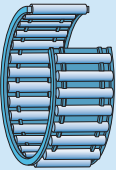
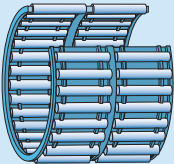




Bearing types

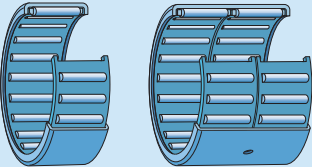
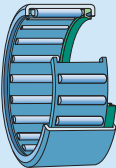
Needle roller and cage assemblies

See chapter 2 starting on **page 57**

Bearing design Needle roller and cage assemblies	Designation series Inside diameter range	Characteristics
Single row 	K .. TN $F_w = 3 - 45 \text{ mm}$ K $F_w = 14 - 265 \text{ mm}$	Polyamide 66 cage Steel cage
Double row 	K .. ZWTN $F_w = 32 \text{ mm}$ K .. ZW $F_w = 24 - 95 \text{ mm}$	Polyamide 66 cage Steel cage

Drawn cup needle roller bearings

See chapter 3 starting on **page 75**

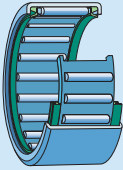
Bearing design Drawn cup needle roller bearings	Designation series Inside diameter range	Characteristics
With open ends, HK series, not sealed 	HK .. TN $F_w = 3 \text{ mm}$ HK $F_w = 4 - 60 \text{ mm}$	Polyamide 66 cage Steel cage, size-dependent single or double row (→ product tables)
With open ends, HK series, sealed on one side 	HK .. RS $F_w = 8 - 50 \text{ mm}$	Steel cage, factory greased

Bearing design

Drawn cup needle roller bearings

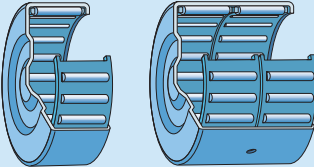
Designation series

Inside diameter range

Characteristics**With open ends, HK series, sealed on both sides**

HK ...2RS
 $F_w = 8 - 50$ mm

Steel cage, factory greased

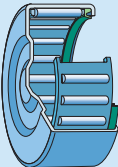
With a closed end, BK series, not sealed

BK .. TN
 $F_w = 3$ mm

Polyamide 66 cage

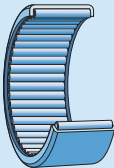
BK
 $F_w = 4 - 45$ mm

Steel cage, size-dependent single or double row (→ product tables)

With a closed end, BK series, sealed

BK .. RS
 $F_w = 10 - 25$ mm

Steel cage, factory greased

With open ends, HN series, full complement, not sealed

HN
 $F_w = 10 - 50$ mm

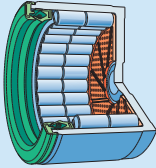
Factory greased to secure the rollers

Bearing types

Universal joint bearings

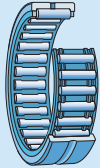
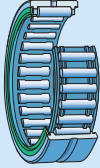
Not covered in this catalogue.

For additional information, refer to the *SKF Interactive Engineering Catalogue*.

Bearing design Universal joint bearings	Designation series	Characteristics
	BNKB	Specific cold forged cup needle roller bearings for universal joints of commercial vehicle propeller shafts

Needle roller bearings with machined rings

See chapter 4 starting on **page 97**

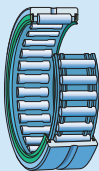
Bearing design Needle roller bearings with machined rings	Designation series Inside diameter range	Characteristics
With flanges, without an inner ring, not sealed		
	NK .. TN $F_w = 5 - 60 \text{ mm}$	Integral flanges, annular groove and one or more lubrication holes (size dependent) If $F_w \leq 10 \text{ mm}$: with integral closure rings, without lubrication hole or annular groove
	NK $F_w = 12 - 110 \text{ mm}$	
	NKS $F_w = 20 - 75 \text{ mm}$	
	RNA 49 $F_w = 14 - 160 \text{ mm}$	
	RNA 69 $F_w = 16 - 110 \text{ mm}$	RNA 69 series bearings with an outside diameter $D \geq 52 \text{ mm}$ are designed as double row bearings
	RNA 48 $F_w = 120 - 415 \text{ mm}$	
With flanges, without an inner ring, sealed on one side		
	RNA 49.. RS $F_w = 14 - 58 \text{ mm}$	Integral flanges, annular groove and one or more lubrication holes (size dependent), factory greased

Bearing design

Needle roller bearings with machined rings

Designation series

Inside/bore diameter range

Characteristics**With flanges, without an inner ring, sealed on both sides**

RNA 49...2RS
 $F_w = 14 - 58$ mm

Integral flanges, annular groove and one or more lubrication holes (size dependent), factory greased

With flanges, with an inner ring, not sealed

NKI .. TN
 $d = 5 - 55$ mm

NKI
 $d = 9 - 100$ mm

NKIS
 $d = 15 - 65$ mm

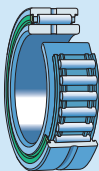
NA 49
 $d = 10 - 140$ mm

NA 69
 $d = 12 - 95$ mm

NA 48
 $d = 110 - 380$ mm

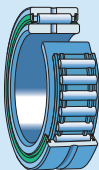
Integral flanges, annular groove and one or more lubrication holes (size dependent)
 If $d \leq 7$ mm: with integral closure rings, without lubrication hole or annular groove

NA 69 series bearings with an outside diameter $D \geq 52$ mm are designed as double row bearings

With flanges, with an inner ring, sealed on one side

NA 49.. RS
 $d = 10 - 50$ mm

Integral flanges, annular groove and one or more lubrication holes (size dependent), factory greased

With flanges, with an inner ring, sealed on both sides

NA 49...2RS
 $d = 10 - 50$ mm

Integral flanges, annular groove and one or more lubrication holes (size dependent), factory greased

Bearing types

Bearing design

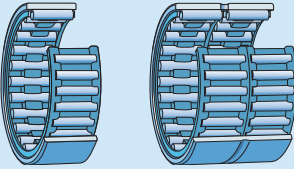
Needle roller bearings with machined rings

Designation series

Inside/bore diameter range

Characteristics

Without flanges, without an inner ring, not sealed

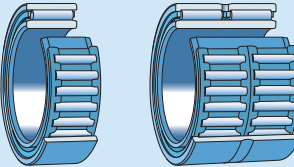


RNAO .. TN
 $F_w = 5 - 12 \text{ mm}$

RNAO
 $F_w = 15 - 100 \text{ mm}$

Available as single or double row bearings (→ product tables)
 Double row bearings have an annular groove and a lubrication hole

Without flanges, with an inner ring, not sealed



NAO .. TN
 $d = 6 - 9 \text{ mm}$

NAO
 $d = 12 - 90 \text{ mm}$

Available as single or double row bearings (→ product table)
 Double row bearings have an annular groove and a lubrication hole
 Some bearings have one lubrication hole in the inner ring (→ product table)

Alignment needle roller bearings

See chapter 5 starting on **page 141**

Bearing design

Alignment needle roller bearings

Designation series

Inside/bore diameter range

Characteristics

Without an inner ring



RPNA
 $F_w = 15 - 45 \text{ mm}$

Can compensate static misalignment up to 3° between the shaft and housing
 Steel cage, not sealed, no lubrication holes

With an inner ring

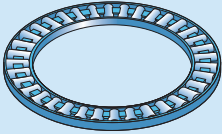
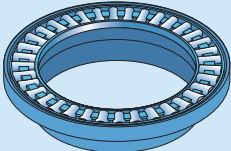


PNA
 $d = 12 - 40 \text{ mm}$

Can compensate static misalignment up to 3° between the shaft and housing
 Steel cage, not sealed, no lubrication holes

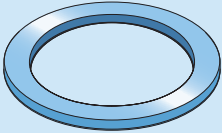
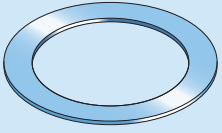
Needle roller thrust bearings

See chapter 6 starting on **page 151**

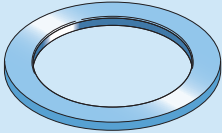
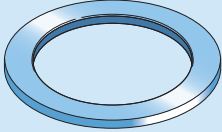
Bearing design	Designation series	Characteristics
Needle roller thrust bearings	Bore diameter range	
Needle roller and cage thrust assemblies		
	AXK .. TN $d = 4 - 8 \text{ mm}$ AXK $d = 10 - 160 \text{ mm}$	Appropriate washers: LS, AS, GS 811 and WS 811 series
Needle roller thrust bearings with a centring spigot		
	AXW $d = 10 - 50 \text{ mm}$	Can be combined with radial needle roller bearings to accommodate combined radial and axial loads

Bearing washers

See chapter 6 on **page 154**

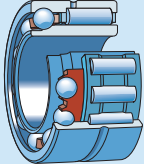
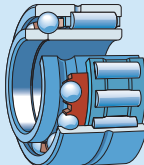
Bearing design	Designation series	Characteristics
Bearing washers	Bore diameter range	
Raceway washers, LS series		
	LS $d = 6 - 160 \text{ mm}$	Ground raceway, turned bore and outside diam- eter, can be combined with AXK and AXW series
Thrust washers, AS series		
	AS $d = 4 - 160 \text{ mm}$	Made of spring steel, 1 mm thick, hardened and polished, can be combined with AXK and AXW series, both sides can be used as raceways

Bearing types

Bearing design Bearing washers	Designation series Bore/outside diameter range	Characteristics
<p>Shaft washers, WS 811 series</p> 	<p>WS 811 d = 15 – 630 mm</p>	<p>Precision machined raceway, ground bore, can be combined with AXK and AXW series, for bore diameters up to 160 mm</p>
<p>Housing washers, GS 811 series</p> 	<p>GS 811 D = 28 – 750 mm</p>	<p>Precision machined raceway, ground outside diameter, can be combined with AXK series, for outside diameters up to 200 mm</p>

Combined needle roller bearings

See chapter 7 starting on **page 169**

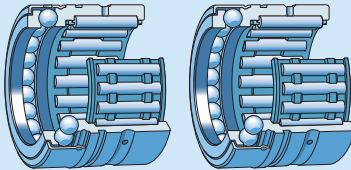
Bearing design Combined needle roller bearings	Designation series Bore diameter range	Characteristics
<p>Needle roller / angular contact ball bearings, NKIA series</p> 	<p>NKIA d = 12 – 70 mm</p>	<p>Can accommodate axial loads in one direction</p>
<p>Needle roller / angular contact ball bearings, NKIB series</p> 	<p>NKIB d = 12 – 70 mm</p>	<p>Can accommodate axial loads in both directions</p>

Bearing design

Combined needle roller bearings

Designation series

Inside diameter range

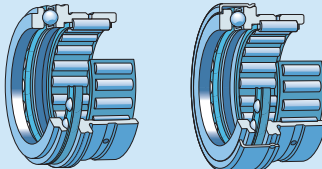
Characteristics**Needle roller / thrust ball bearings, NX series**

NX series

NX..Z series

NX .. (Z)TN $F_w = 7 \text{ mm}$ **NX .. (Z)** $F_w = 10 - 35 \text{ mm}$

Full complement thrust ball bearing, steel cover with or without lubrication holes
 NX .. Z series: factory greased thrust bearing, steel cover without lubrication hole

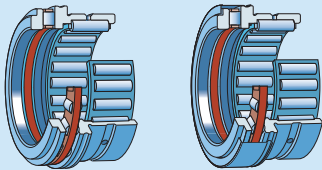
Needle roller / thrust ball bearings, NKX series

NKX series

NKX..Z series

NKX .. (Z)TN $F_w = 10 \text{ mm}$ **NKX .. (Z)** $F_w = 12 - 70 \text{ mm}$

Thrust ball bearing with a cage, with or without steel cover
 NKX .. Z series: factory greased thrust bearing, steel cover without lubrication hole

Needle roller / cylindrical roller thrust bearings, NKXR series

NKXR series

NKXR .. Z series

NKXR $F_w = 15 - 50 \text{ mm}$ **NKXR .. Z** $F_w = 15 - 50 \text{ mm}$

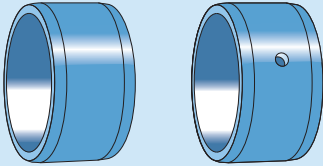
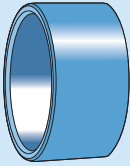
Separable bearing design

Thrust bearing with a steel cover and initial grease fill, non-separable bearing design

Bearing types

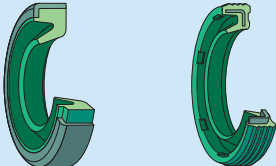
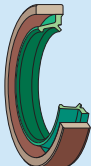
Needle roller bearing inner rings

See chapter 8 starting on **page 195**

Bearing design Needle roller bearing inner rings	Designation series Bore diameter range	Characteristics
 <p>IR series</p> <p>IR .. IS1 series</p>	<p>IR d = 5 – 380 mm</p> <p>IR .. IS1 d = 6 – 50 mm</p>	<p>Made of carbon chromium bearing steel, hardened, precision machined raceway with a lead-in chamfer on both sides, with or without lubrication hole(s)</p>
 <p>LR series</p>	<p>LR d = 7 – 50 mm</p>	<p>Made of carbon chromium bearing steel, hardened, ground bore and raceway, turned side faces</p>

Radial shaft seals with a low cross sectional height

See chapter 8 on **page 208**

Bearing design Radial shaft seals with a low cross sectional height	Designation series Bore diameter range	Characteristics
 <p>G .. S series</p> <p>G series</p>	<p>G .. S d₁ = 4 – 7 mm</p> <p>G d₁ = 8 – 70 mm</p>	<p>Single lip design, made of acrylonitrile-butadiene rubber</p> <p>Rubber material metal cased</p> <p>Sheet steel reinforced</p>
 <p>SD design</p>	<p>SD d₁ = 8 – 50 mm</p>	<p>Double lip design, lips are made of polyurethane elastomer, polyamide reinforcement ring</p>

Track runner bearings

SKF track runner bearings are rolling bearings with a very thick-walled outer ring that can accommodate heavy loads as well as shock loads. The designs of track runner bearings are based on ball bearings, needle roller bearings as well as cylindrical roller bearings.

SKF supplies track runner bearings in many different designs and for a wide variety of operating conditions and applications. They are ready-to-mount pre-greased units and are intended for all types of cam drives, tracks, conveyor systems, etc. The rails used for SKF linear guides can serve as tracks for the bearings.

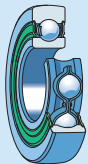
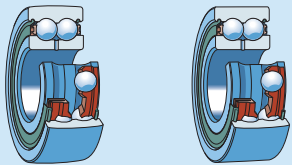
Basics of the SKF track runner bearing assortment are listed below and comprises the following types:

- cam rollers
- support rollers
- cam followers

Cam rollers

Not covered in this catalogue.


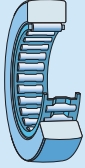


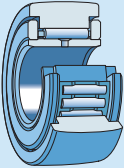
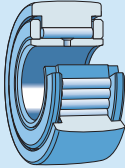
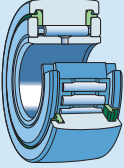
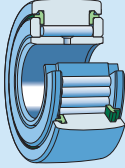
For additional information, refer to the *SKF Interactive Engineering Catalogue*.

Bearing design Cam rollers	Designation series Outside diameter range	Characteristics
Single row 	3612.. R D = 32 – 80 mm	Sealed, crowned running surface
Double row 	3058.. C-2Z D = 32 – 80 mm 3057.. C-2Z D = 35 – 80 mm	Sealed Crowned running surface Cylindrical running surface
3058.. C-2Z series	3057.. C-2Z series	

Bearing types

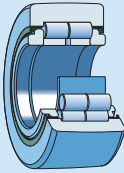
Support rollers

See chapter 9 starting on **page 215**

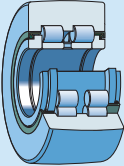
Bearing design	Designation series	Characteristics
Support rollers		
Without flange rings, (R)STO and (R)NA 22...2RS designs		
 <p>STO</p>	STO .. TN D	Cr
	STO D	
 <p>NA</p>	RSTO .. TN D	
	RSTO D	
	NA 22...2RS D	
	RNA 22...2RS D	
With flange rings, NATR and NATV designs		
 <p>NATR</p>	NATR NATV D	Cr
		
 <p>NATR</p>	NATR .. PPA NATV .. PPA D	I s
		

Bearing design
 Support rollers

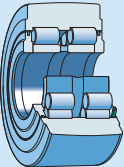
Designation series
 Outside diameter range

Characteristics
With flange rings, NUTR .. A design

NUTR .. A
 D = 35 – 110 mm

Can accommodate axial forces and heavy shock loads, improved crowned running surface

With flange rings, PWTR ...2RS design

PWTR ...2RS
 D = 35 – 110 mm

Improved crowned running surface

With flange rings, NNTR ...2ZL design

NNTR ...2ZL
 D = 130 – 310 mm

Size-dependent crowned running surface

Bearing types

Cam followers

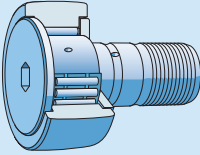
See chapter 9 on **page 238**

Bearing design
Cam followers

Designation series
Outside diameter range

Characteristics

KR design



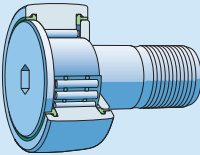
KR .. B series

KR .. B
D = 22 – 40 mm

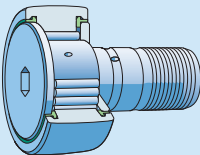
KR .. (PPSKA)
D = 16 – 19 mm

KR .. PPA
KRV .. PPA
KRE .. PPA
D = 16 – 90 mm

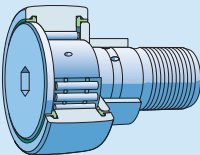
Crowned outer ring running surface as standard, designation suffixes PPSKA and PPA with an improved crowned profile, with or without axial sliding rings, cage-guided or full complement of needle rollers, concentric or eccentric seat, size-dependent characteristics regarding relubrication and holding during mounting



KR .. PPSKA series



KRV .. PPA series



KRE .. PPA series

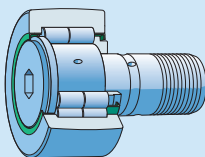
Bearing design

Cam followers

Designation series
Outside diameter range

Characteristics

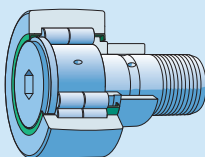
NUKR design



NUKR .. A design

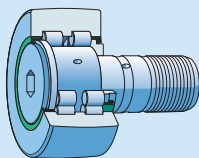
NUKR .. A
NUKRE .. A
D = 35 – 90 mm

Improved crowned profile of the outer ring running surface, concentric seat or eccentric collar on the stud



NUKRE .. A design

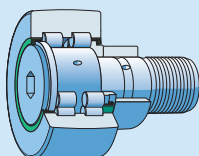
PWKR design



PWKR ...2RS design

PWKR ...2RS
PWKRE ...2RS
D = 35 – 90 mm

Improved crowned profile of the outer ring running surface, concentric seat or eccentric collar on the stud

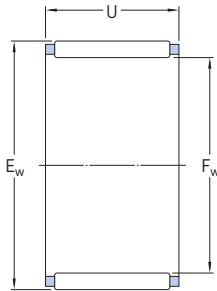


PWKRE ...2RS design



Needle roller and cage assemblies

F_w 3 – 19 mm



K

Dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Appropriate seal ¹⁾ Designation
F_w	E_w	U	dynamic	static		Reference speed	Limiting speed			
			C	C_0	P_u					
mm			kN		kN	r/min		g	–	–
3	5	7	1,51	1,34	0,134	40 000	45 000	0,3	K 3×5×7 TN	–
	5	9	1,68	1,53	0,153	40 000	45 000	0,4	K 3×5×9 TN	–
	6	7	1,42	1,02	0,104	38 000	43 000	0,4	K 3×6×7 TN	–
4	7	7	1,72	1,32	0,137	36 000	43 000	0,5	K 4×7×7 TN	–
	7	10	2,29	1,9	0,204	36 000	43 000	0,7	K 4×7×10 TN	–
5	8	8	2,29	2	0,212	36 000	40 000	0,7	K 5×8×8 TN	–
	8	10	2,92	2,7	0,29	36 000	40 000	0,9	K 5×8×10 TN	–
6	9	8	2,55	2,36	0,25	34 000	38 000	0,8	K 6×9×8 TN	–
	9	10	3,3	3,2	0,345	34 000	38 000	1,1	K 6×9×10 TN	–
	10	13	3,69	3,15	0,36	34 000	38 000	1,9	K 6×10×13 TN	G 6×10×2 S
7	9	7	1,68	1,83	0,19	34 000	38 000	0,6	K 7×9×7 TN	–
	10	8	2,81	2,75	0,29	32 000	36 000	0,9	K 7×10×8 TN	–
	10	10	3,58	3,75	0,415	32 000	36 000	1,0	K 7×10×10 TN	–
8	11	8	3,03	3,1	0,335	32 000	36 000	1,0	K 8×11×8 TN	–
	11	10	3,8	4,25	0,465	32 000	36 000	1,2	K 8×11×10 TN	–
	11	13	5,01	5,85	0,67	32 000	36 000	1,7	K 8×11×13 TN	–
	12	10	4,84	4,75	0,54	30 000	34 000	2,0	K 8×12×10 TN	G 8×12×3
9	12	10	4,4	5,2	0,57	30 000	34 000	1,5	K 9×12×10 TN	–
	12	13	5,72	7,2	0,815	30 000	34 000	2,1	K 9×12×13 TN	–
10	13	10	4,57	5,7	0,63	28 000	32 000	1,6	K 10×13×10 TN	–
	13	13	5,94	8	0,9	28 000	32 000	2,3	K 10×13×13 TN	–
	13	16	6,82	9,5	1,08	28 000	32 000	2,9	K 10×13×16 TN	–
	14	10	5,61	6,1	0,695	28 000	32 000	2,5	K 10×14×10 TN	G 10×14×3
	14	13	7,21	8,5	0,98	28 000	32 000	4,6	K 10×14×13 TN	G 10×14×3
	16	12	7,65	7,2	0,85	28 000	32 000	5,5	K 10×16×12 TN	–
12	15	10	4,73	6,2	0,695	26 000	30 000	2,9	K 12×15×10 TN	–
	15	13	6,16	8,65	0,98	26 000	30 000	2,3	K 12×15×13 TN	–
	16	13	7,65	9,5	1,1	26 000	30 000	3,6	K 12×16×13 TN	G 12×16×3
	17	13	9,13	10,4	1,22	26 000	30 000	4,9	K 12×17×13 TN	–
	18	12	9,52	10	1,18	26 000	30 000	6,0	K 12×18×12 TN	G/SD 12×18×3

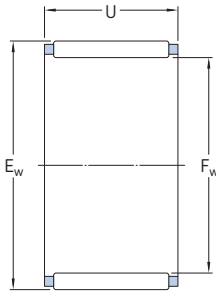
¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Appropriate seal ¹⁾
F _w	E _w	U	C	C ₀	P _u	Reference speed	Limiting speed			Designation
mm			kN		kN	r/min		g	–	–
14	18	10	6,93	8,65	1	24 000	28 000	4,0	K 14×18×10	–
	18	13	7,92	10,2	1,18	24 000	28 000	6,5	K 14×18×13	–
	18	15	9,13	12,5	1,46	24 000	28 000	5,0	K 14×18×15 TN	–
	18	17	10,5	14,6	1,7	24 000	28 000	8,0	K 14×18×17	–
	20	12	9,9	10,6	1,25	24 000	28 000	8,5	K 14×20×12	G/SD 14×20×3
15	18	17	7,65	12,2	1,4	24 000	28 000	4,6	K 15×18×17 TN	–
	19	10	7,21	9,3	1,08	24 000	28 000	5,0	K 15×19×10	–
	19	13	8,25	11,2	1,29	24 000	28 000	7,0	K 15×19×13	–
	19	17	10,8	15,6	1,86	24 000	28 000	9,5	K 15×19×17	–
	20	13	9,52	11,6	1,34	24 000	26 000	7,0	K 15×20×13	–
	21	15	13,8	16,3	2	24 000	26 000	11	K 15×21×15	G/SD 15×21×3
	21	21	18,7	24,5	3	24 000	26 000	17	K 15×21×21	G/SD 15×21×3
16	20	10	7,48	10	1,16	24 000	26 000	5,5	K 16×20×10	–
	20	13	8,58	12	1,37	24 000	26 000	7,5	K 16×20×13	–
	20	17	11,2	17	2	24 000	26 000	10	K 16×20×17	–
	22	12	11	12,5	1,5	22 000	26 000	10	K 16×22×12	G/SD 16×22×3
	22	16	14,2	17,6	2,12	22 000	26 000	12	K 16×22×16	G/SD 16×22×3
	22	20	17,6	22,8	2,8	22 000	26 000	17	K 16×22×20	G/SD 16×22×3
	24	20	20,5	23,6	2,9	22 000	24 000	22	K 16×24×20	G/SD 16×24×3
	24	20	20,5	23,6	2,9	22 000	24 000	22	K 16×24×20	G/SD 16×24×3
17	21	10	7,81	10,8	1,22	22 000	26 000	5,5	K 17×21×10	–
	21	13	10,1	14,6	1,73	22 000	26 000	6,5	K 17×21×13	–
	21	17	11,7	18,3	2,12	22 000	26 000	9,5	K 17×21×17	–
18	22	10	8,09	11,4	1,32	22 000	24 000	6,0	K 18×22×10	–
	22	13	8,8	12,9	1,5	22 000	24 000	8,0	K 18×22×13	–
	22	17	11,7	18,3	2,16	22 000	24 000	11	K 18×22×17	–
	24	12	12,1	15	1,8	20 000	24 000	12	K 18×24×12	G/SD 18×24×3
	24	13	12,5	15,3	1,86	20 000	24 000	13	K 18×24×13	G/SD 18×24×3
	24	20	19,4	27	3,25	20 000	24 000	18	K 18×24×20	G/SD 18×24×3
	25	22	22	29	3,55	20 000	24 000	23	K 18×25×22	–
19	23	13	9,13	13,7	1,6	20 000	24 000	8,0	K 19×23×13	–
	23	17	12,1	19,3	2,28	20 000	24 000	11	K 19×23×17	–

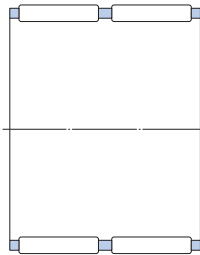
¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Needle roller and cage assemblies

F_w 20 – 30 mm



K



K..ZW

Dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Appropriate seal ¹⁾
F _w	E _w	U	C	C ₀	P _u	Reference speed	Limiting speed			Designation
mm			kN		kN	r/min		g	–	–
20	24	10	8,58	12,9	1,46	20 000	22 000	6,5	K 20×24×10	–
	24	13	9,52	14,6	1,66	20 000	22 000	9,0	K 20×24×13	–
	24	17	12,5	20,8	2,4	20 000	22 000	12	K 20×24×17	–
	26	12	12,8	16,3	1,96	19 000	22 000	11	K 20×26×12	G/SD 20×26×4
	26	13	13,8	18	2,16	19 000	22 000	12	K 20×26×13	G/SD 20×26×4
	26	17	18,3	26	3,2	19 000	22 000	16	K 20×26×17	G/SD 20×26×4
	26	20	20,1	29	3,6	19 000	22 000	19	K 20×26×20	G/SD 20×26×4
	28	16	19	22,4	2,7	18 000	20 000	20	K 20×28×16	G/SD 20×28×4
	28	20	22,9	28,5	3,45	18 000	20 000	27	K 20×28×20	G/SD 20×28×4
	28	25	29,2	39	4,9	18 000	20 000	32	K 20×28×25	G/SD 20×28×4
30	30	34,1	41,5	5,2	17 000	20 000	49	K 20×30×30	–	
21	25	13	9,68	15,3	1,76	19 000	22 000	9,0	K 21×25×13	–
22	26	10	8,8	13,7	1,56	18 000	20 000	7,5	K 22×26×10	–
	26	13	10,1	16,3	1,86	18 000	20 000	9,5	K 22×26×13	–
	26	17	13,2	22,8	2,7	18 000	20 000	12	K 22×26×17	–
	28	17	18,3	27	3,25	17 000	20 000	18	K 22×28×17	G/SD 22×28×4
	29	16	19,4	25,5	3,05	17 000	19 000	16	K 22×29×16	–
	30	15	19	23,6	2,8	17 000	19 000	18	K 22×30×15 TN	G/SD 22×30×4
	32	24	31,9	40	4,9	16 000	18 000	43	K 22×32×24	–
23	35	16	24,2	23,2	2,9	15 000	17 000	29	K 23×35×16 TN	–
24	28	10	9,35	15	1,73	17 000	19 000	8,5	K 24×28×10	–
	28	13	10,6	18	2,08	17 000	19 000	10	K 24×28×13	–
	28	17	14	25,5	3	17 000	19 000	13	K 24×28×17	–
	30	17	18,7	27,5	3,4	16 000	18 000	19	K 24×30×17	–
	30	31	26,4	43	5,3	16 000	18 000	32	K 24×30×31 ZW	–

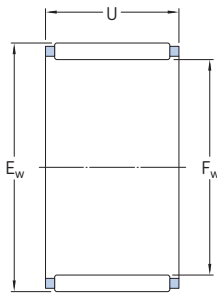
¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Appropriate seal ¹⁾
F _w	E _w	U	C	C ₀	P _u	Reference speed	Limiting speed			Designation
mm			kN		kN	r/min		g	-	-
25	29	10	9,52	15,6	1,8	16 000	18 000	8,5	K 25×29×10	-
	29	13	10,8	18,6	2,16	16 000	18 000	11	K 25×29×13	-
	29	17	14,2	26,5	3,1	16 000	18 000	14	K 25×29×17	-
	30	17	17,9	30,5	3,6	16 000	18 000	16	K 25×30×17	-
	30	20	20,9	36,5	4,4	16 000	18 000	18	K 25×30×20	-
	30	26	20,5	36	4,15	16 000	18 000	19	K 25×30×26 ZW	-
	31	17	18,7	28,5	3,45	16 000	18 000	19	K 25×31×17	-
	31	21	23,3	38	4,75	16 000	18 000	20	K 25×31×21	-
	32	16	19,8	27,5	3,35	15 000	17 000	21	K 25×32×16	G 25×32×4
	33	20	27,5	38	4,65	15 000	17 000	33	K 25×33×20	G/SD 25×33×4
	33	24	31,9	47,5	5,85	15 000	17 000	39	K 25×33×24	G/SD 25×33×4
	35	30	44,6	62	7,8	15 000	17 000	65	K 25×35×30	G/SD 25×35×4
26	30	13	11,2	19,6	2,28	16 000	18 000	11	K 26×30×13	-
	30	17	14,7	27,5	3,25	16 000	18 000	15	K 26×30×17	-
	30	22	15,1	29	3,35	16 000	18 000	12	K 26×30×22 ZW	-
28	33	13	14,7	24,5	2,85	14 000	16 000	13	K 28×33×13	-
	33	17	19	33,5	4,05	14 000	16 000	17	K 28×33×17	-
	34	17	20,9	33,5	4,15	14 000	16 000	24	K 28×34×17	-
	35	16	20,5	30	3,55	14 000	16 000	24	K 28×35×16	G/SD 28×35×4
	35	18	22,9	34,5	4,15	14 000	16 000	27	K 28×35×18	G/SD 28×35×4
	40	25	42,9	55	6,95	13 000	15 000	70	K 28×40×25	-
30	34	13	11,9	22	2,55	14 000	15 000	14	K 30×34×13	-
	35	13	15,1	25,5	3	13 000	15 000	14	K 30×35×13	-
	35	17	18,7	34	4,05	13 000	15 000	19	K 30×35×17	-
	35	27	29,2	60	7,35	13 000	15 000	30	K 30×35×27	-
	37	16	22	33,5	4	13 000	15 000	27	K 30×37×16	G/SD 30×37×4
	37	18	25,1	39	4,65	13 000	15 000	30	K 30×37×18	G/SD 30×37×4
	40	18	30,3	40	4,9	12 000	14 000	48	K 30×40×18	G/SD 30×40×4
	40	30	46,8	69,5	8,65	12 000	14 000	73	K 30×40×30	G/SD 30×40×4

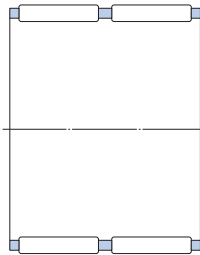
¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Needle roller and cage assemblies

F_w 32 – 55 mm



K



K..ZW

Dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Appropriate seal ¹⁾ Designation
F _w	E _w	U	dynamic	static		Reference speed	Limiting speed			
mm			kN		kN	r/min		g	–	–
32	37	13	14,7	25,5	3	13 000	14 000	18	K 32×37×13	–
	37	17	19	35,5	4,25	13 000	14 000	19	K 32×37×17	–
	37	27	28,6	60	7,35	13 000	14 000	30	K 32×37×27	–
	38	20	25,1	45	5,6	12 000	14 000	30	K 32×38×20	–
	39	16	22,9	35,5	4,25	12 000	14 000	37	K 32×39×16	–
	39	18	25,5	41,5	5	12 000	14 000	31	K 32×39×18	–
	40	25	35,8	58,5	7,2	12 000	14 000	49	K 32×40×25	–
	40	42	48,4	83	10,2	12 000	14 000	77	K 32×40×42 ZWTN	–
	46	32	62,7	83	10,4	11 000	13 000	119	K 32×46×32	–
35	40	13	15,4	28	3,25	12 000	13 000	19	K 35×40×13	–
	40	17	19,8	39	4,65	12 000	13 000	21	K 35×40×17	–
	40	25	28,1	60	7,35	12 000	13 000	31	K 35×40×25	–
	40	27	23,8	49	6	12 000	13 000	39	K 35×40×27 TN	–
	42	16	23,3	37,5	4,5	11 000	13 000	34	K 35×42×16	G/SD 35×42×4
	42	18	26,4	44	5,3	11 000	13 000	34	K 35×42×18	G/SD 35×42×4
	42	20	29,2	50	6	11 000	13 000	37	K 35×42×20	G/SD 35×42×4
	42	30	37,4	68	8,5	11 000	13 000	67	K 35×42×30	G/SD 35×42×4
	45	20	35,2	50	6,2	11 000	12 000	56	K 35×45×20	G/SD 35×45×4
	45	30	50,1	80	10	11 000	12 000	80	K 35×45×30	G/SD 35×45×4
	37	42	17	21,6	43	5,2	11 000	13 000	22	K 37×42×17
38	43	17	19,8	39	4,65	11 000	12 000	29	K 38×43×17	–
	43	27	30,3	68	8,3	11 000	12 000	43	K 38×43×27	–
	46	20	34,1	57	6,95	10 000	12 000	47	K 38×46×20	–
	46	32	52,3	100	12,5	10 000	12 000	76	K 38×46×32	–
39	44	26	26	57	6,7	10 000	12 000	45	K 39×44×26 ZW	–
40	45	13	16,8	32,5	3,8	10 000	12 000	18	K 40×45×13	–
	45	17	20,5	41,5	5	10 000	12 000	31	K 40×45×17	–
	45	27	31,4	73,5	9	10 000	12 000	46	K 40×45×27	–
	47	18	28,6	50	6,1	10 000	11 000	39	K 40×47×18	G/SD 40×47×4
	47	20	31,4	57	6,95	10 000	11 000	42	K 40×47×20	G/SD 40×47×4
	48	20	34,7	58,5	7,35	10 000	11 000	49	K 40×48×20	–

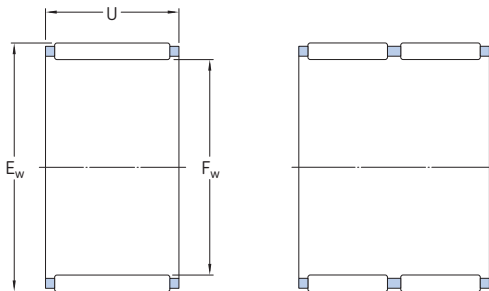
¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Appropriate seal ¹⁾
F _w	E _w	U	C	C ₀	P _u	Reference speed	Limiting speed			Designation
mm			kN		kN	r/min		g	–	–
42	47	13	17,2	33,5	4	10 000	11 000	18	K 42×47×13	–
	47	17	20,9	43	5,2	10 000	11 000	32	K 42×47×17	–
	47	30	31,9	76,5	9	10 000	11 000	54	K 42×47×30 ZW	–
	50	20	33,6	57,0	9,5	9 500	11 000	53	K 42×50×20	–
43	48	17	20,9	43	5,2	9 500	11 000	30	K 43×48×17	–
	48	27	31,9	76,5	9,3	9 500	11 000	50	K 43×48×27	–
45	50	17	21,6	46,5	5,6	9 000	10 000	34	K 45×50×17	–
	50	27	33	81,5	10	9 000	10 000	52	K 45×50×27	–
	52	18	30,3	57	6,95	9 000	10 000	42	K 45×52×18	G/SD 45×52×4
	53	20	37,4	68	8,3	9 000	10 000	55	K 45×53×20	–
	53	21	36,9	67	8,3	9 000	10 000	60	K 45×53×21	–
	53	28	49,5	98	12,2	9 000	10 000	81	K 45×53×28	–
	59	18	44	53	6,55	8 500	9 500	72	K 45×58×18 TN	–
	59	32	69,3	102	12,9	8 500	9 500	148	K 45×59×32	–
47	52	17	22,4	49	6	9 000	10 000	35	K 47×52×17	–
	52	27	33,6	83	10,2	9 000	10 000	51	K 47×52×27	–
50	55	13,5	17,6	36,5	4,3	8 500	9 500	30	K 50×55×13.5	–
	55	17	23,8	55,0	6,55	8 500	9 500	35	K 50×55×17	–
	55	20	25,5	60	7,2	8 500	9 500	43	K 50×55×20	–
	55	30	37,4	98	12	8 500	9 500	65	K 50×55×30	–
	57	18	31,9	64	7,8	8 000	9 000	47	K 50×57×18	–
	58	20	34,1	62	7,65	8 000	9 000	75	K 50×58×20	G/SD 50×58×4
	58	25	41,8	81,5	10,2	8 000	9 000	90	K 50×58×25	G/SD 50×58×4
	52	57	12	17,2	36,5	4,3	8 000	9 000	24	K 52×57×12
55	60	20	27	67	8,15	7 500	8 500	40	K 55×60×20	–
	60	27	35,8	96,5	12	7 500	8 500	60	K 55×60×27	–
	60	30	39,6	108	13,4	7 500	8 500	71	K 55×60×30	–
	62	18	34,1	71	8,5	7 500	8 500	52	K 55×62×18	–
	63	20	38	75	9,15	7 500	8 500	67	K 55×63×20	G 55×63×5
	63	25	49,5	104	12,9	7 500	8 500	80	K 55×63×25	G 55×63×5
	63	32	59,4	129	16,3	7 500	8 500	102	K 55×63×32	G 55×63×5

¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Needle roller and cage assemblies

F_w 58 – 155 mm



K

K..ZW

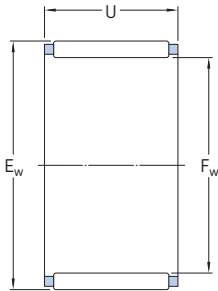
Dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Appropriate seal ¹⁾ Designation
F _w	E _w	U	dynamic	static		Reference speed	Limiting speed			
mm			kN		kN	r/min		g	–	–
58	65	18	33,6	71	8,65	7 000	8 000	52	K 58×65×18	–
	65	36	47,3	108	12,9	7 000	8 000	127	K 58×65×36 ZW	–
60	65	20	28,1	72	8,8	7 000	8 000	52	K 60×65×20	–
	65	30	41,3	116	14,3	7 000	8 000	77	K 60×65×30	–
	66	33	44	112	13,7	7 000	8 000	104	K 60×66×33 ZW	–
	66	40	55	150	18,6	7 000	8 000	116	K 60×66×40 ZW	–
	68	20	41,8	86,5	10,6	6 700	7 500	71	K 60×68×20	–
	68	23	47,3	102	12,5	6 700	7 500	94	K 60×68×23	–
	68	25	51,2	112	14	6 700	7 500	89	K 60×68×25	–
	68	30	42,9	88	10,6	6 700	7 500	129	K 60×68×30 ZW	–
	75	42	112	196	25	6 300	7 500	240	K 60×75×42	–
62	70	40	62,7	146	18,0	6 700	7 500	174	K 62×70×40 ZW	–
64	70	16	26,4	60	7,35	6 300	7 500	53	K 64×70×16	–
65	70	20	29,2	76,5	9,3	6 300	7 500	56	K 65×70×20	–
	70	30	41,8	125	15,3	6 300	7 500	83	K 65×70×30	–
	73	23	44,0	95,0	11,6	6 300	7 000	108	K 65×73×23	–
	73	30	53,9	125	15,6	6 300	7 000	141	K 65×73×30	–
68	74	20	33,6	83	10,4	6 000	7 000	71	K 68×74×20	–
	74	30	44,6	118	15	6 000	7 000	100	K 68×74×30	–
	74	35	46,8	125	15,3	6 000	7 000	120	K 68×74×35 ZW	–
70	76	20	34,1	86,5	10,6	6 000	6 700	71	K 70×76×20	–
	76	30	50,1	140	17,6	6 000	6 700	110	K 70×76×30	–
	78	30	57,2	137	17	6 000	6 700	148	K 70×78×30	G 70×78×5
72	80	20	39,6	85	10,6	5 600	6 300	98	K 72×80×20	–
73	79	20	35,2	90	11,2	5 600	6 300	75	K 73×79×20	–
75	81	20	35,8	93	11,6	5 600	6 300	79	K 75×81×20	–
	81	30	50,1	143	18	5 600	6 300	114	K 75×81×30	–
	83	23	47,3	110	13,7	5 300	6 300	124	K 75×83×23	–
	83	30	59,4	143	18	5 300	6 300	147	K 75×83×30	–
	83	35	60,5	146	18	5 300	6 300	182	K 75×83×35 ZW	–
	83	40	69,3	176	22	5 300	6 300	211	K 75×83×40 ZW	–

¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Dimensions			Basic load ratings		Fatigue load limit P_u	Speed ratings		Mass g	Designation
F_w	E_w	U	dynamic C	static C_0		Reference speed	Limiting speed		
mm			kN		kN	r/min			-
80	86	20	36,9	98	12,2	5 300	6 000	60	K 80×86×20
	88	30	68,2	176	22	5 000	6 000	138	K 80×88×30
	88	40	72,1	193	23,6	5 000	6 000	227	K 80×88×40 ZW
	88	46	84,2	232	28,5	5 000	6 000	260	K 80×88×46 ZW
85	92	20	42,9	108	13,2	4 800	5 600	102	K 85×92×20
90	97	20	42,9	114	13,7	4 500	5 300	109	K 90×97×20
	98	27	58,3	150	18,6	4 500	5 300	150	K 90×98×27
	98	30	64,4	173	21,6	4 500	5 300	172	K 90×98×30
95	103	30	66	180	22,8	4 300	5 000	165	K 95×103×30
	103	40	79,2	228	28,5	4 300	5 000	266	K 95×103×40 ZW
100	107	21	45,7	127	15,3	4 000	4 800	120	K 100×107×21
	108	27	55	143	17,6	4 000	4 800	185	K 100×108×27
	108	30	67,1	190	23,6	4 000	4 800	180	K 100×108×30
105	112	21	45,7	129	15,3	4 000	4 500	129	K 105×112×21
110	117	24	53,9	160	18,6	3 800	4 300	172	K 110×117×24
	118	30	73,7	220	26,5	3 800	4 300	217	K 110×118×30
115	123	27	60,5	170	20	3 600	4 000	200	K 115×123×27
120	127	24	56,1	176	20,4	3 400	4 000	165	K 120×127×24
125	133	35	82,5	260	30,5	3 200	3 800	275	K 125×133×35
130	137	24	58,3	186	21,2	3 200	3 600	170	K 130×137×24
135	143	35	88	290	33,5	3 000	3 400	300	K 135×143×35
145	153	26	70,4	224	25	2 800	3 200	262	K 145×153×26
150	160	46	140	475	53	2 800	3 000	570	K 150×160×46
155	163	26	72,1	236	25,5	2 600	3 000	265	K 155×163×26

Needle roller and cage assemblies

F_w 160 – 265 mm



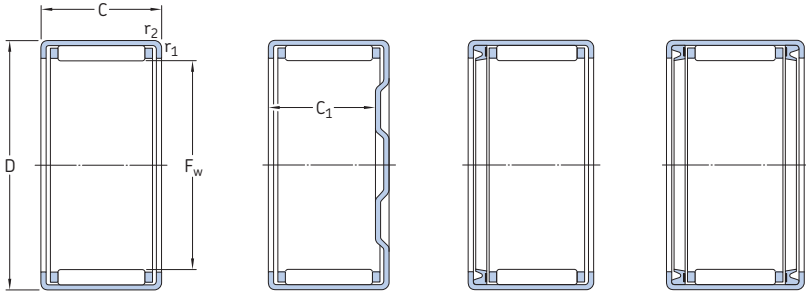
K

Dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
F_w	E_w	U	dynamic	static		Reference speed	Limiting speed		
			C	C_0	P_u				
mm			kN		kN	r/min		g	–
160	170	46	145	510	56	2 600	2 800	550	K 160×170×46
165	173	26	76,5	265	28,5	2 400	2 800	320	K 165×173×26
175	183	32	95,2	355	37,5	2 400	2 600	400	K 175×183×32
185	195	37	123	425	45	2 200	2 400	607	K 185×195×37
195	205	37	125	450	46,5	2 000	2 400	620	K 195×205×37
210	220	42	147	560	57	1 900	2 200	740	K 210×220×42
220	230	42	151	585	58,5	1 800	2 000	790	K 220×230×42
240	250	42	157	630	62	1 700	1 900	850	K 240×250×42
265	280	50	242	850	83	1 500	1 700	1 810	K 265×280×50



Drawn cup needle roller bearings

F_w 3 – 9 mm



HK

BK

HK..RS

HK...2RS

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
F_w	D	C	C	C_0	P_u	Reference speed	Limiting speed		
mm			kN		kN	r/min		kg	–
3	6,5	6	1,23	0,88	0,088	24 000	26 000	0,0010	HK 0306 TN
	6,5	6	1,23	0,88	0,088	24 000	26 000	0,0010	BK 0306 TN
4	8	8	1,76	1,37	0,14	22 000	26 000	0,0020	HK 0408
	8	8	1,76	1,37	0,14	22 000	26 000	0,0021	BK 0408
5	9	9	2,38	2,08	0,22	22 000	24 000	0,0020	HK 0509
	9	9	2,38	2,08	0,22	22 000	24 000	0,0021	BK 0509
6	10	6	1,72	1,29	0,132	20 000	22 000	0,0015	HK 0606
	10	8	2,01	1,73	0,18	20 000	22 000	0,0021	HK 0608
	10	9	2,81	2,7	0,285	20 000	22 000	0,0025	HK 0609
	10	9	2,81	2,7	0,285	20 000	22 000	0,0026	BK 0609
7	11	9	3,03	3,05	0,325	20 000	22 000	0,0026	HK 0709
	11	9	3,03	3,05	0,325	20 000	22 000	0,0029	BK 0709
8	12	8	2,7	2,75	0,285	19 000	22 000	0,0027	HK 0808
	12	8	2,7	2,75	0,285	19 000	22 000	0,0030	BK 0808
	12	10	3,69	4,05	0,44	19 000	22 000	0,0030	HK 0810
	12	10	2,7	2,75	0,285	–	13 000	0,0030	HK 0810 RS
	12	10	2,3	2,04	0,208	–	13 000	0,0032	HK 0810.2RS
	12	10	3,69	4,05	0,44	19 000	22 000	0,0034	BK 0810
	12	12	3,69	4,05	0,44	–	13 000	0,0031	HK 0812 RS
	12	12	2,7	2,75	0,285	–	13 000	0,0033	HK 0812.2RS
9	13	8	3,52	3,9	0,415	18 000	20 000	0,0030	HK 0908
	13	10	4,13	4,8	0,53	18 000	20 000	0,0040	HK 0910
	13	10	4,13	4,8	0,53	18 000	20 000	0,0043	BK 0910
	13	12	5,12	6,4	0,72	18 000	20 000	0,0046	HK 0912
	13	12	5,12	6,4	0,72	18 000	20 000	0,0049	BK 0912

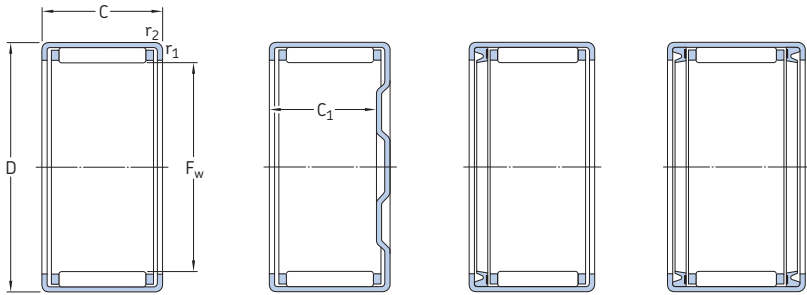
Dimensions			Appropriate inner ring ¹⁾ Designation	Appropriate seal ²⁾ Designation
F _w	C ₁ min	r _{1,2} min		
mm				
3	–	0,3	–	–
	5,2	0,3	–	–
4	–	0,3	–	G 4×8×2 S
	6,4	0,3	–	G 4×8×2 S
5	–	0,4	–	G 5×9×2 S
	7,4	0,4	–	G 5×9×2 S
6	–	0,4	–	G 6×10×2 S
	–	0,4	–	G 6×10×2 S
	–	0,4	–	G 6×10×2 S
	7,4	0,4	–	G 6×10×2 S
7	–	0,4	–	G 7×11×2 S
	7,4	0,4	–	G 7×11×2 S
8	–	0,4	–	G 8×12×3
	6,4	0,4	–	G 8×12×3
	–	0,4	IR 5×8×12	G 8×12×3
	–	0,4	–	–
	–	0,4	–	–
	8,4	0,4	IR 5×8×12	G 8×12×3
	–	0,4	–	–
9	–	0,4	–	G 9×13×3
	–	0,4	–	G 9×13×3
	8,4	0,4	–	G 9×13×3
	–	0,4	IR 6×9×12	G 9×13×3
	–	0,4	IR 6×9×12	G 9×13×3
	10,4	0,4	–	G 9×13×3

¹⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on page 196.

²⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Drawn cup needle roller bearings

F_w 10 – 14 mm



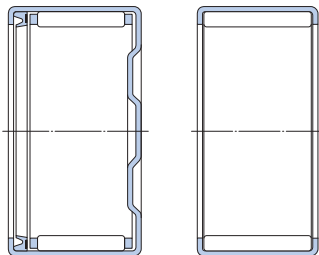
HK

BK

HK..RS

HK...2RS

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	
F _w	D	C	C	C ₀	P _U	Reference speed	Limiting speed			
mm			kN		kN	r/min		kg	–	
10	14	10	4,29	5,3	0,57	18 000	20 000	0,0041	HK 1010	
	14	10	6,82	11,4	1,27	14 000	18 000	0,0046	HN 1010	
	14	10	4,29	5,3	0,57	18 000	20 000	0,0043	BK 1010	
	14	12	5,39	6,95	0,78	18 000	20 000	0,0048	HK 1012	
	14	12	4,29	5,3	0,57	–	12 000	0,0042	HK 1012 RS	
	14	12	3,19	3,55	0,365	–	12 000	0,0043	HK 1012.2RS	
	14	12	5,39	6,95	0,78	18 000	20 000	0,0050	BK 1012	
	14	12	4,29	5,3	0,57	–	–	0,0043	BK 1012 RS	
	14	14	4,29	5,3	0,57	–	12 000	0,0046	HK 1014.2RS	
	14	15	6,6	9	1,02	18 000	20 000	0,0060	HK 1015	
	14	15	6,6	9	1,02	18 000	20 000	0,0062	BK 1015	
	12	16	10	4,84	6,4	0,71	16 000	18 000	0,0046	HK 1210
		16	10	7,48	13,7	1,53	13 000	17 000	0,0053	HN 1210
		16	10	4,84	6,4	0,71	16 000	18 000	0,0052	BK 1210
18		12	6,27	7,35	0,85	16 000	18 000	0,0090	HK 1212	
18		12	9,52	15,3	1,76	13 000	17 000	0,011	HN 1212	
18		12	6,27	7,35	0,85	16 000	18 000	0,010	BK 1212	
18		14	6,27	7,35	0,85	–	10 000	0,010	HK 1214 RS	
16		14	4,84	6,4	0,71	–	10 000	0,0080	HK 1214.2RS	
18		16	6,27	7,35	0,85	–	10 000	0,011	HK 1216.2RS	
13		19	12	6,6	8	0,915	16 000	17 000	0,010	HK 1312
	19	12	6,6	8	0,915	16 000	17 000	0,011	BK 1312	
14	20	12	6,82	8,65	0,98	15 000	17 000	0,011	HK 1412	
	20	12	10,5	17,6	2,04	12 000	15 000	0,012	HN 1412	
	20	12	6,82	8,65	0,98	15 000	17 000	0,012	BK 1412	
	20	14	6,82	8,65	0,98	–	9 500	0,012	HK 1414 RS	
	20	14	6,82	8,65	0,98	–	9 500	0,013	BK 1414 RS	
	20	16	6,82	8,65	0,98	–	9 500	0,013	HK 1416.2RS	



BK..RS

HN

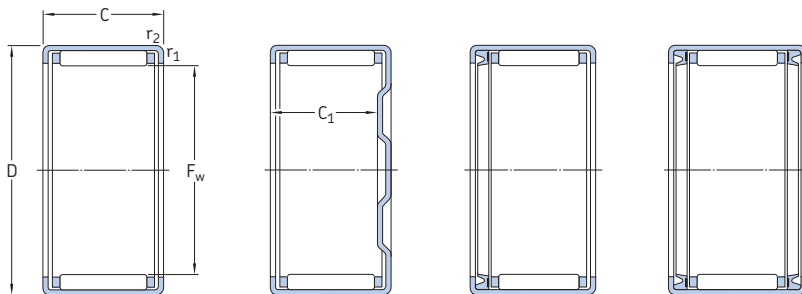
Dimensions			Appropriate inner ring ¹⁾ Designation	Appropriate seal ²⁾ Designation
F _w	C ₁ min	r _{1,2} min		
mm				
10	–	0,4	×10×10,5	G 10×14×3
	8,4	0,4	LR/IR 7×10×10,5	G 10×14×3
	–	0,4	LR/IR 7×10×10,5	G 10×14×3
	–	0,4	IR 7×10×12	G 10×14×3
	–	0,4	–	–
	–	0,4	–	–
	10,4	0,4	IR 7×10×12	G 10×14×3
	10,4	0,4	–	–
	–	0,4	–	–
	–	0,4	IR 7×10×16	G 10×14×3
13,4	0,4	IR 7×10×16	G 10×14×3	
12	–	0,4	LR/IR 8×12×10,5	G 12×16×3
	–	0,4	LR/IR 8×12×10,5	G 12×16×3
	8,4	0,4	LR/IR 8×12×10,5	G 12×16×3
	–	0,8	LR/IR 8×12×12,5	G/SD 12×18×3
	–	0,8	LR/IR 8×12×12,5	G/SD 12×18×3
	9,3	0,8	LR/IR 8×12×12,5	G/SD 12×18×3
	–	0,8	–	–
	–	0,4	–	–
	–	0,8	–	–
13	–	0,8	LR/IR 10×13×12,5	G 13×19×3
	9,3	0,8	LR/IR 10×13×12,5	G 13×19×3
14	–	0,8	IR 10×14×13	G/SD 14×20×3
	–	0,8	IR 10×14×13	G/SD 14×20×3
	9,3	0,8	IR 10×14×13	G/SD 14×20×3
	–	0,8	–	–
	11,3	0,8	–	–
	–	0,8	–	–

¹⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on page 196.

²⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Drawn cup needle roller bearings

F_w 15 – 18 mm



HK

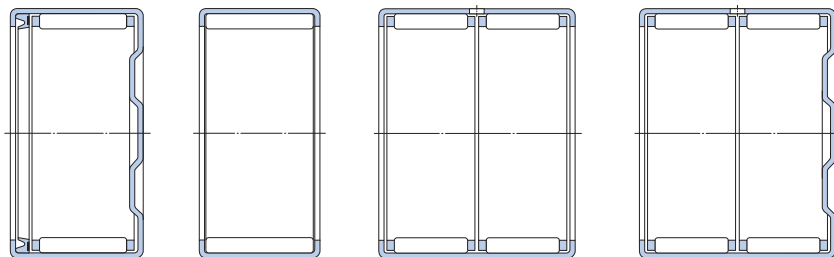
BK

HK..RS

HK...2RS

Principal dimensions	Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation		
	dynamic	static		Reference speed	Limiting speed				
F_w	D	C	C	C_0	P_u				
mm			kN		kN	r/min	kg	–	
15	21	12	7,65	9,5	1,08	15 000	16 000	0,011	HK 1512
	21	12	7,65	9,5	1,08	15 000	16 000	0,013	BK 1512
	21	14	7,48	10	1,14	–	9 500	0,012	HK 1514 RS
	21	16	10,1	14,6	1,7	15 000	16 000	0,015	HK 1516
	21	16	7,48	10	1,14	–	9 500	0,015	HK 1516.2RS
	21	16	14,5	28	3,25	12 000	15 000	0,014	HN 1516
	21	16	10,1	14,6	1,7	15 000	16 000	0,017	BK 1516
	21	18	10,1	14,6	1,7	–	9 500	0,016	HK 1518 RS
	21	20	10,1	14,6	1,7	–	9 500	0,018	HK 1520.2RS
	21	22	13	20	2,28	15 000	16 000	0,020	HK 1522 ¹⁾
	16	22	12	7,37	9,8	1,12	14 000	16 000	0,012
22		12	11,2	20,4	2,32	12 000	15 000	0,013	HN 1612
22		12	7,37	9,8	1,12	14 000	16 000	0,014	BK 1612
22		14	7,37	9,8	1,12	–	9 000	0,013	HK 1614 RS
22		14	7,37	9,8	1,12	–	9 000	0,015	BK 1614 RS
22		16	10,5	15,6	1,8	14 000	16 000	0,016	HK 1616
22		16	7,37	9,8	1,12	–	9 000	0,014	HK 1616.2RS
22		16	10,5	15,6	1,8	14 000	16 000	0,018	BK 1616
22		20	10,5	15,6	1,8	–	9 000	0,018	HK 1620.2RS
22		22	12,8	19,6	2,24	14 000	16 000	0,024	HK 1622 ¹⁾
22		22	12,8	19,6	2,24	14 000	16 000	0,024	BK 1622 ¹⁾
17	23	12	7,65	10,6	1,2	14 000	15 000	0,012	HK 1712
18	24	12	7,92	11,2	1,27	13 000	15 000	0,013	HK 1812
	24	12	7,92	11,2	1,27	13 000	15 000	0,015	BK 1812
	24	14	7,92	11,2	1,27	–	8 500	0,014	HK 1814 RS
	24	16	11,2	17,6	2,04	11 000	14 000	0,018	HK 1816
	24	16	7,92	11,2	1,27	–	8 500	0,015	HK 1816.2RS
	24	16	16,1	33,5	3,8	14 000	11 000	0,020	HN 1816
	24	16	11,2	17,6	2,04	13 000	15 000	0,020	BK 1816

¹⁾ Double row, outer ring with a lubrication hole



BK..RS

HN

HK
(double row)BK
(double row)**Dimensions****Appropriate
inner ring¹⁾
Designation****Appropriate
seal²⁾
Designation**F_wC₁
minr_{1,2}
min

mm

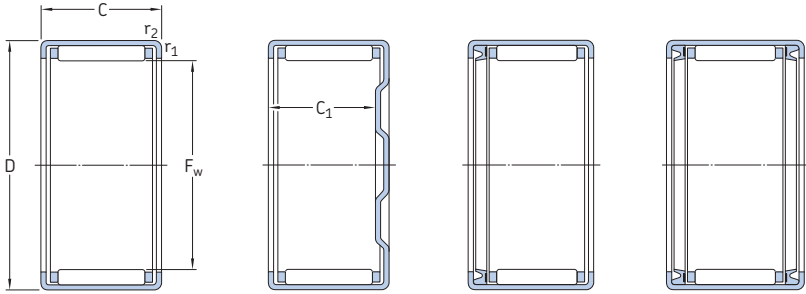
15		0,8	LR/IR 12×15×12.5	G/SD 15×21×3
	9,3	0,8	LR/IR 12×15×12.5	G/SD 15×21×3
	–	0,8	–	–
	–	0,8	LR/IR 12×15×16.5	G/SD 15×21×3
	–	0,8	LR/IR 12×15×16.5	–
	–	0,8	LR/IR 12×15×16.5	G/SD 15×21×3
	13,3	0,8	LR/IR 12×15×16.5	G/SD 15×21×3
	–	0,8	–	–
	–	0,8	LR/IR 12×15×22.5	–
	–	0,8	–	G/SD 15×21×3
16	–	0,8	IR 12×16×13	G/SD 16×22×3
	–	0,8	IR 12×16×13	G/SD 16×22×3
	9,3	0,8	IR 12×16×13	G/SD 16×22×3
	–	0,8	–	–
	11,3	0,8	–	–
	–	0,8	IR 12×16×16	G/SD 16×22×3
	–	0,8	IR 12×16×20	–
	13,3	0,8	IR 12×16×16	G/SD 16×22×3
	–	0,8	IR 12×16×22	–
	–	0,8	IR 12×16×22	G/SD 16×22×3
19,3	0,8	IR 12×16×22	G/SD 16×22×3	
17	–	0,8	–	G/SD 17×23×3
18	–	0,8	LR 15×18×12.5	G/SD 18×24×3
	9,3	0,8	LR 15×18×12.5	G/SD 18×24×3
	–	0,8	LR/IR 15×18×16.5	–
	–	0,8	LR/IR 15×18×16.5	G/SD 18×24×3
	–	0,8	LR/IR 15×18×16.5	–
	–	0,8	LR/IR 15×18×16.5	G/SD 18×24×3
	–	0,8	LR/IR 15×18×16.5	G/SD 18×24×3
	13,3	0,8	LR/IR 15×18×16.5	G/SD 18×24×3

¹⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on **page 196**.

²⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on **page 208**.

Drawn cup needle roller bearings

F_w 20 – 22 mm



HK

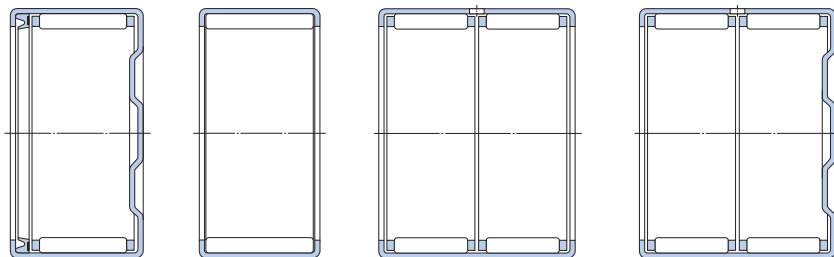
BK

HK..RS

HK...2RS

Principal dimensions	Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation		
	dynamic	static		Reference speed	Limiting speed				
F _w D C	C	C ₀	P _u						
mm	kN		kN	r/min		kg	–		
20	26	10	6,16	8,5	0,93	12 000	14 000	0,012	HK 2010
	26	12	8,42	12,5	1,4	12 000	14 000	0,014	HK 2012
	26	16	12,3	20,4	2,36	10 000	12 000	0,019	HK 2016
	26	16	8,42	12,5	1,4	–	8 000	0,018	HK 2016.2RS
	26	16	16,8	36,5	4,25	12 000	10 000	0,022	HN 2016
	26	16	12,3	20,4	2,36	12 000	14 000	0,022	BK 2016
	26	18	12,3	20,4	2,36	–	8 000	0,021	HK 2018 RS
	26	18	12,3	20,4	2,36	–	8 000	0,024	BK 2018 RS
	26	20	15,1	26,5	3,15	12 000	14 000	0,024	HK 2020
	26	20	12,3	20,4	2,36	–	8 000	0,023	HK 2020.2RS
	26	20	20,9	48	5,7	10 000	12 000	0,030	HN 2020
	26	20	15,1	26,5	3,15	12 000	14 000	0,027	BK 2020 ¹⁾
	26	30	20,9	40,5	4,75	12 000	14 000	0,035	HK 2030 ¹⁾
22	28	10	7,21	10,6	1,2	11 000	12 000	0,013	HK 2210
	28	12	8,8	13,7	1,56	11 000	12 000	0,015	HK 2212
	28	12	8,8	13,7	1,56	11 000	12 000	0,018	BK 2212
	28	14	8,8	13,7	1,56	–	7 500	0,016	HK 2214 RS
	28	16	13	22,4	2,6	11 000	12 000	0,021	HK 2216
	28	16	8,8	13,7	1,56	–	7 500	0,018	HK 2216.2RS
	28	16	13	22,4	2,6	11 000	12 000	0,024	BK 2216
	28	18	13	22,4	2,6	11 000	7 500	0,024	HK 2218 RS
	28	20	15,7	29	3,45	11 000	12 000	0,026	HK 2220
	28	20	13	22,4	2,6	–	7 500	0,023	HK 2220.2RS

¹⁾ Double row, outer ring with a lubrication hole



BK..RS

HN

HK
(double row)BK
(double row)**Dimensions**

F_w C_1
min min

$r_{1,2}$
min

**Appropriate
inner ring¹⁾**

Designation

**Appropriate
seal²⁾**

Designation

mm

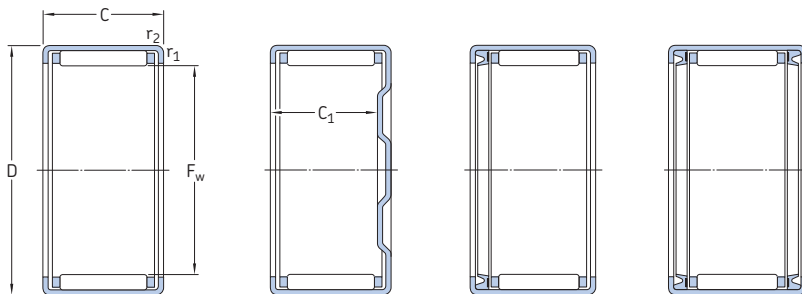
20	–	0,8	–	G/SD 20×26×4
	–	0,8	IR 15×20×13	G/SD 20×26×4
	–	0,8	LR/IR 17×20×16.5	G/SD 20×26×4
	–	0,8	LR/IR 17×20×16.5	–
	–	0,8	LR/IR 17×20×16.5	G/SD 20×26×4
	13,3	0,8	LR/IR 17×20×16.5	G/SD 20×26×4
	–	0,8	LR/IR 17×20×20.5	–
	15,3	0,8	LR/IR 17×20×20.5	–
	–	0,8	LR/IR 17×20×20.5	G/SD 20×26×4
	–	0,8	LR/IR 17×20×20.5	–
	17,3	0,8	LR/IR 17×20×20.5	G/SD 20×26×4
	–	0,8	LR/IR 17×20×20.5	G/SD 20×26×4
22	–	0,8	–	G/SD 22×28×4
	–	0,8	IR 17×22×13	G/SD 22×28×4
	9,3	0,8	IR 17×22×13	G/SD 22×28×4
	–	0,8	IR 17×22×16	–
	–	0,8	IR 17×22×16	G/SD 22×28×4
	–	0,8	IR 17×22×23	–
	13,3	0,8	IR 17×22×16	G/SD 22×28×4
	–	0,8	IR 17×22×23	–
	–	0,8	IR 17×22×23	G/SD 22×28×4
	–	0,8	IR 17×22×23	–
	–	0,8	IR 17×22×23	G/SD 22×28×4
	–	0,8	IR 17×22×23	–

¹⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on **page 196**.

²⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on **page 208**.

Drawn cup needle roller bearings

F_w 25 – 30 mm



HK

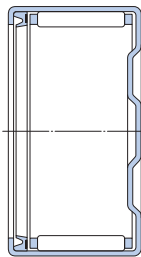
BK

HK..RS

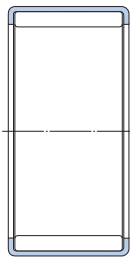
HK...2RS

Principal dimensions	Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation			
	dynamic	static		Reference speed	Limiting speed					
F_w	D	C	C	C_0	P_u					
mm			kN		kN	r/min	kg	–		
25	32	12	10,5	15,3	1,76	9 500	11 000	0,020	HK 2512	
	32	16	15,1	24	2,85	9 500	11 000	0,027	HK 2516	
	32	16	10,5	15,3	1,76	–	6 700	0,027	HK 2516.2RS	
	32	16	15,1	24	2,85	9 500	11 000	0,032	BK 2516	
	32	18	15,1	24	2,85	–	6 700	0,029	HK 2518 RS	
	32	18	15,1	24	2,85	–	6 700	0,034	BK 2518 RS	
	32	20	19	32,5	4	8 000	10 000	0,040	HK 2520	
	32	20	15,1	24	2,85	–	6 700	0,031	HK 2520.2RS	
	32	20	26,4	60	7,2	10 000	8 000	0,040	HN 2520	
	32	20	19	32,5	4	9 500	11 000	0,038	BK 2520	
	32	24	19	32,5	4	–	6 700	0,040	HK 2524.2RS	
	32	26	24,2	45	5,5	9 500	11 000	0,044	HK 2526	
	32	26	24,2	45	5,5	9 500	11 000	0,048	BK 2526	
	32	30	24,2	45	5,5	–	6 700	0,047	HK 2530.2RS	
	32	38	33	65,5	8	9 500	11 000	0,064	HK 2538 ¹⁾	
	32	38	33	65,5	8	9 500	11 000	0,068	BK 2538 ¹⁾	
	28	35	16	15,7	26,5	3,15	9 000	9 500	0,029	HK 2816
		35	18	15,7	26,5	3,15	–	9 000	0,031	HK 2818 RS
		35	20	20,1	36,5	4,4	–	9 500	0,036	HK 2820
		35	20	15,7	26,5	3,15	–	6 300	0,034	HK 2820.2RS
35		20	28,1	68	8,15	7 000	9 000	0,044	HN 2820	
30		37	12	11,7	18,3	2,12	8 000	9 000	0,023	HK 3012
	37	12	11,7	18,3	2,12	8 000	9 000	0,028	BK 3012	
	37	16	16,5	29	3,4	8 000	9 000	0,031	HK 3016	
	37	16	11,7	18,3	2,12	–	5 600	0,031	HK 3016.2RS	
	37	16	16,5	29	3,4	8 000	9 000	0,038	BK 3016	
	37	18	16,5	29	3,4	–	5 600	0,037	HK 3018 RS	
	37	20	20,9	40	4,75	8 000	9 000	0,039	HK 3020	
	37	20	16,5	29	3,4	–	5 600	0,036	HK 3020.2RS	
	37	20	20,9	40	4,75	8 000	9 000	0,047	BK 3020	
	37	22	23,8	46,5	5,6	8 000	9 000	0,042	HK 3022	
	37	24	20,9	40	4,75	–	5 600	0,044	HK 3024.2RS	
	37	26	27	54	6,55	8 000	9 000	0,051	HK 3026	
	37	26	27	54	6,55	8 000	9 000	0,058	BK 3026	
	37	38	35,8	80	9,5	8 000	9 000	0,076	HK 3038 ¹⁾	
	37	38	35,8	80	9,5	8 000	9 000	0,084	BK 3038 ¹⁾	

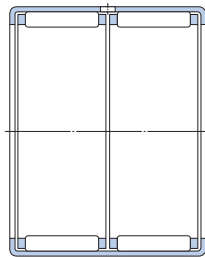
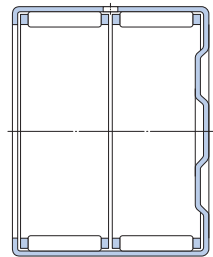
¹⁾ Double row, outer ring with a lubrication hole



BK..RS



HN

HK
(double row)BK
(double row)

Dimensions

F_w C_1
min

$r_{1,2}$
min

Appropriate
inner ring¹⁾
Designation

Appropriate
seal²⁾
Designation

mm

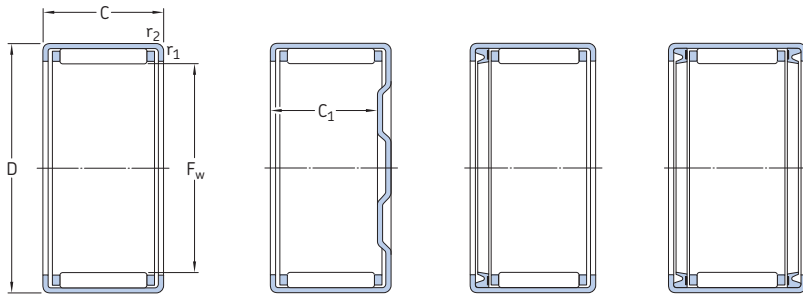
25	–	0,8	LR 20×25×12,5	G 25×32×4
	–	0,8	LR 20×25×16,5 / IR 20×25×17	G 25×32×4
	–	0,8	LR 20×25×16,5 / IR 20×25×17	–
	23,3	0,8	–	–
	–	0,8	LR/IR 20×25×20,5	–
	15,3	0,8	LR 20×25×16,5 / IR 20×25×17	–
	–	0,8	LR/IR 20×25×20,5	G 25×32×4
	–	0,8	LR/IR 20×25×20,5	–
	–	0,8	LR/IR 20×25×20,5	G 25×32×4
	17,3	0,8	LR/IR 20×25×20,5	G 25×32×4
	–	0,8	LR/IR 20×25×26,5	–
	–	0,8	LR/IR 20×25×26,5	G 25×32×4
	23,3	0,8	LR/IR 20×25×26,5	G 25×32×4
	–	0,8	IR 20×25×30	–
	–	0,8	LR/IR 20×25×38,5	G 25×32×4
35,3	0,8	LR/IR 20×25×38,5	G 25×32×4	
28	–	0,8	IR 22×28×17	G/SD 28×35×4
	–	0,8	LR/IR 22×28×20,5	–
	–	0,8	LR/IR 22×28×20,5	G/SD 28×35×4
	–	0,8	LR/IR 22×28×20,5	–
	–	0,8	LR/IR 22×28×20,5	G/SD 28×35×4
30	–	0,8	LR 25×30×12,5	G/SD 30×37×4
	9,3	0,8	LR 25×30×12,5	G/SD 30×37×4
	–	0,8	LR 25×30×16,5 / IR 25×30×17	G/SD 30×37×4
	–	0,8	LR 25×30×16,5 / IR 25×30×17	–
	13,3	0,8	LR 25×30×16,5 / IR 25×30×17	G/SD 30×37×4
	–	0,8	LR/IR 25×30×20,5	–
	–	0,8	LR/IR 25×30×20,5	G/SD 30×37×4
	–	0,8	LR/IR 25×30×20,5	–
	17,3	0,8	LR/IR 25×30×20,5	G/SD 30×37×4
	–	0,8	–	G/SD 30×37×4
	–	0,8	LR/IR 25×30×26,5	–
	–	0,8	LR/IR 25×30×26,5	G/SD 30×37×4
	23,3	0,8	LR/IR 25×30×26,5	G/SD 30×37×4
	–	0,8	LR/IR 25×30×38,5	G/SD 30×37×4
	35,3	0,8	LR/IR 25×30×38,5	G/SD 30×37×4

¹⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on **page 196**.

²⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on **page 208**.

Drawn cup needle roller bearings

F_w 32 – 50 mm



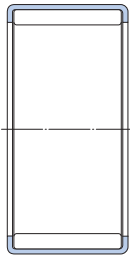
HK

BK

HK..RS

HK...2RS

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
F _w	D	C	C	C ₀	P _u	Reference speed	Limiting speed		
mm			kN		kN	r/min		kg	–
32	39	20	22	43	5,2	7 500	8 500	0,041	HK 3220
	39	24	26,4	54	6,55	7 500	8 500	0,049	HK 3224
35	42	12	12,5	21,6	2,45	7 000	8 000	0,027	HK 3512
	42	16	17,9	34	4	7 000	8 000	0,036	HK 3516
	42	16	12,5	21,6	2,45	–	5 000	0,032	HK 3516.2RS
	42	18	17,9	34	4	–	5 000	0,039	HK 3518 RS
	42	20	22,9	46,5	5,6	7 000	8 000	0,044	HK 3520
	42	20	17,9	34	4	–	5 000	0,041	HK 3520.2RS
	42	20	31,4	83	10,2	6 000	7 500	0,054	HN 3520
	42	20	22,9	46,5	5,6	7 000	8 000	0,053	BK 3520
40	47	12	13,4	24,5	2,8	6 300	7 000	0,030	HK 4012
	47	16	19	39	4,55	6 300	7 000	0,039	HK 4016
	47	16	14,5	27,5	3,15	–	4 500	0,037	HK 4016.2RS
	47	18	19	39	4,55	–	4 500	0,045	HK 4018 RS
	47	20	24,2	53	6,4	6 300	7 000	0,054	HK 4020
	47	20	19	39	4,55	–	4 500	0,048	HK 4020.2RS
	47	20	33,6	95	11,6	5 000	6 300	0,061	HN 4020
	47	20	24,2	53	6,4	6 300	7 000	0,062	BK 4020
45	52	12	14,2	27,5	3,2	5 600	6 300	0,033	HK 4512
	52	16	20,5	43	5,1	5 600	6 300	0,047	HK 4516
	52	18	20,5	43	5,1	5 600	–	0,050	HK 4518 RS
	52	20	26	60	7,2	5 600	6 300	0,056	HK 4520
	52	20	20,5	43	5,1	–	4 000	0,054	HK 4520.2RS
	52	20	35,8	108	13,2	4 500	6 500	0,066	HN 4520
	52	20	26	60	7,2	5 600	6 300	0,072	BK 4520
	52	25	44	140	17	5 600	4 500	0,085	HN 4525
50	58	20	29,2	63	7,8	5 000	5 600	0,070	HK 5020
	58	20	41,8	120	14,3	4 000	5 000	0,085	HN 5020
	58	22	29,2	63	7,8	–	3 600	0,076	HK 5022 RS
	58	24	29,2	63	7,8	–	3 600	0,081	HK 5024.2RS
	58	25	36,9	85	10,6	5 000	5 600	0,090	HK 5025
	58	25	50,1	153	18,6	4 000	5 000	0,107	HN 5025



HN

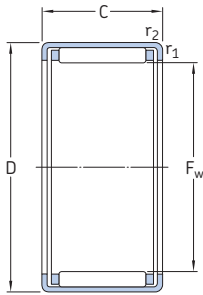
Dimensions			Appropriate inner ring ¹⁾ Designation	Appropriate seal ²⁾ Designation	
F _w	C ₁ min	r _{1,2} min			
mm					
32	–	0,8	–	–	
	–	0,8	–	–	
35	–	0,8	LR 30×35×12.5	G/SD 35×42×4	
	–	0,8	LR 30×35×16.5 / IR 30×35×17	G/SD 35×42×4	
	–	0,8	LR 30×35×16.5 / IR 30×35×17	–	
	–	0,8	LR/IR 30×35×20.5	–	
	–	0,8	LR/IR 30×35×20.5	G/SD 35×42×4	
	–	0,8	LR/IR 30×35×20.5	–	
	–	0,8	LR/IR 30×35×20.5	G/SD 35×42×4	
	–	17,3	0,8	LR/IR 30×35×20.5	G/SD 35×42×4
40	–	0,8	LR 35×40×12.5	G/SD 40×47×4	
	–	0,8	LR 35×40×16.5 / IR 35×40×17	G/SD 40×47×4	
	–	0,8	LR 35×40×16.5 / IR 35×40×17	–	
	–	0,8	LR/IR 35×40×20.5	–	
	–	0,8	LR/IR 35×40×20.5	G/SD 40×47×4	
	–	0,8	LR/IR 35×40×20.5	–	
	–	0,8	LR/IR 35×40×20.5	G/SD 40×47×4	
	–	17,3	0,8	LR/IR 35×40×20.5	G/SD 40×47×4
45	–	0,8	–	G/SD 45×52×4	
	–	0,8	LR 40×45×16.5 / IR 40×45×17	G/SD 45×52×4	
	–	0,8	LR/IR 40×45×20.5	–	
	–	0,8	LR/IR 40×45×20.5	G/SD 45×52×4	
	–	0,8	LR/IR 40×45×20.5	–	
	–	0,8	LR/IR 40×45×20.5	G/SD 45×52×4	
	–	17,3	0,8	LR/IR 40×45×20.5	G/SD 45×52×4
	–	–	0,8	–	G/SD 45×52×4
50	–	0,8	LR 45×50×20.5 / IR 40×50×20 IS1	G/SD 50×58×4	
	–	0,8	LR/IR 40×50×20 IS1	G/SD 50×58×4	
	–	0,8	LR/IR 45×50×25.5	–	
	–	0,8	LR/IR 45×50×25.5	–	
	–	0,8	LR/IR 45×50×25.5	G/SD 50×58×4	
	–	0,8	LR/IR 45×50×25.5	G/SD 50×58×4	

¹⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on page 196.

²⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.

Drawn cup needle roller bearings

F_w 55 – 60 mm



HK

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
F_w	D	C	dynamic	static	P_u	Reference speed	Limiting speed		
mm			kN	C_0	kN	r/min		kg	–
55	63	20	30,3	67	8,3	4 500	5 000	0,074	HK 5520
	63	28	41,8	104	12,9	4 500	5 000	0,105	HK 5528
60	68	12	17,6	32	3,8	4 300	4 800	0,049	HK 6012
	68	20	31,9	75	9,3	4 300	4 800	0,081	HK 6020
	68	32	51,2	137	17	4 300	4 800	0,136	HK 6032

Dimensions		Appropriate inner ring ¹⁾ Designation	Appropriate seal ²⁾ Designation
F _w	r _{1,2} min		
mm			
55	0,8	LR 50×55×20.5	G 55×63×5
	0,8	–	G 55×63×5
60	0,8	–	–
	0,8	–	–
	0,8	–	–

¹⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on **page 196**.

²⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on **page 208**.



Table 3

Fits for needle roller bearings with machined rings with an inner ring on solid steel shafts

Conditions	Shaft diameter	Tolerance class
–	mm	–
Rotating inner ring load or direction of load indeterminate		
Light and variable loads ($P \leq 0,05 C$)	≤ 10 (10) to 25 (25) to 100	k5 k6 m6
Normal to heavy loads ($P > 0,05 C$)	≤ 25 (25) to 60 (60) to 100 (100) to 400	k5 m6 n6 p6 ¹⁾
Heavy to very heavy loads ($P > 0,1 C$)	(50) to 100 (100) to 200 > 200	n6 ¹⁾ p6 ¹⁾ r6 ¹⁾
Stationary inner ring load Easy axial displacement of the inner ring on the shaft necessary		g6
Easy axial displacement of the inner ring on the shaft unnecessary		h6

¹⁾ Bearings with radial internal clearance greater than Normal may be necessary.

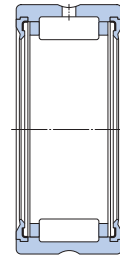
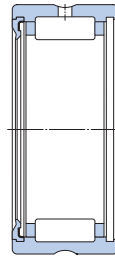
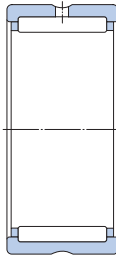
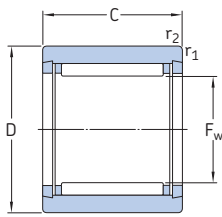
Supplementary designations

The designation suffixes used to identify certain features of SKF needle roller bearings are explained in the following.

- C2** Bearing internal clearance smaller than Normal
- C3** Radial internal clearance greater than Normal
- C4** Radial internal clearance greater than C3
- CN** Bearing internal clearance Normal, only used together with an additional letter (H, L, M, P) that identifies a reduced or displaced clearance range
- H..** Needle roller bearing without an inner ring, with reduced inside diameter (under rollers) tolerance, followed by tolerance limits in μm , e.g. H+27+20
- IS..** Needle roller bearing with one or more lubricating holes in the inner ring, a figure following indicates the number of holes
- ISR..** Needle roller bearing with an annular groove and one or more lubricating holes in the inner ring, a figure following indicates the number of holes
- P5** Dimensional and running accuracy to ISO tolerance class 5 specifications (better than P6)
- P6** Dimensional and running accuracy to ISO tolerance class 6 specifications (better than Normal)
- RS** Contact seal of acrylonitrile-butadiene rubber (NRB) with or without sheet steel reinforcement on one side of the bearing
- .2RS** RS contact seal on both sides of the bearing
- TN** Injection moulded cage of glass fibre reinforced polyamide 66, rolling element centred

Needle roller bearings with machined rings with flanges, without an inner ring

F_w 5 – 16 mm



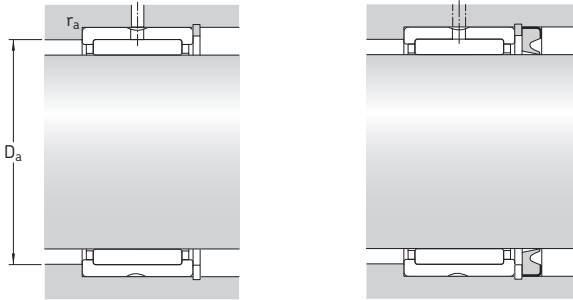
NK ($F_w \leq 10$ mm)

NK ($F_w \geq 12$ mm)
RNA 49
RNA 6901

RNA 49..RS

RNA 49...2RS

Principal dimensions			Basic load ratings		Fatigue load limit P_u	Speed ratings		Mass	Designation
F_w	D	C	dynamic	static		Reference speed	Limiting speed		
mm			C	C_0	kN	r/min	kg	–	
5	10	10	2,29	2	0,212	36 000	40 000	0,0031	NK 5/10 TN NK 5/12 TN
	10	12	2,92	2,7	0,29	36 000	40 000	0,0037	
6	12	10	2,55	2,36	0,25	34 000	38 000	0,0047	NK 6/10 TN NK 6/12 TN
	12	12	3,3	3,2	0,345	34 000	38 000	0,0057	
7	14	10	2,81	2,75	0,29	32 000	36 000	0,0069	NK 7/10 TN NK 7/12 TN
	14	12	3,58	3,75	0,415	32 000	36 000	0,0082	
8	15	12	3,8	4,25	0,465	32 000	36 000	0,0087	NK 8/12 TN NK 8/16 TN
	15	16	5,01	5,85	0,67	32 000	36 000	0,012	
9	16	12	4,4	5,2	0,57	30 000	34 000	0,010	NK 9/12 TN NK 9/16 TN
	16	16	5,72	7,2	0,815	30 000	34 000	0,013	
10	17	12	4,57	5,7	0,63	28 000	32 000	0,010	NK 10/12 TN NK 10/16 TN
	17	16	5,94	8	0,9	28 000	32 000	0,013	
12	19	12	6,71	8,15	0,965	26 000	30 000	0,012	NK 12/12 NK 12/16
	19	16	9,13	12	1,43	26 000	30 000	0,016	
14	22	13	8,8	10,4	1,22	24 000	28 000	0,017	RNA 4900 RNA 4900 RS RNA 4900.2RS NK 14/16 NK 14/20
	22	13	7,37	8,15	0,97	–	12 000	0,016	
	22	13	7,37	8,15	0,97	–	12 000	0,016	
	22	16	10,2	12,5	1,5	24 000	28 000	0,021	
	22	20	12,8	16,6	2	24 000	28 000	0,026	
15	23	16	11	14	1,66	24 000	26 000	0,022	NK 15/16 NK 15/20
	23	20	13,8	18,3	2,2	24 000	26 000	0,027	
16	24	13	9,9	12,2	1,46	22 000	26 000	0,017	RNA 4901 RNA 4901 RS RNA 4901.2RS NK 16/16 NK 16/20 RNA 6901
	24	13	8,09	9,65	1,14	–	11 000	0,018	
	24	13	8,09	9,65	1,14	–	11 000	0,018	
	24	16	11,7	15,3	1,8	22 000	26 000	0,022	
	24	20	14,5	20	2,4	22 000	26 000	0,028	
	24	22	16,1	23,2	2,75	22 000	26 000	0,031	

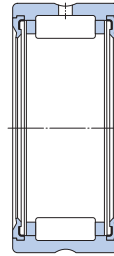
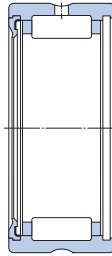
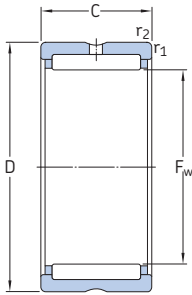


Dimensions		Abutment and fillet dimensions		Appropriate seal ¹⁾
F _w	r _{1,2} min	D _a max	r _a max	Designation
mm	mm	mm	mm	–
5	0,15	8,8	0,1	G 5×10×2 S
	0,15	8,8	0,1	G 5×10×2 S
6	0,15	10,8	0,1	G 6×12×2 S
	0,15	10,8	0,1	G 6×12×2 S
7	0,3	12	0,3	G 7×14×2
	0,3	12	0,3	G 7×14×2
8	0,3	13	0,3	G/SD 8×15×3
	0,3	13	0,3	G/SD 8×15×3
9	0,3	14	0,3	G 9×16×3
	0,3	14	0,3	G 9×16×3
10	0,3	15	0,3	G/SD 10×17×3
	0,3	15	0,3	G/SD 10×17×3
12	0,3	17	0,3	G/SD 12×19×3
	0,3	17	0,3	G/SD 12×19×3
14	0,3	20	0,3	G/SD 14×22×3
	0,3	20	0,3	–
	0,3	20	0,3	–
	0,3	20	0,3	G/SD 14×22×3
	0,3	20	0,3	G/SD 14×22×3
15	0,3	21	0,3	G/SD 15×23×3
	0,3	21	0,3	G/SD 15×23×3
16	0,3	22	0,3	G/SD 16×24×3
	0,3	22	0,3	–
	0,3	22	0,3	–
	0,3	22	0,3	G/SD 16×24×3
	0,3	22	0,3	G/SD 16×24×3
	0,3	22	0,3	G/SD 16×24×3

¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.
For additional information about SKF seals, refer to the SKF catalogue *Industrial shaft seals*.

Needle roller bearings with machined rings with flanges, without an inner ring

F_w 17 – 24 mm

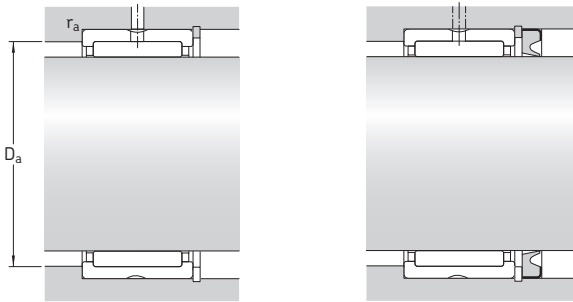


NK(S)
RNA 49
RNA 69

RNA 49..RS

RNA 49...2RS

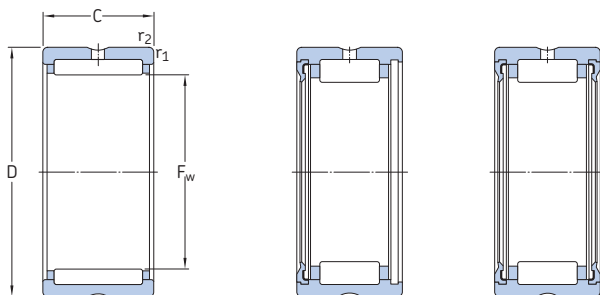
Principal dimensions			Basic load ratings		Fatigue load limit P_u	Speed ratings		Mass	Designation
F_w	D	C	dynamic	static		Reference speed	Limiting speed		
mm			C	C_0	kN	r/min	kg	–	
17	25	16	12,1	16,6	1,96	22 000	26 000	0,024	NK 17/16 NK 17/20
	25	20	15,1	22	2,65	22 000	26 000	0,030	
18	26	16	12,8	17,6	2,12	22 000	24 000	0,025	NK 18/16 NK 18/20
	26	20	16,1	23,6	2,85	22 000	24 000	0,031	
19	27	16	13,4	19	2,28	20 000	24 000	0,026	NK 19/16 NK 19/20
	27	20	16,5	25,5	3,05	20 000	24 000	0,032	
20	28	13	11,2	15,3	1,83	19 000	22 000	0,022	RNA 4902
	28	13	9,13	12	1,43	–	9 500	0,022	RNA 4902 RS
	28	13	9,13	12	1,43	–	9 500	0,022	RNA 4902.2RS
	28	16	13,2	19,3	2,28	19 000	22 000	0,027	NK 20/16
	28	20	16,5	25,5	3,05	19 000	22 000	0,034	NK 20/20
	32	20	23,3	27	3,35	18 000	20 000	0,049	NKS 20
	28	23	17,2	27	3,25	19 000	22 000	0,040	RNA 6902
21	29	16	13,8	20,4	2,45	19 000	22 000	0,028	NK 21/16 NK 21/20
	29	20	17,2	27	3,35	19 000	22 000	0,035	
22	30	13	11,4	16,3	1,96	18 000	20 000	0,022	RNA 4903
	30	13	9,52	12,9	1,53	–	9 000	0,023	RNA 4903 RS
	30	13	9,52	12,9	1,53	–	9 000	0,023	RNA 4903.2RS
	30	16	14,2	21,6	2,6	18 000	20 000	0,030	NK 22/16
	30	20	17,9	29	3,55	18 000	20 000	0,037	NK 22/20
	30	23	18,7	30,5	3,75	18 000	20 000	0,042	RNA 6903
	35	20	24,6	30	3,65	16 000	19 000	0,062	NKS 22
24	32	16	15,4	24,5	2,9	16 000	19 000	0,032	NK 24/16
	32	20	19	32,5	4	16 000	19 000	0,040	NK 24/20
	37	20	26	33,5	4	15 000	17 000	0,066	NKS 24



Dimensions		Abutment and fillet dimensions		Appropriate seal ¹⁾ Designation
F _w	r _{1,2} min	D _a max	r _a max	
mm		mm		–
17	0,3	23	0,3	G/SD 17×25×3
	0,3	23	0,3	G/SD 17×25×3
18	0,3	24	0,3	G/SD 18×26×4
	0,3	24	0,3	G/SD 18×26×4
19	0,3	25	0,3	G/SD 19×27×4
	0,3	25	0,3	G/SD 19×27×4
20	0,3	26	0,3	G/SD 20×28×4
	0,3	26	0,3	–
	0,3	26	0,3	–
	0,3	26	0,3	G/SD 20×28×4
	0,3	26	0,3	G/SD 20×28×4
	0,6	28	0,6	20×32×7 HMS5 RG
	0,3	26	0,3	G/SD 20×28×4
21	0,3	27	0,3	G 21×29×4
	0,3	27	0,3	G 21×29×4
22	0,3	28	0,3	G/SD 22×30×4
	0,3	28	0,3	–
	0,3	28	0,3	–
	0,3	28	0,3	G/SD 22×30×4
	0,3	28	0,3	G/SD 22×30×4
	0,3	28	0,3	G/SD 22×30×4
	0,6	31	0,6	22×35×7 HMS5 RG
24	0,3	30	0,3	G/SD 24×32×4
	0,3	30	0,3	G/SD 24×32×4
	0,6	33	0,6	24×35×7 HMS5 RG

¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.
For additional information about SKF seals, refer to the SKF catalogue *Industrial shaft seals*.

Needle roller bearings with machined rings with flanges, without an inner ring F_w 25 – 32 mm

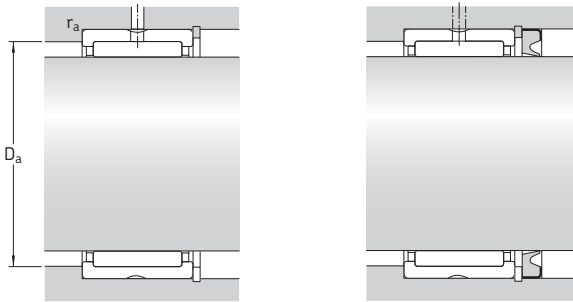


NK(S)
RNA 49
RNA 69

RNA 49.. RS

RNA 49...2RS

Principal dimensions			Basic load ratings		Fatigue load limit P _u	Speed ratings		Mass	Designation
F _w	D	C	dynamic	static		Reference speed	Limiting speed		
mm	mm		kN		kN	r/min		kg	–
25	33	16	15,1	24,5	2,9	16 000	18 000	0,033	NK 25/16
	33	20	19	32,5	4	16 000	18 000	0,042	NK 25/20
	37	17	21,6	28	3,35	15 000	17 000	0,052	RNA 4904
	37	17	19,4	22,4	2,65	–	7 500	0,056	RNA 4904 RS
	37	17	19,4	22,4	2,65	–	7 500	0,056	RNA 4904.2RS
	37	30	35,2	53	6,55	15 000	17 000	0,10	RNA 6904
38	20	27,5	36	4,4	15 000	17 000	0,068	NKS 25	
26	34	16	15,7	26	3,1	15 000	17 000	0,034	NK 26/16
	34	20	19,4	34,5	4,25	15 000	17 000	0,042	NK 26/20
28	37	20	22	36,5	4,55	14 000	16 000	0,052	NK 28/20
	37	30	31,9	60	7,5	14 000	16 000	0,082	NK 28/30
	39	17	23,3	32	3,9	14 000	15 000	0,050	RNA 49/22
	39	30	36,9	57	7,2	14 000	15 000	0,098	RNA 69/22
42	20	28,6	39	4,75	13 000	15 000	0,084	NKS 28	
29	38	20	24,6	42,5	5,2	14 000	15 000	0,050	NK 29/20 TN
	38	30	31,9	60	7,5	14 000	15 000	0,084	NK 29/30
30	40	20	25,1	44	5,5	13 000	15 000	0,061	NK 30/20 TN
	40	30	36,9	72	9	13 000	15 000	0,093	NK 30/30 TN
	42	17	24,2	34,5	4,15	13 000	15 000	0,061	RNA 4905
	42	17	21,6	27,5	3,25	–	6 300	0,060	RNA 4905 RS
	42	17	21,6	27,5	3,25	–	6 300	0,060	RNA 4905.2RS
	42	30	38	62	7,65	13 000	15 000	0,11	RNA 6905
45	22	31,9	43	5,3	12 000	14 000	0,10	NKS 30	
32	42	20	26,4	48	6	12 000	14 000	0,064	NK 32/20 TN
	42	30	34,1	65,5	8,3	12 000	14 000	0,10	NK 32/30
	45	17	25,1	36,5	4,4	12 000	14 000	0,073	RNA 49/28
	45	30	39,6	65,5	8,3	12 000	14 000	0,14	RNA 69/28
	47	22	34,1	46,5	5,7	12 000	13 000	0,11	NKS 32

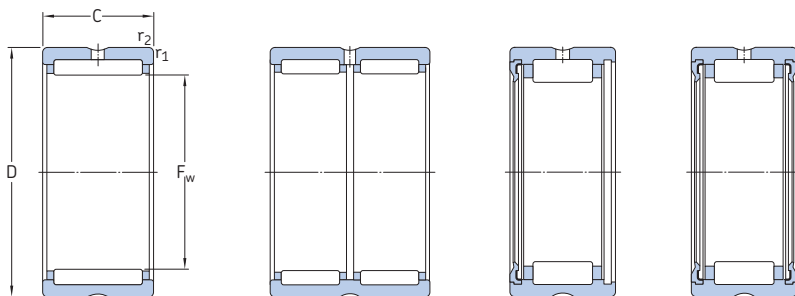


Dimensions		Abutment and fillet dimensions		Appropriate seal ¹⁾
F_w	$r_{1,2}$ min	D_a max	r_a max	Designation
mm		mm		–
25	0,3	31	0,3	G/SD 25×33×4
	0,3	31	0,3	G/SD 25×33×4
	0,3	35	0,3	25×37×5 HMS RG
	0,3	35	0,3	–
	0,3	35	0,3	–
	0,6	34	0,6	25×37×5 HMS5 RG 25×38×7 HMS5 RG
26	0,3	32	0,3	G/SD 26×34×4
	0,3	32	0,3	G/SD 26×34×4
28	0,3	35	0,3	G 28×37×4
	0,3	35	0,3	G 28×37×4
	0,3	37	0,3	–
	0,3	37	0,3	–
	0,6	38	0,6	28×42×7 HMS5 RG
29	0,3	36	0,3	G 29×38×4
	0,3	36	0,3	G 29×38×4
30	0,3	38	0,3	G/SD 30×40×4
	0,3	38	0,3	G/SD 30×40×4
	0,3	40	0,3	30×42×7 HMS RG
	0,3	40	0,3	–
	0,3	40	0,3	–
	0,6	40	0,3	30×42×6 HMS5 RG 30×45×7 HMS RG
32	0,3	40	0,3	G/SD 32×42×4
	0,3	40	0,3	G/SD 32×42×4
	0,3	43	0,3	G 32×45×3
	0,3	43	0,3	G 32×45×3
	0,6	43	0,6	32×47×6 HMS5 RG

¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208. For additional information about SKF seals, refer to the SKF catalogue *Industrial shaft seals*.

Needle roller bearings with machined rings with flanges, without an inner ring

F_w 35 – 47 mm



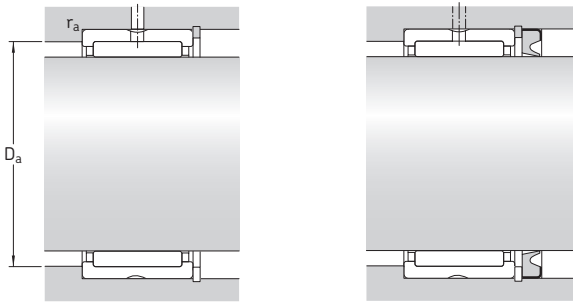
NK(S)
RNA 49
RNA 69 (D ≤ 47 mm)

RNA 69 (D ≥ 52 mm)

RNA 49..RS

RNA 49...2RS

Principal dimensions			Basic load ratings		Fatigue load limit P_u	Speed ratings		Mass	Designation
F_w	D	C	dynamic	static		Reference speed	Limiting speed		
mm			C	C_0	kN	r/min	kg	–	
35	45	20	27,5	52	6,55	11 000	13 000	0,070	NK 35/20 TN
	45	30	40,2	85	10,6	11 000	13 000	0,11	NK 35/30 TN
	47	17	25,5	39	4,65	11 000	13 000	0,069	RNA 4906
	47	17	23,3	32	3,8	–	5 600	0,069	RNA 4906 RS
	47	17	23,3	32	3,8	–	5 600	0,069	RNA 4906.2RS
	47	30	42,9	75	9,3	11 000	13 000	0,13	RNA 4906
50	22	35,2	50	6,2	11 000	12 000	0,12	NKS 35	
37	47	20	25,1	46,5	5,85	11 000	12 000	0,077	NK 37/20
	47	30	36,9	76,5	9,5	11 000	12 000	0,11	NK 37/30
	52	22	36,9	54	6,55	10 000	12 000	0,12	NKS 37
38	48	20	25,5	49	6,1	11 000	12 000	0,079	NK 38/20
	48	30	37,4	80	10	11 000	12 000	0,12	NK 38/30
40	50	20	29,7	60	7,5	10 000	11 000	0,078	NK 40/20 TN
	50	30	38	83	10,4	10 000	11 000	0,13	NK 40/30
	52	20	30,8	51	6,3	10 000	11 000	0,089	RNA 49/32
	52	36	47,3	90	10,8	10 000	11 000	0,16	RNA 69/32
	55	22	38	57	7,1	9 500	11 000	0,13	NKS 40
42	52	20	27	53	6,55	9 500	11 000	0,086	NK 42/20
	52	30	39,1	86,5	10,8	9 500	11 000	0,13	NK 42/30
	55	20	31,9	54	6,7	9 500	11 000	0,11	RNA 4907
	55	20	27	43	5,3	–	4 800	0,11	RNA 4907 RS
	55	20	27	43	5,3	–	4 800	0,11	RNA 4907.2RS
	55	36	48,4	93	11,4	9 500	11 000	0,19	RNA 6907
43	53	20	27,5	55	6,8	9 500	11 000	0,086	NK 43/20
	53	30	40,2	90	11,2	9 500	11 000	0,13	NK 43/30
	58	22	39,1	61	7,5	9 000	10 000	0,14	NKS 43
45	55	20	31,4	65,5	8,3	9 000	10 000	0,086	NK 45/20 TN
	55	30	45,7	108	13,7	9 000	10 000	0,14	NK 45/30 TN
	60	22	40,2	64	8	8 500	10 000	0,15	NKS 45
47	57	20	29,2	61	7,65	8 500	10 000	0,095	NK 47/20
	57	30	41,8	98	12,5	8 500	10 000	0,14	NK 47/30

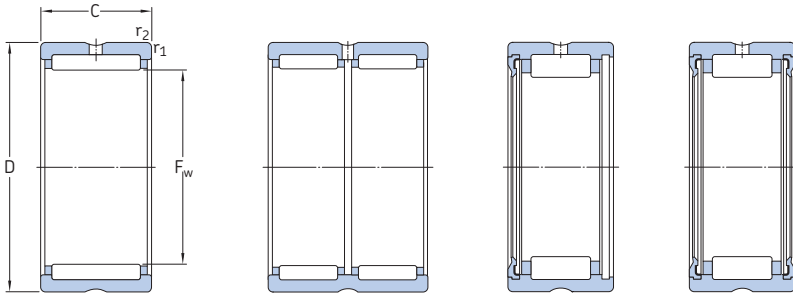


Dimensions		Abutment and fillet dimensions		Appropriate seal ¹⁾ Designation
F _w	r _{1,2} min	D _a max	r _a max	
mm		mm		–
35	0,3	43	0,3	G/SD 35×45×4
	0,3	43	0,3	G/SD 35×45×4
	0,3	45	0,3	35×47×6 HMS5 RG
	0,3	45	0,3	–
	0,3	45	0,3	–
	0,3	45	0,3	35×47×6 HMS5 RG
	0,6	46	0,6	35×50×7 HMS5 RG
37	0,3	45	0,3	G/SD 37×47×4
	0,3	45	0,3	G/SD 37×47×4
	0,6	48	0,6	37×52×8 HMS4 R
38	0,3	46	0,3	G/SD 38×48×4
	0,3	46	0,3	G/SD 38×48×4
40	0,3	48	0,3	G/SD 40×50×4
	0,3	48	0,3	G/SD 40×50×4
	0,6	48	0,6	G/SD 40×52×5
	0,6	48	0,6	G/SD 40×52×5
	0,6	51	0,6	40×55×7 HMS5 RG
42	0,3	50	0,3	G/SD 42×52×4
	0,3	50	0,3	G/SD 42×52×4
	0,6	51	0,6	42×55×7 HMS5 RG
	0,6	51	0,6	–
	0,6	51	0,6	–
	0,6	51	0,6	42×55×7 HMS5 RG
43	0,3	51	0,3	G 43×53×4
	0,3	51	0,3	G 43×53×4
	0,6	53	0,6	–
45	0,3	53	0,3	G/SD 45×55×4
	0,3	53	0,3	G/SD 45×55×4
	0,6	56	0,6	45×60×7 HMS5 RG
47	0,3	55	0,3	–
	0,3	55	0,3	–

¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.
For additional information about SKF seals, refer to the SKF catalogue *Industrial shaft seals*.

Needle roller bearings with machined rings with flanges, without an inner ring

F_w 48 – 68 mm



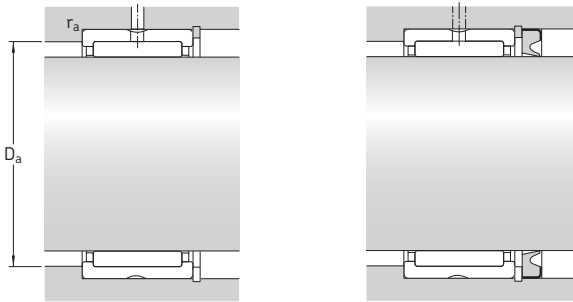
NK(S)
RNA 49

RNA 69

RNA 49..RS

RNA 49...2RS

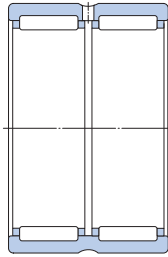
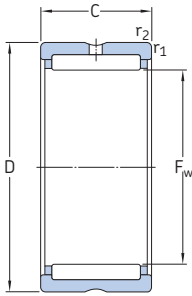
Principal dimensions			Basic load ratings		Fatigue load limit P _u	Speed ratings		Mass	Designation
F _w	D	C	C	C ₀		Reference speed	Limiting speed		
mm			kN		kN	r/min		kg	–
48	62	22	42,9	71	8,8	8 000	9 500	0,14	RNA 4908 RNA 4908 RS RNA 4908.2RS RNA 6908
	62	22	36,9	58,5	7,1	–	4 000	0,15	
	62	22	36,9	58,5	7,1	–	4 000	0,15	
	62	40	67,1	125	15,3	8 000	9 500	0,26	
50	62	25	42,9	91,5	11,2	8 000	9 000	0,15	NK 50/25 TN NK 50/35 TN NKS 50
	62	35	58,3	137	17	8 000	9 000	0,21	
	65	22	42,9	72	8,8	8 000	9 000	0,16	
52	68	22	45,7	78	9,65	7 500	8 500	0,18	RNA 4909 RNA 4909 RS RNA 4909.2RS RNA 6909
	68	22	39,1	64	7,8	–	3 800	0,16	
	68	22	39,1	64	7,8	–	3 800	0,16	
	68	40	70,4	137	17	7 500	8 500	0,34	
55	68	25	40,2	88	10,8	7 500	8 500	0,18	NK 55/25 NK 55/35 NKS 55
	68	35	52,3	122	15,3	7 500	8 500	0,25	
	72	22	44,6	78	9,8	7 000	8 000	0,22	
58	72	22	47,3	85	10,6	7 000	8 000	0,16	RNA 4910 RNA 4910 RS RNA 4910.2RS RNA 6910
	72	22	40,2	69,5	8,5	–	3 400	0,16	
	72	22	40,2	69,5	8,5	–	3 400	0,16	
	72	40	73,7	150	18,6	7 000	8 000	0,31	
60	72	25	46,8	110	13,4	6 700	7 500	0,17	NK 60/25 TN NK 60/35 NKS 60
	72	35	55	134	17	6 700	7 500	0,26	
	80	28	62,7	104	13,2	6 300	7 500	0,34	
63	80	25	57,2	106	13,2	6 300	7 000	0,26	RNA 4911 RNA 6911
	80	45	89,7	190	23,2	6 300	7 000	0,47	
65	78	25	44	104	12,1	6 300	7 000	0,22	NK 65/25 NK 65/35 NKS 65
	78	35	58,3	146	18,3	6 300	7 000	0,31	
	85	28	66	114	14,6	6 000	6 700	0,36	
68	82	25	44	95	11,8	6 000	6 700	0,24	NK 68/25 NK 68/35 RNA 4912 RNA 6912
	82	35	60,5	146	18,3	6 000	6 700	0,34	
	85	25	60,5	114	14,3	6 000	6 700	0,28	
	85	45	93,5	204	25	6 000	6 700	0,49	



Dimensions		Abutment and fillet dimensions		Appropriate seal ¹⁾ Designation
F _w	r _{1,2} min	D _a max	r _a max	
mm		mm		–
48	0,6	58	0,6	48×62×8 HMS5 RG
	0,6	58	0,6	–
	0,6	58	0,6	–
	0,6	58	0,6	48×62×8 HMS5 RG
50	0,6	58	0,6	G/SD 50×62×5
	0,6	58	0,6	G/SD 50×62×5
	1	60	1	CR 50×65×8 CRW1 R
52	0,6	64	0,6	52×68×8 HMS RG
	0,6	64	0,6	–
	0,6	64	0,6	–
	0,6	64	0,6	52×68×8 HMS5 RG
55	0,6	64	0,6	55×58×8 HMS5 RG
	0,6	64	0,6	55×68×8 HMS5 RG
	1	67	1	55×72×8 HMS5 RG
58	0,6	68	0,6	58×72×8 HMS5 RG
	0,6	68	0,6	–
	0,6	68	0,6	–
	0,6	68	0,6	58×72×8 HMS5 RG
60	0,6	68	0,6	60×72×8 HMS5 RG
	0,6	68	0,6	60×72×8 HMS5 RG
	1,1	73,5	1	60×80×8 HMS5 RG
63	1	75	1	63×80×8 CRW1 R
	1	75	1	60×80×8 CRW1 R
65	0,6	74	0,6	–
	0,6	74	0,6	–
	1,1	78,5	1	65×85×8 HMS5 RG
68	0,6	78	0,6	–
	0,6	78	0,6	–
	1	80	1	68×85×8 CRW1 R
	1	80	1	68×85×8 CRW1 R

¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.
For additional information about SKF seals, refer to the SKF catalogue *Industrial shaft seals*.

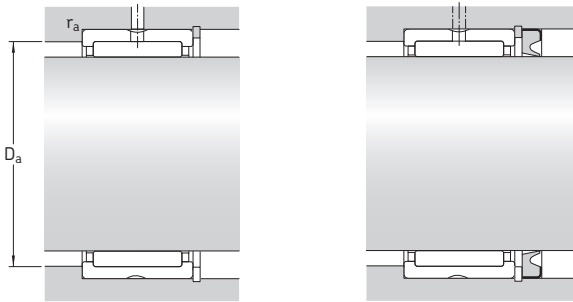
Needle roller bearings with machined rings with flanges, without an inner ring
 F_w 70 – 100 mm



NK(S)
RNA 49

RNA 69

Principal dimensions			Basic load ratings		Fatigue load limit P_u	Speed ratings		Mass	Designation
F_w	D	C	dynamic	static		Reference speed	Limiting speed		
mm			kN		kN	r/min		kg	–
70	85	25	44,6	98	12,2	6 000	6 700	0,26	NK 70/25 NK 70/35 NKS 70
	85	35	61,6	150	19	6 000	6 700	0,37	
	90	28	68,2	120	15,3	5 600	6 300	0,38	
72	90	25	61,6	120	14,6	5 600	6 300	0,31	RNA 4913 RNA 6913
	90	45	95,2	212	26	5 600	6 300	0,58	
73	90	25	52,8	106	13,2	5 600	6 300	0,30	NK 73/25 NK 73/35
	90	35	73,7	163	20,4	5 600	6 300	0,43	
75	92	25	53,9	110	13,7	5 300	6 000	0,32	NK 75/25 NK 75/35 NKS 75
	92	35	74,8	170	21,2	5 300	6 000	0,45	
	95	28	70,4	132	16,6	5 300	6 000	0,40	
80	95	25	56,1	127	15,6	5 000	5 600	0,30	NK 80/25 NK 80/35 RNA 4914 RNA 6914
	95	35	76,5	190	24	5 000	5 600	0,43	
	100	30	84,2	163	20,8	5 000	5 600	0,46	
	100	54	128	285	36	5 000	5 600	0,86	
85	105	25	69,3	132	16,6	4 800	5 300	0,43	NK 85/25 RNA 4915 NK 85/35 RNA 6915
	105	30	84,2	170	21,6	4 800	5 300	0,49	
	105	35	96,8	200	26	4 800	5 300	0,60	
	105	54	130	290	37,5	4 800	5 300	0,94	
90	110	25	72,1	140	18	4 500	5 000	0,45	NK 90/25 RNA 4916 NK 90/35 RNA 6916
	110	30	88	183	23,2	4 500	5 000	0,52	
	110	35	101	216	28	4 500	5 000	0,63	
	110	54	134	315	40	4 500	5 000	0,99	
95	115	26	73,7	146	18,6	4 300	4 800	0,49	NK 95/26 NK 95/36
	115	36	105	232	30	4 300	4 800	0,68	
100	120	26	76,5	156	19,6	4 000	4 500	0,52	NK 100/26 RNA 4917 NK 100/36 RNA 6917
	120	35	108	250	31	4 000	4 500	0,66	
	120	36	108	250	31	4 000	4 500	0,72	
	120	63	165	425	53	4 000	4 500	1,20	

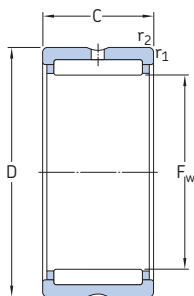


Dimensions		Abutment and fillet dimensions		Appropriate seal ¹⁾ Designation
F _w	r _{1,2} min	D _a max	r _a max	
mm		mm		–
70	0,6	81	0,6	70×85×8 HMS5 GR
	0,6	81	0,6	70×85×8 HMS5 GR
	1,1	83,5	1	70×90×10 HMS5 RG
72	1	85	1	72×90×10 HMS5 GR
	1	85	1	72×90×10 HMS5 GR
73	1	85	1	–
	1	85	1	–
75	1	87	1	73×92×11.1 CRWH1 R
	1	87	1	73×92×11.1 CRWH1 R
	1,1	88,5	1	75×95×10 HMS5 RG
80	1	90	1	80×95×10 HMS5 RG
	1	90	1	80×95×10 HMS5 RG
	1	95	1	80×100×10 HMS5 RG
	1	95	1	80×100×10 HMS5 RG
85	1	100	1	85×105×12 HMS5 RG
	1	100	1	85×105×12 HMS5 RG
	1	100	1	85×105×12 HMS5 RG
	1	100	1	85×105×12 HMS5 RG
90	1	105	1	90×110×10 HMS5 RG
	1	105	1	90×110×10 HMS5 RG
	1	105	1	90×110×10 HMS5 RG
	1	105	1	90×110×10 HMS5 RG
95	1	110	1	95×115×12 HMS5 RG
	1	110	1	95×115×12 HMS5 RG
100	1	115	1	100×120×10 HMS5 RG
	1,1	113,5	1	100×120×10 HMS5 RG
	1	115	1	100×120×10 HMS5 RG
	1,1	113,5	1	100×120×10 HMS5 RG

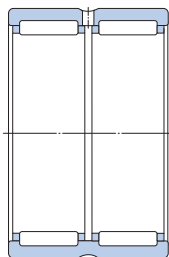
¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.
For additional information about SKF seals, refer to the SKF catalogue *Industrial shaft seals*.

Needle roller bearings with machined rings with flanges, without an inner ring

F_w 105 – 210 mm

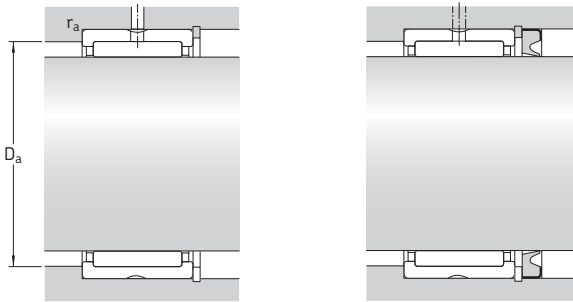


NK
RNA 48
RNA 49



RNA 69

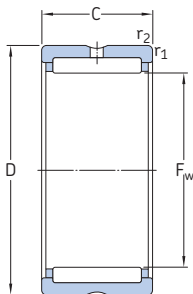
Principal dimensions			Basic load ratings		Fatigue load limit P_u	Speed ratings		Mass	Designation
F_w	D	C	dynamic	static		Reference speed	Limiting speed		
mm			C	C_0	kN	r/min	kg	–	
105	125	26	78,1	166	20,4	3 800	4 300	0,54	NK 105/26 RNA 4918 NK 105/36 RNA 6918
	125	35	112	265	32,5	3 800	4 300	0,75	
	125	36	112	265	32,5	3 800	4 300	0,71	
	125	63	172	450	55	3 800	4 300	1,35	
110	130	30	96,8	220	27	3 600	4 000	0,65	NK 110/30 RNA 4919 NK 110/40 RNA 6919
	130	35	114	270	33,5	3 600	4 000	0,72	
	130	40	123	305	37,5	3 600	4 000	0,83	
	130	63	172	465	56	3 600	4 000	1,45	
115	140	40	125	280	34	3 400	4 000	1,15	RNA 4920
120	140	30	93,5	232	27	3 400	3 800	0,67	RNA 4822
125	150	40	130	300	35,5	3 200	3 600	1,25	RNA 4922
130	150	30	99	255	29	3 200	3 600	0,73	RNA 4824
135	165	45	176	405	49	3 000	3 400	1,85	RNA 4924
145	165	35	119	325	36,5	2 800	3 200	0,99	RNA 4826
150	180	50	198	480	57	2 600	3 000	2,20	RNA 4926
155	175	35	121	345	37,5	2 600	3 000	1,05	RNA 4828
160	190	50	205	510	60	2 400	2 800	2,35	RNA 4928
165	190	40	147	415	46,5	2 400	2 800	1,60	RNA 4830
175	200	40	157	450	49	2 200	2 600	1,70	RNA 4832
185	215	45	179	520	56	2 200	2 400	2,55	RNA 4834
195	225	45	190	570	60	2 000	2 400	2,70	RNA 4836
210	240	50	220	710	73,5	1 900	2 200	3,20	RNA 4838



Dimensions		Abutment and fillet dimensions		Appropriate seal ¹⁾ Designation
F _w	r _{1,2} min	D _a max	r _a max	
mm		mm		–
105	1	120	1	105×125×13 HMS4 R
	1,1	118,5	1	105×125×13 HMS4 R
	1	120	1	105×125×13 HMS4 R
	1,1	118,5	1	105×125×13 HMS4 R
110	1,1	123,5	1	110×130×12 HMS5 RG
	1,1	123,5	1	110×130×12 HMS5 RG
	1,1	123,5	1	110×130×12 HMS5 RG
	1,1	123,5	1	110×130×12 HMS5 RG
115	1,1	133,5	1	115×140×12 HMS5 RG
120	1	135	1	120×140×12 HMS5 RG
125	1,1	143,5	1	125×150×12 HMS5 RG
130	1	145	1	130×150×10 CRSA1 R
135	1,1	158,5	1	135×165×14 HMSA7 R
145	1,1	158,5	1	–
150	1,5	172	1,5	150×180×12 HMS5 RG
155	1,1	168,5	1	–
160	1,5	182	1,5	160×190×15 HMS5 RG
165	1,1	183,5	1	165×190×15 HMS5 RG
175	1,1	193,5	1	175×200×15 HMS5 RG
185	1,1	208,5	1	185×215×15 HMS42 R
195	1,1	218,5	1	–
210	1,5	232	1,5	210×240×15 HMS5 RG

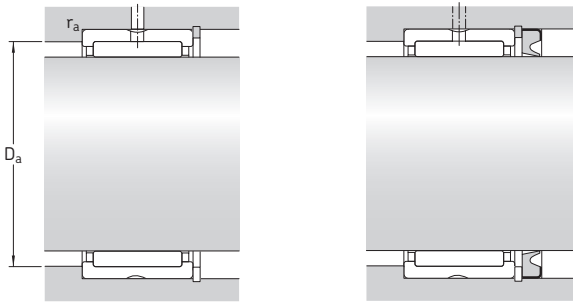
¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.
For additional information about SKF seals, refer to the SKF catalogue *Industrial shaft seals*.

Needle roller bearings with machined rings with flanges, without an inner ring
F_w 220 – 415 mm



RNA 48

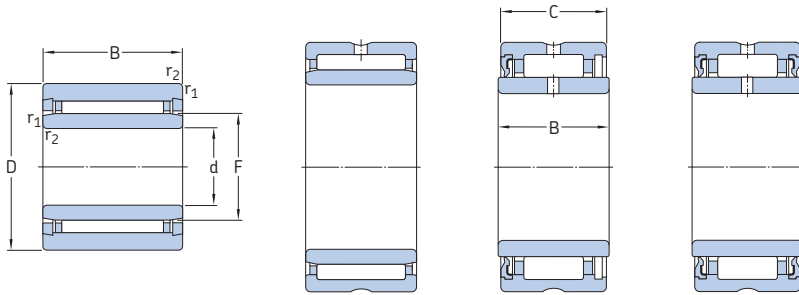
Principal dimensions			Basic load ratings		Fatigue load limit P _u	Speed ratings		Mass	Designation
F _w	D	C	dynamic	static		Reference speed	Limiting speed		
mm			kN		kN	r/min		kg	–
220	250	50	224	735	75	1 800	2 000	3,35	RNA 4840
240	270	50	238	815	81,5	1 700	1 900	3,60	RNA 4844
265	300	60	347	1 120	112	1 500	1 700	5,40	RNA 4848
285	320	60	358	1 200	118	1 400	1 500	5,80	RNA 4852
305	350	69	429	1 320	129	1 300	1 400	9,30	RNA 4856
330	380	80	594	1 800	173	1 100	1 300	12,5	RNA 4860
350	400	80	605	1 900	176	1 100	1 200	13,5	RNA 4864
370	420	80	616	1 960	183	1 000	1 200	14,0	RNA 4868
390	440	80	627	2 040	186	950	1 100	15,0	RNA 4872
415	480	100	968	3 000	–	900	1 000	26,0	RNA 4876



Dimensions		Abutment and fillet dimensions		Appropriate seal ¹⁾ Designation
F _w	r _{1,2} min	D _a max	r _a max	
mm		mm		–
220	1,5	242	1,5	220×250×15 HMS5 RG
240	1,5	262	1,5	240×270×15 HMS5 RG
265	2	291	2	–
285	2	311	2	285×320×16 HDS2 R
305	2	341	2	–
330	2,1	369	2	–
350	2,1	389	2	–
370	2,1	409	2	–
390	2,1	429	2	–
415	2,1	469	2	–

¹⁾ For additional information, refer to the section *Radial shaft seals with a low cross sectional height*, starting on page 208.
For additional information about SKF seals, refer to the SKF catalogue *Industrial shaft seals*.

Needle roller bearings with machined rings with flanges, with an inner ring d 5 – 17 mm



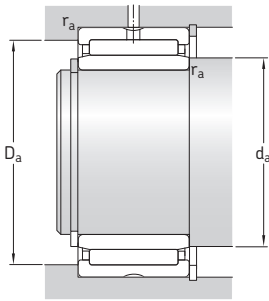
NKI (d ≤ 7 mm)

NKI(S) (d ≥ 9 mm)
NA 49
NA 69

NA 49..RS

NA 49...2RS

Principal dimensions				Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	B	C	C	C ₀	P _u	Reference speed	Limiting speed		
mm				kN		kN	r/min		kg	–
5	15	12	–	3,8	4,25	0,465	32 000	36 000	0,012	NKI 5/12 TN
	15	16	–	5,01	5,85	0,67	32 000	36 000	0,015	NKI 5/16 TN
6	16	12	–	4,4	5,2	0,57	30 000	34 000	0,014	NKI 6/12 TN
	16	16	–	5,72	7,2	0,815	30 000	34 000	0,017	NKI 6/16 TN
7	17	12	–	4,57	5,7	0,63	28 000	32 000	0,014	NKI 7/12 TN
	17	16	–	5,94	8	0,9	28 000	32 000	0,018	NKI 7/16 TN
9	19	12	–	6,71	8,15	0,965	26 000	30 000	0,017	NKI 9/12
	19	16	–	9,13	12	1,43	26 000	30 000	0,022	NKI 9/16
10	22	13	–	8,8	10,4	1,22	24 000	28 000	0,023	NA 4900
	22	14	13	7,37	8,15	0,97	–	12 000	0,025	NA 4900 RS
	22	14	13	7,37	8,15	0,97	–	12 000	0,025	NA 4900.2RS
	22	16	–	10,2	12,5	1,50	24 000	28 000	0,029	NKI 10/16
	22	20	–	12,8	16,6	2,00	24 000	28 000	0,037	NKI 10/20
12	24	13	–	9,9	12,2	1,46	22 000	26 000	0,026	NA 4901
	24	14	13	8,09	9,65	1,14	–	11 000	0,028	NA 4901 RS
	24	14	13	8,09	9,65	1,14	–	11 000	0,028	NA 4901.2RS
	24	16	–	11,7	15,3	1,8	22 000	26 000	0,033	NKI 12/16
	24	20	–	14,5	20	2,4	22 000	26 000	0,042	NKI 12/20
	24	22	–	16,1	23,2	2,75	22 000	26 000	0,046	NA 6901
15	27	16	–	13,4	19	2,28	20 000	24 000	0,039	NKI 15/16
	27	20	–	16,5	25,5	3,05	20 000	24 000	0,049	NKI 15/20
	28	13	–	11,2	15,3	1,83	19 000	22 000	0,034	NA 4902
	28	14	13	9,13	12	1,43	–	9 500	0,037	NA 4902 RS
	28	14	13	9,13	12	1,43	–	9 500	0,037	NA 4902.2RS
	28	23	–	17,2	27	3,35	19 000	22 000	0,064	NA 4902
	35	20	–	24,6	30	3,65	16 000	19 000	0,092	NKIS 15
17	29	16	–	13,8	20,4	2,45	19 000	22 000	0,042	NKI 17/16
	29	20	–	17,2	27	3,35	19 000	22 000	0,053	NKI 17/20
	30	13	–	11,4	16,3	1,96	18 000	20 000	0,037	NA 4903
	30	14	13	9,52	12,9	1,53	–	9 000	0,040	NA 4903 RS
	30	14	13	9,52	12,9	1,53	–	9 000	0,040	NA 4903.2RS
	30	23	–	18,7	30,5	3,75	18 000	20 000	0,072	NA 6903
	37	20	–	26	33,5	4,0	15 000	17 000	0,098	NKIS 17



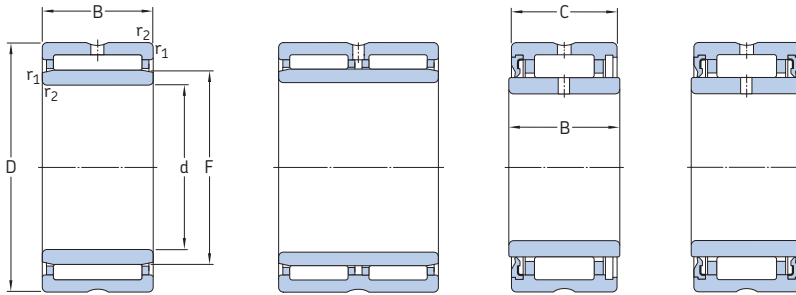
Dimensions

Abutment and fillet dimensions

d	F	r _{1,2} min	s ¹⁾	d _a min	D _a max	r _a max
mm			mm			
5	8	0,3	1,5	7	13	0,3
	8	0,3	2	7	13	0,3
6	9	0,3	1,5	8	14	0,3
	9	0,3	2	8	14	0,3
7	10	0,3	1,5	9	15	0,3
	10	0,3	2	9	15	0,3
9	12	0,3	1,5	11	17	0,3
	12	0,3	2	11	17	0,3
10	14	0,3	0,5	12	20	0,3
	14	0,3	0,5	12	20	0,3
	14	0,3	0,5	12	20	0,3
	14	0,3	0,5	12	20	0,3
	14	0,3	0,5	12	20	0,3
12	16	0,3	0,5	14	22	0,3
	16	0,3	0,5	14	22	0,3
	16	0,3	0,5	14	22	0,3
	16	0,3	0,5	14	22	0,3
	16	0,3	0,5	14	22	0,3
	16	0,3	1	14	22	0,3
15	19	0,3	0,5	17	25	0,3
	19	0,3	0,5	17	25	0,3
	20	0,3	0,5	17	26	0,3
	20	0,3	0,5	17	26	0,3
	20	0,3	0,5	17	26	0,3
	20	0,3	1	17	26	0,3
	22	0,6	0,5	19	31	0,6
17	21	0,3	0,5	19	27	0,3
	21	0,3	0,5	19	27	0,3
	22	0,3	0,5	19	28	0,3
	22	0,3	0,5	19	28	0,3
	22	0,3	0,5	19	28	0,3
	22	0,3	1	19	28	0,3
	24	0,6	0,5	21	33	0,6

¹⁾ Permissible axial displacement from normal position of one bearing ring relative to the other

Needle roller bearings with machined rings with flanges, with an inner ring
d 20 – 32 mm



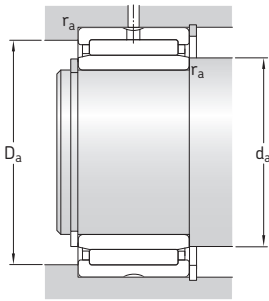
NKI(S)
 NA 49
 NA 69 (D ≤ 47 mm)

NA 69 (D ≥ 52 mm)

NA 49..RS

NA 49...2RS

Principal dimensions				Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	B	C	C	C ₀	P _U	Reference speed	Limiting speed		
mm				kN		kN	r/min		kg	–
20	32	16	–	15,4	24,5	2,9	16 000	19 000	0,048	NKI 20/16
	32	20	–	19	32,5	4	16 000	19 000	0,06	NKI 20/20
	37	17	–	21,6	28	3,35	15 000	17 000	0,08	NA 4904
	37	18	17	19,4	22,4	2,65	–	7 500	0,08	NA 4904 RS
	37	18	17	19,4	22,4	2,65	–	7 500	0,08	NA 4904.2RS
	37	30	–	35,2	53	6,55	15 000	17 000	0,141	NA 6904
	42	20	–	28,6	39	4,75	13 000	15 000	0,129	NKI5 20
22	34	16	–	15,7	26	3,1	15 000	17 000	0,052	NKI 22/16
	34	20	–	19,4	34,5	4,25	15 000	17 000	0,065	NKI 22/20
	39	17	–	23,3	32	3,9	14 000	15 000	0,080	NA 49/22
	39	30	–	36,9	57	7,2	14 000	15 000	0,15	NA 69/22
25	38	20	–	24,6	42,5	5,2	14 000	15 000	0,08	NKI 25/20 TN
	38	30	–	31,9	60	7,5	14 000	15 000	0,115	NKI 25/30
	42	17	–	24,2	34,5	4,15	13 000	15 000	0,088	NA 4905
	42	18	17	21,6	27,5	3,25	–	6 300	0,09	NA 4905 RS
	42	18	17	21,6	27,5	3,25	–	6 300	0,09	NA 4905.2RS
	42	30	–	38	62	7,65	13 000	15 000	0,161	NA 6905
	47	22	–	34,1	46,5	5,7	12 000	13 000	0,162	NKI5 25
28	42	20	–	26,4	48	6	12 000	14 000	0,092	NKI 28/20 TN
	42	30	–	34,1	65,5	8,3	12 000	14 000	0,141	NKI 28/30
	45	17	–	25,1	36,5	4,4	12 000	14 000	0,098	NA 49/28
	45	30	–	39,6	65,5	8,3	12 000	14 000	0,182	NA 69/28
30	45	20	–	27,5	52	6,55	11 000	13 000	0,112	NKI 30/20 TN
	45	30	–	40,2	85	10,6	11 000	13 000	0,165	NKI 30/30 TN
	47	17	–	25,5	39	4,65	11 000	13 000	0,101	NA 4906
	47	18	17	23,3	32	3,8	–	5 600	0,104	NA 4906 RS
	47	18	17	23,3	32	3,8	–	5 600	0,104	NA 4906.2RS
	47	30	–	42,9	75	9,3	11 000	13 000	0,192	NA 6906
	52	22	–	36,9	54	6,55	10 000	12 000	0,184	NKI5 30
32	47	20	–	25,1	46,5	5,85	11 000	12 000	0,114	NKI 32/20
	47	30	–	36,9	76,5	9,5	11 000	12 000	0,173	NKI 32/30
	52	20	–	30,8	51	6,3	10 000	11 000	0,158	NA 49/32
	52	36	–	47,3	90	10,8	10 000	11 000	0,288	NA 69/32



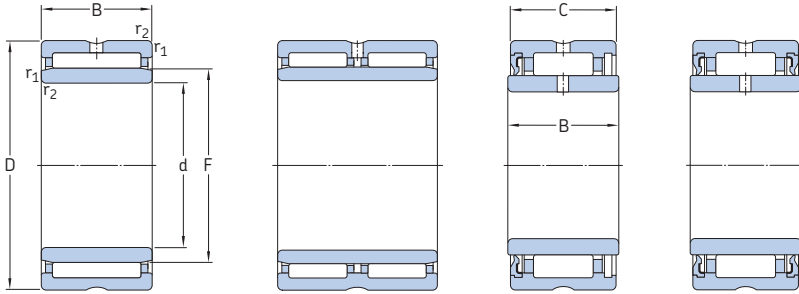
Dimensions

Abutment and fillet dimensions

d	F	r _{1,2} min	s ¹⁾	d _a min	D _a max	r _a max
mm				mm		
20	24	0,3	0,5	22	30	0,3
	24	0,3	0,5	22	30	0,3
	25	0,3	0,8	22	35	0,3
	25	0,3	0,5	22	35	0,3
	25	0,3	0,5	22	35	0,3
	25	0,3	1	22	35	0,3
	28	0,6	0,5	24	38	0,6
22	26	0,3	0,5	24	32	0,3
	26	0,3	0,5	24	32	0,3
	28	0,3	0,8	24	37	0,3
	28	0,3	0,5	24	37	0,3
25	29	0,3	1	27	36	0,3
	29	0,3	1,5	27	36	0,3
	30	0,3	0,8	27	40	0,3
	30	0,3	0,5	27	40	0,3
	30	0,3	0,5	27	40	0,3
	30	0,3	1	27	40	0,3
	32	0,6	1	29	43	0,6
28	32	0,3	1	30	40	0,3
	32	0,3	1,5	30	40	0,3
	32	0,3	0,8	30	43	0,3
	32	0,3	1	30	43	0,3
30	35	0,3	0,5	32	43	0,3
	35	0,3	1	32	43	0,3
	35	0,3	0,8	32	45	0,3
	35	0,3	0,5	32	45	0,3
	35	0,3	0,5	32	45	0,3
	35	0,3	1	32	45	0,3
	37	0,6	1	34	48	0,6
32	37	0,3	0,5	34	45	0,3
	37	0,3	1	34	45	0,3
	40	0,6	0,8	36	48	0,6
	40	0,6	0,5	36	48	0,6

¹⁾ Permissible axial displacement from normal position of one bearing ring in relation to the other

Needle roller bearings with machined rings with flanges, with an inner ring
d 35 – 50 mm



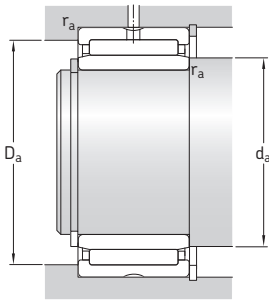
NKI(S)
NA 49

NA 69

NA 49..RS

NA 49...2RS

Principal dimensions				Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	B	C	C	C ₀	P _u	Reference speed	Limiting speed		
mm				kN		kN	r/min		kg	–
35	50	20	–	29,7	60	7,5	10 000	11 000	0,13	NKI 35/20 TN
	50	30	–	38	83	10,4	10 000	11 000	0,19	NKI 35/30
	55	20	–	31,9	54	6,7	9 500	11 000	0,17	NA 4907
	55	21	20	27	43	5,3	–	4 800	0,18	NA 4907 RS
	55	21	20	27	43	5,3	–	4 800	0,18	NA 4907.2RS
	55	36	–	48,4	93	11,4	9 500	11 000	0,31	NA 6907
	58	22	–	39,1	61	7,5	9 000	10 000	0,22	NKIS 35
38	53	20	–	27,5	55	6,8	9 500	11 000	0,13	NKI 38/20
	53	30	–	40,2	90	11,2	9 500	11 000	0,21	NKI 38/30
40	55	20	–	31,4	65,5	8,3	9 000	10 000	0,14	NKI 40/20 TN
	55	30	–	45,7	108	13,7	9 000	10 000	0,22	NKI 40/30 TN
	62	22	–	42,9	71	8,8	8 000	9 500	0,23	NA 4908
	62	23	22	36,9	58,5	7,1	–	4 000	0,25	NA 4908 RS
	62	23	22	36,9	58,5	7,1	–	4 000	0,25	NA 4908.2RS
	62	40	–	67,1	125	15,3	8 000	9 500	0,43	NA 6908
	65	22	–	42,9	72	8,8	8 000	9 000	0,28	NKIS 40
42	57	20	–	29,2	61	7,65	8 500	10 000	0,15	NKI 42/20
	57	30	–	41,8	98	12,5	8 500	10 000	0,22	NKI 42/30
45	62	25	–	42,9	91,5	11,2	8 000	9 000	0,22	NKI 45/25 TN
	62	35	–	58,3	137	17	8 000	9 000	0,31	NKI 45/35 TN
	68	22	–	45,7	78	9,65	7 500	8 500	0,27	NA 4909
	68	23	22	39,1	64	7,8	–	3 800	0,29	NA 4909 RS
	68	23	22	39,1	64	7,8	–	3 800	0,29	NA 4909.2RS
	68	40	–	70,4	137	17	7 500	8 500	0,50	NA 6909
	72	22	–	44,6	78	9,8	7 000	8 000	0,34	NKIS 45
50	68	25	–	40,2	88	10,8	7 500	8 500	0,26	NKI 50/25
	68	35	–	52,3	122	15,3	7 500	8 500	0,38	NKI 50/35
	72	22	–	47,3	85	10,6	7 000	8 000	0,27	NA 4910
	72	23	22	40,2	69,5	8,5	–	3 400	0,30	NA 4910 RS
	72	23	22	40,2	69,5	8,5	–	3 400	0,30	NA 4910.2RS
	72	40	–	73,7	150	18,6	7 000	8 000	0,52	NA 6910
	80	28	–	62,7	104	13,2	6 300	7 500	0,52	NKIS 50



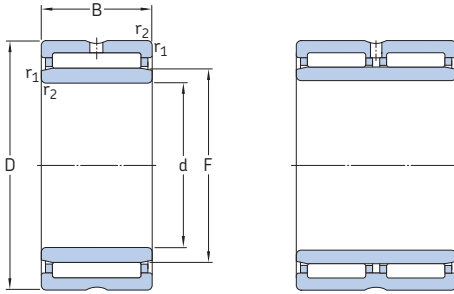
Dimensions

Abutment and fillet dimensions

d	F	$r_{1,2}$ min	$s^1)$	d_a min	D_a max	r_a max
mm				mm		
35	40	0,3	0,5	37	48	0,3
	40	0,3	1	37	48	0,3
	42	0,6	0,8	39	51	0,6
	42	0,6	0,5	39	51	0,6
	42	0,6	0,5	39	51	0,6
	42	0,6	0,5	39	51	0,6
	43	0,6	0,5	39	53	0,6
38	43	0,3	0,5	40	51	0,3
	43	0,3	1	40	51	0,3
40	45	0,3	0,5	42	53	0,3
	45	0,3	1	42	53	0,3
	48	0,6	1	44	58	0,6
	48	0,6	0,5	44	58	0,6
	48	0,6	0,5	44	58	0,6
	48	0,6	0,5	44	58	0,6
	50	1	0,5	45	60	1
42	47	0,3	0,5	44	55	0,3
	47	0,3	1	44	55	0,3
45	50	0,6	1,5	49	58	0,6
	50	0,6	2	49	58	0,6
	52	0,6	1	49	64	0,6
	52	0,6	0,5	49	64	0,6
	52	0,6	0,5	49	64	0,6
	52	0,6	0,5	49	64	0,6
	55	1	0,5	50	67	1
50	55	0,6	1,5	54	64	0,6
	55	0,6	2	54	64	0,6
	58	0,6	1	54	68	0,6
	58	0,6	0,5	54	68	0,6
	58	0,6	0,5	54	68	0,6
	58	0,6	0,5	54	68	0,6
	58	0,6	0,5	54	68	0,6
	60	1,1	2	56,5	73,5	1

¹⁾ Permissible axial displacement from normal position of one bearing ring in relation to the other

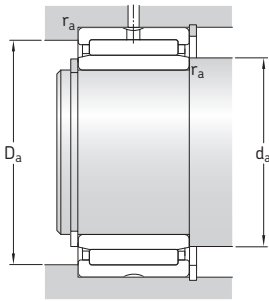
Needle roller bearings with machined rings with flanges, with an inner ring
d 55 – 85 mm



NKI(S)
NA 49

NA 69

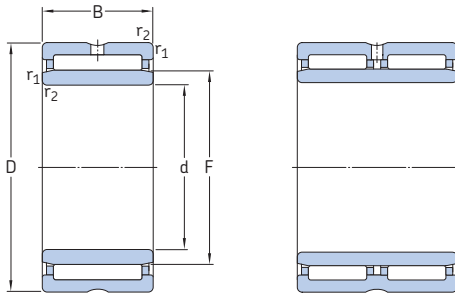
Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	B	dynamic	static		Reference speed	Limiting speed		
mm			kN		kN	r/min		kg	–
55	72	25	46,8	110	13,4	6 700	7 500	0,26	NKI 55/25 TN
	72	35	55	134	17	6 700	7 500	0,36	NKI 55/35
	80	25	57,2	106	13,2	6 300	7 000	0,39	NA 4911
	80	45	89,7	190	23,2	6 300	7 000	0,78	NA 6911
	85	28	66	114	14,6	6 000	6 700	0,56	NKIS 55
60	82	25	44	95	11,8	6 000	6 700	0,39	NKI 60/25
	82	35	60,5	146	18,3	6 000	6 700	0,55	NKI 60/35
	85	25	60,5	114	14,3	6 000	6 700	0,43	NA 4912
	85	45	93,5	204	25	6 000	6 700	0,81	NA 6912
	90	28	68,2	120	15,3	5 600	6 300	0,56	NKIS 60
65	90	25	61,6	120	14,6	5 600	6 300	0,46	NA 4913
	90	25	52,8	106	13,2	5 600	6 300	0,47	NKI 65/25
	90	35	73,7	163	20,4	5 600	6 300	0,66	NKI 65/35
	90	45	95,2	212	26	5 600	6 300	0,83	NA 6913
	95	28	70,4	132	16,6	5 300	6 000	0,64	NKIS 65
70	95	25	56,1	127	15,6	5 000	5 600	0,52	NKI 70/25
	95	35	76,5	190	24	5 000	5 600	0,74	NKI 70/35
	100	30	84,2	163	20,8	5 000	5 600	0,73	NA 4914
	100	54	128	285	36	5 000	5 600	1,35	NA 6914
75	105	25	69,3	132	16,6	4 800	5 300	0,64	NKI 75/25
	105	30	84,2	170	21,6	4 800	5 300	0,78	NA 4915
	105	35	96,8	200	26	4 800	5 300	0,91	NKI 75/35
	105	54	130	290	37,5	4 800	5 300	1,45	NA 6915
80	110	25	72,1	140	18	4 500	5 000	0,68	NKI 80/25
	110	30	88	183	23,2	4 500	5 000	0,88	NA 4916
	110	35	101	216	28	4 500	5 000	0,96	NKI 80/35
	110	54	134	315	40	4 500	5 000	1,50	NA 6916
85	115	26	73,7	146	18,6	4 300	4 800	0,74	NKI 85/26
	115	36	105	232	30	4 300	4 800	1,05	NKI 85/36
	120	35	108	250	31	4 000	4 500	1,25	NA 4917
	120	63	165	425	53	4 000	4 500	2,20	NA 6917


Dimensions
**Abutment and
fillet dimensions**

d	F	$r_{1,2}$ min	$s^1)$	d_a min	D_a max	r_a max
mm				mm		
55	60	0,6	1,5	59	68	0,6
	60	0,6	2	59	68	0,6
	63	1	1,5	60	75	1
	63	1	1,5	60	75	1
	65	1,1	2	61,5	78,5	1
60	68	0,6	1	64	78	0,6
	68	0,6	1	64	78	0,6
	68	1	1,5	65	80	1
	68	1	1,5	65	80	1
	70	1,1	2	66,5	83,5	1
65	72	1	1,5	70	85	1
	73	1	1	70	85	1
	73	1	1	70	85	1
	72	1	1,5	70	85	1
	75	1,1	2	71,5	88,5	1
70	80	1	0,8	75	90	1
	80	1	0,8	75	90	1
	80	1	1,5	75	95	1
	80	1	1	75	95	1
75	85	1	1	80	100	1
	85	1	1,5	80	100	1
	85	1	1	80	100	1
	85	1	1	80	100	1
80	90	1	1	85	105	1
	90	1	1,5	85	105	1
	90	1	1	85	105	1
	90	1	1	85	105	1
85	95	1	1,5	90	110	1
	95	1	1,5	90	110	1
	100	1,1	1	91,5	113,5	1
	100	1,1	1	91,5	113,5	1

¹⁾ Permissible axial displacement from normal position of one bearing ring in relation to the other

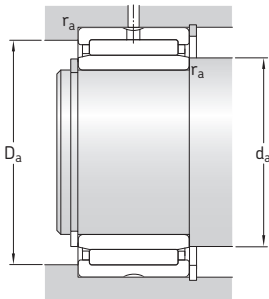
Needle roller bearings with machined rings with flanges, with an inner ring
d 90 – 220 mm



NKI
 NA 48
 NA 49

NA 69

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	B	C	C ₀	P _u	Reference speed	Limiting speed		
mm			kN		kN	r/min		kg	–
90	120	26	76,5	156	19,6	4 000	4 500	0,78	NKI 90/26
	120	36	108	250	31	4 000	4 500	1,10	NKI 90/36
	125	35	112	265	32,5	3 800	4 300	1,30	NA 4918
	125	63	172	450	55	3 800	4 300	2,30	NA 6918
95	125	26	78,1	166	20,4	3 800	4 300	0,82	NKI 95/26
	125	36	112	265	32,5	3 800	4 300	1,15	NKI 95/36
	130	35	114	270	33,5	3 600	4 000	1,35	NA 4919
	130	63	172	465	56	3 600	4 000	2,50	NA 6919
100	130	30	96,8	220	27	3 600	4 000	0,99	NKI 100/30
	130	40	123	305	37,5	3 600	4 000	1,35	NKI 100/40
	140	40	125	280	34	3 400	4 000	1,90	NA 4920
110	140	30	93,5	232	27	3 400	3 800	1,10	NA 4822
	150	40	130	300	35,5	3 200	3 600	2,05	NA 4922
120	150	30	99	255	29	3 200	3 600	1,15	NA 4824
	165	45	176	405	49	3 000	3 400	2,85	NA 4924
130	165	35	119	325	36,5	2 800	3 200	1,80	NA 4826
	180	50	198	480	57	2 600	3 000	3,90	NA 4926
140	175	35	121	345	37,5	2 600	3 000	1,90	NA 4828
	190	50	205	510	60	2 400	2 800	4,15	NA 4928
150	190	40	147	415	46,5	2 400	2 800	2,70	NA 4830
160	200	40	157	450	49	2 200	2 600	2,90	NA 4832
170	215	45	179	520	56	2 200	2 400	3,95	NA 4834
180	225	45	190	570	60	2 000	2 400	4,20	NA 4836
190	240	50	220	710	73,5	1 900	2 200	5,60	NA 4838
200	250	50	224	735	75	1 800	2 000	5,85	NA 4840
220	270	50	238	815	81,5	1 700	1 900	6,40	NA 4844



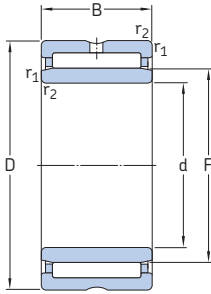
Dimensions

Abutment and fillet dimensions

d	F	r _{1,2} min	s ¹⁾	d _a min	D _a max	r _a max
mm				mm		
90	100	1	1,5	95	115	1
	100	1	1,5	95	115	1
	105	1,1	1	96,5	118,5	1
	105	1,1	1	96,5	118,5	1
95	105	1	1,5	100	120	1
	105	1	1,5	100	120	1
	110	1,1	1	101,5	123,5	1
	110	1,1	1	101,5	123,5	1
100	110	1,1	1,5	106,5	123,5	1
	110	1,1	2	106,5	123,5	1
	115	1,1	2	106,5	133,5	1
110	120	1	0,8	115	135	1
	125	1,1	2	116,5	143,5	1
120	130	1	0,8	125	145	1
	135	1,1	2	126,5	158,5	1
130	145	1,1	1	136,5	158,5	1
	150	1,5	1,5	138	172	1,5
140	155	1,1	1	146,5	168,5	1
	160	1,5	1,5	148	182	1,5
150	165	1,1	1,5	156,5	183,5	1
160	175	1,1	1,5	166,5	193,5	1
170	185	1,1	1,5	176,5	208,5	1
180	195	1,1	1,5	186,5	218,5	1
190	210	1,5	1,5	198	232	1,5
200	220	1,5	1,5	208	242	1,5
220	240	1,5	1,5	228	262	1,5

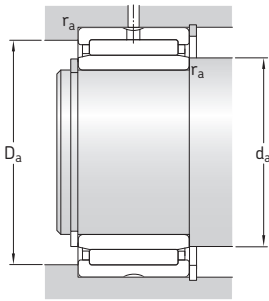
¹⁾ Permissible axial displacement from normal position of one bearing ring in relation to the other

Needle roller bearings with machined rings with flanges, with an inner ring
d 240 – 380 mm



NA 48

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	B	dynamic	static	P_u	Reference speed	Limiting speed		
mm			kN		kN	r/min		kg	–
240	300	60	347	1 120	112	1 500	1 700	10,0	NA 4848
260	320	60	358	1 200	118	1 400	1 500	10,5	NA 4852
280	350	69	429	1 320	129	1 300	1 400	15,5	NA 4856
300	380	80	594	1 800	173	1 100	1 300	22,0	NA 4860
320	400	80	605	1 900	176	1 100	1 200	23,0	NA 4864
340	420	80	616	1 960	183	1 000	1 200	24,0	NA 4868
360	440	80	627	2 040	186	950	1 100	25,5	NA 4872
380	480	100	968	3 000	270	900	1 000	42,5	NA 4876



Dimensions

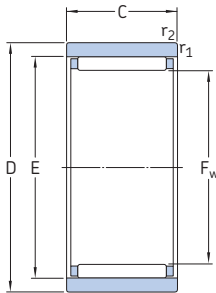
Abutment and fillet dimensions

d	F	$r_{1,2}$ min	$s^1)$	d_a min	D_a max	r_a max
mm				mm		
240	265	2	2	249	291	2
260	285	2	2	269	311	2
280	305	2	2,5	289	341	2
300	330	2,1	2	311	369	2
320	350	2,1	2	331	389	2
340	370	2,1	2	351	409	2
360	390	2,1	2	371	429	2
380	415	2,1	2	391	469	2

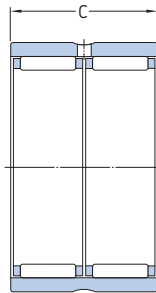
¹⁾ Permissible axial displacement from normal position of one bearing ring in relation to the other

Needle roller bearings with machined rings without flanges, without an inner ring

F_w 5 – 30 mm



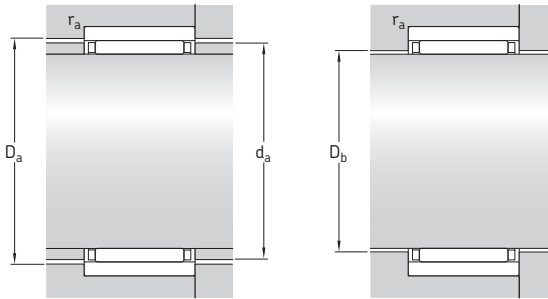
RNAO



RNAO
(double row)

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
F_w	D	C	dynamic	static		Reference speed	Limiting speed		
mm			C	C_0	P_u	r/min	kg	–	
5	10	8	2,29	2	0,212	36 000	40 000	0,003	RNAO 5×10×8 TN
6	13	8	2,55	2,36	0,25	34 000	38 000	0,006	RNAO 6×13×8 TN
7	14	8	2,81	2,75	0,29	32 000	36 000	0,006	RNAO 7×14×8 TN
8	15	10	3,8	4,25	0,465	32 000	36 000	0,008	RNAO 8×15×10 TN
10	17	10	4,57	5,7	0,63	28 000	32 000	0,010	RNAO 10×17×10 TN
12	22	12	9,52	10	1,18	26 000	30 000	0,019	RNAO 12×22×12 TN
15	23	13	8,25	11,2	1,29	24 000	28 000	0,020	RNAO 15×23×13
16	24	13	8,58	12	1,37	24 000	26 000	0,021	RNAO 16×24×13
	28	12	11	12,5	1,5	22 000	26 000	0,032	RNAO 16×28×12
17	25	13	10,1	14,6	1,73	22 000	26 000	0,022	RNAO 17×25×13
18	30	24	20,9	30	3,6	20 000	24 000	0,069	RNAO 18×30×24 ¹⁾
20	28	13	9,52	14,6	1,66	20 000	22 000	0,025	RNAO 20×28×13
	28	26	16,1	29	3,35	20 000	22 000	0,050	RNAO 20×28×26 ¹⁾
	32	12	12,8	16,3	1,96	19 000	22 000	0,038	RNAO 20×32×12
22	30	13	10,1	16,3	1,86	18 000	20 000	0,027	RNAO 22×30×13
	35	16	19,4	25,5	3,05	17 000	19 000	0,059	RNAO 22×35×16
25	35	17	14,2	26,5	3,1	16 000	18 000	0,053	RNAO 25×35×17
	35	26	18,7	37,5	4,3	16 000	18 000	0,076	RNAO 25×35×26 ¹⁾
	37	16	20,1	28	3,35	15 000	17 000	0,060	RNAO 25×37×16
30	40	17	18,7	34	4,05	13 000	15 000	0,060	RNAO 30×40×17
	42	16	22	33,5	4	13 000	15 000	0,059	RNAO 30×42×16
	42	32	38	67	8	13 000	15 000	0,137	RNAO 30×42×32 ¹⁾

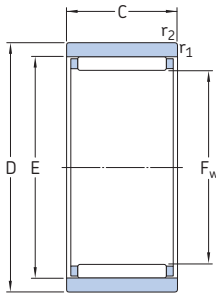
¹⁾ Double row, outer ring with a lubrication hole and an annular groove


Dimensions
**Abutment and
fillet dimensions**

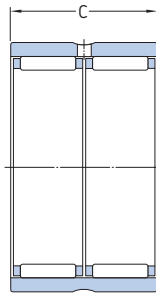
F_w	E	$r_{1,2}$ min	d_a	D_a	D_b	r_a max
mm			mm			
5	8	0,15	7,7	8,3	5,3	0,1
6	9	0,3	8,7	9,3	6,3	0,3
7	10	0,3	9,7	10,3	7,3	0,3
8	11	0,3	10,7	11,3	8,3	0,3
10	13	0,3	12,7	13,3	10,3	0,3
12	18	0,3	17,6	18,3	12,3	0,3
15	19	0,3	18,6	19,3	15,4	0,3
16	20	0,3	19,6	20,3	16,4	0,3
	22	0,3	21,6	22,3	16,4	0,3
17	21	0,3	20,6	21,3	17,4	0,3
18	24	0,3	23,6	24,5	18,4	0,3
20	24	0,3	23,6	24,3	20,4	0,3
	24	0,3	23,6	24,3	20,4	0,3
	26	0,3	25,6	26,5	20,4	0,3
22	26	0,3	25,6	26,3	22,4	0,3
	29	0,3	28,4	29,5	22,4	0,3
25	29	0,3	28,4	29,5	25,6	0,3
	29	0,3	28,4	29,5	25,6	0,3
	32	0,3	31,4	32,5	25,6	0,3
30	35	0,3	34,4	35,5	30,6	0,3
	37	0,3	36,4	37,5	30,6	0,3
	37	0,3	36,4	37,5	30,6	0,3

Needle roller bearings with machined rings without flanges, without an inner ring

F_w 35 – 100 mm



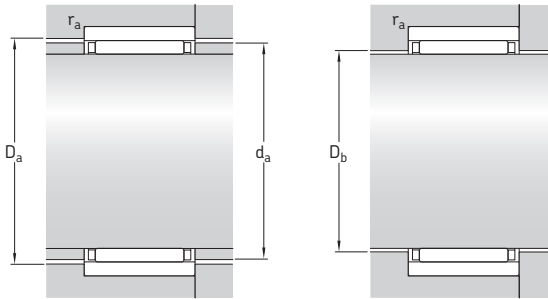
RNAO



RNAO
(double row)

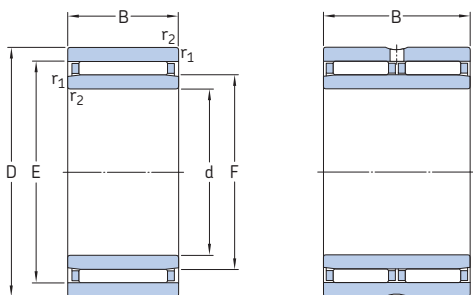
Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
F_w	D	C	dynamic	static	P_u	Reference speed	Limiting speed		
mm			kN	C_0	kN	r/min		kg	–
35	45	13	15,4	28	3,25	12 000	13 000	0,059	RNAO 35×45×13
	45	17	19,8	39	4,65	12 000	13 000	0,069	RNAO 35×45×17
	45	26	26,4	56	6,55	12 000	13 000	0,091	RNAO 35×45×26¹⁾
	47	16	23,3	37,5	4,5	11 000	13 000	0,078	RNAO 35×47×16
	47	18	26,4	44	5,3	11 000	13 000	0,076	RNAO 35×47×18
	47	32	40,2	75	9	11 000	13 000	0,156	RNAO 35×47×32¹⁾
40	50	17	20,5	41,5	5	10 000	12 000	0,074	RNAO 40×50×17
	50	34	35,2	83	10	10 000	12 000	0,152	RNAO 40×50×34¹⁾
	55	20	31,4	57	6,95	10 000	11 000	0,145	RNAO 40×55×20
	55	40	59,4	118	14,6	10 000	11 000	0,275	RNAO 40×55×40¹⁾
45	55	17	21,6	46,5	5,6	9 000	10 000	0,083	RNAO 45×55×17
	62	40	64,4	137	16,6	9 000	10 000	0,377	RNAO 45×62×40¹⁾
50	62	20	25,5	60	7,2	8 500	9 500	0,14	RNAO 50×62×20
	65	20	34,1	62	7,65	8 000	9 000	0,168	RNAO 50×65×20
	65	40	58,3	125	15,3	8 000	9 000	0,355	RNAO 50×65×40¹⁾
55	68	20	27	67	8,15	7 500	8 500	0,166	RNAO 55×68×20
60	78	20	41,8	86,5	10,6	6 700	7 500	0,255	RNAO 60×78×20
	78	40	72,1	173	21,2	6 700	7 500	0,435	RNAO 60×78×40¹⁾
65	85	30	53,9	125	15,6	6 300	7 000	0,464	RNAO 65×85×30
70	90	30	57,2	137	17	6 000	6 700	0,499	RNAO 70×90×30
80	100	30	68,2	176	22	5 000	6 000	0,58	RNAO 80×100×30
90	105	26	58,3	150	18,6	4 500	5 300	0,373	RNAO 90×105×26
	110	30	64,4	173	21,6	4 500	5 300	0,61	RNAO 90×110×30
100	120	30	67,1	190	23,6	4 000	4 800	0,694	RNAO 100×120×30

¹⁾ Double row, outer ring with a lubrication hole and an annular groove



Dimensions			Abutment and fillet dimensions			
F_w	E	$r_{1,2}$ min	d_a	D_a	D_b	r_a max
mm			mm			
35	40	0,3	39,4	40,5	35,6	0,3
	40	0,3	39,4	40,5	35,6	0,3
	40	0,3	39,4	40,5	35,6	0,3
	42	0,3	41,4	42,5	35,6	0,3
	42	0,3	41,4	42,5	35,6	0,3
	42	0,3	41,4	42,5	35,6	0,3
40	45	0,3	44,4	45,5	40,6	0,3
	45	0,3	44,4	45,5	40,6	0,3
	47	0,3	46,2	47,5	40,6	0,3
	48	0,3	47,2	47,5	40,6	0,3
45	50	0,3	49,2	50,5	45,6	0,3
	53	0,3	52,2	53,5	45,6	0,3
50	55	0,3	54,2	55,8	50,6	0,3
	58	0,3	57,2	58,5	50,6	0,3
	58	0,6	57,2	58,5	50,6	0,6
55	60	0,6	59,2	60,8	55,8	0,6
60	68	1	67,2	68,8	60,8	1
	68	1	67,2	68,8	60,8	1
65	73	1	72,2	73,8	66	1
70	78	1	77,2	78,8	71	1
80	88	1	87,2	89	81	1
90	98	1	97,2	99	91	1
	98	1	97,2	99	91	1
100	108	1	107,2	109	101	1

Needle roller bearings with machined rings without flanges, with an inner ring d 6 – 90 mm



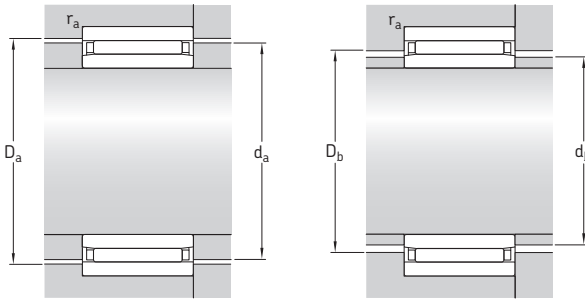
NAO

NAO
(double row)

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	B	dynamic	static		Reference speed	Limiting speed		
mm			C	C ₀	P _u	r/min	kg	–	
6	17	10	4,57	5,7	0,63	28 000	32 000	0,014	NAO 6×17×10 TN ²⁾
9	22	12	9,52	10	1,18	26 000	30 000	0,024	NAO 9×22×12 TN
12	24 28	13 12	8,58 11	12 12,5	1,37 1,5	24 000 22 000	26 000 26 000	0,030 0,040	NAO 12×24×13 NAO 12×28×12 ²⁾
15	28 32	13 12	9,52 12,8	14,6 16,3	1,66 1,96	20 000 19 000	22 000 22 000	0,029 0,047	NAO 15×28×13 NAO 15×32×12 ²⁾
17	30 35	13 16	10,1 19,4	16,3 25,5	1,86 3,05	18 000 17 000	20 000 19 000	0,042 0,078	NAO 17×30×13 NAO 17×35×16
20	35 37	17 16	14,2 20,1	26,5 28	3,1 3,35	16 000 15 000	18 000 17 000	0,076 0,082	NAO 20×35×17 NAO 20×37×16
25	40 42 42	17 16 32	18,7 22 38	34 33,5 67	4,05 4 8,15	13 000 13 000 12 000	15 000 15 000 15 000	0,088 0,086 0,174	NAO 25×40×17 NAO 25×42×16 ²⁾ NAO 25×42×32 ¹⁾
30	45 45 47 47	17 26 16 18	19,8 26,4 23,3 26,4	39 56 37,5 44	4,65 6,55 4,5 5,3	12 000 12 000 11 000 11 000	13 000 13 000 13 000 13 000	0,101 0,157 0,109 0,119	NAO 30×45×17 NAO 30×45×26 ¹⁾ NAO 30×47×16 NAO 30×47×18
35	50 55	17 20	20,5 31,4	41,5 57	5 6,95	10 000 10 000	12 000 11 000	0,113 0,19	NAO 35×50×17 NAO 35×55×20
40	55	17	21,6	46,5	5,6	9 000	10 000	0,127	NAO 40×55×17
50	68	20	27	67	8,15	7 500	8 500	0,23	NAO 50×68×20 ²⁾
70	100	30	68,2	176	22	5 000	6 000	0,85	NAO 70×100×30
80	110	30	64,4	173	21,6	4 500	5 300	0,92	NAO 80×110×30
90	120	30	67,1	190	23,6	4 000	4 800	1,044	NAO 90×120×30

¹⁾ Double row, outer ring with a lubrication hole and an annular groove

²⁾ One lubrication hole in the inner ring



Dimensions

Abutment and fillet dimensions

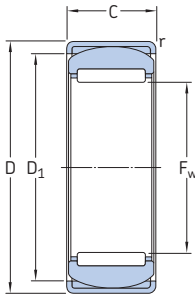
d	E	F	r _{1,2} min	s ³⁾	d _a	d _b	D _a	D _b	r _a max
mm					mm			–	
6	13	10	0,3	0,5	12,7	9,7	13,3	10,3	0,3
9	18	12	0,3	0,5	17,6	11,7	18,3	12,3	0,3
12	20	16	0,3	0,5	19,6	15,7	20,3	16,4	0,3
	22	16	0,3	0,5	21,6	15,7	22,3	16,6	0,3
15	24	20	0,3	0,5	23,6	19,7	24,3	20,4	0,3
	26	20	0,3	0,5	25,6	19,7	26,5	20,6	0,3
17	26	22	0,3	0,5	25,6	21,5	26,3	22,4	0,3
	29	22	0,3	0,5	28,4	21,5	29,5	22,6	0,3
20	29	25	0,3	0,5	28,4	24,5	29,5	25,6	0,3
	32	25	0,3	0,5	31,4	24,5	32,5	25,6	0,3
25	35	30	0,3	0,8	34,4	29,5	35,5	30,6	0,3
	37	30	0,3	0,8	36,4	29,5	37,5	30,6	0,3
	37	30	0,3	0,8	36,4	29,5	37,5	30,6	0,3
30	40	35	0,3	0,8	39,4	34,5	40,5	35,6	0,3
	40	35	0,3	0,8	39,4	34,5	40,5	35,6	0,3
	42	35	0,3	0,8	41,4	34,5	42,5	35,6	0,3
	42	35	0,3	0,8	41,4	34,5	42,5	35,6	0,3
35	45	40	0,3	0,8	44,4	39,5	45,5	40,6	0,3
	47	40	0,3	0,8	46,2	39,5	47,5	40,6	0,3
40	50	45	0,3	0,8	49,2	44,5	50,5	45,6	0,3
50	60	55	0,6	1	59,2	54,5	60,8	55,8	0,6
70	88	80	1	1	87,2	79,3	89	81	1
80	98	90	1	1	97,2	89,3	99	91	1
90	108	100	1	1	107,2	99,3	109	101	1

³⁾ Permissible axial displacement from normal position of one bearing ring relative to the other



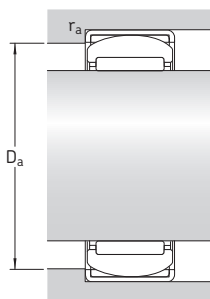
Alignment needle roller bearings without an inner ring

F_w 15 – 45 mm



RPNA

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
F_w	D	C	dynamic	static		Reference speed	Limiting speed		
mm			C	C_0	P_u	r/min		kg	–
15	28	12	7,37	9,15	1,08	24 000	28 000	0,032	RPNA 15/28
18	32	16	12,8	17,6	2,12	22 000	24 000	0,052	RPNA 18/32
20	35	16	13,2	19,3	2,28	19 000	22 000	0,062	RPNA 20/35
25	42	20	19	32,5	4	16 000	18 000	0,109	RPNA 25/42
28	44	20	22	36,5	4,55	14 000	16 000	0,112	RPNA 28/44
30	47	20	22,9	38	4,8	13 000	15 000	0,125	RPNA 30/47
35	52	20	24,6	45	5,6	11 000	13 000	0,131	RPNA 35/52
40	55	20	26,4	51	6,3	10 000	11 000	0,141	RPNA 40/55
45	62	20	27,5	57	7,1	9 000	10 000	0,176	RPNA 45/62

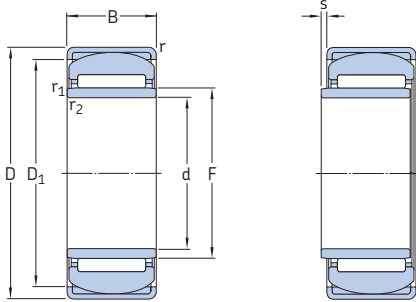


Dimensions

Abutment and fillet dimensions

F_w	D_1	r_{\min}	D_a min	D_a max	r_a max
mm			mm		
15	24,5	0,8	23,5	24,5	1
18	27	0,8	26	27	1
20	30,5	0,8	29,5	30,5	1
25	36,5	0,8	35	37	1
28	38,5	0,8	37,5	39	1
30	42	0,8	41	42	1
35	47,5	0,8	46,5	47,5	1
40	50,5	0,8	49,5	50,5	1
45	58	0,8	57	58	1

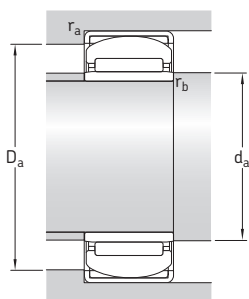
Alignment needle roller bearings with an inner ring
d 12 – 40 mm



PNA

PNA

Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	B	dynamic	static		Reference speed	Limiting speed		
mm			C	C ₀	P _u	r/min		kg	–
12	28	12	7,37	9,15	1,08	24 000	28 000	0,037	PNA 12/28
15	32	16	12,8	17,6	2,12	22 000	24 000	0,062	PNA 15/32
17	35	16	13,2	19,3	2,28	19 000	22 000	0,073	PNA 17/35
20	42	20	19	32,5	4	16 000	18 000	0,136	PNA 20/42
22	44	20	22	36,5	4,55	14 000	16 000	0,145	PNA 22/44
25	47	20	22,9	38	4,8	13 000	15 000	0,157	PNA 25/47
30	52	20	24,6	45	5,6	11 000	13 000	0,181	PNA 30/52
35	55	20	26,4	51	6,3	10 000	11 000	0,177	PNA 35/55
40	62	20	27,5	57	7,1	9 000	10 000	0,227	PNA 40/62



Dimensions

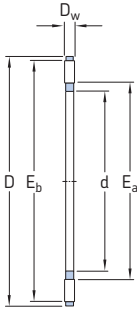
Abutment and fillet dimensions

d	F	D ₁	r _{min}	r _{1,2 min}	s ¹⁾	d _{a min}	D _{a min}	D _{a max}	r _{a max}	r _{b max}
mm						mm				
12	15	24,5	0,8	0,3	0,5	14	23,5	24,5	0,8	0,3
15	18	27	0,8	0,3	0,5	17	26	27	0,8	0,3
17	20	30,5	0,8	0,3	0,5	19	29,5	30,5	0,8	0,3
20	25	36,5	0,8	0,3	0,5	22	35	37	0,8	0,3
22	28	38,5	0,8	0,3	0,5	24	37,5	39	0,8	0,3
25	30	42	0,8	0,3	0,5	25	41	42	0,8	0,3
30	35	47,5	0,8	0,3	0,5	32	46,5	47,5	0,8	0,3
35	40	50,5	0,8	0,3	0,5	37	49,5	50,5	0,8	0,3
40	45	58	0,8	0,3	0,5	42	57	58	0,8	0,3

¹⁾ Permissible axial displacement from normal position of one bearing ring in relation to the other

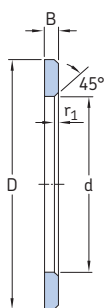


Needle roller and cage thrust assemblies and appropriate washers d 4 – 80 mm



AXK

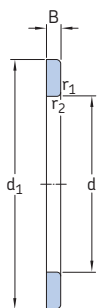
Dimensions					Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	D _w	E _a	E _b	dynamic	static		Reference speed	Limiting speed		
					C	C ₀	P _u			g	–
mm					kN		kN	r/min		g	–
4	14	2	5	13	4,15	8,3	0,865	7 500	15 000	0,7	AXK 0414 TN
5	15	2	6	14	4,5	9,5	1	6 700	14 000	0,8	AXK 0515 TN
6	19	2	7	18	6,3	16	1,75	6 000	12 000	1	AXK 0619 TN
8	21	2	9	20	7,2	20	2,2	5 600	11 000	2	AXK 0821 TN
10	24	2	12	23	8,5	26	2,85	5 300	10 000	3	AXK 1024
12	26	2	14	25	9,15	30	3,25	5 000	10 000	3	AXK 1226
15	28	2	17	27	10,4	37,5	4,15	4 800	9 500	4	AXK 1528
17	30	2	19	29	11	40,5	4,5	4 500	9 500	4	AXK 1730
20	35	2	22	34	12	47,5	5,3	4 300	8 500	5	AXK 2035
25	42	2	29	41	13,4	60	6,7	3 800	7 500	7	AXK 2542
30	47	2	34	46	15	72	8	3 600	7 000	8	AXK 3047
35	52	2	39	51	16,6	83	9,3	3 200	6 300	10	AXK 3552
40	60	3	45	58	25	114	13,7	2 800	5 600	16	AXK 4060
45	65	3	50	63	27	127	15,3	2 600	5 300	18	AXK 4565
50	70	3	55	68	28,5	143	17	2 400	5 000	20	AXK 5070
55	78	3	60	76	34,5	186	22,4	2 200	4 300	28	AXK 5578
60	85	3	65	83	37,5	232	28,5	2 200	4 300	33	AXK 6085
65	90	3	70	88	39	255	31	2 000	4 000	35	AXK 6590
70	95	4	74	93	49	255	30,5	1 800	3 600	60	AXK 7095
75	100	4	79	98	50	265	32	1 700	3 400	61	AXK 75100
80	105	4	84	103	51	280	33,5	1 700	3 400	63	AXK 80105



LS



AS



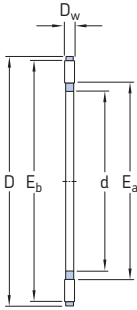
WS 811



GS 811

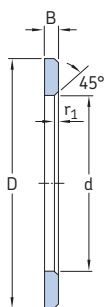
Dimensions Washers						Masses Washers		Designations			
d	d ₁	D	D ₁	B	r _{1,2} min	LS, WS, GS	AS	Raceway washer	Thrust washer	Shaft washer	Housing washer
mm						g		-			
4	-	14	-	-	-	-	1	-	AS 0414	-	-
5	-	15	-	-	-	-	1	-	AS 0515	-	-
6	-	19	-	2,75	0,3	6	2	LS 0619	AS 0619	-	-
8	-	21	-	2,75	0,3	6	2	LS 0821	AS 0821	-	-
10	-	24	-	2,75	0,3	8	3	LS 1024	AS 1024	-	-
12	-	26	-	2,75	0,3	9	3	LS 1226	AS 1226	-	-
15	28	28	16	2,75	0,3	9	3	LS 1528	AS 1528	WS 81102	GS 81102
17	30	30	18	2,75	0,3	10	4	LS 1730	AS 1730	WS 81103	GS 81103
20	35	35	21	2,75	0,3	14	5	LS 2035	AS 2035	WS 81104	GS 81104
25	42	42	26	3,00	0,6	21	7	LS 2542	AS 2542	WS 81105	GS 81105
30	47	47	32	3,00	0,6	24	8	LS 3047	AS 3047	WS 81106	GS 81106
35	52	52	37	3,50	0,6	32	9	LS 3552	AS 3552	WS 81107	GS 81107
40	60	60	42	3,50	0,6	43	12	LS 4060	AS 4060	WS 81108	GS 81108
45	65	65	47	4,00	0,6	54	13	LS 4565	AS 4565	WS 81109	GS 81109
50	70	70	52	4,00	0,6	59	14	LS 5070	AS 5070	WS 81110	GS 81110
55	78	78	57	5,00	0,6	94	18	LS 5578	AS 5578	WS 81111	GS 81111
60	85	85	62	4,75	1	110	22	LS 6085	AS 6085	WS 81112	GS 81112
65	90	90	67	5,25	1	120	24	LS 6590	AS 6590	WS 81113	GS 81113
70	95	95	72	5,25	1	130	25	LS 7095	AS 7095	WS 81114	GS 81114
75	100	100	77	5,75	1	150	27	LS 75100	AS 75100	WS 81115	GS 81115
80	105	105	82	5,75	1	160	28	LS 80105	AS 80105	WS 81116	GS 81116

Needle roller and cage thrust assemblies and appropriate washers
d 85 – 160 mm

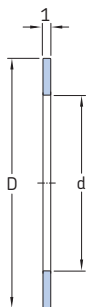


AXK

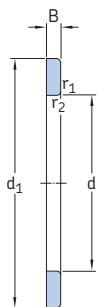
Dimensions					Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation
d	D	D _w	E _a	E _b	dynamic	static		Reference speed	Limiting speed		
					C	C ₀	P _u				
mm					kN		kN	r/min		g	–
85	110	4	89	108	52	290	34,5	1 700	3 400	67	AXK 85110
90	120	4	94	118	65,5	405	48	1 500	3 000	86	AXK 90120
100	135	4	105	133	76,5	560	65,5	1 400	2 800	100	AXK 100135
110	145	4	115	143	81,5	620	71	1 400	2 800	120	AXK 110145
120	155	4	125	153	86,5	680	76,5	1 300	2 600	130	AXK 120155
130	170	5	136	167	112	830	93	1 100	2 200	210	AXK 130170
140	180	5	146	177	116	900	98,6	1 000	2 000	220	AXK 140180
150	190	5	156	187	120	950	102	1 000	2 000	230	AXK 150190
160	200	5	166	197	125	1000	106	950	1 900	250	AXK 160200



LS



AS



WS 811



GS 811

Dimensions
Washers

d
mm

d₁

D

D₁

B

r_{1,2}
min

Masses
Washers
LS,
WS,
GS

AS

g

Designations
Raceway
washer

Thrust
washer

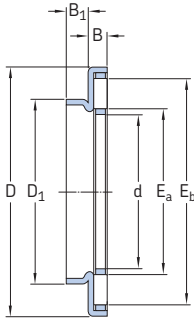
Shaft
washer

Housing
washer

-

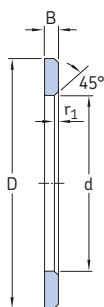
85	90	100	110	120	130	140	150	160				
110	120	135	145	155	170	178	188	198	110	120	135	145
110	120	135	145	155	170	178	188	198	87	92	102	112
5,75	6,50	7,00	7,00	7,00	9,00	9,50	9,50	9,50	1	1	1	1
170	250	350	380	410	660	700	750	790	29	39	50	55
LS 85110	LS 90120	LS 100135	LS 110145	LS 120155	LS 130170	LS 140180	LS 150190	LS 160200	AS 85110	AS 90120	AS 100135	AS 110145
WS 81117	WS 81118	WS 81120	WS 81122	WS 81124	WS 81126	WS 81128	WS 81130	WS 81132	WS 81117	WS 81118	WS 81120	WS 81122
GS 81117	GS 81118	GS 81120	GS 81122	GS 81124	GS 81126	GS 81128	GS 81130	GS 81132	GS 81117	GS 81118	GS 81120	GS 81122

Needle roller thrust bearings with a centring spigot and appropriate washers
d 10 – 50 mm

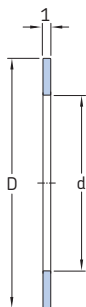


AXW

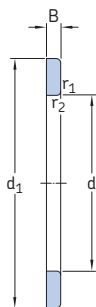
Dimensions								Basic load ratings		Fatigue load limit P_u	Speed ratings		Mass	Designation
d	D	D ₁	B	B ₁	E _a	E _b	dynamic	static	Reference speed		Limiting speed			
mm								kN		kN	r/min		g	–
10	27	14	3,2	3	12	23	8,5	26	2,85	5 300	10 000	8,3	AXW 10	
12	29	16	3,2	3	14	25	9,15	30	3,25	5 000	10 000	9,1	AXW 12	
15	31	21	3,2	3,5	17	27	10,4	37,5	4,15	4 800	9 500	10	AXW 15	
17	33	23	3,2	3,5	19	29	11	40,5	4,5	4 500	9 500	11	AXW 17	
20	38	26	3,2	3,5	22	34	12	47,5	5,3	4 300	8 500	14	AXW 20	
25	45	32	3,2	4	29	41	13,4	60	6,7	3 800	7 500	20	AXW 25	
30	50	37	3,2	4	34	46	15	72	8	3 600	7 000	22	AXW 30	
35	55	42	3,2	4	39	51	16,6	83	9,3	3 200	6 300	27	AXW 35	
40	63	47	4,2	4	45	58	25	114	13,7	2 800	5 600	39	AXW 40	
45	68	52	4,2	4	50	63	27	127	15,3	2 600	5 300	43	AXW 45	
50	73	58	4,2	4,5	55	68	28,5	143	17	2 400	5 000	49	AXW 50	



LS



AS



WS 811

Dimensions
Washers

Masses
Washers
LS, WS AS

Designations
Raceway washer

Thrust washer

Shaft washer

d d₁, D B r_{1,2}
min

mm

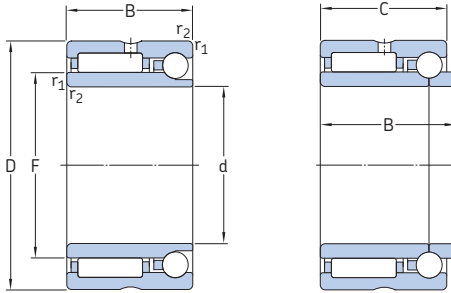
g

–

10	24	2,75	0,3	8	3	LS 1024	AS 1024	–
12	26	2,75	0,3	9	3	LS 1226	AS 1226	–
15	28	2,75	0,3	9	3	LS 1528	AS 1528	WS 81102
17	30	2,75	0,3	10	4	LS 1730	AS 1730	WS 81103
20	35	2,75	0,3	14	5	LS 2035	AS 2035	WS 81104
25	42	3,00	0,6	21	7	LS 2542	AS 2542	WS 81105
30	47	3,00	0,6	24	8	LS 3047	AS 3047	WS 81106
35	52	3,50	0,6	32	9	LS 3552	AS 3552	WS 81107
40	60	3,50	0,6	43	12	LS 4060	AS 4060	WS 81108
45	65	4,00	0,6	54	13	LS 4565	AS 4565	WS 81109
50	70	4,00	0,6	59	14	LS 5070	AS 5070	WS 81110



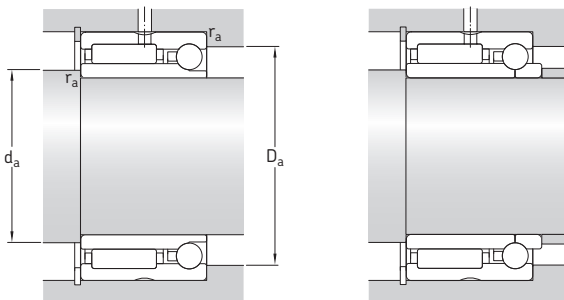
Needle roller / angular contact ball bearings
d 12 – 60 mm



NKIA

NKIB

Principal dimensions	Basic load ratings				Fatigue load limits		Speed ratings		Mass	Designation			
	d	D	B	C	radial dynamic C	static C ₀	radial P _u	axial P _u			Reference speed	Limiting speed	
mm	kN				kN		r/min		kg	–			
12	24	16	–	8,09	9,65	2,07	1,92	1,14	0,083	22 000	26 000	0,04	NKIA 5901
	24	17,5	16	8,09	9,65	2,07	1,92	1,14	0,083	22 000	26 000	0,043	NKIB 5901
15	28	18	–	11,2	15,3	2,27	2,37	1,83	0,099	19 000	22 000	0,05	NKIA 5902
	28	20	18	11,2	15,3	2,27	2,37	1,83	0,099	19 000	22 000	0,052	NKIB 5902
17	30	18	–	11,4	16,3	2,24	2,74	1,96	0,116	18 000	20 000	0,056	NKIA 5903
	30	20	18	11,4	16,3	2,24	2,74	1,96	0,116	18 000	20 000	0,058	NKIB 5903
20	37	23	–	21,6	28	3,79	4,21	3,35	0,176	15 000	17 000	0,1	NKIA 5904
	37	25	23	21,6	28	3,79	4,21	3,35	0,176	15 000	17 000	0,11	NKIB 5904
22	39	23	–	23,3	32	4,14	4,93	3,9	0,205	14 000	15 000	0,12	NKIA 59/22
	39	25	23	23,3	32	4,14	4,93	3,9	0,205	14 000	15 000	0,12	NKIB 59/22
25	42	23	–	24,2	34,5	4,24	5,26	4,15	0,224	13 000	15 000	0,13	NKIA 5905
	42	25	23	24,2	34,5	4,24	5,26	4,15	0,224	13 000	15 000	0,13	NKIB 5905
30	47	23	–	25,5	39	4,54	6,32	4,65	0,268	11 000	13 000	0,15	NKIA 5906
	47	25	23	25,5	39	4,54	6,32	4,65	0,268	11 000	13 000	0,15	NKIB 5906
35	55	27	–	31,9	54	5,83	8,42	6,7	0,355	9 500	11 000	0,24	NKIA 5907
	55	30	27	31,9	54	5,83	8,42	6,7	0,355	9 500	11 000	0,25	NKIB 5907
40	62	30	–	42,9	71	7,17	10,9	8,8	0,467	8 000	9 500	0,32	NKIA 5908
	62	34	30	42,9	71	7,17	10,9	8,8	0,467	8 000	9 500	0,32	NKIB 5908
45	68	30	–	45,7	78	7,47	12	9,65	0,513	7 500	8 500	0,38	NKIA 5909
	68	34	30	45,7	78	7,47	12	9,65	0,513	7 500	8 500	0,38	NKIB 5909
50	72	30	–	47,3	85	7,74	13,7	10,6	0,579	7 000	8 000	0,38	NKIA 5910
	72	34	30	47,3	85	7,74	13,7	10,6	0,579	7 000	8 000	0,39	NKIB 5910
55	80	34	–	57,2	106	9,27	16,7	13,2	0,697	6 300	7 000	0,55	NKIA 5911
	80	38	34	57,2	106	9,27	16,7	13,2	0,697	6 300	7 000	0,56	NKIB 5911
60	85	34	–	60,5	114	9,58	18	14,3	0,77	6 000	6 700	0,59	NKIA 5912
	85	38	34	60,5	114	9,58	18	14,3	0,77	6 000	6 700	0,6	NKIB 5912

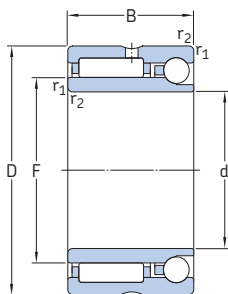


Dimensions

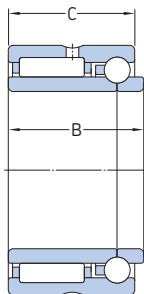
Abutment and fillet dimensions

d	F	$r_{1,2}$ min	d_a min	D_a max	r_a max
mm			mm		
12	16	0,3	14	22	0,3
	16	0,3	14	22	0,3
15	20	0,3	17	26	0,3
	20	0,3	17	26	0,3
17	22	0,3	19	28	0,3
	22	0,3	19	28	0,3
20	25	0,3	22	35	0,3
	25	0,3	22	35	0,3
22	28	0,3	24	37	0,3
	28	0,3	24	37	0,3
25	30	0,3	27	40	0,3
	30	0,3	27	40	0,3
30	35	0,3	32	45	0,3
	35	0,3	32	45	0,3
35	42	0,6	39	51	0,6
	42	0,6	39	51	0,6
40	48	0,6	44	58	0,6
	48	0,6	44	58	0,6
45	52	0,6	49	64	0,6
	52	0,6	49	64	0,6
50	58	0,6	54	68	0,6
	58	0,6	54	68	0,6
55	63	1	60	75	1
	63	1	60	75	1
60	68	1	65	80	1
	68	1	65	80	1

Needle roller / angular contact ball bearings
d 65 – 70 mm

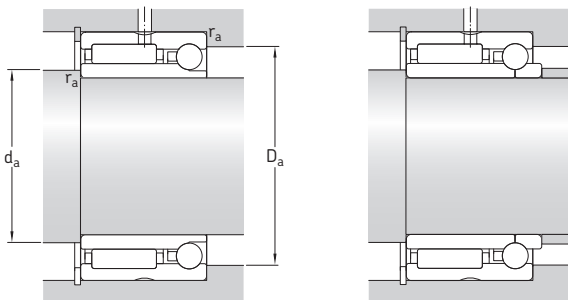


NKIA



NKIB

Principal dimensions				Basic load ratings				Fatigue load limits		Speed ratings		Mass	Designation
d	D	B	C	radial dynamic C	static C ₀	axial dynamic C	static C ₀	radial P _u	axial P _u	Reference speed	Limiting speed	kg	
mm				kN				kN		r/min		kg	–
65	90	34	–	61,6	120	9,96	19,2	14,6	0,816	5 600	6 300	0,64	NKIA 5913
	90	38	34	61,6	120	9,96	19,2	14,6	0,816	5 600	6 300	0,64	NKIB 5913
70	100	40	–	84,2	163	13,2	25	20,8	1,05	5 000	5 600	0,98	NKIA 5914
	100	45	40	84,2	163	13,2	25	20,8	1,05	5 000	5 600	0,99	NKIB 5914



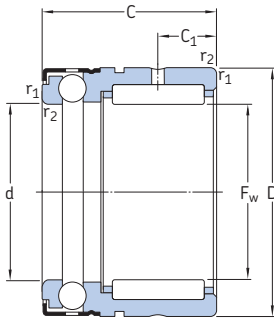
Dimensions

Abutment and fillet dimensions

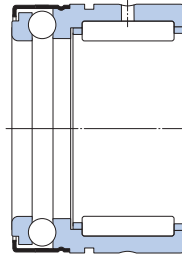
d	F	$r_{1,2}$ min	d_a min	D_a max	r_a max
mm			mm		
65	72	1	70	85	1
	72	1	70	85	1
70	80	1	75	95	1
	80	1	75	95	1

Needle roller / thrust ball bearings, full complement thrust bearing

F_w 7 – 35 mm



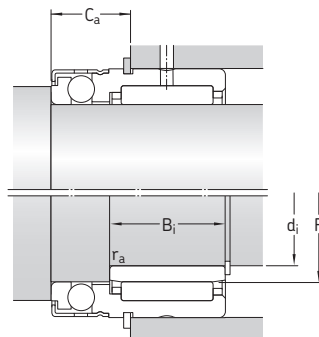
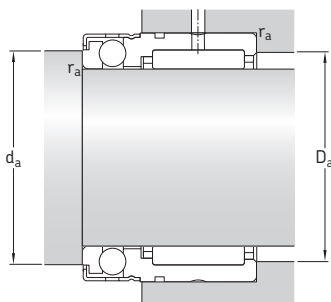
NX



NX..Z

Principal dimensions	Basic load ratings						Fatigue load limits		Min. load factor A	Speed ratings		Mass	Designation
	F _w	D	C	radial dynamic C	static C ₀	axial dynamic C	static C ₀	radial P _u		axial P _u	Reference speed		
mm	kN						kN		–	r/min		kg	–
7	14	18	2,81	2,75	3,45	5	0,29	0,186	0,13	10 000	11 000	0,014	NX 7 TN ¹⁾ NX 7 ZTN ¹⁾
	14	18	2,81	2,75	3,45	5	0,29	0,186	0,13	10 000	6 000	0,014	
10	19	18	4,95	4,55	5,07	8,5	0,53	0,31	0,38	8 500	9 500	0,025	NX 10 NX 10 Z
	19	18	4,95	4,55	5,07	8,5	0,53	0,31	0,38	8 500	5 600	0,025	
12	21	18	5,39	5,2	5,27	9,65	0,61	0,355	0,48	8 000	9 000	0,028	NX 12 NX 12 Z
	21	18	5,39	5,2	5,27	9,65	0,61	0,355	0,48	8 000	5 300	0,028	
15	24	28	11	14	6,18	12,2	1,66	0,45	0,77	7 500	8 500	0,048	NX 15 NX 15 Z
	24	28	11	14	6,18	12,2	1,66	0,45	0,77	7 500	5 300	0,048	
17	26	28	12,1	16,6	6,37	13,4	1,96	0,5	0,93	7 000	8 500	0,053	NX 17 NX 17 Z
	26	28	12,1	16,6	6,37	13,4	1,96	0,5	0,93	7 000	5 000	0,053	
20	30	28	13,2	19,3	7,8	17,3	2,28	0,64	1,6	6 300	7 500	0,068	NX 20 NX 20 Z
	30	28	13,2	19,3	7,8	17,3	2,28	0,64	1,6	6 300	4 500	0,068	
25	37	30	15,1	24,5	12,4	28,5	2,9	1,06	4,2	5 600	6 300	0,12	NX 25 NX 25 Z
	37	30	15,1	24,5	12,4	28,5	2,9	1,06	4,2	5 600	3 800	0,12	
30	42	30	22,9	38	12,7	32,5	4,8	1,2	5,5	5 300	6 000	0,13	NX 30 NX 30 Z
	42	30	22,9	38	12,7	32,5	4,8	1,2	5,5	5 300	3 600	0,13	
35	47	30	24,6	45	13,5	38	5,6	1,4	7,5	5 000	5 600	0,16	NX 35 NX 35 Z
	47	30	24,6	45	13,5	38	5,6	1,4	7,5	5 000	3 400	0,16	

¹⁾ Radial bearing with inserted closure ring



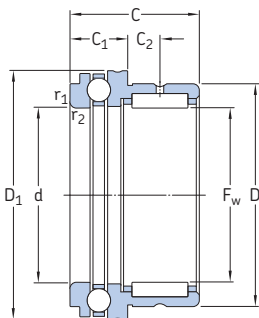
Dimensions				Abutment and fillet dimensions				Appropriate inner ring ²⁾ Dimensions				Appropriate snap ring ³⁾ Designation
F _w	C ₁	d	r _{1,2} min	d _a	D _a max	C _a	r _a max	d _i	F	B _i	Designation	Designation
mm				mm				mm				-
7	4,7	7	0,3	9,6	12	10	0,3	-	-	-	-	SW 14
	4,7	7	0,3	9,6	12	10	0,3	-	-	-	-	SW 14
10	4,7	10	0,3	14,6	17	10	0,3	6	10	10	IR 6×10×10 IS1	SW 19
	4,7	10	0,3	14,6	17	10	0,3	6	10	10	IR 6×10×10 IS1	SW 19
12	4,7	12	0,3	16,6	19	10	0,3	8	12	10	IR 8×12×10 IS1	SW 21
	4,7	12	0,3	16,6	19	10	0,3	8	12	10	IR 8×12×10 IS1	SW 21
15	8	15	0,3	19	22	12,2	0,3	12	15	16	IR 12×15×16	SW 24
	8	15	0,3	19	22	12,2	0,3	12	15	16	IR 12×15×16	SW 24
17	8	17	0,3	21	24	12,2	0,3	14	17	17	IR 14×17×17	SW 26
	8	17	0,3	21	24	12,2	0,3	14	17	17	IR 14×17×17	SW 26
20	8	20	0,3	25	28	12,2	0,3	17	20	16	IR 17×20×16	SW 30
	8	20	0,3	25	28	12,2	0,3	17	20	16	IR 17×20×16	SW 30
25	8	25	0,3	31,5	35	14,2	0,3	20	25	16	IR 20×25×16 IS1	SW 37
	8	25	0,3	31,5	35	14,2	0,3	20	25	16	IR 20×25×16 IS1	SW 37
30	10	30	0,3	36,5	40	14,2	0,3	25	30	20	IR 25×30×20	SW 42
	10	30	0,3	36,5	40	14,2	0,3	25	30	20	IR 25×30×20	SW 42
35	10	35	0,3	40,5	45	14,2	0,3	30	35	20	IR 30×35×20	SW 47
	10	35	0,3	40,5	45	14,2	0,3	30	35	20	IR 30×35×20	SW 47

²⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on page 196.

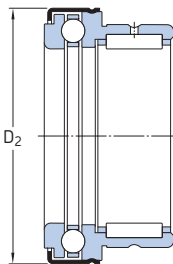
³⁾ In accordance with DIN 471, not supplied by SKF

Needle roller / thrust ball bearings, thrust bearing with a cage

F_w 10 – 70 mm



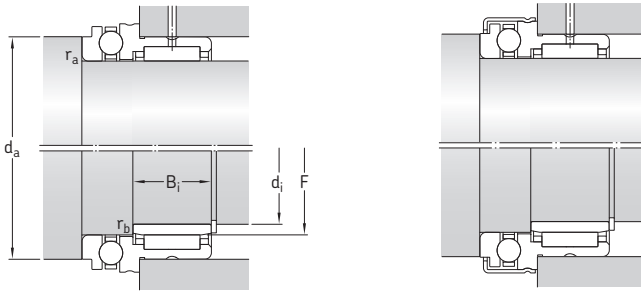
NKX



NKX..Z

Principal dimensions	Basic load ratings						Fatigue load limits		Min. load factor A	Speed ratings		Mass	Designation	
	F_w	D	C	radial dynamic C	static C_0	axial dynamic C	static C_0	radial P_u		axial P_u	Reference speed			Limiting speed
mm	kN						kN		–	r/min		kg	–	
10	19	23	23	5,94	8	9,95	15,3	0,9	0,56	1,2	9 500	13 000	0,034	NKX 10 TN¹⁾ NKX 10 ZTN¹⁾
	19	23	23	5,94	8	9,95	15,3	0,9	0,56	1,2	9 500	8 000	0,036	
12	21	23	23	9,13	12	10,4	16,6	1,43	0,62	1,4	9 000	13 000	0,038	NKX 12 NKX 12 Z
	21	23	23	9,13	12	10,4	16,6	1,43	0,62	1,4	9 000	7 500	0,04	
15	24	23	23	11	14	10,6	18,3	1,66	0,67	1,7	8 500	12 000	0,044	NKX 15 NKX 15 Z
	24	23	23	11	14	10,6	18,3	1,66	0,67	1,7	8 500	7 000	0,047	
17	26	25	25	12,1	16,6	10,8	19,6	1,96	0,735	2	8 500	12 000	0,053	NKX 17 NKX 17 Z
	26	25	25	12,1	16,6	10,8	19,6	1,96	0,735	2	8 500	7 000	0,055	
20	30	30	30	16,5	25,5	14,3	27	3,05	1	3,8	7 500	10 000	0,083	NKX 20 NKX 20 Z
	30	30	30	16,5	25,5	14,3	27	3,05	1	3,8	7 500	6 000	0,09	
25	37	30	30	19	32,5	19,5	40,5	4	1,5	8,5	6 300	9 000	0,13	NKX 25 NKX 25 Z
	37	30	30	19	32,5	19,5	40,5	4	1,5	8,5	6 300	5 500	0,13	
30	42	30	30	22,9	38	20,3	45,5	4,8	1,7	10	6 000	8 500	0,14	NKX 30 NKX 30 Z
	42	30	30	22,9	38	20,3	45,5	4,8	1,7	10	6 000	5 000	0,15	
35	47	30	30	24,6	45	21,2	51	5,6	1,9	13	5 600	7 500	0,16	NKX 35 NKX 35 Z
	47	30	30	24,6	45	21,2	51	5,6	1,9	13	5 600	4 500	0,17	
40	52	32	32	26,4	51	27	68	6,3	2,55	24	5 000	7 000	0,2	NKX 40 NKX 40 Z
	52	32	32	26,4	51	27	68	6,3	2,55	24	5 000	4 000	0,21	
45	58	32	32	27,5	57	28,1	75	7,1	2,8	29	4 500	6 300	0,25	NKX 45 NKX 45 Z
	58	32	32	27,5	57	28,1	75	7,1	2,8	29	4 500	3 800	0,27	
50	62	35	35	38	78	28,6	81,5	9,65	3,05	34	4 300	6 300	0,28	NKX 50 NKX 50 Z
	62	35	35	38	78	28,6	81,5	9,65	3,05	34	4 300	3 600	0,3	
60	72	40	40	41,8	96,5	41,6	122	11,8	4,55	77	3 600	5 000	0,36	NKX 60 NKX 60 Z
	72	40	40	41,8	96,5	41,6	122	11,8	4,55	77	3 600	3 000	0,38	
70	85	40	40	44,6	98	43,6	137	12,2	5,1	97	3 400	4 500	0,5	NKX 70 NKX 70 Z
	85	40	40	44,6	98	43,6	137	12,2	5,1	97	3 400	2 700	0,52	

¹⁾ Radial bearing with inserted closure ring

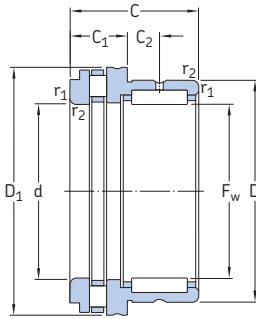


Dimensions							Abutment and fillet dimensions					Appropriate inner ring ²⁾ Designation	
F _w	C ₁	C ₂	d	D ₁	D ₂	r _{1,2} min	d _a min	r _a max	r _b max	d _i	F	B _i	
mm						mm							–
10	9	6,5	10	24,1	–	0,3	19,7	0,3	0,3	7	10	16	IR 7×10×16
	9	6,5	10	–	25,2	0,3	19,7	0,3	0,3	7	10	16	IR 7×10×16
12	9	6,5	12	26,1	–	0,3	21,7	0,3	0,3	9	12	16	IR 9×12×16
	9	6,5	12	–	27,2	0,3	21,7	0,3	0,3	9	12	16	IR 9×12×16
15	9	6,5	15	28,1	–	0,3	23,7	0,3	0,3	12	15	16	IR 12×15×16
	9	6,5	15	–	29,2	0,3	23,7	0,3	0,3	12	15	16	IR 12×15×16
17	9	8	17	30,1	–	0,3	25,7	0,3	0,3	14	17	17	IR 14×17×17
	9	8	17	–	31,1	0,3	25,7	0,3	0,3	14	17	17	IR 14×17×17
20	10	10,5	20	35,1	–	0,3	30,7	0,3	0,3	17	20	20	IR 17×20×20
	10	10,5	20	–	36,2	0,3	30,7	0,3	0,3	17	20	20	IR 17×20×20
25	11	9,5	25	42,1	–	0,6	37,7	0,6	0,3	20	25	20	IR 20×25×20
	11	9,5	25	–	43,2	0,6	37,7	0,6	0,3	20	25	20	IR 20×25×20
30	11	9,5	30	47,1	–	0,6	42,7	0,6	0,3	25	30	20	IR 25×30×20
	11	9,5	30	–	48,2	0,6	42,7	0,6	0,3	25	30	20	IR 25×30×20
35	12	9	35	52,1	–	0,6	47,7	0,6	0,3	30	35	20	IR 30×35×20
	12	9	35	–	53,2	0,6	47,7	0,6	0,3	30	35	20	IR 30×35×20
40	13	10	40	60,1	–	0,6	55,7	0,6	0,3	35	40	20	IR 35×40×20
	13	10	40	–	61,2	0,6	55,7	0,6	0,3	35	40	20	IR 35×40×20
45	14	9	45	65,2	–	0,6	60,5	0,6	0,3	40	45	20	IR 40×45×20
	14	9	45	–	66,5	0,6	60,5	0,6	0,3	40	45	20	IR 40×45×20
50	14	10	50	70,2	–	0,6	65,5	0,6	0,6	45	50	25	IR 45×50×25
	14	10	50	–	71,5	0,6	65,5	0,6	0,6	45	50	25	IR 45×50×25
60	17	12	60	85,2	–	1	80,5	1	1	50	60	25	IR 50×60×25
	17	12	60	–	86,5	1	80,5	1	1	50	60	25	IR 50×60×25
70	18	11	70	95,2	–	1	90,5	1	1	60	70	25	IR 60×70×25
	18	11	70	–	96,5	1	90,5	1	1	60	70	25	IR 60×70×25

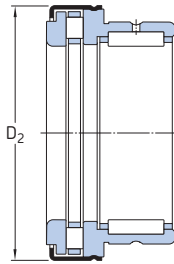
²⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on page 196.

Needle roller / cylindrical roller thrust bearings

F_w 15 – 50 mm

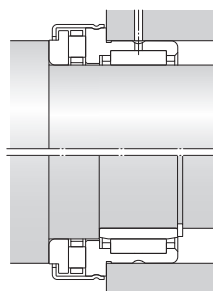
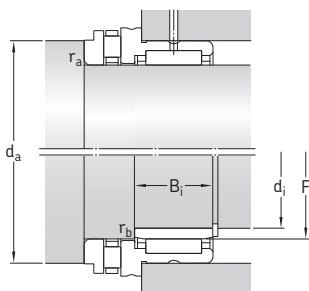


NKXR



NKXR..Z

Principal dimensions	Basic load ratings						Fatigue load limits		Min. load factor A	Speed ratings		Mass	Designation
	F _w	D	C	radial dynamic C	static C ₀	axial dynamic C	static C ₀	radial P _u		axial P _u	Reference speed		
mm	kN						kN		–	r/min		kg	–
15	24	23	11	14	11,2	27	1,66	2,45	0,058	4 300	8 500	0,042	NKXR 15
	24	23	11	14	11,2	27	1,66	2,45	0,058	4 300	8 500	0,045	NKXR 15 Z
17	26	25	12,1	16,6	12,2	31,5	1,96	2,85	0,079	4 300	8 500	0,05	NKXR 17
	26	25	12,1	16,6	12,2	31,5	1,96	2,85	0,079	4 300	8 500	0,053	NKXR 17 Z
20	30	30	16,5	25,5	18,6	48	3,05	4,65	0,18	3 800	7 500	0,08	NKXR 20
	30	30	16,5	25,5	18,6	48	3,05	4,65	0,18	3 800	7 500	0,084	NKXR 20 Z
25	37	30	19	32,5	25	69,5	4	6,8	0,39	3 200	6 300	0,12	NKXR 25
	37	30	19	32,5	25	69,5	4	6,8	0,39	3 200	6 300	0,13	NKXR 25 Z
30	42	30	22,9	38	27	78	4,8	7,65	0,49	3 000	6 000	0,14	NKXR 30
	42	30	22,9	38	27	78	4,8	7,65	0,49	3 000	6 000	0,14	NKXR 30 Z
35	47	30	24,6	45	29	93	5,6	9,15	0,69	2 800	5 600	0,16	NKXR 35
	47	30	24,6	45	29	93	5,6	9,15	0,69	2 800	5 600	0,17	NKXR 35 Z
40	52	32	26,4	51	43	137	6,3	13,7	1,5	2 400	5 000	0,2	NKXR 40
	52	32	26,4	51	43	137	6,3	13,7	1,5	2 400	5 000	0,21	NKXR 40 Z
45	58	32	27,5	57	45	153	7,1	15,3	1,9	2 200	4 500	0,24	NKXR 45
	58	32	27,5	57	45	153	7,1	15,3	1,9	2 200	4 500	0,26	NKXR 45 Z
50	62	35	38	78	47,5	166	9,65	16,6	2,2	2 200	4 300	0,27	NKXR 50
	62	35	38	78	47,5	166	9,65	16,6	2,2	2 200	4 300	0,29	NKXR 50 Z

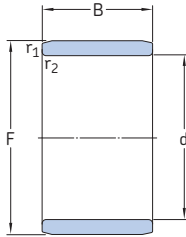


Dimensions							Abutment and fillet dimensions						Appropriate inner ring ¹⁾ Designation
F _w	C ₁	C ₂	d	D ₁	D ₂	r _{1,2} min	d _a	r _a max	r _b max	d _i	F	B _i	
mm							mm						–
15	9	6,5	15	28,1	–	0,3	23,7	0,3	0,3	12	15	16	IR 12×15×16
	9	6,5	15	28,1	29,2	0,3	23,7	0,3	0,3	12	15	16	IR 12×15×16
17	9	8	17	30,1	–	0,3	25,7	0,3	0,3	14	17	17	IR 14×17×17
	9	8	17	30,1	31,2	0,3	25,7	0,3	0,3	14	17	17	IR 14×17×17
20	10	10,5	20	35,1	–	0,3	30,7	0,3	0,3	17	20	20	IR 17×20×20
	10	10,5	20	35,1	36,2	0,3	30,7	0,3	0,3	17	20	20	IR 17×20×20
25	11	9,5	25	42,1	–	0,6	37,7	0,6	0,3	20	25	20	IR 20×25×20
	11	9,5	25	42,1	43,2	0,6	37,7	0,6	0,3	20	25	20	IR 20×25×20
30	11	9,5	30	47,1	–	0,6	42,7	0,6	0,3	25	30	20	IR 25×30×20
	11	9,5	30	47,1	48,2	0,6	42,7	0,6	0,3	25	30	20	IR 25×30×20
35	12	9	35	52,1	–	0,6	47,7	0,6	0,3	30	35	20	IR 30×35×20
	12	9	35	52,1	53,2	0,6	47,7	0,6	0,3	30	35	20	IR 30×35×20
40	13	10	40	60,1	–	0,6	55,7	0,6	0,3	35	40	20	IR 35×40×20
	13	10	40	60,1	61,2	0,6	55,7	0,6	0,3	35	40	20	IR 35×40×20
45	14	9	45	65,2	–	0,6	60,6	0,6	0,3	40	45	20	IR 40×45×20
	14	9	45	65,2	66,5	0,6	60,6	0,6	0,3	40	45	20	IR 40×45×20
50	14	10	50	70,2	–	0,6	65,6	0,6	0,3	45	50	25	IR 45×50×25
	14	10	50	70,2	71,5	0,6	65,6	0,6	0,3	45	50	25	IR 45×50×25

¹⁾ For additional information, refer to the section *Needle roller bearing inner rings*, starting on **page 196**.



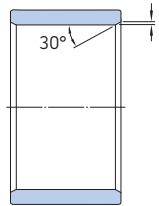
Needle roller bearing inner rings d 5 – 42 mm



IR



IR..IS1



LR

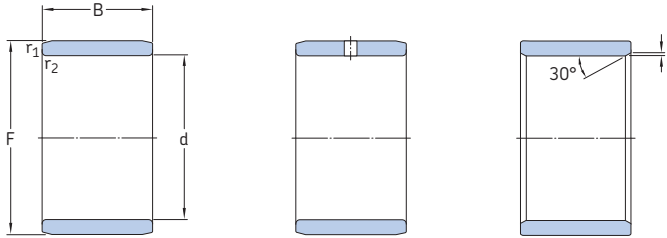
Dimensions				Mass	Designation
d	F	B	r _{1,2}		
mm				kg	-
5	8	12	0,3	0,0028	IR 5×8×12
	8	16	0,3	0,0038	IR 5×8×16
6	9	12	0,3	0,0032	IR 6×9×12
	9	16	0,3	0,0043	IR 6×9×16
	10	10	0,3	0,0037	IR 6×10×10 IS1
7	10	10,5	0,3	0,0031	IR 7×10×10,5
	10	10,5	0,3	0,0031	LR 7×10×10,5
	10	12	0,3	0,0036	IR 7×10×12
	10	16	0,3	0,0049	IR 7×10×16
8	12	10	0,3	0,0048	IR 8×12×10 IS1
	12	10,5	0,3	0,005	IR 8×12×10,5
	12	10,5	0,3	0,005	LR 8×12×10,5
	12	12,5	0,3	0,0059	IR 8×12×12,5
	12	12,5	0,3	0,0059	LR 8×12×12,5
9	12	12	0,3	0,0045	IR 9×12×12
	12	16	0,3	0,0061	IR 9×12×16
10	13	12,5	0,3	0,0052	IR 10×13×12,5
	13	12,5	0,3	0,0052	LR 10×13×12,5
	14	12	0,3	0,0073	IR 10×14×12 IS1
	14	13	0,3	0,0074	IR 10×14×13
	14	16	0,3	0,0092	IR 10×14×16
	14	20	0,3	0,012	IR 10×14×20
12	15	12	0,3	0,0058	IR 12×15×12
	15	12,5	0,3	0,0061	IR 12×15×12,5
	15	12,5	0,3	0,0061	LR 12×15×12,5
	15	16	0,3	0,008	IR 12×15×16
	15	16,5	0,3	0,0081	IR 12×15×16,5
	15	16,5	0,3	0,0081	LR 12×15×16,5
	15	22,5	0,3	0,011	IR 12×15×22,5
	15	22,5	0,3	0,011	LR 12×15×22,5
	16	12	0,3	0,0079	IR 12×16×12 IS1
	16	13	0,3	0,0087	IR 12×16×13
	16	16	0,3	0,011	IR 12×16×16
	16	20	0,3	0,014	IR 12×16×20
	16	22	0,3	0,015	IR 12×16×22

Dimensions				Mass	Designation
d	F	B	r _{1,2}		
mm				kg	-
14	17	17	0,3	0,01	IR 14×17×17
15	18	12,5	0,3	0,0072	LR 15×18×12,5
	18	16	0,3	0,0096	IR 15×18×16
	18	16,5	0,3	0,0099	IR 15×18×16,5
	18	16,5	0,3	0,0099	LR 15×18×16,5
	19	16	0,3	0,013	IR 15×19×16
	19	20	0,3	0,016	IR 15×19×20
	20	12	0,3	0,012	IR 15×20×12 IS1
	20	13	0,3	0,014	IR 15×20×13
17	20	23	0,3	0,024	IR 15×20×23
	20	16	0,3	0,011	IR 17×20×16
	20	16,5	0,3	0,011	IR 17×20×16,5
	20	16,5	0,3	0,011	LR 17×20×16,5
	20	20	0,3	0,014	IR 17×20×20
	20	20,5	0,3	0,014	IR 17×20×20,5
	20	20,5	0,3	0,014	LR 17×20×20,5
	20	30,5	0,3	0,021	IR 17×20×30,5
	20	30,5	0,3	0,021	LR 17×20×30,5
	21	16	0,3	0,014	IR 17×21×16
	21	20	0,3	0,018	IR 17×21×20
	22	13	0,3	0,015	IR 17×22×13
	22	16	0,3	0,019	IR 17×22×16
22	23	0,3	0,027	IR 17×22×23	
20	24	20	0,6	0,034	IR 17×24×20
	24	16	0,3	0,017	IR 20×24×16
	24	20	0,3	0,021	IR 20×24×20
	25	12,5	0,3	0,016	LR 20×25×12,5
	25	16	0,3	0,021	IR 20×25×16 IS1
	25	16,5	0,3	0,022	LR 20×25×16,5
	25	17	0,3	0,022	IR 20×25×17
	25	20	0,3	0,028	IR 20×25×20
	25	20,5	0,3	0,028	LR 20×25×20,5
	25	20,5	0,3	0,028	IR 20×25×20,5
	25	26,5	0,3	0,036	IR 20×25×26,5
	25	26,5	0,3	0,036	LR 20×25×26,5
	25	30	0,3	0,041	IR 20×25×30
	25	38,5	0,3	0,053	IR 20×25×38,5
25	38,5	0,3	0,053	LR 20×25×38,5	
28	20	0,6	0,045	IR 20×28×20	

Dimensions				Mass	Designation
d	F	B	r, r _{1,2}		
mm				kg	–
22	26	16	0,3	0,018	IR 22×26×16
	26	20	0,3	0,023	IR 22×26×20
	28	17	0,3	0,03	IR 22×28×17
	28	20	0,3	0,035	IR 22×28×20
	28	20,5	0,3	0,036	IR 22×28×20.5
	28	20,5	0,3	0,036	LR 22×28×20.5
	28	30	0,3	0,054	IR 22×28×30
	25	29	20	0,3	0,026
29		30	0,3	0,039	IR 25×29×30
30		12,5	0,3	0,02	LR 25×30×12.5
30		16	0,3	0,026	IR 25×30×16 IS1
30		16,5	0,3	0,027	LR 25×30×16.5
30		17	0,3	0,028	IR 25×30×17
30		20	0,3	0,033	IR 25×30×20
30		20,5	0,3	0,034	IR 25×30×20.5
30		20,5	0,3	0,034	LR 25×30×20.5
30		26,5	0,3	0,043	IR 25×30×26.5
30		26,5	0,3	0,043	LR 25×30×26.5
30		30	0,3	0,05	IR 25×30×30
30		32	0,3	0,053	IR 25×30×32
30		38,5	0,3	0,064	IR 25×30×38.5
30		38,5	0,3	0,064	LR 25×30×38.5
32	22	0,6	0,052	IR 25×32×22	
28	32	17	0,3	0,025	IR 28×32×17
	32	20	0,3	0,028	IR 28×32×20
	32	30	0,3	0,044	IR 28×32×30
30	35	12,5	0,3	0,023	LR 30×35×12.5
	35	13	0,3	0,025	IR 30×35×13
	35	16	0,3	0,031	IR 30×35×16
	35	16,5	0,3	0,031	LR 30×35×16.5
	35	17	0,3	0,032	IR 30×35×17
	35	20	0,3	0,04	IR 30×35×20
	35	20,5	0,3	0,041	IR 30×35×20.5
	35	20,5	0,3	0,041	LR 30×35×20.5
	35	26	0,3	0,05	IR 30×35×26
	35	30	0,3	0,059	IR 30×35×30
	37	18	0,6	0,05	IR 30×37×18
	37	22	0,6	0,061	IR 30×37×22
	38	20	0,6	0,065	IR 30×38×20 IS1

Dimensions				Mass	Designation
d	F	B	r, r _{1,2}		
mm				kg	–
32	37	20	0,3	0,042	IR 32×37×20
	37	30	0,3	0,063	IR 32×37×30
	40	20	0,6	0,068	IR 32×40×20
	40	36	0,6	0,12	IR 32×40×36
33	37	13	0,3	0,022	IR 33×37×13
35	40	12,5	0,3	0,027	LR 35×40×12.5
	40	16,5	0,3	0,037	LR 35×40×16.5
	40	17	0,3	0,038	IR 35×40×17
	40	20	0,3	0,044	IR 35×40×20
	40	20,5	0,3	0,046	IR 35×40×20.5
	40	20,5	0,3	0,046	LR 35×40×20.5
	40	30	0,3	0,068	IR 35×40×30
	42	20	0,6	0,064	IR 35×42×20 IS1
38	42	36	0,6	0,12	IR 35×42×36
	43	22	0,6	0,082	IR 35×43×22
38	43	20	0,3	0,048	IR 38×43×20
	43	30	0,3	0,074	IR 38×43×30
40	45	16,5	0,3	0,041	LR 40×45×16.5
	45	17	0,3	0,043	IR 40×45×17
	45	20	0,3	0,051	IR 40×45×20
	45	20,5	0,3	0,053	IR 40×45×20.5
	45	20,5	0,3	0,053	LR 40×45×20.5
	45	30	0,3	0,077	IR 40×45×30
	48	22	0,6	0,092	IR 40×48×22
42	48	40	0,6	0,17	IR 40×48×40
	50	20	1	0,11	IR 40×50×20 IS1
	50	22	1	0,12	IR 40×50×22
42	47	20	0,3	0,054	IR 42×47×20
	47	30	0,3	0,081	IR 42×47×30

Needle roller bearing inner rings d 45 – 380 mm



IR

IR..IS1

LR

Dimensions					Mass	Designation	Dimensions					Mass	Designation
d	F	B	r, r _{1,2}				d	F	B	r, r _{1,2}			
mm					kg	-	mm					kg	-
45	50	20,5	0,3	0,058	LR 45×50×20,5	75	85	25	1	0,24	IR 75×85×25		
	50	25	0,6	0,071	IR 45×50×25		85	30	1	0,29	IR 75×85×30		
	50	25,5	0,3	0,074	IR 45×50×25,5		85	35	1	0,34	IR 75×85×35		
	50	25,5	0,3	0,074	LR 45×50×25,5		85	54	1	0,52	IR 75×85×54		
	50	35	0,6	0,1	IR 45×50×35		80	90	25	1	0,25	IR 80×90×25	
	52	22	0,6	0,089	IR 45×52×22			90	30	1	0,3	IR 80×90×30	
	52	40	0,6	0,16	IR 45×52×40			90	35	1	0,36	IR 80×90×35	
	55	20	1	0,12	IR 45×55×20 IS1			90	54	1	0,55	IR 80×90×54	
	55	22	1	0,13	IR 45×55×22			85	95	26	1	0,28	IR 85×95×26
	55	20,5	0,6	0,064	LR 50×55×20,5				95	36	1	0,39	IR 85×95×36
55	25	0,6	0,078	IR 50×55×25	100	35	1,1		0,58	IR 85×100×35			
55	35	0,6	0,11	IR 50×55×35	100	63	1,1		1,05	IR 85×100×63			
50	58	22	0,6	0,12	IR 50×58×22	90	100	26	1	0,29	IR 90×100×26		
	58	40	0,6	0,21	IR 50×58×40		100	30	1	0,34	IR 90×100×30		
	60	20	1	0,13	IR 50×60×20 IS1		100	36	1	0,41	IR 90×100×36		
	60	25	1	0,16	IR 50×60×25		105	35	1,1	0,61	IR 90×105×35		
	60	28	1,1	0,18	IR 50×60×28		105	63	1,1	1,1	IR 90×105×63		
	55	60	25	0,6	0,086		IR 55×60×25	95	105	26	1	0,31	IR 95×105×26
		60	35	0,6	0,12	IR 55×60×35	105		36	1	0,43	IR 95×105×36	
		63	25	1	0,14	IR 55×63×25	110		35	1,1	0,64	IR 95×110×35	
63		45	1	0,26	IR 55×63×45	110	63		1,1	1,15	IR 95×110×63		
65		28	1,1	0,2	IR 55×65×28	100	110	30	1,1	0,37	IR 100×110×30		
60	68	25	1	0,15	IR 60×68×25		110	40	1,1	0,51	IR 100×110×40		
	68	35	0,6	0,21	IR 60×68×35		115	40	1,1	0,78	IR 100×115×40		
	68	45	1	0,28	IR 60×68×45		110	120	30	1	0,41	IR 110×120×30	
	70	25	1	0,2	IR 60×70×25			125	40	1,1	0,84	IR 110×125×40	
	70	28	1,1	0,22	IR 60×70×28			120	130	30	1	0,44	IR 120×130×30
	65	72	25	1	0,14	IR 65×72×25			135	45	1,1	1	IR 120×135×45
72		45	1	0,26	IR 65×72×45	130	145		35	1,1	0,86	IR 130×145×35	
73		25	1	0,16	IR 65×73×25		150	50	1,5	1,7	IR 130×150×50		
73		35	1	0,23	IR 65×73×35		140	155	35	1,1	0,92	IR 140×155×35	
75		28	1,1	0,23	IR 65×75×28	160		50	1,5	1,8	IR 140×160×50		
70	80	25	1	0,22	IR 70×80×25								
	80	30	1	0,27	IR 70×80×30								
	80	35	1	0,31	IR 70×80×35								
	80	54	1	0,49	IR 70×80×54								

Dimensions			Mass		Designation
d	F	B	r, r _{1,2}		
mm			kg		–
150	165	40	1,1	1,1	IR 150×165×40
160	175	40	1,1	1,2	IR 160×175×40
170	185	45	1,1	1,45	IR 170×185×45
180	195	45	1,1	1,5	IR 180×195×45
190	210	50	1,5	2,4	IR 190×210×50
200	220	50	1,5	2,5	IR 200×220×50
220	240	50	1,5	2,75	IR 220×240×50
240	265	60	2	4,6	IR 240×265×60
260	285	60	2	5	IR 260×285×60
280	305	69	2	6,1	IR 280×305×69
300	330	80	2,1	9,2	IR 300×330×80
320	350	80	2,1	9,8	IR 320×350×80
340	370	80	2,1	10	IR 340×370×80
360	390	80	2,1	11	IR 360×390×80
380	415	100	2,1	17	IR 380×415×100

Needle rollers

Needle rollers can be used to make full complement bearing arrangements for slow speed or oscillating applications. These compact bearing arrangements have a high load carrying capacity and are economical, provided the shaft and housing bore can serve as raceways. The cylindrical surface of the rollers is slightly relieved toward the roller ends to prevent damaging edge stresses.

For additional information about surface requirements for raceways, refer to the section *Raceways on shafts and in housings*, starting on **page 50**. For assistance in designing full complement bearing arrangements or to calculate performance data for these bearing arrangements, contact the SKF application engineering service.

Materials

SKF needle rollers are made from carbon chromium steel with a hardness of 58 to 65 HRC and have a precision machined surface.

Tolerances

SKF needle rollers are in accordance with ISO 3096:1996 Grade 2 for flat end needle rollers. SKF supplies needle rollers with the dimensional and form tolerances as listed in **table 3**, where the preferred diameter deviations range from 0 to $-7 \mu\text{m}$.

The rollers are gauged according to their minimum and maximum deviation from the nominal diameter.

Needle rollers for each gauge are packed separately and the package is marked with the gauge limits, e.g. N/M2 or M2/M4, where M signifies minus and N zero. For a needle roller with a 2 mm nominal diameter and gauge limits M2/M4, the actual diameter is between 1,998 mm and 1,996 mm.

Note

Needle rollers of the same gauge should be used in each bearing arrangement.

A delivery of needle rollers of the same nominal diameter may contain packages of one or more gauges, depending on availability at the time.

Table 3

Dimensional and form accuracy of SKF needle rollers, grade G2

Diameter D_w Deviation		Gauge tolerance	Gauge limits	Roundness (max circularity deviation in accordance with ISO 3096)	Length L_w Tolerance class
high	low				
μm					–
0	-10	2	0/-2 -1/-3 -2/-4 -3/-5 -4/-6 -5/-7 -6/-8 -7/-9 -8/-10	1	h13

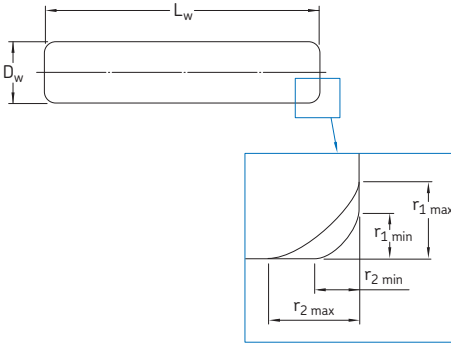
Supplementary designations

The designation suffixes used to identify certain features of SKF needle rollers are explained in the following.

- BF** Needle roller with flat ends
- G2** Needle roller in accordance with ISO 3096:1996 Grade 2
- M../M..** Diameter tolerance of needle rollers, e.g. M2/M4 indicates diameter tolerance -2 to -4 μm
- N/M..** Diameter tolerance of needle rollers, e.g. N/M2 indicates diameter tolerance 0 to -2 μm

Needle rollers

D_w 1 – 6 mm



Dimensions					Mass	Designation
D_w	L_w	$r_{1,2} \min$	$r_1 \max$	$r_2 \max$	per 1000	
mm					kg	–
1	7,8	0,1	0,4	0,6	0,048	RN-1x7.8 BF/G2
1,5	5,8	0,1	0,4	0,6	0,081	RN-1.5x5.8 BF/G2
	6,8	0,1	0,4	0,6	0,094	RN-1.5x6.8 BF/G2
	7,8	0,1	0,4	0,6	0,108	RN-1.5x7.8 BF/G2
	9,8	0,1	0,4	0,6	0,136	RN-1.5x9.8 BF/G2
	11,8	0,1	0,4	0,6	0,164	RN-1.5x11.8 BF/G2
	13,8	0,1	0,4	0,6	0,191	RN-1.5x13.8 BF/G2
2	6,3	0,2	0,6	0,8	0,16	RN-2x6.3 BF/G2
	7,8	0,2	0,6	0,8	0,19	RN-2x7.8 BF/G2
	9,8	0,2	0,6	0,8	0,24	RN-2x9.8 BF/G2
	11,8	0,2	0,6	0,8	0,29	RN-2x11.8 BF/G2
	13,8	0,2	0,6	0,8	0,34	RN-2x13.8 BF/G2
	15,8	0,2	0,6	0,8	0,39	RN-2x15.8 BF/G2
	17,8	0,2	0,6	0,8	0,44	RN-2x17.8 BF/G2
	19,8	0,2	0,6	0,8	0,49	RN-2x19.8 BF/G2
	21,8	0,2	0,6	0,8	0,54	RN-2x21.8 BF/G2
2,5	7,8	0,2	0,6	0,8	0,3	RN-2.5x7.8 BF/G2
	9,8	0,2	0,6	0,8	0,38	RN-2.5x9.8 BF/G2
	11,8	0,2	0,6	0,8	0,45	RN-2.5x11.8 BF/G2
	13,8	0,2	0,6	0,8	0,53	RN-2.5x13.8 BF/G2
	15,8	0,2	0,6	0,8	0,61	RN-2.5x15.8 BF/G2
	17,8	0,2	0,6	0,8	0,69	RN-2.5x17.8 BF/G2
	19,8	0,2	0,6	0,8	0,76	RN-2.5x19.8 BF/G2
	21,8	0,2	0,6	0,8	0,84	RN-2.5x21.8 BF/G2
23,8	0,2	0,6	0,8	0,92	RN-2.5x23.8 BF/G2	
3	9,8	0,2	0,6	0,8	0,54	RN-3x9.8 BF/G2
	11,8	0,2	0,6	0,8	0,65	RN-3x11.8 BF/G2
	13,8	0,2	0,6	0,8	0,77	RN-3x13.8 BF/G2
	15,8	0,2	0,6	0,8	0,88	RN-3x15.8 BF/G2
	17,8	0,2	0,6	0,8	0,99	RN-3x17.8 BF/G2
	19,8	0,2	0,6	0,8	1,1	RN-3x19.8 BF/G2
	21,8	0,2	0,6	0,8	1,21	RN-3x21.8 BF/G2
	23,8	0,2	0,6	0,8	1,32	RN-3x23.8 BF/G2

Dimensions					Mass per 1000	Designation
D _w	L _w	r _{1,2} min	r ₁ max	r ₂ max		
mm					kg	–
3,5	11,8	0,3	0,8	1	0,89	RN-3.5×11.8 BF/G2
	13,8	0,3	0,8	1	1,04	RN-3.5×13.8 BF/G2
	15,8	0,3	0,8	1	1,19	RN-3.5×15.8 BF/G2
	17,8	0,3	0,8	1	1,34	RN-3.5×17.8 BF/G2
	19,8	0,3	0,8	1	1,5	RN-3.5×19.8 BF/G2
	21,8	0,3	0,8	1	1,65	RN-3.5×21.8 BF/G2
	29,8	0,3	0,8	1	2,25	RN-3.5×29.8 BF/G2
	34,8	0,3	0,8	1	2,63	RN-3.5×34.8 BF/G2
	4	11,8	0,3	0,8	1	1,16
13,8		0,3	0,8	1	1,36	RN-4×13.8 BF/G2
15,8		0,3	0,8	1	1,56	RN-4×15.8 BF/G2
17,8		0,3	0,8	1	1,76	RN-4×17.8 BF/G2
19,8		0,3	0,8	1	1,95	RN-4×19.8 BF/G2
21,8		0,3	0,8	1	2,15	RN-4×21.8 BF/G2
23,8		0,3	0,8	1	2,35	RN-4×23.8 BF/G2
25,8		0,3	0,8	1	2,55	RN-4×25.8 BF/G2
27,8		0,3	0,8	1	2,74	RN-4×27.8 BF/G2
29,8		0,3	0,8	1	2,94	RN-4×29.8 BF/G2
34,8		0,3	0,8	1	3,43	RN-4×34.8 BF/G2
39,8		0,3	0,8	1	3,93	RN-4×39.8 BF/G2
5	15,8	0,3	0,8	1	2,44	RN-5×15.8 BF/G2
	19,8	0,3	0,8	1	3,05	RN-5×19.8 BF/G2
	21,8	0,3	0,8	1	3,36	RN-5×21.8 BF/G2
	23,8	0,3	0,8	1	3,67	RN-5×23.8 BF/G2
	25,8	0,3	0,8	1	3,98	RN-5×25.8 BF/G2
	27,8	0,3	0,8	1	4,28	RN-5×27.8 BF/G2
	29,8	0,3	0,8	1	4,59	RN-5×29.8 BF/G2
	34,8	0,3	0,8	1	5,36	RN-5×34.8 BF/G2
	39,8	0,3	0,8	1	6,13	RN-5×39.8 BF/G2
6	17,8	0,3	0,8	1	3,95	RN-6×17.8 BF/G2

Radial shaft seals with a low cross sectional height

It is not always easy to find commercially available radial shaft seals for bearing arrangements that incorporate needle roller bearings because of their very low cross section. As a result, SKF offers a wide assortment of special low cross section radial shaft seals to fit virtually all of these bearing arrangements. These contact seals are designed without garter springs and available in two designs:

- the G design with a single lip
- the SD design with a double lip

G design radial shaft seals

G design radial shaft seals are made of acrylonitrile-butadiene rubber (NBR). The seals for shaft diameters ≥ 8 mm (\rightarrow fig. 5) are reinforced with sheet steel. The rubber outside diameter enhances the seal around the housing bore and reduces the risk of damage to the seal and housing during installation and removal.

To attain an adequate degree of rigidity for seals for shaft diameters ≤ 7 mm (\rightarrow fig. 6), the rubber material is metal cased. These seals are identified by the designation suffix S.

If the seal is to be used primarily for lubricant retention, it should be mounted with the lip facing inward. If the primary purpose of the seal is to exclude contaminants, the lip should face outward, away from the bearing (\rightarrow fig. 7).

For information about the chemical resistance of acrylonitrile-butadiene rubber (NBR), refer to the *SKF Interactive Engineering Catalogue* (section *Chemical resistance*).

SD design radial shaft seals

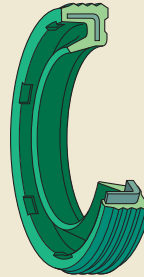
SD design radial shaft seals (\rightarrow fig. 8) have a primary seal lip and an auxiliary dust lip. The lips are made of polyurethane (AU) and the reinforcement ring is made of polyamide (PA) instead of metal.

The auxiliary lip is the smaller of the two lips and designed with zero lip/shaft interference to avoid additional friction, heat and energy losses.

The primary seal lip, i.e. the larger of the two lips, is a contact seal and should always point toward the medium that is to be sealed. Therefore, if the primary function is protection

Fig. 5

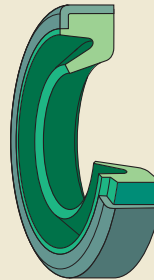
Radial shaft seal



G series ($d_1 \geq 8$ mm)

Fig. 6

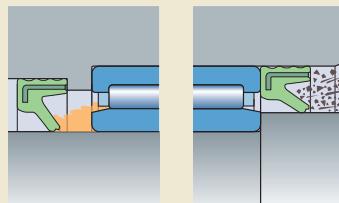
Radial shaft seal



G.. S series ($d_1 \leq 7$ mm)

Fig. 7

Needle roller bearing with machined rings with an external G design seal



Primary lip facing inward

Primary lip facing outward

against ingress of contaminants, the primary lip should face outward. The auxiliary lip will contribute to retain lubricant in the bearing arrangement.

In applications whereas the main purpose is retaining the lubricant, the primary lip should face inward, toward the bearing.

The cavity between the two lips should be filled with a grease that is compatible with the lubricant used in the application. This will provide additional protection and prevent the seal from dry running.

SD seals are resistant to lubricating oils, even those containing small quantities of EP additives, and also to mineral oil based greases.

Depending on the counterface of the shaft, SD seals can also be used as wiper seals for linear applications with speeds up to 3 m/s.

Design of associated components

Shaft requirements

To achieve a reliable seal and sufficiently long service life, the surface of the seal counterface should have a hardness of at least 55 HRC or 600 HV. The surface roughness of the counterface on the shaft of rotary applications should lie between R_a 0,2 and 0,8 μm , if the maximum permissible circumferential speeds are to be used. For linear applications, the maximum permissible roughness of the counterface is R_a 0,3 μm .

The diameter of the shaft at the counterface should be machined to g7 up to k7 tolerance classes. The shaft end should have a 15 to 30° lead-in chamfer to prevent damage to the seal lips during mounting. Appropriate minimum dimensions for lead-in chamfers (\rightarrow fig. 9) are:

- $h_1 = 0,3$ mm for seals with an outside diameter $d_2 \leq 30$ mm
- $h_1 = 0,5$ mm for seals with an outside diameter $d_2 > 30$ mm

Housing requirements

The housing bore tolerance classes normally recommended for needle roller bearings will provide a sufficient interference fit for the seals.

In general, these seals can be fitted into housing bores machined to G7 up to R7 tolerance class.

Fig. 8

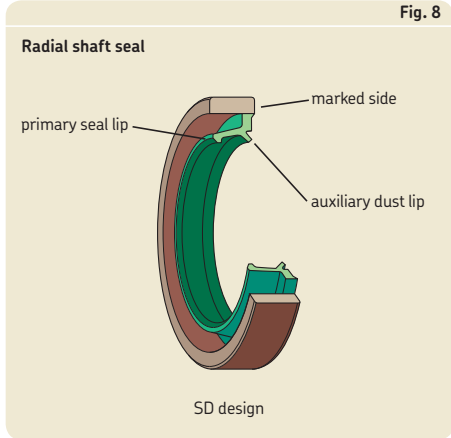
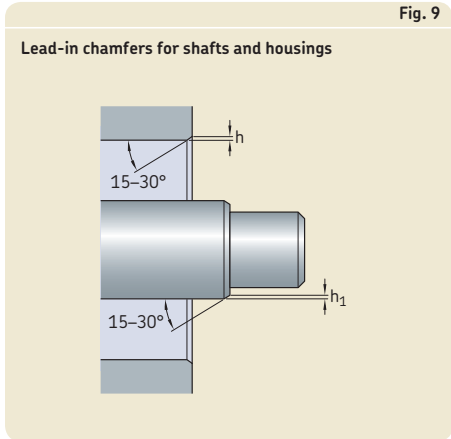


Fig. 9



No additional axial location of the seal will be needed.

To simplify mounting, the housing bore should have a 15 to 30° lead-in chamfer. Appropriate minimum dimensions for lead-in chamfers (\rightarrow fig. 9) are:

- $h = 0,3$ mm for seals with an outside diameter $d_2 \leq 30$ mm
- $h = 0,01 d_2$ mm for seals with an outside diameter $d_2 > 30$ mm

Radial shaft seals with a low cross sectional height

Speeds

If the recommendations under *Design of associated components* are adhered to, the permissible circumferential speed is 10 m/s for both seal designs. To convert circumferential speed to rotational speed, use

$$n = \frac{d \pi 1\,000}{v 60}$$

where

n = rotational speed [r/min]

d = shaft diameter [mm]

v = circumferential speed [m/s]

Operating temperature range

The permissible operating temperature range for

- G design seals is -30 to $+110$ °C
(-20 to $+230$ °F)
- SD design seals is -30 to $+100$ °C
(-20 to $+210$ °F).

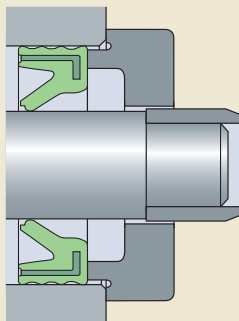
These material related temperature ranges can only be considered as rough guidelines as the influence from the medium in which the seal is working must also be considered.

Mounting instructions

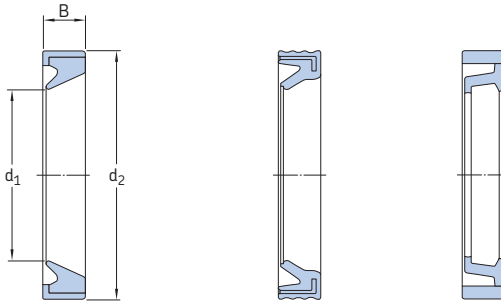
The seals should be mounted concentric and perpendicular to the shaft. A suitable mounting tool (→ **fig. 10**) should be used to prevent the seal from skewing. The outside diameter of G design seals should be lightly oiled to ease installation. If the shaft ends are not chamfered or rounded, a mounting sleeve should be used to prevent damage to the seal lip.

Fig. 10

Mounting tool



Radial shaft seals with a low cross sectional height
 $d_1 - 70$ mm



G
 $(d_1 \leq 7 \text{ mm})$

G
 $(d_1 \geq 8 \text{ mm})$

SD

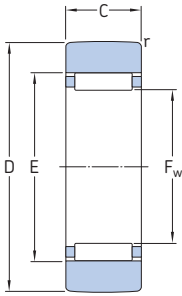
Dimensions			Mass per 100	Designation	Dimensions			Mass per 100	Designation
d_1	d_2	b			d_1	d_2	b		
mm			kg	–	mm			kg	–
4	8	2	0,018	G 4×8×2 S	16	22	3	0,13	G 16×22×3
5	9	2	0,019	G 5×9×2 S		22	3	0,06	SD 16×22×3
	10	2	0,022	G 5×10×2 S		24	3	0,13	G 16×24×3
6	10	2	0,021	G 6×10×2 S		24	3	0,08	SD 16×24×3
	12	2	0,038	G 6×12×2 S		25	3	0,16	G 16×25×3
7	11	2	0,025	G 7×11×2 S	17	23	3	0,13	G 17×23×3
	14	2	0,052	G 7×14×2 S		23	3	0,06	SD 17×23×3
8	12	3	0,041	G 8×12×3		25	3	0,15	G 17×25×3
	15	3	0,065	G 8×15×3		25	3	0,08	SD 17×25×3
	15	3	0,04	SD 8×15×3	18	24	3	0,12	G 18×24×3
9	13	3	0,044	G 9×13×3		24	3	0,06	SD 18×24×3
	16	3	0,069	G 9×16×3		26	4	0,18	G 18×26×4
10	14	3	0,05	G 10×14×3		26	4	0,11	SD 18×26×4
	17	3	0,09	G 10×17×3	19	27	4	0,2	G 19×27×4
	17	3	0,044	SD 10×17×3		27	4	0,11	SD 19×27×4
12	16	3	0,06	G 12×16×3	20	26	4	0,18	G 20×26×4
	18	3	0,09	G 12×18×3		26	4	0,08	SD 20×26×4
	18	3	0,05	SD 12×18×3		28	4	0,21	G 20×28×4
	19	3	0,1	G 12×19×3		28	4	0,11	SD 20×28×4
	19	3	0,06	SD 12×19×3	21	29	4	0,22	G 21×29×4
13	19	3	0,09	G 13×19×3	22	28	4	0,18	G 22×28×4
14	20	3	0,1	G 14×20×3		28	4	0,09	SD 22×28×4
	20	3	0,05	SD 14×20×3		30	4	0,22	G 22×30×4
	21	3	0,11	G 14×21×3		30	4	0,13	SD 22×30×4
	22	3	0,13	G 14×22×3	24	32	4	0,25	G 24×32×4
	22	3	0,07	SD 14×22×3	25	32	4	0,23	G 25×32×4
15	21	3	0,1	G 15×21×3		32	4	0,13	SD 25×32×4
	21	3	0,05	SD 15×21×3		33	4	0,25	G 25×33×4
	23	3	0,13	G 15×23×3		33	4	0,13	SD 25×33×4
	23	3	0,07	SD 15×23×3		35	4	0,26	G 25×35×4
						35	4	0,19	SD 25×35×4

Dimensions			Mass per 100	Designation
d ₁	d ₂	b		
mm			kg	–
26	34	4	0,26	G 26×34×4
	34	4	0,14	SD 26×34×4
28	35	4	0,24	G 28×35×4
	35	4	0,13	SD 28×35×4
	37	4	0,31	G 28×37×4
29	38	4	0,32	G 29×38×4
30	37	4	0,27	G 30×37×4
	37	4	0,13	SD 30×37×4
	40	4	0,36	G 30×40×4
	40	4	0,21	SD 30×40×4
32	42	4	0,37	G 32×42×4
	42	4	0,24	SD 32×42×4
	45	4	0,51	G 32×45×4
35	42	4	0,3	G 35×42×4
	42	4	0,15	SD 35×42×4
	45	4	0,41	G 35×45×4
	45	4	0,25	SD 35×45×4
37	47	4	0,4	G 37×47×4
	47	4	0,27	SD 37×47×4
38	48	4	0,44	G 38×48×4
	48	4	0,28	SD 38×48×4
40	47	4	0,33	G 40×47×4
	47	4	0,17	SD 40×47×4
	50	4	0,46	G 40×50×4
	50	4	0,29	SD 40×50×4
	52	5	0,48	G 40×52×5
	52	5	0,45	SD 40×52×5
42	52	4	0,47	G 42×52×4
	52	4	0,3	SD 42×52×4
43	53	4	0,48	G 43×53×4

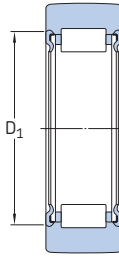
Dimensions			Mass per 100	Designation
d ₁	d ₂	b		
mm			kg	–
45	52	4	0,38	G 45×52×4
	52	4	0,19	SD 45×52×4
	55	4	0,52	G 45×55×4
	55	4	0,32	SD 45×55×4
50	58	4	0,45	G 50×58×4
	58	4	0,24	SD 50×58×4
	62	5	1,05	G 50×62×5
	62	5	0,55	SD 50×62×5
55	63	5	0,71	G 55×63×5
70	78	5	0,9	G 70×78×5



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



RSTO

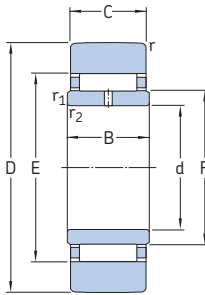


RNA 22...2RS

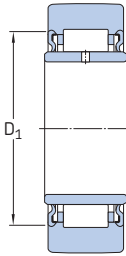
Dimensions						Mass	Designation
D	C	D ₁	F _w	E	r		
mm						kg	–
16	7,8	–	7	10	0,3	0,008	RSTO 5 TN
19	9,8	–	10	13	0,3	0,012	RSTO 6 TN
	11,8	16	10	–	0,3	0,018	RNA 22/6.2RS
24	9,8	–	12	15	0,3	0,021	RSTO 8 TN
	11,8	18	12	–	0,3	0,029	RNA 22/8.2RS
30	11,8	–	14	20	0,3	0,042	RSTO 10
	13,8	20	14	–	0,6	0,052	RNA 2200.2RS
32	11,8	–	16	22	0,3	0,049	RSTO 12
	13,8	22	16	–	0,6	0,057	RNA 2201.2RS
35	11,8	–	20	26	0,3	0,050	RSTO 15
	13,8	26	20	–	0,6	0,060	RNA 2202.2RS
40	15,8	28	22	–	1	0,094	RNA 2203.2RS
	15,8	–	22	29	0,3	0,088	RSTO 17
47	15,8	–	25	32	0,3	0,13	RSTO 20
	17,8	33	25	–	1	0,15	RNA 2204.2RS
52	15,8	–	30	37	0,3	0,15	RSTO 25
	17,8	38	30	–	1	0,18	RNA 2205.2RS
62	19,8	43	35	–	1	0,28	RNA 2206.2RS
	19,8	–	38	46	0,6	0,26	RSTO 30
72	19,8	–	42	50	0,6	0,38	RSTO 35
	22,7	50	42	–	1,1	0,43	RNA 2207.2RS
80	19,8	–	50	58	1	0,42	RSTO 40
	22,7	57	48	–	1,1	0,53	RNA 2208.2RS
85	19,8	–	55	63	1	0,45	RSTO 45
90	19,8	–	60	68	1	0,48	RSTO 50

Designation	Basic load ratings		Fatigue load limit	Maximum radial forces		Limiting speed
	dynamic	static		dynamic	static	
	C	C ₀	P _u	F _r	F _{0r}	
–	kN		kN	kN		r/min
RSTO 5 TN	2,51	2,5	0,27	3,55	5	8 000
RSTO 6 TN	3,74	4,5	0,5	4,25	6,1	7 000
RNA 22/6.2RS	4,02	3,65	0,425	2,55	3,6	7 000
RSTO 8 TN	4,13	5,4	0,6	7,5	10,8	7 000
RNA 22/8.2RS	4,68	4,55	0,54	5,3	7,5	6 700
RSTO 10	8,25	8,8	1,04	8,5	12,2	6 000
RNA 2200.2RS	6,6	7,5	0,88	12	17,3	6 300
RSTO 12	8,8	9,8	1,18	8,3	12	5 600
RNA 2201.2RS	7,04	8,5	1	11,6	16,6	6 000
RSTO 15	9,13	10,6	1,27	7,1	10	5 000
RNA 2202.2RS	7,48	9,3	1,12	9,5	13,7	5 000
RNA 2203.2RS	9,52	13,2	1,6	15,3	22	4 500
RSTO 17	14,2	17,6	2,08	12	17,3	4 500
RSTO 20	16,1	21,2	2,5	18,6	26,5	4 000
RNA 2204.2RS	16,1	18	2,16	17,6	25,5	4 000
RSTO 25	16,5	22,8	2,7	18	26	3 400
RNA 2205.2RS	16,8	20	2,4	17,3	24,5	3 400
RNA 2206.2RS	17,9	25,5	3,05	28,5	40,5	2 800
RSTO 30	22,9	34,5	4,25	23,6	33,5	2 600
RSTO 35	24,6	39	4,8	36	51	2 200
RNA 2207.2RS	22,4	35,5	4,3	38	54	2 200
RSTO 40	23,8	39	4,75	34,5	49	1 900
RNA 2208.2RS	27,5	40,5	5	35,5	51	1 900
RSTO 45	25,1	43	5,3	34,5	50	1 700
RSTO 50	26	45,5	5,7	34,5	50	1 600

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



ST0

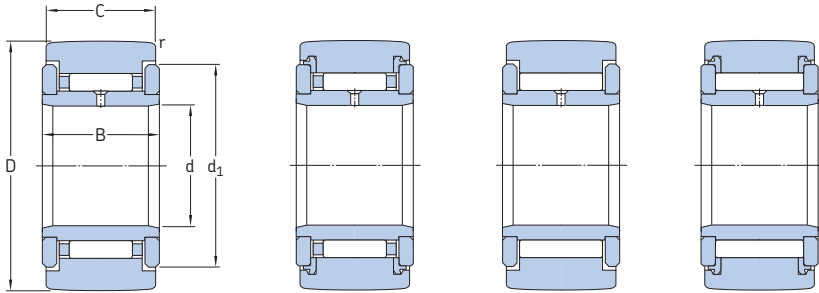


NA 22...2RS

Dimensions									Mass	Designation
D	d	C	B	D ₁	F	E	r _{min}	r _{1,2 min}		
mm									kg	–
19	6	9,8	10	–	10	13	0,3	0,3	0,017	ST0 6 TN NA 22/6.2RS
	6	11,8	12	16	10	–	0,3	0,3	0,022	
24	8	9,8	10	–	12	15	0,3	0,3	0,026	ST0 8 TN NA 22/8.2RS
	8	11,8	12	18	12	–	0,3	0,3	0,034	
30	10	11,8	12	–	14	20	0,3	0,3	0,049	ST0 10 NA 2200.2RS
	10	13,8	14	20	14	–	0,6	0,3	0,06	
32	12	11,8	12	–	16	22	0,3	0,3	0,057	ST0 12 NA 2201.2RS
	12	13,8	14	22	16	–	0,6	0,3	0,067	
35	15	11,8	12	–	20	26	0,3	0,3	0,063	ST0 15 NA 2202.2RS
	15	13,8	14	26	20	–	0,6	0,3	0,075	
40	17	15,8	16	–	22	29	0,3	0,3	0,11	ST0 17 NA 2203.2RS
	17	15,8	16	28	22	–	1	0,3	0,11	
47	20	15,8	16	–	25	32	0,3	0,3	0,15	ST0 20 NA 2204.2RS
	20	17,8	18	33	25	–	1	0,3	0,18	
52	25	15,8	16	–	30	37	0,3	0,3	0,18	ST0 25 NA 2205.2RS
	25	17,8	18	38	30	–	1	0,3	0,21	
62	30	19,8	20	–	38	46	0,6	0,6	0,31	ST0 30 NA 2206.2RS
	30	19,8	20	43	35	–	1	0,3	0,32	
72	35	19,8	20	–	42	50	0,6	0,6	0,44	ST0 35 NA 2207.2RS
	35	22,7	23	50	42	–	1,1	0,6	0,51	
80	40	19,8	20	–	50	58	1	1	0,53	ST0 40 NA 2208.2RS
	40	22,7	23	57	48	–	1,1	0,6	0,63	
85	45	19,8	20	–	55	63	1	1	0,58	ST0 45
90	50	19,8	20	–	60	68	1	1	0,62	ST0 50 NA 2210.2RS
	50	22,7	23	68	–	–	1,1	0,6	0,69	

Designation	Basic load ratings		Fatigue load limit	Maximum radial forces		Limiting speed
	dynamic	static		dynamic	static	
	C	C ₀	P _u	F _r	F _{0r}	
–	kN		kN	kN		r/min
STO 6 TN	3,74	4,5	0,5	4,25	6,1	7 000
NA 22/6.2RS	4,02	3,65	0,425	2,55	3,6	7 000
STO 8 TN	4,13	5,4	0,6	7,5	10,8	7 000
NA 22/8.2RS	4,68	4,55	0,54	5,3	7,5	6 700
STO 10	8,25	8,8	1,04	8,5	12,2	6 000
NA 2200.2RS	6,6	7,5	0,88	12	17,3	6 300
STO 12	8,8	9,8	1,18	8,3	12	5 600
NA 2201.2RS	7,04	8,5	1	11,6	16,6	6 000
STO 15	9,13	10,6	1,27	7,1	10	5 000
NA 2202.2RS	7,48	9,3	1,12	9,5	13,7	5 000
STO 17	14,2	17,6	2,08	12	17,3	4 500
NA 2203.2RS	9,52	13,2	1,6	15,3	22	4 500
STO 20	16,1	21,2	2,5	18,6	26,5	4 000
NA 2204.2RS	16,1	18	2,16	17,6	25,5	4 000
STO 25	16,5	22,8	2,7	18	26	3 400
NA 2205.2RS	16,8	20	2,4	17,3	24,5	3 400
STO 30	22,9	34,5	4,25	23,6	33,5	2 800
NA 2206.2RS	17,9	25,5	3,05	28,5	40,5	2 600
STO 35	25,5	40,5	5	36	51	2 200
NA 2207.2RS	22,4	35,5	4,3	38	54	2 200
STO 40	23,8	39	4,75	34,5	49	1 900
NA 2208.2RS	27,5	40,5	5	35,5	51	1 900
STO 45	25,1	43	5,3	34,5	50	1 700
STO 50	26	45,5	5,7	34,5	50	1 600
NA 2210.2RS	28,1	43	5,3	34,5	50	1 600

Support rollers with flange rings, with an inner ring
D 16 – 40 mm



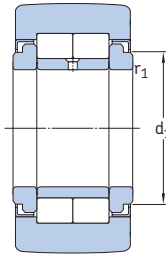
NATR

NATR .. PPA

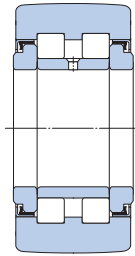
NATV

NATV .. PPA

Dimensions						Mass	Designation	
D	d	C	B	d ₁	r _{min}	r _{1,2} min		
mm						kg	–	
16	5	11	12	12,5	0,15	–	0,014	NATR 5
	5	11	12	12,5	0,15	–	0,014	NATR 5 PPA
	5	11	12	12,5	0,15	–	0,015	NATV 5
	5	11	12	12,5	0,15	–	0,015	NATV 5 PPA
19	6	11	12	15	0,15	–	0,019	NATR 6
	6	11	12	15	0,15	–	0,02	NATR 6 PPA
	6	11	12	15	0,15	–	0,021	NATV 6
	6	11	12	15	0,15	–	0,021	NATV 6 PPA
24	8	14	15	19	0,3	–	0,041	NATR 8
	8	14	15	19	0,3	–	0,038	NATR 8 PPA
	8	14	15	19	0,3	–	0,042	NATV 8
	8	14	15	19	0,3	–	0,041	NATV 8 PPA
30	10	14	15	23	0,6	–	0,064	NATR 10
	10	14	15	23	0,6	–	0,061	NATR 10 PPA
	10	14	15	23	0,6	–	0,065	NATV 10
	10	14	15	23	0,6	–	0,064	NATV 10 PPA
32	12	14	15	25	0,6	–	0,071	NATR 12
	12	14	15	25	0,6	–	0,066	NATR 12 PPA
	12	14	15	25	0,6	–	0,072	NATV 12
	12	14	15	25	0,6	–	0,069	NATV 12 PPA
35	15	18	19	27,6	0,6	–	0,1	NATR 15
	15	18	19	27,6	0,6	–	0,1	NATR 15 PPA
	15	18	19	27,6	0,6	–	0,11	NATV 15
	15	18	19	27,6	0,6	–	0,11	NATV 15 PPA
	15	18	19	20	0,6	0,3	0,1	NUTR 15 A
	15	18	19	20	0,6	0,3	0,1	PWTR 15.2RS
40	17	20	21	31,5	1	–	0,14	NATR 17
	17	20	21	31,5	1	–	0,14	NATR 17 PPA
	17	20	21	31,5	1	–	0,15	NATV 17
	17	20	21	31,5	1	–	0,15	NATV 17 PPA
	17	20	21	22	1	0,5	0,15	NUTR 17 A
	17	20	21	22	1	0,5	0,15	PWTR 17.2RS
	17	20	21	22	1	0,5	0,15	



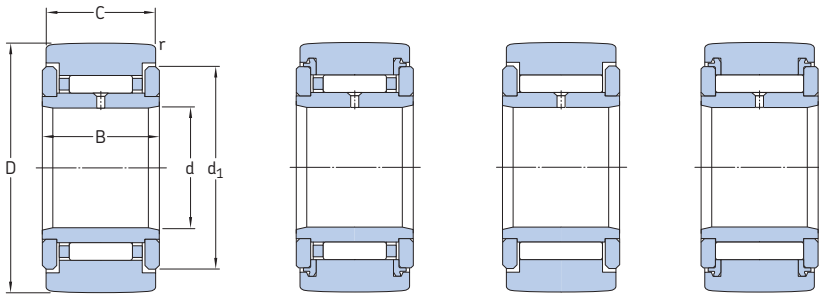
NUTR...A



PWTR...2RS

Designation	Basic load ratings		Fatigue load limit	Maximum radial forces		Limiting speed
	dynamic	static		dynamic	static	
–	C	C ₀	P _u	F _r	F _{0r}	r/min
–	kN		kN	kN		
NATR 5	3,14	3,2	0,345	2,9	4,15	6 000
NATR 5 PPA	3,14	3,2	0,345	2,9	4,15	6 000
NATV 5	4,73	6,55	0,72	4,05	5,7	4 300
NATV 5 PPA	4,73	6,55	0,72	4,05	5,7	4 300
NATR 6	3,47	3,8	0,415	3,8	5,5	5 600
NATR 6 PPA	3,47	3,8	0,415	3,8	5,5	5 600
NATV 6	5,28	8	0,88	5,1	7,35	4 000
NATV 6 PPA	5,28	8	0,88	5,1	7,35	4 000
NATR 8	5,28	6,1	0,695	5,2	7,35	5 000
NATR 8 PPA	5,28	6,1	0,695	5,2	7,35	5 000
NATV 8	7,48	11,4	1,32	7,35	10,4	3 600
NATV 8 PPA	7,48	11,4	1,32	7,35	10,4	3 600
NATR 10	6,44	8	0,88	7,8	11,2	4 800
NATR 10 PPA	6,44	8	0,88	7,8	11,2	4 800
NATV 10	8,97	14,6	1,66	11	15,6	3 200
NATV 10 PPA	8,97	14,6	1,66	11	15,6	3 200
NATR 12	6,6	8,5	0,95	7,65	10,8	4 500
NATR 12 PPA	6,6	8,5	0,95	7,65	10,8	4 500
NATV 12	9,35	15,3	1,76	10,6	15	3 000
NATV 12 PPA	9,35	15,3	1,76	10,6	15	3 000
NATR 15	9,52	13,7	1,56	11,4	16,3	4 000
NATR 15 PPA	9,52	13,7	1,56	11,4	16,3	4 000
NATV 15	12,3	23,2	2,7	14,6	20,8	2 600
NATV 15 PPA	12,3	23,2	2,7	14,6	20,8	2 600
NUTR 15 A	16,8	17,6	2	8,65	12,2	5 000
PWTR 15.2RS	11,9	11,4	1,2	8,65	12,5	5 000
NATR 17	10,5	14,6	1,73	12,5	18	3 400
NATR 17 PPA	10,5	14,6	1,73	12,5	18	3 400
NATV 17	14,2	26,5	3,1	17	24,5	2 200
NATV 17 PPA	14,2	26,5	3,1	17	24,5	2 200
NUTR 17 A	19	22	2,5	14	20	4 500
PWTR 17.2RS	13,8	14,3	1,5	13,7	19,6	4 500

Support rollers with flange rings, with an inner ring
D 42 – 72 mm



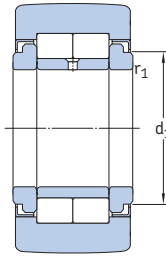
NATR

NATR .. PPA

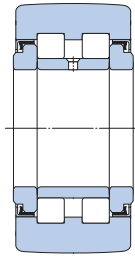
NATV

NATV .. PPA

Dimensions							Mass	Designation
D	d	C	B	d ₁	r _{min}	r _{1,2 min}		
mm							kg	–
42	15	18	19	20	0,6	0,3	0,16	NUTR 1542 A
	15	18	19	20	0,6	0,3	0,16	PWTR 1542.2RS
47	17	20	21	22	1	0,5	0,22	NUTR 1747 A
	17	20	21	22	1	0,5	0,22	PWTR 1747.2RS
	20	24	25	36,5	1	–	0,25	NATR 20
	20	24	25	36,5	1	–	0,25	NATR 20 PPA
	20	24	25	36,5	1	–	0,25	NATV 20
	20	24	25	36,5	1	–	0,25	NATV 20 PPA
	20	24	25	27	1	0,5	0,25	NUTR 20 A
	20	24	25	27	1	0,5	0,25	PWTR 20.2RS
	52	20	24	25	27	1	0,5	0,32
20		24	25	27	1	0,5	0,32	PWTR 2052.2RS
25		24	25	41,5	1	–	0,28	NATR 25
25		24	25	41,5	1	–	0,28	NATR 25 PPA
25		24	25	41,5	1	–	0,29	NATV 25
25		24	25	41,5	1	–	0,29	NATV 25 PPA
25		24	25	31	1	0,5	0,28	NUTR 25 A
25		24	25	31	1	0,5	0,28	PWTR 25.2RS
62		25	24	25	31	1	0,5	0,45
	25	24	25	31	1	0,5	0,45	PWTR 2562.2RS
	30	28	29	51	1	–	0,47	NATR 30
	30	28	29	51	1	–	0,47	NATR 30 PPA
	30	28	29	51	1	–	0,48	NATV 30
	30	28	29	51	1	–	0,48	NATV 30 PPA
	30	28	29	38	1	0,5	0,47	NUTR 30 A
	30	28	29	38	1	0,5	0,47	PWTR 30.2RS
	72	30	28	29	38	1	0,5	0,7
30		28	29	38	1	0,5	0,7	PWTR 3072.2RS
35		28	29	58	1,1	–	0,64	NATR 35 PPA
35		28	29	58	1,1	–	0,65	NATV 35 PPA
35		28	29	44	1,1	0,6	0,63	NUTR 35 A
35		28	29	44	1,1	0,6	0,63	PWTR 35.2RS



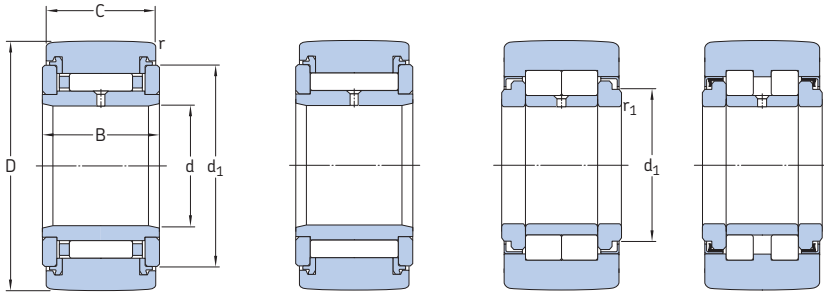
NUTR...A



PWTR...2RS

Designation	Basic load ratings		Fatigue load limit	Maximum radial forces		Limiting speed
	dynamic C	static C ₀		dynamic F _r	static F _{0r}	
–	kN		kN	kN		r/min
NUTR 1542 A	20,1	23,2	2,65	21,6	31	5 000
PWTR 1542.2RS	14,2	15	1,6	22	31,5	5 000
NUTR 1747 A	22	27	3,05	30	43	4 500
PWTR 1747.2RS	15,7	17,6	1,86	30	42,5	4 500
NATR 20	14,7	24,5	2,9	23,6	33,5	3 000
NATR 20 PPA	14,7	24,5	2,9	23,6	33,5	3 000
NATV 20	19,4	41,5	5	30,5	43	1 900
NATV 20 PPA	19,4	41,5	5	30,5	43	1 900
NUTR 20 A	28,6	33,5	3,9	17,6	25	3 800
PWTR 20.2RS	22,9	24,5	2,8	18,3	26	3 800
NUTR 2052 A	31,9	39	4,55	30	42,5	3 800
PWTR 2052.2RS	25,5	29	3,35	30,5	44	3 800
NATR 25	14,7	25,5	3,1	21,6	31	2 400
NATR 25 PPA	14,7	25,5	3,1	21,6	31	2 400
NATV 25	19,8	44	5,3	28,5	40,5	1 600
NATV 25 PPA	19,8	44	5,3	28,5	40,5	1 600
NUTR 25 A	29,7	36	4,25	18	25,5	3 200
PWTR 25.2RS	23,8	26,5	3,05	18,6	26,5	3 200
NUTR 2562 A	35,8	48	5,6	44	63	3 200
PWTR 2562.2RS	29,2	36	4,05	45	64	3 200
NATR 30	22,9	37,5	4,55	26,5	38	1 800
NATR 30 PPA	22,9	37,5	4,55	26,5	38	1 800
NATV 30	29,2	62	7,65	34,5	49	1 400
NATV 30 PPA	29,2	62	7,65	34,5	49	1 400
NUTR 30 A	41,3	47,5	5,85	24	34,5	2 600
PWTR 30.2RS	31,9	32,5	4,05	20,4	29	2 600
NUTR 3072 A	48,4	61	7,5	53	76,5	2 600
PWTR 3072.2RS	39,6	45	5,6	47,5	68	2 000
NATR 35 PPA	24,6	43	5,3	33,5	48	1 600
NATV 35 PPA	31,9	72	8,8	43	62	1 100
NUTR 35 A	45,7	57	6,95	33,5	47,5	2 000
PWTR 35.2RS	35,8	40,5	5	28	40	2 000

Support rollers with flange rings, with an inner ring
D 80 – 240 mm



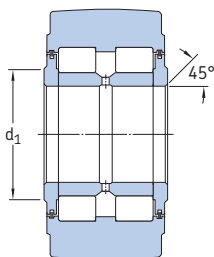
NATR .. PPA

NATV .. PPA

NUTR .. A

PWTR ...2RS

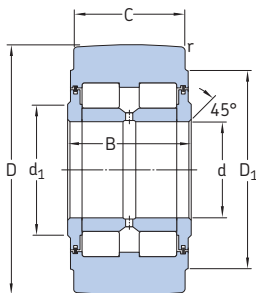
Dimensions							Mass	Designation
D	d	C	B	d ₁	r _{min}	r _{1,2} min		
mm							kg	–
80	35	28	29	44	1,1	0,6	0,84	NUTR 3580 A
	35	28	29	44	1,1	0,6	0,84	PWTR 3580.2RS
	40	30	32	66	1,1	–	0,81	NATR 40 PPA
	40	30	32	66	1,1	–	0,89	NATV 40 PPA
	40	30	32	50,5	1,1	0,6	0,82	NUTR 40 A
	40	30	32	50,5	1,1	0,6	0,82	PWTR 40.2RS
85	45	30	32	55,2	1,1	0,6	0,88	NUTR 45 A
	45	30	32	55,2	1,1	0,6	0,88	PWTR 45.2RS
90	40	30	32	50,5	1,1	0,6	1,13	NUTR 4090 A
	40	30	32	50,5	1,1	0,6	1,13	PWTR 4090.2RS
	50	30	32	76	1,1	–	0,96	NATR 50 PPA
	50	30	32	76	1,1	–	0,99	NATV 50 PPA
	50	30	32	59,8	1,1	0,6	0,95	NUTR 50 A
	50	30	32	59,8	1,1	0,6	0,95	PWTR 50.2RS
100	45	30	32	55,2	1,1	0,6	1,4	NUTR 45100 A
	45	30	32	55,2	1,1	0,6	1,4	PWTR 45100.2RS
110	50	30	32	59,8	1,1	0,6	1,7	NUTR 50110 A
	50	30	32	59,8	1,1	0,6	1,7	PWTR 50110.2RS
130	50	63	65	63	3	2	5,2	NNTR 50x130x65.2ZL
140	55	68	70	73	3	2	6,4	NNTR 55x140x70.2ZL
150	60	73	75	78	3	2	7,8	NNTR 60x150x75.2ZL
160	65	73	75	82	3	2	8,8	NNTR 65x160x75.2ZL
180	70	83	85	92	3	2	13	NNTR 70x180x85.2ZL
200	80	88	90	102	4	2	16,8	NNTR 80x200x90.2ZL
220	90	98	100	119	4	2,5	22,5	NNTR 90x220x100.2ZL
240	100	103	105	132	4	2,5	28	NNTR 100x240x105.2ZL



NNTR...2ZL

Designation	Basic load ratings		Fatigue load limit	Maximum radial forces		Limiting speed
	dynamic	static		dynamic	static	
	C	C ₀	P _u	F _r	F _{0r}	
	kN		kN	kN		r/min
NUTR 3580 A	51,2	68	8,3	57	81,5	2 000
PWTR 3580.2RS	41,8	50	6,3	51	72	2 000
NATR 40 PPA	31,9	57	7,1	41,5	58,5	1 500
NATV 40 PPA	39,1	88	11	51	73,5	950
NUTR 40 A	57,2	72	9	32	45,5	1 800
PWTR 40.2RS	41,8	49	6	33,5	48	1 800
NUTR 45 A	58,3	75	9,3	32,5	46,5	1 700
PWTR 45.2RS	42,9	50	6,2	34	48	1 700
NUTR 4090 A	68,2	91,5	11,4	63	90	1 800
PWTR 4090.2RS	49,5	62	7,65	64	91,5	1 800
NATR 50 PPA	30,8	58,5	7,2	40	57	1 200
NATV 50 PPA	39,1	93	11,6	50	72	850
NUTR 50 A	58,3	78	9,65	32,5	47,5	1 600
PWTR 50.2RS	42,9	52	6,55	34,5	49	1 600
NUTR 45100 A	73,7	104	12,7	80	114	1 700
PWTR 45100.2RS	53,9	69,5	8,65	81,5	116	1 700
NUTR 50110 A	78,1	116	14,3	98	140	1 600
PWTR 50110.2RS	57,2	78	9,65	100	143	1 600
NNTR 50x130x65.2ZL	179	232	31	224	320	750
NNTR 55x140x70.2ZL	209	275	37,5	224	320	700
NNTR 60x150x75.2ZL	238	320	42,5	265	375	670
NNTR 65x160x75.2ZL	255	345	46,5	285	405	600
NNTR 70x180x85.2ZL	330	455	61	375	540	560
NNTR 80x200x90.2ZL	391	540	71	455	640	500
NNTR 90x220x100.2ZL	468	670	83	480	680	430
NNTR 100x240x105.2ZL	528	780	93	550	780	380

Support rollers with flange rings, with an inner ring
D 260 – 310 mm



NNTR ...2ZL

Dimensions							Mass	Designation
D	d	C	B	d ₁	r _{min}	r _{1,2 min}		
mm							kg	–
260	110	113	115	143	4	2,5	35,5	NNTR 110x260x115.2ZL
290	120	133	135	155	4	3	53	NNTR 120x290x135.2ZL
310	130	144	146	165	5	3	65	NNTR 130x310x146.2ZL

Designation	Basic load ratings		Fatigue load limit	Maximum radial forces		Limiting speed
	dynamic C	static C ₀		dynamic F _r	static F _{0r}	
–	kN		kN	kN		r/min
NNTR 110x260x115.2ZL	627	930	112	655	950	360
NNTR 120x290x135.2ZL	825	1270	143	900	1290	320
NNTR 130x310x146.2ZL	952	1460	166	1040	1500	300

Cam followers

SKF cam followers have an internal design very similar to that of a needle or cylindrical roller bearing. They are characterized by a thick-walled outer ring that enables them to accommodate shock loads while reducing distortion and bending stresses. The outer ring running surface is crowned as standard (→ **page 243**). However, cam followers with cylindrical (flat) running surfaces are available for certain applications.

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.

Axial guidance for the outer ring is provided by an integral flange at the head of the stud and a flange ring pressed onto the stud, or by the roller complement. Cam followers are pre-greased, ready-to-mount units that are suitable for all types of cam drives, tracks and conveyor systems.

SKF cam followers are available in three basic designs:

- KR design
- NUKR design
- PWKR design

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.

All designs are available with a concentric seat (→ **fig. 18**) or an eccentric collar on the stud. An eccentric collar (→ **fig. 19**), which has a shrink-fit onto the stud, enables less stringent manufacturing tolerances to be specified for associated components. The values for the adjustable eccentricity are listed in the product tables.

Fig. 18

Cam follower with a concentric seat

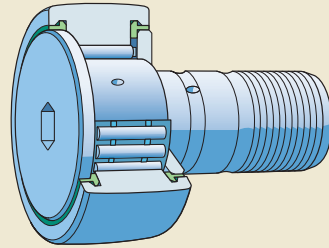


Fig. 19

Cam follower with an eccentric collar

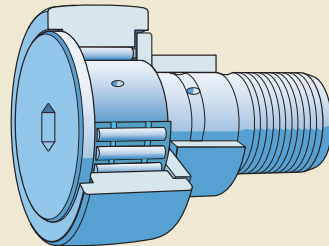
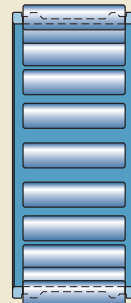


Fig. 20

Machined steel cage



KR design cam followers

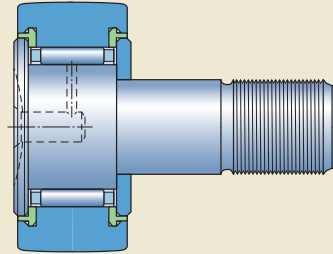
KR design cam followers are fitted with a needle roller and cage assembly (→ **fig. 20**). The steel cage guides the rollers over their entire length, permitting relatively high-speed operation. The outer ring is guided axially by the pressed-on flange ring and the head of the stud, which also serves as an integral flange.

KR design cam followers without a designation suffix or with the designation suffix B (→ **fig. 21**) have a narrow gap between the outer ring and the two flanges and serves as a gap type seal.

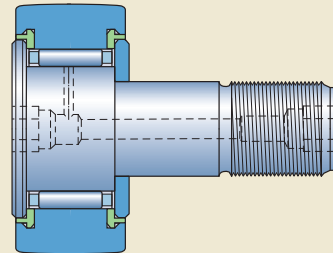
KR design cam followers with the designation suffix PPA have axial sliding rings made of polyamide 66 (→ **fig. 22**). In the radial direction, the sliding ring forms a narrow labyrinth seal with the outer ring to protect against coarse contaminants. In the axial direction, the sliding ring serves as a contact seal to reliably retain grease in the bearing. This improves the lubrication conditions in the bearing, keeps friction and heat low, and extends grease service life.

Fig. 22

KR design cam follower, designation suffix PPA



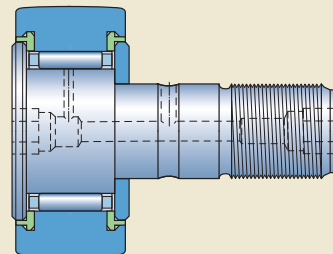
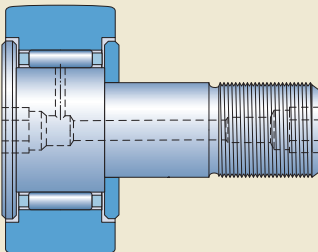
a) sizes 16 and 19



b) sizes 22 and 26

Fig. 21

KR design cam follower, designation suffix B, sizes 22 and 26



c) from size 30

Cam followers

KR design cam followers, sizes 16 and 19, either without a designation suffix or with the designation suffix PPA (→ **fig. 22a**, **page 239**), 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 to press in a grease fitting or a plug if relubrication is not required. See section *Accessories*, starting on **page 244**. SKF also supplies these two sizes with a hexagon recessed into the head of the stud. They are fitted with sliding rings made of polyamide 66 and are identified by the designation suffix PPSKA. Cam followers with the designation suffix PPSKA are not equipped with a lubrication duct and cannot be relubricated (→ **fig. 23**).

KR design cam followers with the designation suffix B, sizes 22 and larger, have a recessed hexagon at each end of the stud. However, sizes 22 and 26 (→ **fig. 21**) do not have an annular groove and lubrication hole in the central part of the stud. In the centre of each hexagon is a relubrication hole to press in a grease fitting, if needed. Sizes 35 and larger can accommodate adapters from a central lubrication system. See section *Accessories*, starting on **page 244**. For cam followers from size 30 and larger, the lubricant can also be supplied via a relubrication hole with an annular groove in the seat.

KRE design cam followers

KRE design cam followers are similar to the KR design with a PPA designation suffix. The difference is that the KRE design has an eccentric collar pressed onto the stud (→ **fig. 24**). Because the eccentric collar covers the duct in the stud, these cam followers can only be relubricated via the stud ends.

KRV design cam followers

KRV design cam followers are similar to the KR design with a designation suffix PPA. The difference is that the KRV design has a full complement of needle rollers (→ **fig. 25**). Therefore, KRV design cam followers can accommodate heavier radial loads than KR design cam followers. However, they are not able to operate at the same high speeds and require more frequent relubrication.

Fig. 23

KR design cam follower, designation suffix PPSKA

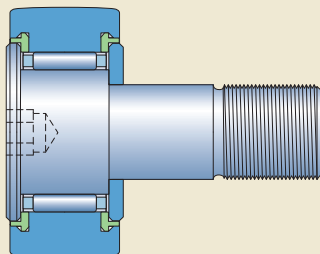


Fig. 24

KRE design cam follower, designation suffix PPA, sizes 30 and larger

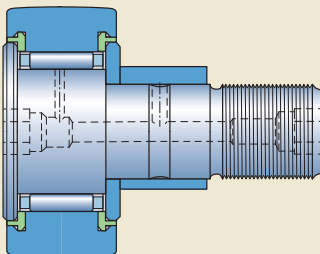
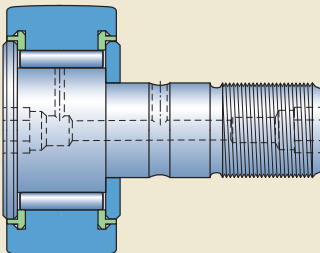


Fig. 25

KRV design cam follower, designation suffix PPA, sizes 30 and larger



NUKR design cam followers

NUKR .. A design cam followers

NUKR .. A design cam followers (→ **fig. 26**) are based on the design of a double row, full complement cylindrical roller bearing. The outer ring has two integral flanges that guide the roller complements axially. The stud head and a pressed-on flange ring provide axial guidance for the outer ring via the rollers. This enables NUKR .. A design cam followers to accommodate the heavy axial forces that result when operating in an inclined or tilted position and to operate at relatively high speeds.

NUKR .. A design cam followers have a recessed hexagon at each end of the stud, to enable 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. See section *Accessories*, starting on **page 244**. Lubricant can also be applied via the relubrication hole and the annular groove in the seat.

Sheet metal angle rings that are pressed into the outer ring and extend over the stud head and the flange ring form efficient labyrinth seals.

NUKRE .. A design cam followers

NUKRE .. A design cam followers are similar to the NUKR .. A design. The difference is that the NUKRE .. A design has an eccentric collar pressed onto the stud (→ **fig. 27**). Because the eccentric collar covers the duct in the stud, these cam followers can only be relubricated via the stud ends.

Fig. 26

NUKR .. A design cam follower

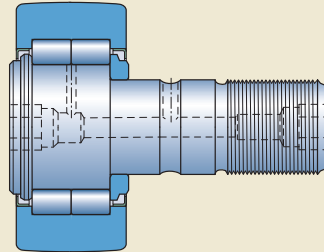
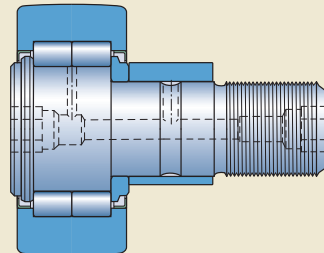


Fig. 27

NUKRE .. A design cam follower



PWKR design cam followers

PWKR ...2RS design cam followers

PWKR ...2RS design cam followers (→ fig. 28) have an outer ring with three integral flanges. They axially guide the two rows of full complement rollers separately to minimize friction in the cam follower, thereby reducing the amount of heat generated by the bearing. The stud head and a pressed-on flange ring provide axial guidance for the outer ring via the rollers. This enables the cam followers to accommodate the relatively heavy constant axial loads that occur when cam followers operate in an inclined position.

PWKR ...2RS design cam followers have a contact seal of oil and wear-resistant acrylonitrile-butadiene rubber (NBR) on both sides. The seals are integral with the angle rings that are pressed in the outer ring and seal against the stud head and the flange ring. The sheet metal angle rings extend over the stud head and the flange ring to form secondary labyrinth seals, making them particularly suitable for operation under arduous conditions.

The large space between the two rows of rollers enables a large quantity of grease to be incorporated. The large grease fill and efficient sealing method make it possible to operate PWKR ...2RS design cam followers for longer periods between maintenance intervals than was previously possible, even under contaminated conditions.

They also have a recessed hexagon at both ends of the stud that enables 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. See section *Accessories*, starting on **page 244**. Lubricant can also be applied via the relubrication hole and the annular groove in the seat.

PWKRE ...2RS design cam followers

PWKRE ...2RS design cam followers are similar to PWKR ...2RS design cam followers. The difference is that the PWKRE ...2RS design has an eccentric collar pressed onto the stud (→ fig. 29). Because the eccentric collar covers the lubrication duct in the stud, these cam followers can only be relubricated via the stud ends.

Fig. 28

PWKR ...2RS design cam follower

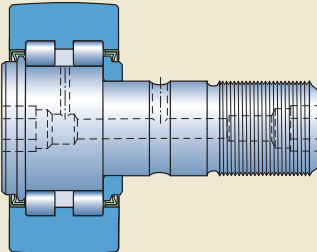
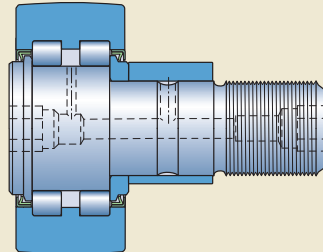


Fig. 29

PWKRE ...2RS design cam follower



Profile of the outer ring running surface

Crowned outer ring running surface

SKF supplies cam followers, as standard, with a crowned outer ring running surface. The crowned outer ring running surface provides good load distribution during operation when the bearing is in a tilted or inclined position.

KR design cam followers, without designation suffix or with designation suffix B, have a crowned running surface with a radius of 500 mm.

SKF also supplies cam followers with an improved crowned profile of the outer ring running surface. The modified line contact provides even better load distribution than cam followers with the standard radius. In practice, this modified line contact provides a higher degree of stiffness while reducing wear between the outer ring running surface and the track. The following cam follower designs have an improved crowned profile:

- KR design, with the designation suffixes PPA and PPSKA
- NUKR design
- PWKR design

Cylindrical outer ring running surface

SKF recommends cam followers with a cylindrical (flat) outer ring running surface for applications requiring a high degree of stiffness and when running in a tilted or inclined position can be avoided. They are identified by the designation suffix X. These cam followers are dimensionally interchangeable with standard profile cam followers. For additional information, contact the SKF application engineering service.

Cam followers

Accessories

The accessories (→ **table 4**) are intended to provide SKF cam followers with reliable lubrication and location. SKF supplies grease fittings and hexagonal nuts with the cam followers as standard, however, other accessories must be ordered separately.

Grease fittings

SKF supplies grease fittings that can be pressed into position, with each cam follower as standard (→ **table 4**). These are the only grease fittings that should be used. Dimensions are listed in **table 2**.

Note

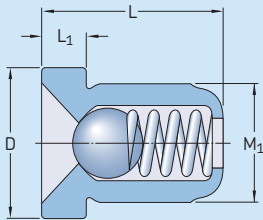
For KR design cam followers, sizes 16 and 19, the head of the grease fitting protrudes from the head end of the stud by 1,5 mm.

Hexagonal nuts

SKF supplies the appropriate hexagonal nuts with each cam follower as standard. They are in accordance with ISO 4032:1999 or ISO 8673:1999. These 8.8 strength class nuts are zinc galvanized to ISO 4042:1999. Dimensions and recommended tightening torques are listed in **table 3**.

Table 2

Grease fittings



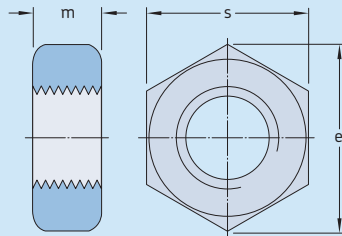
Designation	Dimensions			
	M ₁	D	L	L ₁

mm

NIP A1	4	6	6	1,5
NIP A1×4,5	4	4,7	4,5	1
NIP A2×7,5	6	7,5	7,5	2
NIP A3×9,5	8	10	9,5	3

Table 3

Hexagonal nuts



Size	Dimensions			Tightening torque	Standard ¹⁾
	m	e	s		

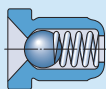
mm Nm

M 6×1	5,2	11	10	3	1
M 8×1,25	6,8	14,4	13	8	1
M 10×1	8,4	17,8	16	15	2
M 12×1,5	10,8	20	18	22	2
M 16×1,5	14,8	26,8	24	58	2
M 18×1,5	15,8	29,6	27	87	2
M 20×1,5	18	33	30	120	2
M 24×1,5	21,5	39,5	36	220	2
M 30×1,5	25,6	50,9	46	450	2

¹⁾ 1 = EN ISO 4032:2001, ISO 4032:1999
2 = EN ISO 8673:2001, ISO 8673:1999

Table 4

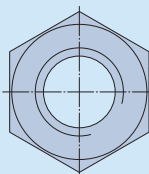
Accessories for cam followers



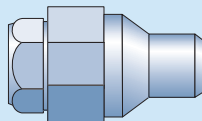
Grease fitting



Plug



Hexagonal nut



Adapter

Cam follower Design	Size without seals	with seals	Supplied with cam follower		To be ordered separately	
			Grease fitting	Hexagonal nut	Plug	Adapter
KR KRE KRV	16	16 PPA	NIP A1	M 6 × 1	VD1	–
	–	16 PPSKA	–	M 6 × 1	–	–
	19	19 PPA	NIP A1	M 8 × 1,25	VD1	–
	–	19 PPSKA	–	M 8 × 1,25	–	–
	22 B	22 PPA	2 × NIP A1 × 4,5	M 10 × 1	–	–
	26 B	26 PPA	2 × NIP A1 × 4,5	M 10 × 1	–	–
	30 B	30 PPA	2 × NIP A1 × 4,5	M 12 × 1,5	–	–
	32 B	32 PPA	2 × NIP A1 × 4,5	M 12 × 1,5	–	–
	35 B	35 PPA	2 × NIP A2 × 7,5	M 16 × 1,5	–	AP 8
	40 B	40 PPA	2 × NIP A2 × 7,5	M 18 × 1,5	–	AP 8
	–	47 PPA	2 × NIP A2 × 7,5	M 20 × 1,5	–	AP 10
	–	52 PPA	2 × NIP A2 × 7,5	M 20 × 1,5	–	AP 10
	–	62 PPA	2 × NIP A3 × 9,5	M 24 × 1,5	–	AP 14
	–	72 PPA	2 × NIP A3 × 9,5	M 24 × 1,5	–	AP 14
	–	80 PPA	2 × NIP A3 × 9,5	M 30 × 1,5	–	AP 14
–	90 PPA	2 × NIP A3 × 9,5	M 30 × 1,5	–	AP 14	
NUKR ... A NUKRE ... A PWKR ... 2RS PWKRE ... 2RS	–	35	2 × NIP A2 × 7,5	M 16 × 1,5	–	AP 8
	–	40	2 × NIP A2 × 7,5	M 18 × 1,5	–	AP 8
	–	47	2 × NIP A2 × 7,5	M 20 × 1,5	–	AP 10
	–	52	2 × NIP A2 × 7,5	M 20 × 1,5	–	AP 10
	–	62	2 × NIP A3 × 9,5	M 24 × 1,5	–	AP 14
	–	72	2 × NIP A3 × 9,5	M 24 × 1,5	–	AP 14
	–	80	2 × NIP A3 × 9,5	M 30 × 1,5	–	AP 14
	–	90	2 × NIP A3 × 9,5	M 30 × 1,5	–	AP 14

Cam followers

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 and if there is no space for the head of the grease fitting. Appropriate plugs with a VD1 designation must be ordered separately. The plug should be pressed into place using a mandrel (→ fig. 30).

Adapters for connecting to a centralized lubrication system

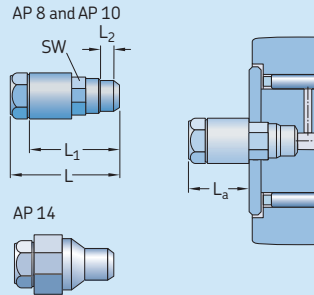
AP design adapters enable cam followers to be relubricated via a centralized lubrication system. These adapters have a quick connection that accommodates, for example, 4x0,75 polyamide tubing in accordance with DIN 73378:1996 (→ fig. 31). The designs and dimensions are listed in table 5.

Dimensions

The dimensions of SKF cam followers are in accordance with ISO 7063:2003 and ANSI/ABMA Standard 18.1-1982.

Table 5

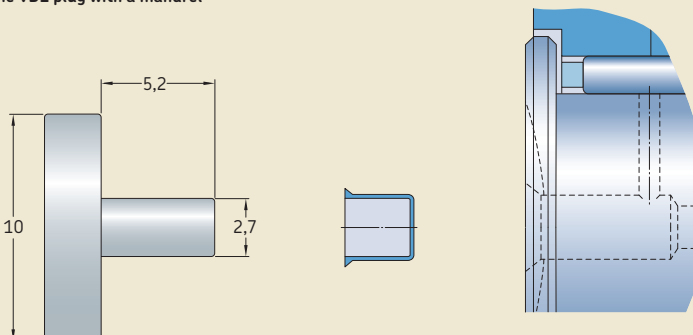
Dimensions of adapters for connecting to a centralized lubrication system



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

Fig. 30

Inserting the VD1 plug with a mandrel



Tolerances

The tolerances of KR, KRE and KRV design cam followers are in accordance with ISO 7063:2003. Other SKF cam followers are made to Normal tolerances in accordance with ISO 492:2002. Exceptions are:

- the tolerance of the outside diameter running surface with a crowned profile, which is 0/-0,050 mm
- the tolerance of the stud shank diameter, h7 tolerance class
- the tolerance for the eccentric collar diameter, h9 tolerance class

The limits for h7 and h9 tolerance classes are listed in **table 6**.

Internal clearance

SKF supplies cam followers with a radial internal clearance in the range of C2 to Normal.

The clearance values are listed in **table 7** on **page 42** and are in accordance with ISO 5753-1:2009.

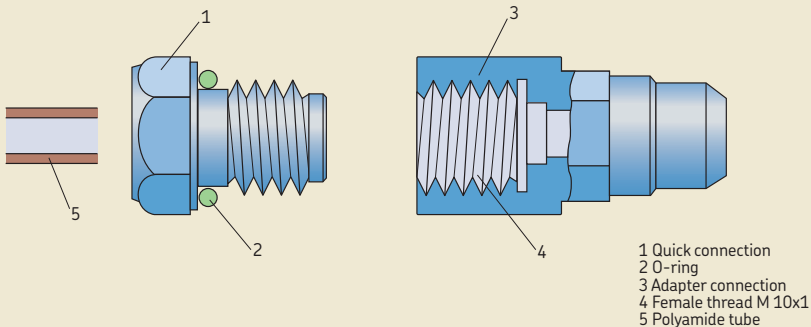
Table 6

ISO tolerance classes

Nominal diameter		h7		h9	
over	incl.	high	low	high	low
mm		µm		µm	
3	6	0	-12	0	-30
6	10	0	-15	0	-36
10	18	0	-18	0	-43
18	30	0	-21	0	-52
30	50	0	-25	0	-62

Fig. 31

Adapter for connection to centralized lubrication system



Load carrying capacity

Compared to a typical rolling bearing, where the outer ring is fully supported in a housing, a cam follower has only a small contact area between its outer ring running surface and the track. The actual contact area depends on the applied radial load and whether the running surface is crowned or flat. The deformation of the outer ring, caused by this limited contact, alters the force distribution in the bearing, which affects load carrying capacity. The basic load ratings listed in the product tables take this into account.

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 dynamic radial load F_r should not be exceeded.

The permissible static load for a cam follower is determined by the smaller of the values F_{0r} and C_0 . If requirements for smooth running are below normal, the static load may exceed C_0 but should never exceed the maximum permissible static radial load F_{0r} .

Permissible operating temperature

Generally, the permissible temperature range for cam followers is -30 to $+140$ °C. However, exceptions due to the seal material are:

- -30 to $+100$ °C for KR design, designation suffixes PPSKA and PPA
- -30 to $+120$ °C for PWKR ...2RS and PWKRE ...2RS design

Exceptions due to the applied grease must also be taken into account.

For additional information about temperature restrictions, refer to the sections *Cage materials* (→ page 44) and *Lubrication* (→ page 52).

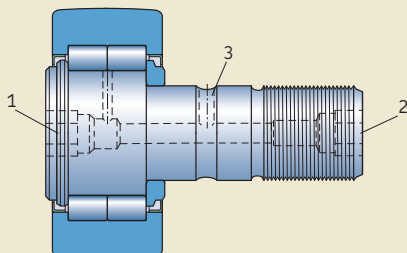
Lubrication

All cam followers are filled at the factory with a high-quality grease with good corrosion inhibiting properties.

Although SKF cam followers require little maintenance, they must be relubricated to achieve their full service life. This can be done via ducts in the stud (→ fig. 32):

Fig. 32

Possibilities for relubrication



- from the head (bearing) end of the stud (1)
- from the thread end of the stud (2)
- through the relubrication hole and the annular groove in the seat on the stud shank (3)

Exceptions are:

- KR design cam followers, sizes 16 and 19, without a designation suffix or with a designation suffix PPA, which can only be relubricated via the head end
- KR design cam followers, sizes 16 and 19, designation suffix PPSKA, which cannot be relubricated
- KRE, NUKRE and PWKRE design cam followers, which can only be relubricated via the stud ends
- KR design cam followers, sizes 22 and 26, designation suffixes B or PPA, which can only be relubricated via the stud ends

SKF recommends relubrication while the initial grease fill still has its full lubricating properties. Cam followers used in applications where there are light loads, relatively low speeds and clean surroundings, can operate for long periods before relubrication is required. Cam followers that operate under contaminated and damp conditions, at high speeds or at temperatures above $+70$ °C, require frequent relubrication. Full complement KRV and NUKR design cam followers require more frequent relubrication. SKF recommends using SKF LGWA 2 grease for relubrication.

For additional information and characteristics (→ **table 1, page 54**) of the initial grease fill and SKF LGWA 2 grease, refer to the section *Lubrication*, starting on **page 52**.

For cam followers from size 35 and larger, the lubrication ducts are also suitable for connection to a central lubrication system. See section *Accessories*, starting on **page 244**.

Design of associated components

The flange ring that is pressed onto the stud shank should be supported axially over its entire side face. The support surface should have a diameter according to diameter d_1 (→ **fig. 33**). The values for the diameter d_1 are listed in the product tables. The bore through which the stud is attached should be machined to H7 tolerance class.

Mounting instructions

Cam followers can be attached to associated components (→ **fig. 33**) using the hexagonal nuts (→ **table 3, page 244**) supplied together with the cam follower. Spring washers, which are not supplied by SKF, serve to secure the nuts.

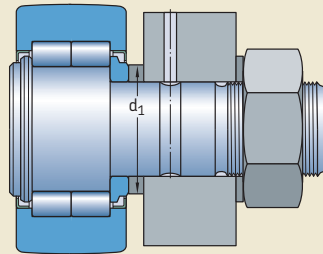
Cam followers that are subjected to shock loads should be mounted without clearance between the stud and its bore seat. The nuts should be tightened according to the recommended torque values listed in **table 3 on page 244**. The recommended tightening torques enable the full load carrying capacity of the cam follower to be exploited. If the requisite tightening torque cannot be achieved, the stud should be mounted with an interference fit.

Most cam followers (all from size 22) have recessed hexagons and can be held with a hexagonal key (Allen wrench) while the nut is being tightened. Some designs of sizes 16 and 19 have a slot in the stud head end and can be held with a screwdriver. For additional information, refer to the illustrations in the product tables, starting on **page 252**.

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

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

Supported flange ring



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 SKF trademark on the head end of the stud.

The lubrication hole (→ position 3 in **fig. 32, page 248**) that is in line with the lubrication hole in the stud head may be used to incorporate a locking device to prevent the stud from turning, or can be used for relubrication purposes. This is only possible with cam followers that do not have an eccentric collar and with KR design cam followers from size 30 and larger.

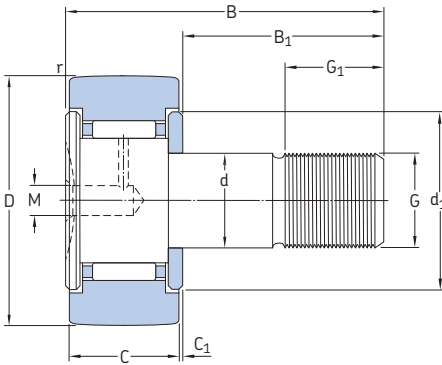
Cam followers

Supplementary designations

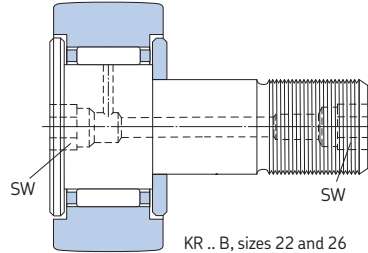
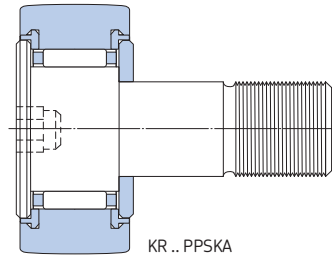
The designation suffixes used to identify certain features of SKF cam followers are explained in the following.

- .2RS** Contact seal of acrylonitrile-butadiene rubber (NBR) on both sides of the cam follower
- A** NUKR design cam followers with an improved crowned profile of the outer ring running surface
- B** KR design cam followers with a crowned profile of the outer ring running surface and a recessed hexagon on both ends of the stud
- PPA** KR design cam followers with a polyamide 66 axial sliding and sealing ring on both sides. Improved crowned profile of the outer ring running surface. Sizes 16 and 19 have one slot in the head of the stud as standard. Size 22 and larger have a recessed hexagon on both ends.
- PPSKA** KR design cam followers, sizes 16 and 19, with a polyamide 66 axial sliding and sealing ring on both sides, improved crowned profile of the outer ring running surface and hexagon recessed into the head of the stud. These cannot be relubricated.
- PPXA** Cam followers with PPA features except for the outer ring running surface, which has a cylindrical profile
- X** Cylindrical (flat) profile of the outer ring running surface
- XA** NUKR .. A and NUKRE .. A design cam followers with a cylindrical (flat) profile of the outer ring running surface

Cam followers
D 16 – 32 mm

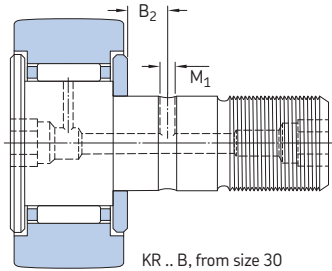


KR, sizes 16 and 19
(KR .. PPA, sizes 16 and 19
are with axial sliding rings)

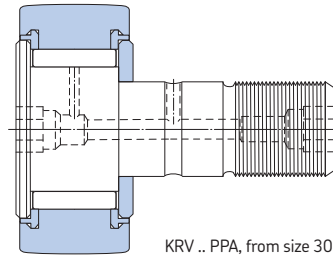


KR .. B, sizes 22 and 26
(KR .. PPA, sizes 22 and 26
are with axial sliding rings)

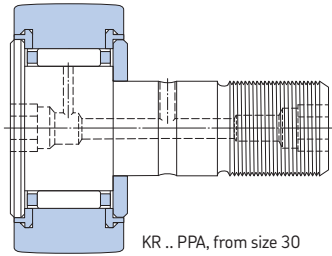
Dimensions															Mass	Designation		
D	C	d	B	B ₁	B ₂	C ₁	d ₁	G	G ₁	M	M ₁	r _{min}	SW	c	B ₃	kg	-	
mm																	kg	-
16	11	6	28	16	-	0,6	12,5	M 6	8	4	-	0,15	-	-	-	0,019	KR 16	
	11	6	28	16	-	0,6	12,5	M 6	8	4	-	0,15	-	-	-	0,018	KR 16 PPA	
	11	6	28	16	-	0,6	12,5	M 6	8	4	-	0,15	4	-	-	0,019	KR 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 8	10	4	-	0,15	-	-	-	0,029	KR 19	
	11	8	32	20	-	0,6	15	M 8	10	4	-	0,15	-	-	-	0,029	KR 19 PPA	
	11	8	32	20	-	0,6	15	M 8	10	4	-	0,15	4	-	-	0,029	KR 19 PPSKA	
	11	8	32	20	-	0,6	15	M 8	10	4	-	0,15	-	-	-	0,031	KRV 19 PPA	
	11	11	32	20	-	0,6	15	M 8	10	4	-	0,15	-	0,5	9	0,032	KRE 19 PPA	
22	12	10	36	23	-	0,6	17,5	M 10×1	12	4	-	0,3	5	-	-	0,045	KR 22 B	
	12	10	36	23	-	0,6	17,5	M 10×1	12	4	-	0,3	5	-	-	0,043	KR 22 PPA	
	12	10	36	23	-	0,6	17,5	M 10×1	12	4	-	0,3	5	-	-	0,045	KRV 22 PPA	
	12	13	36	23	-	0,6	17,5	M 10×1	12	4	-	0,3	5	0,5	10	0,047	KRE 22 PPA	
26	12	10	36	23	-	0,6	17,5	M 10×1	12	4	-	0,3	5	-	-	0,059	KR 26 B	
	12	10	36	23	-	0,6	17,5	M 10×1	12	4	-	0,3	5	-	-	0,057	KR 26 PPA	
	12	10	36	23	-	0,6	17,5	M 10×1	12	4	-	0,3	5	-	-	0,059	KRV 26 PPA	
	12	13	36	23	-	0,6	17,5	M 10×1	12	4	-	0,3	5	0,5	10	0,062	KRE 26 PPA	
30	14	12	40	25	6	0,6	23	M 12×1,5	13	4	3	0,6	6	-	-	0,092	KR 30 B	
	14	12	40	25	6	0,6	23	M 12×1,5	13	4	3	0,6	6	-	-	0,088	KR 30 PPA	
	14	12	40	25	6	0,6	23	M 12×1,5	13	4	3	0,6	6	-	-	0,091	KRV 30 PPA	
	14	15	40	25	6	0,6	23	M 12×1,5	13	4	3	0,6	6	0,5	11	0,093	KRE 30 PPA	
32	14	12	40	25	6	0,6	23	M 12×1,5	13	4	3	0,6	6	-	-	0,1	KR 32 B	
	14	12	40	25	6	0,6	23	M 12×1,5	13	4	3	0,6	6	-	-	0,1	KR 32 PPA	
	14	12	40	25	6	0,6	23	M 12×1,5	13	4	3	0,6	6	-	-	0,1	KRV 32 PPA	
	14	15	40	25	6	0,6	23	M 12×1,5	13	4	3	0,6	6	0,5	11	0,1	KRE 32 PPA	



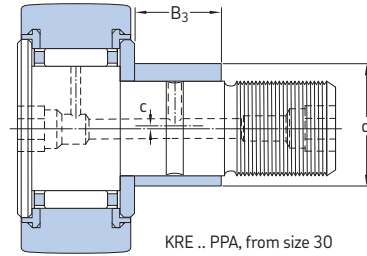
KR .. B, from size 30



KRV .. PPA, from size 30



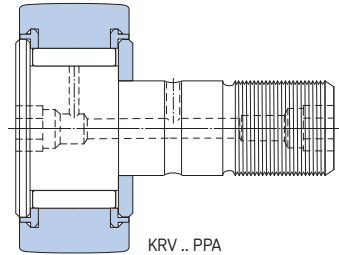
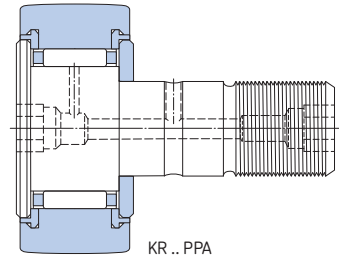
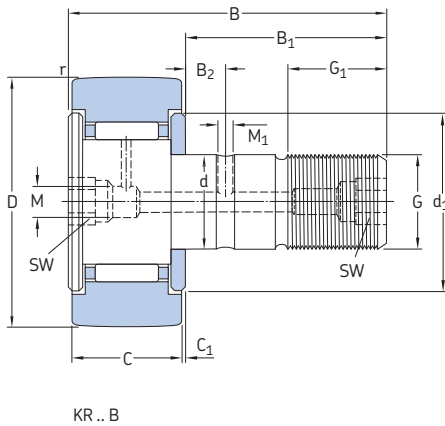
KR .. PPA, from size 30



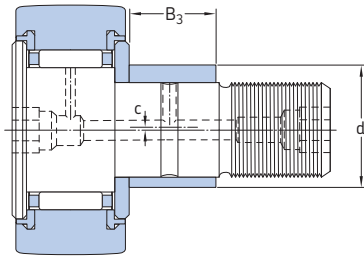
KRE .. PPA, from size 30

Designation	Basic load ratings		Fatigue load limit	Maximum radial loads		Limiting speed
	dynamic	static		dynamic	static	
	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

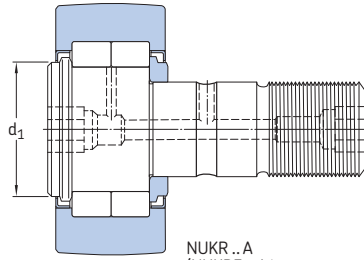
Cam followers
D 35 – 52 mm



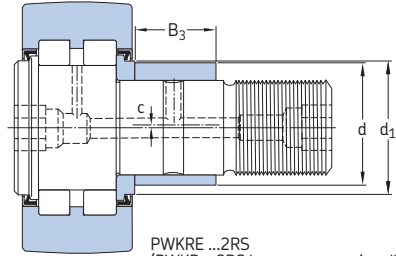
Dimensions															Mass	Designation		
D	C	d	B	B ₁	B ₂	C ₁	d ₁	G	G ₁	M	M ₁	r _{min}	SW	c	B ₃	kg	-	
mm																		
35	18	16	52	32,5	8	0,8	27,6	M16×1,5	17	6	3	0,6	8	-	-	0,17	KR 35 B	
	18	16	52	32,5	8	0,8	27,6	M16×1,5	17	6	3	0,6	8	-	-	0,16	KR 35 PPA	
	18	16	52	32,5	8	0,8	27,6	M16×1,5	17	6	3	0,6	8	-	-	0,17	KRV 35 PPA	
	18	16	52	32,5	7,8	0,8	20	M16×1,5	17	6	3	0,6	8	-	-	0,16	NUKR 35 A	
	18	16	52	32,5	7,8	0,8	20	M16×1,5	17	6	3	0,6	8	-	-	0,16	PWKR 35.2RS	
	18	20	52	32,5	8	0,8	27,6	M16×1,5	17	6	3	0,6	8	1	14	0,18	KRE 35 PPA	
	18	20	52	29,5	7,8	3,8	27,6	M16×1,5	17	6	3	0,6	8	1	12	0,18	NUKRE 35 A	
	18	20	52	29,5	7,8	3,8	27,6	M16×1,5	17	6	3	0,6	8	1	12	0,18	PWKRE 35.2RS	
	40	20	18	58	36,5	8	0,8	31,5	M18×1,5	19	6	3	1	8	-	-	0,25	KR 40 B
20		18	58	36,5	8	0,8	31,5	M18×1,5	19	6	3	1	8	-	-	0,25	KRV 40 PPA	
20		18	58	36,5	8	0,8	31,5	M18×1,5	19	6	3	1	8	-	-	0,25	KRV 40 PPA	
20		18	58	36,5	8	0,8	22	M18×1,5	19	6	3	1	8	-	-	0,24	NUKR 40 A	
20		18	58	36,5	8	0,8	22	M18×1,5	19	6	3	1	8	-	-	0,24	PWKR 40.2RS	
20		22	58	36,5	8	0,8	31,5	M18×1,5	19	6	3	1	8	1	16	0,26	KRE 40 PPA	
20		22	58	33,5	8	3,8	30	M18×1,5	19	6	3	1	8	1	14	0,26	NUKRE 40 A	
20		22	58	33,5	8	3,8	30	M18×1,5	19	6	3	1	8	1	14	0,26	PWKRE 40.2RS	
47		24	20	66	40,5	9	0,8	36,5	M20×1,5	21	6	4	1	10	-	-	0,38	KR 47 PPA
	24	20	66	40,5	9	0,8	36,5	M20×1,5	21	6	4	1	10	-	-	0,39	KRV 47 PPA	
	24	20	66	40,5	9	0,8	27	M20×1,5	21	6	4	1	10	-	-	0,38	NUKR 47 A	
	24	20	66	40,5	9	0,8	27	M20×1,5	21	6	4	1	10	-	-	0,38	PWKR 47.2RS	
	24	24	66	40,5	9	0,8	36,5	M20×1,5	21	6	4	1	10	1	18	0,41	KRE 47 PPA	
	24	24	66	40,5	9	0,8	27	M20×1,5	21	6	4	1	10	1	18	0,4	NUKRE 47 A	
	24	24	66	40,5	9	0,8	27	M20×1,5	21	6	4	1	10	1	18	0,4	PWKRE 47.2RS	
	52	24	20	66	40,5	9	0,8	36,5	M20×1,5	21	6	4	1	10	-	-	0,45	KR 52 PPA
		24	20	66	40,5	9	0,8	36,5	M20×1,5	21	6	4	1	10	-	-	0,46	KRV 52 PPA
24		20	66	40,5	9	0,8	31	M20×1,5	21	6	4	1	10	-	-	0,45	NUKR 52 A	
24		20	66	40,5	9	0,8	31	M20×1,5	21	6	4	1	10	-	-	0,45	PWKR 52.2RS	
24		24	66	40,5	9	0,8	36,5	M20×1,5	21	6	4	1	10	1	18	0,47	KRE 52 PPA	
24		24	66	40,5	9	0,8	31	M20×1,5	21	6	4	1	10	1	18	0,47	NUKRE 52 A	
24		24	66	40,5	9	0,8	31	M20×1,5	21	6	4	1	10	1	18	0,47	PWKRE 52.2RS	



KRE .. PPA



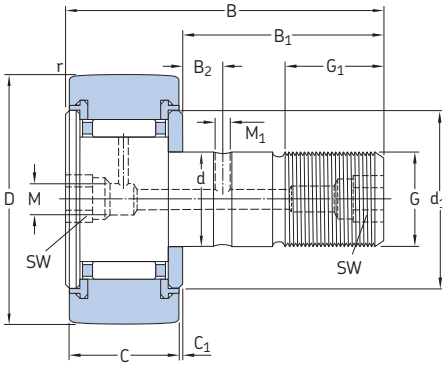
NUKR .. A
(NUKRE .. A have an eccentric collar)



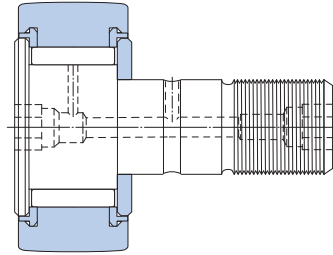
PWKRE ...2RS
(PWKR ...2RS have a concentric collar)

Designation	Basic load ratings		Fatigue load limit	Maximum radial loads		Limiting speed
	dynamic C	static C ₀		dynamic F _r	static 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
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

Cam followers
D 62 – 90 mm

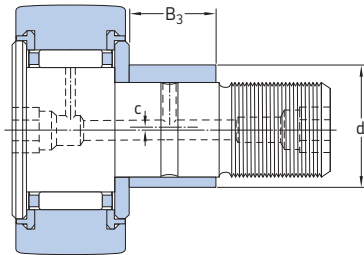


KR .. PPA

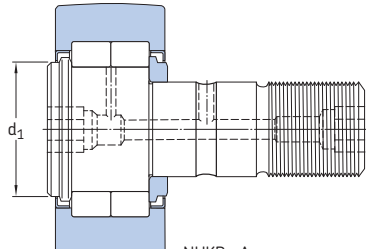


KRV .. PPA

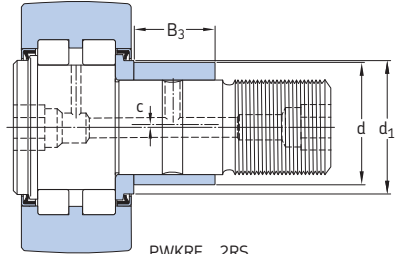
Dimensions															Mass	Designation	
D	C	d	B	B ₁	B ₂	C ₁	d ₁	G	G ₁	M	M ₁	r _{min}	SW	c	B ₃		
mm															kg	-	
62	29	24	80	49,5	11	0,8	44	M 24×1,5	25	8	4	1	14	-	-	0,77	KR 62 PPA
	29	24	80	49,5	11	0,8	44	M 24×1,5	25	8	4	1	14	-	-	0,79	KRV 62 PPA
	28	24	80	49,5	11	1,3	38	M 24×1,5	25	8	4	1	14	-	-	0,8	NUKR 62 A
	28	24	80	49,5	11	1,3	38	M 24×1,5	25	8	4	1	14	-	-	0,8	PWKR 62.2RS
	29	28	80	49,5	11	0,8	44	M 24×1,5	25	8	4	1	14	1	22	0,8	KRE 62 PPA
	28	28	80	49,5	11	1,3	38	M 24×1,5	25	8	4	1	14	1	22	0,82	NUKRE 62 A
	28	28	80	49,5	11	1,3	38	M 24×1,5	25	8	4	1	14	1	22	0,82	PWKRE 62.2RS
72	29	24	80	49,5	11	0,8	44	M 24×1,5	25	8	4	1,1	14	-	-	1,01	KR 72 PPA
	29	24	80	49,5	11	0,8	44	M 24×1,5	25	8	4	1,1	14	-	-	1,03	KRV 72 PPA
	28	24	80	49,5	11	1,3	44	M 24×1,5	25	8	4	1,1	14	-	-	1,02	NUKR 72 A
	28	24	80	49,5	11	1,3	44	M 24×1,5	25	8	4	1,1	14	-	-	1,02	PWKR 72.2RS
	29	28	80	49,5	11	0,8	44	M 24×1,5	25	8	4	1,1	14	1	22	1,04	KRE 72 PPA
	28	28	80	49,5	11	1,3	44	M 24×1,5	25	8	4	1,1	14	1	22	1,05	NUKRE 72 A
	28	28	80	49,5	11	1,3	44	M 24×1,5	25	8	4	1,1	14	1	22	1,05	PWKRE 72.2RS
80	35	30	100	63	15	1	53	M 30×1,5	32	8	4	1,1	14	-	-	1,61	KR 80 PPA
	35	30	100	63	15	1	53	M 30×1,5	32	8	4	1,1	14	-	-	1,64	KRV 80 PPA
	35	30	100	63	15	1	47	M 30×1,5	32	8	4	1,1	14	-	-	1,6	NUKR 80 A
	35	30	100	63	15	1	47	M 30×1,5	32	8	4	1,1	14	-	-	1,6	PWKR 80.2RS
	35	35	100	63	15	1	53	M 30×1,5	32	8	4	1,1	14	1,5	29	1,67	KRE 80 PPA
	35	35	100	63	15	1	47	M 30×1,5	32	8	4	1,1	14	1,5	29	1,67	NUKRE 80 A
	35	35	100	63	15	1	47	M 30×1,5	32	8	4	1,1	14	1,5	29	1,67	PWKRE 80.2RS
90	35	30	100	63	15	1	53	M 30×1,5	32	8	4	1,1	14	-	-	1,98	KR 90 PPA
	35	30	100	63	15	1	53	M 30×1,5	32	8	4	1,1	14	-	-	2	KRV 90 PPA
	35	30	100	63	15	1	47	M 30×1,5	32	8	4	1,1	14	-	-	1,96	NUKR 90 A
	35	30	100	63	15	1	47	M 30×1,5	32	8	4	1,1	14	-	-	1,96	PWKR 90.2RS
	35	35	100	63	15	1	53	M 30×1,5	32	8	4	1,1	14	1,5	29	2,03	KRE 90 PPA
	35	35	100	63	15	1	47	M 30×1,5	32	8	4	1,1	14	1,5	29	2,02	NUKRE 90 A
	35	35	100	63	15	1	47	M 30×1,5	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 a concentric collar)

Designation	Basic load ratings		Fatigue load limit	Maximum radial loads		Limiting speed
	dynamic C	static C ₀		dynamic F _r	static F _{0r}	
–	kN		kN	kN		r/min
KR 62 PPA	24,6	44	5,5	58,5	85	2 400
KRV 62 PPA	31,4	72	9	72	102	1 700
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
KRE 62 PPA	24,6	44	5,5	58,5	85	2 400
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 72 PPA	26	48	6	100	143	2 400
KRV 72 PPA	33	80	9,8	118	170	1 700
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
KRE 72 PPA	26	48	6	100	143	2 400
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 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 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

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NA 49	Needle roller bearings with machined rings with flanges, with an inner ring	4.2	122
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NKIB 59	Needle roller / angular contact ball bearings	7.1	174
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PWKR	Cam followers	9.4	254
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PWTR	Support rollers with flange rings, with an inner ring	9.3	230
RN	Needle rollers	8.2	206
RNA 22	Support rollers without flange rings, without an inner ring	9.1	226
RNA 48	Needle roller bearings with machined rings with flanges, without an inner ring	4.1	118
RNA 49	Needle roller bearings with machined rings with flanges, without an inner ring	4.1	106
RNA 69	Needle roller bearings with machined rings with flanges, without an inner ring	4.1	106
RNAO	Needle roller bearings with machined rings without flanges, without an inner ring	4.3	134
RPNA	Alignment needle roller bearings without an inner ring	5.1	146
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