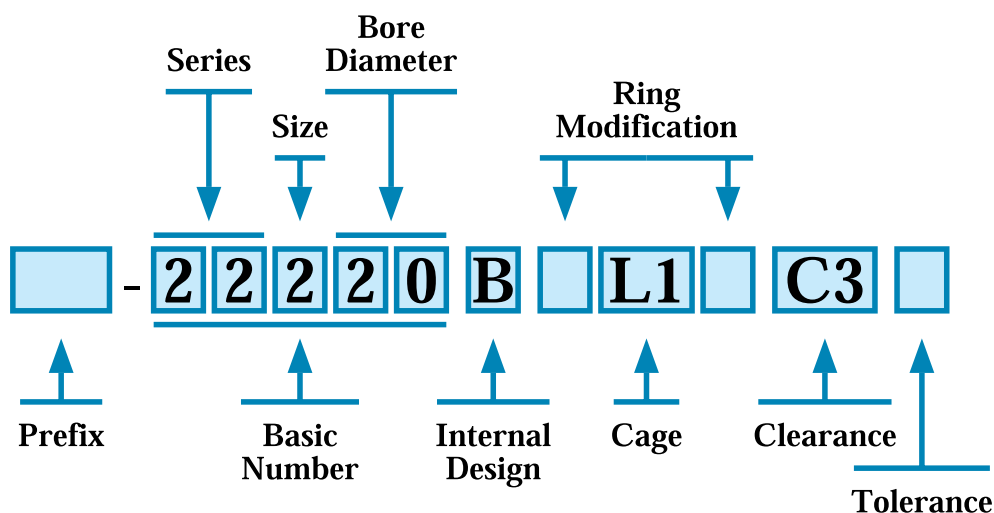
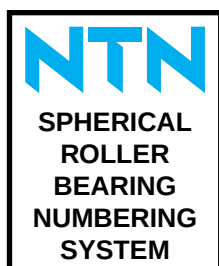




1. PREFIX

TS2:	Heat stabilization for up to 320° F (160° C)
TS3:	Heat stabilization for up to 390° F (200° C)
TS4:	Heat stabilization for up to 480° F (250° C)
LH:	STJ2 Material (Temp 250°C)
MX:	All components phosphate coated

2. SERIES

213:	Standard series spherical roller bearings
222, 223:	Standard series spherical roller bearings
230, 231,	
232, 239:	Standard series spherical roller bearings
240, 241:	Standard series spherical roller bearings
W:	Wide series spherical roller bearing with integral seals

3. INTERNAL DESIGN

B:	One piece ribbed inner ring, asymmetrical rollers and center guided retainer
C:	Plain inner ring, center floating guide ring
UA:	Inner ring without center guide, asymmetrical rollers, and outer ring center-guided retainer (limited thrust capabilities)
E:	High capacity spherical roller bearings

4. CAGE

No Symbol:	Standard cage
J:	Pressed steel cage
L1:	Machined brass cage
T2:	Nylon cage

5. SEALS

LL:	Two integral garter seals with steel backing plates
-----	---

6. RING MODIFICATION

D1:	Oil groove and holes
K:	1:12 tapered bore

7. INTERNAL CLEARANCE

C1:	Radial clearance less than C2
C2:	Radial clearance less than normal
No Suffix:	Normal internal clearance
C3:	Radial clearance greater than normal
C4:	Radial clearance greater than C3
C5:	Radial clearance greater than C4
CSXX:	Special radial clearance; XX is mean value in 0.001 mm units

8. TOLERANCE

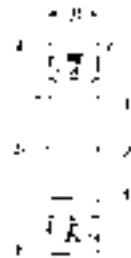
No Symbol:	Class 0 (equivalent to ABEC 1); standard
PXn:	Special tolerance, from 1 onward
Vn:	Special requirement, from 1 onward
VS1:	Special tolerance for shaker screen bearings (C3 clearance)
VS2:	Special tolerance for shaker screen bearings (C4 clearance)

SPHERICAL ROLLER BEARINGS

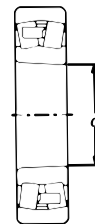
Units: INCHES
Millimeters



Bearing No.		Bore	O.D.	Width	Fillet Radius (minimum)	Basic Load Ratings (lbs)	
213	213K	<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i>	<i>Dynamic C</i>	<i>Static C_o</i>
21308C	21308CK	1.5748 40	3.5433 90	.9055 23	.039 1.0	19,800	20,200
21309C	21309CK	1.7717 45	3.9370 100	.9843 25	.039 1.0	23,000	23,800
21310C	21310CK	1.9685 50	4.3307 110	1.0630 27	.059 1.5	26,400	28,500
21311	21311K	2.1654 55	4.7244 120	1.1417 29	.098 2.5	32,500	36,500
21312	21312K	2.3622 60	5.1181 130	1.2205 31	.098 2.5	37,500	43,000
21313	21313K	2.5591 65	5.5118 140	1.2992 33	.098 2.5	43,500	51,000
21314	21314K	2.7559 70	5.9055 150	1.3780 35	.098 2.5	49,500	59,000
21315	21315K	2.9528 75	6.2992 160	1.4567 37	.098 2.5	53,500	64,500
21316	21316K	3.1496 80	6.6929 170	1.5354 39	.098 2.5	58,500	71,000
21317	21317K	3.3465 85	7.0866 180	1.6142 41	.117 3.0	65,000	80,000
21318	21318K	3.5433 90	7.4803 190	1.6929 43	.117 3.0	72,000	90,000
21319	21319K	3.7402 95	7.8740 200	1.7717 45	.117 3.0	75,500	94,500
21320	21320K	3.9370 100	8.4646 215	1.8504 47	.117 3.0	83,000	105,000



Cylindrical Bore
213



Tapered Bore
213K
Taper 1:12

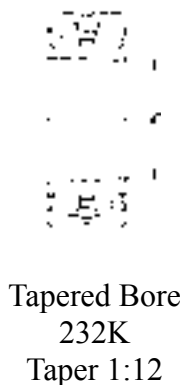
Note: The *d* dimension for the tapered bore is measured from the side of the bearing with the smallest bore dimension.



Units: INCHES
Millimeters

In this series, machined brass cages are also available. When placing an order for them, put the suffix L1 on the bearing number.

Example: 22211EL1



SPHERICAL ROLLER BEARINGS								
Bearing No.		Bore	O.D.	Width	Fillet Radius (minimum)	Oil Groove Width	Basic Load Ratings (lbs)	
222	222K	<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i>	<i>G</i>	Dynamic <i>C</i>	Static <i>C₀</i>
22208CD1	22208CKD1	1.5748 40	3.1496 80	.9055 23	.043 1.1	—	17,800	19,900
22209CD1	22209CKD1	1.7717 45	3.3465 85	.9055 23	.043 1.1	—	18,600	21,400
22210CD1	22210CKD1	1.9685 50	3.5433 90	.9055 23	.043 1.1	—	19,300	23,000
22211ED1	22211EKD1	2.1654 55	3.9370 100	.9843 25	.079 2.0	—	26,460	32,413
22212ED1	22212EKD1	2.3622 60	4.3307 110	1.1024 28	.079 2.0	—	33,736	40,792
22213ED1	22213EKD1	2.5591 65	4.7244 120	1.2205 31	.079 2.0	—	39,690	48,951
22214ED1	22214EKD1	2.7559 70	4.9213 125	1.2205 31	.079 2.0	—	41,233	52,038
22215ED1	22215EKD1	2.9528 75	5.1181 130	1.2205 31	.079 2.0	—	42,777	55,345
22216ED1	22216EKD1	3.1496 80	5.5118 140	1.2992 33	.098 2.5	—	47,848	62,181
22217ED1	22217EKD1	3.3465 85	5.9055 150	1.4173 36	.098 2.5	—	56,448	71,662
22218ED1	22218EKD1	3.5433 90	6.2992 160	1.5748 40	.098 2.5	—	65,709	87,097
22219BD1	22219BKD1	3.7402 95	6.6920 170	1.6929 43	.098 2.5	—	65,500	86,500
22220BD1	22220BKD1	3.9370 100	7.0865 180	1.8110 46	.098 2.5	.31 8	70,000	92,500
22222BD1	22222BKD1	4.3307 110	7.8740 200	2.0866 53	.098 2.5	.39 10	92,500	128,000
22224BD1	22224BKD1	4.7244 120	8.4646 215	2.2835 58	.098 2.5	.39 10	109,000	158,000
22226BD1	22226BKD1	5.1181 130	9.0551 230	2.5197 64	.118 3.0	.39 10	127,000	176,000
22228BD1	22228BKD1	5.5118 140	9.8425 250	2.6772 68	.118 3.0	.39 10	153,000	218,000
22230BD1	22230BKD1	5.9055 150	10.6299 270	2.8740 73	.118 3.0	.47 12	174,000	262,000
22232BD1	22232BKD1	6.2992 160	11.4173 290	3.1496 80	.118 3.0	.47 12	195,000	290,000
22234BD1	22234BKD1	6.6929 170	12.2047 310	3.3858 86	.157 4.0	.47 12	225,000	340,000
22236B	22236BK	7.0866 180	12.5984 320	3.3858 86	.157 4.0	.47 12	233,000	360,000
22238B	22238BK	7.4803 190	13.3858 340	3.6220 92	.157 4.0	.47 12	260,000	410,000
22240B	22240BK	7.8740 200	14.1732 360	3.8583 98	.157 4.0	.47 12	295,000	450,000
22244B	22244BK	8.6614 220	15.7480 400	4.2520 108	.157 4.0	.47 12	350,000	545,000
22248B	22248BK	9.4488 240	17.3228 440	4.7244 120	.157 4.0	.63 16	430,000	680,000
22252B	22252BK	10.2362 260	18.8976 480	5.1181 130	.197 5.0	.63 16	500,000	805,000
22256B	22256BK	11.0236 280	19.6850 500	5.1181 130	.197 5.0	.63 16	520,000	855,000
22260B	22260BK	11.8110 300	21.2598 540	5.5118 140	.197 5.0	.79 20	600,000	975,000
22264B	22264BK	12.5984 320	22.8346 580	5.9055 150	.197 5.0	.79 20	695,000	1,140,000

The suffix D1 means the bearing has lubrication holes and an oil groove. However, for bearing numbers 22236B(K) and over, the suffix D1 is not needed as the lubrication holes and oil groove are standard.

For bearings with a blank G dimension, no lubrication holes and oil groove are provided. These features may be added upon request. (Add suffix D1.)

Note: 'E' type features higher load capacity and high temp. resin cages (40° C to 150° C); EP oil additives could effect cage material.

Note: The d dimension for the tapered bore is measured from the side of the bearing with the smallest bore dimension.

SPHERICAL ROLLER BEARINGS

Units: INCHES
Millimeters



In this series, machined brass cages are also available. When placing an order for them, put the suffix L1 on the bearing number.

Example: 22311BL1

Bearing No.		Bore		O.D.		Width		Fillet Radius		Oil Groove Width		Basic Load Ratings (lbs)	
223	223K	d	D	B	r	G	C	C ₀					
22308CD1	22308CKD1	1.5748 40	3.5433 90	1.2992 33	.039 1.0	—	27,200	28,800					
22309CD1	22309CKD1	1.7717 45	3.9370 100	1.4173 36	.059 1.5	—	33,000	37,500					
22310CD1	22310CKD1	1.9685 50	4.3307 110	1.5748 40	.059 1.5	—	42,000	47,500					
22311BD1	22311BKD1	2.1654 55	4.7244 120	1.6929 43	.098 2.5	—	46,000	52,500					
22312BD1	22312BKD1	2.3622 60	5.1181 130	1.8110 46	.098 2.5	—	53,000	60,500					
22313BD1	22313BKD1	2.5591 65	5.5118 140	1.8898 48	.098 2.5	—	59,500	71,000					
22314BD1	22314BKD1	2.7559 70	5.9055 150	2.0079 51	.098 2.5	—	72,500	85,000					
22315BD1	22315BKD1	2.9528 75	6.2992 160	2.1654 55	.098 2.5	—	74,000	92,000					
22316BD1	22316BKD1	3.1496 80	6.6929 170	2.2835 58	.098 2.5	—	86,000	105,000					
22317BD1	22317BKD1	3.3465 85	7.0866 180	2.3622 60	.118 3.0	.31 8	93,500	115,000					
22318BD1	22318BKD1	3.5433 90	7.4803 190	2.5197 64	.118 3.0	.39 10	107,000	132,000					
22319BD1	22319BKD1	3.7402 95	7.8740 200	2.6378 67	.118 3.0	.39 10	112,000	138,000					
22320BD1	22320BKD1	3.9370 100	8.4646 215	2.8740 73	.118 3.0	.39 10	136,000	169,000					
22322BD1	22322BKD1	4.3307 110	9.4488 240	3.1496 80	.118 3.0	.39 10	167,000	209,000					
22324BD1	22324BKD1	4.7244 120	10.2362 260	3.3858 86	.118 3.0	.47 12	198,000	252,000					
22326BD1	22326BKD1	5.1181 130	11.0236 280	3.6614 93	.157 4.0	.47 12	221,000	282,000					
22328BD1	22328BKD1	5.5118 140	11.8110 300	4.0157 102	.157 4.0	.47 12	250,000	320,000					
22330B	22330BK	5.9055 150	12.5984 320	4.2520 108	.157 4.0	.47 12	281,000	385,000					
22332B	22332BK	6.2992 160	13.3858 340	4.4882 114	.157 4.0	.47 12	315,000	440,000					
22334B	22334BK	6.6929 170	14.1732 360	4.7244 120	.157 4.0	.47 12	340,000	480,000					
22336B	22336BK	7.0866 180	14.9606 380	4.9606 126	.157 4.0	.47 12	385,000	565,000					
22338B	22338BK	7.4803 190	15.7480 400	5.1969 132	.197 5.0	.47 12	415,000	615,000					
22340B	22340BK	7.8740 200	16.5354 420	5.4331 138	.197 5.0	.63 16	460,000	680,000					
22344B	22344BK	8.6614 220	18.1102 460	5.7087 145	.197 5.0	.63 16	530,000	790,000					
22348B	22348BK	9.4488 240	19.6850 500	6.1024 155	.197 5.0	.63 16	605,000	910,000					
22352B	22352BK	10.2362 260	21.2598 540	6.4961 165	.197 5.0	.79 20	695,000	1,060,000					
22356B	22356BK	11.0236 280	22.8346 580	6.8898 175	.236 6.0	.79 20	790,000	1,200,000					
22360B	22360BK	11.8110 300	24.4094 620	7.2835 185	.295 7.5	.79 20	805,000	1,210,000					

Cylindrical Bore
223B
223C

Tapered Bore
223BK
223CK
Taper 1:12

Cylindrical Bore
223B

Tapered Bore
223BK
Taper 1:12

The suffix D1 means the bearing has lubrication holes and an oil groove. However, for bearing numbers 22330B(K) and over, the suffix D1 is not needed as the lubrication holes and oil groove are standard.

For bearings with a blank G dimension, no lubrication holes and oil groove are provided. These features may be added upon request. (Add suffix D1.)

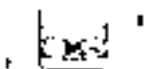
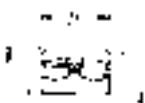
Note: The d dimension for the tapered bore is measured from the side of the bearing with the smallest bore dimension.



Units: **INCHES**
Millimeters

In this series, machined brass cages are also available. When placing an order for them, put the suffix L1 on the bearing number.

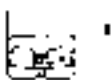
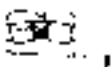
Example: 23024BL1D1



Cylindrical Bore
230



Cylindrical Bore
230



Tapered Bore
230K
Taper 1:12

SPHERICAL ROLLER BEARINGS								
Bearing No.		Bore <i>d</i>	O.D. <i>D</i>	Width <i>B</i>	Fillet Radius <i>r</i>	Oil Groove Width <i>G</i>	Basic Load Ratings (lbs)	
230	230K						Dynamic <i>C</i>	Static <i>C₀</i>
23022BD1	23022BKD1	4.3307 110	6.6929 170	1.7717 45	.098 2.5	.31 8	63,500	102,000
23024BD1	23024BKD1	4.7244 120	7.0866 180	1.8110 46	.098 2.5	.31 8	66,500	111,000
23026BD1	23026BKD1	5.1181 130	7.8740 200	2.0472 52	.098 2.5	.31 8	84,500	139,000
23028BD1	23028BKD1	5.5118 140	8.2677 210	2.0866 53	.098 2.5	.31 8	90,500	156,000
23030BD1	23030BKD1	5.9055 150	8.8583 225	2.2047 56	.098 2.5	.31 8	100,000	174,000
23032BD1	23032BKD1	6.2992 160	9.4488 240	2.3622 60	.098 2.5	.31 8	114,000	199,000
23034BD1	23034BKD1	6.6929 170	10.2362 260	2.6378 67	.098 2.5	.39 10	141,000	242,000
23036BD1	23036BKD1	7.0866 180	11.0236 280	2.9134 74	.098 2.5	.39 10	166,000	291,000
23038BD1	23038BKD1	7.4803 190	11.4173 290	2.9528 75	.098 2.5	.39 10	170,000	305,000
23040BD1	23040BKD1	7.8740 200	12.2047 310	3.2283 82	.098 2.5	.39 10	205,000	365,000
23044B	23044BK	8.6614 220	13.3858 340	3.5433 90	.118 3.0	.47 12	238,000	430,000
23048B	23048BK	9.4488 240	14.1732 360	3.6220 92	.118 3.0	.47 12	255,000	480,000
23052B	23052BK	10.2362 260	15.7480 400	4.0945 104	.157 4.0	.47 12	320,000	590,000
23056B	23056BK	11.0236 280	16.5354 420	4.1732 106	.157 4.0	.47 12	340,000	655,000
23060B	23060BK	11.8110 300	18.1102 460	4.6457 118	.157 4.0	.47 12	425,000	800,000
23064B	23064BK	12.5984 320	18.8976 480	4.7638 121	.157 4.0	.47 12	440,000	870,000
23068B	23068BK	13.3858 340	20.4724 520	5.2362 133	.197 5.0	.63 16	505,000	990,000
23072B	23072BK	14.1732 360	21.2598 540	5.2756 134	.197 5.0	.63 16	535,000	1,060,000
23076B	23076BK	14.9606 380	22.0472 560	5.3150 135	.197 5.0	.63 16	550,000	1,120,000
23080B	23080BK	15.7480 400	23.6220 600	5.8268 148	.197 5.0	.63 16	655,000	1,320,000
23084B	23084BK	16.5354 420	24.4094 620	5.9055 150	.197 5.0	.63 16	680,000	1,400,000
23088B	23088BK	17.3228 440	25.5906 650	6.1811 157	.236 6.0	.79 20	735,000	1,540,000
23092B	23092BK	18.1102 460	26.7717 680	6.4173 163	.236 6.0	.79 20	805,000	1,680,000
23096B	23096BK	18.8976 480	27.5591 700	6.4961 165	.236 6.0	.79 20	835,000	1,770,000
230/500B	230/500BK	19.6850 500	28.3465 720	6.5748 167	.236 6.0	.79 20	860,000	1,870,000
230/530B	230/530BK	20.8661 530	30.7087 780	7.2835 185	.236 6.0	.79 20	985,000	2,110,000
230/560B	230/560BK	22.0472 560	32.2835 820	7.6772 195	.236 6.0	.79 20	1,080,000	2,360,000
230/600B	230/600BK	23.6220 600	34.2520 870	7.8740 200	.236 6.0	.79 20	1,160,000	2,640,000
230/630B	230/630BK	24.8031 630	36.2205 920	8.3465 212	.295 7.5	.79 20	1,320,000	2,920,000
230/670B	230/670BK	26.3780 670	38.5827 980	9.0551 230	.295 7.5	.79 20	1,470,000	3,300,000
230/710B	230/710BK	27.9528 710	40.5512 1030	9.2913 236	.295 7.5	.94 24	1,610,000	3,650,000
230/750B	230/750BK	29.5276 750	42.9134 1090	9.8425 250	.295 7.5	.94 24	1,840,000	4,100,000

The suffix D1 means the bearing has lubrication holes and an oil groove. However, for bearing numbers 23044B(K) and over, the suffix D1 is not needed as the lubrication holes and the oil groove are standard.

Note: The *d* dimension for the tapered bore is measured from the side of the bearing with the smallest bore dimension.

SPHERICAL ROLLER BEARINGS

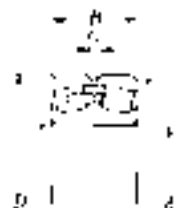
Bearing No.		Bore <i>d</i>	O.D. <i>D</i>	Width <i>B</i>	Fillet Radius <i>r</i>	Oil Groove Width <i>G</i>	Basic Load Ratings (lbs)	
231	231K						Dynamic <i>C</i>	Static <i>C₀</i>
23122BD1	23122BKD1	4.3307 110	7.0866 180	2.2047 56	.098 2.5	.31 8	83,000	131,000
23124BD1	23124BKD1	4.7244 120	7.8740 200	2.4409 62	.098 2.5	.39 10	102,000	158,000
23126BD1	23126BKD1	5.1181 130	8.2677 210	2.5197 64	.098 2.5	.39 10	111,000	179,000
23128BD1	23128BKD1	5.5118 140	8.8583 225	2.6772 68	.098 2.5	.39 10	121,000	201,000
23130BD1	23130BKD1	5.9055 150	9.8425 250	3.1496 80	.098 2.5	.39 10	165,000	268,000
23132BD1	23132BKD1	6.2992 160	10.6299 270	3.3858 86	.098 2.5	.47 12	189,000	310,000
23134BD1	23134BKD1	6.6929 170	11.0236 280	3.4646 88	.098 2.5	.47 12	199,000	335,000
23136BD1	23136BKD1	7.0866 180	11.8110 300	3.7795 96	.118 3.0	.47 12	232,000	390,000
23138B	23138BK	7.4803 190	12.5984 320	4.0945 104	.118 3.0	.47 12	268,000	455,000
23140B	23140BK	7.8740 200	13.3858 340	4.4094 112	.118 3.0	.47 12	305,000	510,000
23144B	23144BK	8.6614 220	14.5669 370	4.7244 120	.157 4.0	.47 12	350,000	610,000
23148B	23148BK	9.4488 240	15.7480 400	5.0394 128	.157 4.0	.47 12	390,000	690,000
23152B	23152BK	10.2362 260	17.3228 440	5.6693 144	.157 4.0	.63 16	470,000	845,000
23156B	23156BK	11.0236 280	18.1102 460	5.7480 146	.197 5.0	.63 16	505,000	930,000
23160B	23160BK	11.8110 300	19.6850 500	6.2992 160	.197 5.0	.63 16	605,000	1,090,000
23164B	23164BK	12.5984 320	21.2598 540	6.9291 176	.197 5.0	.79 20	700,000	1,300,000
23168B	23168BK	13.3858 340	22.8346 580	7.4803 190	.197 5.0	.79 20	810,000	1,480,000
23172B	23172BK	14.1732 360	23.6220 600	7.5591 192	.197 5.0	.79 20	845,000	1,580,000
23176B	23176BK	14.9606 380	24.4094 620	7.6378 194	.197 5.0	.79 20	880,000	1,690,000
23180B	23180BK	15.7480 400	25.5906 650	7.8740 200	.236 6.0	.94 24	940,000	1,810,000
23184B	23184BK	16.5354 420	27.5591 700	8.8189 224	.236 6.0	.94 24	1,150,000	2,200,000
23188B	23188BK	17.3228 440	28.3465 720	8.8976 226	.236 6.0	.94 24	1,170,000	2,260,000
23192B	23192BK	18.1102 460	28.9212 760	9.4488 240	.295 7.5	.94 24	1,290,000	2,560,000
23196B	23196BK	18.8976 480	31.1024 790	9.7638 248	.295 7.5	.94 24	1,410,000	2,810,000
231/500B	231/500BK	19.6850 500	32.6772 830	10.3937 264	.295 7.5	.94 24	1,540,000	3,050,000
231/530B	231/530BK	20.8661 530	34.2520 870	10.7087 272	.295 7.5	.94 24	1,570,000	3,200,000
231/560B	231/560BK	22.0472 560	36.2205 920	11.0236 280	.295 7.5	.94 24	1,720,000	3,500,000
231/600B	231/600BK	23.6220 600	38.5827 980	11.8110 300	.295 7.5	.94 24	2,030,000	4,150,000
231/630B	231/630BK	24.8031 630	40.5512 1030	12.4016 315	.295 7.5	.94 24	2,150,000	4,450,000
231/670B	231/670BK	26.3780 670	42.9134 1090	13.2283 336	.295 7.5	.94 24	2,530,000	5,300,000
231/710B	231/710BK	27.9528 710	45.2756 1150	13.5827 345	.374 9.5	.94 24	2,620,000	5,600,000

Units: INCHES
Millimeters

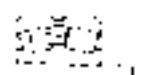


In this series, machined brass cages are also available. When placing an order for them, put the suffix L1 on the bearing number.

Example: 23124BL1D1



Cylindrical Bore
231



Tapered Bore
231K
Taper 1:12

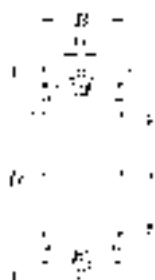
The suffix D1 means the bearing has lubrication holes and an oil groove. However, for bearing numbers 23138B(K) and over, the suffix D1 is not needed as the lubrication holes and oil groove are standard.

Note: The *d* dimension for the tapered bore is measured from the side of the bearing with the smallest bore dimension.

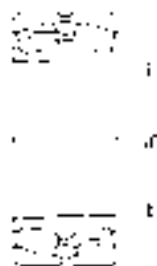


Units: INCHES
Millimeters

Use Suffix L1 for brass cages.
Example: 23218BL1



Cylindrical Bore
232



Tapered Bore
232K
Taper 1:12

SPHERICAL ROLLER BEARINGS								
Bearing No.		Bore	O.D.	Width	Fillet Radius	Oil Groove Width	Basic Load Ratings (lbs)	
232	232K	<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i>	<i>G</i>	<i>Dynamic C</i>	<i>Static C₀</i>
23218BD1	23218BKD1	3.5433 90	6.2992 160	2.0630 52.4	.039 1.0	—	71,500	103,000
23220BD1	23220BKD1	3.9370 100	7.0866 180	3.3740 60.3	.083 2.1	—	91,000	130,000
23222BD1	23222BKD1	4.3307 110	7.8740 200	2.7480 69.8	.079 2.0	.39 10	115,000	171,000
23224BD1	23224BKD1	4.7244 120	8.4646 215	2.9921 76	.079 2.0	.39 10	132,000	198,000
23226BD1	23226BKD1	5.1181 130	9.0551 230	3.1496 80	.098 2.5	.39 10	154,000	239,000
23228BD1	23228BKD1	5.5118 140	9.8425 250	3.4646 88	.098 2.5	.39 10	181,000	285,000
23230BD1	23230BKD1	5.9055 150	10.6299 270	3.7705 96	.098 2.5	.47 12	210,000	330,000
23232BD1	23232BKD1	6.2992 160	11.4173 290	4.0945 104	.098 2.5	.47 12	237,000	375,000
23234BD1	23234BKD1	6.6929 170	12.2047 310	4.3307 110	.118 3.0	.47 12	264,000	440,000
23236B	23236BK	7.0866 180	12.5984 320	4.4094 112	.118 3.0	.47 12	284,000	465,000
23238B	23238BK	7.4803 190	13.3858 340	4.7244 120	.118 3.0	.47 12	320,000	530,000
23240B	23240BK	7.8740 200	14.1732 360	5.0394 128	.118 3.0	.47 12	365,000	595,000
23244B	23244BK	8.6614 220	15.7480 400	5.6693 144	.118 3.0	.47 12	440,000	730,000
23248B	23248BK	9.4488 240	17.3228 440	6.2992 160	.118 3.0	.63 16	535,000	900,000
23252B	23252BK	10.2362 260	18.8976 480	6.8504 174	.157 4.0	.63 16	620,000	1,060,000
23256B	23256BK	11.0236 280	19.6850 500	6.9291 176	.157 4.0	.63 16	660,000	1,160,000
23260B	23260BK	11.8110 300	21.2598 540	7.5591 192	.157 4.0	.79 20	775,000	1,350,000
23264B	23264BK	12.5984 320	22.8346 580	8.1890 208	.157 4.0	.79 20	890,000	1,560,000
23268B	23268BK	13.3858 340	24.4094 620	8.8189 224	.197 5.0	.79 20	990,000	1,760,000
23272B	23272BK	14.1732 360	25.5906 650	9.1339 232	.197 5.0	.94 24	1,090,000	1,950,000
23276B	23276BK	14.9606 380	26.7717 680	9.4488 240	.197 5.0	.94 24	1,170,000	2,170,000
23280B	23280BK	15.7480 400	28.3465 720	10.0787 256	.197 5.0	.94 24	1,330,000	2,420,000
23284B	23284BK	16.5354 420	29.9213 760	10.7087 272	.295 7.5	.94 24	1,450,000	2,660,000
23288B	23288BK	17.3228 440	31.1024 790	11.0236 280	.295 7.5	.94 24	1,530,000	2,850,000
23292B	23292BK	18.1102 460	32.6772 830	11.6535 296	.295 7.5	.94 24	1,730,000	3,200,000
23296B	23296BK	18.8976 480	34.2520 870	12.2047 310	.295 7.5	.94 24	1,880,000	3,550,000
232/500B	232/500BK	19.6850 500	36.2205 920	13.2283 336	.295 7.5	.94 24	2,120,000	4,000,000
232/530B	232/530BK	20.8661 530	38.5826 980	13.9764 355	.295 7.5	1.65 42	2,330,000	4,450,000
232/560B	232/560BK	22.0472 560	40.5511 1,030	14.3701 365	.374 9.5	1.65 42	2,490,000	4,750,000
232/600B	232/600BK	23.6220 600	42.9133 1,090	15.2756 388	.374 9.5	1.65 42	2,740,000	5,350,000
232/630B	232/630BK	24.8031 630	45.2755 1,150	16.2204 412	.374 9.5	1.65 42	3,100,000	6,050,000
232/670B	232/670BK	26.3779 670	48.0314 1,220	17.2441 438	.374 9.5	1.65 42	3,600,000	7,150,000
232/710B	232/710BK	27.9527 710	50.3936 1,280	17.7165 450	.374 9.5	1.65 42	3,650,000	7,300,000
232/750B	232/750BK	29.5275 750	53.5432 1,360	18.7008 475	.374 9.5	1.65 42	4,100,000	8,250,000

The suffix D1 means the bearing has lubrication holes and an oil groove. However, for bearing numbers 23236B(K) and over, the suffix D1 is not needed as the lubrication holes and oil groove are standard.

Note: The *d* dimension for the tapered bore is measured from the side of the bearing with the smallest bore dimension.

SPHERICAL ROLLER BEARINGS

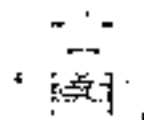
Bearing No.		Bore	O.D.	Width	Fillet Radius	Oil Groove Width	Basic Load Ratings (lbs)	
239	239K	<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i>	<i>G</i>	Dynamic <i>C</i>	Static <i>C₀</i>
23926D1	23926KD1	5.1181 130	7.0866 180	1.4567 37	.079 2.0	.28 7	48,000	85,000
23932D1	23932KD1	6.2992 160	8.6614 220	1.7717 45	.098 2.5	.31 8	72,500	138,000
23934D1	23934KD1	6.6929 170	9.0551 230	1.7717 45	.098 2.5	.31 8	74,500	146,000
23936D1	23936KD1	7.0866 180	9.8425 250	2.0472 52	.098 2.5	.31 8	99,500	188,000
23938D1	23938KD1	7.4803 190	10.2362 260	2.0472 52	.098 2.5	.39 10	103,000	200,000
23940D1	23940KD1	7.8740 200	11.0236 280	2.3622 60	.098 2.5	.39 10	123,000	247,000
23944D1	23944KD1	8.6614 220	11.8110 300	2.3622 60	.098 2.5	.39 10	127,000	263,000
23948	23948K	9.4488 240	12.5984 320	2.3622 60	.098 2.5	.47 12	127,000	267,000
23952	23952K	10.2362 260	14.1732 360	2.9528 75	.098 2.5	.47 12	171,000	355,000
23956	23956K	11.0236 280	14.9606 380	2.9528 75	.098 2.5	.47 12	187,000	395,000
23960	23960K	11.8110 300	16.5354 420	3.5433 90	.118 3.0	.47 12	249,000	520,000
23964	23964K	12.5984 320	17.3228 440	3.5433 90	.118 3.0	.47 12	257,000	555,000
23968	23968K	13.3858 340	18.1102 460	3.5433 90	.118 3.0	.47 12	274,000	595,000
23972	23972K	14.1732 360	18.8976 480	3.5433 90	.118 3.0	.47 12	298,000	660,000
23976	23976K	14.9606 380	20.4724 520	4.1732 106	.157 4.0	.63 16	350,000	795,000
23980	23980K	15.7480 400	21.2598 540	4.1732 106	.157 4.0	.63 16	355,000	820,000
23984	23984K	16.5354 420	22.0472 560	4.1732 106	.157 4.0	.63 16	365,000	865,000
23988	23988K	17.3228 440	23.6220 600	4.6457 118	.157 4.0	.63 16	455,000	1,050,000
23992	23992K	18.1102 460	24.4094 620	4.6457 118	.157 4.0	.63 16	470,000	1,110,000
23996	23996K	18.8976 480	25.5906 650	5.0394 128	.197 5.0	.79 20	525,000	1,240,000
239/500	239/500K	19.6850 500	26.3780 670	5.0394 128	.197 5.0	.79 20	535,000	1,260,000
239/530	239/530K	20.8661 530	27.5928 710	5.3543 136	.197 5.0	.79 20	595,000	1,450,000
239/560	239/560K	22.0472 560	29.5276 750	5.5118 140	.197 5.0	.79 20	635,000	1,500,000
239/600	239/600K	23.6220 600	31.4961 800	5.9055 150	.197 5.0	.79 20	710,000	1,750,000
239/630	239/630K	24.8031 630	33.4646 850	6.4961 165	.236 6.0	.79 20	830,000	2,080,000
239/670	239/670K	26.3780 670	35.4331 900	6.6929 170	.236 6.0	.79 20	925,000	2,330,000
239/710	239/710K	27.9528 710	37.4016 950	7.0866 180	.236 6.0	.79 20	995,000	2,580,000
239/750	239/750K	29.5276 750	39.3701 1000	7.2835 185	.236 6.0	.79 20	1,130,000	2,930,000
239/800	239/800K	31.4961 800	41.7323 1060	7.6772 195	.236 6.0	.94 24	1,220,000	3,100,000
239/850	239/850K	33.4646 850	44.0945 1120	7.8740 200	.236 6.0	.94 24	1,310,000	3,400,000
239/900	239/900K	35.4331 900	46.4567 1180	8.1102 206	.236 6.0	.94 24	1,490,000	3,900,000

Units: INCHES
Millimeters

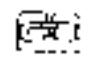


In this series, machined brass cages are also available. When placing an order for them, put the suffix L1 on the bearing number.

Example: 23932L1D1



Cylindrical Bore
239



Tapered Bore
239K
Taper 1:12

The suffix D1 means the bearing has lubrication holes and an oil groove. However, for bearing numbers 23948(K) and over, the suffix D1 is not needed as the lubrication holes and oil groove are standard.

Note: The *d* dimension for the tapered bore is measured from the side of the bearing with the smallest bore dimension.



Units: **INCHES**
Millimeters

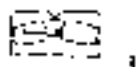
Bearing Numbers 24048B(K30) and under have machined brass cages. Machined brass cage are also available for bearing numbers 24052B(K30) and over. When placing an order for them, put the suffix L1 on the bearing number.

Example: 24052BL1



Cylindrical Bore

240



Tapered Bore
240K30
Taper 1:30

SPHERICAL ROLLER BEARINGS

Bearing No.		Bore <i>d</i>	O.D. <i>D</i>	Width <i>B</i>	Fillet Radius <i>r</i>	Oil Groove Width <i>G</i>	Basic Load Ratings (lbs)	
240	240K30						Dynamic <i>C</i>	Static <i>C₀</i>
24024BD1	24024BK30D1	4.7244 120	7.0866 180	2.3622 60	.098 2.5	.31 8	87,000	151,000
24026BD1	24026BK30D1	5.1181 130	7.8740 200	2.7165 69	.098 2.5	.31 8	114,000	201,000
24028BD1	24028BK30D1	5.5118 140	8.2677 210	2.7165 69	.098 2.5	.31 8	115,000	213,000
24030BD1	24030BK30D1	5.9055 150	8.8583 225	2.9528 75	.098 2.5	.31 8	131,000	238,000
24032BD1	24032BK30D1	6.2992 160	9.4488 240	3.1496 80	.098 2.5	.31 8	146,000	269,000
24034BD1	24034BK30D1	6.6929 170	10.2362 260	3.5433 90	.098 2.5	.39 10	180,000	330,000
24036BD1	24036BK30D1	7.0866 180	11.0236 280	3.9370 100	.098 2.5	.39 10	219,000	405,000
24038BD1	24038BK30D1	7.4803 190	11.4173 290	3.9370 100	.098 2.5	.39 10	224,000	415,000
24040BD1	24040BK30D1	7.8740 200	12.2047 310	4.2913 109	.098 2.5	.39 10	264,000	490,000
24044B	24044BK30	8.6614 220	13.3858 340	4.6457 118	.118 3.0	.47 12	305,000	580,000
24048B	24048BK30	9.4488 240	14.1732 360	4.6457 118	.118 3.0	.47 12	320,000	630,000
24052B	24052BK30	10.2362 260	15.7480 400	5.5118 140	.118 3.0	.47 12	410,000	800,000
24056B	24056BK30	11.0236 280	16.5354 420	5.5118 140	.118 3.0	.47 12	440,000	890,000
24060B	24060BK30	11.8110 300	18.1102 460	6.2992 160	.118 3.0	.47 12	550,000	1,120,000
24064B	24064BK30	12.5984 320	18.8976 480	6.2992 160	.118 3.0	.47 12	565,000	1,170,000
24068B	24068BK30	13.3858 340	20.4724 520	7.0866 180	.157 4.0	.63 16	675,000	1,390,000
24072B	24072BK30	14.1732 360	21.2598 540	7.0866 180	.157 4.0	.63 16	690,000	1,450,000
24076B	24076BK30	14.9606 380	22.0472 560	7.0866 180	.157 4.0	.63 16	715,000	1,560,000
24080B	24080BK30	15.7480 400	23.6220 600	7.8740 200	.157 4.0	.63 16	860,000	1,890,000
24084B	24084BK30	16.5354 420	24.4094 620	7.8740 200	.197 5.0	.63 16	870,000	1,900,000
24088B	24088BK30	17.3228 440	25.5906 650	8.3464 212	.236 6.0	.79 20	965,000	2,120,000
24092B	24092BK30	18.1102 460	26.7717 680	8.5827 218	.236 6.0	.79 20	1,030,000	2,280,000
24096B	24096BK30	18.8976 480	27.5591 700	8.5827 218	.236 6.0	.79 20	1,060,000	2,400,000
240/500B	240/500BK30	19.6850 500	28.3465 720	8.5827 218	.236 6.0	.79 20	1,090,000	2,500,000

The suffix D1 means the bearing has lubrication holes and an oil groove. However, for bearing numbers 24044B(K) and over, the suffix D1 is not needed as the lubrication holes and oil groove are standard.

Note: The *d* dimension for the tapered bore is measured from the side of the bearing with the smallest bore dimension.

SPHERICAL ROLLER BEARINGS

Bearing No.		Bore	O.D.	Width	Fillet Radius	Oil Groove Width	Basic Load Ratings (lbs)	
241	241K30	<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i>	<i>G</i>	Dynamic <i>C</i>	Static <i>C₀</i>
24122BD1	24122BK30D1	4.3307 110	7.0866 180	2.7165 69	.098 2.5	.31 8	101,000	170,000
24124BD1	24124BK30D1	4.7244 120	7.8740 200	3.1496 80	.098 2.5	.31 8	129,000	213,000
24126BD1	24126BK30D1	5.1181 130	8.2677 210	3.1496 80	.098 2.5	.31 8	132,000	224,000
24128BD1	24128BK30D1	5.5118 140	8.8583 225	3.3465 85	.098 2.5	.31 8	151,000	257,000
24130BD1	24130BK30D1	5.9055 150	9.8425 250	3.9370 100	.098 2.5	.31 8	201,000	350,000
24132BD1	24132BK30D1	6.2992 160	10.6299 270	4.2913 109	.098 2.5	.39 10	234,000	400,000
24134BD1	24134BK30D1	6.6929 170	11.0236 280	4.2913 109	.098 2.5	.39 10	242,000	420,000
24136BD1	24136BK30D1	7.0866 180	11.8110 300	4.6457 118	.118 3.0	.39 10	280,000	495,000
24138B	24138BK30	7.4803 190	12.5984 320	5.0394 128	.118 3.0	.47 12	320,000	555,000
24140B	24140BK30	7.8740 200	13.3858 340	5.5118 140	.118 3.0	.47 12	365,000	650,000
24144B	24144BK30	8.6614 220	14.5669 370	5.9055 150	.157 4.0	.47 12	425,000	760,000
24148B	24148BK30	9.4488 240	15.7480 400	6.2992 160	.157 4.0	.47 12	475,000	860,000
24152B	24152BK30	10.2362 260	17.3228 440	7.0866 180	.157 4.0	.47 12	555,000	1,010,000
24156B	24156BK30	11.0236 280	18.1102 460	7.0866 180	.197 5.0	.47 12	605,000	1,150,000
24160B	24160BK30	11.8110 300	19.6850 500	7.8740 200	.197 5.0	.47 12	745,000	1,430,000
24164B	24164BK30	12.5984 320	21.2598 540	8.5827 218	.197 5.0	.63 16	865,000	1,640,000
24168B	24168BK30	13.3858 340	22.8346 580	9.5669 243	.197 5.0	.63 16	1,030,000	2,010,000
24172B	24172BK30	14.1732 360	23.6220 600	9.5669 243	.197 5.0	.63 16	1,040,000	2,090,000
24176B	24176BK30	14.9606 380	24.4094 620	9.5669 243	.197 5.0	.63 16	1,070,000	2,130,000
24180B	24180BK30	15.7480 400	25.5906 650	9.8425 250	.236 6.0	.79 20	1,140,000	2,330,000
24184B	24184BK30	16.5354 420	27.5591 700	11.0236 280	.236 6.0	.79 20	1,380,000	2,740,000
24188B	24188BK30	17.3228 440	28.3465 720	11.0236 280	.236 6.0	.79 20	1,450,000	2,940,000
24192B	24192BK30	18.1102 460	29.9213 760	11.8110 300	.295 7.5	.79 20	1,600,000	3,250,000
24196B	24196BK30	18.8976 480	31.1024 790	12.1260 308	.295 7.5	.79 20	1,690,000	3,500,000
241/500B	241/500BK30	19.6850 500	32.6772 830	12.7953 325	.295 7.5	.79 20	1,830,000	3,800,000

Units: INCHES
Millimeters

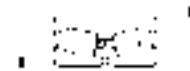


Bearing numbers 24144B(K30) and under have machined brass cages. Machined brass cages are also available for bearing numbers 24148B(K30) and over. When placing an order for them, put the suffix L1 on the bearing number.

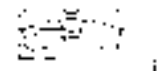
Example: 24148BL1



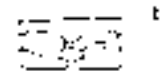
Cylindrical Bore



Cylindrical Bore
241



Tapered Bore



Tapered Bore
241K30
Taper 1:30

The suffix D1 means the bearing has lubrication holes and an oil groove. However, for bearing numbers 24138B(K30) and over, the suffix D1 is not needed as the lubrication holes and oil groove are standard.

Note: The *d* dimension for the tapered bore is measured from the side of the bearing with the smallest bore dimension.

NTN

**SERIES
223 UAVS1**

**SHAKER
SCREEN
BEARINGS**

Units: **INCHES**
Millimeters

The cage is made of machined brass.



223

SPHERICAL ROLLER BEARINGS

Bearing. No.	Bore <i>d</i>	O.D. <i>D</i>	Width <i>B</i>	Fillet Radius <i>r</i>	Oil Groove Width <i>G</i>	Basic Load Ratings (lbs)	
						<i>Dynamic C</i>	<i>Static C₀</i>
22314UAVS1	2.7559 70	5.9055 150	2.0079 51	.098 2.5	.31 8	77,000	92,500
22315UAVS1	2.9528 75	6.2992 160	2.1654 55	.098 2.5	.31 8	86,500	112,000
22316UAVS1	3.1496 80	6.6929 170	2.2835 58	.098 2.5	.31 8	94,500	118,000
22317UAVS1	3.3465 85	7.0866 180	2.3622 60	.118 3.0	.31 8	102,000	128,000
22318UAVS1	3.5433 90	7.4803 190	2.5197 64	.118 3.0	.39 10	116,000	146,000
22319UAVS1	3.7402 95	7.8740 200	2.6378 67	.118 3.0	.39 10	127,000	162,000
22320UAVS1	3.9370 100	8.4646 215	2.8740 73	.118 3.0	.39 10	151,000	194,000
22322UAVS1	4.3307 110	9.4488 240	3.1496 80	.118 3.0	.39 10	188,000	244,000
22324UAVS1	4.7244 120	10.2362 260	3.3858 86	.118 3.0	.47 12	212,000	276,000
22326UAVS1	5.1181 130	11.0236 280	3.6614 93	.157 4.0	.47 12	246,000	325,000
22328UAVS1	5.5118 140	11.8110 300	4.0157 102	.157 4.0	.47 12	287,000	385,000
22330UAVS1	5.9055 150	12.5984 320	4.2520 108	.157 4.0	.47 12	320,000	460,000
22332UAVS1	6.2992 160	13.3858 340	4.4882 114	.157 4.0	.47 12	345,000	495,000
22334UAVS1	6.6929 170	14.1732 360	4.7244 120	.157 4.0	.47 12	385,000	565,000
22336UAVS1	7.0866 180	14.9606 380	4.9606 126	.157 4.0	.47 12	435,000	655,000
22338UAVS1	7.4803 190	15.7480 400	5.1969 132	.197 5.0	.47 12	470,000	720,000
22340UAVS1	7.8740 200	16.5354 420	5.4331 138	.197 5.0	.63 16	500,000	765,000

The suffix VS1 means the bearing has controlled O.D., bore and radial clearance for shaker screen application.

Note: Lubrication holes and oil groove provided as standard; suffix D1 not needed.

SPHERICAL ROLLER BEARINGS

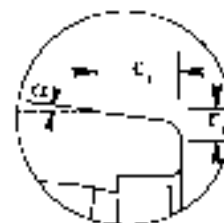
Units: **Millimeters**
INCHES

NTN
SERIES
MX-W222
SEALED
BEARINGS

Bearing No. MX-W222K	Bore <i>d</i>	O.D. <i>D</i>	Width <i>B</i>	Fillet Radius <i>r</i>	Oil Groove Width <i>G</i>	Basic Load Ratings (lbs)	
						<i>Dynamic</i> <i>C</i>	<i>Static</i> <i>C</i>
MX-W22211BLLKC3	55	100	40	0.60	6	21,000	24,700
	2.1654	3.9370	1.5748	0.024	0.2362		
MX-W22213BLLKC3	65	120	46.5	0.60	6	32,000	40,000
	2.5591	4.7244	1.8307	0.024	0.2362		
MX-W22215BLLKC3	75	130	46.5	0.60	8	37,500	50,000
	2.9528	5.1181	1.8307	0.024	0.3150		
MX-W22217BLLKC3	85	150	51.5	0.60	8	46,500	61,000
	3.3465	5.9055	2.0276	0.024	0.3150		
MX-W22220BLLKC3	100	180	64.5	1.0	8	69,500	92,000
	3.9370	7.0866	2.5394	0.039	0.3150		
MX-W22222BLLKC3	110	200	71	1.0	8	92,000	128,000
	4.3307	7.8740	2.7953	0.039	0.3150		
MX-W22224BLLKC3	120	215	76	1.0	10	109,000	157,000
	4.7244	8.4646	2.9921	0.039	0.3937		
MX-W22226BLLKC3	130	230	84	1.0	10	127,000	176,000
	5.1181	9.0551	3.3071	0.039	0.3937		
MX-W22228BLLKC3	140	250	88	1.0	10	153,000	218,000
	5.5118	9.8425	3.4627	0.039	0.3937		
MX-W22232BLLKC3	160	290	104	1.0	12	196,000	290,000
	6.2992	11.4173	4.0945	0.039	0.4724		



Tapered Bore
MX-W222K
Taper 1:12



*Detail:

For outside diameter chamfer dimensions, contact NTN Engineering.

Note: The *d* dimensions for the tapered bore is measured from the side of the bearing with the smallest bore dimension. Lubrication holes and oil groove provided as standard, suffix D1 not needed.