

# 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

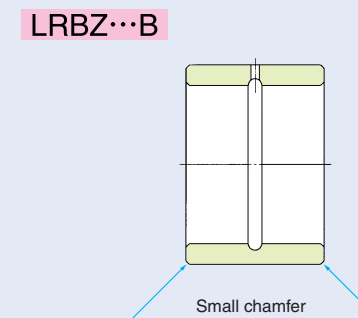
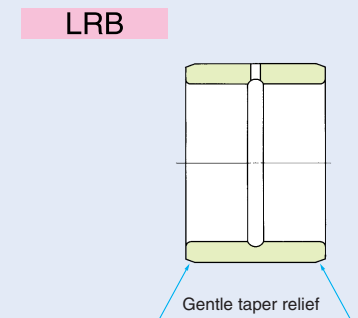
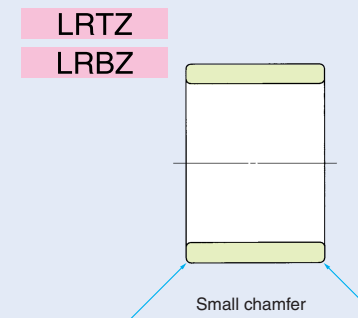
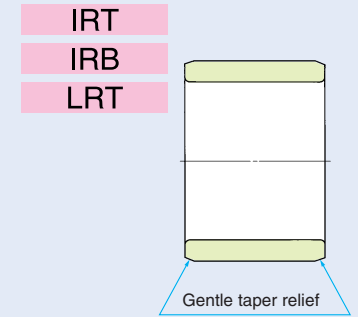
Series		Model codes of assembled bearings
Metric series	IRT	TA...Z, TLA...Z TAM, TLAM, YT, YTL
Inch series	IRB	BA...Z, BHA...Z BAM, BHAM, YB, YBH

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

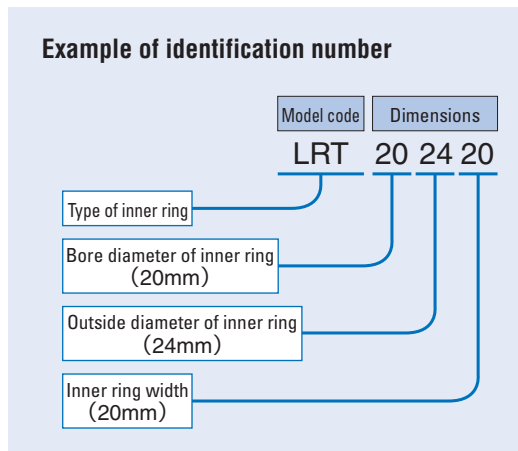


H

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		$\Delta d_{mp}$ Single plane mean bore diameter deviation		$\Delta B_s$ 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		$\Delta d_{mp}$ Single plane mean bore diameter deviation		$\Delta B_s$ 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:  $\mu m$

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	
			0	

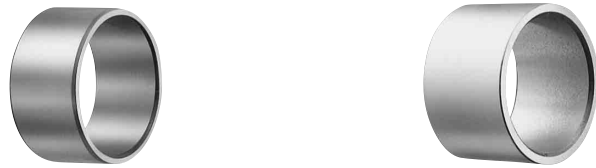
Remark Inner rings with an oil hole are provided with an oil groove.

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	0	0	0	0	0	0	0	0	0	0	24	24									
24	30									+5	-4																						24	30										
30	40									0	-9																						30	40										
40	50									-5	-19																						40	50										
50	65													0	-11																		50	65										
65	80													-10	-21																		65	80										
80	100													-10	-26																		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**

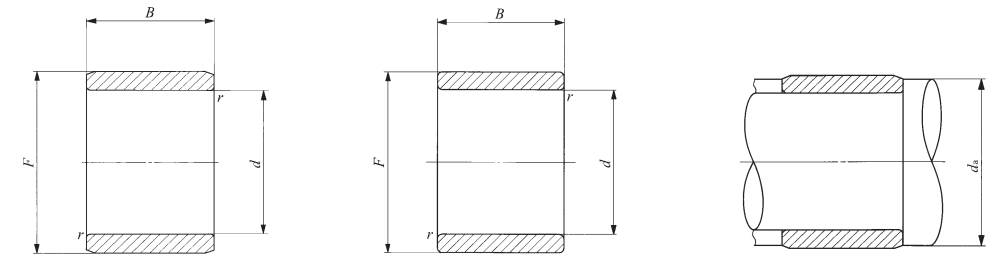
Inner Rings for General Usage



Shaft dia. 35 – 50mm

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<sub>s</sub></i> <sup>(1)</sup> min	<i>d<sub>a</sub></i> Min.	<i>d<sub>a</sub></i> Max.		
35	LRT 354017	—	39	35	40	17	0.3	37	39	RNAF 405017	
	LRT 354020	—	46	35	40	20	0.3	37	39	TAF 405020 RNAF 405520 NAX 4032 NBX 4032	
	—	LRTZ 354020	46	35	40	20.5	0.6	39	39.5	GTR 405520	
	LRT 354030	—	67	35	40	30	0.3	37	39	TAF 405030	
	LRT 354034	—	78	35	40	34	0.3	37	39	RNAFW 405034	
	LRT 354040	—	95	35	40	40	0.3	37	39	RNAFW 405540	
	LRT 354220	—	65	35	42	20	0.6	39	41	RNA 4907	
	—	LRTZ 354221	67	35	42	21	0.6	39	41	RNA 4907 UU	
	LRT 354230	—	97	35	42	30.5	0.6	39	41	TR 425630	
	—	LRTZ 354230	100	35	42	30.5	0.6	39	41	GTR 425630	
38	LRT 384320	—	47.5	38	43	20	0.3	40	42	RNA 6907	
	LRT 384330	—	72	38	43	30	0.3	40	42	RNA 6907 UU	
40	LRT 404517	—	44.5	40	45	17	0.3	42	44	TAF 435320	
	LRT 404520	—	51	40	45	20	0.3	42	44	TAF 435330	
	—	LRTZ 404520	44.5	40	45	17	0.3	42	44	TAF 455517	
	LRT 404530	—	77	40	45	30	0.3	42	44	TAF 455520 RNAF 456220 NAX 4532 NBX 4532	
	LRT 404530-1	—	77	40	45	30.5	0.6	44	44.5	TAF 455530	
	—	LRTZ 404530	77	40	45	30.5	0.6	44	44.5	TR 455930	
	LRT 404534	—	88	40	45	34	0.3	42	44	GTR 455930	
	LRT 404540	—	105	40	45	40	0.3	42	44	RNAFW 455534	
	LRT 404822	—	93	40	48	22	0.6	44	47	RNAFW 456240	
	—	LRTZ 404823	95	40	48	23	0.6	44	47	RNA 4908	
40	LRT 404840	—	165	40	48	40	0.6	44	47	RNA 4908 UU	
	—	LRTZ 404841	170	40	48	41	0.6	44	47	RNA 6908	

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<sub>s</sub></i> <sup>(1)</sup> min	<i>d<sub>a</sub></i> Min.	<i>d<sub>a</sub></i> Max.		
42	LRT 424720	—	54	42	47	20	0.3	44	46	TAF 475720	
	LRT 424730	—	81	42	47	30	0.3	44	46	TAF 475730	
	LRT 424830	—	100	42	48	30.5	0.6	46	47	TR 486230	
	—	LRTZ 424830	100	42	48	30.5	0.6	46	47	GTR 486230	
45	LRT 455020	—	58	45	50	20	0.3	47	49	RNAF 506220	
	LRT 455025	—	71	45	50	25	0.3	47	49	TAF 506225 RNAF 506220 NBX 5035	
	—	LRTZ 455030	90	45	50	30.5	0.6	49	49.5	TR 506430	
	LRT 455030	—	90	45	50	30.5	0.6	49	49.5	GTR 506430	
	LRT 455035	—	95	45	50	35	0.3	47	49	TAF 506235	
	LRT 455040	—	115	45	50	40	0.3	47	49	RNAFW 506240	
	LRT 455222	—	88	45	52	22	0.6	49	51	RNA 4909	
	—	LRTZ 455223	93	45	52	23	0.6	49	51	RNA 4909 UU	
	LRT 455240	—	165	45	52	40	0.6	49	51	RNA 6909	
	—	LRTZ 455241	170	45	52	41	0.6	49	51	RNA 6909 UU	
50	LRT 455520	—	120	45	55	20	1	50	54	RNAFW 557220	
	LRT 455540	—	245	45	55	40	1	50	54	RNAFW 557240	
	LRT 505520	—	63	50	55	20	0.3	52	54	RNAF 556820	
	LRT 505525	—	77	50	55	25	0.3	52	54	TAF 556825	
	LRT 505535	—	110	50	55	35	0.3	52	54	TAF 556835	
	LRT 505540	—	130	50	55	40	0.3	52	54	RNAFW 556840	
	LRT 505822	—	116	50	58	22	0.6	54	57	RNA 4910	
	—	LRTZ 505823	118	50	58	23	0.6	54	57	RNA 4910 UU	
	LRT 505840	—	210	50	58	40	0.6	54	57	RNA 6910	
	—	LRTZ 505841	215	50	58	41	0.6	54	57	RNA 6910 UU	
50	LRT 505845	—	235	50	58	45.5	1	55	57	TR 587745	
	—	LRTZ 505845	235	50	58	45.5	1	55	57	GTR 587745	
	LRT 506020	—	135	50	60	20	1	55	59	RNAF 607820	
	—	—	—	—	—	—	—	—	—	—	

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