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.

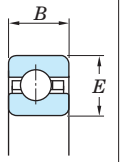
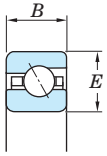
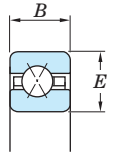
		Bearing type code			
		C (Deep groove type)	A (Angular contact type)	X (Four-point contact type)	
Dimension series code	Cross-sectional dimension $B = E$ (mm)				Bore diameter (mm)
T	4.762	K T C	K T A	K T X	25.4 to 38.1
A	6.35	K A C	K A A	K A X	50.8 to 304.8
B	7.938	K B C	K B A	K B X	50.8 to 508
C	9.525	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	
F	19.05	K F C	K F A	K F X	101.6 to 1 016
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

Unit : μm

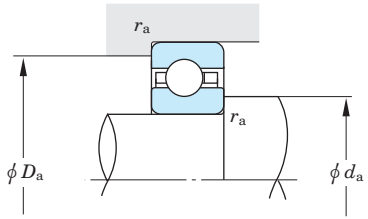
Bore diameter number	Single plane mean bore diameter deviation Δ_{dmp}					Single plane mean outside diameter deviation Δ_{Dmp}					Single inner (outer) ring width deviation Δ_{Bs}, Δ_{Cs}			Radial runout of assembled bearing ring, max.										Assembled bearing ring face runout with raceway, max.				Bore diameter number
														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 −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	8	Same as limit values for radial runout of assembled bearing outer ring	010
015	0 −13		0 −8											15	10	10												015
020	0 −15		0 −10	0 −5	0 −5			0 −10	0 −8	0 −5				20	13	10			25	13	13	8				10		020
025																												025
030						0 −15				0 −8					15					15	15					13		030
035	0 −20		0 −13	0 −8	0 −6									25		13	8	5	30					10				035
040																												040
042						0 −20		0 −13	0 −10	0 −10					20				36	20	20		8					042
045																												045
047	0 −25		0 −15	0 −10	0 −8									30		15												047
050						0 −25		0 −15							25				41	25	23							050
055																												055
060										0 −10																		060
065									0 −13																			065
070						0 −30		0 −18													25	13	10			15		070
075	0 −30		0 −18	0 −13	0 −10									41	30	20	10	8	46	30				13				075
080																												080
090																							10					090
100	0 −36	0 −36	0 −20		0 −13	0 −36	0 −36	0 −20		0 −13				46	36	25	13	10	51	36	30	15		15		18		100
110																												110
120								0 −23	0 −15							30					36	18	13			20		120
140	0 −41			0 −15		0 −41				0 −15	0 −254	0 −254	0 −254											18				140
160	0 −46	0 −41	0 −23			0 −46	0 −41	0 −25	0 −18						41	36	18			41	41	20			20		23		160
180																												180
200	0 −51	0 −46	0 −25	0 −18		0 −51	0 −46	0 −30	0 −20					51	46	41	20			46	46	23		23		25		200
250	0 −76					0 −76																						250
300																												300
350	0 −102	0 −51				0 −102	0 −51								51				51	51								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 radil 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					
030					15 – 30
035	41 – 71	41 – 66	25 – 51		
040					
042				20 – 36	20 – 36
045					
047	51 – 86	51 – 76	30 – 56		
050					
055				25 – 41	
060					
065					
070			36 – 61		
075	61 – 107	61 – 86			
080					
090					
100	71 – 122	71 – 97	41 – 66		25 – 41
110					
120			46 – 71	30 – 46	
140	81 – 132				30 – 46
160	91 – 142	81 – 107	51 – 76	36 – 51	
180					
200	102 – 152	91 – 117	61 – 86	36 – 56	
250	152 – 203				
300					
350	203 – 254	102 – 127			
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

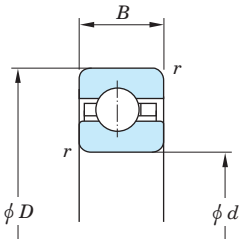
Unit : μm

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	div. Ⅱ				
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		+8 0		+5 0						−13 −25		−8 −15		−5 −10						015
020	+15 0		+10 0	+8 0		+15 0		+10 0	+8 0		−15 −30		−10 −20	−8 −15		−15 −30	−15 −30	−10 −20	−8 −15		020
025																					025
030							+15 0			+8 0											030
035	+20 0		+13 0		+6 0						−20 −40		−13 −25		−6 −13						035
040																					040
042						+20 0		+13 0	+10 0							−20 −40		−13 −25	−10 −20		042
045																					045
047	+25 0		+15 0	+10 0	+8 0						−25 −50		−15 −30	−10 −20	−8 −15						047
050																					050
055						+25 0		+15 0		+10 0						−25 −50		−15 −30		−10 −20	055
060																					060
065																					065
070						+30 0		+18 0	+13 0							−30 −60		−18 −35	−13 −25		070
075	+30 0		+18 0	+13 0	+10 0						−30 −60		−18 −35	−13 −25	−10 −20						075
080																					080
090																					090
100	+35 0	+35 0	+20 0		+13 0	+35 0	+35 0	+20 0		+13 0	−35 −70	−35 −70	−20 −40		−13 −25	−35 −70	−35 −70	−20 −40		−13 −25	100
110																					110
120								+23 0	+15 0									−23 −45	−15 −30		120
140	+40 0			+15 0		+40 0				+15 0	−48 −80			−15 −30		−40 −80				−15 −30	140
160	+45 0	+40 0	+23 0			+45 0	+40 0	+25 0	+18 0		−45 −90	−40 −80	−23 −45			−45 −90	−40 −80	−25 −50	−18 −35		160
180																					180
200	+50 0	+45 0	+25 0	+18 0		+50 0	+45 0	+30 0	+20 0		−50 −100	−45 −90	−25 −50	−15 −35		−50 −100	−45 −90	−30 −60	−18 −40		200
250	+75 0					+75 0					−75 −150					−75 −150					250
300																					300
350	+100 0	+50 0				+100 0	+50 0				−100 −200	−50 −100				−100 −200	−50 −100				350
400																					400

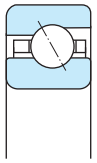
[Notes] Division Ⅰ is for deep groove type ball bearings.
Division Ⅱ is for angular contact type and four-point contact type ball bearings.

K-series super thin section ball bearings open type

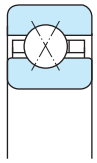
d 25.4 ~ (114.3) mm



Deep groove type



Angular contact type

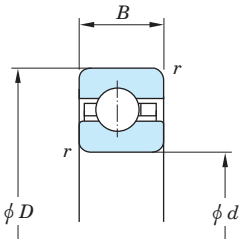


Four-point contact type

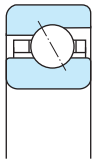
Boundary dimensions (mm)				Deep groove type			Angular contact type					Four-point contact type				(Refer.) Mass (kg)		
				Bearing No.	Basic load ratings (kN)		Bearing No.	Basic load ratings (kN)				Bearing No.	Basic load ratings (kN)						
d	D	B	r min.		C_r	C_{0r}		C_r	C_{0r}	C_a	C_{0a}		C_r	C_{0r}	C_a	C_{0a}	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
	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
114.3	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
	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

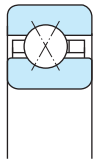
d (114.3) ~ (165.1) mm



Deep groove type



Angular contact type

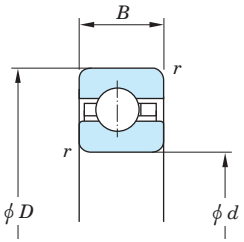


Four-point contact type

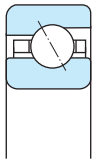
Boundary dimensions (mm)				Deep groove type			Angular contact type				Four-point contact type				(Refer.) Mass (kg)		
				Bearing No.	Basic load ratings (kN)		Bearing No.	Basic load ratings (kN)			Bearing No.	Basic load ratings (kN)					
d	D	B	r min.		C_r	C_{0r}		C_r	C_{0r}	C_a	C_{0a}		C_r	C_{0r}	C_a	C_{0a}	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

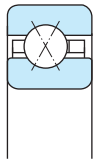
d (165.1) ~ 228.6 mm



Deep groove type



Angular contact type

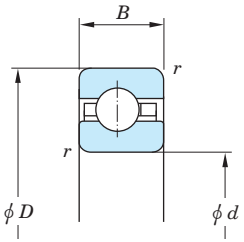


Four-point contact type

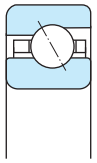
Boundary dimensions (mm)				Deep groove type			Angular contact type				Four-point contact type				(Refer.) Mass (kg)		
				Bearing No.	Basic load ratings (kN)		Bearing No.	Basic load ratings (kN)			Bearing No.	Basic load ratings (kN)					
d	D	B	r min.		C_r	C_{0r}		C_r	C_{0r}	C_a	C_{0a}		C_r	C_{0r}	C_a	C_{0a}	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

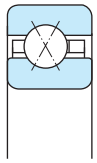
d 254 ~ 406.4 mm



Deep groove type



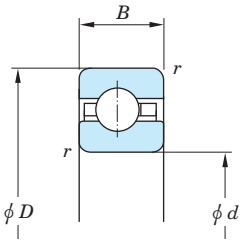
Angular contact type



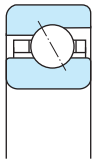
Four-point contact type

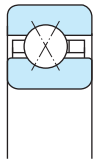
Boundary dimensions (mm)				Deep groove type			Angular contact type					Four-point contact type				(Refer.) Mass (kg)		
				Bearing No.	Basic load ratings (kN)		Bearing No.	Basic load ratings (kN)				Bearing No.	Basic load ratings (kN)					
d	D	B	r min.		C_r	C_{0r}		C_r	C_{0r}	C_a	C_{0a}		C_r	C_{0r}	C_a	C_{0a}	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

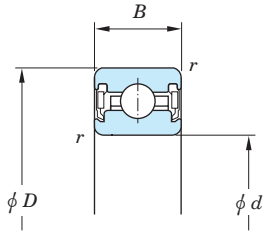

Angular contact type


Four-point contact type

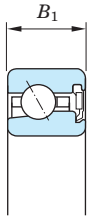
Boundary dimensions (mm)				Deep groove type			Angular contact type					Four-point contact type				(Refer.) Mass (kg)		
				Bearing No.	Basic load ratings (kN)		Bearing No.	Basic load ratings (kN)				Bearing No.	Basic load ratings (kN)					
d	D	B	r min.		C_r	C_{0r}		C_r	C_{0r}	C_a	C_{0a}		C_r	C_{0r}	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

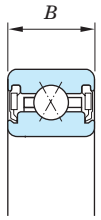
d 101.6 ~ 304.8 mm



Deep groove type
U size
(With seals)



Angular contact type
J size
(With seal)



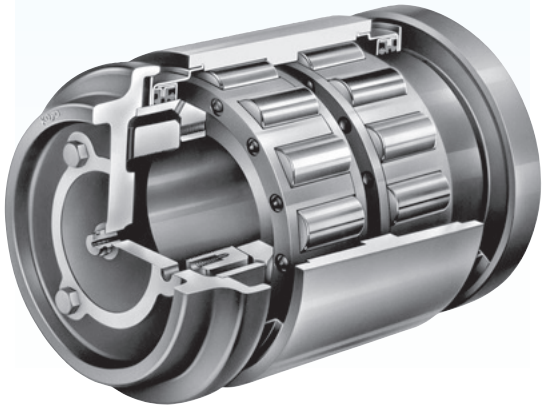
Four-point contact type
U size
(With seals)

Boundary dimensions (mm)					Deep groove type Basic load ratings (kN)			Angular contact type Basic load ratings (kN)					Four-point contact type Basic load ratings (kN)				(Refer.) Mass (kg)		
d	D	B	B_1	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
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.



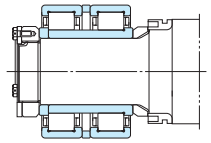
Cylindrical roller bearings

- 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

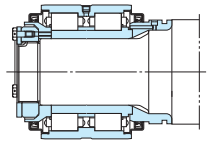
- Maintenance-free : pre-lubricated with grease and provided with oil seals.
- Can be used with a simplified axle box, or with an adapter instead.
- The inch series axle bearing units (ABU) are as specified in the "association of american rail-roads".

Cylindrical roller bearings



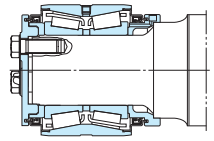
Bore diameter **85** – **133** mm

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 2-1, 2-3	80	120	0	− 400
		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.

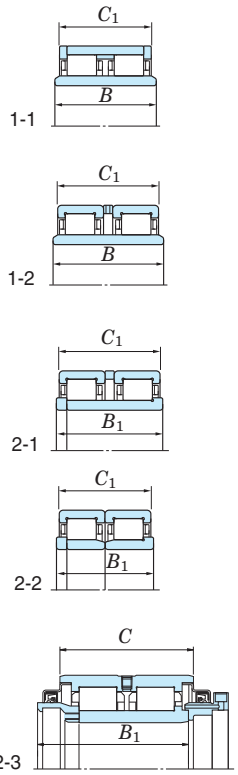


Table 2 Metric series ABU bearing tolerances Unit : μm

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	0	− 125	+ 50	− 50	+ 500	− 500
120	0	− 20			+ 100	− 100		
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
101.6to177.8	+ 25	0	+ 127	0	+ 50	− 250	+ 710	− 510

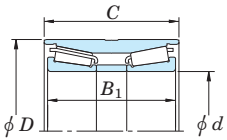
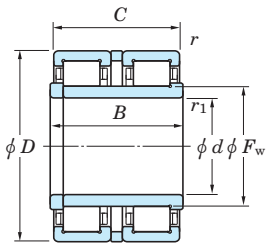


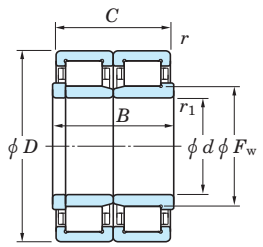
Table 4 Axle journal bearing recommended fits

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)

d 85 ~ (120) mm



Design 1

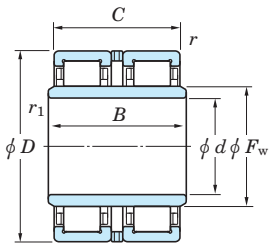


Design 2

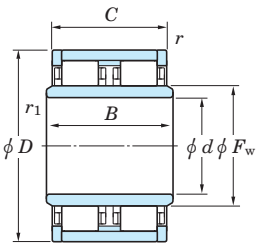
Boundary dimensions (mm)							Basic load ratings (kN)		Bearing No.[2]	Design[3]	(Refer.) Mass (kg)
d	D	B	C	F_w	r min.	r_1[1] min.	C_r	C_{0r}			
85	150	130	120	101.5	1.1	(7)	369	592	**2U2217SC**	3	8.6
90	160	88	80	107	2	2	355	529	**2CR90D**	1	7.2
95	170	120	105	114	1.1	(10)	497	804	**2UJ95**	4	10.9
	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.

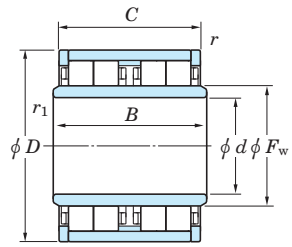
d (120) ~ 133 mm



Design 3



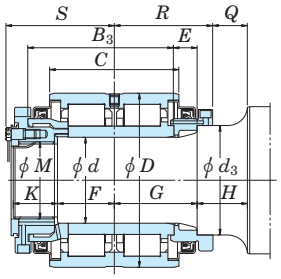
Design 4



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



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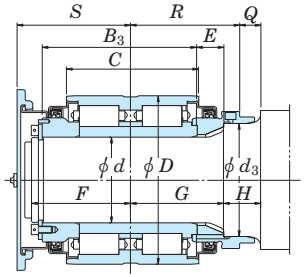

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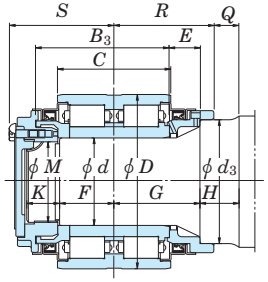

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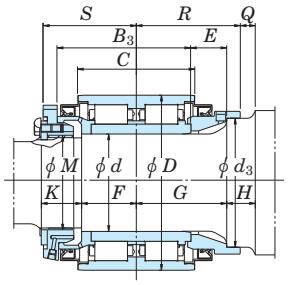

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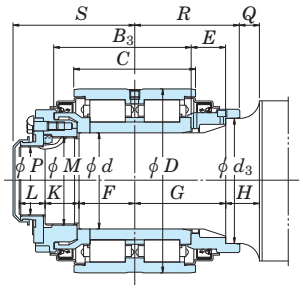

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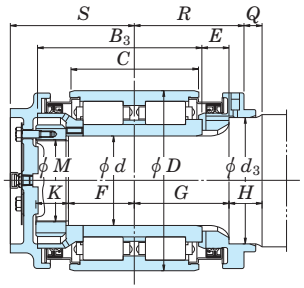
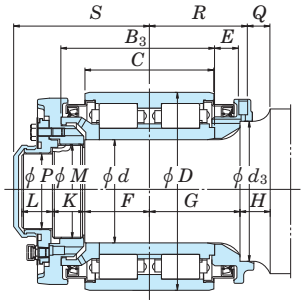
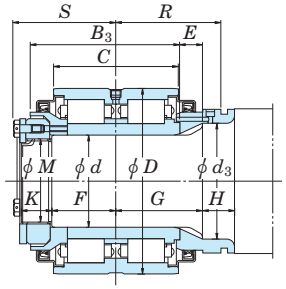


Design 6

Shaft dia. (mm) d	Unit No.	Design	Boundary dimensions (mm) d Brg.	D	C	B_3	d_3	E	F	G	H	K	L	M	P	Q	R	S	Bearing No.	Basic load ratings (kN) C_r	C_{0r}	(Refer.) Unit Mass (kg)
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



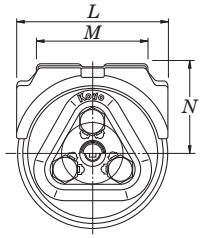
Design 7

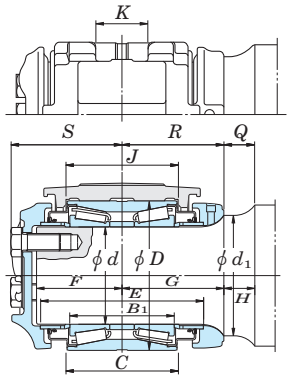


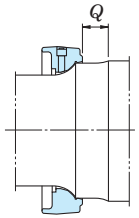
Design 8

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

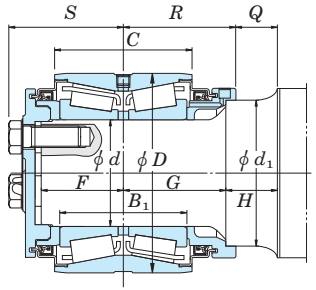
d 101.6 ~ 177.787 mm
110 ~ 130 mm



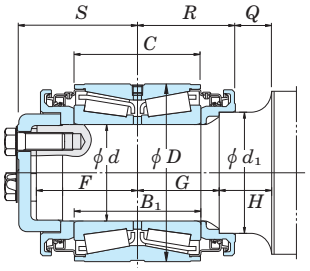




The shape of the backing ring used for JB1204P, JB1205P and JB1206P.



JB1486



JB1450

Dynamic equivalent load
(when $F_a/F_r \leqq e$)
$P=F_r+Y_2F_a$
(when $F_a/F_r > e$)
$P=0.67F_r+Y_3F_a$
Static equivalent load
$P_0=F_r+Y_0F_a$

Class	Axle size	Unit No.	Boundary dimensions (mm)													Adapter No.	Dimensions of adapter (mm)					Bolt size	Dimensions (mm)	Bearing No.	Basic load ratings (kN)		Constant	Axial load factors			(Refer.) Mass (kg)	
			d Brg.	d Axle[1]	D	B_1	C	d_1[1]	E	F	G	H	Q	R	S		J	K	L	M	N		p		C_r	C_{0r}	e	Y_2	Y_3	Y_0	Unit	Adapter
B	4 1/4×8	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 ×9	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 1/2×10	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 ×11	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 1/2×12	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 ×12	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)

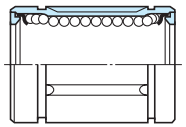
SDM series ..... 6 –120
SDMF, SDMK series ..... 6 – 80
SDE series ..... 5 – 80

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.

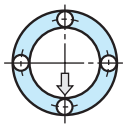
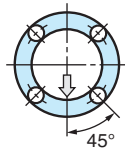
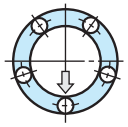
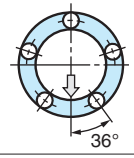
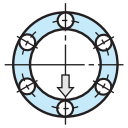
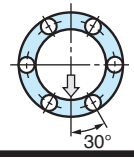
Table 1 Hardness coefficients

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.

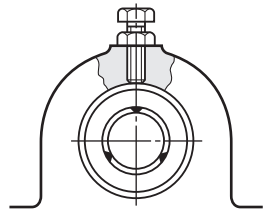


Fig. 1 Clearance adjustment

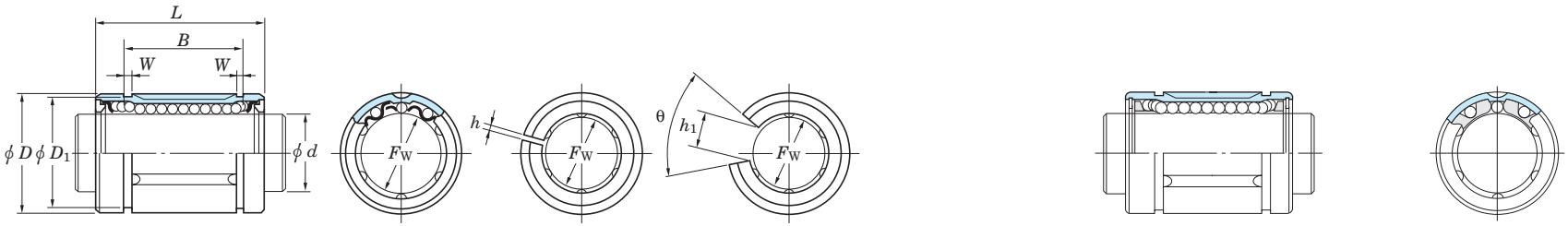
Table 4 SDM series linear ball bearing tolerances Unit : μm

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

d 5 ~ (20) mm

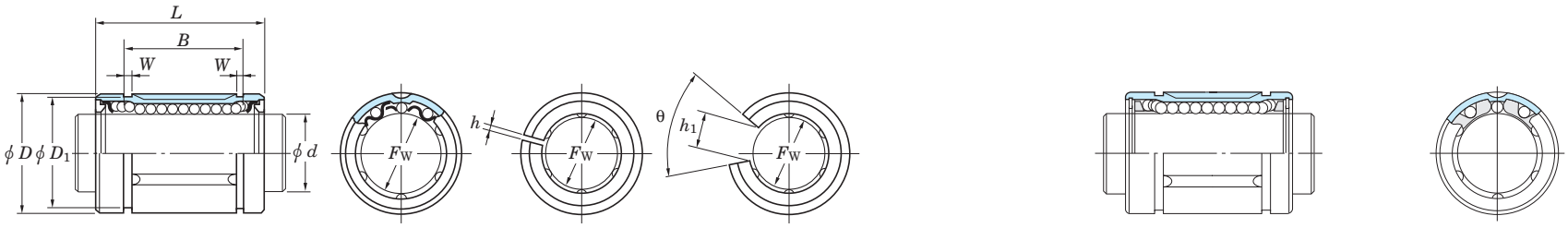


SDM, SDE | Standard type | Clearance adjustable type (...AJ) | Open type (...OP) | SDM...MD

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	Clearanece adjustable type	Open type	C_r	C_{0r}	Standard type
5	5	12	22	14.5	1.1	11.5	—	—	—	**SDE5**	—	—		3	—	—	108	183	10
6	6	12	19	13.5	1.1	11.5	1	—	—	**SDM6**	**SDM6AJ**	—		3	3	—	108	186	7
	6	12	19	13.5	1.1	11.5	1	—	—	**SDM6MG**	**SDM6AJMG**	—		4	4	—	108	186	6
8	8	15	17	11.5	1.1	14.3	1	—	—	**SDM8S**	**SDM8SAJ**	—		3	3	—	96	160	10
	8	15	17	11.5	1.1	14.3	1	—	—	**SDM8SMG**	**SDM8SAJMG**	—		4	4	—	96	160	9
	8	15	24	17.5	1.1	14.3	1	—	—	**SDM8**	**SDM8AJ**	—		3	3	—	122	223	14
	8	15	24	17.5	1.1	14.3	1	—	—	**SDM8MG**	**SDM8AJMG**	—		4	4	—	134	255	13
	8	16	25	16.5	1.1	15.2	1	—	—	**SDE8**	**SDE8AJ**	—		3	3	—	122	223	20
	8	16	25	16.5	1.1	15.2	1	—	—	**SDE8MG**	**SDE8AJMG**	—		4	4	—	134	255	18
10	10	19	29	22	1.3	18	1	6.8	80°	**SDM10**	**SDM10AJ**	**SDM10OP**		4	4	3	259	424	27
	10	19	29	22	1.3	18	1	—	—	**SDM10MG**	**SDM8AJMG**	—		4	4	—	259	424	23
	10	19	29	22	1.3	18	1	6.8	80°	**SDE10**	**SDE10AJ**	**SDE10OP**		4	4	3	259	424	27
	10	19	29	22	1.3	18	1	—	—	**SDE10MG**	**SDE10AJMG**	—		4	4	—	259	424	23
12	12	21	30	23	1.3	20	1.5	8	80°	**SDM12**	**SDM12AJ**	**SDM12OP**		4	4	3	260	431	31
	12	21	30	23	1.3	20	1.5	—	—	**SDM12MG**	**SDM12AJMG**	—		4	4	—	260	431	27
	12	22	32	22.9	1.3	21	1.5	7.5	78°	**SDE12**	**SDE12AJ**	**SDE12OP**		4	4	3	289	503	42
	12	22	32	22.9	1.3	21	1.5	—	—	**SDE12MG**	**SDM12AJMG**	—		4	4	—	289	503	37
13	13	23	32	23	1.3	22	1.5	9	80°	**SDM13**	**SDM13AJ**	**SDM13OP**		4	4	3	289	506	41
	13	23	32	23	1.3	22	1.5	—	—	**SDM13MG**	**SDM13AJMG**	—		4	4	—	289	506	35
16	16	26	36	24.9	1.3	24.9	1.5	10	78°	**SDE16**	**SDE16AJ**	**SDE16OP**		4	4	3	319	587	53
	16	26	36	24.9	1.3	24.9	1.5	—	—	**SDE16MG**	**SDE16AJMG**	—		4	4	—	319	587	47
	16	28	37	26.5	1.6	27	1.5	11	80°	**SDM16**	**SDM16AJ**	**SDM16OP**		4	4	3	480	766	69
	16	28	37	26.5	1.6	27	1.5	—	—	**SDM16MG**	**SDM16AJMG**	—		4	4	—	480	766	59
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	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.

d (20) ~ 80 mm



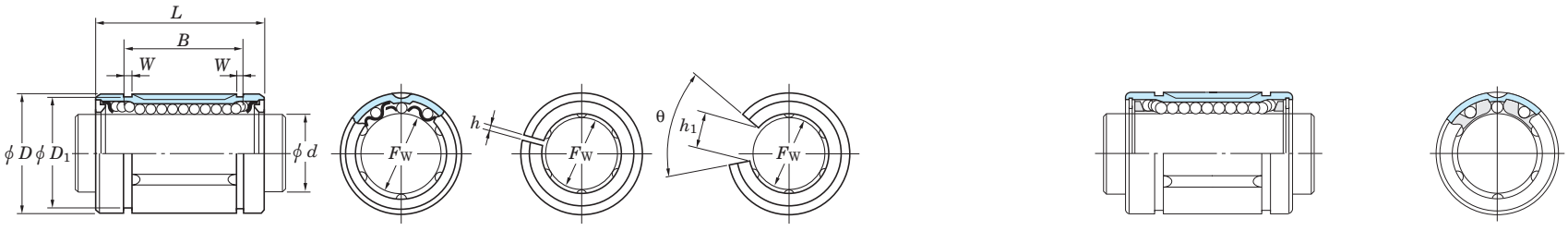
SDM, SDE | Standard type | Clearance adjustable type (...AJ) | Open type (...OP)

SDM...MD

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	Clearanece adjustable type	Open type	C_r	C_{0r}	Standard type
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.

d 100 ~ 120 mm



SDM, SDE | Standard type | Clearance adjustable type (...AJ) | Open type (...OP)

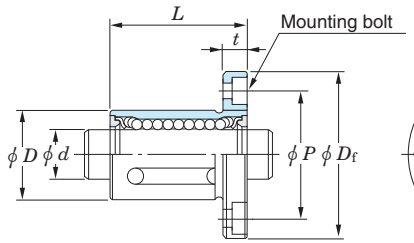
SDM...MD

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	Clearanece adjustable type	Open type	C_r	C_{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

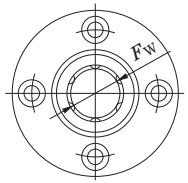
[Note] 1) JTEKT also manufactures sealed types, which are identified by U (one side sealed) or UU (both sides sealed) after ball complement bore diameter number.

Linear ball bearings flanged type

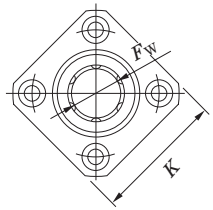
d 6 ~ 50 mm



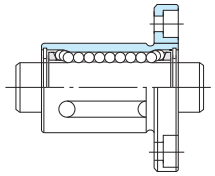
SDMF, SDMK



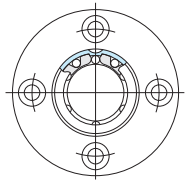
Round-flanged



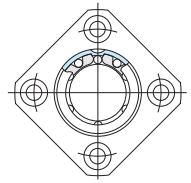
Square-flanged



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



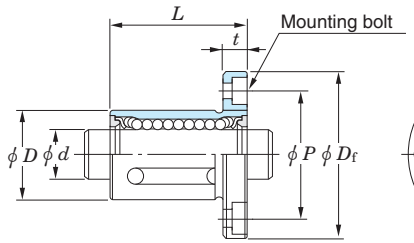
Round-flanged



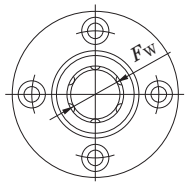
Square-flanged

Shaft dia. (mm)	Dimensions (mm)							Bolt size	Bearing No.		No. of ball rows	Basic load ratings (N)		(Refer.) Mass (g)
									Round-flanged type	Square-flanged type				Round-flanged type
d	F_w	D	L	D_f	K	t	P					C_r	C_{0r}	
6	6	12	19	28	22	5	20	M3	**SDMF6**	**SDMK6**	3	108	186	23
	6	12	19	28	22	5	20	M3	**SDMF6MG**	**SDMK6MG**	4	108	186	22
8	8	15	24	32	25	5	24	M3	**SDMF8**	**SDMK8**	3	122	223	35
	8	15	24	32	25	5	24	M3	**SDMF8MG**	**SDMK8MG**	4	134	255	34
10	10	19	29	40	30	6	29	M4	**SDMF10**	**SDMK10**	4	259	424	65
	10	19	29	40	30	6	29	M4	**SDMF10MG**	**SDMK10MG**	4	259	424	61
12	12	21	30	42	32	6	32	M4	**SDMF12**	**SDMK12**	4	260	431	72
	12	21	30	42	32	6	32	M4	**SDMF12MG**	**SDMK12MG**	4	260	431	68
13	13	23	32	43	34	6	33	M4	**SDMF13**	**SDMK13**	4	289	506	83
	13	23	32	43	34	6	33	M4	**SDMF13MG**	**SDMK13MG**	4	289	506	77
16	16	28	37	48	37	6	38	M4	**SDMF16**	**SDMK16**	4	480	766	120
	16	28	37	48	37	6	38	M4	**SDMF16MG**	**SDMK16MG**	4	480	766	110
20	20	32	42	54	42	8	43	M5	**SDMF20**	**SDMK20**	5	590	1 010	170
	20	32	42	54	42	8	43	M5	**SDMF20MG**	**SDMK20MG**	5	590	1 010	160
25	25	40	59	62	50	8	51	M5	**SDMF25**	**SDMK25**	5	1 130	2 030	290
	25	40	59	62	50	8	51	M5	**SDMF25MG**	**SDMK25MG**	5	1 130	2 030	270
30	30	45	64	74	58	10	60	M6	**SDMF30**	**SDMK30**	6	1 470	2 770	440
	30	45	64	74	58	10	60	M6	**SDMF30MG**	**SDMK30MG**	6	1 470	2 770	410
35	35	52	70	82	64	10	67	M6	**SDMF35**	**SDMK35**	6	1 580	3 070	610
	35	52	70	82	64	10	67	M6	**SDMF35MG**	**SDMK35MG**	6	1 580	3 070	560
40	40	60	80	96	75	13	78	M8	**SDMF40**	**SDMK40**	6	2 180	4 010	1 000
	40	60	80	96	75	13	78	M8	**SDMF40MG**	**SDMK40MG**	6	2 180	4 010	930
50	50	80	100	116	92	13	98	M8	**SDMF50**	**SDMK50**	6	4 420	7 150	2 000

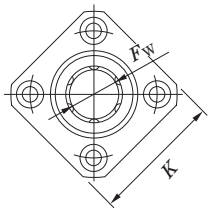
d 60 ~ 80 mm



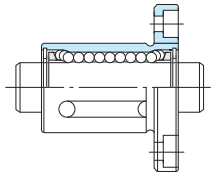
SDMF, SDMK



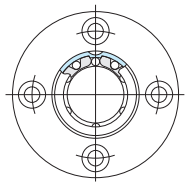
Round-flanged



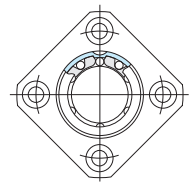
Square-flanged



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



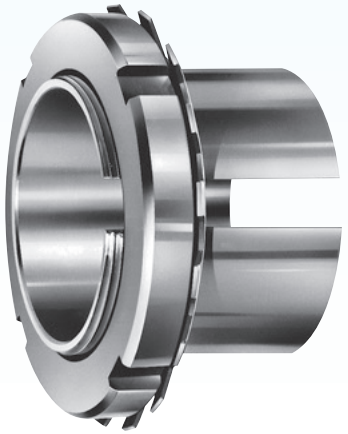
Round-flanged



Square-flanged

Shaft dia. (mm)	Dimensions (mm)							Bolt size	Bearing No.			No. of ball rows	Basic load ratings (N)		(Refer.) Mass (g)
d	F_w	D	L	D_f	K	t	P		Round-flanged type	Square-flanged type			C_r	C_{0r}	Round-flanged type
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.

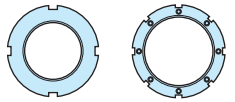
These accessories make it easy to attach and remove bearings.

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.

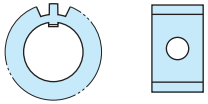
Lockwashers are used with bearings of bore diameter number 40 or lower. Lock plates are used with those of bore diameter 44 or higher.

Locknuts



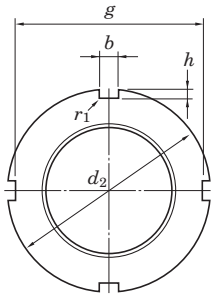
AN (ANL)	02 – 100
HN (HNL)	41 – 110

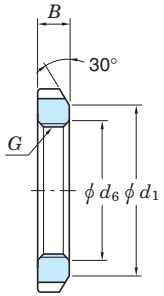
Lockwashers and lock plates



AW (AWL)	00 – 40(X)
AL (ALL)	44 – 100

AN02 ~ 25





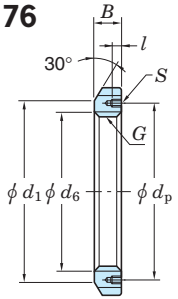
Locknut No.	Thread size[1] G	Standard dimensions (mm) d_2	d_1	g	d_6	b	h	B	r_1 max.	(Refer.) Mass (kg)	Applicable[2] adapter sleeve (bore No.)	Applicable[3] lockwasher No.
AN 02	M 15×1	25	21	21	15.5	4	2	5	0.4	0.010	—	AW 02
03	M 17×1	28	24	24	17.5	4	2	5	0.4	0.013	—	03
04	M 20×1	32	26	28	20.5	4	2	6	0.4	0.019	04	04
AN 05	M 25×1.5	38	32	34	25.8	5	2	7	0.4	0.025	05	AW 05
06	M 30×1.5	45	38	41	30.8	5	2	7	0.4	0.043	06	06
07	M 35×1.5	52	44	48	35.8	5	2	8	0.4	0.053	07	07
AN 08	M 40×1.5	58	50	53	40.8	6	2.5	9	0.5	0.085	08	AW 08
09	M 45×1.5	65	56	60	45.8	6	2.5	10	0.5	0.119	09	09
10	M 50×1.5	70	61	65	50.8	6	2.5	11	0.5	0.148	10	10
AN 11	M 55×2	75	67	69	56	7	3	11	0.5	0.158	11	AW 11
12	M 60×2	80	73	74	61	7	3	11	0.5	0.174	12	12
13	M 65×2	85	79	79	66	7	3	12	0.5	0.203	13	13
AN 14	M 70×2	92	85	85	71	8	3.5	12	0.5	0.242	14	AW 14
15	M 75×2	98	90	91	76	8	3.5	13	0.5	0.287	15	15
16	M 80×2	105	95	98	81	8	3.5	15	0.6	0.397	16	16
AN 17	M 85×2	110	102	103	86	8	3.5	16	0.6	0.451	17	AW 17
18	M 90×2	120	108	112	91	10	4	16	0.6	0.556	18	18
19	M 95×2	125	113	117	96	10	4	17	0.6	0.658	19	19
AN 20	M100×2	130	120	122	101	10	4	18	0.6	0.698	20	AW 20
21	M105×2	140	126	130	106	12	5	18	0.7	0.845	21	21
22	M110×2	145	133	135	111	12	5	19	0.7	0.965	22	22
AN 23	M115×2	150	137	140	116	12	5	19	0.7	1.01	—	AW 23
24	M120×2	155	138	145	121	12	5	20	0.7	1.08	24	24
25	M125×2	160	148	150	126	12	5	21	0.7	1.19	—	25

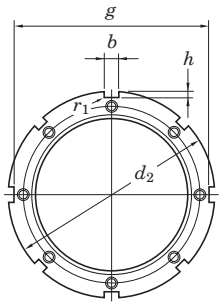
[Notes] 1) Basic profile and dimension of screw thread are in accordance with JIS B 0205.
2) Applicable to adapter sleeve series A31, A2, A3 and A23.
3) Applicable to lockwashers with flat inner tongue.
[Remark] Locknut series AN is used for adapter assembly series H2, H3, H23 and H31, while locknut series ANL is used for adapter assembly series H30.

AN 26 ~ 40
ANL24 ~ 40

Locknut No.	Thread size[1] G	Standard dimensions (mm) d_2	d_1	g	d_6	b	h	B	r_1 max.	(Refer.) Mass (kg)	Applicable[2] adapter sleeve (bore No.)	Applicable[3] lockwasher No.
AN 26	M130×2	165	149	155	131	12	5	21	0.7	1.25	26	AW 26
AN 27	M135×2	175	160	163	136	14	6	22	0.7	1.55	—	AW 27
28	M140×2	180	160	168	141	14	6	22	0.7	1.56	28	28
AN 29	M145×2	190	172	178	146	14	6	24	0.7	1.80	—	AW 29
30	M150×2	195	171	183	151	14	6	24	0.7	2.03	30	30
31	M155×3	200	182	186	156.5	16	7	25	0.7	2.30	—	—
AN 32	M160×3	210	182	196	161.5	16	7	25	0.7	2.59	32	AW 32
33	M165×3	210	193	196	166.5	16	7	26	0.7	2.70	—	—
34	M170×3	220	193	206	171.5	16	7	26	0.7	2.80	34	34
AN 36	M180×3	230	203	214	181.5	18	8	27	0.7	3.07	36	AW 36
38	M190×3	240	214	224	191.5	18	8	28	0.7	3.39	38	38
40	M200×3	250	226	234	201.5	18	8	29	0.7	3.69	40	40
ANL24	M120×2	145	133	135	121	12	5	20	0.7	0.78	24	AWL24
26	M130×2	155	143	145	131	12	5	21	0.7	0.88	26	26
28	M140×2	165	151	153	141	14	6	22	0.7	0.99	28	28
ANL30	M150×2	180	164	168	151	14	6	24	0.7	1.33	30	AWL30
32	M160×3	190	174	176	161.5	16	7	25	0.7	1.56	32	32
34	M170×3	200	184	186	171.5	16	7	26	0.7	1.72	34	34
ANL36	M180×3	210	192	194	181.5	18	8	27	0.7	1.95	36	AWL36
38	M190×3	220	202	204	191.5	18	8	28	0.7	2.08	38	38
40	M200×3	240	218	224	201.5	18	8	29	0.7	2.98	40	40

AN 44 ~ 100
ANL 44 ~ 76





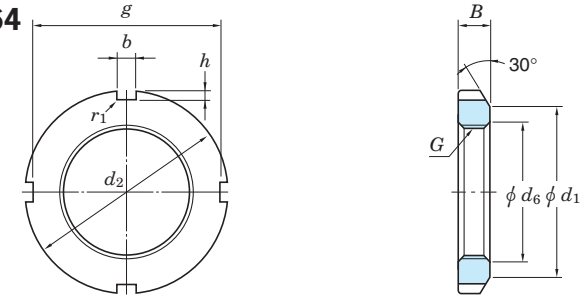
Locknut No.	Thread[1] size G	Standard dimensions (mm) d_2	d_1	g	d_6	b	h	B	r_1 max.	Tapped hole[2] (mm) l	S Thread size	d_p	(Refer.) Mass (kg)	Applicable adapter sleeve[3] (bore No.)	Applicable lock plate No.
AN 44	Tr220×4	280	250	260	222	20	10	32	0.8	15	M 8×1.25	238	5.16	44	AL 44
48	Tr240×4	300	270	280	242	20	10	34	0.8	15	M 8×1.25	258	5.91	48	44
52	Tr260×4	330	300	306	262	24	12	36	0.8	18	M10×1.5	281	7.99	52	52
AN 56	Tr280×4	350	320	326	282	24	12	38	0.8	18	M10×1.5	301	8.99	56	AL 52
60	Tr300×4	380	340	356	302	24	12	40	0.8	18	M10×1.5	326	11.7	60	60
64	Tr320×5	400	360	376	322.5	24	12	42	0.8	18	M10×1.5	345	13.0	64	64
AN 68	Tr340×5	440	400	410	342.5	28	15	55	1	21	M12×1.75	372	23.0	68	AL 68
72	Tr360×5	460	420	430	362.5	28	15	58	1	21	M12×1.75	392	25.0	72	68
76	Tr380×5	490	450	454	382.5	32	18	60	1	21	M12×1.75	414	30.8	76	76
AN 80	Tr400×5	520	470	484	402.5	32	18	62	1	27	M16×2	439	36.7	80	AL 80
84	Tr420×5	540	490	504	422.5	32	18	70	1	27	M16×2	459	43.3	84	80
88	Tr440×5	560	510	520	442.5	36	20	70	1	27	M16×2	477	45.1	88	88
AN 92	Tr460×5	580	540	540	462.5	36	20	75	1	27	M16×2	497	50.2	92	AL 88
96	Tr480×5	620	560	580	482.5	36	20	75	1	27	M16×2	527	62.0	96	96
100	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.

ANL 80 ~ 100

Locknut No.	Thread[1] size G	Standard dimensions (mm) d_2	d_1	g	d_6	b	h	B	r_1 max.	Tapped hole[2] (mm) l	S Thread size	d_p	(Refer.) Mass (kg)	Applicable adapter sleeve[3] (bore No.)	Applicable lock plate No.
ANL80	Tr400×5	470	442	442	402.5	28	14	52	1	18	M10×1.5	418	16.9	80	ALL76
84	Tr420×5	490	462	462	422.5	32	14	52	1	18	M10×1.5	438	17.4	84	84
88	Tr440×5	520	490	490	442.5	32	15	60	1	21	M12×1.75	462	26.2	88	88
ANL92	Tr460×5	540	510	510	462.5	32	15	60	1	21	M12×1.75	482	26.9	92	ALL88
96	Tr480×5	560	530	530	482.5	36	15	60	1	21	M12×1.75	502	28.3	96	96
100	Tr500×5	580	550	550	502.5	36	15	68	1	21	M12×1.75	522	33.6	/500	96

HN 42 ~ 110
HNL 41 ~ 64



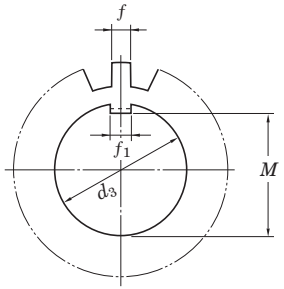
Locknut No.	Thread[1] size G	Standard dimensions (mm) d_2	d_1	g	d_6	b	h	B	r_1 max.	(Refer.) Mass (kg)	Withdrawal sleeve No.			
HN 42	Tr210×4	270	238	250	212	20	10	30	0.8	4.75	AH3138	AH2238	AH3238	AH2338
44	Tr220×4	280	250	260	222	20	10	32	0.8	5.35	3140	2240	3240	2340
48	Tr240×4	300	270	280	242	20	10	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
58	Tr290×4	370	330	346	292	24	12	40	0.8	11.8	3152	2252	—	2352
62	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	—
70	Tr350×5	450	410	420	352.5	28	15	55	1	25.2	3164	2264	3264	—
74	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	—
84	Tr420×5	540	490	504	422.5	32	18	70	1	46.9	3176	—	3276	—
88	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	—
96	Tr480×5	620	560	580	482.5	36	20	75	1	67.0	X3188	—	X3288	—
102	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	—
110	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	—	—
56	Tr280×4	330	310	310	282	24	10	38	0.8	6.72	3052	252	—	—
60	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	—	—	—

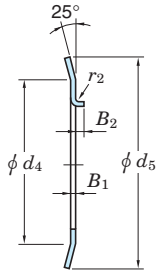
[Note] 1) Basic profile and dimension of screw thread are in accordance with JIS B 0216.
[Remark] Number of slots on nut may sometimes exceed that shown in the figure.

HNL 69 ~ 108

Locknut No.	Thread[1] size G	Standard dimensions (mm) d_2	d_1	g	d_6	b	h	B	r_1 max.	(Refer.) Mass (kg)	Withdrawal sleeve No.			
HNL 69	Tr345×5	410	384	384	347.5	28	13	45	1	11.5	3064	—	—	—
73	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	—	—	—
82	Tr410×5	480	452	452	412.5	32	14	52	1	19.0	3076	—	—	—
86	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	—	—	—
94	Tr470×5	540	510	510	472.5	32	15	60	1	25.0	X3088	—	—	—
98	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	—	—	—
108	Tr540×6	630	590	590	543	40	20	68	1	43.5	X30/500	—	—	—

AW 00 ~ 24(X)





With bent inner tongue

With flat inner tongue

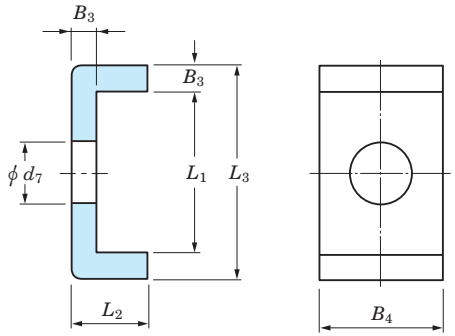
Lockwasher No. With bent inner tongue	Lockwasher No. With flat inner tongue	Standard dimensions (mm) d_3	M	f_1	B_1	f	d_4	d_5	r_2	B_2	No. of tooth	(Refer.) Mass (kg/100pcs.)	Applicable adapter sleeve (bore No.)	Applicable locknut No.
AW 00	AW 00X	10	8.5	3	1	3	13	21	0.5	2	9	0.131	—	AN 00
01	01X	12	10.5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

[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.

AW 25 ~ 40(X)
AWL24 ~ 40(X)

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

AL 44 ~ 100
ALL44 ~ 96



Lock plate No.	Standard dimensions (mm) B_3	B_4	L_2	d_7	L_1	L_3	(Refer.) Mass (kg/100pcs.)	Applicable locknut No.
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.

Exsev&Ceramic 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".

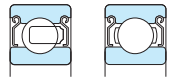
- Exsev bearings for use in a clean environment
  Designed for use in a vacuum.
  The friction surface of the bearing interior is coated with solid lubricant (or soft metal). Bearings pre-lubricated with special grease are also available.

- 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.

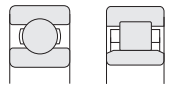
- Ceramic bearings
  Ceramic rings and rolling elements (silicon nitride Si_3N_4) ensure excellent performance in various extreme special environments.

Exsev bearings for use in a vacuum environment

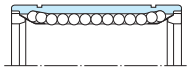
Exsev bearings for use in a clean environment



Ceramic bearings



Linear ball bearings for vacuum



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

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

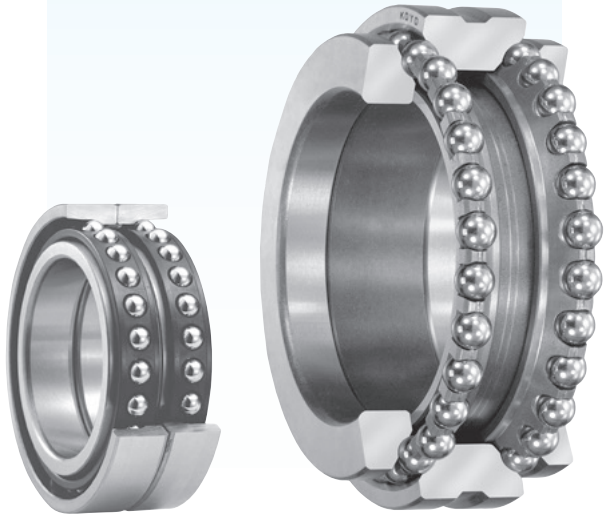
JTEKT supplies double direction angular contact thrust ball bearings and ACT type matched pair angular contact ball bearings which are used with machine tool spindles to support axial loading.

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.

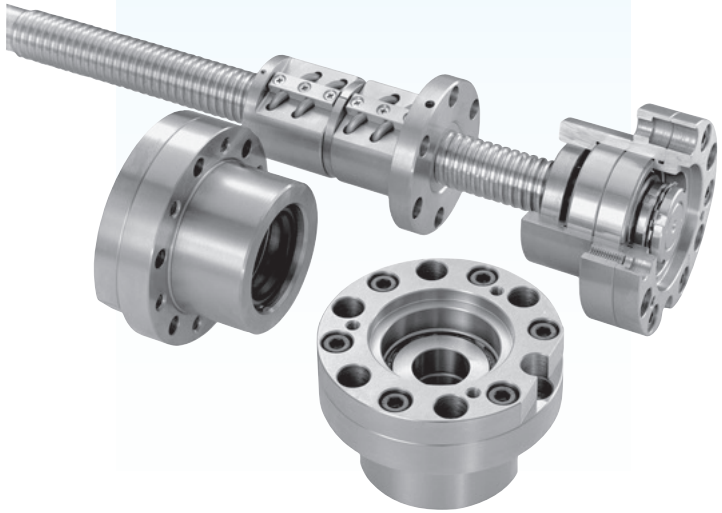
Double direction angular contact thrust ball bearings

Matched pair angular contact ball bearing (ACT type)

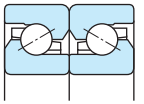


For details, refer to JTEKT separate catalog "Precision Ball and Roller Bearings for Machine Tools" (CAT. NO. B2005E).

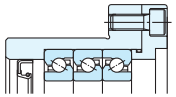
Precision ball screw support bearings and bearing units



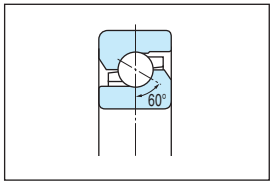
Support bearings



Support 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°.



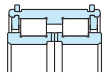
- Have a large axial load carrying capacity. Also able to carry a certain degree of radial load.
- Highly rigid in the axial direction.
- Starting torque is small.

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

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

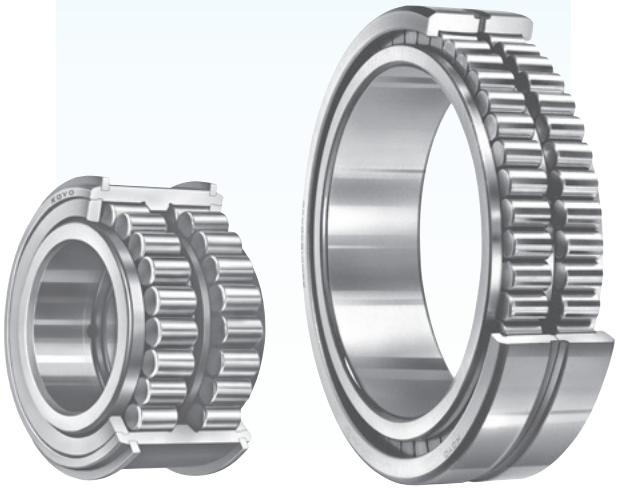
Shielded type



Open type

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

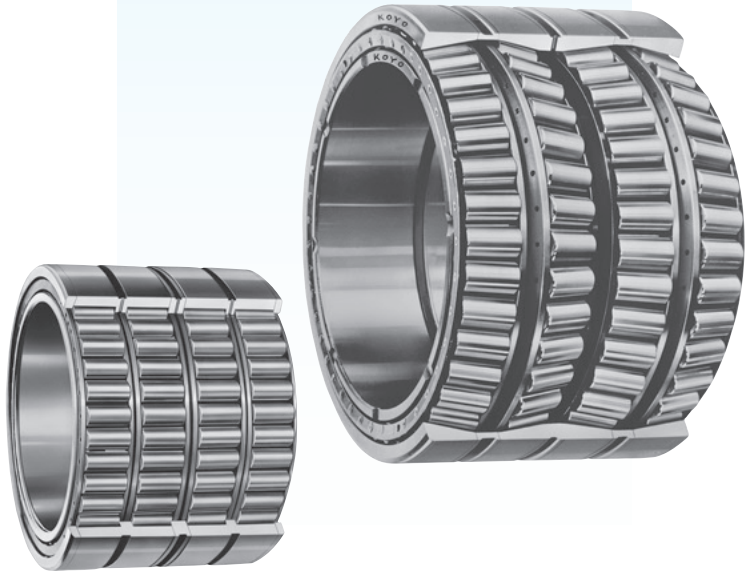
- The shielded type was developed for use with rope sheaves. It is shielded, non-separable and pre-lubricated with grease.
- Bearings with locating snap rings around the outer ring can be positioned and fit to sheaves with ease.
- The bearing surface is coated with phosphate for rust prevention.

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

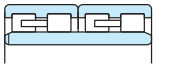


Rolling mill roll neck four-row cylindrical roller bearings and tapered roller bearings are designed to achieve the maximum load rating capacity in a limited space.

■ 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.

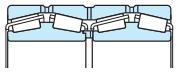
■ Four-row tapered roller bearings
- Suitable for low- and medium-speed rotation. Available in both metric and inch series.
- The internal clearance is preadjusted, facilitating mounting.
- More sealed type four-row tapered roller bearings are being used currently.

Four-row cylindrical roller bearings

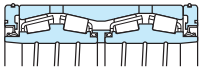


Cylindrical bore

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).