SHELL TYPE NEEDLE ROLLER BEARINGS

●Shell Type Caged Needle Roller Bearings

●Shell Type Grease Retained Full Complement Needle Roller Bearings



Structure and features

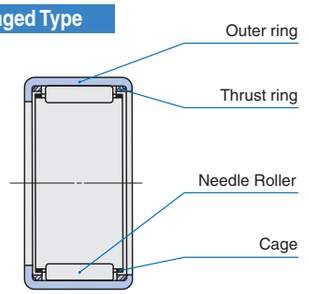
IKO Shell Type Needle Roller Bearings are light-weight bearings with large load ratings. They employ a shell type outer ring made from a thin special-steel plate which is accurately drawn, carburized and quenched, thus providing the lowest sectional height among the needle roller bearings.

There are two types of bearings available in this series; the caged type and the full complement type. The appropriate type can be selected according to the operating conditions. The caged type has a structure in which the needle rollers are accurately guided by the cage and thrust rings. It is useful for applications at high-speed rotation. The full complement type needle roller bearing, on the other hand, is suitable for heavy-load applications at low-speed rotation.

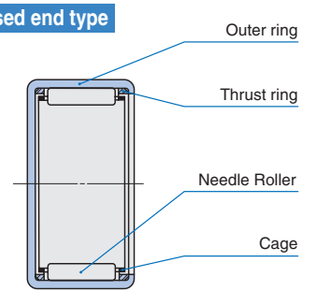
Since these bearings are press-fitted into the housing, no fixtures for axial positioning are needed. They are ideal for use in mass-produced articles that require economy, and have a wide variety of applications.

Structures of Shell Type Needle Roller Bearings

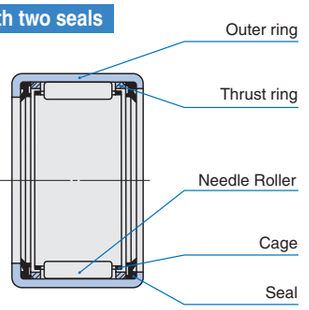
Standard Caged Type



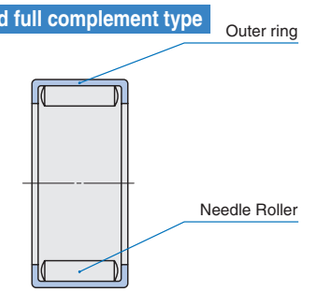
Caged and closed end type



Caged type with two seals



Grease retained full complement type



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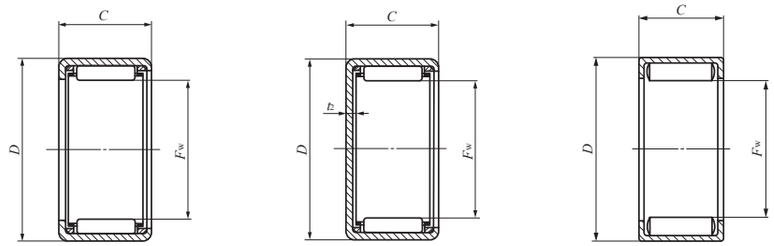


TA···Z TLA···Z　　TAM TLAM　　YT YTL

Shaft dia. 4 — 10mm

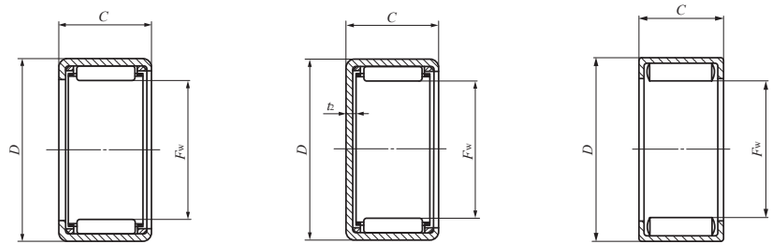
Shaft dia. mm	Identification number										Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g					Shaft dia. h6		Housing bore dia. J7		Housing bore dia. N7					
											F_w	D	C	t_2 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	min^{-1}	
4	—	—	—	—	TLA 48 Z	1.54	TLAM 48	1.67	—	—	4	8	8	1	4.000	3.992	—	—	7.996	7.981	1 350	1 010	75 000	—
	—	—	—	—	—	—	—	—	YTL 48	1.73	4	8	8	—							3 010	2 900	40 000	—
5	—	—	—	—	TLA 59 Z	1.9	TLAM 59	2	—	—	5	9	9	1	5.000	4.992	—	—	8.996	8.981	1 880	1 600	65 000	—
	—	—	—	—	—	—	—	—	YTL 59	2.4	5	9	9	—							4 320	4 750	30 000	—
6	—	—	—	—	TLA 69 Z	2.2	TLAM 69	2.3	—	—	6	10	9	1	6.000	5.992	—	—	9.996	9.981	2 100	1 900	55 000	—
7	—	—	—	—	TLA 79 Z	2.5	TLAM 79	2.7	—	—	7	11	9	1	7.000	6.991	—	—	10.995	10.977	2 490	2 450	50 000	—
8	—	—	—	—	TLA 810 Z	3.1	TLAM 810	3.3	—	—	8	12	10	1	8.000	7.991	—	—	11.995	11.977	3 320	3 670	45 000	—
	TA 810 Z	6.7	TAM 810	7.1	—	—	—	—	—	—	8	15	10	1.3	8.000	7.991	15.010	14.992	—	—	3 470	2 880	45 000	—
	TA 815 Z	9.7	TAM 815	10.1	—	—	—	—	—	—	8	15	15	1.3							5 780	5 570	45 000	—
	TA 820 Z	12.9	TAM 820	13.3	—	—	—	—	—	—	8	15	20	1.3							8 340	8 920	45 000	—
	—	—	—	—	—	—	—	—	YT 810	7.7	8	15	10	—							7 530	7 950	19 000	—
9	—	—	—	—	TLA 910 Z	3.4	TLAM 910	3.6	—	—	9	13	10	1	9.000	8.991	—	—	12.995	12.977	3 500	4 040	45 000	—
	—	—	—	—	TLA 912 Z	4	TLAM 912	4.3	—	—	9	13	12	1							4 460	5 510	45 000	—
	TA 912 Z	8.7	TAM 912	9.2	—	—	—	—	—	—	9	16	12	1.3	9.000	8.991	16.010	15.992	—	—	5 140	4 880	45 000	—
	TA 916 Z	11.4	TAM 916	11.9	—	—	—	—	—	—	9	16	16	1.3							6 960	7 210	45 000	—
	—	—	—	—	—	—	—	—	YT 912	10.1	9	16	12	—							9 690	11 200	17 000	—
10	—	—	—	—	TLA 1010 Z	3.7	TLAM 1010	4	—	—	10	14	10	1	10.000	9.991	—	—	13.995	13.977	3 870	4 740	40 000	IRT 710
	—	—	—	—	TLA 1012 Z	4.4	TLAM 1012	4.8	—	—	10	14	12	1							4 920	6 460	40 000	IRT 712
	—	—	—	—	TLA 1015 Z	5.5	TLAM 1015	5.9	—	—	10	14	15	1							6 390	9 040	40 000	IRT 715
	TA 1010 Z	7.9	TAM 1010	8.5	—	—	—	—	—	—	10	17	10	1.3	10.000	9.991	17.010	16.992	—	—	4 150	3 780	40 000	IRT 710
	TA 1012 Z	9.3	TAM 1012	10	—	—	—	—	—	—	10	17	12	1.3							5 590	5 540	40 000	IRT 712
	TA 1015 Z	11.5	TAM 1015	12.2	—	—	—	—	—	—	10	17	15	1.3							6 920	7 300	40 000	IRT 715
	TA 1020 Z	15.4	TAM 1020	16	—	—	—	—	—	—	10	17	20	1.3							9 990	11 700	40 000	—

Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
Remark Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided with prepacked grease, so perform proper lubrication when using these types of bearings.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS





TA···Z TLA···Z　　TAM TLAM　　YT YTL

Shaft dia. 12 — 15mm

Shaft dia. mm	Identification number										Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g					Shaft dia. h6		Housing bore dia. J7		Housing bore dia. N7					
											F_w	D	C	t_2 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	min^{-1}	
12	—	—	—	—	TLA 1210 Z	4.3	TLAM 1210	4.7	—	—	12	16	10	1	12.000	11.989	—	—	15.995	15.977	4 350	5 810	35 000	IRT 810
	—	—	—	—	—	—	—	—	YTL 1210	5.1	12	16	10	—							7 470	11 800	13 000	IRT 810
	—	—	—	—	TLA 1212 Z	8.6	TLAM 1212	9.4	—	—	12	18	12	1.3	12.000	11.989	—	—	17.995	17.977	6 420	7 490	35 000	IRT 812
	TA 1212 Z	10.5	TAM 1212	11.5	—	—	—	—	—	—	12	19	12	1.3							6 000	6 310	35 000	IRT 812
	TA 1215 Z	13.1	TAM 1215	14	—	—	—	—	—	—	12	19	15	1.3							7 440	8 320	35 000	IRT 815
	TA 1220 Z	17.3	TAM 1220	18.3	—	—	—	—	—	—	12	19	20	1.3	12.000	11.989	19.012	18.991	—	—	10 700	13 300	35 000	—
	TA 1225 Z	21.5	TAM 1225	22.5	—	—	—	—	—	—	12	19	25	1.3							13 800	18 300	35 000	—
	—	—	—	—	—	—	—	—	YT 1212	12.8	12	19	12	—							11 800	15 200	13 000	IRT 812
13	—	—	—	—	TLA 1312 Z	9.2	TLAM 1312	10.1	—	—	13	19	12	1.3	13.000	12.989	—	—	18.993	18.972	6 760	8 170	30 000	IRT 1012
14	—	—	—	—	TLA 1412 Z	9.8	TLAM 1412	10.8	—	—	14	20	12	1.3	14.000	13.989	—	—	19.993	19.972	7 080	8 840	30 000	IRT 1012-2
	—	—	—	—	TLA 1416 Z	13.2	TLAM 1416	14.3	—	—	14	20	16	1.3							8 950	12 000	30 000	IRT 1016-2
	TA 1416 Z	18.4	TAM 1416	19.6	—	—	—	—	—	—	14	22	16	1.3	14.000	13.989	22.012	21.991	—	—	10 500	12 000	30 000	IRT 1016-2
	TA 1420 Z	23	TAM 1420	24	—	—	—	—	—	—	14	22	20	1.3							13 900	17 200	30 000	IRT 1020-2
15	—	—	—	—	TLA 1512 Z	10.4	TLAM 1512	11.5	—	—	15	21	12	1.3	15.000	14.989	—	—	20.993	20.972	7 380	9 520	25 000	IRT 1212
	—	—	—	—	TLA 1516 Z	14	TLAM 1516	15.2	—	—	15	21	16	1.3							9 330	12 900	25 000	IRT 1216
	—	—	—	—	TLA 1522 Z	19.1	TLAM 1522	20.5	—	—	15	21	22	1.3							13 600	20 900	25 000	IRT 1222
	TA 1510 Z	10.8	TAM 1510	12.3	—	—	—	—	—	—	15	22	10	1.3	15.000	14.989	22.012	21.991	—	—	5 290	5 680	25 000	IRT 1010-1
	TA 1512 Z	12.9	TAM 1512	14.3	—	—	—	—	—	—	15	22	12	1.3							7 120	8 310	25 000	IRT 1012-1
	TA 1515 Z	15.9	TAM 1515	17.3	—	—	—	—	—	—	15	22	15	1.3							8 830	11 000	25 000	IRT 1015-1
	TA 1520 Z	21	TAM 1520	22.5	—	—	—	—	—	—	15	22	20	1.3							12 700	17 600	25 000	IRT 1020-1
	TA 1525 Z	25	TAM 1525	26.5	—	—	—	—	—	—	15	22	25	1.3							16 300	24 200	25 000	IRT 1025-1

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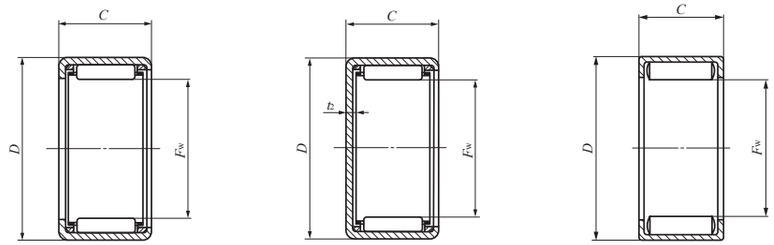
SHELL TYPE NEEDLE ROLLER BEARINGS





TA···Z TLA···Z　　TAM TLAM　　YT

Shaft dia. 16 — 19mm

Shaft dia. mm	Identification number									
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g
16	—	—	—	—	**TLA 1612 Z**	10.9	**TLAM 1612**	12.2	—	—
	—	—	—	—	**TLA 1616 Z**	14.8	**TLAM 1616**	16.1	—	—
	—	—	—	—	**TLA 1622 Z**	20	**TLAM 1622**	21.5	—	—
	TA 1616 Z	20	**TAM 1616**	22	—	—	—	—	—	—
	TA 1620 Z	25	**TAM 1620**	27	—	—	—	—	—	—
17	—	—	—	—	**TLA 1712 Z**	11.5	**TLAM 1712**	13	—	—
	TA 1715 Z	17.6	**TAM 1715**	19.5	—	—	—	—	—	—
	TA 1720 Z	23.5	**TAM 1720**	25	—	—	—	—	—	—
	TA 1725 Z	29	**TAM 1725**	31	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 1715**	20.5
	—	—	—	—	—	—	—	—	**YT 1725**	35.5
18	—	—	—	—	**TLA 1812 Z**	12	**TLAM 1812**	13.7	—	—
	—	—	—	—	**TLA 1816 Z**	16.2	**TLAM 1816**	17.9	—	—
	TA 1813 Z	16.4	**TAM 1813**	18.5	—	—	—	—	—	—
	TA 1815 Z	18.5	**TAM 1815**	20.5	—	—	—	—	—	—
	TA 1817 Z	21	**TAM 1817**	23	—	—	—	—	—	—
	TA 1819 Z	23.5	**TAM 1819**	25.5	—	—	—	—	—	—
	TA 1820 Z	24.5	**TAM 1820**	26.5	—	—	—	—	—	—
	TA 1825 Z	30.5	**TAM 1825**	32.5	—	—	—	—	—	—
19	**TA 1916 Z**	23	**TAM 1916**	25.5	—	—	—	—	—	—
	TA 1920 Z	29	**TAM 1920**	31	—	—	—	—	—	—

Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
				Shaft dia. h6		Housing bore dia. J7		N7					
F_w	D	C	t_2 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	min^{-1}	
16	22	12	1.3							7 670	10 200	25 000	**IRT 1212-1**
16	22	16	1.3	16.000	15.989	—	—	21.993	21.972	9 700	13 800	25 000	**IRT 1216-1**
16	22	22	1.3							14 200	22 400	25 000	**IRT 1222-1**
16	24	16	1.3							11 100	13 300	25 000	**IRT 1216-1**
16	24	20	1.3	16.000	15.989	24.012	23.991	—	—	14 700	19 100	25 000	**IRT 1220-1**
17	23	12	1.3	17.000	16.989	—	—	22.993	22.972	7 960	10 900	25 000	—
17	24	15	1.3							9 660	12 700	25 000	**IRT 1215-2**
17	24	20	1.3							13 900	20 400	25 000	**IRT 1220-2**
17	24	25	1.3	17.000	16.989	24.012	23.991	—	—	17 900	28 100	25 000	**IRT 1225-2**
17	24	15	—							16 600	26 000	9 000	**IRT 1215-2**
17	24	25	—							27 200	49 000	9 000	**IRT 1225-2**
18	24	12	1.3	18.000	17.989	—	—	23.993	23.972	8 230	11 500	20 000	**IRT 1512**
18	24	16	1.3							10 400	15 600	20 000	**IRT 1516**
18	25	13	1.3							9 100	12 000	20 000	**IRT 1513**
18	25	15	1.3							10 100	13 600	20 000	**IRT 1515**
18	25	17	1.3							11 900	16 900	20 000	**IRT 1517**
18	25	19	1.3	18.000	17.989	25.012	24.991	—	—	13 700	20 200	20 000	**IRT 1519**
18	25	20	1.3							14 500	21 800	20 000	**IRT 1520**
18	25	25	1.3							18 600	30 000	20 000	**IRT 1525**
19	27	16	1.3	19.000	18.987	27.012	26.991	—	—	12 200	15 700	20 000	**IRT 1516-1**
19	27	20	1.3							16 100	22 600	20 000	**IRT 1520-1**

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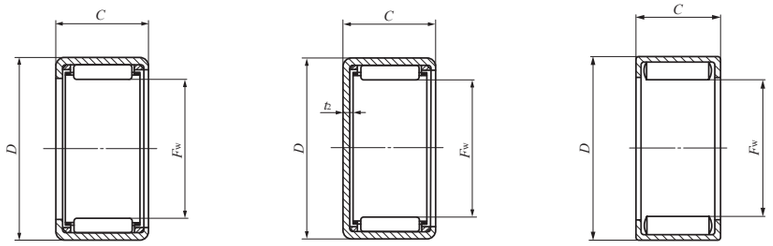

TA ··· Z TLA ··· Z　　TAM TLAM　　YT

Shaft dia. 20 — 21mm

Shaft dia. mm	Identification number										Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g					Shaft dia. h6		Housing bore dia. J7		Housing bore dia. N7					
											F_w	D	C	t_2 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	min^{-1}	
20	—	—	—	—	**TLA 2012 Z**	13.2	**TLAM 2012**	15.2	—	—	20	26	12	1.3	20.000	19.987	—	—	25.993	25.972	8 740	12 900	20 000	—
	—	—	—	—	**TLA 2016 Z**	17.8	**TLAM 2016**	19.9	—	—	20	26	16	1.3							11 100	17 500	20 000	**IRT 1716**
	—	—	—	—	**TLA 2020 Z**	22	**TLAM 2020**	24	—	—	20	26	20	1.3							14 500	24 700	20 000	**IRT 1720**
	—	—	—	—	**TLA 2030 Z**	33	**TLAM 2030**	35	—	—	20	26	30	1.3							22 300	42 900	20 000	**IRT 1730**
	TA 2015 Z	20	**TAM 2015**	22.5	—	—	—	—	—	—	20	27	15	1.3	20.000	19.987	27.012	26.991	—	—	10 400	14 600	20 000	**IRT 1515-2**
	TA 2020 Z	26.5	**TAM 2020**	29	—	—	—	—	—	—	20	27	20	1.3							15 000	23 400	20 000	**IRT 1520-2**
	TA 2025 Z	33	**TAM 2025**	35.5	—	—	—	—	—	—	20	27	25	1.3							19 200	32 200	20 000	**IRT 1525-2**
	TA 2030 Z	39.5	**TAM 2030**	42	—	—	—	—	—	—	20	27	30	1.3							23 100	41 000	20 000	**IRT 1530-2**
	—	—	—	—	—	—	—	—	**YT 2015**	23.5	20	27	15	—							18 400	30 900	7 500	**IRT 1515-2**
	—	—	—	—	—	—	—	—	**YT 2025**	41	20	27	25	—							30 000	58 300	7 500	**IRT 1525-2**
	TA 202820 Z	30	**TAM 202820**	32.5	—	—	—	—	—	—	20	28	20	1.3	20.000	19.987	28.012	27.991	—	—	16 900	24 300	20 000	**IRT 1520-2**
	—	—	—	—	—	—	—	—	**YT 202820**	37.5	20	28	20	—							26 800	44 600	7 500	**IRT 1520-2**
21	**TA 2116 Z**	25	**TAM 2116**	28	—	—	—	—	—	—	21	29	16	1.3	21.000	20.987	29.012	28.991	—	—	13 300	18 100	19 000	**IRT 1716-1**
	TA 2120 Z	31.5	**TAM 2120**	34.5	—	—	—	—	—	—	21	29	20	1.3							17 600	25 900	19 000	**IRT 1720-1**
	—	—	—	—	—	—	—	—	**YT 2116**	31	21	29	16	—							22 100	35 200	7 000	**IRT 1716-1**
	—	—	—	—	—	—	—	—	**YT 2120**	39	21	29	20	—							27 500	46 800	7 000	**IRT 1720-1**

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1mm=0.03937inch

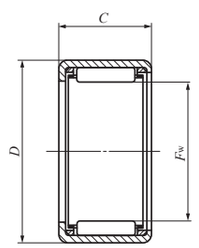
SHELL TYPE NEEDLE ROLLER BEARINGS



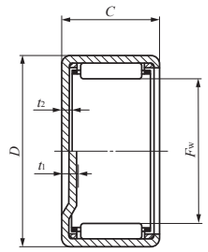
Shaft dia. 22 — 24mm

Shaft dia. mm	Identification number									
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g
22	—	—	—	—	**TLA 2212 Z**	15.6	**TLAM 2212**	18.1	—	—
	—	—	—	—	**TLA 2216 Z**	21.5	**TLAM 2216**	24	—	—
	—	—	—	—	**TLA 2220 Z**	26.5	**TLAM 2220**	29	—	—
	TA 2210 Z	15	**TAM 2210**	18.1	—	—	—	—	—	—
	TA 2215 Z	21.5	**TAM 2215**	24.5	—	—	—	—	—	—
	TA 2220 Z	29	**TAM 2220**	32	—	—	—	—	—	—
	TA 2225 Z	35.5	**TAM 2225**	38.5	—	—	—	—	—	—
	TA 2230 Z	42.5	**TAM 2230**	45.5	—	—	—	—	—	—
	TA 223016 Z	26	**TAM 223016**	29	—	—	—	—	—	—
	TA 223020 Z	32.5	**TAM 223020**	35.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 223016**	32
	—	—	—	—	—	—	—	—	**YT 223020**	40.5
24	**TA 2420 Z**	31	**TAM 2420**	35	—	—	—	—	—	—
	TA 2428 Z	43.5	**TAM 2428**	47	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 2428**	54
	TA 243216 Z	28	**TAM 243216**	32	—	—	—	—	—	—
	TA 243220 Z	35.5	**TAM 243220**	39	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 243216**	34.5
	—	—	—	—	—	—	—	—	**YT 243220**	43.5

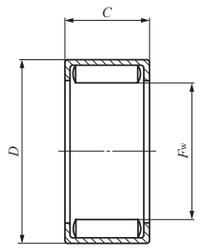
Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
Remark Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided with prepacked grease, so perform proper lubrication when using these types of bearings.



TA ··· Z TLA ··· Z



TAM TLAM
t_1 ($F_w \geqq 24$)
t_2 ($F_w \leqq 22$)



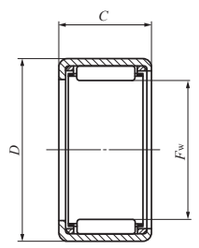
YT

Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
				Shaft dia. h6		Housing bore dia. J7		Housing bore dia. N7					
F_w	D	C	t_1, t_2 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	min^{-1}	
22	28	12	1.3							9 230	14 300	18 000	—
22	28	16	1.3	22.000	21.987	—	—	27.993	27.972	11 700	19 300	18 000	**IRT 1716-2**
22	28	20	1.3							15 300	27 300	18 000	**IRT 1720-2**
22	29	10	1.3							6 650	8 500	18 000	**IRT 1710-2**
22	29	15	1.3							11 100	16 400	18 000	**IRT 1715-2**
22	29	20	1.3	22.000	21.987	29.012	28.991	—	—	16 000	26 300	18 000	**IRT 1720-2**
22	29	25	1.3							19 700	34 300	18 000	**IRT 1725-2**
22	29	30	1.3							23 800	43 700	18 000	**IRT 1730-2**
22	30	16	1.3							13 200	18 200	18 000	**IRT 1716-2**
22	30	20	1.3	22.000	21.987	30.012	29.991	—	—	17 500	26 100	18 000	**IRT 1720-2**
22	30	16	—							22 600	36 800	7 000	**IRT 1716-2**
22	30	20	—							28 200	48 900	7 000	**IRT 1720-2**
24	31	20	3.4							17 000	29 200	16 000	**IRT 2020**
24	31	28	3.4	24.000	23.987	31.014	30.989	—	—	24 500	46 700	16 000	**IRT 2028**
24	31	28	—							36 800	79 900	6 500	**IRT 2028**
24	32	16	3.4							14 200	20 500	16 000	**IRT 2016**
24	32	20	3.4	24.000	23.987	32.014	31.989	—	—	18 800	29 400	16 000	**IRT 2020**
24	32	16	—							23 700	40 100	6 500	**IRT 2016**
24	32	20	—							29 500	53 200	6 500	**IRT 2020**

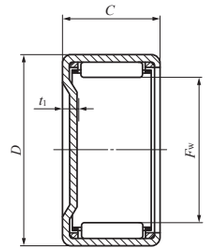
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS

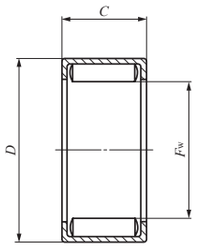




TA ··· Z TLA ··· Z



TAM TLAM



YT YTL

Shaft dia. 25 — 28mm

Shaft dia. mm	Identification number										Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g	F_w	D	C	t_1 Max.	Shaft dia. h6 Max.	Shaft dia. h6 Min.	Housing bore dia. J7 Max.	Housing bore dia. J7 Min.	Housing bore dia. N7 Max.	Housing bore dia. N7 Min.	C N	C_0 N	min^{-1}	
25	—	—	—	—	**TLA 2512 Z**	19.7	**TLAM 2512**	23.5	—	—	25	32	12	2.8							9 440	13 900	15 000	—
	—	—	—	—	**TLA 2516 Z**	26	**TLAM 2516**	29.5	—	—	25	32	16	2.8							12 800	20 500	15 000	—
	—	—	—	—	**TLA 2520 Z**	32	**TLAM 2520**	36	—	—	25	32	20	2.8	25.000	24.987	—	—	31.992	31.967	16 900	29 300	15 000	**IRT 2020-1**
	—	—	—	—	**TLA 2526 Z**	41.5	**TLAM 2526**	45.5	—	—	25	32	26	2.8							22 600	42 500	15 000	**IRT 2026-1**
	—	—	—	—	**TLAW2538Z**	58.5	**TLAMW2538**	62	—	—	25	32	38	2.8							28 900	58 500	15 000	**IRT 2038-1**
	—	—	—	—	—	—	—	—	**YTL 2526**	51.5	25	32	26	—							35 000	75 800	6 000	**IRT 2026-1**
	TA 2510 Z	19.1	**TAM 2510**	23	—	—	—	—	—	—	25	33	10	3.4							7 990	9 900	15 000	**IRT 2010-1**
	TA 2515 Z	28.5	**TAM 2515**	32.5	—	—	—	—	—	—	25	33	15	3.4							13 400	19 300	15 000	**IRT 2015-1**
	TA 2520 Z	36.5	**TAM 2520**	40.5	—	—	—	—	—	—	25	33	20	3.4	25.000	24.987	33.014	32.989	—	—	19 500	31 100	15 000	**IRT 2020-1**
	TA 2525 Z	45.5	**TAM 2525**	49	—	—	—	—	—	—	25	33	25	3.4							24 100	40 800	15 000	**IRT 2025-1**
	TA 2530 Z	54.5	**TAM 2530**	58.5	—	—	—	—	—	—	25	33	30	3.4							29 100	52 000	15 000	**IRT 2030-1**
	—	—	—	—	—	—	—	—	**YT 2510**	22.5	25	33	10	—							15 500	23 600	6 000	**IRT 2010-1**
	—	—	—	—	—	—	—	—	**YT 2515**	33	25	33	15	—							22 700	38 300	6 000	**IRT 2015-1**
	—	—	—	—	—	—	—	—	**YT 2520**	45	25	33	20	—	25.000	24.987	33.014	32.989	—	—	30 200	55 400	6 000	**IRT 2020-1**
	—	—	—	—	—	—	—	—	**YT 2525**	57	25	33	25	—							37 200	72 500	6 000	**IRT 2025-1**
26	**TA 2616 Z**	30.5	**TAM 2616**	34.5	—	—	—	—	—	—	26	34	16	3.4							15 200	22 900	15 000	**IRT 2216**
	TA 2620 Z	38	**TAM 2620**	42.5	—	—	—	—	—	—	26	34	20	3.4							20 100	32 800	15 000	**IRT 2220**
	—	—	—	—	—	—	—	—	**YT 2616**	37	26	34	16	—	26.000	25.987	34.014	33.989	—	—	24 700	43 300	6 000	**IRT 2216**
	—	—	—	—	—	—	—	—	**YT 2620**	46.5	26	34	20	—							30 800	57 500	6 000	**IRT 2220**
28	—	—	—	—	**TLA 2816 Z**	28.5	**TLAM 2816**	33.5	—	—	28	35	16	2.8	28.000	27.987	—	—	34.992	34.967	13 800	23 500	13 000	—
	—	—	—	—	**TLA 2820 Z**	35.5	**TLAM 2820**	40.5	—	—	28	35	20	2.8							18 300	33 600	13 000	**IRT 2220-1**
	TA 2820 Z	45	**TAM 2820**	50	—	—	—	—	—	—	28	37	20	3.4							21 200	32 300	13 000	**IRT 2220-1**
	TA 2830 Z	67.5	**TAM 2830**	72.5	—	—	—	—	—	—	28	37	30	3.4	28.000	27.987	37.014	36.989	—	—	33 000	56 900	13 000	**IRT 2230-1**
	—	—	—	—	—	—	—	—	**YT 2820**	56.5	28	37	20	—							34 700	61 700	5 500	**IRT 2220-1**

Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.

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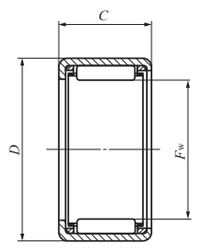
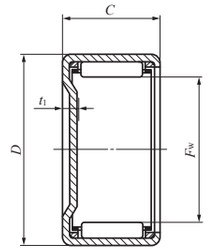
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS

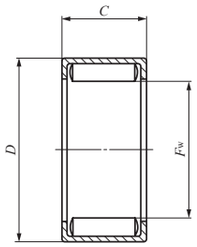




TA···Z TLA···Z



TAM TLAM



YT

Shaft dia. 29 — 35mm

Shaft dia. mm	Identification number										Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g					Shaft dia. h6		Housing bore dia. J7		N7					
											F_w	D	C	t_1 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	min^{-1}	
29	TA 2920 Z	47	TAM 2920	52	—	—	—	—	—	—	29	38	20	3.4							22 000	34 200	13 000	IRT 2520
	TA 2930 Z	70	TAM 2930	75.5	—	—	—	—	—	—	29	38	30	3.4	29.000	28.987	38.014	37.989	—	—	34 200	60 300	13 000	IRT 2530
	—	—	—	—	—	—	—	—	YT 2920	58.5	29	38	20	—							35 500	64 100	5 000	IRT 2520
30	—	—	—	—	TLA 3012 Z	23.5	TLAM 3012	29	—	—	30	37	12	2.8							10 400	16 600	12 000	—
	—	—	—	—	TLA 3016 Z	30.5	TLAM 3016	36	—	—	30	37	16	2.8							14 100	24 500	12 000	—
	—	—	—	—	TLA 3018 Z	34.5	TLAM 3018	40	—	—	30	37	18	2.8							16 400	29 800	12 000	—
	—	—	—	—	TLA 3020 Z	38	TLAM 3020	43.5	—	—	30	37	20	2.8	30.000	29.987	—	—	36.992	36.967	18 600	35 100	12 000	IRT 2520-1
	—	—	—	—	TLA 3026 Z	49	TLAM 3026	54.5	—	—	30	37	26	2.8							24 800	50 900	12 000	IRT 2526-1
	—	—	—	—	TLAW3038 Z	69	TLAMW3038	74.5	—	—	30	37	38	2.8							31 900	70 200	12 000	IRT 2538-1
	TA 3013 Z	36.5	TAM 3013	42.5	—	—	—	—	—	—	30	40	13	3.4							13 500	16 800	12 000	—
	TA 3015 Z	42	TAM 3015	47.5	—	—	—	—	—	—	30	40	15	3.4							16 800	22 400	12 000	IRT 2515-1
	TA 3020 Z	54.5	TAM 3020	60	—	—	—	—	—	—	30	40	20	3.4	30.000	29.987	40.014	39.989	—	—	24 500	36 300	12 000	IRT 2520-1
	TA 3025 Z	68	TAM 3025	73.5	—	—	—	—	—	—	30	40	25	3.4							31 600	50 300	12 000	IRT 2525-1
	TA 3030 Z	80	TAM 3030	85.5	—	—	—	—	—	—	30	40	30	3.4							36 700	60 700	12 000	IRT 2530-1
32	TA 3220 Z	57.5	TAM 3220	63.5	—	—	—	—	—	—	32	42	20	3.4							25 400	38 600	11 000	IRT 2820
	TA 3230 Z	86	TAM 3230	97.5	—	—	—	—	—	—	32	42	30	3.4	32.000	31.984	42.014	41.989	—	—	39 500	68 400	11 000	IRT 2830
	—	—	—	—	—	—	—	—	YT 3220	71.5	32	42	20	—							39 900	70 100	4 500	IRT 2820
35	—	—	—	—	TLA 3512 Z	27	TLAM 3512	34.5	—	—	35	42	12	2.8							11 600	20 000	10 000	IRT 3012
	—	—	—	—	TLA 3516 Z	35	TLAM 3516	42.5	—	—	35	42	16	2.8	35.000	34.984	—	—	41.992	41.967	15 700	29 600	10 000	—
	—	—	—	—	TLA 3520 Z	43.5	TLAM 3520	51	—	—	35	42	20	2.8							20 700	42 300	10 000	IRT 3020
	TA 3512 Z	38.5	TAM 3512	46	—	—	—	—	—	—	35	45	12	3.4							14 800	19 900	10 000	IRT 3012
	TA 3515 Z	48	TAM 3515	56	—	—	—	—	—	—	35	45	15	3.4							18 500	26 500	10 000	IRT 3015
	TA 3520 Z	62.5	TAM 3520	70	—	—	—	—	—	—	35	45	20	3.4	35.000	34.984	45.014	44.989	—	—	27 000	43 100	10 000	IRT 3020
	TA 3525 Z	78	TAM 3525	85.5	—	—	—	—	—	—	35	45	25	3.4							34 800	59 700	10 000	IRT 3025
	TA 3530 Z	97	TAM 3530	105	—	—	—	—	—	—	35	45	30	3.4							40 600	72 600	10 000	IRT 3030

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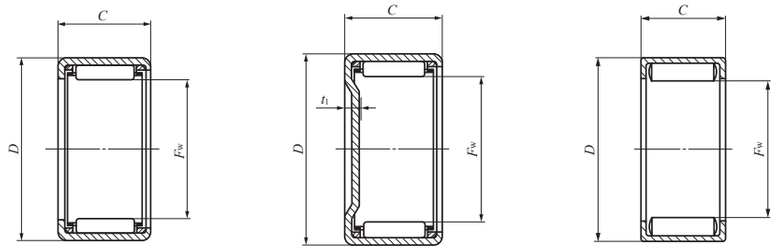
1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS





TA ··· Z TLA ··· Z　　TAM TLAM　　YT

Shaft dia. 37 — 45mm

Shaft dia. mm	Identification number										
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g
37	TA 3720 Z	64.5	TAM 3720	73	—	—	—	—	—	—
	TA 3730 Z	101	TAM 3730	110	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YT 3720	81
38	TA 3815 Z	51	TAM 3815	60	—	—	—	—	—	—
	TA 3820 Z	65.5	TAM 3820	74.5	—	—	—	—	—	—
	TA 3825 Z	82.5	TAM 3825	96	—	—	—	—	—	—
	TA 3830 Z	104	TAM 3830	114	—	—	—	—	—	—
	TAW 3845 Z	149	TAMW 3845	159	—	—	—	—	—	—
40	—	—	—	—	TLA 4012 Z	30	TLAM 4012	40	—	—
	—	—	—	—	TLA 4016 Z	39	TLAM 4016	49	—	—
	—	—	—	—	TLA 4020 Z	49	TLAM 4020	58.5	—	—
	TA 4015 Z	54	TAM 4015	63.5	—	—	—	—	—	—
	TA 4020 Z	69.5	TAM 4020	79	—	—	—	—	—	—
	TA 4025 Z	86.5	TAM 4025	102	—	—	—	—	—	—
	TA 4030 Z	110	TAM 4030	120	—	—	—	—	—	—
	TA 4040 Z	144	TAM 4040	154	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YT 4015	63.5
	—	—	—	—	—	—	—	—	YT 4025	109
45	—	—	—	—	TLA 4516 Z	43.5	TLAM 4516	56	—	—
	—	—	—	—	TLA 4520 Z	54.5	TLAM 4520	67	—	—
	TA 4520 Z	77	TAM 4520	90	—	—	—	—	—	—
	TA 4525 Z	102	TAM 4525	115	—	—	—	—	—	—
	TA 4530 Z	122	TAM 4530	135	—	—	—	—	—	—
	TA 4540 Z	161	TAM 4540	174	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YT 4520	96
	—	—	—	—	—	—	—	—	YT 4525	122

Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
				Shaft dia. h6		Housing bore dia. J7		Housing bore dia. N7					
F_w	D	C	t_1 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	min^{-1}	
37	47	20	3.4							27 800	45 400	9 500	**IRT 3220**
37	47	30	3.4	37.000	36.984	47.014	46.989	—	—	41 800	76 700	9 500	**IRT 3230**
37	47	20	—							43 300	81 300	4 000	**IRT 3220**
38	48	15	3.4							19 000	28 000	9 000	**IRT 3215-1**
38	48	20	3.4							27 700	45 600	9 000	**IRT 3220-1**
38	48	25	3.4	38.000	37.984	48.014	47.989	—	—	35 600	63 100	9 000	**IRT 3225-1**
38	48	30	3.4							43 100	80 600	9 000	**IRT 3230-1**
38	48	45	3.4							55 700	112 000	9 000	**IRT 3245-1**
40	47	12	2.8							12 400	22 800	8 500	—
40	47	16	2.8	40.000	39.984	—	—	46.992	46.967	16 700	33 700	8 500	—
40	47	20	2.8							22 100	48 200	8 500	**IRT 3520**
40	50	15	3.4							19 500	29 400	8 500	**IRT 3515**
40	50	20	3.4							28 400	47 800	8 500	**IRT 3520**
40	50	25	3.4							36 600	66 200	8 500	**IRT 3525**
40	50	30	3.4	40.000	39.984	50.014	49.989	—	—	44 300	84 600	8 500	**IRT 3530**
40	50	40	3.4							56 700	116 000	8 500	**IRT 3540**
40	50	15	—							33 400	59 800	4 000	**IRT 3515**
40	50	25	—							55 300	114 000	4 000	**IRT 3525**
45	52	16	2.8	45.000	44.984	—	—	51.991	51.961	17 800	37 800	7 500	—
45	52	20	2.8							23 400	54 000	7 500	**IRT 4020**
45	55	20	3.4							30 600	54 600	7 500	**IRT 4020**
45	55	25	3.4							39 400	75 600	7 500	**IRT 4025**
45	55	30	3.4	45.000	44.984	55.018	54.988	—	—	47 700	96 600	7 500	**IRT 4030**
45	55	40	3.4							61 300	133 000	7 500	**IRT 4040**
45	55	20	—							47 800	98 200	3 500	**IRT 4020**
45	55	25	—							59 100	129 000	3 500	**IRT 4025**

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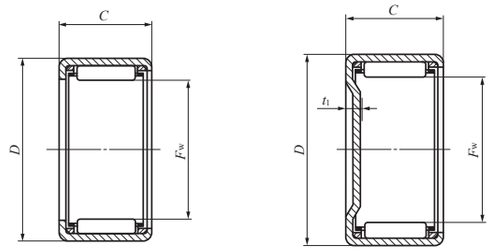
1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS





TA ··· Z TLA ··· Z　　TAM TLAM

Shaft dia. 50 — 62mm

Shaft dia. mm	Identification number: Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g
50	—	—	—	—	**TLA 5020 Z**	69	**TLAM 5020**	84.5	—	—
	—	—	—	—	**TLA 5025 Z**	86	**TLAM 5025**	107	—	—
	TA 5012 Z	62.5	**TAM 5012**	78	—	—	—	—	—	—
	TA 5015 Z	78	**TAM 5015**	98.5	—	—	—	—	—	—
	TA 5020 Z	107	**TAM 5020**	123	—	—	—	—	—	—
	TA 5025 Z	134	**TAM 5025**	150	—	—	—	—	—	—
	TA 5030 Z	161	**TAM 5030**	178	—	—	—	—	—	—
	TA 5040 Z	210	**TAM 5040**	230	—	—	—	—	—	—
	TAW 5045 Z	230	**TAMW 5045**	245	—	—	—	—	—	—
55	—	—	—	—	**TLA 5520 Z**	75	**TLAM 5520**	98.5	—	—
	—	—	—	—	**TLA 5525 Z**	98.5	**TLAM 5525**	118	—	—
	TA 5520 Z	116	**TAM 5520**	136	—	—	—	—	—	—
	TA 5525 Z	145	**TAM 5525**	165	—	—	—	—	—	—
	TA 5530 Z	175	**TAM 5530**	195	—	—	—	—	—	—
	TA 5540 Z	230	**TAM 5540**	250	—	—	—	—	—	—
	TAW 5545 Z	250	**TAMW 5545**	270	—	—	—	—	—	—
	TAW 5550 Z	280	**TAMW 5550**	300	—	—	—	—	—	—
60	**TA 6025 Z**	158	**TAM 6025**	182	—	—	—	—	—	—
	TA 6030 Z	191	**TAM 6030**	215	—	—	—	—	—	—
	TA 6040 Z	250	**TAM 6040**	275	—	—	—	—	—	—
	TAW 6045 Z	270	**TAMW 6045**	295	—	—	—	—	—	—
	TAW 6050 Z	305	**TAMW 6050**	330	—	—	—	—	—	—
62	**TA 6212 Z**	78	**TAM 6212**	107	—	—	—	—	—	—

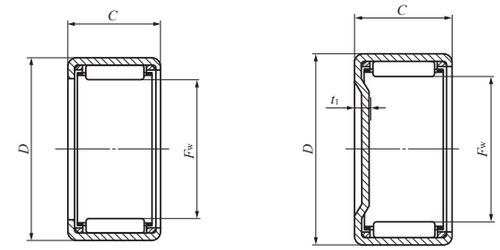
Boundary dimensions mm F_w	D	C	t_1 Max.	Standard mounting dimensions mm: Shaft dia. h6 Max.	Shaft dia. h6 Min.	Housing bore dia. J7 Max.	Housing bore dia. J7 Min.	Housing bore dia. N7 Max.	Housing bore dia. N7 Min.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(1) min^{-1}	Assembled inner ring
50	58	20	2.8	50.000	49.984	—	—	57.991	57.961	28 800	64 100	6 500	**IRT 4520**
50	58	25	2.8							36 900	88 400	6 500	**IRT 4525**
50	62	12	3.4							17 700	24 000	6 500	**IRT 4512**
50	62	15	3.4							25 800	39 000	6 500	**IRT 4515**
50	62	20	3.4							38 000	64 000	6 500	**IRT 4520**
50	62	25	3.4	50.000	49.984	62.018	61.988	—	—	49 100	89 000	6 500	**IRT 4525**
50	62	30	3.4							59 500	114 000	6 500	**IRT 4530**
50	62	40	3.4							76 500	157 000	6 500	**IRT 4540**
50	62	45	3.4							76 700	158 000	6 500	**IRT 4545**
55	63	20	2.8	55.000	54.981	—	—	62.991	62.961	29 800	69 400	5 500	**IRT 5020-1**
55	63	25	2.8							38 300	95 700	5 500	**IRT 5025-1**
55	67	20	3.4							39 600	69 700	5 500	**IRT 5020-1**
55	67	25	3.4							51 200	97 000	5 500	**IRT 5025-1**
55	67	30	3.4							62 000	124 000	5 500	**IRT 5030-1**
55	67	40	3.4	55.000	54.981	67.018	66.988	—	—	80 000	172 000	5 500	**IRT 5040-1**
55	67	45	3.4							79 900	172 000	5 500	**IRT 5045-1**
55	67	50	3.4							91 500	205 000	5 500	**IRT 5050-1**
60	72	25	3.4							54 700	108 000	5 000	**IRT 5025**
60	72	30	3.4							66 300	139 000	5 000	**IRT 5030**
60	72	40	3.4	60.000	59.981	72.018	71.988	—	—	85 700	193 000	5 000	**IRT 5040**
60	72	45	3.4							85 400	193 000	5 000	**IRT 5045**
60	72	50	3.4							97 800	229 000	5 000	**IRT 5050**
62	74	12	3.4	62.000	61.981	74.018	73.988	—	—	20 100	30 300	4 500	**IRT 5212**

Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
Remarks1. "W" in the identification number indicates that rolling elements are arranged in double rows.
2. Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided with prepacked grease, so perform proper lubrication when using these types of bearings.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS





TA···Z　　TAM

Shaft dia. 65 — 70mm

Shaft dia. mm	Identification number									
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g
65	**TA 6525 Z**	169	**TAM 6525**	197	—	—	—	—	—	—
	TA 6530 Z	205	**TAM 6530**	230	—	—	—	—	—	—
	TAW 6545 Z	290	**TAMW 6545**	315	—	—	—	—	—	—
	TAW 6550 Z	330	**TAMW 6550**	355	—	—	—	—	—	—
70	**TA 7025 Z**	181	**TAM 7025**	215	—	—	—	—	—	—
	TA 7030 Z	220	**TAM 7030**	250	—	—	—	—	—	—
	TA 7040 Z	290	**TAM 7040**	320	—	—	—	—	—	—
	TAW 7050 Z	350	**TAMW 7050**	380	—	—	—	—	—	—

Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
				Shaft dia. h6		Housing bore dia. J7		Housing bore dia. N7					
F_w	D	C	t_1 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	min^{-1}	
65	77	25	3.4	65.000	64.981	77.018	76.988	—	—	56 500	116 000	4 000	**IRT 5525**
65	77	30	3.4							68 500	149 000	4 000	**IRT 5530**
65	77	45	3.4							88 300	207 000	4 000	**IRT 5545**
65	77	50	3.4							101 000	246 000	4 000	**IRT 5550**
70	82	25	3.4	70.000	69.981	82.022	81.987	—	—	58 500	124 000	3 500	**IRT 6025**
70	82	30	3.4							70 900	159 000	3 500	**IRT 6030**
70	82	40	3.4							92 000	222 000	3 500	**IRT 6040**
70	82	50	3.4							105 000	262 000	3 500	**IRT 6050**

Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.

Remarks 1. "W" in the identification number indicates that rolling elements are arranged in double rows.

2. Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided with prepacked grease, so perform proper lubrication when using these types of bearings.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Types

Numerous varieties of Shell Type Needle Roller Bearings are available as shown in Table 1.

Table 1 Type of bearing

Series \ Type		Caged			Full complement
		Standard	Closed end	With seals (1)	Grease retained
Metric series	—	TLA ··· Z	TLAM	TLA ··· UU	YTL
	Heavy duty	TA ··· Z	TAM	—	YT
Inch series	—	BA ··· Z	BAM	—	YB
	Heavy duty	BHA ··· Z	BHAM	—	YBH

Note(1) When the heavy duty type with seals or the closed end type with one seal is required, please consult IKO.

Remark A "W" is added to the model code to indicate that the rolling elements are of the double-row type.
Example TAW 5045 Z

Shell Type Caged Needle Roller Bearings

Standard type

This type has a narrow gap between the bore of the marked-side flange of the outer ring (brand, bearing number, etc. are marked) and the shaft, which prevents grease leaks and the entry of foreign particles. This type has wide applications.

Closed end type

This type is completely closed on one side of the outer ring, and is ideal for use when perfect closing of shaft ends is desired.

The shape of the closed end surface of the outer ring is divided into two types, and the dimensions t_1 and t_2 in the illustrations shown in the dimension tables apply to the bearings with the roller set bore diameters, $F_w > 22$ and $F_w \leqq 22$, respectively.

Type with seals at both sides

This type has a wider outer ring than the standard type and is installed with seals consisting of a reinforcing ring and special synthetic rubber to prevent grease leaks and the entry of foreign particles.

Shell Type Grease Retained Full Complement Needle Roller Bearings

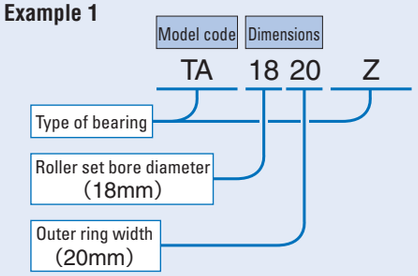
This type has full complement rollers which extend to the full width of the outer ring raceway. It can, therefore, withstand heavy bearing loads and is most suitable for low and medium rotational speeds as well as rocking motions. As lubricating grease is prepacked with the rollers, the bearing can be operated immediately after being fitted.

Identification Number

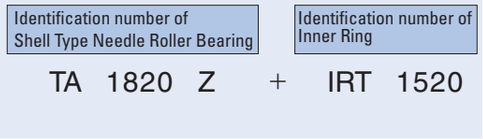
The identification number of Shell Type Needle Roller Bearings consists of a model code and dimensions. Examples of the arrangement are shown below.
When using with inner rings, the assembled inner rings shown in the dimension tables are used. An example in this case is also shown below. Inner rings are delivered separately.

Examples of identification number

Example 1



Example 2 (With inner ring)



Accuracy

The outer rings of Shell Type Needle Roller Bearings are thin and therefore cannot avoid deformation due to heat treatment. It is thus not appropriate to take direct measurements of the bearing. The roller set bore diameter is measured using a plug gauge or tapered gauge after press-fitting the bearing to a suitable ring gauge. The gauge specifications are shown in Tables 2.1 and 2.2.
Tolerances of outer ring width C are shown in Table 3.

Table 2.1 Measuring gauges for metric series bearings unit: mm

F_w Nominal roller set bore diameter	Ring gauge		Plug gauge	
	TA···Z(1)	TLA···Z(2)	Go	No-go
4	—	7.981	4.004	4.016
5	—	8.981	5.004	5.016
6	—	9.981	6.004	6.016
7	—	10.977	7.005	7.020
8	14.992	11.977	8.005	8.020
9	15.992	12.977	9.005	9.020
10	16.992	13.977	10.005	10.020
12	18.991	15.977(3) 17.977(3)	12.006	12.024
13	—	18.972	13.006	13.024
14	21.991	19.972	14.006	14.024
15	21.991	20.972	15.006	15.024
16	23.991	21.972	16.006	16.024
17	23.991	22.972	17.006	17.024
18	24.991	23.972	18.006	18.024
19	26.991	—	19.007	19.028
20	26.991(4) 27.991(4)	25.972	20.007	20.028
21	28.991	—	21.007	21.028
22	28.991(5) 29.991(5)	27.972	22.007	22.028
24	30.989(6) 31.989(6)	—	24.007	24.028
25	32.989	31.967	25.007	25.028
26	33.989	—	26.007	26.028
28	36.989	34.967	28.007	28.028
29	37.989	—	29.007	29.028
30	39.989	36.967	30.007	30.028
32	41.989	—	32.009	32.034
35	44.989	41.967	35.009	35.034
37	46.989	—	37.009	37.034
38	47.989	—	38.009	38.034
40	49.989	46.967	40.009	40.034
45	54.988	51.961	45.009	45.034
50	61.988	57.961	50.009	50.034
55	66.988	62.961	55.010	55.040
60	71.988	—	60.010	60.040
62	73.988	—	62.010	62.040
65	76.988	—	65.010	65.040
70	81.987	—	70.010	70.040

Notes(1) Also applicable to TAM and YT
(2) Also applicable to TLAM, YTL, TLA···UU
(3) The upper value is for TLA 1210Z model, and the lower value is for TLA 1212Z model.
(4) The lower value is for TA 202820Z model, and the upper value is for models other than TA 202820Z model.
(5) The lower value is for TA 223016Z and TA 223020Z models, and the upper value is for models other than those models.
(6) The lower value is for TA 243216Z and TA 243220Z models, and the upper value is for models other than those models.

Table 2.2 Measuring gauges for inch series bearings unit: mm

F_w Nominal roller set bore diameter	Ring gauge		Plug gauge	
	BA···Z(1)	BHA···Z(2)	Go	No-go
3.969	7.155	—	3.990	4.016
4.762	8.730	—	4.783	4.808
6.350	11.125	—	6.388	6.414
7.938	12.713	14.300	7.976	8.001
9.525	14.300	15.888	9.563	9.588
11.112	15.888	17.475	11.151	11.176
12.700	17.475	19.063	12.738	12.764
14.288	19.063	20.650	14.326	14.351
15.875	20.650	22.238	15.913	15.938
17.462	22.238	23.825	17.501	17.526
19.050	25.387	26.975	19.063	19.088
20.638	26.975	28.562	20.650	20.676
22.225	28.562	30.150	22.238	22.263
23.812	30.150	—	23.825	23.851
25.400	31.737	33.325	25.413	25.438
26.988	33.325	—	27.000	27.026
28.575	34.912	38.087	28.588	28.613
30.162	38.087	—	30.175	30.201
31.750	38.087	41.262	31.763	31.788
33.338	41.262	—	33.350	33.378
34.925	41.262	44.437	34.938	34.966
38.100	47.612	—	38.113	38.143
41.275	50.787	—	41.288	41.318
44.450	53.962	57.137	44.463	44.496
47.625	57.137	—	47.638	47.671
50.800	60.312	—	50.815	50.848
52.388	—	64.280	52.413	52.451
53.975	63.487	—	53.990	54.028
57.150	66.662	—	57.165	57.203
66.675	76.187	—	66.700	66.738
69.850	79.362	—	69.875	69.914

Notes(1) Also applicable to BAM and YB
(2) Also applicable to BHAM and YBH

Table 3 Tolerances of outer ring width C unit: mm

Series	Tolerance
Metric	0 ～ − 0.20
Inch	0 ～ − 0.25

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Fit

As the outer ring is thin, the correct dimensions and accuracy of Shell Type Needle Roller Bearings are obtained only after they have been press-fitted into the housing bore. Bearing accuracy is directly affected by housing dimensions, shape and rigidity. This should be taken into account when considering fit and accuracy. The radial clearance after fitting the bearing to the shaft and the housing bore varies with their tolerances.

Table 4 shows the recommended fit for Shell Type Needle Roller Bearings.

Table 5 shows a calculation example of radial clearance after fitting. This calculation applies to bearings without inner ring to be fitted into rigid steel or cast iron housings. When the housing is made of light alloy or a thin steel pipe, it is necessary to check dimensions by actual measurement.

Generally, when making the radial clearance smaller, it is recommended that the shaft diameter be increased, without decreasing the housing bore diameter.

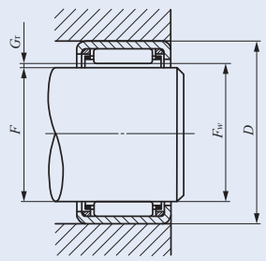
Table 4 Recommended fit

Type of bearing	Housing material	Tolerance class		
		Shaft (1)		Housing bore
		Without inner ring	With inner ring	
TA…Z, BA…Z, BHA…Z, TAM, BAM, BHAM, YT, YB, YBH	Steel Cast iron	h6	k5(j5)	J7
	Light alloy (Thin steel pipe)	h6	k5(j5)	M7(N7)
TLA…Z, TLAM, YTL, TLA…UU	Steel Cast iron	h6	k5(j5)	N7
	Light alloy (Thin steel pipe)	h6	k5(j5)	R7(S7)

Note(1) When housings are made of light alloy or a thin steel pipe, the roller set bore diameter is greatly affected by the housing thickness and shape. Therefore, before mass-production assembly, assembly tests should be carried out to confirm the amount of dimensional change and to determine the tolerance of the shaft which will give normal clearances.

Table 5 Calculation example of radial clearance after fitting

unit: mm



D : Housing bore diameter
F_w : Roller set bore diameter
F : Shaft diameter
G_r : Radial clearance

Calculation procedure	Example of TLA 2020 Z
❶ Dimension of roller set bore diameter of bearing after it has been press-fitted into the ring gauge. Dimension of ring gauge (D_0): See Tables 2.1 and 2.2 on page B4. Max. value of roller set bore dia. ($F_{w\,max}$): No-go dimension of plug gauge Min. value of roller set bore dia. ($F_{w\,min}$): Go dimension of plug gauge	From Table 2.1 on page B4 D_0 =25.972 $F_{w\,max}$ =20.028 $F_{w\,min}$ =20.007
❷ Dimension of housing bore Max. value of housing bore (D_{max}): See the dimension table. Min. value of housing bore (D_{min}): See the dimension table.	From the dimension table on page B14, D_{max} =25.993 D_{min} =25.972
❸ Dimension of roller set bore diameter of bearing after it has been press-fitted into the housing bore Max. value of roller set bore dia.($F_{we\,max}$)=($D_{max}-D_0$) +$F_{w\,max}$ Min. value of roller set bore dia.($F_{we\,min}$)=($D_{min}-D_0$) +$F_{w\,min}$	From the equations, $F_{we\,max}$ =20.049 $F_{we\,min}$ =20.007
❹ Dimension of shaft Max. value of shaft dia. (F_{max}): See the dimension table. Min. value of shaft dia. (F_{min}): See the dimension table.	From the dimension table on page B14, F_{max} =20.000 F_{min} =19.987
❺ Radial clearance after mounting Max. value of radial clearance($G_{r\,max}$)=$F_{we\,max}-F_{min}$ Min. value of radial clearance($G_{r\,min}$)=$F_{we\,min}-F_{max}$	From the equations, $G_{r\,max}$ =0.062 $G_{r\,min}$ =0.007 The radial clearance after mounting becomes 0.007~0.062 mm.

Lubrication

Bearings with prepacked grease are shown in Table 6. ALVANIA GREASE S2 (Shell Lubricants Japan K.K.) is prepacked as the lubricating grease.

In the case of bearings without prepacked grease, perform proper lubrication for use. If the bearings are operated without lubrication, the wear of the roller contact surfaces will increase and the bearing life will be shortened.

Oil Hole

For Shell Type Needle Roller Bearings with an oil hole, "OH" is appended to the end of the identification number.

Example TA 2525 Z OH

The symbol "OH" is not marked on the bearing itself, but is shown on its packaging, etc. When bearings with multiple oil holes are required, please consult IKO.

Table 6 Bearings with prepacked grease

○ : With prepacked grease × : Without prepacked grease

Series \ Bearing type		Caged			Full complement
		Standard	Closed end	With seals	Grease retained
Metric series	TLA, TLAM, YTL	×	×	○	○
	TA, TAM, YT	×	×	–	○
Inch series	BA, BAM, YB	×	×	–	○
	BHA, BHAM, YBH	×	×	–	○

Static Safety Factor

Since Shell Type Needle Roller Bearings employ an outer ring made from a thin steel plate which is drawn, carburized and quenched, excessively large loads must be avoided. The required static safety factor is usually more than 3.

Specifications of shaft and housing

Shell Type Needle Roller Bearings are commonly used without an inner ring. In such cases, the surface hardness of the raceway surface should be 58 ~ 64HRC and the surface roughness should not exceed 0.2 μ mR_a. However, when the operating condition is not severe, a surface roughness 0.8μmR_a or less can be used.

If the surface hardness is low, the load rating must be corrected by the hardness factor shown on page A20. When the shaft cannot be heat treated and finished by grinding, the use of IKO Inner Rings for Shell Type Needle Roller Bearings (See page H1.) is recommended.

Mounting

Shell Type Needle Roller Bearings should be pressed into the housings gently using the appropriate tool as shown in Fig. 1, with their marked end surface up. As the outer ring is thin, it must never be struck directly with a hammer.

Since the outer rings of Shell Type Needle Roller Bearings are firmly fitted to housing bores with interference, it is unnecessary to fix them axially. Fig. 2 shows mounting examples.

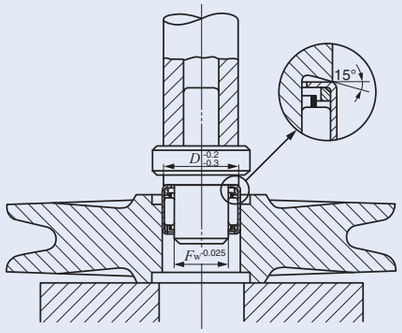


Fig.1 Example of mounting tool

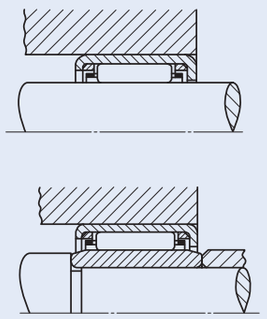


Fig.2 Mounting examples

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch