

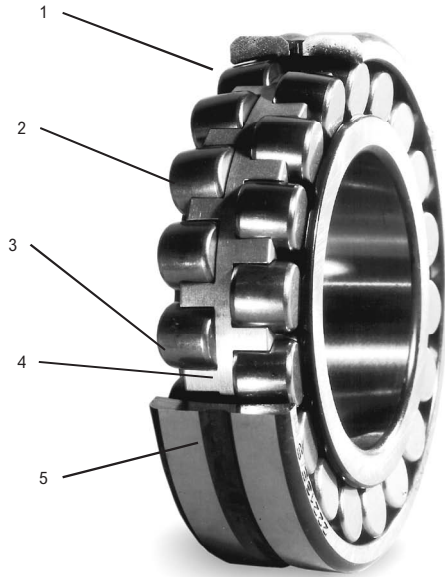


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## Series 22200, 22300, 23000, 23100, 23200 Spherical Roller Bearings

Self-aligning and self-contained spherical roller bearings provide high capacity for heavy-duty and high-precision applications. They are used extensively on earth-moving equipment, vibrating screens, steel mill and paper mill equipment, embossing rolls, printing presses, and torque converters.



**1. Positive Roller Guidance is Provided from Rugged Retainer Design**

**2. Large High-capacity Rollers for Extended Bearing Life**

**3. Raceway Curvatures**

Controlled raceway curvatures afford precise osculation clearance preventing roller edge loading.

**4. Micro-finished Raceways Assure Smooth Operation**

**5. Maximum Lubrication**

Outer ring groove and three symmetrically spaced holes for maximum lubrication access.

## 22200, 22300, 23000, 23100, 23200, 23900 Nomenclature

Symbol	Description	2 22 16 LB K / W33 / C0					
2	Used to distinguish from other series	_____	_____	_____	_____	_____	_____
22	Bearing dimension series (22, 23, 30, 31, 32, 39)	_____	_____	_____	_____	_____	_____
16	One-fifth of bore diameter (mm)	_____	_____	_____	_____	_____	_____
LB	Designation for Link-Belt spherical roller bearing	_____	_____	_____	_____	_____	_____
None	Cylindrical bore	_____	_____	_____	_____	_____	_____
K	Tapered bore	_____	_____	_____	_____	_____	_____
W33	Lubrication holes and groove in outer ring (standard)	_____	_____	_____	_____	_____	_____
C2	Internal clearance less than C0	_____	_____	_____	_____	_____	_____
C0	Basic internal clearance	_____	_____	_____	_____	_____	_____
C3	Internal clearance greater than C0 (standard)	_____	_____	_____	_____	_____	_____
C4	Internal clearance greater than C3	_____	_____	_____	_____	_____	_____

## Link-Belt Spherical Roller Bearing Series 22200, 22300, 23000, 23100, 23200 and 23900 Selection Guide

To select a pillow block, determine the applied radial load, the applied thrust load, the desired Rating Life, the required minimum shaft size, and applicable operating conditions. The procedure shown here will aid in selecting a pillow block to meet an L<sub>10</sub> design life. The formulas for calculating life expectancy should be used to determine the Rating Life L<sub>10</sub> for the pillow block selected. Spherical roller bearing pillow blocks are available in Series 6600, 6800, 22600, 7600, 7800, and 22300. Because a number of series are available, several different pillow blocks that will fulfill and L<sub>10</sub> life requirement can often be chosen.

Some of the factors to consider when choosing between series are: cost, speed limit, minimum shaft diameter, thrust load, space limitations, and type of shaft mounting.

The selection procedures and rating formulas shown here are in agreement with The American Bearing Manufacturers Association Standards and ANSI/ ABMA Standards STD 11-1990. Ratings are based on fatigue life.

The Rating Life L<sub>10</sub> or fatigue life at 90% reliability is the usual basis for bearing selection.

For radial load applications only, Table 3 can be used to select a unit or to determine L<sub>10</sub> life expectancy.

To assure a satisfactory bearing application, fitting practice, mounting, lubrication, sealing, static rating, housing strength, operating conditions and maintenance must be considered.

### Steps for Selection

#### Step 1

Determine an appropriate L<sub>10</sub> design life.

Type of service	Operating time, hours per year	Design life, years	L <sub>10</sub> design life, hours
Heavy seasonal usage	1,400 to 1,600	4-6	8,000
Industrial—8 hour shift	2,000	10	20,000
Industrial—16 hour shift	4,000	10	40,000
Industrial—continuous	8,700	10	80,000 to 100,000
Industrial—High reliability	—	—	120,000 to 300,000

#### Step 2

Determine a required  $\left(\frac{C}{P}\right)$  from Table 1.

#### Step 3

Calculate the required C and select a roller bearing pillow block.

**a** For radial load only:  $P = F_r$

Required  $C = \left(\frac{C}{P}\right) P$  using  $\left(\frac{C}{P}\right)$  from Step 2

Select a roller bearing pillow block from Table 2 or Table 4 having a basic load rating C equal to or greater than the required C.

**b** For combined radial and thrust loads:

Select a roller bearing pillow block of the desired shaft size from Table 2 or Table 4 Calculate the ratio of thrust load  $F_a$  to the radial load  $F_r$ .

$$\frac{F_a}{F_r}$$

Calculate the equivalent radial load P

$$P = X F_r + Y F_a$$

If  $\frac{F_a}{F_r}$  is equal to or less than e, then  $P = X_1 F_r + Y_1 F_a$

If  $\frac{F_a}{F_r}$  is greater than e, then  $P = X_2 F_r + Y_2 F_a$

For values of e, X<sub>1</sub>, Y<sub>1</sub>, X<sub>2</sub>, and Y<sub>2</sub>, see Table 2 or Table 4

Required  $C = \left(\frac{C}{P}\right) P$  using  $\left(\frac{C}{P}\right)$  from Step 2

Consult the bearing rating Table 2 or Table 4, to see if the selected bearing meets or exceeds the required C. The life expectancy of other sizes and series of bearings can be calculated similarly.

## Selection

### Symbols for formulas:

C = basic load rating, pounds (or newtons)	L <sub>10</sub> = rating life, hours
Co = static load rating, pounds (or newtons)	n = speed, revolutions per minute
e = a reference value	P = equivalent radial load, pounds (or newtons)
Fa = thrust load, pounds (or newtons)	X = radial factor
Fr = radial load, pounds (or newtons)	Y = thrust factor

**Table 1 • Relation of L<sub>10</sub> life and speed to  $\left(\frac{C}{P}\right)$**

Bearing Life Hours L <sub>10</sub>	Speed, n									
	50	100	200	300	400	500	600	700	800	
3000	1.93	2.38	2.93	3.31	3.61	3.86	4.07	4.27	4.44	
4000	2.11	2.59	3.19	3.61	3.93	4.20	4.44	4.65	4.84	
5000	2.25	2.77	3.42	3.86	4.20	4.50	4.75	4.97	5.18	
6000	2.38	2.93	3.61	4.07	4.44	4.75	5.02	5.25	5.47	
8000	2.59	3.19	3.93	4.44	4.84	5.18	5.47	5.73	5.96	
10000	2.77	3.42	4.20	4.75	5.18	5.54	5.85	6.12	6.37	
12000	2.93	3.61	4.44	5.02	5.47	5.85	6.18	6.47	6.73	
14000	3.07	3.78	4.65	5.25	5.73	6.12	6.47	6.77	7.05	
16000	3.19	3.93	4.84	5.47	5.96	6.37	6.73	7.05	7.34	
18000	3.31	4.07	5.02	5.66	6.18	6.60	6.97	7.30	7.60	
20000	3.42	4.20	5.18	5.85	6.37	6.81	7.20	7.54	7.85	
25000	3.65	4.50	5.54	6.25	6.81	7.29	7.70	8.06	8.39	
30000	3.86	4.75	5.85	6.60	7.20	7.70	8.13	8.51	8.86	
35000	4.04	4.97	6.12	6.92	7.54	8.06	8.51	8.92	9.28	
40000	4.20	5.18	6.37	7.20	7.85	8.39	8.86	9.28	9.66	
45000	4.36	5.36	6.60	7.46	8.13	8.69	9.18	9.61	10.00	
50000	4.50	5.54	6.81	7.70	8.39	8.97	9.48	9.92	10.30	
60000	4.75	5.85	7.20	8.13	8.86	9.48	10.00	10.50	10.90	
70000	4.97	6.12	7.54	8.51	9.28	9.92	10.50	11.00	11.40	
80000	5.18	6.37	7.85	8.86	9.66	10.30	10.90	11.40	11.90	
90000	5.36	6.60	8.13	9.18	10.00	10.70	11.30	11.80	12.30	
100000	5.54	6.81	8.39	9.48	10.30	11.00	11.70	12.20	12.70	
150000	6.25	7.70	9.48	10.70	11.70	12.50	13.20	13.80	14.40	
200000	6.81	8.39	10.30	11.70	12.70	13.60	14.40	15.00	15.70	
	Speed, n									
	900	1000	1200	1500	1800	2400	3000	3600	6000	
3000	4.60	4.75	5.02	5.36	5.66	6.18	6.60	6.97	8.13	
4000	5.02	5.18	5.47	5.85	6.18	6.73	7.20	7.60	8.86	
5000	5.36	5.54	5.85	6.25	6.60	7.20	7.70	8.13	9.48	
6000	5.66	5.85	6.18	6.60	6.97	7.60	8.13	8.59	10.00	
8000	6.18	6.37	6.73	7.20	7.60	8.29	8.86	9.36	10.90	
10000	6.60	6.81	7.20	7.70	8.13	8.86	9.48	10.00	11.70	
12000	6.97	7.20	7.60	8.13	8.59	9.36	10.00	10.60	12.30	
14000	7.30	7.54	7.96	8.51	8.99	9.80	10.50	11.10	12.90	
16000	7.60	7.85	8.29	8.86	9.36	10.20	10.90	11.50	13.40	
18000	7.88	8.13	8.59	9.18	9.70	10.60	11.30	11.90	13.90	
20000	8.13	8.39	8.86	9.48	10.00	10.90	11.70	12.30	14.40	
25000	8.69	8.97	9.48	10.10	10.70	11.70	12.50	13.20	15.40	
30000	9.18	9.48	10.00	10.70	11.30	12.30	13.20	13.90	16.20	
35000	9.61	9.92	10.50	11.20	11.80	12.90	13.80	14.60	17.00	
40000	10.00	10.30	10.90	11.70	12.30	13.40	14.40	15.20	17.70	
45000	10.40	10.70	11.30	12.10	12.80	13.90	14.90	15.70	18.30	
50000	10.70	11.00	11.70	12.50	13.20	14.40	15.40	16.20	18.90	
60000	11.30	11.70	12.30	13.20	13.90	15.20	16.20	17.10	20.00	
70000	11.80	12.20	12.90	13.80	14.60	15.90	17.00	17.90	20.90	
80000	12.30	12.70	13.40	14.40	15.20	16.50	17.70	18.70	21.80	
90000	12.80	13.20	13.90	14.90	15.70	17.10	18.30	19.40	22.60	
100000	13.20	13.60	14.40	15.40	16.20	17.70	18.90	20.00	23.30	
150000	14.90	15.40	16.20	17.30	18.30	20.00	21.40	22.60	26.30	
200000	16.20	16.70	17.70	18.90	20.00	21.80	23.30	24.60	28.70	

## Basic Formula

$$\left(\frac{C}{P}\right) = \left(\frac{L_{10} \times n \times 60}{1,000,000}\right)^{3/10}$$

$$L_{10} = \frac{\left(\frac{C}{P}\right)^{10/3} \times 1,000,000}{n \times 60}$$

## Life Expectancy

To calculate the Rating Life L<sub>10</sub> of any selected or trial bearing:

### Step 1

Determine the equivalent radial load P.

**a** For radial load only:

$$P = Fr$$

**b** For combined radial and thrust load:

$$P = XFr + YFa$$

if  $\frac{Fa}{Fr}$  is equal to or less than e, then

$$P = X1Fr + Y1Fa$$

if  $\frac{Fa}{Fr}$  is greater than e, then

$$P = X2Fr + Y2Fa$$

For values of e, X1, Y1, X2, and Y2, consult the appropriate bearing rating Table 2 Table 4.

### Step 2

Calculate the ratio of the basic load rating C to the equivalent radial load.

$$\left(\frac{C}{P}\right)$$

### Step 3

Approximate the bearing life from Table 1.

### Live Adjustment

The Rating Life, L<sub>10</sub>, may be modified for some applications in accordance with the formula

$$Ln = a1a2a3L_{10}$$

where Ln = Adjusted life for (100-n) % reliability,

a1 = Life adjustment factor for reliability

a2 = Life adjustment factor

for material and processing

a3 = Life adjustment factor for operating conditions.

For most normal applications, all factors will be taken as 1, and the Rating Life used as the selection basis or life estimate. In addition, as long as standard catalog bearings are used, a2 will be normally set equal to one.

The factor a3 covers such things as lubrication, misalignment, and temperature. Some conditions that could yield a3 significantly different than unity include speeds less than 20000 DN or greater than 200000 DN, temperatures below -40°F (-40°C) or above 275°F (135°C). For other possible conditions, as well as additional information on life adjustment factors, consult Rexnord Bearing Division.

Table 2 • Series 22200LB, 22200LBK Load Ratings and Speed Limits

Bearing Number		Co Static Load Rating		C Basic Load Rating		Speed Limit, RPM		e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
Cylindrical Bore	Tapered bore	newtons	pounds	newtons	pounds	Grease	Oil		X1	Y1	X2	Y2
22209LB	22209LBK	105000	23600	92500	20800	5300	6200	0.26	1.00	2.6	0.67	3.9
22210LB	22210LBK	113000	25500	97900	22000	5000	5500	0.26	1.00	2.8	0.67	4.2
22211LB	22211LBK	145000	32500	120000	27000	4500	5000	0.23	1.00	2.9	0.67	4.4
22212LB	22212LBK	180000	40500	151000	34000	4000	4500	0.24	1.00	2.8	0.67	4.2
22213LB	22213LBK	207000	46500	169000	38000	3800	4300	0.24	1.00	2.8	0.67	4.2
22214LB	22214LBK	222000	50000	178000	40000	3600	4000	0.23	1.00	2.9	0.67	4.4
22215LB	22215LBK	236000	53000	185000	41500	3400	3700	0.22	1.00	3.1	0.67	4.6
22216LB	22216LBK	260000	58500	207000	46500	3200	3500	0.22	1.00	3.1	0.67	4.7
22217LB	22217LBK	327000	73500	260000	58500	3000	3250	0.22	1.00	3.0	0.67	4.5
22218LB	22218LBK	363000	81500	285000	64000	2600	3000	0.23	1.00	2.9	0.67	4.3
22219LB	22219LBK	400000	90000	316000	71000	2400	2900	0.24	1.00	2.9	0.67	4.3
22220LB	22220LBK	463000	104000	356000	80000	2200	2800	0.24	1.00	2.8	0.67	4.2
22222LB	22222LBK	587000	132000	454000	102000	2000	2500	0.25	1.00	2.7	0.67	4.0
22224LB	22224LBK	725000	163000	534000	120000	1900	2300	0.25	1.00	2.7	0.67	4.0
22226LB	22226LBK	872000	196000	636000	143000	1800	2100	0.26	1.00	2.6	0.67	3.9
22228LB	22228LBK	1010000	228000	738000	166000	1700	1950	0.25	1.00	2.7	0.67	4.0
22230LB	22230LBK	1200000	270000	845000	190000	1600	1850	0.25	1.00	2.7	0.67	4.0
22232LB	22232LBK	1380000	310000	961000	216000	1500	1700	0.26	1.00	2.6	0.67	3.9
22234LB	22234LBK	1530000	345000	1110000	250000	1300	1600	0.26	1.00	2.6	0.67	3.9
22236LB	22236LBK	1620000	365000	1130000	255000	1300	1500	0.25	1.00	2.7	0.67	4.0
22238LB	22238LBK	1850000	415000	1200000	270000	1200	1400	0.28	1.00	2.4	0.67	3.6
22240LB	22240LBK	2000000	450000	1330000	300000	1100	1300	0.29	1.00	2.3	0.67	3.5
22244LB	22244LBK	2450000	550000	1620000	365000	1000	1200	0.29	1.00	2.3	0.67	3.5
22248LB	22248LBK	2890000	650000	1870000	420500	750	950	0.27	1.00	2.5	0.67	3.7

If the load P is greater than .25C, consult Rexnord Bearing Division.

Speed limits are based on the following:

1. Negligible seal torque (e.g., non-contact seals)
2. Proper operating internal clearance.
3. Adequate lubrication and maintenance (special lubricants and/or more frequent relubrication may be required).
4. Normal room temperature environment and no extraneous heat sources, such that bearing operating temperature does not exceed 100°C (212°F).
5. Equivalent radial load not greater than 7% of C.
6. Axial load, if any, not greater than 20% of radial load.

Table 3 • Series 22300LB,22300LBK Load Ratings and Speed Limits

Bearing Number		Co Static Load Rating		C Basic Load Rating		Speed Limit RPM			$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
Cylindrical Bore	Tapered Bore	newtons	pounds	newtons	pounds	Grease	Oil	e	X1	Y1	X2	Y2
22308LB	22308LBK	145000	32500	129000	29000	4500	5600	0.36	1.00	1.9	0.67	2.8
22309LB	22309LBK	178000	40000	158000	35500	3800	4800	0.36	1.00	1.9	0.67	2.8
22310LB	22310LBK	214000	48000	189000	42500	3600	4300	0.36	1.00	1.9	0.67	2.8
22311LB	22311LBK	254000	57000	222000	50000	3200	4000	0.36	1.00	1.9	0.67	2.8
22312LB	22312LBK	302000	68000	260000	58500	3000	3800	0.35	1.00	1.9	0.67	2.8
22313LB	22313LBK	356000	80000	291000	65500	2600	3400	0.34	1.00	2.0	0.67	3.0
22314LB	22314LBK	378000	85000	320000	72000	2400	3200	0.34	1.00	2.0	0.67	3.0
22315LB	22315LBK	436000	98000	369000	83000	2200	3000	0.34	1.00	2.0	0.67	3.0
22316LB	22316LBK	498000	112000	414000	93000	2000	2800	0.34	1.00	2.0	0.67	3.0
22317LB	22317LBK	543000	122000	454000	102000	1900	2600	0.33	1.00	2.0	0.67	3.0
22318LB	22318LBK	623000	140000	507000	114000	1800	2400	0.33	1.00	2.0	0.67	3.0
22319LB	22319LBK	681000	153000	556000	125000	1800	2400	0.33	1.00	2.0	0.67	3.0
22320LB	22320LBK	814000	183000	649000	146000	1700	2200	0.34	1.00	2.0	0.67	3.0
22322LB	22322LBK	1050000	236000	801000	180000	1600	2000	0.33	1.00	2.1	0.67	3.1
22324LB	22324LBK	1160000	260000	907000	204000	1400	1800	0.33	1.00	2.1	0.67	3.1
22326LB	22326LBK	1360000	305000	1050000	236000	1300	1700	0.33	1.00	2.1	0.67	3.1
22328LB	22328LBK	1600000	360000	1220000	275000	1100	1500	0.34	1.00	2.0	0.67	3.0
22330LB	22330LBK	1800000	405000	1380000	310000	1000	1400	0.33	1.00	2.0	0.67	3.0
22332LB	22332LBK	1890000	425000	1450000	325000	950	1300	0.37	1.00	1.8	0.67	2.7
22334LB	22334LBK	2110000	475000	1600000	360000	950	1300	0.37	1.00	1.8	0.67	2.7
22336LB	22336LBK	2360000	530000	1730000	390000	900	1200	0.37	1.00	1.8	0.67	2.7
22338LB	22338LBK	2540000	570000	1850000	415000	850	1100	0.37	1.00	1.8	0.67	2.7
22340LB	22340LBK	2800000	630000	2070000	465000	850	1100	0.36	1.00	1.9	0.67	2.8
22344LB	22344LBK	3340000	750000	2360000	530000	700	900	0.35	1.00	2.0	0.67	2.9
22348LB	22348LBK	3800000	854500	2600000	584500	670	850	0.32	1.00	2.1	0.67	3.2
22356LB	22356LBK	5150000	1157800	3500000	787000	560	710	0.31	1.00	2.1	0.67	3.2

If the load P is greater than .25C, consult Rexnord Bearing Division.

Speed limits are based on the following:

1. Negligible seal torque (e.g., non-contact seals)
2. Proper operating internal clearance.
3. Adequate lubrication and maintenance (special lubricants and/or more frequent relubrication may be required).
4. Normal room temperature environment and no extraneous heat sources, such that bearing operating temperature does not exceed 100°C (212°F).
5. Equivalent radial load not greater than 7% of C.
6. Axial load, if any, not greater than 20% of radial load.

**Table 4 – Series 23000LB, 23000LBK Load Ratings and Speed Limits**

Bearing Number		Co Static Load Rating		C Basic Dynamic Load Rating		Speed Limit, RPM		Fa/Fr ≤ e			Fa/Fr > e	
Cylindrical Bore	Tapered Bore	newtons	pounds	newtons	pounds	Grease	Oil	e	X1	Y1	X2	Y2
23044LB	23044LBK	1980000	445100	1090000	245000	950	1200	0.24	1.00	2.8	0.67	4.1
23048LB	23048LBK	2180000	490000	1160000	260000	950	1100	0.25	1.00	2.7	0.67	4.1
23052LB	23052LBK	2580000	580000	1430000	321500	800	950	0.25	1.00	2.7	0.67	4.1
23056LB	23056LBK	2980000	670000	1530000	345000	800	950	0.25	1.00	2.7	0.67	4.1
23060LB	23060LBK	3700000	832000	1920000	431600	670	850	0.24	1.00	2.8	0.67	4.2
23064LB	23064LBK	3850000	865500	1960000	440600	630	800	0.24	1.00	2.8	0.67	4.2
23068LB	23068LBK	4400000	989200	2280000	512600	560	710	0.24	1.00	2.8	0.67	4.2
23072LB	23072LBK	4700000	1056600	2390000	537500	530	670	0.24	1.00	2.8	0.67	4.2
23076LB	23076LBK	5100000	1146500	2500000	562000	530	630	0.22	1.00	3.0	0.67	4.5
23080LB	23080LBK	5900000	1326500	2970000	668000	480	600	0.23	1.00	3.0	0.67	4.4
23084LB	23084LBK	5850000	1315200	2910000	654200	450	560	0.23	1.00	2.9	0.67	4.3
23088LB	23088LBK	6350000	1427500	3150000	708200	430	530	0.23	1.00	2.9	0.67	4.3
23092LB	23092LBK	7100000	1596200	3450000	775600	400	500	0.22	1.00	3.1	0.67	4.6
23096LB	23096LBK	7950000	1787200	3800000	854300	400	480	0.22	1.00	3.1	0.67	4.6
230530LB	230530LBK	9200000	2068200	4400000	989200	340	430	0.22	1.00	3.1	0.67	4.6
230560LB	230560LBK	10700000	2405500	5000000	1124000	320	400	0.22	1.00	3.0	0.67	4.5
230600LB	230600LBK	12200000	2743000	5450000	1225200	300	360	0.21	1.00	3.3	0.67	4.8
230630LB	230630LBK	12700000	2855000	5900000	1326400	280	340	0.22	1.00	3.1	0.67	4.7

If the load P is greater than .25C, consult Rexnord Bearing Division.

Speed limits are based on the following:

1. Negligible seal torque (e.g., non-contact seals)
2. Proper operating internal clearance.
3. Adequate lubrication and maintenance (special lubricants and/or more frequent relubrication may be required).
4. Normal room temperature environment and no extraneous heat sources, such that bearing operating temperature does not exceed 100°C (212°F).
5. Equivalent radial load not greater than 7% of C.
6. Axial load, if any, not greater than 20% of radial load.

**Table 5 – Series 23100LB, 23100LBK Load Ratings and Speed Limits**

Bearing Number		Co Static Load Rating		C Basic Dynamic Load Rating		Speed Limit, RPM		Fa/Fr ≤ e			Fa/Fr > e	
Cylindrical Bore	Tapered Bore	newtons	pounds	newtons	pounds	Grease	Oil	e	X1	Y1	X2	Y2
23144LB	23144LBK	2710000	609200	1570000	353000	710	950	0.30	1.00	2.2	0.67	3.3
23148LB	23148LBK	3100000	697000	1790000	402500	670	850	0.30	1.00	2.2	0.67	3.3
23152LB	23152LBK	3750000	843000	2160000	485500	600	800	0.32	1.00	2.1	0.67	3.2
23156LB	23156LBK	4000000	899300	2230000	501500	560	750	0.30	1.00	2.2	0.67	3.3
23160LB	23160LBK	4800000	1079000	2670000	600500	500	670	0.31	1.00	2.2	0.67	3.3
23164LB	23164LBK	5500000	1236500	3050000	685700	480	600	0.31	1.00	2.1	0.67	3.2
23168LB	23168LBK	6600000	1483800	3600000	809500	430	560	0.31	1.00	2.1	0.67	3.2
23172LB	23172LBK	7100000	1596200	3800000	854500	400	530	0.31	1.00	2.2	0.67	3.2
23176LB	23176LBK	7600000	1708500	4000000	899200	400	500	0.30	1.00	2.2	0.67	3.3
23180LB	23180LBK	7900000	1776000	4150000	933000	380	480	0.29	1.00	2.3	0.67	3.4
23184LB	23184LBK	9400000	2113200	5000000	1124000	340	450	0.31	1.00	2.2	0.67	3.3
23188LB	23188LBK	10300000	2315500	5300000	1191500	320	430	0.30	1.00	2.2	0.67	3.3
23192LB	23192LBK	10900000	2450500	5700000	1281400	300	400	0.31	1.00	2.2	0.67	3.3
23196LB	23196LBK	11700000	2630500	6050000	1360100	300	380	0.31	1.00	2.2	0.67	3.3
231530LB	231530LBK	14100000	3169800	7150000	1607400	260	340	0.30	1.00	2.2	0.67	3.3
231560LB	231560LBK	15500000	3484500	7850000	1764800	240	320	0.30	1.00	2.3	0.67	3.4
231600LB	231600LBK	17500000	3934000	8750000	1967000	220	280	0.30	1.00	2.3	0.67	3.4
231630LB	231630LBK	19400000	4361100	9600000	2158100	200	260	0.30	1.00	2.3	0.67	3.4

If the load P is greater than .25C, consult Rexnord Bearing Division.

Speed limits are based on the following:

1. Negligible seal torque (e.g., non-contact seals)
2. Proper operating internal clearance.
3. Adequate lubrication and maintenance (special lubricants and/or more frequent relubrication may be required).
4. Normal room temperature environment and no extraneous heat sources, such that bearing operating temperature does not exceed 100°C (212°F).
5. Equivalent radial load not greater than 7% of C.
6. Axial load, if any, not greater than 20% of radial load.



**Table 6 – Series 23200LB, 23200LBK Load Ratings and Speed Limits**

Bearing Number		Co Static Load Rating		C Basic Dynamic Load Rating		Speed Limit, RPM		Fa/Fr ≤ e			Fa/Fr > e	
Cylindrical Bore	Tapered Bore	newtons	pounds	newtons	pounds	Grease	Oil	e	X1	Y1	X2	Y2
23244LB	23244LBK	3400000	764500	2020000	454000	670	900	0.35	1.00	1.9	0.67	2.9
23248LB	23248LBK	4050000	910500	2440000	548500	630	800	0.37	1.00	1.8	0.67	2.7
23252LB	23252LBK	4550000	1022900	2740000	616000	560	750	0.37	1.00	1.8	0.67	2.7
23256LB	23256LBK	4900000	1101600	2880000	647500	530	670	0.35	1.00	1.9	0.67	2.9
23260LB	23260LBK	5900000	1326400	3400000	764500	480	630	0.35	1.00	1.9	0.67	2.9
23264LB	23264LBK	6900000	1551200	3900000	877000	450	600	0.36	1.00	1.9	0.67	2.8
23268LB	23268LBK	7800000	1753500	4400000	989200	400	530	0.36	1.00	1.9	0.67	2.8
23272LB	23272LBK	8550000	1922100	4800000	1079000	380	500	0.36	1.00	1.9	0.67	2.8
23276LB	23276LBK	9200000	2068500	5150000	1157800	360	480	0.35	1.00	1.9	0.67	2.9
23280LB	23280LBK	10400000	2338000	5800000	1303900	340	450	0.36	1.00	1.9	0.67	2.8
23284LB	23284LBK	11700000	2630500	6450000	1450000	320	430	0.35	1.00	1.9	0.67	2.9
23288LB	23288LBK	12800000	2877500	6900000	1551200	300	400	0.35	1.00	1.9	0.67	2.9
23292LB	23292LBK	13700000	3080000	7350000	1652400	280	380	0.36	1.00	1.9	0.67	2.8
23296LB	23296LBK	14400000	3237500	7850000	1764800	260	360	0.36	1.00	1.9	0.67	2.8

If the load P is greater than .25C, consult Rexnord Bearing Division.

Speed limits are based on the following:

1. Negligible seal torque (e.g., non-contact seals)
2. Proper operating internal clearance.
3. Adequate lubrication and maintenance (special lubricants and/or more frequent relubrication may be required).
4. Normal room temperature environment and no extraneous heat sources, such that bearing operating temperature does not exceed 100°C (212°F).
5. Equivalent radial load not greater than 7% of C.
6. Axial load, if any, not greater than 20% of radial load.

**Table 7 – Series 23900LB, 23900LBK Load Ratings and Speed Limits**

Bearing Number		Co Static Load Rating		C Basic Dynamic Load Rating		Speed Limit, RPM		Fa/Fr ≤ e			Fa/Fr > e	
Cylindrical Bore	Tapered Bore	newtons	pounds	newtons	pounds	Grease	Oil	e	X1	Y1	X2	Y2
23944LB	23944LBK	1240000	279000	625000	140500	1000	1300	0.18	1.00	3.8	0.67	5.7
23948LB	23948LBK	1300000	292500	635000	143000	950	1200	0.17	1.00	4.0	0.67	6.0

If the load P is greater than .25C, consult Rexnord Bearing Division.

Speed limits are based on the following:

1. Negligible seal torque (e.g., non-contact seals)
2. Proper operating internal clearance.
3. Adequate lubrication and maintenance (special lubricants and/or more frequent relubrication may be required).
4. Normal room temperature environment and no extraneous heat sources, such that bearing operating temperature does not exceed 100°C (212°F).
5. Equivalent radial load not greater than 7% of C.
6. Axial load, if any, not greater than 20% of radial load.

## Cylindrical Bore Bearings - Radial Clearances

Series 22200, 22300, 23000, 23100, 23200		Radial Internal Clearance, Inches							
		C2		C0		C3 (basic)		C4	
Basic Size	Bore (mm)	Min	Max	Min	Max	Min	Max	Min	Max
08	40	0.0006	0.0012	0.0012	0.0018	0.0018	0.0024	0.0024	0.0032
09	45	0.0008	0.0014	0.0014	0.0022	0.0022	0.0030	0.0030	0.0039
10	50								
11	55	0.0010	0.0017	0.0017	0.0026	0.0026	0.0036	0.0036	0.0047
12	60								
13	65								
14	70	0.0012	0.0020	0.0020	0.0032	0.0032	0.0044	0.0044	0.0057
15	75								
16	80								
17	85								
18	90	0.0014	0.0025	0.0025	0.0039	0.0039	0.0053	0.0053	0.0071
19	95								
20	100								
22	110								
24	120	0.0017	0.0031	0.0031	0.0048	0.0048	0.0064	0.0064	0.0083
26	130								
28	140								
30	150	0.0020	0.0038	0.0038	0.0057	0.0057	0.0075	0.0075	0.0095
32	160								
34	170	0.0024	0.0043	0.0043	0.0065	0.0065	0.0087	0.0087	0.0110
36	180								
38	190	0.0026	0.0047	0.0047	0.0071	0.0071	0.0095	0.0095	0.0122
40	200								
44	220	0.0028	0.0051	0.0051	0.0079	0.0079	0.0103	0.0103	0.0133
48	240								
52	260	0.0032	0.0055	0.0055	0.0087	0.0087	0.0114	0.0114	0.0149
56	280								
60	300	0.0036	0.0059	0.0059	0.0095	0.0095	0.0126	0.0126	0.0165
64	320								
68	340	0.0039	0.0067	0.0067	0.0103	0.0103	0.0138	0.0138	0.0180
72	360								
76	380	0.0044	0.0075	0.0075	0.0110	0.0110	0.0145	0.0145	0.0197
80	400								
84	420	0.0047	0.0079	0.0079	0.0122	0.0122	0.0161	0.0161	0.0217
88	440								
92	460	0.0051	0.0087	0.0087	0.0134	0.0134	0.0177	0.0177	0.0236
96	480								
	530	0.0055	0.0094	0.0094	0.0146	0.0146	0.0197	0.0197	0.0260
	560								
	600	0.0055	0.0102	0.0102	0.0161	0.0161	0.0217	0.0217	0.0283
	630								
	600	0.0059	0.0110	0.0110	0.0173	0.0173	0.0236	0.0236	0.0307
	630								
	600	0.0067	0.0122	0.0122	0.0189	0.0189	0.0256	0.0256	0.0335
	630								

C2 = Internal clearance less than C0

C0 = Internal clearance

C3 = Internal clearance greater than C0

C4 = Internal clearance greater than C3

**Tapered Bore Bearings - Radial Clearances**

Series 22200, 22300, 23000, 23100, 23200		Radial Internal Clearance, Inches							
		C2		C0		C3 (basic)		C4	
Basic Size	Bore (mm)	Min	Max	Min	Max	Min	Max	Min	Max
08	40	0.0008	0.0014	0.0014	0.0020	0.0020	0.0026	0.0026	0.0033
09	45	0.0012	0.0018	0.0018	0.0024	0.0024	0.0031	0.0031	0.0039
10	50								
11	55	0.0014	0.0022	0.0022	0.0030	0.0030	0.0037	0.0037	0.0047
12	60								
13	65								
14	70	0.0018	0.0028	0.0028	0.0037	0.0037	0.0047	0.0047	0.0059
15	75								
16	80								
17	85	0.0020	0.0030	0.0030	0.0043	0.0043	0.0055	0.0055	0.0071
18	90								
19	95								
20	100	0.0025	0.0039	0.0039	0.0053	0.0053	0.0067	0.0067	0.0087
22	110								
24	120	0.0030	0.0047	0.0047	0.0063	0.0063	0.0079	0.0079	0.0102
26	130								
28	140	0.0033	0.0051	0.0051	0.0071	0.0071	0.0091	0.0091	0.0118
30	150								
32	160	0.0037	0.0055	0.0055	0.0079	0.0079	0.0102	0.0102	0.0134
34	170								
36	180	0.0041	0.0063	0.0063	0.0087	0.0087	0.0114	0.0114	0.0146
38	190								
40	200	0.0047	0.0071	0.0071	0.0098	0.0098	0.0126	0.0126	0.0161
44	220								
48	240	0.0053	0.0079	0.0079	0.0106	0.0106	0.0138	0.0138	0.0177
52	260								
56	280	0.0065	0.0094	0.0094	0.0130	0.0130	0.0169	0.0169	0.0213
60	300								
64	320	0.0075	0.0106	0.0106	0.0142	0.0142	0.0185	0.0185	0.0232
68	340								
72	360	0.0083	0.0118	0.0118	0.0157	0.0157	0.0205	0.0205	0.0256
76	380								
80	400								
84	420	0.0091	0.0130	0.0130	0.0173	0.0173	0.0224	0.0224	0.0283
88	440								
92	460	0.0102	0.0146	0.0146	0.0193	0.0193	0.0248	0.0248	0.0311
96	480								
	530	0.0114	0.0161	0.0161	0.0213	0.0213	0.0268	0.0268	0.0343
	560								
	600	0.0126	0.0181	0.0181	0.0236	0.0236	0.0299	0.0299	0.0386
	630								

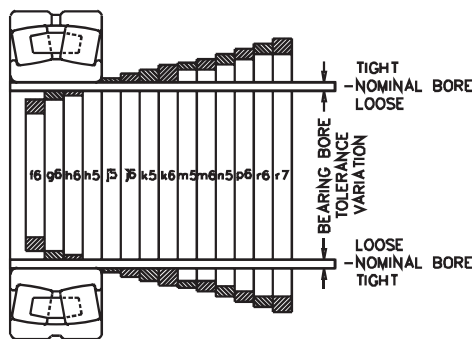
C2 = Internal clearance less than C0

C0 = Internal clearance

C3 = Internal clearance greater than C0

C4 = Internal clearance greater than C3

# Shaft Bearing Seat Diameters



Bearing bore tolerances are in accord with the system of tolerancing established by the International Standards Organization (ISO) and adopted by the American Bearing Manufacturers Association (ABMA) and the American National Standards Institute (ANSI).

A system of limits and fits has been established by ISO for shafts. A portion of this system has been adopted by ABMA to provide flexibility in selecting shaft fits. Shaft fits are designated by a lower case letter and a number, such as h6. The letter indicates the location of the shaft tolerance limits with respect to the nominal bearing bore. The number indicates the size of the tolerance zone.

Shaft fits recommended for various types of applications are listed in the table at right. A graphic relationship of various shaft fits is illustrated in the figure at the left.

Many factors influence the proper fit on the bearing inner ring on a shaft. The magnitude of the load and its direction with respect to bearing inner or outer rings are generally the first factors considered in shaft fit selection. The effects of other factors such as vibration, shock, temperature, speed, etc. are of secondary importance but sometimes need to be considered. Where assembly or disassembly requirements are of prime importance special shaft fits may be required.

Appropriate diameter shafting is determined (as shown) from the tables below.

## Class of Fit and Shaft Diameters

Bearing Series 22200, 22300, 23000	Nominal bearing bore and shaft diameter		Bearing bore tolerance#	Bearing/Shaft diameter fits*									
				f6		g6		h6		h5		j5	
				Tolerance		Tolerance		Tolerance		Tolerance		Tolerance	
Basic Size	inches	mm	Fit	Shaft Dia.	Fit	Shaft Dia.	Fit	Shaft Dia.	Fit	Shaft Dia.	Fit	Shaft Dia.	
08	1.5748	40.000	+0.0000 -0.0005	.0005L	-0.0010	.0001T	-0.0004	.0005T	0.0000	.0005T	0.0000	.0007T	0.0002
09	1.7717	45.000	+0 -12	.0016L	-0.0016	.0010L	-0.0010	.0006L	-0.0006	.0004L	-0.0004	.0002L	-0.0002
10	1.9685	50.000		13L	-25	3T	-9	12T	+0	12T	+0	18T	6
11	2.1654	55.000	+0.0000 -0.0006			25L	-25	16L	-16	11L	-11	5L	-5
12	2.3622	60.000		.0006L	-0.0012	.0002T	-0.0004	.0006T	0.0000	.0006T	0.0000	.0008T	0.0002
13	2.5591	65.000		.0019L	-0.0019	.0011L	-0.0011	.0007L	-0.0007	.0005L	-0.0005	.0003L	-0.0003
14	2.7559	70.000	+0 -15	15L	-30	5T	-10	15T	+0	15T	+0	21T	6
15	2.9528	75.000		49L	-49	29L	-29	19L	-19	13L	-13	7L	-7
16	3.1496	80.000											
17	3.3465	85.000	+0.0000 -0.0008	.0006L	-0.0014	.0003T	-0.0005	.0008T	0.0000	.0008T	0.0000	.0010T	0.0002
18	3.5433	90.000		.0023L	-0.0023	.0014L	-0.0014	.0009L	-0.0009	.0006L	-0.0006	.0004L	-0.0004
19	3.7402	95.000		16L	-36	8T	-12	20T	+0	20T	+0	26T	6
20	3.9370	100.000	+0 -20	58L	-58	34L	-34	22L	-22	15L	-15	9L	-9
22	4.3307	110.000											
24	4.7244	120.000											
26	5.1181	130.000	+0.0000 -0.0010	.0006L	-0.0016	.0004T	-0.0006	.0010T	0.0000	....	....	.0013T	0.0003
28	5.5118	140.000		.0026L	-0.0026	.0016L	-0.0016	.0010L	-0.0010	....	....	.0005L	-0.0004
30	5.9055	150.000	+0 -25	18L	-43	11T	-14	25T	+0	....	....	32T	7
32	6.2992	160.000		68L	-68	39L	-39	25L	-25	....	....	11L	-11
34	6.6929	170.000											
36	7.0866	180.000											
38	7.4803	190.000	+0.0000 -0.0012	.0008L	-0.0020	.0006T	-0.0006	.0012T	0.0000	....	....	....	....
40	7.8740	200.000		.0032L	-0.0032	.0018L	-0.0018	.0012L	-0.0012	....	....	....	....
44	8.6614	220.000	+0 -30	20L	-50	15T	-15	30T	+0	....	....	....	....
48	9.4488	240.000		79L	-79	44L	-44	29L	-29	....	....	....	....
52	10.2362	260.000	+0.0000 -0.0014	.0008L	-0.0022	.0007T	-0.0007	.0014T	0.0000	....	....	....	....
				.0034L	-0.0034	.0019L	-0.0019	.0012L	-0.0012	....	....	....	....
56	11.0236	280.000	+0 -35	21L	-56	18T	-17	35T	+0	....	....	....	....
60	11.811	300.000		88L	-88	49L	-49	32L	-32	....	....	....	....

1µm = .001 mm

#The arithmetical mean of the largest and smallest single diameter to be within tolerance shown.

Allowable deviations from mean diameter per ANSI/ABMA STD 20, latest printing."

For additional shaft sizes, please consult Rexnord Bearing Engineering for proper fitting practices.

### Class of Fit Selection

Operating condition			Examples	Nominal shaft diameter		Class of fit	Remarks
				mm	inches		
Inner ring stationary in relation to direction of load.	All loads	Inner ring has to be easily displaced	Wheel on stationary shaft	All diameters		g6	
		Inner ring does not have to be easily displaced	Tension pulleys and rope sheaves			h6	
Direction of load indeterminate or inner ring rotating in relation to direction of load.	Radial load		Electric apparatus, machine tools, pumps, ventilators, industrial trucks	<=40 40—100 100—200	<=1.57 1.57—3.94 3.94—7.88	j6 k6 m6	When greater accuracy is required, use j5, k5 and m5 for j6, k6, and m6 respectively.
	Light load <=0.08C★						
	Normal load >0.08C★ <=0.18C★		Applications in general, electrical motors, turbines pumps, combustion engines, gear transmissions, wood working machines	<=40 40—65 65—100 100—140 140—280 280—500 >500	<=1.57 1.57—2.56 2.56—3.94 3.94—5.52 5.52—11.10 11.10—19.7 >19.7	k5 m5 m6 n6 p6 r6 r7	
	Heavy load >0.18C★		Journal boxes for locomotives & other heavyrail vehicles, traction motors	<=40 40—65 65—100 100—140 140—200 >200	<=1.57 1.57—2.56 2.56—3.94 3.94—5.52 5.52—7.88 >7.88	m5 m6 n6 p6 r6 r7	

### Bearing/Shafts Diameter Fits\*

j6		k5		k6		m5		m6		n6		p6		r6	
Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		Tolerance	
Fit	Shaft Dia.	Fit	Shaft Dia.	Fit	Shaft Dia.	Fit	Shaft Dia.	Fit	Shaft Dia.	Fit	Shaft Dia.	Fit	Shaft Dia.	Fit	Shaft Dia.
.0009T	0.0004	.0010T	0.0005	.0012T	0.0007	.0013T	0.0008	.0015T	0.001	.0018T	0.0013	.	.	.	.
.0002L	-.0002	.0001T	0.0001	.0001T	0.0001	.0004T	0.0004	.0004T	0.0004	.0007T	0.0007	.	.	.	.
23T	11	25T	13	30T	18	32T	20	37T	25	45T	33	.	.	.	.
5L	-5	2T	2	2T	2	9T	9	9T	9	17T	17	.	.	.	.
.0010T	0.0004	.0012T	0.0006	.0014T	0.0008	.0016T	0.001	.0018T	0.0012	.0021T	0.0015	.0027T	0.021	.	.
.0003L	-.0003	.0001T	0.0001	.0001T	0.0001	.0005T	0.0005	.0005T	0.0005	.0008T	0.0008	.0014T	0.0014	.	.
22T	12	30T	15	36T	21	39T	24	45T	30	54T	39	66T	51	.	.
7L	-7	2T	2	2T	2	11T	11	11T	11	20T	20	32T	32	.	.
.0013T	0.0005	.0015T	0.0007	.0018T	0.001	.0019T	0.0011	.0022T	0.0014	.0027T	0.0019	.0033T	0.0025	.0037T	0.0029
.0004L	-.0004	.0001T	0.0001	.0001T	0.0001	.0005T	0.0005	.0005T	0.0005	.0010T	0.001	.0016T	0.0016	.0020T	0.002
33T	13	38T	18	45T	25	48T	28	55T	35	65T	45	79T	59	93T	73
9L	-9	3T	3	3T	3	13T	13	13T	13	23T	23	37T	37	51T	51
.0016T	0.006	.0018T	0.0008	.0021T	0.0011	.0023T	0.0013	.0026T	0.0016	.0032T	0.002	.0038T	0.0028	.0045T	0.0035
.0004L	-.0004	.0001T	0.0001	.0001T	0.0001	.0006T	0.0006	.0006T	0.0006	.0012T	0.0011	.0018T	0.0018	.0025T	0.0025
39T	14	46T	21	53T	28	58T	33	65T	40	77T	52	93T	68	115T	90
11L	-11	3T	3	3T	3	15T	15	15T	15	27T	27	43T	43	65T	65
.0019T	0.0007	.0022T	0.001	.0026T	0.0014	.0026T	0.0014	.0030T	0.0018	.0038T	0.0026	.0044T	0.0032	.0054T	0.0042
.0005L	-.0005	.0002T	0.0002	.0002T	0.0002	.0006T	0.0006	.0006T	0.0006	.0014T	0.0014	.0020T	0.002	.0030T	0.003
46T	16	54T	24	63T	33	67T	37	76T	46	90T	60	109T	79	136T	106
16L	-16	4T	4	4T	4	17T	17	17T	17	31T	31	50T	50	77T	77
.0021T	0.0007	.0025T	0.0011	.0028T	0.0014	.0031T	0.0017	.0034T	0.002	.0040T	0.0026	.0048T	0.0034	.0061T	0.0047
.0006L	-.0006	.0002T	0.0002	.0002T	0.0002	.0008T	0.0008	.0008T	0.0008	.0014T	0.0014	.0022T	0.0022	.0035T	0.0035
51T	16	62T	27	71T	36	78T	43	87T	52	101T	66	123T	88	161T	126
16L	-16	4T	4	4T	4	20T	20	20T	20	34T	34	56T	56	94T	94

\* Symbol L indicates a loose or clearance fit; Symbol T indicates a tight or interference fit.

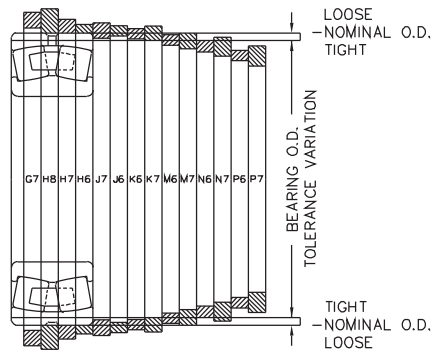
■ For solid steel shafts.

★ = basic load rating of bearing.

The appropriate shaft diameter for any class of fit can be easily determined by applying the shaft tolerance to the nominal shaft diameter. Example: (Using basic bearing size 08 and fit class f6).

	inches		mm			
Nominal shaft diameter	=	1.5748	1.5748	=	40	40
Shaft diameter tolerance	=	-0.001	-0.0016	=	-0.025	-0.041
Resultant shaft diameter	=	1.5738	1.5732	=	39.975	39.959

# Housing Bearing Seat Diameters



Bearing outside diameter tolerances are in accord with the system of tolerancing established by the International Standards Organization (ISO) and adopted by the American Bearing Manufacturers Association (ABMA) and the American National Standards Institute (ANSI).

A system of limits and fits has been established by ISO for shafts. A portion of this system has been adopted by ABMA to provide flexibility in selecting shaft fits. Housing fits are designated by a capital letter and a number, such as H7. The letter indicates the location of the housing bore tolerance limits with respect to the nominal bearing O.D. The number indicates the size of the tolerance zone.

Housing fits recommended for various types of applications are listed in the table at right. A graphic relationship of various housing fits is illustrated in the figure at the left.

The class of fit is determined by nature of loading (oscillating, vibrating, reversing, etc.), axial movement requirements, temperature conditions, housing material and cross section of housing.

Shaft expansion increases bearing center distances and requires all but one bearing on a shaft to be movable axially in the housing. In most bearings the outer rings are subjected to stationary loads which permit a loose housing fit.

Operating temperature may affect the housing fit, as the housing may dissipate heat rapidly and not expand with the outer ring. However, the loose fit must never be greater than necessary. Excessive looseness results in less accurate shaft centering and additional ring deformation under load.

The appropriate housing bores are determined (as shown) from the tables below.

## Class of Fit and Housing Bores

Bearing Series					Nominal bearing O.D. and housing bore		Bearing bore tolerance #	Bearing/Housing diameter fits <sup>^</sup>									
								G7		H8		H7		H6		J7	
222, 232	223	230	231	Basic Size	inches	mm	Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		
							Fit	Housing Bore	Fit	Housing Bore	Fit	Housing Bore	Fit	Housing Bore	Fit	Housing Bore	
09	..	..	..	3.3465	85.000	+0.000 -0.006	.0005L	0.0005	.0000	+0.000	.0000	+0.000	.0000	+0.000	.0005T	-0.0005	
10	08	..	..	3.5433	90.000		.0025L	0.0019	.0028L	0.0022	.0020L	0.0014	.0015L	0.0009	.0015L	0.0009	
11	09	..	..	3.9370	100.000	+0 -15	12L	12	0	+0	0	+0	0	+0	13T	-13	
12	10	..	..	4.3307	110.000		62L	47	69L	54	50L	35	37L	22	37L	22	
13	11	..	..	4.7244	120.000												
14	..	..	..	4.9312	125.000	+0.000 -0.008	.0006L	0.0006	.0000	+0.000	.0000	+0.000	.0000	+0.000	.0006T	-0.0006	
15	12	..	..	5.1181	130.000		.0030L	0.0022	.0033L	0.0025	.0024L	0.0016	.0018L	0.0010	.0018L	0.0010	
16	13	..	..	5.5118	140.000	+0 -20	14L	14	0	+0	0	+0	0	+0	14T	-14	
17	14	..	..	5.9055	150.000		74L	54	83L	63	60L	40	45L	25	46L	26	
18	15	..	..	6.2992	165.000	+0.000 -0.010	.0006L	0.0006	.0000	+0.000	.0000	+0.000	.0000	+0.000	.0006T	-0.0006	
19	16	..	..	6.6929	170.000		.0032L	0.0022	.0035L	0.0025	.0026L	0.0016	.0020L	0.0010	.0020L	0.0010	
20	17	24	22	7.0866	180.000	+0 -25	14L	14	0	+0	0	+0	0	+0	14T	-14	
..	18	..	..	7.4803	190.000		79L	54	88L	63	65L	40	50L	25	51L	26	
22	19	26	24	7.8740	200.000	+0.000 -0.012											
..	..	28	26	8.2677	210.000		.0006L	0.0006	.0000	+0.000	.0000	+0.000	.0000	+0.000	.0007T	-0.0007	
24	20	..	..	8.4646	215.000		.0036L	0.0024	.0040L	0.0028	.0030L	0.0018	.0024L	0.0012	.0023L	0.0011	
..	..	30	28	8.8583	225.000	+0 -30	15L	15	0	+0	0	+0	0	+0	16T	-16	
26	..	..	..	9.0551	230.000		91L	61	102L	72	76L	46	59L	29	60L	30	
..	22	32	..	9.4488	240.000												
28	..	..	30	9.8425	250.000												
..	24	34	..	10.2362	260.000	+0.000 -0.014											
30	..	..	32	10.6299	270.000		.0007L	0.0007	.0000	+0.000	.0000	+0.000	.0000	+0.000	.0007T	-0.0007	
..	26	36	34	11.0236	280.000		.0041L	0.0027	.0044L	0.0030	.0034L	0.0020	.0026L	0.0012	.0027L	0.0013	
32	..	38	..	11.4173	290.000	+0 -35	17L	17	0	+0	0	+0	0	+0	16T	-16	
..	28	..	36	11.8110	300.000		104L	69	116L	81	87L	52	67L	32	71L	36	
34	..	40	..	12.2047	310.000												
36	30	..	38	12.5984	320.000	+0.000 -0.016											
38	32	44	40	13.3858	340.000		.0007L	0.0007	.0000	+0.000	.0000	+0.000	.0000	+0.000	.0007L	-0.0007	
40	34	48	..	14.1732	360.000		.0045L	0.0029	.0051L	0.0035	.0038L	0.0022	.0030L	0.0014	.0031L	0.0015	
..	..	..	44	14.5669	370.000	+0 -40	18L	18	0	+0	0	+0	0	+0	18T	-18	
..	36	..	..	14.9606	380.000		115L	75	129L	89	97L	57	76L	36	79L	39	
44	38	52	48	15.7480	400.000												
..	40	56	..	16.5354	420.000	+0.000 -0.018	.0008L	0.0008	.0000	+0.000	.0000	+0.000	.0000	+0.000	.0009T	-0.0009	
48	..	..	..	17.3228	440.000		.0051L	0.0033	.0056L	0.0038	.0043L	0.0025	.0034L	0.0016	.0034L	0.0016	
..	44	60	..	18.1102	460.000	+0 -45	20L	20	0	+0	0	+0	0	+0	20T	-20	
..	..	..	..	..	..		128L	83	142L	97	108L	63	85L	40	88L	43	

# The arithmetical mean of the largest and smallest single diameter to be within tolerance shown.

Allowable deviations from mean diameter per ANSI/ABMA STD 20, latest printing."

<sup>^</sup> Symbol L indicates a loose or clearance fit. Symbol T indicates a tight or interference fit.

The appropriate housing bore for any class of fit can be easily determined by applying the housing tolerance to the nominal housing bore.

Example: (Using basic bearing size 09 and fit class G7).

For larger bearing sizes please consult Rexnord Bearing Engineering for proper housing fit practices.

			inches			mm
Nominal housing bore	=	3.3465	3.3465	=	85.000	85.000
Shaft bore tolerance	=	+ .0005	+ .0019	=	+ 0.012	+ 0.047
Resultant housing bore	=	3.3470	3.3484	=	85.012	85.047

### Class of Fit Selection

Housing Construction	Operating Condition		Examples	Class of Fit	Remarks
Housing not split radially	Housing rotating in relation to direction of load	Heavy loads on bearings in thin-walled housing	Supporting wheels in cranes, wheel hubs with roller bearings, crank bearings	P6*	Outer ring not axially displaceable
		Normal and heavy loads	Wheel hubs with roller bearings, crank bearings	N6*	
		Light loads	Conveyor rollers, rope sheaves, tension pulleys	M6*	
Housing split or housing not split radially	Direction of load indeterminate	Heavy shock loads	Electrical fraction motors	K6*	Outer ring, as a rule, not axially displaceable
		Heavy and normal loads where outer ring does not have to be axially displaceable	Electrical motors, pumps, crankshaft main bearings		
	Housing stationary in relation to direction of load	Normal and light loads where displaceability of outer ring is desirable		Journal boxes for rail vehicles	J6*
		Shock loads, a temporary complete unloading			
		All loads	Housing not split radially		
Housing split radially	Line shafting		H7		
Heat supplied through shaft		Dryer cylinders	G7		

### Bearing/Housing Diameter Fits <sup>A</sup>

J6		K6		K7		M6		M7		N6		N7		P7	
Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		Tolerance	
Fit	Housing Bore	Fit	Housing Bore	Fit	Housing Bore	Fit	Housing Bore	Fit	Housing Bore	Fit	Housing Bore	Fit	Housing Bore	Fit	Housing Bore
.0002T	-.0002	.0007T	-.0007	.0010T	-.0010	.0012T	-.0012	.0014T	-.0014	.0016T	-.0016	.0018T	-.0018	.0025T	-.0025
.0013L	0.0007	.0008L	0.0002	.0010L	0.0004	.0003L	-.0003	.0006L	0	.0001T	-.0007	.0002L	-.0004	.0005T	-.0011
6T	-6	18T	-18	25T	-25	28T	-28	35T	-35	38T	-38	45T	-45	59T	-59
31L	16	19L	4	25L	10	28L	-6	15L	0	1T	-16	5L	-10	9T	-24
.0003T	0.0003	.0008T	-.0008	.0011T	-.0011	.0013T	-.0013	.0016T	-.0016	.0019T	-.0019	.0022T	-.0022	.0028T	-.0028
.0015L	0.0007	.0010L	0.0002	.0013L	0.0005	.0005L	-.0003	.0008L	0	.0001T	-.0009	.0002L	-.0006	.0004T	-.0012
7T	-7	21T	-21	28T	-28	33T	-33	40T	-40	45T	-45	52T	-52	68T	-68
38L	18	24L	4	32L	12	12L	-8	20L	0	0T	-20	8L	-12	8T	-28
.0003T	-.0003	.0008T	-.0008	.0011T	-.0011	.0013T	-.0013	.0016T	-.0016	.0019T	-.0019	.0022T	-.0022	.0028T	-.0028
.0017L	0.0007	.0012L	0.0002	.0015L	0.0005	.0007L	-.0003	.0010L	0	.0001L	-.0009	.0004L	-.0006	.0002T	-.0012
7T	-7	21T	-21	28T	-28	33T	-33	40T	-40	45T	-45	52T	-52	68T	-68
43L	18	29L	4	37L	12	17L	-8	25L	0	5L	-20	13L	-12	3T	-28
.0003T	-.0003	.0010T	-.0010	.0013T	-.0013	.0015T	-.0015	.0018T	-.0018	.0022T	-.0022	.0026T	-.0026	.0032T	-.0032
.0021L	0.0009	.0014L	0.0002	.0017L	0.0005	.0009L	-.0003	.0012L	0	.0002L	-.0010	.0004L	-.0008	.0002T	-.0014
7T	-7	24T	-24	33T	-33	37T	-37	46T	-46	51T	-51	60T	-60	79T	-79
52L	22	35L	5	43L	13	22L	-8	30L	0	8L	-22	16L	-14	3T	-33
.0003T	-.0003	.0010T	-.0010	.0014T	-.0014	.0016T	-.0016	.0020T	-.0020	.0023T	-.0023	.0028T	-.0028	.0034T	-.0034
.0023L	0.0009	.0016L	0.0002	.0020L	0.0006	.0010L	-.0004	.0014L	0	.0003L	-.0011	.0006L	-.0008	0	-.0014
7T	-7	22T	-27	36T	-36	41T	-41	52T	-52	57T	-57	66T	-66	88T	-88
60L	25	40L	5	51L	16	26L	-9	35L	0	10L	-25	21L	-14	1T	-36
.0003T	-.0003	.0012T	-.0012	.0016T	-.0016	.0018T	-.0018	.0022T	-.0022	.0026T	-.0026	.0030T	-.0030	.0039T	-.0039
.0027L	0.0011	.0018L	0.0002	.0022L	0.0006	.0012L	-.0004	.0016L	0	.0004L	-.0012	.0008L	-.0008	.0001T	-.0017
7T	-7	29T	-29	40T	-40	46T	-46	57T	-57	62T	-62	73T	-73	98T	-98
69L	29	47L	7	57L	17	30L	-10	40L	0	14L	-26	26L	-16	1T	-41
.0003T	-.0003	.0012T	-.0012	.0018T	-.0018	.0020T	-.0020	.0025T	-.0025	.0028T	-.0028	.0034T	-.0034	.0044T	-.0044
.0031L	0.0013	.0022L	0.0004	.0025L	0.0007	.0014L	-.0004	.0018L	0	.0006L	-.0012	.0009L	-.0009	.0001T	-.0019
7T	-7	32T	-32	45T	-45	50T	-50	63T	-63	67T	-67	80T	-80	108T	-108
78L	33	53L	8	63L	18	35L	-10	45L	0	18L	-27	28L	-17	0	-45

■ For cast iron or steel housings. For housings of light metal, select tolerances which give slightly tighter fits than those shown.

\* Where wider tolerances are permissible P7, N7, M7, K7, J7 and H7 may be used for P6, N6, M6, K6, J6 and H6 respectively.