

# SKF 925

# Catalogue

This catalogue of SKF products has been compiled for the Canadian market and relates to SKF's state-of-the-art technology and production capabilities. The data may differ from that shown in earlier catalogues because of redesign, technological developments or revised methods of calculation.

The tables include numbers for SKF bearings and accessories, boundary dimensions (both metric and imperial), speed ratings, weights (mass), and load ratings. Tables are included offering shaft and housing fits, internal clearances of all shown bearing types and clearance reduction (drive-up) recommendations for mounting spherical roller bearings on tapered seats.

SKF has been supplying Canadian industry with top quality bearings, related products and services since 1917. The company offers the broadest product line in the industry in Canada, featuring every basic bearing type - ball, spherical, cylindrical, needle, taper roller and mounted units for virtually every type of application. SKF offers many other products not described in this catalogue, i.e. needle roller bearings, high precision bearings, spherical plain bearings and rod ends, bearing accessories, bearing housings, industrial seals and linear motion products. These are available in dedicated catalogues.

The SKF Group is the world's largest manufacturer of anti-friction bearings and accessories with some 100 manufacturing sites worldwide and sales companies in 70 countries.

For more detailed information on SKF products, system solutions or for assistance in selecting or identifying bearings, consult the SKF Application Engineering Department in Scarborough or your nearest SKF District Office. See telephone numbers on back cover.

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Listing in this publication does not necessarily imply product availability. The designs, load and speed ratings shown are those being used at the time of publication. To determine current condition, contact the SKF Engineering Department in Scarborough.













# Conversions Charts

| Quantity         | Unit                   | Conversion          |  |               |  |
|------------------|------------------------|---------------------|--|---------------|--|
| Length           | inch                   | 1 mm                | 0.039 inch                                   | 1 in          | 25.40 mm                                 |
|                  | foot                   | 1 m                 | 3.281 ft                                     | 1 ft          | 0.3048 m                                 |
|                  | yard                   | 1 m                 | 1.094 yd                                     | 1 yd          | 0.9144 m                                 |
|                  | mile                   | 1 km                | 0.6214 mile                                  | 1 mile        | 1.609 km                                 |
| Area             | square inch            | 1 mm <sup>2</sup>   | 0.00155 sq.in                                | 1 sq.in       | 645.16 mm <sup>2</sup>                   |
|                  | square foot            | 1 m <sup>2</sup>    | 10.76 sq.ft                                  | 1 sq.ft       | 0.0929 m <sup>2</sup>                    |
| Volume           | cubic inch             | 1 cm <sup>3</sup>   | 0.061 cub.in                                 | 1 cub.in      | 16.387 cm <sup>3</sup>                   |
|                  | cubic foot             | 1 m <sup>3</sup>    | 35 cub.ft                                    | 1 cub.ft      | 0.02832 m <sup>3</sup>                   |
|                  | imperial gallon        | 1 l                 | 0.22 gallon                                  | 1 gallon      | 4.5461 l                                 |
|                  | U.S. gallon            | 1 l                 | 0.2642 U.S. gallon                           | 1 U.S. gallon | 3.7854 l                                 |
| Velocity, speed  | foot per second        | 1 m/s               | 3.28 ft/s                                    | 1 ft/s        | 0.30480 m/s                              |
|                  | mile per hour          | 1 km/h              | 0.6214 mph                                   | 1 mph         | 1.609 km/h                               |
| Mass             | ounce                  | 1 g                 | 0.03527 oz                                   | 1 oz          | 28.350 g                                 |
|                  | pound                  | 1 kg                | 2.205 lb                                     | 1 lb          | 0.45359 kg                               |
|                  | short ton              | 1 tonne             | 1.1023 short ton                             | 1 short ton   | 0.90719 tonne                            |
|                  | long ton               | 1 tonne             | 0.9842 long ton                              | 1 long ton    | 1.0161 tonne                             |
| Density          | pound per cubic inch   | 1 g/cm <sup>3</sup> | 0.0361 lb/cub.in                             | 1 lb/cub.in   | 27.680 g/cm <sup>3</sup>                 |
| Force            | pound-force            | 1 N                 | 0.225 lbf                                    | 1 lbf         | 4.4482 N                                 |
| Pressure, stress | pounds per square inch | 1 MPa               | 145 psi                                      | 1 psi         | 6.8948 x10 <sup>3</sup> Pa               |
| Moment           | inch pound-force       | 1 Nm                | 8.85 in.lbf                                  | 1 in.lbf      | 0.113 Nm                                 |
| Power            | foot-pound per second  | 1 W                 | 0.7376 ft lbf/s                              | 1 ft lbf/s    | 1.3558 W                                 |
|                  | horsepower             | 1 kW                | 1.36 HP                                      | 1 HP          | 0.736 kW                                 |
| Temperature      | degree                 | Celcius             | t <sub>C</sub> = 0.555 (t <sub>F</sub> - 32) | Fahrenheit    | t <sub>F</sub> = 1.8 t <sub>C</sub> + 32 |

## Temperature conversions (C and F)

Look up reading in middle columns, if in degrees Celsius, read Fahrenheit equivalent in right hand column; if in degrees Fahrenheit read Celsius equivalent in left hand column.

| C     | F     | C     | F    | C    | F     | C     | F     |       |     |     |      |
|-------|-------|-------|------|------|-------|-------|-------|-------|-----|-----|------|
| -57.0 | -70.0 | -94.0 | 1.7  | 35.0 | 95.0  | 25.0  | 77.0  | 170.6 | 132 | 270 | 518  |
| -51.0 | -60.0 | -76.0 | 2.2  | 36.0 | 96.8  | 25.6  | 78.0  | 172.4 | 138 | 280 | 536  |
| -46.0 | -50.0 | -58.0 | 2.8  | 37.0 | 98.6  | 26.1  | 79.0  | 174.2 | 143 | 290 | 554  |
| -40.0 | -40.0 | -40.0 | 3.3  | 38.0 | 100.4 | 26.7  | 80.0  | 176.0 | 149 | 300 | 572  |
| -34.0 | -30.0 | -22.0 | 3.9  | 39.0 | 102.2 | 27.2  | 81.0  | 177.8 | 154 | 310 | 590  |
| -29.0 | -20.0 | -4.0  | 4.4  | 40.0 | 104.0 | 27.8  | 82.0  | 179.6 | 160 | 320 | 608  |
| -23.0 | -10.0 | 14.0  | 5.0  | 41.0 | 105.8 | 28.3  | 83.0  | 181.4 | 166 | 330 | 626  |
| -17.8 | 0.0   | 32.0  | 5.6  | 42.0 | 107.6 | 28.9  | 84.0  | 183.2 | 171 | 340 | 644  |
| -17.2 | 1.0   | 33.8  | 6.1  | 43.0 | 109.4 | 29.4  | 85.0  | 185.0 | 177 | 350 | 662  |
| -16.7 | 2.0   | 35.6  | 6.7  | 44.0 | 111.2 | 30.0  | 86.0  | 186.8 | 182 | 360 | 680  |
| -16.1 | 3.0   | 37.4  | 7.2  | 45.0 | 113.0 | 30.6  | 87.0  | 188.6 | 188 | 370 | 698  |
| -15.6 | 4.0   | 39.2  | 7.8  | 46.0 | 114.8 | 31.1  | 88.0  | 190.4 | 193 | 380 | 716  |
| -15.0 | 5.0   | 41.0  | 8.3  | 47.0 | 116.6 | 31.7  | 89.0  | 192.2 | 199 | 390 | 734  |
| -14.4 | 6.0   | 42.8  | 8.9  | 48.0 | 118.4 | 32.2  | 90.0  | 194.0 | 204 | 400 | 752  |
| -13.9 | 7.0   | 44.6  | 9.4  | 49.0 | 120.2 | 32.8  | 91.0  | 195.8 | 210 | 410 | 770  |
| -13.3 | 8.0   | 46.4  | 10.0 | 50.0 | 122.0 | 33.3  | 92.0  | 197.6 | 216 | 420 | 788  |
| -12.8 | 9.0   | 48.2  | 10.6 | 51.0 | 123.8 | 33.9  | 93.0  | 199.4 | 221 | 430 | 806  |
| -12.2 | 10.0  | 50.0  | 11.1 | 52.0 | 125.6 | 34.4  | 94.0  | 201.2 | 227 | 440 | 824  |
| -11.7 | 11.0  | 51.8  | 11.7 | 53.0 | 127.4 | 35.0  | 95.0  | 203.0 | 232 | 450 | 842  |
| -11.1 | 12.0  | 53.6  | 12.2 | 54.0 | 129.2 | 35.6  | 96.0  | 204.8 | 238 | 460 | 860  |
| -10.6 | 13.0  | 55.4  | 12.8 | 55.0 | 131.0 | 36.1  | 97.0  | 206.6 | 243 | 470 | 878  |
| -10.0 | 14.0  | 57.2  | 13.3 | 56.0 | 132.8 | 36.7  | 98.0  | 208.4 | 249 | 480 | 896  |
| -9.4  | 15.0  | 59.0  | 13.9 | 57.0 | 134.6 | 37.2  | 99.0  | 210.2 | 254 | 490 | 914  |
| -8.9  | 16.0  | 60.8  | 14.4 | 58.0 | 136.4 | 37.8  | 100.0 | 212.0 | 260 | 500 | 932  |
| -8.3  | 17.0  | 62.6  | 15.0 | 59.0 | 138.2 | 38.0  | 100.0 | 212.0 | 266 | 510 | 950  |
| -7.8  | 18.0  | 64.4  | 15.6 | 60.0 | 140.0 | 43.0  | 110.0 | 230.0 | 271 | 520 | 968  |
| -7.2  | 19.0  | 66.2  | 16.1 | 61.0 | 141.8 | 49.0  | 120.0 | 248.0 | 277 | 530 | 986  |
| -6.7  | 20.0  | 68.0  | 16.7 | 62.0 | 143.6 | 54.0  | 130.0 | 266.0 | 282 | 540 | 1004 |
| -6.1  | 21.0  | 69.8  | 17.2 | 63.0 | 145.4 | 60.0  | 140.0 | 284.0 | 288 | 550 | 1022 |
| -5.6  | 22.0  | 71.6  | 17.8 | 64.0 | 147.2 | 66.0  | 150.0 | 302.0 | 293 | 560 | 1040 |
| -5.0  | 23.0  | 73.4  | 18.3 | 65.0 | 149.0 | 71.0  | 160.0 | 320.0 | 299 | 570 | 1058 |
| -4.4  | 24.0  | 75.2  | 18.9 | 66.0 | 150.8 | 77.0  | 170.0 | 338.0 | 304 | 580 | 1076 |
| -3.9  | 25.0  | 77.0  | 19.4 | 67.0 | 152.6 | 82.0  | 180.0 | 356.0 | 310 | 590 | 1094 |
| -3.3  | 26.0  | 78.8  | 20.0 | 68.0 | 154.4 | 88.0  | 190.0 | 374.0 | 316 | 600 | 1112 |
| -2.8  | 27.0  | 80.6  | 20.6 | 69.0 | 156.2 | 93.0  | 200.0 | 392.0 | 321 | 610 | 1130 |
| -2.2  | 28.0  | 82.4  | 21.1 | 70.0 | 158.0 | 99.0  | 210.0 | 410.0 | 327 | 620 | 1148 |
| -1.7  | 29.0  | 84.2  | 21.7 | 71.0 | 159.8 | 100.0 | 212.0 | 413.6 | 332 | 630 | 1166 |
| -1.1  | 30.0  | 86.0  | 22.2 | 72.0 | 161.6 | 104.0 | 220.0 | 428.0 | 338 | 640 | 1184 |
| -0.6  | 31.0  | 87.9  | 22.8 | 73.0 | 163.4 | 110.0 | 230.0 | 436.0 | 343 | 650 | 1202 |
| 0.0   | 32.0  | 89.6  | 23.3 | 74.0 | 165.2 | 116.0 | 240.0 | 464.0 | 349 | 660 | 1220 |
| 0.6   | 33.0  | 91.4  | 23.9 | 75.0 | 167.0 | 121.0 | 250.0 | 482.0 |     |     |      |
| 1.1   | 34.0  | 93.2  | 24.4 | 76.0 | 168.8 | 127.0 | 260.0 | 500.0 |     |     |      |

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






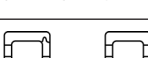






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## Bearing characteristics

This matrix can only provide a rough guide so that in each individual case it is necessary to make a more qualified selection referring to the information given on the following pages or [www.skf.ca](http://www.skf.ca) (Interactive Engineering Catalogue).

| Bearing Type                                       | Series  |   |
|--|---|---|
| <b>Deep Groove Ball Bearings</b>                   | 16000, 200, 300, 6000, 61800, 61900, 6200, 6300, 6400           |    |
| <b>Angular Contact Ball Bearings</b>               | 7200, 7300, 7400  |    |
|  | 3300, 5200, 5300, BA2B 459000                                   |    |
| <b>Four-point Contact Ball Bearings</b>            | QJ200, QJ300  |    |
| <b>Self-aligning Ball Bearings</b>                 | 1200, 1300, 1400, 2200, 2300                                    |    |
| <b>Thrust Ball Bearings</b>                        | 51000, 52000  |    |
|  | 53000, 54000  |    |
| <b>Spherical Roller Thrust Bearings</b>            | 29200, 29300, 29400   |   |
| <b>Cylindrical Roller Bearings</b>                 | N, NJ, NU (200, 300, 400)                                       |  |
|  | NUP (200, 300, 400)   |  |
|  | NNU4000, NN3000   |  |
| <b>Full Complement Cylindrical Roller Bearings</b> | NCF, NJG  |  |
|  | NNC4800, NNCF, NNCL, NNF  |  |
| <b>Spherical Roller Bearings</b>                   | 21000, 22000, 23000, 24000, 452000, 453000, I series            |  |
| <b>CARB®</b>                                       | C2200, C2300, C3000, C3100, C3200, C39/100, C4000, C5900, C6000 |  |
| <b>Needle Roller Bearings</b>                      | HK, NA, NK, NKI, NKIS, NKS, RNA                                 |  |
| <b>Taper Roller Bearings</b>                       | 30000, 31000, 32000, 33000, T2, T4, T7                          |  |
|  | 31300DF, 32000DF  |  |

## Characteristics – suitability of bearing for:

| radial capacity | axial capacity | speed | stiffness | quiet | low friction | compensation for misalignment | axial displacement possible in bearing | typical application   |
|-----------------|----------------|-------|-----------|-------|--------------|-------------------------------|--|---|
| ▲               | ●              | +     | ▲         | +     | +            | ■                             | —                                      | Textiles Power tools, Electric motors, Pumps, Gearboxes               |
| ▲               | ▲              | ▲     | ▲         | ▲     | ▲            | ■                             | —                                      | Pumps, Compressors, Centrifuges                                       |
| ▲               | ▲              | ●     | ▲         | ●     | ●            | —                             | —                                      | Pumps, Compressors, Centrifuges                                       |
| ■               | ●              | ▲     | ●         | ●     | ●            | —                             | —                                      | Compressors   |
| ▲               | ■              | ▲     | ●         | ▲     | ▲            | +                             | —                                      | Fans, Paper making machines   |
| —               | ▲              | ●     | ●         | ■     | ▲            | —                             | —                                      | Plastic extruder tools, Crane hooks                                   |
| —               | ▲              | ●     | ●         | ■     | ●            | —                             | —                                      | Plastic extruder tools, Crane hooks                                   |
| ■               | +              | ●     | ▲         | ■     | ●            | +                             | —                                      | Tunnel boring machines, Wind turbines, Cranes, Pumps, Electric motors |
| ▲               | —              | +     | ▲         | ▲     | ▲            | ■                             | +                                      | Traction motors, Electric motors, Gearboxes                           |
| ▲               | ■              | +     | ▲         | ●     | ▲            | ■                             | ●                                      | Traction motors, Electric motors, Gearboxes                           |
| +               | —              | +     | +         | ▲     | ▲            | —                             | +                                      | Precision machines, Spindles  |
| +               | ■              | ■     | +         | ■     | ■            | ■                             | ●                                      | Elevators, Gearboxes  |
| +               | ■              | ■     | +         | ■     | ■            | —                             | ●                                      | Cranes, Steel rolling mills, Wire ropes, Sheaves                      |
| ■               | +              | ●     | ▲         | ■     | ●            | +                             | —                                      | Fans, Paper, Gearboxes, Crushers, Vibrating screens                   |
| +               | —              | ▲     | +         | ●     | ●            | +                             | +                                      | Paper making machines, Gearboxes, Fans, Electric motors               |
| ▲               | —              | ●     | ▲         | ●     | ■            | —                             | +                                      | Gearboxes (planetary), Alternators                                    |
| ▲               | ●              | ●     | ▲         | ●     | ●            | ■                             | —                                      | Gearboxes, Cone crushers  |
| +               | ●              | ●     | +         | ●     | ●            | ■                             | —                                      | Gearboxes, Rail car axle  |

### Key

+ excellent    ▲ good    ● fair    ■ poor    — unsuitable

# Load Carrying Capacity and Life

The size of a bearing to be used for an application is initially selected on the basis of its load carrying capacity in relation to the loads to be carried and the requirements regarding life and reliability. Numerical values termed basic load ratings are used in the calculations to express load carrying capacity. Values for the basic dynamic load rating C and the basic static load rating  $C_0$  are quoted in the bearing tables.

### Basic load ratings

The basic dynamic load rating C is used for calculations involving dynamically stressed bearings, for example, when selecting a bearing which is to rotate under load. It expresses the bearing load which will give an ISO basic rating life (defined below) of 1,000,000 revolutions.

The basic dynamic load ratings of SKF bearings have been determined in accordance with the methods prescribed by ISO 281:1990/Amd.1:2000 and ABMA Stds. 9 and 11. The values are based on the material and manufacturing techniques used for SKF standard production. They apply to loads which are constant both in magnitude and direction, for radial bearings radial loads, and for thrust bearings axial loads which act centrally.

The basic static load rating  $C_0$  is used in calculations when the bearings are to rotate at very slow speeds, are to be subjected to very slow oscillating movements, or are to be stationary under load during certain periods. It must also be taken into account when heavy shock loads of short duration act on a rotating (dynamically stressed) bearing.

The basic static load rating is defined in accordance with ISO 76-1990 as the static load which corresponds to a calculated contact stress at the center of the most heavily loaded rolling element/raceway contact of:

- 667,000 psi (4,600 Mpa) for self-aligning ball bearings;
- 609,000 psi (4,200 Mpa) for all other ball bearings;
- 580,000 psi (4,000 Mpa) for all roller bearings.

This stress produces a total permanent deformation of rolling element and raceway which is approximately 0.0001 of the rolling element diameter. The loads are purely radial for radial bearings and centrally acting axial loads for thrust bearings.

### Life

The life of a rolling bearing is defined as the number of revolutions (or the number of operating hours at a given constant speed) which the bearing is capable of enduring before the first sign of fatigue (flaking, spalling) occurs on one of its rings or rolling elements.

It is, however, evident from both laboratory tests and practical experience that seemingly identical bearings operating under identical conditions have different lives. A clearer definition of the term "life" is therefore essential for the calculation of bearing size. All information presented by SKF on dynamic load ratings is based on the life that 90% of a sufficiently large group of apparently identical bearings can be expected to attain or exceed. This is called the basic rating life and agrees with the ISO definition. The median life is approximately five times the calculated basic rating life.

There are several other bearing "lives". One of these is the "service life", which is the actual life achieved by a specific bearing before it fails. Failure is not generally by fatigue in the first instance but by wear, corrosion, seal failure, etc. Another is "specification life". This is the life specified by an authority and based on hypothetical load and speed data supplied by the same authority. It is generally a requisite  $L_{10}$  (basic rating life), and it is assumed that the authority has related the specification to experience gained with similar machinery, so that adequate service life will be obtained.

Practical experience and modern research have shown that, under special conditions, SKF bearings attain a much longer life than predicted by the standardized life calculation methods mentioned above, particularly when loads are light. These special conditions apply when the rolling surfaces (raceways and rolling elements) are effectively separated by a lubricant film and when surface damage caused by contaminants is limited. In fact, under ideal conditions, it is possible to speak of infinite life.



# Selecting Bearing Size Using the Life Equations

Bearing life can be calculated with various degrees of sophistication, depending on the accuracy with which the operating conditions can be defined.

## Basic rating life equation

The simplest method of life calculation is to use the ISO or ABMA equation for basic non-adjusted rating life which is:

$$L_{10} = \left(\frac{C}{P}\right)^p$$

where

- $L_{10}$  = basic rating life, millions of revolutions
- $C$  = basic dynamic load rating
- $P$  = equivalent dynamic bearing load
- $p$  = exponent of the life equation

For bearings operating at constant speed it may be more convenient to deal with a basic rating life expressed in operating hours using the equation:

$$L_{10h} = \frac{1\,000\,000}{60\,n} L_{10}$$

where

- $L_{10h}$  = basic rating, operating hours
- $n$  = rotational speed, r/min

## SKF rating life

For modern high quality bearings the basic rating life can deviate significantly from the actual service life in a given application. Service life in a particular application depends on a variety of influencing factors including lubrication, the degree of contamination, misalignment, proper installation and environmental conditions.

Therefore ISO 281:1990/Amd 2:2000 contains a modified life equation to supplement the basic rating life. This life calculation makes use of a modification factor to account for the lubrication and contamination condition of the bearing and the fatigue limit of the material.

ISO 281:1990/Amd 2:2000 also makes provisions for bearing manufacturers to recommend a suitable method for calculating the life modification factor to be applied to a bearing based on operating conditions. The SKF life modification factor  $a_{SKF}$  applies the concept of a fatigue load limit  $P_u$  analogous to that used when calculating other machine components. The values of the fatigue load limit are given in the product tables. Furthermore, the SKF life modification factor  $a_{SKF}$  makes use of the lubrication conditions (viscosity ratio  $k$ ) and a factor  $n_c$  for contamination level to reflect the application's operating conditions.

The equation for SKF rating life is in accordance with 281:1990/Amd 2:2000

$$L_{nm} = a_1 a_{SKF} L_{10} = a_1 a_{SKF} \left(\frac{C}{P}\right)^p$$

If the speed is constant, the life can be expressed in operating hours, using the equation

$$L_{nmh} = \frac{10^6}{60n} L_{nm}$$

where

- $L_{nm}$  = SKF rating life (at 100 - n % reliability), millions of revolutions
- $L_{nmh}$  = SKF rating life (at 100 - n % reliability), operating hours
- $a_1$  = life adjustment factor for reliability
- $a_{SKF}$  = SKF life modification factor
- $C$  = basic dynamic load rating, kN
- $P$  = equivalent dynamic bearing load, kN
- $n$  = rotational speed, r/min
- $p$  = exponent of the life equation  
= 3 for ball bearings  
= 10/3 for roller bearings

This type of evaluation can be performed by SKF Application Engineers. Additional information on this subject can be found in the SKF General Catalogue (5000) or the Interactive Engineering Catalogue available at [www.skf.ca](http://www.skf.ca).

# Static Load Carrying Capacity

Bearing size should be selected on the basis of the basic static load rating  $C_0$  instead of on bearing life when one of the following conditions pertains:

- the bearing is stationary and is subjected to continuous or intermittent (shock) loads;
- the bearing makes slow oscillating or alignment movements under load;
- the bearing rotates under load at very slow speed and is only required to have a short life (the life equation in this case, for a given equivalent load  $P$  would give such a low requisite basic dynamic load rating  $C$ , that the bearing selected on this basis would be subjected to considerable over-loading in service);
- the bearing rotates and, in addition to the normal operating loads, has to sustain heavy shock loads which act during a fraction of a revolution.

In all these cases, the permissible load for a bearing is determined not by material fatigue but by the permanent deformation caused by the load at the rolling element/ raceway contact. Loads acting on a stationary bearing or one which is slowly oscillating, as well as shock loads on a rotating bearing which act for only part of a revolution, produce flattened areas on the rolling elements and indentations in the raceways.

The indentations may be irregularly spaced around the raceway, or they may be evenly

spaced at positions corresponding to the spacing of the rolling elements. If the load acts for several revolutions of the bearing, the deformation will be evenly distributed over the whole raceway. The permanent deformations in the bearing can lead to vibration in the bearing, noisy operation and increased friction; it is also possible that the internal clearance will increase or the character of the fits may be changed. The extent to which these changes are detrimental to bearing performance depends on the demands placed on the bearing in a particular application. It is therefore necessary to ensure that permanent deformations cannot occur, or occur to a very limited extent only, by selecting a bearing with a sufficiently high static load carrying capacity, if one of the following demands has to be satisfied:

- silent running (for example, electric motors)
- vibration-free running (for example, machine tools)
- constant bearing friction torque (for example, measuring equipment and test apparatus)
- low starting friction under load (for example, cranes)

When determining bearing size based on static load carrying capacity, a given safety factor  $s_0$  which represents the relationship between the basic static load rating  $C_0$  and the equivalent static bearing load  $P_0$  is used to calculate the requisite basic static load rating.

### Requisite basic static load rating

The requisite basic static load rating  $C_0$  can be determined from

$$C_0 = s_0 P_0$$

where

- $C_0$  = basic static load rating
- $P_0$  = equivalent static bearing load
- $s_0$  = static safety factor

Guideline values based on experience are given in **table 6** for the static safety factor  $s_0$  for ball and roller bearings for various types of operation and requirements regarding smooth running.

At elevated temperatures the static load carrying capacity of bearings is reduced; further information will be supplied on request.

### Checking the static load carrying capacity

For dynamically loaded bearings which have been selected with reference to life it is advisable, where the equivalent static bearing load is known, to check that the static load carrying capacity is adequate using

$$S_0 = \frac{C_0}{P_0}$$

If the  $s_0$  value obtained is less than the recommended guideline value (see **table 6**) then a bearing having a higher basic static load rating should be selected.

**Table 6** Guideline values for static safety factor  $s_0$

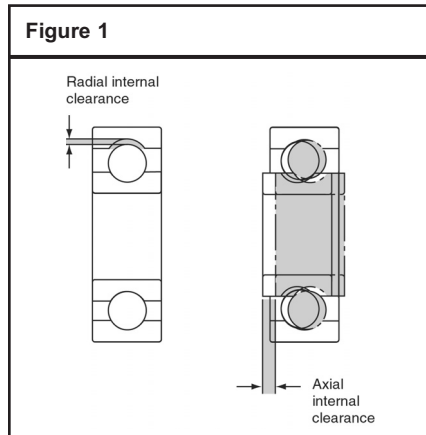
| Type of operation                    | Rotating bearings                    |                 |               |                 |               |                 | Non-rotating bearings |                 |
|--------------------------------------|--------------------------------------|-----------------|---------------|-----------------|---------------|-----------------|-----------------------|-----------------|
|                                      | Requirements regarding quiet running |                 |               |                 |               |                 |                       |                 |
|                                      | unimportant                          | normal          | high          |                 |               |                 |                       |                 |
|                                      | Ball bearings                        | Roller bearings | Ball bearings | Roller bearings | Ball bearings | Roller bearings | Ball bearings         | Roller bearings |
| Smooth, vibration-free               | 0.5                                  | 1               | 1             | 1.5             | 2             | 3               | 0.4                   | 0.8             |
| Normal                               | 0.5                                  | 1               | 1             | 1.5             | 2             | 3.5             | 0.5                   | 1               |
| Pronounced shock loads <sup>1)</sup> | > 1.5                                | > 2.5           | > 1.5         | > 3             | > 2           | > 4             | > 1                   | > 2             |

For spherical roller thrust bearings it is advisable to use  $s_0 > 4$

<sup>1)</sup> Where the magnitude of the load is not known values of  $s_0$  which are at least as large as those quoted above should be used. If the magnitude of the shock loads is exactly known, smaller values of  $s_0$  can be applied

# Bearing Internal Clearance

Bearing internal clearance is defined as the total distance through which one bearing ring can be moved relative to the other in the radial direction (radial internal clearance) or in the axial direction (axial internal clearance). See **figure 1**.



It is necessary to distinguish between the internal clearance of a bearing before mounting and the internal clearance in a mounted bearing which has reached its operating temperature (operational clearance). The initial internal clearance (before mounting) is normally greater than the operational clearance because different degrees of interference in the fits and differences in thermal expansion of the bearing rings and the associated components cause the rings to be expanded or compressed.

The radial internal clearance of a bearing is of considerable importance if satisfactory operation is to be obtained. As a general rule, ball bearings should have an operational clearance which is virtually zero, or there may be a slight preload. Cylindrical and spherical roller bearings, on the other hand, should always have some residual clearance – however small – in operation. The same is true of taper roller bearings except in bearing arrangements where stiffness is desired, e.g. pinion bearing arrangements, where the bearings are mounted with a certain degree of preload.

The bearing internal clearance referred to as Normal (CN or C0) has been selected so that a suitable operational clearance will be obtained when bearings are mounted with the fits usually recommended and operating conditions are normal. Where operating and mounting conditions differ from the normal, for example, where interference fits are used for both bearing rings, unusual temperatures prevail etc. bearings with greater (C3) or smaller (C2) internal clearance than Normal are required. In such cases, it is recommended that the residual clearance in the bearing after it has been mounted should be checked.

Bearings having an internal clearance other than Normal are identified by the suffixes C1 to C5.

Tables giving the clearance values for the various bearing types will be found in the text preceding the relevant bearing table section. For paired single row angular contact ball bearings and taper roller bearings, double row angular contact ball bearings and four-point contact ball bearings, values for the axial internal clearance are given instead of radial clearance, as the axial clearance is of greater importance in application design for these bearing types.

# Vibration Frequencies

Frequencies for most SKF bearings can be found at [www.skf.ca](http://www.skf.ca) under Interactive Engineering Catalogue.

# SKF Explorer

### A new level of performance

Over the years, manufacturing and materials research and process improvements have enabled machine components to get smaller without decreasing power output. With each developmental milestone, Engineers were given a choice; either downsize the application or increase power output. The new generation of SKF Explorer bearings represents the next significant improvement in performance. But this is not just a short hop to the next level. This is a quantum leap in bearing performance. Tests have shown that these bearings will last up to 3 times longer than the bearing you are currently using.

### Improved materials enhance performance

Developments in the steel making process have created an extremely clean and homogenous steel with a minimum number of inclusions. This improved steel is so much cleaner than the highest grades covered by present classification methods that SKF experts developed new specifications with a view toward standardization.

To maximize the benefits of this improved steel, SKF developed new heat treatment procedures. These new procedures further improved the wear resistance of SKF Explorer bearings. In fact, wear resistance was improved so dramatically that SKF Engineers were not able to accurately predict life expectancy using existing life calculation methods. To enable users to predict bearing life more accurately, SKF has done the following:

- Increased basic dynamic load ratings and
- Added a factor to be considered when calculating life using the SKF Life Method

For more information, please contact SKF Application Engineering or visit [www.skf.ca](http://www.skf.ca).

### Reengineered for endurance

By studying the inter-relationship of each bearing component's design, molecular structure and finish, SKF scientists and Engineers were able to maximize the effects of lubrication and minimize the effects of friction, wear, contamination and vibration. To do this, the SKF research team had to literally reengineer each component at either the micro or molecular level, and then develop new procedures to consistently manufacture this new standard of excellence. These new procedures have tightened the manufacturing tolerance for all components used in SKF Explorer bearings.

Since its introduction in 1999, SKF has been making the investments necessary to upgrade other bearing types to the SKF Explorer quality level. Bearing types include Angular contact ball bearings, both single row and double row; Cylindrical roller bearings, Spherical roller thrust bearings and deep groove ball bearings. Depending on the type, have been shown to reduce vibrations, reduce heat, accommodate higher loads and longer service life. In all tests performed, SKF Explorer bearings lasted considerably longer than competitor bearings including non-Explorer SKF bearings.

Now that these other bearing types are available in SKF Explorer quality, OEM's can realize the full benefits of a complete SKF Explorer bearing arrangement. For instance an industrial gearbox manufacturer can now build a unit that contains not just SKF Explorer Sphericals, but can also contain SKF Explorer Cylindricals and SKF Explorer Spherical roller thrust bearings.

### Note on SKF Explorer bearings

High performance SKF Explorer bearings are shown with an asterisk in the product tables. SKF Explorer bearings retain the designation of the standard bearings, however, each bearing and its box are marked with the name "**EXPLORER**".

What SKF Explorer does for your machine

### Existing machine

Switching to SKF Explorer bearings give:

- several times the service life previously achieved,
- more machine uptime,
- higher safety factor,
- an appreciable reduction of machine cycle cost and, therefore, added value.

### New machine with same power

SKF Explorer makes it possible to use a smaller bearing size which allows:

- more compact machines,
- higher speeds,
- smoother and quieter running,
- less lubricant usage,
- reduced friction, and will create added value.

### Existing machine with increased power

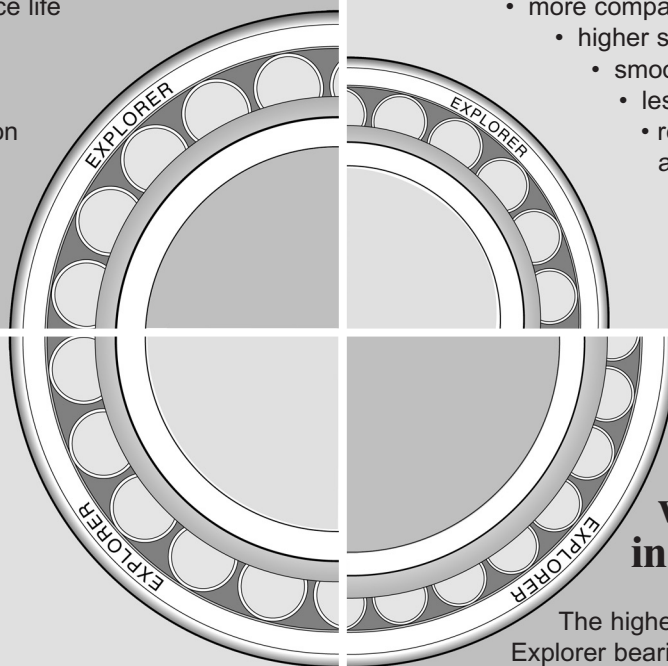
Same size SKF Explorer bearings allow power increases of 15 to 25% with:

- same service life,
- same machine uptime,
- same machine design, and higher added value.

### New machine with same or increased power

The higher carrying capacity of SKF Explorer bearings allows the use of a lighter series with same outside diameter and increased bore diameter, so that:

- a stronger, or even hollow shaft can be used,
- the total design can be stiffer and also cheaper,
- system life is increased due to higher stiffness, and machine cycle cost is significantly reduced.



## Precision, New speed definition

# High Precision Bearings

All SKF bearings listed in this catalogue are precision products conforming to the stringent tolerance requirements of ABEC 1 or REBC 1. Certain ball bearings are made to higher (ABEC 5) tolerances.

There are, however, applications with stricter demands for high running accuracy and rigidity, low frictional torque and operating temperatures, and small temperature variations over a very wide speed range, such as machine tool spindles. The SKF precision catalogue 5002 describes SKF high precision bearings for such applications.

To meet the different demands for accuracy, SKF high precision bearings are made to a number of tolerance classes. A description of these is shown below.

### High precision angular contact ball bearings

The SKF high precision angular contact ball bearings have been specially designed for grinding spindle applications, combining radial and axial load-carrying ability in one bearing.

Their high precision means virtually vibration-free operation. Their low friction, due to groove optimization, means lower

temperatures resulting in longer lubricant life and longer bearing service life.

SKF high precision angular contact ball bearings are manufactured as standard to tolerance class P4A, but may also be supplied to tolerance class PA9A.

Angular contact ball bearings are designed so the direction of load through the balls forms an angle with the radial plane of the bearing.

See catalogue 5002.

| Comparison of different standards        |                           |                 |
|--|---------------------------|-----------------|
| ABMA <sup>1)</sup><br>Tolerance<br>Class | ISO<br>Tolerance<br>Class | SKF<br>Standard |
| ABEC 9                                   | 2                         | PA9A            |
| ABEC 7                                   | 4                         | P4              |
| ABEC 5                                   | 5                         | P5              |

<sup>1)</sup> ANSI/ABMA - American National Standards Institute/  
Antifriction Bearing Manufacturers Association.

| SKF tolerance classes for high-precision bearings |                                     |                                  |
|---|-------------------------------------|----------------------------------|
| SKF<br>Tolerance<br>Class                         | Boundary<br>Dimensions<br>ISO, ABMA | Running<br>Accuracy<br>ISO, ABMA |
| SP  | ISO 5, ABEC 5                       | ISO 4, ABEC 7                    |
| UP  | ISO 4, ABEC 7                       | ISO 2, ABEC 9                    |
| P4A   | ISO 4, ABEC 7                       | ISO 2, ABEC 9 <sup>1)</sup>      |
| P4C   | ISO 4, ABEC 7                       | ISO 4, ABEC 7                    |
| PA9A  | ISO 2, ABEC 9                       | ISO 2, ABEC 9                    |

<sup>1)</sup> Up to 120mm bore diameter, for larger sizes, ABEC 7 or better

## New Speed Definition

In the new SKF 5000 General Catalogue, SKF has introduced new definitions for speed ratings on bearings: Reference speed and Limiting speed.

### Reference speed

The Reference speed is based on a temperature limit, in accordance with conditions set out in ISO 15312. The different conditions for oil and grease lubrication are selected so that for both, the same reference speed is valid. Any deviation from these conditions must be considered in order to determine the permissible speed. For full complement and sealed bearings no

reference speed is given, as the limiting speed is less than the reference speed. This is done to avoid running the bearings over an acceptable value.

### Limiting speed

The Limiting speed is a kinematic limit based on the dynamic limitations of the bearing components (e.g., cage design, rolling element size, etc.). Limiting speeds are valid for the bearing design and standard cage execution shown. It is possible under certain conditions to run the bearings at higher speeds if some of the speed limiting factors

such as running accuracy, cage material and design, lubrication and heat dissipation can be improved.

Some open ball bearings have very low friction and reference speeds listed might be higher than the limiting speeds. Therefore the permissible speed needs to be calculated and compared to the limiting speed. Always limit the bearing to the lower of these 2 values.

See the General Catalogue 6000 on pages 108 and 114.

| Shaft tolerances for bearings mounted on sleeves |       |                              |         |                   |      |         |                   |
|--|-------|------------------------------|---------|-------------------|------|---------|-------------------|
| Shaft diameter                                   |       | Diameter and form tolerances |         |                   |      |         |                   |
| d  |       | h9                           |         | IT5 <sup>1)</sup> | h10  |         | IT7 <sup>1)</sup> |
| Nominal  | incl. | Deviations                   | low     | Deviations        | high | low     | max               |
| over   |       | high                         |         | max               |      |         |                   |
| mm   |       | inch                         |         |                   |      |         |                   |
| 10   | 18    | 0                            | -0.0017 | 0.0003            | 0    | -0.0028 | 0.0007            |
| 18   | 30    | 0                            | -0.0020 | 0.0004            | 0    | -0.0033 | 0.0008            |
| 30   | 50    | 0                            | -0.0024 | 0.0004            | 0    | -0.0039 | 0.0010            |
| 50   | 80    | 0                            | -0.0029 | 0.0005            | 0    | -0.0047 | 0.0012            |
| 80   | 120   | 0                            | -0.0034 | 0.0006            | 0    | -0.0055 | 0.0014            |
| 120  | 180   | 0                            | -0.0039 | 0.0008            | 0    | -0.0063 | 0.0016            |
| 180  | 250   | 0                            | -0.0045 | 0.0008            | 0    | -0.0073 | 0.0018            |
| 250  | 315   | 0                            | -0.0051 | 0.0009            | 0    | -0.0083 | 0.0021            |
| 315  | 400   | 0                            | -0.0055 | 0.0009            | 0    | -0.0091 | 0.0022            |
| 400  | 500   | 0                            | -0.0061 | 0.0016            | 0    | -0.0098 | 0.0025            |
| 500  | 630   | 0                            | -0.0069 | 0.0013            | 0    | -0.0110 | 0.0028            |
| 630  | 800   | 0                            | -0.0079 | 0.0014            | 0    | -0.0126 | 0.0031            |
| 800  | 1 000 | 0                            | -0.0090 | 0.0016            | 0    | -0.0142 | 0.0035            |
| 1 000  | 1 250 | 0                            | -0.0102 | 0.0019            | 0    | 0.0165  | 0.0041            |

<sup>1)</sup> The recommendation is for IT5/2 or IT7/2, because the tolerance zone t is a radius, however in the table above the values relate to a nominal shaft diameter and are therefore not halved

# Mounting Bearings with Tapered Bore

Bearings with a tapered bore are always mounted with an interference fit. The reduction in radial internal clearance, or the axial displacement of the inner ring on its tapered seating is used as a measure of the degree of interference.

Suitable methods for mounting spherical roller bearings with tapered bore are:

- measuring the clearance reduction,
- measuring the lock nut tightening angle,
- measuring the axial drive-up,
- measuring the inner ring expansion.

Small bearings with a bore diameter up to 100 mm can be properly mounted by measuring the lock nut tightening angle. For larger bearings the SKF Drive-up Method is

recommended. This method is more accurate and takes less time than the procedure based on clearance reduction or the lock nut tightening angle. Measuring the inner ring expansion, i.e. applying the SKF SensorMount® Method, allows large size bearings to be mounted simply, quickly and accurately, since a sensor is integrated into the bearing inner ring.

### Measuring clearance reduction

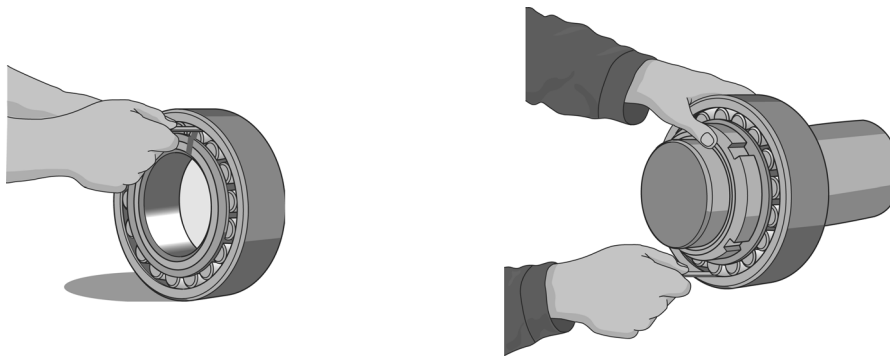
The method using feeler gauges for measuring the radial internal clearance before and after mounting bearings is applicable for medium and large-sized bearings. The clearance should always be measured between the outer ring and an unloaded roller (see fig 1). Before measuring, rotate the inner or outer ring

a few times. Care must be taken to see that both bearing rings and the roller complement are centrally arranged with respect to each other. For the first measurement, a blade should be selected which is slightly thinner than the minimum value for the clearance. The procedure should be repeated using slightly thicker blades each time until a certain resistance is felt when moving between

- outer ring and uppermost roller (a) – before mounting
- outer ring and lowest roller (b) – after mounting.

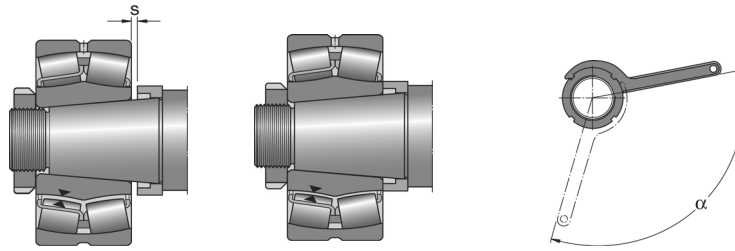
Guideline values for the permissible minimum clearance after mounting are given in table 1.

Figure 1





**Table 1. Guideline values for reduction of radial internal clearance, axial drive-up and lock nut tightening angle**



The locknut tightening method is valid for mounting on adapter sleeves only.

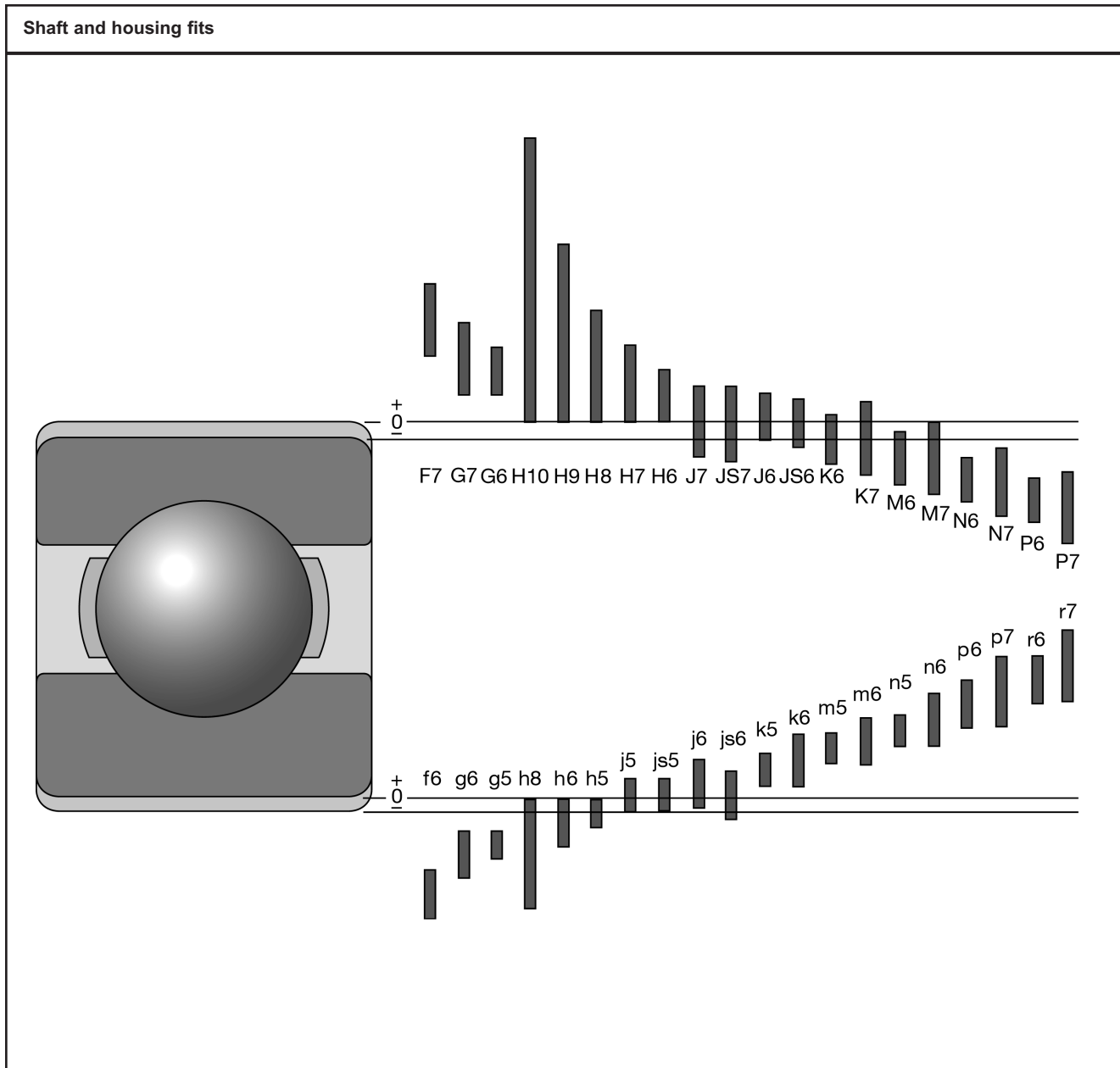
| Bore diameter d |       | Reduction of radial internal clearance |        | Axial drive-up <sup>1)</sup> s |        |            |        | Permissible residual <sup>2)</sup> radial clearance after mounting bearings with initial clearance |        |        | Lock nut tightening angle α |
|-----------------|-------|--|--------|--------------------------------|--------|------------|--------|--|--------|--------|-----------------------------|
| over            | incl. | min                                    | max    | Taper 1:12                     |        | Taper 1:30 |        | Normal   | C3     | C4     | Taper 1:12                  |
|                 |       |  |        | min                            | max    | min        | max    |  |        |        | degrees <sup>3)</sup>       |
| mm              |       | in                                     |        | in                             |        |            |        | in   |        |        |                             |
| 24              | 30    | 0.0006                                 | 0.0008 | 0.0118                         | 0.0138 | -          | -      | 0.0006   | 0.0008 | 0.0014 | 110                         |
| 30              | 40    | 0.0008                                 | 0.0010 | 0.0138                         | 0.0157 | -          | -      | 0.0006   | 0.0010 | 0.0016 | 120                         |
| 40              | 50    | 0.0010                                 | 0.0012 | 0.0157                         | 0.0177 | -          | -      | 0.0008   | 0.0012 | 0.0020 | 130                         |
| 50              | 65    | 0.0012                                 | 0.0016 | 0.0177                         | 0.0236 | 0.1181     | 0.1575 | 0.0010   | 0.0014 | 0.0022 | 110                         |
| 65              | 80    | 0.0016                                 | 0.0020 | 0.0236                         | 0.0276 | 0.1260     | 0.1654 | 0.0010   | 0.0016 | 0.0028 | 130                         |
| 80              | 100   | 0.0018                                 | 0.0024 | 0.0276                         | 0.0354 | 0.0669     | 0.0866 | 0.0014   | 0.0020 | 0.0031 | 150                         |
| 100             | 120   | 0.0020                                 | 0.0028 | 0.0295                         | 0.0433 | 0.0748     | 0.1063 | 0.0020   | 0.0026 | 0.0039 | -                           |
| 120             | 140   | 0.0026                                 | 0.0035 | 0.0433                         | 0.0551 | 0.1063     | 0.1378 | 0.0022   | 0.0031 | 0.0043 | -                           |
| 140             | 160   | 0.0030                                 | 0.0039 | 0.0472                         | 0.0630 | 0.1181     | 0.1575 | 0.0022   | 0.0035 | 0.0051 | -                           |
| 160             | 180   | 0.0031                                 | 0.0043 | 0.0512                         | 0.0669 | 0.1260     | 0.1654 | 0.0024   | 0.0039 | 0.0059 | -                           |
| 180             | 200   | 0.0035                                 | 0.0051 | 0.0551                         | 0.0787 | 0.1378     | 0.1969 | 0.0028   | 0.0039 | 0.0063 | -                           |
| 200             | 225   | 0.0039                                 | 0.0055 | 0.0630                         | 0.0866 | 0.1575     | 0.2165 | 0.0031   | 0.0047 | 0.0071 | -                           |
| 225             | 250   | 0.0043                                 | 0.0059 | 0.0669                         | 0.0945 | 0.1654     | 0.2362 | 0.0035   | 0.0051 | 0.0079 | -                           |
| 250             | 280   | 0.0047                                 | 0.0067 | 0.0748                         | 0.1063 | 0.1850     | 0.2638 | 0.0039   | 0.0055 | 0.0087 | -                           |
| 280             | 315   | 0.0051                                 | 0.0075 | 0.0787                         | 0.1181 | 0.1969     | 0.2953 | 0.0043   | 0.0059 | 0.0094 | -                           |
| 315             | 355   | 0.0059                                 | 0.0083 | 0.0945                         | 0.1299 | 0.2362     | 0.3228 | 0.0047   | 0.0067 | 0.0102 | -                           |
| 355             | 400   | 0.0067                                 | 0.0091 | 0.1024                         | 0.1417 | 0.2559     | 0.3543 | 0.0051   | 0.0075 | 0.0114 | -                           |
| 400             | 450   | 0.0079                                 | 0.0102 | 0.1220                         | 0.1575 | 0.3031     | 0.3937 | 0.0051   | 0.0079 | 0.0122 | -                           |
| 450             | 500   | 0.0083                                 | 0.0110 | 0.1299                         | 0.1732 | 0.3228     | 0.4331 | 0.0063   | 0.0091 | 0.0138 | -                           |
| 500             | 560   | 0.0094                                 | 0.0126 | 0.1457                         | 0.1969 | 0.3622     | 0.4921 | 0.0067   | 0.0098 | 0.0142 | -                           |
| 560             | 630   | 0.0102                                 | 0.0138 | 0.1575                         | 0.2126 | 0.3937     | 0.5315 | 0.0079   | 0.0114 | 0.0161 | -                           |
| 630             | 710   | 0.0118                                 | 0.0157 | 0.1811                         | 0.2441 | 0.4528     | 0.6102 | 0.0083   | 0.0122 | 0.0177 | -                           |
| 710             | 800   | 0.0134                                 | 0.0177 | 0.2087                         | 0.2756 | 0.5236     | 0.6890 | 0.0091   | 0.0138 | 0.0201 | -                           |
| 800             | 900   | 0.0146                                 | 0.0197 | 0.2244                         | 0.3071 | 0.5630     | 0.7677 | 0.0106   | 0.0154 | 0.0224 | -                           |
| 900             | 1 000 | 0.0161                                 | 0.0217 | 0.2480                         | 0.3346 | 0.6220     | 0.8268 | 0.0118   | 0.0169 | 0.0252 | -                           |
| 1 000           | 1 120 | 0.0177                                 | 0.0236 | 0.2677                         | 0.3543 | 0.6693     | 0.9055 | 0.0126   | 0.0189 | 0.0276 | -                           |
| 1 120           | 1 250 | 0.0193                                 | 0.0256 | 0.2913                         | 0.3858 | 0.7283     | 0.9843 | 0.0134   | 0.0213 | 0.0303 | -                           |
| 1 250           | 1 400 | 0.0217                                 | 0.0283 | 0.3268                         | 0.4252 | 0.8268     | 1.0630 | 0.0142   | 0.0232 | 0.0331 | -                           |
| 1 400           | 1 600 | 0.0236                                 | 0.0315 | 0.3583                         | 0.4685 | 0.8937     | 1.1732 | 0.0157   | 0.0256 | 0.0362 | -                           |
| 1 600           | 1 800 | 0.0264                                 | 0.0354 | 0.4016                         | 0.5276 | 1.0000     | 1.3228 | 0.0173   | 0.0283 | 0.0402 | -                           |

<sup>1)</sup> Valid only for solid steel shafts and general application. Not valid for the SKF Drive-up Method

<sup>2)</sup> The residual clearance must be checked in cases where the initial radial internal clearance is in the lower half of the residual clearance must not be less than the minimum values quoted above

<sup>3)</sup> 1:12 tapers only

# Dimensional guidelines for mounting



| <b>Fits for solid steel shafts</b>   |  |   |   |  |  |
|--|--|---|---|--|--|
| <b>Radial bearings with cylindrical bore (except inch size bearings)</b>   |  |   |   |  |  |
| Conditions   | Examples   | Shaft diameter, mm  |   |  | Tolerance  |
|  |  | Ball bearings   | Cylindrical and taper roller bearings   |  | CARB and spherical roller bearings   |
| <b>Rotating inner ring load or direction of load indeterminate</b>   |  |   |   |  |  |
| Light and variable loads ( $P \leq 0.06 C$ )   | Conveyors, lightly loaded gearbox bearings   | (18) to 100<br>(100) to 140   | $\leq 40$<br>(40) to 100  | –  | j6<br>k6   |
| Normal and heavy loads ( $P > 0.06 C$ )  | Bearing applications generally, electric motors, turbines, pumps, internal combustion engines, gearing, woodworking machines | $\leq 18$<br>(18) to 100<br>(100) to 140<br>(140) to 200<br>(200) to 280<br>–<br>–<br>– | –<br>$\leq 40$<br>(40) to 100<br>(100) to 140<br>(140) to 200<br>(200) to 400<br>–<br>– | –<br>$\leq 40$<br>(40) to 65<br>(65) to 100<br>(100) to 140<br>(140) to 280<br>(280) to 500<br>> 500 | j5<br>k5 (k6) <sup>1)</sup><br>m5 (m6) <sup>1)</sup><br>m6<br>n6<br>p6<br>r6 <sup>2)</sup><br>r7 <sup>2)</sup> |
| Very heavy loads and shock loads with difficult working conditions ( $P > 0.12 C$ )  | Axleboxes for heavy railway vehicles, traction motors, rolling mills   | –<br>–<br>–   | (50) to 140<br>(140) to 200<br>> 200  | (50) to 100<br>(100) to 140<br>> 140   | n6 <sup>2)</sup><br>p6 <sup>2)</sup><br>r6 <sup>2)</sup>   |
| High demands on running accuracy with light loads ( $P < \text{or} = 0.06 C$ )   | Machine tools  | 8 to 240<br>–<br>–<br>–<br>–  | –<br>25 to 40<br>(40) to 140<br>(140) to 200<br>(200) to 500                            | –<br>–<br>–<br>–<br>–  | js4<br>js4 (j5) <sup>3)</sup><br>k4 (k5) <sup>3)</sup><br>m5 <sup>3)</sup><br>n5 <sup>3)</sup>                 |
| <b>Stationary inner ring load</b>  |  |   |   |  |  |
| Easy axial displacement of inner ring on shaft desirable   | Wheels on non-rotating axles   |   |   |  | g6 <sup>4)</sup>   |
| Easy axial displacement of inner ring on shaft unnecessary   | Tension pulleys, rope sheaves  |   |   |  | h6   |
| <b>Axial loads only</b>  |  |   |   |  |  |
|  | Bearing applications of all kinds  | $\leq 250$<br>> 250   | $\leq 250$<br>> 250   | $\leq 250$<br>> 250  | j6<br>js6  |
| <sup>1)</sup> The tolerances in brackets are generally used for taper roller bearings and single row angular contact ball bearings, they can also be used for other types of bearing where speeds are moderate and the effect of bearing internal clearance variation is not significant<br><sup>2)</sup> Bearings with radial internal clearance greater than Normal may be necessary<br><sup>3)</sup> The tolerances in brackets apply to taper roller bearings. For lightly loaded taper roller bearings adjusted via the inner ring, js5 or js6 should be used<br><sup>4)</sup> Tolerance f6 can be selected for large bearings to provide easy displacement |  |   |   |  |  |

| <b>Fits for solid steel shafts</b>  |   |                                     |                |
|---|---|-------------------------------------|----------------|
| <b>Thrust bearings</b>  |   |                                     |                |
| Conditions  |   | Shaft diameter, mm                  | Tolerance      |
| <b>Axial loads only</b>   |   |                                     |                |
| Thrust ball bearings  | – |                                     | h6             |
| Cylindrical roller thrust bearings  | – |                                     | h6 (h8)        |
| Cylindrical roller and cage thrust assemblies                                     | – |                                     | h8             |
| <b>Combined radial and axial loads acting on spherical roller thrust bearings</b> |   |                                     |                |
| Stationary load on shaft washer   |   | $\leq 250$<br>> 250                 | j6<br>js6      |
| Rotating load on shaft washer, or direction of load indeterminate                 |   | $\leq 200$<br>(200) to 400<br>> 400 | k6<br>m6<br>n6 |

## Dimensional guidelines for mounting

| <b>Fits for cast iron and steel housings</b>  |  |                  |                                   |
|---|--|------------------|-----------------------------------|
| <b>Radial bearings – non-split housings</b>   |  |                  |                                   |
| <b>Conditions</b>   | <b>Examples</b>  | <b>Tolerance</b> | <b>Displacement of outer ring</b> |
| <b>Rotating outer ring load</b>   |  |                  |                                   |
| Heavy loads on bearings in thin-walled housings, heavy shock loads ( $P > 0.12 C$ )   | Roller bearing wheel hubs, big-end bearings                        | P7               | Cannot be displaced               |
| Normal and heavy loads ( $P > 0.06 C$ )   | Ball bearing wheel hubs, big-end bearings, crane travelling wheels | N7               | Cannot be displaced               |
| Light and variable loads ( $P \leq 0.06 C$ )  | Conveyor rollers, rope sheaves, belt tensioner pulleys             | M7               | Cannot be displaced               |
| <b>Direction of load indeterminate</b>  |  |                  |                                   |
| Heavy shock loads   | Electric traction motors   | M7               | Cannot be displaced               |
| Normal and heavy loads ( $P > 0.06 C$ ), axial displacement of outer ring unnecessary   | Electric motors, pumps, crankshaft bearings                        | K7               | Cannot be displaced as a rule     |
| <b>Accurate or quiet running<sup>1)</sup></b>   |  |                  |                                   |
| Ball bearings   | Small electric motors  | J6 <sup>2)</sup> | Can be displaced                  |
| Taper roller bearings   | When adjusted via the outer ring                                   | JS5              | –                                 |
|   | Axially located outer ring   | K5               | –                                 |
|   | Rotating outer ring load   | M5               | –                                 |
| <sup>1)</sup> For high-precision bearings to tolerance class P5 or better, other recommendations apply (see the SKF catalogue "High-precision bearings")<br><sup>2)</sup> When easy displacement is required use H6 instead of J6 |  |                  |                                   |

| <b>Fits for cast iron and steel housings</b>  |  |                  |                                   |
|---|--|------------------|-----------------------------------|
| <b>Radial bearings – split or non-split housings</b>  |  |                  |                                   |
| <b>Conditions</b>   | <b>Examples</b>  | <b>Tolerance</b> | <b>Displacement of outer ring</b> |
| <b>Direction of load indeterminate</b>  |  |                  |                                   |
| Light and normal loads ( $P \leq 0.12 C$ ), axial displacement of outer ring desirable  | Medium-sized electrical machines, pumps, crankshaft bearings               | J7               | Can be displaced as a rule        |
| <b>Stationary outer ring load</b>   |  |                  |                                   |
| Loads of all kinds  | General engineering, railway axleboxes                                     | H7 <sup>1)</sup> | Can be displaced                  |
| Light and normal loads ( $P \leq 0.12 C$ ) with simple working conditions   | General engineering  | H8               | Can be displaced                  |
| Heat conduction through shaft   | Drying cylinders, large electrical machines with spherical roller bearings | G7 <sup>2)</sup> | Can be displaced                  |
| <p><sup>1)</sup> For large bearings (<math>D &gt; 250</math> mm) and temperature differences between outer ring and housing <math>&gt; 10^\circ\text{C}</math>, G7 should be used instead of H7</p> <p><sup>2)</sup> For large bearings (<math>D &gt; 250</math> mm) and temperature differences between outer ring and housing <math>&gt; 10^\circ\text{C}</math>, F7 should be used instead of G7</p> |  |                  |                                   |

| <b>Fits for cast iron and steel housings</b>                                     |                  |   |
|--|------------------|---|
| <b>Thrust bearings</b>   |                  |   |
| <b>Conditions</b>  | <b>Tolerance</b> | <b>Remarks</b>  |
| <b>Axial loads only</b>  |                  |   |
| Thrust ball bearings   | H8               | For less accurate bearing arrangements there can be a radial clearance of up to 0.001 D                                       |
| Cylindrical roller thrust bearings   | H7 (H9)          |   |
| Cylindrical roller and cage thrust assemblies                                    | H10              |   |
| Spherical roller thrust bearings where separate bearings provide radial location | –                | Housing washer must be fitted with adequate radial clearance so that no radial load whatsoever can act on the thrust bearings |
| <b>Combined radial and axial loads on spherical roller thrust bearings</b>       |                  |   |
| Stationary load on housing washer  | H7               | See also "Design of associated components" in section "Spherical roller thrust bearings" on <b>page 193</b> .                 |
| Rotating load on housing washer  | M7               |   |

# Mounting information: Shaft bearing-seat diameters (in inches)

| Bearing Bore Diameter |         |         | g6          |         |                |             | h6      |                |             |         | h5             |             |         |                | j5          |         |                |             | j6      |                |             |         | k5             |     |     |  |
|-----------------------|---------|---------|-------------|---------|----------------|-------------|---------|----------------|-------------|---------|----------------|-------------|---------|----------------|-------------|---------|----------------|-------------|---------|----------------|-------------|---------|----------------|-----|-----|--|
| mm                    | Inches  |         | Shaft. Dia. |         | fit in 0.0000" | Shaft. Dia. |         | fit in 0.0000" | Shaft. Dia. |         | fit in 0.0000" | Shaft. Dia. |         | fit in 0.0000" | Shaft. Dia. |         | fit in 0.0000" | Shaft. Dia. |         | fit in 0.0000" | Shaft. Dia. |         | fit in 0.0000" |     |     |  |
|                       | Max     | Min     | Max         | Min     |                | Max         | Min     |                | Max         | Min     |                | Max         | Min     |                | Max         | Min     |                | Max         | Min     |                | Max         | Min     |                | Max | Min |  |
| 4                     | 0.1575  | 0.1572  | 0.1573      | 0.1570  | 5L             | 0.1575      | 0.1572  | 3L             | 0.1575      | 0.1573  | 2L             | 0.1576      | 0.1574  | 1L             | 0.1577      | 0.1574  | 1L             | 0.1577      | 0.1575  | 0T             | 0.1577      | 0.1575  | 0T             |     |     |  |
| 5                     | 0.1969  | 0.1966  | 0.1967      | 0.1964  | 1T             | 0.1969      | 0.1966  | 3T             | 0.1969      | 0.1967  | 3T             | 0.1970      | 0.1968  | 4T             | 0.1971      | 0.1968  | 5T             | 0.1971      | 0.1969  | 5T             | 0.1971      | 0.1969  | 5T             |     |     |  |
| 6                     | 0.2362  | 0.2359  | 0.2360      | 0.2357  |                | 0.2362      | 0.2359  |                | 0.2362      | 0.2360  |                | 0.2363      | 0.2361  |                | 0.2364      | 0.2361  |                | 0.2364      | 0.2362  |                | 0.2364      | 0.2362  |                |     |     |  |
| 7                     | 0.2756  | 0.2753  | 0.2754      | 0.2750  | 6L             | 0.2756      | 0.2752  | 4L             | 0.2756      | 0.2754  | 2L             | 0.2758      | 0.2755  | 1L             | 0.2759      | 0.2755  | 1L             | 0.2759      | 0.2755  | 0T             | 0.2759      | 0.2756  | 0T             |     |     |  |
| 8                     | 0.3150  | 0.3147  | 0.3148      | 0.3144  | 1T             | 0.3150      | 0.3146  | 3T             | 0.3150      | 0.3148  | 3T             | 0.3152      | 0.3149  | 5T             | 0.3153      | 0.3149  | 6T             | 0.3153      | 0.3150  | 6T             | 0.3153      | 0.3150  | 6T             |     |     |  |
| 9                     | 0.3543  | 0.3540  | 0.3541      | 0.3537  |                | 0.3543      | 0.3539  |                | 0.3543      | 0.3541  |                | 0.3545      | 0.3542  |                | 0.3546      | 0.3542  |                | 0.3546      | 0.3543  |                | 0.3546      | 0.3543  |                |     |     |  |
| 10                    | 0.3937  | 0.3934  | 0.3935      | 0.3931  |                | 0.3937      | 0.3933  |                | 0.3937      | 0.3935  |                | 0.3939      | 0.3936  |                | 0.3940      | 0.3936  |                | 0.3940      | 0.3937  |                | 0.3940      | 0.3937  |                |     |     |  |
| 12                    | 0.4724  | 0.4721  | 0.4722      | 0.4717  | 7L             | 0.4724      | 0.4720  | 4L             | 0.4724      | 0.4721  | 3L             | 0.4726      | 0.4723  | 1L             | 0.4727      | 0.4723  | 1L             | 0.4727      | 0.4724  | 0T             | 0.4728      | 0.4726  | 0T             |     |     |  |
| 15                    | 0.5906  | 0.5903  | 0.5904      | 0.5899  | 1T             | 0.5906      | 0.5902  | 3T             | 0.5906      | 0.5903  | 3T             | 0.5908      | 0.5905  | 5T             | 0.5909      | 0.5905  | 6T             | 0.5910      | 0.5907  | 7T             | 0.5910      | 0.5907  | 7T             |     |     |  |
| 17                    | 0.6693  | 0.6690  | 0.6691      | 0.6686  |                | 0.6693      | 0.6689  |                | 0.6693      | 0.6690  |                | 0.6695      | 0.6692  |                | 0.6696      | 0.6692  |                | 0.6696      | 0.6693  |                | 0.6697      | 0.6693  |                |     |     |  |
| 20                    | 0.7874  | 0.7870  | 0.7871      | 0.7866  | 8L             | 0.7874      | 0.7869  | 5L             | 0.7874      | 0.7870  | 4L             | 0.7876      | 0.7872  | 2L             | 0.7878      | 0.7872  | 2L             | 0.7878      | 0.7875  | 1T             | 0.7878      | 0.7875  | 1T             |     |     |  |
| 25                    | 0.9843  | 0.9839  | 0.9840      | 0.9835  | 1T             | 0.9843      | 0.9838  | 4T             | 0.9843      | 0.9839  | 4T             | 0.9845      | 0.9841  | 6T             | 0.9847      | 0.9841  | 8T             | 0.9847      | 0.9844  | 8T             | 0.9847      | 0.9844  | 8T             |     |     |  |
| 30                    | 1.1811  | 1.1807  | 1.1808      | 1.1803  |                | 1.1811      | 1.1806  |                | 1.1811      | 1.1807  |                | 1.1813      | 1.1809  |                | 1.1815      | 1.1809  |                | 1.1815      | 1.1812  |                | 1.1815      | 1.1812  |                |     |     |  |
| 35                    | 1.3780  | 1.3775  | 1.3776      | 1.3770  | 10L            | 1.3780      | 1.3774  | 6L             | 1.3780      | 1.3776  | 4L             | 1.3782      | 1.3778  | 2L             | 1.3784      | 1.3778  | 2L             | 1.3784      | 1.3781  | 1T             | 1.3785      | 1.3781  | 1T             |     |     |  |
| 40                    | 1.5748  | 1.5743  | 1.5744      | 1.5738  | 1T             | 1.5748      | 1.5742  | 5T             | 1.5748      | 1.5744  | 5T             | 1.5750      | 1.5746  | 7T             | 1.5752      | 1.5746  | 9T             | 1.5752      | 1.5749  | 10T            | 1.5753      | 1.5749  | 10T            |     |     |  |
| 45                    | 1.7717  | 1.7712  | 1.7713      | 1.7707  |                | 1.7717      | 1.7711  |                | 1.7717      | 1.7713  |                | 1.7719      | 1.7715  |                | 1.7721      | 1.7715  |                | 1.7721      | 1.7718  |                | 1.7722      | 1.7718  |                |     |     |  |
| 50                    | 1.9685  | 1.9680  | 1.9681      | 1.9675  |                | 1.9685      | 1.9679  |                | 1.9685      | 1.9681  |                | 1.9687      | 1.9683  |                | 1.9689      | 1.9683  |                | 1.9689      | 1.9686  |                | 1.9690      | 1.9686  |                |     |     |  |
| 55                    | 2.1654  | 2.1648  | 2.1650      | 2.1643  | 11L            | 2.1654      | 2.1647  | 7L             | 2.1654      | 2.1649  | 5L             | 2.1656      | 2.1651  | 3L             | 2.1659      | 2.1651  | 3L             | 2.1660      | 2.1655  | 1T             | 2.1660      | 2.1655  | 1T             |     |     |  |
| 60                    | 2.3622  | 2.3616  | 2.3618      | 2.3611  | 2T             | 2.3622      | 2.3615  | 6T             | 2.3622      | 2.3617  | 6T             | 2.3624      | 2.3619  | 8T             | 2.3627      | 2.3619  | 11T            | 2.3628      | 2.3623  | 12T            | 2.3628      | 2.3623  | 12T            |     |     |  |
| 65                    | 2.5591  | 2.5585  | 2.5587      | 2.5580  |                | 2.5591      | 2.5584  |                | 2.5591      | 2.5586  |                | 2.5593      | 2.5588  |                | 2.5596      | 2.5588  |                | 2.5597      | 2.5592  |                | 2.5597      | 2.5592  |                |     |     |  |
| 70                    | 2.7559  | 2.7553  | 2.7555      | 2.7548  |                | 2.7559      | 2.7552  |                | 2.7559      | 2.7554  |                | 2.7561      | 2.7556  |                | 2.7564      | 2.7556  |                | 2.7565      | 2.7560  |                | 2.7565      | 2.7560  |                |     |     |  |
| 75                    | 2.9528  | 2.9522  | 2.9524      | 2.9517  |                | 2.9528      | 2.9521  |                | 2.9528      | 2.9523  |                | 2.9530      | 2.9525  |                | 2.9533      | 2.9525  |                | 2.9534      | 2.9529  |                | 2.9534      | 2.9529  |                |     |     |  |
| 80                    | 3.1496  | 3.1490  | 3.1492      | 3.1485  |                | 3.1496      | 3.1489  |                | 3.1496      | 3.1491  |                | 3.1498      | 3.1493  |                | 3.1501      | 3.1493  |                | 3.1502      | 3.1497  |                | 3.1502      | 3.1497  |                |     |     |  |
| 85                    | 3.3465  | 3.3457  | 3.3460      | 3.3452  | 13L            | 3.3465      | 3.3456  | 9L             | 3.3465      | 3.3459  | 6L             | 3.3467      | 3.3461  | 4L             | 3.3470      | 3.3461  | 4L             | 3.3472      | 3.3466  | 1T             | 3.3472      | 3.3466  | 1T             |     |     |  |
| 90                    | 3.5433  | 3.5425  | 3.5428      | 3.5420  | 3T             | 3.5433      | 3.5424  | 8T             | 3.5433      | 3.5427  | 8T             | 3.5435      | 3.5429  | 10T            | 3.5438      | 3.5429  | 13T            | 3.5440      | 3.5434  | 15T            | 3.5440      | 3.5434  | 15T            |     |     |  |
| 95                    | 3.7402  | 3.7394  | 3.7397      | 3.7389  |                | 3.7402      | 3.7393  |                | 3.7402      | 3.7396  |                | 3.7404      | 3.7398  |                | 3.7407      | 3.7398  |                | 3.7409      | 3.7403  |                | 3.7409      | 3.7403  |                |     |     |  |
| 100                   | 3.9370  | 3.9362  | 3.9365      | 3.9357  |                | 3.9370      | 3.9361  |                | 3.9370      | 3.9364  |                | 3.9372      | 3.9366  |                | 3.9375      | 3.9366  |                | 3.9377      | 3.9371  |                | 3.9377      | 3.9371  |                |     |     |  |
| 105                   | 4.1339  | 4.1331  | 4.1334      | 4.1326  |                | 4.1339      | 4.1330  |                | 4.1339      | 4.1333  |                | 4.1341      | 4.1335  |                | 4.1344      | 4.1335  |                | 4.1346      | 4.1340  |                | 4.1346      | 4.1340  |                |     |     |  |
| 110                   | 4.3307  | 4.3299  | 4.3302      | 4.3294  |                | 4.3307      | 4.3298  |                | 4.3307      | 4.3301  |                | 4.3309      | 4.3303  |                | 4.3312      | 4.3303  |                | 4.3314      | 4.3308  |                | 4.3314      | 4.3308  |                |     |     |  |
| 115                   | 4.5276  | 4.5268  | 4.5271      | 4.5263  |                | 4.5276      | 4.5267  |                | 4.5276      | 4.5270  |                | 4.5278      | 4.5272  |                | 4.5281      | 4.5272  |                | 4.5283      | 4.5277  |                | 4.5283      | 4.5277  |                |     |     |  |
| 120                   | 4.7244  | 4.7236  | 4.7239      | 4.7231  |                | 4.7244      | 4.7235  |                | 4.7244      | 4.7238  |                | 4.7246      | 4.7240  |                | 4.7249      | 4.7240  |                | 4.7251      | 4.7245  |                | 4.7251      | 4.7245  |                |     |     |  |
| 125                   | 4.9213  | 4.9203  | 4.9207      | 4.9198  | 15L            | 4.9213      | 4.9203  | 10L            | 4.9213      | 4.9206  | 7L             | 4.9216      | 4.9209  | 4L             | 4.9219      | 4.9209  | 4L             | 4.9221      | 4.9214  | 1T             | 4.9221      | 4.9214  | 1T             |     |     |  |
| 130                   | 5.1181  | 5.1171  | 5.1175      | 5.1166  | 4T             | 5.1181      | 5.1171  | 10T            | 5.1181      | 5.1174  | 10T            | 5.1184      | 5.1177  | 13T            | 5.1187      | 5.1177  | 16T            | 5.1189      | 5.1182  | 18T            | 5.1189      | 5.1182  | 18T            |     |     |  |
| 140                   | 5.5118  | 5.5108  | 5.5112      | 5.5103  |                | 5.5118      | 5.5108  |                | 5.5118      | 5.5111  |                | 5.5121      | 5.5114  |                | 5.5124      | 5.5114  |                | 5.5126      | 5.5119  |                | 5.5126      | 5.5119  |                |     |     |  |
| 150                   | 5.9055  | 5.9045  | 5.9049      | 5.9040  |                | 5.9055      | 5.9045  |                | 5.9055      | 5.9048  |                | 5.9058      | 5.9051  |                | 5.9061      | 5.9051  |                | 5.9063      | 5.9056  |                | 5.9063      | 5.9056  |                |     |     |  |
| 160                   | 6.2992  | 6.2982  | 6.2986      | 6.2977  |                | 6.2992      | 6.2982  |                | 6.2992      | 6.2985  |                | 6.2995      | 6.2988  |                | 6.2998      | 6.2988  |                | 6.3000      | 6.2993  |                | 6.3000      | 6.2993  |                |     |     |  |
| 170                   | 6.6929  | 6.6919  | 6.6923      | 6.6914  |                | 6.6929      | 6.6919  |                | 6.6929      | 6.6922  |                | 6.6932      | 6.6925  |                | 6.6935      | 6.6925  |                | 6.6937      | 6.6930  |                | 6.6937      | 6.6930  |                |     |     |  |
| 180                   | 7.0866  | 7.0856  | 7.0860      | 7.0851  |                | 7.0866      | 7.0856  |                | 7.0866      | 7.0859  |                | 7.0869      | 7.0862  |                | 7.0872      | 7.0862  |                | 7.0874      | 7.0867  |                | 7.0874      | 7.0867  |                |     |     |  |
| 190                   | 7.4803  | 7.4791  | 7.4797      | 7.4786  | 17L            | 7.4803      | 7.4792  | 11L            | 7.4803      | 7.4795  | 8L             | 7.4806      | 7.4798  | 5L             | 7.4809      | 7.4798  | 5L             | 7.4812      | 7.4805  | 2T             | 7.4812      | 7.4805  | 2T             |     |     |  |
| 200                   | 7.8740  | 7.8728  | 7.8734      | 7.8723  | 6T             | 7.8740      | 7.8729  | 12T            | 7.8740      | 7.8732  | 12T            | 7.8743      | 7.8735  | 15T            | 7.8746      | 7.8735  | 18T            | 7.8747      | 7.8740  | 21T            | 7.8747      | 7.8740  | 21T            |     |     |  |
| 220                   | 8.6614  | 8.6602  | 8.6608      | 8.6597  |                | 8.6614      | 8.6603  |                | 8.6614      | 8.6606  |                | 8.6617      | 8.6609  |                | 8.6620      | 8.6609  |                | 8.6623      | 8.6616  |                | 8.6623      | 8.6616  |                |     |     |  |
| 240                   | 9.4488  | 9.4476  | 9.4482      | 9.4471  |                | 9.4488      | 9.4477  |                | 9.4488      | 9.4480  |                | 9.4491      | 9.4483  |                | 9.4494      | 9.4483  |                | 9.4497      | 9.4490  |                | 9.4497      | 9.4490  |                |     |     |  |
| 250                   | 9.8425  | 9.8413  | 9.8419      | 9.8408  |                | 9.8425      | 9.8414  |                | 9.8425      | 9.8417  |                | 9.8428      | 9.8420  |                | 9.8431      | 9.8420  |                | 9.8434      | 9.8427  |                | 9.8434      | 9.8427  |                |     |     |  |
| 260                   | 10.2362 | 10.2348 | 10.2355     | 10.2343 | 19L            | 10.2362     | 10.2349 | 13L            | 10.2362     | 10.2353 | 9L             | 10.2365     | 10.2356 | 6L             | 10.2368     | 10.2356 | 6L             | 10.2373     | 10.2364 | 2T             | 10.2373     | 10.2364 | 2T             |     |     |  |
| 280                   | 11.0236 | 11.0222 | 11.0229     | 11.0217 | 7T             | 11.0236     | 11.0223 | 14T            | 11.0236     | 11.0225 | 14T            | 11.0239     | 11.0230 | 17T            | 11.0242     | 11.0230 | 20T            | 11.0247     | 11.0238 | 25T            | 11.0247     | 11.0238 | 25T            |     |     |  |
| 300                   | 11.8110 | 11.8096 | 11.8103     | 11.8091 |                | 11.8110     | 11.8097 |                | 11.8110     | 11.8101 |                | 11.8113     | 11.8104 |                | 11.8116     | 11.8104 |                | 11.8121     | 11.8112 |                | 11.8121     | 11.8112 |                |     |     |  |
| 310                   | 12.2047 | 12.2033 | 12.2040     | 12.2028 |                | 12.2047     | 12.2034 |                | 12.2047     | 12.2038 |                | 12.2050     | 12.2041 |                | 12.2053     |         |                |             |         |                |             |         |                |     |     |  |

## Mounting information: Shaft bearing-seat diameters (in inches)

| Brg.<br>Bore<br>Dia.<br>mm | k6          |         |                   | m5          |         |                   | m6          |         |                   | n6          |         |                   | p6          |         |                   | r6          |         |                   | r7          |         |                   |
|----------------------------|-------------|---------|-------------------|-------------|---------|-------------------|-------------|---------|-------------------|-------------|---------|-------------------|-------------|---------|-------------------|-------------|---------|-------------------|-------------|---------|-------------------|
|                            | Shaft. Dia. |         | fit in<br>0.0000" | Shaft. Dia. |         | fit in<br>0.0000" | Shaft. Dia. |         | fit in<br>0.0000" | Shaft. Dia. |         | fit in<br>0.0000" | Shaft. Dia. |         | fit in<br>0.0000" | Shaft. Dia. |         | fit in<br>0.0000" | Shaft. Dia. |         | fit in<br>0.0000" |
|                            | Max         | Min     |                   | Max         | Min     |                   | Max         | Min     |                   | Max         | Min     |                   | Max         | Min     |                   | Max         | Min     |                   | Max         | Min     |                   |
| 4                          | 0.1579      | 0.1575  | 0T                | 0.1579      | 0.1577  | 2T                | 0.1580      | 0.1577  | 2T                | 0.1581      | 0.1578  | 3T                |             |         |                   |             |         |                   |             |         |                   |
| 5                          | 0.1973      | 0.1969  | 7T                | 0.1973      | 0.1971  | 7T                | 0.1974      | 0.1971  | 8T                | 0.1975      | 0.1972  | 9T                |             |         |                   |             |         |                   |             |         |                   |
| 6                          | 0.2366      | 0.2362  |                   | 0.2366      | 0.2364  |                   | 0.2367      | 0.2364  |                   | 0.2368      | 0.2365  |                   |             |         |                   |             |         |                   |             |         |                   |
| 7                          | 0.2760      | 0.2756  | 0T                | 0.2761      | 0.2758  | 2T                | 0.2762      | 0.2758  | 2T                | 0.2764      | 0.2760  | 4T                |             |         |                   |             |         |                   |             |         |                   |
| 8                          | 0.3154      | 0.3150  | 7T                | 0.3155      | 0.3152  | 8T                | 0.3156      | 0.3152  | 9T                | 0.3158      | 0.3154  | 11T               |             |         |                   |             |         |                   |             |         |                   |
| 9                          | 0.3547      | 0.3543  |                   | 0.3548      | 0.3545  |                   | 0.3549      | 0.3545  |                   | 0.3551      | 0.3547  |                   |             |         |                   |             |         |                   |             |         |                   |
| 10                         | 0.3941      | 0.3937  |                   | 0.3942      | 0.3939  |                   | 0.3943      | 0.3939  |                   | 0.3945      | 0.3941  |                   |             |         |                   |             |         |                   |             |         |                   |
| 12                         | 0.4729      | 0.4724  | 0T                | 0.4730      | 0.4727  | 3T                | 0.4731      | 0.4727  | 3T                | 0.4733      | 0.4729  | 5T                |             |         |                   |             |         |                   |             |         |                   |
| 15                         | 0.5911      | 0.5906  | 8T                | 0.5912      | 0.5909  | 9T                | 0.5913      | 0.5909  | 10T               | 0.5915      | 0.5911  | 12T               |             |         |                   |             |         |                   |             |         |                   |
| 17                         | 0.6698      | 0.6693  |                   | 0.6699      | 0.6696  |                   | 0.6700      | 0.6696  |                   | 0.6702      | 0.6698  |                   |             |         |                   |             |         |                   |             |         |                   |
| 20                         | 0.7880      | 0.7875  | 1T                | 0.7881      | 0.7877  | 3T                | 0.7882      | 0.7877  | 3T                | 0.7885      | 0.7880  | 6T                |             |         |                   |             |         |                   |             |         |                   |
| 25                         | 0.9849      | 0.9844  | 10T               | 0.9850      | 0.9846  | 11T               | 0.9851      | 0.9846  | 12T               | 0.9854      | 0.9849  | 15T               |             |         |                   |             |         |                   |             |         |                   |
| 30                         | 1.1817      | 1.1812  |                   | 1.1818      | 1.1814  |                   | 1.1819      | 1.1814  |                   | 1.1822      | 1.1817  |                   |             |         |                   |             |         |                   |             |         |                   |
| 35                         | 1.3787      | 1.3781  | 1T                | 1.3788      | 1.3784  | 4T                | 1.3790      | 1.3784  | 4T                | 1.3793      | 1.3787  | 7T                |             |         |                   |             |         |                   |             |         |                   |
| 40                         | 1.5755      | 1.5749  | 12T               | 1.5756      | 1.5752  | 13T               | 1.5758      | 1.5752  | 15T               | 1.5761      | 1.5755  | 18T               |             |         |                   |             |         |                   |             |         |                   |
| 45                         | 1.7724      | 1.7718  |                   | 1.7725      | 1.7721  |                   | 1.7727      | 1.7721  |                   | 1.7730      | 1.7724  |                   |             |         |                   |             |         |                   |             |         |                   |
| 50                         | 1.9692      | 1.9686  |                   | 1.9693      | 1.9689  |                   | 1.9695      | 1.9689  |                   | 1.9698      | 1.9692  |                   |             |         |                   |             |         |                   |             |         |                   |
| 55                         | 2.1662      | 2.1655  | 1T                | 2.1663      | 2.1658  | 4T                | 2.1666      | 2.1658  | 4T                | 2.1669      | 2.1662  | 8T                |             |         |                   |             |         |                   |             |         |                   |
| 60                         | 2.3630      | 2.3623  | 14T               | 2.3631      | 2.3626  | 15T               | 2.3634      | 2.3626  | 18T               | 2.3637      | 2.3630  | 21T               |             |         |                   |             |         |                   |             |         |                   |
| 65                         | 2.5599      | 2.5592  |                   | 2.5600      | 2.5595  |                   | 2.5603      | 2.5595  |                   | 2.5606      | 2.5599  |                   |             |         |                   |             |         |                   |             |         |                   |
| 70                         | 2.7567      | 2.7560  |                   | 2.7568      | 2.7563  |                   | 2.7571      | 2.7563  |                   | 2.7574      | 2.7567  |                   |             |         |                   |             |         |                   |             |         |                   |
| 75                         | 2.9536      | 2.9529  |                   | 2.9537      | 2.9532  |                   | 2.9540      | 2.9532  |                   | 2.9543      | 2.9536  |                   |             |         |                   |             |         |                   |             |         |                   |
| 80                         | 3.1504      | 3.1497  |                   | 3.1505      | 3.1500  |                   | 3.1508      | 3.1500  |                   | 3.1511      | 3.1504  |                   |             |         |                   |             |         |                   |             |         |                   |
| 85                         | 3.3475      | 3.3466  |                   | 3.3476      | 3.3470  | 5T                | 3.3479      | 3.3470  | 5T                | 3.3483      | 3.3474  | 9T                | 3.3488      | 3.3480  | 15T               |             |         |                   |             |         |                   |
| 90                         | 3.5443      | 3.5434  | 18T               | 3.5444      | 3.5438  | 19T               | 3.5447      | 3.5438  | 22T               | 3.5451      | 3.5442  | 26T               | 3.5456      | 3.5448  | 31T               |             |         |                   |             |         |                   |
| 95                         | 3.7412      | 3.7403  |                   | 3.7413      | 3.7407  |                   | 3.7416      | 3.7407  |                   | 3.7420      | 3.7411  |                   | 3.7425      | 3.7417  |                   |             |         |                   |             |         |                   |
| 100                        | 3.9380      | 3.9371  |                   | 3.9381      | 3.9375  |                   | 3.9384      | 3.9375  |                   | 3.9388      | 3.9379  |                   | 3.9393      | 3.9385  |                   |             |         |                   |             |         |                   |
| 105                        | 4.1349      | 4.1340  |                   | 4.1350      | 4.1344  |                   | 4.1353      | 4.1344  |                   | 4.1357      | 4.1348  |                   | 4.1362      | 4.1354  |                   |             |         |                   |             |         |                   |
| 110                        | 4.3317      | 4.3308  |                   | 4.3318      | 4.3312  |                   | 4.3321      | 4.3312  |                   | 4.3325      | 4.3316  |                   | 4.3330      | 4.3322  |                   |             |         |                   |             |         |                   |
| 115                        | 4.5286      | 4.5277  |                   | 4.5287      | 4.5281  |                   | 4.5290      | 4.5281  |                   | 4.5294      | 4.5285  |                   | 4.5299      | 4.5291  |                   |             |         |                   |             |         |                   |
| 120                        | 4.7254      | 4.7245  |                   | 4.7255      | 4.7249  |                   | 4.7258      | 4.7249  |                   | 4.7262      | 4.7253  |                   | 4.7267      | 4.7259  |                   |             |         |                   |             |         |                   |
| 125                        | 4.9224      | 4.9214  | 1T                | 4.9226      | 4.9219  | 6T                | 4.9229      | 4.9219  | 6T                | 4.9233      | 4.9224  | 11T               | 4.9240      | 4.9230  | 17T               | 4.9248      | 4.9239  | 26T               |             |         |                   |
| 130                        | 5.1192      | 5.1182  | 21T               | 5.1194      | 5.1187  | 23T               | 5.1197      | 5.1187  | 26T               | 5.1201      | 5.1192  | 30T               | 5.1208      | 5.1198  | 37T               | 5.1216      | 5.1207  | 45T               |             |         |                   |
| 140                        | 5.5129      | 5.5119  |                   | 5.5131      | 5.5124  |                   | 5.5134      | 5.5124  |                   | 5.5138      | 5.5129  |                   | 5.5145      | 5.5135  |                   |             |         |                   |             |         |                   |
| 150                        | 5.9066      | 5.9056  |                   | 5.9068      | 5.9061  |                   | 5.9071      | 5.9061  |                   | 5.9075      | 5.9066  |                   | 5.9082      | 5.9072  |                   |             |         |                   |             |         |                   |
| 160                        | 6.3003      | 6.2993  |                   | 6.3005      | 6.2998  |                   | 6.3008      | 6.2998  |                   | 6.3012      | 6.3003  |                   | 6.3019      | 6.3009  |                   |             |         |                   |             |         |                   |
| 170                        | 6.6940      | 6.6930  |                   | 6.6942      | 6.6935  |                   | 6.6945      | 6.6935  |                   | 6.6949      | 6.6940  |                   | 6.6956      | 6.6946  |                   |             |         |                   |             |         |                   |
| 180                        | 7.0877      | 7.0867  |                   | 7.0879      | 7.0872  |                   | 7.0882      | 7.0872  |                   | 7.0886      | 7.0877  |                   | 7.0893      | 7.0883  |                   |             |         |                   |             |         |                   |
| 190                        | 7.4816      | 7.4805  | 2T                | 7.4818      | 7.4810  | 7T                | 7.4821      | 7.4810  | 7T                | 7.4827      | 7.4815  | 12T               | 7.4834      | 7.4833  | 20T               | 7.4845      | 7.4833  | 30T               |             |         |                   |
| 200                        | 7.8753      | 7.8742  | 25T               | 7.8755      | 7.8747  | 27T               | 7.8758      | 7.8747  | 30T               | 7.8764      | 7.8752  | 36T               | 7.8771      | 7.8760  | 43T               | 7.8782      | 7.8770  | 54T               |             |         |                   |
| 220                        | 8.6627      | 8.6616  |                   | 8.6629      | 8.6621  |                   | 8.6632      | 8.6621  |                   | 8.6638      | 8.6626  |                   | 8.6645      | 8.6634  |                   | 8.6657      | 8.6645  | 31T/55T           | 8.6664      | 8.6645  | 31T/62T           |
| 240                        | 9.4501      | 9.4490  |                   | 9.4503      | 9.4495  |                   | 9.4506      | 9.4495  |                   | 9.4512      | 9.4500  |                   | 9.4519      | 9.4508  |                   | 9.4532      | 9.4521  | 33T               | 9.4539      | 9.4521  | 33T               |
| 250                        | 9.8438      | 9.8427  |                   | 9.8440      | 9.8432  |                   | 9.8443      | 9.8432  |                   | 9.8449      | 9.8437  |                   | 9.8456      | 9.8445  |                   | 9.8469      | 9.8458  | 56T               | 9.8476      | 9.8458  | 63T               |
| 260                        | 10.2376     | 10.2364 | 2T                | 10.2379     | 10.2370 | 8T                | 10.2382     | 10.2370 | 8T                | 10.2388     | 10.2375 | 13T               | 10.2397     | 10.2384 | 22T               | 10.2412     | 10.2399 | 37T               | 10.2419     | 10.2399 | 37T               |
| 280                        | 11.0250     | 11.0238 | 28T               | 11.0253     | 11.0244 | 31T               | 11.0256     | 11.0244 | 34T               | 11.0262     | 11.0249 | 40T               | 11.0271     | 11.0258 | 49T               | 11.0286     | 11.0273 | 64T               | 11.0293     | 11.0273 | 71T               |
| 300                        | 11.8124     | 11.8112 |                   | 11.8127     | 11.8118 |                   | 11.8130     | 11.8118 |                   | 11.8136     | 11.8123 |                   | 11.8145     | 11.8132 |                   | 11.8161     | 11.8149 | 39T               | 11.8167     | 11.8149 | 39T               |
| 310                        | 12.2061     | 12.2049 |                   | 12.2064     | 12.2055 |                   | 12.2067     | 12.2055 |                   | 12.2073     | 12.2060 |                   | 12.2082     | 12.2069 |                   | 12.2098     | 12.2086 | 65T               | 12.2106     | 12.2086 | 73T               |
| 320                        | 12.5999     | 12.5986 | 2T                | 12.6002     | 12.5992 | 8T                | 12.6006     | 12.5992 | 8T                | 12.6013     | 12.5999 | 15T               | 12.6023     | 12.6008 | 24T               | 12.6041     | 12.6027 | 43T               | 12.6049     | 12.6027 | 43T               |
| 340                        | 13.3873     | 13.3860 | 31T               | 13.3876     | 13.3866 | 34T               | 13.3880     | 13.3866 | 38T               | 13.3887     | 13.3873 | 45T               | 13.3897     | 13.3882 | 55T               | 13.3915     | 13.3901 | 73T               | 13.3923     | 13.3901 | 81T               |
| 350                        | 13.7810     | 13.7797 |                   | 13.7813     | 13.7803 |                   | 13.7817     | 13.7803 |                   | 13.7824     | 13.7810 |                   | 13.7834     | 13.7819 |                   | 13.7852     | 13.7838 |                   | 13.7860     | 13.7838 |                   |
| 360                        | 14.1747     | 14.1734 |                   | 14.1750     | 14.1740 |                   | 14.1754     | 14.1740 |                   | 14.1761     | 14.1747 |                   | 14.1771     | 14.1756 |                   | 14.1791     | 14.1777 | 45T               | 14.1799     | 14.1777 | 45T               |
| 380                        | 14.9621     | 14.9608 |                   | 14.9624     | 14.9614 |                   | 14.9628     | 14.9614 |                   | 14.9635     | 14.9621 |                   | 14.9645     | 14.9630 |                   | 14.9665     | 14.9651 | 75T               | 14.9673     | 14.9651 | 83T               |
| 400                        | 15.7495     | 15.7482 |                   | 15.7498     | 15.7488 |                   | 15.7502     | 15.7488 |                   | 15.7509     | 15.7495 |                   | 15.7519     | 15.7504 |                   | 15.7539     | 15.7525 |                   | 15.7547     | 15.7525 |                   |
| 420                        | 16.5371     | 16.5356 | 2T                | 16.5374     | 16.5363 | 9T                | 16.5379     | 16.5363 | 9T                | 16.5385     | 16.5370 | 16T               | 16.5397     | 16.5381 | 27T               | 16.5419     | 16.5404 | 50T               | 16.5428     | 16.5404 | 50T               |
| 440                        | 17.3245     | 17.3230 | 35T               | 17.3248     | 17.3237 | 38T               | 17.3253     | 17.3237 | 43T               | 17.3259     | 17.3244 | 49T               | 17.3271     | 17.3255 | 61T               | 17.3293     | 17.3278 | 83T               | 17.3302     | 17.3278 | 92T               |
| 460                        | 18.1119     | 18.1104 |                   | 18.1122     | 18.1111 |                   | 18.1127     | 18.1111 |                   | 18.1133     | 18.1118 |                   | 18.1145     | 18.1129 |                   | 18.1170     | 18.1154 | 52T               | 18.1179     | 18.1154 | 52T               |
| 480                        | 18.8993     | 18.8978 |                   | 18.8996     | 18.8985 |                   | 18.9001     | 18.8985 |                   | 18.9007     | 18.8992 |                   | 18.9019     | 18.9003 |                   | 18.9044     | 18.9028 | 86T               | 18.9053     | 18.9028 | 95T               |
| 500                        | 19.6867     | 19.6852 |                   | 19.6870     | 19.6859 |                   | 19.6875     | 19.6859 |                   | 19.6881     | 19.6866 |                   | 19.6893     | 19.6877 |                   | 19.6918     | 19.6902 |                   | 19.6927     | 19.6902 |                   |
| 530                        | 20.8678     | 20.8661 | 0T                | 20.8683     | 20.8671 | 10T               |             |         |                   | 20.8695     | 20.8678 | 17T               | 20.8709     | 20.8692 | 31T               | 20.8737     | 20.8720 | 59T               | 20.8748     | 20.8720 | 59T               |
| 560                        | 22.0489     | 22.0472 | 37T               | 22.0494     | 22.0482 | 42T               |             |         |                   | 22.0506     | 22.0489 | 54T               | 22.0520     | 22.0503 | 68T               | 22.0548     | 22.0531 | 96T               | 22.0559     | 22.0531 | 107T              |
| 600                        | 23.6237     | 23.6220 |                   | 23.6242     | 23.6230 |                   |             |         |                   | 23.6254     | 23.6237 |                   | 23.6268     | 23.6251 |                   | 23.6298     | 23.6281 | 61T               | 23.6309     | 23.6281 | 61T               |
| 630                        | 24.8048     | 24.8031 |                   | 24.8053     | 24.8041 |                   |             |         |                   | 24.8065     | 24.8048 |                   | 24.8079     | 24.8062 |                   | 24.8109     | 24.8092 | 98T               | 24.8120     | 24.8092 | 109T              |
| 660                        | 25.9862     | 25.9843 | 0T                | 25.9869     | 25.9855 | 12T               |             |         |                   | 25.9882     | 25.9863 | 20T               | 25.9897     | 25.9878 | 35T               | 25.9932     | 25.9912 | 69T               | 25.9943     | 25.9912 | 69T               |
| 670                        | 26.3799     | 26.3780 | 49T               | 26.3806     | 26.3792 | 56T               |             |         |                   | 26.3819     | 26.3800 | 69T               | 26.3834     | 26.3815 | 84T</             |             |         |                   |             |         |                   |

# Mounting information: Housing bearing-seat diameters (in inches)

| Bearing Outside Diameter |         |         | F7           |         |                |              | G7      |                |              |         | H8             |              |         |                | H7           |         |                |              | H6   |                |      |      |
|--------------------------|---------|---------|--------------|---------|----------------|--------------|---------|----------------|--------------|---------|----------------|--------------|---------|----------------|--------------|---------|----------------|--------------|------|----------------|------|------|
| mm                       | Inches  |         | Housing Bore |         | Fit in 0.0000" | Housing Bore |         | Fit in 0.0000" | Housing Bore |         | Fit in 0.0000" | Housing Bore |         | Fit in 0.0000" | Housing Bore |         | Fit in 0.0000" | Housing Bore |      | Fit in 0.0000" |      |      |
|                          | Max.    | Min.    | Min.         | Max.    |                | Min.         | Max.    |                | Min.         | Max.    |                | Min.         | Max.    |                | Min.         | Max.    |                | Min.         | Max. |                | Min. | Max. |
|                          | 16      | 0.6299  | 0.6296       | 0.6305  | 0.6312         | 16L/6L       | 0.6301  | 0.6308         | 12L/2L       | 0.6299  | 0.6310         | 14L/0        | 0.6299  | 0.3060         | 10L/0L       | 0.6299  | 0.6303         | 7L/0L        |      |                |      |      |
| 19                       | 0.7480  | 0.7476  | 0.7488       | 0.7496  | 20L            | 0.7483       | 0.7491  | 15L            | 0.7480       | 0.7493  | 17L            | 0.7480       | 0.7488  | 12L            | 0.7480       | 0.7485  | 9L             |              |      |                |      |      |
| 22                       | 0.8661  | 0.8657  | 0.8669       | 0.8677  | 8L             | 0.8664       | 0.8672  | 3L             | 0.8661       | 0.8674  | 0L             | 0.8661       | 0.8669  | 0L             | 0.8661       | 0.8666  | 0L             |              |      |                |      |      |
| 24                       | 0.9449  | 0.9445  | 0.9457       | 0.9465  |                | 0.9452       | 0.9460  |                | 0.9449       | 0.9462  |                | 0.9449       | 0.9457  |                | 0.9449       | 0.9454  |                |              |      |                |      |      |
| 26                       | 1.0236  | 1.0232  | 1.0244       | 1.0252  |                | 1.0239       | 1.0247  |                | 1.0236       | 1.0249  |                | 1.0236       | 1.0244  |                | 1.0236       | 1.0241  |                |              |      |                |      |      |
| 28                       | 1.1024  | 1.1020  | 1.1032       | 1.1040  |                | 1.1027       | 1.1035  |                | 1.1024       | 1.1037  |                | 1.1024       | 1.1032  |                | 1.1024       | 1.1029  |                |              |      |                |      |      |
| 30                       | 1.1811  | 1.1807  | 1.1819       | 1.1827  |                | 1.1814       | 1.1822  |                | 1.1811       | 1.1824  |                | 1.1811       | 1.1819  |                | 1.1811       | 1.1816  |                |              |      |                |      |      |
| 32                       | 1.2598  | 1.2594  | 1.2608       | 1.2618  | 24L            | 1.2602       | 1.2611  | 17L            | 1.2598       | 1.2613  | 19L            | 1.2598       | 1.2608  | 14L            | 1.2598       | 1.2604  | 10L            |              |      |                |      |      |
| 35                       | 1.3780  | 1.3776  | 1.3790       | 1.4000  | 10L            | 1.3784       | 1.3793  | 4L             | 1.3780       | 1.3795  | 0L             | 1.3780       | 1.3790  | 0L             | 1.3780       | 1.3786  | 0L             |              |      |                |      |      |
| 37                       | 1.4567  | 1.4563  | 1.4577       | 1.4587  |                | 1.4571       | 1.4580  |                | 1.4567       | 1.4582  |                | 1.4567       | 1.4577  |                | 1.4567       | 1.4573  |                |              |      |                |      |      |
| 40                       | 1.5748  | 1.5744  | 1.5758       | 1.5768  |                | 1.5752       | 1.5761  |                | 1.5748       | 1.5763  |                | 1.5748       | 1.5758  |                | 1.5748       | 1.5754  |                |              |      |                |      |      |
| 42                       | 1.6535  | 1.6531  | 1.6545       | 1.6555  |                | 1.6539       | 1.6548  |                | 1.6535       | 1.6550  |                | 1.6535       | 1.6545  |                | 1.6535       | 1.6541  |                |              |      |                |      |      |
| 47                       | 1.8504  | 1.8500  | 1.8514       | 1.8524  |                | 1.8508       | 1.8517  |                | 1.8504       | 1.8519  |                | 1.8504       | 1.8514  |                | 1.8504       | 1.8510  |                |              |      |                |      |      |
| 52                       | 2.0472  | 2.0467  | 2.0484       | 2.0496  | 29L            | 2.0476       | 2.0488  | 21L            | 2.0472       | 2.0490  | 23L            | 2.0472       | 2.0484  | 17L            | 2.0472       | 2.0479  | 12L            |              |      |                |      |      |
| 55                       | 2.1654  | 2.1649  | 2.1666       | 2.1678  | 12L            | 2.1658       | 2.1670  | 4L             | 2.1654       | 2.1672  | 0L             | 2.1654       | 2.1666  | 0L             | 2.1654       | 2.1661  | 0L             |              |      |                |      |      |
| 62                       | 2.4409  | 2.4404  | 2.4421       | 2.4433  |                | 2.4413       | 2.4425  |                | 2.4409       | 2.4427  |                | 2.4409       | 2.4421  |                | 2.4409       | 2.4416  |                |              |      |                |      |      |
| 72                       | 2.8346  | 2.8341  | 2.8358       | 2.8370  |                | 2.8350       | 2.8362  |                | 2.8346       | 2.8364  |                | 2.8346       | 2.8358  |                | 2.8346       | 2.8353  |                |              |      |                |      |      |
| 80                       | 3.1496  | 3.1491  | 3.1508       | 3.1520  |                | 3.1500       | 3.1512  |                | 3.1496       | 3.1514  |                | 3.1496       | 3.1508  |                | 3.1496       | 3.1503  |                |              |      |                |      |      |
| 85                       | 3.3465  | 3.3459  | 3.3479       | 3.3493  | 34L            | 3.3470       | 3.3484  | 25L            | 3.3465       | 3.3486  | 27L            | 3.3465       | 3.3479  | 20L            | 3.3465       | 3.3471  | 15L            |              |      |                |      |      |
| 90                       | 3.5433  | 3.5427  | 3.5447       | 3.5461  | 14L            | 3.5438       | 3.5452  | 5L             | 3.5433       | 3.5454  | 0L             | 3.5433       | 3.5447  | 0L             | 3.5433       | 3.5442  | 0L             |              |      |                |      |      |
| 95                       | 3.9370  | 3.9364  | 3.9384       | 3.9398  |                | 3.9375       | 3.9389  |                | 3.9370       | 3.9391  |                | 3.9370       | 3.9384  |                | 3.9370       | 3.9379  |                |              |      |                |      |      |
| 110                      | 4.3307  | 4.3301  | 4.3321       | 4.3335  |                | 4.3312       | 4.3326  |                | 4.3307       | 4.3328  |                | 4.3307       | 4.3321  |                | 4.3307       | 4.3316  |                |              |      |                |      |      |
| 115                      | 4.5276  | 4.5270  | 4.5290       | 4.5304  |                | 4.5281       | 4.5295  |                | 4.5276       | 4.5297  |                | 4.5276       | 4.5290  |                | 4.5276       | 4.5285  |                |              |      |                |      |      |
| 120                      | 4.7244  | 4.7238  | 4.7258       | 4.7272  |                | 4.7249       | 4.7263  |                | 4.7244       | 4.7265  |                | 4.7244       | 4.7258  |                | 4.7244       | 4.7253  |                |              |      |                |      |      |
| 125                      | 4.9213  | 4.9206  | 4.9230       | 4.9246  | 40L            | 4.9219       | 4.9234  | 28L            | 4.9213       | 4.9238  | 32L            | 4.9213       | 4.9229  | 23L            | 4.9213       | 4.9223  | 17L            |              |      |                |      |      |
| 130                      | 5.1181  | 5.1174  | 5.1198       | 5.1214  | 17L            | 5.1187       | 5.1202  | 6L             | 5.1181       | 5.1206  | 0L             | 5.1181       | 5.1197  | 0L             | 5.1181       | 5.1191  | 0L             |              |      |                |      |      |
| 140                      | 5.5118  | 5.5111  | 5.5135       | 5.5151  |                | 5.5124       | 5.5139  |                | 5.5118       | 5.5143  |                | 5.5118       | 5.5134  |                | 5.5118       | 5.5128  |                |              |      |                |      |      |
| 145                      | 5.7087  | 5.7080  | 5.7104       | 5.7120  |                | 5.7093       | 5.7108  |                | 5.7087       | 5.7112  |                | 5.7087       | 5.7103  |                | 5.7087       | 5.7097  |                |              |      |                |      |      |
| 150                      | 5.9055  | 5.9048  | 5.9072       | 5.9088  |                | 5.9061       | 5.9076  |                | 5.9055       | 5.9080  |                | 5.9055       | 5.9071  |                | 5.9055       | 5.9065  |                |              |      |                |      |      |
| 160                      | 6.2992  | 6.2982  | 6.3009       | 6.3025  | 43L            | 6.2998       | 6.3013  | 31L            | 6.2992       | 6.3017  | 35L            | 6.2992       | 6.3008  | 26L            | 6.2992       | 6.3002  | 20L            |              |      |                |      |      |
| 170                      | 6.6929  | 6.6919  | 6.6946       | 6.6962  | 17L            | 6.6935       | 6.6950  | 6L             | 6.6929       | 6.6954  | 0L             | 6.6929       | 6.6945  | 0L             | 6.6929       | 6.6939  | 0L             |              |      |                |      |      |
| 180                      | 7.0866  | 7.0856  | 7.0883       | 7.0899  |                | 7.0872       | 7.0887  |                | 7.0866       | 7.0891  |                | 7.0866       | 7.0882  |                | 7.0866       | 7.0876  |                |              |      |                |      |      |
| 190                      | 7.4803  | 7.4791  | 7.4823       | 7.4841  | 50L            | 7.4809       | 7.4827  | 36L            | 7.4803       | 7.4831  | 40L            | 7.4803       | 7.4821  | 30L            | 7.4803       | 7.4814  | 23L            |              |      |                |      |      |
| 200                      | 7.8740  | 7.8728  | 7.8760       | 7.8778  | 20L            | 7.8746       | 7.8764  | 6L             | 7.8740       | 7.8768  | 0L             | 7.8740       | 7.8758  | 0L             | 7.8740       | 7.8751  | 0L             |              |      |                |      |      |
| 210                      | 8.2677  | 8.2665  | 8.2697       | 8.2715  |                | 8.2683       | 8.2701  |                | 8.2677       | 8.2705  |                | 8.2677       | 8.2695  |                | 8.2677       | 8.2688  |                |              |      |                |      |      |
| 215                      | 8.4646  | 8.4634  | 8.4666       | 8.4684  |                | 8.4652       | 8.4670  |                | 8.4646       | 8.4674  |                | 8.4646       | 8.4664  |                | 8.4646       | 8.4657  |                |              |      |                |      |      |
| 225                      | 8.8583  | 8.8571  | 8.8603       | 8.8621  |                | 8.8589       | 8.8607  |                | 8.8583       | 8.8611  |                | 8.8583       | 8.8601  |                | 8.8583       | 8.8594  |                |              |      |                |      |      |
| 240                      | 9.4488  | 9.4476  | 9.4508       | 9.4526  |                | 9.4494       | 9.4512  |                | 9.4488       | 9.4516  |                | 9.4488       | 9.4506  |                | 9.4488       | 9.4499  |                |              |      |                |      |      |
| 250                      | 9.8425  | 9.8413  | 9.8445       | 9.8463  |                | 9.8431       | 9.8449  |                | 9.8425       | 9.8453  |                | 9.8425       | 9.8443  |                | 9.8425       | 9.8436  |                |              |      |                |      |      |
| 260                      | 10.2362 | 10.2348 | 10.2384      | 10.2405 | 57L            | 10.2369      | 10.2389 | 41L            | 10.2362      | 10.2394 | 46L            | 10.2362      | 10.2382 | 34L            | 10.2362      | 10.2375 | 27L            |              |      |                |      |      |
| 280                      | 11.0236 | 11.0222 | 11.0258      | 11.0279 | 22L            | 11.0243      | 11.0263 | 7L             | 11.0236      | 11.0268 | 0L             | 11.0236      | 11.0256 | 0L             | 11.0236      | 11.0249 | 0L             |              |      |                |      |      |
| 300                      | 11.8110 | 11.8096 | 11.8132      | 11.8153 |                | 11.8117      | 11.8137 |                | 11.8110      | 11.8142 |                | 11.8110      | 11.8130 |                | 11.8110      | 11.8123 |                |              |      |                |      |      |
| 310                      | 12.2047 | 12.2033 | 12.2069      | 12.2090 |                | 12.2054      | 12.2074 |                | 12.2047      | 12.2079 |                | 12.2047      | 12.2067 |                | 12.2047      | 12.2060 |                |              |      |                |      |      |
| 320                      | 12.5984 | 12.5968 | 12.6008      | 12.6031 | 63L            | 12.5991      | 12.6014 | 46L            | 12.5984      | 12.6019 | 51L            | 12.5984      | 12.6006 | 38L            | 12.5984      | 12.5998 | 30L            |              |      |                |      |      |
| 340                      | 13.3858 | 13.3842 | 13.3882      | 13.3905 | 24L            | 13.3865      | 13.3888 | 7L             | 13.3858      | 13.3893 | 0L             | 13.3858      | 13.3880 | 0L             | 13.3858      | 13.3872 | 0L             |              |      |                |      |      |
| 360                      | 14.1732 | 14.1716 | 14.1756      | 14.1779 |                | 14.1739      | 14.1762 |                | 14.1732      | 14.1767 |                | 14.1732      | 14.1754 |                | 14.1732      | 14.1746 |                |              |      |                |      |      |
| 380                      | 14.9606 | 14.9590 | 14.9630      | 14.9653 |                | 14.9613      | 14.9636 |                | 14.9606      | 14.9641 |                | 14.9606      | 14.9628 |                | 14.9606      | 14.9620 |                |              |      |                |      |      |
| 400                      | 15.7480 | 15.7464 | 15.7504      | 15.7527 |                | 15.7487      | 15.7510 |                | 15.7480      | 15.7515 |                | 15.7480      | 15.7502 |                | 15.7480      | 15.7494 |                |              |      |                |      |      |
| 420                      | 16.5354 | 16.5336 | 16.5381      | 16.5406 | 70L            | 16.5362      | 16.5387 | 51L            | 16.5354      | 16.5392 | 56L            | 16.5354      | 16.5379 | 43L            | 16.5354      | 16.5370 | 34L            |              |      |                |      |      |
| 440                      | 17.3228 | 17.3210 | 17.3255      | 17.3280 | 27L            | 17.3236      | 17.3261 | 8L             | 17.3228      | 17.3266 | 0L             | 17.3228      | 17.3253 | 0L             | 17.3228      | 17.3244 | 0L             |              |      |                |      |      |
| 460                      | 18.1102 | 18.1084 | 18.1129      | 18.1154 |                | 18.1110      | 18.1135 |                | 18.1102      | 18.1140 |                | 18.1102      | 18.1127 |                | 18.1102      | 18.1118 |                |              |      |                |      |      |
| 480                      | 18.8976 | 18.8958 | 18.9003      | 18.9028 |                | 18.8984      | 18.9009 |                | 18.8976      | 18.9014 |                | 18.8976      | 18.9001 |                | 18.8976      | 18.8992 |                |              |      |                |      |      |
| 500                      | 19.6850 | 19.6832 | 19.6877      | 19.6902 |                | 19.6858      | 19.6883 |                | 19.6850      | 19.6888 |                | 19.6850      | 19.6875 |                | 19.6850      | 19.6866 |                |              |      |                |      |      |
| 520                      | 20.4724 | 20.4704 | 20.4754      | 20.4781 | 77L            | 20.4733      | 20.4760 | 56L            | 20.4724      | 20.4767 | 63L            | 20.4724      | 20.4752 | 48L            | 20.4724      | 20.4741 | 37L            |              |      |                |      |      |
| 540                      | 21.2598 | 21.2578 | 21.2628      | 21.2655 | 30L            | 21.2607      | 21.2634 | 9L             | 21.2598      | 21.2641 | 0L             | 21.2598      | 21.2626 | 0L             | 21.2598      | 21.2615 | 0L             |              |      |                |      |      |
| 580                      | 22.8346 | 22.8326 | 22.8376      | 22.8403 |                | 22.8356      | 22.8382 |                | 22.8346      | 22.8389 |                | 22.8346      | 22.8374 |                | 22.8346      | 22.8363 |                |              |      |                |      |      |
| 600                      | 23.6220 | 23.6200 | 23.6250      | 23.6277 |                | 23.6229      | 23.6256 |                | 23.6220      | 23.6263 |                | 23.6220      | 23.6248 |                | 23.6220      | 23.6237 |                |              |      |                |      |      |
| 620                      | 24.4094 | 24.4074 | 24.4124      | 24.4151 |                | 24.4103      | 24.4130 |                | 24.4094      | 24.4137 |                | 24.4094      | 24.4122 |                | 24.4094      | 24.4111 |                |              |      |                |      |      |
| 650                      | 25.5906 | 25.5876 | 25.5937      | 25.5969 | 93L            | 25.5915      | 25.5947 | 71L            | 25.5906      | 25.5955 | 79L            | 25.5906      | 25.5937 | 61L            | 25.5906      | 25.5926 | 50L            |              |      |                |      |      |
| 670                      | 26.3780 | 26.3750 | 26.3811      | 26.3843 | 31L            | 26.3789      | 26.3821 | 9L             | 26.3780      | 26.3829 | 0L             | 26.3780      | 26.3811 | 0L             | 26.3780      | 26.3802 | 0L             |              |      |                |      |      |
| 680                      | 26.7717 | 26.7687 | 26.7748      | 26.7780 |                | 26.7726      | 26.7758 |                | 26.7717      | 26.7766 |                | 26.7717      | 26.7748 |                | 26.7717      | 26.7737 |                |              |      |                |      |      |
| 700                      | 27.5591 | 27.5561 | 27.5622      | 27.5654 |                | 27.5600      | 27.5632 |                | 27.5591      | 27.5640 |                | 27.5591      | 27.5622 |                | 27.5591      | 27.5611 |                |              |      |                |      |      |
| 720                      | 28.3465 | 28.3435 | 28.3496      | 28.3528 |                | 28.3474      | 28.3506 |                | 28.3465      | 28.3514 |                | 28.3465      | 28.3496 |                | 28.3465      | 28.3485 |                |              |      |                |      |      |
| 750                      | 29.5276 | 29.5246 | 29.5307      | 29.5339 |                | 29.5285      | 29.5317 |                | 29.5276      | 29.5325 |                | 29.5276      | 29.5307 |                | 29.5276      | 29.5296 |                |              |      |                |      |      |
| 760                      | 29.9213 | 29.9183 | 29.9244      | 29.9276 |                | 29.9222      | 29.9254 |                | 29.9213      | 29.9262 |                | 29.9213      | 29.9244 |                | 29.9213      | 29.9233 |                |              |      |                |      |      |
| 780                      | 30.7087 | 30.7057 | 30.7118      | 30.7150 |                | 30.7096      | 30.7128 |                | 30.7087      | 30.7136 |                | 30.7087      | 30.7118 |                | 30.7087      | 30.7107 |                |              |      |                |      |      |
| 790                      | 31.1024 | 31.0994 | 31.1055      | 31.1087 |                | 31.1033      | 31.1065 |                | 31.1024      | 31.1073 |                | 31.1024      | 31.1055 |                | 31.1024      | 31.1044 |                |              |      |                |      |      |
| 820                      | 32.2835 | 32.2796 | 32.2869      |         |                |              |         |                |              |         |                |              |         |                |              |         |                |              |      |                |      |      |



## Mounting information: Housing bearing-seat diameters (in inches)

| Bearing Outside Diameter |         |         | J6           |         |                |              | J7      |                |              |         | K6             |              |         |                | K7           |         |                |              | M6   |                |      |      |
|--------------------------|---------|---------|--------------|---------|----------------|--------------|---------|----------------|--------------|---------|----------------|--------------|---------|----------------|--------------|---------|----------------|--------------|------|----------------|------|------|
| mm                       | Inches  |         | Housing Bore |         | Fit in 0.0000" | Housing Bore |         | Fit in 0.0000" | Housing Bore |         | Fit in 0.0000" | Housing Bore |         | Fit in 0.0000" | Housing Bore |         | Fit in 0.0000" | Housing Bore |      | Fit in 0.0000" |      |      |
|                          | Max.    | Min.    | Min.         | Max.    |                | Min.         | Max.    |                | Min.         | Max.    |                | Min.         | Max.    |                | Min.         | Max.    |                | Min.         | Max. |                | Min. | Max. |
| 16                       | 0.6299  | 0.6296  | 0.6297       | 0.6301  | 5L/2T          | 0.6296       | 0.6303  | 7L/3T          | 0.6295       | 0.6300  | 4L/4T          | 0.6294       | 0.6301  | 5L/5T          | 0.6293       | 0.6297  | 1L/6T          |              |      |                |      |      |
| 19                       | 0.7480  | 0.7476  | 0.7478       | 0.7483  | 7L             | 0.7476       | 0.7485  | 9L             | 0.7476       | 0.7481  | 5L             | 0.7474       | 0.7482  | 6L             | 0.7473       | 0.7478  | 2L             |              |      |                |      |      |
| 22                       | 0.8661  | 0.8657  | 0.8659       | 0.8664  | 2T             | 0.8657       | 0.8666  | 4T             | 0.8657       | 0.8662  | 4T             | 0.8655       | 0.8663  | 6T             | 0.8654       | 0.8659  | 7T             |              |      |                |      |      |
| 24                       | 0.9449  | 0.9445  | 0.9447       | 0.9452  |                | 0.9445       | 0.9454  |                | 0.9445       | 0.9450  |                | 0.9443       | 0.9451  |                | 0.9442       | 0.9447  |                |              |      |                |      |      |
| 26                       | 1.0236  | 1.0232  | 1.0234       | 1.0239  |                | 1.0232       | 1.0241  |                | 1.0232       | 1.0237  |                | 1.0230       | 1.0238  |                | 1.0229       | 1.0234  |                |              |      |                |      |      |
| 28                       | 1.1024  | 1.1020  | 1.1022       | 1.1027  |                | 1.1020       | 1.1029  |                | 1.1020       | 1.1025  |                | 1.1018       | 1.1026  |                | 1.1017       | 1.1022  |                |              |      |                |      |      |
| 30                       | 1.1811  | 1.1807  | 1.1809       | 1.1814  |                | 1.1807       | 1.1816  |                | 1.1807       | 1.1812  |                | 1.1805       | 1.1813  |                | 1.1804       | 1.1809  |                |              |      |                |      |      |
| 32                       | 1.2598  | 1.2594  | 1.2596       | 1.2602  | 8L             | 1.2594       | 1.2604  | 10L            | 1.2593       | 1.2599  | 5L             | 1.2591       | 1.2601  | 7L             | 1.2590       | 1.2596  | 2L             |              |      |                |      |      |
| 35                       | 1.3780  | 1.3776  | 1.3778       | 1.3784  | 2T             | 1.3776       | 1.3786  | 4T             | 1.3775       | 1.3781  | 5T             | 1.3773       | 1.3783  | 7T             | 1.3772       | 1.3778  | 8T             |              |      |                |      |      |
| 37                       | 1.4567  | 1.4563  | 1.4565       | 1.4571  |                | 1.4563       | 1.4573  |                | 1.4562       | 1.4568  |                | 1.4560       | 1.4570  |                | 1.4559       | 1.4565  |                |              |      |                |      |      |
| 40                       | 1.5748  | 1.5744  | 1.5746       | 1.5752  |                | 1.5744       | 1.5754  |                | 1.5743       | 1.5749  |                | 1.5741       | 1.5751  |                | 1.5740       | 1.5746  |                |              |      |                |      |      |
| 42                       | 1.6535  | 1.6531  | 1.6533       | 1.6539  |                | 1.6531       | 1.6541  |                | 1.6530       | 1.6536  |                | 1.6528       | 1.6538  |                | 1.6527       | 1.6533  |                |              |      |                |      |      |
| 47                       | 1.8504  | 1.8500  | 1.8502       | 1.8508  |                | 1.8500       | 1.8510  |                | 1.8499       | 1.8505  |                | 1.8497       | 1.8507  |                | 1.8496       | 1.8502  |                |              |      |                |      |      |
| 52                       | 2.0472  | 2.0467  | 2.0470       | 2.0477  | 10L            | 2.0467       | 2.0479  | 12L            | 2.0466       | 2.0474  | 7L             | 2.0464       | 2.0476  | 9L             | 2.0463       | 2.0470  | 3L             |              |      |                |      |      |
| 55                       | 2.1654  | 2.1649  | 2.1652       | 2.1659  | 2T             | 2.1649       | 2.1661  | 5T             | 2.1648       | 2.1656  | 6T             | 2.1646       | 2.1658  | 8T             | 2.1645       | 2.1652  | 9T             |              |      |                |      |      |
| 62                       | 2.4409  | 2.4404  | 2.4407       | 2.4414  |                | 2.4404       | 2.4416  |                | 2.4403       | 2.4415  |                | 2.4401       | 2.4413  |                | 2.4400       | 2.4407  |                |              |      |                |      |      |
| 70                       | 2.8346  | 2.8341  | 2.8344       | 2.8351  |                | 2.8341       | 2.8353  |                | 2.8340       | 2.8348  |                | 2.8338       | 2.8350  |                | 2.8337       | 2.8344  |                |              |      |                |      |      |
| 82                       | 3.1496  | 3.1491  | 3.1494       | 3.1501  |                | 3.1491       | 3.1503  |                | 3.1490       | 3.1498  |                | 3.1488       | 3.1500  |                | 3.1487       | 3.1494  |                |              |      |                |      |      |
| 85                       | 3.3465  | 3.3459  | 3.3463       | 3.3474  | 12L            | 3.3460       | 3.3474  | 15L            | 3.3458       | 3.3467  | 8L             | 3.3455       | 3.3469  | 10L            | 3.3454       | 3.3463  | 4L             |              |      |                |      |      |
| 90                       | 3.5433  | 3.5427  | 3.5431       | 3.5439  | 2T             | 3.5428       | 3.5442  | 5T             | 3.5426       | 3.5435  | 7T             | 3.5423       | 3.5437  | 10T            | 3.5422       | 3.5431  | 11T            |              |      |                |      |      |
| 100                      | 3.9370  | 3.9364  | 3.9368       | 3.9376  |                | 3.9365       | 3.9379  |                | 3.9363       | 3.9372  |                | 3.9360       | 3.9374  |                | 3.9359       | 3.9368  |                |              |      |                |      |      |
| 110                      | 4.3307  | 4.3301  | 4.3305       | 4.3313  |                | 4.3302       | 4.3316  |                | 4.3300       | 4.3309  |                | 4.3297       | 4.3311  |                | 4.3296       | 4.3305  |                |              |      |                |      |      |
| 115                      | 4.5276  | 4.5270  | 4.5274       | 4.5282  |                | 4.5271       | 4.5285  |                | 4.5269       | 4.5278  |                | 4.5266       | 4.5280  |                | 4.5265       | 4.5274  |                |              |      |                |      |      |
| 120                      | 4.7244  | 4.7238  | 4.7242       | 4.7250  |                | 4.7239       | 4.7253  |                | 4.7237       | 4.7246  |                | 4.7234       | 4.7248  |                | 4.7233       | 4.7242  |                |              |      |                |      |      |
| 125                      | 4.9213  | 4.9206  | 4.9210       | 4.9220  | 14L            | 4.9207       | 4.9223  | 17L            | 4.9205       | 4.9215  | 9L             | 4.9202       | 4.9218  | 12L            | 4.9200       | 4.9210  | 4L             |              |      |                |      |      |
| 130                      | 5.1181  | 5.1174  | 5.1178       | 5.1188  | 3T             | 5.1175       | 5.1191  | 6T             | 5.1173       | 5.1183  | 8T             | 5.1170       | 5.1186  | 11T            | 5.1168       | 5.1178  | 13T            |              |      |                |      |      |
| 140                      | 5.5118  | 5.5111  | 5.5115       | 5.5125  |                | 5.5112       | 5.5128  |                | 5.5110       | 5.5120  |                | 5.5107       | 5.5123  |                | 5.5105       | 5.5115  |                |              |      |                |      |      |
| 145                      | 5.7087  | 5.7080  | 5.7084       | 5.7094  |                | 5.7081       | 5.7097  |                | 5.7079       | 5.7089  |                | 5.7076       | 5.7092  |                | 5.7074       | 5.7084  |                |              |      |                |      |      |
| 150                      | 5.9055  | 5.9048  | 5.9052       | 5.9062  |                | 5.9049       | 5.9065  |                | 5.9047       | 5.9057  |                | 5.9044       | 5.9060  |                | 5.9042       | 5.9052  |                |              |      |                |      |      |
| 160                      | 6.2992  | 6.2982  | 6.2989       | 6.2999  | 17L            | 6.2986       | 6.3002  | 20L            | 6.2984       | 6.2994  | 12L            | 6.2981       | 6.2997  | 15L            | 6.2979       | 6.2989  | 7L             |              |      |                |      |      |
| 170                      | 6.6929  | 6.6919  | 6.6926       | 6.6936  | 3T             | 6.6923       | 6.6939  | 6T             | 6.6921       | 6.6931  | 8T             | 6.6918       | 6.6934  | 11T            | 6.6916       | 6.6926  | 13T            |              |      |                |      |      |
| 180                      | 7.0866  | 7.0856  | 7.0863       | 7.0873  |                | 7.0860       | 7.0876  |                | 7.0858       | 7.0868  |                | 7.0855       | 7.0871  |                | 7.0853       | 7.0863  |                |              |      |                |      |      |
| 190                      | 7.4803  | 7.4791  | 7.4800       | 7.4812  | 21L            | 7.4797       | 7.4815  | 24L            | 7.4794       | 7.4805  | 14L            | 7.4790       | 7.4808  | 17L            | 7.4788       | 7.4800  | 9L             |              |      |                |      |      |
| 200                      | 7.8740  | 7.8728  | 7.8737       | 7.8749  | 3T             | 7.8734       | 7.8752  | 6T             | 7.8731       | 7.8742  | 9T             | 7.8727       | 7.8745  | 13T            | 7.8725       | 7.8737  | 15T            |              |      |                |      |      |
| 210                      | 8.2677  | 8.2665  | 8.2674       | 8.2686  |                | 8.2671       | 8.2689  |                | 8.2668       | 8.2679  |                | 8.2664       | 8.2682  |                | 8.2662       | 8.2674  |                |              |      |                |      |      |
| 215                      | 8.4646  | 8.4634  | 8.4643       | 8.4655  |                | 8.4640       | 8.4658  |                | 8.4637       | 8.4648  |                | 8.4633       | 8.4651  |                | 8.4631       | 8.4643  |                |              |      |                |      |      |
| 225                      | 8.8583  | 8.8571  | 8.8580       | 8.8592  |                | 8.8577       | 8.8595  |                | 8.8574       | 8.8585  |                | 8.8570       | 8.8588  |                | 8.8568       | 8.8580  |                |              |      |                |      |      |
| 240                      | 9.4488  | 9.4476  | 9.4485       | 9.4497  |                | 9.4482       | 9.4500  |                | 9.4479       | 9.4490  |                | 9.4475       | 9.4493  |                | 9.4473       | 9.4485  |                |              |      |                |      |      |
| 250                      | 9.8425  | 9.8413  | 9.8422       | 9.8434  |                | 9.8419       | 9.8437  |                | 9.8416       | 9.8427  |                | 9.8412       | 9.8430  |                | 9.8410       | 9.8422  |                |              |      |                |      |      |
| 260                      | 10.2362 | 10.2348 | 10.2359      | 10.2372 | 24L            | 10.2356      | 10.2376 | 28L            | 10.2351      | 10.2364 | 16L            | 10.2348      | 10.2368 | 20L            | 10.2346      | 10.2358 | 10L            |              |      |                |      |      |
| 280                      | 11.0236 | 11.0222 | 11.0233      | 11.0246 | 3T             | 11.0230      | 11.0250 | 6T             | 11.0225      | 11.0238 | 11T            | 11.0222      | 11.0242 | 14T            | 11.0220      | 11.0232 | 16T            |              |      |                |      |      |
| 300                      | 11.8110 | 11.8096 | 11.8107      | 11.8120 |                | 11.8104      | 11.8124 |                | 11.8099      | 11.8112 |                | 11.8096      | 11.8116 |                | 11.8094      | 11.8106 |                |              |      |                |      |      |
| 310                      | 12.2047 | 12.2033 | 12.2044      | 12.2057 |                | 12.2041      | 12.2061 |                | 12.2036      | 12.2049 |                | 12.2033      | 12.2053 |                | 12.2031      | 12.2043 |                |              |      |                |      |      |
| 320                      | 12.5984 | 12.5968 | 12.5981      | 12.5995 | 27L            | 12.5977      | 12.5999 | 31L            | 12.5973      | 12.5987 | 19L            | 12.5968      | 12.5991 | 23L            | 12.5966      | 12.5980 | 12L            |              |      |                |      |      |
| 340                      | 13.3858 | 13.3842 | 13.3855      | 13.3869 | 3T             | 13.3851      | 13.3873 | 7T             | 13.3847      | 13.3861 | 11T            | 13.3842      | 13.3865 | 16T            | 13.3840      | 13.3854 | 18T            |              |      |                |      |      |
| 360                      | 14.1732 | 14.1716 | 14.1729      | 14.1743 |                | 14.1725      | 14.1747 |                | 14.1721      | 14.1735 |                | 14.1716      | 14.1739 |                | 14.1714      | 14.1728 |                |              |      |                |      |      |
| 380                      | 14.9606 | 14.9590 | 14.9603      | 14.9617 |                | 14.9599      | 14.9621 |                | 14.9595      | 14.9609 |                | 14.9590      | 14.9613 |                | 14.9588      | 14.9602 |                |              |      |                |      |      |
| 400                      | 15.7480 | 15.7464 | 15.7477      | 15.7491 |                | 15.7473      | 15.7495 |                | 15.7469      | 15.7483 |                | 15.7464      | 15.7487 |                | 15.7462      | 15.7476 |                |              |      |                |      |      |
| 420                      | 16.5354 | 16.5336 | 16.5351      | 16.5367 | 31L            | 16.5346      | 16.5371 | 35L            | 16.5341      | 16.5357 | 21L            | 16.5336      | 16.5361 | 25L            | 16.5334      | 16.5350 | 14L            |              |      |                |      |      |
| 440                      | 17.3228 | 17.3210 | 17.3225      | 17.3241 | 3T             | 17.3220      | 17.3245 | 8T             | 17.3215      | 17.3231 | 13T            | 17.3210      | 17.3235 | 18T            | 17.3208      | 17.3224 | 20T            |              |      |                |      |      |
| 460                      | 18.1102 | 18.1084 | 18.1099      | 18.1115 |                | 18.1094      | 18.1119 |                | 18.1089      | 18.1105 |                | 18.1084      | 18.1109 |                | 18.1082      | 18.1098 |                |              |      |                |      |      |
| 480                      | 18.8976 | 18.8958 | 18.8973      | 18.8989 |                | 18.8968      | 18.8993 |                | 18.8963      | 18.8979 |                | 18.8958      | 18.8983 |                | 18.8956      | 18.8972 |                |              |      |                |      |      |
| 500                      | 19.6850 | 19.6832 | 19.6847      | 19.6863 |                | 19.6842      | 19.6867 |                | 19.6837      | 19.6853 |                | 19.6832      | 19.6857 |                | 19.6830      | 19.6846 |                |              |      |                |      |      |
| 520                      | 20.4724 | 20.4704 | 20.4721      | 20.4739 | 35L            | 20.4715      | 20.4743 | 39L            | 20.4707      | 20.4724 | 20L            | 20.4696      | 20.4724 | 20L            | 20.4696      | 20.4714 | 10L            |              |      |                |      |      |
| 540                      | 21.2598 | 21.2578 | 21.2595      | 21.2613 | 3T             | 21.2589      | 21.2617 | 9T             | 21.2581      | 21.2598 | 17T            | 21.2570      | 21.2598 | 28T            | 21.2570      | 21.2588 | 28T            |              |      |                |      |      |
| 580                      | 22.8346 | 22.8326 | 22.8343      | 22.8361 |                | 22.8337      | 22.8365 |                | 22.8329      | 22.8346 |                | 22.8318      | 22.8346 |                | 22.8316      | 22.8334 |                |              |      |                |      |      |
| 600                      | 23.6220 | 23.6200 | 23.6217      | 23.6235 |                | 23.6211      | 23.6239 |                | 23.6203      | 23.6220 |                | 23.6192      | 23.6220 |                | 23.6192      | 23.6210 |                |              |      |                |      |      |
| 620                      | 24.4094 | 24.4074 | 24.4091      | 24.4109 |                | 24.4085      | 24.4113 |                | 24.4077      | 24.4094 |                | 24.4066      | 24.4094 |                | 24.4066      | 24.4084 |                |              |      |                |      |      |
| 650                      | 25.5906 | 25.5876 | 25.5902      | 25.5922 | 46L            | 25.5897      | 25.5928 | 52L            | 25.5886      | 25.5906 | 30L            | 25.5875      | 25.5906 | 30L            | 25.5875      | 25.5894 | 18L            |              |      |                |      |      |
| 670                      | 26.3780 | 26.3750 | 26.3776      | 26.3796 | 4T             | 26.3771      | 26.3802 | 9T             | 26.3760      | 26.3780 | 20T            | 26.3749      | 26.3780 | 31T            | 26.3749      | 26.3768 | 31T            |              |      |                |      |      |
| 680                      | 26.7717 | 26.7687 | 26.7713      | 26.7733 |                | 26.7708      | 26.7739 |                | 26.7697      | 26.7717 |                | 26.7686      | 26.7717 |                | 26.7686      | 26.7705 |                |              |      |                |      |      |
| 700                      | 27.5591 | 27.5561 | 27.5587      | 27.5607 |                | 27.5572      | 27.5613 |                | 27.5571      | 27.5590 |                | 27.5560      | 27.5590 |                | 27.5560      | 27.5579 |                |              |      |                |      |      |
| 720                      | 28.3465 | 28.3435 | 28.3461      | 28.3481 |                | 28.3456      | 28.3487 |                | 28.3445      | 28.3465 |                | 28.3434      | 28.3465 |                | 28.3434      | 28.3453 |                |              |      |                |      |      |
| 750                      | 29.5276 | 29.5246 | 29.5272      | 29.5292 |                | 29.5267      | 29.5298 |                | 29.5266      | 29.5276 |                | 29.5245      | 29.5276 |                | 29.5245      | 29.5264 |                |              |      |                |      |      |
| 760                      | 29.9213 | 29.9183 | 29.9209      | 29.9229 |                | 29.9204      | 29.9235 |                | 29.9193      | 29.9213 |                | 29.9182      | 29.9213 |                | 29.9182      | 29.9201 |                |              |      |                |      |      |
| 780                      | 30.7087 | 30.7057 | 30.7083      | 30.7103 |                | 30.7078      | 30.7109 |                | 30.7067      | 30.7087 |                | 30.7056      | 30.7087 |                | 30.7056      | 30.7075 |                |              |      |                |      |      |
| 790                      | 31.1024 | 31.0994 | 31.1020      | 31.1040 |                | 31.1015      | 31.1046 |                | 31.1004      | 31.1024 |                | 31.0993      | 31.1024 |                | 31.0993      | 31.1012 |                |              |      |                |      |      |
| 820                      | 32.2835 | 32.2796 | 32.2831      |         |                |              |         |                |              |         |                |              |         |                |              |         |                |              |      |                |      |      |

## Mounting information: Housing bearing-seat diameters (in inches)

| Bearing | M7           |         |                   | N6           |         |                   | N7           |         |                   | P6           |         |                   | P7           |         |                   |
|---------|--------------|---------|-------------------|--------------|---------|-------------------|--------------|---------|-------------------|--------------|---------|-------------------|--------------|---------|-------------------|
|         | Housing Bore |         | Fit in<br>0.0000" | Housing Bore |         | Fit in<br>0.0000" | Housing Bore |         | Fit in<br>0.0000" | Housing Bore |         | Fit in<br>0.0000" | Housing Bore |         | Fit in<br>0.0000" |
|         | Min.         | Max.    |                   | Min.         | Max.    |                   | Min.         | Max.    |                   | Min.         | Max.    |                   | Min.         | Max.    |                   |
| 16      | 0.6292       | 0.6299  | 3L/7T             | 0.6291       | 0.6295  | 1T/8T             | 0.6290       | 0.6297  | 1L/9T             | 0.6289       | 0.6293  | 3T/10T            | 0.6288       | 0.6295  | 1T/11T            |
| 19      | 0.7472       | 0.7480  | 4L                | 0.7471       | 0.7476  | 0T                | 0.7469       | 0.7477  | 1L                | 0.7468       | 0.7473  | 3T                | 0.7466       | 0.7474  | 2T                |
| 22      | 0.8653       | 0.8661  | 8T                | 0.8652       | 0.8657  | 9T                | 0.8650       | 0.8658  | 11T               | 0.8649       | 0.8654  | 12T               | 0.8647       | 0.8655  | 14T               |
| 24      | 0.9441       | 0.9449  |                   | 0.9440       | 0.9445  |                   | 0.9438       | 0.9446  |                   | 0.9437       | 0.9442  |                   | 0.9435       | 0.9443  |                   |
| 26      | 1.0228       | 1.0236  |                   | 1.0227       | 1.0232  |                   | 1.0225       | 1.0233  |                   | 1.0224       | 1.0229  |                   | 1.0222       | 1.0230  |                   |
| 28      | 1.1016       | 1.1024  |                   | 1.1015       | 1.1020  |                   | 1.1013       | 1.1021  |                   | 1.1012       | 1.1017  |                   | 1.1010       | 1.1018  |                   |
| 30      | 1.1803       | 1.1811  |                   | 1.1802       | 1.1807  |                   | 1.1800       | 1.1808  |                   | 1.1799       | 1.1804  |                   | 1.1797       | 1.1805  |                   |
| 32      | 1.2588       | 1.2598  | 4L                | 1.2587       | 1.2593  | 1T                | 1.2585       | 1.2595  | 1L                | 1.2583       | 1.2590  | 4T                | 1.2581       | 1.2591  | 3T                |
| 35      | 1.3770       | 1.3780  | 10T               | 1.3769       | 1.3775  | 11T               | 1.3767       | 1.3777  | 13T               | 1.3765       | 1.3772  | 15T               | 1.3763       | 1.3773  | 17T               |
| 37      | 1.4557       | 1.4567  |                   | 1.4556       | 1.4562  |                   | 1.4554       | 1.4564  |                   | 1.4552       | 1.4559  |                   | 1.4550       | 1.4560  |                   |
| 40      | 1.5738       | 1.5748  |                   | 1.5737       | 1.5743  |                   | 1.5735       | 1.5745  |                   | 1.5733       | 1.5740  |                   | 1.5731       | 1.5741  |                   |
| 42      | 1.6525       | 1.6535  |                   | 1.6524       | 1.6530  |                   | 1.6522       | 1.6532  |                   | 1.6520       | 1.6527  |                   | 1.6518       | 1.6528  |                   |
| 47      | 1.8494       | 1.8504  |                   | 1.8493       | 1.8499  |                   | 1.8491       | 1.8501  |                   | 1.8489       | 1.8496  |                   | 1.8487       | 1.8497  |                   |
| 52      | 2.0460       | 2.0472  | 5L                | 2.0459       | 2.0466  | 1T                | 2.0457       | 2.0468  | 1L                | 2.0454       | 2.0462  | 5T                | 2.0452       | 2.0464  | 3T                |
| 55      | 2.1642       | 2.1654  | 12T               | 2.1641       | 2.1648  | 13T               | 2.1639       | 2.1650  | 15T               | 2.1636       | 2.1644  | 18T               | 2.1634       | 2.1646  | 20T               |
| 62      | 2.4397       | 2.4409  |                   | 2.4396       | 2.4403  |                   | 2.4394       | 2.4405  |                   | 2.4391       | 2.4399  |                   | 2.4389       | 2.4401  |                   |
| 72      | 2.8334       | 2.8346  |                   | 2.8333       | 2.8340  |                   | 2.8331       | 2.8342  |                   | 2.8328       | 2.8336  |                   | 2.8326       | 2.8338  |                   |
| 80      | 3.1484       | 3.1496  |                   | 3.1483       | 3.1490  |                   | 3.1481       | 3.1492  |                   | 3.1478       | 3.1486  |                   | 3.1476       | 3.1488  |                   |
| 85      | 3.3451       | 3.3465  | 6L                | 3.3450       | 3.3459  | 0T                | 3.3447       | 3.3461  | 2L                | 3.3445       | 3.3453  | 6T                | 3.3442       | 3.3456  | 3T                |
| 90      | 3.5419       | 3.5433  | 14T               | 3.5418       | 3.5427  | 15T               | 3.5415       | 3.5429  | 18T               | 3.5413       | 3.5421  | 20T               | 3.5410       | 3.5424  | 23T               |
| 100     | 3.9356       | 3.9370  |                   | 3.9355       | 3.9364  |                   | 3.9352       | 3.9366  |                   | 3.9350       | 3.9358  |                   | 3.9347       | 3.9361  |                   |
| 110     | 4.3293       | 4.3307  |                   | 4.3292       | 4.3301  |                   | 4.3289       | 4.3303  |                   | 4.3287       | 4.3295  |                   | 4.3284       | 4.3298  |                   |
| 115     | 4.5262       | 4.5276  |                   | 4.5261       | 4.5270  |                   | 4.5258       | 4.5272  |                   | 4.5256       | 4.5264  |                   | 4.5253       | 4.5267  |                   |
| 120     | 4.7230       | 4.7244  |                   | 4.7229       | 4.7238  |                   | 4.7226       | 4.7240  |                   | 4.7224       | 4.7232  |                   | 4.7221       | 4.7235  |                   |
| 125     | 4.9197       | 4.9213  | 7L                | 4.9195       | 4.9205  | 1T                | 4.9193       | 4.9208  | 2L                | 4.9189       | 4.9199  | 7T                | 4.9186       | 4.9202  | 4T                |
| 130     | 5.1165       | 5.1181  | 16T               | 5.1163       | 5.1173  | 18T               | 5.1161       | 5.1176  | 20T               | 5.1157       | 5.1167  | 24T               | 5.1154       | 5.1170  | 27T               |
| 140     | 5.5102       | 5.5118  |                   | 5.5100       | 5.5110  |                   | 5.5098       | 5.5113  |                   | 5.5094       | 5.5104  |                   | 5.5091       | 5.5107  |                   |
| 145     | 5.7071       | 5.7087  |                   | 5.7069       | 5.7079  |                   | 5.7067       | 5.7082  |                   | 5.7063       | 5.7073  |                   | 5.7060       | 5.7076  |                   |
| 150     | 5.9039       | 5.9055  |                   | 5.9037       | 5.9047  |                   | 5.9035       | 5.9050  |                   | 5.9031       | 5.9041  |                   | 5.9028       | 5.9044  |                   |
| 160     | 6.2976       | 6.2992  | 10L               | 6.2974       | 6.2984  | 2L                | 6.2972       | 6.2987  | 5L                | 6.2968       | 6.2978  | 4T                | 6.2965       | 6.2981  | 1T                |
| 170     | 6.6913       | 6.6929  | 16T               | 6.6911       | 6.6921  | 18T               | 6.6909       | 6.6924  | 20T               | 6.6905       | 6.6915  | 24T               | 6.6902       | 6.6918  | 27T               |
| 180     | 7.0850       | 7.0866  |                   | 7.0848       | 7.0858  |                   | 7.0846       | 7.0861  |                   | 7.0842       | 7.0852  |                   | 7.0839       | 7.0855  |                   |
| 190     | 7.4785       | 7.4803  | 12L               | 7.4783       | 7.4794  | 3L                | 7.4779       | 7.4797  | 6L                | 7.4775       | 7.4787  | 4T                | 7.4772       | 7.4790  | 1T                |
| 200     | 7.8722       | 7.8740  | 18T               | 7.8720       | 7.8731  | 20T               | 7.8716       | 7.8734  | 24T               | 7.8712       | 7.8724  | 28T               | 7.8709       | 7.8727  | 31T               |
| 210     | 8.2659       | 8.2677  |                   | 8.2657       | 8.2668  |                   | 8.2653       | 8.2671  |                   | 8.2649       | 8.2661  |                   | 8.2646       | 8.2664  |                   |
| 215     | 8.4628       | 8.4646  |                   | 8.4626       | 8.4637  |                   | 8.4622       | 8.4640  |                   | 8.4618       | 8.4630  |                   | 8.4615       | 8.4633  |                   |
| 225     | 8.8565       | 8.8583  |                   | 8.8563       | 8.8574  |                   | 8.8559       | 8.8577  |                   | 8.8555       | 8.8567  |                   | 8.8552       | 8.8570  |                   |
| 240     | 9.4470       | 9.4488  |                   | 9.4468       | 9.4479  |                   | 9.4464       | 9.4482  |                   | 9.4460       | 9.4472  |                   | 9.4457       | 9.4475  |                   |
| 250     | 9.8407       | 9.8425  |                   | 9.8405       | 9.8416  |                   | 9.8401       | 9.8419  |                   | 9.8397       | 9.8409  |                   | 9.8394       | 9.8412  |                   |
| 260     | 10.2342      | 10.2362 | 14L               | 10.2340      | 10.2352 | 4L                | 10.2336      | 10.2356 | 8L                | 10.2331      | 10.2343 | 5T                | 10.2327      | 10.2348 | 0T                |
| 280     | 11.0216      | 11.0236 | 20T               | 11.0214      | 11.0226 | 22T               | 11.0210      | 11.0230 | 26T               | 11.0205      | 11.0217 | 31T               | 11.0201      | 11.0222 | 35T               |
| 300     | 11.8090      | 11.8110 |                   | 11.8088      | 11.8100 |                   | 11.8084      | 11.8104 |                   | 11.8079      | 11.8091 |                   | 11.8075      | 11.8096 |                   |
| 310     | 12.2027      | 12.2047 |                   | 12.2025      | 12.2037 |                   | 12.2021      | 12.2041 |                   | 12.2016      | 12.2028 |                   | 12.2012      | 12.2033 |                   |
| 320     | 12.5962      | 12.5984 | 16L               | 12.5960      | 12.5974 | 6L                | 12.5955      | 12.5978 | 10L               | 12.5950      | 12.5964 | 4T                | 12.5945      | 12.5968 | 0T                |
| 340     | 13.3836      | 13.3858 | 22T               | 13.3834      | 13.3848 | 24T               | 13.3829      | 13.3852 | 29T               | 13.3824      | 13.3838 | 34T               | 13.3819      | 13.3842 | 39T               |
| 360     | 14.1710      | 14.1732 |                   | 14.1708      | 14.1722 |                   | 14.1703      | 14.1726 |                   | 14.1698      | 14.1712 |                   | 14.1693      | 14.1716 |                   |
| 380     | 14.9584      | 14.9606 |                   | 14.9582      | 14.9596 |                   | 14.9577      | 14.9600 |                   | 14.9572      | 14.9586 |                   | 14.9567      | 14.9590 |                   |
| 400     | 15.7458      | 15.7480 |                   | 15.7456      | 15.7470 |                   | 15.7451      | 15.7474 |                   | 15.7446      | 15.7460 |                   | 15.7441      | 15.7464 |                   |
| 420     | 16.5329      | 16.5354 | 18L               | 16.5328      | 16.5343 | 7L                | 16.5323      | 16.5347 | 11L               | 16.5317      | 16.5332 | 4T                | 16.5311      | 16.5336 | 0T                |
| 440     | 17.3203      | 17.3228 | 25T               | 17.3202      | 17.3217 | 26T               | 17.3197      | 17.3221 | 31T               | 17.3191      | 17.3206 | 37T               | 17.3185      | 17.3210 | 43T               |
| 460     | 18.1077      | 18.1102 |                   | 18.1076      | 18.1091 |                   | 18.1071      | 18.1095 |                   | 18.1065      | 18.1080 |                   | 18.1059      | 18.1084 |                   |
| 480     | 18.8951      | 18.8976 |                   | 18.8950      | 18.8965 |                   | 18.8945      | 18.8969 |                   | 18.8939      | 18.8954 |                   | 18.8933      | 18.8958 |                   |
| 500     | 19.6825      | 19.6850 |                   | 19.6824      | 19.6839 |                   | 19.6819      | 19.6843 |                   | 19.6813      | 19.6828 |                   | 19.6807      | 19.6832 |                   |
| 520     | 20.4686      | 20.4714 | 10L               | 20.4689      | 20.4707 | 3L                | 20.4679      | 20.4707 | 3L                | 20.4676      | 20.4693 | 11T               | 20.4666      | 20.4693 | 11T               |
| 540     | 21.2560      | 21.2588 | 38T               | 21.2563      | 21.2581 | 35T               | 21.2553      | 21.2581 | 45T               | 21.2550      | 21.2567 | 48T               | 21.2540      | 21.2567 | 58T               |
| 580     | 22.8308      | 22.8336 |                   | 22.8311      | 22.8329 |                   | 22.8301      | 22.8329 |                   | 22.8298      | 22.8315 |                   | 22.8288      | 22.8315 |                   |
| 600     | 23.6182      | 23.6210 |                   | 23.6185      | 23.6203 |                   | 23.6175      | 23.6203 |                   | 23.6172      | 23.6189 |                   | 23.6162      | 23.6189 |                   |
| 620     | 24.4056      | 24.4084 |                   | 24.4059      | 24.4077 |                   | 24.4049      | 24.4077 |                   | 24.4046      | 24.4063 |                   | 24.4036      | 24.4063 |                   |
| 650     | 25.5863      | 25.5894 | 18L               | 25.5867      | 25.5886 | 10L               | 25.5855      | 25.5886 | 10L               | 25.5852      | 25.5871 | 5T                | 25.5840      | 25.5871 | 5T                |
| 670     | 26.3737      | 26.3768 | 43T               | 26.3741      | 26.3760 | 39T               | 26.3729      | 26.3760 | 51T               | 26.3726      | 26.3745 | 54T               | 26.3714      | 26.3745 | 66T               |
| 680     | 26.7674      | 26.7705 |                   | 26.7678      | 26.7697 |                   | 26.7666      | 26.7697 |                   | 26.7663      | 26.7682 |                   | 26.7651      | 26.7682 |                   |
| 700     | 27.5548      | 27.5579 |                   | 27.5552      | 27.5571 |                   | 27.5540      | 27.5571 |                   | 27.5537      | 27.5556 |                   | 27.5525      | 27.5556 |                   |
| 720     | 28.3422      | 28.3453 |                   | 28.3426      | 28.3445 |                   | 28.3414      | 28.3445 |                   | 28.3411      | 28.3430 |                   | 28.3399      | 28.3430 |                   |
| 750     | 29.5233      | 29.5264 |                   | 29.5237      | 29.5256 |                   | 29.5225      | 29.5256 |                   | 29.5222      | 29.5241 |                   | 29.5210      | 29.5241 |                   |
| 760     | 29.9170      | 29.9201 |                   | 29.9174      | 29.9193 |                   | 29.9162      | 29.9193 |                   | 29.9159      | 29.9178 |                   | 29.9147      | 29.9178 |                   |
| 780     | 30.7044      | 30.7075 |                   | 30.7048      | 30.7067 |                   | 30.7036      | 30.7077 |                   | 30.7033      | 30.7052 |                   | 30.7021      | 30.7052 |                   |
| 790     | 31.0981      | 31.1012 |                   | 31.0985      | 31.1004 |                   | 31.0973      | 31.1004 |                   | 31.0970      | 31.0989 |                   | 31.0958      | 31.0989 |                   |
| 820     | 32.2786      | 32.2822 | 26L               | 32.2791      | 32.2813 | 17L               | 31.2778      | 32.2813 | 17L               | 32.2774      | 32.2796 | 0T                | 32.2760      | 32.2796 | 0T                |
| 850     | 33.4597      | 33.4633 | 49T               | 33.4602      | 33.4624 | 44T               | 33.4589      | 33.4624 | 57T               | 33.4585      | 33.4607 | 61T               | 33.4571      | 33.4607 | 75T               |
| 870     | 34.2471      | 34.2507 |                   | 34.2476      | 34.2498 |                   | 34.2463      | 34.2498 |                   | 34.2459      | 34.2481 |                   | 34.2445      | 34.2481 |                   |
| 920     | 36.2156      | 36.2192 |                   | 36.2161      | 36.2183 |                   | 36.2148      | 36.2183 |                   | 36.2144      | 36.2166 |                   | 36.2130      | 36.2166 |                   |
| 950     | 37.3967      | 37.4003 |                   | 37.3972      | 37.3994 |                   | 37.3959      | 37.3994 |                   | 37.3955      | 37.3977 |                   | 37.3941      | 37.3977 |                   |
| 980     | 38.5778      | 38.5814 |                   | 38.5783      | 38.5805 |                   | 38.5770      | 38.5805 |                   | 38.5766      | 38.5788 |                   | 38.5752      | 38.5788 |                   |
| 1000    | 39.3652      | 39.3688 |                   | 39.3657      | 39.3679 |                   | 39.3644      | 39.3679 |                   | 39.3640      | 39.3662 |                   | 39.3626      | 39.3662 |                   |
| 1150    | 45.2699      | 45.2740 | 33L               | 45.2704      | 45.2730 | 23L               | 45.2689      | 45.2730 | 23L               | 45.2683      | 45.2709 | 2L                | 45.2667      | 45.2709 | 2L                |
| 1250    | 49.2069      | 49.2110 | 57T               | 49.2074      | 49.2100 | 52T               | 49.2059      | 49.2100 | 67T               | 49.2053      | 49.2079 | 73T               | 49.2037      | 49.2079 | 89T               |
| 1400    | 55.1113      | 55.1162 | 44L               | 55.1120      | 55.1150 | 32L               | 55.1101      | 55.1150 | 32L               | 55.1095      | 55.1126 | 8L                | 55.1077      | 55.1126 | 8L                |
| 1600    | 62.9853      | 62.9902 | 68T               |              |         |                   |              |         |                   |              |         |                   |              |         |                   |

# Common Prefixes and Suffixes

Also see introductory pages for each section

## Prefixes

|            |  |
|------------|--|
| <b>BMB</b> | Sensorized Bearings  |
| <b>BS</b>  | Sealed Spherical Roller Bearings   |
| <b>EC</b>  | Y bearing end cover (MRC)  |
| <b>ECB</b> | American for case hardened inner ring (SRB)  |
| <b>ECY</b> | Y bearing end cover  |
| <b>GS</b>  | Housing washer of a cylindrical roller thrust bearing  |
| <b>K</b>   | Cylindrical roller & cage thrust assembly  |
| <b>K-</b>  | Inner ring with roller and cage assembly (cone) or outer ring (cup) of inch size taper roller bearing, belonging to an ABMA standard series. |
| <b>L</b>   | Separate inner or outer ring of a separable bearing  |
| <b>R</b>   | Inner or outer ring with roller (and cage) assembly of a separable bearing   |
| <b>W</b>   | Stainless steel deep groove ball bearing   |
| <b>WS</b>  | Shaft washer of a cylindrical roller thrust bearing  |
| <b>ZE</b>  | Bearing with Sensor Mount® feature   |

## Suffixes

|             |  |
|-------------|--|
| <b>A</b>    | Deviating or modified internal design with the same boundary dimensions. As a rule the significance of the letter is bound to the particular bearing or bearing series. Examples 4210 A: Double row deep groove ball bearings without filling slots. 3220 A: Double row angular contact ball bearing with a 30° contact angle.         |
| <b>ACD</b>  | Single row angular contact ball bearing with a 25° contact angle   |
| <b>ADA</b>  | Modified snap ring grooves in the outer ring: a two-piece inner ring held together by a retaining ring (CRB)   |
| <b>B</b>    | As shown in A above. Examples 7224B, single row angular contact bearing with 40° contact angle and 32210B, steeper contact angle on tapered roller bearing   |
| <b>B...</b> | Combined with two or three digits, identifies variants of the standard design that cannot be identified by general suffixes ie. B20 reduced width tolerance.   |
| <b>C</b>    | As with A & B above. Example 21306C: Spherical roller bearing with a flangeless inner ring, symmetrical rollers, loose guide ring and a window-type steel cage   |
| <b>C</b>    | Y bearing with cylindrical O/D   |
| <b>CA</b>   | <ol style="list-style-type: none"> <li>Spherical roller bearing of C design, but with retaining flanges on the inner ring and machined cage (probably brass)</li> <li>Single row angular contact bearing with universal matching. Two bearings arranged back/back, face/face with a slight axial clearance before mounting.</li> </ol> |
| <b>CAC</b>  | Spherical roller bearing of the CA design but with enhanced roller guidance  |
| <b>CB</b>   | <ol style="list-style-type: none"> <li>Single row angular contact ball bearing for universal matching either face/face or back/back with normal clearance</li> <li>Controlled axial clearance of double row angular contact ball bearings</li> </ol>   |

|               |   |
|---------------|---|
| <b>CC</b>     | <ol style="list-style-type: none"> <li>Spherical roller bearing of C design but with enhanced roller guidance</li> <li>Single row angular contact ball bearing for universal matching, back/back, face/face with greater than CB clearance</li> </ol>   |
| <b>CCK</b>    | Spherical roller bearing of C design but with enhanced roller guidance and 1:12 tapered bore  |
| <b>CCK/30</b> | As CCK but with a 1:30 tapered bore   |
| <b>CD</b>     | Angular contact ball bearing with a 15° contact angle   |
| <b>CLN</b>    | Taper roller bearing with tolerances corresponding to ISO tolerance class 6X  |
| <b>CL0</b>    | Inch-size taper roller bearing with tolerances to class 0 according to ANSI/ABMA Standard 19.2:1994   |
| <b>CL00</b>   | Inch-size taper roller bearing with tolerances to class 3 according to ANSI/ABMA Standard 19.2:1994   |
| <b>CL3</b>    | Inch-size taper roller bearing with tolerances to class 3 according to ANSI/ABMA Standard 19.2:1994   |
| <b>CL7C</b>   | Taper roller bearings with special frictional behavior and higher running accuracy (pinion bearings)  |
| <b>CN</b>     | Normal internal clearance, normally only used with an additional letter that identifies a reduced or displaced clearance range.<br>Examples:<br>CNH Upper half of the Normal clearance range<br>CNM Two middle quarters of the Normal clearance range<br>CNL Lower half of the Normal clearance range |
| <b>CNP</b>    | Upper half of the Normal and lower half of C3<br>CNR Cylindrical roller bearings with Normal clearance to DIN 620-4:1982<br>The above letters, H,M,L,P are also used with the following clearance classes C2, C3, C4.   |
| <b>CS</b>     | Contact seal of Nitrile Butadiene rubber (NBR) with sheet steel reinforcement on one side of the bearing  |
| <b>CS</b>     | 15° contact angle on 7000 and 71900 series (high speed)   |
| <b>CS2</b>    | Contact seal of Fluoro rubber (FPM) with sheet steel reinforcement on one side of the bearing   |
| <b>CS5</b>    | Contact seal of hydrogenated Nitrile butadiene rubber (HNBR) with sheet steel reinforcement on one side of the bearing  |
| <b>2CS</b>    | Same as CS but a seal on both sides of the bearing  |
| <b>2CS2</b>   | Same as CS2 but a seal on both sides of the bearing   |
| <b>2CS5</b>   | Same as CS5 but a seal on both sides of the bearing   |
| <b>CV</b>     | Full complement cylindrical roller bearing with modified internal design  |
| <b>CX</b>     | 15° contact angle, modified internal design   |
| <b>C02</b>    | Extra reduced tolerance for running accuracy of inner ring of assembled bearing   |
| <b>C04</b>    | Extra reduced tolerance for running accuracy of outer ring of assembled bearing   |
| <b>C08</b>    | C02 + C04   |
| <b>C083</b>   | C02 + C04 + C3  |

## Prefixes and suffixes

|             |  |  |  |
|-------------|--|--|--|
| <b>C1</b>   | Bearing internal clearance smaller than C2   | <b>G..</b>   | Grease, a second letter indicates the operating temperature range of the grease and the third letter identifies the actual grease. The significance of the second letter is as follows:  |
| <b>C2</b>   | Bearing internal clearance smaller than normal (CN)  | <b>E</b>   | Extreme pressure grease  |
| <b>C3</b>   | Bearing internal clearance greater than normal (CN)  | <b>F</b>   | Food compatible grease   |
| <b>C4</b>   | Bearing internal clearance greater than C3   | <b>H,J</b>   | High temperature grease, -20 to +150°C   |
| <b>C5</b>   | Bearing internal clearance greater than C4   | <b>L</b>   | Low temperature grease, -50 to + 80°C  |
| <b>C10</b>  | Reduced tolerance for the bore and outside diameters (close to P6)   | <b>M</b>   | Medium temperature grease, -30 to +110°C   |
| <b>C40</b>  | Reduced O/D tolerance approaching nominal (P5)   | <b>W,X</b>   | Low/high temperature grease, -40 to +140°C   |
| <b>D</b>    | As with A, B & C, Example 3310D: Double row angular contact ball bearing with a two-piece inner ring   | A figure following the three-letter grease code indicates that the filling degree deviates from the standard; Figures 1, 2, and 3 indicate smaller than standard, 4 up to 9 a larger fill. |  |
| <b>DA</b>   | Modified snap ring grooves in the outer ring: two-piece inner ring held together by a retaining ring   | Examples;  |  |
| <b>DB</b>   | Two single row deep groove ball bearings (1), single row angular contact ball bearings or (2) single row taper roller bearings matched for mounting in a back-to-back arrangement. The letter(s) following the DB indicate the magnitude of the axial clearance or preload in the bearing pair before mounting.  | <b>GEA</b>   | Extreme pressure grease, standard fill   |
| <b>A</b>    | Light preload (1,2)  | <b>GLB2</b>  | Low temperature grease, 15 to 25% fill   |
| <b>B</b>    | Moderate preload (1,2)   | <b>GA</b>  | Single row angular contact bearings for universal matching. Two bearings arranged back-to-back or face-to-face will have a light preload when mounted  |
| <b>C</b>    | Heavy preload (1,2)  | <b>GB</b>  | Single row angular contact ball bearing for universal matching. Two bearings arranged back-to-back or face-to-face will have a moderate preload when mounted.  |
| <b>CA</b>   | Small axial clearance (1,2)  | <b>GC</b>  | Single row angular contact ball bearing for universal matching. Two bearings arranged back-to-back or face-to-face will have a heavy preload when mounted  |
| <b>CB</b>   | Normal axial clearance (1,2)   | <b>GJN</b>   | Normal fill grade of Polyurea based grease of consistency of NLGI 2 and a temperature range -30 to + 150°C   |
| <b>CC</b>   | Large axial clearance (1,2)  | <b>H</b>   | Pressed snap-type steel cage, hardened (DRACBB)  |
| <b>C..</b>  | special axial clearance in microns   | <b>HA</b>  | Bearing or bearing components of case hardened steel. For closer identification HA is followed by one or the following figures   |
| <b>GA</b>   | Light preload (1,2)  | <b>0</b>   | Complete bearing   |
| <b>GB</b>   | Moderate preload (1,2)   | <b>1</b>   | Outer and inner rings  |
| <b>GC</b>   | Heavy preload (1,2)  | <b>2</b>   | Outer ring   |
| <b>G..</b>  | Special preload in daN. For paired SRACBB.   | <b>3</b>   | Inner ring   |
| <b>DF</b>   | Same as DB except in a face/face arrangement.  | <b>4</b>   | Outer ring, inner ring and rolling elements  |
| <b>DF03</b> | Tapered roller bearings face/face with an outer spacer with lubrication holes. No groove   | <b>5</b>   | Rolling elements   |
| <b>DT</b>   | Two single row deep groove ball bearings, single row angular contact ball bearing or single row taper roller bearings matched for mounting in a tandem arrangement. For paired taper roller bearings the design and arrangement of the intermediate rings between the inner and/or outer rings are identified by a two-figure number which follows immediately after DT as DF03. | <b>6</b>   | Outer ring and rolling elements  |
| <b>E</b>    | Deviating or modified internal design with the same boundary dimensions; as a rule the significance of the letter is bound to the particular bearing series; usually indicates reinforced rolling element complement<br>Example: 7212BE; Single row angular contact ball bearing with a 40° contact angle and optimized internal design. (Increased capacity)                    | <b>7</b>   | Inner ring and rolling elements  |
| <b>EC</b>   | Single row cylindrical roller bearing with an optimized internal design and with modified roller end/flange contact. (Higher capacity)   | <b>HB</b>  | Bainite hardened bearings or bearing components. For specific identification, HB is followed by one of the figures explained under HA  |
| <b>ECA</b>  | Spherical roller bearing of CA design but with reinforced rolling element complement   | <b>HC</b>  | Bearing or bearing components of ceramic material. For specific identification, HC is followed by one of the figures explained under HA  |
| <b>F</b>    | Machined steel or special cast iron cage, rolling element centred: different designs or materials are identified by a figure following the F e.g. F1   | <b>HE</b>  | Bearing or bearing components of vacuum re-melted steel. For specific identification, HE is followed by one of the figures explained under HA  |
| <b>FA</b>   | Machined steel or special cast iron cage; outer ring centred   | <b>HM</b>  | Martensite hardened bearing or bearing components. For specific identification HM is followed by one of the figures explained under HA   |
| <b>FB</b>   | Machined steel or special cast iron cage; inner ring centred   | <b>HN</b>  | Special surface heat-treatment bearing or bearing components. For specific identification HN is followed by one of the figures explained under HA  |
| <b>FM</b>   | Y bearing unit containing a YET bearing  | <b>HT</b>  | Grease for high operating temperatures (-20 to +130°C)<br>Greases that differ from the selected standard grease for this temperature range is identified by two-figure numbers following HT. Filling degrees other than standard are identified by a letter or letter/figure combination following |
| <b>G</b>    | Single row angular contact bearings for universal matching. Two bearings arranged back-to-back or face-to-face will have a certain axial clearance after mounting.   |  |  |

## Prefixes and suffixes

|              |   |             |  |
|--------------|---|-------------|--|
| <b>HTxx.</b> | A Filling degree less than standard<br>B Filling degree greater than standard<br>C Filling degree greater than 70%.<br>F1 Filling degree less than standard<br>F7 Filling degree greater than standard<br>F9 Filling degree greater than 70%<br>Examples HTB, HT22 or HT24B                       | <b>P5</b>   | Dimensional and running accuracy to ISO tolerance class 5 (ABEC 5)   |
| <b>HV</b>    | Bearing or bearing components of hardenable stainless steel. For specific details HV is followed by one of the figures explained under HA   | <b>P6</b>   | Dimensional and running accuracy to ISO tolerance class 6 (ABEC 3)   |
| <b>J</b>     | Unhardened, pressed steel cage, rolling element centred; different designs or materials are identified by a figure e.g. J1  | <b>P62</b>  | P6 + C2  |
| <b>JR</b>    | Cage comprising of two flat washers of unhardened sheet steel, riveted together   | <b>P63</b>  | P6 + C3  |
| <b>K</b>     | Tapered bore, taper 1:12  | <b>PA9A</b> | Dimensional and running Accuracy to ISO class 2, (ABEC 9)  |
| <b>K30</b>   | Tapered bore, taper 1:30  | <b>Q</b>    | Optimized internal geometry and surface finish (taper roller bearings)   |
| <b>LHT</b>   | Grease fill for low and high operating temperatures (-40 to +140°C). A two-figure number following LHT identifies the actual grease. An additional letter or letter/figure combination as mentioned under "HT" identifies filling degrees other than standard. Examples: LHT23, LHT23C or LHT23F7 | <b>R</b>    | 1. Flanged out ring (tapered roller bearings)<br>2. Crowned runner surface (track runner bearings)                                       |
| <b>L4B</b>   | Bearing rings and rolling elements with special surface coating (NoWear)  | <b>RS</b>   | Contact seal of synthetic rubber with or without sheet steel reinforcement on one side of the bearing                                    |
| <b>L5B</b>   | Rolling elements with special surface coating (NoWear)  | <b>RSH</b>  | Contact seal of Acrylonitrile butadiene rubber (NBR) with sheet steel reinforcement on one side of the bearing (new design)              |
| <b>L5DA</b>  | Bearing with coated rolling elements (NoWear)   | <b>RSL</b>  | Low-friction contact seal of Acrylonitrile butadiene rubber (NBR) with sheet steel reinforcement on one side of the bearing (new design) |
| <b>L7DA</b>  | Bearing with coated rolling elements and inner ring raceway(s) (NoWear)   | <b>RSZ1</b> | One RS1 seal with a steel shield on the opposite side of the bearing   |
| <b>M</b>     | Machined brass cage, rolling element centred; different designs or materials are identified by a figure, e.g. M2  | <b>RS1</b>  | Contact seal of Acrylonitrile butadiene rubber (NRB) with sheet steel reinforcement on one side of the bearing                           |
| <b>MA</b>    | Machined brass cage, outer ring centred   | <b>RS2</b>  | Contact seal of Fluoro rubber (FPM) with sheet steel reinforcement on one side of the bearing (High temp)                                |
| <b>MB</b>    | Machined brass cage, inner ring centred   | <b>RZ</b>   | Low-friction seal of Acrylonitrile butadiene rubber (NBR) with sheet steel reinforcement on one side of the bearing                      |
| <b>ML</b>    | One-piece brass window-type cage, inner or outer ring centred   | <b>2RS</b>  | As RS but on both sides of the bearing   |
| <b>MP</b>    | One-piece brass window-type cage, with punched or reamed pockets, inner or outer ring centred   | <b>2RSH</b> | As RSH but on both sides of the bearing  |
| <b>MR</b>    | One-piece brass window-type cage, rolling element centred   | <b>2RSL</b> | As RSL but on both sides of the bearing  |
| <b>MT</b>    | Grease fill for medium operating temperatures (-30 to +110°C) A two-figure number follow MT identifies the actual grease. An additional letter or letter/figure combination as mentioned under "HT" identifies filling degrees other than standard. Examples: MT33, MT37F9 or MT47                | <b>2RZ</b>  | As RZ but on both sides of the bearing   |
| <b>M2</b>    | Roller riding machined brass cage no guide ring   | <b>2RS1</b> | As RS1 but on both sides of the bearing  |
| <b>N</b>     | Snap ring groove in the outer ring  | <b>2RS2</b> | As RS2 but on both sides of the bearing  |
| <b>NR</b>    | Snap ring and groove in the outer ring  | <b>SP</b>   | Boundary accuracy ISO class 5 (ABEC 5) Running accuracy ISO class 4 (ABEC 7)   |
| <b>N1</b>    | One locating slot (notch) in one outer ring side face   | <b>S0</b>   | Bearing rings or washers dimensionally stabilized for use at operating temperatures up to +150°C   |
| <b>N2</b>    | Two locating slots (notches) in one outer ring side face at 180° to each other  | <b>S1</b>   | Bearing rings or washers dimensionally stabilized for use at operating temperatures up to + 200°C  |
| <b>P</b>     | Injection moulded cage of glass fibre reinforced polyamide 6.6, rolling element centred.  | <b>S2</b>   | Bearing rings or washers dimensionally stabilized for use at operating temperatures up to + 250°C  |
| <b>PH</b>    | Injection moulded cage of Polyether Ether Ketone (PEEK), rolling element centred (High temp)  | <b>S3</b>   | Bearing rings or washers dimensionally stabilized for use at operating temperatures up to + 300°C  |
| <b>PHA</b>   | Injection moulded cage of Polyether Ether Ketone (PEEK), outer ring centred (High temp)   | <b>S4</b>   | Bearing rings or washers dimensionally stabilized for use at operating temperatures up t + 350°C   |
| <b>P4</b>    | Dimensional and running accuracy to ISO tolerance class 4 (ABEC 7)  | <b>T</b>    | Machined cage of fabric reinforced Phenolic resin, rolling element centred   |
| <b>P4A</b>   | Boundary accuracy to ISO class 4, running accuracy to ISO class 2 (over 120mm bore ABEC 7 or better)  | <b>TB</b>   | Window-type cage of fabric reinforced Phenolic resin, inner ring centred   |
|              |   | <b>TC</b>   | Phenolic cage, inner ring centred  |
|              |   | <b>TF</b>   | Y bearing unit containing a YAR bearing  |
|              |   | <b>TH</b>   | Snap-type cage of fabric reinforced Phenolic resin, rolling element centred  |
|              |   | <b>TN</b>   | Injection moulded cage of polyamide, rolling element centred   |
|              |   | <b>TNH</b>  | Injection moulded cage of Polyether Ether Ketone (PEEK), rolling element centred (Hi temp)   |

Prefixes and suffixes continued...

## Prefixes and suffixes, Temperature conversions

|               |   |               |  |
|---------------|---|---------------|--|
| <b>TN9</b>    | Injection moulded cage of glass fibre reinforced polyamide 6.6 rolling element centred  | <b>VE553</b>  | Outer ring with three equally spaced threaded holes in both side faces to accommodate hoisting tackle  |
| <b>U</b>      | U combined with a one-figure number identifies a taper roller bearing cone or cup, with reduced width tolerance<br>Examples:<br>U2: Width tolerance +0.05/0 mm<br>U4: Width tolerance +0.10/0 mm  | <b>VG114</b>  | Surface hardened pressed steel cage  |
| <b>UP</b>     | Boundary accuracy ISO class 4 (ABEC 7) Running accuracy ISO class 2 (ABEC 9)  | <b>VH</b>     | Full compliment cylindrical roller bearing with self-retaining roller set  |
| <b>V</b>      | Full complement bearing (without cage)  | <b>VL0241</b> | Aluminum oxide coated outside surface of outer ring for electrical resistance up to 1000 V DC  |
| <b>V...</b>   | V combined with a second letter identifies a variant group and followed by a three or four-figure number denotes variants not covered by "standard" designation suffixes. Examples:<br>VA Application oriented variants<br>VB Boundary dimension deviations<br>VE External or internal deviations<br>VL Coatings<br>VQ Quality<br>VS Clearance and preload<br>VT Lubrication<br>VU Miscellaneous applications | <b>VQ015</b>  | Inner ring with crowned raceway  |
| <b>VA201</b>  | Bearing for high-temperature applications (e.g. kiln trucks) Good up to +250°C Lubricating paste and 100 rpm  | <b>VQ424</b>  | Running accuracy better than C08   |
| <b>VA208</b>  | Bearing for high-temperature applications, good to 350°C (Graphite segment cage) and 100 rpm  | <b>VT143</b>  | Grease fill with an extreme pressure grease  |
| <b>VA228</b>  | Bearing for high-temperature applications, good to 350°C (Graphite cage) and 100 rpm  | <b>VX110</b>  | Spherical roller bearing with lubrication groove and six lubrication holes on inner ring   |
| <b>VA301</b>  | Bearing for traction motors   | <b>W</b>      | Without annular groove and lubrication holes in outer ring   |
| <b>VA305</b>  | VA301 + special inspection routines   | <b>WT</b>     | Grease fill for low as well as high operating temperatures (-40 to +160°C). Greases, which differ from the selected standard grease for this temperature range are identified as explained under "HT" Examples: WT or WTF1 |
| <b>VA3091</b> | VA301 + VL0241  | <b>W20</b>    | Three lubrication holes in the outer ring (No groove)  |
| <b>VA405</b>  | Bearing for vibratory applications  | <b>W22</b>    | Reduced tolerance on the outer ring  |
| <b>VA406</b>  | Bearing for vibratory applications with special PTFE bore coating   | <b>W26</b>    | Six lubrication holes in the inner ring  |
| <b>VE240</b>  | CARB bearing modified for greater axial displacement  | <b>W31</b>    | Inspected to special quality control requirements  |
| <b>VE226</b>  | VX110, but with only three lubricating holes  | <b>W33</b>    | Annular groove and three lubrication holes in the outer ring   |
| <b>VE447</b>  | Shaft washer with three equally spaced threaded holes in one side face to accommodate hoisting tackle   | <b>W4</b>     | High point of eccentricity marked on inner ring or sleeve  |
| <b>VE552</b>  | Outer ring with three equally spaced threaded holes in one side face to accommodate hoisting tackle   | <b>W502</b>   | Combination of W22 and W33   |
|               |   | <b>W507</b>   | Combination of W4, W31 & W33   |
|               |   | <b>W509</b>   | Combination of W26, W31 & W33  |
|               |   | <b>W513</b>   | W26 + W33  |
|               |   | <b>W525</b>   | Combination of W31 and W77   |
|               |   | <b>W64</b>    | Solid Oil fill   |
|               |   | <b>W77</b>    | Plugged W33 lubrication holes  |
|               |   | <b>X</b>      | 1. Boundary dimensions altered to conform to ISO standards<br>2. Cylindrical runner surface (track runner bearing)   |
|               |   | <b>Y</b>      | Pressed brass cage, rolling element centred: different designs or materials are identified by a figure following the Y, e.g. Y1  |
|               |   | <b>Z</b>      | Shield of pressed sheet steel on one side of the bearing   |
|               |   | <b>2Z</b>     | Shields of pressed sheet steel on both sides of the bearing  |