

Double-row ball bearings



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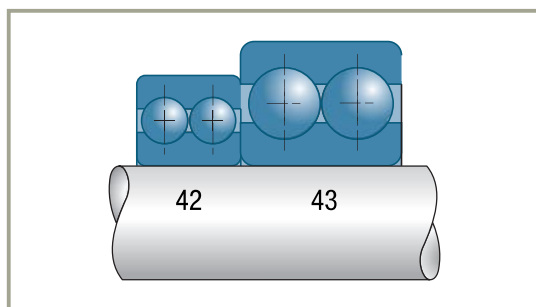
Radial double-row ball bearings

Definition and capabilities

Radial double-row ball bearings are designed to sustain higher radial loads than single-row bearings, as well as axial loads in both directions.

Practically, these bearings only admit very low misalignment between shaft and housing, to the order of 0.06° .

Series



Tolerances and clearances

→ Tolerances

Normally manufactured in the normal tolerance class.

Single-row ball bearings can be supplied on request in tolerance classes 6 and 5 for all or specific characteristics (e.g. bore or radial run-out in tolerance class 6).

→ Internal radial clearance

All standard production bearings are in the normal clearance group N. The other groups can be supplied on request.

For single-row radial ball bearings with a tapered bore, SNR has adopted group 3 (C3) as the standard clearance to allow for the greater reduction in clearance resulting from fitting on a tapered seat.

The radial clearance leads to an axial clearance; a simple formula can be used to calculate the approximate size of the theoretical axial clearance J_a as a function of the operating radial clearance J_r .

$$J_a = (J_r (D-d) / 20)^{1/2}$$



Design criteria

■ Bearing life

■ Residual radial clearance

■ Bearings operating under high axial loads

The performance of bearings operating under high axial loads can be improved by increasing the radial clearance in order to create a contact angle in operation. The axial load F_a must not exceed a mean value of 0,5 C_0 .

This type of operation has to be studied according to the loading conditions and dimensions of the bearings. Consult SNR.

■ Assembly made up by two side-by-side bearings

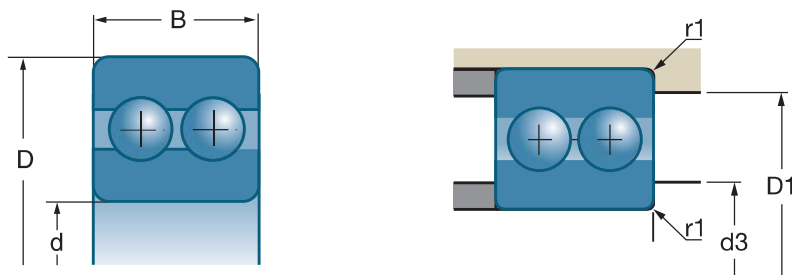
Each pair of bearings is calculated like a single bearing.

Suffixes

A

Bearing without filling slots with glass-fiber reinforced polyamide cage 6.6

Radial double-row ball bearings (continued)

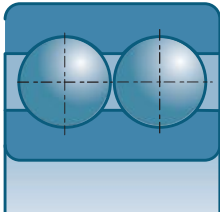


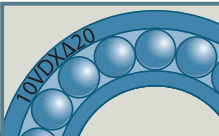
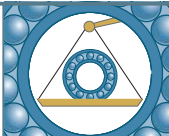
d		D	B				
mm	References	mm	mm	10 ³ N	10 ³ N	rpm*	rpm*
10	4200 A	30	14	9.2	5.2	18000	22000
12	4201 A	32	14	9.4	5.5	16000	20000
15	4202 A	35	14	10.4	6.6	14000	18000
	4302 A	42	17	14.8	9.1	12000	16000
17	4203 A	40	16	14.7	9.5	13000	16000
	4303 A	47	19	19.7	13.2	11000	14000
20	4204 A	47	18	17.8	12.7	11000	13000
	4304 A	52	21	23.4	16	9400	12000
25	4205 A	52	18	19.2	14.7	9400	12000
	4305 A	62	24	31.5	22.4	7800	10000
30	4206 A	62	20	26	20.7	7800	9800
	4306 A	72	27	39.5	30.5	6700	8800
35	4207 A	72	23	32	26	6700	8400
	4307 A	80	31	51	38	5900	7800
40	4208 A	80	23	34	30	6000	7500
	4308 A	90	33	63	48	5200	6900
45	4209 A	85	23	36	33	5500	6900
	4309 A	100	36	72	60	4700	6200
50	4210 A	90	23	39.8	36.5	5100	6400
	4310 A	110	40	89	76	4200	5600
55	4211 A	100	25	43	43	4600	5800
	4311 A	120	43	104	90	3900	5100
60	4212 A	110	28	57	58	4200	5300
	4312 A	130	46	120	106	3600	4700
65	4213 A	120	31	67	67	3900	4900
	4313 A	140	48	129	113	3300	4400
70	4214 A	125	31	70	73	3700	4600
75	4215 A	130	31	73	80	3500	4400
80	4216 A	140	33	81	90	3300	4100
85	4217 A	150	36	94	106	3100	3800

* These are the speed limits according to the SNR concept (see SNR concept 25 to 27)

Design criteria

■ Radial double-row ball bearings



	d3 min	D1 max	r1 max	
References	mm	mm	mm	kg
4200 A	14	26	0.6	0.049
4201 A	16	28	0.6	0.055
4202 A 4302 A	19 21	31 36	0.6 1	0.060 0.120
4203 A 4303 A	21 23	36 41	0.6 1	0.090 0.160
4204 A 4304 A	26 27	41 45	1 1.1	0.140 0.210
4205 A 4305 A	31 32	46 55	1 1.1	0.160 0.340
4206 A 4306 A	36 37	56 65	1 1.1	0.260 0.541
4207 A 4307 A	42 44	65 71	1.1 1.5	0.434 0.732
4208A 4308A	47 49	73 81	1.1 1.5	0.531 1.006
4209 A 4309 A	52 54	78 91	1.1 1.5	0.581 1.348
4210 A 4310 A	57 61	83 99	1.1 2	0.623 1.800
4211 A 4311 A	64 66	91 109	1.5 2	0.839 2.275
4212 A 4312 A	69 73	101 117	1.5 2.1	1.153 2.890
4213 A 4313 A	74 78	111 127	1.5 2.1	1.615 3.460
4214 A	79	116	1.5	1.715
4215 A	84	121	1.5	1.810
4216 A	91	129	2	2.280
4217 A	96	139	2	2.500