

6. 60° Super Precision Angular Contact Thrust Ball Bearings

IBC angular contact thrust ball bearings were developed to meet the demands of high thrust load for ball screw support application.

The large contact angle of 60° allows high thrust load with high stiffness. The radial load should be no more than 90 % of the preload.

Single row angular contact bearings give rise to an identical axial load, which must be counteracted. Therefore, bearings of this design must be arranged so that they can be adjusted against a second bearing. The bearings are primarily supplied as sets of 2 or 4 bearings.

Angular contact thrust ball bearings are manufactured for universal matching and can be mounted in any arrangement. Metric sizes are packed in O-arrangement (back to back) inch sizes are packed in X-arrangement (face to face).

Dimension

The boundary dimensions of IBC angular contact thrust ball bearings are conform to ISO 15-1981 or DIN 616 series 02 and 03. The major BS-series have a uniform width of 15 mm or 20 mm. This design allows a modular system and variation of ball screw shaft diameter without changing O.D. or width. Bearings in inch dimensions are also available.

Precision grades

IBC angular contact thrust ball bearings are manufactured as standard to precision grade class P4A. Axial runout S_d and S_{ia} is restricted to P2A.

Stiffness and preload

IBC angular contact thrust ball bearings are manufactured in three preload classes. As standard in class M (Medium), L (Light) and H (Heavy) are also available. For preloading the bearings we recommend precision lock nuts of the series MMR, MBA, MMRS. MMRS lock nuts are part of the modular sealing system.

Cages

The one piece, glass fibre, reinforced polyamide moulded cage is guided by the balls. As standard it is not designated. The cage execution allows a temperature range of -30° to 120°C.

Lubrication

The bearings are 50 % lubricated with IBC BearLub GH 62 as standard. The grease should not be washed out before mounting bearings because of the difficulty to grease the bearings. Bearings with preservative oil can be supplied on request.

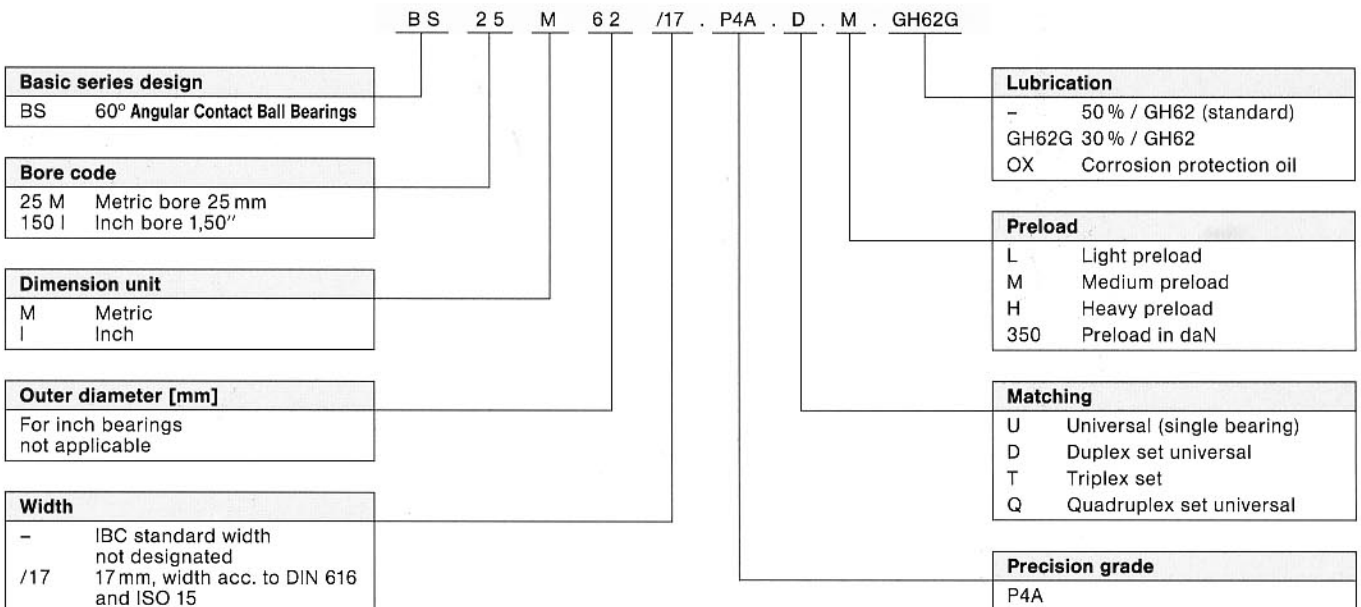
Packing

Bearings are packed as single universal bearing or in multiple sets.

Accessories

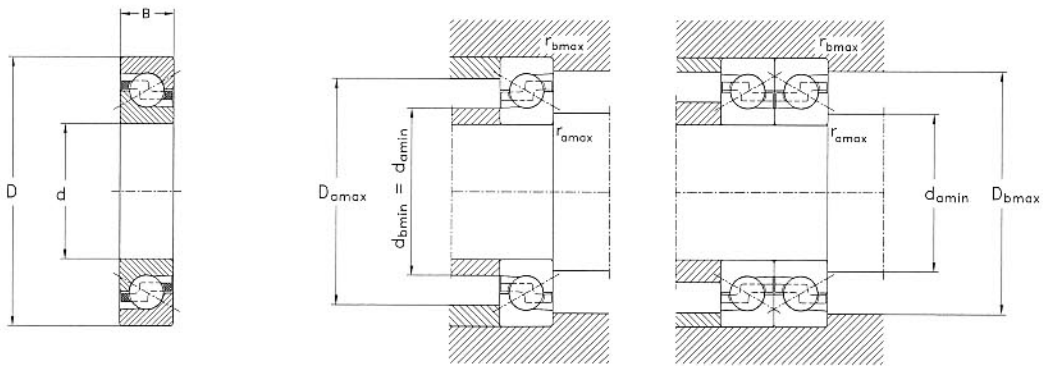
IBC labyrinth seals and IBC precision locknuts.

6.1 Designation of IBC 60° Super Precision Angular Contact Ball Bearings



6.2 Super Precision 60° Angular Contact Thrust Ball Bearings metric, inch

BS..

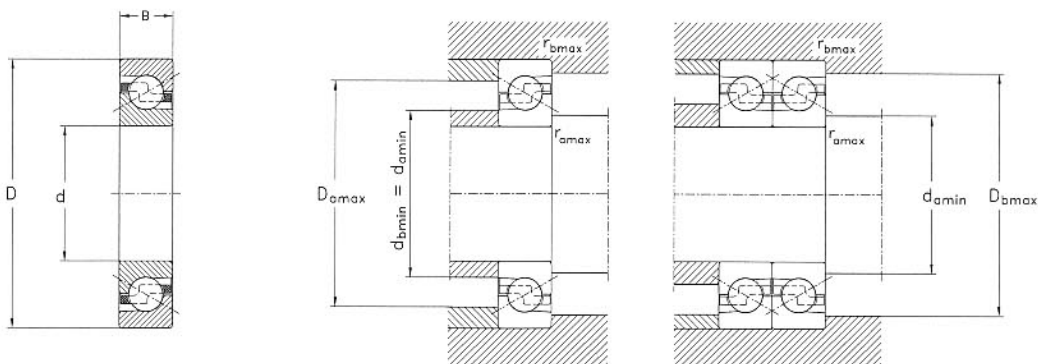


Primary dimensions			Basic bearing number	Abutment and fillet dimensions					Basic load ratings		Weight kg
d	D mm	B		r _{amax}	r _{bmax}	d _{amin} mm	D _{amax}	D _{bmax}	C _a N	C _{oa}	
17	47	15	BS17M47	1,0	0,6	26	38	40	25000	32100	0,13
20	47	14	BS20M47/14*	1,0	0,6	28	38	40	25000	32100	0,14
20	47	15	BS20M47	1,0	0,6	28	38	40	25000	32100	0,14
25	52	15	BS25M52	1,0	0,6	34	44	45	26500	37000	0,22
25	62	15	BS25M62	1,0	0,6	34	52	54	29200	42800	0,27
25	62	17	BS25M62/17*	1,0	0,6	34	52	54	29200	42800	0,27
30	62	15	BS30M62	1,0	0,6	38	52	54	29200	42800	0,25
30	62	16	BS30M62/16*	1,0	0,6	38	52	54	29200	42800	0,25
30	72	15	BS30M72	1,0	0,6	39	63	64	35600	55000	0,32
30	72	19	BS30M72/19*	1,0	0,6	39	63	64	35600	55000	0,32
35	72	15	BS35M72	1,0	0,6	43	63	64	35600	55000	0,29
35	72	17	BS35M72/17*	1,0	0,6	43	63	64	35600	55000	0,34
35	100	20	BS35M100	1,0	0,6	47	86	89	70500	116000	1,05
40	72	15	BS40M72	1,0	0,6	48	63	64	35600	55000	0,28
40	90	20	BS40M90	1,0	0,6	49	80	82	59000	90000	0,64
40	90	23	BS40M90/23*	1,0	0,6	49	80	82	59000	90000	0,72
40	100	20	BS40M100	1,0	0,6	49	86	89	70500	116000	1,00
45	75	15	BS45M75	1,0	0,6	53	65	67	37900	61400	0,29
45	100	20	BS45M100	1,0	0,6	54	86	89	70500	116000	0,95
50	100	20	BS50M100	1,0	0,6	59	86	89	70500	116000	0,89
55	90	15	BS55M90	1,0	0,6	64	78	81	40700	74400	0,42
55	100	20	BS55M100	1,0	0,6	65	86	89	70500	116000	0,71
55	120	20	BS55M120	1,0	0,6	65	106	108	80800	137000	1,43
60	120	20	BS60M120	1,0	0,6	70	100	108	80800	137000	1,36
75	110	15	BS75M110	1,0	0,6	85	98	100	44500	93800	0,48
100	150	22,5	BS100M150	1,0	0,6	114	135	137	86400	192000	1,00
127	180	22,225	BS127M180	1,0	0,6	140	165	168	85200	239300	1,24
20	47	15,875	BS078I	1,0	0,6	28	38	40	25000	32100	0,14
23,838	62	15,875	BS093I	1,0	0,6	32	52	54	29200	42800	0,25
38,100	72	15,875	BS150I	1,0	0,6	46	62	64	35600	55000	0,28
44,475	76,2	15,875	BS175I	1,0	0,6	52	66	68	37900	61400	0,30
57,150	90	15,875	BS225I	1,0	0,6	65	80	81	40700	74400	0,38
76,200	110	15,875	BS300I	1,0	0,6	84	99	100	44500	93800	0,48
101,600	145	22,225	BS400I	1,0	0,6	114	132	134	86400	192000	1,00
127	180	22,225	BS127M180	1,0	0,6	140	165	168	85200	239300	1,24

* Should no more be used in new application.

60° Super Precision Angular Contact Thrust Ball Bearings metric, inch

BS..



d mm	L	Preload		Axial stiffness S_{ax}			Limiting speeds grease n_f			Drag torque M_r		
		M N	H	L	M $N/\mu m$	H	L	M min^{-1}	H	L	M Nm	H
17	875	1750	3500	460	580	740	7200	6300	4950	0,04	0,08	0,16
20	875	1750	3500	460	580	740	7200	6300	4950	0,04	0,18	0,16
20	875	1750	3500	460	580	740	7200	6300	4950	0,04	0,18	0,16
25	1000	1900	3900	500	630	800	5250	4800	3900	0,05	0,07	0,18
25	1125	2250	4500	650	830	1050	4950	4350	3450	0,06	0,11	0,22
25	1125	2250	4500	650	830	1050	4950	4350	3450	0,06	0,11	0,22
30	1125	2250	4500	650	830	1050	4950	4350	3450	0,06	0,11	0,22
30	1125	2250	4500	650	830	1050	4950	4350	3450	0,06	0,11	0,22
30	1700	3400	6800	780	990	1260	4350	3900	3000	0,06	0,11	0,22
30	1700	3400	6800	780	990	1260	4350	3900	3000	0,06	0,11	0,22
35	1700	3400	6800	780	990	1260	4350	3900	3000	0,06	0,11	0,22
35	1700	3400	6800	780	990	1260	4350	3900	3000	0,06	0,11	0,22
35	3200	6400	12800	1090	1390	1760	3300	2850	2250	0,13	0,26	0,51
40	1700	3400	6800	780	990	1260	4350	3900	3000	0,06	0,11	0,22
40	2500	5000	10000	1035	1320	1680	3450	3000	2300	0,12	0,24	0,48
40	2500	5000	10000	1035	1320	1680	3450	3000	2300	0,12	0,24	0,48
40	3200	6400	12800	1090	1390	1760	3300	2850	2250	0,13	0,26	0,51
45	1700	3400	6800	890	1090	1390	4200	3600	2850	0,07	0,14	0,28
45	3200	6400	12800	1090	1390	1760	3300	2850	2250	0,13	0,26	0,51
50	3200	6400	12800	1090	1390	1760	3300	2850	2250	0,13	0,26	0,51
55	1975	3950	7900	1030	1310	1660	3450	3000	2400	0,11	0,21	0,41
55	3200	6400	12800	1090	1390	1760	3300	2850	2250	0,13	0,26	0,51
55	3900	7800	15600	1340	1690	2150	2700	2400	1875	0,17	0,34	0,68
60	3900	7800	15600	1340	1690	2150	2700	2400	1875	0,17	0,34	0,68
75	2500	5000	10000	1280	1620	2060	2700	2400	1875	0,13	0,25	0,50
100	5250	10500	21000	1800	2280	2900	1950	1725	1350	0,27	0,54	1,09
127			18200			3160			1125			1,08
20			3500			750			4950			0,17
23,838			4500			1050			3450			0,23
38,100			7000			1300			3000			0,23
44,475			7000			1380			2850			0,28
57,150			7900			1620			2275			0,40
76,200			10000			2050			1875			0,51
101,600			13900			2480			1350			0,68
127			18200			3160			1125			1,08