WD
BALL & ROLLER
BEARINGS

Precision Cylindrical Roller Bearings

高精度圆柱滚子轴承

WD的精密滚子轴承包括精密圆柱滚子轴承和精密圆锥滚子轴承，单列或双列结构，精度等级均超过P5级。产品具备很高的旋转精度和尺寸精度。此类产品主要用于主轴等需要高旋转精度的场合，随着精度等级的提高，产品寿命也有明显增加，因此也可使用于需要长寿命的工况。

WD precision roller bearings consist of precision cylindrical roller bearing and tapered roller bearing, both of which have single and double row structure. With the higher precision than P5 standard, they have high dimension and running accuracy accordingly. They are normally used in where requests high running accuracy, such as spindle. And with the improvement of the precision, the product lifespan also has been improved distinctly. Therefore they coule be uesd in working condition that requests long lifespan.

WD提供很多不同设计、尺寸系列和大小的圆柱滚子轴承。其中大部分是带有一个保持架的单列轴承。加上单列和双列满滚子轴承（不带保持架），构成WD用于通用工程的轴承品种标准配置。带保持架的轴承可承受较大的径向载荷，并可高速运行。满滚子轴承适用于中速下非常重的径向载荷。

WD圆柱滚子轴承，滚子是其中的关键部件。其几何形状，即所谓的对数外形，在轴承的接触区提供最佳应力分布。其表面光洁度最大限度地促进润滑剂油膜的形成，并使滚子的滚动最优化。同传统设计相比，由此得到的好处包括运行可靠性的提高，以及对于不对中更大的宽容度。

WD圆柱滚子轴承的品种范围包括以下各种基本类型：

带保持架的单列圆柱滚子轴承，主要为NU、NJ、NUP和N设计

带保持架的双列圆柱滚子轴承，主要为NNU和NN设计

单列满滚子圆柱滚子轴承，主要为NCF和NJG设计

双列满滚子圆柱滚子轴承主要为NNF设计

尺寸

WD单列圆柱滚子轴承的尺寸符合ISO 15–1998标准。

公差

标准制造的单列圆柱滚子轴承以普通公差的尺寸精度生产，运行精度为P6公差。有些轴承，特别是窄尺寸18、19和10系列的轴承还能以更高精度的公差级P6或 P5供应。

这些公差值符合ISO 492–2002标准。

径向内部游隙

标准生产的单列圆柱滚子轴承带普通级径向内部游隙，大部分轴承可带C3径向内部游隙供应。有些轴承甚至可带更小的C2或更大的C4游隙供应。此外，有些轴承以特殊降低游隙生产。这些特殊游隙同标准游隙范围的一部分对应，或同两个相邻游隙范围的一部分对应。

带非标准游隙或特殊降低游隙的轴承可根据特殊订单供应。

带圆柱孔的轴承实际游隙和带圆锥孔的轴承实际游隙范围符合ISO 5753–1991标准。这些数值适用于轴承安装前在无载荷时的游隙值。

所有带标准游隙及降低游隙的轴承的可分离部件都是可互换的。

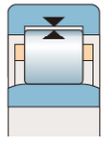


表1：带圆柱孔的圆柱滚子轴承的径向内隙

孔径 d		径向内隙 C1		SPC2		C2		常规		C3		C4		C5	
以上	包括	最小	最大	最小	最大	最小	最大	最小	最大	最小	最大	最小	最大	最小	最大
mm		μm													
–	24	–	–	–	–	0	25	20	45	35	60	50	50	65	90
24	30	5	15	10	25	0	25	20	45	35	60	50	50	70	95
30	40	5	15	12	25	5	30	25	50	45	70	60	60	80	105
40	50	5	18	15	30	5	35	30	60	50	80	70	70	95	125
50	65	5	20	15	35	10	40	40	70	60	90	80	80	110	140
65	80	10	25	20	40	10	45	40	75	65	100	90	90	130	165
80	100	10	30	25	45	15	50	50	85	75	110	105	105	155	190
100	120	10	30	25	50	15	55	50	90	85	125	125	125	180	220
120	140	10	35	30	60	15	60	60	105	100	145	145	145	200	245
140	160	10	35	35	65	20	70	70	120	115	165	165	165	225	275
160	180	10	40	35	75	25	75	75	125	120	170	170	170	250	300
180	200	15	45	40	80	35	90	90	145	140	195	195	195	275	330
200	225	15	50	45	90	45	105	105	165	160	220	220	220	305	365
225	250	15	50	50	100	45	110	110	175	170	235	235	235	330	395
250	280	20	55	55	110	55	125	125	195	190	260	260	260	370	440
280	315	20	60	60	120	55	130	130	205	200	275	275	275	410	485
315	355	20	65	65	135	65	145	145	225	225	305	305	305	455	535
355	400	25	75	75	150	100	190	190	280	280	370	370	370	510	600
400	450	25	85	85	170	110	210	210	310	310	410	410	410	565	665
450	500	25	95	95	190	110	220	220	330	330	440	440	440	625	735
500	560	25	105	105	210	120	240	240	360	360	480	480	480	690	810
560	630	25	115	115	230	140	260	260	380	380	500	500	500	780	900
630	710	30	130	130	260	145	285	285	425	425	565	565	565	865	1005
710	800	35	145	145	290	150	310	310	470	470	630	630	630	975	1135
800	900	40	160	160	320	180	350	350	520	520	690	690	690	1095	1265
900	1000	–	–	–	–	200	390	390	580	580	770	770	770	1215	1405
1000	1120	–	–	–	–	220	430	430	640	640	850	850	850	1355	1565
1120	1250	–	–	–	–	230	470	470	710	710	950	950	950	1510	1750
1250	1400	–	–	–	–	270	530	530	790	790	1050	1050	1050	1680	1940
1400	1600	–	–	–	–	330	610	610	890	890	1170	1170	1170	1920	2200
1600	1800	–	–	–	–	380	700	700	1020	1020	1340	1340	1340	2160	2480
1800	2000	–	–	–	–	400	760	760	1120	1120	1480	1480	1480	2390	2760

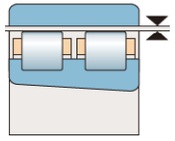


表2：带锥孔的圆柱滚子轴承的径向内隙

孔径 d		径向内隙 C1		SPC2		C2		常规		C3		C4		C5	
以上	包括	最小	最大	最小	最大	最小	最大	最小	最大	最小	最大	最小	最大	最小	最大
mm		μm													
–	24	–	–	–	–	15	40	30	55	40	65	50	75	70	95
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	1020
630	710	160	260	260	390	295	435	435	575	565	705	695	835	1005	1145
710	800	180	290	290	435	325	485	485	645	630	790	775	935	1125	1285
800	900	200	320	320	480	370	540	540	710	700	870	860	1030	1265	1435
900	1000			355	540	410	600	600	790	780	970	960	1150		
1000	1120			395	600	455	665	665	875	865	1075	1065	1275		
1120	1250			440	670	490	730	730	970	960	1200	1200	1440		
1250	1400			490	740	550	810	810	1070	1070	1330	1330	1590		
1400	1600			560	840	640	920	920	1200	1200	1480	1480	1760		
1600	1800			630	950	700	1020	1020	1340	1340	1660	1660	1980		
1800	2000			700	1060	760	1120	1120	1480	1480	1840	1840	2200		

轴向内部游隙

NUP设计的圆柱滚子轴承可在两个方向上对轴进行轴向定位，以表3所示轴向内部游隙制造。NJ–设计的轴承当与HJ角圈结合使用时的轴向内部游隙在表4中规定。

表3和表4所列游隙范围应作为指标值考虑。测量轴向内部游隙时，滚子可能会倾斜，引起轴向游隙的增加。例如，在2、3和4系列轴承中可达到相当于径向内部游隙，在22和23系列轴承中可达到相当于径向内部游隙的三分之二。

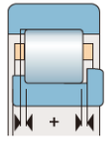


表3: NUP和NP型圆柱滚子轴承的轴向内隙

孔径 d		孔尺寸		以下系列轴承的轴向内隙									
				2		3		4		22		23	
以上	包括	最小	最大	最小	最大	最小	最大	最小	最大	最小	最大	最小	最大
mm		μm											
15	02	–	–	–	–	–	–	–	–	–	–	–	–
17	03	37	140	37	140	–	–	37	140	47	155		
20	04	37	140	37	140	–	–	47	155	47	155		
25	05	37	140	47	155	–	–	47	155	47	155		
30	06	37	140	47	155	55	155	47	155	47	155		
35	07	47	155	47	155	55	155	47	155	62	180		
40	08	47	155	47	155	55	155	47	155	62	180		
45	09	47	155	47	155	55	155	47	155	62	180		
50	10	47	155	47	155	70	185	47	155	62	180		
55	11	47	155	62	180	70	185	47	155	62	180		
60	12	47	155	62	180	70	185	62	180	87	230		
65	13	47	155	62	180	70	185	62	180	87	230		
70	14	47	155	62	180	70	185	62	180	87	230		
75	15	47	155	62	180	70	185	62	180	87	230		
80	16	47	155	62	180	70	185	62	180	87	230		
85	17	62	180	62	180	95	230	62	180	87	230		
90	18	62	180	62	180	95	230	62	180	87	230		
95	19	62	180	62	180	95	230	62	180	87	230		
100	20	62	180	87	230	–	–	87	230	120	315		
105	21	62	180	–	–	–	–	–	–	–	–		
110	22	62	180	87	230	–	–	87	230	120	315		
120	24	62	180	87	230	–	–	87	230	120	315		
130	26	62	180	87	230	–	–	87	230	120	315		
140	28	62	180	87	230	–	–	87	230	120	315		
150	30	62	180	87	230	–	–	87	230	120	315		
160	32	87	230	87	230	–	–	120	315	–	–		
170	34	87	230	–	–	–	–	120	315	–	–		
180	36	87	230	–	–	–	–	120	315	–	–		
190	38	87	230	–	–	–	–	120	315	–	–		
200	40	87	230	–	–	–	–	120	315	–	–		
220	44	95	230	–	–	–	–	120	315	150	365		
240	48	95	250	–	–	–	–	–	–	–	–		
260	52	95	250	–	–	–	–	–	–	–	–		

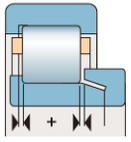


表4：带HJ斜挡圈的NJ型圆柱滚子轴承的径向内隙

孔径	孔尺寸	以下系列轴承的轴向内隙									
		NJ2+HJ		NJ3+HJ		NJ4+HJ		NJ22+HJ		NJ23+HJ	
d		最小	最大	最小	最大	最小	最大	最小	最大	最小	最大
mm		μm									
15	02	42	165	42	165	–	–	–	–	–	–
17	03	42	165	42	165	–	–	42	165	52	183
20	04	42	165	42	165	–	–	52	185	52	183
25	05	42	165	52	185	–	–	52	185	52	183
30	06	42	165	52	185	60	200	52	185	52	183
35	07	52	185	52	185	60	200	52	185	72	215
40	08	52	185	52	185	60	200	52	185	72	215
45	09	52	185	52	185	60	200	52	185	72	215
50	10	52	185	52	185	80	235	52	185	72	215
55	11	52	185	72	215	80	235	52	185	72	215
60	12	52	185	72	215	80	235	72	215	102	275
65	13	52	185	72	215	80	235	72	215	102	275
70	14	52	185	72	215	80	235	72	215	102	275
75	15	52	185	72	215	80	235	72	215	102	275
80	16	52	185	72	215	80	235	72	215	102	275
85	17	72	215	72	215	110	290	72	215	102	275
90	18	72	215	72	215	110	290	72	215	102	275
95	19	72	215	72	215	110	290	72	215	102	275
100	20	72	215	102	275	110	290	102	275	140	375
105	21	72	215	102	275	110	290	102	275	140	375
110	22	72	215	102	275	110	290	102	275	140	375
120	24	72	215	102	275	110	310	102	275	140	375
130	26	72	215	102	275	110	310	102	275	140	375
140	28	72	215	102	275	140	385	102	275	140	375
150	30	72	215	102	275	140	385	102	275	140	375
160	32	102	275	102	275			140	375	140	375
170	34	102	275					140	375		
180	36	102	275					140	375		
190	38	102	275								
200	40	102	275								
220	44	110	290								
240	48	110	310								
260	52	110	310								
280	56	110	310								

不对中

WD单列圆柱滚子轴承可承受内圈相对于外圈角位移的能力在几分弧度以内。 10、12、2、3和4系列轴承的实际数值为4分弧度；20、22和23系列轴承的实际数值为3分弧度。

这些指标值适用于非定位端轴承，条件是轴和轴承座轴的位置保持不变。 较大的不对中也有可能，但可能造成轴承使用寿命缩短。

当轴承用于轴的轴向定位时，必须降低指标值，因为不均匀的法兰载荷可导致磨损增加，甚至可能引起法兰断裂。

不对中的最高值不适用于NUP设计的轴承或带HJ角圈的NJ设计的轴承。 因为这些轴承有两个内圈和外圈法兰，而且轴向内部游隙相对较小，轴承中可能产生轴向应力。

运行温度对轴承材料的影响

WD圆柱滚子轴承经过特殊热处理。使用钢或铜保持架时，这些轴承可在高达摄氏150度的温度下运行。

保持架

根据尺寸和设计，WD单列圆柱滚子轴承标准使用下述保持架：轴承最多可带四种不同保持架供应。

用于单列圆柱滚子轴承的各种保持架如下：

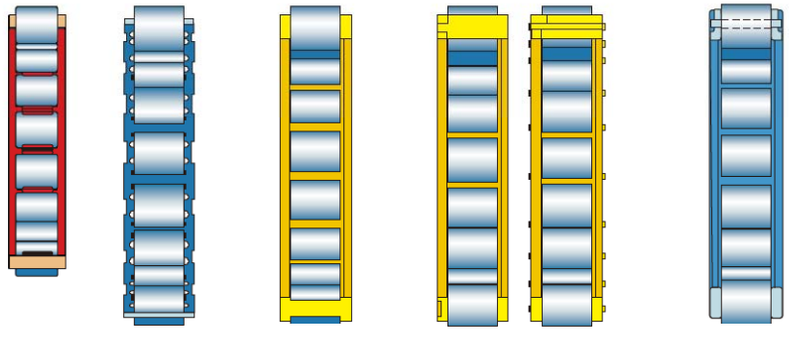
模制玻璃纤维增强尼龙66保持架，以滚子定心；

未硬化冲压钢保持架，以滚子定心；

整体式窗型铜保持架，以内圈或外圈定心；

双组件机加工铜保持架，以滚子定心，型号后缀M；或以外圈定心，型号后缀MA；或以内圈定心，型号后缀MB。

大型圆柱滚子轴承可装备用于穿孔滚子的针型钢保持架。



说明：

WD带尼龙保持架的单列圆柱滚子轴承可在高达摄氏120度的温度下运行。除几种含合成基油的合成油和合成油脂以及EP添加剂含量高的一些润滑剂在高温下使用时以外，一般用于滚动轴承的润滑剂对保持架性能并无有害影响。

对于在连续高温或严酷条件下运行的轴承配置，建议使用带金属保持架的轴承。对使用致冷剂如氨或氟利昂置换的设备的应用，带尼龙保持架的轴承可用于高达摄氏70度的运行温度。在更高的运行温度下，应使用包括机加工铜或钢保持架的轴承。

最低载荷

为了提供满意的运行，像所有球轴承和滚子轴承一样，单列圆柱滚子轴承必须始终承受一定的最低载荷，特别是当轴承要高速运行或在承受载荷方向上处于高加速度或快速变化的状态下。在上述情况下，滚子和保持架的惯性以及润滑剂的摩擦会对轴承配置的滚动状况产生不利影响，而且可能在滚子和滚道之间引起破坏性滑动。

可使用以下公式，估算要施加在单列圆柱滚子轴承上的必要的最低载荷：

$$F_{rm} = k_r \left(6 + \frac{4n}{N_r}\right)\left(\frac{d_m}{100}\right)^2$$

其中		
F_{rm}	=	最低径向载荷，kN
k_r	=	最低载荷系数（见产品表）
n	=	转速，r/min
n_r	=	标准速度（见产品表），r/min
d_m	=	轴承平均直径
	=	0,5 (d + D)，mm

低温起动或润滑剂粘度非常高时，可能要求更高的最低载荷。轴承支撑的部件自重加上外部作用力一般超过必要的最低载荷。如果不是这样，单列圆柱滚子轴承必须承受额外的径向载荷。

轴向动载荷能力

内圈和外圈都带法兰的单列圆柱滚子轴承除径向载荷外，还可支撑轴向载荷。这些轴承的轴向载荷能力主要由滚子端/法兰触点的滑动表面支撑载荷的能力决定。对这种能力影响最大的因素为轴承的润滑、运行温度和轴承的散热。

假定下述条件，允许轴向载荷可从以下公式充分精确地计算出来：

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

其中		
Fap	=	最大允许轴向载荷，kN
Co	=	基本额定静载荷，kN
Fr	=	轴承实际径向载荷，kN
n	=	转速，r/min
d	=	轴承孔径，mm
D	=	轴承外径，mm
K1	=	一个系数
	=	油润滑为1,5
	=	油脂润滑为1
k2	=	一个系数
	=	油润滑为0,15
	=	油脂润滑为0,1

以上公式是根据一般认为正常的轴承运行典型条件得出的：

–	轴承运行温度同环境温度之间摄氏60度的温差；
–	轴承特定的热损失0,5mW/毫米2 C； 关于轴承外径表面（π D B）；
–	粘度比 κ ≥ 2，参阅“润滑情形— 粘性比 κ”章节说明。

油脂润滑时，可使用油脂中的基油粘度。 如果κ低于2，摩擦就会增加，就会有更多磨损。 在低速下可减少这些影响， 例如，可通过使用含AW（抗磨损）和EP（极端压力）添加剂的润滑油。

当轴向载荷长期作用和轴承已是油脂润滑时，最好使用在运行温度下有良好出油特性的油脂（根据DIN 51817标准，> 3%）。 同时建议频繁再润滑。

从热平衡公式中得出的允许载荷值Fap对连续作用的轴向定载荷和滚子端/法兰触点得到充分润滑剂供应的情况有效。 轴向载荷作用时间短时，这些数值可乘以系数2，对于轴向作用的冲击载荷可乘以系数3， 若关于以下的极限不超出法兰力量。 为了避免法兰的破裂，始终作用于轴承的轴向载荷Fap绝不应超过

–	$0.045\ D^{1.5}$ 对于系列2的轴承
–	$0.023\ D^{1.7}$ 对于其它系列

轴向载荷偶然短时间作用时，Fa绝不应超过

–	$0.013\ D^{1.5}$ 对于系列2的轴承
–	$0.007\ D^{1.7}$ 对于其它系列

其中
Fa = 始终或偶然作用的轴向载荷，kN
D = 轴承外径，mm

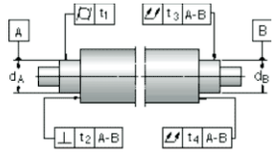
为了获得均匀的法兰载荷和提供轴运行精度，应注意单列滚子圆柱滚子轴承承受重轴向载荷，轴向偏离并且特别注意紧邻部件接合表面的大小。 关于轴向偏离，建议使用“相关部件精度”一节中表3给出的数值。 关于对接表面的直径，建议以同法兰高度一半对应的高度支撑内圈。 例如，对内圈法兰，对接直径可使用以下公式得出：

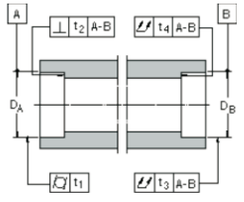
$d_{as} = 0,5\ (d_1 + F)$

其中
D_{as} – 轴对接直径，mm
d_1 = 内圈法兰直径，mm
F = 内圈滚道直径，mm

内圈和外圈之间的不对中超过1分弧时，作用在法兰上的载荷会发生相当大的变化。 指标值所含安全系数可能不充分。

表3: 轴上与轴承箱内轴承基座的形状与位置精度





表面			允许偏差		
特点	符号代表特点	公差范围	公差等级的轴承1) 标准，CLN	P6	P5
圆柱基座					
圆柱性	⌭	t_1	IT5/2	IT4/2	IT3/2
总径向摆动度	⌰	t_3	IT5/2	IT4/2	IT3/2
平挡肩					
长方形性	⊥	t_2	IT5	IT4	IT3
总轴向摆动度	⌰	t_4	IT5	IT4	IT3

1)对于较高精度的轴承（P4级公差等），请参阅型录High–precision bearings (表)

当量轴承动载荷

为非定位的轴承，
P = Fr
如果内圈和外圈都带法兰的轴承用于在一个或两个方向上为轴定位，应使用以下公式计算当量轴承动载荷：
当Fa/Fr = e时，P = F；

当Fa/Fr > e时，P = 0,92 Fr + Yfa

其中

e = 限制值
= 对18、19、10、2、3和4系列的轴承为0,2；
= 对其它系列的轴承为0,3。

Y = 轴向载荷系数
= 对18、19、10、2、3和4系列的轴承为0,6；
= 对其它系列的轴承为0,4。

由于承受轴向载荷的圆柱滚子轴承只有承受同时起作用的径向载荷时才能令人满意地运行，比例Fa/Fr 不应超过0,5。

轴承当量静载荷

$$P_0 = F_r$$

安装带圆锥孔的轴承

带圆锥孔的轴承始终要在轴的支座上带过盈配合安装。降低内圈在轴承座上的径向内部游隙或轴向位移（驱紧）用作调整过盈程度的一个手段。对于圆柱滚子轴承，倾向于使用降低内部游隙的方法，因为这是一个比较简单的程序。只需测量内圈的膨胀，即内圈滚道直径的增大；可使用U型卡规测量。

但是，对于NN设计的大型轴承，没有合适的量规，这样以充分的精确度确定内圈膨胀就很困难，而在圆锥轴承座上使用轴向驱紧来调整过盈更简单。

在表3中，给出了带圆锥孔的圆柱滚子轴承降低内部游隙的指标值以及轴向位移的指标值“S”。使用这些建议所得到的配合有充分的过盈，特别是如果达到较大的内部游隙降低值时。最小值主要用于安装前有径向内部游隙的轴承，而径向内部游隙接近特定范围的下限。请参见间隙表。这样，就没有低于建议最终间隙的对应最小值的危险。

重载荷、高速或外热条件下内圈和外圈之间有大温差时，最好在安装后有很大的内部游隙。在上述情况下，应使用径向内部游隙大于普通级（C3或C4）的轴承，而且在可能的情况下，应采用间隙降低的最高值。

测量轴承间隙

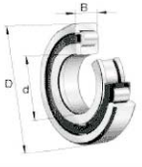
安装前测量圆柱滚子轴承内部游隙时，适合使用最薄塞尺厚度为0,03毫米的塞尺。应采用在“球面滚子轴承”一节的“测量间隙降低”标题下说明的相同步骤。

N设计
内圈带双挡边，可分解，带保持架

NJ设计
外圈带双挡边，内圈带单挡边，可分解，带保持架

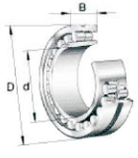
NU设计
外圈带双挡边，可分解，带保持架

NUP设计
外圈带双挡边，内圈带单挡边、活动挡圈，
可分解，带保持架



NN设计
双列，内圈带中挡边和侧挡边，可分解，带保持架

NNU设计
双列，外圈带中挡边和侧挡边，带保持架，可分离

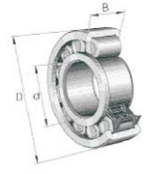


单列、满装滚子，外圈带单挡边、
止动挡圈，内圈带双挡边，不可分离

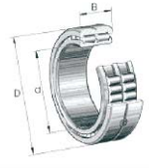
单列、满装滚子。外圈带双挡边，
内圈带单挡边，可分离。

单列、双外圈、带盘式保持器、锁圈。
外圈带单挡边，两外圈用锁圈锁紧。内圈带单挡边，可分离。

单列、带隔环。
外圈带双挡边，内圈带单挡边，可分离。



双列、双外圈、满装滚子、带锁圈。
外圈带单挡边，两外圈用锁圈锁紧。内圈带中挡边和侧挡边。



双列、满装滚子。外圈带油孔油槽，
无挡边。内圈带中挡边和侧挡边，可分离。

双列、双内圈、满装滚子、带锁圈
和密封圈。外圈带单挡边、双止动槽、油孔、油槽。
内圈带双挡边，两内圈用锁圈锁紧。

交叉滚子轴承，双外圈，滚子交叉排列，
带锁圈和隔离块，双外圈用锁圈锁紧

Cylindrical roller bearings

WD cylindrical roller bearings have many designs, dimension series and sizes. The majority is single row bearings with a cage. Single and double row full complement bearings (without cage) complete the WD standard assortment for general engineering. Bearings with a cage can accommodate heavy radial loads and operate at high speeds. Full complement bearings are suitable for very heavy radial loads at moderate speeds.

The rollers of WD cylindrical roller bearings are key components. Their geometry, the so–called logarithmic profile, provides an optimum stress distribution in the contact zones in the bearing. Their surface finish maximizes lubricant film formation and optimizes rolling motion of the rollers. The benefits derived from this compared with traditional designs include enhanced operational reliability and a greater insensitivity to misalignment.

The range of WD cylindrical roller bearings comprises the basic types

WD single row cylindrical roller bearings, caged, mainly of the NU, NJ, NUP and N designs.

WD double row cylindrical roller bearings, caged, mainly of the NNU and NN designs.

WD single row full complement cylindrical roller bearings, mainly of the NCF and NJG designs.

WD double row full complement cylindrical roller bearings, mainly of the NNF design. ..

Dimensions

The dimensions of the standard WD single row cylindrical roller bearings are in accordance with ISO 15:1998.

Tolerances

WD single row cylindrical roller bearings are manufactured with normal tolerances for dimensional accuracy and P6 tolerances for running accuracy as standard. Some bearings, particularly those of the narrow series 18, 19 and 10, are also available with higher accuracy to tolerance class P6 or P5.

The tolerances are in accordance with ISO 492:2002.

Radial internal clearance

WD single row cylindrical roller bearings are manufactured with normal radial internal clearance as standard and most of the bearings are also available with C3 radial internal clearance. Some of the bearings can even be supplied with the smaller C2 or the greater C4 clearance. In addition, some bearings are produced with special reduced clearances. This special clearance corresponds to a section of a standard clearance range or two adjacent clearance ranges.

Bearings with non–standard clearance or special reduced clearances can be supplied to special order.

The actual clearance limits for bearings with a cylindrical bore and a tapered bore are in accordance with ISO 5753:1991. They are valid for unmounted bearings under zero measuring load.

The separable components of all bearings with standard clearance as well as those with reduced clearance are interchangeable.

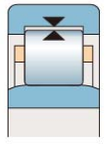
Axial internal clearance

NUP–design cylindrical roller bearings, which can locate a shaft axially in both directions, are manufactured with an axial internal clearance as shown in table 3. The axial internal clearance of NJ–design bearings when combined with an HJ angle ring is specified in table 4.

The clearance limits quoted in tables 3 and 4 should be considered as guideline values. When axial internal clearance is measured, the rollers may tilt, causing an enlargement of the axial clearance, which may be as much as.

–	the radial internal clearance of bearings in the 2, 3 and 4 series or
–	2/3 of the radial internal clearance for bearings in the 22 and 23 series,

For example.



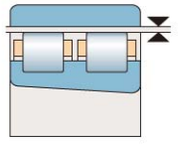


Table 1: Radial internal clearance of cylindrical roller bearings with cylindrical bore

Bore Diameter d		Radial internal clearance													
		C1		SPC2		C2		Normal		C3		C4		C5	
over	incl.	min	max	min	max	min	max	min	max	min	max	min	max	min	max
mm		µm													
–	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	625	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	1005
710	800	35	145	145	290	150	310	310	470	470	630	630	790	975	1135
800	900	40	160	160	320	180	350	350	520	520	690	690	860	1095	1265
900	1000	–	–	–	–	200	390	390	580	580	770	770	960	1215	1405
1000	1120	–	–	–	–	220	430	430	640	640	850	850	1060	1355	1565
1120	1 250	–	–	–	–	230	470	470	710	710	950	950	1190	1510	1750
1250	1400	–	–	–	–	270	530	530	790	790	1050	1050	1310	1680	1940
1400	1600	–	–	–	–	330	610	610	890	890	1170	1170	1450	1920	2200
1600	1 800	–	–	–	–	380	700	700	1020	1020	1340	1340	1660	2160	2480
1800	2000	–	–	–	–	400	760	760	1120	1120	1480	1480	1840	2390	2760

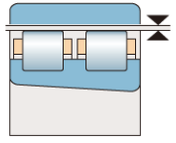


Table 2: Radial internal clearance of cylindrical roller bearings with tapered bore

Bore diameter D		Radial internal clearance													
		C1		SPC2		C2		Normal		C3		C4		C5	
Over	incl	min	max	min	max	min	max	min	max	min	max	min	max	min	max
mm		µm													
–	24	–	–	–	–	15	40	30	55	40	65	50	75	70	95
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	1020
630	710	160	260	260	390	295	435	435	575	565	705	695	835	1005	1145
710	800	180	290	290	435	325	485	485	645	630	790	775	935	1125	1285
800	900	200	320	320	480	370	540	540	710	700	870	860	1030	1265	1435
900	1000			355	540	410	600	600	790	780	970	960	1150		
1000	1120			395	600	455	665	665	875	865	1075	1065	1275		
1120	1250			440	670	490	730	730	970	960	1200	1200	1440		
1250	1400			490	740	550	810	810	1070	1070	1330	1330	1590		
1400	1600			560	840	640	920	920	1200	1200	1480	1480	1760		
1600	1800			630	950	700	1020	1020	1340	1340	1660	1660	1980		
1800	2000			700	1060	760	1120	1120	1480	1480	1840	1840	2200		

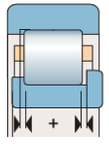


Table 3: Axial internal clearance of cylindrical roller bearings of NUP and NP designs

Bore diameter d	Bore size	Axial internal clearance of bearings of series 2		3		4		22		23	
		min	max	min	max	min	max	min	max	min	max
mm		µm									
15	02	–	–	–	–	–	–	–	–	–	–
17	03	37	140	37	140	–	–	37	140	47	155
20	04	37	140	37	140	–	–	47	155	47	155
25	05	37	140	47	155	–	–	47	155	47	155
30	06	37	140	47	155	55	155	47	155	47	155
35	07	47	155	47	155	55	155	47	155	62	180
40	08	47	155	47	155	55	155	47	155	62	180
45	09	47	155	47	155	55	155	47	155	62	180
50	10	47	155	47	155	70	185	47	155	62	180
55	11	47	155	62	180	70	185	47	155	62	180
60	12	47	155	62	180	70	185	62	180	87	230
65	13	47	155	62	180	70	185	62	180	87	230
70	14	47	155	62	180	70	185	62	180	87	230
75	15	47	155	62	180	70	185	62	180	87	230
80	16	47	155	62	180	70	185	62	180	87	230
85	17	62	180	62	180	95	230	62	180	87	230
90	18	62	180	62	180	95	230	62	180	87	230
95	19	62	180	62	180	95	230	62	180	87	230
100	20	62	180	87	230	–	–	87	230	120	315
105	21	62	180	–	–	–	–	–	–	–	–
110	22	62	180	87	230	–	–	87	230	120	315
120	24	62	180	87	230	–	–	87	230	120	315
130	26	62	180	87	230	–	–	87	230	120	315
140	28	62	180	87	230	–	–	87	230	120	315
150	30	62	180	87	230	–	–	87	230	120	315
160	32	87	230	87	230	–	–	120	315	–	–
170	34	87	230	–	–	–	–	120	315	–	–
180	36	87	230	–	–	–	–	120	315	–	–
190	38	87	230	–	–	–	–	120	315	–	–
200	40	87	230	–	–	–	–	120	315	–	–
220	44	95	230	–	–	–	–	120	315	150	365
240	48	95	250	–	–	–	–	–	–	–	–
260	52	95	250	–	–	–	–	–	–	–	–

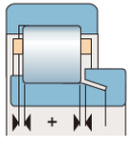


Table 4: Axial internal clearance of cylindrical roller bearings of NJ design with HJ angle ring

Bore diameter d	Bore size	Axial internal clearance of bearings of series NJ 2+HJ		NJ 3+HJ		NJ 4+HJ		NJ 22+HJ		NJ 23+HJ	
		min	max	min	max	min	max	min	max	min	max
mm		µm									
15	02	42	165	42	165	–	–	–	–	–	–
17	03	42	165	42	165	–	–	42	165	52	183
20	04	42	165	42	165	–	–	52	185	52	183
25	05	42	165	52	185	–	–	52	185	52	183
30	06	42	165	52	185	60	200	52	185	52	183
35	07	52	185	52	185	60	200	52	185	72	215
40	08	52	185	52	185	60	200	52	185	72	215
45	09	52	185	52	185	60	200	52	185	72	215
50	10	52	185	52	185	80	235	52	185	72	215
55	11	52	185	72	215	80	235	52	185	72	215
60	12	52	185	72	215	80	235	72	215	102	275
65	13	52	185	72	215	80	235	72	215	102	275
70	14	52	185	72	215	80	235	72	215	102	275
75	15	52	185	72	215	80	235	72	215	102	275
80	16	52	185	72	215	80	235	72	215	102	275
85	17	72	215	72	215	110	290	72	215	102	275
90	18	72	215	72	215	110	290	72	215	102	275
95	19	72	215	72	215	110	290	72	215	102	275
100	20	72	215	102	275	110	290	102	275	140	375
105	21	72	215	102	275	110	290	102	275	140	375
110	22	72	215	102	275	110	290	102	275	140	375
120	24	72	215	102	275	110	310	102	275	140	375
130	26	72	215	102	275	110	310	102	275	140	375
140	28	72	215	102	275	140	385	102	275	140	375
150	30	72	215	102	275	140	385	102	275	140	375
160	32	102	275	102	275			140	375	140	375
170	34	102	275					140	375		
180	36	102	275					140	375		
190	38	102	275								
200	40	102	275								
220	44	110	290								
240	48	110	310								
260	52	110	310								
280	56	110	310								

Misalignment

The capability of single row cylindrical roller bearings to accommodate angular misalignment of the inner ring with respect to the outer ring is limited to a few minutes of arc. The actual values are

- 4 minutes of arc for bearings of 10, 12, 2, 3 and 4 series
- 3 minutes of arc for bearings of the 20, 22 and 23 series.

These guideline values apply to non–locating bearings, providing the positions of the shaft and housing axes remain constant. Larger misalignments may be possible but may result in shorter bearing service life. When the bearings are used to locate the shaft axially, guideline values must be reduced as uneven flange loading can lead to increased wear and possibly even to flange fracture.

The maximum values for misalignment do not apply to bearings of the NUP design or NJ design with an HJ angle ring. Because these bearings have two inner and outer ring flanges and the axial internal clearance is relatively small, axial stress is possibly produced.

Influence of operating temperature on bearing material

Cylindrical roller bearings undergo a special heat treatment. When equipped with a steel or brass cage, they can operate at temperatures up to +150℃.

Cages

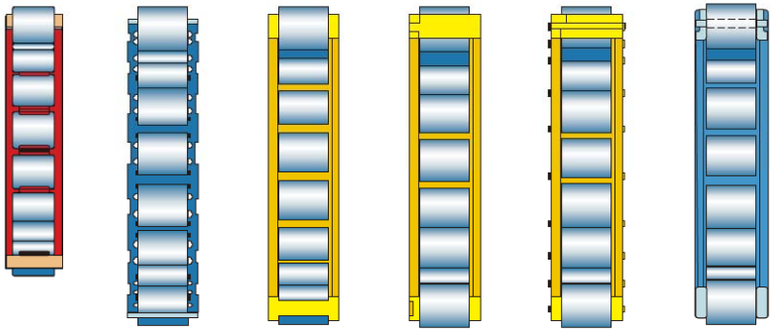
Depending on the bearing series, sizes and designs, cylindrical roller bearings are fitted as standard with one of the following cages.

- an injection moulded window–type cage of glass fibre reinforced polyamide 66, roller centred.
- a pressed window–type cage of unhardened steel, roller centred
- a one–piece machined window–type brass cage, inner or outer ring centred
- a two–piece machined brass cage, roller centred, designation suffix M, or outer ring centred,
- designation suffix MA, or inner ring centred, designation suffix MB
- large cylindrical roller bearings can be equipped with steel pin–type cage for pierced rollers .

Note

WD single row cylindrical roller bearings with polyamide 66 cages can be operated at temperatures up to +120℃ . The lubricants generally used for rolling bearings do not have a detrimental effect on cage properties, with the exception for a few synthetic oils and greases with synthetic base oil as well as some lubricants containing a high proportion of EP additives when used at elevated temperatures.

For bearing arrangements of continuous high temperatures or under tough conditions, the use of bearings with a metallic cage is recommended. For applications in equipment using refrigerants such as ammonia or freon replacements, bearings with a polyamide cage can be used for operating temperatures up to 70℃ . At higher operating temperatures bearings with machined brass or steel cage should be used.



Minimum load

In order to provide satisfactory operation, single row cylindrical roller bearings, like all ball and roller bearings, must always be subjected to a given minimum load, particularly when they are operated at high speeds or are subjected to high accelerations or rapid changes in the direction of load. Under such conditions, the inertia forces of the rollers and cage, and the friction in the lubricant, can have a detrimental influence on the rolling conditions in the bearing arrangement and may cause occurance of damaging sliding movements between rollers and raceways.
The requisite minimum load applied to single row cylindrical roller bearings can be estimated using

$$F_{rm} = k_r \left(6 + \frac{4n}{N_r}\right)\left(\frac{d_m}{100}\right)^2$$

Where		
F_{rm}	=	minimum radial load, kN
k_r	=	minimum load factor (see product table)
n=	=	rotational speed, r/min
n_r	=	reference speed, r/min (see product table)
d_m	=	mean diameter of bearing
	=	0,5 (d + D), mm

When starting up at low temperatures or when the lubricant is highly viscous, even greater minimum loads may be required. The weight of the components supported by the bearing, together with external forces, generally exceeds the requisite minimum load. If this is not the case, the single row cylindrical roller bearing must be subjected to an additional radial load.

Dynamic axial load carrying capacity

Single row cylindrical roller bearings with flanges on both inner and outer rings can support axial loads in addition to radial loads. Their axial load carrying capacity is primarily determined by the ability of the sliding surfaces of the roller end/flange contact to support loads. Factors having the greatest effect on this ability are the lubrication, operating temperature and heat dissipation from the bearing.
Assuming the conditions cited below, the permissible axial load can be calculated with sufficient accuracy from.

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

Where		
Fap	=	permissible axial load, kN
C0	=	permissible axial load, kN
Fr	=	actual radial bearing load, kN
n	=	rotational speed, r/min
d	=	bearing bore diameter, mm
D	=	bearing outside diameter, mm
K1	=	a factor
	=	1,5 for oil lubrication
	=	1 for grease lubrication
k2	=	a factor
	=	0,15 for oil lubrication

The above equation is based on conditions that are considered typically for normal bearing operation, i.e.

–	a difference of 60°C between the bearing operating temperature and the ambient temperature
–	a specific heat loss from the bearing of 0,5 mW/mm2 ° C; with reference to the bearing outside Diameter surface (π D B)
–	a viscosity ratio κ ⩾ 2, see section "Lubrication conditions – the viscosity ratio κ".

For grease lubrication the viscosity of the base oil in the grease may be used. If κ is less than 2, the friction will increase and there will be more wear. These effects can be reduced at low speeds, for example, by using oils with AW (anti–wear) and/or EP (extreme pressure)additives.
Where axial loads act for longer periods and the bearings are grease lubricated, it is advisable to use grease that has good oil bleeding properties at the operating temperatures (> 3 % according to DIN 51 817). Frequent relubrication is also recommended.
The values of the permissible load Fap obtained from the heat balance equation are valid for a continuously acting constant axial load and adequate lubricant supply to the roller end/flange contacts. Where axial loads act only for short periods, the values may be multiplied by a factor of 2, or for shock loads by a factor of 3, provided the limits given in the following with regard to flange strength are not exceeded.

To avoid any risk of flange breakage, the constant axial acting load applied to the bearings should never exceed

$F_a max = 0{,}0045\ D1\ 5$ (bearings in the 2 Diameter Series)

or

$F_a max = 0{,}0023\ D1\ 7$ (bearings in other series) When acting only occasionally and for brief periods, the axial load applied to the bearings should never exceed

$F_a max = 0{,}013\ D1'5$ (bearings in the 2 Diameter Series)

or

$F_a max = 0{,}007\ D1'7$ (bearings in other series)

where		
$F_a max$	=	maximum constantly or occasionally acting axial load, kN
D	=	bearing outside diameter, mm

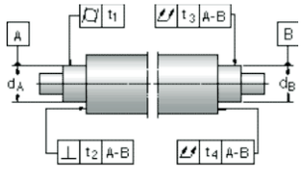
To obtain an even flange load and provide sufficient running accuracy of the shaft when single row cylindrical roller bearings are subjected to heavy axial loads, axial runout and the size of the abutment surfaces of adjacent components become particularly important. Regarding the axial runout it is recommended to use values given in the table. As to the diameter of the abutment surfaces, it is recommended to support the inner ring at the height corresponding to half of the flange height . For the inner ring flange, for example, the abutment diameter can be obtained using

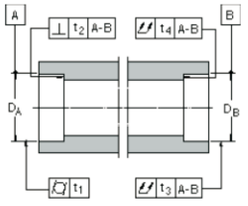
$da_s = 0{,}5\ (d_1 + F)$

where		
da_s	=	shaft abutment diameter, mm
d_1	=	inner ring flange diameter, mm
F	=	inner ring raceway diameter, mm

Where the misalignment between the inner and outer rings exceeds 1 minute of arc, the action of the load on the flange changes considerably. The safety factors included in the guideline values may be inadequate.

Table 3: Accuracy of form and position for bearing seatings on shafts and in housings





Surface			Permissible deviations		
			Bearings of tolerance class1)		
Characteristic	Symbol for Characteristic	tolerance zone	Normal, CLN	P6	P5
Cylindrical seating					
Cylindricity	⌭	t_1	IT5/2	IT4/2	IT3/2
Total radial runout	⌰	t_3	IT5/2	IT4/2	IT3/2
Flat abutment					
Rectangularity	⊥	t_2	IT5	IT4	IT3
Total axial runout	⌰	t_4	IT5	IT4	IT3

For bearings of higher accuracy (tolerance class P4 etc.) please refer to the catalogue "High–precision bearings" (table)ion bearings

Equivalent dynamic bearing load

For non–locating bearings

P = Fr

If bearings with flanges on both inner and outer rings are used to locate a shaft in one or both directions, the equivalent dynamic bearing load should be calculated using

P = F when $Fa/Fr \leq e$

P = 0,92 Fr + YFa when $Fa/Fr > e$

where		
e	=	limiting value
	=	0,2 for bearings in the 18, 19, 10, 2, 3 and 4 series
	=	0,3 for bearings in other series
Y	=	axial load factor
	=	0,6 for bearings in the 18, 19, 10, 2, 3 and 4 series
	=	0,4 for bearings in other series

Since axially loaded cylindrical roller bearings only running well when they are subjected to a simultaneous radial acting load, the ratio Fa/Fr should not exceed 0,5.

Equivalent static bearing load

P0 = Fr

Mounting bearings with a tapered bore

Bearings with a tapered bore are always mounted with an interference fit on their seating on the shaft. The reduction in radial internal clearance or the axial displacement (drive–up) of the inner ring on its seating are used as a measure of the degree of interference. For cylindrical roller bearings, the clearance reduction method is preferred as this is a relatively simple procedure. It is simply a matter of measuring the expansion of the inner ring, i.e. the enlargement of the inner ring raceway diameter; this can be measured by using a stirrup gauge.

For large bearings of the NN design, however, suitable gauges are not available so that it is difficult to determine the inner ring expansion with sufficient accuracy, it is more simple to use the axial drive–up on the tapered seating as a measure of the interference.

In table 3 guideline values are given for the clearance reduction as well as the axial displacement "s" for cylindrical roller bearings with tapered bore. The fit obtained by using these recommendations has sufficient interference, particularly if the larger clearance reduction value is achieved. The minimum value is primarily applied for bearings which have a radial internal clearance before mounting and the radial internal clearance is close to the lower limit of the particular range, see clearance tables. There will then be no risk of going below the corresponding minimum value of the recommended final clearance.

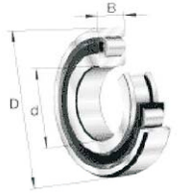
Heavy loads, high speeds or a large temperature difference between inner and outer rings under external heating can make it advisable to have a rather larger internal clearance after mounting. In such cases bearings having a larger radial internal clearance than class Normal (C3 or C4) should be used and where possible the maximum value for the clearance reduction be applied.

Measuring bearing clearance

To measure the internal clearance of cylindrical roller bearings before mounting, feeler gauges having blades starting with a thickness of 0,03 mm are suitable. The same procedure should be applied as what described in the section "Spherical roller bearings" under the heading "Measuring clearance reduction".

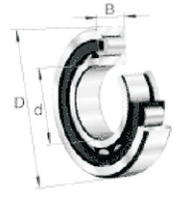
N design

The inner ring has two integral flanges and the outer ring is without flanges. Axial displacement of the shaft with respect to the housing can be accommodated in both directions within the bearing itself. The bearings are therefore used as non–locating bearings.



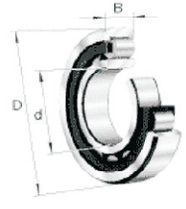
NJ design

The outer ring has two integral flanges and the inner ring one integral flange. The bearings are therefore suitable for the axial location of a shaft in one direction.



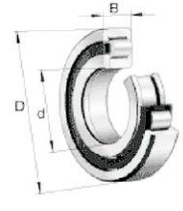
NU design

The outer ring of bearings of the NU design has two integral flanges and the inner ring is without flanges. Axial displacement of the shaft with respect to the housing can be accommodated in both directions within the bearing itself. The bearings are therefore used as non–locating bearings. For manufacturing and maintenance reasons, the two outer ring flanges of large–size bearings of the NU design which are identified by a Drawing No. may not be integral but take the form of loose flange rings.



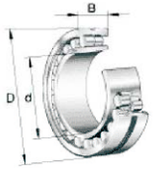
NUP design

The outer ring has two integral flanges and the inner ring one integral flange and one non–integral flange in the form of a loose flange ring . The bearings can be used as locating bearings, i.e. they can provide axial location for a shaft in both directions.



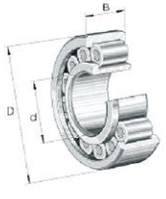
Double row cylindrical roller bearings mainly in the NN design . The bearings are separable, i.e. the ring with integral flanges together with the roller and cage assemblies can be mounted separately from the other bearing ring or all bearing components can be mounted separately. This facilitates the mounting, inspection and maintenance of these bearings.

Double row cylindrical roller bearings mainly in the NNU design . The bearings are separable, i.e. the ring with integral flanges together with the roller and cage assemblies can be mounted separately from the other bearing ring or all bearing components can be mounted separately. This facilitates the mounting, inspection and maintenance of these bearings.

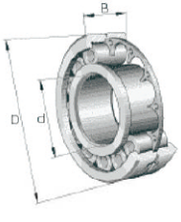


Semi–locating bearing, full complement roller set

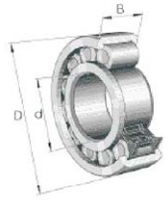
Semi–locating bearing, full complement roller set, self–retaining roller set



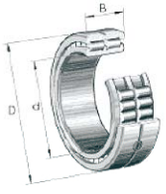
Semi–locating bearing, with disc cage



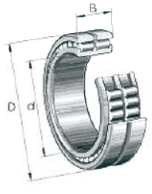
Semi–locating bearing, with spacers



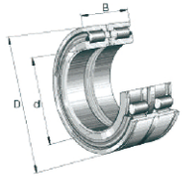
Locating bearing, double row, full complement roller set



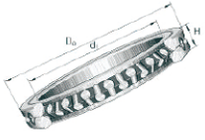
Non–locating bearing, double row, full complement roller set



Locating bearing, double row, full complement roller set, with annular slots, lip seals on both sides



Are complete units comprising an outer ring, inner ring, rolling elements (cylindrical rollers) and spacers .Outer ring split in a circumferential direction and held together by three retaining rings



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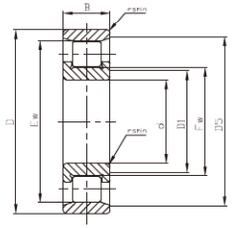
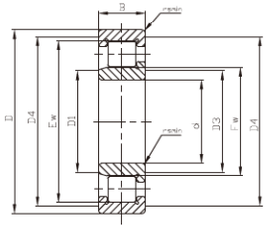
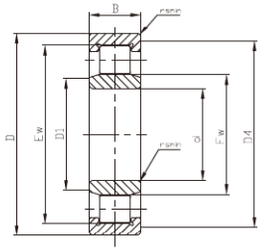


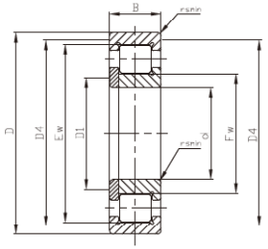
N



NJ



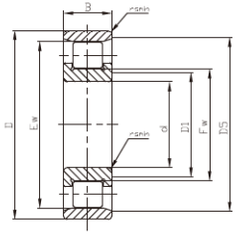
NU



NUP

Single Row Cylindrical Roller Bearings

d	D	B	r_{smin}	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
15	35	11	0.6	30.3	19.3	0.047	12.7	10.4	22000	N202E	17.4	18.5	20	22	32.6	31	29
15	35	11	0.6	30.3	19.3	0.049	12.7	10.4	22000	NJ202F	17.4	18.5	20	22	32.6		
15	35	11	0.6	30.3	19.3	0.048	12.7	10.4	22000	NU202E	17.4	18.5	20	22	32.6		
17	40	12	0.6	35.1	22.1	0.068	17.6	14.6	18000	N203E	21	21.5	23	28	36	36	34
17	40	12	0.6	35.1	22.1	0.07	17.6	14.6	18000	NJ203E	21	21.5	23	28	36		
17	40	12	0.6	35.1	22.1	0.069	17.6	14.6	18000	NU203E	21	21.5	23	28	36		
17	40	12	0.6	35.1	22.1	0.073	17.6	14.6	18000	NUP203E	21	21.5	23	28	36		
17	40	16	0.6	35.1	22.1	0.053	24	22	18000	NJ2203E	21	21.5	23	28	36		
17	40	16	0.6	35.1	22.1	0.051	24	22	18000	NU2203E	21	21.5	23	28	36		
17	40	16	0.6	35.1	22.1	0.055	24	22	18000	NUP2203E	21	21.5	23	28	36		
17	47	14	1	40.2	24.2	0.124	25.5	21.2	16000	NJ303E	21.2	23.5	25	28	42.8		
17	47	14	1	40.2	24.2	0.122	25.5	21.2	16000	NU303E	21.2	23.5	25	28	42.8		
17	47	14	1	40.2	24.2	0.127	25.5	21.2	16000	NUP303E	21.2	23.5	25	28	42.8		
20	47	14	1	41.5	26.5	0.112	27.5	24.5	16000	N204E	24	26	29	32	41	43	40
20	47	14	1	41.5	26.5	0.117	27.5	24.5	16000	NJ204E	24	26	29	32	41		
20	47	14	1	41.5	26.5	0.114	27.5	24.5	16000	NU204E	24	26	29	32	41		
20	47	14	1	41.5	26.5	0.119	27.5	24.5	16000	NUP204E	24	26	29	32	41		
20	47	18	1	41.5	26.5	0.15	32.5	31	16000	NJ2204E	24	26	29	32	41		
20	47	18	1	41.5	26.5	0.146	32.5	31	16000	NU2204E	24	26	29	32	41		
20	47	18	1	41.5	26.5	0.154	32.5	31	16000	NUP2204E	24	26	29	32	41		
20	52	15	1.1	45.5	27.5	0.156	31.5	27	14000	NJ304E	24	27	30	33	45		
20	52	15	1.1	45.5	27.5	0.153	31.5	27	14000	NU304E	24	27	30	33	45		
20	52	15	1.1	45.5	27.5	0.16	31.5	27	14000	NUP304E	24	27	30	33	45		
20	52	21	1.1	45.5	27.5	0.219	41.5	39	14000	NJ2304E	24	27	30	33	45		
20	52	21	1.1	45.5	27.5	0.215	41.5	39	14000	NU2304E	24	27	30	33	45		
20	52	21	1.1	45.5	27.5	0.224	41.5	39	14000	NUP2304E	24	27	30	33	45		
25	47	12	0.6	41.5	30.5	0.083	13.4	12	28000	NU1005	27	30	32	33	44		
25	52	15	1	46.5	31.5	0.135	29	27.5	15000	N205E	29	31	34	37	46		
25	52	15	1	46.5	31.5	0.14	29	27.5	15000	NJ205E	29	31	34	37	46		
25	52	15	1	46.5	31.5	0.137	29	27.5	15000	NU205E	29	31	34	37	46		
25	52	15	1	46.5	31.5	0.145	29	27.5	15000	NUP205E	29	31	34	37	46		



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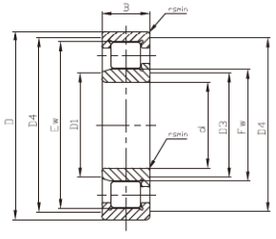

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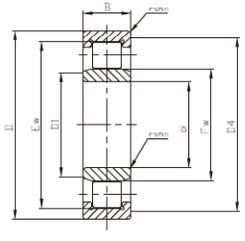

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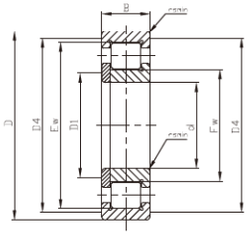

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Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
25	52	18	1	46.5	31.5	0.169	34.5	34.5	15000	NJ2205E	29	31	34	37	46		
25	52	18	1	46.5	31.5	0.164	34.5	34.5	15000	NU2205E	29	31	34	37	46		
25	52	18	1	46.5	31.5	0.174	34.5	34.5	15000	NUP2205E	29	31	34	37	46		
25	62	17	1.1	54	34	0.242	41.5	37.5	12000	N305E	32	33	37	40	55		
25	62	17	1.1	54	34	0.25	41.5	37.5	12000	NJ305E	32	33	37	40	55		
25	62	17	1.1	54	34	0.245	41.5	37.5	12000	NU305E	32	33	37	40	55		
25	62	17	1.1	54	34	0.256	41.5	37.5	12000	NUP305E	32	33	37	40	55		
25	62	24	1.1	54	34	0.356	57	56	12000	NJ2305E	32	33	37	40	55		
25	62	24	1.1	54	34	0.349	57	56	12000	NU2305E	32	33	37	40	55		
25	62	24	1.1	54	34	0.363	57	56	12000	NUP2305E	32	33	37	40	55		
30	55	13	1	48.5	36.5	0.129	16.6	16	24000	NU1006	33	35	38	40	50		
30	62	16	1	55.5	37.5	0.205	39	37.5	12000	N206E	34	37	40	44	56	57	54
30	62	16	1	55.5	37.5	0.213	39	37.5	12000	NJ206E	34	37	40	44	56		
30	62	16	1	55.5	37.5	0.208	39	37.5	12000	NU206E	34	37	40	44	56		
30	62	16	1	55.5	37.5	0.219	39	37.5	12000	NUP206E	34	37	40	44	56		
30	62	20	1	55.5	37.5	0.261	49	50	12000	NJ2206E	34	37	40	44	56		
30	62	20	1	55.5	37.5	0.255	49	50	12000	NU2206E	34	37	40	44	56		
30	62	20	1	55.5	37.5	0.268	49	50	12000	NUP2206E	34	37	40	44	56		
30	72	19	1.1	62.5	40.5	0.366	51	48	10000	N306E	37	40	44	48	65	64	61
30	72	19	1.1	62.5	40.5	0.376	51	48	10000	NJ306E	37	40	44	48	65		
30	72	19	1.1	62.5	40.5	0.368	51	48	10000	NU306E	37	40	44	48	65		
30	72	19	1.1	62.5	40.5	0.385	51	48	10000	NUP306E	37	40	44	48	65		
30	72	27	1.1	62.5	40.5	0.54	73.5	75	10000	NJ2306E	37	40	44	48	65		
30	72	27	1.1	62.5	40.5	0.529	73.5	75	10000	NU2306E	37	40	44	48	65		
30	72	27	1.1	62.5	40.5	0.551	73.5	75	10000	NUP2306E	37	40	44	48	65		
35	62	14	1	55	42	0.181	24.5	26	20000	NU1007M1	38	41	44	45	57		
35	72	17	1.1	64	44	0.301	50	50	10000	N207E	39	43	46	50	65	65	63
35	72	17	1.1	64	44	0.309	50	50	10000	NJ207E	39	43	46	50	65		
35	72	17	1.1	64	44	0.303	50	50	10000	NU207E	39	43	46	50	65		
35	72	17	1.1	64	44	0.317	50	50	10000	NUP207E	39	43	46	50	65		
35	72	23	1.1	64	44	0.416	62	65.5	10000	NJ2207E	39	43	46	50	65		

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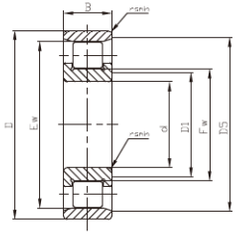

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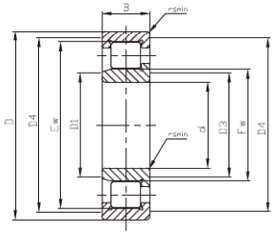

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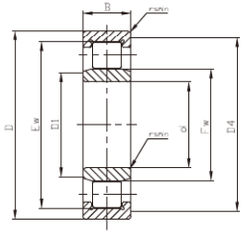

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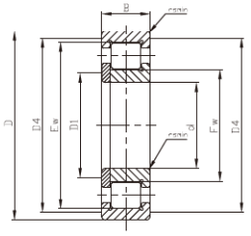
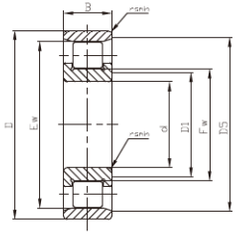


NUP

Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
35	72	23	1.1	64	44	0.406	62	65.5	10000	NU2207E	39	43	46	50	65		
35	72	23	1.1	64	44	0.427	62	65.5	10000	NUP2207E	39	43	46	50	65		
35	80	21	1.5	70.2	46.2	0.486	64	63	9000	N307E	42	45	48	53	71	71	69
35	80	21	1.5	70.2	46.2	0.496	64	63	9000	NJ307E	42	45	48	53	71		
35	80	21	1.5	70.2	46.2	0.486	64	63	9000	NU307E	42	45	48	53	71		
35	80	21	1.5	70.2	46.2	0.506	64	63	9000	NUP307E	42	45	48	53	71		
35	80	31	1.5	70.2	46.2	0.736	91.5	98	9000	NJ2307E	42	45	48	53	71		
35	80	31	1.5	70.2	46.2	0.723	91.5	98	9000	NU2307E	42	45	48	53	71		
35	80	31	1.5	70.2	46.2	0.751	91.5	98	9000	NUP2307E	42	45	48	53	71		
40	68	15	1	61	47	0.23	29	32	19000	NU1008M1	43	46	49	51	63		
40	80	18	1.1	71.5	49.5	0.358	53	53	9000	N208E	47	49	52	56	73		
40	80	18	1.1	71.5	49.5	0.389	53	53	9000	NJ208E	47	49	52	56	73		
40	80	18	1.1	71.5	49.5	0.379	53	53	9000	NU208E	47	49	52	56	73		
40	80	18	1.1	71.5	49.5	0.399	53	53	9000	NUP208E	47	49	52	56	73		
40	80	23	1.1	71.5	49.5	0.504	71	75	9000	NJ2208E	47	49	52	56	73		
40	80	23	1.1	71.5	49.5	0.492	71	75	9000	NU2208E	47	49	52	56	73		
40	80	23	1.1	71.5	49.5	0.518	71	75	9000	NUP2208E	47	49	52	56	73		
40	90	23	1.5	80	52	0.656	81.5	78	7500	N308E	49	51	55	60	81	81	79
40	90	23	1.5	80	52	0.674	81.5	78	7500	NJ308E	49	51	55	60	81		
40	90	23	1.5	80	52	0.659	81.5	78	7500	NU308E	49	51	55	60	81		
40	90	23	1.5	80	52	0.688	81.5	78	7500	NUP308E	49	51	55	60	81		
40	90	33	1.5	80	52	0.978	112	120	7500	NJ2308E	49	51	55	60	81		
40	90	33	1.5	80	52	0.958	112	120	7500	NU2308E	49	51	55	60	81		
40	90	33	1.5	80	52	0.999	112	120	7500	NUP2308E	49	51	55	60	81		
45	75	16	1	67.5	52.5	0.28	34.5	39	16000	NU1009M1	48	52	54	56	70		
45	85	19	1.1	76.5	54.5	0.434	61	63	8500	N209E	52	54	57	61	78	78	75
45	85	19	1.1	76.5	54.5	0.445	61	63	8500	NJ209E	52	54	57	61	78		
45	85	19	1.1	76.5	54.5	0.434	61	63	8500	NU209E	52	54	57	61	78		
45	85	19	1.1	76.5	54.5	0.457	61	63	8500	NUP209E	52	54	57	61	78		
45	85	23	1.1	76.5	54.5	0.544	73.5	81.5	8500	NJ2209E	52	54	57	61	78		
45	85	23	1.1	76.5	54.5	0.532	73.5	81.5	8500	NU2209E	52	54	57	61	78		



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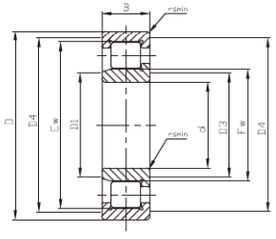

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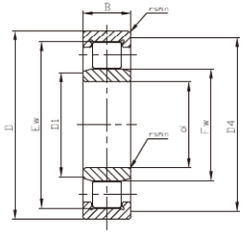

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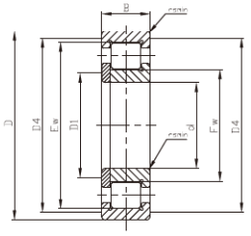

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Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
45	85	23	1.1	76.5	54.5	0.559	73.5	81.5	8500	NUP2209E	52	54	57	61	78		
45	100	25	1.5	88.5	58.5	0.891	98	100	6700	N309E	54	57	60	66	91	90	87
45	100	25	1.5	88.5	58.5	0.913	98	100	6700	NJ309E	54	57	60	66	91		
45	100	25	1.5	88.5	58.5	0.893	98	100	6700	NU309E	54	57	60	66	91		
45	100	25	1.5	88.5	58.5	0.934	98	100	6700	NUP309E	54	57	60	66	91		
45	100	36	1.5	88.5	58.5	1.33	137	153	6700	NJ2309E	54	57	60	66	91		
45	100	36	1.5	88.5	58.5	1.3	137	153	6700	NU2309E	54	57	60	66	91		
45	100	36	1.5	88.5	58.5	1.36	137	153	6700	NUP2309E	54	57	60	66	91		
50	80	16	1	72.5	57.5	0.268	36	41.5	15000	NU1010M1	53	57	59	62	75		
50	90	20	1.1	81.5	59.5	0.488	64	68	8000	N210E	57	58	62	67	83	83	80
50	90	20	1.1	81.5	59.5	0.503	64	68	8000	NJ210E	57	58	62	67	83		
50	90	20	1.1	81.5	59.5	0.49	64	68	8000	NU210E	57	58	62	67	83		
50	90	20	1.1	81.5	59.5	0.517	64	68	8000	NUP210E	57	58	62	67	83		
50	90	23	1.1	81.5	59.5	0.586	78	88	8000	NJ2210E	57	58	62	67	83		
50	90	23	1.1	81.5	59.5	0.573	78	88	8000	NU2210E	57	58	62	67	83		
50	90	23	1.1	81.5	59.5	0.6	78	88	8000	NUP2210E	57	58	62	67	83		
50	110	27	2	97	65	1.16	110	114	6300	N310E	61	63	67	73	99	98	96
50	110	27	2	97	65	1.19	110	114	6300	NJ310E	61	63	67	73	99		
50	110	27	2	97	65	1.16	110	114	6300	NU310E	61	63	67	73	99		
50	110	27	2	97	65	1.21	110	114	6300	NUP310E	61	63	67	73	99		
50	110	40	2	97	65	1.77	163	186	6300	NJ2310E	61	63	67	73	99		
50	110	40	2	97	65	1.75	163	186	6300	NU2310E	61	63	67	73	99		
50	110	40	2	97	65	1.82	163	186	6300	NUP2310E	61	63	67	73	99		
55	90	18	1.1	80.5	64.5	0.45	41.5	50	14000	NU1011M1	60	63	66	69	84		
55	100	21	1.5	90	66	0.668	83	95	7000	N211E	62	65	68	73	91	91	89
55	100	21	1.5	90	66	0.679	83	95	7000	NJ211E	62	65	68	73	91		
55	100	21	1.5	90	66	0.665	83	95	7000	NU211E	62	65	68	73	91		
55	100	21	1.5	90	66	0.693	83	95	7000	NUP211E	62	65	68	73	91		
55	100	25	1.5	90	66	0.812	98	118	7000	NJ2211E	62	65	68	73	91		
55	100	25	1.5	90	66	0.796	98	118	7000	NU2211E	62	65	68	73	91		
55	100	25	1.5	90	66	0.828	98	118	7000	NUP2211E	62	65	68	73	91		

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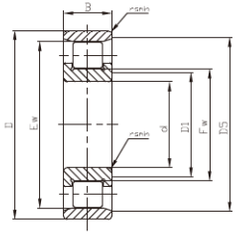

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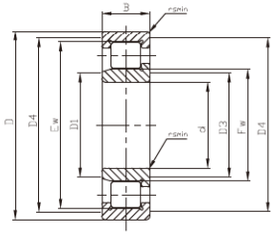

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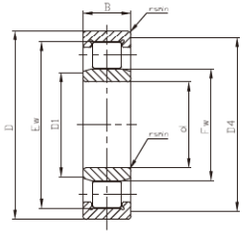

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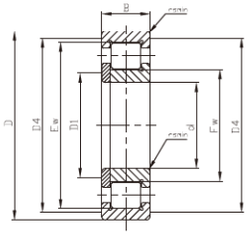

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Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
55	120	29	2	106.5	70.5	1.48	134	140	5600	N311E	66	69	72	80	109	108	105
55	120	29	2	106.5	70.5	1.51	134	140	5600	NJ311E	66	69	72	80	109		
55	120	29	2	106.5	70.5	1.48	134	140	5600	NU311E	66	69	72	80	109		
55	120	29	2	106.5	70.5	1.54	134	140	5600	NUP311E	66	69	72	80	109		
55	120	43	2	106.5	70.5	2.27	200	228	5600	NJ2311E	66	69	72	80	109		
55	120	43	2	106.5	70.5	2.23	200	228	5600	NU2311E	66	69	72	80	109		
55	120	43	2	106.5	70.5	2.31	200	228	5600	NUP2311E	66	69	72	80	109		
60	95	18	1.1	85.5	69.2	0.478	44	55	13000	NU1012M1	65	68	71	74	89		
60	110	22	1.5	100	72	0.827	95	104	6300	N212E	69	71	75	80	101	101	99
60	110	22	1.5	100	72	0.845	95	104	6300	NJ212E	69	71	75	80	101		
60	110	22	1.5	100	72	0.824	95	104	6300	NU212E	69	71	75	80	101		
60	110	22	1.5	100	72	0.909	95	104	6300	NUP212E	69	71	75	80	101		
60	110	28	1.5	100	72	1.1	129	153	6300	NJ2212E	69	71	75	80	101		
60	110	28	1.5	100	72	1.08	129	153	6300	NU2212E	69	71	75	80	101		
60	110	28	1.5	100	72	1.12	129	153	6300	NUP2212E	69	71	75	80	101		
60	130	31	2.1	115	77	1.84	150	156	5000	N312E	72	75	79	86	118	116	114
60	130	31	2.1	115	77	1.89	150	156	5000	NJ312E	72	75	79	86	118		
60	130	31	2.1	115	77	1.85	150	156	5000	NU312E	72	75	79	86	118		
60	130	31	2.1	115	77	1.93	150	156	5000	NUP312E	72	75	79	86	118		
60	130	46	2.1	115	77	2.83	224	260	5000	NJ2312E	72	75	79	86	118		
60	130	46	2.1	115	77	2.78	224	260	5000	NU2312E	72	75	79	86	118		
60	130	46	2.1	115	77	2.88	224	260	5000	NUP2312E	72	75	79	86	118		
65	100	18	1.1	90.5	74.5	0.512	45	58.5	12000	NU1013M1	70	73	76	79	94		
65	120	23	1.5	108.5	78.5	1.05	108	120	6000	N213E	74	77	81	87	111	110	107
65	120	23	1.5	108.5	78.5	1.06	108	120	6000	NJ213E	74	77	81	87	111		
65	120	23	1.5	108.5	78.5	1.04	108	120	6000	NU213E	74	77	81	87	111		
65	120	23	1.5	108.5	78.5	1.09	108	120	6000	NUP213E	74	77	81	87	111		
65	120	31	1.5	108.5	78.5	1.46	150	183	5600	NJ2213E	74	77	81	87	111		
65	120	31	1.5	108.5	78.5	1.43	150	183	5600	NU2213E	74	77	81	87	111		
65	120	31	1.5	108.5	78.5	1.54	150	183	5600	NUP2213E	74	77	81	87	111		
65	140	33	2.1	124.5	82.5	2.28	180	190	4800	N313E	77	81	85	93	128	126	123

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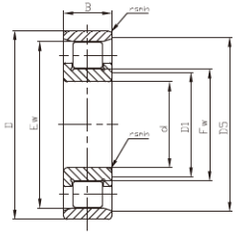

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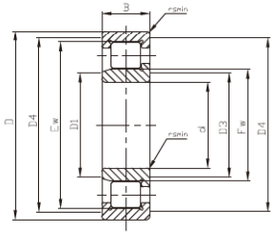

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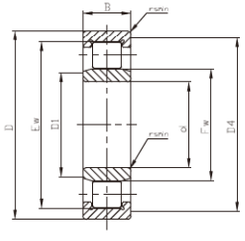

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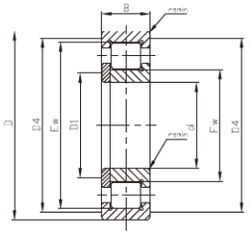

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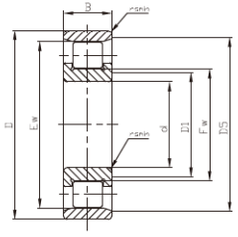
Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
65	140	33	2.1	124.5	82.5	2.32	180	190	4800	NJ313E	77	81	85	93	128		
65	140	33	2.1	124.5	82.5	2.28	180	190	4800	NU313E	77	81	85	93	128		
65	140	33	2.1	124.5	82.5	2.37	180	190	4800	NUP313E	77	81	85	93	128		
65	140	48	2.1	124.5	82.5	3.38	245	285	4800	NJ2313E	77	81	85	93	128		
65	140	48	2.1	124.5	82.5	3.32	245	285	4800	NU2313E	77	81	85	93	128		
65	140	48	2.1	124.5	82.5	3.45	245	285	4800	NUP2313E	77	81	85	93	128		
70	110	20	1.1	100	80	0.706	64	81.5	11000	NU1014M1	75	78	82	85	104		
70	125	24	1.5	113.5	83.5	1.16	120	137	5300	N214E	79	82	86	92	116	115	112
70	125	24	1.5	113.5	83.5	1.18	120	137	5300	NJ214E	79	82	86	92	116		
70	125	24	1.5	113.5	83.5	1.15	120	137	5300	NU214E	79	82	86	92	116		
70	125	24	1.5	113.5	83.5	1.2	120	137	5300	NUP214E	79	82	86	92	116		
70	125	31	1.5	113.5	83.5	1.55	156	196	5300	NJ2214E	79	82	86	92	116		
70	125	31	1.5	113.5	83.5	1.52	156	196	5300	NU2214E	79	82	86	92	116		
70	125	31	1.5	113.5	83.5	1.58	156	196	5300	NUP2214E	79	82	86	92	116		
70	150	35	2.1	133	89	2.79	204	220	4500	N314E	82	87	92	100	138	135	131
70	150	35	2.1	133	89	2.84	204	220	4500	NJ314E	82	87	92	100	138		
70	150	35	2.1	133	89	2.79	204	220	4500	NU314E	82	87	92	100	138		
70	150	35	2.1	133	89	2.89	204	220	4500	NUP314E	82	87	92	100	138		
70	150	51	2.1	133	89	4.09	275	325	4500	NJ2314E	82	87	92	100	138		
70	150	51	2.1	133	89	4.02	275	325	4500	NU2314E	82	87	92	100	138		
70	150	51	2.1	133	89	4.18	275	325	4500	NUP2314E	82	87	92	100	138		
75	115	20	1.1	105	85	0.75	65.5	85	10000	NU1015M1	80	83	87	90	109		
75	130	25	1.5	118.5	88.5	1.29	132	156	5300	N215E	84	87	90	96	121	120	117
75	130	25	1.5	118.5	88.5	1.3	132	156	5300	NJ215E	84	87	90	96	121		
75	130	25	1.5	118.5	88.5	1.27	132	156	5300	NU215E	84	87	90	96	121		
75	130	25	1.5	118.5	88.5	1.33	132	156	5300	NUP215E	84	87	90	96	121		
75	130	31	1.5	118.5	88.5	1.64	163	208	5300	NJ2215E	84	87	90	96	121		
75	130	31	1.5	118.5	88.5	1.61	163	208	5300	NU2215E	84	87	90	96	121		
75	130	31	1.5	118.5	88.5	1.67	163	208	5300	NUP2215E	84	87	90	96	121		
75	160	37	2.1	143	95	3.34	240	265	4000	N315E	87	93	97	106	148	145	151
75	160	37	2.1	143	95	3.39	240	265	4000	NJ315E	87	93	97	106	148		



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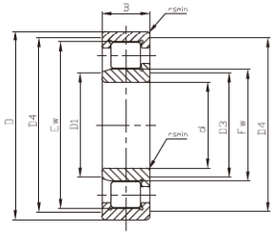

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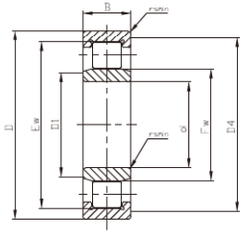

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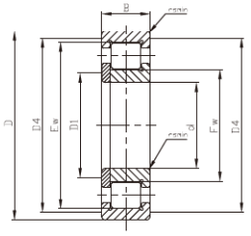

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Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
75	160	37	2.1	143	95	3.33	240	265	4000	NU315E	87	93	97	106	148		
75	160	37	2.1	143	95	3.45	240	265	4000	NUP315E	87	93	97	106	148		
75	160	55	2.1	143	95	5.04	325	390	4000	NJ2315E	87	93	97	106	148		
75	160	55	2.1	143	95	4.95	325	390	4000	NU2315E	87	93	97	106	148		
75	160	55	2.1	143	95	5.14	325	390	4000	NUP2315E	87	93	97	106	148		
80	125	22	1.1	113.5	91.5	0.99	76.5	98	9500	NU1016M1	85	90	94	97	119		
80	140	26	2	127.3	95.3	1.55	140	170	4800	N216E	91	94	97	104	129	129	126
80	140	26	2	127.3	95.3	1.58	140	170	4800	NJ216E	91	94	97	104	129		
80	140	26	2	127.3	95.3	1.54	140	170	4800	NU216E	91	94	97	104	129		
80	140	26	2	127.3	95.3	1.62	140	170	4800	NUP216E	91	94	97	104	129		
80	140	33	2	127.3	95.3	2.05	186	245	4800	NJ2216E	91	94	97	104	129		
80	140	33	2	127.3	95.3	2.02	186	245	4800	NU2216E	91	94	97	104	129		
80	140	33	2	127.3	95.3	2.08	186	245	4800	NUP2216E	91	94	97	104	129		
80	170	39	2.1	151	101	4.12	255	275	3800	N316E	92	99	105	114	158	153	149
80	170	39	2.1	151	101	4.03	255	275	3800	NJ316E	92	99	105	114	158		
80	170	39	2.1	151	101	3.96	255	275	3800	NU316E	92	99	105	114	158		
80	170	39	2.1	151	101	4.11	255	275	3800	NUP316E	92	99	105	114	158		
80	170	58	2.1	151	101	6	355	425	3800	NJ2316E	92	99	105	114	158		
80	170	58	2.1	151	101	5.89	355	425	3800	NU2316E	92	99	105	114	158		
80	170	58	2.1	151	101	6.11	355	425	3800	NUP2316E	92	99	105	114	158		
85	130	22	1.1	118.5	96.5	1.05	78	104	9000	NU1017M1	90	95	99	102	124		
85	150	28	2	136.5	100.5	1.92	163	193	4500	N217E	96	99	104	110	139	138	135
85	150	28	2	136.5	100.5	1.95	163	193	4500	NJ217E	96	99	104	110	139		
85	150	28	2	136.5	100.5	1.91	163	193	4500	NU217E	96	99	104	110	139		
85	150	28	2	136.5	100.5	2.08	163	193	4500	NUP217E	96	99	104	110	139		
85	150	36	2	136.5	100.5	2.55	216	275	4500	NJ2217E	96	99	104	110	139		
85	150	36	2	136.5	100.5	2.5	216	275	4500	NU2217E	96	99	104	110	139		
85	150	36	2	136.5	100.5	2.6	216	275	4500	NUP2217E	96	99	104	110	139		
85	180	41	3	160	108	5.3	290	325	5600	N317E	99	106	110	119	166	162	158
85	180	41	3	160	108	4.71	270	300	3600	NJ317E	99	106	110	119	166		
85	180	41	3	160	108	4.62	270	300	3600	NU317E	99	106	110	119	166		

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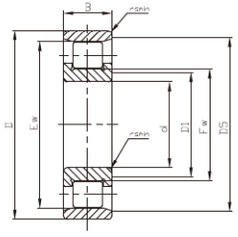

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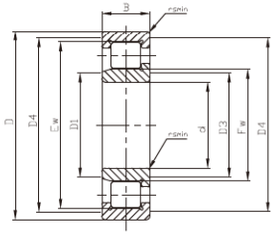

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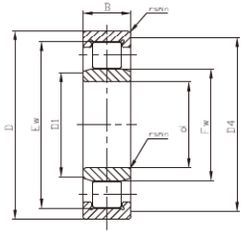

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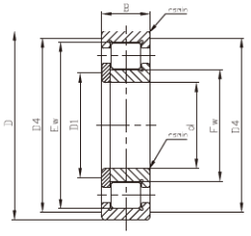

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Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
85	180	41	3	160	108	4.8	270	300	3600	NUP317E	99	106	110	119	166		
85	180	60	3	160	108	6.84	365	450	3600	NJ2317E	99	106	110	119	166		
85	180	60	3	160	108	6.71	365	450	3600	NU2317E	99	106	110	119	166		
85	180	60	3	160	108	6.99	365	450	3600	NUP2317E	99	106	110	119	166		
90	140	24	1.5	127	103	1.31	93	125	8500	NU1018M1	96	101	106	109	133		
90	160	30	2	145	107	2.37	183	216	4300	N218E	101	105	109	116	149	147	143
90	160	30	2	145	107	2.41	183	216	4300	NJ218E	101	105	109	116	149		
90	160	30	2	145	107	2.36	183	216	4300	NU218E	101	105	109	116	149		
90	160	30	2	145	107	2.46	183	216	4300	NUP218E	101	105	109	116	149		
90	160	40	2	145	107	3.23	240	315	4300	NJ2218E	101	105	109	116	149		
90	160	40	2	145	107	3.17	240	315	4300	NU2218E	101	105	109	116	149		
90	160	40	2	145	107	3.29	240	315	4300	NUP2218E	101	105	109	116	149		
90	190	43	3	169.5	113.5	6.19	315	345	5300	N318E	104	111	117	127	176	171	68
90	190	43	3	169.5	113.5	5.49	315	345	3400	NJ318E	104	111	117	127	176		
90	190	43	3	169.5	113.5	5.39	315	345	3400	NU318E	104	111	117	127	176		
90	190	43	3	169.5	113.5	5.59	315	345	3400	NUP318E	104	111	117	127	176		
90	190	64	3	169.5	113.5	8.19	430	530	3400	NJ2318E	104	111	117	127	176		
90	190	64	3	169.5	113.5	8.04	430	530	3400	NU2318E	104	111	117	127	176		
90	190	64	3	169.5	113.5	8.35	430	530	3400	NUP2318E	104	111	117	127	176		
95	145	24	1.5	132	108	1.42	96.5	129	8000	NU1019M1	101	106	111	114	138		
95	170	32	2.1	154.5	112.5	2.89	220	265	3800	N219E	107	111	116	123	158	156	153
95	170	32	2.1	154.5	112.5	2.94	220	265	3800	NJ219E	107	111	116	123	158		
95	170	32	2.1	154.5	112.5	2.88	220	265	3800	NU219E	107	111	116	123	158		
95	170	32	2.1	154.5	112.5	2.99	220	265	3800	NUP219E	107	111	116	123	158		
95	170	43	2.1	154.5	112.5	3.98	285	375	3800	NJ2219E	107	111	116	123	158		
95	170	43	2.1	154.5	112.5	3.9	285	375	3800	NU2219E	107	111	116	123	158		
95	170	43	2.1	154.5	112.5	4.05	285	375	3800	NUP2219E	107	111	116	123	158		
95	200	45	3	177.5	121.5	7.04	335	380	5300	N319E	109	119	124	134	186	179	176
95	200	45	3	177.5	121.5	6.44	335	380	3400	NJ319E	109	119	124	134	186		
95	200	45	3	177.5	121.5	6.32	335	380	3400	NU319E	109	119	124	134	186		
95	200	45	3	177.5	121.5	6.55	335	380	3400	NUP319E	109	119	124	134	186		

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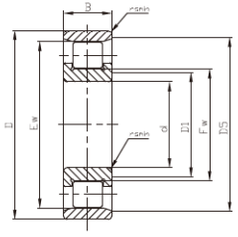

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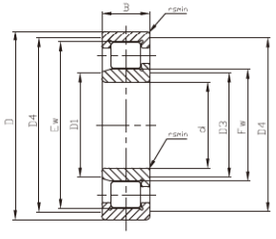

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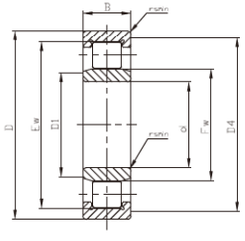

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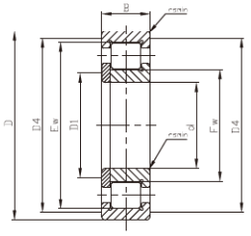

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Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
95	200	67	3	177.5	121.5	9.58	455	585	3400	NJ2319E	109	119	124	134	186		
95	200	67	3	177.5	121.5	9.4	455	585	3400	NU2319E	109	119	124	134	186		
95	200	67	3	177.5	121.5	9.77	455	585	3400	NUP2319E	109	119	124	134	186		
100	150	24	1.5	137	113	1.48	98	134	7500	NU1020M1	106	111	116	119	143		
100	180	34	2.1	163	119	3.5	250	305	3800	N220E	112	117	122	130	168	165	161
100	180	34	2.1	163	119	3.55	250	305	3800	NJ220E	112	117	122	130	168		
100	180	34	2.1	163	119	3.49	250	305	3800	NU220E	112	117	122	130	168		
100	180	34	2.1	163	119	3.61	250	305	3800	NUP220E	112	117	122	130	168		
100	180	46	2.1	163	119	4.85	335	440	3800	NJ2220E	112	117	122	130	168		
100	180	46	2.1	163	119	4.77	335	440	3800	NU2220E	112	117	122	130	168		
100	180	46	2.1	163	119	4.92	335	440	3800	NUP2220E	112	117	122	130	168		
100	215	47	3	191.5	127.5	8.75	380	425	5000	N320E	114	125	132	143	201	193	190
100	215	47	3	191.5	127.5	7.82	380	425	3200	NJ320E	114	125	132	143	201		
100	215	47	3	191.5	127.5	7.67	380	425	3200	NU320E	114	125	132	143	201		
100	215	47	3	191.5	127.5	7.96	380	425	3200	NUP320E	114	125	132	143	201		
100	215	73	3	191.5	127.5	12.3	570	720	3200	NJ2320E	114	125	132	143	201		
100	215	73	3	191.5	127.5	12.1	570	720	3200	NU2320E	114	125	132	143	201		
100	215	73	3	191.5	127.5	12.5	570	720	3200	NUP2320E	114	125	132	143	201		
105	160	26	2	145.5	119.5	1.84	112	153	7000	NU1021M1	111	118	122	126	151		
105	190	36	2.1	171.5	125.5	4.63	260	320	5600	N221E	117	123	128	137	178	173	170
105	190	36	2.1	171.5	125.5	4.17	260	320	3600	NJ221E	117	123	128	137	178		
105	190	36	2.1	171.5	125.5	4.08	260	320	3600	NU221E	117	123	128	137	178		
105	190	36	2.1	171.5	125.5	4.26	260	320	3600	NUP221E	117	123	128	137	178		
110	170	28	2	155	125	2.31	140	190	7000	NU1022M1	116	124	128	133	161		
110	200	38	2.1	180.5	132.5	6.87	290	365	3400	N222E	122	130	135	144	188	182	179
110	200	38	2.1	180.5	132.5	4.93	290	365	3400	NJ222E	122	130	135	144	188		
110	200	38	2.1	180.5	132.5	4.84	290	365	3400	NU222E	122	130	135	144	188		
110	200	38	2.1	180.5	132.5	5.02	290	365	3400	NUP222E	122	130	135	144	188		
110	200	53	2.1	180.5	132.5	6.89	380	520	3400	NJ2222E	122	130	135	144	188		
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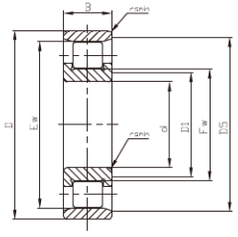

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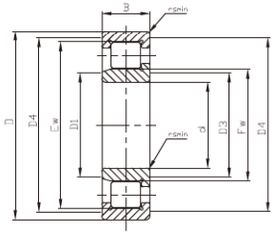

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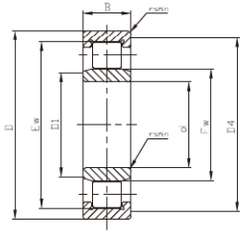

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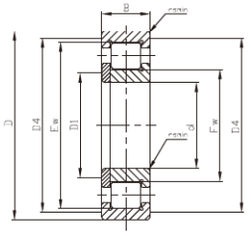

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Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
110	200	53	2.1	180.5	132.5	7.02	380	520	3400	NUP2222E	122	130	135	144	188		
110	240	50	3	211	143	11.7	440	510	4800	N322E	124	140	145	158	226	213	209
110	240	50	3	211	143	10.3	415	475	3000	NJ322E	124	140	145	158	226		
110	240	50	3	211	143	10.3	415	475	3000	NU322E	124	140	145	158	226		
110	240	50	3	211	143	10.7	415	475	3000	NUP322E	124	140	145	158	226		
110	240	80	3	211	143	16.9	630	800	2800	NJ2322E	124	140	145	158	226		
110	240	80	3	211	143	16.6	630	800	2800	NU2322E	124	140	145	158	226		
110	240	80	3	211	143	17.2	630	800	2800	NUP2322E	124	140	145	158	226		
120	180	28	2	165	135	2.47	150	208	6300	NU1024M1	126	134	138	143	171		
120	215	40	2.1	195.5	143.5	5.67	335	415	3200	N224E	132	141	146	156	203	197	194
120	215	40	2.1	195.5	143.5	5.91	335	415	3200	NJ224E	132	141	146	156	203		
120	215	40	2.1	195.5	143.5	5.8	335	415	3200	NU224E	132	141	146	156	203		
120	215	40	2.1	195.5	143.5	6.02	335	415	3200	NUP224E	132	141	146	156	203		
120	215	58	2.1	195.5	143.5	8.54	450	610	3200	NJ2224E	132	141	146	156	203		
120	215	58	2.1	195.5	143.5	8.38	450	610	3200	NU2224E	132	141	146	156	203		
120	215	58	2.1	195.5	143.5	8.7	450	610	5000	NUP2224E	132	141	146	156	203		
120	260	55	3	230	154	15.1	520	600	4500	N324E	134	151	156	171	246	232	228
120	260	55	3	230	154	13.5	520	600	2800	NJ324E	134	151	156	171	246		
120	260	55	3	230	154	13.3	520	600	2800	NU324E	134	151	156	171	246		
120	260	55	3	230	154	13.8	520	600	2800	NUP324E	134	151	156	171	246		
120	260	86	3	230	154	23.5	780	1020	4300	NJ2324E	134	151	156	171	246		
120	260	86	3	230	154	23.5	780	1020	4300	NU2324E	134	151	156	171	246		
120	260	86	3	230	154	23.8	780	1020	4300	NUP2324E	134	151	156	171	246		
130	200	33	2	182	148	3.8	180	250	5600	NU1026M1	136	146	151	157	191		
130	230	40	3	209.5	153.5	6.51	360	450	3000	N226E	144	151	158	168	216	212	207
130	230	40	3	209.5	153.5	6.63	360	450	3000	NJ226E	144	151	158	168	216		
130	230	40	3	209.5	153.5	6.5	360	450	3000	NU226E	144	151	158	168	216		
130	230	40	3	209.5	153.5	6.74	360	450	3000	NUP226E	144	151	158	168	216		
130	230	64	3	209.5	153.5	10.6	530	735	3000	NJ2226E	144	151	158	168	216		
130	230	64	3	209.5	153.5	10.4	530	735	3000	NU2226E	144	151	158	168	216		
130	230	64	3	209.5	153.5	10.8	530	735	3000	NUP2226E	144	151	158	168	216		

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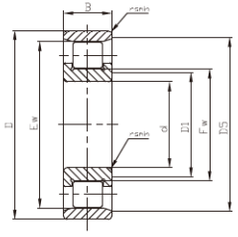

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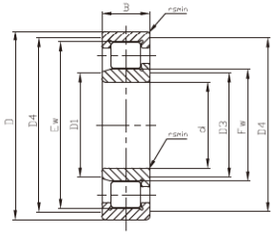

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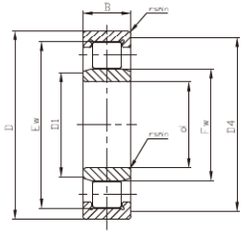

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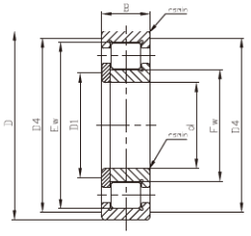

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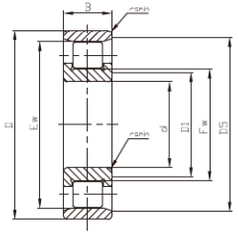
Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
130	280	58	4	247	167	18.4	610	720	4300	N326E	147	164	169	184	263	249	245
130	280	58	4	247	167	16.5	570	670	2600	NJ326E	147	164	169	184	263		
130	280	58	4	247	167	16.2	570	670	2600	NU326E	147	164	169	184	263		
130	280	58	4	247	167	17	610	720	2600	NUP326E	147	164	169	184	263		
130	280	93	4	247	167	29.2	915	1220	3800	NJ2326E	147	164	169	184	263		
130	280	93	4	247	167	28.8	915	1220	3800	NU2326E	147	164	169	184	263		
130	280	93	4	247	167	29.7	915	1220	3800	NUP2326E	147	164	169	184	263		
140	210	33	2	192	158	4.09	183	265	5300	NU1028M1	146	156	161	167	201		
140	250	42	3	225	169	9.29	390	510	4800	N228E	154	166	171	182	236	227	223
140	250	42	3	225	169	9.46	390	510	4800	NJ228E	154	166	171	182	236		
140	250	42	3	225	169	9.3	390	510	4800	NU228E	154	166	171	182	236		
140	250	42	3	225	169	9.61	390	510	4800	NUP228E	154	166	171	182	236		
140	250	68	3	225	169	14.7	570	830	4500	NJ2228E	154	166	171	182	236		
140	250	68	3	225	169	14.5	570	830	4500	NU2228E	154	166	171	182	236		
140	250	68	3	225	169	16.8	570	830	4500	NUP2228E	154	166	171	182	236		
140	300	62	4	264	180	22.5	670	800	3800	N328E	157	176	182	198	283	266	262
140	300	62	4	264	180	20.5	670	800	2400	NJ328E	157	176	182	198	283		
140	300	62	4	264	180	20.1	670	800	2400	NU328E	157	176	182	198	283		
140	300	62	4	264	180	20.8	670	800	2400	NUP328E	157	176	182	198	283		
140	300	102	4	264	180	36.6	1020	1400	3600	NJ2328E	157	176	182	198	283		
140	300	102	4	264	180	36	1020	1400	3600	NU2328E	157	176	182	198	283		
140	300	102	4	264	180	37.1	1020	1400	3600	NUP2328E	157	176	182	198	283		
150	225	35	2.1	205.5	169.5	4.93	208	310	5000	NU1030M1	158	167	173	179	215		
150	270	45	3	242	182	15.9	440	585	4500	N230E	164	179	184	196	256	244	240
150	270	45	3	242	182	11.9	440	585	4500	NJ230E	164	179	184	196	256		
150	270	45	3	242	182	11.8	440	585	4500	NU230E	164	179	184	196	256		
150	270	45	3	242	182	12.4	440	585	4500	NUP230E	164	179	184	196	256		
150	270	73	3	242	182	18.7	655	980	4300	NJ2230E	164	179	184	196	256		
150	270	73	3	242	182	18.4	655	980	4300	NU2230E	164	179	184	196	256		
150	270	73	3	242	182	19.3	655	980	4300	NUP2230E	164	179	184	196	256		
150	320	65	4	283	193	26.8	765	930	3600	N330E	167	190	195	213	303	285	281



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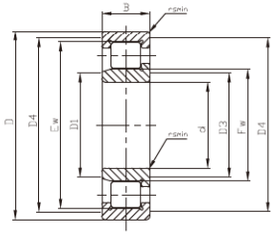

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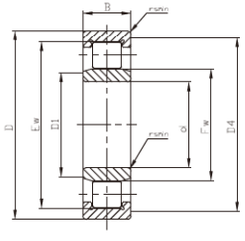

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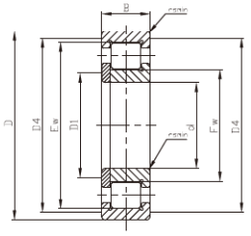

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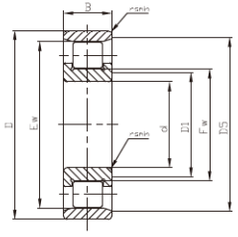
Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
150	320	65	4	283	193	27.2	765	930	3600	NJ330E	167	190	195	213	303		
150	320	65	4	283	193	26.8	765	930	3600	NU330E	167	190	195	213	303		
150	320	65	4	283	193	27.6	765	930	3600	NUP330E	167	190	195	213	303		
150	320	108	4	283	193	43.8	1160	1600	3200	NJ2330E	167	190	195	213	303		
150	320	108	4	283	193	43.2	1160	1600	3200	NU2330E	167	190	195	213	303		
150	320	108	4	283	193	44.6	1160	1600	3200	NUP2330E	167	190	195	213	303		
160	240	38	2.1	220	180	5.92	245	355	4800	NU1032M1	168	178	184	189	230		
160	290	48	3	259	195	14.6	500	670	4300	N232E	174	192	197	210	276	261	257
160	290	48	3	259	195	14.8	500	670	4300	NJ232E	174	192	197	210	276		
160	290	48	3	259	195	14.6	500	670	4300	NU232E	174	192	197	210	276		
160	290	48	3	259	195	15.1	500	670	4300	NUP232E	174	192	197	210	276		
160	290	80	3	261	193	23.5	800	1180	3800	NJ2232E	174	192	197	210	276		
160	290	80	3	261	193	23.5	800	1180	3800	NU2232E	174	192	197	210	276		
160	290	80	3	261	193	24.3	800	1180	3800	NUP2232E	174	192	197	210	276		
160	340	68	4	300	204	32.6	865	1060	3000	N332E	177	200	211	228	323	302	298
160	340	68	4	300	204	32.3	865	1060	3000	NJ332E	177	200	211	228	323		
160	340	68	4	300	204	31.8	865	1060	3000	NU332E	177	200	211	228	323		
160	340	114	4	300	204	52.3	1320	1830	3000	NJ2332E	177	200	211	228	323		
160	340	114	4	300	204	51.5	1320	1830	3000	NU2332E	177	200	211	228	323		
170	260	42	2.1	237	193	7.96	300	430	4500	NU1034M1	180	190	197	204	250		
170	310	52	4	279	207	18.1	585	780	3600	N234E	187	204	211	223	293	281	277
170	310	52	4	279	207	18.4	585	780	3600	NJ234E	187	204	211	223	293		
170	310	52	4	279	207	18.1	585	780	3600	NU234E	187	204	211	223	293		
170	310	52	4	279	207	18.6	585	780	3600	NUP234E	187	204	211	223	293		
170	310	86	4	281	205	35.7	950	1400	3200	NJ2234E	187	204	211	223	293		
170	310	86	4	281	205	35.7	950	1400	3200	NU2234E	187	204	211	223	293		
170	310	86	4	281	205	37.2	950	1400	3200	NUP2234E	187	204	211	223	293		
170	360	72	4	318	218	37.9	965	1220	3000	N334E	187	215	221	240	343	320	316
170	360	72	4	318	218	38.6	965	1220	3000	NJ334E	187	215	221	240	343		
170	360	72	4	318	218	38	965	1220	3000	NU334E	187	215	221	240	343		



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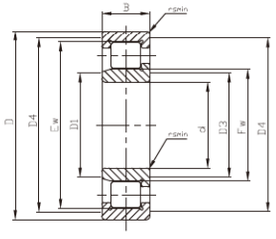

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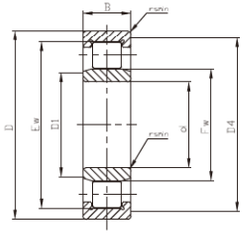

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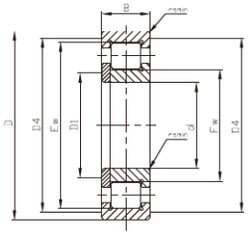

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Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
170	360	120	4	320	216	62.3	1500	2080	2800	NJ2334E	187	214	218	238.3	343		
170	360	120	4	320	216	61.4	1500	2080	2800	NU2334E	187	214	218	238.3	343		
180	280	46	2.1	255	205	10.5	360	520	4500	NU1036M1	190	203	209	217	270		
180	320	52	4	289	217	16.7	610	830	3600	NJ236E	197	214	221	233	303		
180	320	52	4	289	217	18.9	610	830	3600	NU236E	197	214	221	233	303		
180	320	52	4	289	217	17.7	610	830	3600	NUP236E	197	214	221	233	303		
180	320	86	4	291	215	30.9	1000	1500	3200	NJ2236E	197	214	221	233	303		
180	320	86	4	291	215	30.5	1000	1500	3200	NU2236E	197	214	221	233	303		
180	320	86	4	291	215	31.4	1000	1500	3200	NUP2236E	197	214	221	233	303		
180	380	75	4	335	231	44.6	1040	1320	2800	NJ336E	197	228	234	254	363		
180	380	75	4	335	231	43.9	1040	1320	2800	NU336E	197	228	234	254	363		
180	380	126	4	339	227	72.8	1660	2320	2800	NJ2336EX	197	225	229	250.6	363		
180	380	126	4	339	227	71.5	1660	2320	2800	NU2336EX	197	225	229	250.6	363		
190	290	46	2.1	265	215	10.9	365	550	4300	NU1038M1	200	213	219	227	280		
190	340	55	4	306	230	22.8	680	930	3200	N238E	207	227	234	247	323	309	303
190	340	55	4	306	230	23.2	680	930	3200	NJ238E	207	227	234	247	323		
190	340	55	4	306	230	22.8	680	930	3200	NU238E	207	227	234	247	323		
190	340	55	4	306	230	23.5	680	930	3200	NUP238E	207	227	234	247	323		
190	340	92	4	308	228	37.5	1100	1660	3000	NJ2238E	207	227	234	247	323		
190	340	92	4	308	228	36.9	1100	1660	3000	NU2238E	207	227	234	247	323		
190	400	78	5	353	245	50.6	1120	1430	2800	NU338E	210	242	248	269	380		
190	400	132	5	360	240	83.9	1900	2650	2600	NJ2338EX	210	237.8	242.2	265.3	380		
190	400	132	5	360	240	82.9	1900	2650	2600	NU2338EX	210	237.8	242.2	265.3	380		
200	310	51	2.1	281	229	14.1	400	600	3800	NU1040M1	210	226	233	242	300		
200	360	58	4	323	243	30.6	750	1040	3000	N240E	217	240	247	261	343	326	320
200	360	58	4	323	243	31	750	1040	3000	NJ240E	217	240	247	261	343		
200	360	58	4	323	243	30.6	750	1040	3000	NU240E	217	240	247	261	343		
200	360	58	4	323	243	31.4	750	1040	3000	NUP240E	217	240	247	261	343		

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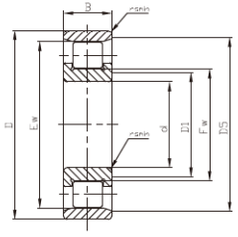

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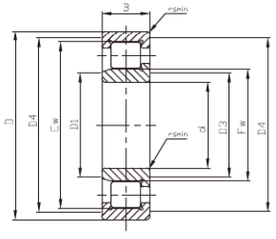

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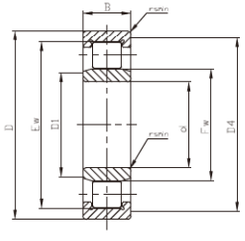

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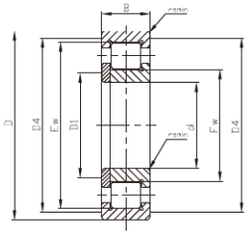

NUP

Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
200	360	98	4	325	241	45.1	1220	1860	2800	NJ2240E	217	240	247	261	343		
200	360	98	4	325	241	45.1	1220	1860	2800	NU2240E	217	240	247	261	343		
200	420	80	5	370	258	58.1	1180	1530	2600	NJ340E	220	255	261	282	400		
200	420	80	5	370	258	57.3	1180	1530	2600	NU340E	220	255	261	282	400		
200	420	138	5	377	253	97.2	2040	2900	2400	NJ2340EX	220	250.7	255.3	279	400		
200	420	138	5	377	253	95.6	2040	2900	2400	NU2340EX	220	250.7	255.3	279	400		
220	340	56	3	310	250	20.5	510	765	3200	NU1044M1	232	248	254	265	328		
220	400	65	4	358	268	38.7	950	1320	2800	NJ244E	237	265	271	288	383		
220	400	65	4	358	268	38.5	950	1320	2800	NU244E	237	265	271	288	383		
220	400	65	4	358	268	39.3	950	1320	2800	NUP244E	237	265	271	288	383		
220	400	108	4	367	259	61.6	1630	2360	2600	NU2244EX	237	256.7	261.3	282.3	383		
220	400	108	4	367	259	63.4	1630	2360	2600	NUP2244EX	237	256.7	261.3	282.3	383		
220	460	88	5	406	282	75.5	1430	1900	2400	NU344E	240	279	285	308	440		
220	460	145	5	413	277	121	2360	3350	2200	NU2344EX	240	274.7	279.3	305.1	440		
220	460	145	5	413	277	124	2360	3350	2200	NUP2344EX	240	274.7	279.3	305.1	440		
240	360	56	3	330	270	20.4	540	850	3000	NU1048M1	252	268	275	285	348		
240	440	72	4	393	293	51.5	1140	1600	2600	N248E	257	290	296	315	423		
240	440	72	4	393	293	52.5	1140	1600	2600	NJ248E	257	290	296	315	423		
240	440	72	4	393	293	51.7	1140	1600	2600	NU248E	257	290	296	315	423		
240	440	120	4	399	287	82.8	1830	2800	2400	NU2248EX	257	284.5	289.5	311.1	423		
240	500	95	5	442	306	97	1730	2280	2200	NJ348E	260	303	309	335	480		
240	500	95	5	442	306	95.7	1730	2280	2200	NU348E	260	303	309	335	480		
240	500	155	5	447	303	151	2600	3750	2000	NU2348EX	260	300.5	305.5	332.7	480		
260	400	65	4	364	296	29.9	655	1020	2800	NU1052M1	275	292	300	312	385		
260	480	80	5	429	317	69.4	1340	1900	2400	NJ252E	280	314	320	341	460		
260	480	80	5	429	317	68.4	1340	1900	2400	NU252E	280	314	320	341	460		

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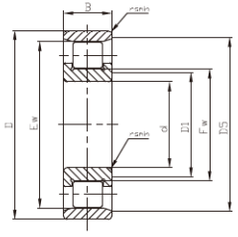

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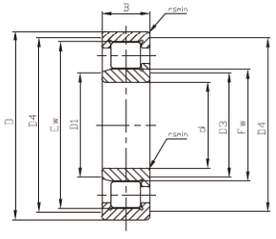

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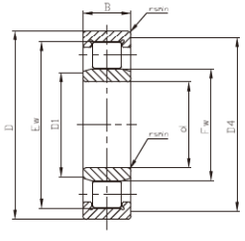

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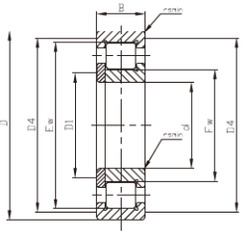

NUP

Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
260	480	130	5	433	313	109	2160	3350	2200	NU2252E	280	310	316	339	460		
260	540	102	6	477	337	121	1900	2600	2000	NU352E	286	334.3	339.7	366.2	514		
260	540	165	6	484	324	189	3100	4500	1800	NU2352EX	286	321.3	326.7	356.8	514		
280	420	65	4	384	316	31.4	680	1100	2800	NU1056M1	295	312	321	333	405		
280	500	80	5	449	337	72.1	1400	2000	2200	NU256E	300	334	340	362	480		
280	500	130	5	453	333	114	2280	3600	2000	NU2256E	300	330	336	359	480		
280	580	108	6	512	362	149	2160	3050	1900	NJ356E	306	359	365	393.4	554		
280	580	108	6	512	362	149	2160	3050	1900	NU356E	306	359	365	393.4	554		
280	580	175	6	521	351	234	3550	5200	1600	NU2356EX	306	348	354	385.9	554		
300	460	74	4	420	340	44.3	900	1430	2400	NU1060M1	315	336	345	359	445		
300	540	85	5	484	364	90.4	1600	2320	2000	NU260E	320	359	367	390	520		
300	540	140	5	495	355	143	2700	4150	1900	NU2260EX	320	352	358	384.7	520		
320	480	74	4	440	360	46.3	915	1500	2400	NU1064M1	335	356	365	380	465		
320	580	92	5	520	392	113	1800	2700	1900	NU264EX	340	388.5	395.5	419.6	560		
320	580	150	5	530	380	180	3150	4900	1600	NU2264EX	340	376.5	383.5	411.7	560		
340	520	82	5	475	385	63	1120	1830	2200	NU1068M1	357	381	390	407	503		
360	540	82	5	495	405	66	1140	1900	2200	NU1072M1	377	400	410	427	523		
360	650	170	6	573	437	256	3150	5400	1500	NU2272M1	386	434	441	468	624		
380	560	82	5	515	425	68.6	1180	2000	2000	NU1076M1	397	420	430	447	543		

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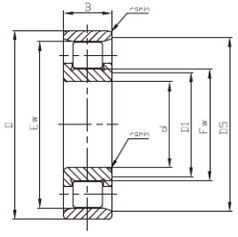

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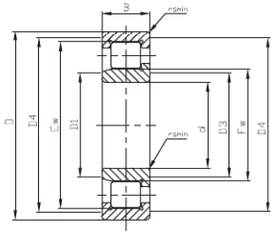

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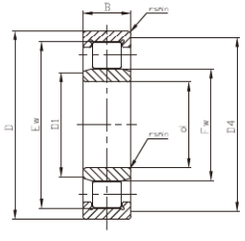

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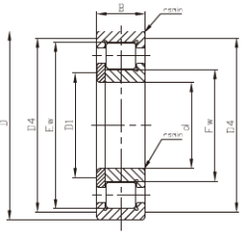

NUP

Single Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D2min	D3min	D4max	D5min	D6max
380	680	175	6	615	451	288	4050	6700	1400	NU2276E	406	446	456	484	654		
400	600	90	5	550	450	89.8	1370	2320	1900	NU1080M1	417	445	455	474	583		
420	620	90	5	570	470	92.9	1400	2450	1800	NU1084M1	437	465	475	494	603		
440	650	94	6	597	493	104	1560	2750	1600	NU1088M1	463	488	498	518	627		
460	620	74	4	578	502	63.1	1020	1960	1800	NU1992M1	475	498	506	520	605		
460	680	100	6	624	516	125	1660	3000	1600	NU1092M1	483	510	522	541	657		
480	650	78	5	605	525	74.2	1140	2240	1800	NU1996M1	497	521	529	545	633		
480	700	100	6	644	536	134	1700	3100	1500	NU1096M1	503	530	542	562	677		
500	720	100	6	664	556	133	1760	3200	1500	NU10/500M1	523	550	562	582	697		
560	750	85	5	700	610	105	1460	3000	1400	NU19/560M1	577	606	614	632	733		
560	820	115	6	754	626	208	2700	5100	1200	NU10/560M1	583	620	632	657	797		
600	800	90	5	748	652	125	1700	3450	1400	NU19/600M1	617	647	657	675	783		
670	900	103	6	839	731	186	2040	4250	1200	NU19/670M1	693	726	736	757	877		
710	950	106	6	886	774	217	2240	4750	1100	NU19/710M1	733	769	779	800	927		

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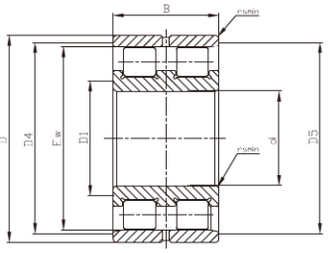

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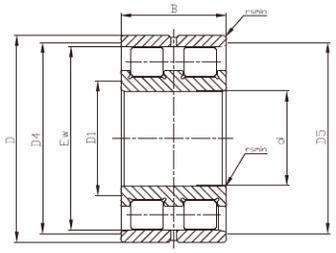

NN

Double Row Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Mass	Cr (kN)	Cor (kN)	Attainable speed	oil throwaway	Bearing Code	D1min	D4max	D5min
30	55	19	1	48.5	0.191	29	34	16000	19000	NN3006ASK	35	50	49
35	62	20	1	55	0.249	35.5	44	14000	17000	NN3007ASK	40	57	56
40	68	21	1	61	0.303	45	58.5	12000	15000	NN3008ASK	45	63	62
45	75	23	1	67.5	0.393	54	72	11000	14000	NN3009ASK	50	70	69
50	80	23	1	72.5	0.426	57	80	10000	13000	NN3010ASK	55	75	74
55	90	26	1.1	81	0.63	72	100	9000	11000	NN3011ASK	61	84	82
60	95	26	1.1	86.1	0.674	75	110	8500	10000	NN3012ASK	66	89	87
65	100	26	1.1	91	0.715	76.5	116	8000	9500	NN3013ASK	71	94	92
70	110	30	1.1	100	1.04	98	150	7000	8500	NN3014ASK	76	104	102
75	115	30	1.1	105	1.09	100	156	6700	8000	NN3015ASK	81	109	107
80	125	34	1.1	113	1.51	120	186	6300	7500	NN3016ASK	86	119	115
85	130	34	1.1	118	1.58	125	200	6000	7000	NN3017ASK	91	124	120
90	140	37	1.5	127	2.05	140	224	5600	6700	NN3018ASK	98	132	129
95	145	37	1.5	132	2.14	143	236	5300	6300	NN3019ASK	103	137	134
100	150	37	1.5	137	2.23	146	245	5300	6300	NN3020ASK	108	142	139
105	160	41	2	146	2.84	190	310	4800	5600	NN3021ASK	114	151	148
110	170	45	2	155	3.61	220	360	4500	5300	NN3022ASK	119	161	157
120	180	46	2	165	3.94	232	390	4300	5000	NN3024ASK	129	171	167
130	200	52	2	182	5.79	290	500	3800	4500	NN3026ASK	139	191	184
140	210	53	2	192	6.22	300	520	3600	4300	NN3028ASK	149	201	194
150	225	56	2.1	206	7.58	335	585	3400	4000	NN3030ASK	160	215	208
160	240	60	2.1	219	9.23	375	670	3200	3800	NN3032ASK	170	230	222
170	260	67	2.1	236	12.5	450	800	3000	3600	NN3034ASK	180	250	239
180	280	74	2.1	255	16.4	570	1000	2800	3400	NN3036ASK	190	270	258
190	290	75	2.1	265	17.3	585	1040	2600	3200	NN3038ASK	200	280	268
200	310	82	2.1	282	22.2	655	1200	2400	3000	NN3040ASK	210	300	285
220	340	90	3	310	29.1	800	1460	2200	2800	NN3044ASK	232	328	313
240	360	92	3	330	31.6	850	1560	2000	2600	NN3048ASK	252	348	334
260	400	104	4	364	46.2	1060	2000	1900	2400	NN3052ASK	275	385	368
280	420	106	4	384	49.7	1080	2080	1800	2200	NN3056ASK	295	405	388
300	460	118	4	418	68.8	1270	2400	1600	1900	NN3060ASK	315	445	422
320	480	121	4	438	74.2	1320	2600	1600	1900	NN3064ASK	335	465	442
340	520	133	5	473	99.3	1630	3250	1400	1700	NN3068ASK	357	503	477
360	540	134	5	493	104	1660	3350	1400	1700	NN3072ASK	377	523	497
380	560	135	5	513	110	1700	3450	1300	1600	NN3076ASK	397	543	517
400	600	148	5	549	143	2160	4500	1200	1500	NN3080ASK	417	583	553

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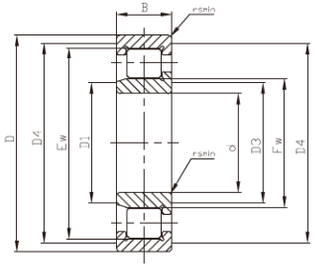

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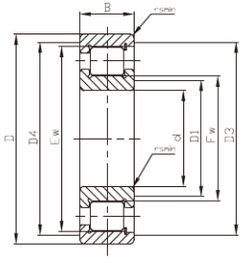

NCF–V

Single Row Full Complement Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass (kg)	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D3min	D4max
85	180	60	3	163	107	7.33	480	600	1800	NJ2317VH	99	106	119	166
90	190	64	3	165.3	105.3	8.82	520	655	1800	NJ2318VH	104	104	118	176
95	200	67	3	176.3	112.3	10.2	600	750	1700	NJ2319VH	109	111	125	186
100	215	73	3	187.3	119.3	13.1	655	830	1600	NJ2320VH	114	118	133	201
110	240	80	3	209.4	133.4	18.1	830	1060	1400	NJ2322VH	124	132	149	226
120	180	46	2	167.6	131.6	3.8	290	430	1600	NCF3024V	128.8			171
120	260	86	3	231.4	147.4	22.4	950	1220	1200	NJ2324VH	134	146	164	246
130	180	30	1.5	166.5	140.5	2.36	204	360	1600	NCF2926V	138			172
130	280	93	4	247.9	157.9	28.1	1100	1430	1000	NJ2326VH	147	156	176	263
140	190	30	1.5	175	149	2.48	212	380	1500	NCF2928V	148			182
140	210	53	2	197.8	153.8	6.05	440	680	1300	NCF3028V	148.8			201
140	300	102	4	264.5	168.5	35	1250	1630	950	NJ2328VH	157	166	187	283
150	210	36	2	194.9	162.9	3.92	290	500	1300	NCF2930V	159			201
150	225	56	2.1	206.8	160.8	7.35	455	710	1200	NCF3030V	160.2			114.8
150	320	108	4	286.5	182.5	42.6	1500	2000	900	NJ2330VH	167	180	203	303
160	220	36	2	205	173	4.14	300	540	1200	NCF2932V	169			211
160	240	60	2.1	224.8	174.8	8.82	520	800	1100	NCF3032V	170.2			229.8
170	230	36	2	215.5	183.5	4.36	310	570	1100	NCF2934V	179			221
170	260	67	2.1	242.9	186.9	12.2	670	1060	1000	NCF3034V	180.5			249.2
170	360	120	4	319.6	203.6	63.2	1760	2400	800	NJ2334VH	187	201	227	343
180	250	42	2	231.5	193.5	6.33	390	695	1000	NCF2936V	189			241
180	280	74	2.1	260.2	200.2	16.1	780	1250	900	NCF3036V	190.5			269.8
190	260	42	2	243.5	205.5	6.61	405	735	950	NCF2938V	199			251
190	290	75	2.1	269.8	209.8	17	800	1290	850	NCF3038V	200.5			279.2
190	400	132	5	352.6	224.6	80.3	2080	2900	700	NJ2338VH	210	222	250	380
200	280	48	2.1	262.4	220.4	9.29	490	915	850	NCF2940V	210			270
200	310	82	2.1	287.8	223.8	21.8	915	1530	800	NCF3040V	210.5			299.2
200	420	138	5	374.7	238.7	92	2320	3250	670	NJ2340VH	220	236	266	400
220	300	48	2.1	282.5	240.5	10.1	520	1000	800	NCF2944V	230			290
220	460	145	5	407.6	267.6	117	2650	3800	600	NJ2344VH	240	265	296	440
240	320	48	2.1	302.5	260.5	10.8	540	1080	700	NCF2948V	250			310

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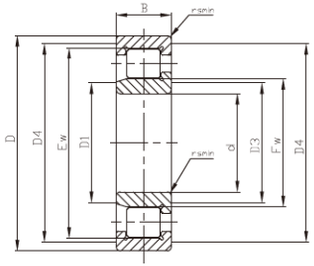

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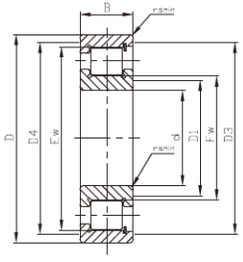

NCF–V

Single Row Full Complement Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass (kg)	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max	D3min	D4max
260	360	60	2.1	333.3	281.3	18.8	750	1430	670	NCF2952V	270			350
260	400	104	4	376.1	286.1	44.7	1560	2600	600	NCF3052V	275			385.4
280	380	60	2.1	359	303	19.7	880	1730	600	NCF2956V	290			370
280	420	106	4	390.5	300.5	48.4	1630	2750	560	NCF3056V	295			405.4
300	420	72	3	389.7	325.7	31.6	1120	2200	560	NCF2960V	312			408
320	440	72	3	410	346	33.5	1160	2360	530	NCF2964V	332			428
340	460	72	3	430.5	366.5	35.1	1200	2500	500	NCF2968V	352			448
360	480	72	3	451	387	37	1220	2600	480	NCF2972V	372			468
380	520	82	4	484.5	412.5	52.6	1460	3100	450	NCF2976V	395			505
400	540	82	4	507.5	435.5	54.9	1500	3250	450	NCF2980V	415			525
420	560	82	4	530	458	57.2	1530	3400	430	NCF2984V	435			545
440	600	95	4	565	481	80.7	2000	4400	400	NCF2988V	455			585

Remarks: If the specifications are not listed above, please contact WD bearings.
Email:sales@wd-bearing.com

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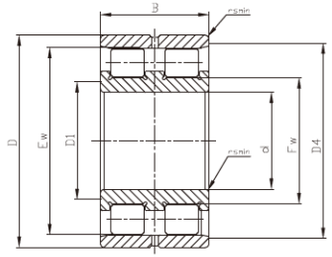
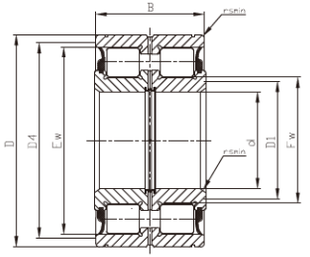


NNC–V



NNF–V

Double Row Full Complement Cylindrical Roller Bearings

d	D	B	rsmin	Ew	Fw	Mass (kg)	Cr (kN)	Cor (kN)	Limiting speed	Bearing Code	D1min	D1max
120	180	80	0.6	164	134	7.07	400	750	480	NNF5024B	126	177
130	180	50	1.5	165.8	143.8	2.67	255	530	1600	NNC4926V	138	172
130	200	95	0.6	183.8	139.8	9.52	710	1220	450	NNF5026C	136	197
140	190	50	1.5	176.3	154.3	4.42	265	570	1400	NNC4928V	148	182
140	210	95	0.6	195.5	157.5	11.2	600	1120	400	NNF5028B	146	207
150	210	60	2	191.7	165.7	7.08	380	850	1300	NNC4930V	159	201
150	225	100	0.6	209.2	167.2	11.5	695	1290	380	NNF5030B	156	222
160	240	109	0.6	222.6	180.6	16.9	720	1400	360	NNF5032B	166	237
170	260	122	0.6	239	191	23.2	930	1800	320	NNF5034B	176	257
180	280	136	0.6	260.2	200.2	30.2	1340	2500	300	NNF5036C	186	277
190	290	136	0.6	269.8	209.8	31.6	1370	2600	300	NNF5038C	196	287
200	310	150	0.6	287.8	223.8	40.3	1560	3050	280	NNF5040C	206	307
220	300	80	2.1	276.9	240.9	17.8	680	1600	800	NNC4944V	230	290

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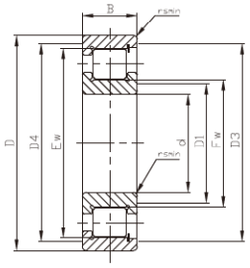
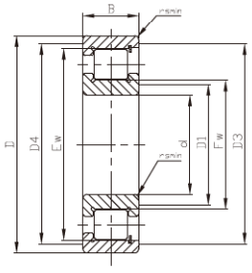


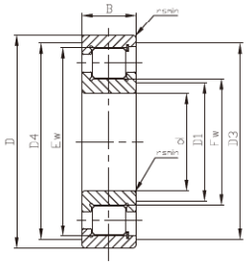
SL1818 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
200	250	24	24		237.6	1.5	2.57	183	330	1440	SL181840E	208		238	240
220	270	24	24		258.5	1.5	2.8	192	365	1320	SL181844E	228		259	260
240	300	28	28		287.5	2	4.29	265	490	1200	SL181848E	250		288	290
260	320	28	28		308	2	4.61	275	530	1120	SL181852E	270		308	310
280	350	33	33		335	2	6.89	355	670	1030	SL181856E	292		336	338
300	380	38	38		360	2.1	9.79	455	840	950	SL181860E	312		362	364
320	400	38	38		381	2.1	10.36	470	900	900	SL181864E	332		382	384
340	420	38	38		402.2	2.1	10.93	485	960	850	SL181868E	352		404	406
360	440	38	38		423.5	2.1	11.49	500	1010	810	SL181872E	374		424	426
380	480	46	46		459	2.1	18.87	650	1290	750	SL181876E	396		460	462
400	500	46	46		475.5	2.1	19.81	660	1340	720	SL181880E	416		480	480
420	520	46	46		500	2.1	20.6	680	1420	690	SL181884E	438		502	504
440	540	46	46		517	2.1	21.54	700	1470	660	SL181888E	456		520	520
460	580	56	56		554	3	33.21	940	1890	620	SL181892E	480		560	560
480	600	56	56		574.5	3	34.53	960	1970	600	SL181896E	500		580	580
500	620	56	56		594.5	3	35.73	980	2050	580	SL1818/500E	520		600	600



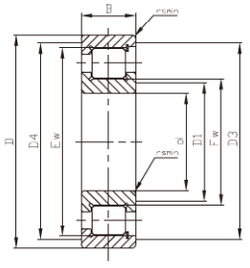
SL1829 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
60	85	16	16		78.55	1	0.29	63	78	4450	SL182912	65		79	80
65	90	16	16		83.5	1	0.31	53.5	80	4200	SL182913	70		84	85
70	100	19	19		92.31	1	0.49	88	114	3800	SL182914	76		93	94
75	105	19	19		97.41	1	0.52	91	121	3600	SL182915	81		98	99
80	110	19	19		102.51	1	0.55	94	129	3400	SL182916	86		103	104
85	120	22	22		109.58	1.1	0.81	118	162	3150	SL182917	91		110	102
90	125	22	22		115.75	1.1	0.84	122	172	3000	SL182918	96		116	118
95	130	22	22		122.25	1.1	0.86	132	179	2900	SL182919	101		123	124
100	140	24	24		130.95	1.1	1.14	152	206	2700	SL182920	107		132	133
110	150	24	24		141.5	1.1	1.23	155	220	2490	SL182922	117		142	144
120	165	27	27		154.3	1.1	1.73	199	295	2270	SL182924	127		156	158
130	180	30	30		167.15	1.5	2.33	238	355	2090	SL182926	138		170	172
140	190	30	30		180	1.5	2.42	260	385	1960	SL182928	148		181	183
150	210	36	36		196.75	2	3.77	340	490	1800	SL182930	160		198	200
160	220	36	36		207.6	2	4	350	520	1710	SL182932	170		210	210
170	230	36	36		218.45	2	4.3	365	560	1620	SL182934	180		220	222
180	250	42	42		231.85	2	6.2	455	690	1510	SL182936	190		235	235
190	260	42	42		244.15	2	6.5	510	790	1440	SL182938	200		246	248
200	280	48	48		261.6	2.1	9.1	610	960	1350	SL182940	212		264	268
220	300	48	48		282.45	2.1	9.9	650	1050	1250	SL182944	232		284	286
240	320	48	48		303.7	2.1	10.6	690	1140	1160	SL182948	254		305	308
260	360	60	60		333.7	2.1	18.5	790	1470	1050	SL182952	276		335	338
280	380	60	60		359.5	2.1	19.7	920	1740	980	SL182956	295		365	365
300	420	72	72		389.45	3	31.2	1180	2230	900	SL182960	315		400	400
320	440	72	72		409.85	3	32.9	1220	2370	850	SL182964	340		420	420
340	460	72	72		430.2	3	34.7	1260	2500	810	SL182968	360		440	440
360	480	72	72		450.6	3	36.4	1290	2650	770	SL182972	380		460	460
380	520	82	82		486.7	4	52.1	1670	3350	720	SL182976	400		500	500



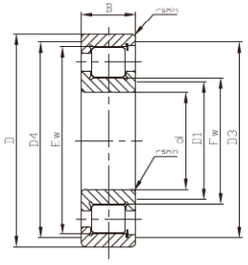
SL1830 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
20	42	16	16		36.81	0.6	0.11	30.5	26.5	10500	SL183004	25		37	39
25	47	16	16		42.51	0.6	0.12	35	32.5	9000	SL183005	30		43	44
30	55	19	19		49.6	1	0.2	45	43	7600	SL183006	35		50	51
35	62	20	20		55.52	1	0.26	55	55	6700	SL183007	40		56	57
40	68	21	21		61.74	1	0.31	66	68	6000	SL183008	45		62	63
45	75	23	23		66.85	1	0.4	70	76	5400	SL183009	50		68	69
50	80	23	23		72.33	1	0.43	88	96	5000	SL183010	55		74	75
55	90	26	26		83.54	1.1	0.64	120	136	4450	SL183011	62		84	85
60	95	26	26		86.74	1.1	0.69	123	145	4200	SL183012	66		88	89
65	100	26	26		93.09	1.1	0.73	130	159	3950	SL183013	72		94	95
70	110	30	30		100.28	1.1	1.02	153	176	3600	SL183014	76		102	103
75	115	30	30		107.9	1.1	1.06	162	194	3400	SL183015	82		108	109
80	125	34	34		117.4	1.1	1.43	173	225	3150	SL183016	88		118	119
85	130	34	34		121.95	1.1	1.51	178	237	3000	SL183017	93		123	124
90	140	37	37		130.65	1.5	1.97	208	280	2800	SL183018	98		132	133
100	150	37	37		140.2	1.5	2.15	219	310	2600	SL183020	108		141	142
110	170	45	45		156.7	2	3.5	285	395	2310	SL183022	119		157	159
120	180	46	46		168.15	2	3.8	300	435	2160	SL183024	129		169	170



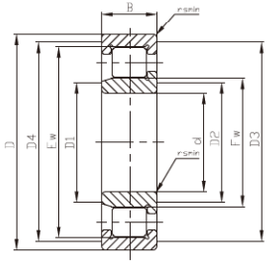
SL1830 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
130	200	52	52		184.4	2	5.65	435	620	1960	SL183026	140		186	188
140	210	53	53		198.4	2	6.04	455	680	1850	SL183028	152		199	200
150	225	56	56		207.45	2.1	7.33	480	710	1730	SL183030	160		208	210
160	240	60	60		225.45	2.1	8.8	550	820	1620	SL183032	173		226	228
170	260	67	67		243.55	2.1	12.2	710	1070	1510	SL183034	184		245	247
180	280	74	74		261	2.1	16.1	820	1260	1410	SL183036	196		262	264
190	290	75	75		270.6	2.1	17	840	1320	1350	SL183038	206		272	274
200	310	82	82		288.6	2.1	21.8	960	1530	1270	SL183040	218		290	292
220	340	90	90		312	3	28.4	1160	1840	1160	SL183044	238		320	320
240	360	92	92		336	3	30.9	1220	2010	1080	SL183048	260		340	340
260	400	104	104		375.97	4	44.5	1620	2550	980	SL183052	280		380	380
280	420	106	106		390.3	4	48	1670	2700	930	SL183056	300		400	400
300	460	118	118		434.85	4	66.6	2040	3350	850	SL183060	320		440	440
320	480	121	121		449.5	4	71.7	2100	3500	810	SL183064	340		460	460
340	520	133	133		485.65	5	95.8	2500	4150	750	SL183068	360		500	500
360	540	134	134		503.45	5	101	2550	4350	720	SL183072	380		520	520
380	560	135	135		521.25	5	106	2600	4500	690	SL183076	400		540	540
400	600	148	148		558.52	5	140	3100	5400	650	SL183080	420		580	580



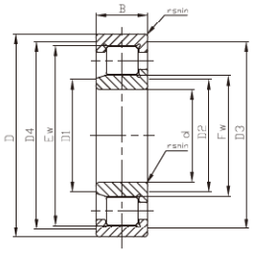
SL1822 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
20	47	18	18		41.47	1	0.16	45.5	37.5	9700	SL182204	25		42	43
25	52	18	18		46.52	1	0.18	51	45	8400	SL182205	30		47	48
30	62	20	20		55.19	1	0.3	70	65	7000	SL182206	36		56	57
35	72	23	23		63.97	1.1	0.44	88	79	6100	SL182207	41		65	66
40	80	23	23		70.94	1.1	0.55	97	93	5400	SL182208	47		72	74
45	85	23	23		74.43	1.1	0.59	101	99	5000	SL182209	51		76	78
50	90	23	23		81.4	1.1	0.64	109	113	4650	SL182210	57		82	84
55	100	25	25		88.81	1.5	0.87	140	150	4200	SL182211	62		90	92
60	110	28	28		99.17	1.5	1.18	169	180	3800	SL182212	68		100	102
65	120	31	31		106.25	1.5	1.57	198	214	3500	SL182213	73		108	110
70	125	31	31		111.45	1.5	1.66	184	227	3300	SL182214	78		113	115
75	130	31	31		116.2	1.5	1.75	190	241	3150	SL182215	83		118	120
80	140	33	33		126.3	2	2.15	226	285	2950	SL182216	88		128	130
85	150	36	36		133.75	2	2.74	255	325	2750	SL182217	95		135	138
90	160	40	40		141.15	2	3.48	290	370	2600	SL182218	100		145	148
95	170	43	43		155.95	2.1	4.17	340	435	2450	SL182219	107		158	160
100	180	46	46		163.35	2.1	5.13	395	520	2310	SL182220	112		166	168
110	200	53	53		177.6	2.1	7.24	455	590	2090	SL182222	122		185	185
120	215	58	58		192.9	2.1	9.08	540	730	1930	SL182224	135		200	200
130	230	64	64		207.75	3	11.25	630	860	1800	SL182226	145		215	215
140	250	68	68		222.55	3	14.47	720	1020	1660	SL182228	155		235	235
150	270	73	73		237.35	3	18.43	830	1180	1540	SL182230	165		250	250
160	290	80	80		267.1	3	23	1030	1490	1440	SL182232	180		270	270
170	310	86	86		281.9	4	28.65	1150	1680	1350	SL182234	190		290	290
180	320	86	86		294	4	29.8	1190	1780	1300	SL182236	200		300	300
190	340	92	92		311.5	4	35.65	1310	1920	1220	SL182238	210		320	320
200	360	98	98		319.4	4	43.12	1420	2040	1160	SL182240	220		340	340



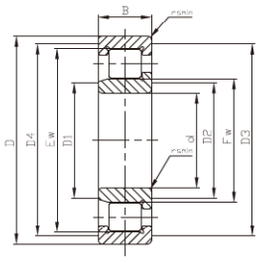
SL1923 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
25	62	24	24	31.72		1.1	0.37	73	60	7400	SL192305	30	30	55	55
30	72	27	27	38.3		1.1	0.56	100	88	6400	SL192306	36	36	64	64
35	80	31	31	44.68		1.5	0.74	126	112	5600	SL192307	42	42	72	72
40	90	33	33	51.12		1.5	1.01	170	156	5000	SL192308	48	48	82	82
45	100	36	36	56.1		1.5	1.37	181	169	4450	SL192309	53	53	90	90
50	110	40	40	60.72		2	1.81	232	219	4050	SL192310	58	58	100	100
55	120	43	43	67.11		2	2.28	270	255	3700	SL192311	65	65	110	110
60	130	46	46	73.62		2.1	2.88	285	280	3400	SL192312	70	70	118	118
65	140	48	48	80.69		2.1	3.52	350	355	3150	SL192313	77	77	128	128
70	150	51	51	84.14		2.1	4.33	385	390	2950	SL192314	82	82	136	136
75	160	55	55	91.22		2.1	5.3	460	475	2750	SL192315	88	88	146	146
80	170	58	58	98.24		2.1	6.23	540	560	2600	SL192316	95	95	156	156
85	180	60	60	107.01		3	7.34	570	620	2450	SL192317	100	100	165	165
90	190	64	64	105.26		3	8.83	620	660	2310	SL192318	102	102	175	175
95	200	67	67	114.65		3	10.2	650	720	2200	SL192319	110	110	185	185
100	215	73	73	119.3		3	13	790	860	2060	SL192320	115	115	200	200
110	240	80	80	134.27		3	17	950	980	1850	SL192322	130	130	220	220
120	260	86	86	147.39		3	22.3	1130	1240	1710	SL192324	140	140	240	240



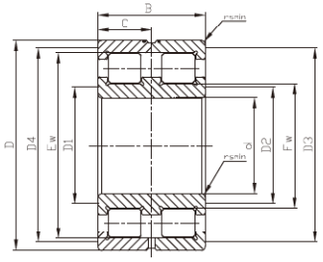
ZSL1923 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
25	62	24	24	31.72		1.1	0.36	68	55	16100	ZSL192305	30	30	55	55
30	72	27	27	38.3		1.1	0.55	94	81	13700	ZSL192306	36	36	64	64
35	80	31	31	44.68		1.5	0.72	118	104	12200	ZSL192307	42	42	72	72
40	90	33	33	51.12		1.5	1	160	144	10800	ZSL192308	48	48	83	83
45	100	36	36	56.1		1.5	1.34	171	160	9700	ZSL192309	53	53	90	90
50	110	40	40	60.72		2	1.76	219	202	8800	ZSL192310	59	59	100	100
55	120	43	43	67.11		2	2.22	255	236	8000	ZSL192311	65	65	110	110
60	130	46	46	73.62		2.1	2.82	270	260	7400	ZSL192312	71	71	118	118
65	140	48	48	80.69		2.1	3.44	335	330	6800	ZSL192313	77	77	128	128
70	150	51	51	84.14		2.1	4.27	365	365	6400	ZSL192314	82	82	136	136
75	160	55	55	91.22		2.1	5.2	435	440	6000	ZSL192315	88	88	146	146
80	170	58	58	98.24		2.1	6.2	510	520	5600	ZSL192316	95	95	156	156
85	180	60	60	107.01		3	7.23	540	570	5300	ZSL192317	102	102	165	165
90	190	64	64	105.26		3	8.7	590	610	5000	ZSL192318	104	104	171	171
95	200	67	67	114.65		3	10	620	670	4750	ZSL192319	111	111	181	181



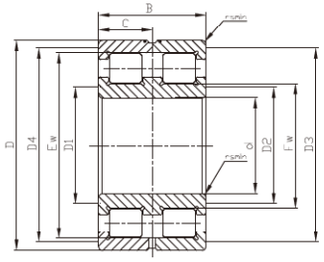
LSL1923 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
80	170	58	58	94		2.1	6.1	475	495	8800	LSL192316	92	92	155	155
85	180	60	60	100		3	7.3	500	520	8300	LSL192317	97	97	165	165
90	190	64	64	105.26		3	8.6	590	610	7900	LSL192318	102	102	175	175
95	200	67	67	114.66		3	10	610	660	7500	LSL192319	110	110	185	185
100	215	73	73	119.3		3	12.8	750	790	6300	LSL192320	115	115	200	200
110	240	80	80	135.5		3	17.3	880	940	5700	LSL192322	130	130	220	220
120	260	86	86	147.39		3	22	1060	1150	5300	LSL192324	140	140	240	240
130	280	93	93	157.9		4	27.2	1190	1300	4900	LSL192326	150	150	260	260
140	300	102	102	168.45		4	34	1340	1470	4550	LSL192328	160	160	280	280
150	320	108	108	182.49		4	40.7	1420	1780	4250	LSL192330	170	170	300	300
160	340	114	114	196.38		4	48.1	1600	2020	4000	LSL192332	180	180	320	320
170	360	120	120	230.55		4	57.5	1750	2230	3750	LSL192334	190	190	340	340
180	380	126	126	221.56		4	67.4	1850	2440	3550	LSL192336	200	200	360	360
190	400	132	132	224.43		5	78.1	2110	2750	3400	LSL192338	210	210	380	380
200	420	138	138	238.45		5	89.3	2350	3050	3250	LSL192340	220	220	400	400
220	460	145	145	266.71		5	108	2500	3200	2950	LSL192344	240	240	440	440
240	500	155	155	280.55		5	138.6	2750	3550	2700	LSL192348	260	260	480	480
260	540	165	165	315.6		6	168	3400	4400	2500	LSL192352	280	280	520	520
280	580	175	175	333.1		6	206.6	3700	4850	2330	LSL192356	300	300	560	560
300	620	185	185	350.93		7.5	253	4150	5600	2170	LSL192360	320	320	600	600



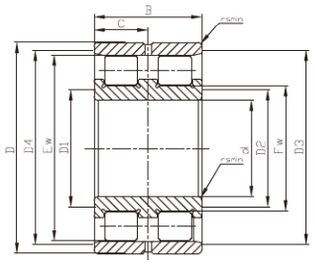
SL0148 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
150	190	40	20			1.1	2.9	237	550	1910	SL014830	158	158	182	182
160	200	40	20			1.1	3.1	243	580	1800	SL014832	168	168	190	190
170	215	45	22.5			1.1	4.1	265	620	1680	SL014834	178	178	205	205
180	225	45	22.5			1.1	4.3	275	660	1600	SL014836	190	190	215	215
190	240	50	25			1.5	5.65	315	750	1510	SL014838	200	200	230	230
200	250	50	25			1.5	5.9	325	790	1440	SL014840	210	210	240	240
220	270	50	25			1.5	6.4	340	870	1320	SL014844	230	230	260	260
240	300	60	30			2	10	520	1290	1200	SL014848	250	250	290	290
260	320	60	30			2	11	540	1400	1120	SL014852	270	270	310	310
280	350	69	34.5			2	16	710	1860	1030	SL014856	290	290	340	340
300	380	80	40			2.1	23	830	2120	950	SL014860	315	315	365	365
320	400	80	40			2.1	24	860	2280	900	SL014864	335	335	385	385
340	420	80	40			2.1	25.5	880	2390	850	SL014868	355	355	405	405
360	440	80	40			2.1	27	910	2550	810	SL014872	375	375	425	425
380	480	100	50			2.1	45.5	1330	3550	750	SL014876	400	400	465	465
400	500	100	50			2.1	46.5	1360	3700	720	SL014880	420	420	480	480



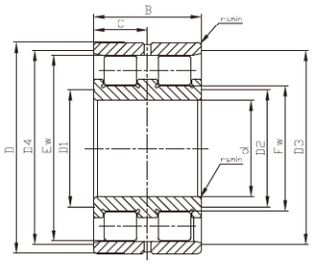
SL0149 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
60	85	25	12.5			1	0.49	71	125	4450	SL014912	65	65	79	79
70	100	30	15			1	0.78	108	189	3800	SL014914	76	76	94	94
80	110	30	15			1	0.88	115	211	3400	SL014916	86	86	104	104
90	125	35	17.5			1.1	1.35	155	295	3000	SL014918	96	96	118	118
100	140	40	20			1.1	1.95	196	380	2700	SL014920	108	108	132	132
110	150	40	20			1.1	2.15	204	410	2490	SL014922	118	118	142	142
120	165	45	22.5			1.1	2.95	228	455	2270	SL014924	130	130	157	157
130	180	50	25			1.5	3.95	265	530	2090	SL014926	140	140	170	170
140	190	50	25			1.5	4.2	275	570	1960	SL014928	150	150	180	180
150	210	60	30			2	6.65	415	840	1800	SL014930	160	160	200	200
160	220	60	30			2	7	435	900	1710	SL014932	170	170	210	210
170	230	60	30			2	7.35	445	950	1620	SL014934	180	180	220	220
180	250	69	34.5			2	10.8	580	1230	1510	SL014936	190	190	240	240
190	260	69	34.5			2	11.2	590	1290	1440	SL014938	200	200	250	250
200	280	80	40			2.1	15.8	690	1480	1350	SL014940	215	215	265	265
220	300	80	40			2.1	17.2	720	1590	1250	SL014944	235	235	285	285
240	320	80	40			2.1	18.5	750	1740	1160	SL014948	255	255	305	305
260	360	100	50			2.1	32	1120	2500	1050	SL014952	275	275	345	345
280	380	100	50			2.1	34	1170	2700	980	SL014956	295	295	365	365
300	420	118	59			3	53	1650	3800	900	SL014960	320	320	400	400
320	440	118	59			3	56	1720	4100	850	SL014964	340	340	420	420
340	460	118	59			3	59	1770	4300	810	SL014968	360	360	440	440
360	480	118	59			3	62.1	1810	4500	770	SL014972	380	380	460	460
380	520	140	70			4	92.4	2280	5600	720	SL014976	400	400	500	500
400	540	140	70			4	96.5	2340	5900	690	SL014980	420	420	520	520



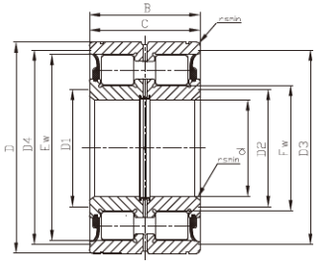
SL0248 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
150	190	40	20		178.3	1.1	2.8	237	550	1910	SL024830	156	156	184	184
160	200	40	20		186.9	1.1	3	243	580	1800	SL024832	166	166	194	194
170	215	45	22.5		201.3	1.1	3.95	265	620	1680	SL024834	178	178	208	208
180	225	45	22.5		214.1	1.1	4.15	275	660	1600	SL024836	188	188	219	219
190	240	50	25		225	1.5	5.45	315	750	1510	SL024838	200	200	232	232
200	250	50	25		235.5	1.5	5.7	325	790	1440	SL024840	210	210	242	242
220	270	50	25		256.5	1.5	6.2	340	870	1320	SL024844	230	230	263	263
240	300	60	30		281.9	2	9.9	520	1290	1200	SL024848	250	250	290	290
260	320	60	30		304.2	2	10.6	540	1400	1120	SL024852	270	270	312	312
280	350	69	34.5		332.4	2	15.6	710	1860	1030	SL024856	290	290	340	340
300	380	80	40		356.7	2.1	22	830	2120	950	SL024860	315	315	370	370
320	400	80	40		379.7	2.1	23.5	860	2280	900	SL024864	335	335	390	390
340	420	80	40		396.9	2.1	25	880	2390	850	SL024868	355	355	412	412
360	440	80	40		419.8	2.1	26	910	2550	810	SL024872	375	375	430	430
380	480	100	50		455.8	2.1	44	1330	3550	750	SL024876	395	395	468	468
400	500	100	50		470.59	2.1	45.8	1360	3700	720	SL024880	415	415	485	485



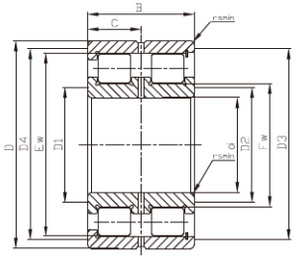
SL0249 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
60	85	25	12.5		77.51	1	0.47	71	125	4450	SL024912	65	65	80	80
70	100	30	15		91.87	1	0.75	108	189	3800	SL024914	75	75	95	95
80	110	30	15		100.78	1	0.85	115	211	3400	SL024916	85	85	105	105
90	125	35	17.5		115.2	1.1	1.3	155	295	3000	SL024918	96	96	120	120
100	140	40	20		129.6	1.1	1.9	196	380	2700	SL024920	106	106	135	135
110	150	40	20		138.2	1.1	2.1	204	410	2490	SL024922	116	116	144	144
120	165	45	22.5		153.55	1.1	2.85	228	455	2270	SL024924	130	130	158	158
130	180	50	25		165.4	1.5	3.8	265	530	2090	SL024926	140	140	172	172
140	190	50	25		175.9	1.5	4.1	275	570	1960	SL024928	150	150	182	182
150	210	60	30		192.77	2	6.45	415	840	1800	SL024930	160	160	202	202
160	220	60	30		206.16	2	6.8	435	900	1710	SL024932	170	170	212	212
170	230	60	30		215.08	2	7.1	445	950	1620	SL024934	180	180	222	222
180	250	69	34.5		230.5	2	10.5	580	1230	1510	SL024936	190	190	240	240
190	260	69	34.5		240.7	2	10.9	590	1290	1440	SL024938	200	200	250	250
200	280	80	40		259.34	2.1	15.3	690	1480	1350	SL024940	215	215	270	270
220	300	80	40		276.52	2.1	16.7	720	1590	1250	SL024944	235	235	288	288
240	320	80	40		299.46	2.1	17.9	750	1740	1160	SL024948	255	255	308	308
260	360	100	50		331.33	2.1	31.2	1120	2500	1050	SL024952	275	275	345	345
280	380	100	50		353.34	2.1	33.1	1170	2700	980	SL024956	295	295	365	365
300	420	118	59		385.51	3	51.9	1650	3800	900	SL024960	320	320	400	400
320	440	118	59		412.27	3	54.9	1720	4100	850	SL024964	340	340	420	420
340	460	118	59		430.11	3	57.8	1770	4300	810	SL024968	360	360	440	440
360	480	118	59		447.95	3	60.8	1810	4500	770	SL024972	380	380	460	460
380	520	140	70		481.35	4	90.5	2280	5600	720	SL024976	400	400	500	500
400	540	140	70		501.74	4	94.6	2340	5900	690	SL024980	420	420	520	520



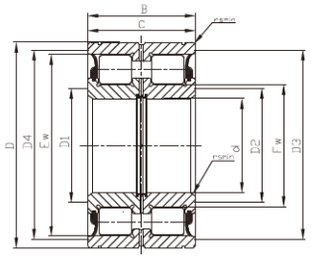
SL04···PP series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
130	190	80	79			0.6	7.5	430	790	800	SL04130-PP	140	140	206	206
140	200	80	79			0.6	8	445	840	750	SL04140-PP	150	150	216	216
150	210	80	79			0.6	8.4	465	920	700	SL04150-PP	162	162	226	226
160	220	80	79			0.6	8.8	480	970	700	SL04160-PP	172	172	236	236
170	230	80	79			0.6	9.3	490	1030	650	SL04170-PP	182	182	250	250
180	240	80	79			0.6	9.8	500	1080	600	SL04180-PP	192	192	260	260
190	260	80	79			0.6	12.7	520	1130	550	SL04190-PP	204	204	282	282
200	270	80	79			0.6	13.2	540	1210	550	SL04200-PP	214	214	292	292
220	300	95	94			1	19.5	700	1550	480	SL04220-PP	234	234	322	322
240	320	95	94			1	21	740	1700	480	SL04240-PP	256	256	346	346
260	340	95	94			1	22.5	840	1990	440	SL04260-PP	276	276	366	366
300	280	95	94			1	25.5	900	2250	380	SL04300-PP	314	314	406	406



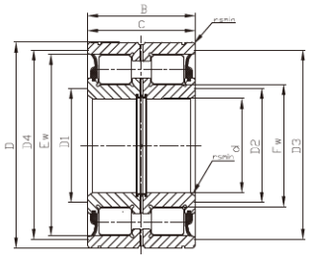
SL1850 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
20	42	30	15		36.81	0.6	0.2	53	53	10500	SL185004	25	25	38	38
25	47	30	15		42.51	0.6	0.23	60	65	9000	SL185005	30	30	43	43
30	55	34	17		49.6	1	0.35	78	84	7600	SL185006	35	35	51	51
35	62	36	18		55.52	1	0.46	94	109	6700	SL185007	40	40	57	57
40	68	38	19		61.74	1	0.56	113	136	6000	SL185008	45	45	63	63
45	75	40	20		66.85	1	0.71	120	151	5400	SL185009	50	50	69	69
50	80	40	20		72.33	1	0.76	151	191	5000	SL185010	55	55	74	74
55	90	46	23		83.54	1.1	1.16	206	275	4450	SL185011	61	61	85	85
60	95	46	23		86.74	1.1	1.24	212	290	4200	SL185012	76	76	89	89
65	100	46	23		93.09	1.1	1.32	223	320	3950	SL185013	71	71	95	95
70	110	54	27		100.28	1.1	1.85	265	355	3600	SL185014	76	76	104	104
75	115	54	27		107.9	1.1	1.93	275	390	3400	SL185015	82	82	109	109
80	125	60	30		117.4	1.1	2.59	295	450	3150	SL185016	87	87	119	119
85	130	60	30		121.95	1.1	2.72	305	475	3000	SL185017	92	92	124	124
90	140	67	33.5		130.65	1.5	3.62	355	560	2800	SL185018	98	98	133	133
100	150	67	33.5		140.2	1.5	3.94	375	620	2600	SL185020	108	108	143	143
110	170	80	40		156.7	2	6.32	490	790	2310	SL185022	118	118	160	160
120	180	80	40		168.15	2	6.77	520	870	2160	SL185024	130	130	170	170
130	200	95	47.5		184.4	2	10.2	740	1230	1960	SL185026	140	140	188	188
140	210	95	47.5		198.4	2	11.1	780	1360	1850	SL185028	150	150	200	200
150	225	100	50		207.45	2	13.3	810	1390	1730	SL185030	160	160	210	210



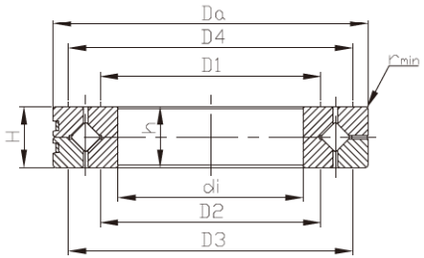
SL0450 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
20	42	30	29			0.3	0.2	40.5	49	4000	SL045004–PP	25	25	47	47
25	47	30	29			0.3	0.24	44.5	58	3600	SL045005–PP	30	30	52	52
30	55	34	33			0.3	0.37	50	67	3000	SL045006–PP	35	35	60	60
35	62	36	35			0.3	0.48	63	88	2600	SL045007–PP	40	40	67	67
40	68	38	37			0.6	0.56	76	103	2400	SL045008–PP	45	45	75	75
45	75	40	39			0.6	0.7	92	130	2200	SL045009–PP	51	51	82	82
50	80	40	39			0.6	0.76	97	142	2000	SL045010–PP	56	56	87	87
55	90	46	45			0.6	1.18	115	175	1800	SL045011–PP	62	62	99	99
60	95	46	45			0.6	1.26	120	189	1700	SL045012–PP	67	67	104	104
65	100	46	45			0.6	1.33	125	203	1600	SL045013–PP	72	72	109	109
70	110	54	53			0.6	1.87	168	265	1400	SL045014–PP	78	78	119	119
75	115	54	53			0.6	1.96	194	300	1400	SL045015–PP	83	83	124	124
80	125	60	59			0.6	2.71	203	325	1300	SL045016–PP	88	88	137	137
85	130	60	59			0.6	2.83	211	350	1200	SL045017–PP	95	95	142	142
90	140	67	66			0.6	3.71	305	510	1100	SL045018–PP	100	100	152	152
95	145	67	66			0.6	3.88	315	530	1100	SL045019–PP	105	105	157	157



SL0450 series

d	D	B	C	Fw	Ew	rsmin	M (kg)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	D1	D2	D3	D4
100	150	67	66			0.6	3.95	330	550	1000	SL045020–PP	110	110	162	162
110	170	80	79			0.6	6.57	395	680	900	SL045022–PP	120	120	182	182
120	180	80	79			0.6	7.04	410	740	900	SL045024–PP	130	130	196	196
130	200	95	94			0.6	10.5	540	960	800	SL045026–PP	142	142	216	216
140	210	95	94			0.6	11.1	610	1100	750	SL045028–PP	152	152	226	226
150	225	100	99			0.6	13.3	710	1260	700	SL045030–PP	162	162	245	245
160	240	109	108			0.6	16.6	740	1360	650	SL045032–PP	175	175	260	260
170	260	122	121			0.6	22.6	960	1750	600	SL045034–PP	185	185	282	282
180	280	136	135			0.6	30.1	1140	2130	550	SL045036–PP	195	195	302	302
190	290	136	135			0.6	31.5	1160	2210	550	SL045038–PP	205	205	312	312
200	310	150	149			0.6	40.8	1350	2600	500	SL045040–PP	320	320	336	336
220	340	160	159			1	52.5	1570	3050	480	SL045044–PP	240	240	366	366
240	360	160	159			1	56	1630	3300	440	SL045048–PP	260	260	386	386
260	400	190	189			1.1	84.5	2380	4700	400	SL045052–PP	280	280	426	426
280	420	190	189			1.1	90	2600	5200	380	SL045056–PP	300	300	453	453
300	460	218	216			1.1	126	3000	5800	340	SL045060–PP	320	320	493	493



Crossed Roller Bearings

di	Da	H	h	rsmin	M (kg)	Ca (KN)	Coa (KN)	Cr (KN)	Cor (KN)	n (r/min)	Bearing Code	Dm	da
70	90	10	10	0.6	0.3	18	60	12	30	955	SX011814	80	79.5
90	115	13	13	1	0.4	26	96	17	47	750	SX011818	102	101.5
100	125	13	13	1	0.5	28	106	18	52	680	SX011820	112	111.5
120	150	16	16	1	0.8	41	153	26	75	565	SX011824	135	134.4
140	175	18	18	1.1	1.1	64	237	41	116	485	SX011828	157	156.3
160	200	20	20	1.1	1.7	69	272	44	133	425	SX011832	180	179.2
180	225	22	22	1.1	2.3	98	381	63	187	375	SX011836	202	201.2
200	250	24	24	1.5	3.1	106	425	68	208	340	SX011840	225	224.2
240	300	28	28	2	5.3	149	612	95	300	280	SX011848	270	269.2
300	380	38	38	2.1	12	245	1027	156	504	225	SX011860	340	339.2
340	420	38	38	2.1	13.5	265	1148	167	563	200	SX011868	380	379.2
400	500	46	46	2.1	24	385	1699	244	833	170	SX011880	450	449
500	620	56	56	3	44	560	2538	355	1244	135	SX0118/500	560	558.8