



Bearings Engineering for Professionals

NTN-SNR Roulements, part of the 3rd largest bearing manufacturing group in the world, is a major force as a designer, developer and manufacturer. Thanks to its strong brands, NTN-SNR is highly active in the automobile, industrial and aeronautics sectors. Together with TransDev, NTN-SNR offers top quality technical products and can provide specialist solutions.

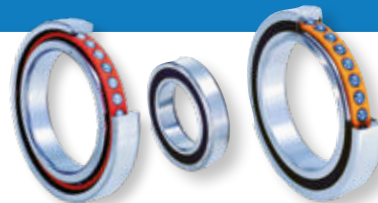
Innovation is a decisive factor in development: anticipating new solutions, enriching bearing functionalities, etc. Whether it is designing Bearings that are more compact, lighter, more economical, reliable and effective, or improving the environment; NTN-SNR are constantly innovating.



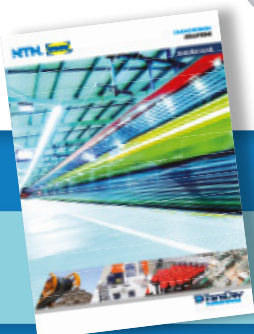
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Searching for your ideal linear solution?
Pick up a copy of our Linear Solutions brochure

Searching for your ideal bearings solution?

Combine genuine NTN-SNR quality with TransDev's motion expertise and complementary product ranges.

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Ball Bearings 4



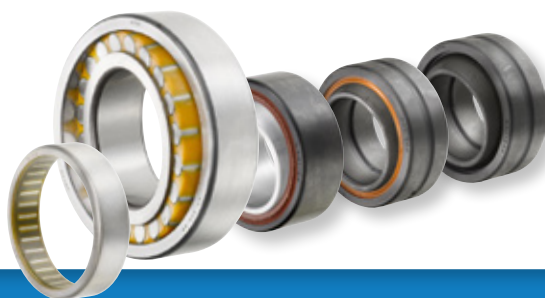
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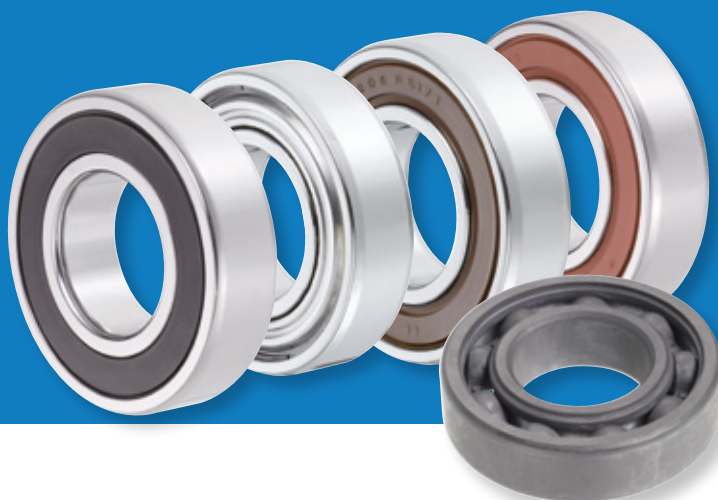


Sealing

Sealed and greased bearings on request

Ball Bearings

The basic bearing of excellence, the ball bearing is designed to accept radial and/or axial loads according to internal design.



Radial Contact Bearings

Standard Ranges

Sheet, solid or reinforced polyamide cage depending on the series and dimensions.

Metric Range

- 1 row: 6700, 6800, 6900, 16000, 6000, 6200, 6300, 6400
 - Miniature range (SEE PAGE 5)
 - Large bearings: bore ≤ 1320 mm
- 2 rows: 4200, 4300

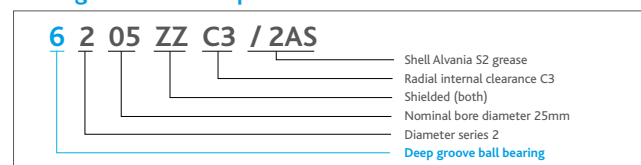
Inch Range (R-)

- Reduced (-C2) or enhanced (-C3, -C4, -C5) internal radial clearances
- Increased precisions (-P6, -P5, -P4)

Ring Modifications

- Presence of a groove on the outer ring with (-NR) or without a snap ring (-N)
- Tapered bore (-K), spherical outer diameter (-S)
- Other materials
 - Case hardened steel (E-)
 - Stainless steel (SEE STAINLESS STEEL RANGE*)
 - Special steel with special heat treatment for long lifetime (TMB-, TAB-)
- Stabilisation for higher-than-standard operating temperatures (TS1 / TS2 / TS3 / TSX)

Bearing Number Example



Specific Ranges

Developed for tough environments.

Expansion Compensating Bearings

- EC: if a tight adjustment on the outer ring (rotating loads on the outer ring) is impossible or a risk of ring rotation exists.
- AC: similar concept to EC- range, the anti-rotation function is provided by two O- rings

*Stainless Steel Range (S- by SNR, F- by NTN): to prevent corrosion (maritime environments, food, etc.)

TOPLINE Range: Standard dimensions for specific applications

Specific restrictions	Characteristics	Suffixes
High temperatures	+150°C	-FT150
High temperatures	+200°C	-HT200
High temperatures	+350°C	-F600
Low temperatures	-60°C	-LT
High speeds	Up to 700 000 NDm	-HV

EMTR Range: low noise quality level with optimised design, especially for electrical motors

MEGAOHM Range: bearings with electrical insulation - mainly for applications with electrical motors and generators

CLEAN Range: for environments with an extreme vacuum (semi-conductors, aeronautics, etc.)

Bearings with integrated sensors (SEE PAGE 15)

Bearings with solid lubrication (SEE PAGE 14)



Possible Cage Variants (suffixes)

Type of cage	NTN	SNR
Brass	-L1	-M
Solid steel	-F1	-
Riveted steel	-JR	-
Reinforced polyamide fibre glass	-T2	-G15

Sealing

Type	Characteristics	Suffixes
Shield	Metal	-Z / -ZZ
Seal	Standard contact	-LU / -LLU (NTN); -E / -EE (SNR)
Seal	Non-contact (labyrinth effect)	-LB / -LLB
Seal	Low torque contact with pressure balancing system	-LH / -LLH
Seal	Standard contact for high temperatures (+150°C)	-LUA / -LLUA
Seal	Standard contact for very high temperatures (+200°C)	-LUA1 / -LLUA1
Seal	Standard contact for extreme temperatures (from -100°C to +200°C)	-LUA2 / -LLUA2

Angular Contact Bearings

High Precision Range (SEE PAGE 12)

Standard Range

Depending on series and dimensions, angle of 30°

- 1 row: 7800, 7900, 71900, 7000, 7200, 7300, 7400
Large bearings: bore < 1060 mm
- 2 rows: 5200, 5300, 3200, 3300
- For series 3200 and 3300, angle 25° or 32°, depending on type

Possible Cages

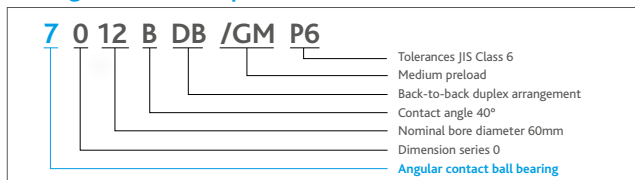
Cage materials	Suffixes
Phenolic resin	T1 -
Sheet	-J
Reinforced polyamide fibre glass	-G15 (SNR) -T2 (NTN)
Brass	-M (SNR) -L1 (NTN)
Solid Steel	-F1 (NTN)

Variants	Brands	Suffixes
Angle at 25°	NTN	-AD
Angle increased to 40°	NTN and SNR	-B
Universal fitting with no pre-load	NTN and SNR	-G
Non-contact metal protection flange	NTN and SNR	-ZZ
Contact seal	SNR	-EE
Non-contact seal (labyrinth effect)	NTN	-LLB

4-Point Angular Contact Bearings

Standard Range: Solid cage (-M by SNR, -L1 by NTN): QJ200, QJ300

Bearing Number Example



Double-Row Self-Aligning Ball Bearings

Standard Range

Sheet or reinforced polyamide fibre glass cages

- (-G15 by SNR, -T2 by NTN)
- Series 1200, 2200, 1300, 2300

Possible Variants

- Contact seal (-EE, SNR)
- Tapered bore (-K)
- Large inner rings for series 11200 and 11300



Miniature Bearings

Standard Range: 670, 680, 690, 600, 620, 630

- With or without shield
- With or without seal
- Range with flange (FL-)
- Metric or inch (R-)

Range with rubber dampers (F-SX)

Pivot bearing range (BCP-)

Stainless steel bearing range (F-)



Thin-Section Bearings

Type of contact	Prefix / Suffix
Radial	KR
Angular	KY
4 points	KX

Also deliverable with seals



LUBE Solutions

LUB'SOLUTIONS provides support for your lubrication project, from design to installation; offering lubricants specially selected for your applications and single-point or multi-point lubrication systems, according to your process size and requirements.

Cartridges and tanks from 400g up to 190 kg.



Automatic Single-Point Lubricators



Automatic Multi-Single Points



Universal



Duty



Vib



High Temp



Ultra High Temp



Food AL



High Speed



Chain Oil



Food Chain Oil

Tapered Roller Bearings

These accept high radial loads and axial loads in one direction. They are generally fitted opposite a bearing of the same type. Load capacity depends on contact angle.



NTN Bower Range

Wide range of tapered roller bearings with inner diameters up to 16 inches.

Steel

- Through hardened bearing steel
- Vacuum degassed case hardened steel (4T, ET) and special heat treatment for a longer service life (ETA / ECO)

Cage

- Generally equipped with a steel sheet cage
- Solid or steel pin-type cages for large bearings
- Fibre glass reinforced polyamide cage possible depending on the application for smaller bearings

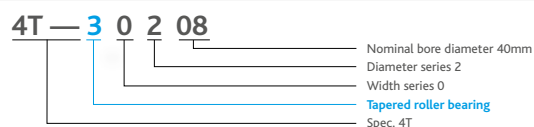
Small Torque Specification

- Bearing identified with the suffix -ST:
- Reduced drag torque
- Reduced heating
- Improved seizure resistance
- Simplified adjustments at assembly

Eco-Top Range: For Challenging Applications

- Life time: +180% compared to through hardened steel
- Optimised design, enhanced service life, more compact bearing and reduced energy consumption

Bearing Number Example



1 Row

- Metric dimensions: ISO 355 and JIS B 1512 standards
- Available with contact angles, spread from 10° to 31°, including 2 series of large contact angle (T7FC and 303xx D)
- Inch dimensions: ABMA standard (including J metric series)
- Can be equipped with flanges



2 Rows

- Appears in the same form as two single-row bearings
- Fitted face-to-face or back-to-back, with metric or inch dimensions
- One-piece outer or inner rings
- Single-row assemblies with spacers also exist



4 Rows

- Composed of two double cones, two single flanges and one double flange
- Extended service life, thanks to the use of case hardened steel, hollow rollers and pin-type cages
- Very high load capacities, adapted to rolling type applications
- Available in sealed version (-LL) and ULTAGE range (SEE PAGE 13)



Spherical Roller Bearings

This unit compensates for shaft bending and absorbs misalignment defects. These accept high radial loads and axial loads in both directions. Available with tapered or cylindrical bores. Tapered bores are delivered with adapter or withdrawal sleeves.



NTN-SNR High Performance Range

Series: 21300 / 22200 - 22300 / 23000 - 23100 - 23200
- 23800 - 23900 / 24000 - 24100 - 24800 - 24900

- High performance standard. Optimal quality steel, geometry and optimised surface conditions. Maximum dynamic load capacity. Service life of the bearings (X2)
- Increased speed limits
- Reduced energy consumption
- Reduced dimensions for identical performance
- Allow to extend intervals between maintenance actions, reduced environmental impact

+24%
for load capacity.

x 2
minimum for service life.

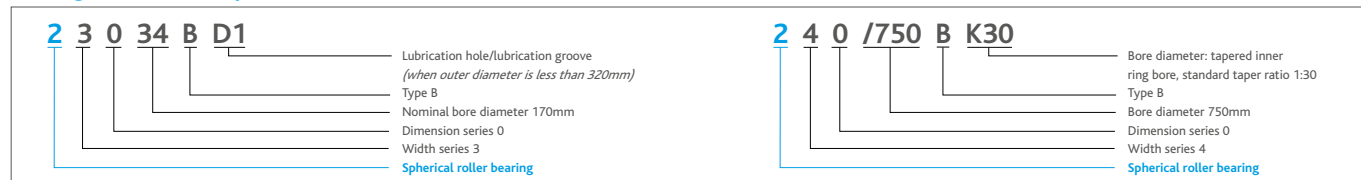
NTN Range

- Large dimensions range D>650 mm: suffix B (NTN)
- Type B. Asymmetric rollers. Reduced vibrations and low operating temperatures

Suffixes

Description	Suffixes
Category 2 ISO radial clearance	C2
Category 3 ISO radial clearance	C3
Category 4 ISO radial clearance	C4
Category 5 ISO radial clearance	C5
Tapered bore 1/12	K
Tapered bore 1/30	K30
Groove and relubrication holes on the outer ring	W33

Bearing Number Examples



Lubrication

To improve lubrication, bearing is supplied with a groove and lubrication holes in the outer ring. Series 21300: without holes or grooves in standard. With holes or grooves on request.

Vibrating Applications

- Designations: EF800 (SNR) ULTAGE
- Solid brass cage, reduced diameter tolerances and special clearance
- Designed to absorb higher accelerations than standard bearings
- Anti-fretting corrosion treatment on the inner ring (MX- prefix option)



Special Bearings

- Bearings with case hardened inner ring (NTN range); for printing or paper machines
- Bearings for high temperature operation (>200°C)
- Railway, steel, mining and quarry applications
- Split bearing
- Bearings with solid lubrication (maintenance-free)

Cage Variants

Cage Materials	Description	Temperature
Steel sheet EA by SNR, - by NTN	Standard applications	Up to +200°C
Solid steel (F1) and brass L1 by NTN, M by SNR	Severe applications	Up to +200°C
Fibre glass reinforced polyamide T2X by NTN, G15 by SNR	Standard applications	Up to +150°C

Cylindrical Roller Bearings

These bearings are highly rigid and can absorb high radial forces. Cage versions accept higher speeds than full complement versions. Equipped with separable rings, dismounting and withdrawal are simple, even when tight clearances are necessary.



1 Row with Cage

Standard Range

- ISO standard: NU, N, NJ, NF, NUP, NH, RNU, HJ
- Series of bearings: 200, 300, 400, 1800, 1900, 1000, 2900, 2200, 2300, 3800, 3100, 3200, 3300
- US types (BOWER): M, W

Possible Variants

- Tapered bore (K)
- Grooves with (NR) or without a snap ring (N) on the outer diameter to simplify assembly
- Fully case hardened bearings for types M and W (BOWER)
- Shoulder rings (HJ-)

Specific Applications

- MEGAOHM range: bearings with electrical insulation, mainly for applications with electrical motors and generators

Suffixes

Description	NTN	SNR
Increased capacity design	E	E
Fibre glass reinforced polyamide +120°C (continuous)	T2	G15
Fibre glass reinforced polyamide +150°C (continuous)	T2X	-
Massive brass cage roller centered	-	M
Massive brass cage inner or outer ring guided	G1	-
Massive brass cage in two parts, inner or outer ring guided	L1	-
Massive steel cage in two parts, inner or outer ring guided	F1	-
Pressed steel cage	J	-
NUP types : washer bore diameter not grinded	U	-

2 Rows with Cage

Standard Range: NN and NNU with solid cage

- Series: 3900, 3000, 3100, 4800, 4900, 4000
- Type NN and NNU bearings: also available with a tapered bore
- Types of applications: machine tools
(SEE HIGH PRECISION PAGE 12) or heavy industry

2 Rows Full Complement (Type SL)

Range suitable for high radial loads and/or to meet the need for excellent rigidity

- Types SL01, SL02 and SL04 can absorb axial forces in both directions, in addition to substantial radial forces

Possible Variants

- Grooves for snap rings in the outer ring (series SL04) for pulley applications, for example Double sealing (LL)

4 Rows with Cage (Type 4R)

Bearings with solid cage, also available in large dimensions (d. ≤ 1200 mm)

Possible Variants

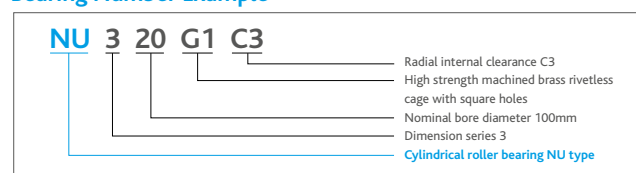
- Case hardened or carbo-nitrided steel for improved resistance
- Lubrication holes

Crossed Roller Bearings (Type Qr)

Suitable for high rotation precision combined with high forces

- Types of applications: robotics, indexing tables

Bearing Number Example





Thrust Bearings

Thrust bearings are designed to maintain the shaft in one single direction. They allow low rotating speeds and sustain high axial loads. You are strongly advised against submitting them to radial loading.

Spherical Roller Thrust Bearing

Composed of 2 separable elements and able to absorb very high axial loads and high radial loads (approx. 50% of the axial load).

- Can absorb misalignment of approximately 3°
- Series: 29000 - Steel sheet cage: version E optimised, interchangeable
- Lubrication - Oil lubrication required by design

Thrust Ball Bearing

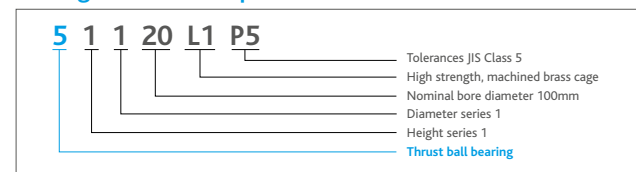
For axial load only

- Series: 51000

Tapered Roller Thrust Bearing

For further information, please refer to your TransDev sales contact.

Bearing Number Example



Tools, Components and Accessories

Mounting & Dismounting Tools

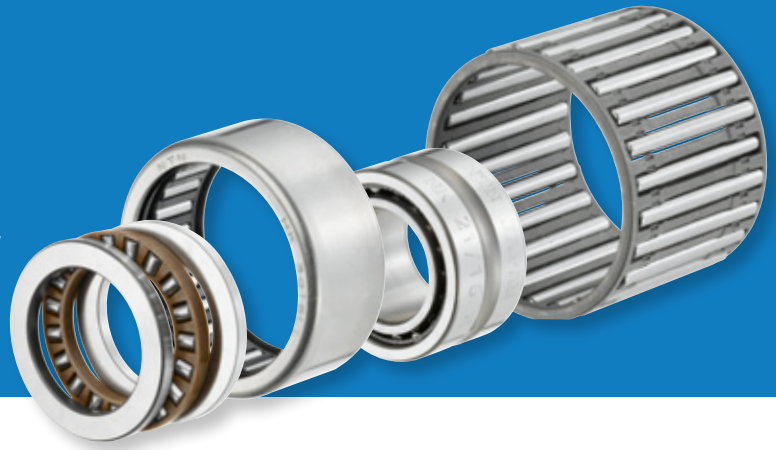
Mounting and dismounting a bearing: these essential stages determine the life span of the installation as well as its correct operation.

- Cold mounting
- Hot mounting
- Hydraulic mounting
- Dismounting tools
- Instruments



Needle Bearings

These bearings are mainly selected for constructions requiring reduced radial dimensions and maximum rigidity and load capacity. They have little resistance for axial forces (except Thrust and Combined bearings).



Roller and Cage Assemblies

A needle cage comprises an inseparable cage and needles and can be used to design very compact, light, constructions with maximum capacity. The shaft and housing act as a raceway and must be machined in compliance with hardness, geometry and roughness characteristics. The needles are guided precisely, therefore the needle cage can absorb much higher speeds of rotation than contact needles.

Material and Cage Variants

Types	Characteristics	Suffixes
K	Fibre glass reinforced polyamide	-T2
K or KJ	Welded pressed steel cage	-S
GK / GPK	In two parts	
K	Two rows	-ZW
KBK	For piston pins application	
KV	For piston pins application	-S
PK / GPK	For crank pins application	
KMJ	For crank pins application	-S

Roller Thrust Bearings

Needle or roller thrust bearings are designed to absorb axial forces in one direction only. Support surfaces used as raceways must be ground and hardened.

Needle thrust bearings: type AXK11

Roller thrust bearings: series 811, 812, 874 and 893

- Available with Polyamide cage (-T2), Aluminium alloy cage (-: lightness and enhanced performance when lack of lubricant) or pressed steel cage

Washers:

- Type AS11 washers are thin (1 mm), therefore their support surfaces must be flat and rigid enough
- Types WS (centered on the shaft) and GS (centered on the housing) are more rigid

Drawn Cup Roller Bearings

Compact and light, mainly used in applications with low loads, needle sockets represent a low-cost bearing solution; the outer ring is not machined, but is obtained using precision pressing processes. It must be noted that the geometry of the raceway depends on the geometry of the housing (the low thickness of the outer ring only provides the hardness and roughness necessary for the raceway).

- Standard (HK) and heavy (HMK) series, available with or without sealing, with open or closed ends (BK, BMK)
- Some dimensions are delivered with 2 rows of needles (-ZW)
- Inches versions with cage (DCL, SCE) and contact needle versions (HCK)
- NTN drawn cup needle roller bearing offer:
 - *simplified adapting thanks to an ideal geometry*
 - *an improved service life: specific treatment of the cage and needles*

With Solid Rings

Needle roller bearings with solid rings are mainly used in applications with high loads.

Inseparable versions: with or without an inner ring

- Series 48, 49, 59 and 69. (Series 49 is also available with simple or double sealing)
- NK series:** also deliverable with the inner ring (NK+IR designation). If the bearing is used without an inner ring, the shaft will act as a raceway and must be machined appropriately

Separable versions: RNAO and NAO

- With these versions, the inner and outer rings and the cage can be separated, opening up more assembly options.
- The inner rings are delivered separately
- Versions with plunge grinding for seal support surfaces are also available
- These solid rings and needle bearings are also available in inch dimensions. (MR,MI)

Combined Bearings

When the application requires resistance to forces combined with substantial rigidity or minimum room, the use of combined bearings offer some benefits. Depending on the type of bearings, axial forces may be absorbed in one or two directions.

- Uni-directional axial forces. The thrust part may comprise, either:
 - a radial contact (NKX) or angular contact (NKIA) ball bearing
 - rollers for high axial loads (NKXR)
 - If the unit must be inseparable, a flange (-Z) is proposed
- Two-way axial forces. Depending on the intensity of the forces, the thrust part will consist of needles (AXN) or rollers (ARN)



Bearing Number Example



Cam Followers

Cam followers are used for applications requiring guidance, with minimum contact with cam and the linear guidance systems. Cam followers applications are very different to bearing applications. The cam follower is not fitted in a housing and its thicker outer ring rolls directly over a surface to provide guidance.

With or without a seal, with an outer ring with a convex or cylindrical profile, all cam followers are proposed:

- **Contact needle version:** (KRV-NATV) to accept significant loads
- **Cage version:** (KR-NATR) to accept higher speeds

Versions with 2 rows of contact bearings also exist to increase capacity (NUTR, NUTW et NUKR)

- **Stud Type:** threaded shaft has a slot head or hex head screwdriver tightening system to simplify the attachment of the roller on the support surface. These rollers may be regreased by the shaft
- **Yoke Type:** with or without lateral guidance



Self-Aligning Bearing Units

- Standard range with more than 25,000 solutions
- Bearings with solid grease (Spot Pack)
- Bearing units with EN-GJS grey cast housings (ductile)
- Bearing units with rolled steel housings
- Bearing inserts with rubber damping rings
- L4 bearing inserts with sealing system for high demands
- Special Food solutions
- Customised solutions for self-aligning bearing units, plummer block units and bearing systems



High Precision Bearings

These bearings are mainly selected for constructions requiring reduced radial dimensions, maximum rigidity and load capacity. They have little resistance for axial forces (except Thrust and Combined bearings).



MACHLINE® by SNR - High precision bearings for machine-tool spindles

Precision, stiffness, high speeds

SNR High Precision bearings meet the most stringent needs. They also permit machining timesavings as well as maintenance cost savings. Their good load capacity and low heating feature contribute to a longer service life.

High Precision MACHLINE: Standard

71900V and 7000V series:

- An ideal compromise between performance in terms of speed, rigidity, capacity and precision

7200G1 series:

- Specially designed for applications with predominantly high axial loads
- Variants depending on contact angle: C for 15°, H for 25°
- Variants depending on preload: light, medium, high
- Hybrid versions available as option (ceramic ball)



MACHLINE ML: High Speed

Designed and developed to meet the toughest requirements for high-speed applications; 30% extra speed thanks to:

- An optimised geometry
- A reduced ball diameter
- An increased number of balls
- Optimised guidance of the cage on the outer ring
- Hybrid versions available as option (ceramic ball)



MACHLINE MLE: Sealed

Nitrile seals fixed on the outer ring, with no contact with the inner ring. Can be used to maintain the same maximum speed as with an open bearing. Lubricated with grease.

- Hybrid versions available as option (ceramic ball)



Self-locking Precision Nuts

Indispensable for all assemblies of precision bearings, especially when the preload and long-term reliability of an assembly must be guaranteed, or if high axial forces exist.



Bebox Training

In conjunction with NTN SNR, TransDev is pleased to be able to offer onsite and offsite training to help improve bearings knowledge and usage.

For further information please contact your TransDev sales representative.



ULTAGE by NTN - Performance at all levels

Higher machine efficiency

Thanks to reduced friction, the optimised internal design offers higher speeds. As a result, the performance is extended and the operating temperatures are kept lower.

Lower maintenance cost

Thanks to their dynamic load capacities, among the highest on the market and the optimisation of all constituent parts of the

bearing, you benefit from a doubled service life compared to a standard solution, an improved reliability for your installations and reduced operational costs.

Reduced environmental impact

With a solution in compliance with the new environmental challenges, you benefit from less noise, less friction, reduced power and lubricant consumption.

Angular Contact Ball Bearings

Standard range: 70U, 72, 78, 79U

- Optimised internal design
- Fiber glass reinforced polyamide cage guaranteed improvements in rigidity, reliability and improved ball guidance and substantial reduction in noise
- Contact angles: 15° (C), 25° (AD), and 30° (-)
- Hybrid version with ceramic balls as option (prefix 5S)



High speed series: HSE

- Special 2LA- steel
- Optimized internal design and surface condition.
- Phenolic resin cage
- Improved bearing performance, improved resistance, lower operating temperatures at maximum speeds
- Contact angles: 15° (C), 25° (AD), and 30° (-)
- Hybrid version with ceramic balls as option (prefix 5S)



Ultra high speed series : HSF

- Special 2LA- steel
- Smaller ceramic balls (prefix -5S)
- Reduced temperature at higher speeds and improved service life
- Contact angle: 25° (AD)

Sealed Series

	Standard LLB	High speed, BNS LLB
Series	70 and 79	BNS0 and BNS9
Contact angle	CD for 15°, AD for 25°	C for 15°, - for 30°, AD for 25°



Cylindrical Roller Bearings

Double row: Standard NN (U)49 (K), NN30 (K), High speed NN30 HS (K)

- Machined brass cage

Single row: N series, High speed HS and Ultra high speed HSR

- High strength machined brass cage for HS types
- Special molded resin cage for HSR types
- Optimised internal designs allow higher speed limits and result in lower temperature rise



Ball Screw Support Bearings

BST: Single row, open or sealed types

- Surface optimised treatment on the bearing race way for a longer bearing life and improved fretting resistance
- Sealed types with a special grease, to reach a longer life and simplify maintenance work

BSTU: Single or double row, sealed

- Highest load rating
- Low friction contact-type seal
- Special long-life grease
- Easy mounting

Others

- Needle bearings AXN, ARN



Other Bearings

Thrust ball bearing:

- Single row HTA
- Double row 5629XX, 5620XX

Specific Ranges



Bearings with Solid Lubrication

Bearings with solid lubrication are manufactured under the NTN brand (**SolidGrease**) and the SNR brand (**LubSolid**). They require a special grease, solidified after injection in the bearings, which can retain a greater quantity of oil than standard grease, as required for the lubrication of the bearing during operation.

- No service
 - Reduced, or even zero, servicing
 - Less servicing for inaccessible bearings
- Resistance to contamination
 - High performance in dusty and/or humid environments
 - The use of sealed bearings is recommended for applications with high levels of contamination. This type of lubrication can be used to improve bearing sealing
- No grease leakage
 - No grease leakage and low oil leakage: guaranteed clean operation
- Excellent resistance to centrifugal forces, vibrations and low-scale oscillations
 - Lubricant is in the form of a solid mass, ensuring: excellent resistance to centrifugal forces from the amount of oil necessary for satisfactory operation
- Low start-up torque
 - "SPOT PACK" type bearings: very low start-up torque at ambient temperature

NTN-BCA® Ball Bearings

Whether in metric or inch dimensions, standard or customised, NTN-BCA® manufactures multiple products, even in small quantities.

- Metric or inch radial ball bearings
- Angular contact bearings
- Mounted bearing units / bearings
- Special agricultural bearings for plough discs
- Mast rollers / chain guide bearing units
- Flat and/or non-circular bearings
- Clutch products
- Wheel bearings
- Pulling or transfer pulleys



Version	Brands	Type	Filling	Operating temperature
Standard	NTN	LP03	Full & Spot	-20°C to +60°C continuously, +80°C intermittent
	SNR	GEN1 (LSO) - GEN2*	Full & Spot (GEN2)	-20°C to +100°C continuously
High temperature	NTN	LP05	Spot	-20°C to +100°C continuously, +120°C intermittent
	SNR	GEN2*	Full & Spot	-20°C to +150°C continuously
Low temperature	SNR	GEN1 (LSF)	Full	-40°C to +110°C
Food	NTN	LP06 / LP09	Full & Spot	-10°C to +80°C continuously, +100°C intermittent
	SNR	GEN1 (LSA)	Full	-50°C to +100°C continuously
Special needle bearings	NTN	LP03	Full	-20°C to +100°C continuously, +120°C intermittent
	SNR	GEN1	Full	-20°C to +100°C continuously

* GEN2 on process, small quantities only

Bearings with Integrated Sensors

Integration of a speed and/or position measuring function, in the bearing function

- Basis bearing: LU sealed version (unilateral), greased.
A magnetic encoder is fitted opposite the seal on the inner ring, with a sensor on the outer ring. The sensor detects the magnetic variations induced by the rotation of the encoder. The sensor then emits an output signal, enabling the electronics to recalculate the speed of rotation. By modifying the type of magnetic encoder, it is also possible to measure angular position.
- Range: 6202 to 6210
- Service temperature: from -40° to +120 °C



Radial And Axial Plain Bearings

The range includes plain bearings steel / steel (lubrication required) and in steel / self-lubricating (PTFE + inner ring with hard chromium plating):

Steel/steel

Series	Definition
SA1	Equivalent to ISO "E" series
SA1 ..SS	Identical to SA1, but with seals
SA2	Inch plain bearing
SA4	Increased dimensions
SAT	Axial plain bearings

Steel/self-lubricating

Series	Definition
SAR1	Equivalent to ISO "E" series
SAR1 ..SS	Identical to SAR1, but with seals
SAR2	Inch plain bearing
SAR4	Increased dimensions



Industrial Constant Velocity Joint

The range includes entirely constant velocity joints, even for large angles, with the following characteristics:

3-ball joints (TBJ)

- Standard catalogue components
- Sealed with life-long greasing
- Flange or direct shaft assembly
- Single or double-effect
- Drive torque: from 3.2 to 1500 kgf.m



6-ball joints (BJ)

- High power constant velocity joints
- Supplied with fixed or sliding shafts
- Open or sealed
- Drive torque: from 155 to 6440 kgf.m



Applications: machine tools, glasswork, industrial washing machines, agricultural machines, industrial packing machines, vibrating platforms, steel and metal industry, crushers, screeners.

Tension Leveller

Complete assemblies equipped with low-torque bearings and with a ground outer diameter. CU type leveller cylinders can be used to absorb radial and axial loads thanks to angular contact ball bearings, while maintaining high rotational precision and compatibility with high speeds.

- Equipped with baffle-type low-torque seals
- For higher loads, these components can be equipped with needle bearings (type NKZ), enabling an increase in load capacity for the entire assembly, while maintaining very high rotational precision and a compact format.
- Cylinder lengths are adapted to each application based on a standard range of defined diameters.

Split Bearing

For some applications, it is not possible to fit traditional bearings, therefore split bearings must be used. Mounting, dismounting and maintenance are all simplified.

Possible variants

- Cylindrical roller bearings
- Spherical roller bearings
- Needle cages, needle bearings
- Complete bearing units equipped with cylindrical roller bearings, with no cage for steel and iron units (continuous casting)

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