

Safety couplings

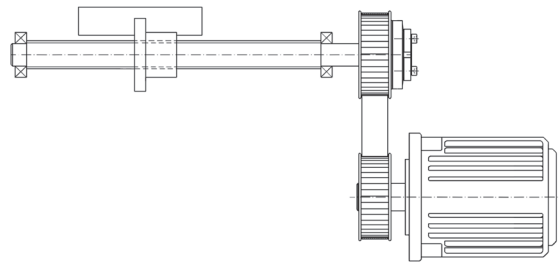


Safety Couplings I Modular System

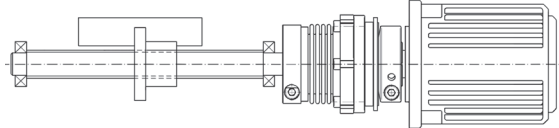
The safety coupling modular system consists of three standard series, as well as several special solutions for nearly every conceivable application. Various attachments can be fit to the safety mechanism, depending on the application.

For indirect drives, pulley, gear, or flange connection is available. For direct drives, the safety mechanism is connected to a metal bellows or elastomer coupling. The most important criteria for selection are the required disengagement torque, torsional stiffness, shaft diameters, assembly conditions, and shaft misalignment.

indirect drives



direct drives

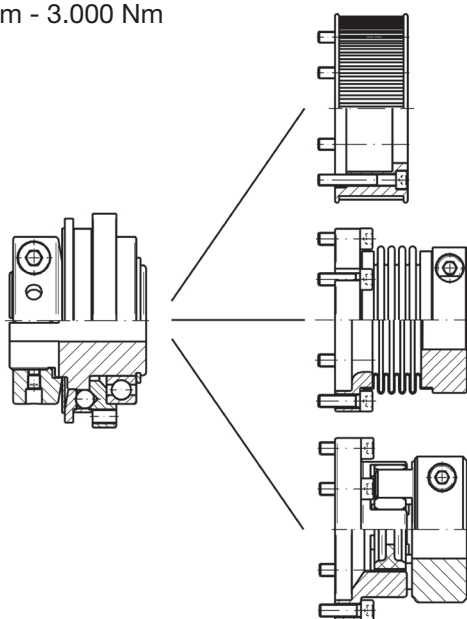


Overview:

safety mechanism

2 Nm - 3.000 Nm

attachments



- /// pulleys
- /// gears
- /// flanges

- /// metal bellows
 - torsionally stiff
 - all-steel-version
 - high operating temperatures
 - variable length

- /// elastomer spider
 - oscillation dampening
 - plug-in, electrically insulating
 - $T_{max} \leq 120^{\circ}C$

series

SK

SKB-K
SKY-K

SKB-E
SKY-E

Note:

- /// To reduce wear on the safety coupling mechanism the drive should be stopped as soon as possible after disengagement. The signal of the limit switch can be used for this purpose (emergency-OFF signal)
- /// In vertical drive axes, the slide or the table can drop upon disengagement of the safety coupling due to its own weight and the low residual torque of the safety coupling. To counter this effect, it is suggested that either a compensating weight or an additional brake be provided.
- /// During the coupling selection, the linear measuring system (positioning) must also be considered. When fitting an encoder to the drive motor, a torsionally stiff coupling should be used to get the best results.
- /// For high speed applications, please select types SKY or SKY-ES because of their rotational symmetry. Nominal speed up to $4,000 \text{ min}^{-1}$ are possible on request.
- /// The safety coupling is maintenance free under normal operating conditions.
- /// For mounting instructions and explanations about the shaft - hub - connection, please see pages 1-4.

Safety Couplings I Technical Information

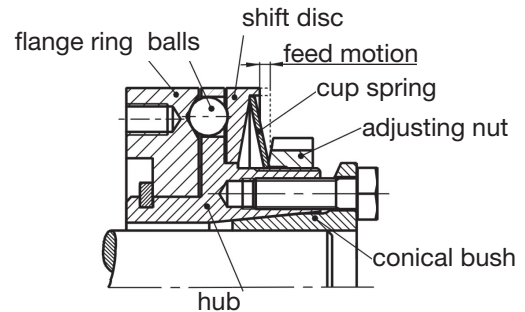
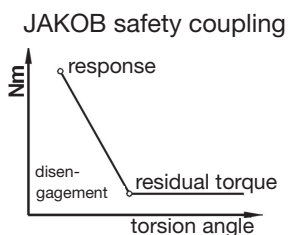
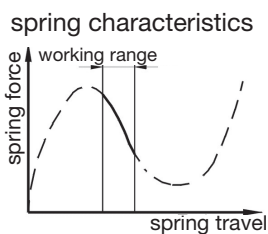
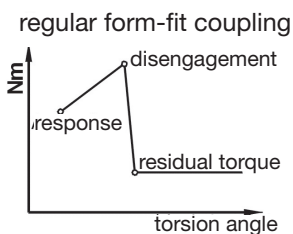
JAKOB safety couplings are designed as nominal break points or as overload protection in a direct or indirect drive train. The heart of the safety coupling is a highly precise, sturdy disengagement mechanism with steel balls as spring loaded positive locking elements. The drive torque is guided into the centrally arranged hub via a frictional, backlash-free radial clamping hub or conical bush connection. The hub is designed as a ball cage and serves for fitting the flange ring and the shift disk. Special cup springs press the balls over the shift disk into hardened countersunk holes (calotte) of the flange ring. In normal operation, the drive torque is transferred without backlash into the flange ring. For further transfer of the torque and speed, a choice of compensation elements (metal bellows, elastomer spider), a gear or pulley or an appropriate connection flange is fit to the flange ring. If the set disengagement torque is exceeded in the case of crash or collision, the flange ring turns in relation to the cage hub and the balls are abruptly pushed out of the holes. The drive train is cut-off within a few milliseconds.

The backlash-free ball locking mechanism

The **preload** of the hardened and polished steel balls between the ball cage, the hub, and the detents of the flange ring ensures a **backlash-free torque** and angular motion transfer with high torsional stiffness. The mechanism is effective **in reverse direction** as well (for clockwise or counter-clockwise operation).

The degressive spring characteristic

The function of the safety coupling is influenced substantially by the cup springs, developed specifically for this application. Due to its operation in the **degressive range**, the spring force drops with increasing spring travel (shifting path), whereby **the torque drops immediately** on response. With conventional spring loaded torque limiters on the other hand, springs are stressed even further and the spring force as well the disengagement torque increase considerably before the actual disengagement takes place, leading to additional damage. This results in an undefined function between response and disengagement.



The axial stroke of the shift disc can be used with a proximity or mechanical limit switch for the immediate stop (emergency-OFF) of the drive.

Dynamic disengagement characteristics

JAKOB safety couplings are distinguished by their excellent dynamic disengagement characteristics. The reason for this is the **degressive spring characteristic**, as well as the **minimized mass** (ball and indexing plate) which must be accelerated axially during disengagement. The product of mass and acceleration ($F = m \times a$) results in a force which must be added to the spring force. In conventional couplings where large masses have to be moved, the static disengagement torque and the reaction time can increase manifold.

The re-engaging

The balls, the cage bores and holes are distributed asymmetrically on the circumference, so that only one **synchronized location** is possible every 360°. Until then, the balls slip over with a low **residual torque** he repeat accuracy of the configured disengagement torque is $\max \pm 5\%$. After elimination of the breakdown cause, the coupling re-engages at low speeds (below 30 r.p.m) into the **synchronized position** automatically and is ready for function. The relocation time for the reference point location is reduced considerably due to the synchronous reengagement.

The release mechanism

JAKOB offers various solutions for applications with high speeds and long stopping times. The ball-locking mechanism may have to be replaced by a mechanism which will not reengage until the drive is reversed at low speeds.

The labyrinth seal

In the SKB, SKY, SKX-L, and SKW series the locking mechanism is protected against penetration with dirt and washing out of lubricants by a special labyrinth seal.

Safety Couplings I Adjusting the Disengagement Torque

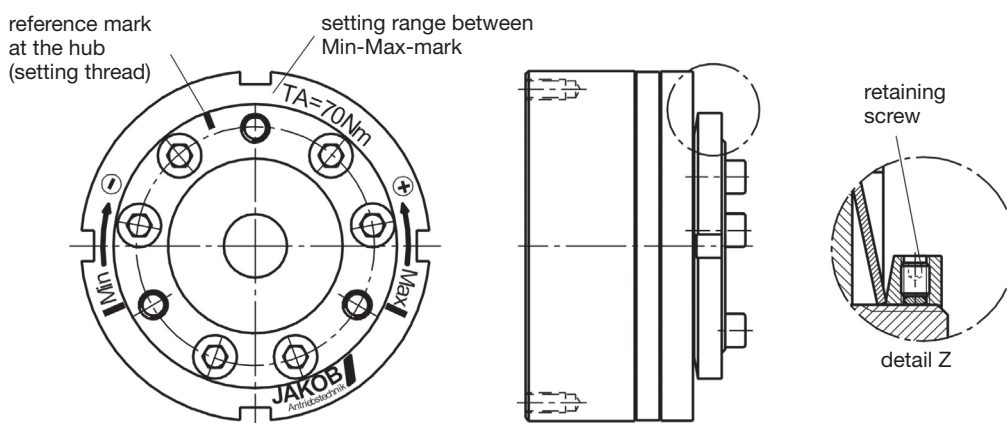
The disengagement torque generally is between 40% and 100% of the nominal torque of the coupling and is adjustable steplessly. If the customer does not specify a setting value, it is set **at the maximum torque** (nominal torque). The set, static disengagement torque can be adjusted (on the machine) at a later date by turning the adjusting nut with a pin wrench if needed. Adjusting nuts are provided with a user friendly scale: the disengagement torque, and the reference marks for T_{min} and T_{max} are engraved on the face side of the adjusting nut to facilitate setting. Disengagement torques greater than T_{max} are possible (on request), but this results in a stronger wear of the disengagement mechanic.

Caution:

Due to the degressive spring characteristics, turning back (counter-clockwise) the adjusting nut means an increase, or a turning in clockwise direction means a reduction of the disengagement torque (see direction arrow at clamping nut)!

Series SKG/SKY/SKW

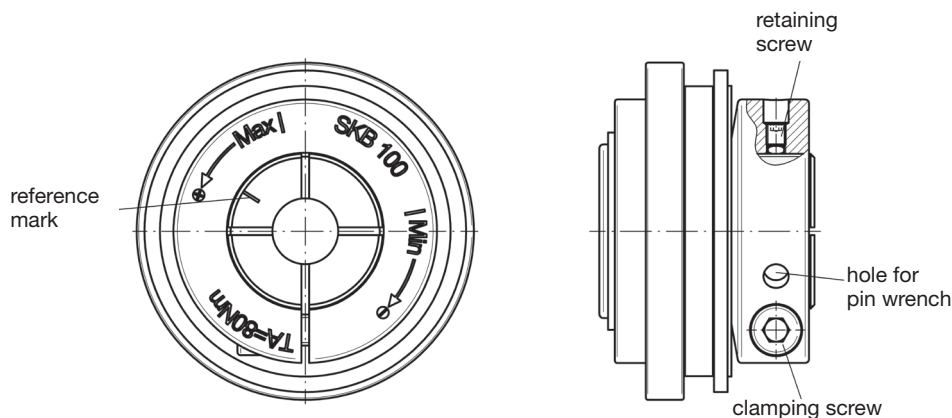
Setting of disengagement torque:



Unscrew retaining screw (see detail Z) completely; turn adjusting nut with pin wrench; after adjustment, secure the adjustment nut against turning by drilling and tightening the retaining screw.

Series SKB/SKX-L

Setting scale of disengagement torque:



Release retaining screw. Turn adjusting nut with pin wrench (note reference mark). Tighten retaining screw on hub after setting the required disengagement torque. Setting can be done by turning the hub with scale till the required torque value is in line with the reference mark. In mounted state, the clamping screw must be released, and after setting the disengagement torque, it has to be fastened again.

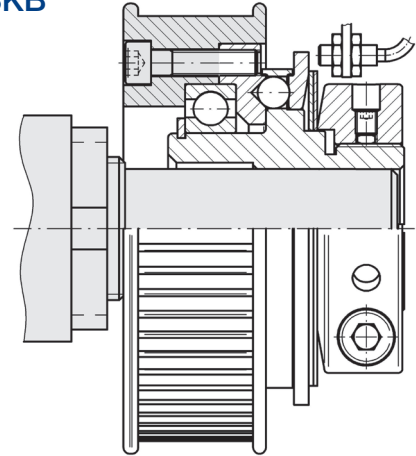
Safety Couplings I *for indirect drives*

- ✓ for the attachment of toothed belt pulleys, gear wheels, chain wheels, flanges, and so on
- ✓ with integrated ball bearing or sliding bearing - for optimal constructional adjustment
- ✓ frictional shaft-hub-connection with conical clamping bush or conical clamping ring

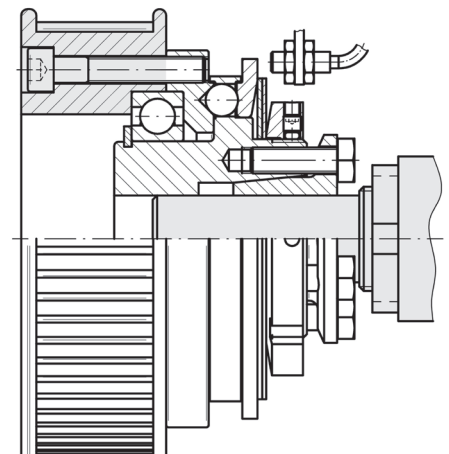
For overload protection or as collision protection for indirect drives, JAKOB's standard program presents series SKB, SKY, SKW and SKG with integrated ball bearing, as well as series SKX-L with integrated sliding bearing. The flange rings can be attached to gear wheels or other units with an axial run-out accuracy of a few hundredths of a millimeter. During normal operation, the bearings must take up the radial and axial forces and transfer them to the drive or output shaft. Only during uncoupling, there is a relative rotational movement between flange ring and hub for a short time. The torque is transferred without backlash and frictionally from the shaft to the coupling hub by a conical clamping ring or a conical clamping bush.

The SKB coupling can be used for big pulleys and pinions because of the reference diameter of the fastening threads, the SKX-L series is made for longer attachment parts with small diameters. The series SKG with its integrated ball bearing provides a good alternative for very compact solutions. To achieve this, the coupling body can almost be completely fit into the pulley with the result, that the forces can be led almost centrally into the bearing. Furthermore, the clamping ring is located on the inside, at the side of the shaft, and therefore a subsequent mounting (modification) is possible, even when available space is limited. Other safety coupling series for indirect drives, such as series SKM with separate sliding bearing or series SKD with blocking mechanism can be delivered upon special request.

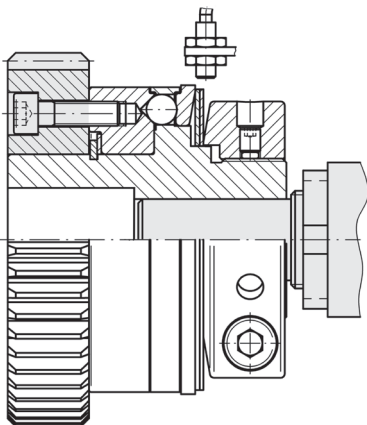
Series SKB



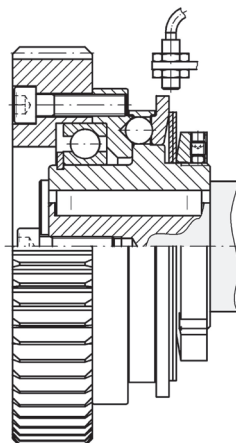
Series SKY



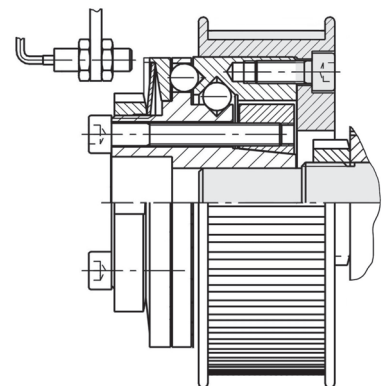
Series SKX-L



Series SKW



Series SKG



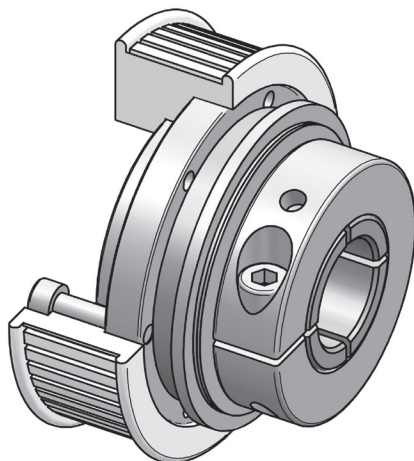
Safety Coupling I Series SKB for indirect drives

- /// simple installation with clamping ring hub // with integral ball bearing
- /// for high axial and radial loads // excellent run-out accuracy
- /// alternative in corrosion-resistant design

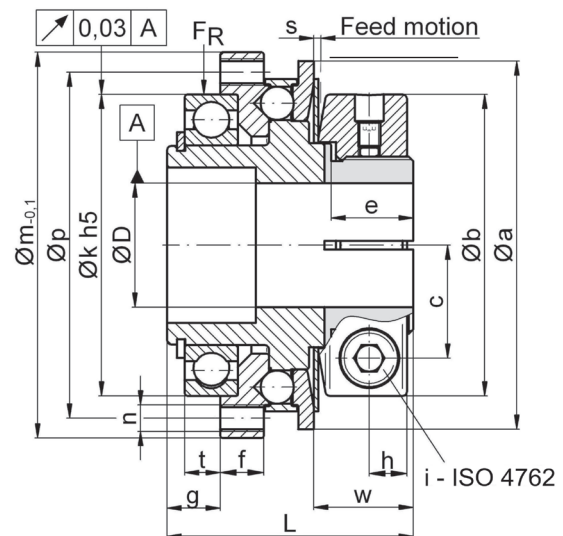
technical data:

SKB size	setting range disengagement torque T_{KA} [Nm]		moment of inertia of inertia [10^{-3} kgm ²]	mass approx. [kg]	tightening torque of screw 'i' [Nm]		max. radial load F_R [N]	bore diameters $\varnothing D$		
	min	max			prebored	min		max		
6	2	- 6	0,09	0,36	M 5	- [10]	5.000	6	6	16
12	6	- 12							8	16
15	8	- 15	0,36	0,80	M 6	- [18]	8.000	10	10	25,4
30	13	- 30							12	25,4
45	22	- 45	1,10	1,50	M 8	- [40]	9.500	17	14	25,4
60	25	- 60							18	35
100	40	- 100	4,2	3,3	M 10	- [80]	23.000	21	18	35
150	60	- 150							24	35
230	80	- 230	12,2	6,2	M 14	- [220]	30.000	27	24	44
330	130	- 330							32	44
500	200	- 500	76	20	2x M 16	- [290]	50.000	38	28	58
800	350	- 800							40	58
1000	500	- 1000	76	20	2x M 16	- [290]	50.000	38	42	100
2000	800	- 2000							48	100

note: for higher torques, see series SKY



material:
heat-treated steel
temperature range: -30°C up to +200°C



Dimensions [mm]: length dimensions according to DIN ISO 2768 cH

SKB	$\varnothing a$	($\varnothing a^*$)	$\varnothing b$	c	e	f	g	h	$\varnothing k^{h5}$	$\varnothing m$	$\varnothing p$	L	n	s	t	w
6/12	48	(42)	38,5	13,5	13	8	9,8	6	42	52	47	41	6xM 3	0,9	7	15,8
15/30/45	66	(60)	53	19,5	15	9	11,5	7,5	55	69	62	48	6xM 4	1,2	8	18,5
60/100/150	83	(76)	68	25,5	18,5	9	12	8,5	68	87	78	55,5	6xM 6	1,6	8	22,4
230/330	109	(104)	87	32	21	14	16,5	10,5	90	113	102	71,5	6xM 8	1,8	12	25,6
500/800	132	-	115	42	30	15	17	13,5	110	136	124	87,5	8xM 8	2,5	12	37
1000/2000	185	-	172	69	76	16	28	17/30	140	181	165	142±2	12xM10	3,7	22,5	77

*note: smaller outer diameters of the thrust plate are possible (see values in brackets)

order example: SKB 30 - $D = 24^{H7}$ - $T_{KA} = 25$ Nm
SKB 230 - corrosion resistant - $D = 35^{G6}$ - $T_{KA} = 200$ Nm

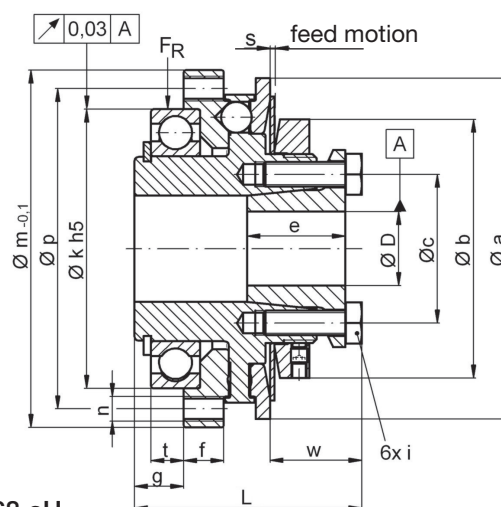
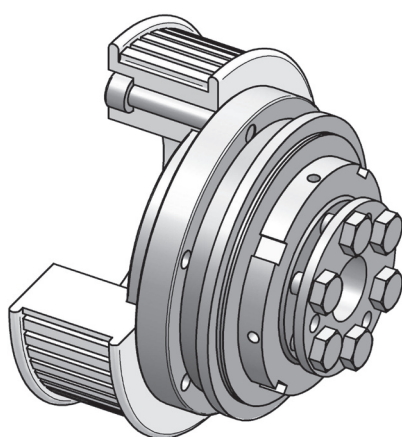
Safety Coupling I Series SKY for indirect drives

- /// with conical clamping hub // with integral ball bearing
- /// for high axial and radial loads // excellent run-out accuracy
- /// alternative in corrosion-resistant design

technical data:

SKY size	setting range disengagement torque T_{KA} [Nm]		moment of inertia $[10^{-3} \text{kgm}^2]$	mass approx. [kg]	tightening torque of screws 6x i [Nm]	max. radial load F_R [N]	bore diameters $\varnothing D$		
							prebored	min	max
6	2	- 6	0,08	0,30	M 3 - ISO 4762 - [1.5]	5.000	-	5	11,5
12	6	- 12						5	11,5
15	8	- 15	0,31	0,65	M 4 - ISO 4762 - [3]	8.000	8	9	17
30	13	- 30						9	17
45	22	- 45	0,95	1,3	M 6 - ISO 4017 - [12]	9.500	11	10	17
60	25	- 60						12	24
100	40	- 100	3,8	2,9	M 6 - ISO 4017 - [12]	23.000	17	12	24
150	60	- 150						14	24
230	80	- 230	10	5,1	M 8 - ISO 4017 - [30]	30.000	25	18	35
330	130	- 330						22	35
500	200	- 500	53	14	M 12 - ISO 4017 - [90]	50.000	38	28	42
800	350	- 800						30	42
1000	500	- 1000	160	26	10x M 12 - ISO 4017 - [115]	65.000	49	40	65
2000	800	- 2000						42	65
3000	1500	- 3000	70	80(120)				50	80(120)
6000	3000	- 6000						50	80(120)
9000	6000	- 9000							

material:
heat-treated steel
temperature range:
-30°C up to +200°C



Dimensions [mm]: length dimensions according to DIN ISO 2768 cH

SKY	$\varnothing a$	$(\varnothing a^*)$	$\varnothing b$	$\varnothing c$	e	f	g	$\varnothing k^{h5}$	$\varnothing m$	$\varnothing p$	L	n	s	t	w
6/12	48	(42)	33	19	15	8	9,8	42	52	47	39	6x M3	0,9	7	13,8
15/30/45	66	(60)	45	27	18	9	11,5	55	69	62	47,5	6x M4	1,2	8	18,1
60/100/150	83	(76)	63	36,2	24	9	12	68	87	78	55,5	6x M6	1,6	8	22,4
230/330	109	(104)	84	50	27	14	16,5	90	113	102	70	6x M8	1,8	12	24
500/800	132	-	105	62	32	15	17	110	136	124	84	8x M8	2,5	12	33,4
1000/2000	185	-	168	90	45	16	28	140	181	165	130	12xM10	3,7	22,5	64,5
3000-9000	236	-	197	110	53	18/14	21	180	243	200/225	136	12xM10	3,0	14	62

*note: smaller outer diameters of the shift disc are possible (see values in brackets)

** sizes 3000-9000 with shrink disc for bigger bore diameters up to $\varnothing 120$

order example: SKY 60 - D = 22^{G6} - $T_{KA} = 40 \text{ Nm}$
 SKY 150 - corrosion resistant - D = 22^{G6} - $T_{KA} = 120 \text{ Nm}$

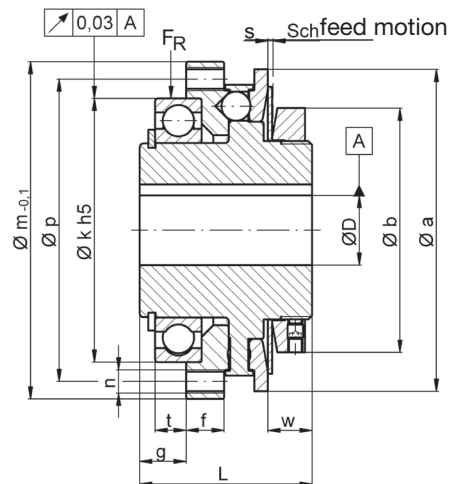
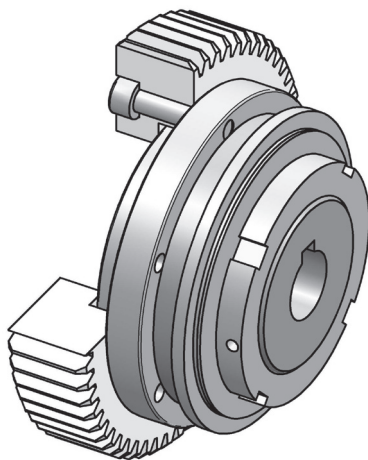
Safety Coupling I Series SKW for indirect drives

- ✓ cost-effective type ✓ easy keyway connection
- ✓ with integrated ball bearing for high axial and radial load

technical data:

SKW Size	setting range disengagement torque T_{KA} [Nm]		moment of inertia [10^{-3}kgm^2]	mass approx. [kg]	max. radial load F_R [N]	n	bore diameters $\varnothing D$	
	min	max					min	max
6	2	- 6	0,08	0,28	5.000	6 x M 3	6	12
12	6	- 12					6	12
15	8	- 15	0,3	0,63	8.000	6 x M 4	8	22
30	13	- 30					10	22
45	22	- 45					10	22
60	25	- 60	0,91	1,25	9.500	6 x M 6	11	32
100	40	- 100					13	32
150	60	- 150					16	32
230	80	- 230					18	38
330	130	- 330	3,70	2,80	23.000	6 x M 8	21	38
500	200	- 500	9,25	4,80	30.000	8 x M 8	26	55
800	350	- 800					38	55
1000	500	- 1000	52	15,5	50.000	12 x M 10	39	90
2000	800	- 2000					52	90
3000	1500	- 3000	160	25	65.000	12 x M 10	50	110
6000	3000	- 6000					50	110
9000	6000	- 9000					50	110

material:
heat-treated steel
temperature range:
-30°C up to +200°C



Dimensions [mm]: length dimensions according to DIN ISO 2768 cH

SKW	$\varnothing a$	($\varnothing a^*$)	$\varnothing b$	f	g	$\varnothing k h^5$	$\varnothing m$	$\varnothing p$	L^*	s	t	w
6/12	48	(42)	33	8	9,8	42	52	47	31	0,9	7	5,8
15/30/45	66	(60)	45	9	11,5	55	69	62	38	1,2	8	8,6
60/100/150	83	(76)	63	9	12	68	87	78	44,5	1,6	8	11,4
230/330	109	(104)	84	14	16,5	90	113	102	59,5	1,8	12	13,7
500/800	132	-	105	15	17	110	136	124	68,5	2,5	12	18,1
1000/2000	185	-	168	19	28	140	181	165	106	3,7	22,5	40,4
3000-9000	236	-	197	18/14	21	180	243	200/225	127	3,0	14	53

*note: smaller outer diameters of the shift disc are possible (see values in brackets)
with zero clearance conical-hub-connection ($D_{max} = \varnothing 120$) see series SKY

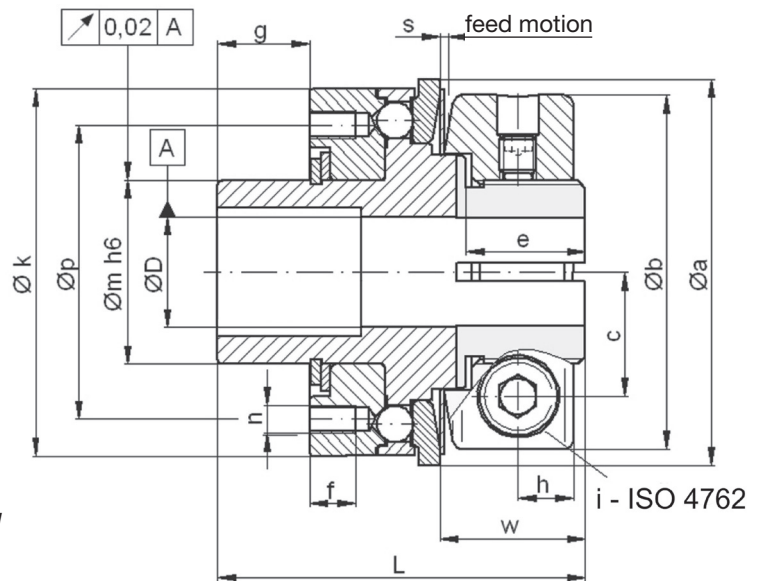
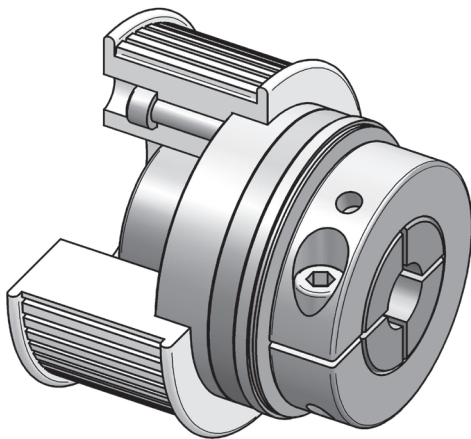
order example: SKW 500 - D = 44^{G6} - PFN 12 P9 x 3,3 - $T_{KA} = 450 \text{ Nm}$

Safety Coupling I Series SKX-L *for indirect drives*

- with longer bearing journal for integrated slide bearing
- simple installation with clamping ring hub
- with small centric diameter of small size pulleys or gear wheels

technical data:

SKX-L size	setting range disengagement torque T_{KA} [Nm]		moment of inertia [10^{-3} kgm ²]	mass approx. [kg]	tightening torque of screws i [Nm]		prebored	bore diameters $\varnothing D$		
	-	-			-	-		min	max	
6	2	- 6	0,05	0,25	M 5	-	[10]	6	6	16
12	6	- 12							8	16
15	8	- 15	0,25	0,65	M 6	-	[18]	10	10	25,4
30	13	- 30							12	25,4
45	22	- 45							14	25,4
60	25	- 60	0,95	1,5	M 8	-	[40]	17	18	35
100	40	- 100							18	35
150	60	- 150							24	35
230	80	- 230	3,34	3	M 10	-	[80]	21	24	42
330	130	- 330							32	42
500	200	- 500	10,70	6	M 14	-	[220]	27	28	58
800	350	- 800							40	58



material:
 heat-treated steel bearing seat: nitro carburized
 temperature range: -30°C up to +200°C

Dimensions [mm]: length dimensions according to DIN ISO 2768 cH

SKX-L	$\varnothing a$	($\varnothing a^*$)	$\varnothing b$	c	e	f	g	h	$\varnothing k$	$\varnothing m^{h6}$	$\varnothing p$	L	6xn	s	w
6/12	42	(48)	38,5	13,5	13	5	10	6	40	20	32	46	M 3	0,9	15,8
15/30/45	60	(66)	53	19,5	15	7	15	7,5	58	30	46	52	M 4	1,2	18,6
60/100/150	76	(83)	68	25,5	18,5	9	20	8,5	75	42	62	69	M 6	1,6	22,4
230/330	104	(109)	87	32	21	12	25	10,5	98	50	74	84	M 8	1,8	26,7
500/800	132	-	115	42	30	14	30	13,5	120	65	92	104	M 10	2,5	37

note: *bigger outer diameters of the shift disc are possible (see values in brackets)

**alternative bearing length 'g' is possible on request; please check if a plain bearing bush is required

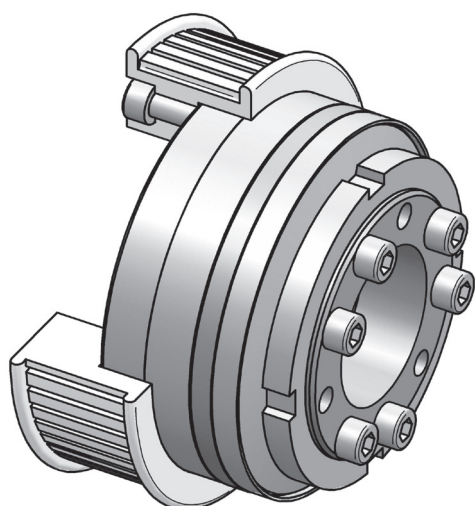
order example: SKX-L 150 - $D = 28^{H7}$ - $T_{KA} = 120$ Nm

Safety Coupling I Series SKG *for indirect drives*

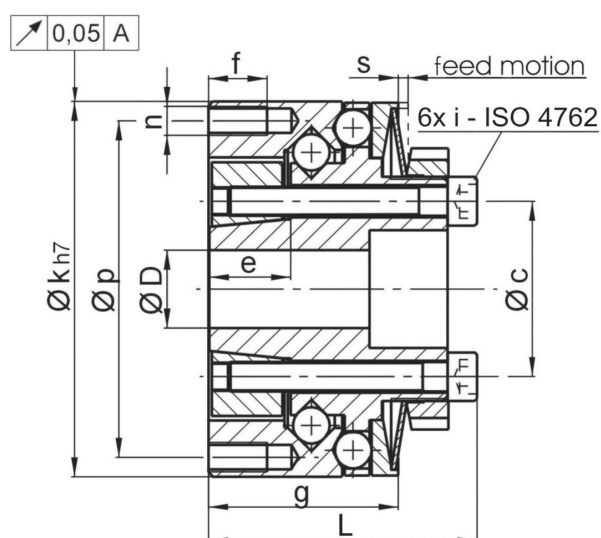
- /// with integral ball bearing // with conical clamping hub
- /// compact attachment - optimal system integration

technical data:

SKG size	setting range disengagement torque T_{KA} [Nm]		moment of inertia [10^{-3} kgm ²]	mass approx. [kg]	tightening torque of screws i [Nm]	bore diameters $\varnothing D$	
	min	max				min	max
4	2	- 4	0,2	0,5	M 4 - [4]	12	18
9	4	- 9	0,2	0,5			
18	9	- 18	0,2	0,5			
23	9	- 23	0,7	1,1	M 5 - [8]	18	25,5
35	18	- 35	0,7	1,1			
75	25	- 75	0,7	1,1			
100	50	- 100	1,8	1,9	M 6 - [12]	22	39
170	65	- 170	3	2,4			
270	100	- 270	10,4	5			
550	200	- 550	10,7	5,3	M 8 - [35]	29	44



material:
heat-treated steel
temperature range: -30°C up to +200°C



Dimensions [mm]: length dimensions according to DIN ISO 2768 cH

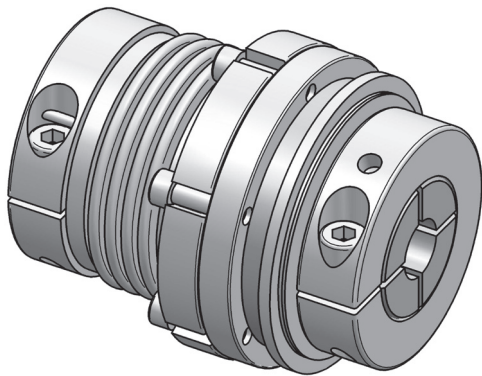
SKG	$\varnothing c$	e	f	g	$\varnothing k_{h7}$	L	n	$\varnothing p$	s
4	27	11	8	27,3	60	40	4x M 4	53	1
9	27	11	8	27,3	60	40	4x M 4	53	1
18	27	11	8	27,9	60	40	4x M 4	53	1
23	37	17	12	39	77	54	4x M 6	69	1,4
35	37	17	12	39	77	54	4x M 6	69	1,4
75	37	17	12	39	77	54	4x M 6	69	1,4
100	54	17	10	36,5	92	55	4x M 6	83	1,4
170	54	17	12	51	105	66	4x M 6	94	1,7
270	66	26	15	63,5	135	85	6x M 8	120	2,2
550	66	26	15	63,5	135	85	6x M 8	120	2,2

order example: SKG 170 - 28^{H7} - $T_A = 140$ Nm

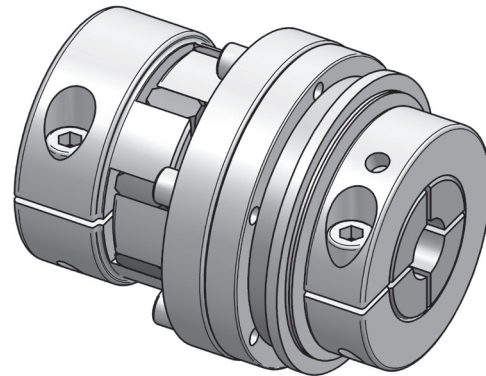
Safety Couplings I *for direct drives*

- /// optimum overload and crash protection for direct drives
- /// with coupling attachment // modular system with numerous variants
- /// simple installation // frictional shaft-hub connection
- /// compact design // low moment of inertia

Series SKB-KP / SKY-KS with bellows attachment



Series SKB-EK / SKY-ES with elastomer attachment

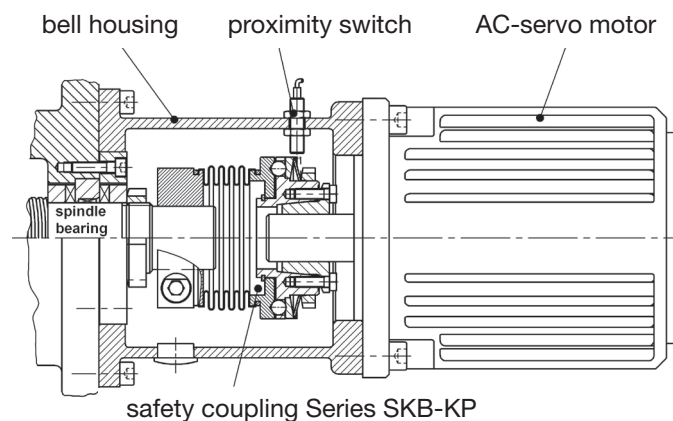


The safety couplings series SKB-K and SKB-E from JAKOB are combinations of the well-tried disengagement function with coupling elements for balancing misalignments between drive and output shaft. From a large program of diverse types, metal bellows or elastomer attachments can be selected. While the main features of metal bellows are very high torsional stiffness and low restoring forces, elastomer couplings feature robustness, excellent oscillation dampening and the possibility of plug-in fitting. Due to the screw connection between coupling element and safety part, a replacement of the coupling attachment is possible at all times, in case of damage or a change of operational parameters.

The following safety couplings series for direct drives are available:

- Series SKB-KP** -> with 4-corrugation metal bellows / on bellows side with easy-to-fit radial clamping hub
- Series SKY-KS** -> with 4-corrugation bellows / on bellows side with conical bushing for small shaft diameters
- Series SKB-EK** -> with elastomer spider - 98 Shore A / on coupling side with plug-in, radial clamping hub
- Series SKY-ES** -> with elastomer spider - 98 Shore A / on coupling side with plug-in, conical hub

note: safety couplings series SKB with clamping hub - series SKY with conical bush



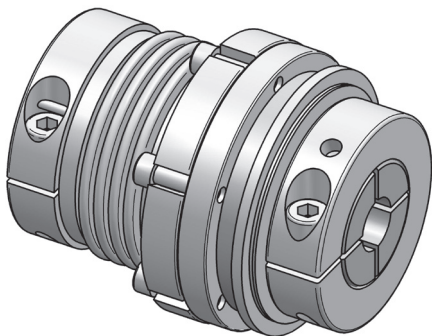
Safety Coupling I Series SKB-KP for direct drives

- /// with bellows attachment // with radial clamping hub on both sides
- /// EASY-clamping hub on bellows side // compensation of misalignments // low restoring forces

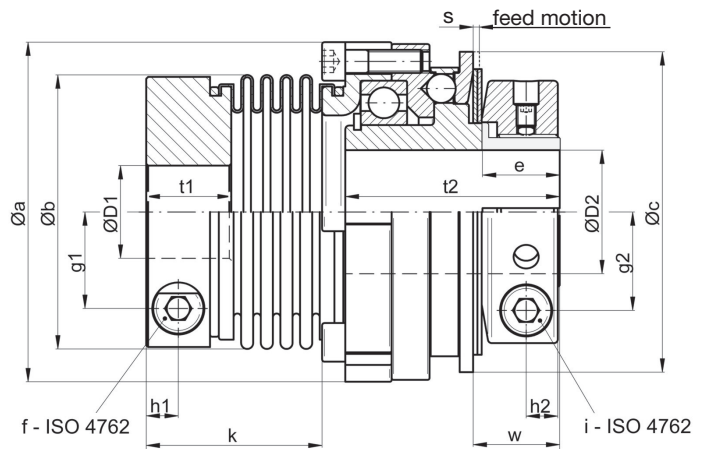
technical data:

SKB-KP size	setting range disengagement torque T_{KA} [Nm]	moment of inertia $[10^{-3} \text{kgm}^2]$	mass approx. [kg]	torsional stiffness [Nm/arcmin]	max. shaft misalignment [mm]		tightening torque of screws		$\varnothing D1$		$\varnothing D2$	
					axial±	lateral	f [Nm]	i [Nm]	min	max	min	max
6	2 - 6	0,13	0,45	2,1	0,5	0,15	M5-8	M5-10	6	19(24)	6	16
12	6 - 12								8	19(24)	8	16
15	8 - 15	0,5	1,0	9	0,5	0,2	M6-14	M6-18	8	32	10	25,4
30	13 - 30								10	32	12	25,4
45	22 - 45	1,5	1,9	20	0,6	0,2	*M8-35 (30)	M8-40	12	32	14	25,4
60	25 - 60								13	34(38)	18	35
100	40 - 100	5,5	3,8	28	0,8	0,2	*M10-65 (50)	M10-80	14	34(38)	18	35
150	60 - 150								21	34(38)	24	35
230	80 - 230	14,0	6,8	52	0,8	0,2	*M12-115 (90)	M14-220	24	35(43)	24	44
330	130 - 330								32	35(43)	32	44
500	200 - 500	17,2	8,3	106	0,7	0,2	*M14-180 (140)	M14-220	35	45(55)	28	58
800	350 - 800								42	55(68)	40	58
1000	500 - 1000	80	20	150	0,8	0,2	*M14-180 (140)	2xM16-290	45	65(75)	42	100
2000	800 - 2000								58	70(85)	45	100

(*) note: reduced tightening torque for bigger hub bore diameter - see also $\varnothing D1/D2$ max!



material: safety part: heat-treated steel
 clamping hub: high-tensile aluminum
 bellows: stainless steel
 screws: ISO 4762 / 12.9
 temperature range: -30°C up to +200°C



Dimensions [mm]: length dimensions according to DIN ISO 2768 cH

SKB-KP	$\varnothing a$	$\varnothing b$	$\varnothing c$	e	g1	g2	h1	h2	k*	L±1	s	t1	t2	w
6/12	52,5	40 (45)	48	14	13	13,5	6	6	36,6	81	0,9	16,5	41	16
15/30/45	69	56	66	16	19	19,5	7,5	7,5	43	94,5	1,2	20	48	18,5
60/100/150	88	71	83	20	25	25,5	8,5	8,5	45,5	107	1,6	22	55,5	22
230/330	115	82	109	23	28,5	32	10,5	10,5	52	132	1,8	26	72	26
500	137	101	132	32	35	42	12	13,5	60	156	2,5	29	87,5	37
800	137	122	132	32	42	42	15	13,5	74,5	170	2,5	34	87,5	37
1000	181	133	185	74	47	69	18,5	17/30	87,5	220±2	3,7	45	124	74
2000	181	157	185	74	54	69	19	17/30	105,5	239±2	3,7	45	124	74

*note: alternative lengths of bellows are possible on request; bellows side with conical hub: see series SKB-KS setting range up to 9000Nm see series SKY-KS

order example: SKB-KP 30 - $D1 = 28^{G6}$ - $D1 = 24^{H7}$ - $T_{KA} = 25 \text{ Nm}$

Safety Coupling I Series SKY-KS for direct drives

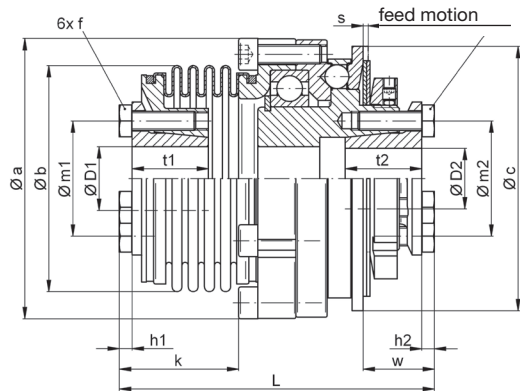
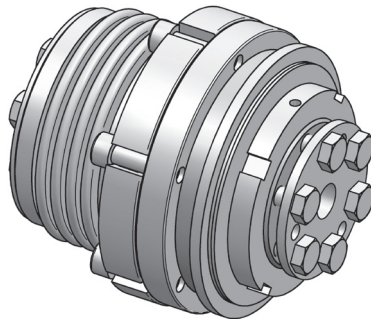
- /// with bellows attachment // with conical clamping hub on both sides
- /// low restoring forces // compensation of misalignments

technical data:

SKY-KS size	setting range disengagement torque T_{KA} [Nm]	moment of inertia $[10^{-3} \text{kgm}^2]$	mass approx. [kg]	torsional stiffness [Nm/arcmin]	max. shaft misalignment [mm]		tightening torque of screws		$\varnothing D1$		$\varnothing D2$	
					axial \pm	lateral	f [Nm]	i [Nm]	min	max	min	max
1	0,5 - 1								3	10[14]	4	12
2	1 - 2	0,05	0,25	0,8	0,3	0,1	1xM3[2]**	M3[1.5]	3	10[14]	4	12
6	2 - 6								6	16	5	12
12	6 - 12	0,12	0,5	2,1	0,5	0,15	M4[3]	M3[1.5]	6	16	5	12
15	8 - 15								9	19	9	17
30	13 - 30	0,44	0,98	9	0,5	0,2	M4[3]	M4[3]	9	19	9	17
45	22 - 45								10	19	10	17
60	25 - 60								12	24	12	24
100	40 - 100	1,4	1,9	20	0,6	0,2	M6[12]	M6[12]	12	24	12	24
150	60 - 150								14	24	14	24
230	80 - 230								18	35	18	35
330	130 - 330	5,1	3,9	28	0,8	0,2	M6[12]	M6[12]	22	35	22	35
500	200 - 500	12,5	6,7	52	0,8	0,2	M8[30]	M8[30]	28	42	28	42
800	350 - 800	14,6	7,7	106	0,7	0,2	M10[50]	M8[30]	30	48	30	42
1000	500 - 1000	58	16	150	0,8	0,2	M10[50]	M12[90]	40	60	42	65
2000	800 - 2000	69	18,5	140	1	0,3	M12[90]	M12[90]	42	70	42	65
3000	1500 - 3000			600	3	1,2			50	130	50	120
6000	3000 - 6000	400	50	1000	3	1,4	10xM12[70]	10xM10[50]	50	130	50	120
9000	6000 - 9000			1000	3	1,4			50	130	50	120

material:

safety part: heat-treated steel
 conical hub: heat-treated steel
 bellows: stainless steel
 screws: ISO 4762 / 12.9
 temperature range:
 -30°C up to +200°C



Dimensions [mm]: length dimensions according to DIN ISO 2768 cH

SKY-KS	$\varnothing a$	$\varnothing b$	$\varnothing c$	h1	h2	k*	$L \pm 1$	$\varnothing m1$	$\varnothing m2$	s	t1	t2	w
1/2	42	25	43	-	3	25	61,5	-	19	0,7	8	15	14
6/12	52,5	39,5	48	2,8	3	37,5	80	27	19	0,9	19	15	14
15/30/45	69	56	66	2,8	4	34,8	86	30	27	1,2	18	18	18
60/100/150	88	71	83	4	4	37,5	99	36	36	1,6	24	24	22
230/330	115	82	109	4	4	40	117	50	50	1,8	27	27	24
500	137	101	132	5,3	5,3	50	143	62	62	2,5	32,5	32	33
800	137	122	132	6,4	5,3	60	152	70	62	2,5	36	32	33
1000	181	132	185	6,4	7,5	69,5	192	83	90	3,7	44	45	64
2000	181	157	185	7,5	7,5	88,5	211	98	90	3,7	45	45	64
3000-9000	243	236	236	7,5	6,4	174	335	175	160	3,0	74	54	105

note: *alternative lengths possible on request

**sizes 1/2 with radial clamping hub type MKP on bellows side (D1)

sizes 3000-9000 with shrink disc on both sides - further details and options on request

order example: SKY-KS 500 - $D1 = 38^{H7}$ - $D1 = 32^{H7}$ - $T_{KA} = 400 \text{ Nm}$

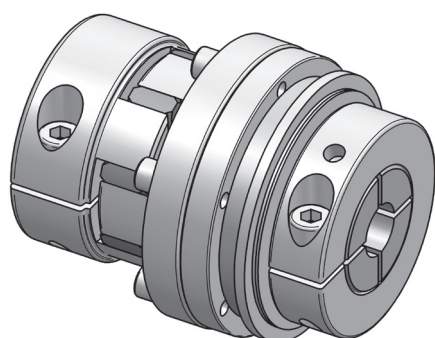
Safety Coupling I Series SKB-EK for direct drives

// with elastomer attachment // with radial clamping hub on both sides
 // plug-in // flexible // backlash-free // oscillation dampening

technical data:

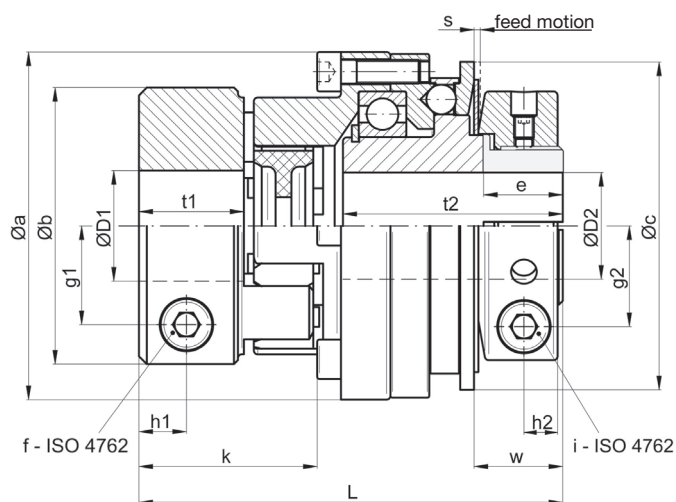
SKB-EK size	setting range disengagement torque T_{KA} [Nm]	moment of inertia $[10^{-3} \text{kgm}^2]$	mass approx. [kg]	torsional stiffness [Nm/arcmin]	max. shaft mis-alignment [mm]		tightening torque of screws		$\varnothing D1$		$\varnothing D2$	
					axial±	lateral	f [Nm]	i [Nm]	min	max	min	max
6	2 - 6	0,13	0,44	0,25	0,5	0,1	M5-8	M5-10	8	20	6	16
12	6 - 12								8	20	8	16
15	8 - 15	0,5	1	1	0,5	0,1	M6-14	M6-18	12	32	10	25,4
30	13 - 30								12	32	12	25,4
45	22 - 45								14	32	14	25,4
60	25 - 60	1,5	2	1,2	1	0,1	M8-35	M8-40	16	38	18	35
100	40 - 100								19	38	18	35
150	60 - 150								22	38	24	35
230	80 - 230	5,6	4,2	3,6	1	0,12	*M12-115(90)	M10-80	20	35(43)	24	42
330	130 - 330								24	35(43)	32	42
500	200 - 500	17	8,6	8	1	0,15	*M14-180(140)	M14-220	30	60(70)	28	58
800	350 - 800								40	60(70)	40	58
1000	500 - 1000	79	19,5	12	1	0,10	*M14-180(140)	M16-290	42	60(70)	42	100
2000	800 - 2000	116	27,9	21	1	0,15	M16-290	M16-290	50	90	42	100

(*) note: reduced tightening torque for bigger hub bore diameter - see also $\varnothing D1$ max!



material:

safety part: heat treated steel
 clamping hub: high-tensile aluminum
 (size 2000: tempered steel)
 elastomer spider: polyurethane – 98 Shore A
 screws: ISO 4762 / 12.9
 temperature range: -30°C up to +90°C



Dimensions [mm]: length dimensions according to DIN ISO 2768 cH

SKB-EK	$\varnothing a$	$\varnothing b$	$\varnothing c$	e	g1	g2	h1	h2	k*	L±1	s	t1	t2	w
6/12	52,5	40	48	14	13	13,5	8	6	33	77	0,9	17	41	16
15/30/45	69	55	66	16	20	19,5	10	7,5	39	91,5	1,2	21	48	18,5
60/100/150	88	70	83	20	25	25,5	12	8,5	45	107	1,6	26,5	55,5	22
230/330	115	85	109	23	29	32	14	10,5	54	134	1,8	31	72	26,5
500/800	137	120	132	32	44	42	18	13,5	71	167,5	2,5	38	87,5	37
1000	181	120	185	74	44	69	18	17/30	72	204	3,7	38	89	74
2000	181	160	185	76	55,5	69	21	17/30	84	219	3,7	42	89	77

*note: other shore hardnesses of elastomer spider are possible on request
coupling side with conical hub: see series SKB-ES

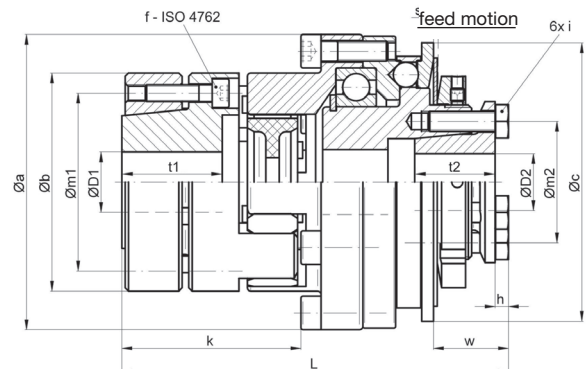
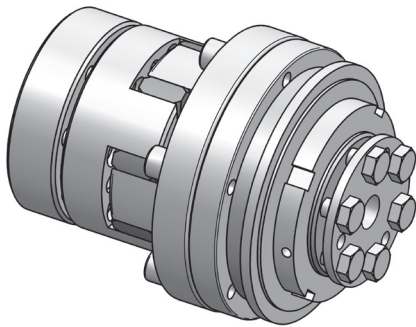
order example: SKB-EK 45 - $D1 = 28^{G7}$ - $D2 = 24^{H7}$ - $T_{KA} = 35 \text{ Nm}$

Safety Coupling I Series SKY-ES for direct drives

// with elastomer attachment for direct drives // with conical clamping hub
 // plug-in // backlash-free // flexible // robust // oscillation dampening

technical data:

SKY -ES size	setting range		moment of inertia [10 ⁻³ kgm ²]	mass approx. [kg]	torsional stiffness [Nm/arcmin]	max. shaft alignment [mm]		tightening torque of screws		ø D1		ø D2	
	disengagement torque	T _{KA} [Nm]				axial ±	lateral	„f“ [Nm]	„i“ [Nm]	min	max	min	max
6	2	- 6	0,13	0,5	0,25	0,5	0,1	6xM4[4]	M3[1.5]	9	19	5	11,5
12	6	- 12								9	19	5	11,5
15	8	- 15	0,5	1,0	1,0	0,5	0,1	4xM5[8]	M4[3]	12	26	9	17
30	13	- 30								12	26	9	17
45	22	- 45	1,4	1,9	1,2	1	0,1	8xM5[8]	M6[12]	12	26	10	17
60	25	- 60								12	36	12	24
100	40	- 100	5,5	4,3	3,6	1	0,12	4xM8[35]	M6[12]	12	36	12	24
150	60	- 150								14	36	14	24
230	80	- 230	18,5	8,8	8	1	0,15	4xM12[115]	M8[30]	19	40	18	35
330	130	- 330								19	40	22	35
500	200	- 500	57	16	12	1	0,1	4xM12[115]	M12[90]	25	60	28	42
800	350	- 800								28	60	30	42
1000	500	- 1000	102	25,6	21	1	0,15	8xM12[115]	M12[90]	35	60	40	65
2000	800	- 2000								35	85	40	65



material: safety part: heat-treated steel
 hub: high-tensile aluminum
 (size 2000: tempered steel)
 clamping ring: heat treated steel

elastomer spider: polyurethane – 98 Shore A
 screws: ISO 4762 / 12.9
 temperature range: -30°C up to +90°C

Dimensions [mm]: length dimensions according to DIN ISO 2768 cH

SKY-ES	Øa	Øb	Øc	h	k	L±1	Øm1	Øm2	s	t1	t2	w
6/12	52,5	40	48	3	41	83	31	19	0,9	21	15	14
15/30/45	69	55	66	4	48	100	43	27	1,2	25	18	18
60/100/150	88	65	83	4	53,5	115,5	53	36	1,6	30	24	22
230/330	115	80	109	4	68	145,5	64	50	1,8	40	27	24
500/800	137	120	132	5,3	94	187	96	62	2,5	54	32	33
1000	181	120	185	7,5	95	218	96	98	3,7	54	45	64,5
2000	181	160	185	7,5	114	236,5	130	98	3,7	66	45	64,5

Note: elastomer spider optionally available with alternative shore hardness
 coupling side with radial clamping hub, see series SKY-EK

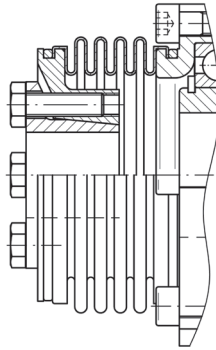
order example: SKY-ES 230 - D1 = 33^{H7} - D2 = 28^{H7} - T_{KA} = 200 Nm

Safety Couplings I Additional Series

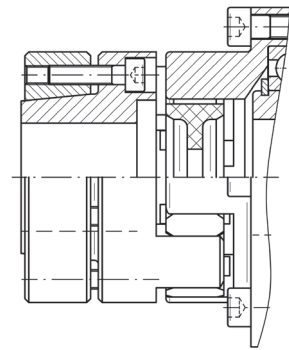
Series

- /// high clamping forces
- /// for smaller shaft diameters
- /// however: more difficult assembly
- /// with ES-hub: blind fitting possible
- /// dimensions on request
or see homepage:
www.jakobantriebstechnik.de

SKB-KS with conical clamping hub

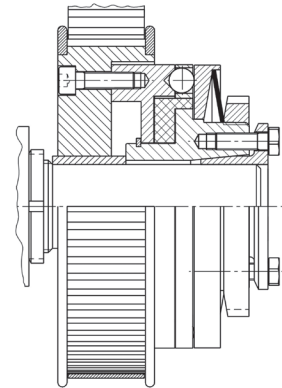
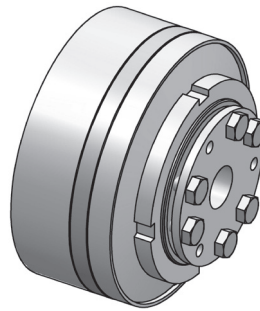


SKB-ES with conical clamping hub



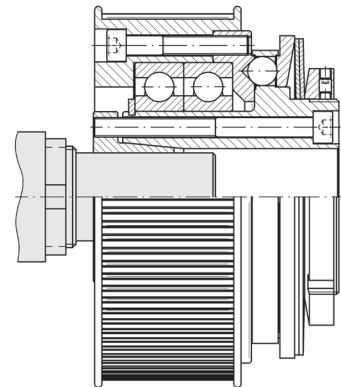
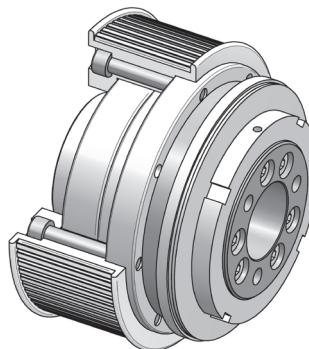
Series SKD/SBE/SK-F with special mechanism

- /// minimal residual torque
- /// re-engaging only by reverse rotation
- /// with separate sliding bearing (series SKD)
or with bellows attachment (series SBE)
- /// 10 sizes from 4 to 1.500 Nm



Series SKY with conical bush at bearing side with bearing tandem

- /// for very wide toothed belts or gear wheels
- /// for highest radial loads
- /// compact mounting onto short shaft
- /// dimensions on request



Special series

- /// customized hub versions and dimensions
- /// operating speeds up to 8.000 rpm
- /// special or stainless steel design
- /// special re-engaging functions (e.g. for vertical drive axis)

-> please feel free to contact us

Product Overview | JAKOB Clamping Technology

Power Clamping Nut Series MCA

- /// 4 sizes up to 200 kN
- /// blind hole thread up to M64
- /// thread protected
- /// centered operation
- /// compact design



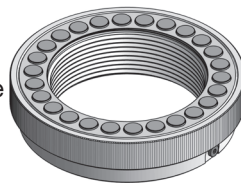
Power Clamping Nut Series MDA

- /// 2 sizes up to 150 kN
- /// through hole thread up to M48
- /// for variable clamping edges
- /// unlimited clamping stroke



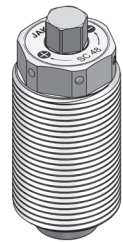
Hydraulic Clamping Nut Series HM

- /// maximum clamping forces over 2,000 kN
- /// threads larger than Ø 500 possible
- /// multi-hub system with spring feedback and oil return
- /// high hydraulic pressure (800 bar) without loss of medium



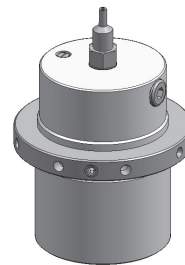
Power Clamping Screw Series SC

- /// 5 sizes up to 250 kN
- /// wedge clamping mechanism
- /// high clamping forces
- /// low tightening torques
- /// maximum operational safety

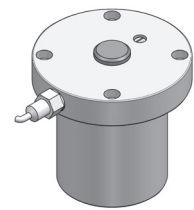


Spring Clamping Cylinder Series ZSF / ZDF

- /// numerous sizes up to 350 kN
- /// mechanical clamping
- /// hydraulic relasing
- /// high operational safety
- /// leak-proof, robust, economical
- /// temperature range: -30°C to +100°C
- /// fitting position in any direction



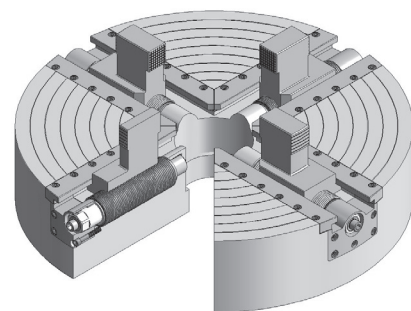
spring clamping cylinder Series ZSF (pulling)



spring clamping cylinder Series ZDF (pushing)

Power Clamping Screws mechanical type: Series MSP/MSPD hydraulic type: Series HSP

- /// nominal clamping forces up to 1,200 kN
- /// maximum operational safety
- /// large power clamping stroke
- /// simple operation and fitting
- /// very large clamping forces at low tightening torques



➔ please ask for our clamping elements catalog

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