



**1) Materials for KBS Bearing's Outer ring, Inner ring & Rolling Elements**

The most common through-hardening steel used for rolling bearing of KBS used is a carbon chromium steel containing approximately 1% carbon and 1.5% chromium. Below table 1.1 which shown G Cr15--the main material that KBS used for producing our ball bearings and its interchangeable material in other nations.

**Table 1.1**

Name	Standard	Chemical Composition (%)					
		C	Mn	Si	Cr	S≤	P≤
G Cr15	KBS	0,95~1,05	0,20~0,40	0,15~0,35	1,30~1,65	0,020	0,027
SUJ 2	JIS G 4805	0,95~1,10	0,50≤	0,15~0,35	1,30~1,60	0,025	0,025
100Cr6	DIN	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -
E52100	AISI	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -
ISO	683/XVII	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -
SKF	-	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -

Note: **KBS** supplies all general bearings with material of G Cr15 as normal products, unless otherwise specified by customer for special usage before ordering. i.e. Pure carbon or Stainless Steel etc.

**2) Material for Bearing Retainers**

The retainer is demanded to bear hitting load and have the lowest friction with the rolling elements when **KBS** bearing is working. So:

2.1) For the bearing with contact angle of 40°C, low carbon steel pressed cage (Please refer to Table 2.1) or Nylon cage (Indicated by suffix NT1) is adopted. Nylon cage could be applied in most conditions, while it could not be used in a working temperature higher than 120°C.

**Table 2.1**

Name	Standard	Chemical Composition (%)				
		C	Mn	Si	S≤	P≤
10F	Chinese GB	0,05~0,11	0,25~0,50	0,07≤	0,035	0,035
SPCC	JIS G 3141	0,12≤	0,50≤	-	0,045	0,040

2.2) For those bearings with its outer diameter large than 250mm, the brass cage is adopted with suffix M for indication.

**3) Precision Class for the bearings**

3.1) The accuracy of a bearing are both dimensional and running accuracy of the bearing It has been standardised internationally. Here we give out a interchangeable precision class standard table which is equal to **KBS** (Table 3,1 refers) for your reference.



Table 3.1

Selection	Classification standard				
	P0	P6	P5	P4	P2
ISO	Class 6X	Class 6	Class 5	Class 4	Class 2
Japan Industrial	Class 0	Class 6	Class 5	Class 4	Class 2
German	P0	P6	P5	P4	P2
United States	ABEC-1	ABEC-3	ABEC-5	ABEC-7	ABEC-9

Note: **KBS** could supply angular contact ball bearings with different tolerance classes. For general usage, the bearings could be made in P0, P6 and P5. While for those mounted in pairs using in spindles of a machine tool P4 or P2 be adopted.

3.2) Relatively, as specified value of accuracy, **KBS** gives out the normal tolerances for radial bearings exceptional for taper roller bearings. ( Tables 3,2 and 3,3 refers )

Table 4.2 Normal Tolerances for Radial Bearings

Inner ring(Unit: μm)

Nominal bore dimension d(mm)		Deviation of the mean bore diameter from the nominal Δdmp										Deviation of the bore diameter Vdp Diameter series 9				
		P0		P6		P5		P4		P2		P0	P6	P5	P4	P2
over	incl.	high	low	high	low	high	low	high	low	high	low	max.				
0,6	2,5	0	-8	0	-7	0	-5	0	-4	0	-2,5	10	9	5	4	2,5
2,5	10	0	-8	0	-7	0	-5	0	-4	0	-2,5	10	9	5	4	2,5
10	18	0	-8	0	-7	0	-5	0	-4	0	-2,5	10	9	5	4	2,5
18	30	0	-10	0	-8	0	-6	0	-5	0	-2,5	13	10	6	5	2,5
30	50	0	-12	0	-10	0	-8	0	-6	0	-2,5	15	13	8	6	2,5
50	80	0	-15	0	-12	0	-9	0	-7	0	-4,0	19	15	9	7	4,0
80	120	0	-20	0	-15	0	-10	0	-8	0	-5,0	25	19	10	8	5,0
120	150	0	-25	0	-18	0	-13	0	-10	0	-7,0	31	23	13	10	7,0
150	180	0	-25	0	-18	0	-13	0	-10	0	-7,0	31	23	13	10	7,0
180	250	0	-30	0	-22	0	-15	0	-12	0	-8,0	38	28	15	12	8,0
250	315	1	-35	0	-25	0	-18	—	—	—	—	44	31	18	—	—
315	400	0	-40	0	-30	0	-23	—	—	—	—	50	38	23	—	—



Deviation of the bore diameter										Mean deviation of the bore diameter					Radial run out				
Vdp										Vdmp					Kia				
Diameter series 0, 1					Diameter series 2, 3, 4														
P0	P6	P5	P4	P2	P0	P6	P5	P4	P2	P0	P6	P5	P4	P2	P0	P6	P5	P4	P2
max.					max.					max.					max.				
8	7	4	3	2,5	6	5	4	3	2,5	6	5	3	2,0	1,5	10	5	4	2,5	1,5
8	7	4	3	2,5	6	5	4	3	2,5	6	5	3	2,0	1,5	10	6	4	2,5	1,5
8	7	4	3	2,5	6	5	4	3	2,5	6	5	3	2,0	1,5	10	7	4	2,5	1,5
10	8	5	4	2,5	8	6	5	4	2,5	8	6	3	2,5	1,5	13	8	4	3,0	2,5
12	10	6	5	2,5	9	8	6	5	2,5	9	8	4	3,0	1,5	15	10	5	4,0	2,5
19	15	7	6	4,0	11	9	7	6	4,0	11	9	5	3,5	2,0	20	10	5	4,0	2,5
25	19	8	6	5,0	15	11	8	6	5,0	15	11	5	4,0	2,5	25	13	6	5,0	2,5
31	23	10	8	7,0	19	14	10	8	7,0	19	14	7	5,0	3,5	30	18	8	6,0	2,5
31	23	10	8	7,0	19	14	10	8	7,0	19	14	7	5,0	3,5	30	18	8	6,0	5,0
38	28	12	9	8,0	23	17	12	9	8,0	23	17	8	6,0	4,0	40	20	10	8,0	5,0
44	31	14	—	—	26	19	14	—	—	26	19	9	—	—	50	25	13	—	—
50	38	18	—	—	30	23	18	—	—	30	23	12	—	—	60	30	15	—	—

Side run out			Axial run out			Deviation of the width										Parallel deviation				
Sd			Sia			$\Delta Bs$										between end surfaces				
						For single bearing					For pair bearing					VBs				
P5	P4	P2	P5	P4	P2	P0, P6	P5, P4	P2	P0, P6	P5, P4	P0, P6	P5, P4	P0	P6	P5	P4	P2			
max.			max.			high	low	high	low	high	low	high	low	high	low	max.				
7	3	1,5	7	3	1,5	0	-40	0	-40	0	-40	—	—	0	-7	12	12	5	2,5	1,5
7	3	1,5	7	3	1,5	0	-120	0	-40	0	-40	0	-8	0	-7	15	15	5	2,5	1,5
7	3	1,5	7	3	1,5	0	-120	0	-80	0	-80	0	-8	0	-7	20	20	5	2,5	1,5
8	4	1,5	8	4	2,5	0	-120	0	-120	0	-120	0	-10	0	-8	20	20	5	2,5	1,5
8	4	1,5	8	4	2,5	0	-120	0	-120	0	-120	0	-12	0	-10	20	20	5	3,0	1,5
8	5	1,5	8	5	2,5	0	-150	0	-150	0	-150	0	-15	0	-12	25	25	5	4,0	1,5
9	5	2,5	9	5	2,5	0	-200	0	-200	0	-200	0	-20	0	-15	25	25	7	4,0	2,5
10	6	2,5	10	7	2,5	0	-250	0	-250	0	-250	0	-25	0	-18	30	30	8	5,0	2,5
10	6	4,0	10	7	5,0	0	-250	0	-250	0	-300	0	-25	0	-18	30	30	8	5,0	4,0
11	7	5,0	13	8	5,0	0	-300	0	-300	0	-350	0	-30	0	-22	30	30	10	6,0	5,0
13	—	—	15	—	—	0	-350	0	-350	—	—	1	-35	0	-25	35	35	13	—	—
15	—	—	20	—	—	0	-400	0	-400	—	—	0	-40	0	-30	40	40	15	—	—

Note: Values for larger sizes on request Table 3,3 Normal Tolerances for Radial Bearings



Out ring (Unit:  $\mu\text{m}$ )

Nominal bore dimension D(mm)		Deviation of the mean bore diameter from the nominal $\Delta D_{mp}$										Deviation of the outer ring diameter (Open type) VDp Diameter series 9				
over	incl.	P0		P6		P5		P4		P2		P0	P6	P5	P4	P2
		high	low	high	low	high	low	high	low	high	low	max.				
2,5	6	0	-8	0	-7	0	-5	0	-4	0	-2,5	10	9	5	4	2,5
6	18	0	-8	0	-7	0	-5	0	-4	0	-2,5	10	9	5	4	2,5
18	30	0	-9	0	-8	0	-6	0	-5	0	-4,0	12	10	6	5	4,0
30	50	0	-11	0	-7	0	-6	0	-6	0	-4,0	14	11	7	6	4,0
50	80	0	-13	0	-9	0	-7	0	-7	0	-4,0	16	14	9	7	4,0
80	120	0	-15	0	-10	0	-8	0	-8	0	-5,0	19	16	10	8	5,0
120	150	0	-18	0	-15	0	-11	0	-9	0	-5,0	23	19	11	9	5,0
150	180	0	-25	0	-18	0	-13	0	-10	0	-7,0	31	23	13	10	7,0
180	250	0	-30	0	-20	0	-15	0	-11	0	-8,0	38	25	15	11	8,0
250	315	0	-35	0	-25	0	-18	0	-13	0	-8,0	44	31	18	13	8,0
315	400	1	-40	0	-28	0	-20	0	-15	0	-10,0	50	35	20	15	10,0
400	500	0	-45	0	-33	0	-23	—	—	—	—	56	41	23	—	—

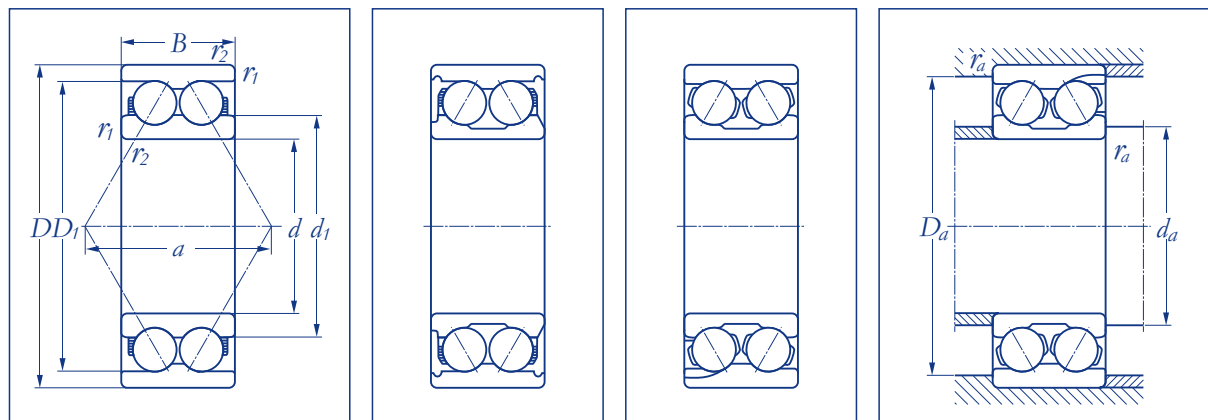
Deviation of the bore diameter (Opentype) VDp Diameter series 0, 1										Deviation of the outer ring diameter (with seals & shields)VDp 2, 3, 4		Mean deviation of the out ring diameter VDmp				
P0	P6	P5	P4	P2	Diameter series 2, 3, 4					P0	P6	P0	P6	P5	P4	P2
max.					P0	P6	P5	P4	P2	max.		max.				
8	7	4	3	2,5	6	5	4	3	2,5	10	9	6	5	3	2,0	1,5
8	7	4	3	2,5	6	5	4	3	2,5	10	9	6	5	3	2,0	1,5
9	8	5	4	4,0	7	6	5	4	4,0	12	10	7	6	3	2,5	2,0
11	9	5	5	4,0	8	7	5	5	4,0	16	13	8	7	4	3,0	2,0
13	11	7	5	4,0	10	8	7	5	4,0	20	16	10	8	5	3,5	2,0
19	16	8	6	5,0	11	10	8	6	5,0	26	20	11	10	5	4,0	2,5
23	19	8	7	5,0	14	11	8	7	5,0	30	25	14	11	6	5,0	2,5
31	23	10	8	7,0	19	14	10	8	7,0	38	30	19	14	7	5,0	3,5
38	25	11	8	8,0	23	15	11	8	8,0	—	—	23	15	8	6,0	4,0
44	31	14	10	8,0	26	19	14	10	8,0	—	—	26	19	9	7,0	4,0
50	35	15	11	10,0	30	21	15	11	10,0	—	—	30	21	10	8,0	5,0
56	41	17	—	—	34	25	17	—	—	—	—	34	25	12	—	—



Radial run out Kea					Side run out SD			Axial run out Sea			Deviation of the width $\Delta Cs$	Parallel deviation between end surfaces VCs				
P0	P6	P5	P4	P2	P5	P4	P2	P5	P4	P2	For all class	P0	P6	P5	P4	P2
max.					max.			max.				max.				
15	8	5	3	1,5	8	4	1,5	8	5	1,5	With "d" of the same model bearing, and refer to relative value of $\Delta Bs$	With "d" of the same model bearing, and refer to relative value of Vcs				
15	8	5	3	1,5	8	4	1,5	8	5	1,5		5	2,5	1,5		
15	9	6	4	2,5	8	4	1,5	8	5	2,5		5	2,5	1,5		
20	10	7	5	2,5	8	4	1,5	8	5	2,5		5	2,5	1,5		
25	13	8	5	4,0	8	4	1,5	10	5	4,0		6	3,0	1,5		
35	18	10	6	5,0	9	5	2,5	11	6	5,0		8	4,0	2,5		
40	20	11	7	5,0	10	5	2,5	13	7	5,0		8	5,0	2,5		
45	23	13	8	5,0	10	5	2,5	14	8	5,0		8	5,0	2,5		
50	25	15	10	7,0	11	7	4,0	15	10	7,0		10	7,0	4,0		
60	30	18	11	7,0	13	8	5,0	18	10	7,0		11	7,0	5,0		
70	35	20	13	8,0	13	10	7,0	20	13	8,0		13	8,0	7,0		
80	40	23	—	—	15	—	—	23	—	—		15	—	—		

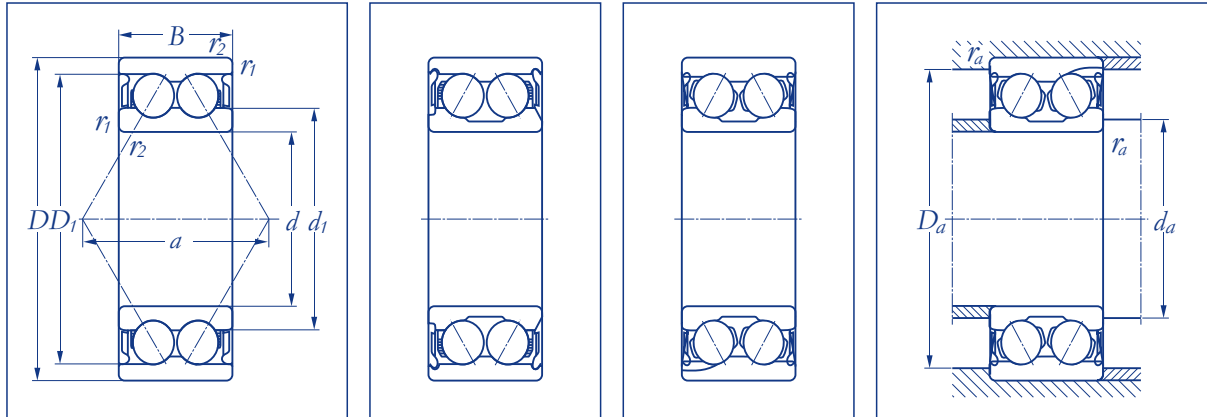
**4) Internal Clearance**

4.1) Internal clearance of KBS angular contact ball bearings (Single row) is depend on its contact angle, which is ensured during production process.

Double row angular contact ball bearings  
 Series 32

**A series  $d \leq 35$** 
**A series  $d \geq 40$** 
**E series**

Designation	Weight (g)	Dimensions(mm)										Load ratings			
		d	D	B	$d_1$	$D_{d1}$	$r_{1,2}$	a	$r_a$	$d_a$	$D_a$	$C_w$	$C_{ow}$	$F_r$ perm	$F_{or}$ perm
							min		max	min	max	(N)	(N)	(N)	(N)
<b>3200 A</b>	51	10	30	14,0	17,7	23,6	0,6	18	0,6	15	25	5.900	3.400	11.200	15.400
<b>3201 A</b>	58	12	32	15,9	19,1	26,5	0,6	20	0,6	17	27	8.000	4.400	10.500	14.000
<b>3202 A</b>	66	15	35	15,9	22,1	29,5	0,6	22	0,6	20	30	8.900	5.400	8.400	11.900
<b>3203 A</b>	96	17	40	17,5	25,2	33,6	0,6	25	0,6	22	35	11.200	6.900	7.000	10.500
<b>3204 A</b>	160	20	47	20,6	29,6	39,5	1,0	30	1,0	26	41	14.800	9.600	6.300	9.100
<b>3205 A</b>	180	25	52	20,6	34,6	44,5	1,0	33	1,0	31	46	16.200	11.200	5.600	7.700
<b>3206 A</b>	290	30	62	23,8	41,4	53,2	1,0	38	1,0	36	56	22.400	16.000	4.900	6.600
<b>3207 A</b>	440	35	72	27,0	48,1	61,9	1,1	45	1,0	42	65	29.600	22.000	4.200	5.600
<b>3208 A</b>	580	40	80	30,2	47,8	72,1	1,1	49	1,0	47	73	35.900	26.800	3.900	5.200
<b>3208 E</b>	640	40	80	30,2	47,8	72,1	1,1	49	1,0	47	73	38.700	38.400	3.900	5.200
<b>3209 A</b>	630	45	85	30,2	52,8	77,1	1,1	52	1,0	52	78	38.000	30.400	3.500	4.600
<b>3209 E</b>	690	45	85	30,2	52,8	77,1	1,1	52	1,0	52	78	40.000	42.400	3.500	4.600
<b>3210 A</b>	660	50	90	30,2	57,8	82,1	1,1	56	1,0	57	83	38.000	31.200	3.300	4.400
<b>3210 E</b>	740	50	90	30,2	57,8	82,1	1,1	56	1,0	57	83	42.200	46.800	3.300	4.400
<b>3211</b>	1.050	55	100	33,3	70,4	88,3	1,1	64	1,5	64	91	45.700	53.600	3.000	3.900
<b>3212</b>	1.400	60	110	36,5	78,0	98,3	1,5	71	1,5	69	101	57.600	68.000	2.600	3.500
<b>3213</b>	1.750	65	120	38,1	83,7	105,0	1,5	76	1,5	74	111	62.400	76.000	2.500	3.300
<b>3214</b>	1.900	70	125	39,7	90,6	111,0	1,5	81	1,5	79	116	61.200	78.400	2.200	3.000
<b>3215</b>	2.100	75	130	41,3	94,7	116,0	1,5	84	1,5	84	121	367.300	88.000	2.200	3.000
<b>3216</b>	2.650	80	140	44,4	102,0	127,0	2,0	91	2,0	90	130	80.800	107.200	1.900	2.600
<b>3217</b>	3.400	85	150	49,2	107,0	133,0	2,0	97	2,0	95	140	88.000	116.800	1.800	2.500
<b>3218</b>	4.150	90	160	52,4	115,0	143,0	2,0	104	2,0	100	150	102.400	138.400	1.600	2.300
<b>3219</b>	5.000	95	170	55,6	124,0	154,0	2,1	111	2,0	107	158	117.600	163.200	1.500	2.200
<b>3220</b>	6.100	100	180	60,3	129,0	160,0	2,1	118	2,0	112	168	125.600	176.000	1.400	2.100
<b>3222</b>	8.800	110	200	69,8	143,0	178,0	2,1	132	2,0	122	188	152.000	216.000	1.300	1.900

Double row angular contact ball bearings  
Series 32



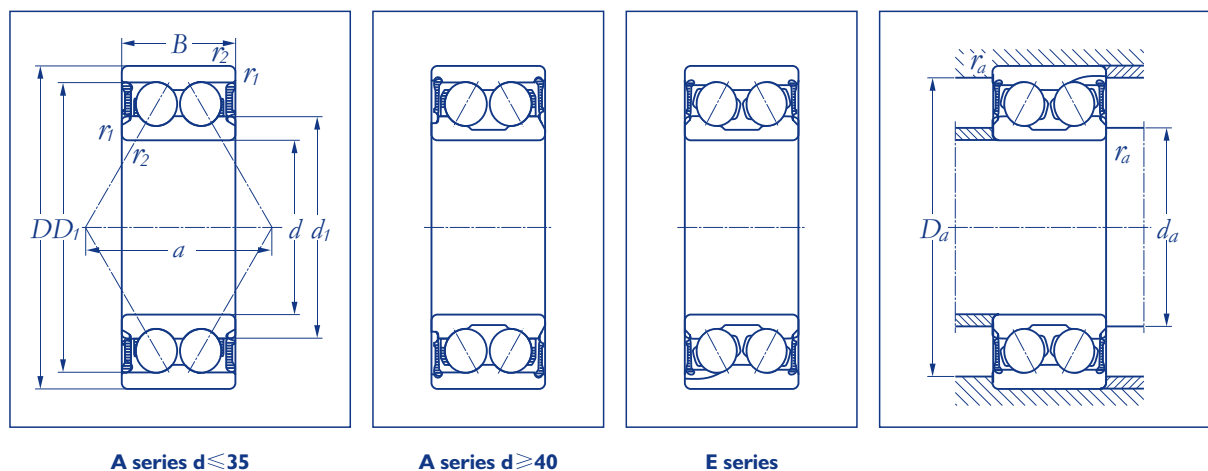
**A series  $d \leq 35$**

**A series  $d \geq 40$**

**E series**

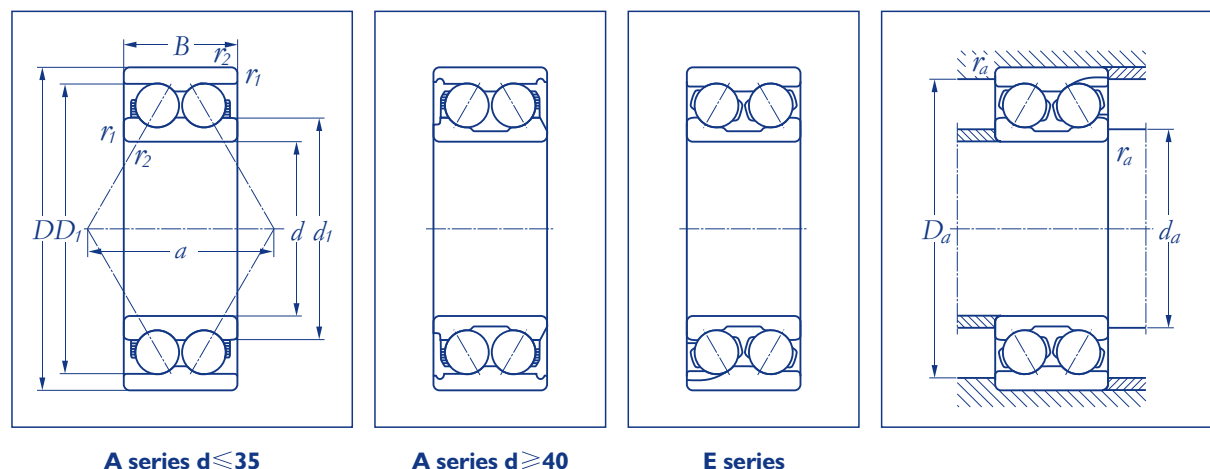
Designation	Weight (g)	Dimensions(mm)										Load ratings			
		d	D	B	$\underline{d}_1$	$\underline{D}_1$	$r_{1.2}$	a	$r_a$	$d_a$	$D_a$	$C_w$	$C_{ow}$	$F_{R \text{ perm}}$	$F_{or \text{ perm}}$
							min		max	min	max	(N)	(N)	(N)	(N)
<b>3202 A-ZZ</b>	51	10	30	14,0	17,7	25,0	0,6	18	0,6	15	-	5.900	3.400	11.200	
<b>3203 A-ZZ</b>	58	12	32	15,9	19,1	27,7	0,6	20	0,6	17	-	8.000	4.400	10.500	
<b>3204 A-ZZ</b>	66	15	35	15,9	22,1	30,7	0,6	22	0,6	20	-	8.900	5.400	8.400	
<b>3205 A-ZZ</b>	96	17	40	17,5	25,2	35,0	0,6	25	0,6	22	-	11.200	6.900	7.000	
<b>3206 A-ZZ</b>	160	20	47	20,6	29,6	40,9	1,0	30	0,6	26	-	14.800	9.600	6.300	
<b>3206 E-ZZ</b>	180	25	52	20,6	34,6	45,9	1,0	33	1,0	31	-	16.200	11.200	5.600	
<b>3207 A-ZZ</b>	290	30	62	23,8	41,4	55,2	1,0	38	1,0	36	-	22.400	16.000	4.900	
<b>3207 E-ZZ</b>	440	35	72	27,0	48,1	63,9	1,1	45	1,0	42	-	29.600	22.000	4.200	
<b>3208 A-ZZ</b>	580	40	80	30,2	47,8	72,1	1,1	49	1,0	47	47,5	35.900	26.800	3.900	
<b>3208 E-ZZ</b>	640	40	80	30,2	47,8	72,1	1,1	49	1,0	47	47,5	38.700	38.400	3.900	
<b>3209 A-ZZ</b>	630	45	85	30,2	52,8	77,1	1,1	52	1,0	52	78,0	38.000	30.400	3.500	
<b>3209 E-ZZ</b>	690	45	85	30,2	52,8	77,1	1,1	52	1,0	52	78,0	40.000	42.400	3.500	
<b>3210 A-ZZ</b>	660	50	90	30,2	57,8	82,1	1,1	56	1,0	57	83,0	38.000	31.200	3.300	
<b>3210 E-ZZ</b>	740	50	90	30,2	57,8	82,1	1,1	56	1,0	57	83,0	42.200	46.800	3.300	

Double row angular contact ball bearings  
Series 32

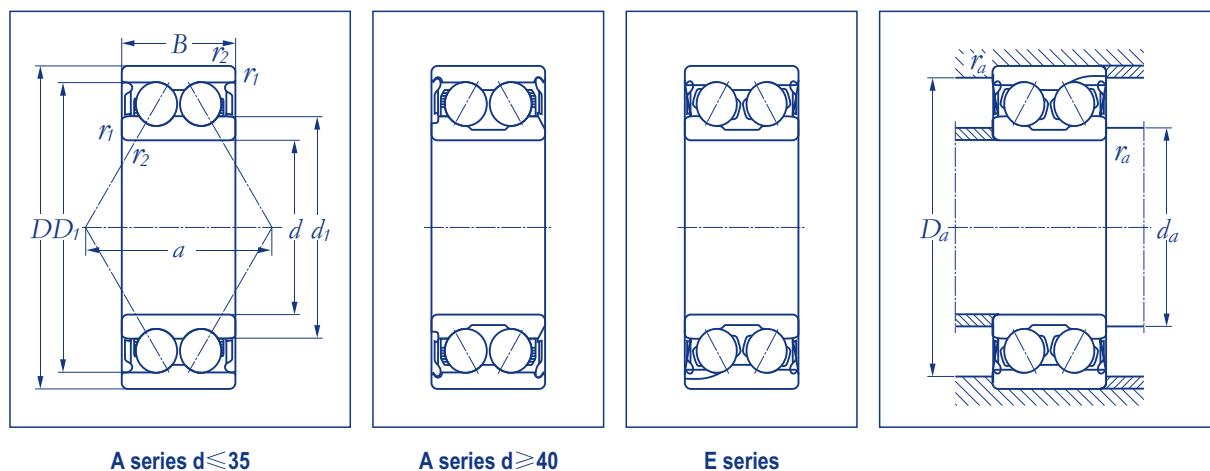


Designation	Weight (g)	Dimensions(mm)										Load ratings			
		d	D	B	$d_1$	$D_1$	$r_{1,2}$	a	$r_a$	$d_a$	$D_a$	$C_w$	$C_{ow}$	$F_r$ perm	$F_{or}$ perm
								min	max	min	max	(N)	(N)	(N)	(N)
<b>3200 A-2RS</b>	51	10	30	14,0	17,7	25,0	0,6	18	0,6	15	-	5.900	3.400	11.200	
<b>3201 A-2RS</b>	58	12	32	15,9	19,1	27,7	0,6	20	0,6	17	-	8.000	4.400	10.500	
<b>3202 A-2RS</b>	66	15	35	15,9	22,1	30,7	0,6	22	0,6	20	-	8.900	5.400	8.400	
<b>3203 A-2RS</b>	96	17	40	17,5	25,2	35,0	0,6	25	0,6	22	-	11.200	6.900	7.000	
<b>3204 A-2RS</b>	60	20	47	20,6	29,6	40,9	1,0	30	0,6	26	-	14.800	9.600	6.300	
<b>3205 A-2RS</b>	180	25	52	20,6	34,6	45,9	1,0	33	1,0	31	-	16.200	11.200	5.600	
<b>3206 A-2RS</b>	290	30	62	23,8	41,4	55,2	1,0	38	1,0	36	-	22.400	16.000	4.900	
<b>3207 A-2RS</b>	440	35	72	27,0	48,1	63,9	1,1	45	1,0	42	-	29.600	22.000	4.200	
<b>3208 A-2RS</b>	580	40	80	30,2	47,8	72,1	1,1	49	1,0	47	47,5	35.900	26.800	3.900	
<b>3208 E-2RS</b>	640	40	80	30,2	47,8	72,1	1,1	49	1,0	47	47,5	38.700	38.400	3.900	
<b>3209 A-2RS</b>	630	45	85	30,2	52,8	77,1	1,1	52	1,0	52	78,0	38.000	30.400	3.500	
<b>3209 E-2RS</b>	690	45	85	30,2	52,8	77,1	1,1	52	1,0	52	78,0	40.000	42.400	3.500	
<b>3210 A-2RS</b>	660	50	90	30,2	57,8	82,1	1,1	56	1,0	57	83,0	38.000	31.200	3.300	
<b>3210 E-2RS</b>	740	50	90	30,2	57,8	82,1	1,1	56	1,0	57	83,0	42.200	46.800	3.300	

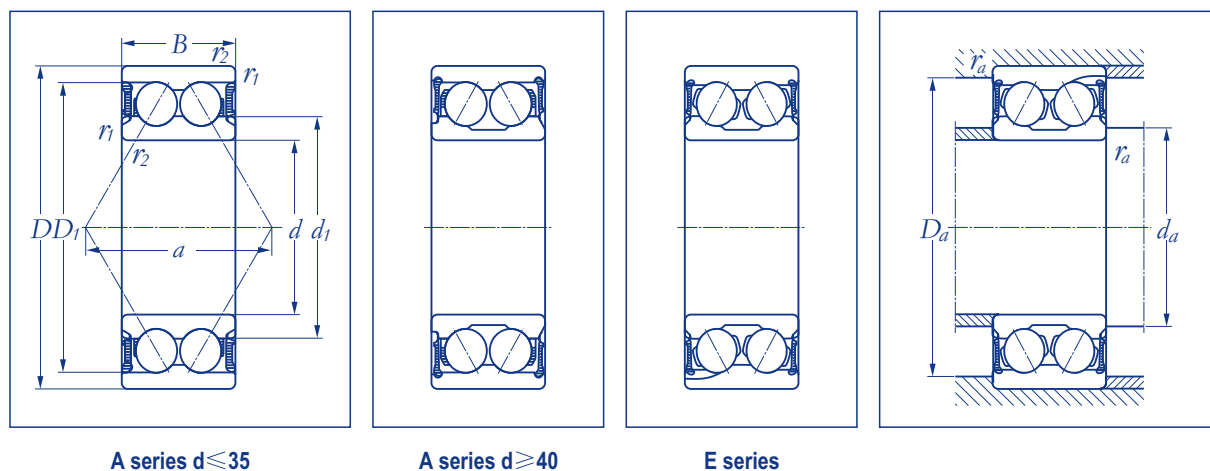


Double row angular contact ball bearings  
 Series **33**


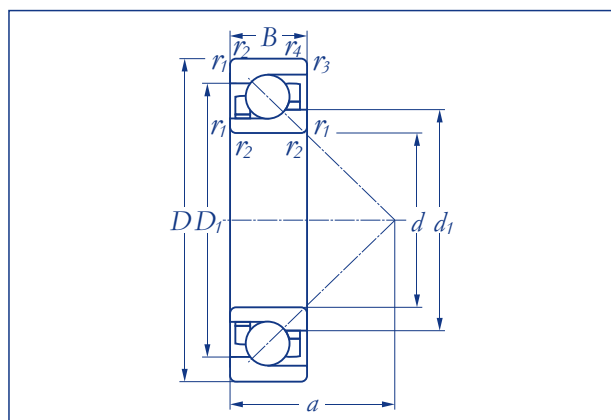
Designation	Weight (g)	Dimensions(mm)										Load ratings			
		d	D	B	$d_{1.2}$	$D_{1.2}$	$r_{1.2}$	a	$r_a$	$d_a$	$D_a$	$C_w$	$C_{ow}$	$F_r$ perm	$F_{or}$ perm
		min		max		min		max		min		max		(N)	(N)
<b>3302 A</b>	130	15	42	19,0	25,6	34,3	1,0	26	1,0	21	36	12.000	7.300	7.000	10.500
<b>3303 A</b>	180	17	47	22,2	27,6	38,8	1,0	29	1,0	23	41	16.900	10.000	6.600	9.800
<b>3304 A</b>	220	20	52	22,2	31,8	42,6	1,1	32	1,0	27	45	17.600	11.400	5.900	8.400
<b>3305 A</b>	350	25	62	25,4	38,4	51,4	1,1	38	1,0	32	55	24.900	16.600	5.200	7.000
<b>3306 A</b>	530	30	72	30,2	39,8	64,1	1,1	44	1,0	37	65	32.800	22.800	4.400	5.900
<b>3306 E</b>	590	30	72	30,2	39,8	64,1	1,1	44	1,0	37	65	36.500	34.000	4.400	5.900
<b>3307 A</b>	730	35	80	34,9	44,6	70,1	1,5	49	1,5	44	71	39.000	27.200	3.900	5.200
<b>3307 E</b>	790	35	80	34,9	44,6	70,1	1,5	49	1,5	44	71	43.100	40.800	3.900	5.200
<b>3308 A</b>	950	40	90	36,5	50,8	80,1	1,5	56	1,5	49	81	47.300	34.400	3.500	4.600
<b>3308 E</b>	1.050	40	90	36,5	50,8	80,1	1,5	56	1,5	49	81	52.800	51.200	3.500	4.600
<b>3309</b>	1.400	45	100	39,7	63,8	86,3	1,5	64	1,5	54	91	57.600	58.800	3.100	4.200
<b>3310</b>	1.950	50	110	44,4	73,3	97,0	2,0	73	2,0	60	100	70.400	77.200	2.800	3.700
<b>3311</b>	2.550	55	120	49,2	81,0	110,0	2,0	80	2,0	65	110	76.100	86.400	2.600	3.500
<b>3312</b>	3.250	60	130	54,0	87,2	115,0	2,1	86	2,0	72	118	89.600	101.600	2.300	3.100
<b>3313</b>	4.100	65	140	58,7	92,5	122,0	2,1	94	2,0	77	128	102.400	120.000	2.200	3.000
<b>3314</b>	5.050	70	150	63,5	99,2	131,0	2,1	101	2,0	82	138	117.600	138.400	1.900	2.600
<b>3315</b>	6.150	75	160	68,3	106,0	139,0	2,1	107	2,0	87	148	125.600	148.800	1.800	2.500
<b>3316</b>	6.950	80	170	68,3	113,0	148,0	2,1	112	2,0	92	158	140.800	169.600	1.600	2.300
<b>3317</b>	8.300	85	180	73,0	120,0	157,0	3,0	119	2,5	99	166	155.200	192.000	1.500	2.200
<b>3318</b>	9.250	90	190	73,0	128,0	169,0	3,0	125	2,5	104	176	176.000	228.000	1.400	2.100
<b>3319</b>	11.000	95	200	77,8	135,0	178,0	3,0	133	2,5	109	186	190.400	252.000	1.300	1.900
<b>3320</b>	13.500	100	215	82,6	142,0	187,0	3,0	139	2,5	114	201	204.000	284.000	1.200	1.800
<b>3322</b>	19.000	110	240	92,1	155,0	205,0	3,0	153	2,5	124	226	233.600	340.000	1.100	1.600

Double row angular contact ball bearings  
 Series **33**


Designation	Weight (g)	Dimensions(mm)										Load ratings			
		d	D	B	$d_1$	$D_1$	$r_{1,2}$	a	$r_a$	$d_a$	$D_a$	$C_w$	$C_{ow}$	$F_r$ perm	$F_{or}$ perm
						min		max				(N)	(N)	(N)	(N)
<b>3302 A-ZZ</b>	130	15	42	19,0	25,6	35,7	1,0	26	1,0	21	36	12.000	7.300	7.000	
<b>3303 A-ZZ</b>	180	17	47	22,2	27,6	40,2	1,0	29	1,0	23	41	16.900	10.000	6.600	
<b>3304 A-ZZ</b>	220	20	52	22,2	31,8	44,0	1,1	32	1,0	27	45	17.600	11.400	5.900	
<b>3305 A-ZZ</b>	350	25	62	25,4	38,4	53,4	1,1	38	1,0	32	55	24.900	16.600	5.200	
<b>3306 A-ZZ</b>	530	30	72	30,2	39,8	64,1	1,1	44	1,5	37	65	32.800	22.800	4.400	
<b>3306 E-ZZ</b>	590	30	72	30,2	39,8	64,1	1,1	44	1,5	37	65	36.500	34.000	4.400	
<b>3307 A-ZZ</b>	730	35	80	34,9	44,6	70,1	1,5	49	1,5	44	71	39.000	27.200	3.900	
<b>3307 E-ZZ</b>	790	35	80	34,9	44,6	70,1	1,5	49	1,5	44	71	43.100	40.800	3.900	
<b>3308 A-ZZ</b>	950	40	90	36,5	50,8	80,1	1,5	56	1,5	49	81	47.300	34.400	3.500	
<b>3308 E-ZZ</b>	1.050	40	90	36,5	50,8	80,1	1,5	56	1,5	49	81	52.800	51.200	3.500	

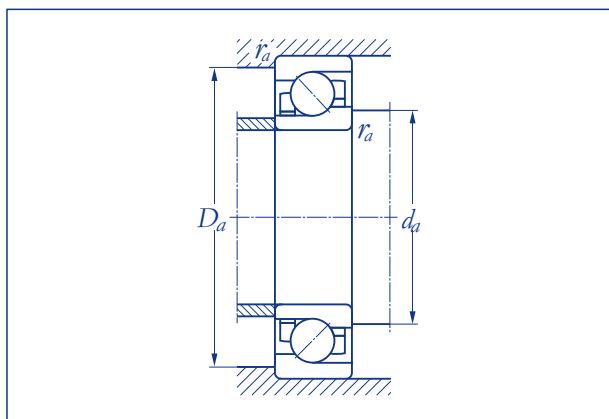
Double row angular contact ball bearings  
 Series **33**


Designation	Weight (g)	Dimensions(mm)										Load ratings				
		d	D	B	$d_1$	$D_1$	$r_{1,2}$	a	$r_a$		$d_a$	$D_a$	$C_w$ (N)	$C_{ow}$ (N)	$F_{r \text{ perm}}$ (N)	$F_{or \text{ perm}}$ (N)
									min	max						
<b>3302 A-2RS</b>	130	15	42	19,0	23,7	35,7	1,0	26	1,0	23,5	36	12.000	7.300	7.000		
<b>3303 A-2RS</b>	180	17	47	22,2	25,7	40,2	1,0	29	1,0	25,5	41	16.900	10.000	6.600		
<b>3304 A-2RS</b>	220	20	52	22,2	29,9	44,0	1,1	32	1,0	29,5	45	17.600	11.400	5.900		
<b>3305 A-2RS</b>	350	25	62	25,4	35,7	53,4	1,1	38	1,0	35,5	55	24.900	16.600	5.200		
<b>3306 A-2RS</b>	530	30	72	30,2	39,8	64,1	1,1	37	1,0	39,5	65	32.800	22.800	4.400		
<b>3306 E-2RS</b>	590	30	72	30,2	39,8	64,1	1,1	37	1,0	39,5	65	36.500	34.000	4.400		
<b>3307 A-2RS</b>	730	35	80	34,9	44,6	70,1	1,5	44	1,5	44,5	71	39.000	27.200	3.900		
<b>3307 E-2RS</b>	790	35	80	34,9	44,6	70,1	1,5	44	1,5	44,5	71	43.100	40.800	3.900		
<b>3308 A-2RS</b>	950	40	90	36,5	50,8	80,1	1,5	49	1,5	50,5	81	47.300	34.400	3.500		
<b>3308 E-2RS</b>	1.050	40	90	36,5	50,8	80,1	1,5	49	1,5	50,5	81	52.800	51.200	3.500		

Angular contact ball bearings  
 Series **72**

**72..**

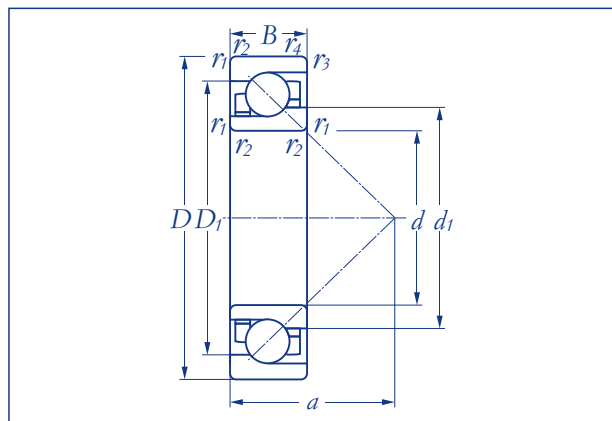
Designation	Weight (g)	Dimensions (mm)			Load ratings			
		d	D	B	C <sub>w</sub> (N)	C <sub>ow</sub> (N)	F <sub>r perm</sub> (N)	F <sub>or perm</sub> (N)
<b>7200 BE</b>	30	10	30	9	5.600	2.600	13.300	19.600
<b>7201 BE</b>	36	12	32	10	6.000	3.000	12.600	18.200
<b>7202 BE</b>	45	15	35	11	7.000	3.800	11.900	16.800
<b>7203 BE</b>	65	17	40	12	8.800	4.800	10.500	14.000
<b>7204 BE</b>	110	20	47	14	11.200	6.600	8.400	11.900
<b>7205 BE</b>	130	25	52	15	12.400	8.100	7.000	10.500
<b>7206 BE</b>	200	30	62	16	19.000	12.400	5.900	8.400
<b>7207 BE</b>	280	35	72	17	24.500	16.600	5.600	7.700
<b>7208 BE</b>	370	40	80	18	29.100	20.800	4.900	6.600
<b>7209 BE</b>	420	45	85	19	30.100	22.400	4.600	6.300
<b>7210 BE</b>	470	50	90	20	31.200	24.400	4.200	5.600
<b>7211 BE</b>	620	55	100	21	39.000	30.400	3.900	5.200
<b>7212 BE</b>	800	60	110	22	45.700	36.400	3.500	4.600
<b>7213 BE</b>	1.000	65	120	23	53.000	43.200	3.100	4.200
<b>7214 BE</b>	1.100	70	125	24	57.200	48.000	3.000	3.900
<b>7215 BE</b>	1.200	75	130	25	58.200	51.200	3.000	3.900
<b>7216 BE</b>	1.450	80	140	26	66.500	58.800	2.600	3.500
<b>7217 BE</b>	1.850	85	150	28	76.400	66.400	2.500	3.300
<b>7218 BE</b>	2.300	90	160	30	86.400	77.200	2.300	3.100
<b>7219 BE</b>	2.700	95	170	32	99.200	86.400	2.200	3.000
<b>7220 BE</b>	3.300	100	180	34	108.000	97.600	2.100	2.800
<b>7221 BE</b>	3.950	105	190	36	118.400	109.600	1.900	2.600
<b>7222 BE</b>	4.600	110	200	38	130.400	122.400	1.800	2.500
<b>7224 B</b>	6.100	120	215	40	132.000	130.400	1.500	2.200
<b>7226 B</b>	6.950	130	230	40	148.800	154.400	1.300	1.900
<b>7228 B</b>	8.850	140	250	42	145.600	156.800	1.200	1.800

Angular contact ball bearings  
Series **72**



Designation	Dimensions(mm)							
	d <sub>1</sub>	D <sub>1</sub>	r <sub>1.2</sub>	r <sub>3.4</sub>	a	d <sub>a</sub>	D <sub>a</sub>	r <sub>a</sub>
			min	min		min	max	max
7200 BE	18,2	23,1	0,6	0,3	13	15	25	0,6
7201 BE	20,2	25,1	0,6	0,3	14	17	27	0,6
7202 BE	22,7	28,0	0,6	0,3	16	20	30	0,6
7203 BE	25,9	31,9	0,6	0,6	18	22	35	0,6
7204 BE	30,7	37,2	1,0	0,6	21	26	41	1,0
7205 BE	35,7	42,2	1,0	0,6	24	31	46	1,0
7206 BE	42,3	50,8	1,0	0,6	27	36	56	1,0
7207 BE	49,3	59,0	1,1	0,6	31	42	65	1,0
7208 BE	55,9	66,3	1,1	0,6	34	47	73	1,0
7209 BE	60,5	70,9	1,1	0,6	37	52	78	1,0
7210 BE	65,5	75,9	1,1	0,6	39	57	83	1,0
7211 BE	72,4	84,1	1,5	1,0	43	64	91	1,5
7212 BE	79,3	92,5	1,5	1,0	47	69	101	1,5
7213 BE	86,3	101,0	1,5	1,0	50	74	111	1,5
7214 BE	91,3	106,0	1,5	1,0	53	79	116	1,5
7215 BE	96,5	111,0	1,5	1,0	56	84	121	1,5
7216 BE	103,0	119,0	2,0	1,0	59	90	130	2,0
7217 BE	110,0	128,0	2,0	1,0	63	95	140	2,0
7218 BE	117,0	136,0	2,0	1,0	67	100	150	2,0
7219 BE	124,0	144,0	2,1	1,1	72	107	158	2,0
7220 BE	131,0	152,0	2,1	1,1	76	112	168	2,0
7221 BE	138,0	160,0	2,1	1,1	80	117	178	2,0
7222 BE	145,0	169,0	2,1	1,1	84	122	188	2,0
7224 B	157,0	180,0	2,1	1,1	90	132	203	2,0
7226 B	169,0	193,0	3,0	1,1	96	144	216	2,5
7228 B	184,0	208,0	3,0	1,1	103	154	236	2,5

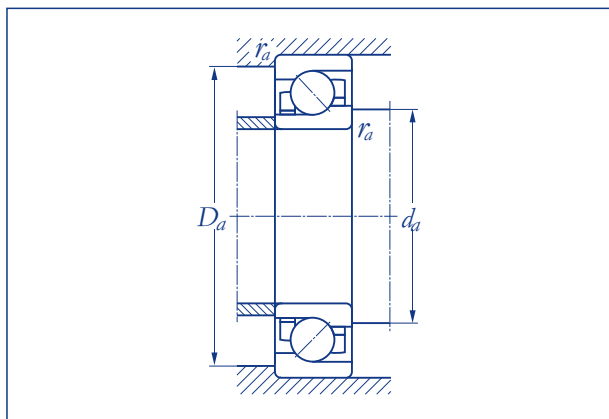
Angular contact ball bearings  
Series **72**



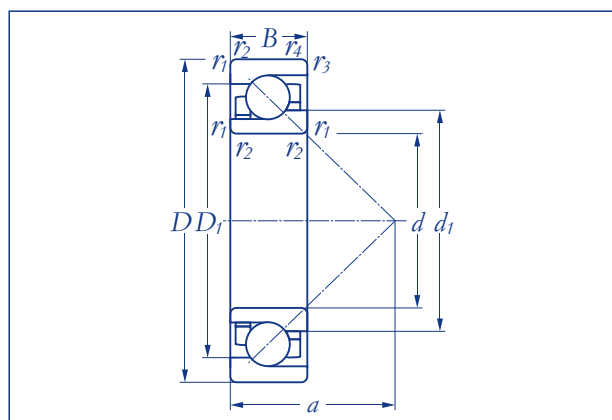
72..

Designation	Weight (g)	Dimensions (mm)			Load ratings			
		d	D	B	C <sub>w</sub>	C <sub>ow</sub>	F <sub>r perm</sub>	F <sub>or perm</sub>
					(N)	(N)	(N)	(N)
<b>7230 BCB</b>	11.500	150	270	45	156.000	179.200	1.100	1.600
<b>7232 BCB</b>	14.000	160	290	48	159.200	188.800	1.100	1.500
<b>7234 BCB</b>	17.500	170	310	52	176.800	216.000	1.100	1.500
<b>7236 BCB</b>	18.000	180	320	52	200.800	256.000	1.000	1.400
<b>7238 BCB</b>	22.000	190	340	55	220.800	284.000	900	1.300
<b>7244 BCB</b>	37.000	220	400	65	255.200	372.000	700	1.100
<b>7248 BCB</b>	49.000	240	440	72	291.200	432.000	700	1.000

Angular contact ball bearings  
Series **72**



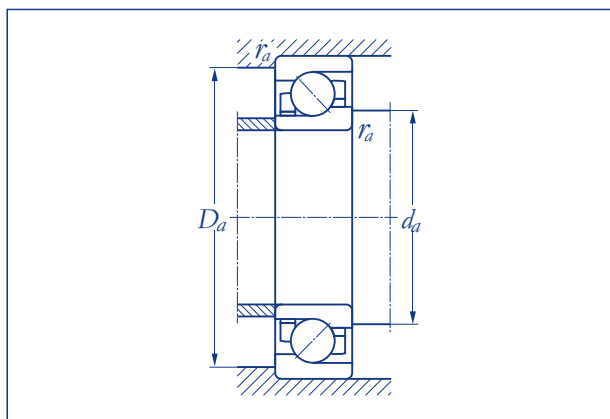
Designation	Dimensions(mm)							
	$d_1$	$D_1$	$r_{1,2}$ min	$r_{3,4}$ min	a	$d_a$ min	$D_a$ max	$r_a$ max
<b>7230 BCB</b>	199	223	3	1,1	111	164	256	2,5
<b>7232 BCB</b>	211	241	3	1,1	118	174	276	2,5
<b>7234 BCB</b>	224	258	4	1,5	127	188	292	3,0
<b>7236 BCB</b>	236	266	4	1,5	131	198	302	3,0
<b>7238 BCB</b>	251	282	4	1,5	139	208	322	3,0
<b>7244 BCB</b>	294	328	4	1,5	164	238	382	3,0
<b>7248 BCB</b>	322	361	4	1,5	180	258	422	3,0

Angular contact ball bearings  
 Series **73**

**73..**

Designation	Weight (g)	Dimensions (mm)			Load ratings			
		d	D	B	C <sub>w</sub> (N)	C <sub>ow</sub> (N)	F <sub>r perm</sub> (N)	F <sub>or perm</sub> (N)
<b>7301 BE</b>	60	12	37	12	8.400	4.000	11.900	16.800
<b>7302 BE</b>	80	15	42	13	10.400	5.300	10.500	14.000
<b>7303 BE</b>	110	17	47	14	12.700	6.600	9.100	12.600
<b>7304 BE</b>	140	20	52	15	15.200	8.300	7.700	11.200
<b>7305 BE</b>	230	25	62	17	20.800	12.400	6.300	9.100
<b>7306 BE</b>	340	30	72	19	27.600	16.900	5.600	7.700
<b>7307 BE</b>	450	35	80	21	31.200	19.600	5.200	7.000
<b>7308 BE</b>	630	40	90	23	39.500	268.000	4.600	6.300
<b>7309 BE</b>	850	45	100	25	48.400	33.200	4.200	5.600
<b>7310 BE</b>	1.100	50	110	27	59.200	40.800	3.700	4.900
<b>7311 BE</b>	1.400	66	120	29	68.100	48.000	3.300	4.400
<b>7312 BE</b>	1.750	60	130	31	76.400	55.600	3.100	4.200
<b>7313 BE</b>	2.150	65	140	33	86.400	64.000	3.000	3.900
<b>7314 BE</b>	2.650	70	150	35	95.200	72.000	2.600	3.500
<b>7315 BE</b>	3.200	75	160	37	106.400	84.800	2.500	3.300
<b>7316 BE</b>	3.800	80	170	39	114.400	94.400	2.300	3.100
<b>7317 BE</b>	4.450	85	180	41	122.400	105.600	2.200	3.000
<b>7318 BE</b>	5.200	90	190	43	132.000	116.800	2.100	2.800
<b>7319 BE</b>	6.050	95	200	45	142.400	130.400	1.900	2.600
<b>7320 BE</b>	7.500	100	215	47	162.400	152.000	1.800	2.500
<b>7321 BE</b>	8.550	105	225	49	169.600	166.400	1.600	2.300
<b>7322 BE</b>	10.000	110	240	50	180.000	179.200	1.500	2.200
<b>7324 B</b>	14.500	120	260	55	190.400	200.000	1.300	1.900
<b>7326 B</b>	1.750	130	280	58	200.800	216.000	1.200	1.800
<b>7328 BCB</b>	21.500	140	300	62	220.800	248.000	1.100	1.600
<b>7330 BCB</b>	26.000	150	320	65	241.600	292.000	1.100	1.500

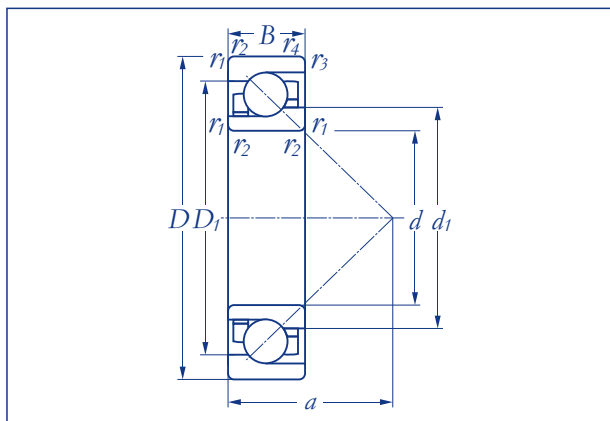


Angular contact ball bearings  
Series **73**



Designation	Dimensions(mm)							
	d <sub>1</sub>	D <sub>1</sub>	r <sub>1.2</sub>	r <sub>3.4</sub>	a	d <sub>a</sub>	D <sub>a</sub>	r <sub>a</sub>
			min	min		min	max	max
7301 BE	21,7	28,3	1,0	0,6	16	18	31	1,0
7302 BE	25,9	32,9	1,0	0,6	19	21	36	1,0
7303 BE	28,6	36,5	1,0	0,6	20	23	41	1,0
7304 BE	32,9	41,0	1,1	0,6	23	27	45	1,0
7305 BE	39,4	48,9	1,1	0,6	27	32	55	1,0
7306 BE	46,2	57,3	1,1	0,6	31	37	65	1,0
7307 BE	52,4	64,2	1,5	1,0	35	44	71	1,5
7308 BE	59,4	72,4	1,5	1,0	39	49	81	1,5
7309 BE	66,3	80,7	1,5	1,0	43	54	91	1,5
7310 BE	73,5	89,7	2,0	1,0	47	60	100	2,0
7311 BE	80,0	97,6	2,0	1,0	51	65	110	2,0
7312 BE	87,0	106,0	2,1	1,1	55	72	118	2,0
7313 BE	93,8	114,0	2,1	1,1	60	77	128	2,0
7314 BE	100,0	123,0	2,1	1,1	64	82	138	2,0
7315 BE	108,0	130,0	2,1	1,1	68	87	148	2,0
7316 BE	114,0	139,0	2,1	1,1	72	92	158	2,0
7317 BE	121,0	147,0	3,0	1,1	76	99	166	2,5
7318 BE	128,0	155,0	3,0	1,1	80	104	176	2,5
7319 BE	135,0	163,0	3,0	1,1	84	109	186	2,5
7320 BE	144,0	176,0	3,0	1,1	90	114	201	2,5
7321 BE	151,0	183,0	3,0	1,1	94	119	211	2,5
7322 BE	160,0	195,0	3,0	1,1	99	124	226	2,5
7324 B	175,0	210,0	3,0	1,1	107	134	246	2,5
7326 B	189,0	227,0	4,0	1,5	115	148	262	3,0
7328 BCB	203,0	243,0	4,0	1,5	123	158	282	3,0
7330 BCB	218,0	258,0	4,0	1,5	131	168	302	3,0

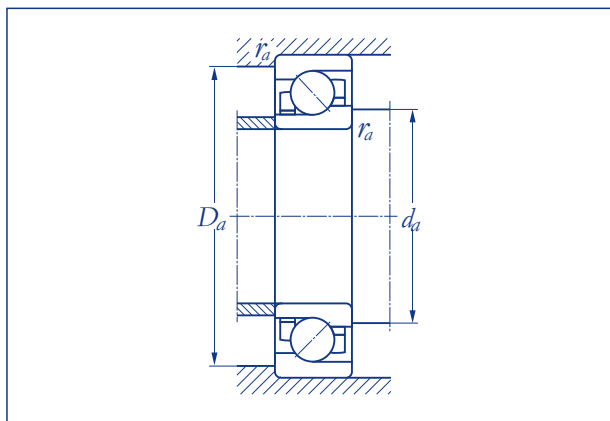
Angular contact ball bearings  
Series 73



73..

Designation	Weight (g)	Dimensions (mm)			Load ratings			
		d	D	B	$C_w$	$C_{ow}$	$F_{r \text{ perm}}$	$F_{or \text{ perm}}$
					(N)	(N)	(N)	(N)
7334 BCB	36.000	170	360	72	286.400	364.000	900	1.300
7336 BCB	42.000	180	380	75	296.800	392.000	900	1.200
7338 BCB	48.500	190	400	78	328.000	448.000	800	1.100

Angular contact ball bearings  
Series 73



Designation	Dimensions(mm)							
	$d_1$	$D_1$	$r_{1,2}$ min	$r_{3,4}$ min	a	$d_a$ min	$D_a$ max	$r_a$ max
7334 BCB	246	292	4	1,5	147	188	342	3
7336 BCB	260	308	4	2,0	156	198	362	3
7338 BCB	275	323	5	2,0	164	212	378	4



## 1. Materials for SLB Bearing's Outer ring, Inner ring Rolling Elements

The most common through-hardening steel used for rolling bearing of SLB used is a carbonchromium steel containing approximately 1% carbon and 1.5% chromium. Below table 1.1 which shown GCr15--the main material that **SLB** used for producing our ball bearings and its in interchangeable material in other nations.

Table 1.1

Name	Standard	Chemical Composition (%)					
		C	Mn	Si	Cr	S ≤	P ≤
G Cr15	SLB	0.95~1.05	0.20~0.40	0.15~0.35	1.30~1.65	0.020	0.027
SUJ 2	JIS G 4805	0.95~1.10	0.50 ≤	0.15~0.35	1.30~1.60	0.025	0.025
100Cr6	DIN	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -
E52100	AISI	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -
ISO	683/XVII	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -
SKF	-	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -	- ditto -

Note: **SLB** supplies all general bearings with material of G Cr15 as normal products, unless otherwise specified by customer for special usage before ordering. i.e. Pure carbon or Stainless Steel etc.

## 2. Material for Bearing Retainers

The retainer is demanded to bear hitting load and have the lowest friction with the rolling elements when **SLB** bearing is working. So:

2.1 For the bearing with contact angle of 40°C, low carbon steel pressed cage( Please refer to Table 2.1) or Nylon cage ( Indicated by suffix NT1) is adopted. Nylon cage could be applied in most conditions, while it could not be used in a working temperature higher than 120°C.

Table 2.1

Name	Standard	Chemical Composition (%)				
		C	Mn	Si	S ≤	P ≤
10F	Chinese GB	0.05~0.11	0.25~0.50	0.07 ≤	0.035	0.035
SPCC	JIS G 3141	0.12 ≤	0.50 ≤	-	0.045	0.040

2.2 For those bearings with its outer diameter large than 250mm, the brass cage is adopted with suffix M for indication.

## 3. Precision Class for the bearings

3.1 The accuracy of a bearing are both dimensional and running accuracy of the bearing It has been standardised internationally. Here we give out a interchangeable precision class standard table which is equal to **SLB** ( Table 3,1 refers) for your reference.



Table 3.1

Selection	Classification standard						
	P0		P6		P5	P4	P2
ISO	Class 6X		Class 6		Class 5	Class 4	Class 2
Japan Industrial	Class 0		Class 6		Class 5	Class 4	Class 2
Germany	P0		P6		P5	P4	P2
United States	ABEC-1		ABEC-3		ABEC-5	ABEC-7	ABEC-9

Note: **SLB** could supply angular contact ball bearings with different tolerance classes. For general usage, the bearings could be made in P0, P6 and P5. While for those mounted in pairs using in spindles of a machine tool P4 or P2 be adopted.

3.2) Relatively, as specified value of accuracy, **SLB** gives out the normal tolerances for radial bearings exceptional for taper roller bearings. ( Tables 3,2 and 3,3 refers )

**Table 3.2** Normal Tolerances for Radial Bearings  
Inner ring(Unit: μm)

Nominal bore dimension d(mm)		Deviation of the mean bore diameter from the nominal $\Delta d_{mp}$										Deviation of the bore diameter V <sub>dp</sub> Diameter series 9				
		P0		P6		P5		P4		P2		P0	P6	P5	P4	P2
over	incl.	high	low	high	low	high	low	high	low	high	low	high	low	high	low	max.
0.6	2.5	0	-8	0	-7	0	-5	0	-4	0	-2.5	10	9	5	4	2.5
2.5	10	0	-8	0	-7	0	-5	0	-4	0	-2.5	10	9	5	4	2.5
10	18	0	-8	0	-7	0	-5	0	-4	0	-2.5	10	9	5	4	2.5
18	30	0	-10	0	-8	0	-6	0	-5	0	-2.5	13	10	6	5	2.5
30	50	0	-12	0	-10	0	-8	0	-6	0	-2.5	15	13	8	6	2.5
50	80	0	-15	0	-12	0	-9	0	-7	0	-4.0	19	15	9	7	4.0
80	120	0	-20	0	-15	0	-10	0	-8	0	-5.0	25	19	10	8	5.0
120	150	0	-25	0	-18	0	-13	0	-10	0	-7.0	31	23	13	10	7.0
150	180	0	-25	0	-18	0	-13	0	-10	0	-7.0	31	23	13	10	7.0
180	250	0	-30	0	-22	0	-15	0	-12	0	-8.0	38	28	15	12	8.0
250	315	1	-35	0	-25	0	-18	—	—	—	—	44	31	18	—	—
315	400	0	-40	0	-30	0	-23	—	—	—	—	50	38	23	—	—



Deviation of the bore diameter										Mean deviation of the bore diameter					Radial run out				
Vdp										Vdmp					Kia				
Diameter series 0, 1					Diameter series 2, 3, 4														
P0	P6	P5	P4	P2	P0	P6	P5	P4	P2	P0	P6	P5	P4	P2	P0	P6	P5	P4	P2
max.					max.					max.					max.				
8	7	4	3	2.5	6	5	4	3	2.5	6	5	3	2.0	1.5	10	5	4	2.5	1.5
8	7	4	3	2.5	6	5	4	3	2.5	6	5	3	2.0	1.5	10	6	4	2.5	1.5
8	7	4	3	2.5	6	5	4	3	2.5	6	5	3	2.0	1.5	10	7	4	2.5	1.5
10	8	5	4	2.5	8	6	5	4	2.5	8	6	3	2.5	1.5	13	8	4	3.0	2.5
12	10	6	5	2.5	9	8	6	5	2.5	9	8	4	3.0	1.5	15	10	5	4.0	2.5
19	15	7	6	4.0	11	9	7	6	4.0	11	9	5	3.5	2.0	20	10	5	4.0	2.5
25	19	8	6	5.0	15	11	8	6	5.0	15	11	5	4.0	2.5	25	13	6	5.0	2.5
31	23	10	8	7.0	19	14	10	8	7.0	19	14	7	5.0	3.5	30	18	8	6.0	2.5
31	23	10	8	7.0	19	14	10	8	7.0	19	14	7	5.0	3.5	30	18	8	6.0	5.0
38	28	12	9	8.0	23	17	12	9	8.0	23	17	8	6.0	4.0	40	20	10	8.0	5.0
44	31	14	—	—	26	19	14	—	—	26	19	9	—	—	50	25	13	—	—
50	38	18	—	—	30	23	18	—	—	30	23	12	—	—	60	30	15	—	—

Side run out			Axial run out			Deviation of the width						Parallel deviation								
Sd			Sia			$\Delta Bs$						between end surfaces								
						For single bearing			For pair bearing			VBs								
P5	P4	P2	P5	P4	P2	P0,	P6	P5, P4	P0,	P6	P5, P4	P0	P6	P5	P4	P2				
max.			max.			high	low	high	high	low	high	max.								
7	3	1.5	7	3	1.5	0	-40	0	-40	0	-40	—	—	0	-7	12	12	5	2.5	1.5
7	3	1.5	7	3	1.5	0	-120	0	-40	0	-40	0	-8	0	-7	15	15	5	2.5	1.5
7	3	1.5	7	3	1.5	0	-120	0	-80	0	-80	0	-8	0	-7	20	20	5	2.5	1.5
8	4	1.5	8	4	2.5	0	-120	0	-120	0	-120	0	-10	0	-8	20	20	5	2.5	1.5
8	4	1.5	8	4	2.5	0	-120	0	-120	0	-120	0	-12	0	-10	20	20	5	3.0	1.5
8	5	1.5	8	5	2.5	0	-150	0	-150	0	-150	0	-15	0	-12	25	25	5	4.0	1.5
9	5	2.5	9	5	2.5	0	-200	0	-200	0	-200	0	-20	0	-15	25	25	7	4.0	2.5
10	6	2.5	10	7	2.5	0	-250	0	-250	0	-250	0	-25	0	-18	30	30	8	5.0	2.5
10	6	4.0	10	7	5.0	0	-250	0	-250	0	-300	0	-25	0	-18	30	30	8	5.0	4.0
11	7	5.0	13	8	5.0	0	-300	0	-300	0	-350	0	-30	0	-22	30	30	10	6.0	5.0
13	—	—	15	—	—	0	-350	0	-350	—	—	1	-35	0	-25	35	35	13	—	—
15	—	—	20	—	—	0	-400	0	-400	—	—	0	-40	0	-30	40	40	15	—	—

Note: Values for larger sizes on request Table 3,3 Normal Tolerances for Radial Bearings



Out ring (Unit: μm)

Nominal bore dimension D(mm)		Deviation of the mean bore diameter from the nominal ΔDmp										Deviation of the outer ring diameter (Open type) VDp				
over	incl.	P0		P6		P5		P4		P2		P0	P6	P5	P4	P2
		high	low	high	low	high	low	high	low	high	low					
2.5	6	0	-8	0	-7	0	-5	0	-4	0	-2.5	10	9	5	4	2.5
6	18	0	-8	0	-7	0	-5	0	-4	0	-2.5	10	9	5	4	2.5
18	30	0	-9	0	-8	0	-6	0	-5	0	-4.0	12	10	6	5	4.0
30	50	0	-11	0	-7	0	-6	0	-6	0	-4.0	14	11	7	6	4.0
50	80	0	-13	0	-9	0	-7	0	-7	0	-4.0	16	14	9	7	4.0
80	120	0	-15	0	-10	0	-8	0	-8	0	-5.0	19	16	10	8	5.0
120	150	0	-18	0	-15	0	-11	0	-9	0	-5.0	23	19	11	9	5.0
150	180	0	-25	0	-18	0	-13	0	-10	0	-7.0	31	23	13	10	7.0
180	250	0	-30	0	-20	0	-15	0	-11	0	-8.0	38	25	15	11	8.0
250	315	0	-35	0	-25	0	-18	0	-13	0	-8.0	44	31	18	13	8.0
315	400	1	-40	0	-28	0	-20	0	-15	0	-10.0	50	35	20	15	10.0
400	500	0	-45	0	-33	0	-23	—	—	—	—	56	41	23	—	—

Deviation of the bore diameter (Open type) VDp										Deviation of the outer ring diameter (with seals & shields)VDp		Mean deviation of the out ring diameter VDmp				
Diameter series 0,1					Diameter series 2,3,4					2,3,4	0,1,2,3,4	P0	P6	P5	P4	P2
P0	P6	P5	P4	P2	P0	P6	P5	P4	P2	P0	P6	P0	P6	P5	P4	P2
max.										max.		max.				
8	7	4	3	2.5	6	5	4	3	2.5	10	9	6	5	3	2.0	1.5
8	7	4	3	2.5	6	5	4	3	2.5	10	9	6	5	3	2.0	1.5
9	8	5	4	4.0	7	6	5	4	4.0	12	10	7	6	3	2.5	2.0
11	9	5	5	4.0	8	7	5	5	4.0	16	13	8	7	4	3.0	2.0
13	11	7	5	4.0	10	8	7	5	4.0	20	16	10	8	5	3.5	2.0
19	16	8	6	5.0	11	10	8	6	5.0	26	20	11	10	5	4.0	2.5
23	19	8	7	5.0	14	11	8	7	5.0	30	25	14	11	6	5.0	2.5
31	23	10	8	7.0	19	14	10	8	7.0	38	30	19	14	7	5.0	3.5
38	25	11	8	8.0	23	15	11	8	8.0	—	—	23	15	8	6.0	4.0
44	31	14	10	8.0	26	19	14	10	8.0	—	—	26	19	9	7.0	4.0
50	35	15	11	10.0	30	21	15	11	10.0	—	—	30	21	10	8.0	5.0
56	41	17	—	—	34	25	17	—	—	—	—	34	25	12	—	—



Radial run out Kea					Side run out SD			Axial run out Sea			Deviation of the width $\Delta Cs$  For all class	Parallel deviation between end surfaces VCs				
P0	P6	P5	P4	P2	P5	P4	P2	P5	P4	P2		P0	P6	P5	P4	P2
max.					max.			max.			max.					
15	8	5	3	1.5	8	4	1.5	8	5	1.5	With "d" of the same model bearing, and refer to relative value of $\Delta Bs$	With "d" of the same model bearing, and refer to relative value of Vcs	5	2.5	1.5	
15	8	5	3	1.5	8	4	1.5	8	5	1.5			5	2.5	1.5	
15	9	6	4	2.5	8	4	1.5	8	5	2.5			5	2.5	1.5	
20	10	7	5	2.5	8	4	1.5	8	5	2.5			5	2.5	1.5	
25	13	8	5	4.0	8	4	1.5	10	5	4.0			6	3.0	1.5	
35	18	10	6	5.0	9	5	2.5	11	6	5.0			8	4.0	2.5	
40	20	11	7	5.0	10	5	2.5	13	7	5.0			8	5.0	2.5	
45	23	13	8	5.0	10	5	2.5	14	8	5.0			8	5.0	2.5	
50	25	15	10	7.0	11	7	4.0	15	10	7.0			10	7.0	4.0	
60	30	18	11	7.0	13	8	5.0	18	10	7.0			11	7.0	5.0	
70	35	20	13	8.0	13	10	7.0	20	13	8.0			13	8.0	7.0	
80	40	23	—	—	15	—	—	23	—	—			15	—	—	

#### 4. Internal Clearance

4.1) Internal clearance of **SLB** angular contact ball bearings (Single row) is depend on its contact angle, which is ensured during production process.