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SPINDLE BEARING

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SPINDLE BEARING

STOCK LIST

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GMN

GRW



FAG

NACHI

NTN





NOMENCLATURE - RADIAL BEARING

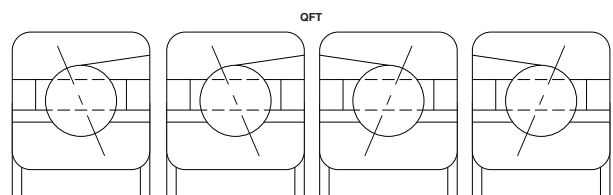
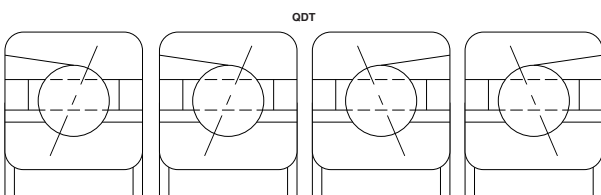
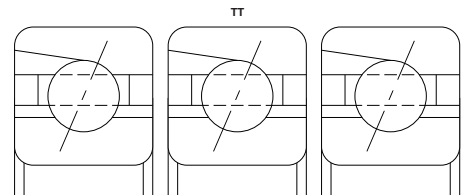
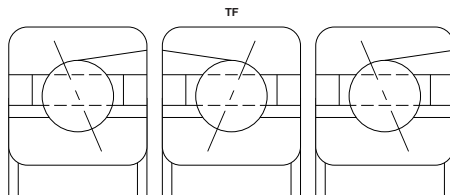
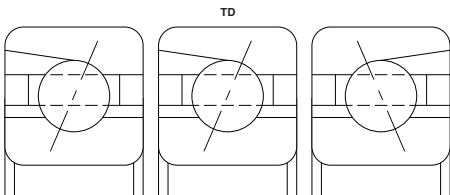
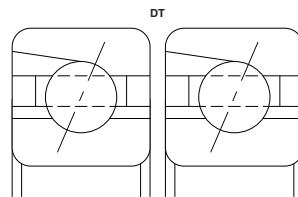
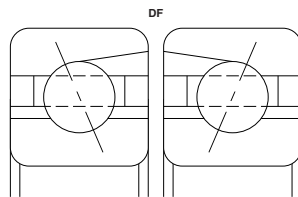
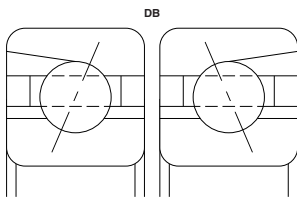
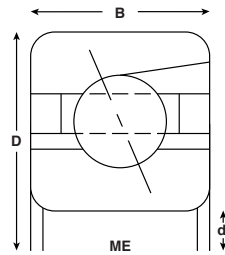
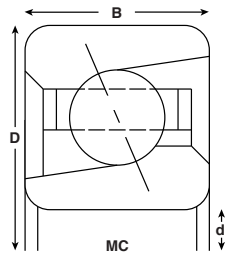
PART EXAMPLE: CER-204ZZKEA7P48LY51

CER-	2	04	ZZ		KE	A7	P58	COMMON
MATERIAL	SERIES	BORE SIZE	CLOSURES	SPECIAL DESIGN	RETAINER	PRECISION	RADIAL PLAY	LUBRICATION
CER = 52100 STEEL RINGS AND CERAMIC BALLS R = 52100 STEEL RINGS AND BALLS	1 = EXTRA LIGHT 2 = LIGHT	00 = 10MM 01 = 12MM 02 = 15MM 03 = 17MM 04 & GREATER MULTIPLY BY 5 TO GET BORE SIZE IN MM	BLANK = OPEN S = SINGLE NON CONTACT RUBBER SEAL ("SS" FOR TWO SEALS) Z = SINGLE METAL SHIELD ("ZZ" FOR TWO SHIELDS)	BLANK = STANDARD DESIGN SD6XX = SPECIAL DESIGN	KE = INNER LAND PILOTED PHENOLIC RETAINER R = INNER LAND PILOTED RIBBON RETAINER	A3 = ABEC 3 A5 = ABEC 5 A7 = ABEC 7	P = FOLLOWED BY TWO OR THREE NUMBERS INDICATES THE RADIAL PLAY IN TENTH THOUSANDTHS OF AN INCH. EXAMPLE: P58 INDICATES A RADIAL PLAY OF .0005" TO .0008".	NO CODE = HIGH SPEED OIL LY51 = ISOFLEX NBU 15 LY75 = SRI-2 LRD2 = KLUBERSPEED BF72-22 OTHERS AVAILABLE UPON REQUEST

NOMENCLATURE - ANGULAR CONTACT BEARING

PART EXAMPLE: CXMC - 1107DLLY51

CX	ME	I	I	07	SS			D	L	COMMON
MATERIAL	CONFIGURATION	CONTACT ANGLE	SERIES	BORE SIZE	CLOSURES	SPECIAL DESIGN	ABEC CLASS	MULTIPLEX	PRELOAD	LUBRICATION
NO CODE = 52100 CHROME STEEL RINGS AND BALLS CX = 52100 CHROME STEEL RINGS AND CERAMIC BALLS HSS = HIGH STRENGTH STEEL	MC = NON-SEPERABLE LOW SHOULDER INNER AND OUTER RING (ULTRA HIGH SPEED) ME = NON-SEPERABLE LOW SHOULDER OUTER RING. SEE BELOW DIAGRAMS	1 = 15 DEGREES 2 = 25 DEGREES	18 = EXTREMELY LIGHT 19 = ULTRA LIGHT I = EXTRA LIGHT 2 = LIGHT 3 = MEDIUM	00 = 10MM 01 = 12MM 02 = 15MM 03 = 17MM 04 & GREATER MULTIPLY BY 5 TO GET BORE SIZE IN MM	BLANK = OPEN S = SINGLE NON CONTACT RUBBER SEAL ("SS" FOR TWO SEALS)	DLR = DIRECT LUBRICATION	NO CODE = ABEC 7 A7/9 = ABEC 7 DIMENSIONS, ABEC 9 RADIAL RUNOUT A9 = ABEC 9 DIMENSIONS AND RADIAL RUNOUT	NO CODE = SINGLE BEARING DU = UNIVERSAL DUPLEX DB = BACK TO BACK DF = FACE TO FACE DT = TANDEM T = TRIPLEX Q = QUADRU- PLEX	NO CODE = NOT PRELOADED X = ULTRA LIGHT L = LIGHT M = MEDIUM H = HEAVY VALUE = POUNDS	NO CODE = HIGH SPEED OIL LY51 = ISOFLEX NBU 15 LY75 = SRI-2 LRD2 = KLUBERSPEED BF72-22 OTHERS AVAILABLE UPON REQUEST

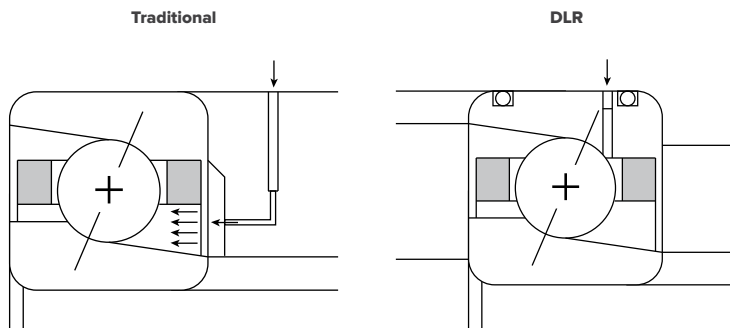


Long Life (LL)

Long life bearings were developed for the highest demands with respect to speed and loading capability. These bearings are hybrid ceramic bearings with bearing rings made from High Strength Steel (HSS), a high nitrogen, corrosion resistant steel. High Strength Steel shows a much finer grain structure compared with the conventional bearing steel 100Cr6 (SAE 52100) resulting in cooler running and higher permissible contact stresses. Most angular contact bearing types are available as High Speed Steel bearings.

The longer service life of High Strength Steel bearings when compared to conventional bearings also contributes to an overall reduction in the total system costs. When calculating the indirect costs of frequent bearing replacement – which include not just inventory, but machine down time, lost productivity and labor – the cost savings potential of High Strength Steel bearings becomes significant.

Direct Lubrication



The Direct Lubricated (DLR) feature allows for bearings to be lubricated through the outer race, enabling higher speeds with optimal lubrication placement. Two O-rings are recessed into the bearing's outer ring and surround an oil groove. This forces the lubricant directly into the ball track way. Unlike traditional oil mist applications this prevents wasted oil.

Sealed Spindle Bearings

Non-contact rubber sealed bearings are greased for life with factory controlled volumes. Common greases are Kluberspeed BF72-22 and Lubcon L252.

THE ADVANTAGES OF SEALED SPINDLE BEARINGS ARE AS FOLLOWS:

- greased for life
- lower risk of contamination
- precise grease placement and amounts
- interchangeable with standard spindle bearings





ANGULAR CONTACT STEEL & CERAMIC BALL: SUPER ULTRA LIGHT 1800

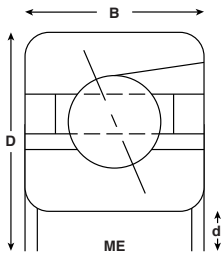
Bore	OD	Width	Load Ratings		*Steel Speed Ratings (Vh)	*Ceramic Speed Ratings (Vh)	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM	RPM	lbs			Part No.
(mm)	(mm)	(mm)	Dynamic	Static	Oil	Oil	Light	Medium	Heavy	
10	19	5	436	281	109,000	136,800	2	7	13	(CX)ME-11800
			416	268			4	11	22	(CX)ME-21800
12	21	5	474	337	95,500	114,600	2	7	15	(CX)ME-11801
			447	321			4	12	24	(CX)ME-21801
15	24	5	526	425	80,500	96,600	3	8	16	(CX)ME-11802
			497	402			4	13	26	(CX)ME-21802
17	26	5	535	450	73,000	87,600	3	8	17	(CX)ME-11803
			506	434			4	13	27	(CX)ME-21903
20	32	7	883	764	60,000	72,000	4	13	27	(CX)ME-11804
			834	719			7	22	45	(CX)ME-21804
25	37	7	949	922	50,000	60,000	5	15	30	(CX)ME-11805
			892	877			8	24	47	(CX)ME-21805
30	42	7	1,003	1,079	43,000	51,600	5	16	31	(CX)ME-11806
			944	1,012			8	25	49	(CX)ME-21806
35	47	7	1,052	1,236	37,500	45,000	6	17	34	(CX)ME-11807
			989	1,169			9	26	52	(CX)ME-21807
40	52	7	1,102	1,394	33,000	39,600	6	18	35	(CX)ME-11808
			1,034	1,326			9	27	54	(CX)ME-21808
45	58	7	1,113	1,506	29,500	35,400	6	18	36	(CX)ME-11809
			1,045	1,416			9	28	56	(CX)ME-21809
50	65	7	1,675	2,248	26,500	31,800	9	27	54	(CX)ME-11810
			1,574	2,136			13	40	81	(CX)ME-21810
55	72	9	2,338	3,102	23,500	28,200	12	37	74	(CX)ME-11811
			2,190	2,945			20	58	117	(CX)ME-21811
60	78	10	3,057	4,047	21,500	25,800	16	47	94	(CX)ME-11812
			2,878	3,822			26	76	153	(CX)ME-21812
65	85	10	3,057	4,249	20,000	24,000	16	48	97	(CX)ME-11813
			2,878	4,002			26	78	155	(CX)ME-21813
70	90	10	3,147	4,564	18,500	22,200	16	49	99	(CX)ME-11814
			2,967	4,316			26	79	157	(CX)ME-21814
75	95	10	3,237	4,878	17,500	21,000	17	51	101	(CX)ME-11815
			3,035	4,609			27	81	162	(CX)ME-21815
80	100	10	3,305	5,216	16,000	19,200	18	53	106	(CX)ME-11816
			3,102	4,901			28	83	166	(CX)ME-21816
85	110	13	4,901	7,239	15,000	18,000	26	78	155	(CX)ME-11817
			4,609	6,834			41	124	247	(CX)ME-21817
90	115	13	4,946	7,531	14,000	16,800	26	79	157	(CX)ME-11818
			4,654	7,104			41	125	250	(CX)ME-21818
95	120	13	5,013	7,801	13,500	16,200	26	80	160	(CX)ME-11819
			4,699	7,374			42	126	252	(CX)ME-21819
100	125	13	5,126	8,340	13,000	15,600	27	81	162	(CX)ME-11820
			4,811	7,868			43	128	256	(CX)ME-21820
105	130	13	5,171	8,610	12,200	14,640	29	88	175	(CX)ME-11821
			4,856	8,116			45	135	270	(CX)ME-21821
110	140	16	7,261	11,690	11,500	13,800	36	112	225	(CX)ME-11822
			6,834	10,971			58	180	360	(CX)ME-21822

ANGULAR CONTACT STEEL & CERAMIC BALL: SUPER ULTRA LIGHT 1800

Bore	OD	Width	Load Ratings		*Steel Speed Ratings (Vh)	*Ceramic Speed Ratings (Vh)	▲Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM	RPM	lbs			Part No.
(mm)	(mm)	(mm)	Dynamic	Static	Oil	Oil	Light	Medium	Heavy	
120	150	16	7,554	12,814	10,500	12,600	40	124	247	(CX)ME-11824
			7,081	12,140			63	191	382	(CX)ME-21824
130	165	18	8,835	15,287	9,500	11,400	47	139	277	(CX)ME-11826
			8,295	14,388			74	220	441	(CX)ME-21826
140	175	18	10,251	17,760	8,800	10,560	54	162	324	(CX)ME-11828
			9,622	16,861			85	256	513	(CX)ME-21828
150	190	20	11,690	20,682	8,100	9,720	61	184	366	(CX)ME-11830
			10,971	19,558			97	292	582	(CX)ME-21830

INTERCHANGES: MACHINE TOOL SPINDLE ANGULAR CONTACT STEEL & CERAMIC BALL: SUPER ULTRA LIGHT 1800

CONTACT ANGLE	ALPINE	BARDEN	FAG	GMN	NTN	NSK	SKF	SNR
15°	(CX)ME-11800CA	(C)1800HC▲	(HC)B71800CTP4S▲	(HY)S61800CTAA7▲	(5S-)7800CG/▲P4	7800C(SN24)TYN▲P4	71800CD/(HC)P4A▲	(CH)71800CV▲P4
25°	(CX)ME-21800CA	(C)1800HE▲	(HC)B71800ETP4S▲	(HY)S61800ETAA7▲	(5S-)7800G/▲P4	7800A5(SN24)TYN▲P4	71800ACD/(HC)P4A▲	(CH)71800HV▲P4



BULLET POINTS

- Part numbers beginning with 1 = 15° (CXME-11800)
- Part numbers beginning with 2 = 25° (CXME-21800)
- (CX) = Ceramic balls
- * Speed ratings and preload levels vary by brand
- ▲ Add DL for light preload
- ▲ Add DM for medium preload
- ▲ Add DH for heavy preload
- See below for speed correction factors

LIMITING SPEED CALCULATION

	K1	K2	K3
	ARRANGEMENT & PRELOAD	LUBRICATION	CONTACT ANGLE
MOUNTING ARRANGEMENTS	ME-MC-BS	ALL	ME-MC-BS
T	0.90		
DBL-DFL	0.80-0.77	OIL 1.00	15° - 1.00
TDL-TFL	0.72-0.66		
QDTL-QFTL	0.64-0.62	GREASE 0.70	25°-0.90
DBM-DFM	0.65-0.61		
TDM-TFM	0.58-0.49	SEALED 0.70	60°-1.00
QDTM-QFTM	0.54-0.48		
DBH-DFH	0.40-0.36		
TDH-TFH	0.36-0.24		
QDTH-QFTH	0.34-0.27		

$$N_{MAX} [RPM] = V_H \cdot K_1 \cdot K_2 \cdot K_3$$



ANGULAR CONTACT, STEEL BALL: ULTRA LIGHT SERIES 1900

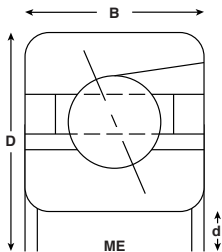
Bore	OD	Width	Load Ratings		*Speed Ratings (Vh)	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM	lbs			Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Light	Medium	Heavy	
10	22	6	280	580	118,000	3	8	18	ME-11900
			270	580		4	12	25	ME-21900
12	24	6	350	650	102,000	4	10	20	ME-11901
			330	640		6	15	30	ME-21901
15	28	7	490	920	86,000	4	12	25	ME-11902
			470	920		8	20	40	ME-21902
17	30	7	832	1,158	66,500	6	18	36	ME-11903
			787	1,102		10	29	58	ME-21903
20	37	9	1,304	1,686	54,500	9	27	54	ME-11904
			1,236	1,607		14	43	85	ME-21904
25	42	9	1,461	1,731	46,000	9	27	54	ME-11905
			1,394	1,641		14	43	85	ME-21905
30	47	9	1,686	1,843	40,000	9	28	56	ME-11906
			1,619	1,742		15	46	92	ME-21906
35	55	10	2,450	2,518	34,000	13	39	79	ME-11907
			2,316	2,383		21	63	126	ME-21907
40	62	12	3,192	3,215	30,000	17	51	101	ME-11908
			3,035	3,035		27	81	162	ME-21908
45	68	12	3,597	3,372	27,000	18	53	106	ME-11909
			3,417	3,192		28	84	169	ME-21909
50	72	12	4,743	4,339	24,500	22	67	135	ME-11910
			4,519	4,092		36	108	216	ME-21910
55	80	13	6,137	5,418	22,000	28	85	171	ME-11911
			5,823	5,126		45	135	270	ME-21911
60	85	13	6,789	5,665	20,500	29	88	175	ME-11912
			6,430	5,350		47	142	283	ME-21912
65	90	13	7,149	5,733	19,000	30	90	180	ME-11913
			6,767	5,395		47	143	286	ME-21913
70	100	16	9,734	7,913	17,500	42	124	247	ME-11914
			9,240	7,464		65	198	396	ME-21914
75	105	16	10,251	8,026	16,000	42	126	252	ME-11915
			9,712	7,554		67	200	400	ME-21915
80	110	16	10,746	8,138	15,000	43	128	256	ME-11916
			10,161	7,666		67	202	405	ME-21916
85	120	18	13,938	10,633	14,000	55	166	333	ME-11917
			13,264	10,026		89	265	531	ME-21917
90	125	18	14,613	10,813	13,000	56	169	337	ME-11918
			13,713	10,184		90	270	540	ME-21918
95	130	18	15,287	10,971	12,500	57	172	344	ME-11919
			14,319	14,388		91	274	549	ME-21919
100	140	20	18,884	13,826	12,000	72	216	432	ME-11920
			17,985	13,016		115	344	688	ME-21920
110	150	20	20,682	14,275	11,000	74	223	445	ME-11922
			19,558	13,421		119	355	710	ME-21922
120	165	22	24,055	16,861	10,000	88	265	531	ME-11924
			22,931	15,894		141	418	845	ME-21924

ANGULAR CONTACT, STEEL BALL: ULTRA LIGHT SERIES 1900

Bore	OD	Width	Load Ratings		*Speed Ratings (Vh)	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM	lbs			Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Light	Medium	Heavy	
130	180	24	26,303	17,310	9,000	91	272	544	ME-11926
			24,954	16,366		145	434	868	ME-21926
140	190	24	28,326	17,985	8,000	93	281	562	ME-11928
			26,977	16,861		148	445	890	ME-21928
150	210	28	39,342	27,202	7,500	142	427	854	ME-11930
			37,318	25,628		227	679	1358	ME-21930
160	220	28	42,939	28,326	7,000	148	445	890	ME-11932
			40,690	26,752		236	708	1416	ME-21932
170	230	28	44,962	28,776	6,500	149	450	899	ME-11934
			42,489	26,977		238	715	1432	ME-21934
180	250	33	55,977	36,644	6,000	192	576	1151	ME-11936
			53,055	34,621		306	917	1834	ME-21936
190	260	33	58,675	37,318	5,500	194	585	1169	ME-11938
			55,528	35,070		310	931	1861	ME-21938
200	280	38	69,916	45,636	5,000	238	715	1430	ME-11940
			66,094	42,939		380	1140	2280	ME-21940
220	300	38	76,660	47,210	4,500	247	742	1484	ME-11944
			72,613	44,512		393	1180	2360	ME-21944
240	320	38	86,327	49,908	4,300	259	787	1574	ME-11948
			81,606	46,985		416	1248	2495	ME-21948
260	360	46	118,924	65,195	3,850	342	1025	2050	ME-11952
			112,629	61,598		544	1632	3264	ME-21952
280	380	46	124,544	65,644	3,500	346	1034	2068	ME-11956
			118,025	62,047		549	1646	3289	ME-21956

INTERCHANGES: ANGULAR CONTACT, STEEL BALL: ULTRA LIGHT SERIES 1900

CONTACT ANGLE	ALPINE	BARDEN	FAFNIR	FAG	GMN	NTN	NSK	SKF	SNR
15°	ME-11900▲	1900HC▲	2MM9300WICR▲	B71900CTP4S▲	S61900CTAA7▲	71900CG/▲P4	7900CTYN▲P4	71900CD/P4A▲	71900CV▲P4
25°	ME-21900▲	1900HE▲	3MM9300WICR▲	B71900ETP4S▲	S61900ETAA7▲	71900G/▲P4	7900A5TYN▲P4	71900ACD/P4A▲	71900HV▲P4



BULLET POINTS

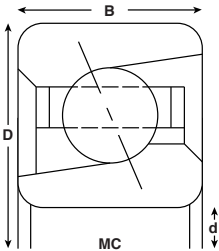
- Part numbers beginning with 1 = 15° (ME-11900)
- Part numbers beginning with 2 = 25° (ME-21900)
- Add SS for seals (ME-11900SSDL)
- * Speed ratings and preload levels vary by brand
- ▲ Add DL for light preload
- ▲ Add DM for medium preload
- ▲ Add DH for heavy preload
- See page 7 for speed correction factors



ANGULAR CONTACT, STEEL & CERAMIC BALL: ULTRA HIGH SPEED SERIES 1900

Bore	OD	Width	Load Ratings		*Steel Ball Speed Ratings (Vh)	*Ceramic Ball Speed Ratings (Vh)	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM	RPM	lbs			Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Oil	Light	Medium	Heavy	
10	22	6	214	461	167,400	139,500	2	7	15	(CX)MC-11900
			205	445			4	11	22	(CX)MC-21900
12	24	6	241	490	147,600	123,000	2	8	15	(CX)MC-11901
			229	468			4	12	25	(CX)MC-21901
15	28	7	373	733	124,200	103,500	4	11	23	(CX)MC-11902
			355	701			6	19	38	(CX)MC-21902
17	30	7	414	771	113,400	94,500	4	12	24	(CX)MC-11903
			393	737			7	20	39	(CX)MC-21903
20	37	9	652	1,124	93,120	77,600	6	18	35	(CX)MC-11904
			607	1,072			9	29	56	(CX)MC-21904
25	42	9	764	1,214	78,960	65,800	6	19	38	(CX)MC-11905
			719	1,156			10	31	61	(CX)MC-21905
30	47	9	877	1,293	68,400	57,000	7	20	40	(CX)MC-11906
			832	1,214			11	33	65	(CX)MC-21906
35	55	10	1,259	1,765	58,440	48,700	9	28	56	(CX)MC-11907
			1,214	1,686			15	45	90	(CX)MC-21907
40	62	12	1,664	2,248	51,240	42,700	12	35	71	(CX)MC-11908
			1,574	2,136			19	56	114	(CX)MC-21908
45	68	12	1,866	2,360	46,080	38,400	12	37	74	(CX)MC-11909
			1,754	2,248			20	60	119	(CX)MC-21909
50	72	12	2,338	2,945	42,600	35,500	16	47	92	(CX)MC-11910
			2,203	2,788			25	74	148	(CX)MC-21910
55	80	13	2,878	3,574	38,400	32,000	19	56	112	(CX)MC-11911
			2,743	3,372			30	90	180	(CX)MC-21911
60	85	13	3,192	3,754	35,640	29,700	20	59	118	(CX)MC-11912
			3,012	3,552			31	94	188	(CX)MC-21912
65	90	13	3,372	3,822	33,240	27,700	20	60	120	(CX)MC-11913
			3,192	3,597			32	96	191	(CX)MC-21913
70	100	16	4,384	5,081	30,120	25,100	27	81	160	(CX)MC-11914
			4,159	4,788			43	128	254	(CX)MC-21914
75	105	16	4,609	5,171	28,440	23,700	27	81	162	(CX)MC-11915
			4,384	4,878			43	130	259	(CX)MC-21915
80	110	16	4,856	5,261	26,760	22,300	28	83	166	(CX)MC-11916
			4,586	4,968			44	133	263	(CX)MC-21916
85	120	18	6,272	6,857	24,720	20,600	36	108	215	(CX)MC-11917
			5,935	6,474			57	172	344	(CX)MC-21917
90	125	18	6,587	6,992	23,520	19,600	37	110	220	(CX)MC-11918
			6,227	6,609			58	175	351	(CX)MC-21918
95	130	18	6,902	7,126	22,320	18,600	37	112	224	(CX)MC-11919
			6,519	6,722			60	179	357	(CX)MC-21919
100	140	20	8,565	8,925	20,880	17,400	47	140	281	(CX)MC-11920
			8,116	8,453			75	224	448	(CX)MC-21920
110	150	20	9,375	9,285	19,080	15,900	49	146	292	(CX)MC-11922
			8,880	8,768			76	232	465	(CX)MC-21922
120	165	22	10,926	10,923	17,280	14,400	56	171	344	(CX)MC-11924
			10,341	10,341			92	274	549	(CX)MC-21924

INTERCHANGES: ANGULAR CONTACT, STEEL & CERAMIC BALL, ULTRA HIGH SPEED SERIES 1900									
CONTACT ANGLE	ALPINE	BARDEN	FAFNIR	FAG	GMN	NTN	NSK	SKF	SNR
15°	(CX)MC-11906▲	(C)ZSB1906C▲	2MMV(C)99306WICR▲	H(C)71906CTP4S▲	(HY)KH61906CTAA7▲	(5S-)BNT906CG/▲P4	30BNR19(H)ST▲P4	71906CE/(HC)P4A▲	ML(CH)71906CV▲4
25°	(CX)MC-21906▲	(C)ZSB1906E▲	3MMV(C)99306WICR▲	H(C)71906ETP4S▲	(HY)KH61906ETA7▲	(5S-)BNT7907G/▲P4	30BER19(H)ST▲P4	71906ACE/(HC)P4A▲	ML(CH)71906HV▲4



BULLET POINTS

- Part numbers beginning with 1 = 15° (MC-11900)
 - Part numbers beginning with 2 = 25° (MC-21900)
 - Add SS for seals (MC-11900SSDL)
 - (CX) = Ceramic balls
 - * Speed ratings and preload levels vary by brand
- ▲ Add DL for light preload
 - ▲ Add DM for medium preload
 - ▲ Add DH for heavy preload
 - See page 7 for speed correction factors





ANGULAR CONTACT, STEEL BALL, EXTRA LIGHT SERIES 100

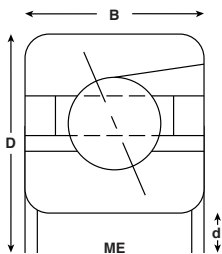
Bore	OD	Width	Load Ratings		*Speed Ratings (Vh)	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM	lbs			Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Light	Medium	Heavy	
10	26	8	501	877	100,500	4	13	27	ME-1100
			483	843		7	22	45	ME-2100
12	28	8	629	1,135	90,500	6	18	36	ME-1101
			607	1,090		10	29	58	ME-2101
15	32	9	809	1,293	76,500	7	20	40	ME-1102
			787	1,236		11	34	67	ME-2102
17	35	10	1,079	1,709	69,000	9	27	54	ME-1103
			1,034	1,630		15	44	88	ME-2103
20	42	12	1,439	2,169	58,000	11	34	67	ME-1104
			1,371	2,068		18	54	108	ME-2104
25	47	12	2,001	2,833	50,000	15	44	88	ME-1105
			1,911	2,698		24	72	144	ME-2105
30	55	13	2,495	3,417	42,500	18	54	108	ME-1106
			2,383	3,237		29	87	173	ME-2106
35	62	14	3,889	4,429	31,500	22	69	137	ME-1107
			3,709	4,204		37	110	220	ME-2107
40	68	15	4,271	4,564	28,000	24	72	143	ME-1108
			4,069	4,316		38	115	229	ME-2108
45	75	16	5,643	6,115	25,000	31	96	191	ME-1109
			5,395	5,800		52	155	308	ME-2109
50	80	16	6,137	6,317	23,000	33	99	198	ME-1110
			5,845	6,002		53	158	317	ME-2110
55	90	18	8,273	8,408	20,500	44	132	263	ME-1111
			7,891	7,958		71	211	423	ME-2111
60	95	18	8,947	8,655	19,000	45	136	271	ME-1112
			8,498	8,206		73	218	436	ME-2112
65	100	18	9,599	8,902	18,000	47	139	279	ME-1113
			9,127	8,430		74	223	447	ME-2113
70	110	20	12,364	11,465	16,500	61	180	360	ME-1114
			11,690	10,813		96	288	573	ME-2114
75	115	20	13,264	11,690	15,500	62	184	369	ME-1115
			12,589	11,083		98	294	589	ME-2115
80	125	22	15,737	14,051	14,000	74	221	443	ME-1116
			15,062	13,376		118	354	708	ME-2116
85	130	22	16,861	14,500	13,500	76	227	454	ME-1117
			15,961	13,713		121	364	726	ME-2117
90	140	24	18,884	15,287	12,500	81	241	481	ME-1118
			17,760	14,500		128	384	767	ME-2118
95	145	24	21,806	18,097	12,000	94	286	569	ME-1119
			20,682	17,085		151	454	908	ME-2119
100	150	24	23,155	18,547	11,500	97	292	582	ME-1120
			22,031	17,535		155	465	933	ME-2120
105	160	26	26,527	21,469	10,500	112	337	674	ME-1121
			25,179	20,345		190	540	1,079	ME-2121
110	170	28	31,248	25,179	10,000	133	398	796	ME-1122
			29,675	23,830		214	641	1,281	ME-2122

ANGULAR CONTACT, STEEL BALL, EXTRA LIGHT SERIES 100

Bore	OD	Width	Load Ratings		*Speed Ratings (Vh)	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM	lbs			Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Light	Medium	Heavy	
120	180	28	33,272	25,853	9,000	135	405	809	ME-1124
			31,698	24,279		218	654	1,308	ME-2124
130	200	33	42,714	33,272	8,500	175	523	1,052	ME-1126
			40,466	31,473		281	843	1,686	ME-2126
140	210	33	45,411	33,946	7,500	180	540	1,079	ME-1128
			42,939	32,148		288	863	1,727	ME-2128
150	225	35	51,931	38,442	7,000	202	607	1,214	ME-1130
			49,458	36,419		324	971	1,942	ME-2130
160	240	38	59,125	43,163	6,500	229	688	1,376	ME-1132
			56,202	40,915		364	1,093	2,185	ME-2132
170	260	42	66,993	46,985	6,000	247	742	1,484	ME-1134
			63,621	44,287		396	1,187	2,374	ME-2134
180	280	46	78,683	52,380	5,500	277	830	1,659	ME-1136
			74,861	49,458		443	1,329	2,657	ME-2136
190	290	46	82,955	53,505	5,200	283	850	1,700	ME-1138
			78,908	50,582		450	1,349	2,698	ME-2138
200	310	51	104,761	66,319	4,800	360	1,079	2,158	ME-1140
			99,815	62,722		562	1,686	3,372	ME-2140
220	340	56	124,994	74,861	4,250	405	1,214	2,428	ME-1144
			118,924	70,815		629	1,888	3,777	ME-2144
240	360	56	139,382	78,683	3,900	427	1,281	2,563	ME-1148
			132,413	74,412		674	2,023	4,047	ME-2148

INTERCHANGES: ANGULAR CONTACT, STEEL BALL, EXTRA LIGHT SERIES 100

CONTACT ANGLE	ALPINE	BARDEN	FAFNIR	FAG	GMN	NTN	NSK	SKF	SNR
15°	ME-1106▲	106HC▲	2MM9106WICR▲	B7006CTP4S▲	S6006CTAA7▲	7006CG/▲P4	7006CTYN▲P4	7006CD/P4A▲	7006CV▲P4
25°	ME-2106▲	106HE▲	3MM9106WICR▲	B7006ETP4S▲	S6006ETAA7▲	7006G/▲P4	7006ASTYN▲P4	7006ACD/P4A▲	7006HV▲P4



BULLET POINTS

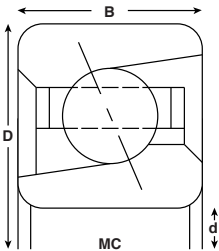
- Part numbers beginning with 1 = 15° (ME-1100)
- Part numbers beginning with 2 = 25° (ME-2100)
- Add SS for seals (ME-1100SSDL)
- * Speed ratings and preload levels vary by brand
- ▲ Add DL for light preload
- ▲ Add DM for medium preload
- ▲ Add DH for heavy preload
- See page 7 for speed correction factors



ANGULAR CONTACT, STEEL & CERAMIC BALL, ULTRA HIGH SPEED 100

Bore	OD	Width	Load Ratings		*Steel Ball Speed Ratings (Vh)	*Ceramic Ball Speed Ratings (Vh)	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM		lbs			Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil		Light	Medium	Heavy	
10	26	8	321	688	126,000	151,200	3	11	21	(CX)MC-1100
12	28	8	409	886	112,500	135,000	4	13	27	(CX)MC-1101
15	32	9	517	1,014	94,500	113,400	6	16	31	(CX)MC-1102
17	35	10	697	1,335	85,500	102,600	7	20	42	(CX)MC-1103
20	42	12	922	1,704	72,000	86,400	9	27	53	(CX)MC-1104
25	47	12	1,124	1,888	63,000	75,600	10	29	58	(CX)MC-1105
			1,079	1,798			16	47	97	(CX)MC-2105
30	55	13	1,416	2,136	54,000	64,800	11	34	67	(CX)MC-1106
			1,349	2,023			18	54	108	(CX)MC-2106
35	62	14	1,798	2,630	45,000	54,000	13	40	83	(CX)MC-1107
			1,731	2,495			22	67	133	(CX)MC-2107
40	68	15	2,068	2,810	40,500	48,600	15	45	88	(CX)MC-1108
			1,956	2,653			24	70	142	(CX)MC-2108
45	75	16	2,338	2,967	36,900	44,280	16	47	92	(CX)MC-1109
			2,203	2,810			25	74	148	(CX)MC-2109
50	80	16	2,855	3,597	34,200	41,040	19	56	112	(CX)MC-1110
			2,720	3,395			29	90	180	(CX)MC-2110
55	90	18	3,327	3,844	28,800	34,560	20	61	121	(CX)MC-1111
			3,147	3,642			31	97	193	(CX)MC-2111
60	95	18	3,507	3,912	27,000	32,400	21	62	124	(CX)MC-1112
			3,327	3,709			34	99	196	(CX)MC-2112
65	100	18	4,226	4,676	25,200	30,240	25	74	146	(CX)MC-1113
			4,002	4,429			38	117	234	(CX)MC-2113
70	110	20	5,013	5,463	23,400	28,080	29	85	171	(CX)MC-1114
			4,743	5,171			45	137	274	(CX)MC-2114
75	115	20	5,912	6,002	21,600	25,920	31	94	189	(CX)MC-1115
			5,598	5,665			49	151	301	(CX)MC-2115
80	125	22	7,644	7,823	19,400	23,280	40	124	245	(CX)MC-1116
			7,239	7,396			63	191	382	(CX)MC-2116
85	130	22	8,003	7,958	18,900	22,680	42	126	250	(CX)MC-1117
			7,576	7,531			65	200	400	(CX)MC-2117
90	140	24	8,700	8,250	17,400	20,880	43	130	259	(CX)MC-1118
			8,228	7,801			67	207	414	(CX)MC-2118
95	145	24	10,409	10,161	16,700	20,040	52	157	315	(CX)MC-1119
			9,869	9,599			85	254	510	(CX)MC-2119
100	150	24	10,881	10,341	16,100	19,320	54	162	324	(CX)MC-1120
			10,296	9,779			88	259	519	(CX)MC-2120
110	170	28	12,364	10,858	13,900	16,680	56	171	342	(CX)MC-1122
			11,690	10,251			90	272	644	(CX)MC-2122
120	180	28	14,837	13,264	12,600	15,120	70	209	416	(CX)MC-1124
			14,163	12,589			110	333	663	(CX)MC-2124

INTERCHANGES: ANGULAR CONTACT, STEEL & CERAMIC BALL, ULTRA HIGH SPEED 100									
CONTACT ANGLE	ALPINE	BARDEN	FAFNIR	FAG	GMN	NTN	NSK	SKF	SNR
15°	(CX)MC-1106▲	(C)ZSB106C▲	2MMV(C)9106HXCRA▲	H(C)7006CTP4S▲	(HY)KH6006CTAA7▲	(5S-)BNT006CG/▲P4	30BNR10(H)ST▲P4	7006CE/(HC)P4A▲	ML(CH)7006CV▲P4
25°	(CX)MC-2106▲	(C)ZSB106E▲	3MMV(C)9106HXCRA▲	H(C)7006ETP4S▲	(HY)KH6006ETAA7▲	(5S-)BNT006G/▲P4	30BER10(H)ST▲P4	7006ACE/(HC)P4A▲	ML(CH)7006HV▲P4



BULLET POINTS

- Part numbers beginning with 1 = 15° (CX) ME-1100 ▲ Add DL for light preload
- Part numbers beginning with 2 = 25°(CX) MC-2100 ▲ Add DM for medium preload
- Add SS for seals (MC-1100SSDL) ▲ Add DH for heavy preload
- * Speed ratings and preload levels vary by brand
- See page 7 for speed correction factors
- (CX) = ceramic balls





ANGULAR CONTACT, STEEL & CERAMIC BALL: LIGHT SERIES 200

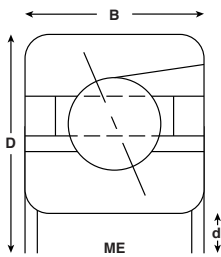
Bore	OD	Width	Load Ratings		*Steel Speed Ratings (Vh)	*Ceramic Speed Ratings (Vh)	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM	RPM	lbs			Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Oil	Light	Medium	Heavy	
10	30	9	832	1,502	78,500	110,000	8	24	47	(CX)ME-1200
			809	1,455			13	38	76	(CX)ME-2000
12	32	10	989	1,652	71,500	95,000	8	26	52	(CX)ME-1201
			944	1,596			13	42	83	(CX)ME-2201
15	35	11	1,281	2,102	62,500	85,000	11	32	65	(CX)ME-1202
			1,236	2,023			18	53	107	(CX)ME-2202
17	40	12	1,619	2,597	55,000	75,000	13	40	81	(CX)ME-1203
			1,574	2,507			22	65	130	(CX)ME-2203
20	47	14	2,113	3,012	46,500	63,000	16	47	94	(CX)ME-1204
			2,046	2,878			26	76	153	(CX)ME-2204
25	52	15	2,900	3,855	40,000	53,000	20	61	121	(CX)ME-1205
			2,765	3,687			34	99	196	(CX)ME-2205
30	62	16	4,159	5,362	33,500	45,000	27	82	164	(CX)ME-1206
			3,979	5,123			45	135	270	(CX)ME-2206
35	72	17	5,103	5,912	28,500	40,000	30	92	184	(CX)ME-1207
			4,878	5,620			49	149	298	(CX)ME-2207
40	80	18	6,857	7,823	25,500	38,000	40	123	245	(CX)ME-1208
			6,564	7,441			66	198	396	(CX)ME-2208
45	85	19	7,531	8,138	23,000	36,000	42	126	252	(CX)ME-1209
			7,194	7,733			67	202	405	(CX)ME-2209
50	90	20	9,015	9,937	21,500	34,000	61	154	308	(CX)ME-1210
			8,610	9,464			83	247	495	(CX)ME-2210
55	100	21	11,240	12,297	19,000	30,000	65	196	391	(CX)ME-1211
			10,858	11,713			103	310	620	(CX)ME-2211
60	110	22	12,589	12,792	17,500	26,000	69	207	414	(CX)ME-1212
			11,915	12,140			108	324	647	(CX)ME-2212
65	120	23	15,287	15,489	16,000	24,000	80	241	481	(CX)ME-1213
			14,613	14,703			129	387	773	(CX)ME-2213
70	125	24	16,636	16,074	15,000	22,000	83	250	499	(CX)ME-1214
			15,961	15,265			134	401	803	(CX)ME-2214
75	130	25	17,985	16,636	14,000	22,000	87	259	517	(CX)ME-1215
			17,085	15,782			139	416	832	(CX)ME-2215
80	140	26	21,582	19,828	13,000	19,000	103	310	620	(CX)ME-1216
			20,458	18,794			169	506	1,012	(CX)ME-2216
85	150	28	24,055	22,324	12,000	18,000	116	347	695	(CX)ME-1217
			22,931	21,177			185	556	1,113	(CX)ME-2217
90	160	30	29,675	28,551	11,500	18,000	147	441	881	(CX)ME-1218
			28,551	26,977			237	710	1,421	(CX)ME-2218
95	170	32	30,124	26,752	10,500	17,000	138	416	832	(CX)ME-1219
			28,776	25,403			223	668	1,335	(CX)ME-2219
100	180	34	36,869	33,497	10,000	16,000	173	519	1,039	(CX)ME-1220
			35,295	31,923			279	837	1,675	(CX)ME-2220
105	190	36	41,814	37,768	9,300	15,000	200	600	1,200	(CX)ME-2221
			40,016	35,745			321	964	1,929	(CX)ME-2221
110	200	38	45,187	39,117	9,000	14,000	207	620	1,241	(CX)ME-1222
			42,939	37,093			333	998	1,996	(CX)ME-2222

ANGULAR CONTACT, STEEL & CERAMIC BALL: LIGHT SERIES 200

Bore	OD	Width	Load Ratings		*Steel Speed Ratings (Vh)	*Ceramic Speed Ratings (Vh)	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM	RPM	lbs			Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Oil	Light	Medium	Heavy	
120	215	40	48,784	40,241	8,200	12,000	214	629	1,259	(CX)ME-1224
			46,535	37,993			337	1,012	2,023	(CX)ME-2224
130	230	40	57,551	45,861	7,500	11,000	241	719	1,441	(CX)ME-1226
			54,853	43,613			384	1,153	2,309	(CX)ME-2226
140	250	42	68,342	51,256	6,700	95,000	272	816	1,632	(CX)ME-1228
			65,195	48,559			436	1,308	2,617	(CX)ME-2228

INTERCHANGES: ANGULAR CONTACT, STEEL & CERAMIC BALL: LIGHT SERIES 200

CONTACT ANGLE	ALPINE	BARDEN	FAFNIR	FAG	GMN	NTN	NSK	SKF	SNR
15°	(CX)ME-1200▲	200HC▲	2MM(C)200WICR	(HC)B7200CTP4S▲	(HY)S6200CTAA7▲	(SS-)7200CG/▲P4	7200C(SN24)TYN▲P4	7200CD/(HC)P4A▲	(CH)7200CGI▲P4
25°	(CX)ME-2200▲	200HE▲	3MM(C)200WICR	(HC)B7200ETP4S▲	(HY)S6200ETAA7▲	(SS-)7200G/▲P4	7200A5(SN24)TYN▲P4	7200ACD/(HC)P4A▲	(CH)7200HGI▲P4



BULLET POINTS

- Part numbers beginning with 1 = 15° (ME-1200)
- Part numbers beginning with 2 = 25° (ME-2200)
- Add SS for seals (ME-1200SSDL)
- * Speed ratings and preload levels vary by brand
- (CX) = ceramic balls
- ▲ Add DL for light preload
- ▲ Add DM for medium preload
- ▲ Add DH for heavy preload
- See page 7 for speed correction factors

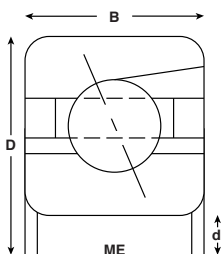


ANGULAR CONTACT, STEEL BALL: MEDIUM SERIES 300

Bore	OD	Width	Load Ratings		*Speed Ratings	*Preload Levels			Alpine Bearing
"d"	"D"	"B"	lbs		RPM (Vh)	lbs			Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Light	Medium	Heavy	
10	35	11	880	2080	77,000	8	20	40	ME-1300
			850	2050		20	40	60	ME-2300
12	37	12	1090	2400	68,000	10	25	50	ME-1301
			1060	2360		25	55	80	ME-2301
15	42	13	1530	2970	55,000	12	30	60	ME-1302
			1490	2920		30	65	110	ME-2302
17	47	14	1890	3740	50,000	20	40	80	ME-1303
			1820	3600		35	80	120	ME-2303
20	52	15	2260	4370	44,000	25	60	120	ME-1304
			2180	4270		40	100	170	ME-2304
25	62	17	3470	6190	36,000	30	80	160	ME-1305
			3350	6070		50	120	220	ME-2305
30	72	19	4570	7580	30,000	40	100	200	ME-1306
			4410	7190		70	160	300	ME-2306
35	80	21	5800	9370	26,000	50	125	250	ME-1307
			5620	8990		90	200	350	ME-2307
40	90	23	7200	11,350	23,000	60	150	300	ME-1308
			6970	11,000		110	250	450	ME-2308
45	100	25	9650	14,400	21,000	75	200	400	ME-1309
			9220	13,900		130	300	550	ME-2309
50	110	27	11,500	16,800	19,000	90	225	450	ME-1310
			11,000	16,200		150	350	600	ME-2310

INTERCHANGES: ANGULAR CONTACT, STEEL BALL: MEDIUM SERIES 300

CONTACT ANGLE	ALPINE	BARDEN	FAFNIR	FAG	SKF
15°	ME-1300▲	300HCA	2MM300WICRA	B7300CTP4S▲	7300CD/P4A▲
25°	ME-2310▲	300HEA	3MM300WICRA	B7300ETP4S▲	7300ACD/P4A▲



BULLET POINTS

- Part numbers beginning with 1 = 15° (ME-1300)
- Part numbers beginning with 2 = 25° (ME-2300)
- * Speed ratings and preload levels vary by brand
- ▲ Add DL for light preload
- ▲ Add DM for medium preload
- ▲ Add DH for heavy preload
- See page 7 for speed correction factors

PRECISION RADIAL: EXTRA LIGHT SERIES 100 - ABEC 7

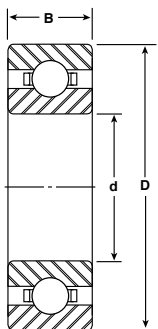
Bore	OD	Width	Load Ratings		*Speed Ratings (Vh)		Alpine Bearing
"d"	"D"	"B"	lbs		RPM		Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Grease	
10	26	8	440	1010	60,000	40,000	R-100KEA7
12	28	8	460	1020	50,000	33,000	R-101KEA7
15	32	9	620	1220	40,000	27,000	R-102KEA7
17	35	10	710	1300	35,000	23,000	R-103KEA7
20	42	12	980	1910	30,000	20,000	R-104KEA7
25	47	12	1290	2200	24,000	16,000	R-105KEA7
30	55	13	1810	2900	20,000	13,500	R-106KEA7
35	62	14	2260	3500	17,000	11,500	R-107KEA7
40	68	15	2910	4590	15,000	10,000	R-108KEA7
45	75	16	3570	5150	13,500	8,900	R-109KEA7
50	80	16	3940	5370	12,000	8,000	R-110KEA7

PRECISION RADIAL: LIGHT SERIES 200 - ABEC 7

Bore	OD	Width	*Load Ratings		*Speed Ratings (Vh)		Alpine Bearing
"d"	"D"	"B"	lbs		RPM		Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Grease	
10	30	9	580	1320	50,000	33,000	R-200KEA7
12	32	10	680	1510	42,000	28,000	R-201KEA7
12	32	12.7	650	1470	70,000	55,000	R-201W721
15	35	11	800	1710	33,000	22,000	R-202KEA7
15	35	12.7	760	1670	62,000	45,000	R-202W721
17	40	12	1060	2100	29,000	19,500	R-203KEA7
20	47	14	1460	2820	25,000	16,500	R-204KEA7
25	52	15	1730	3090	20,000	13,500	R-205KEA7
30	62	16	2500	4300	16,500	11,000	R-206KEA7
35	72	17	3400	5690	14,000	9500	R-207KEA7
40	80	18	3960	6470	12,500	8300	R-208KEA7
45	85	19	4500	6890	11,000	7400	R-209KEA7
50	90	20	5150	7740	10,000	6700	R-210KEA7

INTERCHANGES: PRECISION RADIAL: LIGHT SERIES 200 - ABEC 7

ALPINE	BARDEN	FAFNIR	FAG	NTN	NSK	SKF	SNR
R-100	100	MM9100K	6000P4	6000P4K	6000P4	6000P4	6000P4
R-200	200	MM200K	6200P4	6200P4	6200P4	6200P4	6200P4



BULLET POINTS

- Speed ratings vary by brand
- ABEC 5 also available
- Contact us for ABEC 5 and larger sizes
- KE = Phenolic retainer
- Add SS for non-contact seals (R-100SSKEA7)
- Add ZZ for shields (R-100ZZKEA7)

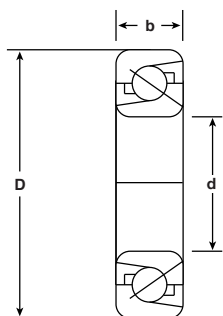


BALL SCREW SUPPORT: INCH SERIES

Bore	OD	Width	Load Ratings		*Speed Ratings (Vh)	Standard Preload lbs	Alpine Bearing
"d"	"D"	"B"	Lbs		RPM	lbs	Part No.
			Static	Dynamic			
0.787	1.850	0.625	5600	5600	3600	700	BS-078
0.938	2.441	0.625	8000	6500	2800	1000	BS-093
0.984	2.441	0.625	8000	6500	2800	1000	BS-098
1.500	2.835	0.625	10000	8000	2400	1400	BS-150
1.750	3.000	0.625	11500	8500	2100	1500	BS-175
2.250	3.543	0.625	13500	9100	1700	1800	BS-225
3.000	4.331	0.625	17000	10000	1300	2200	BS-300

INTERCHANGES: BALL SCREW SUPPORT: INCH SERIES

ALPINE	BARDEN	FAFNIR	NSK	RHP	SKF
BS-093	L093H	MM9308WI-2H	23TAC62	BSB093	BDAB634201



BULLET POINTS

- Speed ratings and preload levels vary by brand
- See page 7 for speed correction factors

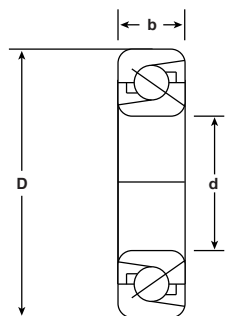


BALL SCREW SUPPORT: METRIC SERIES

Bore	OD	Width	Load Ratings	*Speed Ratings RPM (Vh)	Standard Preload Lbs	Alpine Bearing
"d"	"D"	"B"	Lbs			Part No.
			Dynamic			
17	47	15	4,936	6000	960	M17BS47
17	40	12	3,069	3979	393	M17BS40/12
20	47	15	4,936	6000	960	M20BS47
20	47	14	4,092	3417	393	M20BS47/14
25	62	15	6,413	4500	1395	M25BS62
25	52	15	4,496	2968	427	M25BS52/15
30	62	15	6,567	4300	1484	M30BS62
30	62	16	5,531	2496	506	M30BS62/16
35	72	15	6,942	3600	1708	M35BS72
35	72	17	6,868	2158	764	M35BS72/17
40	72	15	7,163	3600	1752	M40BS72
40	80	18	8,420	1933	764	M40BS80/18
40	90	120	13,224	3000	2300	M40BS90
45	75	15	7,383	3200	1842	M45BS75
45	100	20	13,885	2600	2634	M45BS100
45	85	19	8,509	1754	764	M45BS85/19
50	90	20	8,620	2600	3057	M50BS90
50	100	20	14,105	2600	2746	M50BS100
50	90	20	8,622	1664	1439	M50BS90/20
55	90	15	40,700	2250	12800	M55BS90
55	100	20	14,105	2600	2746	M55BS100
55	120	20	15,097	2200	2946	M55BS120
60	120	20	16,097	2200	2946	M60BS120
60	110	22	13,050	1371	1754	M60BS110/22
75	110	15	44,000	1950	21000	M75BS110

INTERCHANGES: BALL SCREW SUPPORT: METRIC SERIES

ALPINE	BARDEN	FAFNIR	NSK	NTN	RHP	SKF
M25BS62	L2562H	MM25BS62	25TAC62	BST25X61-1BP4	BSB025062	BSD2562



BULLET POINTS

- * Speed ratings and preload levels vary by brand
- See page 7 for speed correction factors



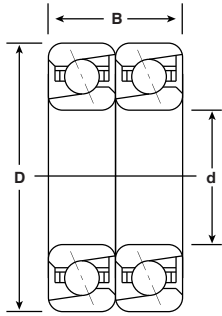


DOUBLE DIRECTION: 30° & 40°

Bore	OD	Width	Load Ratings		* 30° Speed Ratings (Vh) †	* 40° Speed Ratings (Vh) †	Preload	Alpine Bearing
“d”	“D”	“B”	N		RPM	RPM	lbs	Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Oil		
50	80	28.5	19,200	42,500	11,000	9,900	294	BAA5010
			22,800	48,500			539	BTT5010
55	90	33	23,800	54,000	9,500	8,550	392	BAA5510
			28,200	61,500			686	BTT5510
60	95	33	24,700	59,000	9,000	8,100	392	BAA6010
			29,300	67,000			686	BTT6010
65	100	33	25,500	64,000	8,500	7,650	392	BAA6510
			30,500	72,500			686	BTT6510
70	110	36	35,000	84,000	8,000	7,200	588	BAA7010
			41,500	95,500			1,079	BTT7010
75	115	36	35,500	88,000	7,500	6,750	588	BAA7510
			42,000	100,000			1,079	BTT7510
80	125	40.5	41,500	105,000	6,700	6,030	686	BAA8010
			49,500	119,000			1,275	BTT8010
85	130	40.5	42,000	109,000	6,700	6,030	686	BAA8510
			50,000	124,000			1,275	BTT8510
90	140	45	55,500	142,000	6,000	5,400	1,078	BAA9010
			65,500	161,000			1,863	BTT9010
95	145	45	56,000	148,000	6,000	5,400	1,078	BAA9510
			66,500	168,000			1,863	BTT9510
100	150	45	57,000	154,000	5,600	5,040	1,078	BAA10010
			67,500	175,000			1,863	BTT10010
105	160	49.5	64,500	177,000	5,300	4,770	1,177	BAA10510
			76,500	201,000			2,059	BTT10510
110	170	54	73,000	201,000	5,000	4,500	1,373	BAA11010
			86,500	228,000			2,452	BTT11010
120	180	54	75,000	217,000	4,800	4,320	1,471	BAA12010
			89,000	246,000			2,550	BTT12010
130	200	63	94,500	262,000	4,300	3,870	1,863	BAA13010
			112,000	299,000			3,334	BTT13010
140	210	63	103,000	305,000	4,000	3,600	1,961	BAA14010
			122,000	345,000			3,530	BTT14010
150	225	67.5	121,000	360,000	3,800	3,420	2,452	BAA15010
			143,000	410,000			4,315	BTT15010
160	240	72	131,000	395,000	3,600	3,240	2,648	BAA16010
			155,000	450,000			4,511	BTT16010
170	260	81	154,000	470,000	3,200	2,880	3,040	BAA17010
			182,000	535,000			5,296	BTT17010
180	280	90	197,000	590,000	3,000	2,700	4,413	BAA18010
			234,000	670,000			7,649	BTT18010
190	290	90	200,000	615,000	3,000	2,700	4,416	BAA19010
			238,000	700,000			7,649	BTT19010
200	310	99	222,000	680,000	2,800	2,520	5,001	BAA20010
			263,000	770,000			8,630	BTT20010

INTERCHANGES: DOUBLE DIRECTION: 30° & 40°

CONTACT ANGLE	ALPINE	FAG	NTN	NSK	SKF
30°	BAA5010	BAX50-F-T-P4S-DBL	HTA010UAT2DB/GNP4L	50BAR10STYNDBELP4	BTM50A/P4DBA
40°	BTT5010	BAX50-H-T-P4S-DBL	HTA010UT2DB/GNP4L	50BTR10STYNDBELP4	BTM5013/P4DBA

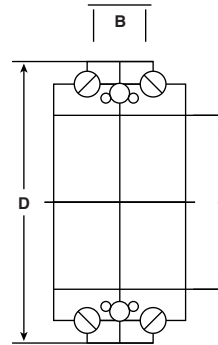


BULLET POINTS

- BAA = 30° contact angle
- BTT = 40° contact angle
- † for grease RPM multiply by .7
- * Speed & load ratings vary by brand

DOUBLE DIRECTION: ANGULAR CONTACT BEARINGS

Bore	OD	Diam	Width	Width 2	Load Ratings		*Speed Ratings (Vh)		Alpine Bearing
"d"	"D"	"di"	"B"	"C"	lbs		RPM		Part No.
(mm)	(mm)	(mm)	(mm)	(mm)	Static	Dyn.	Oil	Grease	
35	62	53	34	17	7,087	3,960	13,000	10,000	234407
40	68	58.5	36	18	8,550	4,680	12,000	9,000	234408
45	75	65	38	19	10,125	5,220	11,000	9,000	234409
50	80	70	38	19	11,025	5,400	10,000	8,500	234410
55	90	78	44	22	15,075	7,650	8,500	7,000	234411
60	95	83	44	22	15,300	7,537	8,500	7,000	234412
65	100	88	44	22	17,212	8,100	8,000	6,700	234413
70	110	97	48	24	20,925	9,562	7,500	6,300	234414
70	115	102	48	24	22,500	9,900	7,000	6,000	234415
80	125	110	54	27	27,000	11,700	6,300	5,300	234416
85	130	115	54	27	28,125	11,700	6,300	5,300	234417
90	140	123	60	30	32,850	13,725	5,600	4,800	234418
95	145	128	60	30	33,750	13,725	5,600	4,800	234419
100	150	133	60	30	35,100	13,950	5,600	4,800	234420
110	170	150	72	36	50,400	20,250	4,800	4,000	234422
120	180	160	72	36	54,000	20,925	4,500	3,800	234424
130	200	177	84	42	67,500	26,550	4,000	3,400	234426
140	210	187	84	42	72,000	27,450	3,800	3,200	234428
150	225	200	90	45	79,875	29,700	3,600	3,000	234430
160	240	212	96	48	93,375	35,100	3,400	2,800	234432
170	260	230	108	54	117,000	43,425	3,000	2,400	234434
180	280	248	120	60	131,625	48,600	2,600	2,000	234436
190	290	258	120	60	141,750	50,400	2,600	2,000	234438
200	310	274	132	66	159,625	162,000	2,400	1,900	234440



BULLET POINTS

- * Speed & load ratings vary by brand
- - 60° contact angle

INTERCHANGES: DOUBLE DIRECTION ANG. CONTACT

ALPINE	FAG	NTN	SKF OLD	SKF NEW
234410	234410MSP	562010GNP4	234410	BTW50CTN9/SPW33

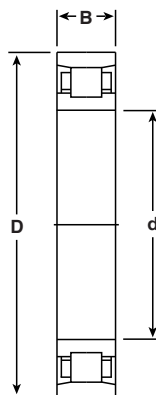


CYLINDRICAL SINGLE ROW: N10 SERIES

Bore	OD	Width	*Load Ratings		*Speed Ratings (Vh)		Alpine Bearing
"d"	"D"	"B"	lbs		RPM		Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Grease	
30	55	13	4,400	4,400	22,000	20,000	N1006
							N1006K
35	62	14	5,200	5,100	20,000	18,000	N1007
							N1007K
40	68	15	6,500	6,150	18,000	16,000	N1008
							N1008K
45	75	16	7,600	7,700	16,000	14,000	N1009
							N1009K
50	80	16	8,100	7,200	15,000	13,000	N1010
							N1010K
55	90	18	9,800	8,400	13,000	12,000	N1011
							N1011K
60	95	18	10,900	9,000	12,000	11,000	N1012
							N1012K
65	100	18	11,500	9,250	12,000	10,000	N1013
							N1013K
70	110	20	15,800	13,100	11,000	9,500	N1014
							N1014K
75	115	20	16,700	13,500	10,000	9,000	N1015
							N1015K
80	125	22	20,400	16,300	9,500	8,500	N1016
							N1016K
85	130	22	21,500	16,700	9,000	8,000	N1017
							N1017K
90	140	24	25,700	19,800	8,500	7,500	N1018
							N1018K
95	145	24	27,000	20,400	8,000	7,100	N1019
							N1019K
100	150	24	28,300	20,900	7,500	6,700	N1020
							N1020K
105	160	26	32,000	23,700	7,100	6,300	N1021
							N1021K
110	170	28	39,000	29,500	6,700	6,000	N1022
							N1022K
120	180	28	43,000	31,000	6,300	5,600	N1024
							N1024K
130	200	33	53,500	38,500	5,600	5,300	N1026
							N1026K
140	210	33	56,000	39,500	5,300	4,800	N1028
							N1028K

INTERCHANGES: CYL. SINGLE ROW N10 SERIES

ALPINE	FAG	NTN	NSK	SKF
N1010	-	N1010H5C1NAP4	N1010BTCCG5P4	-
N1010K	N1010KM1SP	N1010H5KC1NAP4	N1010BTKRCC1P4	N1010KTNSP



Straight Bore

BULLET POINTS

- * Speed & load ratings vary by brand
- -K = tapered bore 1:12

CYLINDRICAL DOUBLE ROW: NN30 SERIES

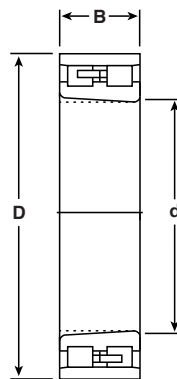
Bore	OD	Width	*Load Ratings		*Speed Ratings (Vh)		Alpine Bearing
"d"	"D"	"B"	lbs		RPM		Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Grease	
25	47	16	6,750	5,800	22,000	19,000	NN3005
							NN3005K
30	55	19	8,350	6,900	19,000	16,000	NN3006
							NN3006K
35	62	20	10,700	8,500	16,000	14,000	NN3007
							NN3007K
40	68	21	12,500	9,750	15,000	13,000	NN3008
							NN3008K
45	75	23	15,400	11,600	13,000	12,000	NN3009
							NN3009K
50	80	23	16,300	11,900	12,000	11,000	NN3010
							NN3010K
55	90	26	21,700	15,600	11,000	9,500	NN3011
							NN3011K
60	95	26	22,900	16,000	10,000	9,000	NN3012
							NN3012K
65	100	26	25,000	16,800	9,500	8,500	NN3013
							NN3013K
70	110	30	32,000	21,300	9,000	8,000	NN3014
							NN3014K
75	115	30	33,500	21,700	8,500	7,500	NN3015
							NN3015K
80	125	34	40,000	26,000	8,000	6,700	NN3016
							NN3016K
85	130	34	43,500	27,400	7,500	6,700	NN3017
							NN3017K
90	140	37	51,000	32,000	7,100	6,000	NN3018
							NN3018K
95	145	37	53,500	33,000	6,700	6,000	NN3019
							NN3019K

CYLINDRICAL DOUBLE ROW: NN30 SERIES							
Bore	OD	Width	*Load Ratings		*Speed Ratings (Vh)		Alpine Bearing
"d"	"D"	"B"	lbs		RPM		Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Grease	
105	160	41	72,500	44,500	6,000	5,300	NN3021
							NN3021K
110	170	45	84,500	51,500	5,600	5,000	NN3022
							NN3022K
120	180	46	88,000	52,500	5,300	4,800	NN3024
							NN3024K
130	200	52	107,000	64,000	4,800	4,300	NN3026
							NN3026K
140	210	53	116,000	67,000	4,500	4,000	NN3028
							NN3028K
150	225	56	132,000	75,000	4,300	3,800	NN3030
							NN3030K
160	240	60	149,000	84,000	4,000	3,600	NN3032
							NN3032K
170	260	67	174,000	99,000	3,800	3,200	NN3034
							NN3034K
180	280	74	224,000	127,000	3,400	3,000	NN3036
							NN3036K
190	290	75	233,000	130,000	3,400	3,000	NN3038
							NN3038K
200	310	82	262,000	147,000	3,200	2,800	NN3040
							NN3040K

INTERCHANGES: CYL. DOUBLE ROW: NN30 SERIES					
	ALPINE	FAG	NTN	NSK	SKF
STRAIGHT	NN3010K	NN3010ASMSP	NN3010C1NAP4	NN3010MBRCC1P4	NN3010TN/SP
TAPERED	NN3010K	NN3010ASKMSP	NN3010KC1NAP4	NN3010MBKRCC1P4	NN3010KTN/SP

BULLET POINTS

- * Speed & load ratings vary by brand
- -K = tapered bore 1:12
- Oil grooves in OD available



Tapered Bore

CYLINDRICAL DOUBLE ROW: NN39 SERIES							
Bore	OD	Width	*Load Ratings		*Speed Ratings (Vh)		Alpine Bearing
"d"	"D"	"B"	kN		RPM		Part No.
(mm)	(mm)	(mm)	Static	Dynamic	Oil	Grease	
100	140	30	182	106	6700	6000	NN3920
							NN3920K
105	145	30	194	110	6300	5600	NN3921
							NN3921K
110	150	30	207	114	6300	5300	NN3922
							NN3922K
120	165	34	251	138	5600	5000	NN3924
							NN3924K
130	180	37	325	173	5300	4500	NN3926
							NN3926K
140	190	37	375	201	4800	4300	NN3928
							NN3928K
150	210	45	490	262	4500	3800	NN3930
							NN3930K
160	220	45	520	271	4300	3600	NN3932
							NN3932K
170	230	45	550	280	4000	3600	NN3934
							NN3934K
180	250	52	655	340	3800	3200	NN3936
							NN3936K
190	260	52	680	345	3600	3200	NN3938
							NN3938K
200	280	60	815	420	3400	3000	NN3940
							NN3940K
220	300	60	895	440	3000	2600	NN3944
							NN3944K
240	320	60	975	460	2800	2600	NN3948
							NN3948K
260	360	75	1,380	670	2600	2200	NN3952
							NN3952K
280	380	75	1,460	695	2400	2200	NN3956
							NN3956K

INTERCHANGES: CYL. DOUBLE ROW: NN39 SERIES					
	ALPINE	FAG	NTN	NSK	SKF
STRAIGHT	NN3920	NN3920ASMSP	NN3920C1NAP4	NN3920MBRCC1P4	NN3920SP
TAPERED	NN3920K	NN3920ASKMSP	NN3920KC1NAP4	NN3920MBKRCC1P4	NN3920KSP

BULLET POINTS

- * Speed & load ratings vary by brand
- -K = tapered bore 1:12



CYLINDRICAL TOLERANCE CHART : INNER RING

d		inner ring	inner ring	width	width	inner ring
over	incl.	max	min.	max	min.	radial runout
mm		µm		µm		µm
-	18	0	-5	0	-100	3
18	30	0	-6	0	-100	3
30	50	0	-8	0	120	4
50	80	0	-9	0	-150	4
80	120	0	-10	0	-200	5
120	180	0	-13	0	-250	6
180	250	0	-15	0	-300	8
250	315	0	-18	0	-350	8

CYLINDRICAL TOLERANCE CHART : OUTER RING

D		outer ring	outer ring	width	width	outer ring
over	incl.	max	min.	max	min.	radial runout
mm		µm		µm		µm
30	50	0	-7	0	-120	5
50	80	0	-9	0	-150	5
80	120	0	-10	0	-200	6
180	250	0	-15	0	-300	10
250	315	0	-18	0	-350	11
315	400	0	-20	0	-630	13

MACHINE TOOL SPINDLE TOLERANCE CHART : INNER RING

Bore Diameter		Tolerance	Radial Runout	Ring Width	Ring Width
Over (mm)	Included (mm)	(µm)	(µm)	Single (µm)	Duplex (µm)
2.5	10	+0 / -4	2.5	-40	-250
10	18	+0 / -4	2.5	-80	-250
18	30	+0 / -5	3	-120	-250
30	50	+0 / -6	4	-120	-250
50	80	+0 / -7	4	-150	-250
80	120	+0 / -8	5	-200	-380
120	150	+0 / -10	6	-250	-380
150	180	+0 / -10	6	-250	-380
180	250	+0 / -12	8	-300	-500

MACHINE TOOL SPINDLE TOLERANCE CHART : OUTER RING

Bore Diameter		Tolerance	Radial Runout	Ring Width	Ring Width
Over (mm)	Included (mm)	(µm)	(µm)	Single (µm)	Duplex (µm)
6	18	+0 / -4	3	-40	-250
18	30	+0 / -5	4	-80	-250
30	50	+0 / -6	5	-120	-250
50	80	+0 / -7	5	-120	-250
80	120	+0 / -8	6	-150	-250
120	150	+0 / -9	7	-200	-380
150	180	+0 / -10	8	-250	-380
180	250	+0 / -11	10	-250	-380
250	315	+0 / -13	11	-300	-500
315	400	+0 / -15	13	-300	-500



SPINDLE BEARING

CATALOG

ALSO STOCKING:

Radial Ball Bearings

Miniature Bearings

Thinex and Torque Tube Bearings

Airframe Control Bearings

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