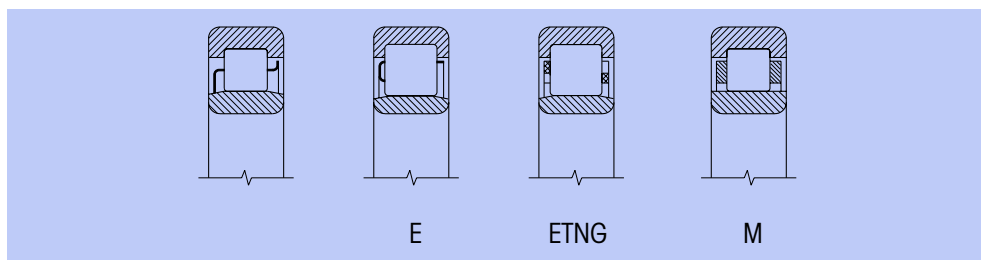


# Single Row Cylindrical Roller Bearings



These bearings are separable and are produced in several designs.

Design NU has cylindrical rollers guided between guiding ribs of the outer ring, the design N between guiding ribs of the inner ring. Both designs enable mutual bearing rings displacement in both directions.



Design NJ has two guiding ribs on the outer ring and one on the inner ring, which enables to carry the axial forces in one direction.

NUP design has a loose inner rib creating the second guiding rib of the inner ring and this enables the bearing to carry limited axial forces in both directions. Axial guiding in both directions can be achieved by means of angle rings HJ for bearings in NJ design and in one direction in NU design.

Single row cylindrical roller bearings have in comparison with single row ball bearings of the same size higher basic load rating and are suitable for arrangements with high radial load, high rotational speed and when light fitting of both rings is desirable.

Basic dynamic load rating of bearings with internal design E is in average higher by 30% as that one for bearings with basic internal design.

## Boundary Dimensions

Boundary dimensions comply with the standard ISO 15 and are shown in the dimension tables of this publication.

## Designation

Bearing designation in standard design is in the dimension tables of this publication.

Difference from standard design is designated by additional symbols (section 2.2).

## Cages

Bearings in standard design have cage according to dimension tables. Material symbol and symbol of the cage design are not indicated by bearings with pressed steel cage. For special arrangements bearings with plastic or brass cages which can be coated with silver are produced. This delivery should be discussed in advance.

## Tolerance

Bearings are commonly produced in normal tolerance class P0 which is not indicated. Bearings for more demanding arrangements are delivered in tolerance classes P6, P5 and P4.

Bearing Type	Bearings with Pressed Steel Cage	Bearings with Reinforced Solid Plastic Cage	Bearings with Machined Brass or Steel Cage
	Bearing Size		
NU/NUP29	-	-	/800 to /1800
NU10	-	-	80 to 80
NU/NJ/NUP/N2	05 to 28	-	48
NU/NJ/NUP/N2E	09, 15	04 to 24	22 to 40
NU/NJ/NUP22	05 to 07, 10, 11, 13, 14, 19	-	36, 80
NU/NJ/NUP22E	09, 15, 17	40 to 20	22 to 30
NU/NJ/NUP/N3	05 to 24	-	26 to 30
NU/NJ/NUP/N3E	-	04 to 17	18 to 30
NU/NJ/NUP23	07, 12, 13, 15	-	-
NU/NJ/NUP23E	09	04 to 17	07, 08, 10, 14 18 to 30
NU/NJ/NUP/N4	06 to 12, 14 to 16	-	13, 17 to 24

Limiting deviation values of dimension and running accuracy are shown in tables 10 and 11 and comply with standards ISO 199 and ISO 492.

## Radial Clearance

Commonly produced bearings have normal radial clearance which is not indicated. For special arrangements bearings with smaller clearance C2 or greater radial clearance C3, C4 and C5 are delivered. Radial clearance values comply with the standard ISO 5753 and are shown in table 24.

## Vibration Level

Commonly produced single row cylindrical roller bearings have normal vibration level checked by the producer. Bearings in tolerance class P5 and P4 have vibration level C6. For special arrangements bearings with reduced vibration level C6 are manufactured.

## Bearings with Angle Rings

Angle rings - type HJ10, HJ2, HJ2E, HJ3, HJ3E and HJ4 can be used for bearings in NJ and NU designs.

Examples of bearing designation :

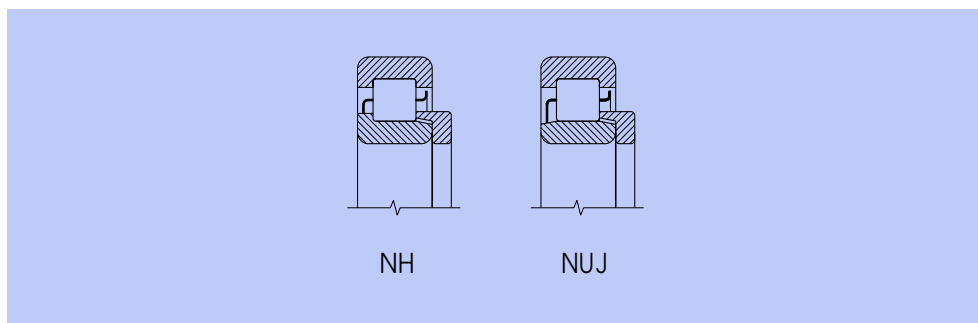
NJ10 + HJ10 = NH10      NU10 + HJ10 = NUJ10

NJ2 + HJ2 = NH2      NU2 + HJ2 = NUJ2

NJ3 + HJ3 = NH3      NU3 + HJ3 = NUJ3

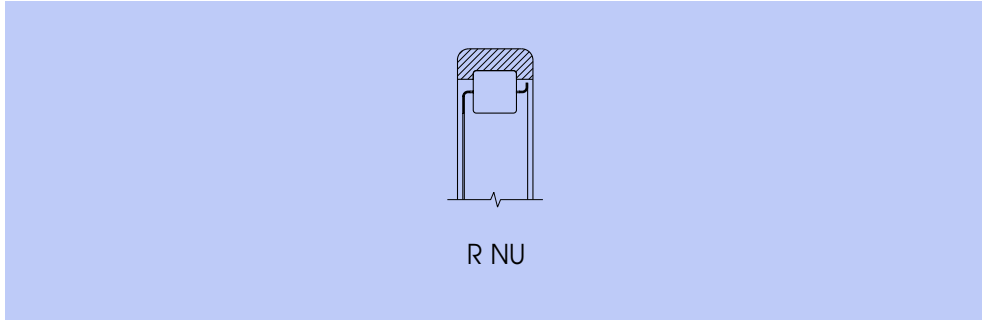
NJ4 + HJ4 = NH4      NU4 + HJ4 = NUJ4

Pictures of individual basic designs and combinations are in the dimension tables of the publication.



## Bearings without Inner Ring

For arrangements with limited space for bearing mounting, single row cylindrical roller bearings without inner ring designated R NU are delivered. The inner bearing ring raceway is created directly by the hardened and ground journal.



Dimension tolerance on the journal is usually "g5" for normal radial clearance, "f6" for greater radial clearance and "h5" for smaller radial clearance. Ovality and cylindricity deviations of the "raceway" on this journal must not be greater than deviations for tolerance class IT3. Surface roughness for this surface should be  $R_a = 0.2$  and for less demanding arrangements  $R_a = 0.4$ .

Basic load rating  $C_r$  and  $C_{or}$  values shown in the dimension tables, are valid for bearings R NU if the journal surface hardness will be in the range 59 to 65 HRC. With decreasing hardness value also load rating values  $C_r$  decrease. It must be multiplied by the factor  $f_h$  from following table. Minimum depth of journal hardening after grinding depends on the cylindrical roller diameter and load magnitude and should be 1 to 3 mm.

Hardness HRC	58	56	54	51	48	45	40	35	30
Factor $f_h$	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.25	0.2

## Misalignment

Mutual bearing ring misalignment of single row cylindrical roller bearings is very small. Permissible misalignment values are in the table.

Bearing Type	Load	
	small ( $F_r < 0,1C_{or}$ )	great ( $F_r \geq 0,1C_{or}$ )
NU10, NU2, NU3, NU4	2' to 3'	5' to 7'
NU29, NU22, NU23	1' to 3'	3' to 4'
Designs NJ, NUP, N <sup>1)</sup> of all dimension series	1' to 2'	3' to 4'

<sup>1)</sup> Smaller values of the number pair are valid for bearings of width series 2 and higher

## Radial Equivalent Dynamic Load

$$P_r = F_r \quad [\text{kN}]$$

## Axial Dynamic Load Rating

Bearings with ribs on both rings can carry, besides the radial load, also a limited axial load. Because permissible bearing load in axial direction depends on many factors, which cannot be expressed only by a simple calculation, the following relations have only an informative character.

The axial load in this case is not limited by the material fatigue but by the carrying capacity of the lubrication film on the contact surface between the cylindrical roller face and guiding rib and lubrication conditions and operating temperature and cooling possibilities of the bearing. At common working conditions when the difference of the bearing and environment temperature does not exceed 60°C, by slight heat transfer (0.5mWmm<sup>-2</sup> °C<sup>-1</sup>), by viscosity relation 1.5 (section 4.2.1) it is possible to calculate maximum permissible axial load with sufficient accuracy from equation:

$$F_{a \max} = \frac{0.5 C_{or} \times 10^4}{n (d + D)} - 0.05 F_r \quad [\text{kN}]$$

- for oil lubrication

$$F_{a \max} = \frac{0.35 C_{or} \times 10^4}{n (d + D)} - 0.03 F_r \quad [\text{kN}]$$

- for grease lubrication

$F_{a \max}$	- maximum permissible axial load	[kN]
$C_{or}$	- radial basic static load rating	[kN]
$F_r$	- radial bearing load	[kN]
$n$	- rotational speed	[min <sup>-1</sup> ]
$d$	- bearing bore diameter	[mm]
$D$	- bearing outside diameter	[mm]

Values  $F_{a \max}$  calculated according to the above introduced equations are valid under assuming of continuously acting axial force. For intermittent or impact load the permissible axial load can be two or three times greater in comparison with calculated value. For reliable bearing function it is important that ratio  $F_a/F_r \leq 0.4$ .

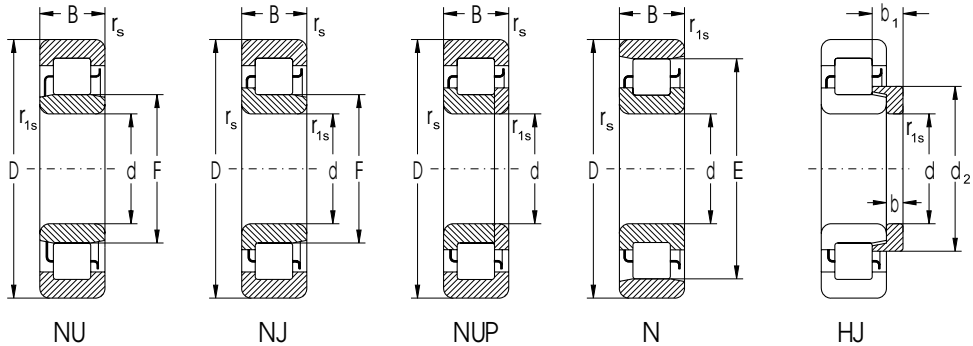
## Radial Equivalent Static Load

$$P_{or} = F_r \quad [\text{kN}]$$



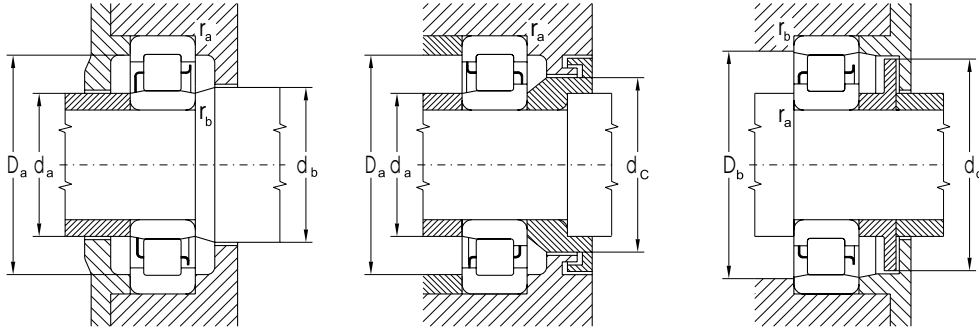
## Single Row Cylindrical Roller Bearings

d = 20 to 40 mm



Dimensions											Bearing Designation				Angle Ring HJ				
d	D	B	r <sub>s</sub>	r <sub>1s</sub>	F	E	d <sub>2</sub>	b	b <sub>1</sub>	s <sup>1)</sup>	NU	NJ	NUP	N	HJ				
			min	min															
mm																			
20	47	14.00	1.0	0.6	27.0	40.0	30.0	3	6.75	1.4	<b>NU204</b>	<b>NJ204</b>	<b>NUP204</b>	<b>N204</b>	<b>HJ204</b>				
25	52	15.00	1.0	0.6	31.5	45.0	35.0	3	7.25	1.5	<b>NU205</b>	<b>NJ205</b>	<b>NUP205</b>	<b>N205</b>	<b>HJ205</b>				
	52	15.00	1.0	0.6	31.5	34.9	3	6.00	1.4	<b>NU205E</b>	<b>NJ205E</b>	<b>NUP205E</b>		<b>HJ205E</b>					
	52	15.00	1.0	0.6	31.5	46.5	34.9	3	6.00	1.4	<b>NU205ETNG</b>	<b>NJ205ETNG</b>	<b>NUP205ETNG</b>	<b>N205ETNGHJ205E</b>					
	52	18.00	1.0	0.6	32.0					1.6	<b>NU2205</b>	<b>NJ2205</b>	<b>NUP2205</b>						
	62	17.00	1.1	1.1	35.0	53.0	39.3	4	8.00	1.4	<b>NU305</b>	<b>NJ305</b>	<b>NUP305</b>	<b>N305</b>	<b>HJ305</b>				
	62	17.00	1.1	1.1	34.0		38.3	4	7.00	1.4	<b>NU305EMAS</b>	<b>NJ305EMAS</b>	<b>NUP305EMAS</b>		<b>HJ305E</b>				
	62	17.00	1.1	1.1	34.0	54.0	38.3	4	7.00	1.4	<b>NU305ETNG</b>	<b>NJ305ETNG</b>	<b>NUP305ETNG</b>	<b>N305ETNGHJ305E</b>					
	80	21.00	1.5	1.5	38.8					1.4	<b>NU405</b>	<b>NJ405</b>							
30	62	16.00	1.0	0.6	38.5	53.5	42.2	4	8.25	1.5	<b>NU206</b>	<b>NJ206</b>	<b>NUP206</b>	<b>N206</b>	<b>HJ206</b>				
	62	16.00	1.0	0.6	37.5	55.5	41.4	4	7.00	1.4	<b>NU206ETNG</b>	<b>NJ206ETNG</b>	<b>NUP206ETNG</b>	<b>N206ETNGHJ206E</b>					
	62	20.00	1.0	0.6	38.5					1.6	<b>NU2206</b>	<b>NJ2206</b>	<b>NUP2206</b>						
	72	19.00	1.1	1.1	42.0	62.0	46.6	5	9.50	1.4	<b>NU306</b>	<b>NJ306</b>	<b>NUP306</b>	<b>N306</b>	<b>HJ306</b>				
	72	19.00	1.1	1.1	40.5		45.1	5	8.50	1.4	<b>NU306E</b>	<b>NJ306E</b>	<b>NUP306E</b>		<b>HJ306E</b>				
	72	19.00	1.1	1.1	40.5	62.5	45.1	5	8.50	1.4	<b>NU306ETNG</b>	<b>NJ306ETNG</b>	<b>NUP306ETNG</b>	<b>N306ETNGHJ306E</b>					
	90	23.00	1.5	1.5	45.0		51.4	7	11.50	1.5	<b>NU406</b>	<b>NJ406</b>	<b>NUP406</b>		<b>HJ406</b>				
	32	65	21.00	1.0	0.6	38.5				1.6	<b>NU22/32ETNG</b>								
35	72	17.00	1.1	0.6	43.8	61.8	48.1	4	8.00	1.5	<b>NU207</b>	<b>NJ207</b>	<b>NUP207</b>	<b>N207</b>	<b>HJ207</b>				
	72	17.00	1.1	0.6	44.0		48.3	4	7.00	1.4	<b>NU207E</b>	<b>NJ207E</b>	<b>NUP207E</b>		<b>HJ207E</b>				
	72	17.00	1.1	0.6	44.0	64.0	48.3	4	7.00	1.4	<b>NU207ETNG</b>	<b>NJ207ETNG</b>	<b>NUP207ETNG</b>	<b>N207ETNGHJ207E</b>					
	72	23.00	1.1	0.6	43.8					1.6	<b>NU2207</b>	<b>NJ2207</b>	<b>NUP2207</b>						
	72	23.00	1.1	0.6	44.0					1.6	<b>NU2207ETNG</b>	<b>NJ2207ETNG</b>	<b>NUP2207ETNG</b>						
	80	21.00	1.5	1.1	46.2	68.2	51.2	6	11.00	1.4	<b>NU307</b>	<b>NJ307</b>	<b>NUP307</b>	<b>N307</b>	<b>HJ307</b>				
	80	21.00	1.5	1.1	46.2		51.2	6	9.50	1.4	<b>NU307E</b>	<b>NJ307E</b>	<b>NUP307E</b>		<b>HJ307E</b>				
	80	31.00	1.5	1.1	46.2					2.7	<b>NU2307EMAS</b>	<b>NJ2307EMAS</b>	<b>NUP2307EMAS</b>						
100	25.00	1.5	1.5	53.0	83.0	59.9	8	13.00	1.5	<b>NU407</b>	<b>NJ407</b>	<b>NUP407</b>	<b>N407</b>	<b>HJ407</b>					
40	80	18.00	1.1	1.1	50.0	70.0	54.6	5	9.00	1.5	<b>NU208</b>	<b>NJ208</b>	<b>NUP208</b>	<b>N208</b>	<b>HJ208</b>				
	80	18.00	1.1	1.1	49.5		54.1	5	8.50	1.4	<b>NU208E</b>	<b>NJ208E</b>	<b>NUP208E</b>		<b>HJ208E</b>				
	80	23.00	1.1	1.1	50.0					1.6	<b>NU2208</b>	<b>NJ2208</b>	<b>NUP2208</b>						
	80	30.16	1.0	1.5	49.3					3	<b>NU5208M</b>								
	90	23.00	1.5	1.5	53.5	77.5	59.0	7	12.50	1.4	<b>NU308</b>	<b>NJ308</b>	<b>NUP308</b>	<b>N308</b>	<b>HJ308</b>				
	90	23.00	1.5	1.5	52.0		57.7	7	11.00	1.4	<b>NU308E</b>	<b>NJ308E</b>	<b>NUP308E</b>		<b>HJ308E</b>				
	90	23.00	1.5	1.5	52.0	80.0	57.7	7	11.00	1.4	<b>NU308ETNG</b>	<b>NJ308ETNG</b>	<b>NUP308ETNG</b>	<b>N308ETNGHJ308E</b>					
	90	33.00	1.5	1.5	52.0					2.9	<b>NU2308EMAS</b>	<b>NJ2308EMAS</b>	<b>NUP2308EMAS</b>						
	110	27.00	2.0	2.0	58.0	92.0	65.8	8	13.00	1.5	<b>NU408</b>	<b>NJ408</b>	<b>NUP408</b>	<b>N408</b>	<b>HJ408</b>				

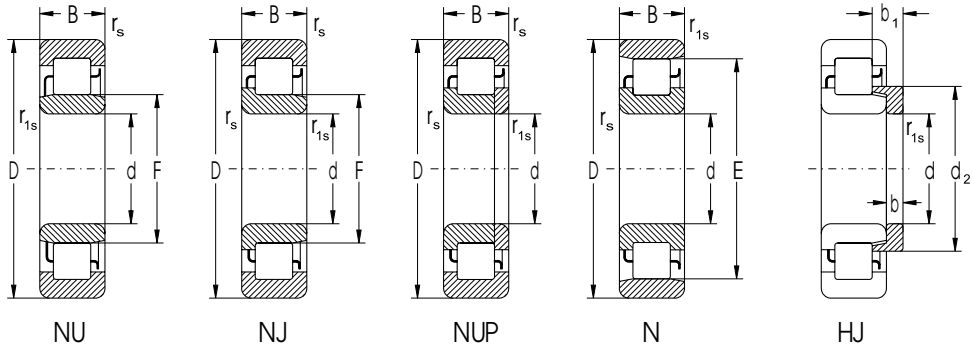
<sup>1)</sup> Permissible axial displacement out of central position



Basic Load Rating		Fatigue load limit $P_u$	Limiting Speed for Lubrication with		Abutment and Fillet Dimensions										Weight	
Dynamic $C_r$	Static $C_{or}$		Grease	Oil	d	$d_a$ min	$d_a$ max	$d_b$ min	$d_c$ min	$d_d$ max	$D_a$ max	$D_b$ min	$r_a$ max	$r_b$ max	Bearing	Angle Ring
kN		kN	$\text{min}^{-1}$		mm										kg	
13.9	10.2	1.24	14000	17000	20	25	25.5	29	32	39	42	42	1.0	0.6	0.11	0.01
15.8	12.6	1.54	12600	15000	25	30	30.5	34	37	43	47	47	1.0	0.6	0.13	0.02
29.3	25.6	3.12	12600	15000		30	30.0	34	37	-	47	-	1.0	0.6	0.13	0.02
29.3	25.6	3.12	12600	15000		30	30.0	34	37	44	47	47	1.0	0.6	0.13	0.02
22.4	19.6	2.39	12600	15000		30	30.5	34	37	-	47	-	1.0	0.6	0.16	
27.6	21.5	2.62	10000	12000		31	33.0	37	40	51	55	55	1.0	1.0	0.24	0.03
43.0	36.2	4.41	10000	12000		31	32.0	37	40	-	55	-	1.0	1.0	0.26	0.03
43.0	36.2	4.41	10000	12000		31	32.0	36	39	52	55	55	1.0	1.0	0.24	0.03
43.8	34.1	4.16	8400	10000		32	38.0	39	40	-	73	-	1.0	1.0	0.57	
21.5	17.8	2.17	10600	12600	30	35	37.0	40	44	52	57	56	1.0	0.6	0.20	0.03
39.1	35.5	4.33	10600	12600		35	37.0	40	43	54	57	57	1.0	0.6	0.20	0.03
31.6	29.3	3.57	10600	12600		35	37.0	40	44	-	57	-	1.0	0.6	0.26	
36.2	31.0	3.78	8900	10600		36	39.0	44	48	60	65	64	1.0	1.0	0.36	0.04
53.1	46.4	5.66	8400	10000		36	37.5	43	47	-	65	-	1.0	1.0	0.36	0.04
53.1	46.4	5.66	8400	10000		36	37.5	43	47	60	65	64	1.0	1.0	0.36	0.04
59.6	48.2	5.88	7100	8400		39	41.0	47	53	-	80	-	1.5	1.5	0.75	0.08
51.1	50.1	6.11	10000	12000	32	35	37.0	39	43	-	60	-	1.0	1.0	0.31	
31.6	27.1	3.30	9400	11000	35	42	42.0	46	50	60	65	64	1.0	0.6	0.29	0.04
51.1	48.2	5.88	8900	10600		42	42.0	46	50	-	65	-	1.0	0.6	0.29	0.04
51.1	48.2	5.88	8900	10600		42	42.0	46	50	62	65	65	1.0	0.6	0.29	0.04
48.2	47.3	5.77	9400	11000		42	42.0	46	50	-	65	-	1.0	0.6	0.40	
64.3	64.3	7.84	8900	10600		42	42.0	46	50	-	65	-	1.0	0.6	0.39	
43.0	36.2	4.41	7900	9400		42	44.0	48	53	66	71	71	1.5	1.0	0.48	0.06
66.8	61.9	7.55	7500	8900		42	44.0	48	53	-	71	-	1.5	1.0	0.47	0.06
92.6	92.6	11.29	7100	8400		42	44.0	48	53	-	71	-	1.5	1.0	0.75	
75.0	64.3	7.84	6300	7500		44	52.0	55	62	81	90	86	1.5	1.5	1.00	0.13
42.2	37.6	4.59	7900	9400	40	47	48.0	52	56	68	73	72	1.0	1.0	0.37	0.05
54.1	50.1	6.11	7900	9400		47	47.0	51	56	-	73	-	1.0	1.0	0.38	0.05
57.3	56.2	6.85	7900	9400		47	48.0	52	56	-	73	-	1.0	1.0	0.74	
57.0	98.1	11.96	7500	8900		48	-	51.5	-	-	72	-	1.5	1.5	0.74	
55.2	48.2	5.88	7100	8400		47	51.0	55	61	75	81	81	1.5	1.5	0.66	0.09
84.1	77.9	9.50	6700	7900		47	50.0	54	60	-	81	-	1.5	1.5	0.67	0.08
84.1	77.9	9.50	6700	7900		47	50.0	54	60	77	81	81	1.5	1.5	0.83	0.08
119.0	123.0	15.00	6300	7500		47	50.0	54	60	-	81	-	1.5	1.5	1.00	
92.6	79.4	9.68	5600	6700		50	55.0	60	68	90	97	95	2.0	2.0	1.30	0.14

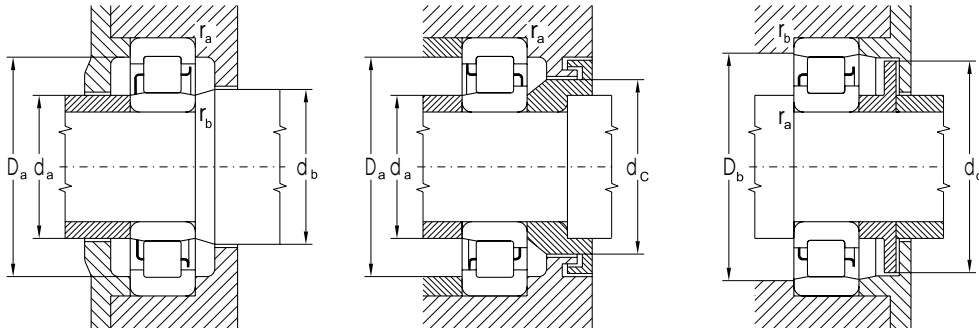
## Single Row Cylindrical Roller Bearings

d = 45 to 60 mm



Dimensions										Bearing Designation				Angle Ring HJ		
d	D	B	r <sub>s</sub> min	r <sub>1s</sub> min	F	E	d <sub>2</sub> max	b	b <sub>1</sub>	s <sup>1)</sup>	NU	NJ	NUP	N	HJ	
mm																
45	85	19.00	1.1	1.1	55.00	75.0	59.6	5.0	9.50	1.5	<b>NU209</b>	<b>NJ209</b>	<b>NUP209</b>	<b>N209</b>	<b>HJ209</b>	
	85	19.00	1.1	1.1	54.50		59.1	5.0	8.50	1.4	<b>NU209E</b>	<b>NJ209E</b>	<b>NUP209E</b>		<b>HJ209E</b>	
	85	19.00	1.1	1.1	54.50	76.5	59.1	5.0	8.50	1.4	<b>NU209ETNG</b>	<b>NJ209ETNG</b>	<b>NUP209ETNG</b>	<b>N209ETNG</b>	<b>HJ209E</b>	
	85	23.00	1.1	1.1	54.50					1.6	<b>NU2209E</b>	<b>NJ2209E</b>	<b>NUP2209E</b>			
	85	23.00	1.1	1.1	54.50					1.6	<b>NU2209ETNG</b>	<b>NJ2209ETNG</b>	<b>NUP2209ETNG</b>			
	85	30.16	1.0	1.5	55.52					4.0	<b>NU5209M</b>					
	100	25.00	1.5	1.5	58.50	86.5	65.0	7.0	12.50	1.4	<b>NU309</b>	<b>NJ309</b>	<b>NUP309</b>	<b>N309</b>	<b>HJ309</b>	
	100	25.00	1.5	1.5	58.50		64.6	7.0	11.50	1.4	<b>NU309E</b>	<b>NJ309E</b>	<b>NUP309E</b>		<b>HJ309E</b>	
	100	36.00	1.5	1.5	58.50					2.9	<b>NU2309E</b>	<b>NJ2309E</b>	<b>NUP2309E</b>			
	120	29.00	2.0	2.0	64.50	100.5	72.8	8.0	13.50	1.5	<b>NU409</b>	<b>NJ409</b>	<b>NUP409</b>	<b>N409</b>	<b>HJ409</b>	
	50	90	20.00	1.1	1.1	59.50		64.6	5.0	9.00	1.6	<b>NU210E</b>	<b>NJ210E</b>	<b>NUP210E</b>		<b>HJ210E</b>
		90	23.00	1.1	1.1	60.40					1.6	<b>NU2210</b>	<b>NJ2210</b>	<b>NUP2210</b>		
90		23.00	1.1	1.1	59.50					1.6	<b>NU2210E</b>	<b>NJ2210E</b>	<b>NUP2210E</b>			
90		30.16	1.0	1.5	60.46					4.5	<b>NU5210M</b>					
110		27.00	2.0	2.0	65.00	95.0	71.9	8.0	14.00	1.5	<b>NU310</b>	<b>NJ310</b>	<b>NUP310</b>	<b>N310</b>	<b>HJ310</b>	
110		27.00	2.0	2.0	65.00	97.0	71.4	8.0	13.00	1.5	<b>NU310ETNG</b>	<b>NJ310ETNG</b>	<b>NUP310ETNG</b>	<b>N310ETNG</b>	<b>HJ310E</b>	
110		40.00	2.0	2.0	65.00					3.0	<b>NU2310</b>	<b>NJ2310</b>	<b>NUP2310</b>			
110		40.00	2.0	2.0	65.00					3.0	<b>NU2310EMAS</b>	<b>NJ2310EMAS</b>	<b>NUP2310EMAS</b>			
130		31.00	2.1	2.1	70.80	110.8	80.0	9.0	14.50	2.0	<b>NU410</b>	<b>NJ410</b>	<b>NUP410</b>	<b>N410</b>	<b>HJ410</b>	
55		100	21.00	1.5	1.1	66.50	88.5	71.5	6.0	11.00	1.6	<b>NU211</b>	<b>NJ211</b>	<b>NUP211</b>	<b>N211</b>	<b>HJ211</b>
		100	21.00	1.5	1.1	66.00		71.0	6.0	9.50	1.6	<b>NU211E</b>	<b>NJ211E</b>	<b>NUP211E</b>		<b>HJ211E</b>
		100	25.00	1.5	1.1	66.50					1.6	<b>NU2211</b>	<b>NJ2211</b>	<b>NUP2211</b>		
	100	33.34	1.5	2.1	66.90					4.5	<b>NU5211M</b>					
	120	29.00	2.0	2.0	70.50	104.5	78.4	9.0	15.00	1.5	<b>NU311</b>	<b>NJ311</b>	<b>NUP311</b>	<b>N311</b>	<b>HJ311</b>	
	120	29.00	2.0	2.0	70.50		77.7	9.0	14.00	1.5	<b>NU311E</b>	<b>NJ311E</b>	<b>NUP311E</b>		<b>HJ311E</b>	
	140	33.00	2.1	2.1	77.20	117.2	86.4	10.0	16.60	3.0	<b>NU411</b>	<b>NJ411</b>	<b>NUP411</b>	<b>N411</b>	<b>HJ411</b>	
	60	110	22.00	1.5	1.5	73.50	97.5	79.0	6.0	11.00	1.6	<b>NU212</b>	<b>NJ212</b>	<b>NUP212</b>	<b>N212</b>	<b>HJ212</b>
110		28.00	1.5	1.5	73.50					1.6	<b>NU2212</b>	<b>NJ2212</b>	<b>NUP2212</b>			
110		36.50	1.5	2.0	72.38					4.5	<b>NU5212M</b>					
130		31.00	2.1	2.1	77.00	113.0	85.3	9.0	15.50	1.5	<b>NU312</b>	<b>NJ312</b>	<b>NUP312</b>	<b>N312</b>	<b>HJ312</b>	
130		46.00	2.1	2.1	77.00					4.5	<b>NU2312</b>	<b>NJ2312</b>	<b>NUP2312</b>			
150		35.00	2.1	2.1	83.00	127.0	93.1	10.0	16.50	2.0	<b>NU412</b>	<b>NJ412</b>	<b>NUP412</b>	<b>N412</b>	<b>HJ412</b>	

<sup>1)</sup> Permissible axial displacement out of central position

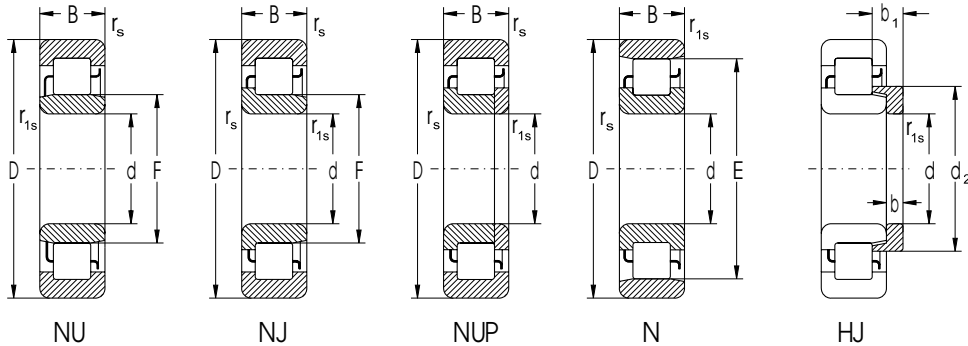


Basic Load Rating		Fatigue load limit $P_u$	Limiting Speed for Lubrication with		Abutment and Fillet Dimensions								Weight			
Dynamic $C_r$	Static $C_{or}$		Grease	Oil	d	$d_a$ min	$d_a$ max	$d_b$ min	$d_c$ min	$d_d$ max	$D_a$ max	$D_b$ min	$r_a$ max	$r_b$ max	Bearing	Angle Ring
kN		kN	$\text{min}^{-1}$		mm								kg			
43.8	41.1	5.01	7500	8900	45	52	53	57	61	74	78	78	1.0	1.0	0.43	0.05
61.9	60.7	7.40	7500	8900	52	53	57	61	-	78	-	1.0	1.0	0.45	0.05	
61.9	60.7	7.40	7500	8900	52	53	57	61	74	78	78	1.0	1.0	0.43	0.05	
76.4	79.4	9.68	7100	8400	52	53	57	61	-	78	-	1.0	1.0	0.55		
76.4	79.4	9.68	7100	8400	53	53	57	61	-	76	-	1.5	1.0	0.52		
89.1	117.7	14.35	6700	7900	53	-	57	-	-	76	-	1.5	1.0	0.80		
70.8	61.9	7.55	6300	7500	52	56	60	66	84	91	90	1.5	1.5	0.87	0.10	
102.0	98.0	11.95	6000	7100	52	56	60	66	-	91	-	1.5	1.5	0.89	0.10	
139.0	147.0	17.93	5600	6700	52	56	60	66	-	91	-	1.5	1.5	1.36		
104.0	90.9	11.09	5300	6300	55	62.7	66	75	99	107	103	2.0	2.0	1.65	0.18	
64.3	65.6	8.00	6700	7900	50	57	57	61	66	-	83	-	1.0	1.0	0.49	0.06
63.1	66.8	8.15	7100	8400	57	58	62	66	-	83	-	1.0	1.0	0.58		
84.1	90.9	11.09	6700	7900	57	57	61	66	-	83	-	1.0	1.0	0.59		
92.6	128.0	15.61	6300	7500	58	-	62	-	-	81	-	1.5	1.0	0.88		
87.4	79.4	9.68	5600	6700	60	63	67	74	93	100	99	2.0	2.0	1.15	0.15	
117.0	114.0	13.90	5300	6300	60	63	67	74	95	100	100	2.0	2.0	1.13	0.14	
123.0	126.0	15.37	5600	6700	60	63	67	74	-	100	-	2.0	2.0	0.17		
168.0	178.0	21.71	5000	6000	60	63	67	74	-	100	-	2.0	2.0	1.83		
139.0	114.0	13.90	4700	5600	63	68	73	82	109	116	114	2.0	2.0	2.00	0.23	
56.2	56.2	6.85	6300	7500	55	62	65	68	73	86	91	1.5	1.0	0.64	0.08	
85.8	90.9	11.09	6300	7500	62	64.5	68	73	-	91	-	1.5	1.0	0.66	0.08	
76.4	82.5	10.06	6300	7500	62	65	68	73	-	91	-	1.5	1.0	0.78		
119.0	171.0	20.85	5600	6700	64	-	69	-	-	90	-	2.0	1.5	1.20		
108.0	100.0	12.20	5300	6300	65	67	72	80	102	110	108	2.0	2.0	1.45	0.19	
136.0	128.0	15.61	4700	5600	65	67	72	80	-	110	-	2.0	2.0	1.38	0.18	
139.0	128.0	15.61	4500	5300	68	71	79	88	115	126	120	2.0	2.0	2.50	0.30	
66.8	68.1	8.30	5600	6700	60	67	71	75	80	95	101	1.5	1.5	0.82	0.11	
98.1	112.0	13.66	5600	6700	69	69.5	74	79	-	101	-	1.5	1.5	1.05		
150.0	211.0	25.73	5300	6300	69	-	74	-	-	99	-	2.0	1.5	1.59		
121.0	114.0	13.90	4700	5600	72	75	79	87	110	118	117	2.0	2.0	1.85	0.22	
168.0	174.0	21.22	4700	5600	72	75	79	87	-	118	-	2.0	2.0	2.70		
168.0	158.0	18.99	4200	5000	73	77	85	95	124	136	130	2.0	2.0	3.00	0.34	



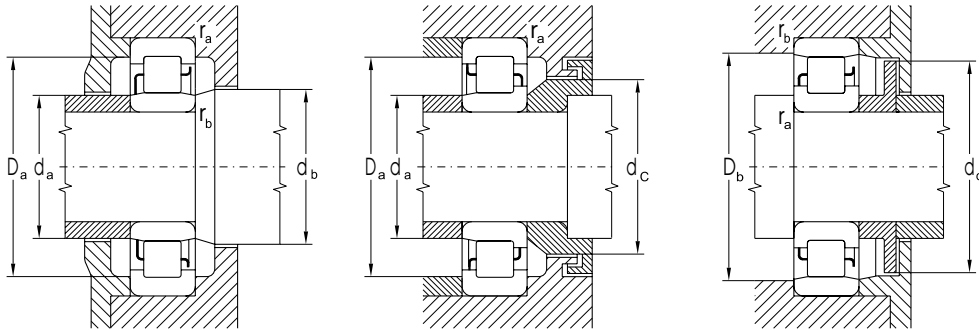
## Single Row Cylindrical Roller Bearings

d = 65 to 80 mm



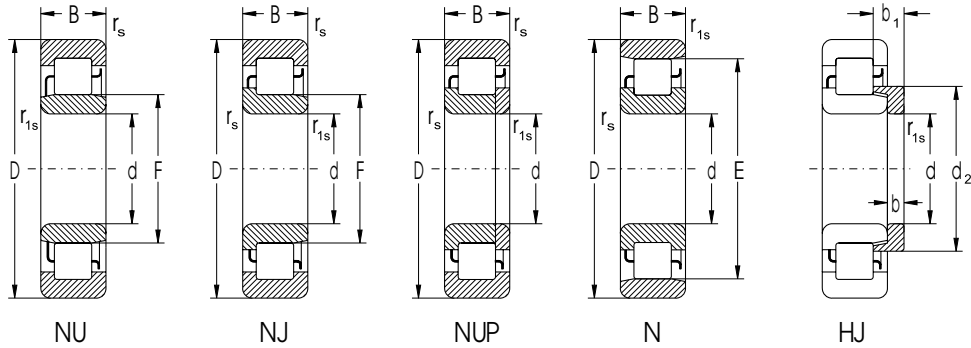
Dimensions											Bearing Designation				Angle Ring HJ				
d	D	B	rs	r1s	F	E	d <sub>2</sub>	b	b <sub>1</sub>	s <sup>1)</sup>	NU	NJ	NUP	N	HJ				
			min	min															
mm																			
65	120	23.00	1.5	1.5	79.60	105.6	85.6	6.0	11.00	1.6	<b>NU213</b>	<b>NJ213</b>	<b>NUP213</b>	<b>N213</b>	<b>HJ213</b>				
	120	31.00	1.5	1.5	79.60					1.6	<b>NU2213</b>	<b>NJ2213</b>	<b>NUP2213</b>						
	120	38.10	1.7	1.7	80.42					4.5	<b>NU5213M</b>								
	140	33.00	2.1	2.1	83.50	121.5	92.2	10.0	17.00	1.5	<b>NU313</b>	<b>NJ313</b>	<b>NUP313</b>	<b>N313</b>	<b>HJ313</b>				
	140	33.00	2.1	2.1	82.50		90.7	10.0	15.50	1.5	<b>NU313E</b>	<b>NJ313E</b>	<b>NUP313E</b>						
	140	48.00	2.1	2.1	83.50					4.5	<b>NU2313</b>	<b>NJ2313</b>	<b>NUP2313</b>						
	160	37.00	2.1	2.1	89.30		99.9	11.0	18.00	2.0	<b>NU413MAS</b>	<b>NJ413MAS</b>	<b>NUP413MAS</b>						
	160	37.00	2.1	2.1	89.30		99.9	11.0	18.00	2.0	<b>NU413MAS</b>	<b>NJ413MAS</b>	<b>NUP413MAS</b>						
70	125	24.00	1.5	1.5	84.50	110.5	90.5	7.0	12.50	1.6	<b>NU214</b>	<b>NJ214</b>	<b>NUP214</b>	<b>N214</b>	<b>HJ214</b>				
	125	31.00	1.5	1.5	84.50					1.6	<b>NU2214</b>	<b>NJ2214</b>	<b>NUP2214</b>						
	125	39.69	1.5	2.2	84.84					4.5	<b>NU5214M</b>								
	150	35.00	2.1	2.1	90.00	130.0	99.2	10.0	17.50	1.5	<b>NU314</b>	<b>NJ314</b>	<b>NUP314</b>	<b>N314</b>	<b>HJ314</b>				
	150	51.00	2.1	2.1	90.00					4.1	<b>NU2314</b>	<b>NJ2314</b>	<b>NUP2314</b>						
	150	51.00	2.1	2.1	89.00					4.1	<b>NU2314EMASNJ2314EMAS NUP2314EMAS</b>								
	180	42.00	3.0	3.0	100.00	152.0	112.0	12.0	20.00	2.0	<b>NU414</b>	<b>NJ414</b>	<b>NUP414</b>	<b>N414</b>	<b>HJ414</b>				
	180	42.00	3.0	3.0	100.00	152.0	112.0	12.0	20.00	2.0	<b>NU414</b>	<b>NJ414</b>	<b>NUP414</b>	<b>N414</b>	<b>HJ414</b>				
75	130	25.00	1.5	1.5	88.50	116.5	94.9	7.0	12.50	1.6	<b>NU215</b>	<b>NJ215</b>	<b>NUP215</b>	<b>N215</b>	<b>HJ215</b>				
	130	25.00	1.5	1.5	88.50		94.6	7.0	11.00	1.6	<b>NU215E</b>	<b>NJ215E</b>	<b>NUP215E</b>						
	130	31.00	1.5	1.5	88.50					2.1	<b>NU2215E</b>	<b>NJ2215E</b>	<b>NUP2215E</b>						
	130	41.28	1.5	1.5	89.01					4.5	<b>NU5215M</b>								
	160	37.00	2.1	2.1	95.50	139.5	105.6	11.0	18.50	1.5	<b>NU315</b>	<b>NJ315</b>	<b>NUP315</b>	<b>N315</b>	<b>HJ315</b>				
	160	55.00	2.1	2.1	95.50					4.5	<b>NU2315</b>	<b>NJ2315</b>	<b>NUP2315</b>						
	190	45.00	3.0	2.0	104.50	160.5	117.0	13.0	21.50	2.0	<b>NU415</b>	<b>NJ415</b>	<b>NUP415</b>	<b>N415</b>	<b>HJ415</b>				
	190	45.00	3.0	2.0	104.50	160.5	117.0	13.0	21.50	2.0	<b>NU415</b>	<b>NJ415</b>	<b>NUP415</b>	<b>N415</b>	<b>HJ415</b>				
80	125	22.00	1.1	1.0	91.50					1.2	<b>NU1016</b>								
	140	26.00	2.0	2.0	95.30	125.3	102.2	8.0	13.50	2.0	<b>NU216</b>	<b>NJ216</b>	<b>NUP216</b>	<b>N216</b>	<b>HJ216</b>				
	140	33.00	2.0	2.0	95.30					2.5	<b>NU2216</b>	<b>NJ2216</b>	<b>NUP2216</b>						
	140	33.00	2.0	2.0	95.30					2.5	<b>NU2216E</b>	<b>NJ2216E</b>	<b>NUP2216E</b>						
	140	44.45	2.1	2.1	95.28					5.0	<b>NU5216M</b>								
	170	39.00	2.1	2.1	103.00	147.0	113.1	11.0	19.50	1.5	<b>NU316</b>	<b>NJ316</b>	<b>NUP316</b>	<b>N316</b>	<b>HJ316</b>				
	200	48.00	3.0	3.0	110.00	170.0	123.8	13.0	22.00	2.0	<b>NU416M</b>	<b>NJ416M</b>	<b>NUP416M</b>	<b>N416M</b>	<b>HJ416</b>				
	200	48.00	3.0	3.0	110.00	170.0	123.8	13.0	22.00	2.0	<b>NU416M</b>	<b>NJ416M</b>	<b>NUP416M</b>	<b>N416M</b>	<b>HJ416</b>				

<sup>1)</sup> Permissible axial displacement out of central position



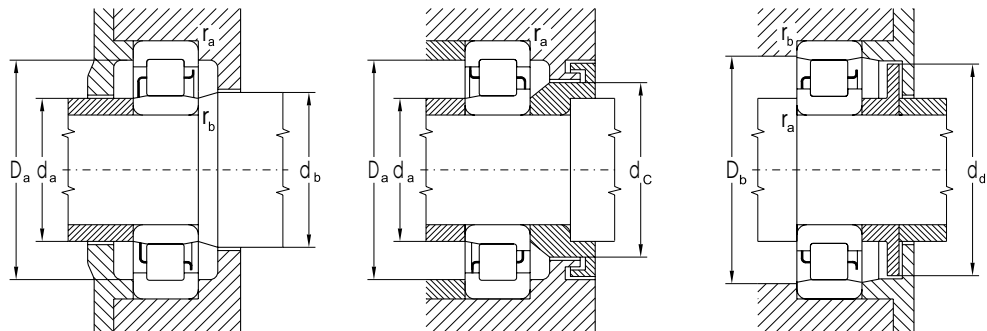
Basic Load Rating		Fatigue load limit $P_u$	Limiting Speed for Lubrication with		Abutment and Fillet Dimensions										Weight	
Dynamic $C_r$	Static $C_{or}$		Grease	Oil	d	$d_a$	$d_a$ min	$d_b$ max	$d_c$ min	$d_d$ min	$D_a$ max	$D_b$ max	$r_a$ min	$r_b$ max	Bearing max	Angle Ring
kN		kN	$\text{min}^{-1}$		mm										kg	
79.4	83	10.06	5300	6300	65	72	77	81	87	103	111	110	1.5	1.5	1.05	0.13
117.0	136	16.59	5300	6300	72	77	81	87	-	111	-	1.5	1.5	1.45		
139.0	196	23.90	4700	5600	77	-	83	-	-	108	-	1.5	1.5	1.88		
131.0	128	15.49	4500	5300	76	78	85	94	119	128	126	2.0	2.0	2.25	0.29	
181.0	178	21.55	4200	5000	76	77	84	93	-	128	-	2.0	2.0	2.35	0.27	
192.0	203	24.57	4500	5300	76	78	85	94	-	128	-	2.0	2.0	3.25		
181.0	174	20.48	3800	4500	78	83	91	101	-	146	-	2.0	2.0	3.60	0.43	
79.4	83	10.06	5600	6700	70	77	82	86	92	108	116	115	1.5	1.5	1.15	0.16
117.0	139	16.95	5000	6000	77	82	86	92	-	116	-	1.5	1.5	1.50		
178.0	261	31.83	4700	5600	81.5	-	87	-	-	112	-	2.0	1.5	2.22		
147.0	144	17.07	4200	5000	81	85	92	101	127	138	135	2.0	2.0	2.75	0.34	
215.0	233	27.61	4200	5000	81	85	92	101	-	138	-	2.0	2.0	5.25		
282.0	310	36.74	3800	4500	81	84	91	100	-	138	-	2.0	2.0	4.21		
224.0	215	24.52	3300	4000	85	93	102	114	149	164	156	2.5	2.5	5.25	0.61	
96.2	96	11.65	4700	5600	75	82	85	90	96	114	121	120	1.5	1.5	1.25	0.17
131.0	147	17.79	4500	5300	82	85	90	96	-	121	-	1.5	1.5	1.30	0.16	
162.0	196	23.73	4500	5300	82	85	90	96	-	121	-	1.5	1.5	1.65		
196.0	299	36.19	4500	5300	85.5	-	91	-	-	117	-	2.0	1.5	2.41		
178.0	178	20.68	3800	4500	86	93	97	107	137	148	145	2.0	2.0	3.25	0.40	
266.0	287	33.35	3800	4500	86	93	97	107	-	148	-	2.0	2.0	4.85		
261.0	251	28.13	3200	3800	90	98	107	119	158	174	164	2.5	2.5	6.25	0.80	
66.8	76	9.25	5000	6000	80	85	90	94	-	118	-	1.0	1.0	0.99		
106.0	114	13.51	4500	5300	90	92	97	104	125	130	130	2.0	2.0	1.50	0.21	
147.0	178	21.10	4500	5300	90	92	97	104	-	130	-	2.0	2.0	1.95		
196.0	246	29.15	4200	5000	90	92	97	104	-	130	-	2.0	2.0	2.05		
185.0	282	33.42	4200	5000	91.5	-	98	-	-	126	-	2.0	2.0	2.91		
192.0	192	21.90	3500	4200	80	99	97	105	116	144	158	153	2.0	2.0	3.90	0.49
299.0	293	32.30	3000	3500	95	105	112	125	167	184	174	2.5	2.5	7.30	0.80	

### Single Row Cylindrical Roller Bearings d = 85 to 105 mm



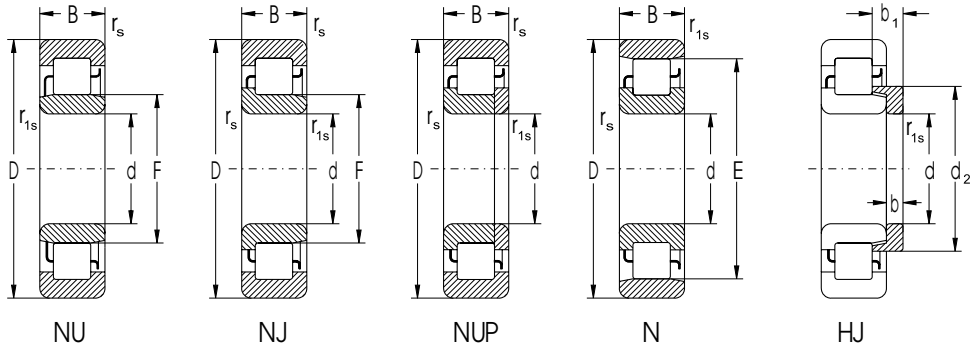
Dimensions											Bearing Designation				Angle Ring HJ
d	D	B	rs	r1s min	F	E	d2 max	b	b1	s <sup>1)</sup>	NU	NJ	NUP	N	HJ
mm															
85	150	28.00	2.0	2.0	101.80	133.8	109.2	8.0	14.00	2.0	<b>NU217</b>	<b>NJ217</b>	<b>NUP217</b>	<b>N217</b>	<b>HJ217</b>
	150	36.00	2.0	2.0	100.50					2.0	<b>NU2217E</b>	<b>NJ2217E</b>	<b>NUP2217E</b>		
	150	49.21	2.1	2.1	102.00					5.5	<b>NU5217M</b>				
	180	41.00	3.0	3.0	108.00	156.0	119.0	12.0	20.50	2.0	<b>NU317</b>	<b>NJ317</b>	<b>NUP317</b>	<b>N317</b>	<b>HJ317</b>
	210	52.00	4.0	4.0	113.00		127.7	14.0	24.00	2.5	<b>NU417</b>	<b>NJ417</b>	<b>NUP417</b>		<b>HJ417</b>
90	160	30.00	2.0	2.0	107.00	143.0	115.3	9.0	15.00	2.0	<b>NU218</b>	<b>NJ218</b>	<b>NUP218</b>	<b>N218</b>	<b>HJ218</b>
	160	52.40	2.1	3.0	107.22					6.0	<b>NU5218M</b>				
	190	43.00	3.0	3.0	115.00	165.0	126.5	12.0	21.00	2.0	<b>NU318</b>	<b>NJ318</b>	<b>NUP318</b>	<b>N318</b>	<b>HJ318</b>
	190	43.00	3.0	3.0	113.50		124.2	12.0	18.50	2.0	<b>NU318E</b>	<b>NJ318E</b>	<b>NUP318E</b>		<b>HJ318E</b>
	225	54.00	4.0	4.0	123.50		139.1	14.0	24.00	2.5	<b>NU418</b>	<b>NJ418</b>	<b>NUP418</b>		<b>HJ418</b>
95	170	32.00	2.1	2.1	113.50	151.5	122.2	9.0	15.50	2.0	<b>NU219</b>	<b>NJ219</b>	<b>NUP219</b>	<b>N219</b>	<b>HJ219</b>
	170	43.00	2.1	2.1	113.50					3.0	<b>NU2219</b>	<b>NJ2219</b>	<b>NUP2219</b>		
	170	55.56	2.5	3.0	113.52					6.0	<b>NU5219M</b>				
	200	45.00	3.0	3.0	121.50	173.5				2.0	<b>NU319</b>	<b>NJ319</b>	<b>NUP319</b>	<b>N319</b>	
	200	45.00	3.0	3.0	121.50					1.9	<b>NU319EM</b>	<b>NJ319EM</b>	<b>NUP319EM</b>		
100	240	55.00	4.0	4.0	133.50					2.5	<b>NU419M</b>	<b>NJ419M</b>	<b>NUP419M</b>		
	180	34.00	2.1	2.1	120.00	160.0	129.2	10.0	17.00	2.0	<b>NU220</b>	<b>NJ220</b>	<b>NUP220</b>	<b>N220</b>	<b>HJ220</b>
	180	46.00	2.1	2.1	120.00					3.0	<b>NU2220</b>	<b>NJ2220</b>	<b>NUP2220</b>		
	180	60.32	2.1	2.1	121.01					7.0	<b>NU5220M</b>				
	215	47.00	3.0	3.0	129.50	185.5	142.4	13.0	22.50	2.0	<b>NU320</b>	<b>NJ320</b>	<b>NUP320</b>	<b>N320</b>	<b>HJ320</b>
105	215	73.00	3.0	3.0	127.50					4.9	<b>NU2320EMAS NJ2320EMAS NUP2320EMAS</b>				
	250	58.00	4.0	4.0	139.00		155.9	16.0	27.00	2.5	<b>NU420</b>	<b>NJ420</b>	<b>NUP420</b>		<b>HJ420</b>
	190	36.00	2.1	2.1	126.80	168.8	136.5	10.0	17.50	2.0	<b>NU221</b>	<b>NJ221</b>	<b>NUP221</b>	<b>N221</b>	<b>HJ221</b>
	190	65.10	2.1	2.1	126.52					7.0	<b>NU5221M</b>				
105	225	49.00	3.0	3.0	135.00	195.0	148.8	13.0	22.50	4.5	<b>NU321</b>	<b>NJ321</b>	<b>NUP321</b>	<b>N321</b>	<b>HJ321</b>
	260	60.00	4.0	4.0	144.50		162.0	16.0	27.00	2.5	<b>NU421</b>	<b>NJ421</b>	<b>NUP421</b>		<b>HJ421</b>

<sup>1)</sup> Permissible axial displacement out of central position



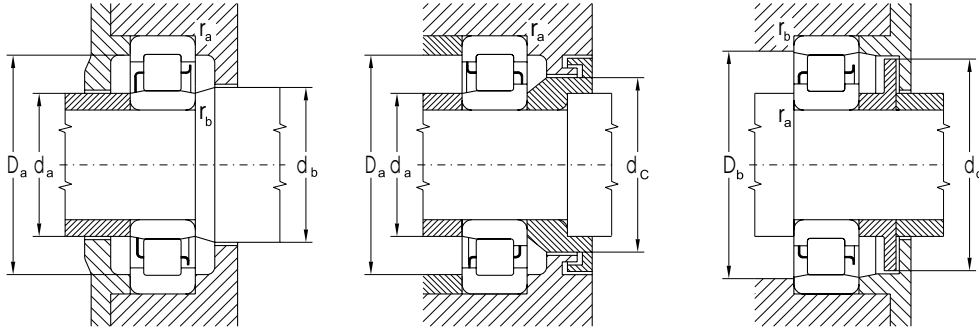
Basic Load Rating		Fatigue load limit P <sub>u</sub>	Limiting Speed for Lubrication with		Abutment and Fillet Dimensions								Weight			
Dynamic C <sub>r</sub>	Static C <sub>or</sub>		Grease	Oil	d	d <sub>a</sub>	d <sub>a min</sub>	d <sub>a max</sub>	d <sub>b min</sub>	d <sub>c</sub>	d <sub>d min</sub>	D <sub>a max</sub>	D <sub>b max</sub>	r <sub>a min</sub>	r <sub>b max</sub>	Bearing max
kN		kN	min <sup>-1</sup>		mm								kg			
121.0	131	15.22	4200	5000	85	95	99	104	111	131	140	138	2.0	2.0	1.90	0.25
220.0	261	30.33	3800	4500		95	98	103	110	-	140	--	2.0	2.0	2.52	
211.0	316	36.72	3800	4500		98	-	105	-	-	135	-	2.0	2.0	3.69	
215.0	215	24.10	3300	4000		98	103	110	121	174	166	162	2.5	2.5	4.50	0.57
362.0	362	39.29	3000	3500		105	108	115	129	-	190	-	3.0	3.0	8.70	0.89
147.0	158	18.02	4000	4700	90	100	105	109	117	140	150	147	2.0	2.0	2.30	0.31
237.0	355	40.49	3500	4200		103	-	110	-	-	144	-	2.5	2.0	4.48	
233.0	242	26.68	3200	3800		103	111	117	128	162	176	172	2.5	2.5	5.40	0.65
316.0	329	36.27	3000	3500		103	110	116	127	-	176	-	2.5	2.5	5.50	0.60
391.0	406	43.20	2700	3200		110	117	125	140	-	205	-	3.0	3.0	11.70	1.05
391.0	406	43.20	2700	3200		110	117	125	140	-	205	-	3.0	3.0	11.70	1.05
162.0	181	20.29	3800	4500	95	107	111	116	124	149	158	155	2.0	2.0	2.80	0.35
233.0	282	31.61	3800	4500		107	111	116	124	-	158	-	2.0	2.0	3.85	
335.0	511	57.27	3300	4000		110	-	117	-	-	153	-	2.5	2.0	5.65	
256.0	266	28.87	3200	3800		109	119	124	135	170	186	178	2.5	2.5	6.20	
329.0	362	39.29	2800	3300		109	119	124	135	-	186	-	2.5	2.5	6.50	
430.0	447	46.70	2500	3000		115	125	136	151	-	220	-	3.0	3.0	13.50	
178.0	203	22.38	3500	4200	100	112	117	122	131	157	168	165	2.0	2.0	3.40	0.45
261.0	322	40.53	3500	4200		112	117	122	131	-	168	-	2.0	2.0	4.65	
304.0	473	59.54	3200	3800		116.5	-	124	-	-	162	-	2.0	2.0	6.49	
299.0	310	36.99	2800	3300		113	125	132	145	182	201	190	2.0	2.0	7.70	0.91
596.0	694	82.82	2500	3000		113	123	130	144	-	201	-	2.5	2.5	12.50	
473.0	501	57.14	2400	2800		120	130	141	158	-	230	-	3.0	3.0	14.00	1.55
200.0	224	24.31	3300	4000	105	117	122	129	138	166	178	175	2.0	2.0	4.00	0.51
362.0	573	62.19	3000	3500		121.5	-	130	-	-	171	-	2.0	2.0	7.94	
341.0	362	37.99	2700	3200		119	132	137	150	192	211	199	2.5	2.5	8.75	1.00
531.0	562	57.22	2200	2700		125	135	147	164	-	240	-	3.0	3.0	19.00	1.65

**Single Row Cylindrical Roller Bearings**  
**d = 110 to 150 mm**



Dimensions											Bearing Designation				Angle Ring HJ
d	D	B	r <sub>s</sub> min	r <sub>1s</sub> min	F	E	d <sub>2</sub> max	b	b <sub>1</sub>	s <sup>1)</sup>	NU	NJ	NUP	N	HJ
mm															
110	200	38.00	2.1	2.1	132.50	178.5	143.1	11.0	18.50	2.5	NU222	NJ222	NUP222	N222	HJ222
	200	53.00	2.1	2.1	132.50					5.0	NU2222	NJ2222	NUP2222		
	200	69.85	2.1	4.0	132.95					7.0	NU5222M				
	240	50.00	3.0	3.0	143.00	207.0	157.5	14.0	23.00	2.7	NU322	NJ322	NUP322	N322	HJ322
	240	50.00	3.0	3.0	143.00					2.9	NU322E	NJ322E	NUP322E		
	280	65.00	4.0	4.0	155.00		173.4	17.0	29.50	2.7	NU422	NJ422	NUP422		HJ422
120	180	28.00	2.0	1.1	135.00					2.0	NU1024				
	215	40.00	2.1	2.1	143.50	191.5	154.5	11.0	19.00	2.5	NU224	NJ224	NUP224	N224	HJ224
	215	58.00	2.1	2.1	143.50					5.4	NU2224	NJ2224	NUP2224		
	215	76.20	2.1	2.1	145.14					7.0	NU5224M				
	260	55.00	3.0	3.0	154.00		170.5	14.0	23.50	2.7	NU324	NJ324	NUP324		HJ324
	260	86.00	3.0	3.0	154.00					6.4	NU2324EMAS NJ2324EMAS NUP2324EMAS				
	310	72.00	5.0	6.0	170.00		188.0	17.0	30.50	2.7	NU424	NJ424	NUP424		HJ424
130	200	33.00	2.0	1.1	148.00					2.0	NU1026				
	230	40.00	3.0	3.0	156.00	204.0	167.0	11.0	19.00	2.5	NU226	NJ226	NUP226	N226	HJ226
	230	79.38	4.0	4.0	155.00					8.0	NU5226M				
	280	58.00	4.0	4.0	167.00		182.3	14.0	23.00	2.9	NU326E	NJ326E	NUP326E		HJ326E
140	250	42.00	3.0	3.0	169.00	221.0	181.0	11.0	19.00	2.5	NU228	NJ228	NUP228	N228	HJ228
	250	82.55	4.0	4.0	168.46					10.0	NU5228M				
	300	62.00	4.0	4.0	180.00		198.4	15.0	26.00	2.7	NU328	NJ328	NUP328		HJ328
	225	35.00	2.1	1.5	169.50					2.0	NU1030				
150	270	45.00	3.0	3.0	182.00		194.7	12.0	20.50	2.4	NU230	NJ230	NUP230		HJ230
	270	45.00	3.0	3.0	182.00		193.7	12.0	19.50	2.4	NU230E	NJ230E	NUP230E		HJ230E
	270	88.90	2.3	2.3	181.54					10.0	NU5230M				
	320	65.00	4.0	4.0	193.00		212.3	15.0	26.50	2.7	NU330	NJ330	NUP330		HJ330

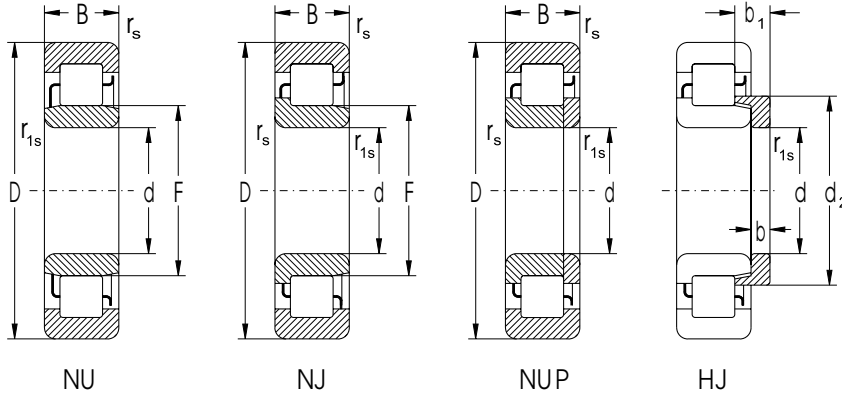
<sup>1)</sup> Permissible axial displacement out of central position



Basic Load Rating		Fatigue load limit $P_u$	Limiting Speed for Lubrication with		Abutment and Fillet Dimensions								Weight				
Dynamic $C_r$	Static $C_{or}$		Grease	Oil	d	$d_a$	$d_{a_{min}}$	$d_{a_{max}}$	$d_b$	$d_c$	$d_d$	$D_a$	$D_b$	$r_a$	$r_b$	Bearing max	Angle Ring
kN		kN	$min^{-1}$		mm								kg				
237.0	271	28.98	3200	3800	110	122	125	135	145	175	188	182	2.0	2.0	4.65	0.62	
341.0	422	45.12	3200	3800	122	125	135	145	-	188	-	2.0	2.0	6.95			
464.0	736	78.70	3000	3500	128	-	137	-	-	180	-	3.0	2.0	10.00			
391.0	414	42.68	2500	3000	124	135	145	160	204	226	211	2.5	2.5	10.50	1.17		
447.0	492	50.73	2400	2800	124	135	145	160	-	226	-	2.5	2.5	11.00			
584.0	631	62.98	2100	2500	130	140	157	175	-	260	-	3.0	3.0	20.00	2.16		
131.0	168	18.14	3300	4000	120	128	131	138	-	-	171	-	2.0	1.0	2.45		
261.0	299	31.24	3000	3500	132	138	146	157	188	203	196	2.0	2.0	5.65	0.72		
369.0	473	49.41	3000	3500	132	138	146	157	-	203	-	2.0	2.0	8.55			
482.0	794	82.95	2700	3200	140	-	149	-	-	194	-	2.0	2.0	11.80			
447.0	473	47.58	2400	2800	134	145	156	172	-	246	-	2.5	2.5	13.00	1.40		
810.0	981	98.68	2100	2500	134	145	156	172	-	246	-	2.5	2.5	24.50			
736.0	810	78.51	1900	2200	144	155	172	192	-	286	-	4.0	4.0	28.00	2.60		
162.0	203	21.30	3200	3800	130	138	143	151	-	191	-	2.0	1.0	3.75			
271.0	322	32.92	2700	3200	144	150	158	169	201	216	208	2.5	2.5	6.50	0.84		
511.0	841	85.98	2500	3000	149	-	159	-	-	207	-	3.0	2.0	13.80			
619.0	694	68.24	2000	2400	148	155	169	186	-	262	-	3.0	3.0	17.00	1.65		
310.0	369	36.83	2500	3000	140	154	160	171	182	218	236	2.5	2.5	8.25	1.00		
596.0	981	97.91	2200	2700	162	-	173	-	-	225	-	3.0	3.0	17.10			
619.0	708	68.15	2000	2400	158	166	182	198	-	282	-	3.0	3.0	20.00	2.05		
192.0	251	25.35	2700	3200	150	159	165	173	-	213	-	2.0	1.5	4.85			
369.0	455	44.42	2200	2700	164	170	184	196	-	256	-	2.5	2.5	10.50	1.35		
447.0	552	53.88	2200	2700	164	170	184	196	-	256	-	2.5	2.5	11.00	1.30		
736.0	1260	123.00	2000	2400	174	-	187	-	-	243	-	5.0	2.0	22.90			
681.0	779	73.52	1900	2200	168	185	195	213	-	302	-	3.0	3.0	27.00	2.37		

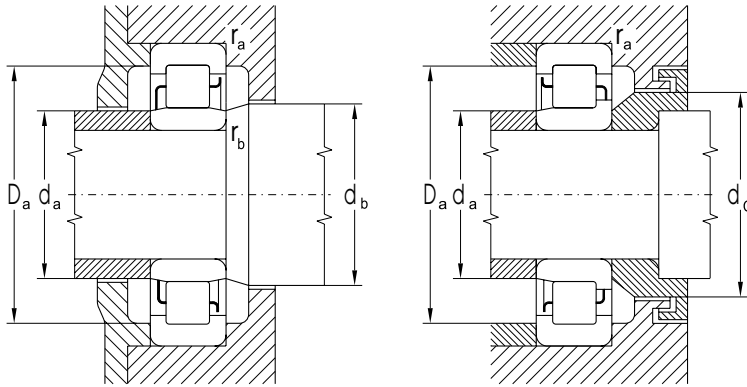
## Single Row Cylindrical Roller Bearings

d = 160 to 1180 mm



Dimensions										Bearing Designation				Angle Ring HJ
d	D	B	r <sub>s</sub> min	r <sub>1s</sub> min	F	d <sub>2</sub> max	b	b <sub>1</sub>	s <sup>1)</sup>	NU	NJ	NUP	N	
mm														
160	290	48.00	3.0	3.0	195.000	207.4	12.0	20.0	2.50	<b>NU232M</b>	<b>NJ232M</b>	<b>NUP232M</b>		<b>HJ232</b>
	290	98.42	2.5	6.3	193.634				10.00	<b>NU5232M</b>				
170	260	42.00	2.1	2.1	193.000				3.00	<b>NU1034</b>				
	310	52.00	4.0	4.0	207.000	228.8	12.0	20.0	2.90	<b>NU234M</b>	<b>NJ234M</b>	<b>NUP234M</b>		<b>HJ234</b>
180	310	104.77	3.2	6.3	205.483				10.00	<b>NU5234M</b>				
	280	46.00	2.1	2.1	205.000				3.60	<b>NU1036</b>				
	320	52.00	4.0	4.0	217.000	230.8	12.0	20.0	2.90	<b>NU236M</b>	<b>NJ236M</b>	<b>NUP236M</b>		<b>HJ236</b>
200	320	86.00	4.0	4.0	218.000	230.5	12.0	29.0	6.90	<b>NU2236M</b>	<b>NJ2236M</b>	<b>NUP2236M</b>		<b>HJ2236</b>
	310	51.00	2.1	2.1	229.000				4.20	<b>NU1040</b>				
	360	58.00	4.0	4.0	243.000	258.2	14.0	23.0	2.90	<b>NU240E</b>	<b>NJ240E</b>	<b>NUP240E</b>		<b>HJ240E</b>
220	340	56.00	3.0	3.0	250.000				4.10	<b>NU1044</b>				
	360	56.00	3.0	3.0	270.000				4.10	<b>NU1048</b>				
	440	72.00	5.0	5.0	295.000				4.00	<b>NU248</b>	<b>NJ248</b>			<b>HJ248</b>
240	440	72.00	5.0	5.0	295.000	315.0	16.0	25.9	4.00	<b>NUJ248</b>	<b>NH248</b>			<b>HJ248</b>
	400	65.00	4.0	4.0	296.000				2.00	<b>NU1052</b>				
	480	130.00	5.0	5.0	320.000				4.30	<b>NU2252</b>				
280	420	65.00	4.0	4.0	316.000				5.00	<b>NU1056</b>				
300	460	74.00	5.0	5.0	340.000				4.50	<b>NU1060</b>	<b>NJ1060</b>			
	460	74.00	5.0	5.0	340.000	357.6	19.0	36.0	4.50	<b>NUJ1060</b>	<b>NH1060</b>			<b>HJ1060</b>
320	480	74.00	4.0	4.0	360.000				5.00	<b>NU1064</b>				
360	540	82.00	6.0	6.0	480.000				5.00	<b>NU1072</b>				
380	540	82.00	6.0	6.0	480.000	423.0	21.0	39.5	5.00	<b>NUJ1072</b>	<b>NH1072</b>			<b>HJ1072</b>
380	560	82.00	5.0	5.0	425.000				6.00	<b>NU1076</b>				
400	600	90.00	5.0	5.0	450.000	470.0	19.6	42.6	5.00	<b>NU1080</b>	<b>NUJ1080</b>			<b>HJ1080</b>
	600	148.00	5.0	5.0	450.000				5.00	<b>NU3080</b>				
600	720	185.00	6.0	6.0	480.000				16.00	<b>NU2280</b>				
	800	118.00	5.0	5.0	650.000				12.00	<b>NU29/600</b>		<b>NUP29/600</b>		
830	150.00	4.7	4.7	659.000				7.00	<b>NU39/600MA</b>					
850	1120	155.00	8.0	8.0	925.000				15.00	<b>NU29/850</b>		<b>NUP29/850</b>		
900	1180	165.00	8.0	8.0	982.000				17.00	<b>NU29/900</b>		<b>NUP29/900</b>		
950	1250	175.00	10.0	10.0	1032.000				17.00	<b>NU29/950</b>		<b>NUP29/950</b>		
1000	1320	185.00	10.0	10.0	1090.000				17.00	<b>NU29/1000</b>		<b>NUP29/1000</b>		
1060	1400	195.00	10.0	10.0	1155.000				20.00	<b>NU29/1060</b>		<b>NUP29/1060</b>		
1180	1540	206.00	10.0	10.0	1280.000				21.00	<b>NU29/1180</b>		<b>NUP29/1180</b>		

<sup>1)</sup> Permissible axial displacement out of central position



Basic Load Rating		Fatigue load limit $P_u$	Limiting Speed for Lubrication with		Abutment and Fillet Dimensions								Weight	
Dynamic $C_r$	Static $C_{or}$		Grease	Oil	d	$d_a$ min	$d_a$ max	$d_b$ min	$d_c$ min	$D_a$ max	$r_a$ max	$r_b$ max	Bearing	Angle Ring
kN		kN	$\text{min}^{-1}$		mm								kg	
511	631.0	60.33	2000	2400	160	174	180	197	210	276	2.5	2.5	14.7	1.50
764	1310.0	125.26	1900	2200		186	-	199	-	261	5.0	2.0	28.9	
276	376.0	36.45	2200	2700	170	179	190	197	-	248	2.0	2.0	7.9	
607	750.0	70.34	1900	2200		188	195	211	223	293	3.0	3.0	16.6	1.70
891	1470.0	137.86	1800	2100		197	-	211	-	279	5.0	3.0	35.5	
329	447.0	42.46	2100	2500	180	189	196	209	-	268	2.0	2.0	10.50	
631	794.0	73.56	1800	2100		198	207	220	233	302	3.0	3.0	19.5	1.80
736	1060.0	98.20	1800	2100		198	208	221	233	302	3.0	3.0	31.2	1.90
383	531.0	48.90	1900	2200	200	212	220	233	-	298	2.0	2.0	14.0	
779	1000.0	89.54	1500	1800		218	227	246	261	342	3.0	3.0	28.4	2.70
501	694.0	62.14	1700	200	220	234	240	254	-	326	2.5	2.5	18.5	
531	764.0	67.01	1600	1900	240	254	260	275	-	346	2.5	2.5	20.0	
944	1280.0	108.13	1300	1600		258	293	298	316	422	3.0	3.0	50.5	
944	1280.0	108.13	1300	1600		258	293	298	316	422	3.0	3.0	50.5	4.68
643	962.0	82.00	1400	1700	260	278	280	300	-	382	3.0	3.0	29.0	
1760	2900.0	238.85	1100	1400		280	309	324	-	460	4.0	4.0	90.0	
681	1020.0	85.42	1300	1600	280	296	311	320	-	404	3.0	3.0	32.5	
891	1310.0	107.03	1200	1400	300	318	325	344	360	442	3.0	3.0	43.6	
891	1310.0	107.03	1200	1400		318	325	344	360	442	3.0	3.0	43.6	5.63
909	1390.0	111.84	1100	1300	320	336	355	364	-	464	3.0	3.0	48.5	
1076	1753.0	136.15	950	1100	360	382	390	410	-	518	4.0	4.0	67.5	
1076	1753.0	136.15	950	1100		382	390	410	427	518	4.0	4.0	67.5	10.00
1166	1982.0	151.94	850	1000	380	400	420	430	-	540	4.0	4.0	71.0	
1470	2330.0	175.33	840	1000	400	422	435	455	-	578	4.0	4.0	89.0	10.50
2255	4900.0	368.72	760	910		422	435	455	-	578	4.0	4.0	150.5	
3410	5960.0	433.49	710	840		426	460	485	-	694	5.0	5.0	350.0	
2230	4853.0	330.12	560	700	600	614	644	654	675	750	4.0	4.0	173.0	
2860	6200.0	419.07	500	600	600	614	645	660	680	790	4.7	4.7	262.0	
3760	8740.0	536.62	380	450	850	878	920	930	952	1092	5.0	5.0	430.0	
4220	9810.0	592.58	300	400	900	928	977	987	1011	1152	5.0	5.0	500.0	
4577	11452.0	680.22	300	370	950	978	1027	1041	1066	1220	5.0	5.0	597.0	
4920	11600.0	678.12	300	350	1000	1036	1085	1095	1122	1284	6.0	6.0	720.0	
5410	12800.0	735.23	280	330	1060	1096	1150	1160	1189	1364	6.0	6.0	850.0	
6310	15300.0	852.74	250	300	1180	1216	1275	1285	1316	1504	6.0	6.0	1050.0	