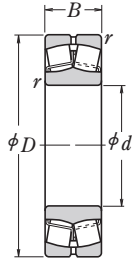
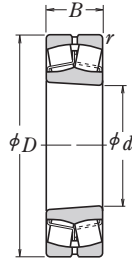


SPHERICAL ROLLER BEARINGS

Bore Diameter 140 – 150 mm



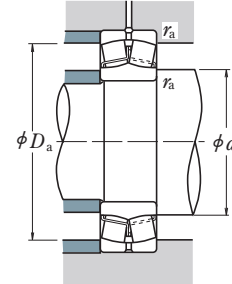
Cylindrical Bore



Tapered Bore



Without an Oil Groove or Holes

**Dynamic Equivalent Load**

$$P = XF_r + YF_a$$

$F_a/F_r \leq e$		$F_a/F_r > e$	
X	Y	X	Y
1	Y_3	0.67	Y_2

Static Equivalent Load

$$P_0 = F_r + Y_0 F_a$$

The values of e , Y_2 , Y_3 , and Y_0 are given in the table below.

Boundary Dimensions (mm)				Basic Load Ratings (N)		Speeds(min ⁻¹) Limiting Speeds				Bearing Designations		Abutment and Fillet Dimensions (mm)					Constant	Axial Load Factors			Mass (kg)
<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i> min.	<i>C_r</i>	<i>C_{0r}</i>	Thermal Speed Rating (Oil Bath)	Mechanical (Forced Oil Circulation)	Grease	Oil (Oil Bath)	Cylindrical Bore	Tapered Bore ⁽¹⁾	<i>d_a</i> min.	max.	max.	<i>D_a</i> min.	<i>r_a</i> max.	<i>e</i>	<i>Y₂</i>	<i>Y₃</i>	<i>Y₀</i>	approx.
140	210	53	2	525 000	715 000	2 800	3 800	1 600	1 900	*23028CAME4	*23028CAMKE4	150	—	200	190	2	0.22	4.5	3.0	2.9	6.49
	210	53	2	525 000	715 000	2 800	3 800	1 600	1 900	*23028CDE4	*23028CDKE4	150	157	200	190	2	0.22	4.5	3.0	2.9	6.49
	210	69	2	635 000	905 000	2 200	3 000	1 300	1 700	*24028CAME4	*24028CAMK30E4	150	—	200	186	2	0.31	3.4	2.3	2.2	8.37
	210	69	2	655 000	945 000	2 200	3 000	1 300	1 700	*24028CE4	*24028CK30E4	150	154	200	186	2	0.29	3.4	2.3	2.2	8.37
	225	68	2.1	725 000	945 000	2 400	3 200	1 200	1 600	*23128CAME4	*23128CAMKE4	152	—	213	198	2	0.28	3.6	2.4	2.3	10.5
	225	68	2.1	725 000	945 000	2 400	3 200	1 200	1 600	*23128CE4	*23128CKE4	152	158	213	198	2	0.28	3.6	2.4	2.3	10.5
	225	85	2.1	835 000	1 160 000	1 600	2 600	1 200	1 600	*24128CAME4	*24128CAMK30E4	152	—	213	193	2	0.37	2.7	1.8	1.8	13
	225	85	2.1	840 000	1 160 000	1 600	2 600	1 200	1 600	*24128CE4	*24128CK30E4	152	156	213	193	2	0.35	2.9	1.9	1.9	13
	250	68	3	835 000	945 000	2 600	3 200	1 400	1 700	*22228CAME4	*22228CAMKE4	154	—	236	221	2.5	0.26	3.9	2.6	2.5	14.5
	250	68	3	645 000	930 000	2 400	—	1 400	1 700	22228CDE4	22228CDKE4	154	167	236	219	2.5	0.25	4.0	2.7	2.6	14.5
	250	88	3	1 040 000	1 300 000	1 800	2 600	1 100	1 500	*23228CAME4	*23228CAMKE4	154	—	236	213	2.5	0.35	2.9	1.9	1.9	18.8
	250	88	3	1 040 000	1 300 000	1 800	2 600	1 100	1 500	*23228CE4	*23228CKE4	154	163	236	213	2.5	0.35	2.9	1.9	1.9	18.8
	300	102	4	1 450 000	1 590 000	1 700	2 400	1 200	1 500	*22328CAME4	*22328CAMKE4	158	—	282	253	3	0.35	2.9	1.9	1.9	35.4
	300	102	4	1 450 000	1 590 000	1 700	2 400	1 200	1 500	*22328CE4	*22328CKE4	158	177	282	253	3	0.35	2.9	1.9	1.9	35.4
150	225	56	2.1	590 000	815 000	2 600	3 600	1 400	1 800	*23030CAME4	*23030CAMKE4	162	—	213	203	2	0.22	4.6	3.1	3.0	7.9
	225	56	2.1	590 000	815 000	2 600	3 600	1 400	1 800	*23030CDE4	*23030CDKE4	162	168	213	203	2	0.22	4.6	3.1	3.0	7.9
	225	75	2.1	740 000	1 090 000	1 900	3 000	1 200	1 500	*24030CAME4	*24030CAMK30E4	162	—	213	198	2	0.30	3.4	2.3	2.2	10.5
	225	75	2.1	740 000	1 090 000	1 900	3 000	1 200	1 500	*24030CE4	*24030CK30E4	162	165	213	198	2	0.30	3.4	2.3	2.2	10.5
	250	80	2.1	905 000	1 180 000	2 200	2 800	1 100	1 400	*23130CAME4	*23130CAMKE4	162	—	238	218	2	0.30	3.4	2.3	2.2	15.8
	250	80	2.1	905 000	1 180 000	2 200	2 800	1 100	1 400	*23130CE4	*23130CKE4	162	174	238	218	2	0.30	3.4	2.3	2.2	15.8
	250	100	2.1	1 070 000	1 450 000	1 400	2 400	1 100	1 400	*24130CAME4	*24130CAMK30E4	162	—	238	212	2	0.38	2.6	1.8	1.7	19.8
	250	100	2.1	1 110 000	1 530 000	1 400	2 400	1 100	1 400	*24130CE4	*24130CK30E4	162	169	238	212	2	0.38	2.6	1.8	1.7	19.8
	270	73	3	955 000	1 120 000	2 400	3 000	1 300	1 600	*22230CAME4	*22230CAMKE4	164	—	256	236	2.5	0.26	3.9	2.6	2.5	18.4
	270	73	3	955 000	1 120 000	2 400	3 000	1 300	1 600	*22230CDE4	*22230CDKE4	164	179	256	236	2.5	0.26	3.9	2.6	2.5	18.4
	270	96	3	1 220 000	1 560 000	1 700	2 400	1 100	1 400	*23230CAME4	*23230CAMKE4	164	—	256	230	2.5	0.35	2.9	1.9	1.9	24.2
	270	96	3	1 220 000	1 560 000	1 700	2 400	1 100	1 400	*23230CE4	*23230CKE4	164	176	256	230	2.5	0.35	2.9	1.9	1.9	24.2
	320	108	4	1 530 000	1 690 000	1 600	2 200	1 100	1 400	*22330CAME4	*22330CAMKE4	168	—	302	270	3	0.35	2.9	1.9	1.9	41.5

Note ⁽¹⁾ Suffixes K and K30 represent bearings with tapered bores (taper 1:12 or 1:30).

- Remarks**
1. Bearings denoted by an asterisk (*) are NSK HPS bearings; they come standard with an oil groove and holes.
 2. The recommended fits (shaft tolerances) on Page A164 are different for NSK HPS bearings, with light loads defined as $\leq 0.05C_r$, normal loads as 0.05 to $0.10C_r$, and heavy loads as $> 0.10C_r$.
 3. For the dimensions of adapters and withdrawal sleeves, refer to Pages C352 and C357 – C358.