

Bearings for Steel Industry

NSK high performance bearings help to maximize uptime and to reduce maintenance costs for steel manufacturers.

Choose
NSK





NSK solutions for iron and steel works

NSK high performance bearings meet the requirements of steel manufacturers. Our years of field experience, product development and accumulated technologies have allowed us to deploy a range of techniques for boosting the productivity of steel manufacturing plant.



NSK is the world's top supplier of bearings to iron and steel works

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NSK bearings for the iron and steel industry are created by our global research and development system.

NSK has engaged in technological challenges for many years, working with customers in the iron and steel industry around the world to develop effective solutions.

We have developed high performance products for the iron and steel industry through strengthening our global R&D focus. We continue to create top of the line products that utilize the core technologies of lubrication, materials, and analytical techniques to respond to field requirements.

Chronology of Product Development

● New products ● New material ● New lubrication

| Year | Bearings for Continuous Casting Machines | Bearings for Rolling Mills | Bearings for Other Equipments in Iron and Steel Works |
|------|---|---|---|
| 2000 | <ul style="list-style-type: none"> ● SWR Bearings ● Tapered Roller Bearings with Aligning Rings | <ul style="list-style-type: none"> ● Water-TF Roll Neck Bearings ● Extra-Capacity Sealed-Clean Roll Neck Bearings | <ul style="list-style-type: none"> ● SNN Plummer Blocks ● Molded-Oil Bearings for Iron and Steel Works |
| 1995 | | <ul style="list-style-type: none"> ● High-Capacity Sealed-Clean Roll Neck Bearings ● Stud-Type Four-Row Cylindrical Roller Bearings | <ul style="list-style-type: none"> ● Super-TF Roll Neck Bearings |
| 1990 | <ul style="list-style-type: none"> ● Oil-Air Lubricators with Malfunction Detection System | | <ul style="list-style-type: none"> ● Sizing Press Bearings |
| 1985 | <ul style="list-style-type: none"> ● Cylindrical Roller Bearings with Aligning Rings | <ul style="list-style-type: none"> ● New Type Bearings for New Developed Rolling Mills | <ul style="list-style-type: none"> ● Sealed-Clean Bearings for Inboard Rollers of Sintering Machine Pallets ● Split Bearings for BOFs and Converter Trunnions |
| 1980 | <ul style="list-style-type: none"> ● Split Bearing Units ● Sealed-Clean Spherical Roller Bearings | <ul style="list-style-type: none"> ● Exclusive Grease for Sealed Bearings ● Sealed-Clean Roll Neck Bearings | <ul style="list-style-type: none"> ● Sealed-Clean Bearings for Chain Conveyors ● Sealed-Clean Bearings for Pallet Wheels of Sintering Machine Pallets ● Leveller Units |

Development of Steel Bearings

● NSK technologies support the development of bearings for iron and steel works

| Design technology | Evaluation technology | Analysis and diagnostic technologies |
|---|--|---|
| <ul style="list-style-type: none"> ● Automatic design system for integrating analysis and field experience ● Design for applications utilizing newly developed materials with longer service life for use under harsh conditions (such as materials resistant to debris, water, and wear) | <ul style="list-style-type: none"> ● Field simulation techniques <p>Performance and endurance evaluation test rigs utilizing actual-size bearings</p> | <ul style="list-style-type: none"> ● Bearing analysis technology ● Fatigue analysis technology ● Diagnostic technology |



Tester for bearings used in guide rolls of continuous casting machines



Tester for bearings used in backup rolls of rolling mills



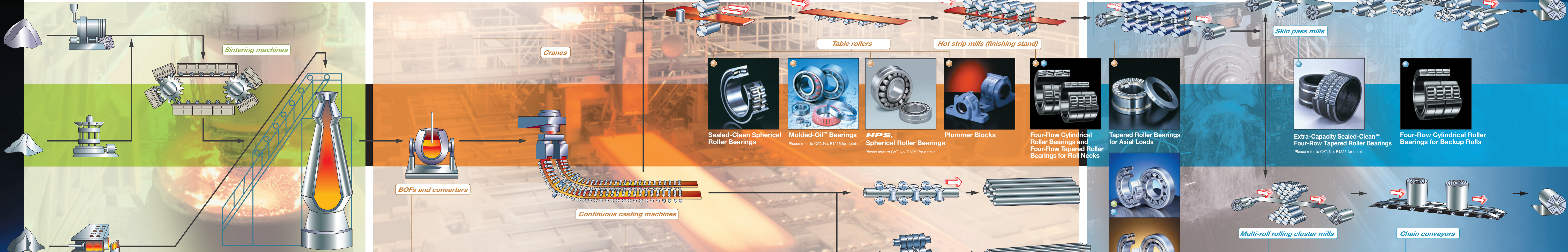
Tester for bearings used in work rolls of rolling mills

● Four core technologies supporting the product development of NSK

| Tribology | Material technology | Analytical technology | Motion and control |
|---|--|---|---|
| <ul style="list-style-type: none"> ● Lubrication theory ● Life theory ● Surface analysis ● Surface modification | <ul style="list-style-type: none"> ● Bearing steel ● Heat treatment ● Ceramics ● Polymeric materials | <ul style="list-style-type: none"> ● NSK-BRAIN ● Simulation technology ● Computer analysis | <ul style="list-style-type: none"> ● System technology ● Sensing technology ● Motor technology |

A complete product line for all steel mill processes delivers improved productivity and lowered maintenance costs, with long life and highly reliable bearings.

Bearings for iron and steel works operate under a variety of harsh conditions, including high temperatures, high speed or super low speed operation, as well as environments contaminated with water and debris. NSK products support the stable operation of equipment under the toughest conditions.



Sealed-Clean Bearings for Sintering Machine Pallets



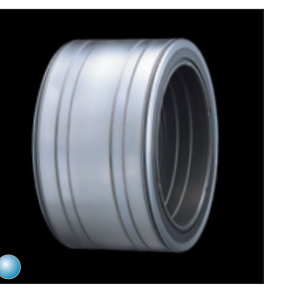
Full-Complement Cylindrical Roller Bearings for Crane Sheaves
Please refer to CAT. No. E1218 for details.



Full-Complement Cylindrical Roller Bearings for Crane Sheaves
Please refer to CAT. No. E1206 for details.



Four-Row Cylindrical Roller Bearings for Backup Rolls (with stud-type cages for super heavy loads)



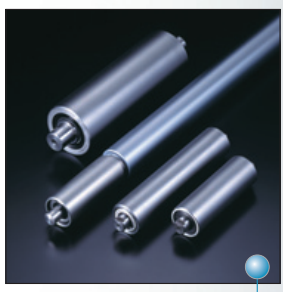
WTF® Bearings
Please refer to CAT. No. E1251 for details.



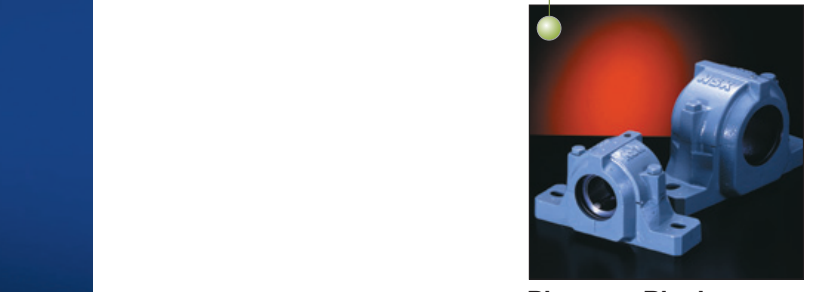
Extra-Capacity Sealed-Clean™ Four-Row Tapered Roller Bearings
Please refer to CAT. No. E1225 for details.



Double-Row Tapered Roller Bearings for Axial Loads



Bearing Units for Tension Levellers
Please refer to CAT. No. E395 for details.



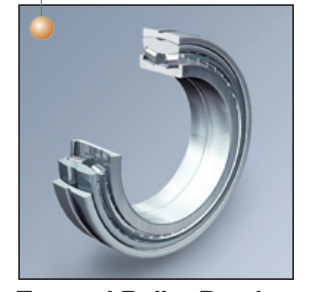
Plummer Blocks



HPS. Spherical Roller Bearings
Please refer to CAT. No. E1259 for details.



Ultra-Large Split Bearings for BOFs and Converter Trunnions



Tapered Roller Bearings with Aligning Rings



Cylindrical Roller Bearings with Aligning Rings
Please refer to CAT. No. E390 for details.



Split Roller Bearing Units for Segmented Rolls
Please refer to CAT. No. E390 for details.



SWR™ Bearings
Please refer to CAT. No. E1242 for details.



Four-Row Tapered Roller Bearings for Vertical Rolls

Rolling mills for steel pipes, steel bars, wire rods and sections

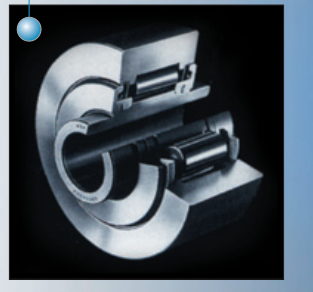
Four-Row Cylindrical Roller Bearings and Four-Row Tapered Roller Bearings for Horizontal Rolls



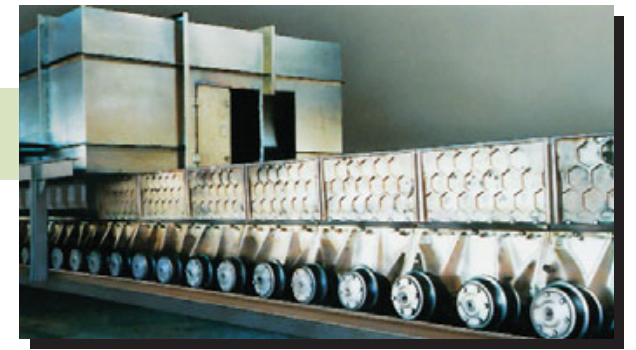
High-Capacity Cylindrical Roller Bearings EW, EM Series
Please refer to CAT. No. E1238 and No. E1237 for details.



Backing Bearings for Backup Rolls

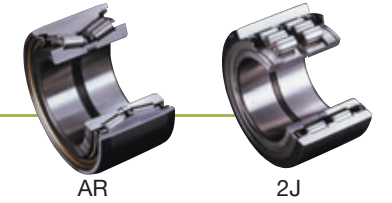


S-Type Sealed-Clean Bearings for Chain Conveyors



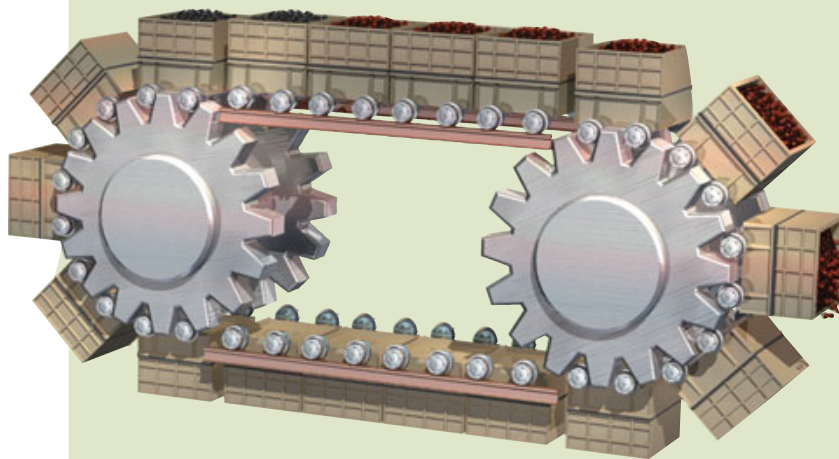
Benefits

- 1 Stable machinery operation through higher reliability and longer operating life
- 2 Cleaner areas adjacent to equipment
- 3 Reduced maintenance costs

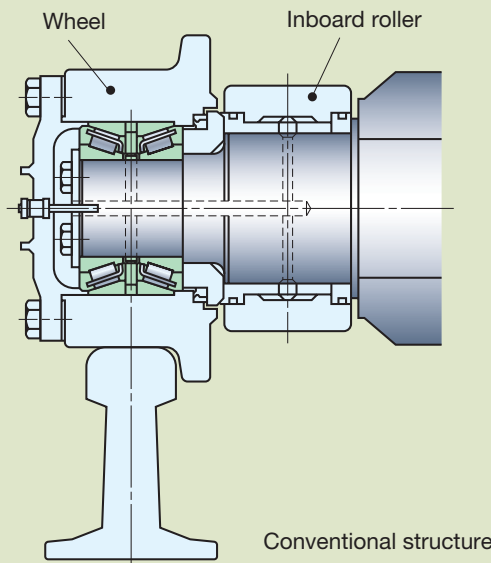


1. Operating conditions

- High temperature
- Heavy loads
- Low speed
- Scale (sintered particles)



Sintering equipment



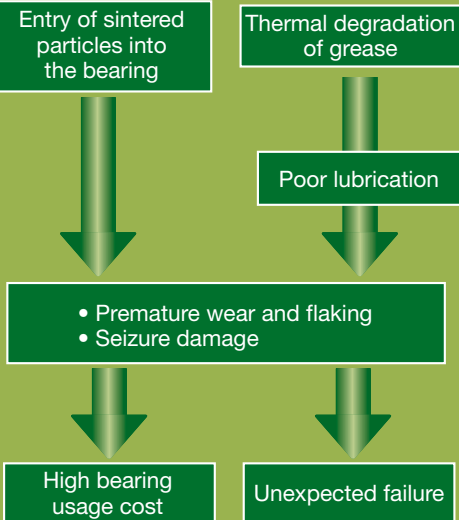
Conventional structure

2. Problems

Typical problems of bearings for sintering equipment

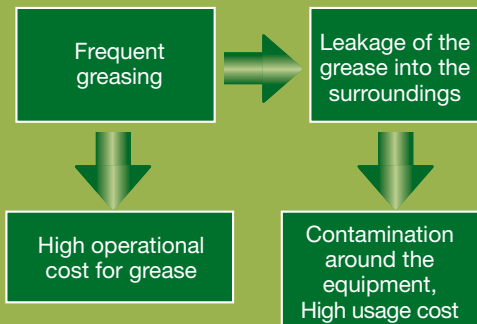
Problem 1

Premature failure of bearings for pallet wheels and bearings for inboard rollers (plain bearings)



Problem 2

Contamination around the equipment, high maintenance costs

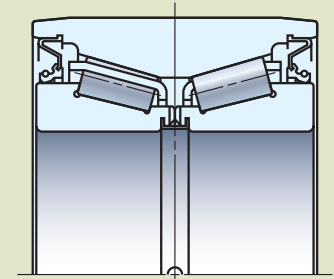


3. Countermeasures

Design measures

Features Sealed-Clean Bearings for Pallet Wheels—AR Series

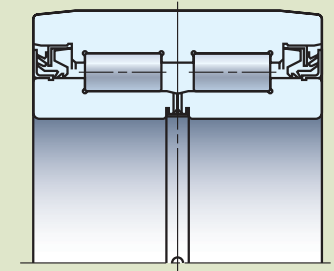
- Optimum crowning of the roller raceway surface enabling resistance to unbalanced load of wheels
- High sealing performance (featuring a special contact seal)
- Packing of grease with excellent heat and pressure resistance
- Easier handling (one-piece design with fastening ring adopted for the inner ring)



Design measures

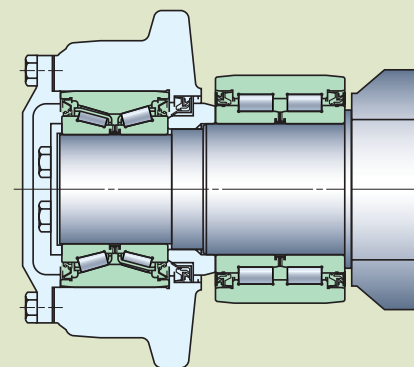
Features Sealed-Clean Bearings for Inboard Rollers—2J Series

- Higher load capacity (by outer ring thickness design with high strength and full-complement roller type)
- Improvement of axial load capacity
- High sealing performance (featuring a special contact seal)
- Packing of grease with excellent heat and pressure resistance
- Easier handling (one-piece design with fastening ring adopted for the inner ring)



• Durability Performance of Bearings in Field Test

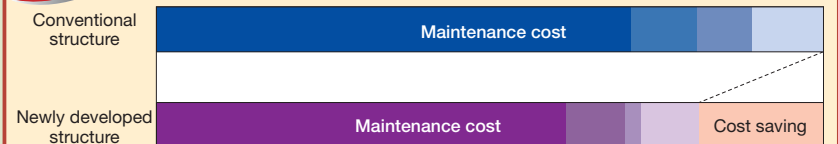
| | Comparison of actual life extension in field tests | | |
|---------------------------|--|--|--------------|
| Conventional structure | 1 | | |
| Newly developed structure | 2.5 on average | | 3 at maximum |



Newly developed structure



Estimated effect of maintenance cost reduction



The maintenance cost includes the replacement costs for bearings, seals, and grease and the operational costs associated with the bearing replacement and greasing.

If the bearing life extends 2.5 times on average as a result of using the newly developed structure for bearings for pallet wheels/inboard rollers for pallet dollies, the total maintenance cost reduction effect is estimated to be 25% to 35%.

| | | |
|----------------|-----------|-----------|
| Bearing Series | AR Series | 2J Series |
| Bearing No. | | |



Benefits

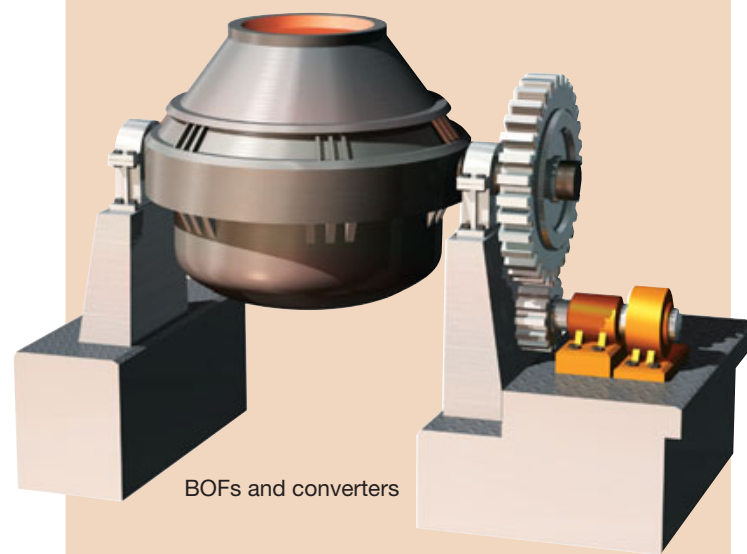
- 1 Bearings can be replaced without removing the bull gear, thus reducing maintenance costs
- 2 Reduction of maintenance costs by shortening length of time for bearing replacement work
- 3 Reduction of production loss, which would affect subsequent processes

1. Operating conditions

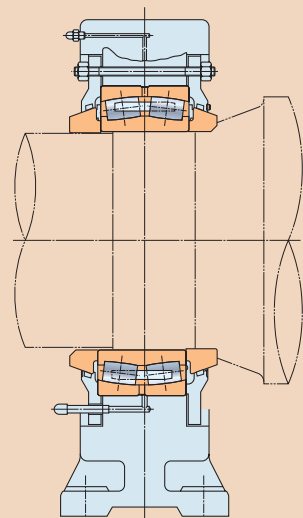
High temperature

Heavy loads

Ultra-low speed and Rocking



BOFs and converters

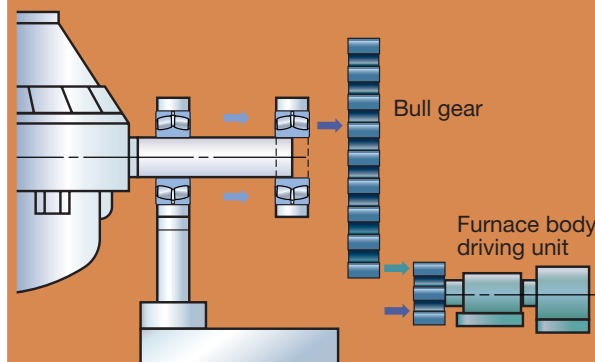


Conventional structure

2. Problems

Typical problems of bearings for BOFs and converters

Inboard bearings cannot be replaced without removing the bull gear



Bearing replacement work is time-consuming, requiring high maintenance costs

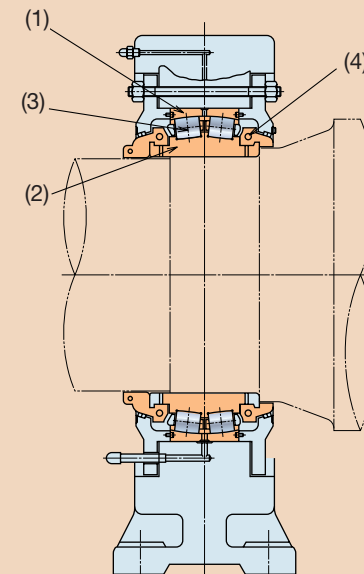
In addition, sudden bearing replacement due to an unexpected failure causes large production loss in the subsequent processes

3. Countermeasures

Design measures

Features Ultra-Large Split Bearings for BOFs and Converter Trunnions

- A split design of ultra-large spherical roller bearings: (1) outer ring (2) inner ring (3) roller and cage assembly and (4) fastening ring
- Seal sliding surface integrated by a fastening ring



Newly developed structure

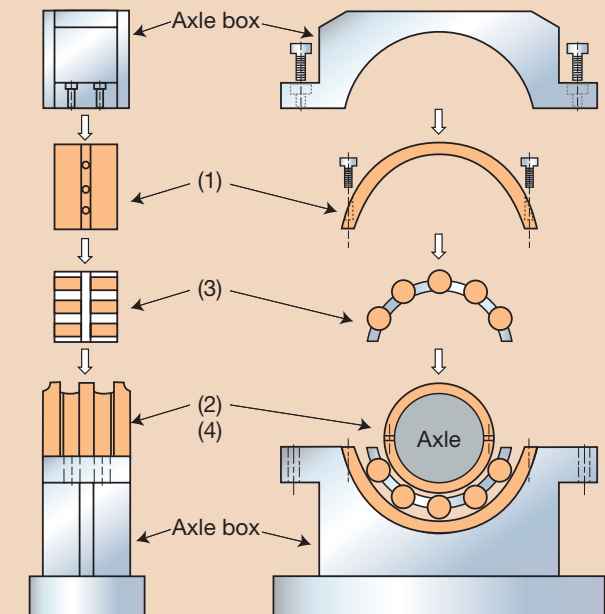


Image of bearing mounting

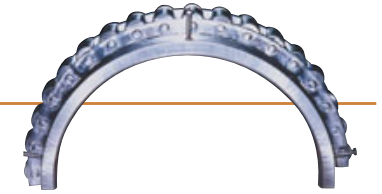
User Benefit

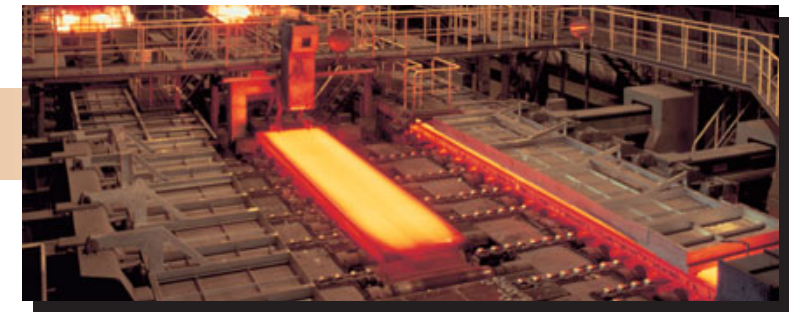
Maintenance cost reduction effect

Result of the comparison of time required for bearing replacement work

| Bearing type | Comparison of time required for bearing replacement work in field test | |
|---|--|--------------------------|
| Conventional structure (one-piece type) | 1 | |
| Newly developed structure (split type) | 0.65 | 0.35 ← Period shortening |

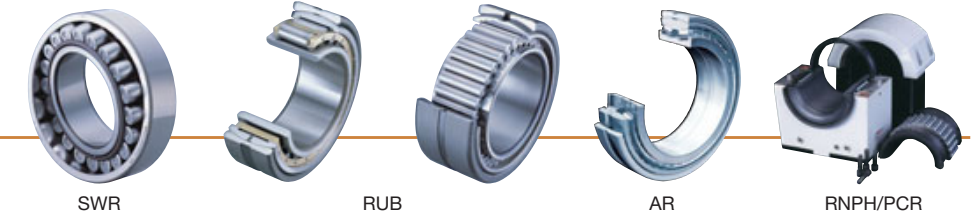
- The bearing replacement period represents the actual result for bearings with bore diameter of 1 200 mm to 1 400 mm.
- In the case above, the bearing with the newly developed structure reduced the time needed for bearing replacement work by approximately 35%, and thereby significantly reduced maintenance cost.



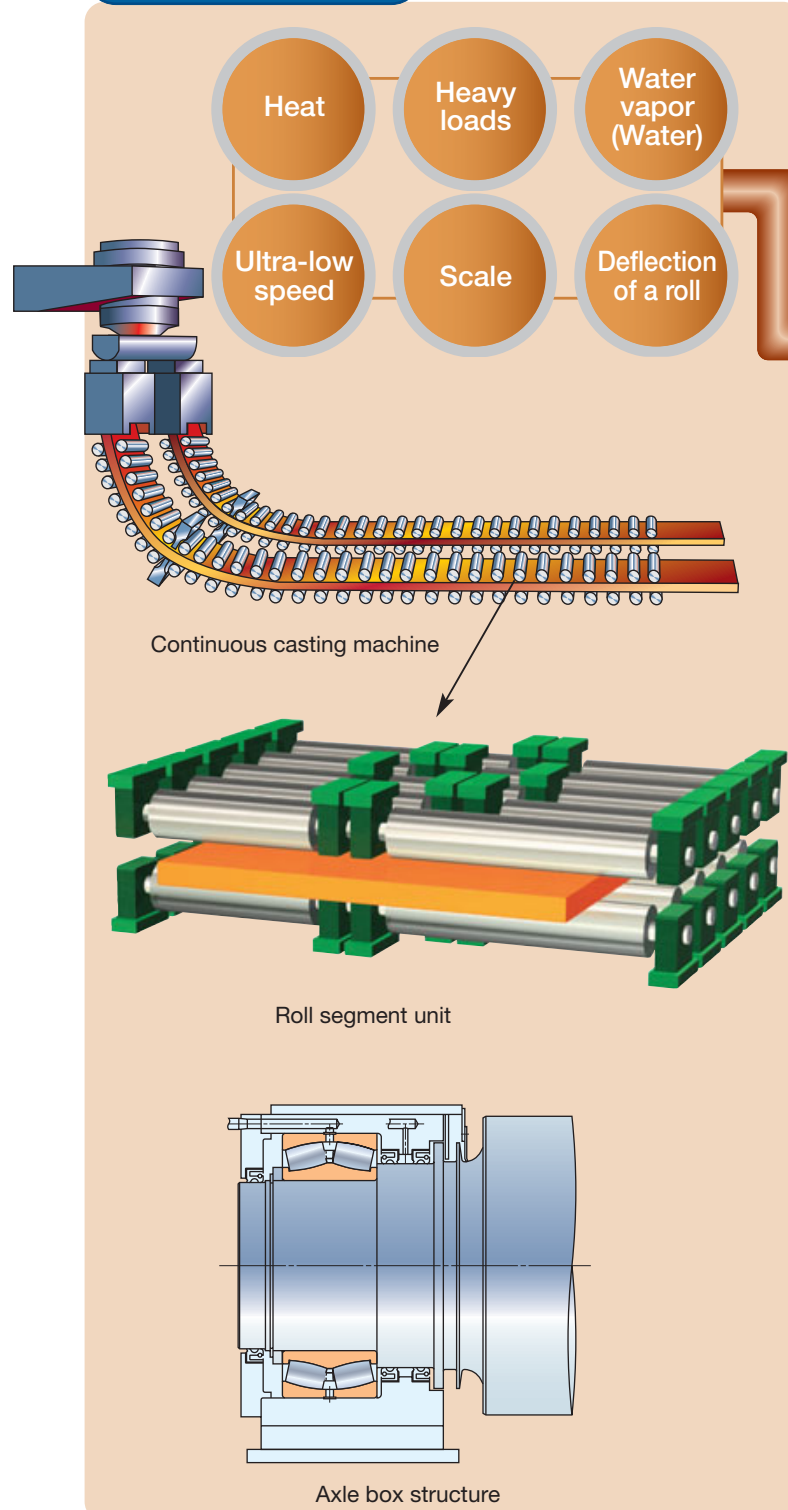


Benefits

- 1 Improved bearing durability prevents unexpected accidents
- 2 Roll segment is replaced less frequently, thus reducing maintenance costs



1. Operating conditions



2. Problems

Typical problems of bearings for continuous casting machines



3. Countermeasures

Material measures

- Comprehensive measures to improve performance of spherical roller bearings for continuous casting machines
- SWR Bearings solve wear problems and significantly extend operating life

Features SWR™ Bearings (Spherical Roller Bearings) – SWR Series

- Improved wear resistance → Three times compared to AISI 52100 bearing steel
- Improved flaking life property → Five times compared to AISI 52100 bearing steel
- Improved toughness of material core (prevention of crack damage) → Five times compared to AISI 52100 bearing steel

Design measures

- Self-centering function added to non-sliding bearing types (cylindrical, tapered).
- Solution of wear problems for conventional spherical roller bearing allows significantly longer operating life

Features Cylindrical Roller Bearings with Aligning Rings (for free end) – RUB Series

- Prevention of wear due to differential sliding of spherical roller bearing and addition of self-aligning function
- Smooth relief of roll expansion
- Type: Easy handling cage type Full-complement type with higher load capacity

Features Tapered Roller Bearings with Aligning Rings (for fixed end) – AR Series

- Prevention of wear due to differential sliding of spherical roller bearing and addition of self-aligning function
- High thrust load capacity

Features Split Cylindrical Roller Bearings (for segmented rolls) – RNP/PCR Series

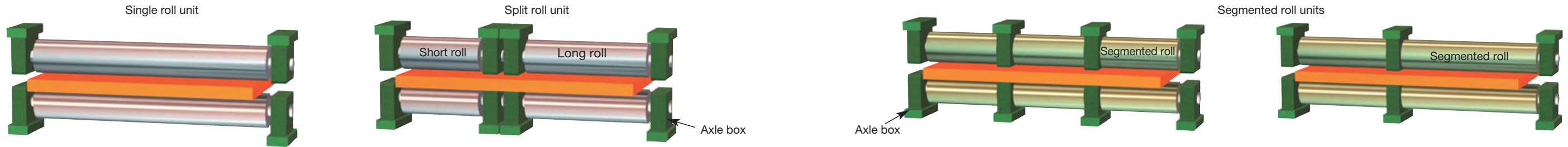
- Prevention of wear due to differential sliding of spherical roller bearing and addition of self-aligning function
- Full-complement, higher load capacity design
- Multi-functional seal and high rigidity plummer block unit

For detailed technical information and user benefit of SWR/RUB/AR/RNP series: Page 17-18

| | | | | |
|---------------------------------|------------|------------|-----------|-------------------|
| Bearing Series | SWR Series | RUB Series | AR Series | RNPH / PCR Series |
| Bearing No. | Page 27-28 | Page 29 | Page 30 | Page 31-32 |
| Recommended bearing arrangement | Page 15-16 | | | |

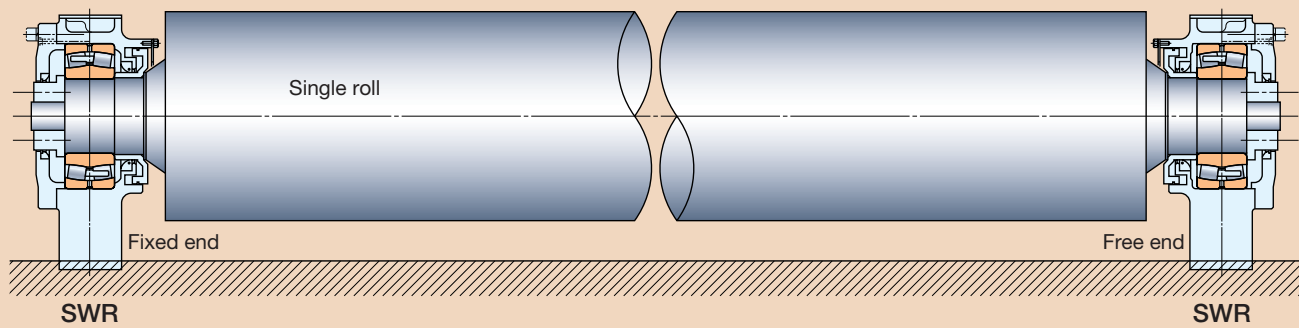
Recommended Bearing Arrangements

NSK has prepared the following arrangements for bearings used in guide rolls of continuous casting machines with recently developed SWR Bearings and tapered roller bearings with aligning rings additionally.

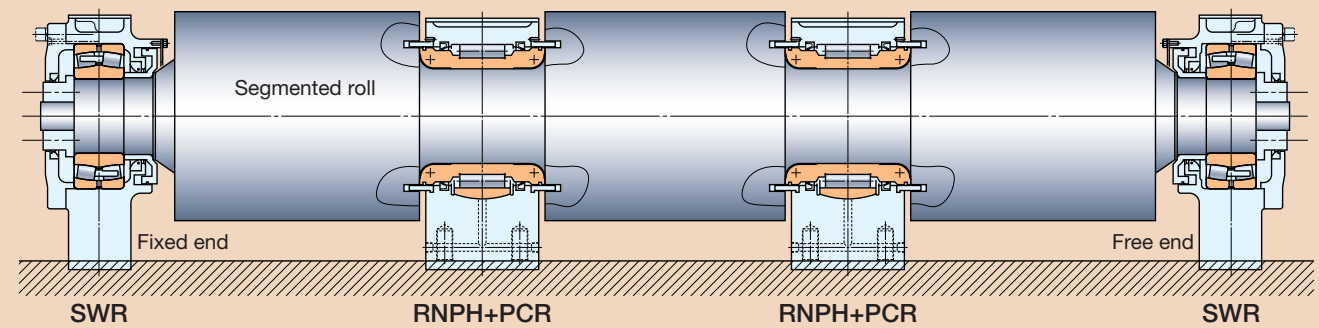


CASE 1 Spherical roller bearings currently used can be replaced with SWR Bearings without modifying the axle boxes, thus easily enhancing performance:

- Bearing arrangement for single rolls and split rolls

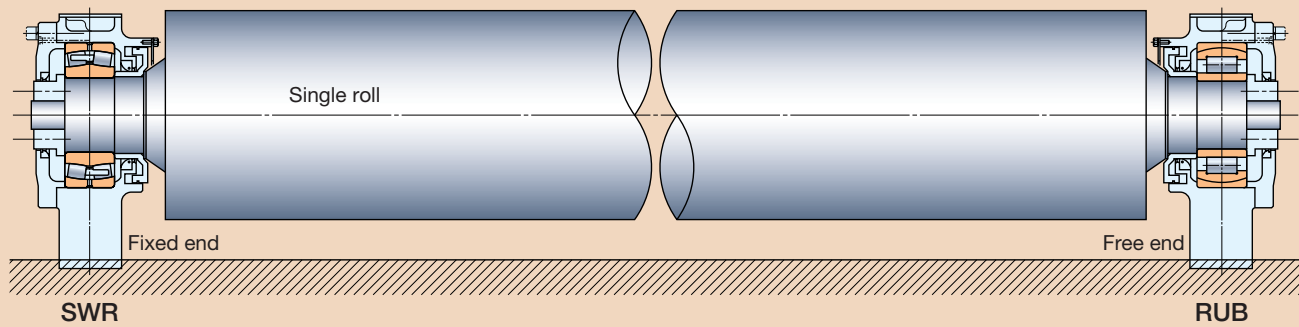


- Bearing arrangement for segmented drive rolls

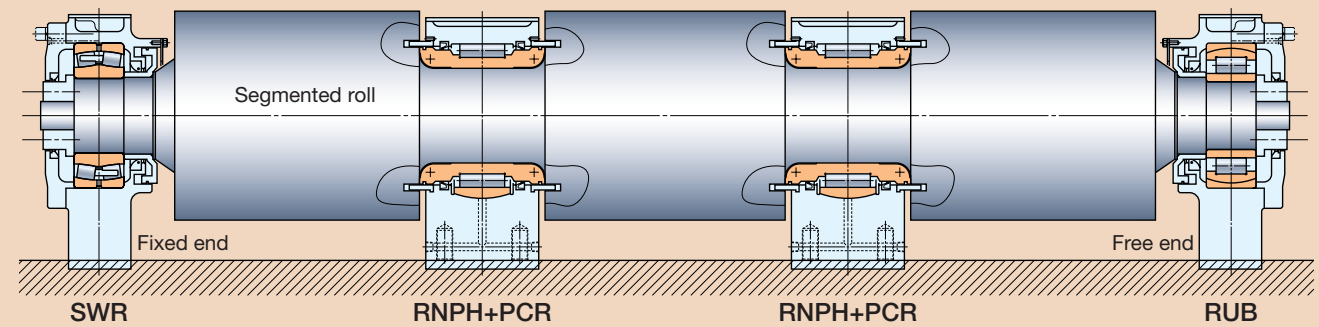


CASE 2 Optimal bearing arrangement to relieve roll expansion:

- Bearing arrangement for single rolls and split rolls



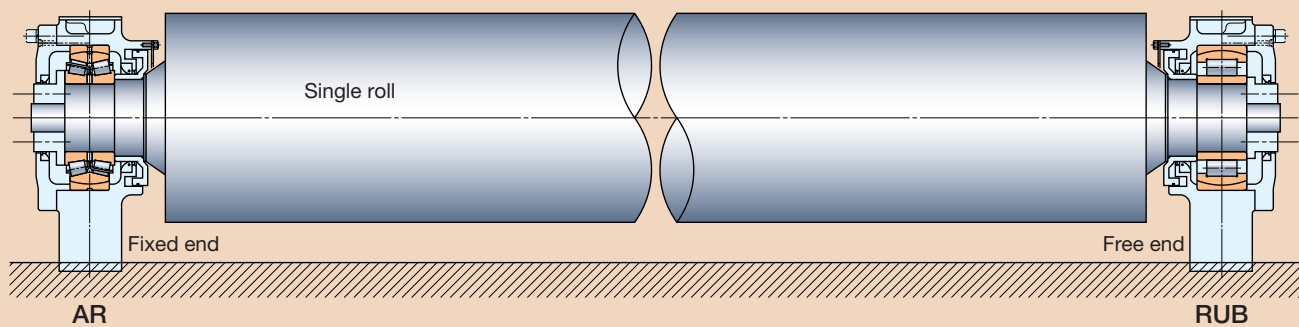
- Bearing arrangement for segmented drive rolls



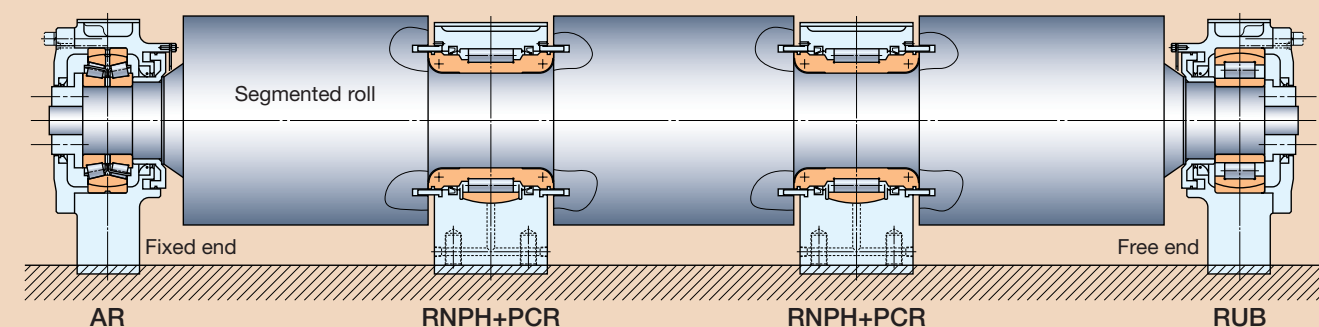
The structure in the axle box needs to be partially modified in case of changing the free-end bearing from a spherical roller bearing to RUB.

CASE 3 Bearing arrangement to prevent roll expansion and roll thrust load:

- Bearing arrangement for single rolls and split rolls



- Bearing arrangement for segmented drive rolls

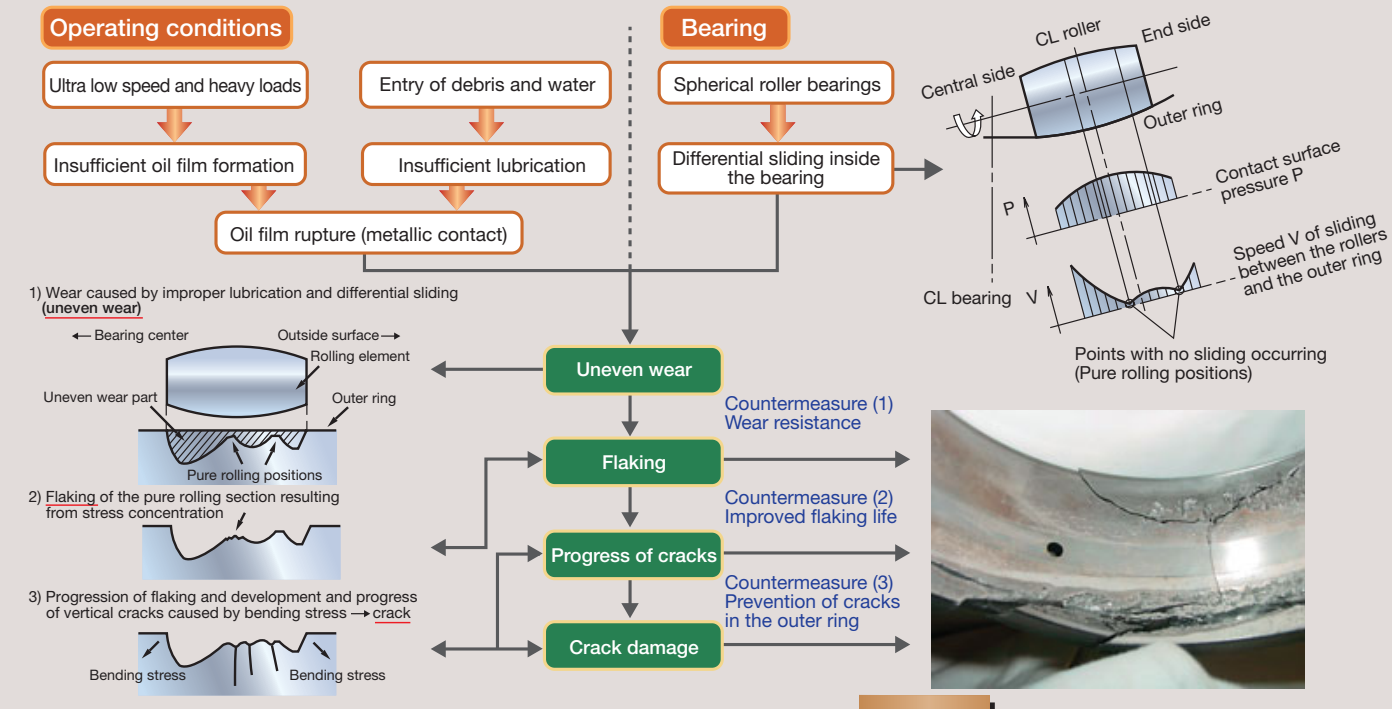


The structure in the axle box needs to be partially modified in case of changing the fixed- and free-end bearings from spherical roller bearings to AR and RUB.

Contribution to Enhancement of Reliability and Reduction of Maintenance Costs for Continuous Casting Machines

Identification of the failure mechanism

Failure mechanism of spherical roller bearings for continuous casting machines



Selection of steel chemical composition



Material measures

Development of wear-resistant materials

- Selection of steel chemical composition
- Applied special heat treatment technology
- Controlled optimum level for retained austenite

Microstructure

Result P-extraction replica work using transmission electron microscopy (TEM)

AISI 52100 SWR

Basic performance

Countermeasure (1) Wear resistance Fig. 1

Countermeasure (2) Improved flaking life (inhibition of flaking) Fig. 2

Countermeasure (3) Improved outer ring strength Fig. 3

Field endurance evaluation

Longer bearing life results in extended segment replacement cycles

Bearing arrangement: Page 15-16

| Bearings used in the segment | Ratio of extended segment replacement cycles in R/A and P/R segments |
|---|--|
| Standard spherical roller bearings CASE 1 and 2 | Average segment replacement cycles: 1 |
| SWR Bearings CASE 1 and 2 | Average segment replacement cycles: 1.6 Maximum: 2 |

SWR Bearings allow users, who have been forced to replace segments at frequent cycles due to the bearing life of standard spherical roller bearings, to attain maximum effect in reducing maintenance, by decreasing unexpected accidents and using rolls to the full extent of their operating life.

Development of tapered roller bearings with aligning rings and cylindrical roller bearings with aligning rings



Development of new type bearings

Comparison of PV value properties affecting the wear within the bearing

Surface pressure (P), Sliding (V), Wear property parameter: PV (P×V)

PV value between the outer ring raceway surface and roller raceway surface

1) tapered roller bearing 2) cylindrical roller bearing

PV value properties of spherical roller bearing

Surface pressure, Sliding, Roller contact length

PV=0

Wear evaluation

Example of inspection of an abrasion level on the outer ring raceway surface

- Tapered roller bearing with aligning ring (one-side): Fig. 1
- Cylindrical roller bearing with aligning ring: Fig. 2
- Standard spherical roller bearing: Fig. 3

Field endurance evaluation

Wear on the outer ring raceway surface was infinitesimal

Amount of wear: 2μm Amount of wear: 2μm Amount of wear: 14μm

Service period: 21 months 12 months

Longer bearing life results in extended segment replacement cycles

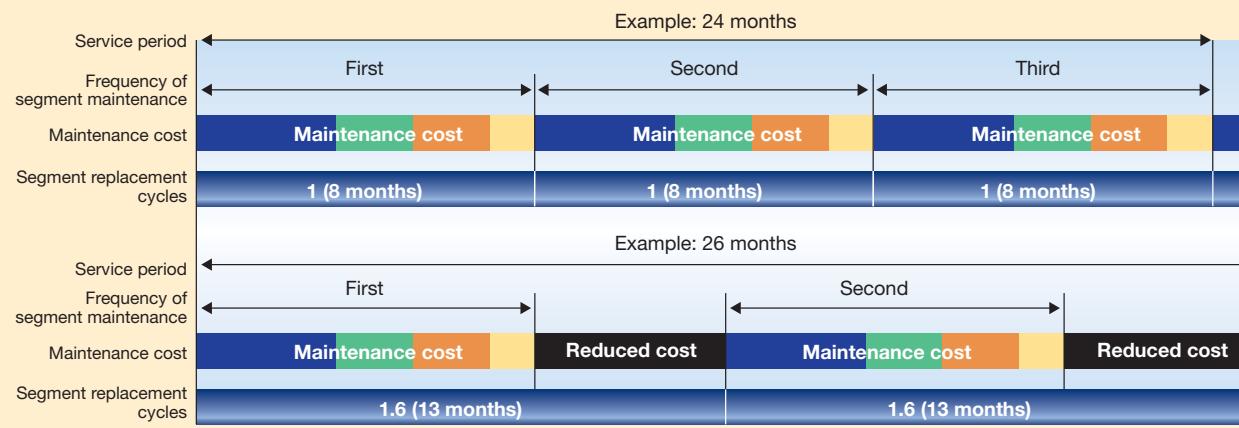
Bearing arrangement: Page 15-16

| Bearings used in the segment | Ratio of extended segment replacement cycles in R/A and P/R segments |
|--|--|
| Standard spherical roller bearings CASE 1 and 2 | Average segment replacement cycles: 1 |
| Tapered roller bearings with aligning rings CASE 3 | Average segment replacement cycles: 1.6 Maximum: 2 |

The usage of tapered roller bearings with aligning rings (for fixed end) and cylindrical roller bearings with aligning rings (for free end) reduced unexpected accidents and lowered maintenance costs to a minimum by using rolls to the full extent of their operating life. The used bearings, after the fatigue analysis by using X-ray, proved to have a residual life corresponding to 2-4 times the tested period.



Estimated effect of maintenance cost reduction

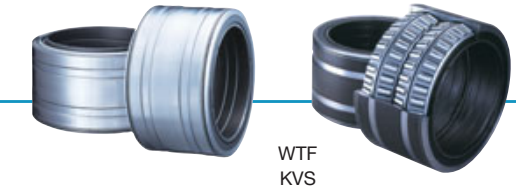


If SWR Bearings are used on 1-8 segments out of 15 segments of a 2-strand continuous casting machine, then segment life is extended on average 1.6 times. The estimated reduction effect is 20%-30% of total maintenance cost.

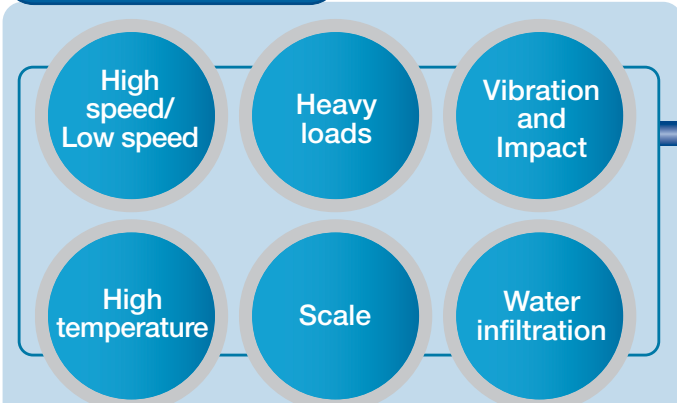


Benefits

- 1 Higher reliability and longer operating life prevent unexpected accidents
- 2 Bearing seal requires less cleaning of work environment and reduces grease consumption
- 3 Reduced maintenance costs

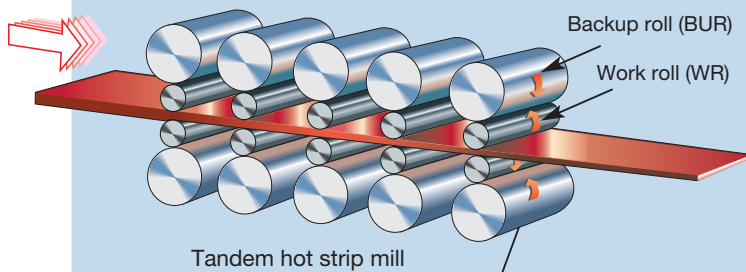


1. Operating conditions

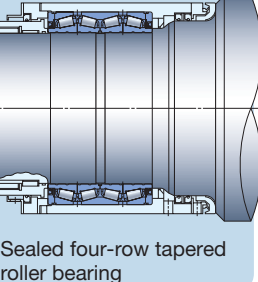
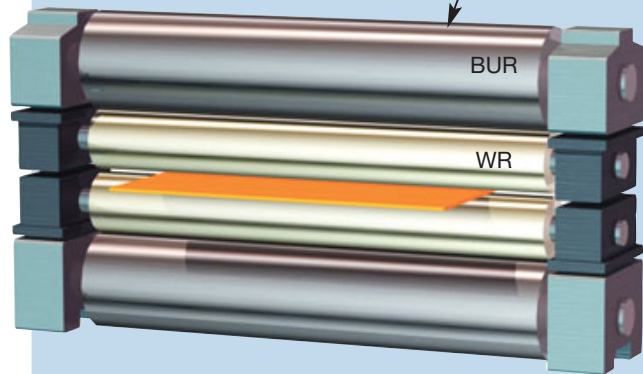


Major target mills:

- Hot strip mills
- Cold rolling mills
- Skin pass mills
- Temper rolling mills



Tandem hot strip mill



(1) Open type four-row tapered roller bearing

(2) Sealed four-row tapered roller bearing

2. Problems

Typical problems of work roll bearings

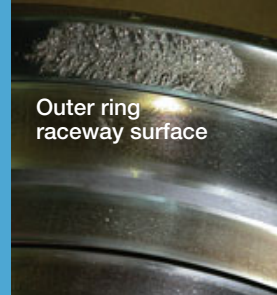
(1) Open type four-row tapered roller bearings

- (1) Large grease consumption and high maintenance costs
- (2) Premature failure due to poor lubrication

(2) Sealed four-row tapered roller bearings

Operating conditions, including loading, debris and water infiltration become severe

Flaking



Outer ring raceway surface

Seizure

High bearing usage cost

Unexpected production line failure

3. Countermeasures

Material measures

- Identified flaking damage mechanism caused by water infiltration
- Developed countermeasures against severe conditions for cases where water and particle contamination are unavoidable

Features Water-TF® Bearings—WTF Series

- Adoption of super-clean steel with optimum alloy balance controls development and progress of cracks at early flaking stage caused by water infiltration
- Control of the retained austenite reduces concentration of stress resulting from dents caused by infiltration of debris

| | Comparison of actual life extension in field test | |
|-------------------------------|---|---|
| Conventional steel | 1 | |
| Material for Water TF Bearing | | 3 |

Water-TF Bearings are a special purpose bearing series in the same design as the standard KVS types (see below).

User Benefit

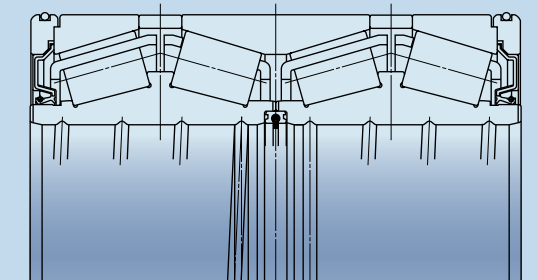
Page 23–24

Material measures

- Developed countermeasures against harsh load conditions
- Improved sealing against water infiltration and foreign contamination

Features Extra-Capacity Sealed-Clean™ Four-Row Tapered Roller Bearings—KVS Series

- Higher load capacity: increased by 15%–35% compared to conventional sealed bearings
- Super-TF steel: resistant to foreign contamination, used as standard
- Controlled negative pressure during rolling to prevent water infiltration
- Improved sealing through usage of heat- and wear-resistant sealing materials
- Easier handling of seals

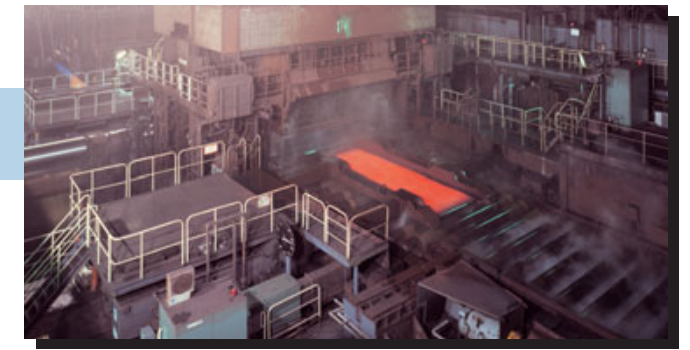


| | Comparison of actual life extension in field test | |
|-----------------------------|---|---|
| Conventional sealed bearing | 1 | |
| KVS Bearing | | 2 |

User Benefit

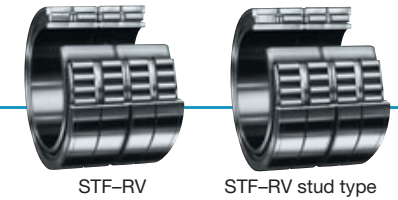
Page 23–24

| | | |
|----------------|------------|------------|
| Bearing Series | WTF Series | KVS Series |
| Bearing No. | Page 33–34 | Page 35–36 |

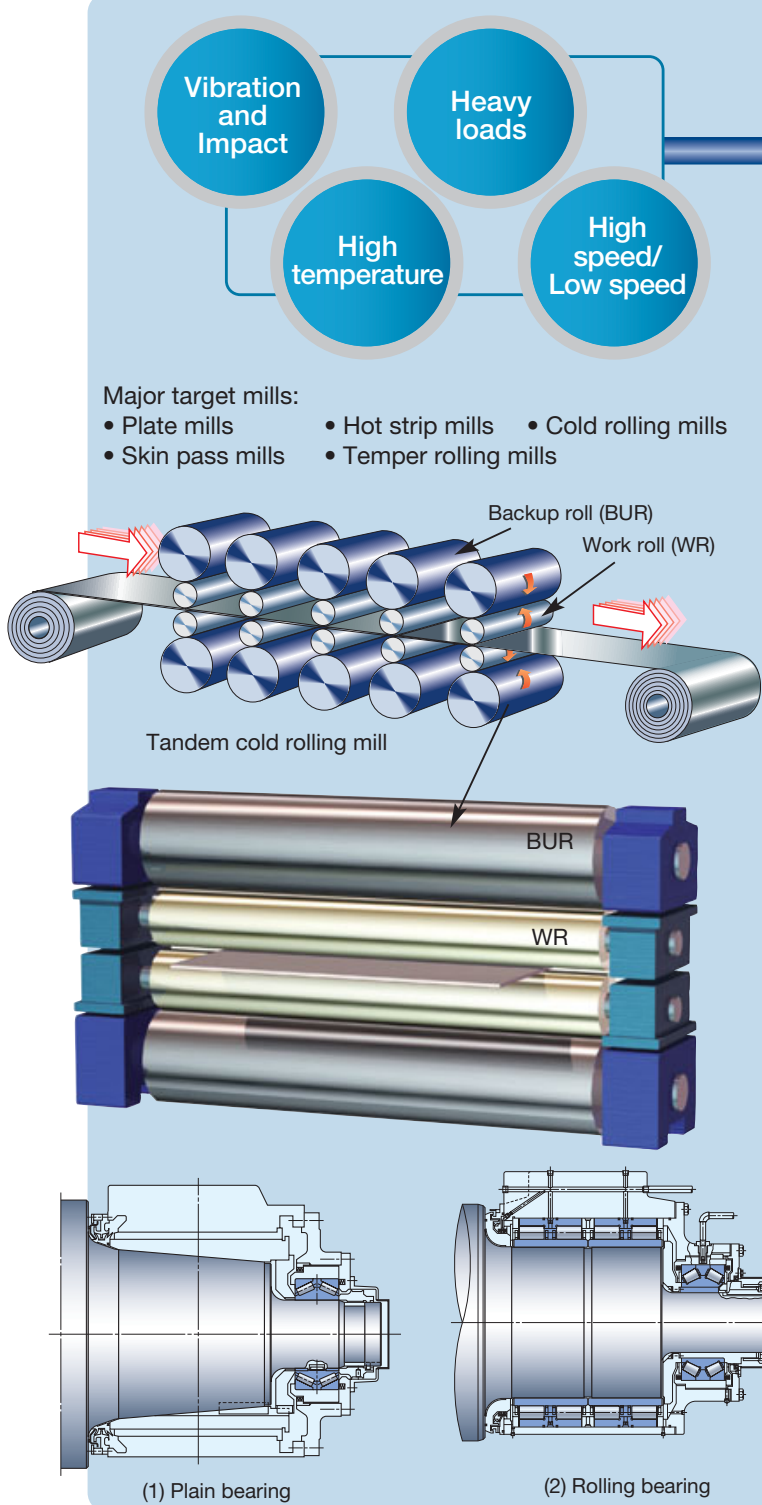


Benefits

- 1 Higher reliability and longer operating life prevent unexpected accidents
- 2 Reduced maintenance costs
- 3 Smoother rolling of bearings for backup rolls improves plate making precision

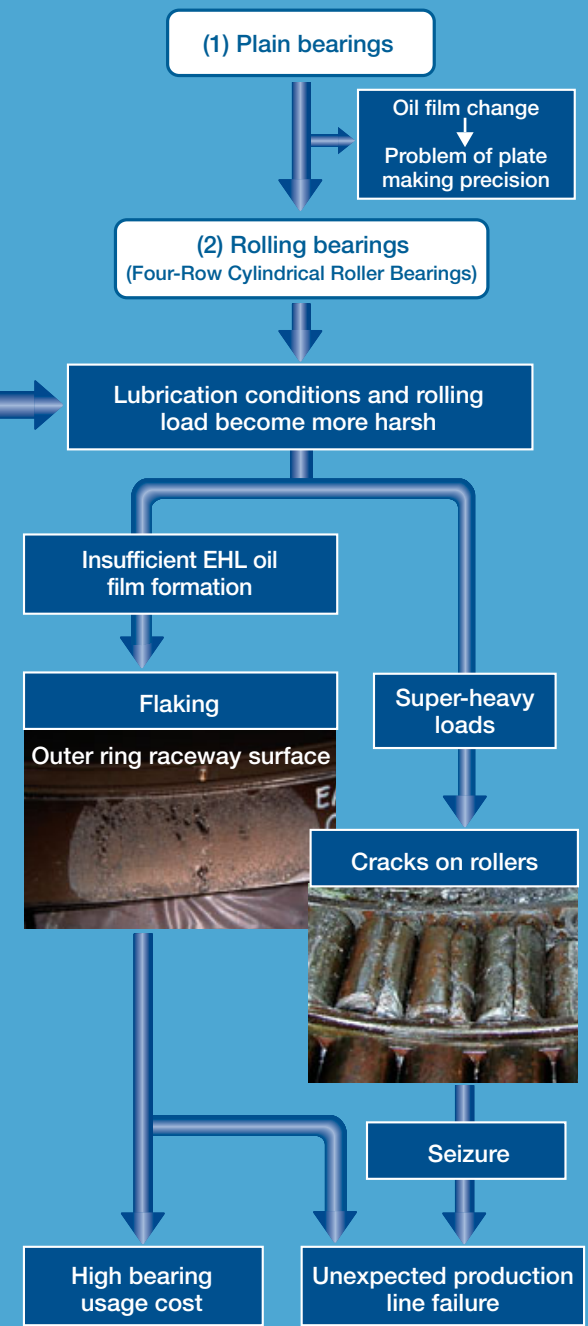


1. Operating conditions



2. Problems

Typical problems of backup roll bearings



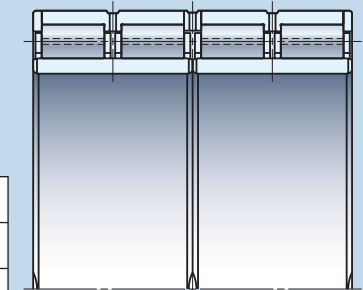
3. Countermeasures

- Material measures**
- Developed optimal bearing specifications for smoother rolling of backup rolls
 - Improved durability under harsh load conditions and insufficient oil film formation

Features Super-TF™ Four-Row Cylindrical Roller Bearings—STF-RV Series

- Longer life Super-TF steel, resulting in longer durability, even under boundary-lubrication with insufficient EHL oil film formation
- Higher load capacity by using pin type cage
- Higher rotational accuracy

| | Comparison of actual life extension in the field test | | |
|--------------------|---|--|--|
| Conventional steel | 1 | | |
| Super TF steel | 2 | | |



User Benefit

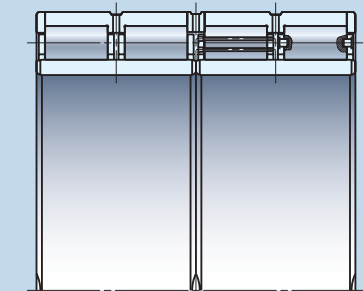
Bearing usage cost reduced by 50%

- Design measures**
- Design measures against cracks on rollers under super-heavy loads conditions

Features Super-TF™ Four-Row Cylindrical Roller Bearings—STF-RV stud-type

Target: Bearings for backup rolls of plate mills

- Adoption of solid type rollers associated with the development of a stud-type cage
- Higher load capacity
- Adoption of long-life Super-TF steel
- Higher rotational accuracy



User Benefit

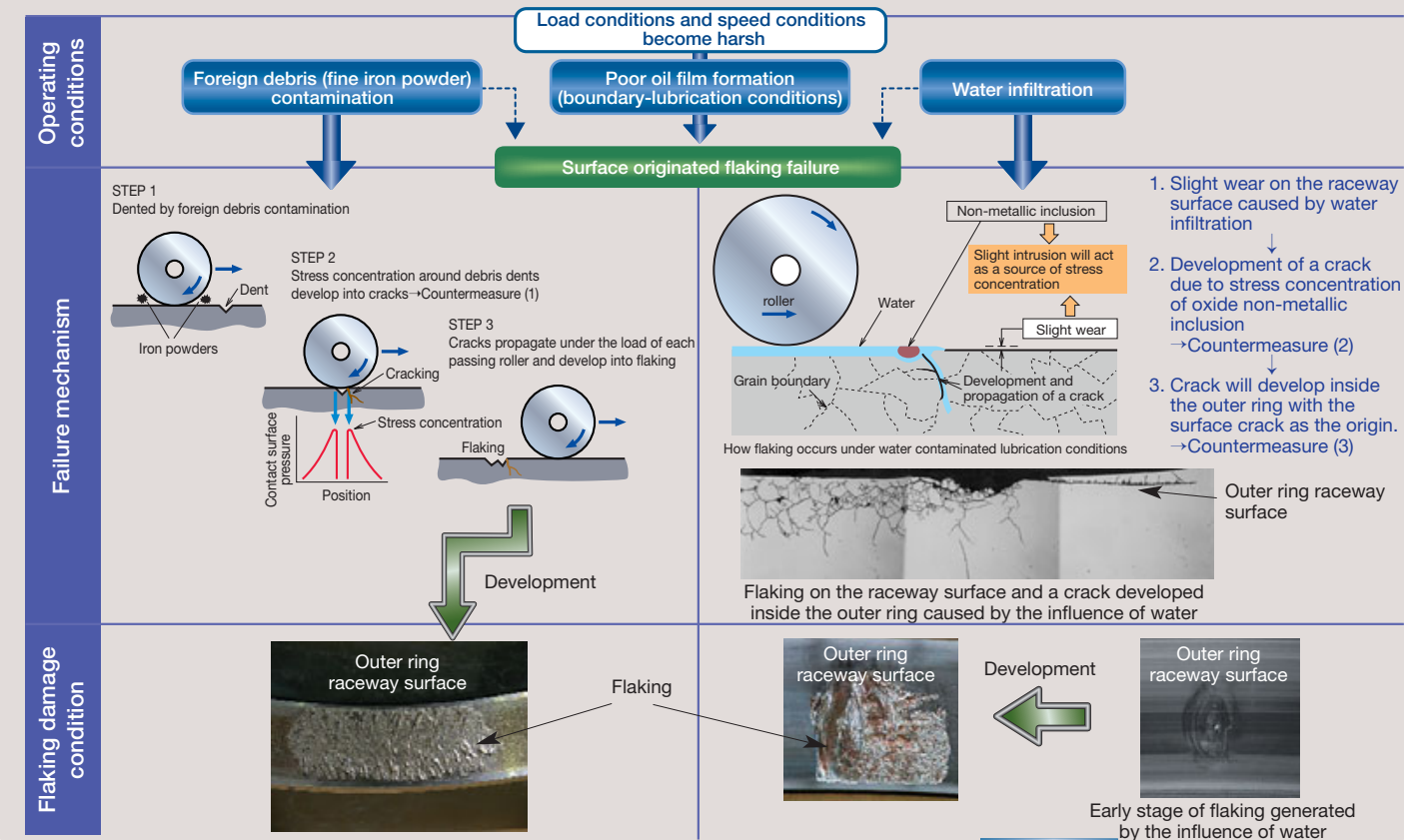
Elimination of unexpected accidents caused by cracks on rollers

| | | |
|----------------|---------------|------------------|
| Bearing Series | STF-RV Series | STF-RV stud type |
| Bearing No. | | |

Contribution to Enhancement of Reliability and Reduction of Maintenance Costs for Rolling Mills

Identification of the failure mechanism

Failure mechanism of the four-row tapered roller bearings for work rolls for rolling mills



Design measures

Development of Extra-Capacity Sealed-Clean™ Four-Row Tapered Roller Bearings (KVS Series)

Design development: High-load capacity design (New internal structure specifications, combined with a new type of seal, increase bearing capacity (patent pending).); New seal and holder (The new seal and its holder make handling easier and minimize seal damage (patent pending).); New bore seal (The new bore seal prevents negative pressure that causes water entry and provides for easier mounting and dismounting (patents pending).).

| KVS Series | |
|---|--|
| Basic load rating, C_r | 15-35% increase |
| Estimated life, L_{10} | 1.6 to 2.7 times of estimated life extension |
| Control of negative pressure inside the bearing | Negative pressure and water infiltration were reduced to less than 1/3 |
| Performance of the bearing seal | |

Please refer to CAT. No. E1255 for details.

Field durability performance: Evaluation result in an actual cold rolling mill (evaluation result in a Water-TF and KVS design). Target equipment: tandem cold rolling mills (4-high). Segment example: work rolls. Bearing type: sealed four-row tapered roller bearings (Fig. 1). Bearing No.: WTF343KVS4551.

Average life ratios of bearings for work rolls:

| | Average life ratios of bearings for work rolls |
|-----------------------------------|--|
| Conventional type sealed bearings | 1 |
| Water-TF Bearings | 3 |

Water-TF Bearings demonstrated on average a three times longer life span for users who previously had been faced with bearings with short life spans due to water infiltration. Please refer to CAT. No. E1251 for detailed data.

Development of Super-TF™ Bearing and Water-TF® Bearing

Enhances reliability and reduces maintenance cost of rolling mills: Countermeasure (1) Control of the retained austenite; Countermeasure (2) Super cleaning (special dissolution); Countermeasure (3) Chemical component design.

Super-TF Bearing: Application to bearings for backup rolls.

Water-TF Bearing: Application to bearings for work rolls.

Life of Super-TF Bearings under lubrication with foreign contamination and under boundary-lubrication:

| Life test result under foreign contamination (tapered roller bearings) | Life, hrs |
|--|-----------|
| Catalog life | 1 |
| General carburized steel | 0.2 |
| Super-TF | 2 |

Life of Water-TF Bearings under lubrication with water and foreign contamination:

| Life test result under boundary-lubrication ($\Delta=0.3$) (ball-rod rolling contact fatigue test) | Life, hrs |
|--|-----------|
| General carburized steel | 1 |
| Super-TF | 5.5 |

Please refer to CAT. No. E1203 for detailed data.

User Benefit

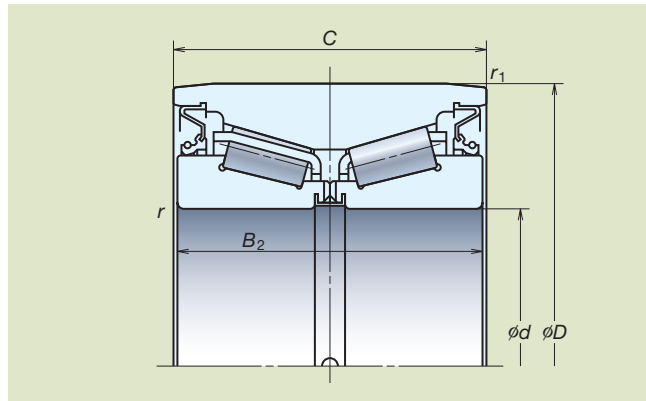
Estimated effect of maintenance cost reduction

| Bearing specifications | Maintenance cost | | |
|--|------------------------------------|---|--|
| | (1) Grease | (2) Bearing usage cost and seal repair cost | (3) Maintenance work cost for bearings |
| Open type bearings (without seal) Maintenance cycle: 3 months | 3 buckets of grease | 12 bearings | 6 workers |
| Conventional sealed bearings Maintenance cycle: 6 months | 1 bucket of grease | 12 bearings | 6 workers |
| Water-TF Bearings Maintenance cycle: 6 months | 1 bucket of grease (90% reduction) | 6 bearings (50% reduction) | 3 workers (50% reduction) |

Overall cost benefit in a five-stand cold rolling mill (four-high rolling) using Water-TF Bearings is roughly 30% to 35% compared to open-type bearings and maintenance cost benefit is roughly 25% to 30% if compared to conventional sealed bearings. Cost benefit is the sum of costs related to grease, bearing usage, seal repair, and maintenance costs ((1)+(2)+(3)).

Dimensions of Bearings for Sintering Equipment

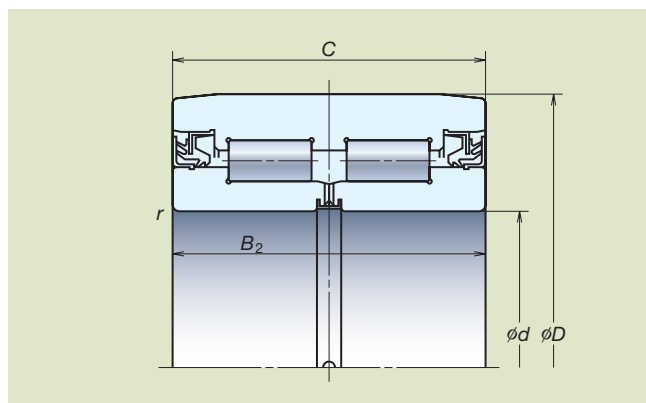
Sealed-Clean Bearings for Pallet Wheels—AR Series



| Bearing Numbers | Boundary Dimensions (mm) | | | | | | Basic Load Ratings (kN) | |
|-----------------|--------------------------|-----|-------|-----|-----------|-------------|-------------------------|----------|
| | d | D | B_2 | C | r (min) | r_1 (min) | C_r | C_{Or} |
| AR80-24 | 80 | 150 | 67 | 67 | 2.5 | 1 | 269 | 390 |
| AR90-25 | 90 | 160 | 74 | 74 | 2.5 | 0.5 | 240 | 435 |
| AR90-26 | 90 | 160 | 80 | 80 | 2.5 | 0.5 | 240 | 435 |
| AR90-27 | 90 | 160 | 78 | 78 | 2.5 | 0.5 | 240 | 435 |
| AR100-29 | 100 | 180 | 98 | 100 | 2.5 | 1 | 350 | 675 |
| AR100-30 | 100 | 180 | 100 | 100 | 2.5 | 1 | 350 | 675 |
| AR100-38 | 100 | 180 | 100 | 100 | 3 | 0.5 | 525 | 835 |
| AR100-40 | 100 | 180 | 98 | 100 | 3 | 0.5 | 525 | 835 |
| AR110-28 | 110 | 180 | 86 | 86 | 3 | 0.5 | 330 | 660 |
| AR110-29 | 110 | 200 | 92 | 100 | 2.5 | 1 | 415 | 805 |
| AR110-39 | 110 | 200 | 100 | 100 | 3 | 1 | 570 | 950 |

Remarks: Other bearings are available. Please contact NSK for additional information.

Sealed-Clean Bearings for Inboard Rollers—2J Series



| Bearing Numbers | Boundary Dimensions (mm) | | | | | Basic Load Ratings (kN) | |
|-----------------|--------------------------|-----|-------|-----|-----------|-------------------------|----------|
| | d | D | B_2 | C | r (min) | C_r | C_{Or} |
| 2J100-2 | 100 | 200 | 120 | 119 | 2.1 | 315 | 910 |
| 2J120-9A | 120 | 210 | 120 | 120 | 2.5 | 610 | 1 080 |
| 2J120-14 | 120 | 210 | 132 | 132 | 2.1 | 530 | 1 320 |
| 2J140-2 | 140 | 250 | 130 | 130 | 4 | 770 | 1 420 |
| 2J160Z-1 | 160.11 | 250 | 130 | 130 | 2.5 | 670 | 1 540 |
| 2J160Z-5 | 160.11 | 250 | 155 | 150 | 2.1 | 610 | 2 050 |

Remarks: Other bearings are available. Please contact NSK for additional information.

Dimensions of Bearings for BOFs and Converters

Ultra-Large Split Bearings for BOFs and Converter Trunnions

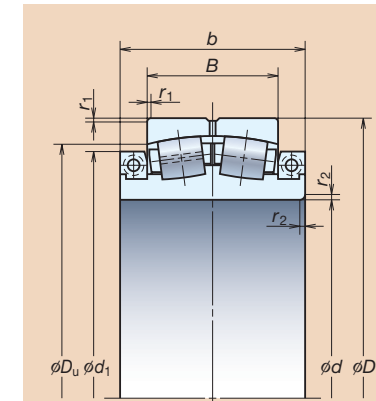


Fig. 1

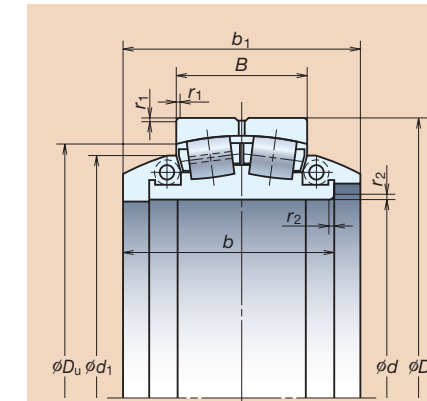


Fig. 2 Clamp ring with tangential seal surface

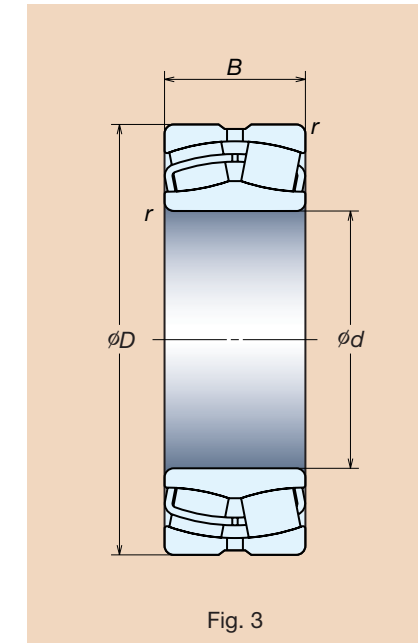
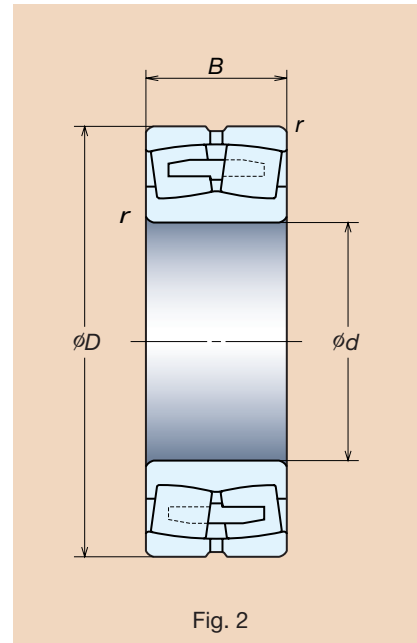
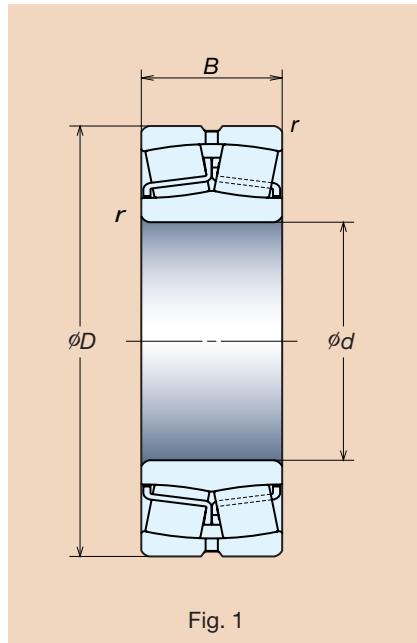


| Bearing Numbers | Boundary Dimensions (mm) | | | | | | | | | | Basic Load Ratings (kN) | | Fig. |
|-----------------|--------------------------|-------|-----|-------|-------|-------|-------|-------------|-------------|--------|-------------------------|----|------|
| | d | D | B | b | b_1 | d_1 | D_u | r_1 (min) | r_2 (min) | C_r | C_{Or} | | |
| 750SLPT1051 | 750 | 1 000 | 250 | 355 | — | 905 | 914.4 | 6 | 7.5 | 6 800 | 18 300 | 1 | |
| SL850-7 | 850 | 1 120 | 272 | 385 | — | 1 015 | 1 025 | 6 | 6 | 8 000 | 21 600 | 1 | |
| 900SLPT1251 | 900 | 1 250 | 285 | 410 | — | 1 100 | 1 142 | 7.5 | 19 | 9 850 | 24 200 | 1 | |
| 950SLPT1451 | 950 | 1 400 | 300 | 520 | 600 | 1 182 | 1 265 | 7.5 | 28 | 12 300 | 27 900 | 2 | |
| SL1120-3 | 1 120 | 1 580 | 320 | 632.5 | 697.5 | 1 400 | 1 445 | 9.5 | 30 | 13 200 | 32 000 | 2 | |
| *1200SLPT1751 | 1 200 | 1 700 | 410 | 780 | 780 | 1 470 | 1 536 | 9.5 | 31 | 17 300 | 43 500 | 2* | |
| 1200SLPT1752 | 1 200 | 1 700 | 410 | 660 | 730 | 1 470 | 1 536 | 9.5 | 19 | 17 300 | 43 500 | 2 | |
| 1320SLPT1851 | 1 320 | 1 850 | 530 | 815 | 814 | 1 600 | 1 670 | 12 | 31 | 22 500 | 63 500 | 2 | |
| *1400SLPT1951 | 1 400 | 1 900 | 530 | 880 | 880 | 1 680 | 1 710 | 12 | 31 | 22 800 | 65 000 | 2* | |
| *1400SLPT1953 | 1 400 | 1 900 | 530 | 810 | 860 | 1 680 | 1 710 | 12 | 31 | 22 800 | 65 000 | 2* | |

Remarks: 1. The shapes of bearings marked * are not exactly the same as shown in Fig. 2.
2. Other bearings are available. Please contact NSK for additional information.

Dimensions of Bearings for Continuous Casting Machines

SWR™ Bearings (Spherical Roller Bearings) – SWR Series



| Bearing Numbers | Boundary Dimensions (mm) | | | | Basic Load Ratings (kN) | | Fig. |
|-----------------|--------------------------|-----|-----|-----------|-------------------------|----------|------|
| | d | D | B | r (min) | C_r | C_{or} | |
| 22208SWREAg2E4 | 40 | 80 | 23 | 1.1 | 113 | 99.5 | 1 |
| 22210SWREAg2E4 | 50 | 90 | 23 | 1.1 | 124 | 119 | 1 |
| 23012SWRCg2E4 | 60 | 95 | 26 | 1.1 | 98.5 | 141 | 3 |
| 22212SWREAg2E4 | | 110 | 28 | 1.5 | 178 | 174 | 1 |
| 22214SWREAg2E4 | 70 | 125 | 31 | 1.5 | 225 | 232 | 1 |
| 22216SWREAg2E4 | 80 | 140 | 33 | 2 | 264 | 275 | 1 |
| 22218SWREAg2E4 | 90 | 160 | 40 | 2 | 360 | 395 | 1 |
| 23020SWRCdg2E4 | 100 | 150 | 37 | 1.5 | 212 | 335 | 3 |
| 24020SWRCg2E4 | | 150 | 50 | 1.5 | 276 | 470 | 3 |
| 24120SWRCAg2ME4 | | 165 | 65 | 2 | 345 | 535 | 2 |
| 22220SWREAg2E4 | 180 | 46 | 2.1 | 455 | 490 | 1 | |
| 23022SWRCdg2E4 | 110 | 170 | 45 | 2 | 293 | 465 | 3 |
| 24022SWRCg2E4 | | 170 | 60 | 2 | 380 | 645 | 3 |
| 24122SWRCg2E4 | | 180 | 69 | 2 | 460 | 750 | 3 |
| 22222SWREAg2E4 | | 200 | 53 | 2.1 | 605 | 645 | 1 |
| 23024SWRCdg2E4 | 120 | 180 | 46 | 2 | 315 | 525 | 3 |
| 24024SWRCg2E4 | | 180 | 60 | 2 | 395 | 705 | 3 |
| 24124SWRCg2E4 | | 200 | 80 | 2 | 575 | 950 | 3 |
| 22224SWREAg2E4 | 215 | 58 | 2.1 | 685 | 765 | 1 | |
| 23026SWRCdg2E4 | 130 | 200 | 52 | 2 | 400 | 655 | 3 |
| 24026SWRCg2E4 | | 200 | 69 | 2 | 495 | 865 | 3 |
| 24126SWRCg2E4 | | 210 | 80 | 2 | 590 | 1 010 | 3 |
| 22226SWREAg2E4 | | 230 | 64 | 3 | 820 | 940 | 1 |
| 23028SWRCdg2E4 | 140 | 210 | 53 | 2 | 420 | 715 | 3 |
| 24028SWRCg2E4 | | 210 | 69 | 2 | 525 | 945 | 3 |
| 24128SWRCg2E4 | | 225 | 85 | 2.1 | 670 | 1 160 | 3 |
| 22228SWRCdg2E4 | | 250 | 68 | 3 | 645 | 930 | 3 |

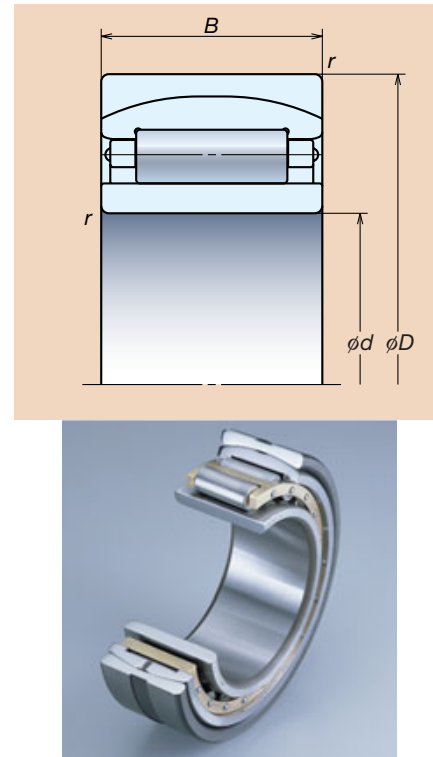
| Bearing Numbers | Boundary Dimensions (mm) | | | | Basic Load Ratings (kN) | | Fig. |
|-----------------|--------------------------|-----|-----|-----------|-------------------------|----------|------|
| | d | D | B | r (min) | C_r | C_{or} | |
| 23030SWRCdg2E4 | 150 | 225 | 56 | 2.1 | 470 | 815 | 3 |
| 24030SWRCg2E4 | | 225 | 75 | 2.1 | 590 | 1 090 | 3 |
| 24130SWRCg2E4 | | 250 | 100 | 2.1 | 890 | 1 530 | 3 |
| 22230SWRCdg2E4 | | 270 | 73 | 3 | 765 | 1 120 | 3 |
| 23032SWRCdg2E4 | 160 | 240 | 60 | 2.1 | 540 | 955 | 3 |
| 24032SWRCg2E4 | | 240 | 80 | 2.1 | 680 | 1 260 | 3 |
| 24132SWRCg2E4 | | 270 | 109 | 2.1 | 1 040 | 1 760 | 3 |
| 22232SWRCdg2E4 | 290 | 80 | 3 | 910 | 1 320 | 3 | |
| 23034SWRCdg2E4 | 170 | 260 | 67 | 2.1 | 640 | 1 090 | 3 |
| 24034SWRCg2E4 | | 260 | 90 | 2.1 | 825 | 1 520 | 3 |
| 24134SWRCg2E4 | | 280 | 109 | 2.1 | 1 080 | 1 860 | 3 |
| 22234SWRCdg2E4 | | 310 | 86 | 4 | 990 | 1 500 | 3 |
| 23036SWRCdg2E4 | 180 | 280 | 74 | 2.1 | 750 | 1 270 | 3 |
| 24036SWRCg2E4 | | 280 | 100 | 2.1 | 965 | 1 750 | 3 |
| 24136SWRCg2E4 | | 300 | 118 | 3 | 1 190 | 2 040 | 3 |
| 22236SWRCdg2E4 | | 320 | 86 | 4 | 1 020 | 1 540 | 3 |
| 23038SWRCAg2ME4 | 190 | 290 | 75 | 2.1 | 775 | 1 350 | 2 |
| 24038SWRCg2E4 | | 290 | 100 | 2.1 | 975 | 1 840 | 3 |
| 24138SWRCg2E4 | | 320 | 128 | 3 | 1 370 | 2 330 | 3 |
| 22238SWRCAg2ME4 | 340 | 92 | 4 | 1 140 | 1 730 | 2 | |
| 23040SWRCAg2ME4 | 200 | 310 | 82 | 2.1 | 940 | 1 700 | 2 |
| 24040SWRCg2E4 | | 310 | 109 | 2.1 | 1 140 | 2 120 | 3 |
| 24140SWRCg2E4 | | 340 | 140 | 3 | 1 570 | 2 670 | 3 |
| 22240SWRCAg2ME4 | | 360 | 98 | 4 | 1 300 | 2 010 | 2 |
| 23044SWRCAg2ME4 | 220 | 340 | 90 | 3 | 1 090 | 1 980 | 2 |
| 24044SWRCg2E4 | | 340 | 118 | 3 | 1 360 | 2 600 | 3 |
| 24144SWRCg2E4 | | 370 | 150 | 4 | 1 800 | 3 200 | 3 |
| 22244SWRCAg2ME4 | | 400 | 108 | 4 | 1 570 | 2 430 | 2 |

Remarks: Other bearings are available. Please contact NSK for additional information.

Dimensions of Bearings for Continuous Casting Machines

Cylindrical Roller Bearings with Aligning Rings (With cage) – RUB Series

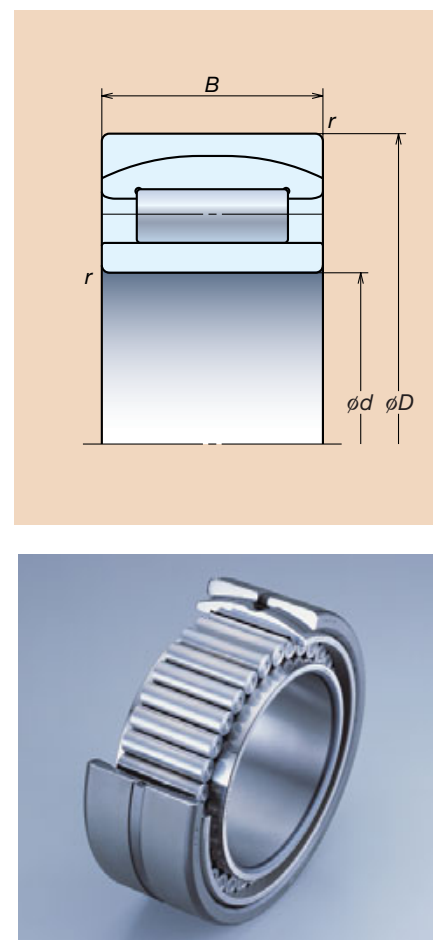
| Bearing Numbers | Boundary Dimensions (mm) | | | | Basic Load Ratings (kN) | |
|-----------------|--------------------------|-----|-----|-----|-------------------------|-------|
| | Free End | d | D | B | r (min) | C_r |
| 110RUB41 | 110 | 180 | 69 | 2 | 271 | 490 |
| 120RUB40 | 120 | 180 | 60 | 2 | 247 | 495 |
| 120RUB41 | | 200 | 80 | 2 | 370 | 680 |
| 120RUB32 | 130 | 215 | 76 | 2.1 | 435 | 735 |
| 130RUB41 | | 210 | 80 | 2 | 380 | 715 |
| 130RUB32 | 140 | 230 | 80 | 3 | 490 | 825 |
| 140RUB40 | | 210 | 69 | 2 | 330 | 670 |
| 140RUB41 | 150 | 225 | 85 | 2.1 | 435 | 830 |
| 150RUB40 | | 225 | 75 | 2.1 | 375 | 755 |
| 150RUB41 | 160 | 250 | 100 | 2.1 | 540 | 1 040 |
| 150RUB32 | | 270 | 96 | 3 | 690 | 1 210 |
| 160RUB41 | 170 | 270 | 109 | 2.1 | 690 | 1 260 |
| 160RUB32 | | 290 | 104 | 3 | 795 | 1 370 |
| 170RUB41 | 180 | 280 | 109 | 2.1 | 710 | 1 330 |
| 170RUB32 | | 310 | 110 | 4 | 915 | 1 590 |
| 180RUB40 | 190 | 280 | 100 | 2.1 | 635 | 1 300 |
| 180RUB41 | | 300 | 118 | 3 | 755 | 1 460 |
| 190RUB40 | 200 | 290 | 100 | 2.1 | 650 | 1 360 |
| 190RUB32 | | 340 | 120 | 4 | 1 050 | 1 870 |
| 200RUB40 | 200 | 310 | 109 | 2.1 | 770 | 1 540 |
| 200RUB41 | | 340 | 140 | 3 | 1 080 | 2 200 |



Remarks: Other bearings are available. Please contact NSK for additional information.

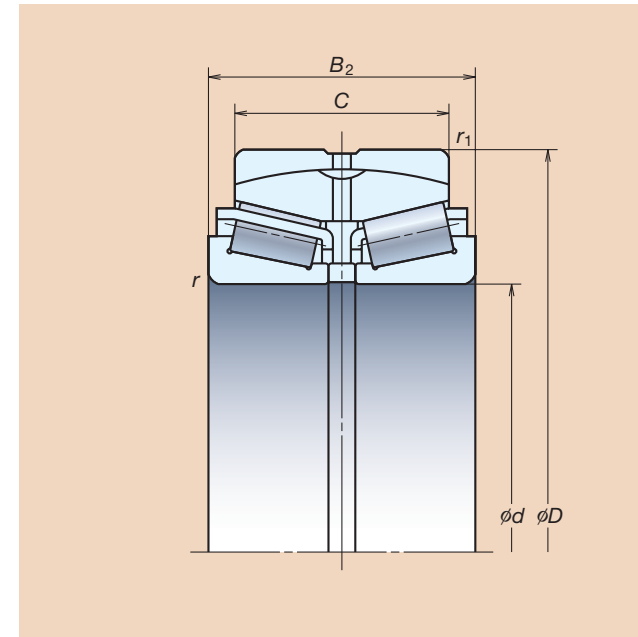
Cylindrical Roller Bearings with Aligning Rings (Full-complement) – RUB Series

| Bearing Numbers | Boundary Dimensions (mm) | | | | Basic Load Ratings (kN) | |
|-----------------|--------------------------|-----|------|-------|-------------------------|-------|
| | Free End | d | D | B | r (min) | C_r |
| 110RUB41APV | 110 | 180 | 69 | 2 | 375 | 805 |
| 110RUB32APV | | 200 | 69.8 | 2.1 | 440 | 805 |
| 120RUB40APV | 120 | 180 | 60 | 2 | 305 | 715 |
| 120RUB41APV | | 200 | 80 | 2 | 450 | 985 |
| 120RUB32APV | 130 | 215 | 76 | 2.1 | 510 | 990 |
| 130RUB40APV | | 200 | 69 | 2 | 405 | 935 |
| 130RUB41APV | 140 | 210 | 80 | 2 | 480 | 1 050 |
| 130RUB32APV | | 230 | 80 | 3 | 585 | 1 090 |
| 140RUB40APV | 150 | 210 | 69 | 2 | 420 | 990 |
| 140RUB41APV | | 225 | 85 | 2.1 | 545 | 1 230 |
| 140RUB32APV | 160 | 250 | 88 | 3 | 715 | 1 390 |
| 150RUB40APV | | 225 | 75 | 2.1 | 435 | 1 070 |
| 150RUB41APV | 170 | 250 | 100 | 2.1 | 710 | 1 620 |
| 150RUB32APV | | 270 | 96 | 3 | 815 | 1 640 |
| 160RUB40APV | 180 | 240 | 80 | 2.1 | 490 | 1 200 |
| 160RUB41APV | | 270 | 109 | 2.1 | 855 | 1 830 |
| 160RUB32APV | 190 | 290 | 104 | 3 | 960 | 1 890 |
| 170RUB40APV | | 260 | 90 | 2.1 | 640 | 1 520 |
| 170RUB41APV | 200 | 280 | 109 | 2.1 | 875 | 1 900 |
| 170RUB32APV | | 310 | 110 | 4 | 1 060 | 2 090 |
| 180RUB40APV | 180 | 280 | 100 | 2.1 | 785 | 1 870 |
| 180RUB41APV | | 300 | 118 | 3 | 940 | 2 120 |
| 180RUB32APV | 190 | 320 | 112 | 4 | 1 090 | 2 190 |
| 190RUB40APV | | 290 | 100 | 2.1 | 810 | 1 980 |
| 190RUB41APV | 200 | 320 | 128 | 3 | 1 120 | 2 480 |
| 190RUB32APV | | 340 | 120 | 4 | 1 210 | 2 430 |
| 200RUB40APV | 200 | 310 | 109 | 2.4 | 960 | 2 250 |
| 200RUB41APV | | 340 | 140 | 3 | 1 300 | 2 930 |
| 200RUB32APV | 360 | 128 | 4 | 1 320 | 2 760 | |



Remarks: Other bearings are available. Please contact NSK for additional information.

Tapered Roller Bearings with Aligning Rings – AR Series



| Bearing Numbers | Boundary Dimensions (mm) | | | | | | Basic Load Ratings (kN) | |
|-----------------|--------------------------|-----|-----|-------|-----|-----------|-------------------------|-------|
| | Fixed End | d | D | B_2 | C | r (min) | r_1 (min) | C_r |
| AR80-31 | 80 | 140 | 46 | 33 | 2 | 2 | 144 | 205 |
| AR90-34 | 90 | 190 | 64 | 58 | 3 | 3 | 300 | 430 |
| AR100-42 | 100 | 180 | 60 | 46 | 2.1 | 2.1 | 256 | 390 |
| AR110-46 | 110 | 170 | 45 | 38 | 2 | 2.5 | 171 | 310 |
| AR120-30 | 120 | 180 | 60 | 48 | 2 | 2.5 | 256 | 525 |
| AR130-31 | 130 | 200 | 69 | 55 | 2 | 2.5 | 320 | 650 |
| AR130-37 | | 230 | 95 | 80 | 3 | 3 | 530 | 1 010 |
| AR140-24 | 140 | 210 | 69 | 55 | 2.5 | 2.5 | 340 | 690 |
| AR140-27 | | 225 | 85 | 70 | 2.1 | 2.1 | 445 | 905 |
| AR140-28 | | 225 | 68 | 54 | 2.5 | 2.5 | 385 | 620 |
| AR140-29 | | 210 | 53 | 43 | 2 | 2.5 | 252 | 460 |
| AR150-1 | 150 | 225 | 75 | 60 | 2.5 | 2.5 | 395 | 845 |
| AR160-11 | 160 | 240 | 80 | 65 | 2.1 | 2.1 | 455 | 935 |
| AR180-1 | 180 | 280 | 100 | 80 | 3 | 2.5 | 665 | 1 430 |
| AR200-18 | 200 | 340 | 112 | 92 | 3 | 3 | 895 | 1 630 |

Remarks: Other bearings are available. Please contact NSK for additional information.

Dimensions of Bearings for Continuous Casting Machines

Split Cylindrical Roller Bearings (for segmented rolls) – RNPH Series

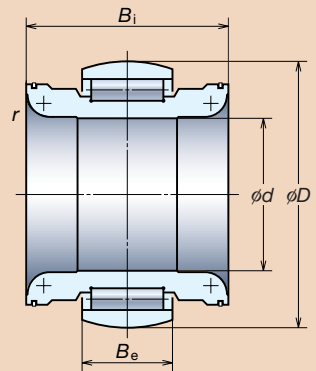


Fig. 1

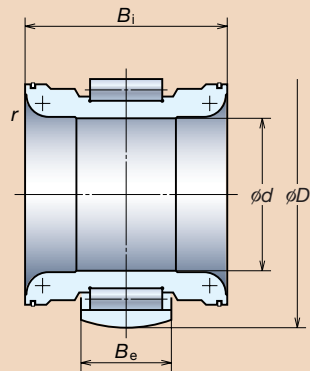
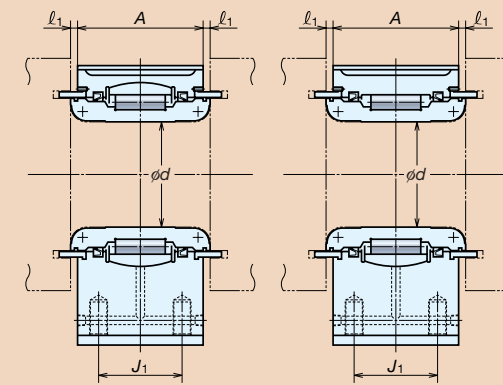
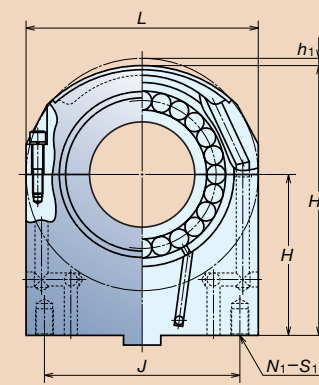


Fig. 2

| Bearing Numbers | Boundary Dimensions (mm) | | | | | Basic Load Ratings (kN) | | Roll Diameter (mm) | Fig. |
|-----------------|--------------------------|-----|----------------|----------------|-----|-------------------------|-----------------|--------------------|------|
| | d | D | B _i | B _e | r | C _r | C _{0r} | | |
| 100RNPH1801 | 100 | 185 | 169 | 74 | 15 | 475 | 950 | 225 | 2 |
| 110RNPH1801 | 110 | 180 | 137 | 49 | 15 | 272 | 570 | 230 | 2 |
| 110RNPH1803 | 110 | 185 | 154 | 76 | 20 | 450 | 1 070 | 230 | 2 |
| 110RNPH2001 | 110 | 200 | 179 | 80 | 20 | 535 | 1 090 | 250 | 2 |
| 115RNPH2001 | 115 | 205 | 202 | 98 | 15 | 625 | 1 460 | 240 | 2 |
| 120RNPH1901 | 120 | 195 | 157 | 66 | 20 | 410 | 950 | 250 | 2 |
| 120RNPH2001 | 120 | 205 | 179 | 80 | 20 | 560 | 1 220 | 255 | 2 |
| 130RNP2001 | 130 | 205 | 139 | 60 | 20 | 455 | 1 030 | 270 | 1 |
| 130RNP2101 | 130 | 215 | 174 | 75 | 20 | 540 | 1 190 | 280 | 1 |
| 130RNPH2105 | 130 | 215 | 143 | 60 | 20 | 460 | 975 | 250 | 2 |
| 130RNPH2107 | 130 | 215 | 174 | 75 | 20 | 550 | 1 230 | 250 | 2 |
| 130RNPH2201 | 130 | 225 | 189 | 90 | 20 | 670 | 1 460 | 280 | 2 |
| 130RNPH2202 | 130 | 220 | 186 | 79 | 20 | 555 | 1 370 | 280 | 2 |
| 135RNPH2101 | 135 | 215 | 183 | 84 | 20 | 570 | 1 350 | 250 | 2 |
| 135RNPH2102 | 135 | 210 | 183 | 84 | 20 | 515 | 1 350 | 250 | 2 |
| 140RNPH2102 | 140 | 215 | 162 | 60 | 20 | 415 | 950 | 270 | 2 |
| 140RNPH2103 | 140 | 215 | 189 | 74 | 2.5 | 490 | 1 170 | 265 | 2 |
| 140RNPH2302 | 140 | 235 | 194 | 84 | 20 | 665 | 1 530 | 285 | 2 |
| 140RNP2401 | 140 | 245 | 184 | 85 | 20 | 710 | 1 510 | 310 | 1 |
| 145RNPH2201 | 145 | 225 | 179 | 76 | 20 | 560 | 1 340 | 280 | 2 |
| 145RNPH2303 | 145 | 232 | 196 | 84 | 20 | 630 | 1 440 | 280 | 2 |
| 145RNPH2401 | 145 | 240 | 208 | 89 | 20 | 765 | 1 780 | 295 | 2 |
| 150RNPH2303 | 150 | 230 | 199 | 78 | 2.5 | 555 | 1 340 | 280 | 2 |
| 150RNPH2401 | 150 | 245 | 159 | 80 | 20 | 680 | 1 550 | 280 | 2 |
| 150RNPH2403 | 150 | 240 | 195 | 84 | 18 | 690 | 1 630 | 290 | 2 |
| 150RNPH2503 | 150 | 250 | 169 | 70 | 20 | 640 | 1 500 | 300 | 2 |
| 150RNPH2505 | 150 | 250 | 208 | 89 | 20 | 780 | 1 840 | 295 | 2 |
| 150RNPH2601 | 150 | 265 | 187 | 98 | 20 | 900 | 1 950 | 320 | 2 |
| 150RNPH2702 | 150 | 275 | 199 | 100 | 20 | 945 | 1 970 | 330 | 2 |
| 155RNPH2401 | 155 | 245 | 199 | 88 | 20 | 740 | 1 720 | 300 | 2 |
| 160RNPH2502 | 160 | 255 | 199 | 90 | 20 | 735 | 1 730 | 310 | 2 |
| 160RNPH2504 | 160 | 255 | 189 | 86 | 20 | 745 | 1 780 | 305 | 2 |
| 160RNPH2601 | 160 | 265 | 200 | 82 | 20 | 745 | 1 700 | 320 | 2 |
| 160RNPH2703 | 160 | 275 | 214 | 100 | 25 | 945 | 2 190 | 325 | 2 |
| 170RNPH2601 | 170 | 265 | 214 | 100 | 20 | 880 | 2 050 | 330 | 2 |
| 180RNPH2901 | 180 | 290 | 214 | 85 | 20 | 880 | 2 050 | 335 | 2 |

Remarks: Other bearings are available. Please contact NSK for additional information.

Plummer Units for Split Cylindrical Roller Bearings – PCR Series

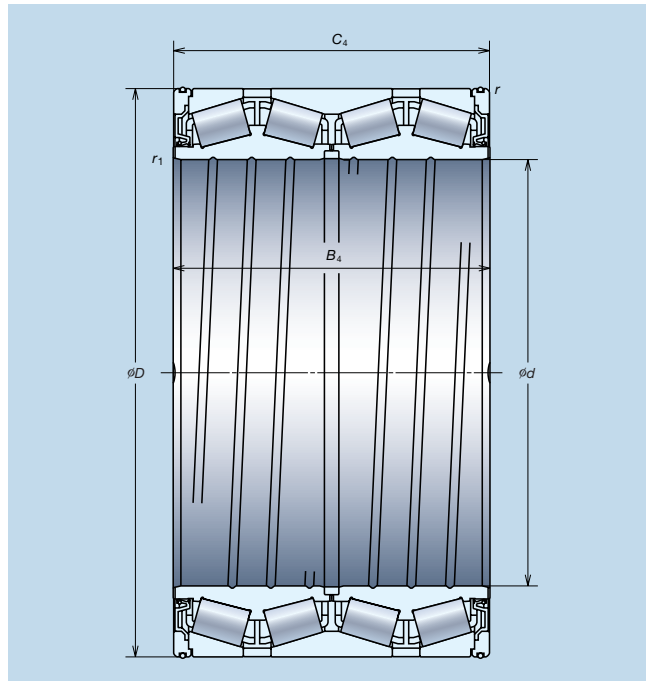


| Bearing Numbers | Shaft Diameter (mm) d | Boundary Dimensions (mm) | | | | | | | | | |
|-----------------|--------------------------|--------------------------|-----|-------|----------------|----------------|----------------|-----|----------------|----------------|----------------|
| | | L | A | H | h ₁ | H ₂ | l ₁ | J | J ₁ | N ₁ | S ₁ |
| 100PCR2201 | 100 | 235 | 152 | 132 | 10 | 234.5 | 9 | 165 | 100 | 4 | M20 |
| 110PCR2301 | 110 | 230 | 120 | 160 | 10 | 265 | 9.5 | 140 | — | 2 | M30 |
| 110PCR2303 | 110 | 230 | 135 | 180 | 10 | 285 | 10 | 170 | — | 2 | M30 |
| 110PCR2502 | 110 | 250 | 156 | 150 | 11.5 | 263.5 | 12 | — | — | 1 | M36 |
| 115PCR2401 | 115 | 245 | 183 | 190 | 10 | 300 | 10 | 150 | — | 2 | M24 |
| 120PCR2501 | 120 | 250 | 142 | 165 | 11.5 | 278.5 | 9 | 190 | 90 | 4 | M24 |
| 120PCR2502 | 120 | 255 | 162 | 230 | 10 | 347.5 | 9 | 205 | 100 | 4 | M24 |
| 130PCR2701 | 130 | 265 | 118 | 190 | 11.5 | 313.5 | 11 | 195 | 65 | 4 | M30 |
| 130PCR2801 | 130 | 280 | 156 | 160 | 10 | 290 | 9.5 | 200 | 100 | 4 | M24 |
| 130PCR2705 | 130 | 270 | 132 | 197 | 9 | 313 | 6 | 220 | 93 | 4 | 3/4-10UNC |
| 130PCR2604 | 130 | 265 | 175 | 145 | 10 | 260 | 7.5 | 210 | 120 | 4 | M16 |
| 130PCR2802 | 130 | 280 | 172 | 180 | 11.5 | 308.5 | 9 | 220 | 110 | 4 | M30 |
| 130PCR2603 | 130 | 265 | 171 | 175 | 12.5 | 295 | 8 | 230 | 90 | 4 | M20 |
| 135PCR2701 | 135 | 270 | 160 | 160 | 10 | 275 | 12 | 180 | 130 | 4 | M20 |
| 135PCR2502 | 135 | 250 | 160 | 160 | 10 | 275 | 12 | 150 | 130 | 4 | M20 |
| 140PCR2701 | 140 | 270 | 145 | 180 | 10 | 305 | 9.5 | 170 | — | 2 | M30 |
| 140PCR2601 | 140 | 265 | 174 | 175 | 7.5 | 300 | 8 | 230 | 130 | 4 | M20 |
| 140PCR2804 | 140 | 285 | 179 | 175 | 12.5 | 305 | 8 | 250 | 97.5 | 4 | M20 |
| 140PCR3101 | 140 | 310 | 166 | 175 | 10 | 320 | 9.5 | 220 | 110 | 4 | M24 |
| 145PCR2801 | 145 | 280 | 162 | 250 | 10 | 380 | 9 | 220 | 100 | 4 | M30 |
| 145PCR2804 | 145 | 280 | 183 | 260 | 10 | 390 | 7 | 220 | 123 | 4 | M30 |
| 145PCR2901 | 145 | 295 | 195 | 270 | 10 | 407.5 | 7 | 230 | 130 | 4 | M30 |
| 150PCR2801 | 150 | 280 | 184 | 175 | 10 | 305 | 8 | 230 | 140 | 4 | M20 |
| 150PCR280 | 150 | 330 | 144 | 310 | 10 | 440 | 8 | 350 | 260 | 4 | φ33 |
| 150PCR3004 | 150 | 305 | 180 | 205.5 | 14.5 | 336 | 8 | 230 | 120 | 4 | M24 |
| 150PCR3003 | 150 | 300 | 150 | 180 | 10 | 320 | 10 | 195 | 90 | 4 | M30 |
| 150PCR2901 | 150 | 295 | 193 | 310 | 10 | 447.5 | 8 | 215 | 126 | 4 | M30 |
| 150PCR3203 | 150 | 320 | 168 | 220 | 15 | 365 | 10 | 240 | 90 | 4 | M36 |
| 150PCR3301 | 150 | 330 | 182 | 220 | 11.5 | 373.5 | 9 | 260 | 110 | 4 | M36 |
| 155PCR3001 | 155 | 300 | 182 | 260 | 10 | 400 | 9 | 240 | 110 | 4 | M30 |
| 160PCR3101 | 160 | 310 | 178 | 185 | 16.5 | 323.5 | 11 | 150 | — | 2 | M30 |
| 160PCR3002 | 160 | 305 | 174 | 217 | 12.5 | 357 | 8 | 255 | 135 | 4 | 3/4-10UNC |
| 160PCR3302 | 160 | 330 | 185 | 225 | 20 | 365 | 8 | 250 | 130 | 4 | M24 |
| 160PCR3401 | 160 | 340 | 199 | 200 | 15.5 | 347 | 8 | 290 | 130 | 4 | M20 |
| 170PCR3301 | 170 | 320 | 194 | 290.5 | 10 | 445.5 | 10.5 | 260 | 340 | 4 | φ26 |
| 180PCR3301 | 180 | 335 | 150 | 217.5 | 10 | 375 | 10 | 240 | 82 | 4 | M30 |

Remarks: Other bearings are available. Please contact NSK for additional information.

Dimensions of Bearings for Rolling Mills

Water-TF® Bearings – WTF Series



Dynamic Equivalent Load

$$P = XF_r + YF_a$$

| $F_a / F_r \leq e$ | | $F_a / F_r > e$ | |
|--------------------|-------|-----------------|-------|
| X | Y | X | Y |
| 1 | Y_3 | 0.67 | Y_2 |

Static Equivalent Load

$$P_0 = F_r + Y_0 F_a$$

Where $Y_0 = Y_3$

The values of e , Y_2 , and Y_3 are given in the table.



| Bearing Numbers | Boundary Dimensions (mm/inch) | | | | | | Basic Load Ratings (kN) | | Constant | Axial Load Factors | | |
|------------------|-------------------------------|----------------------|----------------------|----------------------|-----------|-------------|-------------------------|----------|----------|--------------------|-------|-------|
| | d | D | B_4 | C_4 | r (min) | r_1 (min) | C_r | C_{0r} | | e | Y_2 | Y_3 |
| WTF170KVS2401Eg | 170 | 240 | 175 | 175 | 2.5 | 2.5 | 1 020 | 2 010 | 0.32 | 3.2 | 2.1 | |
| *WTF215KVS2851Eg | 215.900 (8.5000) | 288.925 (11.3750) | 177.800 (7.0000) | 177.800 (7.0000) | 3.3 | 0.8 | 1 070 | 2 350 | 0.49 | 2.1 | 1.4 | |
| *WTF216KVS3351Eg | 216.103 (8.5080) | 330.2 (13.0000) | 263.525 (10.3750) | 269.875 (10.6250) | 3.3 | 1.5 | 2 290 | 4 550 | 0.46 | 2.2 | 1.5 | |
| WTF220KVS3301Eg | 220 | 330 | 260 | 260 | 3 | 4 | 2 330 | 4 800 | 0.40 | 2.5 | 1.7 | |
| *WTF234KVS3251Eg | 234.950 (9.2500) | 327.025 (12.8750) | 196.850 (7.7500) | 196.850 (7.7500) | 3.3 | 1.5 | 1 550 | 3 200 | 0.46 | 2.2 | 1.5 | |
| *WTF244KVS3251Eg | 244.475 (9.6250) | 327.025 (12.8750) | 193.680 (7.6250) | 193.680 (7.6250) | 3 | 1.5 | 1 370 | 3 050 | 0.40 | 2.5 | 1.7 | |
| WTF245KVS3402Eg | 245 | 345 | 310 | 310 | 3 | 2 | 2 700 | 6 650 | 0.40 | 2.5 | 1.7 | |
| *WTF254KVS3552Eg | 254.000 (10.0000) | 358.775 (14.1250) | 269.875 (10.6250) | 269.875 (10.6250) | 3.3 | 1.5 | 2 420 | 5 500 | 0.40 | 2.5 | 1.7 | |
| WTF260KVS3601Eg | 260 | 365 | 340 | 340 | 4 | 2.7 | 2 960 | 7 350 | 0.40 | 2.5 | 1.7 | |
| WTF260KVS3651Eg | 260 | 365 | 340 | 340 | 4 | 2.5 | 2 960 | 7 350 | 0.40 | 2.5 | 1.7 | |
| *WTF260KVS4251Eg | 260.350 (10.2500) | 422.275 (16.6250) | 314.325 (12.3750) | 317.500 (12.5000) | 3.3 | 6.4 | 3 600 | 7 050 | 0.33 | 3.0 | 2.0 | |
| *WTF266KVS3551Eg | 266.700 (10.5000) | 355.600 (14.0000) | 230.188 (9.0625) | 228.600 (9.0000) | 3.3 | 1.5 | 1 960 | 4 600 | 0.35 | 2.9 | 1.9 | |
| *WTF276KVS3952Eg | 276.225 (10.8750) | 393.700 (15.5000) | 269.875 (10.6251) | 269.875 (10.6251) | 3.3 | 1.5 | 2 720 | 6 100 | 0.45 | 2.2 | 1.5 | |
| *WTF279KVS3952Eg | 279.400 (11.0000) | 393.700 (15.5000) | 269.875 (10.6250) | 269.875 (10.6250) | 6.4 | 1.5 | 2 720 | 6 100 | 0.45 | 2.2 | 1.5 | |

Remarks: Other bearings are available. Please contact NSK for additional information.

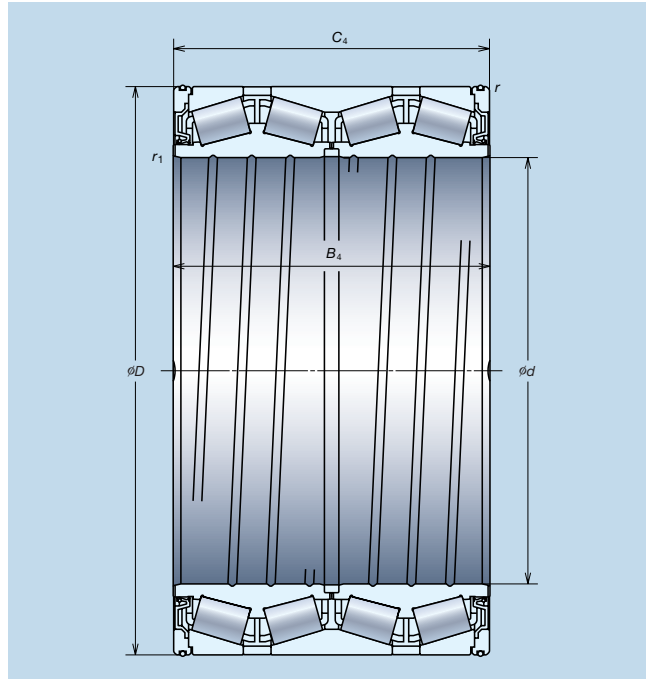
| Bearing Numbers | Boundary Dimensions (mm/inch) | | | | | | Basic Load Ratings (kN) | | Constant | Axial Load Factors | | |
|------------------|-------------------------------|----------------------|----------------------|----------------------|-----------|-------------|-------------------------|----------|----------|--------------------|-------|-------|
| | d | D | B_4 | C_4 | r (min) | r_1 (min) | C_r | C_{0r} | | e | Y_2 | Y_3 |
| WTF279KVS3954Eg | 279.4 | 393.7 | 320 | 320 | 6.4 | 1.5 | 3 100 | 7 350 | 0.40 | 2.5 | 1.7 | |
| WTF290KVS4001Eg | 290 | 400 | 346 | 346 | 4 | 3 | 3 250 | 8 400 | 0.40 | 2.5 | 1.7 | |
| *WTF304KVS4351Eg | 304.648 (11.9940) | 438.048 (17.2460) | 280.990 (11.6260) | 279.400 (11.0000) | 3.3 | 3.3 | 3 100 | 6 750 | 0.45 | 2.2 | 1.5 | |
| *WTF304KVS4155Eg | 304.800 (12.0000) | 419.100 (16.5000) | 269.875 (10.6250) | 269.875 (10.6250) | 6.4 | 1.5 | 2 850 | 6 550 | 0.33 | 3.0 | 2.0 | |
| *WTF304KVS4152Eg | 304.902 (12.0040) | 412.648 (16.2460) | 266.700 (10.5000) | 266.700 (10.5000) | 3.3 | 1.5 | 2 760 | 6 500 | 0.33 | 3.0 | 2.0 | |
| WTF310KVS4301Eg | 310 | 430 | 310 | 310 | 3 | 3 | 3 350 | 8 200 | 0.46 | 2.2 | 1.5 | |
| WTF310KVS4302Eg | 310 | 430 | 350 | 350 | 3 | 2.7 | 3 700 | 9 550 | 0.46 | 2.2 | 1.5 | |
| *WTF317KVS4251Eg | 317.500 (12.5000) | 422.275 (16.6250) | 269.875 (10.6250) | 269.875 (10.6250) | 3.3 | 1.5 | 2 740 | 6 750 | 0.34 | 3.0 | 2.0 | |
| *WTF343KVS4551Eg | 343.052 (13.5060) | 457.098 (17.9960) | 254.000 (10.0000) | 254.000 (10.0000) | 3.3 | 1.5 | 2 830 | 6 700 | 0.45 | 2.2 | 1.5 | |
| *WTF355KVS4551Eg | 355.600 (14.0000) | 457.200 (18.0000) | 252.412 (9.9375) | 252.412 (9.9375) | 3.3 | 1.5 | 2 650 | 6 750 | 0.32 | 3.2 | 2.1 | |
| *WTF406KVS5451Eg | 406.400 (16.0000) | 546.100 (21.5000) | 288.925 (11.3750) | 288.925 (11.3750) | 6.4 | 1.5 | 3 950 | 9 450 | 0.48 | 2.1 | 1.4 | |
| WTF450KVS5901Eg | 450 | 595 | 368 | 368 | 5 | 4 | 5 550 | 15 000 | 0.33 | 3.0 | 2.0 | |
| *WTF457KVS5951Eg | 457.200 (18.0000) | 596.900 (23.5000) | 276.225 (10.8750) | 279.400 (11.0000) | 3.3 | 1.5 | 4 000 | 9 850 | 0.47 | 2.2 | 1.4 | |
| *WTF482KVS6151Eg | 482.600 (19.0000) | 615.950 (24.2500) | 330.200 (13.0000) | 330.200 (13.0000) | 6.4 | 4.3 | 4 900 | 13 500 | 0.33 | 3.1 | 2.1 | |

Note: (*) Bearings marked * are inch designs.

Remarks: Water-TF Bearings are a special purpose bearing series in the same design as the standard Extra-Capacity Sealed-Clean Four-Row Tapered Roller Bearings.

Dimensions of Bearings for Rolling Mills

Extra-Capacity Sealed-Clean™ Four-Row Tapered Roller Bearings—KVS Series



Dynamic Equivalent Load

$$P = XF_r + YF_a$$

| $F_a / F_r \leq e$ | | $F_a / F_r > e$ | |
|--------------------|-------|-----------------|-------|
| X | Y | X | Y |
| 1 | Y_3 | 0.67 | Y_2 |

Static Equivalent Load

$$P_0 = F_r + Y_0 F_a$$

Where $Y_0 = Y_3$

The values of e , Y_2 , and Y_3 are given in the table.



| Bearing Numbers | Boundary Dimensions (mm/inch) | | | | | | Basic Load Ratings (kN) | | Constant | Axial Load Factors | |
|------------------|-------------------------------|----------------------|----------------------|----------------------|-----------|-------------|-------------------------|----------|----------|--------------------|-------|
| | d | D | B_4 | C_4 | r (min) | r_1 (min) | C_r | C_{0r} | | e | Y_2 |
| STF170KVS2401Eg | 170 | 240 | 175 | 175 | 2.5 | 2.5 | 1 020 | 2 010 | 0.32 | 3.2 | 2.1 |
| *STF215KVS2851Eg | 215.900 (8.5000) | 288.925 (11.3750) | 177.800 (7.0000) | 177.800 (7.0000) | 3.3 | 0.8 | 1 070 | 2 350 | 0.49 | 2.1 | 1.4 |
| *STF216KVS3351Eg | 216.103 (8.5080) | 330.2 (13.0000) | 263.525 (10.3750) | 269.875 (10.6250) | 3.3 | 1.5 | 2 290 | 4 550 | 0.46 | 2.2 | 1.5 |
| STF220KVS3301Eg | 220 | 330 | 260 | 260 | 3 | 4 | 2 330 | 4 800 | 0.40 | 2.5 | 1.7 |
| *STF234KVS3251Eg | 234.950 (9.2500) | 327.025 (12.8750) | 196.850 (7.7500) | 196.850 (7.7500) | 3.3 | 1.5 | 1 550 | 3 200 | 0.46 | 2.2 | 1.5 |
| *STF244KVS3251Eg | 244.475 (9.6250) | 327.025 (12.8750) | 193.680 (7.6250) | 193.680 (7.6250) | 3 | 1.5 | 1 370 | 3 050 | 0.40 | 2.5 | 1.7 |
| STF245KVS3402Eg | 245 | 345 | 310 | 310 | 3 | 2 | 2 700 | 6 650 | 0.40 | 2.5 | 1.7 |
| *STF254KVS3552Eg | 254.000 (10.0000) | 358.775 (14.1250) | 269.875 (10.6250) | 269.875 (10.6250) | 3.3 | 1.5 | 2 420 | 5 500 | 0.40 | 2.5 | 1.7 |
| STF260KVS3601Eg | 260 | 365 | 340 | 340 | 4 | 2.7 | 2 960 | 7 350 | 0.40 | 2.5 | 1.7 |
| STF260KVS3651Eg | 260 | 365 | 340 | 340 | 4 | 2.5 | 2 960 | 7 350 | 0.40 | 2.5 | 1.7 |
| *STF260KVS4251Eg | 260.350 (10.2500) | 422.275 (16.6250) | 314.325 (12.3750) | 317.500 (12.5000) | 3.3 | 6.4 | 3 600 | 7 050 | 0.33 | 3.0 | 2.0 |
| *STF266KVS3551Eg | 266.700 (10.5000) | 355.600 (14.0000) | 230.188 (9.0625) | 228.600 (9.0000) | 3.3 | 1.5 | 1 960 | 4 600 | 0.35 | 2.9 | 1.9 |
| *STF276KVS3952Eg | 276.225 (10.8750) | 393.700 (15.5000) | 269.875 (10.6251) | 269.875 (10.6251) | 3.3 | 1.5 | 2 720 | 6 100 | 0.45 | 2.2 | 1.5 |
| *STF279KVS3952Eg | 279.400 (11.0000) | 393.700 (15.5000) | 269.875 (10.6250) | 269.875 (10.6250) | 6.4 | 1.5 | 2 720 | 6 100 | 0.45 | 2.2 | 1.5 |

Remarks: Other bearings are available. Please contact NSK for additional information.

| Bearing Numbers | Boundary Dimensions (mm/inch) | | | | | | Basic Load Ratings (kN) | | Constant | Axial Load Factors | |
|------------------|-------------------------------|----------------------|----------------------|----------------------|-----------|-------------|-------------------------|----------|----------|--------------------|-------|
| | d | D | B_4 | C_4 | r (min) | r_1 (min) | C_r | C_{0r} | | e | Y_2 |
| STF279KVS3954Eg | 279.4 | 393.7 | 320 | 320 | 6.4 | 1.5 | 3 100 | 7 350 | 0.40 | 2.5 | 1.7 |
| STF290KVS4001Eg | 290 | 400 | 346 | 346 | 4 | 3 | 3 250 | 8 400 | 0.40 | 2.5 | 1.7 |
| *STF304KVS4351Eg | 304.648 (11.9940) | 438.048 (17.2460) | 280.990 (11.6260) | 279.400 (11.0000) | 3.3 | 3.3 | 3 100 | 6 750 | 0.45 | 2.2 | 1.5 |
| *STF304KVS4155Eg | 304.800 (12.0000) | 419.100 (16.5000) | 269.875 (10.6250) | 269.875 (10.6250) | 6.4 | 1.5 | 2 850 | 6 550 | 0.33 | 3.0 | 2.0 |
| *STF304KVS4152Eg | 304.902 (12.0040) | 412.648 (16.2460) | 266.700 (10.5000) | 266.700 (10.5000) | 3.3 | 1.5 | 2 760 | 6 500 | 0.33 | 3.0 | 2.0 |
| STF310KVS4301Eg | 310 | 430 | 310 | 310 | 3 | 3 | 3 350 | 8 200 | 0.46 | 2.2 | 1.5 |
| STF310KVS4302Eg | 310 | 430 | 350 | 350 | 3 | 2.7 | 3 700 | 9 550 | 0.46 | 2.2 | 1.5 |
| *STF317KVS4251Eg | 317.500 (12.5000) | 422.275 (16.6250) | 269.875 (10.6250) | 269.875 (10.6250) | 3.3 | 1.5 | 2 740 | 6 750 | 0.34 | 3.0 | 2.0 |
| *STF343KVS4551Eg | 343.052 (13.5060) | 457.098 (17.9960) | 254.000 (10.0000) | 254.000 (10.0000) | 3.3 | 1.5 | 2 830 | 6 700 | 0.45 | 2.2 | 1.5 |
| *STF355KVS4551Eg | 355.600 (14.0000) | 457.200 (18.0000) | 252.412 (9.9375) | 252.412 (9.9375) | 3.3 | 1.5 | 2 650 | 6 750 | 0.32 | 3.2 | 2.1 |
| *STF406KVS5451Eg | 406.400 (16.0000) | 546.100 (21.5000) | 288.925 (11.3750) | 288.925 (11.3750) | 6.4 | 1.5 | 3 950 | 9 450 | 0.48 | 2.1 | 1.4 |
| STF450KVS5901Eg | 450 | 595 | 368 | 368 | 5 | 4 | 5 550 | 15 000 | 0.33 | 3.0 | 2.0 |
| *STF457KVS5951Eg | 457.200 (18.0000) | 596.900 (23.5000) | 276.225 (10.8750) | 279.400 (11.0000) | 3.3 | 1.5 | 4 000 | 9 850 | 0.47 | 2.2 | 1.4 |
| *STF482KVS6151Eg | 482.600 (19.0000) | 615.950 (24.2500) | 330.200 (13.0000) | 330.200 (13.0000) | 6.4 | 4.3 | 4 900 | 13 500 | 0.33 | 3.1 | 2.1 |

Remarks: 1. Extra-Capacity Sealed-Clean Four-Row Tapered Roller Bearings are made of NSK Super-TF material as the standard specification.

2. Bearings marked * are inch design and numerical values in parentheses under Boundary Dimensions are in inches.

Dimensions of Bearings for Rolling Mills

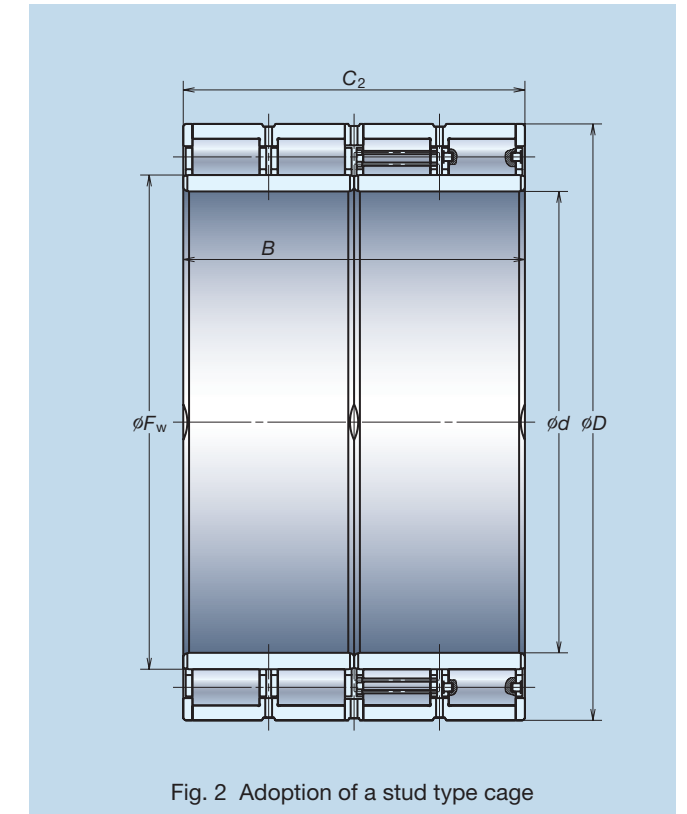
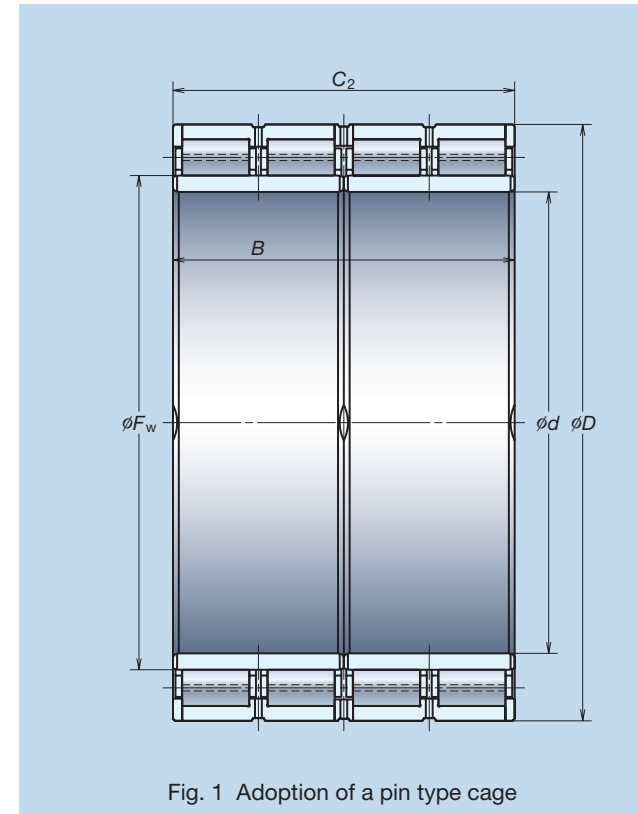
Super-TF™ Four-Row Cylindrical Roller Bearings—STF-RV Series (Fig.1)

| Bearing Numbers | Boundary Dimensions (mm) | | | | | Basic Load Ratings (kN) | |
|-----------------|--------------------------|---------|-------|-------|-------|-------------------------|----------|
| | d | D | B | C_2 | F_w | C_r | C_{0r} |
| STF380RV5414g | 380 | 540 | 300 | 300 | 421 | 4 450 | 9 700 |
| STF380RV5411g | 380 | 540 | 400 | 400 | 422 | 6 000 | 14 400 |
| STF400RV5611g | 400 | 560 | 410 | 410 | 445 | 6 550 | 16 500 |
| STF420RV6012g | 420 | 600 | 440 | 440 | 465 | 7 300 | 17 200 |
| STF430RV5911g | 430 | 591 | 420 | 420 | 476 | 6 350 | 16 100 |
| STF440RV6215g | 440 | 620 | 450 | 450 | 487 | 8 100 | 19 700 |
| STF460RV6513g | 460 | 650 | 470 | 470 | 509 | 8 600 | 21 200 |
| STF470RV6611g | 470 | 660 | 470 | 470 | 519 | 8 450 | 20 800 |
| STF480RV6814g | 480 | 680 | 420 | 420 | 528 | 8 350 | 19 000 |
| STF480RV6815g | 480 | 680 | 500 | 500 | 532 | 9 400 | 23 500 |
| STF500RV6713g | 500 | 670 | 450 | 450 | 540 | 7 750 | 20 000 |
| STF500RV7111g | 500 | 710 | 480 | 480 | 558 | 8 500 | 21 200 |
| STF500RV7214g | 500 | 720 | 530 | 530 | 568 | 10 100 | 25 900 |
| STF510RV6811g | 510 | 680 | 500 | 500 | 560 | 8 950 | 25 700 |
| STF520RV7311g | 520 | 735 | 535 | 535 | 574.5 | 10 800 | 27 500 |
| STF530RV7811g | 530 | 780 | 570 | 570 | 601 | 11 800 | 29 200 |
| STF550RV7413g | 550 | 740 | 510 | 510 | 600 | 10 100 | 27 600 |
| STF560RV8011g | 560 | 800 | 600 | 600 | 620 | 12 400 | 31 500 |
| STF560RV8211g | 560 | 820 | 600 | 600 | 625 | 14 100 | 34 000 |
| STF570RV8113g | 570 | 815 | 594 | 594 | 628 | 13 200 | 32 000 |
| STF600RV8212g | 600 | 820 | 575 | 575 | 660 | 12 900 | 35 500 |
| STF600RV8511g | 600 | 850 | 600 | 600 | 664 | 14 600 | 37 500 |
| STF600RV8711g | 600 | 870 | 640 | 640 | 682 | 15 700 | 40 000 |
| STF600RV8714g | 600 | 870 | 640 | 640 | 669 | 15 700 | 40 000 |
| STF628RV9211g | 628 | 922 | 600 | 600 | 702 | 15 600 | 37 000 |
| STF634RV9011g | 634.5 | 901.87 | 674 | 674 | 705 | 17 000 | 44 500 |
| STF650RV9212g | 650 | 920 | 670 | 670 | 723 | 16 200 | 44 000 |
| STF660RV9311g | 660 | 930 | 660 | 660 | 728 | 17 000 | 44 000 |
| STF690RV9611g | 690 | 960 | 670 | 670 | 760 | 17 400 | 47 000 |
| STF690RV9813g | 690 | 980 | 750 | 750 | 766 | 19 200 | 53 000 |
| STF700RV9313g | 700 | 930 | 620 | 620 | 763 | 14 800 | 43 000 |
| STF700RV9812g | 700 | 980 | 700 | 700 | 766 | 18 800 | 49 000 |
| STF725RV1012g | 725 | 1 000 | 700 | 700 | 790 | 19 000 | 51 500 |
| STF730RV1011g | 730 | 1 030 | 750 | 750 | 809 | 20 700 | 56 500 |
| STF750RV1013g | 750 | 1 000 | 670 | 670 | 813 | 17 500 | 50 000 |
| STF760RV1012g | 760 | 1 030 | 750 | 750 | 828 | 20 800 | 60 000 |
| STF761RV1012g | 761.425 | 1 079.6 | 787.4 | 787.4 | 846 | 23 900 | 65 500 |
| STF770RV1011g | 770 | 1 075 | 770 | 770 | 847 | 23 100 | 63 500 |
| STF800RV1013g | 800 | 1 080 | 700 | 700 | 878 | 19 100 | 56 000 |
| STF800RV1012g | 800 | 1 080 | 750 | 750 | 880 | 19 300 | 57 000 |
| STF820RV1119g | 820 | 1 100 | 745 | 720 | 892 | 20 100 | 59 000 |
| STF820RV11112g | 820 | 1 130 | 650 | 650 | 891 | 20 300 | 53 000 |
| STF820RV11110g | 820 | 1 130 | 800 | 800 | 903 | 22 900 | 66 500 |
| STF840RV1111g | 840 | 1 160 | 840 | 840 | 920 | 24 900 | 71 500 |
| STF850RV1115g | 850 | 1 150 | 840 | 840 | 928 | 25 600 | 77 500 |
| STF850RV1111g | 850 | 1 180 | 850 | 850 | 940 | 24 700 | 72 500 |
| STF900RV1216g | 900 | 1 220 | 810 | 800 | 981 | 25 900 | 74 500 |
| STF900RV1212g | 900 | 1 220 | 840 | 840 | 989 | 26 800 | 80 000 |
| STF900RV1217g | 900 | 1 280 | 930 | 930 | 1 000 | 33 000 | 93 000 |
| STF950RV1314g | 950 | 1 330 | 950 | 950 | 1 053 | 33 500 | 97 000 |

Remarks: Other bearings are available. Please contact NSK for additional information.

Super-TF™ Four-Row Cylindrical Roller Bearings—STF-RV stud-type (Fig.2)

| Bearing Numbers | Boundary Dimensions (mm) | | | | | Basic Load Ratings (kN) | |
|-----------------|--------------------------|-------|-------|-------|-------|-------------------------|----------|
| | d | D | B | C_2 | F_w | C_r | C_{0r} |
| STF800RV1014g | 800 | 1 080 | 700 | 700 | 878 | 19 200 | 55 000 |
| STF1270RV1612g | 1 270 | 1 602 | 850 | 850 | 1 350 | 32 000 | 103 000 |
| STF1300RV1612g | 1 300 | 1 655 | 890 | 880 | 1 391 | 34 000 | 110 500 |
| STF1348RV1711g | 1 348.95 | 1 745 | 1 010 | 1 000 | 1 466 | 42 500 | 134 000 |



Remarks: The specification of oil mist fitting and O-rings on outer rings are available when requested.

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