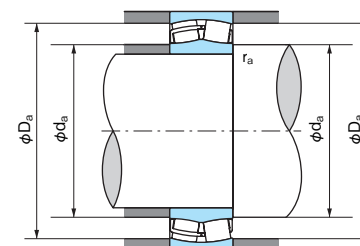
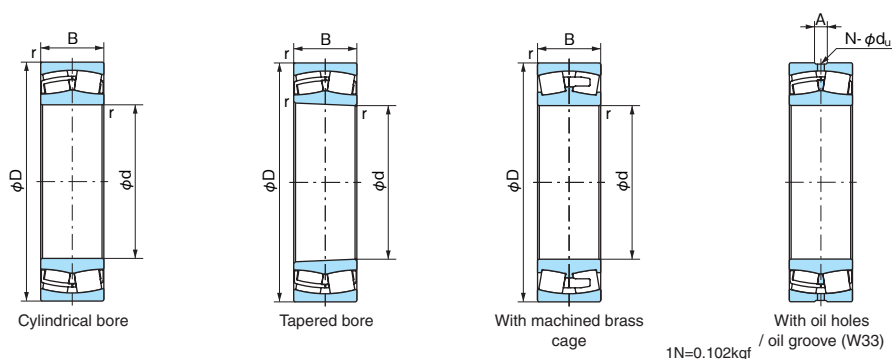


Spherical Roller Bearings

Bore Diameter: 20~50mm



■ Dynamic equivalent radial load
 $P_r = X F_r + Y F_a$

$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	Y_1	0.67	Y_2

Values of Y_1 , Y_2 and e from table.

■ Static equivalent radial load
 $P_0 = F_r + Y_0 F_a$

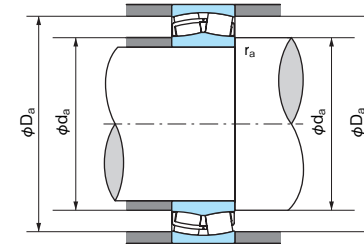
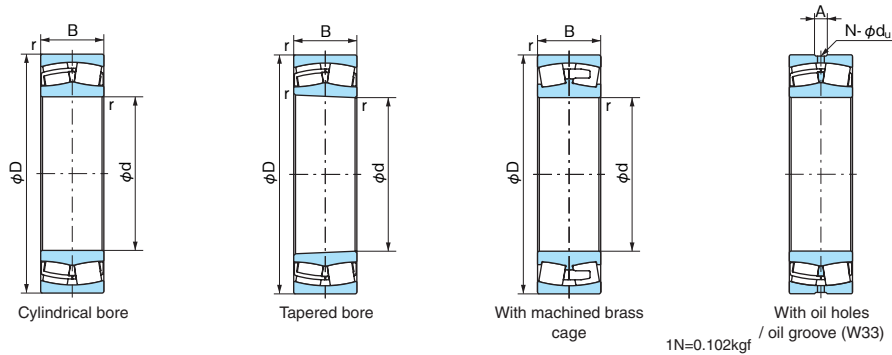
Values Y_0 from table.

Boundary dimensions (mm)				Bearing No.		Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (min ⁻¹)			Dimensions of lubrication holes and grooves			Abutment and fillet dimensions (mm)			Constant e	Axial load factor			Mass (kg) Cylindrical bore (Reference)	Bearing No.	
d	D	B	r (min)	Cylindrical bore	Tapered bore			Grease lubrication	Oil lubrication		Hole diameter d _h	Groove width A	Hole count N	d _a (min)	D _a (max)	r _a (max)		Y ₁	Y ₂	Y ₀		Cylindrical bore	Tapered bore
20	52	15	1.1	21304E	21304EK	47000	33500	11,000	14,000		3	6	4	27.0	45.0	1.0	0.31	2.20	3.27	2.15	0.18	21304E	21304EK
	52	18	1	22205EX	22205EXK	63000	48000	10,500	13,000		3	5	4	30.5	46.5	1.0	0.35	1.91	2.85	1.87	0.19	22205EX	22205EXK
25	52	18	1	22205AEX	22205AEXK	48500	34500	13,300	16,500		3	5	4	30.5	46.5	1.0	0.43	1.57	2.33	1.53	0.18	22205AEX	22205AEXK
	62	17	1.1	21305E	21305EK	64000	47500	9,000	11,500		6	6	4	32.0	53.0	1.0	0.28	2.39	3.56	2.34	0.29	21305E	21305EK
30	62	20	1	22206EX	22206EXK	84500	65000	8,500	11,000		3	5	4	35.5	56.5	1.0	0.33	2.04	3.04	2.00	0.30	22206EX	22206EXK
	62	20	1	22206AEX	22206AEXK	68000	48500	11,200	14,400		3	5	4	35.5	56.5	1.0	0.40	1.70	2.53	1.66	0.29	22206AEX	22206AEXK
	72	19	1.1	21306E	21306EK	83000	62500	8,000	9,500		3	5	4	38.0	65.0	1.0	0.27	2.49	3.71	2.43	0.43	21306E	21306EK
	72	19	1.1	21306AX	21306AXK	73000	50900	9,700	12,700		3	5	4	38.0	65.0	1.0	0.35	1.95	2.90	1.90	0.43	21306AX	21306AXK
35	72	23	1.1	22207EX	22207EXK	112000	88500	7,500	9,500		3	6	4	42.0	65.0	1.0	0.32	2.10	3.13	2.06	0.46	22207EX	22207EXK
	72	23	1.1	22207AEX	22207AEXK	94500	70000	9,600	12,400		3	6	4	42.0	65.0	1.0	0.39	1.74	2.60	1.71	0.46	22207AEX	22207AEXK
	80	21	1.5	21307E	21307EK	96000	76000	7,000	8,500		3	5	4	44.0	71.0	1.5	0.27	2.49	3.71	2.43	0.57	21307E	21307EK
	80	21	1.5	21307AX	21307AXK	89000	63100	9,000	11,200		3	5	4	44.0	71.0	1.5	0.33	2.03	3.03	1.99	0.56	21307AX	21307AXK
40	80	31	1.5	22307AEX	22307AEXK	145000	107000	9,000	11,500		3	6	4	43.5	71.5	1.5	0.48	1.41	2.10	1.38	0.78	22307AEX	22307AEXK
	80	23	1.1	22208EX	22208EXK	126000	102000	6,700	8,500		3	6	4	47.0	73.0	1.0	0.28	2.37	3.53	2.32	0.56	22208EX	22208EXK
	80	23	1.1	22208AEX	22208AEXK	106000	81000	8,500	10,900		3	6	4	47.0	73.0	1.0	0.34	1.99	2.96	1.94	0.56	22208AEX	22208AEXK
	90	23	1.5	21308E	21308EK	119000	95500	6,000	7,500		3	5	4	50.0	81.0	1.5	0.26	2.55	3.80	2.50	0.78	21308E	21308EK
	90	23	1.5	21308AX	21308AXK	116000	84400	7,500	9,750		3	5	4	50.0	81.0	1.5	0.32	2.09	3.11	2.04	0.79	21308AX	21308AXK
	90	33	1.5	22308EX	22308EXK	185000	151000	5,300	6,700		4	7	4	48.5	81.5	1.5	0.37	1.83	2.72	1.79	1.07	22308EX	22308EXK
45	90	33	1.5	22308AEX	22308AEXK	172000	134000	7,800	10,000		4	7	4	48.5	81.5	1.5	0.43	1.55	2.31	1.54	1.05	22308AEX	22308AEXK
	85	23	1.1	22209EX	22209EXK	133000	110000	6,000	7,500		3	6	4	52.0	78.0	1.0	0.26	2.55	3.80	2.50	0.61	22209EX	22209EXK
	85	23	1.1	22209AEX	22209AEXK	113000	85500	7,900	10,200		3	6	4	52.0	78.0	1.0	0.31	2.15	3.21	2.11	0.60	22209AEX	22209AEXK
	100	25	1.5	21309E	21309EK	150000	124000	5,000	6,300		3	5	4	55.0	92.0	1.5	0.26	2.62	3.90	2.56	1.05	21309E	21309EK
	100	25	1.5	21309AX	21309AXK	143000	105000	6,750	9,000		3	5	4	55.0	92.0	1.5	0.31	2.16	3.22	2.11	1.05	21309AX	21309AXK
	100	36	1.5	22309EX	22309EXK	230000	182000	4,500	5,600		4	8	4	53.5	91.5	1.5	0.37	1.83	2.72	1.79	1.41	22309EX	22309EXK
50	100	36	1.5	22309AEX	22309AEXK	208000	157000	7,050	9,150		4	8	4	53.5	91.5	1.5	0.43	1.57	2.34	1.54	1.41	22309AEX	22309AEXK
	90	23	1.1	22210EX	22210EXK	142000	122000	5,600	7,100		3	6	4	57.0	83.0	1.0	0.24	2.79	4.15	2.73	0.65	22210EX	22210EXK
	90	23	1.1	22210AEX	22210AEXK	119000	93500	7,350	9,600		3	6	4	57.0	83.0	1.0	0.29	2.34	3.48	2.28	0.65	22210AEX	22210AEXK
	110	27	2	21310E	21310EK	178000	151000	4,500	5,600		3	5	4	61.0	101.0	2.0	0.25	2.71	4.04	2.65	1.36	21310E	21310EK
	110	27	2	21310AX	21310AXK	170000	127000	6,000	8,250		3	5	4	61.0	101.0	2.0	0.30	2.24	3.34	2.19	1.36	21310AX	21310AXK
	110	40	2	22310EX	22310EXK	280000	235000	4,300	5,300		4	8	4	60.0	100.0	2.0	0.36	1.85	2.75	1.81	1.92	22310EX	22310EXK
	110	40	2	22310AEX	22310AEXK	254000	205000	6,300	8,250		4	8	4	60.0	100.0	2.0	0.42	1.62	2.42	1.59	1.88	22310AEX	22310AEXK

Note: Suffix K or K30 means tapered bore (1/12 or 1/30).

Spherical Roller Bearings

Bore Diameter: 55~75mm



■ Dynamic equivalent radial load
 $P_r = X F_r + Y F_a$

$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	Y_1	0.67	Y_2

Values of Y_1 , Y_2 and e from table.

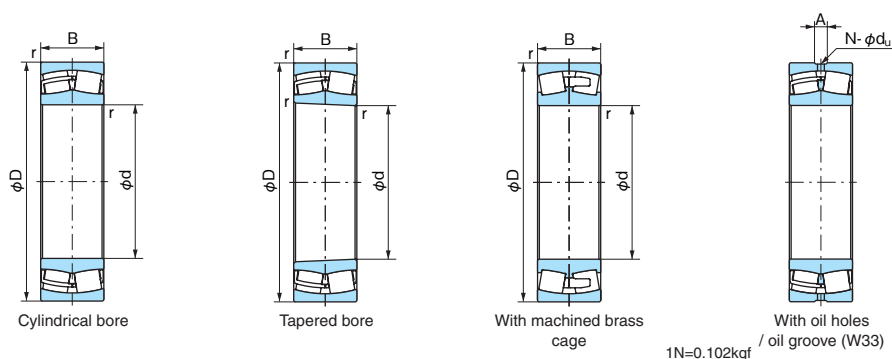
■ Static equivalent radial load
 $P_0 = F_r + Y_0 F_a$
 Values Y_0 from table.

Boundary dimensions (mm)				Bearing No.		Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (min ⁻¹)			Dimensions of lubrication holes and grooves			Abutment and fillet dimensions (mm)			Constant e	Axial load factor			Mass (kg) Cylindrical bore (Reference)	Bearing No.	
d	D	B	r (min)	Cylindrical bore	Tapered bore			Grease lubrication	Oil lubrication		Hole diameter du	Groove width A	Hole count N	da (min)	Da (max)	ra (max)		Y ₁	Y ₂	Y ₀		Cylindrical bore	Tapered bore
55	100	25	1.5	22211EX	22211EXK	171000	144000	5,300	6,700		3	6	4	63.5	91.5	1.5	0.24	2.84	4.23	2.78	0.88	22211EX	22211EXK
	100	25	1.5	22211AEX	22211AEXK	150000	118000	6,750	8,550		3	6	4	63.5	91.5	1.5	0.29	2.34	3.48	2.28	0.89	22211AEX	22211AEXK
	120	29	2	21311EX1	21311EX1K	200000	165000	4,500	5,600		3	5	4	65.0	110.0	2.0	0.25	2.71	4.03	2.65	1.70	21311EX1	21311EX1K
	120	29	2	21311AX	21311AXK	206000	171000	6,000	7,500		3	5	4	65.0	110.0	2.0	0.29	2.32	3.45	2.27	1.77	21311AX	21311AXK
	120	43	2	22311EX	22311EXK	325000	263000	3,800	4,800		4	8	4	65.0	110.0	2.0	0.36	1.85	2.75	1.81	2.40	22311EX	22311EXK
	120	43	2	22311AEX	22311AEXK	294000	227000	6,000	7,650		4	8	4	65.0	110.0	2.0	0.43	1.56	2.33	1.53	2.39	22311AEX	22311AEXK
60	110	28	1.5	22212EX	22212EXK	210000	179000	4,800	6,000		3	6	4	68.5	101.5	1.5	0.25	2.74	4.08	2.68	1.20	22212EX	22212EXK
	110	28	1.5	22212AEX	22212AEXK	179000	144000	6,150	7,800		3	6	4	68.5	101.5	1.5	0.29	2.29	3.41	2.24	1.22	22212AEX	22212AEXK
	130	31	2.1	21312EX1	21312EX1K	238000	193000	3,800	4,800		3	5	4	72.0	118.0	2.0	0.24	2.78	4.14	2.72	2.10	21312EX1	21312EX1K
	130	31	2.1	21312AX	21312AXK	228000	192000	5,250	6,750		3	5	4	72.0	118.0	2.0	0.29	2.36	3.52	2.31	2.19	21312AX	21312AXK
	130	46	2.1	22312EX	22312EXK	390000	330000	3,600	4,500		4	8	4	72.0	118.0	2.0	0.36	1.86	2.77	1.82	3.05	22312EX	22312EXK
	130	46	2.1	22312AEX	22312AEXK	340000	275000	5,400	6,900		4	8	4	72.0	118.0	2.0	0.41	1.65	2.46	1.62	3.01	22312AEX	22312AEXK
65	120	31	1.5	22213EX	22213EXK	246000	209000	4,300	5,300		3	6	4	73.5	111.5	1.5	0.25	2.69	4.00	2.63	1.56	22213EX	22213EXK
	120	31	1.5	22213AEX	22213AEXK	213000	169000	5,700	7,200		3	6	4	73.5	111.5	1.5	0.30	2.26	3.36	2.21	1.60	22213AEX	22213AEXK
	140	33	2.1	21313EX1	21313EX1K	270000	232000	3,600	4,500		3	6	4	77.0	128.0	2.0	0.24	2.83	4.21	2.76	2.60	21313EX1	21313EX1K
	140	33	2.1	21313AX	21313AXK	261000	222000	5,100	6,400		3	6	4	77.0	128.0	2.0	0.28	2.40	3.57	2.35	2.69	21313AX	21313AXK
	140	48	2.1	22313EX	22313EXK	415000	355000	3,200	4,000		4	8	4	77.0	128.0	2.0	0.34	1.98	2.94	1.93	3.67	22313EX	22313EXK
	140	48	2.1	22313AEX	22313AEXK	380000	310000	4,950	6,450		4	8	4	77.0	128.0	2.0	0.39	1.72	2.55	1.68	3.64	22313AEX	22313AEXK
70	125	31	1.5	22214EX	22214EXK	257000	220000	4,000	5,300		3	6	4	78.5	116.5	1.5	0.24	2.87	4.27	2.80	1.65	22214EX	22214EXK
	125	31	1.5	22214AEX	22214AEXK	225000	185000	5,400	6,900		3	6	4	78.5	116.5	1.5	0.28	2.39	3.55	2.33	1.69	22214AEX	22214AEXK
	150	35	2.1	21314EX1	21314EX1K	310000	260000	3,200	4,000		3	6	4	82.0	138.0	2.0	0.24	2.84	4.23	2.78	3.10	21314EX1	21314EX1K
	150	35	2.1	21314AX	21314AXK	305000	268000	4,500	6,000		3	6	4	82.0	138.0	2.0	0.28	2.45	3.64	2.39	3.30	21314AX	21314AXK
	150	51	2.1	22314EX	22314EXK	480000	415000	3,000	3,800		5	10	4	82.0	138.0	2.0	0.34	1.98	2.94	1.93	4.45	22314EX	22314EXK
	150	51	2.1	22314AEX	22314AEXK	445000	365000	4,650	6,000		5	10	4	82.0	138.0	2.0	0.40	1.71	2.54	1.67	4.46	22314AEX	22314AEXK
75	130	31	1.5	22215EX	22215EXK	265000	234000	4,000	5,000		3	6	4	83.5	121.5	1.5	0.22	3.07	4.58	3.01	1.74	22215EX	22215EXK
	130	31	1.5	22215AEX	22215AEXK	234000	191000	5,100	6,600		3	6	4	83.5	121.5	1.5	0.27	2.51	3.73	2.46	1.76	22215AEX	22215AEXK
	160	37	2.1	21315EX1	21315EX1K	340000	298000	3,200	4,000		3	6	4	87.0	148.0	2.0	0.23	2.87	4.27	2.80	3.80	21315EX1	21315EX1K
	160	37	2.1	21315AX	21315AXK	325000	286000	4,350	5,550		3	6	4	87.0	148.0	2.0	0.27	2.50	3.72	2.44	3.95	21315AX	21315AXK
	160	55	2.1	22315EX	22315EXK	550000	475000	2,800	3,600		5	10	4	87.0	148.0	2.0	0.35	1.95	2.90	1.91	5.44	22315EX	22315EXK
	160	55	2.1	22315AEX	22315AEXK	495000	415000	4,350	5,500		5	10	4	87.0	148.0	2.0	0.39	1.72	2.56	1.68	5.44	22315AEX	22315AEXK

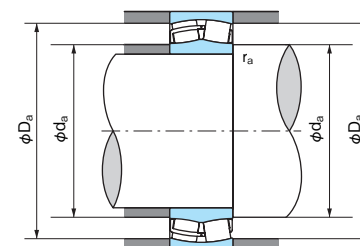
Note: Suffix K or K30 means tapered bore (1/12 or 1/30).

Spherical Roller Bearings

Bore Diameter: 80~95mm



1N=0.102kgf



Dynamic equivalent radial load
 $P_r = X F_r + Y F_a$

$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	Y_1	0.67	Y_2

Values of Y_1 , Y_2 and e from table.

Static equivalent radial load
 $P_0 = F_r + Y_0 F_a$

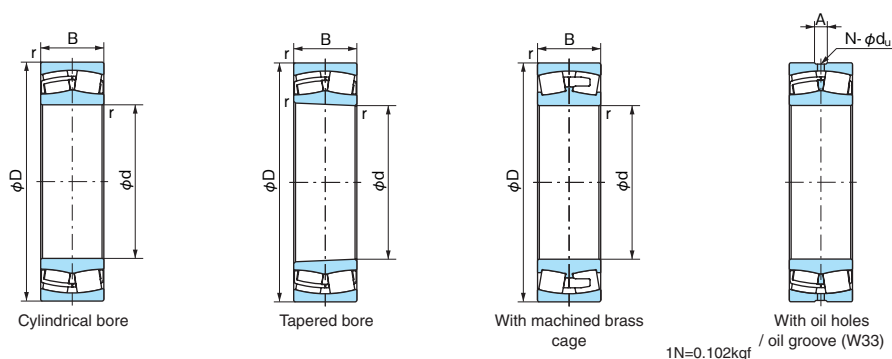
Values Y_0 from table.

Boundary dimensions (mm)				Bearing No.		Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (min ⁻¹)			Dimensions of lubrication holes and grooves			Abutment and fillet dimensions (mm)			Constant e	Axial load factor			Mass (kg) Cylindrical bore (Reference)	Bearing No.	
d	D	B	r (min)	Cylindrical bore	Tapered bore			Grease lubrication	Oil lubrication		Hole diameter d _h	Groove width A	Hole count N	d _a (min)	D _a (max)	r _a (max)		Y ₁	Y ₂	Y ₀		Cylindrical bore	Tapered bore
80	140	33	2	22216EX	22216EXK	299000	269000	3,600	4,500		3	6	4	90.0	130.0	2.0	0.22	3.07	4.58	3.01	2.19	22216EX	22216EXK
	140	33	2	22216AEX	22216AEXK	279000	230000	4,800	6,100		3	6	4	90.0	130.0	2.0	0.27	2.51	3.74	2.46	2.24	22216AEX	22216AEXK
	140	44.4	2	23216E	23216EK	335000	335000	3,300	4,350		4	8	4	90.0	130.0	2.0	0.29	2.35	3.50	2.30	2.95	23216E	23216EK
	170	39	2.1	21316EX1	21316EX1K	380000	339000	3,000	3,800		4	8	4	92.0	158.0	2.0	0.23	2.88	4.29	2.82	4.50	21316EX1	21316EX1K
	170	39	2.1	21316AX	21316AXK	355000	318000	4,200	5,250		4	8	4	92.0	158.0	2.0	0.26	2.55	3.80	2.50	4.67	21316AX	21316AXK
	170	58	2.1	22316EX	22316EXK	595000	520000	2,600	3,400		5	10	4	92.0	158.0	2.0	0.35	1.95	2.90	1.91	6.42	22316EX	22316EXK
	170	58	2.1	22316AEX	22316AEXK	550000	465000	4,050	5,250		5	10	4	92.0	158.0	2.0	0.38	1.75	2.61	1.72	6.43	22316AEX	22316AEXK
85	150	36	2	22217EX	22217EXK	355000	320000	3,400	4,300		4	7	4	95.0	140.0	2.0	0.22	3.01	4.48	2.94	2.75	22217EX	22217EXK
	150	36	2	22217AEX	22217AEXK	310000	260000	4,200	5,700		4	7	4	95.0	140.0	2.0	0.27	2.47	3.67	2.41	2.82	22217AEX	22217AEXK
	150	49.2	2	23217E	23217EK	395000	405000	3,150	4,050		4	8	4	95.0	140.0	2.0	0.30	2.24	3.34	2.19	3.78	23217E	23217EK
	180	41	3	21317EX1	21317EX1K	415000	372000	3,000	4,000		4	8	4	99.0	166.0	2.5	0.23	2.89	4.30	2.83	5.30	21317EX1	21317EX1K
	180	41	3	21317AX	21317AXK	400000	364000	3,900	5,100		4	8	4	99.0	166.0	2.5	0.26	2.55	3.79	2.49	5.52	21317AX	21317AXK
	180	60	3	22317EX	22317EXK	665000	585000	2,400	3,200		6	11	4	99.0	166.0	2.5	0.33	2.02	3.00	1.97	7.46	22317EX	22317EXK
	180	60	3	22317AEX	22317AEXK	590000	500000	3,900	4,950		6	11	4	99.0	166.0	2.5	0.38	1.78	2.65	1.74	7.47	22317AEX	22317AEXK
90	160	40	2	22218EX	22218EXK	410000	375000	3,200	4,000		4	7	4	100.0	150.0	2.0	0.24	2.79	4.15	2.73	3.50	22218EX	22218EXK
	160	40	2	22218AEX	22218AEXK	360000	310000	4,000	5,400		4	7	4	100.0	150.0	2.0	0.28	2.42	3.60	2.36	3.56	22218AEX	22218AEXK
	160	52.4	2	23218EX1	23218EX1K	470000	482000	3,100	4,200		5	10	4	100.0	150.0	2.0	0.32	2.14	3.19	2.09	4.57	23218EX1	23218EX1K
	190	43	3	21318EX1	21318EX1K	460000	410000	2,800	3,600		4	8	6	104.0	176.0	2.5	0.23	2.91	4.33	2.84	6.10	21318EX1	21318EX1K
	190	43	3	21318AX	21318AXK	460000	416000	3,700	4,800		4	8	6	104.0	176.0	2.5	0.26	2.55	3.80	2.50	6.45	21318AX	21318AXK
	190	64	3	22318EX	22318EXK	745000	660000	2,400	3,000		6	11	6	104.0	176.0	2.5	0.34	2.00	2.98	1.96	8.82	22318EX	22318EXK
	190	64	3	22318AEX	22318AEXK	690000	585000	3,700	4,800		6	11	6	104.0	176.0	2.5	0.39	1.73	2.57	1.69	8.91	22318AEX	22318AEXK
95	170	43	2.1	22219EX	22219EXK	465000	420000	3,000	3,800		5	8	4	107.0	158.0	2.0	0.24	2.76	4.11	2.70	4.24	22219EX	22219EXK
	170	43	2.1	22219AEX	22219AEXK	410000	360000	3,900	5,100		5	8	4	107.0	158.0	2.0	0.28	2.38	3.55	2.33	4.35	22219AEX	22219AEXK
	170	55.6	2.1	23219E	23219EK	500000	510000	2,800	3,600		5	10	4	107.0	158.0	2.0	0.30	2.24	3.34	2.19	5.46	23219E	23219EK
	200	45	3	21319EX1	21319EX1K	500000	461000	2,700	3,400		4	8	6	109.0	186.0	2.5	0.23	2.92	4.35	2.86	7.10	21319EX1	21319EX1K
	200	45	3	21319AX	21319AXK	495000	450000	3,400	4,500		4	8	6	109.0	186.0	2.5	0.27	2.54	3.79	2.49	7.44	21319AX	21319AXK
	200	67	3	22319EX	22319EXK	815000	725000	2,200	2,900		6	12	6	109.0	186.0	2.5	0.33	2.02	3.00	1.97	10.2	22319EX	22319EXK
	200	67	3	22319AEX	22319AEXK	755000	645000	3,450	4,500		6	12	6	109.0	186.0	2.5	0.39	1.74	2.59	1.70	10.3	22319AEX	22319AEXK

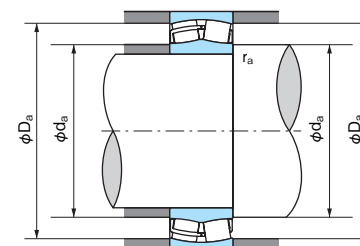
Note: Suffix K or K30 means tapered bore (1/12 or 1/30).

Spherical Roller Bearings

Bore Diameter: 100~110mm



1N=0.102kgf



■ Dynamic equivalent radial load
 $P_r = X F_r + Y F_a$

$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	Y ₁	0.67	Y ₂

Values of Y₁, Y₂ and e from table.

■ Static equivalent radial load
 $P_0 = F_r + Y_0 F_a$

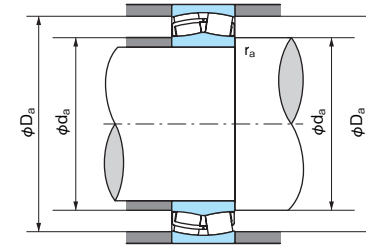
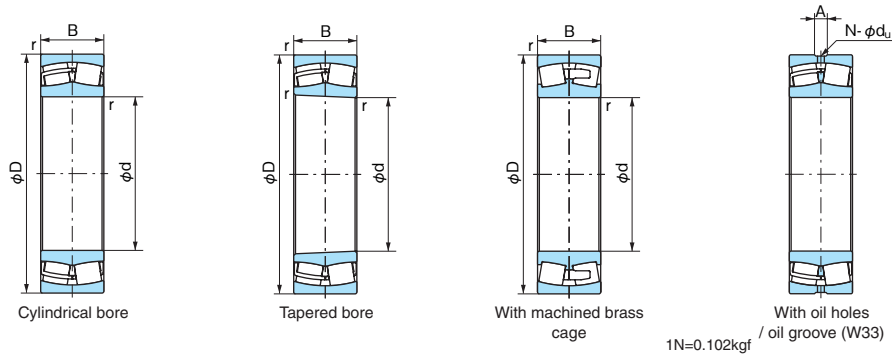
Values Y₀ from table.

Boundary dimensions (mm)				Bearing No.		Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (min ⁻¹)			Dimensions of lubrication holes and grooves			Abutment and fillet dimensions (mm)			Constant e	Axial load factor			Mass (kg) Cylindrical bore (Reference)	Bearing No.	
d	D	B	r (min)	Cylindrical bore	Tapered bore			Grease lubrication	Oil lubrication		Hole diameter d _h	Groove width A	Hole count N	d _a (min)	D _a (max)	r _a (max)		Y ₁	Y ₂	Y ₀		Cylindrical bore	Tapered bore
100	140	30	1.1	23920E	23920EK	197000	233000	3,400	4,500		3	8	4	107.0	133.0	1.0	0.20	3.42	5.08	3.34	1.46	23920E	23920EK
	150	37	1.5	23020E	23020EK	286000	325000	2,700	3,700		4	7	4	117.0	141.0	1.5	0.22	3.01	4.48	2.94	2.33	23020E	23020EK
	150	37	1.5	23020AX	23020AXK	267000	298000	4,200	5,400		4	7	4	117.0	141.0	1.5	0.26	2.64	3.93	2.58	2.40	23020AX	23020AXK
	165	52	2	23120EX1	23120EX1K	450000	500000	2,500	3,300		5	9	4	110.0	155.0	2.0	0.29	2.33	3.47	2.28	4.49	23120EX1	23120EX1K
	165	52	2	23120AX	23120AXK	450000	538000	3,300	4,500		5	9	4	110.0	155.0	2.0	0.34	1.98	2.94	1.93	4.70	23120AX	23120AXK
	180	46	2.1	22220EX	22220EXK	520000	480000	2,800	3,600		5	8	4	112.0	168.0	2.0	0.25	2.74	4.08	2.68	5.10	22220EX	22220EXK
	180	46	2.1	22220AEX	22220AEXK	465000	410000	3,700	4,800		5	8	4	112.0	168.0	2.0	0.29	2.37	3.52	2.31	5.24	22220AEX	22220AEXK
	180	60.3	2.1	23220EX1	23220EX1K	595000	629000	2,800	3,750		5	10	4	112.0	168.0	2.0	0.32	2.09	3.11	2.04	6.76	23220EX1	23220EX1K
	180	60.3	2.1	23220AX	23220AXK	575000	599000	3,100	4,200		5	10	4	112.0	168.0	2.0	0.36	1.88	2.80	1.84	6.88	23220AX	23220AXK
	215	47	3	21320EX1	21320EX1K	580000	524000	2,400	3,300		4	8	6	114.0	201.0	2.5	0.22	3.02	4.49	2.95	8.70	21320EX1	21320EX1K
110	170	45	2	23022E	23022EK	415000	475000	2,700	3,600		5	9	4	120.0	160.0	2.0	0.24	2.84	4.23	2.78	3.84	23022E	23022EK
	170	45	2	23022AX	23022AXK	415000	478000	3,750	4,800		5	9	4	120.0	160.0	2.0	0.28	2.42	3.61	2.37	3.90	23022AX	23022AXK
	180	56	2	23122EX1	23122EX1K	540000	610000	2,700	3,600		5	9	4	120.0	170.0	2.0	0.29	2.36	3.51	2.31	5.70	23122EX1	23122EX1K
	180	56	2	23122AX	23122AXK	535000	605000	3,000	4,050		5	9	4	120.0	170.0	2.0	0.33	2.04	3.03	1.99	5.80	23122AX	23122AXK
	180	69	2	24122EX1	24122EX1K30	633000	743000	2,700	3,600		6	11	4	120.0	170.0	2.0	0.37	1.84	2.74	1.80	6.89	24122EX1	24122EX1K30
	180	69	2	24122AX	24122AXK30	620000	654000	2,700	3,600		6	11	4	120.0	170.0	2.0	0.37	1.80	2.69	1.76	6.85	24122AX	24122AXK30
	200	53	2.1	22222EX	22222EXK	680000	640000	2,600	3,200		5	10	6	122.0	188.0	2.0	0.26	2.64	3.93	2.58	7.36	22222EX	22222EXK
	200	53	2.1	22222AEX	22222AEXK	605000	550000	3,300	4,350		6	10	6	122.0	188.0	2.0	0.29	2.31	3.44	2.26	7.53	22222AEX	22222AEXK
	200	69.8	2.1	23222EX1	23222EX1K	750000	793000	2,550	3,300		6	11	6	122.0	188.0	2.0	0.34	1.99	2.96	1.94	9.60	23222EX1	23222EX1K
	200	69.8	2.1	23222AX	23222AXK	740000	801000	2,850	3,750		6	11	6	122.0	188.0	2.0	0.38	1.78	2.65	1.74	10.0	23222AX	23222AXK
	240	50	3	21322EX1	21322EX1K	675000	635000	2,100	2,850		4	8	6	124.0	226.0	2.5	0.21	3.19	4.75	3.12	11.6	21322EX1	21322EX1K
	240	50	3	21322AX	21322AXK	655000	601000	3,000	3,750		4	8	6	124.0	226.0	2.5	0.24	2.78	4.14	2.72	12.2	21322AX	21322AXK
	240	80	3	22322EX	22322EXK	1150000	1040000	1,950	2,700		6	12	6	124.0	226.0	2.5	0.33	2.03	3.02	1.98	18.1	22322EX	22322EXK
	240	80	3	22322AEX	22322AEXK	1030000	940000	3,000	3,750		6	12	6	124.0	226.0	2.5	0.38	1.77	2.63	1.73	18.2	22322AEX	22322AEXK

Note: Suffix K or K30 means tapered bore (1/12 or 1/30).

Spherical Roller Bearings

Bore Diameter: 120~130mm



■ Dynamic equivalent radial load
 $P_r = X F_r + Y F_a$

$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	Y_1	0.67	Y_2

Values of Y_1 , Y_2 and e from table.

■ Static equivalent radial load
 $P_0 = F_r + Y_0 F_a$

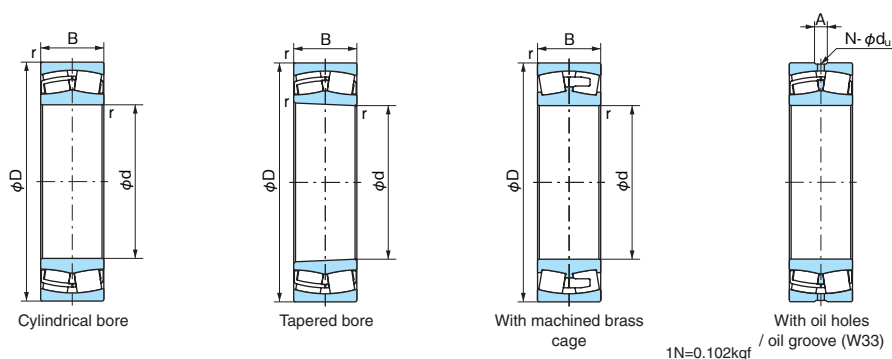
Values Y_0 from table.

Boundary dimensions (mm)				Bearing No.		Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (min ⁻¹)			Dimensions of lubrication holes and grooves			Abutment and fillet dimensions (mm)			Constant e	Axial load factor			Mass (kg) Cylindrical bore (Reference)	Bearing No.	
d	D	B	r (min)	Cylindrical bore	Tapered bore			Grease lubrication	Oil lubrication		Hole diameter d _h	Groove width A	Hole count N	d _a (min)	D _a (max)	r _a (max)		Y ₁	Y ₂	Y ₀		Cylindrical bore	Tapered bore
120	180	46	2	23024E	23024EK	430000	515000	2,550	3,300		5	9	4	130.0	170.0	2.0	0.23	2.95	4.39	2.89	4.20	23024E	23024EK
	180	46	2	23024AX	23024AXK	430000	516000	3,450	4,500		5	9	4	130.0	170.0	2.0	0.27	2.52	3.76	2.47	4.20	23024AX	23024AXK
	180	60	2	24024EX1	24024EX1K30	540000	683000	2,550	3,450		5	9	4	130.0	170.0	2.0	0.30	2.23	3.32	2.18	5.36	24024EX1	24024EX1K30
	180	60	2	24024AX	24024AXK30	540000	627000	2,550	3,450		5	9	4	130.0	170.0	2.0	0.31	2.21	3.29	2.16	5.26	24024AX	24024AXK30
	200	62	2	23124EX1	23124EX1K	675000	720000	2,400	3,300		5	9	6	130.0	190.0	2.0	0.29	2.34	3.49	2.29	7.90	23124EX1	23124EX1K
	200	62	2	23124AX	23124AXK	645000	734000	2,700	3,600		5	9	6	130.0	190.0	2.0	0.34	2.00	2.99	1.96	8.10	23124AX	23124AXK
	200	80	2	24124EX1	24124EX1K30	815000	970000	2,400	3,300		6	11	6	130.0	190.0	2.0	0.38	1.78	2.65	1.74	10.1	24124EX1	24124EX1K30
	200	80	2	24124AX	24124AXK30	780000	850000	2,400	3,300		6	11	6	130.0	190.0	2.0	0.39	1.73	2.58	1.69	9.90	24124AX	24124AXK30
	215	58	2.1	22224EX	22224EXK	785000	765000	2,400	3,000		5	10	6	132.0	203.0	2.0	0.26	2.60	3.87	2.54	9.28	22224EX	22224EXK
	215	58	2.1	22224AEX	22224AEXK	700000	650000	3,150	4,050		5	10	6	132.0	203.0	2.0	0.30	2.28	3.40	2.23	9.35	22224AEX	22224AEXK
	215	76	2.1	23224EX1	23224EX1K	860000	956000	2,250	3,150		6	13	6	132.0	203.0	2.0	0.34	1.97	2.94	1.93	12.0	23224EX1	23224EX1K
	215	76	2.1	23224AX	23224AXK	860000	962000	2,550	3,450		6	13	6	132.0	203.0	2.0	0.39	1.73	2.57	1.69	12.3	23224AX	23224AXK
	260	55	3	21324E	21324EK	790000	765000	1,950	2,400		5	12	6	134.0	246.0	2.5	0.21	3.17	4.72	3.10	15.3	21324E	21324EK
	260	86	3	22324EX	22324EXK	1250000	1130000	1,800	2,600		8	14	6	134.0	246.0	2.5	0.33	2.03	3.02	1.98	22.6	22324EX	22324EXK
	260	86	3	22324AEX	22324AEXK	1180000	1040000	2,700	3,450		8	14	6	134.0	246.0	2.5	0.38	1.77	2.64	1.73	22.2	22324AEX	22324AEXK
	180	37	1.5	23926E	23926EK	284000	355000	2,700	3,450		4	8	4	138.5	171.5	1.5	0.18	3.66	5.46	3.58	2.87	23926E	23926EK
130	200	52	2	23026E	23026EK	555000	660000	2,400	3,000		5	10	6	140.0	190.0	2.0	0.24	2.87	4.27	2.80	6.14	23026E	23026EK
	200	52	2	23026AX	23026AXK	560000	664000	3,150	4,050		5	10	6	140.0	190.0	2.0	0.27	2.50	3.72	2.44	6.10	23026AX	23026AXK
	200	69	2	24026EX1	24026EX1K30	710000	900000	2,400	3,150		6	11	6	140.0	190.0	2.0	0.32	2.14	3.18	2.09	7.93	24026EX1	24026EX1K30
	200	69	2	24026AX	24026AXK30	680000	803000	2,400	3,150		6	11	6	140.0	190.0	2.0	0.33	2.04	3.04	2.00	7.77	24026AX	24026AXK30
	210	64	2	23126EX1	23126EX1K	690000	799000	2,200	3,000		5	9	6	140.0	200.0	2.0	0.28	2.42	3.61	2.37	8.60	23126EX1	23126EX1K
	210	64	2	23126AX	23126AXK	705000	827000	2,500	3,300		5	9	6	140.0	200.0	2.0	0.30	2.25	3.34	2.20	8.90	23126AX	23126AXK
	210	80	2	24126EX1	24126EX1K30	840000	1030000	2,200	3,000		6	11	6	140.0	200.0	2.0	0.36	1.90	2.83	1.86	10.7	24126EX1	24126EX1K30
	210	80	2	24126AX	24126AXK30	815000	918000	2,200	3,000		6	11	6	140.0	200.0	2.0	0.37	1.83	2.72	1.79	10.5	24126AX	24126AXK30
	230	64	3	22226EX	22226EXK	910000	915000	2,200	2,600		5	10	6	144.0	216.0	2.5	0.26	2.55	3.80	2.50	11.6	22226EX	22226EXK
	230	64	3	22226AEX	22226AEXK	815000	765000	2,800	3,700		5	10	6	144.0	216.0	2.5	0.30	2.22	3.30	2.17	11.6	22226AEX	22226AEXK
	230	80	3	23226EX1	23226EX1K	980000	1090000	2,100	2,800		6	13	6	144.0	216.0	2.5	0.33	2.05	3.05	2.00	14.2	23226EX1	23226EX1K
	230	80	3	23226AX	23226AXK	965000	1070000	2,400	3,100		6	13	6	144.0	216.0	2.5	0.38	1.78	2.65	1.74	14.5	23226AX	23226AXK
	280	93	4	22326EX	22326EXK	1450000	1340000	1,700	2,500		8	16	6	148.0	262.0	3.0	0.33	2.03	3.02	1.98	28.4	22326EX	22326EXK
	280	93	4	22326AEX	22326AEXK	1370000	1220000	2,500	3,300		8	16	6	148.0	262.0	3.0	0.38	1.77	2.64	1.73	27.3	22326AEX	22326AEXK

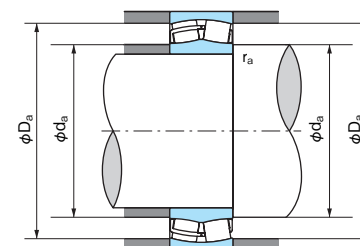
Note: Suffix K or K30 means tapered bore (1/12 or 1/30).

Spherical Roller Bearings

Bore Diameter: 140~150mm



1N=0.102kgf



■ Dynamic equivalent radial load
 $P_r = X F_r + Y F_a$

$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	Y_1	0.67	Y_2

Values of Y_1 , Y_2 and e from table.

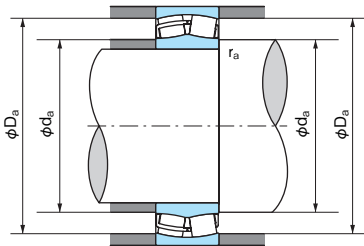
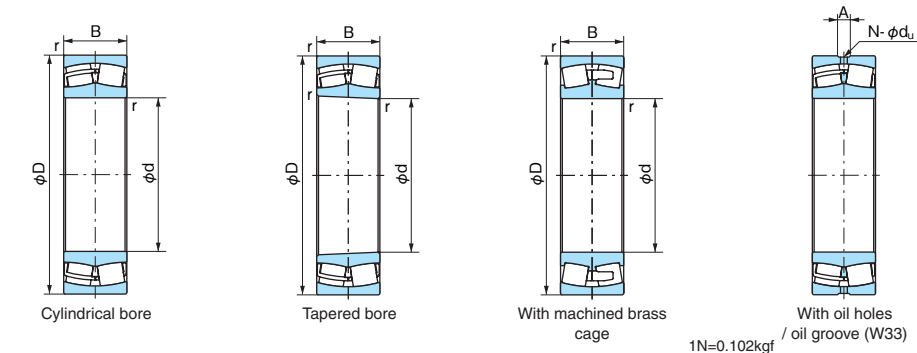
■ Static equivalent radial load
 $P_0 = F_r + Y_0 F_a$

Values Y_0 from table.

Boundary dimensions (mm)				Bearing No.		Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (min ⁻¹)		Hole diameter du	Dimensions of lubrication holes and grooves			Abutment and fillet dimensions (mm)			Constant e	Axial load factor			Mass (kg) Cylindrical bore (Reference)	Bearing No.	
d	D	B	r (min)	Cylindrical bore	Tapered bore			Grease lubrication	Oil lubrication		Groove width A	Hole count N	da (min)	Da (max)	ra (max)	Y ₁		Y ₂	Y ₀	Cylindrical bore		Tapered bore	
140	190	37	1.5	23928AX	23928AXK	345000	466000	2,550	3,300	4	7	6	148.5	181.5	1.5	0.18	3.79	5.65	3.71	3.13	23928AX	23928AXK	
	210	53	2	23028E	23028EK	585000	710000	2,400	2,800	5	10	6	150.0	200.0	2.0	0.23	2.98	4.44	2.91	6.61	23028E	23028EK	
	210	53	2	23028AX	23028AXK	580000	711000	3,000	3,900	5	10	6	150.0	200.0	2.0	0.25	2.75	4.10	2.69	6.70	23028AX	23028AXK	
	210	69	2	24028EX1	24028EX1K30	720000	920000	2,200	3,000	6	11	6	150.0	200.0	2.0	0.30	2.28	3.39	2.23	8.40	24028EX1	24028EX1K30	
	210	69	2	24028AX	24028AXK30	720000	819000	2,200	3,000	6	11	6	150.0	200.0	2.0	0.31	2.15	3.20	2.10	8.22	24028AX	24028AXK30	
	225	68	2.1	23128EX1	23128EX1K	790000	940000	2,100	2,850	6	11	6	152.0	213.0	2.0	0.28	2.45	3.65	2.40	10.5	23128EX1	23128EX1K	
	225	68	2.1	23128AX	23128AXK	790000	934000	2,200	3,100	6	11	6	152.0	213.0	2.0	0.30	2.27	3.37	2.22	10.8	23128AX	23128AXK	
	225	85	2.1	24128EX1	24128EX1K30	950000	1180000	2,100	2,800	8	14	6	152.0	213.0	2.0	0.36	1.87	2.79	1.83	13.0	24128EX1	24128EX1K30	
	225	85	2.1	24128AX	24128AXK30	930000	1030000	2,100	2,800	8	14	6	152.0	213.0	2.0	0.36	1.87	2.79	1.83	12.7	24128AX	24128AXK30	
	250	68	3	22228EX	22228EXK	1050000	1030000	1,900	2,500	6	12	6	154.0	236.0	2.5	0.26	2.60	3.87	2.54	13.9	22228EX	22228EXK	
	250	68	3	22228AEX	22228AEXK	945000	890000	2,700	3,400	6	12	6	154.0	236.0	2.5	0.30	2.26	3.37	2.21	14.8	22228AEX	22228AEXK	
	250	88	3	23228EX1	23228EX1K	1130000	1290000	1,900	2,500	8	15	6	154.0	236.0	2.5	0.34	1.99	2.96	1.95	18.8	23228EX1	23228EX1K	
	250	88	3	23228AX	23228AXK	1120000	1270000	2,200	2,800	8	16	6	154.0	236.0	2.5	0.38	1.78	2.65	1.74	19.3	23228AX	23228AXK	
	300	102	4	22328E	22328EK	1540000	1520000	1,600	2,200	10	22	6	158.0	282.0	3.0	0.37	1.82	2.72	1.78	35.9	22328E	22328EK	
	300	102	4	22328A2X	22328A2XK	1560000	1540000	2,200	3,000	10	22	6	158.0	282.0	3.0	0.40	1.69	2.52	1.65	34.5	22328A2X	22328A2XK	
150	210	45	2	23930AX	23930AXK	465000	622000	2,400	3,000	5	9	6	200.0	160.0	2.0	0.20	3.44	5.12	3.36	5.01	23930AX	23930AXK	
	225	56	2.1	23030E	23030EK	640000	790000	1,900	2,500	5	11	6	162.0	213.0	2.0	0.22	3.04	4.53	2.97	8.01	23030E	23030EK	
	225	56	2.1	23030AX	23030AXK	640000	791000	2,700	3,600	5	11	6	162.0	213.0	2.0	0.24	2.79	4.16	2.73	8.20	23030AX	23030AXK	
	225	75	2.1	24030EX1	24030EX1K30	815000	1060000	2,100	2,700	6	11	6	162.0	213.0	2.0	0.30	2.23	3.32	2.18	10.5	24030EX1	24030EX1K	
	225	75	2.1	24030AX	24030AXK30	815000	924000	2,100	2,700	6	11	6	162.0	213.0	2.0	0.32	2.10	3.13	2.06	10.4	24030AX	24030AXK30	
	250	80	2.1	23130EX1	23130EX1K	1000000	1230000	1,900	2,500	6	13	6	162.0	238.0	2.0	0.30	2.24	3.34	2.19	16.2	23130EX1	23130EX1K	
	250	80	2.1	23130AX	23130AXK	1030000	1310000	2,100	2,800	6	13	6	162.0	238.0	2.0	0.35	1.95	2.91	1.91	16.7	23130AX	23130AXK	
	250	100	2.1	24130EX1	24130EX1K30	1230000	1520000	1,900	2,500	8	14	6	162.0	238.0	2.0	0.38	1.77	2.64	1.73	19.6	24130EX1	24130EX1K30	
	250	100	2.1	24130AX	24130AXK30	1120000	1340000	1,900	2,500	8	14	6	162.0	238.0	2.0	0.38	1.76	2.62	1.72	19.5	24130AX	24130AXK30	
	270	73	3	22230EX	22230EXK	1200000	1200000	1,800	2,400	6	14	6	164.0	256.0	2.5	0.25	2.69	4.00	2.63	18.9	22230EX	22230EXK	
	270	73	3	22230AEX	22230AEXK	1060000	1020000	2,400	3,100	6	14	6	164.0	256.0	2.5	0.29	2.30	3.42	2.25	18.1	22230AEX	22230AEXK	
	270	96	3	23230EX1	23230EX1K	1340000	1540000	1,800	2,400	8	15	6	164.0	256.0	2.5	0.34	1.96	2.93	1.92	24.2	23230EX1	23230EX1K	
	270	96	3	23230AX	23230AXK	1320000	1530000	1,900	2,700	8	15	6	164.0	256.0	2.5	0.40	1.70	2.53	1.66	24.8	23230AX	23230AXK	
	320	108	4	22330E	22330EK	1770000	1740000	1,500	2,100	10	22	6	168.0	302.0	3.0	0.37	1.82	2.70	1.78	43.3	22330E	22330EK	
	320	108	4	22330A2X	22330A2XK	1720000	1710000	2,100	2,800	10	22	6	168.0	302.0	3.0	0.40	1.67	2.49	1.63	41.5	22330A2X	22330A2XK	

Note: Suffix K or K30 means tapered bore (1/12 or 1/30).

Spherical Roller Bearings
Bore Diameter: 160~170mm



Dynamic equivalent radial load
 $P_r = X F_r + Y F_a$

$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	Y_1	0.67	Y_2

Values of Y_1 , Y_2 and e from table.

Static equivalent radial load
 $P_0 = F_r + Y_0 F_a$
Values Y_0 from table.

Boundary dimensions (mm)				Bearing No.		Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (min ⁻¹)			Dimensions of lubrication holes and grooves			Abutment and fillet dimensions (mm)			Constant e	Axial load factor			Mass (kg) Cylindrical bore (Reference)	Bearing No.	
d	D	B	r (min)	Cylindrical bore	Tapered bore			Grease lubrication	Oil lubrication		Hole diameter du	Groove width A	Hole count N	da (min)	Da (max)	ra (max)		Y1	Y2	Y0		Cylindrical bore	Tapered bore
160	220	45	2	23932AX	23932AXK	475000	649000	2,250	2,800		5	10	6	170.0	210.0	2.0	0.19	3.60	5.37	3.52	5.29	23932AX	23932AXK
	240	60	2.1	23032E	23032EK	735000	915000	1,800	2,400		5	11	6	172.0	228.0	2.0	0.22	3.01	4.48	2.94	9.74	23032E	23032EK
	240	60	2.1	23032AX	23032AXK	735000	917000	2,500	3,300		5	11	6	172.0	228.0	2.0	0.24	2.79	4.16	2.73	9.90	23032AX	23032AXK
	240	80	2.1	24032EX1	24032EX1K30	950000	1280000	1,900	2,500		6	11	6	172.0	228.0	2.0	0.30	2.24	3.34	2.19	12.7	24032EX1	24032EX1K30
	240	80	2.1	24032AX	24032AXK30	915000	1110000	1,900	2,500		6	11	6	172.0	228.0	2.0	0.32	2.12	3.15	2.07	12.4	24032AX	24032AXK30
	270	86	2.1	23132EX1	23132EX1K	1180000	1430000	1,800	2,400		8	16	6	172.0	258.0	2.0	0.30	2.22	3.30	2.17	20.5	23132EX1	23132EX1K
	270	86	2.1	23132AX	23132AXK	1200000	1460000	1,900	2,500		8	16	6	172.0	258.0	2.0	0.34	1.96	2.91	1.91	21.2	23132AX	23132AXK
	270	109	2.1	24132EX1	24132EX1K30	1450000	1810000	1,800	2,400		10	17	6	172.0	258.0	2.0	0.39	1.74	2.59	1.70	25.5	24132EX1	24132EX1K30
	270	109	2.1	24132AX	24132AXK30	1340000	1610000	1,800	2,400		10	17	6	172.0	258.0	2.0	0.39	1.74	2.59	1.70	25.5	24132AX	24132AXK30
	290	80	3	22232E	22232EK	1230000	1330000	1,500	2,100		6	14	6	174.0	276.0	2.5	0.26	2.57	3.83	2.52	23.7	22232E	22232EK
	290	80	3	22232E2	22232E2K	1230000	1320000	1,800	2,400		6	14	6	174.0	276.0	2.5	0.28	2.37	3.53	2.32	24.0	22232E2	22232E2K
	290	80	3	22232A2X	22232A2XK	1210000	1300000	2,200	3,000		6	14	6	174.0	276.0	2.5	0.31	2.20	3.27	2.15	23.8	22232A2X	22232A2XK
	290	104	3	23232E	23232EK	1500000	1710000	1,300	1,800		10	22	6	174.0	276.0	2.5	0.37	1.82	2.71	1.78	30.4	23232E	23232EK
	290	104	3	23232A2X	23232A2XK	1460000	1650000	1,900	2,400		10	22	6	174.0	276.0	2.5	0.39	1.72	2.56	1.68	30.7	23232A2X	23232A2XK
	340	114	4	22332E	22332EK	1950000	1950000	1,400	1,900		10	22	6	178.0	322.0	3.0	0.36	1.85	2.75	1.81	51.4	22332E	22332EK
170	230	45	2	23934AX	23934AXK	490000	691000	2,100	2,700		5	10	6	180.0	220.0	2.0	0.18	3.78	5.63	3.70	5.58	23934AX	23934AXK
	260	67	2.1	23034E	23034EK	880000	1080000	1,600	2,200		6	13	6	182.0	248.0	2.0	0.23	2.89	4.31	2.83	13.1	23034E	23034EK
	260	67	2.1	23034AX	23034AXK	880000	1080000	2,400	3,100		6	13	6	182.0	248.0	2.0	0.27	2.51	3.74	2.45	13.1	23034AX	23034AXK
	260	90	2.1	24034EX1	24034EX1K30	1120000	1480000	1,800	2,400		8	14	6	182.0	248.0	2.0	0.32	2.11	3.15	2.07	17.3	24034EX1	24034EX1K30
	260	90	2.1	24034AX	24034AXK30	1030000	1320000	1,800	2,400		8	14	6	182.0	248.0	2.0	0.34	2.00	2.97	1.95	17.0	24034AX	24034AXK30
	280	88	2.1	23134EX1	23134EX1K	1260000	1530000	1,600	2,200		8	16	6	182.0	268.0	2.0	0.29	2.30	3.43	2.25	21.6	23134EX1	23134EX1K
	280	88	2.1	23134AX	23134AXK	1260000	1500000	1,800	2,400		8	16	6	182.0	268.0	2.0	0.34	2.01	3.00	1.97	22.2	23134AX	23134AXK
	280	109	2.1	24134AX	24134AXK30	1360000	1650000	1,600	2,200		10	17	6	182.0	268.0	2.0	0.37	1.82	2.70	1.78	26.4	24134AX	24134AXK30
	310	86	4	22234E	22234EK	1390000	1510000	1,400	1,900		8	18	6	188.0	292.0	3.0	0.29	2.33	3.47	2.28	30.0	22234E	22234EK
	310	110	4	23234E	23234EK	1720000	1970000	1,300	1,800		10	22	6	188.0	292.0	3.0	0.36	1.85	2.75	1.81	37.0	23234E	23234EK
	310	110	4	23234A2X	23234A2XK	1680000	1910000	1,800	2,250		10	22	6	188.0	292.0	3.0	0.39	1.71	2.54	1.67	37.6	23234A2X	23234A2XK
	360	120	4	22334E	22334EK	2150000	2200000	1,300	1,800		10	22	6	188.0	342.0	3.0	0.36	1.85	2.75	1.81	60.6	22334E	22334EK

Note: Suffix K or K30 means tapered bore (1/12 or 1/30).