

SINGLE ROW ANGULAR CONTACT BALL BEARINGS



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MAIN DIMENSIONS

The main and abutment dimensions of the bearings specified in the dimension tables are in accordance with the international standards ISO 15 (STN 02 4629).

SINGLE ROW ANGULAR CONTACT BALL BEARINGS $\alpha = 26^\circ$, $\alpha = 40^\circ$

The group of single row angular contact ball bearings comprises of bearings with contact angle $\alpha = 26^\circ$ and $\alpha = 40^\circ$ designed for standard seating and the high-precise single row ball bearings designed for high rotation speed.

These products have deep raceway that enables the absorption of radial load at relative heavy axial load in single direction. The bearings are mounted in pairs – face to face or back to back - in order to absorb the axial load in both directions.

SINGLE ROW ANGULAR CONTACT BALL BEARINGS DESIGNATED FOR HIGH ROTATION SPEED

Single row angular contact ball bearings designated for high rotation speed and high precision of seating differ from standard angular contact ball bearings by inner design of bearing rings, contact angle dimension of the ball with the raceways of the rings, construction of cage, high precision degree of operation. The bearings are non-separable and their correct arrangement assures required firmness and precision of seating. The bearings have textite cage guided on the inner ring (TB) or on the outer ring (TA).

TOLERANCE

Single row angular contact ball bearings are commonly produced in tolerance classes P0 and P6. Production of bearings with higher tolerance class (P5 or P4) should be discussed in advance. The limit values of deviations in tolerances and the operation of these bearing types are specified in tables 10a to 13b of this catalogue.

RADIAL EQUIVALENT DYNAMIC LOAD

Angular Contact Ball Bearings $\alpha = 40^\circ$, type B:

$$P_r = F_r \quad \text{for } F_a/F_r \leq 1,14$$

$$P_r = 0,35.F_r + 0,57.F_a \quad \text{for } F_a/F_r > 1,14$$

Angular Contact Ball Bearings $\alpha = 26^\circ$, type AA:

$$P_r = F_r \quad \text{for } F_a/F_r \leq 0,68$$

$$P_r = 0,41.F_r + 0,87.F_a \quad \text{for } F_a/F_r > 0,68$$

RADIAL EQUIVALENT STATIC LOAD

Angular Contact Ball Bearings $\alpha = 40^\circ$, type B:

$$P_{or} = 0,5.F_r + 0,26.F_a \quad (P_{or} \geq F_r)$$

Angular Contact Ball Bearings $\alpha = 26^\circ$, type AA:

$$P_{or} = 0,5.F_r + 0,37.F_a \quad (P_{or} \geq F_r)$$

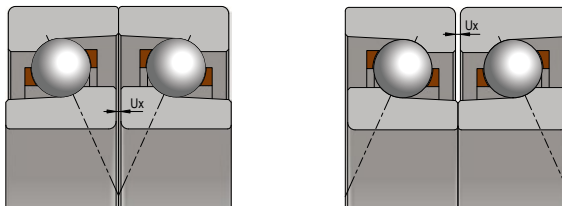
DESIGNATION

Designation of standard single row angular contact ball bearings is specified in the dimension tables. Modification of the basic design is designated with additional symbols according to STN 02 4608.

The meaning of the most used symbols for single row angular contact ball bearings

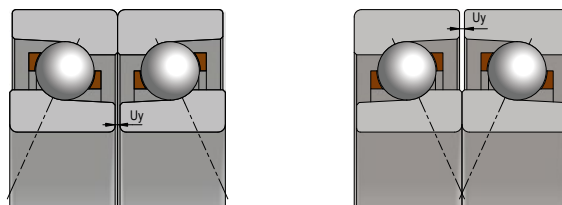
Symbol	Example	Meaning
AA	7203AA	Contact angle $\alpha = 26^\circ$, steel cage
B	7304B	Contact angle $\alpha = 40^\circ$, steel cage
BETNG	7206BETNG	Contact angle $\alpha = 40^\circ$, massive polyamide cage with 25% glass fiber guided on rollers
T	7204AAT	Textite cage
M	7204M	Massive brass cage
TB/MB	7204AATB/7204BMB	Textite/brass cage guided on inner ring

SINGLE ROW ANGULAR CONTACT BALL BEARINGS



Axial internal clearance of universally matchable single row angular contact ball bearings arranged back-to-back or face-to-face							
Bore diameter		Axial internal clearance class					
d		UA (ZVL)=CA (competition)		UB (ZVL)=CB (competition)		UC (ZVL)=CC (competition)	
over	incl.	min	max	min	max	min	max
mm		µm					
10	18	5	13	15	23	24	32
18	30	7	15	18	26	32	40
30	50	9	17	22	30	40	48
50	80	11	23	26	38	48	60
80	120	14	26	32	44	55	67
120	180	17	29	35	47	62	74
180	250	21	37	45	61	74	90

x = A, B, C

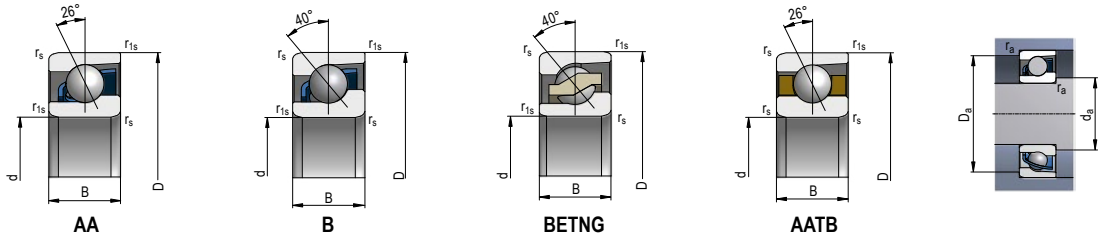


Preload of universally matchable single row angular contact ball bearing arranged back-to-back or face-to-face												
Bore diameter		Preload class										
d		UL (ZVL)=GA (competition)			UM (ZVL)=GB (competition)				US (ZVL)=GC (competition)			
over	incl.	min	max	*max	min	max	*min	*max	min	max	*min	*max
mm		µm			N	µm		N	µm		N	
10	18	+4	-4	80	-2	-10	30	330	-8	-16	230	660
18	30	+4	-4	120	-2	-10	40	480	-8	-16	340	970
30	50	+4	-4	160	-2	-10	60	630	-8	-16	450	1280
50	80	+6	-6	380	-3	-15	140	1500	-12	-24	1080	3050
80	120	+6	-6	410	-3	-15	150	1600	-12	-24	1150	3250
120	180	+6	-6	540	-3	-15	200	2150	-12	-24	1500	4300
180	250	+8	-8	940	-4	-20	330	3700	-16	-32	2650	7500

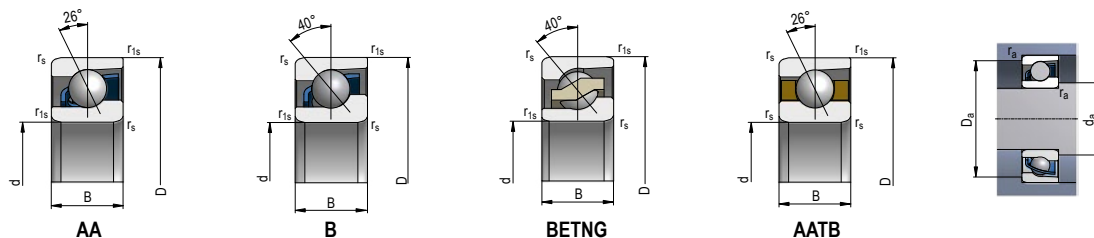
y = L, M, S

*max, *min - maximum and minimum clamping force during dimensional control measurement

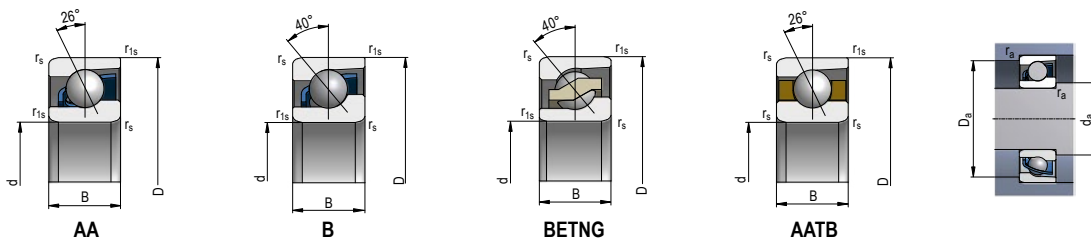
SINGLE ROW ANGULAR CONTACT BALL BEARINGS



Dimensions mm				Basic Load Rating kN		Limiting Speed for Lubrication min ⁻¹		Bearing Designation	Weight kg	Abutment and Fillet Dimensions mm		
d	D	B	r _s min	C	Co	L	L			d _a max	D _a max	r _a max
10	30	9	0,6	4,98	2,49	19000	26000	7200BETNG	0,032	15	26	0,6
12	32	10	0,6	6,93	3,37	19000	26000	7201B	0,038	17	27	0,6
12	32	10	0,6	6,93	3,37	19000	26000	7201BETNG	0,035	17	27	0,6
12	37	12	1	10,54	4,96	18000	24000	7301B	0,060	19	32	0,6
12	37	12	1	10,60	5,00	18000	24000	7301BETNG	0,060	19	32	0,6
15	35	11	1	8,46	4,37	17000	20000	7202AA	0,046	19	31	0,6
15	35	11	1	8,29	4,34	17000	20000	7202AATB	0,051	19	31	0,6
15	35	11	1	7,93	4,29	17000	20000	7202B	0,046	19	31	0,6
15	35	11	0,6	7,93	4,29	17000	20000	7202BETNG	0,045	19	31	0,6
15	42	13	1	12,30	6,20	14000	19000	7302B	0,085	21	36	0,6
15	42	13	1	12,45	6,58	14000	19000	7302BETNG	0,082	21	36	0,6
17	40	12	0,6	11,08	6,14	14000	19000	7203AA	0,068	21	36	0,6
17	40	12	0,6	10,45	5,61	14000	19000	7203AATB	0,068	21	36	0,6
17	40	12	0,6	9,93	5,51	14000	19000	7203B	0,068	21	36	0,6
17	40	12	0,6	9,93	5,51	14000	19000	7203BETNG	0,065	21	36	0,6
17	47	14	1	16,13	8,06	14000	19000	7303AA	0,123	23	41	1
17	47	14	1	14,90	7,40	12600	15000	7303AATB	0,123	23	41	1
17	47	14	1	14,90	8,00	12600	15000	7303B	0,115	23	41	1
17	47	14	1	14,80	8,02	12600	15000	7303BETNG	0,110	23	42	1
20	47	14	1	13,93	7,73	12000	16000	7204AATB	0,110	25	42	1
20	47	14	1	13,31	7,63	12000	16000	7204B	0,110	25	42	1
20	47	14	1	13,31	7,63	12000	16000	7204BETNG	0,110	25	45	1
20	52	15	1,1	17,20	9,20	11000	15000	7304B	0,140	25	42	1
20	52	15	1,1	17,33	9,67	11000	15000	7304BETNG	0,140	25	42	1
25	52	15	1	15,79	9,71	10000	14000	7205AA	0,120	30	47	1
25	52	15	1	15,79	9,71	10000	14000	7205AATB	0,120	30	47	1
25	52	15	1	14,79	9,39	10000	14000	7205B	0,125	30	47	1
25	52	15	1	14,79	9,39	10000	14000	7205BETNG	0,125	30	47	1
25	62	17	1,1	24,36	14,12	9400	11000	7305B	0,230	36	65	1
25	62	17	1,1	24,36	14,12	9400	11000	7305BETNG	0,220	36	65	1
30	62	16	1	22,05	14,16	9000	13000	7206AATB	0,190	35	57	1
30	62	16	1	20,53	13,50	9000	13000	7206B	0,205	35	57	1
30	62	16	1	20,53	13,50	9000	13000	7206BETNG	0,195	35	57	1
30	72	19	1,1	29,64	18,34	7900	9400	7306B	0,346	36	65	1
30	72	19	1,1	31,05	19,28	7900	9400	7306BETNG	0,336	36	65	1
35	62	14	1	18,07	12,96	12000	13 500	7007AA	0,153	39,6	57,4	1
35	72	17	1,1	27,11	18,36	8000	11000	7207B	0,295	42	65	1
35	72	17	1,1	27,11	18,36	8000	11000	7207BETNG	0,285	42	65	1
35	80	21	1,5	38,39	24,42	7000	9500	7307B	0,463	42	71	1,5
35	80	21	1,5	38,39	24,42	7000	9500	7307BETNG	0,440	44	71	1,5
40	80	18	1,1	38,83	26,75	6700	9000	7208AA	0,350	47	73	1
40	80	18	1,1	34,07	23,68	6700	9000	7208AATB	0,350	47	73	1
40	80	18	1,1	34,51	23,86	6700	9000	7208B	0,380	47	73	1
40	80	18	1,1	34,51	23,86	6700	9000	7208BETNG	0,370	47	73	1



Dimensions mm				Basic Load Rating kN		Limiting Speed for Lubrication min ⁻¹		Bearing Designation	Weight kg	Abutment and Fillet Dimensions mm		
d	D	B	r _s min	C	C ₀					d _a max	D _a max	r _a max
40	90	23	1,5	47,44	31,05	6300	7500	7308AATB	0,620	47	81	1,5
40	90	23	1,5	46,39	30,28	6300	8500	7308B	0,636	47	81	1,5
40	90	23	1,5	46,60	30,40	6300	8500	7308BETNG	0,610	47	81	1,5
45	85	19	1,1	40,70	29,49	6700	8500	7209AA	0,420	52	78	1
45	85	19	1,1	38,63	28,14	6700	8500	7209AATB	0,420	52	78	1
45	85	19	1,1	36,20	26,40	6700	8500	7209B	0,420	52	78	1
45	85	19	1,1	36,20	26,40	6700	8500	7209BETNG	0,420	52	78	1
45	100	25	1,5	59,66	39,72	5600	7500	7309B	0,830	52	81	1,5
45	100	25	1,5	59,66	39,72	5600	7500	7309BETNG	0,810	52	81	1,5
50	90	20	1,1	42,47	32,27	5600	8000	7210AA	0,460	57	83	1
50	90	20	1	39,42	29,31	5600	8000	7210AATB	0,460	57	83	1
50	90	20	1,1	37,39	28,58	5600	8000	7210B	0,497	57	83	1
50	90	20	1,1	37,39	28,58	5600	8000	7210BETNG	0,450	57	83	1
50	110	27	2	69,35	47,12	5000	6000	7310B	1,130	60	100	2
50	110	27	2	69,60	47,30	5000	6000	7310BETNG	1,130	60	100	2
55	100	21	1,5	50,19	38,67	5300	6300	7211AATB	0,600	62	91	1,5
55	100	21	1,5	46,32	36,07	5300	7000	7211B	0,630	62	91	1,5
55	100	21	1,5	46,50	36,20	5300	7000	7211BETNG	0,600	62	91	1,5
55	120	29	2	78,75	56,33	4500	5600	7311B	1,440	65	110	2
55	120	29	2	78,75	56,33	4500	5600	7311BETNG	1,370	65	110	2
60	110	22	1,5	57,90	45,70	5300	7000	7212AA	0,827	67	101	1,5
60	110	22	1,5	58,16	46,02	5300	7000	7212AATB	0,790	67	101	1,5
60	110	22	1,5	56,08	44,42	5300	7000	7212B	0,820	67	101	1,5
60	110	22	1,5	56,30	44,60	5300	7000	7212BETNG	0,820	67	101	1,5
60	130	31	2,1	89,96	65,49	4200	5000	7312B	1,780	72	118	2
60	130	31	2,1	90,30	65,70	4200	5000	7312BM	1,930	72	118	2
60	150	35	2,1	119,321	85,98	3100	3000	7412BMB	3,170	55	110	2
65	120	23	1,5	72,30	59,38	4300	6000	7213AA	1,020	72	111	1,5
65	120	23	1,5	72,30	59,60	4300	6000	7213AATB	0,980	72	111	1,5
65	120	23	1,5	63,62	52,58	4300	6000	7213B	1,020	72	111	1,5
65	120	23	1,5	63,90	52,60	4300	6000	7213BETNG	1,000	72	111	1,5
65	120	23	1,5	63,62	52,58	4300	6000	7213BM	1,100	72	111	1,5
65	140	33	2,1	107,30	100,70	3800	5300	7313AATB	2,160	76	128	2
65	140	33	2,1	101,84	75,38	3800	5300	7313B	2,220	76	128	2
65	140	33	2,1	102,20	75,60	3800	5300	7313BETNG	2,100	76	128	2
65	140	33	2,1	102,20	75,60	3800	5300	7313BM	2,400	76	128	2
70	125	24	1,5	69,12	57,77	4000	5600	7214B	1,110	77	116	1,5
70	125	24	1,5	69,12	57,77	4000	5600	7214BETNG	1,080	77	116	1,5
70	150	35	2,1	127,80	95,84	3600	5000	7314AATB	2,680	81	138	2
70	150	35	2,1	114,36	85,96	3600	5000	7314B	2,670	81	138	2
70	150	35	2,1	114,36	85,96	3600	5000	7314BM	2,900	81	138	2
70	180	42	3	148,168	118,096	3200	4400	7414BMB	5,600	84	165	2
75	130	25	1,5	68,65	58,27	3800	5300	7215B	1,230	82	121	1,5
75	130	25	1,5	68,65	58,27	3800	5300	7215BETNG	1,170	82	121	1,5



Dimensions mm				Basic Load Rating kN		Limiting Speed for Lubrication min ⁻¹		Bearing Designation	Weight kg	Abutment and Fillet Dimensions mm		
d	D	B	r _s min	C	Co	Lub 1	Lub 2			d _a max	D _a max	r _a max
75	160	37	2,1	124,48	97,23	3400	4800	7315B	3,120	86	148	2
75	160	37	2,1	124,48	97,23	3400	4800	7315BETNG	3,090	86	148	2
80	140	26	2	77,12	68,08	4000	5300	7216B	1,540	90	130	2
80	170	39	2,1	134,82	109,19	3200	4400	7316BM	4,030	92	158	2
80	200	48	3	178,497	152,853	2800	3800	7416BMB	7,900	92	188	2
85	150	28	2	82,97	74,55	3600	5000	7217B	1,920	95	140	2
85	180	41	3	145,41	121,84	3400	4500	7317BM	4,830	98	166	2,5
90	160	30	2	106,58	93,69	3200	4400	7218B	2,170	101	149	2
90	160	30	2	106,58	93,70	3200	4400	7218BETNG	2,150	101	149	2
90	190	43	3	156,22	135,18	2800	4000	7318BM	5,660	104	176	2,5
90	190	43	3	156,22	135,18	2800	4000	7318BMB	5,690	104	176	2,5
95	200	45	3	167,90	147,10	2700	3800	7319BETNG	5,770	109	186	2,5
100	180	34	2,1	131,00	115,00	2800	4000	7220B	3,290	112	168	2
100	180	34	2,1	130,20	114,32	2600	4300	7220BM	3,610	112	168	2,5
100	215	47	3	212,39	197,69	2500	4000	7320AAM	8,560	114	201	2,5
100	215	47	3	212,39	197,69	2500	4000	7320AAMB	8,560	114	201	2,5
110	200	38	2,1	154,50	144,50	2500	3600	7222BM	4,750	122	188	2
110	240	50	3	238,30	230,40	2200	3600	7322AAM	11,100	124	226	2,5
110	240	50	3	213,50	211,23	1900	3200	7322BM	11,100	124	226	2,5
110	240	50	3	213,50	211,23	1900	3200	7322BMB	11,300	124	226	2,5
120	215	40	2,1	166,20	162,00	2400	3300	7224BM	5,890	132	203	2
120	260	55	3	236,33	240,14	1900	3200	7324B	13,200	134	246	2,5
120	260	55	3	237,60	241,50	1900	3200	7324BM	13,800	134	246	2,5
130	230	40	3	171,70	175,20	2200	3100	7226BM	6,750	144	216	2,5
130	280	58	4	275,78	301,51	1900	2700	7326BM	17,600	147	263	3
140	250	42	3	218,00	234,00	2100	2900	7228AA	8,650	154	236	2,5
140	300	62	4	280,00	312,00	1800	2500	7328BM	21,300	157	283	3
150	270	45	3	248,00	280,00	1900	2600	7230AA	10,700	164	256	2,5
150	320	65	4	325,90	381,10	1800	2400	7330AAM	24,800	167	302	3
150	320	65	4	290,00	342,40	1700	2300	7330BM	24,800	167	302	3
180	320	52	4	312,90	396,70	1500	2000	7236AAM	18,400	220	305	3
200	360	58	4	306,30	412,50	1300	1800	7240BM	25,000	240	342	3
240	440	72	4	432,00	648,80	1100	1600	7248BM	49,600	280	420	3
320	580	92	5	446,00	580,00	850	1250	7264BM	112,000	360	550	4