

# BK

## BACKLASH FREE, TORSIONALLY STIFF METAL BELLOWS COUPLINGS 2 - 10,000 Nm



### GENERAL INFORMATION ABOUT R+W BELLOWS COUPLINGS:



#### 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.

#### FIT CLEARANCE

Overall shaft / hub clearance of 0.01 - 0.05 mm

#### 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.

#### TEMPERATURE RANGE

-30 to +100° C






#### SPECIAL SOLUTIONS

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

#### ATEX (Optional)

For use in hazardous zones 1/21 and 2/22, the metal bellows has been authorized under directive 94/9/EG and is available with certification.

## TORSIONALLY STIFF BELLOWS COUPLINGS 2 - 10,000 Nm

MODEL		FEATURES	
<b>BK1</b>		<p><b>with simple flange mounting from 15 - 10,000 Nm</b></p> <ul style="list-style-type: none"> <li>▶ for adapting the metal bellows to custom drive components</li> <li>▶ custom flange patterns available</li> </ul>	Page 33
<b>BK2</b>		<p><b>with clamping hub from 15 - 10,000 Nm</b></p> <ul style="list-style-type: none"> <li>▶ easy to mount</li> <li>▶ available in multiple lengths</li> <li>▶ low moment of inertia</li> </ul>	Page 34
<b>BKH</b>		<p><b>with split clamping hub from 15 - 4,000 Nm</b></p> <ul style="list-style-type: none"> <li>▶ radial mounting possible</li> <li>▶ easy to install onto pre-aligned shafts</li> <li>▶ low moment of inertia</li> </ul>	Page 35
<b>BKL</b>		<p><b>economy class with clamping hub from 2 - 500 Nm</b></p> <ul style="list-style-type: none"> <li>▶ easy to mount</li> <li>▶ optional self-opening clamp system</li> <li>▶ low moment of inertia</li> </ul>	Page 36
<b>BKC</b>		<p><b>compact version with clamping hub from 15 - 500 Nm</b></p> <ul style="list-style-type: none"> <li>▶ low moment of inertia</li> <li>▶ compact design</li> <li>▶ optional self-opening clamp system</li> </ul>	Page 37

MODEL

FEATURES

**BKM**



**torsional stiff with clamping hub  
from 20 - 1,000 Nm**

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- ▶ high torque density
- ▶ ultra compact
- ▶ lowest moment of inertia of all clamping hub designs

**BKS**



**welded with clamping hub  
from 15 - 500 Nm**

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- ▶ all stainless steel construction
- ▶ temperatures up to 300°C
- ▶ easy to mount

**BK3**



**with conical clamping hub  
from 15 - 10,000 Nm**

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- ▶ high clamping pressure
- ▶ modern design for removal system
- ▶ highly reliable

**SP3**



**with external clamping ring  
from 60 - 10,000 Nm**

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- ▶ highly concentric symmetrical design
- ▶ very true running to the shaft axis
- ▶ for high speed applications

**BK4**



**for tapered shafts  
from 15 - 150 Nm**

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- ▶ standard 1:10 taper with feather keyway
- ▶ special designs on request



## TORSIONALLY STIFF BELLOWS COUPLINGS SIZES FROM 2 - 10,000 Nm

MODEL	FEATURES	
 <b>BK5</b>	<p><b>with clamping hub and blind mate connection from 15 - 1,500 Nm</b></p> <ul style="list-style-type: none"><li>▶ backlash free with two piece design</li><li>▶ easy installation and removal</li><li>▶ available as separate components</li></ul>	Page 43
 <b>BK6</b>	<p><b>with conical clamping ring and blind mate connection from 15 - 1,500 Nm</b></p> <ul style="list-style-type: none"><li>▶ eliminates need for screw access holes</li><li>▶ self centering hubs for highly concentric mounting</li><li>▶ easy installation and removal</li></ul>	Page 44
 <b>BK7</b>	<p><b>with expanding shaft from 15 - 300 Nm</b></p> <ul style="list-style-type: none"><li>▶ for hollow shaft mounting</li><li>▶ save space and cost</li><li>▶ solution for mismatched shaft/bore diameters</li></ul>	Page 45
 <b>BK8</b>	<p><b>with ISO flange mounting from 50 - 2,600 Nm</b></p> <ul style="list-style-type: none"><li>▶ for flange output gearboxes</li><li>▶ allows for continuous hollow through axis with some right angle gearbox designs</li><li>▶ compact layout</li></ul>	Page 46

**BK1**

# WITH FLANGE MOUNTING

15 - 10,000 Nm

## PROPERTIES

### FEATURES

- ▶ For simple flange mounting to special drive components
- ▶ custom flange patterns available

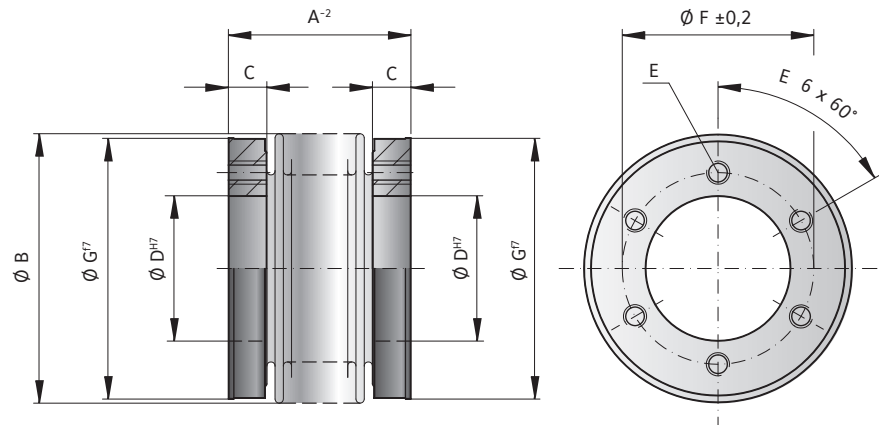
### MATERIAL

- ▶ **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	1500	4000	6000	10000	
Rated torque (Nm)	$T_{KN}$	15	30	60	150	200	300	500	800	1500	4000	6000	10000	
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 diameter 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 ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$	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	1304	3400	5700	10950	
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	0.35	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   1.5	1.5	1.5	1.5	1.5	1.5
Axial spring stiffness (N/mm)	$C_s$	25   15	50   30	72   48	82   52	90   60	105   71	70   48	100	320	565	1030	985	
Lateral spring stiffness (N/mm)	$C_r$	475   137	900   270	1200   420	1550   435	2040   610	3750   1050	2500   840	2000	3600	6070	19200	21800	

ORDERING EXAMPLE	BK1	150	62	XX
Model	●			
Size		●		
Overall length mm			●	
Special designation only (e.g. high speed balancing).				
For custom features place an XX at the end of the part number and describe the special requirements (e.g. BK1 / 150 / 62 / XX; XX=finely balanced for 25,000 rpm)				

# BK2

## WITH CLAMPING HUB

15 - 10,000 Nm

### PROPERTIES



#### FEATURES

- ▶ easy to mount
- ▶ Optional: bolt tensioning system in size 800 and up
- ▶ light weight and low moment of inertia

#### DESIGN

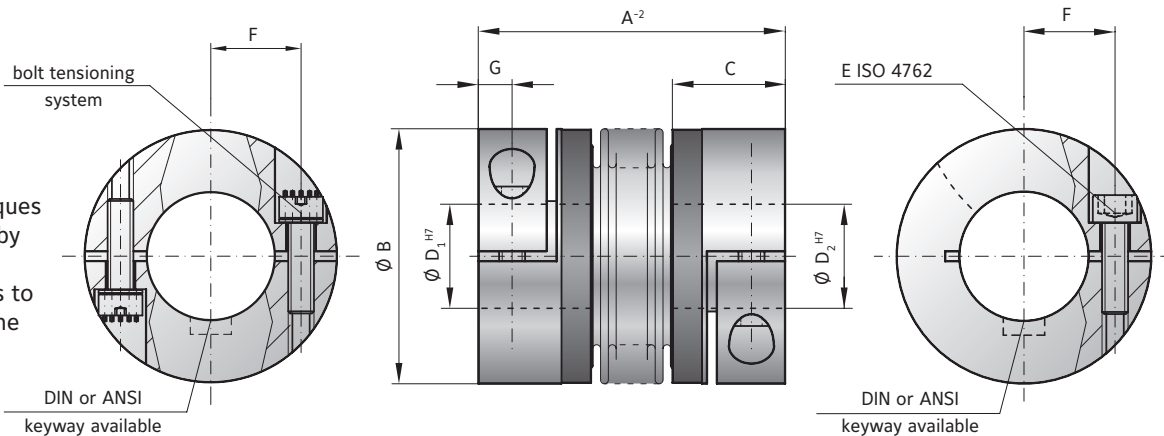
Two clamping hubs concentrically mounted to flexible bellows. Brief overloads of up to 1.5x the rated torque are acceptable.

#### MATERIAL

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

**NEW**

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



## MODEL BK2

SIZE		15	30	60	80	150	200	300	500	800	1500	4000	6000	10000
Rated torque (Nm)	$T_{KN}$	15	30	60	80	150	200	300	500	800	1500	4000	6000	10000
Overall length (mm)	$A^{-2}$	59 66 99	69 77 113	83 93 130	94 106 143	95 107 144	105 117 163	111 125 200	133 146 169	140 179 166 230	225 252 288			
Outside diameter (mm)	B	49	55	66	81	81	90	110	124	134	157	200	253	303
Fit length (mm)	C	22	27	31	36	36	41	43	51	45	55	85	107	129
Inside diameter possible from $\emptyset$ to $\emptyset$ 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	60-140	70-180
Fastening screw ISO 4762	E	M5	M6	M8	M10	M10	M12	M12	M16	2x M16*	2x M20*	2x M24*	2x M24*	2x M30*
Tightening torque of the fastening screw (Nm)	E	8	15	40	50	70	120	130	200	250	470	1200	1200	2400
Distance between centerlines (mm)	F	17	19	23	27	27	31	39	41	2x48	2x55	2x65	2x90	2x117
Distance (mm)	G	6.5	7.5	9.5	11	11	12.5	13	16.5	18	22.5	28	35	42
Moment of inertia ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$	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	7.6 7.9 8.3	14.3 14.6 14.8	16.2 17	43 45	165	495	1214
Hub material		Al optional steel	Al optional steel	Al optional steel	Al optional steel	steel optional AL	steel optional AL	steel optional AL	steel optional AL	steel	steel	steel	steel	steel
Approximate weight (kg)		0.16	0.26	0.48	0.8	1.85	2.65	4	6.3	5.7	11.5	28.8	49.4	80.9
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	450 350 340	510 500 400	780 711	1304 1180	3400	5700	10950
Axial $\pm$ (mm)	Max. values	1 2 3	1 2 3	1.5 2 3	2 3 4	2 3 4	2 3 4	2.5 3.5 4.5	2.5 3.5 4.5	3.5 4.5 4.5	3.5 4.5 4.5	3.5	3	3
Lateral $\pm$ (mm)		0.15 0.2	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	0.25 0.3 1	0.3 0.35 1	0.35 1 0.35 1	0.4 0.4	0.4	0.4	0.4
Angular $\pm$ (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	1 1.5 2	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)	$C_a$	25 15 84	50 30 118	72 48 165	48 32 144	82 52 130	90 60 280	105 71 605	70 48 85	100 285 320 440	565	1030	985	
Lateral spring stiffness (N/mm)	$C_r$	475 137 140	900 270 224	1200 420 337	920 290 401	1550 435 500	2040 610 750	3750 1050 1200 2500	840 614 2000 1490 3600 1700	6070	19200	21800		

\* 180° opposed in each clamping hub.



### PROPERTIES

#### FEATURES

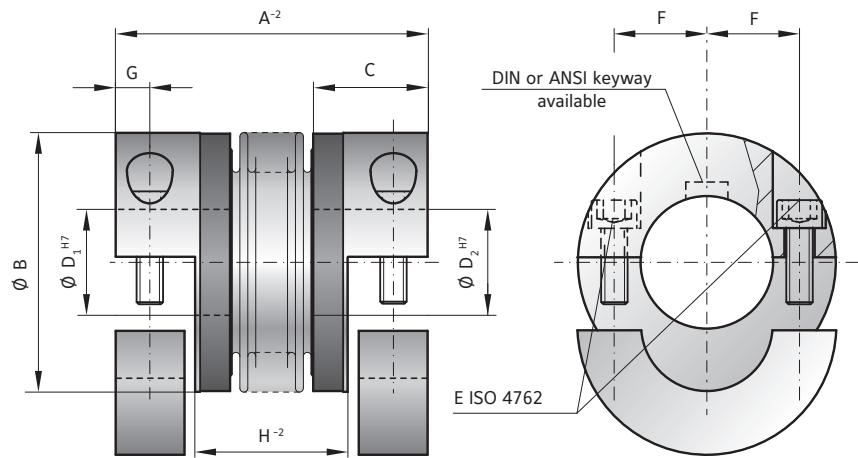
- ▶ radial mounting possible
- ▶ easy installation onto pre-aligned shafts
- ▶ low moment of inertia

#### DESIGN

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

#### MATERIAL

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



## MODEL BKH

SIZE		15	30	60	80	150	200	300	500	800	1500	4000
Rated torque (Nm)	$T_{KN}$	15	30	60	80	150	200	300	500	800	1500	4000
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 $\emptyset$ to $\emptyset$ 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		M5	M6	M8	M10	M10	M12	M12	M16	M16	M20	M24
Tightening torque of the fastening screw (Nm)	E	8	15	40	50	70	120	130	200	250	470	1200
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
Distance (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 ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$	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
Hub material		Al optional steel	Al optional steel	Al optional steel	Al optional steel	steel optional AL	steel optional AL	steel optional AL	steel optional AL	steel	steel	steel
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	1304	3400
Axial $\pm$ (mm)		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 $\pm$ (mm)	Max. values	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 $\pm$ (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)	$C_l$	475   137	900   270	1200   420	920   290	1550   435	2040   610	3750   1050	2500   840	2000	3600	6070

ORDERING EXAMPLE	BK2 / BKH	80	94	20	22.23	XX
Model	●					
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. BKH / 80 / 94 / 20 / 22.23 / XX; XX=finely balanced for 25,000 rpm)						





### PROPERTIES

#### FEATURES

- ▶ easy to mount
- ▶ light weight and low moment of inertia

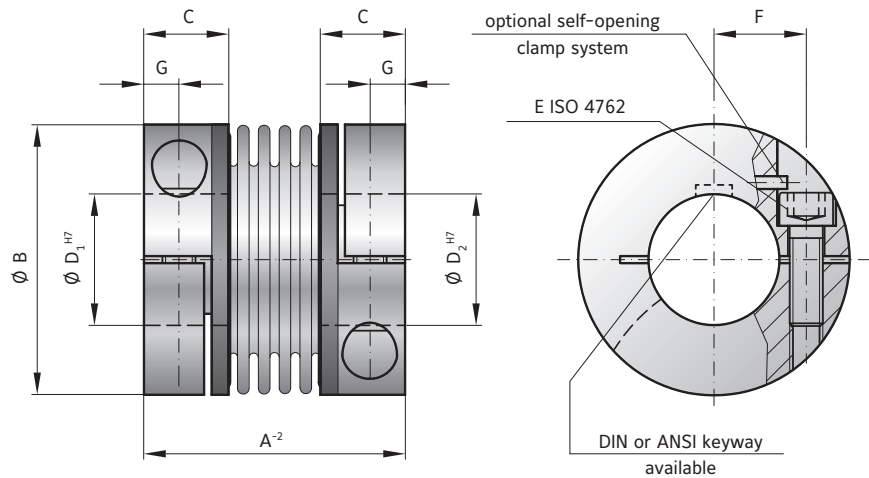
Two clamping hubs concentrically mounted to flexible bellows. Brief overloads of up to 1.5x the rated torque are acceptable.

#### MATERIAL

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

#### DESIGN

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



## MODEL BKL

SIZE		2	4.5	10	15	30	60	80	150	300	500
Rated torque (Nm)	$T_{KN}$	2	4.5	10	15	30	60	80	150	300	500
Overall length (mm)	$A^{-2}$	30	40	44	58	68	79	92	92	109	114
Outside diameter (mm)	B	25	32	40	49	56	66	82	82	110	123
Fit length (mm)	C	10	13	13	21.5	26	28	32.5	32.5	41	42.5
Inside diameter possible from $\emptyset$ to $\emptyset$ H7 (mm)	$D_{1/2}$	4-12.7	6-16	6-24	8-28	10-32	14-35	16-42	19-42	24-60	35-62
Fastening screw ISO 4762	E	M3	M4	M4	M5	M6	M8	M10	M10	M12	M16
Tightening torque of the fastening screw (Nm)		2.3	4	4.5	8	15	40	70	85	120	200
Distance between centerlines (mm)	F	8	11	14	17	20	23	27	27	39	41
Distance (mm)	G	4	5	5	6.5	7.5	9.5	11	11	13	17
Moment of inertia ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$	0.002	0.007	0.016	0.065	0.12	0.3	0.75	1.8   0.8	7.5   3.1	11.7   4.9
Hub material		AL optional steel	AL optional steel	AL optional steel	AL optional steel	AL optional steel	AL optional steel	AL optional steel	steel optional AL	steel optional AL	steel optional AL
Approximate weight (kg)		0.02	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	7	9	23	31	72	80	141	157	290
Axial $\pm$ (mm)	Max. values	0.5	1	1	1	1	1.5	2	2	2	2.5
Lateral $\pm$ (mm)		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Angular $\pm$ (degree)		1	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	2940	1450

ORDERING EXAMPLE	BKL	80	26	22.23	XX
Model	●				
Size		●			
Bore D1 H7			●		
Bore D2 H7				●	
Special designation only (e.g. anodized hubs).					
For custom features place an XX at the end of the part number and describe the special requirements (e.g. BKL / 80 / 26 / 22.23 / XX; XX=finely balanced for 25,000 rpm)					





### PROPERTIES

#### FEATURES

- ▶ for space restricted installations
- ▶ light weight and low moment of inertia
- ▶ easy to mount

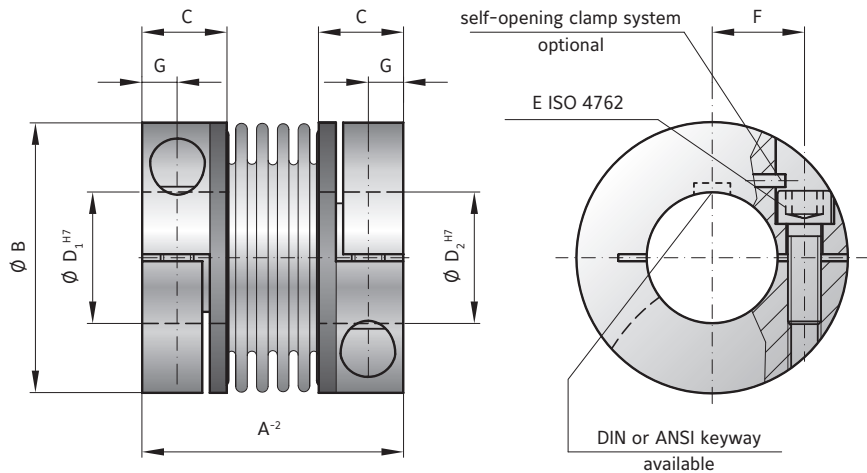
#### MATERIAL

- ▶ **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 $\emptyset$ to $\emptyset$ 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 ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$		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 $\pm$ (mm)	Max. values		1	1	1.5	2	2	2.5
Lateral $\pm$ (mm)			0.2	0.2	0.2	0.2	0.2	0.2
Angular $\pm$ (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	2940	2200
Speed max. with balancing (min <sup>-1</sup> )			80,000	70,000	60,000	50,000	40,000	30,000

ORDERING EXAMPLE	BKC	60	26	22.23	XX
Model	●				Special designation only (e.g. special bore tolerance).
Size		●			
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. BKC / 60 / 26 / 22.23 / XX; XX=finely balanced for 25,000 rpm)



### PROPERTIES

#### FEATURES

- ▶ extremely compact
- ▶ high torque density
- ▶ high torsional stiffness

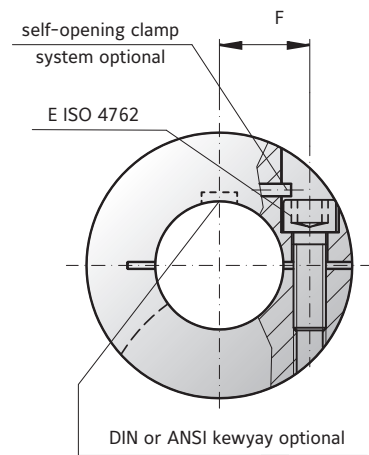
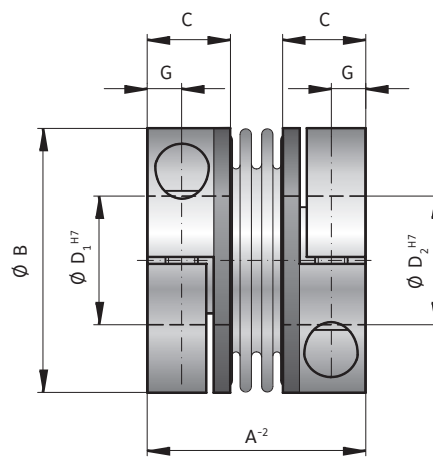
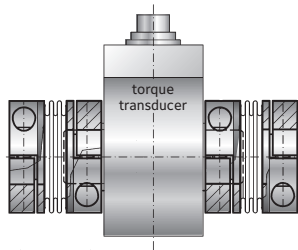
#### MATERIAL

- ▶ **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	1000
Rated torque	(Nm)	$T_{KN}$	20	200	400	1000
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 $\varnothing$ to $\varnothing$ 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	( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges.}$	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	$\pm$ (mm)	Max. values	1	1.5	1	2
Lateral	$\pm$ (mm)		0.06	0.08	0.1	0.1
Angular	$\pm$ (degree)		0.5	0.5	0.5	0.5
Axial spring stiffness	(N/mm)	$C_s$	55.8	153	114	148
Lateral spring stiffness	(N/mm)	$C_l$	3,710	11,000	6,058	9,010
Speed max. with balancing	(min <sup>-1</sup> )		80,000	60,000	50,000	40,000

ORDERING EXAMPLE	BKM	20	20	19.05	XX
Model	●				Special designation only (e.g. special bore tolerance).
Size		●			
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. BKM / 20 / 20 / 19.05 / XX; XX=finely balanced for 25,000 rpm)					



### PROPERTIES

#### FEATURES

- ▶ for high temperatures and aggressive media
- ▶ compact design
- ▶ welded version

#### MATERIAL

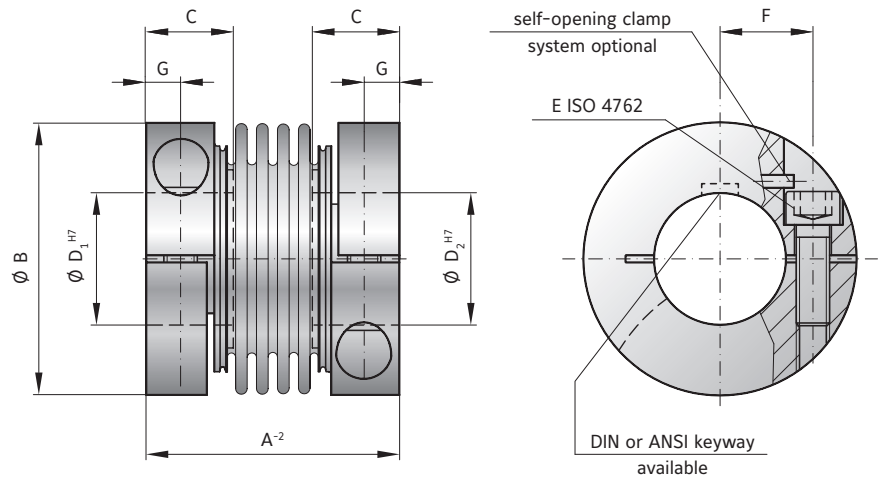
- ▶ **Bellows:** high grade stainless steel
- ▶ **Hubs:** high grade stainless steel

- ▶ **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° 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 $\emptyset$ to $\emptyset H7$ (mm)	$D_1/D_2$		12-28	14-32	16-35	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 ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges.}$		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 $\pm$ (mm)	Max. values		1	1	1.5	2	2	2.5
Lateral $\pm$ (mm)			0.2	0.2	0.2	0.2	0.2	0.2
Angular $\pm$ (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	2940	2200
Speed max. with balancing (min <sup>-1</sup> )			60,000	50,500	50,000	40,500	40,000	30,000

\* Smaller bore diameter available at reduced torque capacity

ORDERING EXAMPLE	BKS	15	20	19.05	XX
Model	●				Special designation only (e.g. special bore tolerance).
Size		●			
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. BKS / 15 / 20 / 19.05 / XX; XX=finely balanced for 25,000 rpm)

# BK3

## WITH CONICAL CLAMPING SYSTEM

15 - 10,000 Nm



### PROPERTIES

#### FEATURES

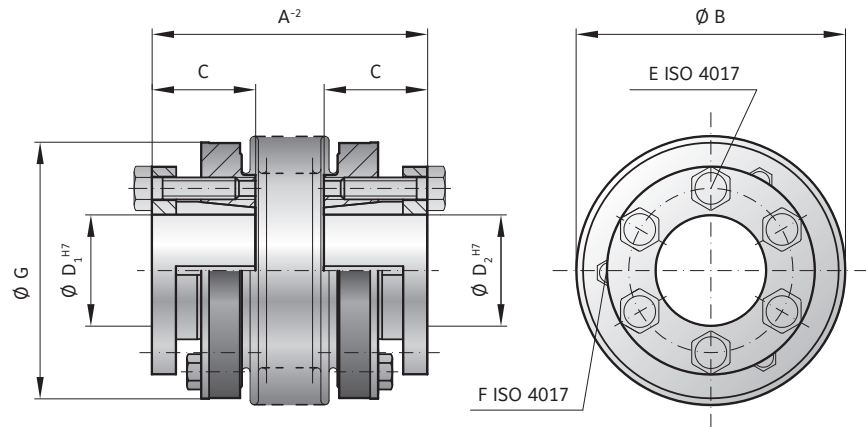
- ▶ high clamping pressure
- ▶ high torque version
- ▶ compact design

#### 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	1500	4000	6000	10000
Rated torque (Nm)	$T_{KN}$	15	30	60	150	200	300	500	800	1500	4000	6000	10000
Overall length (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 $\emptyset$ to $\emptyset$ H7 (mm)	$D_{1/2}$	10-22	12-23	12-29	15-38	15-44	24-56	24-60	30-60	35-70	50-100	60-140	70-180
Fastening screw ISO 4017	E	6 x M4	6 x M5	6 x M5	6 x M6	6 x M6	6 x M8	6 x M8	6 x M10	6 x M12	6 x M16	6 x M16	8 x 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 x M4	3 x M4	3 x M5	3 x M5	3 x M6	3 x M6	3 x M6	3 x M8	6 x M8	6 x M10	6 x M10	4 x M10
Outside diameter of hub (mm)	G	49	55	66	81	90	110	122	116	135	180	246	295
Moment of inertia ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$	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	1304	3400	5700	10950
Axial $\pm$ (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 $\pm$ (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 $\pm$ (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	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	1030	985
Lateral spring stiffness (N/mm)	$C_r$	475 137	900 270	1200 420	1500 435	2040 610	3750 1050	2500 840	2000	3600	6070	19200	21800

ORDERING EXAMPLE	BK3	60	76	20	22.23	XX
Model	●					Special designation only (e.g. non-standard 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. BK3 / 60 / 76 / 20 / 22.23 / XX; XX=K6 bore tolerance on D1)						

# SP3

## WITH EXTERNAL CLAMPING RING

60 - 10,000 Nm

NEW



High speed

### PROPERTIES

#### FEATURES

- ▶ very high balancing quality due to symmetrical design
- ▶ high operating speeds
- ▶ extremely smooth running

#### MATERIAL

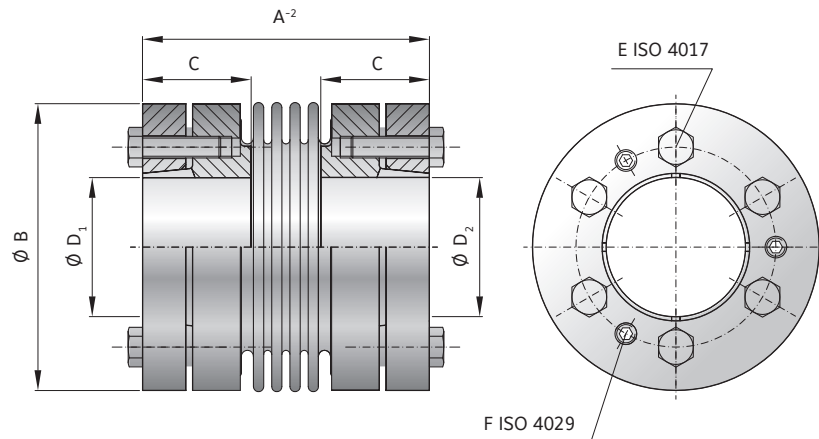
- ▶ **Bellows:** high grade stainless steel
- ▶ **Hubs and clamping ring:** steel

#### 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



## MODELL SP3

SERIE		60	150	200	300	500	800	1500	4000	6000	10000						
Rated torque (Nm)	$T_{KN}$	60	150	200	300	500	800	1,500	4,000	6,000	10,000						
Overall length (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 $\emptyset$ to $\emptyset$ 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 ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$	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	1187.4						
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 $\pm$ (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 $\pm$ (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	0.35	0.4	0.4	0.4
Angular $\pm$ (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	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	3750	1,050	2,500	840	2,000	3,600	6,070	19,200	21,800	
Speed standard (min <sup>-1</sup> )	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  $\emptyset$ 55 G7 / m6

ORDERING EXAMPLE	SP3	150	87	20	32	XX
Model	●					Special designation only (e.g. non-standard 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. SP3 / 150 / 87 / 20 / 32 / XX)

BELLOWS COUPLINGS BK

# BK4

## FOR TAPERED SHAFTS 15 - 150 Nm



### PROPERTIES

#### FEATURES

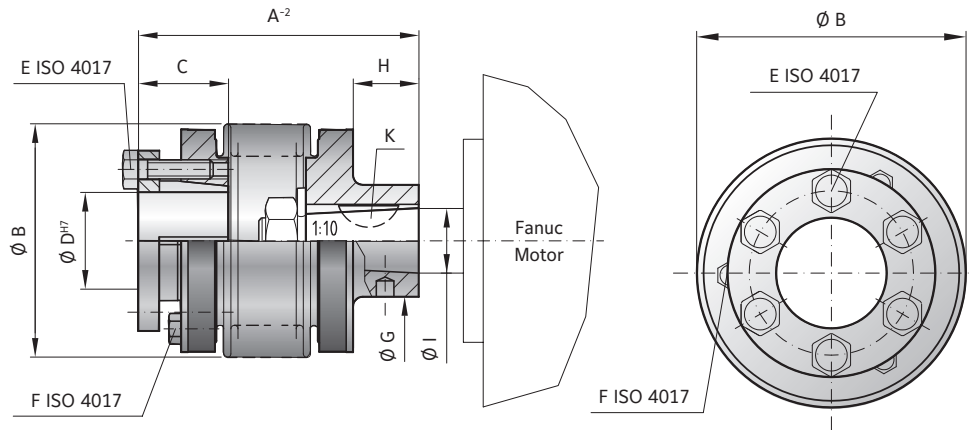
- ▶ for tapered shafts
- ▶ easy to mount and dismount
- ▶ high installed concentricity

#### MATERIAL

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

#### DESIGN

Conical clamping system opposite 1:10 tapered bore with feather keyway. Brief overloads of up to 1.5x the rated torque acceptable.



## MODEL BK4

SIZE		15		30		60		150	
Rated torque (Nm)	$T_{KN}$	15		30		60		150	
Overall length (mm)	$A^{-2}$	47	54	68	76	72	82	82	94
Outside diameter (mm)	B	49		55		66		81	
Fit length (mm)	C	19		22		27		32	
Inside diameter possible from $\varnothing$ to $\varnothing$ H7 (mm)	D	10-22		12-23		12-29		15-37	
Fastening screw ISO 4017	E	6 x M4		6 x M5		6 x M5		6 x M6	
Tightening torque of the fastening screw (Nm)		4		6		8		12	
Jack screw ISO 4017	F	3 x M4		3 x M4		3 x M5		3 x M5	
Outside diameter of hub (mm)	G	20		27		30		30	
Hub length (mm)	H	8.5		22		18		20	
Moment of inertia ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$	0.10	0.12	0.22	0.27	0.58	0.61	1.1	1.4
Approximate weight (kg)		0.25		0.4		0.8		1.35	
Torsional stiffness ( $10^3$ Nm/rad)	$C_T$	20	15	39	28	76	55	175	110
Axial $\pm$ (mm)	Max. values	1	2	1	2	1.5	2	2	3
Lateral $\pm$ (mm)		0.15	0.2	0.2	0.25	0.2	0.25	0.2	0.25
Angular $\pm$ (degree)		1	1.5	1	1.5	1	1.5	1	1.5
Axial spring stiffness (N/mm)	$C_a$	25	15	50	30	72	48	82	52
Lateral spring stiffness (N/mm)	$C_r$	475	137	900	270	1200	420	1500	435
Cone $\varnothing$ (Fanuc-Motor) (mm)	I	11		16		16		16	
Key width (mm)	K	4		5		5		5	

ORDERING EXAMPLE	BK4	150	82	20	XX
Model	●				
Size		●			
Overall length mm			●		
Bore D1 H7				●	
For custom features place an XX at the end of the part number and describe the special requirements (e.g. BK4 / 150 / 82 / 20 / XX; XX=finely balanced for 25,000 rpm)					

# BK5

## BLIND MATE WITH CLAMPING HUB 15 - 1,500 Nm

### PROPERTIES

#### FEATURES

- ▶ easy installation and removal
- ▶ electrically and thermally isolating
- ▶ absolutely backlash free assembly

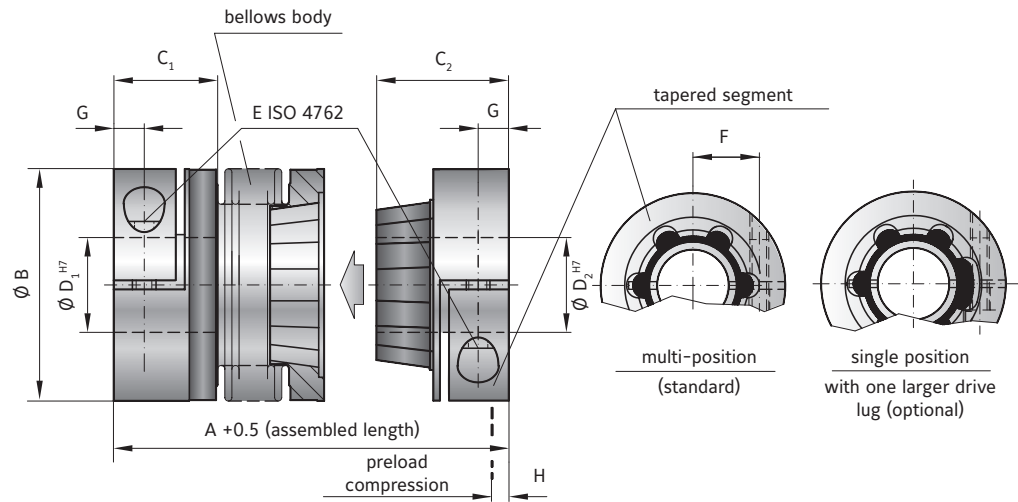
#### MATERIAL

- ▶ **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 blind mate connection. Brief overloads of up to 1.5x the rated torque are acceptable.



BELLOWS COUPLINGS BK

### MODEL BK5

SIZE		15	30	60	80	150	300	500	800	1500
Rated torque (Nm)	$T_{KN}$	15	30	60	80	150	300	500	800	1500
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 $\emptyset$ to $\emptyset$ 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 $\emptyset$ to $\emptyset$ 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		M5	M6	M8	M10	M10	M12	M16	2 x M16**	2 x M20**
Tightening torque of the fastening screw (Nm)	E	8	15	40	50	70	130	200	250	470
Distance between centerlines (mm)	F	17	19	23	27	27	39	41	2 x 48**	2 x 55**
Distance (mm)	G	6.5	7.5	9.5	11	11	13	16.5	18	22.5
Preload compression (mm)		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)	H	20 12	50 30	70 45	48 32	82 52	157 106	140 96	200	650
Moment of inertia ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$	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* $\pm$ (mm)		0.5 1	0.5 1	0.5 1	1 2	1 2	1.5 2	2 2.5	3.5	2
Lateral $\pm$ (mm)	Max. values	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 $\pm$ (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)	$C_L$	475 137	900 270	1200 420	920 290	1550 435	3750 1050	2500 840	2000	3600

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

ORDERING EXAMPLE	BK5	30	71	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. BK5 / 30 / 71 / 18 / 19 / XX; XX=finely balanced for 25,000 rpm)						



# BK6

## BLIND MATE WITH CONICAL CLAMPING RING 15 - 1,500 Nm

### PROPERTIES



#### FEATURES

- ▶ axial mounting possible
- ▶ easy installation and removal
- ▶ naturally very well balanced due to self centering clamping ring system
- ▶ absolutely backlash free assembly

- ▶ **Tapered male segment:** high strength plastic

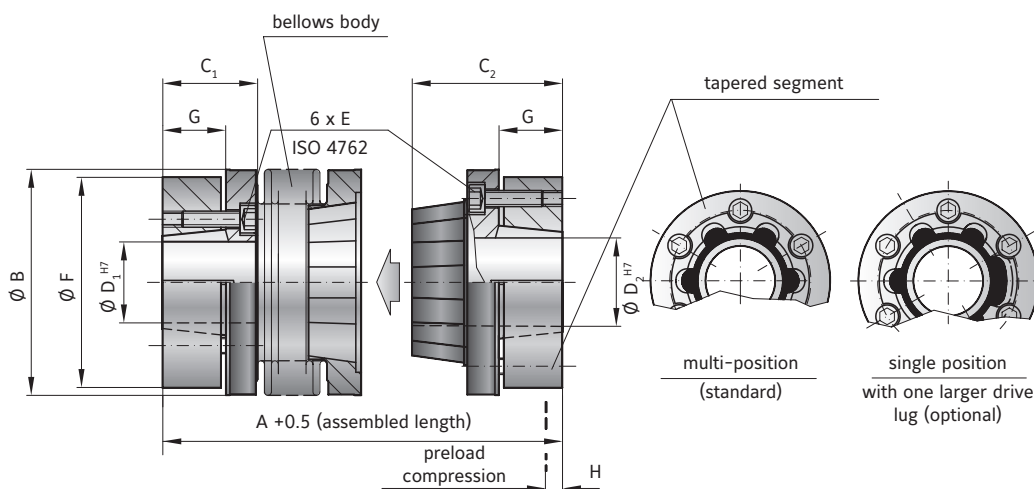
#### MATERIAL

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

#### DESIGN

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

Brief overloads of up to 1.5x the rated torque are acceptable.



### MODEL BK6

SIZE		15	30	60	150	300	500	800	1500						
Rated torque (Nm)	$T_{KN}$	15	30	60	150	300	500	800	1500						
Overall length (gesteckt) (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 $\varnothing$ to $\varnothing$ 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 ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$	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* $\pm$ (mm)	Max. values	0.5	1	0.5	1	0.5	1	1	2	1.5	2	2.5	3.5	3	2
Lateral $\pm$ (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 $\pm$ (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	1200	420	1550	435	3750	1050	2500	840	2000

\* in addition to maximum allowable pretension

Higher torques upon request

ORDERING EXAMPLE	BK6	30	76	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. BK6 / 30 / 76 / 18 / 19 / XX; XX=finely balanced for 25,000 rpm)						

**BK7**

# WITH EXPANDING SHAFT

## 15 - 300 Nm



### PROPERTIES

#### FEATURES

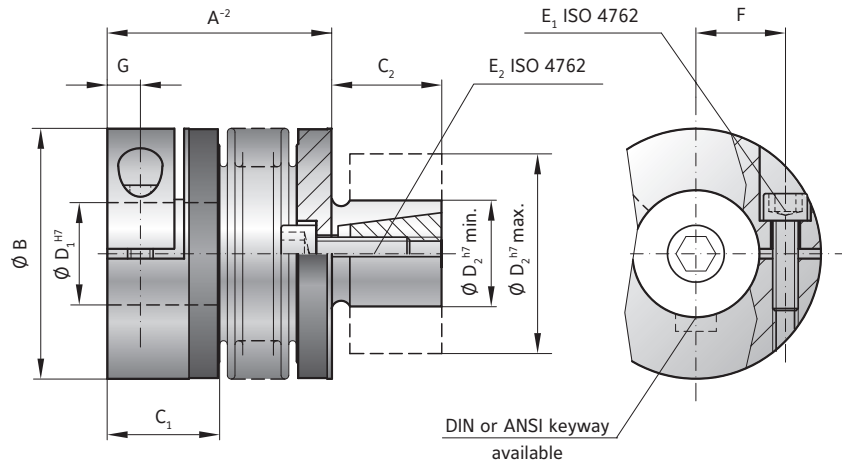
- ▶ for hollow shaft mounting
- ▶ short design saves installation space
- ▶ solution for mismatched shaft / bore

#### 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					
Fit length (mm)	$C_2$		20	25	27	32	45					
Inside diameter possible from $\emptyset$ to $\emptyset$ H7 (mm)	$D_1$		8-28	10-30	12-35	19-42	30-60					
Shaft diameter from $\emptyset$ to $\emptyset$ h7 (mm)	$D_2$		13-25	14-30	23-38	26-42	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 ( $10^{-3}$ kgm <sup>2</sup> )	$J_{ges}$		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 $\pm$ (mm)			1	2	1	2	1.5	2	2	3	2.5	3.5
Lateral $\pm$ (mm)		Max. values	0.15	0.2	0.2	0.25	0.2	0.25	0.2	0.25	0.25	0.3
Angular $\pm$ (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	1200	380	1550	435	3750	1050

ORDERING EXAMPLE	BK7	150	71	32	22.23	XX
Model	●					Special designation only (e.g. special bore tolerance).
Size		●				
Overall length mm			●			
Bore D1 H7				●		
Shaft D2 f7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. BK7 / 150 / 71 / 32 / 22.23 / XX; XX=finely balanced for 25,000 rpm)

**BK8**

# WITH ISO FLANGE CONNECTION

50 - 2,600 Nm



## PROPERTIES

### FEATURES

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

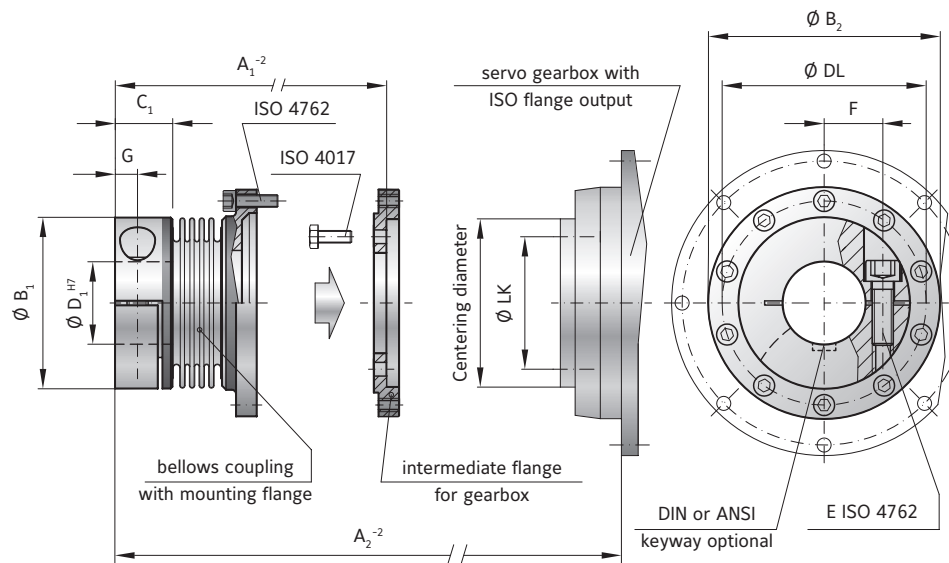
### MATERIAL

- ▶ **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

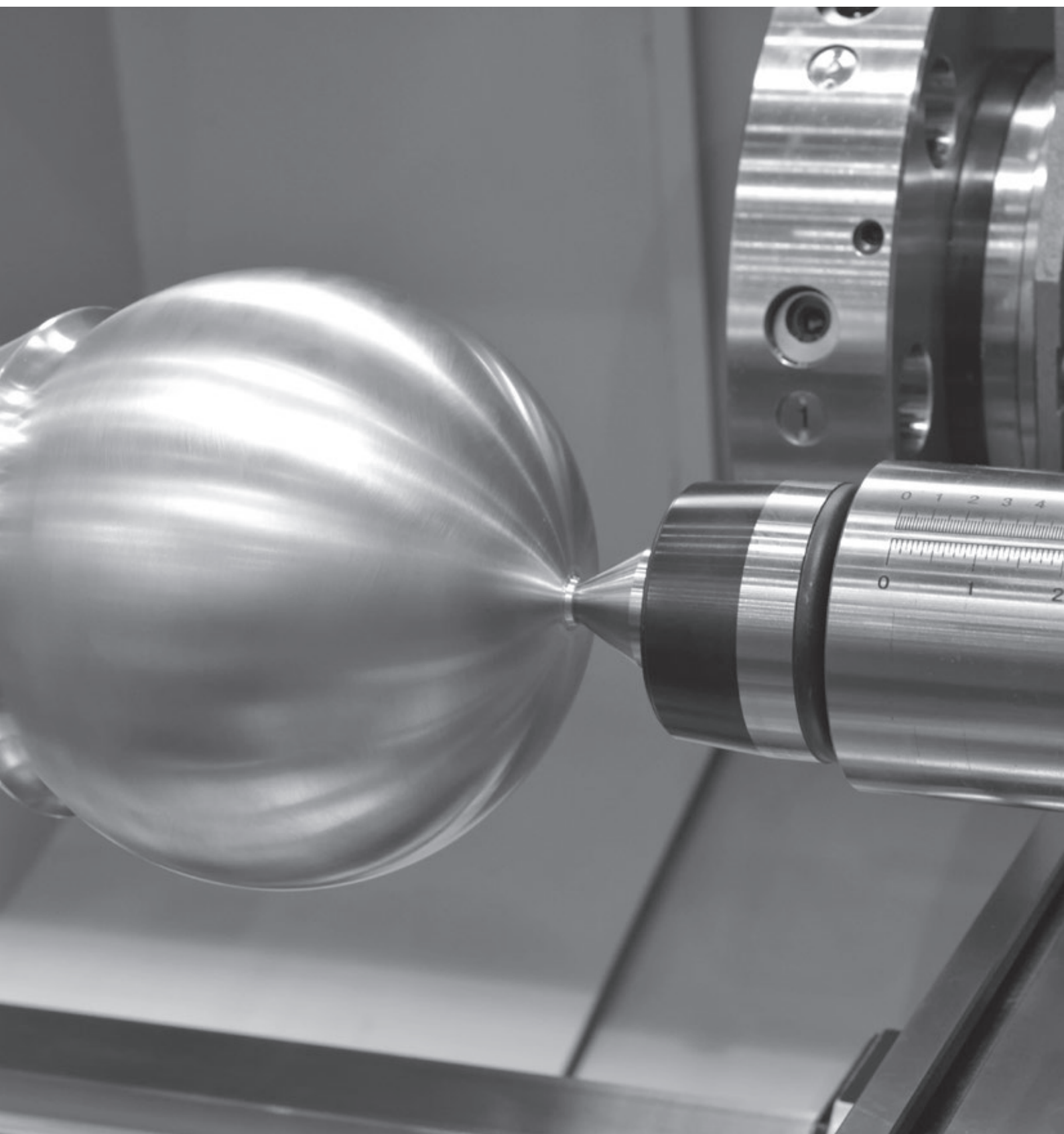
SIZE		15	60	150	300	1500
Flange centering diameter	(mm)	40 h7	63 h7	80 h7	100 h7	160 h7
Flange bolt circle / thread $\emptyset$	(mm)	31.5 / 8 x M5	50 / 8 x M6	63 / 12 x M6	80 / 12 x M8	125 / 12 x M10
Maximum torque*	(Nm)	50	210	380	750	2600
Length -2	(mm) $A_1$	48.5	67	72	90	140
Length -2	(mm) $A_2$	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 $\emptyset$ to $\emptyset$ 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		1 x M5	1 x M8	1 x M10	1 x M12	2 x M20
Tightening torque of the fastening screw	(Nm) $E_1$	8	45	80	120	470
Distance between centerlines	(mm) F	1 x 17.5	1 x 23	1 x 27	1 x 39	2 x 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	( $10^{-3}$ kgm <sup>2</sup> ) $J_{ges}$	0.15	0.65	1.3	5.5	45
Lateral	$\pm$ (mm)	0.25	0.25	0.25	0.25	0.25
Angular	$\pm$ (degree)	1	1	1	1	1
Axial	$\pm$ (mm)	1	1.5	2	2.5	3

\* maximum torque transmittable only for brief periods and requires maximum bore for clamping strength

ORDERING EXAMPLE	BK8	60	22.23	67	XX
Model	●				
Size		●			
Bore D1 H7			●		
Overall length mm				●	
For custom features place an XX at the end of the part number and describe the special requirements (e.g. BK8 / 60 / 22.23 / 67 / XX; XX=anodized hubs)					

Special designation only (e.g. special bore tolerance).





# BACKLASH FREE MINIATURE METAL BELLOWS COUPLINGS 0.05- 10 Nm



## GENERAL INFORMATION R+W MINIATURE BELLOWS COUPLINGS:



### 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.

### FIT CLEARANCE

Overall shaft / hub clearance of 0.01 - 0.05 mm

### 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.

### TEMPERATURE RANGE

-30 to +100° C

### SPECIAL SOLUTIONS

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

### ATEX (Optional)

For use in hazardous zones 1/21 and 2/22, the metal bellows has been authorized under directive 94/9/EG and is available with certification.

# BACKLASH FREE, TORSIONALLY STIFF MINIATURE COUPLINGS

## 0.05 - 10 Nm

MODEL

FEATURES

**MK1**



**with radial set screws  
from 0.05 - 10 Nm**

Page 52

- ▶ large bores available in small size
- ▶ integral dismounting groove eliminates the need for flats on shafts
- ▶ economy design

**MK2**



**with clamping hub  
from 0.5 - 10 Nm**

Page 53

- ▶ easy mounting
- ▶ for highly dynamic applications
- ▶ finely balanced versions up to 90,000 rpm

**MKH**



**with split clamping hub  
from 0.5 - 10 Nm**

Page 54

- ▶ lateral mounting possible
- ▶ easy installation and removal
- ▶ allows for pre-alignment of shafts

**MK3**



**with expanding shaft  
from 0.5 - 10 Nm**

Page 55

- ▶ easy installation
- ▶ solution for mismatched shaft / bore diameters
- ▶ saves space and cost

**MK4**



**with radial set screw and blind  
mate connection  
from 0.5 - 10 Nm**

Page 56

- ▶ axial installation possible
- ▶ electrically and thermally isolating
- ▶ includes integral dismounting groove



## MODEL

## FEATURES

MK5



**with clamping hub and blind mate connection from 0.5 - 10 Nm**

- ▶ axial installation possible
- ▶ electrically and thermally isolating
- ▶ easy mounting and dismounting

Page 57

MK6



**with expanding shaft and blind mate connection from 0.5 - 10 Nm**

- ▶ full axial installation possible
- ▶ well suited to restricted installation space
- ▶ solution to mismatched bore / shaft diameters

Page 58

MKS



**with conical clamping ring from 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

Page 59

BKL



**with clamping hub up to 3 Nm**

- ▶ low priced
- ▶ light weight and low moment of inertia
- ▶ temperatures up to 200° C

Page 60

FK1



**with radial set screw up to 1 Ncm**

- ▶ well balanced
- ▶ sterilizable

Page 61

# MK1

## WITH RADIAL SET SCREWS

0.05 - 10 Nm



### PROPERTIES

#### FEATURES

- ▶ integral dismounting groove eliminates the need for flats on shafts
- ▶ economical design
- ▶ larger bore diameters in a small size possible

▶ **Hubs:** aluminium

#### DESIGN

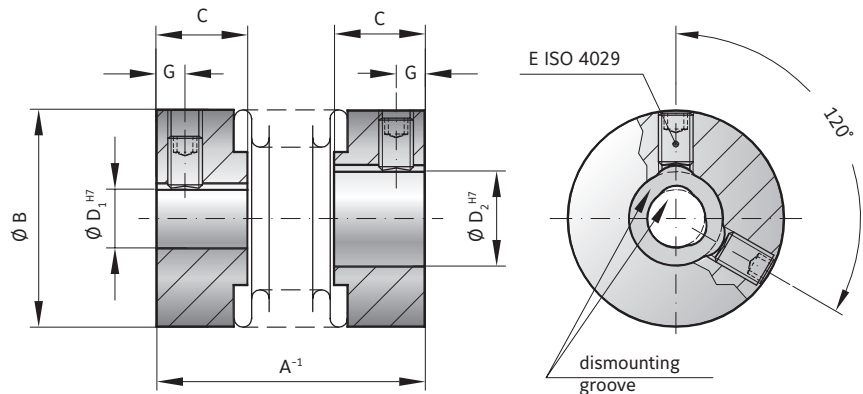
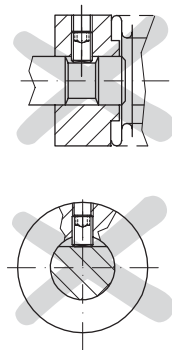
Two hubs with radial set screws concentrically mounted to flexible bellows. Speeds up to 20,000 rpm; over 20,000 with finely balanced version.

#### MATERIAL

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

#### 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 $\varnothing$ to $\varnothing$ 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			1xM2	1xM2.5	1xM3	1xM3	2xM3	2xM4	2xM5	2xM6
Tightening torque of the fastening screw (Nm)	E		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	1200 1300 1200	7000 5000	9050 8800
Axial (mm)			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)	Max. values		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

ORDERING EXAMPLE	MK1	5	26	4.76	5	XX
Model	●					
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. MK1 / 5 / 26 / 4.76 / 5 / XX; XX=finely balanced for 25,000 rpm)						

Special designation only (e.g. high speed balancing).

# MK2

## WITH CLAMPING HUB

0.5 - 10 Nm



### PROPERTIES

#### FEATURES

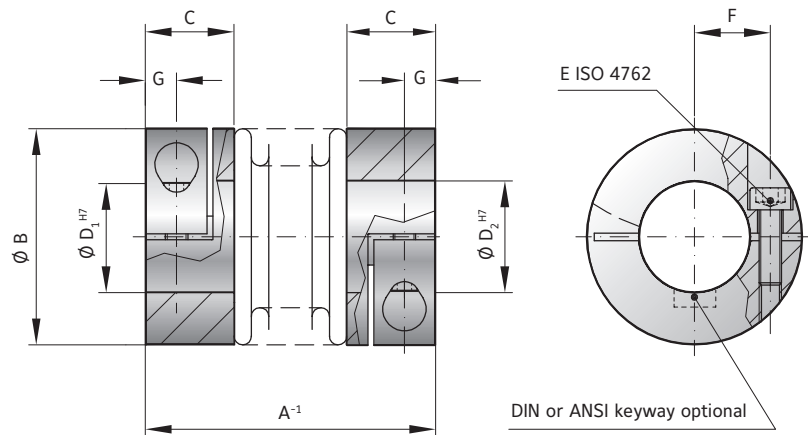
- ▶ for highly dynamic applications
- ▶ easy installation
- ▶ light weight and low moment of inertia

#### DESIGN

Two clamping hubs concentrically mounted to flexible bellows.

#### MATERIAL

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



MINIATURE  
COUPLINGS MK

## 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 $\emptyset$ to $\emptyset$ 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 <sup>2</sup> )	$J_{ges}$	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	1200	1300	1200	7000	5000	9050	8800
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

ORDERING EXAMPLE	MK2	5	25	4.76	5	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. MK2 / 5 / 25 / 4.76 / 5 / XX; XX=finely balanced for 25,000 rpm)



#### PROPERTIES

##### FEATURES

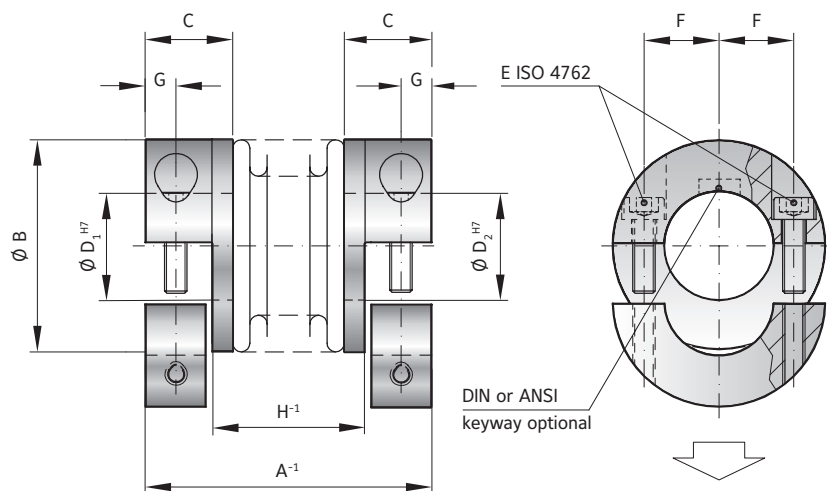
- ▶ mounts laterally
- ▶ allows for pre-alignment of shafts
- ▶ light weight and low moment of inertia

##### DESIGN

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

##### MATERIAL

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



#### MODEL MKH

SIZE	5			10			15			20			45			100		
Rated torque (Nm)	0.5			1.0			1.5			2.0			4.5			10		
Overall length (mm)	25	28	31	27	30	33	30	35	35	40	44	46	54	50	60			
Outside diameter (mm)	15			15			19			25			32			40		
Fit length (mm)	9			9			11			13			16			16		
Inside diameter possible from Ø to Ø H7 (mm)	3-7			3-7			3-8			3-12.7			5-16			5-24		
Fastening screw ISO 4762	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)	4.5			4.5			6			8			10			15		
Distance (mm)	3			3			3.5			4			5			5		
Distance (H)	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 <sup>2</sup> )	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)	280	210	170	510	380	320	750	700	1200	1300	1200	7000	5000	9050	8800			
Axial (mm)	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			

ORDERING EXAMPLE	MKH	20	35	8	9.53	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. MKH / 20 / 35 / 8 / 9.53 / XX; XX=finely balanced for 25,000 rpm)						

# MK3

## WITH EXPANDING SHAFT 0.5 - 10 Nm



### PROPERTIES

#### FEATURES

- ▶ for hollow shaft mounting
- ▶ easy to install
- ▶ light weight and low moment of inertia

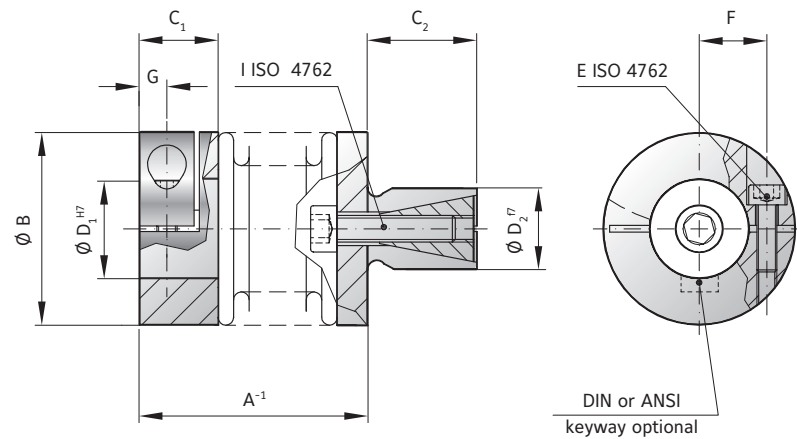
#### MATERIAL

- ▶ **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.



MINIATURE  
COUPLINGS MK

## MODEL MK3

SIZE		5			10			15			20			45		100	
Rated torque (Nm)	$T_{KH}$	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 $\emptyset$ to $\emptyset$ H7 (mm)	$D_1$	3-7			3-7			4-8			4-12.7			5-16		6-24	
Standard shaft possible from $\emptyset$ to $\emptyset$ 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 <sup>2</sup> )	$J_{res.}$	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	1200	1300	1200	7000	5000	9050	8800	
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	

ORDERING EXAMPLE	MK3	20	36	6.35	12	XX
Model	●					Special designation only (e.g. special bore / shaft tolerance).
Size		●				
Overall length mm			●			
Bore D1 H7				●		
Shaft D2 f7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. MK3 / 20 / 36 / 6.35 / 12 / XX; XX=finely balanced for 25,000 rpm)

# MK4

## BLIND MATE WITH RADIAL SET SCREWS

0.5 - 10 Nm

### PROPERTIES

#### FEATURES

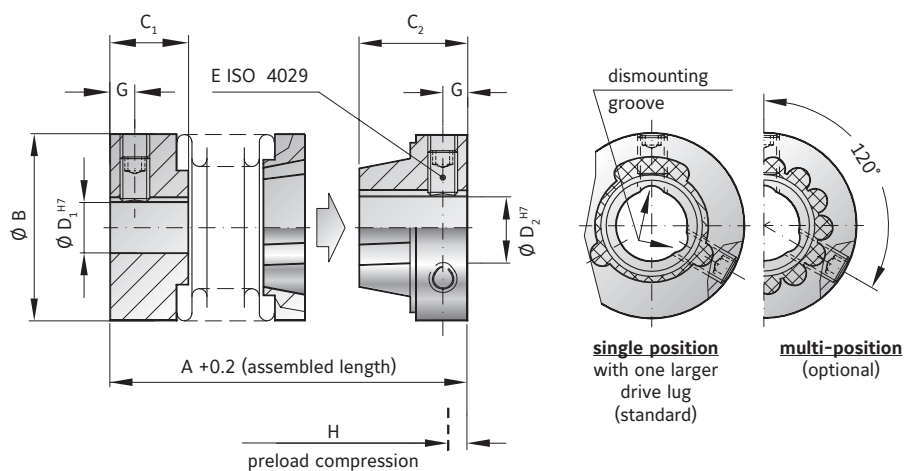
- ▶ easy installation and removal
- ▶ electrically and thermally isolating
- ▶ absolutely backlash free assembly

#### 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 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 $\emptyset$ to $\emptyset$ H7 (mm)	$D_1$	3-9			3-12		3-16			6-22		6-28	
Inside diameter possible from $\emptyset$ to $\emptyset$ 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)	E	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	1200	1300	1200	7000	5000	9050	8800
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

ORDERING EXAMPLE	MK4	20	37	8	9.53	XX
Model	●					
Size		●				
Overall length mm			●			
Bore D1 H7				●		
Bore D2 H7					●	

Special designation only (e.g. special bore tolerance).

For custom features place an XX at the end of the part number and describe the special requirements (e.g. MK4 / 20 / 37 / 8 / 9.53 / XX; XX=finely balanced for 25,000 rpm)

# MK5

## BLIND MATE WITH CLAMPING HUB

0.5 - 10 Nm

### PROPERTIES



#### FEATURES

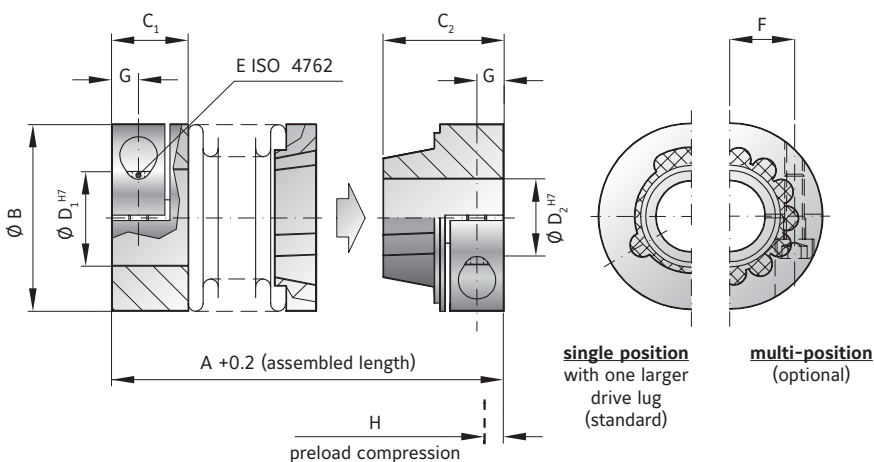
- ▶ easy installation and removal
- ▶ electrically and thermally isolating
- ▶ absolutely backlash free assembly

#### DESIGN

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

#### MATERIAL

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



### MODEL MK5

SIZE	5			15		20			45		100			
Rated torque (Nm)	T <sub>KN</sub>		0.5		1.5		2		4.5		10			
Overall length (inserted) (mm)	A <sup>+0.2</sup>		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 <sub>1</sub>		9			11		13			16		16	
Fit length (mm)	C <sub>2</sub>		12			14		16			20		21.5	
Inside diameter possible from Ø to Ø H7 (mm)	D <sub>1</sub>		3-7			3-8		3-12.7			5-16		5-24	
Inside diameter possible from Ø to Ø H7 (mm)	D <sub>2</sub>		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)	E		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 <sup>2</sup> )	J <sub>ges</sub>		3.0	3.2	3.5	9.0	10	28	30	33	110	120	220	230
Torsional stiffness (Nm/rad)	C <sub>T</sub>		280	210	170	750	700	1200	1300	1200	7000	5000	9050	8800
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)	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)	Max. values		1	1.5	2	1.5	1.5	1.5	1.5	2	1.5	2	1.5	2

\* in addition to maximum pretensioning

ORDERING EXAMPLE	MK5	20	37	6	9.53	XX
Model	●					
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. MK5 / 20 / 37 / 6 / 9.53 / XX; XX=finely balanced for 25,000 rpm)

MINIATURE COUPLINGS MK



# MK6

## BLIND MATE WITH EXPANDING SHAFT 0.5 - 10 Nm

### PROPERTIES



#### FEATURES

- ▶ easy installation and removal
- ▶ solution for mismatched bore / shaft diameters
- ▶ absolutely backlash free assembly

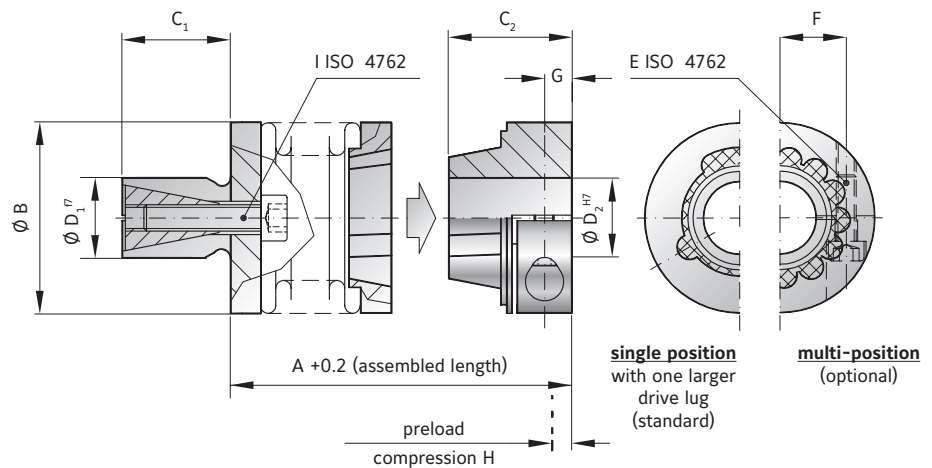
#### MATERIAL

- ▶ **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 $\varnothing f7$	(mm)	$D_1$		8-10		10-14		10-16		14-20		16-24			
Inside diameter possible from $\varnothing$ to $\varnothing H7$	(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)	E		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)	I		1.5		3		4		6.5		11			
Moment of inertia	(gcm <sup>2</sup> )	$J_{ges}$		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	1200	1300	1200	7000	5000	9050	8800
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)	Max. values		1	1.5	2	1.5	1.5	1.5	1.5	2	1.5	2	1.5	2

ORDERING EXAMPLE	MK6	20	28	12	9.53	XX
Model	●					Special designation only (e.g. special bore / shaft tolerance).
Size		●				
Overall length mm			●			
Shaft D1 f7				●		
Bore D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. MK6 / 20 / 28 / 12 / 9.53 / XX; XX=finely balanced for 25,000 rpm)

## WITH CONICAL CLAMPING RING

4.5 - 10 Nm



High speed

### PROPERTIES

#### FEATURES

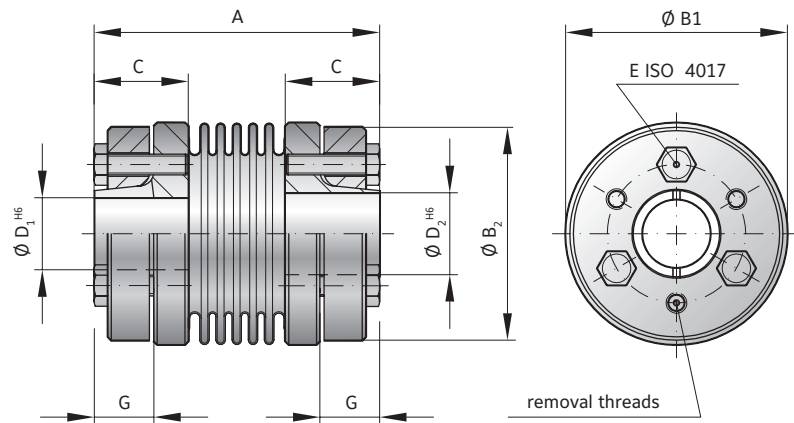
- ▶ for high speeds
- ▶ self centering conical clamping ring design
- ▶ high balancing grade

#### DESIGN

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

#### MATERIAL

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



## MODELL MKS

SIZE			45	100	150	
Rated torque (Nm)	T <sub>KN</sub>		4.5	10	15	
Overall length (mm)	A		42	48	53	
Outside diameter (mm)	B <sub>1</sub>		32	40	49	
Outside diameter of hub (mm)	B <sub>2</sub>		30	38	46	
Fit length (mm)	C		14	16	20	
Inside diameter possible from Ø to Ø H6 (mm)	D <sub>1/2</sub>		6-10	8-14	10-19	
Fastening screw ISO 4017 (mm)			3x M3	4x M3	8x M3	
Tightening torque of the fastening screw (Nm)	E		1.3	1.3	1.3	
Distance (mm)	G		8.5	9.5	13	
Moment of inertia (gcm <sup>2</sup> )	J <sub>ges.</sub>		65	226	561	
Masse (g)			51	103	171	
Torsional stiffness (Nm/rad)	C <sub>r</sub>		7000	9050	23000	
Axial (mm)			0.5	0.75	0.75	
Lateral (mm)	Max. values		0.1	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 \*

ORDERING EXAMPLE	MKS	45	8	9.53	XX
Model	●				
Size		●			
Bore D1 H6			●		
Bore D2 H6				●	
Special designation only (e.g. special bore tolerance).					
For custom features place an XX at the end of the part number and describe the special requirements (e.g. MKS / 45 / 8 / 9.53 / XX; XX=anodized aluminum hubs)					

# BKL/003

## ECOFLEX® WITH CLAMPING HUB

3 Nm



### PROPERTIES

#### FEATURES

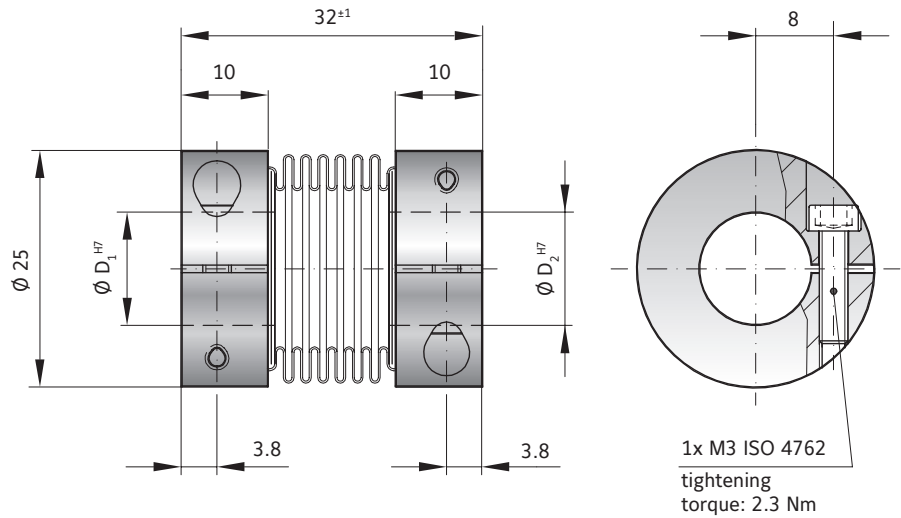
- ▶ economically priced
- ▶ backlash free and torsionally stiff
- ▶ wear free and robust

#### DESIGN

Two clamping hubs, each with a clamping screw.  
Operational from -40 to +200° C

#### MATERIAL

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



## MODEL BKL/003

SIZE			3
Rated torque	(Nm)	$T_{KN}$	3
Standard bore diameters H7	(mm)	$D_1, D_2$	3 to 12.7
Moment of inertia	(gcm <sup>2</sup> )	$J_{ges.}$	20
Approximate weight	(g)		23
Tightening torque of the fastening screws	(Nm)		2.3
Torsional stiffness	(Nm/rad)	$C_T$	994
Axial	(mm)	Max. values	1
Lateral	(mm)		0.2
Angular	(degree)		2

**ECOFLEX®:**  
The low cost alternative for encoders, potentiometers, stepper motors, and small servo drives.

ORDERING EXAMPLE	BKL	003	3	6.35	XX
Model	●				
Size		●			
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. BKL / 003 / 3 / 6.35 / XX; XX=stainless steel hubs)					

# FK1

## MICROFLEX WITH RADIAL SET SCREWS

### 1 Ncm



#### PROPERTIES

##### FEATURES

- ▶ very small dimensions
- ▶ backlash free
- ▶ vibration damping

##### MATERIAL

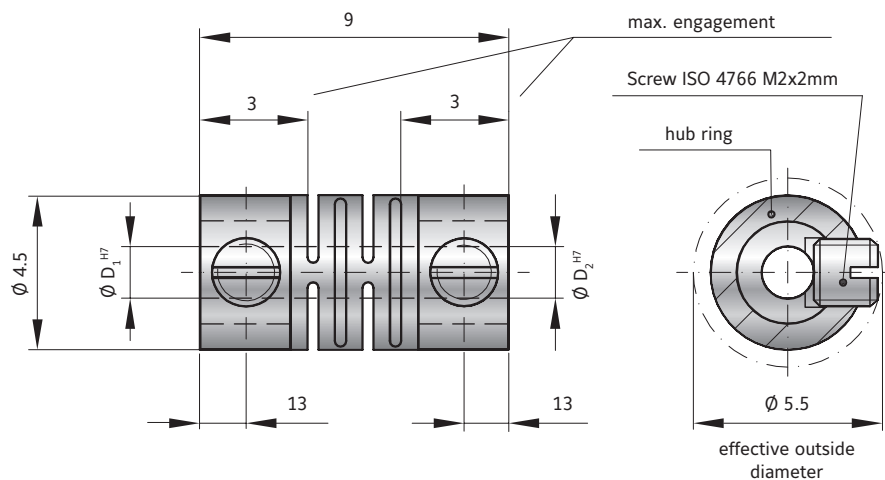
- ▶ **Flex element:** high strength Polyamide
- ▶ **Hubs:** stainless steel

##### DESIGN

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

##### SPECIAL SOLUTION

Effective outside diameter can be reduced to 4.5mm through the use of M2x1.5mm screws.

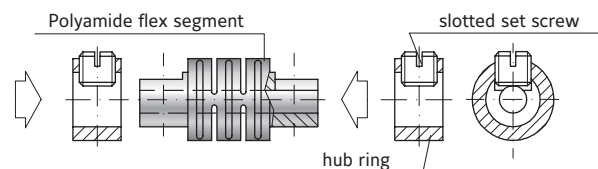


MINIATURE  
COUPLINGS MK

### MODEL FK1/001/9

SIZE			
Rated torque	(Ncm)	$T_{KN}$	1
Standard bore H7	(mm)	$D_1, D_2$	1.5 / 1.5 or 2 / 1.5 additional bore diameters available upon request
Moment of inertia	(gcm <sup>2</sup> )	$J_{ges.}$	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

#### 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.

ORDERING EXAMPLE	FK1	001	9	1.5	1.5	XX
Model	●					Special designation only (e.g. special screw size).
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. FK1 / 001 / 9 / 1.5 / 1.5 / XX; XX=M2x1.5mm screws)

#### DISMOUNTING

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

