

Yoke type track rollers with thick wall outer ring can roll directly on the tray under heavy load. It includes pressure roller, eccentric roller, rocking arm roller. The roller diameter is of ball shape or cylinder ball shape. With the ball shape, the inclining position resulted during the fitting can be compensated.



Structure	
RSTO	No retaining edge in outer ring, yoke type track rollers without inner ring
STO	No retaining edge in outer ring, yoke type track rollers with inner ring
RNA22...2RS	Double face sealed, yoke type track rollers without inner ring
NA22...2RS	Double face sealed, yoke type track rollers with inner ring
NATR NATR...PP	Plain retaining ring, axial guiding, yoke type track rollers
NATV NATV...PP	Plain retaining ring, axial guiding, yoke type track rollers, Full complement needle roller type
NUTR	Rolling body guiding, yoke type track rollers, full complement roller type
CRY	Inch system, plain retaining ring, axial guiding, yoke type track rollers

RSTO and STO series yoke type track rollers

Yoke type track rollers RSTO type, without inner ring, can directly run on the quenched shaft. STO type has inner rings, its inner ring, outer ring and the combinative needle roller retainer assembly can be fitted separately. Because RSTO and STO type yoke type track rollers have no retaining edges and the end retaining rings, axial guiding is needed in fitting. The guiding surface must be precisely machined at least.

RNA22...2RS, NA22...2RS series yoke type track rollers

The diameter of such rollers is the same as STO series rollers but a little wider. Its double face sealed structure ensures no maintenance requested. The operational temperature range is -20°C-20°C. When fitting the yoke type track rollers without inner rings (RNA22...2RS) series, notice no damage to the sealing rings should occur. The outer ring needs end face guidance.

NATR and NATR...PP series yoke type track rollers

NATR series roller contains outer ring, inner ring, needle retainer assembly and the retaining rings which are pressed and fixed by the two sides of inner ring. NATR...PP series has an additional sealing ring. This kind of yoke type track rollers have huge lubricant storage space, so they can be used for long period without re-grease.

NATV and NATV...PP series yoke type track rollers

NATV series yoke type track roller is basically the same as NATR series. The only difference is that NATV is full complement needle roller type. Therefore it can sustain heavier load under low speed. Frequent lubricating should be noticed. NATV...PP is a series with sealing ring structure.

NUTR series yoke type track rollers

NUTR series yoke type track roller is double row full roller bearing with retaining edge guiding outer ring . All the parts of the bearing are pressed into the sealing cage of outer ring forming a complete unit, the sealing cage , together with the thrust retaining ring form an efficient gap sealing. Very heavy load can be used on this yoke type track rollers. Even with very high speed, it can bear impact axle load due to its axle guidance of its rolling bodies.

Tolerance

In common cases , the precision of the dimensions , shape and the rotation of this yoke type track roller is P0 grade . The outer diameter tolerance of the yoke type track roller with an arc outer diameter is $0/-0.05\text{mm}$, the width tolerance of NATR, NATV , NUTR bearings is h12.

Center adjustability

The yoke type track roller with diameter of cylindrical shape have very small center adjustability . With low load, the center adjustability is 3-4' while with middle and heavy load, it is 5-7' The yoke type track rollers with diameter of arc shape have a center adjustability of 15-20' For bigger angle variation, the edge effect will increase with the different loads. This will decrease the life of the bearing.

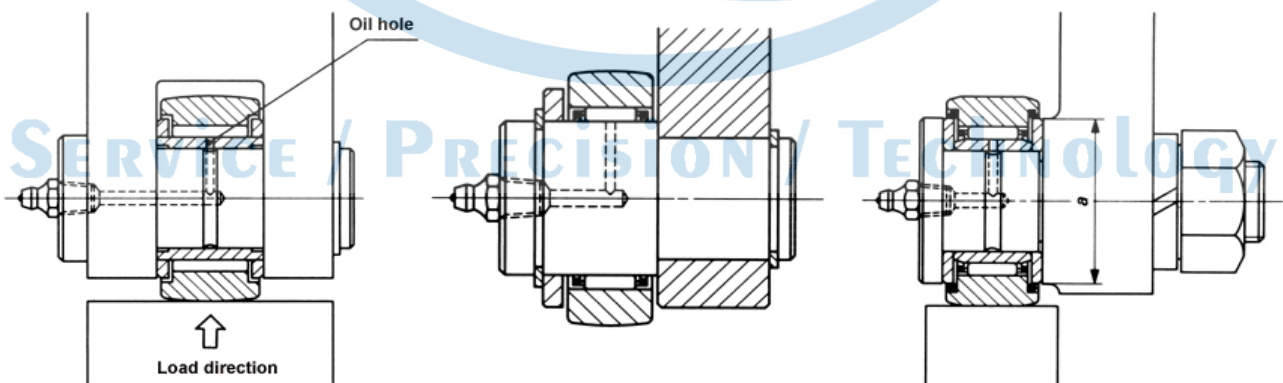
Application and mounting

When the yoke type track rollers are fitted into a bearing cage in combination as the rolling bearings , the load selection will be in the "basic rated load" When the outer ring is directly supported on the tray, the radical load of the yoke type track rollers will cause the elastic deformation of the outer ring . Thus the load distribution will be changed, the peak load will be increase while the dynamic and stable load capacity will decrease, At this time, selection of "being as yoke type track rollers" column will be suitable.

In general cases , the load on the yoke type track rollers inner ring is partial load . So no tight combination of the shaft is required, the recommended shaft tolerances are as follows:

Yoke type track rollers	Shaft tolerance
Without inner ring	K5
With inner ring	g6

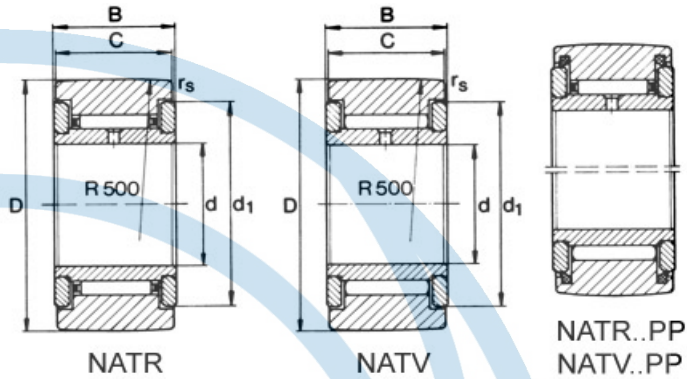
In fitting yoke type track rollers, the oil hole must be situated in the non-load area.



Yoke Type Track Rollers with Axial Guidance

Series 1) NATR, NATR..PP,
NATV, NATV..PP

1) For cylindrical outside surface, add suffix X

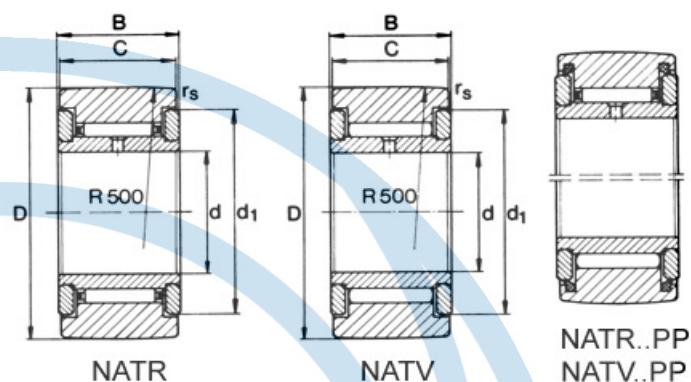


Outside Diameter	Bearing Designation ¹⁾	Mass (g)	Bearing Designation ¹⁾	Mass (g)	Boundary Dimensions							Basic load ratings ²⁾				Limiting Speed ³⁾ N _G min ⁻¹
														As track rollers		
					C	C ₀	C _w	C _{ow}								
N																
16	NATR 5	14	NATR 5 PP	14	5	16	12	0.15	0.15	11	12	3800	3750	3150	3300	*22000
	NATV 5	15	NATV 5 PP	15	5	16	12	0.15	0.15	11	12	6400	8500	4850	6500	8500
19	NATR 6	20	NATR 6 PP	20	6	19	12	0.15	0.15	11	14	4250	4600	3500	3900	*20000
	NATV 6	21	NATV 6 PP	21	6	19	12	0.15	0.15	11	14	7300	10800	5500	7900	7000
24	NATR 8	41	NATR 8 PP	41	8	24	15	0.3	0.3	14	19	6800	7700	5500	6400	*15000
	NATV 8	42	NATV 8 PP	42	8	24	15	0.3	0.3	14	19	10400	15600	7800	11400	5500
30	NATR 10	64	NATR 10 PP	64	10	30	15	0.6	0.3	14	23	8100	9700	6800	8400	*11000
	NATV 10	65	NATV 10 PP	65	10	30	15	0.6	0.3	14	23	12200	19000	9500	14600	4500
32	NATR 12	71	NATR 12 PP	71	12	32	15	0.6	0.3	14	25	8700	11000	6900	8800	9000
	NATV 12	72	NATV 12 PP	72	12	32	15	0.6	0.3	14	25	13200	21700	9700	15400	3900
35	NATR 15	103	NATR 1 5PP	103	15	35	19	0.6	0.3	18	27	12900	19000	9700	14100	7000
	NATV 15	105	NATV 15 PP	105	15	35	19	0.6	0.3	18	27	18300	35000	12800	23000	3400
40	NATR 17	144	NATR 17 PP	144	17	40	21	1	0.3	20	32	14200	20400	10900	15500	6000
	NATV 17	152	NATV 17 PP	152	17	40	21	1	0.3	20	32	21000	39500	14800	26500	2900
47	NATR 20	246	NATR 20 PP	246	20	47	25	1	0.3	24	37	19500	32000	15500	25500	4900
	NATV 20	254	NATV 20 PP	254	20	47	25	1	0.3	24	37	28000	59000	20600	42000	2600
52	NATR 25	275	NATR 25 PP	275	25	52	25	1	0.3	24	42	21200	38000	15400	26500	3600
	NATV 25	285	NATV 25 PP	285	25	52	25	1	0.3	24	42	31000	72000	20500	44000	2100
62	NATR 30	470	NATR 30 PP	470	30	62	29	1	0.3	28	51	34000	59000	23600	38500	2600
	NATV 30	481	NATV 30 PP	481	30	62	29	1	0.3	28	51	48500	108000	30500	63000	1700

Yoke Type Track Rollers with Axial Guidance

Series 1) NATR, NATR..PP,
NATV, NATV..PP

1) For cylindrical outside surface, add suffix X



Outside Diameter	Bearing Designation ¹⁾	Mass (g)	Bearing Designation ¹⁾	Mass (g)	Boundary Dimensions							Basic load ratings ²⁾				Limiting Speed ³⁾ N _G min ⁻¹
														As track rollers		
					d	D	B	r _s min.	r _{1s} min.	C	d1	C	C ₀	C _W	C _{0W}	
72	NATR 35	635	NATR 35 PP	635	35	72	29	1.1	0.6	28	58	37000	69000	25500	44500	2000
	NATV 35	647	NATV 35 PP	647	35	72	29	1.1	0.6	28	58	53000	127000	33000	73000	1400
80	NATR 40	805	NATR 40 PP	805	40	80	32	1.1	0.6	30	66	49000	94000	33000	59000	1700
	NATV 40	890	NATV 40 PP	890	40	80	32	1.1	0.6	30	66	66000	159000	41000	90000	1300
85	NATR 45	910	NATR 45 PP	910	45	85	32	1.1	0.6	30	72	51000	101000	32500	59000	1500
90	NATV 50	960	NATV 50 PP	960	50	90	32	1.1	0.6	30	76	52000	108000	32000	59000	1300
	NATR 50	990	NATR 50 PP	990	50	90	32	1.1	0.6	30	76	76000	191000	40500	93000	1000

1) The suffix X indicates a cylindrical outside surface e.g. NATR 5 X or NATR 5 PPX

2) The basic load ratings C and C₀ apply if the bearing outer ring (with cylindrical outside surface) is mounted in a housing bore with the normal rolling bearing fit; when used as a track roller, the load ratings CW and C_{0W} apply.

3) Limiting speed for grease lubrication. For oil lubrication, the speed can be increased by approximately 30% except for sealed executions.

* For the sealed version the limiting speed n_G for grease lubrication should be reduced by approximately 30%

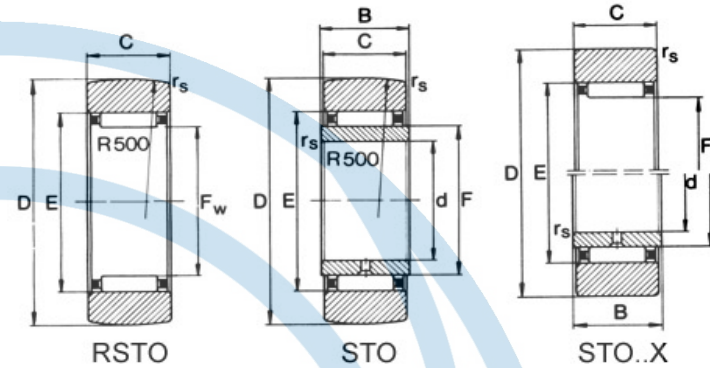
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Yoke Type Track Rollers without Axial Guidance



Series 1) RSTO, STO

1) For cylindrical outside surface, add suffix X



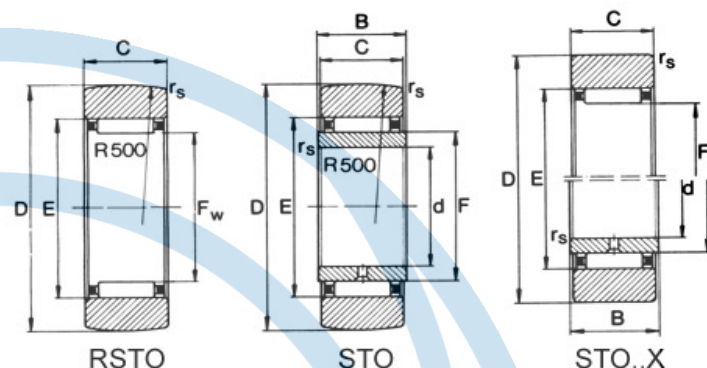
Outer Diameter (mm)	Bearing Designation		Boundary Dimensions							Basic Load Ratings				Limiting Speed3)
												As yoke type track rollers		
	Without inner ring	With inner ring	D	d	F1) Fw	B	C	E	rs	Cw	Cow	Cw	Cow	n1greas≈ min-1
16	RSTO 5 TN	--	16	--	7	--	7.8	10	0.3	2850	2650	2550	2550	23000
	RSTO 5 TNX	--	16	--	7	--	7.8	10	0.3	2850	2650	2550	2550	23000
19	RSTO 6 TN	STO 6 TN	19	6	10	10	9.8	13	0.3	4750	5500	3750	4500	20000
	RSTO 6 TNX	STO 6 TNX	19	6	10	10	9.8	13	0.3	4750	5500	3750	4500	20000
24	RSTO 8 TN	STO 8 TN	24	8	12	10	9.8	15	0.3	4900	6100	4200	5500	16000
	RSTO 8 TNX	STO 8 TNX	24	8	12	10	9.8	15	0.3	4900	6100	4200	5500	16000
30	RSTO 10	STO 10	30	10	14	12	11.8	20	0.3	10300	10600	8400	9200	11000
	RSTO 10 X	STO 10 X	30	10	14	12	11.8	20	0.3	10300	10600	8400	9200	11000
32	RSTO 12	STO 12	32	12	16	12	11.8	22	0.3	11500	12500	8900	10100	9000
	RSTO 12 X	STO 12 X	32	12	16	12	11.8	22	0.3	11500	12500	8900	10100	9000
35	RSTO 15	STO 15	35	15	20	12	11.8	26	0.3	13400	16200	9100	10700	6500
	RSTO 15 X	STO 15 X	35	15	20	12	11.8	26	0.3	13400	16200	9100	10700	6500
40	RSTO 17	STO 17	40	17	22	16	15.8	29	0.3	20000	25500	14300	17700	5500
	RSTO 17 X	STO 17 X	40	17	22	16	15.8	29	0.3	20000	25500	14300	17700	5500
47	RSTO 20	STO 20	47	20	25	16	15.8	32	0.3	21000	28000	16200	21500	4700
	RSTO 20 X	STO 20 X	47	20	25	16	15.8	32	0.3	21000	28000	16200	21500	4700
52	RSTO 25	STO 25	52	25	30	16	15.8	37	0.3	23100	33500	16500	22900	3600
	RSTO 25 X	STO 25 X	52	25	30	16	15.8	37	0.3	23100	33500	16500	22900	3600

Yoke Type Track Rollers without Axial Guidance



Series 1) RSTO, STO

1) For cylindrical outside surface, add suffix X



Outer Diameter (mm)	Bearing Designation		Boundary Dimensions							Basic Load Ratings				Limiting Speed3)
												As yoke type track rollers		
	Without inner ring	With inner ring	D	d	F1) Fw	B	C	E	rs	Cw	Cow	Cw	Cow	
			mm							min	N			
62	RSTO 30	STO 30	62	30	38	20	19.8	46	0.6	35500	57000	23300	35000	2500
	RSTO 30 X	STO 30 X	62	30	38	20	19.8	46	0.6	35500	57000	23300	35000	2500
72	RSTO 35	STO 35	72	35	42	20	19.8	50	0.6	36000	59000	26000	41000	2200
	RSTO 35 X	STO 35 X	72	35	42	20	19.8	50	0.6	36000	59000	26000	41000	2200
80	RSTO 40	STO 40	80	40	50	20	19.8	58	1	35500	62000	24000	39000	1700
	RSTO 40 X	STO 40 X	80	40	50	20	19.8	58	1	35500	62000	24000	39000	1700
85	RSTO 45	STO 45	85	45	55	20	19.8	63	1	40000	74000	25500	43000	1500
	RSTO 45 X	STO 45 X	85	45	55	20	19.8	63	1	40000	74000	25500	43000	1500
90	RSTO 50	STO 50	90	50	60	20	19.8	68	1	43500	85000	26000	46500	1300
	RSTO 50 X	STO 50 X	90	50	60	20	19.8	68	1	43500	85000	26000	46500	1300

TN=plastic retainer, permissible operational temperature 120°C, 150°C for temporary use, 180°C for short time only.

1) F is the inner ring tray diameter, Fw is the needle incircle diameter within the tolerance range F6.

2) When the bearing outer ring (with outer cylindrical surface) is fitted with general bearings in the seat holes, basic stable load C and C0 should be used while used as rolling wheel, rated load CW and COW should be used.

3) The rotating speed will increase by about 30% if oil lubricant is used.

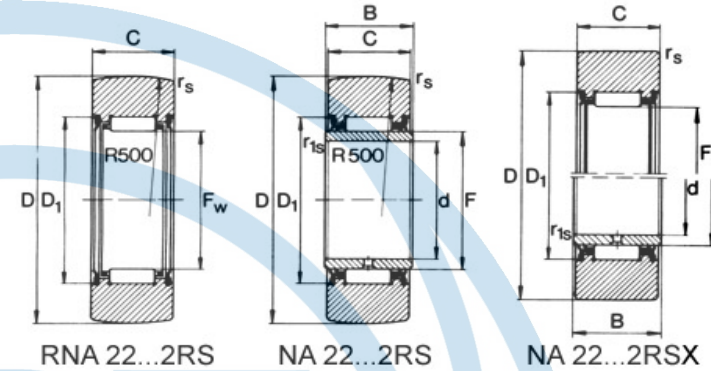
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Yoke Type Track Rollers with Sealed, without Axial Guidance



Series 1) RNA22...2RS, NA22...2RS

1) For cylindrical outside surface, add suffix X

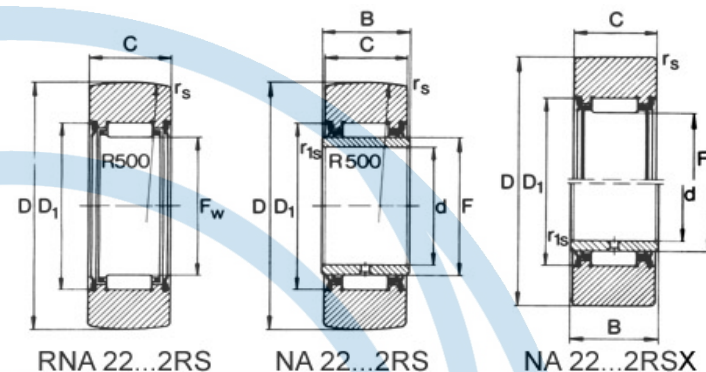


Outer Diameter (mm)	Bearing Designation		Boundary Dimensionsmm							Basic Load Ratings				Limiting Speed3)
												As yoke type track rollers		
	Without inner ring	With inner ring	D	d	F1) Fw	B	C	E	r1s	C	C ₀	C _w	C _{ow}	n1greas≈ min-1
19	RNA 22/6.2RS	NA 22/6.2RS	19	6	10	12	11.8	0.3	0.3	5300	4650	3900	3700	18000
	RNA 22/6.2RS X	NA 22/6.2RS X	19	6	10	12	11.8	0.3	0.3	5300	4650	3900	3700	18000
24	RNA 22/8.2RS	NA 22/8.2RS	24	8	12	12	11.8	0.3	0.3	5700	5400	4800	4800	14000
	RNA 22/8.2RS X	NA 22/8.2RS	24	8	12	12	11.8	0.3	0.3	5700	5400	4800	4800	14000
30	RNA 2200.2RS	NA 2200.2RS	30	10	14	14	13.8	0.6	0.3	7800	8300	7000	8000	11000
	RNA 2200.2RS X	NA 2200.2RS X	30	10	14	14	13.8	0.6	0.3	7800	8300	7000	8000	11000
32	RNA 2201.2RS	NA 2201.2RS	32	12	16	14	13.8	0.6	0.3	8700	9900	7500	9000	9500
	RNA 2201.2RS X	NA 2201.2RS X	32	12	16	14	13.8	0.6	0.3	8700	9900	7500	9000	9500
35	RNA 2202.2RS	NA 2202.2RS	35	15	20	14	13.8	0.6	0.3	9800	12300	7600	9600	7000
	RNA 2202.2RS X	NA 2202.2RS X	35	15	20	14	13.8	0.6	0.3	9800	12300	7600	9600	7000
40	RNA 2203.2RS	NA 2203.2RS	40	17	22	16	15.8	1	0.3	12200	16700	9900	13800	6000
	RNA 2203.2RS X	NA 2203.2RS X	40	17	22	16	15.8	1	0.3	12200	16700	9900	13800	6000
47	RNA 2204.2RS	NA 2204.2RS	47	20	25	18	17.8	1	0.3	18900	22300	15200	18300	4600
	RNA 2204.2RS X	NA 2204.2RS X	47	20	25	18	17.8	1	0.3	18900	22300	15200	18300	4600
52	RNA 2205.2RS	NA 2205.2RS	52	25	30	18	17.8	1	0.3	21100	27000	15700	20000	3500
	RNA 2205.2RS X	NA 2205.2RS X	52	25	30	18	17.8	1	0.3	21100	27000	15700	20000	3500
62	RNA 2206.2RS	NA 2206.2RS	62	30	35	20	19.8	1	0.3	23300	32000	18300	25500	2800
	RNA 2206.2RS X	NA 2206.2RS X	62	30	35	20	19.8	1	0.3	23300	32000	18300	25500	2800

Yoke Type Track Rollers with Sealed, without Axial Guidance

Series 1) RNA22...2RS, NA22...2RS

1) For cylindrical outside surface, add suffix X



Outer Diameter (mm)	Bearing Designation		Boundary Dimensionsmm							Basic Load Ratings				Limiting Speed3)
												As yoke type track rollers		
	Without inner ring	With inner ring	D	d	F1) Fw	B	C	E	r1s	C	C ₀	C _w	C _{ow}	
														mm
72	RNA 2207.2RS	NA 2207.2RS	72	35	42	23	22.7	1.1	0.6	30000	46500	23000	35500	2200
	RNA 2207.2RS X	NA 2207.2RS X	72	35	42	23	22.7	1.1	0.6	30000	46500	23000	35500	2200
80	RNA 2208.2RS	NA 2208.2RS	80	40	48	23	22.7	1.1	0.6	38500	58000	27500	40500	1700
	RNA 2208.2RS X	NA 2208.2RS X	80	40	48	23	22.7	1.1	0.6	38500	58000	27500	40500	1700
85	RNA 2209.2RS	NA 2209.2RS	85	45	52	23	22.7	1.1	0.6	40500	64000	28500	43000	1600
	RNA 2209.2RS X	NA 2209.2RS X	85	45	52	23	22.7	1.1	0.6	40500	64000	28500	43000	1600
90	RNA 2210.2RS	NA 2210.2RS	90	50	58	23	22.7	1.1	0.6	42500	70000	28000	42500	1300
	RNA 2210.2RS X	NA 2210.2RS X	90	50	58	23	22.7	1.1	0.6	42500	70000	28000	42500	1300

1) F is the inner ring tray diameter, F_w is the needle incircle diameter within the tolerance range F6.

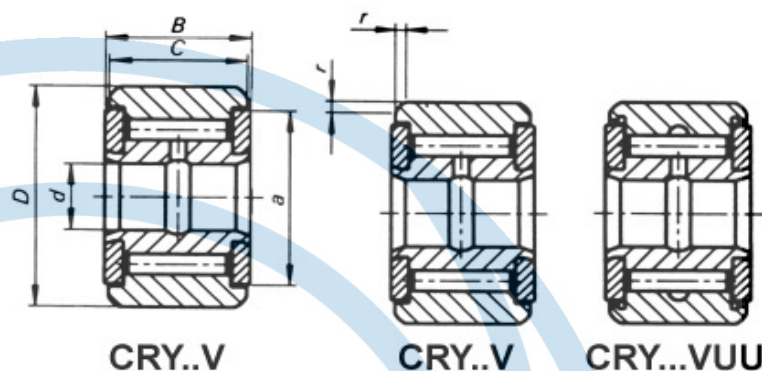
2) when the bearing outer ring (with outer cylindrical surface) is fitted with general bearings in the seat holes, basic stable load C and C₀ should be used while used as rolling wheel, rated load C_w and C_{ow} should be used.

3) the rotating speed will increase by about 30% if oil lubricant is used.

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Yoke Type Track Rollers © Inch Series

Series CRY..V, CRY..VUU



Shaft diameter (mm)	Bearing Designation		Boundary Dimensions (mm)							Standard mounting dimensions							Basic Load Ratings		Limiting Speed rpm
										Shaft dia.(mm)									
	Basic type	Sealed type	d	D	B	C	a	push fit			drive fit		press fit		C kgf	C0 kgf			
								rsmin		Max.	Min.	Min.	Max.	Min.					
6.35	CRY 12 V	CRY 12 VUU	6.35	19.05	0.5625	14.288	12.7	1.567	14.4	0.794	6.342	6.332	6.358	6.358	6.363	6.353	890	1250	8500
	CRY 14 V	CRY 14 VUU	6.35	22.225	0.5625	14.288	12.7	1.567	14.4	0.794	6.342	6.332	6.358	6.358	6.363	6.353	890	1250	8500
7.938	CRY 16 V	CRY 16 VUU	7.938	25.4	0.6875	17.463	15.875	1.772	19.6	1.191	7.93	7.92	7.945	7.945	7.95	7.94	1330	2310	6300
	CRY 18 V	CRY 18 VUU	7.938	28.575	0.6875	17.463	15.875	1.772	19.6	1.588	7.93	7.92	7.945	7.945	7.95	7.94	1330	2310	6300
9.525	CRY 20 V	CRY 20 VUU	9.525	31.75	0.8125	20.638	19.05	1.984	25	1.588	9.517	9.507	9.533	9.533	9.538	9.528	2400	3230	5500
	CRY 22 V	CRY 22 VUU	9.525	34.925	0.8125	20.638	19.05	1.984	25	1.588	9.517	9.507	9.533	9.533	9.538	9.528	2400	3230	5500
11.112	CRY 24 V	CRY 24 VUU	11.112	38.1	0.9375	23.813	22.225	1.134	28.8	1.588	11.105	11.095	11.12	11.12	11.125	11.115	2870	4090	4700
	CRY 26 V	CRY 26 VUU	11.112	41.275	0.9375	23.813	22.225	1.134	28.8	1.588	11.105	11.095	11.12	11.12	11.125	11.115	2870	4090	4700
12.7	CRY 28 V	CRY 28 VUU	12.7	44.45	1.0625	26.988	25.4	1.287	32.7	1.588	12.692	12.682	12.708	12.708	12.718	12.708	3590	5670	4000
	CRY 30 V	CRY 30 VUU	12.7	47.625	1.0625	26.988	25.4	1.287	32.7	1.588	12.692	12.682	12.708	12.708	12.718	12.708	3590	5670	4000
15.875	CRY 32 V	CRY 32 VUU	15.875	50.8	1.3125	33.338	31.75	1.417	36	1.588	15.867	15.587	15.883	15.873	15.893	15.883	4660	8220	3600
	CRY 36 V	CRY 36 VUU	15.875	57.15	1.3125	33.338	31.75	1.417	36	1.588	15.867	15.587	15.883	15.873	15.893	15.883	4660	8220	3600
19.05	CRY 40 V	CRY 40 VUU	19.05	63.5	1.5625	39.688	38.1	1.705	43.3	2.381	19.042	19.032	19.058	19.048	19.068	19.058	6260	11900	3000
	CRY 44 V	CRY 44 VUU	19.05	69.85	1.5625	39.688	38.1	1.705	43.3	2.381	19.042	19.032	19.058	19.048	19.068	19.058	6260	11900	3000

SERVICE / PRECISION / TECHNOLOGY