



## Railway drive bearings

Preferred types



# Foreword

Schaeffler is, through its brands INA and FAG, one of the world's leading manufacturers of rolling and plain bearings. In close partnership with manufacturers and operators, carefully matched solutions are developed for any application in rail vehicles. The product portfolio includes wheelset bearings together with housings as well as bearings and components for traction motors and gearboxes, for wagon joints and tilting mechanisms, for doors and sliding panels.

Bearing arrangements for rail vehicles are subjected to extreme loads and are required to fulfil high safety standards. Schaeffler has more than 140 years of experience in the rail sector. We can thus offer comprehensive technical expertise, the highest quality and precise matching of products to any area of application. The reliability of the bearings is tested under extreme conditions on test rigs we have developed in-house. The railway test shop at the FAG Schweinfurt site is recognised and certified as a test facility for rail vehicle bearing arrangements by the Federal German Railway Authority.

It is also authorised by the DAP (German Accreditation System for Testing) to perform tests in the field "Performance capacity of wheelset bearings for railway applications" in accordance with DIN EN ISO/IEC 17025:2000.

Our services include expert application advisory work, rolling bearing calculations, testing and assembly. We have a close-meshed network of external sales engineers, service and sales technicians working worldwide for you to ensure short travel distances and rapid response times. As a special service, Schaeffler offers the skilled and economical reconditioning of railway bearings.

## Preferred types

Schaeffler has decades of experience in the design and manufacture of rolling bearings for rail drives. Our application knowledge combined with our internally developed calculation tools make us a preferred partner for overcoming future challenges in conjunction with our customers.

The rolling bearings referred to in this publication are products that cover almost the entire size range for traction motor and railway gearbox applications. Most of these products already have many years of field experience in the corresponding applications. Our aim in stipulating specific bearing designs is to ensure good availability of the individual bearings and make bearing selection easier for our customers.

A selection of typical rolling bearing designs that have proved extremely suitable in operation is presented below. If you have any questions or require alternative versions, please do not hesitate to contact our specialists.

Naturally, all other bearing designs are still available from us, independently of this list, on request. An overview of the standard suffixes can be found in the appendix.



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# Traction motor bearings

## Requirements for traction motor bearings

Modern electric drives for the railway industry are subject to certain fundamental requirements such as cost-efficiency, reliability, operational security, adequate service life and low maintenance outlay. The fulfilment of these fundamental requirements is heavily influenced by the acting forces, additional loads and environmental influences. Depending on the drive concept, different rolling bearing solutions can be selected to achieve a bearing arrangement that is efficient, operationally reliable and cost-effective.

One of the additional loads encountered with traction motor bearings in particular is current passage. In general, it is difficult to eliminate the causes of electrical currents in the rolling bearing. Nevertheless, bearing damage can be prevented if it is possible to stop or significantly reduce the flow of current. Current-insulated rolling bearings, coated with Insutect A, are now available for this purpose in numerous designs. The components that should be insulated are dependent on the type of electrical currents occurring.

A premium product alternative to the Insutect A bearings is available in the form of FAG hybrid bearings. The rings of the hybrid bearings are made from rolling bearing steel and the rolling elements are made from ceramic. The hybrid bearings are identified by the prefix HC. The rolling elements are extremely resistant to wear and perform the function of current insulation. In addition to a high resistance value, FAG hybrid bearings offer a very low capacitance and thus optimal protection against high-frequency currents in converter operation. In addition to this effect, hybrid bearings also facilitate higher speeds, have better emergency running characteristics and an extended relubrication interval.

Naturally, all other bearing designs are still available from us, independently of this list, on request.

*Figure 1*  
Cylindrical roller bearing  
NU212-E-XL-M1-S1-C4



001.8D9F2

*Figure 2*  
Current-insulated  
cylindrical roller bearing  
NU212-E-XL-M1-J20AA-C4,  
coated with Insutect A



001.8D9E6

*Figure 3*  
Hybrid cylindrical roller bearing  
HCNU212-E-XL-M1-F1-C4



001.8D9E0

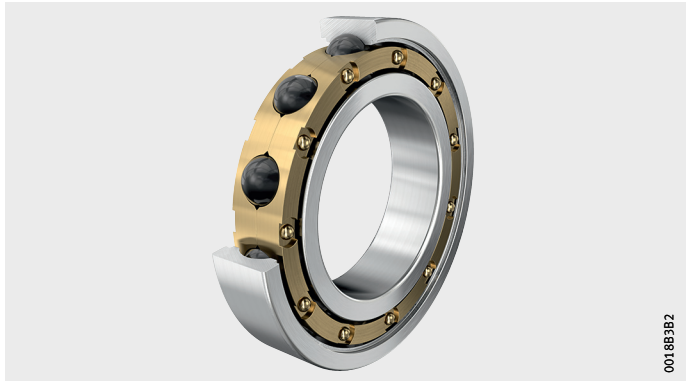
## Traction motor bearings

*Figure 4*  
Current-insulated  
deep groove ball bearing  
6215-M-j20AA



0018839B

*Figure 5*  
Hybrid deep groove ball bearing  
HC6215-M

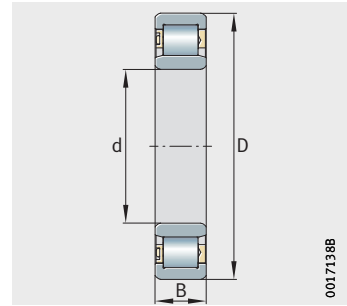


001883BZ



# Cylindrical roller bearings

Standard

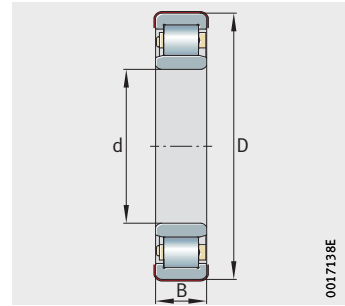


Dimensions

| Dimension table - Dimensions in mm |                   |            |     |    |                    |                              |  |
|------------------------------------|-------------------|------------|-----|----|--------------------|------------------------------|--|
| Designation                        | Mass<br>m<br>≈ kg | Dimensions |     |    | Basic load ratings |                              | Limiting speed<br>n<br>min <sup>-1</sup> |
|                                    |                   | d          | D   | B  | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| NU310-E-XL-M1-F1-C3                | 1,3               | 50         | 110 | 27 | 130 000            | 113 000                      | 10 100                                   |
| NU212-E-XL-M1-S1-C4                | 0,9               | 60         | 110 | 22 | 112 000            | 103 000                      | 10 000                                   |
| NJ314-E-XL-M1-F1-C4                | 3,1               | 70         | 150 | 35 | 242 000            | 222 000                      | 7 200                                    |
| NU214-E-XL-M1-F1-C4                | 1,3               | 70         | 125 | 24 | 140 000            | 137 000                      | 8 800                                    |
| NU314-E-XL-M1-F1-C4                | 3,06              | 70         | 150 | 35 | 242 000            | 222 000                      | 7 200                                    |
| NUP314-E-XL-M1-F1-C3               | 3,2               | 70         | 150 | 35 | 242 000            | 222 000                      | 7 200                                    |
| NU215-E-XL-M1-F1-C4                | 1,41              | 75         | 130 | 25 | 154 000            | 156 000                      | 8 500                                    |
| NU217-E-XL-M1-F1-C4                | 2,1               | 85         | 150 | 28 | 194 000            | 194 000                      | 7 200                                    |
| NH318-E-XL-M1-F1-C4                | 6,9               | 90         | 190 | 55 | 370 000            | 350 000                      | 5 500                                    |
| NJ318-E-XL-M1-F1-C4                | 6,2               | 90         | 190 | 43 | 370 000            | 350 000                      | 5 500                                    |
| NU1018-XL-M1-F1-C4                 | 1,3               | 90         | 140 | 24 | 111 000            | 124 000                      | 8 400                                    |
| NUP318-E-XL-M1-F1-C4               | 6,3               | 90         | 190 | 43 | 370 000            | 350 000                      | 5 500                                    |
| Z-576110.ZL                        | 2,8               | 90         | 160 | 45 | 182 000            | 217 000                      | 5 200                                    |
| NU319-E-XL-M1-F1-C4                | 7                 | 95         | 200 | 45 | 390 000            | 380 000                      | 5 300                                    |
| NUP319-E-XL-M1-F1-C4               | 7,3               | 95         | 200 | 45 | 390 000            | 380 000                      | 5 300                                    |
| F-807919.01.NJ320-E                | 8,6               | 100        | 215 | 47 | 360 000            | 395 000                      | 4 850                                    |
| NU322-E-XL-M1-F1-C4                | 11,5              | 110        | 240 | 50 | 520 000            | 510 000                      | 4 350                                    |
| NJ324-E-XL-M1A-F1-R155-195         | 15,6              | 120        | 260 | 55 | 610 000            | 600 000                      | 3 950                                    |
| NU224-E-XL-M1-F1-H67C-C4           | 6,4               | 120        | 215 | 40 | 390 000            | 415 000                      | 4 900                                    |
| NU324-E-XL-M1-F1-C4                | 15,2              | 120        | 260 | 55 | 610 000            | 600 000                      | 3 950                                    |
| NU326-E-XL-M1-F1-C4                | 18,4              | 130        | 280 | 58 | 720 000            | 720 000                      | 3 700                                    |
| Z-558540.04.ZL                     | 18,3              | 130        | 280 | 58 | 770 000            | 760 000                      | 2 600                                    |
| NU328-E-XL-M1-F1-C4                | 22,1              | 140        | 300 | 62 | 790 000            | 800 000                      | 3 450                                    |
| F-804577.01.NU330-E                | 27                | 150        | 320 | 65 | 760 000            | 930 000                      | 3 200                                    |
| NU330-E-XL-M1A-F1-C4               | 27,4              | 150        | 320 | 65 | 900 000            | 930 000                      | 3 200                                    |
| NU330-E-XL-M1-F1-C4                | 26,8              | 150        | 320 | 65 | 900 000            | 930 000                      | 3 200                                    |
| NUP1030-XL-M1-F1-C4                | 5,2               | 150        | 225 | 35 | 248 000            | 310 000                      | 5 100                                    |
| NU332-E-M1-F1-C4                   | 41,2              | 160        | 340 | 68 | 860 000            | 1 060 000                    | 3 000                                    |
| F-801488.01.NU2236-E               | 30,7              | 180        | 320 | 86 | 1 180 000          | 1 490 000                    | 3 200                                    |
| NU1036-XL-M1-F1-C4                 | 10,5              | 180        | 280 | 46 | 425 000            | 520 000                      | 3 900                                    |

# Cylindrical roller bearings

Current-insulated



Dimensions

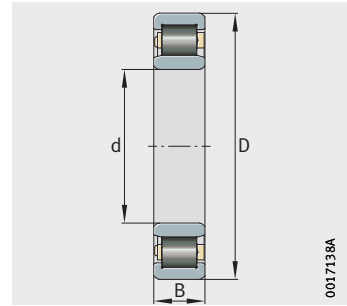
0017138E

Dimension table · Dimensions in mm

| Designation                          | Mass<br>m<br>≈ kg | Dimensions |        |    | Basic load ratings |                              | Limiting speed<br>n<br>min <sup>-1</sup> |
|--------------------------------------|-------------------|------------|--------|----|--------------------|------------------------------|--|
|                                      |                   | d          | D      | B  | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| <b>NU210-E-XL-M1-F1-J20AA-C3H#NA</b> | 0,6               | <b>50</b>  | 90     | 20 | 75 000             | 69 000                       | 12 600                                   |
| <b>NU211-E-XL-M1-S1-J20AA-C4</b>     | 0,8               | <b>55</b>  | 100    | 21 | 99 000             | 95 000                       | 11 000                                   |
| <b>NUB1011-XL-M1-F1-J20AA-C4</b>     | 0,5               | <b>55</b>  | 90     | 26 | 49 500             | 50 000                       | 13 500                                   |
| <b>NU1012-XL-M1-F1-J20AA-C4</b>      | 0,5               | <b>60</b>  | 95     | 18 | 52 000             | 55 000                       | 12 800                                   |
| <b>NU212-E-XL-M1-J20AA-C4</b>        | 0,9               | <b>60</b>  | 110    | 22 | 112 000            | 103 000                      | 10 000                                   |
| <b>NU1013-XL-M1-F1-J20AA-C4</b>      | 0,5               | <b>65</b>  | 100    | 18 | 53 000             | 58 000                       | 12 200                                   |
| <b>NU213-E-XL-M1-F1-J20AA-C4</b>     | 1,2               | <b>65</b>  | 120    | 23 | 127 000            | 119 000                      | 9 200                                    |
| <b>NU1014-XL-M1-F1-J20AA-C4</b>      | 0,7               | <b>70</b>  | 110    | 20 | 77 000             | 81 000                       | 10 700                                   |
| <b>NU214-E-XL-M1-F1-J20AA-C4</b>     | 1,3               | <b>70</b>  | 125    | 24 | 140 000            | 137 000                      | 8 800                                    |
| <b>NU215-E-XL-M1-F1-J20AA-C4</b>     | 1,4               | <b>75</b>  | 130    | 25 | 154 000            | 156 000                      | 8 500                                    |
| <b>NU315-E-XL-M1-J20AA-C4</b>        | 3,7               | <b>75</b>  | 160    | 37 | 285 000            | 265 000                      | 6 600                                    |
| <b>NU216-E-XL-M1-F1-J20AA-C4</b>     | 1,8               | <b>80</b>  | 140    | 26 | 166 000            | 168 000                      | 7 900                                    |
| <b>NU1017-XL-M1-F1-J20AA-C4</b>      | 1                 | <b>85</b>  | 130    | 22 | 93 000             | 103 000                      | 9 000                                    |
| <b>NJ2218-E-XL-M1-F1-J20AA-C4</b>    | 3,5               | <b>90</b>  | 160    | 40 | 285 000            | 315 000                      | 6 800                                    |
| <b>NJ318-E-XL-M1-F1-J20AA-C4</b>     | 6,2               | <b>90</b>  | 190    | 43 | 370 000            | 350 000                      | 5 500                                    |
| <b>NU1018-XL-M1-F1-J20AA-C4</b>      | 1,3               | <b>90</b>  | 140    | 24 | 111 000            | 124 000                      | 8 400                                    |
| <b>F-564169.02.NUB219-E</b>          | 3,5               | <b>95</b>  | 170    | 43 | 237 000            | 234 000                      | 6 300                                    |
| <b>NU219-E-XL-M1-F1-J20AA-C4</b>     | 3,1               | <b>95</b>  | 170    | 32 | 260 000            | 265 000                      | 6 300                                    |
| <b>F-564372.01.ZL-M15CS</b>          | 3,8               | <b>100</b> | 180,02 | 34 | 280 000            | 290 000                      | 5 900                                    |
| <b>NJ320-E-XL-M1-F1-J20AA-C4</b>     | 8,8               | <b>100</b> | 215    | 47 | 450 000            | 425 000                      | 4 850                                    |
| <b>NUB220-E-XL-TVP2-F1-J20AA-C4</b>  | 3,7               | <b>100</b> | 180    | 46 | 295 000            | 305 000                      | 4 550                                    |
| <b>F-585063.ZL</b>                   | 11,4              | <b>110</b> | 240    | 50 | 520 000            | 510 000                      | 4 350                                    |

# Cylindrical roller bearings

Hybrid



Dimensions

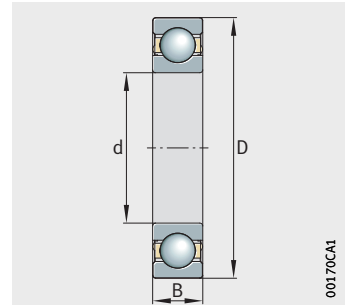
**Dimension table** - Dimensions in mm

| Designation                   | Mass<br>m<br>≈ kg | Dimensions |     |    | Basic load ratings |                              | Limiting speed <sup>1)</sup><br>n<br>min <sup>-1</sup> |
|-------------------------------|-------------------|------------|-----|----|--------------------|------------------------------|--|
|                               |                   | d          | D   | B  | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| <b>F-583158.ZL</b>            | 0,5               | <b>50</b>  | 90  | 20 | 64 000             | 65 000                       | 12 600   |
| <b>HCNU1011-E-XL-M1-F1-C4</b> | 0,4               | <b>55</b>  | 90  | 18 | 62 000             | 62 000                       | 13 000   |
| <b>HCNU212-E-XL-M1-F1-C4</b>  | 0,8               | <b>60</b>  | 110 | 22 | 95 000             | 97 000                       | 9 500  |
| <b>HCNU1014-XL-M1-F1-C4</b>   | 0,6               | <b>70</b>  | 110 | 20 | 77 000             | 81 000                       | 10 700   |
| <b>HCNU1015-XL-M1-F1-C4</b>   | 0,6               | <b>75</b>  | 115 | 20 | 66 000             | 80 000                       | 10 300   |
| <b>HCNU215-E-XL-M1-C3H</b>    | 1,2               | <b>75</b>  | 130 | 25 | 154 000            | 156 000                      | 8 500  |
| <b>HCNU1018-XL-M1-F1-C4</b>   | 1,2               | <b>90</b>  | 140 | 24 | 94 000             | 124 000                      | 8 400  |

<sup>1)</sup> 20% higher limiting speed compared to standard.

# Deep groove ball bearings

Current-insulated



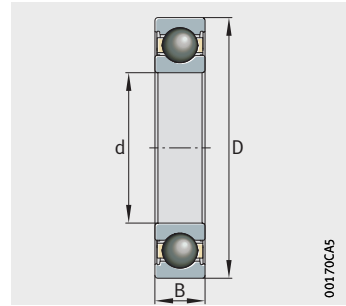
Dimensions

**Dimension table** · Dimensions in mm

| Designation                | Mass<br>m<br>≈ kg | Dimensions |     |    | Basic load ratings |                              | Limiting speed<br>n<br>min <sup>-1</sup> |
|----------------------------|-------------------|------------|-----|----|--------------------|------------------------------|--|
|                            |                   | d          | D   | B  | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| <b>6211-M-S1-J20AA-C5</b>  | 0,733             | <b>55</b>  | 100 | 21 | 46 000             | 29 000                       | 12 300                                   |
| <b>6212-M-J20AA-C5</b>     | 0,95              | <b>60</b>  | 110 | 22 | 57 000             | 36 500                       | 12 100                                   |
| <b>6014-M-P6-J20AA-C4H</b> | 0,71              | <b>70</b>  | 110 | 20 | 40 500             | 31 000                       | 11 200                                   |
| <b>6214-M-J20AA-C4</b>     | 1,28              | <b>70</b>  | 125 | 24 | 66 000             | 44 000                       | 10 600                                   |
| <b>6215-M-J20AA-C4</b>     | 1,42              | <b>75</b>  | 130 | 25 | 70 000             | 49 000                       | 10 200                                   |
| <b>6016-M-P6-J20AA-C5H</b> | 0,99              | <b>80</b>  | 125 | 22 | 51 000             | 40 000                       | 9 700                                    |
| <b>6216-M-P6-J20AA-C5H</b> | 1,74              | <b>80</b>  | 140 | 26 | 77 000             | 55 000                       | 9 500                                    |
| <b>6316-M-P6-J20AA-C5</b>  | 4,41              | <b>80</b>  | 170 | 39 | 131 000            | 87 000                       | 7 000                                    |
| <b>6217-M-J20AA-C4</b>     | 2,16              | <b>85</b>  | 150 | 28 | 89 000             | 64 000                       | 8 800                                    |
| <b>6318-M-P6-J20AA-C5H</b> | 6,11              | <b>90</b>  | 190 | 43 | 142 000            | 102 000                      | 6 300                                    |
| <b>6319-M-J20AA-C4</b>     | 6,94              | <b>95</b>  | 200 | 45 | 154 000            | 113 000                      | 6 000                                    |
| <b>6220-M-J20AA-C4</b>     | 3,85              | <b>100</b> | 180 | 34 | 13 000             | 93 000                       | 6 500                                    |

# Deep groove ball bearings

Hybrid



Dimensions

**Dimension table** - Dimensions in mm

| Designation                  | Mass<br>m<br>≈ kg | Dimensions |     |    | Basic load ratings |                              | Limiting speed<br>n<br>min <sup>-1</sup> |
|------------------------------|-------------------|------------|-----|----|--------------------|------------------------------|--|
|                              |                   | d          | D   | B  | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| <b>HC6210-N1-M-P6-S0-C5L</b> | 0,48              | <b>50</b>  | 90  | 20 | 43 000             | 27 000                       | 16 400                                   |
| <b>HC6211-M-C4H</b>          | 0,65              | <b>55</b>  | 100 | 21 | 51 000             | 32 500                       | 12 300                                   |
| <b>HC6212-M-C4</b>           | 0,94              | <b>60</b>  | 110 | 22 | 57 000             | 35 000                       | 14 600                                   |
| <b>HC6213-M-C4L</b>          | 1,05              | <b>65</b>  | 120 | 23 | 63 000             | 39 500                       | 13 400                                   |
| <b>HC6214-M-C4</b>           | 1,23              | <b>70</b>  | 125 | 24 | 66 000             | 42 000                       | 12 800                                   |
| <b>HC6215-M-C4H</b>          | 1,18              | <b>75</b>  | 130 | 25 | 70 000             | 47 000                       | 12 200                                   |
| <b>HC6216-M-P6-C5H</b>       | 1,49              | <b>80</b>  | 140 | 26 | 77 000             | 53 000                       | 11 400                                   |
| <b>HC6217-M-C4</b>           | 2,14              | <b>85</b>  | 150 | 28 | 85 000             | 61 000                       | 9 600                                    |
| <b>HC6218-M-F1-C4</b>        | 2,66              | <b>90</b>  | 160 | 30 | 97 000             | 70 000                       | 8 900                                    |

# Railway gearbox bearings

## **Requirements for railway gearbox bearings**

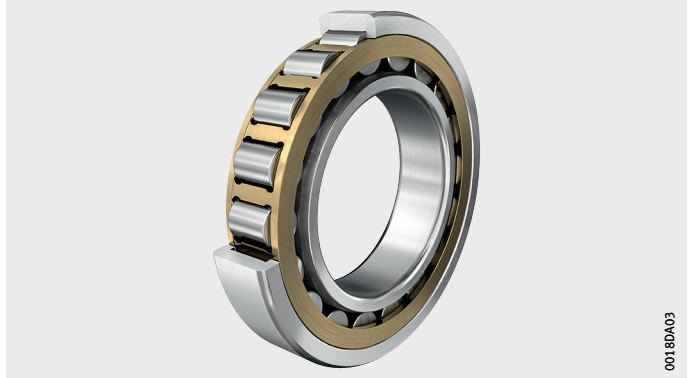
Rolling bearings in railway gearboxes must withstand a wide variety of operating conditions and complex environmental influences.

Not only are high static and, in particular, dynamic loads present in the form of vibrations and shocks, but the rolling bearings are also operated intermittently below the permissible minimum load.

Increasingly high input speeds require low-friction products and operation under all possible climatic conditions is assumed.

A further objective aimed at increasing the availability of the vehicles is to extend the maintenance intervals. Robust rolling bearing designs are therefore a fundamental requirement for ensuring the reliable and problem-free operation of gearboxes and vehicles.

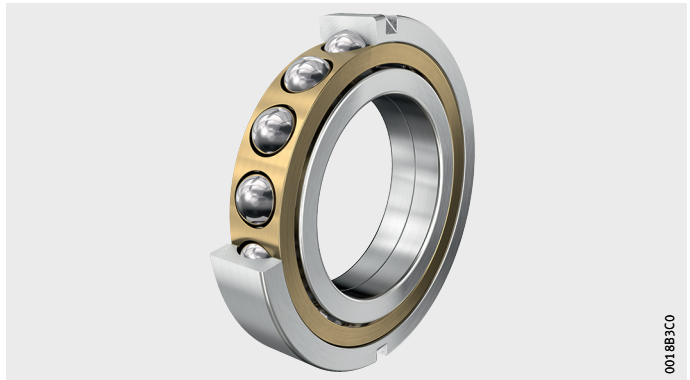
*Figure 1*  
Cylindrical roller bearing NU



*Figure 2*  
Tapered roller bearing 30215-XL

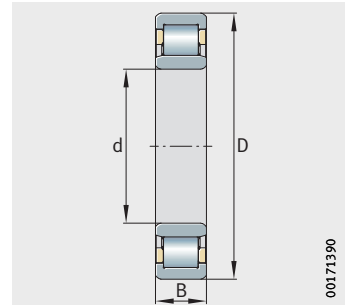


*Figure 3*  
Four point contact bearing QJ215



# Cylindrical roller bearings

Standard



Dimensions

00171390

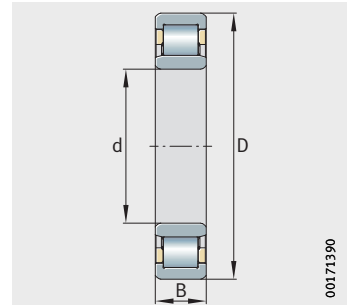
Dimension table · Dimensions in mm

| Designation             | Mass<br>m<br>≈ kg | Dimensions |     |    | Basic load ratings |                              | Limiting speed<br>n<br>min <sup>-1</sup> |
|-------------------------|-------------------|------------|-----|----|--------------------|------------------------------|--|
|                         |                   | d          | D   | B  | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| NJ211-E-XL-N-MPAX-C3    | 0,7               | 55         | 100 | 21 | 99 000             | 95 000                       | 11 300                                   |
| NJ2311-E-XL-MPAX-C3     | 2,5               | 55         | 120 | 43 | 235 000            | 230 000                      | 9 100                                    |
| NU211-E-N1-XL-MPAX-C3   | 0,7               | 55         | 100 | 21 | 99 000             | 95 000                       | 11 300                                   |
| NJ212-E-XL-N1-MPAX-C3   | 0,9               | 60         | 110 | 22 | 112 000            | 103 000                      | 10 000                                   |
| NU212-E-XL-N1-MPAX-C3   | 0,9               | 60         | 110 | 22 | 112 000            | 103 000                      | 10 000                                   |
| NJ2313-E-XL-MPAX-C3H/NA | 3,7               | 65         | 140 | 48 | 295 000            | 285 000                      | 7 700                                    |
| NJ313-E-XL-MPAX-C3      | 2,6               | 65         | 140 | 33 | 214 000            | 191 000                      | 7 700                                    |
| NU213-E-XL-MPAX-C4      | 1,2               | 65         | 120 | 23 | 128 000            | 120 000                      | 9 200                                    |
| NU2313-E-XL-MPAX-C3H/NA | 3,6               | 65         | 140 | 48 | 295 000            | 285 000                      | 7 700                                    |
| NJ214-E-XL-N1-MPAX-C3   | 1,3               | 70         | 125 | 24 | 141 000            | 138 000                      | 8 800                                    |
| NJ2314-E-XL-MPAX-C3H/NA | 4,5               | 70         | 150 | 51 | 325 000            | 325 000                      | 7 200                                    |
| NJ314-E-XL-MPAX-C4      | 3,1               | 70         | 150 | 35 | 242 000            | 222 000                      | 7 200                                    |
| NU214-E-XL-N1-MPAX-C3   | 1,2               | 70         | 125 | 24 | 141 000            | 138 000                      | 8 800                                    |
| NJ215-E-XL-MPAX-C4H/NA  | 1,4               | 75         | 130 | 25 | 155 000            | 157 000                      | 8 500                                    |
| NJ2215-E-XL-MPAX-C3     | 1,8               | 75         | 130 | 31 | 192 000            | 208 000                      | 8 500                                    |
| NJ315-E-XL-MPAX-C3      | 3,7               | 75         | 160 | 37 | 285 000            | 265 000                      | 6 600                                    |
| NU215-E-XL-N1-MPAX-C3   | 1,4               | 75         | 130 | 25 | 155 000            | 157 000                      | 8 500                                    |
| NU2215-E-XL-N1-MPAX-C3  | 1,8               | 75         | 130 | 31 | 192 000            | 208 000                      | 8 500                                    |
| NJ1016-XL-MPAX-C3       | 1                 | 80         | 125 | 22 | 91 000             | 99 000                       | 9 400                                    |
| NJ216-E-XL-N1-MPAX-C3   | 1,8               | 80         | 140 | 26 | 166 000            | 168 000                      | 7 900                                    |
| NJ2216-E-XL-N1-MPAX-C3  | 2,2               | 80         | 140 | 33 | 221 000            | 244 000                      | 7 900                                    |
| NU216-E-XL-MPAX-C4      | 1,7               | 80         | 140 | 26 | 166 000            | 168 000                      | 7 900                                    |
| NU316-E-XL-MPAX-C3      | 4,4               | 80         | 170 | 39 | 300 000            | 275 000                      | 6 200                                    |
| NJ1017-XL-MPAX-C3       | 1                 | 85         | 130 | 22 | 93 000             | 103 000                      | 9 000                                    |
| NJ2217-E-XL-N1-MPAX-C3  | 2,8               | 85         | 150 | 36 | 255 000            | 275 000                      | 7 200                                    |
| NU217-E-XL-MPAX-C4      | 2,1               | 85         | 150 | 28 | 203 000            | 206 000                      | 7 200                                    |
| NU2217-E-XL-MPA-C4H/NA  | 2,8               | 85         | 150 | 36 | 255 000            | 275 000                      | 7 200                                    |
| NJ218-E-MPAX-C4         | 2,6               | 90         | 160 | 30 | 215 000            | 217 000                      | 6 800                                    |
| NJ2218-E-XL-MPA-C4      | 3,7               | 90         | 160 | 40 | 285 000            | 315 000                      | 6 800                                    |
| NU218-E-XL-N-MPAX-C3    | 2,8               | 90         | 160 | 30 | 215 000            | 217 000                      | 6 800                                    |
| NJ219-E-XL-MPAX-C3      | 3,2               | 95         | 170 | 32 | 260 000            | 265 000                      | 6 300                                    |
| NJ2219-E-XL-MPAX-C3     | 4                 | 95         | 170 | 43 | 340 000            | 370 000                      | 6 300                                    |
| NU219-E-XL-MPAX-C3      | 3,1               | 95         | 170 | 32 | 260 000            | 265 000                      | 6 300                                    |



# Cylindrical roller bearings

Standard

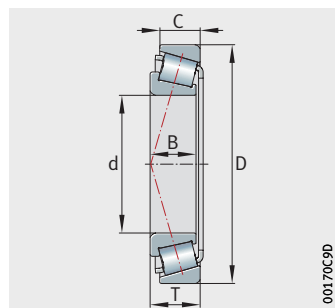


Dimensions

| Dimension table (continued) · Dimensions in mm |                   |            |     |    |                    |                              |  |
|--|-------------------|------------|-----|----|--------------------|------------------------------|--|
| Designation                                    | Mass<br>m<br>≈ kg | Dimensions |     |    | Basic load ratings |                              | Limiting speed<br>n<br>min <sup>-1</sup> |
|  |                   | d          | D   | B  | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| <b>NJ220-E-XL-MPAX-C3</b>                      | 3,8               | <b>100</b> | 180 | 34 | 295 000            | 305 000                      | 5 900                                    |
| <b>NJ2220-E-XL-MPAX-C3</b>                     | 5,3               | <b>100</b> | 180 | 46 | 395 000            | 445 000                      | 5 900                                    |
| <b>NJ320-E-XL-MPAX-C3</b>                      | 8,7               | <b>100</b> | 215 | 47 | 450 000            | 425 000                      | 4 850                                    |
| <b>NU220-E-XL-MPAX-C3H/NA</b>                  | 3,8               | <b>100</b> | 180 | 34 | 295 000            | 305 000                      | 5 900                                    |
| <b>NU2220-E-XL-MPAX-C4</b>                     | 5,2               | <b>100</b> | 180 | 46 | 395 000            | 445 000                      | 5 900                                    |
| <b>NU2222-E-XL-MPAX-C4H/NA</b>                 | 7,4               | <b>110</b> | 200 | 53 | 455 000            | 520 000                      | 5 300                                    |
| <b>NU222-E-XL-MPAX-C3</b>                      | 5,3               | <b>110</b> | 200 | 38 | 345 000            | 365 000                      | 5 300                                    |
| <b>NU2322-E-XL-MPAX-R210-240</b>               | 18,3              | <b>110</b> | 240 | 80 | 790 000            | 870 000                      | 4 350                                    |
| <b>NJ1024-E-XL-MPAX-C3</b>                     | 2,5               | <b>120</b> | 180 | 28 | 175 000            | 208 000                      | 6 400                                    |
| <b>NU2224-E-XL-MPAX-C3</b>                     | 9,1               | <b>120</b> | 215 | 58 | 530 000            | 610 000                      | 4 900                                    |
| <b>NU226-E-XL-MPAX-C3</b>                      | 7,2               | <b>130</b> | 230 | 40 | 425 000            | 445 000                      | 4 550                                    |
| <b>NU228-E-XL-MPAX-C3</b>                      | 9,2               | <b>140</b> | 250 | 42 | 460 000            | 510 000                      | 4 250                                    |
| <b>NU230-E-XL-N-MPAX-C4H/NA</b>                | 11,6              | <b>150</b> | 270 | 45 | 520 000            | 590 000                      | 3 950                                    |
| <b>NJ1032-XL-MPAX-C3</b>                       | 6,2               | <b>160</b> | 240 | 38 | 290 000            | 355 000                      | 4 650                                    |
| <b>NJ1034-XL-MPAX-C3</b>                       | 8,3               | <b>170</b> | 260 | 42 | 350 000            | 435 000                      | 4 300                                    |
| <b>NU1036-XL-MPAX-C3</b>                       | 10,6              | <b>180</b> | 280 | 46 | 425 000            | 520 000                      | 3 900                                    |
| <b>NJ1038-XL-MPAX-T51A-C3</b>                  | 11,2              | <b>190</b> | 290 | 46 | 435 000            | 550 000                      | 3 800                                    |
| <b>NU1944-E-XL-N1-MPAX-C3</b>                  | 7,8               | <b>220</b> | 300 | 38 | 395 000            | 560 000                      | 3 750                                    |
| <b>NUP1944-E-XL-MPAX-C3</b>                    | 8,2               | <b>220</b> | 300 | 38 | 395 000            | 560 000                      | 3 750                                    |
| <b>Z-566185.NJ1044</b>                         | 19                | <b>220</b> | 340 | 56 | 510 000            | 77 000                       | 3 150                                    |
| <b>NU1964-MPAX-C4</b>                          | 25,5              | <b>320</b> | 440 | 56 | 620 000            | 1 090 000                    | 2 500                                    |
| <b>NU1968-E-MPAX-C3</b>                        | 26,3              | <b>340</b> | 460 | 56 | 700 000            | 1 250 000                    | 2 350                                    |
| <b>NUP1968-E-MPAX-C3</b>                       | 27,4              | <b>340</b> | 460 | 56 | 700 000            | 1 250 000                    | 2 350                                    |
| <b>NJ1876-MPAX-C3</b>                          | 19,8              | <b>380</b> | 480 | 46 | 495 000            | 1 010 000                    | 2 420                                    |

# Tapered roller bearings

Standard



Dimensions

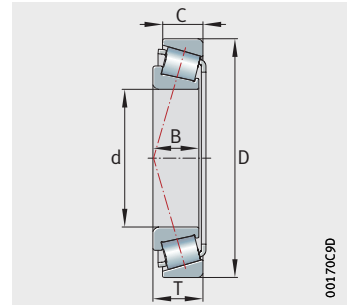
00170C9D

Dimension table · Dimensions in mm

| Designation                 | Mass<br>m<br>≈ kg | Dimensions     |         |        |        |        | Basic load ratings |                              | Limiting speed<br>n<br>min <sup>-1</sup> |
|-----------------------------|-------------------|----------------|---------|--------|--------|--------|--------------------|------------------------------|--|
|                             |                   | d              | D       | B      | C      | T      | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| T7FC045-XL-S1               | 0,93              | <b>45</b>      | 95      | 26,5   | 20     | 29     | 105 000            | 109 000                      | 8 100                                    |
| T7FC055-XL-S1               | 1,59              | <b>55</b>      | 115     | 31     | 23,5   | 34     | 152 000            | 165 000                      | 6 600                                    |
| T7FC060-XL-S1               | 2,03              | <b>60</b>      | 125     | 33,5   | 26     | 37     | 181 000            | 200 000                      | 6 100                                    |
| 31313-XL-S1                 | 2,36              | <b>65</b>      | 140     | 33     | 23     | 36     | 193 000            | 188 000                      | 5 500                                    |
| T7FC070-XL-S1               | 2,63              | <b>70</b>      | 140     | 35,5   | 27     | 39     | 208 000            | 237 000                      | 5 300                                    |
| 31315-XL-S1                 | 3,46              | <b>75</b>      | 160     | 37     | 26     | 40     | 240 000            | 236 000                      | 4 850                                    |
| F-808708.32016-X-XL-S1-H144 | 1,28              | <b>80</b>      | 125     | 29     | 22     | 29     | 162 000            | 212 000                      | 6 000                                    |
| 33217-XL-S1                 | 3,6               | <b>85</b>      | 150     | 49     | 37     | 49     | 345 000            | 440 000                      | 4 950                                    |
| F-801627.32018-X-XL-S1      | 1,8               | <b>90</b>      | 140     | 30     | 24     | 32     | 195 000            | 255 000                      | 5 400                                    |
| F-801573.32218-XL-S1        | 3,48              | <b>90</b>      | 160     | 40     | 34     | 42,5   | 310 000            | 360 000                      | 4 800                                    |
| F-808858.32219-XL-S1        | 4,2               | <b>95</b>      | 170     | 43     | 37     | 45,5   | 355 000            | 420 000                      | 4 500                                    |
| F-809631.TR1-H144           | 3,75              | <b>100</b>     | 180     | 34     | 29     | 37     | 250 000            | 325 000                      | 4 000                                    |
| 32021-X-XL-S1               | 2,45              | <b>105</b>     | 160     | 35     | 26     | 35     | 238 000            | 330 000                      | 4 650                                    |
| F-804120.32026-X-XL-S1      | 4,92              | <b>130</b>     | 200     | 45     | 34     | 45     | 385 000            | 550 000                      | 3 650                                    |
| 32028-X-XL-S1               | 5,4               | <b>140</b>     | 210     | 45     | 34     | 45     | 400 000            | 590 000                      | 3 450                                    |
| F-804622.TR1                | 2,28              | <b>146,05</b>  | 193,675 | 28,575 | 23,02  | 28,575 | 162 000            | 310 000                      | 3 500                                    |
| F-809012.TR1                | 3,68              | <b>152,4</b>   | 203,2   | 41,275 | 34,925 | 41,275 | 255 000            | 540 000                      | 3 200                                    |
| F-801093.TR1-H144           | 2,89              | <b>177,8</b>   | 227,012 | 30,162 | 23,02  | 30,162 | 187 000            | 395 000                      | 2 950                                    |
| Z-579007.TR1-H144           | 6,4               | <b>180</b>     | 250     | 45     | 34     | 45     | 340 000            | 650 000                      | 2 600                                    |
| F-804680.TR1                | 3,48              | <b>184,15</b>  | 235,229 | 33     | 28     | 34     | 234 000            | 485 000                      | 2 800                                    |
| F-808438.TR1                | 6,9               | <b>190</b>     | 260     | 44     | 35     | 46     | 405 000            | 680 000                      | 2 750                                    |
| F-801427.01.TR1-H144        | 4,1               | <b>195</b>     | 250     | 33     | 28     | 34     | 243 000            | 520 000                      | 2 650                                    |
| F-801019.TR1-H144           | 5,3               | <b>196,85</b>  | 257,175 | 39,688 | 30,163 | 39,688 | 260 000            | 590 000                      | 2 550                                    |
| F-801094.TR1-H144           | 3,55              | <b>196,85</b>  | 254     | 27,783 | 21,433 | 28,575 | 201 000            | 400 000                      | 2 700                                    |
| F-809830.01.TR1             | 9,3               | <b>199,949</b> | 282,575 | 49,212 | 36,512 | 46,038 | 380 000            | 680 000                      | 2 700                                    |

# Tapered roller bearings

Standard

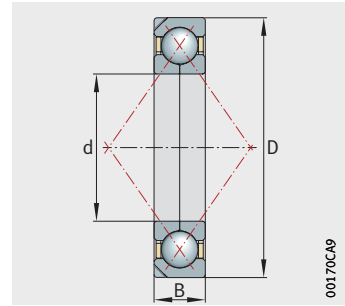


Dimensions

| Dimension table (continued) · Dimensions in mm |                   |                |         |        |        |        |                    |                              |  |
|--|-------------------|----------------|---------|--------|--------|--------|--------------------|------------------------------|--|
| Designation                                    | Mass<br>m<br>≈ kg | Dimensions     |         |        |        |        | Basic load ratings |                              | Limiting speed<br>n<br>min <sup>-1</sup> |
|  |                   | d              | D       | B      | C      | T      | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| Z-548100.01.TR1-H144                           | 7,4               | <b>200,025</b> | 276,225 | 46,038 | 34,133 | 42,862 | 340 000            | 620 000                      | 2 420                                    |
| Z-548101.01.TR1-H144                           | 7                 | <b>203,987</b> | 276,225 | 46,038 | 34,133 | 42,862 | 340 000            | 620 000                      | 2 420                                    |
| Z-573160.TR1-H144                              | 7,3               | <b>210</b>     | 285     | 40     | 33     | 41     | 365 000            | 730 000                      | 2 310                                    |
| F-804989.TR1                                   | 6,9               | <b>213</b>     | 285     | 40     | 33     | 41     | 365 000            | 730 000                      | 2 310                                    |
| F-801860.TR1-H144                              | 5,4               | <b>215,9</b>   | 290,01  | 31,75  | 22,225 | 31,75  | 178 000            | 360 000                      | 2 450                                    |
| Z-576050.TR1-H144                              | 7,8               | <b>215,9</b>   | 285,75  | 46,038 | 34,925 | 46,038 | 360 000            | 790 000                      | 2 240                                    |
| Z-578695.01.TR1                                | 7,9               | <b>216,408</b> | 285,75  | 49,213 | 34,925 | 46,038 | 360 000            | 790 000                      | 2 240                                    |
| F-562964.TR1                                   | 6,6               | <b>216,5</b>   | 285     | 40     | 33     | 41     | 365 000            | 730 000                      | 2 310                                    |
| Z-563839.TR1-H144                              | 6,2               | <b>220</b>     | 285     | 40     | 33     | 41     | 365 000            | 730 000                      | 2 310                                    |
| F-801813.TR1                                   | 9,5               | <b>223,175</b> | 300     | 48     | 38     | 50     | 410 000            | 890 000                      | 2 170                                    |
| F-807285.TR1-H144                              | 5,5               | <b>231,775</b> | 300,038 | 31,75  | 23,813 | 33,338 | 238 000            | 480 000                      | 2 320                                    |
| F-808788.TR1                                   | 10,8              | <b>231,775</b> | 317,5   | 52,388 | 36,512 | 47,625 | 455 000            | 830 000                      | 2 090                                    |
| Z-562497.TR1-H144                              | 8,2               | <b>240</b>     | 320     | 39     | 30     | 42     | 380 000            | 670 000                      | 2 070                                    |
| Z-547734.TR1                                   | 15                | <b>255,6</b>   | 342,9   | 63,5   | 44,45  | 57,15  | 500 000            | 1 150 000                    | 1 870                                    |
| Z-547734.01.TR1                                | 15,3              | <b>255,6</b>   | 342,9   | 63,5   | 44,45  | 57,15  | 460 000            | 1 140 000                    | 1 870                                    |
| Z-547733.01.TR1                                | 20,7              | <b>257,175</b> | 358,775 | 76,2   | 53,975 | 71,438 | 660 000            | 1 370 000                    | 1 800                                    |
| Z-547733.TR1                                   | 20,7              | <b>257,175</b> | 358,775 | 76,2   | 53,975 | 71,438 | 720 000            | 1 370 000                    | 1 800                                    |
| F-801861.TR1                                   | 5,3               | <b>266,56</b>  | 325,438 | 33,47  | 25,48  | 29,5   | 206 000            | 470 000                      | 2 130                                    |
| Z-517132.TR1-H144                              | 12,3              | <b>292,1</b>   | 374,65  | 47,625 | 34,925 | 47,625 | 490 000            | 1 080 000                    | 1 740                                    |

# Four point contact bearings

Standard



Dimensions

00170CA9

Dimension table · Dimensions in mm

| Designation                   | Mass<br>m<br>≈ kg | Dimensions |     |      | Basic load ratings |                              | Limiting speed<br>n<br>min <sup>-1</sup> |
|-------------------------------|-------------------|------------|-----|------|--------------------|------------------------------|--|
|                               |                   | d          | D   | B    | dyn.<br>C<br>N     | stat.<br>C <sub>0</sub><br>N |  |
| <b>QJ211-XL-N2-MPA-F59-C4</b> | 0,75              | <b>55</b>  | 100 | 21   | 77 000             | 71 000                       | 12 400                                   |
| <b>QJ212-XL-N2-MPA-F59-C4</b> | 0,945             | <b>60</b>  | 110 | 22   | 94 000             | 87 000                       | 11 200                                   |
| <b>QJ213-XL-N2-MPA-F59-C4</b> | 1,2               | <b>65</b>  | 120 | 23   | 106 000            | 104 000                      | 10 300                                   |
| <b>F-572543.KLQ</b>           | 1,41              | <b>70</b>  | 125 | 25   | 100 000            | 106 000                      | 9 000                                    |
| <b>QJ214-XL-N2-MPA-F59-C4</b> | 1,3               | <b>70</b>  | 125 | 24   | 118 000            | 114 000                      | 9 700                                    |
| <b>F-612995.KLQ</b>           | 4                 | <b>75</b>  | 170 | 35,2 | 128 000            | 130 000                      | 6 200                                    |
| <b>QJ215-XL-N2-MPA-F59-C4</b> | 1,45              | <b>75</b>  | 130 | 25   | 123 000            | 122 000                      | 9 200                                    |
| <b>QJ216-XL-N2-MPA-F59-C4</b> | 1,78              | <b>80</b>  | 140 | 26   | 136 000            | 137 000                      | 8 600                                    |
| <b>F-801297.01.KLQ</b>        | 2,3               | <b>85</b>  | 149 | 28   | 153 000            | 160 000                      | 8 000                                    |
| <b>QJ217-XL-N2-MPA-T42F</b>   | 2,31              | <b>85</b>  | 150 | 28   | 158 000            | 160 000                      | 8 000                                    |
| <b>QJ218-XL-N2-MPA-F59-C4</b> | 2,8               | <b>90</b>  | 160 | 30   | 181 000            | 185 000                      | 7 400                                    |
| <b>QJ219-N2-MPA-F59-C4</b>    | 3,41              | <b>95</b>  | 170 | 32   | 190 000            | 212 000                      | 7 000                                    |
| <b>QJ220-N2-MPA-F59-C4</b>    | 4,02              | <b>100</b> | 180 | 34   | 224 000            | 241 000                      | 6 600                                    |
| <b>QJ221-N2-MPA-F59-C4</b>    | 4,81              | <b>105</b> | 190 | 36   | 233 000            | 255 000                      | 6 200                                    |
| <b>QJ222-N2-MPA-F59-C4</b>    | 5,58              | <b>110</b> | 200 | 38   | 249 000            | 285 000                      | 5 900                                    |
| <b>QJ224-N2-MPA-F59-C4</b>    | 6,74              | <b>120</b> | 215 | 40   | 285 000            | 340 000                      | 5 400                                    |
| <b>QJ226-N2-MPA-F59-C4</b>    | 7,66              | <b>130</b> | 230 | 40   | 295 000            | 370 000                      | 5 100                                    |
| <b>QJ228-N2-MPA-F59-C4</b>    | 9,69              | <b>140</b> | 250 | 42   | 315 000            | 420 000                      | 4 700                                    |
| <b>QJ230-N2-MPA-A250-280</b>  | 12,2              | <b>150</b> | 270 | 45   | 350 000            | 485 000                      | 4 350                                    |
| <b>QJ1032-N2-MPA-F59-C4</b>   | 6,35              | <b>160</b> | 240 | 38   | 231 000            | 335 000                      | 4 750                                    |
| <b>QJ1034-N2-MPA-F59-C4</b>   | 8,68              | <b>170</b> | 260 | 42   | 295 000            | 430 000                      | 4 350                                    |



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