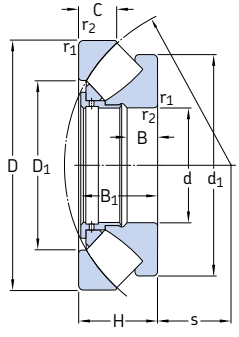
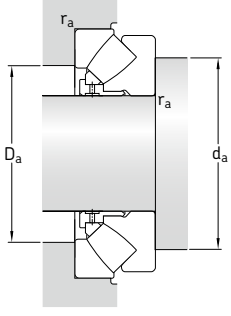
# 13.1 Spherical roller thrust bearings
d **600 – 1 600** mm




| Principal dimensions | | | Basic load ratings dynamic | static | Fatigue load limit | Minimum load factor | Speed ratings Reference speed | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|---|
| d | D | H | C | $C_0$ | $P_u$ | A | | | | |
| mm | | | kN | | kN | – | r/min | | kg | – |
| **600** | 800 | 122 | 3 740 | 18 600 | 1 460 | 33 | 450 | 700 | 170 | **292/600 EM** |
| | 1 030 | 258 | 13 100 | 56 000 | 4 000 | 300 | 280 | 530 | 845 | **294/600 EM** |
| **630** | 850 | 132 | 4 770 | 23 600 | 1 800 | 53 | 400 | 670 | 210 | **292/630 EM** |
| | 950 | 190 | 8 450 | 38 000 | 2 900 | 140 | 320 | 600 | 485 | **293/630 EM** |
| | 1 090 | 280 | 14 400 | 62 000 | 4 150 | 370 | 260 | 500 | 1 040 | **294/630 EM** |
| **670** | 900 | 140 | 4 200 | 22 800 | 1 660 | 49 | 380 | 630 | 255 | **292/670** |
| | 1 150 | 290 | 15 400 | 68 000 | 4 500 | 440 | 240 | 450 | 1 210 | **294/670 EM** |
| **710** | 1 060 | 212 | 9 950 | 45 500 | 3 400 | 200 | 280 | 500 | 610 | **293/710 EM** |
| | 1 220 | 308 | 17 600 | 76 500 | 5 000 | 560 | 220 | 430 | 1 500 | **294/710 EF** |
| **750** | 1 000 | 150 | 6 100 | 31 000 | 2 320 | 91 | 340 | 560 | 325 | **292/750 EM** |
| | 1 120 | 224 | 9 370 | 45 000 | 3 050 | 190 | 260 | 480 | 770 | **293/750** |
| | 1 280 | 315 | 18 700 | 85 000 | 5 500 | 690 | 200 | 400 | 1 650 | **294/750 EF** |
| **800** | 1 060 | 155 | 6 560 | 34 500 | 2 550 | 110 | 320 | 530 | 380 | **292/800 EM** |
| | 1 180 | 230 | 9 950 | 49 000 | 3 250 | 230 | 240 | 450 | 865 | **293/800** |
| | 1 360 | 335 | 20 200 | 93 000 | 5 850 | 820 | 190 | 360 | 2 030 | **294/800 EF** |
| **850** | 1 120 | 160 | 6 730 | 36 000 | 2 550 | 120 | 300 | 500 | 425 | **292/850 EM** |
| | 1 440 | 354 | 23 900 | 108 000 | 7 100 | 1 100 | 170 | 340 | 2 390 | **294/850 EF** |
| **900** | 1 180 | 170 | 7 820 | 42 500 | 3 000 | 170 | 280 | 450 | 475 | **292/900 EM** |
| | 1 520 | 372 | 26 700 | 122 000 | 7 200 | 1 400 | 160 | 300 | 2 650 | **294/900 EF** |
| **950** | 1 250 | 180 | 8 280 | 45 500 | 3 100 | 200 | 260 | 430 | 600 | **292/950 EM** |
| | 1 600 | 390 | 28 200 | 132 000 | 7 800 | 1 700 | 140 | 280 | 3 070 | **294/950 EF** |
| **1 000** | 1 670 | 402 | 31 100 | 140 000 | 8 650 | 1 900 | 130 | 260 | 3 390 | **294/1000 EF** |
| **1 060** | 1 400 | 206 | 10 500 | 58 500 | 3 750 | 330 | 220 | 360 | 860 | **292/1060 EF** |
| | 1 770 | 426 | 33 400 | 156 000 | 8 500 | 2 300 | 120 | 240 | 4 280 | **294/1060 EF** |
| **1 180** | 1 520 | 206 | 10 900 | 64 000 | 3 750 | 390 | 220 | 340 | 950 | **292/1180 EF** |
| **1 250** | 1 800 | 330 | 24 800 | 129 000 | 7 500 | 1 600 | 130 | 240 | 2 770 | **293/1250 EF** |
| **1 600** | 2 280 | 408 | 36 800 | 200 000 | 11 800 | 3 800 | 90 | 160 | 5 380 | **293/1600 EF** |




| Dimensions | | | | | | | | Abutment and fillet dimensions | | |
|---|---|---|---|---|---|---|---|---|---|---|
| d | $d_1$ ~ | $D_1$ ~ | B | $B_1$ | C | $r_{1,2}$ min. | s | $d_a$ min. | $D_a$ max. | $r_a$ max. |
| mm | | | | | | | | mm | | |
| **600** | 760 | 688 | 74 | 117 | 60 | 5 | 321 | 700 | 735 | 4 |
| | 940 | 769 | 170 | 249 | 128 | 12 | 349 | 815 | 900 | 10 |
| **630** | 810 | 723 | 85 | 127 | 62 | 6 | 338 | 740 | 780 | 5 |
| | 880 | 761 | 122 | 183 | 92 | 9,5 | 359 | 795 | 860 | 8 |
| | 995 | 815 | 181 | 270 | 137 | 12 | 365 | 860 | 950 | 10 |
| **670** | 880 | 773 | 84 | 135 | 73 | 6 | 361 | 790 | 825 | 5 |
| | 1 045 | 864 | 188 | 280 | 141 | 15 | 387 | 905 | 1 000 | 12 |
| **710** | 985 | 855 | 134 | 205 | 103 | 9,5 | 404 | 890 | 960 | 8 |
| | 1 110 | 917 | 199 | 298 | 149 | 15 | 415 | 965 | 1 070 | 12 |
| **750** | 950 | 858 | 93 | 144 | 74 | 6 | 409 | 880 | 925 | 5 |
| | 1 086 | 910 | 139 | 216 | 109 | 9,5 | 415 | 935 | 1 000 | 8 |
| | 1 170 | 964 | 207 | 305 | 153 | 15 | 436 | 1 015 | 1 120 | 12 |
| **800** | 1 010 | 911 | 97 | 149 | 77 | 7,5 | 434 | 935 | 980 | 6 |
| | 1 146 | 965 | 144 | 222 | 111 | 9,5 | 440 | 995 | 1 060 | 8 |
| | 1 250 | 1 034 | 213 | 324 | 165 | 15 | 462 | 1 080 | 1 185 | 12 |
| **850** | 1 060 | 967 | 95 | 154 | 82 | 7,5 | 455 | 980 | 1 030 | 6 |
| | 1 315 | 1 077 | 236 | 342 | 172 | 15 | 507 | 1 160 | 1 270 | 12 |
| **900** | 1 136 | 1 020 | 105 | 164 | 85 | 7,5 | 487 | 1 045 | 1 100 | 6 |
| | 1 394 | 1 137 | 247 | 360 | 186 | 15 | 518 | 1 215 | 1 320 | 12 |
| **950** | 1 185 | 1 081 | 111 | 174 | 88 | 7,5 | 507 | 1 095 | 1 155 | 6 |
| | 1 470 | 1 209 | 255 | 377 | 191 | 15 | 546 | 1 275 | 1 400 | 12 |
| **1 000** | 1 531 | 1 270 | 262 | 389 | 190 | 15 | 599 | 1 350 | 1 490 | 12 |
| **1 060** | 1 325 | 1 211 | 125 | 199 | 100 | 9,5 | 566 | 1 225 | 1 290 | 8 |
| | 1 615 | 1 349 | 274 | 412 | 207 | 15 | 610 | 1 410 | 1 555 | 12 |
| **1 180** | 1 450 | 1 331 | 125 | 199 | 101 | 9,5 | 625 | 1 345 | 1 410 | 8 |
| **1 250** | 1 685 | 1 474 | 213 | 319 | 161 | 12 | 698 | 1 540 | 1 640 | 10 |
| **1 600** | 2 130 | 1 885 | 259 | 395 | 195 | 19 | 894 | 1 955 | 2 090 | 15 |


SKF

# 14 Track runner bearings

# Designs and variants

Track runner bearings are designed to run on all types of tracks and to be used in cam drives, conveyor systems, etc. These bearings have a thick-walled outer ring, which enables them to accommodate high radial loads, while reducing distortion and bending stresses.

The outer ring running surface is crowned as standard. This is beneficial for applications where angular misalignment relative to the track may occur or where edge stresses need to be minimized. With the exception of single row cam rollers, track runner bearings are also available with a cylindrical (flat) outer ring running surface.

SKF supplies track runner bearings greased, sealed and ready to mount.

SKF supplies track runner bearings in many different types and designs, and for a wide variety of operating conditions and applications. The assortment comprises:

- cam rollers, internal design based on ball bearings
- support rollers, internal design based on needle or cylindrical roller bearings
- cam followers, internal design based on needle or cylindrical roller bearings

**More information**

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## Cam rollers

### Single row cam rollers

SKF single row cam rollers (→ **fig. 1**) are based on deep groove ball bearings in the 62 series. They are supplied greased and capped with a sheet steel reinforced NBR contact seal on both sides.

### Double row cam rollers

SKF double row cam rollers (→ **fig. 2**) are based on double row angular contact ball bearings in the 32 dimension series and have a 30° contact angle. They are supplied greased and capped with a sheet steel shield on both sides, which extends into a recess on the inner ring.

**Fig. 1**

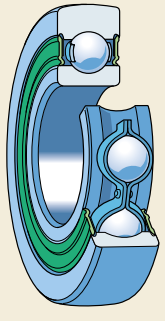
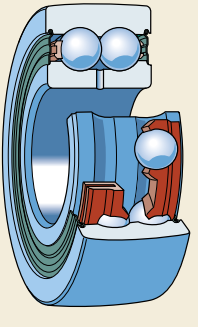


**Fig. 2**



## Support rollers

### Support rollers without flange rings

SKF support rollers without flange rings (→ **fig. 3**) are designed for applications where associated components limit axial movement of the outer ring. Based on needle roller bearings, these support rollers are available with or without an inner ring. Support rollers with an inner ring have an inner ring that is slightly wider than the outer ring to avoid axial clamping of the outer ring. Support rollers without an inner ring are intended for arrangements where the pin or shaft is hardened and ground.

#### STO and RSTO design support rollers

STO design support rollers have an inner ring, while RSTO design support rollers do not have an inner ring (→ **fig. 4**). Both designs are only available open (without seals). The components can be mounted separately, but the outer ring and the needle roller and cage assembly must always be kept together as supplied.

#### NA 22...2RS and RNA 22...2RS design support rollers

NA 22...2RS design support rollers have an inner ring, while RNA 22...2RS design support rollers do not have an inner ring (→ **fig. 5**). The needle roller and cage assembly is guided axially between two integral flanges in the outer ring to form a non-separable unit. The inner ring of NA 22...2RS design support rollers can be mounted separately from the outer ring, roller and cage assembly. Both designs are supplied greased and capped with a sheet steel reinforced NBR contact seal on both sides.

**Fig. 3**

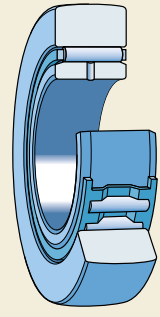


**Fig. 4**

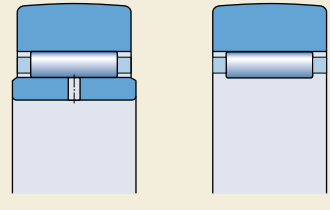
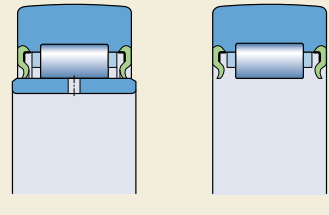



**Fig. 5**



### Support rollers with flange rings

Support rollers with flange rings are non-separable units, designed for applications where there are axial loads, but no lateral (axial) support surfaces (→ **fig. 6**). These axial loads, which are induced when shafts are not horizontal or aligned properly, are accommodated by the flange rings. Depending on the design of the support rollers, the flange rings are pressed-on (NATR and NATV designs) or loose (NUTR, PWTR and NNTR designs).

#### NATR and NATV design support rollers

NATR design support rollers are fitted with a needle roller and cage assembly, while NATV design support rollers have a full complement of needle rollers (→ **fig. 7**). The outer rings of both designs are guided axially by pressed-on flange rings. The narrow gap between the flange rings and the outer ring serves as a gap-type seal.

Both designs are also available with an axial sliding ring on both sides, identified by the designation suffix PPA (→ **fig. 8**). The axial sliding rings are made of PA66. In the radial direction, the sliding ring forms a narrow labyrinth seal with the outer ring, to protect against coarse contaminants. In the axial direction, the sliding ring serves as a contact seal to reliably retain grease in the bearing. This improves the lubrication conditions in the bearing, keeps friction and frictional heat low, and extends grease life.

Support rollers with axial sliding rings can accommodate somewhat heavier axial loads than those without axial sliding rings. Axial loads are induced when operating in an inclined or tilted position.

**Fig. 6**

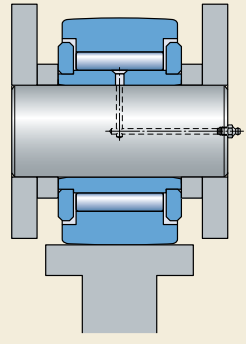


**Fig. 7**

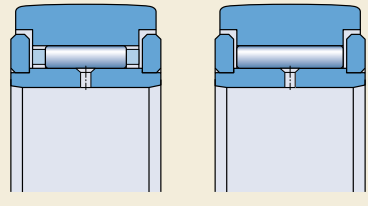
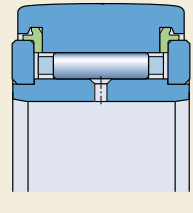



**Fig. 8**



**NUTR .. A design support rollers**

NUTR .. A design support rollers (→ **fig. 9**) are based on double row, full complement cylindrical roller bearings without an integral flange between the two roller sets. The outer ring has two integral flanges to guide the roller sets axially. A loose flange ring on both sides of the inner ring provides axial guidance for the outer ring via the roller sets. This enables NUTR .. A design support rollers to accommodate relatively heavy axial loads that are induced when operating in an inclined or tilted position.

A sheet metal angle ring is pressed into the outer ring shoulder on both sides and forms an effective labyrinth seal. The angle rings extend over the flange rings, making the bearing non-separable.

If heavy shock loads occur, support rollers with a reinforced outer ring should be used. These are identified by a bearing designation that has a four- or five-digit number instead of a two-digit number, e.g. NUTR 50110 A.

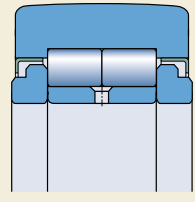
**PWTR ...2RS design support rollers**

PWTR ...2RS design support rollers (→ **fig. 10**) are based on double row, full complement cylindrical roller bearings. Three integral flanges in the outer ring guide the two roller sets axially. A loose flange ring on both sides of the inner ring provides axial guidance for the outer ring via the roller sets. This, together with the relatively large grease quantity between the two roller sets, enable PWTR ...2RS design support rollers to accommodate relatively heavy constant axial loads that are induced when operating in an inclined or tilted position.

PWTR ...2RS design support rollers are supplied with an NBR contact seal on both sides. The seals are integral with the sheet metal angle rings and press against the flange rings. The angle rings are pressed into the outer ring shoulder. They extend over the flange rings, making the bearing non-separable.

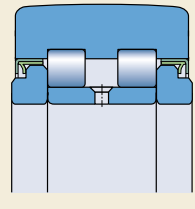
If heavy shock loads occur, support rollers with a reinforced outer ring should be used. These are identified by a bearing designation that has a four- or five-digit number instead of a two-digit number, e.g. PWTR 50110.2RS.

**Fig. 9**



NUTR .. A

**Fig. 10**



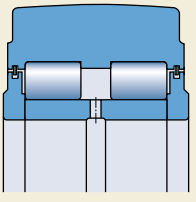
PWTR ...2RS

**NNTR ...2ZL design support rollers**

NNTR ...2ZL design support rollers (→ **fig. 11**) are based on double row, full complement cylindrical roller bearings. They are designed to accommodate very heavy radial loads. Three integral flanges in the outer ring axially guide the two roller sets. A loose flange ring on both sides of the inner ring provides axial guidance for the outer ring via the roller sets. This, together with the relatively large grease quantity between the two roller sets, enable NNTR ...2ZL design support rollers to accommodate relatively heavy constant axial loads that are induced when operating in an inclined or tilted position.

NNTR ...2ZL design support rollers are fitted with a lamellar seal on both sides. The seals are inserted into recesses in the shoulders of the flange rings and the outer ring, making the bearing non-separable.

Fig. 11



NNTR ...2ZL

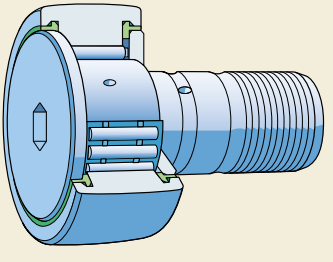
## Cam followers

Instead of an inner ring, cam followers have a solid stud (pin) that is threaded so that the cam follower can be quickly and easily attached to appropriate machine components by means of a hexagonal nut.

SKF cam followers are available in three basic designs:

- KR design
- NUKR design
- PWKR design

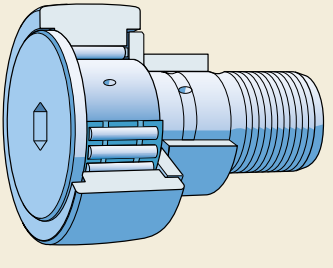
Fig. 12



All three cam follower designs have the same main dimensions. The differences are in their internal design, which make them suitable for various operating conditions. In contrast to ball and roller bearings, where the bearing size refers to the bore diameter d, for cam followers the size refers to their outside diameter D.

All designs are available with a concentric seat (→ **fig. 12**) or an eccentric collar (→ **fig. 13**) on the stud. An eccentric collar, which has a shrink-fit onto the stud, enables less stringent positioning tolerances to be specified for associated components. The values for the adjustable eccentricity are listed in the product tables. An eccentric collar is identified by the letter E at the end of the basic designation.

Fig. 13

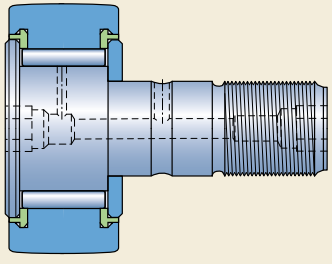


### KR design cam followers

KR design cam followers are fitted with a needle roller and cage assembly. They are also available with a full complement needle roller set (→ **fig. 14**), which is identified by the letter V at the end of the basic designation. The outer ring is axially guided by the pressed-on flange ring and the head of the stud, which also serves as an integral flange.

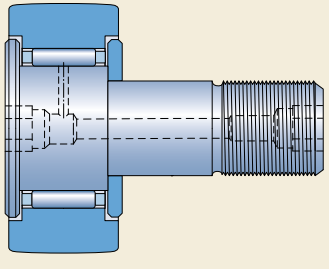
KR design cam followers without a designation suffix or with the designation suffix B (→ **fig. 15**) have a narrow gap between the outer ring and the two flanges that serves as a gap-type seal.

**Fig. 14**



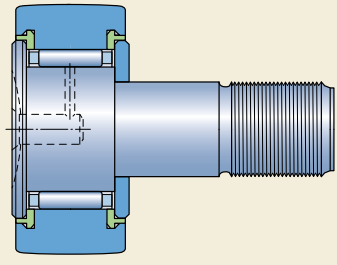
KRV .. PPA, size ≥ 30

**Fig. 15**

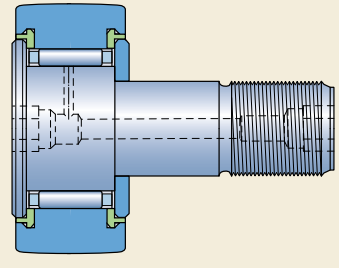


KR .. B, sizes 22 and 26

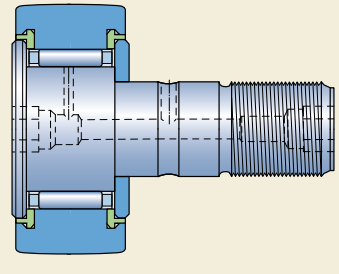
Fig. 16



KR .. PPA, sizes 16 and 19



KR .. PPA, sizes 22 and 26



KR .. PPA, size ≥ 30

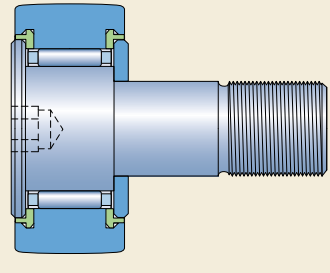
KR design cam followers are also available with an axial sliding ring made of PA66 on both sides, identified by the designation suffix PPA (→ **fig. 16**) or PPSKA (→ **fig. 17**). In the radial direction, the sliding ring forms a narrow labyrinth seal with the outer ring to protect against coarse contaminants. In the axial direction, the sliding ring serves as a contact seal to reliably retain grease in the bearing. This improves the lubrication conditions in the bearing, keeps friction and frictional heat low, and extends grease life.

Cam followers with axial sliding rings can accommodate somewhat heavier axial loads than those without axial sliding rings. Axial loads are induced when operating in an inclined or tilted position.

KR design cam followers, sizes 16 and 19, either without a designation suffix or with the designation suffix PPA have one slot in the head of the stud that enables the stud to be held in place by a screwdriver during mounting. In the centre of that slot is a relubrication hole for a press-in grease fitting or a plug if relubrication is not required (→ *Accessories*, **page 1109**). SKF also supplies these two sizes with a hexagonal recess in the head of the stud. They are fitted with an axial sliding ring on both sides and are identified by the designation suffix PPSKA (→ **fig. 17**).

KR design cam followers with the designation suffix B, sizes 22 and larger, have a hexagonal recess at each end of the stud (→ **fig. 15**, **page 1105**), enabling the cam follower to be held in place by a hexagonal key (Allen wrench)

Fig. 17



KR .. PPSKA

during mounting. In the centre of each hexagon is a relubrication hole for a press-in grease fitting, if needed. Sizes 35 and larger can accommodate adapters from a central lubrication system (→ *Accessories*, **page 1109**).

### NUKR .. A design cam followers

NUKR .. A design cam followers (→ **fig. 18**) are based on double row, full complement cylindrical roller bearings without an integral flange between the two roller sets. The stud head and pressed-on flange ring guide the outer ring axially via the roller sets. This enables NUKR .. A design cam followers to accommodate relatively heavy axial loads that are induced when operating in an inclined or tilted position.

A sheet metal angle ring is pressed into the outer ring shoulder on both sides to form an effective labyrinth seal.

NUKR .. A design cam followers have a hexagonal recess at each end of the stud, enabling the cam follower to be held in place by a hexagonal key (Allen wrench) during mounting. In the centre of each hexagon is a relubrication hole for a press-in grease fitting or an adapter from a central lubrication system (→ *Accessories*, **page 1109**).

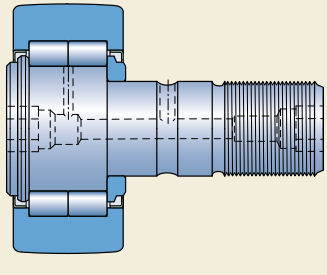
### PWKR ...2RS design cam followers

PWKR ...2RS design cam followers (→ **fig. 19**) are based on double row, full complement cylindrical roller bearings. The stud head and a pressed-on flange ring guide the outer ring axially via the roller sets. This enables PWKR ...2RS design cam followers to accommodate relatively heavy constant axial loads that are induced when operating in an inclined or tilted position.

PWKR ...2RS design cam followers are supplied with an NBR contact seal on both sides. The seals are integral with the sheet metal angle rings and press against the flange ring and the stud head. The angle rings are pressed into the outer ring shoulder.

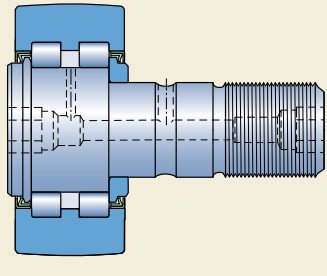
PWKR ...2RS design cam followers have a hexagonal recess at both ends of the stud, enabling the cam follower to be held in place by a hexagonal key (Allen wrench) during mounting. In the centre of each hexagon is a relubrication hole for a press-in grease fitting or an adapter from a central lubrication system (→ *Accessories*, **page 1109**).

**Fig. 18**



NUKR .. A

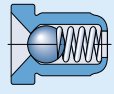
**Fig. 19**



PWKR ...2RS

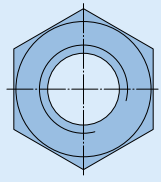
Table 1

**Accessories for cam followers**

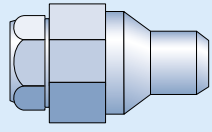


Grease fitting

Plug



Hexagonal nut

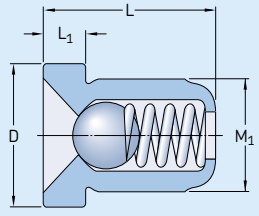


Adapter

| Cam follower Design | Size without seals | with seals | Supplied with the cam follower Grease fitting | Hexagonal nut | To be ordered separately Plug | Adapter |
|---|---|---|---|---|---|---|
| **KR** | | | | | | |
| **KRE** | | | | | | |
| **KRV** | | | | | | |
| | **16** | **16 PPA** | NIP A1 | M 6x1 | VD1 | – |
| | **–** | **16 PPSKA** | – | M 6x1 | – | – |
| | **19** | **19 PPA** | NIP A1 | M 8x1,25 | VD1 | – |
| | **–** | **19 PPSKA** | – | M 8x1,25 | – | – |
| | **22 B** | **22 PPA** | 2 x NIP A1x4,5 | M 10x1 | – | – |
| | **26 B** | **26 PPA** | 2 x NIP A1x4,5 | M 10x1 | – | – |
| | **30 B** | **30 PPA** | 2 x NIP A1x4,5 | M 12x1,5 | – | – |
| | **32 B** | **32 PPA** | 2 x NIP A1x4,5 | M 12x1,5 | – | – |
| | **35 B** | **35 PPA** | 2 x NIP A2x7,5 | M 16x1,5 | – | AP 8 |
| | **40 B** | **40 PPA** | 2 x NIP A2x7,5 | M 18x1,5 | – | AP 8 |
| | **–** | **47 PPA** | 2 x NIP A2x7,5 | M 20x1,5 | – | AP 10 |
| | **–** | **52 PPA** | 2 x NIP A2x7,5 | M 20x1,5 | – | AP 10 |
| | **–** | **62 PPA** | 2 x NIP A3x9,5 | M 24x1,5 | – | AP 14 |
| | **–** | **72 PPA** | 2 x NIP A3x9,5 | M 24x1,5 | – | AP 14 |
| | **–** | **80 PPA** | 2 x NIP A3x9,5 | M 30x1,5 | – | AP 14 |
| | **–** | **90 PPA** | 2 x NIP A3x9,5 | M 30x1,5 | – | AP 14 |
| **NUKR .. A** | | | | | | |
| **NUKRE .. A** | | | | | | |
| **PWKR ...2RS** | | | | | | |
| **PWKRE ...2RS** | | | | | | |
| | **–** | **35** | 2 x NIP A2x7,5 | M 16x1,5 | – | AP 8 |
| | **–** | **40** | 2 x NIP A2x7,5 | M 18x1,5 | – | AP 8 |
| | **–** | **47** | 2 x NIP A2x7,5 | M 20x1,5 | – | AP 10 |
| | **–** | **52** | 2 x NIP A2x7,5 | M 20x1,5 | – | AP 10 |
| | **–** | **62** | 2 x NIP A3x9,5 | M 24x1,5 | – | AP 14 |
| | **–** | **72** | 2 x NIP A3x9,5 | M 24x1,5 | – | AP 14 |
| | **–** | **80** | 2 x NIP A3x9,5 | M 30x1,5 | – | AP 14 |
| | **–** | **90** | 2 x NIP A3x9,5 | M 30x1,5 | – | AP 14 |

Table 2

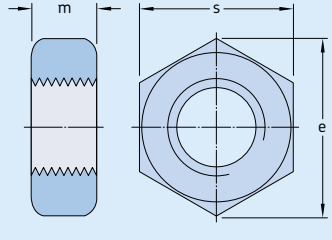
**Grease fittings**




| Designation | Dimensions $M_1$ | D | L | $L_1$ |
|---|---|---|---|---|
| – | mm | | | |
| **NIP A1** | 4 | 6 | 6 | 1,5 |
| **NIP A1x4,5** | 4 | 4,7 | 4,5 | 1 |
| **NIP A2x7,5** | 6 | 7,5 | 7,5 | 2 |
| **NIP A3x9,5** | 8 | 10 | 9,5 | 3 |

Table 3

**Hexagonal nuts**




| Size | Dimensions m | e | s | Tightening torque | Standard[1)] |
|---|---|---|---|---|---|
| – | mm | | | Nm | – |
| **M 6x1** | 5,2 | 11 | 10 | 3 | 1 |
| **M 8x1,25** | 6,8 | 14,4 | 13 | 8 | 1 |
| **M 10x1** | 8,4 | 17,8 | 16 | 15 | 2 |
| **M 12x1,5** | 10,8 | 20 | 18 | 22 | 2 |
| **M 16x1,5** | 14,8 | 26,8 | 24 | 58 | 2 |
| **M 18x1,5** | 15,8 | 29,6 | 27 | 87 | 2 |
| **M 20x1,5** | 18 | 33 | 30 | 120 | 2 |
| **M 24x1,5** | 21,5 | 39,5 | 36 | 220 | 2 |
| **M 30x1,5** | 25,6 | 50,9 | 46 | 450 | 2 |

[1)] 1 = EN ISO 4032, ISO 4032
2 = EN ISO 8673, ISO 8673

## Accessories

Accessories provide SKF cam followers with reliable lubrication and location (→ **table 1**). Accessories, other than grease fittings and hexagonal nuts must be ordered separately.

### Grease fittings

SKF supplies the appropriate grease fittings, that can be pressed into position, with each cam follower as standard (→ **table 1**). These are the only grease fittings that should be used. Dimensions are listed in **table 2**.

For KR design cam followers, sizes 16 and 19, the head of the grease fitting protrudes from the head end of the stud by 1,5 mm.

### Hexagonal nuts

SKF supplies the appropriate hexagonal nuts with each cam follower as standard (→ **table 1**). They are in accordance with ISO 4032 or ISO 8673. These 8.8 strength class nuts are zinc galvanized to ISO 4042. Dimensions and recommended tightening torques are listed in **table 3**.

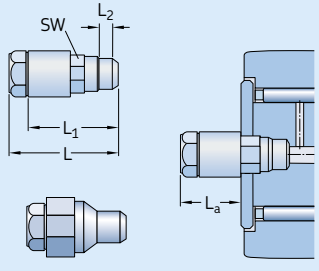
### Plugs

The end of the relubrication hole in the stud of KR design cam followers, sizes 16 and 19, except those with the designation suffix PPSKA, can be plugged if relubrication is not required or if there is no space for the head of the grease fitting. Appropriate plugs (→ **table 1**) with a VD1 designation must be ordered separately.

Table 4

**Dimensions of adapters for connecting to a centralized lubrication system**

AP 8 and AP 10




AP 14

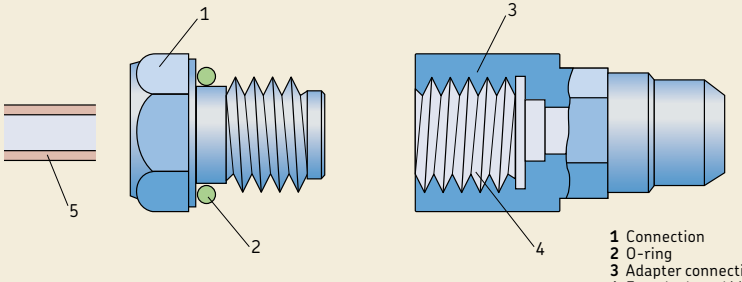
| Designation | Dimensions | | | | |
|---|---|---|---|---|---|
| | L | $L_1$ | $L_2$ | $L_a$ | SW |
| – | mm | | | | |
| **AP 8** | 27 | 22 | 4 | 16 | 8 |
| **AP 10** | 27 | 22 | 5 | 15 | 10 |
| **AP 14** | 25 | 20 | 6 | 8 | 14 |

### Adapters for connecting to a centralized lubrication system

AP design adapters enable cam followers to be relubricated via a centralized lubrication system. These adapters have a connection that accommodates, for example, 4 × 0,75 polyamide tubing in accordance with DIN 73378 (→ **fig. 20**). Appropriate adapters are listed in **table 1** (→ **page 1108**), the dimensions are listed in **table 4**.

Fig. 20

**Adapter for connection to a centralized lubrication system**




**1** Connection
**2** O-ring
**3** Adapter connection
**4** Female thread M 10×1
**5** Polyamide tube

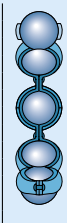
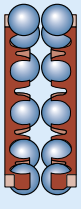
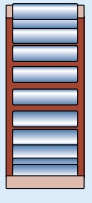
## Cages

Depending on their design and series, SKF track runner bearings are fitted with one of the cages shown in **table 5**. Double row cam rollers are equipped with two cages. The standard cage is not identified in the bearing designation.

The lubricants generally used for rolling bearings do not have a detrimental effect on cage properties. However, some synthetic oils and greases with a synthetic oil base and lubricants containing a high proportion of EP additives, when used at high temperatures, can have a detrimental effect on polyamide cages. For information about the suitability of cages, refer to *Cages* (→ **page 37**) and *Cage materials* (→ **page 152**).

**Table 5**

**Cages for track runner bearings**

| | Single row cam rollers | | Double row cam rollers | Support rollers | | Cam followers |
|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| **Cage type** | Riveted, ball centred | Ribbon-type, ball centred | Snap-type, ball centred | Window-type, centring depends on size and design | Window-type, outer raceway centred | Window-type, roller centred |
| **Material** | Stamped steel | Stamped steel | PA66, glass fibre reinforced | Sheet steel | PA66, glass fibre reinforced | Sheet steel |
| **Suffix** | – | – | – | – | TN | – |

## Lubrication

SKF track runner bearings are supplied greased. They are filled with the appropriate amount of a high-quality grease under clean conditions. The technical specifications of the greases are listed in **table 6**.

(R)STO design support rollers can be oil or grease lubricated. In applications where oil is used, SKF recommends thoroughly washing the initial grease fill from the bearing prior to operation.

### Relubrication requirements

Single row cam rollers are greased for the life of the bearing and cannot be relubricated.

Double row cam rollers are also greased for the life of the bearing under normal operating conditions. If subjected to moisture or solid contaminants, or if they run for long periods at temperatures above 70 °C *(160 °F)*, they should be relubricated. When relubricating double row cam rollers, the grease should be applied slowly to avoid damaging the shields.

Support rollers and cam followers require little maintenance, but they should be relubricated regularly to achieve their full service life. SKF recommends relubrication while the initial grease fill still has its full lubricating properties. Support rollers and cam followers used in applications where there are light loads, relatively slow speeds and clean surroundings, can operate for long periods before relubrication is required. Support rollers and cam followers that operate under contaminated and damp conditions at high speeds or at temperatures above 70 °C *(160 °F)* require more frequent relubrication. Full complement support rollers or cam followers require more frequent relubrication.

KR design cam followers, sizes 16 and 19, designation suffix PPSKA, cannot be relubricated.

**Table 6**

**Technical specifications of SKF greases for track runner bearings**

| Bearing type | Specifications for the initial grease fill Temperature range[1)] | Thickener | Base oil type | NLGI consistency class | Base oil viscosity [mm²/s] at 40 °C *(105 °F)* | at 100 °C *(210 °F)* | Grease for relubrication |
|---|---|---|---|---|---|---|---|
| **Single row cam roller (D ≤ 62 mm)** |  | Lithium soap | Mineral | 2 | 70 | 7,3 | – |
| **Single row cam roller (D > 62 mm), Double row cam roller** |  | Lithuim soap | Mineral | 3 | 100 | 10 | –<br>LGMT 3 |
| **Support roller, Cam follower** |  | Lithium complex soap | Mineral | 2 | 160 | 15,5 | LGWA 2 |



[1)] Refer to the SKF traffic light concept → **page 244**

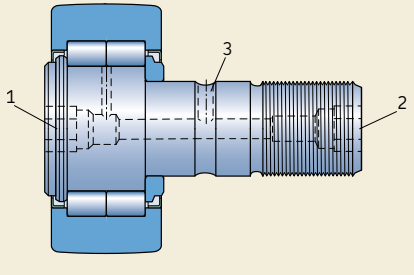
**Relubrication facilities**

SKF supplies all inner rings for support rollers and double row cam rollers with one lubrication hole, except for inner rings of the NNTR design support rollers, which have three lubrication holes when d ≤ 90 mm or six lubrication holes when d ≥ 100 mm. If suitable ducts are provided in the pin, the bearings are easy to relubricate.

Cam followers can be relubricated via ducts in the stud. Depending on series and size, there are up to three positions for relubrication (→ **fig. 21**). Detailed information about the positions can be obtained from the product tables (→ **page 1140**). Positions 1 and 2 can take the grease fitting supplied with the cam follower. Position 3 should be used when relubricating via ducts in the adjacent components. Positions not used for relubrication should be closed with a grease fitting or a plug.

For cam followers, size ≥ 35, positions 1 and 2 can be connected to a central lubrication system (→ *Accessories*, **page 1109**).

**Fig. 21**



## Bearing data

| | Single row cam rollers | Double row cam rollers |
|---|---|---|
| **Dimension standards** | ISO 15, dimension series 02, except for the outside diameter | ISO 15, dimension series 32, except for the outside diameter |
| **Profile of the outer ring running surface** | Radius = 400 mm | **3057.. C design**<br>Cylindrical (flat)<br>**3058.. C design**<br>Radius = 400 mm |
| **Tolerances**<br><br>For additional information (→ **page 132**) | Normal, except:<br>• diameter of the crowned running surface: twice the Normal tolerance | |
| | Values for Normal tolerance class: ISO 492 (→ **table 3**, **page 137**).<br>Values for ISO tolerance classes h7, h9, h10, ... | |
| **Internal clearance** | C3 | Normal |
| For additional information (→ **page 149**) | Values: ISO 5753-1 (→ **table 6**, **page 314**) | Values 32 A series: (→ **table 7**, **page 489**) |
| | Values are valid for unmounted bearings under zero ... | |
| **Defect frequencies** | Defect frequencies can be calculated using the tools available ... | |

| | Support rollers | Cam followers |
|---|---|---|
| | **(R)NA 22 designs**<br>ISO 15, dimension series 22,<br>except for the outer ring width<br>**NATR, NATV, NUTR .. A, PWTR designs**<br>ISO 7063 and ANSI/ABMA Standard 18.1<br>(where standardized)<br>**(R)STO designs**<br>Not standardized | ISO 7063 and<br>ANSI/ABMA Standard 18.1<br>(where standardized) |
| | **(R)STO, (R)NA 22, NATR, NATV designs**<br>Radius = 500 mm<br>**NNTR design**<br>D ≤ 260 mm → Radius = 10 000 mm<br>D ≥ 290 mm → Radius = 15 000 mm<br>**NATR .. PPA, NATV .. PPA, NUTR .. A, PWTR designs**<br>Improved crowned profile for better load distribution, higher stiffness and reduced wear | **KR .. (B) design**<br>Radius = 500 mm<br>**Other designs**<br>Improved crowned profile for better load distribution, higher stiffness and reduced wear |
| | Normal, except:<br>• diameter of the crowned running surface, NNTR design: h10<br>• diameter of the crowned running surface, other designs: 0/–0,05 mm<br>• width B, NNTR design: 0/–0,5 mm<br>• width B, NATR, NATV, NUTR .. A, PWTR designs: h12<br>• inside diameter $F_w$, RSTO, RNA 22 designs: F6 | Normal, except:<br>• KR, KRE, KRV designs: ISO 7063<br>• diameter of the crowned running surface: 0/–0,05 mm<br>• stud shank diameter: h7<br>• eccentric collar diameter: h9 |
| | … h12 and F6: (→ **table 7**, **page 1118**) | |
| | **STO and NA 22 designs**<br>Normal<br>**Other designs**<br>Between C2 and Normal | Between C2 and Normal |
| | Values: ISO 5753-1 (→ **table 13**, **page 710**) | |
| | … measuring load. | |
| | … online at skf.com/bearingcalculator. | |

## Loads

| | Single row cam rollers | Double row cam rollers | Support rollers |
|---|---|---|---|
| **Dynamic loads** | Compared to a typical rolling bearing, where the outer ring is fully supported in a housing, a track runner bearing has only a small contact area between its outside surface and the track. The actual contact area depends on the applied radial load and the profile of the runner surface. Deformation of the outer ring, caused by this limited contact, alters the load distribution in the bearing, which affects load carrying ability. The basic load ratings listed in the product tables take this into account. ... | | |
| **Static loads** | The permissible static load for a track runner bearing is determined by the smaller of the values $F_{0r\,max}$ and $C_0$ (→ **product tables**). If requirements for smooth running are below normal, the static load may exceed $C_0$, ... | | |
| **Axial loads** | Cam rollers are intended for predominantly radial loads. If an axial load acts on the outer ring, as when the cam roller runs against a guide flange, it produces a tilting moment and the service life of the cam roller may be reduced as a consequence. | | Support rollers with flange rings can generally accommodate axial loads that are induced when operating in an inclined or tilted position. The magnitude of permissible load depends on the internal design. |
| **Minimum load**<br><br>For additional information (→ **page 86**) | $F_{rm} = 0{,}0167\ C_0$<br><br>The weight of the components supported by the bearing, together with external forces, generally exceed the requisite minimum load. If this ... | | |
| **Equivalent dynamic bearing load**<br><br>For additional information (→ **page 85**) | $F_a/F_r \leq e$<br>→ $P = F_r$<br><br>$F_a/F_r > e$<br>→ $P = 0{,}46\ F_r + Y\ F_a$ | $F_a/F_r \leq 0{,}8$<br>→ $P = F_r + 0{,}78\ F_a$<br><br>$F_a/F_r > 0{,}8$<br>→ $P = 0{,}63\ F_r + 1{,}24\ F_a$ | $P = F_r$ |
| **Equivalent static bearing load**<br><br>For additional information (→ **page 88**) | $P_0 = 0{,}6\ F_r + 0{,}5\ F_a$<br><br>$P_0 < F_r$ → $P_0 = F_r$ | $P_0 = F_r + 0{,}66\ F_a$ | $P_0 = F_r$ |

| | Cam followers |
|---|---|
| | ... The ability to accommodate dynamic loads depends on the requisite life, but it is also important to consider the strength of the outer ring. Therefore, the value of the maximum permissible dynamic radial load $F_{r\,max}$ (→ **product tables**) should not be exceeded. |
| | ... but should never exceed the maximum permissible static radial load $F_{0r\,max}$. |
| | The flange rings enable cam followers to accommodate axial loads that are induced when operating in an inclined or tilted position. The magnitude of permissible load depends on the internal design. |
| | ... is not the case, the bearing must be subjected to an additional radial load. |
| | $P = F_r$ |
| | $P_0 = F_r$ |

**Symbols**

$C_0$ = basic static load rating [kN] (→ **product tables**)
e = limit for the load ratio depending on the relationship $f_0\,F_a/C_0$ (→ **table 8**, **page 1118**)
$f_0$ = calculation factor (→ **product table**)
$F_a$ = axial load [kN]
$F_r$ = radial load [kN]
$F_{rm}$ = minimum radial load [kN]
$F_{r\,max}$ = maximum permissible dynamic radial load [kN] (→ **product tables**)
$F_{0r\,max}$ = maximum permissible static radial load [kN] (→ **product tables**)
P = equivalent dynamic bearing load [kN]
$P_0$ = equivalent static bearing load [kN]
Y = calculation factor for the axial load, depending on the relationship $f_0\,F_a/C_0$ (→ **table 8**, **page 1118**)

Table 7

**ISO tolerance classes**

| Nominal dimension over | incl. | h7Ⓔ Deviations high | low | h9Ⓔ Deviations high | low | h10Ⓔ Deviations high | low | h12Ⓔ Deviations high | low | F6Ⓔ Deviations high | low |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | | µm | | µm | | µm | | µm | | µm | |
| **3** | **6** | 0 | –12 | – | – | – | – | – | – | – | – |
| **6** | **10** | 0 | –15 | 0 | –36 | – | – | – | – | +22 | +13 |
| **10** | **18** | 0 | –18 | 0 | –43 | – | – | 0 | –180 | +27 | +16 |
| **18** | **30** | 0 | –21 | 0 | –52 | – | – | 0 | –210 | +33 | +20 |
| **30** | **50** | – | – | 0 | –62 | – | – | 0 | –250 | +41 | +25 |
| **50** | **80** | – | – | – | – | – | – | – | – | +49 | +30 |
| **120** | **180** | – | – | – | – | 0 | –160 | – | – | – | – |
| **180** | **250** | – | – | – | – | 0 | –185 | – | – | – | – |
| **250** | **315** | – | – | – | – | 0 | –210 | – | – | – | – |

Table 8

**Calculation factors for single row cam rollers**

| $f_0 F_a/C_0$ | e | Y |
|---|---|---|
| **0,172** | 0,29 | 1,88 |
| **0,345** | 0,32 | 1,71 |
| **0,689** | 0,36 | 1,52 |
| **1,03** | 0,38 | 1,41 |
| **1,38** | 0,4 | 1,34 |
| **2,07** | 0,44 | 1,23 |
| **3,45** | 0,49 | 1,1 |
| **5,17** | 0,54 | 1,01 |
| **6,89** | 0,54 | 1 |

Intermediate values can be obtained by linear interpolation.

## Temperature limits

The permissible operating temperature for track runner bearings can be limited by:

- the dimensional stability of the bearing rings and rolling elements
- the cage
- the seals
- the lubricant

When temperatures outside the permissible range are expected, contact the SKF application engineering service.

#### Bearing rings and rolling elements

SKF track runner bearings undergo a special heat treatment. The bearings are heat stabilized up to at least:

- 120 °C *(250 °F)* for single row cam rollers
- 150 °C *(300 °F)* for double row cam rollers
- 140 °C *(280 °F)* for support rollers and cam followers

#### Cages

Steel cages can be used at the same operating temperatures as the bearing rings and rolling elements. For temperature limits of PA66 cages, refer to *Cage materials* (→ **page 152**).

#### Seals

The permissible operating temperature for seals depends on the material:

- NBR seals:
  –40 to +100 °C *(–40 to +210 °F)*
  Temperatures up to 120 °C *(250 °F)* can be tolerated for brief periods.
- PA66 sliding rings:
  –30 to +100 °C *(–20 to +210 °F)*

#### Lubricants

Temperature limits for greases used in SKF track runner bearings are provided in **table 6** (→ **page 1112**). Temperature limits for other SKF greases are provided under *Lubrication* (→ **page 239**)

When using lubricants not supplied by SKF, the temperature limits should be evaluated according to the SKF traffic light concept (→ **page 244**).

## Speed limits

Values for the limiting speeds are listed in the product tables. For additional information about the limiting speed, refer to *Speeds* (→ **page 117**).

# Design of associated components

## Pins

Cam rollers and support rollers generally operate under conditions of stationary inner ring load. For this type of load, and if easy displacement of the inner ring is required, the pin or shaft should be machined to tolerance class g6Ⓔ.

The recommended pin tolerance class for support rollers without an inner ring is k5Ⓔ. To exploit the full load carrying capacity of support rollers, the raceways on the pins should have the same hardness and surface finish normally found on bearing raceways. For additional information, refer to *Raceways on shafts and in housings* (→ **page 210**).

## Attachment holes for studs

The holes in the adjacent part of machinery to accommodate the stud or eccentric collar of a cam follower should be machined to tolerance class H7Ⓔ. If the requisite tightening torque for the hexagonal nut (→ **table 3**, **page 1109**) cannot be achieved or the cam followers are subjected to shock loads, the stud or eccentric collar should be mounted with an interference fit. The lead-in chamfer of the holes should be ≤ 0,5 × 45°.

## Support surfaces

### Cam rollers

Cam rollers that must accommodate heavy axial loads should be supported over the entire inner ring side face (→ **fig. 22**). The support surface should be dimensioned according to diameter $d_1$ (→ **product tables**).

### Support rollers

The outer ring support surfaces of support rollers without flange rings must be fine turned, free of burrs and clean. Unhardened surfaces should extend to at least half the outer ring side face (→ **fig. 23**) while hardened surfaces may be smaller.

Heavily loaded support rollers with flange rings should be axially supported over the entire flange ring side faces (→ **fig. 24**). The support surface should be dimensioned according to diameter $d_1$ (→ **product tables**).

### Cam followers

The flange ring that is pressed onto the stud shank should be supported axially over its entire side face (→ **fig. 25**). The support surface should be dimensioned according to diameter $d_1$ (→ **product tables**). The strength of the material should be sufficiently high to accommodate the tightening torque.

Fig. 22

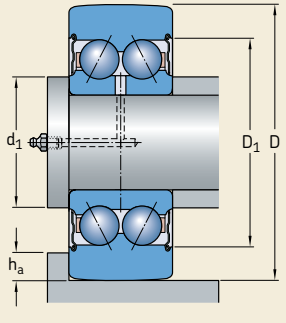
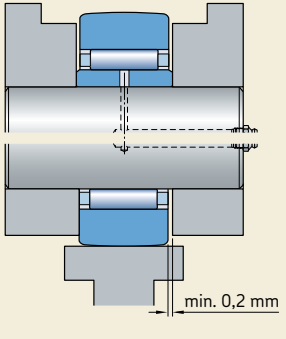



Fig. 23



## Guide flanges for cam rollers

For rails or cams with guide flanges, the recommended flange height $h_a$ (→ **fig. 22**) should be:

$h_a \leq 0{,}5\ (D - D_1)$

This helps to avoid damage to the seals or shields fitted in the outer ring. The values for the outer ring diameters D and $D_1$ are listed in the product tables.

## Axial gap

Support rollers without flange rings, but with an inner ring, and support rollers with flange rings must be located without any axial gap (→ **fig. 24**).

Support rollers without an inner ring must have an axial gap ≥ 0,2 mm between the outer ring and support surface (→ **fig. 23**).

**Fig. 24**

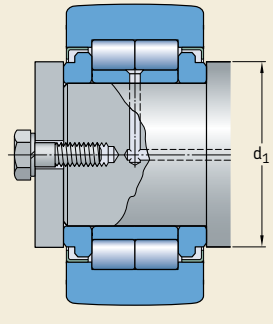
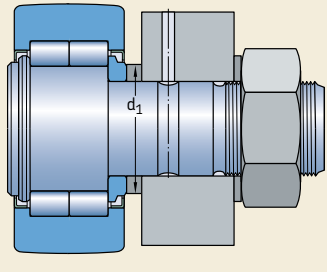



**Fig. 25**



# Mounting

## Support rollers

SKF recommends positioning the lubrication hole in the unloaded zone of the support roller inner ring, except for PWTR and NNTR design support rollers, which have the lubrication holes in the empty space between the two roller sets.

When mounting the outer ring assembly and inner ring separately, care must be taken not to damage the seal lips.

## Cam followers

Cam followers can be attached to associated components (→ **fig. 25**, **page 1121**) using the hexagonal nut (→ **table 3**, **page 1109**) supplied together with the cam follower. Spring washers, which are not supplied by SKF, can be used to secure the nuts.

The nuts should be tightened to the recommended torque values listed in **table 3** (→ **page 1109**). The recommended tightening torques enable the full load carrying capacity of the cam follower to be exploited. If heavy vibrations occur, the cam followers can be located using self-locking nuts in accordance with ISO 10511 or special lock washers.

For self-locking nuts, a higher tightening torque must be applied. Follow the recommendations of the nut manufacturer.

Most cam followers (all for sizes ≥ 22) have a hexagonal recess in the stud head and can be held in place by a hexagonal key (Allen wrench) while the nut is being tightened. Some cam follower designs of the small sizes 16 and 19 have a slot in the stud head instead, and can be held in place by a screwdriver. For additional information, refer to the illustrations in the product tables (→ **page 1140**).

Depending on the mounting conditions, cam followers with an eccentric collar can be adjusted to the required eccentricity via the slot or the hexagonal recess.

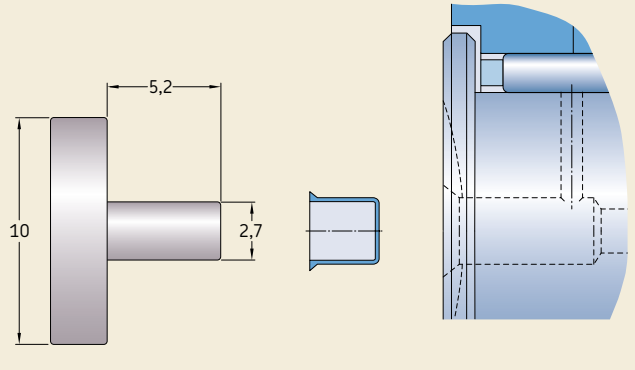
Do not hit the head of the stud as damage to the cam follower may result.

SKF recommends positioning the lubrication hole in the stud head in the unloaded zone of the cam follower. The position of this hole corresponds to the marking on the head end of the stud.

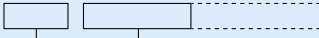
The lubrication hole in position 3 (→ **fig. 21**, **page 1113**) may be used to incorporate a locking device to prevent the stud from turning.

When inserting a plug, it should be pressed into place using a mandrel (→ **fig. 26**).

Fig. 26



# Designation system

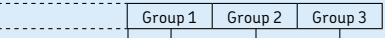


**Prefixes**

| | |
|---|---|
| **R** | Support roller without an inner ring |

**Basic designation**

| | |
|---|---|
| **3612.. R** | Single row cam roller with an NBR contact seal on both sides. |
| **3057.. C** | Double row cam roller with a cylindrical (flat) outer ring running surface. |
| **3058.. C** | Double row cam roller with a crowned outer ring running surface. |
| **NA 22** | Support roller without a flange ring, fitted with a needle roller and cage assembly. |
| **STO** | Support roller without a flange ring, fitted with a needle roller and cage assembly. |
| **NATR** | Support roller with two pressed-on flange rings, fitted with a needle roller and cage assembly. |
| **NATV** | Support roller with two pressed-on flange rings, fitted with a full complement of needle rollers. |
| **NUTR** | Support roller based on a double row, full complement cylindrical roller bearing with two integral outer ring flanges and a loose flange ring on both sides of the inner ring. |
| **NNTR** | Support roller based on a double row, full complement cylindrical roller bearing with three integral outer ring flanges and a loose flange ring on both sides of the inner ring. |
| **PWTR** | Support roller based on a double row, full complement cylindrical roller bearing with three integral outer ring flanges and a loose flange ring on both sides of the inner ring. |
| **KR** | Cam follower fitted with a needle roller and cage assembly. |
| **KRE** | Cam follower fitted with a needle roller and cage assembly, with an eccentric collar pressed onto the stud. |
| **KRV** | Cam follower fitted with a full complement of needle rollers. |
| **KRVE** | Cam follower fitted with a full complement of needle rollers, with an eccentric collar pressed onto the stud. |
| **NUKR** | Cam follower based on a double row, full complement cylindrical roller bearing with two integral outer ring flanges. |
| **NUKRE** | Cam follower based on a double row, full complement cylindrical roller bearing with two integral outer ring flanges, with an eccentric collar pressed onto the stud. |
| **PWKR** | Cam follower based on a double row, full complement cylindrical roller bearing with three integral outer ring flanges. |
| **PWKRE** | Cam follower based on a double row, full complement cylindrical roller bearing with three integral outer ring flanges, with an eccentric collar pressed onto the stud. |




**Group 3: Cage design**

| | |
|---|---|
| **TN** | Glass fibre reinforced PA66 cage |

**Group 2: External design (seals, snap ring groove etc.)**

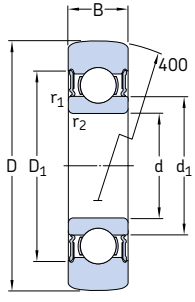
| | |
|---|---|
| **.2RS** | NBR contact seal on both sides |
| **.2ZL** | Lamellar seal on both sides |
| **-2Z** | Shield on both sides |
| **B** | KR design cam follower with a hexagonal recess on both ends of the stud. |
| **PPA** | **1** NATR or NATV design support roller with a PA66 axial sliding and sealing ring on both sides. Improved crowned profile of the outer ring running surface.<br>**2** KR design cam follower have the same features as listed above. Sizes 16 and 19 have one slot in the head of the stud as standard. Sizes ≥ 22 have a hexagonal recess on both ends. |
| **PPSKA** | KR design cam follower, sizes 16 and 19, with a PA66 axial sliding and sealing ring on both sides, improved crowned profile of the outer ring running surface and a hexagonal recess in the head of the stud, no relubrication facilities. |
| **PPXA** | Cam followers with PPA features except for the outer ring running surface, which has a cylindrical profile. |

**Group 1: Internal design**

| | |
|---|---|
| **A** | Improved crowned profile of the outer ring running surface (NUTR design support rollers or NUKR design cam followers). |
| **X** | Cylindrical (flat) profile of the outer ring running surface. |
| **XA** | Cylindrical (flat) profile of the outer ring running surface (NUKR .. A or NUKRE .. A design cam follower). |

**Suffixes**

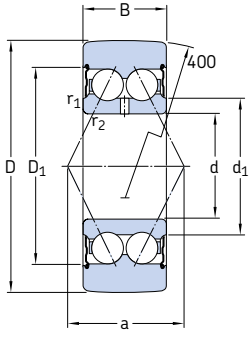
## 14.1 Single row cam rollers
D **32 – 80** mm



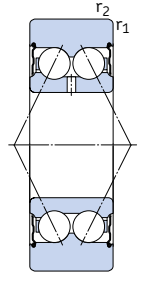

| Dimensions | | | | | | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|
| D | B | d | $d_1$ ~ | $D_1$ ~ | $r_{1,2}$ min. | | | |
| mm | | | | | | r/min | kg | – |
| **32** | 9 | 10 | 17 | 24,8 | 0,6 | 12 000 | 0,04 | **361200 R** |
| **35** | 10 | 12 | 18,4 | 27,4 | 0,6 | 11 000 | 0,051 | **361201 R** |
| **40** | 11 | 15 | 21,7 | 30,4 | 0,6 | 9 500 | 0,072 | **361202 R** |
| **47** | 12 | 17 | 24,5 | 35 | 0,6 | 8 500 | 0,11 | **361203 R** |
| **52** | 14 | 20 | 28,8 | 40,6 | 1 | 7 000 | 0,15 | **361204 R** |
| **62** | 15 | 25 | 34,3 | 46,3 | 1 | 6 300 | 0,24 | **361205 R** |
| **72** | 16 | 30 | 40,3 | 54,1 | 1 | 5 300 | 0,34 | **361206 R** |
| **80** | 17 | 35 | 46,9 | 62,7 | 1,1 | 4 500 | 0,42 | **361207 R** |

| Outside diameter | Basic load ratings dynamic | static | Fatigue load limit | Maximum radial loads dynamic | static | Calculation factor |
|---|---|---|---|---|---|---|
| D | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ | $f_0$ |
| mm | kN | | kN | kN | | – |
| **32** | 4,68 | 2,04 | 0,085 | 3,45 | 5 | 13 |
| **35** | 6,24 | 2,6 | 0,11 | 3,35 | 4,75 | 12 |
| **40** | 7,02 | 3,2 | 0,137 | 5,1 | 7,35 | 13 |
| **47** | 8,84 | 4,25 | 0,18 | 8,15 | 11,6 | 13 |
| **52** | 11,4 | 5,5 | 0,232 | 7,5 | 10,6 | 13 |
| **62** | 13 | 6,8 | 0,29 | 12,9 | 18,6 | 14 |
| **72** | 17,4 | 9,5 | 0,4 | 14,6 | 20,8 | 14 |
| **80** | 22,1 | 11,8 | 0,5 | 12,9 | 18,3 | 14 |

## 14.2 Double row cam rollers
D **32 – 80** mm




3058.. C-2Z

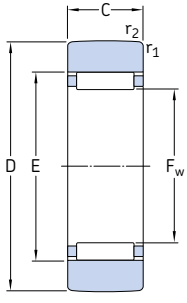



3057.. C-2Z

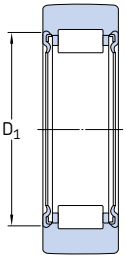
| Dimensions | | | | | | | Limiting speed | Mass | Designations Cam roller with crowned runner surface | cylindrical runner surface |
|---|---|---|---|---|---|---|---|---|---|---|
| D | B | d | $d_1$ ~ | $D_1$ ~ | $r_{1,2}$ min. | a | | | | |
| mm | | | | | | | r/min | kg | – | |
| **32** | 14 | 10 | 15,8 | 25 | 0,6 | 16,5 | 11 000 | 0,062 | **305800 C-2Z** | **–** |
| **35** | 15,9 | 12 | 17,2 | 27,7 | 0,6 | 19 | 9 500 | 0,078 | **305801 C-2Z** | **305701 C-2Z** |
| **40** | 15,9 | 15 | 20,2 | 30,7 | 0,6 | 21 | 9 000 | 0,1 | **305802 C-2Z** | **305702 C-2Z** |
| **47** | 17,5 | 17 | 23,3 | 35 | 0,6 | 23 | 8 000 | 0,16 | **305803 C-2Z** | **305703 C-2Z** |
| **52** | 20,6 | 20 | 27,7 | 40,9 | 1 | 28 | 7 000 | 0,22 | **305804 C-2Z** | **305704 C-2Z** |
| **62** | 20,6 | 25 | 32,7 | 45,9 | 1 | 30 | 6 000 | 0,32 | **305805 C-2Z** | **305705 C-2Z** |
| **72** | 23,8 | 30 | 38,7 | 55,2 | 1 | 36 | 5 000 | 0,49 | **305806 C-2Z** | **305706 C-2Z** |
| **80** | 27 | 35 | 45,4 | 63,9 | 1,1 | 42 | 4 300 | 0,65 | **305807 C-2Z** | **305707 C-2Z** |

| Outside diameter | Basic load ratings dynamic | static | Fatigue load limit | Maximum radial loads dynamic | static |
|---|---|---|---|---|---|
| D | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ |
| mm | kN | | kN | kN | |
| **32** | 7,61 | 4,3 | 0,183 | 4,4 | 6,3 |
| **35** | 10,1 | 5,6 | 0,24 | 3,8 | 5,4 |
| **40** | 11,2 | 6,8 | 0,285 | 5,85 | 8,5 |
| **47** | 14,3 | 8,8 | 0,365 | 9,3 | 13,4 |
| **52** | 19 | 12 | 0,51 | 8,3 | 12 |
| **62** | 20,8 | 14,3 | 0,6 | 15,3 | 21,6 |
| **72** | 28,6 | 20,4 | 0,865 | 17 | 24 |
| **80** | 37,7 | 28 | 1,18 | 15,6 | 22,4 |

## 14.3 Support rollers without flange rings, without an inner ring
D **16 – 90** mm




RSTO

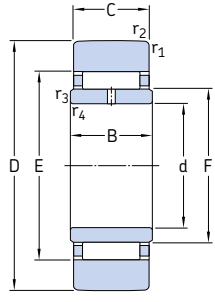



RNA 22 ...2RS

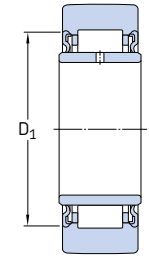
| Dimensions | | | | | | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|
| D | C | $D_1$ | $F_w$ | E | $r_{1,2}$ min | | | |
| mm | | | | | | r/min | kg | – |
| **16** | 7,8 | – | 7 | 10 | 0,3 | 8 000 | 0,008 | **RSTO 5 TN** |
| **19** | 9,8 | – | 10 | 13 | 0,3 | 7 000 | 0,012 | **RSTO 6 TN** |
| | 11,8 | 16 | 10 | – | 0,3 | 7 000 | 0,018 | **RNA 22/6.2RS** |
| **24** | 9,8 | – | 12 | 15 | 0,3 | 7 000 | 0,021 | **RSTO 8 TN** |
| | 11,8 | 18 | 12 | – | 0,3 | 6 700 | 0,029 | **RNA 22/8.2RS** |
| **30** | 11,8 | – | 14 | 20 | 0,3 | 6 000 | 0,042 | **RSTO 10** |
| | 13,8 | 20 | 14 | – | 0,6 | 6 300 | 0,052 | **RNA 2200.2RS** |
| **32** | 11,8 | – | 16 | 22 | 0,3 | 5 600 | 0,049 | **RSTO 12** |
| | 13,8 | 22 | 16 | – | 0,6 | 6 000 | 0,057 | **RNA 2201.2RS** |
| **35** | 11,8 | – | 20 | 26 | 0,3 | 5 000 | 0,05 | **RSTO 15** |
| | 13,8 | 26 | 20 | – | 0,6 | 5 000 | 0,06 | **RNA 2202.2RS** |
| **40** | 15,8 | 28 | 22 | – | 1 | 4 500 | 0,094 | **RNA 2203.2RS** |
| | 15,8 | – | 22 | 29 | 0,3 | 4 500 | 0,088 | **RSTO 17** |
| **47** | 15,8 | – | 25 | 32 | 0,3 | 4 000 | 0,13 | **RSTO 20** |
| | 17,8 | 33 | 25 | – | 1 | 4 000 | 0,15 | **RNA 2204.2RS** |
| **52** | 15,8 | – | 30 | 37 | 0,3 | 3 400 | 0,15 | **RSTO 25** |
| | 17,8 | 38 | 30 | – | 1 | 3 400 | 0,18 | **RNA 2205.2RS** |
| **62** | 19,8 | 43 | 35 | – | 1 | 2 800 | 0,28 | **RNA 2206.2RS** |
| | 19,8 | – | 38 | 46 | 0,6 | 2 600 | 0,26 | **RSTO 30** |
| **72** | 19,8 | – | 42 | 50 | 0,6 | 2 200 | 0,38 | **RSTO 35** |
| | 22,7 | 50 | 42 | – | 1,1 | 2 200 | 0,43 | **RNA 2207.2RS** |
| **80** | 19,8 | – | 50 | 58 | 1 | 1 900 | 0,42 | **RSTO 40** |
| | 22,7 | 57 | 48 | – | 1,1 | 1 900 | 0,53 | **RNA 2208.2RS** |
| **85** | 19,8 | – | 55 | 63 | 1 | 1 700 | 0,45 | **RSTO 45** |
| **90** | 19,8 | – | 60 | 68 | 1 | 1 600 | 0,48 | **RSTO 50** |

| Designation | Basic load ratings | | Fatigue load limit | Maximum radial loads | |
|---|---|---|---|---|---|
| | dynamic | static | | dynamic | static |
| | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ |
| – | kN | | kN | kN | |
| **RSTO 5 TN** | 2,51 | 2,5 | 0,27 | 3,55 | 5 |
| **RSTO 6 TN** | 3,74 | 4,5 | 0,5 | 4,25 | 6,1 |
| **RNA 22/6.2RS** | 4,02 | 3,65 | 0,425 | 2,55 | 3,6 |
| **RSTO 8 TN** | 4,13 | 5,4 | 0,6 | 7,5 | 10,8 |
| **RNA 22/8.2RS** | 4,68 | 4,55 | 0,54 | 5,3 | 7,5 |
| **RSTO 10** | 8,25 | 8,8 | 1,04 | 8,5 | 12,2 |
| **RNA 2200.2RS** | 6,6 | 7,5 | 0,88 | 12 | 17,3 |
| **RSTO 12** | 8,8 | 9,8 | 1,18 | 8,3 | 12 |
| **RNA 2201.2RS** | 7,04 | 8,5 | 1 | 11,6 | 16,6 |
| **RSTO 15** | 9,13 | 10,6 | 1,27 | 7,1 | 10 |
| **RNA 2202.2RS** | 7,48 | 9,3 | 1,12 | 9,5 | 13,7 |
| **RNA 2203.2RS** | 9,52 | 13,2 | 1,6 | 15,3 | 22 |
| **RSTO 17** | 14,2 | 17,6 | 2,08 | 12 | 17,3 |
| **RSTO 20** | 16,1 | 21,2 | 2,5 | 18,6 | 26,5 |
| **RNA 2204.2RS** | 16,1 | 18 | 2,16 | 17,6 | 25,5 |
| **RSTO 25** | 16,5 | 22,8 | 2,7 | 18 | 26 |
| **RNA 2205.2RS** | 16,8 | 20 | 2,4 | 17,3 | 24,5 |
| **RNA 2206.2RS** | 17,9 | 25,5 | 3,05 | 28,5 | 40,5 |
| **RSTO 30** | 22,9 | 34,5 | 4,25 | 23,6 | 33,5 |
| **RSTO 35** | 24,6 | 39 | 4,8 | 36 | 51 |
| **RNA 2207.2RS** | 22,4 | 35,5 | 4,3 | 38 | 54 |
| **RSTO 40** | 23,8 | 39 | 4,75 | 34,5 | 49 |
| **RNA 2208.2RS** | 27,5 | 40,5 | 5 | 35,5 | 51 |
| **RSTO 45** | 25,1 | 43 | 5,3 | 34,5 | 50 |
| **RSTO 50** | 26 | 45,5 | 5,7 | 34,5 | 50 |

## 14.4 Support rollers without flange rings, with an inner ring
D **19 – 90** mm




STO

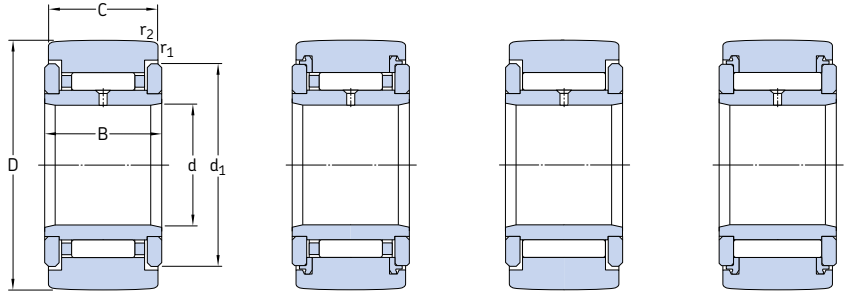



NA 22 ...2RS

| Dimensions | | | | | | | | | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D | d | C | B | $D_1$ | F | E | $r_{1,2}$ min. | $r_{3,4}$ min. | | | |
| mm | | | | | | | | | r/min | kg | – |
| **19** | 6 | 9,8 | 10 | – | 10 | 13 | 0,3 | 0,3 | 7 000 | 0,017 | **STO 6 TN** |
| | 6 | 11,8 | 12 | 16 | 10 | – | 0,3 | 0,3 | 7 000 | 0,022 | **NA 22/6.2RS** |
| **24** | 8 | 9,8 | 10 | – | 12 | 15 | 0,3 | 0,3 | 7 000 | 0,026 | **STO 8 TN** |
| | 8 | 11,8 | 12 | 18 | 12 | – | 0,3 | 0,3 | 6 700 | 0,034 | **NA 22/8.2RS** |
| **30** | 10 | 11,8 | 12 | – | 14 | 20 | 0,3 | 0,3 | 6 000 | 0,049 | **STO 10** |
| | 10 | 13,8 | 14 | 20 | 14 | – | 0,6 | 0,3 | 6 300 | 0,06 | **NA 2200.2RS** |
| **32** | 12 | 11,8 | 12 | – | 16 | 22 | 0,3 | 0,3 | 5 600 | 0,057 | **STO 12** |
| | 12 | 13,8 | 14 | 22 | 16 | – | 0,6 | 0,3 | 6 000 | 0,067 | **NA 2201.2RS** |
| **35** | 15 | 11,8 | 12 | – | 20 | 26 | 0,3 | 0,3 | 5 000 | 0,063 | **STO 15** |
| | 15 | 13,8 | 14 | 26 | 20 | – | 0,6 | 0,3 | 5 000 | 0,075 | **NA 2202.2RS** |
| **40** | 17 | 15,8 | 16 | 28 | 22 | – | 1 | 0,3 | 4 500 | 0,11 | **NA 2203.2RS** |
| | 17 | 15,8 | 16 | – | 22 | 29 | 0,3 | 0,3 | 4 500 | 0,11 | **STO 17** |
| **47** | 20 | 15,8 | 16 | – | 25 | 32 | 0,3 | 0,3 | 4 000 | 0,15 | **STO 20** |
| | 20 | 17,8 | 18 | 33 | 25 | – | 1 | 0,3 | 4 000 | 0,18 | **NA 2204.2RS** |
| **52** | 25 | 15,8 | 16 | – | 30 | 37 | 0,3 | 0,3 | 3 400 | 0,18 | **STO 25** |
| | 25 | 17,8 | 18 | 38 | 30 | – | 1 | 0,3 | 3 400 | 0,21 | **NA 2205.2RS** |
| **62** | 30 | 19,8 | 20 | 43 | 35 | – | 1 | 0,3 | 2 800 | 0,32 | **NA 2206.2RS** |
| | 30 | 19,8 | 20 | – | 38 | 46 | 0,6 | 0,6 | 2 600 | 0,31 | **STO 30** |
| **72** | 35 | 19,8 | 20 | – | 42 | 50 | 0,6 | 0,6 | 2 200 | 0,44 | **STO 35** |
| | 35 | 22,7 | 23 | 50 | 42 | – | 1,1 | 0,6 | 2 200 | 0,51 | **NA 2207.2RS** |
| **80** | 40 | 19,8 | 20 | – | 50 | 58 | 1 | 1 | 1 900 | 0,53 | **STO 40** |
| | 40 | 22,7 | 23 | 57 | 48 | – | 1,1 | 0,6 | 1 900 | 0,63 | **NA 2208.2RS** |
| **85** | 45 | 19,8 | 20 | – | 55 | 63 | 1 | 1 | 1 700 | 0,58 | **STO 45** |
| **90** | 50 | 19,8 | 20 | – | 60 | 68 | 1 | 1 | 1 600 | 0,62 | **STO 50** |
| | 50 | 22,7 | 23 | 68 | 58 | | 1,1 | 0,6 | 1 600 | 0,69 | **NA 2210.2RS** |

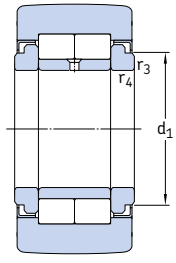
| Designation | Basic load ratings | | Fatigue load limit | Maximum radial loads | |
|---|---|---|---|---|---|
| | dynamic | static | | dynamic | static |
| | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ |
| – | kN | | kN | kN | |
| **STO 6 TN** | 3,74 | 4,5 | 0,5 | 4,25 | 6,1 |
| **NA 22/6.2RS** | 4,02 | 3,65 | 0,425 | 2,55 | 3,6 |
| **STO 8 TN** | 4,13 | 5,4 | 0,6 | 7,5 | 10,8 |
| **NA 22/8.2RS** | 4,68 | 4,55 | 0,54 | 5,3 | 7,5 |
| **STO 10** | 8,25 | 8,8 | 1,04 | 8,5 | 12,2 |
| **NA 2200.2RS** | 6,6 | 7,5 | 0,88 | 12 | 17,3 |
| **STO 12** | 8,8 | 9,8 | 1,18 | 8,3 | 12 |
| **NA 2201.2RS** | 7,04 | 8,5 | 1 | 11,6 | 16,6 |
| **STO 15** | 9,13 | 10,6 | 1,27 | 7,1 | 10 |
| **NA 2202.2RS** | 7,48 | 9,3 | 1,12 | 9,5 | 13,7 |
| **NA 2203.2RS** | 9,52 | 13,2 | 1,6 | 15,3 | 22 |
| **STO 17** | 14,2 | 17,6 | 2,08 | 12 | 17,3 |
| **STO 20** | 16,1 | 21,2 | 2,5 | 18,6 | 26,5 |
| **NA 2204.2RS** | 16,1 | 18 | 2,16 | 17,6 | 25,5 |
| **STO 25** | 16,5 | 22,8 | 2,7 | 18 | 26 |
| **NA 2205.2RS** | 16,8 | 20 | 2,4 | 17,3 | 24,5 |
| **NA 2206.2RS** | 17,9 | 25,5 | 3,05 | 28,5 | 40,5 |
| **STO 30** | 22,9 | 34,5 | 4,25 | 23,6 | 33,5 |
| **STO 35** | 24,6 | 39 | 4,8 | 36 | 51 |
| **NA 2207.2RS** | 22,4 | 35,5 | 4,3 | 38 | 54 |
| **STO 40** | 23,8 | 39 | 4,75 | 34,5 | 49 |
| **NA 2208.2RS** | 27,5 | 40,5 | 5 | 35,5 | 51 |
| **STO 45** | 25,1 | 43 | 5,3 | 34,5 | 50 |
| **STO 50** | 26 | 45,5 | 5,7 | 34,5 | 50 |
| **NA 2210.2RS** | 28,1 | 43 | 5,3 | 34,5 | 50 |

## 14.5 Support rollers with flange rings, with an inner ring
D **16 – 42** mm

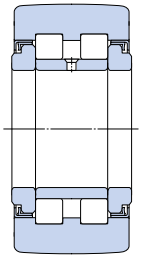



NATR | NATR .. PPA | NATV | NATV .. PPA

| Dimensions | | | | | | | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| D | d | C | B | $d_1$ | $r_{1,2}$ min. | $r_{3,4}$ min. | | | |
| mm | | | | | | | r/min | kg | – |
| **16** | 5 | 11 | 12 | 12,5 | 0,15 | – | 6 000 | 0,014 | **NATR 5** |
| | 5 | 11 | 12 | 12,5 | 0,15 | – | 6 000 | 0,014 | **NATR 5 PPA** |
| | 5 | 11 | 12 | 12,5 | 0,15 | – | 4 300 | 0,015 | **NATV 5** |
| | 5 | 11 | 12 | 12,5 | 0,15 | – | 4 300 | 0,015 | **NATV 5 PPA** |
| **19** | 6 | 11 | 12 | 15 | 0,15 | – | 5 600 | 0,02 | **NATR 6** |
| | 6 | 11 | 12 | 15 | 0,15 | – | 5 600 | 0,019 | **NATR 6 PPA** |
| | 6 | 11 | 12 | 15 | 0,15 | – | 4 000 | 0,021 | **NATV 6** |
| | 6 | 11 | 12 | 15 | 0,15 | – | 4 000 | 0,021 | **NATV 6 PPA** |
| **24** | 8 | 14 | 15 | 19 | 0,3 | – | 5 000 | 0,041 | **NATR 8** |
| | 8 | 14 | 15 | 19 | 0,3 | – | 5 000 | 0,038 | **NATR 8 PPA** |
| | 8 | 14 | 15 | 19 | 0,3 | – | 3 600 | 0,042 | **NATV 8** |
| | 8 | 14 | 15 | 19 | 0,3 | – | 3 600 | 0,041 | **NATV 8 PPA** |
| **30** | 10 | 14 | 15 | 23 | 0,6 | – | 4 800 | 0,064 | **NATR 10** |
| | 10 | 14 | 15 | 23 | 0,6 | – | 4 800 | 0,061 | **NATR 10 PPA** |
| | 10 | 14 | 15 | 23 | 0,6 | – | 3 200 | 0,065 | **NATV 10** |
| | 10 | 14 | 15 | 23 | 0,6 | – | 3 200 | 0,064 | **NATV 10 PPA** |
| **32** | 12 | 14 | 15 | 25 | 0,6 | – | 4 500 | 0,071 | **NATR 12** |
| | 12 | 14 | 15 | 25 | 0,6 | – | 4 500 | 0,066 | **NATR 12 PPA** |
| | 12 | 14 | 15 | 25 | 0,6 | – | 3 000 | 0,072 | **NATV 12** |
| | 12 | 14 | 15 | 25 | 0,6 | – | 3 000 | 0,069 | **NATV 12 PPA** |
| **35** | 15 | 18 | 19 | 27,6 | 0,6 | – | 4 000 | 0,1 | **NATR 15** |
| | 15 | 18 | 19 | 27,6 | 0,6 | – | 4 000 | 0,095 | **NATR 15 PPA** |
| | 15 | 18 | 19 | 27,6 | 0,6 | – | 2 600 | 0,11 | **NATV 15** |
| | 15 | 18 | 19 | 27,6 | 0,6 | – | 2 600 | 0,1 | **NATV 15 PPA** |
| | 15 | 18 | 19 | 20 | 0,6 | 0,3 | 5 000 | 0,099 | **NUTR 15 A** |
| | 15 | 18 | 19 | 20 | 0,6 | 0,3 | 5 000 | 0,099 | **PWTR 15.2RS** |
| **40** | 17 | 20 | 21 | 31,5 | 1 | – | 3 400 | 0,14 | **NATR 17** |
| | 17 | 20 | 21 | 31,5 | 1 | – | 3 400 | 0,14 | **NATR 17 PPA** |
| | 17 | 20 | 21 | 31,5 | 1 | – | 2 200 | 0,15 | **NATV 17** |
| | 17 | 20 | 21 | 31,5 | 1 | – | 2 200 | 0,15 | **NATV 17 PPA** |
| | 17 | 20 | 21 | 22 | 1 | 0,5 | 4 500 | 0,15 | **NUTR 17 A** |
| | 17 | 20 | 21 | 22 | 1 | 0,5 | 4 500 | 0,15 | **PWTR 17.2RS** |
| **42** | 15 | 18 | 19 | 20 | 0,6 | 0,3 | 5 000 | 0,16 | **NUTR 1542 A** |
| | 15 | 18 | 19 | 20 | 0,6 | 0,3 | 5 000 | 0,16 | **PWTR 1542.2RS** |



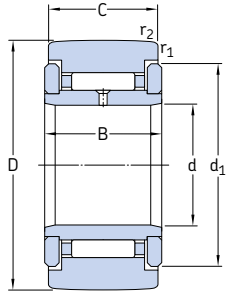

NUTR .. A



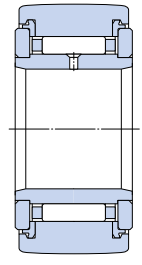
PWTR ...2RS

| Designation | Basic load ratings dynamic | static | Fatigue load limit | Maximum radial loads dynamic | static |
|---|---|---|---|---|---|
| | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ |
| – | kN | | kN | kN | |
| **NATR 5** | 3,14 | 3,2 | 0,345 | 2,9 | 4,15 |
| **NATR 5 PPA** | 3,14 | 3,2 | 0,345 | 2,9 | 4,15 |
| **NATV 5** | 4,73 | 6,55 | 0,72 | 4,05 | 5,7 |
| **NATV 5 PPA** | 4,73 | 6,55 | 0,72 | 4,05 | 5,7 |
| **NATR 6** | 3,47 | 3,8 | 0,415 | 3,8 | 5,5 |
| **NATR 6 PPA** | 3,47 | 3,8 | 0,415 | 3,8 | 5,5 |
| **NATV 6** | 5,28 | 8 | 0,88 | 5,1 | 7,35 |
| **NATV 6 PPA** | 5,28 | 8 | 0,88 | 5,1 | 7,35 |
| **NATR 8** | 5,28 | 6,1 | 0,695 | 5,2 | 7,35 |
| **NATR 8 PPA** | 5,28 | 6,1 | 0,695 | 5,2 | 7,35 |
| **NATV 8** | 7,48 | 11,4 | 1,32 | 7,35 | 10,4 |
| **NATV 8 PPA** | 7,48 | 11,4 | 1,32 | 7,35 | 10,4 |
| **NATR 10** | 6,44 | 8 | 0,88 | 7,8 | 11,2 |
| **NATR 10 PPA** | 6,44 | 8 | 0,88 | 7,8 | 11,2 |
| **NATV 10** | 8,97 | 14,6 | 1,66 | 11 | 15,6 |
| **NATV 10 PPA** | 8,97 | 14,6 | 1,66 | 11 | 15,6 |
| **NATR 12** | 6,6 | 8,5 | 0,95 | 7,65 | 10,8 |
| **NATR 12 PPA** | 6,6 | 8,5 | 0,95 | 7,65 | 10,8 |
| **NATV 12** | 9,35 | 15,3 | 1,76 | 10,6 | 15 |
| **NATV 12 PPA** | 9,35 | 15,3 | 1,76 | 10,6 | 15 |
| **NATR 15** | 9,52 | 13,7 | 1,56 | 11,4 | 16,3 |
| **NATR 15 PPA** | 9,52 | 13,7 | 1,56 | 11,4 | 16,3 |
| **NATV 15** | 12,3 | 23,2 | 2,7 | 14,6 | 20,8 |
| **NATV 15 PPA** | 12,3 | 23,2 | 2,7 | 14,6 | 20,8 |
| **NUTR 15 A** | 16,8 | 17,6 | 2 | 8,65 | 12,2 |
| **PWTR 15.2RS** | 11,9 | 11,4 | 1,2 | 8,65 | 12,5 |
| **NATR 17** | 10,5 | 14,6 | 1,73 | 12,5 | 18 |
| **NATR 17 PPA** | 10,5 | 14,6 | 1,73 | 12,5 | 18 |
| **NATV 17** | 14,2 | 26,5 | 3,1 | 17 | 24,5 |
| **NATV 17 PPA** | 14,2 | 26,5 | 3,1 | 17 | 24,5 |
| **NUTR 17 A** | 19 | 22 | 2,5 | 14 | 20 |
| **PWTR 17.2RS** | 13,8 | 14,3 | 1,5 | 13,7 | 19,6 |
| **NUTR 1542 A** | 20,1 | 23,2 | 2,65 | 21,6 | 31 |
| **PWTR 1542.2RS** | 14,2 | 15 | 1,6 | 22 | 31,5 |

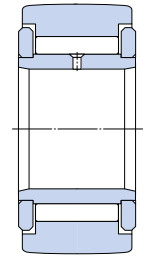
## 14.5 Support rollers with flange rings, with an inner ring
D **47 – 80** mm



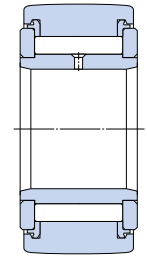

NATR



NATR .. PPA

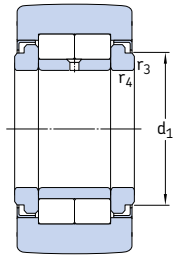


NATV

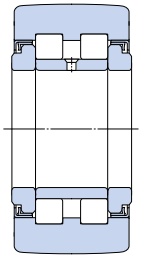


NATV .. PPA

| Dimensions | | | | | | | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| D | d | C | B | $d_1$ | $r_{1,2}$ min. | $r_{3,4}$ min. | | | |
| mm | | | | | | | r/min | kg | – |
| **47** | 17 | 20 | 21 | 22 | 1 | 0,5 | 4 500 | 0,22 | **NUTR 1747 A** |
| | 17 | 20 | 21 | 22 | 1 | 0,5 | 4 500 | 0,22 | **PWTR 1747.2RS** |
| | 20 | 24 | 25 | 36,5 | 1 | – | 3 000 | 0,25 | **NATR 20** |
| | 20 | 24 | 25 | 36,5 | 1 | – | 3 000 | 0,24 | **NATR 20 PPA** |
| | 20 | 24 | 25 | 36,5 | 1 | – | 1 900 | 0,25 | **NATV 20** |
| | 20 | 24 | 25 | 36,5 | 1 | – | 1 900 | 0,25 | **NATV 20 PPA** |
| | 20 | 24 | 25 | 27 | 1 | 0,5 | 3 800 | 0,25 | **NUTR 20 A** |
| | 20 | 24 | 25 | 27 | 1 | 0,5 | 3 800 | 0,25 | **PWTR 20.2RS** |
| **52** | 20 | 24 | 25 | 27 | 1 | 0,5 | 3 800 | 0,32 | **NUTR 2052 A** |
| | 20 | 24 | 25 | 27 | 1 | 0,5 | 3 800 | 0,32 | **PWTR 2052.2RS** |
| | 25 | 24 | 25 | 41,5 | 1 | – | 2 400 | 0,28 | **NATR 25** |
| | 25 | 24 | 25 | 41,5 | 1 | – | 2 400 | 0,27 | **NATR 25 PPA** |
| | 25 | 24 | 25 | 41,5 | 1 | – | 1 600 | 0,29 | **NATV 25** |
| | 25 | 24 | 25 | 41,5 | 1 | – | 1 600 | 0,28 | **NATV 25 PPA** |
| | 25 | 24 | 25 | 31 | 1 | 0,5 | 3 200 | 0,28 | **NUTR 25 A** |
| | 25 | 24 | 25 | 31 | 1 | 0,5 | 3 200 | 0,28 | **PWTR 25.2RS** |
| **62** | 25 | 24 | 25 | 31 | 1 | 0,5 | 3 200 | 0,45 | **NUTR 2562 A** |
| | 25 | 24 | 25 | 31 | 1 | 0,5 | 3 200 | 0,45 | **PWTR 2562.2RS** |
| | 30 | 28 | 29 | 51 | 1 | – | 1 800 | 0,47 | **NATR 30** |
| | 30 | 28 | 29 | 51 | 1 | – | 1 800 | 0,44 | **NATR 30 PPA** |
| | 30 | 28 | 29 | 51 | 1 | – | 1 400 | 0,48 | **NATV 30** |
| | 30 | 28 | 29 | 51 | 1 | – | 1 400 | 0,47 | **NATV 30 PPA** |
| | 30 | 28 | 29 | 38 | 1 | 0,5 | 2 600 | 0,47 | **NUTR 30 A** |
| | 30 | 28 | 29 | 38 | 1 | 0,5 | 2 600 | 0,47 | **PWTR 30.2RS** |
| **72** | 30 | 28 | 29 | 38 | 1 | 0,5 | 2 600 | 0,7 | **NUTR 3072 A** |
| | 30 | 28 | 29 | 38 | 1 | 0,5 | 2 000 | 0,7 | **PWTR 3072.2RS** |
| | 35 | 28 | 29 | 58 | 1,1 | – | 1 600 | 0,55 | **NATR 35 PPA** |
| | 35 | 28 | 29 | 58 | 1,1 | – | 1 100 | 0,63 | **NATV 35 PPA** |
| | 35 | 28 | 29 | 44 | 1,1 | 0,6 | 2 000 | 0,63 | **NUTR 35 A** |
| | 35 | 28 | 29 | 44 | 1,1 | 0,6 | 2 000 | 0,63 | **PWTR 35.2RS** |
| **80** | 35 | 28 | 29 | 44 | 1,1 | 0,6 | 2 000 | 0,84 | **NUTR 3580 A** |
| | 35 | 28 | 29 | 44 | 1,1 | 0,6 | 2 000 | 0,84 | **PWTR 3580.2RS** |



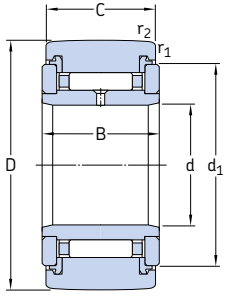

NUTR .. A



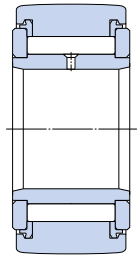
PWTR ...2RS

| Designation | Basic load ratings dynamic | static | Fatigue load limit | Maximum radial loads dynamic | static |
|---|---|---|---|---|---|
| | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ |
| – | kN | | kN | kN | |
| **NUTR 1747 A** | 22 | 27 | 3,05 | 30 | 43 |
| **PWTR 1747.2RS** | 15,7 | 17,6 | 1,86 | 30 | 42,5 |
| **NATR 20** | 14,7 | 24,5 | 2,9 | 23,6 | 33,5 |
| **NATR 20 PPA** | 14,7 | 24,5 | 2,9 | 23,6 | 33,5 |
| **NATV 20** | 19,4 | 41,5 | 5 | 30,5 | 43 |
| **NATV 20 PPA** | 19,4 | 41,5 | 5 | 30,5 | 43 |
| **NUTR 20 A** | 28,6 | 33,5 | 3,9 | 17,6 | 25 |
| **PWTR 20.2RS** | 22,9 | 24,5 | 2,8 | 18,3 | 26 |
| **NUTR 2052 A** | 31,9 | 39 | 4,55 | 30 | 42,5 |
| **PWTR 2052.2RS** | 25,5 | 29 | 3,35 | 30,5 | 44 |
| **NATR 25** | 14,7 | 25,5 | 3,1 | 21,6 | 31 |
| **NATR 25 PPA** | 14,7 | 25,5 | 3,1 | 21,6 | 31 |
| **NATV 25** | 19,8 | 44 | 5,3 | 28,5 | 40,5 |
| **NATV 25 PPA** | 19,8 | 44 | 5,3 | 28,5 | 40,5 |
| **NUTR 25 A** | 29,7 | 36 | 4,25 | 18 | 25,5 |
| **PWTR 25.2RS** | 23,8 | 26,5 | 3,05 | 18,6 | 26,5 |
| **NUTR 2562 A** | 35,8 | 48 | 5,6 | 44 | 63 |
| **PWTR 2562.2RS** | 29,2 | 36 | 4,05 | 45 | 64 |
| **NATR 30** | 22,9 | 37,5 | 4,55 | 26,5 | 38 |
| **NATR 30 PPA** | 22,9 | 37,5 | 4,55 | 26,5 | 38 |
| **NATV 30** | 29,2 | 62 | 7,65 | 34,5 | 49 |
| **NATV 30 PPA** | 29,2 | 62 | 7,65 | 34,5 | 49 |
| **NUTR 30 A** | 41,3 | 47,5 | 5,85 | 24 | 34,5 |
| **PWTR 30.2RS** | 31,9 | 32,5 | 4,05 | 20,4 | 29 |
| **NUTR 3072 A** | 48,4 | 61 | 7,5 | 53 | 76,5 |
| **PWTR 3072.2RS** | 39,6 | 45 | 5,6 | 47,5 | 68 |
| **NATR 35 PPA** | 24,6 | 43 | 5,3 | 33,5 | 48 |
| **NATV 35 PPA** | 31,9 | 72 | 8,8 | 43 | 62 |
| **NUTR 35 A** | 45,7 | 57 | 6,95 | 33,5 | 47,5 |
| **PWTR 35.2RS** | 35,8 | 40,5 | 5 | 28 | 40 |
| **NUTR 3580 A** | 51,2 | 68 | 8,3 | 57 | 81,5 |
| **PWTR 3580.2RS** | 41,8 | 50 | 6,3 | 51 | 72 |

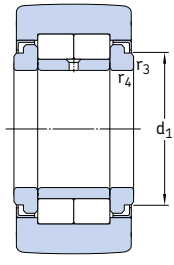
## 14.5 Support rollers with flange rings, with an inner ring
D **80 – 310** mm



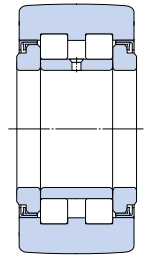

NATR .. PPA



NATV .. PPA

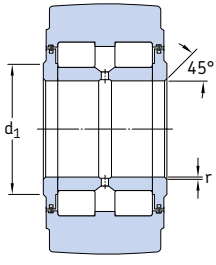



NUTR .. A



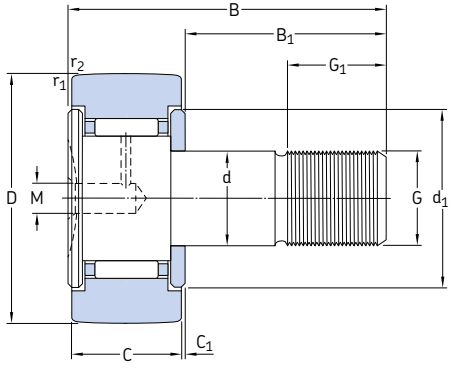
PWTR ...2RS

| Dimensions | | | | | | | Limiting speed | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|
| D | d | C | B | $d_1$ | $r_{1,2}$ min. | r, $r_{3,4}$ min. | | | |
| mm | | | | | | | r/min | kg | – |
| **80** | 40 | 30 | 32 | 66 | 1,1 | – | 1 500 | 0,8 | **NATR 40 PPA** |
| cont. | 40 | 30 | 32 | 66 | 1,1 | – | 950 | 0,83 | **NATV 40 PPA** |
| | 40 | 30 | 32 | 50,5 | 1,1 | 0,6 | 1 800 | 0,82 | **NUTR 40 A** |
| | 40 | 30 | 32 | 50,5 | 1,1 | 0,6 | 1 800 | 0,82 | **PWTR 40.2RS** |
| **85** | 45 | 30 | 32 | 55,2 | 1,1 | 0,6 | 1 700 | 0,88 | **NUTR 45 A** |
| | 45 | 30 | 32 | 55,2 | 1,1 | 0,6 | 1 700 | 0,88 | **PWTR 45.2RS** |
| **90** | 40 | 30 | 32 | 50,5 | 1,1 | 0,6 | 1 800 | 1,15 | **NUTR 4090 A** |
| | 40 | 30 | 32 | 50,5 | 1,1 | 0,6 | 1 800 | 1,15 | **PWTR 4090.2RS** |
| | 50 | 30 | 32 | 76 | 1,1 | – | 1 200 | 0,87 | **NATR 50 PPA** |
| | 50 | 30 | 32 | 76 | 1,1 | – | 850 | 0,97 | **NATV 50 PPA** |
| | 50 | 30 | 32 | 59,8 | 1,1 | 0,6 | 1 600 | 0,95 | **NUTR 50 A** |
| | 50 | 30 | 32 | 59,8 | 1,1 | 0,6 | 1 600 | 0,95 | **PWTR 50.2RS** |
| **100** | 45 | 30 | 32 | 55,2 | 1,1 | 0,6 | 1 700 | 1,4 | **NUTR 45100 A** |
| | 45 | 30 | 32 | 55,2 | 1,1 | 0,6 | 1 700 | 1,4 | **PWTR 45100.2RS** |
| **110** | 50 | 30 | 32 | 59,8 | 1,1 | 0,6 | 1 600 | 1,7 | **NUTR 50110 A** |
| | 50 | 30 | 32 | 59,8 | 1,1 | 0,6 | 1 600 | 1,7 | **PWTR 50110.2RS** |
| **130** | 50 | 63 | 65 | 63 | 3 | 2 | 750 | 5,2 | **NNTR 50X130X65.2ZL** |
| **140** | 55 | 68 | 70 | 73 | 3 | 2 | 700 | 6,4 | **NNTR 55X140X70.2ZL** |
| **150** | 60 | 73 | 75 | 78 | 3 | 2 | 670 | 7,8 | **NNTR 60X150X75.2ZL** |
| **160** | 65 | 73 | 75 | 82 | 3 | 2 | 600 | 8,8 | **NNTR 65X160X75.2ZL** |
| **180** | 70 | 83 | 85 | 92 | 3 | 2 | 560 | 13 | **NNTR 70X180X85.2ZL** |
| **200** | 80 | 88 | 90 | 102 | 4 | 2 | 500 | 17 | **NNTR 80X200X90.2ZL** |
| **220** | 90 | 98 | 100 | 119 | 4 | 2,5 | 430 | 22,5 | **NNTR 90X220X100.2ZL** |
| **240** | 100 | 103 | 105 | 132 | 4 | 2,5 | 380 | 28 | **NNTR 100X240X105.2ZL** |
| **260** | 110 | 113 | 115 | 143 | 4 | 2,5 | 360 | 35,5 | **NNTR 110x260x115.2ZL** |
| **290** | 120 | 133 | 135 | 155 | 4 | 3 | 320 | 53 | **NNTR 120X290X135.2ZL** |
| **310** | 130 | 144 | 146 | 165 | 5 | 3 | 300 | 65 | **NNTR 130x310x146.2ZL** |

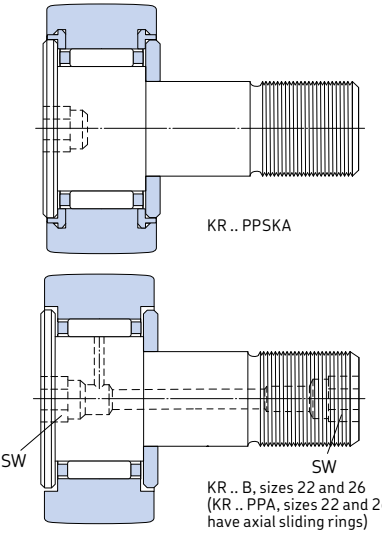



NNTR ...2ZL

| Designation | Basic load ratings dynamic | static | Fatigue load limit | Maximum radial loads dynamic | static |
|---|---|---|---|---|---|
| | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ |
| – | kN | | kN | kN | |
| **NATR 40 PPA** | 31,9 | 57 | 7,1 | 41,5 | 58,5 |
| **NATV 40 PPA** | 39,1 | 88 | 11 | 51 | 73,5 |
| **NUTR 40 A** | 57,2 | 72 | 9 | 32 | 45,5 |
| **PWTR 40.2RS** | 41,8 | 49 | 6 | 33,5 | 48 |
| **NUTR 45 A** | 58,3 | 75 | 9,3 | 32,5 | 46,5 |
| **PWTR 45.2RS** | 42,9 | 50 | 6,2 | 34 | 48 |
| **NUTR 4090 A** | 68,2 | 91,5 | 11,4 | 63 | 90 |
| **PWTR 4090.2RS** | 49,5 | 62 | 7,65 | 64 | 91,5 |
| **NATR 50 PPA** | 30,8 | 58,5 | 7,2 | 40 | 57 |
| **NATV 50 PPA** | 39,1 | 93 | 11,6 | 50 | 72 |
| **NUTR 50 A** | 58,3 | 78 | 9,65 | 32,5 | 47,5 |
| **PWTR 50.2RS** | 42,9 | 52 | 6,55 | 34,5 | 49 |
| **NUTR 45100 A** | 73,7 | 104 | 12,7 | 80 | 114 |
| **PWTR 45100.2RS** | 53,9 | 69,5 | 8,65 | 81,5 | 116 |
| **NUTR 50110 A** | 78,1 | 116 | 14,3 | 98 | 140 |
| **PWTR 50110.2RS** | 57,2 | 78 | 9,65 | 100 | 143 |
| **NNTR 50X130X65.2ZL** | 179 | 232 | 31 | 224 | 320 |
| **NNTR 55X140X70.2ZL** | 209 | 275 | 37,5 | 224 | 320 |
| **NNTR 60X150X75.2ZL** | 238 | 320 | 42,5 | 265 | 375 |
| **NNTR 65X160X75.2ZL** | 255 | 345 | 46,5 | 285 | 405 |
| **NNTR 70X180X85.2ZL** | 330 | 455 | 61 | 375 | 540 |
| **NNTR 80X200X90.2ZL** | 391 | 540 | 71 | 455 | 640 |
| **NNTR 90X220X100.2ZL** | 468 | 670 | 83 | 480 | 680 |
| **NNTR 100X240X105.2ZL** | 528 | 780 | 93 | 550 | 780 |
| **NNTR 110x260x115.2ZL** | 627 | 930 | 112 | 655 | 950 |
| **NNTR 120X290X135.2ZL** | 825 | 1 270 | 143 | 900 | 1 290 |
| **NNTR 130x310x146.2ZL** | 952 | 1 460 | 166 | 1 040 | 1 500 |

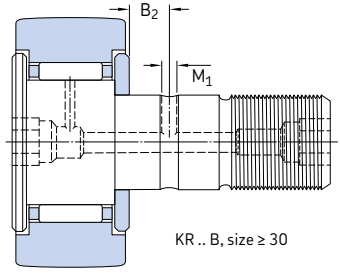



KR, sizes 16 and 19
(KR .. PPA, sizes 16 and 19
have axial sliding rings)

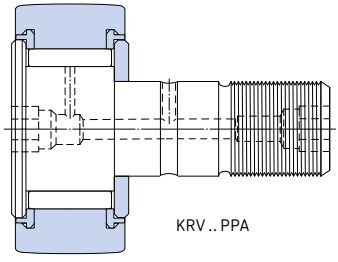


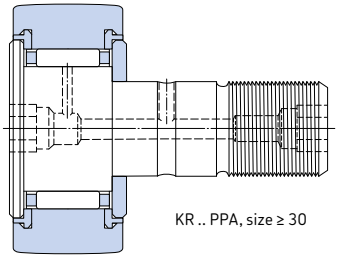

KR .. B, sizes 22 and 26
(KR .. PPA, sizes 22 and 26
have axial sliding rings)

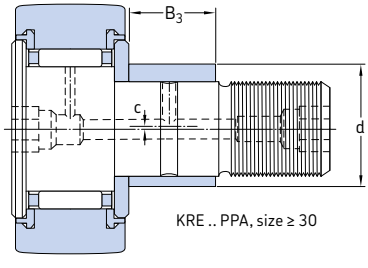
| Dimensions | | | | | | | | | | | | | | | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | C | d | B | $B_1$ | $B_2$ | $C_1$ | $d_1$ | G | $G_1$ | M | $M_1$ | $r_{1,2}$ min. | SW | c | $B_3$ | | |
| mm | | | | | | | | | | | | | | | | kg | – |
| **16** | 11 | 6 | 28 | 16 | – | 0,6 | 12,5 | M 6 | 8 | 4 | – | 0,15 | – | – | – | 0,019 | **KR 16** |
| | 11 | 6 | 28 | 16 | – | 0,6 | 12,5 | M 6 | 8 | 4 | – | 0,15 | – | – | – | 0,018 | **KR 16 PPA** |
| | 11 | 6 | 28 | 16 | – | 0,6 | 12,5 | M 6 | 8 | – | – | 0,15 | 4 | – | – | 0,019 | **KR 16 PPSKA** |
| | 11 | 6 | 28 | 16 | – | 0,6 | 12,5 | M 6 | 8 | 4 | – | 0,15 | – | – | – | 0,019 | **KRV 16 PPA** |
| | 11 | 9 | 28 | 16 | – | 0,6 | 12,5 | M 6 | 8 | 4 | – | 0,15 | – | 0,5 | 7 | 0,02 | **KRE 16 PPA** |
| **19** | 11 | 8 | 32 | 20 | – | 0,6 | 15 | M 6 | 10 | 4 | – | 0,15 | – | – | – | 0,029 | **KR 19** |
| | 11 | 8 | 32 | 20 | – | 0,6 | 15 | M 6 | 10 | 4 | – | 0,15 | – | – | – | 0,029 | **KR 19 PPA** |
| | 11 | 8 | 32 | 20 | – | 0,6 | 15 | M 8 | 10 | – | – | 0,15 | 4 | – | – | 0,029 | **KR 19 PPSKA** |
| | 11 | 8 | 32 | 20 | – | 0,6 | 15 | M 6 | 10 | 4 | – | 0,15 | – | – | – | 0,031 | **KRV 19 PPA** |
| | 11 | 11 | 32 | 20 | – | 0,6 | 15 | M 6 | 10 | 4 | – | 0,15 | – | 0,5 | 9 | 0,032 | **KRE 19 PPA** |
| **22** | 12 | 10 | 36 | 23 | – | 0,6 | 17,5 | M 10x1 | 12 | 4 | – | 0,3 | 5 | – | – | 0,045 | **KR 22 B** |
| | 12 | 10 | 36 | 23 | – | 0,6 | 17,5 | M 10x1 | 12 | 4 | – | 0,3 | 5 | – | – | 0,043 | **KR 22 PPA** |
| | 12 | 10 | 36 | 23 | – | 0,6 | 17,5 | M 10x1 | 12 | 4 | – | 0,3 | 5 | – | – | 0,045 | **KRV 22 PPA** |
| | 12 | 13 | 36 | 23 | – | 0,6 | 17,5 | M 10x1 | 12 | 4 | – | 0,3 | 5 | 0,5 | 10 | 0,047 | **KRE 22 PPA** |
| **26** | 12 | 10 | 36 | 23 | – | 0,6 | 17,5 | M 10x1 | 12 | 4 | – | 0,3 | 5 | – | – | 0,059 | **KR 26 B** |
| | 12 | 10 | 36 | 23 | – | 0,6 | 17,5 | M 10x1 | 12 | 4 | – | 0,3 | 5 | – | – | 0,057 | **KR 26 PPA** |
| | 12 | 10 | 36 | 23 | – | 0,6 | 17,5 | M 10x1 | 12 | 4 | – | 0,3 | 5 | – | – | 0,059 | **KRV 26 PPA** |
| | 12 | 13 | 36 | 23 | – | 0,6 | 17,5 | M 10x1 | 12 | 4 | – | 0,3 | 5 | 0,5 | 10 | 0,062 | **KRE 26 PPA** |
| **30** | 14 | 12 | 40 | 25 | 6 | 0,6 | 23 | M 12x1,5 | 13 | 4 | 3 | 0,6 | 6 | – | – | 0,092 | **KR 30 B** |
| | 14 | 12 | 40 | 25 | 6 | 0,6 | 23 | M 12x1,5 | 13 | 4 | 3 | 0,6 | 6 | – | – | 0,088 | **KR 30 PPA** |
| | 14 | 12 | 40 | 25 | 6 | 0,6 | 23 | M 12x1,5 | 13 | 4 | 3 | 0,6 | 6 | – | – | 0,091 | **KRV 30 PPA** |
| | 14 | 15 | 40 | 25 | 6 | 0,6 | 23 | M 12x1,5 | 13 | 4 | 3 | 0,6 | 6 | 0,5 | 11 | 0,093 | **KRE 30 PPA** |
| **32** | 14 | 12 | 40 | 25 | 6 | 0,6 | 23 | M 12x1,5 | 13 | 4 | 3 | 0,6 | 6 | – | – | 0,103 | **KR 32 B** |
| | 14 | 12 | 40 | 25 | 6 | 0,6 | 23 | M 12x1,5 | 13 | 4 | 3 | 0,6 | 6 | – | – | 0,098 | **KR 32 PPA** |
| | 14 | 12 | 40 | 25 | 6 | 0,6 | 23 | M 12x1,5 | 13 | 4 | 3 | 0,6 | 6 | – | – | 0,101 | **KRV 32 PPA** |
| | 14 | 15 | 40 | 25 | 6 | 0,6 | 23 | M 12x1,5 | 13 | 4 | 3 | 0,6 | 6 | 0,5 | 11 | 0,104 | **KRE 32 PPA** |



KR .. B, size ≥ 30

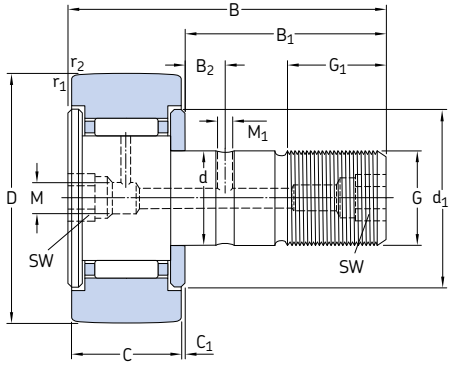

KRV .. PPA


KR .. PPA, size ≥ 30

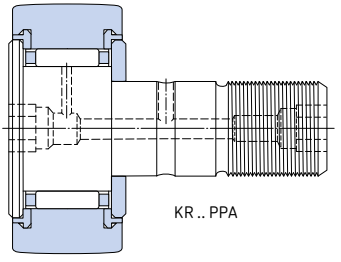


KRE .. PPA, size ≥ 30

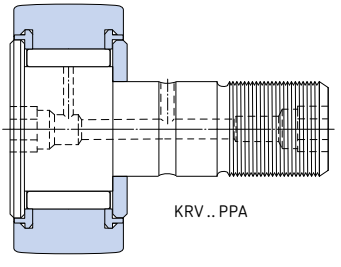
| Designation | Basic load ratings dynamic | static | Fatigue load limit | Maximum radial loads dynamic | static | Limiting speed |
|---|---|---|---|---|---|---|
| | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ | |
| – | kN | | kN | kN | | r/min |
| **KR 16** | 3,14 | 3,2 | 0,345 | 2,9 | 4,15 | 6 000 |
| **KR 16 PPA** | 3,14 | 3,2 | 0,345 | 2,9 | 4,15 | 6 000 |
| **KR 16 PPSKA** | 3,14 | 3,2 | 0,345 | 2,9 | 4,15 | 6 000 |
| **KRV 16 PPA** | 4,73 | 6,55 | 0,72 | 4,05 | 5,7 | 4 300 |
| **KRE 16 PPA** | 3,14 | 3,2 | 0,345 | 2,9 | 4,15 | 6 000 |
| **KR 19** | 3,47 | 3,8 | 0,415 | 3,8 | 5,5 | 5 600 |
| **KR 19 PPA** | 3,47 | 3,8 | 0,415 | 3,8 | 5,5 | 5 600 |
| **KR 19 PPSKA** | 3,47 | 3,8 | 0,415 | 3,8 | 5,5 | 5 600 |
| **KRV 19 PPA** | 5,28 | 8 | 0,88 | 5,1 | 7,35 | 4 000 |
| **KRE 19 PPA** | 3,47 | 3,8 | 0,415 | 3,8 | 5,5 | 5 600 |
| **KR 22 B** | 4,4 | 5 | 0,56 | 4,25 | 6 | 5 300 |
| **KR 22 PPA** | 4,4 | 5 | 0,56 | 4,25 | 6 | 5 300 |
| **KRV 22 PPA** | 6,05 | 9,15 | 1,04 | 5,7 | 8,15 | 3 600 |
| **KRE 22 PPA** | 4,4 | 5 | 0,56 | 4,25 | 6 | 5 300 |
| **KR 26 B** | 4,84 | 6 | 0,655 | 9,3 | 13,2 | 5 300 |
| **KR 26 PPA** | 4,84 | 6 | 0,655 | 9,3 | 13,2 | 5 300 |
| **KRV 26 PPA** | 6,82 | 11 | 1,25 | 11,4 | 16,3 | 3 600 |
| **KRE 26 PPA** | 4,84 | 6 | 0,655 | 9,3 | 13,2 | 5 300 |
| **KR 30 B** | 6,44 | 8 | 0,88 | 7,8 | 11,2 | 4 800 |
| **KR 30 PPA** | 6,44 | 8 | 0,88 | 7,8 | 11,2 | 4 800 |
| **KRV 30 PPA** | 8,97 | 14,6 | 1,66 | 11 | 15,6 | 3 200 |
| **KRE 30 PPA** | 6,44 | 8 | 0,88 | 7,8 | 11,2 | 4 800 |
| **KR 32 B** | 6,71 | 8,5 | 0,95 | 10,6 | 15 | 4 800 |
| **KR 32 PPA** | 6,71 | 8,5 | 0,95 | 10,6 | 15 | 4 800 |
| **KRV 32 PPA** | 9,35 | 15,3 | 1,76 | 14,3 | 20,4 | 3 200 |
| **KRE 32 PPA** | 6,71 | 8,5 | 0,95 | 10,6 | 15 | 4 800 |




KR .. B

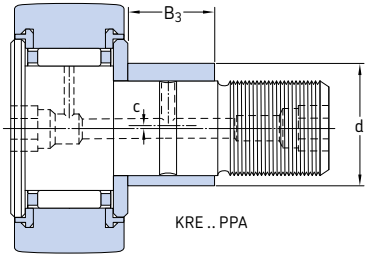


KR .. PPA

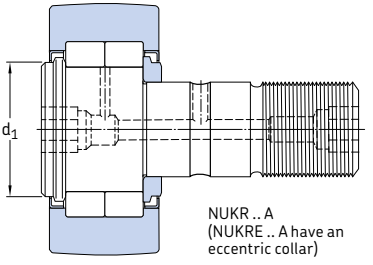


KRV .. PPA

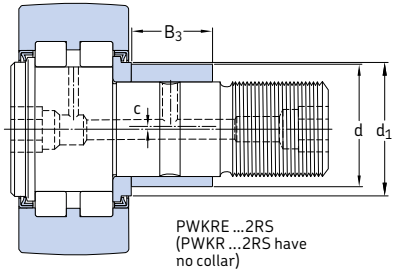
| Dimensions | | | | | | | | | | | | | | | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | C | d | B | $B_1$ | $B_2$ | $C_1$ | $d_1$ | G | $G_1$ | M | $M_1$ | $r_{1,2}$ min. | SW | c | $B_3$ | | |
| mm | | | | | | | | | | | | | | | | kg | – |
| **35** | 18 | 16 | 52 | 32,5 | 8 | 0,8 | 27,6 | M 16x1,5 | 17 | 6 | 3 | 0,6 | 8 | – | – | 0,173 | **KR 35 B** |
| | 18 | 16 | 52 | 32,5 | 8 | 0,8 | 27,6 | M 16x1,5 | 17 | 6 | 3 | 0,6 | 8 | – | – | 0,164 | **KR 35 PPA** |
| | 18 | 16 | 52 | 32,5 | 8 | 0,8 | 27,6 | M 16x1,5 | 17 | 6 | 3 | 0,6 | 8 | – | – | 0,166 | **KRV 35 PPA** |
| | 18 | 16 | 52 | 32,5 | 7,8 | 0,8 | 20 | M 16x1,5 | 17 | 6 | 3 | 0,6 | 8 | – | – | 0,164 | **NUKR 35 A** |
| | 18 | 16 | 52 | 32,5 | 7,8 | 0,8 | 20 | M 16x1,5 | 17 | 6 | 3 | 0,6 | 8 | – | – | 0,164 | **PWKR 35.2RS** |
| | 18 | 20 | 52 | 32,5 | 8 | 0,8 | 27,6 | M 16x1,5 | 17 | 6 | 3 | 0,6 | 8 | 1 | 14 | 0,177 | **KRE 35 PPA** |
| | 18 | 20 | 52 | 29,5 | 7,8 | 3,8 | 27,6 | M 16x1,5 | 17 | 6 | 3 | 0,6 | 8 | 1 | 12 | 0,177 | **NUKRE 35 A** |
| | 18 | 20 | 52 | 29,5 | 7,8 | 3,8 | 27,6 | M 16x1,5 | 17 | 6 | 3 | 0,6 | 8 | 1 | 12 | 0,177 | **PWKRE 35.2RS** |
| **40** | 20 | 18 | 58 | 36,5 | 8 | 0,8 | 31,5 | M 18x1,5 | 19 | 6 | 3 | 1 | 8 | – | – | 0,247 | **KR 40 B** |
| | 20 | 18 | 58 | 36,5 | 8 | 0,8 | 31,5 | M 18x1,5 | 19 | 6 | 3 | 1 | 8 | – | – | 0,239 | **KR 40 PPA** |
| | 20 | 18 | 58 | 36,5 | 8 | 0,8 | 31,5 | M 18x1,5 | 19 | 6 | 3 | 1 | 8 | – | – | 0,247 | **KRV 40 PPA** |
| | 20 | 18 | 58 | 36,5 | 8 | 0,8 | 22 | M 18x1,5 | 19 | 6 | 3 | 1 | 8 | – | – | 0,242 | **NUKR 40 A** |
| | 20 | 18 | 58 | 36,5 | 8 | 0,8 | 22 | M 18x1,5 | 19 | 6 | 3 | 1 | 8 | – | – | 0,242 | **PWKR 40.2RS** |
| | 20 | 22 | 58 | 36,5 | 8 | 0,8 | 31,5 | M 18x1,5 | 19 | 6 | 3 | 1 | 8 | 1 | 16 | 0,255 | **KRE 40 PPA** |
| | 20 | 22 | 58 | 33,5 | 8 | 3,8 | 30 | M 18x1,5 | 19 | 6 | 3 | 1 | 8 | 1 | 14 | 0,258 | **NUKRE 40 A** |
| | 20 | 22 | 58 | 33,5 | 8 | 3,8 | 30 | M 18x1,5 | 19 | 6 | 3 | 1 | 8 | 1 | 14 | 0,258 | **PWKRE 40.2RS** |
| **47** | 24 | 20 | 66 | 40,5 | 9 | 0,8 | 36,5 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | – | – | 0,381 | **KR 47 PPA** |
| | 24 | 20 | 66 | 40,5 | 9 | 0,8 | 36,5 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | – | – | 0,39 | **KRV 47 PPA** |
| | 24 | 20 | 66 | 40,5 | 9 | 0,8 | 27 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | – | – | 0,38 | **NUKR 47 A** |
| | 24 | 20 | 66 | 40,5 | 9 | 0,8 | 27 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | – | – | 0,38 | **PWKR 47.2RS** |
| | 24 | 24 | 66 | 40,5 | 9 | 0,8 | 36,5 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | 1 | 18 | 0,4 | **KRE 47 PPA** |
| | 24 | 24 | 66 | 40,5 | 9 | 0,8 | 27 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | 1 | 18 | 0,4 | **NUKRE 47 A** |
| | 24 | 24 | 66 | 40,5 | 9 | 0,8 | 27 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | 1 | 18 | 0,4 | **PWKRE 47.2RS** |
| **52** | 24 | 20 | 66 | 40,5 | 9 | 0,8 | 36,5 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | – | – | 0,454 | **KR 52 PPA** |
| | 24 | 20 | 66 | 40,5 | 9 | 0,8 | 36,5 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | – | – | 0,463 | **KRV 52 PPA** |
| | 24 | 20 | 66 | 67,5 | 9 | 0,8 | 31 | M 20x1,5 | 25 | 6 | 4 | 1 | 10 | – | – | 0,45 | **NUKR 52 A** |
| | 24 | 20 | 66 | 40,5 | 9 | 0,8 | 31 | M 20x1,5 | 25 | 6 | 4 | 1 | 10 | – | – | 0,45 | **PWKR 52.2RS** |




KRE .. PPA

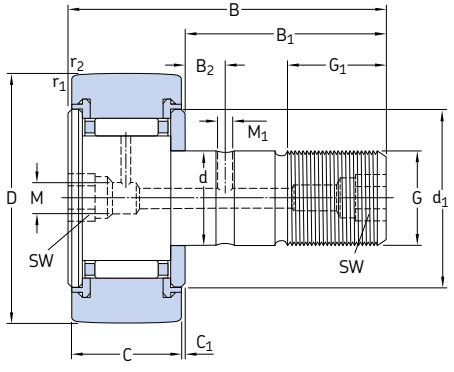



NUKR .. A
(NUKRE .. A have an eccentric collar)

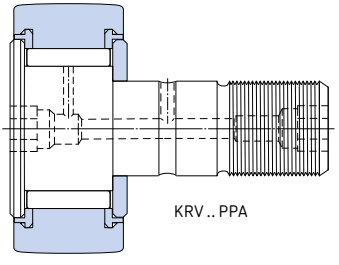



PWKRE ...2RS
(PWKR ...2RS have no collar)

| Designation | Basic load ratings dynamic | static | Fatigue load limit | Maximum radial loads dynamic | static | Limiting speed |
|---|---|---|---|---|---|---|
| | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ | |
| – | kN | | kN | kN | | r/min |
| **KR 35 B** | 9,52 | 13,7 | 1,56 | 11,4 | 16,3 | 4 000 |
| **KR 35 PPA** | 9,52 | 13,7 | 1,56 | 11,4 | 16,3 | 4 000 |
| **KRV 35 PPA** | 12,3 | 23,2 | 2,7 | 14,6 | 20,8 | 2 600 |
| **NUKR 35 A** | 16,8 | 17,6 | 2 | 8,65 | 12,2 | 5 000 |
| **PWKR 35.2RS** | 11,9 | 11,4 | 1,2 | 8,65 | 12,5 | 5 000 |
| **KRE 35 PPA** | 9,52 | 13,7 | 1,56 | 11,4 | 16,3 | 4 000 |
| **NUKRE 35 A** | 16,8 | 17,6 | 2 | 8,65 | 12,2 | 5 000 |
| **PWKRE 35.2RS** | 11,9 | 11,4 | 1,2 | 8,65 | 12,5 | 5 000 |
| **KR 40 B** | 10,5 | 14,6 | 1,73 | 12,5 | 18 | 3 400 |
| **KR 40 PPA** | 10,5 | 14,6 | 1,73 | 12,5 | 18 | 3 400 |
| **KRV 40 PPA** | 14,2 | 26,5 | 3,1 | 17 | 24,5 | 2 200 |
| **NUKR 40 A** | 19 | 22 | 2,5 | 14 | 20 | 4 500 |
| **PWKR 40.2RS** | 13,8 | 14,3 | 1,5 | 13,7 | 19,6 | 4 500 |
| **KRE 40 PPA** | 10,5 | 14,6 | 1,73 | 12,5 | 18 | 3 400 |
| **NUKRE 40 A** | 19 | 22 | 2,5 | 14 | 20 | 4 500 |
| **PWKRE 40.2RS** | 13,8 | 14,3 | 1,5 | 13,7 | 19,6 | 4 500 |
| **KR 47 PPA** | 14,7 | 24,5 | 2,9 | 23,6 | 33,5 | 3 000 |
| **KRV 47 PPA** | 19,4 | 41,5 | 5 | 30,5 | 43 | 1 900 |
| **NUKR 47 A** | 28,6 | 33,5 | 3,9 | 17,6 | 25 | 3 800 |
| **PWKR 47.2RS** | 22,9 | 24,5 | 2,8 | 18,3 | 26 | 3 800 |
| **KRE 47 PPA** | 14,7 | 24,5 | 2,9 | 23,6 | 33,5 | 3 000 |
| **NUKRE 47 A** | 28,6 | 33,5 | 3,9 | 17,6 | 25 | 3 800 |
| **PWKRE 47.2RS** | 22,9 | 24,5 | 2,8 | 18,3 | 26 | 3 800 |
| **KR 52 PPA** | 15,7 | 27 | 3,2 | 36 | 51 | 3 000 |
| **KRV 52 PPA** | 20,9 | 46,5 | 5,6 | 45 | 64 | 1 900 |
| **NUKR 52 A** | 29,7 | 36 | 4,25 | 18 | 25,5 | 3 200 |
| **PWKR 52.2RS** | 23,8 | 26,5 | 3,05 | 18,6 | 26,5 | 3 200 |

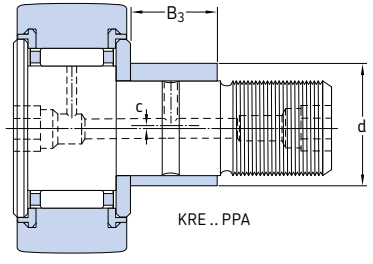



KR .. PPA

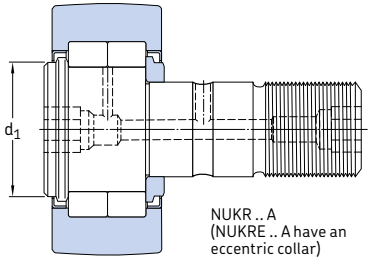


KRV .. PPA

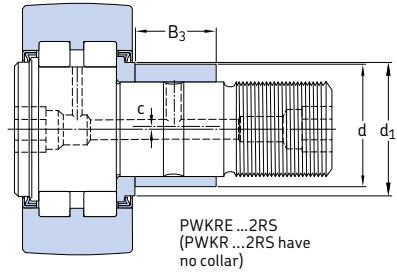
| Dimensions | | | | | | | | | | | | | | | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | C | d | B | $B_1$ | $B_2$ | $C_1$ | $d_1$ | G | $G_1$ | M | $M_1$ | $r_{1,2}$ min. | SW | c | $B_3$ | | |
| mm | | | | | | | | | | | | | | | | kg | – |
| **52** | 24 | 24 | 66 | 40,5 | 9 | 0,8 | 36,5 | M 20x1,5 | 21 | 6 | 4 | 1 | 10 | 1 | 18 | 0,473 | **KRE 52 PPA** |
| cont. | 24 | 24 | 66 | 40,5 | 9 | 0,8 | 31 | M 20x1,5 | 25 | 6 | 4 | 1 | 10 | 1 | 18 | 0,47 | **NUKRE 52 A** |
| | 24 | 24 | 66 | 40,5 | 9 | 0,8 | 31 | M 20x1,5 | 25 | 6 | 4 | 1 | 10 | 1 | 18 | 0,47 | **PWKRE 52.2RS** |
| **62** | 28 | 24 | 80 | 49,5 | 11 | 1,3 | 38 | M 24x1,5 | 25 | 8 | 4 | 1 | 14 | – | – | 0,795 | **NUKR 62 A** |
| | 28 | 24 | 80 | 49,5 | 11 | 1,3 | 38 | M 24x1,5 | 25 | 8 | 4 | 1 | 14 | – | – | 0,795 | **PWKR 62.2RS** |
| | 28 | 28 | 80 | 49,5 | 11 | 1,3 | 38 | M 24x1,5 | 25 | 8 | 4 | 1 | 14 | 1 | 22 | 0,824 | **NUKRE 62 A** |
| | 28 | 28 | 80 | 49,5 | 11 | 1,3 | 38 | M 24x1,5 | 25 | 8 | 4 | 1 | 14 | 1 | 22 | 0,824 | **PWKRE 62.2RS** |
| | 29 | 24 | 80 | 49,5 | 11 | 0,8 | 44 | M 24x1,5 | 25 | 8 | 4 | 1 | 14 | – | – | 0,77 | **KR 62 PPA** |
| | 29 | 24 | 80 | 49,5 | 11 | 0,8 | 44 | M 24x1,5 | 25 | 8 | 4 | 1 | 14 | – | – | 0,787 | **KRV 62 PPA** |
| | 29 | 28 | 80 | 49,5 | 11 | 0,8 | 44 | M 24x1,5 | 25 | 8 | 4 | 1 | 14 | 1 | 22 | 0,798 | **KRE 62 PPA** |
| **72** | 28 | 24 | 80 | 49,5 | 11 | 1,3 | 44 | M 24x1,5 | 25 | 8 | 4 | 1,1 | 14 | – | – | 1,02 | **NUKR 72 A** |
| | 28 | 24 | 80 | 49,5 | 11 | 1,3 | 44 | M 24x1,5 | 25 | 8 | 4 | 1,1 | 14 | – | – | 1,02 | **PWKR 72.2RS** |
| | 28 | 28 | 80 | 49,5 | 11 | 1,3 | 44 | M 24x1,5 | 25 | 8 | 4 | 1,1 | 14 | 1 | 22 | 1,05 | **NUKRE 72 A** |
| | 28 | 28 | 80 | 49,5 | 11 | 1,3 | 44 | M 24x1,5 | 25 | 8 | 4 | 1,1 | 14 | 1 | 22 | 1,05 | **PWKRE 72.2RS** |
| | 29 | 24 | 80 | 49,5 | 11 | 0,8 | 44 | M 24x1,5 | 25 | 8 | 4 | 1,1 | 14 | – | – | 1,01 | **KR 72 PPA** |
| | 29 | 24 | 80 | 49,5 | 11 | 0,8 | 44 | M 24x1,5 | 25 | 8 | 4 | 1,1 | 14 | – | – | 1,027 | **KRV 72 PPA** |
| | 29 | 28 | 80 | 49,5 | 11 | 0,8 | 44 | M 24x1,5 | 25 | 8 | 4 | 1,1 | 14 | 1 | 22 | 1,038 | **KRE 72 PPA** |
| **80** | 35 | 30 | 100 | 63 | 15 | 1 | 53 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | – | – | 1,608 | **KR 80 PPA** |
| | 35 | 30 | 100 | 63 | 15 | 1 | 53 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | – | – | 1,636 | **KRV 80 PPA** |
| | 35 | 30 | 100 | 63 | 15 | 1 | 47 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | – | – | 1,6 | **NUKR 80 A** |
| | 35 | 30 | 100 | 63 | 15 | 1 | 47 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | – | – | 1,6 | **PWKR 80.2RS** |
| | 35 | 35 | 100 | 63 | 15 | 1 | 53 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | 1,5 | 29 | 1,665 | **KRE 80 PPA** |
| | 35 | 35 | 100 | 63 | 15 | 1 | 47 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | 1,5 | 29 | 1,67 | **NUKRE 80 A** |
| | 35 | 35 | 100 | 63 | 15 | 1 | 47 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | 1,5 | 29 | 1,67 | **PWKRE 80.2RS** |




KRE .. PPA

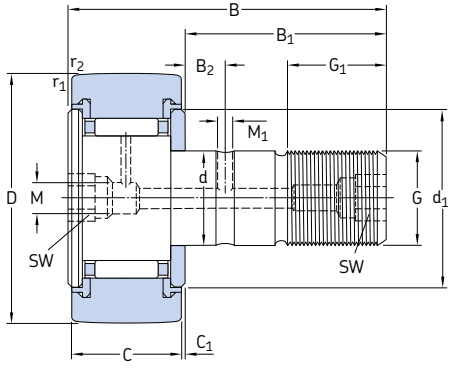



NUKR .. A
(NUKRE .. A have an eccentric collar)

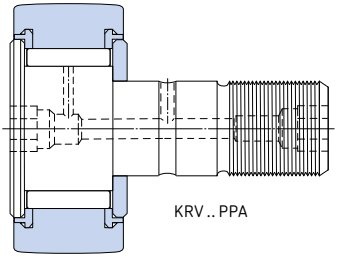



PWKRE ...2RS
(PWKR ...2RS have no collar)

| Designation | Basic load ratings dynamic | static | Fatigue load limit | Maximum radial loads dynamic | static | Limiting speed |
|---|---|---|---|---|---|---|
| | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ | |
| – | kN | | kN | kN | | r/min |
| **KRE 52 PPA** | 15,7 | 27 | 3,2 | 36 | 51 | 3 000 |
| **NUKRE 52 A** | 29,7 | 36 | 4,25 | 18 | 25,5 | 3 200 |
| **PWKRE 52.2RS** | 23,8 | 26,5 | 3,05 | 18,6 | 26,5 | 3 200 |
| **NUKR 62 A** | 41,3 | 48 | 5,85 | 25 | 36 | 2 600 |
| **PWKR 62.2RS** | 31,9 | 32,5 | 4,05 | 20,4 | 29 | 2 600 |
| **NUKRE 62 A** | 41,3 | 48 | 5,85 | 25 | 36 | 2 600 |
| **PWKRE 62.2RS** | 31,9 | 32,5 | 4,05 | 20,4 | 29 | 2 600 |
| **KR 62 PPA** | 24,6 | 44 | 5,5 | 58,5 | 85 | 2 400 |
| **KRV 62 PPA** | 31,4 | 72 | 9 | 72 | 102 | 1 700 |
| **KRE 62 PPA** | 24,6 | 44 | 5,5 | 58,5 | 85 | 2 400 |
| **NUKR 72 A** | 45,7 | 58,5 | 7,1 | 34,5 | 50 | 2 000 |
| **PWKR 72.2RS** | 39,6 | 45 | 5,6 | 47,5 | 68 | 2 600 |
| **NUKRE 72 A** | 45,7 | 58,5 | 7,1 | 34,5 | 50 | 2 000 |
| **PWKRE 72.2RS** | 39,6 | 45 | 5,6 | 47,5 | 68 | 2 600 |
| **KR 72 PPA** | 26 | 48 | 6 | 100 | 143 | 2 400 |
| **KRV 72 PPA** | 33 | 80 | 9,8 | 118 | 170 | 1 700 |
| **KRE 72 PPA** | 26 | 48 | 6 | 100 | 143 | 2 400 |
| **KR 80 PPA** | 36,9 | 72 | 9 | 106 | 150 | 1 800 |
| **KRV 80 PPA** | 45,7 | 114 | 14 | 122 | 176 | 1 400 |
| **NUKR 80 A** | 69,3 | 86,5 | 10,8 | 48 | 69,5 | 1 900 |
| **PWKR 80.2RS** | 57,2 | 73,5 | 9,3 | 64 | 91,5 | 2 000 |
| **KRE 80 PPA** | 36,9 | 72 | 9 | 106 | 150 | 1 800 |
| **NUKRE 80 A** | 69,3 | 86,5 | 10,8 | 48 | 69,5 | 1 900 |
| **PWKRE 80.2RS** | 57,2 | 73,5 | 9,3 | 64 | 91,5 | 2 000 |

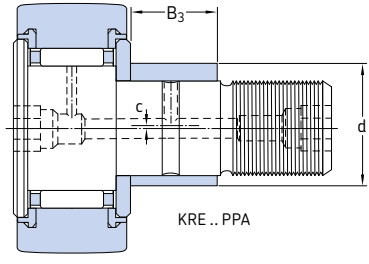



KR .. PPA

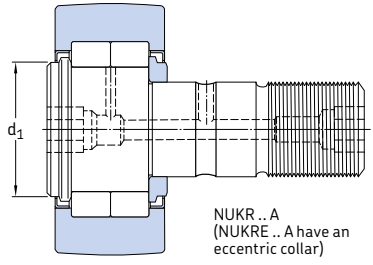


KRV .. PPA

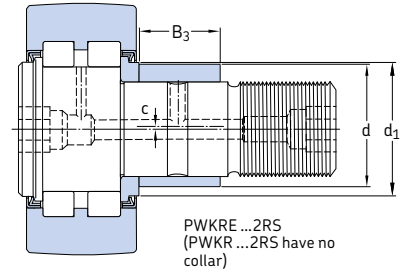
| Dimensions | | | | | | | | | | | | | | | | Mass | Designation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | C | d | B | $B_1$ | $B_2$ | $C_1$ | $d_1$ | G | $G_1$ | M | $M_1$ | $r_{1,2}$ min. | SW | c | $B_3$ | | |
| mm | | | | | | | | | | | | | | | | kg | – |
| **90** | 35 | 30 | 100 | 63 | 15 | 1 | 53 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | – | – | 1,975 | **KR 90 PPA** |
| | 35 | 30 | 100 | 63 | 15 | 1 | 53 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | – | – | 2,003 | **KRV 90 PPA** |
| | 35 | 30 | 100 | 63 | 15 | 1 | 47 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | – | – | 1,96 | **NUKR 90 A** |
| | 35 | 30 | 100 | 63 | 15 | 1 | 47 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | – | – | 1,96 | **PWKR 90.2RS** |
| | 35 | 35 | 100 | 63 | 15 | 1 | 53 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | 1,5 | 29 | 2,032 | **KRE 90 PPA** |
| | 35 | 35 | 100 | 63 | 15 | 1 | 47 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | 1,5 | 29 | 2,02 | **NUKRE 90 A** |
| | 35 | 35 | 100 | 63 | 15 | 1 | 47 | M 30x1,5 | 32 | 8 | 4 | 1,1 | 14 | 1,5 | 29 | 2,02 | **PWKRE 90.2RS** |




KRE .. PPA




NUKR .. A
(NUKRE .. A have an eccentric collar)




PWKRE ...2RS
(PWKR ...2RS have no collar)

| Designation | Basic load ratings dynamic | static | Fatigue load limit | Maximum radial loads dynamic | static | Limiting speed |
|---|---|---|---|---|---|---|
| | C | $C_0$ | $P_u$ | $F_r$ | $F_{0r}$ | |
| – | kN | | kN | kN | | r/min |
| **KR 90 PPA** | 38 | 76,5 | 9,5 | 160 | 228 | 1 800 |
| **KRV 90 PPA** | 47,3 | 122 | 15 | 183 | 260 | 1 400 |
| **NUKR 90 A** | 78,1 | 102 | 12,7 | 86,5 | 125 | 1 900 |
| **PWKR 90.2RS** | 62,7 | 85 | 10,8 | 108 | 153 | 2 000 |
| **KRE 90 PPA** | 38 | 76,5 | 9,5 | 160 | 228 | 1 800 |
| **NUKRE 90 A** | 78,1 | 102 | 12,7 | 86,5 | 125 | 1 900 |
| **PWKRE 90.2RS** | 62,7 | 85 | 10,8 | 108 | 153 | 2 000 |


SKF