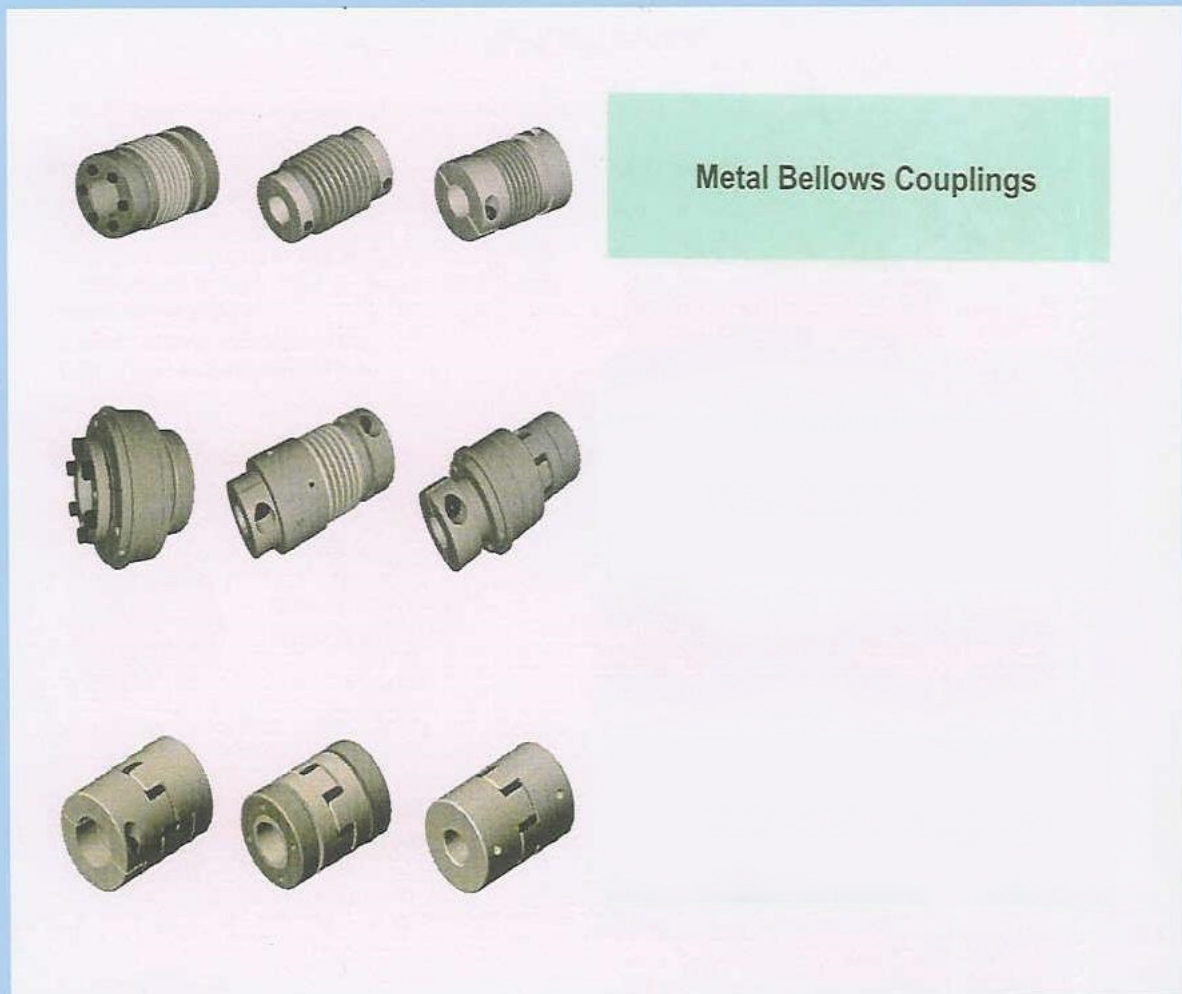




# KBK Couplings

Metal Bellows, Flexible Spider & Adjustable  
Overload-Protection-Clutch Safety Couplings



**Francis and Francis Limited**

The Stables Works, Station Road, Kenley, Surrey, CR8 5JA.

Phone: 020-8668-9792/3

Fax: 020-8668-9793

E-Mail: [sales@powertransmissions.co.uk](mailto:sales@powertransmissions.co.uk)

[Http://www.powertransmissions.co.uk](http://www.powertransmissions.co.uk)

## Metal Bellows couplings

Metal Bellows Couplings are approved components to backlashfree connect two rotating shafts

### Special features

- Backlash - free
- Precise transmission of rotational angle
- Compensation of radial, axial, and angular misalignment
- High torsional stiffness
- Simple assembly and disassembly
- Free of wear and maintenance free

### Applications

- Encoder
- Tachometer and potentiometer
- Measuring equipment and controls
- Machine tools
- Automating systems
- Packaging machines
- Industrial robots and textile machinery

### Metal Bellows Couplings



KB 4 with collet clamp  
Torque 12 - 500 Nm



KB 5 with conical hub  
Torque 12 - 5000 Nm



KB 6 with outer conical hub  
Torque 12 - 5000 Nm



KB 7 for flange mounting  
Torque 12 - 5000 Nm



KB 1 with set screws  
Torque 0,1 - 10 Nm



KB 2 with collet clamp  
Torque 0,1 - 10 Nm

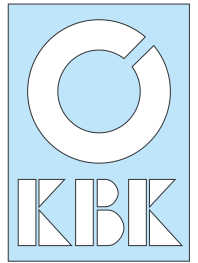


KB 3 with expanding clamp  
Torque 0,4 - 10 Nm

### Miniature Metal Bellows Couplings

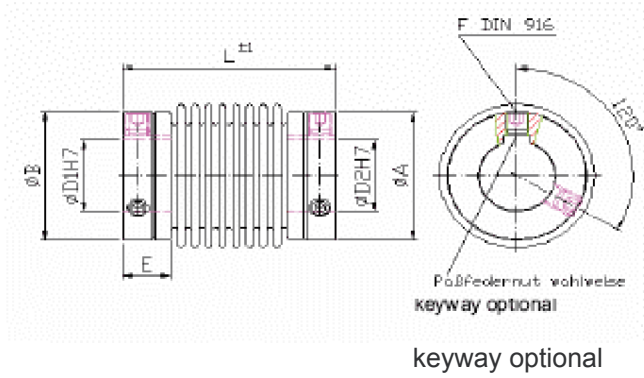
Customized solutions available in the short term

# KB 1 Metal Bellows Couplings



## Advantages:

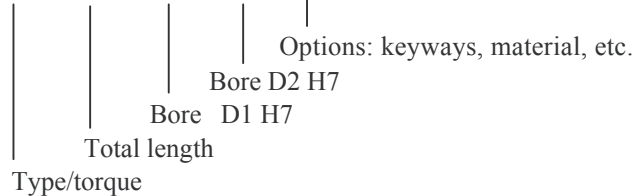
- torsional stiffness
- zero backlash
- small dimensions
- maintenance free
- low inertia



## Technical data

Type	rated torque (Nm) $T_{KN}$	total length (mm) L	outer diameter (mm) A	bore sizes (mm) D 1/D 2	hub diameter (mm) B	thread to edge (mm) C	fitting length (mm) E	clamps F $T_A$ (Nm)	mass (g) m	moment of inertia (gcm <sup>2</sup> ) J	spring stiffness			missalignment		
											torsional (Nm/rad) $C_T$	lateral (N/mm) $C_R$	axial (N/mm) $C_A$	lateral mm	axial mm	angular degrees
KB 1/1	0,1	23	10	1-4 3*	10	2	6	M 3	3	0,45	65	10	14	0,12	0,2	1,2
								0,5								
KB 1/5	0,5	19	15	3-8 6*	13,5	2	6	M3	4	1,3	260	43	13	0,1	0,2	1
		23						0,5	4,5	1,5	200	18	10	0,15	0,3	1,5
		27						5	1,6	160	9	8	0,2	0,4	2	
KB 1/10	1,0	21	15	3-8 6*	13,5	2	6	M3	5,5	1,8	510	74	27	0,1	0,2	1
		25						0,5	6	2	380	31	20	0,15	0,3	1,5
		29						7	2,3	310	16	16	0,2	0,4	2	
KB 1/15	1,5	26	19	3-12 6*	19	3	8	M4	10	6	750	59	15	0,1	0,3	1,5
		30						1,5	12	7,4	700	20	9	0,15	0,4	2
KB 1/20	2,0	22	24	3-14 6/10*	21,5	3	6	M4	11	9,2	1500	67	12	0,15	0,3	1,5
		28						1,5	13	12,6	1300	21	11	0,2	0,4	1,5
		32						15	13,5	1050	11	9	0,25	0,5	2	
KB 1/45	4,5	40	32	6-18 10*	29	4	12	M6	44	68	6500	168	32	0,1	0,3	1,5
		48						3	50	79	4200	41	20	0,2	0,5	2
KB 1/100	10	45	40	6-24 10*	36	4	12	M6	60	150	8100	120	27	0,15	0,4	1,5
		55						3	79	210	6800	29	17	0,3	0,6	2

## ORDER CODE: KB 1/45 - 40 - 10 - 18 - S



**Bores:** \*Standard H7

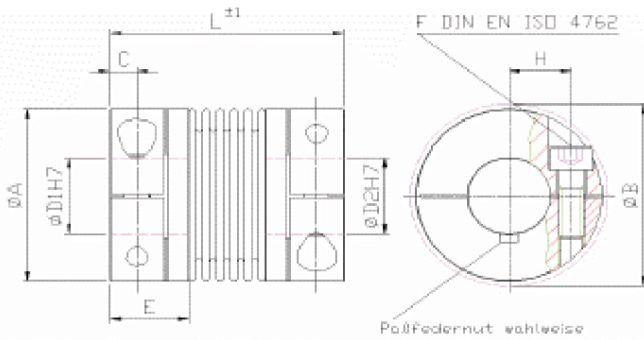
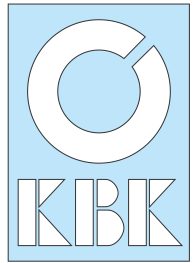
**Temperature resistance:** -20°F to 250°F  
- 30 to 120°C

**Materials:** Bellows made of stainless steel  
Hubs made of AlCuMgPb

**Keyway:** Option acc. to standard DIN 6885

**Option:** stainless steel  
soldered  
welded

# KB 2 METAL BELLOWS COUPLINGS



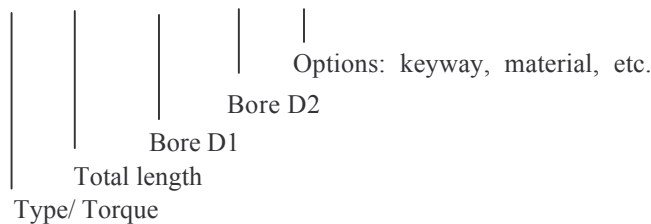
## Advantages:

- torsional stiffness
- zero backlash
- small dimensions
- maintenance free
- low inertia

## Technical data

Type	rated torque (Nm) TKN	total length (mm) L	outer diameter (mm) A	bore sizes (mm) D 1/D 2	clamp to face (mm) H	clamp to centre (mm) C	max diameter (mm) B	length to fit (mm) E	clamps F TA (Nm)	mass (g) m	moment of inertia (gcm <sup>2</sup> ) J	spring stiffness			missalignment		
												torsional (Nm/rad) CT	lateral (N/mm) CR	axial (N/mm) CA	lateral mm	axial mm	angular degrees
KB 2/1	0,1	25	10	1-4 3*	3,4	2	11	7	M1,6	3	0,5	65	10	14	0,12	0,2	1,2
KB 2/5	0,5	21	15,5	3-7 6*	5,2	2,5	17,5	8	M2	7,5	2,7	260	43	13	0,1	0,2	1
		25							0,43	7,8	2,8	200	18	10	0,15	0,3	1,5
		29							8,2	3	160	9	8	0,2	0,4	2	
KB 2/10	1	23	15,5	3-7 6*	5,2	2,5	17,5	8	M2	9	3,1	510	74	27	0,1	0,2	1
		26							0,43	9,3	3,4	380	31	20	0,15	0,3	1,5
		31							10	3,7	310	16	16	0,2	0,4	2	
KB 2/15	1,5	26	20	3-10 6*	7	3	21	9	M2,5	13	8	750	59	15	0,1	0,3	1,5
		31							0,85	15	9,3	700	20	9	0,15	0,4	2
KB 2/20	2	32	25	3-12,7 6/10*	9	3,5	18	11	M3	24	24	1500	67	12	0,15	0,3	1,5
		38							27	27	1300	21	11	0,2	0,4	1,5	
		42							29	29	1050	11	9	0,25	0,5	2	
		47							13,5	34	33	1050	11	9	0,25	0,5	2
KB 2/45	4,5	41	32,5	6-16 10*	12	5	34	14	M4	61	100	6500	168	32	0,1	0,3	1,5
		48							66	109	6500	168	32	0,1	0,3	1,5	
		50							14	67	112	4200	41	20	0,2	0,5	2
		55							15,5	72	121	4200	41	20	0,2	0,5	2
KB 2/100	10	48	40,5	6-22 10*	15,5	5	41,5	14	M4	86	233	8100	120	27	0,15	0,4	1,5
		54							17	101	273	8100	120	27	0,15	0,4	1,5
		57							14	106	290	6800	29	17	0,3	0,6	2
		64							17	120	330	6800	29	17	0,3	0,6	2

## ORDER CODE: KB 2/45 - 55 - 10 - 16 - S



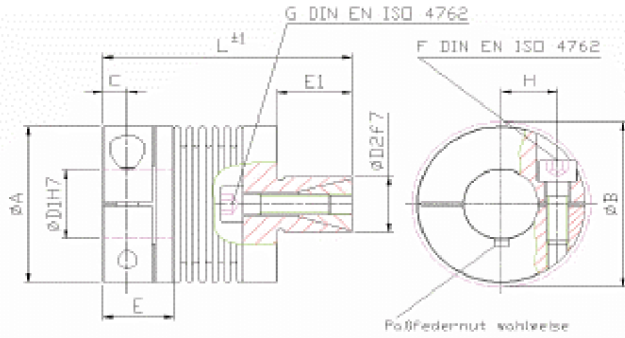
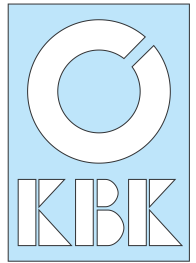
**Bores:** \* Standard H 7

**Temperature:** -20 °F to 250 °F

**Materials:** Hubs made of AlCuMgPb  
Bellows made of stainless steel

**Keyways:** Option acc. to standard DIN 6885

# KB 3 METALL BELLOWS COUPLINGS



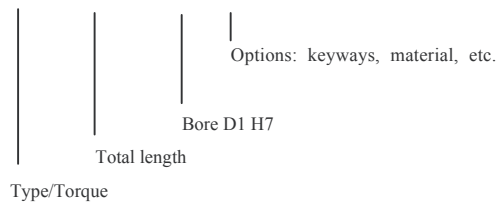
## Advantages:

- torsional stiff
- zero backlash
- small dimensions
- maintenance free
- low inertia

## Technical data

Type	rated torque (Nm) TKN	total length (mm) L	outer dia- meter (mm) A	bore sizes (mm) D1	hub dia- meter (mm) D2	clamp to centre (mm) H	clamp to face (mm) C	max dia- meter (mm) B	length to fit (mm) E	length to fit (mm) E1	torque to tighten clamps (Nm) TA	mass (g) m	inertia (gcm <sup>2</sup> ) I	spring stiffness		missalignment			
														torsional (Nm/rad) CT	lateral (N/mm) CR	axial (N/mm) CA	lateral (mm)	axial (mm)	angular (degrees)
														M2/M3	0,43/1,5	M2/M3	0,43/1,5	M2,5/M4	0,85/3
KB 3/5	0,5	28	16	3-7	8	5,2	2,5	18	8	8	M2/M3	13	2,9	260	43	13	0,1	0,2	1
		32		6*							0,43/1,5	13	3,1	200	18	10	0,2	0,3	1,5
		35		0,43/1,5							14	3,2	160	9	8	0,2	0,4	2	
KB 3/10	1	30	16	3-7	8	5,2	2,5	18	8	8	M2/M3	14	3,3	510	74	27	0,1	0,2	1
		34		6*							0,43/1,5	15	3,4	380	31	20	0,2	0,3	1,5
		38		0,43/1,5							15	3,6	310	16	16	0,2	0,4	2	
KB 3/15	1,5	37	20	3-10	10	7	3	21	9	12	M2,5/M4	27	11	750	59	15	0,1	0,3	1,5
		41		6*							0,85/3	29	12	700	20	9	0,2	0,4	2
KB 3/20	2	40	25	3-12,7	10	9	3,5	27	11	12	M3/M4	40	25	1500	67	12	0,2	0,3	1,5
		46		6/10*							2/4	43	29	1300	21	11	0,2	0,4	1,5
		50		2/4							79	30	1050	11	9	0,3	0,5	2	
KB 3/45	4,5	52	33	6-16	14	12	5	34	14	16	M4/M5	87	98	6500	168	32	0,1	0,3	1,5
		60		10*							3,5/6,5	93	110	4200	41	20	0,2	0,5	2
KB 3/100	10	61	41	6-22	16	15,5	5	42	14	20	M4/M6	135	235	8100	120	27	0,2	0,4	1,5
		71		10*							4,5/11	154	292	6800	29	17	0,3	0,6	2

ORDER CODE: **KB 3/45 - 52 - 10 -**



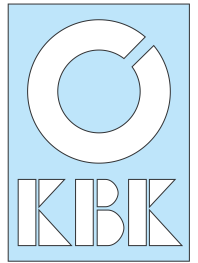
**Bores:** \* **Standard H 7** expanding clamp fits to standard H7 bores

**Materials:** Hubs made of AlCuMgPb  
Bellows made of stainless steel

**Temperature:** -20 °F to 250 °F - 30 to 120°C

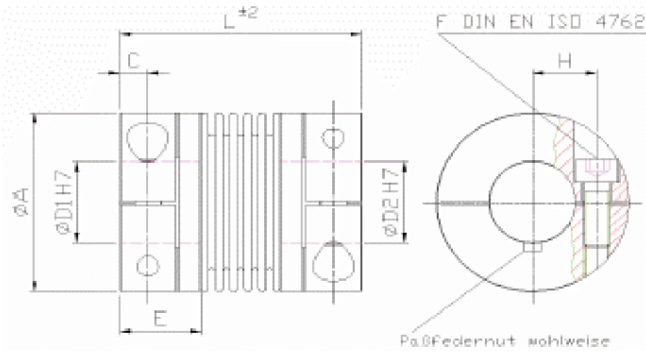
**Keyways:** Option according to standard DIN 6885

# KB 4 METALL BELLOWS COUPLINGS



## Advantages:

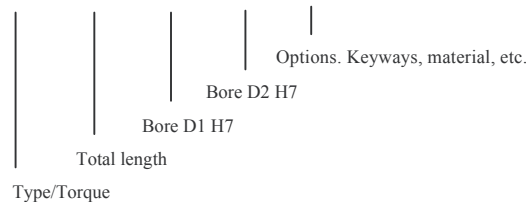
- torsional stiffness
- zero backlash
- small dimensions
- maintenance free
- low inertia



## Technical data

Type	rated torque (Nm) TKN	total length (mm) L	outer dia- meter (mm) A	bore sizes (mm) D1/D2	clamp to centre (mm) H	clamp to face (mm) C	length to fit (mm) E	torque to tighten (Nm) TA	mass (kg) m	inertia x 1/10 <sup>3</sup> (kgm <sup>2</sup> ) J	torsional stiffness x 10 <sup>3</sup> (Nm/rad) CT	lateral spring stiffness (N/mm) CR	axial spring stiffness (N/mm) CA	misalignment		
														mm lateral	mm axial	degrees angular
KB 4/18	18	63	45	10-25.4	17	5,5	19,5	M 5	0,1	0,04	20	205	50	0,2	0,5	1,5
		8						0,15	0,05	15	82	36	0,25	0,5	2	
KB 4/30	30	65	56	10-30	20	7,5	24,5	M 6	0,3	0,15	38	720	50	0,15	0,6	1,5
		15						0,32	0,16	28	225	28	0,25	1	2	
KB 4/60	60	79	66	12-32	23	10	29	M 8	0,5	0,33	75	1150	90	0,15	0,6	1,5
		40						0,6	0,36	50	340	50	0,25	1	2	
KB 4/80	80	91	82	14-42	28	11	33,5	M 10	1,8	2	128	1200	80	0,2	0,5	1,5
		72						1,9	2,1	75	400	50	0,25	0,8	2	
KB 4/150	150	91	82	19-42	28	11	33,5	M 10	1,8	2	155	2020	145	0,2	0,5	1,5
		84						1,9	2,1	105	595	85	0,25	0,5	2	
KB 4/200	200	101	90	22-45	31	13	38	M 12	2,6	3,3	175	2500	145	0,2	0,5	1,5
		125						2,7	3,5	120	460	82	0,25	0,8	2	
KB 4/300	300	105	110	30-60	39	13	38	M 12	3,6	7,3	502	6300	280	0,2	0,5	1,5
		145						3,7	7,5	285	1400	145	0,25	0,8	2	
KB 4/500	500	112	122	35-65	42	15	42	M 12	5,1	12,4	690	7790	100	0,2	0,5	1,5
		145						5,2	12,7	320	970	85	0,25	1	2	

ODER CODE: **KB 4/60 - 90 - 12 - 32 - S**



**Bores:** Standard H 7

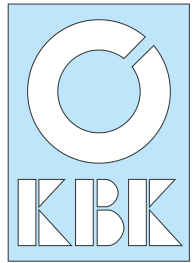
**Temperatures:** -20°F to 250°F  
- 30 to 120°C

**Materials:** Bellows made of stainless steel  
Hubs made of AlCuMgPb  
Hubs larger than size 60 are made of steel

**Keyways:** Option acc.to standard DIN 6885

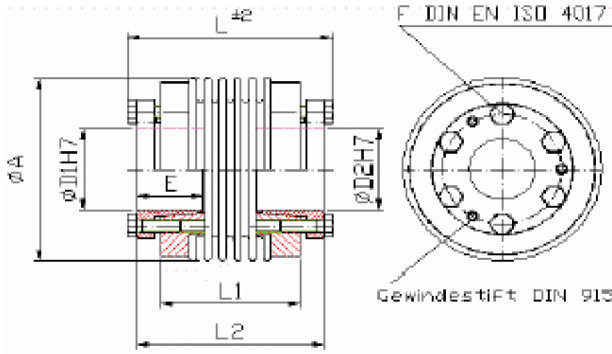
**Options:** Stainless steel soldered or welded

# KB 5 METALL BELLOWS COUPLINGS



## Advantages

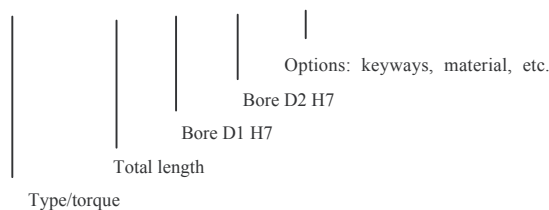
- torsional stiffness
- zero backlash
- high clamping forces
- maintenance free
- low inertia
- high concentricity



## Technical data

Type	rated torque (Nm) TKN	total length (mm) L	outer dia- meter (mm) A	bore sizes (mm) D1 / D2	length to fit (mm) E	length (mm) L1	length (mm) L2	torque to tighten clamps (Nm) F / T <sub>A</sub>	mass ca. (kg) m	inertia $10^{-3}$ (kgm <sup>2</sup> ) J	torsional stiffness $\times 10^3$ Nm/rad C <sub>T</sub>	spring stiffness		misalignment		
												lateral (N/mm) C <sub>R</sub>	axial (N/mm) C <sub>A</sub>	mm		angular °
												radial	axial			
KB 5/18	18	63	47	10-18	20	38	56	4xM5	0,36	0,075	20	205	50	0,2	1	1,5
		71				46	64	4,5	0,37	0,078	15	82	36	0,25	1	2
KB 5/30	30	53	56	12-20	20	30	46	6xM5	0,4	0,11	38	720	50	0,15	1	1,5
		61				38	54	4,5	0,42	0,12	28	225	25	0,25	1	2
KB 5/60	60	62	66	15-25	25	36	54	6xM6	0,77	0,32	75	1150	90	0,15	1	1,5
		73				47	65	8,5	0,79	0,34	50	340	50	0,25	1	2
KB 5/80	80	78	82	20-35	30	50	70	6xM6	1,34	1,05	128	1200	80	0,2	1	1,5
		90				62	82	10	1,39	1,11	75	400	50	0,25	1	2
KB 5/150	150	78	82	20-35	30	50	70	6xM6	1,36	1,15	155	2020	145	0,2	1	1,5
		90				62	82	15	1,41	1,21	105	595	85	0,25	1	2
KB 5/200	200	78	90	20-40	30	50	70	6xM6	1,59	1,39	175	2500	145	0,2	1	1,5
		91				63	83	15	1,66	1,49	120	460	82	0,25	1	2
KB 5/300	300	90	110	25-50	37	56	80	6xM8	3,26	4,66	502	6300	280	0,2	1	1,5
		102				67	91	17	3,32	4,81	285	1400	145	0,25	1	2
KB 5/500	500	101	122	35-55	40	66	90	6xM8	3,78	6,11	690	7790	100	0,2	1	1,5
		112				77	101	25	3,87	6,38	320	970	85	0,25	1	2
KB 5/800	800	170	157	50-70	60	110	150	6xM16 45	9,05	24,05	760	500	185	0,2	1	1,8
KB 5/1400	1400	170	157	50-70	60	110	150	6xM16 80	9,15	24,2	1270	700	275	0,2	1	1,8
KB 5/3000	3000	170	157	55-75	60	110	150	6xM16 115	9,43	25,7	2810	2945	305	0,2	1	1,5
KB 5/5000	5000	206	208	60-90	65	146	186	6xM16 210	19,9	96,7	4810	4915	505	0,2	1	1,5

## ORDER CODE: KB 5/60 - 73 - 20 - 25 - S



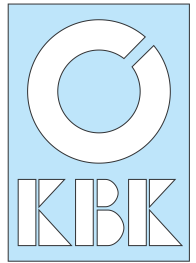
**Bores:** Standard H 7

**Materials:** Hubs made of steel  
Bellows made of stainless steel

**Temperature:** -20°F to 250 °F  
- 30 to 120°C

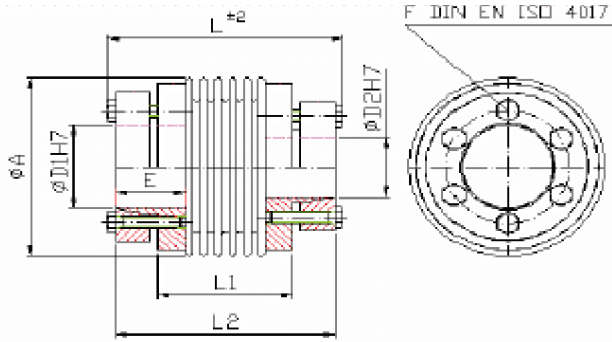
**Option:** stainless steel  
soldered or welded

# KB 6 METAL BELLOWS COUPLINGS



## Advantages

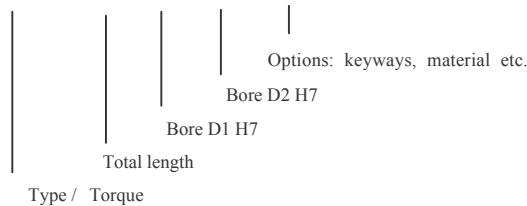
- torsional stiffness
- zero backlash
- high clamping forces
- maintenance free
- low inertia
- very high concentricity



## Technical data

Type	rated torque (Nm) TKN	total length (mm) L	outer dia- meter (mm) A	bore sizes (mm) D1 / D2	length to fit (mm) E	length (mm) L1	length (mm) L2	torque to tighten clamps (Nm) F / T <sub>A</sub>	mass (kg) m	inertia 10 <sup>-3</sup> (kgm <sup>2</sup> ) J	spring stiffness			misalignment		
											torsional x10 <sup>3</sup> Nm/rad C <sub>T</sub>	lateral (N/mm) C <sub>R</sub>	axial (N/mm) C <sub>A</sub>	mm		degr. angular
														lateral	axial	
KB 6/18	18	65	47	8-15	16,5	37	58	4xM5	0,3	0,081	20	205	50	0,2	0,5	1,5
		73				45	66	5,9	0,31	0,084	15	82	36	0,25	0,5	2
KB 6/30	30	60	56	12-20	18	31	53	6xM5	0,37	0,13	38	720	50	0,15	0,6	1,5
		68				39	61	5,9	0,39	0,14	28	225	25	0,25	1	2
KB 6/60	60	78	66	15-32	25	36	71	6xM5	0,76	0,46	75	1150	90	0,15	0,6	1,5
		89				47	82	8,7	0,79	0,49	50	340	50	0,25	1	2
KB 6/80	80	95	82	20-35	31	50	87	6xM6	1,57	1,37	128	1200	80	0,2	0,5	1,5
		107				62	99	15	1,62	1,43	75	400	50	0,25	1	2
KB 6/150	150	95	82	20-35	31	50	87	6xM6	1,59	1,39	155	2020	145	0,2	0,5	1,5
		107				62	99	15	1,64	1,45	105	595	85	0,25	1	2
KB 6/200	200	95	90	20-42	31	50	87	6xM6	1,6	1,64	175	2500	145	0,2	0,5	1,5
		108				63	100	15	1,67	1,74	120	460	82	0,25	1	2
KB 6/300	300	108	110	25-50	34	57	98	6xM8	2,83	4,52	502	6300	280	0,2	0,5	1,5
		120				68	109	25	2,89	4,68	285	1400	145	0,25	1	2
KB 6/500	500	122	122	35-55	41	59	112	6xM8	3,89	7,04	690	7790	100	0,2	0,5	1,5
		134				70	123	36	3,98	7,31	320	970	85	0,25	1	2
KB 6/800	800	184	157	50-70	50	108	169	6xM12 85	8,87	24,9	760	500	185	0,2	0,8	1,8
KB 6/1400	1400	184	157	50-70	50	108	169	6xM12 115	8,92	25,2	1270	700	275	0,2	0,8	1,8
KB 6/3000	3000	202	157	55-75	55	114	187	6xM12 125	10,9	30,9	2810	2945	305	0,2	0,8	1,5
KB 6/5000	5000	245	208	60-90	55	146	225	6xM16 210	27,7	144,4	4810	4915	505	0,2	0,8	1,5

### ORDER CODE: KB 6/60 - 78 - 20 - 32 - S



**Bores:** Standard H7

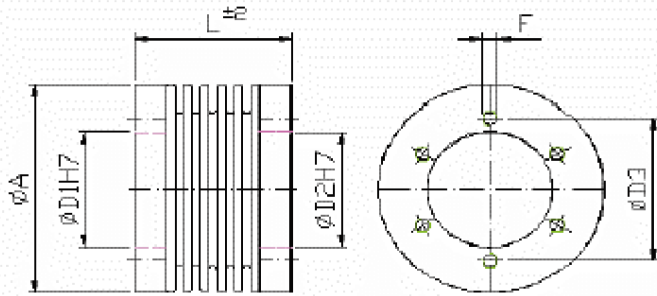
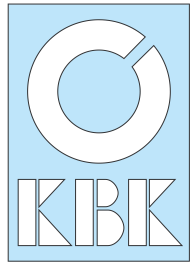
**Temperatures:** -20°F to 250 °F

**Materials:** Hubs made of steel  
Bellows made of stainless steel

**Options:** stainless steel  
soldered, welded



# KB 7 METALL BELLOWS COUPLINGS



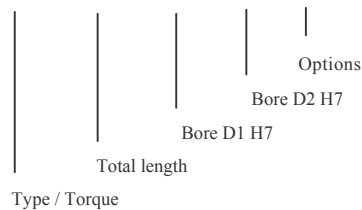
## Advantages

- torsional stiffness
- zero backlash
- small dimensions
- maintenance free
- low inertia

## Technical data

type	rated torque (Nm) TKN	total length (mm) L	outer dia- meter (mm) A	bore sizes (mm) D1 / D2	pitch circle (mm) D 3	tapped hole F	mass ca. (kg) m	inertia 10-3 (kgm2) J	torsional spring stiffness (x103Nm/rad) CT	lateral spring stiffness (N/mm) CR	axial spring stiffness (N/mm) CA	misalignment		
												mm		degrees
												lateral	axial	angular
KB 7/18	18	36 44	47	22	31	M 5	0,128 0,137	0,042 0,045	20 15	205 82	50 36	0,2	0,5	1,5
												0,25	0,5	2
KB 7/30	30	30 38	56	28	37	M 5	0,174 0,192	0,083 0,093	38 28	720 225	50 25	0,15	0,6	1,5
												0,25	1	2
KB 7/60	60	41 51	66	38	46	M 6	0,27 0,29	0,193 0,217	75 50	1150 340	90 50	0,15	0,6	1,5
												0,25	1	2
KB 7/80	80	50 62	82	50	62	M 6	0,65 0,69	0,742 0,805	128 75	1200 400	80 50	0,2	0,5	1,5
												0,25	1	2
KB 7/150	150	50 62	82	50	62	M 6	0,66 0,71	0,75 0,81	155 105	2020 595	145 85	0,2	0,5	1,5
												0,25	1	2
KB 7/200	200	50 63	90	50	62	M 6	0,72 0,78	0,894 0,989	175 120	2500 460	145 82	0,2	0,5	1,5
												0,25	1	2
KB 7/300	300	55 66	110	65	80	M 8	1,18 1,24	2,431 2,588	502 285	6300 1400	280 145	0,2	0,5	1,5
												0,25	1	2
KB 7/500	500	61 72	122	70	94	M 8	1,94 2,03	4,808 5,078	690 320	7790 970	100 85	0,2	0,5	1,5
												0,25	1	2
KB 7/800	800	131	157	85	110	M 16	3,28	11,207	760	500	185	0,2	0,8	1,75
KB 7/1400	1400	131	157	85	110	M 16	3,33	11,421	1270	700	275	0,2	0,8	1,75
KB 7/3000	3000	131	157	85	110	M 16	3,37	11,651	2810	2945	305	0,2	0,8	1,5
KB 7/5000	5000	146	208	100	130	M 16	11,46	65,517	4810	4915	505	0,2	0,8	1,5

**ORDER CODE: KB 7/60 - 47 - 38 - 38 - S**



**Bores:** Standard H 7

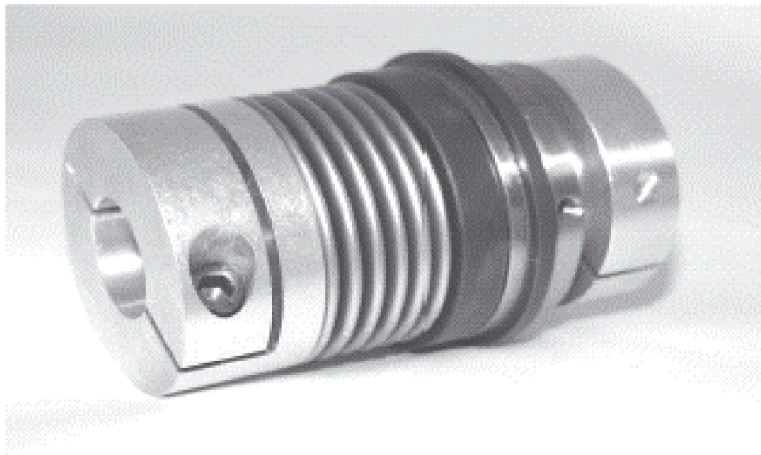
**Temperatures:** - 20 °F to 250°F

**Materials:** Hubs made of steel  
Bellows made of stainless steel

**Options:** stainless steel  
soldered or welded

## Safety Clutches

- Non-wearing and therefore maintenance free
- Minimal residual friction through degressive cup spring
- High-speed cut out time within 2-4 milliseconds
- Exact limitation of torque
- Progressive adjustment of cut out torque
- Compact construction, low moment of inertia, high speeds possible
- Automatic return to an operational state after an overload

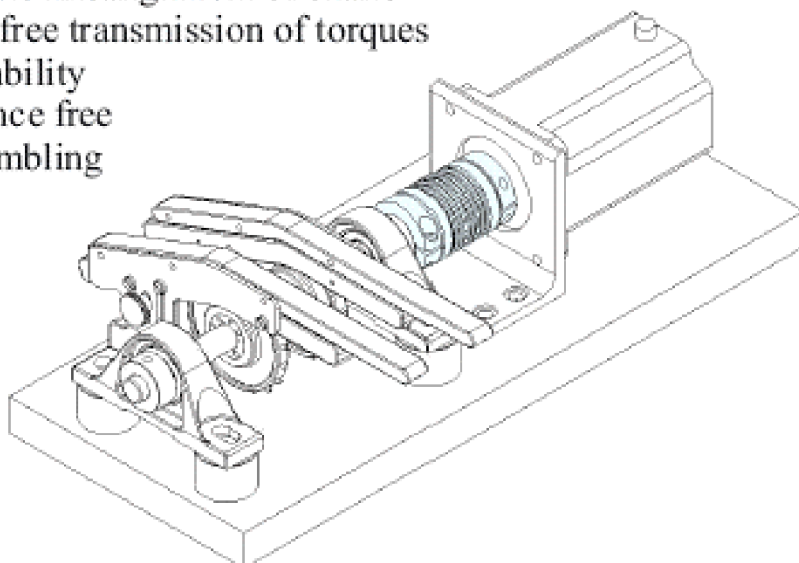


Safety clutch Type KBK/BK - 30

## Metal Bellows Couplings

### Metal Bellows Couplings

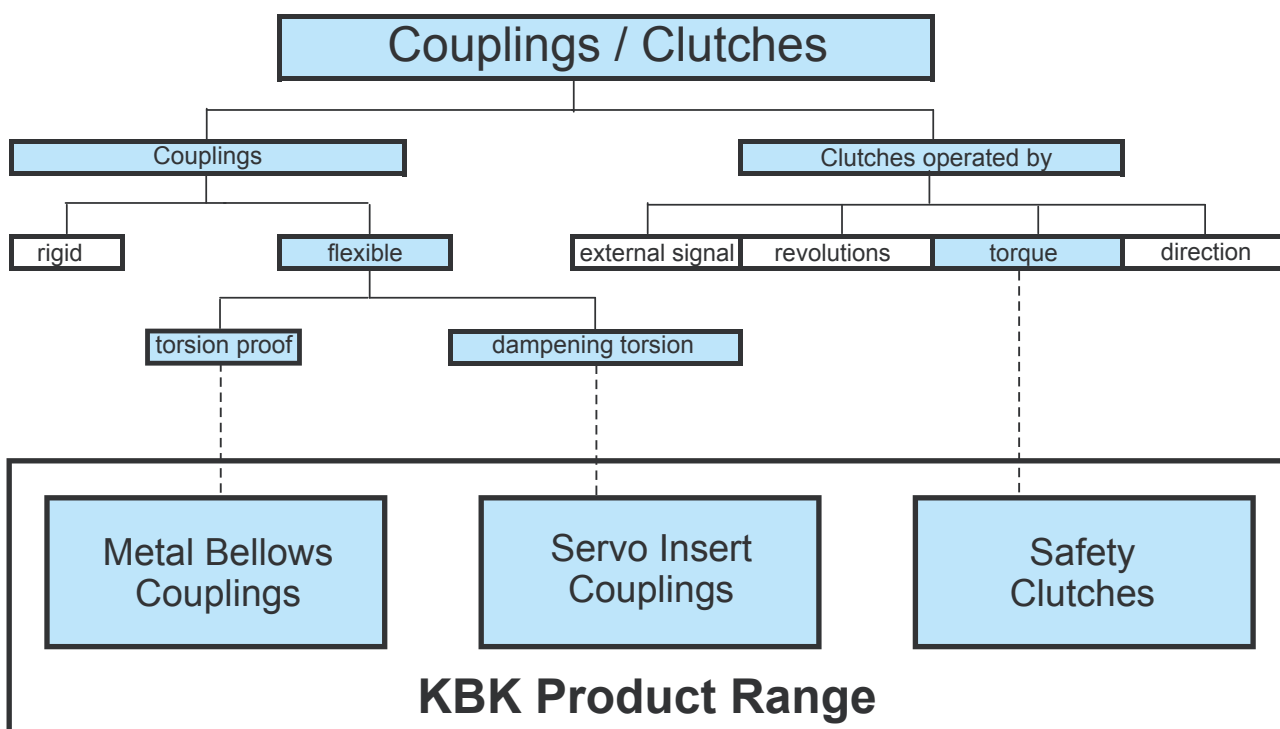
- Compensate misalignment of shafts
- Backlash-free transmission of torques
- Long durability
- Maintenance free
- Easy assembling



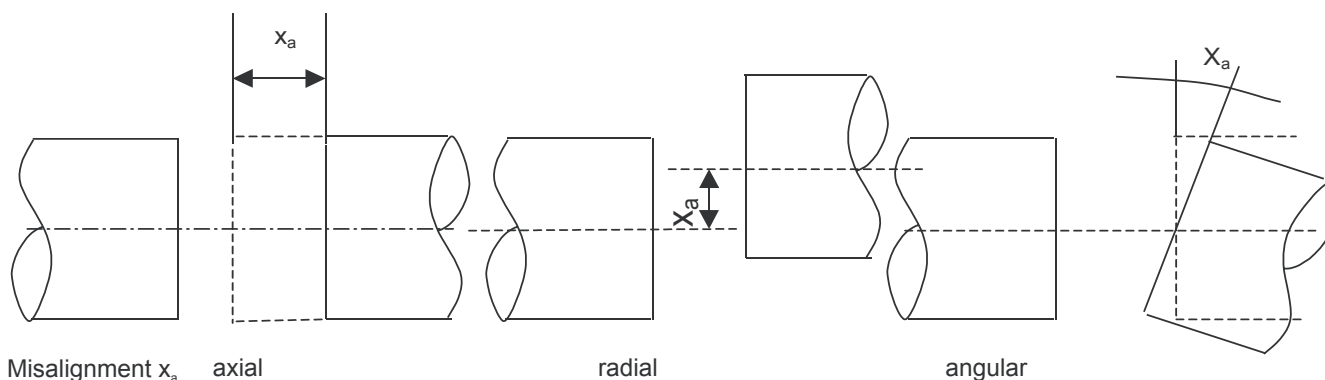
Example for the application of Metal Bellows Couplings

## Product Information

Couplings connect shafts. According to their function, the VDI-Standard 2240 divides couplings and clutches.



Flexible couplings compensate axial, radial and angular misalignment of shafts.



Safety Clutches, operated by a change of torque switch off the drive in case of an overload.