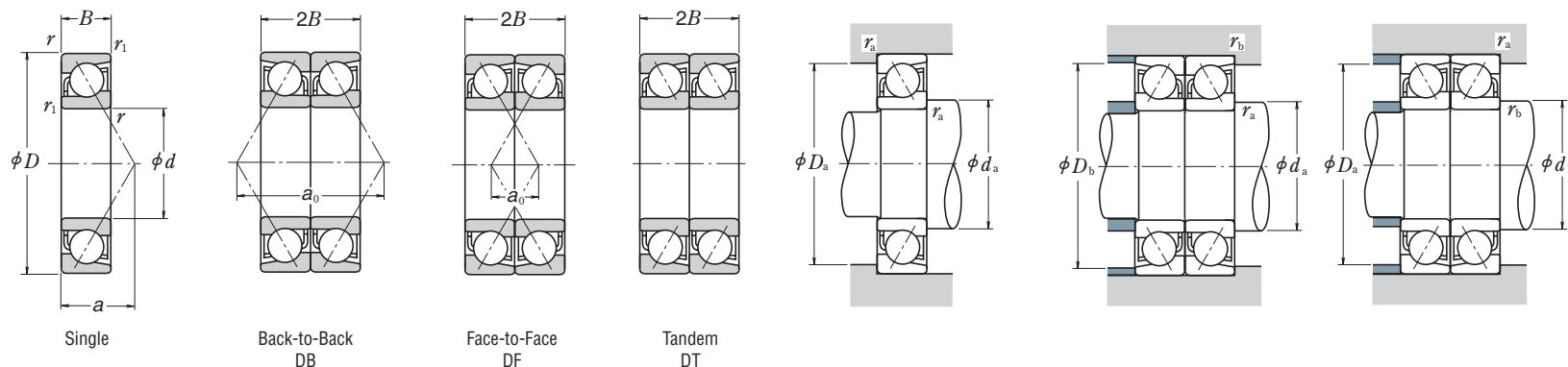


## ■ ANGULAR CONTACT BALL BEARINGS

## SINGLE/MATCHED MOUNTINGS

Bore Diameter 10 – 15 mm

Dynamic Equivalent Load  $P = XF_r + YF_a$ 

| Contact Angle | $i f_0 F_a^* / C_{0r}$ | $e$  | 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 |
|               | 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 |
| 25°           | —                      | 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  $i$ , use 2 for DB and DF and 1 for DTStatic Equivalent Load  $P_0 = X_0 F_r + Y_0 F_a$ 

| Contact Angle | Single, DT |       | DB or DF |       | Single or DT mounting When $F_r > 0.5 F_r + Y_0 F_a$ 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<br>(Single)          |                        | Factor | Limiting Speeds <sup>(1)</sup><br>(min <sup>-1</sup> ) |        | Eff.Load<br>Center<br>(mm)<br><i>a</i> | Abutment and Fillet<br>Dimensions (mm) |                               |                               | Mass<br>(kg)<br><br>approx. | Bearing Designations <sup>(2)</sup><br>Cage Designation <sup>(4)</sup> |                             |                                    |                                 | Basic Load Ratings<br>(Matched)         |                        | Limiting<br>Speeds <sup>(1)</sup> (Matched) |                                 | Load Center<br>Spacings (mm) |                             | Abutment and Fillet<br>Dimensions (mm)       |                               |                                              |      |      |      |
|-----------------------------|----------|----------|------------------|-------------------------------|-----------------------------------------|------------------------|--------|--------------------------------------------------------|--------|----------------------------------------|----------------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------------------------------------------------------|-----------------------------|------------------------------------|---------------------------------|-----------------------------------------|------------------------|---------------------------------------------|---------------------------------|------------------------------|-----------------------------|----------------------------------------------|-------------------------------|----------------------------------------------|------|------|------|
| <i>d</i>                    | <i>D</i> | <i>B</i> | <i>r</i><br>min. | <i>r</i> <sub>1</sub><br>min. | <i>C</i> <sub>r</sub><br><sup>(N)</sup> | <i>C</i> <sub>0r</sub> |        | Grease                                                 | Oil    |                                        | <i>d</i> <sub>a</sub><br>min.          | <i>D</i> <sub>a</sub><br>max. | <i>r</i> <sub>a</sub><br>max. |                             | Single                                                                 | Standard                    | Option                             | Arrangement                     | <i>C</i> <sub>r</sub><br><sup>(N)</sup> | <i>C</i> <sub>0r</sub> | Grease<br><br>(min <sup>-1</sup> )          | Oil<br><br>(min <sup>-1</sup> ) | DB                           | <i>a</i> <sub>0</sub><br>DF | <i>d</i> <sub>b</sub> <sup>(3)</sup><br>min. | <i>D</i> <sub>b</sub><br>max. | <i>r</i> <sub>b</sub> <sup>(3)</sup><br>max. |      |      |      |
| 10                          | 22       | 6        | 0.3              | 0.15                          | 2 880                                   | 1 450                  | —      | 40 000                                                 | 56 000 | 6.7                                    | 12.5                                   | 19.5                          | 0.3                           | 0.010                       | 7900 A5<br>7900 C<br>7000 A                                            | TYN<br>TYN<br>W             | (M)<br>(M), T<br>(M), T, TYN       | DB<br>DB<br>DB                  | DF<br>DF<br>DF                          | DT<br>DT<br>DT         | 4 700                                       | 2 900                           | 32 000                       | 43 000                      | 13.5                                         | 1.5                           | —                                            | 20.8 | 0.15 |      |
|                             | 22       | 6        | 0.3              | 0.15                          | 3 000                                   | 1 520                  | 14.1   | 48 000                                                 | 63 000 | 5.1                                    | 12.5                                   | 19.5                          | 0.3                           | 0.010                       |                                                                        |                             |                                    |                                 |                                         |                        | 4 900                                       | 3 050                           | 38 000                       | 53 000                      | 10.3                                         | 1.7                           | —                                            | 20.8 | 0.15 |      |
|                             | 26       | 8        | 0.3              | 0.15                          | 5 350                                   | 2 600                  | —      | 24 000                                                 | 34 000 | 9.2                                    | 12.5                                   | 23.5                          | 0.3                           | 0.019                       |                                                                        |                             |                                    |                                 |                                         |                        | 8 750                                       | 5 200                           | 20 000                       | 28 000                      | 18.4                                         | 2.4                           | 11.2                                         | 24.8 | 0.15 |      |
|                             | 26       | 8        | 0.3              | 0.15                          | 5 300                                   | 2 490                  | 12.6   | 45 000                                                 | 63 000 | 6.4                                    | 12.5                                   | 23.5                          | 0.3                           | 0.019                       | 7000 C<br>7200 A<br>7200 B                                             | TYN<br>W<br>W               | W, (M), T<br>(M), TYN<br>(M), T    | DB<br>DB<br>DB                  | DF<br>DF<br>DF                          | DT<br>DT<br>DT         | 8 650                                       | 5 000                           | 36 000                       | 50 000                      | 12.8                                         | 3.2                           | —                                            | 24.8 | 0.15 |      |
|                             | 30       | 9        | 0.6              | 0.3                           | 5 400                                   | 2 710                  | —      | 22 000                                                 | 30 000 | 10.3                                   | 15                                     | 25                            | 0.6                           | 0.032                       |                                                                        |                             |                                    |                                 |                                         |                        | 8 800                                       | 5 400                           | 18 000                       | 24 000                      | 20.5                                         | 2.5                           | 12.5                                         | 27.5 | 0.3  |      |
|                             | 30       | 9        | 0.6              | 0.3                           | 5 000                                   | 2 500                  | —      | 16 000                                                 | 22 000 | 12.9                                   | 15                                     | 25                            | 0.6                           | 0.032                       |                                                                        |                             |                                    |                                 |                                         |                        | 8 100                                       | 5 000                           | 13 000                       | 18 000                      | 25.8                                         | 7.8                           | 12.5                                         | 27.5 | 0.3  |      |
|                             | 30       | 9        | 0.6              | 0.3                           | 5 400                                   | 2 610                  | 13.2   | 40 000                                                 | 56 000 | 7.2                                    | 15                                     | 25                            | 0.6                           | 0.032                       | 7200 C<br>7300 A<br>7300 B                                             | TYN<br>W<br>W               | W, (M), T<br>(M), T<br>(M), T      | DB<br>DB<br>DB                  | DF<br>DF<br>DF                          | DT<br>DT<br>DT         | 8 800                                       | 5 200                           | 32 000                       | 45 000                      | 14.4                                         | 3.6                           | —                                            | 27.5 | 0.3  |      |
|                             | 35       | 11       | 0.6              | 0.3                           | 9 300                                   | 4 300                  | —      | 16 000                                                 | 22 000 | 12.0                                   | 15                                     | 30                            | 0.6                           | 0.053                       |                                                                        |                             |                                    |                                 |                                         |                        | 15 100                                      | 8 600                           | 13 000                       | 17 000                      | 24.0                                         | 2.0                           | 12.5                                         | 32.5 | 0.3  |      |
|                             | 35       | 11       | 0.6              | 0.3                           | 8 750                                   | 4 050                  | —      | 14 000                                                 | 20 000 | 14.9                                   | 15                                     | 30                            | 0.6                           | 0.054                       |                                                                        |                             |                                    |                                 |                                         |                        | 14 200                                      | 8 100                           | 11 000                       | 16 000                      | 29.9                                         | 7.9                           | 12.5                                         | 32.5 | 0.3  |      |
|                             | 12       | 24       | 6                | 0.3                           | 0.15                                    | 3 200                  | 1 770  | —                                                      | 38 000 | 53 000                                 | 7.2                                    | 14.5                          | 21.5                          | 0.3                         | 0.011                                                                  | 7901 A5<br>7901 C<br>7001 A | TYN<br>TYN<br>W                    | (M), T<br>(M), T<br>(M), T, TYN | DB<br>DB<br>DB                          | DF<br>DF<br>DF         | DT<br>DT<br>DT                              | 5 200                           | 3 550                        | 30 000                      | 43 000                                       | 14.4                          | 2.4                                          | —    | 22.8 | 0.15 |
|                             |          | 24       | 6                | 0.3                           | 0.15                                    | 3 350                  | 1 860  | 14.7                                                   | 45 000 | 63 000                                 | 5.4                                    | 14.5                          | 21.5                          | 0.3                         | 0.011                                                                  |                             |                                    |                                 |                                         |                        |                                             | 5 450                           | 3 700                        | 36 000                      | 50 000                                       | 10.8                          | 1.2                                          | —    | 22.8 | 0.15 |
|                             |          | 28       | 8                | 0.3                           | 0.15                                    | 5 800                  | 2 980  | —                                                      | 22 000 | 30 000                                 | 9.8                                    | 14.5                          | 25.5                          | 0.3                         | 0.021                                                                  |                             |                                    |                                 |                                         |                        |                                             | 9 400                           | 5 950                        | 18 000                      | 24 000                                       | 19.5                          | 3.5                                          | 13.2 | 26.8 | 0.15 |
| 28                          |          | 8        | 0.3              | 0.15                          | 5 800                                   | 2 900                  | 13.2   | 40 000                                                 | 56 000 | 6.7                                    | 14.5                                   | 25.5                          | 0.3                           | 0.021                       | 7001 C<br>7201 A<br>7201 B                                             | TYN<br>W<br>W               | W, (M), T<br>(M), T, TYN<br>(M), T | DB<br>DB<br>DB                  | DF<br>DF<br>DF                          | DT<br>DT<br>DT         | 9 400                                       | 5 800                           | 32 000                       | 45 000                      | 13.4                                         | 2.6                           | —                                            | 26.8 | 0.15 |      |
| 32                          |          | 10       | 0.6              | 0.3                           | 8 000                                   | 4 050                  | —      | 20 000                                                 | 28 000 | 11.4                                   | 17                                     | 27                            | 0.6                           | 0.037                       |                                                                        |                             |                                    |                                 |                                         |                        | 13 000                                      | 8 050                           | 16 000                       | 22 000                      | 22.7                                         | 2.7                           | 14.5                                         | 29.5 | 0.3  |      |
| 32                          |          | 10       | 0.6              | 0.3                           | 7 450                                   | 3 750                  | —      | 15 000                                                 | 20 000 | 14.2                                   | 17                                     | 27                            | 0.6                           | 0.038                       |                                                                        |                             |                                    |                                 |                                         |                        | 12 100                                      | 7 500                           | 12 000                       | 16 000                      | 28.5                                         | 8.5                           | 14.5                                         | 29.5 | 0.3  |      |
| 32                          |          | 10       | 0.6              | 0.3                           | 8 150                                   | 3 750                  | —      | 20 000                                                 | 30 000 | 14.2                                   | 17                                     | 27                            | 0.6                           | 0.036                       | *7201 BEA<br>7201 C<br>7301 A                                          | T85<br>TYN<br>W             | —<br>W, (M), T<br>(M), T           | DB<br>DB<br>DB                  | DF<br>DF<br>DF                          | DT<br>DT<br>DT         | —                                           | —                               | 16 000                       | 24 000                      | 28.5                                         | 8.5                           | 14.5                                         | 29.5 | 0.3  |      |
| 32                          |          | 10       | 0.6              | 0.3                           | 7 900                                   | 3 850                  | 12.5   | 36 000                                                 | 50 000 | 7.9                                    | 17                                     | 27                            | 0.6                           | 0.036                       |                                                                        |                             |                                    |                                 |                                         |                        | 12 800                                      | 7 700                           | 30 000                       | 40 000                      | 15.9                                         | 4.1                           | —                                            | 29.5 | 0.3  |      |
| 37                          |          | 12       | 1                | 0.6                           | 9 450                                   | 4 500                  | —      | 15 000                                                 | 20 000 | 13.1                                   | 18                                     | 31                            | 1                             | 0.060                       |                                                                        |                             |                                    |                                 |                                         |                        | 15 400                                      | 9 000                           | 12 000                       | 16 000                      | 26.1                                         | 2.1                           | 17                                           | 32   | 0.6  |      |
| 37                          |          | 12       | 1                | 0.6                           | 8 850                                   | 4 200                  | —      | 13 000                                                 | 18 000 | 16.3                                   | 18                                     | 31                            | 1                             | 0.062                       | 7301 B<br>*7301 BEA                                                    | W<br>T85                    | (M), T<br>—                        | DB<br>—                         | DF<br>—                                 | DT<br>—                | 14 400                                      | 8 400                           | 10 000                       | 14 000                      | 32.6                                         | 8.6                           | 17                                           | 32   | 0.6  |      |
| 37                          |          | 12       | 1                | 0.6                           | 11 100                                  | 4 950                  | —      | 18 000                                                 | 26 000 | 16.3                                   | 18                                     | 31                            | 1                             | 0.061                       |                                                                        |                             |                                    |                                 |                                         |                        | —                                           | —                               | 15 000                       | 22 000                      | 32.6                                         | 8.6                           | 17                                           | 32   | 0.6  |      |
| 15                          |          | 28       | 7                | 0.3                           | 0.15                                    | 4 550                  | 2 530  | —                                                      | 32 000 | 43 000                                 | 8.5                                    | 17.5                          | 25.5                          | 0.3                         | 0.016                                                                  | 7902 A5<br>7902 C<br>7002 A | TYN<br>TYN<br>W                    | (M), T<br>(M), T<br>(M), T, TYN | DB<br>DB<br>DB                          | DF<br>DF<br>DF         | DT<br>DT<br>DT                              | 7 400                           | 5 050                        | 26 000                      | 34 000                                       | 17.0                          | 3.0                                          | —    | 26.8 | 0.15 |
|                             | 28       | 7        | 0.3              | 0.15                          | 4 750                                   | 2 640                  | 14.5   | 38 000                                                 | 53 000 | 6.4                                    | 17.5                                   | 25.5                          | 0.3                           | 0.016                       | 7 750                                                                  |                             |                                    |                                 |                                         |                        |                                             | 5 300                           | 30 000                       | 43 000                      | 12.8                                         | 1.2                           | —                                            | 26.8 | 0.15 |      |
|                             | 32       | 9        | 0.3              | 0.15                          | 6 100                                   | 3 450                  | —      | 19 000                                                 | 26 000 | 11.3                                   | 17.5                                   | 29.5                          | 0.3                           | 0.030                       | 9 950                                                                  |                             |                                    |                                 |                                         |                        |                                             | 6 850                           | 15 000                       | 22 000                      | 22.6                                         | 4.6                           | 16.2                                         | 30.8 | 0.15 |      |
|                             | 32       | 9        | 0.3              | 0.15                          | 6 250                                   | 3 400                  | 14.1   | 34 000                                                 | 48 000 | 7.6                                    | 17.5                                   | 29.5                          | 0.3                           | 0.030                       | 7002 C<br>7202 A<br>7202 B                                             | TYN<br>W<br>W               | W, (M), T<br>(M), T, TYN<br>(M), T | DB<br>DB<br>DB                  | DF<br>DF<br>DF                          | DT<br>DT<br>DT         | 10 100                                      | 6 750                           | 28 000                       | 38 000                      | 15.3                                         | 2.7                           | —                                            | 30.8 | 0.15 |      |
|                             | 35       | 11       | 0.6              | 0.3                           | 8 650                                   | 4 650                  | —      | 18 000                                                 | 24 000 | 12.7                                   | 20                                     | 30                            | 0.6                           | 0.045                       |                                                                        |                             |                                    |                                 |                                         |                        | 14 000                                      | 9 300                           | 14 000                       | 20 000                      | 25.4                                         | 3.4                           | 17.5                                         | 32.5 | 0.3  |      |
|                             | 35       | 11       | 0.6              | 0.3                           | 7 950                                   | 4 300                  | —      | 13 000                                                 | 18 000 | 16.0                                   | 20                                     | 30                            | 0.6                           | 0.046                       |                                                                        |                             |                                    |                                 |                                         |                        | 12 900                                      | 8 600                           | 10 000                       | 14 000                      | 32.0                                         | 10.0                          | 17.5                                         | 32.5 | 0.3  |      |
|                             | 35       | 11       | 0.6              | 0.3                           | 9 800                                   | 4 800                  | —      | 18 000                                                 | 26 000 | 16.0                                   | 20                                     | 30                            | 0.6                           | 0.044                       | *7202 BEA<br>7202 C<br>7302 A                                          | T85<br>TYN<br>W             | —<br>W, (M), T<br>(M), T           | DB<br>DB<br>DB                  | DF<br>DF<br>DF                          | DT<br>DT<br>DT         | —                                           | —                               | 14 000                       | 20 000                      | 32.0                                         | 10.0                          | 17.5                                         | 32.5 | 0.3  |      |
|                             | 35       | 11       | 0.6              | 0.3                           | 8 650                                   | 4 550                  | 13.2   | 32 000                                                 | 45 000 | 8.8                                    | 20                                     | 30                            | 0.6                           | 0.045                       |                                                                        |                             |                                    |                                 |                                         |                        | 14 100                                      | 9 050                           | 26 000                       | 36 000                      | 17.7                                         | 4.3                           | —                                            | 32.5 | 0.3  |      |
|                             | 42       | 13       | 1                | 0.6                           | 13 400                                  | 7 100                  | —      | 13 000                                                 | 17 000 | 14.7                                   | 21                                     | 36                            | 1                             | 0.084                       |                                                                        |                             |                                    |                                 |                                         |                        | 21 800                                      | 14 200                          | 10 000                       | 13 000                      | 29.5                                         | 3.5                           | 20                                           | 37   | 0.6  |      |
|                             | 42       | 13       | 1                | 0.6                           | 12 500                                  | 6 600                  | —      | 11 000                                                 | 15 000 | 18.5                                   | 21                                     | 36                            | 1                             | 0.086                       | 7302 B<br>*7302 BEA                                                    | W<br>T85                    | (M), T<br>—                        | DB<br>DB                        | DF<br>DF                                | DT<br>DT               | 20 200                                      | 13 200                          | 9 000                        | 12 000                      | 36.9                                         | 10.9                          | 20                                           | 37   | 0.6  |      |
|                             | 42       | 13       | 1                | 0.6                           | 14 300                                  | 6 900                  | —      | 16 000                                                 | 22 000 | 18.5                                   | 21                                     | 36                            | 1                             | 0.084                       |                                                                        |                             |                                    |                                 |                                         |                        | —                                           | —                               | 13 000                       | 18 000                      | 36.9                                         | 10.9                          | 20                                           | 37   | 0.6  |      |