

SKF

Recommended Product Range

Bearings for printing presses and print finishing machines



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For preferential treatment – the SKF recommended product range

To further improve customer service SKF has made special application-oriented selections of bearings from the comprehensive SKF range. These recommended product ranges are directed at specific industries.

Each bearing has been carefully chosen based on the extensive experience of bearing applications in the particular Industry. SKF has accumulated this knowledge through working closely with bearing users the world over.

To meet customer demands SKF is prepared to supply any bearing. However, when special bearings are required in small quantities for an application, a recommended product range item offers the chance to obtain the optimum product at a favourable price and with the appropriate availability.

Thus, to choose a bearing from this recommended product range implies additional benefits, even for small quantities.

Benefits of using SKF recommended product range bearings

- Simplified bearing selection and application design work coupled with confidence in the suitability of the range offered
- Short delivery times
- Long-term supply stability
- Worldwide availability
- No minimum order quantity
- Simplified ordering and stocking

Bearings used in printing presses and print finishing machines

Introduction

Printing presses and print finishing machines are applications with a very large bearing assortment portfolio. When talking about general requirements on bearings for printing machinery it is necessary to split the demand in various parts.

Bearings for printing cylinders

Highest possible precision is the most important feature for bearings used for printing cylinders. Especially for offset printing presses SKF suggests the use of high precision spherical roller bear-

ings with special design features or printing cylinder bearing units based on high precision cylindrical roller bearings which can also be designed as eccentric units.

For transfer cylinders in sheet fed presses SKF offers a special taper roller bearing range to be used as locating bearings and high precision cylindrical roller bearings of NNU 49 design for the non-locating position.

Bearings for inking rollers, dampening rollers, paper guiding rollers etc.

SKF offers a wide selection of deep

groove ball bearings in an open version or with shields or seals (low friction and rubbing seals). For applications with higher misalignments than normal SKF offers a comprehensive range of self-aligning ball bearings and spherical roller bearings.

For oscillating rollers needle roller bearings and cylindrical roller bearings are mainly used. On top of the standard assortment SKF offers a specially designed range of cylindrical roller bearings with extended inner rings. Also cylindrical roller bearings of the RNU design can be matched with inner rings which fit into the application.

Photo: Heidelberger Druckmaschinen AG



Bearings for pre-press applications and print finishing machines

Normally standard bearings are used for this segment in a wide variety of types and sizes. In addition to high quality, availability is one of the most important requirements for these products.

Therefore bearings for printing presses or print finishing machines should always be selected in close cooperation with SKF. SKF is present in all markets and offers a comprehensive advisory service. The contacts with SKF engineers also serve to further improve the performance and functionality of bearing arrangements in general and of printing machine bearing arrangements in particular.

Deep groove ball bearings

Single row bearings can support radial and additional axial loads acting in both directions and are suitable for high speed operation. The basic design is an open (unsealed) bearing (→ **fig 1**). SKF deep groove ball bearings are also available with shields (non-rubbing seals), or with seals (low-friction seals and rubbing seals) (→ **fig 2**) at one or both sides.

Deep groove ball bearings are used in a large number of different applications, mainly for inking, dampening and paper guiding rollers but also in bookbinding lines, folders and other print finishing machines.

Fig 1 Deep groove ball bearing (open)

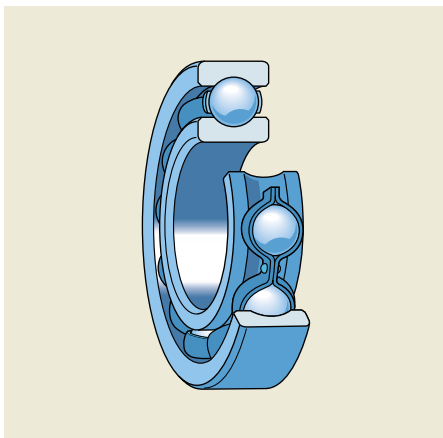
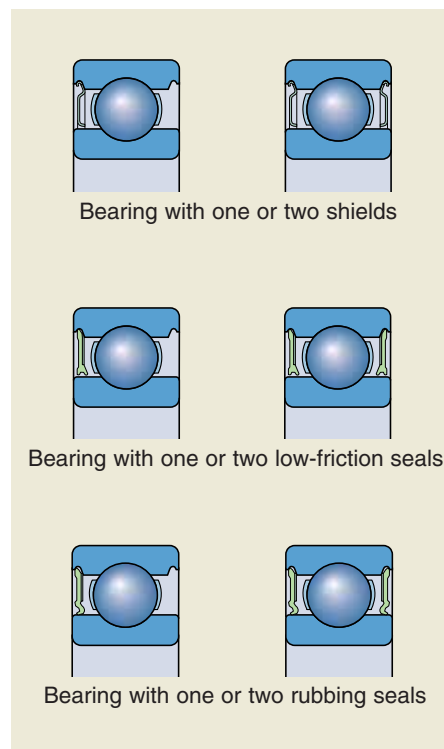


Fig 2 Deep groove ball bearings with shields and seals



Self-aligning ball bearings

Self-aligning ball bearings have two rows of balls with a common sphered raceway in the outer ring. This gives the self-aligning property, permitting angular misalignment of the shaft relative to the housing. The bearings are available in an open (unsealed) design (→ fig 3) or with rubbing seals at both sides (→ fig 4). Self-aligning ball bearings are produced with a cylindrical bore as well as with tapered bore (taper 1:12).

Due to the ability to accommodate misalignment, self-aligning ball bearings are mainly used to support wide rollers with high deflection.

Fig 3 Self-aligning ball bearing

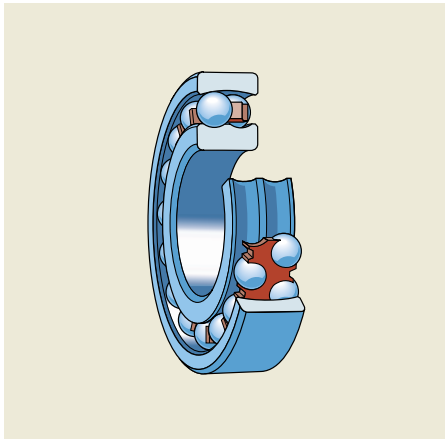
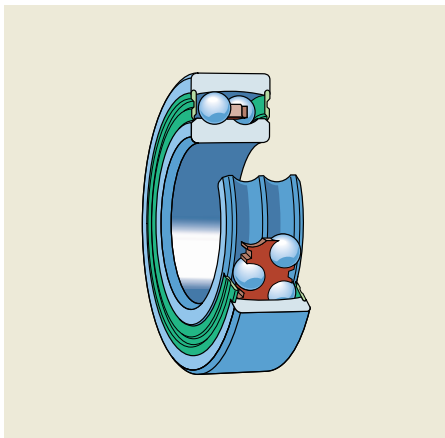


Fig 4 Self-aligning ball bearing with rubbing seals



Angular contact ball bearings

SKF angular contact ball bearings are produced in a wide variety of designs and sizes. Those commonly used in the printing machine industry are

- single row angular contact ball bearings (→ fig 5),
- double row angular contact ball bearings (→ fig 6),
- four-point contact ball bearings (→ fig 7),
- high precision angular contact ball bearings (→ fig 8).

Fig 5 Single row angular contact ball bearing

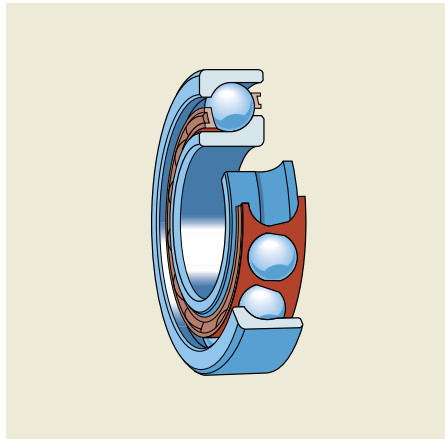
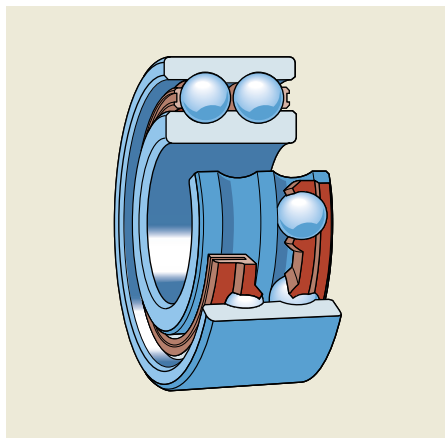


Fig 6 Double row angular contact ball bearing



Single row angular contact ball bearings

Single row bearings for universal matching are commonly used for the axial support of printing cylinders together with printing cylinder bearing units for supporting radial loads (→ fig 1, page 31). When using universal matched single row angular contact ball bearings, SKF recommends the use of medium clearance (suffix BECBP) or light preload (suffix BEGAP).

Double row angular contact ball bearings

Double row angular contact ball bearings can accommodate heavy radial loads and axial loads acting in both directions. The bearings are also

Fig 7 Four-point contact ball bearing

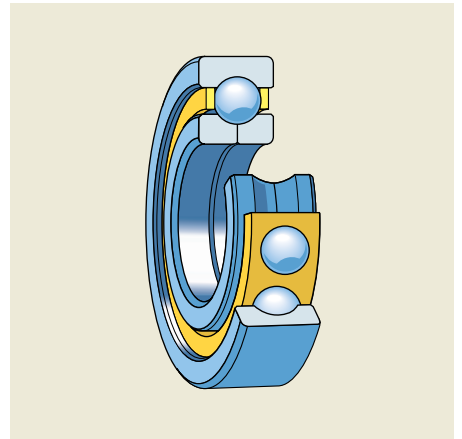
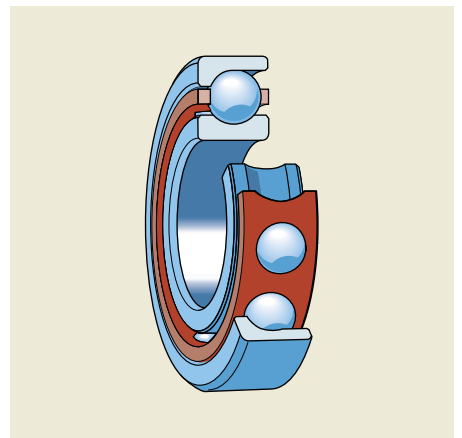


Fig 8 High precision angular contact ball bearing



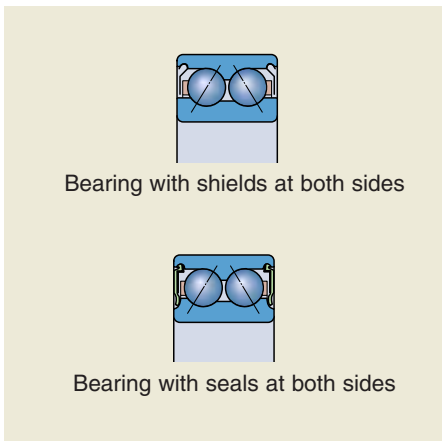


Fig 9 Sealed double row angular contact ball bearings

available as standard with shields (non-rubbing seals), and seals (rubbing seals), at both sides (→ fig 9).

Double row angular contact ball bearings are commonly used as locating bearings for printing cylinders, in gear transmissions and in other applications where the carrying capacity of deep groove ball bearings is not enough.

Four-point contact ball bearings

Four-point contact ball bearings are single row angular contact ball bearings having raceways which are designed to support axial loads in both directions (→ fig 7). They need less axial space than double row bearings.

Four-point contact ball bearings are often used in the drive arrangements of web and sheet fed presses together with cylindrical roller bearings.

High precision angular contact ball bearings

SKF high precision angular contact ball bearings (→ fig 8) are produced in three different dimension series – 719, 70 and 72 – and are available with contact angles of 15° (suffix CD) and 25° (suffix ACD).

Bearings for universal pairing are identified by the designation suffix G followed by A, B or C for the preload class (e.g. 71910 ACDG/P4A). Sets

of two bearings for universal pairing with matched bore and outside diameters are also available. Depending on preload class, these carry the designation suffix DGA, DGB, or DGC (e.g. 7006 CD/P4ADGB).

High precision angular contact ball bearings are produced as standard to tolerance class P4A specifications and are used for high precision applications such as printing cylinders or transfer cylinders in sheet fed presses or any other application where the highest possible accuracy is needed.

Precision support bearings for ball and roller screws (of series BSA or BSD) are also suitable for above applications. For more information see SKF catalogue 4950 “High precision bearings”.

Fig 10 Cylindrical roller bearing

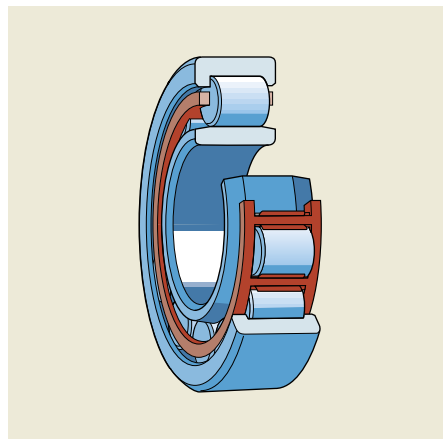
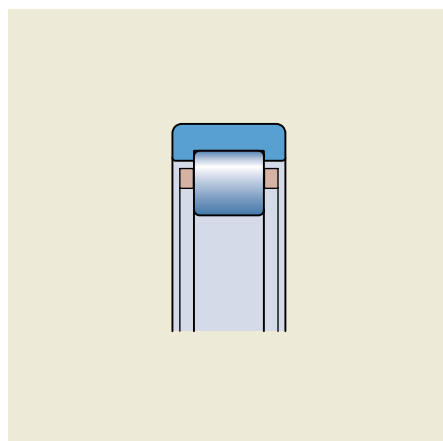


Fig 11 Cylindrical roller bearing, RNU design



Cylindrical roller bearings

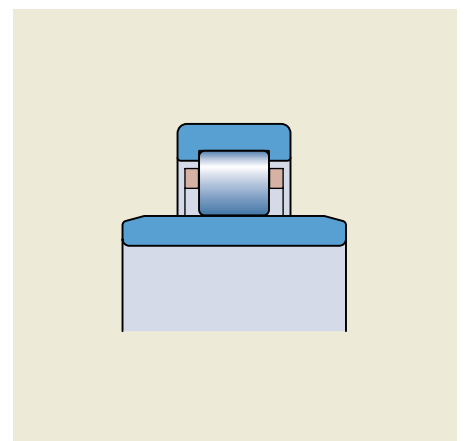
Single row bearings in various designs for heavy, purely radial loads (e.g. NU (→ fig 10) and N designs) and for additional light axial loads acting in one or both directions (e.g. NJ and NUP designs). These bearing designs are much used in gearing systems and power transmission for printing presses.

Cylindrical roller bearings for oscillating rollers

Cylindrical roller bearings are also available without inner ring (RNU design) (→ fig 11) and can be used to run directly on a shaft or they can be matched with inner rings with extended width. Such bearings are best suited for the support of oscillating rollers.

Specially designed SKF cylindrical roller bearings (→ fig 12) are used successfully for rotating and simultaneously oscillating shafts of reciprocating rollers. The bearings are designed with extended inner ring to give the required axial displacement. Bearings are fitted with a polyamide cage and are mainly grease lubricated but can also be integrated into a central oil circulating system.

Fig 12 Cylindrical roller bearing with extended inner ring

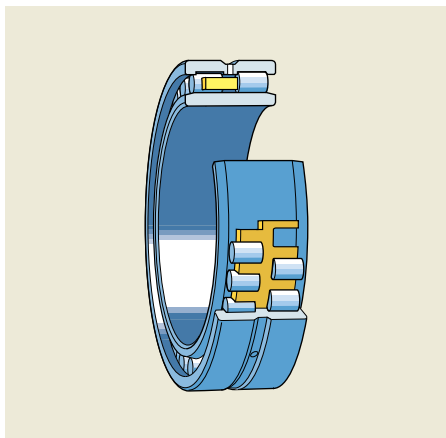


High precision cylindrical roller bearings

Cylindrical roller bearings used for these applications are a double-row design based on series NNU 49 (→ fig 13) and NN 30 (→ fig 14). The rollers of the NNU type bearings are guided between the flanges of the outer ring whilst those of NN type bearings are guided between the flanges of the inner ring. The bearings have a higher tolerance class than normal (SP) and can be supplied with cylindrical bore or with tapered bore (taper 1:12). To achieve efficient lubrication, all bearings are provided with an annular groove and lubrication holes in the outer ring (the W33 feature). Cages are available in brass or polyamide 6.6 depending on bearing size.

High precision cylindrical roller bearings are best suited to support printing cylinders of any kind, bearings of NNU 49 design are often used in transfer cylinders of sheet fed presses. Bearings of NN 30 design form the basis of the printing cylinder bearing units (PCU) (→ page 9).

Fig 13 High precision cylindrical roller bearing, series NNU 49



Needle roller bearings

Needle roller bearings incorporate cylindrical rollers which are thin and long in relation to their diameter. In spite of their low cross section, the bearings have a high load carrying capacity and are thus suitable for bearing arrangements where radial space is limited.

Commonly used types are

- drawn cup needle roller bearings (→ fig 15),
- needle roller bearings without inner ring (→ fig 16),
- needle roller bearings with inner ring (→ fig 17).

For applications where an adequate seal is not available or cannot be provided for space reasons, sealed needle roller bearings can be supplied.

Needle roller bearings are widely used in various applications in print finishing machines. Instead of needle roller bearings, printing cylinders are increasingly being fitted with high precision spherical roller bearings (→ page 10) or printing cylinder bearing units (PCU) (→ page 9). The printing cylinder units with 3 or 4 rings incorporate needle roller and cage assemblies to ensure smooth and frictionless adjustment of the eccentric rings.

Fig 14 High precision cylindrical roller bearing, series NN 30

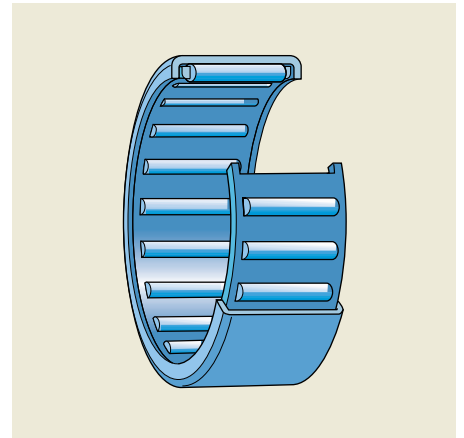
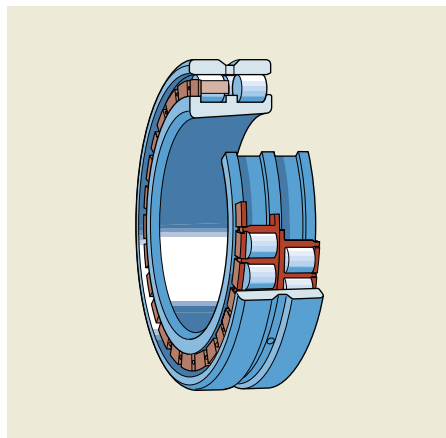


Fig 15 Drawn cup needle roller bearing

Fig 16 Needle roller bearing without inner ring

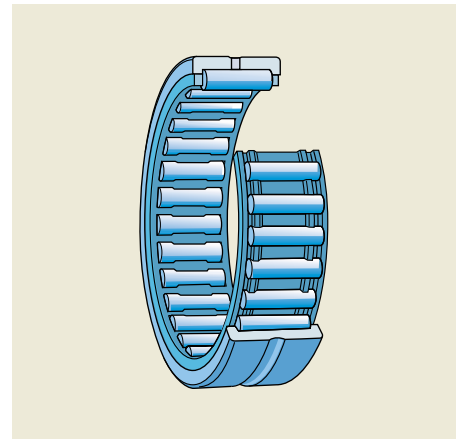
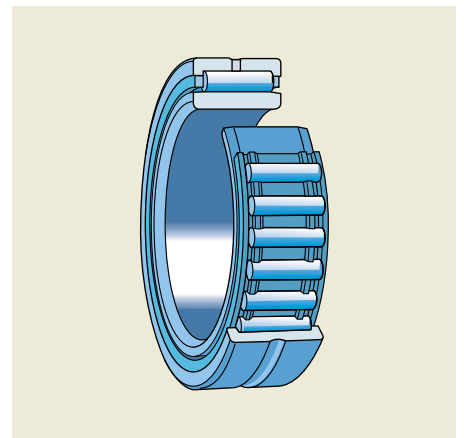


Fig 17 Needle roller bearing with inner ring



Inner rings

SKF also supplies loose inner rings (→ **fig 18**) for use with needle roller bearings or cylindrical roller bearings without inner ring in cases where the shaft cannot be hardened and ground. It is also possible to use extended inner rings in order to permit larger axial displacements of the shaft relative to the housing or to provide ideal riding surfaces for the lips of seals.

Printing cylinder bearing units (PCU)

Printing cylinder bearing units (PCU) (→ **fig 19**) combine the functions of the separate components of the traditional bearing arrangement into a compact self-contained unit. Several designs are available in a range of sizes tailored to meet the needs of the printing press manufacturers.

They are based on high precision cylindrical roller bearings NN 30 and are multi-row (2, 3 or 4) cylindrical roller bearings where usually the outer ring is replaced by an eccentric ring. Some designs have one or two eccentric intermediate rings (→ **fig 20**), each supported by a double row needle roller and cage assembly.

roller and cage assembly. The outermost ring is usually cylindrical.

The units are designed to facilitate the adjustment of printing cylinders in offset presses required during printing press operation. They can also be used for other printing technologies than offset as well as for any other application where eccentricity is needed.

Fig 19 Printing cylinder bearing unit (PCU)

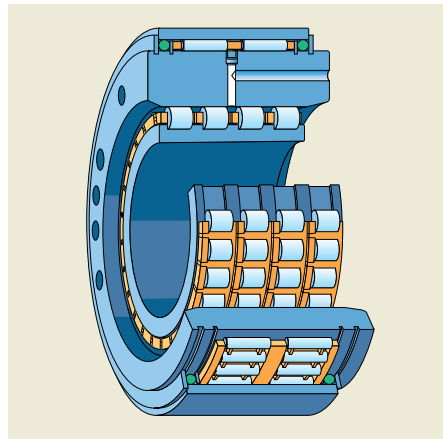


Fig 18 Inner ring

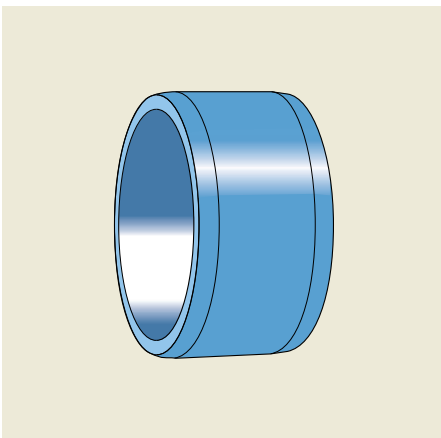
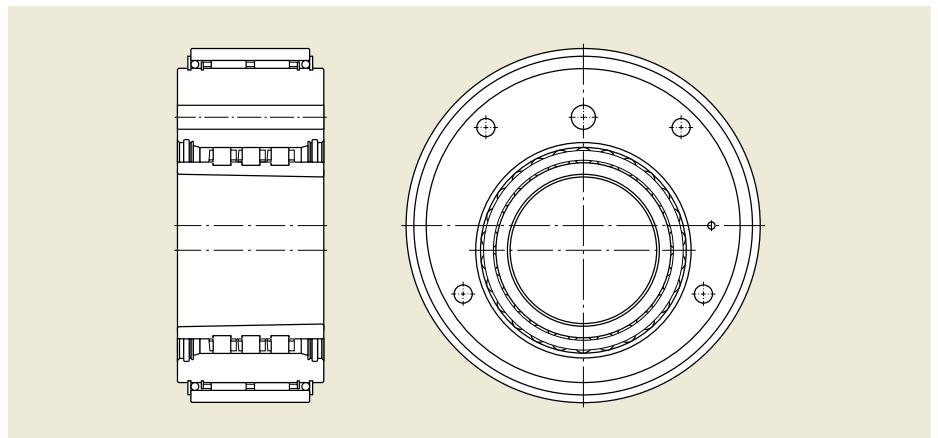


Fig 20 Some printing cylinder bearing units have one or two eccentric intermediate rings, each supported by a double row needle roller and cage assembly



Spherical roller bearings

These are double row bearings, which are self-aligning and consequently insensitive to errors of alignment of the shaft relative to the housing and to shaft bending (→ **fig 21**). In addition to radial loads, the bearings can also accommodate axial loads acting in both directions.

Spherical roller bearings with normal tolerances are used in the power transmission of printing presses or to support wide rollers with high deflection.

SKF offers high precision, preloaded spherical roller bearings for printing cylinder applications. These bearings are identified by the designation suffixes VA751, VA759 and VAB.

Besides this special range there is another earlier range of special bearings for printing cylinders identified by six-figure drawing numbers (e.g. 453538). They are still used in several markets.

SKF Explorer - New performance class for spherical roller bearings

Developments in material and heat treatment, manufacturing process and bearing design have resulted in a new spherical roller bearing, known as Explorer. The new Explorer spherical roller bearings outlast all other spherical roller bearings, including the previous SKF bearings. To pass on the benefits of the several times longer life to users, the calculation methods for life prediction have been modified. For more information about the Explorer spherical roller bearings, see SKF Publication 4401/1.

Taper roller bearings

These are single row bearings for heavy radial and simultaneously acting heavy single direction axial loads (→ **fig 22**).

Two bearings on the shaft are adjusted against each other in order to give clearance or preload, depending on the requirements of the application.

SKF offers a special tailored range of high precision taper roller bearings for printing cylinders or transfer cylinders in sheet fed presses (→ **fig 23**). These special bearings are based on double row taper roller bearings with the roller rows arranged back-to-back. The bearings are preloaded in operation and the running accuracy is to tolerance class P4.

Fig 21 Spherical roller bearing

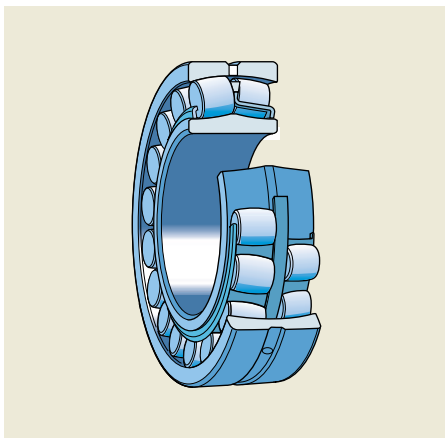


Fig 22 Taper roller bearing

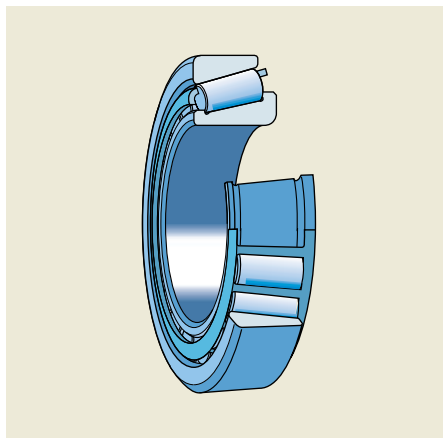
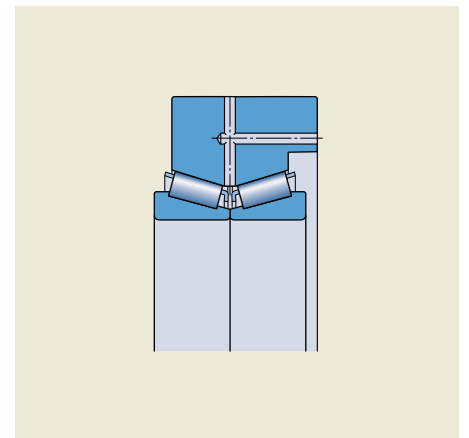


Fig 23 Special taper roller bearing



Track runner bearings

Track runner bearings having a particularly thick-walled outer ring, can accommodate heavy as well as shock loads. They are ready-to-mount units, for all types of printing presses and paper handling systems, and are widely used in the postpress section for folders, cutters, gathering machines, book manufacturing lines and other applications.

Commonly used types are

- cam rollers wide design (→ **fig 24**),
- support rollers (→ **fig 25**),
- cam followers (→ **fig 26**).

Fig 24 Cam roller, wide design

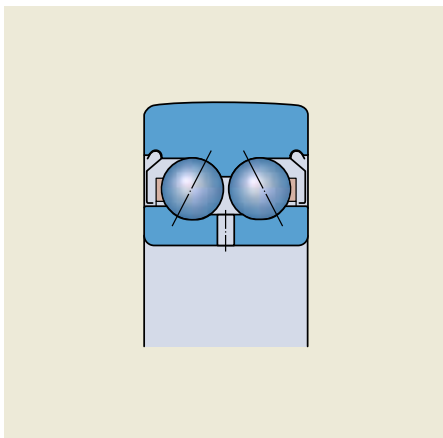


Fig 25 Support roller

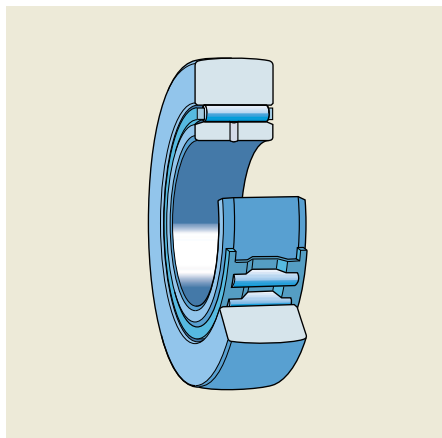
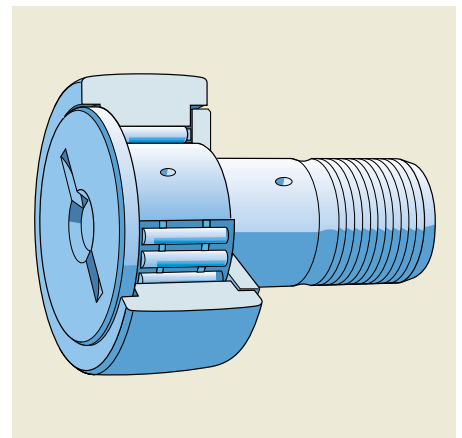


Fig 26 Cam follower



Recommended product range matrices and tables

The bearings included in this recommended product range are presented in the same bearing type order as in the SKF General catalogue or SKF Interactive Engineering Catalogue. They are shown in Dimension Series order (light section series to the left, heavy to the right).

Bearing designations

The matrix headings show bearing designations without the size figures. A darker coloured square indicates the position for the size figures which are shown to the right of the matrices.

Designation suffixes

The following designation suffixes will be found in the matrices.

A	Deviating or modified internal design with same boundary dimensions. As a rule the significance of the letter is bound to the particular bearing or bearing series	B	Deviating or modified internal design with same boundary dimensions.	CAC	Spherical roller bearing of CA design but with enhanced roller guidance and correspondingly reduced friction
ACD	Single row angular contact ball bearing, optimised internal design, 25° contact angle	BE	Single row angular contact ball bearing with 40° contact angle and optimised internal design	CB	Single row angular contact ball bearing for universal pairing in back-to-back, face-to-face or tandem arrangement. When arranged back-to-back or face-to-face there will be an axial clearance greater than CA
ADA	Wide snap ring grooves in the outer ring; two-part inner ring held together by a retaining ring	BEP	Single row angular contact ball bearing with 40° contact angle and optimised internal design, with moulded cage of glass fibre reinforced polyamide 6,6	CC	Spherical roller bearing of C design but with enhanced roller guidance and correspondingly reduced friction
AS	Needle roller bearing with lubrication hole(s) in outer ring. A figure following the AS indicates the number of holes	Bxx(x)	B combined with a two or three-figure number identifies variants of the standard design which cannot be identified by generally applicable suffixes	CD	Single row angular contact ball bearing, optimised internal design, 15° contact angle
Axx(x)	A combined with a two or three-figure number identifies variants of the standard design which cannot be identified by generally applicable suffixes	C	Deviating or modified internal design with same boundary dimensions. As a rule the significance of the letter is bound to the particular bearing	CL7A	Previous standard taper roller bearing quality for pinion bearing arrangements
		CA	1. Spherical roller bearing of C design, but with retaining flanges on inner ring and machined cage 2. Single row angular contact ball bearing for universal pairing in back-to-back, face-to-face or tandem arrangement. When arranged back-to-back or face-to-face there will be a slight axial clearance	CL7C	Current standard taper roller bearing quality for pinion bearing arrangements
		CAB	Spherical roller bearing of CA design but with pierced rollers and pin-type cage	C3	Bearing internal clearance greater than Normal
		CABC	Spherical roller bearing of CAB design but with enhanced roller guidance and correspondingly reduced friction		

DB	Two single row deep groove ball bearings, single row angular contact ball bearings or single row taper roller bearings matched for mounting in a back-to-back arrangement; the letter(s) following the DB indicate the magnitude of the axial internal clearance or preload in the bearing before mounting; for paired taper roller bearings the design and arrangement of the intermediate rings between the inner and/or outer rings are identified by a two-figure number which follows immediately after DB A Light preload (angular contact ball bearings) B Preload greater than A (angular contact ball bearings) GA Light preload (deep groove ball bearings) GB Preload greater than GA	GA	Single row angular contact ball bearing for universal pairing in a back-to-back or face-to-face arrangement; when mounted the bearing pair will have a slight preload	2RS	RS seal at both sides of bearing (needle roller bearing)
		GB	Single row angular contact ball bearing for universal pairing in a back-to-back or face-to-face arrangement; when mounted the bearing pair will have a preload greater than GA	2RS1	RS1 seal at both sides of bearing
		J	Pressed steel cage, unhardened; different designs or materials are identified by a figure, e.g. J2	2RZ	RZ seal at both sides of bearing
		K	Tapered bore, taper 1:12 on diameter	SP	Special tolerance class for machine tool spindle bearings; dimensional accuracy approximately to ISO tolerance class 5 and running accuracy approximately to ISO tolerance class 4
		K30	Tapered bore, taper 1:30 on diameter	TN	Moulded cage of plastic; different designs or materials are identified by a figure following the TN Example: TN9 Moulded cage of glass fibre reinforced polyamide 6,6
DG	Two single row angular contact ball bearings for universal pairing, i.e. paired for mounting in a back-to-back, face-to-face or tandem arrangement; supplementary designations for axial internal clearance and preload are explained under DB	2LS	Rubbing seals of nitrile rubber (NBR) at both sides of bearing	VAB	High precision and preloaded spherical roller bearings
		M	Machined brass cage; different designs or materials are identified by a figure, e.g. M2	VA751	High precision and preloaded spherical roller bearings
		MA	Machined brass cage, outer ring centred	VA759	High precision and preloaded spherical roller bearings
E	Deviating or modified internal design with same boundary dimensions; as a rule the significance of the letter is bound to the particular bearing or bearing series; usually indicates reinforced rolling element complement	P	Moulded glass fibre reinforced polyamide 6,6 cage	W33	Annular groove and three lubrication holes in outer ring
		P4A	Dimensional accuracy to ISO tolerance class 4 and running accuracy to ABMA tolerance class ABEC 9		
EC	Single row cylindrical roller bearing with optimised internal design	Q	Optimised internal geometry and surface finish of taper roller bearings		
Exx(x)	E combined with a two or three-figure number identifies variants of the standard design which cannot be identified by generally applicable suffixes	RS	Rubbing seal of nitrile rubber at one side of bearing (needle roller bearings)		
		RS1	Rubbing seal of nitrile rubber with sheet steel reinforcement at one side of bearing		
		RZ	Low-friction rubbing seal of nitrile rubber with sheet steel reinforcement at one side of bearing		

Deep groove ball bearings

See SKF General catalogue 4000 or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter, mm	Series															Bearing size												
	618	618 -2RZ	618 -2RS1	619	619 -2RZ	619 -2RS1	160	60	60 -2Z	60 -2Z/C3	60 -2RS1	60 -2RS1/C3	161	62	62 -2Z		62 -2Z/C3	62 -2RZ	62 -2RS1	62 -2RS1/C3	63	63 -2Z	63 -2Z/C3	63 -2RS1	63 -2RS1/C3	42 ATN9		
3																											3	
4																												4
5																												5
6																												6 ^{*)}
7																												7
8																												8 ^{*)}
9																												9
10																												00
12																												01
15																												02
17																												03
20																												04
25																												05
30																												06
35																												07
40																												08
45																												09
50																												10
55																												11
60																												12
65																												13
70																												14
75																												15
80																												16
85																												17
90																												18
95																												19
100																												20
105																												21
110																												22
120																												24
130																												26
140																												28
150																												30
160																												32
170																												34
180																												36
190																												38
200																												40
220																												44
240																												48
260																												52
280																												56
300																												60

^{*)} /6 and /8 for series 618

Self-aligning ball bearings

See SKF General catalogue 4000 or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter, mm	Bearing size										
	12 ETN9	12 EKTN9	13 ETN9	22 ETN9	22 EKTN9	22 E-2RS1TN9	22 E-2RS1KTN9	22 E-2RS1KTN9/C3	23 ETN9	23 E-2RS1TN9	
10											00
12											01
15											02
17											03
20											04
25											05
30											06
35											07
40											08
45											09
50											10
55											11
60											12
65											13
70											14
75											15
80											16
85											17
90											18
95											19
100											20
105											21
110											22
120											24
130											26
140											28
150											30
160											32
170											34
180											36
190											38
200											40

Single row angular contact ball bearings

See SKF General catalogue 4000 or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter, mm											Bearing size						
	72	BEP	72	BECBP	72	BEGAP	72	BEGBP	73	BEP		73	BECBP	73	BEGAP	73	BEGBP
10																	00
12																	01
15																	02
17																	03
20																	04
25																	05
30																	06
35																	07
40																	08
45																	09
50																	10
55																	11
60																	12
65																	13
70																	14
75																	15
80																	16
85																	17
90																	18
95																	19
100																	20
105																	21
110																	22
120																	24
130																	26
140																	28
150																	30
160																	32
170																	34
180																	36
190																	38
200																	40

Double row angular contact ball bearings

See SKF General catalogue 4000 or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter, mm											Bearing size								
	32	A	32	ATN9	32	ATN9/305563A	32	A-ZZ	32	A-2RS1		33	A	33	ATN9	33	A-ZZ	33	A-2RS1
10																			00
12																			01
15																			02
17																			03
20																			04
25																			05
30																			06
35																			07
40																			08
45																			09
50																			10
55																			11
60																			12
65																			13
70																			14
75																			15
80																			16
85																			17
90																			18
95																			19
100																			20
105																			21
110																			22
120																			24
130																			26
140																			28
150																			30
160																			32
170																			34
180																			36
190																			38
200																			40

Four-point contact ball bearings

See SKF General catalogue 4000 or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter, mm											Bearing size
	QJ 2 MA	QJ 3 MA									
10											00
12											01
15											02
17											03
20											04
25											05
30											06
35											07
40											08
45											09
50											10
55											11
60											12
65											13
70											14
75											15
80											16
85											17
90											18
95											19
100											20
105											21
110											22
120											24
130											26
140											28
150											30
160											32
170											34
180											36
190											38
200											40

High precision angular contact ball bearings

See SKF catalogue 4950 "High precision bearings" for more detailed specifications

Bearing bore diameter, mm											Bearing size			
	719 ACDGA/P4A	719 ACD/P4ADBA	70 CDGA/P4A	70 CD/P4ADGA	70 CD/P4ADGB	70 CD/P4ADBA	70 ACDGA/P4A	70 ACD/P4ADGA	70 ACD/P4ADGB	72 CD/P4ADGA		72 CD/P4ADGB	72 ACDGA/P4A	72 ACD/P4ADBA
10														00
12														01
15														02
17														03
20														04
25														05
30														06
35														07
40														08
45														09
50														10
55														11
60														12
65														13
70														14
75														15
80														16
85														17
90														18
95														19
100														20
105														21
110														22
120														24
130														26
140														28
150														30
160														32
170														34
180														36
190														38
200														40
220														44
240														48
260														52
280														56
300														60
320														64
400														80

Cylindrical roller bearings

See SKF General catalogue 4000 or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter, mm	Bearing type						Bearing size
	NU 10	NU 2 ECP	NU 22 ECP	NU 3 ECP	NU 23 ECP	NNF 50 ADA-2LSV	
15							02
17							03
20							04
25							05
30							06
35							07
40							08
45							09
50							10
55							11
60							12
65							13
70							14
75							15
80							16
85							17
90							18
95							19
100							20
105							21
110							22
120							24
130							26
140							28
150							30
160							32
170							34
180							36
190							38
200							40
220							44

High precision cylindrical roller bearings

See SKF catalogue 4950 "High precision bearings" or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter	Bearing type						Bearing size
	NNU 49 B/W33	NNU 49 BK/W33	NN 30 TN/W33	NN 30 KTN/W33	NN 30 K/W33		
10							00
12							01
15							02
17							03
20							04
25							05
30							06
35							07
40							08
45							09
50							10
55							11
60							12
65							13
70							14
75							15
80							16
85							17
90							18
95							19
100							20
105							21
110							22
120							24
130							26
140							28
150							30
160							32
170							34
180							36
190							38
200							40
220							44
240							48
260							52
280							56
300							60
320							64
400							80

Cylindrical roller bearings for oscillating rollers

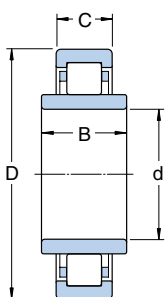
For more detailed specifications please contact the nearest SKF application engineering service

Bearing bore diameter, mm	Designation			
	BC1-0190	BC1-0043	BC1-0318	
15				
17				
20				
25				
30				
35				
40				
45	■			
50				
55		■	■	
60				
65				
70				
75				
80				
85				
90				
95				
100				
105				
110				
120				
130				
140				
150				
160				
170				
180				
190				
200				
220				

Cylindrical roller bearings for oscillating rollers

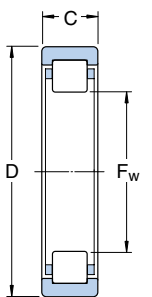
For more detailed specifications please contact the nearest SKF application engineering service

Bearing size	Designation		
	RNU 10 ECP	RNU 2 ECP	RNU 22 ECP
02			
03			
04			
05			
06			
07	■	■	
08	■	■	
09	■		
10			■
11		■	
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
24			
26			
28			
30			
32			
34			
36			
38			
40			
44			

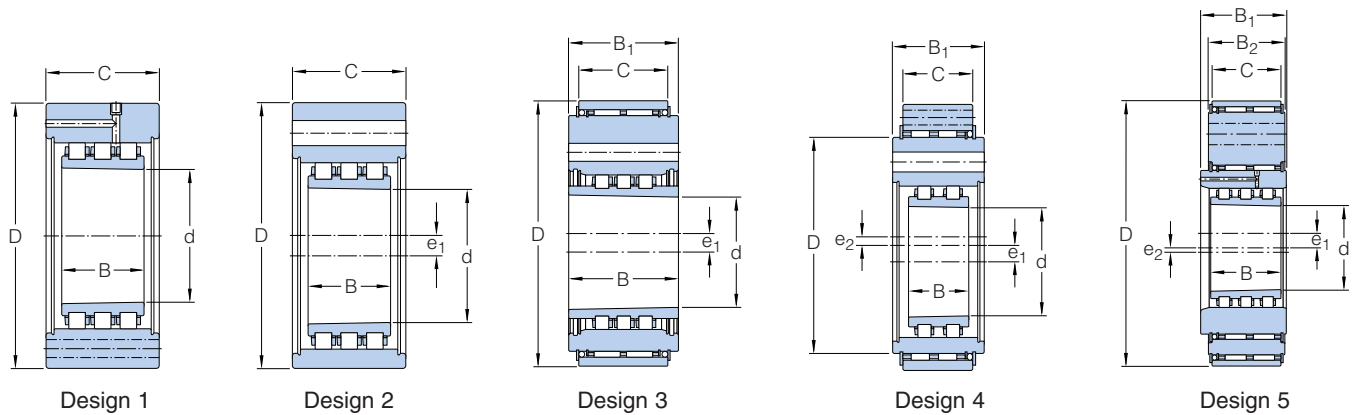


Designation	Principal dimensions			
	d	D	C	B
—	mm			
BC1-0190	45	75	16	50
BC1-0043	55	100	21	45
BC1-0318	55	100	21	59

Designation	Principal dimensions		
	F _w	D	C
—	mm		
RNU 206 ECP	37,5	62	16
RNU 1007 ECP	42	62	14
RNU 207 ECP	44	72	17
RNU 208 ECP	49,5	80	18
RNU 1009 ECP	52,5	75	16
RNU 2210 ECP	59,5	90	23
RNU 211 ECP	66	100	21



Printing cylinder bearing units (PCU)



See SKF brochure Dd 7977 "The new printing performance standard" for more detailed information

Dimensions						Designation	Design
d	D	B	B ₁ /B ₂	C	e ₁ /e ₂		
mm						–	–
Designs 1 and 2							
50	105	23		40	–/–	BC2-7139	1
65	125	53		65,1	–/–	BC4B 326624	1
	130	40		55	–/–	BC3-0004 A	1
	130	40		55	10/–	BC3-0005 A	2
95	185	65		95	–/–	BC3-7014	1
	185	65		95	12,7/–	BC3-7013	2
105	200	60		80	–/–	BC3-0001 B	1
120	273,05	46		80	4,76/–	BC2-7171	1
170	235	78		88	–/–	BC4-7046	1
Designs 3, 4 and 5							
50	120	23	50/–	43	6/–	BVT-7013	3
65	142	53	65,1/–	52	3,5/–	BVTB 326625 C	3
	142	53	65,1/–	52	3,5/–	BVTB 326625 CC	3
	142	53	65,1/–	52	3,5/–	BVTB 326625 CD	3
	150	40	55/–	48	10/–	BCT-0003 A	3
	150	53	65,1/–	52	7/–	BVTB 326627 AA	3
	160	36	56/–	52	16/–	BVT-7026	3
	180	40	88,5/–	60,5	12/7	BVT-7030 A	3
	205	53	65,1/59,5	52	7/14	BVNB 326628 A	5
	205	53	65,1/59,5	52	3,5/14	BVNB 326626 C	5
75	180	48	60/–	52	12,7/–	BCT-0004 A	3
	205	48	60/–	52	24/–	BCT-0005 A	3
95	205	65	95/–	58	12,7/–	BVT-7029 A	3
105	240	60	80/–	68	12,7/0,5	BCT-7002 D	4
120	273,05	46	80/–	68	12,7/–	BVT-7044	3
170	310	78	88/–	66	12/–	BCT-7001	3

Drawn cup needle roller bearings

See SKF catalogue 4703 "Needle roller bearings" or SKF Interactive Engineering Catalogue for more detailed specifications

Inner diameter (F _w), mm	HK F _w C															
	08	09	10	12	15	16	20	22	26	30	38	14.2RS	16.2RS	20.2RS	30.2RS	20.2RS/AS1
03																
04																
05																
06																
07																
08																
09																
10																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
24																
25																
26																
28																
29																
30																
32																
35																
37																
38																
40																
42																
43																
45																
47																
48																
50																
52																
55																
58																
60																
63																
65																
68																

Needle roller bearings without inner ring

See SKF catalogue 4703 "Needle roller bearings" or SKF Interactive Engineering Catalogue for more detailed specifications

Inner diameter (F _w), mm	NK F _w /C										NKS
	/10	/12	/16	/20	/25	/30	/35				
03											
04											
05											
06											
07											
08											
09											
10											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
24											
25											
26											
28											
29											
30											
32											
35											
37											
38											
40											
42											
43											
45											
47											
48											
50											
52											
55											
58											
60											
63											
65											
68											

See next page for larger sizes

Needle roller bearings with inner ring

See SKF catalogue 4703 "Needle roller bearings" or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter, mm	NKI d/B						
	NKI /16	NKI /20	NKI /25	NKI /26	NKI /30	NKI /35	NKIS
10							
12							
15							
17							
20							
25							
28							
30							
32							
35							
40							
45							
50							
55							
60							
65							
70							
75							
80							
85							
90							
95							
100							
105							
110							
120							

Bearing bore diameter, mm	NA 49			Bearing size
	NA 49	NA 49 .2RS	NA 69	
10				00
12				01
15				02
17				03
20				04
25				05
28				/28
30				06
32				/32
35				07
40				08
45				09
50				10
55				11
60				12
65				13
70				14
75				15
80				16
85				17
90				18
95				19
100				20
105				21
110				22
120				24

Inner rings


See SKF catalogue 4703 "Needle roller bearings" or SKF Interactive Engineering Catalogue for more detailed specifications

Ring bore diameter mm	IR d×F×B																
	IR ×70×25	IR ×70×60	IR ×72×25	IR ×72×45	IR ×75×28	IR ×80×25	IR ×80×30	IR ×80×35	IR ×90×25	IR ×90×30	IR ×90×54	IR ×100×35	IR ×100×30	IR ×105×26	IR ×110×40	IR ×120×30	IR ×135×45
8																	
12																	
14																	
15																	
17																	
20																	
25																	
30																	
32																	
35																	
40																	
45																	
50																	
55																	
60																	
65																	
70																	
80																	
85																	
90																	
95																	
100																	
110																	
120																	

Spherical roller bearings

See SKF General catalogue 4000 or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter, mm																			Bearing size									
	239	230	230	240	231	231	231	241	222	222	222	222	222	222	222	232	232	213		213	213	223	223	223				
	CC/W33	CC/W33	CC/C3W33	CC/W33	CC/W33	CCK/W33	CCK/C3W33	CC/W33	CC/W33	CC/W33	CC/C3W33	CC/C3W33	CCK/W33	CCK/C3W33	E	EK	EK/C3	CC/W33	CCK/W33	CC	E	EK	E	EK	EK/C3			
20																											04	
25																												05
30																												06
35																												07
40																												08
45																												09
50																												10
55																												11
60																												12
65																												13
70																												14
75																												15
80																												16
85																												17
90																												18
95																												19
100																												20
105																												21
110																												22
120																												24
130																												26
140																												28
150																												30
160																												32
170																												34
180																												36
190																												38
200																												40
220																												44
240																												48

 Explorer bearings, see page 10 for more information

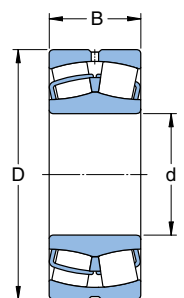
High precision and preloaded spherical roller bearings

See SKF General catalogue 4000, SKF Interactive Engineering Catalogue or contact the nearest SKF application engineering service for more detailed specifications

Bearing bore diameter, mm											Bearing size	
	231	CCK/VA759					223	EK/VA759				
10												00
12												01
15												02
17												03
20												04
25												05
30												06
35												07
40												08
45												09
50												10
55												11
60												12
65												13
70												14
75												15
80												16
85												17
90												18
95												19
100												20
105												21
110												22
120												24
130												26
140												28
150												30
160												32
170												34

Bearing bore diameter, mm											Bearing size		
	450918 C	453538	467964	467304	466915 C/W33	458681	467418 C	466144 C/W33	468603 C	468043 CA/W33		454548	466077 CAM2/W33
10													
12													
15													
17													
20													
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													
80													
85													
90													
95													
100													
105													
110													
120													
130													
140													
150													
160													
170													

Designation	Principal dimensions		
	d	D	B
—	mm		
450918 C	45	100	36
453538	50	90	23
467964	50	110	40
467304	70	150	51
466915 C/W33	75	160	55
458681	85	150	36
467418 C	90	160	40
466144 C/W33	110	180	56
468603 C	110	200	53
468043 CA/W33	110	200	69,8
454548	130	210	64
466077 CAM2/W33	140	240	80
466817 C/W33	140	250	88



Taper roller bearings

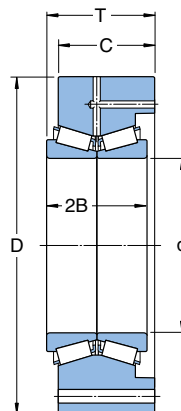
See SKF General catalogue 4000 or SKF Interactive Engineering Catalogue for more detailed specifications

Bearing bore diameter, mm	Bearing size													
	320 X	320 X/Q	320 X/QCL7C	320 J2/Q	330	330 Q	331 Q	302 J2	332 Q	303 J2/Q	313 J2	313 J2/Q	313 J2/QCL7A	313 J2/QCL7C
15														02
17														03
20														04
25														05
30														06
35														07
40														08
45														09
50														10
55														11
60														12
65														13
70														14
75														15
80														16
85														17
90														18
95														19
100														20
105														21
110														22
120														24
130														26
140														28
150														30
160														32
170														34
180														36
190														38

High precision taper roller bearings

For more detailed specifications please contact the nearest SKF application engineering service

Bearing bore diameter, mm	Bearing size					
	BT2-0050	BT2-0075	BT2B 328957	BT2-0032	BT2-0033	
15						
17						
20						
25						
30						
35						
40						
45						
50						
55						
60						
65						
70						
75						
80						
85						
90						
95						
100						
105						
110						
120						
130						
140						
150						
155						
160						
170						
180						



Designation	Principal dimensions				
	d	D	T	C	2B
–	mm				
BT2-0050	55	140	50	50	50
BT2-0075	80	175	61	57	59
BT2B 328957	155	200	66	54	66
BT2-0033	180	250	105	83	105
BT2-0032	180	250	205	83	205

Cam rollers

See SKF General catalogue 4000 or SKF Interactive Engineering Catalogue for more detailed specifications

Runner diameter, mm	3057 C-2Z 3058 C-2Z	Bearing size
32		00
35		01
40		02
47		03
52		04
62		05
72		06
80		07

Support rollers with axial guidance

See SKF catalogue 4703 "Needle roller bearings" or SKF Interactive Engineering Catalogue for more detailed specifications

Runner diameter, mm	Bearing bore diameter, mm	NATR	NATR X	NATR PP	NATR PPX	NATV PP	NATV PPX	NUTR A	NUTR X
16	5								
19	6								
24	8								
30	10								
32	12								
35	15								
40	17								
47	20								
52	25								
62	30								
72	35								
80	40								
85	45								
90	50								
100	45								
110	50								

Support rollers without axial guidance

See SKF catalogue 4703 "Needle roller bearings" or SKF Interactive Engineering Catalogue for more detailed specifications

Runner diameter, mm	Bearing bore diameter, mm	NA 22	.2RS	Bearing size
16	5			
19	6			
24	8			
30	10			
32	12			
35	15			02
40	17			03
47	20			04
52	25			05
62	30			06
72	35			07
80	40			
85	45			
90	50			
100	45			
110	50			

Cam followers

See SKF catalogue 4703 "Needle roller bearings" or SKF Interactive Engineering Catalogue for more detailed specifications

Runner diameter mm	KR	KR PP	KR PPB	KRE PP	KRV PP	NUKR A	NUKRE A
16							
19							
22							
26							
30							
32							
35							
40							
47							
52							
62							
72							
80							
85							
90							
100							

Other products

Besides the products included in this Recommended Product Range, SKF also offers a comprehensive assortment of plain bearings, seals, linear motion products as well as tools, measuring equipment and lubricants. For advanced printing cylinder applications SKF can also offer a tailored range of precision spindles. Detailed information on these products will be found in special publications which will be supplied on request.





Plain bearings

Spherical plain bearings and rod ends in various designs and with various combinations of sliding contact surfaces. Dry sliding bushings of various composite materials.

See SKF Interactive Engineering Catalogue.



Seals

In a variety of designs and executions for applications in all sectors of industry

- radial shaft seals
- mechanical seals
- V-ring seals
- axial clamp seals
- sealing and spacing washers

See SKF catalogue 4006 “CR seals” or SKF Interactive Engineering Catalogue.



Linear ball bearings

A full range of bearings as well as appropriate accessories such as housings, shafts and shaft supports.

For more details please contact your local SKF Linear Motion representative.



Precision rail guides

With ball, cylindrical roller or needle roller and cage assemblies for limited and unlimited travel.

For more details please contact your local SKF Linear Motion representative.



Ball and roller screws

In a variety of designs for positioning movements where there are high or very high demands on accuracy.

For more details please contact your local SKF Linear Motion representative.



Gauges and monitoring equipment
 For tapered shafts, accurate mounting of high precision bearings and for monitoring of machines.

See SKF catalogue MP 201
 "Maintenance Tools and Lubricants"



Mounting and dismounting equipment

Large range of tools for mounting and dismounting mechanically, by the SKF oil injection method and by heating.

See SKF catalogue MP 201
 "Maintenance Tools and Lubricants"



Greases

Specialist bearing greases in a wide range of package sizes.

See SKF catalogue MP 201
 "Maintenance Tools and Lubricants"



Precision spindles

SKF manufactures a wide range of spindles that are fully engineered to meet the needs of many precision applications. Quick availability and rugged performance allow the designer to select the right spindle for the respective application.

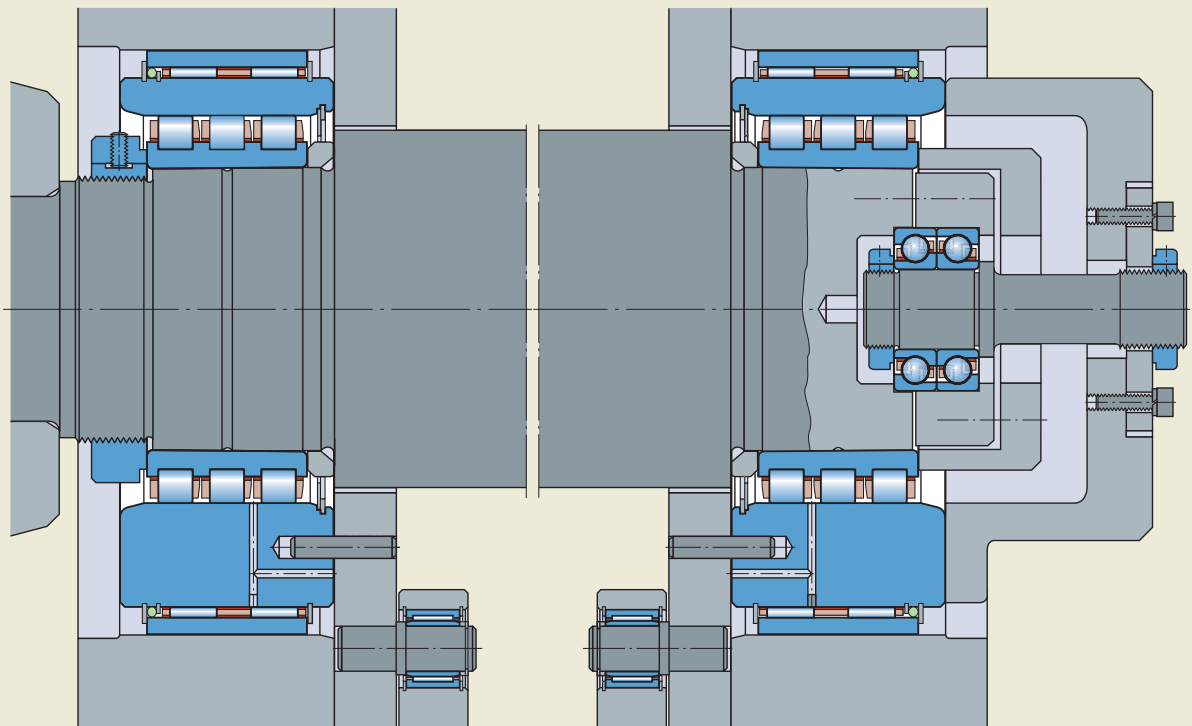
SKF spindles come in a wide range of designs, either belt-driven or motorised, and available as cartridge or rectangular units. SKF can also provide special spindles tailored to specific customer requirements.

For more details please contact your local SKF representative.



Application examples

Fig 1 Arrangement with printing cylinder bearing units (PCU), high precision lock nuts, matched single row angular contact ball bearings and needle roller bearings



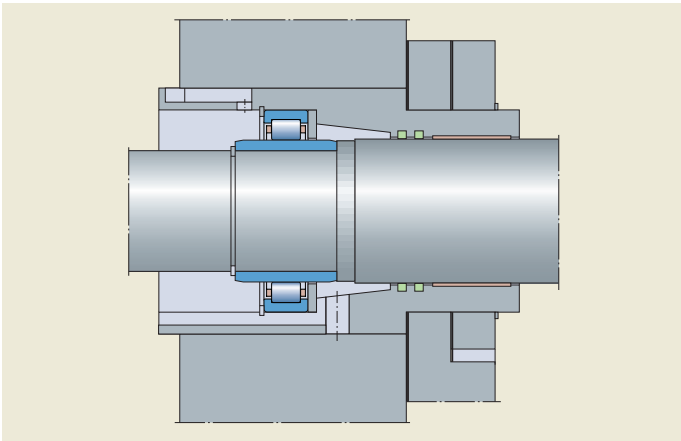


Fig 2 Oscillating roller
 Oscillating roller of inking system fitted with a cylindrical roller bearing with extended inner ring

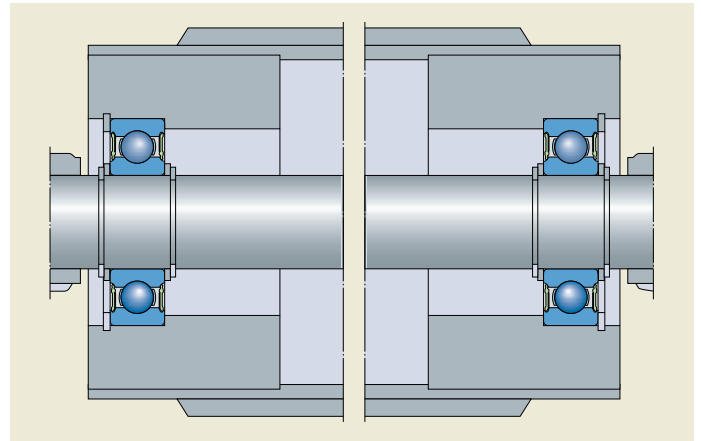


Fig 3 Inking roller
 Bearing arrangement of an inking roller using deep groove ball bearings with seals on both sides

Fig 4 Transfer cylinder
 Taper roller bearing locating arrangement of a transfer cylinder in a sheet fed press

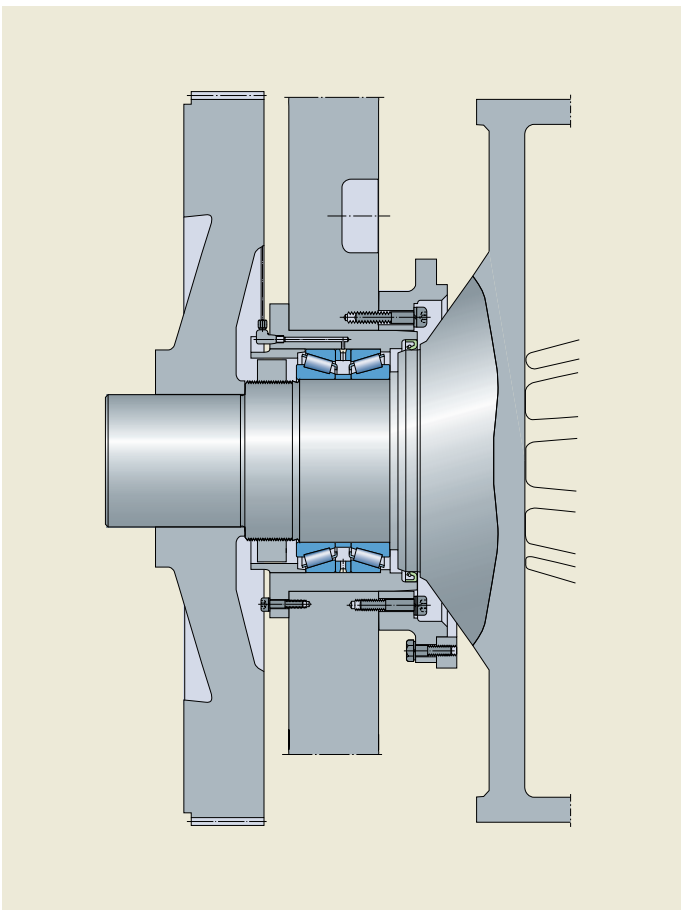
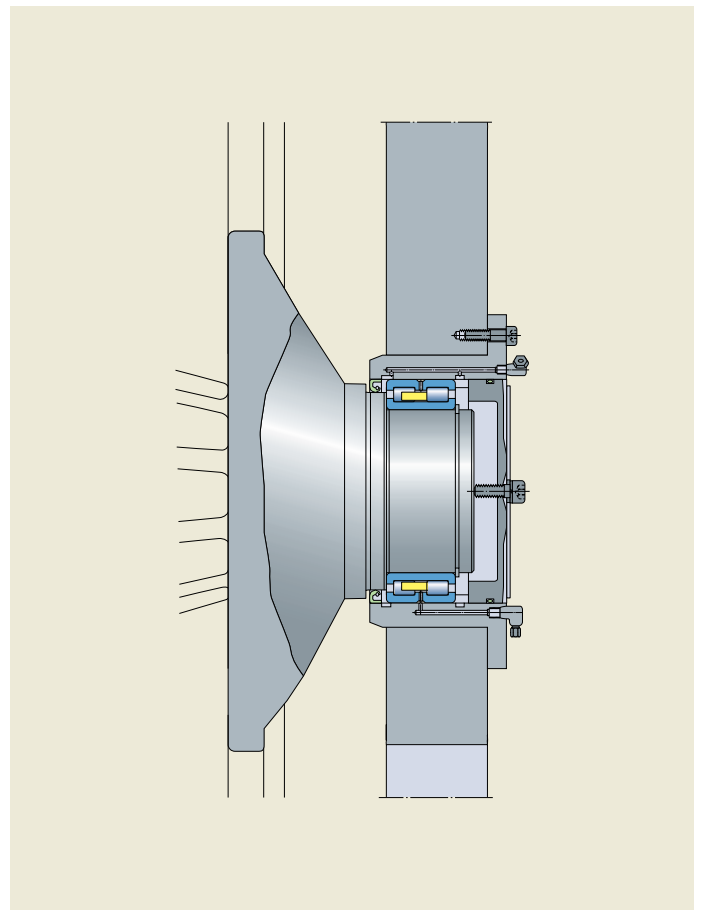


Fig 5 Transfer cylinder
 Cylindrical roller bearing non locating arrangement of a transfer cylinder in a sheet fed press



The SKF Group – a worldwide corporation

SKF is an international industrial Group operating in some 130 countries and is world leader in bearings.

The company was founded in 1907 following the invention of the self-aligning ball bearing by Sven Wingquist and, after only a few years, SKF began to expand all over the world.

Today, SKF has some 40 000 employees and around 80 manufacturing facilities spread throughout the world. An international sales network includes a large number of sales companies and some 7 000 distributors and retailers. Worldwide availability of SKF products is supported by a comprehensive technical advisory service.

The key to success has been a consistent emphasis on maintaining the highest quality of its products and services. Continuous investment in research and

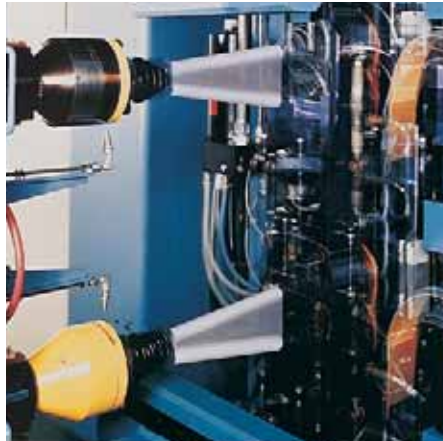
development has also played a vital role, resulting in many examples of epoch-making innovations.

The business of the Group consists of bearings, seals, special steel and a comprehensive range of other high-tech industrial components. The experience gained in these various fields provides SKF with the essential knowledge and expertise required in order to provide the customers with the most advanced engineering products and efficient service.





The SKF Group is the first major bearing manufacturer to have been granted approval according to ISO 14001, the international standard for environmental management systems. The certificate is the most comprehensive of its kind and covers more than 60 SKF production units in 17 countries.



The SKF Engineering & Research Centre is situated just outside Utrecht in The Netherlands. In an area of 17 000 square metres (185 000 sq.ft) some 150 scientists, engineers and support staff are engaged in the further improvement of bearing performance. They are developing technologies aimed at achieving better materials, better designs, better lubricants and better seals – together leading to an even better understanding of the operation of a bearing in its application. This is also where the SKF Life Theory was evolved, enabling the design of bearings which are even more compact and offer even longer operational life.



SKF has developed the Channel concept in factories all over the world. This drastically reduces the lead time from raw material to end product as well as work in progress and finished goods in stock. The concept enables faster and smoother information flow, eliminates bottlenecks and bypasses unnecessary steps in production. The Channel team members have the knowledge and commitment needed to share the responsibility for fulfilling objectives in areas such as quality, delivery time, production flow etc.



SKF manufactures ball bearings, roller bearings and plain bearings. The smallest are just a few millimetres (a fraction of an inch) in diameter, the largest several metres. SKF also manufactures bearing and oil seals which prevent dirt from entering and lubricant from leaking out. SKF's subsidiaries CR and RFT S.p.A. are among the world's largest producers of seals.



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