CELEBRATING 75 YEARS

CK BIRLA GROUP

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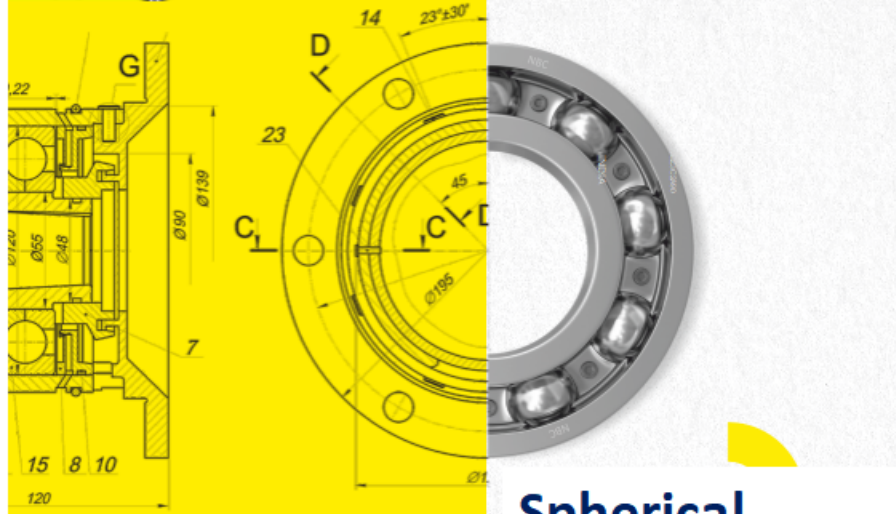
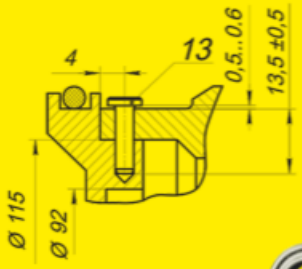


Spherical Roller Bearings



2 WHEELERS | 3 WHEELERS | 4 WHEELERS | TRACTORS | LCV, HCV | INDUSTRIES | RAILWAYS

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About National Engineering Industries Ltd. (NBC Bearings)

A symbol of dependability and flexible engineering solutions, NB Bearings is the brand of National Engineering Industries. Founded in 1946, National Engineering Industries Ltd (NEI) is India's leading bearings manufacturer and exporter, renowned for excellence in quality and delivery. In 2021, NBC bearings completed 75 years of its incorporation.

Headquartered in Jaipur, Having started with 30,000 bearings in 19 sizes in 1946, NBC has evolved to manufacture over 250 million bearings each year offering in 3100+ variants to serve a host of customers in India and over 30 other countries across five continents in automotive, railways and industrial segments. NBC also serves the Indian aftermarket through a countrywide network of 550+ authorized stockists and thousands of retailers.

Award & Recognitions :

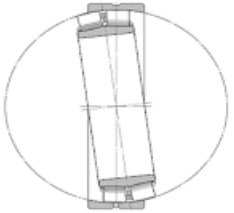
NBC has been the recipient of several award and accolades for its quality consciousness and manufacturing prowess. Most prominent being the coveted Deming Grand Prize which is the highest honour in quality awarded to a company for excellence in Total Quality Management (TQM). NBC bearings is the only bearing manufacturer to win both - The Deming Application Award and The Deming Grand Prize Award.

The award is given by the Japanese Union of Scientists and Engineers (JUSE) to companies for demonstrating practicing TQM in the areas of production, customer service, safety, human resource, corporate social responsibility, environment, etc. NBC stands committed to an endless journey of continuous improvement through TQM.

Spherical Roller Bearings

Spherical Roller Bearing Configuration

Spherical roller bearing inner consists of two rows with symmetrical rollers and outer. The inner raceways are separated by a rib. The outer has a spherical raceway. These bearings have a large capacity for radial loads and axial loads in either directions. In addition to straight bore, tapered bore are also available. The standard taper ratio of 1:12 have 'K 'suffix. With a taper ratio of 1:30 as in the case of 240 series, the suffix is 'K30'. Most of the tapered bore bearings use adaptor sleeve or withdrawal sleeve. The spherical roller bearing have a self-aligning property.



Steel press cage and machined brass cages are widely used in Spherical roller bearings. The bearings with steel cage has 'CC' suffix and with brass cage 'MB' suffix.

Brass cage (MB)

Steel cage (CC)

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Type of configuration

CA - Bearing with symmetrical rollers and retaining ribs. The cage is a one-piece, double pronged machined cage of brass

CC - Bearing with symmetrical rollers, flangeless inner ring, a non-integral guide ring between the two rows of rollers centred on the inner ring and one pressed steel window-type cage for each roller row

MB - Machined brass cage

In addition to beatings with cylindrical bore those with tapered bore are also available. Bearings with tapered bore are specified by attaching te suffix "K" to the end of the bearing's basic number. The standard taper ratio is 1:12 for

Bearings with a "K" suffix, but for bearings in series 240 and 241 the suffix "K30" indicates the taper ration for a bearings is 1:30. Most tapered bore bearings incorporate the use of adapters and withdrawal sleeves for shaft mounting

K- Tapered bearing bore. taper 1:12

K30 - Tapered bearing bore, taper 1:30

Oil inlets and oil groove dimensions

Spherical roller bearings with an outer diameter of 320mm or more are provided with an oil inlet and oil grooveon the outer ring for the purpose of supplying lubricant to the bearing's moving parts When necessary, oil inlets and oil grooves can also be provided on bearings with outer diameters less than 320 mm.

W33-Bearing with annular groove and three lubrication holes in the outer ring

W33X-Bearing with annular groove and six lubrication holes in the outer ring

Adapters and withdrawal sleeves

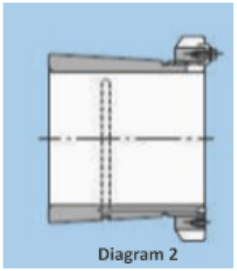

Diagram 2

Adapters are used for installation of bearings with tapered bore on Cylindrical shafts. Withdrawal sleeves are also used to install and disassemble bearings with tapered bore onto and off cylindrical shafts. In disassembling the bearing
From the shaft, the nut is pressed down against the edge of the inner ring utilizing the bolt provided on the withdrawal sleeve, and then the sleeve is drawn away from the bearing's inner diameter surface. As shown in diagram 2 construction is designed to reduce friction by injecting high pressure oil between the surfaces of the adapter sleeve and bearing inner bore by means of a pressure fitting.

* Adapter as well as withdrawal sleeves are also available

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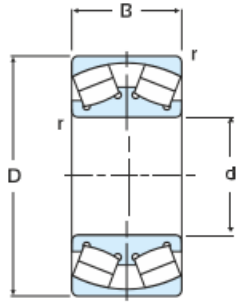
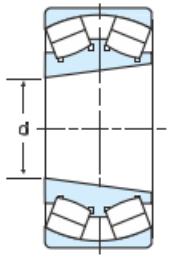
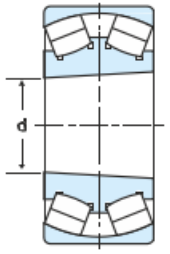
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
25	52	18	1	42.1	43.5	4293	4436	5.3	0.35	1.9	2.9	1.9	**22205CCW33**	0.18
25	52	18	1	42.1	43.5	4293	4436	5.3	0.35	1.9	2.9	1.9	**22205MBW33**	0.19
30	62	20	1	51.7	55	5272	5608	6.7	0.32	2.1	3.1	2.1	**22206CCW33**	0.28
30	62	20	1	52	55	5302	5608	6.7	0.33	2.0	3.0	2.0	**22206MBW33**	0.29
35	72	23	1.1	70.4	78.7	7179	8025	9.6	0.32	2.1	3.2	2.1	**22207CCW33**	0.44
35	72	23	1.1	69.8	73.9	7118	7536	9.0	0.32	2.1	3.2	2.1	**22207MBW33**	0.45
40	80	23	1.1	80.5	90.4	8209	9218	11.0	0.28	2.4	3.5	2.3	**22208CAW33**	0.47
40	80	23	1.1	80.5	90.4	8209	9218	11.0	0.28	2.4	3.5	2.3	**22208CAKW33**	0.45
40	80	23	1.1	79.1	87.9	8066	8963	10.7	0.28	2.4	3.5	2.3	**22208CCW33**	0.53
40	80	23	1.1	79.1	87.9	8066	8963	10.7	0.28	2.4	3.5	2.3	**22208CCKW33**	0.52
40	80	23	1.1	80.5	90.4	8209	9218	11.0	0.31	2.2	3.2	2.1	**22208MBW33**	0.47
40	80	23	1.1	80.5	90.4	8209	9218	11.0	0.31	2.2	3.2	2.1	**22208MBKW33**	0.47
40	90	33	1.5	123.6	142.1	12603	14490	17.3	0.39	1.7	2.5	1.7	**22308MBW33**	1.03
40	90	33	1.5	123.6	142.1	12603	14490	17.3	0.39	1.7	2.5	1.7	**22308MBKW33**	1.03
40	90	33	1.5	125	135	12746	13766	16.5	0.39	1.7	2.5	1.7	**22308MBW33**	1.04

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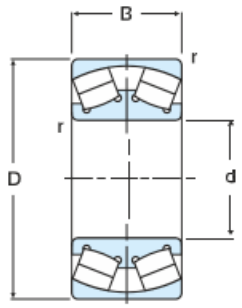
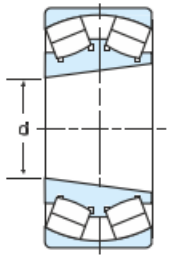
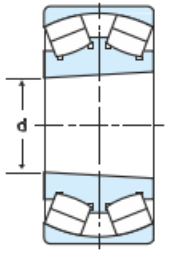
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
45	85	23	1.1	82.6	91.3	8423	9310	11.1	37	8	.7	.8	**22209CAW33**	0.61
45	85	23	1.1	82.6	91.3	8423	9310	11.1	37	8	.7	.8	**22209CAKW33**	0.60
45	85	23	1.1	82.6	95	8423	9687	11.6	26	6	.8	.5	**22209CCW33**	0.59
45	85	23	1.1	82.6	95	8423	9687	11.6	26	6	.8	.5	**22209CCKW33**	0.58
45	85	23	1.1	82.6	91.3	8423	9310	11.1	28	4	.5	.3	**22209MBW33**	0.61
45	85	23	1.1	82.6	91.3	8423	9310	11.1	28	4	.5	.3	**22209MBKCNW33**	0.61
45	100	36	1.5	146	175	14888	17845	21.3	37	8	.7	.8	**22309CAW33**	1.40
45	100	36	1.5	146	175	14888	17845	21.3	37	8	.7	.8	**22309MBW33**	1.40
45	100	36	1.5	146	175	14888	17845	21.3	37	8	.7	.8	**22309MBKW33**	1.38
50	90	23	1.1	82.5	95.8	8413	9769	11.7	24	8	.1	.7	**22210CAW33**	0.64
50	90	23	1.1	82.5	95.8	8413	9769	11.7	24	8	.1	.7	**22210CAKW33**	0.62
50	90	23	1.1	85.9	102	8759	10401	12.4	24	8	.1	.7	**22210CCW33**	0.62
50	90	23	1.1	85.9	102	8759	10401	12.4	24	8	.1	.7	**22210CCKW33**	0.60
50	90	23	1.1	86.6	103.3	8831	10534	12.6	26	6	.8	.5	**22210MBW33**	0.64
50	90	23	1.1	86.6	103.3	8831	10534	12.6	26	6	.8	.5	**22210MBKW33**	0.63

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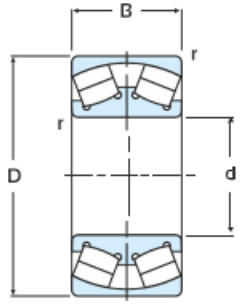
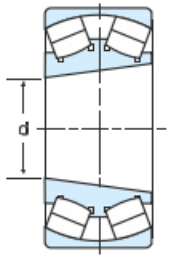
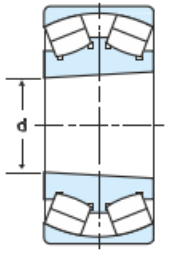
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
50	110	40	2	193	227	19680	23147	27.7	0.37	1.8	2.7	1.8	**22310CAW33**	1.83
50	110	40	2	193	227	19680	23147	27.7	0.37	1.8	2.7	1.8	**22310MBW33**	1.88
50	110	40	2	193	227	19680	23147	27.7	0.37	1.8	2.7	1.8	**22310MBKW33**	1.83
55	100	25	1.5	106	126	10809	12848	15.4	0.24	2.8	4.2	2.8	**22211CAW33**	0.83
55	100	25	1.5	106	126	10809	12848	15.4	0.24	2.8	4.2	2.8	**22211CAKW33**	0.81
55	100	25	1.5	108	128	11013	13052	15.6	0.24	2.8	4.2	2.8	**22211CCW33**	0.83
55	100	25	1.5	108	128	11013	13052	15.6	0.24	2.8	4.2	2.8	**22211CCKW33**	0.83
55	100	25	1.5	98.9	118.9	10085	12124	14.5	0.27	2.5	3.7	2.5	**22211MBW33**	0.87
55	100	25	1.5	98.9	118.9	10085	12124	14.5	0.27	2.5	3.7	2.5	**22211MBKW33**	0.85
55	120	43	2	214	258	21822	26308	31.5	0.36	1.9	2.8	1.8	**22311CAW33**	2.33
55	120	43	2	214	258	21822	26308	31.5	0.36	1.9	2.8	1.8	**22311CAKW33**	2.30
55	120	43	2	214	258	21822	26308	31.5	0.36	1.9	2.8	1.8	**22311MBW33**	2.33
55	120	43	2	214	258	21822	26308	31.5	0.36	1.9	2.8	1.8	**22311MBKW33**	2.30

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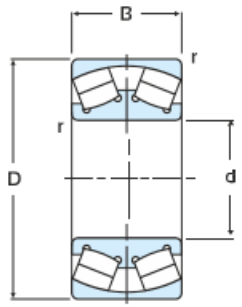
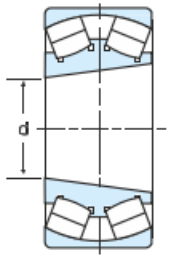
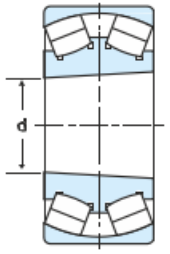
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
60	110	28	1.5	135	157	13766	16009	19.1	0.24	2.8	4.1	2.7	**22212CAW33**	1.18
60	110	28	1.5	135	157	13766	16009	19.1	0.24	2.8	4.1	2.7	**22212CAKW33**	1.15
60	110	28	1.5	150	182	15296	18559	22.2	0.24	2.8	4.1	2.7	**22212CCW33**	1.18
60	110	28	1.5	150	182	15296	18559	22.2	0.24	2.8	4.1	2.7	**22212CCKW33**	1.15
60	110	28	1.5	132	156	13460	15907	19.0	0.25	2.7	4.0	2.7	**22212MBW33**	1.23
60	110	28	1.5	132	156	13460	15907	19.0	0.25	2.7	4.0	2.7	**22212MBKW33**	1.20
60	130	31	2.1	167	191	17029	19476	23.3	0.24	2.8	4.2	2.8	**21312CAW33**	2.10
60	130	31	2.1	174	202	17743	20598	24.6	0.24	2.8	4.2	2.8	**21312CCW33**	1.98
60	130	46	2.1	240	310	24473	31611	37.8	0.36	1.9	2.8	1.8	**22312CAW33**	2.91
60	130	46	2.1	240	310	24473	31611	37.8	0.38	1.8	2.7	1.8	**22312MBW33**	2.90
60	130	46	2.1	240	310	24473	31611	37.8	0.38	1.8	2.7	1.8	**22312MBKW33**	2.90
65	120	31	1.5	164	197	16723	20088	24.0	0.25	2.7	4.0	2.6	**22213CAKW33**	1.52
65	120	31	1.5	157.2	196.8	16030	20068	24.0	0.25	2.7	4.0	2.6	**22213CCKW33**	1.52
65	120	31	1.5	112	158	11421	16111	19.3	0.28	2.4	3.6	2.3	**22213MBKW33**	1.48
65	120	31	1.5	147	181	14990	18457	22.1	0.28	2.4	3.6	2.3	**22213MBW33**	1.54
65	140	48	2.1	295	353	30081	35995	42.7	0.35	1.9	2.9	1.9	**22313CAW33**	2.61

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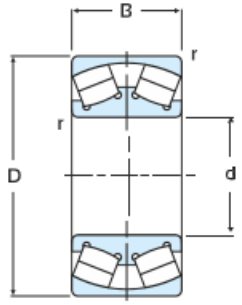
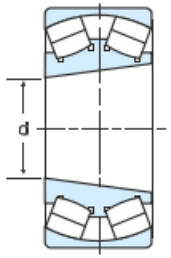
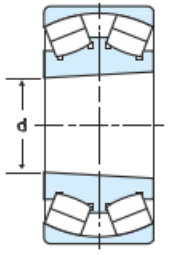
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
65	140	48	2.1	295	353	30081	35995	42.7	0.35	1.9	2.9	1.9	**22313MBW33**	3.61
65	140	48	2.1	295	353	30081	35995	42.7	0.35	1.9	2.9	1.9	**22313MBKW33**	3.54
70	125	31	1.5	170	218	17335	22229	26.6	0.24	2.8	4.2	2.8	**22214MBW33**	1.64
70	125	31	1.5	170	218	17335	22229	26.6	0.24	2.8	4.2	2.8	**22214MBKW33**	1.64
70	150	51	2.1	342	426	34874	43439	50.5	0.34	2.0	2.9	1.9	**22314CAW33**	4.41
70	150	51	2.1	342	426	34874	43439	50.5	0.34	2.0	3.0	1.9	**22314MBW33**	4.41
70	150	51	2.1	342	426	34874	43439	50.5	0.34	2.0	3.0	1.9	**22314MBKW33**	4.32
75	130	31	1.5	170.2	220.3	17355	22464	26.7	0.22	3.0	4.5	2.9	**22215CAKW33**	1.71
75	130	31	1.5	170	220	17335	22433	26.6	0.22	3.0	4.5	2.9	**22215CCW33**	1.80
75	130	31	1.5	170.2	220.3	17355	22464	26.7	0.22	3.0	4.5	2.9	**22215CCKW33**	1.71
75	130	31	1.5	190	240	19374	24473	29.1	0.24	2.9	4.3	2.8	**22215MBW33**	1.69
75	130	31	1.5	163	215	16621	21924	26.0	0.24	2.9	4.3	2.8	**22215MBKW33**	1.80
75	160	37	2.1	239	287	24371	29265	33.3	0.23	2.9	4.4	2.9	**21315CAW33**	3.70
75	160	55	2.1	373	451	38035	45988	52.4	0.35	2.0	2.9	1.9	**22315CAW33**	5.89
75	160	55	2.1	373	451	38035	45988	52.4	0.35	2.0	2.9	1.9	**22315CAKW33**	5.89
75	160	55	2.1	357	449	36403	45785	52.2	0.35	2.0	2.9	1.9	**22315CAW33**	5.36

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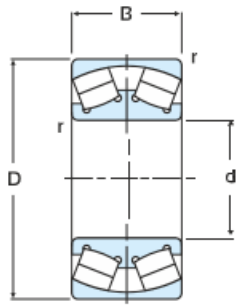
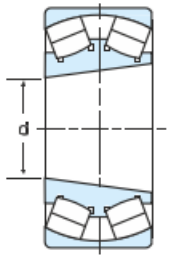
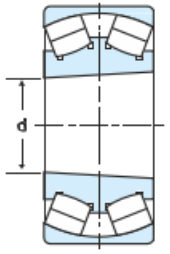
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
75	160	55	2.1	373	451	38035	45988	52.4	0.35	2.0	2.9	1.9	**22315MBW33**	5.89
75	160	55	2.1	373	451	38035	45988	52.4	0.35	2.0	2.9	1.9	**22315MBKW33**	5.89
80	140	33	2	179	240	18253	24473	28.4	0.22	3.0	4.5	3.0	**22216CAW33**	2.26
80	140	33	2	179	240	18253	24473	28.4	0.22	3.0	4.5	3.0	**22216CAKW33**	2.24
80	140	33	2	174	234	17743	23861	27.7	0.22	3.0	4.5	3.0	**22216MBW33**	2.26
80	140	33	2	175	234	17845	23861	27.7	0.22	3.0	4.5	3.0	**22216MBKW33**	2.26
80	170	39	2.1	256	325	26104	33140	37.1	0.24	2.8	4.2	2.8	**21316CCW33**	4.50
80	170	58	2.1	436	533	44459	54350	60.8	0.34	2.0	2.9	1.9	**22316CAW33**	6.19
80	170	58	2.1	436	533	44459	54350	60.8	0.34	2.0	2.9	1.9	**22316CAKW33**	6.15
80	170	58	2.1	436	533	44459	54350	60.8	0.34	2.0	2.9	1.9	**22316MBW33**	6.34
80	170	58	2.1	436	533	44459	54350	60.8	0.34	2.0	2.9	1.9	**22316MBKW33/H2316**	7.50
85	150	36	2	213	282	21720	28756	32.8	0.23	3.0	4.4	2.9	**22217CAKW33**	2.87
85	150	36	2	225	293	22943	29877	34.0	0.23	3.0	4.4	2.9	**22217CCKW33**	2.68
85	150	36	2	224	290	22841	29571	33.7	0.24	2.8	4.2	2.8	**22217MBW33**	2.92
85	180	60	3	438	560	44663	57103	62.8	0.34	2.0	3.0	2.0	**22317CAW33**	7.31
85	180	60	3	446	563	45479	57409	63.1	0.34	2.0	3.0	2.0	**22317CCW33**	7.25

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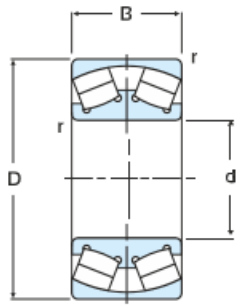
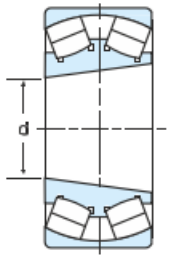
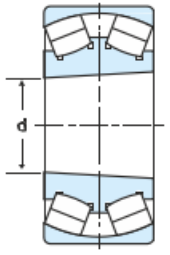
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
85	180	60	3	433	560	44153	57103	62.8	0.34	2.0	3.0	2.0	**22317MBW33**	7.31
85	180	60	3	433	560	44153	57103	62.8	0.34	2.0	3.0	2.0	**22317MBW33**	7.31
85	150	63	2	250	310	25493	31611	36.0	0.24	2.8	4.2	2.8	**22217MBKW33/H317**	3.80
85	180	60	3	462	591	47110	60264	66.2	0.34	2.0	3.0	2.0	**22317CAKW33/H2317**	8.60
85	180	60	3	462	591	47110	60264	66.2	0.34	2.0	3.0	2.0	**22317MBKW33/H2317**	8.67
90	160	40	2	248	345	25289	35180	39.3	0.24	2.9	4.3	2.8	**22218CCW33**	3.50
90	160	40	2	254	336	25900	34262	38.3	0.25	2.7	4.1	2.7	**22218MBW33**	3.36
90	160	40	2	202	286	20598	29163	32.6	0.25	2.7	4.1	2.7	**22218MBKW33**	3.67
90	160	52.4	2	335	492	34160	50169	56.1	0.33	2.1	3.1	2.0	**23218MBW33**	4.58
90	160	52.4	2	339	492	34568	50169	56.1	0.33	2.1	3.1	2.0	**23218MBKW33**	4.54
90	190	64	3	489	641	49863	65363	70.7	0.34	2.0	3.0	2.0	**22318MBW33**	8.35
90	190	64	3	489	641	49863	65363	70.7	0.34	2.0	3.0	2.0	**22318MBKW33**	8.34
95	170	43	2.1	314.4	410.2	32059	41828	46.0	0.25	2.7	4.0	2.6	**22219MBW33**	4.57
95	200	67	3	536	709	54656	72297	76.9	0.34	2.0	3.0	2.0	**22319CAKW33**	10.09
95	200	67	3	551	714	56185	72807	77.5	0.34	2.0	3.0	2.0	**22319CCW33**	10.28

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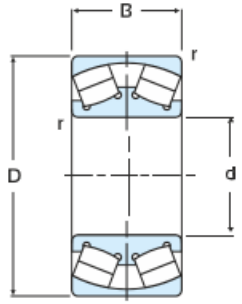
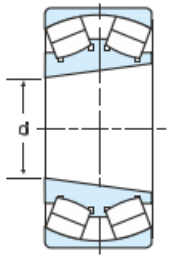
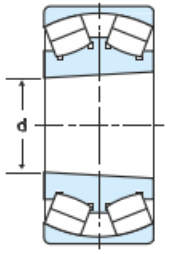
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
95	200	67	3	500	615	50985	62712	66.7	0.34	2.0	3.0	2.0	**22319MBKW33**	10.11
95	170	43	2.1	3144	4102	320594	418281	459.7	0.25	2.7	4.0	2.6	**22219MBKW33/H319**	5.75
100	165	52	2	340	525	34670	53534	58.8	0.30	2.2	3.3	2.2	**23120MBW33**	4.34
100	180	46	2.1	324	449	33038	45785	49.5	0.24	2.8	4.2	2.8	**22220CCW33**	4.95
100	180	46	2.1	360	474	36709	48334	52.3	0.26	2.6	3.9	2.6	**22220MBW33**	5.03
100	180	60.3	2.1	420	580	42827	59143	63.9	0.32	2.1	3.2	2.1	**23220MBW33**	6.80
100	215	73	3	626	840	63833	85655	89.4	0.34	2.0	2.9	1.9	**22320MBW33**	12.95
100	180	71	2.1	360	474	36709	48334	52.3	0.26	2.6	3.9	2.6	**22220MBKW33/H320**	6.50
100	215	97	2.1	626	840	63833	85655	89.4	0.34	2.0	2.9	1.9	**22320MBKW33/H2320**	14.50
110	170	45	2	282	455	28756	46396	50.2	0.24	2.8	4.2	2.8	**23022MBKW33**	3.63
110	180	56	2	325	580	33140	59143	63.3	0.31	2.2	3.3	2.2	**23122MBW33**	5.90
110	200	53	2.1	572	651	58327	66382	69.6	0.25	2.7	4.0	2.6	**22222CCW33**	7.40
110	200	53	2.1	424	591	43235	60264	63.2	0.27	2.5	3.7	2.5	**22222MBW33**	7.54
110	200	69.8	2.1	510	750	52005	76478	80.2	0.35	1.9	2.8	1.9	**23222MBKW33**	9.50
110	200	69.8	2.1	536.5	802.3	54707	81811	85.8	0.35	1.9	2.8	1.9	**23222MBW33**	9.90

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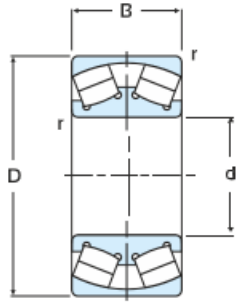
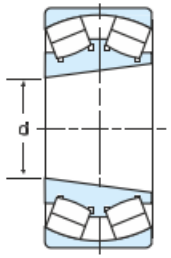
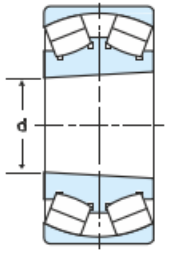
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
110	240	80	3	750	963	76478	98197	99.3	0.36	1.9	2.8	1.8	**22322MBW33**	18.12
110	240	80	3	723	949	73724	96770	97.8	0.36	1.9	2.8	1.8	**22322MBW33**	18.20
110	200	53	2.1	410	588	41808	59958	62.9	0.27	2.5	3.7	2.5	**22222MBKW33/H322**	9.60
120	180	46	2	296	495	30183	50475	53.5	0.23	2.9	4.4	2.9	**23024MBW33**	4.20
120	180	46	2	324.5	513.5	33089	52362	55.4	0.23	2.9	4.4	2.9	**23024MBKW33**	4.06
120	180	60	2	353	638	35995	65057	68.9	0.30	2.3	3.4	2.2	**24024CAW33**	5.30
120	180	60	2	390	700	39768	71379	75.6	0.30	2.3	3.4	2.2	**24024MBW33**	5.27
120	200	62	2	460	705	46906	71889	74.7	0.30	2.3	3.4	2.2	**23124MBW33**	8.00
120	200	62	2	460	705	46906	71889	74.7	0.30	2.3	3.4	2.2	**23124MBKW33**	7.70
120	215	58	2.1	652	765	66484	78007	79.9	0.26	2.6	3.8	2.5	**22224CCW33**	9.00
120	215	58	2.1	507	697	51699	71073	72.8	0.28	2.4	3.6	2.4	**22224MBW33**	9.14
120	215	58	2.1	396	582	40380	59347	60.8	0.28	2.4	3.6	2.4	**22224MBKW33**	9.14
120	215	76	2.1	595	950	60672	96872	99.2	0.35	1.9	2.9	1.9	**23224MBW33**	12.30
120	260	86	3	880	1130	89734	115226	113.7	0.34	2.0	3.0	2.0	**22324CCW33**	23.50
120	260	86	3	884	1154	90141	117673	116.1	0.35	1.9	2.9	1.9	**22324MBW33**	22.67
120	260	86	3	884	1154	90141	117673	116.1	0.35	1.9	2.9	1.9	**22324MBKW33**	22.40

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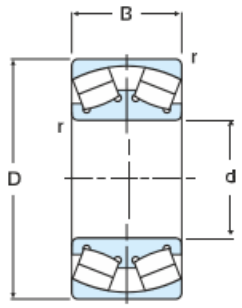
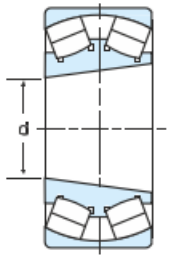
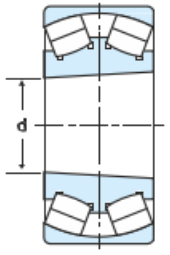
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

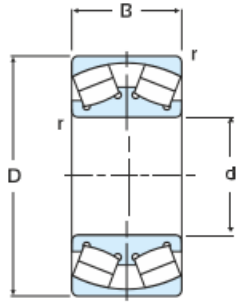
$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

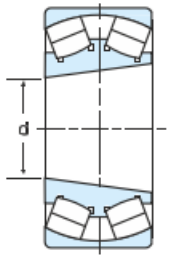
Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
130	200	52	2	375	620	38239	63221	65.1	.25	.7	1.0	1.6	**23026MBW33**	6.00
130	200	52	2	377	609	38443	62100	63.9	.25	.7	1.0	1.6	**23026MBW33**	6.00
130	210	64	2	459	721	46804	73520	75.0	.28	.4	1.6	1.4	**23126MBW33**	8.60
130	230	64	3	563	832	57409	84839	85.1	.26	.6	1.8	1.5	**22226CCW33**	11.10
130	230	64	3	570	729	58123	74336	74.5	.28	.4	1.6	1.4	**22226MBW33**	11.30
130	230	80	3	759.2	1172.3	77416	119539	119.9	.34	.0	1.0	.9	**23226MBW33**	14.30
130	230	80	3	662	1008	67504	102786	103.1	.34	.0	1.0	.9	**23226MBW33**	14.40
130	280	93	4	1020	1377	104009	140413	135.4	.33	.0	1.0	1.0	**22326MBW33**	27.50
130	280	93	4	1020	1377	104009	140413	135.4	.33	.0	1.0	1.0	**22326MBKW33**	27.10
130	200	52	2	380	630	38749	64241	66.1	.25	.7	1.0	1.6	**23026MBKW33/H3026**	8.70
130	230	64	3	636	898	64853	91569	91.8	.28	.4	1.6	1.4	**22226MBKW33/H3126**	14.60
140	210	53	2	400	675	40788	68830	69.6	.23	.0	1.4	1.9	**23028CAW33**	7.00
140	210	53	2	400	675	40788	68830	69.6	.23	.0	1.4	1.9	**23028KCAW33**	7.00
140	210	53	2	415	695	42318	70869	71.7	.23	.0	1.4	1.9	**23028MBW33**	6.66
140	210	69	2	510	945	52005	96362	97.4	.29	.3	1.4	1.2	**24028CCW33**	8.45
140	210	69	2	510	930	52005	94832	95.9	.32	.1	1.2	1.1	**24028MBW33**	8.50

nbc flexible solutions

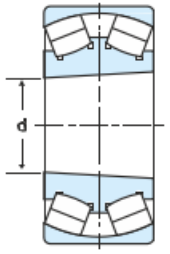
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
140	225	68	2.1	540	895	55064	91263	91.1	0.29	2.4	3.5	2.3	**23128MBW33**	10.70
140	225	68	2.1	540	895	55064	91263	91.1	0.29	2.4	3.5	2.3	**23128MBKW33**	10.40
140	225	68	2.1	869	940	88612	95852	95.7	0.29	2.4	3.5	2.3	**23128MBW33**	10.60
140	225	85	2.1	783	1140	79843	116246	116.1	0.35	1.9	2.9	1.9	**24128CAW513B2CZ**	13.50
140	250	68	3	639	933	65159	95138	93.1	0.27	2.5	3.7	2.4	**22228CCKW33**	14.00
140	250	68	3	634	924	64649	94220	92.2	0.27	2.5	3.7	2.4	**22228MBW33**	14.80
140	250	88	3	826	1320	84227	134600	131.7	0.34	2.0	3.0	2.0	**23228MBKW33**	19.30
140	300	102	4	1154	1620	117673	165191	155.9	0.35	1.9	2.9	1.9	**22328MBW33**	35.50
140	300	102	4	1154	1620	117673	165191	155.9	0.35	1.9	2.9	1.9	**22328MBKW33**	35.50
140	300	102	4	1154	1620	117673	165191	155.9	0.35	1.9	2.9	1.9	**22328MBW33**	35.50
140	210	53	2	410	690	41808	70359	71.1	0.23	3.0	4.4	2.9	**23028MBKW33/H3028**	9.40
140	250	97	3	685	975	69849	99421	97.3	0.27	2.5	3.7	2.4	**22228MBKW33/H3128**	18.70
140	280	93	4	830	1250	84635	127463	122.0	0.36	1.9	2.8	1.8	**73727**	26.00

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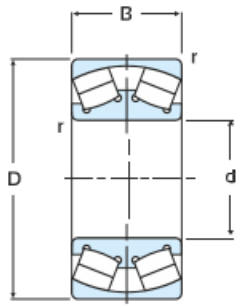
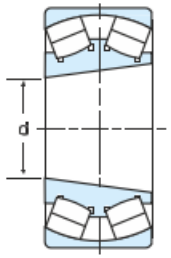
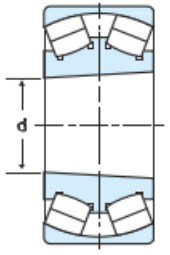
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
150	225	56	2.1	531	820	54146	83615	82.8	0.24	2.8	4.2	2.8	**23030CCKW33**	7.70
150	225	56	2.1	450	795	45887	81066	80.3	0.23	2.9	4.3	2.8	**23030MBW33**	8.10
150	225	75	2.1	607	1116	61896	113799	112.7	0.33	2.0	3.0	2.0	**24030MBW33**	10.52
150	225	75	2.1	590	1080	60162	110128	109.1	0.33	2.0	3.0	2.0	**24030MBK30W33**	10.37
150	250	80	2.1	745	1244	75968	126851	123.2	0.31	2.2	3.2	2.1	**23130MBW33**	16.30
150	250	80	2.1	730	1190	74438	121344	117.9	0.31	2.2	3.2	2.1	**23130MBKW33**	16.00
150	270	73	3	680	965	69340	98401	94.2	0.27	2.5	3.7	2.4	**22230MBW33**	21.10
150	270	73	3	800	1200	81576	122364	117.1	0.27	2.5	3.7	2.4	**22230MBKW33**	18.60
150	270	73	3	747	1085	76172	110637	105.9	0.27	2.5	3.7	2.4	**22230MBW33**	18.50
150	270	96	3	950	1500	96872	152955	146.4	0.36	1.9	2.8	1.8	**23230MBW33**	24.40
150	270	96	3	950	1500	96872	152955	146.4	0.36	1.9	2.8	1.8	**23230MBKW33**	23.40
150	320	108	4	1260	1730	128482	176408	163.3	0.36	1.9	2.8	1.8	**22330E1CC**	
150	320	108	4	1270	1750	129502	178448	165.2	0.36	1.9	2.8	1.8	**22330E1MBW33**	43.90
150	320	108	4	1270	1750	129502	178448	165.2	0.36	1.9	2.8	1.8	**22330MBW33**	43.90
150	320	108	4	1270	1750	129502	178448	165.2	0.36	1.9	2.8	1.8	**22330MBKW33**	41.90
150	225	56	2.1	450	795	45887	81066	80.3	0.23	2.9	4.3	2.8	**23030MBKW33/H3030**	11.80

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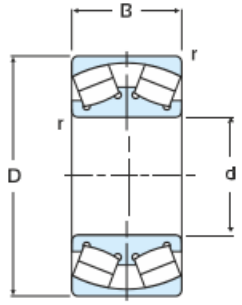
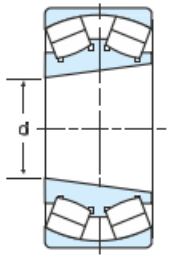
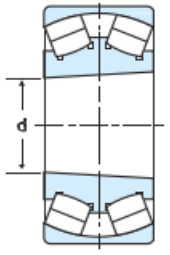
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
160	240	60	2.1	500	875	50985	89224	86.7	0.22	3.0	4.5	2.9	**23032MBW33**	9.60
160	240	80	2.1	711	1329	72501	135518	131.6	0.32	2.1	3.1	2.0	**24032MBW33**	12.82
160	240	80	2.1	711	1329	72501	135518	131.6	0.32	2.1	3.1	2.0	**24032MBK30W33**	12.82
160	270	86	2.1	839	1350	85553	137660	130.9	0.31	2.2	3.2	2.1	**23132MBW33**	20.20
160	270	86	2.1	837	1362	85349	138883	132.0	0.31	2.2	3.2	2.1	**23132MBKW33**	20.50
160	270	86	2.1	839	1350	85553	137660	130.9	0.31	2.2	3.2	2.1	**23132MBW33**	20.20
160	290	80	3	862	1276	87898	130114	122.0	0.28	2.4	3.6	2.4	**22232MBW33**	23.50
160	290	104	3	1100	1760	112167	179467	168.3	0.36	1.9	2.8	1.8	**23232MBW33**	30.90
160	290	104	3	1100	1760	112167	179467	168.3	0.36	1.9	2.8	1.8	**23232MBKW33**	29.60
160	240	60	2.1	500	880	50985	89734	87.2	0.22	3.0	4.5	2.9	**23032MBKW33/H3032**	14.40
160	290	80	3	903	1261	92079	128584	120.6	0.28	2.4	3.6	2.4	**22232MBKW33/H3132**	29.20
170	210	110	4	1470	1960	149896	199861	197.2	0.35	1.9	2.9	1.9	**23234MBW33**	39.00
170	260	67	2.1	728	1100	74234	112167	106.6	0.23	2.9	4.3	2.9	**23034CCW33**	12.80
170	260	67	2.1	640	1080	65261	110128	104.7	0.24	2.8	4.2	2.8	**23034MBW33**	13.20
170	260	67	2.1	630	1090	64241	111147	105.7	0.24	2.8	4.2	2.8	**23034MBKW33**	12.70
170	260	90	2.1	700	1450	71379	147857	140.5	0.34	2.0	3.0	2.0	**24034MBW33**	17.90

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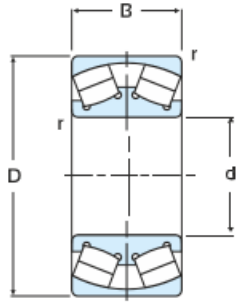
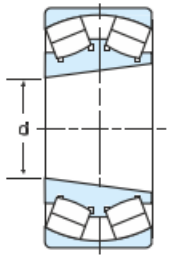
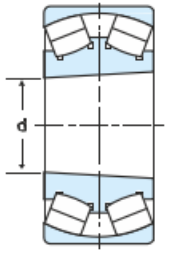
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
170	260	90	2.1	820	1500	83615	152955	145.4	0.34	2.0	3.0	2.0	**24034MBK30W33**	17.50
170	280	88	2.1	1086	1519	110739	154892	145.2	0.30	2.2	3.3	2.2	**23134CCW33**	21.40
170	280	88	2.1	840	1530	85655	156014	146.3	0.30	2.2	3.3	2.2	**23134MBW33**	21.90
170	280	88	2.1	895	1550	91263	158054	148.2	0.30	2.2	3.3	2.2	**23134MBKW33**	21.80
170	280	109	2.1	1020	1800	104009	183546	172.1	0.36	1.9	2.8	1.8	**24134MBW33**	26.90
170	310	86	4	999	1518	101868	154790	142.4	0.27	2.5	3.8	2.5	**22234MBW33**	28.50
170	310	86	4	990	1440	100950	146837	135.0	0.27	2.5	3.8	2.5	**22234MBKW33**	27.10
170	310	110	4	1472	1980	150100	201901	185.7	0.35	1.9	2.9	1.9	**23234CCW33**	37.00
170	310	110	4	1206	1946	122976	198434	182.5	0.35	1.9	2.9	1.9	**23234MBW33**	37.30
170	310	110	4	1180	1960	120325	199861	183.8	0.35	1.9	2.9	1.9	**23234MBKW33**	35.30
170	360	120	4	1550	2150	158054	219236	195.7	0.35	1.9	2.9	1.9	**22334 CAW33**	60.00
170	360	120	4	1540	2240	157034	228413	203.9	0.36	1.9	2.8	1.8	**22334E1CCW33**	58.50
170	360	120	4	1400	1790	142758	182526	163.0	0.36	1.9	2.8	1.8	**22334E1MBW33**	63.20
170	360	120	4	1550	2200	158054	224334	200.3	0.36	1.9	2.8	1.8	**22334MBW33N**	61.50

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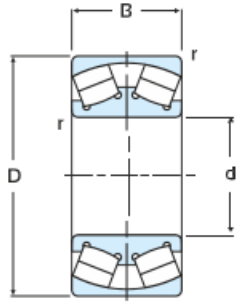
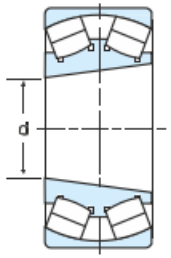
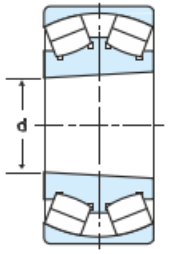
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
180	280	74	2.1	752.5	1299.9	76732	132551	123.5	0.24	2.8	4.2	2.7	**23036CCW33**	17.20
180	280	74	2.1	756	1308	77089	133377	124.2	0.25	2.7	4.0	2.6	**23036MBW33**	17.50
180	280	74	2.1	740	129	75458	13154	12.3	0.25	2.7	4.0	2.6	**23036MBKW33**	17.50
180	280	74	2.1	740	1290	75458	131541	122.5	0.25	2.7	4.0	2.6	**23036MBW33**	17.50
180	280	100	2.1	930	1700	94832	173349	161.5	0.35	1.9	2.9	1.9	**24036CAW33**	23.50
180	280	100	2.1	970	1770	98911	180487	168.1	0.33	2	3	2	**24036MBK30W33**	22.50
180	300	96	3	1050	1750	107069	178448	164.1	0.30	2.3	3.4	2.2	**23136CAKW33**	26.64
180	300	96	3	1030	1730	105029	176408	162.2	0.33	2.0	3.0	2.0	**23136MBW33**	26.00
180	300	118	3	1438	2201	146633	224436	206.4	0.38	1.8	2.7	1.7	**24136CCW33**	33.50
180	320	86	4	940	1390	95852	141738	128.8	0.28	2.4	3.6	2.3	**22236MBW33**	30.00
180	320	86	4	1080	1630	110128	166211	151.0	0.28	2.4	3.6	2.3	**22236MBW33**	29.50
180	320	86	4	1040	1610	106049	164172	149.2	0.28	2.4	3.6	2.3	**22236MBKW33**	28.10
180	320	112	4	1230	2030	125423	206999	188.1	0.35	1.9	2.9	1.9	**23236MBW33**	39.40
180	320	112	4	1230	2130	125423	217196	197.3	0.35	1.9	2.9	1.9	**23236MBKW33**	36.20
180	300	96	3	1263	1760	128788	179467	165.1	0.33	2.0	3.0	2.0	**23136MBKW33/H3136**	37.50
180	380	160	4	1740	2560	177428	261043	229.2	0.28	2.4	3.6	2.3	**22336MBKW33/AH2336**	75.00

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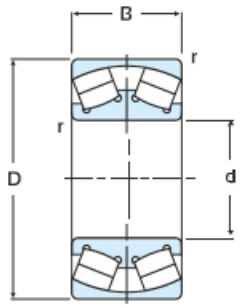
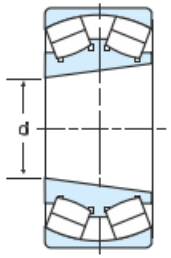
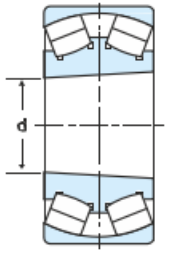
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
190	290	75	2.1	916	1355	93405	138169	127.1	.23	.9	1.3	1.8	**23038CCKW33**	17.40
190	290	75	2.1	760	1350	77497	137660	126.6	.23	.9	1.4	1.9	**23038MBW33**	18.00
190	290	75	2.1	760	1350	77497	137660	126.6	.23	.9	1.4	1.9	**23038MBKW33**	17.50
190	320	104	3	1190	2020	121344	205979	186.0	.33	.1	1.1	1.0	**23138MBW33**	35.10
190	320	128	3	1420	2480	144797	252886	228.4	.39	.7	1.6	1.7	**24138MBW33**	41.60
190	340	92	4	1150	1820	117266	185585	165.7	.27	.5	1.7	1.4	**22238MBKW33**	35.60
190	340	120	4	1450	2370	147857	241669	215.8	.35	.9	1.9	1.9	**23238MBW33**	48.10
190	340	120	4	1450	2350	147857	239630	213.9	.35	.9	1.9	1.9	**23238MBKW33**	47.60
200	310	82	2.1	1038	1606	105845	163764	147.9	.24	.8	1.2	1.7	**23040CCW33**	23.10
200	310	82	2.1	910	1614	92793	164580	148.6	.25	.7	1.0	1.6	**23040MBW33**	23.70
200	310	109	2.1	1310	2090	133581	213117	192.5	.34	.0	1.9	1.9	**24040MBW33**	30.40
200	310	109	2.1	1150	2150	117266	219236	198.0	.33	.0	1.0	1.0	**24040MBK30W33**	30.00
200	340	112	3	1340	2220	136640	226373	201.0	.32	.1	1.2	1.1	**23140MBKW33**	42.00
200	340	112	3	1355	2280	138169	232492	206.4	.32	.1	1.2	1.1	**23140MBW33**	42.50
200	360	98	4	1500	1950	152955	198842	174.6	.26	.6	1.9	1.5	**22240CCKW33**	42.20
200	360	98	4	1190	1810	121344	184566	162.1	.28	.4	1.6	1.4	**22240MBW33**	44.50

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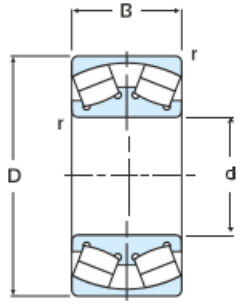
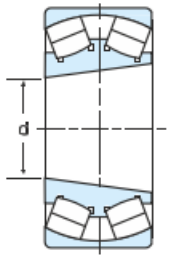
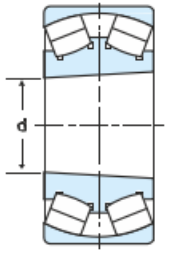
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
200	360	98	4	1190	1810	121344	184566	162.1	0.28	2.4	3.6	2.4	**22240MBW33**	44.50
200	360	128	4	1620	2630	165191	268181	235.5	0.35	1.9	2.8	1.9	**23240MBW33**	57.90
200	360	128	4	1620	2640	165191	269201	236.4	0.35	1.9	2.8	1.9	**23240MBKW33**	57.40
200	420	138	5	2040	3050	208019	311009	264.9	0.35	1.9	2.9	1.9	**22340MBW33**	94.50
200	340	112	3	1400	2500	142758	254925	226.3	0.32	2.1	3.2	2.1	**23140CCKC4W33/H3140**	52.00
200	360	150	4	1310	2010	133581	204960	180.0	0.28	2.4	3.6	2.4	**22240MBKW33/H3140**	56.50
220	340	90	3	1100	1920	112167	195782	171.9	0.25	2.7	4.1	2.7	**23044MBW33**	30.10
220	340	118	3	1355	2580	138169	263083	231.0	0.33	2.1	3.1	2.0	**24044MBK30W33**	38.60
220	340	118	3	1355	2580	138169	263083	231.0	0.33	2.1	3.1	2.0	**24044MBW33**	39.30
220	370	161	4	1520	2710	154994	276339	238.9	0.31	2.2	3.2	2.1	**23144MBKW33/H3144**	67.00
220	400	108	4	1835	2460	187115	250846	213.7	0.27	2.5	3.7	2.4	**22244MBKW33/H3144**	72.50
220	340	90	3	1050	1900	107069	193743	170.1	0.25	2.7	4.1	2.7	**23044MBKW33/H3044**	39.30

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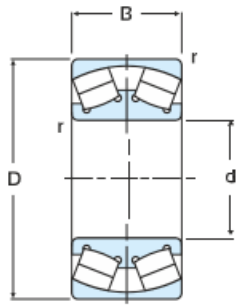
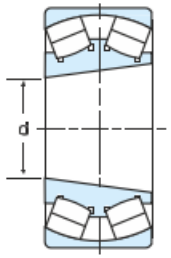
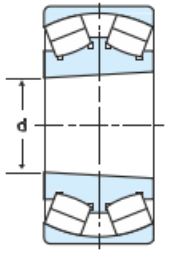
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
240	360	92	3	1130	2170	115226	221275	190.3	0.25	2.7	4.0	2.7	**23048MBKW33**	33.50
240	360	92	3	1130	2170	115226	221275	190.3	0.25	2.7	4.0	2.7	**23048MBW33**	33.70
240	400	128	4	2130	3240	217196	330383	278.7	0.30	2.3	3.4	2.2	**23148CCKW33**	61.80
240	400	128	4	1730	3050	176408	311009	262.4	0.30	2.2	3.3	2.2	**23148MBKW33**	64.60
240	400	128	4	1770	3090	180487	315087	265.8	0.30	2.2	3.3	2.2	**23148MBW33**	67.00
240	400	160	4	2000	3850	203940	392585	331.2	0.30	2.2	3.3	2.2	**24148CAW33**	79.00
240	440	120	4	1940	3130	197822	319166	264.4	0.27	2.5	3.7	2.5	**22248CCKW33**	79.90
240	440	120	4	1900	3050	193743	311009	257.7	0.27	2.5	3.7	2.4	**22248MBKW33**	82.60
260	360	75	2.1	976	1790	99523	182526	155.5	0.18	3.8	5.6	3.6	**23952CAW33**	22.90
260	400	104	4	1671	2580	170392	263083	219.9	0.23	2.9	4.3	2.8	**23052CCKW33**	46.40
260	400	104	4	1450	2700	147857	275319	230.1	0.24	2.8	4.2	2.7	**23052MBW33**	47.20
260	400	104	4	1400	2610	142758	266142	222.5	0.24	2.8	4.2	2.7	**23052MBKW33**	45.00
260	440	144	4	2120	3830	216176	390545	320.7	0.32	2.1	3.2	2.1	**23152MBKW33**	92.00
260	540	165	6	3200	4750	326304	484358	382.2	0.31	2.1	3.2	2.1	**22352CCW33**	181.00

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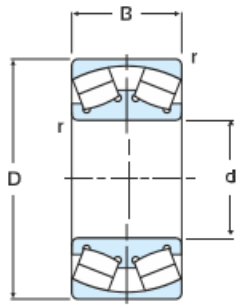
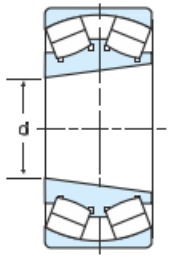
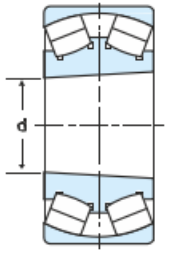
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
280	420	106	4	1500	2800	152955	285516	234.5	0.24	2.9	4.3	2.8	**23056KCAW33**	54.00
280	420	106	4	1320	2850	134600	290615	238.7	0.24	2.9	4.3	2.8	**23056MB W33**	52.50
280	420	106	4	1480	3150	150916	321206	263.8	0.24	2.9	4.3	2.8	**23056MBW33**	52.90
280	460	146	5	2300	4250	234531	433373	350.0	0.30	2.3	3.4	2.2	**23156ECAW33**	97.50
280	460	146	5	2295	4150	234021	423176	341.8	0.30	2.3	3.4	2.2	**23156MBKW33**	96.20
280	460	180	5	2767	5308	282151	541257	437.2	0.36	1.9	2.8	1.8	**24156CCW33**	114.00
280	460	180	5	2730	5200	278378	530244	428.3	0.36	1.9	2.8	1.8	**24156ECCW33X**	121.00
280	500	130	5	2310	3800	235551	387486	308.1	0.26	2.6	3.8	2.5	**22256MBW33**	113.00
300	440	105	4	1450	2760	147857	281437	227.3	0.21	3.2	4.7	3.1	**3760**	55.00
300	460	118	4	1840	3440	187625	350777	281.1	0.24	2.9	4.3	2.8	**23060CK W33**	70.00
300	460	118	4	1890	3550	192723	361994	290.1	0.24	2.9	4.3	2.8	**23060MBKW33**	70.00
300	460	118	4	1890	3550	192723	361994	290.1	0.24	2.9	4.3	2.8	**23060MBW33**	72.50
300	500	160	5	2720	4690	277358	478239	377.3	0.31	2.2	3.3	2.2	**23160MBKW33**	127.0
300	500	200	5	3300	6400	336501	652608	514.9	0.4	1.7	2.5	1.6	**24160ECCW33X**	159.0
320	480	121	4	1940	3790	197822	386466	304.9	0.23	2.9	4.4	2.9	**23064CAW33**	80.1
320	480	160	4	2892	5212	294897	531468	419.3	0.30	2.3	3.4	2.2	**24064CAW33**	103.6

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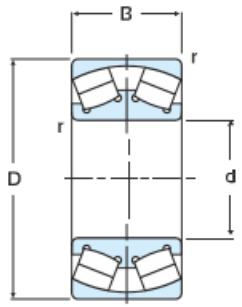
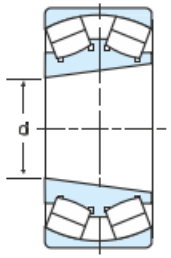
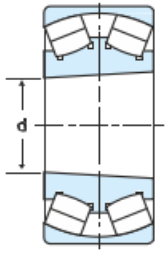
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
320	480	160	4	2511	5201	256047	530346	418.5	0.35	1.9	2.9	1.9	**24064CCW33**	97.8
320	540	176	5	3650	5800	372191	591426	456.6	0.32	2.1	3.1	2.1	**23164MBW33**	167.0
320	580	208	5	4000	7050	407880	718889	547.5	0.36	1.9	2.8	1.8	**23264CAW33X**	240.0
320	580	208	5	4050	7130	412979	727046	553.7	0.36	1.9	2.8	1.8	**23264MBKW33**	243.0
320	580	208	5	4000	7050	407880	718889	547.5	0.36	1.9	2.8	1.8	**23264CAW33**	246.0
320	580	208	5	4050	7130	412979	727046	553.7	0.36	1.9	2.8	1.8	**23264MBW33**	247.0
340	460	90	3	1290	2720	131541	277358	218.8	0.17	4.0	6.0	3.9	**23968CAW33**	44.0
340	520	133	5	2310	4450	235551	453767	350.4	0.24	2.8	4.2	2.8	**23068MBKW33**	103.0
340	580	190	5	3600	6600	367092	673002	509.2	0.34	2.0	2.9	1.9	**23168MBW33**	211.0
340	580	243	5	5168	8950	526981	912632	690.5	0.39	1.7	2.6	1.7	**24168ECAW33**	266.5
340	620	224	6	5127.5	7980.4	522851	813761	607.9	0.36	1.9	2.8	1.8	**23268CAW33**	303.4
340	460	90	3	1290	2720	131541	277358	218.8	0.17	4.0	6.0	3.9	**23968CAKW33/H3968**	66.5
360	540	134	5	2370	4750	241669	484358	368.9	0.22	3.1	4.5	3.0	**23072CCW33**	110
360	540	180	5	3100	6500	316107	662805	504.8	0.36	1.9	2.8	1.8	**24072CAW33**	145
360	540	180	5	3200	6650	326304	678101	516.5	0.31	2.2	3.3	2.2	**24072MBW33**	147

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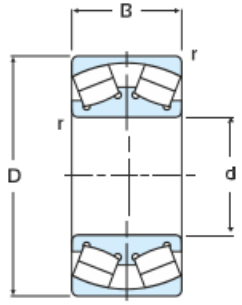
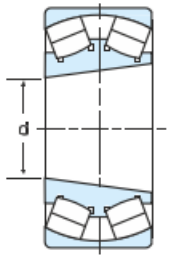
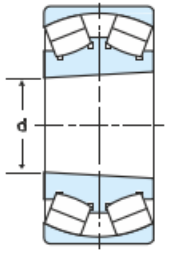
Spherical Roller Bearing



Cylindrical bore



Tapered bore (K)
(1:12)



Tapered bore (K30)
(1:30)

Equivalent radial load
dynamic

$P_r = XF_r + YF_a$

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

static

$P_{or} = F_r + Y_o F_a$

For values of e, Y_2 and Y_o see the table below.

Boundary Dimensions				Basic Load Rating (KN)				Fatigue load limit	e	Y_1	Y_2	Y_o	Bearing Number	Mass Kg. (Approx.)
				Dynamic	Static	Dynamic	Static							
mm				KN		Kgf		KN						
d	D	B	r	Cr	Cor	Cr	Cor	Cu						
400	590	142	5	2450	5000	249827	509850	377.4	0.22	3.1	4.6	3.0	**3880**	134
400	600	148	5	2980	6050	303871	616919	455.3	0.22	3.1	4.6	3.0	**23080CAW33**	154
400	650	250	6	5100	10500	520047	1070685	778.6	0.36	1.9	2.8	1.8	**24180ECAW33**	322
420	760	272	7.5	6550	12100	667904	1233837	866.4	0.36	1.9	2.8	1.9	**23284MBKW33**	526
440	720	226	6	5200	10100	530244	1029897	726.9	0.30	2.2	3.3	2.2	**23188CAW33**	377
440	720	280	6	6450	13100	657707	1335807	942.8	0.37	1.8	2.7	1.8	**24188MBW33**	473
460	680	163	4	3450	7100	351797	723987	510	0.22	3	4.6	2.8	**23092CAW33**	203
480	790	308	7.5	7450	15300	759677	1560141	1072	0.38	1.8	2.7	1.7	**24196ECAW33**	584
480	870	310	7.5	8300	15500	846351	1580535	1066	0.36	1.9	2.8	1.8	**23296CAW33**	820
480	870	310	7.5	8350	15500	851450	1580535	1066	0.36	1.9	2.8	1.8	**23296MBW33**	808
750	920	170	5	3600	11050	367092	1126769	712.9	0.16	4.2	6.2	4.1	**40038/750 (248/750MBW33)**	245
850	1220	365	7.5	12700	31500	1295019	3212055	1906	0.27	2.5	3.7	2.5	**40031/850 (240/850CAW33)**	1410
850	1420	620	12	23300	49260	2375901	5023042	2899	0.34	2.0	3.0	1.9	**241/900MBK30W33/AH241_900G_H**	3480
1180	1420	180	6	5620	17200	573071	1753884	972	0.10	6.4	9.6	6.3	**238/1180CAW33**	565

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