

# NEEDLE ROLLER BEARINGS WITH SEPARABLE CAGE

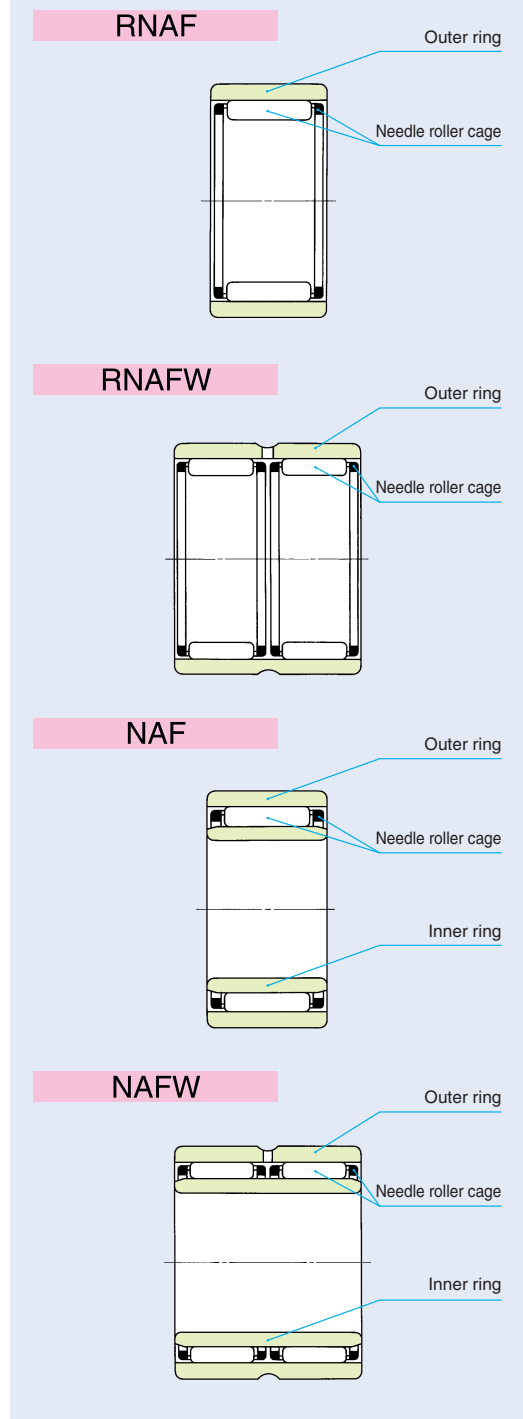
- Needle Roller Bearings with Separable Cage - Without Inner Ring
- Needle Roller Bearings with Separable Cage - With Inner Ring



## Structure and Features

In IKO Needle Roller Bearings with Separable Cage, the inner ring, outer ring and IKO Needle Roller Cage are combined, and they can be separated easily. This type has a simple structure with high accuracy. In addition, the radial clearance can be freely chosen by selecting and combining these component parts. As Needle Roller Cages are used, these bearings have excellent rotational performance. These bearings are most suitable for mass-production high accuracy products such as machine tools, textile machinery, and printing machines.

Structures of Needle Roller Bearings with Separable Cage



## Types

Needle Roller Bearings with Separable Cage are available in the types shown in Table 1.

Table 1 Type of bearing

Type	Single-row		Double-row	
	Without inner ring	With inner ring	Without inner ring	With inner ring
Model code	RNAF	NAF	RNAFW	NAFW

### Needle Roller Bearings with Separable Cage - Without Inner Ring

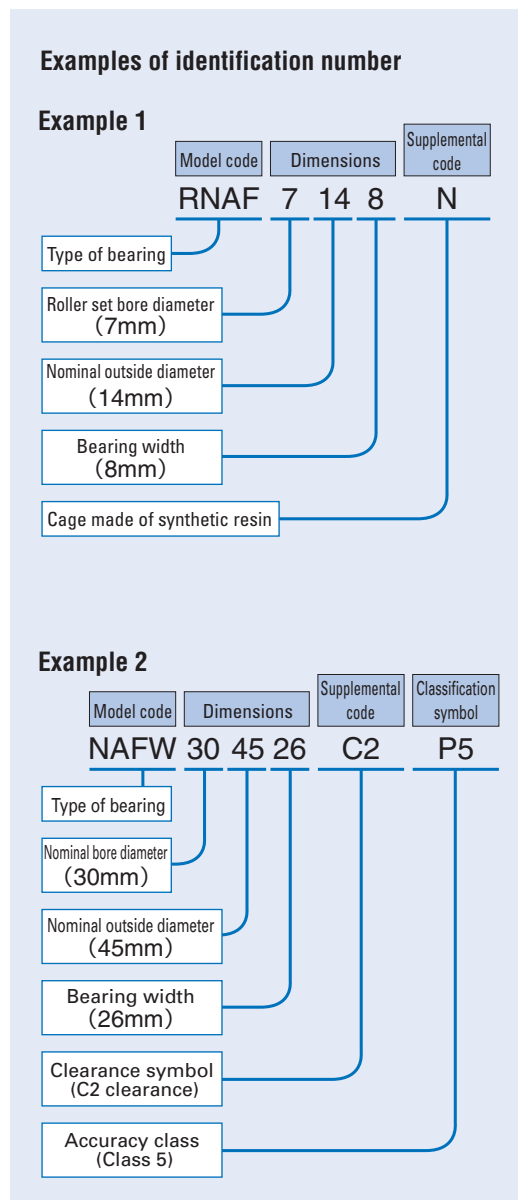
The single-row as well as the double-row types are available with the same sectional height, and either of them can be selected according to load conditions. As shown in the section, "Design of shaft and housing" on page A44, any desired radial internal clearance can be selected by combining a shaft which is heat-treated and finished by grinding.

### Needle Roller Bearings with Separable Cage - With Inner Ring

These bearings are made to the CN clearance shown in Table 19 on page A37. When especially high accuracy is required, it is possible to supply semi-finished inner rings which have a finishing allowance on their outside diameter so that they can be ground after being press-fitted to shafts.

## Identification Number

The identification number of Needle Roller Bearings with Separable Cage consists of a model code, dimensions, any supplemental codes and a classification symbol. The arrangement examples are as follows.



## Accuracy

Needle Roller Bearings with Separable Cage are manufactured to the accuracy based on JIS (See page A31.). Tolerances for the smallest single roller set bore diameter of bearings without inner ring are based on Table 14 on page A33.

## Clearance

Radial internal clearances of Needle Roller Bearings with Separable Cage are made to the CN clearance shown in Table 18 on page A37.

## Fit

Recommended fits for Needle Roller Bearings with Separable Cage are shown in Tables 21 to 23 on pages A41 and A42.

## Lubrication

Needle Roller Bearings with Separable Cage are not provided with prepacked grease. Perform proper lubrication for use. Using them without lubrication will increase the wear of the rolling contact surfaces and shorten their lives.

## Oil Hole

The double-row type outer rings have both an oil hole and an oil groove, but the single-row type outer rings do not. When outer rings with an oil hole are required, attach "-OH" before the clearance symbol in the identification number, and when outer rings with both an oil hole and an oil groove are required, attach "-OG" to the same position.

Example: NAF 203517 - OH C2 P6

When outer rings with multiple oil holes or inner rings with oil hole(s) are required, please contact IKO.

## Operating temperature range

For synthetic resin cages, "N" is added at the end of the identification number. The operating temperature range for Needle Roller Bearings with Separable Cage is -20 ~ +120°C. However, the maximum allowable temperature for synthetic resin cages is +110°C, and when they are continuously operated, it is +100°C.

## Mounting

Mounting examples of Needle Roller Bearings with Separable Cage are shown in Fig.1.

When mounting Needle Roller Bearings with Separable Cage, it is necessary to locate the needle cage axially. The needle cage is guided by shoulders of the shaft and housing or by side plates, and their guide surfaces must be heat-treated and finished by grinding at right angles to the shaft central axis. Dimensions related to mounting are shown in the table of dimensions.

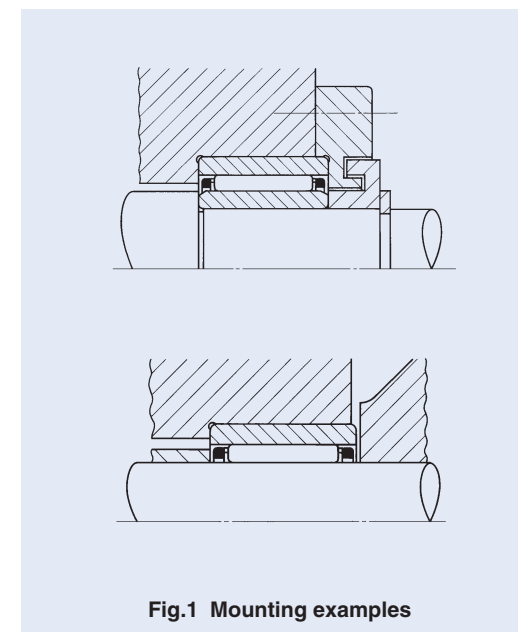
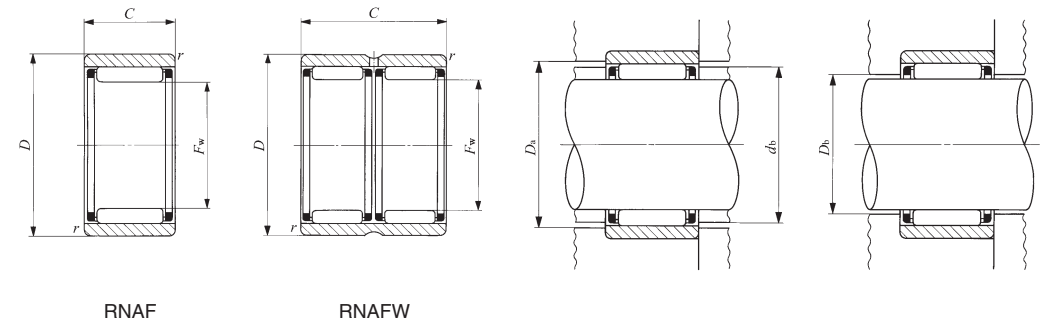


Fig.1 Mounting examples

**NEEDLE ROLLER BEARINGS WITH SEPARABLE CAGE**

Without Inner Ring



Shaft dia. 20 – 40mm

Shaft dia. mm	Identification number	Mass (Ref.) g	Boundary dimensions mm				Standard mounting dimensions mm			Basic dynamic load rating <i>C</i> N	Basic static load rating <i>C</i> <sub>0</sub> N
			<i>F</i> <sub>w</sub>	<i>D</i>	<i>C</i>	<i>r</i> <sub>s min</sub> <sup>(1)</sup>	<i>d</i> <sub>b</sub>	<i>D</i> <sub>a</sub> Max.	<i>D</i> <sub>b</sub>		
20	<b>RNAF 202813</b>	25	20	28	13	0.3	23.6	26	20.6	9 590	13 500
	<b>RNAFW 202826</b>	49.5	20	28	26	0.3	23.6	26	20.6	16 400	27 100
	<b>RNAF 203212</b>	37.5	20	32	12	0.3	25.4	30	20.6	12 400	14 300
	<b>RNAFW 203224</b>	75	20	32	24	0.3	25.4	30	20.6	21 200	28 600
22	<b>RNAF 223013</b>	27	22	30	13	0.3	25.6	28	22.6	10 200	15 200
	<b>RNAFW 223026</b>	53.5	22	30	26	0.3	25.6	28	22.6	17 500	30 300
	<b>RNAF 223516</b>	58.5	22	35	16	0.3	27.8	33	22.6	17 600	20 900
	<b>RNAFW 223532</b>	117	22	35	32	0.3	27.8	33	22.6	30 200	41 800
25	<b>RNAF 253517</b>	51	25	35	17	0.3	29.5	33	25.6	17 300	26 600
	<b>RNAFW 253526</b>	78	25	35	26	0.3	29.5	33	25.6	22 400	37 200
	<b>RNAF 253716</b>	57	25	37	16	0.3	30.4	35	25.6	19 400	24 500
	<b>RNAFW 253732</b>	114	25	37	32	0.3	30.4	35	25.6	33 200	49 000
28	<b>RNAF 284016</b>	62.5	28	40	16	0.3	33.4	38	28.6	20 100	26 500
	<b>RNAFW 284032</b>	125	28	40	32	0.3	33.4	38	28.6	34 400	53 000
30	<b>RNAF 304017</b>	59	30	40	17	0.3	34.5	38	30.6	18 700	31 100
	<b>RNAFW 304026</b>	90.5	30	40	26	0.3	34.5	38	30.6	24 200	43 400
	<b>RNAF 304216</b>	66	30	42	16	0.3	35.4	40	30.6	20 800	28 400
	<b>RNAFW 304232</b>	132	30	42	32	0.3	35.4	40	30.6	35 700	56 800
35	<b>RNAF 354517</b>	67.5	35	45	17	0.3	39.5	43	35.6	20 500	36 900
	<b>RNAFW 354526</b>	103	35	45	26	0.3	39.5	43	35.6	26 600	51 500
	<b>RNAF 354716</b>	75.5	35	47	16	0.3	40.4	45	35.6	23 100	33 900
	<b>RNAFW 354732</b>	151	35	47	32	0.3	40.4	45	35.6	39 500	67 800
40	<b>RNAF 405017</b>	76	40	50	17	0.3	43.5	48	40.8	22 200	42 700
	<b>RNAFW 405034</b>	152	40	50	34	0.3	43.5	48	40.8	38 000	85 400
	<b>RNAF 405520</b>	140	40	55	20	0.3	45.2	53	40.8	31 400	48 000
	<b>RNAFW 405540</b>	280	40	55	40	0.3	45.2	53	40.8	53 900	96 000

Notes<sup>(1)</sup> Minimum allowable value of chamfer dimension *r*  
<sup>(2)</sup> Allowable rotational speed applies to oil lubrication. For grease lubrication, a maximum of 50% of this value is allowable.  
 Remarks1. RNAF has no oil hole. RNAFW is provided with an oil groove and an oil hole on the outer ring.  
 2. No grease is prepacked. Perform proper lubrication.

Allowable rotational speed <sup>(2)</sup> rpm
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