

**BUREAU OF INDIAN STANDARDS**

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**Doc No.: PGD 13 (25116) P-Draft**

**March 2024**

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*प्रारंभिक मसौदा*

**डबल पंक्ति रेडियल बॉल बियरिंग्स के लिए विशिष्टता**

[IS 6456 का पहला पुनरीक्षण]

*Preliminary Draft*

**Specification for Double Row Radial Ball Bearings**

[*First revision of IS 6456*]

ICS 21.100.20

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Bearings Sectional Committee, PGD 13

Last date for Comment: 24 June 2024

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**NATIONAL FOREWORD**

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Bearings Sectional Committee had been approved by the Production and General Engineering Division Council.

This standard was first published in 1972. This revision was taken up to keep pace with the latest technological developments and international practices.

In this revision, the following changes have been made:

- a)
- b)

**In the preparation of this standard assistance has been derived from.....**

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*).' The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*  
**SPECIFICATION FOR DOUBLE ROW RADIAL BALL BEARINGS**  
*(First Revision)*

## 1 SCOPE

Requirements for double row radial ball bearings.

## 2 REFERENCES

The following Indian Standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS</i>	<i>Title</i>
Doc No. PGD 13 (24061)	Rolling bearings symbols for physical quantities
2399 : 2019	Rolling bearings — Vocabulary ( <i>second revision</i> )
5669 : 2019	General plan of boundary dimensions for radial rolling bearings ( <i>second revision</i> )
5692 : 2019	Rolling bearings — Radial bearings — Geometrical product specifications (GPS) and tolerance values ( <i>third revision</i> )
5935 (Part 1) : 2019	Rolling bearings — Internal clearance: Part 1 Radial internal clearance for radial bearings ( <i>second revision</i> )
6453 : 1984	Technical supply conditions for roller bearing ( <i>first revision</i> )

## 3 TERMINOLOGY

For the purpose of this standard the terms and definitions given in IS 2399 and the following shall apply.

### 3.1 Supplier

The party supplying the bearings.

### 3.2 Purchaser

The party purchasing the bearings. This term shall also apply to person or persons expressly authorized by the purchaser to act on his behalf for inspection of the material.

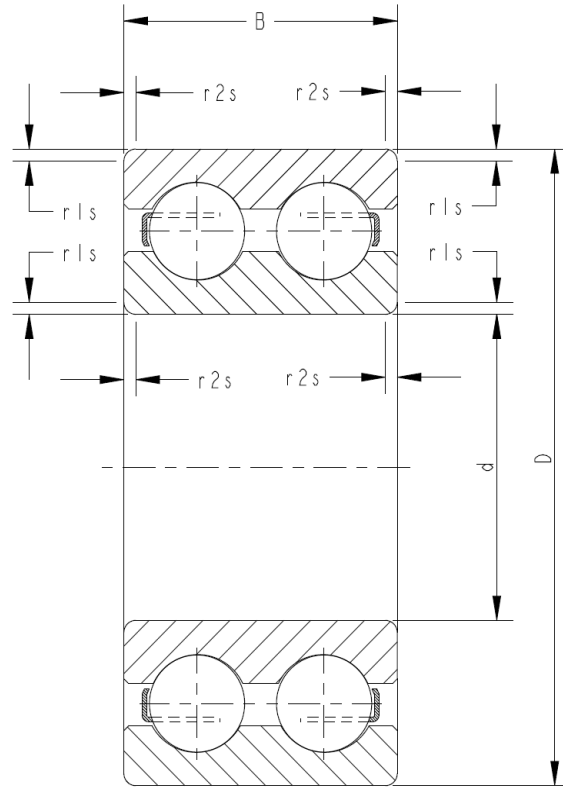
## 4 TYPES

### 4.1 Radial Contact - Dimension and Designations

#### 4.1.1 *Radial Contact - Double Row Deep Groove Ball Bearing (DRDGBB)*

Boundary dimensions and designations of Double Row Deep Groove Ball Bearing shall be as per Table 1, Fig 1.

NOTE – In Double Row Deep Groove Ball Bearing, only open bearings are offered and No sealed & Shielded versions are offered.



- B Bearing width
- D Bearing outside diameter
- d Bearing bore diameter
- $r_{1s}, r_{2s}$  Smallest permissible chamfer dimension

FIG. 1 TERMS RELATED TO DOUBLE ROW DEEP GROOVE BALL BEARING

**Table 1 Dimension and Designation**  
 (Clause 4.1.1)

Dimensions in millimetres

Double Row Deep Groove Ball Bearing - Table 2										
d	D	B	$r_{1s}, r_{2s}$ Min	Designation <sup>1)</sup>						
				Basic type	Variant					
					Z	2Z	RS	2RS	N	NR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
10	30	14	0.6	4200	–	–	–	–	–	–
	35	17	0.6	4300	–	–	–	–	–	–
12	32	14	0.6	4201	–	–	–	–	–	–
	37	17	1	4301	–	–	–	–	–	–

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15	35	14	0.6	4202	-	-	-	-	-	-
	42	17	1	4302	-	-	-	-	-	-
17	40	16	0.6	4203	-	-	-	-	-	-
	47	19	1	4303	-	-	-	-	-	-
20	47	18	1	4204	-	-	-	-	-	-
	52	21	1.1	4304	-	-	-	-	-	-
22	50	18	1	42/22	-	-	-	-	-	-
	56	21	1.1	43/22	-	-	-	-	-	-
25	52	18	1	4205	-	-	-	-	-	-
	62	24	1.1	4305	-	-	-	-	-	-
28	58	19	1	42/28	-	-	-	-	-	-
	68	24	1.1	43/28	-	-	-	-	-	-
30	62	20	1	4206	-	-	-	-	-	-
	72	27	1.1	4306	-	-	-	-	-	-
32	65	21	1	42/32	-	-	-	-	-	-
	75	28	1.1	43/32	-	-	-	-	-	-
35	72	23	1.1	4207	-	-	-	-	-	-
	80	31	1.5	4307	-	-	-	-	-	-
40	80	23	1.1	4208	-	-	-	-	-	-
	90	33	1.5	4308	-	-	-	-	-	-
45	85	23	1.1	4209	-	-	-	-	-	-
	100	36	1.5	4309	-	-	-	-	-	-
50	90	23	1.1	4210	-	-	-	-	-	-
	110	40	2	4310	-	-	-	-	-	-
55	100	25	1.5	4211	-	-	-	-	-	-
	120	43	2	4311	-	-	-	-	-	-
60	110	28	1.5	4212	-	-	-	-	-	-
	130	46	2.1	4312	-	-	-	-	-	-
65	120	31	1.5	4213	-	-	-	-	-	-
	140	48	2.1	4313	-	-	-	-	-	-
70	125	31	1.5	4214	-	-	-	-	-	-
	150	51	2.1	4314	-	-	-	-	-	-
75	130	31	1.5	4215	-	-	-	-	-	-
	160	55	2.1	4315	-	-	-	-	-	-
80	140	33	2	4216	-	-	-	-	-	-
	170	58	2.1	4316	-	-	-	-	-	-
85	150	36	2	4217	-	-	-	-	-	-
	180	60	3	4317	-	-	-	-	-	-
90	160	40	2	4218	-	-	-	-	-	-
	190	64	3	4318	-	-	-	-	-	-

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95	170	43	2.1	4219	-	-	-	-	-	-
	200	67	3	4319	-	-	-	-	-	-
100	180	45	2.1	4220	-	-	-	-	-	-
	215	73	3	4320	-	-	-	-	-	-
105	190	50	2.1	4221	-	-	-	-	-	-
	225	77	3	4321	-	-	-	-	-	-
110	200	53	2.1	4222	-	-	-	-	-	-
	240	80	3	4322	-	-	-	-	-	-
120	215	58	2.1	4224	-	-	-	-	-	-
	260	86	3	4324	-	-	-	-	-	-
130	230	64	3	4226	-	-	-	-	-	-
	280	93	4	4326	-	-	-	-	-	-
140	250	68	3	4228	-	-	-	-	-	-
	300	102	4	4328	-	-	-	-	-	-
150	270	73	3	4230	-	-	-	-	-	-
	320	108	4	4330	-	-	-	-	-	-
160	290	80	3	4232	-	-	-	-	-	-
	340	114	4	4332	-	-	-	-	-	-
170	310	86	4	4234	-	-	-	-	-	-
	360	120	4	4334	-	-	-	-	-	-
180	320	86	4	4236	-	-	-	-	-	-
	380	126	4	4336	-	-	-	-	-	-
190	340	92	4	4238	-	-	-	-	-	-
	400	132	5	4338	-	-	-	-	-	-
200	360	98	4	4240	-	-	-	-	-	-
	420	138	5	4340	-	-	-	-	-	-
220	400	106	4	4244	-	-	-	-	-	-
	460	145	5	4344	-	-	-	-	-	-
240	440	120	4	4248	-	-	-	-	-	-
	500	155	5	4348	-	-	-	-	-	-
260	480	130	5	4252	-	-	-	-	-	-
	540	165	6	4352	-	-	-	-	-	-
280	500	130	5	4256	-	-	-	-	-	-
	580	175	6	4356	-	-	-	-	-	-
300	540	140	5	4260	-	-	-	-	-	-
	620	185	7.5	4360	-	-	-	-	-	-
320	580	150	5	4264	-	-	-	-	-	-
	670	200	7.5	4364	-	-	-	-	-	-
340	620	165	6	4268	-	-	-	-	-	-
	710	212	7.5	4368	-	-	-	-	-	-

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360	650	170	6	4272	-	-	-	-	-	-
	750	224	7.5	4372	-	-	-	-	-	-
380	680	175	6	4276	-	-	-	-	-	-
	780	230	7.5	4376	-	-	-	-	-	-
400	720	185	6	4280	-	-	-	-	-	-
	820	243	7.5	4380	-	-	-	-	-	-
420	760	195	7.5	4284	-	-	-	-	-	-
	850	250	9.5	4384	-	-	-	-	-	-
440	790	200	7.5	4288	-	-	-	-	-	-
	900	265	9.5	4388	-	-	-	-	-	-
460	830	212	7.5	4292	-	-	-	-	-	-
	950	280	9.5	4392	-	-	-	-	-	-
480	870	224	7.5	4296	-	-	-	-	-	-
	980	290	9.5	4396	-	-	-	-	-	-
500	920	243	7.5	42/500	-	-	-	-	-	-
	1030	300	12	43/500	-	-	-	-	-	-
530	980	258	9.5	42/530	-	-	-	-	-	-
	1090	325	12	43/530	-	-	-	-	-	-
560	1030	272	9.5	42/560	-	-	-	-	-	-
	1150	335	12	43/560	-	-	-	-	-	-
600	1090	280	9.5	42/600	-	-	-	-	-	-
	1220	355	15	43/600	-	-	-	-	-	-
630	1150	300	12	42/630	-	-	-	-	-	-
	1280	375	15	43/630	-	-	-	-	-	-
670	1220	315	12	42/670	-	-	-	-	-	-
	1360	400	15	43/670	-	-	-	-	-	-
710	1280	325	12	42/710	-	-	-	-	-	-
	1420	412	15	43/710	-	-	-	-	-	-
750	1360	345	15	42/750	-	-	-	-	-	-
	1500	438	15	43/750	-	-	-	-	-	-
800	1420	355	15	42/800	-	-	-	-	-	-
	1600	462	15	43/800	-	-	-	-	-	-
850	1500	375	15	42/850	-	-	-	-	-	-
	1700	488	19	43/850	-	-	-	-	-	-
900	1580	388	15	42/900	-	-	-	-	-	-
	1780	500	19	43/900	-	-	-	-	-	-
950	1 660	412	15	42/950	-	-	-	-	-	-
	1850	515	19	43/950	-	-	-	-	-	-
1 000	1750	425	15	42/1000	-	-	-	-	-	-
	1950	545	19	43/1000	-	-	-	-	-	-

## 4.2 Angular Contact - Dimension and Designations

### 4.2.1 Angular Contact - Double Row Angular Contact Ball Bearing (DRACBB)

Boundary dimensions and designations of Double Row Angular Contact Ball Bearing shall be as per Table 2, Fig 2 and Fig 3.

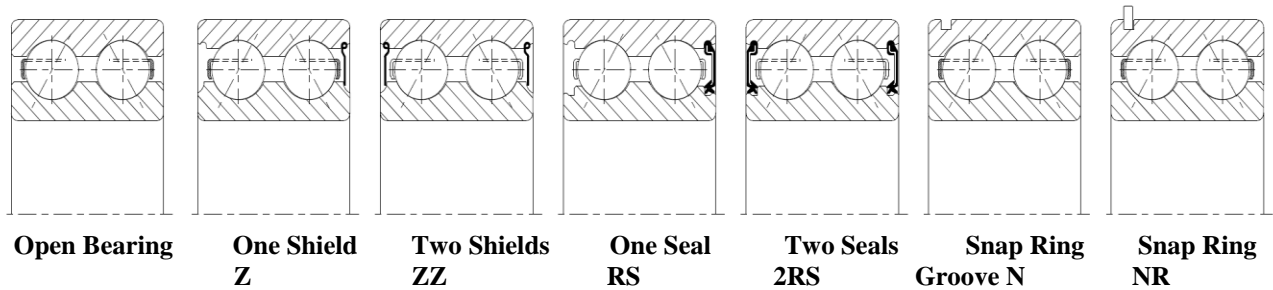
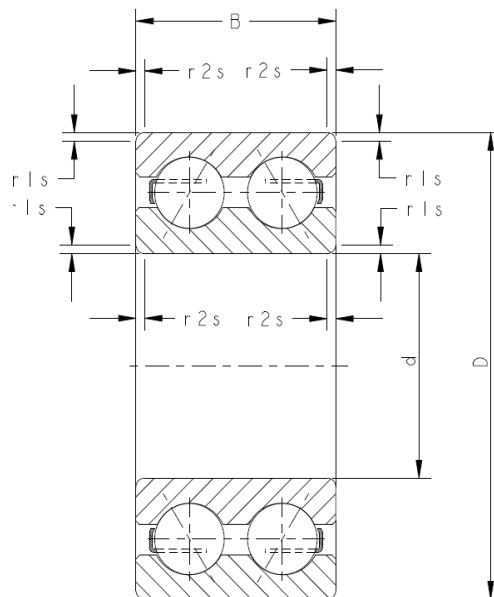


FIG. 2 VARIANTS OF DOUBLE ROW ANGULAR CONTACT BALL BEARINGS



B	Bearing width
D	Bearing outside diameter
d	Bearing bore diameter
r1s, r2s	Smallest permissible chamfer dimension
Z	Bearing with shield on one side
2Z	Bearing with shield on both sides
RS	Bearing with seal on one side
2RS	Bearing with seals on both sides
N	Bearing with snap ring groove on surface of outer ring
NR	Bearing with snap ring groove on surface of outer ring and associated snap ring.

FIG. 3 TERMS RELATED TO ANGULAR CONTACT DOUBLE ROW BALL BEARING

**Table 2 Dimension and Designation**  
(Clause 4.2.1)

Dimensions in millimetres

Double Row Angular Contact Ball Bearing - Table 2										
d	D	B	r1 <sub>s</sub> , r2 <sub>s</sub> Min	Designation <sup>1)</sup>						
				Basic type	Variant					
					Z	2Z	RS	2RS	N	NR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
10	30	14.3	0.6	3200	3200-Z	3200-2Z	3200-RS	3200-2RS	3200-N	3200-NR
	35	19	0.6	3300	3300-Z	3300-2Z	3300-RS	3300-2RS	3300-N	3300-NR
12	32	15.9	0.6	3201	3201-Z	3201-2Z	3201-RS	3201-2RS	3201-N	3201-NR
	37	19	1	3301	3301-Z	3301-2Z	3301-RS	3301-2RS	3301-N	3301-NR
15	35	15.9	0.6	3202	3202-Z	3202-2Z	3202-RS	3202-2RS	3202-N	3202-NR
	42	19	1	3302	3302-Z	3302-2Z	3302-RS	3302-2RS	3302-N	3302-NR
17	40	17.5	0.6	3203	3203-Z	3203-2Z	3203-RS	3203-2RS	3203-N	3203-NR
	47	22.2	1	3303	3303-Z	3303-2Z	3303-RS	3303-2RS	3303-N	3303-NR
20	47	20.6	1	3204	3204-Z	3204-2Z	3204-RS	3204-2RS	3204-N	3204-NR
	52	22.2	1.1	3304	3304-Z	3304-2Z	3304-RS	3304-2RS	3304-N	3304-NR
22	50	20.6	1	32/22	32/22-Z	32/22-2Z	32/22-RS	32/22-2RS	32/22-N	32/22-NR
	56	25	1.1	33/22	33/22-Z	33/22-2Z	33/22-RS	33/22-2RS	33/22-N	33/22-NR
25	52	20.6	1	3205	3205-Z	3205-2Z	3205-RS	3205-2RS	3205-N	3205-NR
	62	25.4	1.1	3305	3305-Z	3305-2Z	3305-RS	3305-2RS	3305-N	3305-NR
28	58	23	1	32/28	32/28-Z	32/28-2Z	32/28-RS	32/28-2RS	32/28-N	32/28-NR
	68	30	1.1	33/28	33/28-Z	33/28-2Z	33/28-RS	33/28-2RS	33/28-N	33/28-NR
30	62	23.8	1	3206	3206-Z	3206-2Z	3206-RS	3206-2RS	3206-N	3206-NR
	72	30.2	1.1	3306	3306-Z	3306-2Z	3306-RS	3306-2RS	3306-N	3306-NR
32	65	25	1	32/32	32/32-Z	32/32-2Z	32/32-RS	32/32-2RS	32/32-N	32/32-NR
	75	32	1.1	33/32	33/32-Z	33/32-2Z	33/32-RS	33/32-2RS	33/32-N	33/32-NR
35	72	27	1.1	3207	3207-Z	3207-2Z	3207-RS	3207-2RS	3207-N	3207-NR
	80	34.9	1.5	3307	3307-Z	3307-2Z	3307-RS	3307-2RS	3307-N	3307-NR
40	80	30.2	1.1	3208	3208-Z	3208-2Z	3208-RS	3208-2RS	3208-N	3208-NR
	90	36.5	1.5	3308	3308-Z	3308-2Z	3308-RS	3308-2RS	3308-N	3308-NR
45	85	30.2	1.1	3209	3209-Z	3209-2Z	3209-RS	3209-2RS	3209-N	3209-NR
	100	39.7	1.5	3309	3309-Z	3309-2Z	3309-RS	3309-2RS	3309-N	3309-NR
50	90	30.2	1.1	3210	3210-Z	3210-2Z	3210-RS	3210-2RS	3210-N	3210-NR
	110	44.4	2	3310	3310-Z	3310-2Z	3310-RS	3310-2RS	3310-N	3310-NR
55	100	33.3	1.5	3211	3211-Z	3211-2Z	3211-RS	3211-2RS	3211-N	3211-NR
	120	49.2	2	3311	3311-Z	3311-2Z	3311-RS	3311-2RS	3311-N	3311-NR
60	110	36.5	1.5	3212	3212-Z	3212-2Z	3212-RS	3212-2RS	3212-N	3212-NR



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	130	54	2.1	3312	3312-Z	3312-2Z	3312-RS	3312-2RS	3312-N	3312-NR
65	120	38.1	1.5	3213	3213-Z	3213-2Z	3213-RS	3213-2RS	3213-N	3213-NR
	140	58.7	2.1	3313	3313-Z	3313-2Z	3313-RS	3313-2RS	3313-N	3313-NR
70	125	39.7	1.5	3214	3214-Z	3214-2Z	3214-RS	3214-2RS	3214-N	3214-NR
	150	63.5	2.1	3314	3314-Z	3314-2Z	3314-RS	3314-2RS	3314-N	3314-NR
75	130	41.3	1.5	3215	3215-Z	3215-2Z	3215-RS	3215-2RS	3215-N	3215-NR
	160	68.3	2.1	3315	3315-Z	3315-2Z	3315-RS	3315-2RS	3315-N	3315-NR
80	140	44.4	2	3216	3216-Z	3216-2Z	3216-RS	3216-2RS	3216-N	3216-NR
	170	68.3	2.1	3316	3316-Z	3316-2Z	3316-RS	3316-2RS	3316-N	3316-NR
85	150	49.2	2	3217	3217-Z	3217-2Z	3217-RS	3217-2RS	3217-N	3217-NR
	180	73	3	3317	3317-Z	3317-2Z	3317-RS	3317-2RS	3317-N	3317-NR
90	160	52.4	2	3218	3218-Z	3218-2Z	3218-RS	3218-2RS	3218-N	3218-NR
	190	73	3	3318	3318-Z	3318-2Z	3318-RS	3318-2RS	3318-N	3318-NR
95	170	55.6	2.1	3219	3219-Z	3219-2Z	3219-RS	3219-2RS	3219-N	3219-NR
	200	77.8	3	3319	3319-Z	3319-2Z	3319-RS	3319-2RS	3319-N	3319-NR
100	180	60.3	2.1	3220	3220-Z	3220-2Z	3220-RS	3220-2RS	3220-N	3220-NR
	215	82.5	3	3320	3320-Z	3320-2Z	3320-RS	3320-2RS	3320-N	3320-NR
105	190	65.1	2.1	3221	3221-Z	3221-2Z	3221-RS	3221-2RS	3221-N	3221-NR
	225	87.3	3	3321	3321-Z	3321-2Z	3321-RS	3321-2RS	3321-N	3321-NR
110	200	69.6	2.1	3222	3222-Z	3222-2Z	3222-RS	3222-2RS	3222-N	3222-NR
	240	92.1	3	3322	3322-Z	3322-2Z	3322-RS	3322-2RS	3322-N	3322-NR
120	215	76	2.1	3224	3224-Z	3224-2Z	3224-RS	3224-2RS	3224-N	3224-NR
	260	106	3	3324	3324-Z	3324-2Z	3324-RS	3324-2RS	3324-N	3324-NR
130	230	80	3	3226	3226-Z	3226-2Z	3226-RS	3226-2RS	3226-N	3226-NR
	280	112	4	3326	3326-Z	3326-2Z	3326-RS	3326-2RS	3326-N	3326-NR
140	250	88	3	3228	3228-Z	3228-2Z	3228-RS	3228-2RS	3228-N	3228-NR
	300	118	4	3328	3328-Z	3328-2Z	3328-RS	3328-2RS	3328-N	3328-NR
150	270	96	3	3230	3230-Z	3230-2Z	3230-RS	3230-2RS	3230-N	3230-NR
	320	128	4	3330	3330-Z	3330-2Z	3330-RS	3330-2RS	3330-N	3330-NR
160	290	104	3	3232	3232-Z	3232-2Z	3232-RS	3232-2RS	3232-N	3232-NR
	340	136	4	3332	3332-Z	3332-2Z	3332-RS	3332-2RS	3332-N	3332-NR
170	310	110	4	3234	3234-Z	3234-2Z	3234-RS	3234-2RS	3234-N	3234-NR
	360	140	4	3334	3334-Z	3334-2Z	3334-RS	3334-2RS	3334-N	3334-NR
180	320	112	4	3236	3236-Z	3236-2Z	3236-RS	3236-2RS	3236-N	3236-NR
	380	150	4	3336	3336-Z	3336-2Z	3336-RS	3336-2RS	3336-N	3336-NR
190	340	120	4	3238	3238-Z	3238-2Z	3238-RS	3238-2RS	3238-N	3238-NR
	400	155	5	3338	3338-Z	3338-2Z	3338-RS	3338-2RS	3338-N	3338-NR
200	360	128	4	3240	3240-Z	3240-2Z	3240-RS	3240-2RS	3240-N	3240-NR
	420	165	5	3340	3340-Z	3340-2Z	3340-RS	3340-2RS	3340-N	3340-NR
220	400	144	4	3244	3244-Z	3244-2Z	3244-RS	3244-2RS	3244-N	3244-NR

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	460	180	5	3344	3344-Z	3344-2Z	3344-RS	3344-2RS	3344-N	3344-NR
240	440	160	4	3248	3248-Z	3248-2Z	3248-RS	3248-2RS	3248-N	3248-NR
	500	195	5	3348	3348-Z	3348-2Z	3348-RS	3348-2RS	3348-N	3348-NR
260	480	174	5	3252	3252-Z	3252-2Z	3252-RS	3252-2RS	3252-N	3252-NR
	540	206	6	3352	3352-Z	3352-2Z	3352-RS	3352-2RS	3352-N	3352-NR
280	500	176	5	3256	3256-Z	3256-2Z	3256-RS	3256-2RS	3256-N	3256-NR
	580	224	6	3356	3356-Z	3356-2Z	3356-RS	3356-2RS	3356-N	3356-NR
300	540	192	5	3260	3260-Z	3260-2Z	3260-RS	3260-2RS	3260-N	3260-NR
	620	236	7.5	3360	3360-Z	3360-2Z	3360-RS	3360-2RS	3360-N	3360-NR
320	580	208	5	3264	3264-Z	3264-2Z	3264-RS	3264-2RS	3264-N	3264-NR
	670	258	7.5	3364	3364-Z	3364-2Z	3364-RS	3364-2RS	3364-N	3364-NR
340	620	224	6	3268	3268-Z	3268-2Z	3268-RS	3268-2RS	3268-N	3268-NR
	710	272	7.5	3368	3368-Z	3368-2Z	3368-RS	3368-2RS	3368-N	3368-NR
360	650	232	6	3272	3272-Z	3272-2Z	3272-RS	3272-2RS	3272-N	3272-NR
	750	290	7.5	3372	3372-Z	3372-2Z	3372-RS	3372-2RS	3372-N	3372-NR
380	680	240	6	3276	3276-Z	3276-2Z	3276-RS	3276-2RS	3276-N	3276-NR
	780	300	7.5	3376	3376-Z	3376-2Z	3376-RS	3376-2RS	3376-N	3376-NR
400	720	256	6	3280	3280-Z	3280-2Z	3280-RS	3280-2RS	3280-N	3280-NR
	820	308	7.5	3380	3380-Z	3380-2Z	3380-RS	3380-2RS	3380-N	3380-NR
420	760	272	7.5	3284	3284-Z	3284-2Z	3284-RS	3284-2RS	3284-N	3284-NR
	850	315	9.5	3384	3384-Z	3384-2Z	3384-RS	3384-2RS	3384-N	3384-NR
440	790	280	7.5	3288	3288-Z	3288-2Z	3288-RS	3288-2RS	3288-N	3288-NR
	900	345	9.5	3388	3388-Z	3388-2Z	3388-RS	3388-2RS	3388-N	3388-NR
460	830	296	7.5	3292	3292-Z	3292-2Z	3292-RS	3292-2RS	3292-N	3292-NR
	950	365	9.5	3392	3392-Z	3392-2Z	3392-RS	3392-2RS	3392-N	3392-NR
480	870	310	7.5	3296	3296-Z	3296-2Z	3296-RS	3296-2RS	3296-N	3296-NR
	980	375	9.5	3396	3396-Z	3396-2Z	3396-RS	3396-2RS	3396-N	3396-NR
500	920	336	7.5	32/500	32/500-Z	32/500-2Z	32/500-RS	32/500-2RS	32/500-N	32/500-NR
	1030	388	12	33/500	33/500-Z	33/500-2Z	33/500-RS	33/500-2RS	33/500-N	33/500-NR
530	980	355	9.5	32/530	32/530-Z	32/530-2Z	32/530-RS	32/530-2RS	32/530-N	32/530-NR
	1090	412	12	33/530	33/530-Z	33/530-2Z	33/530-RS	33/530-2RS	33/530-N	33/530-NR
560	1030	365	9.5	32/560	32/560-Z	32/560-2Z	32/560-RS	32/560-2RS	32/560-N	32/560-NR
	1150	438	12	33/560	33/560-Z	33/560-2Z	33/560-RS	33/560-2RS	33/560-N	33/560-NR
600	1090	388	9.5	32/600	32/600-Z	32/600-2Z	32/600-RS	32/600-2RS	32/600-N	32/600-NR
	1220	462	15	33/600	33/600-Z	33/600-2Z	33/600-RS	33/600-2RS	33/600-N	33/600-NR

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630	1150	412	12	32/630	32/630-Z	32/630-2Z	32/630-RS	32/630-2RS	32/630-N	32/630-NR
	1280	488	15	33/630	33/630-Z	33/630-2Z	33/630-RS	33/630-2RS	33/630-N	33/630-NR
670	1220	438	12	32/670	32/670-Z	32/670-2Z	32/670-RS	32/670-2RS	32/670-N	32/670-NR
	1360	515	15	33/670	33/670-Z	33/670-2Z	33/670-RS	33/670-2RS	33/670-N	33/670-NR
710	1280	450	12	32/710	32/710-Z	32/710-2Z	32/710-RS	32/710-2RS	32/710-N	32/710-NR
	1420	530	15	33/710	33/710-Z	33/710-2Z	33/710-RS	33/710-2RS	33/710-N	33/710-NR
750	1360	475	15	32/750	32/750-Z	32/750-2Z	32/750-RS	32/750-2RS	32/750-N	32/750-NR
	1500	560	15	33/750	33/750-Z	33/750-2Z	33/750-RS	33/750-2RS	33/750-N	33/750-NR
800	1420	488	15	32/800	32/800-Z	32/800-2Z	32/800-RS	32/800-2RS	32/800-N	32/800-NR
	1600	600	15	33/800	33/800-Z	33/800-2Z	33/800-RS	33/800-2RS	33/800-N	33/800-NR
850	1500	515	15	32/850	32/850-Z	32/850-2Z	32/850-RS	32/850-2RS	32/850-N	32/850-NR
	1700	630	19	33/850	33/850-Z	33/850-2Z	33/850-RS	33/850-2RS	33/850-N	33/850-NR
900	1580	515	15	32/900	32/900-Z	32/900-2Z	32/900-RS	32/900-2RS	32/900-N	32/900-NR
	1780	650	19	33/900	33/900-Z	33/900-2Z	33/900-RS	33/900-2RS	33/900-N	33/900-NR
950	1 660	530	15	32/950	32/950-Z	32/950-2Z	32/950-RS	32/950-2RS	32/950-N	32/950-NR
	1850	670	19	33/950	33/950-Z	33/950-2Z	33/950-RS	33/950-2RS	33/950-N	33/950-NR
1000	1750	560	15	32/1000	32/1000-Z	32/1000-2Z	32/1000-RS	32/1000-2RS	32/1000-N	32/1000-NR
	1950	710	19	33/1000	33/1000-Z	33/1000-2Z	33/1000-RS	33/1000-2RS	33/1000-N	33/1000-NR

### 4.3 Self Aligning - Dimension And Designations

#### 4.3.1 Self Aligning – Self-Aligning Ball Bearing (SABB)

Boundary dimensions and designations of Self-Aligning Ball Bearing be as per Table 3, Fig 4 and Fig 5.

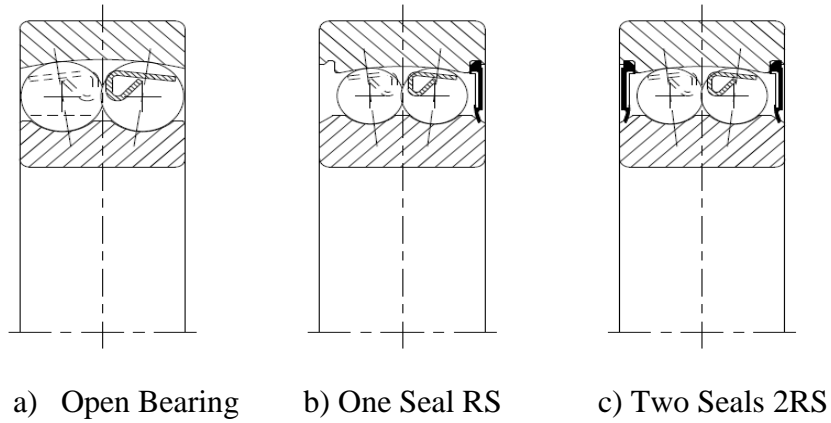
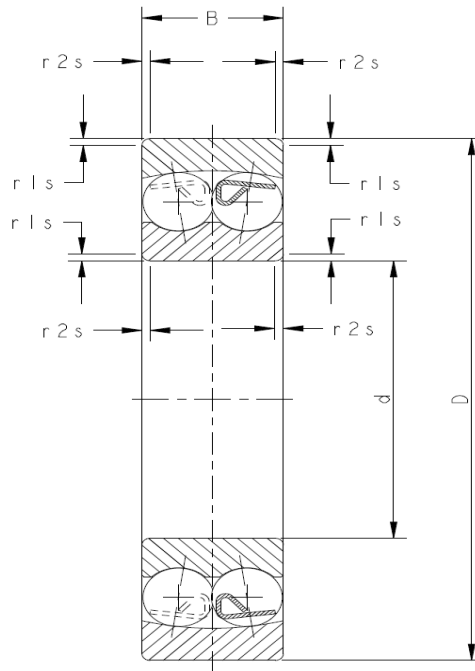


FIG. 4 VARIANTS OF SELF-ALIGNING BALL BEARING



- B Bearing width
- D Bearing outside diameter
- d Bearing bore diameter
- r1s, r2s Smallest permissible chamfer dimension
- RS Bearing with seal on one side
- 2RS Bearing with seals on both sides

FIG. 5 TERMS RELATED TO SELF-ALIGNING BALL BEARING

**Table 3 Dimension and Designation**  
 (Clause 4.3.1)

Dimensions in millimetres

<b>Self-Aligning Ball Bearings - Table 3</b>										
<b>d</b>	<b>D</b>	<b>B</b>	<b>r1<sub>s</sub>, r2<sub>s</sub></b> <i>Min</i>	<b>Designation<sup>1)</sup></b>						
				<b>Basic type</b>	<b>Variant</b>					
					Z	2Z	RS	2RS	N	NR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
10	30	9	0.6	1200	–	–	–	–	–	–
	30	14	0.6	2200	–	–	2200-RS	2200-2RS	–	–
	35	11	0.6	1300	–	–	–	–	–	–
	35	17	0.6	2300	–	–	2300-RS	2300-2RS	–	–
12	32	10	0.6	1201	–	–	–	–	–	–
	32	14	0.6	2201	–	–	2201-RS	2201-2RS	–	–
	37	12	1	1301	–	–	–	–	–	–
	37	17	1	2301	–	–	2301-RS	2301-2RS	–	–
15	35	11	0.6	1202	–	–	–	–	–	–
	35	14	0.6	2202	–	–	2202-RS	2202-2RS	–	–
	42	13	1	1302	–	–	–	–	–	–
	42	17	1	2302	–	–	2302-RS	2302-2RS	–	–
17	40	12	0.6	1203	–	–	–	–	–	–
	40	16	0.6	2203	–	–	2203-RS	2203-2RS	–	–
	47	14	1	1303	–	–	–	–	–	–
	47	19	1	2303	–	–	2303-RS	2303-2RS	–	–
20	47	14	1	1204	–	–	–	–	–	–
	47	18	1	2204	–	–	2204-RS	2204-2RS	–	–
	52	15	1.1	1304	–	–	–	–	–	–
	52	21	1.1	2304	–	–	2304-RS	2304-2RS	–	–
22	50	14	1	12/22	–	–	–	–	–	–
	50	18	1	22/22	–	–	22/22-RS	22/22-2RS	–	–
	56	16	1.1	13/22	–	–	–	–	–	–
	56	21	1.1	23/22	–	–	23/22-RS	23/22-2RS	–	–
25	52	15	1	1205	–	–	–	–	–	–
	52	18	1	2205	–	–	2205-RS	2205-2RS	–	–
	62	17	1.1	1305	–	–	–	–	–	–
	62	24	1.1	2305	–	–	2305-RS	2305-2RS	–	–
28	58	16	1	12/28	–	–	–	–	–	–
	58	19	1	22/28	–	–	22/28-RS	22/28-2RS	–	–
	68	18	1.1	13/28	–	–	–	–	–	–
	68	24	1.1	23/28	–	–	23/28-RS	23/28-2RS	–	–
30	62	16	1	1206	–	–	–	–	–	–
	62	20	1	2206	–	–	2206-RS	2206-2RS	–	–

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	72	19	1.1	1306	-	-	-	-	-	-
	72	27	1.1	2306	-	-	2306-RS	2306-2RS	-	-
32	65	17	1	12/32	-	-	-	-	-	-
	65	21	1	22/32	-	-	22/32-RS	22/32-2RS	-	-
	75	20	1.1	13/32	-	-	-	-	-	-
	75	28	1.1	23/32	-	-	23/32-RS	23/32-2RS	-	-
35	72	17	1.1	1207	-	-	-	-	-	-
	72	23	1.1	2207	-	-	2207-RS	2207-2RS	-	-
	80	21	1.5	1307	-	-	-	-	-	-
	80	31	1.5	2307	-	-	2307-RS	2307-2RS	-	-
40	80	23	1.1	1208	-	-	-	-	-	-
	80	18	1.1	2208	-	-	2208-RS	2208-2RS	-	-
	90	23	1.5	1308	-	-	-	-	-	-
	90	33	1.5	2308	-	-	2308-RS	2308-2RS	-	-
45	85	19	1.1	1209	-	-	-	-	-	-
	85	23	1.1	2209	-	-	2209-RS	2209-2RS	-	-
	100	25	1.5	1309	-	-	-	-	-	-
	100	36	1.5	2309	-	-	2309-RS	2309-2RS	-	-
50	90	20	1.1	1210	-	-	-	-	-	-
	90	23	1.1	2210	-	-	2210-RS	2210-2RS	-	-
	110	27	2	1310	-	-	-	-	-	-
	110	40	2	2310	-	-	2310-RS	2310-2RS	-	-
55	100	21	1.5	1211	-	-	-	-	-	-
	100	25	1.5	2211	-	-	2211-RS	2211-2RS	-	-
	120	29	2	1311	-	-	-	-	-	-
	120	43	2	2311	-	-	2311-RS	2311-2RS	-	-
60	110	22	1.5	1212	-	-	-	-	-	-
	110	28	1.5	2212	-	-	2212-RS	2212-2RS	-	-
	130	31	2.1	1312	-	-	-	-	-	-
	130	46	2.1	2312	-	-	2312-RS	2312-2RS	-	-
65	120	23	1.5	1213	-	-	-	-	-	-
	120	31	1.5	2213	-	-	2213-RS	2213-2RS	-	-
	140	33	2.1	1313	-	-	-	-	-	-
	140	48	2.1	2313	-	-	2313-RS	2313-2RS	-	-
70	125	24	1.5	1214	-	-	-	-	-	-
	125	31	1.5	2214	-	-	2214-RS	2214-2RS	-	-
	150	35	2.1	1314	-	-	-	-	-	-
	150	51	2.1	2314	-	-	2314-RS	2314-2RS	-	-
75	130	25	1.5	1215	-	-	-	-	-	-
	130	31	1.5	2215	-	-	2215-RS	2215-2RS	-	-

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	160	37	2.1	1315	-	-	-	-	-	-
	160	55	2.1	2315	-	-	2315-RS	2315-2RS	-	-
80	140	26	2	1216	-	-	-	-	-	-
	140	33	2	2216	-	-	2216-RS	2216-2RS	-	-
	170	39	2.1	1316	-	-	-	-	-	-
	170	58	2.1	2316	-	-	2316-RS	2316-2RS	-	-
85	150	28	2	1217	-	-	-	-	-	-
	150	36	2	2217	-	-	2217-RS	2217-2RS	-	-
	180	41	3	1317	-	-	-	-	-	-
	180	60	3	2317	-	-	2317-RS	2317-2RS	-	-
90	160	30	2	1218	-	-	-	-	-	-
	160	40	2	2218	-	-	2218-RS	2218-2RS	-	-
	190	43	3	1318	-	-	-	-	-	-
	190	64	3	2318	-	-	2318-RS	2318-2RS	-	-
95	170	32	2.1	1219	-	-	-	-	-	-
	170	43	2.1	2219	-	-	2219-RS	2219-2RS	-	-
	200	45	3	1319	-	-	-	-	-	-
	200	67	3	2319	-	-	2319-RS	2319-2RS	-	-
100	180	34	2.1	1220	-	-	-	-	-	-
	180	45	2.1	2220	-	-	2220-RS	2220-2RS	-	-
	215	47	3	1320	-	-	-	-	-	-
	215	73	3	2320	-	-	2320-RS	2320-2RS	-	-
105	190	36	2.1	1221	-	-	-	-	-	-
	190	50	2.1	2221	-	-	2221-RS	2221-2RS	-	-
	225	49	3	1321	-	-	-	-	-	-
	225	77	3	2321	-	-	2321-RS	2321-2RS	-	-
110	200	38	2.1	1222	-	-	-	-	-	-
	200	53	2.1	2222	-	-	2222-RS	2222-2RS	-	-
	240	50	3	1322	-	-	-	-	-	-
	240	80	3	2322	-	-	2322-RS	2322-2RS	-	-
120	215	40	2.1	1224	-	-	-	-	-	-
	215	58	2.1	2224	-	-	2224-RS	2224-2RS	-	-
	260	55	3	1324	-	-	-	-	-	-
	260	86	3	2324	-	-	2324-RS	2324-2RS	-	-
130	230	40	3	1226	-	-	-	-	-	-
	230	64	3	2226	-	-	2226-RS	2226-2RS	-	-
	280	58	4	1326	-	-	-	-	-	-
	280	93	4	2326	-	-	2326-RS	2326-2RS	-	-
140	250	42	3	1228	-	-	-	-	-	-
	250	68	3	2228	-	-	2228-RS	2228-2RS	-	-

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	300	62	4	1328	-	-	-	-	-	-
	300	102	4	2328	-	-	2328-RS	2328-2RS	-	-
150	270	45	3	1230	-	-	-	-	-	-
	270	73	3	2230	-	-	2230-RS	2230-2RS	-	-
	320	65	4	1330	-	-	-	-	-	-
	320	108	4	2330	-	-	2330-RS	2330-2RS	-	-
160	290	48	3	1232	-	-	-	-	-	-
	290	80	3	2232	-	-	2232-RS	2232-2RS	-	-
	340	68	4	1332	-	-	-	-	-	-
	340	114	4	2332	-	-	2332-RS	2332-2RS	-	-
170	310	52	4	1234	-	-	-	-	-	-
	310	86	4	2234	-	-	2234-RS	2234-2RS	-	-
	360	72	4	1334	-	-	-	-	-	-
	360	120	4	2334	-	-	2334-RS	2334-2RS	-	-
180	320	52	4	1236	-	-	-	-	-	-
	320	86	4	2236	-	-	2236-RS	2236-2RS	-	-
	380	75	4	1336	-	-	-	-	-	-
	380	126	4	2336	-	-	2336-RS	2336-2RS	-	-
190	340	55	4	1238	-	-	-	-	-	-
	340	92	4	2238	-	-	2238-RS	2238-2RS	-	-
	400	78	5	1338	-	-	-	-	-	-
	400	132	5	2338	-	-	2338-RS	2338-2RS	-	-
200	360	58	4	1240	-	-	-	-	-	-
	360	98	4	2240	-	-	2240-RS	2240-2RS	-	-
	420	80	5	1340	-	-	-	-	-	-
	420	138	5	2340	-	-	2340-RS	2340-2RS	-	-
220	400	65	4	1244	-	-	-	-	-	-
	400	106	4	2244	-	-	2244-RS	2244-2RS	-	-
	460	88	5	1344	-	-	-	-	-	-
	460	145	5	2344	-	-	2344-RS	2344-2RS	-	-
240	440	72	4	1248	-	-	-	-	-	-
	440	120	4	2248	-	-	2248-RS	2248-2RS	-	-
	500	95	5	1348	-	-	-	-	-	-
	500	155	5	2348	-	-	2348-RS	2348-2RS	-	-
260	480	80	5	1252	-	-	-	-	-	-
	480	130	5	2252	-	-	2252-RS	2252-2RS	-	-
	540	102	6	1352	-	-	-	-	-	-
	540	165	6	2352	-	-	2352-RS	2352-2RS	-	-
280	500	80	5	1256	-	-	-	-	-	-
	500	130	5	2256	-	-	2256-RS	2256-2RS	-	-



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	580	108	6	1356	-	-	-	-	-	-
	580	175	6	2356	-	-	2356-RS	2356-2RS	-	-
300	540	85	5	1260	-	-	-	-	-	-
	540	140	5	2260	-	-	2260-RS	2260-2RS	-	-
	620	109	7.5	1360	-	-	-	-	-	-
	620	185	7.5	2360	-	-	2360-RS	2360-2RS	-	-
320	580	92	5	1264	-	-	-	-	-	-
	580	150	5	2264	-	-	2264-RS	2264-2RS	-	-
	670	112	7.5	1364	-	-	-	-	-	-
	670	200	7.5	2364	-	-	2364-RS	2364-2RS	-	-
340	620	92	6	1268	-	-	-	-	-	-
	620	165	6	2268	-	-	2268-RS	2268-2RS	-	-
	710	118	7.5	1368	-	-	-	-	-	-
	710	212	7.5	2368	-	-	2368-RS	2368-2RS	-	-
360	650	95	6	1272	-	-	-	-	-	-
	650	170	6	2272	-	-	2272-RS	2272-2RS	-	-
	750	125	7.5	1372	-	-	-	-	-	-
	750	224	7.5	2372	-	-	2372-RS	2372-2RS	-	-
380	680	95	6	1276	-	-	-	-	-	-
	680	175	6	2276	-	-	2276-RS	2276-2RS	-	-
	780	128	7.5	1376	-	-	-	-	-	-
	780	230	7.5	2376	-	-	2376-RS	2376-2RS	-	-
400	720	103	6	1280	-	-	-	-	-	-
	720	185	6	2280	-	-	2280-RS	2280-2RS	-	-
	820	136	7.5	1380	-	-	-	-	-	-
	820	243	7.5	2380	-	-	2380-RS	2380-2RS	-	-
420	760	109	7.5	1284	-	-	-	-	-	-
	760	195	7.5	2284	-	-	2284-RS	2284-2RS	-	-
	850	136	9.5	1384	-	-	-	-	-	-
	850	250	9.5	2384	-	-	2384-RS	2384-2RS	-	-
440	790	112	7.5	1288	-	-	-	-	-	-
	790	200	7.5	2288	-	-	2288-RS	2288-2RS	-	-
	900	145	9.5	1388	-	-	-	-	-	-
	900	265	9.5	2388	-	-	2388-RS	2388-2RS	-	-
460	830	118	7.5	1292	-	-	-	-	-	-
	830	212	7.5	2292	-	-	2292-RS	2292-2RS	-	-
	950	155	9.5	1392	-	-	-	-	-	-
	950	280	9.5	2392	-	-	2392-RS	2392-2RS	-	-
480	870	125	7.5	1296	-	-	-	-	-	-
	870	224	7.5	2296	-	-	2296-RS	2296-2RS	-	-

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	980	160	9.5	1396	-	-	-	-	-	-
	980	290	9.5	2396	-	-	2396-RS	2396-2RS	-	-
500	920	136	7.5	12/500	-	-	-	-	-	-
	920	243	7.5	22/500	-	-	22/500-RS	22/500-2RS	-	-
	1030	170	12	13/500	-	-	-	-	-	-
	1030	300	12	23/500	-	-	23/500-RS	23/500-2RS	-	-
530	980	145	9.5	12/530	-	-	-	-	-	-
	980	258	9.5	22/530	-	-	22/530-RS	22/530-2RS	-	-
	1090	180	12	13/530	-	-	-	-	-	-
	1090	325	12	23/530	-	-	23/530-RS	23/530-2RS	-	-
560	1030	150	9.5	12/560	-	-	-	-	-	-
	1030	272	9.5	22/560	-	-	22/560-RS	22/560-2RS	-	-
	1150	190	12	13/560	-	-	-	-	-	-
	1150	335	12	23/560	-	-	23/560-RS	23/560-2RS	-	-
600	1090	155	9.5	12/600	-	-	-	-	-	-
	1090	280	9.5	22/600	-	-	22/600-RS	22/600-2RS	-	-
	1220	200	15	13/600	-	-	-	-	-	-
	1220	355	15	23/600	-	-	23/600-RS	23/600-2RS	-	-
630	1150	165	12	12/630	-	-	-	-	-	-
	1150	300	12	22/630	-	-	22/630-RS	22/630-2RS	-	-
	1280	206	15	13/630	-	-	-	-	-	-
	1280	375	15	23/630	-	-	23/630-RS	23/630-2RS	-	-
670	1220	175	12	12/670	-	-	-	-	-	-
	1220	315	12	22/670	-	-	22/670-RS	22/670-2RS	-	-
	1360	218	15	13/670	-	-	-	-	-	-
	1360	400	15	23/670	-	-	23/670-RS	23/670-2RS	-	-
710	1280	180	12	12/710	-	-	-	-	-	-
	1280	325	12	22/710	-	-	22/710-RS	22/710-2RS	-	-
	1420	224	15	13/710	-	-	-	-	-	-
	1420	412	15	23/710	-	-	23/710-RS	23/710-2RS	-	-
750	1360	195	15	12/750	-	-	-	-	-	-
	1360	345	15	22/750	-	-	22/750-RS	22/750-2RS	-	-
	1500	236	15	13/750	-	-	-	-	-	-
	1500	438	15	23/750	-	-	23/750-RS	23/750-2RS	-	-
800	1420	200	15	12/800	-	-	-	-	-	-
	1420	355	15	22/800	-	-	22/800-RS	22/800-2RS	-	-
	1600	258	15	13/800	-	-	-	-	-	-
	1600	462	15	23/800	-	-	23/800-RS	23/800-2RS	-	-
850	1500	206	15	12/850	-	-	-	-	-	-
	1500	375	15	22/850	-	-	22/850-RS	22/850-2RS	-	-

	1700	272	19	13/850	-	-	-	-	-	-
	1700	488	19	23/850	-	-	23/850-RS	23/850-2RS	-	-
900	1580	218	15	12/900	-	-	-	-	-	-
	1580	388	15	22/900	-	-	22/900-RS	22/900-2RS	-	-
	1780	280	19	13/900	-	-	-	-	-	-
	1780	500	19	23/900	-	-	23/900-RS	23/900-2RS	-	-
950	1 660	230	15	12/950	-	-	-	-	-	-
	1 660	412	15	22/950	-	-	22/950-RS	22/950-2RS	-	-
	1850	290	19	13/950	-	-	-	-	-	-
	1850	515	19	23/950	-	-	23/950-RS	23/950-2RS	-	-
1 000	1750	243	15	12/1000	-	-	-	-	-	-
	1750	425	15	22/1000	-	-	22/1000-RS	22/1000-2RS	-	-
	1950	300	19	13/1000	-	-	-	-	-	-
	1950	545	19	23/1000	-	-	23/1000-RS	23/1000-2RS	-	-

## 5 SYMBOLS

Conforming to Doc No. PGD 13 (24061).

## 6 DIMENSIONS AND TOLERANCES

### 6.1 Boundary Dimensions

Dimensions shall conform to dimension series 02, 22, 32, 03, 23 and 33 of IS 5669.

### 6.2 Tolerances

Tolerances on the boundary dimensions shall conform to IS 5692.

### 6.3 Radial Clearances

Radial clearances shall conform to IS 5935 (Part 1).

## 7 GENERAL REQUIREMENTS

Other requirements for the bearings shall conform to IS 6453.

## 8 DESIGNATION

Typical examples

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Sl. No.	Order of Designating Symbols	Bore Dia of Bearing	Type <sup>3</sup>	Width and Outside Dia Series (Dimension Series)	Supplementary Code (If Required for any Modification in Design) †	Number of This Standard	Tolerance Class‡	Radial Clearance Group§	Complete Designation
	Description	OOOO	AAA	OO	AAAA	IS 6456	PO	CO	
i)	Radial ball-bearing, bore dia 50 mm, double row. self-aligning; raceway of outer ring spherical; dimension series 02; tolerance class normal; radial clearance group normal	50	BS	02	—	IS 6456	—	—	50 BS 02 IS 6456
ii)	Same bearing as SI No. (1) but with tolerance class 5	50	BS	02	—	IS 6456	P5	—	50 BS 02 IS 6456 P5
iii)	Same bearing as SI No. (1) but with radial clearance group 3	50	BS	02	—	IS 6456		C3	50 BS 02 IS 6456 C3
iv)	Same bearing as SI No.(i) but with tolerance class 5 and radial clearance group 3	50	BS	02	—	IS 6456	P5	C3	50 BS 02 IS 6456 P5 C3
v)	Bearing of SI No. (iv) having a cage in steel sheet or stripform. Centred by rolling elements and having a tapered bore 1 : 12	50	BS	02	JXXK	IS 6456	P5	C3	50 BS 02 JXXK IS 6456 P5 C3

\* In accordance with **3.3.1** of IS 2338

† In accordance with **3.4** of IS 2306

‡ In accordance with **5.2**

§ In accordance with **5.3**