

# 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

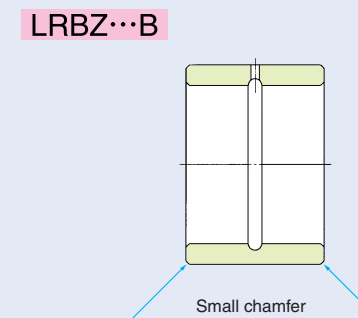
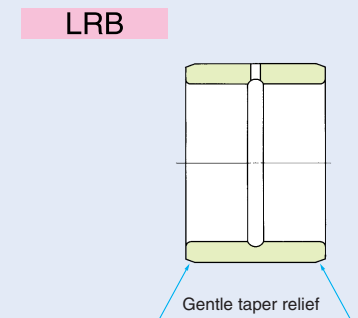
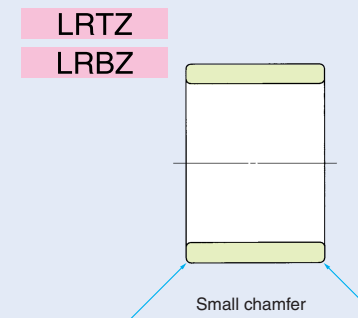
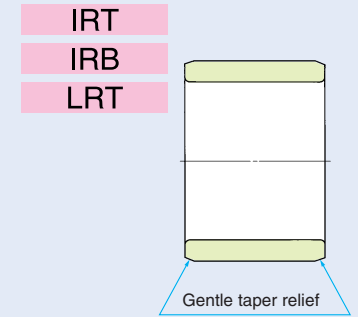
Series		Model codes of assembled bearings
Metric series	IRT	TA...Z, TLA...Z TAM, TLAM, YT, YTL
Inch series	IRB	BA...Z, BHA...Z BAM, BHAM, YB, YBH

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

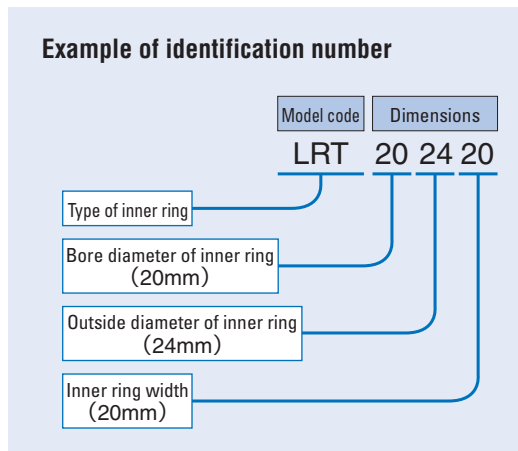


H

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		$\Delta_{dmp}$ Single plane mean bore diameter deviation		$\Delta_{Bs}$ 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		$\Delta_{dmp}$ Single plane mean bore diameter deviation		$\Delta_{Bs}$ 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:  $\mu m$

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:  $\mu m$

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
		LRBZ...B	$76.200 < d$	2
LRBZ		1		
LRBZ		0		

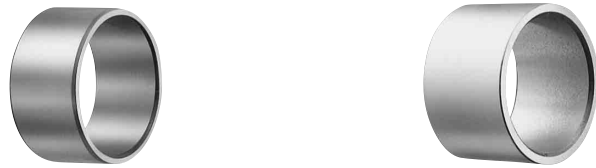
Remark Inner rings with an oil hole are provided with an oil groove.

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																								$d$ Bore diameter of inner ring mm																			
	3 < F ≤ 6												6 < F ≤ 10												10 < F ≤ 18		18 < F ≤ 30		30 < F ≤ 50		50 < F ≤ 80		80 < F ≤ 120		120 < F ≤ 180		180 < F ≤ 250		250 < F ≤ 315		315 < F ≤ 400		400 < F ≤ 500	
	Over	Incl.	High	Low	High	Low	High	Low	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	0	-11	-4	-17	-7	-22	-17	-37	-25	-46	-	-	24	24								
24	30																																	24	30									
30	40																																	30	40									
40	50																																	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**

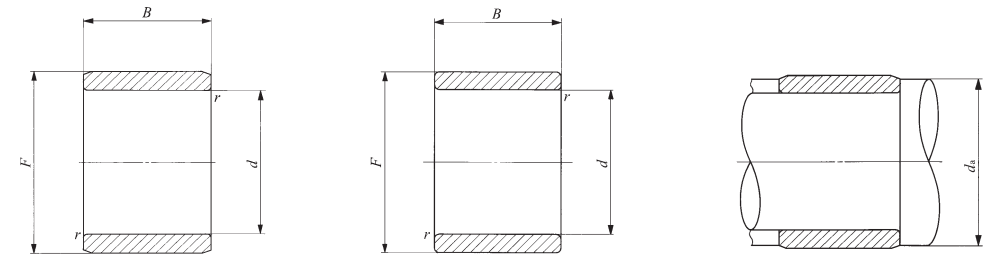
Inner Rings for General Usage



Shaft dia. 20 – 32mm

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm				Standard mounting dimension mm		Assembled bearings	
				<i>d</i>	<i>F</i>	<i>B</i>	<i>r</i> <sub>s min</sub> <sup>(1)</sup>	Min.	Max.		
20	LRT 202516	—	22	20	25	16	0.3	22	24	RNAF 253716	
	LRT 202517	—	23	20	25	17	0.3	22	24	RNA 4904	RNAF 253517
	—	LRTZ 202518	24	20	25	18	0.3	22	24	RNA 4904 UU	
	LRT 202520	—	28	20	25	20.5	0.3	22	24	TR 253820	NAX 2530
	—	LRTZ 202520	28	20	25	20.5	0.3	22	24	NBX 2530	
	LRT 202525	—	35	20	25	25.5	0.3	22	24	GTR 253820	
	—	LRTZ 202525	35	20	25	25.5	0.3	22	24	TR 253825	
	LRT 202526	—	36	20	25	26	0.3	22	24	GTR 253825	
	LRT 202530	—	40.5	20	25	30	0.3	22	24	RNAFW 253526	
22	—	LRTZ 202531	41.5	20	25	31	0.3	22	24	RNA 6904	
	LRT 202532	—	44	20	25	32	0.3	22	24	RNA 6904 UU	
	LRT 222616	—	17.5	22	26	16	0.3	24	25	RNAFW 253732	
	LRT 222620	—	24	22	26	20	0.3	24	25	TAF 263416	
	LRT 222817	—	30.5	22	28	17	0.3	24	27	TAF 263420	
	—	LRTZ 222818	32	22	28	18	0.3	24	27	RNA 49/22	
	LRT 222830	—	55	22	28	30	0.3	24	27	RNA 49/22 UU	
	—	LRTZ 222831	55	22	28	31	0.3	24	27	RNA 69/22	
	—	—	55	22	28	31	0.3	24	27	RNA 69/22 UU	
25	LRT 252920	—	25	25	29	20	0.3	27	28	TAF 293820	
	LRT 252930	—	38	25	29	30	0.3	27	28	TAF 293830	
	LRT 253016	—	28	25	30	16	0.3	27	29	RNAF 304216	
	LRT 253017	—	28.5	25	30	17	0.3	27	29	RNA 4905	RNAF 304017
	—	LRTZ 253018	29.5	25	30	18	0.3	27	29	RNA 4905 UU	
	LRT 253020	—	34	25	30	20.5	0.3	27	29	NAX 3030	NBX 3030
	LRT 253025	—	42	25	30	25.5	0.3	27	29	TR 304425	
	—	LRTZ 253025	42	25	30	25.5	0.3	27	29	GTR 304425	
	LRT 253026	—	44.5	25	30	26	0.3	27	29	RNAFW 304026	
LRT 253030	—	49	25	30	30	0.3	27	29	RNA 6905		

Note<sup>(1)</sup> Minimum allowable value of chamfer dimension *r*  
 Remark No oil hole is provided.



LRT

LRTZ

Shaft dia. mm	Identification number		Mass (Ref.) g	Boundary dimensions mm				Standard mounting dimension mm		Assembled bearings	
				<i>d</i>	<i>F</i>	<i>B</i>	<i>r</i> <sub>s min</sub> <sup>(1)</sup>	Min.	Max.		
25	—	LRTZ 253031	51	25	30	31	0.3	27	29	RNA 6905 UU	
	LRT 253032	—	54	25	30	32	0.3	27	29	RNAFW 304232	
28	LRT 283217	—	24.5	28	32	17	0.3	30	31	RNA 49/28	
	—	LRTZ 283218	25.5	28	32	18	0.3	30	31	RNA 49/28 UU	
	LRT 283220	—	28.5	28	32	20	0.3	30	31	TAF 324220	
	LRT 283230	—	43	28	32	30	0.3	30	31	RNA 69/28	TAF 324230
	—	LRTZ 283230	43	28	32	30.5	0.3	30	31	GTR 324530	
30	—	LRTZ 283231	44	28	32	31	0.3	30	31	RNA 69/28 UU	
	LRT 303516	—	31.5	30	35	16	0.3	32	34	RNAF 354716	
	LRT 303517	—	33.5	30	35	17	0.3	32	34	RNA 4906	RNAF 354517
	—	LRTZ 303518	35	30	35	18	0.3	32	34	RNA 4906 UU	
	LRT 303520	—	38.5	30	35	20	0.3	32	34	TAF 354520	NAX 3530
	LRT 303526	—	52	30	35	26	0.3	32	34	NBX 3530	
	LRT 303530	—	59	30	35	30	0.3	32	34	RNAFW 354526	
	LRT 303530-1	—	59	30	35	30.5	0.3	32	34	RNA 6906	TAF 354530
	—	LRTZ 303530	59	30	35	30.5	0.3	32	34	TR 354830	
32	—	LRTZ 303531	61	30	35	31	0.3	32	34	GTR 354830	
	LRT 303532	—	64	30	35	32	0.3	32	34	RNA 6906 UU	
	LRT 323720	—	43.5	32	37	20	0.3	34	36	RNAFW 354732	
	LRT 323730	—	63	32	37	30	0.3	34	36	TAF 374720	
	LRT 323830	—	77	32	38	30.5	0.6	36	37	TAF 374730	
	—	LRTZ 323830	77	32	38	30.5	0.6	36	37	TR 385230	
	LRT 324020	—	69	32	40	20	0.6	36	39	GTR 385230	
	—	LRTZ 324021	72.5	32	40	21	0.6	36	39	RNA 49/32	
	LRT 324036	—	123	32	40	36	0.6	36	39	RNA 49/32 UU	
—	LRTZ 324037	130	32	40	37	0.6	36	39	RNA 69/32		
—	—	—	—	—	—	—	—	—	RNA 69/32 UU		

Note<sup>(1)</sup> Minimum allowable value of chamfer dimension *r*  
 Remark No oil hole is provided.