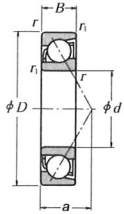
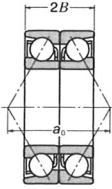


# ANGULAR CONTACT BALL BEARINGS

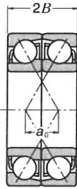
## SINGLE/MATCHED MOUNTINGS Bore Diameter 25 - 40 mm



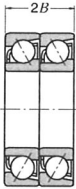
Single



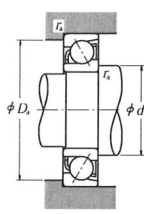
Back-to-Back  
DB



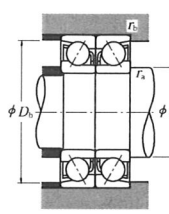
Face-to-Face  
DF



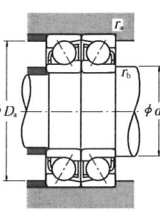
Tandem  
DT



Single



Back-to-Back  
DB



Face-to-Face  
DF

### Dynamic Equivalent Load

$$P = X F_r + Y F_a$$

| Contact Angle | $\frac{1}{2} F_a^*$<br>$C_{er}$ | $e$  | Single, DT       |   |               |      | DB or DF         |      |               |      |      |
|---------------|---------------------------------|------|------------------|---|---------------|------|------------------|------|---------------|------|------|
|               |                                 |      | $F_a/F_r \leq e$ |   | $F_a/F_r > e$ |      | $F_a/F_r \leq e$ |      | $F_a/F_r > e$ |      |      |
|               |                                 |      | X                | Y | X             | Y    | X                | Y    | X             | Y    |      |
| 15°           | 0.178                           | 0.38 | 1                | 0 | 0.44          | 1.47 | 1                | 1.65 | 0.72          | 2.39 |      |
|               | 0.357                           | 0.40 | 1                | 0 | 0.44          | 1.40 | 1                | 1.57 | 0.72          | 2.28 |      |
|               | 0.714                           | 0.43 | 1                | 0 | 0.44          | 1.30 | 1                | 1.46 | 0.72          | 2.11 |      |
|               | 1.07                            | 0.46 | 1                | 0 | 0.44          | 1.23 | 1                | 1.38 | 0.72          | 2.00 |      |
|               | 1.43                            | 0.47 | 1                | 0 | 0.44          | 1.19 | 1                | 1.34 | 0.72          | 1.93 |      |
|               | 2.14                            | 0.50 | 1                | 0 | 0.44          | 1.12 | 1                | 1.26 | 0.72          | 1.82 |      |
| 25°           | 3.57                            | 0.55 | 1                | 0 | 0.44          | 1.02 | 1                | 1.14 | 0.72          | 1.66 |      |
|               | 5.35                            | 0.56 | 1                | 0 | 0.44          | 1.00 | 1                | 1.12 | 0.72          | 1.63 |      |
|               | —                               | 0.68 | 1                | 0 | 0.41          | 0.87 | 1                | 0.92 | 0.67          | 1.41 |      |
|               | 30°                             | —    | 0.80             | 1 | 0             | 0.39 | 0.76             | 1    | 0.78          | 0.63 | 1.24 |
|               | 40°                             | —    | 1.14             | 1 | 0             | 0.35 | 0.57             | 1    | 0.55          | 0.57 | 0.93 |

\*For  $r_1$ , use 2 for DB, DF and 1 for DT

### Static Equivalent Load

$$P_0 = X_0 F_r + Y_0 F_a$$

| Contact Angle | Single, DT |       | DB or DF |       | Single or DT mounting when $F_a > 0.5 F_r = Y_0 F_a$ use $P_0 = F_r$ |
|---------------|------------|-------|----------|-------|----------------------------------------------------------------------|
|               | $X_0$      | $Y_0$ | $X_0$    | $Y_0$ |                                                                      |
|               |            |       |          |       |                                                                      |
| 15°           | 0.5        | 0.46  | 1        | 0.92  |                                                                      |
| 25°           | 0.5        | 0.38  | 1        | 0.76  |                                                                      |
| 30°           | 0.5        | 0.33  | 1        | 0.66  |                                                                      |
| 40°           | 0.5        | 0.26  | 1        | 0.52  |                                                                      |

| Boundary Dimensions<br>(mm) |          |          |          |                       | Basic Load Ratings (Single)<br>(N) |                        |                       |                        | Factor                | Limiting<br>Speeds (1)<br>(min <sup>-1</sup> ) |        | Eff. Load<br>Centers<br>(mm) | Abutment and Fillet<br>Dimensions (mm) |                       |                       | Mass<br>(kg) |
|-----------------------------|----------|----------|----------|-----------------------|------------------------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------------------------------|--------|------------------------------|----------------------------------------|-----------------------|-----------------------|--------------|
| <i>d</i>                    | <i>D</i> | <i>B</i> | <i>r</i> | <i>r</i> <sub>1</sub> | <i>C</i> <sub>r</sub>              | <i>C</i> <sub>0r</sub> | <i>C</i> <sub>r</sub> | <i>C</i> <sub>0r</sub> | <i>f</i> <sub>0</sub> | Grease                                         | Oil    | <i>a</i>                     | <i>d</i> <sub>a</sub>                  | <i>D</i> <sub>a</sub> | <i>r</i> <sub>a</sub> | approx.      |
|                             |          |          | min.     | max.                  |                                    |                        |                       |                        |                       |                                                |        |                              | min.                                   | max.                  | max.                  |              |
| 25                          | 62       | 17       | 1.1      | 0.6                   | 24 400                             | 14 600                 | 2 490                 | 1 490                  | —                     | 9 000                                          | 13 000 | 26.7                         | 32                                     | 55                    | 1                     | 0.241        |
|                             | 62       | 17       | 1.1      | 0.6                   | 27 200                             | 14 900                 | 2 770                 | 1 520                  | —                     | 10 000                                         | 15 000 | 26.8                         | 32                                     | 55                    | 1                     | 0.229        |
| 30                          | 47       | 9        | 0.3      | 0.15                  | 7 850                              | 5 950                  | 800                   | 605                    | —                     | 18 000                                         | 24 000 | 13.5                         | 32.5                                   | 44.5                  | 0.3                   | 0.049        |
|                             | 47       | 9        | 0.3      | 0.15                  | 8 300                              | 6 250                  | 845                   | 640                    | 15.9                  | 22 000                                         | 28 000 | 9.7                          | 32.5                                   | 44.5                  | 0.3                   | 0.049        |
| 55                          | 13       | 1        | 0.6      | 14 500                | 10 100                             | 1 480                  | 1 030                 | —                      | 13 000                | 18 000                                         | 18.8   | 36                           | 49                                     | 1                     | 0.116                 |              |
|                             | 55       | 13       | 1        | 0.6                   | 15 100                             | 10 300                 | 1 540                 | 1 050                  | 14.9                  | 19 000                                         | 26 000 | 12.2                         | 36                                     | 49                    | 1                     | 0.134        |
| 62                          | 16       | 1        | 0.6      | 22 500                | 14 800                             | 2 300                  | 1 510                 | —                      | 12 000                | 17 000                                         | 21.3   | 36                           | 56                                     | 1                     | 0.197                 |              |
|                             | 62       | 16       | 1        | 0.6                   | 20 500                             | 13 500                 | 2 080                 | 1 380                  | —                     | 8 500                                          | 12 000 | 27.3                         | 36                                     | 56                    | 1                     | 0.202        |
| 62                          | 16       | 1        | 0.6      | 23 700                | 14 300                             | 2 420                  | 1 460                 | —                      | 10 000                | 14 000                                         | 27.3   | 36                           | 56                                     | 1                     | 0.194                 |              |
|                             | 62       | 16       | 1        | 0.6                   | 23 000                             | 14 700                 | 2 350                 | 1 500                  | 13.9                  | 18 000                                         | 24 000 | 14.2                         | 36                                     | 56                    | 1                     | 0.222        |
| 72                          | 19       | 1.1      | 0.6      | 33 500                | 20 900                             | 3 450                  | 2 130                 | —                      | 9 000                 | 12 000                                         | 24.2   | 37                           | 65                                     | 1                     | 0.346                 |              |
|                             | 72       | 19       | 1.1      | 0.6                   | 31 000                             | 19 300                 | 3 150                 | 1 960                  | —                     | 8 000                                          | 11 000 | 30.9                         | 37                                     | 65                    | 1                     | 0.354        |
| 72                          | 19       | 1.1      | 0.6      | 36 500                | 20 600                             | 3 700                  | 2 100                 | —                      | 9 000                 | 13 000                                         | 30.9   | 37                           | 65                                     | 1                     | 0.336                 |              |
|                             | 35       | 55       | 10       | 0.6                   | 0.3                                | 11 400                 | 8 700                 | 1 170                  | 885                   | —                                              | 15 000 | 20 000                       | 15.5                                   | 40                    | 50                    | 0.6          |
| 55                          |          | 10       | 0.6      | 0.3                   | 12 100                             | 9 150                  | 1 230                 | 930                    | 15.7                  | 18 000                                         | 24 000 | 11.0                         | 40                                     | 50                    | 0.6                   | 0.074        |
| 62                          | 14       | 1        | 0.6      | 18 300                | 13 400                             | 1 670                  | 1 370                 | —                      | 12 000                | 16 000                                         | 21.0   | 41                           | 56                                     | 1                     | 0.153                 |              |
|                             | 62       | 14       | 1        | 0.6                   | 19 100                             | 13 700                 | 1 950                 | 1 390                  | 15.0                  | 17 000                                         | 22 000 | 13.5                         | 41                                     | 56                    | 1                     | 0.173        |
| 72                          | 17       | 1.1      | 0.6      | 29 700                | 20 100                             | 3 050                  | 2 050                 | —                      | 10 000                | 14 000                                         | 23.9   | 42                           | 65                                     | 1                     | 0.287                 |              |
|                             | 72       | 17       | 1.1      | 0.6                   | 27 100                             | 18 400                 | 2 760                 | 1 670                  | —                     | 7 500                                          | 10 000 | 30.9                         | 42                                     | 65                    | 1                     | 0.294        |
| 72                          | 17       | 1.1      | 0.6      | 32 500                | 19 600                             | 3 300                  | 1 990                 | —                      | 8 500                 | 12 000                                         | 30.9   | 42                           | 65                                     | 1                     | 0.271                 |              |
|                             | 72       | 17       | 1.1      | 0.6                   | 30 500                             | 19 900                 | 3 100                 | 2 030                  | 13.9                  | 15 000                                         | 20 000 | 15.7                         | 42                                     | 65                    | 1                     | 0.32         |
| 80                          | 21       | 1.5      | 1        | 40 000                | 26 300                             | 4 050                  | 2 680                 | —                      | 8 000                 | 10 000                                         | 27.1   | 44                           | 71                                     | 1.5                   | 0.464                 |              |
|                             | 80       | 21       | 1.5      | 1                     | 36 500                             | 24 200                 | 3 750                 | 2 460                  | —                     | 7 100                                          | 9 500  | 34.6                         | 44                                     | 71                    | 1.5                   | 0.474        |
| 80                          | 21       | 1.5      | 1        | 40 500                | 24 400                             | 4 100                  | 2 490                 | —                      | 8 000                 | 11 000                                         | 34.6   | 44                           | 71                                     | 1.5                   | 0.451                 |              |
|                             | 40       | 62       | 12       | 0.6                   | 0.3                                | 14 300                 | 11 200                | 1 460                  | 1 140                 | —                                              | 14 000 | 18 000                       | 17.9                                   | 45                    | 57                    | 0.6          |
| 62                          |          | 12       | 0.6      | 0.3                   | 15 100                             | 11 700                 | 1 540                 | 1 200                  | 15.7                  | 16 000                                         | 22 000 | 12.8                         | 45                                     | 57                    | 0.6                   | 0.109        |
| 68                          | 15       | 1        | 0.6      | 19 500                | 15 400                             | 1 990                  | 1 570                 | —                      | 10 000                | 14 000                                         | 23.1   | 46                           | 62                                     | 1                     | 0.19                  |              |
|                             | 68       | 15       | 1        | 0.6                   | 20 600                             | 15 900                 | 2 100                 | 1 620                  | 15.4                  | 15 000                                         | 20 000 | 14.7                         | 46                                     | 62                    | 1                     | 0.213        |
| 80                          | 18       | 1.1      | 0.6      | 35 500                | 25 100                             | 3 600                  | 2 560                 | —                      | 9 500                 | 13 000                                         | 26.3   | 47                           | 73                                     | 1                     | 0.375                 |              |
|                             | 80       | 18       | 1.1      | 0.6                   | 32 000                             | 23 000                 | 3 250                 | 2 340                  | —                     | 6 700                                          | 9 000  | 34.2                         | 47                                     | 73                    | 1                     | 0.383        |

Notes (1) For applications operating near the limiting speed, refer to Page B49.  
(2) The suffixes A, A5, B, and C represent contact angles of 30°, 25°, 40°, and 15° respectively.

| Bearing Numbers (°) |        |    |    | Basic Load Ratings (Matched) |          |       |          | Limiting Speeds (1) (Matched) |        | Load Center Spacing (mm) |      | Abutment and Fillet Dimensions (mm) |            |                              |  |  |  |
|---------------------|--------|----|----|------------------------------|----------|-------|----------|-------------------------------|--------|--------------------------|------|-------------------------------------|------------|------------------------------|--|--|--|
|                     |        |    |    | (N)                          |          |       |          | (kgf)                         |        |                          |      | $d_0$                               |            |                              |  |  |  |
| Single              | Duplex |    |    | $C_r$                        | $C_{0r}$ | $C_r$ | $C_{0r}$ | Grease                        | Oil    | DB                       | DF   | $d_h$ (r <sub>1</sub> ) min.        | $D_h$ max. | $r_h$ (r <sub>1</sub> ) max. |  |  |  |
| 7305 B              | DB     | DF | DT | 39 500                       | 29 300   | 4 050 | 2 960    | 7 500                         | 10 000 | 53.5                     | 19.5 | 30                                  | 57         | 0.6                          |  |  |  |
| *7305 BEA           |        |    |    | —                            | —        | —     | —        | 8 500                         | 12 000 | 53.5                     | 19.5 | 30                                  | 57         | 0.6                          |  |  |  |
| 7906 A5             | DB     | DF | DT | 12 800                       | 11 900   | 1 300 | 1 210    | 14 000                        | 19 000 | 27.0                     | 9.0  | —                                   | 45.8       | 0.15                         |  |  |  |
| 7906 C              | DB     | DF | DT | 13 500                       | 12 500   | 1 380 | 1 280    | 17 000                        | 24 000 | 19.3                     | 1.3  | —                                   | 45.8       | 0.15                         |  |  |  |
| 7906 A              | DB     | DF | DT | 23 600                       | 20 200   | 2 410 | 2 060    | 11 000                        | 15 000 | 37.5                     | 11.5 | 35                                  | 50         | 0.6                          |  |  |  |
| 7006 C              | DB     | DF | DT | 24 600                       | 20 500   | 2 510 | 2 080    | 15 000                        | 22 000 | 24.4                     | 1.6  | —                                   | 50         | 0.6                          |  |  |  |
| 7206 A              | DB     | DF | DT | 36 500                       | 29 500   | 3 750 | 3 000    | 10 000                        | 13 000 | 42.6                     | 10.6 | 35                                  | 57         | 0.6                          |  |  |  |
| 7206 B              | DB     | DF | DT | 33 500                       | 27 000   | 3 400 | 2 760    | 7 100                         | 9 500  | 54.6                     | 22.6 | 35                                  | 57         | 0.6                          |  |  |  |
| *7206 BEA           |        |    |    | —                            | —        | —     | —        | 8 000                         | 11 000 | 54.6                     | 22.6 | 35                                  | 57         | 0.6                          |  |  |  |
| 7206 C              | DB     | DF | DT | 37 500                       | 29 300   | 3 800 | 2 980    | 14 000                        | 20 000 | 28.3                     | 3.7  | —                                   | 57         | 0.6                          |  |  |  |
| 7306 A              | DB     | DF | DT | 54 500                       | 41 500   | 5 600 | 4 250    | 7 100                         | 9 500  | 48.4                     | 10.4 | 35                                  | 67         | 0.6                          |  |  |  |
| 7306 B              | DB     | DF | DT | 50 500                       | 38 500   | 5 150 | 3 950    | 6 300                         | 8 500  | 61.8                     | 23.8 | 35                                  | 67         | 0.6                          |  |  |  |
| *7306 BEA           |        |    |    | —                            | —        | —     | —        | 7 100                         | 10 000 | 61.8                     | 23.8 | 35                                  | 67         | 0.6                          |  |  |  |
| 7907 A5             | DB     | DF | DT | 18 600                       | 17 400   | 1 880 | 1 770    | 12 000                        | 17 000 | 31.0                     | 11.0 | —                                   | 52.5       | 0.3                          |  |  |  |
| 7907 C              | DB     | DF | DT | 19 600                       | 18 300   | 2 000 | 1 860    | 14 000                        | 20 000 | 22.1                     | 2.1  | —                                   | 52.5       | 0.3                          |  |  |  |
| 7907 A              | DB     | DF | DT | 29 700                       | 26 800   | 3 050 | 2 740    | 9 500                         | 13 000 | 42.0                     | 14.0 | 40                                  | 57         | 0.6                          |  |  |  |
| 7007 C              | DB     | DF | DT | 31 000                       | 27 300   | 3 150 | 2 780    | 13 000                        | 19 000 | 27.0                     | 1.0  | —                                   | 57         | 0.6                          |  |  |  |
| 7207 A              | DB     | DF | DT | 48 500                       | 40 000   | 4 900 | 4 100    | 8 500                         | 12 000 | 47.9                     | 13.9 | 40                                  | 67         | 0.6                          |  |  |  |
| 7207 B              | DB     | DF | DT | 44 000                       | 36 500   | 4 500 | 3 750    | 6 000                         | 8 000  | 61.9                     | 27.9 | 40                                  | 67         | 0.6                          |  |  |  |
| *7207 BEA           |        |    |    | —                            | —        | —     | —        | 6 700                         | 9 500  | 61.9                     | 27.9 | 40                                  | 67         | 0.6                          |  |  |  |
| 7207 C              | DB     | DF | DT | 49 500                       | 40 000   | 5 050 | 4 050    | 12 000                        | 17 000 | 31.3                     | 2.7  | —                                   | 67         | 0.6                          |  |  |  |
| 7307 A              | DB     | DF | DT | 65 000                       | 52 500   | 6 600 | 5 350    | 6 300                         | 8 500  | 54.2                     | 12.2 | 41                                  | 74         | 1                            |  |  |  |
| 7307 B              | DB     | DF | DT | 59 500                       | 48 500   | 6 100 | 4 950    | 5 600                         | 7 500  | 69.2                     | 27.2 | 41                                  | 74         | 1                            |  |  |  |
| *7307 BEA           |        |    |    | —                            | —        | —     | —        | 6 300                         | 9 000  | 69.2                     | 27.2 | 41                                  | 74         | 1                            |  |  |  |
| 7908 A5             | DB     | DF | DT | 23 300                       | 22 300   | 2 370 | 2 270    | 11 000                        | 15 000 | 35.8                     | 11.8 | —                                   | 59.5       | 0.3                          |  |  |  |
| 7908 C              | DB     | DF | DT | 24 600                       | 23 500   | 2 510 | 2 390    | 13 000                        | 18 000 | 25.7                     | 1.7  | —                                   | 59.5       | 0.3                          |  |  |  |
| 7908 A              | DB     | DF | DT | 31 500                       | 31 000   | 3 250 | 3 150    | 8 500                         | 11 000 | 46.2                     | 16.2 | 45                                  | 63         | 0.6                          |  |  |  |
| 7008 C              | DB     | DF | DT | 33 500                       | 32 000   | 3 400 | 3 250    | 12 000                        | 17 000 | 29.5                     | 0.5  | —                                   | 63         | 0.6                          |  |  |  |
| 7208 A              | DB     | DF | DT | 57 500                       | 50 500   | 5 850 | 5 150    | 7 500                         | 10 000 | 52.6                     | 16.6 | 45                                  | 75         | 0.6                          |  |  |  |
| 7208 B              | DB     | DF | DT | 52 000                       | 46 000   | 5 300 | 4 700    | 5 300                         | 7 500  | 68.3                     | 32.3 | 45                                  | 75         | 0.6                          |  |  |  |