

# ***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

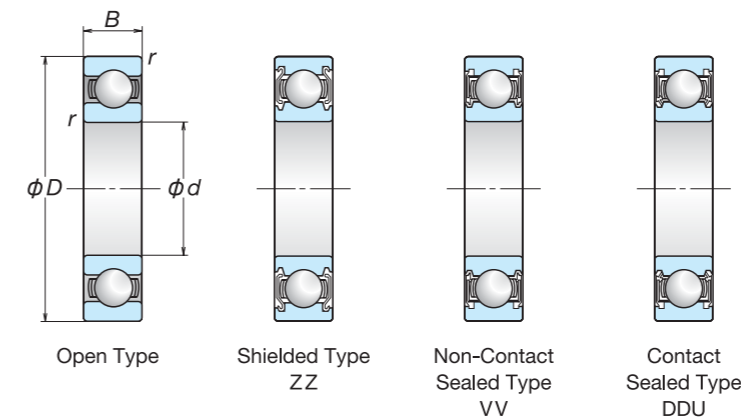


# Deep Groove Ball Bearings



**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**

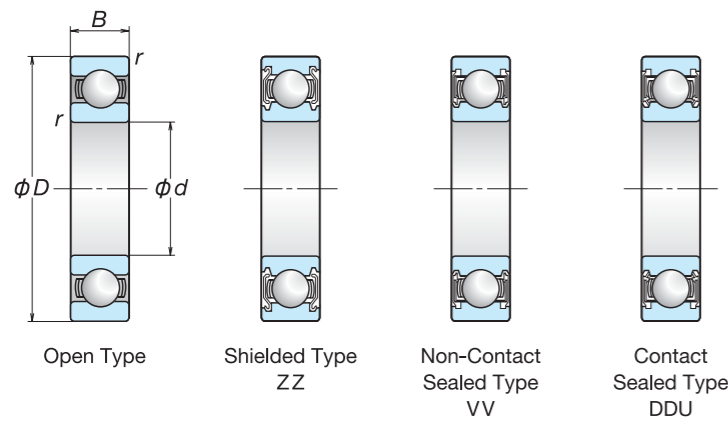
Bearing Series Symbols: 62  
 Bore Number: 03  
 Seals, Shields Symbol: ZZ  
 Internal Clearance Symbol: CM  
 NSK HPS Symbol: &  
 Grease Symbol: NS7S

<b>62</b>	Bearing Series Symbols	60, 62, 63: Single-Row Deep Groove Ball Bearings
<b>03</b>	Bore Number	Bore number indicates bore diameter. 00:10mm; 01:12mm; 02:15mm; 03: 17mm 04 or Larger: Bore Number x 5 (mm)
<b>ZZ</b>	Seals, Shields Symbol	ZZ: Shield on Both Side DDU: Contact Rubber Seal on Both Side VV: Non-Contact Rubber Sealed on Both Side
<b>CM</b>	Internal Clearance Symbol	Omitted: CN Clearance* <sup>2</sup> C3: Clearance Greater than CN C4: Clearance Greater than C3 CM: For Electric Motors* <sup>2</sup>
<b>&amp;</b>	NSKHPS Symbol	&: NSKHPS Bearings
<b>NS7S</b>	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 (kN)		Factor $f_0$	Limiting Speeds (min <sup>-1</sup> )							
Open	Shielded	Sealed	NSKHPS Symbol	&	d	D	B	r (min.)	$C_r$	$C_{or}$		Grease		Oil					
												Open	DDU	Open					
					10	30	9	0.6	5.35	2.39	13.2	28 000	18 000	34 000					
						35	11	0.6	8.5	3.45	11.2	26 000	17 000	30 000					
					12	28	8	0.3	5.35	2.37	13.0	32 000	18 000	38 000					
						32	10	0.6	7.15	3.05	12.3	26 000	17 000	32 000					
					15	37	12	1	10.2	4.2	11.1	24 000	16 000	28 000					
						32	9	0.3	5.85	2.83	13.9	26 000	15 000	32 000					
						35	11	0.6	8	3.75	13.2	22 000	14 000	28 000					
					17	42	13	1	12	5.45	12.3	19 000	13 000	24 000					
						35	10	0.3	6.3	3.25	14.4	24 000	13 000	28 000					
					20	40	12	0.6	10.1	4.8	13.2	20 000	12 000	24 000					
						47	14	1	14.3	6.65	12.4	17 000	11 000	20 000					
					25	42	12	0.6	9.85	5	13.8	20 000	11 000	24 000					
						47	14	1	13.4	6.6	13.1	17 000	11 000	20 000					
					30	52	15	1.1	16.7	7.9	12.4	16 000	10 000	19 000					
						6005	ZZ	VV	DDU	&	47	12	0.6	10.6	5.85	14.5	18 000	9 500	22 000
					35	6205	ZZ	VV	DDU	&	52	15	1	14.7	7.85	13.9	15 000	9 000	18 000
						6305	ZZ	VV	DDU	&	62	17	1.1	21.6	11.2	13.2	13 000	8 000	16 000
					40	6006	ZZ	VV	DDU	&	55	13	1	13.9	8.3	14.7	15 000	8 000	18 000
						6206	ZZ	VV	DDU	&	62	16	1	20.4	11.3	13.8	12 000	7 500	15 000
					45	6306	ZZ	VV	DDU	&	72	19	1.1	28	15	13.3	11 000	6 700	13 000
						6007	ZZ	VV	DDU	&	62	14	1	16.8	10.3	14.8	13 000	6 700	15 000
					50	6207	ZZ	VV	DDU	&	72	17	1.1	27	15.3	13.8	11 000	6 300	13 000
						6307	ZZ	VV	DDU	&	80	21	1.5	35	19.2	13.2	10 000	6 000	12 000
					55	6008	ZZ	VV	DDU	&	68	15	1	17.6	11.5	15.3	12 000	6 000	14 000
						6208	ZZ	VV	DDU	&	80	18	1.1	30.5	17.9	14.0	9 500	5 600	12 000
					60	6308	ZZ	VV	DDU	&	90	23	1.5	43	24	13.2	9 000	5 300	11 000
						6009	ZZ	VV	DDU	&	75	16	1	22	15.2	15.3	10 000	5 300	12 000
					65	6209	ZZ	VV	DDU	&	85	19	1.1	33	20.4	14.4	9 000	5 300	11 000
						6309	ZZ	VV	DDU	&	100	25	1.5	55.5	32	13.1	7 500	4 800	9 500
					70	6010	ZZ	VV	DDU	&	80	16	1	22.9	16.6	15.6	9 500	4 800	11 000
						6210	ZZ	VV	DDU	&	90	20	1.1	37	23.2	14.4	8 000	4 800	10 000
					6310	ZZ	VV	DDU	&	110	27	2	65	38.5	13.2	7 100	4 300	8 500	

# Angular Contact Ball Bearings



### Dynamic Equivalent Load

$$P = XF_r + YF_a$$

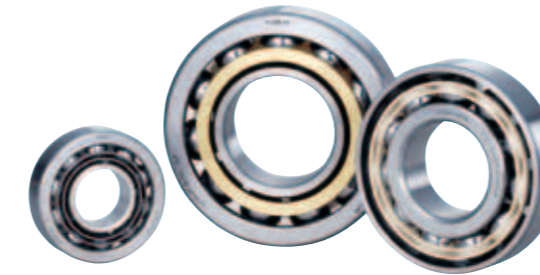
$\frac{f_0 F_a}{C_{0r}}$	e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
		X	Y	X	Y
0.172	0.19	1	0	0.56	2.30
0.345	0.22	1	0	0.56	1.99
0.689	0.26	1	0	0.56	1.71
1.03	0.28	1	0	0.56	1.55
1.38	0.30	1	0	0.56	1.45
2.07	0.34	1	0	0.56	1.31
3.45	0.38	1	0	0.56	1.15
5.17	0.42	1	0	0.56	1.04
6.89	0.44	1	0	0.56	1.00

### Static Equivalent Load

$$P_0 = 0.6F_r + 0.5F_a$$

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

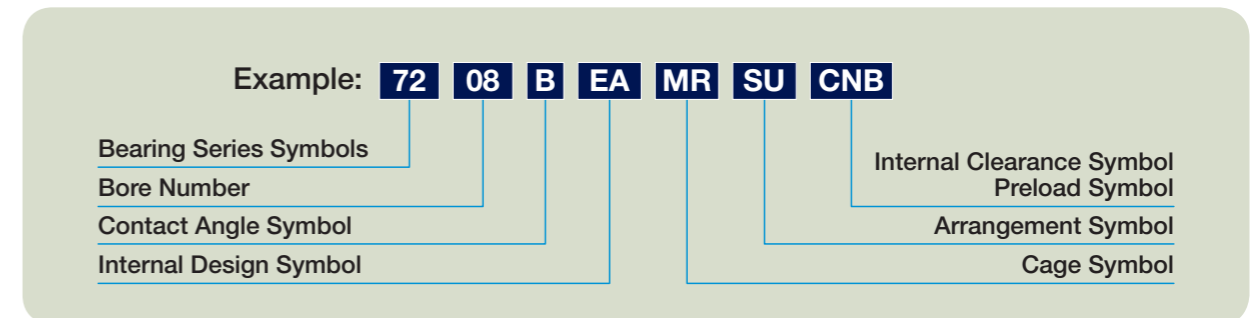
Bearing Numbers					Boundary Dimensions (mm)				Basic Load Ratings (kN)		Factor	Limiting Speeds (min <sup>-1</sup> )		
Open	Shielded	Sealed	NSKHPS Symbol	d	D	B	r (min.)	C <sub>r</sub>	C <sub>0r</sub>	f <sub>0</sub>		Grease		Oil
												Open	ZZ	DDU
6011	ZZ	VV	DDU	&	55	90	18	1.1	29.7	21.2	15.3	8 500	4 500	10 000
6211	ZZ	VV	DDU	&		100	21	1.5	45.5	29.3	14.3	7 500	4 300	9 000
6311	ZZ	VV	DDU	&		120	29	2	75	44.5	13.1	6 700	4 000	8 000
6012	ZZ	VV	DDU	&	60	95	18	1.1	31	23.2	15.6	8 000	4 000	9 500
6212	ZZ	VV	DDU	&		110	22	1.5	55	36	14.3	6 700	3 800	8 000
6312	ZZ	VV	DDU	&		130	31	2.1	86	52	13.1	6 000	3 600	7 100
6013	ZZ	VV	DDU	&	65	100	18	1.1	32	25.2	15.8	7 500	4 000	9 000
6213	ZZ	VV	DDU	&		120	23	1.5	60	40	14.4	6 300	3 600	7 500
6313	ZZ	VV	DDU	&		140	33	2.1	97.5	60	13.2	5 600	3 400	6 700
6014	ZZ	VV	DDU	&	70	110	20	1.1	40	31	15.6	7 100	3 600	8 500
6214	ZZ	VV	DDU	&		125	24	1.5	65.5	44	14.5	6 000	3 400	7 100
6314	ZZ	VV	DDU	&		150	35	2.1	109	68	13.2	5 300	3 200	6 300
6015	ZZ	VV	DDU	&	75	115	20	1.1	41.5	33.5	15.8	6 700	3 400	8 000
6215	ZZ	VV	DDU	&		130	25	1.5	69.5	49.5	14.7	5 600	3 200	6 700
6315	ZZ	VV	DDU	&		160	37	2.1	119	77	13.2	4 800	2 800	6 000
6016	ZZ	VV	DDU	&	80	125	22	1.1	50	40	15.6	6 300	3 200	7 100
6216	ZZ	VV	DDU	&		140	26	2	76.5	53	14.6	5 300	3 000	6 300
6316	ZZ	VV	DDU	&		170	39	2.1	129	86.5	13.3	4 500	2 800	5 600
6017	ZZ	VV	DDU	&	85	130	22	1.1	52	43	15.8	6 000	3 000	7 100
6217	ZZ	VV	DDU	&		150	28	2	88	62	14.5	4 800	2 800	6 000
6317	ZZ	VV	DDU	&		180	41	3	139	97	13.3	4 300	2 600	5 000
6018	ZZ	VV	DDU	&	90	140	24	1.5	61	50	15.6	5 600	2 800	6 300
6218	ZZ	VV	DDU	&		160	30	2	101	71.5	14.5	4 500	2 600	5 600
6318	ZZ	VV	DDU	&		190	43	3	150	107	13.3	4 000	2 400	4 800
6019	ZZ	VV	DDU	&	95	145	24	1.5	63.5	54	15.8	5 300	2 600	6 000
6219	ZZ	VV	DDU	&		170	32	2.1	114	82	14.4	4 300	2 600	5 000
6319	ZZ	VV	DDU	&		200	45	3	160	119	13.3	3 400	2 400	4 300
6020	ZZ	VV	DDU	&	100	150	24	1.5	63	54	15.9	5 000	2 600	6 000
6220	ZZ	VV	DDU	&		180	34	2.1	128	93	14.4	4 000	2 400	4 800
6021	ZZ	VV	DDU	&	105	160	26	2	76	66	15.8	4 500	2 400	5 600
6221	ZZ	VV	DDU	&		190	36	2.1	140	105	14.4	3 800	2 200	4 500
6022	ZZ	VV	DDU	&	110	170	28	2	89	73	15.5	4 500	2 200	5 300
6024	ZZ	VV	DDU	&		180	28	2	92.5	80	15.7	4 000	2 200	4 800



**Features** Compared with conventional bearings...

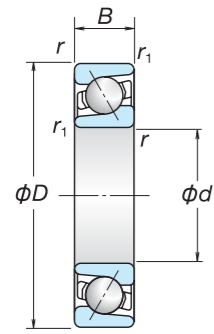
- Bearing Life 90% higher (Maximum)**
- Limiting Speed 20% higher (Maximum)**
- High Accuracy Running Accuracy ISO class 5 Dimensional Accuracy ISO class 6**
- Universal Matching Wide range combination is possible**

### 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

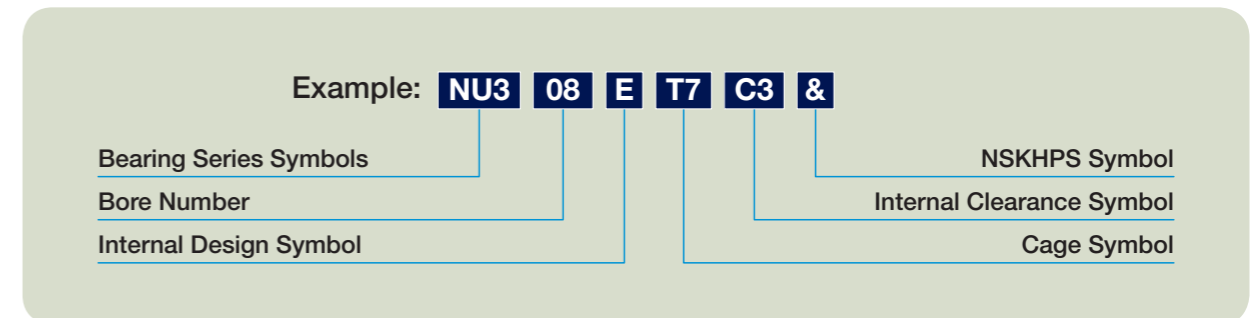


**Features** Compared with conventional bearings...

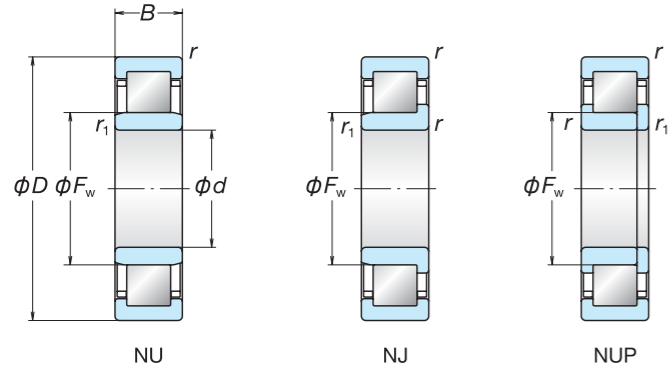
- Bearing Life 60% higher (Maximum)**
- New Product Lineup Wide range lineup**

Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (N)		Limiting Speed (min <sup>-1</sup> )	
	d	D	B	r (min.)	r <sub>1</sub> (min.)	C <sub>r</sub>	C <sub>0r</sub>	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
- &** - NSKHPS Symbol: &: NSKHPS Bearings



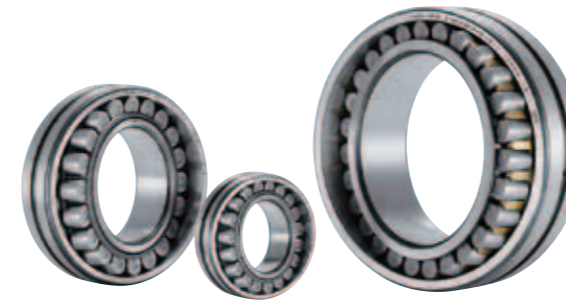
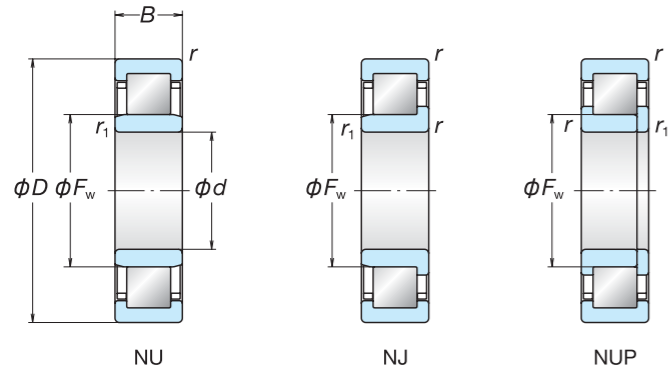
Bearing Numbers*						Boundary Dimensions (mm)					Basic Load Ratings (kN)			Speeds (min <sup>-1</sup> )			Permissible Axial Movement S (mm)
Basic Number & Internal Design Symbol	cage				NSKHPS Symbol	d	D	B	r (min.)	r <sub>1</sub> (min.)	F <sub>w</sub>	C <sub>r</sub>	C <sub>0r</sub>	Thermal Reference Speed	Limiting Speeds		
	W	M	T	T7											Mechanical	Grease	
NU205E	*	*	*	*	&	25	52	15	1	0.6	31.5	33.5	27.7	14 000	17 000	12 000	1.2
NU2205E	*	*	*	*	&		52	18	1	0.6	31.5	40	34.5	14 000	20 000	12 000	1.2
NU305E	*	*	*	*	&		62	17	1.1	1.1	34	48	37.5	11 000	15 000	10 000	1.2
NU2305E	*	*	*	*	&	30	62	24	1.1	1.1	34	65.5	56	11 000	18 000	9 000	1.2
NU206E	*	*	*	*	&		62	16	1	0.6	37.5	45	37.5	12 000	14 000	9 500	1.2
NU2206E	*	*	*	*	&		62	20	1	0.6	37.5	56.5	50	12 000	17 000	9 500	1.2
NU306E	*	*	*	*	&	35	72	19	1.1	1.1	40.5	61	50	9 500	13 000	8 500	1.2
NU2306E	*	*	*	*	&		72	27	1.1	1.1	40.5	86	77.5	9 500	16 000	8 000	1.2
NU207E	*	*	*	*	&		72	17	1.1	0.6	44	58	50	10 000	12 000	8 500	1.2
NU2207E	*	*	*	*	&	40	72	23	1.1	0.6	44	71	65.5	11 000	15 000	8 500	2.2
NU307E	*	*	*	*	&		80	21	1.5	1.1	46.2	76.5	65.5	8 500	11 000	7 500	1.2
NU2307E	*	*	*	*	&		80	31	1.5	1.1	46.2	107	101	9 000	14 000	6 700	1.2
NU208E	*	*	*	*	&	45	80	18	1.1	1.1	49.5	64	55.5	9 000	11 000	7 500	1.2
NU2208E	*	*	*	*	&		80	23	1.1	1.1	49.5	83	77.5	9 000	13 000	7 500	1.2
NU308E	*	*	*	*	&		90	23	1.5	1.5	52	95.5	81.5	7 500	10 000	6 700	1.2
NU2308E	*	*	*	*	&	50	90	33	1.5	1.5	52	131	122	8 000	12 000	6 000	1.2
NU209E	*	*	*	*	&		85	19	1.1	1.1	54.5	72.5	66.5	8 500	10 000	6 700	1.2
NU2209E	*	*	*	*	&		85	23	1.1	1.1	54.5	87.5	84.5	8 500	12 000	6 700	1.2
NU309E	*	*	*	*	&	55	100	25	1.5	1.5	58.5	112	98.5	7 100	9 000	6 000	1.4
NU2309E	*	*	*	*	&		100	36	1.5	1.5	58.5	158	153	7 100	11 000	5 300	1.4
NU210E	*	*	*	*	&		90	20	1.1	1.1	59.5	79.5	76.5	8 000	9 000	6 300	1.7
NU2210E	*	*	*	*	&	100	90	23	1.1	1.1	59.5	96	97	7 500	11 000	6 300	1.2
NU310E	*	*	*	*	&		110	27	2	2	65	127	113	6 700	8 000	5 000	1.4
NU2310E	*	*	*	*	&		110	40	2	2	65	187	187	6 700	10 000	5 000	1.9
NU211E	*	*	*	*	&	105	100	21	1.5	1.1	66	99	98.5	6 700	8 500	5 600	1.2
NU2211E	*	*	*	*	&		100	25	1.5	1.1	66	117	122	6 700	10 000	5 600	1.2
NU311E	*	*	*	*	&		120	29	2	2	70.5	158	143	6 000	7 500	4 500	1.4
NU2311E	*	*	*	*	&	110	120	43	2	2	70.5	231	233	6 000	9 000	4 500	1.4

\* : Available cage  
★ NJ and NUP type bearings are available. Please consult NSK.

Bearing Numbers*						Boundary Dimensions (mm)					Basic Load Ratings (kN)			Speeds (min <sup>-1</sup> )			Permissible Axial Movement S (mm)
Basic Number & Internal Design Symbol	cage				NSKHPS Symbol	d	D	B	r (min.)	r <sub>1</sub> (min.)	F <sub>w</sub>	C <sub>r</sub>	C <sub>0r</sub>	Thermal Reference Speed	Limiting Speeds		
	W	M	T	T7											Mechanical	Grease	
NU212E	*	*	*	*	&	60	110	22	1.5	1.5	72	112	107	6 300	7 500	5 300	1.2
NU2212E	*	*	*	*	&		110	28	1.5	1.5	72	151	157	6 300	9 500	5 300	1.2
NU312E	*	*	*	*	&		130	31	2.1	2.1	77	169	157	5 600	9 500	4 800	1.5
NU2312E	*	*	*	*	&		130	46	2.1	2.1	77	251	262	5 600	8 500	4 300	1.5
NU213E	*	*	*	*	&	65	120	23	1.5	1.5	78.5	124	119	6 000	7 100	4 800	1.4
NU2213E	*	*	*	*	&		120	31	1.5	1.5	78.5	171	181	6 000	8 500	4 800	1.4
NU313E	*	*	*	*	&		140	33	2.1	2.1	82.5	204	191	5 300	8 500	4 300	1.5
NU2313E	*	*	*	*	&		140	48	2.1	2.1	82.5	263	265	5 600	7 500	3 800	1.5
NU214E	*	*	*	*	&	70	125	24	1.5	1.5	83.5	136	137	5 600	9 000	5 000	1.4
NU2214E	*	*	*	*	&		125	31	1.5	1.5	83.5	179	194	5 600	8 000	4 500	1.4
NU314E	*	*	*	*	&		150	35	2.1	2.1	89	231	222	4 800	8 000	4 000	1.5
NU2314E	*	*	*	*	&		150	51	2.1	2.1	89	310	325	5 000	7 100	3 600	1.5
NU215E	*	*	*	*	&	75	130	25	1.5	1.5	88.5	150	156	5 300	8 500	4 800	1.4
NU2215E	*	*	*	*	&		130	31	1.5	1.5	88.5	186	207	5 300	7 500	4 300	1.4
NU315E	*	*	*	*	&		160	37	2.1	2.1	95	271	263	4 500	7 500	3 800	1.4
NU2315E	*	*	*	*	&	80	160	55	2.1	2.1	95	370	395	4 800	6 700	3 400	4.4
NU216E	*	*	*	*	&		140	26	2	2	95.3	160	167	5 000	8 000	4 500	1.4
NU2216E	*	*	*	*	&		140	33	2	2	95.3	214	243	5 000	7 100	4 000	1.4
NU316E	*	*	*	*	&	85	170	39	2.1	2.1	101	289	282	4 300	7 100	3 600	1.5
NU2316E	*	*	*	*	&		170	58	2.1	2.1	101	400	430	4 500	6 300	3 200	1.5
NU217E	*	*	*	*	&	90	150	28	2	2	100.5	192	199	4 800	7 500	4 300	1.3
NU2217E	*	*	*	*	&		150	36	2	2	100.5	250	279	4 800	6 700	3 800	1.3
NU317E	*	*	*	*	&		180	41	3	3	108	360	330	4 000	6 700	3 400	2.0
NU2317E	*	*	*	*	&	95	180	60	3	3	108	485	485	4 300	6 000	3 000	1.6
NU218E	*	*	*	*	&		160	30	2	2	107	205	217	4 800	7 100	4 000	1.4
NU2218E	*	*	*	*	&		160	40	2	2	107	274	315	4 800	6 300	3 600	1.9
NU318E	*	*	*	*	&	100	190	43	3	3	113.5	390	355	4 000	6 300	3 200	1.5
NU2318E	*	*	*	*	&		190	64	3	3	113.5	535	535	4 000	5 600	2 800	3.1
NU219E	*	*	*	*	&	105	170	32	2.1	2.1	112.5	249	265	4 300	6 700	3 800	1.4
NU2219E	*	*	*	*	&		170	43	2.1	2.1	112.5	325	370	4 500	6 000	3 400	1.4
NU319E	*	*	*	*	&		200	45	3	3	121.5	410	385	3 800	6 000	3 000	1.5
NU2319E	*	*	*	*	&	110	200	67	3	3	121.5	565	585	3 800	5 300	2 600	1.6
NU220E	*	*	*	*	&		180	34	2.1	2.1	119	305	305	4 300	6 300	3 600	1.4
NU2220E	*	*	*	*	&		180	46	2.1	2.1	119	410	445	4 300	5 600	3 200	1.4
NU320E	*	*	*	*	&	105	215	47	3	3	127.5	465	425	3 600	5 600	2 800	1.8
NU2320E	*	*	*	*	&		215	73	3	3	127.5	700	715	3 400	5 000	2 400	1.8
NU221E	*	*	*	*	&	110	190	36	2.1	2.1	125	320	310	4 300	6 000	3 400	1.4
NU321E	*	*	*	*	&		225	49	3	3	133	525	480	3 400	5 300	2 600	1.8
NU222E	*	*	*	*	&	110	200	38	2.1	2.1	132.5	360	365	4 000	5 600	3 200	1.4
NU2222E	*	*	*	*	&		200	53	2.1	2.1	132.5	470	515	4 000	5 000	2 800	1.4
NU322E	*	*	*	*	&		240	50	3	3	143	555	525	3 200	5 000	2 600	3.8
NU2322E	*	*	*	*	&	240	80	3	3	143	830	880	3 000	4 500	2 200	3.3	

\* : Available cage  
★ NJ and NUP type bearings are available. Please consult NSK.

# Spherical Roller bearings



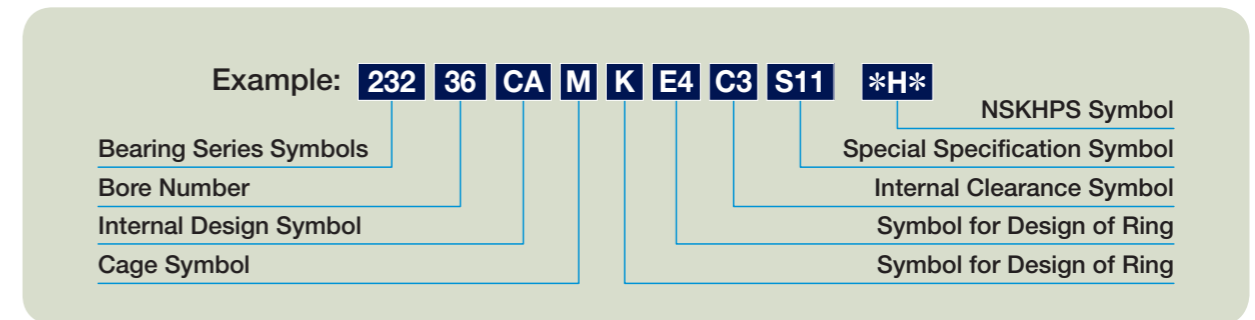
**Features** Compared with conventional bearings...

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

Bearing Numbers*					Boundary Dimensions (mm)					Basic Load Ratings (kN)		Speeds (min <sup>-1</sup> )			Permissible Axial Movement S (mm)		
Basic Number & Internal Design Symbol	cage				NSKHPS Symbol	d	D	B	r (min.)	r <sub>1</sub> (min.)	F <sub>w</sub>	C <sub>r</sub>	C <sub>0r</sub>	Thermal Reference Speed		Limiting Speeds	
	W	M	T	T7											Mechanical	Grease	
NU224E	*				&	120	215	40	2.1	2.1	143.5	410	420	3 600	5 300	3 000	1.5
NU2224E	*				&		215	58	2.1	2.1	143.5	555	620	3 600	4 800	2 600	2.0
NU324E	*				&		260	55	3	3	154	650	610	2 800	4 800	2 200	1.8
NU2324E	*				&		260	86	3	3	154	975	1 030	2 600	4 300	2 000	2.8
NU226E	*				&	130	230	40	3	3	153.5	445	455	3 400	5 000	2 600	1.5
NU2226E	*				&		230	64	3	3	153.5	650	735	3 400	4 500	2 400	3.0
NU326E	*				&		280	58	4	4	167	760	735	2 600	4 300	2 200	2.3
NU2326E	*				&		280	93	4	4	167	1 130	1 230	2 400	3 800	1 900	2.3
NU228E	*				&	140	250	42	3	3	169	485	515	3 200	4 500	2 400	1.5
NU2228E	*				&		250	68	3	3	169	675	790	3 200	4 000	2 200	2.5
NU328E	*				&		300	62	4	4	180	815	795	2 400	4 000	2 000	3.3
NU2328E	*				&		300	102	4	4	180	1 250	1 380	2 200	2 600	1 700	2.8
NU230E	*				&	150	270	45	3	3	182	550	595	2 800	4 300	2 200	1.5
NU2230E	*				&		270	73	3	3	182	780	930	2 800	3 800	2 000	3.0
NU330E	*				&		320	65	4	4	193	930	920	2 200	3 800	1 800	3.2
NU2330E	*				&		320	108	4	4	193	1 430	1 600	2 000	2 400	1 600	2.2
NU232E	*				&	160	290	48	3	3	195	615	665	2 600	4 000	2 200	1.8
NU2232E	*				&		290	80	3	3	193	995	1 190	2 400	3 600	1 900	3.3
NU332E	*				&		340	68	4	4	204	1 060	1 050	1 900	3 600	1 700	3.2
NU234E	*				&		310	52	4	4	207	740	800	2 400	3 800	2 000	3.8
NU2234E	*				&	170	310	86	4	4	205	1 140	1 330	2 200	3 200	1 800	2.8
NU236E	*				&		320	52	4	4	217	770	850	2 200	3 600	1 900	2.2
NU2236E	*				&		320	86	4	4	215	1 240	1 510	2 000	3 200	1 700	2.7
NU238E	*				&		340	55	4	4	230	855	955	2 000	3 400	1 800	1.7
NU2238E	*				&	190	340	92	4	4	228	1 360	1 670	1 900	3 000	1 600	1.7
NU240E	*				&		360	58	4	4	243	945	1 060	1 900	3 200	1 700	2.2
NU2240E	*				&		360	98	4	4	241	1 500	1 870	1 800	2 200	1 500	2.2
NU244E	*				&		220	400	65	4	4	268	1 110	1 250	1 800	—	1 500

\* : Available cage  
 ★ NJ and NUP type bearings are available. Please consult NSK.

## Formulation of Bearing Numbers



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

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

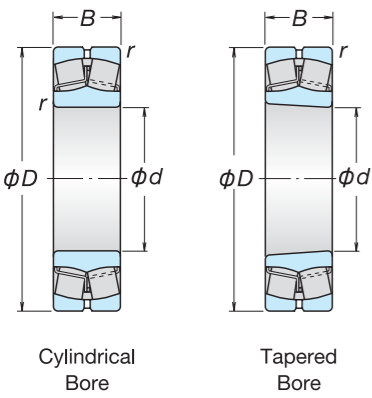
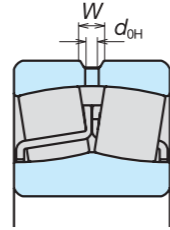


Table 1 Dimensions of Oil Groove and Holes  
Unit: mm

Nominal Width B		Oil Groove Width W	Hole Diameter d <sub>OH</sub>
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

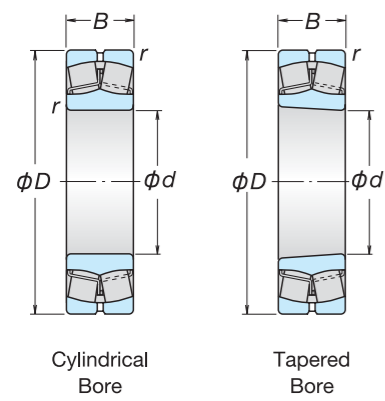


Bearing Numbers			Boundary Dimensions (mm)				Basic Load Ratings (kN)		Speeds (min <sup>-1</sup> )		
Cylindrical Bore	Tapered Bore	NSKHPS Symbol	d	D	B	r (min.)	C <sub>r</sub>	C <sub>0r</sub>	Thermal Reference Speed		Grease
									Mechanical	Limiting Speeds	
22208EAE4	22208EAKE4	* H *	40	80	23	1.1	113	99	7 100	12 000	6 700
21308EAE4	21308EAKE4	* H *		90	23	1.5	118	111	6 700	11 000	6 000
22308EAE4	22308EAKE4	* H *		90	33	1.5	170	153	5 600	9 000	5 300
22209EAE4	22209EAKE4	* H *	45	85	23	1.1	118	111	6 300	11 000	6 000
21309EAE4	21309EAKE4	* H *		100	25	1.5	149	144	6 000	9 000	5 000
22309EAE4	22309EAKE4	* H *		100	36	1.5	207	195	5 000	8 000	4 500
22210EAE4	22210EAKE4	* H *	50	90	23	1.1	124	119	6 000	9 500	5 600
21310EAE4	21310EAKE4	* H *		110	27	2	178	174	5 300	8 000	4 500
22310EAE4	22310EAKE4	* H *		110	40	2	246	234	4 800	7 100	4 300
22211EAE4	22211EAKE4	* H *	55	100	25	1.5	149	144	5 300	9 000	5 300
21311EAE4	21311EAKE4	* H *		120	29	2	178	174	5 300	8 000	4 500
22311EAE4	22311EAKE4	* H *		120	43	2	292	292	4 300	6 000	3 800
22212EAE4	22212EAKE4	* H *	60	110	28	1.5	178	174	5 300	8 000	4 800
21312EAE4	21312EAKE4	* H *		130	31	2.1	238	244	4 800	6 700	3 800
22312EAE4	22312EAKE4	* H *		130	46	2.1	340	340	4 000	5 600	3 600
22213EAE4	22213EAKE4	* H *	65	120	31	1.5	221	230	4 800	7 500	4 300
21313EAE4	21313EAKE4	* H *		140	33	2.1	264	275	4 500	6 000	3 600
22313EAE4	22313EAKE4	* H *		140	48	2.1	375	380	3 800	5 000	3 200
22214EAE4	22214EAKE4	* H *	70	125	31	1.5	225	232	4 500	7 100	4 000
21314EAE4	21314EAKE4	* H *		150	35	2.1	310	325	4 300	5 600	3 200
22314EAE4	22314EAKE4	* H *		150	51	2.1	425	435	3 600	4 800	3 000
22215EAE4	22215EAKE4	* H *	75	130	31	1.5	238	244	4 300	6 700	4 000
21315EAE4	21315EAKE4	* H *		160	37	2.1	310	325	4 000	5 600	3 200
22315EAE4	22315EAKE4	* H *		160	55	2.1	485	505	3 400	4 300	2 800
22216EAE4	22216EAKE4	* H *	80	140	33	2	264	275	4 000	6 000	3 600
21316EAE4	21316EAKE4	* H *		170	39	2.1	355	375	3 800	4 800	3 000
22316EAE4	22316EAKE4	* H *		170	58	2.1	540	565	3 200	3 800	2 600
22217EAE4	22217EAKE4	* H *	85	150	36	2	310	325	4 000	5 600	3 400
21317EAE4	21317EAKE4	* H *		180	41	3	360	395	3 800	5 000	3 000
22317EAE4	22317EAKE4	* H *		180	60	3	600	630	3 000	3 400	2 400

Bearing Numbers			Boundary Dimensions (mm)				Basic Load Ratings (kN)		Speeds (min <sup>-1</sup> )		
Cylindrical Bore	Tapered Bore	NSKHPS Symbol	d	D	B	r (min.)	C <sub>r</sub>	C <sub>0r</sub>	Thermal Reference Speed		Grease
									Mechanical	Limiting Speeds	
22218EAE4	22218EAKE4	* H *	90	160	40	2	360	395	3 800	5 000	3 200
21318EAE4	21318EAKE4	* H *		190	43	3	415	450	3 600	4 500	2 800
22318EAE4	22318EAKE4	* H *		190	64	3	665	705	2 800	3 000	2 400
22219EAE4	22219EAKE4	* H *	95	170	43	2.1	415	450	3 800	4 500	3 000
21319EAE4	21319EAKE4	* H *		200	45	3	430	435	3 600	4 800	1 500
22319EAE4	22319EAKE4	* H *		200	67	3	735	780	2 600	3 000	2 200
22220EAE4	22220EAKE4	* H *	100	180	46	2.1	455	490	3 600	4 300	2 800
23220EAE4	23220EAKE4	* H *		180	60.3	2.1	525	605	2 800	3 800	1 600
21320EAE4	21320EAKE4	* H *		215	47	3	495	485	3 400	4 500	1 400
22320EAE4*	22320EAKE4*	* H *	110	215	73	3	750	785	2 600	3 400	1 700
23122EAE4	23122EAKE4	* H *		180	56	2	480	630	3 200	4 000	1 600
24122EAE4	24122EAKE4	* H *		180	69	2	575	750	2 200	3 400	1 600
22222EAE4	22222EAKE4	* H *	120	200	53	2.1	605	645	3 400	3 400	2 600
23222EAE4	23222EAKE4	* H *		200	69.8	2.1	645	760	2 600	3 400	1 500
21322EAE4	21322EAKE4	* H *		240	50	3	565	545	3 000	4 300	1 300
22322EAE4*	22322EAKE4*	* H *	130	240	80	3	925	980	2 200	3 000	1 500
23024EAE4	23024EAKE4	* H *		180	46	2	395	525	3 200	4 500	1 800
24024EAE4	24024EAKE4	* H *		180	60	2	480	680	2 600	3 600	1 500
23124EAE4	23124EAKE4	* H *	140	200	62	2	580	720	2 800	3 600	1 400
24124EAE4	24124EAKE4	* H *		200	80	2	695	905	2 000	3 000	1 400
22224EAE4	22224EAKE4	* H *		215	58	2.1	685	765	3 200	3 000	2 400
23224EAE4	23224EAKE4	* H *	150	215	76	2.1	790	970	2 200	3 000	1 300
22324EAE4*	22324EAKE4*	* H *		260	86	3	1 060	1 120	1 900	2 800	1 400
23026EAE4	23026EAKE4	* H *		200	52	2	500	655	3 000	3 800	1 700
24026EAE4	24026EAKE4	* H *	160	200	69	2	620	865	2 200	3 200	1 400
23126EAE4	23126EAKE4	* H *		210	64	2	630	825	2 600	3 400	1 300
24126EAE4	24126EAKE4	* H *		210	80	2	735	1 010	1 800	2 800	1 300
22226EAE4	22226EAKE4	* H *	170	230	64	3	820	940	2 800	2 600	2 200
23226EAE4	23226EAKE4	* H *		230	80	3	875	1 080	2 000	2 800	1 200
22326EAE4	22326EAKE4	* H *		280	93	4	1 240	1 350	1 800	2 600	1 300
23028EAE4	23028EAKE4	* H *	180	210	53	2	525	715	2 800	3 800	1 600
24028EAE4	24028EAKE4	* H *		210	69	2	635	905	2 200	3 000	1 300
23128EAE4	23128EAKE4	* H *		225	68	2.1	725	945	2 400	3 200	1 200
24128EAE4	24128EAKE4	* H *	190	225	85	2.1	835	1 160	1 600	2 600	1 200
22228EAE4	22228EAKE4	* H *		250	68	3	835	945	2 600	3 200	1 400
23228EAE4	23228EAKE4	* H *		250	88	3	1 040	1 300	1 800	2 600	1 100
22328EAE4	22328EAKE4	* H *	200	300	102	4	1 450	1 590	1 700	2 400	1 200
23030EAE4	23030EAKE4	* H *		225	56	2.1	590	815	2 600	3 600	1 400
24030EAE4	24030EAKE4	* H *		225	75	2.1	740	1 090	1 900	3 000	1 200
23130EAE4	23130EAKE4	* H *	210	250	80	2.1	905	1 180	2 200	2 800	1 100
24130EAE4	24130EAKE4	* H *		250	100	2.1	1 070	1 450	1 400	2 400	1 100
22230EAE4	22230EAKE4	* H *		270	73	3	955	1 120	2 400	3 000	1 300
23230EAE4	23230EAKE4	* H *	220	270	96	3	1 220	1 560	1 700	2 400	1 100
22330EAE4	22330EAKE4	* H *		320	108	4	1 530	1 690	1 600	2 200	1 100

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





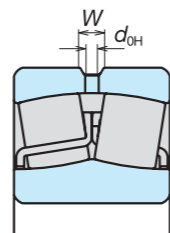
**Table 1 Dimensions of Oil Groove and Holes**

Unit: mm

Nominal Width B		Oil Groove Width W	Hole Diameter d <sub>OH</sub>
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 (kN)		Speeds (min <sup>-1</sup> )			
									Thermal Reference Speed	Limiting Speeds		
Cylindrical Bore	Tapered Bore	NSKHPS Symbol	d	D	B	r (min.)	C <sub>r</sub>	C <sub>0r</sub>		Mechanical	Grease	
23932CAME4	23932CAMKE4	* H *	160	220	45	2	450	675	3 000	3 200	1 400	
23032CAME4	23032CAMKE4	* H *		240	60	2.1	675	955	2 400	3 200	1 300	
24032CAME4	24032CAMK30E4	* H *		240	80	2.1	845	1 260	1 800	2 800	1 100	
23132CAME4	23132CAMKE4	* H *		270	86	2.1	1 070	1 400	2 000	2 600	1 000	
24132CAME4	24132CAMK30E4	* H *		270	109	2.1	1 240	1 670	1 300	2 200	1 000	
22232CAME4	22232CAMKE4	* H *		290	80	3	1 140	1 320	2 200	2 800	1 200	
23232CAME4	23232CAMKE4	* H *		290	104	3	1 370	1 770	1 500	2 200	1 000	
22332CAME4	22332CAMKE4	* H *		340	114	4	1 700	1 900	1 400	2 200	1 100	
23934CAME4	23934CAMKE4	* H *		170	230	45	2	450	680	3 000	3 600	1 400
23034CAME4	23034CAMKE4	* H *			260	67	2.1	795	1 090	2 200	3 000	1 200
24034CAME4	24034CAMK30E4	* H *	260		90	2.1	1 030	1 520	1 600	2 400	1 000	
23134CAME4	23134CAMKE4	* H *	280		88	2.1	1 180	1 570	1 800	2 600	1 000	
24134CAME4	24134CAMK30E4	* H *	280		109	2.1	1 280	1 770	1 200	2 200	1 000	
22234CAME4	22234CAMKE4	* H *	310		86	4	1 240	1 500	2 000	2 600	1 100	
23234CAME4	23234CAMKE4	* H *	310		110	4	1 500	1 910	1 400	2 200	900	
22334CAME4	22334CAMKE4	* H *	360		120	4	1 970	2 110	1 300	2 000	1 000	
23936CAME4	23936CAMKE4	* H *	180	250	52	2	590	890	2 600	3 000	1 200	
23036CAME4	23036CAMKE4	* H *		280	74	2.1	935	1 270	2 000	2 800	1 200	
24036CAME4	24036CAMK30E4	* H *		280	100	2.1	1 210	1 750	1 500	2 200	950	
23136CAME4	23136CAMKE4	* H *		300	96	3	1 320	1 760	1 700	2 200	900	
24136CAME4	24136CAMK30E4	* H *		300	118	3	1 490	2 040	1 100	2 000	900	
22236CAME4	22236CAMKE4	* H *		320	86	4	1 280	1 540	2 000	2 600	1 100	
23236CAME4	23236CAMKE4	* H *		320	112	4	1 620	2 110	1 300	2 000	850	
22336CAME4	22336CAMKE4	* H *		380	126	4	2 170	2 340	1 200	2 000	950	
23938CAME4	23938CAMKE4	* H *		190	260	52	2	575	875	2 600	3 000	1 200
23038CAME4	23038CAMKE4	* H *	290		75	2.1	970	1 350	2 000	2 600	1 100	
24038CAME4	24038CAMK30E4	* H *	290		100	2.1	1 220	1 840	1 400	2 200	900	
23138CAME4	23138CAMKE4	* H *	320		104	3	1 480	2 020	1 600	2 200	850	
24138CAME4	24138CAMK30E4	* H *	320		128	3	1 710	2 330	1 000	1 900	850	
22238CAME4	22238CAMKE4	* H *	340		92	4	1 420	1 730	1 800	2 400	1 000	
23238CAME4	23238CAMKE4	* H *	340		120	4	1 800	2 350	1 200	1 900	800	
22338CAME4	22338CAMKE4	* H *	400		132	5	2 370	2 590	1 200	1 900	900	

Bearing Numbers			Boundary Dimensions (mm)				Basic Load Ratings (kN)		Speeds (min <sup>-1</sup> )			
									Thermal Reference Speed	Limiting Speeds		
Cylindrical Bore	Tapered Bore	NSKHPS Symbol	d	D	B	r (min.)	C <sub>r</sub>	C <sub>0r</sub>		Mechanical	Grease	
23940CAME4	23940CAMKE4	* H *	200	280	60	2.1	710	1 060	2 400	2 600	1 100	
23040CAME4	23040CAMKE4	* H *		310	82	2.1	1 180	1 700	1 800	2 400	1 000	
24040CAME4	24040CAMK30E4	* H *		310	109	2.1	1 420	2 120	1 300	2 000	850	
23140CAME4	23140CAMKE4	* H *		340	112	3	1 700	2 330	1 500	2 000	800	
24140CAME4	24140CAMK30E4	* H *		340	140	3	1 960	2 660	950	1 800	800	
22240CAME4	22240CAMKE4	* H *		360	98	4	1 620	2 010	1 700	2 200	950	
23240CAME4	23240CAMKE4	* H *		360	128	4	2 070	2 750	1 100	1 800	750	
22340CAME4	22340CAMKE4	* H *		420	138	5	2 500	2 990	1 000	1 700	850	
23944CAME4	23944CAMKE4	* H *		220	300	60	2.1	785	1 240	2 200	2 600	1 000
23044CAME4	23044CAMKE4	* H *			340	90	3	1 360	1 980	1 600	2 200	950
24044CAME4	24044CAMK30E4	* H *	340		118	3	1 640	2 490	1 200	1 900	750	
23144CAME4	23144CAMKE4	* H *	370		120	4	1 960	2 710	1 300	1 800	710	
24144CAME4	24144CAMK30E4	* H *	370		150	4	2 250	3 200	850	1 600	710	
22244CAME4	22244CAMKE4	* H *	400		108	4	1 960	2 430	1 500	2 000	850	
23244CAME4	23244CAMKE4	* H *	400		144	4	2 520	3 400	1 000	1 600	670	
22344CAME4	22344CAMKE4	* H *	460		145	5	2 940	3 400	950	1 600	750	
23948CAME4	23948CAMKE4	* H *	240		320	60	2.1	795	1 300	1 900	2 600	950
23048CAME4	23048CAMKE4	* H *			360	92	3	1 450	2 140	1 500	2 200	850
24048CAME4	24048CAMK30E4	* H *		360	118	3	1 730	2 730	1 100	1 800	710	
23148CAME4	23148CAMKE4	* H *		400	128	4	2 230	3 100	1 200	1 700	670	
24148CAME4	24148CAMK30E4	* H *		400	160	4	2 660	3 800	750	1 500	670	
22248CAME4	22248CAMKE4	* H *		440	120	4	2 340	2 890	1 400	1 800	750	
23248CAME4	23248CAMKE4	* H *		440	160	4	3 050	4 050	850	1 500	630	
22348CAME4	22348CAMKE4	* H *		500	155	5	3 250	3 800	850	1 500	670	
23952CAME4	23952CAMKE4	* H *		260	360	75	2.1	1 170	1 870	1 800	2 200	850
23052CAME4	23052CAMKE4	* H *			400	104	4	1 780	2 580	1 300	1 900	800
24052CAME4	24052CAMK30E4	* H *	400		140	4	2 270	3 500	950	1 600	630	
23152CAME4	23152CAMKE4	* H *	440		144	4	2 700	3 750	1 100	1 500	600	
24152CAME4	24152CAMK30E4	* H *	440		180	4	3 200	4 700	630	1 300	600	
22252CAME4	22252CAMKE4	* H *	480		130	5	2 720	3 400	1 200	1 700	670	
23252CAME4	23252CAMKE4	* H *	480		174	5	3 400	4 550	800	1 400	560	
22352CAME4	22352CAMKE4	* H *	540		165	6	3 900	4 600	750	1 400	630	
23956CAME4	23956CAMKE4	* H *	280		380	75	2.1	1 160	1 950	1 600	2 000	800
23056CAME4	23056CAMKE4	* H *			420	106	4	1 930	2 950	1 200	1 800	710
24056CAME4	24056CAMK30E4	* H *		420	140	4	2 350	3 800	850	1 500	600	
23156CAME4	23156CAMKE4	* H *		460	146	5	2 790	4 000	1 000	1 500	560	
24156CAME4	24156CAMK30E4	* H *		460	180	5	3 300	5 000	600	1 300	560	
22256CAME4	22256CAMKE4	* H *		500	130	5	2 850	3 650	1 100	1 600	630	
23256CAME4	23256CAMKE4	* H *		500	176	5	3 600	4 900	750	1 300	530	
22356CAME4	22356CAMKE4	* H *		580	175	6	4 350	5 150	710	1 300	560	
23960CAME4	23960CAMKE4	* H *		300	420	90	3	1 540	2 490	1 500	1 800	710
23060CAME4	23060CAMKE4	* H *			460	118	4	2 400	3 700	1 100	1 600	670
24060CAME4	24060CAMK30E4	* H *	460		160	4	2 890	4 600	800	1 400	530	
23160CAME4	23160CAMKE4	* H *	500		160	5	3 350	4 800	900	1 400	500	
24160CAME4	24160CAMK30E4	* H *	500		200	5	3 900	5 800	530	1 200	500	
22260CAME4	22260CAMKE4	* H *	540		140	5	3 250	4 250	1 000	1 500	600	
23260CAME4	23260CAMKE4	* H *	540		192	5	4 250	5 900	670	1 200	480	

# High Precision Angular Contact Ball Bearings

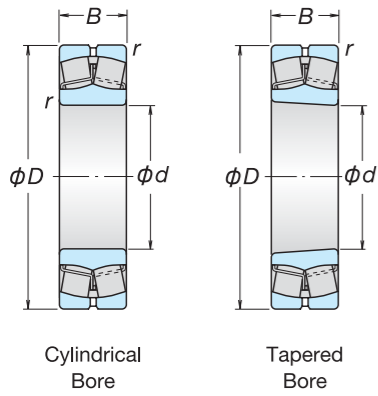


Table 1 Dimensions of Oil Groove and Holes  
Unit: mm

Nominal Width B		Oil Groove Width W	Hole Diameter d <sub>OH</sub>
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

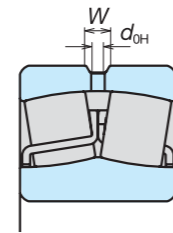


Table 2 Number of Oil Holes

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 (kN)		Speeds (min <sup>-1</sup> )			
Cylindrical Bore	Tapered Bore	NSKHPS Symbol	d	D	B	r (min.)	C <sub>r</sub>	C <sub>0r</sub>	Thermal Reference Speed	Limiting Speeds		
									Mechanical	Grease		
23964CAME4	23964CAMKE4	* H *	320	440	90	3	1 620	2 750	1 400	1 700	670	
23064CAME4	23064CAMKE4	* H *		480	121	4	2 450	3 850	1 000	1 600	630	
24064CAME4	24064CAMK30E4	* H *		480	160	4	3 050	5 050	710	1 300	500	
23164CAME4	23164CAMKE4	* H *		540	176	5	3 850	5 500	800	1 300	480	
24164CAME4	24164CAMK30E4	* H *		540	218	5	4 400	6 650	500	1 100	480	
22264CAME4	22264CAMKE4	* H *		580	150	5	3 750	4 850	950	1 400	530	
23264CAME4	23264CAMKE4	* H *		580	208	5	4 850	6 900	600	1 100	450	
23968CAME4	23968CAMKE4	* H *		340	460	90	3	1 670	2 840	1 300	1 700	630
23068CAME4	23068CAMKE4	* H *			520	133	5	2 850	4 400	950	1 500	560
24068CAME4	24068CAMK30E4	* H *			520	180	5	3 650	6 050	670	1 200	480
23168CAME4	23168CAMKE4	* H *	580		190	5	4 500	6 600	710	1 200	430	
24168CAME4	24168CAMK30E4	* H *	580		243	5	5 300	7 900	450	1 000	430	
23972CAME4	23972CAMKE4	* H *	360	480	90	3	1 730	3 050	1 200	1 700	600	
23072CAME4	23072CAMKE4	* H *		540	134	5	2 990	4 700	900	1 400	530	
24072CAME4	24072CAMK30E4	* H *		540	180	5	3 650	6 100	630	1 200	450	
23172CAME4	23172CAMKE4	* H *		600	192	5	4 800	7 100	670	1 100	400	
24172CAME4	24172CAMK30E4	* H *		600	243	5	5 250	8 000	430	1 000	400	
23976CAME4	23976CAMKE4	* H *	380	520	106	4	2 340	4 100	1 100	1 500	530	
23076CAME4	23076CAMKE4	* H *		560	135	5	3 150	5 100	850	1 400	530	
24076CAME4	24076CAMK30E4	* H *		560	180	5	3 850	6 600	600	1 200	430	
23980CAME4	23980CAMKE4	* H *	400	540	106	4	2 370	4 250	1 000	1 400	530	
23080CAME4	23080CAMKE4	* H *		600	148	5	3 700	5 900	800	1 300	480	
24080CAME4	24080CAMK30E4	* H *		600	200	5	4 500	7 600	560	1 100	400	
23984CAME4	23984CAMKE4	* H *	420	560	106	4	2 340	4 250	1 000	1 400	500	



## Features Compared with conventional bearings...

Bearing Life

**15% higher**

Universal Matching

Wide range combination is possible

New Product Lineup

Wide range lineup

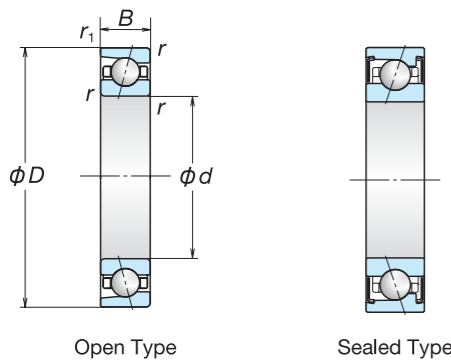
## Formulation of Bearing Numbers

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

Bearing Series Symbols	Accuracy Symbol
Bore Number	Preload Symbol
Contact Angle Symbol	Arrangement Symbol
Cage Symbol	Seals Symbol

<b>70</b>	<b>Bearing Series Symbols</b>	79, 70, 72: Single-Row AngularContact Ball Bearings
<b>13</b>	<b>Bore Number</b>	Bore number indicates bore diameter. 00: 10mm; 01: 12mm; 02: 15mm; 03: 17mm 04 or Larger: Bore Number × 5 (mm)
<b>C</b>	<b>Contact Angle Symbol</b>	C: 15°; A5: 25°; A: 30°
<b>TYN</b>	<b>Cage Symbol</b>	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
<b>SU</b>	<b>Arrangement Symbol</b>	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
<b>L</b>	<b>Preload Symbol</b>	EL: Extra Light Preload/ L: Light Preload/ M: Medium Preload/ and H: Heavy Preload
<b>P4</b>	<b>Accuracy Symbol</b>	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.)

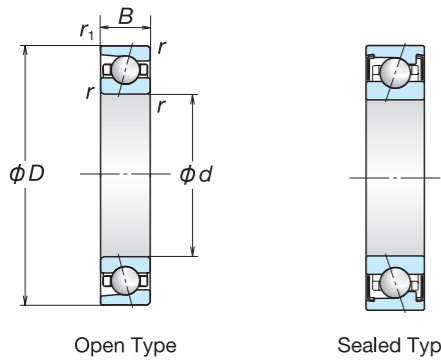
\*1  $d_m n$  = (Bore diameter + Outside diameter) / 2 × Rotating speed



Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (kN)		Limiting Speeds (min <sup>-1</sup> )		Preload (DB,DF Arrangement) (N)			
	d	D	B	r (min.)	r <sub>1</sub> (min.)	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil	EL	L	M	H
7900C	10	22	6	0.3	0.15	3.15	1.52	71 900	109 000	7.0	16	29	58
7900A5		22	6	0.3	0.15	3.00	1.45	62 500	93 800	9.8	17	55	94
7000C		26	8	0.3	0.15	5.60	2.49	63 900	97 300	13	25	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	25	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	25	97	202	—	
7901C	12	24	6	0.3	0.15	3.55	1.86	63 900	97 300	8.6	16	41	77
7901A5		24	6	0.3	0.15	3.35	1.77	55 600	83 400	16	25	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	203
7001A		28	8	0.3	0.15	5.70	2.71	37 500	50 000	25	104	218	363
7201C		32	10	0.6	0.3	8.30	3.85	52 300	79 600	20	39	99	197
7201A5	32	10	0.6	0.3	8.05	3.70	45 500	68 200	34	56	146	287	
7201A	32	10	0.6	0.3	7.85	3.65	34 100	45 500	25	104	218	361	
7902C	15	28	7	0.3	0.15	5.00	2.64	53 500	81 400	12	25	47	104
7902A5		28	7	0.3	0.15	4.75	2.53	46 600	69 800	16	35	74	141
7002C		32	9	0.3	0.15	6.55	3.40	49 000	74 500	12	29	66	147
7002A5		32	9	0.3	0.15	6.25	3.25	42 600	63 900	16	35	103	197
7002A		32	9	0.3	0.15	6.05	3.15	32 000	42 600	25	110	234	392
7202C		35	11	0.6	0.3	9.10	4.55	46 000	70 000	20	40	97	199
7202A5	35	11	0.6	0.3	8.75	4.35	40 000	60 000	35	73	197	392	
7202A	35	11	0.6	0.3	8.50	4.25	30 000	40 000	25	111	236	394	
7903C	17	30	7	0.3	0.15	5.25	2.94	49 000	74 500	11	25	56	119
7903A5		30	7	0.3	0.15	5.00	2.80	42 600	63 900	15	35	77	149
7003C		35	10	0.3	0.15	6.95	3.80	44 300	67 400	15	30	69	156
7003A5		35	10	0.3	0.15	6.60	3.65	38 500	57 700	25	47	127	257
7003A		35	10	0.3	0.15	6.40	3.50	28 900	38 500	25	116	251	422
7203C		40	12	0.6	0.3	11.40	5.85	40 400	61 500	25	46	146	296
7203A5	40	12	0.6	0.3	11.00	5.60	35 100	52 700	35	75	204	408	
7203A	40	12	0.6	0.3	10.70	5.45	26 400	35 100	25	115	247	412	
7904C	20	37	9	0.3	0.15	7.30	4.25	40 400	61 500	20	42	80	152
7904A5		37	9	0.3	0.15	6.95	4.05	35 100	52 700	25	63	114	247
7004C		42	12	0.6	0.3	11.7	6.55	37 100	56 500	25	49	119	244
7004A5		42	12	0.6	0.3	11.2	6.25	32 300	48 400	36	81	206	403
7004A		42	12	0.6	0.3	10.8	6.10	24 200	32 300	25	128	280	473
7204C		47	14	1	0.6	15.3	8.05	34 400	52 300	35	68	196	384
7204A5	47	14	1	0.6	14.7	7.75	29 900	44 800	63	112	290	596	
7204A	47	14	1	0.6	14.3	7.55	22 400	29 900	25	262	439	649	

\* 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 <sup>-1</sup> )		Preload (DB,DF Arrangement) (N)			
	d	D	B	r (min.)	r <sub>1</sub> (min.)	C <sub>r</sub>	C <sub>or</sub>	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	203
7905A5		42	9	0.3	0.15	7.80	5.15	29 900	44 800	38	70	153	290
7005C		47	12	0.6	0.3	12.3	7.40	32 000	48 700	30	58	148	292
7005A5		47	12	0.6	0.3	11.7	7.10	27 800	41 700	52	104	193	397
7005A		47	12	0.6	0.3	11.3	6.85	20 900	27 800	25	135	299	507
7205C		52	15	1	0.6	17.4	10.2	29 900	45 500	42	82	193	402
7205A5		52	15	1	0.6	16.7	9.80	26 000	39 000	82	143	330	691
7205A		52	15	1	0.6	16.1	9.45	19 500	26 000	49	357	578	839
*7906C	30	47	9	0.3	0.15	8.70	6.25	29 900	45 500	25	46	95	204
*7906A5		47	9	0.3	0.15	8.25	5.95	26 000	39 000	39	74	141	285
*7006C		55	13	1	0.6	15.9	10.3	27 100	41 200	41	75	195	386
*7006A5		55	13	1	0.6	15.1	9.80	23 600	35 300	66	129	294	590
*7006A		55	13	1	0.6	14.6	9.45	17 700	23 600	49	191	390	638
7206C		62	16	1	0.6	24.2	14.7	25 000	38 100	57	114	292	591
7206A5	62	16	1	0.6	23.2	14.1	21 800	32 700	105	202	457	881	
7206A	62	16	1	0.6	22.4	13.6	16 400	21 800	49	384	625	908	
*7907C	35	55	10	0.6	0.3	12.7	9.15	25 600	38 900	33	67	149	297
*7907A5		55	10	0.6	0.3	12.0	8.70	22 300	33 400	49	110	248	508
*7007C		62	14	1	0.6	20.1	13.7	23 800	36 100	58	121	251	493
*7007A5		62	14	1	0.6	19.1	13.0	20 700	31 000	68	161	387	779
*7007A		62	14	1	0.6	18.4	12.6	15 500	20 700	49	203	421	693
7207C	72	17	1.1	0.6	32.0	19.9	21 500	32 800	75	151	385	794	
7207A5	72	17	1.1	0.6	30.5	19.1	18 700	28 100	131	238	596	1 178	
7207A	72	17	1.1	0.6	29.6	18.5	14 100	18 700	49	401	654	1 288	
*7908C	40	62	12	0.6	0.3	15.9	11.7	22 600	34 400	41	78	196	384
*7908A5		62	12	0.6	0.3	15.0	11.2	19 700	29 500	68	113	291	572
*7008C		68	15	1	0.6	21.6	15.9	21 300	32 500	58	114	291	594
*7008A5		68	15	1	0.6	20.5	15.1	18 600	27 800	92	203	424	864
*7008A		68	15	1	0.6	19.7	14.6	13 900	18 600	49	219	463	768
7208C		80	18	1.1	0.6	38.0	25.2	19 200	29 200	98	202	501	985
7208A5	80	18	1.1	0.6	36.5	24.1	16 700	25 000	138	290	750	1 490	
7208A	80	18	1.1	0.6	35.5	23.3	12 500	16 700	49	438	721	1 428	
*7909C	45	68	12	0.6	0.3	16.8	13.4	20 400	31 000	49	104	192	391
*7909A5		68	12	0.6	0.3	15.9	12.7	17 700	26 600	70	146	353	676
*7009C		75	16	1	0.6	25.6	19.3	19 200	29 200	80	144	338	695
*7009A5		75	16	1	0.6	24.3	18.3	16 700	25 000	94	210	485	958
*7009A		75	16	1	0.6	23.4	17.7	12 500	16 700	49	227	482	1 178
7209C	85	19	1.1	0.6	43.0	28.8	17 700	27 000	123	254	534	1 067	
7209A5	85	19	1.1	0.6	41.0	27.6	15 400	23 100	169	333	875	1 738	
7209A	85	19	1.1	0.6	39.5	26.7	11 600	15 400	49	450	1 084	1 905	
*7910C	50	72	12	0.6	0.3	17.7	15.0	18 900	28 700	49	95	240	499
*7910A5		72	12	0.6	0.3	16.7	14.2	16 400	24 600	71	154	379	791
*7010C		80	16	1	0.6	27.3	21.9	17 700	27 000	70	152	388	791
*7010A5		80	16	1	0.6	25.8	20.8	15 400	23 100	125	262	580	1 189
*7010A		80	16	1	0.6	24.9	20.1	11 600	15 400	49	243	525	1 299
7210C		90	20	1.1	0.6	45.0	31.5	16 500	25 000	127	248	590	1 171
7210A5	90	20	1.1	0.6	43.0	30.5	14 300	21 500	208	391	989	1 934	
7210A	90	20	1.1	0.6	41.5	29.3	10 800	14 300	49	477	1 156	2 038	
*7911C	55	80	13	1	0.6	20.1	17.7	17 100	26 000	60	111	296	593
*7911A5		80	13	1	0.6	19.0	16.8	14 900	22 300	99	196	454	917
*7011C		90	18	1.1	0.6	36.0	28.6	15 900	24 200	95	200	479	971
*7011A5		90	18	1.1	0.6	34.0	27.2	13 800	20 700	157	345	804	1 552
*7011A		90	18	1.1	0.6	32.5	26.3	10 400	13 800	49	246	887	1 307
7211C		100	21	1.5	1	55.5	40.0	14 900	22 600	142	289	788	1 554
7211A5	100	21	1.5	1	53.0	38.0	13 000	19 400	248	491	1 206	2 397	
7211A	100	21	1.5	1	51.0	37.0	9 700	13 000	49	494	1 722	2 635	
*7912C	60	85	13	1	0.6	20.4	18.7	15 900	24 200	60	113	305	581
*7912A5		85	13	1	0.6	19.2	17.7	13 800	20 700	101	201	419	884
*7012C		95	18	1.1	0.6	37.0	30.5	14 900	22 600	96	189	526	1 092
*7012A5		95	18										



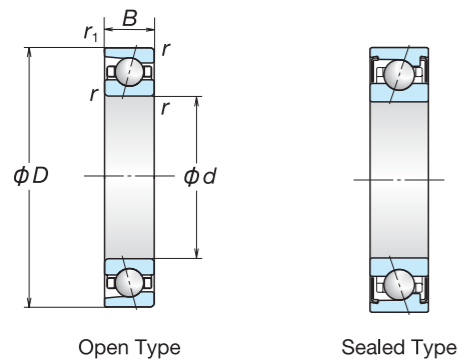
Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (kN)		Limiting Speeds (min <sup>-1</sup> )		Preload (DB,DF Arrangement) (N)				
	d	D	B	r (min.)	r <sub>1</sub> (min.)	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil	EL	L	M	H	
*7913C	65	90	13	1	0.6	21.2	20.5	14 900	22 600	74	151	348	690	
*7913A5		90	13	1	0.6	20.0	19.4	13 000	19 400	104	212	500	948	
*7013C		100	18	1.1	0.6	39.0	34.5	14 000	21 300	130	260	537	1 062	
*7013A5		100	18	1.1	0.6	37.0	32.5	12 200	18 200	209	386	915	1 781	
*7013A		100	18	1.1	0.6	33.5	31.5	9 100	12 200	49	272	1 012	1 498	
7213C		120	23	1.5	1	77.0	58.5	12 500	19 000	219	448	1 069	2 175	
7213A5		120	23	1.5	1	73.0	56.0	10 900	16 300	357	657	1 664	3 307	
7213A		120	23	1.5	1	70.5	54.0	8 200	10 900	49	553	1 851	2 998	
*7914C		70	100	16	1.0	0.6	29.5	27.8	13 600	20 600	101	205	503	1 004
*7914A5			100	16	1.0	0.6	27.9	26.3	11 800	17 700	137	298	676	1 404
*7014C	110		20	1.1	0.6	49.0	43.0	12 800	19 500	148	285	732	1 460	
*7014A5	110		20	1.1	0.6	46.5	41.0	11 200	16 700	255	500	1 080	2 196	
*7014A	110		20	1.1	0.6	45.0	39.5	8 400	11 200	49	278	1 038	2 106	
7214C	125		24	1.5	1.0	83.5	64.5	11 800	18 000	243	484	1 164	2 368	
7214A5	125		24	1.5	1.0	79.5	61.5	10 300	15 400	406	781	1 856	3 690	
7214A	125	24	1.5	1.0	77.0	59.5	7 700	10 300	98	1 067	2 626	3 932		
*7915C	75	105	16	1	0.6	30.0	29.3	12 800	19 500	103	190	489	997	
*7915A5		105	16	1	0.6	28.3	27.7	11 200	16 700	140	307	765	1 458	
*7015C		115	20	1.1	0.6	50.5	45.5	12 200	18 500	151	294	796	1 573	
*7015A5		115	20	1.1	0.6	47.5	43.5	10 600	15 800	263	519	1 204	2 399	
*7015A		115	20	1.1	0.6	46.0	41.5	7 900	10 600	49	288	1 083	2 202	
7215C		130	25	1.5	1	87.0	70.0	11 300	17 100	270	530	1 224	2 445	
7215A5		130	25	1.5	1	82.5	66.5	9 800	14 700	422	819	1 961	3 911	
7215A	130	25	1.5	1	80.0	64.5	7 400	9 800	98	1 123	2 780	4 170		
*7916C	80	110	16	1	0.6	30.5	30.5	12 200	18 500	104	195	503	986	
*7916A5		110	16	1	0.6	28.7	29.0	10 600	15 800	182	366	792	1 603	
*7016C		125	22	1.1	0.6	61.5	55.5	11 300	17 100	202	382	921	1 880	
*7016A5		125	22	1.1	0.6	58.5	52.5	9 800	14 700	345	624	1 513	2 903	
*7016A		125	22	1.1	0.6	56.0	50.5	7 400	9 800	98	752	1 762	3 060	
7216C		140	26	2	1	97.5	77.5	10 500	16 000	305	595	1 367	2 752	
7216A5		140	26	2	1	93.0	74.0	9 100	13 700	463	925	2 161	4 345	
7216A	140	26	2	1	89.5	71.5	6 900	9 100	98	1 095	2 696	4 035		
*7917C	85	120	18	1.1	0.6	41.0	40.5	11 300	17 100	138	307	629	1 281	
*7917A5		120	18	1.1	0.6	38.5	38.5	9 800	14 700	227	427	950	1 909	
*7017C		130	22	1.1	0.6	63.0	58.5	10 700	16 300	205	393	995	1 956	
*7017A5		130	22	1.1	0.6	60.0	55.5	9 400	14 000	305	646	1 487	2 915	
*7017A		130	22	1.1	0.6	57.5	53.5	7 000	9 400	98	780	1 837	3 196	
7217C		150	28	2	1	113	90.5	9 800	14 900	355	697	1 658	3 358	
7217A5		150	28	2	1	107	86.5	8 600	12 800	530	1 095	2 431	4 882	
7217A	150	28	2	1	104	83.5	6 400	8 600	98	1 135	3 473	5 794		

\* 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 <sup>-1</sup> )		Preload (DB,DF Arrangement) (N)				
	d	D	B	r (min.)	r <sub>1</sub> (min.)	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil	EL	L	M	H	
*7918C	90	125	18	1.1	0.6	44.0	46.0	10 700	16 300	153	289	740	1 488	
*7918A5		125	18	1.1	0.6	41.0	43.5	9 400	14 000	272	500	1 096	2 184	
*7018C		140	24	1.5	1	75.5	69.0	10 000	15 300	247	502	1 187	2 373	
*7018A5		140	24	1.5	1	71.0	65.5	8 700	13 100	409	779	1 758	3 498	
*7018A		140	24	1.5	1	68.5	63.5	6 600	8 700	98	782	2 483	3 977	
7218C		160	30	2	1	129	105	9 200	14 000	384	771	1 865	3 713	
7218A5		160	30	2	1	123	100	8 000	12 000	658	1 272	2 899	5 945	
7218A		160	30	2	1	118	96.5	6 000	8 000	98	1 676	4 314	5 954	
*7919C		95	130	18	1.1	0.6	44.5	48.0	10 300	15 600	154	294	800	1 588
*7919A5			130	18	1.1	0.6	42.0	45.5	8 900	13 400	226	512	1 218	2 371
*7019C	145		24	1.5	1	77.0	73.0	9 600	14 600	275	549	1 188	2 348	
*7019A5	145		24	1.5	1	73.0	69.5	8 400	12 500	421	808	1 832	3 786	
*7019A	145		24	1.5	1	70.0	67.0	6 300	8 400	98	811	2 592	4 157	
7219C	170		32	2.1	1.1	139	112	8 700	13 300	448	876	2 081	4 153	
7219A5	170		32	2.1	1.1	133	107	7 600	11 400	703	1 390	3 124	6 301	
7219A	170	32	2.1	1.1	128	103	5 700	7 600	356	1 633	4 191	6 644		
*7920C	100	140	20	1.1	0.6	52.5	54.0	9 600	14 600	191	387	905	1 790	
*7920A5		140	20	1.1	0.6	49.5	51.5	8 400	12 500	318	615	1 229	2 546	
*7020C		150	24	1.5	1	79.0	77.0	9 200	14 000	282	534	1 278	2 572	
*7020A5		150	24	1.5	1	75.0	73.5	8 000	12 000	434	837	2 009	3 948	
*7020A		150	24	1.5	1	72.0	70.5	6 000	8 000	98	840	2 701	4 338	
7220C		180	34	2.1	1.1	157	127	8 300	12 500	503	984	2 337	4 700	
7220A5		180	34	2.1	1.1	149	121	7 200	10 800	776	1 574	3 500	7 110	
7220A		180	34	2.1	1.1	144	117	5 400	7 200	361	1 664	5 052	7 687	
7921C	105	145	20	1.1	0.6	53.5	57.0	9 200	14 000	194	396	890	1 791	
7921A5		145	20	1.1	0.6	50.5	54.0	8 000	12 000	272	565	1 361	2 760	
7021C		160	26	2	1	92.5	89.5	8 700	13 300	330	625	1 494	2 973	
7021A5		160	26	2	1	87.5	85.0	7 600	11 400	493	989	2 211	4 473	
7021A		160	26	2	1	84.0	81.5	5 700	7 600	98	840	2 693	4 318	
7221C		190	36	2.1	1.1	171	143	7 800	11 900	540	1 077	2 651	5 311	
7221A5		190	36	2.1	1.1	163	137	6 800	10 200	862	1 790	3 950	7 929	
7221A	190	36	2.1	1.1	157	132	5 100	6 800	368	2 298	5 208	8 924		
7922C	110	150	20	1.1	0.6	54.5	59.5	8 900	13 500	196	405	916	1 849	
7922A5		150	20	1.1	0.6	51.5	56.0	7 700	11 600	332	651	1 502	2 985	
7022C		170	28	2	1	111	104	8 300	12 500	371	733	1 752	3 516	
7022A5		170	28	2	1	105	99.0	7 200	10 800	604	1 194	2 657	5 250	
7022A		170	28	2	1	101	95.5	5 400	7 200	98	1 325	3 331	5 949	
7222C		200	38	2.1	1.1	185	160	7 500	11 300	632	1 281	2 962	5 901	
7222A5		200	38	2.1	1.1	176	153	6 500	9 700	948	2 009	4 400	9 396	
7222A		200	38	2.1	1.1	170	148	4 900	6 500	374	2 350	6 201	10 187	
7924C	120	165	22	1.1	0.6	75.5	81.0	8 100	12 300	270	536	1 288	2 539	
7924A5		165	22	1.1	0.6	71.0	77.0	7 100	10 600	461	902	1 964	3 884	
7024C		180	28	2	1	118	117	7 700	11 700	422	825	1 959	3 918	
7024A5		180	28	2	1	111	111	6 700	10 000	648	1 295	2 903	5 921	
7024A		180	28	2	1	107	107	5 000	6 700	98	1 439	3 645	6 531	
7224C		215	40	2.1	1.1	209	192	6 900	10 500	690	1 395	3 212	6 371	
7224A5		215	40	2.1	1.1	199	184	6 000	9 000	1 137	2 327	5 259	10 296	
7224A	215	40	2.1	1.1	192	177	4 500	6 000	542	2 817	8 158	11 550		
7926C	130	180	24	1.5	1	82.5	91.0	7 500	11 300	327	652	1 466	2 943	
7926A5		180	24	1.5	1	78.0	86.0	6 500	9 700	470	1 008	2 126	4 280	
7026C		200	33	2	1	136	137	7 000	10 700	493	970	2 252	4 518	
7026A5		200	33	2	1	128	130	6 100	9 100	821	1 535	3 407	6 842	
7026A		200	33	2	1	123	125	4 600	6 100	98	1 494	4 721	7 942	
7226C		230	40	3	1.1	217	209	6 400	9 800	749	1 506	3 386	6 740	
7226A5		230	40	3	1.1	206	199	5 600	8 400	1 189	2 452	5 569	10 929	
7226A		230	40	3	1.1	199	193	4 200	5 600	559	3 764	9 804	13 576	

# Ball Screw Support Angular Contact Thrust Ball Bearings



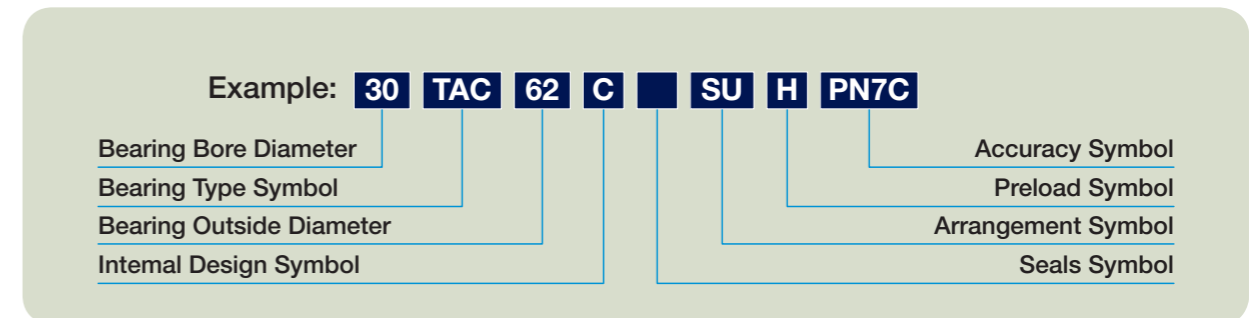
**Features**

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

Bearing Numbers	Boundary Dimensions (mm)					Basic Load Ratings (kN)		Limiting Speeds (min <sup>-1</sup> )		Preload (DB,DF Arrangement) (N)			
	d	D	B	r (min.)	r <sub>1</sub> (min.)	C <sub>r</sub>	C <sub>or</sub>	Grease	Oil	EL	L	M	H
7930C	150	210	28	2	1	107	122	6 400	9 800	387	825	1 969	3 990
7930A5		210	28	2	1	101	115	5 600	8 400	651	1 269	2 914	5 914
7030C		225	35	2.1	1.1	158	168	6 200	9 400	577	1 149	2 764	5 487
7030A5		225	35	2.1	1.1	150	160	5 400	8 000	973	1 877	4 118	8 340
7030A		225	35	2.1	1.1	144	154	4 000	5 400	196	1 828	5 852	11 679
7230C		270	45	3	1.1	284	305	5 500	8 400	1 093	2 203	4 952	9 979
7230A5		270	45	3	1.1	270	290	4 800	7 200	1 854	3 642	8 044	16 467
7230A		270	45	3	1.1	261	280	3 600	4 800	587	5 000	11 917	16 154
7932C	160	220	28	2	1	112	133	5 600	8 700	431	863	1 954	3 882
7932A5		220	28	2	1	105	125	4 800	7 400	678	1 340	3 252	6 333
7032C		240	38	2.1	1.1	180	193	5 300	8 300	623	1 270	2 968	5 798
7032A5		240	38	2.1	1.1	170	183	4 500	7 000	1 090	2 168	4 725	9 446
7032A	240	38	2.1	1.1	163	176	3 300	4 500	196	1 883	5 601	12 072	
7934C	170	230	28	2	1	118	148	5 300	8 300	486	968	2 186	4 334
7934A5		230	28	2	1	112	140	4 500	7 000	812	1 564	3 553	7 173
7034C		260	42	2.1	1.1	215	234	4 900	7 700	777	1 572	3 598	7 104
7034A5		260	42	2.1	1.1	203	223	4 200	6 600	1 292	2 555	5 927	11 666
7034A	260	42	2.1	1.1	195	214	3 100	4 200	196	2 697	6 086	12 116	
7936C	180	250	33	2	1	152	184	4 900	7 700	591	1 138	2 659	5 370
7936A5		250	33	2	1	144	174	4 200	6 600	990	2 017	4 440	8 876
7036C		280	46	2.1	1.1	240	276	4 600	7 200	938	1 880	4 201	8 277
7036A5		280	46	2.1	1.1	227	262	4 000	6 100	1 580	3 130	6 880	13 679
7036A	280	46	2.1	1.1	218	252	2 900	4 000	196	3 618	7 232	14 216	
7938C	190	260	33	2	1	155	192	4 700	7 400	602	1 219	2 815	5 649
7938A5		260	33	2	1	146	182	4 000	6 300	1 013	2 075	4 582	9 175
7038C		290	46	2.1	1.1	259	305	4 400	6 900	1 042	2 087	4 682	9 306
7038A5		290	46	2.1	1.1	245	291	3 800	5 900	1 723	3 640	7 610	15 239
7038A	290	46	2.1	1.1	235	280	2 800	3 800	196	3 890	8 161	16 183	
7940C	200	280	38	2.1	1.1	199	244	4 400	6 900	784	1 584	3 592	7 168
7940A5		280	38	2.1	1.1	187	231	3 800	5 900	1 256	2 554	5 855	11 667
7040C		310	51	2.1	1.1	278	340	4 200	6 500	1 153	2 310	5 202	10 293
7040A5		310	51	2.1	1.1	263	325	3 600	5 500	1 876	3 710	8 392	16 917
7040A	310	51	2.1	1.1	252	310	2 600	3 600	196	5 065	13 451	26 693	
7944C	220	300	38	2.1	1.1	200	256	4 100	6 400	848	1 690	3 793	7 530
7944A5		300	38	2.1	1.1	188	242	3 500	5 400	1 288	2 631	6 047	12 067
7948C	240	320	38	2.1	1.1	210	286	3 800	5 900	902	1 822	4 129	8 237
7948A5		320	38	2.1	1.1	198	270	3 300	5 000	1 385	2 860	6 622	13 265
7952C	260	360	46	2.1	1.1	268	365	3 400	5 400	1 187	2 376	5 327	10 728
7952A5		360	46	2.1	1.1	253	345	3 000	4 600	1 901	3 888	8 783	17 498

\* 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.

## Formulation of Bearing Numbers



- 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
- 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





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