

NSKHPS™

High Performance Standard Bearings for Industrial Machinery

NSKHPS, redefining the standard.



NSKHPS, redefining the standard.

Continually developing products with greater strength and higher accuracy, NSK's new NSKHPS fully incorporate the advantages of NSK's world-class design, materials, and manufacturing technology, setting a new standard for bearings.

LONG LIFE

High accuracy

Higher limiting speed

Universal matching

Wide range lineup

Deep Groove Ball Bearings



Angular Contact Ball Bearings



Cylindrical Roller Bearings



Spherical Roller Bearings



High Precision Angular Contact Ball Bearings



Ball Screw Support Angular Contact Thrust Ball Bearings

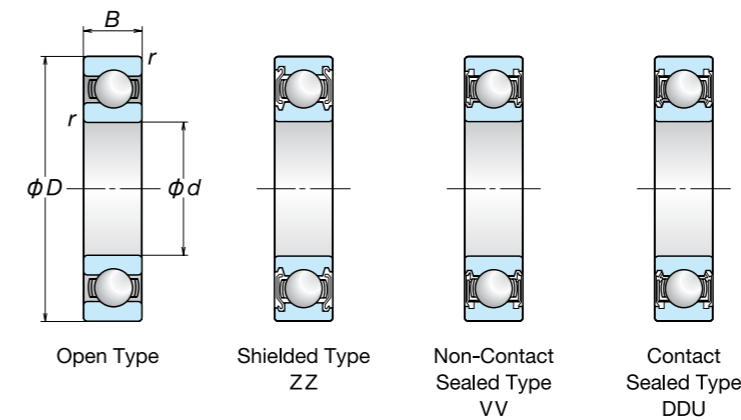


Deep Groove Ball Bearings



Features Compared with conventional bearings...

- Bearing Life 15% higher**
- Limiting Speed 15% higher***
- New Product Lineup Wide range lineup**



Dynamic Equivalent Load

$$P = XF_r + YF_a$$

$\frac{f_0 F_a}{C_{or}}$	e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
		X	Y	X	Y
0.172	0.19	1	0	0.56	2.30
0.345	0.22	1	0	0.56	1.99
0.689	0.26	1	0	0.56	1.71
1.03	0.28	1	0	0.56	1.55
1.38	0.30	1	0	0.56	1.45
2.07	0.34	1	0	0.56	1.31
3.45	0.38	1	0	0.56	1.15
5.17	0.42	1	0	0.56	1.04
6.89	0.44	1	0	0.56	1.00

Static Equivalent Load

$$P_0 = 0.6F_r + 0.5F_a$$

When $F_r > 0.6F_r + 0.5F_a$, use $P_0 = F_r$.

Formulation of Bearing Numbers

Example: **62 03 + ZZ CM NS7S**

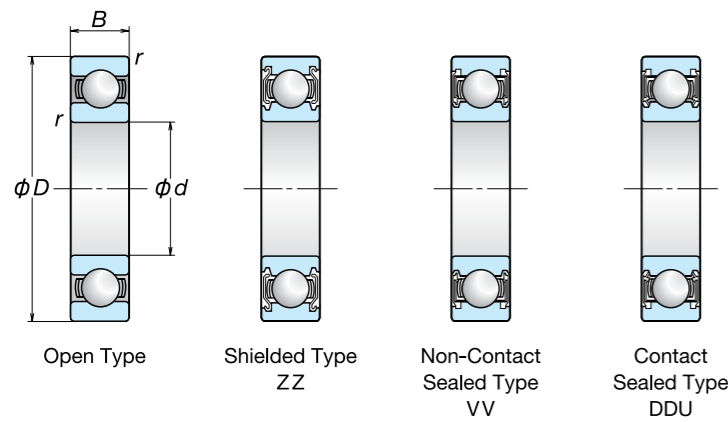
Bearing Series Symbols: 62
 Bore Number: 03
 NSKHPS Symbol: +
 Grease Symbol: NS7S
 Internal Clearance Symbol: CM
 Seals, Shields Symbol: ZZ

62	Bearing Series Symbols	60, 62, 63: Single-Row Deep Groove Ball Bearings
03	Bore Number	Bore number indicates bore diameter. 00:10mm; 01:12mm; 02:15mm; 03: 17mm 04 or Larger: Bore Number x 5 (mm)
+	NSKHPS Symbol	+ : NSKHPS Bearings
ZZ	Seals, Shields Symbol	ZZ: Shield on Both Side DDU: Contact Rubber Seal on Both Side VV: Non-Contact Rubber Sealed on Both Side
CM	Internal Clearance Symbol	Omitted: CN Clearance* ² C3: Clearance Greater than CN C4: Clearance Greater than C3 CM: For Electric Motors* ²
NS7S	Grease Symbol	NS7: NS Hi-Lube

*1 Limiting speeds of the DDU-type contact seals are equal to those of conventional bearings.
 *2 The CM clearance can be used in substitute of the CN clearance. (The opposite is not available.)

Bearing Numbers				Boundary Dimensions (mm)				Basic Load Ratings (N)		Factor f_0	Limiting Speeds (min ⁻¹)		
Open	Shielded	Sealed		d	D	B	r (min.)	C_r	C_{or}		Grease		Oil
											Open	DDU	
6200+	ZZ	VV	DDU	10	30	9	0.6	5 350	2 390	13.2	28 000	18 000	34 000
6300+	ZZ	VV	DDU		35	11	0.6	8 500	3 450	11.2	26 000	17 000	30 000
6001+	ZZ	VV	DDU	12	28	8	0.3	5 350	2 370	13.0	32 000	18 000	38 000
6201+	ZZ	VV	DDU		32	10	0.6	7 150	3 050	12.3	26 000	17 000	32 000
6301+	ZZ	VV	DDU		37	12	1.0	10 200	4 200	11.1	24 000	16 000	28 000
6002+	ZZ	VV	DDU	15	32	9	0.3	5 850	2 830	13.9	26 000	15 000	32 000
6202+	ZZ	VV	DDU		35	11	0.6	8 000	3 750	13.2	22 000	14 000	28 000
6302+	ZZ	VV	DDU		42	13	1.0	12 000	5 450	12.3	20 000	13 000	24 000
6003+	ZZ	VV	DDU	17	35	10	0.3	6 300	3 250	14.4	24 000	13 000	28 000
6203+	ZZ	VV	DDU		40	12	0.6	10 100	4 800	13.2	20 000	12 000	24 000
6303+	ZZ	VV	DDU		47	14	1.0	14 300	6 650	12.4	18 000	11 000	20 000
6004+	ZZ	VV	DDU	20	42	12	0.6	9 850	5 000	13.8	20 000	11 000	24 000
6204+	ZZ	VV	DDU		47	14	1.0	13 400	6 600	13.1	17 000	11 000	20 000
6304+	ZZ	VV	DDU		52	15	1.1	16 700	7 900	12.4	16 000	10 000	19 000
6005+	ZZ	VV	DDU	25	47	12	0.6	10 600	5 850	14.5	18 000	9 500	22 000
6205+	ZZ	VV	DDU		52	15	1.0	14 700	7 850	13.9	15 000	9 000	18 000
6305+	ZZ	VV	DDU		62	17	1.1	21 600	11 200	13.2	13 000	8 000	16 000
6006+	ZZ	VV	DDU	30	55	13	1.0	13 900	8 300	14.7	15 000	8 000	18 000
6206+	ZZ	VV	DDU		62	16	1.0	20 400	11 300	13.8	12 000	7 500	15 000
6306+	ZZ	VV	DDU		72	19	1.1	28 000	15 000	13.3	11 000	6 700	13 000
6007+	ZZ	VV	DDU	35	62	14	1.0	16 800	10 300	14.8	13 000	6 700	15 000
6207+	ZZ	VV	DDU		72	17	1.1	27 000	15 300	13.8	11 000	6 300	13 000
6307+	ZZ	VV	DDU		80	21	1.5	35 000	19 200	13.2	10 000	6 000	12 000
6008+	ZZ	VV	DDU	40	68	15	1.0	17 600	11 500	15.3	12 000	6 000	14 000
6208+	ZZ	VV	DDU		80	18	1.1	30 500	17 900	14.0	9 500	5 600	12 000
6308+	ZZ	VV	DDU		90	23	1.5	43 000	24 000	13.2	9 000	5 300	11 000
6009+	ZZ	VV	DDU	45	75	16	1.0	22 000	15 200	15.3	10 000	5 300	12 000
6209+	ZZ	VV	DDU		85	19	1.1	33 000	20 400	14.4	9 000	5 300	11 000
6309+	ZZ	VV	DDU		100	25	1.5	55 500	32 000	13.1	8 000	4 800	9 500
6010+	ZZ	VV	DDU	50	80	16	1.0	22 900	16 600	15.6	9 500	4 800	11 000
6210+	ZZ	VV	DDU		90	20	1.1	37 000	23 200	14.4	8 500	4 800	10 000
6310+	ZZ	VV	DDU		110	27	2.0	65 000	38 500	13.2	7 100	4 300	8 500

Angular Contact Ball Bearings



Dynamic Equivalent Load

$$P = XF_r + YF_a$$

$\frac{f_0 F_a}{C_{Or}}$	e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
		X	Y	X	Y
0.172	0.19	1	0	0.56	2.30
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5.17	0.42	1	0	0.56	1.04
6.89	0.44	1	0	0.56	1.00

Static Equivalent Load

$$P_0 = 0.6F_r + 0.5F_a$$

When $F_r > 0.6F_r + 0.5F_a$, use $P_0 = F_r$.

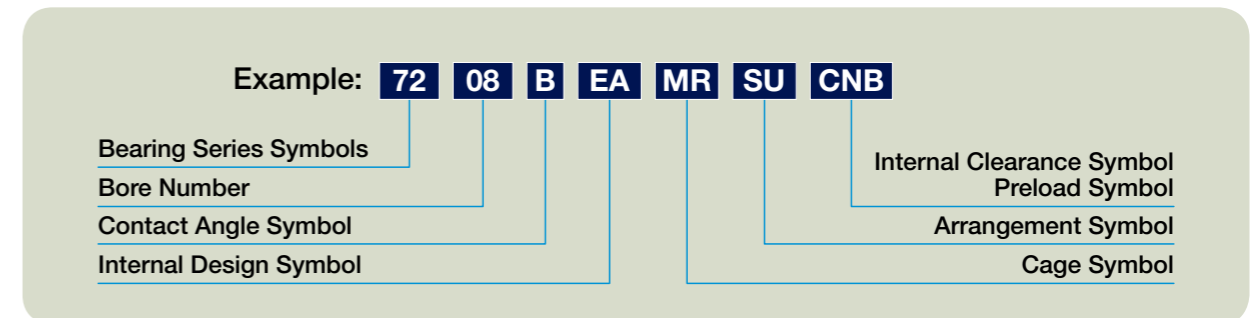
Bearing Numbers				Boundary Dimensions (mm)				Basic Load Ratings (N)		Factor	Limiting Speeds (min ⁻¹)		
Open	Shielded	Sealed		d	D	B	r (min.)	C _r	C _{Or}		Grease		Oil
											Open	ZZ	DDU
6011+	ZZ	VV	DDU	55	90	18	1.1	29 700	21 200	15.3	8 500	4 500	10 000
6211+	ZZ	VV	DDU		100	21	1.5	45 500	29 300	14.3	7 500	4 300	9 000
6311+	ZZ	VV	DDU		120	29	2.0	75 000	44 500	13.1	6 700	4 000	8 000
6012+	ZZ	VV	DDU	60	95	18	1.1	31 000	23 200	15.6	8 000	4 000	9 500
6212+	ZZ	VV	DDU		110	22	1.5	55 000	36 000	14.3	6 700	3 800	8 000
6312+	ZZ	VV	DDU		130	31	2.1	86 000	52 000	13.1	6 000	3 600	7 100
6013+	ZZ	VV	DDU	65	100	18	1.1	32 000	25 200	15.8	7 500	4 000	9 000
6213+	ZZ	VV	DDU		120	23	1.5	60 000	40 000	14.4	6 300	3 600	7 500
6313+	ZZ	VV	DDU		140	33	2.1	97 500	60 000	13.2	5 600	3 400	6 700
6014+	ZZ	VV	DDU	70	110	20	1.1	40 000	31 000	15.6	7 100	3 600	8 500
6214+	ZZ	VV	DDU		125	24	1.5	65 500	44 000	14.5	6 000	3 400	7 100
6314+	ZZ	VV	DDU		150	35	2.1	109 000	68 000	13.2	5 300	3 200	6 300
6015+	ZZ	VV	DDU	75	115	20	1.1	41 500	33 500	15.8	6 700	3 400	8 000
6215+	ZZ	VV	DDU		130	25	1.5	69 500	49 500	14.7	5 600	3 200	6 700
6315+	ZZ	VV	DDU		160	37	2.1	119 000	77 000	13.2	5 000	2 800	6 000
6016+	ZZ	VV	DDU	80	125	22	1.1	50 000	40 000	15.6	6 000	3 200	7 500
6216+	ZZ	VV	DDU		140	26	2.0	76 500	53 000	14.6	5 300	3 000	6 300
6316+	ZZ	VV	DDU		170	39	2.1	129 000	86 500	13.3	4 500	2 800	5 600
6017+	ZZ	VV	DDU	85	130	22	1.1	52 000	43 000	15.8	6 000	3 000	7 100
6217+	ZZ	VV	DDU		150	28	2.0	88 000	62 000	14.5	5 000	2 800	6 000
6317+	ZZ	VV	DDU		180	41	3.0	139 000	97 000	13.3	4 300	2 600	5 000
6018+	ZZ	VV	DDU	90	140	24	1.5	61 000	50 000	15.6	5 300	2 800	6 300
6218+	ZZ	VV	DDU		160	30	2.0	101 000	71 500	14.5	4 500	2 600	5 600
6318+	ZZ	VV	DDU		190	43	3.0	150 000	107 000	13.3	4 000	2 400	4 800
6019+	ZZ	VV	DDU	95	145	24	1.5	63 500	54 000	15.8	5 000	2 600	6 000
6219+	ZZ	VV	DDU		170	32	2.1	114 000	82 000	14.4	4 300	2 600	5 000
6319+	ZZ	VV	DDU		200	45	3.0	160 000	119 000	13.3	3 400	2 400	4 300
6020+	ZZ	VV	DDU	100	150	24	1.5	63 000	54 000	15.9	5 000	2 600	6 000
6220+	ZZ	VV	DDU		180	34	2.1	128 000	93 000	14.4	4 000	2 400	4 800
6021+	ZZ	VV	DDU	105	160	26	2.0	76 000	66 000	15.8	4 500	2 400	5 600
6221+	ZZ	VV	DDU		190	36	2.1	140 000	105 000	14.4	3 800	2 200	4 500
6022+	ZZ	VV	DDU		170	28	2.0	89 000	73 000	15.5	4 500	2 200	5 300
6024+	ZZ	VV	DDU	120	180	28	2.0	92 500	80 000	15.7	4 000	2 200	5 000



Features Compared with conventional bearings...

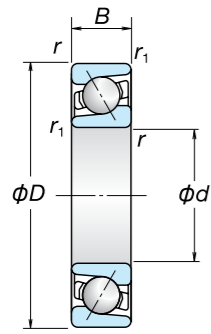
- Bearing Life 90% higher (Maximum)**
- Limiting Speed 20% higher (Maximum)**
- High Accuracy Running Accuracy ISO class 5 Dimensional Accuracy ISO class 6**
- Universal Matching Wide range combination is possible**

Formulation of Bearing Numbers



- 72** — Bearing Series Symbols: 72, 73: Single-Row Angular Contact Ball Bearings
- 08** — Bore Number: Bore number indicates bore diameter. 01:12mm; 02:15mm; 03:17mm. 04 or Larger: Bore Number × 5 (mm)
- B** — Contact Angle Symbol: B: Standard Contact Angle of 40°
- EA** — Internal Design Symbol: EA: High Load Capacity
- MR** — Cage Symbol: MR: Machined Brass Cage; T85: Polyamide 46 Resin Cage; T7: L-PPS Resin Cage
- SU** — Arrangement Symbol: SU: Universal Matching
- CNB** — Internal Clearance Symbol / Preload Symbol: CNB, GA

Cylindrical Roller bearings



Matched Measured Axial Clearance

Bore Diameter		CNB		GA	
Over	Incl.	Min.	Max.	Min.	Max.
mm		μm		μm	
12	18	17	25	-2	6
18	30	20	28	-2	6
30	50	24	32	-2	6
50	80	29	41	-3	9

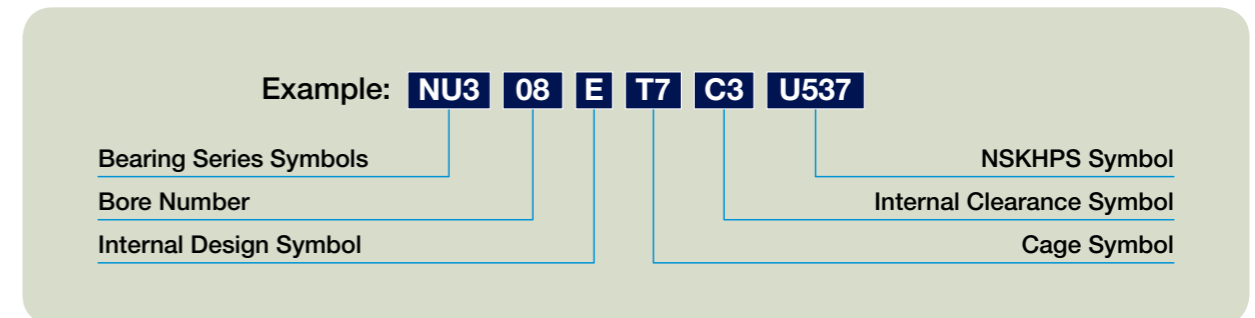


Features Compared with conventional bearings...

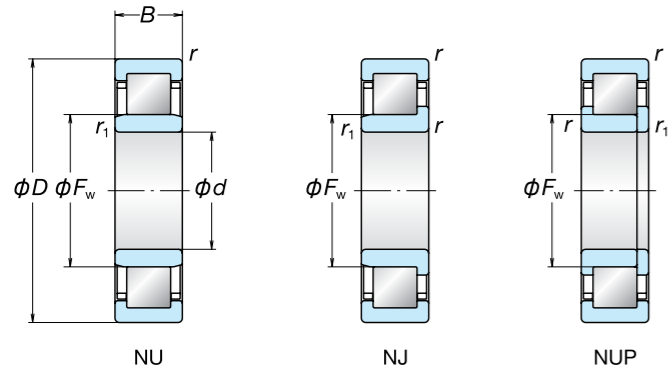
- Bearing Life 60% higher (Maximum)**
- New Product Lineup Wide range lineup**

Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (N)		Limiting Speed (min ⁻¹)	
	d	D	B	r (min.)	r ₁ (min.)	C _r	C _{0r}	Grease	Oil
7201BEA	12	32	10	0.6	0.3	8 150	3 750	20 000	30 000
7301BEA		37	12	1	0.6	11 100	4 950	18 000	26 000
7202BEA	15	35	11	0.6	0.3	9 800	4 800	18 000	26 000
7302BEA		42	13	1	0.6	14 300	6 900	16 000	22 000
7203BEA	17	40	12	0.6	0.3	11 600	6 100	16 000	22 000
7303BEA		47	14	1	0.6	16 800	8 300	14 000	20 000
7204BEA	20	47	14	1	0.6	15 600	8 150	13 000	19 000
7304BEA		52	15	1.1	0.6	19 800	10 500	13 000	18 000
7205BEA	25	52	15	1	0.6	17 600	10 200	12 000	17 000
7305BEA		62	17	1.1	0.6	27 200	14 900	10 000	15 000
7206BEA	30	62	16	1	0.6	23 700	14 300	10 000	14 000
7306BEA		72	19	1.1	0.6	36 500	20 600	9 000	13 000
7207BEA	35	72	17	1.1	0.6	32 500	19 600	8 500	12 000
7307BEA		80	21	1.5	1	40 500	24 400	8 000	11 000
7208BEA	40	80	18	1.1	0.6	38 500	24 500	7 500	11 000
7308BEA		90	23	1.5	1	53 000	33 000	7 100	10 000
7209BEA	45	85	19	1.1	0.6	40 500	27 100	7 100	10 000
7309BEA		100	25	1.5	1	62 500	39 500	6 300	9 000
7210BEA	50	90	20	1.1	0.6	42 000	29 700	6 300	9 500
7310BEA		110	27	2	1	78 000	50 500	5 600	8 000
7211BEA	55	100	21	1.5	1	51 500	37 000	6 000	8 500
7311BEA		120	29	2	1	89 000	58 500	5 000	7 500
7212BEA	60	110	22	1.5	1	61 500	45 000	5 300	7 500
7312BEA		130	31	2.1	1.1	102 000	68 500	4 800	6 700
7213BEA	65	120	23	1.5	1	70 000	53 500	4 800	7 100
7313BEA		140	33	2.1	1.1	114 000	77 000	4 300	6 300
7214BEA	70	125	24	1.5	1	75 500	58 500	4 500	6 700
7314BEA		150	35	2.1	1.1	124 000	87 500	4 000	6 000
7215BEA	75	130	25	1.5	1	78 500	63 500	4 300	6 300
7315BEA		160	37	2.1	1.1	134 000	98 500	3 800	5 600
7216BEA	80	140	26	2	1	87 500	70 000	4 000	6 000
7316BEA		170	39	2.1	1.1	144 000	110 000	3 600	5 300

Formulation of Bearing Numbers



- NU3** - Bearing Series Symbols: NU2, NU22, NU3, NU23; NJ2, NJ22, NJ3, NJ23; NUP2, NUP22, NUP3, NUP23. : Cylindrical Roller Bearings
- 08** - Bore Number: Bore number indicates bore diameter. Bore Number × 5 (mm)
- E** - Internal Design Symbol: E: High Load Capacity
- T7** - Cage Symbol: W: Pressed Steel Cage; M: Machined Brass Cage; T: Polyamide Resin Cage; T7: L-PPS Resin Cage
- C3** - Internal Clearance Symbol: Omitted: CN Clearance; C3: Clearance Greater than CN; C4: Clearance Greater than C3
- U537** - NSKHPS Symbol: U537: NSKHPS Bearings



Bearing Numbers	Cage				Boundary Dimensions (mm)					Basic Load Ratings (N)		Limiting Speeds (min ⁻¹)		Permissible Axial Movement S (mm)	
	W	M	T	T7	d	D	B	r (min.)	r ₁ (min.)	F _w	C _r	C _{0r}	Grease		Oil
205E	*	*	*	*	25	52	15	1	0.6	31.5	33 500	27 700	12 000	14 000	1.2
2205E		*	*	*		52	18	1	0.6	31.5	40 000	34 500	12 000	14 000	1.2
305E	*	*	*	*		62	17	1.1	1.1	34	48 000	37 500	10 000	12 000	1.2
2305E		*	*	*		62	24	1.1	1.1	34	65 500	56 000	9 000	11 000	1.2
206E	*	*	*	*	30	62	16	1	0.6	37.5	45 000	37 500	9 500	12 000	1.2
2206E		*	*	*		62	20	1	0.6	37.5	56 500	50 000	9 500	12 000	1.2
306E	*	*	*	*		72	19	1.1	1.1	40.5	61 000	50 000	8 500	10 000	1.2
2306E		*	*	*		72	27	1.1	1.1	40.5	86 000	77 500	8 000	9 500	1.2
207E	*	*	*	*	35	72	17	1.1	0.6	44	58 000	50 000	8 500	10 000	1.2
2207E		*	*	*		72	23	1.1	0.6	44	71 000	65 500	8 500	10 000	2.2
307E	*	*	*	*		80	21	1.5	1.1	46.2	76 500	65 500	7 500	9 500	1.2
2307E		*	*	*		80	31	1.5	1.1	46.2	107 000	101 000	6 700	8 500	1.2
208E	*	*	*	*	40	80	18	1.1	1.1	49.5	64 000	55 500	7 500	9 000	1.2
2208E		*	*	*		80	23	1.1	1.1	49.5	83 000	77 500	7 500	9 000	1.2
308E	*	*	*	*		90	23	1.5	1.5	52	95 500	81 500	6 700	8 000	1.2
2308E		*	*	*		90	33	1.5	1.5	52	131 000	122 000	6 000	7 500	1.2
209E	*	*	*	*	45	85	19	1.1	1.1	54.5	72 500	66 500	6 700	8 000	1.2
2209E		*	*	*		85	23	1.1	1.1	54.5	87 500	84 500	6 700	8 500	1.2
309E	*	*	*	*		100	25	1.5	1.5	58.5	112 000	98 500	6 000	7 500	1.4
2309E		*	*	*		100	36	1.5	1.5	58.5	158 000	153 000	5 300	6 700	1.4
210E	*	*	*	*	50	90	20	1.1	1.1	59.5	79 500	76 500	6 300	7 500	1.7
2210E		*	*	*		90	23	1.1	1.1	59.5	96 000	97 000	6 300	8 000	1.2
310E	*	*	*	*		110	27	2	2	65	127 000	113 000	5 000	6 000	1.4
2310E		*	*	*		110	40	2	2	65	187 000	187 000	5 000	6 300	1.4
211E	*	*	*	*	55	100	21	1.5	1.1	66	99 000	98 500	5 600	7 100	1.2
2211E		*	*	*		100	25	1.5	1.1	66	117 000	122 000	5 600	7 100	1.2
311E	*	*	*	*		120	29	2	2	70.5	158 000	143 000	4 500	5 600	1.4
2311E		*	*	*		120	43	2	2	70.5	231 000	233 000	4 500	5 600	1.4

Bearing Numbers	Cage				Boundary Dimensions (mm)					Basic Load Ratings (N)		Limiting Speeds (min ⁻¹)		Permissible Axial Movement S (mm)	
	W	M	T	T7	d	D	B	r (min.)	r ₁ (min.)	F _w	C _r	C _{0r}	Grease		Oil
212E	*	*	*	*	60	110	22	1.5	1.5	72	112 000	107 000	5 300	6 300	1.2
2212E		*	*	*		110	28	1.5	1.5	72	151 000	157 000	5 300	6 300	1.2
312E		*	*	*		130	31	2.1	2.1	77	169 000	157 000	4 800	5 600	1.5
2312E		*	*	*		130	46	2.1	2.1	77	251 000	262 000	4 300	5 300	1.5
213E	*	*	*	*	65	120	23	1.5	1.5	78.5	124 000	119 000	4 800	5 600	1.4
2213E		*	*	*		120	31	1.5	1.5	78.5	171 000	181 000	4 800	6 000	1.4
313E		*	*	*		140	33	2.1	2.1	82.5	204 000	191 000	4 300	5 300	1.5
2313E		*	*	*		140	48	2.1	2.1	82.5	263 000	265 000	3 800	4 800	1.5
214E		*	*	*	70	125	24	1.5	1.5	83.5	136 000	137 000	5 000	6 300	1.4
2214E		*	*	*		125	31	1.5	1.5	83.5	179 000	194 000	4 500	5 600	1.4
314E		*	*	*		150	35	2.1	2.1	89	231 000	222 000	4 000	5 000	1.5
2314E		*	*	*		150	51	2.1	2.1	89	310 000	325 000	3 600	4 500	1.5
215E		*	*	*	75	130	25	1.5	1.5	88.5	150 000	156 000	4 800	6 000	1.4
2215E		*	*	*		130	31	1.5	1.5	88.5	186 000	207 000	4 300	5 300	1.4
315E		*	*	*		160	37	2.1	2.1	95	271 000	263 000	3 800	4 800	1.4
2315E		*	*	*		160	55	2.1	2.1	95	370 000	395 000	3 400	4 300	4.4
216E		*	*	*	80	140	26	2	2	95.3	160 000	167 000	4 500	5 300	1.4
2216E		*	*	*		140	33	2	2	95.3	214 000	243 000	4 000	5 000	1.4
316E		*	*	*		170	39	2.1	2.1	101	289 000	282 000	3 600	4 300	1.5
2316E		*	*	*		170	58	2.1	2.1	101	400 000	430 000	3 200	4 000	1.5
217E		*	*	*	85	150	28	2	2	100.5	192 000	199 000	4 300	5 000	0.8
2217E		*	*	*		150	36	2	2	100.5	250 000	279 000	3 800	4 500	1.3
218E		*	*	*	90	160	30	2	2	107	205 000	217 000	4 000	4 800	1.4
2218E		*	*	*		160	40	2	2	107	274 000	315 000	3 600	4 300	1.9
219E		*	*	*	95	170	32	2.1	2.1	112.5	249 000	265 000	3 800	4 500	1.4
2219E		*	*	*		170	43	2.1	2.1	112.5	325 000	370 000	3 400	4 000	1.4

* : Available cage

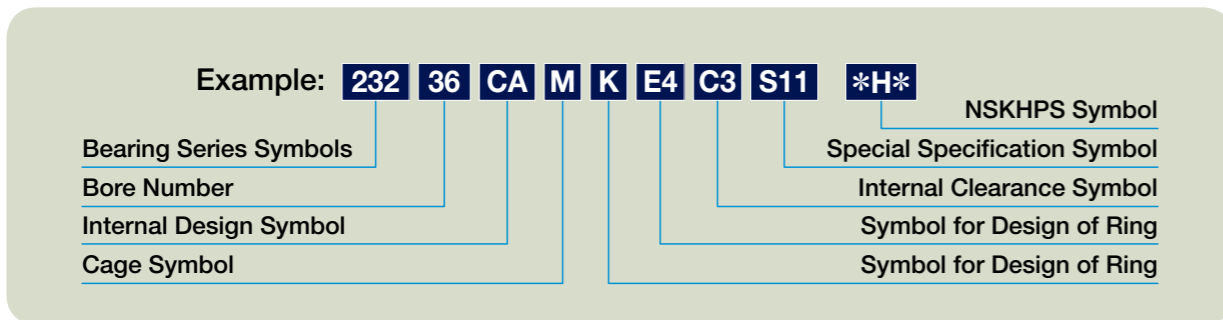
Spherical Roller bearings



Features Compared with conventional bearings...

- Bearing Life 2 times (Maximum)**
- Limiting Speed 20% higher*1 (Maximum)**
- Working Temp. up to 200°C**

Formulation of Bearing Numbers



232	Bearing Series Symbols	239, 230, 240, 231, 241, 222, 232, 213, 223: Spherical Roller Bearings
36	Bore Number	Bore number indicates bore diameter. Bore Number x 5 (mm)
CA	Internal Design Symbol	EA, CA: High Load Capacity
M	Cage Symbol	M: Machined Brass Cage (for CA Design) Omitted: Pressed Steel Cage (for EA Design)
K	Symbol for Design of Rings	K: Tapered Bore of Inner Ring (Taper 1:12) K30: Tapered Bore of Inner Ring (Taper 1:30)
E4	Symbol for Design of Rings	E4: Lubricating Groove in Outside Surface and Holes in Outer Ring
C3	Internal Clearance Symbol	C2: Clearance Less than CN Omitted: CN Clearance C3: Clearance Greater than CN C4: Clearance Greater than C3 C5: Clearance Greater than C4
S11	Special Specification Symbol	S11: Dimensional Stabilizing Treatment Working Temperature Lower than 200°C (Omitted for EA Design)
H	NSKHPS Symbol	* H * : NSKHPS Bearings

*1 Limiting speeds of CA-design bearings are equal to those of conventional bearings.

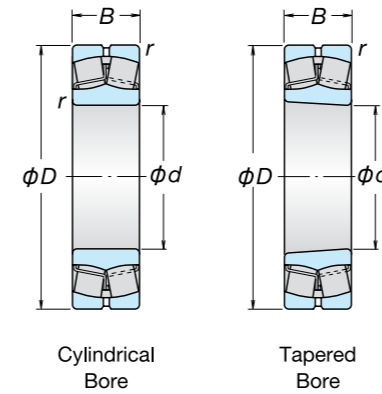


Table 1 Dimensions of Oil Groove and Holes
Unit: mm

Nominal Width B		Oil Groove Width W	Hole Diameter d _{OH}
Over	Incl.		
18	30	5	2.5
30	40	6	3
40	50	7	4
50	65	8	5
65	80	10	6
80	100	12	8
100	120	15	10
120	160	20	12
160	200	25	15
200	250	30	20
250	315	35	20
315	400	40	25
400	—	40	25

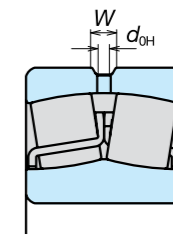


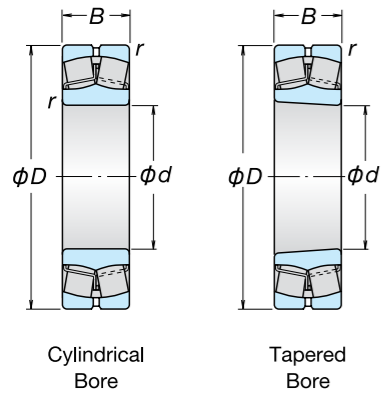
Table 2 Number of Oil Holes

Nominal Outer Ring Diameter D (mm)		Number of Holes
Over	Incl.	
—	180	4
180	250	6
250	315	6
315	400	6
400	500	6
500	630	8
630	800	8
800	1000	8
1000	1250	8
1250	1600	8
1600	2000	8

Bearing Numbers		Boundary Dimensions (mm)				Basic Load Ratings (N)		Limiting Speeds (min ⁻¹)	
Cylindrical Bore	Tapered Bore	d	D	B	r (min.)	C _r	C _{0r}	Grease	Oil
22208EAE4	22208EAKE4	40	80	23	1.1	113 000	99 500	6 700	8 500
21308EAE4	21308EAKE4		90	23	1.5	118 000	111 000	6 000	7 500
22308EAE4	22308EAKE4		90	33	1.5	170 000	153 000	5 300	6 700
22209EAE4	22209EAKE4	45	85	23	1.1	118 000	111 000	6 000	7 500
21309EAE4	21309EAKE4		100	25	1.5	149 000	144 000	5 000	6 300
22309EAE4	22309EAKE4		100	36	1.5	207 000	195 000	4 500	5 600
22210EAE4	22210EAKE4	50	90	23	1.1	124 000	119 000	5 600	7 100
21310EAE4	21310EAKE4		110	27	2	178 000	175 000	4 500	5 600
22310EAE4	22310EAKE4		110	40	2	246 000	234 000	4 300	5 300
22211EAE4	22211EAKE4	55	100	25	1.5	149 000	144 000	5 300	6 700
21311EAE4	21311EAKE4		120	29	2	178 000	174 000	4 500	5 600
22311EAE4	22311EAKE4		120	43	2	292 000	292 000	3 800	4 800
22212EAE4	22212EAKE4	60	110	28	1.5	178 000	174 000	4 800	6 000
21312EAE4	21312EAKE4		130	31	2.1	238 000	244 000	3 800	4 800
22312EAE4	22312EAKE4		130	46	2.1	340 000	340 000	3 600	4 500
22213EAE4	22213EAKE4	65	120	31	1.5	221 000	230 000	4 300	5 300
21313EAE4	21313EAKE4		140	33	2.1	264 000	275 000	3 600	4 500
22313EAE4	22313EAKE4		140	48	2.1	375 000	380 000	3 200	4 000
22214EAE4	22214EAKE4	70	125	31	1.5	225 000	232 000	4 000	5 300
21314EAE4	21314EAKE4		150	35	2.1	310 000	325 000	3 200	4 000
22314EAE4	22314EAKE4		150	51	2.1	425 000	435 000	3 000	3 800
22215EAE4	22215EAKE4	75	130	31	1.5	238 000	244 000	4 000	5 000
21315EAE4	21315EAKE4		160	37	2.1	310 000	325 000	3 200	4 000
22315EAE4	22315EAKE4		160	55	2.1	485 000	505 000	2 800	3 600
22216EAE4	22216EAKE4	80	140	33	2	264 000	275 000	3 600	4 500
21316EAE4	21316EAKE4		170	39	2.1	355 000	375 000	3 000	3 800
22316EAE4	22316EAKE4		170	58	2.1	540 000	565 000	2 600	3 400
22217EAE4	22217EAKE4	85	150	36	2	310 000	325 000	3 400	4 300
21317EAE4	21317EAKE4		180	41	3	360 000	395 000	3 000	4 000
22317EAE4	22317EAKE4		180	60	3	600 000	630 000	2 400	3 200
22218EAE4	22218EAKE4	90	160	40	2	360 000	395 000	3 200	4 000
21318EAE4	21318EAKE4		190	43	3	415 000	450 000	2 800	3 600
22318EAE4	22318EAKE4		190	64	3	665 000	705 000	2 400	3 000
22219EAE4	22219EAKE4	95	170	43	2.1	415 000	450 000	3 000	3 800
21319EAE4	21319EAKE4		200	45	3	430 000	435 000	1 500	2 000
22319EAE4	22319EAKE4		200	67	3	735 000	780 000	2 200	2 800
22220EAE4	22220EAKE4	100	180	46	2.1	455 000	490 000	2 800	3 600
23220CAME4	23220CAMKE4		180	60.3	2.1	525 000	605 000	1 600	2 200
21320EAE4	21320EAKE4		215	47	3	495 000	485 000	1 400	1 900
22320EAE4*	22320EAKE4*		215	73	3	750 000	785 000	1 700	2 200

* EA is also available. Load rating of EA is around 10% higher than CAM's, please consult NSK.

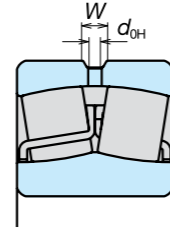
Table 1 Dimensions of Oil Groove and Holes
Unit: mm



Nominal Width B		Oil Groove Width W	Hole Diameter d _{OH}
Over	Incl.		
18	30	5	2.5
30	40	6	3
40	50	7	4
50	65	8	5
65	80	10	6
80	100	12	8
100	120	15	10
120	160	20	12
160	200	25	15
200	250	30	20
250	315	35	20
315	400	40	25
400	—	40	25

Table 2 Number of Oil Holes

Nominal Outer Ring Diameter D (mm)		Number of Holes
Over	Incl.	
—	180	4
180	250	6
250	315	6
315	400	6
400	500	6
500	630	8
630	800	8
800	1000	8
1000	1250	8
1250	1600	8
1600	2000	8



Bearing Numbers		Boundary Dimensions (mm)				Basic Load Ratings (N)		Limiting Speeds (min ⁻¹)		
Cylindrical Bore	Tapered Bore	d	D	B	r (min.)	C _r	C _{0r}	Grease	Oil	
23122CAME4	23122CAMKE4	110	180	56	2	480 000	630 000	1 600	2 000	
24122CAME4	24122CAMK30E4		180	69	2	575 000	750 000	1 600	2 000	
22222EAE4	22222EAKE4		200	53	2.1	605 000	645 000	2 600	3 200	
23222CAME4	23222CAMKE4		200	69.8	2.1	645 000	760 000	1 500	1 900	
21322CAME4	21322CAMKE4		240	50	3	565 000	545 000	1 300	1 700	
22322CAME4*	22322CAMKE4*		240	80	3	925 000	980 000	1 500	1 900	
23024CAME4	23024CAMKE4		120	180	46	2	395 000	525 000	1 800	2 200
24024CAME4	24024CAMK30E4			180	60	2	480 000	680 000	1 500	2 000
23124CAME4	23124CAMKE4			200	62	2	580 000	720 000	1 400	1 800
24124CAME4	24124CAMK30E4			200	80	2	695 000	905 000	1 400	1 800
22224EAE4	22224EAKE4	215		58	2.1	685 000	765 000	2 400	3 000	
23224CAME4	23224CAMKE4	215		76	2.1	790 000	970 000	1 300	1 700	
22324CAME4*	22324CAMKE4*	260		86	3	1 060 000	1 120 000	1 400	1 700	
23026CAME4	23026CAMKE4	130		200	52	2	500 000	655 000	1 700	2 000
24026CAME4	24026CAMK30E4			200	69	2	620 000	865 000	1 400	1 800
23126CAME4	23126CAMKE4			210	64	2	630 000	825 000	1 300	1 700
24126CAME4	24126CAMK30E4		210	80	2	735 000	1 010 000	1 300	1 700	
22226EAE4	22226EAKE4		230	64	3	820 000	940 000	2 200	2 600	
23226CAME4	23226CAMKE4		230	80	3	875 000	1 080 000	1 200	1 600	
22326CAME4	22326CAMKE4		280	93	4	1 240 000	1 350 000	1 300	1 600	
23028CAME4	23028CAMKE4		140	210	53	2	525 000	715 000	1 600	1 900
24028CAME4	24028CAMK30E4			210	69	2	635 000	905 000	1 300	1 700
23128CAME4	23128CAMKE4			225	68	2.1	725 000	945 000	1 200	1 600
24128CAME4	24128CAMK30E4	225		85	2.1	835 000	1 160 000	1 200	1 600	
22228EAE4	22228EAKE4	250		68	3	835 000	945 000	1 400	1 700	
23228CAME4	23228CAMKE4	250		88	3	1 040 000	1 300 000	1 100	1 500	
22328CAME4	22328CAMKE4	300		102	4	1 450 000	1 590 000	1 200	1 500	
23030CAME4	23030CAMKE4	150		225	56	2.1	590 000	815 000	1 400	1 800
24030CAME4	24030CAMK30E4			225	75	2.1	740 000	1 090 000	1 200	1 500
23130CAME4	23130CAMKE4			250	80	2.1	905 000	1 180 000	1 100	1 400
24130CAME4	24130CAMK30E4		250	100	2.1	1 070 000	1 450 000	1 100	1 400	
22230CAME4	22230CAMKE4		270	73	3	955 000	1 120 000	1 300	1 600	
23230CAME4	23230CAMKE4		270	96	3	1 220 000	1 560 000	1 100	1 400	
22330CAME4	22330CAMKE4		320	108	4	1 530 000	1 690 000	1 100	1 400	
23932CAME4	23932CAMKE4		160	220	45	2	450 000	675 000	1 400	1 800
23032CAME4	23032CAMKE4			240	60	2.1	675 000	955 000	1 300	1 700
24032CAME4	24032CAMK30E4			240	80	2.1	845 000	1 260 000	1 100	1 400
23132CAME4	23132CAMKE4	270		86	2.1	1 070 000	1 400 000	1 000	1 300	
24132CAME4	24132CAMK30E4	270		109	2.1	1 240 000	1 670 000	1 000	1 300	
22232CAME4	22232CAMKE4	290		80	3	1 140 000	1 320 000	1 200	1 500	
23232CAME4	23232CAMKE4	290		104	3	1 370 000	1 770 000	1 000	1 300	
22332CAME4	22332CAMKE4	340		114	4	1 700 000	1 900 000	1 100	1 300	

* EA is also available. Load rating of EA is around 10% higher than CAM's, please consult NSK.

Bearing Numbers		Boundary Dimensions (mm)				Basic Load Ratings (N)		Limiting Speeds (min ⁻¹)		
Cylindrical Bore	Tapered Bore	d	D	B	r (min.)	C _r	C _{0r}	Grease	Oil	
23934BCAME4	23934BCAMKE4	170	230	45	2	440 000	660 000	1 400	1 800	
23034CAME4	23034CAMKE4		260	67	2.1	795 000	1 090 000	1 200	1 600	
24034CAME4	24034CAMK30E4		260	90	2.1	1 030 000	1 520 000	1 000	1 300	
23134CAME4	23134CAMKE4		280	88	2.1	1 180 000	1 570 000	1 000	1 300	
24134CAME4	24134CAMK30E4		280	109	2.1	1 280 000	1 770 000	1 000	1 300	
22234CAME4	22234CAMKE4		310	86	4	1 240 000	1 500 000	1 100	1 400	
23234CAME4	23234CAMKE4		310	110	4	1 500 000	1 910 000	900	1 200	
22334CAME4	22334CAMKE4		360	120	4	1 970 000	2 110 000	1 000	1 200	
23936CAME4	23936CAMKE4		180	250	52	2	590 000	890 000	1 200	1 600
23036CAME4	23036CAMKE4			280	74	2.1	935 000	1 270 000	1 200	1 400
24036CAME4	24036CAMK30E4	280		100	2.1	1 210 000	1 750 000	950	1 200	
23136CAME4	23136CAMKE4	300		96	3	1 320 000	1 760 000	900	1 200	
24136CAME4	24136CAMK30E4	300		118	3	1 490 000	2 040 000	900	1 200	
22236CAME4	22236CAMKE4	320		86	4	1 280 000	1 540 000	1 100	1 300	
23236CAME4	23236CAMKE4	320		112	4	1 620 000	2 110 000	850	1 100	
22336CAME4	22336CAMKE4	380		126	4	2 170 000	2 340 000	950	1 200	
23938CAME4	23938CAMKE4	190		260	52	2	575 000	875 000	1 200	1 500
23038CAME4	23038CAMKE4			290	75	2.1	970 000	1 350 000	1 100	1 400
24038CAME4	24038CAMK30E4		290	100	2.1	1 220 000	1 840 000	900	1 200	
23138CAME4	23138CAMKE4		320	104	3	1 480 000	2 020 000	850	1 100	
24138CAME4	24138CAMK30E4		320	128	3	1 710 000	2 330 000	850	1 100	
22238CAME4	22238CAMKE4		340	92	4	1 420 000	1 730 000	1 000	1 200	
23238CAME4	23238CAMKE4		340	120	4	1 800 000	2 350 000	800	1 100	
22338CAME4	22338CAMKE4		400	132	5	2 370 000	2 590 000	900	1 100	
23940CAME4	23940CAMKE4		200	280	60	2.1	710 000	1 060 000	1 100	1 400
23040CAME4	23040CAMKE4			310	82	2.1	1 180 000	1 700 000	1 000	1 300
24040CAME4	24040CAMK30E4	310		109	2.1	1 420 000	2 120 000	850	1 100	
23140CAME4	23140CAMKE4	340		112	3	1 700 000	2 330 000	800	1 000	
24140CAME4	24140CAMK30E4	340		140	3	1 960 000	2 660 000	800	1 000	
22240CAME4	22240CAMKE4	360		98	4	1 620 000	2 010 000	950	1 200	
23240CAME4	23240CAMKE4	360		128	4	2 070 000	2 750 000	750	1 000	
23944CAME4	23944CAMKE4	220		300	60	2.1	785 000	1 240 000	1 000	1 300
23044CAME4	23044CAMKE4			340	90	3	1 360 000	1 980 000	950	1 200
24044CAME4	24044CAMK30E4			340	118	3	1 640 000	2 490 000	750	1 000
23144CAME4	23144CAMKE4		370	120	4	1 960 000	2 710 000	710	950	
24144CAME4	24144CAMK30E4		370	150	4	2 250 000	3 200 000	710	950	
22244CAME4	22244CAMKE4		400	108	4	1 960 000	2 430 000	850	1 000	
23244CAME4	23244CAMKE4		400	144	4	2 520 000	3 400 000	670	900	
23948CAME4	23948CAMKE4		240	320	60	2.1	795 000	1 300 000	950	1 200
23048CAME4	23048CAMKE4			360	92	3	1 450 000	2 140 000	850	1 100
24048CAME4	24048CAMK30E4			360	118	3	1 730 000	2 730 000	710	950
23148CAME4	23148CAMKE4	400		128	4	2 230 000	3 100 000	670	850	
24148CAME4	24148CAMK30E4	400		160	4	2 660 000	3 800 000	670	850	
23952CAME4	23952CAMKE4	260		360	75	2.1	1 170 000	1 870 000	850	1 000

High Precision Angular Contact Ball Bearings

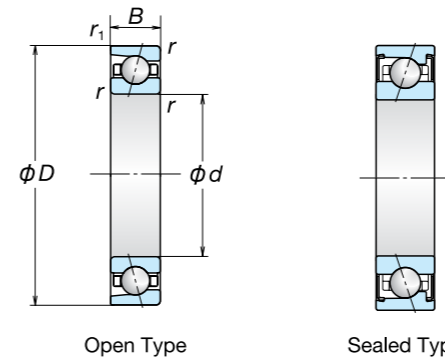


Features Compared with conventional bearings...

Bearing Life
15% higher

Universal Matching
Wide range combination is possible

New Product Lineup
Wide range lineup

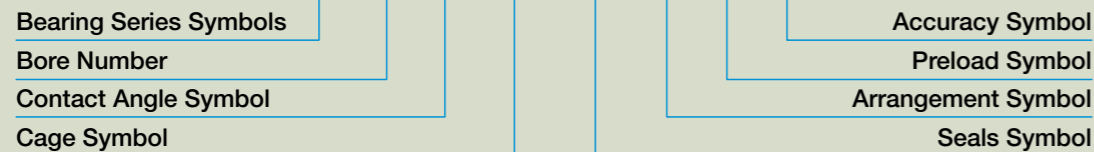


Open Type

Sealed Type

Formulation of Bearing Numbers

Example: **70 13 C TYN SU L P4**



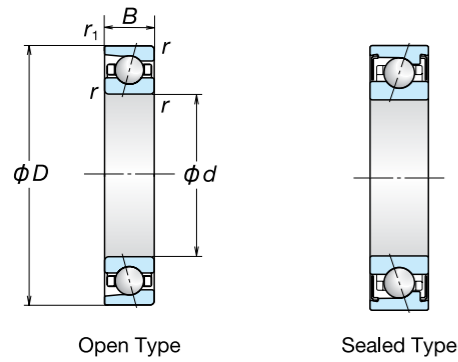
70	Bearing Series Symbols	79, 70, 72: Single-Row AngularContact Ball Bearings
13	Bore Number	Bore number indicates bore diameter. 00: 10mm; 01: 12mm; 02: 15mm; 03: 17mm 04 or Larger: Bore Number × 5 (mm)
C	Contact Angle Symbol	C: 15°; A5: 25°; A: 30°
TYN	Cage Symbol	TYN: Ball Guided Polyamide Resin Cage. Permissible $d_m n^{*1}$ Value; 1 400 000. Continuousness Operating Temperature Limit; 120°C TR: Outer-Ring-Guided Phenolic Resin Cage. Continuousness Operating Temperature Limit; 120°C
	Seals Symbol	None: Open Type/ V1V: Noncontact Rubber Seal
SU	Arrangement Symbol	SU: Universal Matching for Single Row/ DU: Universal Matching for Two Rows/ DB: Back-to-Back Matching/ DF: Face-to-Face Matching/ DT: Tandem Matching DBD, DFD, DTD: Three-Row Combination DBB, DFF, DBT, DFT, DTT: Four-Row Combination
L	Preload Symbol	EL: Extra Light Preload/ L: Light Preload/ M: Medium Preload/ and H: Heavy Preload
P4	Accuracy Symbol	P2: ISO Class 2/ P4: ISO Class 4/ P5: ISO Class 5 P3: Special Class (Dimensional Accuracy: ISO Class 4/ Running Accuracy: ISO Class 2) P4Y: Special Class (Tolerances of Inner Ring Bore Diameter and Outer Ring Outside Diameter are Controlled by NSK. Other Tolerances are ISO Class 4.)

*1 $d_m n = (\text{Bore diameter} + \text{Outside diameter}) / 2 \times \text{Rotating speed}$

Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (kN)		Limiting Speeds (min ⁻¹)		Preload (DB,DF Arrangement) (N)				
	d	D	B	r (min.)	r ₁ (min.)	C _r	C _{0r}	Grease	Oil	EL	L	M	H	
7900C	10	22	6	0.3	0.15	3.15	1.52	71 900	109 000	7	16	29	58	
7900A5		22	6	0.3	0.15	3.00	1.45	62 500	93 800	10	17	55	94	
7000C		26	8	0.3	0.15	5.60	2.49	63 900	97 300	13	24	49	96	
7000A5		26	8	0.3	0.15	5.40	2.41	55 600	83 400	17	43	78	153	
7000A		26	8	0.3	0.15	5.25	2.34	41 700	55 600	26	97	202	333	
7200C		30	9	0.6	0.3	5.65	2.61	57 500	87 500	13	29	68	150	
7200A5		30	9	0.6	0.3	5.45	2.51	50 000	75 000	17	43	106	188	
7200A		30	9	0.6	0.3	5.30	2.44	37 500	50 000	26	98	202	—	
7901C		12	24	6	0.3	0.15	3.55	1.86	63 900	97 300	9	16	41	77
7901A5			24	6	0.3	0.15	3.35	1.77	55 600	83 400	16	24	59	120
7001C	28		8	0.3	0.15	6.10	2.90	57 500	87 500	13	25	57	120	
7001A5	28		8	0.3	0.15	5.85	2.79	50 000	75 000	16	45	97	205	
7001A	28		8	0.3	0.15	5.70	2.71	37 500	50 000	26	105	220	365	
7201C	32		10	0.6	0.3	8.30	3.85	52 300	79 600	20	39	99	195	
7201A5	32		10	0.6	0.3	8.05	3.70	45 500	68 200	34	56	145	285	
7201A	32		10	0.6	0.3	7.85	3.65	34 100	45 500	26	105	220	360	
7902C	15		28	7	0.3	0.15	5.00	2.64	53 500	81 400	12	25	47	105
7902A5			28	7	0.3	0.15	4.75	2.53	46 600	69 800	16	35	74	140
7002C		32	9	0.3	0.15	6.55	3.40	49 000	74 500	12	29	66	145	
7002A5		32	9	0.3	0.15	6.25	3.25	42 600	63 900	16	35	105	195	
7002A		32	9	0.3	0.15	6.05	3.15	32 000	42 600	26	110	235	390	
7202C		35	11	0.6	0.3	9.10	4.55	46 000	70 000	20	40	97	200	
7202A5		35	11	0.6	0.3	8.75	4.35	40 000	60 000	35	73	195	390	
7202A		35	11	0.6	0.3	8.50	4.25	30 000	40 000	26	110	235	395	
7903C		17	30	7	0.3	0.15	5.25	2.94	49 000	74 500	11	25	56	120
7903A5			30	7	0.3	0.15	5.00	2.80	42 600	63 900	15	35	77	150
7003C	35		10	0.3	0.15	6.95	3.80	44 300	67 400	15	30	69	155	
7003A5	35		10	0.3	0.15	6.60	3.65	38 500	57 700	26	48	125	255	
7003A	35		10	0.3	0.15	6.40	3.50	28 900	38 500	26	115	250	420	
7203C	40		12	0.6	0.3	11.4	5.85	40 400	61 500	25	46	145	295	
7203A5	40		12	0.6	0.3	11.0	5.60	35 100	52 700	35	75	205	410	
7203A	40		12	0.6	0.3	10.7	5.45	26 400	35 100	26	115	245	410	
7904C	20		37	9	0.3	0.15	7.30	4.25	40 400	61 500	20	42	80	150
7904A5			37	9	0.3	0.15	6.95	4.05	35 100	52 700	26	63	115	245
7004C		42	12	0.6	0.3	11.7	6.55	37 100	56 500	25	49	120	245	
7004A5		42	12	0.6	0.3	11.2	6.25	32 300	48 400	37	82	205	405	
7004A		42	12	0.6	0.3	10.8	6.10	24 200	32 300	26	130	280	475	
7204C		47	14	1	0.6	15.3	8.05	34 400	52 300	35	68	195	385	
7204A5		47	14	1	0.6	14.7	7.75	29 900	44 800	63	110	290	595	
7204A		47	14	1	0.6	14.3	7.55	22 400	29 900	26	260	440	650	

* Non-contact sealed design correspondence.

The limiting speeds listed table are guideline values. They are based on a single bearing that is lightly preloaded by means of a spring.

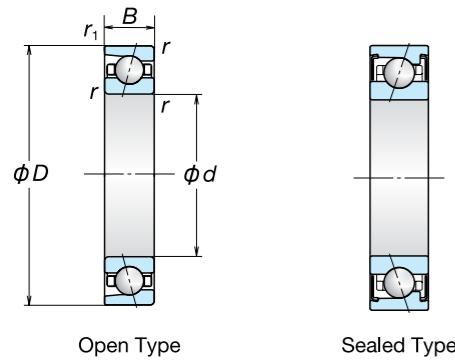


Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (kN)		Limiting Speeds (min ⁻¹)		Preload (DB,DF Arrangement) (N)			
	d	D	B	r (min.)	r ₁ (min.)	C _r	C _{0r}	Grease	Oil	EL	L	M	H
7905C	25	42	9	0.3	0.15	8.25	5.40	34 400	52 300	19	37	99	205
7905A5		42	9	0.3	0.15	7.80	5.15	29 900	44 800	38	70	155	290
7005C		47	12	0.6	0.3	12.3	7.40	32 000	48 700	30	58	150	290
7005A5		47	12	0.6	0.3	11.7	7.10	27 800	41 700	52	105	195	395
7005A		47	12	0.6	0.3	11.3	6.85	20 900	27 800	26	135	300	505
7205C		52	15	1	0.6	17.4	10.2	29 900	45 500	42	82	195	400
7205A5	52	15	1	0.6	16.7	9.80	26 000	39 000	82	145	330	690	
7205A	52	15	1	0.6	16.1	9.45	19 500	26 000	51	355	580	840	
*7906C	30	47	9	0.3	0.15	8.70	6.25	29 900	45 500	25	46	95	205
*7906A5		47	9	0.3	0.15	8.25	5.95	26 000	39 000	39	74	140	285
*7006C		55	13	1	0.6	15.9	10.3	27 100	41 200	41	75	195	385
*7006A5		55	13	1	0.6	15.1	9.80	23 600	35 300	66	130	295	590
*7006A		55	13	1	0.6	14.6	9.45	17 700	23 600	51	190	390	640
7206C		62	16	1	0.6	24.2	14.7	25 000	38 100	57	115	290	590
7206A5	62	16	1	0.6	23.2	14.1	21 800	32 700	105	200	455	880	
7206A	62	16	1	0.6	22.4	13.6	16 400	21 800	51	385	625	910	
*7907C	35	55	10	0.6	0.3	12.7	9.15	25 600	38 900	33	67	150	295
*7907A5		55	10	0.6	0.3	12.0	8.70	22 300	33 400	51	110	250	510
*7007C		62	14	1	0.6	20.1	13.7	23 800	36 100	58	120	250	495
*7007A5		62	14	1	0.6	19.1	13.0	20 700	31 000	68	160	385	780
*7007A		62	14	1	0.6	18.4	12.6	15 500	20 700	51	205	420	695
7207C		72	17	1.1	0.6	32.0	19.9	21 500	32 800	75	150	385	795
7207A5	72	17	1.1	0.6	30.5	19.1	18 700	28 100	130	240	595	1 180	
7207A	72	17	1.1	0.6	29.6	18.5	14 100	18 700	51	400	655	1 290	
*7908C	40	62	12	0.6	0.3	15.9	11.7	22 600	34 400	41	78	195	385
*7908A5		62	12	0.6	0.3	15.0	11.2	19 700	29 500	68	115	290	570
*7008C		68	15	1	0.6	21.6	15.9	21 300	32 500	58	115	290	595
*7008A5		68	15	1	0.6	20.5	15.1	18 600	27 800	92	205	425	865
*7008A		68	15	1	0.6	19.7	14.6	13 900	18 600	52	220	465	770
7208C		80	18	1.1	0.6	38.0	25.2	19 200	29 200	98	200	500	985
7208A5	80	18	1.1	0.6	36.5	24.1	16 700	25 000	140	290	750	1 490	
7208A	80	18	1.1	0.6	35.5	23.4	12 500	16 700	51	440	720	1 430	
*7909C	45	68	12	0.6	0.3	16.8	13.4	20 400	31 000	50	105	190	390
*7909A5		68	12	0.6	0.3	15.9	12.7	17 700	26 600	70	145	355	675
*7009C		75	16	1	0.6	25.6	19.3	19 200	29 200	80	145	340	695
*7009A5		75	16	1	0.6	24.3	18.3	16 700	25 000	94	210	485	960
*7009A		75	16	1	0.6	23.4	17.7	12 500	16 700	52	225	480	1 180
7209C		85	19	1.1	0.6	43.0	28.8	17 700	27 000	125	255	535	1 070
7209A5	85	19	1.1	0.6	41.0	27.6	15 400	23 100	170	335	875	1 740	
7209A	85	19	1.1	0.6	39.5	26.7	11 600	15 400	51	450	1 080	1 900	

* Non-contact sealed design correspondence.

The limiting speeds listed table are guideline values. They are based on a single bearing that is lightly preloaded by means of a spring.

Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (kN)		Limiting Speeds (min ⁻¹)		Preload (DB,DF Arrangement) (N)			
	d	D	B	r (min.)	r ₁ (min.)	C _r	C _{0r}	Grease	Oil	EL	L	M	H
*7910C	50	72	12	0.6	0.3	17.7	15.0	18 900	28 700	50	94	240	500
*7910A5		72	12	0.6	0.3	16.7	14.2	16 400	24 600	71	155	380	790
*7010C		80	16	1	0.6	27.3	21.9	17 700	27 000	70	150	390	790
*7010A5		80	16	1	0.6	25.8	20.8	15 400	23 100	125	260	580	1 190
*7010A		80	16	1	0.6	24.8	20.1	11 600	15 400	52	245	525	1 300
7210C		90	20	1.1	0.6	45.0	31.5	16 500	25 000	125	250	590	1 170
7210A5		90	20	1.1	0.6	43.0	30.5	14 300	21 500	210	390	990	1 930
7210A		90	20	1.1	0.6	41.5	29.3	10 800	14 300	52	475	1 160	2 040
*7911C	55	80	13	1	0.6	20.1	17.7	17 100	26 000	60	110	295	595
*7911A5		80	13	1	0.6	19.0	16.8	14 900	22 300	99	195	455	915
*7011C		90	18	1.1	0.6	36.0	28.6	15 900	24 200	95	200	480	970
*7011A5		90	18	1.1	0.6	34.0	27.2	13 800	20 700	155	345	805	1 550
*7011A		90	18	1.1	0.6	32.5	26.3	10 400	13 800	52	245	885	1 310
7211C		100	21	1.5	1	55.5	40.0	14 900	22 600	140	290	790	1 550
7211A5	100	21	1.5	1	53.0	38.0	13 000	19 400	250	490	1 210	2 400	
7211A	100	21	1.5	1	51.0	37.0	9 700	13 000	52	495	1 720	2 630	
*7912C	60	85	13	1	0.6	20.4	18.7	15 900	24 200	60	115	305	580
*7912A5		85	13	1	0.6	19.2	17.7	13 800	20 700	100	200	420	885
*7012C		95	18	1.1	0.6	37.0	30.5	14 900	22 600	96	190	525	1 090
*7012A5		95	18	1.1	0.6	35.0	29.1	13 000	19 400	160	360	780	1 550
*7012A		95	18	1.1	0.6	33.5	28.1	9 700	13 000	52	255	930	1 370
7212C		110	22	1.5	1	67.5	49.0	13 600	20 600	190	395	925	1 880
7212A5	110	22	1.5	1	64.0	47.0	11 800	17 700	295	605	1 460	2 940	
7212A	110	22	1.5	1	62.0	45.5	8 900	11 800	52	510	1 700	2 740	
*7913C	65	90	13	1	0.6	21.2	20.5	14 900	22 600	74	150	350	690
*7913A5		90	13	1	0.6	20.0	19.4	13 000	19 400	105	210	500	950
*7013C		100	18	1.1	0.6	39.0	34.5	14 000	21 300	130	260	535	1 060
*7013A5		100	18	1.1	0.6	37.0	32.5	12 200	18 200	210	385	915	1 780
*7013A		100	18	1.1	0.6	35.5	31.5	9 100	12 200	52	270	1 010	1 500
7213C		120	23	1.5	1	77.0	58.5	12 500	19 000	220	450	1 070	2 170
7213A5	120	23	1.5	1	73.0	56.0	10 900	16 300	355	655	1 660	3 300	
7213A	120	23	1.5	1	70.5	54.0	8 200	10 900	52	555	1 850	3 000	
*7914C	70	100	16	1.0	0.6	29.5	27.8	13 600	20 600	100	205	505	1 000
*7914A5		100	16	1.0	0.6	27.9	26.3	11 800	17 700	135	300	675	1 400
*7014C		110	20	1.1	0.6	49.0	43.0	12 800	19 500	150	285	730	1 460
*7014A5		110	20	1.1	0.6	46.5	41.0	11 200	16 700	255	500	1 080	2 200
*7014A		110	20	1.1	0.6	45.0	39.5	8 400	11 200	52	280	1 040	2 110
7214C		125	24	1.5	1.0	83.5	64.5	11 800	18 000	245	485	1 160	2 370
7214A5	125	24	1.5	1.0	79.5	61.5	10 300	15 400	405	780	1 860	3 690	
7214A	125	24	1.5	1.0	77.0	59.5	7 700	10 300	100	1 070	2 620	3 930	
*7915C	75	105	16	1	0.6	30.0	29.3	12 800	19 500	105	190	490	995
*7915A5		105	16	1	0.6	28.3	27.7	11 200	16 700	140	305	765	1 460
*7015C		115	20	1.1	0.6	50.5	45.5	12 200	18 500	150	295	795	1 570
*7015A5		115	20	1.1	0.6	47.5	43.5	10 600	15 800	265	520	1 200	2 400
*7015A		115	20	1.1	0.6	46.0	41.5	7 900	10 600	52	290	1 080	2 200
7215C		130	25	1.5	1	87.0	70.0	11 300	17 100	270	530	1 220	2 440
7215A5	130	25	1.5	1	82.5	66.5	9 800	14 700	420	820	1 960	3 910	
7215A	130	25	1.5	1	80.0	64.5	7 400	9 800	100	1 120	2 780	4 170	
*7916C	80	110	16	1	0.6	30.5	30.5	12 200	18 500	105	195	505	985
*7916A5		110	16	1	0.6	28.7	29.0	10 600	15 800	180	365	790	1 600
*7016C		125	22	1.1	0.6	61.5	55.5	11 300	17 100	200	380	920	1 880
*7016A5		125	22	1.1	0.6	58.5	52.5	9 800	14 700	345	625	1 510	2 900
*7016A		125	22	1.1	0.6	56.0	50.5	7 400	9 800	100	750	1 760	3 060
7216C		140	26	2	1	97.5	77.5	10 500	16 000	305	595	1 370	2 750
7216A5	140	26	2	1	93.0	74.0	9 100	13 700	465	925	2 160	4 350	
7216A	140	26	2	1	89.5	71.5	6 900	9 100	100	1 090	2 700	4 040	
*7917C	85	120	18	1.1	0.6	41.0	40.5	11 300	17 100	140	305	630	1 280
*7917A5		120	18	1.1	0.6	38.5	38.5						



Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (kN)		Limiting Speeds (min ⁻¹)		Preload (DB,DF Arrangement) (N)			
	d	D	B	r (min.)	r ₁ (min.)	C _r	C _{0r}	Grease	Oil	EL	L	M	H
*7918C	90	125	18	1.1	0.6	44.0	46.0	10 700	16 300	155	290	740	1 490
*7918A5		125	18	1.1	0.6	41.0	43.5	9 400	14 000	270	500	1 100	2 180
*7018C		140	24	1.5	1	75.5	69.0	10 000	15 300	245	500	1 190	2 370
*7018A5		140	24	1.5	1	71.0	65.5	8 700	13 100	410	780	1 760	3 500
*7018A		140	24	1.5	1	68.5	63.5	6 600	8 700	100	780	2 480	3 970
7218C		160	30	2	1	129	105	9 200	14 000	385	770	1 870	3 710
7218A5		160	30	2	1	123	100	8 000	12 000	660	1 270	2 900	5 940
7218A		160	30	2	1	118	96.5	6 000	8 000	100	1 250	3 330	4 650
*7919C	95	130	18	1.1	0.6	44.5	48.0	10 300	15 600	155	295	800	1 590
*7919A5		130	18	1.1	0.6	42.0	45.5	8 900	13 400	225	510	1 220	2 370
*7019C		145	24	1.5	1	77.0	73.0	9 600	14 600	275	550	1 190	2 350
*7019A5		145	24	1.5	1	73.0	69.5	8 400	12 500	420	810	1 830	3 780
*7019A		145	24	1.5	1	70.0	67.0	6 300	8 400	105	810	2 590	4 160
7219C		170	32	2.1	1.1	139	112	8 700	13 300	450	875	2 080	4 150
7219A5		170	32	2.1	1.1	133	107	7 600	11 400	705	1 390	3 120	6 300
7219A		170	32	2.1	1.1	128	103	5 700	7 600	355	1 630	4 190	6 640
*7920C	100	140	20	1.1	0.6	52.5	54.0	9 600	14 600	190	385	905	1 790
*7920A5		140	20	1.1	0.6	49.5	51.5	8 400	12 500	320	615	1 230	2 550
*7020C		150	24	1.5	1	79.0	77.0	9 200	14 000	280	535	1 280	2 570
*7020A5		150	24	1.5	1	75.0	73.5	8 000	12 000	435	835	2 010	3 950
*7020A		150	24	1.5	1	72.0	70.5	6 000	8 000	105	840	2 700	4 340
7220C		180	34	2.1	1.1	157	127	8 300	12 500	505	985	2 340	4 700
7220A5		180	34	2.1	1.1	149	121	7 200	10 800	775	1 570	3 500	7 110
7220A		180	34	2.1	1.1	144	117	5 400	7 200	360	1 660	5 050	7 690
7921C	105	145	20	1.1	0.6	53.5	57.0	9 200	14 000	195	395	890	1 790
7921A5		145	20	1.1	0.6	50.5	54.0	8 000	12 000	270	565	1 360	2 760
7021C		160	26	2	1	92.5	89.5	8 700	13 300	330	625	1 490	2 970
7021A5		160	26	2	1	87.5	85.0	7 600	11 400	495	990	2 210	4 470
7021A		160	26	2	1	84.0	81.5	5 700	7 600	105	840	2 690	4 320
7221C		190	36	2.1	1.1	171	143	7 800	11 900	540	1 080	2 650	5 310
7221A5		190	36	2.1	1.1	163	137	6 800	10 200	860	1 790	3 950	7 930
7221A		190	36	2.1	1.1	157	132	5 100	6 800	370	2 300	5 210	8 920
7922C	110	150	20	1.1	0.6	54.5	59.5	8 900	13 500	195	405	915	1 850
7922A5		150	20	1.1	0.6	51.5	56.0	7 700	11 600	330	650	1 500	2 990
7022C		170	28	2	1	111	104	8 300	12 500	370	735	1 750	3 520
7022A5		170	28	2	1	105	99.0	7 200	10 800	605	1 190	2 660	5 250
7022A		170	28	2	1	101	95.5	5 400	7 200	105	1 330	3 330	5 950
7222C		200	38	2.1	1.1	185	160	7 500	11 300	630	1 280	2 960	5 900
7222A5		200	38	2.1	1.1	176	153	6 500	9 700	950	2 010	4 400	9 400
7222A		200	38	2.1	1.1	170	148	4 900	6 500	375	2 350	6 200	10 200

* Non-contact sealed design correspondence.

The limiting speeds listed table are guideline values. They are based on a single bearing that is lightly preloaded by means of a spring.

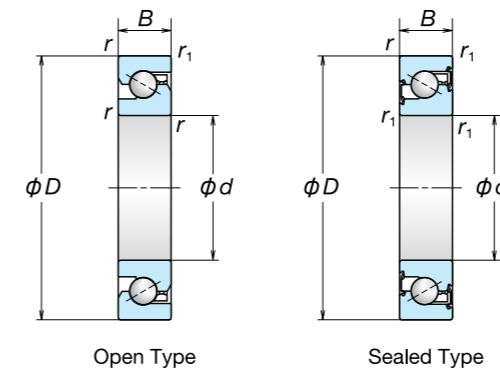
Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (kN)		Limiting Speeds (min ⁻¹)		Preload (DB,DF Arrangement) (N)				
	d	D	B	r (min.)	r ₁ (min.)	C _r	C _{0r}	Grease	Oil	EL	L	M	H	
7924C	120	165	22	1.1	0.6	75.5	81.0	8 100	12 300	270	535	1 290	2 540	
7924A5		165	22	1.1	0.6	71.0	77.0	7 100	10 600	460	900	1 960	3 880	
7024C		180	28	2	1	118	117	7 700	11 700	420	825	1 960	3 920	
7024A5		180	28	2	1	111	111	6 700	10 000	650	1 290	2 900	5 920	
7024A		180	28	2	1	107	107	5 000	6 700	105	1 440	3 650	6 530	
7224C		215	40	2.1	1.1	209	192	6 900	10 500	690	1 390	3 210	6 370	
7224A5		215	40	2.1	1.1	199	184	6 000	9 000	1 140	2 330	5 260	10 300	
7224A		215	40	2.1	1.1	192	177	4 500	6 000	540	2 820	8 160	11 500	
7926C	130	180	24	1.5	1	82.5	91.0	7 500	11 300	325	650	1 470	2 940	
7926A5		180	24	1.5	1	78.0	86.0	6 500	9 700	470	1 010	2 130	4 280	
7026C		200	33	2	1	136	137	7 000	10 700	495	970	2 250	4 520	
7026A5		200	33	2	1	128	130	6 100	9 100	820	1 540	3 410	6 840	
7026A		200	33	2	1	123	125	4 600	6 100	105	1 490	4 720	7 940	
7226C		230	40	3	1.1	217	209	6 400	9 800	750	1 510	3 390	6 740	
7226A5		230	40	3	1.1	206	199	5 600	8 400	1 190	2 450	5 570	10 900	
7226A		230	40	3	1.1	199	193	4 200	5 600	560	3 760	9 800	13 600	
7928C	140	190	24	1.5	1	83.5	95.5	7 000	10 700	335	630	1 460	2 960	
7928A5		190	24	1.5	1	78.5	90.0	6 100	9 100	480	950	2 200	4 430	
7028C		210	33	2	1	139	145	6 600	10 000	505	1 000	2 330	4 790	
7028A5		210	33	2	1	131	138	5 800	8 600	785	1 520	3 440	6 820	
7028A		210	33	2	1	126	133	4 300	5 800	205	1 780	5 270	8 720	
7228C		250	42	3	1.1	250	254	5 900	9 000	910	1 830	4 080	8 300	
7228A5		250	42	3	1.1	238	242	5 200	7 700	1 500	3 010	6 730	13 400	
7228A		250	42	3	1.1	229	234	3 900	5 200	575	4 990	11 400	15 500	
7930C	150	210	28	2	1	107	122	6 400	9 800	385	825	1 970	3 990	
7930A5		210	28	2	1	101	115	5 600	8 400	650	1 270	2 910	5 910	
7030C		225	35	2.1	1.1	158	168	6 200	9 400	575	1 150	2 760	5 490	
7030A5		225	35	2.1	1.1	150	160	5 400	8 000	975	1 880	4 120	8 340	
7030A		225	35	2.1	1.1	144	154	4 000	5 400	205	1 830	5 850	11 700	
7230C		270	45	3	1.1	284	305	5 500	8 400	1 090	2 200	4 950	9 980	
7230A5		270	45	3	1.1	270	290	4 800	7 200	1 850	3 640	8 040	16 500	
7230A		270	45	3	1.1	261	280	3 600	4 800	585	5 000	11 900	16 100	
7932C	160	220	28	2	1	112	133	5 600	8 700	430	860	1 950	3 880	
7932A5		220	28	2	1	105	125	4 800	7 400	680	1 340	3 250	6 330	
7032C		240	38	2.1	1.1	180	193	5 300	8 300	625	1 270	2 970	5 800	
7032A5		240	38	2.1	1.1	170	183	4 500	7 000	1 090	2 170	4 720	9 440	
7032A		240	38	2.1	1.1	163	176	3 300	4 500	205	1 880	5 600	12 100	
7934C		170	230	28	2	1	118	148	5 300	8 300	485	965	2 180	4 330
7934A5			230	28	2	1	112	140	4 500	7 000	810	1 560	3 550	7 170
7034C			260	42	2.1	1.1	215	234	4 900	7 700	775	1 570	3 600	7 110
7034A5	260		42	2.1	1.1	203	223	4 200	6 600	1 290	2 560	5 930	11 700	
7034A	260		42	2.1	1.1	195	214	3 100	4 200	205	2 700	6 090	12 100	
7936C	180		250	33	2	1	152	184	4 900	7 700	590	1 140	2 660	5 370
7936A5			250	33	2	1	144	174	4 200	6 600	990	2 020	4 440	8 880
7036C			280	46	2.1	1.1	240	276	4 600	7 200	940	1 880	4 200	8 280
7036A5		280	46	2.1	1.1	227	262	4 000	6 100	1 580	3 130	6 880	13 700	
7036A		280	46	2.1	1.1	218	252	2 900	4 000	205	3 620	7 230	14 200	
7938C		190	260	33	2	1	155	192	4 700	7 400	600	1 220	2 820	5 650
7938A5			260	33	2	1	146	182	4 000	6 300	1 010	2 080	4 580	9 180
7038C			290	46	2.1	1.1	259	305	4 400	6 900	1 040	2 090	4 680	9 300
7038A5	290		46	2.1	1.1	245	291	3 800	5 900	1 720	3 640	7 610	15 200	
7038A	290		46	2.1	1.1	235	280	2 800	3 800	205	3 890	8 160	16 200	
7940C	200		280	38	2.1	1.1	199	244	4 400	6 900	785	1 580	3 590	7 170
7940A5			280	38	2.1	1.1	187	231	3 800	5 900	1 260	2 550	5 850	11 700
7040C			310	51	2.1	1.1	278	340	4 200	6 500	1 150	2 310	5 200	10 300
7040A5		310	51	2.1	1.1	263	325	3 600	5 500	1 880	3 710			

Ball Screw Support Angular Contact Thrust Ball Bearings



Features

- Bearing Life*¹ **15% higher**
- Universal Matching **Wide range combination is possible**
- New Product Lineup **Wide range lineup**



Formulation of Bearing Numbers

Example: **30 TAC 62 C SU H PN7C**

Bearing Bore Diameter: 30
 Bearing Type Symbol: TAC
 Bearing Outside Diameter: 62
 Internal Design Symbol: C
 Accuracy Symbol: PN7C
 Preload Symbol: H
 Arrangement Symbol: SU
 Seals Symbol: (None)

30	Bearing Bore Diameter	Bore Diameter (mm)
TAC	Bearing Type Symbol	Thrust Angular Contact Ball Bearing
62	Bearing Outside Diameter	Outside Diameter (mm)
C	Internal Design Symbol	Contact Angle 60° NSKHPS Bearing* ²
	Seals Symbol	None: Open Type/ DDG: Contact Rubber Seal/ V1V: Non-Contact Rubber Seal
SU	Arrangement Symbol	SU: Universal Matching for Single Row
H	Preload Symbol	H: Heavy Preload (Standard for NSKHPS Series)
PN7C	Accuracy Symbol	PN7C: NSK Standard Accuracy Class 7C (Equivalent to Axial Runout Class 2) PN5D: NSK Standard Accuracy Class 5D (Equivalent to Axial Runout Class 4)

*1 Basic Rating Life *2 SUJ2Z steel is adopted as standard in this bearings.

Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings C_a (kN)	Limiting Speeds (min ⁻¹)		Recommended Grease Amount (cc)	Limiting Axial Load (kN)	Preload (DB,DF Arrangement) (N)		Axial Rigidity (DB,DF Arrangement) (N/μm)	Starting Torque (N·m)
	d	D	B	r (min.)	r_1 (min.)		Grease	Oil			H	H	H	
*15TAC47C	15	47	15	1	0.6	23	6 900	9 200	2.2	26.6	1 450	630	0.09	
*17TAC47C	17	47	15	1	0.6	23	6 900	9 200	2.2	26.6	1 450	630	0.09	
*20TAC47C	20	47	15	1	0.6	23	6 900	9 200	2.2	26.6	1 450	630	0.09	
*25TAC62C	25	62	15	1	0.6	29.9	5 200	6 900	3	40.5	2 280	850	0.15	
*30TAC62C	30	62	15	1	0.6	30.5	4 900	6 400	3.2	43	2 400	890	0.16	
*35TAC72C	35	72	15	1	0.6	32.5	4 100	5 800	3.8	50	2 750	1 030	0.18	
*40TAC72C	40	72	15	1	0.6	33.5	4 100	5 500	3.9	52	2 860	1 080	0.19	
*40TAC90C		90	20	1	0.6	62	3 500	4 600	8.8	89.5	3 450	1 150	0.29	
45TAC75C	45	75	15	1	0.6	34.5	3 700	4 900	4.2	57	3 100	1 170	0.20	
*45TAC100C		100	20	1	0.6	64.5	3 000	4 100	9.7	99	4 440	1 340	0.40	
*50TAC100C	50	100	20	1	0.6	66	3 000	3 900	10.2	104	4 650	1 410	0.42	
*55TAC100C	55	100	20	1	0.6	66	3 000	3 900	10.2	104	4 650	1 410	0.42	
55TAC120C		120	20	1	0.6	70.5	2 500	3 500	12	123	5 450	1 660	0.49	
60TAC120C	60	120	20	1	0.6	70.5	2 500	3 500	12	123	5 450	1 660	0.49	

Bearing numbers denoted by an asterisk represent availability of either a contact rubber seal or a non-contact rubber seal. The value of limiting speed is for when H preload is applied. This value is uninfluenced by the type of arrangement. Starting torque shows the numerical value for grease lubrication. Under conditions of oil lubrication, starting torque becomes 1.4 times that of the figures listed above. Permissible axial load becomes 0.7 times that of limiting axial load.

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