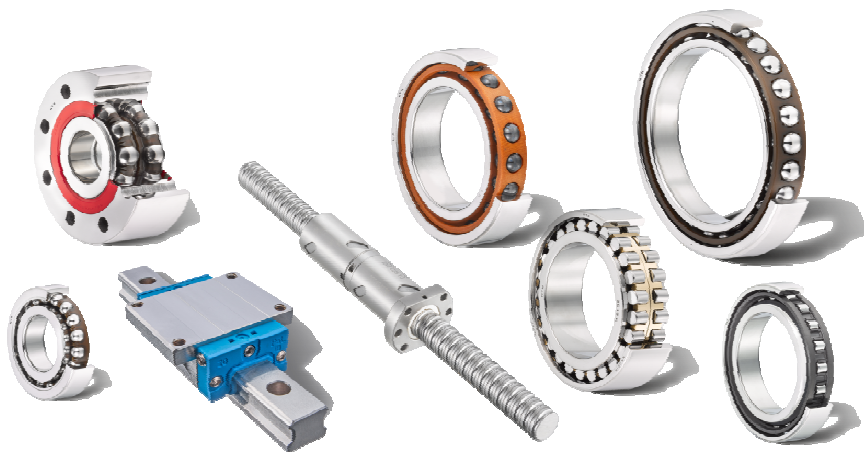


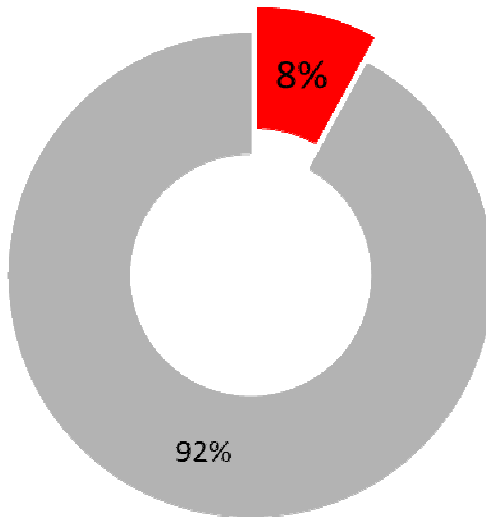
NTN's Super Precision Bearings

We serve your industry



NTN = **N°1** in Japan*,

one of the leading nations on the
high performance machine tool
market.



Machine tool = **8%**

of NTN Global
Industrial sales

* With 45% market share

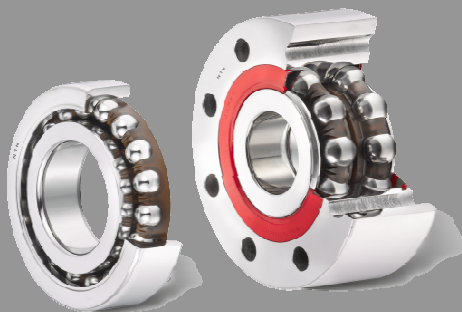


SPINDLE BEARINGS

High precision angular contact ball bearings



BALL SCREW SUPPORT BEARINGS



High precision cylindrical roller bearings



High precision thrust bearings



LINEAR RANGE





With You



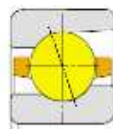
D-MF
MADE IN GERMANY

HPACBB D-MF range overview

Standard High Precision



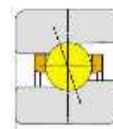
| Contact angles | | |
|----------------|------|------|
| 15° | 25° | 30° |
| Series | | |
| 7900 | 7000 | 7200 |



High speed **HSE**



| Contact angles | | |
|----------------|------|-----|
| 15° | 20° | 25° |
| Series | | |
| 7900 | 7000 | |



Hybrid **5S** as option

With ceramic balls



| | |
|-----------|-------------|
| Speed | +30% |
| Rigidity | +10% |
| Life time | X 3 |

ULTAGE Polyamide cage T2

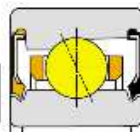
Phenolic cage T1 LA special improved material

Polyamide resin cage High performance seal – High load

Sealed High Precision **LLB**



| Contact angles | |
|----------------|------|
| 15° | 25° |
| Series | |
| 7900 | 7000 |

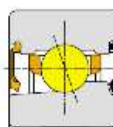


Non contact seal

Sealed High Speed **BNS**



| Contact angles | | |
|----------------|------|-----|
| 15° | 20° | 25° |
| Series | | |
| 7900 | 7000 | |

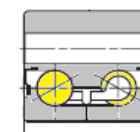


Non contact seal

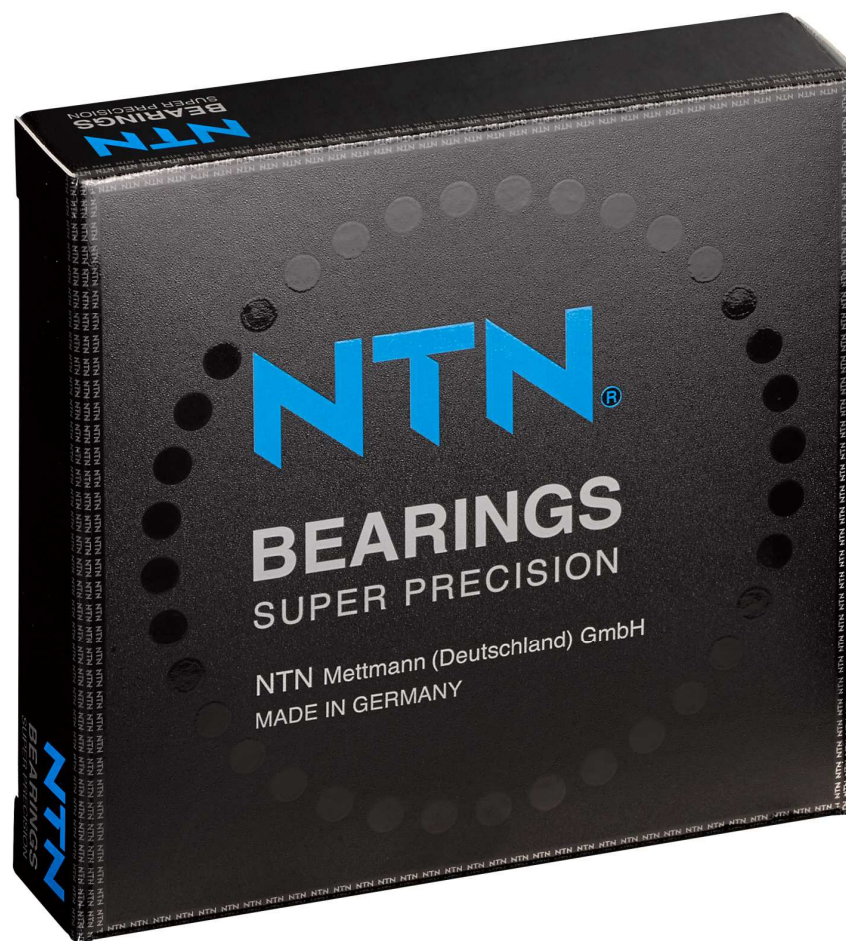
BSTU series



| Execution |
|---------------|
| Sealed |
| Contact angle |
| 60° |



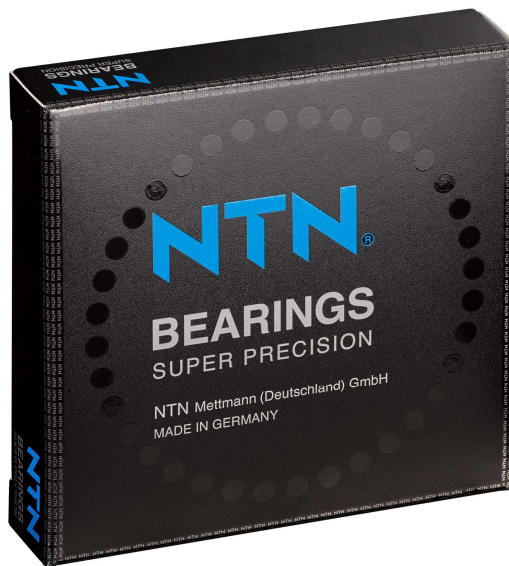
NTN's digital solution for Your Spindle



NTN's digital solution for Your Spindle

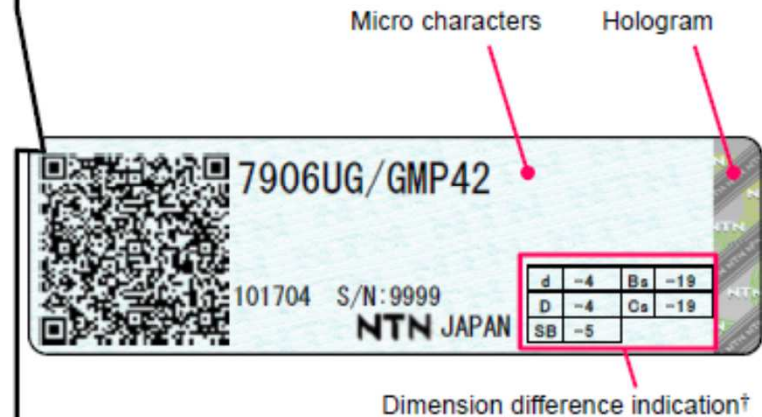
Advantages:

- QR-Code can be scanned → Bearing data for each spindle are digital available
- Easier matching of bearings to sets without opening of bearing box
- Countermeasures for fake



Example; Two-dimensional barcode

P/N 7906UG/GMP42
 Serial N° 9999
 Production date 2017/04/10
 d (Inner ring inner diameter) - 4
 Kia (Inner ring radial runout) 0.9
 Sia (Inner ring axial runout) 1.6
 Sd (Inner ring side runout) 0.5
 D (Outer ring outer diameter) - 4
 Kea (Outer ring radial runout) 1.3
 Sea (Outer ring axial runout) 1.4
 Bs (Inner ring width) -19
 Cs (Outer ring width) -19
 SB (Back face height difference) - 5
 SF (Front face height difference) - 5
 Ts (Bearing height)
 Rs (Radial clearance)
 Identification code



Example of New Label

NTN's Super Precision Bearings

We serve your industry

NTN's Product range

Standard high precision 70U/79U

- Ball guided polyamid cage PA6.6 with special cage design
- Contact angle: 15° , 25° und 30°
- $d_m \times n - 1,15 \times 10^6$ (Grease)
- $d_m \times n - 1,8 \times 10^6$ (Air-oil)

Optional:

- Outer ring guided phenolic resin cage (Suffix: T1A)
- Initially greased bearings
- Ceramic balls (Prefix: 5S)



CUSTOMER BENEFITS

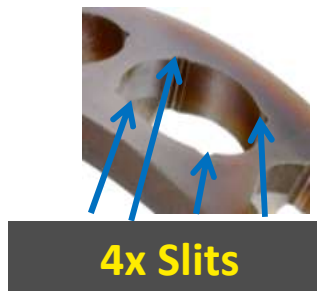
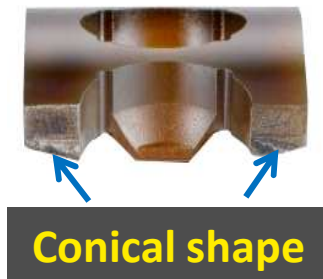
- Less cage noise because of ball guided cage
- Best value for money

Standard high precision 70U/79U

- Ball guided polyamid cage PA6.6 with special cage design

ADVANTAGES

- Improved lubrication:
 - Grease lubrication: improvement in grease retention for a perfect and longer lubrication (because of slits)
 - Air-oil lubrication: optimized lubrication flow inside the bearing to prevent heat generation (because of conical shape and slits)
- Reduced cage noise because of ball guidance



High-speed type HSE9U, HSE0

- Smaller balls than 70/79U to enable high speed performance
- Outer ring guided phenolic resin cage
- Special material (Prefix: 2LA) for rings as Standard
- Contact angle: 15° , 20° und 25°
- $d_m \times n - 1,4 \times 10^6$ (Grease)
- $d_m \times n - 2,2 \times 10^6$ (Air-Oil)

Optional:

- Ball guided Polyamide PA6.6 cage for middle speed (Suffix: T2)
- Initially greased bearings
- Ceramic balls (Prefix: 5S)



CUSTOMER BENEFITS

- Special material enable a higher fatigue lifetime and higher resistance against wear
- Lower maintenance costs

High-speed type 5S- HSEW9U, HSEW0

- Direct lubrication through the outer ring → Spindle can be shorter
- O-Rings on outer ring surface
- Outer ring guided phenolic resin cage
- Ceramic balls as Standard
- Contact angle: 15° , 20° und 25°
- $d_m \times n - 2,2 \times 10^6$ (Air-Oil)



CUSTOMER BENEFITS

- Special material enable a higher fatigue lifetime and higher resistance against wear
- Lower maintenance costs

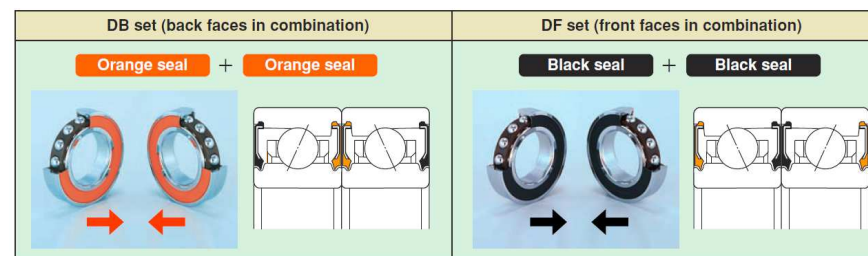
Standard sealed bearings 79LLB, 70LLB

- Ball guided polyamid cage
- Non contacting seals with different colors (LB)
- Long-Life Polyurea grease SE-1 (NTN-Code:L749) NTN- Development
- Contact angle: 15° und 25°
- $d_m \times n - 1,2 \times 10^6$



Optional:

- Outer ring guided cage (Suffix: T1A)
- Ceramic balls (Prefix: 5S)



CUSTOMER BENEFITS

- Reduce cage noise because of ball guided cage
- Different seal colors enable a faster assembly

High speed bearings 2LA-BNS9, 2LA-BNS0

- Outer ring guided phenolic resin cage
- Non contacting seals with different colors (Suffix: LLB)
- Grease reservoir on outer ring
- Special material (Prefix: 2LA) for rings as Standard
- Long-Life Polyurea grease SE-1 (Suffix: L749), NTN- Development
- Contact angle: 15° , 20° und 25°
- $d_m \times n - 1,4 \times 10^6$

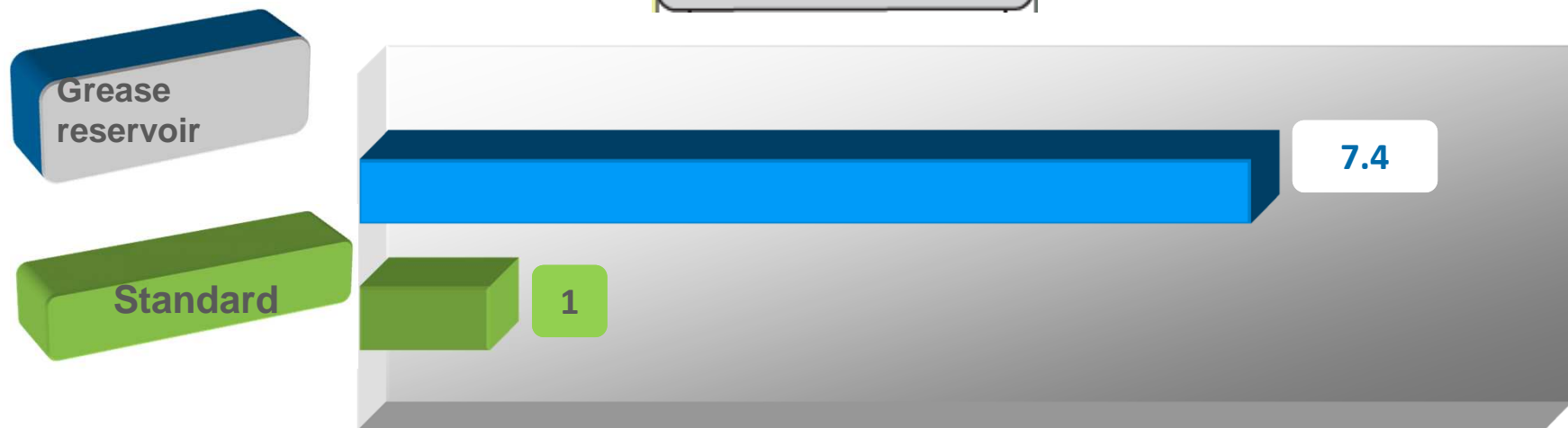
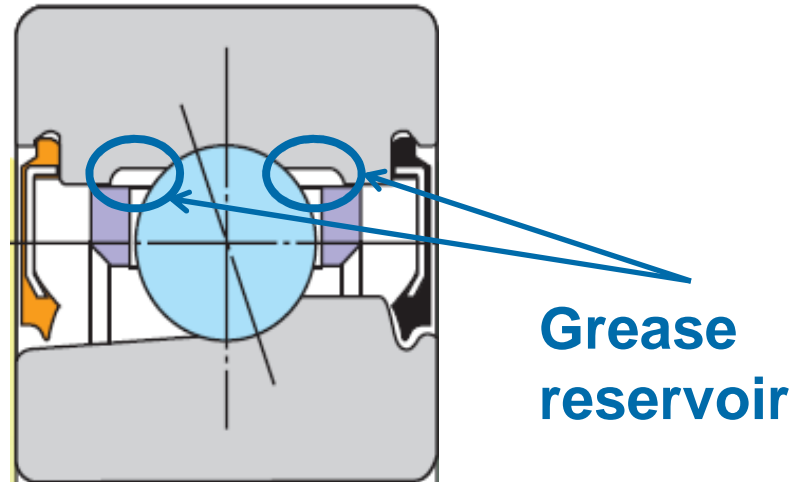


CUSTOMER BENEFITS

- **Lower maintenance costs** (Due to grease reservoir on outer ring → a higher grease amount is possible → grease lifetime can be increased)
- **Cage noise will be reduced** (Due to grease reservoir on outer ring → Grease will lubricate contact between cage and outer ring)
- **Different seal colors enable a faster assembly**

High speed bearings 2LA-BNS9, 2LA-BNS0

- Grease reservoir on outer ring



Effect of the grease reservoir for bearing lifetime

Standard N10..HS

- Roller guided brass cage
- High speed version HS
- Available with cylindrical bore or conical bore (Suffix: K)
- $d_m \times n \ 0,8 \times 10^6$ (Grease)
- $d_m \times n \ 1,3 \times 10^6$ (Air-Oil)



Standard NN30, NN49 oder NNU49

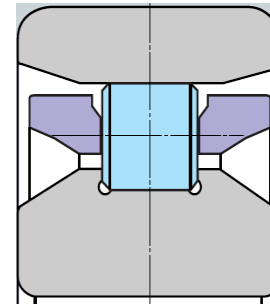
- Roller guided machined brass cage
- Standard and High speed version HS
- Available with cylindrical bore or conical bore (K)
- $d_m \times n \ 0,7 \times 10^6$ (Grease, HS-Version)
- $d_m \times n \ 0,85 \times 10^6$ (Air-Oil, HS-Version)



Cylindrical roller bearings

High speed N10..HSRT6

- Roller guided PEEK cage
- Optimized cage design for an improved supply of lubricant
- Available with cylindrical bore or conical bore (K)
- $d_m \times n - 1,12 \times 10^6$ (Grease)
- $d_m \times n - 2,25 \times 10^6$ (Air-oil)



CUSTOMER BENEFITS

- High Rigid PEEK cage → high speed, no metallic wear (compared to brass cage)
- Easier design of circumference parts (Inner ring and cage has a special design to secure Air-Oil-Inlet)

High speed NN30HSRT6

- Roller guided PEEK Cage
- Optimized cage design for an improved supply of lubricant
- Available with cylindrical bore or conical bore (K)
- $d_m \times n - 1,0 \times 10^6$ (Grease)
- $d_m \times n - 1,75 \times 10^6$ (Air-oil)

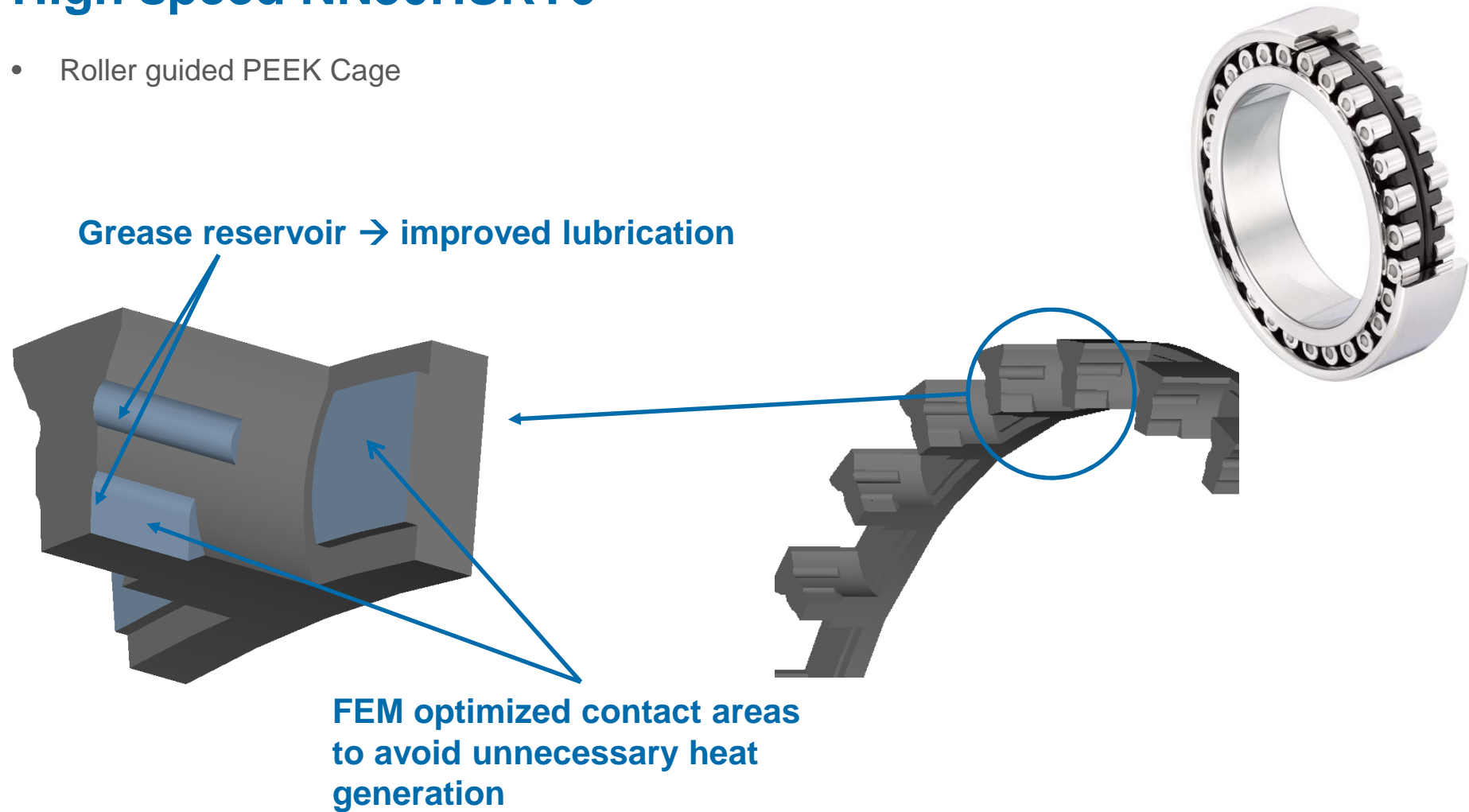


CUSTOMER BENEFITS

- High Rigid PEEK cage → high speed, no metallic wear (compared to brass cage)
- High Speed due to an optimized cage design

High speed NN30HSRT6

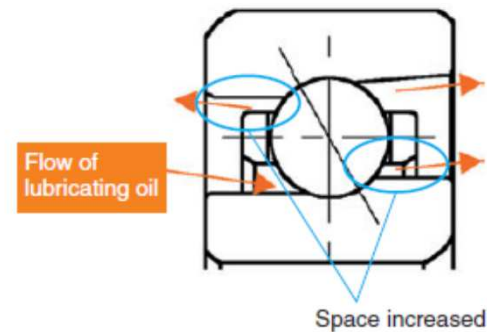
- Roller guided PEEK Cage



Bearings for high axial loads

(5S) HTA9U/HTA0U series

- Available for 70/79 series
- Contact angle: 30° , 40°
- Ball guided polyamid cage PA6.6
- OD is smaller to secure load distribution
- Improved design for an optimized lubrication
- $d_m \times n$: 1,10x10⁶ (Grease)
- $d_m \times n$: 1,45x10⁶ (Air-Oil)



CUSTOMER BENEFITS

- Lower Maintenance costs → high load ratings
- High Speeds due to an optimized inner geometry design

Bearings for high axial loads

5626/5620

- Contact angle: 60°
- Machined brass cage
- Interchangeable to NTN's HTA series
- For vertical shafts → Grease lubrication
- For horizontal shafts → Air-Oil Lubrication



CUSTOMER BENEFITS

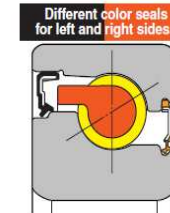
- High accuracy
- High axial rigidity

Universalbearing BST

- Ball guided Polyamid cage
- Universal bearing → easier assembly to bearing sets
- Contact angle: 60°
- Available in open open or sealed version (Light contact seal, Suffix: LLX)
- Special heat treatment (Prefix: 2A-)
- Special grease: L588

Optional:

- Ceramic balls (Prefix: 5S)



CUSTOMER BENEFITS

- Low maintenance costs due to special heat treatment
- Longer service life & High reliability

Ball Screw Support Bearing BSTU

- Ball guided Polyamid cage
- Easy Assembly
- Contact angle: 60°
- Light contact seal (Suffix LLX)
- Special Grease: L588
- Paired version (Suffix: D2)

Optional:

- Ceramic balls (Prefix: 5S)
- Relubrication bores (Suffix: DX)
- Outer ring pull-out groove (Suffix: N)

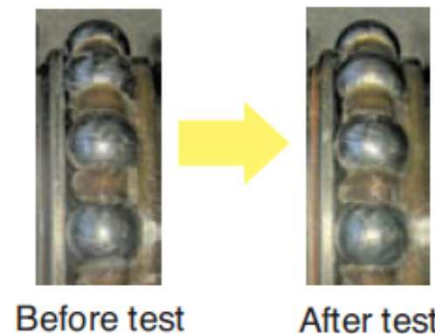
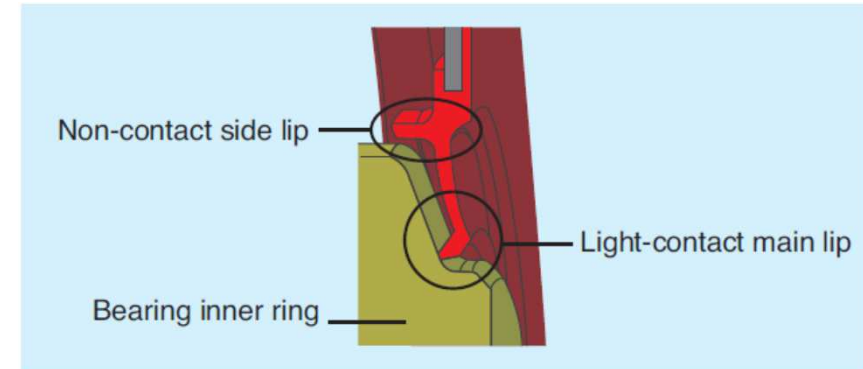
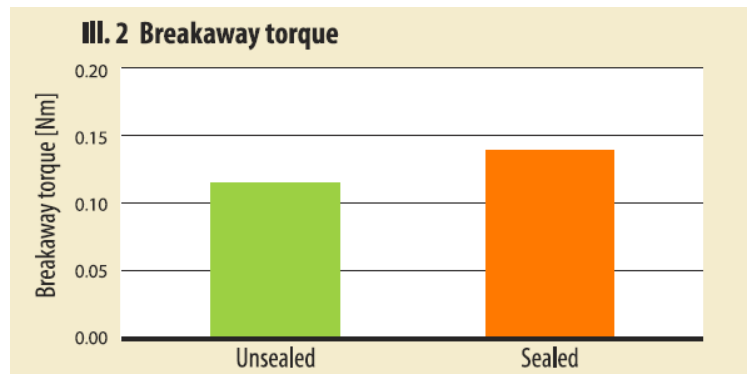


CUSTOMER BENEFITS

- Energy saving → relubrication isn't necessary
- Longer service life & High reliability

Ball Screw Support Bearing BSTU

- Light contact seal (Suffix. LLX)
 - Low torque
 - High sealing performance



Bearing internal conditions before and after test
(with bearing outer ring removed)
No internal bearing penetration of foreign matter observed after test

Standard Material - Premium SUJ2

- European Equivalent for 100Cr6 / 52100
- Through hardened bearing steel
- No Suffix

High Speed Material for Rings LA

- Through hardened special bearing steel
- Rings have an additional special heat treatment
- 6-times higher wear resistance
- 13-times higher fatigue lifetime at room temperature
- 30-times higher fatigue lifetime at 200°C
- 15-times higher Anti Seizure characteristics
- Prefix 2LA
- Standard for HSE, HSF, HSL and BNS



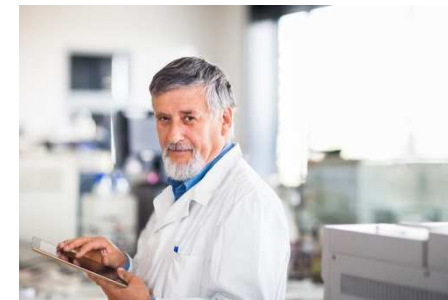
Contact persons in each country

- easier communication
- fast reactivity



Application engineers

- Technical support
- Special knowledge in each market

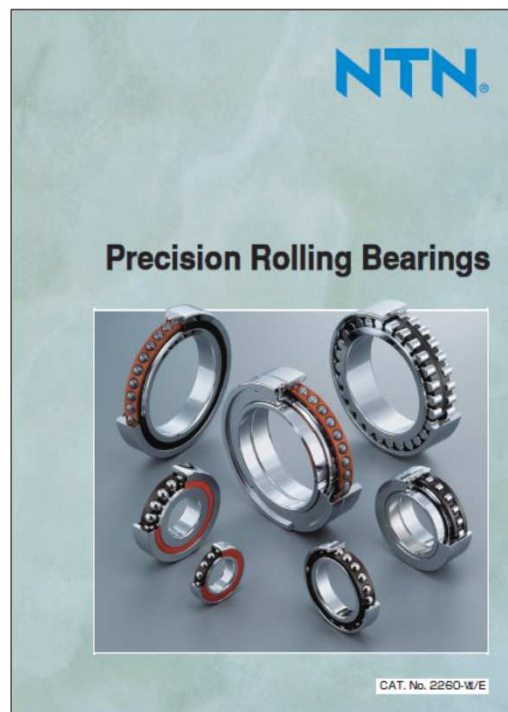


Experts & Tools

- Internal and external trainings

**Experts
& Tools**

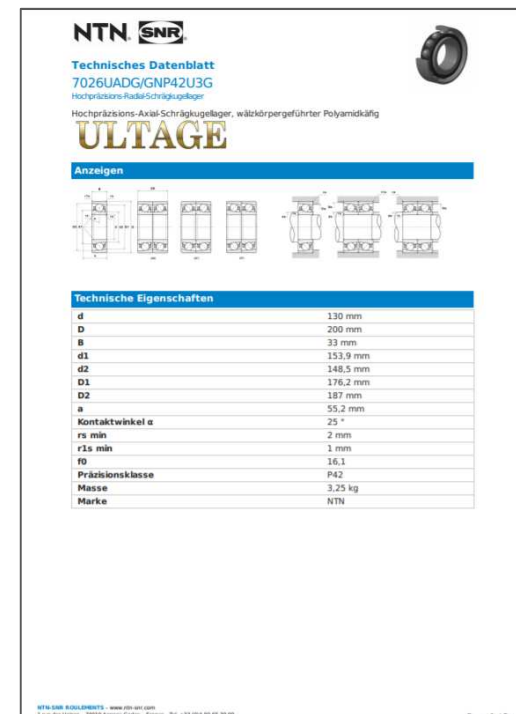




General catalogue



Brochures



Data sheets

www.ntn-snr.com
NTN-SNR E-Shop

Conclusion



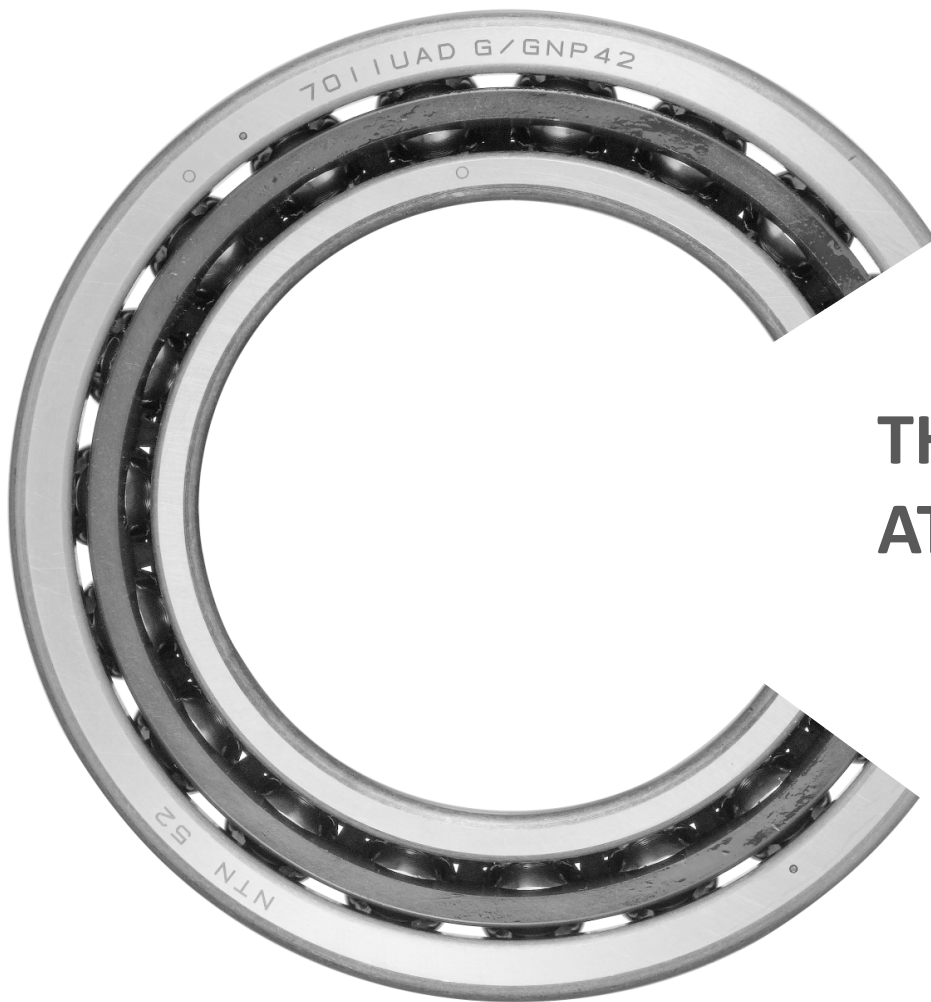
- All the **technology of the Japanese leader** of high precision bearings for machine tool
→ Performance for your equipment



- A **complete and reliable** offer (7 product lines, ULTAGE label)
→ All your machine tool needs



- **European** service and production facilities
→ Service reliability and reactivity



**THANK YOU FOR YOUR
ATTENTION**