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SALES AGENT:

CYLINDRICAL ROLLER BEARING

NPB cylindrical roller bearings are available in many designs, series and sizes. The majorities are single row bearings with a cage, single and double row full complement bearing. Bearings with a cage can accommodate heavy radial loads, rapid accelerations and high speeds. Full complement bearings incorporate a maximum number of rollers and are therefore suitable for very heavy radial loads at moderate speeds.

Most of NPB's cylindrical roller bearings are separable. This makes it very convenient to mount and dismount. The rollers in cylindrical roller bearings are guided by ribs on either the inner ring or outer ring, so the rings can move axially relative to each other. These can be used as free-end bearings.

CYLINDRICAL ROLLER BEARINGS WITH CAGE

Single row cylindrical roller bearings with cage

Single row cylindrical roller bearings with cage have a very high radial load carrying capacity and are suitable for high speeds compared to full complement designs. The rollers are guided between rigid ribs in one of the two bearing rings and form a unit with this ring due to the cage. Since a bearing ring of this type can be removed, the rings can be mounted separately. The bearings are available as non-locating NU, N, semi-locating NJ, NF and locating bearings NUP.

Basic design bearings

NPB basic design single row cylindrical roller bearings are available in several designs. The main difference is the configuration of the flanges. The most popular designs (fig. 1) are listed in this catalogue and include:

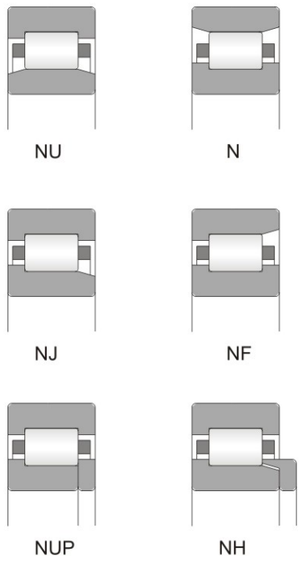


fig1

• NU, N design

NU design bearings have two integral flanges on the outer ring and no flanges on the inner ring.

In series N, the bearings have two integral flanges on the inner ring, while the outer ring has no flanges.

These bearings are used as non-locating bearings and can accommodate axial displacement of the shaft relative to the housing in both directions.

• NJ, NF design

NJ design bearings have two integral flanges on the outer ring and one on the inner ring. In series NF, the bearings have two integrated flanges on inner ring, and the outer ring has only one flange.

These bearings are used as semi-locating bearings and support not only high radial forces but also axial force in one direction and therefore guide the shafts axially in one direction.

• NUP, NH design

NUP design bearings have two integral flanges on the outer ring and one integral flange and one non-integral flange i.e. a loose flange ring on the inner ring. Bearings of type NH are combined by the bearing of type NJ and L-section ring for the flangeless side of the inner ring. Comparing to NUP type with short flange ring and non-locating loose flange, type NH can take the advantage of the whole inner ring width of NJ to match with axes tightly. Moreover, it's quite convenient to mount and dismount.

These type of bearings can support not only high axial forces but also axial forces in both directions and therefore used as locating bearings.

Double row cylindrical roller bearings with cage

NPB's double-row cylindrical roller bearings are divided into bearings with cylindrical inner bore and tapered inner bore(with suffix K). This type of bearing has there advantages, such as compact structure, good rigidity, heavy load carrying capacity, and little distortion under loads. Therefore they are mainly used in machine tools, rolling mill stands, plastic calenders, grinding mills and also large gearboxes.

• NN, NNU design

Bearings of type (fig2) NN have three integral flanges on the inner ring and a flangeless outer ring. Bearings of type NNU (fig3) have three integral flanges on the outer ring and a flangeless outer ring.

Therefore, these bearings are used as non-locating bearings and permits axial displacement in double directions of the housings relative to the shaft.

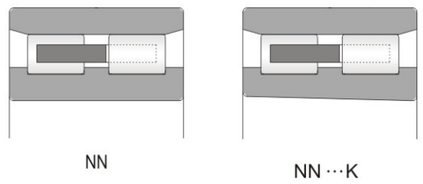


fig2

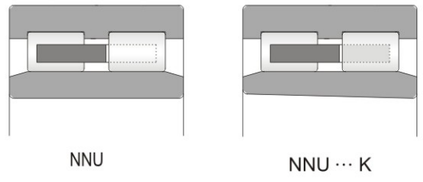


fig3

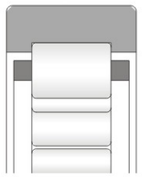
Other variants

Type of E design

Comparing to the former bearings with the same types, the internal structures have been improved to in order to increase the carrying capacity and life. The bearing code will be suffixed with E.

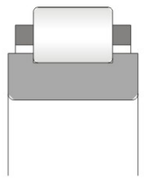
Bearings without an inner or outer ring

NPB can supply NU design cylindrical roller bearings without an inner ring (RNU series fig4), and N design bearings without an outer ring (RN series fig5). These bearings are typically used in applications where hardened and ground raceways are provided on the shaft or in the housing. Because RNU bearings do not have an inner ring, the shaft diameter can be larger to provide a stronger, stiffer shaft arrangement. Additionally, the possible axial displacement of the shaft relative to the housing is limited only by the width of the raceway on the shaft for RNU bearings, or in the housing for RN bearings.



RNU

fig4



RN

fig5

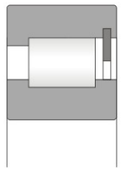
FULL COMPLEMENT CYLINDRICAL ROLLER BEARINGS

Full complement cylindrical roller bearings have the maximum possible number of rollers which enable the bearings to have extremely high radial load carrying capacity and high rigidity. Due to the kinematic conditions, however, they do not achieve the high speed that are possible when using cylindrical roller bearings with cage.

Single row full complement cylindrical roller bearings

• NCF design

NCF (fig6) design bearings have two integral flanges on the inner ring and one on the outer ring. A retaining ring inserted in the outer ring on the side opposite the integral flange holds the bearing together. The retaining ring should not be loaded axially during operation.

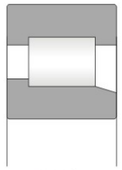


NCF

fig6

• NJG design

NJG (fig7) design bearings, which comprise the heavy 23 dimension series, are intended for very heavily loaded, low-speed applications. These bearings have two integral flanges on the outer ring and one on the inner ring. NJG design bearings have a self-retaining roller complement. Therefore, the outer ring with the roller complement can be separated from the inner ring without having to take special precautions to prevent the rollers from falling out. This simplifies mounting and dismounting.

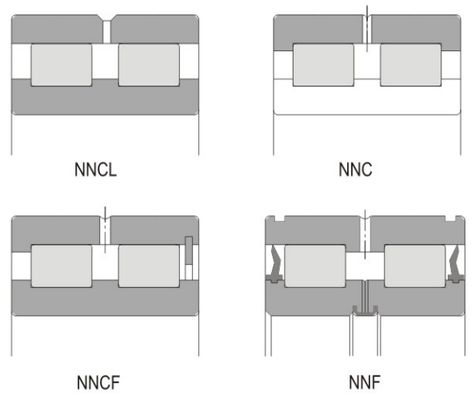


NJG

fig7

Double row full complement cylindrical roller bearings

The basic assortment of double row full complement cylindrical roller bearings includes NNCL, NNCF and NNC (fig8) open design bearings, as well as sealed NNF design bearings. All bearings are non-separable and have an annular groove and three lubrication holes in the outer ring to facilitate lubrication. NNF design bearings have three additional lubrication holes in the inner ring.



NNCL NNC

NNCF NNF

fig8

SUFFIXES

Suffixes for available designs: see talbe1

Table 1

Suffixes	Description
C3	Radial internal clearance larger than normal
E	Increased capacity design
J	Sheet steel window cage, single piece, roller-guided
M	Solid window cage, roller-guided
MA	Solid brass cage, single piece, rib-guided on outer ring
MB	Solid brass cage, single piece, rib-guided on inner ring
T	Phenolic pressure solid cage
V	Full complement
CV	Modified internal design, full complement roller set
VH	Full complement of rollers, self-retaining
K	Tapered bore, taper1:12
W33	Lubrication groove and three holes on outer ring

CAGE

Most cage for NPB s cylindrical roller bearings are pressed steel cages (suffix J) or machined brass cages(suffix M), glass fiber reinforced polyamide PA66 (suffix P) is also used in some types of bearings. According to different working conditions and customer s requirements, cages with other designs and structure could be supplied.

The cages used in the standard bearings are shown in the table2.

Table 2

Bearing Series	Pressed steel J	Polyamide PA66 cage P	Solid brass cage M
NU,NUP 10	-	-	1005~1092
N,NF 2	204~220	-	204~264
NU,NJ,NUP 2	-	-	244~264
NU,NJ,NUP 2 E	-	204E~213E	214E~240E
NU,NJ,NUP 22	2204~2220	-	2204~2252
NU,NJ,NUP 22 E	2204E~2220R	-	2204E~2240E
NU 32	-	-	3206~3252
N,NF 3	304~320	-	304~348
NU,NJ,NUP 3	-	-	334~348
NU,NJ,NUP 3 E	-	304E~214E	315E~332E
NU,NJ,NUP 23	2304~2320	-	2304~2340
NU,NJ,NUP 23 E	2304E~2320E	-	2304E~2332E
NU 33	-	-	3306~3352
NU,NJ,NUP,NF 4	406~420	-	406~430

DIMENSION AND ACCURACY

NPB's standard cylindrical roller bearing dimension is in accordance to GB/T273.3(Rolling Bearing, Radial Bearing, and Boundary Dimension General Specification), GB/T283(Rolling Bearing, Cylindrical Roller Bearing, and Boundary Dimension), GB/T285(Rolling Bearing, and Boundary Dimension)

The tolerance of standard cylindrical roller bearing is in accordance to GB/T307.1(Rolling Bearing, Radial Bearing, and Tolerance) which can be refer to table3.

The standard cylindrical roller bearings have normal precision degree P0, and it can be ordered if higher degree is needed.

CLEARANCE

The clearance of NPB's standard cylindrical roller bearing is in accordance to GB/T4604 which can be refer to table4.

The standard cylindrical roller bearings are supplied with normal clearance. Most of the bearings are also can be supplied with clearance of C3.

MINIMUM LOAD

In order to keep bearings working in good condition, a minimum load must be imposed on bearings, particularly on bearings working at high speeds, high accelerations, or with the load direction changing frequently, because under these working conditions, internal force of balls and cage and lubricant friction will have bad influence on the rotation of bearings, and detrimental sliding movement may be caused.

The minimum load of a cylindrical roller bearing can be obtained from

$$Fmin = K_r \left(6 + \frac{4n}{n_{limit}} \right) \left(\frac{dm}{100} \right)^2$$

Where

n-Working speed, r/min

n_{limit}—Limit speed, r/min

dm—Mean bearing diameter dm=0.5(d+D), mm

K_r—Minimum load factors, the values are listed in the table below

K_r	Dimension Series			
	10	2,3,4	22	23
	100	150	200	250

When bearings are started at low ambient temperatures ore in the condition that the viscosity of the lubricant is very high, bigger minimum load is required. Usually, the weight of the bearing supporting parts plus the load on the bearing has been over the required minimum load. If the weight cannot be up to the minimum load, extra radial load must be exerted on this type of bearing in order to meet the requirement of minimum load.

LOAD RATING

Axial Dynamic Load Carrying Capacity

NPB's cylindrical roller bearings with designed flanges on inner and outer ring can carry not only radial load but also a certain amount of axial loads. The axial load carrying capacity mainly depends on the form of interface between roller and face and flange, lubricating conditions, and heat dissipation, etc

Based on the following supposed conditions, the permissible axial load can be calculated from

$$Fmax = \frac{K_1 C_0 10^4}{n(d+D)} - K_2 F_r$$

Where

F_{max}—Max permissible axial load, kN

C_0—Basic static load rating,kN

F_r—Actual radial load, kN

n—Speed, r/min

d(D)—Bearing innder diameter(outer diameter),mm

K_1– Factor, oil lubricant:1.5, grease lubricant:0.5

K_2—Factor, oil lubricant:0.3, grease lubricant:0.15

The above formula is based on the temperature difference of 60℃ between working and ambient temperature, and the viscosity ratio≥2.

Note that this formula will not be applicable in the case of roller end face or lange with special design.

In order to avoid flange cracking, NPB technical department advises that the axial load K_a(frequently or occasionally) cannot be larger than the following Value:

$$F_a=0.0023D^{1.7}\ kN$$

D-Bearing outer diameter, mm

The axial load F_a acting on bearing in a short time or occasionally can not be larger than the following value:

$$F_a=0.007D^{1.7}\ kN$$

D-Bearing outer diameter, mm

When single row cylindrical roller bearings carry heavy axial load, the loads need to be distributed equally. In addition, a certain rotating precision, dimension of shaft shoulder and axial runout should be reached. The related axial runout of shaft shoulder can be referred to “Bearing application”.

When axial load and deflexion happen at the same time , the height of the shaft shoulder of supporting inner ring should be on half of the flange, see Fig.1 In order to avoid the flange carrying circular stress, the shaft shoulder diameter can be calculated from

$$d_a=0.5(d_1+F)$$

Where

d_a—Shaft shoulder diameter, mm

d_1—Flange diameter of inner ring, mm

F—Raceway diameter of inner ring, mm

When axes angular error between inner ring and outer ring exceed 1′, the load carrying capacity on the flange shall be changed extremely. In that case, safe coefficient as above may not be suitable. In this case, please consult NPB technical department.

To ensure cylindrical roller bearing is working in good condition under axial loads, especially heavy axial loads, NPB technical department suggests to notice the following several points:

• Internal radial clearance should be controlled within the required range, and small clearance is preferred to big.

• Please use lubricant with extreme pressure additive.

Equivalent Dynamic Load

For cylindrical roller bearings carrying dynamic loads, when applied as wandering end bearings, the equivalent dynamic load can be calculated as following

$P=F_r$

If the bearing carries axial load in one direction ore double directions, the equivalent dynamic load can be calculated from

When $F_a/F_r \leqslant e$ $P=F_r$

When $F_a/F_r > e$ $P=0.92F_r+YF_a$

e- Limit vales

For dimension series 2,3,4 e=0.2

For other series e=0.3

Y-Axial load coefficient

For dimension series 2,3,4 Y=0.6

For other series Y=0.4

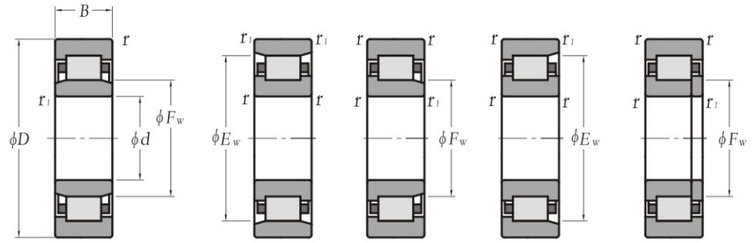
In order to obtain ideal effect, cylindrical roller bearing needs to carry axial load an radial load at the same time. However, the ratio of axial load and radial load should be smaller than0.5.

Equivalent Static Load

For the cylindrical roller bearing carrying static load, the equivalent static load can be calculated from

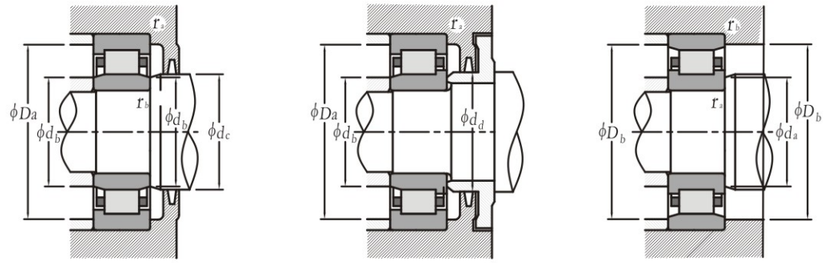
$P_0=F_r$

Cylindrical Roller Bearing d20~30mm



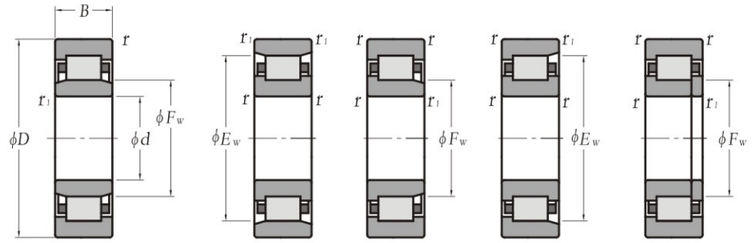
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
20	47	14	1	0.6	27	40	15.4	12.7	15 000	18 000	**NU204**	**NJ204**
	47	14	1	0.6	26.5	—	25.7	22.6	12 000	15 000	**NU204E**	**NJ204E**
	47	18	1	0.6	27	—	20.7	18.4	13 000	18 000	**NU2204**	**NJ2204**
	47	18	1	0.6	26.5	—	30.6	28.3	12 000	15 000	**NU2204E**	**NJ2204E**
	52	15	1.1	0.6	28.5	44.5	23.1	19.2	12 000	16 000	**NU304**	**NJ304**
	52	15	1.1	0.6	27.5	—	31.5	26.9	11 000	14 000	**NU304E**	**NJ304E**
	52	21	1.1	0.6	28.5	—	32.9	30.2	11 000	16 000	**NU2304**	**NJ2304**
	52	21	1.1	0.6	27.5	—	42.0	38.8	9 000	14 000	**NU2304E**	**NJ2304E**
25	47	12	0.6	0.3	30.5	—	14.3	13.1	15 000	18 000	**NU1005**	**–**
	52	15	1	0.6	32	45	17.7	15.7	13 000	16 000	**NU205**	**NJ205**
	52	15	1	0.6	31.5	—	29.3	27.7	10 000	13 000	**NU205E**	**NJ205E**
	52	18	1	0.6	32	—	23.7	22.8	12 000	16 000	**NU2205**	**NJ2205**
	52	18	1	0.6	31.5	—	34.9	34.6	10 000	13 000	**NU2205E**	**NJ2205E**
	62	17	1.1	1.1	35	53	29.3	25.2	10 000	14 000	**NU305**	**NJ305**
	62	17	1.1	1.1	34	—	41.6	37.4	9 100	11 000	**NU305E**	**NJ305E**
	62	24	1.1	1.1	35	—	42.7	40.9	9 100	14 000	**NU2305**	**NJ2305**
	62	24	1.1	1.1	34	—	57.0	56.1	8 000	11 000	**NU2305E**	**NJ2305E**
30	55	13	1	0.6	36.5	—	18.7	18.4	13 000	15 000	**NU1006**	**–**
	62	16	1	0.6	38.5	53.5	23.5	21.5	11 000	13 000	**NU206**	**NJ206**
	62	16	1	0.6	37.5	—	39.1	37.4	8 600	11 000	**NU206E**	**NJ206E**
	62	20	1	0.6	38.5	—	32.9	33.1	9 800	13 000	**NU2206**	**NJ2206**
	62	20	1	0.6	37.5	—	48.9	49.8	8 600	11 000	**NU2206E**	**NJ2206E**
	62	23.8	1	1	38.5	—	42.7	46.4	8 700	13 000	**NU3206**	**–**
	72	19	1.1	1.1	42	62	38.6	35.2	8 700	12 000	**NU306**	**NJ306**
	72	19	1.1	1.1	40.5	—	53.1	50.2	7 800	9 700	**NU306E**	**NJ306E**
	72	27	1.1	1.1	42	—	51.4	50.8	7 700	12 000	**NU2306**	**NJ2306**



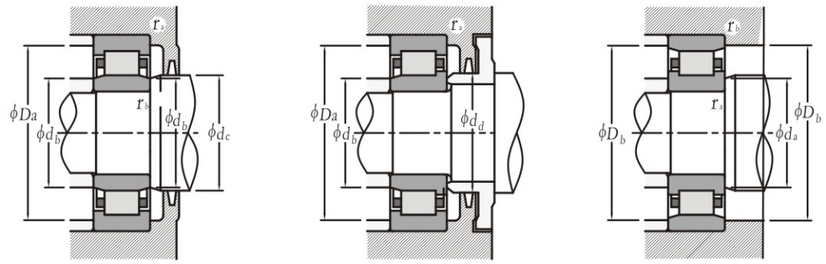
Type			Mounting Dimensions (mm)									(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP204	**N204**	**Nf204**	25	24	26	29	32	42	43	42	1	0.6	0.108
NUP204E	**–**	**–**	25	24	26	29	32	42	—	—	1	0.6	0.112
NUP2204	**–**	**–**	25	24	26	29	32	42	—	—	1	0.6	0.146
NUP2204E	**–**	**–**	25	24	26	29	32	42	—	—	1	0.6	0.146
NUP304	**N304**	**NF304**	26.5	24	27	30	33	45.5	48	45.5	1	0.6	0.147
NUP3304E	**–**	**–**	26.5	24	27	30	33	45.5	—	—	1	0.6	0.153
NUP2304	**–**	**–**	26.5	24	27	30	33	45.5	—	—	1	0.6	0.212
NUP2304E	**–**	**–**	26.5	24	27	30	33	45.5	—	—	1	1	0.215
NUP1005	**–**	**–**	29	27	30	32	—	43	—	—	0.6	0.3	0.084
NUP205	**N205**	**NF205**	30	29	31	34	37	47	48	47	1	0.6	0.132
NUP205E	**–**	**–**	30	29	31	34	37	47	—	—	1	0.6	0.138
NUP2205	**–**	**–**	30	29	31	34	37	47	—	—	1	0.6	0.163
NUP2205E	**–**	**–**	30	29	31	34	37	47	—	—	1	0.6	0.166
NUP305	**N305**	**NF305**	31.5	31.5	33	37	40	55.5	55.5	55	1	1	0.241
NUP305E	**–**	**–**	31.5	31.5	33	37	40	55.5	—	—	1	1	0.243
NUP2305	**–**	**–**	31.5	31.5	33	37	40	55.5	—	—	1	1	0.340
NUP2305E	**–**	**–**	31.5	31.5	33	37	40	55.5	—	—	1	1	0.350
NUP1006	**–**	**–**	35	34	35	38	—	50	—	—	1	0.5	0.121
NUP206	**N206**	**NF206**	35	34	37	40	44	57	58	56	1	0.6	0.200
NUP206E	**–**	**–**	35	34	37	40	44	57	—	—	1	0.6	0.209
NUP2206	**–**	**–**	35	34	37	40	44	57	—	—	1	0.6	0.262
NUP2206E	**–**	**–**	35	34	37	40	44	57	—	—	1	0.6	0.262
–	**–**	**–**	—	35	37	40	—	57	—	—	1	0.6	0.343
NUP306	**N306**	**NF306**	36.5	36.5	40	44	48	65.5	65.5	64	1	1	0.358
NUP306E	**–**	**–**	36.5	36.5	40	44	48	65.5	—	—	1	1	0.361
NUP2306	**–**	**–**	36.5	36.5	40	44	48	65.5	—	—	1	1	0.500

Cylindrical Roller Bearing d30~40mm



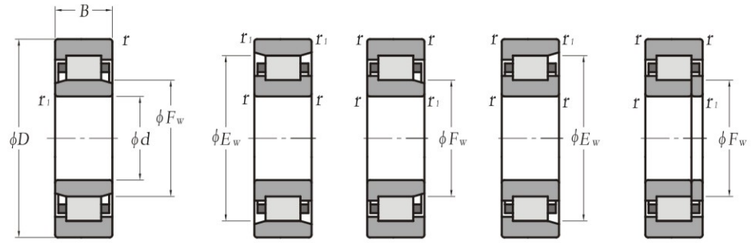
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
30	72	27	1.1	1.1	40.5	—	74.6	77.6	6 800	9 700	**NU2306E**	**NJ2306E**
	72	30.2	1.1	1.1	42	—	69.1	74.3	7 700	12 000	**NU3306**	**–**
	90	23	1.5	1.5	45	73	62.8	55.0	7 600	10 000	**NU406**	**NJ406**
35	62	14	1	0.6	42	—	22.6	23.2	11 000	13 000	**NU1007**	**–**
	72	17	1.1	0.6	43.8	61.8	33.6	31.5	9 500	11 000	**NU207**	**NJ207**
	72	17	1.1	0.6	44	—	50.2	50.2	7 400	9 300	**NU207E**	**NJ207E**
	72	23	1.1	0.6	43.8	—	49.0	51.2	8 500	11 000	**NU2207**	**NJ2207**
	72	23	1.1	0.6	44	—	61.6	65.3	7 400	9 300	**NU2207E**	**NJ2207E**
	72	27	1.1	1.1	43.8	—	54.8	59.1	7 600	11 000	**NU3207**	**–**
	80	21	1.5	1.1	46.2	68.2	49.6	46.9	7 900	10 000	**NU307**	**NJ307**
	80	21	1.5	1.1	46.2	—	66.6	65.4	6 900	8 600	**NU307E**	**NJ307E**
	80	31	1.5	1.1	46.2	—	64.4	65.7	7 000	10 000	**NU2307**	**NJ2307**
	80	31	1.5	1.1	46.2	—	93.1	101	6 000	8 600	**NU2307E**	**NJ2307E**
	80	34.9	1.5	1.5	46.2	—	81.7	89.1	7 000	10 000	**NU3307**	**–**
	100	25	1.5	1.5	53	83	75.2	68.9	6 600	8 800	**NU407**	**NJ407**
40	68	15	1	0.6	47	—	24.9	25.7	10 000	12 000	**NU1008**	**–**
	80	18	1.1	1.1	50	70	43.8	42.9	8 300	10 000	**NU208**	**NJ208**
	80	18	1.1	1.1	49.5	—	55.7	55.4	6 600	8 300	**NU208E**	**NJ208E**
	80	23	1.1	1.1	50	—	58.3	62.0	7 500	10 000	**NU2208**	**NJ2208**
	80	23	1.1	1.1	49.5	—	72.3	77.6	6 600	8 300	**NU2208E**	**NJ2208E**
	80	30.2	1.1	1.1	50	—	78.3	90.6	6 700	10 000	**NU3208**	**–**
	90	23	1.5	1.5	53.5	77.5	58.6	56.9	6 900	9 100	**NU308**	**NJ308**
	90	23	1.5	1.5	52	—	83.1	81.5	6 100	7 600	**NU308E**	**NJ308E**
	90	33	1.5	1.5	53.5	—	82.2	88.0	6 100	9 100	**NU2308**	**NJ2308**
	90	33	1.5	1.5	52	—	114	122	5 300	7 600	**NU2308E**	**NJ2308E**
	90	36.5	1.5	1.5	53.5	—	104	119	6 100	9 100	**NU3308**	**–**
	110	27	2	2	58	92	97.1	89.1	6 000	8 000	**NU408**	**NJ408**



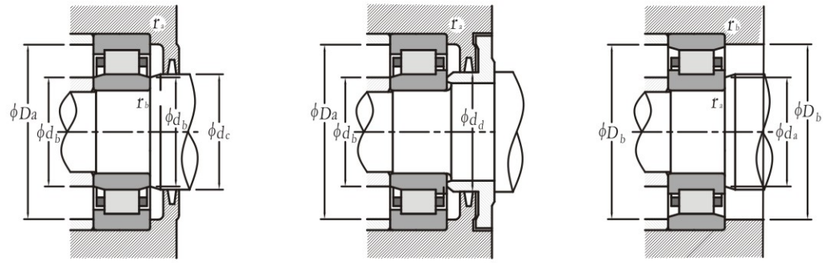
Type			Mounting Dimensions (mm)										(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP2306E	**–**	**–**	36.5	36.5	40	44	48	65.5	—	—	1	1	0.534
–	**–**	**–**	—	36.5	40	44	—	65.5	—	—	1	1	0.650
NUP406	**N406**	**NF406**	38	38	44	47	52	82	82	74	1.5	1.5	0.753
NUP1007	**–**	**–**	40	39	41	44	—	57	—	—	1	0.5	0.182
NUP207	**N207**	**NF207**	41.5	39	43	46	50	65.5	68	64	1	0.6	0.293
NUP207E	**–**	**–**	41.5	39	43	46	50	65.5	—	—	1	0.6	0.306
NUP2207	**–**	**–**	41.5	39	43	46	50	65.5	—	—	1	0.6	0.402
NUP2207E	**–**	**–**	41.5	39	43	46	50	65.5	—	—	1	0.6	0.404
–	**–**	**–**	—	41.5	43	46	—	65.5	—	—	1	0.6	0.524
NUP307	**N307**	**NF307**	43	41.5	45	48	53	72	73.5	71	1.5	1	0.477
NUP307E	**–**	**–**	43	41.5	45	48	53	72	—	—	1.5	1	0.482
NUP2307	**–**	**–**	43	41.5	45	48	53	72	—	—	1.5	1	0.696
NUP2307E	**–**	**–**	43	41.5	45	48	53	72	—	—	1.5	1	0.729
–	**–**	**–**	—	43	45	48	—	72	—	—	1.5	1	0.908
NUP407	**N407**	**NF407**	43	43	52	55	61	92	92	84	1.5	1.5	1.02
NUP1008	**–**	**–**	45	44	46	49	—	63	—	—	1	0.6	0.223
NUP208	**N208**	**NF208**	46.5	46.5	49	52	56	73.5	73.5	72	1	1	0.366
NUP208E	**–**	**–**	46.5	46.5	49	52	56	73.5	—	—	1	1	0.384
NUP2208	**–**	**–**	46.5	46.5	49	52	56	73.5	—	—	1	1	0.490
NUP2208E	**–**	**–**	46.5	46.5	49	52	56	73.5	—	—	1	1	0.490
–	**–**	**–**	—	46.5	49	52	—	73.5	—	—	1	1	0.711
NUP308	**N308**	**NF308**	48	48	51	55	60	82	82	80	1.5	1.5	0.657
NUP308E	**–**	**–**	48	48	51	55	60	82	—	—	1.5	1.5	0.664
NUP2308	**–**	**–**	48	48	51	55	60	82	—	—	1.5	1.5	0.956
NUP2308E	**–**	**–**	48	48	51	55	60	82	—	—	1.5	1.5	0.962
–	**–**	**–**	—	48	51	55	—	82	—	—	1.5	1.5	1.19
NUP408	**N408**	**NF408**	49	49	57	60	67	101	101	93	2	2	1.30

Cylindrical Roller Bearing d45~55mm



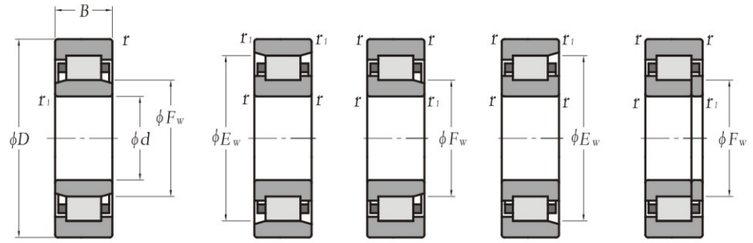
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
45	75	16	1	0.6	52.5	—	31.0	33.8	9 200	11 000	**NU1009**	**–**
	85	19	1.1	1.1	55	75	46.1	46.9	7 700	9 200	**NU209**	**NJ209**
	85	19	1.1	1.1	54.5	—	63.1	66.4	6 100	7 600	**NU209E**	**NJ209E**
	85	23	1.1	1.1	55	—	61.4	67.8	6 900	9 200	**NU2209**	**NJ2209**
	85	23	1.1	1.1	54.5	—	76.1	84.6	6 100	7 600	**NU2209E**	**NJ2209E**
	85	30.2	1.1	1.1	55	—	82.4	99.0	6 100	9 200	**NU3209**	**–**
	100	25	1.5	1.5	58.5	86.5	78.8	77.5	6 200	8 300	**NU309**	**NJ309**
	100	25	1.5	1.5	58.5	—	97.4	98.3	5 400	6 800	**NU309E**	**NJ309E**
	100	36	1.5	1.5	58.5	—	106	113	5 500	8 300	**NU2309**	**NJ2309**
	100	36	1.5	1.5	58.5	—	137	153	4 700	6 800	**NU2309E**	**NJ2309E**
	100	39.7	1.5	1.5	58.5	—	131	149	5 500	8 300	**NU3309**	**–**
	120	29	2	2	64.5	100.5	115	112	5 400	7 200	**NU409**	**NJ409**
50	80	16	1	0.6	57.5	—	33.6	36.8	8 400	9 900	**NU1010**	**–**
	90	20	1.1	1.1	60.4	80.4	48.2	51.0	7 100	8 500	**NU210**	**NJ210**
	90	20	1.1	1.1	59.5	—	66.1	71.9	5 700	7 100	**NU210E**	**NJ210E**
	90	23	1.1	1.1	60.4	—	64.2	73.6	6 400	8 500	**NU2210**	**NJ2210**
	90	23	1.1	1.1	59.5	—	79.7	91.5	5 700	7 100	**NU2210E**	**NJ2210E**
	90	30.2	1.1	1.1	60.4	—	86.2	108	5 700	8 500	**NU3210**	**–**
	110	27	2	2	65	95	92.2	93.4	5 600	7 500	**NU310**	**NJ310**
	110	27	2	2	65	—	110	113	4 900	6 100	**NU310E**	**NJ310E**
	110	40	2	2	65	—	128	142	5 000	7 500	**NU2310**	**NJ2310**
	110	40	2	2	65	—	163	187	4 300	6 100	**NU2310E**	**NJ2310E**
	110	44.4	2	2	65	—	156	183	5 000	7 500	**NU3310**	**–**
	130	31	2.1	2.1	70.8	110.8	139	136	4 900	6 600	**NU410**	**NJ410**
55	90	18	1.1	1	64.8	—	37.4	43.8	7 600	8 900	**NU1011**	**–**
	100	21	1.5	1.1	66.5	88.5	58.0	62.3	6 400	7 700	**NU211**	**NJ211**
	100	21	1.5	1.1	66	—	86.4	98.7	5 100	6 400	**NU211E**	**NJ211E**



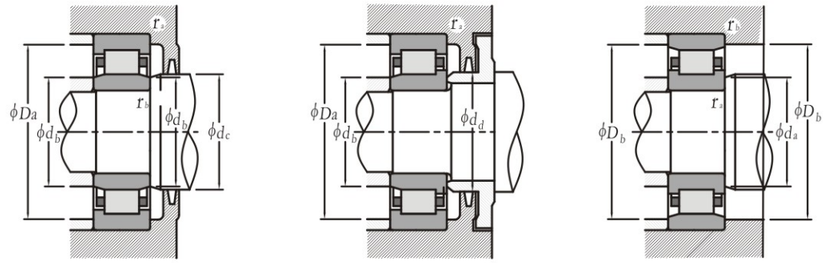
Type			Mounting Dimensions (mm)								(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP1009	**–**	**–**	50	49	52	54	—	70	—	—	1	0.6	0.289
NUP209	**N209**	**NF209**	51.5	51.5	54	57	61	78.5	78.5	77	1	1	0.427
NUP209E	**–**	**–**	51.5	51.5	54	57	61	78.5	—	—	1	1	0.439
NUP2209	**–**	**–**	51.5	51.5	54	57	61	78.5	—	—	1	1	0.536
NUP2209E	**–**	**–**	51.5	51.5	54	57	61	78.5	—	—	1	1	0.536
–	**–**	**–**	—	51.5	54	57	—	78.5	—	—	1	1	0.770
NUP309	**N309**	**NF309**	53	53	57	60	66	92	92	89	1.5	1.5	0.870
NUP309E	**–**	**–**	53	53	57	60	66	92	—	—	1.5	1.5	0.909
NUP2309	**–**	**–**	53	53	57	60	66	92	—	—	1.5	1.5	1.25
NUP2309E	**–**	**–**	53	53	57	60	66	92	—	—	1.5	1.5	1.32
–	**–**	**–**	—	53	57	60	—	92	—	—	1.5	1.5	1.59
NUP409	**N409**	**NF409**	54	54	63	66	74	111	111	102	2	2	1.64
NUP1010	**–**	**–**	55	54	57	59	—	75	—	—	1	0.6	0.306
NUP210	**N210**	**NF210**	56.5	56.5	58	62	67	83.5	83.5	82	1	1	0.479
NUP210E	**–**	**–**	56.5	56.5	58	62	67	83.5	—	—	1	1	0.497
NUP2210	**–**	**–**	56.5	56.5	58	62	67	83.5	—	—	1	1	0.580
NUP2210E	**–**	**–**	56.5	56.5	58	62	67	83.5	—	—	1	1	0.580
–	**–**	**–**	—	56.5	58	62	—	83.5	—	—	1	1	0.829
NUP310	**N310**	**NF310**	59	59	63	67	73	101	101	98	2	2	1.15
NUP310E	**–**	**–**	59	59	63	67	73	101	—	—	2	2	1.15
NUP2310	**–**	**–**	59	59	63	67	73	101	—	—	2	2	1.69
NUP2310E	**–**	**–**	59	59	63	67	73	101	—	—	2	2	1.76
–	**–**	**–**	—	59	63	67	—	101	—	—	2	2	2.14
NUP410	**N410**	**NF410**	61	61	69	73	81	119	119	112	2	2	2.01
NUP1011	**–**	**–**	61.5	60	63	66	—	83.5	—	—	1	1	0.445
NUP211	**N211**	**NF211**	63	61.5	65	68	73	92	93.5	91	1.5	1	0.640
NUP211E	**–**	**–**	63	61.5	65	68	73	92	—	—	1.5	1	0.650

Cylindrical Roller Bearing d55~65mm



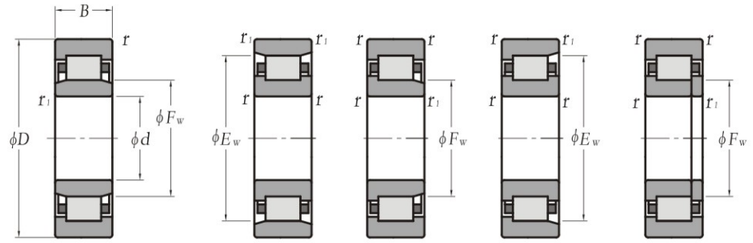
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
55	100	25	1.5	1.1	66.5	—	75.3	87.2	5800	7700	**NU2211**	**NJ2211**
	100	25	1.5	1.1	66	—	101	122	5100	6400	**NU2211E**	**NJ2211E**
	100	33.3	1.5	1.5	66.5	—	95.5	118	5100	7700	**NU3211**	**–**
	120	29	2	2	70.5	104.5	111	111	5100	6800	**NU311**	**NJ311**
	120	29	2	2	70.5	—	137	143	4500	5600	**NU311E**	**NJ311E**
	120	43	2	2	70.5	—	148	162	4500	6800	**NU2311**	**NJ2311**
	120	43	2	2	70.5	—	201	233	3900	5600	**NU2311E**	**NJ2311E**
	120	49.2	2	2	70.5	—	188	220	4500	6800	**NU3311**	**–**
	140	33	2.1	2.1	77.2	117.2	142	138	4600	6100	**NU411**	**NJ411**
60	95	18	1.1	1	69.5	—	42.1	50.0	7000	8300	**NU1012**	**–**
	110	22	1.5	1.5	73.5	97.5	71.9	79.9	5800	7000	**NU212**	**NJ212**
	110	22	1.5	1.5	72	—	97.7	107	4600	5800	**NU212E**	**NJ212E**
	110	28	1.5	1.5	73.5	—	101	123	5200	7000	**NU2212**	**NJ2212**
	110	28	1.5	1.5	72	—	131	157	4600	5800	**NU2212E**	**NJ2212E**
	110	36.5	1.5	1.5	73.5	—	128	167	4700	7000	**NU3212**	**–**
	130	31	2.1	2.1	17	113	124	126	4700	6300	**NU312**	**NJ312**
	130	31	2.1	2.1	77	—	150	157	4100	5200	**NU312E**	**NJ312E**
	130	46	2.1	2.1	77	—	168	188	4200	6300	**NU2312**	**NJ2312**
	130	46	2.1	2.1	77	—	223	262	3600	5200	**NU2312E**	**NJ2312E**
	130	54	2.1	2.1	77	—	220	265	4200	6300	**NU3312**	**–**
	150	35	2.1	2.1	83	127	178	184	4200	5700	**NU412**	**NJ412**
65	100	18	1.1	1	74.5	—	43.3	52.9	6600	7800	**NU1013**	**–**
	120	23	1.5	1.5	79.6	105.6	83.8	94.4	5400	6400	**NU213**	**NJ213**
	120	23	1.5	1.5	78.5	—	108	119	4200	5300	**NU213E**	**NJ213E**
	120	31	1.5	1.5	79.6	—	120	149	4800	6400	**NU2213**	**NJ2213**
	120	31	1.5	1.5	78.5	—	149	181	4200	5300	**NU2213E**	**NJ2213E**
	120	38.1	1.5	1.5	79.6	—	148	197	4300	6400	**NU3213**	**–**



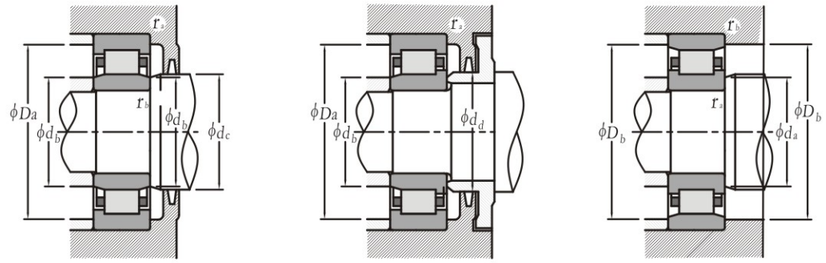
Type			Mounting Dimensions (mm)										(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP2211	**–**	**–**	63	61.5	65	68	73	92	—	—	1.5	1	0.780
NUP2211E	**–**	**–**	63	61.5	65	68	73	92	—	—	1.5	1	0.806
–	**–**	**–**	—	63	65	68	—	92	—	—	1.5	1	1.14
NUP311	**N311**	**NF311**	64	64	69	72	80	111	111	107	2	2	1.44
NUP311E	**–**	**–**	64	64	69	72	80	111	—	—	2	2	1.50
NUP2311	**–**	**–**	64	64	69	72	80	111	—	—	2	2	2.10
NUP2311E	**–**	**–**	64	64	69	72	80	111	—	—	2	2	2.25
–	**–**	**–**	—	64	69	72	—	111	—	—	2	2	2.81
NUP411	**N411**	**NF411**	66	66	76	79	87	129	129	119	2	2	2.51
NUP1012	**–**	**–**	66.5	65	68	71	—	88.5	—	—	1	1	0.477
NUP212	**N212**	**NF212**	68	68	71	75	80	102	102	100	1.5	1.5	0.823
NUP212E	**–**	**–**	68	68	71	75	80	102	—	—	1.5	1.5	0.830
NUP2212	**–**	**–**	68	68	71	75	80	102	—	—	1.5	1.5	1.07
NUP2212E	**–**	**–**	68	68	71	75	80	102	—	—	1.5	1.5	1.09
–	**–**	**–**	—	68	71	75	—	102	—	—	1.5	1.5	1.52
NUP312	**N312**	**NF312**	71	71	75	79	86	119	119	116	2	2	1.83
NUP312E	**–**	**–**	71	71	75	79	86	119	—	—	2	2	1.87
NUP2312	**–**	**–**	71	71	75	79	86	119	—	—	2	2	2.69
NUP2312E	**–**	**–**	71	71	75	79	86	119	—	—	2	2	2.81
–	**–**	**–**	—	71	75	79	—	119	—	—	2	2	3.61
NUP412	**N412**	**NF412**	71	71	82	85	94	139	139	128	2	2	3.02
NUP1013	**–**	**–**	71.5	70	73	76	—	93.5	—	—	1	1	0.506
NUP213	**N213**	**NF213**	73	73	77	81	87	112	112	108	1.5	1.5	1.05
NUP213E	**–**	**–**	73	73	77	81	87	112	—	—	1.5	1.5	1.05
NUP2213	**–**	**–**	73	73	77	81	87	112	—	—	1.5	1.5	1.43
NUP2213E	**–**	**–**	73	73	77	81	87	112	—	—	1.5	1.5	1.45
–	**–**	**–**	—	73	77	81	—	112	—	—	1.5	1.5	1.90

Cylindrical Roller Bearing d65~75mm



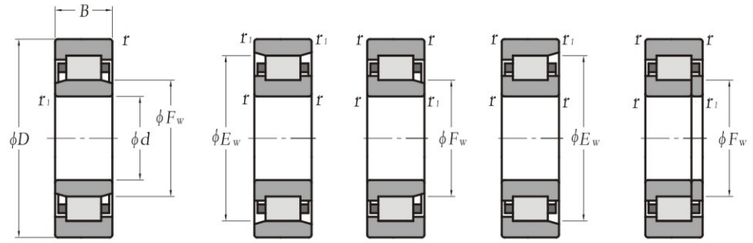
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
65	140	33	2.1	2.1	83.5	121.5	137	139	4300	5800	**NU313**	**NJ313**
	140	33	2.1	2.1	82.5	—	181	191	3800	4800	**NU313E**	**NJ313E**
	140	48	2.1	2.1	83.5	—	190	212	3900	5800	**NU2313**	**NJ2313**
	140	48	2.1	2.1	82.5	—	251	287	3300	4800	**NU2313E**	**NJ2313E**
	140	58.7	2.1	2.1	83.5	—	241	294	3900	5800	**NU3313**	**–**
	160	37	2.1	2.1	89.3	135.3	198	203	4000	5300	**NU413**	**NJ413**
70	110	20	1.1	1	80	—	57.9	70.4	6100	7200	**NU1014**	**–**
	125	24	1.5	1.5	84.5	110.5	83.3	95.2	5100	6100	**NU214**	**NJ214**
	125	24	1.5	1.5	83.5	—	119	137	4000	5000	**NU214E**	**NJ214E**
	125	31	1.5	1.5	84.5	—	119	151	4600	6100	**NU2214**	**NJ2214**
	125	31	1.5	1.5	83.5	—	156	194	4000	5000	**NU2214E**	**NJ2214E**
	125	39.7	1.5	1.5	84.5	—	147	198	4100	6100	**NU3214**	**–**
	150	35	2.1	2.1	90	130	162	168	4000	5400	**NU314**	**NJ314**
	150	35	2.1	2.1	89	—	205	222	3600	4400	**NU314E**	**NJ314E**
	150	51	2.1	2.1	90	—	224	262	3600	5400	**NU2314**	**NJ2314**
	150	51	2.1	2.1	89	—	275	323	3100	4400	**NU2314E**	**NJ2314E**
	150	63.5	2.1	2.1	90	—	283	356	3600	5400	**NU3314**	**–**
	150	42	3	3	100	152	246	257	3500	4700	**NU414**	**NJ414**
75	115	20	1.1	1	85	—	63.6	78.1	5700	6800	**NU1015**	**–**
	130	25	1.5	1.5	88.5	116.5	101	118	4800	5800	**NU215**	**NJ215**
	130	25	1.5	1.5	88.5	—	130	156	3800	4800	**NU215E**	**NJ215E**
	130	31	1.5	1.5	88.5	—	135	172	4300	5800	**NU2215**	**NJ2215**
	130	31	1.5	1.5	88.5	—	162	207	3800	4800	**NU2215E**	**NJ2215E**
	130	41.3	1.5	1.5	88.5	—	167	226	3900	5800	**NU3215**	**–**
	160	37	2.1	2.1	95.5	139.5	194	205	3800	5000	**NU315**	**NJ315**
	160	37	2.1	2.1	95	—	240	263	3300	4100	**NU315E**	**NJ315E**
	160	55	2.1	2.1	95.5	—	275	327	3400	5000	**NU2315**	**NJ2315**



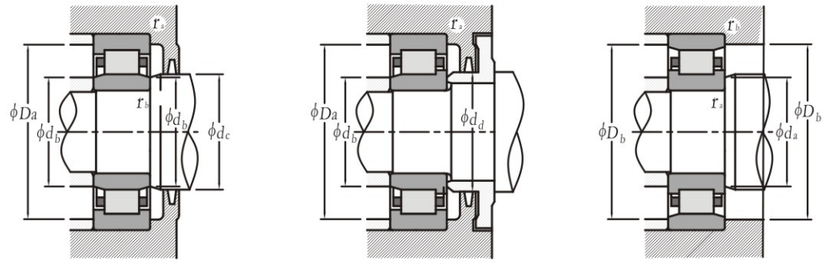
Type			Mounting Dimensions (mm)									(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP313	**N313**	**NF313**	76	76	81	85	93	129	129	125	2	2	2.24
NUP313E	**–**	**–**	76	76	81	85	93	129	—	—	2	2	2.31
NUP2313	**–**	**–**	76	76	81	85	93	129	—	—	2	2	3.25
NUP2313E	**–**	**–**	76	76	81	85	93	129	—	—	2	2	3.36
–	**–**	**–**	—	76	81	85	—	129	—	—	2	2	4.53
NUP413	**N413**	**NF413**	76	76	88	91	100	149	149	137	2	2	3.58
NUP1014	**–**	**–**	76.5	75	78	82	—	103.5	—	—	1	1	0.702
NUP214	**N214**	**NF214**	78	78	82	86	92	117	117	114	1.5	1.5	1.15
NUP214E	**–**	**–**	78	78	82	86	92	117	—	—	1.5	1.5	1.16
NUP2214	**–**	**–**	78	78	82	86	92	117	—	—	1.5	1.5	1.52
NUP2214E	**–**	**–**	78	78	82	86	92	117	—	—	1.5	1.5	1.53
–	**–**	**–**	—	78	82	86	—	117	—	—	1.5	1.5	2.09
NUP314	**N314**	**NF314**	81	81	87	92	100	139	139	134	2	2	2.73
NUP314E	**–**	**–**	81	81	87	92	100	139	—	—	2	2	2.81
NUP2314	**–**	**–**	81	81	87	92	100	139	—	—	2	2	3.97
NUP2314E	**–**	**–**	81	81	87	92	100	139	—	—	2	2	4.08
–	**–**	**–**	—	81	87	92	—	139	—	—	2	2	5.62
NUP414	**N414**	**NF414**	83	83	99	102	112	167	167	153	2.5	2.5	5.26
NUP1015	**–**	**–**	81.5	80	83	87	—	108.5	—	—	1	1	0.735
NUP215	**N215**	**NF215**	83	83	87	90	96	122	122	120	1.5	1.5	1.24
NUP215E	**–**	**–**	83	83	87	90	96	122	—	—	1.5	1.5	1.29
NUP2215	**–**	**–**	83	83	87	90	96	122	—	—	1.5	1.5	1.57
NUP2215E	**–**	**–**	83	83	87	90	96	122	—	—	1.5	1.5	1.61
–	**–**	**–**	—	83	87	90	—	122	—	—	1.5	1.5	2.28
NUP315	**N315**	**NF315**	86	86	93	97	106	149	149	143	2	2	3.24
NUP315E	**–**	**–**	86	86	93	97	106	149	—	—	2	2	3.37
NUP2315	**–**	**–**	86	86	93	97	106	149	—	—	2	2	4.84

Cylindrical Roller Bearing d75~85mm



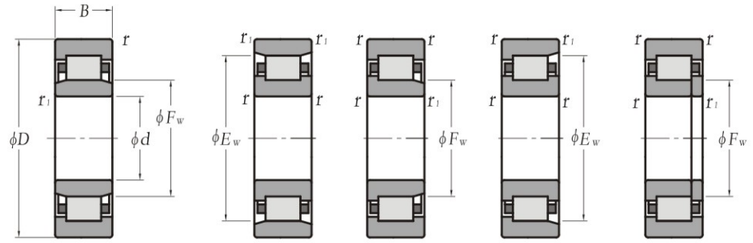
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
75	160	55	2.1	2.1	95	—	329	395	2900	4100	**NU2315E**	**NJ2315E**
	160	68.3	2.1	2.1	95.5	—	338	430	3400	5000	**NU3315**	**–**
	190	45	3	3	104.5	160.5	265	274	3300	4400	**NU415**	**NJ415**
	125	22	1.1	1	91.5	—	69.3	86.4	5300	6300	**NU1016**	**–**
	140	26	2	2	95.3	125.3	106	122	4500	4500	**NU216**	**NJ216**
	140	26	2	2	95.3	—	139	167	3500	4400	**NU216E**	**NJ216E**
80	140	33	2	2	95.3	—	148	186	4000	5400	**NU2216**	**NJ2216**
	140	33	2	2	95.3	—	186	243	3500	4400	**NU2216E**	**NJ2216E**
	140	44.4	2	2	95.3	—	190	259	3600	5400	**NU3216**	**–**
	170	39	2.1	2.1	103	147	194	207	3500	4700	**NU316**	**NJ316**
	170	39	2.1	2.1	101	—	259	282	3100	3900	**NU316E**	**NJ316E**
	170	58	2.1	2.1	103	—	275	332	3100	4700	**NU2316**	**NJ2316**
	170	58	2.1	2.1	101	—	361	431	2700	3900	**NU2316E**	**NJ2316E**
	170	68.3	2.1	2.1	103	—	338	436	3100	4700	**NU3316**	**–**
	200	48	3	3	110	170	302	315	3100	4200	**NU416**	**NJ416**
85	130	22	1.1	1	96.5	—	71.4	91.2	5100	6000	**NU1017**	**–**
	150	28	2	2	101.8	133.8	121	140	4200	5000	**NU217**	**NJ217**
	150	28	2	2	100.5	—	167	199	3300	4200	**NU217E**	**NJ217E**
	150	36	2	2	101.8	—	169	218	3800	5000	**NU2217**	**NJ2217**
	150	36	2	2	100.5	—	218	279	3300	4200	**NU2217E**	**NJ2217E**
	150	49.2	2	2	101.8	—	215	296	3300	5000	**NU3217**	**–**
	180	41	3	3	108	156	225	247	3300	4500	**NU317**	**NJ317**
	180	41	3	3	108	—	291	330	2900	3700	**NU317E**	**NJ317E**
	180	60	3	3	108	—	315	382	3000	4500	**NU2317**	**NJ2317**
	180	60	3	3	108	—	394	485	2600	3700	**NU2317E**	**NJ2317E**
	180	73	3	3	108	—	399	517	3000	4500	**NU3317**	**–**
	210	52	4	4	113	177	340	350	3000	4000	**NU417**	**NJ417**



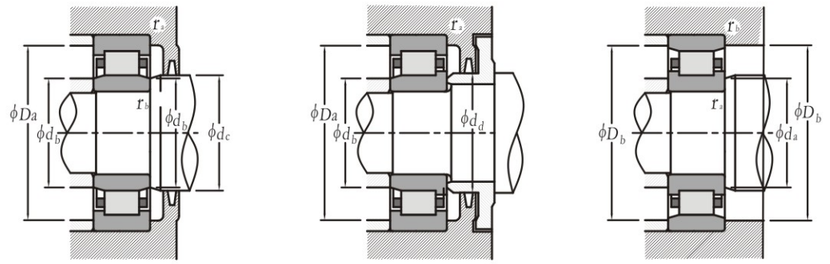
Type			Mounting Dimensions (mm)										(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP2315E	**–**	**–**	86	86	93	97	106	149	—	—	2	2	5.00
–	**–**	**–**	—	86	93	97	—	149	—	—	2	2	6.86
NUP415	**N415**	**NF415**	86	88	103	109	118	177	177	162	2.5	2.5	6.25
NUP1016	**–**	**–**	86.5	85	90	91	—	118.5	—	—	1	1	0.994
NUP216	**N218**	**NF218**	89	89	94	97	104	131	131	128	2	2	1.51
NUP216E	**–**	**–**	89	89	94	97	104	131	—	—	2	2	1.56
NUP2216	**–**	**–**	89	89	94	97	104	131	—	—	2	2	1.96
NUP2216E	**–**	**–**	89	89	94	97	104	131	—	—	2	2	2.03
–	**–**	**–**	—	89	94	97	—	131	—	—	2	2	2.87
NUP316	**N316**	**NF316**	91	91	99	105	114	159	159	151	2	2	3.92
NUP316E	**–**	**–**	91	91	99	105	114	159	—	—	2	2	4.00
NUP2316	**–**	**–**	91	91	99	105	114	159	—	—	2	2	5.83
NUP2316E	**–**	**–**	91	91	99	105	114	159	—	—	2	2	5.95
–	**–**	**–**	—	91	99	105	—	159	—	—	2	2	7.72
NUP416	**N416**	**NF416**	93	93	109	112	124	187	187	172	2.5	2.5	7.28
NUP1017	**–**	**–**	91.5	90	95	99	—	123.5	—	—	1	1	1.04
NUP217	**N217**	**NF217**	94	94	99	104	110	141	141	137	2	2	1.90
NUP217E	**–**	**–**	94	94	99	104	110	141	—	—	2	2	1.94
NUP2217	**–**	**–**	94	94	99	104	110	141	—	—	2	2	2.50
NUP2217E	**–**	**–**	94	94	99	104	110	141	—	—	2	2	2.53
–	**–**	**–**	—	94	99	104	—	141	—	—	2	2	3.67
NUP317	**N317**	**NF317**	98	98	106	110	119	167	167	160	2.5	2.5	4.52
NUP317E	**–**	**–**	98	98	106	110	119	167	—	—	2.5	2.5	4.80
NUP2317	**–**	**–**	98	98	106	110	119	167	—	—	2.5	2.5	6.62
NUP2317E	**–**	**–**	98	98	106	110	119	167	—	—	2.5	2.5	6.98
–	**–**	**–**	—	98	106	110	—	167	—	—	2.5	2.5	9.23
NUP417	**N417**	**NF417**	101	101	111	115	128	194	194	179	3	3	8.68

Cylindrical Roller Bearing d90~100mm



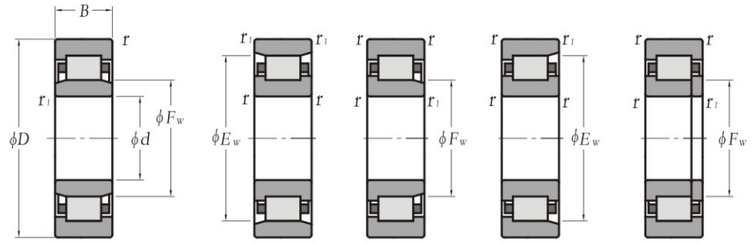
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
90	140	24	1.5	1.1	103	—	84.7	109	4700	5600	**NU1018**	**–**
	160	30	2	2	107	143	152	178	3900	4700	**NU218**	**NJ218**
	160	30	2	2	107	—	182	217	3100	3900	**NU218E**	**NJ218E**
	160	40	2	2	107	—	207	265	3500	4700	**NU2218**	**NJ2218**
	160	40	2	2	107	—	242	314	3100	3900	**NU2218E**	**NJ2218E**
	160	52.4	2	2	107	—	270	373	3100	4700	**NU3218**	**–**
	190	43	3	3	115	165	243	265	3100	4200	**NU318**	**NJ318**
	190	43	3	3	113.5	—	316	355	2800	3400	**NU318E**	**NJ318E**
	190	64	3	3	115	—	329	395	2800	4200	**NU2318**	**NJ2318**
	190	64	3	3	113.5	—	437	534	2400	3400	**NU2318E**	**NJ2318E**
	190	73	3	3	115	—	428	559	2800	4200	**NU3318**	**–**
	225	54	4	4	123.5	191.5	314	400	2800	3700	**NU418**	**NJ418**
95	145	24	1.5	1.1	108	—	87.2	115	4500	5300	**NU1019**	**–**
	170	32	2.1	2.1	113.5	151.5	165	195	3700	4400	**NU219**	**NJ219**
	170	32	2.1	2.1	112.5	—	221	265	2900	3700	**NU219E**	**NJ219E**
	170	43	2.1	2.1	113.5	—	230	298	3300	4400	**NU2219**	**NJ2219**
	170	43	2.1	2.1	112.5	—	287	371	2900	3700	**NU2219E**	**NJ2219E**
	170	55.6	2.1	2.1	113.5	—	297	412	3000	4400	**NU3219**	**–**
	200	45	3	3	121.5	173.5	277	311	3000	4000	**NU319**	**NJ319**
	200	45	3	3	121.5	—	334	387	2600	3200	**NU319E**	**NJ319E**
	200	67	3	3	121.5	—	394	496	2600	4000	**NU2319**	**NJ2319**
	200	77.8	3	3	121.5	—	487	654	2600	4000	**NU3319**	**–**
	240	55	4	4	133.5	201.5	410	444	2600	3400	**NU419**	**NJ419**
100	150	24	1.5	1.1	113	—	91.0	120	4300	5100	**NU1020**	**–**
	180	34	2.1	2.1	120	160	183	217	3500	4200	**NU220**	**NJ220**
	180	34	2.1	2.1	119	—	250	306	2800	3500	**NU220E**	**NJ220E**



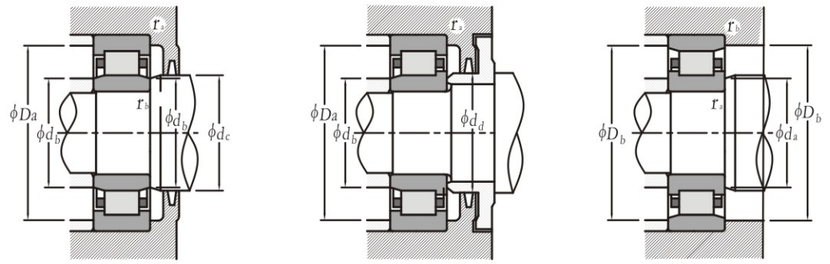
Type			Mounting Dimensions (mm)										(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP1018	**–**	**–**	98	96.5	101	106	—	132	—	—	1.5	1	1.34
NUP218	**N218**	**NF218**	99	99	105	109	116	151	151	146	2	2	2.28
NUP218E	**–**	**–**	99	99	105	109	116	151	—	—	2	2	2.38
NUP2218	**–**	**–**	99	99	105	109	116	151	—	—	2	2	3.10
NUP2218E	**–**	**–**	99	99	105	109	116	151	—	—	2	2	3.21
–	**–**	**–**	—	99	105	109	—	151	—	—	2	2	4.49
NUP318	**N318**	**NF318**	103	103	111	117	127	177	177	169	2.5	2.5	5.38
NUP318E	**–**	**–**	103	103	111	117	127	177	—	—	2.5	2.5	5.47
NUP2318	**–**	**–**	103	103	111	117	127	177	—	—	2.5	2.5	7.90
NUP2318E	**–**	**–**	103	103	111	117	127	177	—	—	2.5	2.5	8.12
–	**–**	**–**	—	103	111	117	—	177	—	—	2.5	2.5	10.3
NUP418	**N418**	**NF418**	106	106	122	125	139	209	209	194	3	3	10.3
NUP1019	**–**	**–**	103	101.5	106	111	—	137	159	155	1.5	1	1.40
NUP219	**N219**	**NF219**	106	106	111	116	123	159	—	—	2	2	2.80
NUP219E	**–**	**–**	106	106	111	116	123	159	—	—	2	2	2.92
NUP2219	**–**	**–**	106	106	111	116	123	159	—	—	2	2	3.85
NUP2219E	**–**	**–**	106	106	111	116	123	159	—	—	2	2	3.93
–	**–**	**–**	—	106	111	116	—	159	—	—	2	2	5.42
NUP319	**N319**	**NF319**	108	108	119	124	134	187	187	178	2.5	2.5	6.20
NUP319E	**–**	**–**	108	108	119	124	134	187	—	—	2.5	2.5	6.42
NUP2319	**–**	**–**	108	108	119	124	134	187	—	—	2.5	2.5	9.39
–	**–**	**–**	—	108	119	124	—	187	—	—	2.5	2.5	12.1
NUP419	**N419**	**NF419**	111	111	132	136	149	224	224	204	3	3	13.6
NUP1020	**–**	**–**	108	106.5	111	116	—	142	—	—	1.5	1	1.46
NUP220	**N220**	**NF220**	111	111	117	122	130	169	169	164	2	2	3.38
NUP220E	**–**	**–**	111	111	117	122	130	169	—	—	2	2	3.52

Cylindrical Roller Bearing d100~110mm



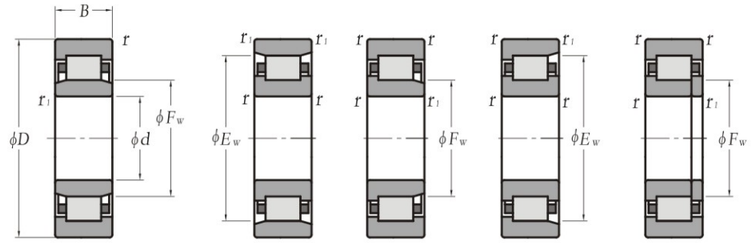
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
100	180	46	2.1	2.1	120	—	259	338	3100	4200	**NU2220**	**NJ2220**
	180	46	2.1	2.1	119	—	334	444	2800	3500	**NU2220E**	**NJ2220E**
	180	60.3	2.1	2.1	120	—	327	459	2800	4200	**NU3220**	**–**
	215	47	3	3	129.5	185.5	323	337	2800	3700	**NU320**	**NJ320**
	215	47	3	3	127.5	—	379	424	2400	3000	**NU320E**	**NJ320E**
	215	73	3	3	129.5	—	464	548	2500	3700	**NU2320**	**NJ2320**
	215	73	3	3	127.5	—	570	717	2100	3000	**NU2320E**	**NJ2320E**
	215	82.6	3	3	129.5	—	530	706	2500	3700	**NU3320**	**–**
	250	58	4	4	139	211	458	498	2500	3300	**NU420**	**NJ420**
105	160	26	2	1.1	119.5	—	108	149	4100	5600	**NU1021**	**–**
	190	36	2.1	2.1	126.8	168.8	201	241	3300	4700	**NU221**	**NJ221**
	190	65.1	2.1	2.1	126.8	—	344	482	2600	3900	**NU3221**	**–**
	225	49	3	3	135	195	366	417	2600	3500	**NU321**	**NJ321**
	225	87.3	3	3	135	—	638	871	2300	3500	**NU3321**	**–**
	260	60	4	4	144.5	220.5	471	510	2400	3100	**NU421**	**NJ421**
110	170	28	2	1.1	125	—	134	171	3800	4500	**NU1022**	**–**
	200	38	2.1	2.1	132.5	178.5	241	290	3100	3700	**NU222**	**NJ222**
	200	38	2.1	2.1	132.5	—	293	365	2500	3100	**NU222E**	**NJ222E**
	200	53	2.1	2.1	132.5	—	334	442	2800	3700	**NU2222**	**NJ2222**
	200	53	2.1	2.1	132.5	—	384	517	2500	3100	**NU2222E**	**NJ2222E**
	200	69.8	2.1	2.1	132.5	—	427	607	2500	3700	**NU3222**	**–**
	240	50	3	3	143	207	411	467	2500	3300	**NU322**	**NJ322**
	240	50	3	3	143	—	451	525	2200	2700	**NU322E**	**NJ322E**
	240	80	3	3	143	—	604	789	2200	3300	**NU2322**	**NJ2322**
	240	80	3	3	143	—	680	880	1900	2700	**NU2322E**	**NJ2322E**
	240	92.1	3	3	143	—	678	918	2200	3300	**NU3322**	**–**
	280	65	4	4	155	235	550	621	2200	2900	**NU422**	**NJ422**



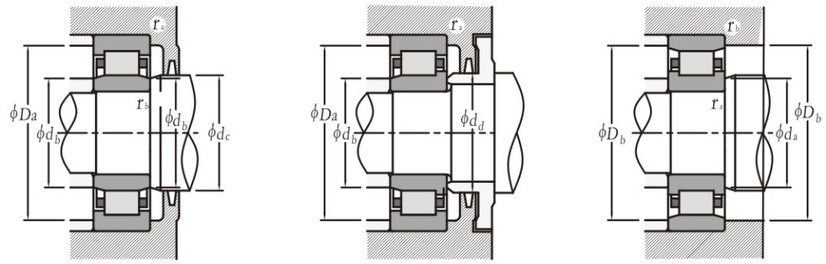
Type			Mounting Dimensions (mm)										(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP2220	**–**	**–**	111	111	117	122	130	169	—	—	2	2	4.67
NUP2220E	**–**	**–**	111	111	117	122	130	169	—	—	2	2	4.82
–	**–**	**–**	—	111	117	122	—	169	—	—	2	2	6.62
NUP320	**N320**	**NF320**	113	113	125	132	143	202	202	190	2.5	2.5	7.70
NUP320E	**–**	**–**	113	113	125	132	143	202	—	—	2.5	2.5	7.75
NUP2320	**–**	**–**	113	113	125	132	143	202	—	—	2.5	2.5	11.9
NUP2320E	**–**	**–**	113	113	125	132	143	202	—	—	2.5	2.5	12.1
–	**–**	**–**	—	113	125	132	—	202	—	—	2.5	2.5	15.0
NUP420	**N420**	**NF420**	116	116	137	141	156	234	234	213	3	3	14.0
NUP1021	**–**	**–**	114	111.5	118	122	—	151	—	—	2	1	1.85
NUP221	**N221**	**NF221**	116	116	124	129	137	179	179	173	2	2	4.00
–	**–**	**–**	—	116	124	129	—	179	—	—	2	2	8.00
NUP321	**N321**	**NF321**	118	118	132	137	149	212	212	199	2.5	2.5	8.76
–	**–**	**–**		118	132	137	—	212	—	—	2.5	2.5	17.4
NUP421	**N421**	**NF421**	121	121	143	147	162	244	244	223	3	3	19.1
NUP1022	**–**	**–**	119	116.5	124	128	—	161	—	—	2	1	2.31
NUP222	**N222**	**NF222**	121	121	130	135	144	189	189	182	2	2	4.65
NUP222E	**–**	**–**	121	121	130	135	144	189	—	—	2	2	4.90
NUP2222	**–**	**–**	121	121	130	135	144	189	—	—	2	2	6.93
NUP2222E	**–**	**–**	121	121	130	135	144	189	—	—	2	2	6.93
–	**–**	**–**	—	121	130	135	—	189	—	—	2	2	9.55
NUP322	**N322**	**NF322**	123	123	140	145	158	227	227	211	2.5	2.5	10.4
NUP322E	**–**	**–**	123	123	140	145	158	227	—	—	2.5	2.5	10.7
NUP2322	**–**	**–**	123	123	140	145	158	227	—	—	2.5	2.5	18.8
NUP2322E	**–**	**–**	123	123	140	145	158	227	—	—	2.5	2.5	18.8
–	**–**	**–**	—	123	140	145	—	227	—	—	2.5	2.5	21.1
NUP422	**N422**	**NF422**	126	126	153	157	173	264	264	237	3	3	19.9

Cylindrical Roller Bearing d120~140mm



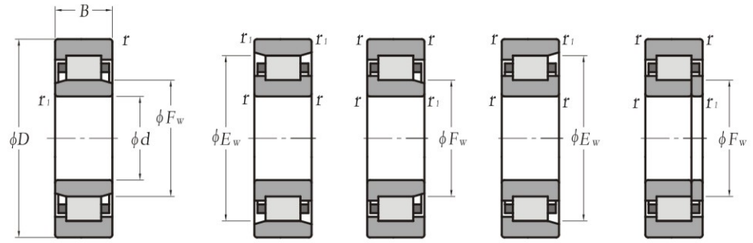
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
120	180	28	2	1.1	135	—	137	181	3500	4200	**NU1024**	**–**
	215	40	2.1	2.1	143.5	191.5	260	318	2900	3400	**NU224**	**NJ224**
	215	40	2.1	2.1	143.5	—	336	421	2300	2800	**NU224E**	**NJ224E**
	215	58	2.1	2.1	143.5	—	367	492	2600	3400	**NU2224**	**NJ2224**
	215	58	2.1	2.1	143.5	—	452	619	2300	2800	**NU2224E**	**NJ2224E**
	215	76	2.1	2.1	143.5	—	477	695	2300	3400	**NU3224**	**–**
	260	55	3	3	154	226	485	551	2200	3000	**NU324**	**NJ324**
	260	55	3	3	154	—	528	610	2000	2500	**NU324E**	**NJ324E**
	260	86	3	3	154	—	708	918	2000	3000	**NU2324**	**NJ2324**
	260	86	3	3	154	—	793	1030	1700	2500	**NU2324E**	**NJ2324E**
	260	106	3	3	154	—	826	1120	2000	3000	**NU3324**	**–**
	310	72	5	5	170	260	690	770	1900	2600	**NU424**	**NJ424**
130	200	33	2	1.1	148	—	171	238	3200	3800	**NU1026**	**–**
	230	40	3	3	156	204	282	362	2700	3200	**NU226**	**NJ226**
	230	40	3	3	153.5	—	364	453	2100	2600	**NU226E**	**NJ226E**
	230	64	3	3	156	—	395	560	2400	3200	**NU2226**	**NJ2226**
	230	64	3	3	153.5	—	530	737	2100	2600	**NU2226E**	**NJ2226E**
	230	80	3	3	156	—	550	857	2100	3200	**NU3226**	**–**
	280	58	4	4	167	243	564	667	2100	2700	**NU326**	**NJ326**
	280	58	4	4	167	—	616	736	1800	2300	**NU326E**	**NJ326E**
	280	93	4	4	167	—	838	1130	1800	2700	**NU2326**	**NJ2326**
	280	93	4	4	167	—	920	1230	1600	2300	**NU2326E**	**NJ2326E**
	280	112	4	4	167	—	936	1290	1800	2700	**NU3326**	**–**
	340	78	5	5	185	285	771	876	1800	2300	**NU426**	**NJ426**
140	210	33	2	1.1	158	—	175	250	3000	3600	**NU1028**	**–**
	250	42	3	3	169	221	324	421	2400	2900	**NU228**	**NJ228**
	250	42	3	3	169	—	392	514	1900	2400	**NU228E**	**NJ228E**



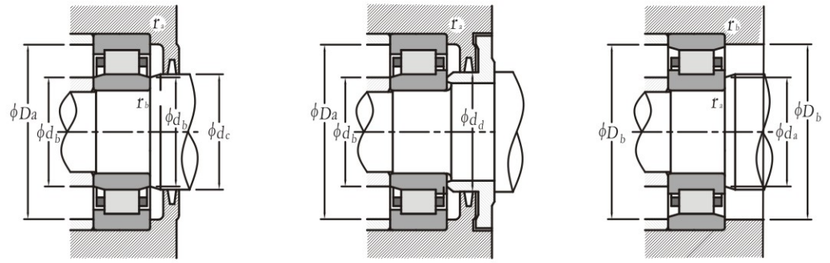
Type			Mounting Dimensions (mm)										(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP1024	**–**	**–**	128	126.5	134	138	—	171	—	—	2	1	2.47
NUP224	**N224**	**NF224**	131	131	141	146	156	204	204	196	2	2	5.65
NUP224E	**–**	**–**	131	131	141	146	156	204	—	—	2	2	5.85
NUP2224	**–**	**–**	131	131	141	146	156	204	—	—	2	2	8.56
NUP2224E	**–**	**–**	131	131	141	146	156	204	—	—	2	2	8.56
–	**–**	**–**	—	131	141	146	—	204	—	—	2	2	11.9
NUP324	**N324**	**NF324**	133	133	151	156	171	247	247	230	2.5	2.5	13.1
NUP324E	**–**	**–**	133	133	151	156	171	247	—	—	2.5	2.5	13.4
NUP2324	**–**	**–**	133	133	151	156	171	247	—	—	2.5	2.5	23.1
NUP2324E	**–**	**–**	133	133	151	156	172	247	—	—	2.5	2.5	23.1
–	**–**	**–**	—	133	151	156	—	247	—	—	2.5	2.5	28.3
NUP424	**N424**	**NF424**	140	140	168	172	190	290	290	262	4	4	28.0
NUP1026	**–**	**–**	139	136.5	146	151	—	191	—	—	2	1	3.77
NUP226	**N226**	**NF226**	143	143	151	158	168	217	217	208	2.5	2.5	6.49
NUP226E	**–**	**–**	143	143	151	158	168	217	—	—	2.5	2.5	6.60
NUP2226	**–**	**–**	143	143	151	158	168	217	—	—	2.5	2.5	11.2
NUP2226E	**–**	**–**	143	143	151	158	168	217	—	—	2.5	2.5	11.2
–	**–**	**–**	—	143	151	158	—	217	—	—	2.5	2.5	14.1
NUP326	**N326**	**NF326**	146	146	164	169	184	264	264	247	3	3	16.4
NUP326E	**–**	**–**	146	146	164	169	184	264	—	—	3	3	16.7
NUP2326	**–**	**–**	146	146	164	169	184	264	—	—	3	3	29.1
NUP2326E	**–**	**–**	146	146	164	169	186	264	—	—	3	3	29.1
–	**–**	**–**	—	146	164	168	—	264	—	—	3	3	34.6
NUP426	**N426**	**NF426**	150	150	183	187	208	320	320	287	4	4	36.1
NUP1028	**–**	**–**	149	146.5	156	161	—	201	—	—	2	1	4.00
NUP228	**N228**	**NF228**	153	153	166	171	182	237	237	228	2.5	2.5	8.27
NUP228E	**–**	**–**	153	153	166	171	182	237	—	—	2.5	2.5	8.50

Cylindrical Roller Bearing d140~160mm



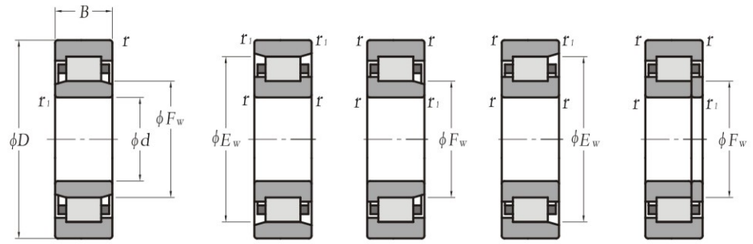
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
140	250	68	3	3	169	—	465	671	2 200	2 900	**NU2228**	**NJ2228**
	250	68	3	3	169	—	572	835	1 900	2 400	**NU2228E**	**NJ2228E**
	250	88	3	3	169	—	604	939	1 900	2 900	**NU3228**	**–**
	300	62	4	4	180	260	623	746	1 900	2 500	**NU328**	**NJ328**
	300	62	4	4	180	—	663	797	1 700	2 100	**NU328E**	**NJ328E**
	300	102	4	4	180	—	920	1 250	1 700	2 500	**NU2328**	**NJ2328**
	300	102	4	4	180	—	1 020	1 380	1 500	2 100	**NU2328E**	**NJ2328E**
	300	118	4	4	180	—	1 090	1 550	1 700	2 500	**NU3328**	**–**
	360	82	5	5	198	302	874	1 020	1 600	2 200	**NU428**	**NJ428**
150	225	35	2.1	1.5	169.5	—	201	281	2 800	3 300	**NU1030**	**–**
	270	45	3	3	182	238	374	492	2 200	2 700	**NU230**	**NJ230**
	270	45	3	3	182	—	448	594	1 800	2 200	**NU230E**	**NJ230E**
	270	73	3	3	182	—	545	800	2 000	2 700	**NU2230**	**NJ2230**
	270	73	3	3	182	—	662	982	1 800	2 200	**NU2230E**	**NJ2230E**
	270	96	3	3	182	—	749	1 200	1 800	2 700	**NU3230**	**–**
	320	65	4	4	193	277	663	807	1 800	2 300	**NU330**	**NJ330**
	320	65	4	4	193	—	757	922	1 500	1 900	**NU330E**	**NJ330E**
	320	108	4	4	193	—	1 020	1 400	1 600	2 300	**NU2330**	**NJ2330**
	320	108	4	4	193	—	1 180	1 600	1 300	1 900	**NU2330E**	**NJ2330E**
	320	128	4	4	193	—	1 180	1 700	1 600	2 300	**NU3330**	**–**
	380	85	5	5	213	317	930	1 120	1 500	2 000	**NU430**	**NJ430**
160	240	38	2.1	1.5	180	—	236	300	2 600	3 000	**NU1032**	**–**
	290	48	3	3	195	255	427	568	2 100	2 500	**NU232**	**NJ232**
	290	48	3	3	195	—	498	666	1 600	2 000	**NU232E**	**NJ232E**
	290	80	2	3	195	—	631	939	1 800	2 500	**NU2232**	**NJ2232**
	290	80	3	3	193	—	809	1 190	1 600	2 000	**NU2232E**	**NJ2232E**
	290	104	3	3	195	—	857	1 390	1 600	2 500	**NU3232**	**–**



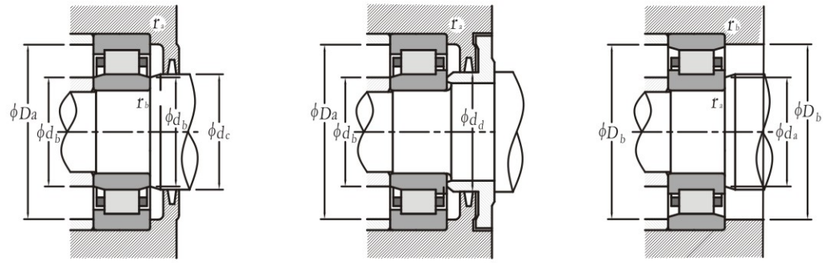
Type			Mounting Dimensions (mm)										(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP2228	**–**	**–**	153	153	166	171	182	237	—	—	2.5	2.5	14.3
NUP2228E	**–**	**–**	153	153	166	171	182	237	—	—	2.5	2.5	14.3
–	**–**	**–**	—	153	166	171	—	237	—	—	2.5	2.5	18.5
NUP328	**N328**	**NF328**	156	156	176	182	198	284	284	264	3	3	20.1
NUP328E	**–**	**–**	156	156	176	182	198	284	—	—	3	3	20.4
NUP2328	**–**	**–**	156	156	176	182	198	284	—	—	3	3	36.8
NUP2328E	**–**	**–**	156	156	176	182	200	284	—	—	3	3	36.8
–	**–**	**–**	—	156	176	182	—	284	—	—	3	3	41.5
NUP428	**N428**	**NF428**	160	160	195	200	222	340	340	304	4	4	46.8
NUP1030	**–**	**–**	161	158	167	173		214	—	—	2	1.5	4.83
NUP230	**N230**	**NF230**	163	163	179	184	196	257	257	245	2.5	2.5	10.3
NUP230E	**–**	**–**	163	163	179	184	196	257	—	—	2.5	2.5	10.7
NUP2230	**–**	**–**	163	163	179	184	196	257	—	—	2.5	2.5	18.7
NUP2230E	**–**	**–**	163	163	179	184	196	257	—	—	2.5	2.5	18.7
–	**–**	**–**	—	163	179	184	—	257	—	—	2.5	2.5	23.7
NUP330	**N330**	**NF330**	166	166	190	195	213	304	304	281	3	3	26.4
NUP330E	**–**	**–**	166	166	190	195	213	304	—	—	3	3	27.0
NUP2330	**–**	**–**	166	166	190	195	213	304	—	—	3	3	44.7
NUP2330E	**–**	**–**	166	166	190	195	213	304	—	—	3	3	44.7
–	**–**	**–**	—	166	190	195	—	304	—	—	3	3	51.4
NUP430	**N430**	**NF430**	170	170	210	216	237	360	360	391	4	4	53.3
NUP1032	**–**	**–**	171	168	178	184	—	229	—	—	2	1.5	5.93
NUP232	**N232**	**NF232**	173	173	192	197	210	277	277	262	2.5	2.5	14.4
NUP232E	**–**	**–**	173	173	192	197	210	277	—	—	2.5	2.5	14.8
NUP2232	**–**	**–**	173	173	192	197	210	277	—	—	2.5	2.5	23.6
NUP2232E	**–**	**–**	173	173	192	197	210	277	—	—	2.5	2.5	23.6
–	**–**	**–**	—	173	192	197	—	277	—	—	2.5	2.5	29.8

Cylindrical Roller Bearing d160~190mm



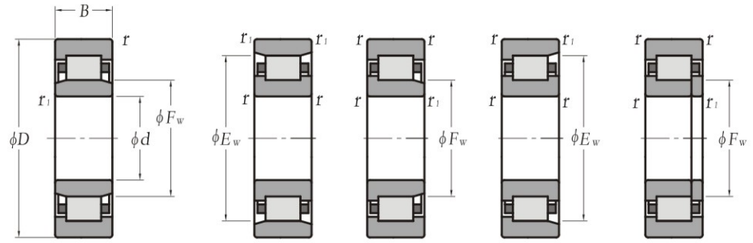
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
160	340	68	4	4	208	292	698	876	1 600	2 200	**NU332**	**NJ332**
	340	68	4	4	204	—	857	1 050	1 400	1 800	**NU332E**	**NJ332E**
	340	114	4	4	208	—	1 070	1 520	1 400	2 200	**NU2332**	**NJ2332**
	340	114	4	4	204	—	1 310	1 820	1 300	1 800	**NU2332E**	**NJ2332E**
	340	136	4	4	208	—	1 270	1 890	1 400	2 200	**NU3332**	**–**
170	260	42	2.1	2.1	193	—	276	400	2 400	2 800	**NU1034**	**–**
	310	52	4	4	208	272	475	637	1 900	2 300	**NU234**	**NJ234**
	310	52	4	4	207	—	603	802	1 500	1 900	**NU234E**	**NJ234E**
	310	86	4	4	208	—	715	1 080	1 700	2 300	**NU2234**	**NJ2234**
	310	86	4	4	205	—	967	1 410	1 500	1 900	**NU2234E**	**NJ2234E**
	310	110	4	4	208	—	964	1 580	1 500	2 300	**NU3234**	**–**
	360	72	4	4	220	310	809	1 010	1 500	2 000	**NU334**	**NJ334**
	360	120	4	4	220	—	1 220	1 750	1 300	2 000	**NU2334**	**NJ2334**
	360	140	4	4	220	—	1 420	2 120	1 300	2 000	**NU3334**	**–**
180	280	46	2.1	2.1	205	—	356	503	2 200	2 600	**NU1036**	**–**
	320	52	4	4	218	282	492	677	1 800	2 200	**NU236**	**NJ236**
	320	52	4	4	217	—	626	852	1 400	1 800	**NU236E**	**NJ236E**
	320	86	4	4	218	—	741	1 140	1 600	2 200	**NU2236**	**NJ2236**
	320	86	4	4	215	—	1 010	1 510	1 400	1 800	**NU2236E**	**NJ2236E**
	320	112	4	4	218	—	999	1 680	1 400	2 200	**NU3236**	**–**
	380	75	4	4	232	328	917	1 150	1 400	1 900	**NU336**	**NJ336**
	380	126	4	4	232	—	1 350	1 940	1 300	1 900	**NU2336**	**NJ2336**
	380	150	4	4	232	—	1 660	2 520	1 300	1 900	**NU3336**	**–**
190	290	46	2.1	2.1	215	—	366	530	2 100	2 500	**NU1038**	**–**
	340	55	4	4	231	299	554	768	1 700	2 000	**NU238**	**NJ238**
	340	55	4	4	230	—	694	954	1 300	1 700	**NU238E**	**NJ238E**



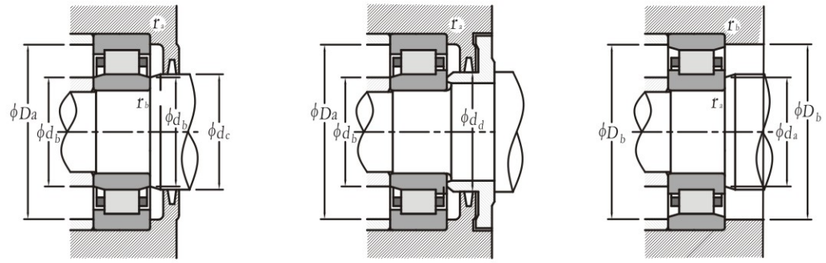
Type			Mounting Dimensions (mm)									(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP332	**N332**	**Nf332**	176	176	200	211	228	324	324	296	3	3	31.7
NUP332E	**–**	**–**	176	176	200	211	228	324	—	—	3	3	32.0
NUP2332	**–**	**–**	176	176	200	211	228	324	—	—	3	3	53.1
NUP2332E	**–**	**–**	176	176	200	211	228	324	—	—	3	3	53.1
–	**–**	**–**	—	176	200	211	—	324	—	—	3	3	61.5
NUP1034	**–**	**–**	181	181	190	197	—	249	—	—	2	2	7.90
NUP234	**N234**	**NF234**	186	186	204	211	223	294	294	280	3	3	18.4
NUP234E	**–**	**–**	186	186	204	211	223	294	—	—	3	3	18.6
NUP2234	**–**	**–**	186	186	204	211	223	294	—	—	3	3	29.2
NUP2234E	**–**	**–**	186	186	204	211	223	294	—	—	3	3	29.2
–	**–**	**–**	—	186	204	211	—	294	—	—	3	3	36.2
NUP334	**N334**	**NF334**	186	186	216	223	241	344	344	314	3	3	38.6
NUP2334	**–**	**–**	186	186	216	223	241	344	—	—	3	3	62.6
–	**–**	**–**	—	186	216	223	—	344	—	—	3	3	70.8
NUP1036	**–**	**–**	191	191	203	209	—	269	—	—	2	2	10.5
NUP236	**N236**	**NF236**	196	196	214	221	233	304	304	290	3	3	19.3
NUP236E	**–**	**–**	196	196	214	221	233	304	—	—	3	3	19.3
NUP2236	**–**	**–**	196	196	214	221	233	304	—	—	3	3	30.4
NUP2236E	**–**	**–**	196	196	214	221	233	304	—	—	3	3	30.4
–	**–**	**–**	—	196	214	221	—	304	—	—	3	3	38.4
NUP336	**N336**	**NF336**	196	196	227	235	255	364	364	332	3	3	42.6
NUP2336	**–**	**–**	196	196	227	235	255	364	—	—	3	3	73.0
–	**–**	**–**	—	196	227	235	—	364	—	—	3	3	84.4
NUP1038	**–**	**–**	201	201	213	219	—	279	—	—	2	2	10.9
NUP238	**N238**	**NF238**	206	206	227	234	247	324	324	310	3	3	23.2
NUP238E	**–**	**–**	206	206	227	234	247	324	—	—	3	3	23.3

Cylindrical Roller Bearing d190~240mm



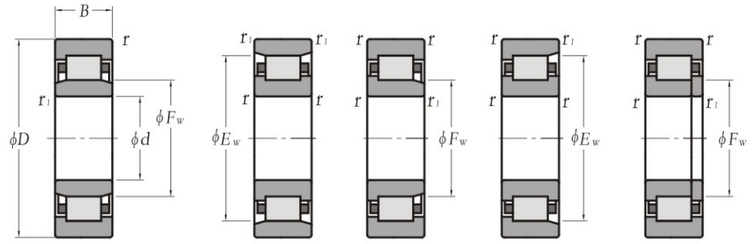
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
190	340	92	4	4	231	—	828	1 290	1 500	2 200	**NU2238**	**NJ2238**
	340	92	4	4	228	—	1 100	1 670	1 300	1 700	**NU2238E**	**NJ2238E**
	340	120	4	4	231	—	1 310	1 930	1 300	2 000	**NU3238**	**–**
	400	78	5	5	245	345	987	1 260	1 300	1 800	**NU338**	**NJ338**
	400	132	5	5	245	—	1 520	2 220	1 200	1 800	**NU2338**	**NJ2338**
	400	155	5	5	245	—	1 870	2 910	1 200	1 800	**NU3338**	**–**
200	310	51	2.1	2.1	229	—	388	582	1 900	2 300	**NU1040**	**–**
	360	58	4	4	244	316	618	865	1 600	1 900	**NU240**	**NJ240**
	360	58	4	4	243	—	766	1 060	1 200	1 600	**NU240E**	**NJ240E**
	360	98	4	4	244	—	946	1 490	1 400	1 900	**NU2240**	**NJ2240**
	360	98	4	4	241	—	1 220	1 870	1 200	1 600	**NU2240E**	**NJ2240E**
	360	128	4	4	244	—	1 200	2 020	1 300	1 900	**NU3240**	**–**
	420	80	5	5	260	360	987	1 270	1 200	1 700	**NU340**	**NJ340**
	420	138	5	5	260	—	1 520	2 240	1 100	1 700	**NU2340**	**NJ2340**
	420	165	5	5	260	—	1 870	2 930	1 100	1 700	**NU3340**	**–**
220	340	56	3	3	250	—	507	748	1 700	2 000	**NU1044**	**–**
	400	65	4	4	270	350	766	1 080	1 400	1 700	**NU244**	**NJ244**
	400	108	4	4	270	—	1 130	1 810	1 200	1 700	**NU2244**	**NJ2244**
	400	144	4	4	270	—	1 630	2 880	1 100	1 700	**NU3244**	**–**
	460	88	5	5	284	396	1 200	1 570	1 100	1 500	**NU344**	**NJ344**
	460	180	5	5	284	—	2 130	3 300	990	1 500	**NU3344**	**–**
240	360	56	3	3	270	—	535	822	1 600	1 900	**NU1048**	**–**
	440	72	4	4	295	385	949	1 340	1 200	1 500	**NU248**	**NJ248**
	440	120	4	4	295	—	1 430	2 320	1 100	1 500	**NU2248**	**NJ2248**
	440	160	4	4	295	—	1 950	3 460	990	1 500	**NU3248**	**–**
	500	95	5	5	310	430	1 430	1 950	990	1 300	**NU348**	**NJ348**



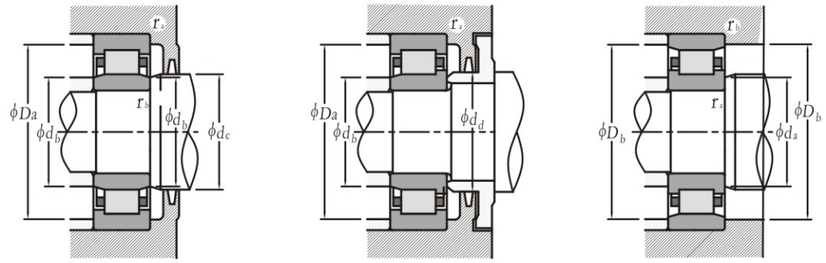
Type			Mounting Dimensions (mm)									(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
NUP2238	**–**	**–**	206	206	227	234	247	324	—	—	3	3	37.0
NUP2238E	**–**	**–**	206	206	227	234	247	324	—	—	3	3	37.0
–	**–**	**–**	—	206	227	234	—	324	—	—	3	3	46.8
NUP338	**N338**	**NF338**	210	210	240	248	268	380	380	349	4	4	49.9
NUP2338	**–**	**–**	210	210	240	248	268	380	—	—	4	4	84.7
–	**–**	**–**	—	210	240	248	—	380	—	—	4	4	96.5
NUP1040	**–**	**–**	211	211	226	233	—	299	—	—	2	2	14.1
NUP240	**N240**	**NF240**	216	216	240	247	261	344	344	328	3	3	26.8
NUP240E	**–**	**–**	216	216	240	247	261	344	—	—	3	3	27.2
NUP2240	**–**	**–**	216	216	240	247	261	344	—	—	3	3	44.4
NUP2240E	**–**	**–**	216	216	240	247	261	344	—	—	3	3	44.4
–	**–**	**–**	—	216	240	247	—	344	—	—	3	3	56.2
NUP340	**N340**	**NF340**	220	220	254	263	283	400	400	364	4	4	56.2
NUP2340	**–**	**–**	220	220	254	263	283	400	—	—	4	4	97.4
–	**–**	**–**	—	220	250	258	—	400	—	—	4	4	113
NUP1044	**–**	**–**	233	233	248	254	—	327	—	—	2.5	2.5	18.5
NUP244	**N244**	**NF244**	236	236	266	273	289	384	384	362	3	3	38.5
–	**–**	**–**	—	236	266	273	289	384	—	—	3	3	60.9
–	**–**	**–**	—	236	266	273	—	384	—	—	3	3	78.8
NUP344	**N344**	**NF344**	240	240	279	287	309	440	440	400	4	4	74.4
–	**–**	**–**	—	240	279	287	—	440	—	—	4	4	148
NUP1048	**–**	**–**	253	253	268	275	—	347	—	—	2.5	2.5	20.1
NUP248	**N248**	**NF248**	256	256	293	298	316	424	424	397	3	3	52.1
–	**–**	**–**	—	256	293	298	316	424	—	—	3	3	82.5
–	**–**	**–**	—	256	293	298	—	424	—	—	3	3	107
NUP348	**N348**	**NF348**	260	260	305	313	337	480	480	434	4	4	94.6

Cylindrical Roller Bearing d240~460mm



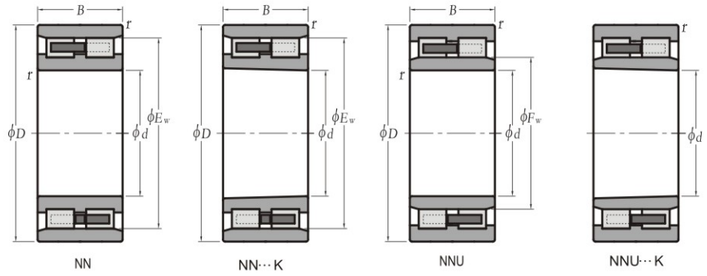
NU N NJ NF NUP

Main Dimensions (mm)							Basic Load (kN)		Limit Speed (rpm)		Type	
d	D	B	r (min)	r1 (max)	Fw	Ew	Cr	Cor	Grease	Oil	NU	NJ
240	500	195	5	5	310	—	2 540	4 070	880	1 300	**NU3348**	**–**
260	400	65	4	4	296	—	651	979	1 400	1 700	**NU1052**	**–**
	480	80	5	5	320	420	1 100	1 580	1 100	1 300	**NU252**	**NJ252**
	480	130	5	5	320	—	1 790	2 950	990	1 300	**NU2252**	**NJ2252**
	480	174	5	5	320	—	2 140	3 680	880	1 300	**NU3252**	**–**
	540	206	6	6	336	—	2 940	4 790	790	1 200	**NU3352**	**–**
280	420	65	4	4	316	—	669	1 030	1 300	1 500	**NU1056**	**–**
	500	80	5	5	340	440	1 140	1 680	1 000	1 200	**NU256**	**NJ256**
300	460	74	4	4	340	—	890	1 380	1 200	1 400	**NU1060**	**–**
	540	85	5	5	364	476	1 350	1 960	920	1 100	**NU260**	**NJ260**
320	480	74	4	4	360	—	913	1 450	1 100	1 300	**NU1064**	**–**
	580	92	5	5	390	510	1 540	2 270	840	1 000	**NU264**	**NJ264**
340	520	82	5	5	385	—	1 090	1 750	980	1 200	**NU1068**	**–**
360	540	82	5	5	405	—	1 120	1 830	920	1 100	**NU1072**	**–**
380	560	82	5	5	425	—	1 150	1 920	860	1 000	**NU1076**	**–**
400	600	90	5	5	450	—	1 400	2 310	780	920	**NU1080**	**–**
420	620	90	5	5	470	—	1 390	2 320	730	860	**NU1084**	**–**
440	650	94	6	6	493	—	1 490	2 520	680	800	**NU1088**	**–**
460	680	100	6	6	516	—	1 590	2 730	630	750	**NU1092**	**–**



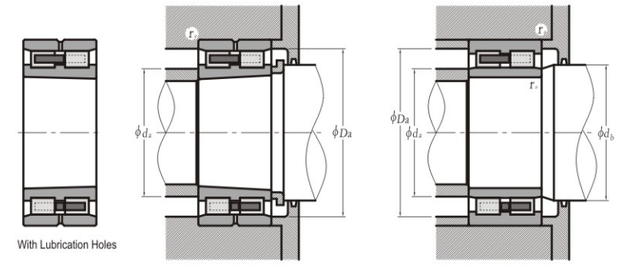
Type			Mounting Dimensions (mm)									(Reference)
NUP	N	NF	da (min)	db (min)	db (max)	dc (min)	dd (min)	Da (max)	Db (max)	Db (min)	ra (max)	rb (max)	Mass (kg)
–	**–**	**–**	—	260	305	313	—	480	—	—	4	4	189
NUP1052	**–**	**–**	276	276	292	300	—	384	—	—	3	3	29.2
NUP252	**N252**	**NF252**	280	280	318	323	343	460	460	432	4	4	69.0
–	**–**	**–**	—	280	318	323	343	460	—	—	4	4	107
–	**–**	**–**	—	280	318	323	—	460	—	—	4	4	139
–	**–**	**–**	—	284	330	339	—	516	—	—	5	5	232
NUP1056	**–**	**–**	296	296	313	320	—	404	—	—	3	3	35.2
NUP256	**N256**	**NF256**	300	300	336	343	365	480	480	452	4	4	72.7
NUP1060	**–**	**–**	316	316	337	344	—	444	—	—	3	3	44.1
NUP260	**N260**	**NF260**	320	320	361	368	392	520	520	487	4	4	90.7
NUP1064	**–**	**–**	336	336	356	365	—	464	—	—	3	3	48.4
NUP264	**N264**	**NF264**	340	340	386	393	419	560	560	522	4	4	114
NUP1068	**–**	**–**	360	360	381	390	—	500	—	—	4	4	64.1
NUP1072	**–**	**–**	380	380	401	410	—	520	—	—	4	4	67.1
NUP1076	**–**	**–**	400	400	421	430	—	540	—	—	4	4	70.1
NUP1080	**–**	**–**	420	420	446	455	—	580	—	—	4	4	91.0
NUP1084	**–**	**–**	440	440	466	475	—	600	—	—	4	4	94.6
NUP1088	**–**	**–**	464	464	489	498	—	626	—	—	5	5	109
NUP1092	**–**	**–**	484	484	512	520	—	656	—	—	5	5	127

Double Row Cylindrical Roller Bearing d25~100mm



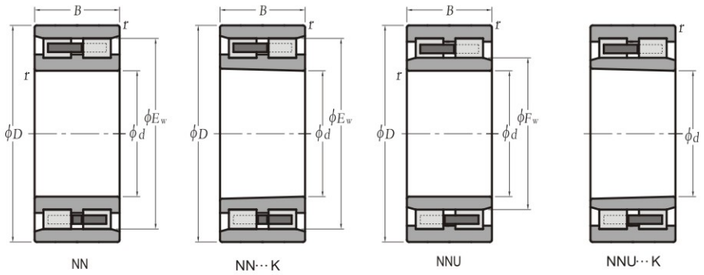
NN　NN···K　NNU　NNU···K

Main Dimensions (mm)						Basic Load (kN)		Limit Speed (rpm)		Type(NN)	
d	D	B	r (min)	F_w	E_w	C_r	C_{or}	Grease	Oil	Cylindrical Bore	Tapered Bore
25	47	16	0.6	—	41.3	25.7	30.0	14 000	17 000	**NN3005**	**NN3005K**
30	55	19	1	—	48.5	36.8	44.1	12 000	14 000	**NN3006**	**NN3006K**
35	62	20	1	—	55	39.1	50.0	10 000	12 000	**NN3007**	**NN3007K**
40	68	21	1	—	61	41.3	55.9	9 100	11 000	**NN3008**	**NN3008K**
45	75	23	1	—	67.5	53.4	71.9	8 300	9 900	**NN3009**	**NN3009K**
50	80	23	1	—	72.5	52.8	72.6	7 600	9 100	**NN3010**	**NN3010K**
55	90	26	1.1	—	81	71.2	101	6 800	8 200	**NN3011**	**NN3011K**
60	95	26	1.1	—	86.1	72.8	106	6 400	7 700	**NN3012**	**NN3012K**
65	100	26	1.1	—	91	74.5	111	6 000	7 200	**NN3013**	**NN3013K**
70	110	30	1.1	—	100	96.9	148	5 500	6 500	**NN3014**	**NN3014K**
75	115	30	1.1	—	105	99.0	155	5 200	6 200	**NN3015**	**NN3015K**
80	125	34	1.1	—	113	119	186	4 800	5 800	**NN3016**	**NN3016K**
85	130	34	1.1	—	118	121	194	4 600	5 500	**NN3017**	**NN3017K**
90	140	37	1.5	—	127	142	228	4 200	5 100	**NN3018**	**NN3018K**
95	145	37	1.5	—	132	150	246	4 100	4 900	**NN3019**	**NN3019K**
100	140	40	1.1	113	—	139	258	4 000	4 800	–	–
	150	37	1.5	—	137	157	265	3 900	4 700	**NN3020**	**NN3020K**

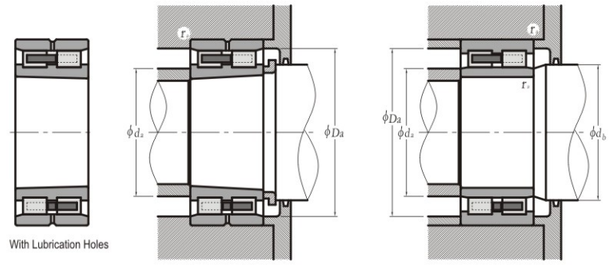


Type(NNU)		Mounting Dimensions (mm)						(Reference) Mass (kg)	
Cylindrical Bore	Tapered Bore	d_a (min)	d_a (max)	d_b (min)	D_a (max)	D_a (min)	r_a (max)	Cylindrical Bore	Tapered Bore
–	–	29	—	—	43	42	0.6	0.127	0.123
–	–	35	—	—	50	49	1	0.198	0.192
–	–	40	—	—	57	56	1	0.253	0.246
–	–	45	—	—	63	62	1	0.307	0.298
–	–	50	—	—	70	69	1	0.404	0.382
–	–	55	—	—	75	74	1	0.429	0.415
–	–	61.5	—	—	83.5	82	1	0.637	0.618
–	–	66.5	—	—	88.5	87	1	0.685	0.664
–	–	71.5	—	—	93.5	92	1	0.728	0.705
–	–	76.5	—	—	103.5	101	1	1.04	1.02
–	–	81.5	—	—	108.5	106	1	1.11	1.08
–	–	86.5	—	—	118.5	114	1	1.55	1.50
–	–	91.5	—	—	123.5	119	1	1.63	1.58
–	–	98	—	—	132	129	1.5	2.07	2.01
–	–	103	—	—	137	134	1.5	2.17	2.10
NNU4920	**NNU4920K**	106.5	111	115	133.5	—	1	1.95	1.87
–	–	108	—	—	142	139	1.5	2.28	2.21

Double Row Cylindrical Roller Bearing d105~200mm

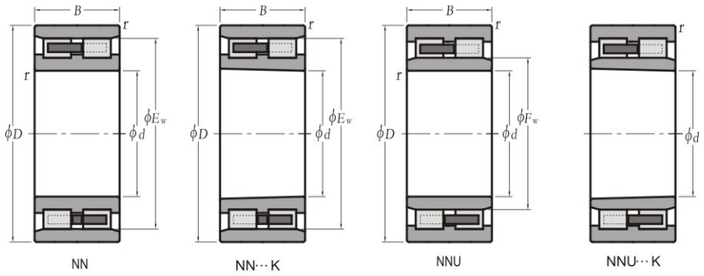


Main Dimensions (mm)						Basic Load (kN)		Limit Speed (rpm)		Type(NN)	
d	D	B	r (min)	F_w	E_w	C_r	C_{or}	Grease	Oil	Cylindrical Bore	Tapered Bore
105	145	40	1.1	118	—	157	306	3900	4600	–	–
	160	41	2	—	146	197	322	3700	4400	**NN3021**	**NN3021K**
110	150	40	1.1	123	—	163	326	3700	4500	–	–
	170	45	2	—	155	221	361	3500	4200	**NN3022**	**NN3022K**
120	165	45	1.1	134.5	—	187	373	3400	4000	–	–
	180	46	2	—	165	232	392	3200	3900	**NN3024**	**NN3024K**
130	180	50	1.5	146	—	216	428	3100	3700	–	–
	200	52	2	—	182	283	476	2900	3500	**NN3026**	**NN3026K**
140	190	50	1.5	156	—	222	456	2900	3500	–	–
	210	53	2	—	192	297	516	2700	3300	**NN3028**	**NN3028K**
150	210	60	2	168.5	—	343	692	2600	3100	–	–
	225	56	2.1	—	206	334	587	2500	3000	**NN3030**	**NN3030K**
160	220	60	2	178.5	—	340	695	2500	3000	–	–
	240	60	2.1	—	219	398	695	2400	2800	**NN3032**	**NN3032K**
170	230	60	2	188.5	—	361	763	2300	2800	–	–
	260	67	2.1	—	236	471	824	2200	2600	**NN3034**	**NN3034K**
180	250	69	2	202	—	458	964	2100	2600	–	–
	280	74	2.1	—	255	561	958	2000	2400	**NN3036**	**NN3036K**
190	260	69	2	210	—	465	996	2000	2400	–	–
	290	75	2.1	—	265	598	1020	1900	2300	**NN3038**	**NN3038K**
200	280	80	2.1	223	—	509	1050	1900	2300	–	–
	310	82	2.1	—	282	638	1120	1700	2100	**NN3040**	**NN3040K**

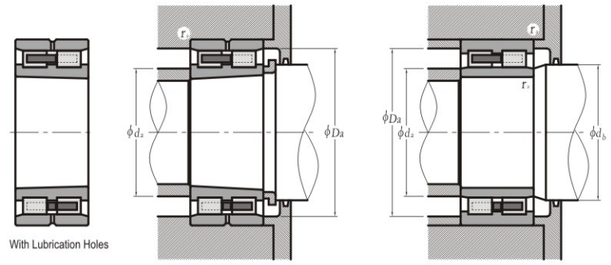


Type(NNU)		Mounting Dimensions (mm)						(Reference) Mass (kg)	
Cylindrical Bore	Tapered Bore	d_a (min)	d_a (max)	d_b (min)	D_a (max)	D_a (min)	r_a (max)	Cylindrical Bore	Tapered Bore
NNU4921	**NNU4921K**	111.5	116	120	138.5	—	1	2.00	1.91
–	–	114	—	—	151	148	2	2.88	2.81
NNU4922	**NNU4922K**	116.5	121	125	143.5	—	1	2.10	2.01
–	–	119	—	—	161	157	2	3.65	3.56
NNU4924	**NNU4924K**	126.5	132	137	158.5	—	1	2.90	2.77
–	–	129	—	—	171	167	2	4.00	3.87
NNU4926	**NNU4926K**	138	143.5	148	172	—	1.5	3.90	3.73
–	–	139	—	—	191	183	2	5.94	5.76
NNU4928	**NNU4928K**	148	153.5	158	182	—	1.5	4.15	3.97
–	–	149	—	—	201	194	2	6.41	6.21
NNU4930	**NNU4930K**	159	166	171	201	—	2	6.50	6.22
–	–	161	—	—	214	208	2	7.74	7.50
NNU4932	**NNU4932K**	169	176	182	211	—	2	6.95	6.65
–	–	171	—	—	229	221	2	9.38	9.08
NNU4934	**NNU4934K**	179	186	192	221	—	2	7.20	6.88
–	–	181	—	—	249	238	2	12.8	12.4
NNU4936	**NNU4936K**	189	199.5	205	241	—	2	10.5	10.1
–	–	191	—	—	269	257	2	16.8	16.3
NNU4938	**NNU4938K**	199	207	215	251	—	2	11.0	10.5
–	–	201	—	—	279	267	2	17.6	17.1
NNU4940	**NNU4940K**	211	219.5	228	269	—	2	15.4	14.7
–	–	211	—	—	299	285	2	22.5	21.8

Double Row Cylindrical Roller Bearing d220~480mm

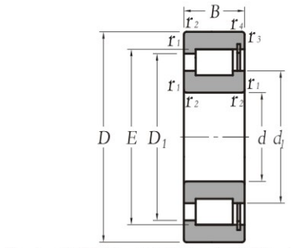


Main Dimensions (mm)						Basic Load (kN)		Limit Speed (rpm)		Type(NN)	
d	D	B	r (min)	F_w	E_w	C_r	C_{or}	Grease	Oil	Cylindrical Bore	Tapered Bore
220	300	80	2.1	244	—	561	1220	1700	2000	–	–
	340	90	3	—	310	752	1370	1600	1900	**NN3044**	**NN3044K**
240	320	80	2.1	263	—	588	1340	1600	1900	–	–
	360	92	3	—	330	864	1590	1400	1700	**NN3048**	**NN3048K**
260	360	100	2.1	287	—	941	2050	1400	1700	–	–
	400	104	4	—	364	1030	1830	1300	1500	**NN3052**	**NN3052K**
280	380	100	2.1	308	—	976	2200	1300	1500	–	–
	420	106	4	—	384	1090	2010	1200	1400	**NN3056**	**NN3056K**
300	420	118	3	339	—	1170	2720	1100	1300	–	–
	460	118	4	—	418	1290	2460	1100	1300	**NN3060**	**NN3060K**
320	440	118	3	352	—	1220	2750	1100	1300	–	–
	480	121	4	—	438	1350	2670	980	1200	**NN3064**	**NN3064K**
340	460	118	3	372	—	1270	2930	990	1200	–	–
	520	133	5	—	473	1580	3090	880	1100	**NN3068**	**NN3068K**
360	540	134	5	—	493	1560	3090	830	990	**NN3072**	**NN3072K**
380	560	135	5	—	510	1650	3350	780	940	**NN3076**	**NN3076K**
400	600	148	5	—	548	2030	4140	700	850	**NN3080**	**NN3080K**
420	620	150	5	—	570	2310	4570	670	800	**NN3084**	**NN3084K**
440	650	157	6	—	597	2520	5060	620	740	**NN3088**	**NN3088K**
460	680	163	6	—	627	2700	5480	570	690	**NN3092**	**NN3092K**
480	700	165	6	—	642	2770	5710	540	650	**NN3096**	**NN3096K**

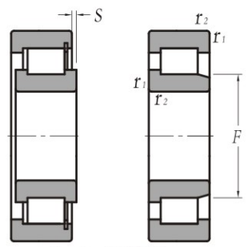


Type(NNU)		Mounting Dimensions (mm)						(Reference) Mass (kg)	
Cylindrical Bore	Tapered Bore	d_a (min)	d_a (max)	d_b (min)	D_a (max)	D_a (min)	r_a (max)	Cylindrical Bore	Tapered Bore
NNU4944	**NNU4944K**	231	241	248	289	—	2	16.7	16.0
–	–	233	—	—	327	313	2.5	29.3	28.4
NNU4948	**NNU4948K**	251	260	269	309	—	2	18.0	17.2
–	–	253	—	—	347	333	2.5	32.8	31.8
NNU4952	**NNU4952K**	271	284	296	349	—	2	31.4	30.0
–	–	276	—	—	384	367	3	47.4	46.0
NNU4956	**NNU4956K**	291	305	316	369	—	2	33.1	31.6
–	–	296	—	—	404	387	3	51.2	49.6
NNU4960	**NNU4960K**	313	335	343	407	—	2.5	51.9	49.7
–	–	316	—	—	444	421	3	70.8	68.7
NNU4964	**NNU4964K**	333	348	363	427	—	2.5	53.7	51.4
–	–	336	—	—	464	442	3	76.4	74.0
NNU4968	**NNU4968K**	353	368	383	447	—	2.5	56.8	54.3
–	–	360	—	—	500	477	4	101	97.8
–	–	380	—	—	520	497	4	107	104
–	–	400	—	—	540	514	4	113	109
–	–	420	—	—	580	552	4	146	141
–	–	440	—	—	600	574	4	154	149
–	–	464	—	—	626	602	5	177	171
–	–	484	—	—	656	632	5	201	195
–	–	504	—	—	676	647	5	211	204

Single Row Full Complement Cylindrical Roller Bearing d 20~75mm

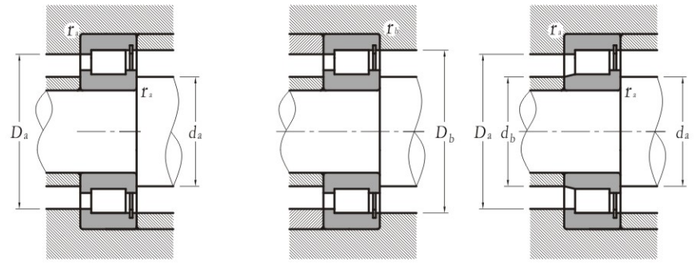


Series NCF18, NCF22, NCF29, NCF30
(SL1818, SL1822, SL1829, SL1830)



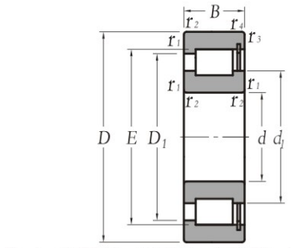
Series NJG23
(SI1923)

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
d	D	B	Dynamic C	Static C_0	p_u	Reference Speed	Limit Speed			
mm			kN		kN	r/min		kg	–	
20	42	16	28.1	28.5	3.1	8500	10000	0.11	**NCF 3004 CV**	**SL183004**
25	47	16	31.9	35.5	3.8	7000	9000	0.12	**NCF 3005 CV**	**SL183005**
	62	24	68.2	68	8.5	4500	5600	0.38	**NJG 2305 VH**	**SL192305**
30	55	19	39.6	44	5	6000	7500	0.20	**NCF 3006 CV**	**SL183006**
	72	27	84.2	86.5	11	4000	4800	0.56	**NJG 2306 VH**	**SL192306**
35	62	20	48.4	56	6.55	5300	6700	0.26	**NCF 3007 CV**	**SL183007**
	80	31	108	114	14.3	3400	4300	0.75	**NJG 2307 VH**	**SL192307**
40	68	21	57.2	69.5	8.15	4800	6000	0.31	**NCF 3008 CV**	**SL183008**
	90	33	145	156	20	3000	3600	1.00	**NJG 2308VH**	**SL192308**
45	75	23	60.5	78	9.15	4300	5300	0.40	**NCF 3009 CV**	**SL183009**
	100	36	172	196	25.5	2800	3400	1.45	**NJG 2309 VH**	**SL192309**
50	80	23	76.5	98	11.8	4000	5000	0.43	**NCF 3010 CV**	**SL183010**
55	90	26	105	140	17.3	3400	4300	0.64	**NCF 3011 CV**	**SL183011**
	120	43	233	260	33.5	2200	2800	2.30	**NJG 2311 VH**	**SL192311**
60	85	16	55	80	9.15	3600	4500	0.29	**NCF 3012 CV**	**SL183012**
	95	26	106	146	18.3	3400	4000	0.69	**NJG 2312 VH**	**SL192312**
65	90	16	58.3	88	10.2	3200	4000	0.31	**NCF 2913 CV**	**SL182913**
	100	26	112	163	20	3000	3800	0.73	**NCF 3013 CV**	**SL183013**
	140	48	303	360	46.5	1900	2400	3.55	**NJG 2313 VH**	**SL192313**
70	100	19	76.5	116	13.7	3000	3800	0.49	**NCF 2914 CV**	**SL182914**
	110	30	128	173	22.4	2800	3600	1.02	**NCF 3014 CV**	**SL183014**
	150	51	336	400	50	1800	2200	4.40	**NJG 2314 VH**	**SL192314**
75	105	19	79.2	125	14.6	2800	3600	0.52	**NCF 2915 CV**	**SL182915**
	115	30	134	190	24.5	2600	3200	1.06	**NCF 3015 CV**	**SL183015**
	160	50	396	480	60	1600	2000	5.36	**NJG 2315VH**	**SL192315**

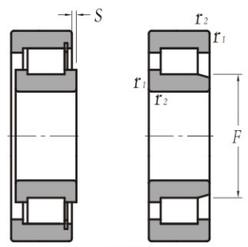


Mounting Dimensions							Shoulder and Chamfer						
d	d_1 ~	D_1 ~	D.F	$r_{1.2}$ (min)	$r_{3.4}$ (min)	s[1]	d_a (min)	d_{as}[2] (Recommend)	d_b (max)	D_a (max)	D_b (max)	r_a (max)	r_b (max)
	mm						mm						
20	29	33	36.8	0.6	0.6	1.5	24	26.9	–	38	40	0.6	0.6
25	34	39	42.5	0.6	0.6	1.5	29	32.3	–	43	45	0.6	0.6
	36.1	48.2	31.74	1.1	–	1.7	32	33.9	30	45	–	1	–
30	40	45	49.6	1	1	2	35	37.8	–	50	52	1	1
	43.2	56.4	38.36	1.1	–	1.8	37	40.8	36	65	–	1	–
35	45	51	55.5	1	1	2	40	42.8	–	57	59	1	1
	50.4	65.8	44.75	1.5	–	2	44	47.6	42	71	–	1.5	–
40	50	58	61.7	1	1	2	45	47.9	–	63	65	1	1
	57.6	75.2	51.15	1.5	–	2.4	49	54.4	49	81	–	1.5	–
45	55	62	66.9	1	1	2	50	53	–	70	72	1	1
	62.5	80.1	56.14	1.5	–	2.4	54	59.3	54	91	–	1.5	–
50	59	68	72.3	1	1	2	55	56.7	–	75	77	1	1
55	68	79	83.5	1.1	1.1	2	61	65.8	–	84	86	1	1
	75.5	98.6	67.14	2	–	2.6	66	71.3	66	109	–	2	–
60	69	74.5	78.65	1	1	1	65	66.8	–	80	80	1	1
	71	82	86.7	1.1	1.1	2	66	68.9	–	89	91	1	1
65	75.5	81	85.35	1	1	1	70	73.4	–	85	85	1	1
	78	88	93.1	1.1	1.1	2	71	75.6	–	94	96	1	1
	89.9	116	80.71	2.1	–	3	77	85.3	78	128	–	2	–
70	80.5	88.5	92.5	1	1	1	75	78.5	–	95	95	1	1
	81	95	100.3	1.1	1.1	3	76	78.7	–	104	106	1	1
	93.8	121	84.22	2.1	–	3	82	89	81	138	–	2	–
75	86	93	97.6	1	1	1	80	83.8	–	100	100	1	1
	89	103	107.9	1.1	1.1	3	81	86.5	–	109	111	1	1
	101	131	91.24	2.1	–	3	87	96.1	98	148	–	2	–

Single Row Full Complement Cylindrical Roller Bearing d 80~150mm

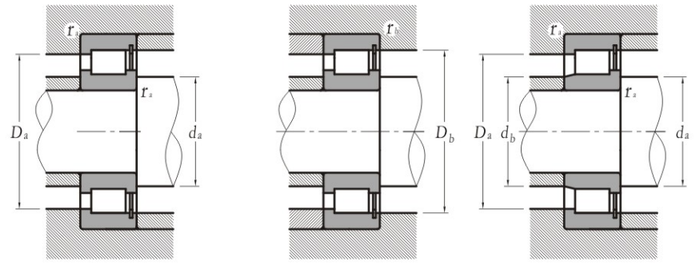


Series NCF18, NCF22, NCF29, NCF30
(SL1818, SL1822, SL1829, SL1830)



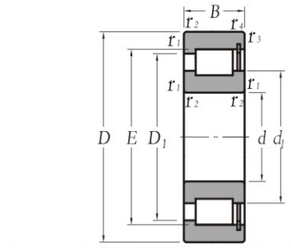
Series NJG23
(SI1923)

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
d	D	B	Dynamic C	Static C_0	p_u	Reference Speed	Limit Speed			
mm			kN		kN	r/min		kg	–	
80	110	19	80. 9	132	15.6	2600	3400	0.55	**NCF 2916 CV**	**SI182916**
	125	34	165	228	29	2400	3000	1.43	**NCF 3016 CV**	**SL183016**
	170	58	457	570	71	1500	1900	6.40	**NJG 2316 VH**	**SL192316**
85	120	22	102	166	20	2600	3200	0.81	**NCF 2917 CV**	**SL182917**
	130	34	172	236	30	2400	3000	1.51	**NCF 3017 CV**	**SL183017**
	180	60	484	620	76.5	1400	1800	7.40	**NJG 2317 VH**	**SL192317**
90	125	22	105	176	20.8	2400	3000	0.84	**NCF 2918 CV**	**SL182918**
	140	37	198	280	35.5	2200	2800	1.97	**NCF 3018 CV**	**SL183018**
	190	64	528	670	81.5	1400	1800	8.75	**NJG 2318 VH**	**SL192318**
100	140	24	128	200	24.5	2200	2600	1.14	**NCF 2920 CV**	**SL182920**
	150	37	209	310	37.5	2000	2600	2.15	**NCF 3020 CV**	**SL183020**
	215	73	682	865	104	1200	1500	13.0	**NJG 2320 VH**	**SL192320**
110	150	24	134	220	26	1900	2400	1.23	**NCF 2922 CV**	**SL182922**
	170	45	275	400	47.5	1800	2200	3.50	**NCF 3022 CV**	**SL183022**
	240	80	858	1060	122	1100	1300	17.5	**NJG 2322 VH**	**SL192322**
120	165	27	172	290	34.5	1800	2200	1.73	**NCF 2924 CV**	**SL182924**
	180	46	292	440	52	1700	2000	3.80	**NCF 3024 CV**	**SL183024**
	215	58	512	735	85	1400	1700	9.05	**NCF 2224 V**	**SL182224**
	260	86	952	1250	140	1000	1200	22.5	**NJG 2324 VH**	**SL192324**
130	180	30	205	360	40.5	1600	2000	2.33	**NCF 2926 CV**	**SL182926**
	200	52	413	620	72	1500	1900	5.80	**NCF 3026 CV**	**SL183026**
	280	93	1080	1430	156	950	1200	28.0	**NJG 2326 VH**	**SL192326**
140	190	30	220	390	43	1500	1900	2.42	**NCF 2928 CV**	**SL182928**
	210	53	440	680	78	1400	1800	6.10	**NCF 3028 CV**	**SL183028**
	250	68	693	1020	114	1200	1500	14.5	**NCF 2228 V**	**SL182228**
	300	102	1210	1600	173	850	1100	35.5	**NJG 2328 VH**	**SL192328**
150	210	36	292	490	55	1400	1700	3.77	**NCF 2930 CV**	**SL182930**
	225	56	457	710	80	1300	1600	7.50	**NCF 3030 CV**	**SL183030**
	270	73	792	1180	132	1100	1400	18.4	**NCF 2230 V**	**SL182230**
	320	108	1450	1930	196	800	1000	42.5	**NJG 2330 VH**	**SI192330**

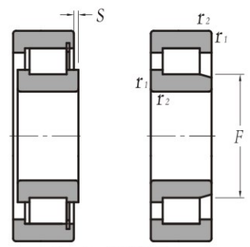


Mounting Dimensions							Shoulder and Chamfer						
d	d_1 ~	D_1 ~	D.F	$r_{1.2}$ (min)	$r_{3.4}$ (min)	s[1]	d_a (min)	d_{as}[2] (Recommend)	d_b (max)	D_a (max)	D_b (max)	r_a (max)	r_b (max)
mm							mm						
80	90.5	99	102.7	1	1	1	85	88.6	–	105	105	1	1
	95	111	117	1.1	1.1	4	86	92	–	119	121	1	1
	109	141	98.26	2.1	–	4	92	104	95	158	–	2	–
85	96	105	109.7	1.1	1.1	1	91	93.9	–	114	114	1	1
	99	116	121.4	1.1	1.1	4	91	96.2	–	124	126	1	1
	118	149	107	3	–	4	99	113	104	166	–	2.5	–
90	102	111	115.6	1.1	1.1	1	96	99.8	–	119	119	1	1
	106	124	130.1	1.5	1.5	4	97	103	–	133	135	1.5	1.5
	117	152	105.3	3	–	4	104	111	105	176	–	2.5	–
100	114	126	130.6	1.1	1.1	1.5	106	111	–	134	134	1	1
	115	134	139.7	1.5	1.5	4	107	112	–	143	145	1.5	1.5
	133	173	119.3	3	–	4	114	126	119	201	–	2.5	–
110	124	136	141.1	1.1	1.1	1.5	116	122	–	144	144	1	1
	127	149	156.1	2	2	5.5	120	124	–	160	165	2	2
	151	198	134.3	3	–	5	124	143	130	226	–	2.5	–
120	136	149	154.3	1.1	1.1	1.5	126	133	–	159	159	1	1
	139	160	167.6	2	2	5.5	130	135	–	170	175	2	2
	150	184	192.32	2.1	2.1	4	131	145	–	204	204	2	2
	164	213	147.4	3	–	5	134	156	142	246	–	2.5	–
130	147	161	167.1	1.5	1.5	2	137	143	–	173	173	1.5	1.5
	149	175	183	2	1	5.5	140	148	–	190	195	2	1
	175	226	157.9	4	–	6	147	166	153	263	–	3	–
140	158	173	180	1.5	1.5	2	147	155	–	183	183	1.5	1.5
	163	189	197	2	1	5.5	150	159	–	200	200	2	1
	173	212	221.9	3	3	5	143	167	–	127	127	2.5	2.5
	187	241	168.5	4	–	6.5	157	178	163	283	–	3	–
150	169	189	196.4	2	2	2.5	159	166	–	201	201	2	1.5
	170	198	206	2.1	1.1	7	161	167	–	214	234	2	1
	184	227	236.7	3	3	6	153	178	–	137	137	2.5	2.5
	202	261	182.5	4	–	6.5	167	192	178	303	–	3	–

Single Row Full Complement Cylindrical Roller Bearing d 160~260mm

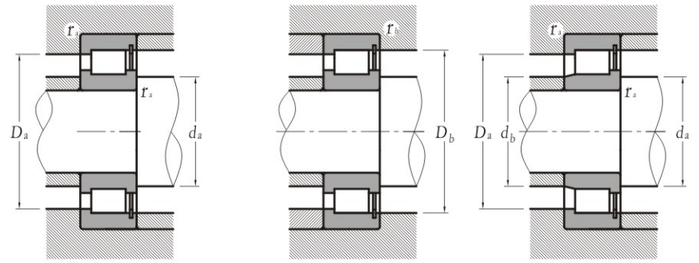


Series NCF18, NCF22, NCF29, NCF30
(SL1818, SL1822, SL1829, SL1830)



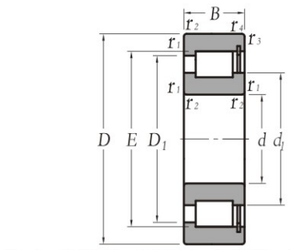
Series NJG23
(SI1923)

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
d	D	B	Dynamic C	Static C_0	p_u	Reference Speed	Limit Speed			
mm			kN		kN	r/min		kg	–	
160	220	36	303	530	58.5	1300	1600	4.00	**NCF 2932 CV**	**SI182932**
	240	60	512	800	90	1200	1500	9.10	**NCF 3032 CV**	**SL183032**
	290	80	990	1500	160	950	1200	23.0	**NCF 2232 V**	**SL182232**
170	230	36	314	560	60	1200	1500	4.30	**NCF 2934 CV**	**SL182934**
	260	67	671	1060	118	1100	1400	12.5	**NCF 3034 CV**	**SL183034**
	310	86	1100	1700	176	900	1100	28.7	**NCF 2234 V**	**SL182234**
	360	120	1760	2450	236	700	900	59.5	**NJG 2334 VH**	**SL192334**
180	250	42	391	695	75	1100	1400	6.20	**NCF 2936 CV**	**SL182936**
	280	74	781	1250	134	1100	1300	16.5	**NCF 3036 CV**	**SL183036**
	380	126	1870	2650	255	670	800	69.5	**NJG 2336 VH**	**SL192336**
190	260	42	440	780	81.5	1100	1400	6.50	**NCF 2938 CV**	**SL182938**
	290	75	792	1290	140	1000	1300	17.0	**NCF 3038 CV**	**SL183038**
	340	92	1250	1900	196	800	1000	35.7	**NCF 2238 V**	**SL182238**
	400	132	2160	3000	280	630	800	80.0	**NJG 2338 VH**	**SL192338**
200	250	24	176	335	32.5	1100	1400	2.60	**NCF 1840 V**	**SL181840**
	280	48	528	965	100	1000	1300	9.10	**NCF 2940 CV**	**SL182940**
	310	82	913	1530	160	950	1200	22.5	**NCF 3040 CV**	**SL183040**
	420	138	2290	3200	290	600	750	92.0	**NJG 2340 VH**	**SL192340**
220	270	24	183	365	34.5	1000	1200	2.85	**NCF 1844 V**	**SL181844**
	300	48	550	1060	106	950	1200	9.90	**NCF 2944CV**	**SL182944**
	340	90	1080	1800	186	850	1100	29.5	**NCF 3044 CV**	**SL183044**
	400	108	1830	2750	255	700	850	58.0	**NCF 2244 V**	**SL182244**
	460	145	2550	3550	320	530	670	111	**NJG 2344 VH**	**SL192344**
240	300	28	260	510	47.5	900	1100	4.40	**NCF 1848 V**	**SL181848**
	320	48	583	1140	114	850	1100	10.6	**NCF 2948 CV**	**SL182948**
	360	92	1140	1960	200	800	1000	32.0	**NCF 3048 CV**	**SL183048**
	500	155	2810	3900	345	500	630	147	**NJG 2348 VH**	**SL192348**
260	320	28	270	550	50	800	1000	4.75	**NCF 1852 V**	**SL181852**
	360	60	737	1430	143	750	950	18.5	**NCF 2952 CV**	**SL182952**
	400	104	1540	2550	250	700	900	46.5	**NCF 3052 CV**	**SL183052**
	540	165	3410	4800	415	430	530	177	**NJG 2352 VH**	**SI192352**

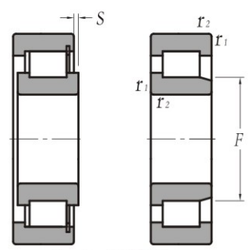


Mounting Dimensions							Shoulder and Chamfer						
d	d_1 ~	D_1 ~	D.F	$r_{1.2}$ (min)	$r_{3.4}$ (min)	s[1]	d_a (min)	d_{as}[2] (Recommend)	d_b (max)	D_a (max)	D_b (max)	r_a (max)	r_b (max)
mm							mm						
160	180	200	207.2	2	2	2.5	169	177	–	211	211	2	2
	185	215	224	2.1	1.1	7	171	180	–	229	304	2	1
	208	255	266.4	3	3	6	163	201	–	276	276	2.5	2.5
170	191	211	218	2	2	2.5	179	188	–	211	221	2	2
	198	232	242	2.1	1.1	7	181	192	–	249	252	2	1
	219	269	281.1	4	4	7	185	212	–	295	295	3	3
	227	291	203.55	4	–	7	187	214	200	343	–	3	–
180	203	223	232	2	2	2.5	189	199	–	241	241	2	2
	212	248	260	2.1	2.1	7	191	206	–	279	269	2	2
	245	309	221.7	4	–	8	197	232	216	363	–	3	–
190	212	236	244	2	2	2.5	199	208	–	251	251	2	2
	222	258	269	2.1	2.1	9	201	216	–	279	279	2	2
	243	296	311	4	4	7	205	235	–	325	325	3	3
	250	320	224.5	5	–	8	210	237	222	380	–	4	–
200	218	231	237.5	1.5	1.1	1.8	207	215	–	243	245	1.5	1
	226	253	262	2.1	2.1	3	211	222	–	269	269	2	2
	237	275	287	2.1	2.1	9	211	230	–	299	299	2	2
	266	342	28.6	5	–	9	220	252	232	400	–	4	–
220	238	252	258	1.5	1.1	1.8	227	235	–	263	263	1.5	1
	247	274	283	2.1	2.1	3	231	242	–	289	289	2	2
	255	298	312	3	3	9	233	248	–	327	327	2.5	2.5
	277	349	366	4	4	8	234	260	–	385	385	3	3
	295	383	266.7	5	–	10	240	281	260	440	–	4	–
240	263	279	287	2	1.1	1.8	249	259	–	291	295	2	1
	267	294	303	2.1	2.1	3	251	263	–	309	309	2	2
	278	321	335	3	3	11	253	271	–	347	347	2.5	2.5
	310	403	280.6	5	–	10	240	295	282	480	–	4	–
260	283	299	307.2	2	1.1	1.8	270	279	–	310	315	2	1
	291	323	333	2.1	2.1	3.5	271	286	–	349	349	2	2
	304	358	376	4	4	11	275	295	–	385	385	3	3
	349	456	315.6	6	–	11	286	332	309	514	–	5	–

Single Row Full Complement Cylindrical Roller Bearing d 280~440mm

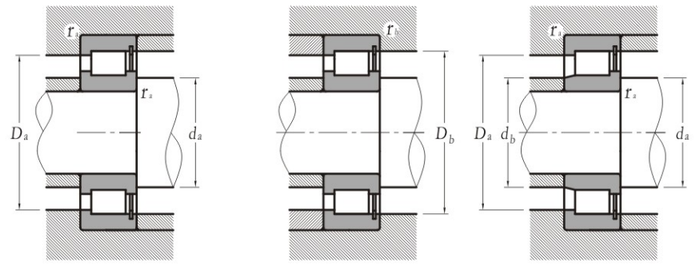


Series NCF18, NCF22, NCF29, NCF30
(SL1818, SL1822, SL1829, SL1830)



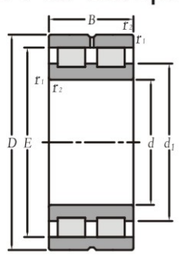
Series NJG23
(SI1923)

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
d	D	B	Dynamic C	Static C_0	p_u	Reference Speed	Limit Speed			
mm			kN		kN	r/min		kg	–	
280	350	33	341	695	64	750	950	7.10	**NCF 1856 V**	**SI181856**
	380	60	880	1730	166	700	900	19.7	**NCF 2956 CV**	**SL182956**
	420	106	1570	2650	260	670	850	50.0	**NCF 3056 CV**	**SL183056**
300	380	38	418	850	75	670	850	10.0	**NCF 1860 V**	**SL181860**
	420	72	1120	2200	208	670	800	31.2	**NCF 2960 CV**	**SL182960**
	460	118	1900	3250	300	600	750	69.0	**NCF 3060 CV**	**SL183060**
320	400	38	440	900	80	630	800	10.5	**NCF 1864 V**	**SL181864**
	440	72	1140	2360	220	600	750	32.9	**NCF 2964 CV**	**SL182964**
	480	121	1980	3450	310	560	700	74.5	**NCF 3064 CV**	**SL183064**
340	420	38	446	950	83	600	750	11.0		
	460	72	1190	2500	228	560	700	35.0	**NCF 1868 V**	**SL181868**
	520	133	2380	4150	355	530	670	100	**NCF 2968 CV**	**SL182968**
									NCF 3068 CV	**SL183068**
360	440	38	402	900	76.5	560	700	11.5	**NCF 1872 V**	**SL181872**
	480	72	1230	2600	240	530	670	36.5	**NCF 2972 CV**	**SL182972**
	540	134	2420	4300	365	500	630	105	**NCF 3072 CV**	**SL183072**
380	480	46	627	1290	114	530	670	19.5	**NCF 1876 V**	**SL181876**
	520	82	1570	3250	300	500	630	52.5	**NCF 2976 CV**	**SL182976**
	560	135	2510	4550	380	480	600	110	**NCF 3076 CV**	**SL183076**
400	500	46	627	1340	118	500	630	20.5	**NCF 1880 V**	**SL181880**
	540	82	1650	3450	310	480	600	54.5	**NCF 2980 CV**	**SL182980**
	600	148	2970	5500	450	450	560	145	**NCF 3080 CV**	**SL183080**
420	520	46	660	1430	122	480	600	21.0	**NCF 1884 V**	**SL181884**
	560	82	1650	3600	315	450	560	57.0	**NCF 2984 CV**	**SL182984**
	620	150	3030	5700	455	430	530	150	**NCF 3084 CV**	**SL183084**
440	540	46	671	1460	125	450	560	22.0	**NCF 1888 V**	**SL181888**
	540	60	1060	2700	232	450	560	29.0	**NCF 2888 CV**	**SL182888**
	600	95	2010	4400	380	430	530	80.5	**NCF 2988 CV**	**SL182988**
	650	157	3580	6550	520	400	500	175	**NCF 3088 CV**	**SI183088**

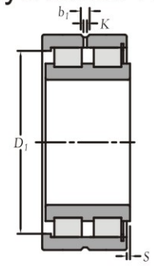


Mounting Dimensions							Shoulder and Chamfer					
d	d_1 ~	D_1 ~	E	$r_{1.2}$ (min)	$r_{3.4}$ (min)	s[1]	d_a (min)	d_{as}[2] (Recommend)	D_a (max)	D_b (max)	r_a (max)	r_b (max)
mm							mm					
280	307	325	334	2	1.1	2.5	289	303	341	344	2	1
	314	348	359.1	2.1	2.1	3.5	291	309	369	369	2	2
	319	373	391	4	4	11	295	310	405	405	3	3
300	331	353	363	2.1	1.5	3	311	326	369	373	2	1.5
	341	375	390.5	3	3	5	313	334	407	407	2.5	2.5
	355	413	433	4	4	14	315	344	445	455	3	3
320	351	373	383	2.1	1.5	3	331	346	389	393	2	1.5
	359	421	411	3	3	5	333	353	427	427	2.5	2.5
	368	468	449	4	4	14	335	359	465	465	3	3
340	371	393	403	2.1	1.5	3	351	366	409	413	2	1.5
	378	421	431	3	3	5	353	373	447	447	2.5	2.5
	395	468	485	5	4	14	358	384	502	502	4	4
360	388	413	418.9	2.1	1.5	4.5	371	384	429	433	2	1.5
	404	437	451.5	3	3	5	373	396	467	467	2.5	2.5
	412	486	503	5	5	14	378	402	522	522	4	4
380	416	448	458	2.1	1.5	3.5	391	411	469	473	2	1.5
	427	474	488	4	4	5	395	420	505	505	3	3
	431	504	521	5	5	14	398	420	542	542	4	4
400	433	465	475	2.1	1.5	3.5	411	428	489	493	2	1.5
	449	499	511	4	4	5	415	448	525	525	3	3
	460	540	558	5	5	14	418	449	582	582	4	4
420	457	489	499	2.1	1.5	3.5	431	452	509	513	2	1.5
	468	512	524	4	4	5	435	455	545	545	3	3
	480	559	577	5	5	14	438	469	602	602	4	4
440	474	506	516	2.1	1.5	3.5	451	469	529	533	2	1.5
	474	508	516	2.1	1.5	3.5	451	469	529	533	2	1.5
	502	545	565.5	4	4	6	455	492	585	585	3	3
	500	590	611	6	6	16	463	488	627	627	5	4

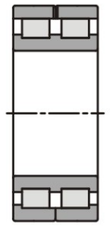
Double Row Full Complement Cylindrical Roller Bearing d 20~85mm



Series NNCL48,NNCL49
(SL0248,SL0249)

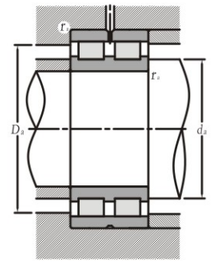


Series NNCF50, NNCF48, NNCF49
（SI1850）



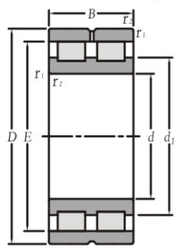
Series NNC48, NNC49
（SL0148, SL0149）

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
d	D	B	Dynamic C	Static C_0	p_u	Reference Speed	Limit Speed			
mm			kN		kN	r/min		kg	–	
20	42	30	52.3	57	6.2	8500	10000	0.20	**NNCF 5004 CV**	**SL185004**
25	47	30	59.4	71	7.65	7000	9000	0.23	**NNCF 5005 CV**	**SL185005**
30	55	34	73.7	88	10	6000	7500	0.35	**NNCF 5006 CV**	**SL185006**
35	62	36	89.7	112	12.9	5300	6700	0.46	**NNCF 5007 CV**	**SL185007**
40	68	38	106	140	16.3	4800	6000	0.56	**NNCF 5008 CV**	**SL185008**
45	75	40	112	156	18.3	4300	5300	0.71	**NNCF 5009 CV**	**SL185009**
50	80	40	142	196	23.6	4000	5000	0.76	**NNCF 5010 CV**	**SL185010**
55	90	46	190	280	34.5	3400	4300	1.16	**NNCF 5011 CV**	**SL185011**
60	85	25	78.1	137	14.3	3600	4500	0.49	**NNCF 4912 CV**	**-**
	85	25	78.1	137	14.3	3600	4500	0.49	**NNC 4912 CV**	**SL014912**
	85	25	78.1	137	14.3	3600	4500	0.49	**NNCL 4912 CV**	**SL024912**
	95	46	198	300	36.5	3400	4000	1.24	**NNCF 5012 CV**	**SL185012**
65	100	46	209	325	40	3000	3800	1.32	**NNCF 5013 CV**	**SL185013**
70	100	30	114	193	22.4	3000	3800	0.78	**NNCF 4914 CV**	**-**
	100	30	114	193	22.4	3000	3800	0.78	**NNC 4914 CV**	**SL014914**
	100	30	114	193	22.4	3000	3800	0.78	**NNCL 4914 CV**	**SL024914**
	110	54	238	345	45	2800	3600	1.85	**NNCF 5014 CV**	**SL185014**
75	115	54	251	380	49	2600	3200	1.93	**NNCF 5015 CV**	**SL185015**
80	110	30	121	216	25	2600	3400	0.88	**NNCF 4916 CV**	**-**
	110	30	121	216	25	2800	3400	0.88	**NNC 4916 CV**	**SL014916**
	110	30	121	216	25	2600	3400	0.88	**NNCL 4916 CV**	**SL024916**
	125	60	308	455	58.5	2400	3000	2.59	**NNCF 5016 CV**	**SL185016**
85	130	60	314	475	60	2400	3000	2.72	**NNCF 5017 CV**	**SL185017**

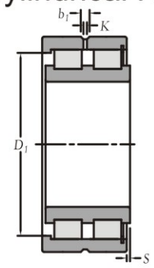


Mounting Dimensions								Shoulder and Chamfer			
d	d_1 ~	D_1 ~	E	b_1	K	$r_{1,2}$ (min)	s[1]	d_a (min)	d_{as}[2] (Recommend)	D_a (max)	r_a (max)
mm								mm			
20	28.4	33.2	36.81	4.5	3	0.6	1	23.2	26.6	38.8	0.6
25	34.5	38.9	42.51	4.5	3	0.6	1	28.2	28.2	43.8	0.6
30	40	45.3	49.6	4.5	3	1	1.5	34.6	34.6	50.4	1
35	44.9	51.3	55.52	4.5	3	1	1.5	39.6	39.6	57.4	1
40	50.5	57.2	61.74	4.5	3	1	1.5	44.6	44.6	63.4	1
45	55.3	62.5	66.85	4.5	3	1	1.5	49.6	49.6	70.4	1
50	59.1	67.6	72.23	4.5	3	1	1.5	54.6	54.6	75.4	1
55	68.5	78.7	83.54	4.5	3.5	1.1	1.5	61	61	84	1
60	70.5	73.53	77.51	4.5	3.5	1	1	64.6	68.5	80.4	1
	70.5	73.53	77.51	4.5	3.5	1	–	64.6	68.5	80.4	1
	70.5	–	77.51	4.5	3.5	1	1	64.6	–	80.4	1
	71.7	81.9	86.74	4.5	3.5	1.1	1.5	66	69.2	89	1
65	78.1	88.3	93.09	4.5	3.5	1.1	1.5	71	71	94	1
70	83	87	91.87	4.5	3.5	1	1	74.6	80.4	95.4	1
	83	87	91.87	4.5	3.5	1	–	74.6	80.4	95.4	1
	83	–	91.87	4.5	3.5	1	1	74.6	–	95.4	1
	81.5	95	100.28	5	3.5	1.1	3	76	78.9	104	1
75	89	103	107.9	5	3.5	1.1	3	81	81	109	1
80	91.4	96	97.78	5	3.5	1	1	84.6	89.4	105.4	1
	92	96	100.78	5	3.5	1	–	84.6	89.4	105.4	1
	92	–	100.78	5	3.5	1	1	84.6	–	105.4	1
	95	111	116.99	5	3.5	1.1	3.5	86	92	119	1
85	99	117	121.44	5	3.5	1.1	3.5	91	91	124	1

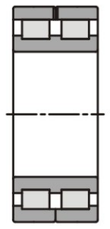
Double Row Full Complement Cylindrical Roller Bearing d 90~150mm



Series NNCL48,NNCL49
(SL0248,SL0249)

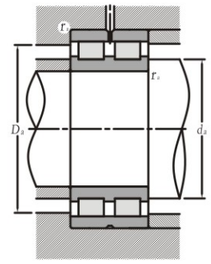


Series NNCF50, NNCF48, NNCF49
(SI1850)



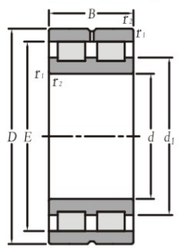
Series NNC48, NNC49
(SL0148, SL0149)

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
d	D	B	Dynamic C	Static C_0	p_u	Reference Speed	Limit Speed			
mm			kN		kN	r/min		kg	–	
90	125	35	161	300	35.5	2400	3000	1.35	**NNCF 4918 CV**	**-**
	125	35	161	300	35.5	2400	3000	1.35	**NNC 4918 CV**	**SL014918**
	125	35	161	300	35.5	2400	3000	1.35	**NNCL 4918 CV**	**SL024918**
	140	67	369	560	69.5	2200	2800	3.62	**NNCF 5018 CV**	**SL185018**
100	140	40	209	400	46.5	2000	2600	2.00	**NNCF 4920 CV**	**-**
	140	40	209	400	46.5	2000	2600	1.95	**NNC 4920 CV**	**SL014920**
	140	40	209	400	46.5	2000	2600	1.95	**NNCL 4920 CV**	**SL024920**
	150	67	391	620	75	2000	2600	3.94	**NNCF 5020 CV**	**SL185020**
110	150	40	220	430	49	1900	2400	2.15	**NNCF 4922 CV**	**-**
	150	40	220	430	49	1900	2400	2.15	**NNC 4922 CV**	**SL014922**
	150	40	220	430	49	1900	2400	2.15	**NNCL 4922 CV**	**SL024922**
	170	80	512	800	95	1800	2200	6.32	**NNCF 5022 CV**	**SL185022**
120	165	40	242	480	53	1700	2200	2.95	**NNCF 4924 CV**	**-**
	165	40	242	480	53	1700	2200	2.95	**NNC 4924 CV**	**SL014924**
	165	40	242	480	53	1700	2200	2.95	**NNCL 4924 CV**	**SL024924**
	180	85	539	880	104	1700	2000	6.77	**NNCF 5024 CV**	**SL185024**
130	180	50	275	530	60	1600	2000	3.95	**NNCF 4926 CV**	**-**
	180	50	275	530	60	1600	2000	3.95	**NNC 4926 CV**	**SL014926**
	180	50	275	530	60	1600	2000	3.95	**NNCL 4926 CV**	**SL024926**
	200	95	765	1250	143	1500	1900	10.2	**NNCF 5026 CV**	**SL185026**
140	190	50	286	570	63	1500	1900	4.20	**NNCF 4928 CV**	**-**
	190	50	286	570	63	1500	1900	4.20	**NNC 4928 CV**	**SL014928**
	190	50	286	570	63	1500	1900	4.20	**NNCL 4928 CV**	**SL024928**
	210	95	809	1370	156	1400	1800	11.1	**NNCF 5028 CV**	**SL185028**
150	190	40	255	585	60	1500	1800	2.70	**NNCF 4830 CV**	**-**
	190	40	255	585	60	1500	1800	2.90	**NNC 4830 CV**	**SL014830**
	190	40	255	585	60	1500	1800	2.70	**NNCL 4830 CV**	**SL024830**
	210	60	429	830	91.5	1400	1700	6.65	**NNCF 4930 CV**	**-**
	210	60	429	830	91.5	1400	1700	6.65	**NNC 4930 CV**	**SL014930**
	210	60	429	830	91.5	1400	1700	6.65	**NNCL 4930 CV**	**SL024930**
	225	100	842	1430	160	1300	1700	13.3	**NNCF 5030 CV**	**SL185030**

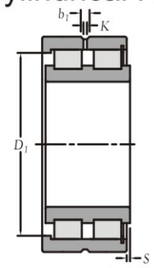


Mounting Dimensions								Shoulder and Chamfer			
d	d_1 ~	D_1 ~	E	b_1	K	$r_{1.2}$ (min)	s[1]	d_a (min)	d_{as}[2] (Recommend)	D_a (max)	r_a (max)
mm								mm			
90	103	111	113.2	5	3.5	1.1	1.5	96	100	119	1
	103	110	115.2	5	3.5	1.1	–	96	101	119	1
	103	–	115.2	5	3.5	1.1	1.5	96	–	119	1
	106	124	130.11	5	3.5	1.5	4	97	103	133	1.5
100	116	125	129.6	5	3.5	1.1	2	106	114	134	1
	116	125	129.6	5	3.5	1.1	–	106	114	134	1
	116	–	129.6	5	3.5	1.1	2	106	–	134	1
	115	134	139.65	6	3.5	1.5	4	107	112	143	1.5
110	124	134	138.2	6	3.5	1.1	2	116	122	144	1
	125	134	138.2	6	3.5	1.1	–	116	123	144	1
	125	–	138.2	6	3.5	1.1	2	116	–	144	1
	127	149	156.13	6	3.5	2	5	120	124	160	2
120	138	149	153.55	6	3.5	1.1	3	126	136	159	1
	139	148	153.55	6	3.5	1.1	–	126	136	159	1
	139	–	153.55	6	3.5	1.1	3	126	–	159	1
	138	161	167.58	6	3.5	2	5	130	135	170	2
130	148	160	165.4	6	3.5	1.5	4	137	146	173	1.5
	149	160	165.4	6	3.5	1.5	–	137	146	173	1.5
	149	–	165.4	6	3.5	1.5	4	137	–	173	1.5
	149	175	183.81	7	4	2	5	140	140	190	2
140	159	171	175.9	6	3.5	1.5	4	147	156	183	1.5
	160	170	175.9	6	3.5	1.5	–	147	157	183	1.5
	160	–	175.9	6	3.5	1.5	4	147	–	183	1.5
	163	189	197.82	7	4	2	5	150	150	200	2
150	166	173	178.3	7	4	1.1	2	156	163	184	1
	166	173	178.3	7	4	1.1	–	156	163	184	1
	166	–	178.3	7	4	1.1	2	160	–	180	1
	170	187	192.77	7	4	2	4	160	167	200	2
	171	187	192.77	7	4	2	–	160	168	200	2
	171	–	192.77	7	4	2	4	160	–	200	2
	170	198	206.8	7	4	2	6	160	160	215	2

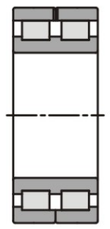
Double Row Full Complement Cylindrical Roller Bearing d 160~190mm



Series NNCL48,NNCL49
(SL0248,SL0249)

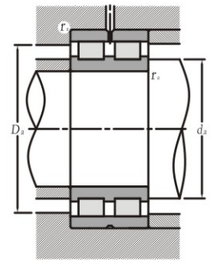


Series NNCF50, NNCF48, NNCF49
(SI1850)



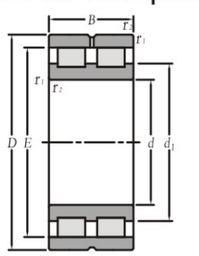
Series NNC48, NNC49
(SL0148, SL0149)

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
d	D	B	Dynamic C	Static C_0	p_u	Reference Speed	Limit Speed			
mm			kN		kN	r/min		kg	–	
160	200	40	260	610	62	1400	1700	2.90	**NNCF 4832 CV**	**–**
	200	40	260	610	62	1400	1700	3.10	**NNC 4832 CV**	**SL014932**
	200	40	260	610	62	1400	1700	2.90	**NNCL 4832 CV**	**SL024932**
	220	60	446	915	96.5	1300	1600	7.00	**NNCF 4932CV**	**–**
	220	60	446	915	96.5	1300	1600	7.00	**NNC 4932 CV**	**SL014932**
	220	60	446	915	96.5	1300	1600	7.00	**NNCL 4932 CV**	**SL024932**
	240	109	952	1600	180	1200	1500	16.2	**NNCF 5032 CV**	**SL185032**
170	215	45	286	655	65.5	1300	1600	3.90	**NNCF 4834 CV**	**–**
	215	45	286	655	65.5	1300	1600	4.10	**NNC 4834 CV**	**SL014834**
	215	45	286	655	65.5	1300	1600	3.90	**NNCL 4834 CV**	**SL024834**
	230	60	457	950	100	1200	1500	7.35	**NNCF 4934 CV**	**–**
	230	60	457	950	100	1200	1500	7.35	**NNC 4934 CV**	**SL014934**
	230	60	457	950	100	1200	1500	7.35	**NNCL 4934 CV**	**SL024934**
	260	122	1230	2120	236	1100	1400	23.0	**NNCF 5034 CV**	**SL185034**
180	225	45	297	695	69.5	1200	1500	4.00	**NNCF 4836 CV**	**–**
	225	45	297	695	69.5	1200	1500	4.30	**NNC 4836CV**	**SL014836**
	225	45	297	695	69.5	1200	1500	4.00	**NNCL 4836 CV**	**SL024836**
	250	69	594	1220	127	1100	1400	10.8	**NNCF 4936 CV**	**–**
	250	69	594	1220	127	1100	1400	10.8	**NNC 4936CV**	**SL014936**
	250	69	594	1220	127	1100	1400	10.8	**NNCL 4936 CV**	**SL024936**
	280	136	1420	2500	270	1100	1300	30.5	**NNCF 5036 CV**	**SL185036**
190	240	50	330	750	76.5	1100	1400	5.30	**NNCF 4838 CV**	**–**
	240	50	330	750	76.5	1100	1400	5.65	**NNC 4838 CV**	**SL014838**
	240	50	330	750	76.5	1100	1400	5.30	**NNCL 4838 CV**	**SL024838**
	260	69	605	1290	132	1100	1400	11.2	**NNCF 4938 CV**	**–**
	260	69	605	1290	132	1100	1400	11.2	**NNC 4938 CV**	**SL014938**
	260	69	605	1290	132	1100	1400	11.2	**NNCL 4938 CV**	**SL024938**
	290	136	1470	2600	280	1000	1300	31.5	**NNCF 5038 CV**	**SL185038**

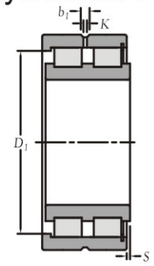


Mounting Dimensions								Shoulder and Chamfer			
d	d_1 ~	D_1 ~	E	b_1	K	$r_{1.2}$ (min)	s[1]	d_a (min)	d_{as}[2] (Recommend)	D_a (max)	r_a (max)
mm								mm			
160	174	182	186.9	7	4	1.1	2	171	171	189	1
	174	182	186.9	7	4	1.1	-	166	171	194	1
	174	–	186.9	7	4	1.1	2	166	-	194	1
	184	200	206.16	7	4	2	4	170	181	210	2
	185	200	206.16	7	4	2	-	170	182	210	2
	185	–	206.16	7	4	2	4	170	-	210	2
	184	216	224.8	7	4	2.1	6	171	171	229	2
170	187	196	201.3	7	4	1.1	3	176	184	209	1
	187	196	201.3	7	4	1.1	-	176	184	209	1
	187	–	201.3	7	4	1.1	3	176	-	209	1
	193	209	215.08	7	4	2	4	180	190	220	2
	194	209	215.08	7	4	2	-	180	191	220	2
	194	–	215.08	7	4	2	4	180	-	220	2
	198	232	243	7	4	2.1	6	181	181	249	2
180	200	209	214.1	7	4	1.1	3	186	197	219	1
	200	209	214.1	7	4	1.1	-	186	197	219	1
	200	–	214.1	7	4	1.1	3	186	-	219	1
	205	224	230.5	7	4	2	4	190	202	240	2
	206	224	230.5	7	4	2	-	190	202	240	2
	206	–	230.5	7	4	2	4	190	-	240	2
	212	249	260.5	8	4	2.1	8	191	206	269	2
190	209	219	225	7	4	1.5	4	197	206	233	1.5
	209	219	225	7	4	1.5	-	197	206	233	1.5
	209	–	225	7	4	1.5	4	197	-	233	1.5
	215	234	240.7	7	4	2	4	200	212	250	2
	206	233	240.7	7	4	2	-	200	212	250	2
	216	–	240.7	7	4	2	4	200	-	250	2
	222	258	270	8	4	2.1	8	201	201	279	2

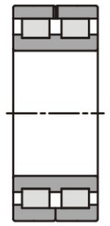
Double Row Full Complement Cylindrical Roller Bearing d 200~260mm



Series NNCL48,NNCL49
(SL0248,SL0249)

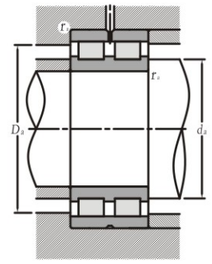


Series NNCF50, NNCF48, NNCF49
(SI1850)



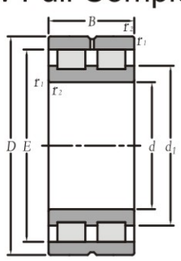
Series NNC48, NNC49
(SL0148, SL0149)

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
d	D	B	Dynamic C	Static C_0	p_u	Reference Speed	Limit Speed			
mm			kN		kN	r/min		kg	–	
200	250	50	336	800	80	1100	1400	5.50	**NNCF 4840 CV**	**–**
	250	50	336	800	80	1100	1400	5.90	**NNC 4840 CV**	**SL014840**
	250	50	336	800	80	1100	1400	5.50	**NNCL 4840 CV**	**SL024840**
	280	80	704	1500	153	1000	1300	15.8	**NNCF 4940 CV**	**–**
	280	80	704	1500	153	1000	1300	15.8	**NNC 4940 CV**	**SL014940**
	280	80	704	1500	153	1000	1300	15.8	**NNCL 4940 CV**	**SL024940**
	310	150	1680	3050	320	950	1200	41.0	**NNCF 5040 CV**	**SL185040**
220	270	50	352	865	85	1000	1200	5.90	**NNCF 4844 CV**	**–**
	270	50	352	865	85	1000	1200	6.40	**NNC 4844 CV**	**SL014844**
	270	50	352	865	85	1000	1200	5.90	**NNCL 4844 CV**	**SL024844**
	300	80	737	1600	160	950	1200	17.2	**NNCF 4944 CV**	**–**
	300	80	737	1600	160	950	1200	17.2	**NNC 4944 CV**	**SL014944**
	300	80	737	1600	160	950	1200	17.2	**NNCL 4944 CV**	**SL024944**
	340	160	2010	3600	375	850	1100	52.5	**NNCF 5044 CV**	**SL185044**
240	300	60	539	1290	125	900	1100	9.10	**NNCF 4848 CV**	**–**
	300	60	539	1290	125	900	1100	10.0	**NNC 4848 CV**	**SL014848**
	300	60	539	1290	125	900	1100	9.10	**NNCL 4848 CV**	**SL024848**
	320	80	781	1760	173	850	1100	18.5	**NNCF 4948 CV**	**–**
	320	80	781	1760	173	850	1100	18.5	**NNC 4948 CV**	**SL014948**
	320	80	781	1760	173	850	1100	18.5	**NNCL 4948 CV**	**SL024948**
	360	160	2120	3900	400	800	1000	56.0	**NNCF 5048 CV**	**SL185048**
260	320	60	561	1400	132	800	1000	9.70	**NNCF 4852 CV**	**–**
	320	60	561	1400	132	800	1000	11.0	**NNC 4852 CV**	**SL014852**
	320	60	561	1400	132	800	1000	9.70	**NNCL 4852 CV**	**SL024852**
	360	100	1170	2550	245	750	950	32.0	**NNCF 4952 CV**	**–**
	360	100	1170	2550	245	750	950	32.0	**NNC 4952 CV**	**SL014952**
	360	100	1170	2550	245	750	950	32.0	**NNCL 4952 CV**	**SL024952**
	400	190	2860	5200	520	700	900	85.5	**NNCF 5052 CV**	**SL185052**

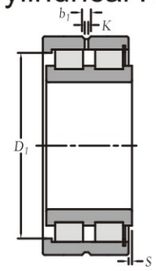


Mounting Dimensions								Shoulder and Chamfer			
d	d_1 ~	D_1 ~	E	b_1	K	$r_{1.2}$ (min)	s[1]	d_a (min)	d_{as}[2] (Recommend)	D_a (max)	r_a (max)
mm								mm			
200	220	230	235.5	7	4	1.5	2	207	217	243	1.5
	220	230	235.5	7	4	1.5	—	207	217	243	1.5
	220	—	235.5	7	4	1.5	2	207	—	243	1.5
	230	252	259.3	8	4	2.1	4	211	227	269	2
	231	252	259.34	8	4	2.1	—	211	227	269	2
	231	—	259.34	8	4	2.1	4	211	—	269	2
	236	276	288	8	4	2.1	6	211	230	299	2
220	241	251	256.5	7	4	1.5	4	227	238	263	1.5
	241	251	256.5	7	4	1.5	—	227	238	263	1.5
	241	—	256.5	7	4	1.5	4	227	—	263	1.5
	247	269	276.52	8	4	2.1	5	231	244	289	2
	248	269	276.52	8	4	2.1	—	231	244	289	2
	248	—	276.52	8	4	2.1	5	231	—	289	2
	255	300	312.2	8	6	3	9	235	248	325	2.5
240	261	275	281.9	8	4	2	4	250	257	290	2
	261	275	281.9	8	4	2	—	250	257	290	2
	261	—	281.9	8	4	2	4	250	—	290	2
	270	292	299.46	8	4	2.1	5	251	267	309	2
	271	291	299.1	8	4	2.1	—	251	267	309	2
	271	—	299.46	8	4	2.1	5	251	—	309	2
	278	322	355.6	9.4	5	3	9	255	271	345	2.5
260	283	297	304.2	8	4	2	4	270	280	310	2
	283	297	304.2	8	4	2	—	270	280	310	2
	283	—	304.2	8	4	2	4	270	—	310	2
	294	322	331.33	9.4	5	2.1	6	271	290	349	2
	295	321	331.33	9.4	5	2.1	—	271	290	349	2
	295	—	331.33	9.4	5	2.1	6	271	—	349	2
	304	357	373.5	9.4	5	4	10	278	297	382	3

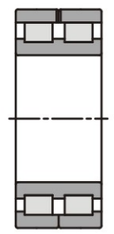
Double Row Full Complement Cylindrical Roller Bearing d 280~340mm



Series NNCL48,NNCL49
(SL0248,SL0249)

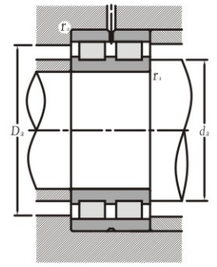


Series NNCF50, NNCF48, NNCF49
(SI1850)



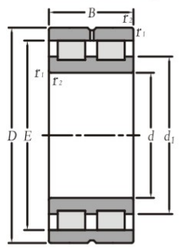
Series NNC48, NNC49
(SL0148, SL0149)

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
			Dynamic	Static		Reference Speed	Limit Speed			
d	D	B	C	C_0	p_u					
mm			kN		kN	r/min		kg	–	
280	350	69	737	1860	173	750	950	15.3	**NNCF 4856 CV**	**–**
	350	69	737	1860	173	750	950	16.0	**NNC 4856 CV**	**SL014856**
	350	69	737	1860	173	750	950	15.3	**NNCL 4856 CV**	**SL024856**
	380	100	1210	2700	255	700	900	34.0	**NNCF 4956 CV**	**–**
	380	100	1210	2700	255	700	900	34.0	**NNC 4956 CV**	**SL014956**
	380	100	1210	2700	255	700	900	34.0	**NNCL 4956 CV**	**SL024956**
	420	190	2920	5600	540	670	850	90.5	**NNCF 5056 CV**	**SL185056**
300	380	80	858	2120	196	700	850	21.8	**NNCF 4860 CV**	**–**
	380	80	858	2120	196	700	850	23.0	**NNC 4860 CV**	**SL014860**
	380	80	858	2120	196	700	850	21.8	**NNCL 4860 CV**	**SL024860**
	420	118	1680	3750	355	670	800	53.0	**NNCF 4960 CV**	**–**
	420	118	1680	3750	355	670	800	53.0	**NNC 4960 CV**	**SL014960**
	420	118	1680	3750	355	670	800	53.0	**NNCL 4960 CV**	**SL024960**
	460	218	3250	6550	600	600	750	130	**NNCF 5060 CV**	**SL185060**
320	400	80	897	2280	208	630	800	22.7	**NNCF 4864 CV**	**–**
	400	80	897	2280	208	630	800	24.0	**NNC 4864 CV**	**SL014864**
	400	80	897	2280	208	630	800	22.7	**NNCL 4864 CV**	**SL024864**
	440	118	1760	4050	375	600	750	56.0	**NNCF 4964 CV**	**–**
	440	118	1760	4050	375	600	750	56.0	**NNC 4964CV**	**SL014964**
	440	118	1760	4050	375	600	750	56.0	**NNCL 4964 CV**	**SL024964**
	480	218	3690	6950	620	560	700	135	**NNCF 5064 CV**	**SL185064**
340	420	80	913	2400	216	600	750	25.5	**NNCF 4868 CV**	**–**
	420	80	913	2400	216	600	750	25.5	**NNC 4868CV**	**SL014868**
	420	80	913	2400	216	600	750	25.5	**NNCL 4868 CV**	**SL024868**
	460	118	1790	4250	390	560	700	59.0	**NNCF 4968 CV**	**–**
	460	118	1790	4250	390	560	700	59.0	**NNC 4968 CV**	**SL014968**
	460	118	1790	4250	390	560	700	59.0	**NNCL 4968 CV**	**SL024968**
	480	243	4400	8300	710	530	650	185	**NNCF 5068 CV**	**SL185068**

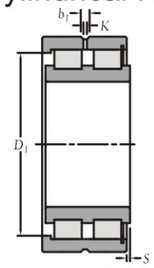


Mounting Dimensions								Shoulder and Chamfer			
d	d_1 ~	D_1 ~	E	b_1	K	$r_{1.2}$ (min)	$s^{1)}$	d_a (min)	$d_{as}{}^{2)}$ (Recommend)	D_a (max)	r_a (max)
mm								mm			
280	309	326	332.4	8	4	2	4	290	305	340	2
	308	326	332.4	8	4	2	-	290	304	340	2
	309	–	332.4	8	4	2	4	290	-	340	2
	316	344	353.34	9.4	5	2.1	6	291	312	369	2
	317	343	353.34	9.4	5	2.1	-	291	312	369	2
	317	–	353.34	9.4	5	2.1	6	291	-	369	2
	320	372	389	9.4	5	4	10	298	314	402	3
300	329	349	356.7	9.4	5	2.1	6	311	325	369	2
	329	349	356.7	9.4	5	2.1	-	311	325	369	2
	329	–	356.7	9.4	5	2.1	6	311	-	369	2
	340	374	385.51	9.4	5	3	6	315	335	405	2.5
	341	374	385.51	9.4	5	3	-	315	335	405	2.5
	341	–	385.51	9.4	5	3	6	315	-	405	2.5
	352	418	433	9.4	5	4	9	318	343	442	3
320	352	372	379.7	9.4	5	2.1	6	331	348	389	2
	352	372	379.7	9.4	5	2.1	-	331	348	389	2
	352	–	379.7	9.4	5	2.1	6	331	-	389	2
	368	400	412.27	9.4	5	3	6	335	362	425	2.5
	368	400	412.27	9.4	5	3	-	335	362	425	2.5
	368	–	412.3	9.4	5	3	6	335	-	425	2.5
	370	434	449	9.4	5	4	9	338	360	462	3
340	369	389	396.9	9.4	5	2.1	6	351	365	409	2
	369	389	396.9	9.4	5	2.1	-	351	365	409	2
	369	–	396.9	9.4	5	2.1	6	351	-	409	2
	386	418	430.11	9.4	5	3	6	355	380	445	2.5
	386	418	430.11	9.4	5	3	-	355	380	445	2.5
	386	–	430.11	9.4	5	3	6	355	-	445	2.5
	395	468	485	9.4	5	5	11	363	384	497	4

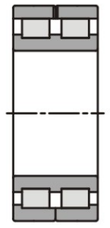
Double Row Full Complement Cylindrical Roller Bearing d 360~400mm



Series NNCL48,NNCL49
(SL0248,SL0249)

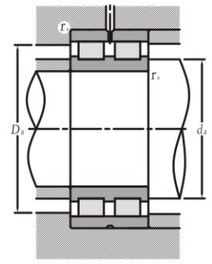


Series NNCF50, NNCF48, NNCF49
(SI1850)



Series NNC48, NNC49
(SL0148, SL0149)

Main Dimensions (mm)			Basic Load		Fitigue Load	Rated Speed		Mass (kg)	Type	
d	D	B	Dynamic C	Static C_0	p_u	Reference Speed	Limit Speed			
mm			kN		kN	r/min		kg	–	
360	440	80	935	2550	224	560	700	27.0	**NNCF 4872 CV**	**–**
	440	80	935	2550	224	560	700	27.0	**NNC 4872 CV**	**SL014872**
	440	80	935	2550	224	560	700	27.0	**NNCL 4872 CV**	**SL024872**
	480	118	1830	4500	405	530	670	62.1	**NNCF 4972 CV**	**–**
	480	118	1830	4500	405	530	670	62.1	**NNC 4972 CV**	**SL014972**
	480	118	1830	4500	405	530	670	60.8	**NNCL 4972 CV**	**SL024972**
	540	243	4460	8650	735	500	630	195	**NNCF 5072 CV**	**SL185072**
380	480	100	1400	3650	315	530	670	45.5	**NNCF 4876CV**	**–**
	480	100	1400	3650	315	530	670	45.5	**NNC 4876 CV**	**SL014876**
	480	100	1400	3650	315	530	670	45.5	**NNCL 4876 CV**	**SL024876**
	520	140	2380	5700	500	500	630	92.4	**NNCF 4976 CV**	**–**
	520	140	2380	5700	500	500	630	92.4	**NNC 4976 CV**	**SL014976**
	520	140	2380	5700	500	500	630	92.4	**NNCL 4976 CV**	**SL024976**
	560	243	4680	9150	735	480	600	200	**NNCF 5076 CV**	**SL185076**
400	500	100	1420	3750	325	500	630	46.5	**NNCF 4880 CV**	**–**
	500	100	1420	3750	325	500	630	46.5	**NNC 4880 CV**	**SL014880**
	500	100	1420	3750	325	500	630	46.5	**NNCL 4880 CV**	**SL024880**
	540	140	2420	6000	520	480	600	96.5	**NNCF 4980 CV**	**–**
	540	140	2420	6000	520	480	600	96.5	**NNC 4980 CV**	**SL014980**
	540	140	2420	6000	520	480	600	96.5	**NNCL 4980 CV**	**SL024980**
	600	272	5500	11000	900	450	560	270	**NNCF 5080 CV**	**SL185080**



Mounting Dimensions								Shoulder and Chamfer			
d	d_1 ~	D_1 ~	E	b_1	K	$r_{1.2}$ (min)	s[1)]	d_a (min)	d_{as}[2)] (Recommend)	D_a (max)	r_a (max)
mm								mm			
360	392	412	419.8	9.4	5	2.1	6	371	388	429	2
	392	412	419.8	9.4	5	2.1	-	371	388	429	2
	392	–	419.8	9.4	5	2.1	6	371	-	429	2
	404	436	448	9.4	5	3	6	375	398	465	2.5
	404	436	448	9.4	5	3	-	375	398	465	2.5
	404	–	448	9.4	5	3	6	375	-	465	2.5
	412	486	503	9.4	5	5	11	383	402	517	4
380	421	446	455.8	9.4	5	2.1	6	391	415	469	2
	421	446	455.8	9.4	5	2.1	-	391	415	469	2
	421	–	455.8	9.4	5	2.1	6	391	-	469	2
	431	468	481.35	9.4	5	4	7	398	424	502	3
	431	467	481.35	9.4	5	4	-	398	424	502	3
	431	–	481.4	9.4	5	4	7	398	-	502	3
	431	504	521	9.4	5	5	11	403	420	537	4
400	435	461	470.59	9.4	5	2.1	6	411	430	489	2
	435	461	470.59	9.4	5	2.1	-	411	430	489	2
	435	–	470.59	9.4	5	2.1	6	411	-	489	2
	451	488	501.74	9.4	5	4	6	418	444	522	3
	451	488	501.74	9.4	5	4	-	418	444	522	3
	451	–	501.74	9.4	5	4	7	418	-	522	3
	460	540	558	9.4	5	5	11	423	449	577	4

Radial Bearing Tolerance (Except for taper roller bearings) Tolerance class P0 (Table3)

d(mm)		△dmp		Vdp Diameter series			Vdmp	△Bs		VBs	Kia
over	incl.	high	low	8,9 max	0,1 max	2,3,4 max	max	high	low	max	max
-	2.5	0	-8	10	8	6	6	0	-40	12	10
2.5	10	0	-8	10	8	6	6	0	-120	15	10
10	18	0	-8	10	8	6	6	0	-120	20	10
18	30	0	-10	13	10	8	8	0	-120	20	13
30	50	0	-12	15	12	9	9	0	-120	20	15
50	80	0	-15	19	19	11	11	0	-150	25	20
80	120	0	-20	25	25	15	15	0	-200	25	25
120	180	0	-25	31	31	19	19	0	-250	30	30
180	250	0	-30	38	38	23	23	0	-300	30	40
250	315	0	-35	44	44	26	26	0	-350	35	50
315	400	0	-40	50	50	30	30	0	-400	40	60
400	500	0	-45	56	56	34	34	0	-450	50	65
500	630	0	-50	63	63	38	38	0	-500	60	70
630	800	0	-75	-	-	-	-	0	-750	70	80
800	1,000	0	-100	-	-	-	-	0	-1,000	80	90
1,000	1,250	0	-125	-	-	-	-	0	-1,250	100	100
1,250	1,600	0	-160	-	-	-	-	0	-1,600	120	120
1,600	2,000	0	-200	-	-	-	-	0	-2,000	140	140

Radial Bearing Tolerance (Except for taper roller bearings) Tolerance class P0 (Table4)

D(mm)		△Dmp		VDp Diameter series			Vdmp	△Cs		VBs	Kea
over	incl.	high	low	8,9 max	0,1 max	2,3,4 max	max	high	low	max	max
6	18	0	-8	10	8	6	6				15
18	30	0	-9	12	9	7	7				15
30	50	0	-11	14	11	8	8				20
50	80	0	-13	16	13	10	10				25
80	120	0	-15	19	19	11	11				35
120	150	0	-18	23	23	14	14				40
150	180	0	-25	31	31	19	19	△Cs and VCs values are identical to those for inner ring of same bearing(△Bs and VBs)			45
180	250	0	-30	38	38	23	23				50
250	315	0	-35	44	44	26	26				60
315	400	0	-40	50	50	30	30				70
400	500	0	-45	56	56	34	34				80
500	630	0	-50	63	63	38	38				100
630	800	0	-75	94	94	55	55				120
800	1,000	0	-100	125	125	75	75				140
1,000	1,250	0	-125	-	-	-	-				160
1,250	1,600	0	-160	-	-	-	-				190
1,600	2,000	0	-200	-	-	-	-				220
2,000	2,500	0	-250	-	-	-	-				250

Radial Bearing Tolerance (Except for taper roller bearings) Tolerance class P6 (Table5)

d(mm)		△dmp		Vdp Diameter series			Vdmp	△Bs		VBs	Kia
over	incl.	high	low	8,9 max	0,1 max	2,3,4 max	max	high	low	max	max
-	2.5	0	-7	9	7	5	5	0	-40	12	5
2.5	10	0	-7	9	7	5	5	0	-120	15	6
10	18	0	-7	9	7	5	5	0	-120	20	7
18	30	0	-8	10	8	6	6	0	-120	20	8
30	50	0	-10	13	10	8	8	0	-120	20	10
50	80	0	-12	15	15	9	9	0	-150	25	13
80	120	0	-15	19	19	11	11	0	-200	25	18
120	180	0	-18	23	23	14	14	0	-250	30	20
180	250	0	-22	28	28	17	17	0	-300	30	25
250	315	0	-25	31	31	19	19	0	-350	35	30
315	400	0	-30	38	38	23	23	0	-400	40	35
400	500	0	-35	44	44	26	26	0	-450	45	40
500	630	0	-40	50	50	30	30	0	-500	50	45
630	800	0	-50	-	-	-	-	0	-750	55	50
800	1,000	0	-65	-	-	-	-	0	-1,000	60	60
1,000	1,250	0	-80	-	-	-	-	0	-1,250	70	70
1,250	1,600	0	-100	-	-	-	-	0	-1,600	70	80
1,600	2,000	0	-130	-	-	-	-	0	-2,000	80	

Radial Bearing Tolerance (Except for taper roller bearings) Tolerance class P6 (Table6)

D(mm)		△Dmp		VDp Diameter series			Vdmp	△Cs		Vcs	Kea
over	incl.	high	low	8,9 max	0,1 max	2,3,4 max	max	high	low	max	max
6	18	0	-7	9	7	5	5				8
18	30	0	-8	10	8	6	6				9
30	50	0	-9	11	9	7	7				10
50	80	0	-11	14	11	8	8				13
80	120	0	-13	16	16	10	10				18
120	150	0	-15	19	19	11	11				20
150	180	0	-18	23	23	14	14	△Cs and VCs values are identical to those for inner ring of same bearing(△Bs and VBs)			23
180	250	0	-20	25	25	15	15				25
250	315	0	-25	31	31	19	19				30
315	400	0	-28	35	35	21	21				35
400	500	0	-33	41	41	25	25				40
500	630	0	-38	48	48	29	29				50
630	800	0	-45	56	56	34	34				60
800	1,000	0	-60	75	75	45	45				75
1,000	1,250	0	-80	-	-	-	-				85
1,250	1,600	0	-100	-	-	-	-				100
1,600	2,000	0	-130	-	-	-	-				100
2,000	2,500	0	-160	-	-	-	-				120

Radial Bearing Tolerance (Except for taper roller bearings) Tolerance class P5 (Table7)

d(mm)		△dmp		Vdp Diameter series		Vdmp	△Bs		VBs	Kia	Sd
over	incl.	high	low	8,9 max	0,1,2,3,4 max	max	high	low	max	max	max
-	2.5	0	-5	5	4	3	0	-40	5	4	7
2.5	10	0	-5	5	4	3	0	-40	5	4	7
10	18	0	-5	5	4	3	0	-80	5	4	7
18	30	0	-6	6	5	3	0	-120	5	4	8
30	50	0	-8	8	6	4	0	-120	5	5	8
50	80	0	-9	9	7	5	0	-150	6	5	8
80	120	0	-10	10	8	5	0	-200	7	6	9
120	180	0	-13	13	10	7	0	-250	8	8	10
180	250	0	-15	15	12	8	0	-300	10	10	11
250	315	0	-18	18	14	9	0	-350	13	13	13
315	400	0	-23	23	18	12	0	-400	15	15	15
400	500	0	-27	28	21	14	0	-450	18	17	18
500	630	0	-33	35	26	18	0	-500	20	19	20
630	800	0	-40	-	-	-	0	-750	26	22	26
800	1,000	0	-50	-	-	-	0	-1,000	32	26	32
1,000	1,250	0	65	-	-	-	0	-1,250	38	30	38
1,250	1,600	0	-80	-	-	-	0	-1,600	45	35	45
1,600	2,000	0	-100	-	-	-	0	-2,000	55	40	55

Radial Bearing Tolerance (Except for taper roller bearings) Tolerance class P5 (Table8)

D(mm)		△Dmp		VDp Diameter series		VDmp	△Cs		Vcs	Kea	SD
over	incl.	high	low	8,9 max	0,1,2,3,4 max	max	high	low	max	max	max
6	18	0	-5	5	4	3	△Cs values are identical to those for inner ring of same bearing(△Bs)		5	5	8
18	30	0	-6	6	5	3			5	6	8
30	50	0	-7	7	5	4			5	7	8
50	80	0	-9	9	7	5			6	8	8
80	120	0	-10	10	8	5			8	10	9
120	150	0	-11	11	8	6			8	11	10
150	180	0	-13	13	10	7			8	13	10
180	250	0	-15	15	11	8			10	15	11
250	315	0	-18	18	14	9			11	18	13
315	400	0	-20	20	15	10			13	20	13
400	500	0	-23	23	17	12			15	23	15
500	630	0	-28	28	21	14			18	25	18
630	800	0	-35	35	26	18			20	30	20
800	1,000	0	-40	50	29	25			25	35	25
1,000	1,250	0	-50	-	-	-			30	40	30
1,250	1,600	0	-65	-	-	-			35	45	35
1,600	2,000	0	-85	-	-	-			38	55	40
2,000	2,500	0	-110	-	-	-			45	65	50

Radial Bearing Tolerance (Except for taper roller bearings) Tolerance class P4 (Table9)

d(mm)		△dmp		Vdp Diameter series		Vdmp	△Bs		VBs	Kia	Sd
over	incl.	high	low	8,9 max	0,1,2,3,4 max	max	high	low	max	max	max
-	2.5	0	-4	4	3	2	0	-40	2.5	2.5	3
2.5	10	0	-4	4	3	2	0	-40	2.5	2.5	3
10	18	0	-4	4	3	2	0	-80	2.5	2.5	3
18	30	0	-5	5	4	2.5	0	-120	2.5	3	4
30	50	0	-6	6	5	3	0	-120	3	4	4
50	80	0	-7	7	5	3.5	0	-150	4	4	5
80	120	0	-8	8	6	4	0	-200	4	5	5
120	180	0	-10	10	8	5	0	-250	5	6	6
180	250	0	-12	12	9	6	0	-300	6	8	7
250	315	0	-15	-	-	-	0	-350	7	8	7
315	400	0	-19	-	-	-	0	-400	8	10	8
400	500	0	-23	-	-	-	0	-450	9	10	9
500	630	0	-26	-	-	-	0	-500	10	12	10
630	800	0	-32	-	-	-	0	-750	15	15	15
800	1,000	0	-40	-	-	-	0	-1,000	21	20	21

Radial Bearing Tolerance (Except for taper roller bearings) Tolerance class P4 (Table10)

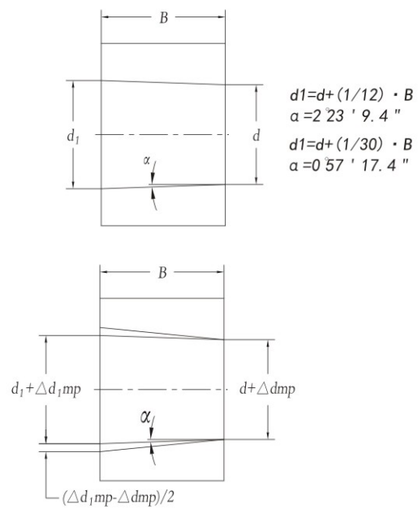
D(mm)		△Dmp		VDp Diameter series		VDmp	△Cs		Vcs	Kea	SD
over	incl.	high	low	8,9 max	0,1,2,3,4 max	max	high	low	max	max	max
6	18	0	-4	4	3	2	△Cs values are identical to those for inner ring of same bearing(△Bs)		2.5	3	4
18	30	0	-5	5	4	2.5			2.5	4	4
30	50	0	-6	6	5	3			2.5	5	4
50	80	0	-7	7	5	3.5			3	5	4
80	120	0	-8	8	6	4			4	6	5
120	150	0	-9	9	7	5			5	7	5
150	180	0	-10	10	8	5			5	8	5
180	250	0	-11	11	8	6			7	10	7
250	315	0	-13	13	10	7			7	11	8
315	400	0	-15	15	11	8			8	13	10
400	500	0	-20	-	-	-			9	14	10
500	630	0	-25	-	-	-			10	17	12
630	800	0	-28	-	-	-			12	20	14
800	1,000	0	-35	-	-	-			15	25	20
1,000	1,250	0	-40	-	-	-			20	30	25
1,250	1,600	0	-55	-	-	-			25	40	30

Tolerances for tapered bores, taper 1:12 (μm) (Table11)

d(mm)		Normal class po and P6					Class P6				
		△dmp		Vdp	△d1mp−△dmp		△dmp		Vdp	△d1mp−△dmp	
over	incl.	high	low	max	high	low	high	low	max	high	low
18	30	+21	0	13	+21	0	+13	0	13	+13	0
30	50	+25	0	15	+25	0	+16	0	15	+16	0
50	80	+30	0	19	+30	0	+19	0	19	+19	0
80	120	+35	0	25	+35	0	+22	0	22	+22	0
120	180	+40	0	31	+40	0	+25	0	25	+25	0
180	250	+46	0	38	+46	0	+29	0	29	+29	0
250	315	+52	0	44	+52	0	+32	0	32	+32	0
315	400	+57	0	50	+57	0	+36	0	36	+36	0
400	500	+63	0	56	+63	0	+40	0	-	+40	0
500	630	+70	0	70	+70	0	+44	0	-	+44	0
630	800	+80	0	-	+80	0	+50	0	-	+50	0
800	1,000	+90	0	-	+90	0	+56	0	-	+56	0
1,000	1,250	+105	0	-	+105	0	+66	0	-	+66	0
1,250	1,600	+125	0	-	+125	0	+78	0	-	+78	0
1,600	2,000	+150	0	-	+150	0	+92	0	-	+92	0

Tolerances for tapered bores, taper 1:30 (μm) (Table12)

d(mm)		Normal Class P0				
		△dmp		Vdp	△d1mp−△dmp	
over	incl.	high	low	max	high	low
-	80	+15	0	19	+30	0
80	120	+20	0	22	+35	0
120	180	+25	0	40	+40	0
180	250	+30	0	46	+46	0
250	315	+35	0	52	+52	0
315	400	+40	0	57	+57	0
400	500	+45	0	63	+63	0
500	630	+50	0	70	+70	0
630	800	+75	0	-	+100	0
800	1,000	+100	0	-	+100	0
1,000	1,250	+125	0	-	+115	0
1,250	1,600	+160	0	-	+125	0
1,600	2,000	+200	0	-	+150	0



Radial Clearance of Cylindrical Roller Bearings with Cylindrical Bore (μm) (Table13)

Bore Diameter(mm)		Radial clearance													
		C1		SPC2		C2		C0		C3		C4		C5	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
-	24	-	-	-	-	0	25	20	45	35	60	50	75	65	90
24	30	5	15	10	25	0	25	20	45	35	60	50	75	70	95
30	40	5	15	12	25	5	30	25	50	45	70	60	85	80	105
40	50	5	18	15	30	5	35	30	60	50	80	70	100	95	125
50	65	5	20	15	35	10	40	40	70	60	90	80	110	110	140
65	80	10	25	20	40	10	45	40	75	65	100	90	125	130	165
80	100	10	30	25	45	15	50	50	85	75	110	105	140	155	190
100	120	10	30	25	50	15	55	50	90	85	125	125	165	180	220
120	140	10	35	30	60	15	60	60	105	100	145	145	190	200	245
140	160	10	35	35	65	20	70	70	120	115	165	165	215	225	275
160	180	10	40	35	75	25	75	75	125	120	170	170	220	250	300
180	200	15	45	40	80	35	90	90	145	140	195	195	250	275	330
200	225	15	50	45	90	45	105	105	165	160	220	220	280	305	365
225	250	15	50	50	100	45	110	110	175	170	235	235	300	330	395
250	280	20	55	55	110	55	125	125	195	190	260	260	330	370	440
280	315	20	60	60	120	55	130	130	205	200	275	275	350	410	485
315	355	20	65	65	135	65	145	145	225	225	305	305	385	455	535
355	400	25	75	75	150	100	190	190	280	280	370	370	460	510	600
400	450	25	85	85	170	110	210	210	310	310	410	410	510	565	665
450	500	25	95	95	190	110	220	220	330	330	440	440	550	635	735
500	560	25	105	105	210	120	240	240	360	360	480	480	600	690	810
560	630	25	115	115	230	140	260	260	380	380	500	500	620	780	900
630	710	30	130	130	260	145	285	285	425	425	565	565	705	865	1,005
710	800	35	145	145	290	150	310	310	470	470	630	630	790	975	1,135
800	900	40	160	160	320	180	350	350	520	520	690	690	860	1,095	1,265
900	1000	-	-	-	-	200	390	390	580	580	770	770	960	1,215	1,405
1,000	1,120	-	-	-	-	220	430	430	640	640	850	850	1060	1,355	1,565
1,120	1,250	-	-	-	-	230	470	470	710	710	950	950	1,190	1,510	1,750
1,250	1,400	-	-	-	-	270	530	530	790	790	1,050	1,050	1,310	1,680	1,940
1,400	1,600	-	-	-	-	330	610	610	890	890	1,170	1,170	1,450	1,920	2,200
1,600	1,800	-	-	-	-	380	700	700	1,020	1,020	1,340	1,340	1,660	2,160	2,480

Radial clearance of Cylindrical Roller Bearings With Tapered Bore (Table14)

Bore Diameter(mm)		Radial clearance													
		C1		SPC2		C2		C0		C3		C4		C5	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
-	24	-	-	-	-	15	40	30	55	40	65	50	75	70	96
24	30	15	25	25	35	20	45	35	60	45	70	55	80	75	100
30	40	15	25	25	40	20	45	40	65	55	80	70	95	90	115
40	50	17	30	30	45	25	55	45	75	60	90	75	105	105	135
50	65	20	35	35	50	30	60	50	80	70	100	90	120	125	155
65	80	25	40	40	60	35	70	60	95	85	120	110	145	145	180
80	100	35	55	45	70	40	75	70	105	95	130	120	155	175	210
100	120	40	60	50	80	50	90	90	130	115	155	140	180	200	240
120	140	45	70	60	90	55	100	100	145	130	175	160	205	225	270
140	160	50	75	65	100	60	110	110	160	145	195	180	230	255	305
160	180	55	85	75	110	75	125	125	175	160	210	195	245	280	330
180	200	60	90	80	120	85	140	140	195	180	235	220	275	305	360
200	225	60	95	90	135	95	155	155	215	200	260	245	305	340	400
225	250	65	100	100	150	105	170	170	235	220	285	270	335	375	440
250	280	75	110	110	165	115	185	185	255	240	310	295	365	415	485
280	315	80	120	120	180	130	205	205	280	265	340	325	400	465	540
315	355	90	135	135	200	145	225	225	305	290	370	355	435	515	595
355	400	100	150	150	225	165	255	255	345	330	420	405	495	580	670
400	450	110	170	170	255	185	285	285	385	370	470	455	555	650	750
450	500	120	190	190	285	205	315	315	425	410	520	505	615	720	830
500	560	130	210	210	315	230	350	350	470	455	575	560	680	800	920
560	630	140	230	230	345	260	380	380	500	500	620	620	740	900	1,020
630	710	160	260	260	390	295	435	435	575	565	705	695	835	1,005	1,145
710	800	180	290	290	435	325	485	485	645	630	790	775	935	1,125	1,285
800	900	200	320	320	480	370	540	540	710	700	870	860	1,030	1,265	1,435
900	1000	-	-	355	540	410	600	600	790	780	970	960	1,150	-	-
1,000	1,120	-	-	395	600	455	665	665	875	865	1,075	1,065	1,275	-	-
1,120	1,250	-	-	440	670	490	730	730	970	960	1,200	1,200	1,440	-	-
1,250	1,400	-	-	490	740	550	810	810	1,070	1,070	1,330	1,330	1,590	-	-
1,400	1,600	-	-	560	840	640	920	920	1,200	1,200	1,480	1,480	1,760	-	-
1,600	1,800	-	-	630	950	700	1,020	1,020	1,340	1,340	1,660	1,660	1,980	-	-
1,800	2,000	-	-	700	1,060	760	1,120	1,120	1,480	1,480	1,840	1,840	2,200	-	-