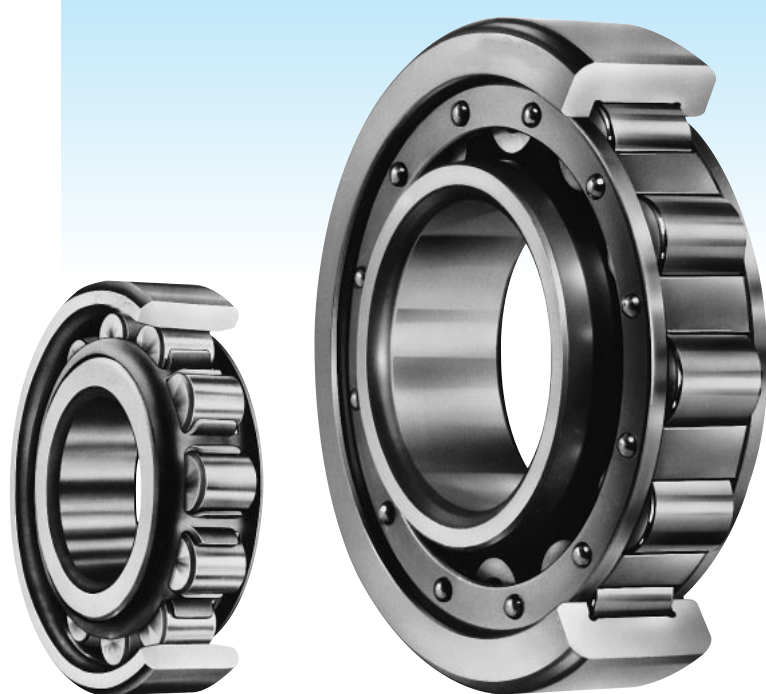




Cylindrical Roller Bearing



Wuxi LOTTON Bearing Manufacturing Co., Ltd.



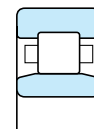
Cylindrical roller bearings

LOTTON Cylindrical roller bearings feature high radial load capacity because the rollers and raceway are in linear contact. These bearings are suitable for applications that involve heavy radial and impact loading.

They are also appropriate for high-speed applications in that they can be machined very accurately due to their structure.

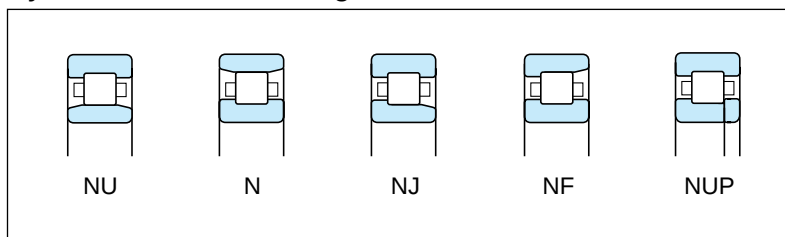
Having a separable inner ring or outer ring, these bearings can be mounted and dismounted easily.

Cylindrical roller bearings



Bore diameter **20 – 200 mm**

■ Cylindrical roller bearings



- The NU and N types exhibit their best performance when used as free side bearings since they adjust to the shaft's axial movement, to a certain extent, relative to the housing position.
- The NJ and NF types carry axial load in one direction, while the NUP type can carry a certain degree of axial load in both directions.

Cylindrical roller bearings

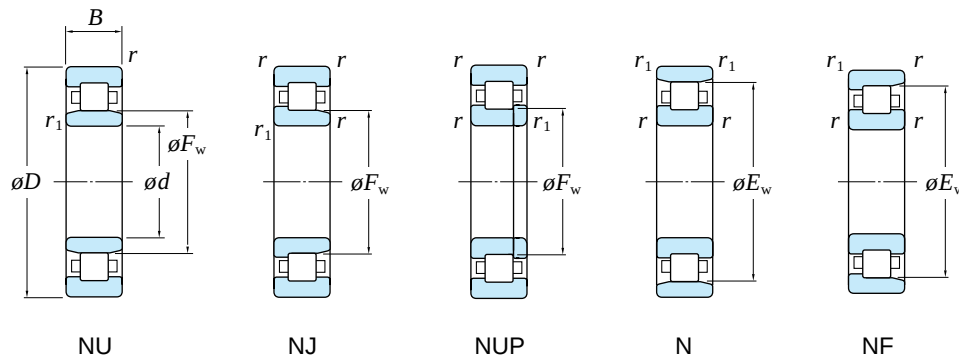
Boundary dimensions	The dimensions of standard series are as specified in JIS B 1512.					
Tolerances	As specified in JIS B 1514.					
	Tolerances of roller set bore diameter F and roller set outside diameter E of interchangeable bearings are as follows ^w : Unit μm					
	Nominal bore diameter d (mm)		ΔF_w Roller set bore diameter deviation		ΔE_w Roller set outside diameter deviation	
	over	up to	upper	lower	upper	lower
	–	20	+10	0	0	–10
	20	50	+15	0	0	–15
	50	120	+20	0	0	–20
	120	200	+25	0	0	–25
	200	250	+30	0	0	–30
	250	315	+35	0	0	–35
	315	400	+40	0	0	–40
	400	500	+45	0	–	–
	Remark) Interchangeable bearings have an inner ring with rollers that can be matched with the outer ring, or an outer ring with rollers that can be matched with the inner ring, without affecting performance.					
Radial internal clearance	• Cylindrical bore and tapered bore bearings (refer to Table 2-7 on pp. A 16, 17.) • Motor bearings(refer to Table 2-6 on P. A 14.)					
	• Pressed steel cage (supplementary code : //) • Copper alloy machined cage (supplementary code : FY) For application range, refer to Table 1. Copper alloy machined cages without rivets (LY) are also used for some special purposes.					
Allowable misalignment	Allowable misalignment of single-row cylindrical roller bearings depends on bearing type and specification. General values are as follows : 1) When P_r / C_r is approx. 10% under load of normal use 0.000 6 – 0.000 9 rad (2' – 3') 2) When P_r / C_r is approx. 6% under load lighter than 1) 0.001 2 rad (4') When very large allowable misalignment is required, consult LOTTON h .					
Equivalent radial load	Dynamic equivalent radial load $P_r = F_r$ Static equivalent radial load $P_{0r} = F_r$					
Allowable axial load	Cylindrical roller bearings with ribs, including loose rib and thrust collar, on both inner and outer rings accommodate axial load to a certain extent. (NJ and NF types accommodate load applied in one direction : NUP type in both directions.)					

Table 1 Application of standard cages

Bearing series	Pressed cage	Machined cage
NU 10	–	1005 – 1092
NU, NJ, NUP, NF 2	204 – 220	204 – 264
NU, NJ, NUP 22	2204 – 2220	2204 – 2252
NU, NJ, NUP, NF 3	304 – 320	304 – 348
NU, NJ, NUP 23	2304 – 2320	2304 – 2340
NU, NJ, NUP, NF 4	406 – 420	406 – 430

Cylindrical roller bearings

d 20 – (45) mm



Boundary dimensions (mm)							Basic load ratings (kN)		Limiting speeds (min ⁻¹)		Bearing No.					(Refer.) Mass NU (kg)
d	D	B	$r_{\min.}$	$r_{1\min.}$	F_w	E_w	C_r	C_{0r}	Grease lub.	Oil lub.	NU	NJ	NUP	N	NF	
20	47	14	1	0.6	27	40	15.4	12.7	15 000	18 000	NU204	NJ	NUP	N	NF	0.108
	47	18	1	0.6	27	—	20.7	18.4	13 000	18 000	NU2204	NJ	—	—	—	0.146
	52	15	1.1	0.6	28.5	44.5	23.1	19.2	12 000	16 000	NU304	NJ	NUP	N	NF	0.147
	52	21	1.1	0.6	28.5	—	32.9	30.2	11 000	16 000	NU2304	—	—	—	—	0.212
25	47	12	0.6	0.3	30.5	—	14.3	13.1	15 000	18 000	NU1005	—	—	—	—	0.084
	52	15	1	0.6	32	45	17.7	15.7	13 000	16 000	NU205	NJ	NUP	N	NF	0.132
	52	18	1	0.6	32	—	23.7	22.8	12 000	16 000	NU2205	NJ	NUP	—	—	0.163
	62	17	1.1	1.1	35	53	29.3	25.2	10 000	14 000	NU305	NJ	NUP	N	NF	0.241
	62	24	1.1	1.1	35	—	42.7	40.9	9 100	14 000	NU2305	NJ	NUP	—	—	0.340
30	55	13	1	0.6	36.5	—	18.7	18.4	13 000	15 000	NU1006	—	—	—	—	0.121
	62	16	1	0.6	38.5	53.5	23.5	21.5	11 000	13 000	NU206	NJ	NUP	N	NF	0.200
	62	20	1	0.6	38.5	—	32.9	33.1	9 800	13 000	NU2206	NJ	NUP	—	—	0.262
	72	19	1.1	1.1	42	62	38.6	35.2	8 700	12 000	NU306	NJ	NUP	N	NF	0.358
	72	27	1.1	1.1	42	—	51.4	50.8	7 700	12 000	NU2306	NJ	NUP	—	—	0.500
	90	23	1.5	1.5	45	73	62.8	55.0	7 600	10 000	NU406	NJ	—	—	NF	0.753
35	62	14	1	0.6	42	—	22.6	23.2	11 000	13 000	NU1007	—	—	—	—	0.182
	72	17	1.1	0.6	43.8	61.8	33.6	31.5	9 500	11 000	NU207	NJ	NUP	N	NF	0.293
	72	23	1.1	0.6	43.8	—	49.0	51.2	8 500	11 000	NU2207	NJ	NUP	—	—	0.402
	80	21	1.5	1.1	46.2	68.2	49.6	46.9	7 900	10 000	NU307	NJ	NUP	N	NF	0.477
	80	31	1.5	1.1	46.2	—	64.4	65.7	7 000	10 000	NU2307	NJ	NUP	—	—	0.696
40	100	25	1.5	1.5	53	83	75.2	68.9	6 600	8 800	NU407	NJ	—	—	NF	1.02
	68	15	1	0.6	47	—	24.9	25.7	10 000	12 000	NU1008	—	—	—	—	0.223
	80	18	1.1	1.1	50	70	43.8	42.9	8 300	10 000	NU208	NJ	NUP	N	NF	0.366
	80	23	1.1	1.1	50	—	58.3	62.0	7 500	10 000	NU2208	NJ	NUP	—	—	0.490
	90	23	1.5	1.5	53.5	77.5	58.6	56.9	6 900	9 100	NU308	NJ	NUP	N	NF	0.657
	90	33	1.5	1.5	53.5	—	82.2	88.0	6 100	9 100	NU2308	NJ	NUP	—	—	0.956
45	110	27	2	2	58	92	97.1	89.1	6 000	8 000	NU408	NJ	—	N	NF	1.30
	75	16	1	0.6	52.5	—	31.0	33.8	9 200	11 000	NU1009	—	—	—	—	0.289
	85	19	1.1	1.1	55	75	46.1	46.9	7 700	9 200	NU209	NJ	NUP	N	NF	0.427
	85	23	1.1	1.1	55	—	61.4	67.8	6 900	9 200	NU2209	NJ	NUP	—	—	0.536
	100	25	1.5	1.5	58.5	86.5	78.8	77.5	6 200	8 300	NU309	NJ	NUP	N	NF	0.870

Remarks) Standard cage types used for the above bearings are shown in Table 1 earlier in this section. Please note that basic load ratings and rotation speed limits shown above indicate the value applicable to machined cage. When bearings with pressed cage are used, consult LOTTON

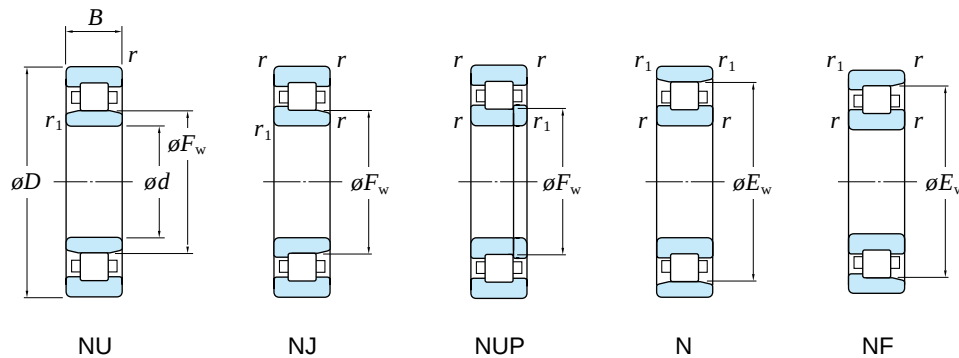
d (45) – 80 mm

Boundary dimensions (mm)							Basic load ratings (kN)		Limiting speeds (min ⁻¹)		Bearing No.					(Refer.) Mass NU (kg)
d	D	B	$r_{\min.}$	$r_{1\min.}$	F_w	E_w	C_r	C_{0r}	Grease lub.	Oil lub.	NU	NJ	NUP	N	NF	
45	100	36	1.5	1.5	58.5	–	106	113	5 500	8 300	NU2309	NJ	NUP	–	–	1.25
	120	29	2	2	64.5	100.5	115	112	5 400	7 200	NU409	NJ	–	N	NF	1.64
50	80	16	1	0.6	57.5	–	33.6	36.8	8 400	9 900	NU1010	–	–	–	–	0.306
	90	20	1.1	1.1	60.4	80.4	48.2	51.0	7 100	8 500	NU210	NJ	NUP	N	NF	0.479
	90	23	1.1	1.1	60.4	–	64.2	73.6	6 400	8 500	NU2210	NJ	NUP	–	–	0.580
	110	27	2	2	65	95	92.2	93.4	5 600	7 500	NU310	NJ	NUP	N	NF	1.15
	110	40	2	2	65	–	128	142	5 000	7 500	NU2310	NJ	NUP	–	–	1.69
	130	31	2.1	2.1	70.8	110.8	139	136	4 900	6 600	NU410	NJ	–	–	NF	2.01
55	90	18	1.1	1	64.5	–	37.4	43.8	7 600	8 900	NU1011	–	–	–	–	0.445
	100	21	1.5	1.1	66.5	88.5	58.0	62.3	6 400	7 700	NU211	NJ	NUP	N	NF	0.640
	100	25	1.5	1.1	66.5	–	75.3	87.2	5 800	7 700	NU2211	NJ	NUP	–	–	0.780
	120	29	2	2	70.5	104.5	111	111	5 100	6 800	NU311	NJ	NUP	N	NF	1.44
	120	43	2	2	70.5	–	148	162	4 500	6 800	NU2311	NJ	NUP	–	–	2.10
	140	33	2.1	2.1	77.2	117.2	142	138	4 600	6 100	NU411	NJ	–	N	NF	2.51
60	95	18	1.1	1	69.5	–	42.1	50.0	7 000	8 300	NU1012	–	–	–	–	0.477
	110	22	1.5	1.5	73.5	97.5	71.9	79.9	5 800	7 000	NU212	NJ	NUP	N	NF	0.823
	110	28	1.5	1.5	73.5	–	101	123	5 200	7 000	NU2212	NJ	NUP	–	–	1.07
	130	31	2.1	2.1	77	113	124	126	4 700	6 300	NU312	NJ	NUP	N	NF	1.83
	130	46	2.1	2.1	77	–	168	188	4 200	6 300	NU2312	NJ	NUP	–	–	2.69
	150	35	2.1	2.1	83	127	178	184	4 200	5 700	NU412	NJ	NUP	N	NF	3.02
65	100	18	1.1	1	74.5	–	43.3	52.9	6 600	7 800	NU1013	–	–	–	–	0.506
	120	23	1.5	1.5	79.6	105.6	83.8	94.4	5 400	6 400	NU213	NJ	NUP	N	NF	1.05
	120	31	1.5	1.5	79.6	–	120	149	4 800	6 400	NU2213	NJ	NUP	–	–	1.43
	120	38.1	1.5	1.5	79.6	–	148	197	4 300	6 400	NU3213	–	–	–	–	1.90
	140	33	2.1	2.1	83.5	121.5	137	139	4 300	5 800	NU313	NJ	NUP	N	NF	2.24
	140	48	2.1	2.1	83.5	–	190	212	3 900	5 800	NU2313	NJ	NUP	–	–	3.25
70	160	37	2.1	2.1	89.3	135.3	198	203	4 000	5 300	NU413	NJ	NUP	–	NF	3.58
	110	20	1.1	1	80	–	57.9	70.4	6 100	7 200	NU1014	–	–	–	–	0.702
	125	24	1.5	1.5	84.5	110.5	83.3	95.2	5 100	6 100	NU214	NJ	NUP	N	NF	1.15
	125	31	1.5	1.5	84.5	–	119	151	4 600	6 100	NU2214	NJ	NUP	–	–	1.52
	150	35	2.1	2.1	90	130	162	168	4 000	5 400	NU314	NJ	NUP	N	NF	2.73
	150	51	2.1	2.1	90	–	224	262	3 600	5 400	NU2314	NJ	NUP	–	–	3.97
75	180	42	3	3	100	152	246	257	3 500	4 700	NU414	NJ	NUP	N	NF	5.26
	115	20	1.1	1	85	–	63.6	78.1	5 700	6 800	NU1015	–	–	–	–	0.735
	130	25	1.5	1.5	88.5	116.5	101	118	4 800	5 800	NU215	NJ	NUP	N	NF	1.24
	130	31	1.5	1.5	88.5	–	135	172	4 300	5 800	NU2215	NJ	NUP	–	–	1.57
	160	37	2.1	2.1	95.5	139.5	194	205	3 800	5 000	NU315	NJ	NUP	N	NF	3.24
	160	55	2.1	2.1	95.5	–	275	327	3 400	5 000	NU2315	NJ	NUP	–	–	4.84
80	190	45	3	3	104.5	160.5	265	274	3 300	4 400	NU415	NJ	NUP	N	NF	6.25
	125	22	1.1	1	91.5	–	69.3	86.4	5 300	6 300	NU1016	–	–	–	–	0.994
	140	26	2	2	95.3	125.3	106	122	4 500	5 400	NU216	NJ	NUP	N	NF	1.51
	140	33	2	2	95.3	–	148	186	4 000	5 400	NU2216	NJ	NUP	–	–	1.96
	170	39	2.1	2.1	103	147	194	207	3 500	4 700	NU316	NJ	NUP	N	NF	3.92
	170	58	2.1	2.1	103	–	275	332	3 100	4 700	NU2316	NJ	NUP	–	–	5.83
	200	48	3	3	110	170	302	315	3 100	4 200	NU416	NJ	NUP	N	NF	7.28

Remarks) Standard cage types used for the above bearings are shown in Table 1 earlier in this section. Please note that basic load ratings and rotation speed limits shown above indicate the value applicable to machined cage. When bearings with pressed cage are used, consult LOTTON.

Cylindrical roller bearings

d 85 – (120) mm



Boundary dimensions (mm)							Basic load ratings (kN)		Limiting speeds (min ⁻¹)		Bearing No.					(Refer.) Mass NU (kg)
d	D	B	r min.	r ₁ min.	F _w	E _w	C _r	C _{0r}	Grease lub.	Oil lub.	NU	NJ	NUP	N	NF	
85	130	22	1.1	1	96.5	—	71.4	91.2	5 100	6 000	NU1017	—	—	—	—	1.04
	150	28	2	2	101.8	133.8	121	140	4 200	5 000	NU217	NJ	NUP	N	NF	1.90
	150	36	2	2	101.8	—	169	218	3 800	5 000	NU2217	NJ	NUP	—	—	2.50
	180	41	3	3	108	156	225	247	3 300	4 500	NU317	NJ	NUP	N	NF	4.52
	180	60	3	3	108	—	315	382	3 000	4 500	NU2317	NJ	NUP	—	—	6.62
	210	52	4	4	113	177	340	350	3 000	4 000	NU417	NJ	NUP	N	NF	8.68
90	160	30	2	2	107	143	152	178	3 900	4 700	NU218	NJ	NUP	N	NF	2.28
	160	40	2	2	107	—	207	265	3 500	4 700	NU2218	NJ	NUP	—	—	3.10
	190	43	3	3	115	165	243	265	3 100	4 200	NU318	NJ	NUP	N	NF	5.38
	190	64	3	3	115	—	329	395	2 800	4 200	NU2318	NJ	NUP	—	—	7.90
	225	54	4	4	123.5	191.5	374	400	2 800	3 700	NU418	NJ	NUP	N	NF	10.3
95	170	32	2.1	2.1	113.5	151.5	165	195	3 700	4 400	NU219	NJ	NUP	N	NF	2.80
	170	43	2.1	2.1	113.5	—	230	298	3 300	4 400	NU2219	NJ	NUP	—	—	3.85
	200	45	3	3	121.5	173.5	277	311	3 000	4 000	NU319	NJ	NUP	N	NF	6.20
	200	67	3	3	121.5	—	394	496	2 600	4 000	NU2319	NJ	NUP	—	—	9.39
	240	55	4	4	133.5	—	410	444	2 600	3 400	NU419	NJ	—	—	—	13.6
100	180	34	2.1	2.1	120	160	183	217	3 500	4 200	NU220	NJ	NUP	N	NF	3.38
	180	46	2.1	2.1	120	—	259	338	3 100	4 200	NU2220	NJ	NUP	—	—	4.67
	215	47	3	3	129.5	185.5	323	337	2 800	3 700	NU320	NJ	NUP	N	NF	7.70
	215	73	3	3	129.5	—	464	548	2 500	3 700	NU2320	NJ	NUP	—	—	11.9
	250	58	4	4	139	—	458	498	2 500	3 300	NU420	NJ	—	—	—	14.0
105	190	36	2.1	2.1	126.8	168.8	201	241	3 300	3 900	NU221	NJ	NUP	N	NF	4.00
	225	49	3	3	135	195	366	417	2 600	3 500	NU321	NJ	NUP	N	NF	8.76
110	200	38	2.1	2.1	132.5	178.5	241	290	3 100	3 700	NU222	NJ	NUP	N	NF	4.65
	200	53	2.1	2.1	132.5	—	334	442	2 800	3 700	NU2222	NJ	NUP	—	—	6.93
	240	50	3	3	143	207	411	467	2 500	3 300	NU322	NJ	NUP	N	NF	10.4
	240	80	3	3	143	—	604	789	2 200	3 300	NU2322	NJ	—	—	—	18.8
	280	65	4	4	155	—	550	621	2 200	2 900	NU422	NJ	—	—	—	19.9
120	215	40	2.1	2.1	143.5	191.5	260	318	2 900	3 400	NU224	NJ	NUP	N	NF	5.65
	215	58	2.1	2.1	143.5	—	367	492	2 600	3 400	NU2224	NJ	NUP	—	—	8.56

Remarks) Standard cage types used for the above bearings are shown in Table 1 earlier in this section. Please note that basic load ratings and rotation speed limits shown above indicate the value applicable to machined cage. When bearings with pressed cage are used, consult LOTTON.

d (120) – 200 mm

d	Boundary dimensions (mm)						Basic load ratings (kN)		Limiting speeds (min ⁻¹)		Bearing No.					(Refer.) Mass NU (kg)
	D	B	$r_{\min.}$	$r_{1\min.}$	F_w	E_w	C_r	C_{0r}	Grease lub.	Oil lub.	NU	NJ	NUP	N	NF	
120	260	55	3	3	154	226	485	551	2 200	3 000	NU324	NJ	NUP	N	NF	13.1
	260	86	3	3	154	—	708	918	2 000	3 000	NU2324	NJ	NUP	—	—	23.1
	310	72	5	5	170	—	690	770	1 900	2 600	NU424	NJ	—	—	—	28.0
130	200	33	2	1.1	148	—	171	238	3 200	3 800	NU1026	—	—	—	—	3.77
	230	40	3	3	156	204	282	362	2 700	3 200	NU226	NJ	NUP	N	NF	6.49
	230	64	3	3	156	—	395	560	2 400	3 200	NU2226	NJ	NUP	—	—	11.2
	280	58	4	4	167	243	564	667	2 100	2 700	NU326	NJ	NUP	N	NF	16.4
	280	93	4	4	167	—	838	1 130	1 800	2 700	NU2326	NJ	NUP	—	—	29.1
	340	78	5	5	185	—	771	876	1 800	2 300	NU426	NJ	—	—	—	36.1
140	210	33	2	1.1	158	—	175	250	3 000	3 600	NU1028	—	—	—	—	4.00
	250	42	3	3	169	221	324	421	2 400	2 900	NU228	NJ	NUP	N	—	8.27
	250	68	3	3	169	—	465	671	2 200	2 900	NU2228	NJ	NUP	—	—	14.3
	300	62	4	4	180	260	623	746	1 900	2 500	NU328	NJ	NUP	N	NF	20.1
	300	102	4	4	180	—	920	1 250	1 700	2 500	NU2328	NJ	NUP	—	—	36.8
	360	82	5	5	198	—	874	1 020	1 600	2 200	NU428	NJ	—	—	—	46.8
150	225	35	2.1	1.5	169.5	—	201	281	2 800	3 300	NU1030	—	—	—	—	4.83
	270	45	3	3	182	238	374	492	2 200	2 700	NU230	NJ	NUP	N	NF	10.3
	270	73	3	3	182	—	545	800	2 000	2 700	NU2230	NJ	NUP	—	—	18.7
	320	65	4	4	193	277	663	807	1 800	2 300	NU330	NJ	NUP	N	NF	26.4
	320	108	4	4	193	—	1 020	1 400	1 600	2 300	NU2330	NJ	NUP	—	—	44.7
	380	85	5	5	213	—	930	1 120	1 500	2 000	NU430	NJ	—	—	—	53.3
160	290	48	3	3	195	255	427	568	2 100	2 500	NU232	NJ	NUP	N	NF	14.4
	290	80	3	3	195	—	631	939	1 800	2 500	NU2232	NJ	NUP	—	—	23.6
	340	68	4	4	208	292	698	876	1 600	2 200	NU332	NJ	NUP	N	—	31.7
	340	114	4	4	208	—	1 070	1 520	1 400	2 200	NU2332	NJ	NUP	—	—	53.1
170	310	52	4	4	208	272	475	637	1 900	2 300	NU234	NJ	NUP	N	—	18.4
	310	86	4	4	208	—	715	1 080	1 700	2 300	NU2234	NJ	NUP	—	—	29.2
	360	72	4	4	220	310	809	1 010	1 500	2 000	NU334	NJ	NUP	N	—	38.6
180	360	120	4	4	220	—	1 220	1 750	1 300	2 000	NU2334	NJ	NUP	—	—	62.6
	320	52	4	4	218	282	492	677	1 800	2 200	NU236	NJ	NUP	N	—	19.3
	320	86	4	4	218	—	741	1 140	1 600	2 200	NU2236	NJ	NUP	—	—	30.4
	380	75	4	4	232	328	917	1 150	1 400	1 900	NU336	NJ	NUP	N	—	42.6
190	380	126	4	4	232	—	1 350	1 940	1 300	1 900	NU2336	NJ	NUP	—	—	73.0
	340	55	4	4	231	299	554	768	1 700	2 000	NU238	NJ	NUP	N	—	23.2
	340	92	4	4	231	—	828	1 290	1 500	2 000	NU2238	NJ	NUP	—	—	37.0
	400	78	5	5	245	345	987	1 260	1 300	1 800	NU338	NJ	NUP	N	—	49.9
200	400	132	5	5	245	—	1 520	2 220	1 200	1 800	NU2338	NJ	NUP	—	—	84.7
	360	58	4	4	244	316	618	865	1 600	1 900	NU240	NJ	NUP	N	—	26.8
	360	98	4	4	244	—	946	1 490	1 400	1 900	NU2240	NJ	NUP	—	—	44.4
	420	80	5	5	260	360	987	1 270	1 200	1 700	NU340	NJ	NUP	N	—	56.2
200	420	138	5	5	260	—	1 520	2 240	1 100	1 700	NU2340	NJ	NUP	—	—	97.4

Remarks) Standard cage types used for the above bearings are shown in Table 1 earlier in this section. Please note that basic load ratings and rotation speed limits shown above indicate the value applicable to machined cage. When bearings with pressed cage are used, consult LOTTON.



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