BK

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

R+W AUGMENTED REALITY

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

Optional:
EDELSTAHL Rostfrei STAINLESS STEEL

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.

BK

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

MODEL		FEATURES	
BK1		**with simple flange mounting** **from 15 - 10,000 Nm** ▶ for adapting the metal bellows to custom drive components ▶ custom flange patterns available	Page 33
BK2		**with clamping hub** **from 15 - 10,000 Nm** ▶ easy to mount ▶ availalbe in multiple lengths ▶ low moment of inertia	Page 34
BKH		**with split clamping hub** **from 15 - 4,000 Nm** ▶ radial mounting possible ▶ easy to install onto pre-aligned shafts ▶ low moment of inertia	Page 35
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MODEL		FEATURES	
BKM		**torsional stiff with clamping hub from 20 - 1,000 Nm** ▶ high torque density ▶ ultra compact ▶ lowest moment of inertia of all clamping hub designs	Page 38
BKS		**welded with clamping hub from 15 – 500 Nm** ▶ all stainless steel construction ▶ temperatures up to 300°C ▶ easy to mount	Page 39
BK3		**with conical clamping hub from 15 - 10,000 Nm** ▶ high clamping pressure ▶ modern design for removal system ▶ highly reliable	Page 40
SP3		**with external clamping ring from 60 – 10,000 Nm** ▶ highly concentric symmetrical design ▶ very true running to the shaft axis ▶ for high speed applications	Page 41
BK4		**for tapered shafts from 15 - 150 Nm** ▶ standard 1:10 taper with feather keyway ▶ special designs on request	Page 42

BK

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

MODEL | FEATURES

BK5

with clamping hub and blind mate connection from 15 - 1,500 Nm

- backlash free with two piece design
- easy installation and removal
- available as separate components

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BK6

with conical clamping ring and blind mate connection from 15 - 1,500 Nm

- eliminates need for screw access holes
- self centering hubs for highly concentric mounting
- easy installation and removal

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BK7

with expanding shaft from 15 - 300 Nm

- for hollow shaft mounting
- save space and cost
- solution for mismatched shaft/bore diameters

Page 45

BK8

with ISO flange mounting from 50 - 2,600 Nm

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

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BK1

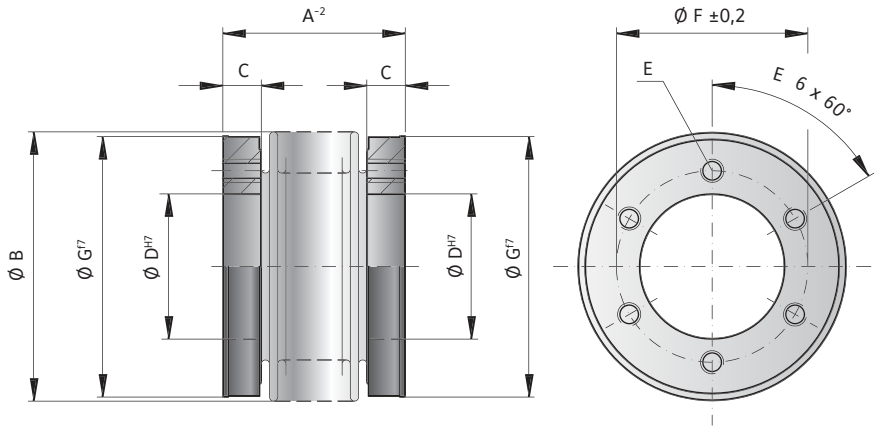
WITH FLANGE MOUNTING
15 - 10,000 Nm

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} 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	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	0.4	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	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	●			Special designation only (e.g. high speed balancing).
Size		●		
Overall length mm			●	

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

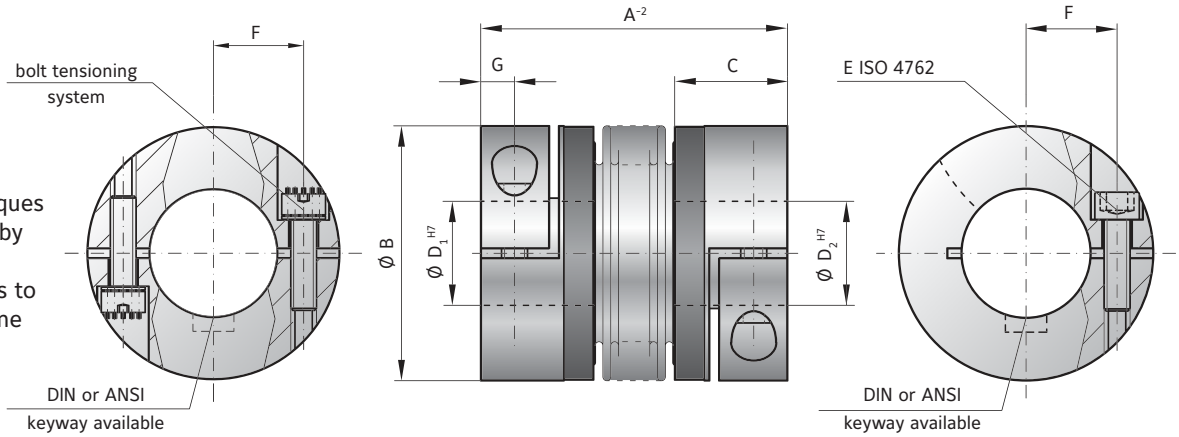
Two clamping hubs concentrically mounted to flexible bellows.
Brief overloads of up to 1.5x the rated torque are acceptable.

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 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	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} 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	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 ± (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	3.5 4.5	3.5	3	3
Lateral ± (mm)	Max. values	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	0.25 0.3 1	0.3 0.35 1	0.35 1	0.35 1	0.4	0.4	0.4
Angular ± (degree)	Max. values	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.

BKH

WITH SPLIT CLAMPING HUB

15 - 4,000 Nm

PROPERTIES

FEATURES

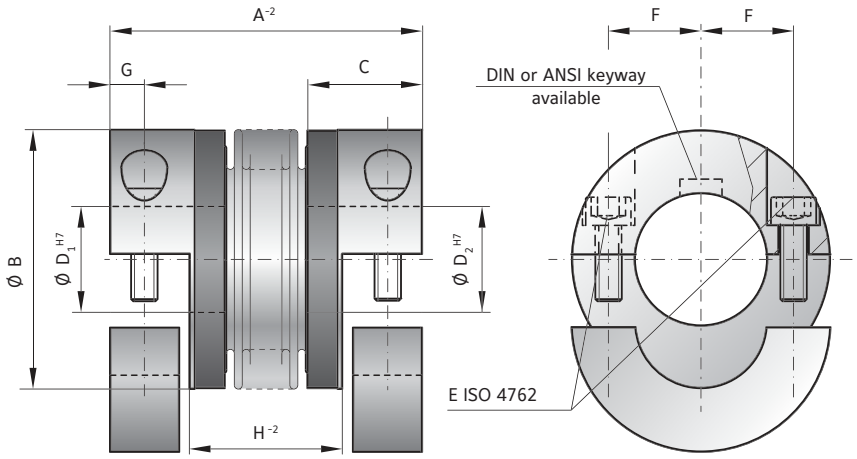
- radial mounting possible
- easy installation onto pre-aligned shafts
- low moment of inertia

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 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	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} 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
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	± (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	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	●					Special designation only (e.g. anodized hubs).
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)

BKL

WITH CLAMPING HUB
2 – 500 Nm

PROPERTIES

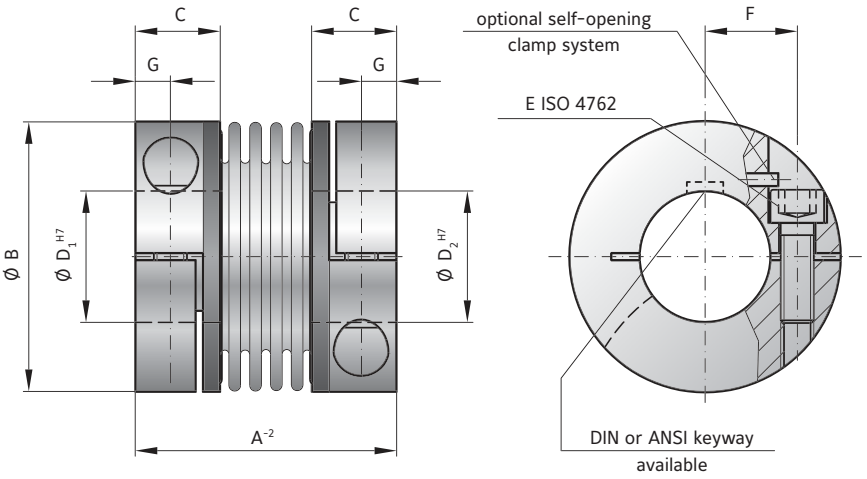
FEATURES
- easy to mount
- light weight and low moment of inertia

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 Ø to Ø 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)	E	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} kgm²)	$J_{ges.}$	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	± (mm)	Max. values	0.5	1	1	1	1	1.5	2	2	2	2.5
Lateral	± (mm)	Max. values	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Angular	± (degree)	Max. values	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	●				Special designation only (e.g. anodized hubs).
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 / 80 / 26 / 22.23 / XX; XX=finely balanced for 25,000 rpm)

BKC

COMPACT DESIGN WITH CLAMPING HUB

15 - 500 Nm

PROPERTIES

FEATURES

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

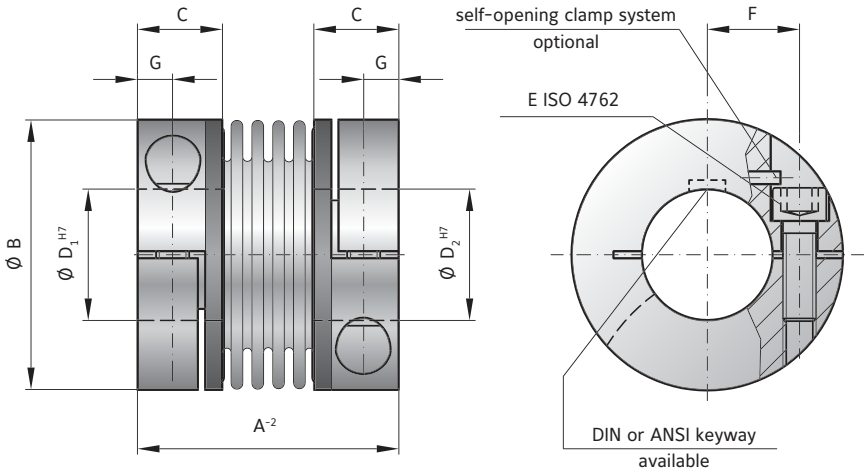
DESIGN

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

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	2940	2200
Speed max. with balancing	(min^{-1})		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)

BKM

TORSIONAL STIFF WITH CLAMPING HUB
20 - 1,000 NM

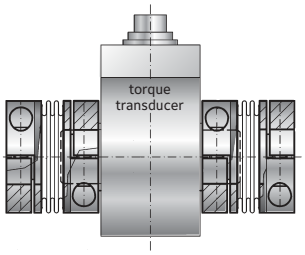
PROPERTIES

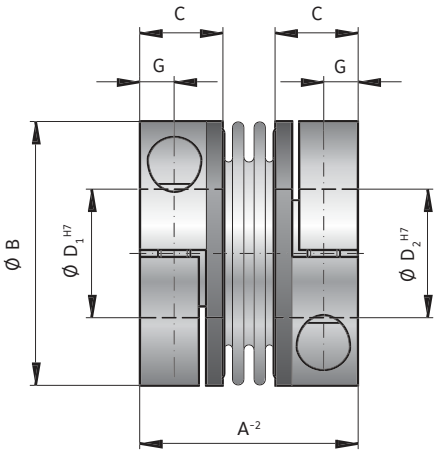
FEATURES
- extremely compact
- high torque density
- high torsional stiffness

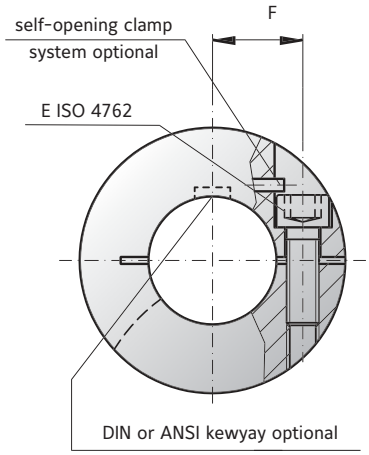
MATERIAL
- **Bellows:** high grade stainless steel
- **Hubs:** see table

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 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

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)

BKS

WELDED WITH CLAMPING HUB

15 – 500 Nm

PROPERTIES

FEATURES

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

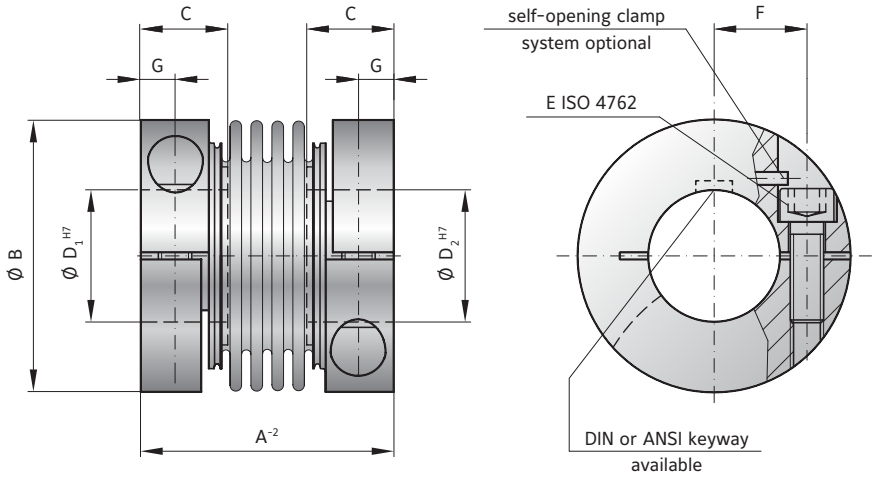
MATERIAL

- **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 Ø to Ø 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} 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	2940	2200
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

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

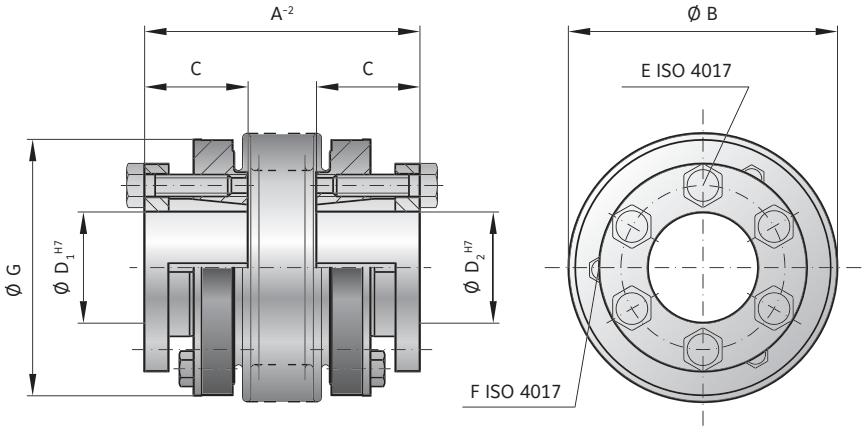
- high clamping pressure
- high torque version
- compact design

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 Ø to Ø 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} 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	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	0.4	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	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

DESIGN

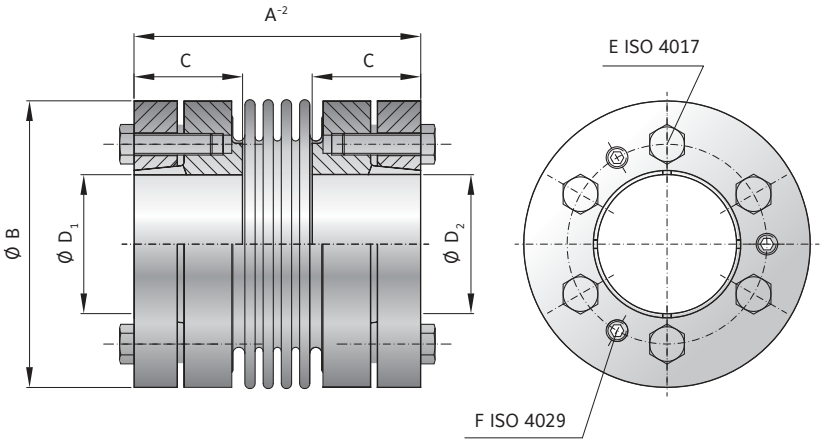
Two precision machined clamping ring hubs mounted concentrically to a flexible bellows. Brief overloads of up to 1.5x the rated torque are acceptable.

MATERIAL

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

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 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	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	± (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_t	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^{-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

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)

BK4

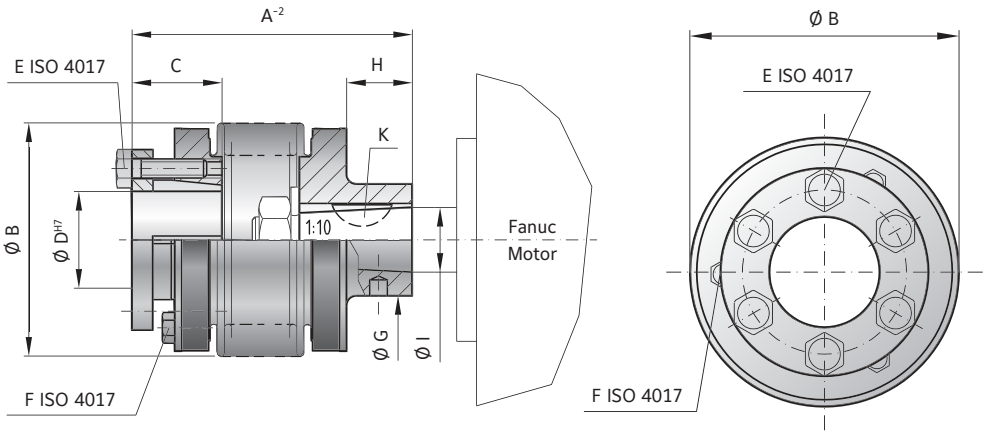
FOR TAPERED SHAFTS
15 - 150 Nm

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 Ø to Ø 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} kgm²)	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	± (mm)	Max. values	1	2	1	2	1.5	2	2	3
Lateral	± (mm)		0.15	0.2	0.2	0.25	0.2	0.25	0.2	0.25
Angular	± (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 Ø (Fanuc-Motor)	(mm)	I	11		16		16		16	
Key width	(mm)	K	4		5		5		5	

ORDERING EXAMPLE	BK4	150	82	20	XX
Model	●				Special designation only (e.g. non-standard bore tolerance)
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

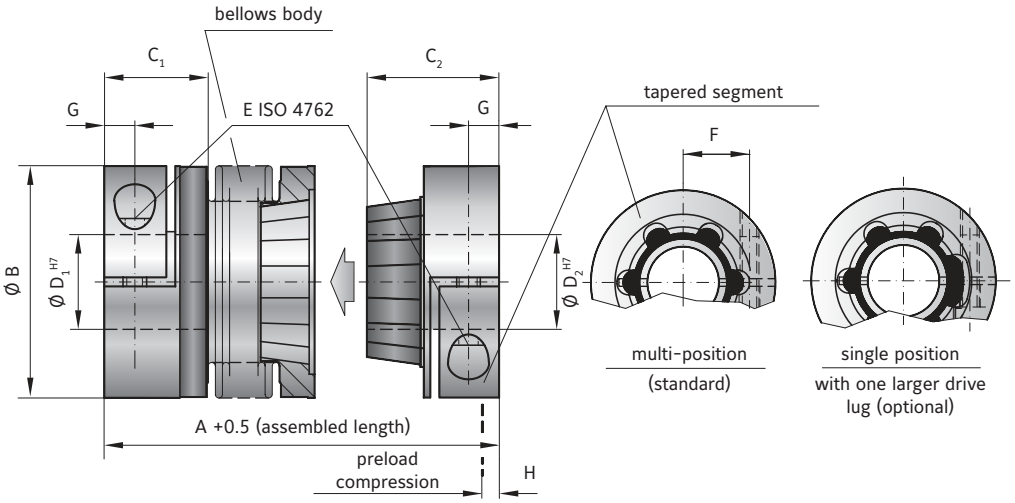
- easy installation and removal
- electrically and thermally isolating
- absolutely backlash free assembly

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 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	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 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 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)	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	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

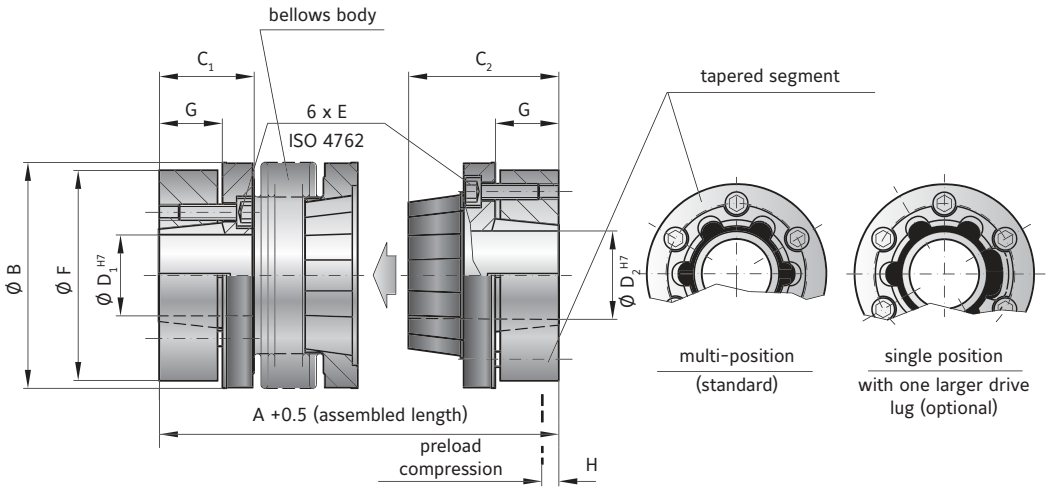
- axial mounting possible
- easy installation and removal
- naturally very well balanced due to self centering clamping ring system
- absolutely backlash free assembly

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	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 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	1200	420	1550	435	3750	1050	2500	840	2000	3600

* 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

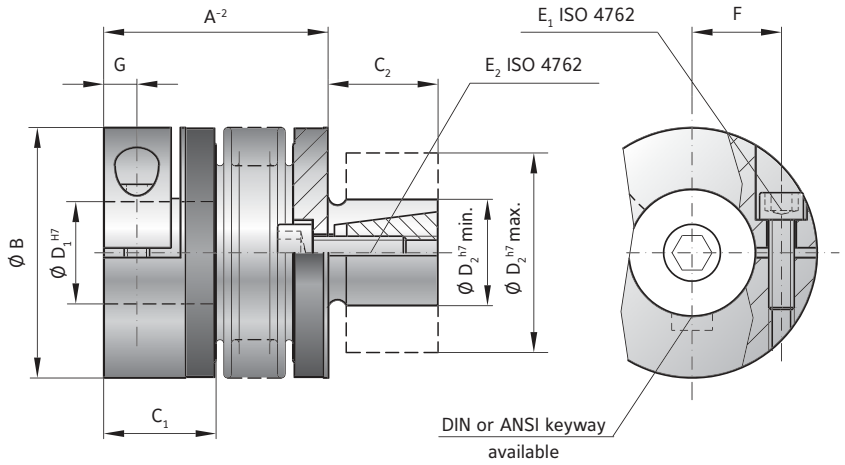
- for hollow shaft mounting
- short design saves installation space
- solution for mismatched shaft / bore

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 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		26-42		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} 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	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

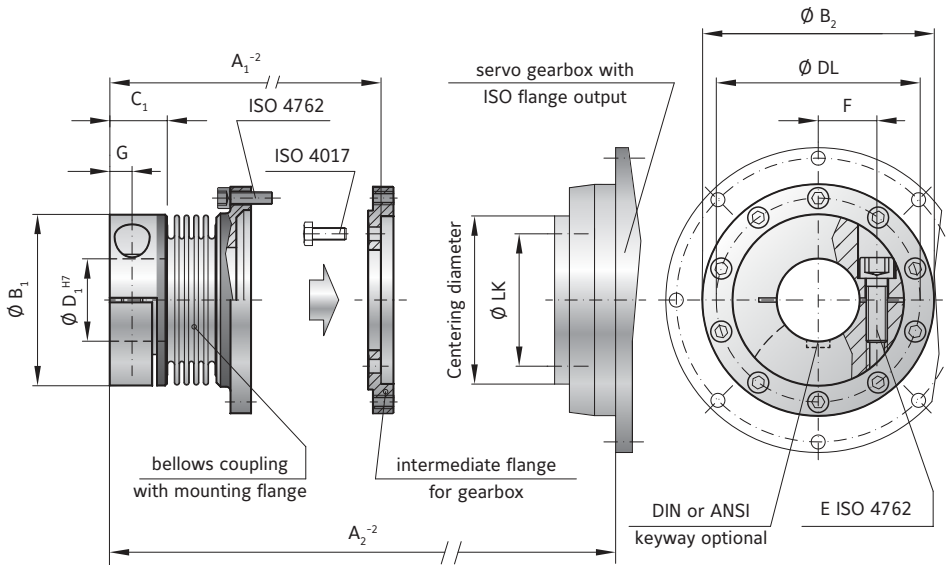
WITH ISO FLANGE CONNECTION
50 – 2,600 Nm

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 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	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 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 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} 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

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

ORDERING EXAMPLE	BK8	60	22.23	67	XX
Model	●				Special designation only (e.g. special bore tolerance).
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)					