

NTN[®]

[KIZEI][®]

ISOSPHERICAL ROLLER
BEARING WITH SHIELDS



CAT. A-4105

IBT

INDUSTRIAL SOLUTIONS[™]

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NTN[®] **SNR**[®]

[KIZEI][®]

A UNIQUE INNOVATION ON THE MARKET

The ISO spherical roller bearing with metallic shields by NTN-SNR.

The NTN-SNR R&D department developed an unprecedented solution for the market to extend spherical roller bearing service lifetime.

This exclusive product improves your equipment output.

ON THE MARKET TODAY:

FIELD SITUATION ANALYSIS WITH AN OPEN SPHERICAL ROLLER BEARING

Based on NTN-SNR lab internal analysis

21%

of failures
due to solid pollution

13%

of failures
due to lubrication issues

With KIZEI, change the game!

- Protection against external solid contamination
- Improvement of grease retention inside the bearing
- ISO dimensions to easily replace existing open spherical roller bearings

[KIZEI]



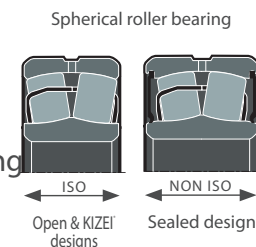
[KIZEI] Technical features

ULTAGE[®] LOAD RATINGS AND SPEEDS

- Designed and manufactured in accordance with NTN premium class specifications
- Satisfies the most stringent quality requirements

ISO DIMENSIONS

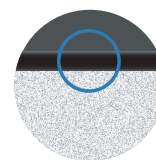
- Same width as open spherical roller bearing
- 100% interchangeable with open spherical roller bearing
- Operational even in tight housings



Open spherical roller bearing

HIGH QUALITY NITRIDED STEEL CAGE AND SHIELDS

- Maximized shock resistance
- Optimized corrosion resistance



WIDE WORKING TEMPERATURE RANGE

- Same temperature range as open spherical roller bearing (from -40°F up to +400°F)
- Dimensional stability up to +400°F



EASY LUBRICATION

- Delivered without grease
- Initial lubrication process similar to open spherical roller bearing
- Lubrication in service possible thanks to dedicated holes and groove on outer ring



OPTIMAL MISALIGNMENT

- Similar to open spherical roller bearing
- Possible internal inspection to facilitate maintenance



SIMPLE MOUNTING

- No special tool required: standard sleeves, nuts and washers can be used
- Possibility to check clearance after mounting





CUSTOMER BENEFITS:

- Optimized production output due to longer service life
- Reduced maintenance costs
- Easy to use



Optimized production output

▶ INCREASE YOUR MACHINE RELIABILITY

EXPERIENCE DRIVEN IN A QUARRY

Application: Quarry conveyor



Reduced maintenance costs

▶ MAXIMIZE YOUR PROFITS

EXPERIENCE DRIVEN IN A CEMENT PLANT

Application: Bucket elevator

| | Open spherical roller bearing | [KIZEI] |
|-------------------|-------------------------------|--------------|
| Life time | 1 month | 3 months |
| Production stops | 12 times/year | 4 times/year |
| Maintenance costs | 100 | 30 |

A 70% reduction in maintenance costs

Easy to use

► ISO DIMENSIONS

► HOW TO MOUNT KIZEI:

Mounting and dismounting conditions are, in every aspect, similar to an open spherical roller bearing.

- Standard accessories
- Possible measurement of clearance




► HOW TO GREASE KIZEI:

- KIZEI bearings are sold ungreased so it is very important to add grease before being mounted in the application.
- The proper amount of grease depends on bearing size and can be referenced on Page 7.



NTN-SNR SPHERICAL ROLLER BEARINGS: the most complete range on the market

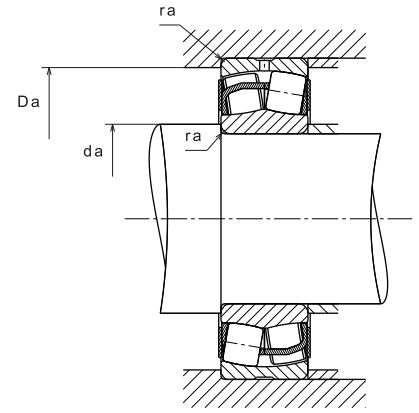
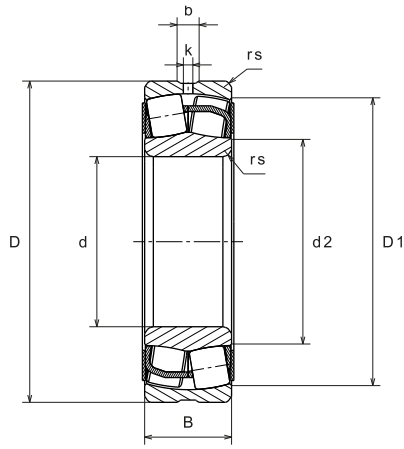
KIZEI, the viable alternative for dirty environments.

| | OPEN  | [KIZEI]  | SEALED  |
|-----------------------|---|--|---|
| Dimensions | ISO | ISO | Special |
| Protection | 0 | +* | ++ |
| Grease retention | 0 | + | ++ |
| Temperature range | -40°F to +400°F | -40°F to +400°F | +14°F to +250°F |
| Speed limit | ++ | ++ | + |
| Load rating | Ultage | Ultage | Ultage |
| Clearance check | Yes | Yes | No |
| Internal check | Yes | Yes | No |
| Sleeve & Nut | Standard | Standard | Special |
| Delivered with grease | No | No | Yes |

* Suitable for solid dust proofing – no liquids.

ULTAGE[®]

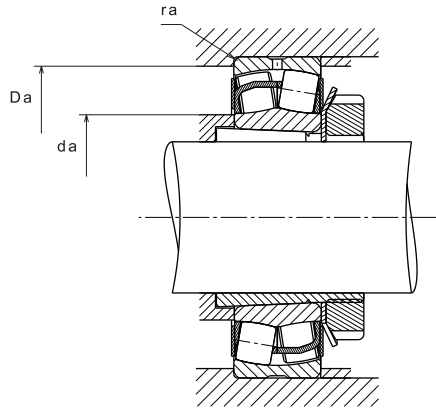
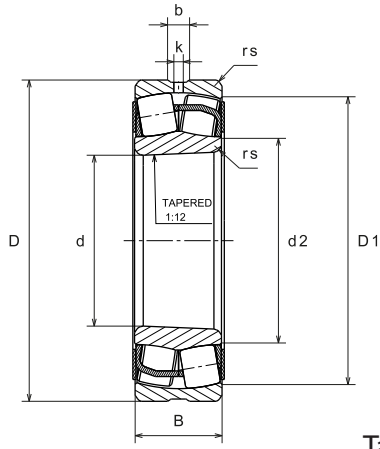
[KIZEI][®] RANGE



Cylindrical Bore

| Bearing Number ¹ | | Dimensions mm | | | | | | | | Abutment dimensions mm | | |
|-----------------------------|---------------|---------------|-----|----|-----|-------|-------|-------|-----|------------------------|--------|--------|
| Cylindrical Bore | Tapered Bore | d | D | B | rs | D1 | d2 | b | k | da min | Da max | ra max |
| 22208EAW33ZZ | 22208EAKW33ZZ | 40 | 80 | 23 | 1.1 | 70.8 | 50.2 | 5.40 | 2.5 | 47 | 73 | 1.0 |
| 22209EAW33ZZ | 22209EAKW33ZZ | 45 | 85 | 23 | 1.1 | 75.6 | 54.9 | 5.80 | 2.5 | 52 | 78 | 1.0 |
| 22210EAW33ZZ | 22210EAKW33ZZ | 50 | 90 | 23 | 1.1 | 80.7 | 59.5 | 5.80 | 2.5 | 57 | 83 | 1.0 |
| 22211EAW33ZZ | 22211EAKW33ZZ | 55 | 100 | 25 | 1.5 | 89.7 | 66.0 | 6.40 | 3.0 | 64 | 91 | 1.5 |
| 22212EAW33ZZ | 22212EAKW33ZZ | 60 | 110 | 28 | 1.5 | 98.5 | 71.9 | 6.90 | 3.0 | 69 | 101 | 1.5 |
| 22213EAW33ZZ | 22213EAKW33ZZ | 65 | 120 | 31 | 1.5 | 107.0 | 78.2 | 7.80 | 3.5 | 74 | 111 | 1.5 |
| 22215EAW33ZZ | 22215EAKW33ZZ | 75 | 130 | 31 | 1.5 | 117.8 | 88.4 | 7.40 | 3.5 | 84 | 121 | 1.5 |
| 22216EAW33ZZ | 22216EAKW33ZZ | 80 | 140 | 33 | 2.0 | 127.0 | 94.0 | 7.87 | 3.5 | 91 | 129 | 2.0 |
| 22217EAW33ZZ | 22217EAKW33ZZ | 85 | 150 | 36 | 2.0 | 136.5 | 100.7 | 7.90 | 3.5 | 96 | 139 | 2.0 |
| 22218EAW33ZZ | 22218EAKW33ZZ | 90 | 160 | 40 | 2.0 | 143.2 | 105.3 | 10.20 | 4.5 | 101 | 149 | 2.0 |
| 22220EAW33ZZ | 22220EAKW33ZZ | 100 | 180 | 46 | 2.1 | 160.8 | 118.2 | 11.20 | 5.0 | 112 | 168 | 2.0 |

1) "K" indicates bearings have tapered bore with a taper ratio of 1:12.



Tapered Bore

Dynamic equivalent radial load

$$P_r = X F_r + Y F_a$$

| $\frac{F_a}{F_r} \leq e$ | | $\frac{F_a}{F_r} > e$ | |
|--------------------------|-------|-----------------------|-------|
| X | Y | X | Y |
| 1 | Y_1 | 0.67 | Y_2 |

Static equivalent radial load

$$P_{0r} = F_r + Y_0 F_a$$

For values e, Y_1, Y_2 and Y_0 see the following table.

| | Load Ratings kN | | | Calculation factors | | | | Speed rpm | | Cyl. Bore Internal clearance μm | | Tap. Bore Internal clearance μm | | Initial grease addition cm^3 | Weight kg | |
|--|--------------------|--------------------|------------------|---------------------|-------|-------|-------|--------------|--------|--|------|--|------|--|--------------|--------------|
| | Dynamic C_r | Static C_{0r} | Fatigue C_u | e | Y_1 | Y_2 | Y_0 | Reference | Limit | min. | max. | min. | max. | | cyl. Bore | tap. Bore |
| | 116 | 105 | 11.0 | 0.27 | 2.47 | 3.68 | 2.41 | 8,200 | 11,000 | 30 | 45 | 35 | 50 | 5.49 | 0.54 | 0.52 |
| | 121 | 113 | 12.6 | 0.26 | 2.64 | 3.94 | 2.58 | 7,400 | 9,800 | 35 | 55 | 45 | 60 | 6.19 | 0.59 | 0.58 |
| | 130 | 124 | 14.5 | 0.24 | 2.84 | 4.23 | 2.78 | 6,700 | 9,100 | 35 | 55 | 45 | 60 | 6.70 | 0.63 | 0.62 |
| | 155 | 148 | 17.9 | 0.23 | 2.95 | 4.39 | 2.89 | 6,100 | 8,200 | 40 | 65 | 55 | 75 | 8.51 | 0.85 | 0.83 |
| | 187 | 181 | 22.0 | 0.24 | 2.84 | 4.23 | 2.78 | 5,600 | 7,500 | 40 | 65 | 55 | 75 | 12.03 | 1.18 | 1.17 |
| | 226 | 224 | 26.0 | 0.24 | 2.79 | 4.15 | 2.73 | 5,300 | 6,900 | 40 | 65 | 55 | 75 | 15.32 | 1.57 | 1.54 |
| | 244 | 249 | 30.2 | 0.22 | 3.13 | 4.67 | 3.06 | 4,600 | 6,200 | 50 | 80 | 70 | 95 | 17.46 | 1.72 | 1.68 |
| | 278 | 287 | 33.4 | 0.22 | 3.14 | 4.67 | 3.07 | 4,300 | 5,800 | 50 | 80 | 70 | 95 | 21.41 | 2.15 | 2.10 |
| | 324 | 330 | 38.7 | 0.22 | 3.07 | 4.58 | 3.01 | 4,100 | 5,400 | 60 | 100 | 80 | 110 | 28.93 | 2.64 | 2.63 |
| | 384 | 398 | 43.1 | 0.23 | 2.9 | 4.31 | 2.83 | 3,900 | 5,100 | 60 | 100 | 80 | 110 | 34.68 | 3.39 | 3.32 |
| | 472 | 495 | 52.6 | 0.24 | 2.84 | 4.23 | 2.78 | 3,600 | 4,600 | 60 | 100 | 80 | 110 | 53.15 | 4.99 | 4.93 |

ULTAGE®

[KIZEI] BEARING ADAPTER PART NUMBERS

| Bore | Bearing | Adapter |
|---------|----------------|-----------------------------|
| 35mm | 22208EAKW33ZZ | H308 |
| 1-1/4 | | SNW08X1.1/4 |
| 1-15/16 | | SNW08X1.15/16 |
| 1-3/8 | | SNW08X1.3/8 |
| 40mm | 22209EAKW33ZZ | H309 |
| 1-3/8 | | SNW09X1.3/8 |
| 1-7/16 | | SNW09X1.7/16 |
| 1-1/2 | | SNW09X1.1/2 |
| 45mm | 22210EAKW33ZZ | H310 |
| 1-5/8 | | SNW10X1.5/8 |
| 1-1/16 | | SMW10X1.1/16 |
| 1-3/4 | | SNW10X1.3/4 |
| 50mm | 22211EAKW33ZZ | H311 |
| 1-3/4 | | SNW11X1.3/4 |
| 1-7/8 | | SNW11X1.7/8 |
| 1-15/16 | | SNW11X1.15/16 |
| 2 | | SNW11X2 |
| 55mm | 22212EAKW33CZZ | H312 |
| 2 | | SNW12X2 |
| 2-1/8 | | SNW12X2.1/16 SNW12X2.1/8 |
| 60mm | 22213EAKW33ZZ | H313 |
| 2 | | SNW13X2 |
| 2-1/8 | | SNW13X2.1/8 |
| 2-3/16 | | SNW13X2.3/16 |
| 2-1/4 | | SMW13X2.1/4 |
| 2-5/16 | | SNW13X2.5/16 |
| 70mm | 22215EAKW33ZZ | H315 |
| 2-3/8 | | SNW15X2.3/8 |
| 2-7/16 | | SNW15X2.7/16 |
| 2-1/2 | | SNW15X2.1/2 |
| 75mm | 22216EAKW33ZZ | H316 |
| 2-11/16 | | SNW16X2.11/16 |
| 2-3/4 | SNW16X2.3/4 | |
| 80mm | 22217EAKW33ZZ | H317 |
| 2-15/16 | | SNW17X2.15/16 |
| 3 | SNW17X3 | |
| 80mm | 22218EAKW33ZZ | H318 |
| 3-1/8 | | SNW18X3.1/8 |
| 3-3/16 | | SNW18X3.3/16 |
| 3-1/4 | | SMW18X3.1/4 |
| 95mm | 22220EAKW33ZZ | H320 |
| 3-7/16 | | SNW20X3.7/16 |
| 3-1/2 | | SNW20X3.1/2 |

Adapters sold separately

ULTAGE®

The ULTAGE Advantage

Combining premium-grade materials, optimized design and precision manufacturing, ULTAGE is the new generation of high-performance bearings from NTN that delivers unmatched service life, the highest limiting speeds and the best load capacities on the market to maximize the productivity of your equipment.

Encompassing a wide variety of key bearing types such as spherical roller, cylindrical roller, tapered roller, heavy duty mounted roller, angular contact and radial ball bearings, the ULTAGE line of superior, high-performance bearings from NTN delivers:

- Extended service life for better return on our end-users' investment.
- Greater performance, longer production and less downtime.
- Dependable product availability, thanks to a wide, robust distribution network.
- Extra that goes beyond a standard offering, including on-site and web-based technical training, installation support, digital resources and more.

Spherical Roller Bearings

ULTAGE spherical roller bearings combine cutting-edge product research, premium-grade materials, and an optimized internal and external design to greatly extend bearing life. The result is greater profitability for our customers thanks to improved uptime and productivity.

- Made from premium-grade steel and larger rollers, ULTAGE SRRBs provide a 65% increase in capacity compared to a conventional bearing, resulting in up to 5 times longer service life. In addition, ULTAGE SRRBs provide up to 35% greater basic static load rating compared to conventional bearings.
- ULTAGE SRRBs contain an optimized surface finish and incorporate high-performance, window-type pressed steel cage without the center guiding for high rigidity, stability, and better lubrication flow through the bearing. All these design features allow for a 20% higher limiting speeds when compared to conventional designs, reducing operating temperatures that extend lubrication intervals and keep production lines running longer.
- Our special heat treatment process allows for dimensional stability of the bearing up to 200°C (400°F) all while maintaining high hardness. The combination of high temperature stability and high hardness allows the bearing to achieve a longer life, thus reducing down time and increasing production.
- Manufactured in our state-of-the-art facilities which maintain consistently tight tolerances through production, ULTAGE spherical roller bearings feature an optimized design that enables higher loads and faster rotational speeds. Besides allowing machines to run at maximum productivity, the improved design reduces heat generation for extended grease life and improved



Since 1918, NTN has been a trusted OE manufacturer of high-performing bearing products that increase companies' productivity and efficiency.

- NTN has been the world's broad-line bearing manufacturer for nearly 100 years.
- NTN has the largest bearing manufacturing footprint in the United States.
- NTN is the largest supplier of American-made products to the construction and mining industries.
- NTN is a major supplier to over two-thirds of the world's "Fortune 500" manufacturing companies.
- More cars worldwide ride on NTN bearings and drivetrains than any other manufacturer's product.



◀ NTN was the first bearing manufacturer to be awarded the prestigious Deming Prize for recognition of its quality products and systems.

Beyond Bearings

Training. Installation Support.
Trouble-shooting. And more.

When you choose NTN, your team is equipped with all the necessary tools and resources to get the job done right. From installation to problem-solving, we'll be there with the hands-on support you need to take on your toughest challenges. This includes extra services such as:



Technical Training Unit

On-site, mobile training unit offering specialized, hands-on instruction from NTN engineers



Product Training School

Three days of in-depth instruction from NTN engineers at NTN headquarters
(go.ntnamericas.com/trainingschool)



eKnowledge

WEB-BASED TRAINING PROGRAM

Six online product training modules covering different bearing types and nomenclature
(www.ntnamericas.com/eknowledge)



NTN Bearing Finder

Customizable search tool featuring exhaustive data sets, comprehensive part interchanges and interactive CAD drawings
(bearingfinder.ntnamericas.com)



[KIZEI] ARMORED TO FACE THE DIRT

Ready to get rolling? Contact us today for full details at
1-800-323-2358 or eng@ntnamerica.com.

NTN®

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