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Spherical Roller Bearings

Introduction

About NSK Spherical Roller Bearings

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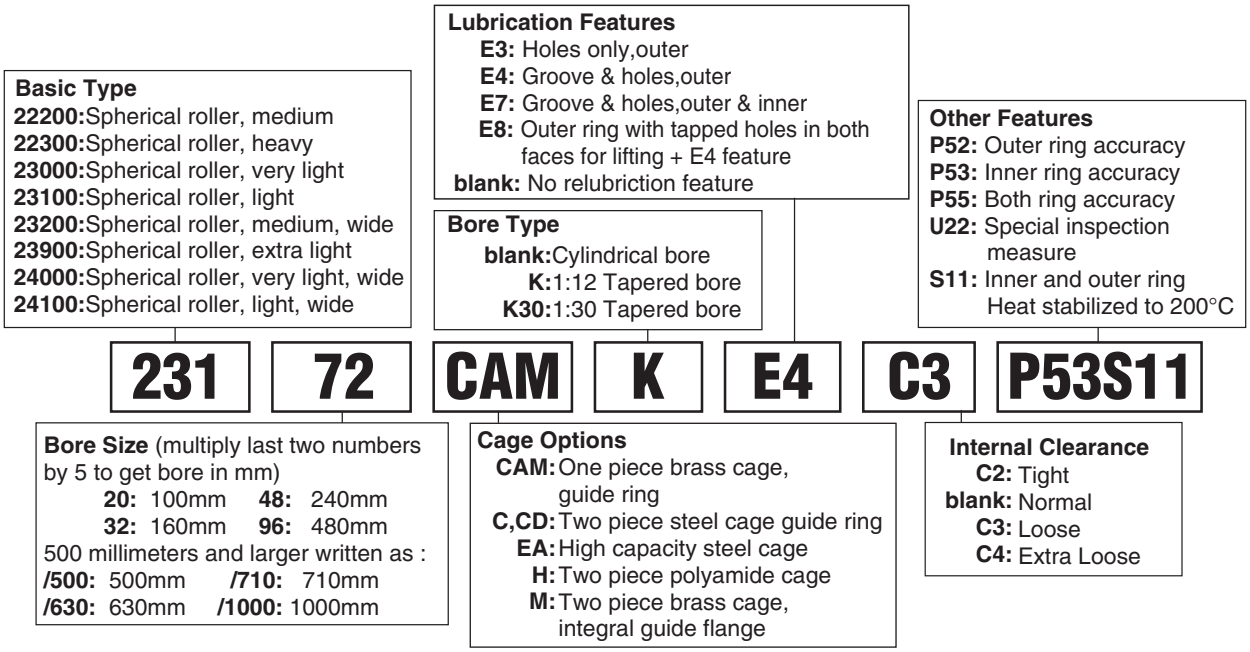
Spherical Roller bearings are double row self-aligning bearings capable of carrying heavy radial loads combined with moderate thrust loads in either direction. They are extremely resistant to shock loads and their self-aligning feature allows full capacity loading despite shaft deflection.

Shaker Screen bearings are designed for vibrating applications such as screens, feeders and compactors. These are self-aligning spherical roller bearings designed to accommodate the high loads, static and dynamic misalignment characteristics, and severe environmental conditions inherent in these applications.

Triple Ring bearings are specially designed for use with controlled crown rolls used extensively in the paper industry. These high load capacity bearings provide "shaft within shaft" operation, while simplifying the surrounding structure and installation.

Nomenclature — Spherical Roller Bearings



Please refer to the bearing tables for exact part number options.

Interchange — Spherical Roller Bearings

	DESCRIPTION	INTERCHANGE			
		NSK	SKF	TORR/FAF	FAG
Part Number	VERY LIGHT	239xx	239xx	239xx	239xx
	LIGHT	230xx	230xx	230xx	230xx
	LIGHT, WIDE	240xx	240xx	240xx	240xx
	MEDIUM	231xx	231xx	231xx	231xx
	MEDIUM, WIDE	241xx	241xx	241xx	241xx
	HEAVY	222xx	222xx	222xx	222xx
	HEAVY, WIDE	232xx	232xx	232xx	232xx
	EXTRA HEAVY	213xx	213xx	213xx	213xx
	EXTRA HEAVY, WIDE	223xx	223xx	223xx	223xx
Part Number Suffix	BRONZE CAGE, ONE PIECE, GUIDE RING	CAM,AM	CA,CACM	YM	M
	BRONZE CAGE, TWO PIECE, GUIDE FLANGE	M	MC	BR	MB
	STEEL CAGE, TWO PIECE, GUIDE RING	C,CD	CJ,CC	CJ,VJ	BLANK
	POLYAMIDE CAGE, TWO PIECE	H	--	VCF	TVPB
	TAPERED BORE 1:12	K	K	K	K
	TAPERED BORE 1:30	K30	K30	K	K30
	CARBURIZED STEEL, COMPLETE BEARING	g	ECD	W40	W209
	CARBURIZED STEEL, INNER RING ONLY	g3	ECB	W40I	W209B
	LUBE GROOVE & HOLES OUTER RING	E4	W33	W33	S
	LUBE GROOVE & HOLES OUTER RING, HOLES INNER RING	E7*	W513	W33W94	SH40AB
	OUTER RING, TAPPED HOLES ONE FACE FOR LIFTING	--	W56	W45A	--
	OUTER RING, TAPPED HOLES BOTH FACES FOR LIFTING + E4 FEATURE	E8	--	--	--
	HOLES ONLY OUTER RING	E3	W20	W20	SY
	HOLES ONLY INNER RING	E5	W26	W94	H40AB
	NO RELUBE FEATURES	BLANK	BLANK	BLANK	--
	PLUGS PROVIDED FOR OUTER RING HOLES	E42	W77	W84	H40
	COMBINATION W33, W4, W31	E4P55	W507	W33W4W31	--
	COMBINATION W33, W31	E4U22	W506	W33W31	--
	COMBINATION W33, W26, W31	E7U22	W509	W33W94W31	SH40A
	OUTER RING WITH EXTRA CLOSE RUNNING ACCURACY	P52	C04	C04	T52BN
	INNER RING WITH EXTRA CLOSE RUNNING ACCURACY	P53	C02	C02	T52BE
	INNER AND OUTER RING W/EXTRA CLOSE RUNNING ACCURACY	P55	C08	C08	T52BW
	SPECIAL INSPECTION MEASURES	U22	W31	W31	--
	INNER RING AND OUTER RING HEAT STABILIZED TO 200°C	S11	S1	--	--
	TIGHT CLEARANCE	C2	C2	C2	C2
	NORMAL CLEARANCE	BLANK	BLANK	BLANK	BLANK
	LOOSE CLEARANCE	C3	C3	C3	C3
	EXTRA LOOSE CLEARANCE	C4	C4	C4	C4

The competitive manufacturers are provided for a convenient source of unit substitution. They can be considered interchangeable in most instances, but for special applications, please consult NSK Engineering. NSK assumes no liability with respect to errors or omissions.

Interchange — Shaker Screen Bearings

NSK	TOR.	SKF	FAG*
22308 HE4C4U15-VS	22308VCFW33C4	452308CACM2/W502	22308ESTVPBC4F80
22309 HE4C4U15- VS	22309VCFW33C4	452309CACM2/W502	22309ESTVPBC4F80
22310 HE4C4U15- VS	22310VCFW33C4	452310CACM2/W502	22310ESTVPBC4F80
22311 CAME4C4U15-VS	22311YMW33W800C4	452311CACM2/W502	22311ASMAC4F80
22312 CAME4C4U15-VS	22312YMW33W800C4	452312CACM2/W502	22312ASMAC4F80
22313 CAME4C4U15-VS	22313YMW33W800C4	452313CACM2/W502	22313ASMAC4F80
22314 CAME4C4U15-VS	22314YMW33W800C4	452314CACM2/W502	22314ASMAC4F80
22315 CAME4C4U15-VS	22315YMW33W800C4	452315CACM2/W502	22315ASMAC4F80
22316 CAME4C4U15-VS	22316YMW33W800C4	452316CACM2/W502	22316ASMAC4F80
22317 CAME4C4U15-VS	22317YMW33W800C4	452317CACM2/W502	22317ASMAC4F80
22318 CAME4C4U15-VS	22318YMW33W800C4	452318CACM2/W502	22318ASMAC4F80
22319 CAME4C4U15-VS	22319YMW33W800C4	452319CACM2/W502	22319ASMAC4F80
22320 CAME4C4U15-VS	22320YMW33W800C4	452320CACM2/W502	22320ASMAC4F80
22322 CAME4C4U15-VS	22322YMW33W800C4	452322CACM2/W502	22322ASMAC4F80
22324 CAME4C4U15-VS	22324YMW33W800C4	452324CACM2/W502	22324ASMAC4F80
22326 CAME4C4U15-VS	22326YMW33W800C4	452326CACM2/W502	22326ASMAC4F80
22328 CAME4C4U15-VS	22328YMW33W800C4	452328CACM2/W502	22328ASMAC4F80
22330 CAME4C4U15-VS	22330YMW33W800C4	452330CACM2/W502	22330AMAC4F80
22332 CAME4C4U15-VS	22332YMW33W800C4	452332CACM2/W502	22332AMAC4F80
22334 CAME4C4U15-VS	22334W33W800C4	452334CACM2/W502	22334AMAC4F80
22336 CAME4C4U15-VS	22336W33W800C4	452336CACM2/W502	22336AMAC4F80
22338 CAME4C4U15-VS	22338W33W800C4	452338CACM2/W502	22338AMAC4F80
22340 CAME4C4U15-VS	22340W33W800C4	452340CACM2/W502	22340AMAC4F80
23322 CAME4C4U15-VS	23322W33W800C4	453322CACM2/W502	23322ASMAC4F80
23324 CAME4C4U15-VS	23324W33W800C4	453324CACM2/W502	23324ASMAC4F80
23326 CAME4C4U15-VS	23326W33W800C4	453326CACM2/W502	23326ASMAC4F80
23328 CAME4C4U15-VS	23328W33W800C4	453328CACM2/W502	23328ASMAC4F80
23330 CAME4C4U15-VS	23330W33W800C4	453330CACM2/W502	23330ASMAC4F80
23332 CAME4C4U15-VS	23332W33W800C4	453332CACM2/W502	23332ASMAC4F80
23338 CAME4C4U15-VS	23338W33W22BRC4	453338CACM2/W502	23338ASMAC4F80
23340 CAME4C4U15-VS	23340W33W22BRC4	–	23340ASMAC4F80

* NSK bearings with “CAME4C4U15-VS” suffix may also be used in place of bearings with FAG suffix “T41A”

The competitive manufacturers are provided for a convenient source of unit substitution. They can be considered interchangeable in most instances, but for special applications, please consult NSK Engineering. NSK assumes no liability with respect to errors or omissions.

Interchange — Triple Ring Bearings

NSK	SKF	FAG	TOR.
2SL180-2UPA	462825	525349	B9483G
2SL200-2UPA	462826	531033	B9484G
2SL220-2UPA	462827	527870	B9485G
2SL240-2UPA	462828	531040	B9486G
2SL260-2UPA	462606	522933	B9362G (B7362G)
2SL280-2UPA	462829	525350	B9417G
2SL300-2UPA	461619	522401	B9193G (B7193G)
2SL320-2UPA	461902	525351	B9194G
2SL340-2UPA	460924	522400	B9094G (B7094G)

The competitive manufacturers are provided for a convenient source of unit substitution. They can be considered interchangeable in most instances, but for special applications, please consult NSK Engineering. NSK assumes no liability with respect to errors or omissions.

Spherical Roller Bearing Applications

Provided below are a few common applications for spherical roller bearings. The spherical roller bearing is designed to handle very heavy loads, even under misalignment or shaft deflection conditions. The spherical shape of the outer ring raceway allows the inner ring to tilt slightly relative to the outer ring without significant loss in bearing life. Spherical roller bearings can also handle axial loading in either direction and heavy shock loads.

- Continuous Casters
  - Support roll
  - Guide roll
  - Pinch roll
  - Table roll
- Other Metal Mill Equipment
- Shaker Screens and Other Vibratory Equipment
- Paper Making Equipment
  - Calender rolls
  - Dryer rolls
  - Fourdrinier
  - etc.
- Mining Equipment
  - Drag lines
  - Gyratory crushers
  - Continuous miners
  - Jaw crushers
  - etc.
- Blowers and Fans
- Rubber and Plastic Forming Equipment
  - Extruders
  - Granulators
  - etc.
- Pumps and Compressors
  - Deep well
  - Slurry
  - etc.
- Gears, Drives and Reducers
- Construction Equipment
- Oil Field Equipment
  - Pump jacks
  - Compounders
  - Derricks
  - Hoists
  - etc.
- Overhead Cranes, Crane Hooks, Hoists
- Metal Forming Equipment
- Railroad Generators and Alternators

Spherical Roller Bearings

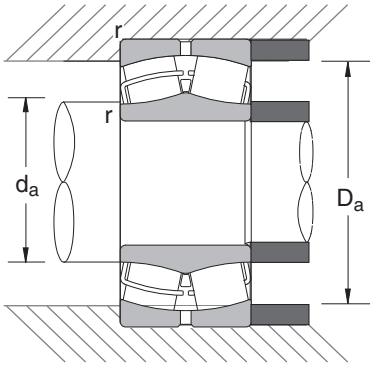
Series 22200

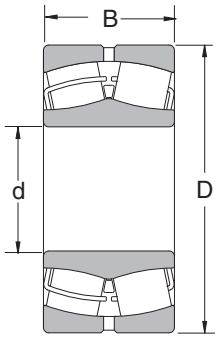
Bore Diameter 30 – 90 mm
1.1811 – 3.5433 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
22206HE4	30	1.1811	62	2.4409	20	0.7874	0.039	1.42	1.45	2.11	2.20
22206CE4	30	1.1811	62	2.4409	20	0.7874	0.039	1.42	1.45	2.11	2.20
22207HE4	35	1.3780	72	2.8346	23	0.9055	0.039	1.65	1.69	2.46	2.56
22207CE4	35	1.3780	72	2.8346	23	0.9055	0.039	1.65	1.69	2.46	2.56
22208HE4	40	1.5748	80	3.1496	23	0.9055	0.039	1.85	1.89	2.76	2.87
22208EAE4	40	1.5748	80	3.1496	23	0.9055	0.039	1.85	1.95	2.71	2.87
22209HE4	45	1.7717	85	3.3465	23	0.9055	0.039	2.05	2.12	2.96	3.07
22209EAE4	45	1.7717	85	3.3465	23	0.9055	0.039	2.05	2.15	2.92	3.07
22210HE4	50	1.9685	90	3.5433	23	0.9055	0.039	2.24	2.32	3.16	3.27
22210EAE4	50	1.9685	90	3.5433	23	0.9055	0.039	2.24	2.37	3.14	3.27
22210CAME4	50	1.9685	90	3.5433	23	0.9055	0.039	2.24	2.33	3.12	3.27
22211HE4	55	2.1654	100	3.9370	25	0.9843	0.059	2.52	2.57	3.53	3.58
22211EAE4	55	2.1654	100	3.9370	25	0.9843	0.059	2.52	2.59	3.47	3.58
22211CAME4	55	2.1654	100	3.9370	25	0.9843	0.059	2.52	2.60	3.47	3.58
22212HE4	60	2.3622	110	4.3307	28	1.1024	0.059	2.72	2.79	3.89	3.98
22212EAE4	60	2.3622	110	4.3307	28	1.1024	0.059	2.72	2.87	3.83	3.98
22212CAME4	60	2.3622	110	4.3307	28	1.1024	0.059	2.72	2.86	3.81	3.98
22213HE4	65	2.5591	120	4.7244	31	1.2205	0.059	2.91	3.10	4.22	4.37
22213EAE4	65	2.5591	120	4.7244	31	1.2205	0.059	2.91	3.17	4.17	4.37
22213CAME4	65	2.5591	120	4.7244	31	1.2205	0.059	2.91	3.12	4.14	4.37
22214HE4	70	2.7559	125	4.9213	31	1.2205	0.059	3.11	3.30	4.41	4.57
22214EAE4	70	2.7559	125	4.9213	31	1.2205	0.059	3.11	3.30	4.35	4.57
22214CAME4	70	2.7559	125	4.9213	31	1.2205	0.059	3.11	3.28	4.35	4.57
22215HE4	75	2.9528	130	5.1181	31	1.2205	0.059	3.31	3.50	4.61	4.76
22215EAE4	75	2.9528	130	5.1181	31	1.2205	0.059	3.31	3.46	4.57	4.76
22215CAME4	75	2.9528	130	5.1181	31	1.2205	0.059	3.31	3.52	4.55	4.76
22216HE4	80	3.1496	140	5.5118	33	1.2992	0.078	3.54	3.73	4.98	5.12
22216EAE4	80	3.1496	140	5.5118	33	1.2992	0.078	3.54	3.73	4.91	5.12
22216CAME4	80	3.1496	140	5.5118	33	1.2992	0.078	3.54	3.72	4.86	5.12
22217HE4	85	3.3465	150	5.9055	36	1.4173	0.078	3.74	3.91	5.31	5.51
22217EAE4	85	3.3465	150	5.9055	36	1.4173	0.078	3.74	3.99	5.27	5.51
22217CAME4	85	3.3465	150	5.9055	36	1.4173	0.078	3.74	3.98	5.24	5.51
22218HE4	90	3.5433	160	6.2992	40	1.5748	0.078	3.94	4.16	5.63	5.91
22218EAE4	90	3.5433	160	6.2992	40	1.5748	0.078	3.94	4.25	5.57	5.91
22218CAME4	90	3.5433	160	6.2992	40	1.5748	0.078	3.94	4.24	5.56	5.91

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
22206HE4	13200	13800	6700	8500	0.55
22206CE4	11300	11200	6000	7500	0.59
22207HE4	17700	18900	5600	7100	0.85
22207CE4	15500	15900	5300	6700	0.93
22208HE4	20200	21400	5000	6300	1.03
22208EAE4	20281	22265	4800	6000	1.16
22209HE4	21300	24000	4500	6000	1.13
22209EAE4	21163	24911	4300	5300	1.25
22210HE4	22400	26200	4300	5300	1.21
22210EAE4	22200	26700	5000	6300	1.34
22210CAME4	18500	20900	4000	5000	1.28
22211HE4	27400	32000	3800	5000	1.67
22211EAE4	26700	32000	4500	5600	1.78
22211CAME4	23400	27600	3600	4500	1.79
22212HE4	33500	39000	3600	4500	2.26
22212EAE4	32000	39000	4300	5300	2.42
22212CAME4	28500	34500	3200	4000	2.48
22213HE4	39500	48500	3200	4000	3.10
22213EAE4	39500	52000	3800	4800	3.32
22213CAME4	34000	42500	3000	3800	3.34
22214HE4	41000	51500	3000	3800	3.27
22214EAE4	40500	52000	3600	4500	3.48
22214CAME4	36500	46000	2800	3600	3.49
22215HE4	42500	55500	3000	3800	3.46
22215EAE4	43000	55000	3400	4300	3.61
22215CAME4	36500	47500	2800	3400	3.73
22216HE4	48000	61500	2800	3400	4.13
22216EAE4	47500	61500	3200	4000	4.42
22216CAME4	41000	52000	2600	3200	4.47
22217HE4	56500	70500	2600	3200	5.23
22217EAE4	56000	73500	3000	3800	5.59
22217CAME4	48500	62000	2400	3000	5.62
22218HE4	66000	84000	2400	3000	6.76
22218EAE4	65000	88500	2800	3600	7.26
22218CAME4	57500	76500	2200	2800	7.33

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

Spherical Roller Bearings

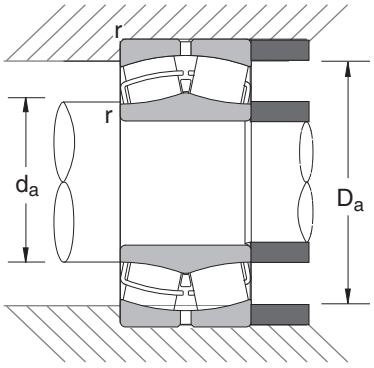
Series 22200 (Continued)

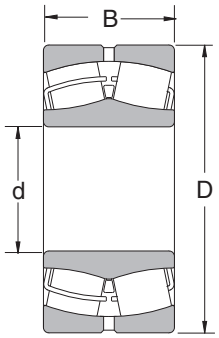
Bore Diameter 95 – 320 mm
3.7402 – 12.5984 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
22219HE4	95	3.7402	170	6.6929	43	1.6929	0.078	4.21	4.42	5.99	6.22
22219EAE4	95	3.7402	170	6.6929	43	1.6929	0.078	4.21	4.52	5.95	6.22
22219CAME4	95	3.7402	170	6.6929	43	1.6929	0.078	4.21	4.47	5.90	6.22
22220HE4	100	3.9370	180	7.0866	46	1.8110	0.078	4.41	4.68	6.34	6.61
22220EAE4	100	3.9370	180	7.0866	46	1.8110	0.078	4.41	4.71	6.25	6.61
22220CAME4	100	3.9370	180	7.0866	46	1.8110	0.078	4.41	4.75	6.24	6.61
22222HE4	110	4.3307	200	7.8740	53	2.0866	0.078	4.80	5.15	6.98	7.40
22222EAE4	110	4.3307	200	7.8740	53	2.0866	0.078	4.80	5.11	6.95	7.40
22222CAME4	110	4.3307	200	7.8740	53	2.0866	0.078	4.80	5.26	6.91	7.40
22224HE4	120	4.7244	215	8.4646	58	2.2835	0.078	5.20	5.57	7.53	7.99
22224EAE4	120	4.7244	215	8.4646	58	2.2835	0.078	5.20	5.60	7.46	7.99
22224CAME4	120	4.7244	215	8.4646	58	2.2835	0.078	5.20	5.65	7.42	7.99
22226HE4	130	5.1181	230	9.0551	64	2.5197	0.098	5.67	5.98	8.09	8.50
22226EAE4	130	5.1181	230	9.0551	64	2.5197	0.098	5.67	6.02	8.00	8.50
22226CAME4	130	5.1181	230	9.0551	64	2.5197	0.098	5.67	6.14	7.99	8.50
22228CDE4	140	5.5118	250	9.8425	68	2.6772	0.098	6.06	6.59	8.61	9.29
22228CAME4	140	5.5118	250	9.8425	68	2.6772	0.098	6.06	6.55	8.69	9.29
22230CDE4	150	5.9055	270	10.6299	73	2.8740	0.098	6.46	7.07	9.28	10.08
22230CAME4	150	5.9055	270	10.6299	73	2.8740	0.098	6.46	7.08	9.28	10.08
22232CDE4	160	6.2992	290	11.4173	80	3.1496	0.098	6.85	7.51	10.02	10.87
22232CAME4	160	6.2992	290	11.4173	80	3.1496	0.098	6.85	7.53	10.02	10.87
22234CDE4	170	6.6929	310	12.2047	86	3.3858	0.118	7.40	8.12	10.62	11.50
22234CAME4	170	6.6929	310	12.2047	86	3.3858	0.118	7.40	8.14	10.62	11.50
22236CDE4	180	7.0866	320	12.5984	86	3.3858	0.118	7.80	8.37	10.95	11.89
22236CAME4	180	7.0866	320	12.5984	86	3.3858	0.118	7.80	8.39	10.95	11.89
22238CAME4	190	7.4803	340	13.3858	92	3.6220	0.118	8.19	8.91	11.63	12.68
22240CAME4	200	7.8740	360	14.1732	98	3.8583	0.118	8.58	9.47	12.37	13.46
22244CAME4	220	8.6614	400	15.7480	108	4.2520	0.118	9.37	10.41	13.69	15.04
22248CAME4	240	9.4488	440	17.3228	120	4.7244	0.118	10.16	11.39	15.07	16.61
22252CAME4	260	10.2362	480	18.8976	130	5.1181	0.157	11.10	12.39	16.45	18.03
22256CAME4	280	11.0236	500	19.6850	130	5.1181	0.157	11.89	13.21	17.26	18.82
22260CAME4	300	11.8110	540	21.2598	140	5.5118	0.157	12.68	14.28	18.63	20.39
22264CAME4	320	12.5984	580	22.8346	150	5.9055	0.157	13.46	15.25	19.99	21.97

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
22219HE4	74000	96000	2200	2800	8.27
22219EAE4	74500	101000	2600	3400	8.89
22219CAME4	66500	88500	2000	2600	8.80
22220HE4	84000	110000	2200	2600	10.06
22220EAE4	82000	110000	2400	3200	10.65
22220CAME4	74000	99000	2000	2400	10.80
22222HE4	106000	143000	1900	2400	14.76
22222EAE4	109000	145000	2200	2800	15.38
22222CAME4	95500	132000	1800	2200	15.54
22224HE4	124000	170000	1700	2200	18.42
22224EAE4	123000	172000	2000	2600	19.36
22224CAME4	110000	155000	1600	2000	19.42
22226HE4	147000	206000	1600	2000	22.89
22226EAE4	147000	211000	1900	2400	24.20
22226CAME4	127000	183000	1500	1900	24.04
22228CDE4	145000	209000	1400	1700	31.58
22228CAME4	151000	213000	1400	1700	30.47
22230CDE4	172000	252000	1300	1600	40.22
22230CAME4	172000	252000	1300	1600	39.68
22232CDE4	205000	297000	1200	1500	50.56
22232CAME4	205000	297000	1200	1500	49.20
22234CDE4	223000	335000	1100	1400	62.89
22234CAME4	223000	335000	1100	1400	61.35
22236CDE4	230000	345000	1100	1300	65.86
22236CAME4	230000	345000	1100	1300	63.97
22238CAME4	255000	390000	1000	1200	77.49
22240CAME4	292000	450000	950	1200	93.10
22244CAME4	355000	545000	850	1000	128.88
22248CAME4	420000	650000	750	950	175.32
22252CAME4	490000	760000	670	850	226.56
22256CAME4	515000	820000	630	800	238.79
22260CAME4	585000	950000	600	750	303.92
22264CAME4	675000	1100000	530	670	379.55

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

Spherical Roller Bearings

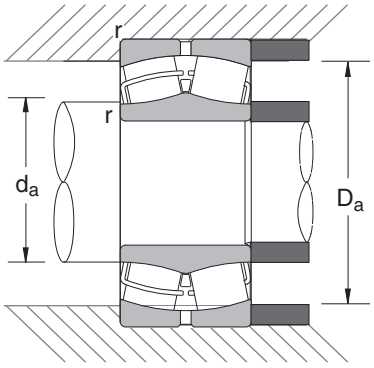
Series 22300

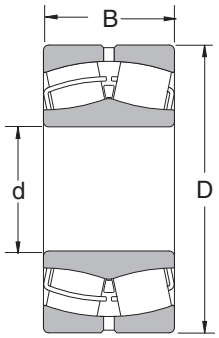
Bore Diameter 40 – 95 mm
1.5748– 3.7402 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
22308HE4	40	1.5748	90	3.5433	33	1.2992	0.059	1.93	2.06	3.03	3.19
22308EAE4	40	1.5748	90	3.5433	33	1.2992	0.059	1.93	1.95	2.96	3.19
22308CAME4	40	1.5748	90	3.5433	33	1.2992	0.059	1.93	1.96	2.96	3.19
22309HE4	45	1.7717	100	3.9370	36	1.4173	0.059	2.13	2.28	3.37	3.58
22309EAE4	45	1.7717	100	3.9370	36	1.4173	0.059	2.13	2.28	3.33	3.58
22309CAME4	45	1.7717	100	3.9370	36	1.4173	0.059	2.13	2.30	3.33	3.58
22310HE4	50	1.9685	110	4.3307	40	1.5748	0.078	2.36	2.47	3.68	3.94
22310EAE4	50	1.9685	110	4.3307	40	1.5748	0.078	2.36	2.55	3.62	3.94
22310CAME4	50	1.9685	110	4.3307	40	1.5748	0.078	2.36	2.46	3.63	3.94
22311HE4	55	2.1654	120	4.7244	43	1.6929	0.078	2.56	2.75	4.02	4.33
22311EAE4	55	2.1654	120	4.7244	43	1.6929	0.078	2.56	2.88	3.99	4.33
22311CAME4	55	2.1654	120	4.7244	43	1.6929	0.078	2.56	2.74	3.97	4.33
22312HE4	60	2.3622	130	5.1181	46	1.8110	0.078	2.83	2.93	4.35	4.65
22312EAE4	60	2.3622	130	5.1181	46	1.8110	0.078	2.83	3.11	4.32	4.65
22312CAME4	60	2.3622	130	5.1181	46	1.8110	0.078	2.83	2.97	4.30	4.65
22313HE4	65	2.5591	140	5.5118	48	1.8898	0.078	3.03	3.13	4.67	5.04
22313EAE4	65	2.5591	140	5.5118	48	1.8898	0.078	3.03	3.33	4.64	5.04
22313CAME4	65	2.5591	140	5.5118	48	1.8898	0.078	3.03	3.24	4.61	5.04
22314HE4	70	2.7559	150	5.9055	51	2.0079	0.078	3.23	3.42	5.04	5.43
22314EAE4	70	2.7559	150	5.9055	51	2.0079	0.078	3.23	3.59	5.01	5.43
22314CAME4	70	2.7559	150	5.9055	51	2.0079	0.078	3.23	3.48	4.96	5.43
22315HE4	75	2.9528	160	6.2992	55	2.1654	0.078	3.43	3.65	5.38	5.83
22315EAE4	75	2.9528	160	6.2992	55	2.1654	0.078	3.43	3.83	5.33	5.83
22315CAME4	75	2.9528	160	6.2992	55	2.1654	0.078	3.43	3.71	5.29	5.83
22316HE4	80	3.1496	170	6.6929	58	2.2835	0.078	3.62	3.86	5.71	6.22
22316EAE4	80	3.1496	170	6.6929	58	2.2835	0.078	3.62	4.07	5.66	6.22
22316CAME4	80	3.1496	170	6.6929	58	2.2835	0.078	3.62	3.94	5.64	6.22
22317HE4	85	3.3465	180	7.0866	60	2.3622	0.098	3.90	4.10	6.09	6.54
22317EAE4	85	3.3465	180	7.0866	60	2.3622	0.098	3.90	4.34	6.06	6.54
22317CAME4	85	3.3465	180	7.0866	60	2.3622	0.098	3.90	4.22	6.03	6.54
22318HE4	90	3.5433	190	7.4803	64	2.5197	0.098	4.09	4.32	6.41	6.93
22318EAE4	90	3.5433	190	7.4803	64	2.5197	0.098	4.09	4.56	6.38	6.93
22318CAME4	90	3.5433	190	7.4803	64	2.5197	0.098	4.09	4.34	6.27	6.93
22319HE4	95	3.7402	200	7.8740	67	2.6378	0.098	4.29	4.55	6.76	7.32
22319EAE4	95	3.7402	200	7.8740	67	2.6378	0.098	4.29	4.78	6.72	7.32
22319CAME4	95	3.7402	200	7.8740	67	2.6378	0.098	4.29	4.70	6.66	7.32

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
22308HE4	30500	34000	4500	6000	2.09
22308EAE4	30642	34390	4300	5300	2.24
22308CAME4	27400	29100	4300	5300	2.17
22309HE4	36000	40500	4000	5300	2.79
22309EAE4	37256	43869	3800	4800	3.05
22309CAME4	33000	37500	3800	4800	2.97
22310HE4	44000	50500	3800	4800	3.67
22310EAE4	44000	52500	3800	4800	3.92
22310CAME4	41500	47500	3600	4300	3.87
22311HE4	51000	59500	3400	4300	4.71
22311EAE4	52500	65500	3400	4300	5.06
22311CAME4	47000	54500	3200	4000	4.93
22312HE4	59500	69500	3200	4000	5.92
22312EAE4	61000	77000	3200	4000	6.36
22312CAME4	55500	65000	3000	3600	6.28
22313HE4	68500	80500	3000	3800	7.31
22313EAE4	67500	85500	3000	3800	7.74
22313CAME4	59500	71500	2800	3400	7.58
22314HE4	75500	90500	2800	3400	8.76
22314EAE4	76500	97500	2800	3400	9.42
22314CAME4	69000	83500	2600	3200	9.24
22315HE4	86500	104000	2600	3200	10.78
22315EAE4	87500	113000	2600	3200	11.57
22315CAME4	76500	93000	2400	3000	11.31
22316HE4	97000	118000	2400	3000	12.87
22316EAE4	97500	128000	2400	3000	13.71
22316CAME4	87500	107000	2200	2800	13.46
22317HE4	105000	127000	2200	2800	14.64
22317EAE4	107000	141000	2200	2800	15.91
22317CAME4	93500	114000	2000	2600	15.55
22318HE4	119000	146000	2200	2600	17.57
22318EAE4	120000	158000	2200	2600	18.83
22318CAME4	109000	134000	2000	2400	18.50
22319HE4	129000	158000	2000	2600	20.23
22319EAE4	132000	175000	2000	2600	21.80
22319CAME4	118000	151000	1900	2400	21.82

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

Spherical Roller Bearings

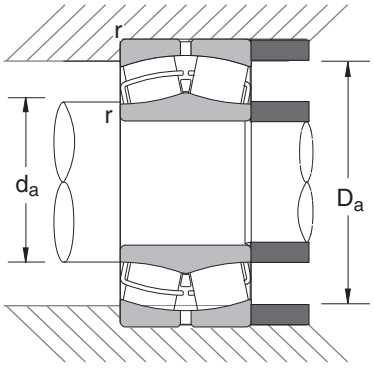
Series 22300 (Continued)

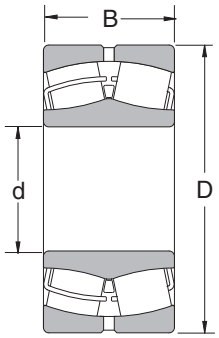
Bore Diameter 100 - 320 mm
3.9370 – 12.5984 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
22320HE4	100	3.9370	215	8.4646	73	2.8740	0.098	4.49	5.02	7.26	7.91
22320EAE4	100	3.9370	215	8.4646	73	2.8740	0.098	4.49	5.12	7.20	7.91
22320CAME4	100	3.9370	215	8.4646	73	2.8740	0.098	4.49	5.11	7.19	7.91
22322HE4	110	4.3307	240	9.4488	80	3.1496	0.098	4.88	5.63	8.10	8.90
22322EAE4	110	4.3307	240	9.4488	80	3.1496	0.098	4.88	5.74	8.04	8.90
22322CAME4	110	4.3307	240	9.4488	80	3.1496	0.098	4.88	5.65	7.96	8.90
22324EAE4	120	4.7244	260	10.2362	86	3.3858	0.098	5.28	6.20	8.70	9.69
22324CAME4	120	4.7244	260	10.2362	86	3.3858	0.098	5.28	6.09	8.61	9.69
22326CE4	130	5.1181	280	11.0236	93	3.6614	0.118	5.83	6.54	9.28	10.31
22326CAME4	130	5.1181	280	11.0236	93	3.6614	0.118	5.83	6.57	9.28	10.31
22328CE4	140	5.5118	300	11.8110	102	4.0157	0.118	6.22	7.00	9.94	11.10
22328CAME4	140	5.5118	300	11.8110	102	4.0157	0.118	6.22	7.03	9.94	11.10
22330CAME4	150	5.9055	320	12.5984	108	4.2520	0.118	6.61	7.56	10.61	11.89
22332CAME4	160	6.2992	340	13.3858	114	4.4882	0.118	7.01	8.05	11.28	12.68
22334CAME4	170	6.6929	360	14.1732	120	4.7244	0.118	7.40	8.20	11.95	13.46
22336CAME4	180	7.0866	380	14.9606	126	4.9606	0.118	7.80	8.69	12.66	14.25
22338CAME4	190	7.4803	400	15.7480	132	5.1969	0.157	8.35	9.17	13.30	14.88
22340CAME4	200	7.8740	420	16.5354	138	5.4331	0.157	8.74	10.12	13.85	15.67
22344CAME4	220	8.6614	460	18.1102	145	5.7087	0.157	9.53	10.90	15.38	17.24
22348CAME4	240	9.4488	500	19.6850	155	6.1024	0.157	10.31	11.91	16.63	18.82
22352CAME4	260	10.2362	540	21.2598	165	6.4961	0.196	11.34	12.89	18.17	20.16
22356CAME4	280	11.0236	580	22.8346	175	6.8898	0.196	12.13	13.88	19.53	21.73
22360CAME4	300	11.8110	620	24.4094	185	7.2835	0.236	13.23	14.85	20.97	22.99
22364CAME4	320	12.5984	670	26.3780	200	7.8740	0.236	14.02	16.01	22.59	24.96

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
22320HE4	150000	194000	1900	2400	26.52
22320EAE4	155000	209000	1900	2400	27.94
22320CAME4	135000	176000	1700	2200	27.52
22322HE4	184000	242000	1700	2200	37.11
22322EAE4	18500	253000	1700	2200	38.72
22322CAME4	166000	221000	1600	1900	38.40
22324EAE4	214000	296000	1600	2000	48.84
22324CAME4	190000	252000	1400	1800	48.30
22326CE4	223000	305000	1300	1600	61.46
22326CAME4	223000	305000	1300	1600	60.72
22328CE4	260000	360000	1200	1500	77.35
22328CAME4	260000	360000	1200	1500	75.74
22330CAME4	275000	380000	1100	1400	90.48
22332CAME4	305000	425000	1100	1300	107.65
22334CAME4	355000	475000	1000	1200	126.51
22336CAME4	390000	525000	950	1200	146.03
22338CAME4	425000	580000	900	1100	169.29
22340CAME4	450000	670000	850	1000	201.82
22344CAME4	530000	760000	750	950	253.13
22348CAME4	585000	855000	670	850	320.25
22352CAME4	700000	1030000	630	800	396.54
22356CAME4	780000	1160000	560	710	481.94
22360CAME4	885000	1320000	530	670	579.80
22364CAME4	1020000	1540000	480	600	741.39

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

Spherical Roller Bearings

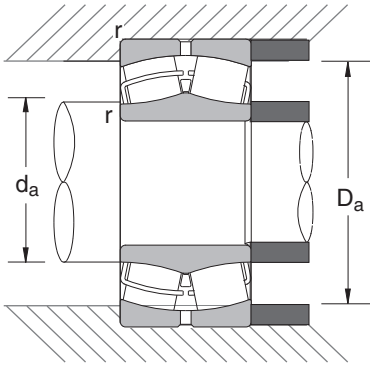
Series 23000

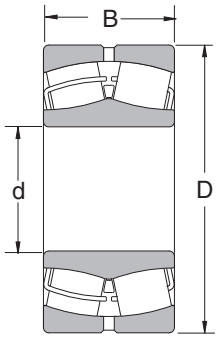
Bore Diameter 100 – 480 mm
3.9370 – 18.8976 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
23020CDE4	100	3.9370	150	5.9055	37	1.4567	0.059	4.29	4.42	5.34	5.55
23022CDE4	110	4.3307	170	6.6929	45	1.7717	0.078	4.72	4.90	5.99	6.30
23022CAME4	110	4.3307	170	6.6929	45	1.7717	0.078	4.72	4.90	5.99	6.30
23024CDE4	120	4.7244	180	7.0866	46	1.8110	0.078	5.12	5.30	6.39	6.69
23024CAME4	120	4.7244	180	7.0866	46	1.8110	0.078	5.12	5.30	6.39	6.69
23026CDE4	130	5.1181	200	7.8740	52	2.0472	0.078	5.51	5.78	7.06	7.48
23026CAME4	130	5.1181	200	7.8740	52	2.0472	0.078	5.51	5.79	7.06	7.48
23028CDE4	140	5.5118	210	8.2677	53	2.0866	0.078	5.91	6.18	7.46	7.87
23028CAME4	140	5.5118	210	8.2677	53	2.0866	0.078	5.91	6.18	7.46	7.87
23030CDE4	150	5.9055	225	8.8583	56	2.2047	0.078	6.38	6.65	8.00	8.39
23030CAME4	150	5.9055	225	8.8583	56	2.2047	0.078	6.38	6.65	8.00	8.39
23032CDE4	160	6.2992	240	9.4488	60	2.3622	0.078	6.77	7.06	8.49	8.98
23032CAME4	160	6.2992	240	9.4488	60	2.3622	0.078	6.77	7.07	8.49	8.98
23034CDE4	170	6.6929	260	10.2362	67	2.6378	0.078	7.17	7.55	9.18	9.76
23034CAME4	170	6.6929	260	10.2362	67	2.6378	0.078	7.17	7.55	9.18	9.76
23036CDE4	180	7.0866	280	11.0236	74	2.9134	0.078	7.56	7.96	9.78	10.55
23036CAME4	180	7.0866	280	11.0236	74	2.9134	0.078	7.56	7.97	9.78	10.55
23038CAME4	190	7.4803	290	11.4173	75	2.9528	0.078	7.95	8.43	10.25	10.94
23040CAME4	200	7.8740	310	12.2047	82	3.2283	0.078	8.35	9.02	10.95	11.73
23044CAME4	220	8.6614	340	13.3858	90	3.5433	0.098	9.21	9.79	11.89	12.83
23048CAME4	240	9.4488	360	14.1732	92	3.6220	0.098	10.00	10.53	12.74	13.62
23052CAME4	260	10.2362	400	15.7480	104	4.0945	0.118	10.94	11.44	13.98	15.04
23056CAME4	280	11.0236	420	16.5354	106	4.1732	0.118	11.73	12.33	14.85	15.83
23060CAME4	300	11.8110	460	18.1102	118	4.6457	0.118	12.52	13.40	16.24	17.40
23064CAME4	320	12.5984	480	18.8976	121	4.7638	0.118	13.31	14.15	16.99	18.19
23068CAME4	340	13.3858	520	20.4724	133	5.2362	0.157	14.25	15.10	18.28	19.61
23072CAME4	360	14.1732	540	21.2598	134	5.2756	0.157	15.04	15.84	19.09	20.39
23076CAME4	380	14.9606	560	22.0472	135	5.3150	0.157	15.83	16.69	19.90	21.18
23080CAME4	400	15.7480	600	23.6220	148	5.8268	0.157	16.61	17.59	21.23	22.76
23084CAME4	420	16.5354	620	24.4094	150	5.9055	0.157	17.40	18.43	22.10	23.54
23088CAME4	440	17.3228	650	25.5906	157	6.1811	0.196	18.43	19.27	23.08	24.49
23092CAME4	460	18.1102	680	26.7717	163	6.4173	0.196	19.21	20.20	24.18	25.67
23096CAME4	480	18.8976	700	27.5591	165	6.4961	0.196	20.00	20.91	24.93	26.46

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
23020CDE4	47500	75500	2200	2800	5.02
23022CDE4	66000	105000	2000	2400	8.18
23022CAME4	66000	105000	2000	2400	7.82
23024CDE4	70500	118000	1800	2200	8.95
23024CAME4	70500	118000	1800	2200	8.65
23026CDE4	90000	148000	1700	2000	13.00
23026CAME4	90000	148000	1700	2000	12.65
23028CDE4	94500	161000	1600	1900	14.11
23028CAME4	94500	161000	1600	1900	13.69
23030CDE4	106000	183000	1400	1800	17.19
23030CAME4	106000	183000	1400	1800	16.67
23032CDE4	121000	215000	1300	1700	21.05
23032CAME4	121000	215000	1300	1700	20.53
23034CDE4	143000	246000	1200	1600	28.29
23034CAME4	143000	246000	1200	1600	27.21
23036CDE4	168000	285000	1200	1400	37.24
23036CAME4	168000	285000	1200	1400	36.18
23038CAME4	174000	305000	1100	1400	38.45
23040CAME4	211000	385000	1000	1300	48.94
23044CAME4	245000	445000	950	1200	64.70
23048CAME4	260000	480000	850	1100	71.12
23052CAME4	320000	580000	800	950	101.63
23056CAME4	345000	665000	710	900	110.15
23060CAME4	430000	830000	670	850	154.02
23064CAME4	440000	865000	630	800	164.73
23068CAME4	510000	985000	560	710	220.55
23072CAME4	535000	1060000	530	670	230.81
23076CAME4	560000	1150000	530	630	246.15
23080CAME4	670000	1330000	480	600	318.84
23084CAME4	655000	1310000	450	560	329.35
23088CAME4	705000	1430000	430	530	378.44
23092CAME4	780000	1590000	400	500	438.48
23096CAME4	850000	1790000	400	480	461.25

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

Spherical Roller Bearings

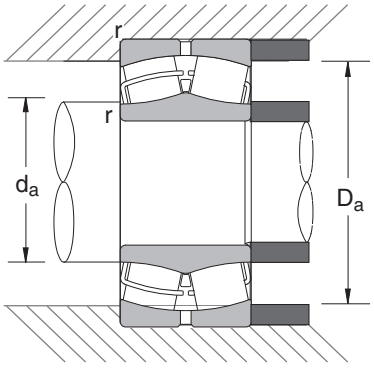
Series 23000 (Continued)

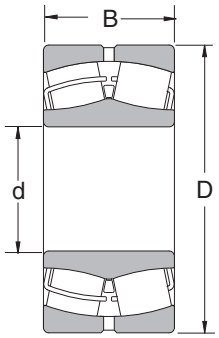
Bore Diameter 500 – 1250 mm
19.6850 – 49.2126 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
230/500CAME4	500	19.6850	720	28.3465	167	6.5748	0.196	20.79	21.78	25.77	27.24
230/530CAME4	530	20.8661	780	30.7087	185	7.2835	0.196	21.97	23.25	27.78	29.61
230/560CAME4	560	22.0472	820	32.2835	195	7.6772	0.196	23.15	24.46	29.19	31.18
230/600CAME4	600	23.6220	870	34.2520	200	7.8740	0.196	24.72	26.43	31.24	33.15
230/630CAME4	630	24.8031	920	36.2205	212	8.3465	0.236	26.22	27.55	32.85	34.80
230/670CAME4	670	26.3780	980	38.5827	230	9.0551	0.236	27.80	29.39	35.08	37.17
230/710CAME4	710	27.9528	1030	40.5512	236	9.2913	0.236	29.37	31.05	36.84	39.13
230/750CAME4	750	29.5276	1090	42.9134	250	9.8425	0.236	30.94	32.78	38.97	41.50
230/800CAME4	800	31.4961	1150	45.2756	258	10.1575	0.236	32.91	34.86	41.13	43.86
230/850CAME4	850	33.4646	1220	48.0315	272	10.7087	0.236	34.88	37.03	43.65	46.61
230/900CAME4	900	35.4331	1280	50.3937	280	11.0236	0.236	36.85	39.09	46.02	48.98
230/950CAME4	950	37.4016	1360	53.5433	300	11.8110	0.236	38.82	41.37	48.83	52.13
230/1000CAME4	1000	39.3701	1420	55.9055	308	12.1260	0.236	40.79	43.42	51.10	54.49
230/1060CAME4	1060	41.7323	1500	59.0551	325	12.7953	0.314	43.46	45.95	53.84	57.32
230/1120CAME4	1120	44.0945	1580	62.2047	345	13.5827	0.314	45.83	48.46	56.83	60.47
230/1250CAME4	1250	49.2126	1750	68.8976	375	14.7638	0.314	50.94	54.11	62.94	67.17

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
230/500CAME4	850000	1820000	380	480	481
230/530CAME4	990000	2070000	340	430	652
230/560CAME4	1120000	2400000	320	400	757
230/600CAME4	1230000	2730000	300	360	856
230/630CAME4	1330000	2870000	280	340	1029
230/670CAME4	1540000	3350000	240	320	1256
230/710CAME4	1590000	3550000	240	280	1424
230/750CAME4	1740000	3850000	220	260	1689
230/800CAME4	1870000	4300000	200	240	1913
230/850CAME4	2090000	4800000	180	220	2237
230/900CAME4	2220000	5150000	160	200	2545
230/950CAME4	2550000	5950000	150	190	3091
230/1000CAME4	2680000	6300000	140	170	3440
230/1060CAME4	2930000	7050000	120	160	3928
230/1120CAME4	3450000	8550000	110	140	4674
230/1250CAME4	3900000	9950000	90	110	6086

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

Spherical Roller Bearings

Series 23100

Bore Diameter 100 – 380 mm
3.9370 – 14.9606 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
23120CE4	100	3.9370	165	6.4961	52	2.0472	0.078	4.33	4.48	5.66	6.10
23120CAME4	100	3.9370	165	6.4961	52	2.0472	0.078	4.33	4.49	5.66	6.10
23122CE4	110	4.3307	180	7.0866	56	2.2047	0.078	4.72	5.02	6.19	6.69
23122CAME4	110	4.3307	180	7.0866	56	2.2047	0.078	4.72	5.03	6.19	6.69
23124CE4	120	4.7244	200	7.8740	62	2.4409	0.078	5.12	5.43	6.86	7.48
23124CAME4	120	4.7244	200	7.8740	62	2.4409	0.078	5.12	5.44	6.86	7.48
23126CE4	130	5.1181	210	8.2677	64	2.5197	0.078	5.51	5.87	7.25	7.87
23126CAME4	130	5.1181	210	8.2677	64	2.5197	0.078	5.51	5.88	7.25	7.87
23128CE4	140	5.5118	225	8.8583	68	2.6772	0.078	5.98	6.24	7.79	8.39
23128CAME4	140	5.5118	225	8.8583	68	2.6772	0.078	5.98	6.25	7.79	8.39
23130CE4	150	5.9055	250	9.8425	80	3.1496	0.078	6.38	6.85	8.57	9.37
23130CAME4	150	5.9055	250	9.8425	80	3.1496	0.078	6.38	6.86	8.57	9.37
23132CE4	160	6.2992	270	10.6299	86	3.3858	0.078	6.77	7.30	9.21	10.16
23132CAME4	160	6.2992	270	10.6299	86	3.3858	0.078	6.77	7.32	9.21	10.16
23134CE4	170	6.6929	280	11.0236	88	3.4646	0.078	7.17	7.66	9.63	10.55
23134CAME4	170	6.6929	280	11.0236	88	3.4646	0.078	7.17	7.67	9.63	10.55
23136CE4	180	7.0866	300	11.8110	96	3.7795	0.098	7.64	8.13	10.24	11.26
23136CAME4	180	7.0866	300	11.8110	96	3.7795	0.098	7.64	8.13	10.24	11.26
23138CE4	190	7.4803	320	12.5984	104	4.0945	0.098	8.03	8.64	10.84	12.05
23138CAME4	190	7.4803	320	12.5984	104	4.0945	0.098	8.03	8.64	10.84	12.05
23140CE4	200	7.8740	340	13.3858	112	4.4094	0.098	8.43	9.15	11.52	12.83
23140CAME4	200	7.8740	340	13.3858	112	4.4094	0.098	8.43	9.15	11.52	12.83
23144CE4	220	8.6614	370	14.5669	120	4.7244	0.118	9.37	10.00	12.58	13.86
23144CAME4	220	8.6614	370	14.5669	120	4.7244	0.118	9.37	9.99	12.58	13.86
23148CE4	240	9.4488	400	15.7480	128	5.0394	0.118	10.16	10.83	13.64	15.04
23148CAME4	240	9.4488	400	15.7480	128	5.0394	0.118	10.16	10.84	13.64	15.04
23152CAME4	260	10.2362	440	17.3228	144	5.6693	0.118	10.94	11.77	14.93	16.61
23156CAME4	280	11.0236	460	18.1102	146	5.7480	0.157	11.89	12.59	15.73	17.24
23160CAME4	300	11.8110	500	19.6850	160	6.2992	0.157	12.68	13.56	17.05	18.82
23164CAME4	320	12.5984	540	21.2598	176	6.9291	0.157	13.46	14.50	18.35	20.39
23168CAME4	340	13.3858	580	22.8346	190	7.4803	0.157	14.25	15.54	19.62	21.97
23172CAME4	360	14.1732	600	23.6220	192	7.5591	0.157	15.04	16.24	20.45	22.76
23176CAME4	380	14.9606	620	24.4094	194	7.6378	0.157	15.83	17.04	21.26	23.54

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
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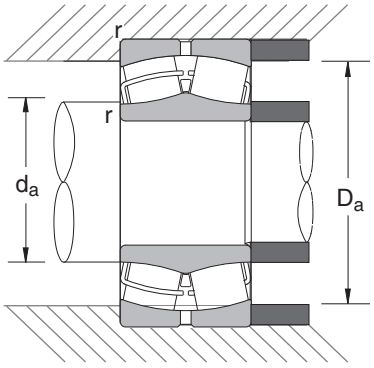

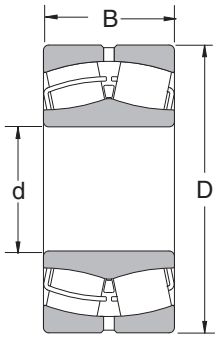

Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
23120CE4	78000	119000	1700	2200	9.52
23120CAME4	78000	119000	1700	2200	9.25
23122CE4	86500	141000	1600	2000	12.40
23122CAME4	86500	141000	1600	2000	12.03
23124CE4	105000	162000	1400	1800	17.10
23124CAME4	105000	162000	1400	1800	16.83
23126CE4	113000	186000	1300	1700	18.94
23126CAME4	113000	186000	1300	1700	18.52
23128CE4	130000	212000	1200	1600	22.92
23128CAME4	130000	212000	1200	1600	21.92
23130CE4	163000	266000	1100	1400	34.60
23130CAME4	163000	266000	1100	1400	33.83
23132CE4	192000	315000	1000	1300	44.31
23132CAME4	192000	315000	1000	1300	43.67
23134CE4	212000	355000	1000	1300	47.52
23134CAME4	212000	355000	1000	1300	45.73
23136CE4	237000	395000	900	1200	60.12
23136CAME4	237000	395000	900	1200	58.80
23138CE4	267000	455000	850	1100	75.24
23138CAME4	266000	455000	850	1100	74.15
23140CE4	305000	525000	800	1000	93.13
23140CAME4	305000	525000	800	1000	91.18
23144CE4	350000	610000	710	950	115.82
23144CAME4	350000	610000	710	950	113.64
23148CE4	400000	700000	670	850	141.82
23148CAME4	400000	700000	670	850	139.15
23152CAME4	485000	850000	600	800	192.63
23156CAME4	500000	900000	560	750	205.91
23160CAME4	600000	1080000	500	670	273.31
23164CAME4	690000	1230000	480	600	353.16
23168CAME4	810000	1480000	430	560	450.19
23172CAME4	860000	1590000	400	530	473.33
23176CAME4	895000	1700000	400	500	499.20

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

Spherical Roller Bearings

Series 23100 (Continued)

Bore Diameter 400 – 900 mm
15.7480 – 35.4331 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
23180CAME4	400	15.7480	650	25.5906	200	7.8740	0.196	16.85	18.00	22.37	24.49
23184CAME4	420	16.5354	700	27.5591	224	8.8189	0.196	17.64	18.98	23.89	26.46
23188CAME4	440	17.3228	720	28.3465	226	8.8976	0.196	18.43	19.75	24.67	27.24
23192CAME4	460	18.1102	760	29.9213	240	9.4488	0.236	19.53	20.72	26.01	28.50
23196CAME4	480	18.8976	790	31.1024	248	9.7638	0.236	20.31	21.58	27.07	29.69
231/500CAME4	500	19.6850	830	32.6772	264	10.3937	0.236	21.10	22.53	28.35	31.26
231/530CAME4	530	20.8661	870	34.2520	272	10.7087	0.236	22.28	23.84	29.82	32.83
231/560CAME4	560	22.0472	920	36.2205	280	11.0236	0.236	23.46	25.23	31.63	34.80
231/600CAME4	600	23.6220	980	38.5827	300	11.8110	0.236	25.04	26.97	33.69	37.17
231/630CAME4	630	24.8031	1030	40.5512	315	12.4016	0.236	26.22	28.33	35.40	39.13
231/670CAME4	670	26.3780	1090	42.9134	336	13.2283	0.236	27.80	30.03	37.45	41.50
231/710CAME4	710	27.9528	1150	45.2756	345	13.5827	0.314	29.69	31.85	39.67	43.54
231/750CAME4	750	29.5276	1220	48.0315	365	14.3701	0.314	31.26	33.81	42.07	46.30
231/800CAME4	800	31.4961	1280	50.3937	375	14.7638	0.314	33.23	35.79	44.34	48.66
231/850CAME4	850	33.4646	1360	53.5433	400	15.7480	0.393	35.59	38.13	47.08	51.42
231/900CAME4	900	35.4331	1420	55.9055	412	16.2205	0.393	37.56	39.90	49.33	53.78

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
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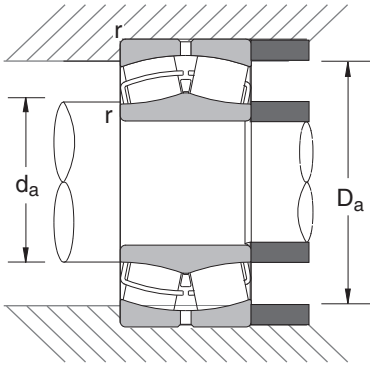
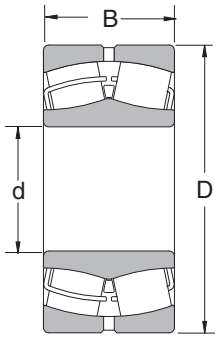




Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
23180CAME4	930000	1780000	380	480	562
23184CAME4	1120000	2110000	340	450	745
23188CAME4	1200000	2330000	320	430	788
23192CAME4	1280000	2450000	300	400	925
23196CAME4	1360000	2640000	300	380	1039
231/500CAME4	1540000	3000000	280	360	1241
231/530CAME4	1610000	3150000	260	340	1381
231/560CAME4	1760000	3500000	240	320	1600
231/600CAME4	1970000	3950000	220	280	1976
231/630CAME4	2160000	4350000	200	260	2296
231/670CAME4	2390000	4850000	190	240	2715
231/710CAME4	2660000	5500000	170	220	3114
231/750CAME4	2940000	6150000	160	200	3732
231/800CAME4	3100000	6550000	150	190	4121
231/850CAME4	3550000	7700000	130	170	4979
231/900CAME4	3850000	8300000	120	160	5469

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

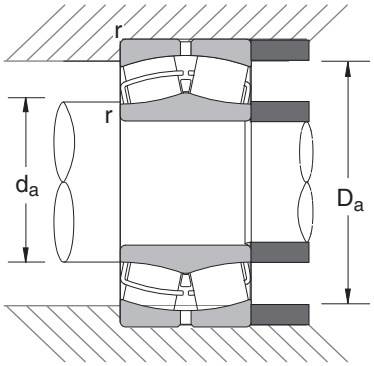
Spherical Roller Bearings

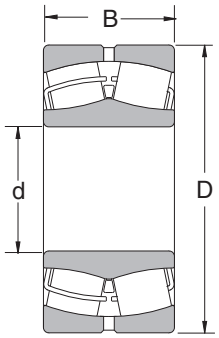
Series 23200

Bore Diameter 70 – 280 mm
2.7559 – 11.0236 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
23214CAME4	70	2.7559	125	4.9213	39.7	1.5630	0.059	3.11	3.26	4.24	4.57
23218CE4	90	3.5433	160	6.2992	52.4	2.0630	0.078	3.94	4.15	5.40	5.91
23218CAME4	90	3.5433	160	6.2992	52.4	2.0630	0.078	3.94	4.16	5.40	5.91
23219CAME4	95	3.7402	170	6.6929	55.6	2.1890	0.078	4.21	4.37	5.74	6.22
23220CE4	100	3.9370	180	7.0866	60.3	2.3740	0.078	4.41	4.67	6.09	6.61
23220CAME4	100	3.9370	180	7.0866	60.3	2.3740	0.078	4.41	4.66	6.09	6.61
23222CE4	110	4.3307	200	7.8740	69.8	2.7480	0.078	4.80	5.12	6.66	7.40
23222CAME4	110	4.3307	200	7.8740	69.8	2.7480	0.078	4.80	5.13	6.66	7.40
23224CE4	120	4.7244	215	8.4646	76	2.9921	0.078	5.20	5.52	7.16	7.99
23224CAME4	120	4.7244	215	8.4646	76	2.9921	0.078	5.20	5.54	7.16	7.99
23226CE4	130	5.1181	230	9.0551	80	3.1496	0.098	5.67	5.93	7.69	8.50
23226CAME4	130	5.1181	230	9.0551	80	3.1496	0.098	5.67	5.95	7.69	8.50
23228CE4	140	5.5118	250	9.8425	88	3.4646	0.098	6.06	6.44	8.38	9.29
23228CAME4	140	5.5118	250	9.8425	88	3.4646	0.098	6.06	6.46	8.38	9.29
23230CE4	150	5.9055	270	10.6299	96	3.7795	0.098	6.46	6.96	9.02	10.08
23230CAME4	150	5.9055	270	10.6299	96	3.7795	0.098	6.46	6.98	9.02	10.08
23232CE4	160	6.2992	290	11.4173	104	4.0945	0.098	6.85	7.44	9.62	10.87
23232CAME4	160	6.2992	290	11.4173	104	4.0945	0.098	6.85	7.47	9.62	10.87
23234CE4	170	6.6929	310	12.2047	110	4.3307	0.118	7.40	7.93	10.28	11.50
23234CAME4	170	6.6929	310	12.2047	110	4.3307	0.118	7.40	7.94	10.28	11.50
23236CE4	180	7.0866	320	12.5984	112	4.4094	0.118	7.80	8.33	10.76	11.89
23236CAME4	180	7.0866	320	12.5984	112	4.4094	0.118	7.80	8.31	10.76	11.89
23238CE4	190	7.4803	340	13.3858	120	4.7244	0.118	8.19	8.74	11.32	12.68
23238CAME4	190	7.4803	340	13.3858	120	4.7244	0.118	8.19	8.75	11.32	12.68
23240CE4	200	7.8740	360	14.1732	128	5.0394	0.118	8.58	9.34	12.08	13.46
23240CAME4	200	7.8740	360	14.1732	128	5.0394	0.118	8.58	9.35	12.08	13.46
23244CE4	220	8.6614	400	15.7480	144	5.6693	0.118	9.37	10.25	13.25	15.04
23244CAME4	220	8.6614	400	15.7480	144	5.6693	0.118	9.37	10.23	13.25	15.04
23248CAME4	240	9.4488	440	17.3228	160	6.2992	0.118	10.16	11.13	14.65	16.61
23252CAME4	260	10.2362	480	18.8976	174	6.8504	0.157	11.10	12.13	15.95	18.03
23256CAME4	280	11.0236	500	19.6850	176	6.9291	0.157	11.89	12.91	16.73	18.82

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
23214CAME4	45500	62500	2400	3000	4.50
23218CE4	76500	110000	1800	2400	9.80
23218CAME4	76500	110000	1800	2400	9.66
23219CAME4	83000	118000	1700	2200	11.73
23220CE4	94000	135000	1600	2200	14.39
23220CAME4	94000	135000	1600	2200	14.11
23222CE4	116000	171000	1500	1900	20.78
23222CAME4	116000	171000	1500	1900	20.54
23224CE4	142000	218000	1300	1700	26.32
23224CAME4	142000	218000	1300	1700	25.67
23226CE4	158000	243000	1200	1600	31.26
23226CAME4	158000	243000	1200	1600	30.56
23228CE4	187000	292000	1100	1500	41.01
23228CAME4	187000	292000	1100	1500	40.12
23230CE4	219000	350000	1100	1400	52.72
23230CAME4	219000	350000	1100	1400	51.84
23232CE4	247000	395000	1000	1300	66.42
23232CAME4	247000	395000	1000	1300	65.57
23234CE4	270000	430000	900	1200	79.49
23234CAME4	270000	430000	900	1200	78.49
23236CE4	293000	475000	850	1100	84.97
23236CAME4	292000	475000	850	1100	81.70
23238CE4	325000	530000	800	1100	104.03
23238CAME4	325000	530000	800	1100	101.74
23240CE4	375000	620000	750	1000	124.47
23240CAME4	370000	620000	750	1000	121.20
23244CE4	455000	765000	670	900	175.45
23244CAME4	455000	765000	670	900	172.23
23248CAME4	550000	910000	630	800	231.56
23252CAME4	615000	1020000	560	750	298.14
23256CAME4	650000	1110000	530	670	319.60

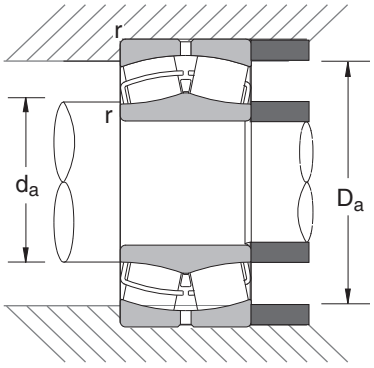
C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

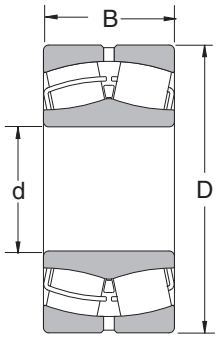
Spherical Roller Bearings

Series 23200 (Continued)

Bore Diameter 300 – 950 mm
11.8110 - 37.4016 inch

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
23260CAME4	300	11.8110	540	21.2598	192	7.5591	0.157	12.68	13.87	18.00	20.39
23264CAME4	320	12.5984	580	22.8346	208	8.1890	0.157	13.46	14.88	19.21	21.97
23268CAME4	340	13.3858	620	24.4094	224	8.8189	0.196	14.49	15.83	20.49	23.31
23272CAME4	360	14.1732	650	25.5906	232	9.1339	0.196	15.28	16.62	21.59	24.49
23276CAME4	380	14.9606	680	26.7717	240	9.4488	0.196	16.06	17.55	22.74	25.67
23280CAME4	400	15.7480	720	28.3465	256	10.0787	0.196	16.85	18.45	23.99	27.24
23284CAME4	420	16.5354	760	29.9213	272	10.7087	0.236	17.95	19.48	25.34	28.50
23288CAME4	440	17.3228	790	31.1024	280	11.0236	0.236	18.74	20.34	26.31	29.69
23292CAME4	460	18.1102	830	32.6772	296	11.6535	0.236	19.53	21.45	27.63	31.26
23296CAME4	480	18.8976	870	34.2520	310	12.2047	0.236	20.31	22.19	28.86	32.83
232/500CAME4	500	19.6850	920	36.2205	336	13.2283	0.236	21.10	23.36	30.44	34.80
232/530CAME4	530	20.8661	980	38.5827	355	13.9764	0.314	22.60	24.81	32.41	36.85
232/560CAME4	560	22.0472	1030	40.5512	365	14.3701	0.314	23.78	26.29	34.23	38.82
232/600CAME4	600	23.6220	1090	42.9134	388	15.2756	0.314	25.35	28.07	36.32	41.18
232/630CAME4	630	24.8031	1150	45.2756	412	16.2205	0.393	26.93	29.36	38.19	43.15
232/670CAME4	670	26.3780	1220	48.0315	438	17.2441	0.393	28.50	30.94	40.32	45.91
232/710CAME4	710	27.9528	1280	50.3937	450	17.7165	0.393	30.08	32.83	42.51	48.27
232/750CAME4	750	29.5276	1360	53.5433	475	18.7008	0.472	32.05	35.14	45.17	51.02
232/800CAME4	800	31.4961	1420	55.9055	488	19.2126	0.472	34.02	36.70	47.55	53.39
232/850CAME4	850	33.4646	1500	59.0551	515	20.2756	0.472	35.98	38.86	50.16	56.54
232/950CAME4	950	37.4016	1660	65.3543	530	20.8661	0.472	39.92	43.71	56.22	62.83





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
23260CAME4	770000	1330000	480	630	413
23264CAME4	875000	1550000	450	600	522
23268CAME4	990000	1760000	400	530	643
23272CAME4	1080000	1920000	380	500	725
23276CAME4	1160000	2070000	360	480	812
23280CAME4	1300000	2340000	340	450	981
23284CAME4	1450000	2630000	320	430	1168
23288CAME4	1550000	2870000	300	400	1296
23292CAME4	1650000	3100000	280	380	1512
23296CAME4	1770000	3250000	260	360	1742
232/500CAME4	2020000	3750000	260	320	2132
232/530CAME4	2270000	4250000	240	300	2565
232/560CAME4	2460000	4600000	220	280	2911
232/600CAME4	2870000	5600000	200	260	3498
232/630CAME4	3000000	5750000	180	240	4065
232/670CAME4	3350000	6450000	170	220	4857
232/710CAME4	3500000	6850000	160	200	5440
232/750CAME4	3950000	7950000	140	190	6564
232/800CAME4	4550000	9200000	130	170	7156
232/850CAME4	5000000	10200000	120	160	8558
232/950CAME4	5550000	11300000	100	130	10568

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

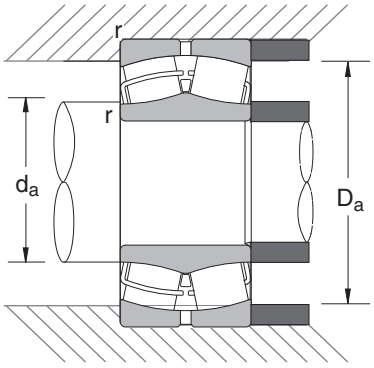
Spherical Roller Bearings

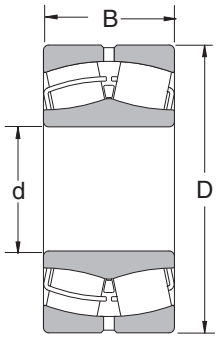
Series 23900

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
23926CAME4	130	5.1181	180	7.0866	37	1.4567	0.059	5.47	5.58	6.51	6.73
23932CAME4	160	6.2992	220	8.6614	45	1.7717	0.078	6.69	6.86	7.98	8.27
23934BCAME4	170	6.6929	230	9.0551	45	1.7717	0.078	7.09	7.26	8.38	8.66
23936CAME4	180	7.0866	250	9.8425	52	2.0472	0.078	7.48	7.75	9.05	9.45
23938CAME4	190	7.4803	260	10.2362	52	2.0472	0.078	7.87	8.14	9.45	9.84
23940CAME4	200	7.8740	280	11.0236	60	2.3622	0.078	8.35	8.66	10.15	10.55
23944CAME4	220	8.6614	300	11.8110	60	2.3622	0.078	9.13	9.42	10.91	11.34
23948CAME4	240	9.4488	320	12.5984	60	2.3622	0.078	9.92	10.22	11.71	12.13
23952CAME4	260	10.2362	360	14.1732	75	2.9528	0.078	10.71	11.23	13.09	13.70
23956CAME4	280	11.0236	380	14.9606	75	2.9528	0.078	11.50	12.03	13.80	14.49
23960CAME4	300	11.8110	420	16.5354	90	3.5433	0.098	12.36	13.00	15.17	15.98
23964CAME4	320	12.5984	440	17.3228	90	3.5433	0.098	13.15	13.83	15.98	16.77
23968CAME4	340	13.3858	460	18.1102	90	3.5433	0.098	13.94	14.55	16.78	17.56
23972CAME4	360	14.1732	480	18.8976	90	3.5433	0.098	14.72	15.39	17.58	18.35
23976CAME4	380	14.9606	520	20.4724	106	4.1732	0.118	15.67	16.39	18.95	19.76
23980CAME4	400	15.7480	540	21.2598	106	4.1732	0.118	16.46	17.15	19.71	20.55
23984CAME4	420	16.5354	560	22.0472	106	4.1732	0.118	17.24	17.95	20.52	21.34
23988CAME4	440	17.3228	600	23.6220	118	4.6457	0.118	18.03	18.90	21.83	22.91
23992CAME4	460	18.1102	620	24.4094	118	4.6457	0.118	18.82	19.70	22.63	23.70
23996CAME4	480	18.8976	650	25.5906	128	5.0394	0.157	19.76	20.56	23.68	24.72
239/500CAME4	500	19.6850	670	26.3780	128	5.0394	0.157	20.55	21.37	24.49	25.51
239/530CAME4	530	20.8661	710	27.9528	136	5.3543	0.157	21.73	22.65	25.95	27.09
239/560CAME4	560	22.0472	750	29.5276	140	5.5118	0.157	22.91	23.95	27.44	28.66
239/600CAME4	600	23.6220	800	31.4961	150	5.9055	0.157	24.49	25.60	29.30	30.63
239/630CAME4	630	24.8031	850	33.4646	165	6.4961	0.196	25.91	26.93	30.95	32.36
239/670CAME4	670	26.3780	900	35.4331	170	6.6929	0.196	27.48	28.66	32.92	34.33
239/710CAME4	710	27.9528	950	37.4016	180	7.0866	0.196	29.06	30.45	34.77	36.30
239/750CAME4	750	29.5276	1000	39.3701	185	7.2835	0.196	30.63	32.03	36.65	38.27
239/800CAME4	800	31.4961	1060	41.7323	195	7.6772	0.196	32.60	34.05	38.86	40.63
239/850CAME4	850	33.4646	1120	44.0945	200	7.8740	0.196	34.57	36.14	41.15	42.99
239/900CAME4	900	35.4331	1180	46.4567	206	8.1102	0.196	36.54	38.23	43.43	45.35
239/950CAME4	950	37.4016	1250	49.2126	224	8.8189	0.236	38.82	40.63	45.99	47.80
239/1000CAME4	1000	39.3701	1320	51.9685	236	9.2913	0.236	40.79	42.82	48.39	50.55
239/1060CAME4	1060	41.7323	1400	55.1181	250	9.8425	0.236	43.15	45.12	51.26	53.70
239/1120CAME4	1120	44.0945	1460	57.4803	250	9.8425	0.236	45.51	47.76	53.73	56.06
239/1180CAME4	1180	46.4567	1540	60.6299	272	10.7087	0.236	47.87	50.11	56.46	59.21
239/1250CAME4	1250	49.2126	1630	64.1732	280	11.0236	0.236	50.63	53.21	60.08	62.76
239/1400CAME4	1400	55.1181	1820	71.6535	315	12.4016	0.314	56.85	59.58	67.04	69.92

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
23926CAME4	54000	95000	1800	2200	6.04
23932CAME4	81000	152000	1400	1800	10.78
23934BCAME4	78500	148000	1300	1700	11.69
23936CAME4	106000	200000	1200	1600	16.61
23938CAME4	104000	197000	1200	1500	17.46
23940CAME4	128000	239000	1100	1400	23.96
23944CAME4	141000	278000	1000	1300	26.57
23948CAME4	143000	292000	950	1200	28.90
23952CAME4	210000	420000	850	1000	50.13
23956CAME4	208000	440000	800	950	53.35
23960CAME4	276000	560000	710	900	83.46
23964CAME4	292000	620000	670	850	89.98
23968CAME4	300000	635000	630	800	92.66
23972CAME4	310000	690000	600	750	97.61
23976CAME4	420000	925000	530	670	142.8
23980CAME4	425000	955000	530	630	151.0
23984CAME4	420000	955000	500	600	156.4
23988CAME4	490000	1080000	450	560	211.8
23992CAME4	500000	1110000	430	530	219.2
23996CAME4	580000	1310000	400	500	263.3
239/500CAME4	550000	1250000	400	500	270.9
239/530CAME4	660000	1530000	360	450	326.3
239/560CAME4	700000	1630000	340	430	374.9
239/600CAME4	775000	1830000	320	400	451.2
239/630CAME4	895000	2100000	300	360	570.4
239/670CAME4	985000	2320000	260	340	661.0
239/710CAME4	1080000	2640000	240	300	775.0
239/750CAME4	1180000	2880000	220	280	876.4
239/800CAME4	1260000	3100000	220	260	1017
239/850CAME4	1370000	3400000	190	240	1151
239/900CAME4	1480000	3750000	180	220	1299
239/950CAME4	1710000	4500000	160	200	1609
239/1000CAME4	1840000	4900000	150	190	1937
239/1060CAME4	2090000	5500000	130	170	2263
239/1120CAME4	2130000	5850000	120	150	2430
239/1180CAME4	2380000	6550000	110	140	2879
239/1250CAME4	2600000	7050000	100	120	3355
239/1400CAME4	3200000	9100000	80	100	4709

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

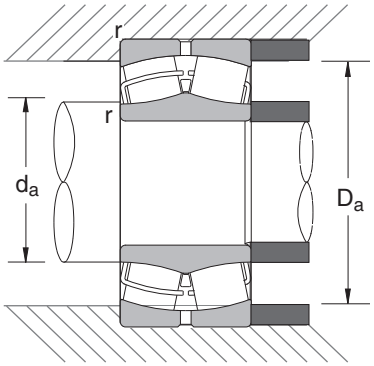
Spherical Roller Bearings

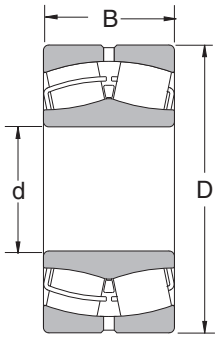
Series 24000

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
24020CE4	100	3.9370	150	5.9055	50	1.9685	0.059	4.29	4.33	5.20	5.55
24022CE4	110	4.3307	170	6.6929	60	2.3622	0.078	4.72	4.78	5.82	6.30
24024CE4	120	4.7244	180	7.0866	60	2.3622	0.078	5.12	5.17	6.21	6.69
24024CAME4	120	4.7244	180	7.0866	60	2.3622	0.078	5.12	5.18	6.21	6.69
24026CE4	130	5.1181	200	7.8740	69	2.7165	0.078	5.51	5.66	6.87	7.48
24026CAME4	130	5.1181	200	7.8740	69	2.7165	0.078	5.51	5.66	6.87	7.48
24028CE4	140	5.5118	210	8.2677	69	2.7165	0.078	5.91	6.07	7.29	7.87
24028CAME4	140	5.5118	210	8.2677	69	2.7165	0.078	5.91	6.05	7.26	7.87
24030CE4	150	5.9055	225	8.8583	75	2.9528	0.078	6.38	6.52	7.80	8.39
24030CAME4	150	5.9055	225	8.8583	75	2.9528	0.078	6.38	6.53	7.80	8.39
24032CE4	160	6.2992	240	9.4488	80	3.1496	0.078	6.77	6.97	8.33	8.98
24032CAME4	160	6.2992	240	9.4488	80	3.1496	0.078	6.77	6.98	8.33	8.98
24034CE4	170	6.6929	260	10.2362	90	3.5433	0.078	7.17	7.43	8.95	9.76
24034CAME4	170	6.6929	260	10.2362	90	3.5433	0.078	7.17	7.44	8.95	9.76
24036CE4	180	7.0866	280	11.0236	100	3.9370	0.078	7.56	7.88	9.63	10.55
24036CAME4	180	7.0866	280	11.0236	100	3.9370	0.078	7.56	7.90	9.63	10.55
24038CE4	190	7.4803	290	11.4173	100	3.9370	0.078	7.95	8.29	9.95	10.94
24038CAME4	190	7.4803	290	11.4173	100	3.9370	0.078	7.95	8.28	9.95	10.94
24040CE4	200	7.8740	310	12.2047	109	4.2913	0.078	8.35	8.78	10.66	11.73
24040CAME4	200	7.8740	310	12.2047	109	4.2913	0.078	8.35	8.79	10.66	11.73
24044CE4	220	8.6614	340	13.3858	118	4.6457	0.098	9.21	9.63	11.65	12.83
24044CAME4	220	8.6614	340	13.3858	118	4.6457	0.098	9.21	9.64	11.65	12.83
24048CE4	240	9.4488	360	14.1732	118	4.6457	0.098	10.00	10.45	12.49	13.62
24048CAME4	240	9.4488	360	14.1732	118	4.6457	0.098	10.00	10.45	12.49	13.62
24052CAME4	260	10.2362	400	15.7480	140	5.5118	0.118	10.94	11.32	13.70	15.04
24056CAME4	280	11.0236	420	16.5354	140	5.5118	0.118	11.73	12.17	14.50	15.83
24060CAME4	300	11.8110	460	18.1102	160	6.2992	0.118	12.52	13.08	15.75	17.40
24064CAME4	320	12.5984	480	18.8976	160	6.2992	0.118	13.31	13.90	16.60	18.19
24068CAME4	340	13.3858	520	20.4724	180	7.0866	0.157	14.25	14.90	17.87	19.61
24072CAME4	360	14.1732	540	21.2598	180	7.0866	0.157	15.04	15.67	18.73	20.39
24076CAME4	380	14.9606	560	22.0472	180	7.0866	0.157	15.83	16.46	19.51	21.18
24080CAME4	400	15.7480	600	23.6220	200	7.8740	0.157	16.61	17.33	20.72	22.76
24084CAME4	420	16.5354	620	24.4094	200	7.8740	0.157	17.40	18.18	21.58	23.54
24088CAME4	440	17.3228	650	25.5906	212	8.3465	0.196	18.43	19.07	22.67	24.49
24092CAME4	460	18.1102	680	26.7717	218	8.5827	0.196	19.21	20.01	23.75	25.67
24096CAME4	480	18.8976	700	27.5591	218	8.5827	0.196	20.00	20.71	24.59	26.46
240/500CAME4	500	19.6850	720	28.3465	218	8.5827	0.196	20.79	21.42	25.30	27.24
240/530CAME4	530	20.8661	780	30.7087	250	9.8425	0.196	21.97	22.83	27.17	29.61
240/560CAME4	560	22.0472	820	32.2835	258	10.1575	0.196	23.15	24.18	28.71	31.18
240/600CAME4	600	23.6220	870	34.2520	272	10.7087	0.196	24.72	25.72	30.38	33.15
240/630CAME4	630	24.8031	920	36.2205	290	11.4173	0.236	26.22	27.19	32.08	34.80
240/670CAME4	670	26.3780	980	38.5827	308	12.1260	0.236	27.80	28.80	34.15	37.17
240/710CAME4	710	27.9528	1030	40.5512	315	12.4016	0.236	29.37	30.50	36.06	39.13
240/800CAME4	800	31.4961	1150	45.2756	345	13.5827	0.236	32.91	34.45	40.50	43.86
240/850CAME4	850	33.4646	1220	48.0315	365	14.3701	0.236	34.88	36.64	43.03	46.61
240/950CAME4	950	37.4016	1360	53.5433	412	16.2205	0.236	38.82	40.85	47.97	52.13
240/1000CAME4	1000	39.3701	1420	55.9055	412	16.2205	0.236	40.79	42.84	50.19	54.49
240/1120CAME4	1120	44.0945	1580	62.2047	462	18.1890	0.314	45.83	48.14	55.92	60.47
240/1250CAME4	1250	49.2126	1750	68.8976	500	19.6850	0.314	50.94	54.35	62.15	67.17
240/1320CAME4	1320	51.9685	1850	72.8346	530	20.8661	0.393	54.09	57.16	65.17	70.71
240/1400CAME4	1400	55.1181	1950	76.7717	545	21.4567	0.393	57.24	59.77	69.57	74.65

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
24020CE4	62000	106000	1800	2400	6.72
24022CE4	85000	145000	1600	2200	10.80
24024CE4	89500	158000	1500	2000	11.62
24024CAME4	86500	152000	1500	2000	10.92
24026CE4	111000	194000	1400	1800	17.05
24026CAME4	111000	194000	1400	1800	16.46
24028CE4	117000	213000	1300	1700	18.21
24028CAME4	114000	204000	1300	1700	17.27
24030CE4	133000	245000	1200	1500	22.83
24030CAME4	133000	245000	1200	1500	22.29
24032CE4	152000	283000	1100	1400	27.62
24032CAME4	152000	283000	1100	1400	26.95
24034CE4	185000	340000	1000	1300	37.75
24034CAME4	185000	340000	1000	1300	36.85
24036CE4	217000	395000	950	1200	49.51
24036CAME4	217000	395000	950	1200	48.46
24038CE4	219000	415000	900	1200	52.32
24038CAME4	219000	415000	900	1200	50.39
24040CE4	256000	475000	850	1100	66.32
24040CAME4	256000	475000	850	1100	63.88
24044CE4	305000	585000	750	1000	86.66
24044CAME4	296000	560000	750	1000	83.84
24048CE4	310000	615000	710	950	92.41
24048CAME4	310000	615000	710	950	89.81
24052CAME4	405000	790000	630	850	136.5
24056CAME4	420000	855000	600	800	144.8
24060CAME4	520000	1040000	530	710	204.3
24064CAME4	550000	1130000	500	670	217.8
24068CAME4	655000	1360000	480	600	294.8
24072CAME4	660000	1370000	450	600	303.6
24076CAME4	690000	1480000	430	560	323.2
24080CAME4	810000	1710000	400	500	422.6
24084CAME4	840000	1820000	380	480	434.1
24088CAME4	940000	2050000	360	450	503.3
24092CAME4	1010000	2240000	340	430	579.7
24096CAME4	1040000	2290000	320	430	590.0
240/500CAME4	995000	2220000	300	400	607.6
240/530CAME4	1210000	2660000	280	360	857.2
240/560CAME4	1340000	3000000	260	340	969.1
240/600CAME4	1480000	3400000	240	320	1164
240/630CAME4	1700000	4000000	220	300	1400
240/670CAME4	1900000	4400000	200	260	1701
240/710CAME4	1990000	4650000	190	240	1894
240/800CAME4	2440000	5900000	160	200	2480
240/850CAME4	2610000	6350000	150	190	2965
240/950CAME4	3250000	8150000	120	160	4146
240/1000CAME4	3450000	8700000	110	150	4421
240/1120CAME4	4200000	11100000	95	120	6143
240/1250CAME4	4700000	13400000	75	100	8136
240/1320CAME4	5100000	14300000	67	85	9673
240/1400CAME4	5500000	14600000	60	75	10772

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

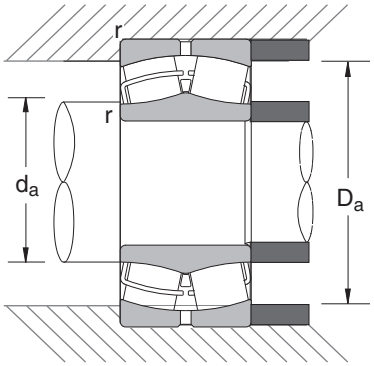
Spherical Roller Bearings

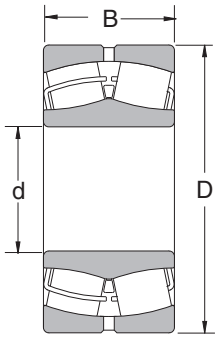
Series 24100

Bearing Number	Nominal Bearing Dimensions						Preferred Shoulder Diameters				
	d		*D*		*B*		*r* * (in)	da (in)		Da (in)	
	mm	inch	mm	inch	mm	inch	max	min	max	min	max
24120CAME4	100	3.9370	165	6.4961	65	2.5591	0.078	4.33	4.50	5.62	6.10
24122CE4	110	4.3307	180	7.0866	69	2.7165	0.078	4.72	4.86	6.04	6.69
24122CAME4	110	4.3307	180	7.0866	69	2.7165	0.078	4.72	4.87	6.04	6.69
24124CE4	120	4.7244	200	7.8740	80	3.1496	0.078	5.12	5.36	6.72	7.48
24124CAME4	120	4.7244	200	7.8740	80	3.1496	0.078	5.12	5.36	6.72	7.48
24126CE4	130	5.1181	210	8.2677	80	3.1496	0.078	5.51	5.77	7.09	7.87
24126CAME4	130	5.1181	210	8.2677	80	3.1496	0.078	5.51	5.75	7.09	7.87
24128CE4	140	5.5118	225	8.8583	85	3.3465	0.078	5.98	6.15	7.57	8.39
24128CAME4	140	5.5118	225	8.8583	85	3.3465	0.078	5.98	6.12	7.53	8.39
24130CE4	150	5.9055	250	9.8425	100	3.9370	0.078	6.38	6.65	8.33	9.37
24130CAME4	150	5.9055	250	9.8425	100	3.9370	0.078	6.38	6.68	8.33	9.37
24132CE4	160	6.2992	270	10.6299	109	4.2913	0.078	6.77	7.07	8.99	10.16
24132CAME4	160	6.2992	270	10.6299	109	4.2913	0.078	6.77	7.14	8.99	10.16
24134CE4	170	6.6929	280	11.0236	109	4.2913	0.078	7.17	7.49	9.39	10.55
24134CAME4	170	6.6929	280	11.0236	109	4.2913	0.078	7.17	7.54	9.39	10.55
24136CE4	180	7.0866	300	11.8110	118	4.6457	0.098	7.64	7.98	10.04	11.26
24136CAME4	180	7.0866	300	11.8110	118	4.6457	0.098	7.64	7.99	10.04	11.26
24138CE4	190	7.4803	320	12.5984	128	5.0394	0.098	8.03	8.31	10.58	12.05
24138CAME4	190	7.4803	320	12.5984	128	5.0394	0.098	8.03	8.41	10.57	12.05
24140CE4	200	7.8740	340	13.3858	140	5.5118	0.098	8.43	8.90	11.39	12.83
24140CAME4	200	7.8740	340	13.3858	140	5.5118	0.098	8.43	8.92	11.39	12.83
24144CE4	220	8.6614	370	14.5669	150	5.9055	0.118	9.37	9.78	12.30	13.86
24144CAME4	220	8.6614	370	14.5669	150	5.9055	0.118	9.37	9.82	12.30	13.86
24148CE4	240	9.4488	400	15.7480	160	6.2992	0.118	10.16	10.55	13.42	15.04
24148CAME4	240	9.4488	400	15.7480	160	6.2992	0.118	10.16	10.59	13.42	15.04
24152CE4	260	10.2362	440	17.3228	180	7.0866	0.118	10.94	11.60	14.60	16.61
24152CAME4	260	10.2362	440	17.3228	180	7.0866	0.118	10.94	11.65	14.60	16.61
24156CXE4	280	11.0236	460	18.1102	180	7.0866	0.157	11.89	12.39	15.42	17.24
24156CAME4	280	11.0236	460	18.1102	180	7.0866	0.157	11.89	12.43	15.42	17.24
24160CXE4	300	11.8110	500	19.6850	200	7.8740	0.157	12.68	13.27	16.62	18.82
24160CAME4	300	11.8110	500	19.6850	200	7.8740	0.157	12.68	13.33	16.62	18.82
24164CE4	320	12.5984	540	21.2598	218	8.5827	0.157	13.46	14.25	17.95	20.39
24164CAME4	320	12.5984	540	21.2598	218	8.5827	0.157	13.46	14.32	17.95	20.39
24168CXE4	340	13.3858	580	22.8346	243	9.5669	0.157	14.25	15.12	19.23	21.97
24168CAME4	340	13.3858	580	22.8346	243	9.5669	0.157	14.25	15.19	19.23	21.97
24172CAME4	360	14.1732	600	23.6220	243	9.5669	0.157	15.04	15.95	19.95	22.76
24176CXE4	380	14.9606	620	24.4094	243	9.5669	0.157	15.83	16.69	20.72	23.54
24176CAME4	380	14.9606	620	24.4094	243	9.5669	0.157	15.83	16.77	20.80	23.54
24180CAME4	400	15.7480	650	25.5906	250	9.8425	0.196	16.85	17.65	21.69	24.49
24184CAME4	420	16.5354	700	27.5591	280	11.0236	0.196	17.64	18.84	23.51	26.46
24188CAME4	440	17.3228	720	28.3465	280	11.0236	0.196	18.43	19.64	24.27	27.24
24192CAME4	460	18.1102	760	29.9213	300	11.8110	0.236	19.53	20.40	25.43	28.50
24196CAME4	480	18.8976	790	31.1024	308	12.1260	0.236	20.31	21.25	26.38	29.69
241/500CAME4	500	19.6850	830	32.6772	325	12.7953	0.236	21.10	22.02	27.68	31.26
241/560CAME4	560	22.0472	920	36.2205	355	13.9764	0.236	23.46	24.79	30.76	34.80
241/600CAME4	600	23.6220	980	38.5827	375	14.7638	0.236	25.04	26.53	32.88	37.17
241/630CAME4	630	24.8031	1030	40.5512	400	15.7480	0.236	26.22	27.80	34.47	39.13
241/670CAME4	670	26.3780	1090	42.9134	412	16.2205	0.236	27.80	29.72	36.74	41.50

*Maximum fillet which corner radius of bearing will clear.

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29





Common Options	
CAM	: One piece bronze cage
C,CD	: Two piece steel cage
EA	: High capacity steel cage
H	: Two piece polyamide cage
K	: 1:12 tapered bore
G3	: Inner ring carburized
E4	: Lube groove/holes, outer ring
P55	: High run accuracy both rings
S11	: Heat stabilized to 200°C
C2	: Tight internal clearance
C0†	: Normal internal clearance
C3	: Loose internal clearance

† Not shown in part number
See page 66 for additional options.

Bearing Number	Basic Load Ratings (lbs)		Limiting Speeds (RPM)		Bearing Weight (Approx.)
	C_r	C_{or}	Grease	Oil	lbs
24120CAME4	77500	121000	1700	2200	11.83
24122CE4	103000	168000	1600	2000	14.87
24122CAME4	103000	168000	1600	2000	14.41
24124CE4	129000	213000	1400	1800	21.85
24124CAME4	125000	203000	1400	1800	20.83
24126CE4	133000	228000	1300	1700	23.34
24126CAME4	132000	227000	1300	1700	22.13
24128CE4	151000	261000	1200	1600	28.25
24128CAME4	150000	260000	1200	1600	27.02
24130CE4	200000	345000	1100	1400	43.23
24130CAME4	193000	325000	1100	1400	41.05
24132CE4	234000	395000	1000	1300	55.36
24132CAME4	223000	375000	1000	1300	53.45
24134CE4	242000	420000	1000	1300	58.04
24134CAME4	230000	400000	1000	1300	55.70
24136CE4	268000	460000	900	1200	72.29
24136CAME4	267000	460000	900	1200	70.82
24138CE4	310000	525000	850	1100	90.33
24138CAME4	294000	505000	850	1100	88.07
24140CE4	350000	600000	800	1000	111.9
24140CAME4	350000	600000	800	1000	109.2
24144CE4	405000	720000	710	950	146.7
24144CAME4	405000	720000	710	950	137.7
24148CE4	480000	850000	670	850	173.7
24148CAME4	480000	850000	670	850	172.2
24152CE4	575000	1050000	600	800	242.0
24152CAME4	575000	1050000	600	800	237.4
24156CXE4	550000	1010000	560	750	251.7
24156CAME4	595000	1120000	560	750	250.5
24160CXE4	670000	1240000	500	670	339.8
24160CAME4	695000	1310000	500	670	332.7
24164CE4	795000	1490000	480	600	440.0
24164CAME4	795000	1490000	480	600	427.2
24168CXE4	915000	1690000	430	560	561.5
24168CAME4	955000	1780000	430	560	560.2
24172CAME4	945000	1800000	400	530	576.0
24176CXE4	945000	1820000	400	500	612.9
24176CAME4	975000	1900000	400	500	600.5
24180CAME4	1110000	2260000	380	480	691.5
24184CAME4	1350000	2690000	340	450	919.5
24188CAME4	1340000	2710000	320	430	947.5
24192CAME4	1410000	2800000	300	400	1121
24196CAME4	1610000	3300000	300	380	1248
241/500CAME4	1800000	3600000	280	360	1465
241/560CAME4	2120000	4400000	240	320	1948
241/600CAME4	2340000	4900000	220	280	2310
241/630CAME4	2460000	5150000	200	260	2739
241/670CAME4	2790000	5950000	190	240	3175

C_r = Dynamic Radial Load Rating
C_{or} = Static Radial Load Rating

Shaker Screen Bearings

22300/23300 Series

223 Series

Bearing Number	Bearing Dimensions						CAM Design			H Design		
	Bore		O.D.		Width		Capacity	Limiting Speeds (RPM)		Capacity	Limiting Speeds (RPM)	
	mm	inch	mm	inch	mm	inch	Cr (lbf)	Grease	Oil	Cr (lbf)	Grease	Oil
22308	40	1.5748	90	3.5433	33	1.2992	27400	4300	5300	30500	4500	6000
22309	45	1.7717	100	3.937	36	1.4173	33000	3800	4800	36000	4000	5300
22310	50	1.9685	110	4.3307	40	1.5748	41500	3600	4300	44000	3800	4800
22311	55	2.1654	120	4.7244	43	1.6929	47000	3200	4000	51000	3400	4300
22312	60	2.3622	130	5.1181	46	1.811	55500	3000	3600	59500	3200	4000
22313	65	2.5591	140	5.5118	48	1.8898	59500	2800	3400	68500	3000	3800
22314	70	2.7559	150	5.9055	51	2.0079	69000	2600	3200	75500	2800	3400
22315	75	2.9528	160	6.2992	55	2.1654	76500	2400	3000	86500	2600	3200
22316	80	3.1496	170	6.6929	58	2.2835	87500	2200	2800	97000	2400	3000
22317	85	3.3465	180	7.0866	60	2.3622	93500	2000	2600	105000	2200	2800
22318	90	3.5433	190	7.4803	64	2.5197	109000	2000	2400	119000	2200	2600
22319	95	3.7402	200	7.874	67	2.6378	118000	1900	2400	129000	2000	2600
22320	100	3.937	215	8.4646	73	2.874	135000	1700	2200	150000	1900	2400
22322	110	4.3307	240	9.4488	80	3.1496	166000	1600	1900	184000	1700	2200
22324	120	4.7244	260	10.2362	86	3.3858	190000	1400	1800	-	-	-
22326	130	5.1181	280	11.0236	93	3.6614	223000	1300	1600	-	-	-
22328	140	5.5118	300	11.811	102	4.0157	260000	1200	1500	-	-	-
22330	150	5.9055	320	12.5984	108	4.252	275000	1100	1400	-	-	-
22332	160	6.2992	340	13.3858	114	4.4882	305000	1100	1300	-	-	-
22334	170	6.6929	360	14.1732	120	4.7244	355000	1000	1200	-	-	-
22336	180	7.0866	380	14.9606	126	4.9606	390000	950	1200	-	-	-
22338	190	7.4803	400	15.748	132	5.1969	425000	900	1100	-	-	-
22340	200	7.874	420	16.5354	138	5.4331	450000	850	1000	-	-	-

233 Series

23326	130	5.1181	280	11.0236	112	4.4094	233000	1100	1400	-	-	-
23330	150	5.9055	320	12.5984	128	5.0394	315000	950	1200	-	-	-
23332	160	6.2992	340	13.3858	136	5.3543	350000	850	1100	-	-	-

Application Data
Radial Internal Clearance — Table 10.39 on page 332
Bearing Tolerances — Table 10.12 thru Table 10.16 on pages 315-17
Shaft & Housing Fits — Table 10.31 and Table 10.33 on pages 328-29

Shaker Screen Bearings

22300/23300 Series
Fitting Recommendations

223 Series

Bearing Number	Shaft Diameter (in)			Housing Bore Diameter (in)			Press Force (lbf)				Housing Temp for Shrink Fit
							With E4		Without E4		
	max	min	fit	min	max	fit	min	max	min	max	
22308	1.5742	1.5738	.0003L-.0010L	3.5413	3.5422	.0007T-.0018T	990	2540	1260	3250	200°F
22309	1.7711	1.7707	.0003L-.0010L	3.9350	3.9359	.0007T-.0018T	1110	2850	1380	3550	190°F
22310	1.9679	1.9675	.0003L-.0010L	4.3287	4.3296	.0007T-.0018T	1230	3170	1500	3870	180°F
22311	2.1648	2.1644	.0006L-.0014L	4.7224	4.7233	.0007T-.0018T	1090	2790	1480	3820	170°F
22312	2.3612	2.3608	.0006L-.0014L	5.1157	5.1167	.0009T-.0022T	1760	4300	2360	5770	180°F
22313	2.5581	2.5577	.0006L-.0014L	5.5094	5.5104	.0009T-.0022T	1731	4230	2290	5590	170°F
22314	2.7549	2.7545	.0006L-.0014L	5.9031	5.9041	.0009T-.0022T	1900	4640	2610	6370	170°F
22315	2.9518	2.9514	.0006L-.0014L	6.2968	6.2978	.0006T-.0022T	1410	5180	1880	6910	160°F
22316	3.1486	3.1482	.0006L-.0014L	6.6905	6.6915	.0006T-.0022T	1520	5570	1990	7280	160°F
22317	3.3452	3.3448	.0008L-.0017L	7.0842	7.0852	.0006T-.0022T	1550	5680	2010	7370	150°F
22318	3.5420	3.5416	.0008L-.0017L	7.4775	7.4786	.0007T-.0024T	2080	7130	2650	9070	160°F
22319	3.7389	3.7385	.0008L-.0017L	7.8712	7.8723	.0007T-.0024T	2010	6890	2630	9030	160°F
22320	3.9357	3.9353	.0008L-.0017L	8.4618	8.4629	.0007T-.0024T	2100	7200	2680	9180	150°F
22322	4.3294	4.3290	.0008L-.0017L	9.4460	9.4471	.0007T-.0024T	2440	8360	3030	10400	150°F
22324	4.7231	4.7227	.0008L-.0017L	10.2331	10.2344	.0010T-.0027T	3880	10500	5050	13600	150°F
22326	5.1165	5.1160	.0010L-.0021L	11.0205	11.0218	.0010T-.0027T	4170	11300	5330	14400	140°F
22328	5.5102	5.5097	.0010L-.0021L	11.8079	11.8092	.0010T-.0027T	4310	11600	5670	15300	150°F
22330	5.9039	5.9034	.0010L-.0021L	12.5950	12.5964	.0009T-.0029T	3910	12600	5060	16300	140°F
22332	6.2976	6.2971	.0010L-.0021L	13.3824	13.3838	.0009T-.0029T	4650	15000	5900	19000	140°F
22334	6.6913	6.6908	.0010L-.0021L	14.1698	14.1712	.0009T-.0029T	5100	16400	6400	20600	140°F
22336	7.0850	7.0845	.0010L-.0021L	14.9572	14.9586	.0009T-.0029T	4920	15900	6340	20400	130°F
22338	7.4784	7.4778	.0012L-.0025L	15.7446	15.7460	.0009T-.0029T	5130	16500	6540	21100	130°F
22340	7.8721	7.8715	.0012L-.0025L	16.5317	16.5333	.0010T-.0032T	6350	20300	8000	25600	140°F

233 Series

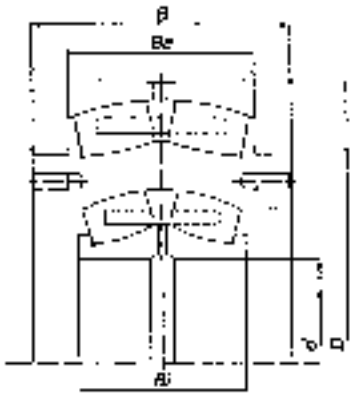
23326	5.1165	5.1160	.0010L-.0021L	11.0205	11.0218	.0010T-.0027T	5260	14200	–	–	140°F
23330	5.9039	5.9034	.0010L-.0021L	12.5950	12.5964	.0009T-.0029T	4990	16100	–	–	140°F
23332	6.2976	6.2971	.0010L-.0021L	13.3824	13.3838	.0009T-.0029T	6040	19500	–	–	140°F

Shaker Screen Bearing

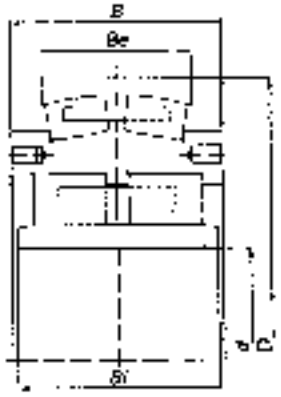
Radial Internal Clearance (inches)

Bearing Bore (mm)	Unmounted				Mounted			
	C3		C4		C3		C4	
	min	max	min	max	min	max	min	max
40	0.0020	0.0024	0.0026	0.0031	0.0006	0.0019	0.0012	0.0026
45-50	0.0024	0.0031	0.0033	0.0039	0.0010	0.0026	0.0019	0.0034
55	0.0029	0.0035	0.0039	0.0047	0.0015	0.0030	0.0025	0.0042
60-65	0.0029	0.0035	0.0039	0.0047	0.0012	0.0038	0.0022	0.0040
70	0.0035	0.0043	0.0047	0.0057	0.0018	0.0036	0.0030	0.0050
75-80	0.0035	0.0043	0.0047	0.0057	0.0018	0.0038	0.0030	0.0052
85	0.0043	0.0053	0.0059	0.0071	0.0026	0.0048	0.0042	0.0066
90-100	0.0043	0.0053	0.0059	0.0071	0.0025	0.0048	0.0041	0.0066
110	0.0053	0.0063	0.0070	0.0083	0.0036	0.0058	0.0052	0.0078
120	0.0053	0.0063	0.0070	0.0083	0.0032	0.0055	0.0049	0.0075
130-140	0.0063	0.0075	0.0081	0.0094	0.0042	0.0067	0.0060	0.0086
150-160	0.0075	0.0087	0.0094	0.0110	0.0053	0.0080	0.0072	0.0103
170-180	0.0079	0.0094	0.0104	0.0122	0.0057	0.0087	0.0082	0.0115
190	0.0087	0.0102	0.0113	0.0134	0.0065	0.0095	0.0091	0.0127
200	0.0087	0.0102	0.0113	0.0134	0.0063	0.0094	0.0089	0.0126

Triple Ring Bearing



2SL



2PSL

Bearing Number	Boundary Dimensions					Mass	
	d	D	B_i	B_e	B	kg	lbs
2SL180-2 UPA	180	480	140	160	215.9	165	364
2SL200-2 UPA	200	520	160	180	241.3	230	507
2SL220-2 UPA	220	600	180	200	279.4	330	728
2SL240-2 UPA	240	620	200	200	279.4	410	904
2PSL240-1 UPA	240	600	205	160	225	285	628
2SL260-2 UPA	260	680	218	218	317.5	490	1080
2SL280-2 UPA	280	720	218	218	317.5	525	1157
2SL300-2 UPA	300	780	243	250	342.9	735	1620
2SL320-2 UPA	320	820	258	258	368.3	840	1851
2SL340-2 UPA	340	870	280	272	393.7	1050	2314