



K-series super thin section ball bearings

Koyo K-series super thin section ball bearings were developed to meet current engineering needs for thinner, lighter bearings. They are used extensively in automation and labor saving equipment, such as industrial robots.

These bearings are sorted into nine dimension series according to cross-sectional area.

Those of the same dimension series have an equivalent cross-sectional area irrespective of the bore diameter.

They are available in three types that differ in structure.

■ Deep groove type

Carries radial load, axial load in both directions, and combined loads.

■ Angular contact type

Has a 30° contact angle, and carries radial load and axial load in one direction.

Two bearings are usually used together facing one another.

■ Four-point contact type

Has a contact angle of 30° both to the right and to the left. Able to carry axial load in both directions. Also able to support moment and radial loads.

Dimension series code	Cross-sectional dimension $B = E$ (mm)	Bearing type code			Bore diameter (mm)
		C (Deep groove type)	A (Angular contact type)	X (Four-point contact type)	
T	4.762	K T C	K T A	K T X	25.4 to 38.1
A	6.35	K A C	K A A	K A X	50.8 to 304.8
B	7.938	K B C	K B A	K B X	50.8 to 508
C	9.525	K C C	K C A	K C X	101.6 to 762
D	12.7	K D C	K D A	K D X	101.6 to 1 016
F	19.05	K F C	K F A	K F X	
G	25.4	K G C	K G A	K G X	
J	$B = 11.1$ $E = 9.525$	—	KJA...RD 	—	101.6 to 304.8
U	$B = 12.7$ $E = 9.525$	KUC...2RD 	—	KUX...2RD 	

Table 1 K-series super thin section ball bearings : tolerance

Bore diameter number	Single plane mean bore diameter deviation					Single plane mean outside diameter deviation					Single inner (outer) ring width deviation $\Delta B_{is}, \Delta C_s$				Radial runout of assembled bearing ring, max.													Assembled bearing ring face runout with raceway, max.				Bore diameter number					
	Δd_{mp}					ΔD_{mp}									Inner ring K_{ia}						Outer ring K_{ea}							Inner ring S_{ia}		Outer ring S_{ea}							
	classes K0, K1, K2		class K3	class K4	class K6	classes K0, K1, K2		class K3	class K4	class K6	classes K0, K1, K2	classes K3, K4	class K6		class K0		class K3	classes K1, K4	classes K2, K6	class K0		class K3	classes K1, K4	classes K2, K6	classes K1, K4	classes K0, K2, K3, K6	classes K1, K4	classes K0, K2, K3, K6									
	div. I	div. II				div. I	div. II								div. I	div. II					div. I	div. II															
010	0 -10	0 -5	0 -5	0 -4	0 -13	0 -13	0 -8	0 -5	0 -5	0 -127			13	8	8	5	4	20	10	10	5	5	8	Same as limit values for radial runout of assembled bearing inner ring	13	Same as limit values for radial runout of assembled bearing outer ring	010										
015	0 -13	0 -8	0 -8	0 -5									15	10	10			5	8	015																	
020	0 -15	0 -10	0 -5	0 -10									0 -8	0 -8	20			13	10	25	13						13	8	10	020							
025															025																						
030	0 -20	0 -13	0 -6	0 -20	0 -13	0 -10	0 -10	15	13				5	30	15	15	10	8	10	13	15	20	20				13	15	23	13	15	20	25	30	40	45	
035																																					035
040																																					040
042																																					042
045	045																																				
047	047																																				
050	050																																				
055	055																																				
060	060																																				
065	065																																				
070	070																																				
075	075																																				
080	080																																				
090	090																																				
100	100																																				
110	110																																				
120	120																																				
140	140																																				
160	160																																				
180	180																																				
200	200																																				
250	250																																				
300	300																																				
350	350																																				
400	400																																				

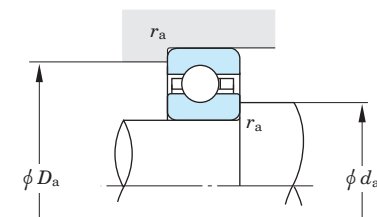
[Notes] Division I is for deep groove type ball bearings.

Division II is for angular contact type and four-point contact type ball bearings.

Table 2 Standard radial internal clearance of deep groove and four-point contact type ball bearings Unit : μm

Bore diameter number	Radial internal clearance				
	classes K0, K1, K2		class K3	class K4	class K6
	Deep groove type	Four-point contact type			
010	25 – 41	25 – 38	18 – 28	13 – 23	10 – 20
015	30 – 46	30 – 43	20 – 30		13 – 23
020	30 – 61	30 – 56	20 – 46	15 – 30	10 – 25
025					15 – 30
030	41 – 71	41 – 66	25 – 51		
035					
040					
042	51 – 86	51 – 76	30 – 56	25 – 41	20 – 36
045					
047					
050	61 – 107	61 – 86	36 – 61	25 – 41	20 – 36
055					
060					
065	71 – 122	71 – 97	41 – 66	30 – 46	25 – 41
070					
075					
080	81 – 132	81 – 107	51 – 76	36 – 51	30 – 46
090					
100					
110	91 – 142	91 – 117	61 – 86	36 – 56	36 – 51
120					
140					
160	102 – 152	102 – 127	102 – 127	102 – 127	102 – 127
180					
200					
250	152 – 203	102 – 127	102 – 127	102 – 127	102 – 127
300					
350					
400					

Table 3 Mounting dimensions



Unit : mm

Dimension series	Bearing type			ϕd_a		ϕD_a		r_a
				max.	min.	min.	max.	max.
T	KTC	KTA	KTX	$d + 5.3$	$d + 3.4$	$d + 4.2$	$d + 6.1$	0.2
A	KAC	KAA	KAX	$d + 7.3$	$d + 4.6$	$d + 5.4$	$d + 8.2$	0.4
B	KBC	KBA	KBX	$d + 9.3$	$d + 5.7$	$d + 6.6$	$d + 10.2$	0.8
C	KCC	KCA	KCX	$d + 11.3$	$d + 6.9$	$d + 7.7$	$d + 12.2$	0.8
D	KDC	KDA	KDX	$d + 15.3$	$d + 9.2$	$d + 10.1$	$d + 16.2$	1.3
F	KFC	KFA	KFX	$d + 23.3$	$d + 13.9$	$d + 14.8$	$d + 24.2$	1.8
G	KGC	KGA	KGX	$d + 31.3$	$d + 18.7$	$d + 19.5$	$d + 32.1$	1.8
J	–	KJA	–	$d + 11.3$	$d + 6.9$	$d + 7.7$	$d + 12.2$	0.2
U	KUC	–	KUX					

Table 4 Shaft diameter and housing bore diameter tolerance

Unit : μm

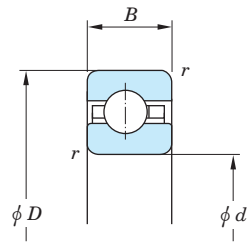
Bore diameter number	Inner ring rotation											Outer ring rotation										Bore diameter number
	Shaft diameter tolerance					Housing bore diameter tolerance						Shaft diameter tolerance					Housing bore diameter tolerance					
	classes K0, K1, K2		class K3	class K4	class K6	classes K0, K1, K2		class K3	class K4	class K6		classes K0, K1, K2		class K3	class K4	class K6	classes K0, K1, K2	class K3	class K4	class K6		
	div. I	div. II				div. I	div. II					div. I	div. II								div. I	
010	+ 10 0		+ 5 0	+ 5 0	+ 4 0	+ 13 0	+ 13 0	+ 8 0	+ 5 0	+ 5 0		- 10 - 20		- 5 - 10	- 5 - 10	- 4 - 8	- 13 - 25	- 13 - 25	- 8 - 15	- 5 - 10	- 5 - 10	010
015	+ 13 0																					
020	+ 15 0		+ 10 0	+ 8 0	+ 5 0	+ 15 0	+ 13 0	+ 10 0	+ 8 0	+ 5 0		- 15 - 30		- 10 - 20	- 8 - 15	- 5 - 10	- 15 - 30	- 13 - 25	- 10 - 20	- 8 - 15	- 8 - 15	020
025																						
030	+ 20 0		+ 13 0	+ 8 0	+ 6 0	+ 15 0	+ 15 0	+ 10 0	+ 8 0	+ 5 0		- 20 - 40		- 13 - 25	- 8 - 15	- 6 - 13	- 15 - 30	- 15 - 30	- 13 - 25	- 10 - 20	- 8 - 15	030
035																						
040	+ 20 0		+ 13 0	+ 8 0	+ 6 0	+ 15 0	+ 15 0	+ 10 0	+ 8 0	+ 5 0		- 20 - 40		- 13 - 25	- 8 - 15	- 6 - 13	- 15 - 30	- 15 - 30	- 13 - 25	- 10 - 20	- 8 - 15	040
042																						
045	+ 25 0		+ 15 0	+ 10 0	+ 8 0	+ 20 0	+ 13 0	+ 10 0	+ 5 0	+ 5 0		- 25 - 50		- 15 - 30	- 10 - 20	- 8 - 15	- 25 - 50	- 15 - 30	- 13 - 25	- 10 - 20	- 10 - 20	045
047																						
050	+ 30 0		+ 18 0	+ 13 0	+ 10 0	+ 25 0	+ 15 0	+ 10 0	+ 5 0	+ 5 0		- 30 - 60		- 18 - 35	- 13 - 25	- 10 - 20	- 30 - 60	- 18 - 35	- 13 - 25	- 10 - 20	- 10 - 20	050
055																						
060	+ 35 0		+ 20 0	+ 13 0	+ 10 0	+ 35 0	+ 35 0	+ 20 0	+ 13 0	+ 5 0		- 35 - 70		- 20 - 40	- 13 - 25	- 13 - 25	- 35 - 70	- 35 - 70	- 20 - 40	- 18 - 35	- 13 - 25	060
065																						
070	+ 40 0		+ 23 0	+ 15 0	+ 10 0	+ 40 0	+ 23 0	+ 15 0	+ 5 0	+ 5 0		- 40 - 80		- 15 - 30	- 13 - 25	- 13 - 25	- 40 - 80	- 35 - 70	- 23 - 45	- 15 - 30	- 15 - 30	070
075																						
080	+ 45 0		+ 23 0	+ 15 0	+ 10 0	+ 45 0	+ 40 0	+ 25 0	+ 18 0	+ 5 0		- 45 - 90		- 23 - 45	- 15 - 30	- 13 - 25	- 45 - 90	- 40 - 80	- 25 - 50	- 18 - 35	- 13 - 25	080
090																						
100	+ 50 0		+ 25 0	+ 18 0	+ 10 0	+ 50 0	+ 45 0	+ 30 0	+ 20 0	+ 5 0		- 50 - 100		- 25 - 50	- 15 - 35	- 13 - 25	- 50 - 100	- 45 - 90	- 30 - 60	- 18 - 40	- 13 - 25	100
110																						
120	+ 75 0		+ 45 0	+ 13 0	+ 10 0	+ 75 0	+ 45 0	+ 30 0	+ 20 0	+ 5 0		- 75 - 150		- 45 - 90	- 15 - 30	- 13 - 25	- 75 - 150	- 45 - 90	- 30 - 60	- 18 - 40	- 13 - 25	120
140																						
160	+ 100 0		+ 50 0	+ 13 0	+ 10 0	+ 100 0	+ 50 0	+ 25 0	+ 18 0	+ 5 0		- 100 - 200		- 50 - 100	- 15 - 30	- 13 - 25	- 100 - 200	- 50 - 100	- 25 - 50	- 18 - 35	- 13 - 25	160
180																						
200	+ 50 0		+ 25 0	+ 18 0	+ 10 0	+ 50 0	+ 45 0	+ 30 0	+ 20 0	+ 5 0		- 50 - 100		- 25 - 50	- 15 - 35	- 13 - 25	- 50 - 100	- 45 - 90	- 30 - 60	- 18 - 40	- 13 - 25	200
250																						
300	+ 75 0		+ 45 0	+ 13 0	+ 10 0	+ 75 0	+ 45 0	+ 30 0	+ 20 0	+ 5 0		- 75 - 150		- 45 - 90	- 15 - 30	- 13 - 25	- 75 - 150	- 45 - 90	- 30 - 60	- 18 - 40	- 13 - 25	300
350																						
400	+ 100 0		+ 50 0	+ 13 0	+ 10 0	+ 100 0	+ 50 0	+ 25 0	+ 18 0	+ 5 0		- 100 - 200		- 50 - 100	- 15 - 30	- 13 - 25	- 100 - 200	- 50 - 100	- 25 - 50	- 18 - 35	- 13 - 25	400

[Notes] Division I is for deep groove type ball bearings.

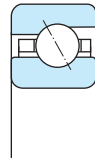
Division II is for angular contact type and four-point contact type ball bearings.

K-series super thin section ball bearings open type

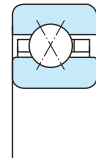
d 25.4 ~ (114.3) mm



Deep groove type



Angular contact type



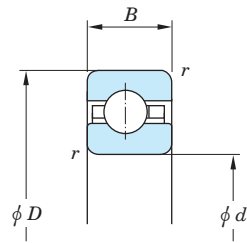
Four-point contact type

Boundary dimensions (mm)				Deep groove type Basic load ratings			Angular contact type Basic load ratings						Four-point contact type Basic load ratings					(Refer.) Mass (kg)			
<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i> min.	Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	<i>C_a</i>	<i>C_{0a}</i>		Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	<i>C_a</i>	<i>C_{0a}</i>	Deep groove type	Angular contact type	Four-point contact type	
25.4	34.925	4.762	0.4	KTC010	2.50	1.95	KTA010	2.65	2.20	3.45	6.70		KTX010	2.15	1.65	3.70	7.15	0.012	0.011	0.012	
38.1	47.625	4.762	0.4	KTC015	2.90	2.70	KTA015	3.05	3.10	4.00	9.35		KTX015	2.50	2.30	4.20	10.5	0.018	0.017	0.018	
50.8	63.5	6.35	0.6	KAC020	4.50	4.30	KAA020	4.75	4.95	6.25	14.9		KAX020	3.90	3.70	6.60	16.9	0.045	0.045	0.045	
	66.675	7.938	1	KBC020	6.35	5.85	KBA020	6.75	6.70	8.90	20.4		KBX020	5.55	5.00	9.35	22.0	0.073	0.068	0.073	
63.5	76.2	6.35	0.6	KAC025	4.85	5.20	KAA025	5.10	5.95	6.75	18.0		KAX025	4.20	4.45	7.05	20.9	0.059	0.054	0.059	
	79.375	7.938	1	KBC025	6.90	7.00	KBA025	7.35	8.15	9.65	24.6		KBX025	6.00	6.00	10.0	27.3	0.086	0.086	0.086	
76.2	88.9	6.35	0.6	KAC030	5.20	6.10	KAA030	5.45	7.00	7.15	21.2		KAX030	4.50	5.25	7.45	24.9	0.068	0.064	0.068	
	92.075	7.938	1	KBC030	7.35	8.15	KBA030	7.70	9.35	10.2	28.3		KBX030	6.35	7.00	10.6	32.5	0.109	0.100	0.109	
88.9	101.6	6.35	0.6	KAC035	5.45	7.00	KAA035	5.75	8.00	7.55	24.3		KAX035	4.75	6.00	7.80	29.0	0.082	0.077	0.082	
	104.775	7.938	1	KBC035	7.75	9.30	KBA035	8.20	10.7	10.8	32.5		KBX035	6.70	8.00	11.1	37.8	0.122	0.122	0.122	
101.6	114.3	6.35	0.6	KAC040	5.75	7.85	KAA040	6.00	9.05	7.90	27.4		KAX040	4.95	6.80	8.10	33.0	0.086	0.086	0.086	
	117.475	7.938	1	KBC040	8.10	10.5	KBA040	8.60	12.1	11.3	36.8		KBX040	7.05	9.00	11.6	43.1	0.136	0.136	0.136	
	120.65	9.525	1	KCC040	10.3	12.4	KCA040	11.2	14.9	14.7	45.1		KCX040	8.95	10.6	14.8	50.0	0.204	0.200	0.204	
	127	12.7	1.5	KDC040	15.7	17.2	KDA040	16.5	19.7	21.7	59.8		KDX040	13.6	14.8	22.6	67.4	0.354	0.363	0.354	
	139.7	19.05	2	KFC040	28.2	28.1	KFA040	30.3	32.9	39.8	99.6		KFX040	24.6	24.0	41.0	103	0.862	0.871	0.862	
	152.4	25.4	2	KGC040	42.6	39.6	KGA040	45.2	46.0	59.5	139		KGX040	37.3	34.5	62.4	141	1.63	1.64	1.63	
	107.95	120.65	6.35	0.6	KAC042	5.85	8.30	KAA042	6.15	9.55	8.10	29.0		KAX042	5.10	7.15	8.25	35.0	0.091	0.091	0.091
		123.825	7.938	1	KBC042	8.25	10.9	KBA042	8.75	12.7	11.5	38.6		KBX042	7.15	9.40	11.7	45.2	0.141	0.141	0.141
127		9.525	1	KCC042	10.5	13.0	KCA042	11.5	15.8	15.1	47.8		KCX042	9.15	11.2	15.0	53.0	0.213	0.209	0.213	
133.35		12.7	1.5	KDC042	15.8	17.8	KDA042	16.8	20.8	22.1	62.9		KDX042	13.7	15.3	22.8	70.2	0.376	0.381	0.376	
114.3	146.05	19.05	2	KFC042	28.8	29.4	KFA042	30.6	34.0	40.3	103		KFX042	25.1	25.2	41.8	109	0.907	0.925	0.907	
	158.75	25.4	2	KGC042	42.2	39.9	KGA042	46.2	48.0	60.8	146		KGX042	36.9	34.3	61.8	142	1.72	1.74	1.72	
	127	6.35	0.6	KAC045	6.00	8.75	KAA045	6.25	10.1	8.25	30.5		KAX045	5.20	7.55	8.40	37.0	0.100	0.095	0.100	
	130.175	7.938	1	KBC045	8.45	11.6	KBA045	8.90	13.3	11.7	40.4		KBX045	7.35	10.0	12.0	48.3	0.150	0.154	0.150	
114.3	133.35	9.525	1	KCC045	10.7	13.7	KCA045	11.7	16.6	15.4	50.4		KCX045	9.30	11.8	15.3	56.1	0.218	0.222	0.218	
	139.7	12.7	1.5	KDC045	16.3	19.0	KDA045	17.2	21.8	22.6	66.0		KDX045	14.2	16.3	23.4	75.5	0.399	0.399	0.399	

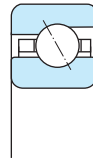
K-series super thin section ball bearings

open type

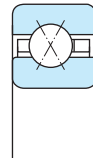
d (114.3) ~ (165.1) mm



Deep groove type



Angular contact type



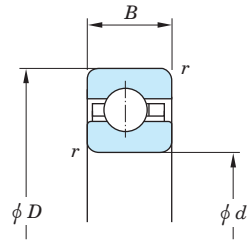
Four-point contact type

Boundary dimensions (mm)				Deep groove type Basic load ratings			Angular contact type Basic load ratings					Four-point contact type Basic load ratings					(Refer.) Mass		
<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i> min.	Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	<i>C_a</i>	<i>C_{0a}</i>	Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	<i>C_a</i>	<i>C_{0a}</i>	Deep groove type	Angular contact type	Four-point contact type
114.3	152.4	19.05	2	KFC045	29.4	30.8	KFA045	31.7	36.4	41.7	110	KFX045	25.6	26.3	42.6	115	0.953	0.971	0.953
	165.1	25.4	2	KGC045	43.6	42.7	KGA045	47.1	50.1	62.0	152	KGX045	38.1	36.4	63.6	152	1.81	1.79	1.81
120.65	133.35	6.35	0.6	KAC047	6.10	9.20	KAA047	6.40	10.6	8.40	32.1	KAX047	5.30	7.95	8.55	39.0	0.104	0.100	0.104
	136.525	7.938	1	KBC047	8.55	12.1	KBA047	9.10	14.2	12.0	42.9	KBX047	7.45	10.4	12.1	50.4	0.154	0.159	0.154
	139.7	9.525	1	KCC047	10.9	14.4	KCA047	12.0	17.5	15.7	53.0	KCX047	9.50	12.4	15.5	59.1	0.227	0.231	0.227
	146.05	12.7	1.5	KDC047	16.5	19.6	KDA047	17.5	22.8	23.0	69.1	KDX047	14.3	16.8	23.6	78.2	0.426	0.422	0.426
	158.75	19.05	2	KFC047	29.9	32.1	KFA047	32.0	37.5	42.2	114	KFX047	26.1	27.5	43.3	121	0.998	1.03	0.998
	171.45	25.4	2	KGC047	44.9	45.2	KGA047	48.0	52.1	63.1	158	KGX047	39.2	38.6	65.4	162	1.86	1.89	1.86
127	139.7	6.35	0.6	KAC050	6.20	9.65	KAA050	6.50	11.1	8.55	33.6	KAX050	5.35	8.35	8.65	41.1	0.109	0.104	0.109
	142.875	7.938	1	KBC050	8.80	12.8	KBA050	9.25	14.8	12.2	44.7	KBX050	7.60	11.0	12.4	53.6	0.172	0.168	0.172
	146.05	9.525	1	KCC050	11.1	15.0	KCA050	12.2	18.4	16.0	55.7	KCX050	9.65	12.9	15.8	62.1	0.263	0.245	0.263
	152.4	12.7	1.5	KDC050	16.9	20.8	KDA050	17.8	23.8	23.4	72.2	KDX050	14.7	17.9	24.2	83.5	0.454	0.445	0.454
	165.1	19.05	2	KFC050	30.5	33.4	KFA050	32.4	38.6	42.6	117	KFX050	26.5	28.7	44.0	127	1.04	1.08	1.04
	177.8	25.4	2	KGC050	46.2	47.6	KGA050	48.8	54.2	64.3	164	KGX050	40.3	40.7	67.1	173	1.95	2.00	1.95
139.7	152.4	6.35	0.6	KAC055	6.40	10.5	KAA055	6.75	12.1	8.85	36.8	KAX055	5.55	9.10	8.90	45.1	0.113	0.113	0.113
	155.575	7.938	1	KBC055	9.10	13.9	KBA055	9.60	16.2	12.6	49.0	KBX055	7.85	12.0	12.7	58.8	0.186	0.181	0.186
	158.75	9.525	1	KCC055	11.5	16.4	KCA055	12.5	19.8	16.5	60.0	KCX055	10.0	14.1	16.2	68.2	0.268	0.263	0.268
	165.1	12.7	1.5	KDC055	17.5	22.6	KDA055	18.4	25.9	24.2	78.5	KDX055	15.2	19.4	24.9	91.6	0.481	0.481	0.481
	177.8	19.05	2	KFC055	31.5	36.1	KFA055	33.6	42.1	44.3	128	KFX055	27.4	31.0	45.3	140	1.13	1.17	1.13
	190.5	25.4	2	KGC055	47.0	49.8	KGA055	50.5	58.3	66.4	177	KGX055	41.0	42.6	68.0	184	2.13	2.15	2.13
152.4	165.1	6.35	0.6	KAC060	6.60	11.4	KAA060	6.95	13.2	9.15	39.9	KAX060	5.75	9.85	9.15	49.1	0.127	0.127	0.127
	168.275	7.938	1	KBC060	9.35	15.1	KBA060	9.90	17.6	13.0	53.3	KBX060	8.10	13.0	13.1	64.1	0.200	0.200	0.200
	171.45	9.525	1	KCC060	11.9	17.7	KCA060	12.9	21.5	17.0	65.3	KCX060	10.3	15.3	16.7	74.2	0.286	0.290	0.286
	177.8	12.7	1.5	KDC060	18.0	24.4	KDA060	19.0	27.9	24.9	84.7	KDX060	15.7	21.0	25.5	99.7	0.526	0.522	0.526
	190.5	19.05	2	KFC060	32.5	38.8	KFA060	34.8	45.6	45.8	138	KFX060	28.2	33.3	46.5	152	1.22	1.23	1.22
	203.2	25.4	2	KGC060	49.3	54.7	KGA060	52.0	62.4	68.4	189	KGX060	42.9	46.8	71.1	205	2.31	2.30	2.31
165.1	177.8	6.35	0.6	KAC065	6.80	12.3	KAA065	7.15	14.2	9.40	43.0	KAX065	5.90	10.6	9.40	53.2	0.136	0.136	0.136
	180.975	7.938	1	KBC065	9.65	16.3	KBA065	10.1	18.8	13.3	56.9	KBX065	8.35	14.0	13.4	69.3	0.213	0.213	0.213

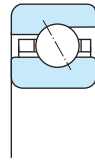
K-series super thin section ball bearings

open type

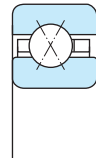
d (165.1) ~ 228.6 mm



Deep groove type



Angular contact type

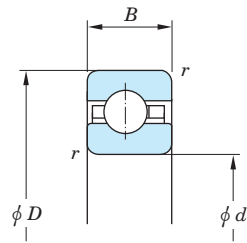


Four-point contact type

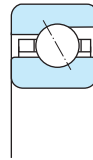
Boundary dimensions (mm)				Deep groove type Basic load ratings			Angular contact type Basic load ratings						Four-point contact type Basic load ratings					(Refer.) Mass (kg)		
<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i> min.	Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	<i>C_a</i>	<i>C_{0a}</i>		Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	<i>C_a</i>	<i>C_{0a}</i>	Deep groove type	Angular contact type	Four-point contact type
165.1	184.15	9.525	1	KCC065	12.2	19.0	KCA065	13.4	23.3	17.6	70.6		KCX065	10.6	16.4	17.1	80.3	0.308	0.308	0.308
	190.5	12.7	1.5	KDC065	18.6	26.1	KDA065	19.5	30.0	25.6	90.9		KDX065	16.1	22.5	26.2	108	0.553	0.562	0.553
	203.2	19.05	2	KFC065	33.4	41.5	KFA065	36.0	49.1	47.3	149		KFX065	29.0	35.6	47.7	164	1.32	1.33	1.32
	215.9	25.4	2	KGC065	50.0	57.0	KGA065	53.5	66.5	70.3	202		KGX065	43.5	48.8	71.8	216	2.45	2.45	2.45
177.8	190.5	6.35	0.6	KAC070	7.00	13.2	KAA070	7.35	15.2	9.65	46.1		KAX070	6.05	11.4	9.60	57.2	0.141	0.145	0.141
	193.675	7.938	1	KBC070	9.90	17.4	KBA070	10.4	20.2	13.7	61.2		KBX070	8.55	15.0	13.7	74.6	0.227	0.227	0.227
	196.85	9.525	1	KCC070	12.5	20.4	KCA070	13.6	24.7	17.9	74.9		KCX070	10.9	17.6	17.5	86.3	0.331	0.336	0.331
	203.2	12.7	1.5	KDC070	19.0	27.9	KDA070	20.0	32.1	26.3	97.2		KDX070	16.5	24.0	26.7	116	0.594	0.603	0.594
	215.9	19.05	2	KFC070	34.3	44.1	KFA070	37.0	52.6	48.7	159		KFX070	29.8	37.9	48.7	176	1.45	1.43	1.45
	228.6	25.4	2	KGC070	52.1	61.8	KGA070	54.8	70.7	72.2	214		KGX070	45.3	53.0	74.5	237	2.63	2.66	2.63
190.5	203.2	6.35	0.6	KAC075	7.15	14.1	KAA075	7.50	16.2	9.90	49.2		KAX075	6.20	12.2	9.80	61.3	0.154	0.154	0.154
	206.375	7.938	1	KBC075	10.1	18.6	KBA075	10.7	21.6	14.1	65.4		KBX075	8.80	16.0	14.0	79.8	0.240	0.245	0.240
	209.55	9.525	1	KCC075	12.8	21.7	KCA075	14.0	26.5	18.4	80.2		KCX075	11.1	18.7	17.8	92.4	0.354	0.354	0.354
	215.9	12.7	1.5	KDC075	19.5	29.7	KDA075	20.5	34.1	27.0	103		KDX075	16.9	25.6	27.3	124	0.640	0.644	0.640
	228.6	19.05	2	KFC075	35.1	46.8	KFA075	37.5	54.8	49.3	166		KFX075	30.5	40.2	49.8	188	1.54	1.54	1.54
	241.3	25.4	2	KGC075	52.6	64.1	KGA075	56.2	74.8	73.9	227		KGX075	45.8	55.0	75.2	249	2.77	2.81	2.77
203.2	215.9	6.35	0.6	KAC080	7.35	15.0	KAA080	7.70	17.3	10.1	52.3		KAX080	6.35	13.0	10.0	65.3	0.172	0.163	0.172
	219.075	7.938	1	KBC080	10.4	19.7	KBA080	11.0	23.0	14.4	69.7		KBX080	9.00	17.0	14.3	85.1	0.259	0.259	0.259
	222.25	9.525	1	KCC080	13.1	23.1	KCA080	14.4	28.2	18.9	85.5		KCX080	11.4	19.9	18.2	98.5	0.381	0.381	0.381
	228.6	12.7	1.5	KDC080	20.0	31.5	KDA080	21.0	36.2	27.6	110		KDX080	17.3	27.1	27.9	132	0.694	0.689	0.694
	241.3	19.05	2	KFC080	35.9	49.5	KFA080	38.5	58.3	50.6	177		KFX080	31.2	42.5	50.7	200	1.59	1.64	1.59
	254	25.4	2	KGC080	54.5	69.0	KGA080	57.4	78.9	75.5	239		KGX080	47.4	59.2	77.6	270	2.95	2.97	2.95
228.6	241.3	6.35	0.6	KAC090	7.65	16.8	KAA090	8.00	19.3	10.5	58.6		KAX090	6.60	14.5	10.4	73.4	0.200	0.186	0.200
	244.475	7.938	1	KBC090	10.8	22.1	KBA090	11.4	25.6	15.0	77.6		KBX090	9.35	19.1	14.8	95.6	0.299	0.290	0.299
	247.65	9.525	1	KCC090	13.7	25.7	KCA090	14.9	31.4	19.6	95.1		KCX090	11.9	22.2	18.9	111	0.426	0.445	0.426
	254	12.7	1.5	KDC090	20.8	35.0	KDA090	21.8	40.3	28.7	122		KDX090	18.0	30.2	28.9	148	0.780	0.767	0.780
	266.7	19.05	2	KFC090	37.4	54.8	KFA090	40.3	65.3	53.1	198		KFX090	32.5	47.2	52.6	224	1.77	1.79	1.77
	279.4	25.4	2	KGC090	56.8	76.1	KGA090	59.8	87.1	78.7	264		KGX090	49.4	65.3	80.5	302	3.27	3.27	3.27

K-series super thin section ball bearings open type

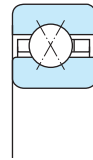
d 254 ~ 406.4 mm



Deep groove type



Angular contact type

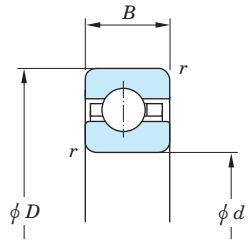


Four-point contact type

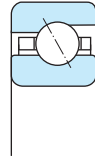
Boundary dimensions (mm)				Deep groove type Basic load ratings			Angular contact type Basic load ratings						Four-point contact type Basic load ratings					(Refer.) Mass (kg)		
<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i> min.	Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	<i>C_a</i>	<i>C_{0a}</i>		Bearing No.	<i>C_r</i>	<i>C_{0r}</i>	<i>C_a</i>	<i>C_{0a}</i>	Deep groove type	Angular contact type	Four-point contact type
254	266.7	6.35	0.6	KAC100	7.95	18.6	KAA100	8.30	21.4	11.0	64.8		KAX100	6.85	16.0	10.7	81.4	0.227	0.204	0.227
	269.875	7.938	1	KBC100	11.2	24.4	KBA100	11.9	28.4	15.6	86.1		KBX100	9.75	21.1	15.3	106	0.331	0.322	0.331
	273.05	9.525	1	KCC100	14.2	28.4	KCA100	15.6	34.9	20.5	106		KCX100	12.3	24.5	19.5	123	0.481	0.472	0.481
	279.4	12.7	1.5	KDC100	21.6	38.6	KDA100	22.7	44.4	29.8	135		KDX100	18.7	33.3	29.8	164	0.853	0.848	0.853
	292.1	19.05	2	KFC100	38.8	60.2	KFA100	41.6	71.1	54.7	215		KFX100	33.7	51.8	54.3	249	1.95	2.00	1.95
	304.8	25.4	2	KGC100	59.0	83.2	KGA100	62.0	95.3	81.6	289		KGX100	51.2	71.5	83.1	334	3.58	3.63	3.58
279.4	292.1	6.35	0.6	KAC110	8.20	20.3	KAA110	8.60	23.4	11.3	71.0		KAX110	7.10	17.6	11.1	89.5	0.236	0.227	0.236
	295.275	7.938	1	KBC110	11.6	26.7	KBA110	12.3	31.0	16.1	94.0		KBX110	10.1	23.1	15.7	117	0.340	0.354	0.340
	298.45	9.525	1	KCC110	14.7	31.1	KCA110	16.1	38.0	21.1	115		KCX110	12.7	26.8	20.1	135	0.526	0.517	0.526
	304.8	12.7	1.5	KDC110	22.3	42.2	KDA110	23.4	48.5	30.8	147		KDX110	19.3	36.4	30.7	180	0.934	0.930	0.934
	317.5	19.05	2	KFC110	40.2	65.5	KFA110	43.2	78.0	56.9	236		KFX110	34.8	56.4	55.9	273	2.18	2.15	2.18
	330.2	25.4	2	KGC110	61.0	90.3	KGA110	64.1	104	84.3	314		KGX110	52.9	77.7	85.5	366	3.90	3.94	3.90
304.8	317.5	6.35	0.6	KAC120	8.45	22.1	KAA120	8.90	25.5	11.7	77.3		KAX120	7.35	19.1	11.4	97.6	0.254	0.245	0.254
	320.675	7.938	1	KBC120	12.0	29.0	KBA120	12.7	33.8	16.7	103		KBX120	10.4	25.1	16.2	127	0.376	0.386	0.376
	323.85	9.525	1	KCC120	15.2	33.8	KCA120	16.5	41.2	21.8	125		KCX120	13.1	29.2	20.6	147	0.567	0.558	0.567
	330.2	12.7	1.5	KDC120	23.0	45.7	KDA120	24.2	52.6	31.8	160		KDX120	20.0	39.5	31.5	197	1.02	1.01	1.02
	342.9	19.05	2	KFC120	41.4	70.9	KFA120	44.3	83.8	58.3	254		KFX120	35.9	61.1	57.4	297	2.36	2.36	2.36
	355.6	25.4	2	KGC120	62.9	97.5	KGA120	66.0	112	86.9	339		KGX120	54.5	83.9	87.8	399	4.22	4.30	4.22
355.6	371.475	7.938	1	KBC140	12.7	33.7	KBA140	13.4	39.1	17.6	118		KBX140	11.0	29.1	17.0	148	0.476	0.445	0.476
	374.65	9.525	1	KCC140	16.0	39.1	KCA140	17.5	47.9	23.0	145		KCX140	13.9	33.8	21.6	171	0.689	0.649	0.689
	381	12.7	1.5	KDC140	24.3	52.9	KDA140	25.5	60.9	33.6	184		KDX140	21.1	45.7	33.1	229	1.24	1.17	1.24
	393.7	19.05	2	KFC140	43.7	81.5	KFA140	46.8	96.5	61.6	293		KFX140	37.9	70.3	60.2	345	2.72	2.61	2.72
	406.4	25.4	2	KGC140	66.3	112	KGA140	69.7	128	91.7	389		KGX140	57.5	96.2	92.0	463	4.90	4.94	4.90
406.4	422.275	7.938	1	KBC160	13.3	38.3	KBA160	14.0	44.5	18.4	135		KBX160	11.5	33.1	17.7	169	0.544	0.508	0.544
	425.45	9.525	1	KCC160	16.8	44.4	KCA160	18.4	54.5	24.2	165		KCX160	14.6	38.4	22.6	195	0.785	0.739	0.785
	431.8	12.7	1.5	KDC160	25.5	60.0	KDA160	26.8	69.1	35.2	209		KDX160	22.1	51.8	34.5	261	1.41	1.33	1.41
	444.5	19.05	2	KFC160	45.8	92.2	KFA160	49.0	109	64.5	331		KFX160	39.7	79.6	62.7	394	3.22	3.08	3.22
	457.2	25.4	2	KGC160	69.5	126	KGA160	73.0	145	96.0	439		KGX160	60.3	109	95.9	528	5.58	5.62	5.58

K-series super thin section ball bearings open type

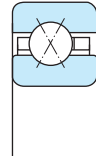
d 457.2 ~ 1 016 mm



Deep groove type



Angular contact type

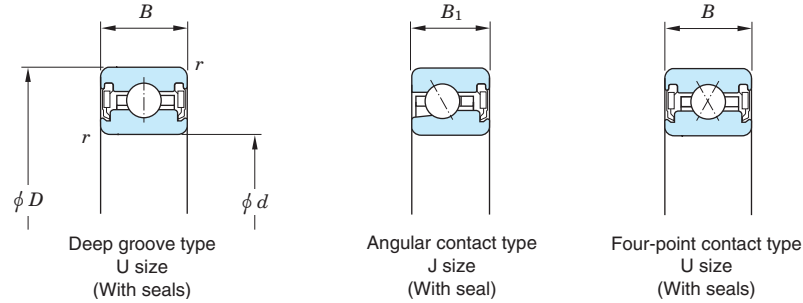


Four-point contact type

Boundary dimensions (mm)				Deep groove type Basic load ratings			Angular contact type Basic load ratings						Four-point contact type Basic load ratings					(Refer.) Mass (kg)		
d	D	B	r min.	Bearing No.	C_r	C_{0r}	Bearing No.	C_r	C_{0r}	C_a	C_{0a}		Bearing No.	C_r	C_{0r}	C_a	C_{0a}	Deep groove type	Angular contact type	Four-point contact type
457.2	473.075	7.938	1	KBC180	13.9	42.9	KBA180	14.6	49.9	19.2	151		KBX180	12.0	37.1	18.4	190	0.612	0.572	0.612
	476.25	9.525	1	KCC180	17.5	49.8	KCA180	19.2	61.2	25.3	185		KCX180	15.2	43.0	23.4	220	0.880	0.830	0.880
	482.6	12.7	1.5	KDC180	26.6	67.1	KDA180	27.6	77.3	36.3	234		KDX180	23.0	58.0	35.8	293	1.58	1.49	1.58
	495.3	19.05	2	KFC180	47.8	103	KFA180	51.5	123	67.7	373		KFX180	41.4	88.8	65.0	442	3.58	3.48	3.58
	508	25.4	2	KGC180	72.5	140	KGA180	76.0	161	100	488		KGX180	62.8	121	99.4	592	6.21	6.26	6.21
508	523.875	7.938	1	KBC200	14.4	47.6	KBA200	15.2	55.3	20.0	168		KBX200	12.5	41.2	19.0	211	0.680	0.635	0.680
	527.05	9.525	1	KCC200	18.2	55.1	KCA200	19.9	67.5	26.2	205		KCX200	15.8	47.7	24.2	244	0.980	0.921	0.980
	533.4	12.7	1.5	KDC200	27.6	74.3	KDA200	29.0	85.6	38.1	259		KDX200	23.9	64.2	37.0	326	1.75	1.66	1.75
	546.1	19.05	2	KFC200	49.6	114	KFA200	53.4	136	70.3	412		KFX200	43.0	98.1	67.2	491	4.04	3.84	4.04
	558.8	25.4	2	KGC200	75.2	154	KGA200	78.9	178	104	538		KGX200	65.2	133	103	657	8.53	6.89	8.53
635	654.05	9.525	1	KCC250	19.7	68.5	KCA250	21.6	84.0	28.4	255		KCX250	17.1	59.2	26.0	304	1.22	1.14	1.22
	660.4	12.7	1.5	KDC250	29.9	92.1	KDA250	31.4	106	41.3	322		KDX250	25.9	79.6	39.7	407	2.17	2.06	2.17
	673.1	19.05	2	KFC250	53.7	140	KFA250	57.6	167	75.8	506		KFX250	46.5	121	72.0	612	4.94	4.76	4.94
	685.8	25.4	2	KGC250	81.4	190	KGA250	85.4	219	112	663		KGX250	70.5	164	110	819	8.85	8.53	8.85
762	781.05	9.525	1	KCC300	21.1	81.9	KCA300	23.1	101	30.3	305		KCX300	18.3	70.8	27.6	365	1.46	1.37	1.46
	787.4	12.7	1.5	KDC300	32.0	110	KDA300	33.5	127	44.1	384		KDX300	27.7	95.0	42.1	487	2.60	2.47	2.60
	800.1	19.05	2	KFC300	57.3	167	KFA300	61.6	200	81.0	605		KFX300	49.6	144	76.3	733	5.90	5.67	5.90
	812.8	25.4	2	KGC300	86.8	226	KGA300	91.1	260	120	788		KGX300	75.2	195	116	980	10.6	10.2	10.6
889	927.1	19.05	2	KFC350	60.6	194	KFA350	65.2	232	85.8	703		KFX350	52.5	168	80.1	854	6.85	6.62	6.85
	939.8	25.4	2	KGC350	91.7	261	KGA350	96.2	301	127	912		KGX350	79.4	226	122	1 140	12.3	11.9	12.3
1 016	1 054.1	19.05	2	KFC400	63.5	221	KFA400	68.4	264	90.0	801		KFX400	55.0	191	83.6	975	7.80	7.53	7.80
	1 066.8	25.4	2	KGC400	96.2	297	KGA400	101	342	133	1 040		KGX400	83.3	257	128	1 300	14.0	13.5	14.0

K-series super thin section ball bearings sealed type

d 101.6 ~ 304.8 mm



Boundary dimensions (mm)					Deep groove type Basic load ratings			Angular contact type Basic load ratings						Four-point contact type Basic load ratings					(Refer.) Mass (kg)		
d	D	B	B_1	r min.	Bearing No.	(kN)		Bearing No.	(kN)					Bearing No.	(kN)				Deep groove type	Angular contact type	Four-point contact type
						C_r	C_{0r}		C_r	C_{0r}	C_a	C_{0a}			C_r	C_{0r}	C_a	C_{0a}			
101.6	120.65	12.7	11.1	0.4	KUC040 2RD	10.3	12.4	KJA040 RD	11.2	14.9	14.7	45.1		KUX040 2RD	8.95	10.6	14.8	50.0	0.249	0.222	0.249
107.95	127	12.7	11.1	0.4	KUC042 2RD	10.5	13.0	KJA042 RD	11.5	15.8	15.1	47.8		KUX042 2RD	9.15	11.2	15.0	53.0	0.263	0.236	0.263
114.3	133.35	12.7	11.1	0.4	KUC045 2RD	10.7	13.7	KJA045 RD	11.7	16.6	15.4	50.4		KUX045 2RD	9.30	11.8	15.3	56.1	0.277	0.254	0.277
120.65	139.7	12.7	11.1	0.4	KUC047 2RD	10.9	14.4	KJA047 RD	12.0	17.5	15.7	53.0		KUX047 2RD	9.50	12.4	15.5	59.1	0.295	0.268	0.295
127	146.05	12.7	11.1	0.4	KUC050 2RD	11.1	15.0	KJA050 RD	12.2	18.4	16.0	55.7		KUX050 2RD	9.65	12.9	15.8	62.1	0.308	0.281	0.308
139.7	158.75	12.7	11.1	0.4	KUC055 2RD	11.5	16.4	KJA055 RD	12.5	19.8	16.5	60.0		KUX055 2RD	10.0	14.1	16.2	68.2	0.336	0.304	0.336
152.4	171.45	12.7	11.1	0.4	KUC060 2RD	11.9	17.7	KJA060 RD	12.9	21.5	17.0	65.3		KUX060 2RD	10.3	15.3	16.7	74.2	0.367	0.331	0.367
165.1	184.15	12.7	11.1	0.4	KUC065 2RD	12.2	19.0	KJA065 RD	13.4	23.3	17.6	70.6		KUX065 2RD	10.6	16.4	17.1	80.3	0.395	0.354	0.395
177.8	196.85	12.7	11.1	0.4	KUC070 2RD	12.5	20.4	KJA070 RD	13.6	24.7	17.9	74.9		KUX070 2RD	10.9	17.6	17.5	86.3	0.422	0.381	0.422
190.5	209.55	12.7	11.1	0.4	KUC075 2RD	12.8	21.7	KJA075 RD	14.0	26.5	18.4	80.2		KUX075 2RD	11.1	18.7	17.8	92.4	0.449	0.404	0.449
203.2	222.25	12.7	11.1	0.4	KUC080 2RD	13.1	23.1	KJA080 RD	14.4	28.2	18.9	85.5		KUX080 2RD	11.4	19.9	18.2	98.5	0.481	0.431	0.481
228.6	247.65	12.7	11.1	0.4	KUC090 2RD	13.7	25.7	KJA090 RD	14.9	31.4	19.6	95.1		KUX090 2RD	11.9	22.2	18.9	111	0.535	0.499	0.535
254	273.05	12.7	11.1	0.4	KUC100 2RD	14.2	28.4	KJA100 RD	15.6	34.9	20.5	106		KUX100 2RD	12.3	24.5	19.5	123	0.594	0.531	0.594
279.4	298.45	12.7	11.1	0.4	KUC110 2RD	14.7	31.1	KJA110 RD	16.1	38.0	21.1	115		KUX110 2RD	12.7	26.8	20.1	135	0.649	0.581	0.649
304.8	323.85	12.7	11.1	0.4	KUC120 2RD	15.2	33.8	KJA120 RD	16.5	41.2	21.8	125		KUX120 2RD	13.1	29.2	20.6	147	0.708	0.630	0.708

Bearings for railway rolling stock axle journals

Bearings used to support rolling stock axle journals are required to be very strong and, at the same time, to be small because of limited space.

Double-row bearings that are larger in width than general bearings are popular in that they are compact and have high load ratings.

■ Cylindrical roller bearings

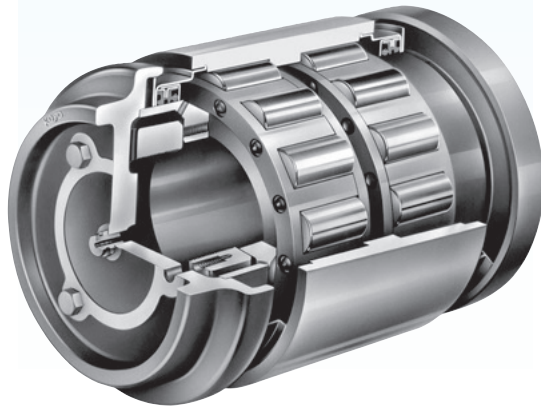
- Feature good high-speed performance, and can be maintained and inspected easily because of their separable structure.

Most commonly used bearing.

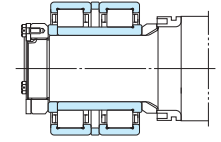
- Those with a rib next to the inner ring are able to support not only radial load but also a certain degree of axial load, so that a ball bearing is not required to accommodate the axial load.

■ Sealed type cylindrical roller bearing units and tapered roller bearing units

- Maintenance-free : pre-lubricated with grease and provided with oil seals.
- Can be used with a simplified axle box, or with an adapter instead.
- The inch series axle bearing units (ABU) are as specified in the "association of american rail-roads".

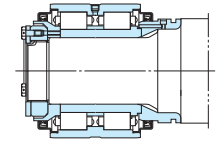


Cylindrical roller bearings



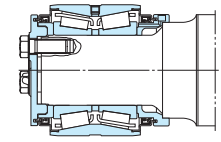
Bore diameter **85 – 133 mm**

Sealed type cylindrical roller bearing units



Bore diameter **95 – 120 mm**

Sealed type tapered roller bearing units(ABU)



Bore diameter **101.600 – 177.787 mm**

Tolerances	- Cylindrical roller and axial load support ball bearings : as specified in JIS B 1514-1, class 0 (Table 7-3 on pp. A 60–A 63). The tolerances for cylindrical roller bearing width and overall width are as shown in Table 1. - Metric series ABU bearings: refer to Table 2. - Inch series ABU bearings : refer to Table 3.
Recommended fits	Refer to Table 4.
Radial internal clearance	- Cylindrical roller bearings : class C 3 UIC* standard cylindrical roller bearings : class C 4 (refer to Table 10-8 on p. A 106.) - Axial load support ball bearings : class C 5 However, the clearance class should be adjusted according to the axle box structure. Consult with JTEKT for further information. - ABU bearings : class C 3 (refer to Table 10-10 on p. A 110) *Denotes that the bearings are compatible with axle journals and axle boxes standardized by the UIC.

Table 1 Cylindrical roller bearings for axle journals : tolerances for inner ring width, outer ring width and overall width

(1) Tolerances for inner ring width and inner ring overall width Unit : μm

Bearing type	Design	Nominal bore diameter d (mm)		Δ_{Bs} or Δ_{B1s}	
		over	up to	upper	lower
Inner ring one-piece type, Inner ring with a rib and loose rib	1-1, 1-2	80	120	0	– 400
	2-1, 2-3	120	180	0	– 500
Two inner rings and spacer	2-2	80	120	0	– 600
		120	180	0	– 700

(2) Tolerances for outer ring width and outer ring overall width Unit : μm

Bearing type	Design	Nominal bore diameter d (mm)		Δ_{Cs} or Δ_{C1s}	
		over	up to	upper	lower
Outer ring one-piece type	2-3	80	120	0	– 300
		120	180	0	– 350
Outer ring and two loose ribs	1-1	80	120	+ 100	– 200
		120	180	+ 100	– 250
Two outer rings	2-1 ¹⁾	120	180	0	– 500
Two outer rings and spacer	1-2 2-1, 2-2	80	120	0	– 500
		120	180	0	– 600

[Note] 1) (2-1) means that spacer shown in Design 2-1 is removed.

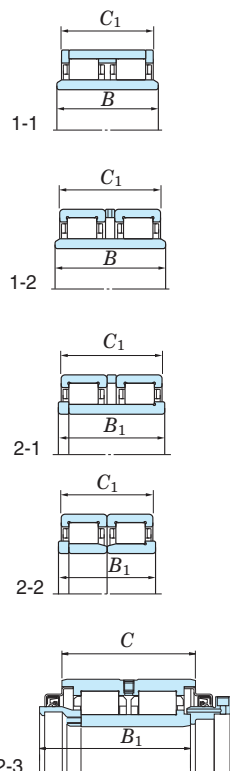


Table 2 Metric series ABU bearing tolerances							Unit : μm	
Nominal bore diameter d (mm)	Single plane mean bore diameter deviation Δ_{dmp}		Single plane mean outside diameter deviation Δ_{Dmp}		Single outer ring width deviation Δ_{Cs}		Actual overall width of inner rings deviation Δ_{B1s}	
	upper	lower	upper	lower	upper	lower	upper	lower
110	0	– 20			+ 50	– 50		
120	0	– 20	0	– 125	+ 100	– 100	+ 500	– 500
130	0	– 25			+ 100	– 100		

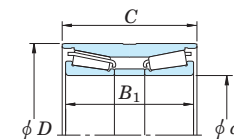


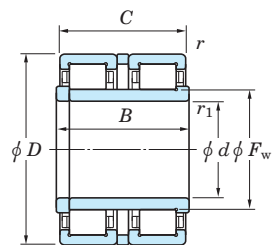
Table 3 Inch series ABU bearing tolerances							Unit : μm	
Nominal bore diameter d (mm)	Single plane mean bore diameter deviation Δ_{dmp}		Single plane mean outside diameter deviation Δ_{Dmp}		Single outer ring width deviation Δ_{Cs}		Actual overall width of inner rings deviation Δ_{B1s}	
	upper	lower	upper	lower	upper	lower	upper	lower
101.6 to 177.8	+ 25	0	+ 127	0	+ 50	– 250	+ 710	– 510

Table 4 Axle journal bearing recommended fits

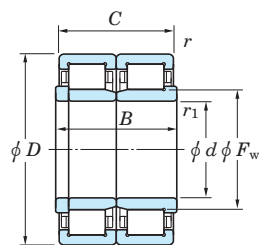
Bearing type	Axle journal diameter (mm)		Axle journal tolerance class	Axle box bore tolerance class
	over	up to		
Cylindrical roller bearing Tapered roller bearing	50	100	(m 6), n 6	H 7
	100	140	n 6	
	140	240	p 6	
Axial load support deep groove ball bearing	All diameters		k 5	Clearance fit (clearance of approx. 0.2 to 0.6 mm)

Cylindrical roller bearings for railway rolling stock axle journals

d 85 ~ (120) mm



Design 1

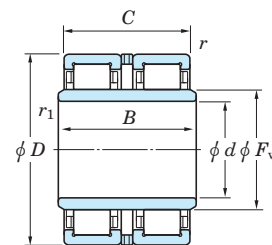


Design 2

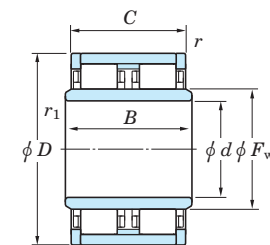
Boundary dimensions (mm)							Basic load ratings (kN)		Bearing No. ²⁾	Design ³⁾	(Refer.) Mass (kg)
d	D	B	C	F_w	$r_{min.}$	$r_1^{1)}$ min.	C_r	C_{0r}			
85	150	130	120	101.5	1.1	(7)	369	592	2U2217SC	3	8.6
90	160	88	80	107	2	2	355	529	2CR90D	1	7.2
95	170	120	105	114	1.1	(10)	497	804	2UJ95	4	10.9
	170	125	115	113.5	2.5	(7)	441	687	2CR95A	1	11.5
	170	130	130	114	2	2	441	688	2UJ1917	3	11.4
	170	140	125	114	1.1	(10)	555	926	4UJ95	5	12.7
100	180	150	134	120	1.1	(10)	594	990	4UJ100	5	15.1
	190	140	130	122	2.5	(7)	697	1 120	20DC19130/140	3	16.9
	200	170	170	125	2	(7)	755	1 160	2CR100	1	23.7
	200	170	170	125	2	(10)	755	1 160	20DC20170	3	23.2
110	200	180	160	134	1.1	(7)	721	1 190	JC3	5	22.6
	220	180	160	138	2.5	(7)	789	1 190	JC6	1	30.0
	220	185	180	138	2	(7)	922	1 460	2CR110	1	31.3
	225	150	140	138	1.1	(7)	833	1 230	JC1A	4	27.7
	225	150	140	138	2.5	(7)	897	1 350	22DC23140/150	3	26.7
	235	180	160	141	2.5	(7)	934	1 430	JC2A	3	35.3
116	220	185	180	142	2	(7)	891	1 470	2CR116	1	30.5
	225	150	140	197.5	1.1	(7)	786	1 220	2UJ116	4	26.0
120	225	170	165	145	3	(10)	876	1 380	JC35	1	29.4
	230	170	165	145	3	(10)	943	1 460	JC34	1	30.8
	230	177	150	145	3	(30)	943	1 460	JC27X	(1)	29.7
	240	160	160	150	3	7.5	961	1 500	(24NJ/NJP2480)	2	33.9
	240	180	160	150	1.1	(10)	1 020	1 580	JC11	4	35.5
	240	180	176	150	3	(7)	1 020	1 580	JC12	1	37.7

- [Notes] 1) Values in () indicate axial chamfer dimension.
2) Bearings indicated in () are in accordance with UIC standards.
3) (1) means that the inner ring (rib side) shown in Design 1 has a special form.
(2) means that loose rib shown in Design 2 is replaced with thrust collar.

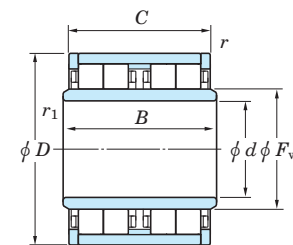
d (120) ~ 133 mm



Design 3



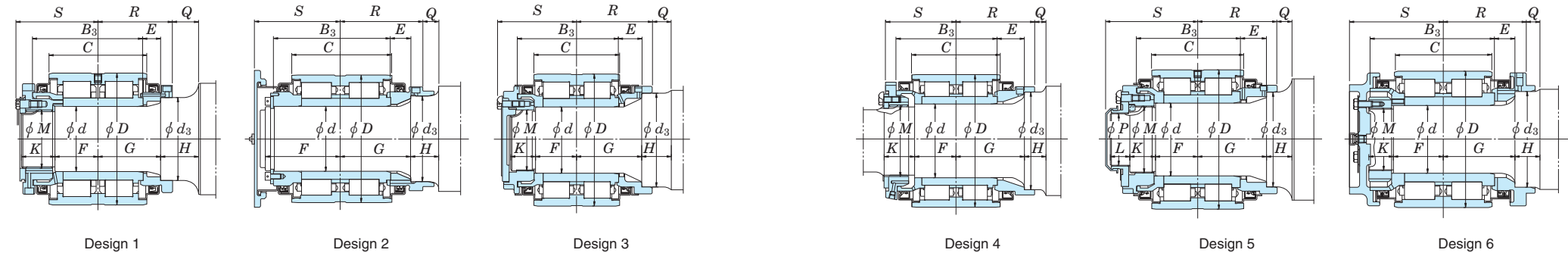
Design 4



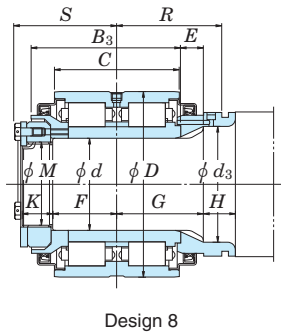
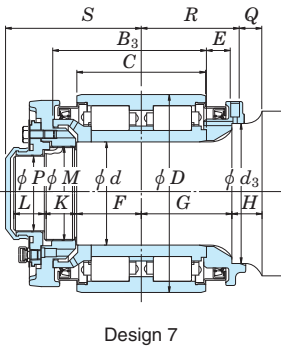
Design 5

Boundary dimensions (mm)							Basic load ratings (kN)		Bearing No. ²⁾	Design ³⁾	(Refer.) Mass (kg)
d	D	B	C	F_w	$r_{min.}$	$r_1^{1)}$ min.	C_r	C_{0r}			
120	240	185	180	150	2	(7)	983	1 600	2CR120A	1	37.8
130	220	170	160	152	1.1	0.6	865	1 520	4UJ130B	5	25.2
	240	160	160	157	3	5	867	1 390	(2CR2624A)	2	32.0
	240	180	160	158	1.1	(10)	970	1 610	4UJ130A	5	35.8
	240	204	198	157	3	5	867	1 390	(2CR2624)	2	35.4
	250	160	160	158	3	7.5	1 090	1 720	(26NJ/NJP2580)	2	36.4
	260	180	160	163	1.1	(10)	1 080	1 710	JC5	4	42.7
	260	185	180	163	3	(7)	1 030	1 610	2CR130A	1	44.2
	260	186	172	164	3	7.5	1 220	1 930	26NJ/NUJ2686	(2)	44.6
	260	205.5	180	163	3	(30)	1 030	1 610	JC21	(1)	45.1
	270	215	210	164	4	(15)	1 280	2 000	JC29	3	55.1
	280	215	210	167	4	(15)	1 440	2 250	JC9-1	3	61.4
133	280	215	210	167	4	(15)	1 440	2 250	JC9-2	3	59.8

d 95 ~ 120 mm

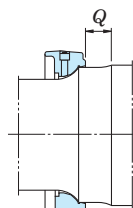
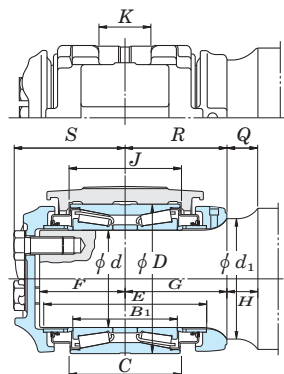
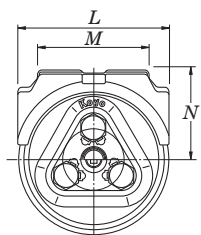


Shaft dia. (mm)	Unit No.	Design	Boundary dimensions																Bearing No.	Basic load ratings		(Refer.) Unit Mass (kg)
			(mm)																	(kN)		
			<i>d</i> Br _g .	<i>D</i>	<i>C</i>	<i>B</i> ₃	<i>d</i> ₃	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>K</i>	<i>L</i>	<i>M</i>	<i>P</i>	<i>Q</i>	<i>R</i>	<i>S</i>		<i>C</i> _r	<i>C</i> _{0r}	
95	JB1425	1	95	190	140	158	120	25	62	90	35	48	—	M85×4	—	18	107	119	19RDC19140/158	610	910	24.5
100	JB1199B	2	100	195	150	175	130	30	120	105	42	—	—	—	—	24	123	130	20RDC20150/133B	673	1 040	27.5
110	JB1462	3	110	220	145	171	155	39	70	110	50	42	—	M100×2	—	33	127	134	S-JC33	789	1 190	35.9
120	JB1356	4	120	220	150	170	158	46	70	116	36	51	—	M115×4	—	19	133	131	24RDC22150/170	702	1 110	34.9
	JB1380D	5	120	230	150	171	155	43	70	113	42	42	33	M110×2	85	25	130	152	JC32	831	1 290	39.0
	JB1010	6	120	240	170	218	168	35	87	125	45	43	—	M110×2	—	25	145	164	JC17	1 020	1 580	57.7
	JB1240	7	120	240	160	193	168	31	80	113	38	40	38	M110×2	85	27	128	169	JC26	935	1 420	51.1
	JB1377	8	120	240	160	192	150	30	83	112	40	38	—	M110×4	—	—	135	131	24RDC24160/192A	935	1 420	42.0

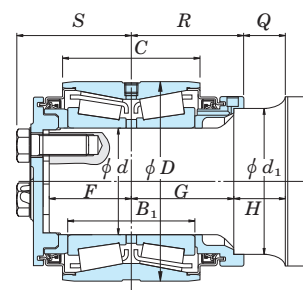


Sealed type tapered roller bearings for railway rolling stock axle journals (ABU bearing)

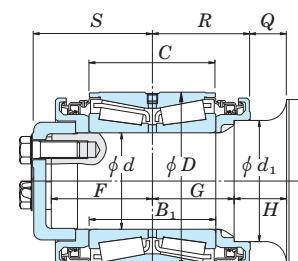
d 101.6 ~ 177.787 mm
110 ~ 130 mm



The shape of the backing ring used for JB1204P, JB1205P and JB1206P.



JB1486



JB1450

Dynamic equivalent load
(when $F_a/F_r \leq e$)
 $P = F_r + Y_2 F_a$
(when $F_a/F_r > e$)
 $P = 0.67 F_r + Y_3 F_a$
Static equivalent load
 $P_0 = F_r + Y_0 F_a$

Class	Axle size	Unit No.	Boundary dimensions														Adapter No.	Dimensions of adapter					Bolt size	Dimen- sions (mm) <i>p</i>	Bearing No.	Basic load ratings		Constant	Axial load factors			(Refer.) Mass (kg)	
			(mm)															(mm)								(kN)			<i>Y</i> ₂	<i>Y</i> ₃	<i>Y</i> ₀	Unit Adapter	
			Brg.	<i>d</i> Axle ¹⁾	<i>D</i>	<i>B</i> ₁	<i>C</i>	<i>d</i> ₁ ¹⁾	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>Q</i>	<i>R</i>	<i>S</i>			<i>J</i>	<i>K</i>	<i>L</i>	<i>M</i>	<i>N</i>				<i>C</i> _r	<i>C</i> _{0r}						
B	4 1/4x8	JB1201	101.600	101.702 101.676	165.100	106.362	114.300	127.0	182.6	101.6	117.5	41.3	41.3	117.5	134.8	JB701	117.5	68.3	165.9	124.6	101.6	3/4-10 UNC	61.9	HM120848/ HM120817XD	402	769	0.26	2.55	3.80	2.50	17.3	3.8	
C	5 x9	JB1202	119.062	119.164 119.139	195.262	136.525	142.875	149.2	217.5	112.7	134.9	36.5	36.5	134.9	147.0	JB702	146.0	74.6	196.1	143.7	117.5	7/8-9 UNC	76.2	HM124646/ HM124618XD	626	1 200	0.26	2.55	3.80	2.50	25.3	6.1	
D	5 1/2x10	JB1203	131.750	131.864 131.839	207.962	146.050	152.400	161.9	227.0	115.9	139.7	44.5	44.5	139.7	150.5	JB703	155.6	74.6	208.8	156.4	123.8	7/8-9 UNC	88.9	HM127446/ HM127415XD	641	1 270	0.26	2.55	3.80	2.50	28.3	7.4	
E	6 x11	JB1204	144.450	144.564 144.539	220.662	155.575	163.512	177.8	241.3	127.0	150.8	46.0	46.0	150.8	164.1	JB704	166.7	96.8	221.5	181.8	136.5	1-8 UNC	98.4	HM129848/ HM129814XD	667	1 380	0.26	2.55	3.80	2.50	34.3	10.8	
		JB1204P	144.450	144.564 144.539	220.662	155.575	163.512	178.613 178.562	241.3	127.0	150.8	46.0	36.8	160.0	164.1	JB704	166.7	96.8	221.5	181.8	136.5	1-8 UNC	98.4	HM129848/ HM129814XD	667	1 380	0.26	2.55	3.80	2.50	35.0	10.8	
F	6 1/2x12	JB1205	157.150	157.264 157.239	252.412	177.800	184.150	190.5	273.0	134.9	163.5	46.0	46.0	163.5	176.6	JB705	187.3	96.8	253.2	194.5	152.4	1 1/8-7 UNC	108.0	HM133444/ HM133416XD	910	1 890	0.26	2.55	3.80	2.50	51.6	16.3	
		JB1205P	157.150	157.264 157.239	252.412	177.800	184.150	191.313 191.262	273.0	134.9	163.5	46.0	36.7	172.8	176.6	JB705	187.3	96.8	253.2	194.5	152.4	1 1/8-7 UNC	108.0	HM133444/ HM133416XD	910	1 890	0.26	2.55	3.80	2.50	52.4	16.3	
G	7 x12	JB1206P	177.787	177.902 177.876	276.225	180.975	185.738	203.251 203.200	269.9	130.2	150.8	58.7	46.0	163.5	180.1	JB706 ²⁾	189.7	181.0	—	279.4	168.3	1 1/4-7 UNC	117.5	HM136948/ HM136916XD	1 080	2 220	0.26	2.55	3.80	2.50	59.2	23	
—	110	JB558	110	110.076 110.054	175	125	130	155	206	105	135	30	30	135	136.4	JB558	134	70	175	135	110	M22	75	JT9	481	972	0.26	2.55	3.80	2.50	22.0	5.6	
—		JB1486	110	110.059 110.037	205	130	140	150.068 150.043	—	85	105	53	43	115	118.4	—	—	—	—	—	—	M22	75	JT13	743	1 220	0.26	2.55	3.80	2.50	27.3	—	
—	120	JB613	120	120.076 120.054	195	136	142	155	217	113	135	30	30	135	147.5	JB613	146	74.5	196	142.5	118	M22	75	JT10	626	1 200	0.26	2.55	3.80	2.50	27.0	6.2	
—		JB1450	120	120.059 120.037	220	155	155	150.068 150.043	—	125	100	55	35	120	164.4	—	—	—	—	—	—	M22	75	JT12	907	1 670	0.26	2.55	3.80	2.50	36.6	—	
—	130	JB633	130	130.076 130.054	208	146	152	165	227	139	139	26	26	139	149.2	JB633 ²⁾	156	110	255	232	130	M22	89	JT11	641	1 270	0.26	2.55	3.80	2.50	30.0	14.3	

[Notes] 1) Upper figures : max. value ; lower : min. value

2) JB706 and JB633 indicate the specifications of wide adapters.
Others indicate narrow adapters (shown in figures above).

Linear ball bearings

Linear ball bearings have an outer cylinder and a cage with three or more elliptic raceways inside. Balls are aligned on these raceways.

	Ball complement	bore diameter (mm)
SDM series		6 – 120
SDMF, SDMK series		6 – 80
SDE series		5 – 80

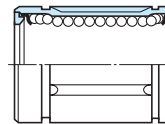
Standard type	Clearance adjustable type	Open type
		
Suitable for a wide range of applications and widely used in practice. The upper-class type is used for general purposes. The precision-class type is used when the bearing is required to be highly accurate.	The outer cylinder and side plate are slit axially so that the clearance between the bearing and shaft can be adjusted. Together with the use of a boreadjustable housing, a no-clearance state or light-preloaded state can be realized without fitting.	The outer cylinder and side plate each have a slit which is equivalent in size to a recirculating ball row raceway, so that the bearing does not interfere with a shaft strut during operation. This type is suitable for use with very long shafts. The bore diameter is adjustable.

Flanged type



Can be fit quickly, and helps make equipment smaller and lighter in weight. Helps reduce cost.

Sealed type



One or both side(s) is/are sealed with special synthetic rubber so that foreign material cannot enter the bearing while the grease is kept from leaking. This sealing can be provided on all bearings of the standard, clearance adjustable, open, and flanged types.

Bearing numbering system

SDM	35	UU	AJ		
Series code	Ball complement bore diameter number	Seal code	Shape code	Material code	Tolerance code
Series code		SDM : metric series SDMF : metric series (flanged type) SDMK : metric series (flanged type) SDE : metric series (popular ones in europe) SDB : inch series			
Ball complement bore diameter number	Metric series	35 : ball complement bore diameter 35 mm			
	Inch series	4 : ball complement bore diameter 4/16 = 1/4 inch			
Seal code		UU : both sides sealed U : single side sealed Not specified : not sealed			
Shape code		Not specified : standard type AJ : clearance adjustable type OP : open type			
Material code	Outer cylinder and balls	Not specified : high carbon chrome bearing steel			
	Cage	Not specified : cold rolled steel sheet MG : synthetic resin			
Tolerance code		Not specified : upper-class P : precision-class			



■ Linear ball bearing service life

Linear ball bearing service life refers to the distance that the bearing travels until the outer cylinder, balls or shaft become damaged because of rolling contact fatigue from repeated stress.

The basic dynamic load rating refers to the magnitude of a constant load which makes a bearing's service life end after it travels a distance of 50 km.

The linear ball bearing service life and the basic dynamic load rating bear the relation shown below :

$$L = 50 \left(\frac{C}{P} \right)^3$$

where :

L : service life km
 P : radial load on the bearing N
 C : bearing basic dynamic load rating N
 (refer to the specification table.)

Shaft surface hardness is closely related to running performance. In general, it is best for the hardness to be 60 thru 64 HRC.

If the hardness is 60 HRC or lower, the basic dynamic load rating (C) should be corrected by multiplying it by the appropriate hardness coefficient selected from Table 1.

Table 1 Hardness coefficients	
Shaft hardness HRC	Hardness coefficient f_H
60	1
59	0.97
57	0.88
55	0.76
53	0.64
51	0.52

● Ball row arrangement and load rating

The basic load ratings given in the specification table are those measured when a load is applied directly above a ball row (Q_1). When the load is applied between two ball rows, the load ratings become larger (Q_2). Table 2 lists the ratios of Q_2 ratings to Q_1 ratings.

Table 2 Ball row arrangement and the comparison of load ratings			
Number of ball rows	When a load is applied directly above a row (Q_1)	When a load is applied between two rows (Q_2)	Ratios of Q_2 to Q_1
4			1.414
5			1.463
6			1.280

[Note] When there are only three rows, $Q_2 / Q_1 = 1$

■ Recommended fits for linear ball bearings

Table 3 lists the recommended fits for linear ball bearings.

When a bearing is mounted with a housing, the normal clearance fit should be selected. When the application is highly precise or special, the transition fit should be selected.

For the clearance adjustable and open type bearings, it is best for the shaft diameter to be smaller than the ball complement bore diameter lower deviation, and for the housing bore diameter to be larger than the bearing outside diameter upper deviation.

Table 3 Linear ball bearing recommended fits

Bearing	Tolerance	Shaft tolerance class		Housing bore tolerance class	
		Normal clearance	Close clearance	Clearance fit	Transition fit
SDM, SDB	Upper-class	f 6, g 6	h 6	H 7	JS 7 (J 7)
	Precision-class	f 5, g 5	h 5	H 6	JS 6 (J 6)
SDE	—	h 6	js 6 (j 6)	H 7	JS 7 (J 7)

■ Linear ball bearing clearance

Linear ball bearings provide linear motion smoothly with little wear when the clearance is 0.003 to 0.012 mm. However, when clearance increase due to wear is considered critical, e.g. when the bearing is provided to press die sets, precision machine tools or precision testers; when the bearing becomes unable to slide because of moment; or when smooth bearing operation is needed with no clearance provided, the clearance is adjusted to zero or negative.

In such a case, shafts generally need to be mounted by "selective fitting."

They should be handled carefully so as not to be preloaded excessively.

As Fig. 1 shows, the clearance of bearings with numbers SDM 6 thru SDM 10 can be easily set to

zero or negative, by adjusting one of the three ball rows with a bolt.

Consult with JTEKT on the gauging of linear ball bearings and shafts which should be mounted by "selective fitting," as well as on the whole design of shafts.

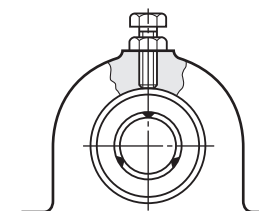


Fig. 1 Clearance adjustment

Table 4 SDM series linear ball bearing tolerances

Unit : μm

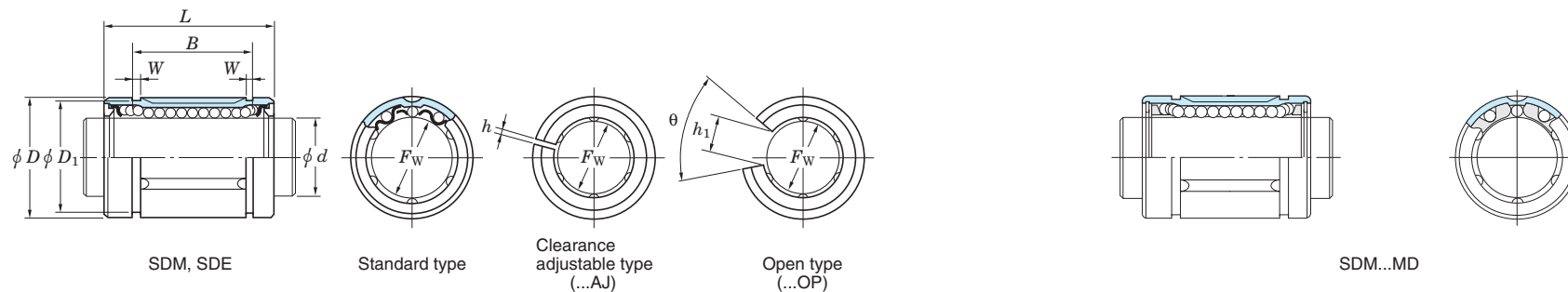
Bearing number SDM	Ball complement bore diameter (F_w) deviation				Outside diameter (D) deviation		Overall length (L) deviation		B deviation		Eccentricity	
	Precision- class		Upper- class								Precision- class	Upper- class
	upper	lower	upper	lower	upper	lower	upper	lower	upper	lower	max.	
6, 8	0	− 6	0	− 9	0	− 11	0	− 200	0	− 200	8	12
10, 12, 13, 16	0	− 6	0	− 9	0	− 13	0	− 200	0	− 200	8	12
20	0	− 7	0	− 10	0	− 16	0	− 200	0	− 200	10	15
25, 30	0	− 7	0	− 10	0	− 16	0	− 300	0	− 300	10	15
35, 38, 40, 50	0	− 8	0	− 12	0	− 19	0	− 300	0	− 300	12	20
60	0	− 9	0	− 15	0	− 22	0	− 300	0	− 300	17	25
80	0	− 9	0	− 15	0	− 22	0	− 400	0	− 400	17	25
100, 120	0	− 10	0	− 20	0	− 25	0	− 400	0	− 400	20	30

Table 5 SDE series linear ball bearing tolerances

Unit : μm

Bearing number SDE	Ball complement bore diameter (F_w) deviation		Outside diameter (D) deviation		Overall length (L) deviation		B deviation		Eccentricity
	upper	lower	upper	lower	upper	lower	upper	lower	max.
5, 8	+ 8	0	0	- 8	0	- 200	0	- 200	12
10, 12	+ 8	0	0	- 9	0	- 200	0	- 200	12
16	+ 9	- 1	0	- 9	0	- 200	0	- 200	12
20	+ 9	- 1	0	- 11	0	- 200	0	- 200	15
25, 30	+ 11	- 1	0	- 11	0	- 300	0	- 300	15
40, 50	+ 13	- 2	0	- 13	0	- 300	0	- 300	17
60	+ 13	- 2	0	- 15	0	- 400	0	- 400	20
80	+ 16	- 4	0	- 15	0	- 400	0	- 400	20

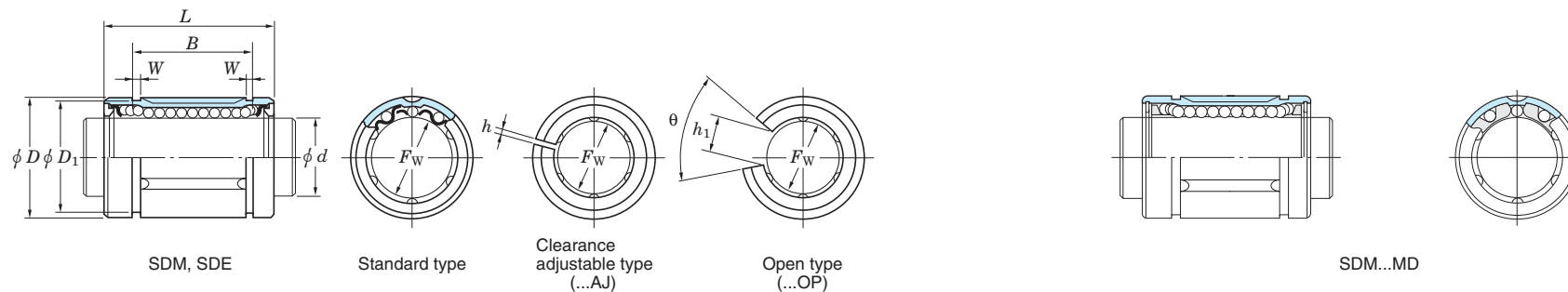
Linear ball bearings

 d 5 ~ (20) mm

Shaft dia. (mm)	Dimensions (mm)										Bearing No. ¹⁾			No. of ball rows			Basic load ratings (N)		(Refer.) Mass (g)
	d	F_w	D	L	B	W	D_1	h	h_1	θ	Standard type	Clearance adjustable type	Open type	Standard type	Clearance adjustable type	Open type	C_r	C_{Or}	Standard type
5	5	5	12	22	14.5	1.1	11.5	—	—	—	SDE5	—	—	3	—	—	108	183	10
6	6	6	12	19	13.5	1.1	11.5	1	—	—	SDM6	SDM6AJ	—	3	3	—	108	186	7
	6	6	12	19	13.5	1.1	11.5	1	—	—	SDM6MG	SDM6AJMG	—	4	4	—	108	186	6
8	8	8	15	17	11.5	1.1	14.3	1	—	—	SDM8S	SDM8SAJ	—	3	3	—	96	160	10
	8	8	15	17	11.5	1.1	14.3	1	—	—	SDM8SMG	SDM8SAJMG	—	4	4	—	96	160	9
	8	8	15	24	17.5	1.1	14.3	1	—	—	SDM8	SDM8AJ	—	3	3	—	122	223	14
	8	8	15	24	17.5	1.1	14.3	1	—	—	SDM8MG	SDM8AJMG	—	4	4	—	134	255	13
	8	8	16	25	16.5	1.1	15.2	1	—	—	SDE8	SDE8AJ	—	3	3	—	122	223	20
	8	8	16	25	16.5	1.1	15.2	1	—	—	SDE8MG	SDE8AJMG	—	4	4	—	134	255	18
	8	8	16	25	16.5	1.1	15.2	1	—	—	SDE8MG	SDE8AJMG	—	4	4	—	134	255	18
	8	8	16	25	16.5	1.1	15.2	1	—	—	SDE8MG	SDE8AJMG	—	4	4	—	134	255	18
10	10	10	19	29	22	1.3	18	1	6.8	80°	SDM10	SDM10AJ	SDM10OP	4	4	3	259	424	27
	10	10	19	29	22	1.3	18	1	—	—	SDM10MG	SDM10AJMG	—	4	4	—	259	424	23
	10	10	19	29	22	1.3	18	1	6.8	80°	SDE10	SDE10AJ	SDE10OP	4	4	3	259	424	27
	10	10	19	29	22	1.3	18	1	—	—	SDE10MG	SDE10AJMG	—	4	4	—	259	424	23
12	12	12	21	30	23	1.3	20	1.5	8	80°	SDM12	SDM12AJ	SDM12OP	4	4	3	260	431	31
	12	12	21	30	23	1.3	20	1.5	—	—	SDM12MG	SDM12AJMG	—	4	4	—	260	431	27
	12	12	22	32	22.9	1.3	21	1.5	7.5	78°	SDE12	SDE12AJ	SDE12OP	4	4	3	289	503	42
	12	12	22	32	22.9	1.3	21	1.5	—	—	SDE12MG	SDM12AJMG	—	4	4	—	289	503	37
13	13	13	23	32	23	1.3	22	1.5	9	80°	SDM13	SDM13AJ	SDM13OP	4	4	3	289	506	41
	13	13	23	32	23	1.3	22	1.5	—	—	SDM13MG	SDM13AJMG	—	4	4	—	289	506	35
16	16	16	26	36	24.9	1.3	24.9	1.5	10	78°	SDE16	SDE16AJ	SDE16OP	4	4	3	319	587	53
	16	16	26	36	24.9	1.3	24.9	1.5	—	—	SDE16MG	SDE16AJMG	—	4	4	—	319	587	47
	16	16	28	37	26.5	1.6	27	1.5	11	80°	SDM16	SDM16AJ	SDM16OP	4	4	3	480	766	69
	16	16	28	37	26.5	1.6	27	1.5	—	—	SDM16MG	SDM16AJMG	—	4	4	—	480	766	59
20	20	20	32	42	30.5	1.6	30.5	1.5	11	60°	SDM20	SDM20AJ	SDM20OP	5	5	4	590	1 010	92
	20	20	32	42	30.5	1.6	30.5	1.5	—	—	SDM20MG	SDM20AJMG	—	5	5	—	590	1 010	79

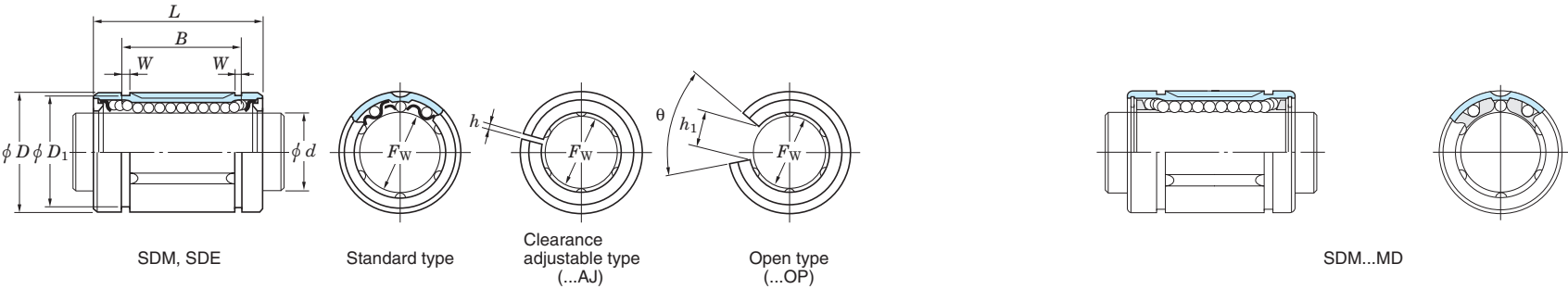
[Note] 1) JTEKT also manufactures sealed types, which are identified by U (one side sealed) or UU (both sides sealed) after ball complement bore diameter number.

Linear ball bearings

 d (20) ~ 80 mm

Shaft dia. (mm)	Dimensions (mm)									Bearing No. ¹⁾				No. of ball rows			Basic load ratings (N)		(Refer.) Mass (g)
	<i>d</i>	<i>F_w</i>	<i>D</i>	<i>L</i>	<i>B</i>	<i>W</i>	<i>D</i> ₁	<i>h</i>	<i>h</i> ₁	θ	Standard type	Clearance adjustable type		Open type	Standard type	Clearance adjustable type	Open type	<i>C_r</i>	<i>C</i> _{0r}
20	20	32	45	31.5	1.6	30.3	2	10	60°	SDE20	SDE20AJ	SDE20OP		5	5	4	590	1 010	96
	20	32	45	31.5	1.6	30.3	2	—	—	SDE20MG	SDE20AJMG	—		5	5	—	590	1 010	88
25	25	40	58	44.1	1.85	37.5	2	12.5	60°	SDE25	SDE25AJ	SDE25OP		5	5	4	1 130	2 030	190
	25	40	58	44.1	1.85	37.5	2	—	—	SDE25MG	SDE25AJMG	—		5	5	—	1 130	2 030	170
	25	40	59	41	1.85	38	2	12	60°	SDM25	SDM25AJ	SDM25OP		5	5	4	1 130	2 030	200
	25	40	59	41	1.85	38	2	—	—	SDM25MG	SDM25AJMG	—		5	5	—	1 130	2 030	170
30	30	45	64	44.5	1.85	43	2.5	15	50°	SDM30	SDM30AJ	SDM30OP		6	6	5	1 470	2 770	250
	30	45	64	44.5	1.85	43	2.5	—	—	SDM30MG	SDM30AJMG	—		6	6	—	1 470	2 770	220
	30	47	68	52.1	1.85	44.5	2	12.5	50°	SDE30	SDE30AJ	SDE30OP		6	6	5	1 470	2 770	340
	30	47	68	52.1	1.85	44.5	2	—	—	SDE30MG	SDE30AJMG	—		6	6	—	1 470	2 770	320
35	35	52	70	49.5	2.1	49	2.5	17	50°	SDM35	SDM35AJ	SDM35OP		6	6	5	1 580	3 070	370
	35	52	70	49.5	2.1	49	2.5	—	—	SDM35MG	SDM35AJMG	—		6	6	—	1 580	3 070	330
38	38	57	76	58.5	2.1	54.5	3	18	50°	SDM38	SDM38AJ	SDM38OP		6	6	5	2 020	3 600	490
40	40	60	80	60.5	2.1	57	3	20	50°	SDM40	SDM40AJ	SDM40OP		6	6	5	2 180	4 010	590
	40	60	80	60.5	2.1	57	3	—	—	SDM40MG	SDM40AJMG	—		6	6	—	2 180	4 010	530
	40	62	80	60.6	2.15	59	3	16.8	50°	SDE40	SDE40AJ	SDE40OP		6	6	5	2 180	4 010	710
	40	62	80	60.6	2.15	59	3	—	—	SDE40MG	SDE40AJMG	—		6	6	—	2 180	4 010	650
50	50	75	100	77.6	2.65	72	3	21	50°	SDE50	SDE50AJ	SDE50OP		6	6	5	4 020	7 110	1 050
	50	80	100	74	2.6	76.5	3	25	50°	SDM50	SDM50AJ	SDM50OP		6	6	5	4 420	7 150	1 500
60	60	90	110	85	3.15	86.5	3	30	50°	SDM60	SDM60AJ	SDM60OP		6	6	5	5 170	9 030	1 850
	60	90	125	101.7	3.15	86.5	3	27.2	54°	SDE60	SDE60AJ	SDE60OP		6	6	5	6 470	11 100	1 900
80	80	120	140	105.5	4.15	116	3	40	50°	SDM80	SDM80AJ	SDM80OP		6	6	5	8 180	12 800	4 200
	80	120	165	133.7	4.15	116	3	36.3	54°	SDE80	SDE80AJ	SDE80OP		6	6	5	8 890	14 500	4 800

[Note] 1) JTEKT also manufactures sealed types, which are identified by U (one side sealed) or UU (both sides sealed) after ball complement bore diameter number.

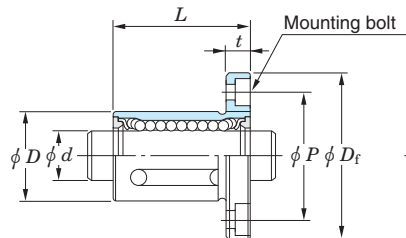


Shaft dia. (mm)	Dimensions (mm)									Bearing No. ¹⁾				No. of ball rows			Basic load ratings (N)		(Refer.) Mass (g)	
	<i>d</i>	<i>F</i> _w	<i>D</i>	<i>L</i>	<i>B</i>	<i>W</i>	<i>D</i> ₁	<i>h</i>	<i>h</i> ₁	θ	Standard type	Clearance adjustable type	Open type		Standard type	Clearance adjustable type	Open type	<i>C</i> _r	<i>C</i> _{0r}	Standard type
100	100	150	175	125.5	4.15	145	3	50	50°		SDM100	SDM100AJ	SDM100OP		6	6	5	12 300	19 700	8 200
120	120	180	200	158.6	4.15	175	4	85	80°		SDM120	SDM120AJ	SDM120OP		8	8	6	22 300	39 100	15 500

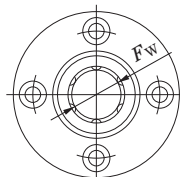
[Note] 1) JTEKT also manufactures sealed types, which are identified by U (one side sealed) or UU (both sides sealed) after ball complement bore diameter number.

Linear ball bearings flanged type

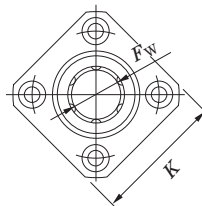
d 6 ~ 50 mm



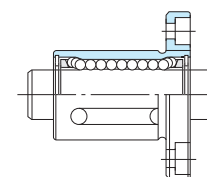
SDMF, SDMK



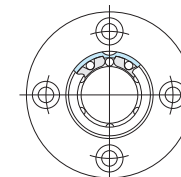
Round-flanged



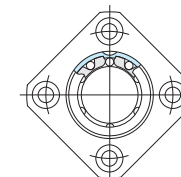
Square-flanged



SDMF...MG
SDMK...MG (Synthetic resin)



Round-flanged

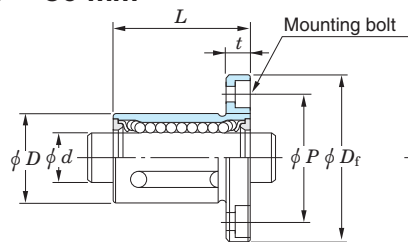


Square-flanged

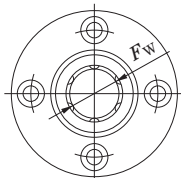
Shaft dia. (mm)	Dimensions (mm)							Bolt size	Bearing No.		No. of ball rows	Basic load ratings (N)		(Refer.) Mass (g) Round-flanged type
	d	F_w	D	L	D_f	K	t		Round-flanged type	Square-flanged type		C_r	C_{0r}	
6	6	6	12	19	28	22	5	M3	SDMF6	SDMK6	3	108	186	23
	6	6	12	19	28	22	5	M3	SDMF6MG	SDMK6MG	4	108	186	22
8	8	8	15	24	32	25	5	M3	SDMF8	SDMK8	3	122	223	35
	8	8	15	24	32	25	5	M3	SDMF8MG	SDMK8MG	4	134	255	34
10	10	10	19	29	40	30	6	M4	SDMF10	SDMK10	4	259	424	65
	10	10	19	29	40	30	6	M4	SDMF10MG	SDMK10MG	4	259	424	61
12	12	12	21	30	42	32	6	M4	SDMF12	SDMK12	4	260	431	72
	12	12	21	30	42	32	6	M4	SDMF12MG	SDMK12MG	4	260	431	68
13	13	13	23	32	43	34	6	M4	SDMF13	SDMK13	4	289	506	83
	13	13	23	32	43	34	6	M4	SDMF13MG	SDMK13MG	4	289	506	77
16	16	16	28	37	48	37	6	M4	SDMF16	SDMK16	4	480	766	120
	16	16	28	37	48	37	6	M4	SDMF16MG	SDMK16MG	4	480	766	110
20	20	20	32	42	54	42	8	M5	SDMF20	SDMK20	5	590	1 010	170
	20	20	32	42	54	42	8	M5	SDMF20MG	SDMK20MG	5	590	1 010	160
25	25	25	40	59	62	50	8	M5	SDMF25	SDMK25	5	1 130	2 030	290
	25	25	40	59	62	50	8	M5	SDMF25MG	SDMK25MG	5	1 130	2 030	270
30	30	30	45	64	74	58	10	M6	SDMF30	SDMK30	6	1 470	2 770	440
	30	30	45	64	74	58	10	M6	SDMF30MG	SDMK30MG	6	1 470	2 770	410
35	35	35	52	70	82	64	10	M6	SDMF35	SDMK35	6	1 580	3 070	610
	35	35	52	70	82	64	10	M6	SDMF35MG	SDMK35MG	6	1 580	3 070	560
40	40	40	60	80	96	75	13	M8	SDMF40	SDMK40	6	2 180	4 010	1 000
	40	40	60	80	96	75	13	M8	SDMF40MG	SDMK40MG	6	2 180	4 010	930
50	50	50	80	100	116	92	13	M8	SDMF50	SDMK50	6	4 420	7 150	2 000

Linear ball bearings
flanged type

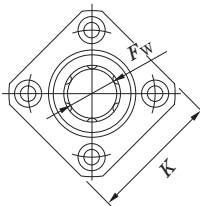
d 60 ~ 80 mm



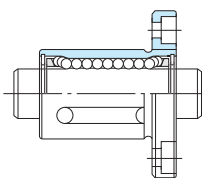
SDMF, SDMK



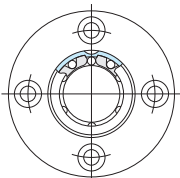
Round-flanged



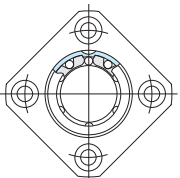
Square-flanged



SDMF...MG
SDMK...MG (Synthetic resin)



Round-flanged



Square-flanged

Shaft dia. (mm)	Dimensions (mm)							Bolt size	Bearing No.			No. of ball rows	Basic load ratings (N)		(Refer.) Mass (g) Round-flanged type
	F_w	D	L	D_f	K	t	P		Round-flanged type	Square-flanged type			C_r	C_{0r}	
60	60	90	110	134	106	18	112	M10	SDMF60	SDMK60		6	5 170	9 030	2 800
80	80	120	140	164	136	18	142	M10	SDMF80	SDMK80		6	8 180	12 800	5 400

Locknuts, lockwashers & lock plates

Bearings are often fit to a shaft with an adapter sleeve, locknut, lockwasher or lock plate.

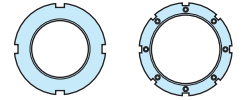
These accessories make it easy to attach and remove bearings.

They are standardized in JIS.

- Locknuts are standardized such that they can be used with either adapter sleeves, withdrawal sleeves or shafts.
- Lockwashers and lock plates are used as locks on locknuts.

Lockwashers are used with bearings of bore diameter number 40 or lower. Lock plates are used with those of bore diameter 44 or higher.

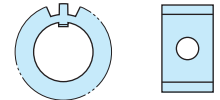
Locknuts



AN (ANL) 02 – 100

HN (HNL) 41 – 110

Lockwashers and lock plates



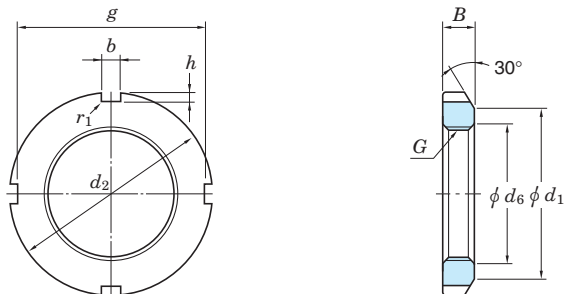
AW (AWL) 00 – 40(X)

AL (ALL) 44 – 100



Locknuts for adapter sleeves and shafts

AN02 ~ 25



Locknut No.	Thread size ¹⁾ G	Standard dimensions (mm)								(Refer.) Mass (kg)	Applicable ²⁾ adapter sleeve (bore No.)	Applicable ³⁾ lockwasher No.
		d ₂	d ₁	g	d ₆	b	h	B	r ₁ max.			
AN 02 03 04	M 15×1	25	21	21	15.5	4	2	5	0.4	0.010	—	AW 02
	M 17×1	28	24	24	17.5	4	2	5	0.4	0.013	—	03
	M 20×1	32	26	28	20.5	4	2	6	0.4	0.019	04	04
AN 05 06 07	M 25×1.5	38	32	34	25.8	5	2	7	0.4	0.025	05	AW 05
	M 30×1.5	45	38	41	30.8	5	2	7	0.4	0.043	06	06
	M 35×1.5	52	44	48	35.8	5	2	8	0.4	0.053	07	07
AN 08 09 10	M 40×1.5	58	50	53	40.8	6	2.5	9	0.5	0.085	08	AW 08
	M 45×1.5	65	56	60	45.8	6	2.5	10	0.5	0.119	09	09
	M 50×1.5	70	61	65	50.8	6	2.5	11	0.5	0.148	10	10
AN 11 12 13	M 55×2	75	67	69	56	7	3	11	0.5	0.158	11	AW 11
	M 60×2	80	73	74	61	7	3	11	0.5	0.174	12	12
	M 65×2	85	79	79	66	7	3	12	0.5	0.203	13	13
AN 14 15 16	M 70×2	92	85	85	71	8	3.5	12	0.5	0.242	14	AW 14
	M 75×2	98	90	91	76	8	3.5	13	0.5	0.287	15	15
	M 80×2	105	95	98	81	8	3.5	15	0.6	0.397	16	16
AN 17 18 19	M 85×2	110	102	103	86	8	3.5	16	0.6	0.451	17	AW 17
	M 90×2	120	108	112	91	10	4	16	0.6	0.556	18	18
	M 95×2	125	113	117	96	10	4	17	0.6	0.658	19	19
AN 20 21 22	M100×2	130	120	122	101	10	4	18	0.6	0.698	20	AW 20
	M105×2	140	126	130	106	12	5	18	0.7	0.845	21	21
	M110×2	145	133	135	111	12	5	19	0.7	0.965	22	22
AN 23 24 25	M115×2	150	137	140	116	12	5	19	0.7	1.01	—	AW 23
	M120×2	155	138	145	121	12	5	20	0.7	1.08	24	24
	M125×2	160	148	150	126	12	5	21	0.7	1.19	—	25

[Notes] 1) Basic profile and dimension of screw thread are in accordance with JIS B 0205.

2) Applicable to adapter sleeve series A31, A2, A3 and A23.

3) Applicable to lockwashers with flat inner tongue.

[Remark] Locknut series AN is used for adapter assembly series H2, H3, H23 and H31, while locknut series ANL is used for adapter assembly series H30.

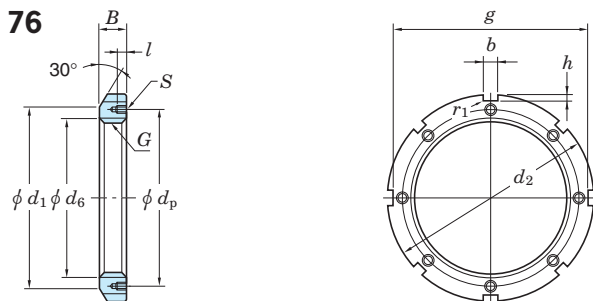
AN 26 ~ 40 ANL24 ~ 40

Locknut No.	Thread size ¹⁾ G	Standard dimensions (mm)								(Refer.) Mass (kg)	Applicable ²⁾ adapter sleeve (bore No.)	Applicable ³⁾ lockwasher No.
		d ₂	d ₁	g	d ₆	b	h	B	r ₁ max.			
AN 26	M130×2	165	149	155	131	12	5	21	0.7	1.25	26	AW 26
	M140×2	180	160	168	141	14	6	22	0.7	1.56	28	28
AN 27 28	M135×2	175	160	163	136	14	6	22	0.7	1.55	—	AW 27
	M140×2	180	160	168	141	14	6	22	0.7	1.56	28	28
AN 29 30 31	M145×2	190	172	178	146	14	6	24	0.7	1.80	—	AW 29
	M150×2	195	171	183	151	14	6	24	0.7	2.03	30	30
	M155×3	200	182	186	156.5	16	7	25	0.7	2.30	—	—
AN 32 33 34	M160×3	210	182	196	161.5	16	7	25	0.7	2.59	32	AW 32
	M165×3	210	193	196	166.5	16	7	26	0.7	2.70	—	—
	M170×3	220	193	206	171.5	16	7	26	0.7	2.80	34	34
AN 36 38 40	M180×3	230	203	214	181.5	18	8	27	0.7	3.07	36	AW 36
	M190×3	240	214	224	191.5	18	8	28	0.7	3.39	38	38
	M200×3	250	226	234	201.5	18	8	29	0.7	3.69	40	40
ANL24 26 28	M120×2	145	133	135	121	12	5	20	0.7	0.78	24	AWL24
	M130×2	155	143	145	131	12	5	21	0.7	0.88	26	26
	M140×2	165	151	153	141	14	6	22	0.7	0.99	28	28
ANL30 32 34	M150×2	180	164	168	151	14	6	24	0.7	1.33	30	AWL30
	M160×3	190	174	176	161.5	16	7	25	0.7	1.56	32	32
	M170×3	200	184	186	171.5	16	7	26	0.7	1.72	34	34
ANL36 38 40	M180×3	210	192	194	181.5	18	8	27	0.7	1.95	36	AWL36
	M190×3	220	202	204	191.5	18	8	28	0.7	2.08	38	38
	M200×3	240	218	224	201.5	18	8	29	0.7	2.98	40	40

Locknuts for adapter sleeves and shafts

AN 44 ~ 100

ANL 44 ~ 76



ANL 80 ~ 100

Locknut No.	Thread ¹⁾ size <i>G</i>	Standard dimensions (mm)								Tapped hole ²⁾ (mm) <i>S</i> Thread size			(Refer.) Mass (kg)	Applicable adapter sleeve ³⁾ (bore No.)	Applicable lock plate No.
		<i>d</i> ₂	<i>d</i> ₁	<i>g</i>	<i>d</i> ₆	<i>b</i>	<i>h</i>	<i>B</i>	<i>r</i> ₁ max.	<i>l</i>	<i>d</i> _p				
AN 44 48 52	Tr220×4	280	250	260	222	20	10	32	0.8	15	M 8×1.25	238	5.16	44	AL 44
	Tr240×4	300	270	280	242	20	10	34	0.8	15	M 8×1.25	258	5.91	48	44
	Tr260×4	330	300	306	262	24	12	36	0.8	18	M10×1.5	281	7.99	52	52
AN 56 60 64	Tr280×4	350	320	326	282	24	12	38	0.8	18	M10×1.5	301	8.99	56	AL 52
	Tr300×4	380	340	356	302	24	12	40	0.8	18	M10×1.5	326	11.7	60	60
	Tr320×5	400	360	376	322.5	24	12	42	0.8	18	M10×1.5	345	13.0	64	64
AN 68 72 76	Tr340×5	440	400	410	342.5	28	15	55	1	21	M12×1.75	372	23.0	68	AL 68
	Tr360×5	460	420	430	362.5	28	15	58	1	21	M12×1.75	392	25.0	72	68
	Tr380×5	490	450	454	382.5	32	18	60	1	21	M12×1.75	414	30.8	76	76
AN 80 84 88	Tr400×5	520	470	484	402.5	32	18	62	1	27	M16×2	439	36.7	80	AL 80
	Tr420×5	540	490	504	422.5	32	18	70	1	27	M16×2	459	43.3	84	80
	Tr440×5	560	510	520	442.5	36	20	70	1	27	M16×2	477	45.1	88	88
AN 92 96 100	Tr460×5	580	540	540	462.5	36	20	75	1	27	M16×2	497	50.2	92	AL 88
	Tr480×5	620	560	580	482.5	36	20	75	1	27	M16×2	527	62.0	96	96
	Tr500×5	630	580	584	502.5	40	23	80	1	27	M16×2	539	63.1	/500	100

ANL44	Tr220×4	260	242	242	222	20	9	30	0.8	12	M 6×1	229	3.09	44	ALL44
48	Tr240×4	290	270	270	242	20	10	34	0.8	15	M 8×1.25	253	5.16	48	48
52	Tr260×4	310	290	290	262	20	10	34	0.8	15	M 8×1.25	273	5.67	52	48
ANL56	Tr280×4	330	310	310	282	24	10	38	0.8	15	M 8×1.25	293	6.78	56	ALL56
60	Tr300×4	360	336	336	302	24	12	42	0.8	15	M 8×1.25	316	9.62	60	60
64	Tr320×5	380	356	356	322.5	24	12	42	0.8	15	M 8×1.25	335	9.94	64	64
ANL68	Tr340×5	400	376	376	342.5	24	12	45	1	15	M 8×1.25	355	11.7	68	ALL64
72	Tr360×5	420	394	394	362.5	28	13	45	1	15	M 8×1.25	374	12.0	72	72
76	Tr380×5	450	422	422	382.5	28	14	48	1	18	M10×1.5	398	14.9	76	76

[Notes] 1) Basic profile and dimension of screw thread are in accordance with JIS B 0216.

2) Basic profile and dimension of bore with internal thread are in accordance with JIS B 0205.

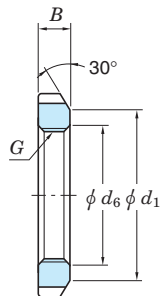
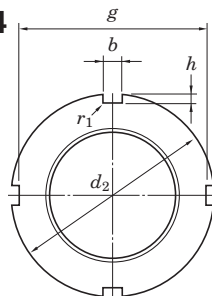
3) Applicable to adapter sleeve series A31, A32, A23 and A30.

Locknut No.	Thread ¹⁾ size <i>G</i>	Standard dimensions (mm)								Tapped hole ²⁾ (mm) <i>S</i> Thread size			(Refer.) Mass (kg)	Applicable adapter sleeve ³⁾ (bore No.)	Applicable lock plate No.
		<i>d</i> ₂	<i>d</i> ₁	<i>g</i>	<i>d</i> ₆	<i>b</i>	<i>h</i>	<i>B</i>	<i>r</i> ₁ max.	<i>l</i>	<i>d</i> _p				
ANL80 84 88	Tr400×5	470	442	442	402.5	28	14	52	1	18	M10×1.5	418	16.9	80	ALL76
	Tr420×5	490	462	462	422.5	32	14	52	1	18	M10×1.5	438	17.4	84	84
	Tr440×5	520	490	490	442.5	32	15	60	1	21	M12×1.75	462	26.2	88	88
ANL92 96 100	Tr460×5	540	510	510	462.5	32	15	60	1	21	M12×1.75	482	26.9	92	ALL88
	Tr480×5	560	530	530	482.5	36	15	60	1	21	M12×1.75	502	28.3	96	96
	Tr500×5	580	550	550	502.5	36	15	68	1	21	M12×1.75	522	33.6	/500	96

Locknuts for withdrawal sleeves

HN 42 ~ 110

HNL 41 ~ 64



HNL 69 ~ 108

Locknut No.	Thread ¹⁾ size	Standard dimensions (mm)								(Refer.) Mass (kg)	Withdrawal sleeve No.			
		d_2	d_1	g	d_6	b	h	B	$r_{1 \text{ max.}}$					
HN 42	Tr210×4	270	238	250	212	20	10	30	0.8	4.75	AH3138	AH2238	AH3238	AH2338
	Tr220×4	280	250	260	222	20	10	32	0.8	5.35	3140	2240	3240	2340
	Tr240×4	300	270	280	242	20	10	34	0.8	6.20	3144	2244	—	2344
HN 52	Tr260×4	330	300	306	262	24	12	36	0.8	8.55	AH3148	AH2248	—	AH2348
	Tr290×4	370	330	346	292	24	12	40	0.8	11.8	3152	2252	—	2352
	Tr310×5	390	350	366	312.5	24	12	42	0.8	13.4	3156	2256	—	2356
HN 66	Tr330×5	420	380	390	332.5	28	15	52	1	20.4	AH3160	AH2260	AH3260	—
	Tr350×5	450	410	420	352.5	28	15	55	1	25.2	3164	2264	3264	—
	Tr370×5	470	430	440	372.5	28	15	58	1	28.2	3168	—	3268	—
HN 80	Tr400×5	520	470	484	402.5	32	18	62	1	40.0	AH3172	—	AH3272	—
	Tr420×5	540	490	504	422.5	32	18	70	1	46.9	3176	—	3276	—
	Tr440×5	560	510	520	442.5	36	20	70	1	48.5	3180	—	3280	—
HN 92	Tr460×5	580	540	540	462.5	36	20	75	1	55.0	AH3184	—	AH3284	—
	Tr480×5	620	560	580	482.5	36	20	75	1	67.0	X3188	—	X3288	—
	Tr510×6	650	590	604	513	40	23	80	1	75.0	X3192	—	X3292	—
HN 106	Tr530×6	670	610	624	533	40	23	80	1	78.0	AHX3196	—	AHX3296	—
	Tr550×6	700	640	654	553	40	23	80	1	92.5	X31/500	—	X32/500	—

HNL 41	Tr205×4	250	232	234	207	18	8	30	0.8	3.43	AH3038	AH238	—	—
43	Tr215×4	260	242	242	217	20	9	30	0.8	3.72	3040	240	—	—
47	Tr235×4	280	262	262	237	20	9	34	0.8	4.60	3044	244	—	—
HNL 52	Tr260×4	310	290	290	262	20	10	34	0.8	5.80	AH3048	AH248	—	—
	Tr280×4	330	310	310	282	24	10	38	0.8	6.72	3052	252	—	—
	Tr300×4	360	336	336	302	24	12	42	0.8	9.60	3056	256	—	—
HNL 64	Tr320×5	380	356	356	322.5	24	12	42	1	10.3	AH3060	—	—	—

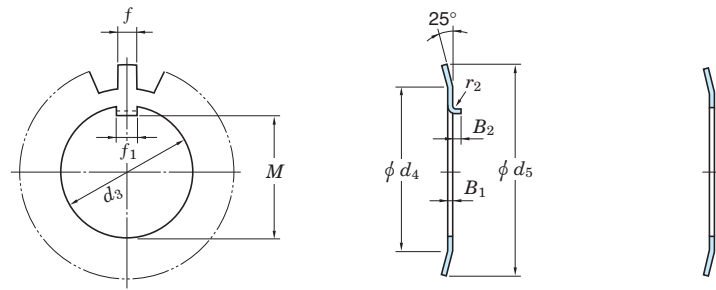
[Note] 1) Basic profile and dimension of screw thread are in accordance with JIS B 0216.

[Remark] Number of slots on nut may sometimes exceed that shown in the figure.

Locknut No.	Thread ¹⁾ size	Standard dimensions (mm)								(Refer.) Mass (kg)	Withdrawal sleeve No.			
		d_2	d_1	g	d_6	b	h	B	$r_{1 \text{ max.}}$					
HNL 69	Tr345×5	410	384	384	347.5	28	13	45	1	11.5	3064	—	—	—
	Tr365×5	430	404	404	367.5	28	13	48	1	14.2	3068	—	—	—
HNL 77	Tr385×5	450	422	422	387.5	28	14	48	1	15.0	AH3072	—	—	—
	Tr410×5	480	452	452	412.5	32	14	52	1	19.0	3076	—	—	—
	Tr430×5	500	472	472	432.5	32	14	52	1	19.8	3080	—	—	—
HNL 90	Tr450×5	520	490	490	452.5	32	15	60	1	23.8	AH3084	—	—	—
	Tr470×5	540	510	510	472.5	32	15	60	1	25.0	X3088	—	—	—
	Tr490×5	580	550	550	492.5	36	15	60	1	34.0	X3092	—	—	—
HNL104	Tr520×6	600	570	570	523	36	15	68	1	37.0	AHX3096	—	—	—
	Tr540×6	630	590	590	543	40	20	68	1	43.5	X30/500	—	—	—

Lockwashers

AW 00 ~ 24(X)



With bent inner tongue

With flat inner tongue

Lockwasher No.		Standard dimensions (mm)										No. of tooth	(Refer.) Mass (kg/100pcs.)	Applicable adapter sleeve (bore No.)	Applicable locknut No.
With bent inner tongue	With flat inner tongue	d_3	M	f_1	B_1	f	d_4	d_5	r_2	B_2					
AW 00 01 02	AW 00X 01X 02X	10	8.5	3	1	3	13	21	0.5	2	9	0.131	—	AN 00	
		12	10.5	3	1	3	17	25	0.5	2	9	0.192	—	01	
		15	13.5	4	1	4	21	28	1	2.5	13	0.253	—	02	
AW 03 04 05	AW 03X 04X 05X	17	15.5	4	1	4	24	32	1	2.5	13	0.313	—	AN 03	
		20	18.5	4	1	4	26	36	1	2.5	13	0.350	04	04	
		25	23	5	1.2	5	32	42	1	2.5	13	0.640	05	05	
AW 06 07 08	AW 06X 07X 08X	30	27.5	5	1.2	5	38	49	1	2.5	13	0.780	06	AN 06	
		35	32.5	6	1.2	5	44	57	1	2.5	15	1.04	07	07	
		40	37.5	6	1.2	6	50	62	1	2.5	15	1.23	08	08	
AW 09 10 11	AW 09X 10X 11X	45	42.5	6	1.2	6	56	69	1	2.5	17	1.52	09	AN 09	
		50	47.5	6	1.2	6	61	74	1	2.5	17	1.60	10	10	
		55	52.5	8	1.2	7	67	81	1	4	17	1.96	11	11	
AW 12 13 14	AW 12X 13X 14X	60	57.5	8	1.5	7	73	86	1.2	4	17	2.53	12	AN 12	
		65	62.5	8	1.5	7	79	92	1.2	4	19	2.90	13	13	
		70	66.5	8	1.5	8	85	98	1.2	4	19	3.34	14	14	
AW 15 16 17	AW 15X 16X 17X	75	71.5	8	1.5	8	90	104	1.2	4	19	3.56	15	AN 15	
		80	76.5	10	1.8	8	95	112	1.2	4	19	4.64	16	16	
		85	81.5	10	1.8	8	102	119	1.2	4	19	5.24	17	17	
AW 18 19 20	AW 18X 19X 20X	90	86.5	10	1.8	10	108	126	1.2	4	19	6.23	18	AN 18	
		95	91.5	10	1.8	10	113	133	1.2	4	19	6.70	19	19	
		100	96.5	12	1.8	10	120	142	1.2	6	19	7.65	20	20	
AW 21 22 23	AW 21X 22X 23X	105	100.5	12	1.8	12	126	145	1.2	6	19	8.26	21	AN 21	
		110	105.5	12	1.8	12	133	154	1.2	6	19	9.40	22	22	
		115	110.5	12	2	12	137	159	1.5	6	19	10.8	—	23	
AW 24	AW 24X	120	115	14	2	12	138	164	1.5	6	19	10.5	24	AN 24	

AW 25 ~ 40(X)

AWL24 ~ 40(X)

Lockwasher No.		Standard dimensions (mm)										No. of tooth	(Refer.) Mass (kg/100pcs.)	Applicable adapter sleeve (bore No.)	Applicable locknut No.
With bent inner tongue	With flat inner tongue	d_3	M	f_1	B_1	f	d_4	d_5	r_2	B_2					
AW 25 26	AW 25X 26X	125	120	14	2	12	148	170	1.5	6	19	11.8	—	25	
		130	125	14	2	12	149	175	1.5	6	19	11.3	26	26	
AW 27 28 29	AW 27X 28X 29X	135	130	14	2	14	160	185	1.5	6	19	14.4	—	AN 27	
		140	135	16	2	14	160	192	1.5	8	19	14.2	28	28	
		145	140	16	2	14	172	202	1.5	8	19	16.8	—	29	
AW 30 31 32	AW 30X 31X 32X	150	145	16	2	14	171	205	1.5	8	19	15.5	30	AN 30	
		155	147.5	16	2.5	16	182	212	1.5	8	19	20.9	—	31	
		160	154	18	2.5	16	182	217	1.5	8	19	22.2	32	32	
AW 33 34 36	AW 33X 34X 36X	165	157.5	18	2.5	16	193	222	1.5	8	19	24.1	—	AN 33	
		170	164	18	2.5	16	193	232	1.5	8	19	24.7	34	34	
		180	174	20	2.5	18	203	242	1.5	8	19	26.8	36	36	
AW 38 40	AW 38X 40X	190	184	20	2.5	18	214	252	1.5	8	19	27.8	38	AN 38	
		200	194	20	2.5	18	226	262	1.5	8	19	29.3	40	40	
AWL24 26 28	AWL24X 26X 28X	120	115	14	2	12	133	155	1.5	6	19	7.70	24	ANL24	
		130	125	14	2	12	143	165	1.5	6	19	8.70	26	26	
		140	135	16	2	14	151	175	1.5	8	19	10.9	28	28	
AWL30 32 34	AWL30X 32X 34X	150	145	16	2	14	164	190	1.5	8	19	11.3	30	ANL30	
		160	154	18	2.5	16	174	200	1.5	8	19	16.2	32	32	
		170	164	18	2.5	16	184	210	1.5	8	19	19.0	34	34	
AWL36 38 40	AWL36X 38X 40X	180	174	20	2.5	18	192	220	1.5	8	19	18.0	36	ANL36	
		190	184	20	2.5	18	202	230	1.5	8	19	20.5	38	38	
		200	194	20	2.5	18	218	250	1.5	8	19	21.4	40	40	

[Remark] 1) AW00~AW40, AW00X~AW40X are applicable to adapter assembly series H31, H2, H3 and H23.

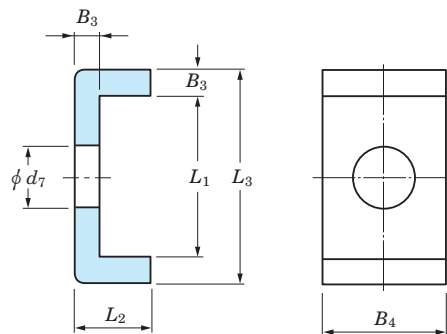
2) AWL24~AWL40, AWL24X~AWL40X are applied to adapter assembly series H30.

3) For adapter sleeves with narrow slits, lockwashers with flat inner tongue should be used. Either type of lockwasher can be used for adapter sleeves with wide slits.

Lock plates

AL 44 ~ 100

ALL44 ~ 96



Lock plate No.	Standard dimensions (mm)						(Refer.) Mass (kg/100pcs.)	Applicable locknut No.
	B_3	B_4	L_2	d_7	L_1	L_3		
AL 44	4	20	12	9	22.5	30.5	2.60	AN 44,48
52	4	24	12	12	25.5	33.5	3.39	52,56
60	4	24	12	12	30.5	38.5	3.79	60
AL 64	5	24	15	12	31	41	5.35	AN 64
68	5	28	15	14	38	48	6.65	68,72
76	5	32	15	14	40	50	7.96	76
AL 80	5	32	15	18	45	55	8.20	AN 80,84
88	5	36	15	18	43	53	9.00	88,92
96	5	36	15	18	53	63	10.4	96
100	5	40	15	18	45	55	10.5	100
ALL44	4	20	12	7	13.5	21.5	2.12	ANL44
48	4	20	12	9	17.5	25.5	2.29	48,52
56	4	24	12	9	17.5	25.5	2.92	56
ALL60	4	24	12	9	20.5	28.5	3.16	ANL60
64	5	24	15	9	21	31	4.56	64,68
72	5	28	15	9	20	30	5.03	72
ALL76	5	28	15	12	24	34	5.28	ANL76,80
84	5	32	15	12	24	34	6.11	84
88	5	32	15	14	28	38	6.45	88,92
96	5	36	15	14	28	38	7.29	96,100

[Remark] Lock plate series AL are applicable to adapter assembly series H31, H32 and H23, while lock plate series ALL are applicable to H30.

Ceramic&Exsev bearing series

More and more bearings are being used in extreme special environments, such as in a vacuum, or in a clean, corrosive, or heated place. In some cases bearings are required to be insulated or antimagnetic.

Applications of bearings in such environments are increasing in the field of state-of-the-art technology, e.g. vacuum equipment, aerospace equipment and semi-conductor production facilities. Bearings made of conventional materials and lubricants can hardly meet these new needs.

JTEKT has succeeded in developing a series of bearings for use in extreme special environments, having started from the study of the very basics of materials and testing of their performance under various severe conditions.

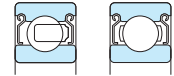
JTEKT has standardized the following bearings as the "Koyo **EXSEV** bearing series".

- Exsev bearings for use in a clean environment
Designed for use in a vacuum.
The friction surface of the bearing interior is coated with solid lubricant (or soft metal). Bearings pre-lubricated with special grease are also available.
- Exsev bearings for use in a vacuum environment
Produce insignificant contamination, provided with rolling elements and a cage made of self-lubricating materials. Optimal for use in environments which need to be clean.
- Ceramic bearings
Ceramic rings and rolling elements (silicon nitride Si_3N_4) ensure excellent performance in various extreme special environments.

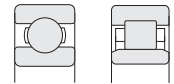
Exsev bearings for use in a vacuum environment



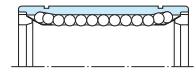
Exsev bearings for use in a clean environment



Ceramic bearings



Linear ball bearings for vacuum



For details, refer to JTEKT separate catalog "Ceramic bearings and **EXSEV** bearings for extreme special environments" (CAT. NO. B2004E).



Bearings for machine tool spindles (for support of axial loading)

JTEKT supplies double direction angular contact thrust ball bearings and ACT type matched pair angular contact ball bearings which are used with machine tool spindles to support axial loading.

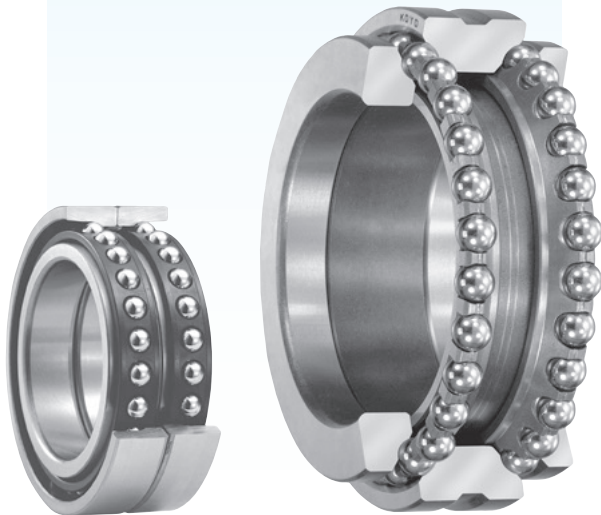
These bearings were developed to meet needs which have grown as machine tool spindle rotation has become faster and more accurate.

Several dimension series are available for selection according to operating conditions.

Double direction angular contact thrust ball bearings



Matched pair angular contact ball bearing (ACT type)

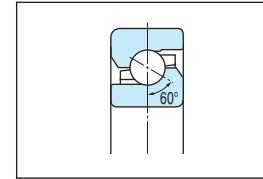


For details, refer to JTEKT separate catalog "Precision Ball and Roller Bearings for Machine Tools" (CAT. NO. B2005E).



Precision ball screw support bearings and bearing units

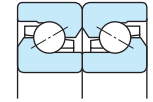
■ Support bearings were developed to support precision ball screw shafts. They have the same structure as angular contact thrust ball bearings with a contact angle of 60°.



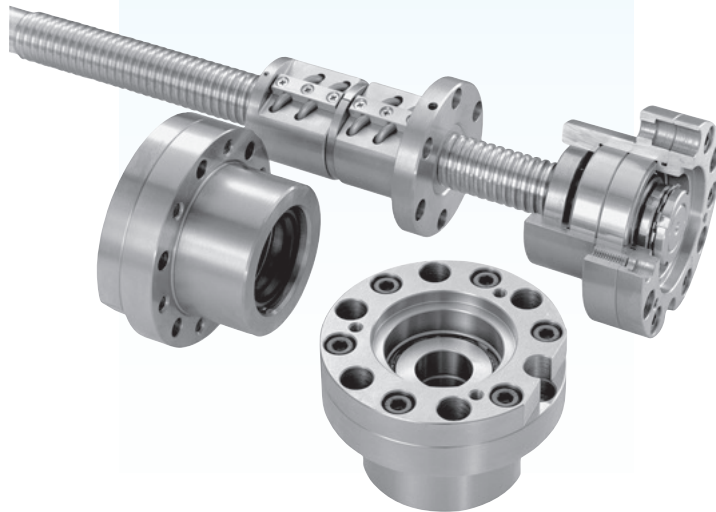
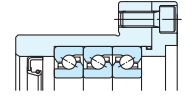
- Have a large axial load carrying capacity. Also able to carry a certain degree of radial load.
- Highly rigid in the axial direction.
- Starting torque is small.

■ Support bearing units consist of the bearings described above and a precisely processed housing. Units with a Koyo precision ball screw are also available.

Support bearings



Support bearing units



For details, refer to JTEKT separate catalog "Precision Ball and Roller Bearings for Machine Tools" (CAT. NO. B2005E).

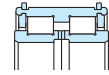


Full complement type cylindrical roller bearings for crane sheaves

Crane rope sheaves and running wheels which are operated at low or medium speed are generally equipped with full complement type cylindrical roller bearings because the operation of these machines involves heavy, impact loading.

These bearings are divided into shielded and open types. The shielded type is often used with the outer ring rotation.

Shielded type



Open type

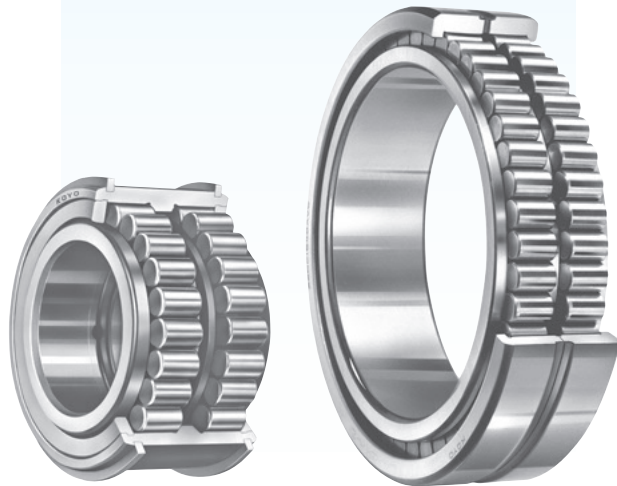


■ Shielded type

- The shielded type was developed for use with rope sheaves. It is shielded, non-separable and pre-lubricated with grease.
- Bearings with locating snap rings around the outer ring can be positioned and fit to sheaves with ease.
- The bearing surface is coated with phosphate for rust prevention.

■ Open type

- Open type bearings are further divided into those used on the fixed side and those used on the free side. The former carry axial load in both directions. The relative position of the latter's inner ring and outer ring can be adjusted by moving them along the axis.
- Open type bearings are separable because the outer ring divided into two annular pieces in a plane perpendicular to its axis. Triple-row and four-row bearings are available along with double-row types.



For details, refer to JTEKT separate catalog "Large size ball & roller bearings" (CAT. NO. B2002E).

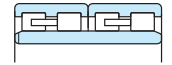


Rolling mill roll neck bearings

Rolling mill roll neck four-row cylindrical roller bearings and tapered roller bearings are designed to achieve the maximum load rating capacity in a limited space.

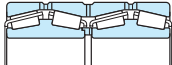
- Four-row cylindrical roller bearings
 - Suitable for high-speed rotation. Thin section designs are also available.
 - The inner ring raceway surface and the roll can be finished simultaneously after the inner ring is mounted on the roll neck. This feature is useful in improving rolling mill accuracy.
- Four-row tapered roller bearings
 - Suitable for low- and medium-speed rotation. Available in both metric and inch series.
 - The internal clearance is preadjusted, facilitating mounting.
 - More sealed type four-row tapered roller bearings are being used currently.

Four-row cylindrical roller bearings

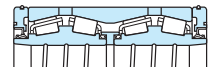


Cylindrical bore

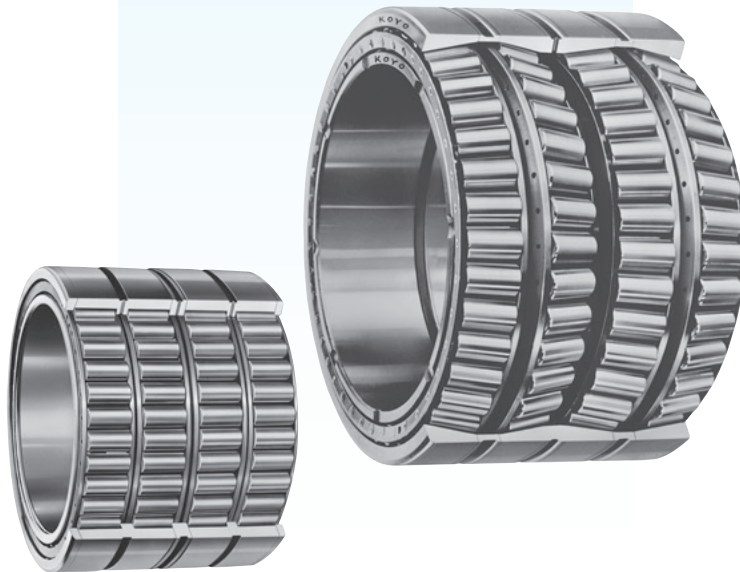
Four-row tapered roller bearings



Open type



Sealed type



For details, refer to JTEKT separate catalog "Roll neck bearings for rolling mill" (CAT. NO. B2013E).

