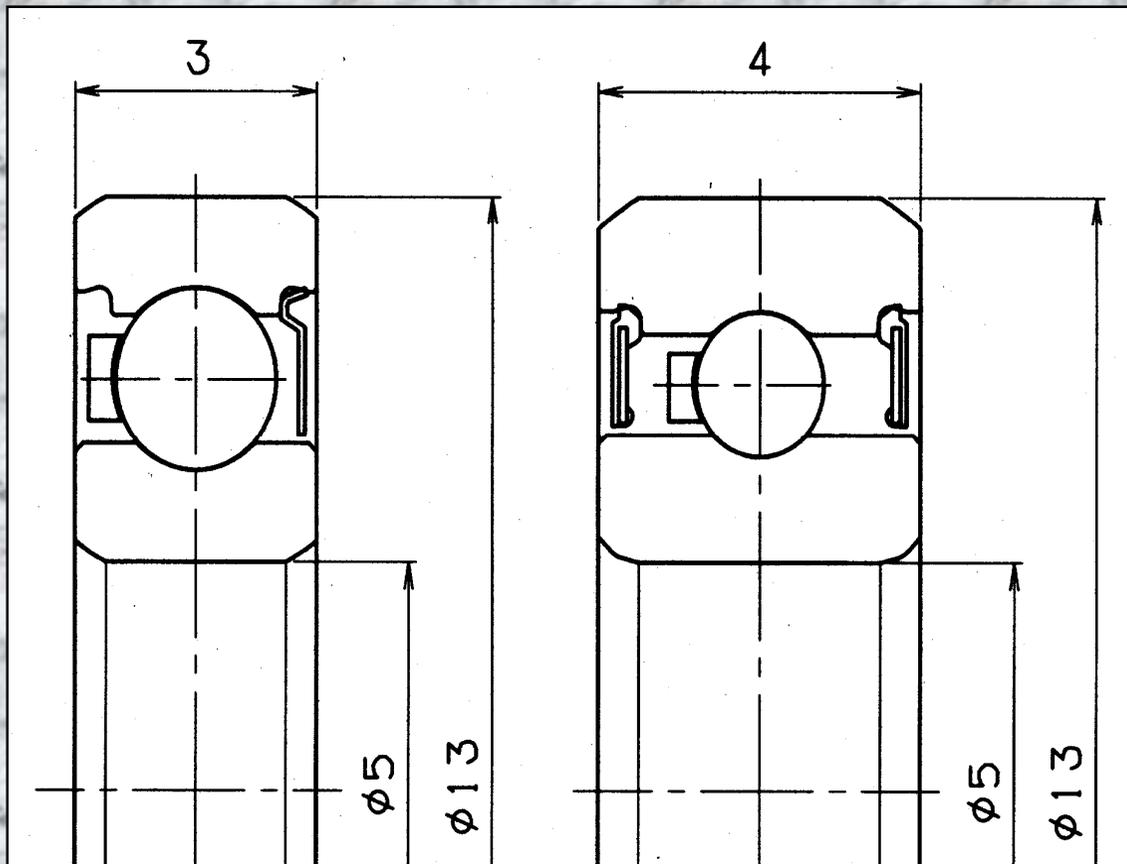


### FEATURES

- > Designed for high speed and high rigidity machine tool spindle
- > This unit can adjust the preload with two or three steps by rotational speed of the main spindle
  - Low speed : fixed preload for high rigidity
  - High speed : less preload to prevent high temperature rise
- > Compact design and maintenance free

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## BEARINGS FOR HDD SPINDLE MOTORS



Structure of bearing

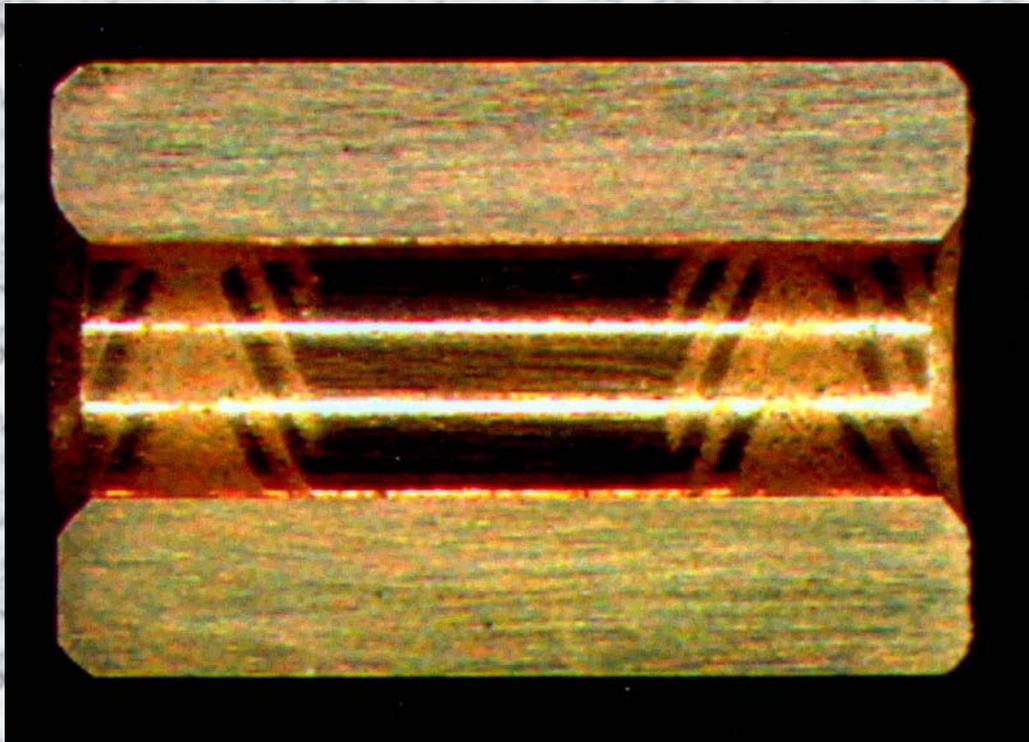
### FEATURES

- > Low noise
- > Low N.R.R.O.  
(Non repetitive runout)
- > Low torque
- > Anti impact load
- > Long life (High reliability)

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## HYDRODYNAMIC OIL-IMPREGNATED SINTERED BEARINGS

ACHIEVE HIGH ACCURACY OF ROTATION BY HYDRODYNAMIC ACTION

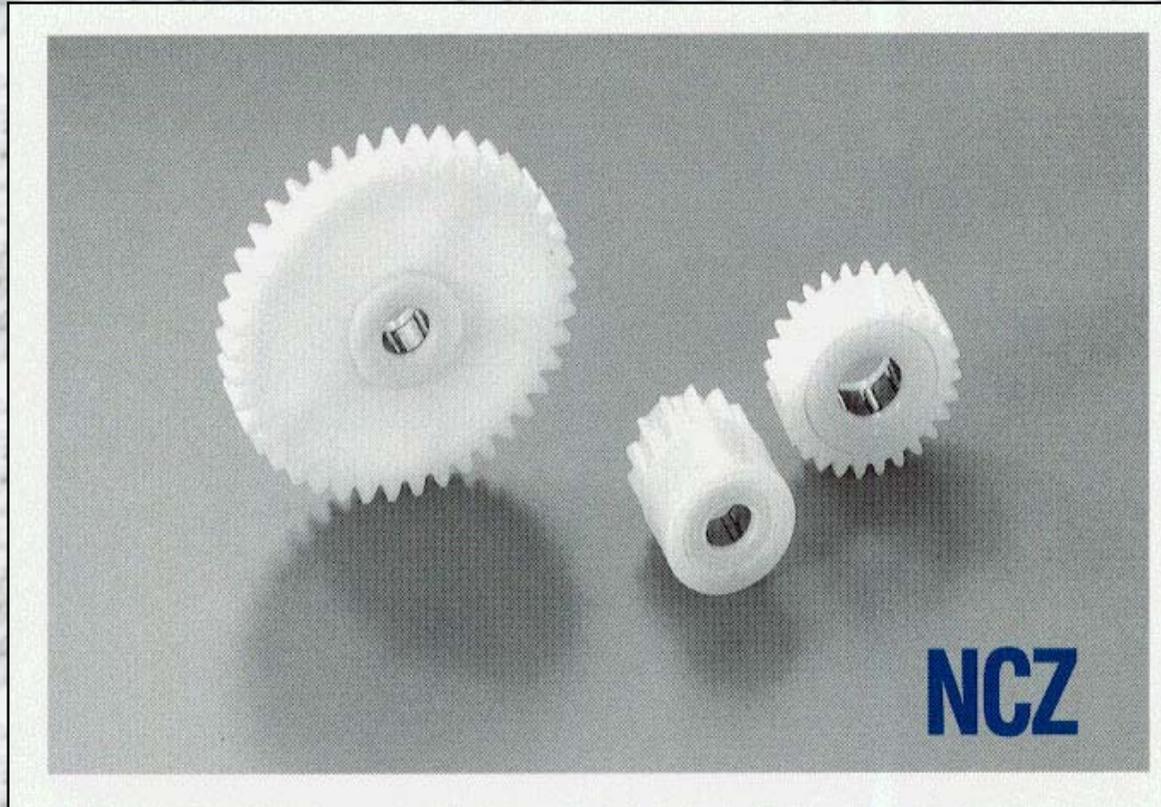


### FEATURES

- > Oil film pressure is increased to give higher bearing stiffness
- > Low-price hydrodynamic bearing can be achieved
- \* Application device ;  
DVD-ROM / RAM ,LBP,HDD etc.
- \* Bore size ;  $\varphi 2 \sim \varphi 5$

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## ONE WAY CLUTCH



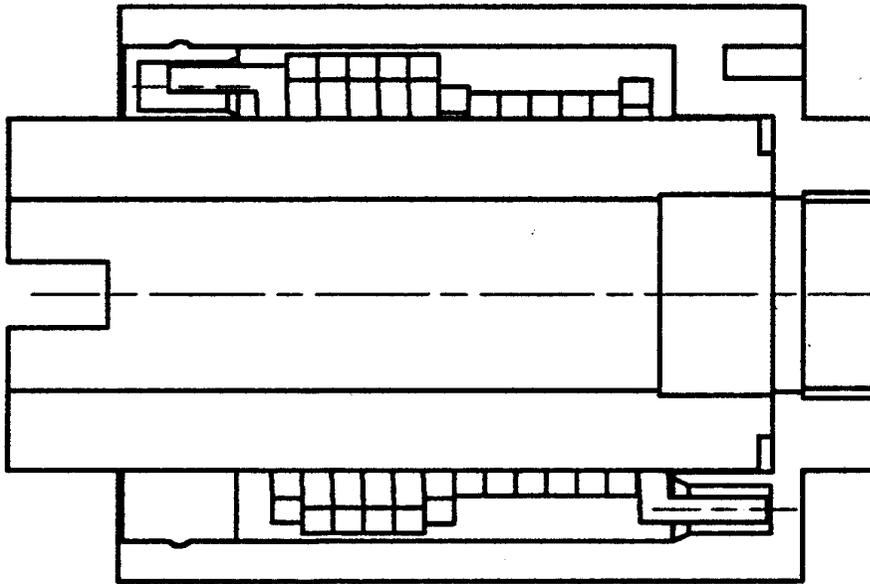
### FEATURES

- > Compact design
- > Excellent torque capacity and clutch accuracy

Type:NCZ,NCU

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## TORQUE LIMITER



### FEATURES

- Torque can be set to customer's requirement
- Excellent torque stability and durability

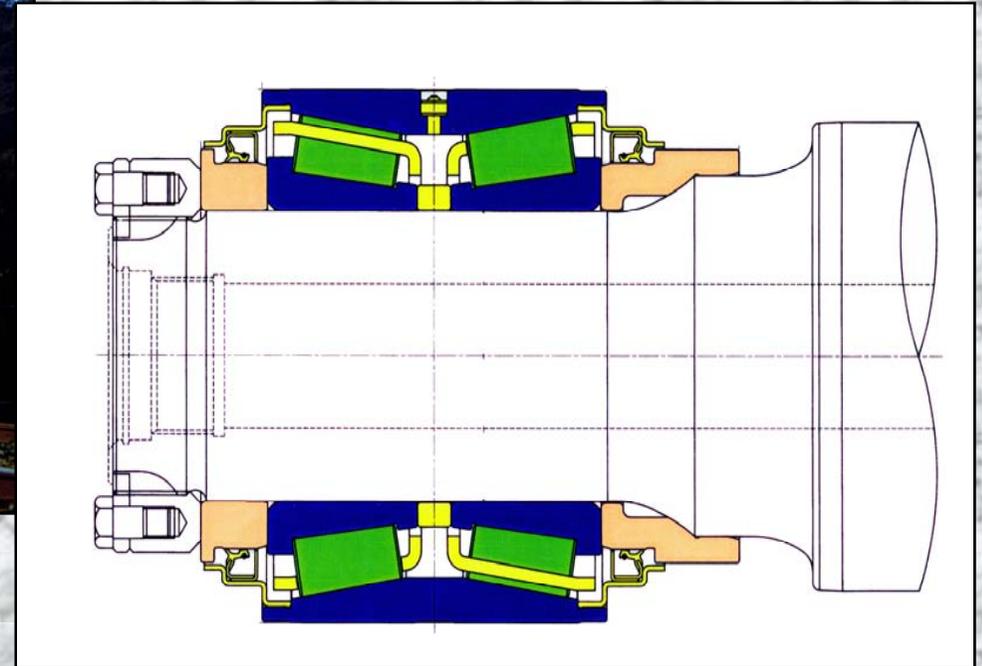
Type: NTS, NTK

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## JOURNAL ROLLER BEARINGS FOR BULLET TRAIN / SERIES 500



### Structure



### Features

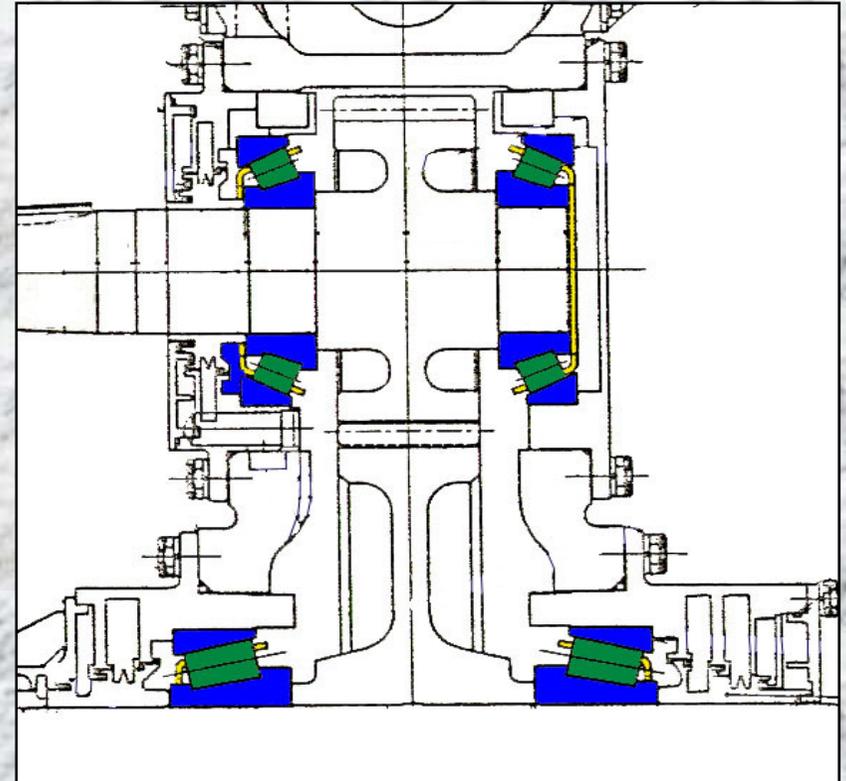
- > Double row Tapered Roller Bearing with Seals
- > Maximum speed : 350Km/hr(220mph)
- > Maximum service speed : 300km/hr(188mph)

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## REDUCTION GEAR BEARINGS FOR BULLET TRAIN / SERIES 500



### Structure



### Features

- Single row Tapered Roller Bearing
- Maximum speed : 350Km/hr(220mph)
- Maximum continuous operating speed : 300km/hr(188mph)

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## TRACTION MOTOR BEARINGS FOR BULLET TRAIN / SERIES 500

Traction Motor Bearing (Ceramics)



Traction Motor Bearing (PPS)

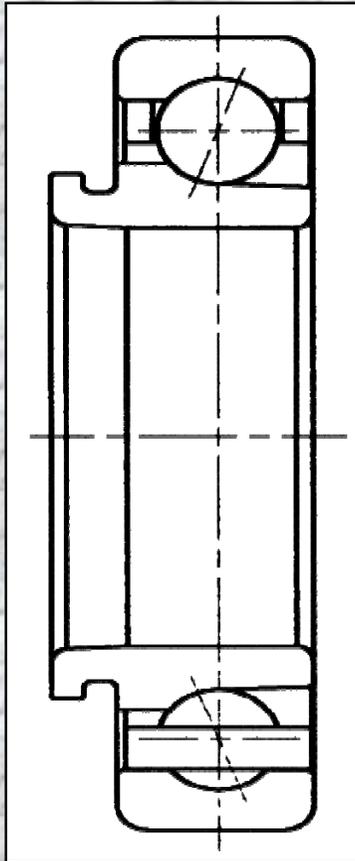


### Features

- > Insulation resistance is  $10M\Omega$  or greater
- > Dimensionally interchangeable with standard bearing series
- > Effectively prevents electric corrosion in bearings used in traction motors

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## CRYOGENIC HIGH - SPEED BALL BEARINGS FOR ROCKET TURBOPUMPS

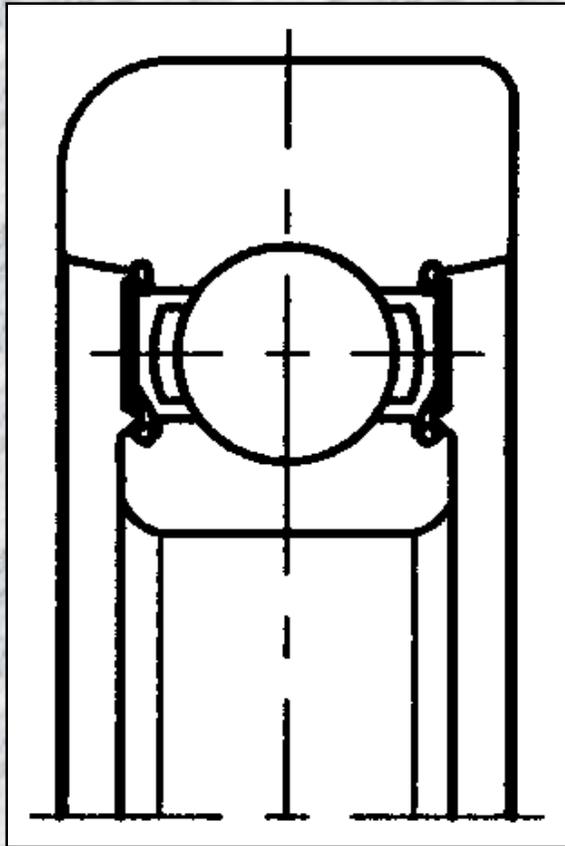


### FEATURES

- > **Cage Design :** Special Pocket Shape
- > **Cage Material :** Glass Fabric With PTFE Laminated
- > **Operation Environment :**  
Liquid Hydrogen, Liquid Oxygen
- > **Operating Speed :** Max. 50,000rpm
- > **Bearing Type :** Angular Contact Ball Bearing

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## MAST GUIDE BALL BEARINGS



### FEATURES

- > High Fracture Strength
- > Big Chamfer
- > Heat Treatment
  - a) Through Hardening
  - b) Soft O.D.

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## PRECISION ANGLE SENSOR UNIT



### FEATURES

- > **Accuracy:** output linearity  $\pm 0.5\%$
- > **Compact design:** short height
- > **Rigid:** duplex bearing set