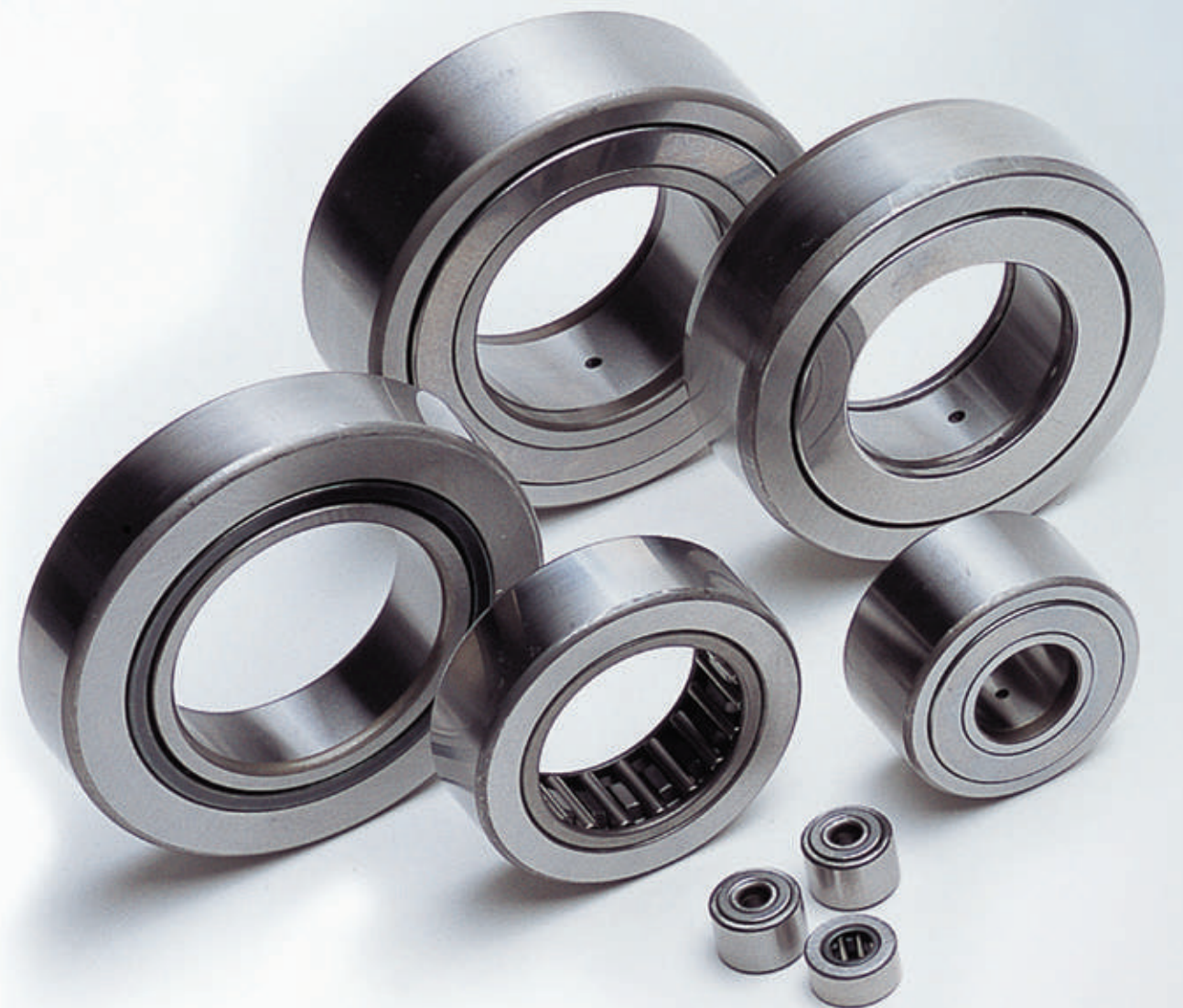






# ROLLER FOLLOWERS



## Type and Part Code

Type	Applicable shaft diameter	Feature	Part Code
 <p>RNAS T (Separable type)</p>	φ 7 ~ φ 60	NAS T type without inner ring.	<p><b>RNAS T</b>   <b>15</b>   <b>R</b></p> <p>↑   ↑   ↑</p> <p>Type   Bore diameter code   <b>R</b>: Crowned outer ring <b>None</b>: Cylindrical outer ring</p>
 <p>NAS T (Separable type)</p>	φ 6 ~ φ 50	Thick wall outer ring, inner ring. Separable bearing with combined needle roller with precision cage.	<p><b>NAS T</b>   <b>15</b>   <b>R</b></p> <p>↑   ↑   ↑</p> <p>Type   Bore diameter code   <b>R</b>: Crowned outer ring <b>None</b>: Cylindrical outer ring</p>
 <p>NAS T-ZZ (Separable type)</p>	φ 6 ~ φ 50	Separable bearing in which labyrinth seal is formed with combined side plate at both sides of inner ring of NAS T type. (NAS T-ZZUU type comes with seal)	<p><b>NAS T</b>   <b>15</b>   <b>ZZ</b>   <b>UU</b>   <b>R</b></p> <p>↑   ↑   ↑   ↑   ↑</p> <p>Type   Bore diameter code   <b>ZZ</b>: With shield   <b>UU</b>: With seal   <b>R</b>: Crowned outer ring <b>X</b>: Cylindrical outer ring <b>None</b>: With shield</p>
 <p>NART-R (Non-separable type)</p>	φ 5 ~ φ 50	Non-separable bearing with fixed side plate at inner ring. Mitigate eccentric load with spherical shape at outer diameter of outer ring (code R). (NART-UUR type comes with seal)	<p><b>NART</b>   <b>15</b>   <b>UU</b>   <b>V</b>   <b>R</b></p> <p>↑   ↑   ↑   ↑   ↑</p> <p>Type   Bore diameter code   <b>UU</b>: With seal   <b>V</b>: Full complement   <b>R</b>: Crowned outer ring <b>None</b>: With shield   <b>X</b>: Cylindrical outer ring <b>None</b>: With cage</p>

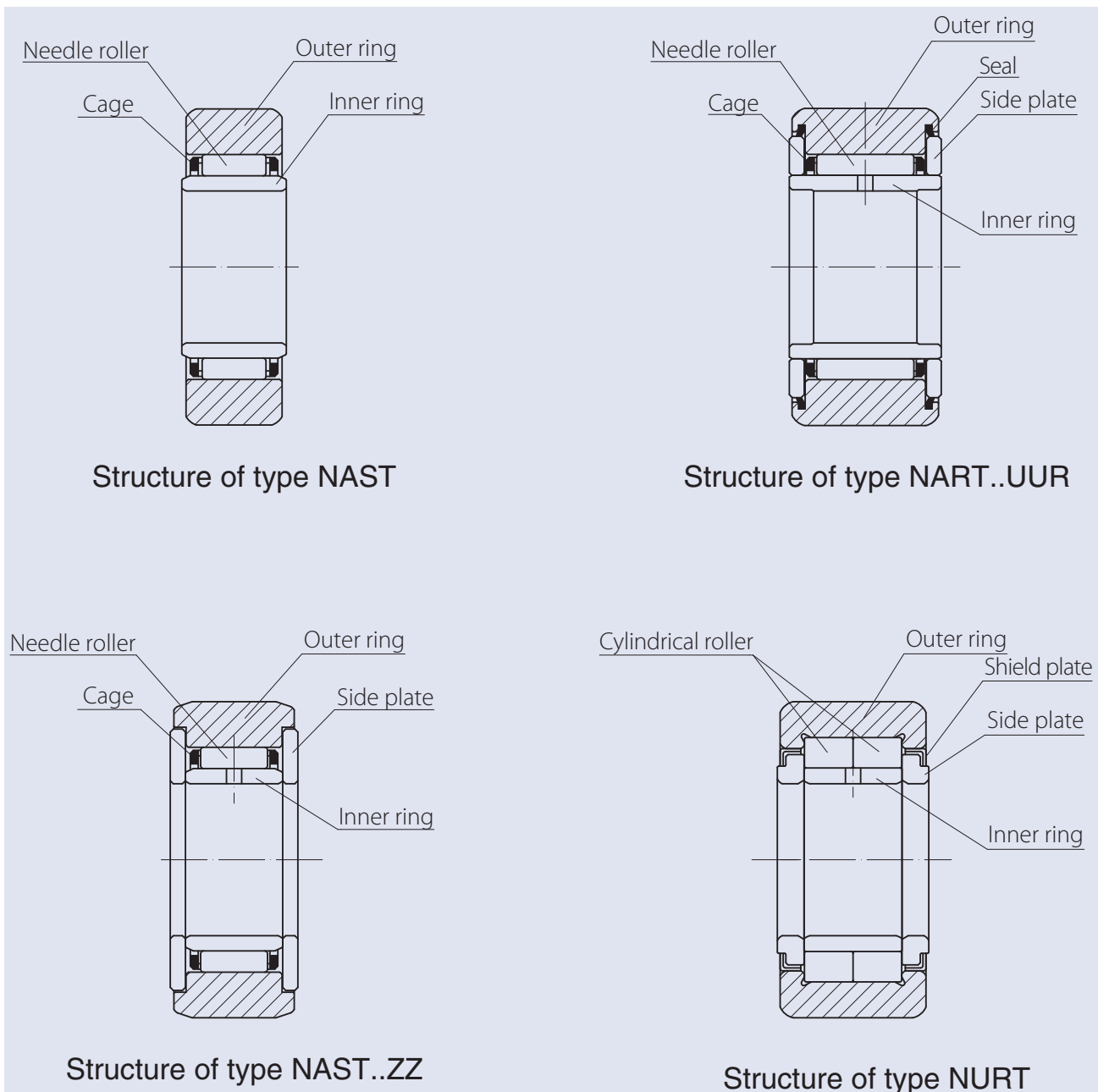
## Structure and Features

Roller follower is a bearing with integrated "roller" featuring high rigidity. Its primary application is in a guide roller to have its contacting member travel in linear motion in direction of tangent using rotation of outer ring.

Outer ring of the roller follower is designed with thick ring in order to provide high rigidity to endure heavy load or impact load at portion to contact with the associated objects.

Type of roller follower mainly consists of separate type, which have separated inner ring and outer ring, and non-separate type, whose inner ring has fixed side plate.

Also, various types with shapes and structures are available in accordance with application. Outer rings have two types – crowned outer ring and cylindrical outer ring. The crowned outer ring is suited for absorbing eccentric load since it absorbs angular misalignment due to a mount error. Cylindrical outer ring is effective for heavy duty since it contacts with large contact area of the associated objects so that can mitigate the contact surface pressure. They have two internal mechanism – one with cage and one with full complement. A roller follower with cage is suitable for high speed application since the guiding feature of cage enables the rotation of "rollers" to be stable. Compared with cage type, full complement type is effective for applications with low-speed operation of heavy load due to its larger load rating. Full complement type also includes double-row cylindrical roller type which allows moderate axial loading.



## Accuracy standard

Roller followers are manufactured in accordance with the following accuracies.

Table-1 Accuracy Unit:  $\mu\text{m}$

Name	Category	Crowned outer ring	Cylindrical outer ring
Dimension tolerance of outer ring outer diameter (D)		0 -50	Refer to Table-3
Dimension tolerance of outer ring width (C)		0 -120	
Tolerance of inner ring width (B)	Separable	0 -120	
Tolerance of bearing width (B)	Non-separable	h12	—
Fw	Separable	Refer to Table-11 on page 23	

Table-2 Accuracy of inner ring Unit:  $\mu\text{m}$

Nominal inner ring bore diameter d (mm)		Deviation of mean bore diameter in a single plane $\Delta_{dmp}$		Tolerance of radial runout of inner ring
Over	Incl.	high	low	max.
2.5	10	0	-8	10
10	18	0	-8	10
18	30	0	-10	13
30	50	0	-12	15

Table-3 Accuracy of outer ring Unit:  $\mu\text{m}$

Nominal outer ring bore diameter D (mm)		Deviation of mean outer diameter in a single plane $\Delta_{Dmp}$		Tolerance of radial runout of outer ring (max.)
Over	Incl.	high	low	max.
6	18	0	-8	15
18	30	0	-9	15
30	50	0	-11	20
50	80	0	-13	25
80	120	0	-15	35

## Radial internal clearance

Table below indicates radial internal clearance of roller follower.

Table-4 Radial internal clearance

Unit:  $\mu\text{m}$

Part code			Radial internal clearance	
Separable	Non-separable	Double row cylindrical roller	min.	max.
NAST6	NART5R ~ 6R	—	5	20
NAST8 ~ 12	NART8R ~ 12R	—	5	25
NAST15 ~ 25	NART15R ~ 25R	—	10	30
NAST30 ~ 40	NART30R ~ 40R	—	10	40
NAST45 ~ 50	NART45R ~ 50R	—	15	50
—	—	NURT15R ~ 30-1R	0	25
—	—	NURT35R ~ 40-1R	5	30
—	—	NURT45R ~ 50-1R	5	35

## Fits

Table below indicates recommended fits between roller follower and its mounting shaft.

Table-5 Shaft fits

Type		Tolerance grade
Separable	Without inner ring	k5,k6
	With inner ring	g6,h6
Non-separable		
Double row cylindrical roller		

## Track load capacity

Track load capacity means a permissible load under which the outer ring of cam follower and the mating surface are allowable to be used over a long period without causing any deformation nor compression mark. Track load capacity depicted in dimension table indicates a value for which hardness of contacting steel member is assumed to be HRC40. In the case that the hardness of contacting member is not HRC40, track load capacity in the dimension table shall be multiplied by value of track capacity factor obtained by Figure-1.

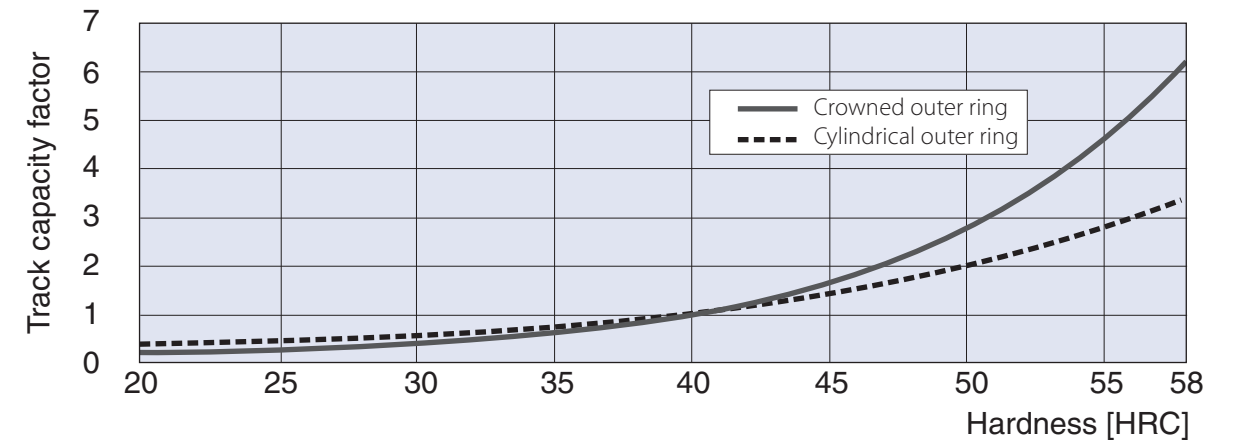


Figure-1 Track capacity factor

## Lubrication

All the JNS roller followers are lubricated with pre-packed high quality lithium soap-based grease grade 2 (RoHS compliant) so that they are ready to use. For applications requiring high prevention measure against invasion of foreign matter or leakage of lubricant, products with seal (part code--UU) which integrate special synthetic lubber with high abrasion resistance are also available.

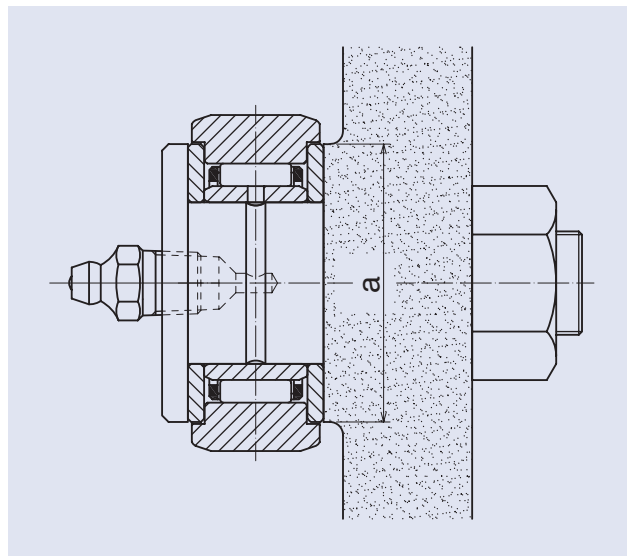
Grease shall be packed up to volume approximately one-third to one-half of internal space of bearing. Lubrication interval varies depending on operation condition. Referential interval may be every six to twenty four months for roller followers with cages and every one to six months for full complement type with grease in the same type.

Some excessive grease may leak at the beginning of usage or immediately after re-greasing even for the products with seal. Aging operation period is recommended prior to application in which no contamination by grease is allowed in and around device. Wipe and clean any leaked extra grease after this operation.

## Mounting

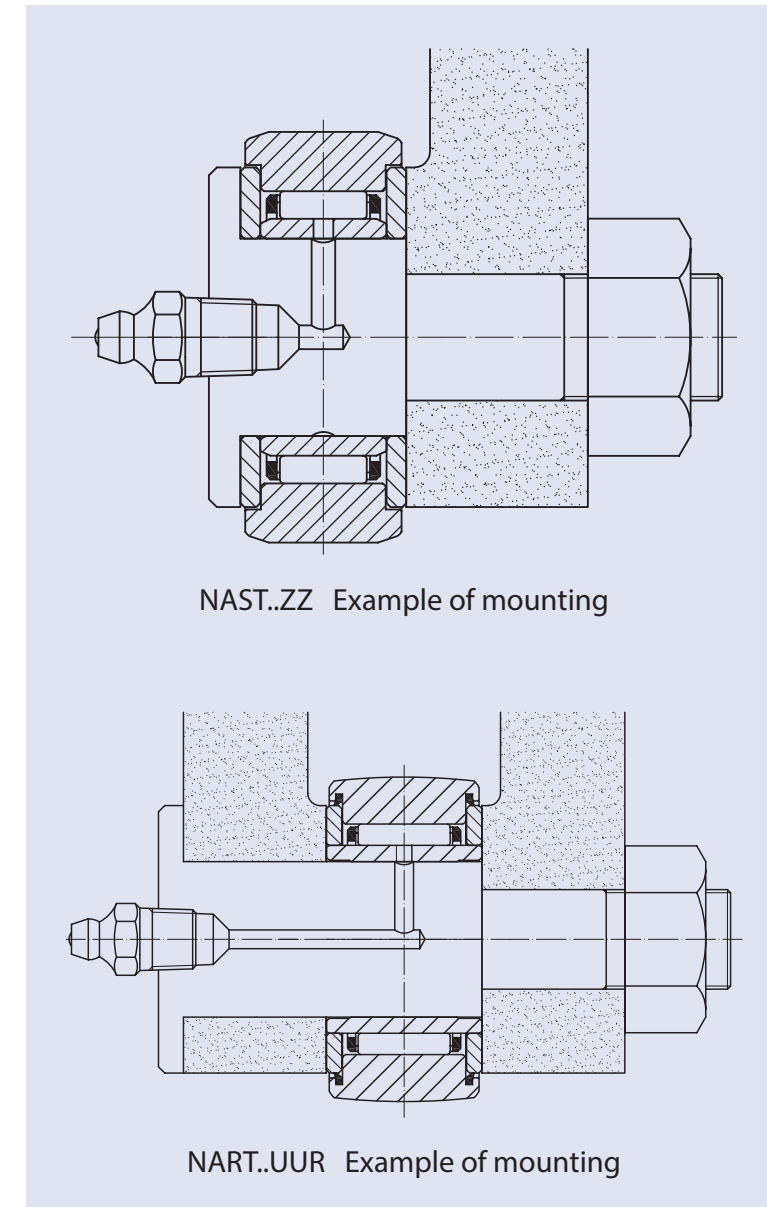
### Mounting part

- Thrust load may cause damage to side plate, outer ring or roller follower since it is designed so as to support load in radial direction. It is recommended to design and assemble to avoid thrust load.
- Application with roller follower without inner ring requires heat treatment and grinding finish of shaft. Surface hardness of the shaft shall be HRC58 to 64, and surface roughness shall be  $R_a$  0.2  $\mu$  m or less for this application.
- Side plate of non-separate type roller follower is pressed-in to fix it. Application in a manner to push the side plate shall be avoided in order to prevent risk of abnormal rotation under external force.
- Crowned outer ring is recommended in the case that contact between the outer ring and contacting member track surface is not smooth and even.
- When mounting NART, NAST-ZZ and NURT type, dimension "a" must be more than it described in dimension table in order to protect the side plate.



### Mounting method

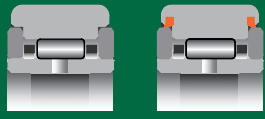
To prevent pre-mature failure of roller follower, lubrication hole of inner ring shall be located outside of loading range (on the side to receive load).





# ROLLER FOLLOWERS

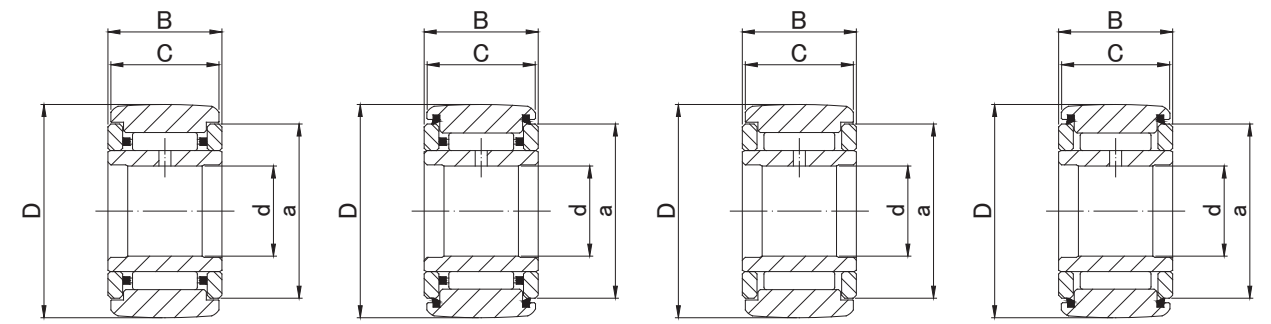
NON SEPARABLE WITH INNER RING



NART..R



NART..VR



NART..R  
NART..X

NART..UUR  
NART..UUX

NART..VR  
NART..VX

NART..UUVR  
NART..UUVX

## NART TYPE

Prepacked Grease

Shaft Diameter (mm)	Designation				Dimensions (mm)					Basic dynamic load rating Cr N	Basic static load rating Cor N	Track load capacity		Limiting speed * rpm	Mass g (approx)
	Crowned outer ring R500( ≤ NART17) R1000(NART20 ≤ )		Cylindrical outer ring		d	D	B	C	a			Crowned outer ring N	Cylindrical outer ring N		
	Without seals	With seals	Without seals	With seals											
5	NART 5R	NART 5UUR	NART 5X	NART 5UUX	5 <sup>0</sup> <sub>-0.008</sub>	16	12	11	12	3 620 6 760	3 720 8 340	1 080	3 430	25 000 8 500	14.5 15.1
	NART 5VR	NART 5UUVR	NART 5VX	NART 5UUVX											
6	NART 6R	NART 6UUR	NART 6X	NART 6UUX	6 <sup>0</sup> <sub>-0.008</sub>	19	12	11	14	4 200 7 640	4 700 10 300	1 370	4 020	20 000 7 000	20.5 21.5
	NART 6VR	NART 6UUVR	NART 6VX	NART 6UUVX											
8	NART 8R	NART 8UUR	NART 8X	NART 8UUX	8 <sup>0</sup> <sub>-0.008</sub>	24	15	14	17.5	6 600 11 800	7 300 15 600	1 860	5 950	17 000 5 500	41.5 42.5
	NART 8VR	NART 8UUVR	NART 8VX	NART 8UUVX											
10	NART10R	NART10UUR	NART10X	NART10UUX	10 <sup>0</sup> <sub>-0.008</sub>	30	15	14	23.5	8 600 15 600	8 300 18 100	2 450	7 060	15 000 5 000	64.5 66.5
	NART10VR	NART10UUVR	NART10VX	NART10UUVX											
12	NART12R	NART12UUR	NART12X	NART12UUX	12 <sup>0</sup> <sub>-0.008</sub>	32	15	14	25.5	9 100 16 800	9 200 20 500	2 740	7 450	13 000 4 500	71 73
	NART12VR	NART12UUVR	NART12VX	NART12UUVX											
15	NART15R	NART15UUR	NART15X	NART15UUX	15 <sup>0</sup> <sub>-0.008</sub>	35	19	18	29	14 400 25 100	17 600 36 400	3 140	11 200	10 000 3 500	102 106
	NART15VR	NART15UUVR	NART15VX	NART15UUVX											
17	NART17R	NART17UUR	NART17X	NART17UUX	17 <sup>0</sup> <sub>-0.008</sub>	40	21	20	32.5	18 600 32 000	22 500 46 200	3 720	14 400	9 500 3 000	149 155
	NART17VR	NART17UUVR	NART17VX	NART17UUVX											
20	NART20R	NART20UUR	NART20X	NART20UUX	20 <sup>0</sup> <sub>-0.010</sub>	47	25	24	38	24 100 41 700	32 700 67 300	7 150	21 000	8 000 2 500	250 255
	NART20VR	NART20UUVR	NART20VX	NART20UUVX											
25	NART25R	NART25UUR	NART25X	NART25UUX	25 <sup>0</sup> <sub>-0.010</sub>	52	25	24	43	25 800 45 500	37 500 79 000	8 230	23 200	7 000 2 500	285 295
	NART25VR	NART25UUVR	NART25VX	NART25UUVX											
30	NART30R	NART30UUR	NART30X	NART30UUX	30 <sup>0</sup> <sub>-0.010</sub>	62	29	28	50.5	36 200 59 800	56 900 110 400	10 500	33 000	5 500 1 800	470 485
	NART30VR	NART30UUVR	NART30VX	NART30UUVX											
35	NART35R	NART35UUR	NART35X	NART35UUX	35 <sup>0</sup> <sub>-0.012</sub>	72	29	28	53.5	38 200 63 000	62 800 121 500	12 900	38 000	5 000 1 700	640 655
	NART35VR	NART35UUVR	NART35VX	NART35UUVX											
40	NART40R	NART40UUR	NART40X	NART40UUX	40 <sup>0</sup> <sub>-0.012</sub>	80	32	30	61.5	46 200 76 200	84 700 164 200	14 900	44 400	4 000 1 400	845 865
	NART40VR	NART40UUVR	NART40VX	NART40UUVX											
45	NART45R	NART45UUR	NART45X	NART45UUX	45 <sup>0</sup> <sub>-0.012</sub>	85	32	30	66.5	49 300 80 200	95 200 181 100	16 100	47 000	4 000 1 300	915 935
	NART45VR	NART45UUVR	NART45VX	NART45UUVX											
50	NART50R	NART50UUR	NART50X	NART50UUX	50 <sup>0</sup> <sub>-0.012</sub>	90	32	30	76	51 100 84 100	102 300 198 000	17 300	50 000	3 500 1 200	980 1 010
	NART50VR	NART50UUVR	NART50VX	NART50UUVX											

\* Without seals, suitable for grease lubrication. In case of oil lubrication, up to 130% of this value shall be permissible, and 70% of this value shall apply for types with seals.

### OUTER RINGS TOLERANCE (Outside diameter) (μm)

TYPE	Crowned outer ring	Cylindrical outer ring
NART5	0/-50	0/-8
NART6,NART8,NART10	0/-50	0/-9
NART12,NART15,NART17,NART20	0/-50	0/-11
NART25,NART30,NART35,NART40	0/-50	0/-13
NART45,NART50	0/-50	0/-15