SHELL TYPE NEEDLE ROLLER BEARINGS

●Shell Type Caged Needle Roller Bearings

●Shell Type Grease Retained Full Complement Needle Roller Bearings



Structure and features

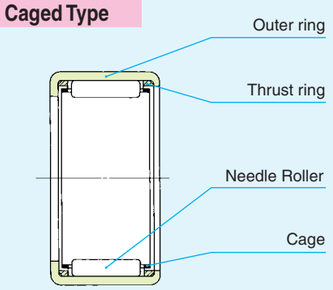
IKO Shell Type Needle Roller Bearings are light-weight bearings with large load ratings. They employ a shell type outer ring made from a thin special-steel plate which is accurately drawn, carburized and quenched, thus providing the lowest sectional height among the needle roller bearings.

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.

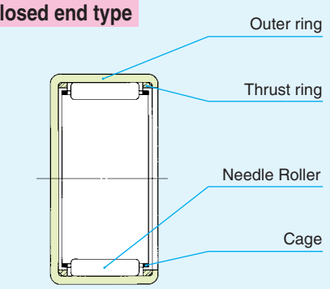
Since these bearings are press-fitted into the housing, no fixtures for axial positioning are needed. They are ideal for use in mass-produced articles that require economy, and have a wide variety of applications.

Structures of Shell Type Needle Roller Bearings

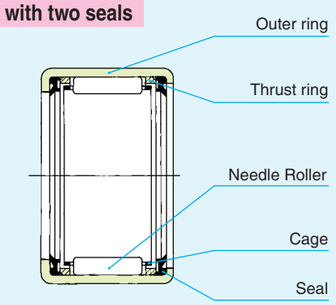
Standard Caged Type



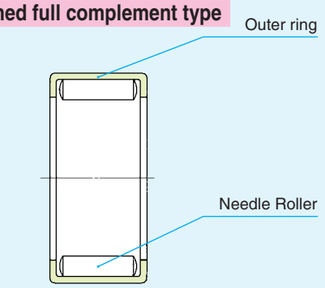
Caged and closed end type



Caged type with two seals



Grease retained full complement type



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

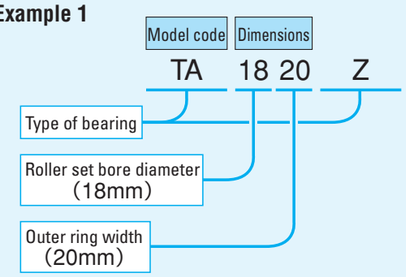
This type has full complement rollers which extend to the full width of the outer ring raceway. It can, therefore, withstand heavy bearing loads and is most suitable for low and medium rotational speeds as well as rocking motions. As lubricating grease is prepacked with the rollers, the bearing can be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

Identification Number

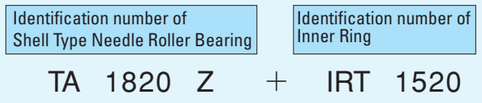
The identification number of Shell Type Needle Roller Bearings consists of a model code and dimensions. Examples of the arrangement are shown below.
When using with inner rings, the assembled inner rings shown in the dimension tables are used. An example in this case is also shown below. Inner rings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

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.

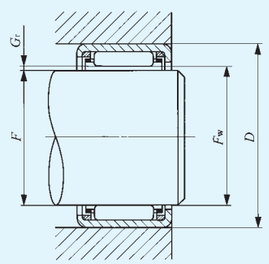
Table 4 Recommended fit

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 71. 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 71 $D_0 = 25.972$ $F_{w\,max} = 20.028$ $F_{w\,min} = 20.007$
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 81, $D_{max} = 25.993$ $D_{min} = 25.972$
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 81, $F_{max} = 20.000$ $F_{min} = 19.987$
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 2 (SHELL) 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 μmR_a. However, when the operating condition is not severe, a surface roughness 0.8 μmR_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 23. 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 294.) 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.

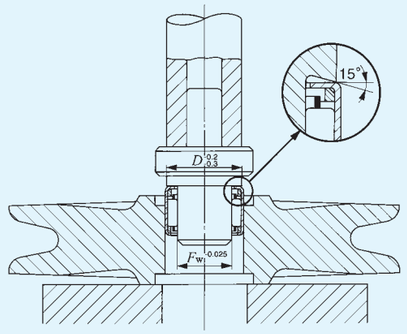


Fig.1 Example of mounting tool

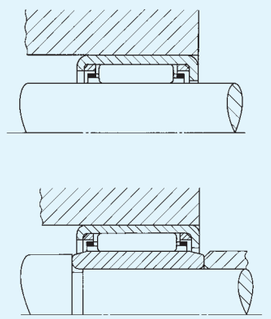
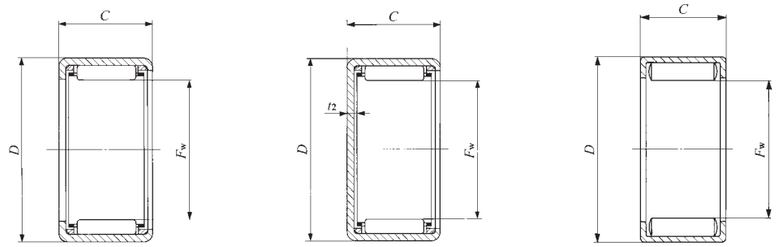


Fig.2 Mounting examples

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

SHELL TYPE NEEDLE ROLLER BEARINGS





TA···Z TLA···Z　　TAM TLAM　　YT YTL

Shaft dia. 4 — 10 mm

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
4	—	—	—	—	**TLA 48 Z**	1.54	**TLAM 48**	1.67	—	—
	—	—	—	—	—	—	—	—	**YTL 48**	1.73
5	—	—	—	—	**TLA 59 Z**	1.9	**TLAM 59**	2	—	—
	—	—	—	—	—	—	—	—	**YTL 59**	2.4
6	—	—	—	—	**TLA 69 Z**	2.2	**TLAM 69**	2.3	—	—
7	—	—	—	—	**TLA 79 Z**	2.5	**TLAM 79**	2.7	—	—
8	—	—	—	—	**TLA 810 Z**	3.1	**TLAM 810**	3.3	—	—
	TA 810 Z	6.7	**TAM 810**	7.1	—	—	—	—	—	—
	TA 815 Z	9.7	**TAM 815**	10.1	—	—	—	—	—	—
	TA 820 Z	12.9	**TAM 820**	13.3	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 810**	7.7
9	—	—	—	—	**TLA 910 Z**	3.4	**TLAM 910**	3.6	—	—
	—	—	—	—	**TLA 912 Z**	4	**TLAM 912**	4.3	—	—
	TA 912 Z	8.7	**TAM 912**	9.2	—	—	—	—	—	—
	TA 916 Z	11.4	**TAM 916**	11.9	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 912**	10.1
10	—	—	—	—	**TLA 1010 Z**	3.7	**TLAM 1010**	4	—	—
	—	—	—	—	**TLA 1012 Z**	4.4	**TLAM 1012**	4.8	—	—
	—	—	—	—	**TLA 1015 Z**	5.5	**TLAM 1015**	5.9	—	—
	TA 1010 Z	7.9	**TAM 1010**	8.5	—	—	—	—	—	—
	TA 1012 Z	9.3	**TAM 1012**	10	—	—	—	—	—	—
	TA 1015 Z	11.5	**TAM 1015**	12.2	—	—	—	—	—	—
	TA 1020 Z	15.4	**TAM 1020**	16	—	—	—	—	—	—

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_2 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
4	8	8	1	4.000	3.992	—	—	7.996	7.981	1 350	1 010	75 000	—
4	8	8	—							3 010	2 900	40 000	—
5	9	9	1	5.000	4.992	—	—	8.996	8.981	1 880	1 600	65 000	—
5	9	9	—							4 320	4 750	30 000	—
6	10	9	1	6.000	5.992	—	—	9.996	9.981	2 100	1 900	55 000	—
7	11	9	1	7.000	6.991	—	—	10.995	10.977	2 490	2 450	50 000	—
8	12	10	1	8.000	7.991	—	—	11.995	11.977	3 320	3 670	45 000	—
8	15	10	1.3	8.000	7.991	15.010	14.992	—	—	3 470	2 880	45 000	—
8	15	15	1.3							5 780	5 570	45 000	—
8	15	20	1.3							8 340	8 920	45 000	—
8	15	10	—							7 530	7 950	19 000	—
9	13	10	1	9.000	8.991	—	—	12.995	12.977	3 500	4 040	45 000	—
9	13	12	1							4 460	5 510	45 000	—
9	16	12	1.3	9.000	8.991	16.010	15.992	—	—	5 140	4 880	45 000	—
9	16	16	1.3							6 960	7 210	45 000	—
9	16	12	—							9 690	11 200	17 000	—
10	14	10	1	10.000	9.991	—	—	13.995	13.977	3 870	4 740	40 000	**IRT 710**
10	14	12	1							4 920	6 460	40 000	**IRT 712**
10	14	15	1							6 390	9 040	40 000	**IRT 715**
10	17	10	1.3	10.000	9.991	17.010	16.992	—	—	4 150	3 780	40 000	**IRT 710**
10	17	12	1.3							5 590	5 540	40 000	**IRT 712**
10	17	15	1.3							6 920	7 300	40 000	**IRT 715**
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.

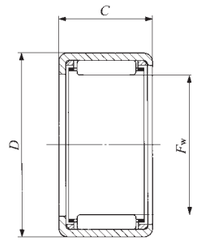
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1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS

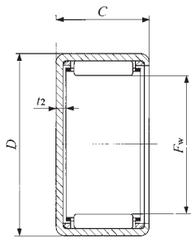




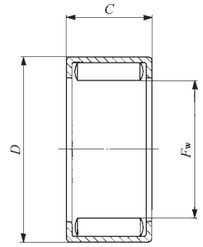




TA···Z TLA···Z



TAM TLAM



YT YTL

Shaft dia. 12 — 15 mm

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
12	—	—	—	—	**TLA 1210 Z**	4.3	**TLAM 1210**	4.7	—	—
	—	—	—	—	—	—	—	—	**YTL 1210**	5.1
	—	—	—	—	**TLA 1212 Z**	8.6	**TLAM 1212**	9.4	—	—
	TA 1212 Z	10.5	**TAM 1212**	11.5	—	—	—	—	—	—
	TA 1215 Z	13.1	**TAM 1215**	14	—	—	—	—	—	—
	TA 1220 Z	17.3	**TAM 1220**	18.3	—	—	—	—	—	—
	TA 1225 Z	21.5	**TAM 1225**	22.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 1212**	12.8
13	—	—	—	—	**TLA 1312 Z**	9.2	**TLAM 1312**	10.1	—	—
14	—	—	—	—	**TLA 1412 Z**	9.8	**TLAM 1412**	10.8	—	—
	—	—	—	—	**TLA 1416 Z**	13.2	**TLAM 1416**	14.3	—	—
	TA 1416 Z	18.4	**TAM 1416**	19.6	—	—	—	—	—	—
	TA 1420 Z	23	**TAM 1420**	24	—	—	—	—	—	—
15	—	—	—	—	**TLA 1512 Z**	10.4	**TLAM 1512**	11.5	—	—
	—	—	—	—	**TLA 1516 Z**	14	**TLAM 1516**	15.2	—	—
	—	—	—	—	**TLA 1522 Z**	19.1	**TLAM 1522**	20.5	—	—
	TA 1510 Z	10.8	**TAM 1510**	12.3	—	—	—	—	—	—
	TA 1512 Z	12.9	**TAM 1512**	14.3	—	—	—	—	—	—
	TA 1515 Z	15.9	**TAM 1515**	17.3	—	—	—	—	—	—
	TA 1520 Z	21	**TAM 1520**	22.5	—	—	—	—	—	—
	TA 1525 Z	25	**TAM 1525**	26.5	—	—	—	—	—	—

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_2 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
12	16	10	1	12.000	11.989	—	—	15.995	15.977	4 350	5 810	35 000	**IRT 810**
12	16	10	—							7 470	11 800	13 000	**IRT 810**
12	18	12	1.3	12.000	11.989	—	—	17.995	17.977	6 420	7 490	35 000	**IRT 812**
12	19	12	1.3							6 000	6 310	35 000	**IRT 812**
12	19	15	1.3							7 440	8 320	35 000	**IRT 815**
12	19	20	1.3	12.000	11.989	19.012	18.991	—	—	10 700	13 300	35 000	—
12	19	25	1.3							13 800	18 300	35 000	—
12	19	12	—							11 800	15 200	13 000	**IRT 812**
13	19	12	1.3	13.000	12.989	—	—	18.993	18.972	6 760	8 170	30 000	**IRT 1012**
14	20	12	1.3	14.000	13.989	—	—	19.993	19.972	7 080	8 840	30 000	**IRT 1012-2**
14	20	16	1.3							8 950	12 000	30 000	**IRT 1016-2**
14	22	16	1.3	14.000	13.989	22.012	21.991	—	—	10 500	12 000	30 000	**IRT 1016-2**
14	22	20	1.3							13 900	17 200	30 000	**IRT 1020-2**
15	21	12	1.3	15.000	14.989	—	—	20.993	20.972	7 380	9 520	25 000	**IRT 1212**
15	21	16	1.3							9 330	12 900	25 000	**IRT 1216**
15	21	22	1.3							13 600	20 900	25 000	**IRT 1222**
15	22	10	1.3	15.000	14.989	22.012	21.991	—	—	5 290	5 680	25 000	**IRT 1010-1**
15	22	12	1.3							7 120	8 310	25 000	**IRT 1012-1**
15	22	15	1.3							8 830	11 000	25 000	**IRT 1015-1**
15	22	20	1.3							12 700	17 600	25 000	**IRT 1020-1**
15	22	25	1.3							16 300	24 200	25 000	**IRT 1025-1**

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.

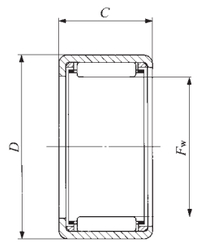
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS

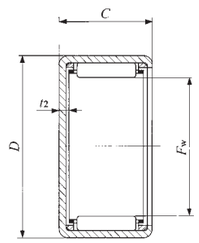




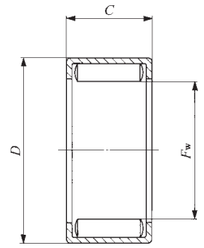




TA···Z TLA···Z



TAM TLAM



YT

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	—	—	—	—	—	—

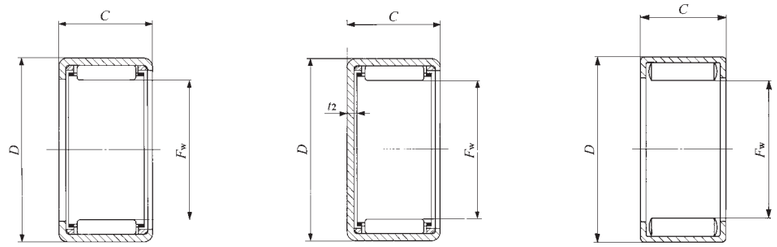
Boundary dimensions mm				Standard mounting dimensions mm						Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
				Shaft dia. h6		Housing bore dia. J7		Housing bore dia. N7					
F_w	D	C	t_2 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
16	22	12	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	16.000	15.989	24.012	23.991	—	—	11 100	13 300	25 000	**IRT 1216-1**
16	24	20	1.3							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	18.000	17.989	25.012	24.991	—	—	11 900	16 900	20 000	**IRT 1517**
18	25	19	1.3							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**

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

Shaft dia. 20 — 21mm

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
20	—	—	—	—	**TLA 2012 Z**	13.2	**TLAM 2012**	15.2	—	—
	—	—	—	—	**TLA 2016 Z**	17.8	**TLAM 2016**	19.9	—	—
	—	—	—	—	**TLA 2020 Z**	22	**TLAM 2020**	24	—	—
	—	—	—	—	**TLA 2030 Z**	33	**TLAM 2030**	35	—	—
	TA 2015 Z	20	**TAM 2015**	22.5	—	—	—	—	—	—
	TA 2020 Z	26.5	**TAM 2020**	29	—	—	—	—	—	—
	TA 2025 Z	33	**TAM 2025**	35.5	—	—	—	—	—	—
	TA 2030 Z	39.5	**TAM 2030**	42	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 2015**	23.5
	—	—	—	—	—	—	—	—	**YT 2025**	41
	TA 202820 Z	30	**TAM 202820**	32.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 202820**	37.5
21	**TA 2116 Z**	25	**TAM 2116**	28	—	—	—	—	—	—
	TA 2120 Z	31.5	**TAM 2120**	34.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 2116**	31
	—	—	—	—	—	—	—	—	**YT 2120**	39

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_2 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
20	26	12	1.3	20.000	19.987	—	—	25.993	25.972	8 740	12 900	20 000	—
20	26	16	1.3							11 100	17 500	20 000	**IRT 1716**
20	26	20	1.3							14 500	24 700	20 000	**IRT 1720**
20	26	30	1.3							22 300	42 900	20 000	**IRT 1730**
20	27	15	1.3	20.000	19.987	27.012	26.991	—	—	10 400	14 600	20 000	**IRT 1515-2**
20	27	20	1.3							15 000	23 400	20 000	**IRT 1520-2**
20	27	25	1.3							19 200	32 200	20 000	**IRT 1525-2**
20	27	30	1.3							23 100	41 000	20 000	**IRT 1530-2**
20	27	15	—							18 400	30 900	7 500	**IRT 1515-2**
20	27	25	—							30 000	58 300	7 500	**IRT 1525-2**
20	28	20	1.3	20.000	19.987	28.012	27.991	—	—	16 900	24 300	20 000	**IRT 1520-2**
20	28	20	—							26 800	44 600	7 500	**IRT 1520-2**
21	29	16	1.3	21.000	20.987	29.012	28.991	—	—	13 300	18 100	19 000	**IRT 1716-1**
21	29	20	1.3							17 600	25 900	19 000	**IRT 1720-1**
21	29	16	—							22 100	35 200	7 000	**IRT 1716-1**
21	29	20	—							27 500	46 800	7 000	**IRT 1720-1**

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

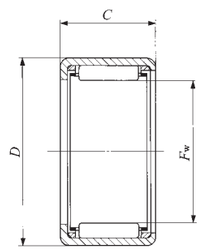
SHELL TYPE NEEDLE ROLLER BEARINGS



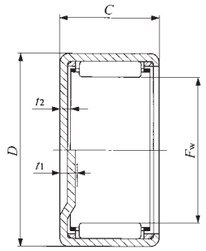
Shaft dia. 22 — 24mm

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

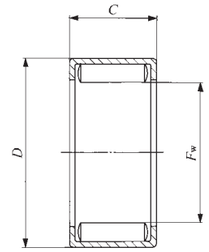
Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
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TA···Z TLA···Z



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



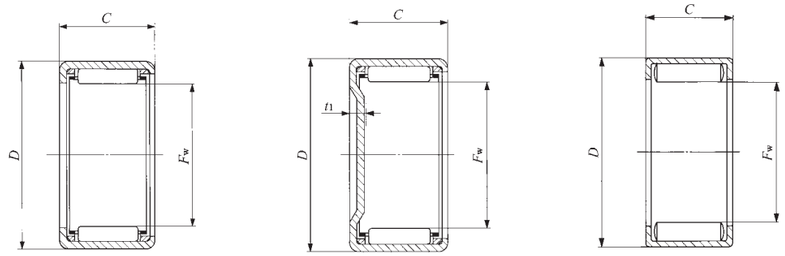
YT

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	rpm	
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 — 28 mm

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
25	—	—	—	—	**TLA 2512 Z**	19.7	**TLAM 2512**	23.5	—	—
	—	—	—	—	**TLA 2516 Z**	26	**TLAM 2516**	29.5	—	—
	—	—	—	—	**TLA 2520 Z**	32	**TLAM 2520**	36	—	—
	—	—	—	—	**TLA 2526 Z**	41.5	**TLAM 2526**	45.5	—	—
	—	—	—	—	**TLAW2538Z**	58.5	**TLAMW2538**	62	—	—
	—	—	—	—	—	—	—	—	**YTL 2526**	51.5
	TA 2510 Z	19.1	**TAM 2510**	23	—	—	—	—	—	—
	TA 2515 Z	28.5	**TAM 2515**	32.5	—	—	—	—	—	—
	TA 2520 Z	36.5	**TAM 2520**	40.5	—	—	—	—	—	—
	TA 2525 Z	45.5	**TAM 2525**	49	—	—	—	—	—	—
	TA 2530 Z	54.5	**TAM 2530**	58.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 2510**	22.5
	—	—	—	—	—	—	—	—	**YT 2515**	33
	—	—	—	—	—	—	—	—	**YT 2520**	45
	—	—	—	—	—	—	—	—	**YT 2525**	57
26	**TA 2616 Z**	30.5	**TAM 2616**	34.5	—	—	—	—	—	—
	TA 2620 Z	38	**TAM 2620**	42.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 2616**	37
	—	—	—	—	—	—	—	—	**YT 2620**	46.5
28	—	—	—	—	**TLA 2816 Z**	28.5	**TLAM 2816**	33.5	—	—
	—	—	—	—	**TLA 2820 Z**	35.5	**TLAM 2820**	40.5	—	—
	TA 2820 Z	45	**TAM 2820**	50	—	—	—	—	—	—
	TA 2830 Z	67.5	**TAM 2830**	72.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 2820**	56.5

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	rpm	
25	32	12	2.8	25.000	24.987	—	—	31.992	31.967	9 440	13 900	15 000	—
25	32	16	2.8							12 800	20 500	15 000	—
25	32	20	2.8							16 900	29 300	15 000	**IRT 2020-1**
25	32	26	2.8							22 600	42 500	15 000	**IRT 2026-1**
25	32	38	2.8							28 900	58 500	15 000	**IRT 2038-1**
25	32	26	—							35 000	75 800	6 000	**IRT 2026-1**
25	33	10	3.4	25.000	24.987	33.014	32.989	—	—	7 990	9 900	15 000	**IRT 2010-1**
25	33	15	3.4							13 400	19 300	15 000	**IRT 2015-1**
25	33	20	3.4							19 500	31 100	15 000	**IRT 2020-1**
25	33	25	3.4							24 100	40 800	15 000	**IRT 2025-1**
25	33	30	3.4							29 100	52 000	15 000	**IRT 2030-1**
25	33	10	—	25.000	24.987	33.014	32.989	—	—	15 500	23 600	6 000	**IRT 2010-1**
25	33	15	—							22 700	38 300	6 000	**IRT 2015-1**
25	33	20	—							30 200	55 400	6 000	**IRT 2020-1**
25	33	25	—							37 200	72 500	6 000	**IRT 2025-1**
26	34	16	3.4	26.000	25.987	34.014	33.989	—	—	15 200	22 900	15 000	**IRT 2216**
26	34	20	3.4							20 100	32 800	15 000	**IRT 2220**
26	34	16	—							24 700	43 300	6 000	**IRT 2216**
26	34	20	—							30 800	57 500	6 000	**IRT 2220**
28	35	16	2.8	28.000	27.987	—	—	34.992	34.967	13 800	23 500	13 000	—
28	35	20	2.8							18 300	33 600	13 000	**IRT 2220-1**
28	37	20	3.4	28.000	27.987	37.014	36.989	—	—	21 200	32 300	13 000	**IRT 2220-1**
28	37	30	3.4							33 000	56 900	13 000	**IRT 2230-1**
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.

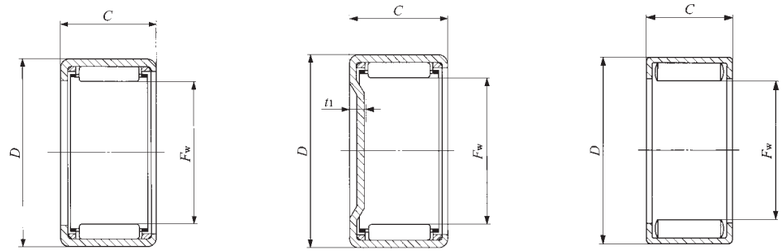
Remarks1. "W" in the identification number indicates that rolling elements are arranged in double rows.

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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									
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g
29	**TA 2920 Z**	47	**TAM 2920**	52	—	—	—	—	—	—
	TA 2930 Z	70	**TAM 2930**	75.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 2920**	58.5
30	—	—	—	—	**TLA 3012 Z**	23.5	**TLAM 3012**	29	—	—
	—	—	—	—	**TLA 3016 Z**	30.5	**TLAM 3016**	36	—	—
	—	—	—	—	**TLA 3018 Z**	34.5	**TLAM 3018**	40	—	—
	—	—	—	—	**TLA 3020 Z**	38	**TLAM 3020**	43.5	—	—
	—	—	—	—	**TLA 3026 Z**	49	**TLAM 3026**	54.5	—	—
	—	—	—	—	**TLAW3038 Z**	69	**TLAMW3038**	74.5	—	—
	TA 3013 Z	36.5	**TAM 3013**	42.5	—	—	—	—	—	—
	TA 3015 Z	42	**TAM 3015**	47.5	—	—	—	—	—	—
	TA 3020 Z	54.5	**TAM 3020**	60	—	—	—	—	—	—
	TA 3025 Z	68	**TAM 3025**	73.5	—	—	—	—	—	—
	TA 3030 Z	80	**TAM 3030**	85.5	—	—	—	—	—	—
32	**TA 3220 Z**	57.5	**TAM 3220**	63.5	—	—	—	—	—	—
	TA 3230 Z	86	**TAM 3230**	97.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YT 3220**	71.5
35	—	—	—	—	**TLA 3512 Z**	27	**TLAM 3512**	34.5	—	—
	—	—	—	—	**TLA 3516 Z**	35	**TLAM 3516**	42.5	—	—
	—	—	—	—	**TLA 3520 Z**	43.5	**TLAM 3520**	51	—	—
	TA 3512 Z	38.5	**TAM 3512**	46	—	—	—	—	—	—
	TA 3515 Z	48	**TAM 3515**	56	—	—	—	—	—	—
	TA 3520 Z	62.5	**TAM 3520**	70	—	—	—	—	—	—
	TA 3525 Z	78	**TAM 3525**	85.5	—	—	—	—	—	—
	TA 3530 Z	97	**TAM 3530**	105	—	—	—	—	—	—

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	rpm	
29	38	20	3.4							22 000	34 200	13 000	**IRT 2520**
29	38	30	3.4	29.000	28.987	38.014	37.989	—	—	34 200	60 300	13 000	**IRT 2530**
29	38	20	—							35 500	64 100	5 000	**IRT 2520**
30	37	12	2.8							10 400	16 600	12 000	—
30	37	16	2.8							14 100	24 500	12 000	—
30	37	18	2.8							16 400	29 800	12 000	—
30	37	20	2.8	30.000	29.987	—	—	36.992	36.967	18 600	35 100	12 000	**IRT 2520-1**
30	37	26	2.8							24 800	50 900	12 000	**IRT 2526-1**
30	37	38	2.8							31 900	70 200	12 000	**IRT 2538-1**
30	40	13	3.4							13 500	16 800	12 000	—
30	40	15	3.4							16 800	22 400	12 000	**IRT 2515-1**
30	40	20	3.4	30.000	29.987	40.014	39.989	—	—	24 500	36 300	12 000	**IRT 2520-1**
30	40	25	3.4							31 600	50 300	12 000	**IRT 2525-1**
30	40	30	3.4							36 700	60 700	12 000	**IRT 2530-1**
32	42	20	3.4							25 400	38 600	11 000	**IRT 2820**
32	42	30	3.4	32.000	31.984	42.014	41.989	—	—	39 500	68 400	11 000	**IRT 2830**
32	42	20	—							39 900	70 100	4 500	**IRT 2820**
35	42	12	2.8							11 600	20 000	10 000	**IRT 3012**
35	42	16	2.8	35.000	34.984	—	—	41.992	41.967	15 700	29 600	10 000	—
35	42	20	2.8							20 700	42 300	10 000	**IRT 3020**
35	45	12	3.4							14 800	19 900	10 000	**IRT 3012**
35	45	15	3.4							18 500	26 500	10 000	**IRT 3015**
35	45	20	3.4	35.000	34.984	45.014	44.989	—	—	27 000	43 100	10 000	**IRT 3020**
35	45	25	3.4							34 800	59 700	10 000	**IRT 3025**
35	45	30	3.4							40 600	72 600	10 000	**IRT 3030**

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

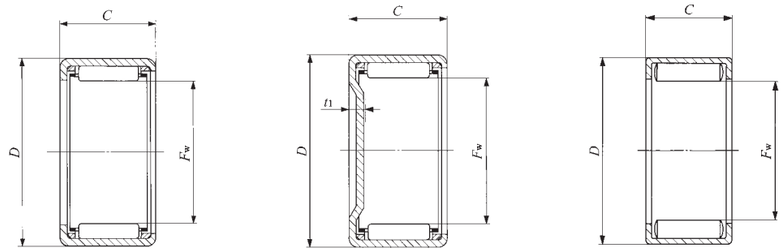
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1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS





TA···Z TLA···Z　　TAM TLAM　　YT

Shaft dia. 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		N7					
F_w	D	C	t_1 Max.	Max.	Min.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
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**

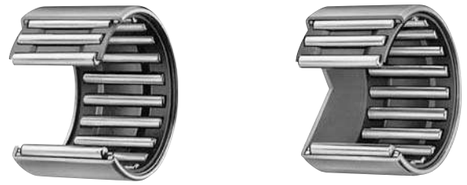
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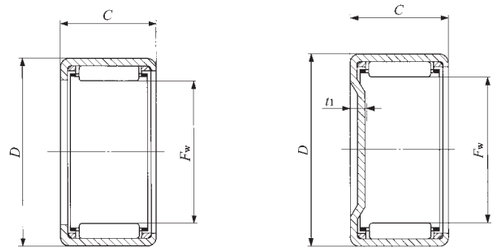
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1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

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				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	rpm	
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**

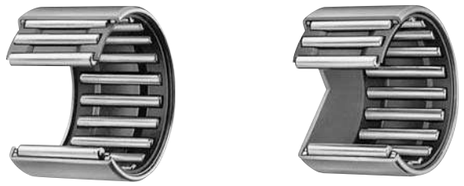
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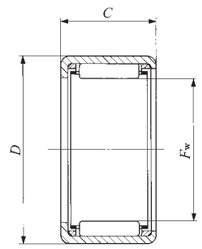
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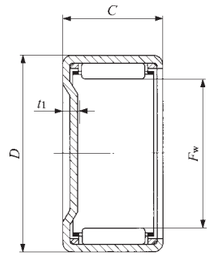
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

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	rpm	
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.

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

Inch Series

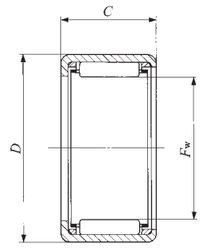




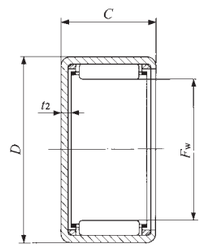
Shaft dia. 3.969 — 9.525mm

Shaft dia. mm (inch)	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
3.969 (5/32)	—	—	—	—	—	—	—	—	YB 2.5 2.5	0.64
	—	—	—	—	—	—	—	—	YB 2.5 4	0.96
4.762 (3/16)	—	—	—	—	—	—	—	—	YB 34	1.6
6.350 (1/4)	BA 44	2.1	—	—	—	—	—	—	—	—
	BA 45 Z	2.5	BAM 45	2.7	—	—	—	—	—	—
	BA 47 Z	3.5	BAM 47	3.7	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YB 45	3.2
	—	—	—	—	—	—	—	—	YB 47	4.6
7.938 (5/16)	BA 55 Z	3	BAM 55	3.3	—	—	—	—	—	—
	BA 56 Z	3.6	BAM 56	3.9	—	—	—	—	—	—
	BA 57 Z	4.3	BAM 57	4.6	—	—	—	—	—	—
	BA 59 Z	5.4	BAM 59	5.7	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YB 55	3.8
	—	—	—	—	BHA 57 Z	6.3	BHAM 57	6.6	—	—
9.525 (3/8)	BA 65 Z	3.5	BAM 65	3.9	—	—	—	—	—	—
	BA 66 Z	4.2	BAM 66	4.6	—	—	—	—	—	—
	BA 68 Z	5.7	BAM 68	6.1	—	—	—	—	—	—
	BA 69 Z	6.3	BAM 69	6.7	—	—	—	—	—	—
	BA 610 Z	7	BAM 610	7.4	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YB 64	3.4
	—	—	—	—	—	—	—	—	YB 66	5.3
	—	—	—	—	—	—	—	—	YB 68	7.2
	—	—	—	—	—	—	—	—	YB 610	9.1
	—	—	—	—	BHA 68 Z	8.2	BHAM 68	8.6	—	—

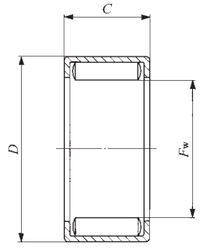
Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
Remark Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided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



BA···Z BHA···Z



BAM BHAM



YB

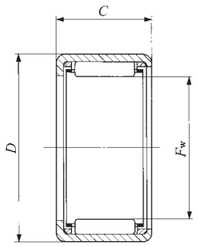
Boundary dimensions mm(inch) F_w	D	C	t_2 Max.	Standard mounting dimensions mm: Shaft dia. h6 Max.	Shaft dia. h6 Min.	Housing bore dia. J7 Max.	Housing bore dia. J7 Min.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(1) rpm	Assembled inner ring
3.969 (5/32)	7.144 (9/32)	3.96(.156)	—	3.969	3.961	7.152	7.137	1 350	1 220	40 000	—
3.969 (5/32)	7.144 (9/32)	6.35(.250)	—					2 320	2 440	40 000	—
4.762 (3/16)	8.731 (11/32)	6.35(.250)	—	4.762	4.754	8.739	8.724	2 770	2 700	30 000	—
6.350 (1/4)	11.112 (7/16)	6.35(.250)	1					1 770	1 390	55 000	—
6.350 (1/4)	11.112 (7/16)	7.92(.312)	1					1 510	1 120	55 000	—
6.350 (1/4)	11.112 (7/16)	11.13(.438)	1	6.350	6.341	11.122	11.104	2 650	2 310	55 000	—
6.350 (1/4)	11.112 (7/16)	7.92(.312)	—					4 450	4 870	25 000	—
6.350 (1/4)	11.112 (7/16)	11.13(.438)	—					6 320	7 650	25 000	—
7.938 (5/16)	12.700 (1/2)	7.92(.312)	1					1 880	1 560	45 000	—
7.938 (5/16)	12.700 (1/2)	9.52(.375)	1					2 620	2 390	45 000	—
7.938 (5/16)	12.700 (1/2)	11.13(.438)	1	7.938	7.929	12.710	12.692	3 310	3 220	45 000	—
7.938 (5/16)	12.700 (1/2)	14.27(.562)	1					4 190	4 360	45 000	—
7.938 (5/16)	12.700 (1/2)	7.92(.312)	—					5 110	6 090	20 000	—
7.938 (5/16)	14.288 (9/16)	11.13(.438)	1.3	7.938	7.929	14.298	14.280	4 150	3 730	45 000	—
9.525 (3/8)	14.288 (9/16)	7.92(.312)	1					2 220	2 010	40 000	—
9.525 (3/8)	14.288 (9/16)	9.52(.375)	1					3 090	3 080	40 000	—
9.525 (3/8)	14.288 (9/16)	12.70(.500)	1	9.525	9.516	14.298	14.280	4 190	4 560	40 000	—
9.525 (3/8)	14.288 (9/16)	14.27(.562)	1					4 940	5 630	40 000	—
9.525 (3/8)	14.288 (9/16)	15.88(.625)	1					5 660	6 700	40 000	—
9.525 (3/8)	14.288 (9/16)	6.35(.250)	—					4 470	5 360	16 000	—
9.525 (3/8)	14.288 (9/16)	9.52(.375)	—	9.525	9.516	14.298	14.280	6 920	9 410	16 000	—
9.525 (3/8)	14.288 (9/16)	12.70(.500)	—					9 210	13 600	16 000	—
9.525 (3/8)	14.288 (9/16)	15.88(.625)	—					11 300	17 800	16 000	—
9.525 (3/8)	15.875 (5/8)	12.70(.500)	1.3	9.525	9.516	15.885	15.867	4 880	4 740	40 000	—

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

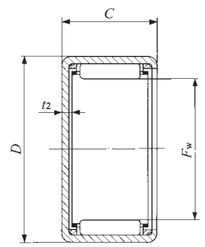
SHELL TYPE NEEDLE ROLLER BEARINGS

Inch Series

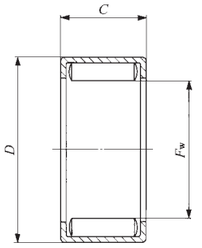




BA···Z BHA···Z



BAM BHAM



YB YBH

Shaft dia. 11.112 — 12.700mm

Shaft dia. mm (inch)	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
11.112 (7/16)	**BA 76 Z**	4.8	**BAM 76**	5.3	—	—	—	—	—	—
	BA 77 Z	5.6	**BAM 77**	6.2	—	—	—	—	—	—
	BA 78 Z	6.4	**BAM 78**	7	—	—	—	—	—	—
	BA 710 Z	7.9	**BAM 710**	8.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 78**	8.2
	—	—	—	—	**BHA 78 Z**	9.3	**BHAM 78**	10	—	—
	—	—	—	—	—	—	—	—	**YBH 78**	10.5
	BA 85 Z	4.4	**BAM 85**	5.2	—	—	—	—	—	—
	BA 86 Z	5.3	**BAM 86**	6.1	—	—	—	—	—	—
	BA 87 Z	6.3	**BAM 87**	7	—	—	—	—	—	—
	BA 88 Z	7.2	**BAM 88**	7.9	—	—	—	—	—	—
	BA 810 Z	8.9	**BAM 810**	9.6	—	—	—	—	—	—
	BA 812 Z	10.6	**BAM 812**	11.3	—	—	—	—	—	—
12.700 (1/2)	—	—	—	—	—	—	—	—	**YB 84**	4.3
	—	—	—	—	—	—	—	—	**YB 86**	6.7
	—	—	—	—	—	—	—	—	**YB 87**	7.9
	—	—	—	—	—	—	—	—	**YB 88**	9.1
	—	—	—	—	—	—	—	—	**YB 810**	11.5
	—	—	—	—	—	—	—	—	**YB 812**	13.9
	—	—	—	—	**BHA 87 Z**	9.1	**BHAM 87**	9.9	—	—
	—	—	—	—	**BHA 88 Z**	10.4	**BHAM 88**	11.3	—	—
	—	—	—	—	**BHA 810 Z**	12.5	**BHAM 810**	13.3	—	—
	—	—	—	—	**BHA 812 Z**	15	**BHAM 812**	15.8	—	—
	—	—	—	—	—	—	—	—	**YBH 810**	16

Boundary dimensions mm(inch)				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					
F_w	D	C	t_2 Max.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
11.112 (7/16)	15.875 (5/8)	9.52(.375)	1					3 290	3 470	35 000	—
11.112 (7/16)	15.875 (5/8)	11.13(.438)	1					4 150	4 680	35 000	—
11.112 (7/16)	15.875 (5/8)	12.70(.500)	1	11.112	11.101	15.885	15.867	4 460	5 130	35 000	—
11.112 (7/16)	15.875 (5/8)	15.88(.625)	1					6 020	7 550	35 000	—
11.112 (7/16)	15.875 (5/8)	12.70(.500)	—					10 100	15 900	14 000	—
11.112 (7/16)	17.462 (11/16)	12.70(.500)	1.3	11.112	11.101	17.472	17.454	5 680	5 970	35 000	—
11.112 (7/16)	17.462 (11/16)	12.70(.500)	—					12 500	15 800	14 000	—
12.700 (1/2)	17.462 (11/16)	7.92(.312)	1					2 490	2 510	30 000	—
12.700 (1/2)	17.462 (11/16)	9.52(.375)	1					3 470	3 850	30 000	—
12.700 (1/2)	17.462 (11/16)	11.13(.438)	1	12.700	12.689	17.472	17.454	4 380	5 190	30 000	—
12.700 (1/2)	17.462 (11/16)	12.70(.500)	1					4 710	5 700	30 000	**IRB 58**
12.700 (1/2)	17.462 (11/16)	15.88(.625)	1					6 350	8 380	30 000	—
12.700 (1/2)	17.462 (11/16)	19.05(.750)	1					7 840	11 000	30 000	—
12.700 (1/2)	17.462 (11/16)	6.35(.250)	—					5 260	7 150	12 000	—
12.700 (1/2)	17.462 (11/16)	9.52(.375)	—					8 150	12 600	12 000	—
12.700 (1/2)	17.462 (11/16)	11.13(.438)	—	12.700	12.689	17.472	17.454	9 530	15 300	12 000	—
12.700 (1/2)	17.462 (11/16)	12.70(.500)	—					10 800	18 100	12 000	**IRB 58**
12.700 (1/2)	17.462 (11/16)	15.88(.625)	—					13 400	23 700	12 000	—
12.700 (1/2)	17.462 (11/16)	19.05(.750)	—					15 800	29 300	12 000	—
12.700 (1/2)	19.050 (3/4)	11.13(.438)	1.3					5 670	6 120	30 000	—
12.700 (1/2)	19.050 (3/4)	12.70(.500)	1.3					6 040	6 650	30 000	**IRB 58**
12.700 (1/2)	19.050 (3/4)	15.88(.625)	1.3	12.700	12.689	19.062	19.041	8 830	10 900	30 000	—
12.700 (1/2)	19.050 (3/4)	19.05(.750)	1.3					11 100	14 500	30 000	—
12.700 (1/2)	19.050 (3/4)	15.88(.625)	—					16 300	23 500	12 000	—

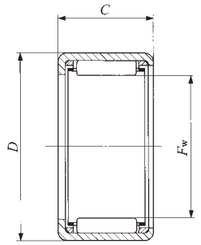
Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
Remark Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided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

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

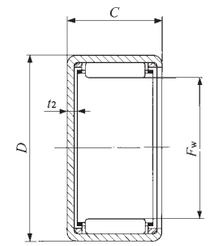
SHELL TYPE NEEDLE ROLLER BEARINGS

Inch Series

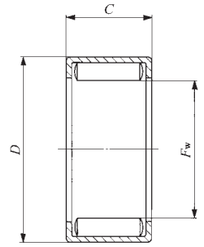




BA···Z BHA···Z



BAM BHAM



YB YBH

Shaft dia. 14.288 — 15.875mm

Shaft dia. mm (inch)	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
14.288 (9/16)	BA 95 Z	4.9	BAM 95	5.8	—	—	—	—	—	—
	BA 96 Z	5.9	BAM 96	6.8	—	—	—	—	—	—
	BA 97 Z	6.9	BAM 97	7.8	—	—	—	—	—	—
	BA 98 Z	7.9	BAM 98	8.9	—	—	—	—	—	—
	BA 910 Z	9.9	BAM 910	10.8	—	—	—	—	—	—
	BA 912 Z	11.7	BAM 912	12.6	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YB 98	10.1
	—	—	—	—	—	—	—	—	YB 910	12.7
	—	—	—	—	—	—	—	—	YB 912	15.4
	—	—	—	—	BHA 98 Z	11.4	BHAM 98	12.5	—	—
	—	—	—	—	BHA 910 Z	13.6	BHAM 910	14.7	—	—
	—	—	—	—	BHA 912 Z	16.3	BHAM 912	17.4	—	—
15.875 (5/8)	BA 105 Z	5.3	BAM 105	6.5	—	—	—	—	—	—
	BA 107 Z	7.6	BAM 107	8.7	—	—	—	—	—	—
	BA 108 Z	8.7	BAM 108	9.9	—	—	—	—	—	—
	BA 1010 Z	10.8	BAM 1010	12	—	—	—	—	—	—
	BA 1012 Z	12.9	BAM 1012	14	—	—	—	—	—	—
	BA 1014 Z	15.1	BAM 1014	16.2	—	—	—	—	—	—
	BA 1016 Z	17.3	BAM 1016	18.4	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YB 105	6.7
	—	—	—	—	—	—	—	—	YB 108	11
	—	—	—	—	—	—	—	—	YB 1012	16.9
	—	—	—	—	BHA 108 Z	12.6	BHAM 108	13.9	—	—
	—	—	—	—	BHA 1010 Z	14.9	BHAM 1010	16.2	—	—
	—	—	—	—	BHA 1012 Z	18	BHAM 1012	19.3	—	—
	—	—	—	—	BHA 1016 Z	24	BHAM 1016	25	—	—
	—	—	—	—	—	—	—	—	YBH 108	15.3

Boundary dimensions mm(inch) F_w	D	C	t_2 Max.	Standard mounting dimensions mm: Shaft dia. h6 Max.	Shaft dia. h6 Min.	Housing bore dia. J7 Max.	Housing bore dia. J7 Min.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(1) rpm	Assembled inner ring
14.288 (9/16)	19.050 (3/4)	7.92(.312)	1.3					2 760	2 970	30 000	—
14.288 (9/16)	19.050 (3/4)	9.52(.375)	1.3					3 850	4 560	30 000	—
14.288 (9/16)	19.050 (3/4)	11.13(.438)	1.3					4 860	6 140	30 000	—
14.288 (9/16)	19.050 (3/4)	12.70(.500)	1.3					5 220	6 740	30 000	IRB 68
14.288 (9/16)	19.050 (3/4)	15.88(.625)	1.3	14.288	14.277	19.062	19.041	7 050	9 910	30 000	—
14.288 (9/16)	19.050 (3/4)	19.05(.750)	1.3					8 690	13 000	30 000	IRB 612
14.288 (9/16)	19.050 (3/4)	12.70(.500)	—					11 600	20 400	11 000	IRB 68
14.288 (9/16)	19.050 (3/4)	15.88(.625)	—					14 300	26 700	11 000	—
14.288 (9/16)	19.050 (3/4)	19.05(.750)	—					16 800	33 000	11 000	IRB 612
14.288 (9/16)	20.638 (13/16)	12.70(.500)	1.3					6 380	7 330	30 000	IRB 68
14.288 (9/16)	20.638 (13/16)	15.88(.625)	1.3	14.288	14.277	20.650	20.629	9 280	11 900	30 000	—
14.288 (9/16)	20.638 (13/16)	19.05(.750)	1.3					11 600	15 900	30 000	IRB 612
15.875 (5/8)	20.638 (13/16)	7.92(.312)	1.3					2 870	3 220	25 000	—
15.875 (5/8)	20.638 (13/16)	11.13(.438)	1.3					5 040	6 660	25 000	—
15.875 (5/8)	20.638 (13/16)	12.70(.500)	1.3					5 420	7 310	25 000	IRB 68-1
15.875 (5/8)	20.638 (13/16)	15.88(.625)	1.3					7 320	10 700	25 000	—
15.875 (5/8)	20.638 (13/16)	19.05(.750)	1.3	15.875	15.864	20.650	20.629	9 020	14 100	25 000	IRB 612-1
15.875 (5/8)	20.638 (13/16)	22.22(.875)	1.3					10 700	17 500	25 000	IRB 714
15.875 (5/8)	20.638 (13/16)	25.40(1.000)	1.3					12 300	20 800	25 000	IRB 716
15.875 (5/8)	20.638 (13/16)	7.92(.312)	—					7 580	12 200	9 500	—
15.875 (5/8)	20.638 (13/16)	12.70(.500)	—					12 300	22 700	9 500	IRB 68-1
15.875 (5/8)	20.638 (13/16)	19.05(.750)	—					17 800	36 600	9 500	IRB 612-1
15.875 (5/8)	22.225 (7/8)	12.70(.500)	1.3					6 680	8 020	25 000	IRB 68-1
15.875 (5/8)	22.225 (7/8)	15.88(.625)	1.3					10 200	13 800	25 000	—
15.875 (5/8)	22.225 (7/8)	19.05(.750)	1.3	15.875	15.864	22.237	22.216	12 700	18 500	25 000	IRB 612-1
15.875 (5/8)	22.225 (7/8)	25.40(1.000)	1.3					17 400	27 600	25 000	IRB 716
15.875 (5/8)	22.225 (7/8)	12.70(.500)	—					15 000	22 400	9 500	IRB 68-1

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

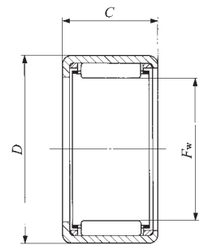
Inch Series



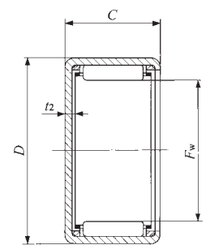
Shaft dia. 17.462 — 19.050mm

Shaft dia. mm (inch)	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
17.462 (11/16)	**BA 116 Z**	7	**BAM 116**	8.4	—	—	—	—	—	—
	BA 118 Z	9.5	**BAM 118**	10.8	—	—	—	—	—	—
	BA 1110 Z	11.8	**BAM 1110**	13.2	—	—	—	—	—	—
	BA 1112 Z	14	**BAM 1112**	15.4	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 1112**	18.3
	—	—	—	—	**BHA 117 Z**	11.9	**BHAM 117**	13.5	—	—
	—	—	—	—	**BHA 118 Z**	13.7	**BHAM 118**	15.3	—	—
	—	—	—	—	**BHA 1110 Z**	16	**BHAM 1110**	17.6	—	—
	—	—	—	—	**BHA 1112 Z**	19.3	**BHAM 1112**	21	—	—
19.050 (3/4)	**BA 126 Z**	10	**BAM 126**	11.7	—	—	—	—	—	—
	BA 128 Z	13.5	**BAM 128**	15.2	—	—	—	—	—	—
	BA 1210 Z	17	**BAM 1210**	18.6	—	—	—	—	—	—
	BA 1212 Z	20.5	**BAM 1212**	22	—	—	—	—	—	—
	BA 1214 Z	23.5	**BAM 1214**	25	—	—	—	—	—	—
	BA 1216 Z	27	**BAM 1216**	28.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 124**	8.5
	—	—	—	—	—	—	—	—	**YB 128**	17.8
	—	—	—	—	—	—	—	—	**YB 1210**	22.5
	—	—	—	—	—	—	—	—	**YB 1212**	27
	—	—	—	—	**BHA 1212 Z**	26.5	**BHAM 1212**	28.5	—	—

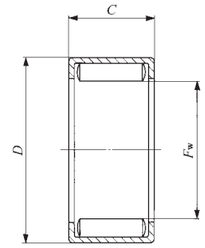
Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
Remark Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided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



BA···Z BHA···Z



BAM BHAM



YB

Boundary dimensions mm(inch)				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					
F_w	D	C	t_2 Max.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
17.462 (11/16)	22.225 (7/8)	9.52(.375)	1.3					4 530	5 980	25 000	**IRB 86**
17.462 (11/16)	22.225 (7/8)	12.70(.500)	1.3					6 140	8 850	25 000	**IRB 88**
17.462 (11/16)	22.225 (7/8)	15.88(.625)	1.3	17.462	17.451	22.237	22.216	8 280	13 000	25 000	—
17.462 (11/16)	22.225 (7/8)	19.05(.750)	1.3					10 200	17 000	25 000	**IRB 812**
17.462 (11/16)	22.225 (7/8)	19.05(.750)	—					18 700	40 300	8 500	**IRB 812**
17.462 (11/16)	23.812 (15/16)	11.13(.438)	1.3					6 860	8 530	25 000	—
17.462 (11/16)	23.812 (15/16)	12.70(.500)	1.3					7 320	9 270	25 000	**IRB 88**
17.462 (11/16)	23.812 (15/16)	15.88(.625)	1.3	17.462	17.451	23.824	23.803	10 500	14 900	25 000	—
17.462 (11/16)	23.812 (15/16)	19.05(.750)	1.3					13 200	19 900	25 000	**IRB 812**
19.050 (3/4)	25.400 (1)	9.52(.375)	1.3					5 040	5 850	20 000	—
19.050 (3/4)	25.400 (1)	12.70(.500)	1.3					6 910	8 780	20 000	**IRB 88-1**
19.050 (3/4)	25.400 (1)	15.88(.625)	1.3					9 500	13 200	20 000	**IRB 810-1**
19.050 (3/4)	25.400 (1)	19.05(.750)	1.3	19.050	19.037	25.412	25.391	11 900	17 700	20 000	**IRB 812-1**
19.050 (3/4)	25.400 (1)	22.22(.875)	1.3					14 200	22 200	20 000	**IRB 814-1**
19.050 (3/4)	25.400 (1)	25.40(1.000)	1.3					16 300	26 500	20 000	**IRB 816-1**
19.050 (3/4)	25.400 (1)	6.35(.250)	—					7 820	10 200	8 000	—
19.050 (3/4)	25.400 (1)	12.70(.500)	—	19.050	19.037	25.412	25.391	16 600	26 900	8 000	**IRB 88-1**
19.050 (3/4)	25.400 (1)	15.88(.625)	—					20 500	35 300	8 000	**IRB 810-1**
19.050 (3/4)	25.400 (1)	19.05(.750)	—					24 100	43 400	8 000	**IRB 812-1**
19.050 (3/4)	26.988 (1 1/16)	19.05(.750)	1.3	19.050	19.037	27.000	26.979	16 600	22 600	20 000	**IRB 812-1**

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

SHELL TYPE NEEDLE ROLLER BEARINGS

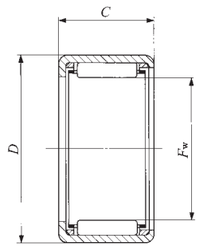
Inch Series



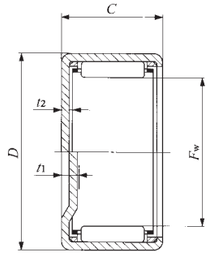
Shaft dia. 20.638 — 22.225mm

Shaft dia. mm (inch)	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
20.638 (13/16)	**BA 136 Z**	10.7	**BAM 136**	12.6	—	—	—	—	—	—
	BA 138 Z	14.5	**BAM 138**	16.4	—	—	—	—	—	—
	BA 1310 Z	18.2	**BAM 1310**	20	—	—	—	—	—	—
	BA 1312 Z	22	**BAM 1312**	23.5	—	—	—	—	—	—
	BA 1314 Z	25	**BAM 1314**	27	—	—	—	—	—	—
	BA 1316 Z	28.5	**BAM 1316**	30.5	—	—	—	—	—	—
	BA 1320 Z	35.5	**BAM 1320**	37.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 136**	14.1
	—	—	—	—	—	—	—	—	**YB 138**	19.1
	—	—	—	—	**BHA 138 Z**	20	**BHAM 138**	22.5	—	—
	—	—	—	—	**BHA 1310 Z**	23.5	**BHAM 1310**	25.5	—	—
	—	—	—	—	**BHA 1312 Z**	28.5	**BHAM 1312**	30.5	—	—
	—	—	—	—	—	—	—	—	**YBH 1310**	30.5
	—	—	—	—	—	—	—	—	**YBH 1312**	37
22.225 (7/8)	**BA 146 Z**	11.5	**BAM 146**	13.8	—	—	—	—	—	—
	BA 148 Z	15.6	**BAM 148**	17.8	—	—	—	—	—	—
	BA 1412 Z	23.5	**BAM 1412**	26	—	—	—	—	—	—
	BA 1414 Z	27	**BAM 1414**	29.5	—	—	—	—	—	—
	BA 1416 Z	31	**BAM 1416**	33.5	—	—	—	—	—	—
	BA 1418 Z	34.5	**BAM 1418**	37	—	—	—	—	—	—
	BA 1422 Z	42.5	**BAM 1422**	44.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 148**	20.5
	—	—	—	—	—	—	—	—	**YB 1412**	31
	—	—	—	—	—	—	—	—	**YB 1416**	41.5
	—	—	—	—	**BHA 1410 Z**	25	**BHAM 1410**	27.5	—	—
	—	—	—	—	**BHA 1412 Z**	30	**BHAM 1412**	32.5	—	—
	—	—	—	—	**BHA 1416 Z**	39.5	**BHAM 1416**	42	—	—
	—	—	—	—	—	—	—	—	**YBH 1412**	39

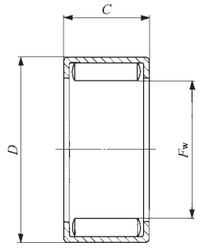
Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
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BA···Z BHA···Z



BAM BHAM
t_1 ($F_w \leqq 22.225$)
t_2 ($F_w \leqq 20.638$)



YB YBH

Boundary dimensions mm(inch)				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					
F_w	D	C	t_1 t_2 Max.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
20.638 (13/16)	26.988 (1 1/16)	9.52(.375)	1.3					5 230	6 300	19 000	—
20.638 (13/16)	26.988 (1 1/16)	12.70(.500)	1.3					7 170	9 450	19 000	**IRB 98**
20.638 (13/16)	26.988 (1 1/16)	15.88(.625)	1.3					9 870	14 200	19 000	**IRB 910**
20.638 (13/16)	26.988 (1 1/16)	19.05(.750)	1.3					12 400	19 000	19 000	**IRB 912**
20.638 (13/16)	26.988 (1 1/16)	22.22(.875)	1.3	20.638	20.625	27.000	26.979	14 700	23 800	19 000	**IRB 914**
20.638 (13/16)	26.988 (1 1/16)	25.40(1.000)	1.3					16 900	28 500	19 000	**IRB 916**
20.638 (13/16)	26.988 (1 1/16)	31.75(1.250)	1.3					21 200	38 100	19 000	**IRB 920**
20.638 (13/16)	26.988 (1 1/16)	9.52(.375)	—					13 000	20 100	7 500	—
20.638 (13/16)	26.988 (1 1/16)	12.70(.500)	—					17 400	29 200	7 500	**IRB 98**
20.638 (13/16)	28.575 (1 1/8)	12.70(.500)	1.3					9 500	11 200	19 000	**IRB 98**
20.638 (13/16)	28.575 (1 1/8)	15.88(.625)	1.3					13 800	18 200	19 000	**IRB 910**
20.638 (13/16)	28.575 (1 1/8)	19.05(.750)	1.3	20.638	20.625	28.587	28.566	17 300	24 400	19 000	**IRB 912**
20.638 (13/16)	28.575 (1 1/8)	15.88(.625)	—					22 900	36 300	7 500	**IRB 910**
20.638 (13/16)	28.575 (1 1/8)	19.05(.750)	—					27 200	45 300	7 500	**IRB 912**
22.225 (7/8)	28.575 (1 1/8)	9.52(.375)	2.8					5 430	6 740	18 000	**IRB 106**
22.225 (7/8)	28.575 (1 1/8)	12.70(.500)	2.8					7 440	10 100	18 000	**IRB 108**
22.225 (7/8)	28.575 (1 1/8)	19.05(.750)	2.8					12 800	20 400	18 000	**IRB 1012**
22.225 (7/8)	28.575 (1 1/8)	22.22(.875)	2.8					15 300	25 500	18 000	**IRB 1014**
22.225 (7/8)	28.575 (1 1/8)	25.40(1.000)	2.8	22.225	22.212	28.587	28.566	17 600	30 500	18 000	**IRB 1016**
22.225 (7/8)	28.575 (1 1/8)	28.58(1.125)	2.8					19 800	35 600	18 000	—
22.225 (7/8)	28.575 (1 1/8)	34.92(1.375)	2.8					24 100	45 700	18 000	**IRB 1022**
22.225 (7/8)	28.575 (1 1/8)	12.70(.500)	—					18 100	31 400	7 000	**IRB 108**
22.225 (7/8)	28.575 (1 1/8)	19.05(.750)	—					26 300	50 700	7 000	**IRB 1012**
22.225 (7/8)	28.575 (1 1/8)	25.40(1.000)	—					33 800	70 200	7 000	**IRB 1016**
22.225 (7/8)	30.162 (1 3/16)	15.88(.625)	3.4					14 300	19 500	18 000	—
22.225 (7/8)	30.162 (1 3/16)	19.05(.750)	3.4					18 000	26 100	18 000	**IRB 1012**
22.225 (7/8)	30.162 (1 3/16)	25.40(1.000)	3.4	22.225	22.212	30.176	30.151	23 600	36 900	18 000	**IRB 1016**
22.225 (7/8)	30.162 (1 3/16)	19.05(.750)	—					28 200	49 000	7 000	**IRB 1012**

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

SHELL TYPE NEEDLE ROLLER BEARINGS

Inch Series

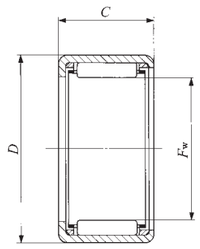




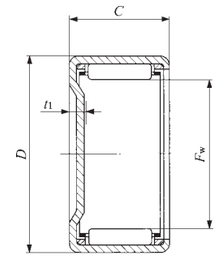
Shaft dia. 23.812 — 26.988mm

Shaft dia. mm (inch)	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
23.812 (15/16)	**BA 158 Z**	16.5	**BAM 158**	19	—	—	—	—	—	—
	BA 1510 Z	20.5	**BAM 1510**	23	—	—	—	—	—	—
	BA 1516 Z	33	**BAM 1516**	35.5	—	—	—	—	—	—
25.400 (1)	**BA 166 Z**	13.1	**BAM 166**	16	—	—	—	—	—	—
	BA 167 Z	15.4	**BAM 167**	18.3	—	—	—	—	—	—
	BA 168 Z	17.7	**BAM 168**	20.5	—	—	—	—	—	—
	BA 1610 Z	22	**BAM 1610**	25	—	—	—	—	—	—
	BA 1612 Z	26.5	**BAM 1612**	29.5	—	—	—	—	—	—
	BA 1614 Z	31	**BAM 1614**	33.5	—	—	—	—	—	—
	BA 1616 Z	35.5	**BAM 1616**	38	—	—	—	—	—	—
	BA 1620 Z	44	**BAM 1620**	46.5	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 168**	23
	—	—	—	—	—	—	—	—	**YB 1612**	34.5
	—	—	—	—	—	—	—	—	**YB 1616**	46.5
	—	—	—	—	**BHA 168 Z**	24	**BHAM 168**	27	—	—
	—	—	—	—	**BHA 1610 Z**	28	**BHAM 1610**	31	—	—
	—	—	—	—	**BHA 1612 Z**	33.5	**BHAM 1612**	37	—	—
	—	—	—	—	**BHA 1614 Z**	39.5	**BHAM 1614**	42.5	—	—
	—	—	—	—	**BHA 1616 Z**	45	**BHAM 1616**	48	—	—
	—	—	—	—	**BHA 1620 Z**	56.5	**BHAM 1620**	59.5	—	—
	—	—	—	—	**BHA 1624 Z**	67.5	**BHAM 1624**	71	—	—
	—	—	—	—	—	—	—	—	**YBH 168**	29
	—	—	—	—	—	—	—	—	**YBH 1612**	44.5
	—	—	—	—	—	—	—	—	**YBH 1616**	59.5
26.988 (1 1/16)	**BA 1710 Z**	23.5	**BAM 1710**	26.5	—	—	—	—	—	—
	BA 1716 Z	37	**BAM 1716**	40.5	—	—	—	—	—	—

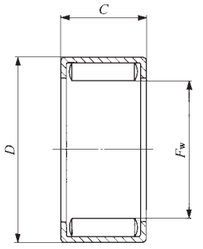
Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
Remark Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided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



BA···Z BHA···Z



BAM BHAM



YB YBH

Boundary dimensions mm(inch)				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					
F_w	D	C	t_1 Max.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
23.812 (15/16)	30.162 (1 3/16)	12.70 (.500)	2.8					8 000	11 400	16 000	—
23.812 (15/16)	30.162 (1 3/16)	15.88 (.625)	2.8	23.812	23.799	30.176	30.151	11 000	17 100	16 000	**IRB 1110**
23.812 (15/16)	30.162 (1 3/16)	25.40(1.000)	2.8					18 900	34 300	16 000	**IRB 1116**
25.400 (1)	31.750 (1 1/4)	9.52 (.375)	2.8					6 010	8 020	15 000	—
25.400 (1)	31.750 (1 1/4)	11.13 (.438)	2.8					7 720	11 100	15 000	—
25.400 (1)	31.750 (1 1/4)	12.70 (.500)	2.8					8 240	12 000	15 000	**IRB 128**
25.400 (1)	31.750 (1 1/4)	15.88 (.625)	2.8					11 300	18 100	15 000	—
25.400 (1)	31.750 (1 1/4)	19.05 (.750)	2.8					14 200	24 300	15 000	**IRB 1212**
25.400 (1)	31.750 (1 1/4)	22.22 (.875)	2.8	25.400	25.387	31.764	31.739	16 900	30 400	15 000	**IRB 1214**
25.400 (1)	31.750 (1 1/4)	25.40(1.000)	2.8					19 400	36 300	15 000	**IRB 1216**
25.400 (1)	31.750 (1 1/4)	31.75(1.250)	2.8					24 400	48 500	15 000	**IRB 1220**
25.400 (1)	31.750 (1 1/4)	12.70 (.500)	—					19 400	36 000	6 000	**IRB 128**
25.400 (1)	31.750 (1 1/4)	19.05 (.750)	—					28 200	58 000	6 000	**IRB 1212**
25.400 (1)	31.750 (1 1/4)	25.40(1.000)	—					36 300	80 300	6 000	**IRB 1216**
25.400 (1)	33.338 (1 3/16)	12.70 (.500)	3.4					10 200	13 100	15 000	**IRB 128**
25.400 (1)	33.338 (1 3/16)	15.88 (.625)	3.4					15 300	22 100	15 000	—
25.400 (1)	33.338 (1 3/16)	19.05 (.750)	3.4					19 300	29 700	15 000	**IRB 1212**
25.400 (1)	33.338 (1 3/16)	22.22 (.875)	3.4					23 000	37 200	15 000	**IRB 1214**
25.400 (1)	33.338 (1 3/16)	25.40(1.000)	3.4	25.400	25.387	33.352	33.327	26 400	44 500	15 000	**IRB 1216**
25.400 (1)	33.338 (1 3/16)	31.75(1.250)	3.4					33 200	59 600	15 000	**IRB 1220**
25.400 (1)	33.338 (1 3/16)	38.10(1.500)	3.4					39 400	74 400	15 000	—
25.400 (1)	33.338 (1 3/16)	12.70 (.500)	—					20 900	34 100	6 000	**IRB 128**
25.400 (1)	33.338 (1 3/16)	19.05 (.750)	—					30 700	56 100	6 000	**IRB 1212**
25.400 (1)	33.338 (1 3/16)	25.40(1.000)	—					39 900	78 400	6 000	**IRB 1216**
26.988 (1 1/16)	33.338 (1 3/16)	15.88 (.625)	2.8	26.988	26.975	33.352	33.327	11 600	19 200	14 000	—
26.988 (1 1/16)	33.338 (1 3/16)	25.40(1.000)	2.8					20 000	38 300	14 000	—

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

SHELL TYPE NEEDLE ROLLER BEARINGS

Inch Series

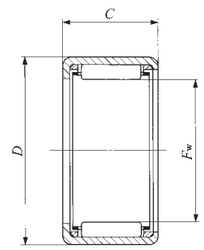


Shaft dia. 28.575 — 30.162mm

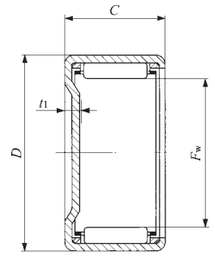
Shaft dia. mm (inch)	Identification number									
	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Standard	Mass (Ref.) g	Closed end	Mass (Ref.) g	Grease retained	Mass (Ref.) g
28.575 (1 1/8)	**BA 186 Z**	14.5	**BAM 186**	18.1	—	—	—	—	—	—
	BA 188 Z	19.5	**BAM 188**	23	—	—	—	—	—	—
	BA 1812 Z	29.5	**BAM 1812**	33	—	—	—	—	—	—
	BA 1816 Z	39	**BAM 1816**	42.5	—	—	—	—	—	—
	BA 1820 Z	48.5	**BAM 1820**	52	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 188**	25.5
	—	—	—	—	—	—	—	—	**YB 1812**	38.5
	—	—	—	—	—	—	—	—	**YB 1816**	51.5
	—	—	—	—	**BHA 1812 Z**	45	**BHAM 1812**	49	—	—
	—	—	—	—	**BHA 1816 Z**	60	**BHAM 1816**	64	—	—
	—	—	—	—	**BHA 1818 Z**	67.5	**BHAM 1818**	71.5	—	—
	—	—	—	—	**BHA 1820 Z**	73.5	**BHAM 1820**	78	—	—
30.162 (1 3/16)	**BA 1910 Z**	32.5	**BAM 1910**	37.5	—	—	—	—	—	—
	BA 1916 Z	52	**BAM 1916**	57	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 1910**	42.5

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

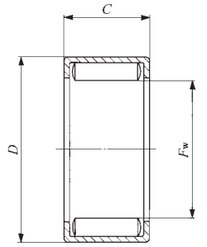
Remark Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided with prepacked grease, so perform proper lubrication when using these types of bearings.



BA···Z BHA···Z



BAM BHAM



YB

Boundary dimensions mm(inch)				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					
F_w	D	C	t_1 Max.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
28.575 (1 1/8)	34.925 (1 3/8)	9.52(. 375)	2.8	28.575	28.562	34.939	34.914	6 330	8 910	13 000	—
28.575 (1 1/8)	34.925 (1 3/8)	12.70(.500)	2.8					8 680	13 400	13 000	**IRB 148**
28.575 (1 1/8)	34.925 (1 3/8)	19.05(.750)	2.8					15 000	26 900	13 000	**IRB 1412**
28.575 (1 1/8)	34.925 (1 3/8)	25.40(1.000)	2.8					20 500	40 300	13 000	**IRB 1416**
28.575 (1 1/8)	34.925 (1 3/8)	31.75(1.250)	2.8					25 700	53 900	13 000	**IRB 1420**
28.575 (1 1/8)	34.925 (1 3/8)	12.70(.500)	—					20 700	40 500	5 500	**IRB 148**
28.575 (1 1/8)	34.925 (1 3/8)	19.05(.750)	—					30 000	65 300	5 500	**IRB 1412**
28.575 (1 1/8)	34.925 (1 3/8)	25.40(1.000)	—					38 700	90 400	5 500	**IRB 1416**
28.575 (1 1/8)	38.100 (1 1/2)	19.05(.750)	3.4	28.575	28.562	38.114	38.089	22 500	32 200	13 000	**IRB 1412**
28.575 (1 1/8)	38.100 (1 1/2)	25.40(1.000)	3.4					30 900	48 600	13 000	**IRB 1416**
28.575 (1 1/8)	38.100 (1 1/2)	28.58(1.125)	3.4					34 900	56 600	13 000	—
28.575 (1 1/8)	38.100 (1 1/2)	31.75(1.250)	3.4					37 100	61 100	13 000	**IRB 1420**
30.162 (1 3/16)	38.100 (1 1/2)	15.88(.625)	2.8	30.162	30.146	38.114	38.089	15 000	22 500	12 000	—
30.162 (1 3/16)	38.100 (1 1/2)	25.40(1.000)	2.8					25 800	45 300	12 000	—
30.162 (1 3/16)	38.100 (1 1/2)	15.88(.625)	—					28 400	53 600	5 000	—

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

SHELL TYPE NEEDLE ROLLER BEARINGS

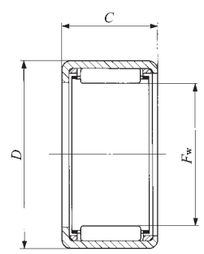
Inch Series



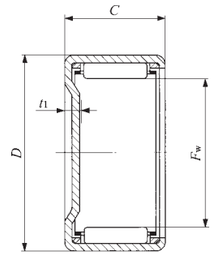
Shaft dia. 31.750 — 33.338mm

Shaft dia. mm (inch)	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
31.750 (1 1/4)	**BA 208 Z**	21.5	**BAM 208**	26	—	—	—	—	—	—
	BA 2010 Z	27	**BAM 2010**	31.5	—	—	—	—	—	—
	BA 2012 Z	32.5	**BAM 2012**	37	—	—	—	—	—	—
	BA 2016 Z	43	**BAM 2016**	47.5	—	—	—	—	—	—
	BA 2020 Z	53.5	**BAM 2020**	58	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 2010**	35
	—	—	—	—	—	—	—	—	**YB 2012**	42.5
	—	—	—	—	—	—	—	—	**YB 2016**	57
	—	—	—	—	—	—	—	—	**YB 2018**	64
	—	—	—	—	—	—	—	—	**YB 2020**	68
	—	—	—	—	**BHA 208 Z**	34.5	**BHAM 208**	40	—	—
	—	—	—	—	**BHA 2012 Z**	49.5	**BHAM 2012**	54.5	—	—
	—	—	—	—	**BHA 2016 Z**	66	**BHAM 2016**	71	—	—
	—	—	—	—	**BHA 2020 Z**	81.5	**BHAM 2020**	86.5	—	—
33.338 (1 5/16)	**BA 218 Z**	28.5	**BAM 218**	35	—	—	—	—	—	—
	BA 2110 Z	35.5	**BAM 2110**	41.5	—	—	—	—	—	—
	BA 2112 Z	43	**BAM 2112**	49	—	—	—	—	—	—

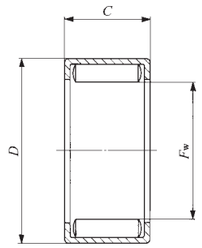
Note(1) Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 60% of this value is allowable.
Remark Shell Type Grease Retained Full Complement Needle Roller Bearings are provided with prepacked grease. Standard type and closed end type bearings are not provided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



BA···Z BHA···Z



BAM BHAM



YB

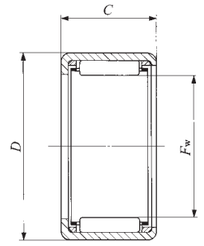
Boundary dimensions mm(inch)				Standard mounting dimensions mm				Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
				Shaft dia. h6		Housing bore dia. J7					
F_w	D	C	t_1 Max.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
31.750 (1 1/4)	38.100 (1 1/2)	12.70(.500)	2.8					9 100	14 700	12 000	**IRB 168**
31.750 (1 1/4)	38.100 (1 1/2)	15.88(.625)	2.8					12 500	22 200	12 000	**IRB 1610**
31.750 (1 1/4)	38.100 (1 1/2)	19.05(.750)	2.8	31.750	31.734	38.114	38.089	15 700	29 600	12 000	**IRB 1612**
31.750 (1 1/4)	38.100 (1 1/2)	25.40(1.000)	2.8					21 500	44 300	12 000	**IRB 1616**
31.750 (1 1/4)	38.100 (1 1/2)	31.75(1.250)	2.8					26 900	59 200	12 000	**IRB 1620**
31.750 (1 1/4)	38.100 (1 1/2)	15.88(.625)	—					27 000	59 000	4 500	**IRB 1610**
31.750 (1 1/4)	38.100 (1 1/2)	19.05(.750)	—					31 800	72 500	4 500	**IRB 1612**
31.750 (1 1/4)	38.100 (1 1/2)	25.40(1.000)	—	31.750	31.734	38.114	38.089	40 900	100 000	4 500	**IRB 1616**
31.750 (1 1/4)	38.100 (1 1/2)	28.58(1.125)	—					45 300	114 000	4 500	—
31.750 (1 1/4)	38.100 (1 1/2)	31.75(1.250)	—					49 400	128 000	4 500	**IRB 1620**
31.750 (1 1/4)	41.275 (1 5/8)	12.70(.500)	3.4					13 700	17 600	12 000	**IRB 168**
31.750 (1 1/4)	41.275 (1 5/8)	19.05(.750)	3.4					24 100	36 400	12 000	**IRB 1612**
31.750 (1 1/4)	41.275 (1 5/8)	25.40(1.000)	3.4	31.750	31.734	41.289	41.264	33 200	55 000	12 000	**IRB 1616**
31.750 (1 1/4)	41.275 (1 5/8)	31.75(1.250)	3.4					40 000	69 600	12 000	**IRB 1620**
33.338 (1 5/16)	41.275 (1 5/8)	12.70(.500)	2.8					11 100	15 800	11 000	**IRB 168-1**
33.338 (1 5/16)	41.275 (1 5/8)	15.88(.625)	2.8	33.338	33.322	41.289	41.264	15 400	23 900	11 000	**IRB 1610-1**
33.338 (1 5/16)	41.275 (1 5/8)	19.05(.750)	2.8					19 300	32 100	11 000	**IRB 1612-1**

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

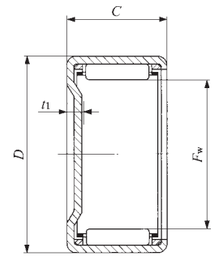
SHELL TYPE NEEDLE ROLLER BEARINGS

Inch Series

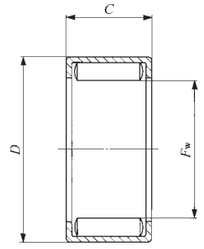




BA···Z BHA···Z



BAM BHAM



YB

Shaft dia. 34.925 — 38.100mm

Shaft dia. mm (inch)	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
34.925 (1 3/8)	BA 228 Z	23.5	BAM 228	29	—	—	—	—	—	—
	BA 2212 Z	35.5	BAM 2212	41	—	—	—	—	—	—
	BA 2216 Z	47.5	BAM 2216	53	—	—	—	—	—	—
	BA 2220 Z	59	BAM 2220	64	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YB 228	30.5
	—	—	—	—	—	—	—	—	YB 2212	46
	—	—	—	—	—	—	—	—	YB 2220	77.5
	—	—	—	—	BHA 228 Z	37	BHAM 228	43	—	—
	—	—	—	—	BHA 2210 Z	44	BHAM 2210	50	—	—
	—	—	—	—	BHA 2212 Z	53	BHAM 2212	59	—	—
	—	—	—	—	BHA 2216 Z	71	BHAM 2216	77	—	—
	—	—	—	—	BHA 2220 Z	87	BHAM 2220	98.5	—	—
38.100 (1 1/2)	BA 248 Z	38.5	BAM 248	47.5	—	—	—	—	—	—
	BA 2410 Z	48.5	BAM 2410	57.5	—	—	—	—	—	—
	BA 2412 Z	58.5	BAM 2412	67.5	—	—	—	—	—	—
	BA 2414 Z	69	BAM 2414	78	—	—	—	—	—	—
	BA 2416 Z	79	BAM 2416	88	—	—	—	—	—	—
	BA 2420 Z	97.5	BAM 2420	106	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	YB 246	38
	—	—	—	—	—	—	—	—	YB 248	51.5
	—	—	—	—	—	—	—	—	YB 2414	91
	—	—	—	—	—	—	—	—	YB 2416	105
	—	—	—	—	—	—	—	—	YB 2420	131

Boundary dimensions mm(inch) 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.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(1) rpm	Assembled inner ring
34.925 (1 3/8)	41.275 (1 5/8)	12.70(.500)	2.8					9 770	16 600	10 000	IRB 188
34.925 (1 3/8)	41.275 (1 5/8)	19.05(.750)	2.8					16 900	33 500	10 000	IRB 1812
34.925 (1 3/8)	41.275 (1 5/8)	25.40(1.000)	2.8					23 100	50 200	10 000	IRB 1816
34.925 (1 3/8)	41.275 (1 5/8)	31.75(1.250)	2.8	34.925	34.909	41.289	41.264	28 900	67 100	10 000	IRB 1820
34.925 (1 3/8)	41.275 (1 5/8)	12.70(.500)	—					23 000	49 500	4 500	IRB 188
34.925 (1 3/8)	41.275 (1 5/8)	19.05(.750)	—					33 400	79 800	4 500	IRB 1812
34.925 (1 3/8)	41.275 (1 5/8)	31.75(1.250)	—					52 000	141 000	4 500	IRB 1820
34.925 (1 3/8)	44.450 (1 3/4)	12.70(.500)	3.4					14 100	18 800	10 000	IRB 188
34.925 (1 3/8)	44.450 (1 3/4)	15.88(.625)	3.4					19 700	28 800	10 000	—
34.925 (1 3/8)	44.450 (1 3/4)	19.05(.750)	3.4	34.925	34.909	44.464	44.439	24 800	38 800	10 000	IRB 1812
34.925 (1 3/8)	44.450 (1 3/4)	25.40(1.000)	3.4					34 100	58 400	10 000	IRB 1816
34.925 (1 3/8)	44.450 (1 3/4)	31.75(1.250)	3.4					41 200	74 200	10 000	IRB 1820
38.100 (1 1/2)	47.625 (1 7/8)	12.70(.500)	2.8					12 900	17 900	9 000	—
38.100 (1 1/2)	47.625 (1 7/8)	15.88(.625)	2.8					17 800	27 100	9 000	IRB 2010
38.100 (1 1/2)	47.625 (1 7/8)	19.05(.750)	2.8					22 500	36 600	9 000	—
38.100 (1 1/2)	47.625 (1 7/8)	22.22(.875)	2.8	38.100	38.084	47.639	47.614	26 700	45 600	9 000	IRB 2014
38.100 (1 1/2)	47.625 (1 7/8)	25.40(1.000)	2.8					31 100	55 400	9 000	IRB 2016
38.100 (1 1/2)	47.625 (1 7/8)	31.75(1.250)	2.8					39 000	74 200	9 000	IRB 2020
38.100 (1 1/2)	47.625 (1 7/8)	9.52(.375)	—					21 000	34 100	4 000	—
38.100 (1 1/2)	47.625 (1 7/8)	12.70(.500)	—					28 700	50 900	4 000	—
38.100 (1 1/2)	47.625 (1 7/8)	22.22(.875)	—	38.100	38.084	47.639	47.614	48 900	101 000	4 000	IRB 2014
38.100 (1 1/2)	47.625 (1 7/8)	25.40(1.000)	—					55 100	118 000	4 000	IRB 2016
38.100 (1 1/2)	47.625 (1 7/8)	31.75(1.250)	—					66 800	151 000	4 000	IRB 2020

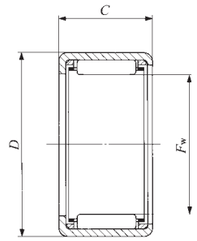
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1mm=0.03937inch

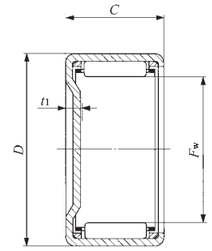
SHELL TYPE NEEDLE ROLLER BEARINGS

Inch Series

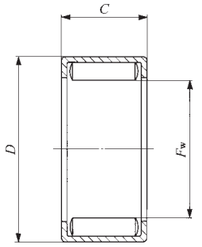




BA···Z BHA···Z



BAM BHAM



YB

Shaft dia. 41.275 — 52.388mm

Shaft dia. mm (inch)	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
41.275 (1 5/8)	**BA 268 Z**	41	**BAM 268**	51.5	—	—	—	—	—	—
	BA 2610 Z	52	**BAM 2610**	62.5	—	—	—	—	—	—
	BA 2616 Z	85	**BAM 2616**	95.5	—	—	—	—	—	—
	BA 2620 Z	105	**BAM 2620**	115	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 2610**	69
44.450 (1 3/4)	**BA 2812 Z**	67.5	**BAM 2812**	79.5	—	—	—	—	—	—
	BA 2816 Z	91	**BAM 2816**	103	—	—	—	—	—	—
	BA 2820 Z	112	**BAM 2820**	125	—	—	—	—	—	—
	BA 2824 Z	136	**BAM 2824**	148	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 2816**	119
	—	—	—	—	**BHA 2824 Z**	195	**BHAM 2824**	210	—	—
47.625 (1 7/8)	**BA 308 Z**	47.5	**BAM 308**	61	—	—	—	—	—	—
	BA 3010 Z	60	**BAM 3010**	74	—	—	—	—	—	—
	BA 3012 Z	72.5	**BAM 3012**	86.5	—	—	—	—	—	—
	BA 3016 Z	97.5	**BAM 3016**	112	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 3012**	95
50.800 (2)	**BA 328 Z**	50	**BAM 328**	66	—	—	—	—	—	—
	BA 3216 Z	104	**BAM 3216**	119	—	—	—	—	—	—
	BA 3220 Z	128	**BAM 3220**	144	—	—	—	—	—	—
	BA 3224 Z	155	**BAM 3224**	170	—	—	—	—	—	—
	BAW3228Z	180	**BAMW3228**	196	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	**YB 3216**	130
52.388 (2 1/16)	—	—	—	—	**BHA 3312 Z**	104	**BHAM 3312**	122	—	—
	—	—	—	—	**BHA 3316 Z**	139	**BHAM 3316**	157	—	—
	—	—	—	—	**BHA 3324 Z**	205	**BHAM 3324**	225	—	—

Boundary dimensions mm(inch) 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.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(1) rpm	Assembled inner ring
41.275 (1 5/8)	50.800 (2)	12.70(.500)	2.8					13 700	19 800	8 000	—
41.275 (1 5/8)	50.800 (2)	15.88(.625)	2.8					18 900	30 000	8 000	**IRB 2210**
41.275 (1 5/8)	50.800 (2)	25.40(1.000)	2.8	41.275	41.259	50.818	50.788	33 000	61 400	8 000	—
41.275 (1 5/8)	50.800 (2)	31.75(1.250)	2.8					41 400	82 100	8 000	**IRB 2220**
41.275 (1 5/8)	50.800 (2)	15.88(.625)	—					37 000	71 700	3 500	**IRB 2210**
44.450 (1 3/4)	53.975 (2 1/8)	19.05(.750)	2.8					25 200	44 500	7 500	**IRB 2412**
44.450 (1 3/4)	53.975 (2 1/8)	25.40(1.000)	2.8					34 800	67 400	7 500	**IRB 2416**
44.450 (1 3/4)	53.975 (2 1/8)	31.75(1.250)	2.8	44.450	44.434	53.993	53.963	43 600	90 200	7 500	—
44.450 (1 3/4)	53.975 (2 1/8)	38.10(1.500)	2.8					52 000	113 000	7 500	**IRB 2424**
44.450 (1 3/4)	53.975 (2 1/8)	25.40(1.000)	—					59 500	136 000	3 500	**IRB 2416**
44.450 (1 3/4)	57.150 (2 1/4)	38.10(1.500)	3.4	44.450	44.434	57.168	57.138	72 200	135 000	7 500	**IRB 2424**
47.625 (1 7/8)	57.150 (2 1/4)	12.70(.500)	2.8					14 700	22 800	7 000	**IRB 248-1**
47.625 (1 7/8)	57.150 (2 1/4)	15.88(.625)	2.8					20 300	34 500	7 000	**IRB 2410-1**
47.625 (1 7/8)	57.150 (2 1/4)	19.05(.750)	2.8	47.625	47.609	57.168	57.138	25 700	46 700	7 000	—
47.625 (1 7/8)	57.150 (2 1/4)	25.40(1.000)	2.8					35 400	70 600	7 000	—
47.625 (1 7/8)	57.150 (2 1/4)	19.05(.750)	—					47 800	105 000	3 000	—
50.800 (2)	60.325 (2 3/8)	12.70(.500)	2.8					15 400	24 700	6 000	—
50.800 (2)	60.325 (2 3/8)	25.40(1.000)	2.8					37 100	76 500	6 000	**IRB 2616**
50.800 (2)	60.325 (2 3/8)	31.75(1.250)	2.8					46 600	102 000	6 000	**IRB 2720**
50.800 (2)	60.325 (2 3/8)	38.10(1.500)	2.8	50.800	50.781	60.343	60.313	55 500	128 000	6 000	—
50.800 (2)	60.325 (2 3/8)	44.45(1.750)	2.8					57 900	136 000	6 000	**IRB 2628**
50.800 (2)	60.325 (2 3/8)	25.40(1.000)	—					64 100	156 000	2 500	**IRB 2616**
52.388 (2 1/16)	64.294 (2 17/32)	19.05(.750)	3.4					36 400	62 100	6 000	—
52.388 (2 1/16)	64.294 (2 17/32)	25.40(1.000)	3.4	52.388	52.369	64.312	64.282	50 600	94 700	6 000	—
52.388 (2 1/16)	64.294 (2 17/32)	38.10(1.500)	3.4					73 900	154 000	6 000	—

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.

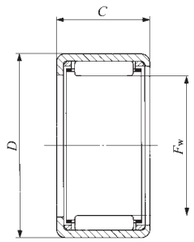
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1mm=0.03937inch

SHELL TYPE NEEDLE ROLLER BEARINGS

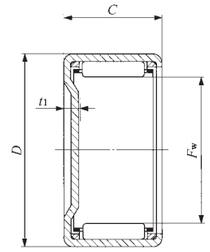
Inch Series







BA···Z



BAM

Shaft dia. 53.975 — 69.850mm

Shaft dia. mm (inch)	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
53.975 (2 1/8)	**BA 348 Z**	53	**BAM 348**	70.5	—	—	—	—	—	—
	BA 3416 Z	109	**BAM 3416**	127	—	—	—	—	—	—
	BA 3424 Z	162	**BAM 3424**	180	—	—	—	—	—	—
57.150 (2 1/4)	**BA 3612 Z**	85.5	**BAM 3612**	105	—	—	—	—	—	—
	BA 3616 Z	115	**BAM 3616**	135	—	—	—	—	—	—
	BA 3620 Z	143	**BAM 3620**	163	—	—	—	—	—	—
	BA 3624 Z	172	**BAM 3624**	192	—	—	—	—	—	—
66.675 (2 5/8)	**BA 4216 Z**	133	**BAM 4216**	161	—	—	—	—	—	—
69.850 (2 3/4)	**BA 4410 Z**	85.5	**BAM 4410**	115	—	—	—	—	—	—
	BA 4412 Z	103	**BAM 4412**	133	—	—	—	—	—	—
	BA 4416 Z	139	**BAM 4416**	169	—	—	—	—	—	—
	BA 4420 Z	173	**BAM 4420**	205	—	—	—	—	—	—

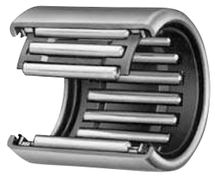
Boundary dimensions mm(inch)				Standard mounting dimensions mm				Basic dynamic load rating	Basic static load rating	Allowable rotational speed(1)	Assembled inner ring
				Shaft dia. h6		Housing bore dia. J7					
F_w	D	C	t_1 Max.	Max.	Min.	Max.	Min.	C N	C_0 N	rpm	
53.975 (2 1/8)	63.500 (2 1/2)	12.70(.500)	2.8	53.975	53.956	63.518	63.488	16 100	26 600	5 500	—
53.975 (2 1/8)	63.500 (2 1/2)	25.40(1.000)	2.8					38 700	82 500	5 500	**IRB 3016**
53.975 (2 1/8)	63.500 (2 1/2)	38.10(1.500)	2.8					57 900	138 000	5 500	**IRB 3024**
57.150 (2 1/4)	66.675 (2 5/8)	19.05(.750)	2.8	57.150	57.131	66.693	66.663	28 500	56 700	5 000	—
57.150 (2 1/4)	66.675 (2 5/8)	25.40(1.000)	2.8					39 300	85 700	5 000	—
57.150 (2 1/4)	66.675 (2 5/8)	31.75(1.250)	2.8					49 400	115 000	5 000	—
57.150 (2 1/4)	66.675 (2 5/8)	38.10(1.500)	2.8					58 800	144 000	5 000	—
66.675 (2 5/8)	76.200 (3)	25.40(1.000)	2.8	66.675	66.656	76.218	76.188	42 000	97 900	4 000	**IRB 3616**
69.850 (2 3/4)	79.375 (3 1/8)	15.88(.625)	2.8	69.850	69.831	79.393	79.363	25 000	50 800	3 500	—
69.850 (2 3/4)	79.375 (3 1/8)	19.05(.750)	2.8					31 500	68 700	3 500	—
69.850 (2 3/4)	79.375 (3 1/8)	25.40(1.000)	2.8					43 500	104 000	3 500	**IRB 4016**
69.850 (2 3/4)	79.375 (3 1/8)	31.75(1.250)	2.8					54 600	139 000	3 500	**IRB 4020**

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

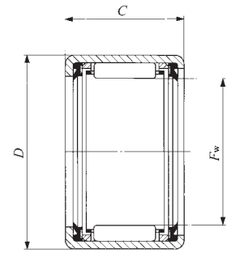
With seals



Shaft dia. 12 — 50mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm F_w	D	C	Standard mounting dimensions mm Shaft dia. h6 Max.	Min.	Housing bore dia. N7 Max.	Min.	Basic dynamic load rating C N	Basic static load rating C_0 N	Allowable rotational speed(1) rpm
12	**TLA 1216 UU**	11.7	12	18	16	12.000	11.989	17.995	17.977	6 420	7 490	14 000
14	**TLA 1416 UU**	13.3	14	20	16	14.000	13.989	19.993	19.972	7 080	8 840	12 000
15	**TLA 1516 UU**	14	15	21	16	15.000	14.989	20.993	20.972	7 380	9 520	11 000
16	**TLA 1616 UU**	14.8	16	22	16	16.000	15.989	21.993	21.972	7 670	10 200	11 000
18	**TLA 1816 UU**	16.3	18	24	16	18.000	17.989	23.993	23.972	8 230	11 500	9 000
20	**TLA 2016 UU** **TLA 2020 UU**	17.8 22.5	20 20	26 26	16 20	20.000	19.987	25.993	25.972	8 740 11 100	12 900 17 500	9 000 9 000
22	**TLA 2216 UU** **TLA 2220 UU**	19.4 25	22 22	28 28	16 20	22.000	21.987	27.993	27.972	9 230 11 700	14 300 19 300	8 000 8 000
25	**TLA 2516 UU** **TLA 2520 UU**	26 33	25 25	32 32	16 20	25.000	24.987	31.992	31.967	9 440 12 800	13 900 20 500	7 000 7 000
28	**TLA 2820 UU**	36.5	28	35	20	28.000	27.987	34.992	34.967	13 800	23 500	6 000
30	**TLA 3016 UU** **TLA 3020 UU**	30.5 39	30 30	37 37	16 20	30.000	29.987	36.992	36.967	10 400 14 100	16 600 24 500	5 500 5 500
35	**TLA 3516 UU** **TLA 3520 UU**	35 45	35 35	42 42	16 20	35.000	34.984	41.992	41.967	11 600 15 700	20 000 29 600	5 000 5 000
40	**TLA 4016 UU** **TLA 4020 UU**	39.5 50.5	40 40	47 47	16 20	40.000	39.984	46.992	46.967	12 400 16 700	22 800 33 700	4 500 4 500
45	**TLA 4520 UU**	56	45	52	20	45.000	44.984	51.991	51.961	17 800	37 800	4 000
50	**TLA 5026 UU**	89	50	58	26	50.000	49.984	57.991	57.961	28 800	64 100	3 500

Note(1) Allowable rotational speed applies to grease lubrication.
Remark The type with seals is provided with prepacked grease.



TLA···UU