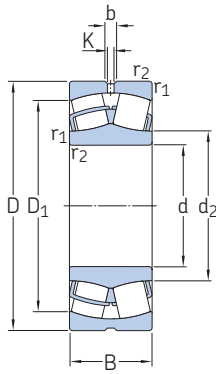
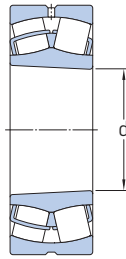


## 9.1 Spherical roller bearings

d 110 – 120 mm



Cylindrical bore

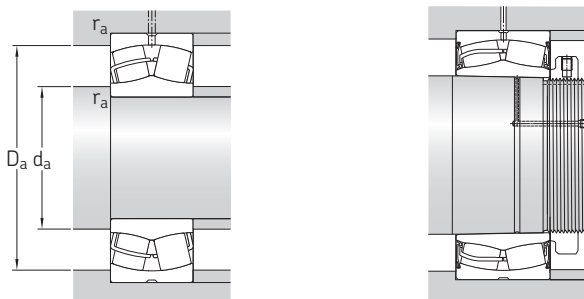


Tapered bore



Sealed (2RS, 2RS5, 2CS5)

| Principal dimensions |     |      | Basic load ratings |                 | Fatigue load limit<br>$P_u$ | Speed ratings   |                | Mass | Designations                  |                        |
|----------------------|-----|------|--------------------|-----------------|-----------------------------|-----------------|----------------|------|-------------------------------|------------------------|
| d                    | D   | B    | dynamic<br>$C$     | static<br>$C_0$ |                             | Reference speed | Limiting speed |      | Bearing with cylindrical bore | tapered bore           |
| mm                   |     |      | kN                 |                 | kN                          | r/min           |                | kg   | –                             |                        |
| 110                  | 170 | 45   | 326                | 440             | 46,5                        | –               | 1 500          | 3,8  | ▶ 23022-2RS/VT143             | –                      |
|                      | 170 | 45   | 326                | 440             | 46,5                        | 3 400           | 4 300          | 3,8  | ▶ 23022 CC/W33                | ▶ 23022 CCK/W33        |
|                      | 170 | 60   | 437                | 620             | 67                          | 2 400           | 3 600          | 5    | ▶ 24022 CC/W33                | ▶ 24022 CCK30/W33      |
|                      | 170 | 60   | 438                | 620             | 67                          | –               | 1 600          | 5    | ▶ 24022-2RS5/VT143            | –                      |
|                      | 180 | 56   | 450                | 585             | 61                          | 2 800           | 3 600          | 5,75 | ▶ 23122 CC/W33                | ▶ 23122 CCK/W33        |
|                      | 180 | 56   | 451                | 585             | 61                          | –               | 800            | 5,75 | ▶ 23122-2CS5/VT143            | ▶ 23122-2CS5K/VT143    |
|                      | 180 | 69   | 539                | 750             | 78                          | 2 000           | 3 000          | 7,1  | ▶ 24122 CC/W33                | ▶ 24122 CCK30/W33      |
|                      | 180 | 69   | 540                | 750             | 78                          | –               | 630            | 7,1  | ▶ 24122-2CS5/VT143            | –                      |
|                      | 200 | 53   | 572                | 640             | 63                          | 3 000           | 4 000          | 7    | ▶ 22222 E                     | ▶ 22222 EK             |
|                      | 200 | 63   | 572                | 640             | 63                          | –               | 1 500          | 7,6  | ▶ BS2-2222-2RS5/VT143         | ▶ BS2-2222-2RS5K/VT143 |
|                      | 200 | 69,8 | 626                | 765             | 76,5                        | 2 200           | 3 200          | 9,85 | ▶ 23222 CC/W33                | ▶ 23222 CCK/W33        |
|                      | 200 | 69,8 | 627                | 765             | 76,5                        | –               | 640            | 9,85 | ▶ 23222-2CS5/VT143            | ▶ 23222-2CS5K/VT143    |
|                      | 240 | 80   | 989                | 1 120           | 100                         | 2 000           | 2 800          | 18,5 | ▶ 22322 E                     | ▶ 22322 EK             |
|                      | 240 | 80   | 989                | 1 120           | 100                         | 2 000           | 2 800          | 18,5 | ▶ 22322 EJA/VA405             | ▶ 22322 EKJA/VA405     |
|                      | 240 | 80   | 989                | 1 120           | 100                         | 2 000           | 2 800          | 18,5 | 22322 EJA/VA406               | –                      |
| 120                  | 180 | 46   | 366                | 500             | 52                          | 3 200           | 4 000          | 4,2  | ▶ 23024 CC/W33                | ▶ 23024 CCK/W33        |
|                      | 180 | 46   | 367                | 500             | 52                          | –               | 1 400          | 4,2  | ▶ 23024-2RS5/VT143            | –                      |
|                      | 180 | 60   | 456                | 670             | 68                          | 2 400           | 3 400          | 5,45 | ▶ 24024 CC/W33                | ▶ 24024 CCK30/W33      |
|                      | 180 | 60   | 457                | 670             | 68                          | –               | 670            | 5,45 | ▶ 24024-2CS5/VT143            | –                      |
|                      | 200 | 62   | 534                | 695             | 71                          | 2 600           | 3 400          | 8    | ▶ 23124 CC/W33                | ▶ 23124 CCK/W33        |
|                      | 200 | 62   | 535                | 695             | 71                          | –               | 720            | 7,55 | ▶ 23124-2CS5/VT143            | –                      |
|                      | 200 | 80   | 679                | 950             | 95                          | 1 900           | 2 600          | 10,5 | ▶ 24124 CC/W33                | ▶ 24124 CCK30/W33      |
|                      | 200 | 80   | 680                | 950             | 95                          | –               | 560            | 10,5 | ▶ 24124-2CS5/VT143            | –                      |
|                      | 215 | 58   | 652                | 765             | 73,5                        | 2 800           | 3 800          | 8,7  | ▶ 22224 E                     | ▶ 22224 EK             |
|                      | 215 | 69   | 652                | 765             | 73,5                        | –               | 1 400          | 9,75 | ▶ BS2-2224-2RS5/VT143         | ▶ BS2-2224-2RS5K/VT143 |
|                      | 215 | 76   | 732                | 930             | 93                          | 2 000           | 2 800          | 12   | ▶ 23224 CC/W33                | ▶ 23224 CCK/W33        |
|                      | 215 | 76   | 734                | 930             | 93                          | –               | 600            | 12   | ▶ 23224-2CS5/VT143            | ▶ 23224-2CS5K/VT143    |
|                      | 260 | 86   | 1 019              | 1 120           | 100                         | 2 000           | 2 600          | 23   | ▶ 22324 CC/W33                | ▶ 22324 CCK/W33        |
|                      | 260 | 86   | 1 019              | 1 120           | 100                         | 2 000           | 2 600          | 23   | ▶ 22324 CCJA/W33VA405         | ▶ 22324 CCKJA/W33VA405 |
|                      | 260 | 86   | 1 019              | 1 120           | 100                         | 2 000           | 2 600          | 23   | ▶ 22324 CCJA/W33VA406         | –                      |
|                      | 260 | 86   | 1 022              | 1 120           | 100                         | –               | 600            | 23   | ▶ 22324-2CS5/VT143            | ▶ 22324-2CS5K/VT143    |



| Dimensions |                     |                     |      |     |                          | Abutment and fillet dimensions |                        |                        |                        | Calculation factors |                |                |                | Permissible acceleration for oil lubrication <sup>1)</sup> |        |
|------------|---------------------|---------------------|------|-----|--------------------------|--------------------------------|------------------------|------------------------|------------------------|---------------------|----------------|----------------|----------------|------------------------------------------------------------|--------|
| d          | d <sub>2</sub><br>≈ | D <sub>1</sub><br>≈ | b    | K   | r <sub>1,2</sub><br>min. | d <sub>a</sub><br>min.         | d <sub>a</sub><br>max. | D <sub>a</sub><br>max. | r <sub>a</sub><br>max. | e                   | Y <sub>1</sub> | Y <sub>2</sub> | Y <sub>0</sub> | rota-<br>tional                                            | linear |
| mm         |                     |                     |      |     |                          | mm                             |                        |                        |                        | –                   |                |                |                | m/s <sup>2</sup>                                           |        |
| <b>110</b> | 122                 | 156                 | 6    | 3   | 2                        | 119                            | 122                    | 161                    | 2                      | 0,21                | 3,2            | 4,8            | 3,2            | –                                                          | –      |
|            | 125                 | 151                 | 6    | 3   | 2                        | 119                            | –                      | 161                    | 2                      | 0,23                | 2,9            | 4,4            | 2,8            | –                                                          | –      |
|            | 122                 | 149                 | 5,5  | 3   | 2                        | 119                            | –                      | 161                    | 2                      | 0,33                | 2              | 3              | 2              | –                                                          | –      |
|            | 120                 | 154                 | 6    | 3   | 2                        | 119                            | 120                    | 161                    | 2                      | 0,3                 | 2,3            | 3,4            | 2,2            | –                                                          | –      |
|            | 126                 | 157                 | 8,3  | 4,5 | 2                        | 121                            | –                      | 169                    | 2                      | 0,3                 | 2,3            | 3,4            | 2,2            | –                                                          | –      |
|            | 122                 | 166                 | 8,3  | 4,5 | 2                        | 121                            | 122                    | 169                    | 2                      | 0,27                | 2,5            | 3,7            | 2,5            | –                                                          | –      |
|            | 123                 | 153                 | 6    | 3   | 2                        | 121                            | –                      | 169                    | 2                      | 0,37                | 1,8            | 2,7            | 1,8            | –                                                          | –      |
|            | 120                 | 163                 | 6    | 3   | 2                        | 121                            | 121                    | 169                    | 2                      | 0,35                | 1,9            | 2,9            | 1,8            | –                                                          | –      |
|            | 130                 | 178                 | 8,3  | 4,5 | 2,1                      | 122                            | –                      | 188                    | 2                      | 0,25                | 2,7            | 4              | 2,5            | –                                                          | –      |
|            | 126                 | 183                 | 8,3  | 4,5 | 2,1                      | 122                            | 126                    | 188                    | 2                      | 0,25                | 2,7            | 4              | 2,5            | –                                                          | –      |
|            | 130                 | 169                 | 8,3  | 4,5 | 2,1                      | 122                            | –                      | 188                    | 2                      | 0,33                | 2              | 3              | 2              | –                                                          | –      |
|            | 126                 | 178                 | 8,3  | 4,5 | 2,1                      | 122                            | 126                    | 188                    | 2                      | 0,33                | 2              | 3              | 2              | –                                                          | –      |
|            | 143                 | 204                 | 13,9 | 7,5 | 3                        | 124                            | –                      | 226                    | 2,5                    | 0,33                | 2              | 3              | 2              | –                                                          | –      |
|            | 143                 | 204                 | 13,9 | 7,5 | 3                        | 124                            | –                      | 226                    | 2,5                    | 0,33                | 2              | 3              | 2              | 53 g                                                       | 19 g   |
|            | 143                 | 204                 | 13,9 | 7,5 | 3                        | 124                            | –                      | 226                    | 2,5                    | 0,33                | 2              | 3              | 2              | 53 g                                                       | 19 g   |
|            | 135                 | 163                 | 6    | 3   | 2                        | 129                            | –                      | 171                    | 2                      | 0,22                | 3              | 4,6            | 2,8            | –                                                          | –      |
|            | 132                 | 168                 | 6    | 3   | 2                        | 129                            | 132                    | 171                    | 2                      | 0,2                 | 3,4            | 5              | 3,2            | –                                                          | –      |
|            | 132                 | 159                 | 6    | 3   | 2                        | 129                            | –                      | 171                    | 2                      | 0,3                 | 2,3            | 3,4            | 2,2            | –                                                          | –      |
|            | 130                 | 166                 | 6    | 3   | 2                        | 129                            | 130                    | 171                    | 2                      | 0,28                | 2,4            | 3,6            | 2,5            | –                                                          | –      |
|            | 139                 | 174                 | 8,3  | 4,5 | 2                        | 131                            | –                      | 189                    | 2                      | 0,28                | 2,4            | 3,6            | 2,5            | –                                                          | –      |
|            | 135                 | 183                 | 8,3  | 4,5 | 2                        | 131                            | 135                    | 189                    | 2                      | 0,27                | 2,5            | 3,7            | 2,5            | –                                                          | –      |
| <b>120</b> | 135                 | 168                 | 6    | 3   | 2                        | 131                            | –                      | 189                    | 2                      | 0,37                | 1,8            | 2,7            | 1,8            | –                                                          | –      |
|            | 132                 | 179                 | 6    | 3   | 2                        | 131                            | 132                    | 189                    | 2                      | 0,37                | 1,8            | 2,7            | 1,8            | –                                                          | –      |
|            | 141                 | 189                 | 11,1 | 6   | 2,1                      | 132                            | –                      | 203                    | 2                      | 0,26                | 2,6            | 3,9            | 2,5            | –                                                          | –      |
|            | 136                 | 194                 | 11,1 | 6   | 2,1                      | 132                            | 136                    | 203                    | 2                      | 0,26                | 2,6            | 3,9            | 2,5            | –                                                          | –      |
|            | 141                 | 182                 | 8,3  | 4,5 | 2,1                      | 132                            | –                      | 203                    | 2                      | 0,35                | 1,9            | 2,9            | 1,8            | –                                                          | –      |
|            | 137                 | 193                 | 8,3  | 4,5 | 2,1                      | 132                            | 137                    | 203                    | 2                      | 0,33                | 2              | 3              | 2              | –                                                          | –      |
|            | 152                 | 216                 | 13,9 | 7,5 | 3                        | 134                            | –                      | 246                    | 2,5                    | 0,35                | 1,9            | 2,9            | 1,8            | –                                                          | –      |
|            | 152                 | 216                 | 13,9 | 7,5 | 3                        | 134                            | –                      | 246                    | 2,5                    | 0,35                | 1,9            | 2,9            | 1,8            | 96 g                                                       | 21 g   |
|            | 152                 | 216                 | 13,9 | 7,5 | 3                        | 134                            | –                      | 246                    | 2,5                    | 0,35                | 1,9            | 2,9            | 1,8            | 96 g                                                       | 21 g   |
|            | 147                 | 229                 | 13,9 | 7,5 | 3                        | 134                            | 147                    | 246                    | 2,5                    | 0,33                | 2              | 3              | 2              | –                                                          | –      |

<sup>1)</sup> For details about permissible accelerations → [page 779](#)