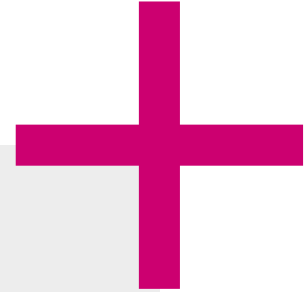


THE COUPLING.



PRECISION COUPLINGS

Sizing and selection



Proper sizing of couplings is crucial to ensuring smooth and efficient power transmission. This involves taking the specific requirements and operating conditions of the application into account. Various factors such as torque, speed, temperature and shock loads must be considered when selecting the correct coupling type and size.

According to DIN 740 part 2

Legend Guide book precision couplings

T_{KN}	=	Rated torque of the coupling (Nm)
T_{KMAX}	=	Maximum torque rating of the coupling (Nm)
T_S	=	Peak torque applied to the coupling (Nm)
T_{AS}	=	Peak torque of the drive system (Nm)
T_{AN}	=	Nominal torque of the drive system (Nm)
T_{LN}	=	Nominal torque of the load (Nm)
P	=	Drive power (kW)
n	=	Drive speed (min. ⁻¹)
s	=	Screw lead (mm)
t	=	Acceleration / deceleration time (s)
ω	=	Angular velocity (1/s)
F_V	=	Feed force (N)
η	=	Spindle efficiency
d_0	=	Pinion dia. (pulley) (mm)
J_1	=	Moment of inertia of driving coupling half (kgm ²)
J_2	=	Moment of inertia of driven coupling half (kgm ²)
J_L	=	Total load inertia (e.g. spindle + slide + workpiece) (kgm ²)
J_A	=	Total driving inertia (motor [including gear ratio]) (kgm ²)
$J_{Masch.}$	=	Total load inertia (e.g. spindle + slide + workpiece + ½ of coupling) (kgm ²)
$J_{Mot.}$	=	Total driving inertia (motor [including gear ratio] + ½ of coupling) (kgm ²)
m	=	Ratio of the moment of inertia of the drive to the load
C_T	=	Torsional stiffness of the coupling (Nm/rad)
f_e	=	Natural frequency of the two mass system (Hz)
f_{er}	=	Excitation frequency of the drive (Hz)
φ	=	Torsional deflection (degree)
α	=	Angular acceleration (1/s ²)
v	=	Temperature at the coupling (observed radiant heat)
S_v	=	Temperature factor
S_A	=	Load factor
S_Z	=	Start factor (factor for the number of starts per hour)
Z_h	=	Number of starts per hour (1/h)

Sizing and selection

Formulas

According to troque

Couplings are normally sized for the highest torque to be regularly transmitted. The peak torque of the application should not exceed the rated torque of the coupling. The following calculation provides an approximation of the minimum required coupling size, and allows for the maximum rated speed and misalignment to exist in the application:

$$T_{KN} \geq 1.5 \cdot T_{AS} \text{ (Nm)}$$

According to accleration torque

A more detailed calculation takes acceleration and the driving and driven moments of inertia into account. A strong inertia ratio diminishes the effect of the load factor in the sizing calculation.

$$T_{KN} \geq T_{AS} \cdot S_A \cdot \frac{J_L}{J_A + J_L} \text{ (Nm)}$$

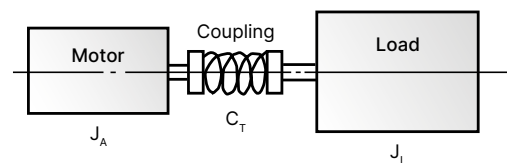
According to resonant frequency

The torsional natural frequency of the coupling must be significantly higher or lower than that of the equipment. For the mechanical substitution model the two mass system applies.

In practice the following applies: $f_e \geq 2 \cdot f_{er}$

$$f_e = \frac{1}{2 \cdot \pi} \sqrt{C_T \cdot \frac{J_A + J_L}{J_A \cdot J_L}} \text{ (Hz)}$$

Two Mass System



According to torsional defelction

To calculate transmission error as a result of torsional stress:

$$\varphi = \frac{180}{\pi} \cdot \frac{T_{AS}}{C_T} \text{ (degree)}$$

Torque limiters

According to load holding function system

Load Holding Version

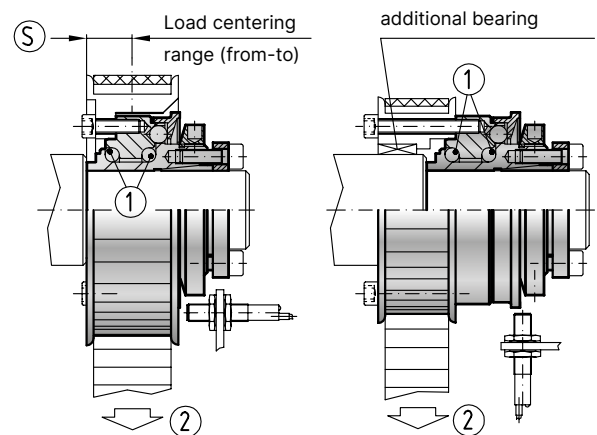
The SK1, SKP, and SKN models in the load holding version can secure a minimum of 2x their torque setting after disengagement. The SK2, SK3, and SK5 models can secure only up to the torque rating of the flexible bellows after disengagement.

Radial loads



The models shown above have an integral bearing (1) to support the drive attachment (e.g. timing belt or chain sprocket, gear, or hand wheel). The maximum radial load (2) is listed in the table below.

If the center of the overhung load is located within dimension range (S) no additional bearing support is necessary. For offset mounting additional bearings can be used to support the load. This is useful in cases where the attached component is too small to fit over the coupling output flange or has a large width.



Depending on the installation space, ball, roller or needle bearings can all be used.

Size SK1/SKN/SKP	1.5	2	4.5	10	15	30	60	150	200	300	500	800	1,500	2,500
Max. radial load (N)	50	100	200	500	1,400	1,800	2,300	3,000	3,500	4,500	5,600	8,000	12,000	20,000
(S) from-to (mm)	3-6	5-8	5-11	6-14	7-17	10-24	10-24	12-24	12-26	12-28	16-38	16-42	20-50	28-60

Size SLN/SLP	30	60	150	300
Max. radial load (N)	800	1,000	1,200	1,600
(S) from-to (mm)	4-14	5-18	6-20	6-23

Sizing and selection

Formulas

According to disengagement torque

Torque limiters are generally selected according to the required disengagement torque, which must be greater than the torque required for regular operation. The disengagement of the torque limiter is most commonly determined in accordance with the drive data. For this purpose, the following calculation applies:

$$T_{KN} \geq 9,550 \cdot \frac{P}{n} \cdot 1.5 \text{ (Nm)}$$

According to acceleration (start-up with no load)

$$T_{KN} \geq \frac{J_L}{J_A + J_L} \cdot T_{AS} \cdot S_A \geq \alpha \cdot J_L \text{ (Nm)}$$

$$\alpha = \frac{\omega}{t} = \frac{\pi \cdot n}{t \cdot 30}$$

According to acceleration with load (start-up under load)

$$T_{KN} \geq \left[\frac{J_L}{J_A + J_L} \cdot (T_{AS} - T_{AN}) + T_{AN} \right] \cdot S_A \geq \alpha \cdot J_L + T_{AN} \text{ (Nm)}$$

According to linear feed force

Spindle Drive (ball screw / lead screw)

$$T_{AN} = \frac{s \cdot F_v}{2,000 \cdot \pi \cdot \eta} \text{ (Nm)}$$

Belt Drive / Chain Drive

$$T_{AN} = \frac{d_0 \cdot F_v}{2,000} \text{ (Nm)}$$



SK

SL

ES

Backlash free torque limiters

0.1 – 2,800 Nm

Areas of application

for overload protection in:

- + Machine tools
- + Packaging machinery
- + Metal forming equipment
- + Test stands
- + Pump drives
- + Assembly systems
- + For overload protection

Service life

As long as the technical limits are not exceeded these couplings are wear and maintenance free.

Fit clearance

Overall shaft / hub clearance of 0.01 - 0.05 mm

Special solutions

Various materials, tolerances, dimensions and performance ratings available for custom applications on request.

ATEX (Optional)

Available on request.

Ordering Example	SK2	15	75	D	10	14	8	7-15	XX
Model	●								Special designation only (e.g. special bore / keyway dimensions).
Size		●							
Overall length mm			●						
Function system				●					
Bore D1 H7					●				
Bore D2 H7						●			
Disengagement torque Nm							●		
Torque adjustment range Nm								●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. SK2 / 15 / 75 / D / 10 / 14 / 8 / 7-15 / XX)






SK






SL

ES

Backlash free torque limiters

0.1 – 2,800 Nm

Model		Features	Page
SK1		<p>With conical clamping bushing (or clamping hub in smaller sizes) for indirect drives 0.1 – 2,800 Nm</p> <ul style="list-style-type: none"> • Integral bearing to support sprockets, gears, and other drive elements • Compact simple design • Adjustable torque settings 	84-85
SKP		<p>With keyway connection for indirect drives 0.1 – 2,800 Nm</p> <ul style="list-style-type: none"> • Integral bearing to support sprockets, gears, and other drive elements • Compact simple design • Adjustable torque settings 	86
SLP		<p>With keyway connection for indirect drives 10 - 700 Nm</p> <ul style="list-style-type: none"> • Integral bearing to support sprockets, gears, and other drive elements • Adjustable torque settings • Ultra compact, low inertia version 	87
SKN		<p>With clamping hub for indirect drives 5 – 1,800 Nm</p> <ul style="list-style-type: none"> • Integral bearing to support sprockets, gears, and other drive elements • Compact simple design • Adjustable torque settings 	88
SLN		<p>With clamping hub for indirect drives 10 - 700 Nm</p> <ul style="list-style-type: none"> • Integral bearing to support sprockets, gears, and other drive elements • Adjustable torque settings • Ultra compact, low inertia version 	89

Model	Features	Page
 <p data-bbox="148 667 199 696">SK2</p>	<p data-bbox="592 645 1305 712">With clamping hubs and bellows coupling for direct drives 0.1 – 1,800 Nm</p> <ul data-bbox="592 734 1062 837" style="list-style-type: none"> <li data-bbox="592 734 786 763">• Easy to mount <li data-bbox="592 770 1062 799">• Compensation for shaft misalignment <li data-bbox="592 806 930 835">• Adjustable torque settings 	90
 <p data-bbox="148 969 199 999">SL2</p>	<p data-bbox="592 947 1305 1014">With clamping hubs and bellows coupling for direct drives 10 – 400 Nm</p> <ul data-bbox="592 1037 1062 1178" style="list-style-type: none"> <li data-bbox="592 1037 786 1066">• Easy to mount <li data-bbox="592 1072 1062 1102">• Compensation for shaft misalignment <li data-bbox="592 1108 930 1137">• Adjustable torque settings <li data-bbox="592 1144 1015 1173">• Ultra compact, low inertia version 	91
 <p data-bbox="148 1272 199 1301">SKH</p>	<p data-bbox="592 1249 1082 1317">With split clamping hub for direct drives 0.1 – 2,800 Nm</p> <ul data-bbox="592 1339 1305 1442" style="list-style-type: none"> <li data-bbox="592 1339 911 1368">• Radial mounting possible <li data-bbox="592 1375 1018 1404">• Very easy to mount and dismount <li data-bbox="592 1411 1305 1440">• Torque limiter element: spring loaded ball-detent principle 	
 <p data-bbox="148 1576 199 1606">SK3</p>	<p data-bbox="592 1552 1249 1619">With conical clamping bushings and bellows coupling for direct drives 5 – 2,800 Nm</p> <ul data-bbox="592 1671 1062 1783" style="list-style-type: none"> <li data-bbox="592 1671 895 1700">• High clamping pressure <li data-bbox="592 1706 1062 1736">• Compensation for shaft misalignment <li data-bbox="592 1742 930 1771">• Adjustable torque settings 	94
 <p data-bbox="148 1877 199 1906">SK5</p>	<p data-bbox="592 1854 1350 1921">With clamping hubs, bellows coupling, and blind mate system for direct drives 0,1 – 850 Nm</p> <ul data-bbox="592 1973 1018 2076" style="list-style-type: none"> <li data-bbox="592 1973 1018 2002">• Very easy to mount and dismount <li data-bbox="592 2009 1018 2038">• Electrically and thermally isolating <li data-bbox="592 2045 930 2074">• Adjustable torque settings 	95




SK

SL

ES

Backlash free torque limiters

0.1 – 2,800 Nm

Model		Features	Page
ES2		<p>With clamping hubs and elastomer coupling for direct drives 1 – 1,800 Nm</p> <ul style="list-style-type: none"> • Easy to mount • Vibration damping • Compensation for shaft misalignment • Adjustable torque settings 	96
SLE		<p>With clamping hubs and elastomer coupling for direct drives 10 - 700 Nm</p> <ul style="list-style-type: none"> • Easy to mount • Vibration damping • Compensation for shaft misalignment • Adjustable torque settings • Ultra compact, low inertia version 	97
ESL		<p>With keyway mounting and elastomer coupling for direct drives 1 – 150 Nm</p> <ul style="list-style-type: none"> • Low cost design • Vibration damping • Wear resistant ratcheting ball design 	98
Accessories			99-100

SK1

With conical clamp

0.1 – 2,800 Nm



Features

- Integral bearing to support sprockets, gears, and other drive elements
- Compact simple design
- Adjustable torque settings

Material

- **Torque limiter element:** hardened steel
- **Clamping ring size 1.5 - 10:** aluminium
- **Conical clamping bushing size 15 - 2,500:** steel

Design

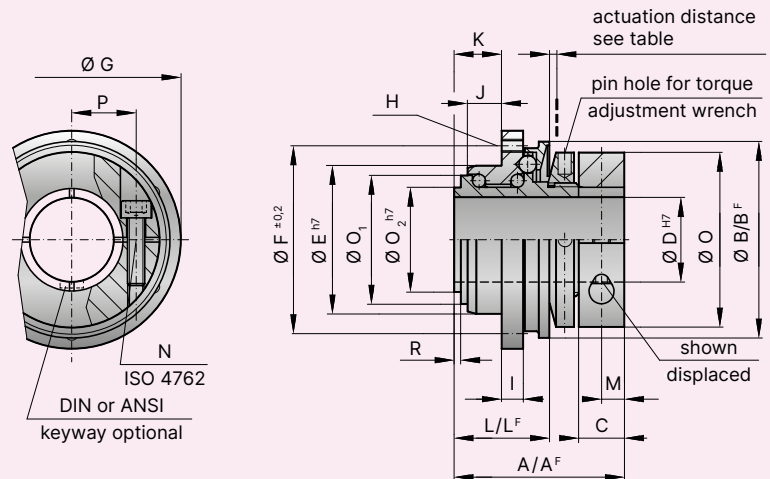
Size 1.5 - 10 with clamping ring and a single clamping screw.
 Size 15 - 2,500 with conical clamping bushing and six screws.
 Torque limiter system: spring loaded ball-detent principle.
 Operable temperature range from -30°C to +120°C.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement

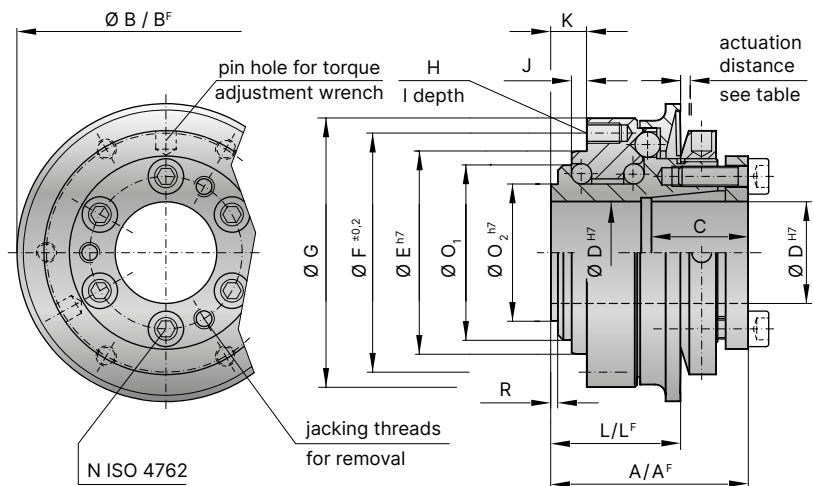
Miniature design Size 1.5 - 10

Standard with
clamping collar



Standard design Size 15 - 2,500

Standard with
conical clamping bushing



Model SK1

		Miniature design													
Size		1.5	2	4.5	10	15	30	60	150	200	300	500	800	1,500	2,500
Adjustment range available from - to (Nm) (approx. values)	T _{KN}	0.1-0.6 0.4-1 0.8-2	0.2-1.5 0.5-2.2 1.5-3.5	1-3 2-4.5 3-7	2-6 4-12 7-18	5-15 12-25 20-40 35-70	5-20 10-30 20-60 50-100	10-30 25-80 50-115	20-70 45-150 80-225	30-90 60-160 140-280 250-400	100-200 150-240 220-440	80-200 200-350 320-650	400-650 500-800 650-950	600-800 700-1,200 1,000-1,800	1,500-2,000 2,000-2,500 2,300-2,800
Adjustment range from - to (Nm) (approx. values) ("F" Version)	T _{KN}	0.3-0.8 or 0.6-1.3	0.2-1 or 0.7-2	2.5-4.5	2-5 4-10 8-15	7-15	8-20 or 16-30	10-30 20-40 30-60	20-60 40-80 80-150	80-140 oder 130-200	120-180 160-300 300-450	50-150 100-300 250-500	200-400 or 450-850	1,000-1,250 or 1,250-1,500	1,400-2,200 or 1,800-2,700
Overall length (mm)	A	23	28	32	39	40	50	54	58	63	70	84	95	109	146
Overall length ("F" Version) (mm)	A ^F	23	28	32	39	40	50	54	58	66	73	88	95	117	152
Actuation ring Ø (mm)	B	23	29	35	45	55	65	73	92	99	120	135	152	174	242
Actuation ring Ø, ("F" Version) (mm)	B ^F	24	32	42	51.5	62	70	83	98	117	132	155	177	187	258
Clamping fit length (mm)	C	7	8	11	11	19	22	27.5	32	32	41	41	49	61	80
Inner diameter from Ø to Ø H7 (mm)	D	4-8	4-12	5-14	6-20	8-22	12-22	12-29	15-37	20-44	25-56	25-56	30-60	35-70	50-100
Pilot diameter h7 (mm)	E	14	22	25	34	40	47	55	68	75	82	90	100	125	168
Bolt-hole circle diameter ± 0.2 (mm)	F	22	28	35	43	47	54	63	78	85	98	110	120	148	202
Flange outside diameter -0.2 (mm)	G	26	32	40	50	53	63	72	87	98	112	128	140	165	240
Thread	H	4xM2	4xM2.5	6xM2.5	6xM3	6xM4	6xM5	6xM5	6xM6	6xM6	6xM8	6xM8	6xM10	6xM12	6xM16
Thread depth (mm)	I	3	4	4	5	6	8	9	10	10	10	12	15	16	24
Centering length -0.2 (mm)	J	2.5	3.5	5	8	3	5	5	5	5	6	9	10	13.5	20
Distance (mm)	K	5	6	8	11	8	11	11	12	12	15	21	19	25	34
Distance (mm)	L	11	15	17	22	27	35	37	39	44	47	59	67	82	112
Distance, ("F" Version) (mm)	L ^F	11.5	16	18	24	27	37	39	41.5	47	51.5	68	75	94	120
Distance	M	3.5	4	5	5										
Screw ISO 4762	N	1xM2.5	1xM3	1xM4	1xM4	6xM4	6xM5	6xM5	6xM6	6xM6	6xM8	6xM8	6xM10	6xM12	6xM16
Tightening torque (Nm)		1	2	4	4.5	4	6	8	12	14	18	25	40	70	120
Outside diameter clamp ring Ø (mm)	O	20	25	32	40										
Diameter (mm)	O ₁	13	18	21	30	35	42	49	62	67	75	84	91	112	154
Diameter h7 (mm)	O ₂	11	14	17	24	27	32	39	50	55	65	72	75	92	128
Distance between centers (mm)	P	6.5	8	10	15										
Distance (mm)	R	1	1.3	1.5	1.5	2.5	2.5	2.5	2.5	3	3	4	4	4.5	6
Moment of inertia (10 ⁻³ kgm ²)	J _{ges}	0.01	0.02	0.05	0.07	0.15	0.25	0.50	1.60	2.70	5.20	8.6	20	31.5	210
Approx. weight (kg)		0.03	0.065	0.12	0.22	0.4	0.7	1.0	1.3	2.0	3.0	4.0	5.5	10	28
Actuation distance (mm)		0.7	0.8	0.8	1.2	1.5	1.5	1.7	1.9	2.2	2.2	2.2	2.2	3.0	3.0

A^F, B^F, L^F = Full disengagement / manual re-engagement version (F)

SKP

With keyway connection

0.1 – 2,800 Nm



Features

- Integral bearing to support sprockets, gears, and other drive elements
- Compact simple design
- Adjustable torque settings

Material

- **Torque limiter element:** hardened steel

Design

With DIN 6885 or ANSI B17.1 keyway. Torque limiter system: spring

loaded ball-detent principle.

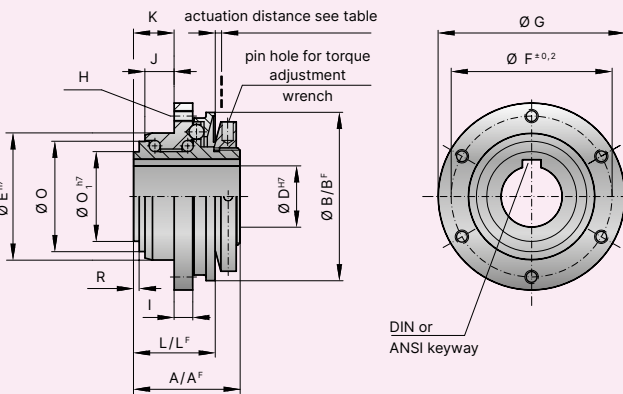
Operable temperature range from -30°C to +120°C.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement

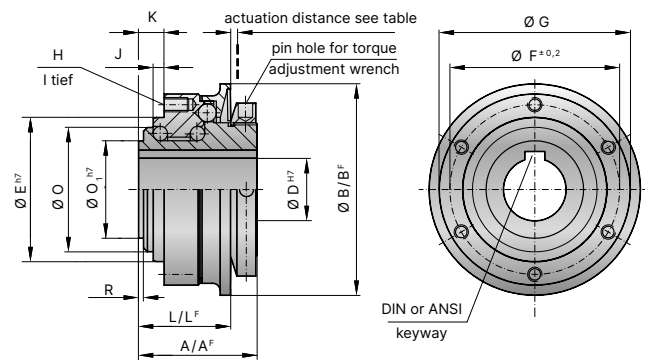
Miniature design Size 1.5 - 10

Standard with keyway mounting



Standard design Size 15 - 2,500

Standard with keyway mounting



Model SKP

Miniature design

Size		1.5	2	4.5	10	15	30	60	150	200	300	500	800	1,500	2,500
Adjustment range available from - to (approx. values)	(Nm) T _{KN}	0.1-0.6 0.4-1 0.8-2	0.2-1.5 0.5-2.2 1.5-3.5	1-3 2-4.5 3-7	2-6 4-12 7-18	5-15 12-25 20-40 35-70	5-20 10-30 20-60 50-100	10-30 25-80 20-40 50-115	20-70 45-150 40-80 80-225	30-90 60-160 140-280 250-400	100-200 150-240 220-440	80-200 200-350 320-650	400-650 500-800 650-950	600-800 700-1,200 1,000-1,800	1,500-2,000 2,000-2,500 2,300-2,800
Adjustment range available from - to (approx. values) ("F" Version)	(Nm) T _{KN}	0.3-0.8 or 0.6-1.3	0.2-1 or 0.7-2	2.5-4.5	2-5 4-10 8-15	7-15	8-20 or 16-30	10-30 20-40 30-60	20-60 40-80 80-150	80-140 oder 160-300 130-200	120-180 100-300 300-450	50-150 or 100-300 250-400	200-400 or 450-850	1,000-1,250 or 1,250-1,500	1,400-2,200 or 1,800-2,700
Overall length A	(mm) A	15.5	20	22	28	34	43	46	48.5	54	57	71.5	80	99	135
Overall length ("F" Version)	(mm) A ^F	15.5	20	22	28	34	43	46	48.5	57	60	75	91	110	141
Actuation ring Ø	(mm) B	23	29	35	45	55	65	73	92	99	120	135	152	174	242
Actuation ring Ø, ("F" Version)	(mm) B ^F	24	32	42	51.5	62	70	83	98	117	132	155	177	187	258
Inner diameter from Ø to Ø H7	(mm) D	4-8*	4-10*	4-12*	4-16*	8-18	12-25.4	12-28	15-38	20-42	25-50	25-58	30-60	35-73	50-98
Inner diameter with keyway DIN 6885-3 (flat)	(mm) D	-	-	-	16-18	18-20	25.4-27	28-30	38-40	42-44	50-52	58-60	60-63	73-75	98-100
Pilot diameter h7	(mm) E	14	22	25	34	40	47	55	68	75	82	90	100	125	168
Bolt-hole circle diameter ± 0.2	(mm) F	22	28	35	43	47	54	63	78	85	98	110	120	148	202
Flange outside diameter -0.2 (mm)	G	26	32	40	50	53	63	72	87	98	112	128	140	165	240
Thread	H	4xM2	4xM2.5	6xM2.5	6xM3	6xM4	6xM5	6xM5	6xM6	6xM6	6xM8	6xM8	6xM10	6xM12	6xM16
Thread depth	(mm) I	3	4	4	5	6	8	9	10	10	10	12	15	16	24
Centering length -0.2	(mm) J	2.5	3.5	5	8	3	5	5	5	5	6	9	10	13.5	20
Distance	(mm) K	5	6	8	11	8	11	11	12	12	15	21	19	25	34
Distance	(mm) L	11	15	17	22	27	35	37	39	44	47	59	67	82	112
Distance, ("F" Version)	(mm) L ^F	11.5	16	18	24	27	37	39	41.5	47	51.5	68	75	94	120
Diameter	(mm) O	13	18	21	30	35	42	49	62	67	75	84	91	112	154
Diameter h7	(mm) O ₁	11	14	17	24	27	32	39	50	55	65	72	75	92	128
Distance	(mm) R	1	1.3	1.5	1.5	2.5	2.5	2.5	2.5	3	3	4	4	4.5	6
Moment of inertia (10 ⁻³ kgm ²)	J _{ges}	0.01	0.02	0.05	0.07	0.15	0.25	0.50	1.60	2.70	5.20	8.6	20	31.5	210
Approx. weight	(kg)	0.03	0.065	0.12	0.22	0.4	0.7	1.0	1.3	2.0	3.0	4.0	5.5	10	28
Actuation distance	(mm)	0.7	0.8	0.8	1.2	1.5	1.5	1.7	1.9	2.2	2.2	2.2	2.2	3.0	3.0

A^F, B^F, L^F = Full disengagement / manual re-engagement version (F)

* bore diameter < 6 mm delivered without keyway

SLP

With keyway connection

10 – 700 Nm



Features

- Integral bearing to support sprockets, gears, and other drive elements
- Adjustable torque settings
- Ultra compact, low inertia version

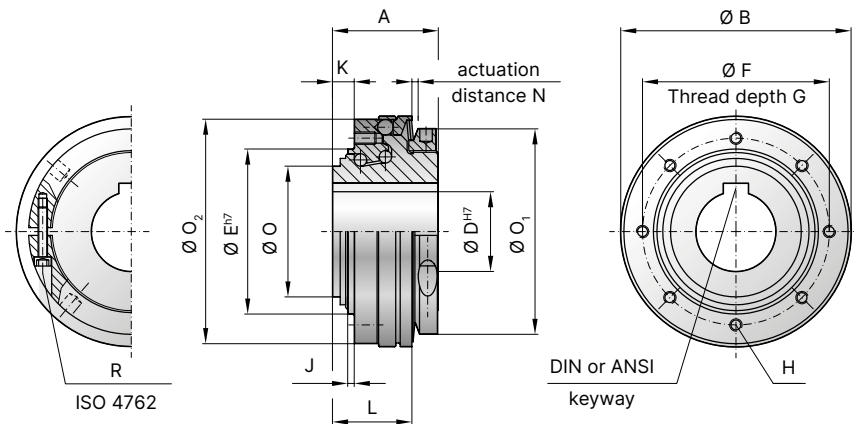
Design

With DIN 6885 or ANSI B17.1 keyway.

Torque limiter system: spring loaded ball-detent principle.
Operable temperature range from -30°C to +120°C.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement



Light weight
safety coupling

Modell SLP

Size			30	60	150	300
Adjustment range* from - to	(Nm)	T_{KN}	10-35 30-80 40-135	30-80 60-120 100-200	40-100 100-200 150-300	200-350 300-450 400-550 550-700
Overall length	(mm)	A	30	35	41	48
Actuation ring diameter	(mm)	B	63	74	92	118
Inner diameter from \emptyset to \emptyset H7	(mm)	D	12-25.4 (28)*	16-30 (32)*	19-44 (46)*	22-54 (58)*
Pilot diameter h7	(mm)	E	43	53	68	85
Bolt-hole circle diameter \pm 0.2	(mm)	F	48	60	75	95
Thread depth +1	(mm)	G	5	6	7	9
Fastening threads		H	8x M4	8x M4	8x M5	8x M6
Centering length -0.2	(mm)	J	2	2	3	3
Distance	(mm)	K	6	7	9	9
Distance to actuation ring edge	(mm)	L	23	26	32	36
Actuation distance	(mm)	N	1.3	1.5	1.8	2
\emptyset Base element	(mm)	O	35	42	54	70
\emptyset Adjustment nut	(mm)	O_1	55	66	82	100
\emptyset Flange -0.2	(mm)	O_2	58	72	87	110
Adjustment nut's clamp screw ISO 4762		R	M3	M3	M3	M4
Tightening torque	(Nm)		2	2	2	4.5
Approx. weight	(kg)		0.2	0.35	0.7	1.1
Approx. moment of inertia at D max.	(10^{-3} kgm ²)	J_{ges}	0.1	0.4	1.1	2.3

* maximum bore diameters shown are only available with shallow keyway according to DIN 6885/3 or special heights for inch bores

SKN

With clamping hub

5 – 1,800 Nm



Features

- Integral bearing to support sprockets, gears, and other drive elements
- Compact simple design
- Adjustable torque settings

Material

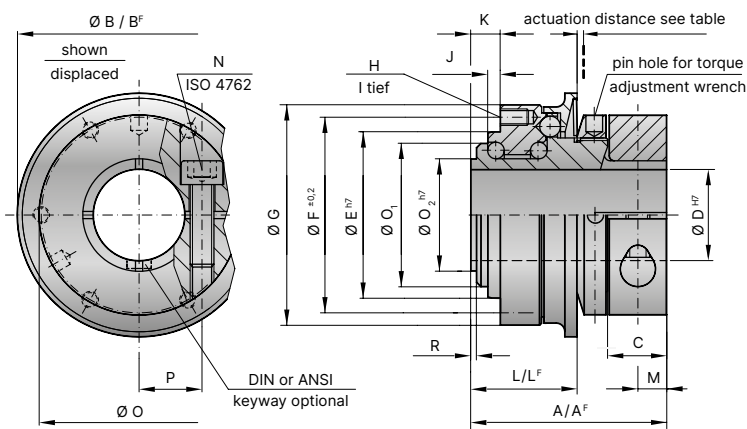
- **Torque limiter element:** hardened steel
- **Clamping collar:** up to size 500 aluminum, size 800 and up steel

Design

With clamping ring and one clamping screw. Torque limiter system: spring loaded ball-detent principle. Operable temperature range from -30°C to +120°C.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement



Model SKN

Size			15	30	60	150	200	300	500	800	1,500
Adjustment range available from - to (approx. values)	(Nm)	T _{KN}	5-10 oder 8-20	10-25 oder 20-40	10-30 oder 25-80	20-70 oder 45-150 oder 80-180	30-90 oder 60-160 oder 120-240	100-200 oder 150-240 oder 200-320	80-200 oder 200-350 oder 300-500	400-650 oder 500-800 oder 600-850	600-800 oder 700-1,200 oder 1,000-1,800
Adjustment range available from - to (approx. values) ("F" Version)	(Nm)	T _{KN}	7-15	8-20 oder 16-30	10-30 oder 20-40 oder 30-60	20-60 oder 40-80 oder 80-150	80-140 oder 130-200	120-180 oder 160-300	50-150 oder 100-300 oder 250-500	200-400 oder 600-850 oder 450-800	1,000-1,250 oder 1,250-1,500
Overall length	(mm)	A	47	59	65	71	80	84	101	115	145
Overall length ("F" Version)	(mm)	A ^F	47	59	65	73	83	87	107	126	160
Actuation ring Ø	(mm)	B	55	65	73	92	99	120	135	152	174
Actuation ring Ø, ("F" Version)	(mm)	B ^F	62	70	83	98	117	132	155	177	187
Clamping fit length	(mm)	C	13.5	16	20	23	26	26	30	35	46
Inner diameter from Ø to Ø H7	(mm)	D	12-22*	14-25.4*	16-32	19-40*	24-44	30-56*	35-60*	40-62*	50-72*
Pilot diameter h7	(mm)	E	40	47	55	68	75	82	90	100	125
Bolt-hole circle diameter ± 0.2	(mm)	F	47	54	63	78	85	98	110	120	148
Flange outside diameter -0.2	(mm)	G	53	63	72	87	98	112	128	140	165
Thread		H	6xM4	6xM5	6xM5	6xM6	6xM6	6xM8	6xM8	6xM10	6xM12
Thread depth	(mm)	I	6	8	9	10	10	10	12	15	16
Centering length -0.2	(mm)	J	3	5	5	5	5	6	9	10	13.5
Distance	(mm)	K	8	11	11	12	12	15	21	19	25
Distance	(mm)	L	27	35	37	39	44	47	59	67	82
Distance, ("F" Version)	(mm)	L ^F	27	37	39	41.5	47	51.5	68	75	94
Distance		M	6.5	7.5	9.5	11	13	13	14.5	18	22.5
Screw ISO 4762		N	M5	M6	M8	M10	M12	M12	M14	M16	M20
Tightening torque			8	15	40	70	70	130	210	270	500
Clamp ring Ø		O	49	55	67	85	94	110	121	134	157
Diameter	(mm)	O ₁	35	42	49	62	67	75	84	91	112
Diameter h7	(mm)	O ₂	27	36	39	50	55	65	72	75	92
Distance between centers	(mm)	P	17.5	19	23.5	30	32.5	39	43.5	45	52
Distance	(mm)	R	2.5	2.5	2.5	2.5	3	3	4	4	4.5
Moment of inertia	(10 ⁻³ kgm ²)	J _{ges}	0.15	0.25	0.50	1.60	2.70	5.20	8.60	20	31.5
Approx. weight	(kg)		0.4	0.7	1.0	1.3	2.0	3.0	4.0	5.5	10
Actuation distance	(mm)		1.5	1.5	1.7	1.9	2.2	2.2	2.2	2.2	3.0

A^F, B^F, L^F = Full disengagement / manual re-engagement version (F) * keyway with max. bore only in clamping hub possible.

SLN

With clamping collar

10 – 700 Nm



Features

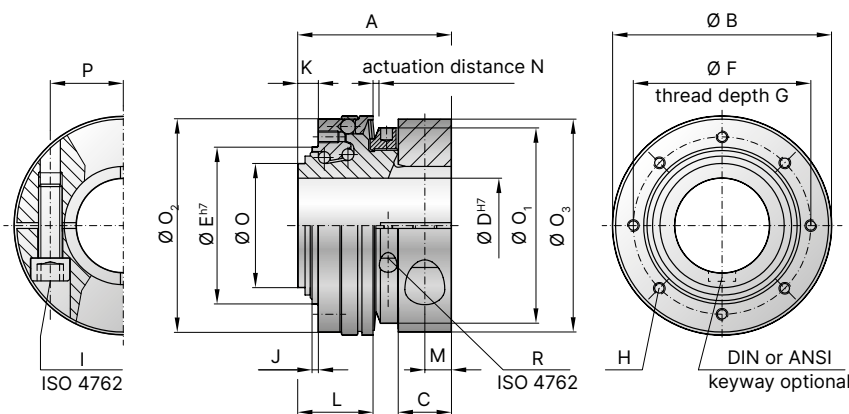
- Integral bearing to support sprockets, gears, and other drive elements
- Adjustable torque settings
- Ultra compact, low inertia version

Design

With clamping collar and a single clamping screw.
Torque limiter system: spring loaded ball-detent principle.
Operable temperature range from -30°C to +120°C.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement



Light weight
safety coupling

Model SLN

Size			30	60	150	300
Adjustment range from - to	(Nm)	T_{KN}	10-35 30-80 40-135	30-80 60-120 100-200	40-100 100-200 150-300	200-350 400-550 300-450 550-700
Overall length	(mm)	A	45	53	63	72
Actuation ring Ø	(mm)	B	63	74	92	118
Clamping fit length	(mm)	C	15	18	22	24
Inner diameter from Ø to Ø H7	(mm)	D	12-30	16-35	19-42	22-60
Pilot diameter h7	(mm)	E	43	53	68	85
Bolt-hole circle diameter ± 0.2	(mm)	F	48	60	75	95
Thread depth +1	(mm)	G	5	6	7	9
Fastening threads		H	8x M4	8x M4	8x M5	8x M6
Screw ISO 4762		I	M6	M8	M10	M12
Tightening torque	(Nm)		15	40	75	130
Centering length -0.2	(mm)	J	2	2	3	3
Distance	(mm)	K	6	7	9	9
Distance to actuation ring edge	(mm)	L	23	26	32	36
Distance	(mm)	M	7.5	9	11	12
Actuation distance	(mm)	N	1.3	1.5	1.8	2
Ø Base element	(mm)	O	35	42	54	70
Ø Adjustment nut	(mm)	O ₁	55	66	82	100
Ø Flange -0.2	(mm)	O ₂	58	72	87	110
Ø Clamp ring	(mm)	O ₃	59	72	90	114
Distance between centers	(mm)	P	21.5	25	33	41
Adjustment nut's clamp screw ISO 4762		R	M3	M3	M3	M4
Tightening torque	(Nm)		2	2	2	4.5
Approx. weight	(kg)		0.3	0.5	0.8	1.5
Approx. moment of inertia at D max	(10 ⁻³ Kgm ²)	J_{ges}	0.15	0.3	1	3

SK2

With clamping hubs

0.1 – 1,800 Nm



Features

- Easy to mount
- Compensation for shaft misalignment
- Adjustable torque settings

Material

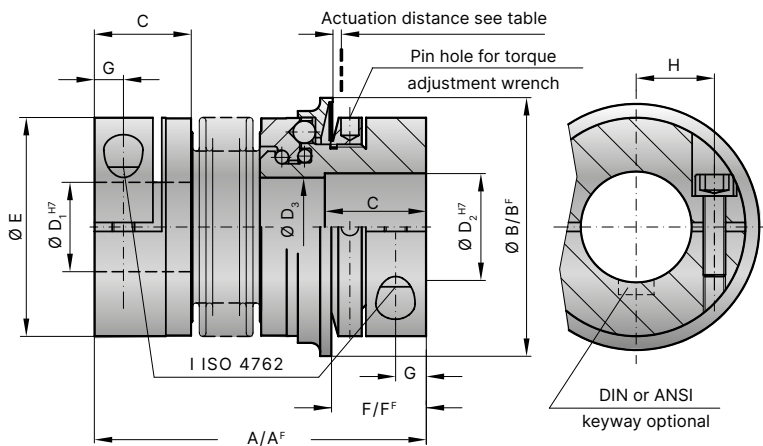
- **Bellows:** high grade stainless steel
- **Torque limiter element:** hardened steel
- **Clamping hubs:** up to size 80 aluminum, size 150 and up steel

Design

Two clamping hubs with one clamping screw in each. Torque limiter system: spring loaded ball-detent principle. Operable temperature range from -30°C to +100°C.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement



Model SK2

Size		1.5	2	4.5	10	15	30	60	80	150	200	300	500	800	1,500
Adjustment range available from - to (approx. values) (Nm)	T_{KN}	0.1-0.6 0.4-1 0.8-1.5	0.2-1.5 oder 0.5-2	1-3 oder 3-6	2-6 oder 4-12	5-10 oder 8-20	10-25 oder 20-40	10-30 oder 25-80	20-70 oder 30-90	20-70 oder 45-150 80-180	30-90 oder 60-160 120-240	100-200 oder 150-240 200-320	80-200 oder 200-350 300-500	400-650 oder 500-800 650-850	650-800 oder 1,000-1,200 1,000-1,800
Adjustment range available from - to (approx. values) ("F" Version) (Nm)	T_{KN}	0.3-0.8 or 0.6-1.3	0.2-1 or 0.7-2	2.5-4.5	2-5 oder 5-10	7-15	8-20 oder 16-30	20-40 oder 30-60	20-60 oder 40-80	20-60 oder 40-80 80-150	80-140 oder 130-200	120-180 oder 160-300	60-150 oder 100-300 250-500	200-400 oder 450-800	1,000-1,250 oder 1,250-1,500
Overall length (mm)	A	42	46 51	57 65	65 74	75 82	87 95	102 112	115 127	116 128	128 140	139 153	163 177	190	223
Overall length ("F" Version) (mm)	A ^F	42	46 51	57 65	65 74	75 82	87 95	102 112	117 129	118 130	131 143	142 156	167 181	201	232
Actuation ring Ø (mm)	B	23	29	35	45	55	65	73	92	92	99	120	135	152	174
Actuation ring Ø, ("F" Version) (mm)	B ^F	24	32	42	51.5	62	70	83	98	98	117	132	155	177	187
Clamping fit length (mm)	C	11	13	16	16	22	27	31	35	35	40	42	51	48	67
Inner diameter from Ø to Ø H7 (mm)	D ₁ /D ₂	3-8*	4-12*	5-14*	6-16*	10-26	12-30	15-32	19-42	19-42	24-45	30-60	35-60	40-75	50-80
Diameter (mm)	D ₃	9.1	12.1	14.1	20.1	21.1	24.1	32.1	36.1	36.1	42.1	58.1	60.1	60.1	68.1
Outside diameter of coupling (mm)	E	19	25	32	40	49	55	66	81	81	90	110	123	134	157
Distance (mm)	F	12	13	15	17	19	24	28	31	31	35	35	45	50	63
Distance, ("F" Version) (mm)	F ^F	11.5	12	14	16	19	22	29	31	30	33	35	43	54	61
Distance (mm)	G	3.5	4	5	5	6.5	7.5	9.5	11	11	12.5	13	17	18	22.5
Distance between centers (mm)	H	6	8	10	15	17	19	23	27	27	31	39	41	2x48	2x55
Screw ISO 4762	I	M2.5	M3	M4	M4	M5	M6	M8	M10	M10	M12	M12	M16	2xM16	2xM20
Tightening torque (Nm)	I	1	2	4	4.5	8	15	40	50	70	120	130	200	250	470
Approx. weight (kg)		0.047	0.07	0.2	0.3	0.4	0.6	1.0	2.0	2.4	4.0	5.9	9.6	14	21
Moment of inertia (10 ⁻³ kgm ²)	J _{ges}	0.01	0.01 0.01	0.020 0.02	0.06 0.07	0.10 0.15	0.27 0.32	0.75 0.80	1.80 1.90	2.50 2.80	5.10 5.30	11.5 11.8	22.8 23.0	42.0	83.0
Lateral ± (mm)	max.	0.15	0.15 0.20	0.20 0.25	0.20 0.30	0.15 0.20	0.20 0.25	0.20 0.25	0.20 0.25	0.20 0.25	0.25 0.30	0.25 0.30	0.30 0.35	0.35	0.35
Angular ± (degree)	values	1	1 1.5	1.5 2	1.5 2	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1.5 2	1.5 2	2 2.5	2.5	2.5
Lateral spring stiffness (N/mm)		70	40 30	290 45	280 145	475 137	900 270	1,200 420	920 255	1,550 435	2,040 610	3,750 1,050	2,500 840	2,000	3,600
Actuation distance (mm)		0.7	0.8	0.8	1.2	1.5	1.5	1.7	1.9	1.9	2.2	2.2	2.2	2.2	3

A^F, B^F, L^F = Full disengagement / manual re-engagement version (F) Larger versions available upon request.

* keyway with max. bore only in clamping hub possible.

SL2

With clamping hubs

10 – 400 Nm



Features

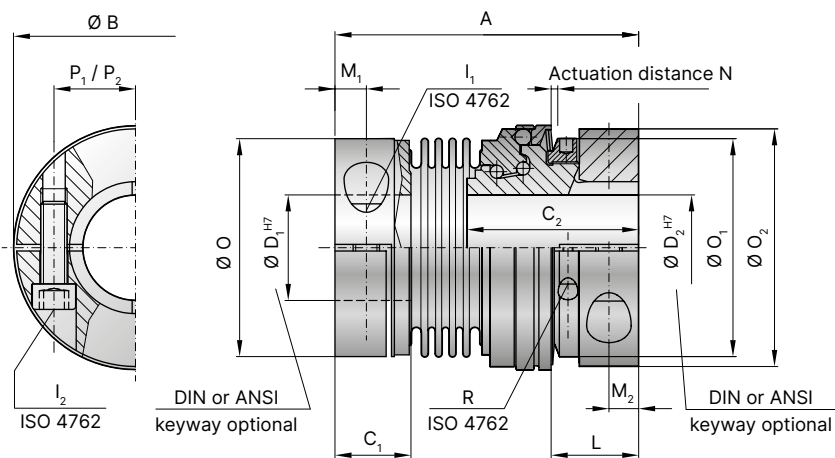
- Easy to mount
- Compensation for shaft misalignment
- Adjustable torque settings
- Ultra compact, low inertia version

Design

Clamping collar / clamping hub with one clamping screw each.
Torque limiter system: spring loaded ball-detent principle.
Special compact, high stiffness version.
Operable temperature range from -30°C to +100°C.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement



Light weight
safety coupling

Model SL2

Size			30	60	150	300
Adjustment range from - to	(Nm)	T_{KN}	10-35 30-80	20-50 40-100	40-100 100-200	100-250 200-350 300-400
Overall length	(mm)	A	80	93	112	126
Actuation ring diameter	(mm)	B	63	74	92	118
Hub length	(mm)	C_1/C_2	21/45	23/53	28 / 63	34/72
Inner diameter from \emptyset to \emptyset H7	(mm)	D_1/D_2	12-32/12-30	16-35 / 16-35	19-42 / 19-42	22-60 / 22-60
Screw ISO 4762	(mm)	I_1/I_2	M6	M8	M10	M12
Tightening torque	(Nm)		15	40	75	130
Distance to actuation ring edge	(mm)	L	22	26	32	35
Distance	(mm)	M_1/M_2	7.5/7.5	9.5/9	11/11	13/12
Actuation distance	(mm)	N	1.3	1.5	1.8	2
\emptyset Clamping hub \emptyset , (coupling end)	(mm)	O	55.5	66	82	110
\emptyset Adjustment nut	(mm)	O_1	55	66	82	100
Clamping ring \emptyset , (torque limiter end)	(mm)	O_2	59	72	90	112
Distance between centers, bellows side/safety element	(mm)	P_1/P_2	20/21.5	23 / 25	27/33	39/41
Adjustment nut's clamp screw ISO 4762		R	M3	M3	M3	M4
Tightening torque	(Nm)		2	2	2	4.5
Approx. weight	(kg)		0.4	0.7	1.2	2.8
Approx. moment of inertia at D max. (10^{-3} Kg m^2)		J_{ges}	0.2	0.8	1.4	6.2
Torsional stiffness	(10^3 Nm/rad)		31	72	141	157
Lateral \pm	max. (mm)		0.2	0.2	0.2	0.25

SKH

Backlash free torque limiters (with fully split clamping hub)

0.1 – 2,800 Nm



Features

- Radial mounting possible
- Very easy to mount and dismount
- Torque limiter system: spring loaded ball-detent principle

Material

- **Bellows:** high grade stainless steel
- **Torque limiter element:** hardened steel
- **Clamping hubs:** up to size 80 aluminum. size 150 and up steel

Design

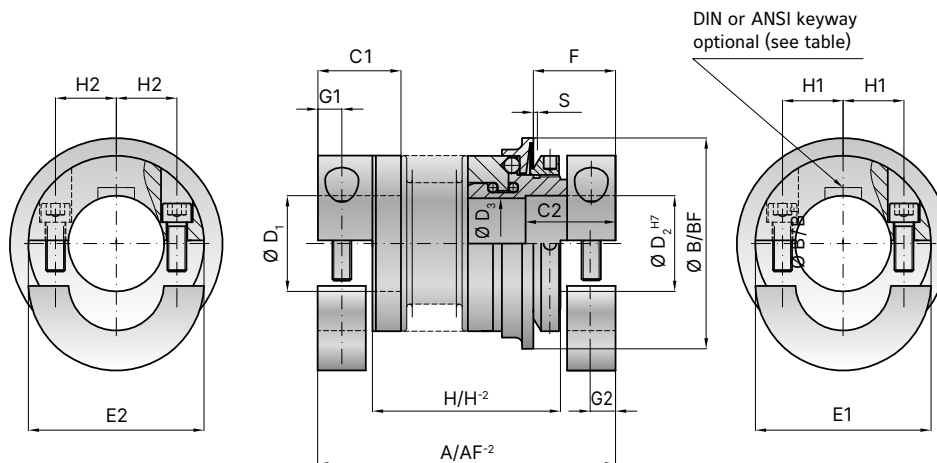
Two clamping hubs with two clamping screw in each.
Torque limiter system: spring loaded ball-detent principle.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement

Model SKH

SIZE			1.5	2		4.5		10		15		30		60		
Adjustment range available from - to (approx. values)	(Nm)	T	0.1-0.6 0.4-1 0.8-1.5	0.2-1.5 or 0.5-2		1-3 or 3-6		2-6 or 4-12		5-10 or 8-20		10-25 or 20-40		10-30 or 25-80		
Adjustment range available from - to (approx. values) ("F" Version)	(Nm)	T ^F	0.3-0.8 or 0.6-1.3	0.2-1 or 0.7-2		2.5-4.5		2-5 or 5-10		7-15		8-20 or 16-30		20-40 or 30-60		
Overall length	(mm)	A	42	48	54	60	68	68	78	76	83	89	97	104	114	
Distance	(mm)	H	27	30.5	36	37.5	45.5	45.5	55.5	46	53	54.5	62.5	62.5	72.5	
Overall length ("F" Version)	(mm)	A ^F	42	48	54	60	68	68	78	76	83	89	97	104	114	
Distance ("F" Version)	(mm)	H ^F	27	30.5	36	37.5	45.5	45.5	55.5	46	53	54.5	62.5	62.5	72.5	
Actuation ring Ø	(mm)	B	23	29		35		45		55		65		73		
Actuation ring Ø, ("F" Version)(mm)		B ^F	24	32		42		51.5		62		70		83		
Clamping fit length	(mm)	C1	11	12.8		16		16		22		26.5		31		
Clamping fit length	(mm)	C2	7.2	8.4		11.5		11.4		23.1		28.2		33		
Inside diameter from Ø to Ø H7	(mm)	D1	3-8	4-12.7		5-16		5-20		10-28		10-30		14-35		
Inside diameter from Ø to Ø H7 (with DIN 6885 keyway)	(mm)	D1 ^N	6-8	6-12.7		6-16		6-20		10-28		10-30		14-35		
Inside diameter from Ø to Ø H7	(mm)	D2	4-8	4-12		5-14		5-20		10-26		10-30		14-32		
Inside diameter from Ø to Ø H7 (with DIN 6885 keyway)	(mm)	D2 ^N	6	6-8		6-12		6-12		10-22		10-28		14-32		
Diameter	(mm)	D3	6	8		12		12		21.1		24.1		32.1		
Outside diameter of clamping hubs D1/D2	(mm)	E1/E2	21.2/20		25/27		32/32		40/40		49/49		55/55		66/66	
Distance	(mm)	F	12.5-13.4		15.4-16.1		17.6-18.5		18.9-19.5		21.5-22.5		25.5-26.5		29-30	
Distance ("F" Version)	(mm)	F ^F	12.5-13.4		14.8-15.5		17.4-18.2		18-19		21-22		23-25		27.5-29	
Distance (approx. values)	(mm)	G1/G2	3.5/3.2		4.1/4.2		5.1/5.1		5.1/5.1		7/7		7.5/7.5		9.5/9.5	
Distance between centers	(mm)	H1/H2	7.2/6.5		8/9.5		10.3/11		14.7/14.7		17.5/17.5		19/19		23.2/23.2	
Screw ISO 4762	(mm)	I	4xM2.5		4xM3		4xM4		4xM4		4xM5		4xM6		4xM8	
Tightening torque	(Nm)		1		2		4		4.5		8		15		40	
Approx. weight	(kg)		0.047		0.07		0.2		0.3		0.4		0.6		1	
Moment of inertia (10 ⁻³ kgm ²)		J _{ges}	0.01		0.01		0.01		0.02		0.02		0.06		0.07	
Torsional stiffness (10 ³ Nm/rad)		CT	0.7		1.2		1.3		7		5		9		8	
Lateral ± (mm)		max. values	0.15		0.15		0.20		0.20		0.25		0.20		0.30	
Angular ± (degree)			1		1		1.5		1.5		2		1.5		2	
Lateral spring stiffness	(N/mm)		70		40		30		290		45		280		145	
Actuation distance from EBS / from - to	(mm)	S	0.3-0.7		0.3-0.8		0.4-1		0.4-1		0.8-1.3		1-1.4		1.1-1.6	



Model SKH

SIZE		150		200		300		500		800		1,500		2,500	
Adjustment range available from - to (approx. values)	(Nm)	T	20-70 45-150 80-180	30-90 60-160 120-240	100-200 150-240 200-320	80-200 200-350 300-500	400-600 500-800 650-850	650-800 700-1,200 1,000-1,800	1,500-2,000 2,000-2,500 2,300-2,800						
Adjustment range available from - to (approx. values) ("F" Version)	(Nm)	T ^F	20-60 40-80 80-150	80-140 or 130-200	120-180 or 160-300	60-150 100-300 300-500	200-400 or 450-800	1,000-1,250 or 1,250-1,500	1,400-2,200 or 1,800-2,700						
Overall length	(mm)	A	118 130	130.5 142.5	141 155	164 178	189	224.1	308						
Distance	(mm)	H	70 82	76.5 88.5	84.5 98.5	93 107	115	130.1	198						
Overall length ("F" Version)	(mm)	A ^F	120 132	134.5 146.4	143.5 157.5	169 183	201	236	314						
Distance ("F" Version)	(mm)	H ^F	72 84	80.5 92.5	87 101	98 112	126.5	142	204						
Actuation ring Ø	(mm)	B	92	99	120	135	152	174	243						
Actuation ring Ø, ("F" Version)	(mm)	B ^F	98	117	132	155	177	187	258						
Clamping fit length	(mm)	C1	35.5	40.5	42.5	50.5	45	65	82						
Clamping fit length	(mm)	C2	37	44	44.3	54.5	47.7	67	78.5						
Inside diameter from Ø to Ø H7	(mm)	D1	19-42	24-45	30-60	35-60	40-75	50-80	60-100						
Inside diameter from Ø to Ø H7 (with DIN 6885 keyway)	(mm)	D1 ^N	19-42	24-45	30-60	35-60	40-75	50-80	60-100						
Inside diameter from Ø to Ø H7	(mm)	D2	19-42	24-45	30-60	35-60	40-75	50-80	60-100						
Inside diameter from Ø to Ø H7 (with DIN 6885 keyway)	(mm)	D2 ^N	19-42	24-45	30-60	35-60	40-75	50-80	60-100						
Diameter	(mm)	D3	38.05	42.5	58	60.1	60.1	68.1	100.1						
Outside diameter of clamping hubs D1/D2	(mm)	E1/E2	81/81	90/90	110/110	122.5/122.5	132/132	157/157	198/198						
Distance	(mm)	F	32-33	36-37.5	38-40.5	47-49	49.5-51.5	60-62	81-83						
Distance ("F" Version)	(mm)	F ^F	33-35	36.5-40	36-39	48-51.5	53-57.5	59-63	79-83						
Distance (approx. values)	(mm)	G1/G2	12/11	12.5/12.5	14/13	16.8/16.8	17.5/17.5	22.5/22.5	26/26						
Distance between centers	(mm)	H1/H2	27.3/27.3	30.5/30.5	39/39	41/41	48/48	55/55	75/75						
Screw ISO 4762	(mm)	I	4xM10	4xM12	4xM12	4xM16	4xM16	4xM20	4xM20						
Tightening torque	(Nm)	I	70	120	130	200	250	470	500						
Approx. weight	(kg)		2.4	4	5.9	9.6	14	21	43						
Moment of inertia (10 ⁻³ kgm ²)	J _{ges}		2.5 2.8	5.1 5.3	11.5 11.8	22.8 23.0	42.0	83.0	348						
Torsional stiffness (10 ³ Nm/rad)	CT		175 110	191 140	420 350	510 500	780	1,304	3,400						
Lateral ± (mm)	max. values		0.20 0.25	0.25 0.30	0.25 0.30	0.30 0.35	0.35	0.35	0.35						
Angular ± (degree)			1 1.5	1.5 2	1.5 2	2 2.5	2.5	2.5	2.5						
Lateral spring stiffness (N/mm)			1,550 435	2,040 610	3,750 1,050	2,500 840	2,000	3,600	6,070						
Actuation distance from EBS / from - to	(mm)	S	1.1-1.7	1.7-2.3	1.8-2.4	1.9-2.6	1.7-2.5	2.4-3	2.8-3.2						

SK3

With conical clamping system

5 – 2,800 Nm



Features

- High clamping pressure
- Compensation for shaft misalignment
- Adjustable torque settings

Material

- **Bellows:** high grade stainless steel
- **Torque limiter element:** hardened steel
- **Clamping hubs / bushings:** steel

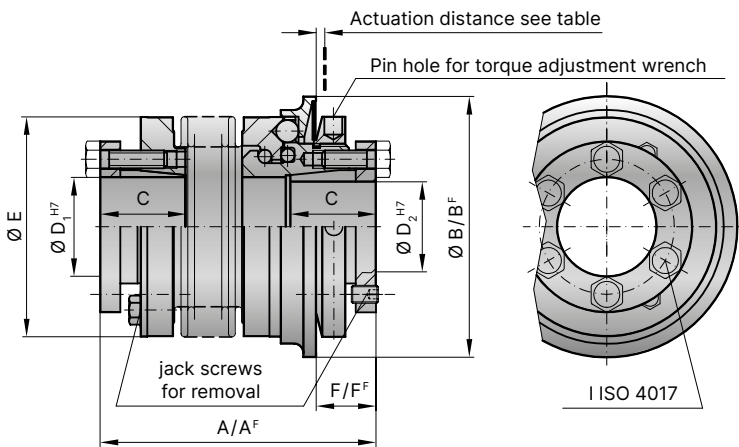
Design

Two conical clamping assemblies with six tightening screws each,

plus jack screws for removal. Torque limiter system : spring loaded ball-detent principle. Operable temperature range from -30°C to +100°C.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement



Model SK3

Size		15	30	60	150	200	300	500	800	1,500	2,500
Adjustment range available from (approx. values) (Nm)	T_{KN}	5-10 or 8-20	10-25 or 20-40	10-30 or 25-80	20-70 45-150 80-200	30-90 60-160 140-280	100-200 150-240 220-400	80-200 200-350 300-500	400-650 500-800 600-900	650-850 700-1,200 1,000-1,800	1,500-2,000 2,000-2,500 2,300-2,800
Adjustment range available from (approx. values) ("F" Version) (Nm)	T_{KN}	7-15	8-20 or 16-30	20-40 or 30-60	20-60 40-80 80-150	80-140 or 130-200	120-180 or 160-300	60-150 or 100-300 250-500	200-400 or 450-800	1,000-1,250 or 1,250-1,500	1,400-2,200 or 1,800-2,700
Overall length ±2 (mm)	A	62 69	72 80	84 94	93 105	99 111	114 128	123 136	151	175	246
Overall length ("F" Version) ±2 (mm)	A ^F	62 69	72 80	84 94	93 105	102 114	117 131	127 140	151	184	252
Actuation ring Ø (mm)	B	55	65	73	92	99	120	135	152	174	243
Actuation ring Ø, ("F" Version) (mm)	B ^F	62	70	83	98	117	132	155	177	187	258
Clamping fit length (mm)	C	19	22	27	32	32	41	41	49	61	80
Inner diameter from Ø to Ø H7 (mm)	D ₁ /D ₂	10-22	12-23	12-29	15-37	20-44	25-56	25-60	30-60	35-70	50-100
Outside diameter of coupling (mm)	E	49	55	66	81	90	110	123	133	157	200
Distance (mm)	F	13	16	18	19	19	23	25	31	30	34
Distance ("F" Version) (mm)	F ^F	13	14	17	18	17	20	22	20	26	31
6x Screw ISO 4017	I	M4	M5	M5	M6	M6	M8	M8	M10	M12	M16
Tightening torque (Nm)		4	6	8	12	14	18	25	40	70	120
Approx. weight (kg)		0.3	0.4	1.2	2.3	3.0	5.0	6.5	9.0	16.3	35
Moment of inertia (10 ⁻³ kgm ²)	J _{ges}	0.10 0.15	0.28 0.30	0.75 0.80	1.90 2.00	2.80 3.00	5.50 6.00	11.0 12.8	20	42	257
Lateral	max. values	0.15 0.20	0.20 0.25	0.20 0.25	0.20 0.25	0.25 0.30	0.25 0.30	0.30 0.35	0.35	0.35	0.35
Angular		1 1.5	1 1.5	1 1.5	1 1.5	1.5 2	1.5 2	2 2.5	2.5	2.5	2.5
Lateral spring stiffness		475 137	900 270	1,200 380	1,550 435	2,040 610	3,750 1,050	2,500 840	2,000	3,600	6,070
Actuation distance		1.5	1.5	1.7	1.9	2.2	2.2	2.2	2.2	3	3

A^F, B^F, L^F = Full disengagement / manual re-engagement version (F) Larger versions available upon request.

SK5

Blind mate with clamping hubs

0.1 – 850 Nm



Features

- Very easy to mount and dismount
- Electrically and thermally isolating
- Adjustable torque settings

Material

- **Bellows:** high grade stainless steel
- **Torque limiter element:** hardened steel
- **Clamping hubs:** up to size 80 aluminum, size 150 and up steel
- **Tapered male segment:** high strength plastic

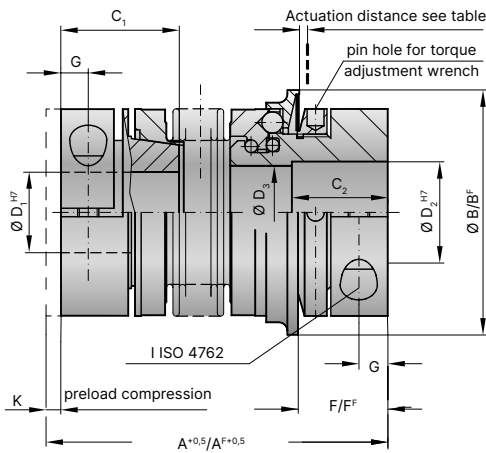
Design

Two clamping hubs with one

clamping screw each, and one of the clamping hubs with tapered male segment for plug-in installation. Torque limiter system: spring loaded ball-detent principle. Operable temperature range from -30°C to +100°C.

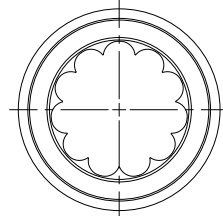
Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement



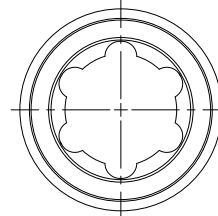
Multi position

Optional: Series 1.5 -800



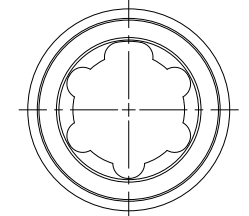
Six position

Standard: Series 15-800



Single position

Standard: Series 1.5 – 10
Optional: Series 15-800



Model SK5

Size		1.5	2	4.5	10	15	30	60	80	150	300	500	800
Adjustment range available from - to (approx. values) (Nm)	T_{KN}	0.1-0.6 0.4-1 0.8-1.5	0.2-1.5 0.5-2	1-3 3-6	2-6 4-12	5-10 8-20	10-25 20-40	10-30 25-80	20-70 30-90	20-70 45-150	100-200 150-240 200-320	80-200 200-350 300-500	400-650 500-800 650-850
Adjustment range available from - to (approx. values) ("F" Version) (Nm)	T_{KN}	0.3-0.8 0.6-1.3	0.2-1 0.7-2	2.5-4.5	2-5 5-10	7-15	8-20 16-30	20-40 30-60	20-60 40-80	80-150	120-200 160-300	60-150 100-300 250-500	200-400 450-800
Overall length +0,5 (mm)	A	44	48 54	60 68	70 79	76 83	89 97	105 115	115 127	116 128	143 157	166 180	196
Overall length +0.5 ("F" Version) (mm)	A ^F	44	48 54	60 68	70 79	76 83	89 97	105 115	117 129	118 130	146 160	170 184	207
Actuation ring Ø (mm)	B	23	29	35	45	55	65	73	92	92	120	135	152
Actuation ring Ø, ("F" Version) (mm)	B ^F	24	32	42	51.5	62	70	83	98	98	132	155	177
Clamping fit length (mm)	C ₁ /C ₂	14 11	16 13	19 16	21 16	28 22	33 27	39 31	43 35	43 35	52 42	61 52	74 48
Inner diameter from Ø to Ø H7 (mm)	D ₁	3-8*	4-12*	5-16*	5-20*	8-22*	10-25*	12-32	14-38*	14-38*	30-56	35-60	40-62*
Inner diameter from Ø to Ø H7 (mm)	D ₂	3-8*	4-12*	5-14*	5-20*	8-26	10-30	12-32	14-42	14-42	30-60	35-60	40-75
Diameter (mm)	D ₃	9.1	12.1	14.1	20.1	21.1	24.1	32.1	36.1	36.1	58.1	60.1	60.1
Outside diameter (mm)	E	19	25	32	40	49	55	66	81	81	110	123	134
Distance (mm)	F	12	13	15	17	19	24	28	31	31	35	45	50
Distance ("F" Version) (mm)	F ^F	11.5	12	14	16	19	22	29	31	30	36	43	54
Distance (mm)	G	3.5	4	5	5	6.5	7.5	9.5	11	11	13	17	18
Distance between centers (mm)	H	6	8	10	15	17	19	23	27	27	39	41	2x48
Screw ISO 4762	I	M2.5	M3	M4	M4	M5	M6	M8	M10	M10	M12	M16	2xM16
Tightening torque (Nm)	I	1	2	4	4.5	8	15	40	50	70	130	200	250
Pretensioning, approx (mm)	K	0.1-0.5	0.2 - 0.7	0.2 - 0.7	0.2 - 1.0	0.2 - 1.0	0.3 - 1.5	0.5 - 1.5	0.5 - 1.0	0.5 - 1.0	0.5 - 1.5	0.5 - 2.0	0.8 - 2.0
Axial recovery of coupling max. (N)	K	4	8 5	15 10	25 30	20 12	50 30	70 45	48 32	82 52	157 106	140 96	200
Approx. weight (kg)		0.038	0.07	0.2	0.3	0.4	0.6	1.4	2	2.4	5.9	9.6	15
Moment of inertia (10 ⁻³ kgm ²)	J _{ges}	0.01	0.01 0.01	0.02 0.02	0.06 0.07	0.10 0.15	0.27 0.32	0.75 0.80	1.80 1.90	2.50 2.80	6.50 7.00	13.0 17.0	50
Lateral ± (mm) max. values		0.15	0.15 0.20	0.20 0.25	0.20 0.30	0.15 0.20	0.20 0.25	0.20 0.25	0.20 0.25	0.20 0.25	0.25 0.30	0.30 0.35	0.35
Angular ± (degree)		1	1 1.5	1.5 2	1.5 2	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1.5 2	2 2.5	2.5
Lateral spring stiffness (N/mm)		70	40 30	290 45	280 145	475 137	900 270	1,200 420	920 290	1,550 435	3,750 1,050	2,500 840	2,000
Actuation distance (mm)		0.7	0.8	0.8	1.2	1.5	1.5	1.7	1.9	1.9	2.2	2.2	2.2

A^F, B^F, L^F = Full disengagement / manual re-engagement version (F) * keyway with max. bore only conditionally possible.

SAFETY COUPLINGS
SK | SL | ES

ES2

Press fit elastomer with clamping hub

1 – 1,800 Nm



Features

- Easy to mount
- Vibration damping
- Compensation for shaft misalignment
- Adjustable torque settings

Material

- **Torque limiter element:** hardened steel
- **Hub D1:** up to size 450 high strength aluminum, size 800 and up steel
- **Hub D2:** up to size 60 high strength aluminum, size 150 and up steel
- **Elastomer insert:** wear resistant thermally stable TPU

Information for elastomer inserts

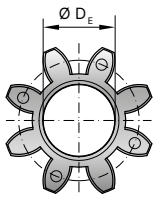
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Design

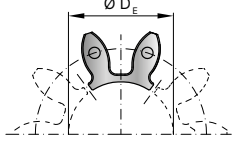
Two clamping hubs with one clamping screw in each and concave driving jaws. Backlash free, vibration damping, electrically isolating elastomer insert press fit into the jaw sets. Torque limiter system: spring loaded ball-detent principle.

Available function systems

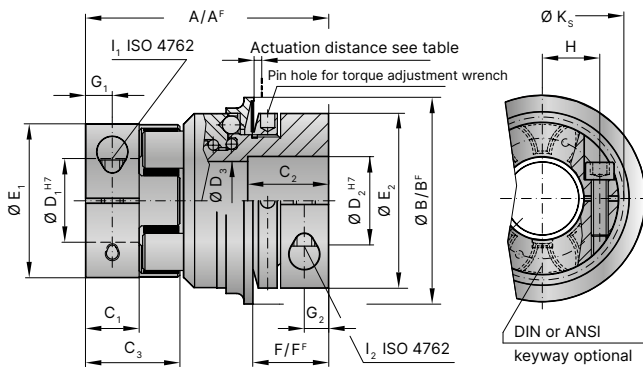
- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement



Size 5-80 elastomer insert type A / B



Size 1500 includes 5x elastomer segments type A / B



Model ES2

Size		5		10		20		60		150		300		450		800		1,500	
Type (Elastomer insert)		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Rated torque	(Nm)	T _{KN} 9 12		12.5 16		17 21		60 75		160 200		325 405		530 660		950 1,100		1,950 2,450	
Max. torque	(Nm)	T _{KNmax} 18 24		25 32		34 42		120 150		320 400		650 810		1,060 1,350		1,900 2,150		3,900 4,900	
Adjustment range possible from -to	(Nm)	T _{KN} 1-3 or 3-6		2 - 6 or 4 - 12		10 - 25 or 20 - 40		10 - 30 or 25 - 80		20 - 70 or 45 - 150 or 80 - 180		100 - 200 or 150 - 240 or 200 - 320		80 - 200 or 200 - 350 or 300 - 500		400 - 650 or 500 - 800 or 600 - 900		600 - 850 or 700 - 1,200 or 1,000 - 1,800	
Adjustment range ("F" Version) possible from -to	(Nm)	T _{KN^F} 2.5 - 4.5		2 - 5 or 5 - 10		8 - 20 or 16 - 30		20 - 40 or 30 - 60		20 - 60 or 40 - 80 or 80 - 150		120 - 180 or 180 - 300		60 - 150 or 100 - 300 or 250 - 500		200 - 400 or 450 - 800		1,000 - 1,250 or 1,250 - 1,500	
Overall length	(mm)	A	50	60	86	96	106	140	164	179	245								
Overall length ("F" Version)	(mm)	A _F	50	60	86	96	108	143	168	190	257								
Actuation ring Ø	(mm)	B	35	45	65	73	92	120	135	152	174								
Actuation ring Ø, ("F" Version)	(mm)	B _F	42	51.5	70	83	98	132	155	177	187								
Clamping fit length	(mm)	C ₁	8	10.3	17	20	21	31	34	46	88								
Fit length	(mm)	C ₂	14	16	27	31	35	42	51	67	120								
Length of hub	(mm)	C ₃	16.7	20.7	31	36	39	52	57	74	120								
Inner diameter from Ø to Ø H7	(mm)	D ₁	4 - 12.7	5 - 16	8 - 25	12 - 32	19 - 36	20 - 45	28 - 60	35 - 80	35 - 90								
Inner diameter from Ø to Ø H7	(mm)	D ₂	6 - 14	6 - 16	12 - 30	15 - 32	19 - 42	30 - 60	35 - 60	40 - 75	50 - 80								
Diameter Ø	(mm)	D ₃	14.1	20.1	24.1	32.1	36.1	58.1	60.1	68.1									
Inside diameter (Elastomer insert)	(mm)	D _E	10.2	14.2	19.2	26.2	29.2	36.2	46.2	60.5	79								
Diameter of the hub	(mm)	E ₁	25	32	42	56	66.5	82	102	136.5	160								
Diameter of the hub	(mm)	E ₂	19	40	55	66	81	110	123	132	157								
Distance	(mm)	F	15	17	24	28	31	35	45	50	63								
Distance, ("F" Version)	(mm)	F _F	14	16	22	29	30	35	43	54	61								
Distance	(mm)	G ₁	4	5	8.5	10	11	15	17.5	23	36								
Distance	(mm)	G ₂	5	5	7.5	9.5	11	13	17	18	22.5								
Distance between centers	(mm)	H ₁	8	10.5	15	21	24	29	38	50.5	2 × 57								
ISO 4762 clamping screw			M3	M4	M5	M6	M8	M10	M12	M16	4 × M16*								
Tightening torque	(Nm)	I ₁	2	4.5	8	15	35	70	120	290	300								
Distance between centers D2 side	(mm)	H ₂	10	15	19	23	27	39	41	48	2 × 55								
Screws (ISO 4762)			M4	M4	M6	M8	M10	M12	M16	2 × M16	2 × M20								
Tightening torque	(Nm)	I ₂	4	4.5	15	40	70	130	200	250	470								
Diameter with screwhead	(mm)	K _S	25	32	44.5	57	68	85	105	139	155								
Approx. weight	(kg)		0.2	0.3	0.6	1.0	2.4	5.8	9.3	14.3	26								
Moment of inertia	(10 ⁻³ kgm ²)	J _{ges}	0.02	0.06	0.25	0.7	2.3	11	22	33.5	185								
Actuation distance	(mm)		0.8	1.2	1.5	1.7	1.9	2.2	2.2	2.2	3.0								

A^F, B^F, L^F = Full disengagement / manual re-engagement version (F) * keyway with max. bore only in clamping hub possible.

SLE

Press fit elastomer with clamping hub

10 – 700 Nm



Features

- Easy to mount
- Vibration damping
- Compensation for shaft misalignment
- Adjustable torque settings
- Ultra compact, low inertia version

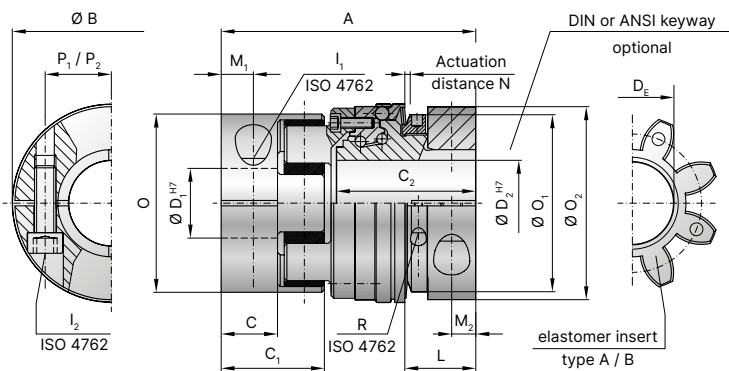
Design

Clamping collar with clamping screw. Clamping hub with concave driving jaws and clamping screw. Backlash free, vibration damping, electrically

isolating elastomer insert press fitted into the jaw sets. Torque limiter system: spring loaded ball detent principle, in a special compact, low inertia design.

Available function systems

- W = Single position / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement



Light weight safety coupling

Model SLE

Size		30		60		150		300	
Type (elastomer insert)		A	B	A	B	A	B	A	B
Rated torque	T_{KN}	60	75	160	200	325	405	530	660
Max. torque	$T_{KN max}$	120	150	320	400	650	810	1,060	1,350
Adjustment range* possible from -to	(Nm) T_{KN}	10-35 30-80 40-135		30-80 60-120 100-200		40-100 100-200 150-300		200-350 300-450 400-550 550-700	
Overall length	(mm) A	85		93		122		135	
Actuation ring diameter	(mm) B	63		74		92		118	
Hub length (coupling hub end)	(mm) C/C ₁	20 / 36		21 / 39		31 / 52		34 / 57	
Length of hub (torque limiting portion)	(mm) C ₂	45		53		63		72	
Inner diameter from Ø to Ø H7	(mm) D ₁ /D ₂	12-32 / 12-30		16-36 / 16-35		19-45 / 19-42		22-60 / 22-60	
Inner diameter (elastomer insert)	(mm) D _E	26.2		29.2		36.2		46.2	
ISO 4762 screw, coupling side / torque limiter side	I ₁ /I ₂	M6		M8		M10		M12	
Tightening torque	(Nm)	15		40		75		130	
Distance to actuation ring edge	(mm) L	22		26		32		35	
Distance	(mm) M ₁ /M ₂	10 / 7.5		12 / 9		15 / 11		17.5 / 12	
Actuation distance	(mm) N	1.3		1.5		1.8		2	
Clamping hub Ø, elastomer coupling	O	56		66.5		82		102	
Ø Adjustment nut	O ₁	55		66		82		100	
Clamping hub Ø, safety coupling	O ₂	59		72		90		112	
Distance to clamping screw, coupling side / torque limiter side	P ₁ /P ₂	21 / 21.5		24 / 25		29 / 33		38 / 41	
Adjustment nut's clamp screw ISO 4762	R	M3		M3		M3		M4	
Tightening torque	(Nm)	2		2		2		4.5	
Approx. weight	(kg)	0.4		0.8		1.5		2.9	
Approx. moment of inertia at D max. (10 ⁻³ Kg·m ²)	J _{ges}	0.3		1		1.8		5	
Static torsional rigidity	(Nm/rad)	3,290	9,750	4,970	10,600	12,400	18,000	15,100	27,000
Dynamic torsional rigidity	(Nm/rad)	7,940	11,900	13,400	29,300	23,700	40,400	55,400	81,200
Lateral ±	approx. (mm)	0.12	0.1	0.15	0.12	0.18	0.14	0.2	0.18

SAFETY COUPLINGS
SK | SL | ES

ESL

With keyway connection

1 – 150 Nm



Features

- Low cost design
- Vibration damping
- Wear resistant ratcheting ball design

Material

- **The torque limiter element:** high strength steel, drive balls made from hardened steel
- **Hubs:** high strength aluminum
- **Elastomer insert:** wear resistant, thermally stable TPU

Information for elastomer inserts

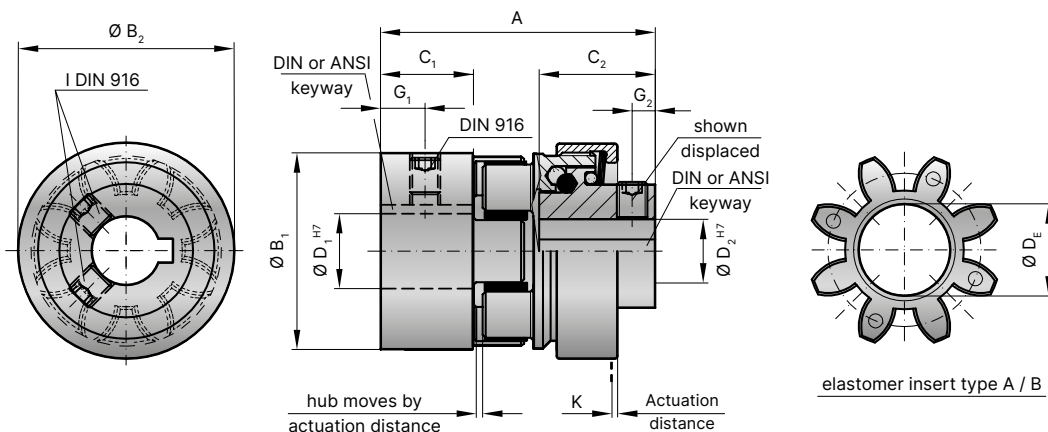
See page 64

Design

Two hubs, each with keyway, set screw, and concave driving jaws. The torque limiter element is integrated into one of the hubs.

Disengagement

Negligible wear at up to 200 rpm. Contact R+W for higher speed applications.



Model ESL

Size	5		10		20		60		150			
Type (Elastomer insert)			A	B	A	B	A	B	A	B		
Rated torque (Nm)	T_{kn}		9	12	12.5	16	17	21	60	75	160	200
Torque setting possible* from - to (Nm)	T_{kn}		1-6		1-12		3-19		5-60		20-150	
Overall length (mm)	A		34		45		64		80		90	
Diameter of the hub (mm)	B_1		25		32		42		56		66.5	
Diameter of the hub (mm)	B_2		29		32		46		59		75	
Clamping fit length (mm)	C_1		12.5		12		25		30		35	
Clamping fit length (mm)	C_2		11.5		20		22		31		35	
Inner diameter from Ø to Ø H7 (mm)	D_1		6-15		6-18		8-25		12-32		19-38	
Inner diameter from Ø to Ø H7 (mm)	D_2		6-10		6-12		8-19		12-24		19-32	
Inside diameter max. (elastomer) (mm)	D_E		10.5		14.2		19.2		26.2		29.2	
Distance (mm)	G_1		5		6		9		11		12	
Distance (mm)	G_2		2.5		3.5		4		4		4	
Screws DIN 916**	I		depending on bore diameter see below table									
Approx. weight (kg)			0.05		0.15		0.2		0.5		1	
Moment of inertia (10^{-3} kgm^2)	J_1 / J_2		0.01		0.02		0.08		0.15		0.5	
Actuation distance (mm)	K		0.6		0.6		0.7		1.1		1.4	

* Disengagement torque is permanently set at the factory.

Fixed disengagement torque

The ESL coupling is unlike other R+W safety couplings in that the disengagement torque is permanently set and tamper proof.

** Set screws

D1/D2	- Ø 10	Ø 11-12	Ø 13-30	Ø 31-58	Ø 59-80
I	M3	M4	M5	M8	M10

Bores <6mm made without keyway.

SK

ES2

SL

Accessories safety coupling

Proximity switch

SK

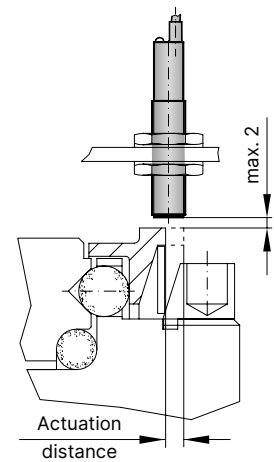
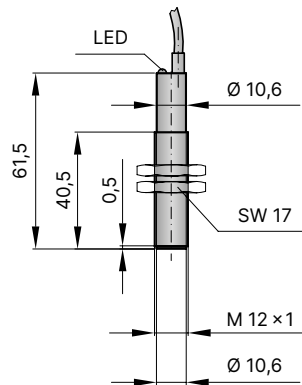
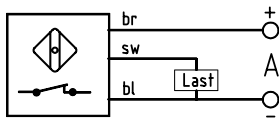
ES 2

Order number 650.2703.001

Technical data SK, ES2

Voltage	10 to 30 V DC
Max. output current	200 mA
Max. switch frequency	800 Hz
Temperature range	-25° to +70° C
Protective system	IP 67
Switch type	normally open
Max. detection gap	max. 2 mm

Switch diagram SK, ES2



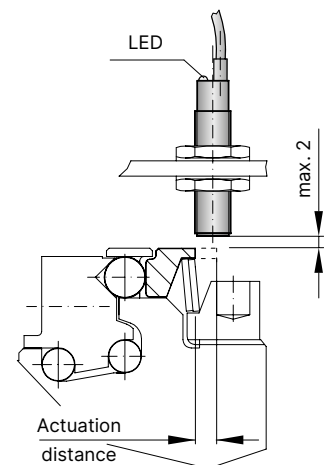
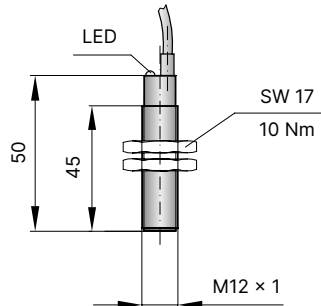
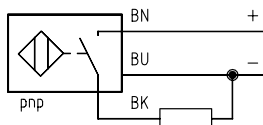
SL

Order number 619.4711.650

Technical data SL

Voltage	10 to 30 V DC
Max. output current	200 mA
Max. switch frequency	≤ 3 KHz
Temperature range	-25° to +70° C
Protective system	IP 67
Switch type	PNP, NO
Max. detection gap	max. 2 mm

Switch diagram SK, ES2



SK**ES2****SL**

Accessories safety coupling

Mechanical limit switch

SK**ES2****SL**

Order number 618.3000.313

Technical data SK, ES2, SL

Max. voltage 250 V AC

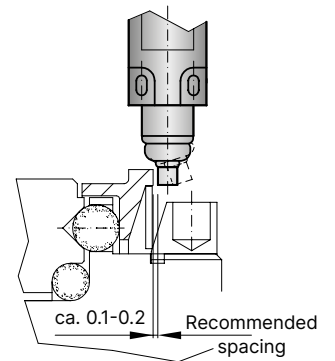
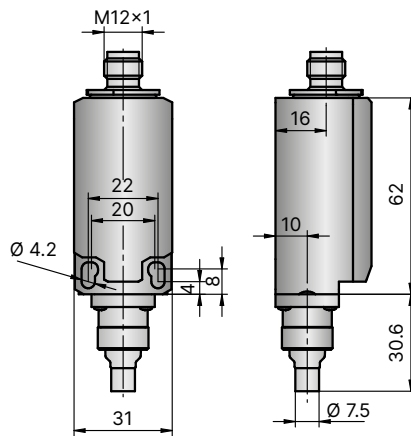
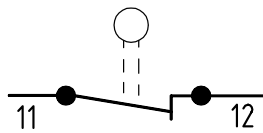
Protective system IP 67

Contact system 2 Opener (forced separating)

Temperature range -30° to +80° C

Actuation Plunger (metal)

Switch diagram SK, ES2, SL



The mechanical limit switch is suitable for size 30 and up.
For smaller safety couplings the proximity sensor is recommended

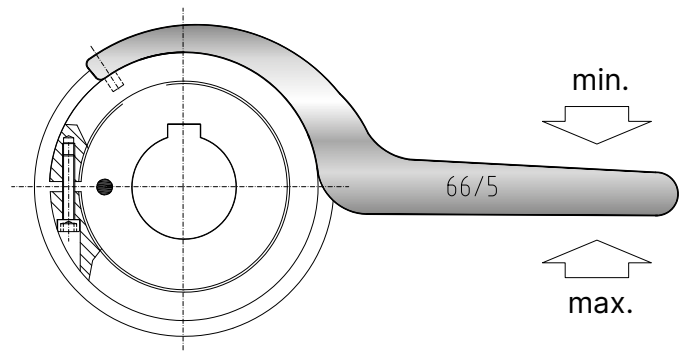
The switch plunger (pictured above and right) should be located as close to the actuation ring / limit switch plate as possible (approximately 0.1-0.2mm).

SK**ES2****SL**

Accessories safety coupling

R+W spanner wrench for torque adjustment

For smaller couplings the spanner wrench is not necessary. In sizes 1.5/2/4.5/10 the torque adjustment nut is easily turned with a screw or pin.



Order Numbers

Size	SK Single position Multi-position Load holding	SK Full disengagement	ES2 Single position Multi-position Load holding	ES2 Full disengagement	SL Single position Multi-position
15	49/4	49/4	-	-	-
20	-	-	55/4	55/4	-
30	55/4	55/4	-	-	55/4
60	66/5	66/5	66/5	66/5	66/5
80	82/5	82/5	-	-	-
150	82/5	82/5	82/5	82/5	82/5
200	90/6	98/5	-	-	-
300	114/6	114/6	114/6	114/6	100/6
450	-	-	126/8	126/8	-
500	126/8	126/8	-	-	-
800	134/8	144/8	134/8	144/8	-
1500	163/8	163/8	163/8	163/8	-
2500	210/10	226/10	-	-	-