

Axle Bearings for Railway Rolling Stock

Spherical Roller Bearings

Spherical roller bearings are self-aligning. Also, they can sustain some axial loads as well as heavy radial loads; hence, the journal box design is relatively simple.



Spherical Roller Bearings

Spherical roller bearings can sustain, not only heavy radial loads, but also some axial loads in either direction. They have excellent radial load carrying capacity and are suitable for use where there are heavy or impact loads.

1. Single spherical roller bearing

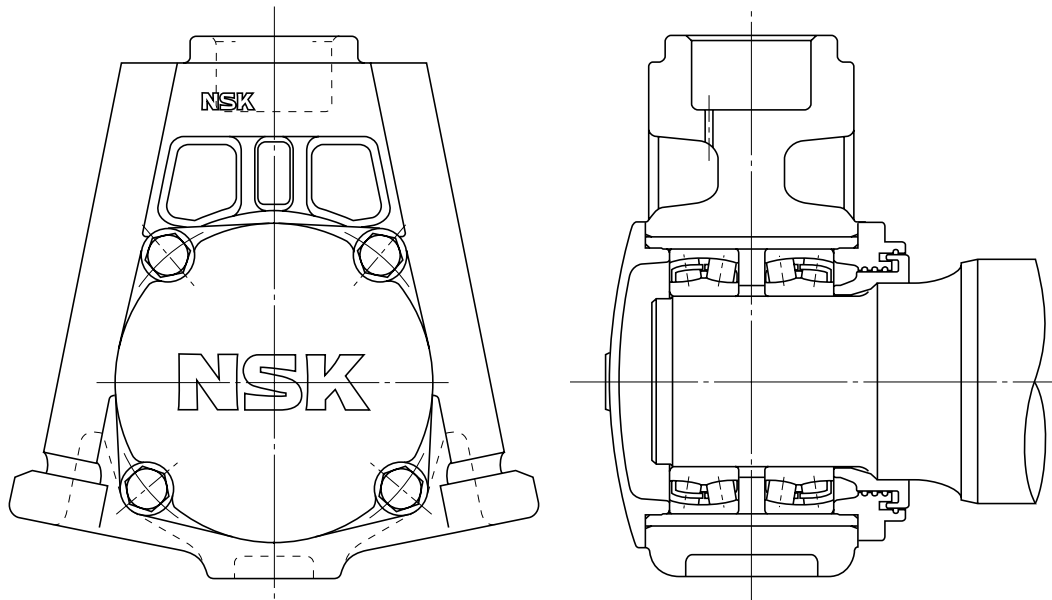
The bearing box is allowed to move freely in relation to the axle center because of the self-aligning property of the bearing.

When a single spherical roller bearing is used, the use of a wing-type bearing box is recommended.

2. Two spherical roller bearing

When two spherical roller bearings are used in a double-row configuration, the self-aligning capability of the bearing is lost. But they are provided higher load-carrying capacity.

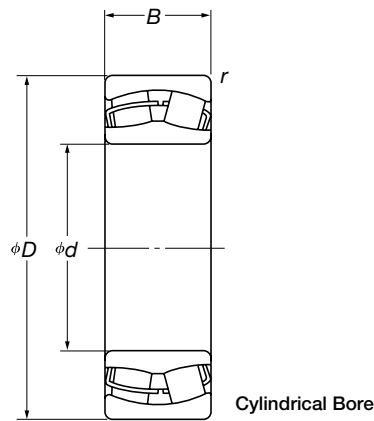
This type of bearing is used worldwide because of standardized by the International Union of Railways (UIC) in Europe.



Singapore Mass Rapid Transit Corporation, Subway

Bearing Number: J-232, J-232A

Spherical Roller Bearing Table



| Bearing Numbers | Boundary Dimensions (mm) | | | | Basic Dynamic Load Rating N (lbf) | Basic Static Load Rating N (lbf) |
|-----------------|--------------------------|----------|----------|-------------------------|--------------------------------------|-------------------------------------|
| | <i>d</i> | <i>D</i> | <i>B</i> | <i>r</i> ⁽¹⁾ | | |
| 230092C | 99.746 | 180 | 60.3 | 3.5 | 420 000 (94 000) | 605 000 (135 000) |
| 23220C | 100 | 180 | 60.3 | 2.1 | 420 000 (94 000) | 605 000 (135 000) |
| 23122C | 110 | 180 | 56 | 2 | 385 000 (86 500) | 630 000 (141 000) |
| 231255C | 119.105 | 200 | 62 | 2 5 | 465 000 (105 000) | 720 000 (162 000) |
| 23124C | 120 | 200 | 62 | 2 | 465 000 (105 000) | 720 000 (162 000) |
| 23224C | 120 | 215 | 76 | 2.1 | 630 000 (142 000) | 970 000 (218 000) |
| 22324C | 120 | 260 | 86 | 3 | 845 000 (190 000) | 1 130 000 (253 000) |
| 23126C | 130 | 210 | 64 | 2 | 505 000 (113 000) | 825 000 (186 000) |
| 229750C | 130 | 220 | 73 | 2.7 5 | 575 000 (129 000) | 960 000 (216 000) |
| 23226C | 130 | 230 | 80 | 3 | 700 000 (158 000) | 1 080 000 (243 000) |
| 22326C | 130 | 280 | 93 | 4 | 995 000 (223 000) | 1 350 000 (305 000) |
| 230906C | 131.796 | 220 | 73 | 2.7 5 | 575 000 (129 000) | 960 000 (216 000) |
| 228285C | 139.734 | 218 | 80 | 1.5 5 | 605 000 (136 000) | 1 040 000 (235 000) |
| 23128C | 140 | 225 | 68 | 2.1 | 580 000 (130 000) | 945 000 (212 000) |
| 23228C | 140 | 250 | 88 | 3 | 835 000 (187 000) | 1 300 000 (292 000) |
| 231019C | 144.475 | 250 | 80 | 2.7 5 | 725 000 (163 000) | 1 180 000 (266 000) |
| 228708C | 152.434 | 250 | 100 | 2.7 5 | 860 000 (193 000) | 1 450 000 (325 000) |
| 231481C | 157.174 | 270 | 86 | 2 5 | 855 000 (192 000) | 1 400 000 (315 000) |
| 22228M | 140 | 250 | 68 | 3 | 655 000 (147 000) | 910 000 (205 000) |
| 23026Ca3 | 130 | 200 | 52 | 2 5 | 400 000 (90 000) | 655 000 (148 000) |
| 22328 | 140 | 300 | 102 | 4 | 1 160 000 (260 000) | 1 590 000 (360 000) |
| 23120C | 100 | 165 | 52 | 2 | 345 000 (78 000) | 530 000 (119 000) |

Note (1) The upper and lower numbers in "r" column refer to radial and axial directions, respectively.