

INNER RINGS

- Inner Rings for Shell Type Needle Roller Bearings
- Inner Rings for General Usage



Structure and Features

IKO Inner Rings are heat-treated and finished by grinding to a high degree of accuracy. In the case of needle roller bearings, normally, the shafts are heat-treated and finished by grinding, and used as the raceway surfaces. However, when it is impossible to make shaft surfaces according to the specified surface hardness or surface roughness, inner rings are used.

Inner rings include those for Shell Type Needle Roller Bearings and those for general use and are available in a variety of dimensions. When shafts move axially or seals are used adjacent to bearings, wide inner rings can be selected.

Inner rings can also be used economically as bushings without requiring any additional machining.

Types

For Inner Rings, the types shown in Table 1 are available.

Table 1.1 Inner Rings for Shell Type Needle Roller Bearings

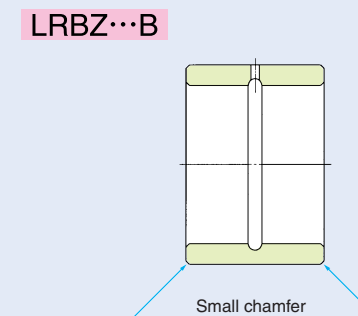
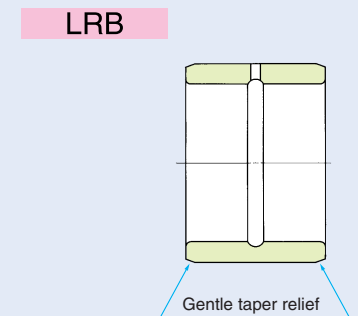
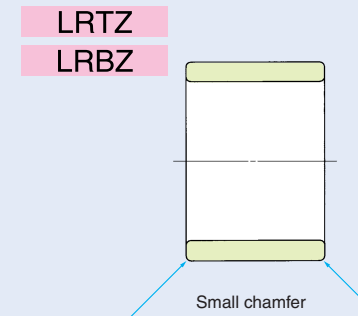
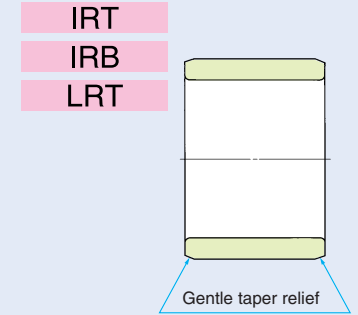
| Series | | Model codes of assembled bearings |
|---------------|-----|---------------------------------------|
| Metric series | IRT | TA...Z, TLA...Z TAM, TLAM, YT, YTL |
| Inch series | IRB | BA...Z, BHA...Z BAM, BHAM, YB, YBH |

Remark For Inner Rings for Shell Type Needle Roller Bearings with Seal, please consult IKO.

Table 1.2 Inner Rings for General Usage

| Series | | Model codes of assembled bearings |
|---------------|----------|---|
| Metric series | LRT | RNA 49, RNA 69 RNA 48, TAF, TR RNAF, NAX, NBX |
| | LRTZ | RNA 49...UU, RNA 69...UU GTR |
| Inch series | LRB | BR |
| | LRBZ...B | BR...UU |
| | LRBZ | GBR, GBR...UU |

Shapes of Inner Rings

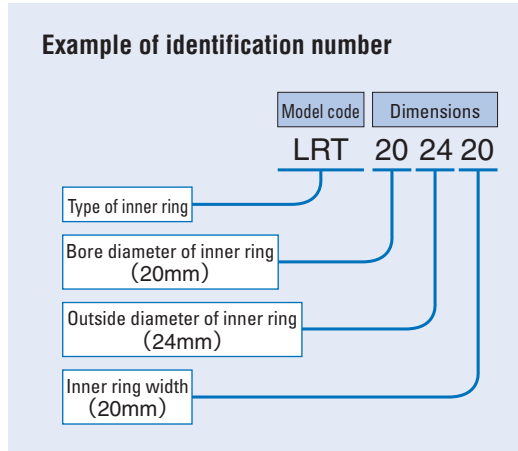


H

IRT
IRB
LRT
LRB

Identification number

The identification number of Inner Rings consists of a model code and dimensions. An example is shown below.



Accuracy

Dimensional accuracy of Inner Rings is based on Table 2. Inner Rings for Shell Type Needle Roller Bearings are manufactured so that exact radial internal clearances can be obtained when assembled with Shell Type Needle Roller Bearings. Inner Rings for General Usage produce CN clearance when used in the assembled bearings shown in Table 1.2. LRB and LRBZ...B models produce the radial internal clearances shown in Table 4 on page D5. When clearances other than CN clearance or accuracy other than Class 0 are required, please consult

Table 2 Tolerances for inner ring

| Model code | Tolerance |
|--------------------------|---|
| IRT LRT, LRTZ LRBZ | JIS Class 0 (See the table 12, page A31) |
| IRB | Based on Table 3 |
| LRB LRBZ...B | Based on Table 4 |

Remark Tolerances of outside diameter of inner ring are based on Table 5.

Table 3 Tolerances of IRB

| Nominal inside diameter of inner ring mm | | Δd_{mp} Single plane mean bore diameter deviation | | ΔB_s Deviation of a single inner ring width | | K_{ia} Radial runout of assembled bearing inner ring |
|--|-------|--|-----|--|------|---|
| Over | Incl. | High | Low | High | Low | Max. |
| 2.5 | 10 | 0 | -13 | 0 | -250 | 10 |
| 10 | 18 | 0 | -13 | 0 | -250 | 10 |
| 18 | 30 | 0 | -13 | 0 | -250 | 13 |
| 30 | 50 | 0 | -13 | 0 | -250 | 15 |
| 50 | 80 | 0 | -13 | 0 | -250 | 20 |

Table 4 Tolerances of LRB,LRBZ...B

| Nominal inside diameter of inner ring mm | | Δd_{mp} Single plane mean bore diameter deviation | | ΔB_s Deviation of a single inner ring width | | K_{ia} Radial runout of assembled bearing inner ring |
|--|---------|--|-----|--|------|---|
| Over | Incl. | High | Low | High | Low | Max. |
| - | 19.050 | 0 | -10 | 0 | -130 | 10 |
| 19.050 | 30.162 | 0 | -13 | 0 | -130 | 13 |
| 30.162 | 50.800 | 0 | -13 | 0 | -130 | 15 |
| 50.800 | 82.550 | 0 | -15 | 0 | -130 | 20 |
| 82.550 | 120.650 | 0 | -20 | 0 | -130 | 25 |

Table 5 Tolerances of outside diameter of inner ring unit: μm

| Model code | Tolerance |
|-----------------|------------------|
| IRT | g5 |
| IRB | 0 ~ -13 |
| LRT, LRTZ, LRBZ | Based on Table 6 |
| LRB, LRBZ...B | Based on Table 7 |

Table 7 Tolerances of outside diameters of LRB and LRBZ...B unit: μm

| Nominal outside diameter of inner ring mm | | Tolerance | |
|---|---------|-----------|-----|
| Over | Incl. | High | Low |
| - | 18.034 | -13 | -23 |
| 18.034 | 25.908 | -18 | -30 |
| 25.908 | 30.226 | -23 | -36 |
| 30.226 | 35.052 | -23 | -38 |
| 35.052 | 50.038 | -25 | -41 |
| 50.038 | 80.010 | -28 | -46 |
| 80.010 | 100.076 | -32 | -56 |
| 100.076 | 102.108 | -37 | -66 |

Fit

The recommended fits between Inner Rings and shafts are shown in Table 22 on page A42.

Oil Hole

The number of oil holes is shown in Table 8. When Inner Rings with an oil hole are especially required for a model without an oil hole, attach an "OH" to the end of the identification number when ordering.

Example: LRT 202420 OH

For Inner Rings with multiple oil holes, please consult .

Table 8 Number of oil holes

| Bearing type | | Bore diameter of inner ring d mm | Number of oil holes | |
|---------------------------------------|---------------|------------------------------------|---------------------|---|
| For Shell Type Needle Roller Bearings | Metric series | IRT | 0 | |
| | Inch series | IRB | 0 | |
| For General Usage | Metric series | LRT | 0 | |
| | | LRTZ | 0 | |
| | Inch series | LRB | $d \leq 76.200$ | 1 |
| | | | $76.200 < d$ | 2 |
| | | LRBZ...B | 1 | |
| LRBZ | 0 | | | |

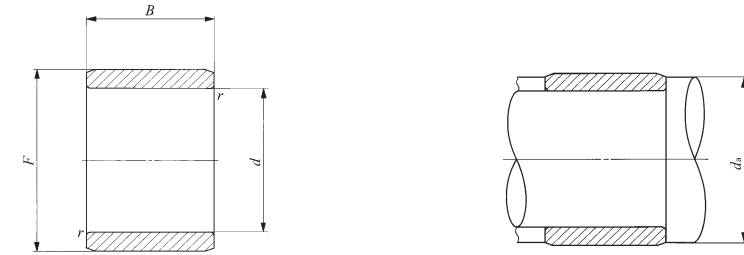
Remark Inner rings with an oil hole are provided with an oil groove.

Table 6 Tolerances of outside diameters for LRT, LRTZ and LRBZ (When the clearance is CN clearance)

| d Bore diameter of inner ring mm | Outside diameter of inner ring mm | Outside diameter of inner ring mm | | | | | | | | | | | | | | | | | | | | | | | | d Bore diameter of inner ring mm | | | |
|---------------------------------------|-----------------------------------|-----------------------------------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-----------------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|---------------------------------------|-------|-----------------|--|
| | | $3 < F \leq 6$ | | | | | | | | | | | | $6 < F \leq 10$ | | | | | | | | | | | | $3 < F \leq 6$ | | $6 < F \leq 10$ | |
| | | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low | High | Low | Over | Incl. | | |
| - | 24 | -10 | -27 | -7 | -23 | -4 | -18 | 0 | -12 | 0 | -12 | 0 | -12 | 0 | -12 | 0 | -12 | 0 | -12 | 0 | -12 | 0 | -12 | 0 | -12 | - | 24 | | |
| 24 | 30 | | | | | | | +5 | -4 | | | | | | | | | | | | | | | | | 24 | 30 | | |
| 30 | 40 | | | | | | | 0 | -9 | | | | | | | | | | | | | | | | | 30 | 40 | | |
| 40 | 50 | | | | | | | -5 | -19 | | | | | | | | | | | | | | | | | 40 | 50 | | |
| 50 | 65 | | | | | | | | | | | | | | | | | | | | | | | | | 50 | 65 | | |
| 65 | 80 | | | | | | | | | | | | | | | | | | | | | | | | | 65 | 80 | | |
| 80 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | 80 | 100 | | |
| 100 | 120 | | | | | | | | | | | | | | | | | | | | | | | | | 100 | 120 | | |
| 120 | 140 | | | | | | | | | | | | | | | | | | | | | | | | | 120 | 140 | | |
| 140 | 160 | | | | | | | | | | | | | | | | | | | | | | | | | 140 | 160 | | |
| 160 | 180 | | | | | | | | | | | | | | | | | | | | | | | | | 160 | 180 | | |
| 180 | 200 | | | | | | | | | | | | | | | | | | | | | | | | | 180 | 200 | | |
| 200 | 225 | | | | | | | | | | | | | | | | | | | | | | | | | 200 | 225 | | |
| 225 | 250 | | | | | | | | | | | | | | | | | | | | | | | | | 225 | 250 | | |
| 250 | 280 | | | | | | | | | | | | | | | | | | | | | | | | | 250 | 280 | | |
| 280 | 315 | | | | | | | | | | | | | | | | | | | | | | | | | 280 | 315 | | |
| 315 | 355 | | | | | | | | | | | | | | | | | | | | | | | | | 315 | 355 | | |
| 355 | 400 | | | | | | | | | | | | | | | | | | | | | | | | | 355 | 400 | | |
| 400 | 450 | | | | | | | | | | | | | | | | | | | | | | | | | 400 | 450 | | |
| 450 | 500 | | | | | | | | | | | | | | | | | | | | | | | | | 450 | 500 | | |

INNER RINGS

Inner Rings for Shell Type Needle Roller Bearings



IRT

Shaft dia. 7 – 17mm

| Shaft dia. mm | Identification number | Mass (Ref.) g | Boundary dimensions mm | | | | Standard mounting dimension mm | | Assembled bearings | | |
|------------------|-----------------------|---------------------|---------------------------|----|------|-----------------------------------|-----------------------------------|------|--------------------|-------------------|-----------|
| | | | d | F | B | r _{s min} ⁽¹⁾ | Min. | Max. | TA...Z (TAM) | TLA...Z (TLAM) | YT YTL |
| 7 | IRT 710 | 3.2 | 7 | 10 | 10.5 | 0.3 | 9 | 9.7 | TA 1010Z | TLA 1010Z | — |
| | IRT 712 | 3.9 | 7 | 10 | 12.5 | 0.3 | 9 | 9.7 | TA 1012Z | TLA 1012Z | — |
| | IRT 715 | 4.8 | 7 | 10 | 15.5 | 0.3 | 9 | 9.7 | TA 1015Z | TLA 1015Z | — |
| 8 | IRT 810 | 5.1 | 8 | 12 | 10.5 | 0.3 | 10 | 11 | — | TLA 1210Z | YTL 1210 |
| | IRT 812 | 6 | 8 | 12 | 12.5 | 0.3 | 10 | 11 | TA 1212Z | TLA 1212Z | YT 1212 |
| | IRT 815 | 7.5 | 8 | 12 | 15.5 | 0.3 | 10 | 11 | TA 1215Z | — | — |
| 10 | IRT 1012 | 5.2 | 10 | 13 | 12.5 | 0.3 | 12 | 12.7 | — | TLA 1312Z | — |
| | IRT 1012-2 | 7.2 | 10 | 14 | 12.5 | 0.3 | 12 | 13 | — | TLA 1412Z | — |
| | IRT 1016-2 | 9.6 | 10 | 14 | 16.5 | 0.3 | 12 | 13 | TA 1416Z | TLA 1416Z | — |
| | IRT 1020-2 | 11.9 | 10 | 14 | 20.5 | 0.3 | 12 | 13 | TA 1420Z | — | — |
| | IRT 1010-1 | 7.9 | 10 | 15 | 10.5 | 0.3 | 12 | 14 | TA 1510Z | — | — |
| | IRT 1012-1 | 9.4 | 10 | 15 | 12.5 | 0.3 | 12 | 14 | TA 1512Z | TLA 1512Z | — |
| | IRT 1015-1 | 11.7 | 10 | 15 | 15.5 | 0.3 | 12 | 14 | TA 1515Z | — | — |
| | IRT 1020-1 | 15.5 | 10 | 15 | 20.5 | 0.3 | 12 | 14 | TA 1520Z | — | — |
| | IRT 1025-1 | 19.3 | 10 | 15 | 25.5 | 0.3 | 12 | 14 | TA 1525Z | — | — |
| 12 | IRT 1212 | 6.1 | 12 | 15 | 12.5 | 0.3 | 14 | 14.5 | TA 1512Z | TLA 1512Z | — |
| | IRT 1216 | 8.1 | 12 | 15 | 16.5 | 0.3 | 14 | 14.5 | — | TLA 1516Z | — |
| | IRT 1222 | 11 | 12 | 15 | 22.5 | 0.3 | 14 | 14.5 | — | TLA 1522Z | — |
| | IRT 1212-1 | 8.5 | 12 | 16 | 12.5 | 0.3 | 14 | 15 | — | TLA 1612Z | — |
| | IRT 1216-1 | 11.2 | 12 | 16 | 16.5 | 0.3 | 14 | 15 | TA 1616Z | TLA 1616Z | — |
| | IRT 1220-1 | 13.9 | 12 | 16 | 20.5 | 0.3 | 14 | 15 | TA 1620Z | — | — |
| | IRT 1222-1 | 15.2 | 12 | 16 | 22.5 | 0.3 | 14 | 15 | — | TLA 1622Z | — |
| | IRT 1215-2 | 13.6 | 12 | 17 | 15.5 | 0.3 | 14 | 16 | TA 1715Z | — | YT 1715 |
| | IRT 1220-2 | 18 | 12 | 17 | 20.5 | 0.3 | 14 | 16 | TA 1720Z | — | — |
| | IRT 1225-2 | 22.5 | 12 | 17 | 25.5 | 0.3 | 14 | 16 | TA 1725Z | — | YT 1725 |
| 15 | IRT 1512 | 7.5 | 15 | 18 | 12.5 | 0.3 | 17 | 17.5 | — | TLA 1812Z | — |
| | IRT 1513 | 8.1 | 15 | 18 | 13.5 | 0.3 | 17 | 17.5 | TA 1813Z | — | — |

Note⁽¹⁾ Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.

| Shaft dia. mm | Identification number | Mass (Ref.) g | Boundary dimensions mm | | | | Standard mounting dimension mm | | Assembled bearings | | |
|------------------|-----------------------|---------------------|---------------------------|------|------|-----------------------------------|-----------------------------------|----------|--------------------|-------------------|-----------|
| | | | d | F | B | r _{s min} ⁽¹⁾ | Min. | Max. | TA...Z (TAM) | TLA...Z (TLAM) | YT YTL |
| 15 | IRT 1515 | 9.3 | 15 | 18 | 15.5 | 0.3 | 17 | 17.5 | TA 1815Z | — | — |
| | IRT 1516 | 9.9 | 15 | 18 | 16.5 | 0.3 | 17 | 17.5 | — | TLA 1816Z | — |
| | IRT 1517 | 10.5 | 15 | 18 | 17.5 | 0.3 | 17 | 17.5 | TA 1817Z | — | — |
| | IRT 1519 | 11.7 | 15 | 18 | 19.5 | 0.3 | 17 | 17.5 | TA 1819Z | — | — |
| | IRT 1520 | 12.3 | 15 | 18 | 20.5 | 0.3 | 17 | 17.5 | TA 1820Z | — | — |
| | IRT 1525 | 15.2 | 15 | 18 | 25.5 | 0.3 | 17 | 17.5 | TA 1825Z | — | — |
| | IRT 1516-1 | 13.6 | 15 | 19 | 16.5 | 0.3 | 17 | 18 | TA 1916Z | — | — |
| | IRT 1520-1 | 16.8 | 15 | 19 | 20.5 | 0.3 | 17 | 18 | TA 1920Z | — | — |
| | IRT 1515-2 | 16.4 | 15 | 20 | 15.5 | 0.3 | 17 | 19 | TA 2015Z | — | YT 2015 |
| | IRT 1520-2 | 21.5 | 15 | 20 | 20.5 | 0.3 | 17 | 19 | TA 2020Z | TLA 2020Z | YT 202820 |
| | IRT 1525-2 | 27 | 15 | 20 | 25.5 | 0.3 | 17 | 19 | TA 2025Z | — | YT 2025 |
| IRT 1530-2 | 32 | 15 | 20 | 30.5 | 0.3 | 17 | 19 | TA 2030Z | TLA 2030Z | — | |
| 17 | IRT 1716 | 11.1 | 17 | 20 | 16.5 | 0.3 | 19 | 19.5 | — | TLA 2016Z | — |
| | IRT 1720 | 13.7 | 17 | 20 | 20.5 | 0.3 | 19 | 19.5 | TA 2020Z | TLA 2020Z | YT 202820 |
| | IRT 1730 | 20.5 | 17 | 20 | 30.5 | 0.3 | 19 | 19.5 | TA 202820Z | — | — |
| | IRT 1716-1 | 15.1 | 17 | 21 | 16.5 | 0.3 | 19 | 20 | TA 2030Z | TLA 2030Z | — |
| | IRT 1720-1 | 18.8 | 17 | 21 | 20.5 | 0.3 | 19 | 20 | TA 2116Z | — | YT 2116 |
| | IRT 1710-2 | 12.4 | 17 | 22 | 10.5 | 0.3 | 19 | 21 | TA 2120Z | — | YT 2120 |
| | IRT 1715-2 | 18.3 | 17 | 22 | 15.5 | 0.3 | 19 | 21 | TA 2210Z | — | — |
| | IRT 1716-2 | 19.4 | 17 | 22 | 16.5 | 0.3 | 19 | 21 | TA 2215Z | — | — |
| | IRT 1720-2 | 24 | 17 | 22 | 20.5 | 0.3 | 19 | 21 | TA 223016Z | TLA 2216Z | YT 223016 |
| | IRT 1725-2 | 30 | 17 | 22 | 25.5 | 0.3 | 19 | 21 | TA 2220Z | TLA 2220Z | YT 223020 |
| | IRT 1730-2 | 36 | 17 | 22 | 30.5 | 0.3 | 19 | 21 | TA 223020Z | — | — |
| | IRT 1725Z | — | — | — | — | — | — | — | TA 2225Z | — | — |
| | IRT 1730Z | — | — | — | — | — | — | — | TA 2230Z | — | — |

Note⁽¹⁾ Minimum allowable value of chamfer dimension r
Remark No oil hole is provided.