

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

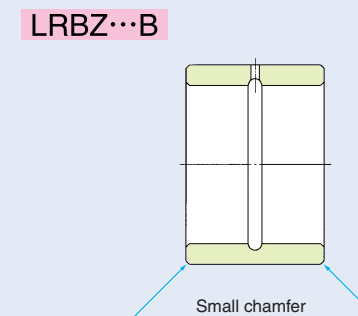
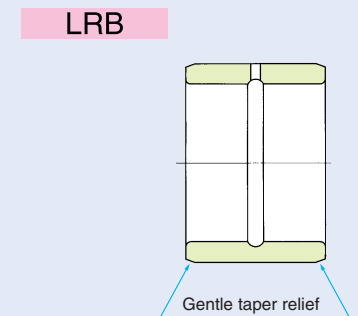
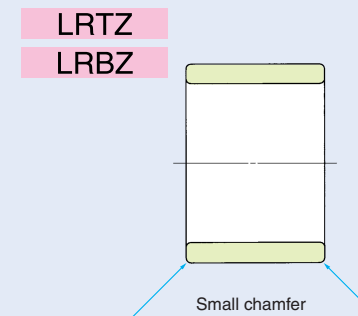
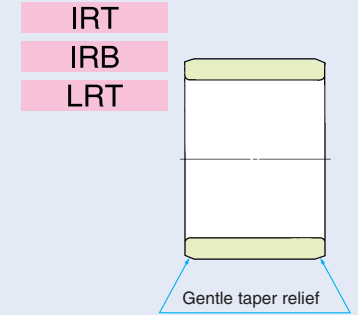
Series		Model codes of assembled bearings
Metric series	IRT	TA...Z, TLA...Z TAM, TLAM, YT, YTL
Inch series	IRB	BA...Z, BHA...Z BAM, BHAM, YB, YBH

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

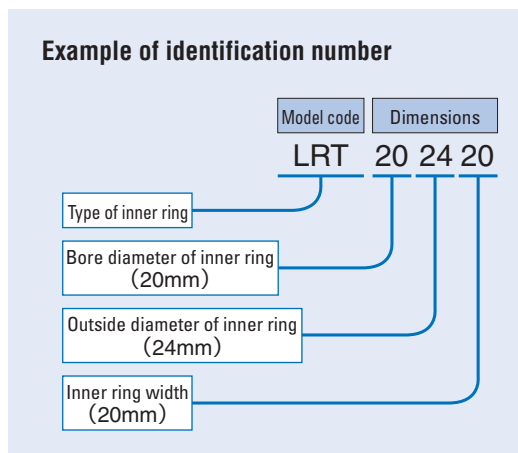


H

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 runoff 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 runoff 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	

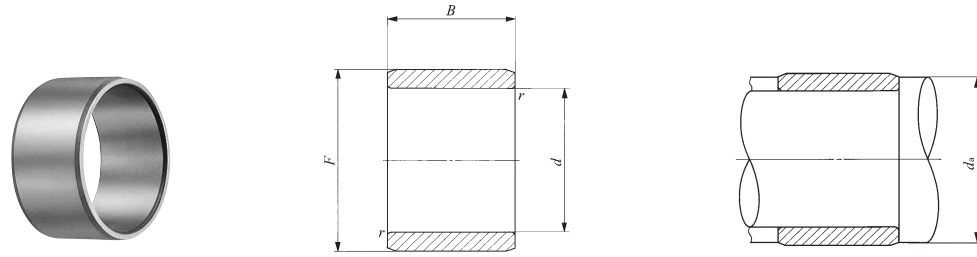
Remark Inner rings with an oil hole are provided with an oil groove.

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																								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	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	0	24	24																
24	30							0	-12	+5	-4															30	30																	
30	40							0	-12	0	-9															40	40																	
40	50									-5	-19															50	50																	
50	65													0	-11											65	65																	
65	80													-10	-21											80	80																	
80	100													-10	-26											100	100																	
100	120																									120	120																	
120	140																									140	140																	
140	160																									160	160																	
160	180																									180	180																	
180	200																									200	200																	
200	225																									225	225																	
225	250																									250	250																	
250	280																									280	280																	
280	315																									315	315																	
315	355																									355	355																	
355	400																									400	400																	
400	450																									450	450																	
450	500																									500	500																	

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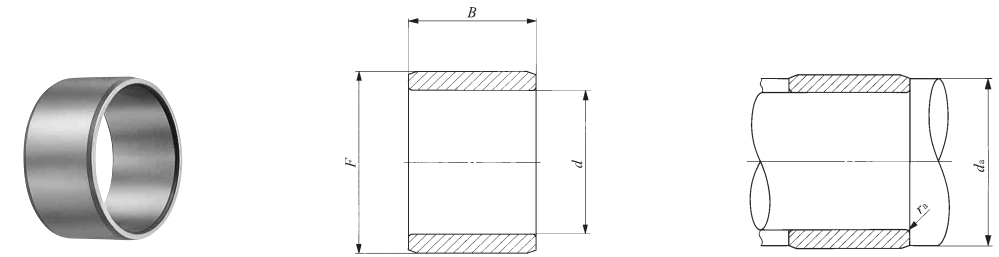
IRT

Shaft dia. 50 – 60mm

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
50	IRT 5020-1	65	50	55	20.5	0.6	54	54.5	TA 5520Z	TLA 5520Z	—
	IRT 5025-1	81	50	55	25.5	0.6	54	54.5	TA 5525Z	TLA 5525Z	—
	IRT 5030-1	96.5	50	55	30.5	0.6	54	54.5	TA 5530Z	—	—
	IRT 5040-1	128	50	55	40.5	0.6	54	54.5	TA 5540Z	—	—
	IRT 5045-1	144	50	55	45.5	0.6	54	54.5	TAW 5545Z	—	—
	IRT 5050-1	160	50	55	50.5	0.6	54	54.5	TAW 5550Z	—	—
	IRT 5025	169	50	60	25.5	1.5	58	59	TA 6025Z	—	—
	IRT 5030	205	50	60	30.5	1.5	58	59	TA 6030Z	—	—
	IRT 5040	270	50	60	40.5	1.5	58	59	TA 6040Z	—	—
	IRT 5045	300	50	60	45.5	1.5	58	59	TAW 6045Z	—	—
IRT 5050	335	50	60	50.5	1.5	58	59	TAW 6050Z	—	—	
52	IRT 5212	86	52	62	12.5	1.5	60	60.5	TA 6212Z	—	—
55	IRT 5525	185	55	65	25.5	1.5	63	63.5	TA 6525Z	—	—
	IRT 5530	220	55	65	30.5	1.5	63	63.5	TA 6530Z	—	—
	IRT 5545	330	55	65	45.5	1.5	63	63.5	TAW 6545Z	—	—
	IRT 5550	365	55	65	50.5	1.5	63	63.5	TAW 6550Z	—	—
60	IRT 6025	200	60	70	25.5	1.5	68	68.5	TA 7025Z	—	—
	IRT 6030	240	60	70	30.5	1.5	68	68.5	TA 7030Z	—	—
	IRT 6040	320	60	70	40.5	1.5	68	68.5	TA 7040Z	—	—
	IRT 6050	395	60	70	50.5	1.5	68	68.5	TAW 7050Z	—	—

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

Inner Rings for Shell Type Needle Roller Bearings **Inch Series**



IRB

Shaft dia. 7.938 – 15.875mm

Shaft dia. mm (inch)	Identification number	Mass (Ref.) g	Boundary dimensions mm (inch)			Standard mounting dimensions mm ⁽¹⁾			Assembled bearings		
			d	F	B	Min.	Max.	Max.	BA...Z (BAM)	BHA...Z (BHAM)	YB YBH
7.938 (5/16)	IRB 58	8	7.938 (5/16)	12.700 (1/2)	13.08	11.3	11.7	0.3	BA 88Z	BHA 88Z	YB 88
9.525 (3/8)	IRB 68	8.9	9.525 (3/8)	14.288 (9/16)	13.08	12.8	13.2	0.3	BA 98Z	BHA 98Z	YB 98
	IRB 68-1	12.6	9.525 (3/8)	15.875 (5/8)	13.08	12.8	14	0.3	BA 108Z	BHA 108Z	YB 108
	IRB 612	13.2	9.525 (3/8)	14.288 (9/16)	19.43	12.8	13.2	0.3	BA 912Z	—	YB 912
11.112 (7/16)	IRB 612-1	18.8	9.525 (3/8)	15.875 (5/8)	19.43	12.8	14	0.3	BA 1012Z	BHA 1012Z	YB 1012
	IRB 78	10.1	11.112 (7/16)	15.875 (5/8)	13.08	14.4	14.8	0.3	BA 108Z	BHA 108Z	YB 108
	IRB 712	15	11.112 (7/16)	15.875 (5/8)	19.43	14.4	14.8	0.3	BA 1012Z	—	YB 108
12.700 (1/2)	IRB 714	17.4	11.112 (7/16)	15.875 (5/8)	22.60	14.4	14.8	0.3	BA 1014Z	—	YB 1012
	IRB 716	19.9	11.112 (7/16)	15.875 (5/8)	25.78	14.4	14.8	0.3	BA 1016Z	BHA 1016Z	—
	IRB 86	8.5	12.700 (1/2)	17.462 (13/16)	9.90	16.9	16.9	0.3	BA 116Z	—	—
	IRB 88	11.2	12.700 (1/2)	17.462 (13/16)	13.08	16.9	16.9	0.3	BA 118Z	—	—
	IRB 812	16.7	12.700 (1/2)	17.462 (13/16)	19.43	16.9	16.9	0.3	BA 1112Z	—	YB 1112
	IRB 88-1	15.8	12.700 (1/2)	19.050 (3/4)	13.08	16.9	17.5	0.6	BA 128Z	—	YB 128
14.288 (9/16)	IRB 810-1	19.6	12.700 (1/2)	19.050 (3/4)	16.25	16.9	17.5	0.6	BA 1210Z	—	YB 1210
	IRB 812-1	23.5	12.700 (1/2)	19.050 (3/4)	19.43	16.9	17.5	0.6	BA 1212Z	—	YB 1212
	IRB 814-1	27.5	12.700 (1/2)	19.050 (3/4)	22.60	16.9	17.5	0.6	BA 1214Z	—	—
	IRB 816-1	31	12.700 (1/2)	19.050 (3/4)	25.78	16.9	17.5	0.6	BA 1216Z	—	—
15.875 (5/8)	IRB 98	17.3	14.288 (9/16)	20.638 (13/16)	13.08	19	19.6	0.6	BA 138Z	—	YB 138
	IRB 910	21.5	14.288 (9/16)	20.638 (13/16)	16.25	19	19.6	0.6	BA 1310Z	—	YB 1310
	IRB 912	26	14.288 (9/16)	20.638 (13/16)	19.43	19	19.6	0.6	BA 1312Z	BHA 1312Z	YB 1312
	IRB 914	30	14.288 (9/16)	20.638 (13/16)	22.60	19	19.6	0.6	BA 1314Z	—	—
	IRB 916	34.5	14.288 (9/16)	20.638 (13/16)	25.78	19	19.6	0.6	BA 1316Z	—	—
15.875 (5/8)	IRB 920	43	14.288 (9/16)	20.638 (13/16)	32.13	19	19.6	0.6	BA 1320Z	—	—
	IRB 106	14.5	15.875 (5/8)	22.225 (7/8)	9.90	20.7	21.2	0.6	BA 146Z	—	—
	IRB 108	18.9	15.875 (5/8)	22.225 (7/8)	13.08	20.7	21.2	0.6	BA 148Z	—	YB 148
IRB 1012	28	15.875 (5/8)	22.225 (7/8)	19.43	20.7	21.2	0.6	BA 1412Z	BHA 1412Z	YB 1412	

Note⁽¹⁾ Maximum allowable fillet corner radius of shaft
Remark No oil hole is provided.