

Double-row angular-contact ball bearings

Definition and capabilities

→ Definition

Double-row angular-contact ball bearings accept axial loads in both directions and can be used singly, as dual bearing units.

→ Capabilities

■ Loads and speeds

These bearings are designed to:

- withstand combined loads with a predominant axial component

$$F_a / F_r \geq 1$$

- withstand axial loads in both directions
- accept relatively high speeds of rotation

■ Misalignment

The construction of these bearings limits them to very small misalignment values, in the range of 0.06°.

Series

■ Series 32...A, 33...A

Contact angle 25°.

No filling slot.

Can accept axial loads in both directions.

These bearings have synthetic material cages.

They are supplied pre-lubricated with a standard application grease (maximum operating temperature 110°C or 230°F).

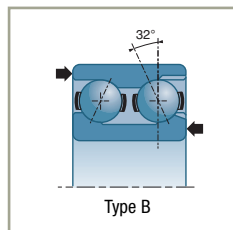
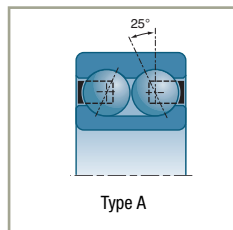
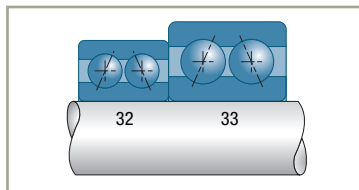
■ Series 32...B, 33...B

Contact angle 32°.

With filling slots.

Can accept axial loads (higher loads than Type A) in a predominant direction.

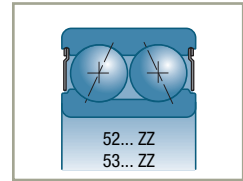
Cage in pressed steel, synthetic material or machined brass.



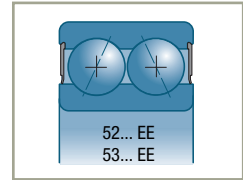
Variants

Sealed or protected bearings

Double-row angular-contact ball bearings also exist in variants fitted with shields or seals. In this case their reference becomes 52... ZZ, 53... ZZ or 52... EE, 53... EE.



The outer ring of bearings in the series with seals or shields can be fitted with a snap ring (reference 52...NRZZ, 53 ... NREE). The position dimensions of the snap ring are identical to those of the ball bearing with the same outside diameter.



Tolerances and clearances

Tolerances

Manufactured in the normal tolerance class.

Axial clearance

An axial clearance is defined for these bearings. This clearance is not standardised. The values are communicated by SNR on request.

The relation between the radial clearance J_r of a bearing and the axial clearance J_a defined above can be approximated using the following formula:

Type A:

$$J_r = 0.4 J_a$$

Type B:

$$J_r = 0.5 J_a$$

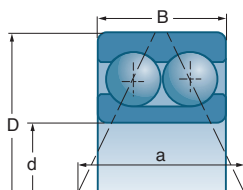
Installation/assembly criteria

In the majority of applications this bearing is considered a single assembly. It can sometimes be used like a double bearing playing the role of two bearings due to the distance between the load application points.

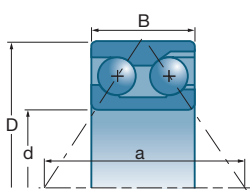
Suffixes

A	No filling slot with polyamide cage, angle 25°
B	With filling slots, angle 32°
G15	Glass-fiber reinforced polyamide cage

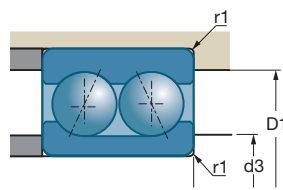
Double-row angular-contact ball bearings (continued)



version A



version B

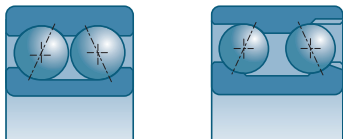


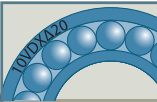
d		D	B	a				
mm	References	mm	mm	mm	10 ³ N	10 ³ N	rpm*	rpm*
10	3200 A	30	14	15.1	7.8	4.55	16000	21000
12	3201 A	32	15.9	16.6	10.7	5.9	15000	20000
15	3202 A 3302 A	35	15.9	18	11.8	7.1	13000	18000
		42	19	21.5	16.2	10.1	11000	15000
17	3203 A 3303 A	40	17.5	20.4	14.6	9	12000	15000
		47	22.2	24	20.9	12.4	10000	14000
20	3204 A 3304 B	47	20.6	24.2	19.6	12.5	9700	13000
		52	22.2	34	20.8	18.3	9000	12000
25	3205 B 3305 B	52	20.6	35	18.9	18.2	8400	11000
		62	25.4	40	29	26.5	7500	10000
30	3206 B 3306 B	62	23.8	40.6	27	27	7200	9600
		72	30.2	47.3	38	36	6400	8600
35	3207 B 3307 B	72	27	47.2	37	37.5	6100	8200
		80	34.9	54.1	48.5	47	5600	7500
40	3208 B 3308 B	80	30.2	52	42	44	5500	7300
		90	36.5	59	60	59	5100	6800
45	3209 A 3309 A	85	30.2	43.2	48	37	5100	6800
		100	39.7	50.1	68	51	4600	6100
50	3210 A 3310 A	90	30.2	45.5	51	42	4700	6300
		110	44.4	55	81	62	4200	5600
55	3211 A 3311 A 3311 B	100	33.3	49.9	63	52	4300	5700
		120	49.2	61.2	102	79	3800	5100
		120	49.2	80.4	101	113	3800	5100
60	3212 A 3312 A	110	36.5	55.1	72	61	3900	5200
		130	54	67.3	125	98	3500	4600
65	3213 A 3313 A	120	38.1	59.8	80	73	3500	4700
		140	58.7	73.3	149	118	3200	4300
70	3214 A 3314 B	125	39.7	61.6	84	76	3400	4600
		150	63.5	100.8	147	172	3000	4000
75	3215 A	130	41.3	65	77	84	3200	4200
80	3216 A	140	44.4	69	99	93	3000	4000

* These are the speed limits according to the SNR concept (see pages 85 to 87).

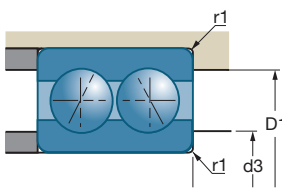
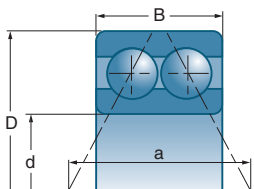
Characteristics

■ Double-row angular-contact ball bearings



	d3 min	D1 max	r1 max	
	mm	mm	mm	kg
3200 A	15	25	0,6	0,043
3201 A	17	27	0,6	0,051
3202 A 3302 A	20 21	30 36	0,6 1	0,058 0,112
3203 A 3303 A	22 23	35 41	0,6 1	0,085 0,161
3204 A 3304 B	26 27	41 45	1 1	0,139 0,230
3205 B 3305 B	31 32	46 55	1 1	0,190 0,370
3206 B 3306 B	36 37	56 65	1 1	0,310 0,580
3207 B 3307 B	42 44	65 71	1 1,5	0,480 0,780
3208 B 3308 B	47 49	73 81	1 1,5	0,650 1,050
3209 A 3309 A	52 54	78 91	1 1,5	0,583 1,210
3210 A 3310 A	57 60	83 100	1 2	0,760 1,600
3211 A 3311 A 3311 B	64 65 65	91 110 110	1,5 2 2	0,876 2,110 2,530
3212 A 3312 A	69 73	101 118	1,5 2	1,180 2,700
3213 A 3313 A	74 78	111 128	1,5 2	1,520 3,390
3214 A 3314 B	79 83	116 138	1,5 2	1,520 5,050
3215 A	84	121	1,5	1,910
3216 A	91	129	2	2,450

Double-row angular-contact ball bearings (continued)

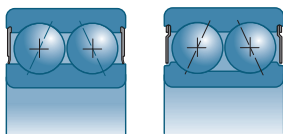


d		D	B	a					
mm	References	mm	mm	mm	10°N	10°N	rpm*	rpm*	
12	5201 EE 5201 ZZ	32	15.9	16.6	10.7	5.9	15000	15000	
15	5202 EE 5202 ZZ 5302 EE	35 42	15.9 19	18 21.5	11.8 16.2	7.1 10.1	13000 11000	13000	
17	5203 EE 5203 ZZ 5303 EE 5303 ZZ	40 47	17.5 22.2	20.4 24	14.6 20.9	9 12.4	12000 10000	12000 10000	
20	5204 EE 5204 ZZ 5304 EE 5304 ZZ	47 52	20.6 22.2	24.2 26.4	19.6 23.3	12.5 15.1	9700 8900	9700 8900	
25	5205 EE 5205 ZZ 5305 EE 5305 ZZ	52 62	20.6 25.4	26.5 30.7	21.3 30	14.7 19.9	8400 7600	8400 7600	
30	5206 EE 5206 ZZ 5306 EE 5306 ZZ	62 72	23.8 30.2	31.4 36.2	29.5 41.5	21.1 28.5	7100 6500	7100 6500	
35	5207 EE 5207 ZZ 5307 EE 5307 ZZ	72 80	27 34.9	36.5 41.5	39 51	28.5 34.5	6200 5700	6200 5700	
40	5208 EE 5208 ZZ 5308 EE 5308 ZZ	80 90	30.2 36.5	40.9 45.8	48 62	36.5 45	5500 5100	5500 5100	
45	5209 EE 5209 ZZ 5309 EE 5309 ZZ	85 100	30.2 39.7	43.2 50.1	48 68	37 51	5100 4600	5100 4600	
50	5210 EE 5210 ZZ 5310 EE 5310 ZZ	90 110	30.2 44.4	45.5 55	51 81	42 62	4700 4200	4700 4200	
55	5211 EE 5211 ZZ 5311 ZZ	100 120	33.3 49.2	49.9 61.2	59 102	49.5 79	2800	4300 3800	
60	5212 EE 5212 ZZ 5312 ZZ	110 130	36.5 54	55.1 67.3	72 125	61 98	2500	3900 3500	
65	5213 EE 5213 ZZ 5313 ZZ	120 140	38.1 58.7	59.8 73.3	80 149	73 118	3500	3500 3200	
70	5214 EE 5214 ZZ	125	39.7	61.6	84	76	2200	3400	

* These are the speed limits according to the SNR concept (see pages 85 to 87).

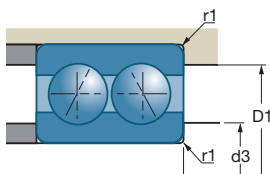
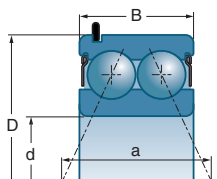
Characteristics

■ Double-row angular-contact ball bearings sealed and protected



		d3 min	D1 max	r1 max	
References		mm	mm	mm	kg
5201 EE	5201 ZZ	17	27	0,6	0,051
5202 EE	5202 ZZ	20	30	0,6	0,058
5302 EE		21	36	1	0,112
5203 EE	5203 ZZ	22	35	0,6	0,085
5303 EE	5303 ZZ	23	41	1	0,161
5204 EE	5204 ZZ	26	41	1	0,140
5304 EE	5304 ZZ	27	45	1	0,200
5205 EE	5205 ZZ	31	46	1	0,160
5305 EE	5305 ZZ	32	55	1	0,320
5206 EE	5206 ZZ	36	56	1	0,265
5306 EE	5306 ZZ	37	65	1,1	0,510
5207 EE	5207 ZZ	42	65	1,1	0,430
5307 EE	5307 ZZ	44	71	1,5	0,790
5208 EE	5208 ZZ	47	73	1,1	0,570
5308 EE	5308 ZZ	49	81	1,5	1,050
5209 EE	5209 ZZ	52	78	1,1	0,620
5309 EE	5309 ZZ	54	91	1,5	1,420
5210 EE	5210 ZZ	57	83	1,1	0,800
5310 EE	5310 ZZ	60	100	2	1,930
5211 EE	5211 ZZ	64	91	1,5	0,876
	5311 ZZ	6	110	2	2,110
5212 EE	5212 ZZ	69	101	1,5	1,180
	5312 ZZ	73	118	2,1	2,700
5213 EE	5213 ZZ	74	111	1,5	1,520
	5313 ZZ	78	128	2,1	3,390
5214 EE	5214 ZZ	79	116	1,5	1,640

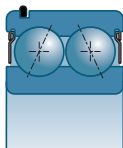
Double-row angular-contact ball bearings (continued)



d		D	B	a			
mm	References	mm	mm	mm	10°N	10°N	rpm*
15	5202 NRZZ	35	15.9	18	11.8	7.1	13000
17	5203 NRZZ	40	17.5	20.4	14.6	9	12000
	5303 NRZZ	47	22.2	24	20.9	12.4	10000
20	5204 NRZZ	47	20.6	24.2	19.6	12.5	9700
	5304 NRZZ	52	22.2	26.4	23.3	15.1	8900
25	5205 NRZZ	52	20.6	26.5	21.3	14.7	8400
	5305 NRZZ	62	25.4	30.7	30	19.9	7600
30	5206 NRZZ	62	23.8	31.4	29.5	21.1	7100
	5306 NRZZ	72	30.2	36.2	41.5	28.5	6500
35	5207 NRZZ	72	27	36.5	39	28.5	6200
	5307 NRZZ	80	34.9	41.5	51	34.5	5700
40	5208 NRZZ	80	30.2	40.9	48	36.5	5500
	5308 NRZZ	90	36.5	45.8	62	45	5100
45	5209 NRZZ	85	30.2	43.2	48	37	5100
	5309 NRZZ	100	39.7	50.1	68	51	4600
50	5210 NRZZ	90	30.2	45.5	51	42	4700
	5310 NRZZ	110	44.4	55	81	62	4200
55	5211 NRZZ	100	33.3	49.9	59	49.5	4300
	5311 NRZZ	120	49.2	61.2	102	79	3800
60	5212 NRZZ	110	36.5	55.1	72	61	3900
	5312 NRZZ	130	54	67.3	125	98	3500
65	5213 NRZZ	120	38.1	59.8	80	73	3500
	5313 NRZZ	140	58.7	73.3	149	118	3200
70	5214 NRZZ	125	39.7	61.6	84	76	3400

* These are the speed limits according to the SNR concept (see pages 85 to 87).

■ Double-row angular-contact ball bearings protected with snap ring



	d3 min	D1 max	r1 max	segment	
References	mm	mm	mm		kg
5202 NRZZ	20	30	0,6	R35	0,058
5203 NRZZ	22	35	0,6	R40	0,100
5303 NRZZ	23	41	1	R47	0,190
5204 NRZZ	26	41	1	R47	0,140
5304 NRZZ	27	45	1	R52	0,200
5205 NRZZ	31	46	1	R52	0,160
5305 NRZZ	32	55	1	R62	0,320
5206 NRZZ	36	56	1	R62	0,265
5306 NRZZ	37	65	1,1	R72	0,590
5207 NRZZ	42	65	1,1	R72	0,480
5307 NRZZ	44	71	1,5	R80	0,820
5208 NRZZ	47	73	1,1	R80	0,650
5308 NRZZ	49	81	1,5	R90	1,050
5209 NRZZ	52	78	1,1	R85	0,710
5309 NRZZ	54	91	1,5	R100	1,340
5210 NRZZ	57	83	1,1	R90	0,760
5310 NRZZ	60	100	2	R11	1,720
5211 NRZZ	64	91	1,5	R100	0,876
5311 NRZZ	65	110	2	R120	2,110
5212 NRZZ	69	101	1,5	R110	1,180
5312 NRZZ	73	118	2,1	R130	2,700
5213 NRZZ	74	111	1,5	R120	1,520
5313 NRZZ	78	128	2,1	R140	3,390
5214 NRZZ	79	116	1,5	R125	1,640