

## Spherical roller bearings

### Features

Spherical roller bearings are double row inseparable bearings, including outer rings with spherical raceways, inner rings with double raceways and drum rollers with cages. It has the characteristic of compensating the misalignment of the shaft. They're suitable for heavy load conditions. There are two types of inner rings, cylindrical bore and tapered bore.

Spherical roller bearings provide: E-type design, CC-type design, CA-type design.

E-type structure design: It consists of symmetrical rollers, a floating guide ring between two rows of rollers, an inner ring without ribs, two hardened stamped steel cages and an outer ring.

This type of bearing is a patented product of KMR. Its dynamic load rating has been increased by an average of 25% to 35%. Therefore, under the same conditions, the rated life of the bearing is 2.0-3.5 times that of the traditional structure bearing of the same type

CC type structure design: It consists of symmetrical rollers, two stamped steel cages, an inner ring without ribs, a floating guide ring between two rows of rollers and an outer ring.

CA-type structural design: It consists of symmetrical rollers, fork-shaped machined brass or steel cages, inner and outer rings with ribs.

### Radial and axial load carrying capacity

Spherical roller bearings can bearing bidirectional axial forces and extremely high radial forces. The optimized fit between the rollers and the raceways ensures a uniform stress distribution in the bearing.

### Bearings with Tapered bore

The inner ring of the spherical roller bearing has a tapered bore design.

## Seals

KMR has a sealed series of spherical roller bearings.

### Bearings with Cylindrical bore

All series of spherical roller bearing inner rings have a cylindrical bore design.

### Spherical Roller Bearings for Vibrating Machinery

For machines that required eccentric motion, such as vibrating screens and compactors, KMR has developed a series of spherical roller bearings suitable for applications in vibration situations. These bearings are in the 223 series, with a cylindrical or tapered bore, with shaft diameters ranging from 40 to 240 mm, and a standard radial internal clearance of C4.

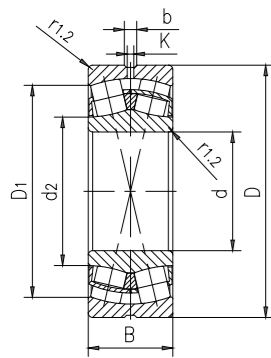
Existing bearings for vibrating machinery have been tested and verified to prove that they can greatly reduce the temperature and prolong the service life of the machine. KMR spherical roller bearings for vibration machinery have the following advantages: Applied in all kinds of vibrating machinery, it shows excellent performance. The performance of KMR bearings allows the design of more compact arrangements. High wear resistance even in polluted environments.



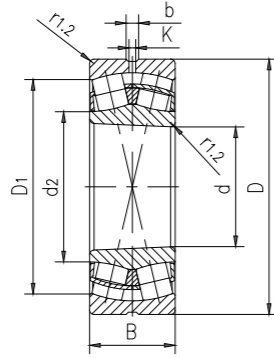
## suffix for an existing design

| Suffix     | Meaning   |
|------------|---|
| BC         | Bearing for wind turbine main shafts with roller-guided cast iron cage  |
| CA CAC     | Retaining langes on the inner ring, guide ring centred on the inner ring, machined brass  |
| CC(J) CJ   | Flangeless inner ring, guide ring centred on the inner ring, two stamped steel cages  |
| CCJA EJA   | Flangeless inner ring, guide ring centred on the outer ring raceway, two stamped steel cages  |
| E          | Optimized internal design for increased load carrying capacity<br>213, 222 and 223 series: Flangeless inner ring and two stamped steel cages Annular groove and three lubrication holes in the outer ring<br>d ≤ 65 mm: Guide ring centred on the inner ring<br>d > 65 mm: Guide ring centred on the cage |
| -CS -2CS   | Contact seal, NBR, on one or both sides   |
| -CS2 -2CS2 | Contact seal, FKM, on one or both sides   |
| -CS5 -2CS5 | Contact seal, HNBR, on one or both sides  |
| -RS -2RS   | Contact seal, NBR, on one or both sides   |
| -RS5 -2RS5 | Contact seal, HNBR, on one or both sides  |
| K          | Tapered bore, taper 1:12  |
| K30        | Tapered bore, taper 1:30  |
| F          | Machined steel cage, inner ring centred   |
| FA         | Machined steel cage, outer ring centred   |
| J          | Stamped steel cage, inner ring centred  |
| JA         | Stamped steel cage, outer ring centred  |
| MA         | Machined brass cage, outer ring centred   |
| C08        | Running accuracy to P5 tolerance class  |
| C083       | C08 + C3  |
| C084       | C08 + C4  |
| C2         | Radial internal clearance smaller than Normal   |
| C3         | Radial internal clearance greater than Normal   |
| C4         | Radial internal clearance greater than C3   |
| C5         | Radial internal clearance greater than C4   |
| P5         | Dimensional and running accuracy to P5 tolerance class  |
| P6         | Dimensional and running accuracy to P6 tolerance class  |
| P62        | P6 + C2   |
| 235220     | Case-hardened inner ring with a helical groove in the bore  |
| HA3        | Case-hardened inner ring  |

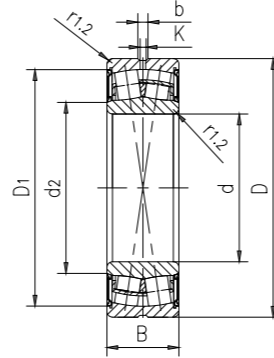
# Spherical roller bearings



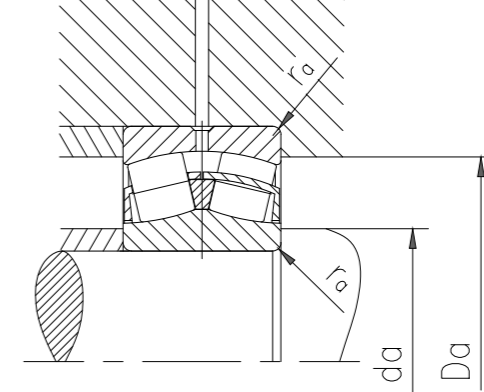
Cylindrical bore (CC)



Tapered bore(CC)



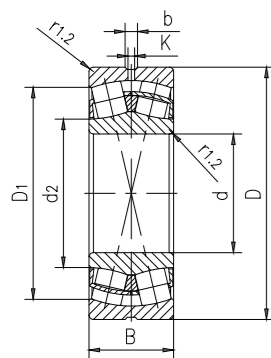
Sealed (CC / 2CS5)



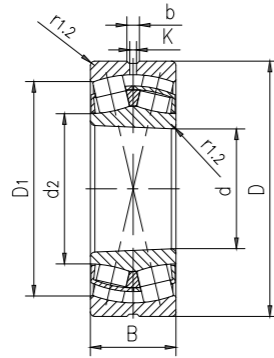
| Type                          |                     | Main dimensions |     |     | Dimensions     |                |      |     |     | Shoulder and chamfer dimensions |                     |                     |                     |
|-------------------------------|---------------------|-----------------|-----|-----|----------------|----------------|------|-----|-----|---------------------------------|---------------------|---------------------|---------------------|
| Bearing with cylindrical bore | Taper Hole          | d               | D   | B   | d <sub>2</sub> | D <sub>1</sub> | b    | K   | C   | r <sub>1.2</sub> min.           | d <sub>a</sub> min. | d <sub>a</sub> max. | r <sub>a</sub> max. |
|                               |                     |                 |     |     |                |                |      |     |     |                                 |                     |                     |                     |
| 23028CC/W33                   | 23028CCK/W33        | 140             | 210 | 53  | 158            | 190            | 8.3  | 4.5 | 2   | 149                             | -                   | 201                 | 2                   |
| 24028CC/W33                   | 24028CCK30/W33      | 140             | 210 | 69  | 155            | 185            | 6    | 3   | 2   | 149                             | -                   | 201                 | 2                   |
| 24028-2CS5/VT143              | -                   | 140             | 210 | 69  | 151            | 195            | 6    | 3   | 2   | 149                             | 151                 | 201                 | 2                   |
| 23128CC/W33                   | 23128CCK/W33        | 140             | 225 | 68  | 159            | 197            | 8.3  | 4.5 | 2.1 | 152                             | -                   | 213                 | 2                   |
| 24128CC/W33                   | 24128CCK30/W33      | 140             | 225 | 85  | 156            | 193            | 8.3  | 4.5 | 2.1 | 152                             | -                   | 213                 | 2                   |
| 24128-2CS5/VT143              | 24128-2CS5K30/VT143 | 140             | 225 | 85  | 153            | 203            | 8.3  | 4.5 | 2.1 | 152                             | 153                 | 213                 | 2                   |
| 22228CC/W33                   | 22228CCK/W33        | 140             | 250 | 68  | 166            | 216            | 11.1 | 6   | 3   | 154                             | -                   | 236                 | 2.5                 |
| 22228-2CS5/VT143              | 22228-2CS5K/VT143   | 140             | 250 | 68  | 161            | 225            | 11.1 | 6   | 3   | 154                             | 161                 | 236                 | 2.5                 |
| 23228CC/W33                   | 23228CCK/W33        | 140             | 250 | 88  | 165            | 212            | 11.1 | 6   | 3   | 154                             | -                   | 236                 | 2.5                 |
| 23228-2CS5/VT143              | 23228-2CS5K/VT143   | 140             | 250 | 88  | 161            | 225            | 11.1 | 6   | 3   | 154                             | 161                 | 236                 | 2.5                 |
| 22328CC/W33                   | 22328CCK/W33        | 140             | 300 | 102 | 175            | 247            | 16.7 | 9   | 4   | 157                             | -                   | 283                 | 3                   |
| 22328CCJA/W33VA405            | 22328CCJA/W33VA405  | 140             | 300 | 102 | 175            | 247            | 16.7 | 9   | 4   | 157                             | -                   | 283                 | 3                   |
| 22328CCJA/W33VA406            | -                   | 140             | 300 | 102 | 175            | 247            | 16.7 | 9   | 4   | 157                             | -                   | 283                 | 3                   |
| 22328-2CS5/VT143              | 22328-2CS5K/VT143   | 140             | 300 | 102 | 169            | 261            | 16.7 | 9   | 4   | 157                             | 169                 | 283                 | 3                   |
| 23030CC/W33                   | 23030CCK/W33        | 150             | 225 | 56  | 169            | 203            | 8.3  | 4.5 | 2.1 | 161                             | -                   | 214                 | 2                   |
| 23030-2CS5/VT143              | 23030-2CS5K/VT143   | 150             | 225 | 56  | 165            | 211            | 8.3  | 4.5 | 2.1 | 161                             | 165                 | 214                 | 2                   |
| 24030CC/W33                   | 24030CCK30/W33      | 150             | 225 | 75  | 165            | 197            | 6    | 3   | 2.1 | 161                             | -                   | 214                 | 2                   |
| 24030-2CS5/VT143              | -                   | 150             | 225 | 75  | 162            | 206            | 6    | 3   | 2.1 | 161                             | 162                 | 214                 | 2                   |
| 23130CC/W33                   | 23130CCK/W33        | 150             | 250 | 80  | 172            | 216            | 11.1 | 6   | 2.1 | 162                             | -                   | 238                 | 2                   |
| 23130-2CS5/VT143              | 23130-2CS5K/VT143   | 150             | 250 | 80  | 168            | 226            | 11.1 | 6   | 2.1 | 162                             | 168                 | 238                 | 2                   |
| 24130CC/W33                   | 24130CCK30/W33      | 150             | 250 | 100 | 169            | 211            | 8.3  | 4.5 | 2.1 | 162                             | -                   | 238                 | 2                   |
| 24130-2CS5/VT143              | 24130-2CS5K30/VT143 | 150             | 250 | 100 | 163            | 222            | 8.3  | 4.5 | 2.1 | 162                             | 163                 | 238                 | 2                   |
| 22230CC/W33                   | 22230CCK/W33        | 150             | 270 | 73  | 178            | 234            | 13.9 | 7.5 | 3   | 164                             | -                   | 256                 | 2.5                 |
| 22230-2CS5/VT143              | 23230-2CS5K/VT143   | 150             | 270 | 73  | 174            | 248            | 13.9 | 7.5 | 3   | 164                             | 174                 | 256                 | 2.5                 |
| 22330CC/W33                   | 22330CCK/W33        | 150             | 270 | 96  | 175            | 228            | 11.1 | 6   | 3   | 164                             | -                   | 256                 | 2.5                 |
| 23230-2CS5/VT143              | 23230-2CS5K/VT143   | 150             | 270 | 96  | 171            | 243            | 11.1 | 6   | 3   | 164                             | 171                 | 256                 | 2.5                 |
| 23230CC/W33                   | 23230CCK/W33        | 150             | 320 | 108 | 188            | 266            | 16.7 | 9   | 4   | 167                             | -                   | 303                 | 3                   |
| 22330CCJA/W33VA405            | 22330CCJA/W33VA405  | 150             | 320 | 108 | 188            | 266            | 16.7 | 9   | 4   | 167                             | -                   | 303                 | 3                   |
| 22330CCJA/W33VA406            | -                   | 150             | 320 | 108 | 188            | 266            | 16.7 | 9   | 4   | 167                             | -                   | 303                 | 3                   |
| 22330-2CS5/VT143              | 22330-2CS5K/VT143   | 150             | 320 | 108 | 181            | 281            | 16.7 | 9   | 4   | 167                             | 181                 | 303                 | 3                   |
| 23032CC/W33                   | 23032CCK/W33        | 160             | 240 | 60  | 180            | 217            | 11.1 | 6   | 2.1 | 171                             | -                   | 229                 | 2                   |
| 23032-2CS5/VT143              | 23032-2CS5K/VT143   | 160             | 240 | 60  | 177            | 225            | 11.1 | 6   | 2.1 | 171                             | 177                 | 229                 | 2                   |
| 24032CC/W33                   | 24032CCK30/W33      | 160             | 240 | 80  | 176            | 211            | 8.3  | 4.5 | 2.1 | 171                             | -                   | 229                 | 2                   |
| 24032-2CS5/VT143              | -                   | 160             | 240 | 80  | 173            | 218            | 8.3  | 4.5 | 2.1 | 171                             | 173                 | 229                 | 2                   |
| 23132CC/W33                   | 23132CCK/W33        | 160             | 270 | 86  | 184            | 234            | 13.9 | 7.5 | 2.1 | 172                             | -                   | 258                 | 2                   |
| 23132-2CS5/VT143              | 23132-2CS5K/VT143   | 160             | 270 | 86  | 180            | 244            | 13.9 | 7.5 | 2.1 | 172                             | 180                 | 258                 | 2                   |

| Type                          |                     | Weight | Basic load rating |                | Fatigue load limit | Rated speed     |               | The allowable acceleration of oil lubrication |        | Calculate the coefficient |                |                |                |
|-------------------------------|---------------------|--------|-------------------|----------------|--------------------|-----------------|---------------|---|--------|---------------------------|----------------|----------------|----------------|
| Bearing with cylindrical bore | Taper Hole          |        | Dynamic           | Static         |                    | reference speed | Maximum speed | Spin  | Linear | e                         | Y <sub>1</sub> | Y <sub>2</sub> | Y <sub>0</sub> |
|                               |                     |        | C                 | C <sub>0</sub> | P <sub>0</sub>     |                 |               |   |        |                           |                |                |                |
| 23028CC/W33                   | 23028CCK/W33        | 6.55   | 509.25            | 714            | 71.4               | 2730            | 3570          | -   | -      | 0.22                      | 3              | 4.6            | 2.8            |
| 24028CC/W33                   | 24028CCK30/W33      | 8.55   | 630               | 945            | 92.4               | 2100            | 2940          | -   | -      | 0.3                       | 2.3            | 3.4            | 2.2            |
| 24028-2CS5/VT143              | -                   | 8.55   | 631.05            | 945            | 92.4               | -               | 588           | -   | -      | 0.28                      | 2.4            | 3.6            | 2.5            |
| 23128CC/W33                   | 23128CCK/W33        | 10.5   | 691.95            | 945            | 92.4               | 2310            | 2940          | -   | -      | 0.28                      | 2.4            | 3.6            | 2.5            |
| 24128CC/W33                   | 24128CCK30/W33      | 13.5   | 835.8             | 1218           | 117.6              | 1680            | 2310          | -   | -      | 0.35                      | 1.9            | 2.9            | 1.8            |
| 24128-2CS5/VT143              | 24128-2CS5K30/VT143 | 13.5   | 836.85            | 1218           | 117.6              | -               | 472.5         | -   | -      | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22228CC/W33                   | 22228CCK/W33        | 14     | 780.15            | 945            | 90.825             | 2520            | 3360          | -   | -      | 0.26                      | 2.6            | 3.9            | 2.5            |
| 22228-2CS5/VT143              | 22228-2CS5K/VT143   | 14     | 781.2             | 945            | 90.825             | -               | 703.5         | -   | -      | 0.24                      | 2.8            | 4.2            | 2.8            |
| 23228CC/W33                   | 23228CCK/W33        | 19     | 1010.1            | 1312.5         | 126                | 1785            | 2520          | -   | -      | 0.33                      | 2              | 3              | 2              |
| 23228-2CS5/VT143              | 23228-2CS5K/VT143   | 19     | 1011.15           | 1312.5         | 126                | -               | 504           | -   | -      | 0.33                      | 2              | 3              | 2              |
| 22328CC/W33                   | 22328CCK/W33        | 36.5   | 1424.85           | 1638           | 138.6              | 1785            | 2310          | -   | -      | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22328CCJA/W33VA405            | 22328CCJA/W33VA405  | 36.5   | 1424.85           | 1638           | 138.6              | 1785            | 2310          | 87g   | 20g    | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22328CCJA/W33VA406            | -                   | 36.5   | 1424.85           | 1638           | 138.6              | 1785            | 2310          | 87g   | 20g    | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22328-2CS5/VT143              | 22328-2CS5K/VT143   | 36.5   | 1426.95           | 1638           | 138.6              | -               | 451.5         | -   | -      | 0.33                      | 2              | 3              | 2              |
| 23030CC/W33                   | 23030CCK/W33        | 7.95   | 557.55            | 787.5          | 77.175             | 2520            | 3360          | -   | -      | 0.22                      | 3              | 4.6            | 2.8            |
| 23030-2CS5/VT143              | 23030-2CS5K/VT143   | 7.95   | 558.6             | 787.5          | 77.175             | -               | 703.5         | -   | -      | 0.2                       | 3.4            | 5              | 3.2            |
| 24030CC/W33                   | 24030CCK30/W33      | 10.5   | 714               | 1092           | 105                | 1890            | 2730          | -   | -      | 0.3                       | 2.3            | 3.4            | 2.2            |
| 24030-2CS5/VT143              | -                   | 10.5   | 715.05            | 1092           | 105                | -               | 556.5         | -   | -      | 0.28                      | 2.4            | 3.6            | 2.5            |
| 23130CC/W33                   | 23130CCK/W33        | 16     | 927.15            | 1260           | 119.7              | 2100            | 2730          | -   | -      | 0.3                       | 2.3            | 3.4            | 2.2            |
| 23130-2CS5/VT143              | 23130-2CS5K/VT143   | 16     | 928.2             | 1260           | 119.7              | -               | 588           | -   | -      | 0.28                      | 2.4            | 3.6            | 2.5            |
| 24130CC/W33                   | 24130CCK30/W33      | 20     | 1106.7            | 1606.5         | 153.3              | 1470            | 2100          | -   | -      | 0.37                      | 1.8            | 2.7            | 1.8            |
| 24130-2CS5/VT143              | 24130-2CS5K30/VT143 | 20     | 1108.8            | 1606.5         | 153.3              | -               | 420           | -   | -      | 0.37                      | 1.8            | 2.7            | 1.8            |
| 22230CC/W33                   | 22230CCK/W33        | 18     | 942.9             | 1134           | 107.1              | 2310            | 3150          | -   | -      | 0.26                      | 2.6            | 3.9            | 2.5            |
| 22230-2CS5/VT143              | 23230-2CS5K/VT143   | 18     | 943.95            | 1134           | 107.1              | -               | 661.5         | -   | -      | 0.24                      | 2.8            | 4.2            | 2.8            |
| 22330CC/W33                   | 22330CCK/W33        | 24.5   | 1185.45           | 1533           | 143.85             | 1680            | 2310          | -   | -      | 0.35                      | 1.9            | 2.9            | 1.8            |
| 23230-2CS5/VT143              | 23230-2CS5K/VT143   | 24.5   | 1188.6            | 1533           | 143.85             | -               | 451.5         | -   | -      | 0.33                      | 2              | 3              | 2              |
| 23230CC/W33                   | 23230CCK/W33        | 43.5   | 1615.95           | 1848           | 153.3              | 1680            | 2100          | -   | -      | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22330CCJA/W33VA405            | 22330CCJA/W33VA405  | 43.5   | 1615.95           | 1848           | 153.3              | 1680            | 2100          | 72g   | 19g    | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22330CCJA/W33VA406            | -                   | 43.5   | 1615.95           | 1848           | 153.3              | 1680            | 2100          | 72g   | 19g    | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22330-2CS5/VT143              | 22330-2CS5K/VT143   | 43.5   | 1618.05           | 1848           | 153.3              | -               | 420           | -   | -      | 0.33                      | 2              | 3              | 2              |
| 23032CC/W33                   | 23032CCK/W33        | 9.7    | 1694.7            | 924            | 87.15              | 2520            | 3150          | -   | -      | 0.22                      | 3              | 4.6            | 2.8            |
| 23032-2CS5/VT143              | 23032-2CS5K/VT143   | 9.7    | 645.75            | 924            | 87.15              | -               | 703.5         | -   | -      | 0.2                       | 3.4            | 5              | 3.2            |
| 24032CC/W33                   | 24032CCK30/W33      | 13     | 822.15            | 1260           | 119.7              | 1785            | 2520          | -   | -      | 0.3                       | 2.3            | 3.4            | 2.2            |
| 24032-2CS5/VT143              | -                   | 13     | 823.2             | 2205           | 119.7              | -               | 472.5         | -   | -      | 0.28                      | 2.4            | 3.6            | 2.5            |
| 23132CC/W33                   | 23132CCK/W33        | 20.5   | 1080.45           | 1438.5         | 135.45             | 1995            | 2520          | -   | -      | 0.3                       | 2.3            | 3.4            | 2.2            |
| 23132-2CS5/VT143              | 23132-2CS5K/VT143   | 20.5   | 1081.5            | 1470           | 135.45             | -               | 556.5         | -   | -      | 0.28                      | 2.4            | 3.6            | 2.5            |

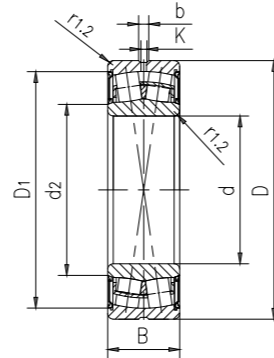
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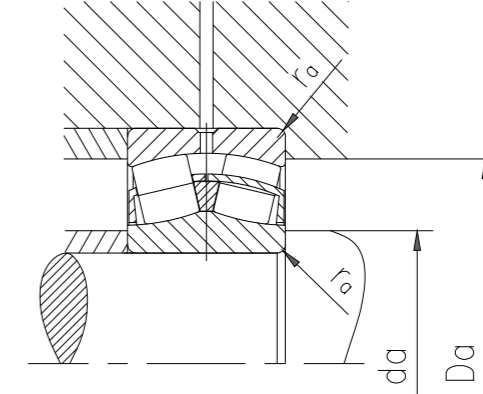
Cylindrical bore (CC)



Tapered bore(CC)



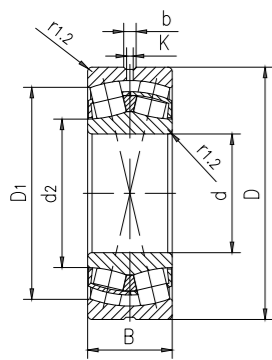
Sealed (CC / 2CS5)



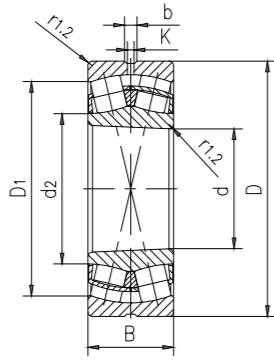
| Type                          |                     | Main dimensions |     |     | Dimensions    |               |      |     |     | Shoulder and chamfer dimensions |            |            |            |
|-------------------------------|---------------------|-----------------|-----|-----|---------------|---------------|------|-----|-----|---------------------------------|------------|------------|------------|
| Bearing with cylindrical bore | Taper Hole          | d               | D   | B   | $d_2 \approx$ | $D_1 \approx$ | b    | K   | C   | $r_{1.2}$ min.                  | $d_a$ min. | $d_a$ max. | $r_a$ max. |
|                               |                     | mm              |     |     | mm            |               |      |     |     | mm                              |            |            |            |
| 24132-2CS5/VT143              | -                   | 160             | 270 | 109 | 176           | 239           | 8.3  | 4.5 | 2.1 | 172                             | 176        | 258        | 2          |
| 22232CC/W33                   | 22232CCK/W33        | 160             | 290 | 80  | 191           | 250           | 13.9 | 7.5 | 3   | 174                             | -          | 276        | 2.5        |
| 22232-2CS5/VT143              | 22232-2CS5K/VT143   | 160             | 290 | 80  | 185           | 264           | 13.9 | 7.5 | 3   | 174                             | 185        | 276        | 2.5        |
| 23232CC/W33                   | 23232CCK/W33        | 160             | 290 | 104 | 188           | 244           | 13.9 | 7.5 | 3   | 174                             | -          | 276        | 2.5        |
| 22332CC/W33                   | 22332CCK/W33        | 160             | 340 | 114 | 200           | 282           | 16.7 | 9   | 4   | 177                             | -          | 323        | 3          |
| 22332CCJA/W33VA405            | 22332CCKJA/W33VA405 | 160             | 340 | 114 | 200           | 282           | 16.7 | 9   | 4   | 177                             | -          | 323        | 3          |
| 22332CCJA/W33VA406            | -                   | 160             | 340 | 114 | 200           | 282           | 16.7 | 9   | 4   | 177                             | -          | 323        | 3          |
| 22332-2CS5/VT143              | 22332-2CS5K/VT143   | 160             | 340 | 114 | 193           | 296           | 16.7 | 9   | 4   | 177                             | 193        | 323        | 3          |
| 23034CC/W33                   | 23034CCK/W33        | 170             | 260 | 67  | 191           | 232           | 11.1 | 6   | 2.1 | 181                             | -          | 249        | 2          |
| 23034-2CS5/VT143              | 23034-2CS5K/VT143   | 170             | 260 | 67  | 188           | 243           | 11.1 | 6   | 2.1 | 181                             | 188        | 249        | 2          |
| 24034CC/W33                   | 24034CCK30/W33      | 170             | 260 | 90  | 188           | 226           | 8.3  | 4.5 | 2.1 | 181                             | -          | 249        | 2          |
| 24034-2CS5/VT143              | -                   | 170             | 260 | 90  | 184           | 235           | 8.3  | 4.5 | 2.1 | 181                             | 184        | 249        | 2          |
| 23134CC/W33                   | 23134CCK/W33        | 170             | 280 | 88  | 195           | 244           | 13.9 | 7.5 | 2.1 | 182                             | -          | 268        | 2          |
| 23134-2CS5/VT143              | 23134-2CS5K/VT143   | 170             | 280 | 88  | 190           | 256           | 13.9 | 7.5 | 2.1 | 182                             | 190        | 268        | 2          |
| 24134CC/W33                   | 24134CCK30/W33      | 170             | 280 | 109 | 190           | 237           | 8.3  | 4.5 | 2.1 | 182                             | -          | 268        | 2          |
| 24134-2CS5/VT143              | -                   | 170             | 280 | 109 | 185           | 248           | 8.3  | 4.5 | 2.1 | 182                             | 185        | 268        | 2          |
| 22234CC/W33                   | 22234CCK/W33        | 170             | 310 | 86  | 203           | 267           | 16.7 | 9   | 4   | 187                             | -          | 293        | 3          |
| 22234-2CS5/VT143              | 22234-2CS5K/VT143   | 170             | 310 | 86  | 198           | 282           | 16.7 | 9   | 4   | 187                             | 198        | 293        | 3          |
| 23234CC/W33                   | 23234CCK/W33        | 170             | 310 | 110 | 200           | 261           | 13.9 | 7.5 | 4   | 187                             | -          | 293        | 3          |
| 22334CC/W33                   | 22334CCK/W33        | 170             | 360 | 120 | 213           | 300           | 16.7 | 9   | 4   | 187                             | -          | 343        | 3          |
| 22334CCJA/W33VA405            | 22334CCKJA/W33VA405 | 170             | 360 | 120 | 213           | 300           | 16.7 | 9   | 4   | 187                             | -          | 343        | 3          |
| 22334CCJA/W33VA406            | -                   | 170             | 360 | 120 | 213           | 300           | 16.7 | 9   | 4   | 187                             | -          | 343        | 3          |
| 23936CC/W33                   | 23936CCK/W33        | 180             | 250 | 52  | 199           | 231           | 6    | 3   | 2   | 189                             | -          | 241        | 2          |
| 23036CC/W33                   | 23036CCK/W33        | 180             | 280 | 74  | 204           | 249           | 13.9 | 7.5 | 2.1 | 191                             | -          | 269        | 2          |
| 23036-2CS5/VT143              | 23036-2CS5K/VT143   | 180             | 280 | 74  | 199           | 262           | 13.9 | 7.5 | 2.1 | 191                             | 199        | 269        | 2          |
| 24036CC/W33                   | 24036CCK30/W33      | 180             | 280 | 100 | 201           | 243           | 8.3  | 4.5 | 2.1 | 191                             | -          | 269        | 2          |
| 24036-2CS5/VT143              | -                   | 180             | 280 | 100 | 194           | 251           | 8.3  | 4.5 | 2.1 | 191                             | 194        | 269        | 2          |
| 23136CC/W33                   | 23136CCK/W33        | 180             | 300 | 96  | 207           | 259           | 13.9 | 7.5 | 3   | 194                             | -          | 286        | 2.5        |
| 23136-2CS5/VT143              | 23136-2CS5K/VT143   | 180             | 300 | 96  | 202           | 272           | 13.9 | 7.5 | 3   | 194                             | 202        | 286        | 2.5        |
| 24136CC/W33                   | 24136CCK30/W33      | 180             | 300 | 118 | 203           | 253           | 11.1 | 6   | 3   | 194                             | -          | 286        | 2.5        |
| 24136-2CS5/VT143              | -                   | 180             | 300 | 118 | 198           | 266           | 11.1 | 6   | 3   | 194                             | 198        | 286        | 2.5        |
| 22236CC/W33                   | 22236CCK/W33        | 180             | 320 | 86  | 213           | 278           | 16.7 | 9   | 4   | 197                             | -          | 303        | 3          |
| 22236-2CS5/VT143              | 22236-2CS5K/VT143   | 180             | 320 | 86  | 208           | 289           | 16.7 | 9   | 4   | 197                             | 208        | 303        | 3          |
| 23236CC/W33                   | 23236CCK/W33        | 180             | 320 | 112 | 211           | 271           | 13.9 | 7.5 | 4   | 197                             | -          | 303        | 3          |
| 22336CC/W33                   | 22336CCK/W33        | 180             | 380 | 126 | 224           | 317           | 22.3 | 12  | 4   | 197                             | -          | 363        | 3          |
| 22336CCJA/W33VA405            | 22336CCKJA/W33VA405 | 180             | 380 | 126 | 224           | 317           | 22.3 | 12  | 4   | 197                             | -          | 363        | 3          |

| Type                          |                     | Weight | Basic load rating |        | Fatigue load limit | Rated speed     |                  | The allowable acceleration of oil lubrication |        | Calculate the coefficient |       |       |       |
|-------------------------------|---------------------|--------|-------------------|--------|--------------------|-----------------|------------------|---|--------|---------------------------|-------|-------|-------|
| Bearing with cylindrical bore | Taper Hole          |        | Dynamic           | Static |                    | reference speed | Maximum speed    | Spin  | Linear | e                         | $Y_1$ | $Y_2$ | $Y_0$ |
|                               |                     |        | C                 | $C_0$  | $P_u$              | r/min           | m/s <sup>2</sup> |   |        |                           |       |       |       |
| 24132-2CS5/VT143              | -                   | 25     | 1290.45           | 1848   | 171.15             | -               | 399              | -   | -      | 0.37                      | 1.8   | 2.7   | 1.8   |
| 22232CC/W33                   | 22232CCK/W33        | 22.5   | 1095.15           | 1354.5 | 123.9              | 2100            | 2940             | -   | -      | 0.26                      | 2.6   | 3.9   | 2.5   |
| 22232-2CS5/VT143              | 22232-2CS5K/VT143   | 22.5   | 1096.2            | 1354.5 | 123.9              | -               | 630              | -   | -      | 0.25                      | 2.7   | 4     | 2.5   |
| 23232CC/W33                   | 23232CCK/W33        | 31     | 1345.05           | 1743   | 160.65             | 1575            | 2310             | -   | -      | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22332CC/W33                   | 22332CCK/W33        | 52     | 1764              | 2058   | 168                | 1575            | 1995             | -   | -      | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22332CCJA/W33VA405            | 22332CCKJA/W33VA405 | 52     | 1764              | 2058   | 168                | 1575            | 1995             | 69g   | 18g    | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22332CCJA/W33VA406            | -                   | 52     | 1764              | 2058   | 168                | 1575            | 1995             | 69g   | 18g    | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22332-2CS5/VT143              | 22332-2CS5K/VT143   | 52     | 1767.15           | 2058   | 168                | -               | 399              | -   | -      | 0.33                      | 2     | 3     | 2     |
| 23034CC/W33                   | 23034CCK/W33        | 13     | 782.25            | 1113   | 105                | 2310            | 2940             | -   | -      | 0.23                      | 2.9   | 4.4   | 2.8   |
| 23034-2CS5/VT143              | 23034-2CS5K/VT143   | 13     | 783.3             | 1134   | 105                | -               | 661.5            | -   | -      | 0.22                      | 3     | 4.6   | 2.8   |
| 24034CC/W33                   | 24034CCK30/W33      | 17.5   | 1011.15           | 1533   | 143.85             | 1680            | 2520             | -   | -      | 0.33                      | 2     | 3     | 2     |
| 24034-2CS5/VT143              | -                   | 17.5   | 1014.3            | 1575   | 143.85             | -               | 420              | -   | -      | 0.3                       | 2.3   | 3.4   | 2.2   |
| 23134CC/W33                   | 23134CCK/W33        | 22     | 1140.3            | 1575   | 143.85             | 1890            | 2520             | -   | -      | 0.3                       | 2.3   | 3.4   | 2.2   |
| 23134-2CS5/VT143              | 23134-2CS5K/VT143   | 22     | 1142.4            | 1575   | 143.85             | -               | 504              | -   | -      | 0.28                      | 2.4   | 3.6   | 2.5   |
| 24134CC/W33                   | 24134CCK30/W33      | 27.5   | 1333.5            | 1953   | 178.5              | 1260            | 1890             | -   | -      | 0.37                      | 1.8   | 2.7   | 1.8   |
| 24134-2CS5/VT143              | -                   | 27.5   | 1336.65           | 1953   | 178.5              | -               | 378              | -   | -      | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22234CC/W33                   | 22234CCK/W33        | 28.5   | 1242.15           | 1533   | 138.6              | 1995            | 2730             | -   | -      | 0.27                      | 2.5   | 3.7   | 2.5   |
| 22234-2CS5/VT143              | 22234-2CS5K/VT143   | 28.5   | 1244.25           | 1533   | 140.7              | -               | 525              | -   | -      | 0.25                      | 2.7   | 4     | 2.5   |
| 23234CC/W33                   | 23234CCK/W33        | 37.5   | 1545.6            | 2026.5 | 181.65             | 1470            | 2100             | -   | -      | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22334CC/W33                   | 22334CCK/W33        | 61     | 1956.15           | 2268   | 184.8              | 1470            | 1890             | -   | -      | 0.33                      | 2     | 3     | 2     |
| 22334CCJA/W33VA405            | 22334CCKJA/W33VA405 | 61     | 1956.15           | 2268   | 184.8              | 1470            | 1890             | 65g   | 18g    | 0.33                      | 2     | 3     | 2     |
| 22334CCJA/W33VA406            | -                   | 61     | 1956.15           | 2268   | 184.8              | 1470            | 1890             | 65g   | 18g    | 0.33                      | 2     | 3     | 2     |
| 23936CC/W33                   | 23936CCK/W33        | 7.9    | 544.95            | 871.5  | 80.325             | 2730            | 2940             | -   | -      | 0.18                      | 3.8   | 5.6   | 3.6   |
| 23036CC/W33                   | 23036CCK/W33        | 17     | 927.15            | 1312.5 | 119.7              | 2100            | 2730             | -   | -      | 0.24                      | 2.8   | 4.2   | 2.8   |
| 23036-2CS5/VT143              | 23036-2CS5K/VT143   | 17     | 928.2             | 1333.5 | 119.7              | -               | 588              | -   | -      | 0.22                      | 3     | 4.6   | 2.8   |
| 24036CC/W33                   | 24036CCK30/W33      | 23     | 1190.7            | 1816.5 | 163.8              | 1575            | 2310             | -   | -      | 0.33                      | 2     | 3     | 2     |
| 24036-2CS5/VT143              | -                   | 23     | 1192.8            | 1816.5 | 163.8              | -               | 399              | -   | -      | 0.31                      | 2.2   | 3.3   | 2.2   |
| 23136CC/W33                   | 23136CCK/W33        | 28     | 1326.15           | 1848   | 168                | 1785            | 2310             | -   | -      | 0.3                       | 2.3   | 3.4   | 2.2   |
| 23136-2CS5/VT143              | 23136-2CS5K/VT143   | 28     | 1327.2            | 1890   | 168                | -               | 451.5            | -   | -      | 0.28                      | 2.4   | 3.6   | 2.5   |
| 24136CC/W33                   | 24136CCK30/W33      | 34.5   | 1521.45           | 2268   | 205.8              | 1155            | 1680             | -   | -      | 0.37                      | 1.8   | 2.7   | 1.8   |
| 24136-2CS5/VT143              | -                   | 34.5   | 1524.6            | 2268   | 205.8              | -               | 378              | -   | -      | 0.37                      | 1.8   | 2.7   | 1.8   |
| 22236CC/W33                   | 22236CCK/W33        | 29.5   | 1298.85           | 1638   | 147                | 1890            | 2730             | -   | -      | 0.26                      | 2.6   | 3.9   | 2.5   |
| 22236-2CS5/VT143              | 22236-2CS5K/VT143   | 29     | 1300.95           | 1638   | 147                | -               | 556.5            | -   | -      | 0.24                      | 2.8   | 4.2   | 2.8   |
| 23236CC/W33                   | 23236CCK/W33        | 39.5   | 1634.85           | 2226   | 195.3              | 1365            | 1995             | -   | -      | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22336CC/W33                   | 22336CCK/W33        | 71.5   | 2180.85           | 2572.5 | 202.65             | 1365            | 1785             | -   | -      | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22336CCJA/W33VA405            | 22336CCKJA/W33VA405 | 71.5   | 2180.85           | 2572.5 | 202.65             | 1365            | 1785             | 59g   | 17g    | 0.35                      | 1.9   | 2.9   | 1.8   |

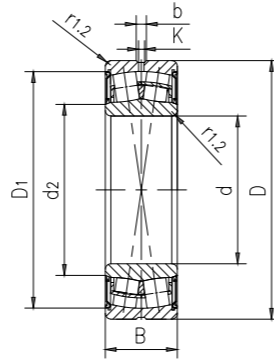
# Spherical roller bearings



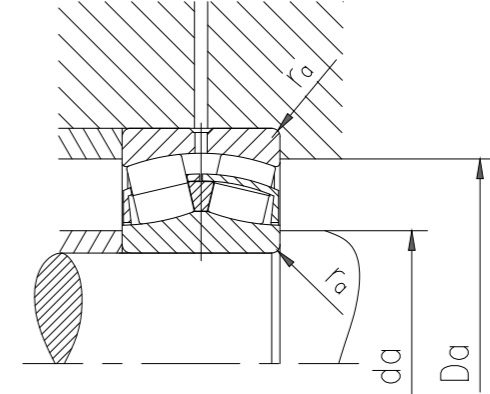
Cylindrical bore (CC)



Tapered bore(CC)



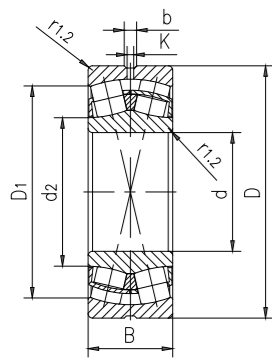
Sealed (CC / 2CS5)



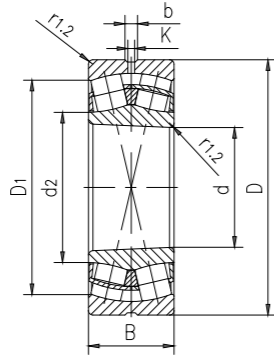
| Type                          |                     | Main dimensions |     |     | Dimensions          |                     |      |     |     | Shoulder and chamfer dimensions |                        |                        |                        |
|-------------------------------|---------------------|-----------------|-----|-----|---------------------|---------------------|------|-----|-----|---------------------------------|------------------------|------------------------|------------------------|
| Bearing with cylindrical bore | Taper Hole          | d               | D   | B   | d <sub>2</sub><br>≈ | D <sub>1</sub><br>≈ | b    | K   | C   | r <sub>1.2</sub><br>min.        | d <sub>a</sub><br>min. | d <sub>a</sub><br>max. | r <sub>a</sub><br>max. |
|                               |                     |                 |     |     |                     |                     |      |     |     |                                 |                        |                        |                        |
| -                             | -                   | mm              |     |     |                     |                     |      |     |     |                                 |                        |                        |                        |
| 23938CC/W33                   | 23938CCK/W33        | 190             | 260 | 52  | 209                 | 240                 | 6    | 3   | 2   | 199                             | -                      | 251                    | 2                      |
| 23038CC/W33                   | 23038CCK/W33        | 190             | 290 | 75  | 216                 | 261                 | 13.9 | 7.5 | 2.1 | 201                             | -                      | 279                    | 2                      |
| 24038CC/W33                   | 24038CCK30/W33      | 190             | 290 | 100 | 210                 | 253                 | 8.3  | 4.5 | 2.1 | 201                             | -                      | 279                    | 2                      |
| 23138CC/W33                   | 23138CCK/W33        | 190             | 320 | 104 | 220                 | 275                 | 13.9 | 7.5 | 3   | 204                             | -                      | 306                    | 2.5                    |
| 23138-2CS5/VT143              | 23138-2CS5K/VT143   | 190             | 320 | 104 | 215                 | 288                 | 13.9 | 7.5 | 3   | 204                             | 215                    | 306                    | 2.5                    |
| 24138CC/W33                   | 24138CCK30/W33      | 190             | 320 | 128 | 215                 | 268                 | 11.1 | 6   | 3   | 204                             | -                      | 306                    | 2.5                    |
| 24138-2CS5/VT143              | -                   | 190             | 320 | 128 | 210                 | 282                 | 11.1 | 6   | 3   | 204                             | 210                    | 306                    | 2.5                    |
| 22238CC/W33                   | 22238CCK/W33        | 190             | 340 | 92  | 225                 | 294                 | 16.7 | 9   | 4   | 207                             | -                      | 323                    | 3                      |
| 22238-2CS5/VT143              | 22238-2CS5K/VT143   | 190             | 340 | 92  | 220                 | 306                 | 16.7 | 9   | 4   | 207                             | 220                    | 323                    | 3                      |
| 23238CC/W33                   | 23238CCK/W33        | 190             | 340 | 120 | 222                 | 287                 | 16.7 | 9   | 4   | 207                             | -                      | 323                    | 3                      |
| 22338CC/W33                   | 22338CCK/W33        | 190             | 400 | 132 | 236                 | 333                 | 22.3 | 12  | 5   | 210                             | -                      | 380                    | 4                      |
| 22338CCJA/W33VA405            | 22338CCKJA/W33VA405 | 190             | 400 | 132 | 236                 | 333                 | 22.3 | 12  | 5   | 210                             | -                      | 380                    | 4                      |
| 22338CCJA/W33VA406            | -                   | 190             | 400 | 132 | 236                 | 333                 | 22.3 | 12  | 5   | 210                             | -                      | 380                    | 4                      |
| 22338-2CS5/VT143              | -                   | 190             | 400 | 132 | 228                 | 352                 | 22.3 | 12  | 5   | 210                             | 228                    | 380                    | 4                      |
| 23940CC/W33                   | 23940CCK/W33        | 200             | 280 | 60  | 222                 | 258                 | 8.3  | 4.5 | 2.1 | 211                             | -                      | 269                    | 2                      |
| 23040CC/W33                   | 23040CCK/W33        | 200             | 310 | 82  | 228                 | 278                 | 13.9 | 7.5 | 2.1 | 211                             | -                      | 299                    | 2                      |
| 23040-2CS5/VT143              | 23040-2CS5K/VT143   | 200             | 310 | 82  | 223                 | 286                 | 13.9 | 7.5 | 2.1 | 211                             | 223                    | 299                    | 2                      |
| 24040CC/W33                   | 24040CCK30/W33      | 200             | 310 | 109 | 223                 | 268                 | 11.1 | 6   | 2.1 | 211                             | -                      | 299                    | 2                      |
| 23140CC/W33                   | 23140CCK/W33        | 200             | 340 | 112 | 231                 | 293                 | 16.7 | 9   | 3   | 214                             | -                      | 326                    | 2.5                    |
| 23140-2CS5/VT143              | 23140-2CS5K/VT143   | 200             | 340 | 112 | 227                 | 306                 | 16.7 | 9   | 3   | 214                             | 227                    | 326                    | 2.5                    |
| 24140CC/W33                   | 24140CCK30/W33      | 200             | 340 | 140 | 226                 | 284                 | 11.1 | 6   | 3   | 214                             | -                      | 326                    | 2.5                    |
| 24140-2CS5/VT143              | -                   | 200             | 340 | 140 | 221                 | 294                 | 11.1 | 6   | 3   | 214                             | 221                    | 326                    | 2.5                    |
| 22240CC/W33                   | 22240CCK/W33        | 200             | 360 | 98  | 238                 | 313                 | 16.7 | 9   | 4   | 217                             | -                      | 343                    | 3                      |
| 22240-2CS5/VT143              | 22240-2CS5K/VT143   | 200             | 360 | 98  | 232                 | 324                 | 16.7 | 9   | 4   | 217                             | 232                    | 343                    | 3                      |
| 23240CC/W33                   | 23240CCK/W33        | 200             | 360 | 128 | 235                 | 304                 | 16.7 | 9   | 4   | 217                             | -                      | 343                    | 3                      |
| 23240-2CS5/VT143              | 23240-2CS5K/VT143   | 200             | 360 | 128 | 230                 | 320                 | 16.7 | 9   | 4   | 217                             | 230                    | 343                    | 3                      |
| 22340CC/W33                   | 22340CCK/W33        | 200             | 420 | 138 | 249                 | 351                 | 22.3 | 12  | 5   | 220                             | -                      | 400                    | 4                      |
| 22340CCJA/W33VA405            | 22340CCKJA/W33VA405 | 200             | 420 | 138 | 249                 | 351                 | 22.3 | 12  | 5   | 220                             | -                      | 400                    | 4                      |
| 22340CCJA/W33VA406            | -                   | 200             | 420 | 138 | 249                 | 351                 | 22.3 | 12  | 5   | 220                             | -                      | 400                    | 4                      |
| 23944CC/W33                   | 23944CCK/W33        | 220             | 300 | 60  | 241                 | 278                 | 8.3  | 4.5 | 2.1 | 231                             | -                      | 289                    | 2                      |
| 23944-2CS/VT143               | -                   | 220             | 300 | 60  | 238                 | 284                 | 8.3  | 4.5 | 2.1 | 231                             | 238                    | 289                    | 2                      |
| 23044CC/W33                   | 23044CCK/W33        | 220             | 340 | 90  | 250                 | 306                 | 13.9 | 7.5 | 3   | 233                             | -                      | 327                    | 2.5                    |
| 23044-2CS5/VT143              | 23044-2CS5K/VT143   | 220             | 340 | 90  | 245                 | 314                 | 13.9 | 7.5 | 3   | 233                             | 245                    | 327                    | 2.5                    |
| 24044CC/W33                   | 24044CCK30/W33      | 220             | 340 | 118 | 244                 | 295                 | 11.1 | 6   | 3   | 233                             | -                      | 327                    | 2.5                    |
| 23144CC/W33                   | 23144CCK/W33        | 220             | 370 | 120 | 255                 | 320                 | 16.7 | 9   | 4   | 237                             | -                      | 353                    | 3                      |
| 23144-2CS5/VT143              | 23144-2CS5K/VT143   | 220             | 370 | 120 | 249                 | 332                 | 16.7 | 9   | 4   | 237                             | 249                    | 353                    | 3                      |

| Type                          |                     | Weight | Basic load rating |                | Fatigue load limit | Rated speed     |               | The allowable acceleration of oil lubrication |        | Calculate the coefficient |                |                |                |
|-------------------------------|---------------------|--------|-------------------|----------------|--------------------|-----------------|---------------|---|--------|---------------------------|----------------|----------------|----------------|
| Bearing with cylindrical bore | Taper Hole          |        | Dynamic           | Static         |                    | reference speed | Maximum speed | Spin  | Linear | e                         | Y <sub>1</sub> | Y <sub>2</sub> | Y <sub>0</sub> |
|                               |                     |        | C                 | C <sub>0</sub> | P <sub>u</sub>     |                 |               |   |        |                           |                |                |                |
| -                             | -                   | kg     | kN                |                |                    | r/min           |               | m/s <sup>2</sup>                              |        | -                         |                |                |                |
| 23938CC/W33                   | 23938CCK/W33        | 8.3    | 523.95            | 840            | 80.325             | 2520            | 2730          | -   | -      | 0.16                      | 4.2            | 6.3            | 4              |
| 23038CC/W33                   | 23038CCK/W33        | 18     | 961.8             | 1407           | 128.1              | 1995            | 2520          | -   | -      | 0.23                      | 2.9            | 4.4            | 2.8            |
| 24038CC/W33                   | 24038CCK30/W33      | 24.5   | 1222.2            | 1890           | 171.15             | 1470            | 2100          | -   | -      | 0.31                      | 2.2            | 3.3            | 2.2            |
| 23138CC/W33                   | 23138CCK/W33        | 35     | 1528.8            | 2184           | 192.15             | 1575            | 2100          | -   | -      | 0.31                      | 2.2            | 3.3            | 2.2            |
| 23138-2CS5/VT143              | 23138-2CS5K/VT143   | 35     | 1530.9            | 2184           | 192.15             | -               | 420           | -   | -      | 0.3                       | 2.3            | 3.4            | 2.2            |
| 24138CC/W33                   | 24138CCK30/W33      | 43     | 1734.6            | 2625           | 222.6              | 1155            | 1575          | -   | -      | 0.4                       | 1.7            | 2.5            | 1.6            |
| 24138-2CS5/VT143              | -                   | 43     | 1737.75           | 2625           | 222.6              | -               | 357           | -   | -      | 0.37                      | 1.8            | 2.7            | 1.8            |
| 22238CC/W33                   | 22238CCK/W33        | 36.5   | 1409.1            | 1785           | 157.5              | 1785            | 2520          | -   | -      | 0.26                      | 2.6            | 3.9            | 2.5            |
| 22238-2CS5/VT143              | 22238-2CS5K/VT143   | 35     | 1412.25           | 1785           | 157.5              | -               | 504           | -   | -      | 0.24                      | 2.8            | 4.2            | 2.8            |
| 23238CC/W33                   | 23238CCK/W33        | 48     | 1846.95           | 2520           | 218.4              | 1365            | 1890          | -   | -      | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22338CC/W33                   | 22338CCK/W33        | 82.5   | 2343.6            | 2782.5         | 218.4              | 1260            | 1680          | -   | -      | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22338CCJA/W33VA405            | 22338CCKJA/W33VA405 | 82.5   | 2343.6            | 2782.5         | 218.4              | 1260            | 1680          | 57g   | 17g    | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22338CCJA/W33VA406            | -                   | 82.5   | 2343.6            | 2782.5         | 218.4              | 1260            | 1680          | 57g   | 17g    | 0.35                      | 1.9            | 2.9            | 1.8            |
| 22338-2CS5/VT143              | -                   | 77.5   | 2347.8            | 2782.5         | 218.4              | -               | 357           | -   | -      | 0.33                      | 2              | 3              | 2              |
| 23940CC/W33                   | 23940CCK/W33        | 11.5   | 683.55            | 1092           | 97.65              | 2310            | 2520          | -   | -      | 0.19                      | 3.6            | 5.3            | 3.6            |
| 23040CC/W33                   | 23040CCK/W33        | 23.5   | 1110.9            | 1606.5         | 143.85             | 1890            | 2310          | -   | -      | 0.24                      | 2.8            | 4.2            | 2.8            |
| 23040-2CS5/VT143              | 23040-2CS5K/VT143   | 22     | 1111.95           | 1606.5         | 143.85             | -               | 504           | -   | -      | 0.22                      | 3              | 4.6            | 2.8            |
| 24040CC/W33                   | 24040CCK30/W33      | 31     | 1420.65           | 2226           | 195.3              | 1365            | 1995          | -   | -      | 0.33                      | 2              | 3              | 2              |
| 23140CC/W33                   | 23140CCK/W33        | 43     | 1748.25           | 2478           | 214.2              | 1575            | 1995          | -   | -      | 0.31                      | 2.2            | 3.3            | 2.2            |
| 23140-2CS5/VT143              | 23140-2CS5K/VT143   | 43     | 1751.4            | 2478           | 214.2              | -               | 399           | -   | -      | 0.3                       | 2.3            | 3.4            | 2.2            |
| 24140CC/W33                   | 24140CCK30/W33      | 53.5   | 1958.25           | 2940           | 243.6              | 1050            | 1470          | -   | -      | 0.4                       | 1.7            | 2.5            | 1.6            |
| 24140-2CS5/VT143              | -                   | 53.5   | 1964.55           | 2940           | 243.6              | -               | 336           | -   | -      | 0.37                      | 1.8            | 2.7            | 1.8            |
| 22240CC/W33                   | 22240CCK/W33        | 43.5   | 1602.3            | 2026.5         | 174.3              | 1680            | 2310          | -   | -      | 0.26                      | 2.6            | 3.9            | 2.5            |
| 22240-2CS5/VT143              | 22240-2CS5K/VT143   | 42     | 1605.45           | 2026.5         | 174.3              | -               | 451.5         | -   | -      | 0.24                      | 2.8            | 4.2            | 2.8            |
| 23240CC/W33                   | 23240CCK/W33        | 58     | 2044.35           | 2835           | 239.4              | 1260            | 1785          | -   | -      | 0.35                      | 1.9            | 2.9            | 1.8            |
| 23240-2CS5/VT143              | 23240-2CS5K/VT143   | 58     | 2047.5            | 2835           | 243.6              | -               | 357           | -   | -      | 0.33                      | 2              | 3              | 2              |
| 22340CC/W33                   | 22340CCK/W33        | 95     | 2560.95           | 3045           | 235.2              | 1260            | 1575          | -   | -      | 0.33                      | 2              | 3              | 2              |
| 22340CCJA/W33VA405            | 22340CCKJA/W33VA405 | 95     | 2560.95           | 3045           | 235.2              | 1260            | 1575          | 55g   | 17g    | 0.33                      | 2              | 3              | 2              |
| 22340CCJA/W33VA406            | -                   | 95     | 2560.95           | 3045           | 235.2              | 1260            | 1575          | 55g   | 17g    | 0.33                      | 2              | 3              | 2              |
| 23944CC/W33                   | 23944CCK/W33        | 12.5   | 694.05            | 1134           | 97.65              | 2100            | 2310          | -   | -      | 0.16                      | 4.2            | 6.3            | 4              |
| 23944-2CS/VT143               | -                   | 12.5   | 695.1             | 1134           | 97.65              | -               | 630           | -   | -      | 0.15                      | 4.5            | 6.7            | 4.5            |
| 23044CC/W33                   | 23044CCK/W33        | 30.5   | 1324.05           | 1953           | 171.15             | 1680            | 2100          | -   | -      | 0.24                      | 2.8            | 4.2            | 2.8            |
| 23044-2CS5/VT143              | 23044-2CS5K/VT143   | 29     | 1325.1            | 1953           | 171.15             | -               | 451.5         | -   | -      | 0.22                      | 3              | 4.6            | 2.8            |
| 24044CC/W33                   | 24044CCK30/W33      | 40     | 1709.4            | 2730           | 222.6              | 1260            | 1785          | -   | -      | 0.33                      | 2              | 3              | 2              |
| 23144CC/W33                   | 23144CCK/W33        | 53.5   | 1982.4            | 2887.5         | 243.6              | 1365            | 1785          | -   | -      | 0.3                       | 2.3            | 3.4            | 2.2            |
| 23144-2CS5/VT143              | 23144-2CS5K/VT143   | 53.5   | 1985.55           | 2887.5         | 243.6              | -               | 378           | -   | -      | 0.28                      | 2.4            | 3.6            | 2.5            |

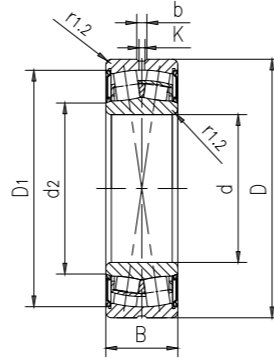
# Spherical roller bearings



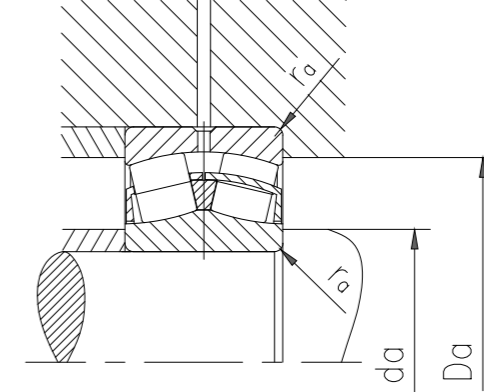
Cylindrical bore (CC)



Tapered bore(CC)



Sealed (CC / 2CS5)



| Type                          |                     | Main dimensions |     |     | Dimensions    |               |      |     |     | Shoulder and chamfer dimensions |            |            |            |
|-------------------------------|---------------------|-----------------|-----|-----|---------------|---------------|------|-----|-----|---------------------------------|------------|------------|------------|
| Bearing with cylindrical bore | Taper Hole          | d               | D   | B   | $d_2 \approx$ | $D_1 \approx$ | b    | K   | C   | $r_{1.2}$ min.                  | $d_a$ min. | $d_a$ max. | $r_a$ max. |
|                               |                     | mm              |     |     | mm            |               |      |     |     | mm                              |            |            |            |
| 22244CC/W33                   | 22244CCK/W33        | 220             | 400 | 108 | 263           | 346           | 16.7 | 9   | 4   | 237                             | -          | 383        | 3          |
| 22244-2CS5/VT143              | 22244-2CS5K/VT143   | 220             | 400 | 108 | 257           | 359           | 16.7 | 9   | 4   | 237                             | 257        | 383        | 3          |
| 23244CC/W33                   | 23244CCK/W33        | 220             | 400 | 144 | 259           | 338           | 16.7 | 9   | 4   | 237                             | -          | 383        | 3          |
| 22344CC/W33                   | 22344CCK/W33        | 220             | 460 | 145 | 279           | 389           | 22.3 | 12  | 5   | 240                             | -          | 440        | 4          |
| 22344CCJA/W33VA405            | 22344CCKJA/W33VA405 | 220             | 460 | 145 | 279           | 389           | 22.3 | 12  | 5   | 240                             | -          | 440        | 4          |
| 22344-2CS5/VT143              | 22344-2CS5K/VT143   | 220             | 460 | 145 | 270           | 406           | 22.3 | 12  | 5   | 240                             | 270        | 440        | 4          |
| 23948CC/W33                   | 23948CCK/W33        | 240             | 320 | 60  | 261           | 298           | 8.3  | 4.5 | 2.1 | 251                             | -          | 309        | 2          |
| 23048CC/W33                   | 23048CCK/W33        | 240             | 360 | 92  | 271           | 326           | 13.9 | 7.5 | 3   | 253                             | -          | 347        | 2.5        |
| 23048-2CS5/VT143              | 23048-2CS5K/VT143   | 240             | 360 | 92  | 265           | 333           | 13.9 | 7.5 | 3   | 253                             | 265        | 347        | 2.5        |
| 24048CC/W33                   | 24048CCK30/W33      | 240             | 360 | 118 | 265           | 316           | 11.1 | 6   | 3   | 253                             | -          | 347        | 2.5        |
| 23148CC/W33                   | 23148CCK/W33        | 240             | 400 | 128 | 277           | 348           | 16.7 | 9   | 4   | 257                             | -          | 383        | 3          |
| 23148-2CS5/VT143              | 23148-2CS5K/VT143   | 240             | 400 | 128 | 270           | 360           | 16.7 | 9   | 4   | 257                             | 270        | 383        | 3          |
| 24148CC/W33                   | 24148CCK30/W33      | 240             | 400 | 160 | 271           | 336           | 11.1 | 6   | 4   | 257                             | -          | 383        | 3          |
| 22248CC/W33                   | 22248CCK/W33        | 240             | 440 | 120 | 290           | 383           | 22.3 | 12  | 4   | 257                             | -          | 423        | 3          |
| 23248CC/W33                   | 23248CCK/W33        | 240             | 440 | 160 | 286           | 374           | 22.3 | 12  | 4   | 257                             | -          | 423        | 3          |
| 22348CC/W33                   | 22348CCK/W33        | 240             | 500 | 155 | 303           | 423           | 22.3 | 12  | 5   | 260                             | -          | 480        | 4          |
| 22348CCJA/W33VA405            | 22348CCKJA/W33VA405 | 240             | 500 | 155 | 303           | 423           | 22.3 | 12  | 5   | 260                             | -          | 480        | 4          |
| 23952CC/W33                   | 23952CCK/W33        | 260             | 360 | 75  | 287           | 331           | 8.3  | 4.5 | 2.1 | 271                             | -          | 349        | 2          |
| 23052CC/W33                   | 23052CCK/W33        | 260             | 400 | 104 | 295           | 360           | 16.7 | 9   | 4   | 275                             | -          | 385        | 3          |
| 23052-2CS5/VT143              | 23052-2CS5K/VT143   | 260             | 400 | 104 | 289           | 369           | 16.7 | 9   | 4   | 275                             | 289        | 385        | 3          |
| 24052CC/W33                   | 24052CCK30/W33      | 260             | 400 | 140 | 289           | 347           | 11.1 | 6   | 4   | 275                             | -          | 385        | 3          |
| 23152CC/W33                   | 23152CCK/W33        | 260             | 440 | 144 | 301           | 380           | 16.7 | 9   | 4   | 277                             | -          | 423        | 3          |
| 23152-2CS5/VT143              | 23152-2CS5K/VT143   | 260             | 440 | 144 | 293           | 398           | 16.7 | 9   | 4   | 277                             | 293        | 423        | 3          |
| 24152CC/W33                   | 24152CCK30/W33      | 260             | 440 | 180 | 293           | 368           | 13.9 | 7.5 | 4   | 277                             | -          | 423        | 3          |
| 24152-2CS5/VT143              | -                   | 260             | 440 | 180 | 286           | 391           | 13.9 | 7.5 | 4   | 277                             | 286        | 423        | 3          |
| 22252CC/W33                   | 22252CCK/W33        | 260             | 480 | 130 | 312           | 421           | 22.3 | 12  | 5   | 280                             | -          | 460        | 4          |
| 23252CC/W33                   | 23252CCK/W33        | 260             | 480 | 174 | 312           | 408           | 22.3 | 12  | 5   | 280                             | -          | 460        | 4          |
| 22352CC/W33                   | 22352CCK/W33        | 260             | 540 | 165 | 328           | 458           | 22.3 | 12  | 6   | 286                             | -          | 514        | 5          |
| 23956CC/W33                   | 23956CCK/W33        | 280             | 380 | 75  | 308           | 352           | 11.1 | 6   | 2.1 | 291                             | -          | 369        | 2          |
| 23056CC/W33                   | 23056CCK/W33        | 280             | 420 | 106 | 315           | 380           | 16.7 | 9   | 4   | 295                             | -          | 405        | 3          |
| 24056CC/W33                   | 24056CCK30/W33      | 280             | 420 | 140 | 309           | 368           | 11.1 | 6   | 4   | 295                             | -          | 405        | 3          |
| 23156CC/W33                   | 23156CCK/W33        | 280             | 460 | 146 | 321           | 401           | 16.7 | 9   | 5   | 300                             | -          | 440        | 4          |
| 23156-2CS5/VT143              | 23156-2CS5K/VT143   | 280             | 460 | 146 | 314           | 417           | 16.7 | 9   | 5   | 300                             | 314        | 440        | 4          |
| 24156CC/W33                   | 24156CCK30/W33      | 280             | 460 | 180 | 314           | 390           | 13.9 | 7.5 | 5   | 300                             | -          | 440        | 4          |
| 24156-2CS5/VT143              | 24156-2CS5K30/VT143 | 280             | 460 | 180 | 307           | 413           | 13.9 | 7.5 | 5   | 300                             | 307        | 440        | 4          |
| 22256CC/W33                   | 22256CCK/W33        | 280             | 500 | 130 | 333           | 441           | 22.3 | 12  | 5   | 300                             | -          | 480        | 4          |

| Type                          |                     | Weight | Basic load rating |        | Fatigue load limit | Rated speed     |                  | The allowable acceleration of oil lubrication |        | Calculate the coefficient |       |       |       |
|-------------------------------|---------------------|--------|-------------------|--------|--------------------|-----------------|------------------|---|--------|---------------------------|-------|-------|-------|
| Bearing with cylindrical bore | Taper Hole          |        | Dynamic           | Static |                    | reference speed | Maximum speed    | Spin  | Linear | e                         | $Y_1$ | $Y_2$ | $Y_0$ |
|                               |                     |        | C                 | $C_0$  | $P_u$              | r/min           | m/s <sup>2</sup> |   |        |                           |       |       |       |
| 22244CC/W33                   | 22244CCK/W33        | 60.5   | 1926.75           | 2478   | 205.8              | 1575            | 2100             | -   | -      | 0.27                      | 2.5   | 3.7   | 2.5   |
| 22244-2CS5/VT143              | 22244-2CS5K/VT143   | 58     | 1930.95           | 2478   | 210                | -               | 399              | -   | -      | 0.25                      | 2.7   | 4     | 2.5   |
| 23244CC/W33                   | 23244CCK/W33        | 81.5   | 2609.25           | 3622.5 | 299.25             | 1155            | 1575             | -   | -      | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22344CC/W33                   | 22344CCK/W33        | 120    | 2980.95           | 3622.5 | 273                | 1050            | 1470             | -   | -      | 0.31                      | 2.2   | 3.3   | 2.2   |
| 22344CCJA/W33VA405            | 22344CCKJA/W33VA405 | 120    | 2980.95           | 3622.5 | 273                | 1050            | 1470             | 49g   | 16g    | 0.31                      | 2.2   | 3.3   | 2.2   |
| 22344-2CS5/VT143              | 22344-2CS5K/VT143   | 115    | 2986.2            | 3622.5 | 273                | -               | 315              | -   | -      | 0.3                       | 2.3   | 3.4   | 2.2   |
| 23948CC/W33                   | 23948CCK/W33        | 13.5   | 719.25            | 1218   | 102.9              | 1995            | 2100             | -   | -      | 0.15                      | 4.5   | 6.7   | 4.5   |
| 23048CC/W33                   | 23048CCK/W33        | 33.5   | 1407              | 2184   | 184.8              | 1575            | 1995             | -   | -      | 0.23                      | 2.9   | 4.4   | 2.8   |
| 23048-2CS5/VT143              | 23048-2CS5K/VT143   | 32     | 1408.05           | 2184   | 184.8              | -               | 420              | -   | -      | 0.21                      | 3.2   | 4.8   | 3.2   |
| 24048CC/W33                   | 24048CCK30/W33      | 43     | 1746.15           | 2835   | 239.4              | 1155            | 1680             | -   | -      | 0.3                       | 2.3   | 3.4   | 2.2   |
| 23148CC/W33                   | 23148CCK/W33        | 66.5   | 2296.35           | 3360   | 267.75             | 1260            | 1680             | -   | -      | 0.3                       | 2.3   | 3.4   | 2.2   |
| 23148-2CS5/VT143              | 23148-2CS5K/VT143   | 66.5   | 2299.5            | 3360   | 267.75             | -               | 357              | -   | -      | 0.28                      | 2.4   | 3.6   | 2.5   |
| 24148CC/W33                   | 24148CCK30/W33      | 83     | 2613.45           | 4095   | 336                | 787.5           | 1155             | -   | -      | 0.4                       | 1.7   | 2.5   | 1.6   |
| 22248CC/W33                   | 22248CCK/W33        | 83     | 2370.9            | 3150   | 257.25             | 1365            | 1890             | -   | -      | 0.27                      | 2.5   | 3.7   | 2.5   |
| 23248CC/W33                   | 23248CCK/W33        | 110    | 3194.1            | 4515   | 362.25             | 997.5           | 1365             | -   | -      | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22348CC/W33                   | 22348CCK/W33        | 155    | 3390.45           | 4200   | 304.5              | 997.5           | 1365             | -   | -      | 0.31                      | 2.2   | 3.3   | 2.2   |
| 22348CCJA/W33VA405            | 22348CCKJA/W33VA405 | 155    | 3390.45           | 4200   | 304.5              | 997.5           | 1365             | 45g   | 15g    | 0.31                      | 2.2   | 3.3   | 2.2   |
| 23952CC/W33                   | 23952CCK/W33        | 23.5   | 1107.75           | 1890   | 163.8              | 1785            | 1995             | -   | -      | 0.18                      | 3.8   | 5.6   | 3.6   |
| 23052CC/W33                   | 23052CCK/W33        | 48.5   | 1758.75           | 2677.5 | 222.6              | 1365            | 1785             | -   | -      | 0.23                      | 2.9   | 4.4   | 2.8   |
| 23052-2CS5/VT143              | 23052-2CS5K/VT143   | 46     | 1760.85           | 2677.5 | 222.6              | -               | 378              | -   | -      | 0.22                      | 3     | 4.6   | 2.8   |
| 24052CC/W33                   | 24052CCK30/W33      | 65.5   | 2241.75           | 3622.5 | 299.25             | 1050            | 1470             | -   | -      | 0.33                      | 2     | 3     | 2     |
| 23152CC/W33                   | 23152CCK/W33        | 90.5   | 2797.2            | 4095   | 304.5              | 1155            | 1470             | -   | -      | 0.31                      | 2.2   | 3.3   | 2.2   |
| 23152-2CS5/VT143              | 23152-2CS5K/VT143   | 90.5   | 2801.4            | 4095   | 304.5              | -               | 336              | -   | -      | 0.3                       | 2.3   | 3.4   | 2.2   |
| 24152CC/W33                   | 24152CCK30/W33      | 110    | 3240.3            | 5040   | 399                | 703.5           | 997.5            | -   | -      | 0.4                       | 1.7   | 2.5   | 1.6   |
| 24152-2CS5/VT143              | -                   | 109    | 3246.6            | 5145   | 399                | -               | 252              | -   | -      | 0.4                       | 1.7   | 2.5   | 1.6   |
| 22252CC/W33                   | 22252CCK/W33        | 110    | 2858.1            | 3727.5 | 299.25             | 1260            | 1680             | -   | -      | 0.27                      | 2.5   | 3.7   | 2.5   |
| 23252CC/W33                   | 23252CCK/W33        | 140    | 3564.75           | 4987.5 | 378                | 892.5           | 1260             | -   | -      | 0.35                      | 1.9   | 2.9   | 1.8   |
| 22352CC/W33                   | 22352CCK/W33        | 190    | 3864              | 4777.5 | 341.25             | 892.5           | 1155             | -   | -      | 0.31                      | 2.2   | 3.3   | 2.2   |
| 23956CC/W33                   | 23956CCK/W33        | 25     | 1066.8            | 1848   | 150.15             | 1680            | 1785             | -   | -      | 0.16                      | 4.2   | 6.3   | 4     |
| 23056CC/W33                   | 23056CCK/W33        | 52.5   | 1886.85           | 2992.5 | 235.2              | 1365            | 1680             | -   | -      | 0.23                      | 2.9   | 4.4   | 2.8   |
| 24056CC/W33                   | 24056CCK30/W33      | 69.5   | 2360.4            | 3990   | 299.25             | 997.5           | 1470             | -   | -      | 0.31                      | 2.2   | 3.3   | 2.2   |
| 23156CC/W33                   | 23156CCK/W33        | 97     | 2923.2            | 4462.5 | 351.75             | 1050            | 1365             | -   | -      | 0.3                       | 2.3   | 3.4   | 2.2   |
| 23156-2CS5/VT143              | 23156-2CS5K/VT143   | 97     | 2927.4            | 4462.5 | 351.75             | -               | 315              | -   | -      | 0.28                      | 2.4   | 3.6   | 2.5   |
| 24156CC/W33                   | 24156CCK30/W33      | 120    | 3342.15           | 5355   | 435.75             | 661.5           | 945              | -   | -      | 0.4                       | 1.7   | 2.5   | 1.6   |
| 24156-2CS5/VT143              | 24156-2CS5K30/VT143 | 115    | 3349.5            | 5355   | 435.75             | -               | 231              | -   | -      | 0.37                      | 1.8   | 2.7   | 1.8   |
| 22256CC/W33                   | 22256CCK/W33        | 115    | 2934.75           | 3937.5 | 315                | 1155            | 1575             | -   | -      | 0.26                      | 2.6   | 3.9   | 2.5   |