

# Super Precision Bearings



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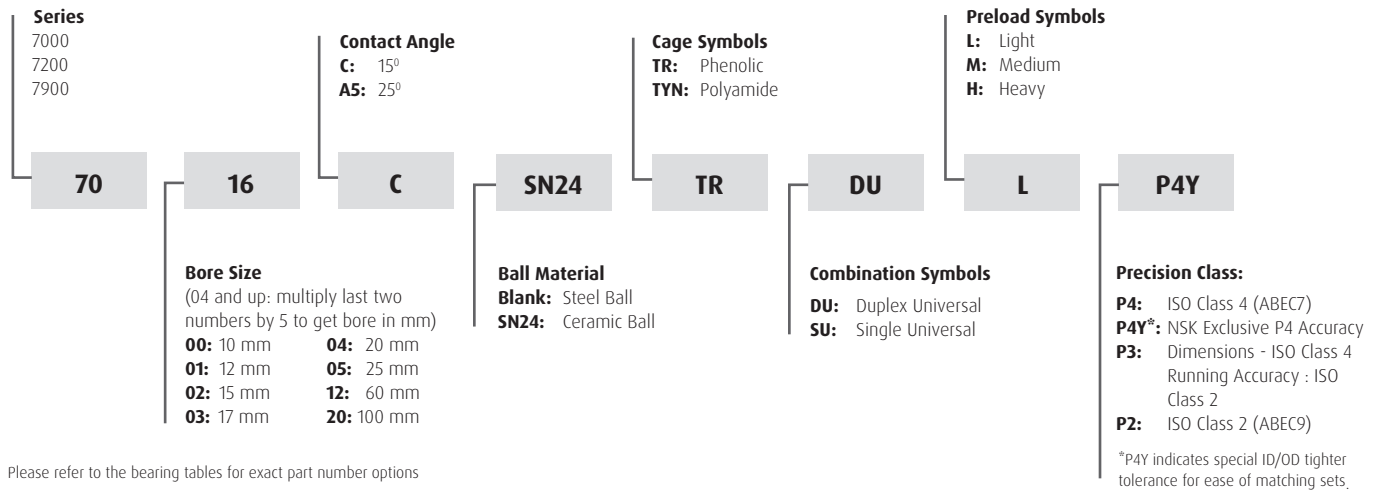
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# Super Precision Angular Contact Bearings



## Interchange

Description		Interchange								
		NSK	*OLD NSK	SKF	FAG	BARDEN	OLD BARDEN	FAF/TIMKEN	SNFA	NTN
Part No.	Ultra Light Series	79XX	79XX	719XX	719XX	19XX	-	93XXWI	EB/ESP	79XX
	Extra Light Series	70XX	70XX	70XX	70XX	1XX	1XX	91XXWI	EX/ESX	70XX
	Light Series	72XX	72XX	72XX	72XX	2XX	2XX	2XXWI	E2/ES2	72XX
Part Number Suffix	15° Contact Angle	C	C	CD	C	C	BLANK	2**	1	C
	25° Contact Angle	A5	A5	ACD	E	E	2**	3**	3	AD
	Polyamide Cage	TYN	TY	-	-	TMT	-	PRC	P	T2
	Phenolic Cage	TR	T	BLANK	T	T, TA	BLANK	CR	C	T1
	Seals	V1V	-	S**	2RSD OR S**	RR	VV, PP	-	/S	-
	Duplex Universal	DU	DU	DG	DU	DU	D	DU	DU	GD2
	Single Universal	SU	SU	G	U	U	-	SU	U	G
	Extra Light Preload	EL	EL	-	-	-	-	X	-	GL
	Light Preload	L	L	A	L	L	L	L	L	GN
	Medium Preload	M	M	B	M	M	M	M	M	GM
	Heavy Preload	H	H	C	H	H	H	H	H	-
	Ceramic Balls	SN24	SN24	HC	HCB**	C**	-	C**	/NS	5S**
	ABEC 7 Precision	P4Y	P4	P4A	P4S	BLANK	BLANK	MM/MMV**	7	P4
	ABEC 9 Precision	P2	P2	PA9A, P9	-	ABEC 9	ABEC 9	MMX**	9	P2

\*TYN cage replaces TY, TR cage replaces T. Sealed (V1V) versions are a new option and P4Y tolerance specification replaces P4. P4Y tolerance specification has tighter bore and OD control than ABEC 7 (class 4 or P4). NSK supplies the following bearing series with P4Y tolerance: 7000; 7200.

\*\*Indicates prefix not suffix.

The competitive manufacturers are provided for a convenient source of unit substitution. They can be considered interchangeable in most instances, but for special applications, please contact NSK. NSK assumes no liability with respect to errors or omissions.

## Applications

Super Precision Angular Contact bearings are specifically designed for rigid, high-speed, high-precision machine tool spindles. Their state-of-the-art preload control assures consistent high performance. Super Precision Angular contacts are also available with seals – contact NSK for details.

- › Lathes › Boring Machinery › Grinders › Machining Centers › Milling Machines › Slicing Machines › Drilling Machines
- › Gem Cutting Machines

## Limiting Speeds

The limiting speeds listed in the Bearing Dimensional Tables are guideline values. They are based on a single bearing that is lightly preloaded by means of a spring and subjected to a relatively light load with good heat dissipation.

The limiting speeds with grease lubrication are determined using high quality grease in appropriate amounts. Those listed for oil lubrication are based on the use of oil-air (or oil mist) lubrication. In situations where the lubricating oil is used as a means to remove heat, higher speed can be achieved, however a large amount of oil must be pressure fed through the bearing, so there is significant loss of spindle power.

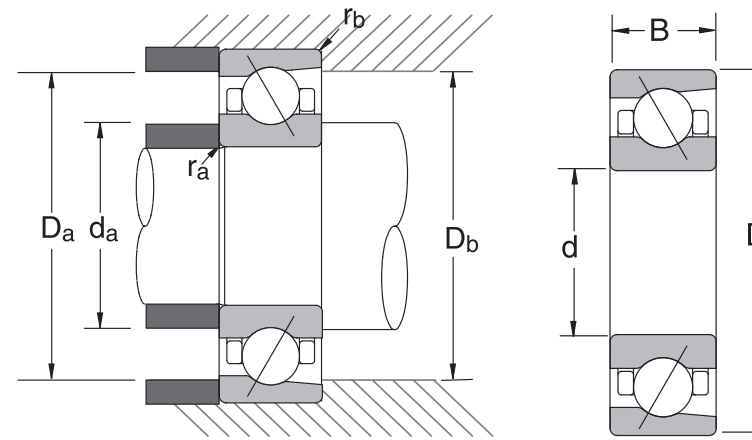
When single bearings are used in two, three or four row combinations, or the preload is increased to improve spindle rigidity, limiting speeds will be lower than those listed by the factors in the table below.

## Speed Factor

Arrangement	EL	L	M	H
DB	0.85	0.80	0.65	0.55
DBB	0.80	0.75	0.60	0.45
DBD	0.75	0.70	0.55	0.40

# Super Precision Angular Contact: 7000C Series

15° Contact Angle



COMMON OPTIONS	
TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
L	Light Preload
M	Medium Preload
H	Heavy Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal
SN24	Ceramic Rolling Element

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>a</sub> min	D <sub>a</sub> max	*D <sub>b</sub> max	r <sub>a</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	
7000C	10	0.3937	26	1.0236	8	0.3150	0.492	0.925	0.976	0.012	0.006
7001C	12	0.4724	28	1.1024	8	0.3150	0.571	1.004	1.055	0.012	0.006
7002C	15	0.5906	32	1.2598	9	0.3543	0.689	1.161	1.213	0.012	0.006
7003C	17	0.6693	35	1.3780	10	0.3937	0.768	1.280	1.331	0.012	0.006
7004C	20	0.7874	42	1.6535	12	0.4724	0.984	1.457	1.555	0.024	0.012
7005C	25	0.9843	47	1.8504	12	0.4724	1.181	1.654	1.752	0.024	0.012
7006C	30	1.1811	55	2.1654	13	0.5118	1.417	1.929	1.969	0.039	0.020
7007C	35	1.3780	62	2.4409	14	0.5512	1.614	2.205	2.244	0.039	0.020
7008C	40	1.5748	68	2.6772	15	0.5906	1.811	2.441	2.480	0.039	0.020
7009C	45	1.7717	75	2.9528	16	0.6299	2.008	2.717	2.756	0.039	0.020
7010C	50	1.9685	80	3.1496	16	0.6299	2.205	2.913	2.953	0.039	0.020
7011C	55	2.1654	90	3.5433	18	0.7087	2.441	3.268	3.346	0.039	0.024
7012C	60	2.3622	95	3.7402	18	0.7087	2.638	3.465	3.543	0.039	0.024
7013C	65	2.5591	100	3.9370	18	0.7087	2.835	3.661	3.740	0.039	0.024
7014C	70	2.7559	110	4.3307	20	0.7874	3.031	4.055	4.134	0.039	0.024
7015C	75	2.9528	115	4.5276	20	0.7874	3.228	4.252	4.331	0.039	0.024
7016C	80	3.1496	125	4.9213	22	0.8661	3.425	4.646	4.724	0.039	0.024
7017C	85	3.3465	130	5.1181	22	0.8661	3.622	4.843	4.921	0.039	0.024
7018C	90	3.5433	140	5.5118	24	0.9449	3.898	5.157	5.276	0.059	0.031
7019C	95	3.7402	145	5.7087	24	0.9449	4.094	5.354	5.472	0.059	0.031
7020C	100	3.9370	150	5.9055	24	0.9449	4.291	5.551	5.669	0.059	0.031
7021C	105	4.1339	160	6.2992	26	1.0236	4.528	5.906	6.063	0.079	0.039
7022C	110	4.3307	170	6.6929	28	1.1024	4.724	6.299	6.457	0.079	0.039
7024C	120	4.7244	180	7.0866	28	1.1024	5.118	6.693	6.850	0.079	0.039
7026C	130	5.1181	200	7.8740	33	1.2992	5.512	7.480	7.638	0.079	0.039
7028C	140	5.5118	210	8.2677	33	1.2992	5.906	7.874	8.031	0.079	0.039
7030C	150	5.9055	225	8.8583	35	1.3780	6.378	8.386	8.583	0.079	0.039
7032C	160	6.2992	240	9.4488	38	1.4961	6.772	8.976	9.173	0.079	0.039
7034C	170	6.6929	260	10.2362	42	1.6535	7.165	9.764	9.961	0.079	0.039
7036C	180	7.0866	280	11.0236	46	1.8110	7.559	10.551	10.748	0.079	0.039
7038C	190	7.4803	290	11.4173	46	1.8110	7.953	10.945	11.142	0.079	0.039
7040C	200	7.8740	310	12.2047	51	2.0079	8.346	11.732	11.929	0.079	0.039

\*D<sub>a</sub> is housing diameter for low shoulder      r<sub>b</sub> is housing fillet radius for low shoulder  
 For application limiting speed, please refer to page H-2.  
 Note: When a ceramic ball is used, limiting speed value will be 1.25 times the value of the steel ball.

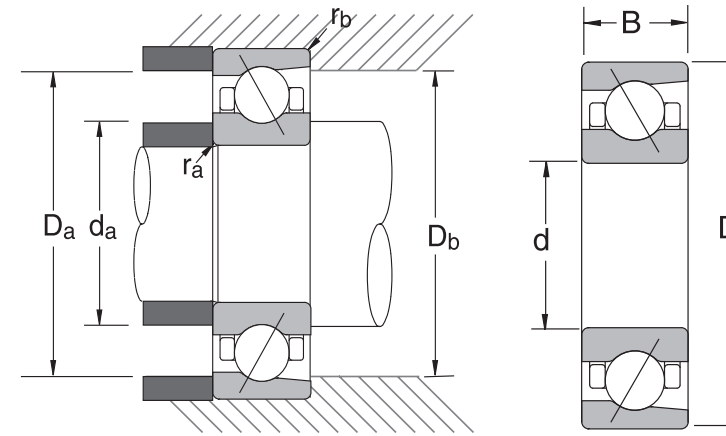
Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil		
	7000C	1190	560	63.9	97.3	0.05
7001C	1300	650	57.5	87.5	0.05	-
7002C	1400	760	49.0	74.5	0.07	-
7003C	1490	860	44.3	67.4	0.10	-
7004C	2490	1470	37.1	56.5	0.17	-
7005C	2620	1660	32.0	48.7	0.19	-
7006C	3400	2310	27.1	41.2	0.29	*
7007C	4300	3060	23.8	36.1	0.37	*
7008C	4630	3570	21.3	32.5	0.46	*
7009C	5490	4320	19.2	29.2	0.59	*
7010C	5840	4920	17.7	27.0	0.64	*
7011C	7720	6440	15.9	24.2	0.93	*
7012C	7940	6940	14.9	22.6	0.99	*
7013C	8380	7720	14.0	21.3	1.06	*
7014C	10600	9700	12.8	19.5	1.49	*
7015C	10800	10300	12.2	18.5	1.62	*
7016C	13200	12500	11.3	17.1	2.11	*
7017C	13600	13200	10.7	16.3	2.21	*
7018C	16100	15500	10.0	15.3	2.91	*
7019C	16500	16400	9.6	14.6	3.06	*
7020C	17000	17400	9.2	14.0	3.18	*
7021C	19800	20100	8.7	13.3	3.97	-
7022C	23800	23400	8.3	12.5	4.94	-
7024C	25100	26200	7.7	11.7	5.31	-
7026C	29100	30900	7.0	10.7	8.03	-
7028C	29800	32600	6.6	10.0	8.49	-
7030C	34000	37900	6.2	9.4	10.30	-
7032C	38400	43400	5.8	8.8	12.55	-
7034C	46100	52700	5.4	8.2	17.20	-
7036C	51400	61900	5.0	7.7	22.49	-
7038C	55300	69400	4.8	7.3	24.48	-
7040C	59500	76100	4.6	6.9	29.77	-

C<sub>r</sub> = Dynamic Radial Load Rating      C<sub>or</sub> = Static Radial Load Rating



# Super Precision Angular Contact: 7000A5 Series

25° Contact Angle



COMMON OPTIONS	
TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
L	Light Preload
M	Medium Preload
H	Heavy Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal
SN24	Ceramic Rolling Element

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>a</sub> min	D <sub>a</sub> max	*D <sub>b</sub> max	r <sub>a</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	
7000A5	10	0.3937	26	1.0236	8	0.3150	0.492	0.925	0.976	0.012	0.006
7001A5	12	0.4724	28	1.1024	8	0.3150	0.571	1.004	1.055	0.012	0.006
7002A5	15	0.5906	32	1.2598	9	0.3543	0.689	1.161	1.213	0.012	0.006
7003A5	17	0.6693	35	1.3780	10	0.3937	0.768	1.280	1.331	0.012	0.006
7004A5	20	0.7874	42	1.6535	12	0.4724	0.984	1.457	1.555	0.024	0.012
7005A5	25	0.9843	47	1.8504	12	0.4724	1.181	1.654	1.752	0.024	0.012
7006A5	30	1.1811	55	2.1654	13	0.5118	1.417	1.929	1.969	0.039	0.020
7007A5	35	1.3780	62	2.4409	14	0.5512	1.614	2.205	2.244	0.039	0.020
7008A5	40	1.5748	68	2.6772	15	0.5906	1.811	2.441	2.480	0.039	0.020
7009A5	45	1.7717	75	2.9528	16	0.6299	2.008	2.717	2.756	0.039	0.020
7010A5	50	1.9685	80	3.1496	16	0.6299	2.205	2.913	2.953	0.039	0.020
7011A5	55	2.1654	90	3.5433	18	0.7087	2.441	3.268	3.346	0.039	0.024
7012A5	60	2.3622	95	3.7402	18	0.7087	2.638	3.465	3.543	0.039	0.024
7013A5	65	2.5591	100	3.9370	18	0.7087	2.835	3.661	3.740	0.039	0.024
7014A5	70	2.7559	110	4.3307	20	0.7874	3.031	4.055	4.134	0.039	0.024
7015A5	75	2.9528	115	4.5276	20	0.7874	3.228	4.252	4.331	0.039	0.024
7016A5	80	3.1496	125	4.9213	22	0.8661	3.425	4.646	4.724	0.039	0.024
7017A5	85	3.3465	130	5.1181	22	0.8661	3.622	4.843	4.921	0.039	0.024
7018A5	90	3.5433	140	5.5118	24	0.9449	3.898	5.157	5.276	0.059	0.031
7019A5	95	3.7402	145	5.7087	24	0.9449	4.094	5.354	5.472	0.059	0.031
7020A5	100	3.9370	150	5.9055	24	0.9449	4.291	5.551	5.669	0.059	0.031
7021A5	105	4.1339	160	6.2992	26	1.0236	4.528	5.906	6.063	0.079	0.039
7022A5	110	4.3307	170	6.6929	28	1.1024	4.724	6.299	6.457	0.079	0.039
7024A5	120	4.7244	180	7.0866	28	1.1024	5.118	6.693	6.850	0.079	0.039
7026A5	130	5.1181	200	7.8740	33	1.2992	5.512	7.480	7.638	0.079	0.039
7028A5	140	5.5118	210	8.2677	33	1.2992	5.906	7.874	8.031	0.079	0.039
7030A5	150	5.9055	225	8.8583	35	1.3780	6.378	8.386	8.583	0.079	0.039
7032A5	160	6.2992	240	9.4488	38	1.4961	6.772	8.976	9.173	0.079	0.039
7034A5	170	6.6929	260	10.2362	42	1.6535	7.165	9.764	9.961	0.079	0.039
7036A5	180	7.0866	280	11.0236	46	1.8110	7.559	10.551	10.748	0.079	0.039
7038A5	190	7.4803	290	11.4173	46	1.8110	7.953	10.945	11.142	0.079	0.039
7040A5	200	7.8740	310	12.2047	51	2.0079	8.346	11.732	11.929	0.079	0.012

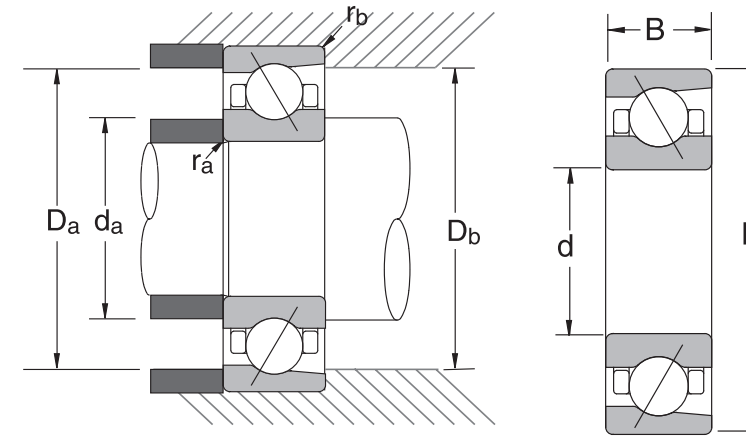
\*D<sub>b</sub> is housing diameter for low shoulder      r<sub>b</sub> is housing fillet radius for low shoulder  
 For application limiting speed, please refer to page H-2.  
 Note: When a ceramic ball is used, limiting speed value will be 1.25 times the value of the steel ball.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil		
7000A5	1160	540	55.6	83.4	0.04	-
7001A5	1260	630	50.0	75.0	0.05	-
7002A5	1340	730	42.6	63.9	0.07	-
7003A5	1420	820	38.5	57.7	0.09	-
7004A5	2380	1410	37.1	56.5	0.15	-
7005A5	2510	1600	27.8	41.7	0.17	-
7006A5	3240	2190	23.6	35.3	0.25	*
7007A5	4080	2930	20.7	31.0	0.33	*
7008A5	4390	3400	18.6	27.8	0.41	*
7009A5	5200	4120	16.7	25.0	0.55	*
7010A5	5530	4670	15.4	23.1	0.60	*
7011A5	7280	6130	13.8	20.7	0.84	*
7012A5	7500	6550	13.0	19.4	0.90	*
7013A5	7940	7280	12.2	18.2	1.00	*
7014A5	10000	9150	11.2	16.7	1.38	*
7015A5	10300	9700	10.6	15.8	1.44	*
7016A5	12500	11800	9.8	14.7	1.94	*
7017A5	12800	12500	9.4	14.0	1.99	*
7018A5	15200	14800	8.7	13.1	2.58	*
7019A5	15700	15700	8.4	12.5	3.11	*
7020A5	16000	16400	8.0	12.0	3.20	*
7021A5	18700	19100	7.5	11.4	4.01	-
7022A5	22500	22300	7.2	10.8	4.98	-
7024A5	23800	24900	6.7	10.0	5.36	-
7026A5	27600	29300	6.1	9.1	8.07	-
7028A5	28000	30900	5.8	8.6	8.53	-
7030A5	32000	35900	5.4	8.0	10.34	-
7032A5	36400	41200	5.0	7.5	12.59	-
7034A5	37500	43400	4.7	7.0	17.27	-
7036A5	41700	51100	4.4	6.6	22.93	-
7038A5	45000	56900	4.2	6.3	24.70	-
7040A5	48300	63100	4.0	5.9	30.21	-

C<sub>r</sub> = Dynamic Radial Load Rating      C<sub>or</sub> = Static Radial Load Rating

# Super Precision Angular Contact: 7200C Series

15° Contact Angle



COMMON OPTIONS	
TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
L	Light Preload
M	Medium Preload
H	Heavy Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal
SN24	Ceramic Rolling Element

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>a</sub> min	D <sub>a</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	
7200C	10	0.3937	30	1.1811	9	0.3543	0.591	0.984	1.083	0.024	0.012
7201C	12	0.4724	32	1.2598	10	0.3937	0.669	1.063	1.161	0.024	0.012
7202C	15	0.5906	35	1.3780	11	0.4331	0.787	1.181	1.280	0.024	0.012
7203C	17	0.6693	40	1.5748	12	0.4724	0.866	1.378	1.476	0.024	0.020
7204C	20	0.7874	47	1.8504	14	0.5512	1.024	1.614	1.654	0.039	0.020
7205C	25	0.9843	52	2.0472	15	0.5906	1.220	1.811	1.850	0.039	0.020
7206C	30	1.1811	62	2.4409	16	0.6299	1.417	2.205	2.244	0.039	0.024
7207C	35	1.3780	72	2.8346	17	0.6693	1.654	2.559	2.638	0.039	0.024
7208C	40	1.5748	80	3.1496	18	0.7087	1.850	2.874	2.953	0.039	0.024
7209C	45	1.7717	85	3.3465	19	0.7480	2.047	3.071	3.150	0.039	0.024
7210C	50	1.9685	90	3.5433	20	0.7874	2.244	3.268	3.346	0.039	0.031
7211C	55	2.1654	100	3.9370	21	0.8268	2.520	3.583	3.701	0.059	0.031
7212C	60	2.3622	110	4.3307	22	0.8661	2.717	3.976	4.094	0.059	0.031
7213C	65	2.5591	120	4.7244	23	0.9055	2.913	4.370	4.488	0.059	0.031
7214C	70	2.7559	125	4.9213	24	0.9449	3.110	4.567	4.685	0.059	0.031
7215C	75	2.9528	130	5.1181	25	0.9843	3.307	4.764	4.882	0.059	0.031
7216C	80	3.1496	140	5.5118	26	1.0236	3.543	5.118	5.276	0.079	0.039
7217C	85	3.3465	150	5.9055	28	1.1024	3.740	5.512	5.669	0.079	0.039
7218C	90	3.5433	160	6.2992	30	1.1811	3.937	5.906	6.063	0.079	0.039
7219C	95	3.7402	170	6.6929	32	1.2598	4.213	6.220	6.417	0.079	0.039
7220C	100	3.9370	180	7.0866	34	1.3386	4.409	6.614	6.811	0.079	0.039
7221C	105	4.1339	190	7.4803	36	1.4173	4.606	7.008	7.205	0.079	0.039
7222C	110	4.3307	200	7.8740	38	1.4961	4.803	7.402	7.598	0.079	0.039
7224C	120	4.7244	215	8.4646	40	1.5748	5.197	7.992	8.189	0.079	0.039
7226C	130	5.1181	230	9.0551	40	1.5748	5.669	8.504	8.780	0.098	0.039
7228C	140	5.5118	250	9.8425	42	1.6535	6.063	9.291	9.567	0.098	0.039
7230C	150	5.9055	270	10.6299	45	1.7717	6.457	10.079	10.354	0.098	0.039
7232C	160	6.2992	290	11.4173	48	1.8898	6.850	10.866	11.142	0.098	0.039
7234C	170	6.6929	310	12.2047	52	2.0472	7.402	11.496	11.850	0.118	0.059
7236C	180	7.0866	320	12.5984	52	2.0472	7.795	11.890	12.244	0.118	0.059
7238C	190	7.4803	340	13.3858	55	2.1654	8.189	12.677	13.031	0.118	0.059
7240C	200	7.8740	360	14.1732	58	2.2835	8.583	13.465	13.819	0.118	0.059

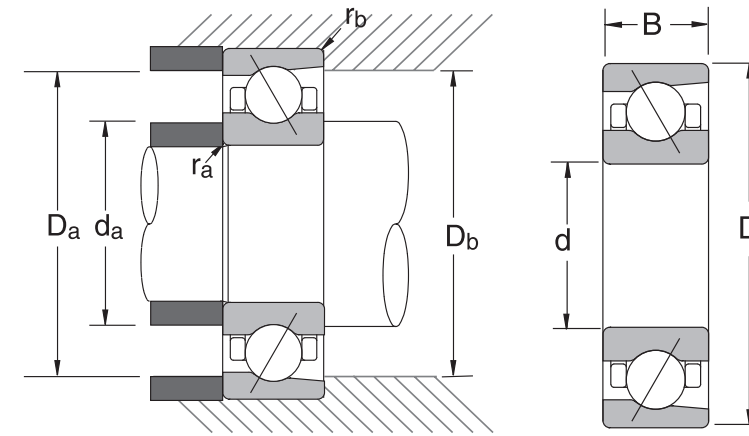
\*D<sub>a</sub> is housing diameter for low shoulder      r<sub>b</sub> is housing fillet radius for low shoulder  
 For application limiting speed, please refer to page H-2.  
 Note: When a ceramic ball is used, limiting speed value will be 1.25 times the value of the steel ball.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.) (lbs)
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil	
	7200C	1210	590	57.5	87.5
7201C	1770	870	52.3	79.6	0.08
7202C	1950	1010	46.0	70.0	0.09
7203C	2450	1310	40.4	61.5	0.14
7204C	3260	1820	34.4	52.3	0.22
7205C	3730	2290	29.9	45.5	0.28
7206C	5180	3310	25.0	38.1	0.42
7207C	6830	4480	21.5	32.8	0.60
7208C	8160	5670	19.2	29.2	0.79
7209C	9150	6480	17.7	27.0	0.87
7210C	9590	7170	16.5	25.0	0.99
7211C	11900	9040	14.9	22.6	1.29
7212C	14400	11000	13.6	20.6	1.69
7213C	16400	13200	12.5	19.0	2.19
7214C	17900	14600	11.8	18.0	2.36
7215C	18600	15700	11.3	17.1	2.58
7216C	20800	17400	10.5	16.0	3.09
7217C	24000	20400	9.8	14.9	3.90
7218C	27600	23600	9.2	14.0	4.83
7219C	29800	25100	8.7	13.3	5.73
7220C	33500	28400	8.3	12.5	6.90
7221C	36600	32200	7.8	11.9	8.22
7222C	39500	35900	7.5	11.3	9.70
7224C	44800	43200	6.9	10.5	11.84
7226C	46500	47000	6.4	9.8	13.60
7228C	53600	57100	5.9	9.0	17.29
7230C	60800	68300	5.5	8.4	24.48
7232C	64400	75000	5.2	7.8	30.65
7234C	71700	87100	4.8	7.3	38.37
7236C	75000	93700	4.6	7.0	39.25
7238C	77200	101000	4.4	6.7	48.73
7240C	82700	110000	4.2	6.3	57.77

C<sub>r</sub> = Dynamic Radial Load Rating      C<sub>or</sub> = Static Radial Load Rating

# Super Precision Angular Contact: 7200A5 Series

25° Contact Angle



COMMON OPTIONS	
TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
L	Light Preload
M	Medium Preload
H	Heavy Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal
SN24	Ceramic Rolling Element

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	
7200A5	10	0.3937	30	1.1811	9	0.3543	0.591	0.984	1.083	0.024	0.012
7201A5	12	0.4724	32	1.2598	10	0.3937	0.669	1.063	1.161	0.024	0.012
7202A5	15	0.5906	35	1.3780	11	0.4331	0.787	1.181	1.280	0.024	0.012
7203A5	17	0.6693	40	1.5748	12	0.4724	0.866	1.378	1.476	0.024	0.012
7204A5	20	0.7874	47	1.8504	14	0.5512	1.024	1.614	1.654	0.039	0.020
7205A5	25	0.9843	52	2.0472	15	0.5906	1.220	1.811	1.850	0.039	0.020
7206A5	30	1.1811	62	2.4409	16	0.6299	1.417	2.205	2.244	0.039	0.020
7207A5	35	1.3780	72	2.8346	17	0.6693	1.654	2.559	2.638	0.039	0.024
7208A5	40	1.5748	80	3.1496	18	0.7087	1.850	2.874	2.953	0.039	0.024
7209A5	45	1.7717	85	3.3465	19	0.7480	2.047	3.071	3.150	0.039	0.024
7210A5	50	1.9685	90	3.5433	20	0.7874	2.244	3.268	3.346	0.039	0.024
7211A5	55	2.1654	100	3.9370	21	0.8268	2.520	3.583	3.701	0.059	0.031
7212A5	60	2.3622	110	4.3307	22	0.8661	2.717	3.976	4.094	0.059	0.031
7213A5	65	2.5591	120	4.7244	23	0.9055	2.913	4.370	4.488	0.059	0.031
7214A5	70	2.7559	125	4.9213	24	0.9449	3.110	4.567	4.685	0.059	0.031
7215A5	75	2.9528	130	5.1181	25	0.9843	3.307	4.764	4.882	0.059	0.031
7216A5	80	3.1496	140	5.5118	26	1.0236	3.543	5.118	5.276	0.079	0.039
7217A5	85	3.3465	150	5.9055	28	1.1024	3.740	5.512	5.669	0.079	0.039
7218A5	90	3.5433	160	6.2992	30	1.1811	3.937	5.906	6.063	0.079	0.039
7219A5	95	3.7402	170	6.6929	32	1.2598	4.213	6.220	6.417	0.079	0.039
7220A5	100	3.9370	180	7.0866	34	1.3386	4.409	6.614	6.811	0.079	0.039
7221A5	105	4.1339	190	7.4803	36	1.4173	4.606	7.008	7.205	0.079	0.039
7222A5	110	4.3307	200	7.8740	38	1.4961	4.803	7.402	7.598	0.079	0.039
7224A5	120	4.7244	215	8.4646	40	1.5748	5.197	7.992	8.189	0.079	0.039
7226A5	130	5.1181	230	9.0551	40	1.5748	5.669	8.504	8.780	0.098	0.039
7228A5	140	5.5118	250	9.8425	42	1.6535	6.063	9.291	9.567	0.098	0.039
7230A5	150	5.9055	270	10.6299	45	1.7717	6.457	10.079	10.354	0.098	0.039
7232A5	160	6.2992	290	11.4173	48	1.8898	6.850	10.866	11.142	0.098	0.039
7234A5	170	6.6929	310	12.2047	52	2.0472	7.402	11.496	11.850	0.118	0.059
7236A5	180	7.0866	320	12.5984	52	2.0472	7.795	11.890	12.244	0.118	0.059
7238A5	190	7.4803	340	13.3858	55	2.1654	8.189	12.677	13.031	0.118	0.059
7240A5	200	7.8740	360	14.1732	58	2.2835	8.583	13.465	13.819	0.118	0.059

\*D<sub>b</sub> is housing diameter for low shoulder      r<sub>b</sub> is housing fillet radius for low shoulder  
 For application limiting speed, please refer to page H-2.  
 Note: When a ceramic ball is used, limiting speed value will be 1.25 times the value of the steel ball.

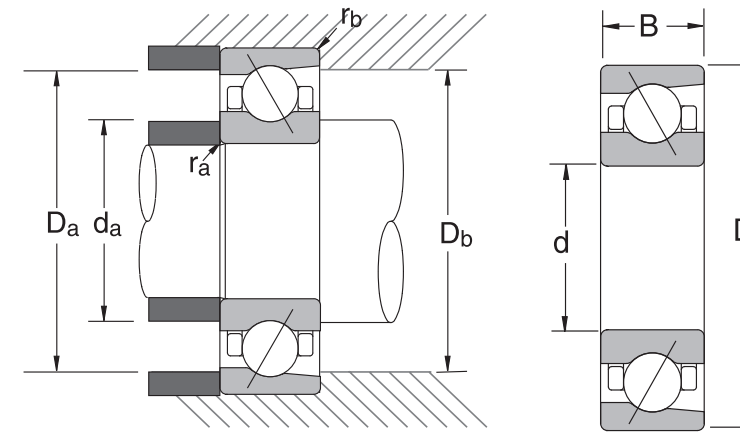
Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.) lbs
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil	
	7200A5	1140	550	50.0	
7201A5	1720	840	45.5	68.2	0.08
7202A5	1870	980	40.0	60.0	0.10
7203A5	2360	1260	35.1	52.7	0.14
7204A5	3150	1740	29.9	44.8	0.22
7205A5	3570	2190	26.0	39.0	0.29
7206A5	4960	3150	21.8	32.7	0.43
7207A5	6550	4300	18.7	28.1	0.61
7208A5	7830	5420	16.7	25.0	0.80
7209A5	8820	6190	15.4	23.1	0.89
7210A5	9150	6830	14.3	21.5	1.00
7211A5	11400	8600	13.0	19.4	1.31
7212A5	13800	10600	11.8	17.7	1.70
7213A5	15700	12600	10.9	16.3	2.21
7214A5	17100	13900	10.3	15.4	2.38
7215A5	17700	15000	9.8	14.7	2.60
7216A5	19800	16600	9.1	13.7	3.13
7217A5	22900	19400	8.6	12.8	3.95
7218A5	26200	22500	8.0	12.0	4.87
7219A5	28400	24000	7.6	11.4	5.80
7220A5	32000	27300	7.2	10.8	6.97
7221A5	34800	30600	6.8	10.2	8.31
7222A5	37700	34400	6.5	9.7	9.81
7224A5	42500	41200	6.0	9.0	11.95
7226A5	44100	44800	5.6	8.4	13.72
7228A5	50900	54500	5.2	7.7	17.44
7230A5	58000	65000	4.8	7.2	24.48
7232A5	61300	71700	3.6	4.8	30.87
7234A5	68300	83800	3.4	4.5	37.93
7236A5	71700	89300	3.2	4.5	39.47
7238A5	73900	95900	3.0	4.3	49.17
7240A5	78300	105000	2.8	4.0	58.21

C<sub>r</sub> = Dynamic Radial Load Rating      C<sub>or</sub> = Static Radial Load Rating



# Super Precision Angular Contact: 7900C Series

15° Contact Angle



COMMON OPTIONS	
TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
L	Light Preload
M	Medium Preload
H	Heavy Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal
SN24	Ceramic Rolling Element

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>a</sub> min	D <sub>a</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
7900C	10	0.3937	22	0.8661	6	0.2362	0.492	0.768	0.819	0.012	0.006
7901C	12	0.4724	24	0.9449	6	0.2362	0.571	0.846	0.898	0.012	0.006
7902C	15	0.5906	28	1.1024	7	0.2756	0.689	1.004	1.055	0.012	0.006
7903C	17	0.6693	30	1.1811	7	0.2756	0.768	1.083	1.134	0.012	0.006
7904C	20	0.7874	37	1.4567	9	0.3543	0.886	1.358	1.409	0.012	0.006
7905C	25	0.9843	42	1.6535	9	0.3543	1.083	1.555	1.606	0.012	0.006
7906C	30	1.1811	47	1.8504	9	0.3543	1.280	1.752	1.803	0.012	0.006
7907C	35	1.3780	55	2.1654	10	0.3937	1.575	1.969	2.067	0.024	0.012
7908C	40	1.5748	62	2.4409	12	0.4724	1.772	2.244	2.343	0.024	0.012
7909C	45	1.7717	68	2.6772	12	0.4724	1.969	2.480	2.579	0.024	0.012
7910C	50	1.9685	72	2.8346	12	0.4724	2.165	2.638	2.736	0.024	0.012
7911C	55	2.1654	80	3.1496	13	0.5118	2.402	2.913	2.953	0.039	0.020
7912C	60	2.3622	85	3.3465	13	0.5118	2.598	3.110	3.150	0.039	0.020
7913C	65	2.5591	90	3.5433	13	0.5118	2.795	3.307	3.346	0.039	0.020
7914C	70	2.7559	100	3.9370	16	0.6299	2.992	3.701	3.740	0.039	0.020
7915C	75	2.9528	105	4.1339	16	0.6299	3.189	3.898	3.937	0.039	0.020
7916C	80	3.1496	110	4.3307	16	0.6299	3.386	4.094	4.134	0.039	0.020
7917C	85	3.3465	120	4.7244	18	0.7087	3.622	4.449	4.528	0.039	0.024
7918C	90	3.5433	125	4.9213	18	0.7087	3.819	4.646	4.724	0.039	0.024
7919C	95	3.7402	130	5.1181	18	0.7087	4.016	4.843	4.921	0.039	0.024
7920C	100	3.9370	140	5.5118	20	0.7874	4.213	5.236	5.315	0.039	0.024
7921C	105	4.1339	145	5.7087	20	0.7874	4.409	5.433	5.512	0.039	0.024
7922C	110	4.3307	150	5.9055	20	0.7874	4.606	5.630	5.709	0.039	0.024
7924C	120	4.7244	165	6.4961	22	0.8661	5.000	6.220	6.299	0.039	0.024
7926C	130	5.1181	180	7.0866	24	0.9449	5.472	6.732	6.850	0.059	0.031
7928C	140	5.5118	190	7.4803	24	0.9449	5.866	7.126	7.244	0.059	0.031
7930C	150	5.9055	210	8.2677	28	1.1024	6.299	7.874	8.031	0.079	0.039
7932C	160	6.2992	220	8.6614	28	1.1024	6.693	8.268	8.425	0.079	0.039
7934C	170	6.6929	230	9.0551	28	1.1024	7.087	8.661	8.819	0.079	0.039
7936C	180	7.0866	250	9.8425	33	1.2992	7.480	9.449	9.606	0.079	0.039
7938C	190	7.4803	260	10.2362	33	1.2992	7.874	9.843	10.000	0.079	0.039
7940C	200	7.8740	280	11.0236	38	1.4961	8.346	10.551	10.748	0.079	0.039

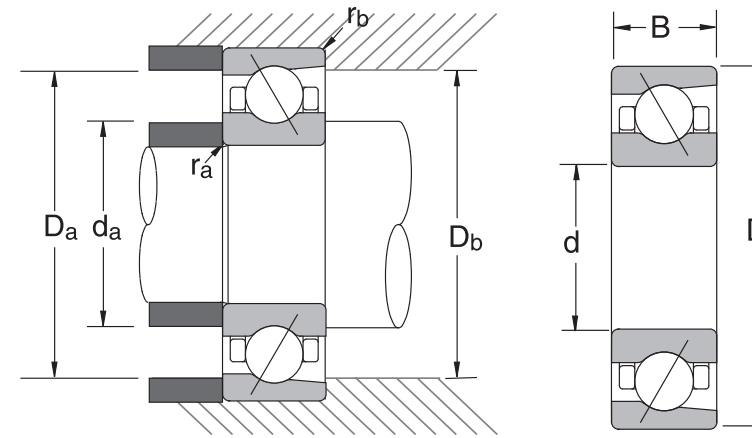
\*d<sub>a</sub> is housing diameter for low shoulder      r<sub>b</sub> is housing fillet radius for low shoulder  
 For application limiting speed, please refer to page H-2.  
 Note: When a ceramic ball is used, limiting speed value will be 1.25 times the value of the steel ball.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil		
	7900C	670	340	71.9	109.4	0.02
7901C	750	420	63.9	97.3	0.02	-
7902C	1070	600	53.5	81.4	0.03	-
7903C	1120	660	49.0	74.5	0.04	-
7904C	1570	950	40.4	61.5	0.08	-
7905C	1760	1220	34.4	52.3	0.09	-
7906C	1860	1410	29.9	45.5	0.11	*
7907C	2710	2050	25.6	38.9	0.16	*
7908C	3400	2650	22.6	34.4	0.24	*
7909C	3590	3000	20.4	31.0	0.28	*
7910C	3790	3370	18.9	28.7	0.28	*
7911C	4300	3990	17.1	26.0	0.39	*
7912C	4370	4210	15.9	24.2	0.42	*
7913C	4540	4610	14.9	22.6	0.45	*
7914C	6330	6240	13.6	20.6	0.73	*
7915C	6420	6570	12.8	19.5	0.78	*
7916C	6530	6940	12.2	18.5	0.82	*
7917C	8710	9150	11.3	17.1	1.15	*
7918C	9370	10400	10.7	16.3	1.22	*
7919C	9480	10800	10.3	15.6	1.28	*
7920C	11200	12200	9.6	14.6	1.73	*
7921C	11500	12800	9.2	14.0	1.79	-
7922C	11700	13300	8.9	13.5	1.87	-
7924C	16100	18300	8.1	12.3	2.51	-
7926C	17600	20400	7.5	11.3	3.31	-
7928C	17900	21400	7.0	10.7	3.55	-
7930C	22900	27300	6.4	9.8	6.54	-
7932C	23800	29800	6.1	9.3	6.81	-
7934C	25400	33300	5.8	8.8	7.34	-
7936C	32600	41400	5.4	8.2	10.80	-
7938C	33100	43200	5.2	7.8	11.16	-
7940C	42500	54900	4.8	7.3	15.10	-

C<sub>r</sub> = Dynamic Radial Load Rating      C<sub>or</sub> = Static Radial Load Rating

# Super Precision Angular Contact: 7900A5 Series

25° Contact Angle



COMMON OPTIONS	
TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
L	Light Preload
M	Medium Preload
H	Heavy Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal
SN24	Ceramic Rolling Element

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>a</sub> min	D <sub>a</sub> max	*D <sub>b</sub> max	r <sub>a</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
7900A5	10	0.3937	22	0.8661	6	0.2362	0.492	0.768	0.819	0.012	0.006
7901A5	12	0.4724	24	0.9449	6	0.2362	0.571	0.846	0.898	0.012	0.006
7902A5	15	0.5906	28	1.1024	7	0.2756	0.689	1.004	1.055	0.012	0.006
7903A5	17	0.6693	30	1.1811	7	0.2756	0.768	1.083	1.134	0.012	0.006
7904A5	20	0.7874	37	1.4567	9	0.3543	0.886	1.358	1.409	0.012	0.006
7905A5	25	0.9843	42	1.6535	9	0.3543	1.083	1.555	1.606	0.012	0.006
7906A5	30	1.1811	47	1.8504	9	0.3543	1.280	1.752	1.803	0.012	0.006
7907A5	35	1.3780	55	2.1654	10	0.3937	1.575	1.969	2.067	0.024	0.012
7908A5	40	1.5748	62	2.4409	12	0.4724	1.772	2.244	2.343	0.024	0.012
7909A5	45	1.7717	68	2.6772	12	0.4724	1.969	2.480	2.579	0.024	0.012
7910A5	50	1.9685	72	2.8346	12	0.4724	2.165	2.638	2.736	0.024	0.012
7911A5	55	2.1654	80	3.1496	13	0.5118	2.402	2.913	2.953	0.039	0.020
7912A5	60	2.3622	85	3.3465	13	0.5118	2.598	3.110	3.150	0.039	0.020
7913A5	65	2.5591	90	3.5433	13	0.5118	2.795	3.307	3.346	0.039	0.020
7914A5	70	2.7559	100	3.9370	16	0.6299	2.992	3.701	3.740	0.039	0.020
7915A5	75	2.9528	105	4.1339	16	0.6299	3.189	3.898	3.937	0.039	0.020
7916A5	80	3.1496	110	4.3307	16	0.6299	3.386	4.094	4.134	0.039	0.020
7917A5	85	3.3465	120	4.7244	18	0.7087	3.622	4.449	4.528	0.039	0.024
7918A5	90	3.5433	125	4.9213	18	0.7087	3.819	4.646	4.724	0.039	0.024
7919A5	95	3.7402	130	5.1181	18	0.7087	4.016	4.843	4.921	0.039	0.024
7920A5	100	3.9370	140	5.5118	20	0.7874	4.213	5.236	5.315	0.039	0.024
7921A5	105	4.1339	145	5.7087	20	0.7874	4.409	5.433	5.512	0.039	0.024
7922A5	110	4.3307	150	5.9055	20	0.7874	4.606	5.630	5.709	0.039	0.024
7924A5	120	4.7244	165	6.4961	22	0.8661	5.000	6.220	6.299	0.039	0.024
7926A5	130	5.1181	180	7.0866	24	0.9449	5.472	6.732	6.850	0.059	0.031
7928A5	140	5.5118	190	7.4803	24	0.9449	5.866	7.126	7.244	0.059	0.031
7930A5	150	5.9055	210	8.2677	28	1.1024	6.299	7.874	8.031	0.079	0.039
7932A5	160	6.2992	220	8.6614	28	1.1024	6.693	8.268	8.425	0.079	0.039
7934A5	170	6.6929	230	9.0551	28	1.1024	7.087	8.661	8.819	0.079	0.039
7936A5	180	7.0866	250	9.8425	33	1.2992	7.480	9.449	9.606	0.079	0.039
7938A5	190	7.4803	260	10.2362	33	1.2992	7.874	9.843	10.000	0.079	0.039
7940A5	200	7.8740	280	11.0236	38	1.4961	8.346	10.551	10.748	0.079	0.039

\*D<sub>b</sub> is housing diameter for low shoulder      r<sub>b</sub> is housing fillet radius for low shoulder

For application limiting speed, please refer to page H-2.

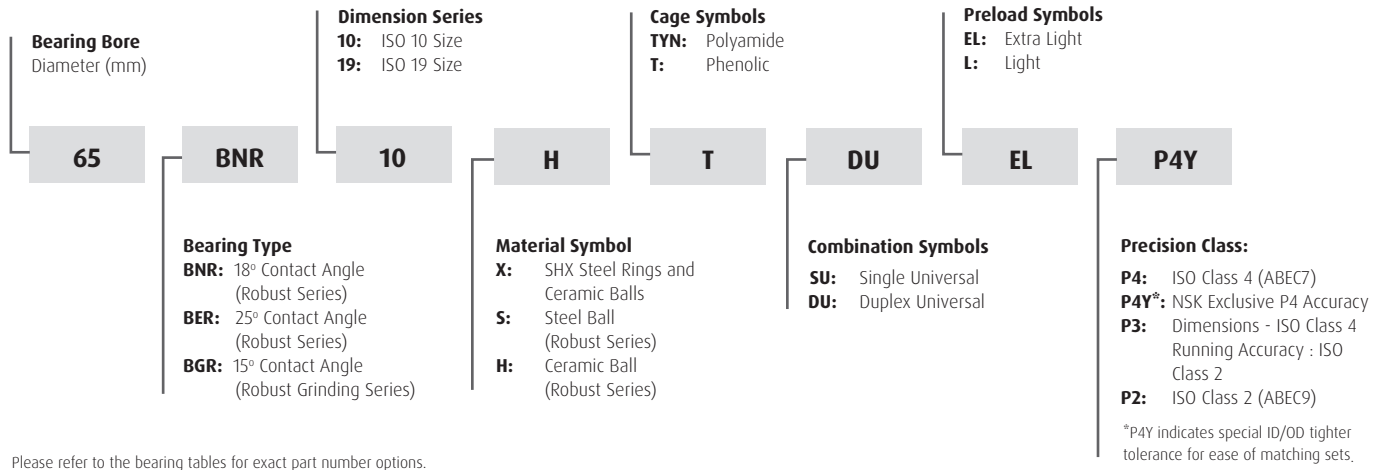
Note: When a ceramic ball is used, limiting speed value will be 1.25 times the value of the steel ball.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil		
	7900A5	650	330	62.5	93.8	0.02
7901A5	720	400	55.6	83.4	0.02	-
7902A5	1030	570	46.6	69.8	0.03	-
7903A5	1070	630	42.6	63.9	0.04	-
7904A5	1490	900	35.1	52.7	0.08	-
7905A5	1680	1160	29.9	44.8	0.09	-
7906A5	1760	1330	26.0	39.0	0.11	*
7907A5	2580	1950	22.3	33.4	0.16	*
7908A5	3220	2510	19.7	29.5	0.24	*
7909A5	3400	2840	17.7	26.6	0.28	*
7910A5	3590	3200	16.4	24.6	0.29	*
7911A5	4060	3770	14.9	22.3	0.40	*
7912A5	4120	3990	13.8	20.7	0.38	*
7913A5	4280	4370	13.0	19.4	0.45	*
7914A5	5970	5910	11.8	17.7	0.74	*
7915A5	6060	6220	11.2	16.7	0.78	*
7916A5	6150	6530	10.6	15.8	0.83	*
7917A5	8270	8600	9.8	14.7	1.16	*
7918A5	8820	9810	9.4	14.0	1.23	*
7919A5	8930	10300	8.9	13.4	1.30	*
7920A5	10700	11600	8.4	12.5	1.75	*
7921A5	10800	12100	8.0	12.0	1.81	-
7922A5	11000	12700	7.7	11.6	1.89	-
7924A5	15200	17300	7.1	10.6	2.54	-
7926A5	16600	19300	6.5	9.7	3.35	-
7928A5	16900	20300	6.1	9.1	3.59	-
7930A5	21700	26000	5.6	8.4	6.55	-
7932A5	22500	28200	5.3	7.9	6.88	-
7934A5	23800	31500	5.0	7.5	7.41	-
7936A5	30600	39200	4.7	7.0	10.89	-
7938A5	31100	40800	4.5	6.7	11.29	-
7940A5	40100	52000	4.2	6.3	15.26	-

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# High Speed Super Precision Angular Contact Ball Bearings



Please refer to the bearing tables for exact part number options.

## Interchange

Description		Interchange						
		NSK	*OLD NSK	SKF	BARDEN	FAF/TIMKEN	SNFA	NTN
Part No.	Ultra Light Robust High Speed Series	XXBNR19	XXBNC19	719XXCE	ZSB19XX	93XXWO,WN,HX	VEBXX	HSB9XX
	Extra Light Robust High Speed Series	XXBNR10	XXBNC10	70XXCE	ZSB1XX	91XXWO,WN,HX	VEXXX	HSB0XX
	Ultra Light Robust High Speed Series for Grinding Spindles	XXBGR19	XXBNT19	-	-	-	-	BNT9XX
	Extra Light Robust High Speed Series for Grinding Spindles	XXBGR10	XXBNT10	-	XXBX48	-	-	BNT0XX
Part Number Suffix	Polyamide Cage	TYN	TY	BLANK, TNH	TMT	PRC	P	T2
	Phenolic Cage	TR	T	-	T, TA	CR	C	T1
	Duplex Universal	DU	DU	DG	DU	DU	DU	D
	Single Universal	SU	SU	G	U	SU	U	BLANK
	Extra Light Preload	EL	EL	A	-	X	-	GL
	Light Preload	L	L	B	L	L	L	GN
	Ceramic Balls	H	SN24	HC	C**	C**	/NS	5S**
	Steel Balls	S	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK
	ABEC 7 Precision	P4Y	P4	P4	BLANK	MM/MMV**	7	P4
ABEC 9 Precision	P2	P2	P2	ABEC 9	MMX**	9	P2	

\*BNR has replaced BNC series. P4Y tolerance specification replaces P4. P4Y tolerance specification has tighter bore and OD control than ABEC 7 (class 4 or P4). NSK supplies the following bearing series with P4Y tolerance: 7000; 7200; 7900; and BNR.

\*\* Indicates prefix not suffix

The competitive manufacturers are provided for a convenient source of unit substitution. They can be considered interchangeable in most instances, but for special applications, please contact NSK. NSK assumes no liability with respect to errors or omissions.

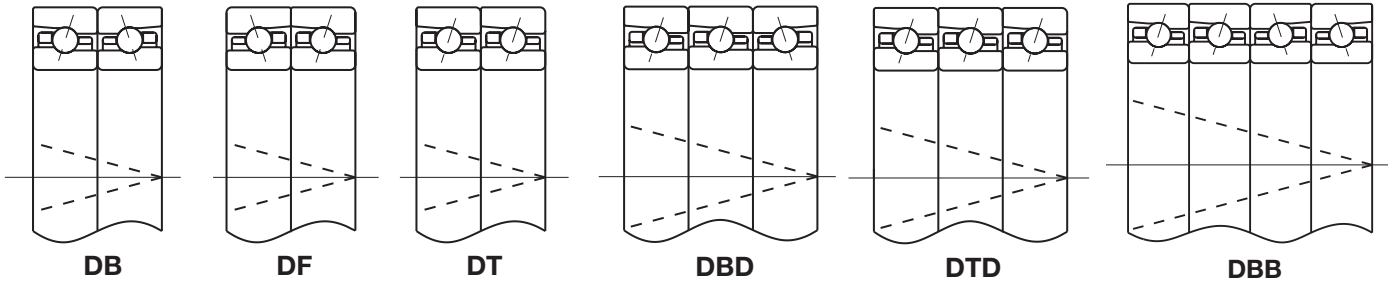
## Applications

High Speed Super Precision Angular Contact bearings are now available due to NSK's new optimized design, under the ROBUST name. Allowing increased speeds and improved performance, these series are available in applications specific designs for machining center applications (BNR), and high speed grinding applications (BGR) – both allowing customers to push the limits of existing speeds.

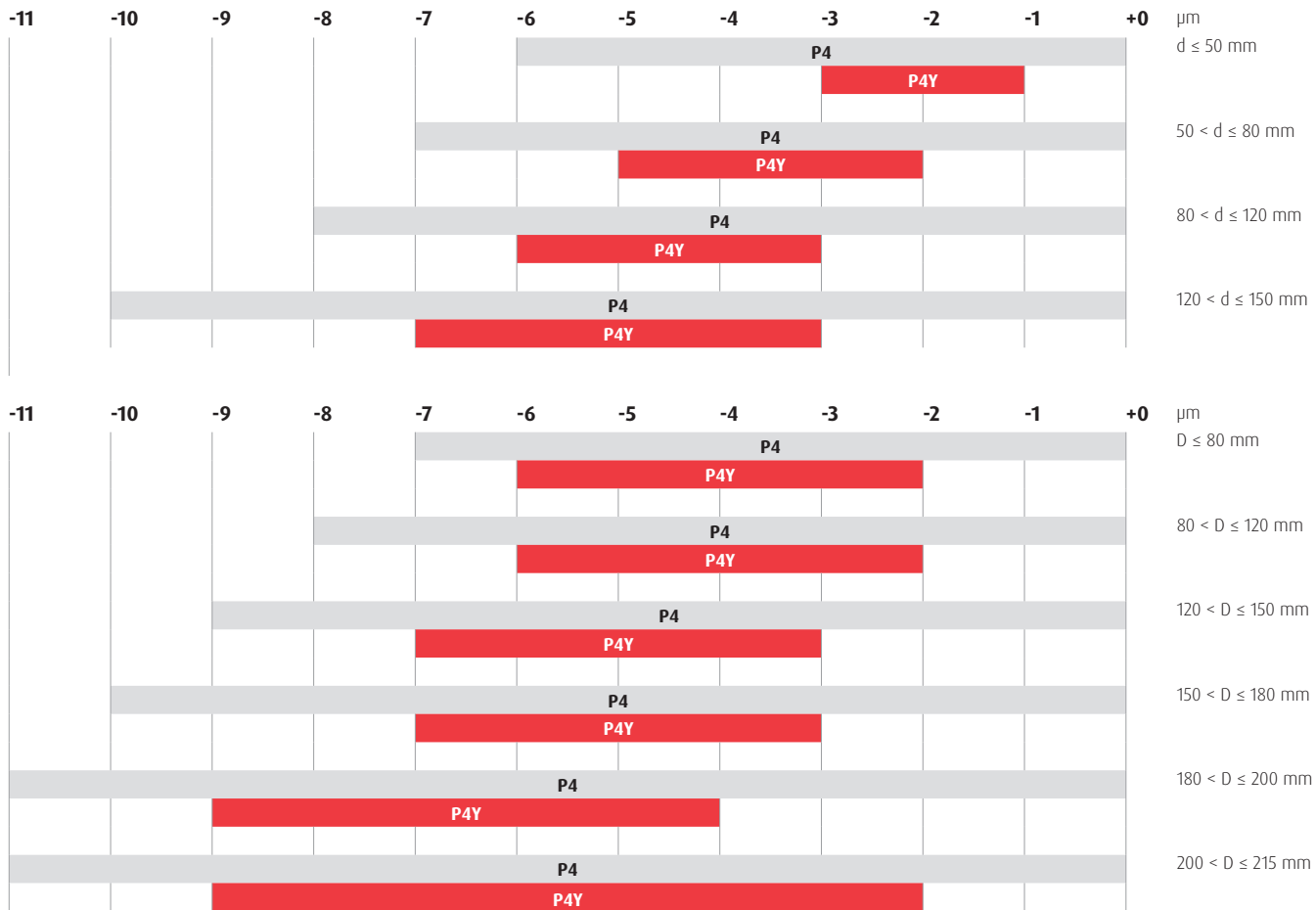
› Machining Centers › Grinding Machines › High Frequency Spindles › Lathes › Milling Machines

# High Speed Super Precision Angular Contact Ball Bearings

Example of Outer and Inner Ring Face Arrangements for a Variety of Matching Combinations



P4Y Bore and OD Tolerance - Exclusive to NSK





# Recommended Grease Quantities

## The Recommended Grease Quantities for High-Speed Spindle Bearings

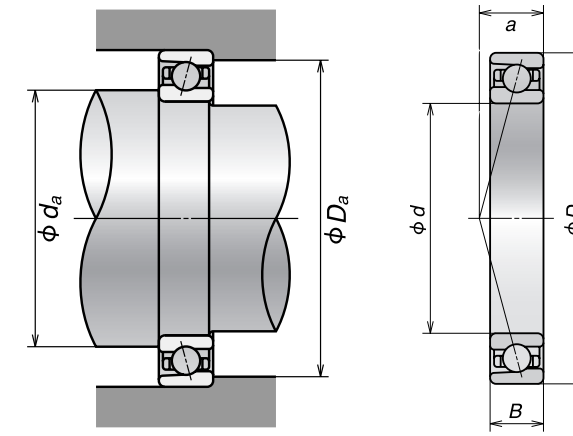
Unit: cc/bearing

Bore Number	Bore Diameter (mm)	Angular Contact Ball Bearing : 15% of internal space				Cylindrical Roller Bearing: 10% of internal space			
		BNR19 BGR19 79xx	BGR10 70xx	BGR02 72xx	BNR10 BAR10 BTR10	NN49	NN39	NN30	N10
		X-quantity	X-quantity	X-quantity	X-quantity	X-quantity	X-quantity	X-quantity	X-quantity
5	5	-	-	0.03	-	-	-	-	-
6	6	-	0.04	0.07	-	-	-	-	-
7	7	-	0.07	-	-	-	-	-	-
8	8	-	0.12	0.10	-	-	-	-	-
00	10	0.06	0.13	0.16	-	-	-	-	-
01	12	0.06	0.14	0.23	-	-	-	-	-
02	15	0.11	0.18	0.29	-	-	-	-	-
03	17	0.13	0.24	0.41	-	-	-	-	-
04	20	0.23	0.44	0.68	-	-	-	-	-
05	25	0.27	0.52	0.85	-	-	-	0.4	-
06	30	0.31	0.69	1.20	0.58	-	-	0.6	0.4
07	35	0.48	0.98	1.70	0.78	-	-	0.8	0.6
08	40	0.75	1.20	2.10	0.92	-	-	1.0	0.7
09	45	0.83	1.50	2.60	1.20	-	-	1.3	1.0
10	50	0.91	1.60	3.00	1.20	-	-	1.4	1.1
11	55	1.10	2.40	3.90	1.70	-	-	2.0	1.5
12	60	1.20	2.60	4.80	1.80	-	-	2.1	1.6
13	65	1.30	2.60	5.70	1.90	-	-	2.2	1.6
14	70	2.10	3.60	6.50	2.80	-	-	3.2	2.4
15	75	2.30	3.60	7.00	2.90	-	-	3.5	2.5
16	80	2.40	5.10	8.70	3.80	-	-	4.7	3.5
17	85	3.50	5.30	11.00	4.00	-	-	4.9	3.7
18	90	3.60	6.60	13.00	5.50	-	-	6.5	4.5
19	95	3.60	6.80	16.00	5.70	-	-	6.6	4.7
20	100	4.90	7.20	19.00	6.10	5.4	4.5	6.8	4.9
21	105	5.10	9.00	23.00	7.60	5.6	4.6	9.3	5.9
22	110	5.20	12.00	27.00	9.10	5.7	4.8	11.0	7.5
24	120	7.90	12.00	31.00	9.80	8.4	6.5	12.5	8.1
26	130	9.00	18.00	34.00	15.00	11.0	8.5	18.0	12.4
28	140	9.90	20.00	42.00	17.00	12.0	9.3	20.0	12.9
30	150	14.00	25.00	53.00	22.00	24.0	14.0	23.0	-
32	160	16.00	34.00	-	26.00	20.0	15.0	29.0	-
34	170	14.00	42.00	-	33.00	21.0	15.0	38.0	-
36	180	22.00	51.00	-	46.00	28.0	23.0	51.0	-
38	190	27.00	47.00	-	50.00	30.0	24.0	54.0	-
40	200	39.00	76.00	-	61.00	44.0	35.0	69.0	-
44	220	42.00	-	-	-	-	37.0	-	-
48	240	41.00	-	-	-	-	40.0	-	-
52	260	77.00	-	-	-	-	70.0	-	-
56	280	80.00	-	-	-	-	75.0	-	-

The grease quantity of "xxTAC20(29)X(D)" should be the same as the double row cylindrical roller bearing's, which is assembled with this bearing together.

# High Speed Super Precision Angular Contact BER Series - ROBUST (Steel Ball)

25° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
30BER10S	30	1.1811	55	2.1654	13	0.5118	1.417	1.929	1.969	0.039	0.020
35BER10S	35	1.3780	62	2.4409	14	0.5512	1.614	2.205	2.244	0.039	0.020
40BER10S	40	1.5748	68	2.6772	15	0.5906	1.811	2.441	2.480	0.039	0.020
45BER10S	45	1.7717	75	2.9528	16	0.6299	2.008	2.717	2.756	0.039	0.020
50BER10S	50	1.9685	80	3.1496	16	0.6299	2.205	2.913	2.953	0.039	0.020
55BER10S	55	2.1654	90	3.5433	18	0.7087	2.441	3.268	3.346	0.039	0.024
60BER10S	60	2.3622	95	3.7402	18	0.7087	2.638	3.465	3.543	0.039	0.024
65BER10S	65	2.5591	100	3.9370	18	0.7087	2.835	3.661	3.740	0.039	0.024
70BER10S	70	2.7559	110	4.3307	20	0.7874	0.433	4.055	4.134	0.039	0.024
75BER10S	75	2.9528	115	4.5276	20	0.7874	3.228	4.252	4.331	0.039	0.024
80BER10S	80	3.1496	125	4.9213	22	0.8661	3.425	4.646	4.724	0.039	0.024
85BER10S	85	3.3465	130	5.1181	22	0.8661	3.622	4.843	4.921	0.039	0.024
90BER10S	90	3.5433	140	5.5118	24	0.9449	3.898	5.157	5.276	0.059	0.031
95BER10S	95	3.7402	145	5.7087	24	0.9449	4.094	5.354	5.472	0.059	0.031
100BER10S	100	3.9370	150	5.9055	24	0.9449	4.291	5.551	5.669	0.059	0.031

\*D<sub>b</sub> is housing diameter for low shoulder.

r<sub>b</sub> is housing fillet radius for low shoulder.

For application limiting speed, please refer to page H-2.

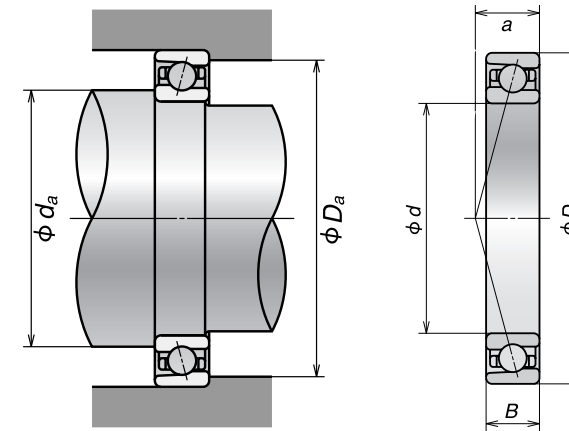
Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (RPM)		Bearing Weight (Approx.) lbs	Preload Value Duplex (EL) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil			
30BER10S	1866	1236	28300	40000	0.273	11.24	*
35BER10S	2181	1540	28900	41300	0.361	11.24	*
40BER10S	2270	1720	22300	31500	0.450	11.24	*
45BER10S	2518	1933	20000	28400	0.571	11.24	*
50BER10S	2608	2136	18500	26200	0.619	11.24	*
55BER10S	3237	2698	16600	23500	0.912	11.24	*
60BER10S	3372	2945	15500	22000	0.976	11.24	*
65BER10S	3484	3192	14600	20700	1.040	11.24	*
70BER10S	4788	4249	13400	18900	1.422	11.24	*
75BER10S	4856	4451	12700	17900	1.497	11.24	*
80BER10S	5687	5283	11800	16600	2.030	22.48	*
85BER10S	5755	5530	11200	15900	2.120	22.48	*
90BER10S	7531	7081	10500	14800	2.735	22.48	*
95BER10S	7643	7418	10000	14200	2.861	22.48	*
100BER10S	7756	7756	9600	13600	2.744	22.48	*

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# High Speed Super Precision Angular Contact BER Series - ROBUST (Ceramic Ball)

25° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
30BER10H	30	1.1811	55	2.1654	13	0.5118	1.417	1.929	1.969	0.039	0.020
35BER10H	35	1.3780	62	2.4409	14	0.5512	1.614	2.205	2.244	0.039	0.020
40BER10H	40	1.5748	68	2.6772	15	0.5906	1.811	2.441	2.480	0.039	0.020
45BER10H	45	1.7717	75	2.9528	16	0.6299	2.008	2.717	2.756	0.039	0.020
50BER10H	50	1.9685	80	3.1496	16	0.6299	2.205	2.913	2.953	0.039	0.020
55BER10H	55	2.1654	90	3.5433	18	0.7087	2.441	3.268	3.346	0.039	0.024
60BER10H	60	2.3622	95	3.7402	18	0.7087	2.638	3.465	3.543	0.039	0.024
65BER10H	65	2.5591	100	3.9370	18	0.7087	2.835	3.661	3.740	0.039	0.024
70BER10H	70	2.7559	110	4.3307	20	0.7874	0.433	4.055	4.134	0.039	0.024
75BER10H	75	2.9528	115	4.5276	20	0.7874	3.228	4.252	4.331	0.039	0.024
80BER10H	80	3.1496	125	4.9213	22	0.8661	3.425	4.646	4.724	0.039	0.024
85BER10H	85	3.3465	130	5.1181	22	0.8661	3.622	4.843	4.921	0.039	0.024
90BER10H	90	3.5433	140	5.5118	24	0.9449	3.898	5.157	5.276	0.059	0.031
95BER10H	95	3.7402	145	5.7087	24	0.9449	4.094	5.354	5.472	0.059	0.031
100BER10H	100	3.9370	150	5.9055	24	0.9449	4.291	5.551	5.669	0.059	0.031

\*D<sub>b</sub> is housing diameter for low shoulder.

r<sub>b</sub> is housing fillet radius for low shoulder.

For application limiting speed, please refer to page H-2.

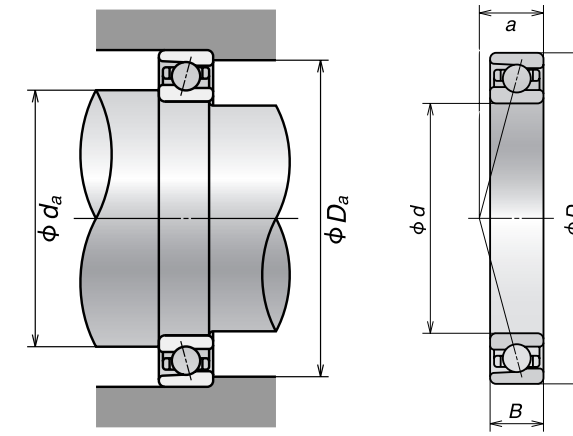
Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (RPM)		Bearing Weight (Approx.) lbs	Preload Value Duplex (EL) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil			
30BER10H	1866	1236	37700	58900	0.256	11.24	*
35BER10H	2181	1540	33000	51600	0.339	11.24	*
40BER10H	2270	1720	29700	46300	0.425	11.24	*
45BER10H	2518	1933	26700	41700	0.542	11.24	*
50BER10H	2608	2136	24700	38500	0.586	11.24	*
55BER10H	3237	2698	22100	34500	0.866	11.24	*
60BER10H	3372	2945	20700	32300	0.923	11.24	*
65BER10H	3484	3192	19400	30400	0.985	11.24	*
70BER10H	4788	4249	17800	27800	1.333	11.24	*
75BER10H	4856	4451	16900	26400	1.406	11.24	*
80BER10H	5687	5283	15700	24400	1.911	22.48	*
85BER10H	5755	5530	14900	23300	1.997	22.48	*
90BER10H	7531	7081	14000	21800	2.546	22.48	*
95BER10H	7643	7418	13400	20900	2.665	22.48	*
100BER10H	7756	7756	12800	20000	2.762	22.48	*

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# High Speed Super Precision Angular Contact BER Series - ROBUST (Steel Ball)

25° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
30BER19S	30	1.1811	47	1.8504	9	0.3543	1.2795	1.7520	1.8031	0.0118	0.0059
35BER19S	35	1.3780	55	2.1654	10	0.3937	1.5748	1.9685	2.0669	0.0236	0.0118
40BER19S	40	1.5748	62	2.4409	12	0.4724	1.7717	2.2441	2.3425	0.0236	0.0118
45BER19S	45	1.7717	68	2.6772	12	0.4724	1.9685	2.4803	2.5787	0.0236	0.0118
50BER19S	50	1.9685	72	2.8346	12	0.4724	2.1654	2.6378	2.7362	0.0236	0.0118
55BER19S	55	2.1654	80	3.1496	13	0.5118	2.4016	2.9134	2.9528	0.0394	0.0197
60BER19S	60	2.3622	85	3.3465	13	0.5118	2.5984	3.1102	3.1496	0.0394	0.0197
65BER19S	65	2.5591	90	3.5433	13	0.5118	2.7953	3.3071	3.3465	0.0394	0.0197
70BER19S	70	2.7559	100	3.9370	16	0.6299	2.9921	3.7008	3.7402	0.0394	0.0197
75BER19S	75	2.9528	105	4.1339	16	0.6299	3.1890	3.8976	3.9370	0.0394	0.0197
80BER19S	80	3.1496	110	4.3307	16	0.6299	3.3858	4.0945	4.1339	0.0394	0.0197
85BER19S	85	3.3465	120	4.7244	18	0.7087	3.6220	4.4488	4.5276	0.0394	0.0236
90BER19S	90	3.5433	125	4.9213	18	0.7087	3.8189	4.6457	4.7244	0.0394	0.0236
95BER19S	95	3.7402	130	5.1181	18	0.7087	4.0157	4.8425	4.9213	0.0394	0.0236
100BER19S	100	3.9370	140	5.5118	20	0.7874	4.2126	5.2362	5.3150	0.0394	0.0236

\*D<sub>b</sub> is housing diameter for low shoulder.

r<sub>b</sub> is housing fillet radius for low shoulder.

For application limiting speed, please refer to page H-2.

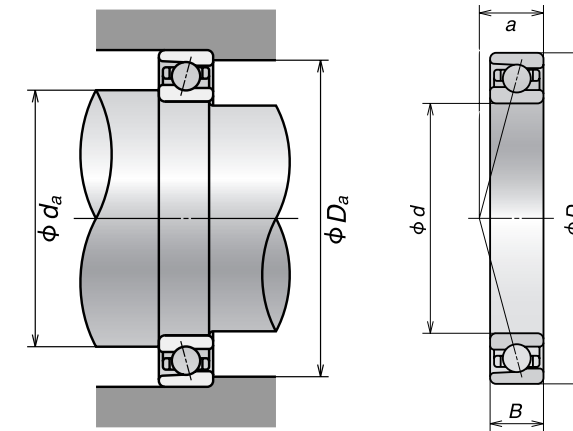
Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (RPM)		Bearing Weight (Approx.) lbs	Preload Value Duplex (EL) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil			
	30BER19S	1349	877	31200	44200	0.106	11.24
35BER19S	1978	1293	26700	37800	0.159	11.24	*
40BER19S	2473	1652	23600	33400	0.231	11.24	*
45BER19S	2608	1877	21300	30100	0.276	11.24	*
50BER19S	2765	2102	19700	27900	0.280	11.24	*
55BER19S	3102	2450	17800	25200	0.392	11.24	*
60BER19S	3147	2585	16600	23500	0.419	11.24	*
65BER19S	3260	2832	15500	22000	0.450	11.24	*
70BER19S	4586	3889	14200	20000	0.723	11.24	*
75BER19S	4653	4091	13400	18900	0.767	11.24	*
80BER19S	4721	4294	12700	17900	0.807	22.48	*
85BER19S	6317	5665	11800	16600	1.162	22.48	*
90BER19S	6744	6407	11200	15900	1.217	22.48	*
95BER19S	6856	6677	10700	15200	1.258	22.48	*
100BER19S	8093	7531	10000	14200	1.697	22.48	*

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# High Speed Super Precision Angular Contact BER Series - ROBUST (Ceramic Ball)

25° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
30BER19H	30	1.1811	47	1.8504	9	0.3543	1.2795	1.7520	1.8031	0.0118	0.0059
35BER19H	35	1.3780	55	2.1654	10	0.3937	1.5748	1.9685	2.0669	0.0236	0.0118
40BER19H	40	1.5748	62	2.4409	12	0.4724	1.7717	2.2441	2.3425	0.0236	0.0118
45BER19H	45	1.7717	68	2.6772	12	0.4724	1.9685	2.4803	2.5787	0.0236	0.0118
50BER19H	50	1.9685	72	2.8346	12	0.4724	2.1654	2.6378	2.7362	0.0236	0.0118
55BER19H	55	2.1654	80	3.1496	13	0.5118	2.4016	2.9134	2.9528	0.0394	0.0197
60BER19H	60	2.3622	85	3.3465	13	0.5118	2.5984	3.1102	3.1496	0.0394	0.0197
65BER19H	65	2.5591	90	3.5433	13	0.5118	2.7953	3.3071	3.3465	0.0394	0.0197
70BER19H	70	2.7559	100	3.9370	16	0.6299	2.9921	3.7008	3.7402	0.0394	0.0197
75BER19H	75	2.9528	105	4.1339	16	0.6299	3.1890	3.8976	3.9370	0.0394	0.0197
80BER19H	80	3.1496	110	4.3307	16	0.6299	3.3858	4.0945	4.1339	0.0394	0.0197
85BER19H	85	3.3465	120	4.7244	18	0.7087	3.6220	4.4488	4.5276	0.0394	0.0236
90BER19H	90	3.5433	125	4.9213	18	0.7087	3.8189	4.6457	4.7244	0.0394	0.0236
95BER19H	95	3.7402	130	5.1181	18	0.7087	4.0157	4.8425	4.9213	0.0394	0.0236
100BER19H	100	3.9370	140	5.5118	20	0.7874	4.2126	5.2362	5.3150	0.0394	0.0236

\*D<sub>b</sub> is housing diameter for low shoulder.

r<sub>b</sub> is housing fillet radius for low shoulder.

For application limiting speed, please refer to page H-2.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (RPM)		Bearing Weight (Approx.) lbs	Preload Value Duplex (EL) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil			
	30BER19H	1349	877	41600	65000	0.095	11.24
35BER19H	1978	1293	35600	55600	0.139	11.24	*
40BER19H	2473	1652	31400	49100	0.203	11.24	*
45BER19H	2608	1877	28400	44300	0.245	11.24	*
50BER19H	2765	2102	26300	41000	0.245	11.24	*
55BER19H	3102	2450	23800	37100	0.348	11.24	*
60BER19H	3147	2585	22100	34500	0.375	11.24	*
65BER19H	3260	2832	20700	32300	0.399	11.24	*
70BER19H	4586	3889	18900	29500	0.644	11.24	*
75BER19H	4653	4091	17800	27800	0.683	11.24	*
80BER19H	4721	4294	16900	26400	0.719	22.48	*
85BER19H	6317	5665	15700	24400	1.005	22.48	*
90BER19H	6744	6407	14900	23300	1.058	22.48	*
95BER19H	6856	6677	14300	22300	1.095	22.48	*
100BER19H	8093	7531	13400	20900	1.483	22.48	*

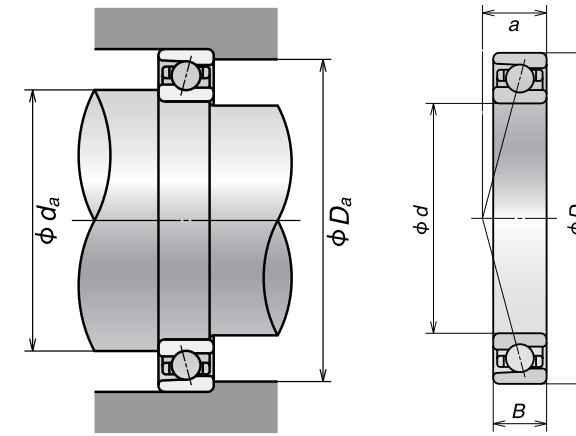
C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating



# High Speed Super Precision Angular Contact BNR Series – ROBUST (Steel Ball)

18° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
30BNR10S	30	1.1811	55	2.1654	13	0.5118	1.417	1.929	1.969	0.039	0.020
35BNR10S	35	1.3780	62	2.4409	14	0.5512	1.614	2.205	2.244	0.039	0.020
40BNR10S	40	1.5748	68	2.6772	15	0.5906	1.811	2.441	2.480	0.039	0.020
45BNR10S	45	1.7717	75	2.9528	16	0.6299	2.008	2.717	2.756	0.039	0.020
50BNR10S	50	1.9685	80	3.1496	16	0.6299	2.205	2.913	2.953	0.039	0.020
55BNR10S	55	2.1654	90	3.5433	18	0.7087	2.441	3.268	3.346	0.039	0.024
60BNR10S	60	2.3622	95	3.7402	18	0.7087	2.638	3.465	3.543	0.039	0.024
65BNR10S	65	2.5591	100	3.9370	18	0.7087	2.835	3.661	3.740	0.039	0.024
70BNR10S	70	2.7559	110	4.3307	20	0.7874	0.433	4.055	4.134	0.039	0.024
75BNR10S	75	2.9528	115	4.5276	20	0.7874	3.228	4.252	4.331	0.039	0.024
80BNR10S	80	3.1496	125	4.9213	22	0.8661	3.425	4.646	4.724	0.039	0.024
85BNR10S	85	3.3465	130	5.1181	22	0.8661	3.622	4.843	4.921	0.039	0.024
90BNR10S	90	3.5433	140	5.5118	24	0.9449	3.898	5.157	5.276	0.059	0.031
95BNR10S	95	3.7402	145	5.7087	24	0.9449	4.094	5.354	5.472	0.059	0.031
100BNR10S	100	3.9370	150	5.9055	24	0.9449	4.291	5.551	5.669	0.059	0.031

\*D<sub>b</sub> is housing diameter for low shoulder.

r<sub>b</sub> is housing fillet radius for low shoulder.

For application limiting speed, please refer to page H-2.

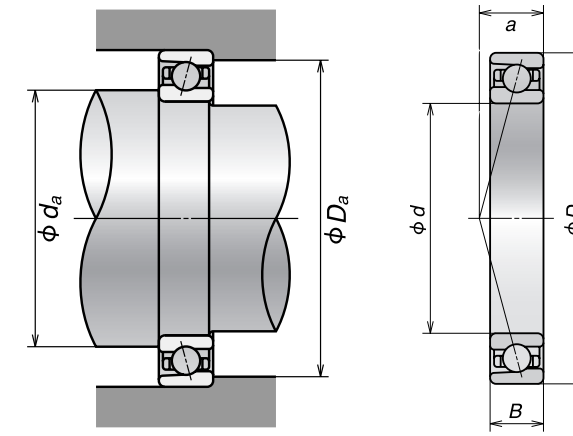
Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (RPM)		Bearing Weight (Approx.) lbs	Preload Value Duplex (EL) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil			
	30BNR10S	1940	1290	33000	47100	0.273	11.24
35BNR10S	2270	1600	28900	41300	0.362	11.24	*
40BNR10S	2380	1790	26000	37100	0.450	11.24	*
45BNR10S	2630	2020	23400	33400	0.571	11.24	*
50BNR10S	2740	2230	21600	30800	0.620	11.24	*
55BNR10S	3390	2810	19400	27600	0.913	11.24	*
60BNR10S	3510	3080	18100	25900	0.977	11.24	*
65BNR10S	3640	3330	17000	24300	1.041	11.24	*
70BNR10S	5010	4450	15600	22300	1.422	11.24	*
75BNR10S	5080	4650	14800	21100	1.497	11.24	*
80BNR10S	5960	5510	13700	19600	2.031	22.48	*
85BNR10S	6020	5780	13100	18700	2.121	22.48	*
90BNR10S	7870	7420	12200	17400	2.736	22.48	*
95BNR10S	7980	7760	11700	16700	2.862	22.48	*
100BNR10S	8090	8090	11200	16000	2.745	22.48	*

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# High Speed Super Precision Angular Contact BNR Series – ROBUST (Ceramic Ball)

18° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
30BNR10H	30	1.1811	55	2.1654	13	0.5118	1.417	1.929	1.969	0.039	0.020
35BNR10H	35	1.3780	62	2.4409	14	0.5512	1.614	2.205	2.244	0.039	0.020
40BNR10H	40	1.5748	68	2.6772	15	0.5906	1.811	2.441	2.480	0.039	0.020
45BNR10H	45	1.7717	75	2.9528	16	0.6299	2.008	2.717	2.756	0.039	0.020
50BNR10H	50	1.9685	80	3.1496	16	0.6299	2.205	2.913	2.953	0.039	0.020
55BNR10H	55	2.1654	90	3.5433	18	0.7087	2.441	3.268	3.346	0.039	0.024
60BNR10H	60	2.3622	95	3.7402	18	0.7087	2.638	3.465	3.543	0.039	0.024
65BNR10H	65	2.5591	100	3.9370	18	0.7087	2.835	3.661	3.740	0.039	0.024
70BNR10H	70	2.7559	110	4.3307	20	0.7874	0.433	4.055	4.134	0.039	0.024
75BNR10H	75	2.9528	115	4.5276	20	0.7874	3.228	4.252	4.331	0.039	0.024
80BNR10H	80	3.1496	125	4.9213	22	0.8661	3.425	4.646	4.724	0.039	0.024
85BNR10H	85	3.3465	130	5.1181	22	0.8661	3.622	4.843	4.921	0.039	0.024
90BNR10H	90	3.5433	140	5.5118	24	0.9449	3.898	5.157	5.276	0.059	0.031
95BNR10H	95	3.7402	145	5.7087	24	0.9449	4.094	5.354	5.472	0.059	0.031
100BNR10H	100	3.9370	150	5.9055	24	0.9449	4.291	5.551	5.669	0.059	0.031

\*D<sub>b</sub> is housing diameter for low shoulder.

r<sub>b</sub> is housing fillet radius for low shoulder.

For application limiting speed, please refer to page H-2.

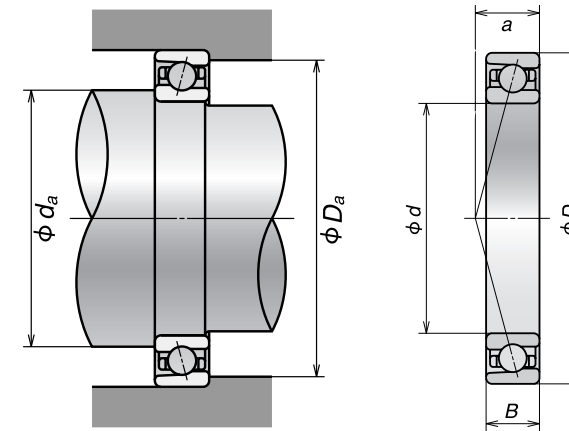
Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (RPM)		Bearing Weight (Approx.) lbs	Preload Value Duplex (EL) lbs	Sealed Design Available
	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil			
	30BNR10H	1940	1290	42400	65900	0.273	11.24
35BNR10H	2270	1600	37200	57800	0.362	11.24	*
40BNR10H	2380	1790	33400	51900	0.450	11.24	*
45BNR10H	2630	2020	30000	46700	0.571	11.24	*
50BNR10H	2740	2230	27700	43100	0.620	11.24	*
55BNR10H	3390	2810	24900	38700	0.913	11.24	*
60BNR10H	3510	3080	23300	36200	0.977	11.24	*
65BNR10H	3640	3330	21900	34000	1.041	11.24	*
70BNR10H	5010	4450	20000	31200	1.422	11.24	*
75BNR10H	5080	4650	19000	29500	1.497	11.24	*
80BNR10H	5960	5510	17600	27400	2.031	22.48	*
85BNR10H	6020	5780	16800	26100	2.121	22.48	*
90BNR10H	7870	7420	15700	24400	2.736	22.48	*
95BNR10H	7980	7760	15000	23400	2.862	22.48	*
100BNR10H	8090	8090	14400	22400	2.745	22.48	*

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>0r</sub> = Static Radial Load Rating

# High Speed Super Precision Angular Contact BNR Series - ROBUST (Steel Ball)

18° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	
30BNR19S	30	1.1811	47	1.8504	9	0.3543	1.2795	1.7520	1.8031	0.0118	0.0059
35BNR19S	35	1.3780	55	2.1654	10	0.3937	1.5748	1.9685	2.0669	0.0236	0.0118
40BNR19S	40	1.5748	62	2.4409	12	0.4724	1.7717	2.2441	2.3425	0.0236	0.0118
45BNR19S	45	1.7717	68	2.6772	12	0.4724	1.9685	2.4803	2.5787	0.0236	0.0118
50BNR19S	50	1.9685	72	2.8346	12	0.4724	2.1654	2.6378	2.7362	0.0236	0.0118
55BNR19S	55	2.1654	80	3.1496	13	0.5118	2.4016	2.9134	2.9528	0.0394	0.0197
60BNR19S	60	2.3622	85	3.3465	13	0.5118	2.5984	3.1102	3.1496	0.0394	0.0197
65BNR19S	65	2.5591	90	3.5433	13	0.5118	2.7953	3.3071	3.3465	0.0394	0.0197
70BNR19S	70	2.7559	100	3.9370	16	0.6299	2.9921	3.7008	3.7402	0.0394	0.0197
75BNR19S	75	2.9528	105	4.1339	16	0.6299	3.1890	3.8976	3.9370	0.0394	0.0197
80BNR19S	80	3.1496	110	4.3307	16	0.6299	3.3858	4.0945	4.1339	0.0394	0.0197
85BNR19S	85	3.3465	120	4.7244	18	0.7087	3.6220	4.4488	4.5276	0.0394	0.0236
90BNR19S	90	3.5433	125	4.9213	18	0.7087	3.8189	4.6457	4.7244	0.0394	0.0236
95BNR19S	95	3.7402	130	5.1181	18	0.7087	4.0157	4.8425	4.9213	0.0394	0.0236
100BNR19S	100	3.9370	140	5.5118	20	0.7874	4.2126	5.2362	5.3150	0.0394	0.0236

\*D<sub>b</sub> is housing diameter for low shoulder.

r<sub>b</sub> is housing fillet radius for low shoulder.

For application limiting speed, please refer to page H-2.

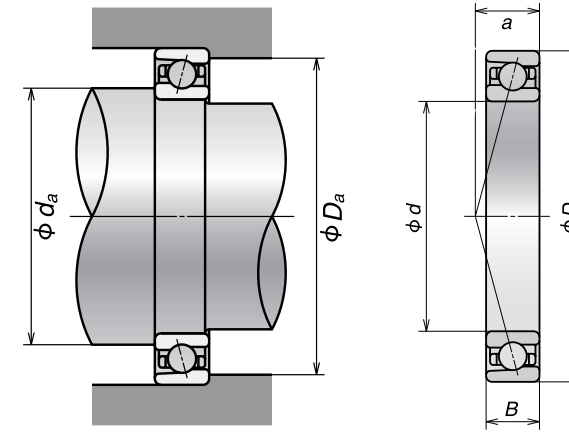
Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (RPM)		Bearing Weight (Approx.) (lbs)	Preload Value Duplex (EL) (lbs)	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil			
					lbs	lbs	
30BNR19S	1416	910	36400	52000	0.106	11.24	*
35BNR19S	2068	1349	31200	44500	0.159	11.24	*
40BNR19S	2585	1720	27500	39300	0.231	11.24	*
45BNR19S	2720	1956	24800	35400	0.276	11.24	*
50BNR19S	2877	2192	23000	32800	0.280	11.24	*
55BNR19S	3237	2563	20800	29700	0.392	11.24	*
60BNR19S	3282	2698	19400	27600	0.419	11.24	*
65BNR19S	3417	2967	18100	25900	0.450	11.24	*
70BNR19S	4788	4069	16500	23600	0.723	11.24	*
75BNR19S	4856	4271	15600	22300	0.767	11.24	*
80BNR19S	4946	4474	14800	21100	0.807	11.24	*
85BNR19S	6609	5912	13700	19600	1.162	11.24	*
90BNR19S	7081	6677	13100	18700	1.217	22.48	*
95BNR19S	7194	6969	12500	17800	1.258	22.48	*
100BNR19S	8542	7868	11700	16700	1.697	22.48	*

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# High Speed Super Precision Angular Contact BNR Series - ROBUST (Ceramic Ball)

18° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4	ISO 4 (ABEC 7) Precision
P4Y	NSK Exclusive P4 Accuracy
V1V	Non-contacting Seal

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions				
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	*D <sub>b</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
30BNR19H	30	1.1811	47	1.8504	9	0.3543	1.2795	1.7520	1.8031	0.0118	0.0059
35BNR19H	35	1.3780	55	2.1654	10	0.3937	1.5748	1.9685	2.0669	0.0236	0.0118
40BNR19H	40	1.5748	62	2.4409	12	0.4724	1.7717	2.2441	2.3425	0.0236	0.0118
45BNR19H	45	1.7717	68	2.6772	12	0.4724	1.9685	2.4803	2.5787	0.0236	0.0118
50BNR19H	50	1.9685	72	2.8346	12	0.4724	2.1654	2.6378	2.7362	0.0236	0.0118
55BNR19H	55	2.1654	80	3.1496	13	0.5118	2.4016	2.9134	2.9528	0.0394	0.0197
60BNR19H	60	2.3622	85	3.3465	13	0.5118	2.5984	3.1102	3.1496	0.0394	0.0197
65BNR19H	65	2.5591	90	3.5433	13	0.5118	2.7953	3.3071	3.3465	0.0394	0.0197
70BNR19H	70	2.7559	100	3.9370	16	0.6299	2.9921	3.7008	3.7402	0.0394	0.0197
75BNR19H	75	2.9528	105	4.1339	16	0.6299	3.1890	3.8976	3.9370	0.0394	0.0197
80BNR19H	80	3.1496	110	4.3307	16	0.6299	3.3858	4.0945	4.1339	0.0394	0.0197
85BNR19H	85	3.3465	120	4.7244	18	0.7087	3.6220	4.4488	4.5276	0.0394	0.0236
90BNR19H	90	3.5433	125	4.9213	18	0.7087	3.8189	4.6457	4.7244	0.0394	0.0236
95BNR19H	95	3.7402	130	5.1181	18	0.7087	4.0157	4.8425	4.9213	0.0394	0.0236
100BNR19H	100	3.9370	140	5.5118	20	0.7874	4.2126	5.2362	5.3150	0.0394	0.0236

\*D<sub>b</sub> is housing diameter for low shoulder.

r<sub>b</sub> is housing fillet radius for low shoulder.

For application limiting speed, please refer to page H-2.

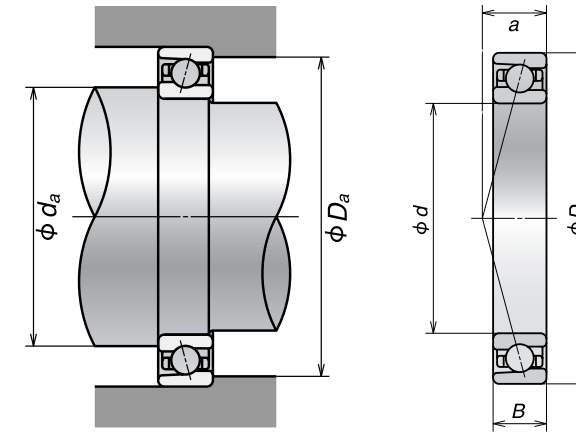
Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (RPM)		Bearing Weight (Approx.) (lbs)	Preload Value Duplex (EL) (lbs)	Sealed Design Available
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil			
					lbs	lbs	
30BNR19H	1416	910	46800	72800	0.095	11.24	*
35BNR19H	2068	1349	40000	62300	0.139	11.24	*
40BNR19H	2585	1720	35300	55000	0.203	11.24	*
45BNR19H	2720	1956	31900	49600	0.245	11.24	*
50BNR19H	2877	2192	29600	46000	0.245	11.24	*
55BNR19H	3237	2563	26700	41500	0.348	11.24	*
60BNR19H	3282	2698	24900	38700	0.375	11.24	*
65BNR19H	3417	2967	23300	36200	0.399	11.24	*
70BNR19H	4788	4069	21200	33000	0.644	11.24	*
75BNR19H	4856	4271	20000	31200	0.683	11.24	*
80BNR19H	4946	4474	19000	29500	0.719	11.24	*
85BNR19H	6609	5912	17600	27400	1.005	11.24	*
90BNR19H	7081	6677	16800	26100	1.058	22.48	*
95BNR19H	7194	6969	16000	24900	1.095	22.48	*
100BNR19H	8542	7868	15000	23400	1.483	22.48	*

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# High Speed Super Precision Angular Contact BGR Series Robust (Steel Ball)

15° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P2	ISO 2 (ABEC 9) Precision
P4	ISO 4 (ABEC 7) Precision

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions			
	d		D		B		d <sub>a</sub> min	D <sub>a</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch
6BGR10S	6	0.2362	17	0.6693	6	0.2362	0.335	0.571	0.012	-
7BGR10S	7	0.2756	19	0.7480	6	0.2362	0.374	0.650	0.012	-
8BGR10S	8	0.3150	22	0.8661	7	0.2756	0.413	0.768	0.012	-
10BGR10S	10	0.3937	26	1.0236	8	0.3150	0.492	0.925	0.012	0.0059
12BGR10S	12	0.4724	28	1.1024	8	0.3150	0.571	1.004	0.012	0.0059
15BGR10S	15	0.5906	32	1.2598	9	0.3543	0.689	1.161	0.012	0.0059
17BGR10S	17	0.6693	35	1.3780	10	0.3937	0.768	1.280	0.012	0.0059
20BGR10S	20	0.7874	42	1.6535	12	0.4724	0.984	1.457	0.024	0.0118
25BGR10S	25	0.9843	47	1.8504	12	0.4724	1.181	1.654	0.024	0.0118

r<sub>b</sub> is housing fillet radius for low shoulder.

For application limiting speed, please refer to page H-2.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (1000 RPM)		Bearing Weight (Approx.) lbs
	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil	
	6BGR10S	320	100	140.0	192.0
7BGR10S	370	120	124.0	170.0	0.02
8BGR10S	530	180	107.0	147.0	0.03
10BGR10S	800	290	88.9	123.0	0.04
12BGR10S	880	330	80.0	110.0	0.05
15BGR10S	940	390	68.1	93.7	0.06
17BGR10S	1010	440	61.6	84.7	0.08
20BGR10S	1690	750	51.7	71.0	0.15
25BGR10S	1790	850	44.5	61.2	0.17

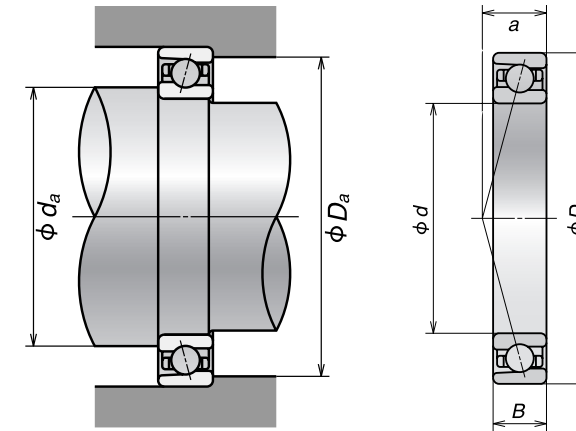
C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>0r</sub> = Static Radial Load Rating



# High Speed Super Precision Angular Contact BGR Series Robust (Ceramic Ball)

15° Contact Angle



### COMMON OPTIONS

TR	Phenolic Cage
TYN	Polyamide Cage
DU	Duplex Universal
SU	Single Universal
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P2	ISO 2 (ABEC 9) Precision
P4	ISO 4 (ABEC 7) Precision

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions			
	d		D		B		d <sub>s</sub> min	D <sub>s</sub> max	r <sub>s</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch
6BGR10H	6	0.2362	17	0.6693	6	0.2362	0.335	0.571	0.012	-
7BGR10H	7	0.2756	19	0.7480	6	0.2362	0.374	0.650	0.012	-
8BGR10H	8	0.3150	22	0.8661	7	0.2756	0.413	0.768	0.012	-
10BGR10H	10	0.3937	26	1.0236	8	0.3150	0.492	0.925	0.012	0.0059
12BGR10H	12	0.4724	28	1.1024	8	0.3150	0.571	1.004	0.012	0.0059
15BGR10H	15	0.5906	32	1.2598	9	0.3543	0.689	1.161	0.012	0.0059
17BGR10H	17	0.6693	35	1.3780	10	0.3937	0.768	1.280	0.012	0.0059
20BGR10H	20	0.7874	42	1.6535	12	0.4724	0.984	1.457	0.024	0.0118
25BGR10H	25	0.9843	47	1.8504	12	0.4724	1.181	1.654	0.024	0.0118

r<sub>b</sub> is housing fillet radius for low shoulder.

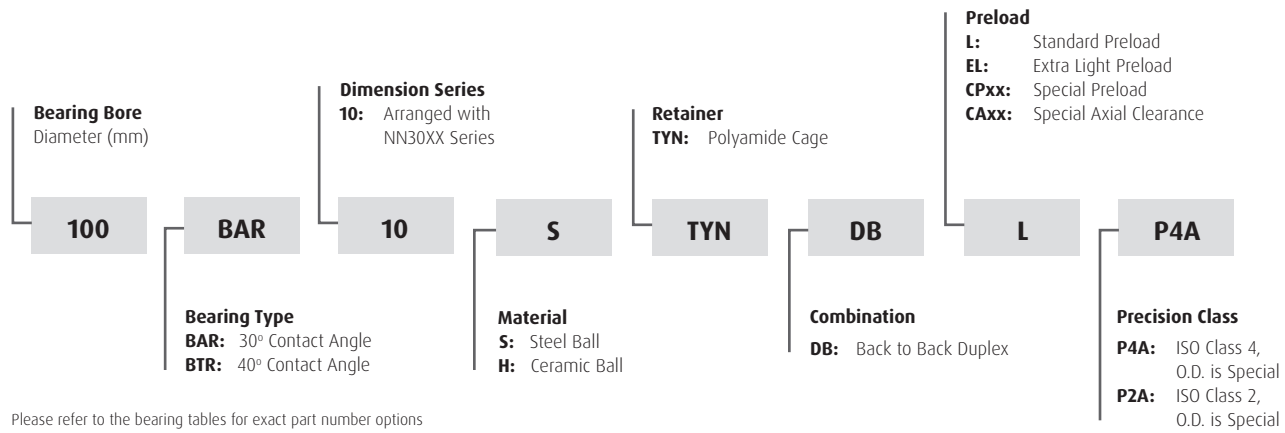
For application limiting speed, please refer to page H-2.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Single or Tandem (1000 RPM)		Bearing Weight (Approx.) lbs
	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil	
	6BGR10H	320	100	166.0	244.0
7BGR10H	370	120	147.0	216.0	0.02
8BGR10H	530	180	127.0	187.0	0.03
10BGR10H	800	290	106.0	156.0	0.04
12BGR10H	880	330	95.0	140.0	0.05
15BGR10H	940	390	80.9	120.0	0.06
17BGR10H	1010	440	73.1	108.0	0.08
20BGR10H	1690	750	61.3	90.4	0.15
25BGR10H	1790	850	52.8	77.8	0.17

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>0r</sub> = Static Radial Load Rating

# Super Precision Angular Contact Thrust Ball Bearings



## Interchange

Description		Interchange			
		NSK	*OLD NSK	SKF	NTN
Part No.	30° Angular Contact Thrust Bearings	XXBAR10	XXBA10	BTMXXA	HTA0XXA
	40° Angular Contact Thrust Bearings	XXBTR10	XXBT10	BTMXXB	HTA0XX
Part Number Suffix	Polyamide Cage	TYN	TY	BLANK	T2
	Phenolic Cage	TR	T	-	BLANK
	Duplex Universal	DU	DU	DB	GD2
	Single Universal	SU	SU	-	G
	Extra Light Preload	EL	EL	-	-
	Light Preload	L	L	A	GN
	Ceramic Balls	H	SN24	HC	5S**
	Steel Balls	S	BLANK	BLANK	BLANK
	ABEC 7 Precision	P4A	P4A	PC	P4
	ABEC 9 Precision	P2A	P2A	PA9A	P2

\*BAR and BTR series have replaced BA and BT series.

\*\* Indicates prefix not suffix

The competitive manufacturers are provided for a convenient source of unit substitution. They can be considered interchangeable in most instances, but for special applications, please contact NSK. NSK assumes no liability with respect to errors or omissions.

## Applications

Super Precision Angular Contact Thrust bearings are designed to work together with high speed super precision cylindrical roller bearings where high speed, and high rigidity are required. Offered in a 30° and 40° series, this offering allows flexibility for meeting the rigidity requirements seen in many machine tool applications.

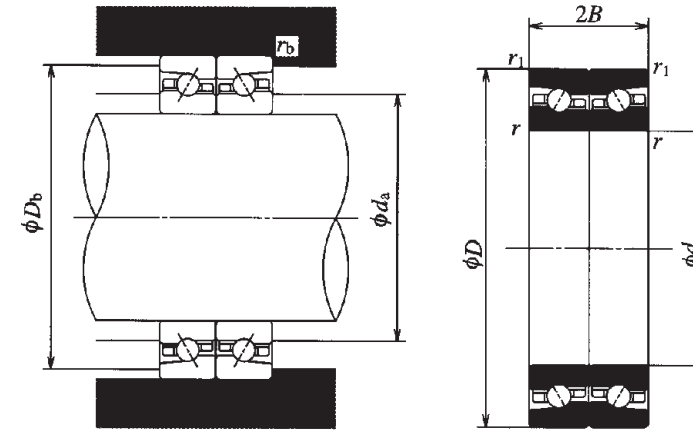
### › Lathes

## Features

All of these bearings have special outside diameter tolerances (P4A and P2A) to provide clearance between the outer ring periphery and housing bore in order to avoid supporting radial loads.

# Super Precision Thrust Angular Contact: BAR Series

30° Contact Angle



### COMMON OPTIONS

TYN	Polyamide Cage
DU	Duplex Universal
DB	Back to Back Duplex
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4A	ISO 4 (ABEC 7) Precision - O.D. is Special
P2A	ISO 2 (ABEC 9) Precision - O.D. is Special

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions		
	d		D*		B		d <sub>s</sub> min	D <sub>b</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch
60BAR10S	60	2.3622	95	3.7402	16.50	0.6496	2.6378	3.54331	0.02362
65BAR10S	65	2.5591	100	3.9370	16.50	0.6496	2.8346	3.74015	0.02362
70BAR10S	70	2.7559	110	4.3307	18.00	0.7087	3.0315	4.13385	0.02362
75BAR10S	75	2.9528	115	4.5276	18.00	0.7087	3.2283	4.33070	0.02362
80BAR10S	80	3.1496	125	4.9213	20.25	0.7972	3.4252	4.72440	0.02362
85BAR10S	85	3.3465	130	5.1181	20.25	0.7972	3.6220	4.92125	0.02362
90BAR10S	90	3.5433	140	5.5118	22.50	0.8858	3.8976	5.27559	0.03937
95BAR10S	95	3.7402	145	5.7087	22.50	0.8858	4.0945	5.47244	0.03937
100BAR10S	100	3.9370	150	5.9055	22.50	0.8858	4.2913	5.66929	0.03937
105BAR10S	105	4.1339	160	6.2992	24.75	0.9744	4.5276	6.06299	0.03937
110BAR10S	110	4.3307	170	6.6929	27.00	1.0630	4.7244	6.45669	0.03937
120BAR10S	120	4.7244	180	7.0866	27.00	1.0630	5.1181	6.85039	0.03937
130BAR10S	130	5.1181	200	7.8740	31.50	1.2402	5.5118	7.63779	0.03937

r<sub>b</sub> is housing fillet radius for low shoulder.

\* Special outer ring outside diameter tolerance (class P4A or P2A) to provide clearance between the outer ring periphery and housing bore in order to avoid support of radial loads.

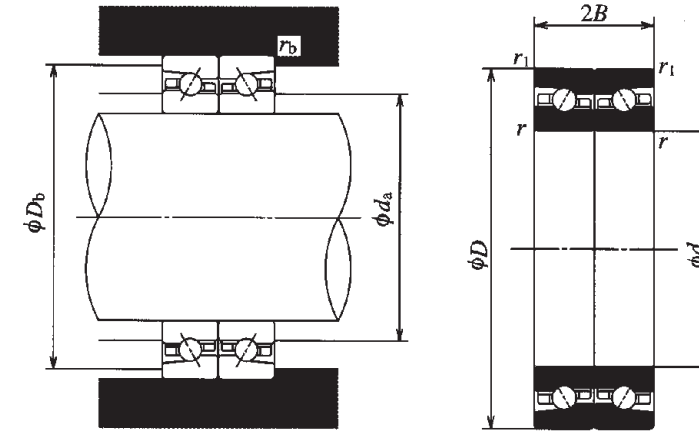
Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Duplex (RPM)		Bearing Weight (Approx.) (lbs)	Preload Value Duplex (EL) (lbs)	Axial Rigidity Duplex (EL) (lbs/.001 inch)
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil			
	60BAR10S	4249	8543	9 700	12 300	0.93	53.95
65BAR10S	4384	9330	9 100	11 600	0.99	56.20	1142.0
70BAR10S	6047	12364	8 400	10 600	1.32	56.20	1142.0
75BAR10S	6137	13039	7 900	10 000	1.40	58.45	1199.1
80BAR10S	7194	15399	7 400	9 300	1.93	76.44	1370.4
85BAR10S	73064	16074	7 000	8 900	2.14	78.68	1370.4
90BAR10S	95544	20795	6 600	8 300	2.64	80.93	1427.5
95BAR10S	9667	21694	6 300	8 000	2.91	80.93	1484.6
100BAR10S	9779	22481	6 000	7 600	3.08	83.18	1541.7
105BAR10S	11128	25853	5 700	7 200	3.83	85.43	1598.8
110BAR10S	12477	29450	5 400	6 800	4.65	87.68	1598.8
120BAR10S	12814	31698	5 000	6 400	4.99	87.68	1713.0
130BAR10S	16299	38667	4 600	5 800	7.41	87.68	1713.0

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# Super Precision Thrust Angular Contact: BTR Series

40° Contact Angle



### COMMON OPTIONS

TYN	Polyamide Cage
DU	Duplex Universal
DB	Back to Back Duplex
EL	Extra Light Preload
L	Light Preload
M	Medium Preload
P4A	ISO 4 (ABEC 7) Precision - O.D. is Special
P2A	ISO 2 (ABEC 9) Precision - O.D. is Special

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions		
	d		D*		B		d <sub>s</sub> min	D <sub>b</sub> max	*r <sub>b</sub> max
	mm	inch	mm	inch	mm	inch	inch	inch	inch
60BTR10S	60	2.3622	95	3.7402	16.50	0.6496	2.6378	3.5433	0.02362
65BTR10S	65	2.5591	100	3.9370	16.50	0.6496	2.8346	3.7402	0.02362
70BTR10S	70	2.7559	110	4.3307	18.00	0.7087	3.0315	4.1339	0.02362
75BTR10S	75	2.9528	115	4.5276	18.00	0.7087	3.2283	4.3307	0.02362
80BTR10S	80	3.1496	125	4.9213	20.25	0.7972	3.4252	4.7244	0.02362
85BTR10S	85	3.3465	130	5.1181	20.25	0.7972	3.6220	4.9213	0.02362
90BTR10S	90	3.5433	140	5.5118	22.50	0.8858	3.8976	5.2756	0.03937
95BTR10S	95	3.7402	145	5.7087	22.50	0.8858	4.0945	5.4724	0.03937
100BTR10S	100	3.9370	150	5.9055	22.50	0.8858	4.2913	5.6693	0.03937
105BTR10S	105	4.1339	160	6.2992	24.75	0.9744	4.5276	6.0630	0.03937
110BTR10S	110	4.3307	170	6.6929	27.00	1.0630	4.7244	6.4567	0.03937
120BTR10S	120	4.7244	180	7.0866	27.00	1.0630	5.1181	6.8504	0.03937
130BTR10S	130	5.1181	200	7.8740	31.50	1.2402	5.5118	7.6378	0.03937

r<sub>b</sub> is housing fillet radius for low shoulder.

\* Special outer ring outside diameter tolerance (class P4A or P2A) to provide clearance between the outer ring periphery and housing bore in order to avoid support of radial loads.

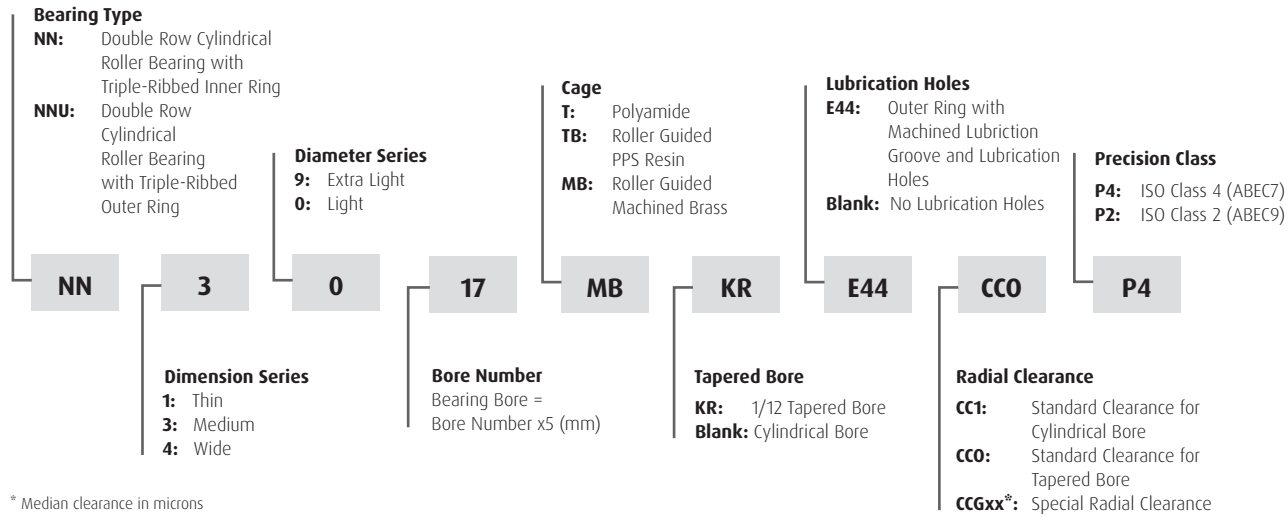
Bearing Number	Basic Load Ratings (lbs)		Limiting Speed Duplex (RPM)		Bearing Weight (Approx.) (lbs)	Preload Value Duplex (EL) (lbs)	Axial Rigidity Duplex (EL) (lbs/.001 inch)
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil			
	60BTR10S	5036	9779	8 400	11 000	0.93	83.18
65BTR10S	5193	10566	7 900	10 400	0.99	87.68	1998500
70BTR10S	7194	14163	7 300	9 500	1.32	87.68	1998500
75BTR10S	7306	14725	6 900	9 000	1.40	89.92	2055600
80BTR10S	8543	17535	6 400	8 300	1.93	114.65	2284000
85BTR10S	8655	18322	6 100	8 000	2.14	116.90	2398200
90BTR10S	11240	23605	5 700	7 400	2.64	119.15	2455300
95BTR10S	11465	24729	5 500	7 100	2.91	123.64	2569500
100BTR10S	11578	25628	5 200	6 800	3.08	125.89	2626600
105BTR10S	13151	29450	5 000	6 500	3.84	128.14	2683700
110BTR10S	14837	33272	4 700	6 100	4.65	130.39	2797900
120BTR10S	15287	35969	4 400	5 700	4.99	137.13	2969200
130BTR10S	19334	43838	4 000	5 200	7.41	137.13	2969200

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# Super Precision Cylindrical Roller Bearings

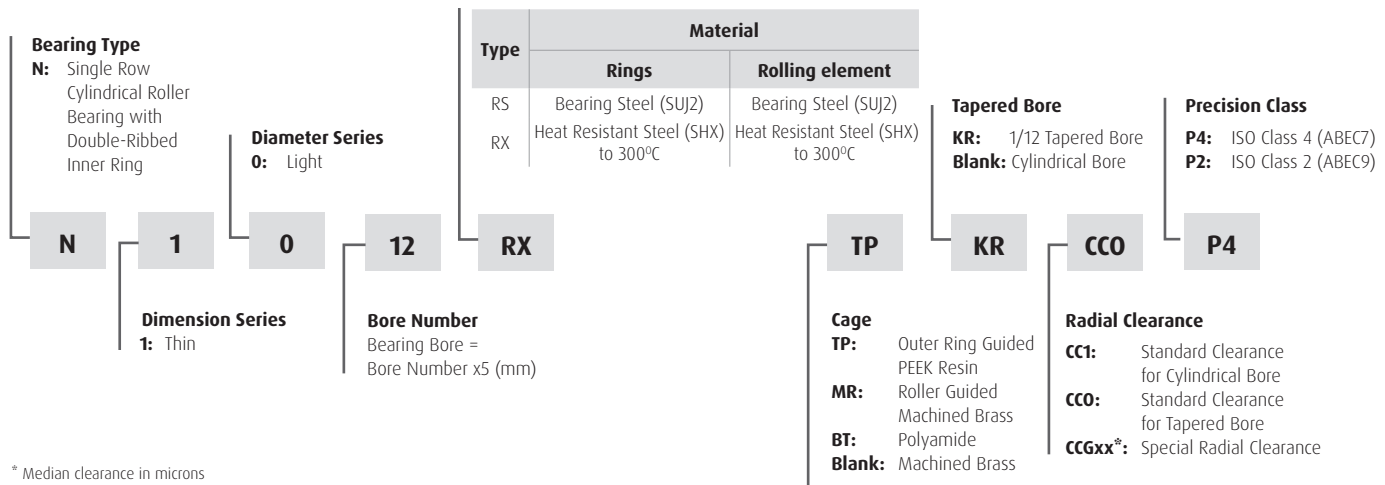
## Double Row



\* Median clearance in microns

Please refer to the bearing tables for exact part number options

## Single Row



\* Median clearance in microns

Please refer to the bearing tables for exact part number options



## Interchange

Description		Interchange				
		NSK	*OLD NSK	SKF	FAG	NTN
Part No.	Ultra Light Double Row Cylindrical Series	NN39XX	NN39XX	-	-	-
	Extra Light Double Row Cylindrical Series	NN30XX	NN30XX	NN30XX	NN30XX	NN30XX
	Extra Light Single Row Cylindrical Series	N10XX	N10XX	N10XX	N10XX	N10XX
Part Number Suffix	Non-Metallic Cage	TB	T	TN, TN9, TNHA	-	T6
	Brass Cage	MB	M	BLANK	M, MI	BLANK
	Tapered Bore	KR	K	UPK	K	K
	Lube Groove And Holes On Outer Ring	E44	-	W33, U33X	AS	-
	Matched Clearance, Rings Not To Be Mixed	CCX	CCX	CX	CX	CXNA
	ABEC 7 Precision	P4	P4	SP	SP	P4

\*The outer ring machined lubrication groove and holes (E44) is now a standard feature. TB cage replaces T cage, MB replaces M and KR replaces K.

The competitive manufacturers are provided for a convenient source of unit substitution. They can be considered interchangeable in most instances, but for special applications, please contact NSK. NSK assumes no liability with respect to errors or omissions.

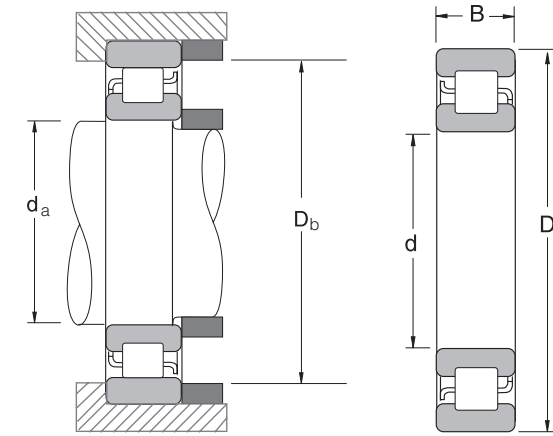
## Applications

Super Precision Cylindrical roller bearings are designed to specifically handle large radial loads in high speed applications. They are available in a variety of designs, including double row and single row options, to suit various applications. In addition, a standard lube groove and hole feature is available along with tapered and non-tapered bores. When combined with Super Precision Angular Contact Thrust bearings, the Super Precision Cylindrical meets the high rigidity requirements of many machine tool spindle applications

- › Lathes › Machining Centers › (NN) Double Row Design for High Radial Rigidity
- › (N) Single Row Design for Radial Rigidity and High Speed

# Super Precision Cylindrical Roller Bearings: N1000 Series

Single Row



### COMMON OPTIONS

M	One piece brass cage; inner ring guided
MB	Split type brass cage; roller guided
MR	Riveted brass cage; roller guided
T	Polyamide cage; roller guided
KR	Precision Tapered Bore 1:12
CCx	Matched Clearance (9, 1, ...)
CCGxx*	Special radial clearance
P4	ISO 4 (ABEC7) Precision

\* Median clearance in microns

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions			
	d		D		B		$r_a$	$d_a$	$D_b$	
	mm	inch	mm	inch	mm	inch	max	max	min	max
N1006	30	1.1811	55	2.1654	13	0.5118	0.0197	1.3780	2.0079	1.9291
N1007	35	1.3780	62	2.4409	14	0.5512	0.0197	1.5748	2.2835	2.2047
N1008	40	1.5748	68	2.6772	15	0.5906	0.0236	1.7717	2.5197	2.4409
N1009	45	1.7717	75	2.9528	16	0.6299	0.0236	1.9685	2.7953	2.6772
N1010	50	1.9685	80	3.1496	16	0.6299	0.0236	2.1654	2.9921	2.8740
N1011	55	2.1654	90	3.5433	18	0.7087	0.0394	2.4213	3.3465	3.2283
N1012	60	2.3622	95	3.7402	18	0.7087	0.0394	2.6181	3.5433	3.4252
N1013	65	2.5591	100	3.9370	18	0.7087	0.0394	2.8150	3.7402	3.6220
N1014	70	2.7559	110	4.3307	20	0.7874	0.0394	3.0118	4.1339	3.9764
N1015	75	2.9528	115	4.5276	20	0.7874	0.0394	3.2087	4.3307	4.1732
N1016	80	3.1496	125	4.9213	22	0.8661	0.0394	3.4055	4.7244	4.5276
N1017	85	3.3465	130	5.1181	22	0.8661	0.0394	3.6024	4.9213	4.7244
N1018	90	3.5433	140	5.5118	24	0.9449	0.0394	3.8583	5.2559	5.0787
N1019	95	3.7402	145	5.7087	24	0.9449	0.0394	4.0551	5.4528	5.2756
N1020	100	3.9370	150	5.9055	24	0.9449	0.0394	4.2520	5.6496	5.4724
N1021	105	4.1339	160	6.2992	26	1.0236	0.0394	4.4882	6.0433	5.7874
N1022	110	4.3307	170	6.6929	28	1.1024	0.0394	4.6850	6.4370	6.1811
N1024	120	4.7244	180	7.0866	28	1.1024	0.0394	5.0787	6.8307	6.5748
N1026	130	5.1181	200	7.8740	33	1.2992	0.0394	5.4724	7.6181	7.2441
N1028	140	5.5118	210	8.2677	33	1.2992	0.0394	5.8661	8.0118	7.6378

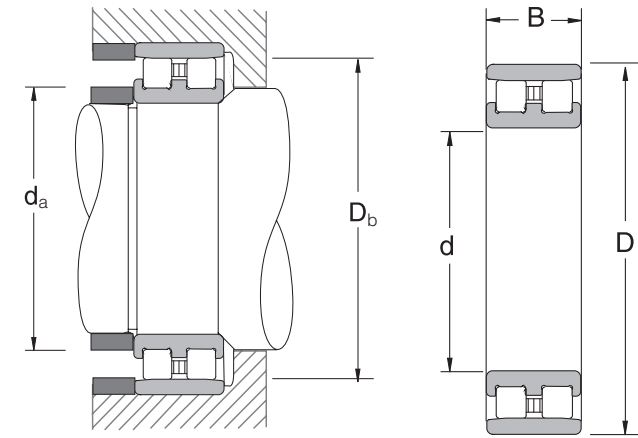
Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.) (lbs)
	$C_r$	$C_{or}$	Grease	Oil	
N1006	4400	4400	20.0	22.0	0.29
N1007	5100	5200	18.0	20.0	0.40
N1008	6100	6500	16.5	27.5	0.49
N1009	7300	8000	15.4	24.2	0.60
N1010	7300	8200	14.3	22.0	0.64
N1011	8500	9800	13.2	19.8	0.96
N1012	9000	10900	12.1	18.7	1.02
N1013	9300	11500	11.0	17.6	1.10
N1014	13100	15900	9.9	16.5	1.49
N1015	13400	16800	9.4	15.1	1.58
N1016	16300	20400	8.7	14.0	2.09
N1017	16800	21500	8.3	13.3	2.19
N1018	19800	25800	7.7	12.5	2.86
N1019	20400	27100	7.4	12.0	3.01
N1020	20900	28200	7.0	11.4	3.15
N1021	24500	33500	6.3	7.1	3.98
N1022	29500	39000	6.0	6.7	4.95
N1024	31100	43000	5.6	6.3	5.24
N1026	38600	53500	5.3	5.6	7.94
N1028	39500	56000	4.8	5.3	8.38

$C_r$  = Dynamic Radial Load Rating

$C_{or}$  = Static Radial Load Rating

# Super Precision Cylindrical Roller Bearings: NN3000 Series

Double Row



### COMMON OPTIONS

M	One piece brass cage; inner ring guided
MB	Split type brass cage; roller guided
MR	Riveted brass cage; roller guided
T	Polyamide cage; roller guided
TB	Roller guided PPS resin cage
KR	Precision Tapered Bore 1:12
E44	Lube groove and holes, outer ring
CCx	Matched Clearance (9, 1, ...)
CCGxx*	Special radial clearance
P4	ISO 4 (ABEC7) Precision

\* Median clearance in microns

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions			
	d		D		B		ra	da	Db	
	mm	inch	mm	inch	mm	inch	max	max	min	max
NN3005	25	0.9843	47	1.8504	16	0.6299	0.0236	1.1417	1.6929	1.6535
NN3006	30	1.1811	55	2.1654	19	0.7480	0.0394	1.3780	1.9685	1.9685
NN3007	35	1.3780	62	2.4409	20	0.7874	0.0394	1.5748	2.2441	2.2047
NN3008	40	1.5748	68	2.6772	21	0.8268	0.0394	1.7717	2.4803	2.4409
NN3009	45	1.7717	75	2.9528	23	0.9055	0.0394	1.9685	2.7559	2.7165
NN3010	50	1.9685	80	3.1496	23	0.9055	0.0394	2.1654	2.9528	2.9134
NN3011	55	2.1654	90	3.5433	26	1.0236	0.0394	2.4213	3.2874	3.2677
NN3012	60	2.3622	95	3.7402	26	1.0236	0.0394	2.6181	3.4843	3.4646
NN3013	65	2.5591	100	3.9370	26	1.0236	0.0394	2.8150	3.6811	3.6614
NN3014	70	2.7559	110	4.3307	30	1.1811	0.0394	3.0118	4.0748	4.0157
NN3015	75	2.9528	115	4.5276	30	1.1811	0.0394	3.2087	4.2717	4.2126
NN3016	80	3.1496	125	4.9213	34	1.3386	0.0394	3.4055	4.6654	4.5276
NN3017	85	3.3465	130	5.1181	34	1.3386	0.0394	3.6024	4.8622	4.7244
NN3018	90	3.5433	140	5.5118	37	1.4567	0.0591	3.8583	5.1969	5.0787
NN3019	95	3.7402	145	5.7087	37	1.4567	0.0591	4.0551	5.3937	5.2756
NN3020	100	3.9370	150	5.9055	37	1.4567	0.0591	4.2520	5.5906	5.4724
NN3021	105	4.1339	160	6.2992	41	1.6142	0.0787	4.4882	5.9449	5.8268
NN3022	110	4.3307	170	6.6929	45	1.7717	0.0787	4.6850	6.3386	6.1811
NN3024	120	4.7244	180	7.0866	46	1.8110	0.0787	5.0787	6.7323	6.5748
NN3026	130	5.1181	200	7.8740	52	2.0472	0.0787	5.4724	7.5197	7.2835
NN3028	140	5.5118	210	8.2677	53	2.0866	0.0787	5.8661	7.9134	7.6772
NN3030	150	5.9055	225	8.8583	56	2.2047	0.0787	6.3386	8.4252	8.2283
NN3032	160	6.2992	240	9.4488	60	2.3622	0.0787	6.7323	9.0157	8.7402
NN3034	170	6.6929	260	10.2362	67	2.6378	0.0787	7.1260	9.8031	9.4094
NN3036	180	7.0866	280	11.0236	74	2.9134	0.0787	7.5197	10.5906	10.1575
NN3038	190	7.4803	290	11.4173	75	2.9528	0.0787	7.9134	10.9843	10.5512
NN3040	200	7.8740	310	12.2047	82	3.2283	0.0787	8.3071	11.7717	11.2205

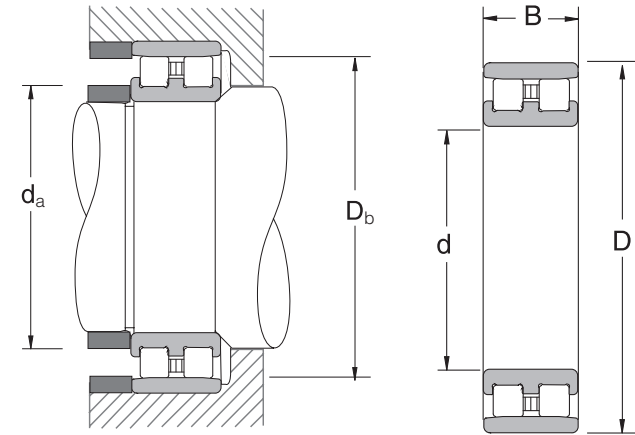
Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.) lbs
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil	
NN3005	5800	6700	19.0	22.0	0.28
NN3006	6900	8400	16.0	19.0	0.43
NN3007	8800	11200	14.0	16.0	0.56
NN3008	9700	12500	13.9	16.7	0.67
NN3009	11700	15400	12.5	13.9	0.88
NN3010	11900	16300	11.6	13.9	0.95
NN3011	15500	21700	10.4	12.5	1.40
NN3012	16400	23800	9.7	11.7	1.50
NN3013	17300	26000	9.1	11.0	1.61
NN3014	21900	33300	8.0	10.0	2.31
NN3015	21800	34000	7.9	9.5	2.42
NN3016	26900	41900	7.4	8.8	3.37
NN3017	28200	45200	7.0	8.4	3.54
NN3018	32200	51100	6.6	7.9	4.53
NN3019	33700	55300	6.3	7.5	4.73
NN3020	35300	59500	6.0	7.2	4.95
NN3021	44500	73000	5.7	6.8	6.27
NN3022	51500	84000	5.4	6.5	8.10
NN3024	54000	91000	5.0	6.0	8.82
NN3026	64000	107000	4.6	5.5	12.87
NN3028	67200	116000	4.0	4.5	13.93
NN3030	75000	132000	3.8	4.3	16.92
NN3032	84000	149000	3.6	4.0	20.55
NN3034	101000	181000	3.2	3.8	28.16
NN3036	127000	225000	3.0	3.4	36.74
NN3038	133000	242000	3.0	3.4	38.94
NN3040	147000	262000	2.8	3.2	49.72

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# Super Precision Cylindrical Roller Bearings: NN3900 Series

Double Row



### COMMON OPTIONS

M	One piece brass cage; inner ring guided
MB	Split type brass cage; roller guided
MR	Riveted brass cage; roller guided
T	Polyamide cage; roller guided
TB	Roller guided PPS resin cage
KR	Precision Tapered Bore 1:12
E44	Lube groove and holes, outer ring
CCx	Matched Clearance (9, 1, ...)
CCgxx*	Special radial clearance
P4	ISO 4 (ABEC7) Precision

\* Median clearance in microns

Bearing Number	Basic Bearing Dimensions						Preferred Shoulder Dimensions			
	d		D		B		r <sub>a</sub> (inch)	d <sub>a</sub> (inch)	D <sub>b</sub> (inch)	
	mm	inch	mm	inch	mm	inch			min	max
NN3920	100	3.9370	140	5.5118	30	1.1811	0.0394	4.1929	5.2559	5.1575
NN3921	105	4.1339	145	5.7087	30	1.1811	0.0394	4.3898	5.4528	5.3543
NN3922	110	4.3307	150	5.9055	30	1.1811	0.0394	4.5866	5.6496	5.5512
NN3924	120	4.7244	165	6.4961	34	1.3386	0.0394	4.9803	6.2402	6.0827
NN3926	130	5.1181	180	7.0866	37	1.4567	0.0591	5.4331	6.7717	6.6535
NN3928	140	5.5118	190	7.4803	37	1.4567	0.0591	5.8268	7.1654	7.0866
NN3930	150	5.9055	210	8.2677	45	1.7717	0.0787	6.2598	7.9134	7.7559
NN3932	160	6.2992	220	8.6614	45	1.7717	0.0787	6.6535	8.3071	8.1496
NN3934	170	6.6929	230	9.0551	45	1.7717	0.0787	7.0472	8.7008	8.5433
NN3936	180	7.0866	250	9.8425	52	2.0472	0.0787	7.4409	9.4882	9.2126
NN3938	190	7.4803	260	10.2362	52	2.0472	0.0787	7.8346	9.8819	9.6654
NN3940	200	7.8740	280	11.0236	60	2.3622	0.0787	8.3071	10.5906	10.2756
NN3944	220	8.6614	300	11.8110	60	2.3622	0.0787	9.0945	11.378	11.063
NN3948	240	9.4488	320	12.5984	60	2.3622	0.0787	9.8819	12.1654	11.8898
NN3952	260	10.2362	360	14.1732	75	2.9528	0.0787	10.6693	13.7402	13.3071
NN3956	280	11.0236	380	14.9606	75	2.9528	0.0787	11.4567	14.5276	14.0945

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (1000 RPM)		Bearing Weight (Approx.) lbs
	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil	
	NN3920	23800	40800	6.0	6.7
NN3921	24700	43600	5.6	6.3	3.30
NN3922	25800	46500	5.3	6.3	3.43
NN3924	30900	56000	5.0	5.6	4.40
NN3926	39000	72500	4.5	5.3	5.65
NN3928	45200	85000	4.3	4.8	6.07
NN3930	59000	109000	3.8	4.5	9.77
NN3932	61000	117000	3.6	4.3	11.33
NN3934	63000	123000	3.6	4.0	12.03
NN3936	76000	148000	3.2	3.8	15.71
NN3938	77000	152000	3.2	3.6	16.35
NN3940	93500	184000	3.0	3.4	23.10
NN3944	99000	202000	2.6	3.0	25.08
NN3948	104000	218000	2.6	2.8	26.62
NN3952	151000	311000	2.2	2.6	47.08
NN3956	155000	328000	2.2	2.4	49.94

C<sub>r</sub> = Dynamic Radial Load Rating  
C<sub>or</sub> = Static Radial Load Rating

# Ball Screw Support Bearings



## Bearing Bore Diameter (mm)

For inch series bearings, the figures to the right of the decimal point are omitted when converted to millimeters.

**30**

## Bearing Outside Diameter (mm)

For inch series bearings, the figures to the right of the decimal point are omitted when converted to millimeters.

**62**

## Bearing Type Symbol (Contact Angle 60°)

**TAC**

**B**

## Internal Specification Symbol

**A:** Standard Capacity  
**B:** High Capacity (Replaces A)

## Combination Symbols

**SU:** Single Universal  
**DF:** Duplex Face to Face  
**DB:** Duplex Back to Back  
**DT:** Duplex Tandem  
**DBD:** 3 Row Combinations  
**DFF:** 4 Row Combinations  
**DFT:** 4 Row Combinations  
**DTT:** 4 Row Combinations

**SU**

## Accuracy Symbol

**PN7A:** Corresponds to ISO Class 4  
**PN7B:** Tighter Bore and O.D. Accuracy for Universally Ground (SU) Bearings

**PN7B**

## Preload Symbol

**C10:** Heavy Preload (Metric Series)  
**C11:** Heavy Preload (Inch Series)

**C10**

Please refer to the bearing tables for exact part number options

## Interchange

Description		Interchange				
		NSK	SKF	FAF/TIMKEN	MRC	NTN
Part No.	Metric Type	xxTACxxx	BDAB6342xx	MMxxBSxxx	--	BSTxxXxx
	Inch Type	xxTACxxx	BDAB6342xx	MM93xxWI xH	Jxxx	--
Part Number Suffix	Internal Specifications (Standard Capacity)	A	--	--	--	X
	Internal Specifications (High Capacity)	B	C	--	--	-1B
	Single Universal	SU	G	SU	DS	G
	Duplex Universal	DU	DG	DU	DU	GD2
	Duplex Face to Face	DF	DF	DU	DF	DF
	Duplex Back to Back	DB	DB	DU	DB	DB
	Duplex Tandem	DT	DT	DU	DT	DT
	Quad Set \\ \\ //	DFF	QFC	QU	--	DTFT
	Quad Set \ ///	DFT	QFT	QU	DFDT	--
	Quad Set // \\ \	DBB	QBC	QU	--	--
	Quad Set / \\ \ \	DBT	QBT	QU	--	DTBT
	Quad Set /// /	DTT	QT	QU	--	--
	Metric Series Preload	C10	BLANK	H	--	BLANK
	Inch Series Preload	C11	BLANK	H	BLANK	--
	Corresponds to ISO Class 4	PN7A	P4(PA7)	MM	BLANK	P4
	Tighter Bore and O.D. Accuracy for SU Bearings	PN7B	P4(PA7)	MM	BLANK	UP

The competitive manufacturers are provided for a convenient source of unit substitution. They can be considered interchangeable in most instances, but for special applications, please consult NSK Engineering. NSK assumes no liability with respect to errors or omissions.

## Applications

Ball Screw Support bearings are designed specifically to provide maximum axial rigidity and improved feeding accuracy for use with precision ball screws. They are high accuracy angular contact thrust bearings, which are superior to combinations of standard angular contact bearings or arrangements of radial and thrust bearings for ball screw applications. Both Metric and Inch series are available.

› Precision Ball Screws › Rolled Ball Screws › Heavy Duty Ball Screw Support Units



# Ball Screw Support Bearings: Major Dimensions



## Inch Series

Bearing Number	Boundary Dimensions							
	Bore Diameter d		Outside Diameter D		Width B		Ball Complement	Sealed Design Available
	mm	inch	mm	inch	mm	inch	no.-inch	
20TAC47XB	20.000	0.7874	47.0	1.8504	15.875	0.6250	15-1/4	-
23TAC62B	23.838	0.9385	62.0	2.4409	15.875	0.6250	21-1/4	-
38TAC72B	38.100	1.5000	72.0	2.8346	15.875	0.6250	24-1/4	-
44TAC76B	44.475	1.7510	76.2	3.0000	15.875	0.6250	26-1/4	-
57TAC90B	57.150	2.2500	90.0	3.5433	15.875	0.6250	32-1/4	-
76TAC110B	76.200	3.0000	110.0	4.3307	15.875	0.6250	41-1/4	-
101TAC145B	101.600	4.0000	145.0	5.7087	22.225	0.8750	37-3/8	-

## Metric Series

Bearing Number	Boundary Dimensions							
	Bore Diameter d		Outside Diameter D		Width B		Ball Complement	Sealed Design Available
	mm	inch	mm	inch	mm	inch	no.-inch	
17TAC47B	17	0.6693	47	1.8504	15	0.5906	15-1/4	*
20TAC47B	20	0.7874	47	1.8504	15	0.5906	15-1/4	*
25TAC62B	25	0.9843	62	2.4409	15	0.5906	21-1/4	*
30TAC62B	30	1.1811	62	2.4409	15	0.5906	21-1/4	*
35TAC72B	35	1.3780	72	2.8346	15	0.5906	24-1/4	*
40TAC72B	40	1.5748	72	2.8346	15	0.5906	24-1/4	*
40TAC90B	40	1.5748	90	3.5433	20	0.7874	20-1/4	*
45TAC75B	45	1.7717	75	2.9528	15	0.5906	26-1/4	*
45TAC100B	45	1.7717	100	3.9370	20	0.7874	23-3/8	*
50TAC100B	50	1.9685	100	3.9370	20	0.7874	23-3/8	-
55TAC100B	55	2.1654	100	3.9370	20	0.7874	23-3/8	-
55TAC120B	55	2.1654	120	4.7244	20	0.7874	27-3/8	-
60TAC120B	60	2.1654	120	4.7244	20	0.7874	27-3/8	-

# Ball Screw Support Bearings: Load Ratings

## COMMON OPTIONS

DDG	Contact Rubber Seal
SU	Single Universal
DU	Duplex Universal
QU	Quad Set Universal
C10	Heavy preload (metric series)
C11	Heavy preload (inch series)
PN7B	Tighter bore and O.D. accuracy for universally ground (SU) bearings

## Inch Series

Bearing Number	Dynamic Axial Load Rating $C_a$						Limited Axial Capacity					
	One Row Loaded DF		Two Rows Loaded DFD • DFF • DT		Three Rows Loaded DFT • DTD		One Row Loaded DF		Two Rows Loaded DFD • DFF • DT		Three Rows Loaded DFT • DTD	
	daN	lbf	daN	lbf	daN	lbf	daN	lbf	daN	lbf	daN	lbf
20TAC47XB	2190	4920	3550	7980	4750	10700	2660	5980	5300	11900	7950	17900
23TAC62B	2850	6410	4650	10500	6150	13800	4050	9110	8150	18300	12200	27400
38TAC72B	3150	7080	5150	11600	6850	15400	5200	11700	10400	23400	15700	35300
44TAC76B	3300	7420	4350	12000	7100	16000	5700	12800	11400	25600	17000	38200
57TAC90B	3550	7980	5750	12900	7600	17100	6850	15400	13700	30800	20500	46100
76TAC110B	3900	8770	6300	14200	8350	18800	8650	19400	17300	38900	26000	58500
101TAC145B	7600	17100	12300	27700	16400	36900	16600	37300	33000	74200	50000	112000

## Metric Series

Bearing Number	Dynamic Axial Load Rating $C_a$						Limited Axial Capacity					
	One Row Loaded DF		Two Rows Loaded DFD • DFF • DT		Three Rows Loaded DFT • DTD		One Row Loaded DF		Two Rows Loaded DFD • DFF • DT		Three Rows Loaded DFT • DTD	
	daN	lbf	daN	lbf	daN	lbf	daN	lbf	daN	lbf	daN	lbf
17TAC47B	2190	4920	3550	7980	4750	10700	2660	5980	5300	11900	7950	17900
20TAC47B	2190	4920	3550	7980	4750	10700	2660	5980	5300	11900	7950	17900
25TAC62B	2850	6410	4650	10500	6150	13800	4050	9110	8150	18300	12200	27400
30TAC62B	2920	6570	4750	10700	6300	14200	4300	9670	8600	19300	12900	29000
35TAC72B	3100	6970	5050	11400	6700	15100	5000	11200	10000	22500	15000	33700
40TAC72B	3150	7080	5150	11600	6850	15400	5200	11700	10400	23400	15700	35300
40TAC90B	5900	1330	9550	21500	12700	28600	8950	20100	17900	40200	26900	60500
45TAC75B	3300	7420	5350	12000	7100	16000	5700	12800	11400	25600	17000	38200
45TAC100B	6150	13800	10000	22500	13300	29900	9900	22300	19800	44500	29800	67000
50TAC100B	6300	14200	10200	22900	13600	30600	10400	23400	20800	46800	31000	69700
55TAC100B	6300	14200	10200	22900	13600	30600	10400	23400	20800	46800	31000	69700
55TAC120B	6750	15200	10900	24500	14500	32600	12300	27700	24600	55300	37000	83200
60TAC120B	6750	15200	10900	24500	14500	32600	12300	27700	24600	55300	37000	83200

# Ball Screw Support Bearings: Preloads

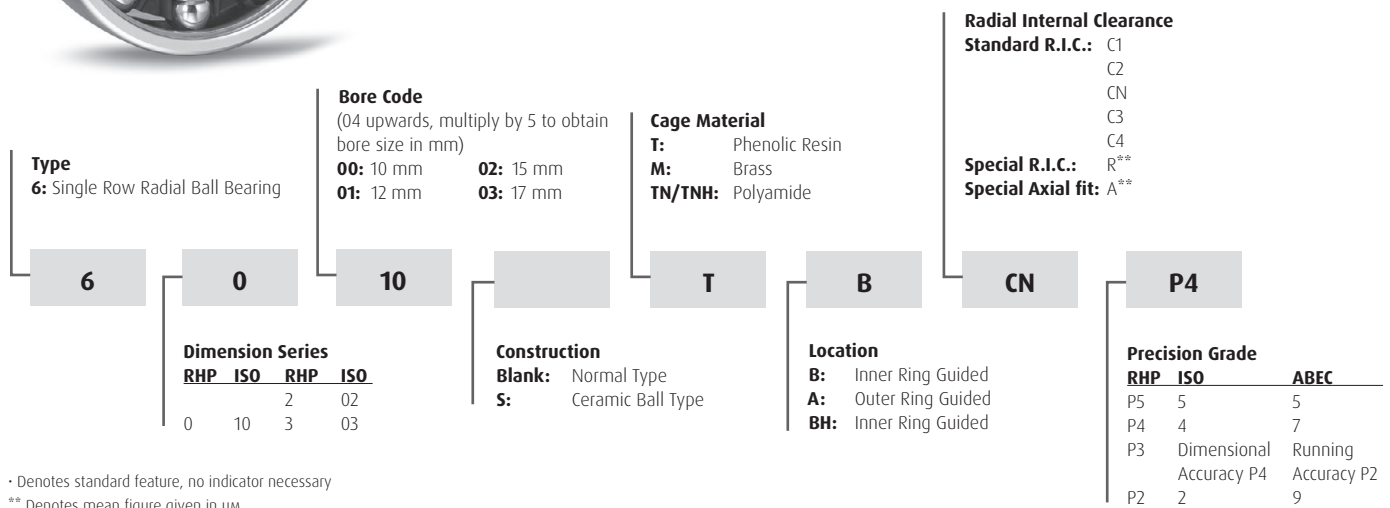
## Inch Series (Preload Symbol C11)

Bearing Number	Duplex Combinations (DF) Preload	Triplex Combinations (DFD) Preload	Quadruplex Combinations (DFF) Preload
	lbf	lbf	lbf
20TAC47XB	750	1000	1500
23TAC62B	1000	1350	2000
38TAC72B	1500	2100	3000
44TAC76B	1500	2100	3000
57TAC90B	1750	2300	3500
76TAC110B	2250	3000	4500
101TAC145B	3000	4100	6000

## Metric Series (Preload Symbol C10)

Bearing Number	Duplex Combinations (DF) Preload	Triplex Combinations (DFD) Preload	Quadruplex Combinations (DFF) Preload
	lbf	lbf	lbf
17TAC47B	490	680	990
20TAC47B	490	680	990
25TAC62B	680	930	1390
30TAC62B	680	930	1390
35TAC72B	790	1080	1590
40TAC72B	790	1080	1590
40TAC90B	1010	1390	2050
45TAC75B	790	1080	1590
45TAC100B	1170	590	2300
50TAC100B	1170	1590	2300
55TAC100B	1170	1590	2300
55TAC120B	1390	1870	2750
60TAC120B	1390	1870	2750

# Precision Deep Groove Ball Bearings



· Denotes standard feature, no indicator necessary

\*\* Denotes mean figure given in µm

Please refer to the bearing tables for exact part number options

## Interchange

Description	Interchange		
	NSK	FAF/TIMKEN	Barden
Part Number	ISO 19	69xx	---
	ISO 10	60xx	91xxK
	ISO 02	62xx	2xxK
	ISO 03	63xx	3xxK
Prefixes / Suffixes	Polyamide Cage	T1X	PRB
	High Speed Polyamide Cage	TYA	---
	Phenolic Cage	T	CR
	Shield	Z	---
	Non-contact Seal	V	V
	Contact Seal	(D)DU	---
	Radial Clearance (Loose)	C3	P
ABEC 7 Precision	P4	MM	

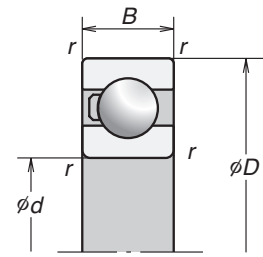
The competitive manufacturers are provided for a convenient source of unit substitution. They can be considered interchangeable in most instances, but for special applications, please contact NSK. NSK assumes no liability with respect to errors or omissions.

## Applications

› Woodworking Spindles › Light Duty Precision Vertical Milling Spindles › Machining Center Spindles

# Precision Deep Groove Ball Bearings: 60 & 62 Series

Bore Diameter 20-120mm



Bearing Number	Boundary Dimensions (mm)				Basic Load Ratings (lbs)		Limiting Speeds (RPM)	
	d	D	B	r	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil
6004T	20	42	12	0.6	2109	1131	32000	48000
6204T	20	47	14	1.0	2878	1479	35000	44000
6005T	25	47	12	0.6	2271	1315	27000	45200
6205T	25	52	15	1.0	3147	1760	26000	42800
6006T	30	55	13	1.0	2968	1859	23000	40000
6206T	30	62	16	1.0	4384	2540	21000	37300
6007T	35	62	14	1.0	3597	2316	22000	35800
6207T	35	72	17	1.0	5778	3440	18500	32700
6008T	40	68	15	1.0	3777	2585	21000	32400
6208T	40	80	18	1.0	6542	4024	16600	26700
6009T	45	75	16	1.0	4474	3147	18800	29000
6209T	45	85	19	1.0	7352	4586	15300	26000
6010T	50	80	16	1.0	4676	3462	17300	26700
6210T	50	90	20	1.0	7891	5216	14300	24200
6011T	55	90	18	1.0	6362	4766	16700	23800
6211T	55	100	21	1.5	9757	6565	12000	21900
6012T	60	95	18	1.0	6610	5216	15700	21900
6212T	60	110	22	1.5	11803	8094	11700	19700
6013T	65	100	18	1.0	6565	5283	13300	20600
6213T	65	120	23	1.5	12927	8993	10800	17800
6014T	70	110	20	1.0	8566	6947	11900	18400
6214T	70	125	24	1.5	13939	9892	10200	16700
6015T	75	115	20	1.0	8498	7014	11100	17200
6215T	75	130	25	1.5	14838	11016	10200	15600
6016T	80	125	22	1.0	10701	8925	10200	15700
6216T	80	140	26	2.0	16299	11915	9200	14300
6017T	85	130	22	1.0	10679	8993	9500	14700
6217T	85	150	28	2.0	18885	13939	8500	13100
6018T	90	140	24	1.5	13085	11151	8700	13500
6019T	95	145	24	1.5	13040	11241	8100	12600
6020T	100	150	24	1.5	13489	12140	7800	12000
6022T	110	170	28	2.0	19110	16412	6500	10100
6024T	120	180	28	2.0	19784	17986	6100	9400

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating

# Precision Deep Groove Ball Bearings: 63 Series

Bore Diameter 20-90mm

## Single Row Radial Ball Bearings

Boundary Dimensions			Basic Bearing	Limiting Speeds		Load Ratings (lbs)		Abutment Dimensions			Grease Volume	PCD of Lubrication Jets
								max. fillet radius	d <sub>1</sub>	D <sub>1</sub>		
d	D	B		oil/air	grease	dynamic	static	r	min	max	30%	P
mm	mm	mm	rev/min	rev/min	C <sub>r</sub>	C <sub>or</sub>	mm	mm	mm	cm <sup>3</sup>	mm	
20	52	15	6304 TB	41000	27000	3575	1754	1.0	25.0	47.0	1.3	40.1
25	62	17	6305 TB	31600	23000	4631	2630	1.0	30.0	57.0	2.0	48.9
30	72	19	6306 TB	26800	19500	6655	3732	1.0	35.0	67.0	2.9	58.1
35	80	21	6307 TB	23000	15000	7487	4294	1.5	42.5	72.5	4.0	63.8
40	90	23	6308 TB	20700	13500	9982	5868	1.5	47.5	82.5	6.0	72.4
45	100	25	6309 TB	18500	12000	1187	7127	1.5	52.5	92.5	7.3	80.1
50	110	27	6310 TB	16600	10800	13894	8521	2.0	60.0	100.0	10.0	88.3
55	120	29	6311 TB	15100	9800	16075	10027	2.0	65.0	110.0	15.0	96.6
60	130	31	6312 TB	13800	9000	18390	11691	2.0	70.0	120.0	16.0	106.8
65	140	33	6313 TB	12700	8300	20818	13377	2.0	75.0	130.0	18.0	113.8
70	150	35	6314 TB	11700	7600	23381	15288	2.0	80.0	140.0	22.0	122.1
75	160	37	6315 TB	10900	7100	25405	17311	2.0	85.0	150.0	28.0	130.5
80	170	39	6316 TB	10200	6600	25630	17873	2.0	90.0	160.0	32.0	135.1
85	180	41	6317 TB	9500	6200	29901	21695	2.5	97.5	167.5	40.0	145.0
90	190	43	6318 TB	9000	5800	32149	24056	2.5	102.5	177.5	50.0	156.5

C<sub>r</sub> = Dynamic Radial Load Rating

C<sub>or</sub> = Static Radial Load Rating



