

Double row angular contact ball bearings

Can be considered in design similar to a pair of single row angular contact ball bearings in "O arrangement" or in a "X arrangement".

RKB double row angular contact ball bearings can accommodate thrust load as well as high radial load.

The bearings are normally used in arrangement requiring a rigid axial guidance. They can also withstand tilting moments.



acceleration and sudden changes of rotating direction. In these operating conditions a skidding between balls and raceways can be generated by the inertial forces, influencing negatively the bearing life.

The requested minimum axial load can be theoretically estimated as follows:

$$\frac{F_{rm}}{C_r} > 0,015$$

where:

- F_{rm} minimum radial load, [kN];
- C_r basic dynamic radial load, [kN].

Usually, the minimum radial load is reached or surpassed by the weight of the components supported by the bearing together with the loads acting on it, otherwise supplementary radial load must be applied on the single row angular contact ball bearing. In application where a starting up at a low temperature is planned or a lubricant with high viscosity is used, a larger value of the minimum radial load is required.

Misalignment

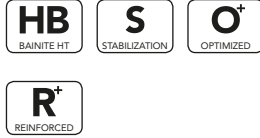
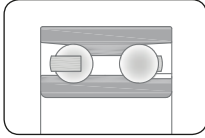
According to the bearing internal design of double row angular contact ball bearings any misalignment may shorten the bearing service life, as well as give an increase of rotation noise.

Minimum load

A minimum axial load is requested for a thrust ball bearing, like for all ball and roller bearings, to guarantee an adequate operating conditions, especially in critical application requirements like: high speed, high

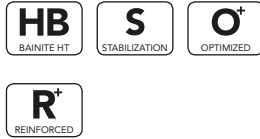
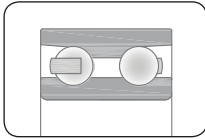
Designs and variants

Type DBA



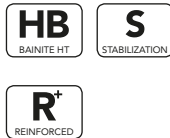
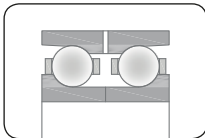
- Double row ACBB back-to-back arrangement (DB)
- Filling slot on inner ring
- Non-separable open design
- Moulded glass fiber reinforced polyamide snap-in cage guided on balls (TN)
- Available with lubrication holes in the inner ring
- Supports high combined loads

Type DB1



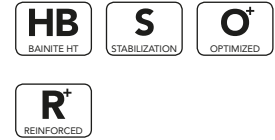
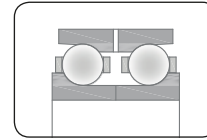
- Double row ACBB back-to-back arrangement (DB)
- Non-separable open design
- Moulded glass fiber reinforced polyamide snap-in cage guided on balls (TN)
- Available with lubrication holes in the inner ring
- Supports high combined loads

Type DB2



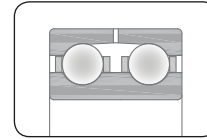
- Double row ACBB back-to-back arrangement (DB)
- Machined brass cage guided on inner ring (MB)

Type DB3

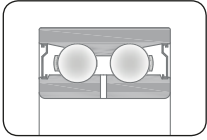


- Double row ACBB back-to-back arrangement (DB)
- Machined brass cage guided on inner ring (MB)
- Lubrication grooves and holes in outer ring
- Narrower outer ring compared to type DB2 design
- Two-piece inner ring
- Supports high combined loads

Type DF



- Double row ACBB face-to-face arrangement (DF)
- Separable open design
- Machined brass cage guided on inner ring (MB)
- Lubrication grooves and holes in outer rings
- Supports high combined loads

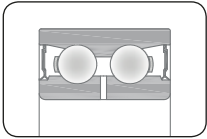
Seal type DB/ZZ
HB
 BAINITE HT

S
 STABILIZATION

O⁺
 OPTIMIZED

R⁺
 REINFORCED

- Double row ACBB back-to-back arrangement (DB)
- Non-separable shielded design (ZZ)
- Moulded glass fiber reinforced polyamide snap-in cage guided on balls (TN)
- Available with lubrication holes in the inner ring
- Shielded type to keep the grease inside the bearing without compromising the limiting speed
- Supports high combined loads

Type DB/2RS
HB
 BAINITE HT

S
 STABILIZATION

O⁺
 OPTIMIZED

R⁺
 REINFORCED

- Double row ACBB back-to-back arrangement (DB)
- Non-separable sealed design (2RS)
- Moulded glass fiber reinforced polyamide snap-in cage guided on balls (TN)
- Available with lubrication holes in the inner ring
- Sealed type to keep the grease inside the bearing without compromising the limiting speed
- Supports high combined loads

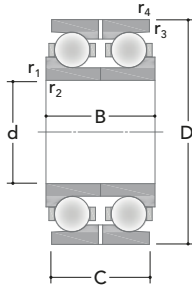
Suffixes	Internal Design
D	Two-piece inner ring
A	No filling slots
SP	Special or non-standard bearing

Suffixes	Cage
TN or ATN	Molded polyamide cage (PA66) guided on balls
TN9	Molded glass fiber-reinforced polyamide cage (PA66-GF25) guided on balls
M	Machined brass cage guided on balls
J	Pressed steel cage guided on balls

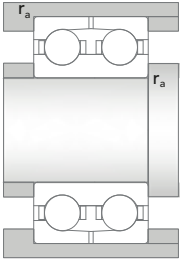
Suffixes	Accuracy, clearance, running
ABEC1	Approximated to tolerance class P0
ABEC3	Approximated to tolerance class P6
ABEC5	Approximated to tolerance class P5

Suffixes	External design
N	Snap ring groove in outer ring
N2	Two locating slots in outer ring
RS	Contact seal on one side
2RS	Contact seal on both sides
Z	Shield on one side
ZZ or 2Z	Shield on both sides

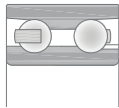
Suffixes	Set
DF or X or DFX	Double row angular contact ball bearing in X arrangement
DB	Double row angular contact ball bearing in O arrangement



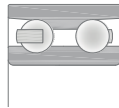
DB3



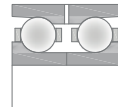
Main dimensions				Basic load ratings		Fatigue load limit	Speed ratings		Designation
d	D	B	C	Dynamic C	Static C ₀	C _u	Reference	Limiting	Standard design
[mm]				[kN]			[rpm]		
10	30	14	-	7,69	4,28	0,180	20500	21400	3200
12	32	15,9	-	10,30	5,51	0,240	18300	20500	3201
15	35	15,9	-	11,42	6,78	0,280	16000	16400	3202
	42	19	-	15,40	9,21	0,400	13400	14400	3302
17	40	17,5	-	14,16	8,8	0,370	13400	14500	3203
	47	22,2	-	21,82	12,6	0,540	12500	12300	3303
20	47	20,6	-	19,60	11,8	0,500	12700	12300	3204
	52	22,2	-	23,60	14,3	0,610	11400	11600	3304
25	52	20,6	-	21,17	14,1	0,590	11300	11000	3205
	62	25,4	-	32,00	20,1	0,850	10300	9900	3305
30	62	23,8	-	30,30	20,3	0,860	9000	9300	3206
	72	30,2	-	42,33	27,4	1,160	8100	8300	3306
35	72	27	-	39,20	27,9	1,180	8500	7900	3207
	80	34,9	-	50,96	35,5	1,500	7900	7800	3307
40	80	30,2	-	47,50	33,5	1,410	7400	7300	3208
	90	36,5	-	63,36	43,4	1,830	6900	6800	3308
45	85	30,2	-	49,98	38,9	1,630	7000	7000	3209
	100	39,7	-	75,00	52,2	2,210	6000	6100	3309
50	90	30,2	-	49,98	38,5	1,640	6200	6300	3210
	110	44,4	-	89,10	63,1	2,710	5300	5400	3310
55	100	33,3	-	59,40	46,9	1,970	5600	5500	3211
	120	49,2	-	110,88	81	3,430	4800	4700	3311



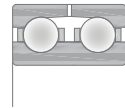
DBA



DB1

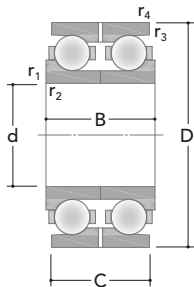


DB2

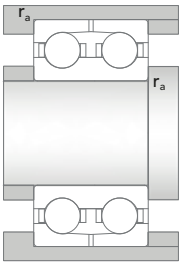


DF

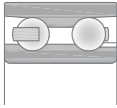
Dimensions					Mass	Designation
d	r _{1,2min}	r _{3,4min}	r _{amax}	r _{bmax}		Standard design
[mm]					[kg]	
10	0,6	0,6	0,6	0,6	0,051	3200
12	0,6	0,6	0,6	0,6	0,058	3201
15	0,6	0,6	0,6	0,6	0,066	3202
	1	1	1	1	0,13	3302
17	0,6	0,6	0,6	0,6	0,096	3203
	1	1	1	1	0,18	3303
20	1	1	1	1	0,16	3204
	1,1	1,1	1	1	0,22	3304
25	1	1	1	1	0,18	3205
	1,1	1,1	1	1	0,35	3305
30	1	1	1	1	0,29	3206
	1,1	1,1	1	1	0,52	3306
35	1,1	1,1	1	1	0,44	3207
	1,5	1,5	1,5	1,5	0,74	3307
40	1,1	1,1	1	1	0,57	3208
	1,5	1,5	1,5	1,5	0,93	3308
45	1,1	1,1	1	1	0,63	3209
	1,5	1,5	1,5	1,5	1,25	3309
50	1,1	1,1	1	1	0,65	3210
	2	2	2	2	1,7	3310
55	1,5	1,5	1,5	1,5	0,91	3211
	2	2	2	2	2,65	3311



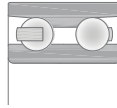
DB3



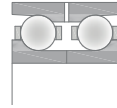
Main dimensions				Basic load ratings		Fatigue load limit	Speed ratings		Designation
d	D	B	C	Dynamic C	Static C ₀	C _u	Reference	Limiting	Standard design
[mm]				[kN]			[rpm]		
60	110	36,5	-	73,50	57,4	2,450	5000	4900	3212
	130	54	-	125,73	94,9	4,050	4600	4700	3312
65	120	38,1	-	82,21	73,4	3,100	4000	4400	3213
	140	58,7	-	144,54	109	4,510	4000	4200	3313
70	125	39,7	-	90,17	79,1	3,360	3900	4100	3214
	150	63,5	-	163,00	125	5,000	4000	3900	3314
75	130	41,3	-	93,69	87	3,710	3900	4200	3215
	160	68,3	-	179,52	140	5,500	3700	3600	3315
80	140	44,4	-	107,06	93,4	3,830	3600	3800	3216
	170	68,3	-	194,93	155	5,960	3500	3500	3316
85	150	49,2	-	126,48	109	4,360	3200	3400	3217
	180	73	-	212,16	173	6,440	3300	3300	3317
90	160	52,4	-	131,30	119	4,510	3000	3300	3218
	190	73	-	212,16	179	6,360	3200	3100	3318
95	170	55,6	-	159,00	146	5,400	3000	3100	3219
	200	77,8	-	237,60	216	7,500	2800	3000	3319
100	170	60,3	-	132,3	144	5,810	2600	2900	305397
	180	60,3	-	176,2	216	7,810	2600	2800	3220
	215	82,6	-	260,10	353	11,970	2300	2600	3320
110	200	69,8	-	214,12	270	9,170	2500	2600	3222
	240	92,1	-	293,91	418	13,430	2200	2300	3322
120	190	66	-	190,0	236	7,870	2700	3200	309733



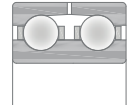
DBA



DB1

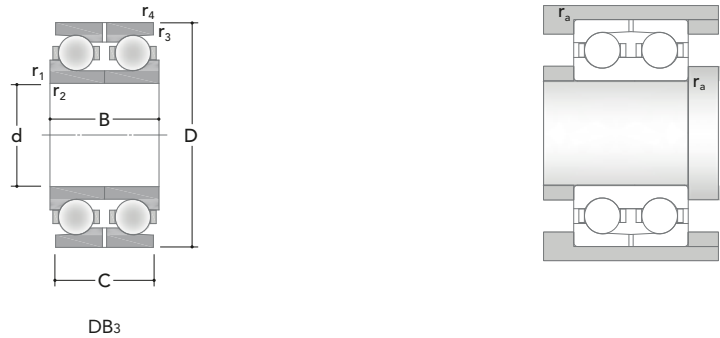


DB2

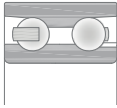


DF

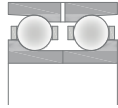
Dimensions					Mass	Designation
d	r _{1,2min}	r _{3,4min}	r _{amax}	r _{bmax}		Standard design
[mm]					[kg]	
60	1,5	1,5	1,5	1,5	1,2	3212
	2,1	2,1	2	2	2,8	3312
65	1,5	1,5	1,5	1,5	1,75	3213
	2,1	2,1	2	2	4,1	3313
70	1,5	1,5	1,5	1,5	1,9	3214
	2,1	2,1	2	2	5,05	3314
75	1,5	1,5	1,5	1,5	2,1	3215
	2,1	2,1	2	2	5,55	3315
80	2	2	2	2	2,65	3216
	2,1	2,1	2	2	6,8	3316
85	2	2	2	2	3,4	3217
	3	3	2,5	2,5	8,3	3317
90	2	2	2	2	4,15	3218
	3	3	2,5	2,5	9,25	3318
95	2,1	2,1	2	2	5	3219
	3	3	2,5	2,5	11	3319
100	2,1	2,1	2	2	5,35	305397
	2,1	2,1	2	2	6,1	3220
	3	3	2,5	2,5	13,5	3320
110	2,1	2,1	2	2	8,8	3222
	3	3	2,5	2,5	19	3322
120	2	2	2	2	6,6	309733



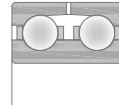
Main dimensions				Basic load ratings		Fatigue load limit	Speed ratings		Designation
d	D	B	C	Dynamic C	Static C ₀	C _u	Reference	Limiting	Standard design
[mm]				[kN]			[rpm]		
140	209,5	66	-	181,6	248	7,940	2600	2500	309515
150	225	73	-	191,0	273	7,730	1500	1800	305286
	230	70	-	201,0	285	9,000	2200	2700	305283
	240	84	-	253,51	335	10,250	2100	2700	305248
160	215	56	50	137,70	216	6,680	2200	2700	305608
	240	76	-	231,66	331	9,880	2000	2600	305183
170	260	84	-	281,0	399	11,430	1800	2400	305180
175	280	92	-	300,9	452	12,620	1900	2300	305351
180	250	70	-	194,0	281	8,530	1800	2400	305288
	250	70	-	186,2	282	8,560	1800	2300	305455
	259,5	66	-	257,00	396	11,240	1800	2400	305262
	280	92	-	322,19	479	13,370	1900	2400	305172
190	255	66	58	174,4	283	8,590	1900	2400	305609
	269,5	66	-	267,3	415	11,600	1700	2300	305338
	290	92	-	328,3	510	13,700	1800	2400	305178
200	279,5	76	-	246,8	374	10,24	1700	2100	305428
	280	76	-	239,58	360	9,850	1700	2100	305237
	280	80	-	239,58	376	10,290	1700	2200	305393
	289,5	76	-	294,0	468	12,710	1600	2000	305263
	310	96	-	365,2	551	14,760	1800	2400	305352
220	300	76	70	262,6	442	11,590	1500	2000	305610
	309,5	76	-	318,2	518	13,350	1500	1800	305272
230	329,5	80	-	351,00	592	15,100	1400	1800	305264



DBA

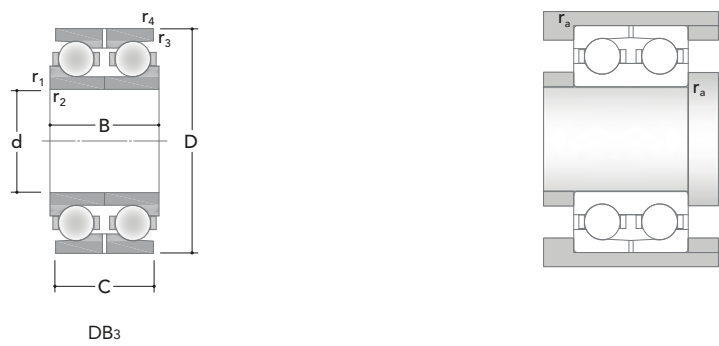


DB2

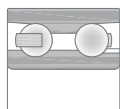


DF

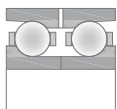
Dimensions					Mass	Designation
d	r _{1,2min}	r _{3,4min}	r _{amax}	r _{bmax}		Standard design
[mm]					[kg]	
140	2	2	2	2	7,4	309515
150	2	2	2	2	9,5	305286
	2	2	2	2	10	305283
	2,1	2,1	2	2	16	305248
160	2	1,1	2	1	5,45	305608
	2,1	2,1	2	2	11	305183
170	2	2	2	2	15	305180
175	2,1	2,1	2	2	21	305351
180	2	2	2	2	10	305288
	2	2	2	2	9,95	305455
	2,1	2,1	2	2	11	305262
	2,1	2,1	2	2	21,9	305172
190	1,5	1,1	1,5	1	9	305609
	2,1	2,1	2	2	11	305338
	2,1	2,1	2	2	20,5	305178
200	2,1	2,1	2	2	13	305428
	2,1	2,1	2	2	12,5	305237
	2,1	2,1	2	2	14,5	305393
	2,1	2,1	2	2	15,5	305263
	3	3	2,5	2,5	25,5	305352
220	2	1,1	2	1	14,5	305610
	2,1	2,1	2	2	17	305272
230	2,1	2,1	2	2	21	305264



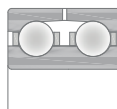
Main dimensions				Basic load ratings		Fatigue load limit	Speed ratings		Designation
d	D	B	C	Dynamic C	Static C ₀	C _u	Reference	Limiting	Standard design
[mm]				[kN]			[rpm]		
250	340	76	70	325,4	566	14,200	1400	1800	305611
260	369,5	92	-	397,0	696	16,960	1200	1500	305270
	400	130	-	431,6	727	17,11	1200	1500	305174
280	389,5	92	-	398,97	747	17,930	1200	1500	305269
650	780	84	-	540,0	1730	27,520	490	600	309984
900	1030	135	-	669,2	2510	33,960	330	400	311631
1000	1170	140	-	815,4	3170	41,11	280	400	311495



DBA

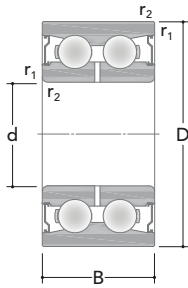


DB2

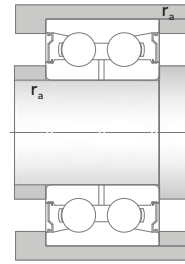


DF

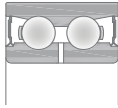
Dimensions					Mass	Designation
d	r _{1,2min}	r _{3,4min}	r _{amax}	r _{bmax}		Standard design
[mm]					[kg]	
250	2,1	1,5	2	1,5	19	305611
260	2,1	2,1	2	2	30	305270
	4	4	3	3	56	305174
280	2,1	2,1	2	2	31,5	305269
650	4	2,1	3	2	81	309984
900	5	4	4	3	150	311631
1000	5	2,5	4	2	255	311495



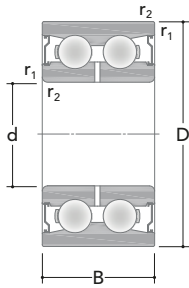
DB/ZZ



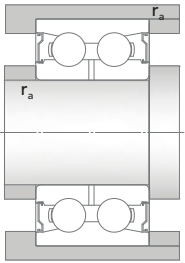
Main dimensions			Basic load ratings		Fatigue load limit C _u	Limiting speed		Designation
d	D	B	Dynamic C	Static C ₀		Bearing featuring shields seals		Standard design
[mm]			[kN]			[rpm]		
10	30	14,3	7,76	4,28	0,18	21600	15800	3200
12	32	15,9	9,9	5,50	0,24	20200	13500	3201
15	35	15,9	11,2	6,80	0,28	16700	12700	3202
	42	19	15,4	9,20	0,4	14600	11300	3302
17	40	17,5	14,3	8,80	0,37	14200	10700	3203
	47	22,2	21,8	12,60	0,54	13000	9700	3303
20	47	20,6	19,8	11,80	0,5	12700	8900	3204
	52	22,2	23,6	14,30	0,61	12200	7900	3304
25	52	20,6	21,4	14,10	0,59	11200	7700	3205
	62	25,4	32,6	20,10	0,85	9900	6700	3305
30	62	23,8	29,3	20,30	0,86	9100	7100	3206
	72	30,2	41,5	27,40	1,16	8200	5900	3306
35	72	27	40,4	27,90	1,18	8200	5900	3207
	80	34,9	51,5	35,50	1,5	7800	5600	3307
40	80	30,2	48,5	36,10	1,41	7500	4900	3208
	90	36,5	65,3	43,40	1,83	6900	4500	3308
45	85	30,2	52	38,90	1,63	6800	4900	3209
	100	39,7	75	52,20	2,21	6100	4300	3309
50	90	30,2	51	38,50	1,64	6200	4500	3210
	110	44,4	89,1	63,10	2,71	5600	3900	3310
55	100	33,3	60,6	46,90	1,97	5800	4100	3211
	120	49,2	109,8	81,00	3,43	4800	3500	3311

**DB/2RS**

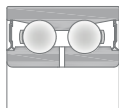
Dimensions			Mass	Designation	
d	r _{1,2min}	r _{amax}		Bearing sealed on	
				both sides	one side
[mm]			[kg]		
10	0,6	0,6	0,051	3200 ZZ	3200 2RS
12	0,6	0,6	0,058	3201 ZZ	3201 2RS
15	0,6	0,6	0,066	3202 ZZ	3202 2RS
	1	1	0,13	3302 ZZ	3302 2RS
17	0,6	0,6	0,1	3203 ZZ	3203 2RS
	1	1	0,18	3303 ZZ	3303 2RS
20	1	1	0,16	3204 ZZ	3204 2RS
	1,1	1	0,22	3304 ZZ	3304 2RS
25	1	1	0,18	3205 ZZ	3205 2RS
	1,1	1	0,35	3305 ZZ	3305 2RS
30	1	1	0,29	3206 ZZ	3206 2RS
	1,1	1	0,52	3306 ZZ	3306 2RS
35	1,1	1	0,44	3207 ZZ	3207 2RS
	1,5	1,5	0,74	3307 ZZ	3307 2RS
40	1,1	1	0,57	3208 ZZ	3208 2RS
	1,5	1,5	0,93	3308 ZZ	3308 2RS
45	1,1	1	0,63	3209 ZZ	3209 2RS
	1,5	1,5	1,25	3309 ZZ	3309 2RS
50	1,1	1	0,65	3210 ZZ	3210 2RS
	2	2	1,7	3310 ZZ	3310 2RS
55	1,5	1,5	0,91	3211 ZZ	3211 2RS
	2	2	2,65	3311 ZZ	3311 2RS



DB/ZZ



Main dimensions			Basic load ratings		Fatigue load limit C _u	Limiting speed		Designation
d	D	B	Dynamic C	Static C ₀		Bearing featuring		Standard design
						shields	seals	
[mm]			[kN]			[rpm]		
60	110	36,5	74,2	57,40	2,45	5000	3600	3212
	130	54	124,5	94,90	4,05	4600	-	3312
65	120	38,1	80,6	73,40	3,1	4400	3300	3213
	140	58,7	143,1	109,00	4,51	4100	-	3313
70	125	39,7	90,2	79,10	3,36	4100	-	3214
	150	63,5	163	125,00	5	3800	-	3314
75	130	41,3	96,6	87,00	3,71	4100	-	3215
	160	68,3	172,5	140,00	5,5	3600	-	3315

**DB/2RS**

Dimensions			Mass	Designation	
d	r _{1,2min}	r _{amax}		Bearing sealed on	
				both sides	one side
[mm]			[kg]		
60	1,5	1,5	1,2	3212 ZZ	3212 2RS
	2,1	2	2,8	3312 ZZ	-
65	1,5	1,5	1,75	3213 ZZ	3213 2RS
	2,1	2	4,1	3313 ZZ	-
70	1,5	1,5	1,9	3214 ZZ	-
	2,1	2	5,05	3314 ZZ	-
75	1,5	1,5	2,1	3215 ZZ	-
	2,1	2	5,6	3315 ZZ	-