THE COUPLING.

R+W®
A POPPE + POTTHOFF COMPANY

PRECISION COUPLINGS

R+W is one thing above all:
THE COUPLING.

The company
Who we are

Day after day, we at R+W make the impossible possible and drive technology for tomorrow. Our couplings are usually only a small component of larger solutions - but they are a decisive factor when it comes to moving components.

Close by worldwide

From our headquarters in Wörth am Main, Germany, we operate as a global industrial enterprise and maintain subsidiaries and sales offices in Italy, France, Slovakia, the USA, China and Singapore.

We attach great importance to close cooperation with our customers and partners. Our goal is to provide our customers with outstanding technical advice and individual development services. That is why we promote our strong and extensive network of more than 80 premium partners and are represented worldwide in over 65 countries close to the market.

Since our founding in 1990, we have developed into the technology leader with in-depth coupling know-how. From batch size 1 we tackle new projects together and implement them consistently.

We produce and deliver more than 1,000,000 couplings annually around the world, from our production facilities in Germany, Slovakia and the USA.

Sustainable Principles

Ecological. Social. Economic. Sustainable development is only possible if we give equal weight to economic growth, social security and ecological compatibility on an equal footing. Our sustainability initiatives take this into account. They span all areas of the company and provide a comprehensive and reliable framework for responsible use of resources.

Natural progress

We are striving to gradually move closer to our goal of zero emissions. To this end, we constantly monitor our consumption levels and rely on technologies and equipment with high resource efficiency. Green energy for our production is provided by a 180-kWp photovoltaic system. The purchased energy comes 100% from hydropower. We reduce process water through targeted fine filtration and cascading.

Social plus

Here, the focus is on those who are the plus at R+W: our employees. We place occupational health and safety at the top of our agenda, and provide continuous investment in this area. A high level of process reliability guarantees the high quality of our couplings and ensures the benefit for our customers.

Long-term value

For success to be sustainable, we must think economically. The prerequisite for this is a modern infrastructure, continuous process improvement in the value chain and cooperation with sustainable suppliers and service providers.

Implementation
How we succeed with Forward thinking

Smart future here today!

With the Intelligent Coupling from R+W Antriebselemente, we are setting a sign for modern developments in the course of digitalization, automation and the Industrial Internet of Things (IIoT).

As a technology leader and specialist, we recognized this early on: The transformation to networked Industry 4.0 cannot be avoided. Data and its efficient use are becoming increasingly valuable. We do not want to simply but to actively help shape it for our customers and turn it into reality.

In drive technology, real-time data acquisition has been a major challenge. The reason: a rotating drive axis cannot be easily connected to a cable – until now! Thanks to the Intelligent Coupling from R+W, this situation has changed fundamentally.

R+W Milestones

1993

Development of the first plug-in metal bellows coupling on the market

1999

New technical standards and superior competitive advantage in elastomer couplings

2001-2004

International openings: USA (sales office), Slovakia (component production) and China (sales office)

2006

New standard for TÜV tested safety couplings + development of a special safety coupling for the International Space Station

More
R+W Couplings

For further information and products please refer to our catalogs of precision and/or industrial couplings.

The new generation of coupling: Intelligent couplings with built-in sensor technology

2008

Additional site opening in Italy

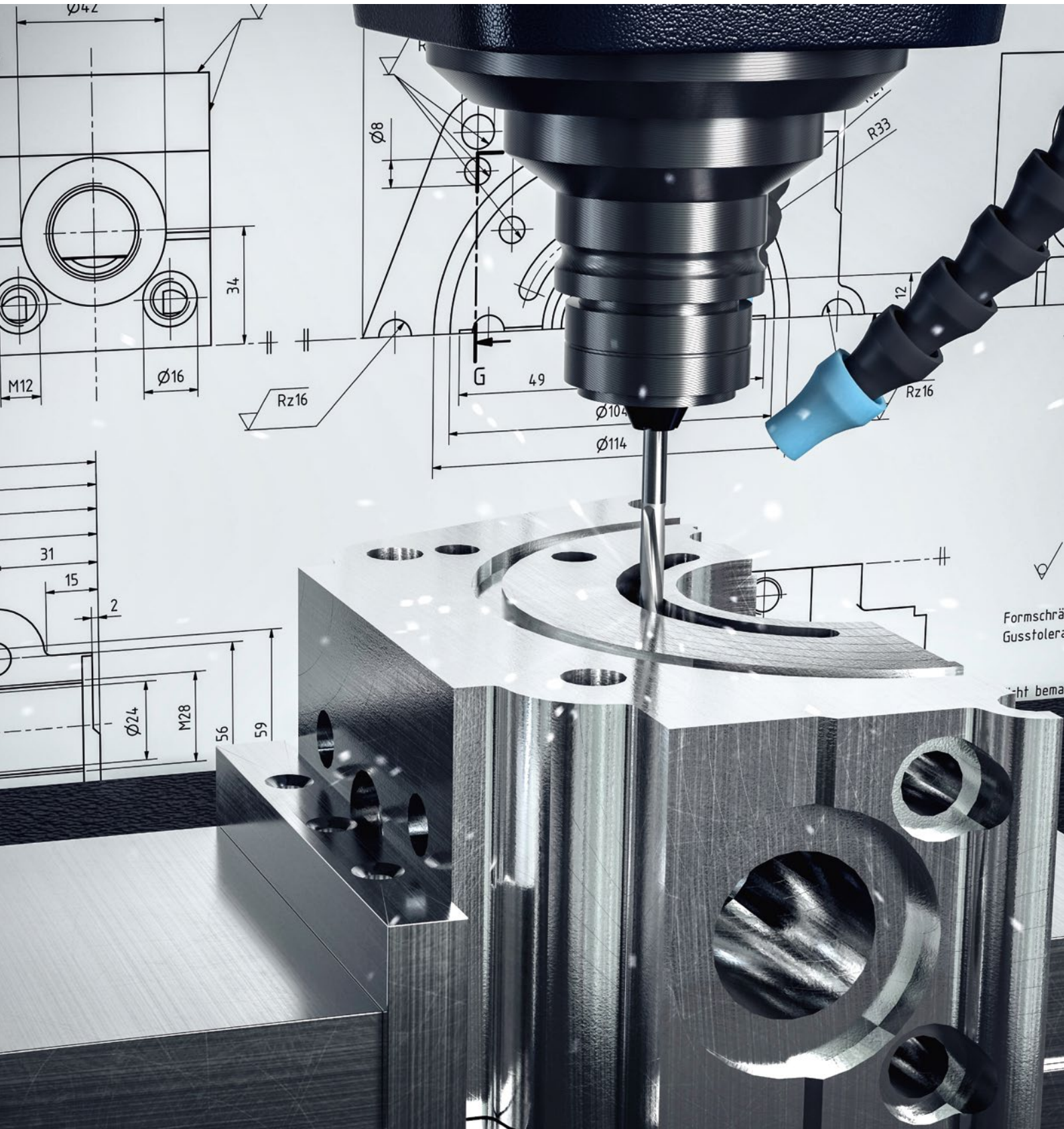
2020

2023

Sales office in Chicago becomes a full production facility

Precision Couplings
0.05 – 25,000 Nm

Model	Features	Page
EK SP	**Backlash free Servomax® elastomer couplings** from 0.5 – 25,000 Nm • Vibration damping • Electrically isolating • Backlash free • Calibrated preloaded insert • Concentrically machined hubs	60
SK SL ES	**Backlash free torque limiters** from 0.1 – 2,800 Nm • Protects from rotating inertia as well as motor torque • Precise torque overload protection • Patented preload for zero backlash • Compact simple design • Low moment of inertia • Extremely fast disengagement • Low residual friction after disengagement	78
ZA EZ	**Backlash free an smooth running line shafts** from 9 – 25,000 Nm • Installation and removal without disturbing adjacent equipment • Self-supporting up to 6 meters • No intermediate support bearing required	102
ATEX	**For use in hazardous environments** For hazard zones 1/21 and 2/22 these couplings are authorized under directive 94/9/EG. • Bellows couplings • Elastomer couplings • Torque limiters • Line shafts • Disc pack couplings	116


Ø42
Ø8
R33
34
M12
Ø16
Rz16
G
49
Ø104
Ø114
12
Rz16
31
15
2
Ø24
M28
56
59

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 + workspiece) (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 ($1/s^2$)
υ	=	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)

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.

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

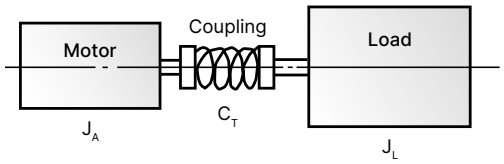
According to resonant frequency

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.

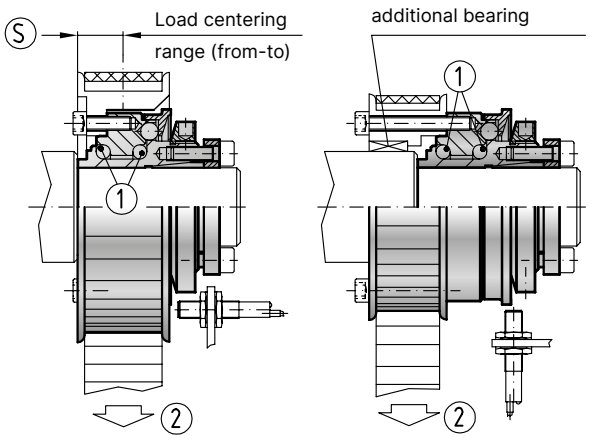
Radial loads

SK1 SKN SKP SLN SLP

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

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 zo accleration (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 accleration 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

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

Elastomer couplings

Temperature factor S_υ	A	B	C	E
Temperature (υ)	Sh 98 A	Sh 64 D	Sh 80 A	Sh 64 D
> -30°C to -10°C	1.5	1.3	1.4	1.2
> -10°C to +30°C	1.0	1.0	1.0	1.0
> +30°C to +40°C	1.2	1.1	1.3	1.0
> +40°C to +60°C	1.4	1.3	1.5	1.2
> +60°C to +80°C	1.7	1.5	1.8	1.3
> +80°C to +100°C	2.0	1.8	2.1	1.6
> +100°C to +120°C	–	2.4	–	2.0
> +120°C to +150°C	–	–	–	2.8

Coupling selection for operation without shock or reversal

The rated torque of coupling (T_{KN}) must be greater than the rated torque of the load (T_{LN}) taking into account the temperature at the coupling (Temperature factor Sυ). Should T_{LN} be unknown, T_{AN} can be used as a substitute in the formula.

Calculation

$$T_{KN} > T_{AN} \cdot S_\upsilon$$

Supplemental Calculation

$$T_{AN} = \frac{9{,}550 \cdot P}{n}$$

Coupling selection for operation with shock loads

Same basic conditions as above. In addition, the maximum torque rating of the coupling (T_{Kmax}) is dictated by peak torque (T_S) due to shock loads.

Calculation

$$T_{KN} > T_{AN} \cdot S_\upsilon$$

Supplemental Calculation

$$T_{AN} = \frac{9{,}550 \cdot P}{n}$$

Calculation

$$T_{Kmax} > T_S \cdot S_Z \cdot S_\upsilon$$

Supplemental Calculation

$$T_S = \frac{T_{AS} \cdot S_A}{m + 1}$$

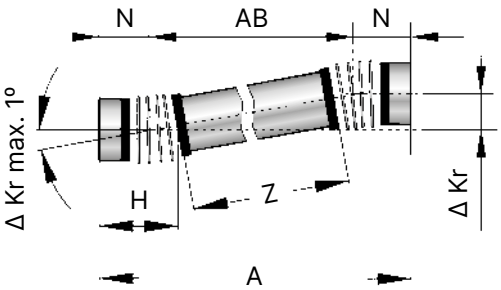
$$m = \frac{J_A + J_1}{J_L + J_2}$$

Line shafts

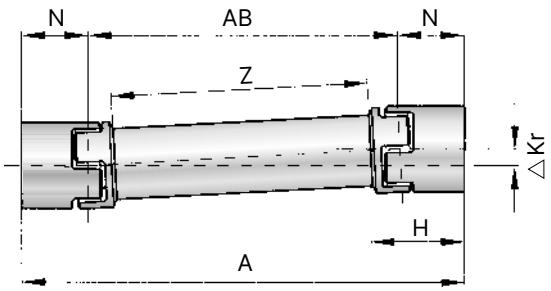
Symbols

A	=	Total length (mm)
AB	=	Distance between flextures (mm) AB = (A – 2xN)
Z	=	Tube length (mm) Z = (A – 2xH)
H	=	Length of coupling ends (mm)
N	=	Length to flexture (mm)
T_{AS}	=	Peak torque of the drive (Nm)
φ	=	Torsional deflection (degree)
C_T^B	=	Torsional stiffness of both flexible elements (Nm/rad)
C_T^{ZWR}	=	Torsional stiffness per 1m of tubing (Nm/rad)
C_T^{ZA}	=	Total torsional stiffness (Nm/rad)
n_k	=	Critical speed (1/min.)
C_{Tdyn}^E	=	Dynamic torsional stiffness of both elastomer inserts (Nm/rad)
C_{Tdyn}^{EZ}	=	Total torsional stiffness (Nm/rad)

ZA

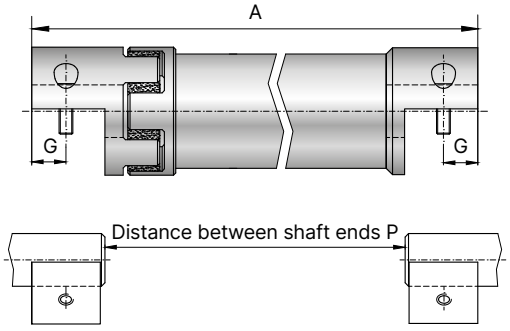


EZ



Installation

The overall length A is best determined as the distance between shaft ends P plus 2x dimension O.



Line shafts

Model ZA

Size	Torsional stiffness of both bellows bodies	Torsional stiffness per 1m of standard tubing	Torsional stiffness per 1m of CFK tubing	Length of coupling ends ZA	Length of coupling ends ZAE	Length to flexture	Maximum Axial misalignment
	C_T^B (Nm/rad)	C_T^{ZWR} (Nm/rad)	C_T^{ZWR} (Nm/rad)	H (mm)	H (mm)	N (mm)	Δ Ka (mm)
10	4,525	1,770	2,892	44.5	39.5	25	2
30	19,500	6,440	8,931	57.5	52	34	2
60	38,000	11,500	17,120	71	64	41	3
150	87,500	24,000	46,679	78	72	47	4
200	95,500	73,000	–	86	–	52	4
300	250,500	220,000	87,438	94	83	56	4
500	255,000	297,000	149,111	110	96	66	5
800	475,000	389,000	230,467	101	89	64	6
1,500	1,400,000	775,000	–	92	–	56	4
4,000	4,850,000	1,160,000	–	102	–	61	4

Table 1

Model EZ

Size	Torsional stiffness of both flexible elements		Torsional stiffness per 1m of tubing	Working length EZ	Length to flexture	Max. axial misalignment
	Elastomer insert A CTB (Nm/rad)	Elastomer insert B CTB (Nm/rad)	C_T^{ZWR} (Nm/rad)	H (mm)	N (mm)	Δ Ka (mm)
5	150	350	503	25	18	2
10	270	825	727	34	26	2
20	1,270	2,220	1,770	46	33	3
60	3,970	5,950	6,440	63	49	3
150	6,700	14,650	11,500	73	57	3.6
300	11,850	20,200	24,000	86	67	4
450	27,700	40,600	73,000	99	78	4
800	41,300	90,000	389,000	125	94	4
2,500	87,500	108,000	950,000	142	108	6
4,500	168,500	371,500	2,200,000	181	137	6
9,500	590,000	670,000	5,500,000	229	171	8

Table 2

Line shafts

According to torsional stiffness

Condition: Line shaft ZA, size 150 T_{AS} = 150 Nm
Wanted: Total torsional stiffness C_T^{ZA}

$$(C_T^{ZA}) = \frac{C_T^{B} \cdot (C_T^{ZWR}/Z)}{C_T^{B} + (C_T^{ZWR}/Z)} \text{ (Nm/rad)}$$

$$(C_T^{ZA}) = \frac{87{,}500 \text{ Nm/rad} \times (24{,}000 \text{ Nm/rad} / 1.344 \text{ m})}{87{,}500 \text{ Nm/rad} + (24{,}000 \text{ Nm/rad} / 1.344 \text{ m})} = 14{,}830 \text{ [Nm/rad]}$$

According to torsional defelction

Condition: Line shaft ZA, size 150 TAS = 150 Nm
Wanted: Torsional deflection at maximum acceleration torque T_{AS}

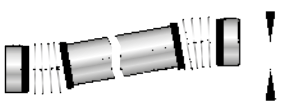
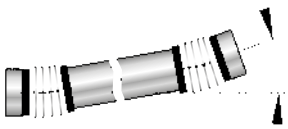
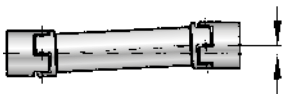
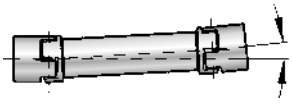
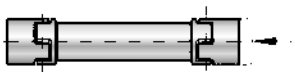
$$\varphi = \frac{180 \cdot T_{AS}}{\pi \cdot C_T^{ZA}} \text{ (degree)}$$

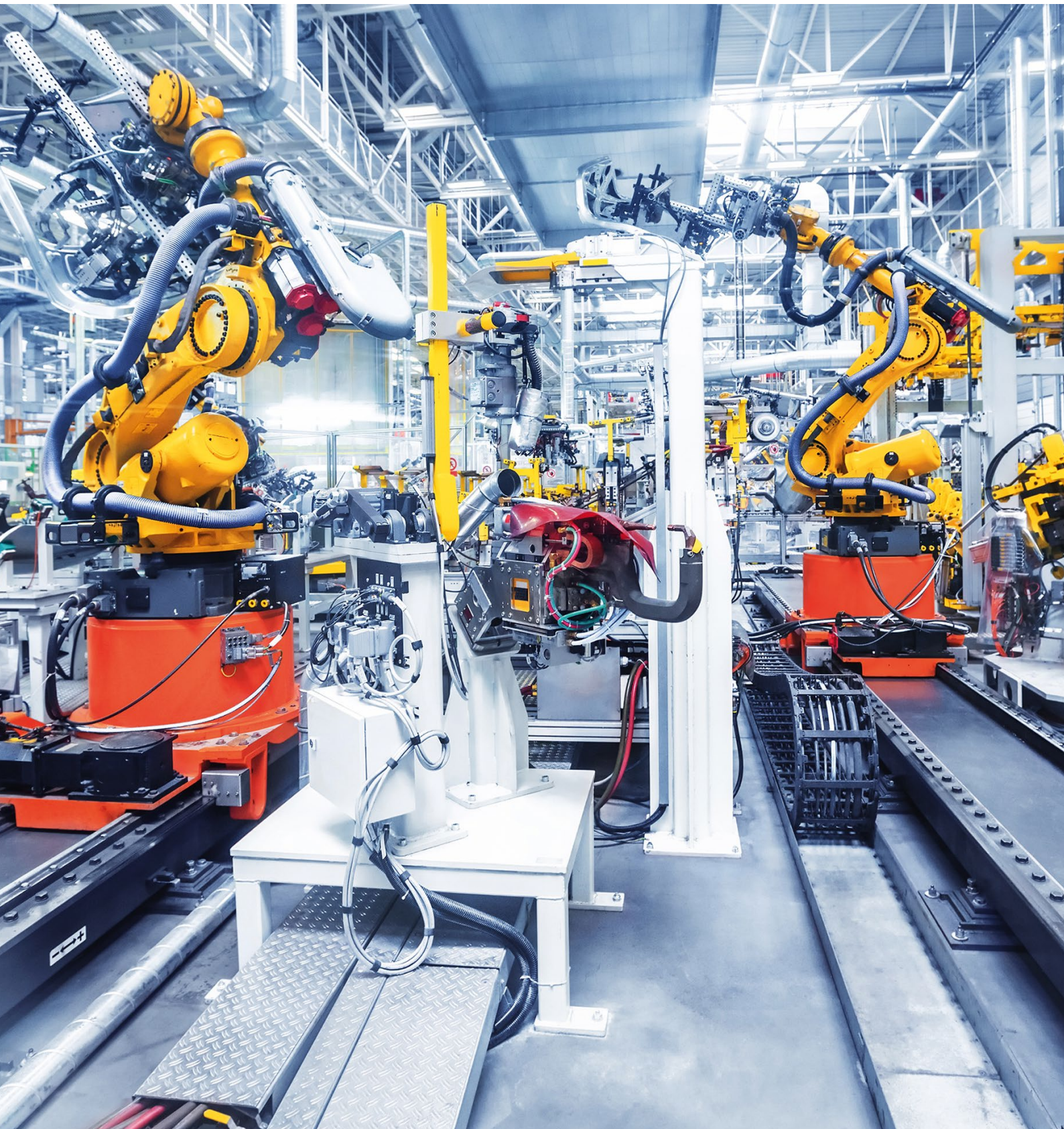
Measurement (A) of line shaft = 1,5 m
Length (Z) of Tubing = A – (2xH) = 1,344 m

$$\varphi = \frac{180 \times 150 \text{ Nm}}{\pi \times 14{,}830 \text{ Nm/rad}} = 0.579°$$

With a maximum torque of 150 Nm the torsional deflection is 0.579°

According to maximum misalignment

	Lateral misalignment △ Kr	Angular misalignment △ Kw	Axial misalignment △ Ka
ZA			
EZ			
	$\Delta Kr_{max} = \tan \Delta \frac{Kw}{2} \cdot AB$ $AB = A - 2xN$	$\Delta Kw_{max.} = 2°$	see table 1/2 (page 16)



BK

Backlash free, torsionally stiff metal bellows couplings

2 – 10,000 Nm

Areas of application
for highly dynamic motion in:
+ Machine tools
+ Packaging machinery
+ Printing machinery
+ Paper converting machinery
+ Labeling machinery
+ Automation equipment

Service life
R+W bellows couplings are fatigue resistant and wear free for an infinite service life, as long as the technical limits are not exceeded.

Temperature range
-30°C to 100°C

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.

Rotational speed
Standard up to 10,000 rpm.
Over 10,000 rpm in finely balanced version; up to grade ISO G=2.5 is available.

ATEX (Optional)
Available on request

Ordering Example	BK2	30	69	14	16	XX
Model	●					Special designation only (e.g. anodized hubs).
Size		●				
Overall length mm			●			
Bore Ø D1 H7				●		
Bore Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. BK2 / 30 / 69 / 14 / 16 / XX=finely balanced for 25,000 rpm)

BK

Torsionally stiff **bellows couplings** 2 – 10,000 Nm

Model		Features	Page
BK1		**With simple flange mounting** 15 – 10,000 Nm • For adapting the metal bellows to custom drive components • Custom flange patterns available	23
BK2		**With clamping hub** 15 – 10,000 Nm • Easy to mount • Availalbe in multiple lengths • Low moment of inertia	24-25
BKH		**With split clamping hub** 15 – 4,000 Nm • Radial mounting possible • Easy to install onto pre-aligned shafts • Low moment of inertia	26
BKL		**Economy class with clamping hub** 2 – 500 Nm • Easy to mount • Optional self-opening clamp system • Low moment of inertia	27
BKC		**Compact version with clamping hub** 15 – 500 Nm • Low moment of inertia • Compact design • Optional self-opening clamp system	28

Model		Features	Page
BKM		**Torsional stiff with clamping hub** 20 – 1,000 Nm • High torque density • Ultra compact • Lowest moment of inertia of all clamping hub designs	29
BKS		**Welded with clamping hub** 15 – 500 Nm • All stainless steel construction • Temperatures up to 300˚C • Easy to mount	30
BK3		**With conical clamping hub** 15 – 10,000 Nm • High clamping pressure • Modern design for removal system • Highly reliable	31
SP3		**With external clamping ring** 60 – 10,000 Nm • Highly concentric symmetrical design • Very true running to the shaft axis • For high speed applications	32
BK5		**With clamping hub and blind mate connection** 15 – 1,500 Nm • Backlash free with two piece design • Easy installation and removal • Available as separate components	33

BK

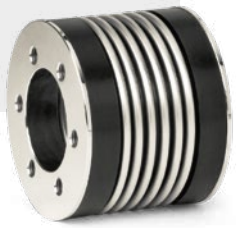
Torsionally stiff **bellows couplings** 2 – 10,000 Nm

Model		Features	Page
BK6		**With conical clamping ring and blind mate connection** 15 – 1,500 Nm • Eliminates need for screw access holes • Self centering hubs for highly concentric mounting • Easy installation and removal	34
BK7		**With expanding shaft** 15 – 300 Nm • For hollow shaft mounting • Save space and cost • Solution for mismatched shaft/bore diameters	35
BK8		**With ISO flange mounting** 50 – 2,600 Nm • For flange output gearboxes • allows for continuous hollow through axis with some right angle gearbox designs • compact layout	36

BK1

With flange mounting

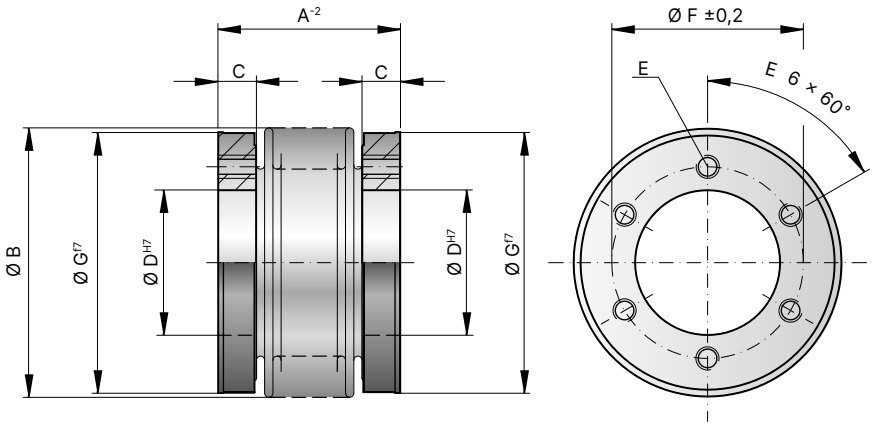
15 – 10,000 Nm



Feataures
- For simple flange mounting to special drive components
- Custom flange patterns available

Material
- **Bellows:** high grade stainless steel
- **Hubs:** steel

Design
Two mounting flanges concentrically assembled to the flexible bellows. Brief overloads of up to 1.5x the rated torque are acceptable.



Model BK1

Size			15	30	60	150	200	300	500	800	1,500	4,000	6,000	10,000
Rated torque	(Nm)	T_{KN}	15	30	60	150	200	300	500	800	1,500	4,000	6,000	10,000
Overall length	(mm)	A^{-2}	30 37	36 44	43 53	50 62	53 65	56 70	64 77	81	100	145	138	150
Outside Ø of bellows	(mm)	B	49	55	66	81	90	110	124	133	157	200	253	303
Fit length/ thread depth	(mm)	C	7,5	10	11	13	14,5	15	16	18	22	30	30	36
Inside diameter H7	(mm)	D	25	28	38	50	58	65	70	75	85	100	145	190
Fastening threads		E	6 x M5	6 x M5	6 x M6	6 x M6	6 x M6	6 x M8	6 x M8	6 x M10	6 x M16	6 x M20	8 x M20	8 x M24
Bolt circle diameter ± 0.2	(mm)	F	35	37	46	62	70	80	94	90	110	140	190	234
Outside diameter f7	(mm)	G	49	55	66	81	90	110	122	116	140	182	235	295
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.07 0.08	0.14 0.15	0.30 0.32	0.90 0.95	1.30 1.40	1.95 2.10	3.0 3.4	4.3	10.6	46	132	350
Approximate weight	(kg)		0.15	0.2	0.3	0.6	0.8	1.35	1.8	1.9	3.3	8.9	13.9	23.7
Torsional stiffness	(10^3 Nm/rad)	C_T	20 15	39 28	76 55	175 110	191 140	450 350	510 500	780	1,304	3,400	5,700	10,950
Axial	± (mm)		1 2	1 2	1.5 2	2 3	2 3	2.5 3.5	2.5 3.5	3.5	3.5	3.5	3	3
Lateral	± (mm)	Max. values	0.15 0.2	0.2 0.25	0.2 0.25	0.2 0.25	0.25 0.3	0.25 0.3	0.3 0.35	0.35	0.35	0.4	0.4	0.4
Angular	± (degree)		1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1.5	1.5	1.5	1.5	1.5
Axial spring stiffness	(N/mm)	C_a	25 15	50 30	72 48	82 52	90 60	105 71	70 48	100	320	565	1,030	985
Lateral spring stiffness	(N/mm)	C_r	475 137	900 270	1,200 420	1,550 435	2,040 610	3,750 1,050	2,500 840	2,000	3,600	6,070	19,200	21,800

BK2

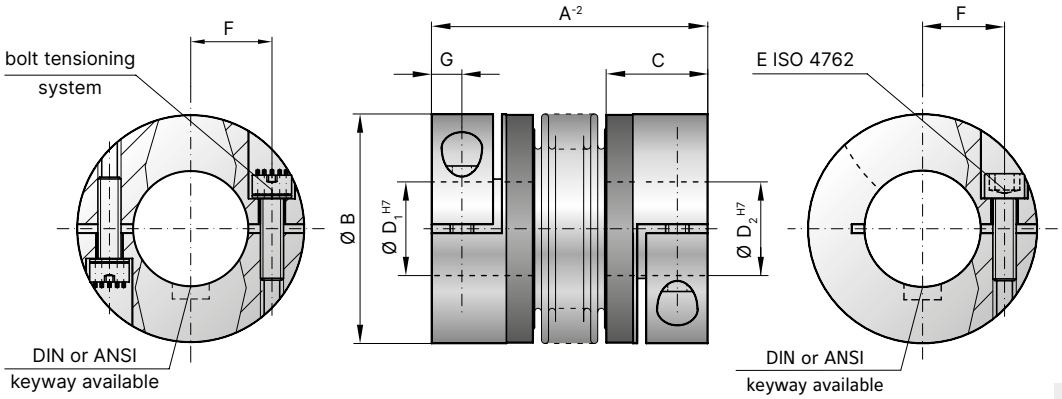
With clamping hub

15 – 200 Nm

Feataures
- Easy to mount
- Light weight and low moment of inertia

Material
- **Bellows:** high grade stainless steel
- **Hubs:** see table

Design
Two clamping hubs concentrically mounted to flexible bellows.
Brief overloads of up to 1.5x the rated torque are acceptable.



Advantage: reduce screw tightening torques by up to 90% by using multiple smaller screws to create the same tension.

Optionally also available in other materials.

Model BK2

Size			15			30			60			80			150			200		
Rated torque	(Nm)	T_{KN}	15			30			60			80			150			200		
Overall length	(mm)	A^{-2}	59	66	99	69	77	113	83	93	130	94	106	143	95	107	144	105	117	163
Outside diameter	(mm)	B	49			55			66			81			81			90		
Fit length	(mm)	C	22			27			31			36			36			41		
Inside diameter possible from Ø to Ø H7	(mm)	D_1/D_2	8-28			10-30			12-35			14-42			19-42			22-45		
Fastening screw ISO 4762		E	M5			M6			M8			M10			M10			M12		
Tightening torque of the fastening screw	(Nm)		8			15			40			50			70			120		
Distance between centerlines	(mm)	F	17			19			23			27			27			31		
Distance	(mm)	G	6.5			7.5			9.5			11			11			12.5		
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.06	0.07	0.08	0.12	0.13	0.14	0.32	0.35	0.4	0.8	0.85	0.9	1.9	2	2.1	3.2	3.4	3.6
Hub material			AL optional steel			AL optional steel			AL optional steel			AL optional steel			steel optional AL			steel optional AL		
Approximate weight	(kg)		0.16			0.26			0.48			0.8			1.85			2.65		
Torsional stiffness	(10^3 Nm/rad)	C_T	20	15	14	39	28	27	76	55	54	129	85	84	175	110	97	191	140	135
Axial	± (mm)	Max. values	1	2	3	1	2	3	1.5	2	3	2	3	4	2	3	4	2	3	4
Lateral	± (mm)		0.15	0.2	1	0.2	0.25	1	0.2	0.25	1	0.2	0.25	1	0.2	0.25	1	0.25	0.3	1
Angular	± (degree)		1	1.5	2	1	1.5	2	1	1.5	2	1	1.5	2	1	1.5	2	1	1.5	2
Axial spring stiffness	(N/mm)	C_a	25	15	84	50	30	118	72	48	165	48	32	144	82	52	130	90	60	280
Lateral spring stiffness	(N/mm)	C_r	475	137	140	900	270	224	1,200	420	337	920	290	401	1,550	435	500	2,040	610	750

* 180° opposed in each clamping hub.

BK2

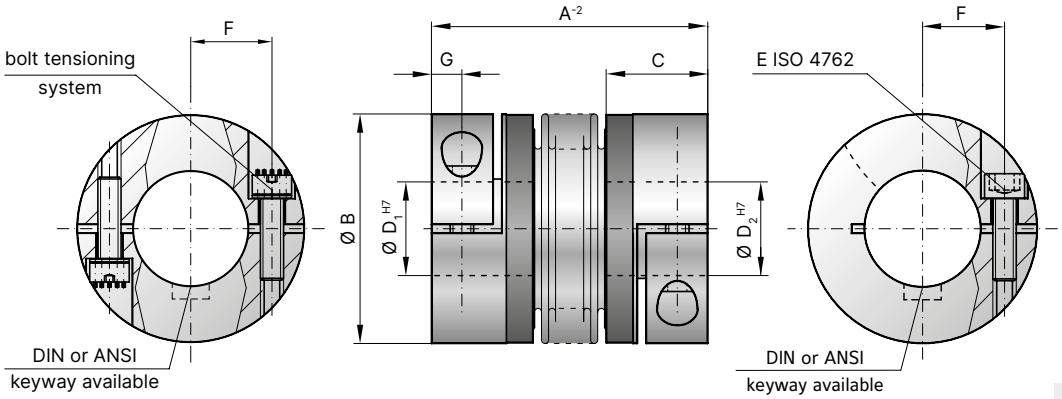
With clamping hub

300 – 10,000 Nm

Feataures
- Easy to mount
- Light weight and low moment of inertia
- Optional: bolt tensioning system in size 800 and up

Material
- **Bellows:** high grade stainless steel
- **Hubs:** see table

Design
Two clamping hubs concentrically mounted to flexible bellows.
Brief overloads of up to 1.5x the rated torque are acceptable.



Advantage: reduce screw tightening torques by up to 90% by using multiple smaller screws to create the same tension.

Optionally also available in other materials.

Model BK2

Size			300			500			800		1,500		4,000	6,000	10,000
Rated torque	(Nm)	T_{KN}	300			500			800		1,500		4,000	6,000	10,000
Overall length	(mm)	A^{-2}	111	125	200	133	146	169	140	179	166	230	225	252	288
Outside diameter	(mm)	B	110			124			134		157		200	253	303
Fit length	(mm)	C	43			51			45		55		85	107	129
Inside diameter possible from Ø to Ø H7	(mm)	D_1/D_2	24-60			35-60			40-75		50-80		50-90	60-140	70-180
Fastening screw ISO 4762		E	M12			M16			2x M16*		2x M20*		2x M24*	2x M24*	2x M30*
Tightening torque of the fastening screw	(Nm)		130			200			250		470		1,200	1,200	2,400
Distance between centerlines	(mm)	F	39			41			2×48		2×55		2×65	2×90	2×117
Distance	(mm)	G	13			16.5			18		22.5		28	35	42
Moment of inertia	(10^{-3} kgm²)	J_{ges}	7.6	7.9	8.3	14.3	14.6	14.8	16.2	17	43	45	165	495	1,214
Hub material			steel optional AL			steel optional AL			steel		steel		steel	steel	steel
Approximate weight	(kg)		4			6.3			5.7		11.5		28.8	49.4	80.9
Torsional stiffness	(10^3 Nm/rad)	C_T	450	350	340	510	500	400	780	711	1,304	1,180	3,400	5,700	10,950
Axial	± (mm)	Max. values	2.5	3.5	4.5	2.5	3.5	4.5	3.5	4.5	3.5	4.5	3.5	3	3
Lateral	± (mm)		0.25	0.3	1	0.3	0.35	1	0.35	1	0.35	1	0.4	0.4	0.4
Angular	± (degree)		1	1.5	2	1	1.5	2	1.5	2	1.5	2	1.5	1.5	1.5
Axial spring stiffness	(N/mm)	C_a	105	71	605	70	48	85	100	285	320	440	565	1,030	985
Lateral spring stiffness	(N/mm)	C_r	3,750	1,050	1,200	2,500	840	614	2,000	1,490	3,600	1,700	6,070	19,200	21,800

* 180° opposed in each clamping hub.

BKH

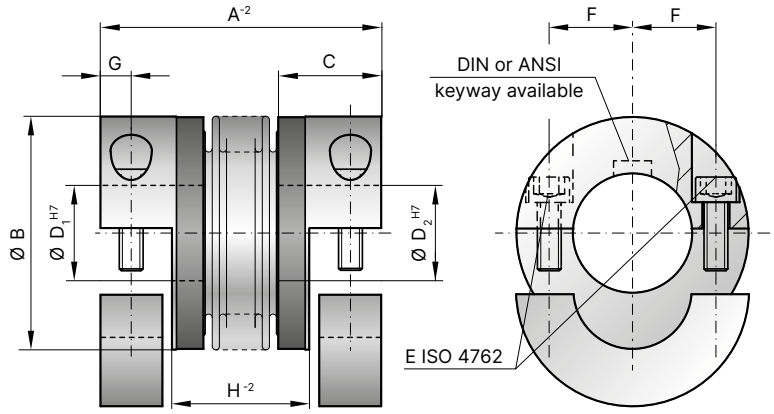
With split clamping hub

15 – 4,000 Nm

Feataures
- Radial mounting possible
- Easy installation onto pre-aligned shafts
- Low moment of inertia

Material
- **Bellows:** high grade stainless steel
- **Hubs:** see table

Design
Two split clamping hubs with two screws in each.
Brief overloads of up to 1.5x the rated torque are acceptable.



Model BKH

Size			15	30	60	80	150	200	300	500	800	1,500	4,000
Rated torque	(Nm)	T_{KN}	15	30	60	80	150	200	300	500	800	1,500	4,000
Overall length	(mm)	A^{-2}	59 66	69 77	83 93	94 106	95 107	105 117	111 125	133 146	140	166	225
Outside diameter	(mm)	B	49	55	66	81	81	90	110	124	134	157	200
Fit length	(mm)	C	22	27	31	36	36	41	43	51	45	55	85
Inside diameter possible from Ø to Ø H7	(mm)	D_1/D_2	8-28	10-30	12-35	14-42	19-42	22-45	24-60	35-60	40-75	50-80	50-90
Fastening screw ISO 4762		E	M5	M6	M8	M10	M10	M12	M12	M16	M16	M20	M24
Tightening torque of the fastening screw	(Nm)		8	15	40	50	70	120	130	200	250	470	1,200
Distance between centerlines	(mm)	F	17.5	19	23	27	27	31	39	41	48	55	65
Distance	(mm)	G	7	7.5	9.5	12	12	12.5	14	16.5	18	22.5	28
Length of center section	(mm)	H^{-2}	29 36	35 43	41 51	47 59	48 60	50 62	55 69	61 75	65.5	71	109
Moment of inertia(10^{-3} kgm²)		J_{ges}	0.07 0.08	0.14 0.15	0.23 0.26	0.65 0.67	2.5 3.2	4.5 5.4	8.5 10.5	17.3 19.6	24.3	49.2	165
Approximate weight	(kg)		0.15	0.3	0.4	0.8	1.7	2.5	4	7.5	7	12	28
Torsional stiffness	(10^3 Nm/rad)	C_T	20 15	39 28	76 55	129 85	175 110	191 140	450 350	510 500	780	1,304	3,400
Axial	± (mm)	Max. values	1 2	1 2	1.5 2	2 3	2 3	2 3	2.5 3.5	2.5 3.5	3.5	3.5	3.5
Lateral	± (mm)		0.15 0.2	0.2 0.25	0.2 0.25	0.2 0.25	0.2 0.25	0.25 0.3	0.25 0.3	0.3 0.35	0.35	0.35	0.4
Angular	± (degree)		1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1.5	1.5	1.5
Axial spring stiffness	(N/mm)	C_a	25 15	50 30	72 48	48 32	82 52	90 60	105 71	70 48	100	320	565
Lateral spring stiffness	(N/mm)	C_r	475 137	900 270	1,200 420	920 290	1,550 435	2,040 610	3,750 1,050	2,500 840	2,000	3,600	6,070

BKL

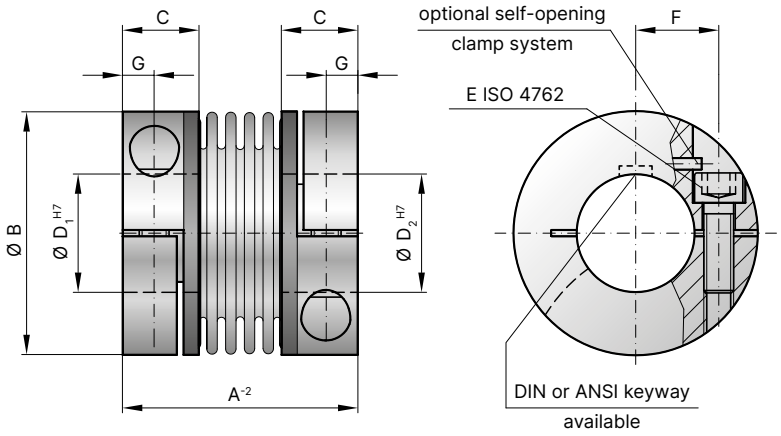
With clamping hub

2 – 500 Nm

Feataures
- Easy to mount
- Light weight and low moment of inertia

Material
- **Bellows:** high grade stainless steel
- **Hubs:** see table

Design
Two clamping hubs concentrically mounted to flexible bellows.
Brief overloads of up to 1.5x the rated torque are acceptable.



Optional: self-opening clamp system to open the bore during installation and removal by backing out the clamping screw.

Model BKL

Size			2	3	4.5	10	15	30	60	80	150	300	500
Rated torque	(Nm)	T_{KN}	2	3	4.5	10	15	30	60	80	150	300	500
Overall length	(mm)	A^{-2}	30	32	40	44	58	68	79	92	92	109	114
Outside diameter	(mm)	B	25	25	32	40	49	56	66	82	82	110	123
Fit length	(mm)	C	10	10	13	13	21.5	26	28	32.5	32.5	41	42.5
Inside diameter possible from Ø to Ø H7	(mm)	$D_{1/2}$	4-12.7	3-12.7	6-16	6-24	8-28	10-32	14-35	16-42	19-42	24-60	35-62
Fastening screw ISO 4762		E	M3	M3	M4	M4	M5	M6	M8	M10	M10	M12	M16
Tightening torque of the fastening screw	(Nm)		2.3	2.3	4	4.5	8	15	40	70	85	120	200
Distance between centerlines	(mm)	F	8	8	11	14	17	20	23	27	27	39	41
Distance	(mm)	G	4	3.8	5	5	6.5	7.5	9.5	11	11	13	17
Moment of inertia (10^{-3} kgm²)		$J_{ges.}$	0.002	20	0.007	0.016	0.065	0.12	0.3	0.75	1.8 0.8	7.5 3.1	11.7 4.9
Approximate weight	(kg)		0.02	0.023	0.05	0.06	0.16	0.25	0.4	0.7	1.7 0.75	3.8 1.6	4.9 2.1
Torsional stiffness(10^3 Nm/rad)		C_T	1.5	0.994	7	9	23	31	72	80	141	157	290
Axial	± (mm)	Max. values	0.5	1	1	1	1	1	1.5	2	2	2	2.5
Lateral	± (mm)		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Angular	± (degree)		1	2	1	1	1	1	1	1	1	1	1
Axial spring stiffness	(N/mm)	C_a	8		35	30	30	50	67	44	77	112	72
Lateral spring stiffness	(N/mm)	C_r	50		350	320	315	366	679	590	960	2,940	1,450

BKC

Compact design with clamping hub

15 – 500 Nm

Feataures

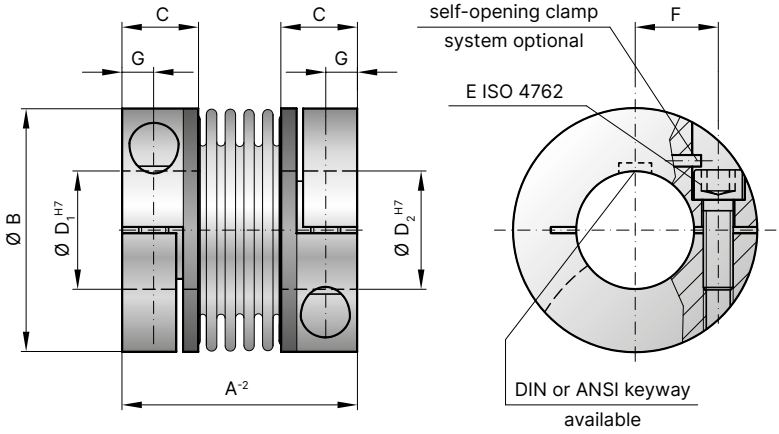
- For space restricted installations
- Light weight and low moment of inertia
- Easy to mount

Material

- **Bellows:** high grade stainless steel
- **Hubs:** see table

Design

Two clamping hubs concentrically mounted to flexible bellows.
Brief overloads of up to 1.5x the rated torque are acceptable.



Optional: self-opening clamp system to open the bore during installation and removal by backing out the clamping screw.

Model BKC

Size			15	30	60	150	300	500
Rated torque	(Nm)	T_{KN}	15	30	60	150	300	500
Overall length	(mm)	A^{-2}	48	58	67	78	94	100
Outside diameter	(mm)	B	49	56	66	82	110	123
Fit length	(mm)	C	16.5	21	23	27.5	34	34
Inside diameter possible from Ø to Ø H7	(mm)	D_1/D_2	8-28	12-32	14-35	19-42	24-60	32-75
Fastening screw ISO 4762		E	M5	M6	M8	M10	M12	M12
Tightening torque of the fastening screw	(Nm)		8	15	40	75	120	125
Distance between centerlines	(mm)	F	17.5	20	23	27	39	45
Distance	(mm)	G	6.5	7.5	9.5	11	13	13
Moment of inertia	(10^{-3} kgm²)	$J_{ges.}$	0.05	0.1	0.26	0.65	6.3	9
Hub material			AL	AL	AL	AL	steel	steel
Approximate weight	(kg)		0.13	0.21	0.37	0.72	3.26	3.52
Torsional stiffness	(10^3 Nm/rad)	C_T	23	31	72	141	157	290
Axial	± (mm)	Max. values	1	1	1.5	2	2	2.5
Lateral	± (mm)		0.2	0.2	0.2	0.2	0.2	0.2
Angular	± (degree)		1	1	1	1	1	1
Axial spring stiffness	(N/mm)	C_a	30	50	67	77	112	72
Lateral spring stiffness	(N/mm)	C_r	315	366	679	960	2,940	2,200
Speed max. with balancing	(min^{-1})		80,000	70,000	60,000	50,000	40,000	30,000

BKM

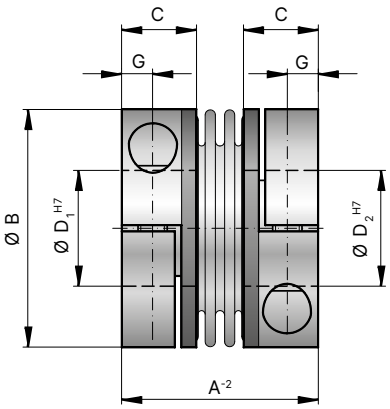
Torsional stiff with clamping hub

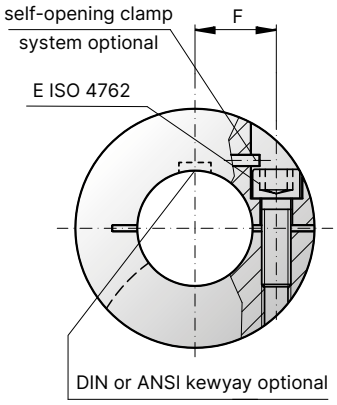
20 – 1,000 Nm

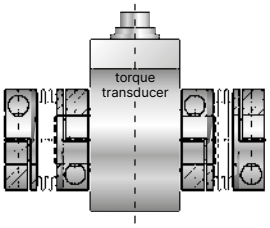
Feataures
- Extremely compact
- High torque density
- High torsional stiffness

Material
- **Bellows:** high grade stainless steel
- **Hubs:** see table

Design
Two clamping hubs concentrically mounted to flexible bellows.
Brief overloads of up to 1.5x the rated torque are acceptable.







Key application: For mounting on a torque transducer.

Model BKM

Size			20	200	400	1,000
Rated torque	(Nm)	T_{KN}	20	200	400	1,000
Overall length	(mm)	A^{-2}	40	59	75	89
Outside diameter	(mm)	B	49	66	82	110
Fit length	(mm)	C	16.5	23	27.5	34
Inside diameter possible from Ø to Ø H7	(mm)	$D_{1/2}$	15-28	24-35	32-42	40-60
Fastening screw ISO 4762		E	M5	M8	M10	M12
Tightening torque of the fastening screw	(Nm)		8	40	60	130
Distance between centerlines	(mm)	F	17	23	27	39
Distance	(mm)	G	6	9.5	11	13
Moment of inertia	(10^{-3} kgm²)	$J_{ges.}$	0.05	0.18	0.62	7.2
Hub material			AL	AL	AL	steel
Approximate weight	(kg)		0.13	0.4	0.7	3.5
Torsional stiffness	(10^3 Nm/rad)	C_T	41.9	138	170	570
Axial	± (mm)	Max. values	1	1.5	1	2
Lateral	± (mm)		0.06	0.08	0.1	0.1
Angular	± (degree)		0.5	0.5	0.5	0.5
Axial spring stiffness	(N/mm)	C_a	55.8	153	114	148
Lateral spring stiffness	(N/mm)	C_r	3,710	11,000	6,058	9,010
Speed max. with balancing	(min^{-1})		80,000	60,000	50,000	40,000

BKS

Welded with clamping hub

15 – 500 Nm

Feataures

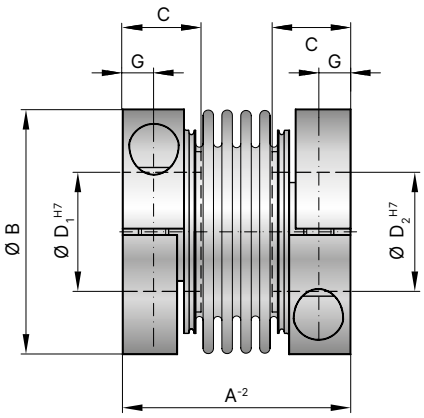
- For high temperatures and aggressive media
- Compact design
- Welded version

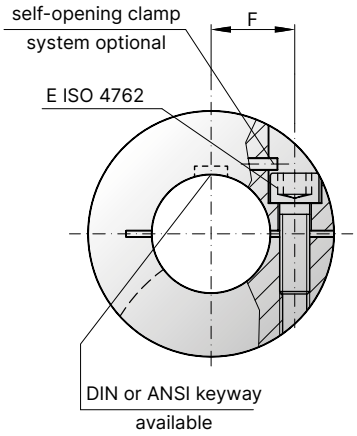
Material

- **Bellows:** high grade stainless steel
- **Hubs:** high grade stainless steel
- **Screws:** Grade 12.9 Geomet coated (alternate materials on request)

Design

Two clamping hubs concentrically mounted to flexible bellows.
Brief overloads of up to 1.5x the rated torque are acceptable.
From -40˚C to +300˚C operating temperature.





Optional:
self-opening clamp system to open the bore during installation and removal by backing out the clamping screw.

Model BKS

Size			15	30	60	150	300	500
Rated torque	(Nm)	T_{KN}	15	30	60	150	300	500
Overall length	(mm)	A^{-2}	45	52	66	76	89	95
Outside diameter	(mm)	B	49	56	66	82	110	123
Fit length	(mm)	C	17	20	24	30	34	35
Inside diameter* possible from Ø to Ø H7	(mm)	D_1/D_2	12-28	14-32	14-35	19-42	24-60	32-75
Fastening screw ISO 4762		E	M5	M6	M8	M10	M12	M12
Tightening torque of the fastening screw	(Nm)		8	15	40	75	120	125
Distance between centerlines	(mm)	F	17.5	20	23	27	39	45
Distance	(mm)	G	6	7.5	9.5	11	13	13
Moment of inertia	(10^{-3} kgm²)	$J_{ges.}$	0.1	0.2	0.53	1.5	5.5	8.1
Approximate weight	(kg)		0.27	0.42	0.78	1.5	2.9	3.5
Torsional stiffness	(10^3 Nm/rad)	C_T	23	31	72	141	157	290
Axial	± (mm)	Max. values	1	1	1.5	2	2	2.5
Lateral	± (mm)		0.2	0.2	0.2	0.2	0.2	0.2
Angular	± (degree)		1	1	1	1	1	1
Axial spring stiffness	(N/mm)	C_a	30	50	67	77	112	72
Lateral spring stiffness	(N/mm)	C_r	315	366	679	960	2,940	2,200
Speed max. with balancing	(min⁻¹)		60,000	50,500	50,000	40,500	40,000	30,000

* Smaller bore diameter available at reduced torque capacity

BK3

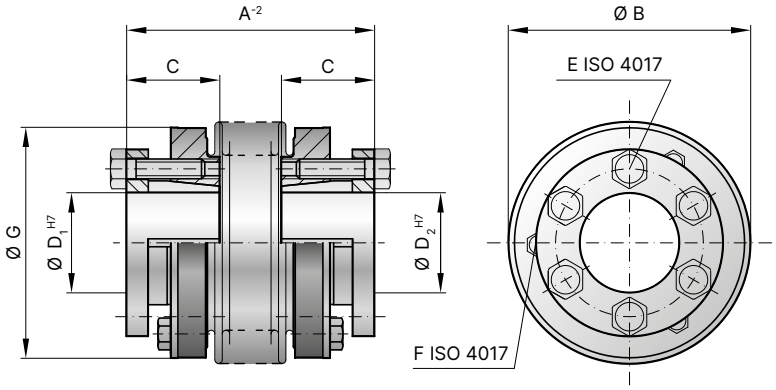
With conical clamping system

15 – 10,000 Nm

Feataures
- High clamping pressure
- High torque version
- Compact design
- Suitable for space restricted installation spaces, with easy removal due to jack screws

Material
- **Bellows:** high grade stainless steel
- **Hubs:** steel

Design
Two conical clamping hubs concentrically mounted to flexible bellows. Brief overloads of up to 1.5x the rated torque are acceptable.



Model BK3

Size			15	30	60	150	200	300	500	800	1,500	4,000	6,000	10,000
Rated torque	(Nm)	T_{KN}	15	30	60	150	200	300	500	800	1,500	4,000	6,000	10,000
Overall length without screw head	(mm)	A^{-2}	48 55	57 65	66 76	75 87	78 90	89 103	97 110	114	141	195	210	217
Outside diameter	(mm)	B	49	55	66	81	90	110	124	133	157	200	253	303
Fit length	(mm)	C	19	22	27	32	32	41	41	50	61	80	85	92
Inside diameter possible from Ø to Ø H7	(mm)	$D_{1/2}$	10-22	12-23	12-30	15-37	15-44	24-60	24-60	30-60	35-70	50-100	60-140	70-180
Fastening screw ISO 4017		E	6 × M4	6 × MS	6 × MS	6 × M6	6 × M6	6 × M8	6 × M8	6 × M10	6 × M12	6 × M16	6 × M16	8 × M16
Tightening torque of the fastening screw	(Nm)		4	6	8	12	14	18	25	40	70	120	150	160
Jack screw ISO 4017		F	3 × M4	3 × M4	3 × M5	3 × M5	3 × M6	3 × M6	3 × M6	3 × M8	6 × M8	6 × M10	6 × M10	4 × M10
Outside diameter of hub	(mm)	G	49	55	66	81	90	110	122	116	135	180	246	295
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.07 0.08	0.15 0.16	0.39 0.41	1.2 1.6	1.7 2.5	5.1 5.9	9.1 9.9	13.2	34.9	85.5	254	629
Approximate weight	(kg)		0.25	0.4	0.8	1.2	1.8	3	4.2	5.6	8.2	23	32.6	45.5
Torsional stiffness	(10^3 Nm/rad)	C_T	20 15	39 28	76 55	175 110	191 140	450 350	510 500	780	1,304	3,400	5,700	10,950
Axial	± (mm)	Max. values	1 2	1 2	1.5 2	2 3	2 3	2.5 3.5	2.5 3.5	3.5	3.5	3.5	3	3
Lateral	± (mm)		0.15 0.2	0.2 0.25	0.2 0.25	0.2 0.25	0.25 0.3	0.25 0.3	0.3 0.35	0.35	0.35	0.4	0.4	0.4
Angular	± (degree)		1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1.5	1.5	1.5	1.5	1.5
Axial spring stiffness	(N/mm)	C_a	25 15	50 30	72 48	82 52	90 60	105 71	70 48	100	320	565	1,030	985
Lateral spring stiffness	(N/mm)	C_r	475 137	900 270	1,200 420	1,500 435	2,040 610	3,750 1,050	2,500 840	2,000	3,600	6,070	19,200	21,800

SP3

With external clamping ring

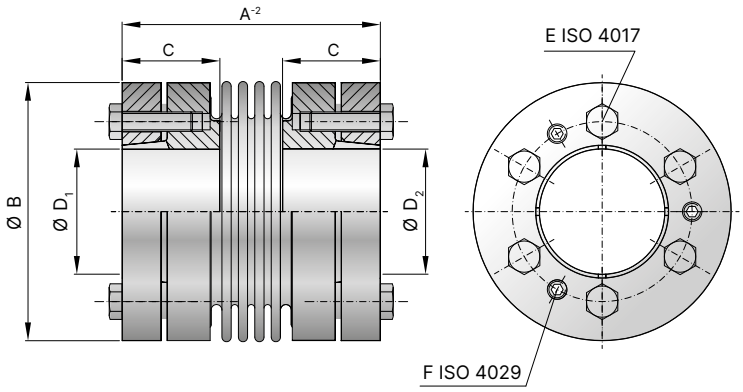
60 – 10,000 Nm
High speed

Feataures
- Very high balancing quality due to symmetrical design
- High operating speeds
- Extremely smooth running

Material
- **Bellows:** high grade stainless steel
- **Hubs and clamping ring:** steel

Design
Two precision machined clamping ring hubs mounted concentrically to a flexible bellows. Brief overloads of up to 1.5x the rated torque are acceptable.

Fit clearance
Overall shaft / hub tolerance 0.01 - 0.025 mm



Model SP3

Size			60		150		200		300		500		800	1,500	4,000	6,000	10,000
Rated torque	(Nm)	T_{KN}	60		150		200		300		500		800	1,500	4,000	6,000	10,000
Overall length without screw head	(mm)	A^{-2}	66	76	75	87	76	88	89	103	97	111	117	133	195	250	300
Outside diameter	(mm)	B	66		81		90		110		124		133	157	200	253	300
Fit length	(mm)	C	25		30		32		36		40		40	53	65	86	95
Inside diameter possible from Ø to Ø H7	(mm)	D_1/D_2	14-32		18-35		20-42		22-55		25-60		32-60	42-75	50-100	60-140	70-180
Fastening screw ISO 4017		E	6 x M5		6 x M6		6 x M6		6 x M8		6 x M8		6 x M10	6 x M10	6 x M12	6 x M16	8 x M16
Tightening torque of the fastening screw	(Nm)		8.5		14		14		30		35		50	60	120	260	295
Jack screw ISO 4017		F	3 x M5		3 x M6		3 x M6		3 x M8		3 x M8		3 x M10	3 x M10	3 x M12	3 x M16	4 x M16
Moment of inertia (10^{-3} kgm²)		J_{ges}	0.58	0.60	1.6	1.62	2.42	2.52	6.38	6.56	10.35	10.67	10.9	24.3	107.9	466.2	1,187.4
Approximate weight	(kg)		0.9	0.92	1.7	1.8	2.1	2.2	3.52	3.6	4.73	4.83	4.9	7.9	19.0	45.0	80.5
Torsional stiffness (10^3 Nm/rad)		C_T	76	55	175	110	191	140	450	350	510	500	780	1,304	3,400	5,700	10,950
Axial	± (mm)	Max. values	1.5	2	2	3	2	3	2.5	3.5	2.5	3.5	3.5	3.5	3.5	3.0	3.0
Lateral	± (mm)		0.2	0.25	0.2	0.25	0.25	0.3	0.25	0.3	0.3	0.35	0.35	0.35	0.4	0.4	0.4
Angular	± (degree)		1	1.5	1	1.5	1	1.5	1	1.5	1	1.5	1.5	1.5	1.5	1.5	1.5
Axial spring stiffness	(N/mm)	C_a	72	48	82	52	90	60	105	71	70	48	100	320	565	1,030	985
Lateral spring stiffness	(N/mm)	C_l	1,200	420	1,500	435	2,040	610	3,750	1,050	2,500	840	2,000	3,600	6,070	19,200	21,800
Speed standard	(min^{-1})	n	22,500		16,500		16,500		13,500		12,500		10,000	8,000	6,000	5,000	3,000

* Recommended fit pairing H7 / k6; H6 / j5 (short spindle); starting at Ø55 G7 / m6

BK5

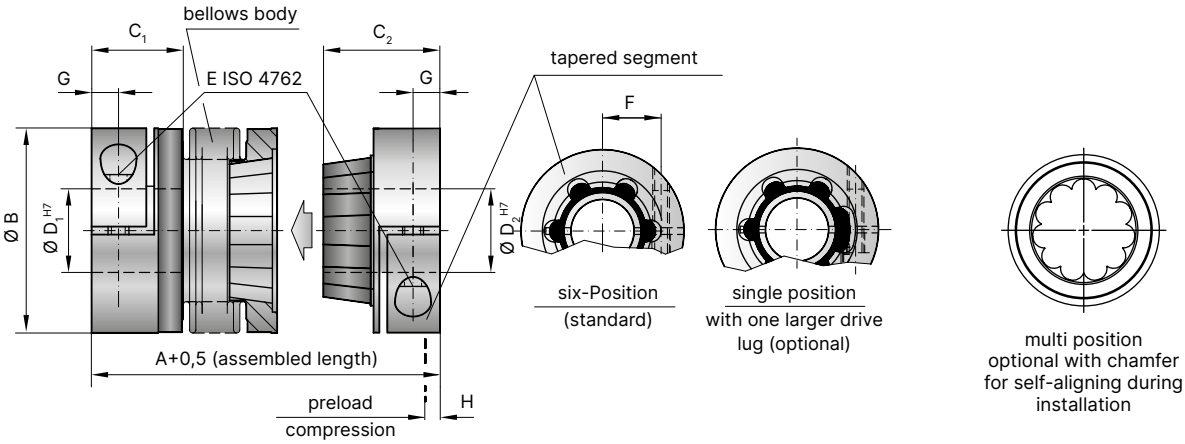
Blind mate with clamping hub

15 – 1,500 Nm

Feataures
- Easy installation and removal due to blind mate
- Electrically and thermally isolating
- Absolutely backlash free assembly

Material
- **Bellows:** high grade stainless steel
- **Hubs:** Up through size 80 Aluminum, size 150 and up steel
- **Tapered male segment:** High strength plastic

Design
Two clamping hubs, one of which has a tapered male projection for bind mate connection. Brief overloads of up to 1.5x the rated torque are acceptable.



Model BK5

Size			15	30	60	80	150	300	500	800	1,500
Rated torque	(Nm)	T_{KN}	15	30	60	80	150	300	500	800	1,500
Overall length (inserted)	(mm)	$A^{+0,5}$	60 67	71 79	85 95	94 106	95 107	114 128	136 149	150	176
Outside diameter	(mm)	B	49	55	66	81	81	110	124	133	157
Fit length	(mm)	C_1	22	27	31	36	36	43	51	45	55
Fit length	(mm)	C_2	28	33	39	43	43	52	61	74	94
Inside diameter possible from Ø to Ø H7	(mm)	D_1	8-28	10-30	12-35	14-42	14-42	24-60	35-60	40-75	50-80
Inside diameter possible from Ø to Ø H7	(mm)	D_2	8-22	10-25	12-32	14-38	14-38	24-58	35-60	40-62	50-75
Fastening screw ISO 4762		E	M5	M6	M8	M10	M10	M12	M16	2 x M16**	2 x M20**
Tightening torque of the fastening screw	(Nm)		8	15	40	50	70	130	200	250	470
Distance between centerlines	(mm)	F	17	19	23	27	27	39	41	2 × 48**	2 × 55**
Distance	(mm)	G	6.5	7.5	9.5	11	11	13	16.5	18	22.5
Preload compression	(mm)	H	0.2 - 1.0	0.5 - 1.0	0.5 - 1.5	0.5 - 1.5	0.5 - 1.5	0.5 - 1.5	1.0 - 2.0	1.0 - 2.5	0.5 - 1.5
Axial recovery force at maximum pretensioning	(N)		20 12	50 30	70 45	48 32	82 52	157 106	140 96	200	650
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.07 0.08	0.14 0.15	0.23 0.26	0.65 0.67	2.2 2.4	7.4 7.9	13.7 14.4	21.5	51.4
Approximate weight	(kg)		0.1 0.1	0.3 0.3	0.4 0.4	0.9 0.9	1.8 1.8	4 4	6.5 6.7	9	15.3
Torsional stiffness	(10^3 Nm/rad)	C_T	10 8	20 14	38 28	65 43	88 55	225 175	255 245	400	650
Axial*	± (mm)	Max. values	0.5 1	0.5 1	0.5 1	1 2	1 2	1.5 2	2.5 3.5	3	2
Lateral	± (mm)		0.15 0.2	0.2 0.25	0.2 0.25	0.2 0.25	0.2 0.25	0.25 0.3	0.3 0.35	0.35	0.35
Angular	± (degree)		1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1 1.5	1.5	1.5
Lateral spring stiffness	(N/mm)	C_r	475 137	900 270	1,200 420	920 290	1,550 435	3,750 1,050	2,500 840	2,000	3,600

*in addition to maximum allowable pretension **180° opposed in each clamping hub.

BK6

Blind mate with conical clamping ring

15 – 1,500 Nm

Feataures

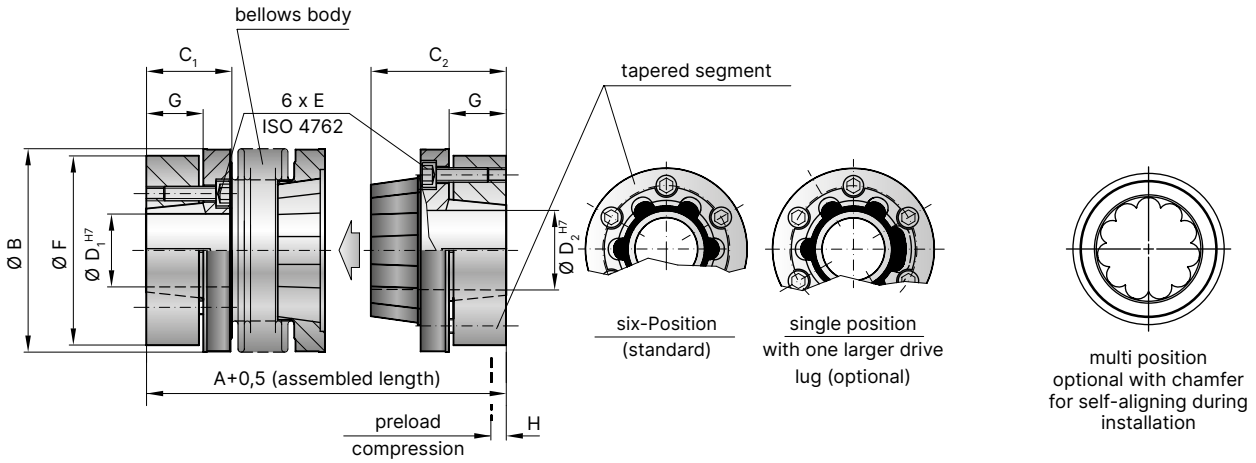
- Axial mounting possible
- Easy installation and removal due to blind mate
- Naturally very well balanced due to self centering clamping ring system
- Absolutely backlash free assembly

Material

- **Bellows:** high grade stainless steel
- **Hubs:** steel
- **Tapered male segment:** high strength plastic

Design

Two conical clamping ring hubs, one of which has a tapered male projection for bind mate connection.
Brief overloads of up to 1.5x the rated torque are acceptable.



Model BK6

Size			15		30		60		150		300		500		800	1,500
Rated torque	(Nm)	T_{KN}	15		30		60		150		300		500		800	1,500
Overall length (inserted)	(mm)	$A^{+0,5}$	58	65	68	76	79	89	97	109	113	127	132	145	140	158
Outside diameter	(mm)	B	49		55		66		81		110		124		133	157
Fit length	(mm)	C_1	13.3		21.5		17.5		30		37		32		42.5	53
Fit length	(mm)	C_2	29		34		39		49.5		59		68		74	90.5
Inside diameter possible from Ø to Ø H7	(mm)	$D_{1/2}$	10-22		12-24		12-32		15-40		24-56		30-60		40-62	50-75
Fastening screw ISO 4762		E	M4		M5		M5		M6		M8		M8		M10	M12
Tightening torque of the fastening screw	(Nm)		3.5		6.5		8		12		30		32		55	110
Diameter of clamping ring	(mm)	F	46.5		51		60		74		102		114		126	146
Clamping ring length	(mm)	G	9.5		10.5		11.5		17.5		20		23		27	32
Preload compression	(mm)	H	0.2 - 1.0		0.5 - 1.0		0.5 - 1.5		0.5 - 1.5		0.5 - 1.5		1.0 - 2.0		1.0 - 2.0	0.5 - 1.5
Axial recovery force at maximum pretensioning	(N)		20	12	50	30	70	45	82	52	157	106	140	96	400	650
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.1	0.12	0.2	0.25	0.4	0.45	2.0	2.5	5.4	6.1	8.4	9.1	17.5	44
Approximate weight	(kg)		0.3	0.32	0.5	0.52	0.82	0.84	1.6	1.7	4.1	4.2	6.0	6.3	8.1	16.2
Torsional stiffness	(10^3 Nm/rad)	C_T	10	8	20	14	38	28	88	55	225	175	255	245	400	660
axial*	± (mm)	Max. values	0.5	1	0.5	1	0.5	1	1	2	1.5	2	2.5	3.5	3	2
lateral	± (mm)		0.15	0.2	0.2	0.25	0.2	0.25	0.2	0.25	0.25	0.3	0.3	0.35	0.35	0.35
angular	± (degree)		1	1.5	1	1.5	1	1.5	1	1.5	1	1.5	1	1.5	1.5	1.5
Lateral spring stiffness	(N/mm)	C_r	475	137	900	270	1,200	420	1,550	435	3,750	1,050	2,500	840	2,000	3,600

* in addition to maximum allowable pretension. Higher torques upon request.

BK7

With expanding shaft

15 – 300 Nm

Feataures

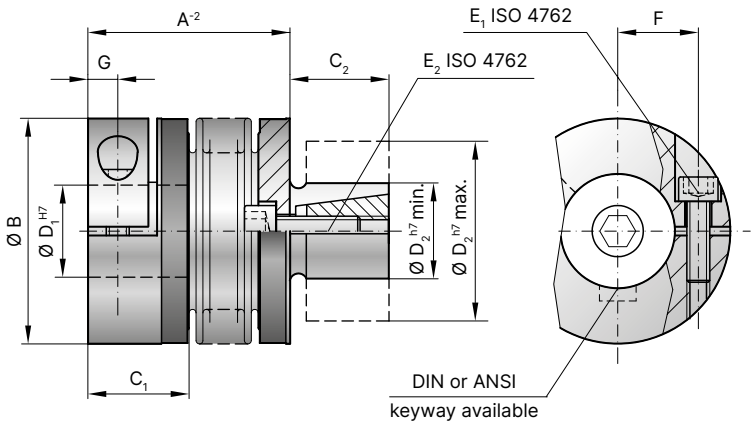
- For hollow shaft mounting
- Short design saves installation space
- Solution for mismatched shaft / bore

Material

- **Bellows:** high grade stainless steel
- **Hubs:** see table
- **Expanding mandrel system:** steel

Design

One clamping hub on one end with an expanding shaft on the other end. Brief overloads of up to 1.5x the rated torque are acceptable.



Model BK7

Size			15		30		60		150		300	
Rated torque	(Nm)	T_{KN}	15		30		60		150		300	
Overall length	(mm)	A^{-2}	45	52	53	61	62	72	71	83	84	98
Outside diameter	(mm)	B	49		55		66		81		110	
Fit length	(mm)	C_1	22		27		31		36		43	
Shaft length	(mm)	C_2	20		25		27		32		45	
Inside diameter possible from Ø to Ø H7	(mm)	D_1	8-28		10-30		12-35		19-42		30-60	
Shaft diameter from Ø to Ø h7	(mm)	D_2	13-25		14-30		23-38		26-45		38-60	
Fastening screw ISO 4762		$E_{1/2}$	M5		M6		M8		M10		M12	
Tightening torque of the fastening screw	(Nm)	$E_{1/2}$	8		14		38		65		120	
Distance between centerlines	(mm)	F	17		19		23		27		39	
Distance	(mm)	G	6.5		7.5		9.5		11		13	
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.07	0.08	0.14	0.15	0.23	0.26	2.2	2.4	6.5	8.9
Hub material			AL		AL		AL		steel		steel	
Approximate weight	(kg)		0.15		0.3		0.4		1.7		4	
Torsional stiffness	(10^3 Nm/rad)	C_T	20	15	39	28	76	55	175	110	450	350
axial	± (mm)	Max. values	1	2	1	2	1.5	2	2	3	2.5	3.5
lateral	± (mm)		0.15	0.2	0.2	0.25	0.2	0.25	0.2	0.25	0.25	0.3
angular	± (degree)		1	1.5	1	1.5	1	1.5	1	1.5	1	1.5
Axial spring stiffness	(N/mm)	C_a	20	12	50	30	72	48	82	52	105	71
Lateral spring stiffness	(N/mm)	C_r	315	108	730	230	1,200	380	1,550	435	3,750	1,050

BK8

With iso flange connection

50 – 2,600 Nm

Feataures

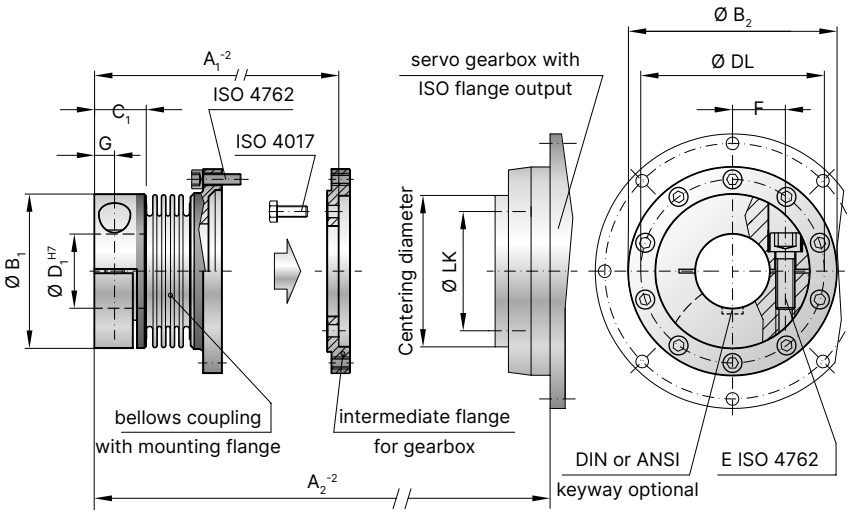
- for ISO flange output gearboxes
- allows for continuous hollow through axis with some right angle gearbox designs
- compact design

Material

- **Bellows:** high grade stainless steel
- **Hubs:** up through size 300 aluminum, size 1500 and up steel
- **Adapter flange:** steel

Design

One clamping hub on one end with an integral flange and adapter flange on the other end. Maximum transmittable torque depends on the bore diameter.



Model BK8

Size			15	60	150	300	1,500
Flange centering diameter	(mm)		40 h7	63 h7	80 h7	100 h7	160 h7
Flange bolt circle / thread Ø	(mm)		31.5 / 8 x M5	50 / 8 x M6	63 / 12 x M6	80 / 12 x M8	125 / 12 x M10
Maximum torque*	(Nm)		50	210	380	750	2,600
Length -2	(mm)	A_1	48.5	67	72	90	140
Length -2	(mm)	A_2	68	97	101	128	190
Outside diameter of hub	(mm)	B_1	49	66	82	110	157
Flange diameter	(mm)	B_2	63.5	86	108	132	188
Fit length	(mm)	C_1	16.5	23	27.5	34	55
Inside diameter possible from Ø to Ø H7	(mm)	D_1	12-28	14-35	19-42	24-60	50-80
Hub bolt circle	(mm)	DL	56.5	76	97	120	170
Fastening threads	(mm)		10 x M4	10 x M5	10 x M6	12 x M6	16 x M8
Fastening screws ISO 4762		E_1	1 x M5	1 x M8	1 x M10	1 x M12	2 x M20
Tightening torque of the fastening screw	(Nm)		8	45	80	120	470
Distance between centerlines	(mm)	F	1 × 17.5	1 × 23	1 × 27	1 × 39	2 × 55
Distance	(mm)	G	6.5	9.5	11	13	22.5
Approximate weight	(kg)		0.3	0.7	1	2.8	10
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.15	0.65	1.3	5.5	45
Lateral	± (mm)	Max. values	0.25	0.25	0.25	0.25	0.25
Angular	± (degree)		1	1	1	1	1
Axial	± (mm)		1	1.5	2	2.5	3

Notes

MK

Backlash free, torsionally stiff miniature bellows couplings

0.05 – 10 Nm

Areas of application
for precise transmission of angular motion and torque in:
+ Linear actuators
+ Semiconductor machinery
+ Medical devices
+ Lab automation systems
+ Micro pumps
+ Test and measurement systems

Service life
R+W bellows couplings are fatigue resistant and wear free for an infinite service life, as long as the technical limits are not exceeded.

Temperature range
-30°C to +100°C

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.

Rotational speed
Standard up to 10,000 rpm.
Over 10,000 rpm in finely balanced version; up to grade ISO G=2.5 is available.

ATEX (Optional)
Available on request.

Ordering Example	MK2	10	30	4	6	XX
Model	●					Special designation only (e.g. special bore tolerance).
Size		●				
Overall length mm			●			
Bore Ø D1 H7				●		
Bore Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. MK2 / 10 / 30 / 4 / 6 / XX=finely balanced for 25,000 rpm)

MK

Backlash free, torsionally stiff **miniature bellows couplings** 0.05 – 10 Nm

Model		Features	Page
MK1		**With radial set screws** 0.05 - 10 Nm • Large bores available in small size • Integral dismounting groove eliminates the need for flats on shafts • Economy design	42
MK2		**With clamping hub** 0.5 - 10 Nm • Easy mounting • For highly dynamic applications • Finely balanced versions up to 90,000 rpm	43
MKH		**With split clamping hub** 0.5 - 10 Nm • Lateral mounting possible • Easy installation and removal • Allows for pre-alignment of shafts	44
MK3		**With expanding shaft** 0.5 - 10 Nm • Easy installation • Solution for mismatched shaft / bore diameters • Saves space and cost	45
MK4		**With radial set screw and blind mate connection** 0.5 - 10 Nm • Axial installation possible • Electrically and thermally isolating • Includes integral dismounting groove	46

Model		Features	Page
MK5		**With clamping hub and blind mate connection** 0.5 - 10 Nm • Axial installation possible • Electrically and thermally isolating • Easy mounting and dismounting	47
MK6		**With expanding shaft and blind mate connection** 0.5 - 10 Nm • Full axial installation possible • Well suited to restricted installation space • Solution to mismatched bore / shaft diameters	48
MKS		**With conical clamping ring** 4.5 – 10 Nm • Speeds up to 120,000 rpm • Naturally very well balanced due in part to self centering clamping system • For high speed high precision applications	49
FK1		**With radial set screw** up to 1 Ncm • Well balanced • Sterilizable	50

MK1

With radial set screws

0.05 – 10 Nm

Feataures

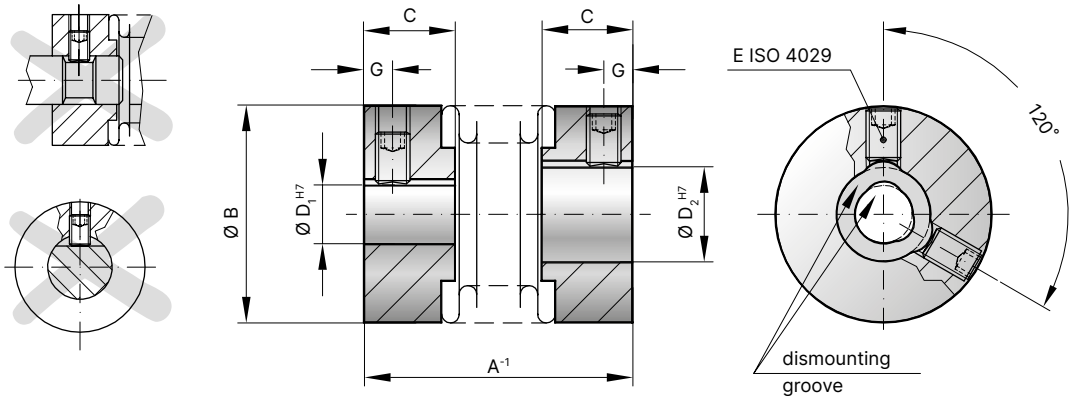
- Integral dismounting groove eliminates the need for flats on shafts
- Economical design
- Larger bore diameters in a small size possible

Material

- **Bellows:** size 0.5 tombac; sizes 1 and up high grade stainless steel
- **Hubs:** aluminium

Design

Two hubs with radial set screws concentrically mounted to flexible bellows. Speeds up to 20,000 rpm; over 20,000 with finely balanced version.



Advantage: Bore diameters above 4mm have an integral dismounting groove, which provides clearance over any burr which may be kicked up by the set screw, eliminating the need for flats on shafts.

Model MK1

Size			0.5	1	5			10			15		20			45		100	
Rated torque	(Nm)	T_{KN}	0.05	0.1	0.5			1.0			1.5		2.0			4.5		10	
Overall length	(mm)	A^{-1}	14	20	20	23	26	22	25	28	24	29	26	31	35	37	45	43	53
Outside diameter	(mm)	B	6.5	10	15			15			19		25			32		40	
Fit length	(mm)	C	4	5	6.5			6.5			7.5		11			13		15	
Inside diameter possible from Ø to Ø H7	(mm)	$D_{1/2}$	1-3	1-5	3-9			3-9			3-12		3-16			6-22		6-28	
Clamping screw ISO 4029		E	1xM2	1xM2.5	1xM3			1xM3			2xM3		2xM4			2xM5		2xM6	
Tightening torque of the fastening screw	(Nm)		0.35	0.75	1.3			1.3			1.3		2.5			4		6	
Distance	(mm)	G	1.5	1.8	2			2			2		2.5			3.5		4	
Moment of inertia	(gcm^2)	$J_{ges.}$	0.1	0.4	1.1	1.2	1.3	1.3	1.8	2	4.7	5.5	15	18	20	65	70	180	220
Approximate weight	(g)		1	5	6	6	6	6	7	8	12	14	22	24	26	54	58	106	114
Torsional stiffness	(Nm/rad)	C_T	50	70	280	210	170	510	380	320	750	700	1,200	1,300	1,200	7,000	5,000	9,050	8,800
Axial	(mm)	Max. values	0.4	0.4	0.4	0.5	0.6	0.4	0.5	0.6	0.5	0.7	0.5	0.6	0.7	0.7	1	1	1.2
Lateral	(mm)		0.1	0.15	0.15	0.2	0.25	0.15	0.2	0.25	0.15	0.2	0.15	0.2	0.25	0.2	0.25	0.2	0.3
Angular	(degree)		1	1	1	1.5	2	1	1.5	2	1.5	1.5	1.5	1.5	2	1.5	2	1.5	2

MK2

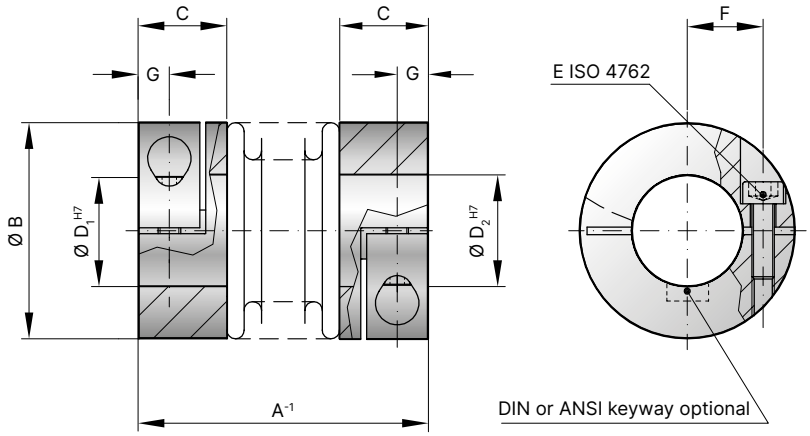
With clamping hub

0.5 – 10 Nm

Feataures
- For highly dynamic applications
- Easy installation
- Light weight and low moment of inertia

Material
- **Bellows:** high grade stainless steel
- **Hubs:** aluminium

Design
Two clamping hubs concentrically mounted to flexible bellows.



Optionally available in other materials

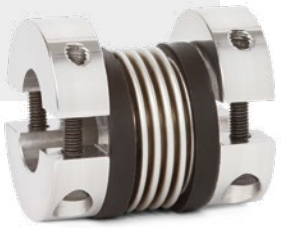
Model MK2

Size			5			10			15		20			45		100	
Rated torque	(Nm)	T_{KN}	0.5			1.0			1.5		2.0			4.5		10	
Overall length	(mm)	A^{-1}	25	28	31	27	30	33	30	35	35	40	44	46	54	50	60
Outside diameter	(mm)	B	15			15			19		25			32		40	
Fit length	(mm)	C	9			9			11		13			16		16	
Inside diameter possible from Ø to Ø H7	(mm)	$D_{1/2}$	3-7			3-7			3-8		3-12.7			5-16		5-24	
Fastening screw ISO 4762		E	M2			M2			M2.5		M3			M4		M4	
Tightening torque of the fastening screw	(Nm)		0.43			0.43			0.85		2.3			4		4.5	
Distance between centerlines	(mm)	F	4.5			4.5			6		8			10		15	
Distance	(mm)	G	3			3			3.5		4			5		5	
Moment of inertia	(gcm^2)	J_{ges}	2.6	2.8	3	3	3.4	3.6	8.5	9.5	25	27	29	100	108	160	205
Approximate weight	(g)		9	9	9	9	10	11	22	24	36	38	40	74	78	120	130
Torsional stiffness	(Nm/rad)	C_T	280	210	170	510	380	320	750	700	1,200	1,300	1,200	7,000	5,000	9,050	8,800
Axial	(mm)	Max. values	0.4	0.5	0.6	0.4	0.5	0.6	0.5	0.7	0.5	0.6	0.7	0.7	1	1	1.2
Lateral	(mm)		0.15	0.2	0.25	0.15	0.2	0.25	0.15	0.2	0.15	0.2	0.25	0.2	0.25	0.2	0.3
Angular	(degree)		1	1.5	2	1	1.5	2	1.5	1.5	1.5	1.5	2	1.5	2	1.5	2

MKH

With split clamping hub

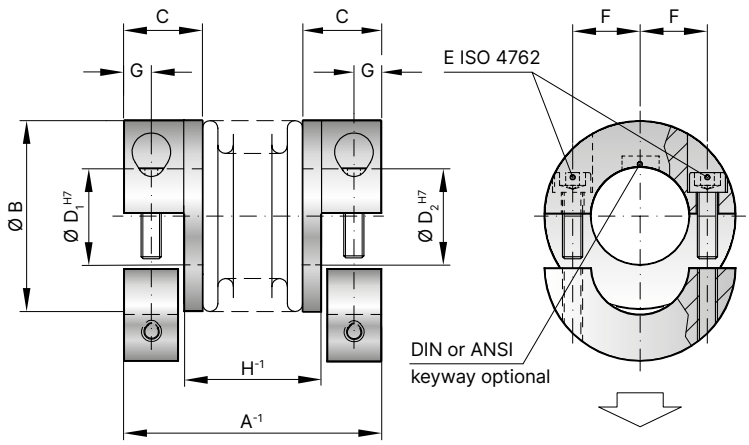
0.5 – 10 Nm



Feataures
- Mounts laterally
- Allows for pre-alignment of shafts
- Light weight and low moment of inertia

Material
- **Bellows:** high grade stainless steel
- **Hubs:** aluminium

Design
Two fully split clamping hubs, with two screws in each, concentrically mounted to flexible bellows.



Model MKH

Size			5			10			15		20			45		100	
Rated torque	(Nm)	T_{KN}	0.5			1.0			1.5		2.0			4.5		10	
Overall length	(mm)	A^{-1}	25	28	31	27	30	33	30	35	35	40	44	46	54	50	60
Outside diameter	(mm)	B	15			15			19		25			32		40	
Fit length	(mm)	C	9			9			11		13			16		16	
Inside diameter possible from Ø to Ø H7	(mm)	$D_{1/2}$	3-7			3-7			3-8		3-12.7			5-16		5-24	
Fastening screw ISO 4762		E	M2			M2			M2.5		M3			M4		M4	
Tightening torque of the fastening screw	(Nm)		0.43			0.43			0.85		2.3			4		4.5	
Distance between centerlines	(mm)	F	4.5			4.5			6		8			10		15	
Distance	(mm)	G	3			3			3.5		4			5		5	
Distance	(H)	H^{-1}	12	15	18	14	17	20	14.5	19.5	17	22	26	23.5	31.5	27.5	37.5
Moment of inertia	(gcm^2)	J_{ges}	2.6	2.8	3	3	3.4	3.6	8.5	9.5	25	27	29	100	108	160	205
Approximate weight	(g)		9	9	9	9	10	11	22	24	36	38	40	74	78	120	130
Torsional stiffness	(Nm/rad)	C_T	280	210	170	510	380	320	750	700	1,200	1,300	1,200	7,000	5,000	9,050	8,800
Axial	(mm)	Max. values	0.4	0.5	0.6	0.4	0.5	0.6	0.5	0.7	0.5	0.6	0.7	0.7	1	1	1.2
Lateral	(mm)		0.15	0.2	0.25	0.15	0.2	0.25	0.15	0.2	0.15	0.2	0.25	0.2	0.25	0.2	0.3
Angular	(degree)		1	1.5	2	1	1.5	2	1.5	1.5	1.5	1.5	2	1.5	2	1.5	2

MK3

With expanding shaft

0.5 – 10 Nm

Feataures

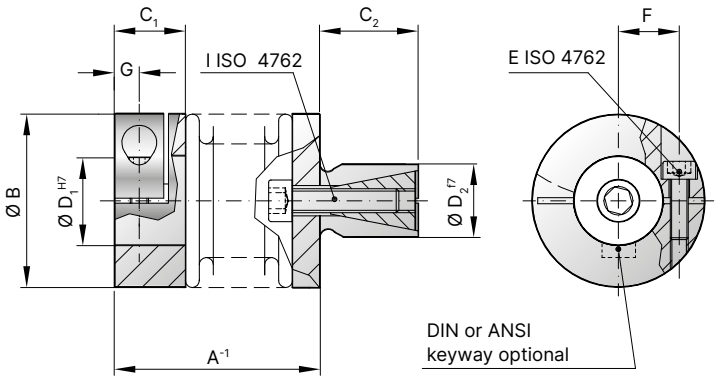
- For hollow shaft mounting
- Easy to install
- Light weight and low moment of inertia

Material

- **Bellows:** high grade stainless steel
- **Clamping Hub:** aluminium
- **Expanding shaft:** steel

Design

One clamping hub with one clamping screw, one expanding shaft system, both concentrically mounted to flexible bellows.



Model MK3

Size			5			10			15		20			45		100	
Rated torque	(Nm)	T_{KN}	0.5			1			1.5		2			4.5		10	
Overall length	(mm)	A^{-1}	20	23	26	22	25	28	24	30	27	33	36	36	44	41	51
Outside diameter	(mm)	B	15			15			19		25			32		40	
Fit length	(mm)	C_1	9			9			11		13			16		16	
Shaft length	(mm)	C_2	10			10			12		12			15		20	
Inside diameter possible from Ø to Ø H7	(mm)	D_1	3-7			3-7			4-8		4-12.7			5-16		6-24	
Standard shaft possible from Ø to Ø f7	(mm)	D_2	8-10			8-10			10-14		10-16			14-20		16-24	
Fastening screw ISO 4762		E	M2			M2			M2.5		M3			M4		M4	
Tightening torque of the fastening screw	(Nm)		0.43			0.43			0.85		2.3			4		4.5	
Distance between centerlines	(mm)	F	4.5			4.5			6		8			10		15	
Distance	(mm)	G	3			3			3.5		4			5		5	
Fastening screw ISO 4762		I	M3			M3			M4		M4			M5		M6	
Tightening torque of the fastening screw	(Nm)		1.5			1.5			3		4			6.5		11	
Moment of inertia	(gcm^2)	$J_{ges.}$	2.6	2.8	3.0	3.0	3.4	3.6	8.5	9.5	25	27	29	100	108	160	205
Torsional stiffness	(Nm/rad)	C_T	280	210	170	510	380	320	750	700	1,200	1,300	1,200	7,000	5,000	9,050	8,800
Axial	(mm)	Max. values	0.4	0.5	0.6	0.4	0.5	0.6	0.5	0.7	0.5	0.6	0.7	0.7	1	1	1.2
Lateral	(mm)		0.15	0.2	0.25	0.15	0.2	0.25	0.15	0.2	0.15	0.2	0.25	0.2	0.25	0.2	0.3
Angular	(degree)		1	1.5	2	1	1.5	2	1.5	1.5	1.5	1.5	2	1.5	2	1.5	2

MK4

Blind mate with radial set screws

0.5 – 10 Nm

Feataures

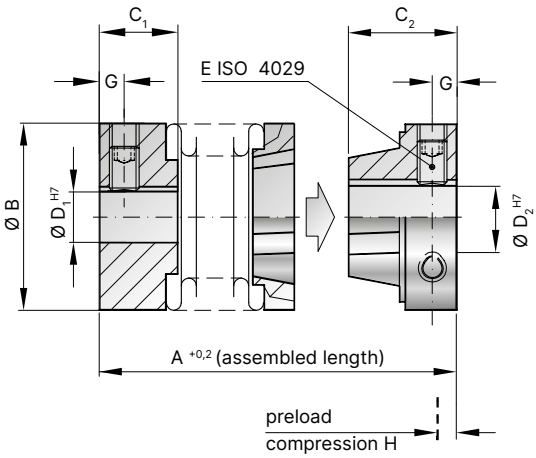
- Easy installation and removal
- Electrically and thermally isolating
- Absolutely backlash free assembly

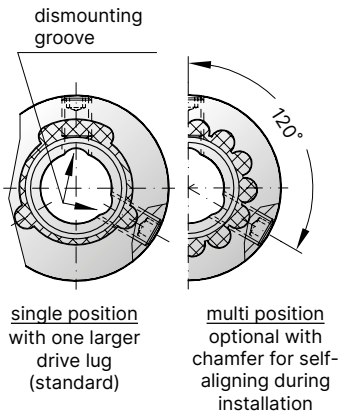
Material

- **Bellows:** high grade stainless steel
- **Hubs:** aluminium
- **Tapered male segment:** high strength plastic

Design

Two hubs with radial set screws, one of which has a tapered male projection for blind mate connection. Speeds up to 20,000 rpm; over 20,000 rpm with finely balanced version.





Model MK4

Size			5			15		20			45		100	
Rated torque	(Nm)	T_{KN}	0.5			1.5		2			4.5		10	
Overall length (inserted)	(mm)	$A^{+0,2}$	22	25	28	26	31	28	33	37	39	47	46	56
Outside diameter	(mm)	B	15			19		25			32		40	
Fit length	(mm)	C_1	6.5			7.5		11			13		15	
Fit length	(mm)	C_2	9			10		11			14		16	
Inside diameter possible from Ø to Ø H7	(mm)	D_1	3-9			3-12		3-16			6-22		6-28	
Inside diameter possible from Ø to Ø H7	(mm)	D_2	3-6.35			3-9		3-12.7			6-16		6-20	
Clamping screw ISO 4029		E	1xM3			2xM3		2xM4			2xM5		2xM6	
Tightening torque of the fastening screw	(Nm)		1.3			1.3		2.5			4		6	
Distance	(mm)	G	2			2		2.5			3.5		4	
Preload compression	(mm)	H	0.4			0.5		0.5			0.7		1	
Axial recovery force at max. preload compression	(N)		5	3	2	4	3	3	4	3	15	10	25	30
Moment of inertia	(gcm^2)	J_{ges}	2.0	2.2	2.5	5.5	6.0	21	23	25	80	85	200	210
Torsional stiffness	(Nm/rad)	C_T	280	210	170	750	700	1,200	1,300	1,200	7,000	5,000	9,050	8,800
Axial*	(mm)	Max. values	0.4	0.5	0.6	0.5	0.7	0.5	0.6	0.7	0.7	1	1	1.2
Lateral	(mm)		0.15	0.2	0.25	0.15	0.2	0.15	0.2	0.25	0.2	0.25	0.2	0.3
Angular	(degree)		1	1.5	2	1.5	1.5	1.5	1.5	2	1.5	2	1.5	2

* in addition to maximum pretensioning

MK5

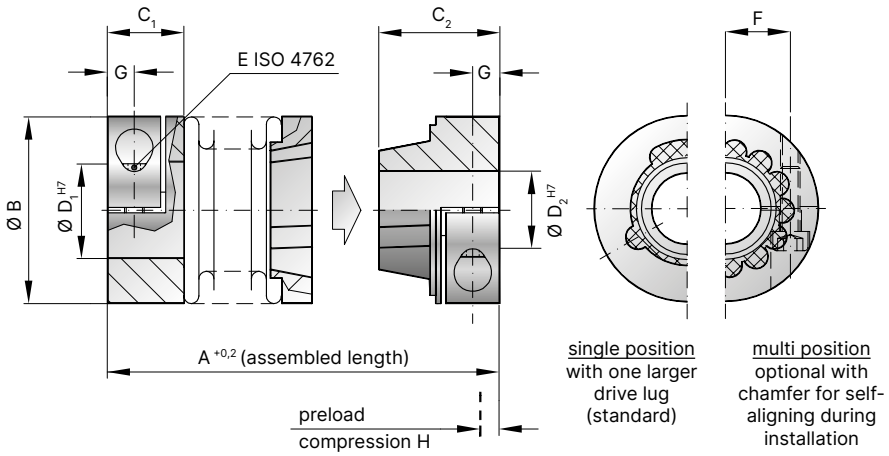
Blind mate with clamping hub

0.5 – 10 Nm

Feataures
- Easy installation and removal
- Electrically and thermally isolating
- Absolutely backlash free assembly

Material
- **Bellows:** high grade stainless steel
- **Hubs:** aluminium
- **Tapered male segment:** high strength plastic

Design
Two clamping hubs, one of which has a tapered male projection for blind mate connection.



Model MK5

Size			5			15		20			45		100	
Rated torque	(Nm)	T_{KN}	0.5			1.5		2			4.5		10	
Overall length (inserted)	(mm)	$A^{+0,2}$	27	30	33	34	39	37	43	46	49	57	55	65
Outside diameter	(mm)	B	15			19		25			32		40	
Fit length	(mm)	C_1	9			11		13			16		16	
Fit length	(mm)	C_2	12			14		16			20		21.5	
Inside diameter possible from Ø to Ø H7	(mm)	D_1	3-7			3-8		3-12.7			5-16		5-24	
Inside diameter possible from Ø to Ø H7	(mm)	D_2	3-6.35			3-8		3-12.7			5-16		5-20	
Fastening screw ISO 4762		E	M2			M2.5		M3			M4		M4	
Tightening torque of the fastening screw	(Nm)		0.43			0.85		2.3			4		4.5	
Distance between centerlines	(mm)	F	4.5			6		8			10		15	
Distance	(mm)	G	3			3.5		4			5		5	
Preload compression	(mm)	H	0.4			0.5		0.5			0.7		1	
Axial recovery force at max. preload compression	(N)		5	3	2	4	3	3	4	3	15	10	25	30
Moment of inertia	(gcm^2)	J_{ges}	3.0	3.2	3.5	9.0	10	28	30	33	110	120	220	230
Torsional stiffness	(Nm/rad)	C_T	280	210	170	750	700	1,200	1,300	1,200	7,000	5,000	9,050	8,800
Axial*	(mm)	Max. values	0.4	0.5	0.6	0.5	0.7	0.5	0.6	0.7	0.7	1	1	1.2
Lateral	(mm)		0.15	0.2	0.25	0.15	0.2	0.15	0.2	0.25	0.2	0.25	0.2	0.3
Angular	(degree)		1	1.5	2	1.5	1.5	1.5	1.5	2	1.5	2	1.5	2

* in addition to maximum pretensioning

MK6

Blind mate with expanding shaft

0.5 – 10 Nm

Feataures

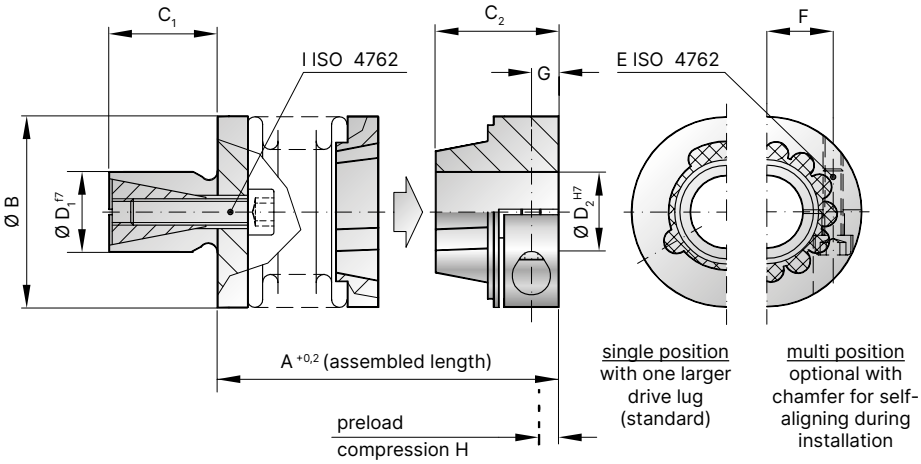
- Easy installation and removal
- Solution for mismatched bore / shaft diameters
- Absolutely backlash free assembly

Material

- **Bellows:** high grade stainless steel
- **Tapered male segment:** high strength plastic
- **Clamping hub:** aluminium
- **Expanding shaft:** steel

Design

One clamping hub with a tapered male projection for blind mate connection and one expanding shaft system.



Model MK6

Size			5			15		20			45		100	
Rated torque	(Nm)	T_{KN}	0.5			1.5		2			4.5		10	
Overall length (inserted)	(mm)	$A^{+0.2}$	21	24	27	27	32	28	34	38	38	46	45	55
Outside diameter	(mm)	B	15			19		25			32		40	
Shaft length	(mm)	C_1	10			12		12			15		20	
Fit length	(mm)	C_2	12			14		16			20		21.5	
Standard shaft Ø f7	(mm)	D_1	8-10			10-14		10-16			14-20		16-24	
Inside diameter possible from Ø to Ø H7	(mm)	D_2	3-6.35			3-8		3-12.7			5-16		5-20	
Fastening screw ISO 4762		E	M2			M2.5		M3			M4		M4	
Tightening torque of the fastening screw	(Nm)		0.43			0.85		2.3			4		4.5	
Distance between centerlines	(mm)	F	4.5			6		8			10		15	
Distance	(mm)	G	3			3.5		4			5		5	
Preload compression	(mm)	H	0.4			0.5		0.5			0.7		1	
Axial recovery force at max. preload compression	(N)		5	3	2	4	3	3	4	3	15	10	25	30
Fastening screw ISO 4762		I	M3			M4		M4			M5		M6	
Tightening torque of the fastening screw	(Nm)		1.5			3		4			6.5		11	
Moment of inertia	(gcm^2)	J_{ges}	3.0	3.2	3.5	9.0	10	28	30	33	110	120	220	230
Torsional stiffness	(Nm/rad)	C_T	280	210	170	750	700	1,200	1,300	1,200	7,000	5,000	9,050	8,800
Lateral	(mm)	Max. values	0.15	0.2	0.25	0.15	0.2	0.15	0.2	0.25	0.2	0.25	0.2	0.3
Angular	(degree)		1	1.5	2	1.5	1.5	1.5	1.5	2	1.5	2	1.5	2

MKS

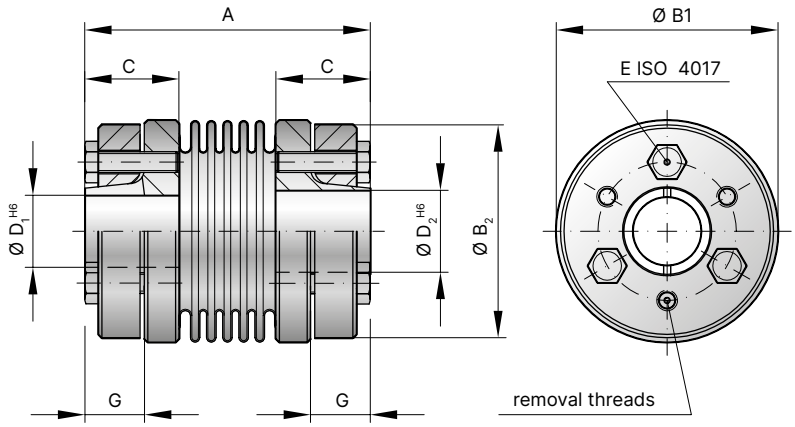
With conical clamping ring

4.5 – 15 Nm
High Speed

Feataures
- For high speeds
- Self centering conical clamping ring design
- High balancing grade

Material
- **Bellows:** high grade stainless steel
- **Hubs and clamping rings:** aluminium

Design
Two hubs with conical clamping ring and three or four screws.
Maximum speed up to 120,000 rpm.



Model MKS

Size			45	100	150
Rated torque	(Nm)	T_{KN}	4.5	10	15
Overall length	(mm)	A	42	48	53
Outside diameter	(mm)	B_1	32	40	49
Outside diameter of hub	(mm)	B_2	30	38	46
Fit length	(mm)	C	14	16	20
Inside diameter possible from Ø to Ø H6	(mm)	$D_{1/2}$	6-10	8-14	10-19
Fastening screw ISO 4017	(mm)	E	3x M3	4x M3	8x M3
Tightening torque of the fastening screw	(Nm)		1.3	1.3	1.3
Distance	(mm)	G	8.5	9.5	13
Moment of inertia	(gcm^2)	$J_{ges.}$	65	226	561
Approximate weight	(g)		51	103	171
Torsional stiffness	(Nm/rad)	C_T	7,000	9,050	23,000
Axial	(mm)	Max. values	0.5	0.75	0.75
Lateral	(mm)		0.5 0.05*	0.75 0.05*	0.1 0.05*
Angular	(degree)		0.5	0.5	0.5

For speeds beyond 50,000 rpm use reduced misalignment values marked with *

FK1

Microflex with radial set screws

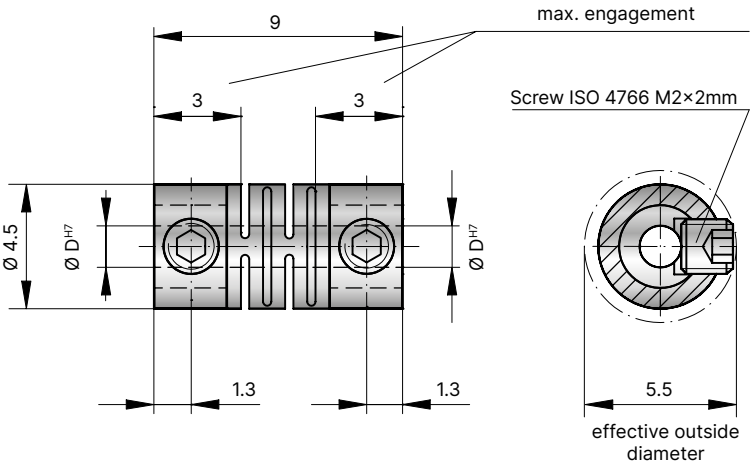
1 Ncm

Feataures
- Very small dimensions
- Backlash free
- Vibration damping

Material
- **Flex element:** High strength Polyamide
- **Hubs:** Stainless steel

Design
Two hubs with set screws mounted to a flex beam segment. Operational from -35˚C to +80˚ C. Speeds up to 20,000 rpm

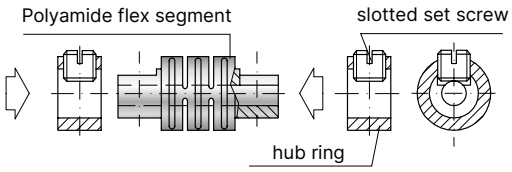
Special solution
Effective outside diameter can be reduced to 4.5mm through the use of M2×1.5 mm screws.



Coupling assembly and mounting

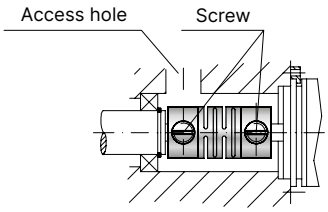
The screw threads through the clamping ring, through a slot in the flexible segment, and down onto the shaft, securing the entire assembly. Including a flat on the shaft can improve torque transmission.

Caution: Always use a precisely calibrated torque wrench during installation.



Dismounting

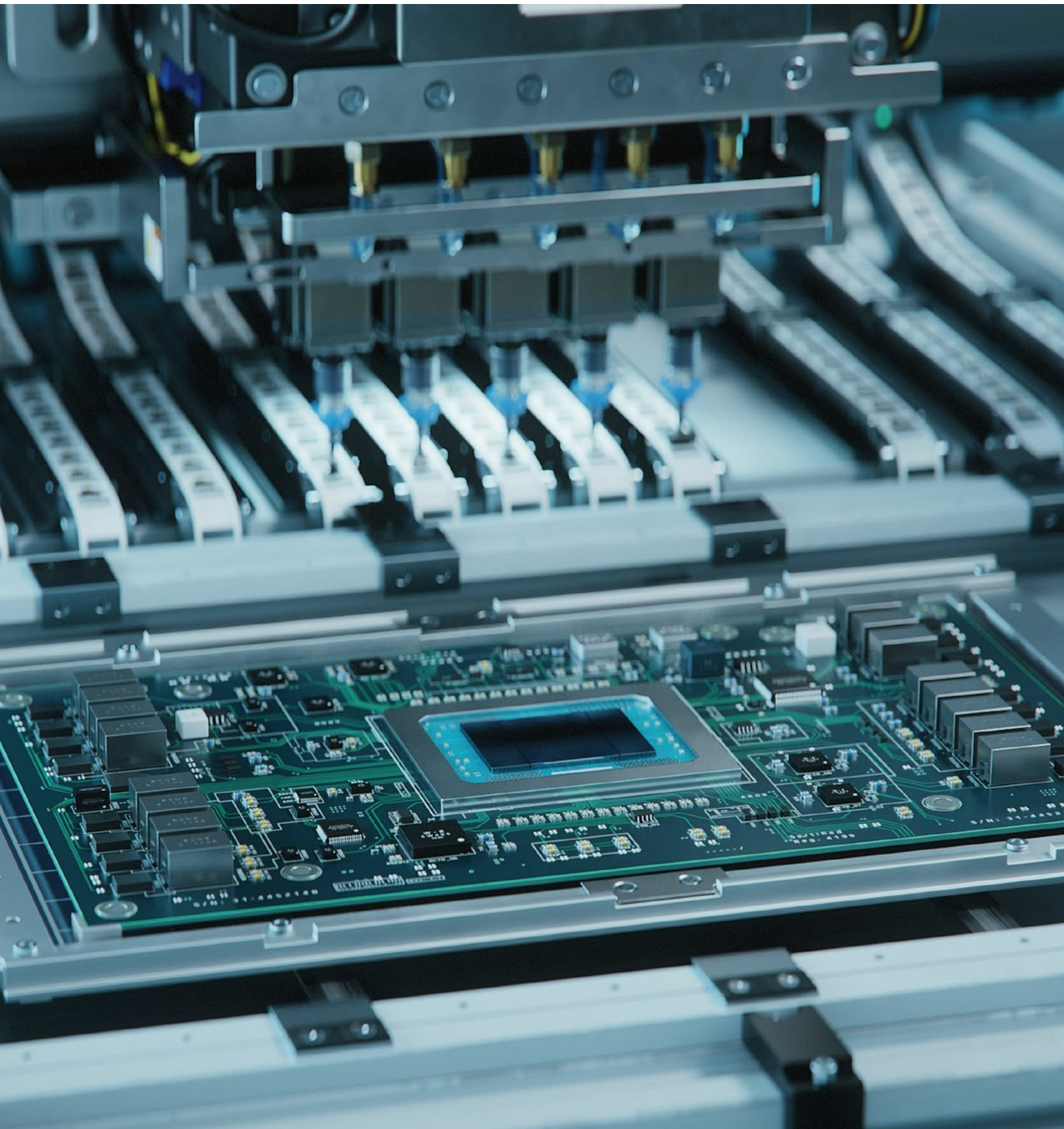
For dismounting, simply loosen the set screws and remove the coupling from the shafts.



Model FK1/001/9

Size			
Rated torque	(Ncm)	T_{KN}	1
Bore diameter H7	(mm)	D_1 / D_2	1.5 / 1.5 or 2 / 1.5 additional bore diameters available upon request
Moment of inertia	(gcm^2)	$J_{ges.}$	5.39
Approximate weight	(g)		0.47
Torsional stiffness	(Ncm/rad)	C_T	23 (measured at +20° C)
Axial	(mm)	Max. values	0.2
Lateral	(mm)		0.1
Angular	(degree)		1.5

Notes



SCL

Backlash free servo disc pack couplings

25 – 100 Nm

Areas of application
For dynamic drive applications in
+ Machine tools
+ Printing applications
+ Extruders
+ Test stands

Service life
R+W servo disc pack couplings are fatigue resistant and wear free for an infinite service life, as long as the technical limits are not exceeded.

Temperature range
-30°C to +130°C

Fit clearance
Overall shaft / hub clearance of 0.01 - 0.05 mm

Special solutions
Available on request.

Rotational speed
Standard up to 10,000 rpm.

ATEX (Optional)
Available on request.

Ordering Example	SCL2	25	D	18	20	XX
Model	●					Special designation only (e.g. balanced G2.5)
Size		●				
System			●			
Bore Ø D1 H7				●		
Bore Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. SCL2 / 25 / D / 18 / 20 / XX)

SCL

Backlash free **servo disc pack couplings** 25 – 100 Nm

Model		Features	Page
SCL2 S		**With clamping hub** **single flex coupling** 25 - 100 Nm • Very high torsional stiffness • Compact design • Low moment of inertia	56
SCL2 D		**With clamping hub** **double flex coupling** 25 - 100 Nm • High torsional stiffness • Low moment of inertia • Lateral misalignment compensation	57
SCL3 S		**With conical clamping system** **single flex coupling** 25 - 100 Nm • Very high concentricity • High clamping pressure • Low moment of inertia	58
SCL3 D		**With conical clamping system** **double flex coupling** 25 - 100 Nm • High concentricity • High clamping pressure • High torsional stiffness	59

Notes

SCL2 S

With clamping hub single flex coupling

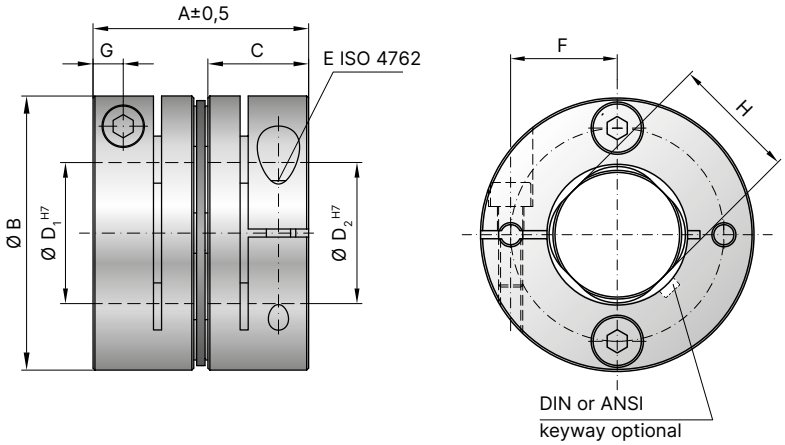
25 - 100 Nm

Feataures
- Very high torsional stiffness
- Compact design
- Low moment of inertia

Material
- **Disc packs:** highly elastic steel
- **Hubs and spacer:** aluminium

Design
Two precision machined coupling hubs and precision spacer mounted to the disc packs by means of high strength screws and spacers for frictional clamping of the assembly. Also available as split clamping hub.

S = Single flex coupling



Modell SCL2 S

Size			25	40	60	100
Rated torque	(Nm)	T_{KN}	25	40	60	100
Maximum torque	(mm)	T_{Kmax}	37.5	60	90	150
Coupling length	(mm)	A	43.6	50.9	53.5	68.7
Outside diameter	(mm)	B	56	63	68	82
Fit length	(mm)	C	20.5	24	25	30
Bore diameter H7	(mm)	D_1 / D_2	15-30	16-30	25-35	26-40
Fastening screw		E	M5	M6	M6	M8
Tightening torque	(Nm)		8	15	15	30
Distance	(mm)	F	22	23	26.5	28
Distance	(mm)	G	6	7.5	7.5	8.5
Shaft diameter limitation	(mm)	H	26	–	31	38
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.095	0.182	0.260	0.706
Weight	(kg)		0.192	0.304	0.363	0.694
Torsional stiffness	(Nm/rad)	C_T	46,000	58,000	82,000	157,000
Axial displacement	± (mm)	Max. values	0.4	0.42	0.5	0.5
Lateral displacement	± (mm)		–	–	–	–
Angular displacement	± (degree)		1	1	1	1
Max. speed	(1/min)		10,000			

SCL2 D

With clamping hub double flex coupling

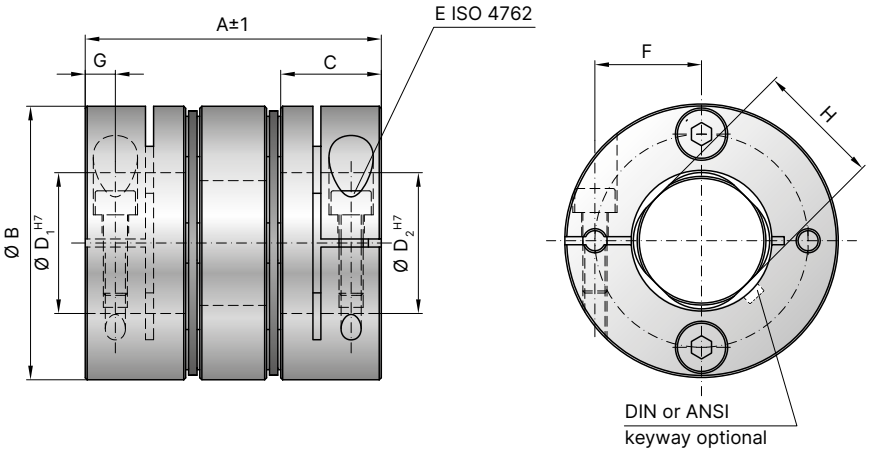
25 – 100 Nm

Feataures
- High torsional stiffness
- Low moment of inertia
- Lateral misalignment compensation

Material
- **Disc packs:** highly elastic steel
- **Hubs and spacer:** aluminium

Design
Two precision machined coupling hubs and precision spacer mounted to the disc packs by means of high strength screws and spacers for frictional clamping of the assembly. Also available as split clamping hub.

D = Double flex coupling



Model SCL2 D

Size			25	40	60	100
Rated torque	(Nm)	T_{KN}	25	40	60	100
Maximum torque	(mm)	T_{Kmax}	37.5	60	90	150
Coupling length	(mm)	A	60.2	69.3	73.6	98.8
Outside diameter	(mm)	B	56	63	68	82
Fit length	(mm)	C	20.5	24	25	30
Bore diameter H7	(mm)	D_1 / D_2	15-30	16-30	25-35	26-40
Fastening screw		E	M5	M6	M6	M8
Tightening torque	(Nm)		8	15	15	30
Distance	(mm)	F	22	23	26.5	28
Distance	(mm)	G	6	7.5	7.5	8.5
Shaft diameter limitation	(mm)	H	26	–	31	38
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.138	0.256	0.373	1.036
Weight	(kg)		0.284	0.428	0.531	1.022
Torsional stiffness	(Nm/rad)	C_T	23,000	29,000	41,000	78,500
Axial displacement	± (mm)	Max. values	0.81	0.85	1	1.15
Lateral displacement	± (mm)		0.29	0.32	0.35	0.53
Angular displacement	± (degree)		2	2	2	2
Max. speed	(1/min)		10,000			

SCL3 S

With conical clamping system single flex coupling

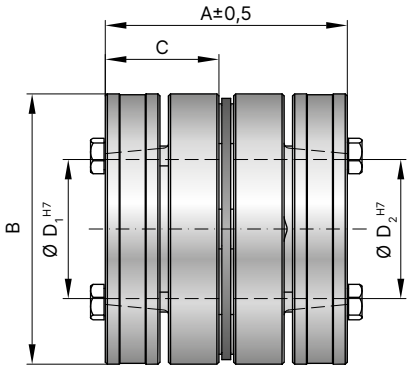
25 – 100 Nm

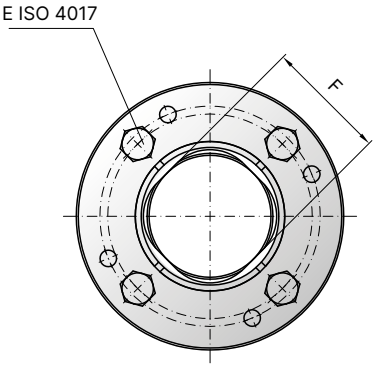
Feataures
- Very high concentricity
- High clamping pressure
- Low moment of inertia

Material
- **Disc packs:** highly elastic spring steel
- **Hubs and spacer:** aluminium

Design
Two precision machined coupling hubs and precision spacer mounted to the disc packs by means of high strength screws and spacers for frictional clamping of the assembly.

S = Single flex coupling





Model SCL3 S

Size			25	40	60	100
Rated torque	(Nm)	T_{KN}	25	40	60	100
Maximum torque	(mm)	T_{Kmax}	37.5	60	90	150
Coupling length	(mm)	A	56.6	56.9	57.5	73.7
Outside diameter	(mm)	B	56	63	68	82
Fit length	(mm)	C	27	27	27	32.5
Bore diameter H7	(mm)	D_1 / D_2	18-28	20-30	27-35	24-40
Fastening screw		E	M5	M5	M5	M5
Tightening torque	(Nm)		5.5	6	6	6
Shaft diameter limitation	(mm)	F	26	–	31	38
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.144	0.230	0.310	0.837
Weight	(kg)		0.299	0.384	0.435	0.835
Torsional stiffness	(Nm/rad)	C_T	46,000	58,000	82,000	157,000
Axial displacement	± (mm)	Max. values	0.4	0.42	0.5	0.5
Lateral displacement	± (mm)		–	–	–	–
Angula displacement	± (degree)		1	1	1	1
Max. speed	(1/min)		10,000			

SCL3 D

With conical clamping system double flex coupling

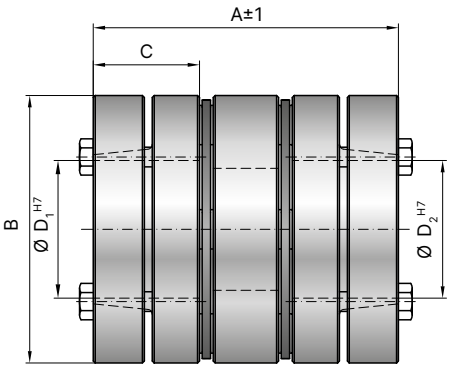
25 – 100 Nm

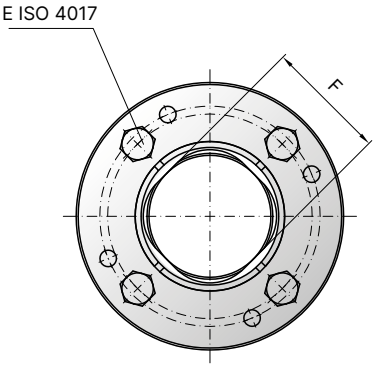
Feataures
- High concentricity
- High clamping pressure
- High torsional stiffness

Material
- **Disc packs:** highly elastic spring steel
- **Hubs and spacer:** aluminium

Design
Two precision machined coupling hubs and precision spacer mounted to the disc packs by means of high strength screws and spacers for frictional clamping of the assembly.

D = Double flex coupling





Model SCL3 D

Size			25	40	60	100
Rated torque	(Nm)	T_{KN}	25	40	60	100
Maximum torque	(mm)	T_{Kmax}	37.5	60	90	150
Coupling length	(mm)	A	73.2	75.3	77.6	103.8
Outside diameter	(mm)	B	56	63	68	82
Fit length	(mm)	C	27	27	27	32.5
Bore diameter H7	(mm)	D_1 / D_2	18-28	20-30	27-35	24-40
Fastening screw		E	M5	M5	M5	M5
Tightening torque	(Nm)		5.5	6	6	6
Shaft diameter limitation	(mm)	F	26	–	31	38
Moment of inertia	(10^{-3} kgm²)	J_{ges}	0.187	0.304	0.422	1.170
Weight	(kg)		0.390	0.508	0.603	1.156
Torsional stiffness	(Nm/rad)	C_T	23,000	29,000	41,000	78,500
Axial displacement	± (mm)	Max. values	0.81	0.85	1	1.15
Lateral displacement	± (mm)		0.29	0.32	0.35	0.53
Angula displacement	± (degree)		2	2	2	2
Max. speed	(1/min)		10,000			

EK SP

Backlash free elastomer couplings Servomax®

0.5 – 25,000 Nm

Areas of application
for vibration damping torque transmission in:
+ Packaging machinery
+ Pump drives
+ Machine tools
+ Lift systems
+ Conveyors
+ Labeling machinery

Service life
When properly selected, handled, and installed, these couplings are maintenance free with infinite service life.

Fit clearance
Overall shaft / hub clearance of 0.01 - 0.05 mm

Features
Elastomer is press fit for zero backlash; standard versions are electrically isolating.

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

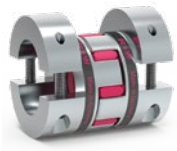
ATEX (Optional)
Available on request.

Ordering Example	EK2	20	A	8	10	XX
Model	●					Special designation only (e.g. special bore tolerance).
Size		●				
Elastomer insert type			●			
Bore Ø D1 H7				●		
Bore Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. EK2 / 20 / A / 8 / 10 / XX)

EK SP

Backlash free **elastomer couplings** **Servomax®** 0.5 – 25,000 Nm

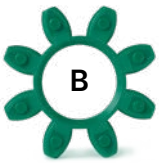
Model		Features	Page
EK1		**With keyway connection** 0.5 – 25,000 Nm • Press fit design • Readily modified for custom dimensions	66-67
EK2		**With clamping hub** 6 – 2,150 Nm • High concentricity • Backlash free • Easy mounting	68
EKL		**With clamping hub** 0.5 - 2,150 Nm • Compact design • Low moment of inertia • Easy mounting	69
EKH		**With split clamping hub** 4 – 25,000 Nm • For lateral installation • Allows for pre-aligned shafts • Easy mounting	70-71
EK6		**With conical clamping ring** 4 – 25,000 Nm • High concentricity • High clamping pressure • Self centering hub design • Allows for axial installation	72-73

Model		Features	Page
SP6		**For high speed spindle applications** 60 - 2,150 Nm • Very high precision • Very high concentricity • High clamping force • Symmetrically machined hubs	74
EK7		**With expanding shaft** 2 – 2,150 Nm • For hollow shaft mounting • Expanding shaft through axial tightening • Short body length after installation	75
EKZ		**Intermediate spacer** 2 – 2,150 Nm • High lateral misalignment • Easy to mount • Vibration damping	76

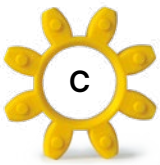
General informations R+W elastomer couplings

Sizes 2 – 800

Shore hardness
98 Sh A

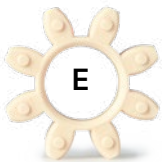


Shore hardness
64 Sh D



Shore hardness
80 Sh A

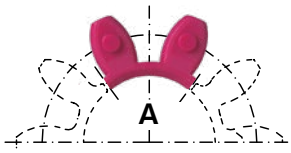
Shore hardness
65 Sh D



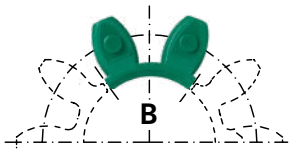
Shore hardness
64 Sh D

Sizes 2.500 – 9.500

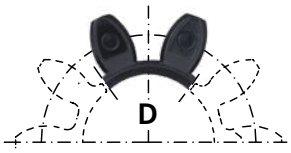
The coupling includes 5x elastomer segments



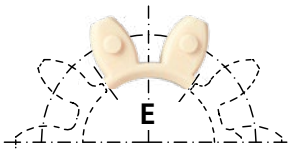
Shore hardness 98 Sh A



Shore hardness 64 Sh D



Shore hardness 65 Sh D



Shore hardness 64 Sh D

Description of the elastomer inserts

Type	Shore hardness	Color	Material	Relative damping (Ψ)	Temperature range	Features
A	98 Sh A	red	TPU	0.4 - 0.5	-30°C to +100°C	high damping
B	64 Sh D	green	TPU	0.3 - 0.45	-30°C to +120°C	high torsional stiffness
C	80 Sh A	yellow	TPU	0.3 - 0.4	-30°C to +100°C	very high damping
D*	65 Sh D	black	TPU	0.3 - 0.45	-10°C to + 70°C	electrically conductive
E	64 Sh D	beige	Hytrel	0.3 - 0.45	-50°C to +150°C	temperature resistant

* The electrical conductivity of the elastomer material is to prevent the electrostatic charging of the elastomer coupling system, to reduce the risk of sparking in operation. ATEX technical data is available upon request. The values of the relative damping were determined at 10 Hz and +20° C.

Sizes EK

Size*		2			5			10			20			60		
Type (Elastomer insert)		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Static torsional stiffness (Nm/rad)	C_T	50	115	17	150	350	53	260	600	90	1,140	2,500	520	3,290	9,750	1,400
Dynamic torsional stiffness (Nm/rad)	C_{Tdyn}	100	230	35	300	700	106	541	1,650	224	2,540	4,440	876	7,940	11,900	2,072
Lateral (mm)	Max. values	0.08	0.06	0.2	0.08	0.06	0.2	0.1	0.08	0.22	0.1	0.08	0.25	0.12	0.1	0.25
Angular (degree)		1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2
Axial (mm)		±1			±1			±1			±1,5			±1,5		

Size*		150			300			400			450			600		
Type (Elastomer insert)		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Static torsional stiffness (Nm/rad)	C_T	4,970	10,600	2,000	12,400	18,000	3,000	14,200	24,200	3,650	15,100	27,000	4,120	25,000	49,100	7,550
Dynamic torsional stiffness (Nm/rad)	C_{Tdyn}	13,400	29,300	3,590	23,700	40,400	6,090	43,200	66,300	7,050	55,400	81,200	11,600	63,600	136,800	21,200
Lateral (mm)	Max. values	0.15	0.12	0.3	0.18	0.14	0.35	0.2	0.16	0.35	0.2	0.18	0.35	0.22	0.18	0.36
Angular (degree)		1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2
Axial (mm)		±1,8			±2			±2			±2					

Size*		800			2.500		4.500		9.500	
Type (Elastomer insert)		A	B	C	A	B	A	B	A	B
Static torsional stiffness (Nm/rad)	C_T	41,300	66,080	10,320	87,600	109,000	167,000	372,000	590,000	670,000
Dynamic torsional stiffness (Nm/rad)	C_{Tdyn}	82,600	180,150	28,600	175,000	216,000	337,000	743,000	1,180,000	1,340,000
Lateral (mm)	Max. values	0.25	0.2	0.4	0.5	0.3	0.5	0.3	0.6	0.4
Angular (degree)		1	0.8	1.2	1.5	1	1.5	1	1.5	1
Axial (mm)		±2			±3		±3		±4	

Static torsional stiffness at 50% T_{KN} Dynamic torsional stiffness at T_{KN}

* Note: The technical values for elastomer inserts D and E correspond to the values for B, due to the identical Shore hardness.

EK1

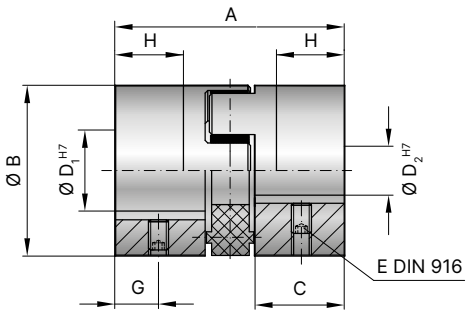
With keyway connection

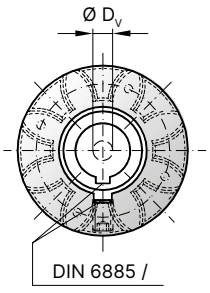
0.5 - 2,150 Nm

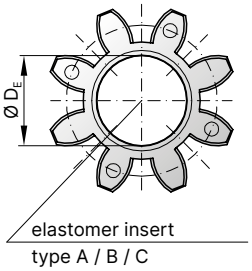
Feataures
- Press fit design
- Readily modified for custom dimensions
- Low backlash (keyway)

Material
- **Hubs:** up to size 600 high strength aluminum; size 800 steel
- **Elastomer:** wear resistant thermally stable TPU

Design
Two concentrically machined hubs with curved jaws, keyways, and set screws.







Optional:
Conical bores for Fanuc motors and other tapered shafts available.

Model EK1

Size		2			5			10			20			60			150			300			400			450			600			800		
Type (Elastomer insert)		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Rated torque (Nm)	T_{KN}	2	2.4	0.5	9	12	2	12.5	16	4	17	21	6	60	75	20	160	200	42	325	405	84	410	520	90	530	660	95	700	840	150	950	1,100	240
Max. torque (Nm)	T_{Kmax}	4	4.8	1	18	24	4	25	32	6	34	42	12	120	150	35	320	400	85	650	810	170	820	1,040	180	1,060	1,350	190	1,400	1,680	300	1,900	2,150	400
Overall length (mm)	A	20			34			35			66			78			90			114			120			126			147			162		
Outside diameter (mm)	B/B_1	15			25			32			42			56			66.5			82			95			102			120			136.5		
Mounting length (mm)	C	6.5			12			12			25			30			35			45			46			50			57			65		
Inside diameter (pilot bored) (mm)	D_V	3			4			6			7			9			14			16			20			22			25			29		
Inside diameter range H7 (mm)	$D_{1/2}$	3 - 9			6 - 15			6 - 18			8 - 25			12 - 32			19 - 38			20 - 45			25-50			28 - 60			30-70			32 - 80		
Inside diameter of elastomer (mm)	D_E	6.2			10.2			14.2			19.2			26.2			29.2			36.2			43			46.2			55			60.5		
Set screws (DIN 916)	E	see table (depending on bore Ø)**																																
Distance (mm)	G	3			5			6			9			11			12			15			16			17			23			30		
Possible shortening length(mm)	H	4			6			6			19			22			26			32			35			37			40			43		
Moment of inertia per hub (10^{-3} kgm²)	J_1/J_2	0.0001			0.001			0.003			0.02			0.06			0.2			0.6			1.1			1.5			3.5			19		
Approx. weight (kg)		0.008			0.03			0.08			0.15			0.35			0.7			1.4			1.9			2.3			3.7			15.5		
Speed standard(min^{-1})		15,000			15,000			13,000			12,500			11,000			10,000			9,000			8,500			8,000			6,800			4,000		
Speed balanced ($10^3 min^{-1}$)		60	67	45	57	65	43	53	63	40	45	60	35	31	31	25	22	26	18	22	26	16	17	18	13	16	17	12	14	14	10	13	13	8

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts **see pages 64.**

**** set screw size**

D_1/D_2	- Ø 10	Ø 10.1 - 12	Ø 12,1 - 30	Ø 30.1 - 60	Ø 60.1 - 95	Ø 95.1 - 130	Ø 130.1 - 170
E	M4	M4	M5	M8	M10	M12	M16

EK1

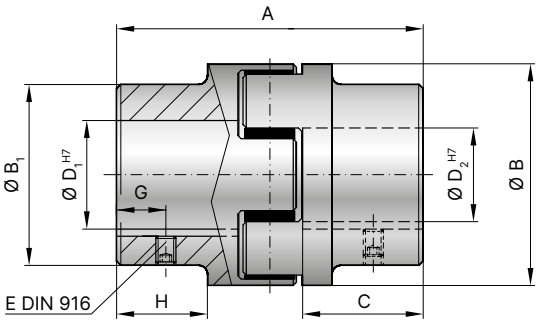
With keyway connection

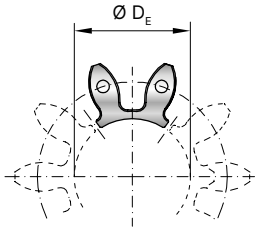
1,950 – 25,000 Nm

Feataures
- Press fit design
- Readily modified for custom dimensions
- Low backlash (keyway)

Material
- **Hubs:** GGG40
- **Elastomer:** wear resistant thermally stable TPU

Design
Two concentrically machined hubs with curved jaws, keyways, and set screws. Elastomer insert consist of 5 segments.





elastomer insert type A / B

Model EK1

Serie			2,500		4,500		9,500	
Type (Elastomer insert)			A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	1,950	2,450	5,000	6,200	10,000	12,500
Max. torque	(Nm)	T_{Kmax}	3,900	4,900	10,000	12,400	20,000	25,000
Overall length	(mm)	A	213		272		341	
Outside diameter	(mm)	B/B_1	160 / 154		225 / 190		290 / 240	
Mounting length	(mm)	C	88		113		142	
Inside diameter (pilot bored)	(mm)	D_V	28		39		49	
Inside diameter range H7	(mm)	$D_{1/2}$	30 - 95		40 - 130		50 - 170	
Inside diameter of elastomer	(mm)	D_E	80		111		145	
Set screws (DIN 916)		E	see table (depending on bore Ø)**					
Distance	(mm)	G	25		30		40	
Possible shortening length	(mm)	H	69		89		110	
Moment of inertia per hub	(10^{-3} kgm²)	J_1/J_2	40		147		480	
Approx. weight	(kg)		12.5		25		53	
Speed standard	(min^{-1})		3,500		3,000		2,000	
Speed balanced	($10^3 min^{-1}$)		10	10	8	8	6.5	6.5

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts see pages 64.

EK2

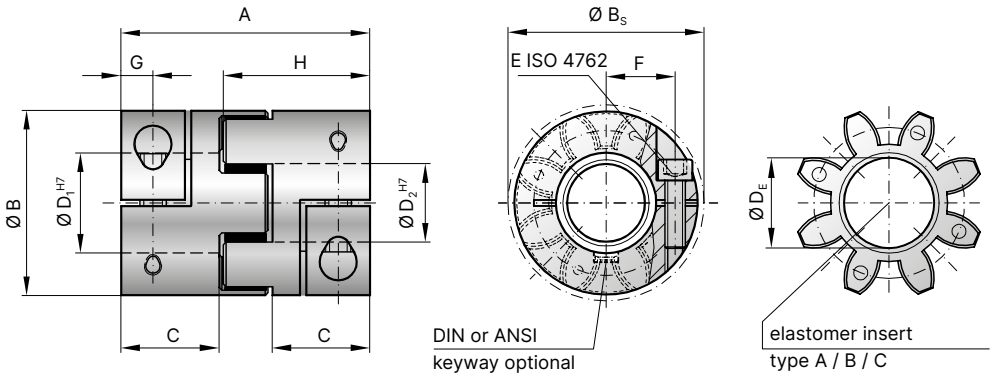
With clamping hub

6 – 2,150 Nm

Feataures
- Easy mounting
- Highly concentric assembly
- Vibration damping

Material
- **Hubs:** up to size 600 high strength aluminum; size 800 steel
- **Elastomer:** wear resistant thermally stable TPU

Design
Two concentrically machined hubs with curved jaws and clamping screws.



Model EK2

Size			20			60			150			300			400			450			600			800		
Type (Elastomer insert)			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Rated torque	(Nm)	T_{KN}	17	21	6	60	75	20	160	200	42	325	405	84	410	520	90	530	660	95	700	840	150	950	1,100	240
Max. torque	(Nm)	T_{Kmax}	34	42	12	120	150	35	320	400	85	650	810	170	820	1,040	180	1,060	1,350	190	1,400	1,680	300	1,900	2,150	400
Overall length	(mm)	A	66			78			90			114			118			126			141			162		
Outside diameter	(mm)	B	42			56			66.5			82			95			102			120			136.5		
Outside diameter with screw head	(mm)	B_S	44.5			57			68			85			96			105			122.5			139		
Mounting length	(mm)	C	25			30			35			45			46			50			54			65		
Inside diameter range H7	(mm)	$D_{1/2}$	8 - 25			12 - 32			19 - 36			20 - 45			25-50			28 - 60			30-70			35 - 80		
Inside diameter of elastomer	(mm)	D_E	19.2			26.2			29.2			36.2			43			46.2			55			60.5		
Clamping screw (ISO 4762)		E	M5			M6			M8			M10			M12			M12			M12			M16		
Tightening torque of the clamping screw	(Nm)		8			15			35			70			120			120			120			290		
Distance between centers	(mm)	F	15.5			21			24			29			32			38			47			50.5		
Distance	(mm)	G	8.5			10			12			15			15			17.5			20			23		
Hub length	(mm)	H	39			46			52.5			66			69			73			83			93.5		
Moment of inertia per hub	(10^{-3} kgm²)	J_1/J_2	0.02			0.08			0.1			0.5			1			1.4			3.2			17		
Approx. weight	(kg)		0.2			0.35			0.6			1.1			1.5			2			3.2			12.7		
Speed standard	(min^{-1})		12,500			11,000			10,000			9,000			8,500			8,000			6,800			4,000		
Speed balanced	($10^3 min^{-1}$)		45	60	35	31	31	25	22	26	18	22	26	16	17	18	13	16	17	12	14	14	10	13	13	8

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts see pages 64.

EKL

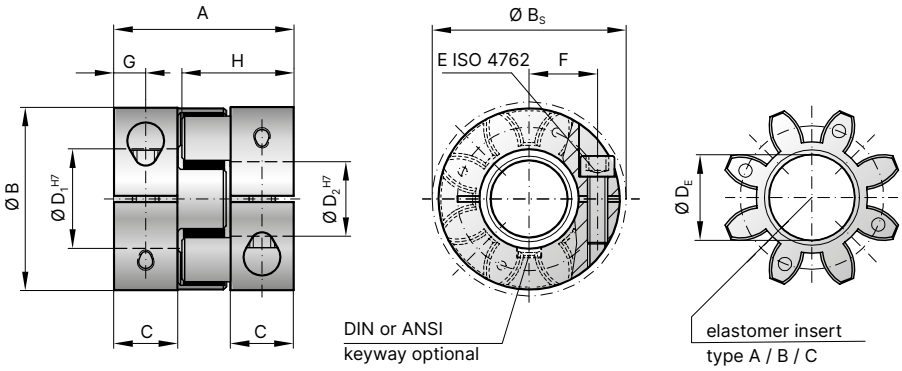
Compact version with clamping hub

0.5 – 2,150 Nm

Feataures
- Short overall length
- Easy mounting
- Vibration damping

Material
- **Hubs:** up to size 600 high strength aluminum; size 800 steel
- **Elastomer:** wear resistant thermally stable TPU

Design
Two concentrically machined hubs with curved jaws and clamping screws.



Model EKL

Size			2			5			10			20			60			150			300			400			450			600			800		
Type (Elastomer insert)			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Rated torque	(Nm)	T_{KN}	2	2.4	0.5	9	12	2	12.5	16	4	17	21	6	60	75	20	160	200	42	325	405	84	410	520	90	530	660	95	700	840	150	950	1,100	240
Max. torque	(Nm)	T_{Kmax}	4	4.8	1	18	24	4	25	32	6	34	42	12	120	150	35	320	400	85	650	810	170	820	1,040	180	1,060	1,350	190	1,400	1,680	300	1,900	2,150	400
Overall length	(mm)	A	20			26			32			50			58			62			86			90			94			111			123		
Outside diameter	(mm)	B	16			25			32			42			56			66.5			82			95			102			120			136.5		
Outside diameter with screw head	(mm)	B_S	17			25			32			44.5			57			68			85			98			105			122			139		
Mounting length	(mm)	C	6			8			10.3			17			20			21			31			32			34			40			46		
Inside diameter range H7	(mm)	$D_{1/2}$	3 - 8			4 - 12.7			4 - 16			8 - 25			12 - 32			19 - 36			20 - 45			25 - 50			28 - 60			30 - 70			35 - 80		
Inside diameter of elastomer	(mm)	D_E	6.2			10.2			14.2			19.2			26.2			29.2			36.2			43			46.2			55			60.5		
Clamping screw (ISO 4762)		E	M2			M3			M4			M5			M6			M8			M10			M12			M12			M12			M16		
Tightening torque of the clamping screw	(Nm)		0.6			2			4			8			15			35			70			120			120			120			290		
Distance between centers	(mm)	F	5.5			8			10.5			15.5			21			24			29			33.5			38			47			50.5		
Distance	(mm)	G	3			4			5			8.5			10			11			15			16			17.5			20			23		
Hub length	(mm)	H	12			16.7			20.7			31			36			39			52			55			57			68			74		
Moment of inertia per hub	(10^{-3} kgm²)	J_1/J_2	0.0003			0.002			0.003			0.01			0.04			0.08			0.5			0.8			1.1			2.66			14		
Approx. weight	(kg)		0.008			0.02			0.05			0.12			0.3			0.5			0.9			1.1			1.5			2.5			9		
Speed standard	(min^{-1})		15,000			15,000			13,000			12,500			11,000			10,000			9,000			8,500			8,000			6,800			4,000		
Speed balanced	($10^3 min^{-1}$)		60	67	45	57	65	43	53	63	40	45	60	35	31	31	25	22	26	18	22	26	16	17	18	13	16	17	12	14	14	10	13	13	8

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts see pages 64.

EKH

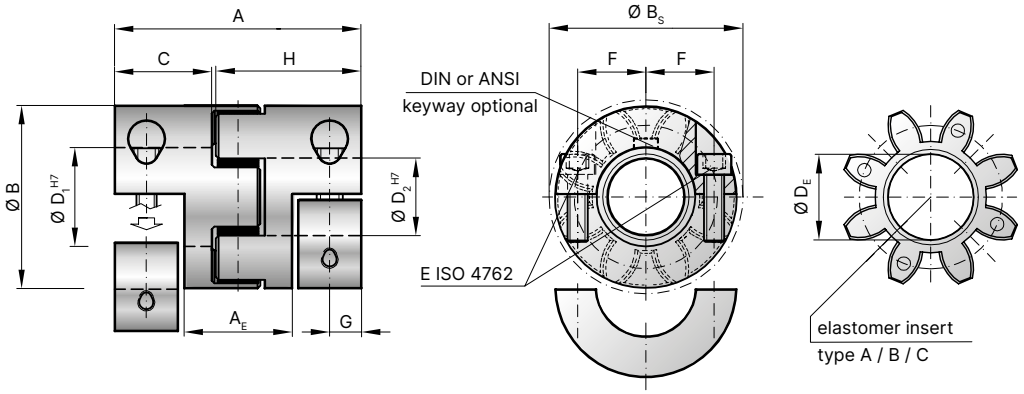
With split clamping hub

4 – 2,150 Nm

Feataures
- Lateral mounting
- Easy installation and removal
- Allows for pre-alignment of shafts

Material
- **Hubs:** up to size 600 high strength aluminum; size 800 steel
- **Elastomer:** wear resistant thermally stable TPU

Design
Two concentrically machined, fully split hubs with curved jaws and clamping screws.



Model EKH

Size			10			20			60			150			300			400			450			600			800		
Type (Elastomer insert)			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Rated torque	(Nm)	T_{KN}	12.6	16	4	17	21	6	60	75	20	160	200	42	325	405	84	410	520	90	530	660	95	700	840	150	950	1,100	240
Max, torque	(Nm)	T_{Kmax}	25	32	6	34	42	12	120	150	35	320	400	85	650	810	170	820	1,040	180	1,060	1,350	190	1,400	1,680	300	1,900	2,150	400
Overall length	(mm)	A	53			66			78			90			114			120			126			141			162		
Length of center section	(mm)	A_E	20			28.8			34			38			50			52			52			56			65		
Outside diameter	(mm)	B	32			42			56			66.5			82			95			102			120			136.5		
Outside diameter with screw head	(mm)	B_S	32			44.5			57			68			85			98			105			122			139		
Mounting length	(mm)	C	20			25			30			35			45			47			50			55			65		
Inside diameter range H7	(mm)	$D_{1/2}$	6 - 16			8 - 25			12 - 32			19 - 36			20 - 45			25 - 50			28 - 60			30 - 70			35 - 80		
Inside diameter of elastomer	(mm)	D_E	14.2			19.2			26.2			29.2			36.2			43			46.2			55			60.5		
Clamping screw (ISO 4762)		E	4 x M4			4 x M5			4 x M6			4 x M8			4 x M10			4 x M12			4 x M12			4 x M12			4 x M16		
Tightening torque of the clamping screw	(Nm)		4			8			15			35			70			120			120			120			290		
Distance between centers	(mm)	F	10.5			15.5			21			24			29			33.5			38			47			50.5		
Distance	(mm)	G/G_1	7.5			8.5			10			12			15			16			17.5			20			23		
Hub length	(mm)	H/H_1	31			39			46			52.5			66			73			73			83			93.5		
Moment of inertia per hub	(10^{-3} kgm^2)	J_1/J_2	0.005			0.02			0.06			0.1			0.55			1.11			1.6			3.45			18.5		
Approx, weight	(kg)		0.08			0.15			0.35			0.6			1.2			1.57			2.1			3.22			14.8		
Speed standard	(min^{-1})		13,000			12,500			11,000			10,000			9,000			8,500			8,000			6,800			4,000		
Speed balanced	(10^3min^{-1})		53	63	40	45	60	35	31	31	25	22	26	18	22	26	16	17	18	13	16	17	12	14	14	10	13	13	8

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts see pages 64.

EKH

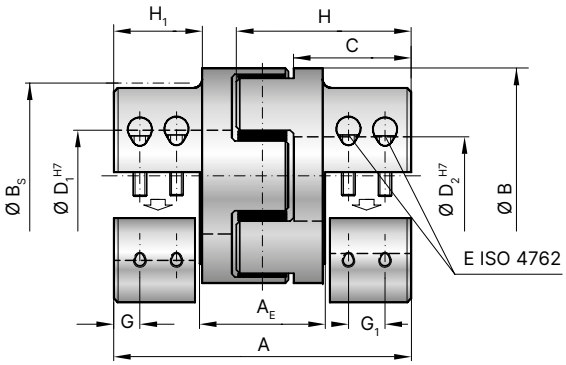
With split clamping hub

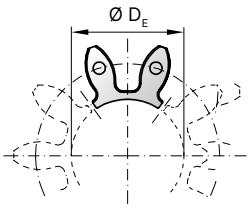
1,950 – 25,000 Nm

Feataures
- Lateral mounting
- Easy installation and removal
- Allows for pre-alignment of shafts

Material
- **Hubs:** GGG40
- **Elastomer:** wear resistant thermally stable TPU

Design
Two concentrically machined, fully split hubs with curved jaws and clamping screws. Elastomer insert consist of 5 segments.





elastomer insert type A / B

Model EKH

Size			2,500		4,500		9,500	
Type (Elastomer insert)			A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	1,950	2,450	5,000	6,200	10,000	12,500
Max. torque	(Nm)	T_{Kmax}	3,900	4,900	10,000	12,400	20,000	25,000
Overall length	(mm)	A	213		272		341	
Length of center section	(mm)	A_E	78		104		131	
Outside diameter	(mm)	B	160		225		290	
Outside diameter with screw head	(mm)	B_S	156		199		243	
Mounting length	(mm)	C	85		113		140	
Inside diameter range H7	(mm)	$D_{1/2}$	35 - 90		40 - 120		50 - 140	
Inside diameter of elastomer	(mm)	D_E	80		111		145	
Clamping screw (ISO 4762)		E	8 x M16		8 x M20		8 x M24	
Tightening torque of the clamping screw	(Nm)		300		600		1,100	
Distance between centers	(mm)	F	57		75		90	
Distance	(mm)	G/G_1	18 / 30		24 / 41		30 / 48	
Hub length	(mm)	H/H_1	120 / 69		154 / 89		193 / 110	
Moment of inertia per hub	(10^{-3} kgm²)	J_1/J_2	40		147		480	
Approx. weight	(kg)		12.5		25		53	
Speed standard	(min^{-1})		3,000		3,500		2,000	
Speed balanced	($10^3 min^{-1}$)		10	10	8	8	6.5	6.5

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts see pages 64.

EK6

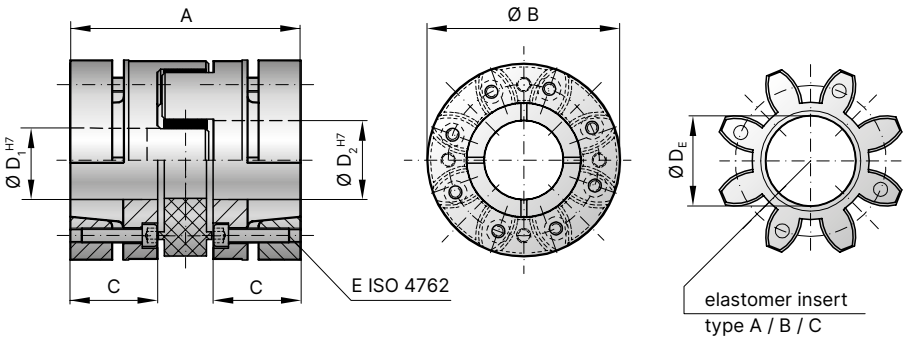
With conical clamping ring

4 – 2,150 Nm

Feataures
- High clamping pressure
- Self centering on shaft
- Very high concentricity

Material
- **Hubs:** up to size 600 high strength aluminum; size 800 steel
- **Elastomer:** wear resistant thermally stable TPU

Design
Two concentrically machined hubs with curved jaws and conical clamping rings.



Model EK6

Size			10			20			60			150			300			400			450			600			800		
Type (Elastomer insert)			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Rated torque	(Nm)	T_{KN}	12.6	16	4	17	21	6	60	75	20	160	200	42	325	405	84	410	520	90	530	660	95	700	840	150	950	1,100	240
Max. torque	(Nm)	T_{Kmax}	25	32	6	34	42	12	120	150	35	320	400	85	650	810	170	820	1,040	180	1,060	1,350	190	1,400	1,680	300	1,900	2,150	400
Overall length	(mm)	A	42			56			64			76			96			107			110			121			138		
Outside diameter	(mm)	B/B_1	32			43			56			66.5			82			95			102			120			136.5		
Mounting length	(mm)	C	15			20			23			28			36			39			42			44.5			53		
Inside diameter range H7	(mm)	$D_{1/2}$	6 - 16			8 - 24			12 - 32			19 - 35			20 - 45			25 -50			28 - 55			30 - 70			32 - 80		
Inside diameter of elastomer	(mm)	D_E	14.2			19.2			26.2			29.2			36.2			43			46.2			55			60.5		
Clamping screw (ISO 4762)		E	3x M3			6x M4			4x M5			8x M5			8x M6			8x M8			8x M8			8x M8			8x M10		
Tightening torque of the clamping screw	(Nm)		2			3			6			7			12			20			25			35			55		
Moment of inertia per hub	(10^{-3} kgm^2)	J_1/J_2	0.004			0.015			0.05			0.1			0.3			0.8			0.85			3			9.2		
Approx. weight	(kg)		0.08			0.12			0.3			0.6			1.1			1.5			2.1			2.9			12		
Speed standard	(min^{-1})		20,000			19,000			14,000			13,000			10,000			9,500			9,000			6,800			4,000		
Speed balanced	($10^3 min^{-1}$)		53	63	40	45	60	35	31	31	25	22	26	18	22	26	16	17	18	13	16	17	12	14	14	10	13	13	8

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts see pages 64.

EK6

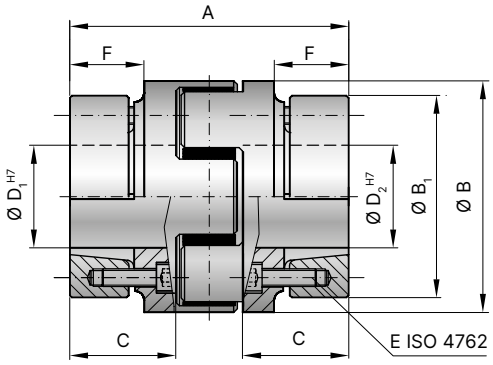
With conical clamping ring

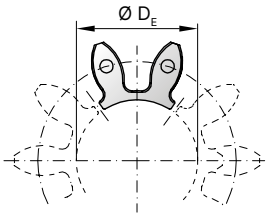
1,950 – 25,000 Nm

Feataures
- High clamping pressure
- Self centering on shaft
- Very high concentricity

Material
- **Hubs:** GGG40
- **Elastomer:** wear resistant thermally stable TPU

Design
Two concentrically machined hubs with curved jaws and conical clamping rings. Elastomer insert consist of 5 segments.





elastomer insert type A / B

Model EK6

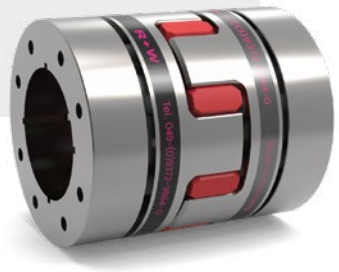
Size			2,500		4,500		9,500	
Type (Elastomer insert)			A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	1,950	2,450	5,000	6,200	10,000	12,500
Max. torque	(Nm)	T_{Kmax}	3,900	4,900	10,000	12,400	20,000	25,000
Overall length	(mm)	A	177		227		282	
Outside diameter	(mm)	B/B_1	160 / 159		225 / 208		290 / 285	
Mounting length	(mm)	C	70		90		112	
Inside diameter range H7	(mm)	$D_{1/2}$	40 - 95		50 - 130		60 - 170	
Inside diameter of elastomer	(mm)	D_E	80		111		145	
Clamping screw (ISO 4762)		E	10x M10		10x M12		10x M16	
Tightening torque of the clamping screw	(Nm)		60		100		160	
Distance	(mm)	F	51		66		80	
Moment of inertia per hub	(10^{-3} kgm²)	J_1/J_2	31.7		135.7		469.2	
Approx. weight	(kg)		19.5		35		73	
Speed standard	(min^{-1})		3,500		3,000		2,000	
Speed balanced	($10^3 min^{-1}$)		10	10	8	8	6.5	6.5

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts see pages 64.

SP6

High speed with conical clamping ring

60 – 2,150 Nm

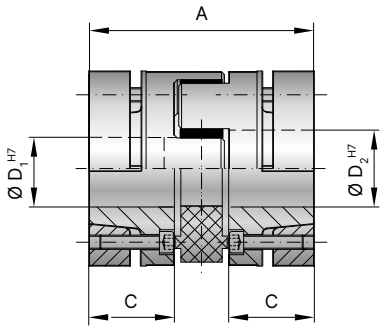


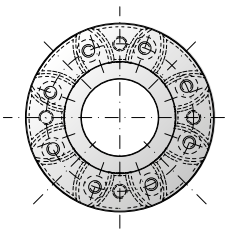
Feataures
- Very high precision
- Very high concentricity
- High clamping force
- Symmetrically machined hubs

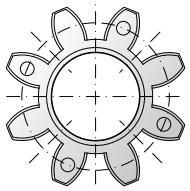
Material
- **Hubs:** high strength aluminium; optional steel
- **Clamping ring:** high strength aluminium; optional steel
- **Elastomer:** wear resistant thermally stable TPU

Design
Two precision machined hubs with curved jaws and conical clamping rings.

Fit clearance
Overall shaft / hub tolerance 0.01 - 0.025 mm







High speed

Model SP6

Size		60		150			300		400		450			600		800	
Type (Elastomer insert)		A	B	A		B	A	B	A	B	A		B	A	B	A	B
Rated torque (Nm)	T_{KN}	60	75	160		200	325	405	410	520	530		660	700	840	950	1,100
Max. torque* (Nm)	T_{Kmax}	120	150	320		400	650	810	820	1,040	1,060		1,350	1,400	1,680	1,900	2,150
Overall length (mm)	A	64	78	80	90	100	114		126		110	126	140	160		138	
Outside diameter (mm)	B	55		65			80		95		102			120		136.5	
Mounting length (mm)	C	23	30	30	35	40	45		50		42	50	57	65		53	
Inside diameter range H7 (mm)	$D_{1/2}$*	14 - 32		19 - 38			20 - 48**		25 - 50		28 - 55			35 - 70		40 - 80	
Inside diameter of elastomer (mm)	D_E	26.2		29.2			36.2		43		46.2			55		60.5	
Hub material)		AL / optional steel														steel	
Clamping screw (ISO 4762)	E	4x M5		8x M5			8x M6		8x M8		8x M8			8x M8		8x M10	
Tightening torque of the clamping screw - AL / steel (Nm)		6 / 6	7 / 7	7 / 8.5	7.5 / 8.5	8.5 / 8.5	14 / 14		23 / 30		25 / 30			30 / 35		46 / 63	
Moment of inertia per hub AL / steel (10^{-3} kgm²)	J_1/J_2	0.06 / 0.15	0.08 /0.20	0.16 /0.38	0.18 / 0.44	0.20 / 0.50	0.52 / 1.29		1.25 / 3.05		1.33 / 3.31	1.55 / 3.88	1.74 / 4.38	3.80 / 9.60		5.52 / 13.72	
Approx. weight AL / steel (kg)		0.25 / 0.62	0.32 / 0.78	0.46 / 1.10	0.53 / 1.30	0.60 / 1.43	1.00 / 2.41		1.76 / 4.17		1.70 / 4.00	1.90 / 4.70	2.20 /5.20	3.22 / 8.00		3.73/ 9.17	
Speed standard (min-1)		28,000		26,000			26,000		19,000		18,000			15,000		13,500	

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts **see pages 64.**

* Recommended fit pairing H7 / k6; H6 / j5 (short spindle); starting at Ø55 G7 / m6
** from Ø46 to 48 with custom hub

EK7

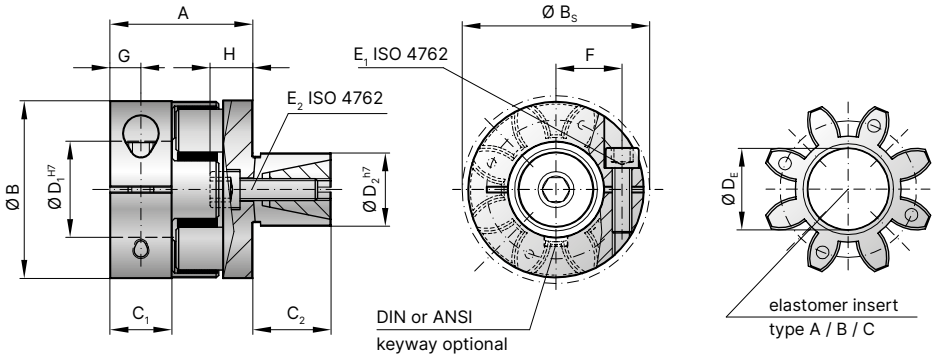
With expanding shaft

2 – 2,150 Nm

Feataures
- For hollow shaft mounting
- Short overall length
- Solution for mismatched bore / shaft diameters

Material
- **Hubs:** up to size 600 high strength aluminum; size 800 steel
- **Expanding shaft hub:** steel
- **Elastomer:** wear resistant thermally stable TPU

Design
One concentrically machined hub with clamping screw and curved jaws. One concentrically machined hub with expanding shaft system and curved jaws.



Model EK7

Size			5			10			20			60			150			300			400			450			600			800		
Type (Elastomer insert)			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Rated torque	(Nm)	T_{KN}	9	12	2	12.5	16	4	17	21	6	60	75	20	160	200	42	325	405	84	410	520	90	530	660	95	700	840	150	950	1,100	240
Max. torque	(Nm)	T_{Kmax}	18	24	4	25	32	6	34	42	12	120	150	35	320	400	85	650	810	170	820	1,040	180	1,060	1,350	190	1,400	1,680	300	1,900	2,150	400
Overall length	(mm)	A	22.3			28			40			46			51			68			74			76			88			94		
Outside diameter	(mm)	B	25			32			42			56			66.5			82			95			102			120			136.5		
Outside diameter with screw head	(mm)	B_S	25			32			44.5			57			68			85			98			105			122			139		
Mounting length	(mm)	C_1	8			10.3			17			20			21			31			32			34			40			46		
Mounting length	(mm)	C_2	12			20			25			27			32			45			50			55			55			60		
Inside diameter range H7	(mm)	D_1	4 - 12.7			5 - 16			8 - 25			12 - 32			19 - 36			20 - 45			25 - 50			28 - 60			30 - 70			35 - 80		
Outside diameter range h7	(mm)	D_2	10 - 16			13 - 25			14 - 30			23 - 38			26 - 45			38 - 60			40 - 65			42 - 70			42 - 75			42 - 80		
Inside diameter of elastomer	(mm)	D_E	10.2			14.2			19.2			26.2			29.2			36.2			43			46.2			55			60.5		
Clamping screw (ISO 4762)		E_1	M3			M4			M5			M6			M8			M10			M12			M12			M12			M16		
Tightening torque	(Nm)		2			4			8			15			35			70			120			120			120			290		
Clamping screw (ISO 4762)		E_2	M4			M5			M6			M8			M10			M12			M16			M16			M16			M16		
Tightening torque	(Nm)		4			9			12			32			60			110			240			240			240			300		
Distance between centers	(mm)	F	8			10.5			15.5			21			24			29			33.5			38			47			50.5		
Distance	(mm)	G	4			5			8.5			10			11			15			16			17.5			20			23		
Length	(mm)	H	7			7			10			11			16			20			27			27			27			27		
Moment of inertia D_1	(10^{-3} kgm²)	J_1	0.002			0.003			0.01			0.04			0.08			0.5			0.82			1.1			2.66			14		
Moment of inertia D_2	(10^{-3} kgm²)	J_2	0.002			0.01			0.04			0.1			0.2			1			1.92			2.6			4.97			9		
Approx. weight	(kg)		0.04			0.05			0.12			0.3			0.5			0.9			2.82			3.5			4.88			7.6		
Speed standard	(min^{-1})		15,000			13,000			12,500			11,000			10,000			9,000			8,500			8,000			6,800			4,000		
Speed balanced	($10^3 min^{-1}$)		57	65	43	53	63	40	45	60	35	31	31	25	22	26	18	22	26	16	17	18	13	16	17	12	14	14	10	13	13	8

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts see pages 64.

EKZ

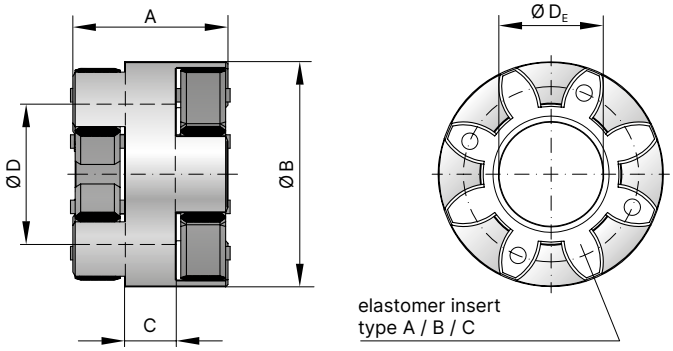
Intermediate spacer

0.5 – 2,150 Nm

Feataures
- High lateral misalignment
- Easy to mount
- Combine with any two hub designs

Material
- **Hubs:** high strength aluminum
- **Elastomer:** wear resistant thermally stable TPU

Design
A concentrically machined spacer with curved jaws. 2x elastomer segment press fit for zero backlash; standard versions are electrically isolating.



Model EKZ

Size			2			5			10			20			60			150			300			400			450			600			800		
Type (Elastomer insert)			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Rated torque	(Nm)	T_{KN}	2	2.4	0.5	9	12	2	12.5	16	4	17	21	6	60	75	20	160	200	42	325	405	84	410	520	90	530	660	95	700	840	150	950	1,100	240
Max, torque	(Nm)	T_{Kmax}	4	4.8	1	18	24	4	25	32	6	34	42	12	120	150	35	320	400	85	650	810	170	820	1,040	180	1,060	1,350	190	1,400	1,680	300	1,900	2,150	400
Overall length	(mm)	A	20			26			30			39			48			53			62			74			86			86			81		
Outside diameter	(mm)	B	16			25			32			42			56			66.5			82			94			102			119			136.5		
Hub length	(mm)	C	9			9			9			10			16			18			20			28			40			30			25		
Inside diameter	(mm)	D	9			15			18			25			32			38			45			50			60			65			80		
Inside diameter of elastomer	(mm)	D_E	6.2			10.2			14.2			19.2			26.2			29.2			36.2			43			46.2			55			60.5		
Moment of inertia	(10^{-3} kgm²)	J_1/J_2	0.0001			0.0005			0.002			0.008			0.03			0.05			0.1			0.47			0.6			1.39			1.1		
Approx, weight	(kg)		0.007			0.02			0.04			0.09			0.21			0.33			0.58			0.675			1.38			1.24			1.24		
Speed standard	(min^{-1})		15,000			15,000			13,000			12,500			11,000			10,000			9,000			8,500			8,000			6,800			4,000		

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts **see pages 64.**

Notes


2

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.

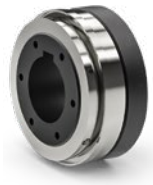
ATEX (Optional)
Available on request.

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		**With conical clamping bushing (or clamping hub in smaller sizes) for indirect drives** 0.1 – 2,800 Nm • Integral bearing to support sprockets, gears, and other drive elements • Compact simple design • Adjustable torque settings	84-85
SKP		**With keyway connection for indirect drives** 0.1 – 2,800 Nm • Integral bearing to support sprockets, gears, and other drive elements • Compact simple design • Adjustable torque settings	86
SLP		**With keyway connection for indirect drives** 10 - 700 Nm • Integral bearing to support sprockets, gears, and other drive elements • Adjustable torque settings • Ultra compact, low inertia version	87
SKN		**With clamping hub for indirect drives** 5 – 1,800 Nm • Integral bearing to support sprockets, gears, and other drive elements • Compact simple design • Adjustable torque settings	88
SLN		**With clamping hub for indirect drives** 10 - 700 Nm • Integral bearing to support sprockets, gears, and other drive elements • Adjustable torque settings • Ultra compact, low inertia version	89

Model		Features	Page
SK2		**With clamping hubs and bellows coupling for direct drives** 0.1 – 1,800 Nm • Easy to mount • Compensation for shaft misalignment • Adjustable torque settings	90
SL2		**With clamping hubs and bellows coupling for direct drives** 10 – 400 Nm • Easy to mount • Compensation for shaft misalignment • Adjustable torque settings • Ultra compact, low inertia version	91
SKH		**With split clamping hub for direct drives** 0.1 – 2,800 Nm • Radial mounting possible • Very easy to mount and dismount • Torque limiter element: spring loaded ball-detent principle	
SK3		**With conical clamping bushings and bellows coupling for direct drives** 5 – 2,800 Nm • High clamping pressure • Compensation for shaft misalignment • Adjustable torque settings	94
SK5		**With clamping hubs, bellows coupling, and blind mate system for direct drives** 0,1 – 850 Nm • Very easy to mount and dismount • Electrically and thermally isolating • Adjustable torque settings	95

SK SL ES

Backlash free **torque limiters**
0.1 – 2,800 Nm

Model		Features	Page
ES2		**With clamping hubs and elastomer coupling for direct drives** 1 – 1,800 Nm • Easy to mount • Vibration damping • Compensation for shaft misalignment • Adjustable torque settings	96
SLE		**With clamping hubs and elastomer coupling for direct drives** 10 - 700 Nm • Easy to mount • Vibration damping • Compensation for shaft misalignment • Adjustable torque settings • Ultra compact, low inertia version	97
ESL		**With keyway mounting and elastomer coupling for direct drives** 1 – 150 Nm • Low cost design • Vibration damping • Wear resistant ratcheting ball design	98
Accessories			99-100

Notes

SK1

With conical clamp

0.1 – 2,800 Nm

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

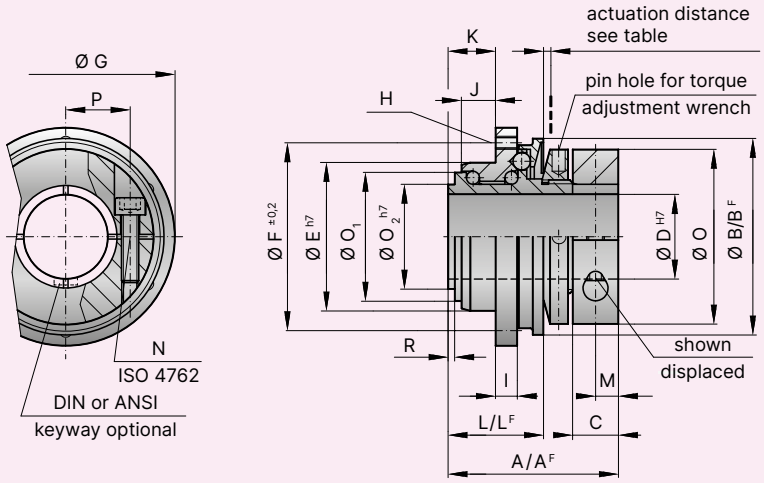
Material
- **Torque limiter element:** hardened steel
- **Clamping ring size 1.5 - 10:** aluminium
- **Conical clamping bushing size 15 - 2,500:** steel

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

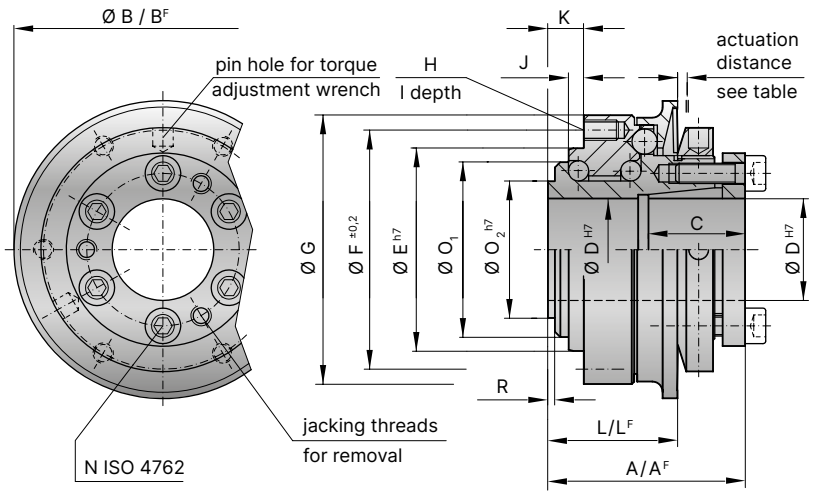
Miniature design
Size 1.5 - 10

Standard with clamping collar



Standard design
Size 15 - 2,500

Standard with conical clamping bushing



Model SK1

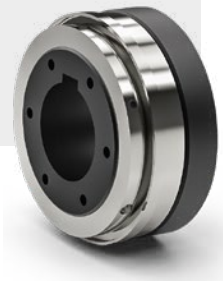
			Miniature design													
Size			**1.5**	**2**	**4.5**	**10**	**15**	**30**	**60**	**150**	**200**	**300**	**500**	**800**	**1,500**	**2,500**
Adjustment range available from - to (approx. values)	(Nm)	T_{KN}	0.1-0.6 0.4-1 0.8-2	0.2-1.5 0.5-2.2 1.5-3.5	1-3 2-4.5 3-7	2-6 4-12 7-18	5-15 12-25 20-40 35-70	5-20 10-30 20-60 50-100	10-30 25-80 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 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 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}kgm²)	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-engegement version (F)

SKP

With keyway connection

0.1 – 2,800 Nm



Feataures

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

Material

- **Torque limiter element:** hardened steel

Design

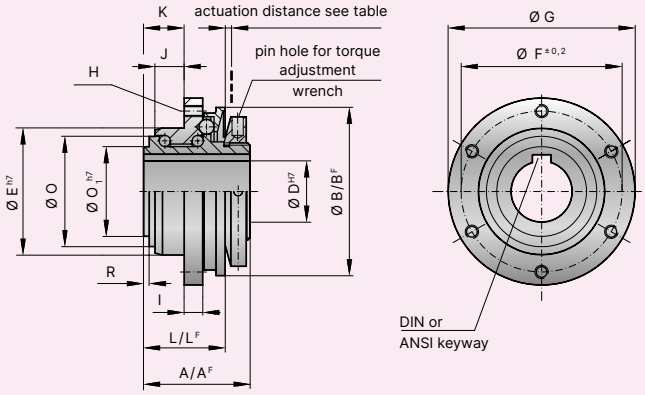
With DIN 6885 or ANSI B17.1 key-way. Torque limiter system: spring loaded ball-detent principle. Operable temperature range from -30˚C to +120˚C.

Available function systems

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

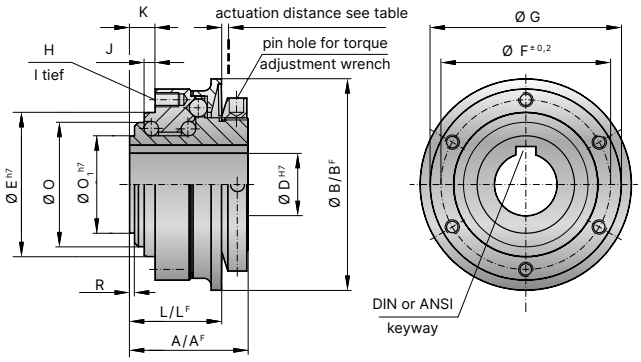
Miniature design Size 1.5 - 10

Standard with keyway mounting



Standard design Size 15 - 2,500

Standard with keyway mounting



Model SKP

Size			Miniature design 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 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 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 130-200	120-180 160-300 300-450	50-150 100-300 250-400	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}kgm²)	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-engegement version (F)

* bore diameter < 6 mm delivered without keyway

SLP

With keyway connection

10 – 700 Nm

Feataures

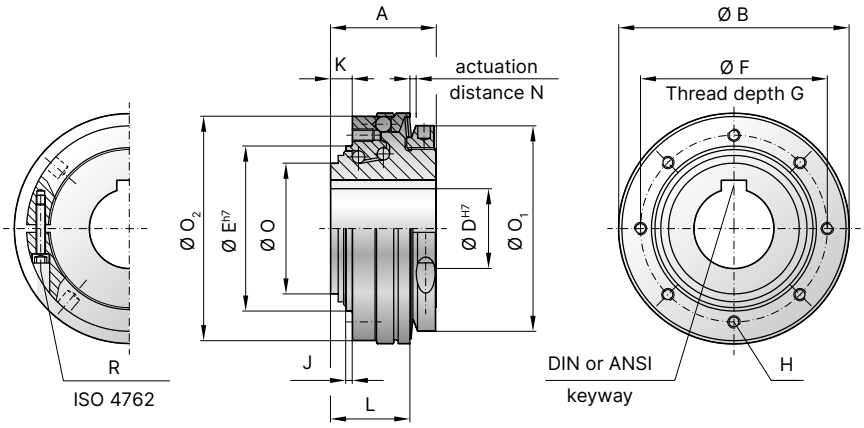
- Integral bearing to support sprockets, gears, and other drive elements
- Adjustable torque settings
- Ultra compact, low inertia version

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 postion / 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 Ø to Ø 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 ± 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
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
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} kgm²)	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

Feataures

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

Material

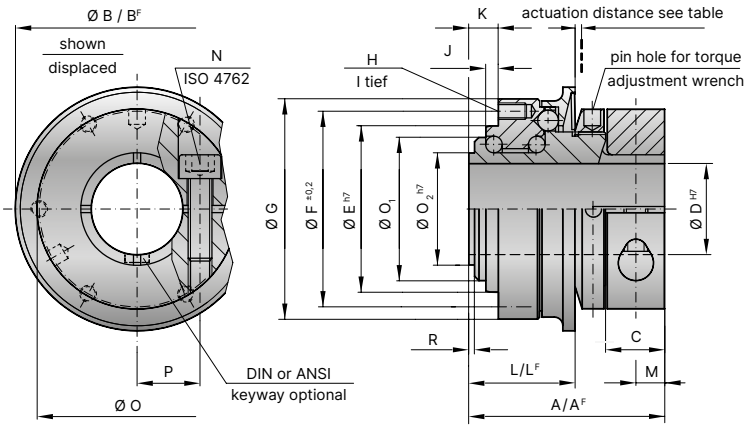
- **Torque limiter element:** hardened steel
- **Clamping collar:** up to size 500 aluminum, size 800 and up steel

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 postion / 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 45-150 80-180	30-90 60-160 120-240	100-200 150-240 200-320	80-200 200-350 300-500	400-650 500-800 600-850	600-800 700-1,200 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 20-40 30-60	20-60 40-80 80-150	80-140 oder 130-200	120-180 oder 160-300	50-150 100-300 250-500	200-400 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}kgm²)	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-engegement version (F) * keyway with max. bore only in clamping hub possible.

SLN

With clamping collar

10 – 700 Nm

Feataures

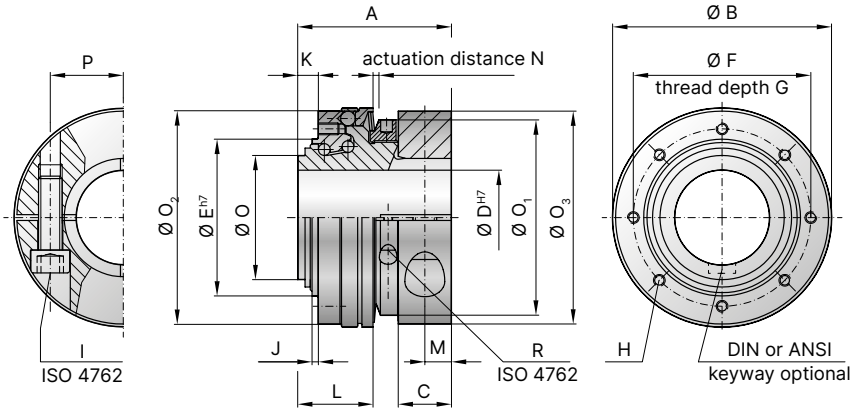
- Integral bearing to support sprockets, gears, and other drive elements
- Adjustable torque settings
- Ultra compact, low inertia version

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 postion / 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} Kgm²)	J_{ges}	0.15	0.3	1	3

SK2

With clamping hubs

0.1 – 1,800 Nm

Feataures

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

Material

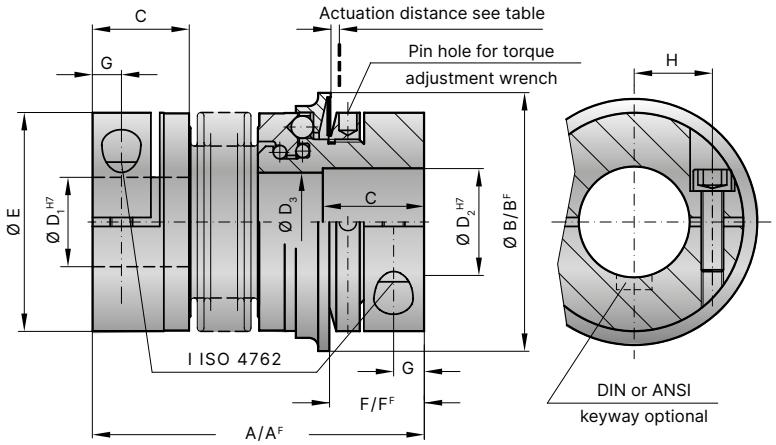
- **Bellows:** high grade stainless steel
- **Torque limiter element:** hardened steel
- **Clamping hubs:** up to size 80 aluminum, size 150 and up steel

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 postion / 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 45-150 80-180	30-90 60-160 120-240	100-200 150-240 200-320	80-200 200-350 300-500	400-650 500-800 650-850	650-800 700-1,200 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 or 5-10	7-15	8-20 or 16-30	20-40 or 30-60	20-60 or 40-80	20-60 40-80 80-150	80-140 or 130-200	120-180 or 160-300	60-150 100-300 250-500	200-400 or 450-800	1,000-1,250 or 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	2×48	2×55
Screw ISO 4762		I	M2.5	M3	M4	M4	M5	M6	M8	M10	M10	M12	M12	M16	2xM16	2xM20
Tightening torque	(Nm)		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} kgm²)	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	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-engegement version (F) Larger versions available upon request.
* keyway with max. bore only in clamping hub possible.

SL2

With clamping hubs

10 – 400 Nm

Feataures

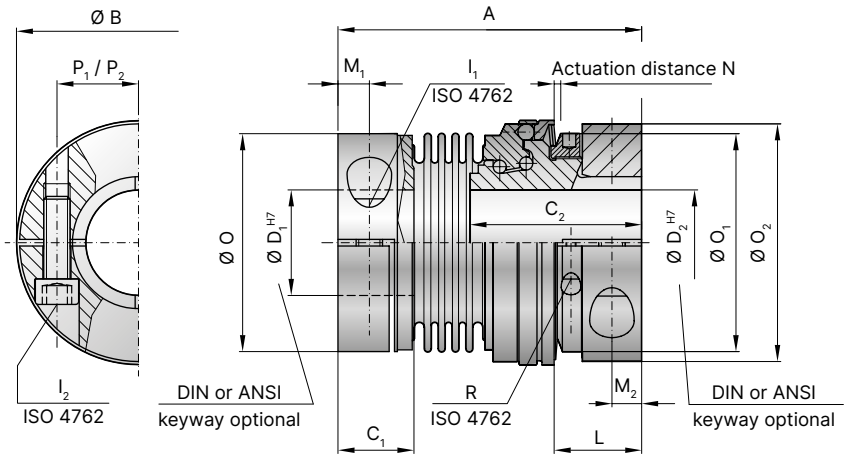
- Easy to mount
- Compensation for shaft misalignment
- Adjustable torque settings
- Ultra compact, low inertia version

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 postion / 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 Ø to Ø 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
Ø Clamping hub Ø, (coupling end)	(mm)	O	55.5	66	82	110
Ø Adjustment nut	(mm)	O_1	55	66	82	100
Clamping ring Ø, (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} Kgm²)	J_{ges}	0.2	0.8	1.4	6.2
Torsional stiffness	(10^3 Nm/rad)		31	72	141	157
Lateral ±	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

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

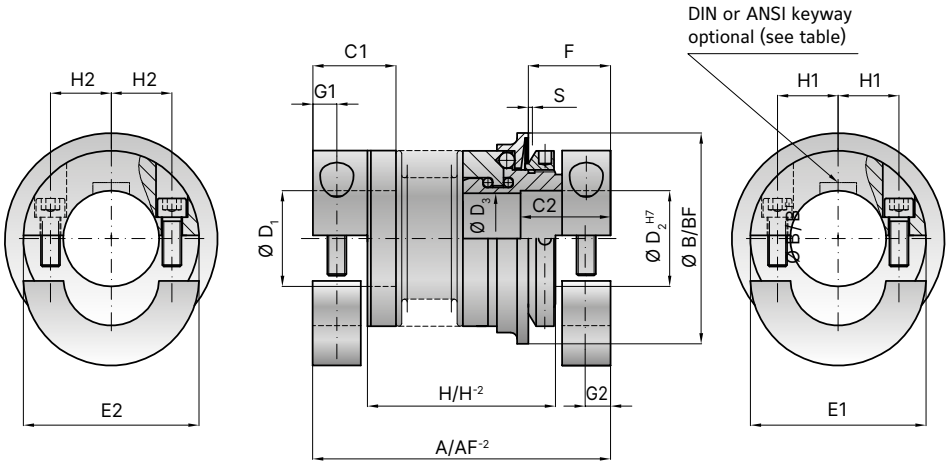
Material
- **Bellows:** high grade stainless steel
- **Torque limiter element:** hardened steel
- **Clamping hubs:** up to size 80 aluminum. size 150 and up steel

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

Available function systems
- W = Single postion / 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} kgm²)	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
Torsional stiffness	(10^3 Nm/rad)	CT	0.7	1.2	1.3	7	5	9	8	20	15	39	28	76	55
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
Angular	± (degree)		1	1	1.5	1.5	2	1.5	2	1	1.5	1	1.5	1	1.5
Lateral spring stiffness	(N/mm)		70	40	30	290	45	280	145	475	137	900	270	1,200	420
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)		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} kgm²)	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

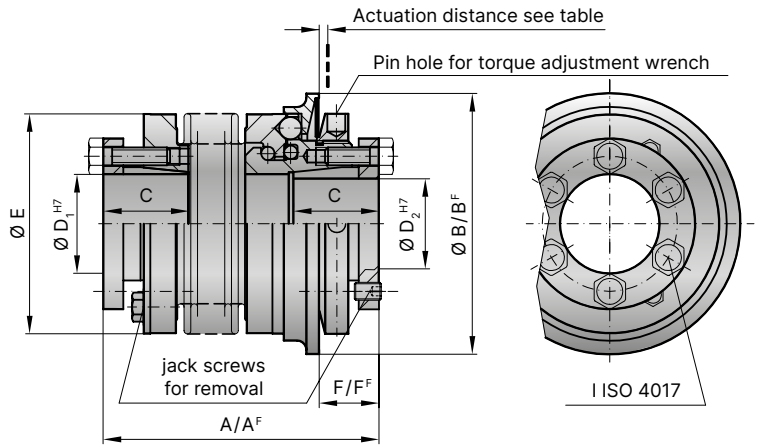
5 – 2,800 Nm

Feataures
- 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 postion / 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	60-150 100-300 250-500	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} kgm²)	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-engegement version (F) Larger versions available upon request.

SK5

Blind mate with clamping hubs

0.1 – 850 Nm

Feataures

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

Material

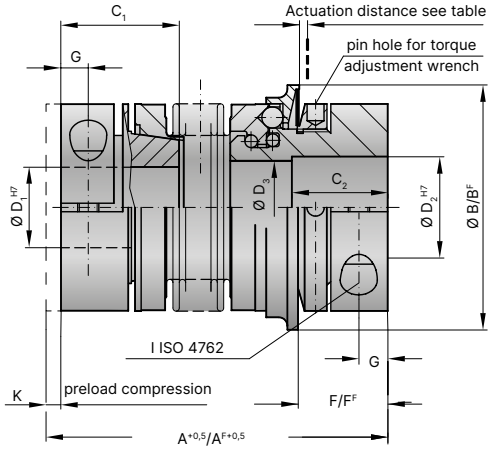
- **Bellows:** high grade stainless steel
- **Torque limiter element:** hardened steel
- **Clamping hubs:** up to size 80 aluminum, size 150 and up steel
- **Tapered male segment:** high strength plastic

Design

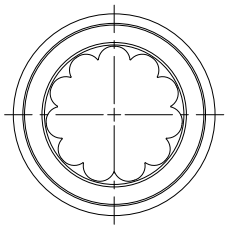
Two clamping hubs with one clamping screw each, and one of the clamping hubs with tapered male segment for plug-in installation. Torque limiter system: spring loaded ball-detent principle. Operable temperature range from -30˚C to +100˚C.

Available function systems

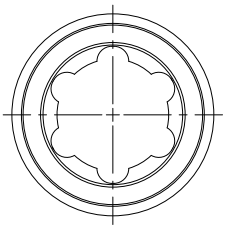
- W = Single postion / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement



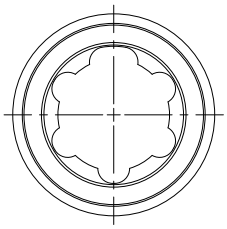
Multi position
Optional: Series 1.5 -800



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 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	20-70 or 30-90	20-70 oder 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 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	20-60 or 40-80	80-150	120-200 or 160-300	60-150 100-300 250-500	200-400 or 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	2×48
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)		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} kgm²)	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-engegement version (F) * keyway with max. bore only conditionally possible.

ES2

Press fit elastomer with clamping hub

1 – 1,800 Nm

Feataures

- 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

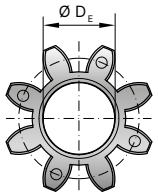
See page 64

Design

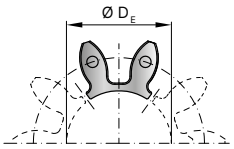
Two clamping hubs with one clamping screw in each and concave driving jaws. Backlash free, vibration damping, electrically isolating elastomer insert press fit into the jaw sets. Torque limiter system: spring loaded ball-detent principle.

Available function systems

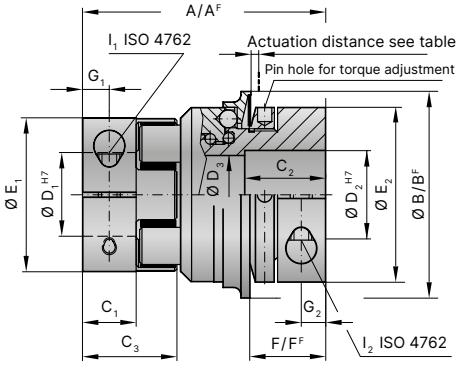
- W = Single postion / automatic re-engagement (standard)
- D = Multi-position / automatic re-engagement
- G = Load holding / load blocking
- F = Full disengagement / manual re-engagement

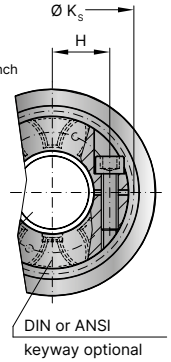


Size 5-800
elastomer insert
type A / B



Size 1500
includes 5x elastomer
segments type A / B





Model ES2

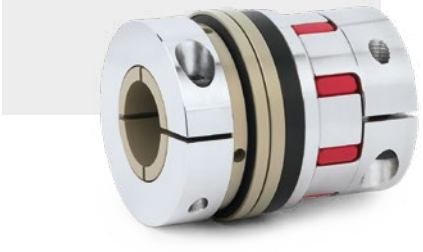
Size			5		10		20		60		150		300		450		800		1,500	
Type (Elastomer insert)			A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	9	12	12.5	16	17	21	60	75	160	200	325	405	530	660	950	1,100	1,950	2,450
Max. torque	(Nm)	T_{Kmax}	18	24	25	32	34	42	120	150	320	400	650	810	1,060	1,350	1,900	2,150	3,900	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 45 - 150 80 - 180		100 - 200 150 - 240 200 - 320		80 - 200 200 - 350 300 - 500		400 - 650 500 - 800 600 - 900		600 - 850 700 - 1,200 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 or16 - 30		20 - 40 or 30 - 60		20 - 60 40 - 80 80 - 150		120 - 180 oder 180 - 300		60 - 150 100 - 300 250 - 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		45		67	
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		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		I_1	M3		M4		M5		M6		M8		M10		M12		M16		4x M16*	
Tightening torque	(Nm)		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)		I_2	M4		M4		M6		M8		M10		M12		M16		2x M16		2x M20	
Tightening torque	(Nm)		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} kgm²)	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-engegement version (F) * keyway with max. bore only in clamping hub possible.

SLE

Press fit elastomer with clamping hub

10 – 700 Nm



Feataures

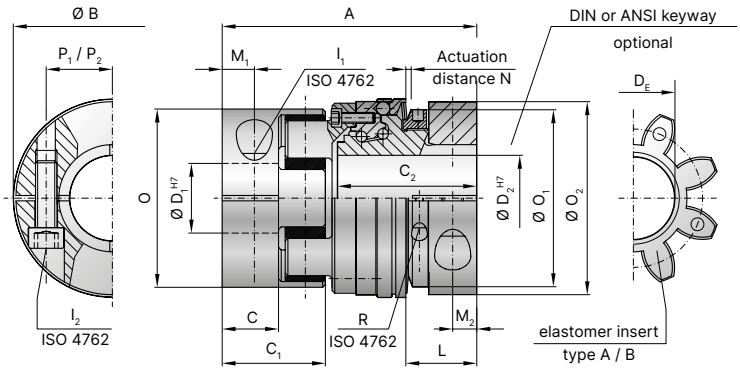
- Easy to mount
- Vibration damping
- Compensation for shaft misalignment
- Adjustable torque settings
- Ultra compact, low inertia version

Design

Clamping collar with clamping screw. Clamping hub with concave driving jaws and clamping screw. Backlash free, vibration damping, electrically isolating elastomer insert press fitinto the jaw sets. Torque limiter system: spring loaded balldetent principle, in a special compact, low inertia design.

Available function systems

- W = Single postion / 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)		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)		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} Kgm²)	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

ESL

With keyway connection

1 – 150 Nm

Feataures

- 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

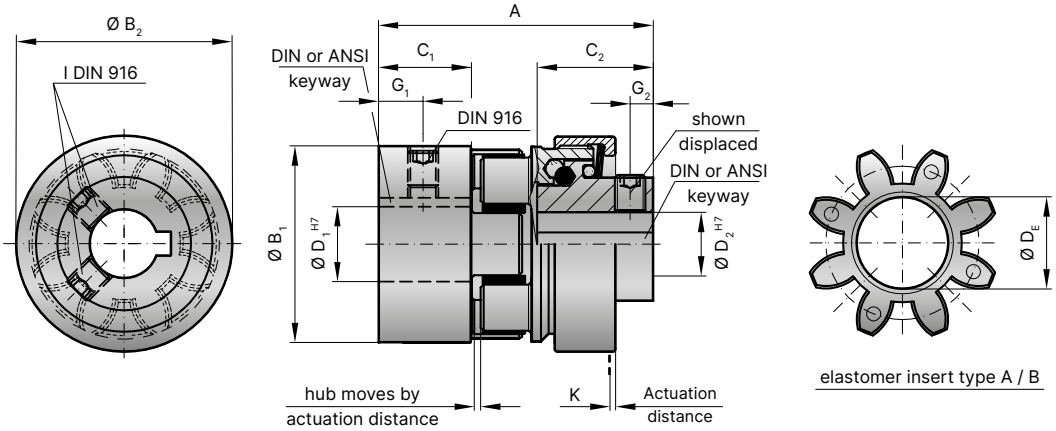
See page 64

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	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} kgm²)	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

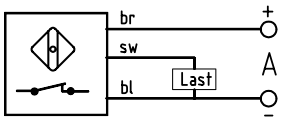
Accessories safety coupling

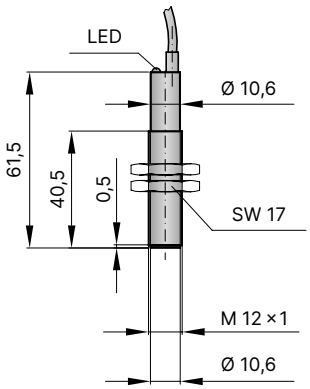
Proximity switch

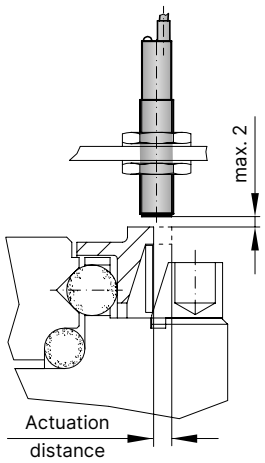
SK ES 2

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



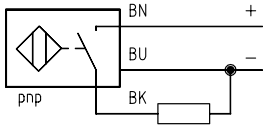


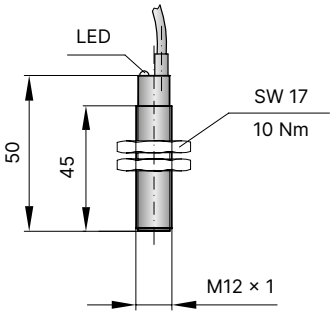


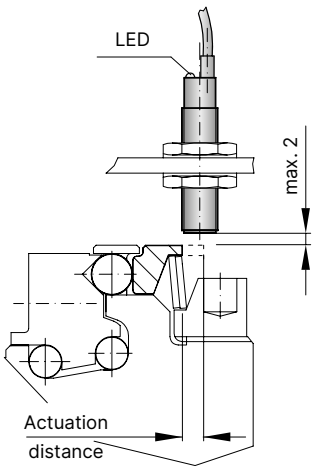
SL

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

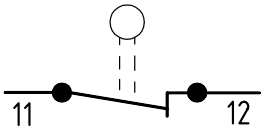
Accessories safety coupling

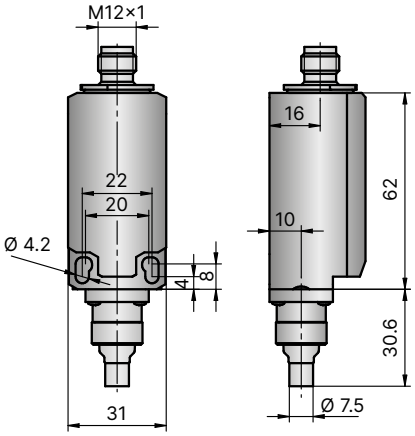
Mechanical limit switch

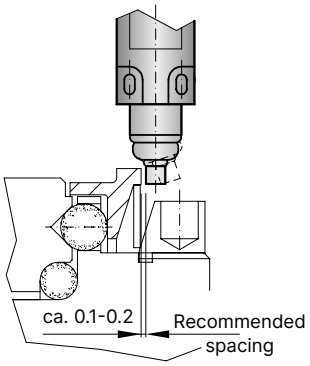
SK ES2 SL

Order number	618.3000.313
Technical data	**SK, ES2, SL**
Max. voltage	250 V AC
Protective system	IP 67
Contact system	2 Opener (forced seperating)
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

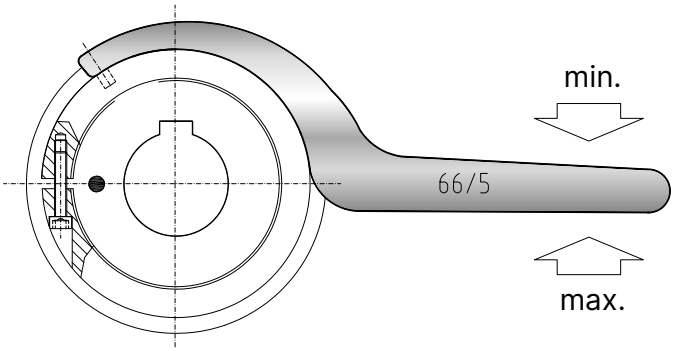
The switch plunger (pictured above and right) should be located as close to the actuation ring / limit switch plate as possible (approximately 0.1-0.2mm).

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 postion Multi-position Load holding	SK Full disengagement	ES2 Single postion Multi-position Load holding	ES2 Full disengagement	SL Single postion 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	–	–	–

ZA EZ

Line shafts

9 – 25,000 Nm

Areas of application
for spanning large distances between shaft ends in:
+ Material handling systems
+ Printing machinery
+ Packaging machinery
+ Theatre automation
+ Gantry systems
+ Screw jack systems

Service life
R+W line shafts are wear and maintenance free for an infinite service life, as long as the technical limits are not exceeded.

Fit clearance
Overall shaft / hub clearance of 0.01 - 0.05 mm

Rotational speed
After selecting overall length A, contact R+W for maximum speed.

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

ATEX (Optional)
Available on request.

Ordering example	ZA / EZ	30	1551	18	19	XX
Model	●					Special designation only (e.g. special bore tolerance).
Size		●				
Overall length mm			●			
Bore D1 H7				●		
Bore D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g.ZA / 30 / 1551 / 18 / 19 / XX; XX=anodized aluminum)

ZA

Backlash free, torsionally stiff **line shafts** 10 – 4,000 Nm

Model		Features	Page
ZA		**With clamping hub** 10 – 800 Nm • Installation and removal possible without disturbing other machine components • Standard lengths up to 6 meters • No intermediate support bearings required	106
ZA		**With conical clamping system** 1,500 – 4,000 Nm • Installation and removal possible without disturbing other machine components • Standard lengths up to 6 meters • No intermediate support bearings required	107
ZAE		**With split clamping hub** 10 - 800 Nm • Complete coupling system mounts laterally for very easy installation and removal • Standard lengths up to 6 meters • No intermediate support bearings required	108
ZAL		**CFK intermediate tube with split clamping hub** 10 – 800 Nm • Complete coupling system mounts laterally for very easy installation and removal • Standard lengths up to 4 meters, with CFK tube • No intermediate support bearings required	109

EZ

Backlash free **line shafts**
9 – 25,000 Nm

Model		Features	Page
EZ2		**With split clamping hub** 9 – 25,000 Nm • Standard lengths up to 4 meters • No intermediate support bearings required • Complete coupling system mounts laterally for very easy installation and removal	110-111
EZ2 S		**With rigid hub on one end** 12.5 – 1,350 Nm • Complete coupling system mounts laterally for very easy installation and removal • Standard lengths up to 4 meters • For use with intermediate bearing (ZL)	112
EZV		**With split clamping hub, adjustable length** 12.5 – 2,150 Nm • Adjustable length ranges up to 4 meters • No intermediate support bearings required • Complete coupling system mounts laterally for very easy installation and removal	114-115
Accessories			113

ZA

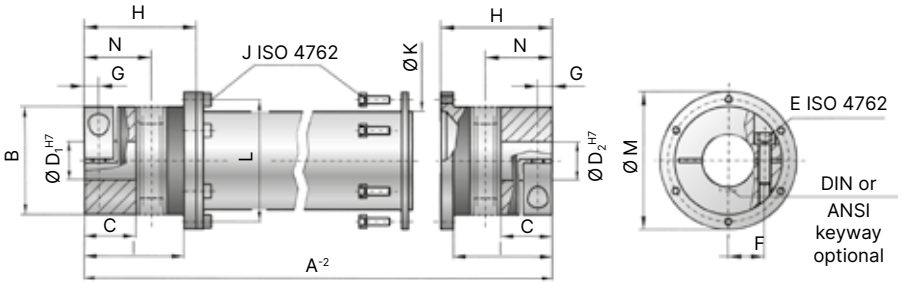
With clamping hub

10 – 800 Nm

Feataures
- For spanning larger distances between shaft ends
- Standard lengths up to 6 meters
- No intermediate support bearings required
- Extremely straight and laterally stiff intermediate tube

Material
- **Bellows:** high grade stainless steel
- **Intermediate tube:** up to size 150 aluminum, size 300 and up steel, optional CFK
- **Hubs:** up to size 60 aluminum, size 150 and up steel

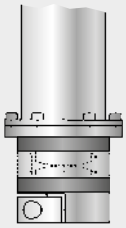
Design
Two clamping hubs with a single clamping screw in each. A special support system carries the weight of the tube on the hubs. Operable temperature range from -30˚C to +100˚C.



Vertical installation

ZA

ZAE



Schematic of support system
- In vertical installations a special support transfers the weight to the bottom hub.
- This support system is available for all sizes.
- Please note, "for vertical installation" when ordering.

Model ZA

Size			10	30	60	150	200	300	500	800
Rated torque	(Nm)	T_{KN}	10	30	60	150	200	300	500	800
Overall length min. to max.	(mm)	A^{-2}	110 - 6,000	140 - 6,000	170 - 6,000	215 - 6,000	210 - 6,000	250 - 6,000	260 - 6,000	260 - 6,000
Outside diameter clamping hub	(mm)	B	40	55	66	81	90	110	123	134
Fit length	(mm)	C	16	27	31	35.5	40.5	43	50	48
Inside diameter from Ø to Ø H7	(mm)	$D_{1/2}$	5 - 20	10 - 28	12 - 32	19 - 42	22 - 45	30 - 60	35 - 60	40 - 72
With keyway max. Ø H7	(mm)	$D_{1/2}$	17	23	29	36	45	60	60	66
ISO 4762 clamping screw		E	M4	M6	M8	M10	M12	M12	M16	2x M16
Tightening torque	(Nm)		5	15	40	70	110	130	200	250
Distance between centers	(mm)	F	15	19	23	27	31	39	41	48
Distance	(mm)	G	5	7.5	9.5	11	12.5	13	17	18
Length bellows body	(mm)	H	44.5	57.5	71	78	86	94	110	101
Distance	(mm)	I	38.5	51	61	69	75.5	81	96	89
ISO 4762 clamping screw		J	4x M4	6x M4	6x M5	8x M6	8x M6	8x M8	8x M8	10x M8
Tightening torque	(Nm)		3	4	7	10	12	30	30	40
Outside diameter tube section	(mm)	K	35	50	60	76	90	100	110	120
Bolt hole circle Ø	(mm)	L	45	62.5	71.5	88	100	120	132	138
Outside diameter flange	(mm)	M	52	70	80	98	110	135	148	153
Shaft average value	(mm)	N	25	34	41	47	52	56	66	64

ZA

With conical clamping system

1,500 - 4,000 Nm

Feataures

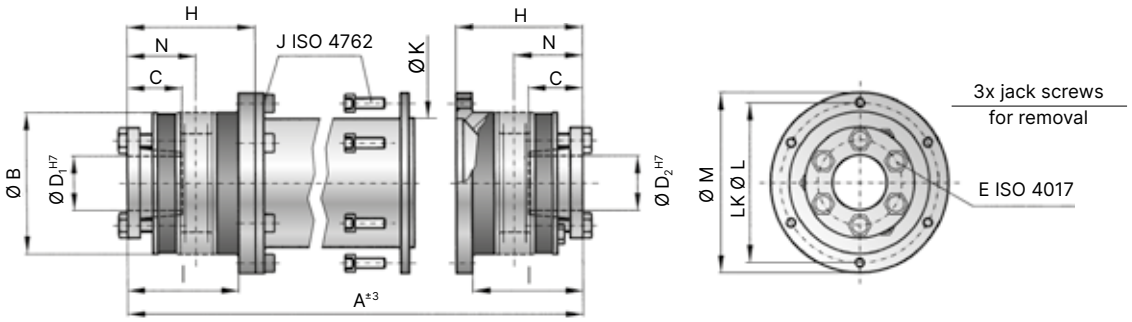
- For spanning larger distances between shaft ends
- Standard length up to 6 meters
- No intermediate support bearings required
- Extremely straight and laterally stiff intermediate tube

Material

- **Bellows:** high grade stainless steel
- **Intermediate tube:** steel, optional CFK
- **Hubs:** steel

Design

Two conical clamping bushings with separate screws for mounting and dismounting. A special support system carries the weight of the tube on the hubs. Operable temperature range from -30°C to +100°C.



Model ZA

Size			1,500	4,000
Rated torque	(Nm)	T_{KN}	1,500	4,000
Overall length min. to max.	(mm)	$A^{\pm 3}$	280 - 6,000	280 - 6,000
Outside diameter	(mm)	B	157	200
Fit length	(mm)	C	61	80.5
Inside diameter from Ø to Ø H7	(mm)	$D_{1/2}$	35 - 70	40 - 100
ISO 4017 clamping screws		E	6 x M12	6 x M16
Tightening torque	(Nm)		70	120
Length bellows body	(mm)	H	98	103.5
Distance	(mm)	I	82	84
ISO 4762 clamping screw		J	10x M10	12x M12
Tightening torque	(Nm)		70	120
Outside diameter tube section	(mm)	K	150	160
Bolt hole circle Ø	(mm)	L	168	193
Outside diameter flange	(mm)	M	184	213
Shaft average value	(mm)	N	56	61

ZAE

With split clamping hub

10 – 800 Nm

Feataures

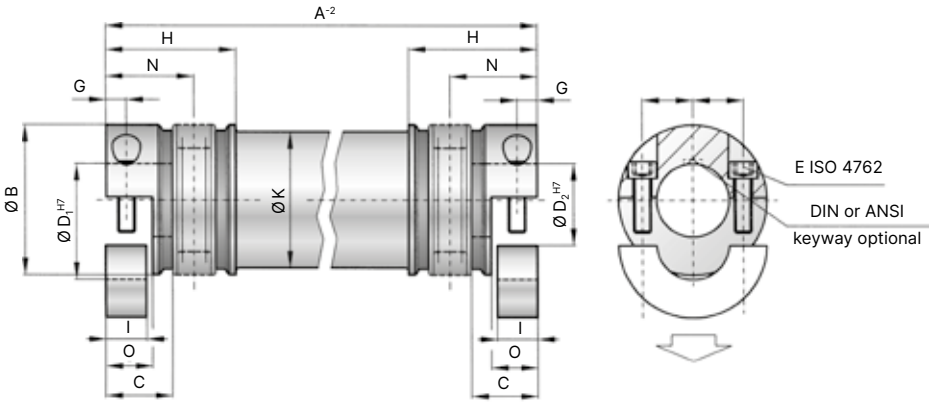
- For spanning larger distances between shaft ends
- Standard length up to 6 meters
- No intermediate support bearings required
- Extremely straight and laterally stiff intermediate tube

Material

- **Bellows:** high grade stainless steel
- **Intermediate tube:** up to size 150 aluminum, size 300 and up steel
- **Hubs:** up to size 60 aluminum, size 150 and up steel

Design

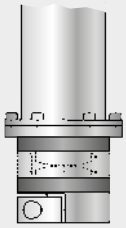
Two clamping hubs with two clamping screws in each. A special support system carries the weight of the tube on the hubs. Operable temperature range from -30 to +100 °C.



Vertical installation

ZA

ZAE



Schematic of support system

- In vertical installations a special support transfers the weight to the bottom hub.
- This support system is available for all sizes.
- Please note, "for vertical installation" when ordering.

Model ZAE

Size			10	30	60	150	300	500	800
Rated torque	(Nm)	T_{KN}	10	30	60	150	300	500	800
Overall length min. to max.	(mm)	A^{-2}	100 - 6,000	130 - 6,000	160 - 6,000	180 - 6,000	240 - 6,000	250 - 6,000	250 - 6,000
Outside diameter clamping hub	(mm)	B	40	55	66	81	110	123	133
Fit length	(mm)	C	16	27	31	34.5	42	50	47
Inside diameter from Ø to Ø H7	(mm)	$D_{1/2}$	5 - 20	10 - 28	12 - 32	19 - 42	30 - 60	35 - 60	40 - 72
Max. inside diameter clamping hub	(mm)	D_{max}	24	30	32	42	60	60	75
With keyway - max Ø H7	(mm)	$D_{1/2}$	17	23	29	36	60	60	66
With keyway - max Ø H7		E	M4	M6	M8	M10	M12	M16	M16
Tightening torque	(Nm)		5	15	40	70	130	200	250
Distance between centers	(mm)	F	15	19	23	27	39	41	48
Distance	(mm)	G	5	7.5	9.5	12	14	17	19
Length bellows body	(mm)	H	39.5	52	64	72	83	96	95
Clamping length	(mm)	I	10	15	19	22	28	33.5	37.5
Outside diameter tube section	(mm)	K	35	50	60	76	100	110	120
Length	(mm)	O	11.5	17	21	24	30	35.5	40
Shaft average value	(mm)	N	25	34	41	47	56	66	65

ZAL

With CFK intermediate tube and split clamping hub

10 – 800 Nm

Feataures

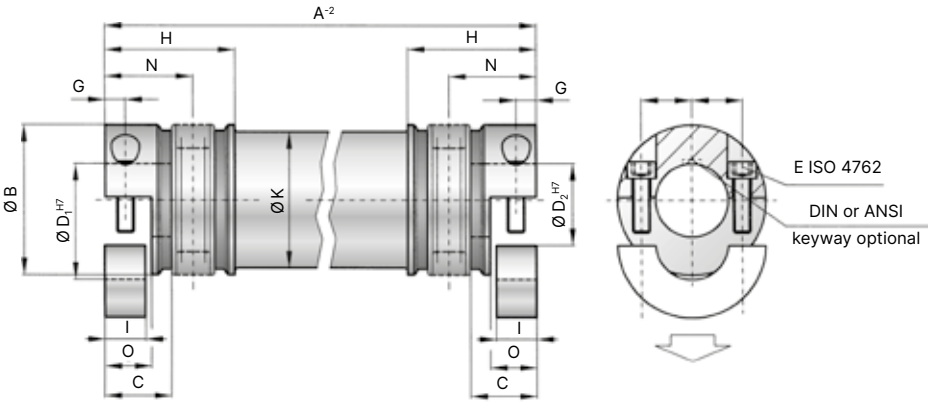
- For high speeds
- Low moment of inertia
- High torsional stiffness
- Capable of spanning long distances
- Standard lengths up to 4m, special lengths on request
- No intermediate support bearing required

Material

- **Bellows:** high grade stainless steel
- **Intermediate tube:** CFK
- **Hubs:** up to size 60 aluminum, size 150 and up steel

Design

Two clamping hubs with two clamping screws in each. A special support system carries the weight of the tube on the hubs. Operable temperature range from -30°C to +100°C.



Model ZAL

Size			10	30	60	150	300	500	800
Rated torque	(Nm)	T_{KN}	10	30	60	150	300	500	800
Overall length min. to max.	(mm)	A^{-2}	110-2,000	150-4,000	190-4,000	210-4,000	260 - 4,000	320 - 4,000	340 - 4,000
Outside diameter clamping hub	(mm)	B	40	55	66	81	110	123	133
Fit length	(mm)	C	16	27	31	34.5	42	50	47
Inside diameter from Ø to Ø H7	(mm)	$D_{1/2}$	5 - 20	10 - 28	12 - 32	19 - 42	30 - 60	35 - 62	40 - 72
Max. inside diameter clamping hub	(mm)	D_{max}	24	30	32	42	60	60	75
With keyway - max Ø H7	(mm)	$D_{1/2}$	17	23	29	36	60	62	66
ISO 4762 clamping screw		E	M4	M6	M8	M10	M12	M16	M16
Tightening torque	(Nm)		5	15	40	70	130	200	250
Distance between centers	(mm)	F	15	19	23	27	39	41	48
Distance	(mm)	G	5	7.5	9.5	12	14	17	19
Length bellows body	(mm)	H	40	52	66	73	80.5	95	100
Clamping length	(mm)	I	10	15	19	22	28	33.5	37.5
Outside diameter tube section	(mm)	K	35	52	63	79	102.5	115	127
Length	(mm)	O	11.5	17	21	24	30	35	40
Shaft average value	(mm)	N	25	34	41	47	56	66	65

EZ2

With split clamping hub

9 – 25,000 Nm

Feataures

- Easy installation and removal
- Standard length up to 4 meters
- No intermediate support bearings required

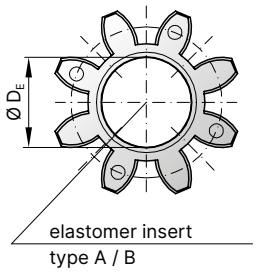
Material

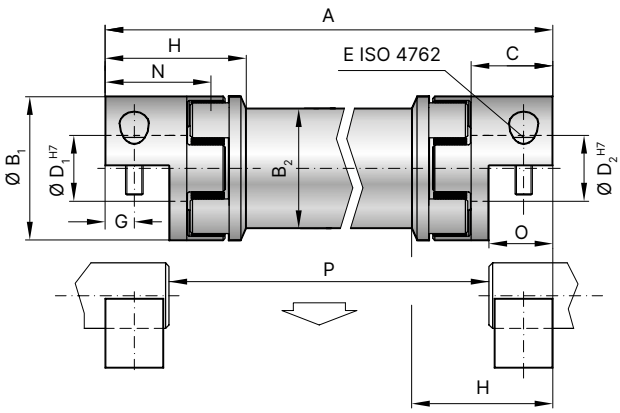
- **Hubs:** up to size 450 high strength aluminum, size 800 steel, size 2500 and up GGG40
- **Intermediate tube:** up to size 450 high strength aluminum, size 800 and up steel, optional CFK tube on request
- **Elastomer insert:** wear resistant, thermally stable TPU

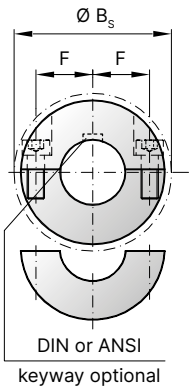
Design

Two split clamping hubs, with two clamping screws in each, and concave driving jaws. Backlash free, vibration damping, electrically isolating elastomer inserts press fit into the hubs. Precision intermediate tube with a high level of straightness and lateral stiffness.

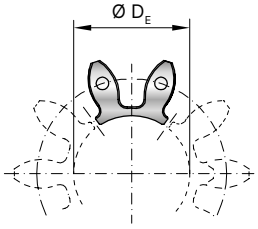
Design | Size 15 - 800

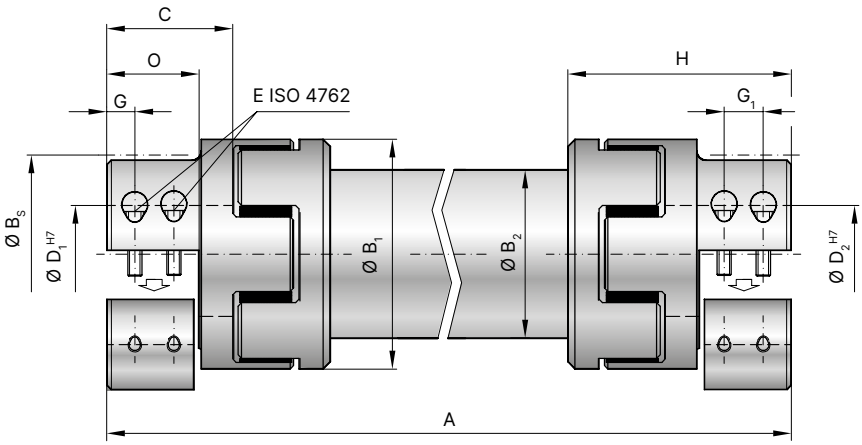






Design | Size 2,500 - 9,500



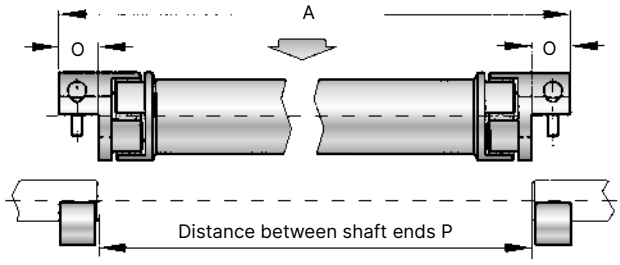


Model EZ2

Size		5		10		20		60		150		300		450		800		2,500		4,500		9,500	
Type (Elastomer insert)		A	B	A	B	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	5,000	6,200	10,000	12,500
Max. torque (Nm)	T_{Kmax}	18	24	25	32	34	42	120	150	320	400	650	810	1,060	1,350	1,900	2,150	3,900	4,900	10,000	12,400	20,000	25,000
Overall length (mm)	A	75-2,000		95 - 4,000		130 - 4,000		175 - 4,000		200 - 4,000		245 - 4,000		280 - 4,000		320 - 4,000		460 - 4,000		580 - 4,000		710 - 4,000	
Outside diameter hub (mm)	B_1	25		32		42		56		66.5		82		102		136.5		160		225		290	
Outside diameter tube (mm)	B_2	25		28		35		50		60		76		90		120		150		175		220	
Outside diameter with screwhead (mm)	B_S	25		32		44.5		57		68		85		105		139		155		199		243	
Fit length (mm)	C	13		20		25		40		47		55		65		79		88		113		142	
Inside diameter from Ø to Ø H7 (mm)	$D_{1/2}$	5 - 12.7		5 - 16		8 - 25		14 - 32		19 - 36		19 - 45		24 - 60		35 - 80		35 - 90		40 - 120		50 - 140	
Max. inside diameter (Elastomer insert) (mm)	D_E	10.2		14.2		19.2		26.2		29.2		36.2		46.2		60.5		80		111		145	
ISO 4762 clamping screw	E	4 x M3		4 x M4		4 x M5		4 x M6		4 x M8		4 x M10		4 x M12		4 x M16		8x M16		8 x M20		8 x M24	
Tightening torque (Nm)		2		4		8		15		35		70		120		290		300		600		980	
Distance between centers (mm)	F	8		10.5		15.5		21		24		29		38		50.5		57		75		90	
Distance (mm)	G/G_1	5		7.5		8.5		15		17.5		20		25		30		18 / 30		24 / 41		30 / 48	
Coupling length (mm)	H	25		34		46		63		73		86		98		129		142		181		229	
Moment of inertia per hub (10^{-3} kgm²)	J_1/J_2	0.004		0.01		0.02		0.15		0.21		1.02		2.3		17		30		140		450	
Inertia of tube per meter (10^{-3} kgm²)	J_3	0.049		0.075		0.183		0.66		1.18		2.48		10.6		38		360		750		1,800	
Combined dynamic torsional stiffness of the inserts (Nm/rad)	C_{Tdyn}^{E}	150	350	270	825	1,270	2,220	3,970	5,950	6,700	14,650	11,850	20,200	27,700	40,600	41,300	90,000	87,500	108,000	168,500	371,500	590,000	670,000
Torsional stiffness of tube per meter (Nm/rad)	C_T^{ZWR}	503		727		1,770		6,440		11,500		24,000		73,000		389,000		950,000		2,200,200		5,500,000	
Shaft average value (mm)	N	18		26		33		49		57		67		78		94		108		137		171	
Length (mm)	O	11		16.6		18.6		32		37		42		52		62		67		85		105	
Length of hub (mm)		25		34		46		63		73		86		98		129		142		181		229	

Installation

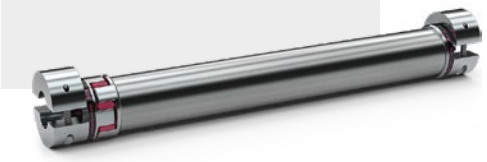
The overall length A is best determined as the distance between shaft ends P plus 2x dimension O.



EZ2 S

With rigid hub on one end

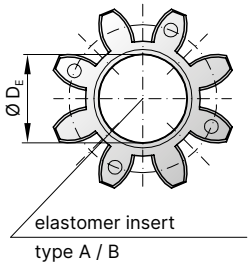
12.5 – 1,350 Nm

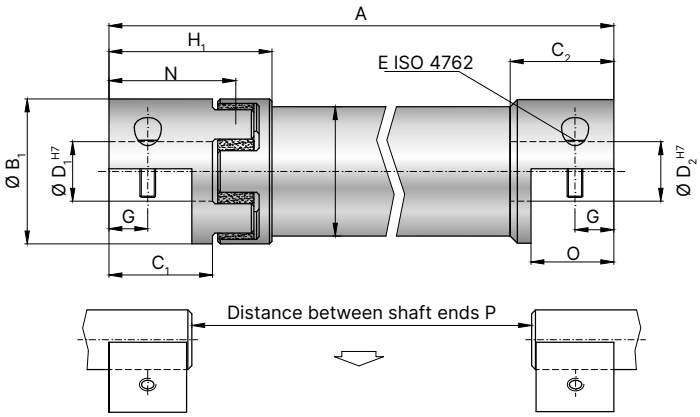


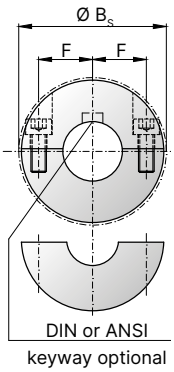
Feataures
- Easy lateral installation without the need to disturb adjacent shafts
- Standard lengths up to 4m
- For use with intermediate support bearing (ZL)

Material
- **Hubs:** high strength aluminum
- **Intermediate tube:** high strength aluminum
- **Elastomer insert:** wear resistant, thermally stable TPU

Design
Two split clamping hubs, with two clamping screws in each, and concave driving jaws on one end, with rigid hub on the other. Backlash free, vibration damping, electrically isolating elastomer insert press fit into the jaw hub. Precision intermediate tube with a high level of straightness and lateral stiffness.







The total length A is calculated by adding distance between shaft ends P + 2xO

Intermediate support bearing and intermediate shaft available as accessories in various sizes.

Model EZ2 S

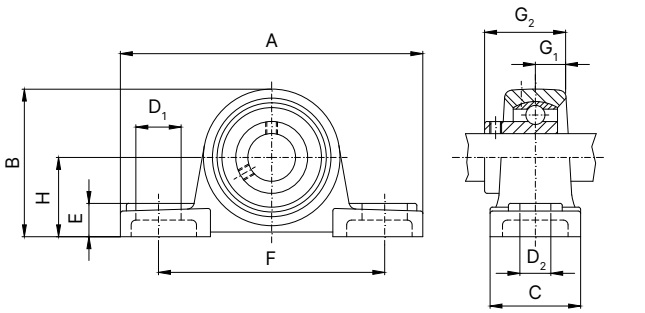
Size			10		20		60		150		300		450	
Type (Elastomer insert)			A	B	A	B	A	B	A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	12.5	16	17	21	60	75	160	200	325	405	530	660
Max. torque	(Nm)	T_{Kmax}	25	32	34	42	120	150	320	400	650	810	1,060	1,350
Overall length from - to	(mm)	A	85 - 4,000		115 - 4,000		155 - 4,000		175 - 4,000		220 - 4,000		250 - 4,000	
Outside diameter hub	(mm)	B_1	32		42		56		66.5		82		102	
Outside diameter tube section	(mm)	B_2	28		35		50		60		76		90	
Outside diameter with screwhead	(mm)	B_S	32		44.5		57		68		85		105	
Fit length	(mm)	C_1/C_2	20		25		40		47		55		65	
Inside diameter from Ø to Ø H7	(mm)	D_1/D_2	5 - 16		8 - 25		14 - 32		19 - 36		19 - 45		24 - 60	
ISO 4762 clamping screw		E	4 x M4		4 x M5		4 x M6		4 x M8		4 x M10		4 x M12	
Tightening torque	(Nm)		4		8		15		35		70		120	
Distance between centers	(mm)	F_1/F_2	10.5		15.5 / 15		21		24		29		38	
Distance	(mm)	G_1/G_2	7.5		8.5		15		17.5		20		25	
Coupling length	(mm)	H	34		46		63		73		84		97	
Shaft average value	(mm)	N	26		33		49		57		67		78	
Length	(mm)	O	16.6		18.6		32		37		42		52	

ZA EZ

Accessories for ZA/EZ

ZL Intermediate support bearing

ZL



Intermediate Support Bearing

The Intermediate Support Bearing (ZL) in combination with the line shafts of the series ZA and EZ for special installation situations.

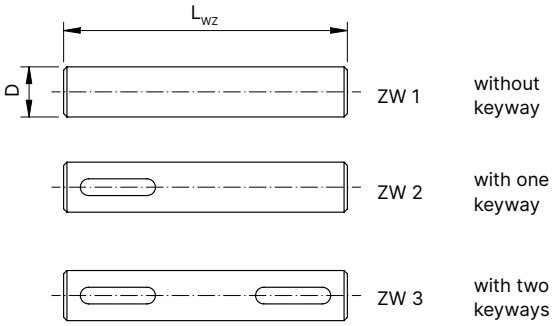
Intermediate support bearing ZL

Size	(mm)		15	20	30	40	50
Length	(mm)	A	127	127	163	178	206
Heigh	(mm)	B	62	65	82	97	113
Width	(mm)	C	38	38	46	52	60
Mounting dimension	(mm)	D_1	19	19	21	21	23
Mounting dimension	(mm)	D_2	13	13	17	17	20
Mounting dimension	(mm)	E	14	14	17	18	21
Hole spacing	(mm)	F	95	95	121	136	159
Distance	(mm)	G_1	12.7	12.7	15.9	19	19
Distance	(mm)	G_2	31	31	38.1	49.2	51.6
Distance	(mm)	H	30.2	33.3	42.9	49.2	57.2
Intermediate Support Bearing			202	204	206	208	210

Ordering Example	ZL	15
Model	●	
Size		●

ZW Intermediate shaft

ZW



Intermediate shaft (SW) for Intermediate Support Bearing (ZL) in conjuction with ZA and EZ Line Shafts. Steel construction.

The intermediate shaft ZW 1 comes without keyways, the intermediate shaft ZW 2 has one keyway and the intermediate shaft ZW 3 has two keyways.

Keyways are machined to DIN 6885 standard.

Intermediate support bearing ZW

Size (ShaftØ)	(mm)	D	15	20	30	40	50
Length	(mm)	L_{WZ}	130	140	165	195	210
Intermediate Support Bearing			202	204	206	208	210

Ordering Example	ZW	2	15
Model	●		
Intermediate Shaft Style		●	
Size			●

EZV

Adjustable length with split clamping hub

12.5 – 2,150 Nm

Feataures

- Telescoping for adjustable length and rotational orientation
- Very easy to install and remove
- No intermediate support bearings required
- Length ranges up to 4 meters

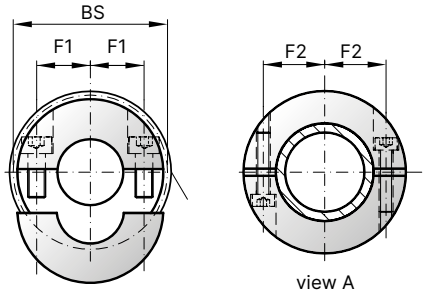
Material

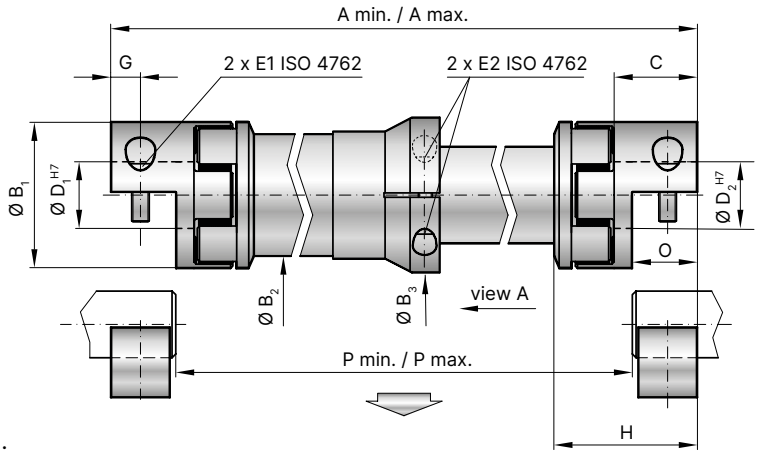
- **Hubs:** high strength aluminum
- **Intermediate tube:** highly straight and concentric aluminum tubing
- **Elastomer insert:** wear resistant, thermally stable TPU

Design

Two split clamping hubs, with two clamping screws in each, and concave driving jaws. Backlash free, vibration damping, electrically isolating elastomer inserts press fit into the hubs. Precision intermediate tube with a high level of straightness and lateral stiffness. Outer tube clamps over inner tube to fix the overall length.

split clamping hub



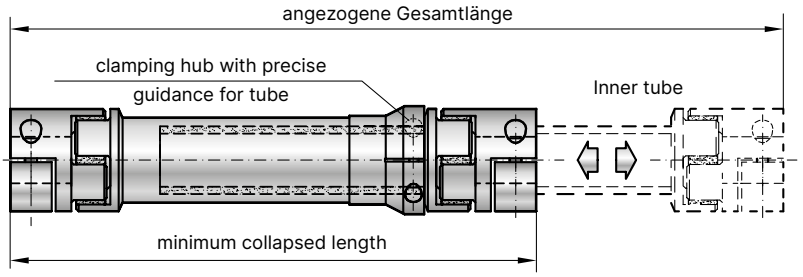


For details on the elastomer inserts see page 64/65.

Functional Description

The maximum extended length relates to the minimum collapsed length. The formulas to the right can be used to determine the corresponding values.

Maximum extended length = (collapsed length x 2) - measurement (X1 + X2)



Minimum collapsed length = $\frac{\text{maximum extended length + dimension (X1 + X2)}}{2}$

Model EZV

Size			10		20		60		150		300		450		800	
Type (Elastomer insert)			A	B	A	B	A	B	A	B	A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	12.5	16	17	21	60	75	160	200	325	405	530	660	950	1,100
Max. torque	(Nm)	T_{Kmax}	25	32	34	42	120	150	320	400	650	810	1,060	1,200	1,900	2,150
Inserted min. length from - to	(mm)	A_{min}	150 - 2,057.5		200 - 2,078		250 - 2,098.5		300 - 2,120		350 - 2,140		400 - 2,156		480 - 2,190	
Extended over all length from - to	(mm)	A_{max}	185 - 4,000		244 - 4,000		303 - 4,000		360 - 4,000		420 - 4,000		488 - 4,000		580 - 4,000	
Measurement	(mm)	X1+X2	115		156		197		240		280		312		380	
Outside diameter clamping hub	(mm)	B_1	32		42		56		66.5		82		102		136.5	
Outside diameter tube section	(mm)	B_2	28		35		50		60		80		90		120	
Outside diameter center hub	(mm)	B_3	41.5		47		67		77		102		115		158	
Outside diameter with screwhead	(mm)	B_S	32		44.5		57		68		85		105		158	
Fit length	(mm)	C	20		25		40		47		55		65		79	
Inside diameter from Ø to Ø H7	(mm)	$D_{1/2}$	5 - 16		8 - 25		14 - 32		19 - 36		19 - 45		24 - 60		35 - 80	
ISO 4762 clamping screw		E_1	M4		M5		M6		M8		M10		M12		M16	
Tightening torque	(Nm)		4		8		15		35		70		120		290	
Screw ISO 4762		E_2	M4		M4		M5		M6		M8		M10		M12	
Tightening torque	(Nm)		4		4.5		8		18		35		70		120	
Distance between centers	(mm)	F_1	10.5		15.5		21		24		29		38		50.5	
Distance between centers	(mm)	F_2	15		18		26		31		41		45		65	
Distance	(mm)	G	7.5		8.5		15		17.5		20		25		30	
Coupling length	(mm)	H	34		46		63		73		86		99		125	
Shaft average value	(mm)	N	26		33		49		57		67		78		94	
Length	(mm)	O	16.6		18.6		32		37		42		52		62	
Moment of inertia coupling half	(10^{-3} kgm²)	J_1/J_2	0.01		0.02		0.15		0.21		1.02		2.3		17	
Inertia of tube per meter	(10^{-3} kgm²)	J_3	0.075		0.183		0.66		1.18		2.48		10.6		38	
Combined dynamic torsional stiffness of the inserts	(Nm/rad)	C_{Tdyn}^{E}	270	825	1,270	2,220	3,970	5,950	6,700	14,650	11,850	20,200	27,700	40,600	41,300	90,000
Torsional stiffness of tube per meter	(Nm/rad)	C_T^{ZWR}	321		1,530		6,632		11,810		20,230		65,340		392,800	

ATEX

For use in hazardous areas precision couplings

Based on the ATEX markings the product can be certified for suitability under certain conditions.

CE	Ex	II	2G	Ex h	IIA T6	Gb	X
		II	2D	Ex h	IIIA T85°C	DB	X
		Equipment group	Category	Protection type	Explosion subgroup / Temperature class / max. surface temperature	Equipment protection level (EPL)	Additional features c

Equipment group	Approval type
I	Approved for underground operation
II	Approved for all other applications

Category	Approved for zone	Zone description
1G	0	Area in which an explosive atmosphere consisting of a mixture of air and flammable gases, vapors, or mists is present continuously, frequently or for long periods of time.
2G	1	Area in which the potential exists for an explosive mixture of air and flammable gases, vapors or mists to occur.
3G	2	Area in which the potential for an explosive mixture of air and flammable gases, vapors, or mists to occur is unlikely and only for a brief duration.
1D	20	Area with the same conditions as zone 0, with powder or dust.
2D	21	Area with the same conditions as zone 1, with powder or dust.
3D	22	Area with the same conditions as zone 2, with powder or dust.

Protection type	Definition
Ex h	Design safety level: ignition hazard is avoided by the product design.

Example classification by occurring gases, mists and vapors according to temperature class and explosion group

Temperature class / max. surface temperature	IIA	IIB (includes IIA)	IIC (includes IIA + IIB)
T1 / 450°C	Acetone, ammonia, methane, ...	City gas (gas lamp)	Hydrogen
T2 / 300°C	Ethyl alcohol, n-butane, cyclohexane, ...	Ethylene, ethylene oxide	Ethine (acetylene)
T3 / 200°C	Gasoline, diesel, heating oil, ...	Eethylene glycol, hydrogen sulfide	
T4 / 135°C	Acetaldehyde	Ethyl ether	
T5 / 100°C			
T6 / 85°C			Carbon disulphide

Equipment protection level according to IEC 60079	Importance
Ga	Very high protection level
Gb	High protection level
Gc	Extended protection level
Da	Very high protection level
Db	High protection level
Dc	Extended protection level

Additional mark	Importance
X	Special operating conditions (from description)
U	Part is a component. Conformity must be declared after installation in a device.

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Would you like to learn more about R+W and our couplings?
We are pleased to take you into the world of R+W. On our YouTube channel, you can find several videos pertaining to our product line.

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