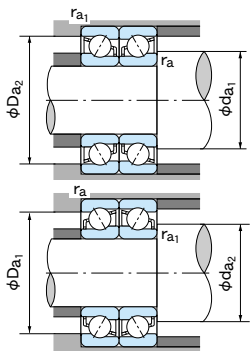
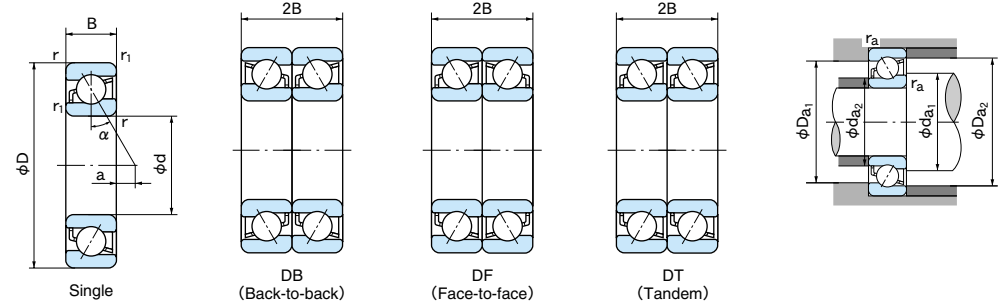


# Angular Contact Ball Bearings

## Single Mounting / Duplex Mounting

Bore Diameter : 10~17mm



• Dynamic equivalent radial load  
 $Pr = XFr + YFa$

| Contact angle | iFa<br>Cor | e    | Single or DT |      | DB or DF |      |          |      |
|---------------|------------|------|--------------|------|----------|------|----------|------|
|               |            |      | Fa<br>Fr     |      | Fa<br>Fr |      | Fa<br>Fr |      |
|               |            |      | > e          |      | ≤ e      |      | > e      |      |
|               |            |      | X            | Y    | X        | Y    | X        | Y    |
| 15°           | 0.015      | 0.38 |              |      | 1.47     | 1.65 |          |      |
|               | 0.029      | 0.40 | 0.44         | 1.40 | 1        | 1.57 | 0.72     | 2.39 |
|               | 0.058      | 0.43 |              | 1.30 |          | 1.46 |          | 2.11 |
|               | 0.087      | 0.46 |              | 1.23 |          | 1.38 |          | 2.00 |
|               | 0.12       | 0.47 | 0.44         | 1.19 | 1        | 1.34 | 0.72     | 1.93 |
|               | 0.17       | 0.50 |              | 1.12 |          | 1.26 |          | 1.82 |
| 30°           | 0.29       | 0.55 |              | 1.02 |          | 1.14 |          | 1.66 |
|               | 0.44       | 0.56 | 0.44         | 1.00 | 1        | 1.12 | 0.72     | 1.63 |
|               | 0.58       | 0.56 |              | 1.00 |          | 1.12 |          | 1.63 |
|               | 0.8        | 0.8  | 0.39         | 0.76 | 1        | 0.78 | 0.63     | 1.24 |
| 40°           | —          | 1.14 | 0.35         | 0.57 | 1        | 0.55 | 0.57     | 0.93 |

• i = 2 for DB or DF mounting  
i = 1 for Single or DT mounting  
• Single or DT mounting  
When  $Fa/Fr \leq e$ , use  $Pr = Fr$

• Static equivalent radial load  
 $Por = XoFr + YoFa$

| Contact angle | Single or DT |      | DB or DF |      |
|---------------|--------------|------|----------|------|
|               | Xo           | Yo   | Xo       | Yo   |
| 15°           | 0.5          | 0.46 | 1        | 0.92 |
| 30°           | 0.5          | 0.33 | 1        | 0.66 |
| 40°           | 0.5          | 0.26 | 1        | 0.52 |

• Single or DT mounting  
When  $Por < Fr$ , use  $Pr = Fr$

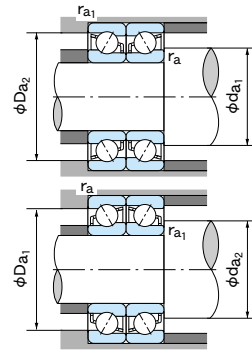
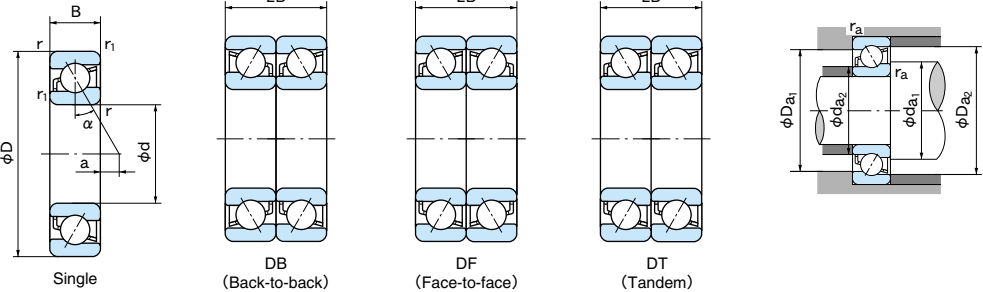
| Boundary dimensions (mm) |    |    |         |                      | Load center (mm) | Bearing No. |         |         |         | Basic dynamic load rating Cr(N) |        | Basic static load rating Cor(N) |        | Limiting speed (rpm) |        |        |                       | Abutment and fillet dimensions (mm) |                       |                       |                      |                       |        | Mass (kg) |       | Bearing No. |
|--------------------------|----|----|---------|----------------------|------------------|-------------|---------|---------|---------|---------------------------------|--------|---------------------------------|--------|----------------------|--------|--------|-----------------------|-------------------------------------|-----------------------|-----------------------|----------------------|-----------------------|--------|-----------|-------|-------------|
| d                        | D  | B  | r (min) | r <sub>1</sub> (min) | a <sup>(1)</sup> | Single      | Duplex  |         | Single  | Duplex                          | Single | Duplex                          | Single | Duplex               | Single | Duplex | d <sub>a1</sub> (min) | d <sub>a2</sub> (min)               | D <sub>a1</sub> (max) | D <sub>a2</sub> (max) | r <sub>a</sub> (max) | r <sub>a1</sub> (max) | Single |           |       |             |
| 10                       | 26 | 8  | 0.3     | 0.15                 | 1.2              | 7000        | 7000DB  | 7000DF  | 7000DT  | 5000                            | 8150   | 2340                            | 4650   | 23000                | 19000  | 31000  | 26000                 | 12                                  | 12                    | 24                    | 25                   | 0.3                   | 0.15   | 0.022     | 7000  |             |
|                          | 26 | 8  | 0.3     | 0.15                 | -1.9             | 7000C       | 7000CDB | 7000CDF | 7000CDT | 5350                            | 8700   | 2500                            | 5000   | 44000                | 35000  | 61000  | 49000                 | 12                                  | 12                    | 24                    | 25                   | 0.3                   | 0.15   | 0.022     | 7000C |             |
|                          | 30 | 9  | 0.6     | 0.3                  | 1.3              | 7200        | 7200DB  | 7200DF  | 7200DT  | 5400                            | 8800   | 2710                            | 5400   | 22000                | 18000  | 30000  | 24000                 | 15                                  | 12                    | 25                    | 27.4                 | 0.6                   | 0.3    | 0.034     | 7200  |             |
|                          | 30 | 9  | 0.6     | 0.3                  | 3.9              | 7200B       | 7200BDB | 7200BDF | 7200BDT | 5150                            | 8350   | 2570                            | 5150   | 19000                | 16000  | 28000  | 22000                 | 15                                  | 12                    | 25                    | 27.4                 | 0.6                   | 0.3    | 0.034     | 7200B |             |
|                          | 30 | 9  | 0.6     | 0.3                  | -2.2             | 7200C       | 7200CDB | 7200CDF | 7200CDT | 6950                            | 11300  | 3300                            | 6650   | 40000                | 32000  | 55000  | 44000                 | 15                                  | 15                    | 25                    | 27.4                 | 0.6                   | 0.3    | 0.034     | 7200C |             |
|                          | 35 | 11 | 0.6     | 0.3                  | 1.0              | 7300        | 7300DB  | 7300DF  | 7300DT  | 9300                            | 15100  | 4300                            | 8600   | 20000                | 16000  | 26000  | 21000                 | 15                                  | 12                    | 30                    | 32.4                 | 0.6                   | 0.3    | 0.055     | 7300  |             |
|                          | 35 | 11 | 0.6     | 0.3                  | 3.9              | 7300B       | 7300BDB | 7300BDF | 7300BDT | 8950                            | 14500  | 4150                            | 8250   | 18000                | 14000  | 24000  | 19000                 | 15                                  | 12                    | 30                    | 32.4                 | 0.6                   | 0.3    | 0.055     | 7300B |             |
|                          | 35 | 11 | 0.6     | 0.3                  | -2.8             | 7300C       | 7300CDB | 7300CDF | 7300CDT | 9850                            | 16000  | 4600                            | 9250   | 36000                | 29000  | 49000  | 39000                 | 15                                  | 15                    | 30                    | 32.4                 | 0.6                   | 0.3    | 0.055     | 7300C |             |
| 12                       | 28 | 8  | 0.3     | 0.15                 | 1.7              | 7001        | 7001DB  | 7001DF  | 7001DT  | 5050                            | 8800   | 2710                            | 5700   | 22000                | 18000  | 29000  | 23000                 | 14                                  | 14                    | 26                    | 27                   | 0.3                   | 0.15   | 0.024     | 7001  |             |
|                          | 28 | 8  | 0.3     | 0.15                 | -1.7             | 7001C       | 7001CDB | 7001CDF | 7001CDT | 5800                            | 9450   | 2910                            | 5800   | 40000                | 32000  | 55000  | 44000                 | 14                                  | 14                    | 26                    | 27                   | 0.3                   | 0.15   | 0.024     | 7001C |             |
|                          | 32 | 10 | 0.6     | 0.3                  | 1.4              | 7201        | 7201DB  | 7201DF  | 7201DT  | 7600                            | 12400  | 3960                            | 7950   | 20000                | 16000  | 27000  | 22000                 | 17                                  | 14                    | 27                    | 29.4                 | 0.6                   | 0.3    | 0.040     | 7201  |             |
|                          | 32 | 10 | 0.6     | 0.3                  | 4.2              | 7201B       | 7201BDB | 7201BDF | 7201BDT | 7200                            | 11700  | 3800                            | 7550   | 17000                | 15000  | 24000  | 20000                 | 17                                  | 14                    | 27                    | 29.4                 | 0.6                   | 0.3    | 0.040     | 7201B |             |
|                          | 32 | 10 | 0.6     | 0.3                  | -2.5             | 7201C       | 7201CDB | 7201CDF | 7201CDT | 7950                            | 13000  | 3900                            | 7750   | 36000                | 29000  | 50000  | 40000                 | 17                                  | 17                    | 27                    | 29.4                 | 0.6                   | 0.3    | 0.040     | 7201C |             |
|                          | 37 | 12 | 1       | 0.6                  | 1.1              | 7301        | 7301DB  | 7301DF  | 7301DT  | 11200                           | 18200  | 5250                            | 10500  | 18000                | 15000  | 24000  | 20000                 | 18                                  | 15                    | 31                    | 33.4                 | 1                     | 0.6    | 0.063     | 7301  |             |
|                          | 37 | 12 | 1       | 0.6                  | 4.3              | 7301B       | 7301BDB | 7301BDF | 7301BDT | 10800                           | 17500  | 5050                            | 10100  | 16000                | 13000  | 22000  | 18000                 | 18                                  | 15                    | 31                    | 33.4                 | 1                     | 0.6    | 0.063     | 7301B |             |
|                          | 37 | 12 | 1       | 0.6                  | -3.1             | 7301C       | 7301CDB | 7301CDF | 7301CDT | 10800                           | 17500  | 4900                            | 9800   | 33000                | 26000  | 45000  | 36000                 | 18                                  | 18                    | 31                    | 33.4                 | 1                     | 0.6    | 0.063     | 7301C |             |
| 15                       | 32 | 9  | 0.3     | 0.15                 | 2.3              | 7002        | 7002DB  | 7002DF  | 7002DT  | 6150                            | 9950   | 3400                            | 6850   | 18000                | 15000  | 24000  | 20000                 | 17                                  | 17                    | 30                    | 31                   | 0.3                   | 0.15   | 0.035     | 7002  |             |
|                          | 32 | 9  | 0.3     | 0.15                 | -1.8             | 7002C       | 7002CDB | 7002CDF | 7002CDT | 6650                            | 10800  | 3700                            | 7450   | 34000                | 27000  | 47000  | 38000                 | 17                                  | 17                    | 30                    | 31                   | 0.3                   | 0.15   | 0.035     | 7002C |             |
|                          | 35 | 11 | 0.6     | 0.3                  | 1.7              | 7202        | 7202DB  | 7202DF  | 7202DT  | 9050                            | 14700  | 4700                            | 9400   | 17000                | 14000  | 23000  | 19000                 | 20                                  | 17                    | 30                    | 32.4                 | 0.6                   | 0.3    | 0.048     | 7202  |             |
|                          | 35 | 11 | 0.6     | 0.3                  | 5.0              | 7202B       | 7202BDB | 7202BDF | 7202BDT | 8600                            | 14000  | 4500                            | 8950   | 16000                | 12000  | 21000  | 17000                 | 20                                  | 17                    | 30                    | 32.4                 | 0.6                   | 0.3    | 0.048     | 7202B |             |
|                          | 35 | 11 | 0.6     | 0.3                  | -2.6             | 7202C       | 7202CDB | 7202CDF | 7202CDT | 8700                            | 14200  | 4550                            | 9150   | 32000                | 26000  | 44000  | 35000                 | 20                                  | 20                    | 30                    | 32.4                 | 0.6                   | 0.3    | 0.048     | 7202C |             |
|                          | 42 | 13 | 1       | 0.6                  | 1.7              | 7302        | 7302DB  | 7302DF  | 7302DT  | 13600                           | 22000  | 7100                            | 14200  | 16000                | 13000  | 21000  | 17000                 | 21                                  | 18                    | 36                    | 38.4                 | 1                     | 0.6    | 0.085     | 7302  |             |
|                          | 42 | 13 | 1       | 0.6                  | 5.5              | 7302B       | 7302BDB | 7302BDF | 7302BDT | 12800                           | 21000  | 6750                            | 13500  | 14000                | 11000  | 19000  | 16000                 | 21                                  | 18                    | 36                    | 38.4                 | 1                     | 0.6    | 0.085     | 7302B |             |
|                          | 42 | 13 | 1       | 0.6                  | -3.1             | 7302C       | 7302CDB | 7302CDF | 7302CDT | 13300                           | 21700  | 6850                            | 13700  | 28000                | 22000  | 39000  | 31000                 | 21                                  | 21                    | 36                    | 38.4                 | 1                     | 0.6    | 0.085     | 7302C |             |
| 17                       | 35 | 10 | 0.3     | 0.15                 | 2.5              | 7003        | 7003DB  | 7003DF  | 7003DT  | 6400                            | 10400  | 3800                            | 7650   | 17000                | 13000  | 22000  | 18000                 | 19                                  | 19                    | 33                    | 34                   | 0.3                   | 0.15   | 0.045     | 7003  |             |
|                          | 35 | 10 | 0.3     | 0.15                 | -2.0             | 7003C       | 7003CDB | 7003CDF | 7003CDT | 7000                            | 11400  | 4150                            | 8300   | 31000                | 25000  | 42000  | 34000                 | 19                                  | 19                    | 33                    | 34                   | 0.3                   | 0.15   | 0.045     | 7003C |             |
|                          | 40 | 12 | 0.6     | 0.3                  | 2.2              | 7203        | 7203DB  | 7203DF  | 7203DT  | 11900                           | 19400  | 6600                            | 13200  | 16000                | 13000  | 21000  | 17000                 | 22                                  | 19                    | 35                    | 37.4                 | 0.6                   | 0.3    | 0.070     | 7203  |             |
|                          | 40 | 12 | 0.6     | 0.3                  | 6.0              | 7203B       | 7203BDB | 7203BDF | 7203BDT | 11300                           | 18400  | 6300                            | 12600  | 14000                | 11000  | 19000  | 15000                 | 22                                  | 19                    | 35                    | 37.4                 | 0.6                   | 0.3    | 0.070     | 7203B |             |
|                          | 40 | 12 | 0.6     | 0.3                  | -2.7             | 7203C       | 7203CDB | 7203CDF | 7203CDT | 10900                           | 17800  | 5900                            | 11800  | 28000                | 22000  | 39000  | 31000                 | 22                                  | 22                    | 35                    | 37.4                 | 0.6                   | 0.3    | 0.070     | 7203C |             |
|                          | 47 | 14 | 1       | 0.6                  | 2.2              | 7303        | 7303DB  | 7303DF  | 7303DT  | 15900                           | 25900  | 8650                            | 17300  | 14000                | 11000  | 19000  | 15000                 | 23                                  | 21                    | 41                    | 43.4                 | 1                     | 0.6    | 0.120     | 7303  |             |
|                          | 47 | 14 | 1       | 0.6                  | 6.4              | 7303B       | 7303BDB | 7303BDF | 7303BDT | 15200                           | 24700  | 8250                            | 16500  | 13000                | 10000  | 17000  | 14000                 | 23                                  | 21                    | 41                    | 43.4                 | 1                     | 0.6    | 0.120     | 7303B |             |
|                          | 47 | 14 | 1       | 0.6                  | -3.2             | 7303C       | 7303CDB | 7303CDF | 7303CDT | 15900                           | 25800  | 8350                            | 16700  | 25000                | 20000  | 34000  | 27000                 | 23                                  | 23                    | 41                    | 43.4                 | 1                     | 0.6    | 0.120     | 7303C |             |

Note : (1) "a" means the distance between back face and load center.

# Angular Contact Ball Bearings

## Single Mounting / Duplex Mounting

Bore Diameter : 20~35mm



• Dynamic equivalent radial load  
 $Pr = XFr + YFa$

| Contact angle | iFa<br>Cor | e    | Single or DT        |      | DB or DF               |      |                     |      |
|---------------|------------|------|---------------------|------|------------------------|------|---------------------|------|
|               |            |      | $\frac{Fa}{Fr} > e$ |      | $\frac{Fa}{Fr} \leq e$ |      | $\frac{Fa}{Fr} > e$ |      |
|               |            |      | X                   | Y    | X                      | Y    | X                   | Y    |
| 15°           | 0.015      | 0.38 | 1.47                | 1.65 | 0.72                   | 2.39 |                     |      |
|               | 0.029      | 0.40 | 0.44                | 1.40 | 1.57                   | 2.28 |                     |      |
|               | 0.058      | 0.43 | 1.30                | 1.46 | 1.46                   | 2.11 |                     |      |
|               | 0.087      | 0.46 | 1.23                | 1.38 | 1.38                   | 2.00 |                     |      |
|               | 0.12       | 0.47 | 0.44                | 1.19 | 1.34                   | 0.72 | 1.93                |      |
|               | 0.17       | 0.50 | 1.12                | 1.26 | 1.26                   | 1.82 |                     |      |
| 30°           | 0.29       | 0.55 | 1.02                | 1.14 | 1.14                   | 1.66 |                     |      |
|               | 0.44       | 0.56 | 1.00                | 1.12 | 1.12                   | 1.63 |                     |      |
|               | 0.58       | 0.56 | 1.00                | 1.12 | 1.12                   | 1.63 |                     |      |
|               | —          | 0.8  | 0.39                | 0.76 | 1                      | 0.78 | 0.63                | 1.24 |
| 40°           | —          | 1.14 | 0.35                | 0.57 | 1                      | 0.55 | 0.57                | 0.93 |

• i = 2 for DB or DF mounting  
i = 1 for Single or DT mounting  
• Single or DT mounting  
When  $Fa/Fr \leq e$ , use  $Pr = Fr$

• Static equivalent radial load  
 $Por = XoFr + YoFa$

| Contact angle | Single or DT |      | DB or DF |      |
|---------------|--------------|------|----------|------|
|               | Xo           | Yo   | Xo       | Yo   |
| 15°           | 0.5          | 0.46 | 1        | 0.92 |
| 30°           | 0.5          | 0.33 | 1        | 0.66 |
| 40°           | 0.5          | 0.26 | 1        | 0.52 |

• Single or DT mounting  
When  $Por < Fr$ , use  $Pr = Fr$

1N=0.102kgf

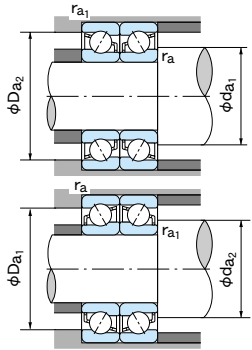
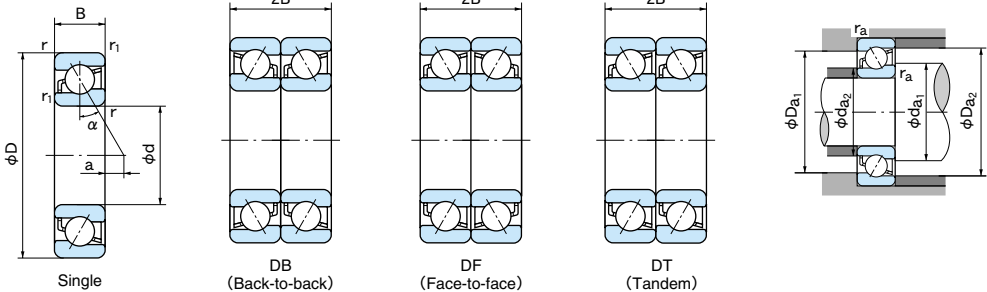
| Boundary dimensions (mm) |    |    |         |                      |                  | Load center (mm) |         |         |         | Bearing No. |        |        |        | Basic dynamic load rating Cr(N) |        | Basic static load rating Cor(N) |        | Limiting speed (rpm) |        |                       |                       | Abutment and fillet dimensions (mm) |                       |                      |                       |        |  | Mass (kg) |  | Bearing No. |
|--------------------------|----|----|---------|----------------------|------------------|------------------|---------|---------|---------|-------------|--------|--------|--------|---------------------------------|--------|---------------------------------|--------|----------------------|--------|-----------------------|-----------------------|-------------------------------------|-----------------------|----------------------|-----------------------|--------|--|-----------|--|-------------|
| d                        | D  | B  | r (min) | r <sub>1</sub> (min) | a <sup>(1)</sup> | Single           | Duplex  |         |         | Single      | Duplex | Single | Duplex | Single                          | Duplex | Single                          | Duplex | Single               | Duplex | d <sub>a1</sub> (min) | d <sub>a2</sub> (min) | D <sub>a1</sub> (max)               | D <sub>a2</sub> (max) | r <sub>a</sub> (max) | r <sub>a1</sub> (max) | Single |  |           |  |             |
| 20                       | 42 | 12 | 0.6     | 0.3                  | 2.9              | 7004             | 7004DB  | 7004DF  | 7004DT  | 10300       | 16700  | 6050   | 12100  | 15000                           | 12000  | 20000                           | 16000  | 24                   | 24     | 38                    | 40                    | 0.6                                 | 0.3                   | 0.079                | 7004                  |        |  |           |  |             |
|                          | 42 | 12 | 0.6     | 0.3                  | -2.4             | 7004C            | 7004CDB | 7004CDF | 7004CDT | 11200       | 18200  | 6600   | 13200  | 26000                           | 21000  | 35000                           | 28000  | 24                   | 24     | 38                    | 40                    | 0.6                                 | 0.3                   | 0.079                | 7004C                 |        |  |           |  |             |
|                          | 47 | 14 | 1       | 0.6                  | 2.7              | 7204             | 7204DB  | 7204DF  | 7204DT  | 14500       | 23500  | 8300   | 16600  | 13000                           | 10000  | 18000                           | 14000  | 26                   | 23     | 41                    | 43.4                  | 1                                   | 0.6                   | 0.110                | 7204                  |        |  |           |  |             |
|                          | 47 | 14 | 1       | 0.6                  | 7.1              | 7204B            | 7204BDB | 7204BDF | 7204BDT | 13700       | 22300  | 7850   | 15700  | 11000                           | 9500   | 16000                           | 13000  | 26                   | 23     | 41                    | 43.4                  | 1                                   | 0.6                   | 0.110                | 7204B                 |        |  |           |  |             |
|                          | 47 | 14 | 1       | 0.6                  | -3.1             | 7204C            | 7204CDB | 7204CDF | 7204CDT | 14700       | 23800  | 8150   | 16300  | 24000                           | 19000  | 33000                           | 26000  | 26                   | 26     | 41                    | 43.4                  | 1                                   | 0.6                   | 0.110                | 7204C                 |        |  |           |  |             |
|                          | 52 | 15 | 1.1     | 0.6                  | 2.9              | 7304             | 7304DB  | 7304DF  | 7304DT  | 18700       | 30500  | 10400  | 20800  | 13000                           | 10000  | 17000                           | 13000  | 27                   | 25     | 45                    | 47                    | 1                                   | 0.6                   | 0.150                | 7304                  |        |  |           |  |             |
|                          | 52 | 15 | 1.1     | 0.6                  | 7.6              | 7304B            | 7304BDB | 7304BDF | 7304BDT | 17800       | 28900  | 9900   | 19800  | 10000                           | 9000   | 15000                           | 12000  | 27                   | 25     | 45                    | 47                    | 1                                   | 0.6                   | 0.150                | 7304B                 |        |  |           |  |             |
|                          | 52 | 15 | 1.1     | 0.6                  | -3.2             | 7304C            | 7304CDB | 7304CDF | 7304CDT | 18600       | 30000  | 10000  | 20000  | 22000                           | 18000  | 31000                           | 25000  | 27                   | 27     | 45                    | 47                    | 1                                   | 0.6                   | 0.150                | 7304C                 |        |  |           |  |             |
| 25                       | 47 | 12 | 0.6     | 0.3                  | 4.4              | 7005             | 7005DB  | 7005DF  | 7005DT  | 11300       | 18400  | 7400   | 14800  | 13000                           | 10000  | 17000                           | 13000  | 29                   | 29     | 43                    | 45                    | 0.6                                 | 0.3                   | 0.091                | 7005                  |        |  |           |  |             |
|                          | 47 | 12 | 0.6     | 0.3                  | -1.8             | 7005C            | 7005CDB | 7005CDF | 7005CDT | 12900       | 21000  | 8650   | 17300  | 22000                           | 18000  | 31000                           | 25000  | 29                   | 29     | 43                    | 45                    | 0.6                                 | 0.3                   | 0.091                | 7005C                 |        |  |           |  |             |
|                          | 52 | 15 | 1       | 0.6                  | 3.6              | 7205             | 7205DB  | 7205DF  | 7205DT  | 16200       | 26300  | 10200  | 20500  | 12000                           | 9500   | 15000                           | 12000  | 31                   | 28     | 46                    | 48.4                  | 1                                   | 0.6                   | 0.135                | 7205                  |        |  |           |  |             |
|                          | 52 | 15 | 1       | 0.6                  | 8.9              | 7205B            | 7205BDB | 7205BDF | 7205BDT | 15300       | 24800  | 9700   | 19400  | 9500                            | 8000   | 14000                           | 11000  | 31                   | 28     | 46                    | 48.4                  | 1                                   | 0.6                   | 0.135                | 7205B                 |        |  |           |  |             |
|                          | 52 | 15 | 1       | 0.6                  | -3.1             | 7205C            | 7205CDB | 7205CDF | 7205CDT | 16700       | 27100  | 10300  | 20700  | 21000                           | 17000  | 29000                           | 23000  | 31                   | 31     | 46                    | 48.4                  | 1                                   | 0.6                   | 0.135                | 7205C                 |        |  |           |  |             |
|                          | 62 | 17 | 1.1     | 0.6                  | 4.1              | 7305             | 7305DB  | 7305DF  | 7305DT  | 26400       | 43000  | 15800  | 31500  | 10000                           | 8500   | 14000                           | 11000  | 32                   | 30     | 55                    | 57                    | 1                                   | 0.6                   | 0.245                | 7305                  |        |  |           |  |             |
|                          | 62 | 17 | 1.1     | 0.6                  | 9.8              | 7305B            | 7305BDB | 7305BDF | 7305BDT | 25100       | 40500  | 15100  | 30000  | 8500                            | 7300   | 12000                           | 10000  | 32                   | 30     | 55                    | 57                    | 1                                   | 0.6                   | 0.245                | 7305B                 |        |  |           |  |             |
|                          | 62 | 17 | 1.1     | 0.6                  | -3.4             | 7305C            | 7305CDB | 7305CDF | 7305CDT | 26600       | 43000  | 15500  | 31000  | 18000                           | 14000  | 25000                           | 20000  | 32                   | 32     | 55                    | 57                    | 1                                   | 0.6                   | 0.245                | 7305C                 |        |  |           |  |             |
| 30                       | 55 | 13 | 1       | 0.6                  | 5.8              | 7006             | 7006DB  | 7006DF  | 7006DT  | 14500       | 23600  | 10100  | 20300  | 12000                           | 8500   | 14000                           | 11000  | 35                   | 35     | 50                    | 52                    | 1                                   | 0.6                   | 0.135                | 7006                  |        |  |           |  |             |
|                          | 55 | 13 | 1       | 0.6                  | -1.6             | 7006C            | 7006CDB | 7006CDF | 7006CDT | 16000       | 25900  | 11100  | 24000  | 19000                           | 15000  | 26000                           | 21000  | 35                   | 35     | 50                    | 52                    | 1                                   | 0.6                   | 0.135                | 7006C                 |        |  |           |  |             |
|                          | 62 | 16 | 1       | 0.6                  | 5.3              | 7206             | 7206DB  | 7206DF  | 7206DT  | 22500       | 36500  | 14800  | 29600  | 10000                           | 8000   | 13000                           | 10000  | 36                   | 33     | 56                    | 58.4                  | 1                                   | 0.6                   | 0.210                | 7206                  |        |  |           |  |             |
|                          | 62 | 16 | 1       | 0.6                  | 11.3             | 7206B            | 7206BDB | 7206BDF | 7206BDT | 21200       | 34500  | 13900  | 27900  | 8500                            | 7000   | 12000                           | 9500   | 36                   | 33     | 56                    | 58.4                  | 1                                   | 0.6                   | 0.210                | 7206B                 |        |  |           |  |             |
|                          | 62 | 16 | 1       | 0.6                  | -2.7             | 7206C            | 7206CDB | 7206CDF | 7206CDT | 23200       | 37500  | 14900  | 29700  | 18000                           | 14000  | 24000                           | 19000  | 36                   | 36     | 56                    | 58.4                  | 1                                   | 0.6                   | 0.210                | 7206C                 |        |  |           |  |             |
|                          | 72 | 19 | 1.1     | 0.6                  | 5.2              | 7306             | 7306DB  | 7306DF  | 7306DT  | 33500       | 54500  | 22400  | 44500  | 9000                            | 7000   | 12000                           | 9500   | 37                   | 35     | 65                    | 67                    | 1                                   | 0.6                   | 0.360                | 7306                  |        |  |           |  |             |
|                          | 72 | 19 | 1.1     | 0.6                  | 11.9             | 7306B            | 7306BDB | 7306BDF | 7306BDT | 32000       | 52000  | 21000  | 42000  | 7500                            | 6100   | 10000                           | 8500   | 37                   | 35     | 65                    | 67                    | 1                                   | 0.6                   | 0.360                | 7306B                 |        |  |           |  |             |
|                          | 72 | 19 | 1.1     | 0.6                  | -3.6             | 7306C            | 7306CDB | 7306CDF | 7306CDT | 32500       | 52500  | 20400  | 40500  | 16000                           | 13000  | 22000                           | 18000  | 37                   | 37     | 65                    | 67                    | 1                                   | 0.6                   | 0.360                | 7306C                 |        |  |           |  |             |
| 35                       | 62 | 14 | 1       | 0.6                  | 7                | 7007             | 7007DB  | 7007DF  | 7007DT  | 17500       | 28500  | 12600  | 25200  | 9500                            | 7500   | 13000                           | 10000  | 40                   | 40     | 57                    | 59                    | 1                                   | 0.6                   | 0.170                | 7007                  |        |  |           |  |             |
|                          | 62 | 14 | 1       | 0.6                  | -1.4             | 7007C            | 7007CDB | 7007CDF | 7007CDT | 19300       | 31000  | 13700  | 27500  | 16000                           | 13000  | 23000                           | 18000  | 40                   | 40     | 57                    | 59                    | 1                                   | 0.6                   | 0.170                | 7007C                 |        |  |           |  |             |
|                          | 72 | 17 | 1.1     | 0.6                  | 6.9              | 7207             | 7207DB  | 7207DF  | 7207DT  | 29700       | 48000  | 20000  | 40000  | 8500                            | 7000   | 11000                           | 9500   | 42                   | 40     | 65                    | 67                    | 1                                   | 0.6                   | 0.295                | 7207                  |        |  |           |  |             |
|                          | 72 | 17 | 1.1     | 0.6                  | 14.1             | 7207B            | 7207BDB | 7207BDF | 7207BDT | 28000       | 45500  | 19000  | 38000  | 7500                            | 6000   | 10000                           | 8000   | 42                   | 40     | 65                    | 67                    | 1                                   | 0.6                   | 0.295                | 7207B                 |        |  |           |  |             |
|                          | 72 | 17 | 1.1     | 0.6                  | -2.8             | 7207C            | 7207CDB | 7207CDF | 7207CDT | 30500       | 49500  | 20100  | 40000  | 15000                           | 12000  | 21000                           | 17000  | 42                   | 42     | 65                    | 67                    | 1                                   | 0.6                   | 0.295                | 7207C                 |        |  |           |  |             |
|                          | 80 | 21 | 1.5     | 1                    | 6.1              | 7307             | 7307DB  | 7307DF  | 7307DT  | 40000       | 65000  | 26300  | 52500  | 8000                            | 6300   | 10000                           | 8500   | 44                   | 40     | 71                    | 74.6                  | 1.5                                 | 1                     | 0.475                | 7307                  |        |  |           |  |             |
|                          | 80 | 21 | 1.5     | 1                    | 13.7             | 7307B            | 7307BDB | 7307BDF | 7307BDT | 37500       | 61500  | 24900  | 49500  | 7000                            | 5500   | 9500                            | 7500   | 44                   | 40     | 71                    | 74.6                  | 1.5                                 | 1                     | 0.475                | 7307B                 |        |  |           |  |             |
|                          | 80 | 21 | 1.5     | 1                    | -3.9             | 7307C            | 7307CDB | 7307CDF | 7307CDT | 40500       | 66000  | 26000  | 52000  | 14000                           | 11000  | 19000                           | 15000  | 44                   | 44     | 71                    | 74.6                  | 1.5                                 | 1                     | 0.475                | 7307C                 |        |  |           |  |             |

Note : (1) "a" means the distance between back face and load center.

# Angular Contact Ball Bearings

## Single Mounting / Duplex Mounting

Bore Diameter : 40~55mm



• Dynamic equivalent radial load  
 $Pr = XFr + YFa$

| Contact angle | iFa<br>Cor | e    | Single or DT |      | DB or DF |      |        |      |
|---------------|------------|------|--------------|------|----------|------|--------|------|
|               |            |      | Fa > e       |      | Fa ≤ e   |      | Fa > e |      |
|               |            |      | X            | Y    | X        | Y    | X      | Y    |
| 15°           | 0.015      | 0.38 |              |      | 1.47     | 1.65 |        | 2.39 |
|               | 0.029      | 0.40 | 0.44         | 1.40 | 1        | 1.57 | 0.72   | 2.28 |
|               | 0.058      | 0.43 |              |      | 1.30     | 1.46 |        | 2.11 |
|               | 0.087      | 0.46 |              |      | 1.23     | 1.38 |        | 2.00 |
|               | 0.12       | 0.47 | 0.44         | 1.19 | 1        | 1.34 | 0.72   | 1.93 |
|               | 0.17       | 0.50 |              |      | 1.12     | 1.26 |        | 1.82 |
| 30°           | 0.29       | 0.55 |              |      | 1.02     | 1.14 |        | 1.66 |
|               | 0.44       | 0.56 | 0.44         | 1.00 | 1        | 1.12 | 0.72   | 1.63 |
|               | 0.58       | 0.56 |              |      | 1.00     | 1.12 |        | 1.63 |
|               | —          | 0.8  | 0.39         | 0.76 | 1        | 0.78 | 0.63   | 1.24 |
| 40°           | —          | 1.14 | 0.35         | 0.57 | 1        | 0.55 | 0.57   | 0.93 |

• i = 2 for DB or DF mounting  
i = 1 for Single or DT mounting  
• Single or DT mounting  
When  $Fa/Fr \leq e$ , use  $Pr = Fr$

• Static equivalent radial load  
 $Por = XoFr + YoFa$

| Contact angle | Single or DT |      | DB or DF |      |
|---------------|--------------|------|----------|------|
|               | Xo           | Yo   | Xo       | Yo   |
| 15°           | 0.5          | 0.46 | 1        | 0.92 |
| 30°           | 0.5          | 0.33 | 1        | 0.66 |
| 40°           | 0.5          | 0.26 | 1        | 0.52 |

• Single or DT mounting  
When  $Por < Fr$ , use  $Pr = Fr$

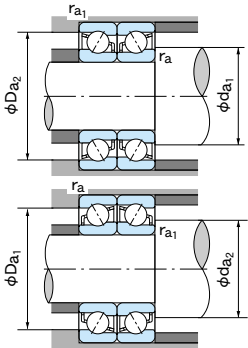
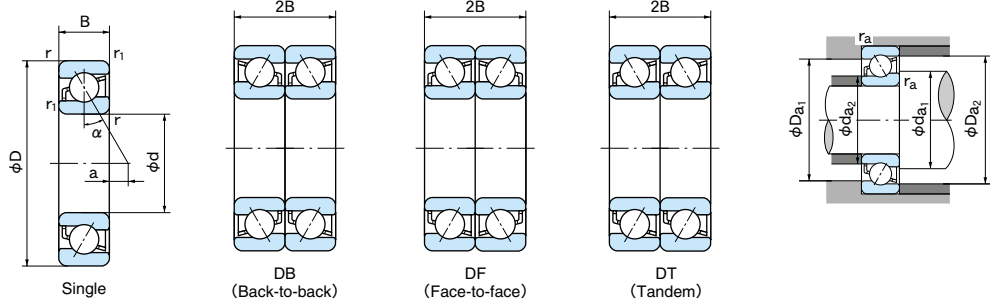
| Boundary dimensions (mm) |     |    |         |                      |                  | Bearing No. |         |         |         | Basic dynamic load rating Cr(N) |        | Basic static load rating Cor(N) |        | Limiting speed (rpm) |        |        |        | Abutment and fillet dimensions (mm) |                       |                       |                       |                      |                       | Mass (kg) |       | Bearing No. |
|--------------------------|-----|----|---------|----------------------|------------------|-------------|---------|---------|---------|---------------------------------|--------|---------------------------------|--------|----------------------|--------|--------|--------|-------------------------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------|-------|-------------|
| Load center (mm)         |     |    |         |                      |                  |             |         |         |         |                                 |        |                                 |        |                      |        |        |        |                                     |                       |                       |                       |                      |                       |           |       |             |
| d                        | D   | B  | r (min) | r <sub>1</sub> (min) | a <sup>(1)</sup> | Single      | Duplex  |         |         | Single                          | Duplex | Single                          | Duplex | Single               | Duplex | Single | Duplex | d <sub>a1</sub> (min)               | d <sub>a2</sub> (min) | D <sub>a1</sub> (max) | D <sub>a2</sub> (max) | r <sub>a</sub> (max) | r <sub>a1</sub> (max) | Single    |       |             |
| 40                       | 68  | 15 | 1       | 0.6                  | 8.2              | 7008        | 7008DB  | 7008DF  | 7008DT  | 18800                           | 30500  | 14500                           | 29000  | 8500                 | 6600   | 11000  | 9000   | 45                                  | 45                    | 63                    | 65                    | 1                    | 0.6                   | 0.210     | 7008  |             |
|                          | 68  | 15 | 1       | 0.6                  | -1.3             | 7008C       | 7008CDB | 7008CDF | 7008CDT | 20700                           | 33500  | 16000                           | 32000  | 15000                | 12000  | 20000  | 16000  | 45                                  | 45                    | 63                    | 65                    | 1                    | 0.6                   | 0.210     | 7008C |             |
|                          | 80  | 18 | 1.1     | 0.6                  | 8.3              | 7208        | 7208DB  | 7208DF  | 7208DT  | 35000                           | 57500  | 25200                           | 50500  | 7500                 | 6000   | 10000  | 8000   | 47                                  | 45                    | 73                    | 75                    | 1                    | 0.6                   | 0.380     | 7208  |             |
|                          | 80  | 18 | 1.1     | 0.6                  | 16.2             | 7208B       | 7208BDB | 7208BDF | 7208BDT | 33000                           | 54000  | 23700                           | 47500  | 6700                 | 5300   | 9200   | 7200   | 47                                  | 45                    | 73                    | 75                    | 1                    | 0.6                   | 0.380     | 7208B |             |
|                          | 80  | 18 | 1.1     | 0.6                  | -2.1             | 7208C       | 7208CDB | 7208CDF | 7208CDT | 36500                           | 59500  | 25400                           | 50500  | 13000                | 10000  | 18000  | 14000  | 47                                  | 47                    | 73                    | 75                    | 1                    | 0.6                   | 0.380     | 7208C |             |
|                          | 90  | 23 | 1.5     | 1                    | 7.3              | 7308        | 7308DB  | 7308DF  | 7308DT  | 49000                           | 79000  | 33000                           | 66000  | 7000                 | 5500   | 9200   | 7500   | 49                                  | 45                    | 81                    | 84.6                  | 1.5                  | 1                     | 0.655     | 7308  |             |
|                          | 90  | 23 | 1.5     | 1                    | 15.8             | 7308B       | 7308BDB | 7308BDF | 7308BDT | 46000                           | 75000  | 31000                           | 62500  | 6300                 | 5000   | 8500   | 6700   | 49                                  | 45                    | 81                    | 84.6                  | 1.5                  | 1                     | 0.655     | 7308B |             |
|                          | 90  | 23 | 1.5     | 1                    | -4.0             | 7308C       | 7308CDB | 7308CDF | 7308CDT | 49500                           | 80500  | 32500                           | 65500  | 12000                | 9600   | 17000  | 13000  | 49                                  | 49                    | 81                    | 84.6                  | 1.5                  | 1                     | 0.655     | 7308C |             |
| 45                       | 75  | 16 | 1       | 0.6                  | 9.3              | 7009        | 7009DB  | 7009DF  | 7009DT  | 22200                           | 36000  | 17600                           | 35000  | 7500                 | 6000   | 10000  | 8000   | 50                                  | 50                    | 70                    | 72                    | 1                    | 0.6                   | 0.265     | 7009  |             |
|                          | 75  | 16 | 1       | 0.6                  | -1.1             | 7009C       | 7009CDB | 7009CDF | 7009CDT | 24600                           | 40000  | 19400                           | 39000  | 13000                | 10000  | 18000  | 14000  | 50                                  | 50                    | 70                    | 72                    | 1                    | 0.6                   | 0.265     | 7009C |             |
|                          | 85  | 19 | 1.1     | 0.6                  | 9.3              | 7209        | 7209DB  | 7209DF  | 7209DT  | 39500                           | 64500  | 28800                           | 57500  | 7000                 | 5500   | 9200   | 7500   | 52                                  | 50                    | 78                    | 80                    | 1                    | 0.6                   | 0.430     | 7209  |             |
|                          | 85  | 19 | 1.1     | 0.6                  | 17.8             | 7209B       | 7209BDB | 7209BDF | 7209BDT | 37000                           | 60500  | 27100                           | 54000  | 6300                 | 5000   | 8500   | 6700   | 52                                  | 50                    | 78                    | 80                    | 1                    | 0.6                   | 0.430     | 7209B |             |
|                          | 85  | 19 | 1.1     | 0.6                  | -2.0             | 7209C       | 7209CDB | 7209CDF | 7209CDT | 41000                           | 66500  | 29000                           | 58000  | 12000                | 9600   | 17000  | 13000  | 52                                  | 52                    | 78                    | 80                    | 1                    | 0.6                   | 0.430     | 7209C |             |
|                          | 100 | 25 | 1.5     | 1                    | 8.4              | 7309        | 7309DB  | 7309DF  | 7309DT  | 63500                           | 103000 | 43500                           | 87000  | 6300                 | 5000   | 8500   | 6700   | 54                                  | 50                    | 91                    | 94.6                  | 1.5                  | 1                     | 0.875     | 7309  |             |
|                          | 100 | 25 | 1.5     | 1                    | 18.0             | 7309B       | 7309BDB | 7309BDF | 7309BDT | 60000                           | 97500  | 41500                           | 82500  | 5600                 | 4500   | 7500   | 6000   | 54                                  | 50                    | 91                    | 94.6                  | 1.5                  | 1                     | 0.875     | 7309B |             |
|                          | 100 | 25 | 1.5     | 1                    | -4.1             | 7309C       | 7309CDB | 7309CDF | 7309CDT | 63500                           | 103000 | 43500                           | 87000  | 11000                | 8800   | 15000  | 12000  | 54                                  | 54                    | 91                    | 94.6                  | 1.5                  | 1                     | 0.875     | 7309C |             |
| 50                       | 80  | 16 | 1       | 0.6                  | 10.8             | 7010        | 7010DB  | 7010DF  | 7010DT  | 23600                           | 38500  | 20000                           | 40000  | 7000                 | 5500   | 9200   | 7500   | 55                                  | 55                    | 75                    | 77                    | 1                    | 0.6                   | 0.285     | 7010  |             |
|                          | 80  | 16 | 1       | 0.6                  | -0.5             | 7010C       | 7010CDB | 7010CDF | 7010CDT | 26200                           | 42500  | 22000                           | 44000  | 12000                | 9600   | 17000  | 13000  | 55                                  | 55                    | 75                    | 77                    | 1                    | 0.6                   | 0.285     | 7010C |             |
|                          | 90  | 20 | 1.1     | 0.6                  | 10.2             | 7210        | 7210DB  | 7210DF  | 7210DT  | 41000                           | 67000  | 31500                           | 63000  | 6300                 | 5300   | 8500   | 6700   | 57                                  | 55                    | 83                    | 85                    | 1                    | 0.6                   | 0.485     | 7210  |             |
|                          | 90  | 20 | 1.1     | 0.6                  | 19.4             | 7210B       | 7210BDB | 7210BDF | 7210BDT | 38500                           | 63000  | 29600                           | 59000  | 5600                 | 4500   | 7500   | 6000   | 57                                  | 55                    | 83                    | 85                    | 1                    | 0.6                   | 0.485     | 7210B |             |
|                          | 90  | 20 | 1.1     | 0.6                  | -1.9             | 7210C       | 7210CDB | 7210CDF | 7210CDT | 43000                           | 70000  | 32000                           | 63500  | 11000                | 8800   | 16000  | 13000  | 57                                  | 57                    | 83                    | 85                    | 1                    | 0.6                   | 0.485     | 7210C |             |
|                          | 110 | 27 | 2       | 1                    | 9.6              | 7310        | 7310DB  | 7310DF  | 7310DT  | 74000                           | 121000 | 52000                           | 104000 | 5600                 | 4500   | 7500   | 6000   | 60                                  | 56                    | 100                   | 104                   | 2                    | 1                     | 1.14      | 7310  |             |
|                          | 110 | 27 | 2       | 1                    | 20.1             | 7310B       | 7310BDB | 7310BDF | 7310BDT | 70500                           | 114000 | 49500                           | 98500  | 5000                 | 4000   | 6700   | 5300   | 60                                  | 56                    | 100                   | 104                   | 2                    | 1                     | 1.14      | 7310B |             |
|                          | 110 | 27 | 2       | 1                    | -4.3             | 7310C       | 7310CDB | 7310CDF | 7310CDT | 75500                           | 122000 | 51000                           | 102000 | 10000                | 8000   | 14000  | 11000  | 60                                  | 60                    | 100                   | 104                   | 2                    | 1                     | 1.14      | 7310C |             |
| 55                       | 90  | 18 | 1.1     | 0.6                  | 11.9             | 7011        | 7011DB  | 7011DF  | 7011DT  | 31000                           | 50500  | 26200                           | 52500  | 6300                 | 5000   | 8500   | 6700   | 61                                  | 61                    | 84                    | 86                    | 1                    | 0.6                   | 0.420     | 7011  |             |
|                          | 90  | 18 | 1.1     | 0.6                  | -0.6             | 7011C       | 7011CDB | 7011CDF | 7011CDT | 34500                           | 56000  | 28800                           | 57500  | 11000                | 8800   | 15000  | 12000  | 61                                  | 61                    | 84                    | 86                    | 1                    | 0.6                   | 0.420     | 7011C |             |
|                          | 100 | 21 | 1.5     | 1                    | 11.9             | 7211        | 7211DB  | 7211DF  | 7211DT  | 51000                           | 83000  | 39500                           | 79000  | 6000                 | 4500   | 7500   | 6300   | 64                                  | 60                    | 91                    | 94.6                  | 1.5                  | 1                     | 0.635     | 7211  |             |
|                          | 100 | 21 | 1.5     | 1                    | 22.1             | 7211B       | 7211BDB | 7211BDF | 7211BDT | 48000                           | 78000  | 37500                           | 74500  | 5300                 | 4000   | 7000   | 5500   | 64                                  | 60                    | 91                    | 94.6                  | 1.5                  | 1                     | 0.635     | 7211B |             |
|                          | 100 | 21 | 1.5     | 1                    | -1.6             | 7211C       | 7211CDB | 7211CDF | 7211CDT | 53000                           | 86500  | 40000                           | 80000  | 10000                | 8000   | 14000  | 11000  | 64                                  | 64                    | 91                    | 94.6                  | 1.5                  | 1                     | 0.635     | 7211C |             |
|                          | 120 | 29 | 2       | 1                    | 10.8             | 7311        | 7311DB  | 7311DF  | 7311DT  | 85500                           | 139000 | 61500                           | 123000 | 5000                 | 4000   | 7000   | 5500   | 65                                  | 61                    | 110                   | 114                   | 2                    | 1                     | 1.45      | 7311  |             |
|                          | 120 | 29 | 2       | 1                    | 22.3             | 7311B       | 7311BDB | 7311BDF | 7311BDT | 81000                           | 132000 | 58000                           | 116000 | 4500                 | 3500   | 6200   | 5000   | 65                                  | 61                    | 110                   | 114                   | 2                    | 1                     | 1.45      | 7311B |             |
|                          | 120 | 29 | 2       | 1                    | -4.4             | 7311C       | 7311CDB | 7311CDF | 7311CDT | 87000                           | 142000 | 60000                           | 121000 | 9100                 | 7300   | 13000  | 10000  | 65                                  | 65                    | 110                   | 114                   | 2                    | 1                     | 1.45      | 7311C |             |

Note : (1) "a" means the distance between back face and load center.

# Angular Contact Ball Bearings

## Single Mounting / Duplex Mounting

Bore Diameter : 60~75mm



• Dynamic equivalent radial load  
 $Pr = XFr + YFa$

| Contact angle | iFa<br>Cor | e    | Single or DT |      | DB or DF     |      |              |      |
|---------------|------------|------|--------------|------|--------------|------|--------------|------|
|               |            |      | Fa<br>Fr > e |      | Fa<br>Fr ≤ e |      | Fa<br>Fr > e |      |
|               |            |      | X            | Y    | X            | Y    | X            | Y    |
|               |            |      | 15°          |      | 30°          |      | 40°          |      |
|               | 0.015      | 0.38 | 0.44         | 1.47 | 1.65         | 1.65 | 2.39         | 2.39 |
|               | 0.029      | 0.40 | 0.44         | 1.40 | 1.57         | 1.57 | 2.28         | 2.28 |
|               | 0.058      | 0.43 | 0.44         | 1.30 | 1.46         | 1.46 | 2.11         | 2.11 |
|               | 0.087      | 0.46 | 0.44         | 1.23 | 1.38         | 1.38 | 2.00         | 2.00 |
|               | 0.12       | 0.47 | 0.44         | 1.19 | 1.34         | 1.34 | 1.93         | 1.93 |
|               | 0.17       | 0.50 | 0.44         | 1.12 | 1.26         | 1.26 | 1.82         | 1.82 |
|               | 0.29       | 0.55 | 0.44         | 1.02 | 1.14         | 1.14 | 1.66         | 1.66 |
|               | 0.44       | 0.56 | 0.44         | 1.00 | 1.12         | 1.12 | 1.63         | 1.63 |
|               | 0.58       | 0.56 | 0.44         | 1.00 | 1.12         | 1.12 | 1.63         | 1.63 |
|               | 0.8        | 0.39 | 0.76         | 1    | 0.78         | 0.63 | 1.24         | 1.24 |
|               | 1.14       | 0.35 | 0.57         | 1    | 0.55         | 0.57 | 0.93         | 0.93 |

• i = 2 for DB or DF mounting  
i = 1 for Single or DT mounting  
• Single or DT mounting  
When  $Fa/Fr \leq e$ , use  $Pr = Fr$

• Static equivalent radial load  
 $Por = XoFr + YoFa$

| Contact angle | Single or DT |      | DB or DF |      |
|---------------|--------------|------|----------|------|
|               | Xo           | Yo   | Xo       | Yo   |
| 15°           | 0.5          | 0.46 | 1        | 0.92 |
| 30°           | 0.5          | 0.33 | 1        | 0.66 |
| 40°           | 0.5          | 0.26 | 1        | 0.52 |

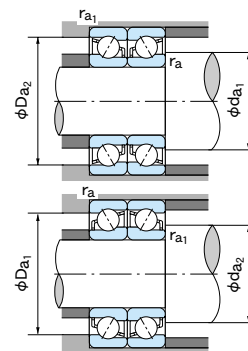
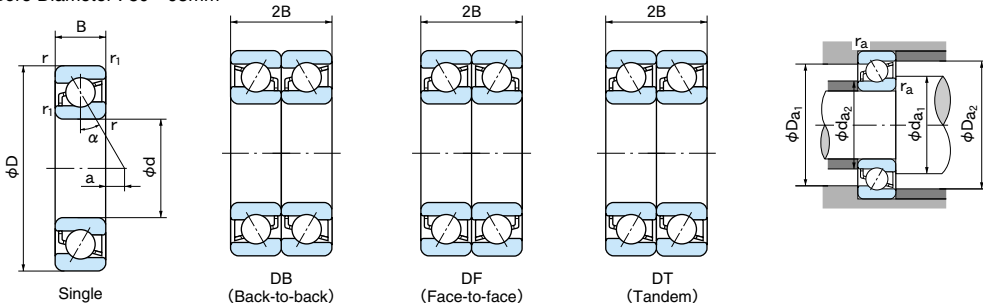
• Single or DT mounting  
When  $Por < Fr$ , use  $Pr = Fr$

| Boundary dimensions (mm) |     |    |            |                         | Load center<br>(mm)<br>a <sup>(1)</sup> | Bearing No. |         |         |         | Basic dynamic load<br>rating Cr(N) |        | Basic static load<br>rating Cor(N) |        | Limiting speed (rpm)         |                           |        |        | Abutment and fillet<br>dimensions (mm) |        |        |        |                          | Mass (kg)                |                          | Bearing No. |                          |                         |
|--------------------------|-----|----|------------|-------------------------|-----------------------------------------|-------------|---------|---------|---------|------------------------------------|--------|------------------------------------|--------|------------------------------|---------------------------|--------|--------|----------------------------------------|--------|--------|--------|--------------------------|--------------------------|--------------------------|-------------|--------------------------|-------------------------|
| d                        | D   | B  | r<br>(min) | r <sub>1</sub><br>(min) |                                         | Single      | Duplex  |         |         | Single                             | Duplex | Single                             | Duplex | Grease lubrication<br>Single | Oil lubrication<br>Single | Duplex | Duplex | Duplex                                 | Duplex | Duplex | Duplex | d <sub>a1</sub><br>(min) | d <sub>a2</sub><br>(min) | D <sub>a1</sub><br>(max) |             | D <sub>a2</sub><br>(max) | r <sub>a</sub><br>(max) |
| 60                       | 95  | 18 | 1.1        | 0.6                     | 13.4                                    | 7012        | 7012DB  | 7012DF  | 7012DT  | 32000                              | 51500  | 28000                              | 56000  | 6000                         | 4500                      | 7600   | 6200   | 66                                     | 66     | 89     | 91     | 1                        | 0.6                      | 0.450                    | 7012        |                          |                         |
|                          | 95  | 18 | 1.1        | 0.6                     | -0.1                                    | 7012C       | 7012CDB | 7012CDF | 7012CDT | 35500                              | 57500  | 30500                              | 61500  | 10000                        | 8000                      | 14000  | 11000  | 66                                     | 66     | 89     | 91     | 1                        | 0.6                      | 0.450                    | 7012C       |                          |                         |
|                          | 110 | 22 | 1.5        | 1                       | 13.5                                    | 7212        | 7212DB  | 7212DF  | 7212DT  | 62000                              | 100000 | 48500                              | 97500  | 5300                         | 4300                      | 7100   | 5600   | 69                                     | 65     | 101    | 104.6  | 1.5                      | 1                        | 0.820                    | 7212        |                          |                         |
|                          | 110 | 22 | 1.5        | 1                       | 24.7                                    | 7212B       | 7212BDB | 7212BDF | 7212BDT | 58000                              | 94000  | 46000                              | 92000  | 4800                         | 3800                      | 6300   | 5000   | 69                                     | 65     | 101    | 104.6  | 1.5                      | 1                        | 0.820                    | 7212B       |                          |                         |
|                          | 110 | 22 | 1.5        | 1                       | -1.2                                    | 7212C       | 7212CDB | 7212CDF | 7212CDT | 64500                              | 105000 | 49500                              | 98500  | 9400                         | 7500                      | 13000  | 10000  | 69                                     | 69     | 101    | 104.6  | 1.5                      | 1                        | 0.820                    | 7212C       |                          |                         |
|                          | 130 | 31 | 2.1        | 1.1                     | 11.9                                    | 7312        | 7312DB  | 7312DF  | 7312DT  | 98000                              | 159000 | 71500                              | 148000 | 4800                         | 3800                      | 6300   | 5000   | 72                                     | 67     | 118    | 123    | 2                        | 1                        | 1.81                     | 7312        |                          |                         |
|                          | 130 | 31 | 2.1        | 1.1                     | 24.4                                    | 7312B       | 7312BDB | 7312BDF | 7312BDT | 92500                              | 151000 | 67500                              | 135000 | 4300                         | 3400                      | 5500   | 4500   | 72                                     | 67     | 118    | 123    | 2                        | 1                        | 1.81                     | 7312B       |                          |                         |
|                          | 130 | 31 | 2.1        | 1.1                     | -4.5                                    | 7312C       | 7312CDB | 7312CDF | 7312CDT | 99500                              | 162000 | 70000                              | 140000 | 8400                         | 6700                      | 12000  | 9600   | 72                                     | 72     | 118    | 123    | 2                        | 1                        | 1.81                     | 7312C       |                          |                         |
| 65                       | 100 | 18 | 1.1        | 0.6                     | 14.8                                    | 7013        | 7013DB  | 7013DF  | 7013DT  | 33500                              | 54500  | 31000                              | 62500  | 5600                         | 4300                      | 7100   | 6000   | 71                                     | 71     | 94     | 96     | 1                        | 0.6                      | 0.470                    | 7013        |                          |                         |
|                          | 100 | 18 | 1.1        | 0.6                     | 0.5                                     | 7013C       | 7013CDB | 7013CDF | 7013CDT | 37500                              | 60500  | 34500                              | 69000  | 9700                         | 7800                      | 13000  | 10000  | 71                                     | 71     | 94     | 96     | 1                        | 0.6                      | 0.470                    | 7013C       |                          |                         |
|                          | 120 | 23 | 1.5        | 1                       | 15.2                                    | 7213        | 7213DB  | 7213DF  | 7213DT  | 70000                              | 114000 | 57800                              | 116000 | 4900                         | 3900                      | 6500   | 5300   | 74                                     | 70     | 111    | 114.6  | 1.5                      | 1                        | 1.02                     | 7213        |                          |                         |
|                          | 120 | 23 | 1.5        | 1                       | 27.4                                    | 7213B       | 7213BDB | 7213BDF | 7213BDT | 66000                              | 107000 | 54500                              | 109000 | 4300                         | 3400                      | 5600   | 4600   | 74                                     | 70     | 111    | 114.6  | 1.5                      | 1                        | 1.02                     | 7213B       |                          |                         |
|                          | 120 | 23 | 1.5        | 1                       | -0.8                                    | 7213C       | 7213CDB | 7213CDF | 7213CDT | 73500                              | 120000 | 59000                              | 118000 | 8600                         | 6900                      | 12000  | 9600   | 74                                     | 74     | 111    | 114.6  | 1.5                      | 1                        | 1.02                     | 7213C       |                          |                         |
|                          | 140 | 33 | 2.1        | 1.1                     | 13.1                                    | 7313        | 7313DB  | 7313DF  | 7313DT  | 111000                             | 180000 | 82000                              | 165000 | 4400                         | 3600                      | 5800   | 4700   | 77                                     | 72     | 128    | 133    | 2                        | 1                        | 2.22                     | 7313        |                          |                         |
|                          | 140 | 33 | 2.1        | 1.1                     | 26.6                                    | 7313B       | 7313BDB | 7313BDF | 7313BDT | 105000                             | 170000 | 77500                              | 155000 | 4000                         | 3200                      | 5300   | 4200   | 77                                     | 72     | 128    | 133    | 2                        | 1                        | 2.22                     | 7313B       |                          |                         |
|                          | 140 | 33 | 2.1        | 1.1                     | -4.7                                    | 7313C       | 7313CDB | 7313CDF | 7313CDT | 113000                             | 183000 | 81000                              | 162000 | 7800                         | 6200                      | 11000  | 8800   | 77                                     | 77     | 128    | 133    | 2                        | 1                        | 2.22                     | 7313C       |                          |                         |
| 70                       | 110 | 20 | 1.1        | 0.6                     | 16.0                                    | 7014        | 7014DB  | 7014DF  | 7014DT  | 42500                              | 69000  | 39500                              | 78500  | 5000                         | 4000                      | 6600   | 5300   | 76                                     | 76     | 104    | 106    | 1                        | 0.6                      | 0.660                    | 7014        |                          |                         |
|                          | 110 | 20 | 1.1        | 0.6                     | 0.4                                     | 7014C       | 7014CDB | 7014CDF | 7014CDT | 47000                              | 76500  | 43000                              | 86500  | 8900                         | 7100                      | 12000  | 9600   | 76                                     | 76     | 104    | 106    | 1                        | 0.6                      | 0.660                    | 7014C       |                          |                         |
|                          | 125 | 24 | 1.5        | 1                       | 16.1                                    | 7214        | 7214DB  | 7214DF  | 7214DT  | 76500                              | 124000 | 63500                              | 127000 | 4500                         | 3800                      | 6300   | 5000   | 79                                     | 75     | 116    | 119.6  | 1.5                      | 1                        | 1.12                     | 7214        |                          |                         |
|                          | 125 | 24 | 1.5        | 1                       | 29.0                                    | 7214B       | 7214BDB | 7214BDF | 7214BDT | 71500                              | 116000 | 59500                              | 120000 | 4300                         | 3200                      | 5600   | 4500   | 79                                     | 75     | 116    | 119.6  | 1.5                      | 1                        | 1.12                     | 7214B       |                          |                         |
|                          | 125 | 24 | 1.5        | 1                       | -0.7                                    | 7214C       | 7214CDB | 7214CDF | 7214CDT | 80000                              | 130000 | 65000                              | 130000 | 8200                         | 6600                      | 11000  | 8800   | 79                                     | 79     | 116    | 119.6  | 1.5                      | 1                        | 1.12                     | 7214C       |                          |                         |
|                          | 150 | 35 | 2.1        | 1.1                     | 14.3                                    | 7314        | 7314DB  | 7314DF  | 7314DT  | 125000                             | 203000 | 94000                              | 188000 | 4000                         | 3200                      | 5300   | 4300   | 82                                     | 77     | 138    | 143    | 2                        | 1                        | 2.70                     | 7314        |                          |                         |
|                          | 150 | 35 | 2.1        | 1.1                     | 28.7                                    | 7314B       | 7314BDB | 7314BDF | 7314BDT | 118000                             | 191000 | 88500                              | 177000 | 3600                         | 2900                      | 4800   | 3900   | 82                                     | 77     | 138    | 143    | 2                        | 1                        | 2.70                     | 7314B       |                          |                         |
|                          | 150 | 35 | 2.1        | 1.1                     | -4.8                                    | 7314C       | 7314CDB | 7314CDF | 7314CDT | 127000                             | 206000 | 92500                              | 185000 | 7300                         | 5800                      | 10000  | 8000   | 82                                     | 82     | 138    | 143    | 2                        | 1                        | 2.70                     | 7314C       |                          |                         |
| 75                       | 115 | 20 | 1.1        | 0.6                     | 17.4                                    | 7015        | 7015DB  | 7015DF  | 7015DT  | 43500                              | 70500  | 41500                              | 83000  | 4800                         | 3800                      | 6300   | 5000   | 81                                     | 81     | 109    | 111    | 1                        | 0.6                      | 0.695                    | 7015        |                          |                         |
|                          | 115 | 20 | 1.1        | 0.6                     | 1.0                                     | 7015C       | 7015CDB | 7015CDF | 7015CDT | 48500                              | 78500  | 46000                              | 92000  | 8400                         | 6700                      | 12000  | 9600   | 81                                     | 81     | 109    | 111    | 1                        | 0.6                      | 0.695                    | 7015C       |                          |                         |
|                          | 130 | 25 | 1.5        | 1                       | 17.1                                    | 7215        | 7215DB  | 7215DF  | 7215DT  | 79000                              | 129000 | 68500                              | 137000 | 4300                         | 3400                      | 5800   | 4700   | 84                                     | 80     | 121    | 124.6  | 1.5                      | 1                        | 1.23                     | 7215        |                          |                         |
|                          | 130 | 25 | 1.5        | 1                       | 30.6                                    | 7215B       | 7215BDB | 7215BDF | 7215BDT | 74000                              | 120000 | 64000                              | 128000 | 4000                         | 3200                      | 5300   | 4300   | 84                                     | 80     | 121    | 124.6  | 1.5                      | 1                        | 1.23                     | 7215B       |                          |                         |
|                          | 130 | 25 | 1.5        | 1                       | -0.7                                    | 7215C       | 7215CDB | 7215CDF | 7215CDT | 83500                              | 135000 | 70000                              | 141000 | 7800                         | 6200                      | 11000  | 8800   | 84                                     | 84     | 121    | 124.6  | 1.5                      | 1                        | 1.23                     | 7215C       |                          |                         |
|                          | 160 | 37 | 2.1        | 1.1                     | 15.4                                    | 7315        | 7315DB  | 7315DF  | 7315DT  | 136000                             | 221000 | 106000                             | 212000 | 3800                         | 3000                      | 5000   | 4000   | 87                                     | 82     | 148    | 153    | 2                        | 1                        | 3.15                     | 7315        |                          |                         |
|                          | 160 | 37 | 2.1        | 1.1                     | 30.9                                    | 7315B       | 7315BDB | 7315BDF | 7315BDT | 128000                             | 208000 | 100000                             | 200000 | 3400                         | 2700                      | 4500   | 3600   | 87                                     | 82     | 148    | 153    | 2                        | 1                        | 3.15                     | 7315B       |                          |                         |
|                          | 160 | 37 | 2.1        | 1.1                     | -4.9                                    | 7315C       | 7315CDB | 7315CDF | 7315CDT | 138000                             | 225000 | 104000                             | 209000 | 6800                         | 5400                      | 9400   | 7500   | 87                                     | 87     | 148    | 153    | 2                        | 1                        | 3.15                     | 7315C       |                          |                         |

Note : (1) "a" means the distance between back face and load center.

# Angular Contact Ball Bearings Single Mounting / Duplex Mounting

Bore Diameter : 80~95mm



• Dynamic equivalent radial load  
 $Pr = XFr + YFa$

| Contact angle | iFa<br>Cor | e    | Single or DT |      | DB or DF |      |          |      |
|---------------|------------|------|--------------|------|----------|------|----------|------|
|               |            |      | Fa<br>Fr     |      | Fa<br>Fr |      | Fa<br>Fr |      |
|               |            |      | X            | Y    | X        | Y    | X        | Y    |
| 15°           | 0.015      | 0.38 |              |      | 1.47     | 1.65 |          | 2.39 |
|               | 0.029      | 0.40 | 0.44         | 1.40 | 1        | 1.57 | 0.72     | 2.28 |
|               | 0.058      | 0.43 |              |      | 1.30     | 1.46 |          | 2.11 |
|               | 0.087      | 0.46 |              |      | 1.23     | 1.38 |          | 2.00 |
|               | 0.12       | 0.47 | 0.44         | 1.19 | 1        | 1.34 | 0.72     | 1.93 |
|               | 0.17       | 0.50 |              |      | 1.12     | 1.26 |          | 1.82 |
| 30°           | 0.29       | 0.55 |              |      | 1.02     | 1.14 |          | 1.66 |
|               | 0.44       | 0.56 | 0.44         | 1.00 | 1        | 1.12 | 0.72     | 1.63 |
|               | 0.58       | 0.56 |              |      | 1.00     | 1.12 |          | 1.63 |
|               | 0.8        | 0.8  | 0.39         | 0.76 | 1        | 0.78 | 0.63     | 1.24 |
| 40°           | —          | —    | 1.14         | 0.35 | 0.57     | 1    | 0.55     | 0.57 |

- $i = 2$  for DB or DF mounting  
 $i = 1$  for Single or DT mounting
- Single or DT mounting  
When  $Fa/Fr \leq e$ , use  $Pr = Fr$

• Static equivalent radial load  
 $Por = XoFr + YoFa$

| Contact angle | Single or DT |      | DB or DF |      |
|---------------|--------------|------|----------|------|
|               | Xo           | Yo   | Xo       | Yo   |
| 15°           | 0.5          | 0.46 | 1        | 0.92 |
| 30°           | 0.5          | 0.33 | 1        | 0.66 |
| 40°           | 0.5          | 0.26 | 1        | 0.52 |

- Single or DT mounting  
When  $Por < Fr$ , use  $Pr = Fr$

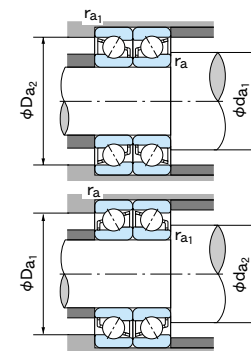
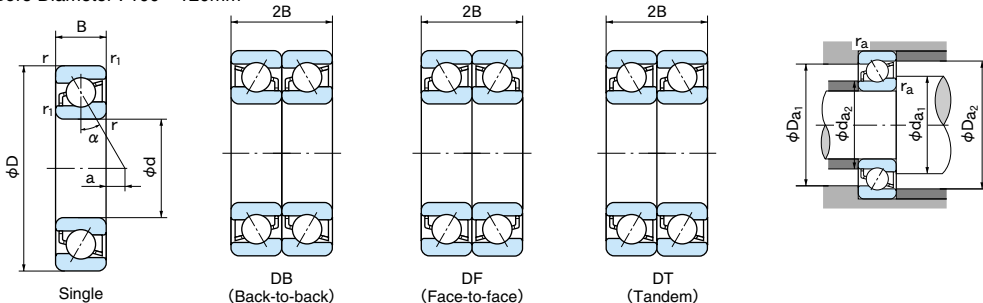
1N=0.102kgf

| Boundary dimensions (mm) |     |     |            |                         |                  | Load center | Bearing No. |         |         |        | Basic dynamic load rating Cr(N) |        | Basic static load rating Cor(N) |                    | Limiting speed (rpm) |                 |        |                          | Abutment and fillet dimensions (mm) |                          |                          |                         |                          |        | Mass (kg) |  | Bearing No. |
|--------------------------|-----|-----|------------|-------------------------|------------------|-------------|-------------|---------|---------|--------|---------------------------------|--------|---------------------------------|--------------------|----------------------|-----------------|--------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------|-----------|--|-------------|
| d                        | D   | B   | r<br>(min) | r <sub>1</sub><br>(min) | a <sup>(1)</sup> | Single      | Duplex      |         |         | Single | Duplex                          | Single | Duplex                          | Grease lubrication |                      | Oil lubrication |        | d <sub>a1</sub><br>(min) | d <sub>a2</sub><br>(min)            | D <sub>a1</sub><br>(max) | D <sub>a2</sub><br>(max) | r <sub>a</sub><br>(max) | r <sub>a1</sub><br>(max) | Single |           |  |             |
|                          |     |     |            |                         |                  |             |             |         |         |        |                                 |        |                                 |                    | Single               | Duplex          | Single |                          |                                     |                          |                          |                         |                          |        | Duplex    |  |             |
| 80                       | 125 | 22  | 1.1        | 0.6                     | 18.6             | 7016        | 7016DB      | 7016DF  | 7016DT  | 53500  | 86500                           | 50500  | 101000                          | 4400               | 3500                 | 5800            | 4600   | 86                       | 86                                  | 119                      | 121                      | 1                       | 0.6                      | 0.925  | 7016      |  |             |
|                          | 125 | 22  | 1.1        | 0.6                     | 0.8              | 7016C       | 7016CDB     | 7016CDF | 7016CDT | 59000  | 96000                           | 55500  | 111000                          | 7800               | 6200                 | 11000           | 8800   | 86                       | 86                                  | 119                      | 121                      | 1                       | 0.6                      | 0.925  | 7016C     |  |             |
|                          | 140 | 26  | 2          | 1                       | 18.8             | 7216        | 7216DB      | 7216DF  | 7216DT  | 89000  | 145000                          | 76500  | 153000                          | 4000               | 3200                 | 5400            | 4300   | 90                       | 86                                  | 130                      | 134                      | 2                       | 1                        | 1.50   | 7216      |  |             |
|                          | 140 | 26  | 2          | 1                       | 33.2             | 7216B       | 7216BDB     | 7216BDF | 7216BDT | 83500  | 135000                          | 71500  | 143000                          | 3600               | 2800                 | 5000            | 4000   | 90                       | 86                                  | 130                      | 134                      | 2                       | 1                        | 1.50   | 7216B     |  |             |
|                          | 140 | 26  | 2          | 1                       | -0.3             | 7216C       | 7216CDB     | 7216CDF | 7216CDT | 93500  | 152000                          | 78000  | 156000                          | 7300               | 5800                 | 10000           | 8000   | 90                       | 90                                  | 130                      | 134                      | 2                       | 1                        | 1.50   | 7216C     |  |             |
|                          | 170 | 39  | 2.1        | 1.1                     | 16.6             | 7316        | 7316DB      | 7316DF  | 7316DT  | 147000 | 239000                          | 119000 | 238000                          | 3600               | 2800                 | 4800            | 3800   | 92                       | 87                                  | 158                      | 163                      | 2                       | 1                        | 4.18   | 7316      |  |             |
|                          | 170 | 39  | 2.1        | 1.1                     | 33.0             | 7316B       | 7316BDB     | 7316BDF | 7316BDT | 139000 | 226000                          | 112000 | 225000                          | 3200               | 2500                 | 4200            | 3400   | 92                       | 87                                  | 158                      | 163                      | 2                       | 1                        | 4.18   | 7316B     |  |             |
|                          | 170 | 39  | 2.1        | 1.1                     | -5.1             | 7316C       | 7316CDB     | 7316CDF | 7316CDT | 150000 | 243000                          | 117000 | 235000                          | 6400               | 5100                 | 8800            | 7000   | 92                       | 92                                  | 158                      | 163                      | 2                       | 1                        | 4.18   | 7316C     |  |             |
|                          | 130 | 22  | 1.1        | 0.6                     | 20               | 7017        | 7017DB      | 7017DF  | 7017DT  | 54500  | 88500                           | 53500  | 107000                          | 4100               | 3300                 | 5500            | 4400   | 91                       | 91                                  | 124                      | 126                      | 1                       | 0.6                      | 0.960  | 7017      |  |             |
| 130                      | 22  | 1.1 | 0.6        | 1.4                     | 7017C            | 7017CDB     | 7017CDF     | 7017CDT | 60500   | 98500  | 59000                           | 118000 | 7400                            | 5900               | 10000                | 8000            | 91     | 91                       | 124                                 | 126                      | 1                        | 0.6                     | 0.960                    | 7017C  |           |  |             |
| 85                       | 150 | 28  | 2          | 1                       | 19.9             | 7217        | 7217DB      | 7217DF  | 7217DT  | 103000 | 167000                          | 89500  | 179000                          | 3800               | 3000                 | 5000            | 4000   | 95                       | 91                                  | 140                      | 144                      | 2                       | 1                        | 1.87   | 7217      |  |             |
|                          | 150 | 28  | 2          | 1                       | 35.4             | 7217B       | 7217BDB     | 7217BDF | 7217BDT | 96500  | 159000                          | 83500  | 168000                          | 3400               | 2600                 | 4500            | 3800   | 95                       | 91                                  | 140                      | 144                      | 2                       | 1                        | 1.87   | 7217B     |  |             |
|                          | 150 | 28  | 2          | 1                       | -0.4             | 7217C       | 7217CDB     | 7217CDF | 7217CDT | 100000 | 163000                          | 85000  | 170000                          | 6800               | 5400                 | 9400            | 7500   | 95                       | 95                                  | 140                      | 144                      | 2                       | 1                        | 1.87   | 7217C     |  |             |
|                          | 180 | 41  | 3          | 1.1                     | 17.7             | 7317        | 7317DB      | 7317DF  | 7317DT  | 159000 | 258000                          | 133000 | 266000                          | 3400               | 2600                 | 4500            | 3600   | 99                       | 92                                  | 166                      | 173                      | 2.5                     | 1                        | 4.90   | 7317      |  |             |
|                          | 180 | 41  | 3          | 1.1                     | 35.2             | 7317B       | 7317BDB     | 7317BDF | 7317BDT | 150000 | 244000                          | 125000 | 251000                          | 3000               | 2400                 | 4000            | 3200   | 99                       | 92                                  | 166                      | 173                      | 2.5                     | 1                        | 4.90   | 7317B     |  |             |
|                          | 180 | 41  | 3          | 1.1                     | -5.2             | 7317C       | 7317CDB     | 7317CDF | 7317CDT | 162000 | 263000                          | 131000 | 262000                          | 6000               | 4800                 | 8300            | 6600   | 99                       | 99                                  | 166                      | 173                      | 2.5                     | 1                        | 4.90   | 7317C     |  |             |
|                          | 140 | 24  | 1.5        | 1                       | 21.2             | 7018        | 7018DB      | 7018DF  | 7018DT  | 65000  | 106000                          | 63000  | 126000                          | 3800               | 3200                 | 5200            | 4200   | 97                       | 97                                  | 133                      | 135.6                    | 1.5                     | 1                        | 1.26   | 7018      |  |             |
|                          | 140 | 24  | 1.5        | 1                       | 1.3              | 7018C       | 7018CDB     | 7018CDF | 7018CDT | 72000  | 117000                          | 69500  | 139000                          | 7000               | 5600                 | 9600            | 7800   | 97                       | 97                                  | 133                      | 135.6                    | 1.5                     | 1                        | 1.26   | 7018C     |  |             |
|                          | 160 | 30  | 2          | 1                       | 21.1             | 7218        | 7218DB      | 7218DF  | 7218DT  | 118000 | 191000                          | 103000 | 206000                          | 3500               | 2800                 | 4700            | 3700   | 100                      | 96                                  | 150                      | 154                      | 2                       | 1                        | 2.30   | 7218      |  |             |
| 160                      | 30  | 2   | 1          | 37.5                    | 7218B            | 7218BDB     | 7218BDF     | 7218BDT | 110000  | 179000 | 97000                           | 194000 | 3200                            | 2500               | 4300                 | 3400            | 100    | 96                       | 150                                 | 154                      | 2                        | 1                       | 2.30                     | 7218B  |           |  |             |
| 160                      | 30  | 2   | 1          | -0.6                    | 7218C            | 7218CDB     | 7218CDF     | 7218CDT | 124000  | 201000 | 105000                          | 211000 | 6400                            | 5100               | 8800                 | 7000            | 100    | 100                      | 150                                 | 154                      | 2                        | 1                       | 2.30                     | 7218C  |           |  |             |
| 90                       | 190 | 43  | 3          | 1.1                     | 18.9             | 7318        | 7318DB      | 7318DF  | 7318DT  | 171000 | 277000                          | 147000 | 295000                          | 3200               | 2600                 | 4300            | 3400   | 104                      | 97                                  | 176                      | 183                      | 2.5                     | 1                        | 5.76   | 7318      |  |             |
|                          | 190 | 43  | 3          | 1.1                     | 37.3             | 7318B       | 7318BDB     | 7318BDF | 7318BDT | 161000 | 262000                          | 139000 | 278000                          | 2800               | 2300                 | 3800            | 3000   | 104                      | 97                                  | 176                      | 183                      | 2.5                     | 1                        | 5.76   | 7318B     |  |             |
|                          | 190 | 43  | 3          | 1.1                     | -5.3             | 7318C       | 7318CDB     | 7318CDF | 7318CDT | 174000 | 282000                          | 146000 | 291000                          | 5700               | 4600                 | 7900            | 6300   | 104                      | 104                                 | 176                      | 183                      | 2.5                     | 1                        | 5.76   | 7318C     |  |             |
|                          | 145 | 24  | 1.5        | 1                       | 22.6             | 7019        | 7019DB      | 7019DF  | 7019DT  | 67000  | 109000                          | 66500  | 133000                          | 3800               | 3100                 | 5200            | 4200   | 102                      | 102                                 | 138                      | 140.6                    | 1.5                     | 1                        | 1.36   | 7019      |  |             |
|                          | 145 | 24  | 1.5        | 1                       | 1.9              | 7019C       | 7019CDB     | 7019CDF | 7019CDT | 74000  | 120000                          | 73500  | 147000                          | 6700               | 5400                 | 9200            | 7400   | 102                      | 102                                 | 138                      | 140.6                    | 1.5                     | 1                        | 1.36   | 7019C     |  |             |
|                          | 170 | 32  | 2.1        | 1.1                     | 22.2             | 7219        | 7219DB      | 7219DF  | 7219DT  | 126000 | 205000                          | 112000 | 225000                          | 3400               | 2600                 | 4500            | 3600   | 107                      | 102                                 | 158                      | 163                      | 2                       | 1                        | 2.78   | 7219      |  |             |
|                          | 170 | 32  | 2.1        | 1.1                     | 39.7             | 7219B       | 7219BDB     | 7219BDF | 7219BDT | 120000 | 195000                          | 105000 | 210000                          | 3000               | 2400                 | 4000            | 3200   | 107                      | 102                                 | 158                      | 163                      | 2                       | 1                        | 2.78   | 7219B     |  |             |
|                          | 170 | 32  | 2.1        | 1.1                     | -0.7             | 7219C       | 7219CDB     | 7219CDF | 7219CDT | 133000 | 217000                          | 115000 | 230000                          | 6000               | 4800                 | 8300            | 6600   | 107                      | 107                                 | 158                      | 163                      | 2                       | 1                        | 2.78   | 7219C     |  |             |
|                          | 200 | 45  | 3          | 1.1                     | 20.1             | 7319        | 7319DB      | 7319DF  | 7319DT  | 183000 | 297000                          | 163000 | 325000                          | 3000               | 2400                 | 4000            | 3200   | 109                      | 102                                 | 186                      | 193                      | 2.5                     | 1                        | 6.68   | 7319      |  |             |
| 200                      | 45  | 3   | 1.1        | 39.5                    | 7319B            | 7319BDB     | 7319BDF     | 7319BDT | 172000  | 280000 | 153000                          | 305000 | 2500                            | 2200               | 3600                 | 3000            | 109    | 102                      | 186                                 | 193                      | 2.5                      | 1                       | 6.68                     | 7319B  |           |  |             |
| 200                      | 45  | 3   | 1.1        | -5.5                    | 7319C            | 7319CDB     | 7319CDF     | 7319CDT | 186000  | 300000 | 161000                          | 320000 | 5400                            | 4300               | 7500                 | 6000            | 109    | 109                      | 186                                 | 193                      | 2.5                      | 1                       | 6.68                     | 7319C  |           |  |             |

Note : (1) "a" means the distance between back face and load center.

# Angular Contact Ball Bearings Single Mounting / Duplex Mounting

Bore Diameter : 100~120mm



• Dynamic equivalent radial load  
 $Pr = XFr + YFa$

| Contact angle | iFa<br>Cor | e    | Single or DT |      |      |        |      |      | DB or DF |      |      |        |      |      |
|---------------|------------|------|--------------|------|------|--------|------|------|----------|------|------|--------|------|------|
|               |            |      | Fa > e       |      |      | Fa ≤ e |      |      | Fa > e   |      |      | Fa ≤ e |      |      |
|               |            |      | X            | Y    | X    | X      | Y    | X    | Y        | X    | Y    | X      | Y    | X    |
|               |            |      | X            | Y    | X    | X      | Y    | X    | Y        | X    | Y    | X      | Y    | X    |
| 15°           | 0.015      | 0.38 | 0.44         | 1.47 | 1.65 | 0.72   | 2.39 | 0.44 | 1.47     | 1.65 | 0.72 | 2.39   | 0.44 | 1.47 |
|               | 0.029      | 0.40 | 0.44         | 1.40 | 1.57 | 0.72   | 2.28 | 0.44 | 1.40     | 1.57 | 0.72 | 2.28   | 0.44 | 1.40 |
|               | 0.058      | 0.43 | 0.44         | 1.30 | 1.46 | 0.72   | 2.11 | 0.44 | 1.30     | 1.46 | 0.72 | 2.11   | 0.44 | 1.30 |
|               | 0.087      | 0.46 | 0.44         | 1.23 | 1.38 | 0.72   | 2.00 | 0.44 | 1.23     | 1.38 | 0.72 | 2.00   | 0.44 | 1.23 |
|               | 0.12       | 0.47 | 0.44         | 1.19 | 1.34 | 0.72   | 1.93 | 0.44 | 1.19     | 1.34 | 0.72 | 1.93   | 0.44 | 1.19 |
|               | 0.17       | 0.50 | 0.44         | 1.12 | 1.26 | 0.72   | 1.82 | 0.44 | 1.12     | 1.26 | 0.72 | 1.82   | 0.44 | 1.12 |
| 30°           | 0.29       | 0.55 | 0.44         | 1.02 | 1.14 | 0.72   | 1.66 | 0.44 | 1.02     | 1.14 | 0.72 | 1.66   | 0.44 | 1.02 |
|               | 0.44       | 0.56 | 0.44         | 1.00 | 1.12 | 0.72   | 1.63 | 0.44 | 1.00     | 1.12 | 0.72 | 1.63   | 0.44 | 1.00 |
|               | 0.58       | 0.56 | 0.44         | 1.00 | 1.12 | 0.72   | 1.63 | 0.44 | 1.00     | 1.12 | 0.72 | 1.63   | 0.44 | 1.00 |
|               | 0.8        | 0.56 | 0.39         | 0.76 | 1    | 0.78   | 0.63 | 0.39 | 0.76     | 1    | 0.78 | 0.63   | 0.39 | 0.76 |
|               | 1.14       | 0.57 | 0.35         | 0.57 | 1    | 0.55   | 0.57 | 0.35 | 0.57     | 1    | 0.55 | 0.57   | 0.35 | 0.57 |
|               | 1.14       | 0.57 | 0.35         | 0.57 | 1    | 0.55   | 0.57 | 0.35 | 0.57     | 1    | 0.55 | 0.57   | 0.35 | 0.57 |

- i = 2 for DB or DF mounting  
i = 1 for Single or DT mounting
- Single or DT mounting  
When  $Fa/Fr \leq e$ , use  $Pr = Fr$

• Static equivalent radial load  
 $Por = XoFr + YoFa$

| Contact angle | Single or DT |      | DB or DF |      |
|---------------|--------------|------|----------|------|
|               | Xo           | Yo   | Xo       | Yo   |
| 15°           | 0.5          | 0.46 | 1        | 0.92 |
| 30°           | 0.5          | 0.33 | 1        | 0.66 |
| 40°           | 0.5          | 0.26 | 1        | 0.52 |

- Single or DT mounting  
When  $Por < Fr$ , use  $Pr = Fr$

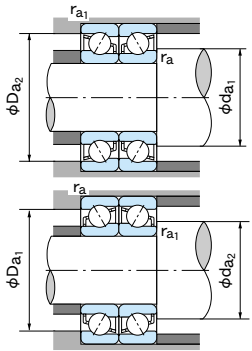
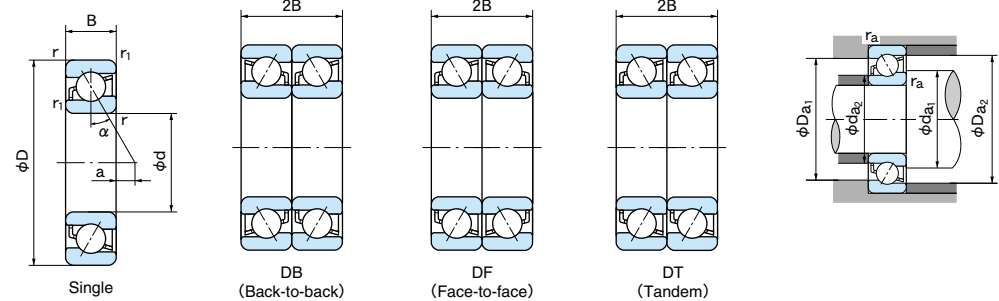
| Boundary dimensions (mm) |     |    |         |                      |                  | Load center (mm) |         | Bearing No. |         |        |        | Basic dynamic load rating Cr(N) |        | Basic static load rating Cor(N) |                        | Limiting speed (rpm)      |                        |                       |                       | Abutment and fillet dimensions (mm) |                       |                      |                       |        |       | Mass (kg) |  | Bearing No. |
|--------------------------|-----|----|---------|----------------------|------------------|------------------|---------|-------------|---------|--------|--------|---------------------------------|--------|---------------------------------|------------------------|---------------------------|------------------------|-----------------------|-----------------------|-------------------------------------|-----------------------|----------------------|-----------------------|--------|-------|-----------|--|-------------|
| d                        | D   | B  | r (min) | r <sub>1</sub> (min) | a <sup>(1)</sup> | Single           | Duplex  |             |         | Single | Duplex | Single                          | Duplex | Grease lubrication Single       | Oil lubrication Duplex | Grease lubrication Single | Oil lubrication Duplex | d <sub>a1</sub> (min) | d <sub>a2</sub> (min) | D <sub>a1</sub> (max)               | D <sub>a2</sub> (max) | r <sub>a</sub> (max) | r <sub>a1</sub> (max) | Single |       |           |  |             |
| 100                      | 150 | 24 | 1.5     | 1                    | 24.1             | 7020             | 7020DB  | 7020DF      | 7020DT  | 68500  | 111000 | 70500                           | 141000 | 3600                            | 2800                   | 4800                      | 3800                   | 107                   | 107                   | 143                                 | 145.6                 | 1.5                  | 1                     | 1.37   | 7020  |           |  |             |
|                          | 150 | 24 | 1.5     | 1                    | 2.4              | 7020C            | 7020CDB | 7020CDF     | 7020CDT | 76000  | 123000 | 77500                           | 156000 | 6400                            | 5100                   | 8800                      | 7000                   | 107                   | 107                   | 143                                 | 145.6                 | 1.5                  | 1                     | 1.37   | 7020C |           |  |             |
|                          | 180 | 34 | 2.1     | 1.1                  | 23.4             | 7220             | 7220DB  | 7220DF      | 7220DT  | 144000 | 234000 | 126000                          | 251000 | 3200                            | 2400                   | 4200                      | 3400                   | 112                   | 107                   | 168                                 | 173                   | 2                    | 1                     | 3.32   | 7220  |           |  |             |
|                          | 180 | 34 | 2.1     | 1.1                  | 41.8             | 7220B            | 7220BDB | 7220BDF     | 7220BDT | 135000 | 219000 | 118000                          | 237000 | 2800                            | 2200                   | 3700                      | 3000                   | 112                   | 107                   | 168                                 | 173                   | 2                    | 1                     | 3.32   | 7220B |           |  |             |
|                          | 180 | 34 | 2.1     | 1.1                  | -0.8             | 7220C            | 7220CDB | 7220CDF     | 7220CDT | 150000 | 244000 | 128000                          | 255000 | 5700                            | 4600                   | 7900                      | 6300                   | 112                   | 112                   | 168                                 | 173                   | 2                    | 1                     | 3.32   | 7220C |           |  |             |
|                          | 215 | 47 | 3       | 1.1                  | 22.0             | 7320             | 7320DB  | 7320DF      | 7320DT  | 207000 | 335000 | 190000                          | 380000 | 2800                            | 2200                   | 3800                      | 3000                   | 114                   | 107                   | 201                                 | 208                   | 2.5                  | 1                     | 8.18   | 7320  |           |  |             |
|                          | 215 | 47 | 3       | 1.1                  | 42.7             | 7320B            | 7320BDB | 7320BDF     | 7320BDT | 196000 | 320000 | 180000                          | 360000 | 2400                            | 2000                   | 3300                      | 2800                   | 114                   | 107                   | 201                                 | 208                   | 2.5                  | 1                     | 8.18   | 7320B |           |  |             |
|                          | 215 | 47 | 3       | 1.1                  | -5.3             | 7320C            | 7320CDB | 7320CDF     | 7320CDT | 211000 | 340000 | 197000                          | 385000 | 5100                            | 4100                   | 7000                      | 5600                   | 114                   | 114                   | 201                                 | 208                   | 2.5                  | 1                     | 8.18   | 7320C |           |  |             |
| 105                      | 160 | 26 | 2       | 1                    | 25.2             | 7021             | 7021DB  | 7021DF      | 7021DT  | 80000  | 130000 | 81500                           | 163000 | 3300                            | 2600                   | 4400                      | 3500                   | 113                   | 113                   | 152                                 | 155                   | 2                    | 1                     | 1.73   | 7021  |           |  |             |
|                          | 160 | 26 | 2       | 1                    | 2.3              | 7021C            | 7021CDB | 7021CDF     | 7021CDT | 97000  | 158000 | 97500                           | 195000 | 6000                            | 4800                   | 8300                      | 6600                   | 113                   | 113                   | 152                                 | 155                   | 2                    | 1                     | 1.73   | 7021C |           |  |             |
|                          | 190 | 36 | 2.1     | 1.1                  | 24.6             | 7221             | 7221DB  | 7221DF      | 7221DT  | 157000 | 254000 | 141000                          | 283000 | 3000                            | 2400                   | 4000                      | 3200                   | 117                   | 112                   | 178                                 | 183                   | 2                    | 1                     | 3.93   | 7221  |           |  |             |
|                          | 190 | 36 | 2.1     | 1.1                  | 44.0             | 7221B            | 7221BDB | 7221BDF     | 7221BDT | 147000 | 239000 | 135000                          | 267000 | 2700                            | 2100                   | 3600                      | 2900                   | 117                   | 112                   | 178                                 | 183                   | 2                    | 1                     | 3.93   | 7221B |           |  |             |
|                          | 190 | 36 | 2.1     | 1.1                  | -0.9             | 7221C            | 7221CDB | 7221CDF     | 7221CDT | 163000 | 265000 | 144000                          | 287000 | 5400                            | 4300                   | 7500                      | 6000                   | 117                   | 117                   | 178                                 | 183                   | 2                    | 1                     | 3.93   | 7221C |           |  |             |
|                          | 225 | 49 | 3       | 1.1                  | 23.1             | 7321             | 7321DB  | 7321DF      | 7321DT  | 219000 | 355000 | 206000                          | 410000 | 2700                            | 2100                   | 3600                      | 2800                   | 119                   | 112                   | 211                                 | 218                   | 2.5                  | 1                     | 9.34   | 7321  |           |  |             |
|                          | 225 | 49 | 3       | 1.1                  | 44.8             | 7321B            | 7321BDB | 7321BDF     | 7321BDT | 208000 | 335000 | 196000                          | 390000 | 2400                            | 1900                   | 3200                      | 2600                   | 119                   | 112                   | 211                                 | 218                   | 2.5                  | 1                     | 9.34   | 7321B |           |  |             |
|                          | 225 | 49 | 3       | 1.1                  | -5.3             | 7321C            | 7321CDB | 7321CDF     | 7321CDT | 224000 | 365000 | 212000                          | 425000 | 4800                            | 3800                   | 6700                      | 5400                   | 119                   | 119                   | 211                                 | 218                   | 2.5                  | 1                     | 9.34   | 7321C |           |  |             |
| 110                      | 170 | 28 | 2       | 1                    | 26.2             | 7022             | 7022DB  | 7022DF      | 7022DT  | 92000  | 149000 | 92500                           | 185000 | 3200                            | 2500                   | 4300                      | 3300                   | 118                   | 118                   | 162                                 | 165                   | 2                    | 1                     | 2.14   | 7022  |           |  |             |
|                          | 170 | 28 | 2       | 1                    | 2.2              | 7022C            | 7022CDB | 7022CDF     | 7022CDT | 107000 | 173000 | 104000                          | 209000 | 5700                            | 4600                   | 7900                      | 6300                   | 118                   | 118                   | 162                                 | 165                   | 2                    | 1                     | 2.14   | 7022C |           |  |             |
|                          | 200 | 38 | 2.1     | 1.1                  | 25.7             | 7222             | 7222DB  | 7222DF      | 7222DT  | 170000 | 276000 | 158000                          | 315000 | 2800                            | 2200                   | 3800                      | 3000                   | 122                   | 117                   | 188                                 | 193                   | 2                    | 1                     | 4.62   | 7222  |           |  |             |
|                          | 200 | 38 | 2.1     | 1.1                  | 46.1             | 7222B            | 7222BDB | 7222BDF     | 7222BDT | 159000 | 259000 | 149000                          | 298000 | 2600                            | 2000                   | 3400                      | 2800                   | 122                   | 117                   | 188                                 | 193                   | 2                    | 1                     | 4.62   | 7222B |           |  |             |
|                          | 200 | 38 | 2.1     | 1.1                  | -1.0             | 7222C            | 7222CDB | 7222CDF     | 7222CDT | 171000 | 277000 | 157000                          | 315000 | 5200                            | 4200                   | 7100                      | 5700                   | 122                   | 122                   | 188                                 | 193                   | 2                    | 1                     | 4.62   | 7222C |           |  |             |
|                          | 240 | 50 | 3       | 1.1                  | 25.5             | 7322             | 7322DB  | 7322DF      | 7322DT  | 244000 | 395000 | 239000                          | 480000 | 2600                            | 2000                   | 3400                      | 2700                   | 124                   | 117                   | 226                                 | 233                   | 2.5                  | 1                     | 11.0   | 7322  |           |  |             |
|                          | 240 | 50 | 3       | 1.1                  | 48.5             | 7322B            | 7322BDB | 7322BDF     | 7322BDT | 231000 | 375000 | 227000                          | 455000 | 2200                            | 1800                   | 3000                      | 2400                   | 124                   | 117                   | 226                                 | 233                   | 2.5                  | 1                     | 11.0   | 7322B |           |  |             |
|                          | 240 | 50 | 3       | 1.1                  | -4.7             | 7322C            | 7322CDB | 7322CDF     | 7322CDT | 237000 | 385000 | 227000                          | 455000 | 4600                            | 3700                   | 6300                      | 5000                   | 124                   | 124                   | 226                                 | 233                   | 2.5                  | 1                     | 11.0   | 7322C |           |  |             |
| 120                      | 180 | 28 | 2       | 1                    | 29.3             | 7024             | 7024DB  | 7024DF      | 7024DT  | 96500  | 157000 | 103000                          | 206000 | 2900                            | 2300                   | 3800                      | 3000                   | 128                   | 128                   | 172                                 | 175                   | 2                    | 1                     | 2.27   | 7024  |           |  |             |
|                          | 180 | 28 | 2       | 1                    | 3.3              | 7024C            | 7024CDB | 7024CDF     | 7024CDT | 109000 | 178000 | 112000                          | 223000 | 5300                            | 4200                   | 7300                      | 5800                   | 128                   | 128                   | 172                                 | 175                   | 2                    | 1                     | 2.27   | 7024C |           |  |             |
|                          | 215 | 40 | 2.1     | 1.1                  | 28.4             | 7224             | 7224DB  | 7224DF      | 7224DT  | 182000 | 295000 | 180000                          | 360000 | 2600                            | 2100                   | 3400                      | 2700                   | 132                   | 127                   | 203                                 | 208                   | 2                    | 1                     | 6.05   | 7224  |           |  |             |
|                          | 215 | 40 | 2.1     | 1.1                  | 50.3             | 7224B            | 7224BDB | 7224BDF     | 7224BDT | 170000 | 277000 | 169000                          | 335000 | 2300                            | 1900                   | 3100                      | 2500                   | 132                   | 127                   | 203                                 | 208                   | 2                    | 1                     | 6.05   | 7224B |           |  |             |
|                          | 215 | 40 | 2.1     | 1.1                  | -0.6             | 7224C            | 7224CDB | 7224CDF     | 7224CDT | 185000 | 300000 | 176000                          | 350000 | 4800                            | 3800                   | 6600                      | 5300                   | 132                   | 132                   | 203                                 | 208                   | 2                    | 1                     | 6.05   | 7224C |           |  |             |
|                          | 260 | 55 | 3       | 1.1                  | 27.3             | 7324             | 7324DB  | 7324DF      | 7324DT  | 260000 | 420000 | 169000                          | 540000 | 2200                            | 1800                   | 3000                      | 2400                   | 134                   | 127                   | 246                                 | 253                   | 2.5                  | 1                     | 14.2   | 7324  |           |  |             |
|                          | 260 | 55 | 3       | 1.1                  | 52.2             | 7324B            | 7324BDB | 7324BDF     | 7324BDT | 245000 | 400000 | 253000                          | 505000 | 2100                            | 1700                   | 2800                      | 2200                   | 134                   | 127                   | 246                                 | 253                   | 2.5                  | 1                     | 14.2   | 7324B |           |  |             |

Note : (1) "a" means the distance between back face and load center.

# Angular Contact Ball Bearings

## Single Mounting / Duplex Mounting

Bore Diameter : 130~160mm



• Dynamic equivalent radial load  
 $Pr = XFr + YFa$

| Contact angle | iFa<br>Cor | e    | Single or DT |      |       |        |       |      | DB or DF |      |      |        |      |      |
|---------------|------------|------|--------------|------|-------|--------|-------|------|----------|------|------|--------|------|------|
|               |            |      | Fa > e       |      |       | Fa ≤ e |       |      | Fa > e   |      |      | Fa ≤ e |      |      |
|               |            |      | X            | Y    | X     | X      | Y     | X    | Y        | X    | Y    | X      | Y    | X    |
|               |            |      | 0.015        | 0.38 | 0.029 | 0.40   | 0.058 | 0.43 | 0.087    | 0.46 | 0.12 | 0.47   | 0.17 | 0.50 |
| 15°           |            |      | 0.44         | 1.47 | 0.44  | 1.40   | 1     | 1.57 | 0.72     | 2.28 | 0.72 | 2.11   | 0.72 | 2.11 |
|               |            |      | 0.44         | 1.23 | 0.44  | 1.19   | 1     | 1.34 | 0.72     | 1.93 | 0.72 | 1.82   | 0.72 | 1.82 |
|               |            |      | 0.44         | 1.02 | 0.44  | 1.00   | 1     | 1.14 | 0.72     | 1.66 | 0.72 | 1.63   | 0.72 | 1.63 |
|               |            |      | 0.44         | 0.56 | 0.44  | 0.56   | 1     | 1.00 | 0.72     | 1.12 | 0.72 | 1.12   | 0.72 | 1.12 |
| 30°           | —          | 0.8  | 0.39         | 0.76 | 0.39  | 0.76   | 1     | 0.78 | 0.63     | 1.24 | 0.63 | 1.24   | 0.63 | 1.24 |
| 40°           | —          | 1.14 | 0.35         | 0.57 | 0.35  | 0.57   | 1     | 0.55 | 0.57     | 0.93 | 0.55 | 0.93   | 0.55 | 0.93 |

• i = 2 for DB or DF mounting  
i = 1 for Single or DT mounting  
• Single or DT mounting  
When  $Fa/Fr \leq e$ , use  $Pr = Fr$

• Static equivalent radial load  
 $Por = XoFr + YoFa$

| Contact angle | Single or DT |      | DB or DF |      |
|---------------|--------------|------|----------|------|
|               | Xo           | Yo   | Xo       | Yo   |
| 15°           | 0.5          | 0.46 | 1        | 0.92 |
| 30°           | 0.5          | 0.33 | 1        | 0.66 |
| 40°           | 0.5          | 0.26 | 1        | 0.52 |

• Single or DT mounting  
When  $Por < Fr$ , use  $Pr = Fr$

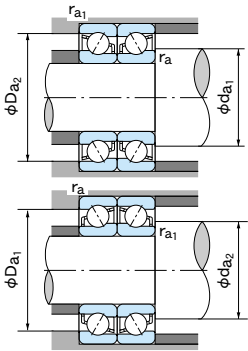
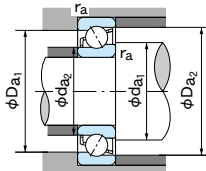
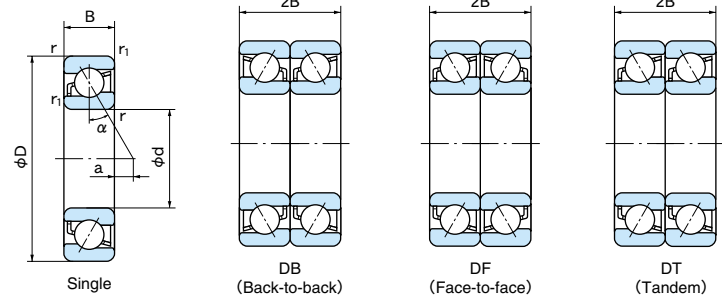
| Boundary dimensions (mm) |     |    |         |                      |                  | Load center (mm) | Bearing No. |         |         |        | Basic dynamic load rating Cr(N) |        | Basic static load rating Cor(N) |        | Limiting speed (rpm) |        |        |                       | Abutment and fillet dimensions (mm) |                       |                       |                      |                       |        | Mass (kg) |  | Bearing No. |
|--------------------------|-----|----|---------|----------------------|------------------|------------------|-------------|---------|---------|--------|---------------------------------|--------|---------------------------------|--------|----------------------|--------|--------|-----------------------|-------------------------------------|-----------------------|-----------------------|----------------------|-----------------------|--------|-----------|--|-------------|
| d                        | D   | B  | r (min) | r <sub>1</sub> (min) | a <sup>(1)</sup> | Single           | Duplex      |         |         | Single | Duplex                          |        | Duplex                          | Single | Duplex               | Single | Duplex | d <sub>a1</sub> (min) | d <sub>a2</sub> (min)               | D <sub>a1</sub> (max) | D <sub>a2</sub> (max) | r <sub>a</sub> (max) | r <sub>a1</sub> (max) | Single |           |  |             |
| 130                      | 200 | 33 | 2       | 1                    | 31.1             | 7026             | 7026DB      | 7026DF  | 7026DT  | 117000 | 190000                          | 125000 | 250000                          | 2600   | 2200                 | 3600   | 2700   | 138                   | 138                                 | 192                   | 195                   | 2                    | 1                     | 3.43   | 7026      |  |             |
|                          | 200 | 33 | 2       | 1                    | 2.5              | 7026C            | 7026CDB     | 7026CDF | 7026CDT | 130000 | 211000                          | 138000 | 276000                          | 4800   | 3800                 | 6700   | 5400   | 138                   | 138                                 | 192                   | 195                   | 2                    | 1                     | 3.43   | 7026C     |  |             |
|                          | 230 | 40 | 3       | 1.1                  | 32               | 7226             | 7226DB      | 7226DF  | 7226DT  | 196000 | 320000                          | 198000 | 395000                          | 2400   | 1900                 | 3100   | 2500   | 144                   | 137                                 | 216                   | 223                   | 2.5                  | 1                     | 6.88   | 7226      |  |             |
|                          | 230 | 40 | 3       | 1.1                  | 55.5             | 7226B            | 7226BDB     | 7226BDF | 7226BDT | 184000 | 298000                          | 185000 | 370000                          | 2100   | 1700                 | 2800   | 2300   | 144                   | 137                                 | 216                   | 223                   | 2.5                  | 1                     | 6.88   | 7226B     |  |             |
|                          | 230 | 40 | 3       | 1.1                  | 0.9              | 7226C            | 7226CDB     | 7226CDF | 7226CDT | 214000 | 350000                          | 216000 | 430000                          | 4400   | 3500                 | 6100   | 4900   | 144                   | 144                                 | 216                   | 223                   | 2.5                  | 1                     | 6.88   | 7226C     |  |             |
|                          | 280 | 58 | 4       | 1.5                  | 30.2             | 7326             | 7326DB      | 7326DF  | 7326DT  | 300000 | 490000                          | 330000 | 660000                          | 2200   | 1700                 | 2900   | 2200   | 148                   | 139                                 | 262                   | 271                   | 3                    | 1.5                   | 17.4   | 7326      |  |             |
| 280                      | 58  | 4  | 1.5     | 57.0                 | 7326B            | 7326BDB          | 7326BDF     | 7326BDT | 284000  | 460000 | 310000                          | 620000 | 1900                            | 1500   | 2600                 | 2000   | 148    | 139                   | 262                                 | 271                   | 3                     | 1.5                  | 17.4                  | 7326B  |           |  |             |
| 140                      | 210 | 33 | 2       | 1                    | 34               | 7028             | 7028DB      | 7028DF  | 7028DT  | 120000 | 194000                          | 133000 | 265000                          | 2400   | 1900                 | 3300   | 2600   | 148                   | 148                                 | 202                   | 205                   | 2                    | 1                     | 3.63   | 7028      |  |             |
|                          | 210 | 33 | 2       | 1                    | 3.7              | 7028C            | 7028CDB     | 7028CDF | 7028CDT | 133000 | 216000                          | 146000 | 292000                          | 4600   | 3700                 | 6300   | 5000   | 148                   | 148                                 | 202                   | 205                   | 2                    | 1                     | 3.63   | 7028C     |  |             |
|                          | 250 | 42 | 3       | 1.1                  | 35.3             | 7228             | 7228DB      | 7228DF  | 7228DT  | 211000 | 345000                          | 228000 | 525000                          | 2200   | 1800                 | 3000   | 2400   | 154                   | 147                                 | 236                   | 243                   | 2.5                  | 1                     | 8.78   | 7228      |  |             |
|                          | 250 | 42 | 3       | 1.1                  | 60.8             | 7228B            | 7228BDB     | 7228BDF | 7228BDT | 197000 | 320000                          | 214000 | 425000                          | 2000   | 1600                 | 2600   | 2200   | 154                   | 147                                 | 236                   | 243                   | 2.5                  | 1                     | 8.78   | 7228B     |  |             |
|                          | 250 | 42 | 3       | 1.1                  | 1.3              | 7228C            | 7228CDB     | 7228CDF | 7228CDT | 223000 | 360000                          | 235000 | 470000                          | 4100   | 3300                 | 5600   | 4500   | 154                   | 154                                 | 236                   | 243                   | 2.5                  | 1                     | 8.78   | 7228C     |  |             |
|                          | 300 | 62 | 4       | 1.5                  | 32.5             | 7328             | 7328DB      | 7328DF  | 7328DT  | 300000 | 490000                          | 335000 | 670000                          | 2000   | 1600                 | 2600   | 2000   | 158                   | 149                                 | 282                   | 291                   | 3                    | 1.5                   | 21.5   | 7328      |  |             |
| 300                      | 62  | 4  | 1.5     | 61.3                 | 7328B            | 7328BDB          | 7328BDF     | 7328BDT | 284000  | 460000 | 315000                          | 635000 | 1700                            | 1400   | 2400                 | 1900   | 158    | 149                   | 282                                 | 291                   | 3                     | 1.5                  | 21.5                  | 7328B  |           |  |             |
| 150                      | 225 | 35 | 2.1     | 1.1                  | 36.6             | 7030             | 7030DB      | 7030DF  | 7030DT  | 137000 | 222000                          | 154000 | 305000                          | 2300   | 1800                 | 3000   | 2400   | 159                   | 159                                 | 216                   | 219                   | 2                    | 1                     | 4.42   | 7030      |  |             |
|                          | 225 | 35 | 2.1     | 1.1                  | 4.1              | 7030C            | 7030CDB     | 7030CDF | 7030CDT | 152000 | 247000                          | 169000 | 340000                          | 4300   | 3400                 | 5900   | 4700   | 159                   | 159                                 | 216                   | 219                   | 2                    | 1                     | 4.42   | 7030C     |  |             |
|                          | 270 | 45 | 3       | 1.1                  | 38.1             | 7230             | 7230DB      | 7230DF  | 7230DT  | 249000 | 405000                          | 280000 | 560000                          | 2000   | 1600                 | 2800   | 2200   | 164                   | 157                                 | 256                   | 263                   | 2.5                  | 1                     | 11.0   | 7230      |  |             |
|                          | 270 | 45 | 3       | 1.1                  | 65.6             | 7230B            | 7230BDB     | 7230BDF | 7230BDT | 223000 | 360000                          | 246000 | 490000                          | 1800   | 1500                 | 2600   | 2000   | 164                   | 157                                 | 256                   | 263                   | 2.5                  | 1                     | 11.0   | 7230B     |  |             |
|                          | 270 | 45 | 3       | 1.1                  | 1.5              | 7230C            | 7230CDB     | 7230CDF | 7230CDT | 261000 | 425000                          | 287000 | 575000                          | 3800   | 3000                 | 5200   | 4200   | 164                   | 164                                 | 256                   | 263                   | 2.5                  | 1                     | 11.0   | 7230C     |  |             |
|                          | 320 | 65 | 4       | 1.5                  | 35.3             | 7330             | 7330DB      | 7330DF  | 7330DT  | 330000 | 535000                          | 380000 | 765000                          | 1700   | 1400                 | 2400   | 1800   | 168                   | 159                                 | 302                   | 311                   | 3                    | 1.5                   | 25.1   | 7330      |  |             |
| 320                      | 65  | 4  | 1.5     | 66.1                 | 7330B            | 7330BDB          | 7330BDF     | 7330BDT | 310000  | 505000 | 360000                          | 725000 | 1500                            | 1300   | 2200                 | 1600   | 168    | 159                   | 302                                 | 311                   | 3                     | 1.5                  | 25.1                  | 7330B  |           |  |             |
| 160                      | 240 | 38 | 2.1     | 1.1                  | 38.7             | 7032             | 7032DB      | 7032DF  | 7032DT  | 155000 | 252000                          | 176000 | 350000                          | 2100   | 1700                 | 2800   | 2300   | 169                   | 169                                 | 231                   | 234                   | 2                    | 1                     | 5.44   | 7032      |  |             |
|                          | 240 | 38 | 2.1     | 1.1                  | 4.1              | 7032C            | 7032CDB     | 7032CDF | 7032CDT | 172000 | 280000                          | 194000 | 390000                          | 4000   | 3200                 | 5500   | 4400   | 169                   | 169                                 | 231                   | 234                   | 2                    | 1                     | 5.44   | 7032C     |  |             |
|                          | 290 | 48 | 3       | 1.1                  | 41.0             | 7232             | 7232DB      | 7232DF  | 7232DT  | 263000 | 425000                          | 305000 | 615000                          | 1900   | 1500                 | 2600   | 2000   | 174                   | 167                                 | 276                   | 283                   | 2.5                  | 1                     | 13.7   | 7232      |  |             |
|                          | 290 | 48 | 3       | 1.1                  | 70.4             | 7232B            | 7232BDB     | 7232BDF | 7232BDT | 246000 | 400000                          | 287000 | 575000                          | 1700   | 1400                 | 2200   | 1800   | 174                   | 167                                 | 276                   | 283                   | 2.5                  | 1                     | 13.7   | 7232B     |  |             |
|                          | 290 | 48 | 3       | 1.1                  | 2.4              | 7232C            | 7232CDB     | 7232CDF | 7232CDT | 288000 | 470000                          | 335000 | 670000                          | 3600   | 2900                 | 4900   | 3900   | 174                   | 167                                 | 276                   | 283                   | 2.5                  | 1                     | 13.7   | 7232C     |  |             |
|                          | 340 | 68 | 4       | 1.5                  | 38.2             | 7332             | 7332DB      | 7332DF  | 7332DT  | 345000 | 565000                          | 420000 | 845000                          | 1700   | 1400                 | 2200   | 1800   | 178                   | 169                                 | 322                   | 331                   | 3                    | 1.5                   | 30.2   | 7332      |  |             |
| 340                      | 68  | 4  | 1.5     | 70.9                 | 7332B            | 7332BDB          | 7332BDF     | 7332BDT | 325000  | 530000 | 395000                          | 795000 | 1500                            | 1200   | 2000                 | 1600   | 178    | 169                   | 322                                 | 331                   | 3                     | 1.5                  | 30.2                  | 7332B  |           |  |             |

Note : (1) "a" means the distance between back face and load center.

# Angular Contact Ball Bearings

## Single Mounting / Duplex Mounting

Bore Diameter : 170~200mm



1N=0.102kgf

• Dynamic equivalent radial load  
 $Pr = XFr + YFa$

| Contact angle | iFa<br>Cor | e    | Single or DT |      |              |      |              |      | DB or DF     |      |              |      |              |      |
|---------------|------------|------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|--------------|------|
|               |            |      | Fa<br>Fr > e |      | Fa<br>Fr ≤ e |      | Fa<br>Fr > e |      | Fa<br>Fr ≤ e |      | Fa<br>Fr > e |      | Fa<br>Fr ≤ e |      |
|               |            |      | X            | Y    | X            | Y    | X            | Y    | X            | Y    | X            | Y    | X            | Y    |
| 15°           | 0.015      | 0.38 | 1.47         | 1.65 | 1.65         | 2.39 | 0.44         | 1.40 | 1            | 1.57 | 0.72         | 2.28 | 0.058        | 0.43 |
|               | 0.029      | 0.40 | 1.30         | 1.46 | 1.46         | 2.11 | 0.44         | 1.23 | 1            | 1.38 | 0.72         | 1.93 | 0.087        | 0.46 |
|               | 0.12       | 0.47 | 1.19         | 1.34 | 1.34         | 2.00 | 0.44         | 1.19 | 1            | 1.12 | 0.72         | 1.63 | 0.17         | 0.50 |
|               | 0.17       | 0.50 | 1.12         | 1.26 | 1.26         | 1.82 | 0.44         | 1.02 | 1            | 1.14 | 0.72         | 1.66 | 0.29         | 0.55 |
|               | 0.44       | 0.56 | 1.00         | 1.12 | 1.12         | 1.63 | 0.44         | 1.00 | 1            | 1.12 | 0.72         | 1.63 | 0.58         | 0.56 |
|               | 0.58       | 0.56 | 1.00         | 1.12 | 1.12         | 1.63 | 0.44         | 1.00 | 1            | 1.12 | 0.72         | 1.63 | 0.58         | 0.56 |
| 30°           | —          | 0.8  | 0.39         | 0.76 | 1            | 0.78 | 0.63         | 1.24 | —            | —    | —            | —    | —            | —    |
| 40°           | —          | 1.14 | 0.35         | 0.57 | 1            | 0.55 | 0.57         | 0.93 | —            | —    | —            | —    | —            | —    |

• i = 2 for DB or DF mounting  
i = 1 for Single or DT mounting  
• Single or DT mounting  
When  $Fa/Fr \leq e$ , use  $Pr = Fr$

• Static equivalent radial load  
 $Por = XoFr + YoFa$

| Contact angle | Single or DT   |                | DB or DF       |                |
|---------------|----------------|----------------|----------------|----------------|
|               | X <sub>0</sub> | Y <sub>0</sub> | X <sub>0</sub> | Y <sub>0</sub> |
| 15°           | 0.5            | 0.46           | 1              | 0.92           |
| 30°           | 0.5            | 0.33           | 1              | 0.66           |
| 40°           | 0.5            | 0.26           | 1              | 0.52           |

• Single or DT mounting  
When  $Por < Fr$ , use  $Pr = Fr$

| Boundary dimensions (mm) |     |    |         |                      | Load center<br>(mm)<br>a <sup>(1)</sup> | Bearing No. |         |         |         | Basic dynamic load rating Cr(N) |        | Basic static load rating Cor(N) |         | Limiting speed (rpm)         |        |                           |        | Abutment and fillet dimensions (mm) |                       |                       |                       |                      |                       | Mass (kg) |  | Bearing No. |
|--------------------------|-----|----|---------|----------------------|-----------------------------------------|-------------|---------|---------|---------|---------------------------------|--------|---------------------------------|---------|------------------------------|--------|---------------------------|--------|-------------------------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------|--|-------------|
| d                        | D   | B  | r (min) | r <sub>1</sub> (min) |                                         | Single      | Duplex  |         |         | Single                          | Duplex | Single                          | Duplex  | Grease lubrication<br>Single | Duplex | Oil lubrication<br>Single | Duplex | d <sub>a1</sub> (min)               | d <sub>a2</sub> (min) | D <sub>a1</sub> (max) | D <sub>a2</sub> (max) | r <sub>a</sub> (max) | r <sub>a1</sub> (max) | Single    |  |             |
| 170                      | 260 | 42 | 2.1     | 1.1                  | 41.1                                    | 7034        | 7034DB  | 7034DF  | 7034DT  | 179000                          | 291000 | 210000                          | 420000  | 2000                         | 1600   | 2600                      | 2100   | 179                                 | 179                   | 251                   | 254                   | 2                    | 1                     | 7.87      |  | 7034        |
|                          | 260 | 42 | 2.1     | 1.1                  | 3.8                                     | 7034C       | 7034CDB | 7034CDF | 7034CDT | 206000                          | 335000 | 236000                          | 470000  | 3700                         | 3000   | 5100                      | 4100   | 179                                 | 179                   | 251                   | 254                   | 2                    | 1                     | 7.87      |  | 7034C       |
|                          | 310 | 52 | 4       | 1.5                  | 43.3                                    | 7234        | 7234DB  | 7234DF  | 7234DT  | 272000                          | 440000 | 330000                          | 660000  | 1800                         | 1400   | 2400                      | 1900   | 188                                 | 179                   | 292                   | 301                   | 3                    | 1.5                   | 17.4      |  | 7234        |
|                          | 310 | 52 | 4       | 1.5                  | 74.7                                    | 7234B       | 7234BDB | 7234BDF | 7234BDT | 254000                          | 410000 | 310000                          | 620000  | 1600                         | 1300   | 2200                      | 1700   | 188                                 | 179                   | 292                   | 301                   | 3                    | 1.5                   | 17.4      |  | 7234B       |
|                          | 310 | 52 | 4       | 1.5                  | 2.2                                     | 7234C       | 7234CDB | 7234CDF | 7234CDT | 299000                          | 485000 | 360000                          | 725000  | 3300                         | 2600   | 4600                      | 3700   | 188                                 | 179                   | 292                   | 301                   | 3                    | 1.5                   | 17.4      |  | 7234C       |
|                          | 360 | 72 | 4       | 1.5                  | 40.5                                    | 7334        | 7334DB  | 7334DF  | 7334DT  | 390000                          | 630000 | 485000                          | 970000  | 1600                         | 1300   | 2200                      | 1700   | 188                                 | 179                   | 342                   | 351                   | 3                    | 1.5                   | 35.7      |  | 7334        |
| 180                      | 280 | 46 | 2.1     | 1.1                  | 43.4                                    | 7036        | 7036DB  | 7036DF  | 7036DT  | 207000                          | 335000 | 252000                          | 505000  | 1900                         | 1500   | 2500                      | 2000   | 189                                 | 189                   | 271                   | 274                   | 2                    | 1                     | 9.98      |  | 7036        |
|                          | 280 | 46 | 2.1     | 1.1                  | 3.5                                     | 7036C       | 7036CDB | 7036CDF | 7036CDT | 235000                          | 385000 | 290000                          | 580000  | 3500                         | 2800   | 4800                      | 3800   | 189                                 | 189                   | 271                   | 274                   | 2                    | 1                     | 9.98      |  | 7036C       |
|                          | 320 | 52 | 4       | 1.5                  | 46.2                                    | 7236        | 7236DB  | 7236DF  | 7236DT  | 281000                          | 455000 | 350000                          | 705000  | 1700                         | 1300   | 2200                      | 1800   | 198                                 | 189                   | 302                   | 311                   | 3                    | 1.5                   | 19.9      |  | 7236        |
|                          | 320 | 52 | 4       | 1.5                  | 48.9                                    | 7236B       | 7236BDB | 7236BDF | 7236BDT | 262000                          | 425000 | 330000                          | 660000  | 1500                         | 1200   | 2000                      | 1700   | 198                                 | 189                   | 302                   | 311                   | 3                    | 1.5                   | 19.9      |  | 7236B       |
|                          | 320 | 52 | 4       | 1.5                  | 3.3                                     | 7236C       | 7236CDB | 7236CDF | 7236CDT | 310000                          | 500000 | 385000                          | 775000  | 3200                         | 2600   | 4400                      | 3500   | 198                                 | 189                   | 302                   | 311                   | 3                    | 1.5                   | 19.9      |  | 7236C       |
|                          | 380 | 75 | 4       | 1.5                  | 43.3                                    | 7336        | 7336DB  | 7336DF  | 7336DT  | 410000                          | 665000 | 535000                          | 1070000 | 1400                         | 1200   | 2000                      | 1600   | 198                                 | 189                   | 362                   | 371                   | 3                    | 1.5                   | 41.3      |  | 7336        |
| 190                      | 290 | 46 | 2.1     | 1.1                  | 46.3                                    | 7038        | 7038DB  | 7038DF  | 7038DT  | 218000                          | 355000 | 277000                          | 555000  | 1800                         | 1400   | 2300                      | 1900   | 199                                 | 199                   | 281                   | 284                   | 2                    | 1                     | 10.7      |  | 7038        |
|                          | 290 | 46 | 2.1     | 1.1                  | 4.7                                     | 7038C       | 7038CDB | 7038CDF | 7038CDT | 248000                          | 405000 | 310000                          | 615000  | 3300                         | 2600   | 4600                      | 3700   | 199                                 | 199                   | 281                   | 284                   | 2                    | 1                     | 10.7      |  | 7038C       |
|                          | 340 | 55 | 4       | 1.5                  | 49.0                                    | 7238        | 7238DB  | 7238DF  | 7238DT  | 315000                          | 510000 | 410000                          | 825000  | 1600                         | 1300   | 2200                      | 1700   | 208                                 | 199                   | 322                   | 331                   | 3                    | 1.5                   | 21.5      |  | 7238        |
|                          | 340 | 55 | 4       | 1.5                  | 83.7                                    | 7238B       | 7238BDB | 7238BDF | 7238BDT | 294000                          | 475000 | 385000                          | 770000  | 1400                         | 1100   | 2000                      | 1600   | 208                                 | 199                   | 322                   | 331                   | 3                    | 1.5                   | 21.5      |  | 7238B       |
|                          | 400 | 78 | 5       | 2                    | 46.1                                    | 7338        | 7338DB  | 7338DF  | 7338DT  | 445000                          | 725000 | 610000                          | 1220000 | 1400                         | 1100   | 1900                      | 1500   | 212                                 | 200                   | 378                   | 390                   | 4                    | 2                     | 47.6      |  | 7338        |
|                          | 400 | 78 | 5       | 2                    | 84.8                                    | 7338B       | 7338BDB | 7338BDF | 7338BDT | 420000                          | 680000 | 575000                          | 1150000 | 1300                         | 1000   | 1800                      | 1400   | 212                                 | 200                   | 378                   | 390                   | 4                    | 2                     | 47.6      |  | 7338B       |
| 200                      | 310 | 51 | 2.1     | 1.1                  | 48.1                                    | 7040        | 7040DB  | 7040DF  | 7040DT  | 226000                          | 365000 | 277000                          | 565000  | 1700                         | 1300   | 2200                      | 1800   | 209                                 | 209                   | 301                   | 304                   | 2                    | 1                     | 13.8      |  | 7040        |
|                          | 310 | 51 | 2.1     | 1.1                  | 3.9                                     | 7040C       | 7040CDB | 7040CDF | 7040CDT | 274000                          | 445000 | 360000                          | 715000  | 3100                         | 2500   | 4300                      | 3400   | 209                                 | 209                   | 301                   | 304                   | 2                    | 1                     | 13.8      |  | 7040C       |
|                          | 360 | 58 | 4       | 1.5                  | 51.8                                    | 7240        | 7240DB  | 7240DF  | 7240DT  | 335000                          | 550000 | 450000                          | 900000  | 1500                         | 1200   | 2000                      | 1600   | 218                                 | 209                   | 342                   | 351                   | 3                    | 1.5                   | 25.5      |  | 7240        |
|                          | 360 | 58 | 4       | 1.5                  | 88.5                                    | 7240B       | 7240BDB | 7240BDF | 7240BDT | 315000                          | 510000 | 420000                          | 840000  | 1300                         | 1000   | 1900                      | 1500   | 218                                 | 209                   | 342                   | 351                   | 3                    | 1.5                   | 25.5      |  | 7240B       |
|                          | 420 | 80 | 5       | 2                    | 49.5                                    | 7340        | 7340DB  | 7340DF  | 7340DT  | 475000                          | 770000 | 655000                          | 1310000 | 1300                         | 1100   | 1800                      | 1400   | 222                                 | 210                   | 398                   | 410                   | 4                    | 2                     | 53.7      |  | 7340        |
|                          | 420 | 80 | 5       | 2                    | 90.1                                    | 7340B       | 7340BDB | 7340BDF | 7340BDT | 445000                          | 725000 | 620000                          | 1240000 | 1200                         | 1000   | 1700                      | 1300   | 222                                 | 210                   | 398                   | 410                   | 4                    | 2                     | 53.7      |  | 7340B       |

Note : (1) "a" means the distance between back face and load center.