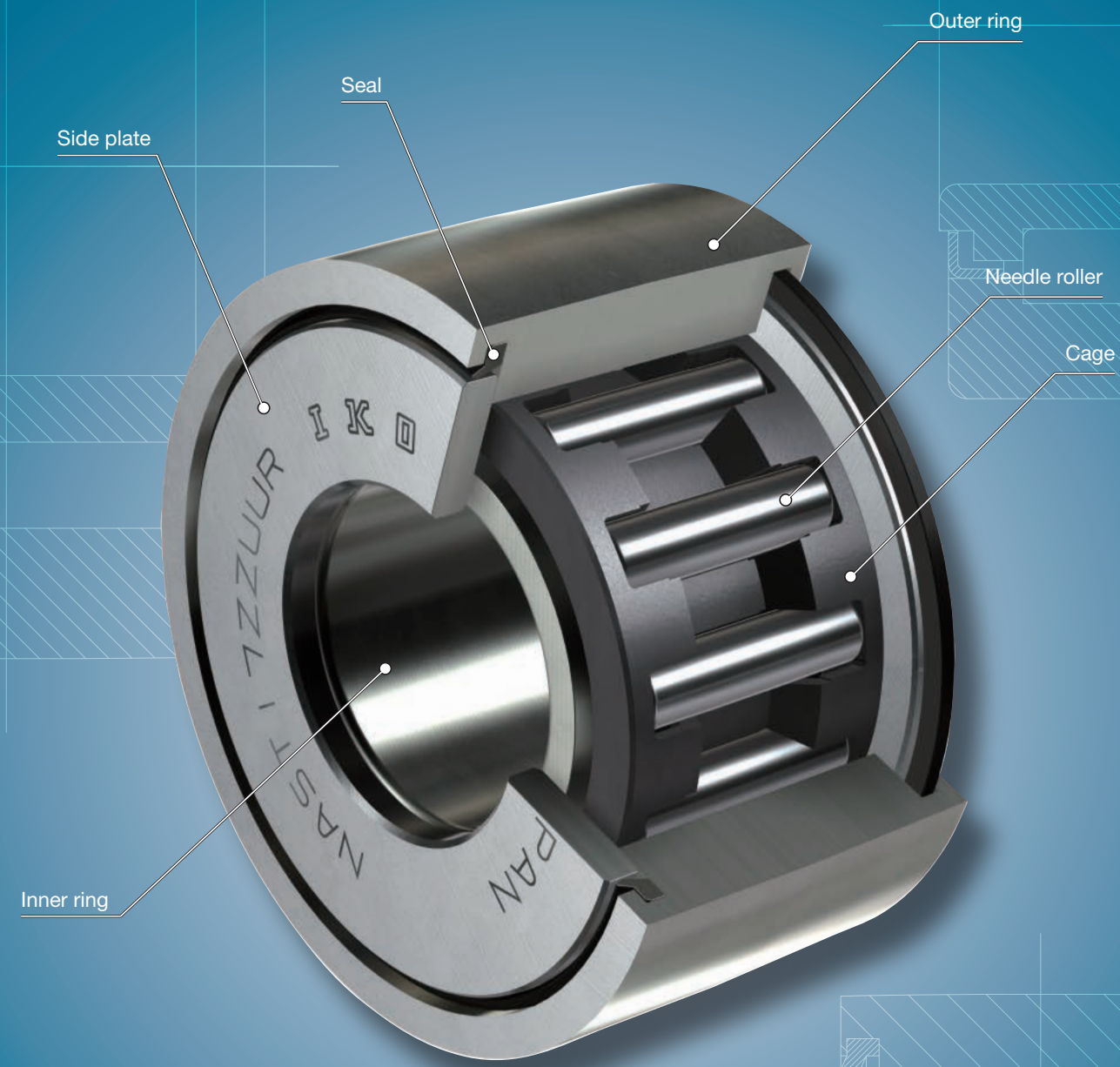


Roller Followers



Reliable and proven Roller Followers series!

Roller Followers are bearings with needle rollers in the thick outer ring and designed for rotation of the outer ring. There are separable/non-separable model, Cylindrical Roller Followers, and other models. Roller Followers are widely used as follower bearings of various cam mechanisms and guide rollers for linear motion of transfer machine.

Identification Number and Specification

Example of an Identification Number

The specification of Roller Followers series is indicated by the identification number. In addition, for application of roller guide type, seal structure and shape of outer ring outside surface to each models, refer to the dimension table.

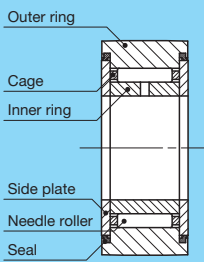
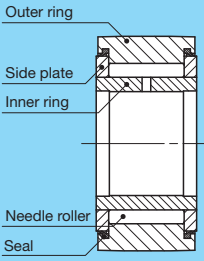
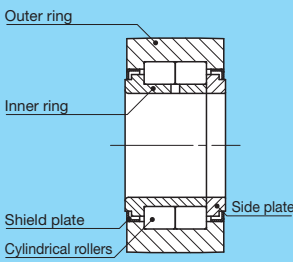
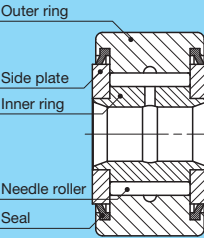
	1	2	3	4	5
Arrangement example 1	NAST	10		ZZUU	R
Arrangement example 2	NART	10	V	UU	R
Arrangement example 3	NURT	15			R
Arrangement example 4	CRY	12	V	UU	R

1 Model	Page II -293
2 Dimensions	Page II -293
3 Roller guide type	Page II -294
4 Seal structure	Page II -294
5 Shape of outer ring outside surface	Page II -294

1	Model	Separable Roller Followers	Without inner ring	: RNAS
			With inner ring	: NAS
		Non-separable Roller Followers		: NART
		Cylindrical Roller Followers		: NURT
		Inch series Non-separable Roller Followers		: CRY
		For applicable models and dimensions, see Table 1.		

2	Dimensions	Indicates the inner ring bore diameter.(unit: mm) For inch series, outer ring outside diameter are indicated in 1/16 inch.
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Table 1 Models and dimensions

Shape	Model	Characteristics	Inner ring bore diameter
Separable Roller Followers 	RNAS NAS	This type has a structure combining the outer ring, the inner ring, and the needle cage and offers excellent high-speed rotation performance. In addition, each part is separable and has handleability. The inner ring is not provided for RNAS. The inner ring is provided for NAS.	7 to 60 mm
Non-separable Roller Followers 	NART	This non-separable bearing has a press-fitted side plate at both sides of the inner ring. Caged type and full complement type are available for your use.	5 to 50 mm
Cylindrical Roller Followers 	NURT	The full complement type bearing with double row cylindrical rollers incorporated in the outer ring can receive large radial load and some axial load.	15 to 50 mm
Inch series Non-separable Roller Followers 	CRY	This is inch series Roller Followers of NART with black oxide film treatment.	6.350 to 31.750 mm

3	Roller guide type (1)	Caged type	: No symbol	As caged type has smaller friction coefficient, it is suited for high-speed rotation. Full complement type is suited for sections where low-speed rotation, oscillatory movement or heavy load exists.
		Full complement type	: V	
Note (1) Cylindrical Roller Followers are full complement type with no symbol.				

4	Seal structure	Separable Roller Followers		Shield is shaped so that clearance between the outer ring and stud flange and between the outer ring and side plate become smaller and labyrinth is formed.
		Open type	: No symbol	
		Shield type	: ZZ	
		Sealed type	: ZZUU	The sealed type incorporates the seal structure, which can prevent foreign substances from entering.
		Other than Separable Roller Followers		
		Shield type	: No symbol	
		Sealed type	: UU	

5	Shape of outer ring outside surface	Cylindrical outer ring	: No symbol	Crowned outer ring is effective for mitigation of end load generated due to installation errors. Cylindrical outer ring is suited if the applied load is large or hardness of cam guide surface is low.
		Crowned outer ring	: R	

Load Rating and Life

Basic dynamic load rating C

Basic dynamic load rating refers to a static radial load with a certain direction and size with which 90% of a group of the same Roller Followers can run one million rotations without material damages due to rolling contact fatigue when they are operated in the same conditions.

Basic static load rating C0

Basic static load rating refers to a static radial load with a certain direction and size with a certain contact stress at the center of contact parts of the rolling elements and a raceway under maximum load.

Life

The basic rating life calculation formulas are shown below.

L10 = (C / Pr)^10/3

where, L10 : Basic rating life 10^6rev.
C : Basic dynamic load rating N
Pr : Dynamic equivalent radial load N

Therefore, life time can be calculated by applying the rotational speed to the formula below.

Lh = (10^6 L10) / (60n)

where, Lh : Basic rating life represented as time h
n : Rotational speed min^-1

Static safety factor

Static safety factor can be obtained by the following equation and typical values are indicated in Table 2.

fs = C0 / Por

where, fs : Static safety factor
C0 : Basic static load rating N
Por : Static equivalent radial load (maximum load) N

Table 2 Static safety factor

Bearing use conditions	fs
When high rotation accuracy is required	≥3
Normal operating conditions	≥1.5
When smooth operations are not required with a high priority under normal operating conditions When it is rarely rotated	≥1

Load factor

Load actually applied on the Roller Followers becomes larger than load theoretically calculated from vibration and shock. Therefore, multiply the load by the load factor indicated in the Table 3.

Table 3 Load factor

Operating condition	fw
Smooth operation free from shock	1 ~1.2
Normal operation	1.2~1.5
Operation with shock load	1.5~3

Maximum Allowable Static Load

A load that Roller Followers can handle may depend on the strength of the outer ring rather than the load rating as a needle roller bearing. For this reason the maximum allowable static load is defined.

Accuracy

Accuracy of Roller Followers is shown in Tables 4, 5.1, 5.2, and 5.3.The tolerance of the smallest single roller set bore diameter of separable Roller Followers is shown in Table 6.We also provide special accuracy class product. For details, please contact **IKO**.

Table 4 Tolerance

Series		Metric series		Inch series	
		Crowned outer ring	Cylindrical outer ring	Crowned outer ring	Cylindrical outer ring
Bore diameter of inner ring d	d ≤19.05	See Table 5.1		+ 5 - 10	+ 5 - 10
	19.05 < d			+ 2 - 12	
Outside diameter of outer ring D		0 - 50	See Table 5.2	0 - 50	See Table 5.3
Width of outer ring C		0 - 120		0 - 130	
Width of inner ring B		0 - 120		-	
Width of bearing B	Separable Roller Followers	0 - 120		-	
	Non-separable Roller Followers	h12	-	+ 130 - 250	
	Cylindrical Roller Followers		h12		
Roller set bore diameter Fw		Separable Roller Followers		See Table 6	
				-	

Table 5.1 Tolerance and allowance of inner ring (metric series)

d		Δdmp		Vdsp	Vdmp	Kia	VBs
Nominal bore dia. mm		Single plane mean bore dia. deviation		Bore dia. variation in a single radial plane (Maximum)	Mean bore dia. variation (Maximum)	Radial runout (Maximum)	Width variation (Maximum)
Over	Incl.	High	Low				
2.5	10	0	- 8	10	6	10	15
10	18	0	- 8	10	6	10	20
18	30	0	- 10	13	8	13	20
30	50	0	- 12	15	9	15	20

Table 5.2 Tolerance and allowance of outer ring (metric series cylindrical outer ring)

D		ΔDmp		VDisp	VDmp	Kca	Vcs
Nominal outside dia. of outer ring mm		Single plane mean outside dia. deviation		Outside dia. variation in a single radial plane (Maximum)	Mean outside dia. variation (Maximum)	Radial runout (Maximum)	Width variation (Maximum)
Over	Incl.	High	Low				
6	18	0	- 8	10	6	15	See the allowance of VBs for the same bearing d.
18	30	0	- 9	12	7	15	
30	50	0	- 11	14	8	20	
50	80	0	- 13	16	10	25	
80	120	0	- 15	19	11	35	

Table 5.3 Tolerance and allowance of outer ring (inch series and cylindrical outer ring) unit: μm

D Nominal outside dia. of outer ring mm		ΔD_{mp} Single plane mean outside dia. deviation		$V_{D_{\text{op}}}$ Outside dia. variation in a single radial plane (Maximum)	$V_{D_{\text{mp}}}$ Mean outside dia. variation (Maximum)	K_{ca} Radial runout (Maximum)
Over	Incl.	High	Low			
6	18	0	−25	10	6	15
18	30			12	7	15
30	50			14	8	20
50	80			16	10	25
80	120			19	11	35

Table 6 Tolerance of smallest single roller set bore diameter $F_{\text{ws min}}$ unit: μm

F_{w} Nominal roller set bore diameter mm		$\Delta F_{\text{ws min}}$ Deviation of smallest single roller set bore diameter	
Over	Incl.	High	Low
6	10	+22	+13
10	18	+27	+16
18	30	+33	+20
30	50	+41	+25
50	80	+49	+30

Radial Internal Clearance

Radial internal clearance of Roller Followers is indicated in the Table 7.

Table 7 Radial internal clearance value unit: μm

Identification number ⁽¹⁾				Radial internal clearance	
Metric series			Inch series	Minimum	Maximum
Separable Roller Followers	Non-separable Roller Followers	Cylindrical Roller Followers	Non-separable Roller Followers		
NAST 6R	NART 5R	—	—	5	20
NAST 8R to NAST12R	NART 6R to NART12R	—	—	5	25
NAST15R to NAST25R	NART15R to NART20R	—	—	10	30
NAST30R to NAST40R	NART25R to NART40R	—	—	10	40
NAST45R, NAST50R	NART45R, NART50R	—	—	15	50
—	—	NURT15R to NURT30-1R	—	20	45
—	—	NURT35R to NURT40-1R	—	25	50
—	—	NURT45R to NURT50-1R	—	30	60
—	—	—	CRY12R to CRY56R	35	60
—	—	—	CRY64R	45	70

Note ⁽¹⁾ Also applicable to the full complement type, the shield and sealed types, and the cylindrical outer ring type.

Roller Followers are generally used for outer ring rotation load. A recommended fit with a shaft is shown in Table 8. Inch series is described in the dimension table.

Table 8 Recommended fit (metric series)

Model of bearing		Tolerance class of shaft
Separable Roller Followers	Without inner ring	k5, k6
	With inner ring	g6, h6
Non-separable Roller Followers		
Cylindrical Roller Followers		

Track Capacity

Track capacity refers to allowable load with which the mating member material can continuously endure the contact between Roller Followers outer ring and steel mating cam guide surface (plane) without generating deformation or indentation. Track capacities indicated in the Table 9.1 and Table 9.2 are values on the assumption that hardness of the mating member material is 40HRC (tensile strength: 1250 N/mm²)

and if hardness is not 40HRC, these values must be multiplied by track capacity factors indicated in the Table 10. If the lubrication between outer ring and mating cam guide surface is not sufficient, seizure and wear may be generated depending on use conditions. Special care is required for lubrication and surface roughness at high rotational speed of the cam mechanism, etc.

Table 9.1 Track capacity (metric series) unit: N

Crowned outer ring				Cylindrical outer ring					
Identification number ⁽¹⁾			Track capacity	Identification number	Track capacity	Identification number ⁽²⁾	Track capacity	Identification number	Track capacity
Separable Roller Followers	Non-separable Roller Followers	Cylindrical Roller Followers							
RNAST 5R	NART 5R	—	1 040	RNAST 5	2 310	—	—	—	—
(R) NAST 6R	NART 6R	—	1 330	(R) NAST 6	3 550	NAST 6ZZ	3 550	—	—
(R) NAST 8R	NART 8R	—	1 850	(R) NAST 8	3 980	NAST 8ZZ	4 490	—	—
(R) NAST10R	NART10R	—	2 470	(R) NAST10	5 610	NAST10ZZ	6 890	—	—
(R) NAST12R	NART12R	—	2 710	(R) NAST12	5 990	NAST12ZZ	7 350	—	—
(R) NAST15R	NART15R	NURT15 R	3 060	(R) NAST15	6 550	NAST15ZZ	8 030	NURT 15	11 500
—	—	NURT15-1R	3 910	—	—	—	—	NURT 15-1	13 700
(R) NAST17R	NART17R	NURT17 R	3 660	(R) NAST17	10 900	NAST17ZZ	11 700	NURT 17	13 600
—	—	NURT17-1R	4 530	—	—	—	—	NURT 17-1	16 000
(R) NAST20R	NART20R	NURT20 R	4 530	(R) NAST20	12 800	NAST20ZZ	13 800	NURT 20	20 000
—	—	NURT20-1R	5 190	—	—	—	—	NURT 20-1	22 100
(R) NAST25R	NART25R	NURT25 R	5 190	(R) NAST25	14 100	NAST25ZZ	15 300	NURT 25	22 100
—	—	NURT25-1R	6 580	—	—	—	—	NURT 25-1	26 400
(R) NAST30R	NART30R	NURT30 R	6 580	(R) NAST30	22 100	NAST30ZZ	22 100	NURT 30	31 600
—	—	NURT30-1R	8 020	—	—	—	—	NURT 30-1	36 700
(R) NAST35R	NART35R	NURT35 R	8 020	(R) NAST35	25 700	NAST35ZZ	25 700	NURT 35	36 700
—	—	NURT35-1R	9 220	—	—	—	—	NURT 35-1	40 800
(R) NAST40R	NART40R	NURT40 R	9 220	(R) NAST40	26 900	NAST40ZZ	30 300	NURT 40	44 200
—	—	NURT40-1R	10 800	—	—	—	—	NURT 40-1	49 700
(R) NAST45R	NART45R	NURT45 R	9 990	(R) NAST45	28 500	NAST45ZZ	32 200	NURT 45	47 000
—	—	NURT45-1R	12 400	—	—	—	—	NURT 45-1	55 300
(R) NAST50R	NART50R	NURT50 R	10 800	(R) NAST50	30 200	NAST50ZZ	34 000	NURT 50	49 700
—	—	NURT50-1R	14 000	—	—	—	—	NURT 50-1	60 800

Note ⁽¹⁾ Also applicable to the full complement type and the shield and sealed type.
⁽²⁾ Also applicable to the sealed type.

Table 9.2 Track capacity (inch series) unit: N

Crowned outer ring		Cylindrical outer ring	
Identification number ⁽¹⁾	Track capacity	Identification number ⁽¹⁾	Track capacity
CRY12 R	853	CRY12	4 490
CRY14 R	1 050	CRY14	5 240
CRY16 R	1 420	CRY16	7 270
CRY18 R	1 660	CRY18	7 700
CRY20 R	2 160	CRY20	10 700
CRY22 R	2 450	CRY22	11 800
CRY24 R	3 410	CRY24	15 400
CRY26 R	3 820	CRY26	16 700
CRY28 R	4 210	CRY28	21 000
CRY30 R	4 610	CRY30	22 500
CRY32 R	5 690	CRY32	30 800
CRY36 R	6 640	CRY36	34 700
CRY40 R	8 970	CRY40	44 900
CRY44 R	10 200	CRY44	49 400
CRY48 R	11 400	CRY48	64 300
CRY52 R	12 700	CRY52	69 600
CRY56 R	14 100	CRY56	87 000
CRY64 R	16 800	CRY64	113 000

Note ⁽¹⁾ Also applicable to the sealed type.

Table 10 Track capacity factor

Hardness HRC	Tensile strength N/mm²	Track capacity factor	
		Crowned outer ring	Cylindrical outer ring
20	760	0.22	0.37
25	840	0.31	0.46
30	950	0.45	0.58
35	1 080	0.65	0.75
38	1 180	0.85	0.89
40	1 250	1.00	1.00
42	1 340	1.23	1.15
44	1 435	1.52	1.32
46	1 530	1.85	1.51
48	1 635	2.27	1.73
50	1 760	2.80	1.99
52	1 880	3.46	2.29
54	2 015	4.21	2.61
56	2 150	5.13	2.97
58	2 290	6.26	3.39

Allowable Rotational Speed

The allowable rotational speed for Roller Followers is affected by mounting and use conditions. For dn value with only pure radial load applied, use values in Table 11 or lower as references. Under actual use conditions, it is recommended to use dn , one tenth of indicated values, taking into account the effect of axial load.

Table 11 dn value ⁽¹⁾ of Roller Followers

Lubrication	Grease lubrication	Oil lubrication
Model of bearing		
Caged type	84 000	140 000
Full complement type	42 000	70 000
Cylindrical Roller Followers	72 000	120 000

Note ⁽¹⁾ dn value = $d \times n$
where, d : Bearing bore diameter mm
 n : Rotational speed min⁻¹

Lubrication

Alvania Grease S2 [SHOWA SHELL SEKIYU K. K.] is pre-packed as lubrication grease in the sealed type of Roller Followers, Cylindrical Roller Followers, and Inch series Roller Followers. Feed grease or oil from the oil hole on the inner ring to use the bearing without pre-packed grease. Otherwise, increased wear on the rolling contact surface and/or short life time may be resulted.

Oil hole

An oil hole is not provided for the open type of Separable Roller Followers. As for the other metric series Roller Followers, one oil hole is provided. An oil groove and one oil hole are provided for the inner ring of the inch series.

Operating Temperature Range

Roller Followers can be used in an environment between -20 and 120°C. For usage exceeding 100°C, please contact **IKO**. The sealed type can withstand up to 100°C. For continuous usage, please keep it under 80°C.

Mounting

- 1 Mount the mounting part of the shield/sealed type according to the a dimensions in the dimension table.(See Fig. 1)
- 2 When mounting Roller Followers, make sure that the oil hole on the inner ring does not enter the loading area. Otherwise, product life may become shorter.(See Fig. 2)
- 3 When mounting the sealed type of Separable Roller Followers, make sure that the side plate does not come off. If the side plate comes off, make sure not to have the seal lip bitten when mounting it.
- 4 If using a bearing without the inner ring, it is necessary to have the bearing heat-treated and ground. At this time, the shaft surface hardness of 58 to 64 HRC and the shaft surface roughness of 0.2 μmR_a or less is recommended. In addition, it is ideal to have the side surface of the mounting part ground because the outer ring and the cage are guided in the axial direction by the side surface. At a minimum, make the surface turned or processed similarly.(See Fig. 3)
- 5 When mounting Non-separable Roller Followers, make sure not to push the side plate because it is press-fitted.

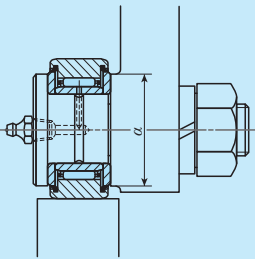


Fig. 1 Mating seating dimension "a"

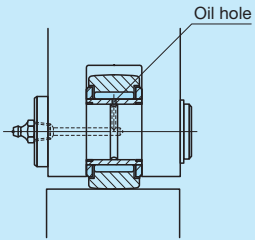


Fig. 2 Oil hole location and loading direction

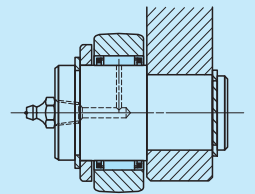
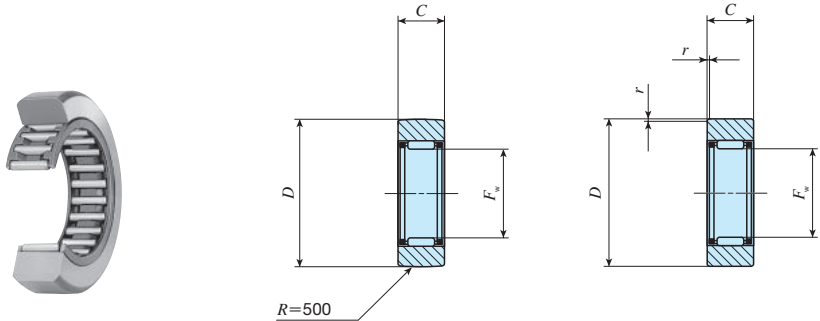


Fig. 3 Mounting example of bearing without inner ring

IKO Separable Roller Followers · Open Type · Without Inner Ring

Selectable product specifications

Roller guide type	No symbol	 Caged type
	V	 Full complement type
Seal structure	No symbol	 Open Type
	ZZ	 Shield type
	ZZUU	 Sealed type
Shape of outer ring outside surface	No symbol	 Cylindrical outer ring
	R	 Crowned outer ring



RNAS...R

RNAS

Shaft diameter	Identification number		Mass (Ref.)	Nominal dimensions mm				Basic dynamic load rating	Basic static load rating
	Open Type			F_w	D	C	$r_{s\min}^{(1)}$		
	Crowned outer ring	Cylindrical outer ring							
mm									
7	RNAST 5 R	RNAST 5	8.9	7	16	7.8	0.3	2 710	2 390
10	RNAST 6 R	RNAST 6	13.9	10	19	9.8	0.3	4 160	4 550
12	RNAST 8 R	RNAST 8	23.5	12	24	9.8	0.6	5 650	5 890
14	RNAST 10 R	RNAST 10	42.5	14	30	11.8	1	9 790	9 680
16	RNAST 12 R	RNAST 12	49.5	16	32	11.8	1	10 500	10 900
20	RNAST 15 R	RNAST 15	50	20	35	11.8	1	12 400	14 300
22	RNAST 17 R	RNAST 17	90	22	40	15.8	1	17 600	20 900
25	RNAST 20 R	RNAST 20	135	25	47	15.8	1	19 400	24 500
30	RNAST 25 R	RNAST 25	152	30	52	15.8	1	20 800	28 400
38	RNAST 30 R	RNAST 30	255	38	62	19.8	1	30 500	45 400
42	RNAST 35 R	RNAST 35	375	42	72	19.8	1	32 400	50 600
50	RNAST 40 R	RNAST 40	420	50	80	19.8	1.5	35 900	61 100
55	RNAST 45 R	RNAST 45	460	55	85	19.8	1.5	37 400	66 400
60	RNAST 50 R	RNAST 50	500	60	90	19.8	1.5	38 900	71 700

Note (1) This represents the minimum tolerance dimensions of the chamfer dimensions *r*.

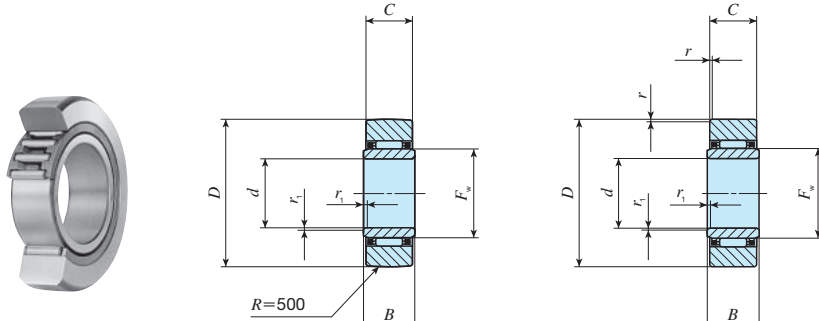
Remarks 1. No oil hole is provided.

2. Grease is not pre-packed. Use the product with appropriate lubrication.

IKO Separable Roller Followers · Open Type · With Inner Ring

Selectable product specifications

Roller guide type	No symbol	 Caged type
	V	 Full complement type
Seal structure	No symbol	 Open Type
	ZZ	 Shield type
	ZZUU	 Sealed type
Shape of outer ring outside surface	No symbol	 Cylindrical outer ring
	R	 Crowned outer ring



NAS...R

NAS

Shaft diameter	Identification number		Mass (Ref.)	Nominal dimensions mm							Basic dynamic load rating	Basic static load rating	Assembled inner ring
	Open Type			<i>d</i>	<i>D</i>	<i>B</i>	<i>C</i>	<i>r</i> _{s min} ⁽¹⁾	<i>r</i> _{s min} ⁽¹⁾	<i>F</i> _w			
	Crowned outer ring	Cylindrical outer ring											
mm			g								<i>C</i> N	<i>C</i> ₀ N	
6	NAST 6R	NAST 6	17.8	6	19	10	9.8	0.3	0.3	10	4 160	4 550	LRT 61010 S
8	NAST 8 R	NAST 8	28	8	24	10	9.8	0.6	0.3	12	5 650	5 890	LRT 81210 S
10	NAST 10 R	NAST 10	49.5	10	30	12	11.8	1	0.3	14	9 790	9 680	LRT 101412 S
12	NAST 12 R	NAST 12	58	12	32	12	11.8	1	0.3	16	10 500	10 900	LRT 121612 S
15	NAST 15 R	NAST 15	62	15	35	12	11.8	1	0.3	20	12 400	14 300	LRT 152012 S
17	NAST 17 R	NAST 17	109	17	40	16	15.8	1	0.3	22	17 600	20 900	LRT 172216 S
20	NAST 20 R	NAST 20	157	20	47	16	15.8	1	0.3	25	19 400	24 500	LRT 202516 S
25	NAST 25 R	NAST 25	180	25	52	16	15.8	1	0.3	30	20 800	28 400	LRT 253016 S
30	NAST 30 R	NAST 30	320	30	62	20	19.8	1	0.6	38	30 500	45 400	LRT 303820 S
35	NAST 35 R	NAST 35	440	35	72	20	19.8	1	0.6	42	32 400	50 600	LRT 354220 S
40	NAST 40 R	NAST 40	530	40	80	20	19.8	1.5	1	50	35 900	61 100	LRT 405020 S
45	NAST 45 R	NAST 45	580	45	85	20	19.8	1.5	1	55	37 400	66 400	LRT 455520 S
50	NAST 50 R	NAST 50	635	50	90	20	19.8	1.5	1	60	38 900	71 700	LRT 506020 S

Note (1) This represents the minimum tolerance dimensions of the chamfer dimensions *r* and *r*₁.

Remarks 1. No oil hole is provided.

2. Grease is not pre-packed. Use the product with appropriate lubrication.

IKO

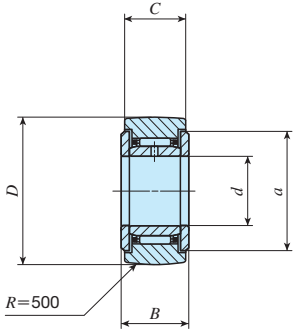
Separable Roller Followers · Shield Type · With Inner Ring

IKO

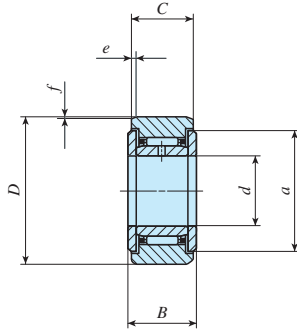
Separable Roller Followers · Sealed Type · With Inner Ring

Selectable product specifications

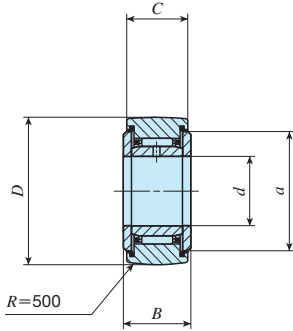
Roller guide type	No symbol	 Caged type
	V	 Full complement type
Seal structure	No symbol	 Open Type
	ZZ	 Shield type
	ZZUU	 Sealed type
Shape of outer ring outside surface	No symbol	 Cylindrical outer ring
	R	 Crowned outer ring



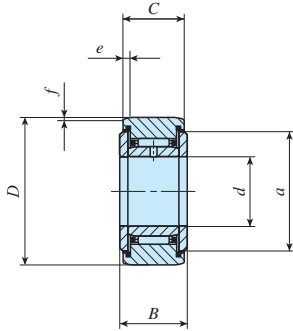
NAST...ZZR



NAST...ZZ



NAST...ZZUUR



NAST...ZZUU

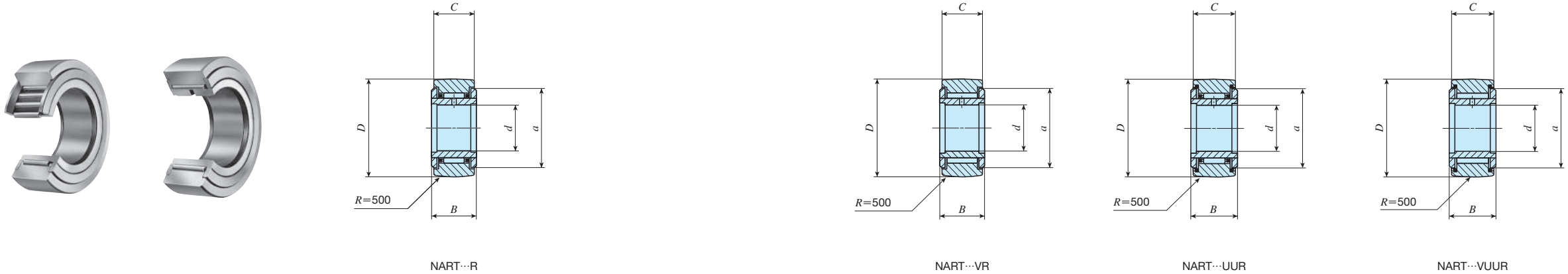
Shaft diameter	Identification number				Mass (Ref.)		Nominal dimensions mm							Basic dynamic load rating C N	Basic static load rating C_0 N
	Shield type		Sealed Type				d	D	B	C	a	e	f		
	Crowned outer ring	Cylindrical outer ring	Crowned outer ring	Cylindrical outer ring											
6	NAST 6 ZZR	NAST 6ZZ	NAST 6 ZZUUR	NAST 6 ZZUU	24.5		6	19	14	13.8	14	2.5	0.8	4 160	4 550
8	NAST 8 ZZR	NAST 8ZZ	NAST 8 ZZUUR	NAST 8 ZZUU	39		8	24	14	13.8	17.5	2.5	0.8	5 650	5 890
10	NAST 10 ZZR	NAST 10 ZZ	NAST 10 ZZUUR	NAST 10 ZZUU	65		10	30	16	15.8	23.5	2.5	0.8	9 790	9 680
12	NAST 12 ZZR	NAST 12 ZZ	NAST 12 ZZUUR	NAST 12 ZZUU	75		12	32	16	15.8	25.5	2.5	0.8	10 500	10 900
15	NAST 15 ZZR	NAST 15 ZZ	NAST 15 ZZUUR	NAST 15 ZZUU	83		15	35	16	15.8	29	2.5	0.8	12 400	14 300
17	NAST 17 ZZR	NAST 17 ZZ	NAST 17 ZZUUR	NAST 17 ZZUU	135		17	40	20	19.8	32.5	3	1	17 600	20 900
20	NAST 20 ZZR	NAST 20 ZZ	NAST 20 ZZUUR	NAST 20 ZZUU	195		20	47	20	19.8	38	3	1	19 400	24 500
25	NAST 25 ZZR	NAST 25 ZZ	NAST 25 ZZUUR	NAST 25 ZZUU	225		25	52	20	19.8	43	3	1	20 800	28 400
30	NAST 30 ZZR	NAST 30 ZZ	NAST 30 ZZUUR	NAST 30 ZZUU	400		30	62	25	24.8	50.5	4	1.2	30 500	45 400
35	NAST 35 ZZR	NAST 35 ZZ	NAST 35 ZZUUR	NAST 35 ZZUU	550		35	72	25	24.8	53.5	4	1.2	32 400	50 600
40	NAST 40 ZZR	NAST 40 ZZ	NAST 40 ZZUUR	NAST 40 ZZUU	710		40	80	26	25.8	61.5	4	1.2	35 900	61 100
45	NAST 45 ZZR	NAST 45 ZZ	NAST 45 ZZUUR	NAST 45 ZZUU	760		45	85	26	25.8	66.5	4	1.2	37 400	66 400
50	NAST 50 ZZR	NAST 50 ZZ	NAST 50 ZZUUR	NAST 50 ZZUU	830		50	90	26	25.8	76	4	1.2	38 900	71 700

Remarks 1. One oil hole is provided for the inner ring.
2. Grease is pre-packed for the sealed type. Grease is not pre-packed for the shield type. Use the product with appropriate lubrication.

IKO Non-separable Roller Followers

Selectable product specifications

Roller guide type	No symbol	 Caged type
	V	 Full complement type
Seal structure	No symbol	 Shield type
	UU	 Sealed type
Shape of outer ring outside surface	No symbol	 Cylindrical outer ring
	R	 Crowned outer ring



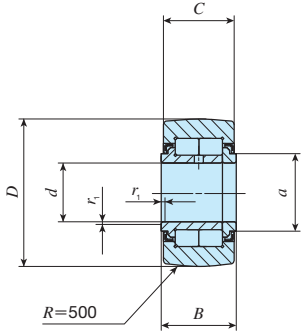
Shaft diameter	Identification number				Mass (Ref.)		Nominal dimensions mm					Basic dynamic load rating <i>C</i>	Basic static load rating <i>C</i> ₀	Maximum allowable static load
	Shield type		Sealed Type				<i>d</i>	<i>D</i>	<i>B</i>	<i>C</i>	<i>a</i>			
	Crowned outer ring		Crowned outer ring											
mm	Caged type	Full complement type	Caged type	Full complement type	g						N	N	N	
5	NART 5 R	—	NART 5 UUR	—	14.5		5	16	12	11	12	3 650	3 680	3 680
	—	NART 5 VR	—	NART 5 VUUR	15.1		5	16	12	11	12	6 810	8 370	7 310
6	NART 6 R	—	NART 6 UUR	—	20.5		6	19	12	11	14	4 250	4 740	4 740
	—	NART 6 VR	—	NART 6 VUUR	21.5		6	19	12	11	14	7 690	10 300	10 300
8	NART 8 R	—	NART 8 UUR	—	41.5		8	24	15	14	17.5	5 640	5 900	5 900
	—	NART 8 VR	—	NART 8 VUUR	42.5		8	24	15	14	17.5	11 800	15 600	15 600
10	NART 10 R	—	NART 10 UUR	—	64.5		10	30	15	14	23.5	8 030	7 540	7 540
	—	NART 10 VR	—	NART 10 VUUR	66.5		10	30	15	14	23.5	15 600	18 100	17 500
12	NART 12 R	—	NART 12 UUR	—	71		12	32	15	14	25.5	8 580	8 470	8 470
	—	NART 12 VR	—	NART 12 VUUR	73		12	32	15	14	25.5	16 800	20 500	18 600
15	NART 15 R	—	NART 15 UUR	—	102		15	35	19	18	29	13 700	16 400	16 400
	—	NART 15 VR	—	NART 15 VUUR	106		15	35	19	18	29	25 200	36 400	24 000
17	NART 17 R	—	NART 17 UUR	—	149		17	40	21	20	32.5	17 600	21 000	21 000
	—	NART 17 VR	—	NART 17 VUUR	155		17	40	21	20	32.5	32 000	46 300	33 100
20	NART 20 R	—	NART 20 UUR	—	250		20	47	25	24	38	23 000	30 700	30 700
	—	NART 20 VR	—	NART 20 VUUR	255		20	47	25	24	38	41 600	67 300	67 300
25	NART 25 R	—	NART 25 UUR	—	285		25	52	25	24	43	24 700	35 400	35 400
	—	NART 25 VR	—	NART 25 VUUR	295		25	52	25	24	43	45 500	79 100	79 100
30	NART 30 R	—	NART 30 UUR	—	470		30	62	29	28	50.5	33 600	51 400	51 400
	—	NART 30 VR	—	NART 30 VUUR	485		30	62	29	28	50.5	59 900	110 000	92 500
35	NART 35 R	—	NART 35 UUR	—	640		35	72	29	28	53.5	35 700	57 400	57 400
	—	NART 35 VR	—	NART 35 VUUR	655		35	72	29	28	53.5	63 100	121 000	121 000
40	NART 40 R	—	NART 40 UUR	—	845		40	80	32	30	61.5	44 900	81 500	81 500
	—	NART 40 VR	—	NART 40 VUUR	865		40	80	32	30	61.5	76 300	164 000	164 000
45	NART 45 R	—	NART 45 UUR	—	915		45	85	32	30	66.5	46 800	88 600	88 600
	—	NART 45 VR	—	NART 45 VUUR	935		45	85	32	30	66.5	80 300	181 000	181 000
50	NART 50 R	—	NART 50 UUR	—	980		50	90	32	30	76	48 600	95 600	95 600
	—	NART 50 VR	—	NART 50 VUUR	1 010		50	90	32	30	76	84 300	198 000	198 000

Remarks 1. One oil hole is provided for the inner ring.
2. Grease is pre-packed for the sealed type. Grease is not pre-packed for the shield type. Use the product with appropriate lubrication.

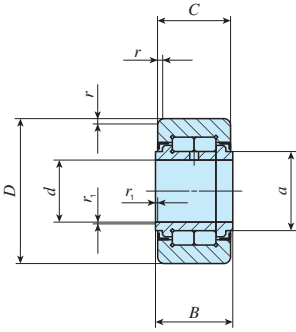
IKO Cylindrical Roller Followers

Selectable product specifications

Roller guide type	No symbol	 Full complement type
Seal structure	No symbol	 Shield type
	UU	 Sealed type
Shape of outer ring outside surface	No symbol	 Cylindrical outer ring
	R	 Crowned outer ring



NURT...R



NURT

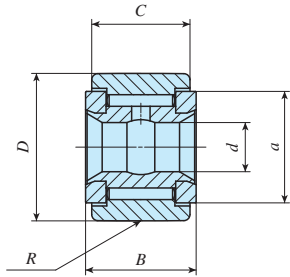
Shaft diameter mm	Identification number		Mass (Ref.) g	Nominal dimensions mm								Basic dynamic load rating <i>C</i>	Basic static load rating <i>C</i> ₀	Maximum allowable static load
	Crowned outer ring	Cylindrical outer ring		<i>d</i>	<i>D</i>	<i>B</i>	<i>C</i>	<i>a</i>		<i>r</i> _{s min} ⁽¹⁾	<i>r</i> _{1s min} ⁽¹⁾	N	N	N
15	NURT 15 R	NURT 15	100	15	35	19	18	20		0.6	0.3	23 400	27 300	11 800
	NURT 15-1 R	NURT 15-1	160	15	42	19	18	20		0.6	0.3	23 400	27 300	27 300
17	NURT 17 R	NURT 17	147	17	40	21	20	22		1	0.3	25 200	30 900	20 300
	NURT 17-1 R	NURT 17-1	222	17	47	21	20	22		1	0.3	25 200	30 900	30 900
20	NURT 20 R	NURT 20	245	20	47	25	24	27		1	0.3	38 900	49 000	27 200
	NURT 20-1 R	NURT 20-1	321	20	52	25	24	27		1	0.3	38 900	49 000	49 000
25	NURT 25 R	NURT 25	281	25	52	25	24	31		1	0.3	43 100	58 100	30 000
	NURT 25-1 R	NURT 25-1	450	25	62	25	24	31		1	0.3	43 100	58 100	58 100
30	NURT 30 R	NURT 30	466	30	62	29	28	38		1	0.3	58 200	75 300	35 200
	NURT 30-1 R	NURT 30-1	697	30	72	29	28	38		1	0.3	58 200	75 300	75 300
35	NURT 35 R	NURT 35	630	35	72	29	28	44		1	0.6	63 900	88 800	57 000
	NURT 35-1 R	NURT 35-1	840	35	80	29	28	44		1	0.6	63 900	88 800	88 800
40	NURT 40 R	NURT 40	817	40	80	32	30	49		1	0.6	86 500	122 000	75 300
	NURT 40-1 R	NURT 40-1	1 130	40	90	32	30	49		1	0.6	86 500	122 000	122 000
45	NURT 45 R	NURT 45	883	45	85	32	30	53		1	0.6	91 500	135 000	78 700
	NURT 45-1 R	NURT 45-1	1 400	45	100	32	30	53		1	0.6	91 500	135 000	135 000
50	NURT 50 R	NURT 50	950	50	90	32	30	58		1	0.6	96 300	148 000	82 100
	NURT 50-1 R	NURT 50-1	1 690	50	110	32	30	58		1	0.6	96 300	148 000	148 000

Note (1) This represents the minimum tolerance dimensions of the chamfer dimensions *r* and *r*_s.
Remarks 1. One oil hole is provided for the inner ring.
2. Grease is pre-packed.

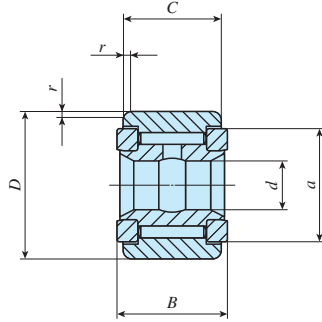
IKO Inch Series Non-separable Roller Followers

Selectable product specifications

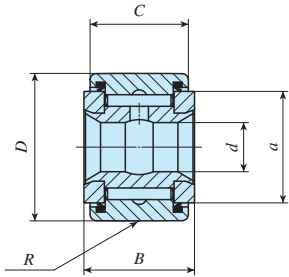
Roller guide type	No symbol	 Caged type
	V	 Full complement type
Seal structure	No symbol	 Shield type
	UU	 Sealed type
Shape of outer ring outside surface	No symbol	 Cylindrical outer ring
	R	 Crowned outer ring



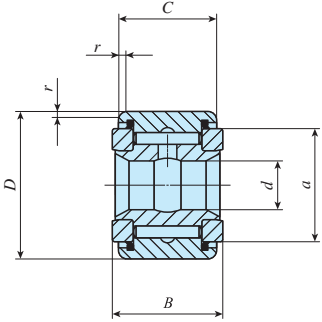
CRY...VR



CRY...V



CRY...VUUR



CRY...VUU

Shaft diameter	Identification number				Mass (Ref.)	Nominal dimensions mm (inch)									Shaft diameter mm						Basic dynamic load rating <i>C</i> N	Basic static load rating <i>C</i> ₀ N
	Shield type		Sealed Type			<i>d</i>	<i>D</i>	<i>B</i>	<i>C</i>		<i>a</i>	<i>R</i>	<i>r</i>	Clearance fit		Transition fit		Interference fit				
	Crowned outer ring	Cylindrical outer ring	Crowned outer ring	Cylindrical outer ring										Minimum	Maximum	Minimum	Maximum	Minimum	Maximum			
6.350 (¹ / ₄)	CRY 12 VR	CRY 12 V	CRY 12 VUUR	CRY 12 VUU	27	6.350(¹ / ₄)	19.050(³ / ₄)	14.288(0.5625)	12.700(¹ / ₂)		14.4(0.567)	250(10)	0.794(¹ / ₃₂)	6.332	6.342	6.348	6.358	6.353	6.363	8 710	12 300	
	CRY 14 VR	CRY 14 V	CRY 14 VUUR	CRY 14 VUU	36	6.350(¹ / ₄)	22.225(⁷ / ₈)	14.288(0.5625)	12.700(¹ / ₂)		14.4(0.567)	250(10)	0.794(¹ / ₃₂)	6.332	6.342	6.348	6.358	6.353	6.363	8 710	12 300	
7.938 (⁵ / ₁₆)	CRY 16 VR	CRY 16 V	CRY 16 VUUR	CRY 16 VUU	68	7.938(⁵ / ₁₆)	25.400(1)	17.463(0.6875)	15.875(⁵ / ₈)		19.6(0.772)	300(12)	1.191(³ / ₁₆)	7.920	7.930	7.935	7.945	7.940	7.950	13 100	22 700	
	CRY 18 VR	CRY 18 V	CRY 18 VUUR	CRY 18 VUU	77	7.938(⁵ / ₁₆)	28.575(1 ¹ / ₈)	17.463(0.6875)	15.875(⁵ / ₈)		19.6(0.772)	300(12)	1.588(¹ / ₁₆)	7.920	7.930	7.935	7.945	7.940	7.950	13 100	22 700	
9.525 (³ / ₈)	CRY 20 VR	CRY 20 V	CRY 20 VUUR	CRY 20 VUU	109	9.525(³ / ₈)	31.750(1 ¹ / ₄)	20.638(0.8125)	19.050(³ / ₄)		25.0(0.984)	360(14)	1.588(¹ / ₁₆)	9.507	9.517	9.523	9.533	9.528	9.538	23 600	31 700	
	CRY 22 VR	CRY 22 V	CRY 22 VUUR	CRY 22 VUU	136	9.525(³ / ₈)	34.925(1 ³ / ₈)	20.638(0.8125)	19.050(³ / ₄)		25.0(0.984)	360(14)	1.588(¹ / ₁₆)	9.507	9.517	9.523	9.533	9.528	9.538	23 600	31 700	
11.112 (⁷ / ₁₆)	CRY 24 VR	CRY 24 V	CRY 24 VUUR	CRY 24 VUU	186	11.112(⁷ / ₁₆)	38.100(1 ¹ / ₂)	23.813(0.9375)	22.225(⁷ / ₈)		28.8(1.134)	500(20)	1.588(¹ / ₁₆)	11.095	11.105	11.110	11.120	11.115	11.125	28 200	40 100	
	CRY 26 VR	CRY 26 V	CRY 26 VUUR	CRY 26 VUU	227	11.112(⁷ / ₁₆)	41.275(1 ⁵ / ₈)	23.813(0.9375)	22.225(⁷ / ₈)		28.8(1.134)	500(20)	1.588(¹ / ₁₆)	11.095	11.105	11.110	11.120	11.115	11.125	28 200	40 100	
12.700 (¹ / ₂)	CRY 28 VR	CRY 28 V	CRY 28 VUUR	CRY 28 VUU	290	12.700(¹ / ₂)	44.450(1 ³ / ₄)	26.988(1.0625)	25.400(1)		32.7(1.287)	500(20)	1.588(¹ / ₁₆)	12.682	12.692	12.698	12.708	12.708	12.718	35 300	55 600	
	CRY 30 VR	CRY 30 V	CRY 30 VUUR	CRY 30 VUU	363	12.700(¹ / ₂)	47.625(1 ⁷ / ₈)	26.988(1.0625)	25.400(1)		32.7(1.287)	500(20)	1.588(¹ / ₁₆)	12.682	12.692	12.698	12.708	12.708	12.718	35 300	55 600	
15.875 (⁵ / ₈)	CRY 32 VR	CRY 32 V	CRY 32 VUUR	CRY 32 VUU	476	15.875(⁵ / ₈)	50.800(2)	33.338(1.3125)	31.750(1 ¹ / ₄)		36.0(1.417)	600(24)	1.588(¹ / ₁₆)	15.857	15.867	15.873	15.883	15.883	15.893	45 700	80 600	
	CRY 36 VR	CRY 36 V	CRY 36 VUUR	CRY 36 VUU	599	15.875(⁵ / ₈)	57.150(2 ¹ / ₄)	33.338(1.3125)	31.750(1 ¹ / ₄)		36.0(1.417)	600(24)	1.588(¹ / ₁₆)	15.857	15.867	15.873	15.883	15.883	15.893	45 700	80 600	
19.050 (³ / ₄)	CRY 40 VR	CRY 40 V	CRY 40 VUUR	CRY 40 VUU	816	19.050(³ / ₄)	63.500(2 ¹ / ₂)	39.688(1.5625)	38.100(1 ¹ / ₂)		43.3(1.705)	760(30)	2.381(³ / ₃₂)	19.032	19.042	19.048	19.058	19.058	19.068	61 400	116 000	
	CRY 44 VR	CRY 44 V	CRY 44 VUUR	CRY 44 VUU	1 020	19.050(³ / ₄)	69.850(2 ³ / ₄)	39.688(1.5625)	38.100(1 ¹ / ₂)		43.3(1.705)	760(30)	2.381(³ / ₃₂)	19.032	19.042	19.048	19.058	19.058	19.068	61 400	116 000	
25.400 (1)	CRY 48 VR	CRY 48 V	CRY 48 VUUR	CRY 48 VUU	1 410	25.400(1)	76.200(3)	46.038(1.8125)	44.450(1 ³ / ₄)		54.0(2.125)	760(30)	2.381(³ / ₃₂)	25.377	25.390	25.397	25.410	25.408	25.420	77 600	172 000	
	CRY 52 VR	CRY 52 V	CRY 52 VUUR	CRY 52 VUU	1 640	25.400(1)	82.550(3 ¹ / ₄)	46.038(1.8125)	44.450(1 ³ / ₄)		54.0(2.125)	760(30)	2.381(³ / ₃₂)	25.377	25.390	25.397	25.410	25.408	25.420	77 600	172 000	
28.575 (1 ¹ / ₈)	CRY 56 VR	CRY 56 V	CRY 56 VUUR	CRY 56 VUU	2 250	28.575(1 ¹ / ₈)	88.900(3 ¹ / ₂)	52.388(2.0625)	50.800(2)		61.9(2.437)	760(30)	2.381(³ / ₃₂)	28.522	28.565	28.572	28.585	28.583	28.595	111 000	239 000	
31.750 (1 ¹ / ₄)	CRY 64 VR	CRY 64 V	CRY 64 VUUR	CRY 64 VUU	3 200	31.750(1 ¹ / ₄)	101.600(4)	58.738(2.3125)	57.150(2 ¹ / ₄)		71.0(2.797)	760(30)	2.381(³ / ₃₂)	31.727	31.740	31.747	31.760	31.758	31.770	142 000	317 000	

Remarks 1. An oil groove and one oil hole are provided for the inner ring.
2. Grease is pre-packed.