Flexible pin type couplings BOKU-N

KWN 22014
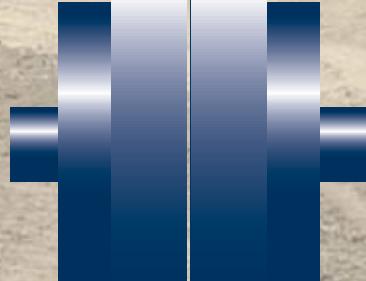
Couplings from Dresden / Germany

By specialists – for specialists

buffer part

buffer and bolt

bolt part
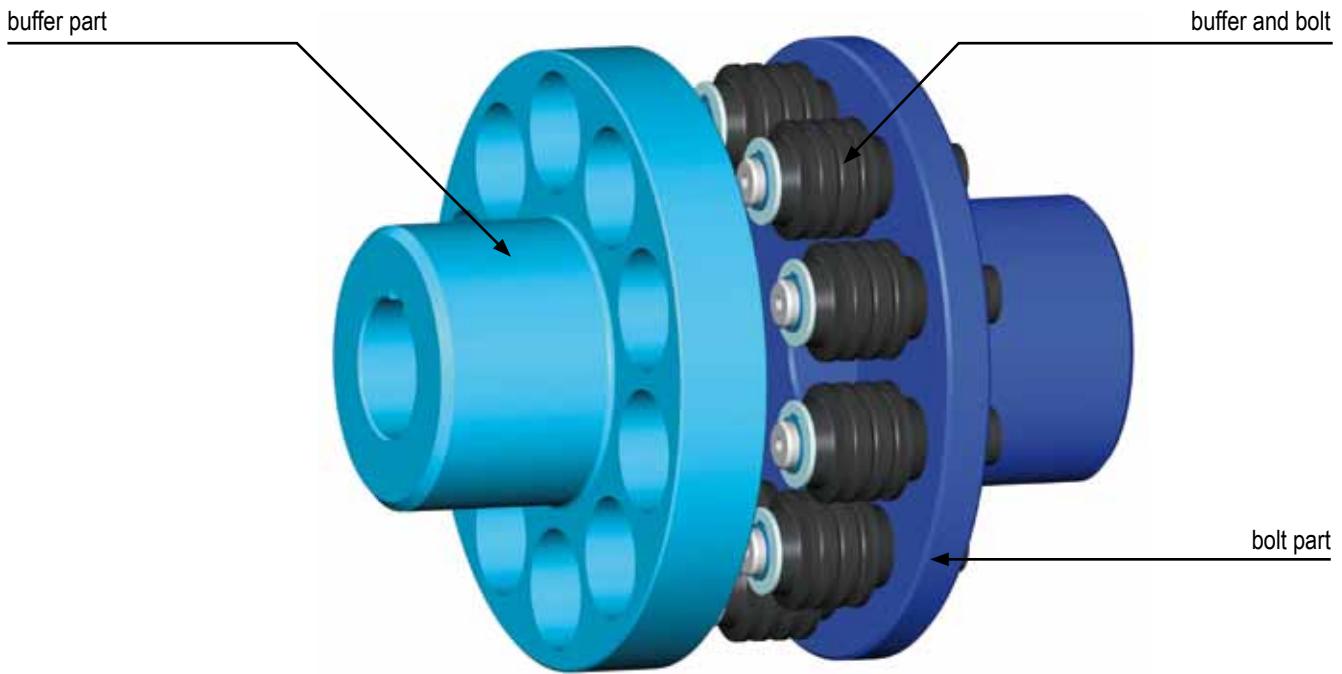
technical characteristics

Flexible pin type couplings are positive-locking, torsionally elastic, flexible shaft couplings with rubbery-elastic transmission elements. They are failsafe and pluggable.

Buffer material and buffer geometry ensure an optimal balancing between resilience and restoring action as well as a good damping behavior.

Flexible pin type couplings are available in various series and designs.

The assignment of driving and drive side is arbitrary. Due to the assembly, the pin coupling has a small circumferential backlash. After the installation of the coupling, it is required to align the drive as precisely as possible because the extent of the displacements have a decisive influence on the service life as well as on the restoring forces and torques.

The permissible values specified on page 12 define the limit for the sum of alignment errors and operational displacements.

The operating temperature range is between -40 °C (-25 °C if constructed of gray cast iron) and, depending on the buffer material, up to +100 °C (+120 °C are possible for a short time).

Flexible pin type couplings exhibit progressive spring characteristics.

Buffer and bolts are interchangeable with those of earlier models. The selection of material for the pin and buffer components depends on the rotational speed. While gray cast iron can be used for low rotational speeds it is required to fall back on steel solutions in case of high speeds. Available as further constructive designs are welded designs. The constructive design (welded part or ductile iron) of steel is done by the manufacturer depending on the size.

design

design A / B   standard design

design P   design with brake drum

design S1   design with brake disk

design S2   design with radially removable brake disk

design H   design with spacer

the following special designs are offered:

- design with axial backlash limitation
- design with safety element
- design for an explosive environment

⟨Ex⟩ II 2G IIB T5   -20 °C ≤ T_a ≤ +50 °C

⟨Ex⟩ II 2D 90 °C   -20 °C ≤ T_a ≤ +50 °C

- design with elastic pin couplings according to KWN 22009
- design backlash-free due to prestress
- design electrically insulating
- design switchable at standstill
- pin removable hydraulically
- low temperature version
- further version upon request

coupling selection

The coupling shall be designed according to DIN 740, sheet 2. In doing so, it is required to dimension the coupling so that the occurring stresses won't exceed the permissible value in any operating condition.

nominal torque: $T_{KN} \geq T_N \cdot s_t$

maximum torque: $T_{Kmax} \geq T_{max} \cdot s_t \cdot s_a$

Here, the temperature factor s_t takes the reduction of the resilience of the coupling buffer in case of higher environmental temperatures into account.

ambient temperature in °C	s_t				
	< 30 °C	< 40 °C	< 60 °C	< 80 °C	< 100 °C
standard element NR-SBR	1,0	1,1	1,3	1,6	-
NBR (Perbunan)	1,0	1,0	1,0	1,2	1,8
PUR	1,0	1,2	1,4	1,8	-

The start-up factor s_a takes an additional stress due to the frequency of torque impulses (starting and braking) into account.

starting frequency/h	< 60	< 120	< 240
start-up factor s_a	1,0	1,2	1,3

In case of stress of the coupling due to a vibratory torque as well as in case of torque impulses and high moments of inertia between drive and output side, you should fall back to a higher calculation procedure.

The specified characteristic values refer to the material steel for the coupling components and the grooved buffer made of NR-SBR with a 75 Shore A hardness. Changes are possible if other materials are used. Our technical staff will help the user with the technically correct design of the coupling and the dimensioning.

[1]   finish bore according to ISO-fit H7, feather key groove according to DIN 6885 sheet 1, fit JS 9

[2]   without feather key groove, pilot bore - free size, „medium" according to DIN ISO 2768

[3]   deviating hub lengths are possible after consulting the manufacturer; please indicate the desired length in brackets

[4]   see „Version/design of the hub bore"

[5]   applicable for d_1, $d_{2\,max}$, in case of smaller bores, we reserve the right to perform an adjustment/adaptation.

[6]   masses and mass moments of inertia are applicable for d_1, $d_{2\,max}$ as well as considering pins and buffers as well as the material steel (St), Masses and mass moments of inertia for the material cast iron (G) approx. 92 %

[7]   use in case of higher rotational speeds upon request

[8]   rotational speeds for St, in case of material (G) see design S1/S2

Technical changes in the sense of progress are reserved. The constructive design may deviate from the illustrations, however, the specified dimensions shall be adhered to.

buffer part   f   e₁   ℙ ff buffer and bolt
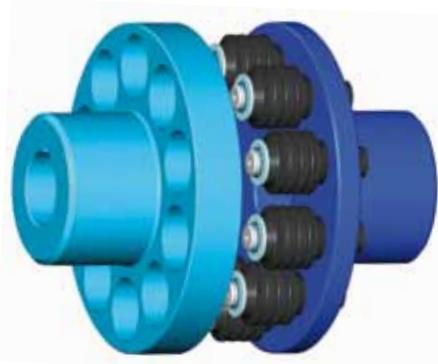
design A: horizontal
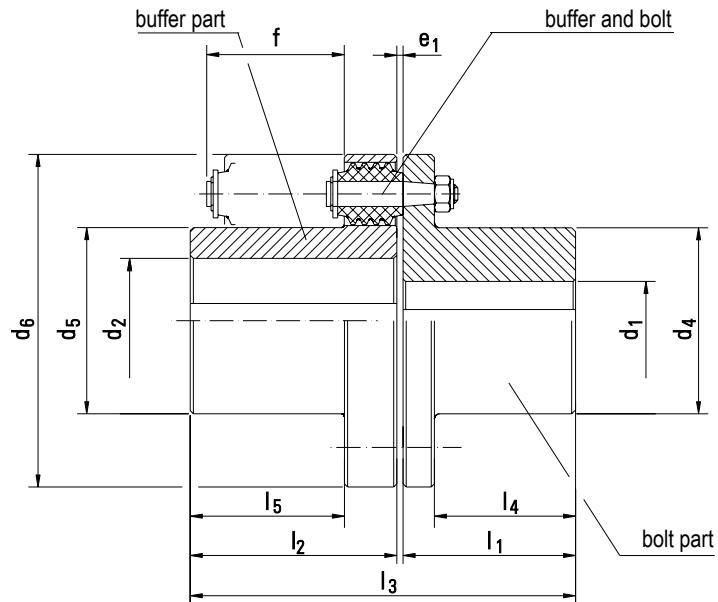
▶ **Ordering example:** BOKU-N-A St 25 - 16v⁴⁾ (x50)³⁾ - 36 H7 (x40)³⁾ - KWN 22014 dy

Designation of an elastic pin coupling of the Design A of the nominal size 25, material steel,
pilot bore d_1 = 16 mm (with hub length l_1 = 50 mm), finish bore d_2 = 36 mm, tolerance zone H7,
without feather key groove in the shortened buffer part (with hub length l_2 = 40 mm), dynamically balanced

Footnotes see page 3.

main dimensions — Table 1

size	pilot bore[2]	min	max d_1, d_2[1] St	max G	d_4[5]	d_5[5]	d_6 h9	l_1	l_2	l_3	l_4	l_5	e_1	tolerance e_1	buffer nominal size	buffer quantity	bolt dismounting measurem. f
4	10	12	32	-	45	45	81	30	30	61	21	17	1,5	±1	6	5	33
6,3	10	12	38	-	53	53	92	30	30	61	21	17	1,5	±1	6	6	33
10	12	16	42	-	59	59	106	40	40	82	30	23	2	±1	8	5	43
16	14	16	45	-	63	63	120	40	40	83	29	19	3	±1	10	5	52
25	16	20	48	-	67	67	124	50	50	103	39	29	3	±1	10	7	52
40	16	20	55	-	77	77	134	50	50	103	39	29	3	±1	10	10	52
63	20	25	65	-	91	91	150	60	60	123	49	39	3	±1	10	12	52
100	25	30	75	-	105	105	186	80	80	164	62	51	3,5	±2	14	9	77
160	25	30	85	-	119	119	212	80	80	164	60	47	4	±2	16	10	85
250	35	40	95	-	133	133	240	110	110	224	90	77	4	±2	16	12	85
400	40	50	105	90	145	145	275	110	110	225	82	66	5	±2	22	10	113
630	45	60	120	100	165	165	320	140	140	285	112	96	5	±2	22	12	113
1 000	55	80	125	110	175	175	380	170	170	347	141	112	7	±2	30	10	146
1 600	65	100	150	135	215	215	440	210	210	427	181	152	7	±2	30	12	146
2 500	80	100	170	150	240	240	510	210	210	431	163	127	11	±4	42	10	208
4 000	120	140	190	170	270	270	630	250	250	518	192	127	18	±4	65	6	292
6 300	120	140	215	190	300	300	660	250	250	518	192	127	18	±4	65	8	292
10 000	140	160	225	200	320	320	770	300	300	618	242	177	18	±4	65	10	292
16 000	160	180	280	245	392	392	910	300	300	618	242	177	18	±4	65	14	292
25 000	180	200	320	280	448	448	1 087	350	350	718	292	227	18	±4	65	17	292
40 000	200	220	360	315	504	504	1 331	350	350	718	292	227	18	±4	65	22	292
63 000	230	250	360	315	504	504	1 606	410	410	838	352	287	18	±4	65	28	292
100 000	240	280	400	350	560	560	1 989	470	470	958	412	347	18	±4	65	35	292

buffer part　f　e₁　buffer and bolt

bolt part
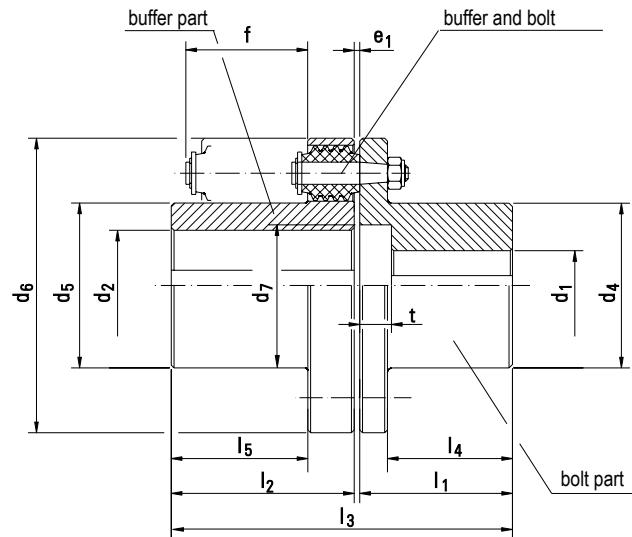
## design B: vertical

For the dimensions d_7 as well as t, we kindly ask for consultation with the manufacturer.

Footnotes see page 3.

| Table 2											characteristic values			
size	speed		torque			torsion angle	dynamic torsional spring stiffness		rel. damping	buffer part		bolt part		
	n_{max} [7] [rpm]		[Nm]			φ [°]	C_{dyn} [kNm/rad]		Ψ [-]	mass	moment of inertia	mass	moment of inertia	
	St	G	T_{KN}	T_{Kmax}	± T_{KW}	at T_{KN}	$0{,}5 \cdot T_{KN}$	at T_{KN}		$m^{6)}$ [kg]	$J^{6)}$ [kgm²]	$m^{6)}$ [kg]	$J^{6)}$ [kgm²]	
4	5 000	-	40	80	10	3	5,3	8,5	ca. 1	0,46	0,00036	0,46	0,00037	
6,3	5 000	-	63	126	16	3	6,7	9,1	ca. 1	0,59	0,00061	0,61	0,00063	
10	5 000	-	100	200	25	3	7,8	9,5	ca. 1	1,1	0,0014	1,1	0,0014	
16	4 500	-	160	320	40	3	15,2	26,3	ca. 1	1,4	0,0025	1,3	0,0023	
25	4 500	-	250	500	63	3	23,2	40,2	ca. 1	1,5	0,0028	1,6	0,0029	
40	4 000	-	400	800	100	3	40,6	70,3	ca. 1	1,6	0,0031	1,9	0,0043	
63	3 500	-	630	1 260	158	3	64,8	112,0	ca. 1	2,4	0,0055	2,8	0,0075	
100	3 350	-	1 000	2 000	250	3	50,1	69,2	ca. 1	4,9	0,0183	5,9	0,0248	
160	3 200	-	1 600	3 200	400	3	95,0	157	ca. 1	6,4	0,0334	7,4	0,0423	
250	3 100	-	2 500	5 000	625	3	157	260	ca. 1	10	0,0596	11	0,0741	
400	3 000	2 000	4 000	8 000	1 000	3	231	395	ca. 1	14	0,114	17	0,167	
630	2 700	1 800	6 300	12 600	1 575	3	380	650	ca. 1	21	0,226	24	0,298	
1 000	2 300	1 500	10 000	20 000	2 500	3	823	1 410	ca. 1	36	0,573	44	0,697	
1 600	2 000	1 300	16 000	32 000	4 000	3	1 460	2 500	ca. 1	59	1,13	69	1,35	
2 500	1 800	1 100	25 000	50 000	6 250	3	1 120	1 310	ca. 1	84	2,41	118	3,55	
4 000	1 400	1 000	40 000	80 000	10 000	3	1 460	1 990	ca. 1	200	9,73	212	9,64	
6 300	1 300	850	63 000	126 000	15 750	3	2 210	3 020	ca. 1	193	10,1	244	12,4	
10 000	1 100	750	100 000	200 000	25 000	3	4 040	5 510	ca. 1	297	19,3	337	22,7	
16 000	1 000	650	160 000	320 000	40 000	3	8 810	12 000	ca. 1	408	33,3	473	75,2	
25 000	900	500	250 000	500 000	62 500	3	18 200	24 800	ca. 1	665	72,2	689	96,1	
40 000	750	430	400 000	800 000	100 000	3	35 000	47 800	ca. 1	1 045	79,9	957	199	
63 000	650	350	630 000	1260 000	157 500	3	68 300	93 200	ca. 1	1 600	395	1 331	404	
100 000	500	280	1 000 000	2 000 000	250 000	3	137 000	188 000	ca. 1	2 610	1 011	1 979	911	
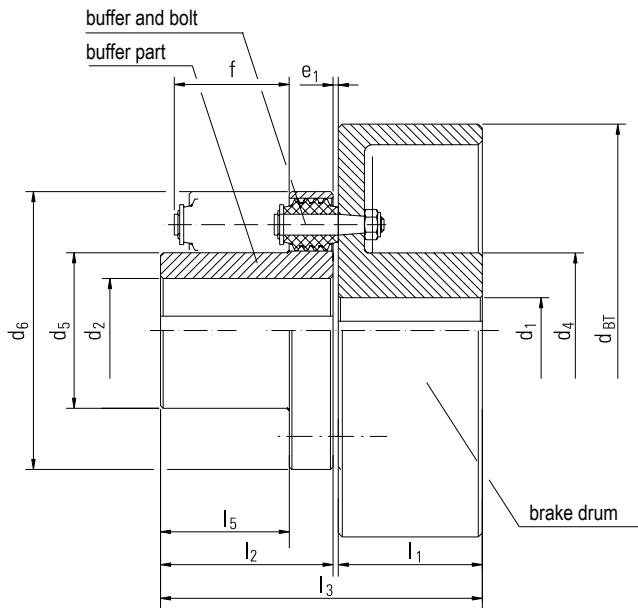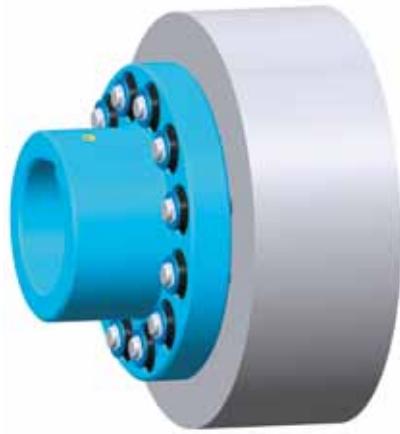
design P: with brake drum

Dimensions and tolerances for e_1 and f correspond to those of the design A
(assigned to the analog nominal size), brake drums with different dimensions upon request.

> **Ordering example: BOKU-N-PSt 40 - 250 - 50 H7 P1[4] (x 95)[3] - 30 H7 P2[4] (x 50)[3] - KWN 22014**
>
> Designation of a flexible pin type coupling type P, nominal size 40, material steel, diameter d_{BT} = 250 mm
> finished bore d_1 = 50 mm, tolerance zone H7, one keyway (hub length l_1 = 95 mm)
> finished bore d_2 = 30 mm, tolerance zone H7, with two keyways (120° staggered) (hub length l_2 = 50 mm)

Footnotes see page 3.

| main dimensions																Table 3
size	pilot bore[2]	min	d_1[1] max		pilot bore[2]	min	d_2[1] max		d_4[5]	d_5[5]	d_6	d_{BT}	l_1	l_2	l_3	l_5
			St	G			St	G			h9					
16	-	16	43	39	14	16	45	-	61	63	120	160	60	40	103	19
16	-	16	45	42	14	16	45	-	66	63	120	200	75	40	118	19
16	-	16	45	42	14	16	45	-	66	63	120	250	95	40	138	19
25	-	20	47	42	16	20	48	-	66	67	124	200	75	50	128	29
25	-	20	50	44	16	20	48	-	70	67	124	250	95	50	148	29
40	-	20	47	42	16	20	55	-	66	77	134	200	75	50	128	29
40	-	20	55	50	16	20	55	-	80	77	134	250	95	50	148	29
40	-	20	55	50	16	20	55	-	80	77	134	315	118	50	171	29
63	-	25	65	55	20	25	65	-	90	91	150	250	95	60	158	39
63	-	25	65	55	20	25	65	-	90	91	150	315	118	60	181	39
100	25	30	75	65	25	30	75	-	106	105	186	250	95	80	178	51
100	25	30	80	70	25	30	75	-	113	105	186	315	118	80	201	51
100	25	30	80	70	25	30	75	-	113	105	186	400	150	80	233	51
160	25	30	95	80	25	30	85	-	132	119	212	315	118	80	202	47
160	25	30	95	80	25	30	85	-	132	119	212	400	150	80	234	47
250	25	40	95	80	35	40	95	-	132	133	240	315	118	110	232	77
250	25	40	95	85	35	40	95	-	136	133	240	400	150	110	264	77
250	30	40	110	95	35	40	95	-	155	133	240	500	190	110	304	77
400	30	50	115	105	40	50	105	90	166	145	275	500	190	110	305	66
630	30	60	115	105	45	60	120	100	166	165	320	500	190	140	335	96
630	30	60	140	120	45	60	120	100	196	165	320	630	236	140	381	96
1 000	30	55	145	130	55	80	125	110	205	175	380	710	265	170	442	112
1 600	30	55	170	150	65	100	150	135	240	215	440	710	265	210	482	152
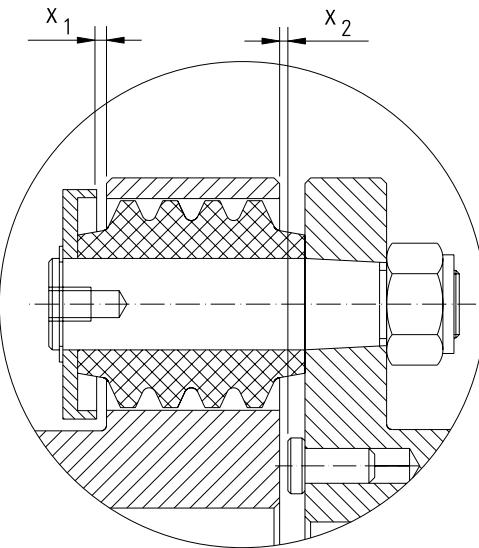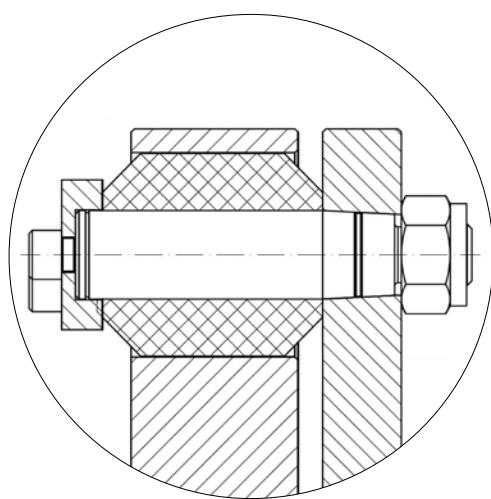
x_1 and x_2 = possible backlash-limiting

buffer prestressed and electrically insulating, bolts hydraulically demountable

backlash-limiting
(also available as a non-sparking design)

All designs are also available with axial backlash limitation. The requested axial play x_1 and x_2 has to be agreed upon with the manufacturer.

Footnotes see page 3.

| Table 4												characteristic values			
size	speed		torque			torsion angle	dynamic torsional spring stiffness		rel. damping	buffer part		brake disk			
	n_{max} [7) [rpm]		[Nm]			φ [°]	C_{dyn} [kNm/rad]		Ψ [-]	mass	moment of inertia	mass	moment of inertia		
	St	G	T_{KN}	T_{Kmax}	$\pm T_{KW}$	at T_{KN}	$0{,}5 \cdot T_{KN}$	at T_{KN}		$m^{6)}$ [kg]	$J^{6)}$ [kgm²]	$m^{6)}$ [kg]	$J^{6)}$ [kgm²]		
16	4 500	3 500	160	320	40	3	15,2	26,3	ca. 1	1,4	0,0025	3,7	0,0153		
16	4 500	2 800	160	320	40	3	15,2	26,3	ca. 1	1,4	0,0025	6,7	0,0442		
16	3 800	2 300	160	320	40	3	15,2	26,3	ca. 1	1,4	0,0025	11	0,114		
25	4 500	2 800	250	500	63	3	23,2	40,2	ca. 1	1,5	0,0028	6,7	0,0442		
25	3 800	2 300	250	500	63	3	23,2	40,2	ca. 1	1,5	0,0028	11	0,115		
40	4 000	2 800	400	800	100	3	40,6	70,3	ca. 1	1,6	0,0031	6,7	0,0448		
40	3 800	2 300	400	800	100	3	40,6	70,3	ca. 1	1,6	0,0031	11	0,115		
40	3 000	1 800	400	800	100	3	40,6	70,3	ca. 1	1,6	0,0031	20	0,367		
63	3 500	2 300	630	1 260	158	3	64,8	112	ca. 1	2,4	0,0055	11	0,118		
63	3 000	1 800	630	1 260	158	3	64,8	112	ca. 1	2,4	0,0055	20	0,368		
100	3 350	2 300	1 000	2 000	250	3	50,1	69,2	ca. 1	4,9	0,0183	14	0,137		
100	3 000	1 800	1 000	2 000	250	3	50,1	69,2	ca. 1	4,9	0,0183	26	0,421		
100	2 500	1 500	1 000	2 000	250	3	50,1	69,2	ca. 1	4,9	0,0183	44	1,22		
160	3 000	1 800	1 600	3 200	400	3	95	157	ca. 1	6,4	0,0334	28	0,447		
160	2 500	1 500	1 600	3 200	400	3	95	157	ca. 1	6,4	0,0334	48	1,28		
250	3 000	1 800	2 500	5 000	625	3	157	260	ca. 1	10	0,0596	27	0,441		
250	2 500	1 500	2 500	5 000	625	3	157	260	ca. 1	10	0,0596	48	1,28		
250	1 800	1 100	2 500	5 000	625	3	157	260	ca. 1	10	0,0596	99	4,18		
400	1 800	1 100	4 000	8 000	1 000	3	231	395	ca. 1	14	0,167	106	4,63		
630	1 800	1 100	6 300	12 600	1 575	3	380	650	ca. 1	21	0,226	104	4,63		
630	1 700	1 000	6 300	12 600	1 575	3	380	650	ca. 1	21	0,226	176	12,1		
1 000	1 400	800	10 000	20 000	2 500	3	823	1 410	ca. 1	36	0,573	237	20,7		
1 600	1 400	800	16 000	32 000	4 000	3	1 460	2 500	ca. 1	59	1,13	226	20,6		
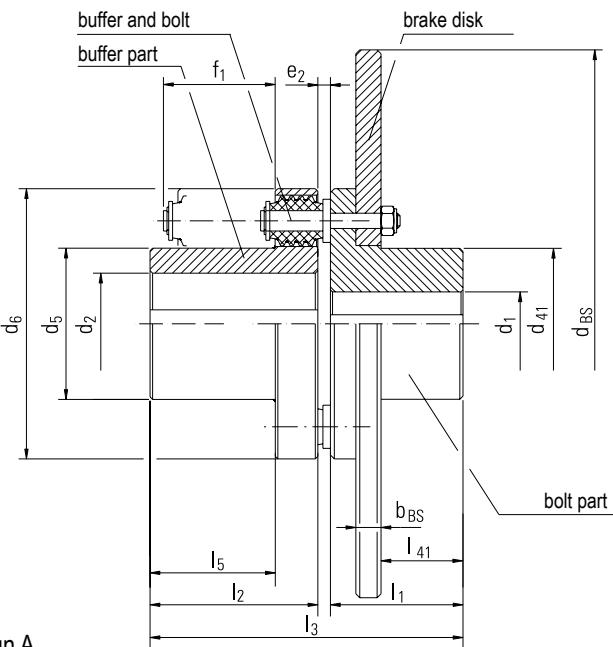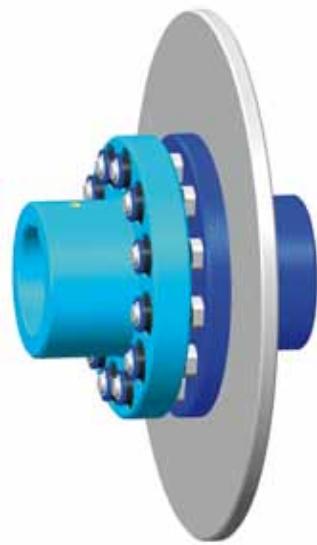
design S1: standard type

Dimensions and tolerances for e_2 and f_1 correspond to those of the Design A
(assigned to the analog nominal size), brake disks with different dimensions upon request.

> **Ordering example: BOKU-N-S1 160 – 630 x 30 – 60 H7P1(x80) – 50v – KWN 22014**
>
> Designation of an flexible pin type coupling type S_1 of nominal size 160, material steel, diameter of brake disk d_{BS} = 630 mm, thickness of the brake disk b_{BS} = 30 mm, finished bore d_1 = 60 mm, tolerance zone H7, with one keyway (hub length l_1 = 80 mm) pilot bore d_2 = 50 mm (hub length l_2 = 80 mm)

Footnotes see page 3.

main dimensions																							Table 5
size	pilot bore [2]	d_1 [1]			pilot bore [2]	d_2 [1]			d_4 [5]	d_{41} [5]	d_5 [5]	d_6	d_{BS}	b_{BS}	e_2	f_1	l_1	l_2	l_3	l_{31}	l_4	l_{41}	l_5
		min	max			min	max																
			St	G			St	G				h9											
16	14	16	42	-	14	16	45	-	63	61	63	120	315	15	7	85	40	40	87	97	35	15	19
16	14	16	42	-	14	16	45	-	63	61	63	120	400	15	7	85	40	40	87	97	35	15	19
16	14	16	42	-	14	16	45	-	63	61	63	120	500	15	7	85	40	40	87	97	35	15	19
25	16	20	45	-	16	20	48	-	67	65	67	124	400	15	7	85	50	50	107	117	45	25	29
25	16	20	45	-	16	20	48	-	67	65	67	124	500	15	7	85	50	50	107	117	45	25	29
40	16	20	52	-	16	20	55	-	77	75	77	134	400	15	7	85	50	50	107	117	45	25	29
40	16	20	52	-	16	20	55	-	77	75	77	134	500	15	7	85	50	50	107	117	45	25	29
40	16	20	52	-	16	20	55	-	77	75	77	134	630	15	7	85	50	50	107	117	45	25	29
63	20	25	63	-	20	25	65	-	91	89	91	150	500	30	7	85	60	60	127	152	55	15	39
63	20	25	63	-	20	25	65	-	91	89	91	150	630	30	7	85	60	60	127	152	55	15	39
100	25	30	73	-	25	30	75	-	105	103	105	186	500	30	12,5	101	80	80	172,5	192,5	70	35	51
100	25	30	73	-	25	30	75	-	105	103	105	186	630	30	12,5	101	80	80	172,5	192,5	70	35	51
100	25	30	73	-	25	30	75	-	105	103	105	186	800	30	12,5	101	80	80	172,5	192,5	70	35	51
160	25	30	83	-	25	30	85	-	119	117	119	212	630	30	14	110	80	80	174	194	70	35	47
160	25	30	83	-	25	30	85	-	119	117	119	212	800	30	14	110	80	80	174	194	70	35	47
250	35	40	95	-	35	40	95	-	133	131	133	240	500	30	14	110	110	110	234	254	100	65	77
250	35	40	95	-	35	40	95	-	133	131	133	240	630	30	14	110	110	110	234	254	100	65	77
250	35	40	95	-	35	40	95	-	133	131	133	240	800	30	14	110	110	110	234	254	100	65	77
400	40	50	105	90	40	50	105	90	145	143	145	275	630	30	20	136	110	110	240	260	100	60	66
630	45	60	120	100	45	60	120	100	165	163	165	320	630	30	20	136	140	140	300	320	130	90	96
630	45	60	120	100	45	60	120	100	165	163	165	320	710	30	20	136	140	140	300	320	130	90	96
630	45	60	120	100	45	60	120	100	165	163	165	320	800	30	20	136	140	140	300	320	130	90	96
1 000	55	80	125	110	55	80	125	110	175	173	175	380	800	30	22	162	170	170	362	382	160	120	112
1 600	65	100	150	135	65	100	150	135	215	213	215	440	1 000	30	22	162	210	210	442	457	195	160	152
2 500	80	100	170	150	80	100	170	150	240	238	240	510	1 250	42	26	202	210	210	446	473	195	143	127
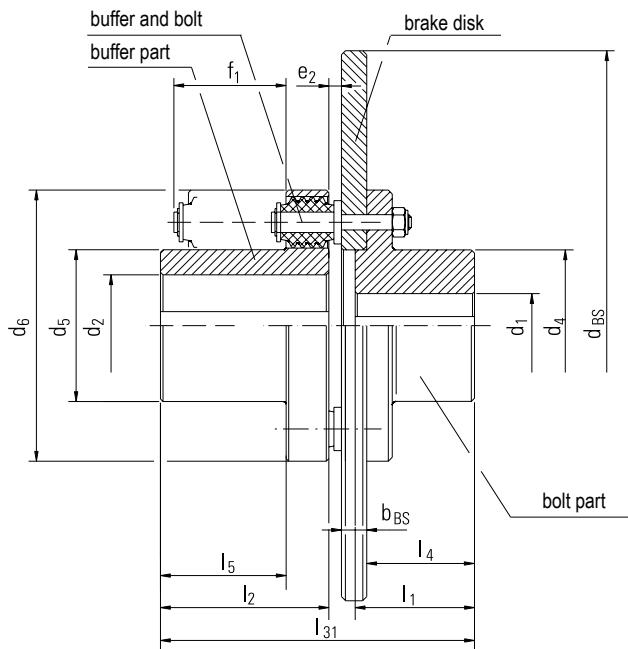
**design S2: design with radial dismountable brake disk**

Dimensions and tolerances for e_2 and f_1 correspond to those of the Design A
(assigned to the analog nominal size), brake disks with different dimensions upon request.

▶ **Ordering example:** **BOKU-N-S2 250 – 630 x 30 – 95 H7P1(x110) – 95 H7P1(x110) dy – KWN 22014**

Designation of an flexible pin type coupling type S_2 of size 250, material steel, diameter of brake disk d_{BS} = 630 mm, thickness of the brake disk b_{BS} = 30 mm, finished bore d_1 = 95 mm, tolerance zone H7, with one keyway (hub length l_1 = 110 mm), finished bore d_2 = 95 mm, tolerance field H7, with one keyway (hub length l_1 = 110 mm), dynamically balanced

Footnotes see page 3.

Table 6										characteristic values			
size	speed n_{max} [7] [rpm]		torque [Nm]			torsion angle φ [°]	dynamic torsional spring stiffness C_{dyn} [kNm/rad]		rel. damping Ψ [-]	buffer part		bolt part / brake disk	
	St	G	T_{KN}	T_{Kmax}	$\pm T_{KW}$	at T_{KN}	$0{,}5 \cdot T_{KN}$	at T_{KN}		mass $m^{6)}$ [kg]	moment of inertia $J^{6)}$ [kgm^2]	mass $m^{6)}$ [kg]	moment of inertia $J^{6)}$ [kgm^2]
16	4 500	-	160	320	40	3	15,2	26,3	ca. 1	1,4	0,0025	9,7	0,121
16	4 500	-	160	320	40	3	15,2	26,3	ca. 1	1,4	0,0025	15	0,304
16	4 500	-	160	320	40	3	15,2	26,3	ca. 1	1,4	0,0025	24	0,722
25	4 500	-	250	500	63	3	23,2	40,2	ca. 1	1,5	0,0028	15	0,297
25	4 500	-	250	500	63	3	23,2	40,2	ca. 1	1,5	0,0028	24	0,721
40	4 000	-	400	800	100	3	40,6	70,3	ca. 1	1,6	0,0031	16	0,298
40	4 000	-	400	800	100	3	40,6	70,3	ca. 1	1,6	0,0031	24	0,721
40	4 000	-	400	800	100	3	40,6	70,3	ca. 1	1,6	0,0031	38	1,82
63	3 500	-	630	1 260	158	3	64,8	112	ca. 1	2,4	0,0055	48	1,45
63	3 500	-	630	1 260	158	3	64,8	112	ca. 1	2,4	0,0055	75	3,71
100	3 350	-	1 000	2 000	250	3	50,1	69,2	ca. 1	4,9	0,0183	58	1,48
100	3 350	-	1 000	2 000	250	3	50,1	69,2	ca. 1	4,9	0,0183	85	3,68
100	3 350	-	1 000	2 000	250	3	50,1	69,2	ca. 1	4,9	0,0183	130	9,48
160	3 200	-	1 600	3 200	400	3	95,0	157	ca. 1	6,4	0,0334	80	3,71
160	3 200	-	1 600	3 200	400	3	95,0	157	ca. 1	6,4	0,0334	125	9,51
250	3 100	-	2 500	5 000	625	3	157	260	ca. 1	10	0,0596	67	2,35
250	2 500	-	2 500	5 000	625	3	157	260	ca. 1	10	0,0596	95	4,57
250	1 800	-	2 500	5 000	625	3	157	260	ca. 1	10	0,0596	143	10
400	3 000	2 000	4 000	8 000	1 000	3	231	395	ca. 1	14	0,167	87	3,81
630	2 700	1 800	6 300	12 600	1 575	3	380	650	ca. 1	21	0,226	95	3,93
630	2 700	1 800	6 300	12 600	1 575	3	380	650	ca. 1	21	0,226	115	6,21
630	2 700	1 800	6 300	12 600	1 575	3	380	650	ca. 1	21	0,226	140	9,76
1 000	2 300	1 500	10 000	20 000	2 500	3	823	1 410	ca. 1	36	0,573	155	10,2
1 600	2 000	1 300	16 000	32 000	4 000	3	1 460	2 500	ca. 1	59	1,13	316	34,5
2 500	1 800	1 100	25 000	50 000	6 250	3	1 120	1 310	ca. 1	84	2,41	488	112
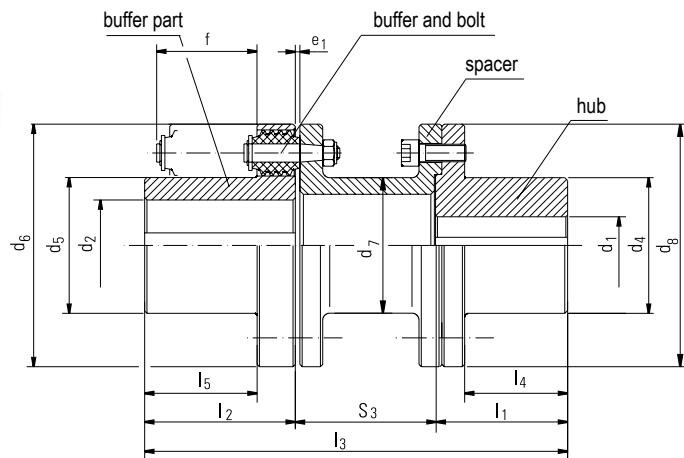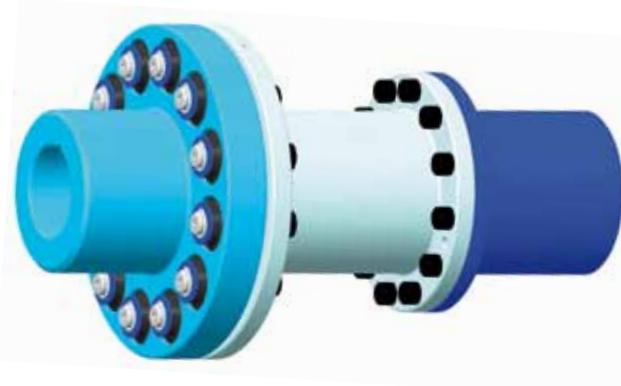
design H: with spacer

Dimensions and tolerances for e_1 and f correspond to those of the design A (assigned to the analog nominal size), different dimensions upon request.

▶ **Ordering example: BOKU-N-H St 100 - 250 - 25v[4] (x80)[3] - 50 H7P1 (x80)[3] - KWN 22014**

Designation of a flexible pin type coupling type H, size 100, material steel, with spacer s_3 = 250 mm, pilot bore d_1 = 25 mm (hub length l_1 = 80 mm) and finished bore d_2 = 50 mm, tolerance zone H7, with keyway (hub length l_2 = 80 mm).

Spacers with other dimensions are available on request.   Dimensions f see under corresponding nominal size in type A

main dimensions																	Table 7
size	pilot bore [2]	d_1, d_2 [1]			d_4 [5]	d_5 [5]	d_6	d_7	d_8	l_1	l_2	l_3	l_4	l_5	s_3	e_1	tole-rance e_1
		min	max St	G			h9										
4	10	12	32	28	45	45	81	45	81	30	30	160	20	17	100	2	±0,5
6,3	10	12	38	33	53	53	92	54	92	30	30	160	20	17	100	2	±0,5
6,3	10	12	38	33	53	53	92	54	92	30	30	200	20	17	140	2	±0,5
10	12	16	42	36	59	59	106	60	101	40	40	180	30	23	100	2,5	±0,5
10	12	16	42	36	59	59	106	60	101	40	40	220	30	23	140	2,5	±0,5
16	14	16	45	40	63	63	120	64	104	40	40	220	29	19	140	3,5	±0,5
16	14	16	45	40	63	63	120	64	104	40	40	260	29	19	180	3,5	±0,5
25	16	20	48	42	67	67	124	70	111	50	50	280	39	29	180	3,5	±0,5
25	16	20	48	42	67	67	124	70	111	50	50	300	39	29	200	3,5	±0,5
40	16	20	55	48	77	77	134	76	123	50	50	280	39	29	180	3,5	±0,5
40	16	20	55	48	77	77	134	76	123	50	50	300	39	29	200	3,5	±0,5
63	20	25	65	55	91	91	150	89	136	60	60	300	49	39	180	3,5	±0,5
63	20	25	65	55	91	91	150	89	136	60	60	320	49	39	200	3,5	±0,5
100	25	30	75	65	105	105	186	108	159	80	80	360	64	51	200	4	±0,5
100	25	30	75	65	105	105	186	108	159	80	80	410	64	51	250	4	±0,5
160	25	30	85	75	119	119	212	127	193	80	80	360	60	47	200	4	±0,5
160	25	30	85	75	119	119	212	127	193	80	80	410	60	47	250	4	±0,5
250	35	40	95	85	133	133	240	133	199	110	110	470	90	77	250	4	±0,5
250	35	40	95	85	133	133	240	133	199	110	110	500	90	77	280	4	±0,5
400	40	50	105	90	145	145	275	159	225	110	110	470	89	66	250	6	±1
400	40	50	105	90	145	145	275	159	225	110	110	500	89	66	280	6	±1
630	45	60	120	100	165	165	320	168	237	140	140	530	119	96	250	6	±1
630	45	60	120	100	165	165	320	168	237	140	140	560	119	96	280	6	±1
1 000	55	80	125	110	175	175	380	194	274	170	170	590	141	112	250	8	±1
1 000	55	80	125	110	175	175	380	194	274	170	170	620	141	112	280	8	±1
1 600	65	100	150	135	215	215	440	219	315	210	210	670	181	152	250	8	±1
1 600	65	100	150	135	215	215	440	219	315	210	210	700	181	152	280	8	±1
2 500	80	100	170	150	240	240	510	245	343	210	210	670	179	127	250	12	±3
2 500	80	100	170	150	240	240	510	245	343	210	210	700	179	127	280	12	±3
4 000	120	140	190	170	270	270	630	273	374	250	250	780	219	127	280	18	±4
6 300	120	140	215	190	300	300	660	324	425	250	250	780	219	127	280	18	±4
10 000	140	160	225	200	320	320	770	407	507	300	300	880	269	177	280	18	±4

mineral deposits conveyor

Footnotes see page 3.

Table 8														characteristic values	
size	speed n_{max} [rpm]		torque [Nm]			torsion angle φ [°] at T_{KN}	dynamic torsional spring stiffness C_{dyn} [kNm/rad]		rel. damping Ψ [-]	buffer part		hub + spacer	
	St	G	T_{KN}	T_{Kmax}	$\pm T_{KW}$		$0{,}5 \cdot T_{KN}$	at T_{KN}		mass $m^{6)}$ [kg]	moment of inertia $J^{6)}$ [kgm²]	mass $m^{6)}$ [kg]	moment of inertia $J^{6)}$ [kgm²]
4	5 000	-	40	80	10	3	5,3	8,5	ca. 1	0,46	0,00036	1,5	0,0012
6,3	5 000	-	63	126	16	3	6,7	9,1	ca. 1	0,59	0,00061	1,9	0,0019
6,3	5 000	-	63	126	16	3	6,7	9,1	ca. 1	0,59	0,00061	2,1	0,0021
10	5 000	-	100	200	25	3	7,8	9,5	ca. 1	1,1	0,0014	2,5	0,0032
10	5 000	-	100	200	25	3	7,8	9,5	ca. 1	1,1	0,0014	2,8	0,0034
16	4 500	-	160	320	40	3	15,2	26,3	ca. 1	1,4	0,0025	3,2	0,0046
16	4 500	-	160	320	40	3	15,2	26,3	ca. 1	1,4	0,0025	3,5	0,0049
25	4 500	-	250	500	63	3	23,2	40,2	ca. 1	1,5	0,0028	3,9	0,0063
25	4 500	-	250	500	63	3	23,2	40,2	ca. 1	1,5	0,0028	4,1	0,0064
40	4 000	-	400	800	100	3	40,6	70,3	ca. 1	1,6	0,0031	4,8	0,0094
40	4 000	-	400	800	100	3	40,6	70,3	ca. 1	1,6	0,0031	5,0	0,0096
63	3 500	-	630	1 260	158	3	64,8	112,0	ca. 1	2,4	0,0055	6,0	0,015
63	3 500	-	630	1 260	158	3	64,8	112,0	ca. 1	2,4	0,0055	6,2	0,016
100	3 350	-	1000	2 000	250	3	50,1	69,2	ca. 1	4,9	0,0183	11,0	0,042
100	3 350	-	1 000	2 000	250	3	50,1	69,2	ca. 1	4,9	0,0183	12,0	0,044
160	3 200	-	1 600	3 200	400	3	95,0	157	ca. 1	6,4	0,0334	16,0	0,087
160	3 200	-	1 600	3 200	400	3	95,0	157	ca. 1	6,4	0,0334	17,0	0,091
250	3 100	-	2 500	5 000	625	3	157	260	ca. 1	10,0	0,0596	21,0	0,129
250	3 100	-	2 500	5 000	625	3	157	260	ca. 1	10,0	0,0596	22,0	0,132
400	3 000	2 000	4 000	8 000	1 000	3	231	395	ca. 1	14,0	0,114	31,0	0,258
400	3 000	2 000	4 000	8 000	1 000	3	231	395	ca. 1	14,0	0,114	32,0	0,262
630	2 700	1 800	6 300	12 600	1 575	3	380	650	ca. 1	21,0	0,226	41,0	0,423
630	2 700	1 800	6 300	12 600	1 575	3	380	650	ca. 1	21,0	0,226	42,0	0,429
1 000	2 300	1 500	10 000	20 000	2 500	3	823	1 410	ca. 1	36,0	0,573	65,0	0,91
1 000	2 300	1 500	10 000	20 000	2 500	3	823	1 410	ca. 1	36,0	0,573	66,0	0,919
1 600	2 000	1 300	16 000	32 000	4 000	3	1 460	2 500	ca. 1	59,0	1,13	97,0	1,74
1 600	2 000	1 300	16 000	32 000	4 000	3	1 460	2 500	ca. 1	59,0	1,13	99,0	1,75
2 500	1 800	1 100	25 000	50 000	6 250	3	1 120	1 310	ca. 1	84,0	2,41	157	4,17
2 500	1 800	1 100	25 000	50 000	6 250	3	1 120	1 310	ca. 1	84,0	2,41	159	4,19
4 000	1 400	1 000	40 000	80 000	10 000	3	1 460	1 990	ca. 1	200	9,73	268	10,7
6 300	1 300	850	63 000	126 000	15 750	3	2 210	3 020	ca. 1	193	10,1	311	14
10 000	1 100	750	100 000	200 000	25 000	3	4 040	5 510	ca. 1	297	19,3	447	34,7

design A, B and H

design P and S

ΔK_a axial displacement
ΔK_w angular displacement
ΔK_r radial displacement

e_4 = ΔK_r
e_5 ≥ maximum dimension e_1 or e_2
e_6 ≤ minimum dimension e_1 or e_2

$\Delta K_w^* = e_5 - e_6$

$\Delta K_r = \dfrac{\overline{e_7 - e_8}}{2}$
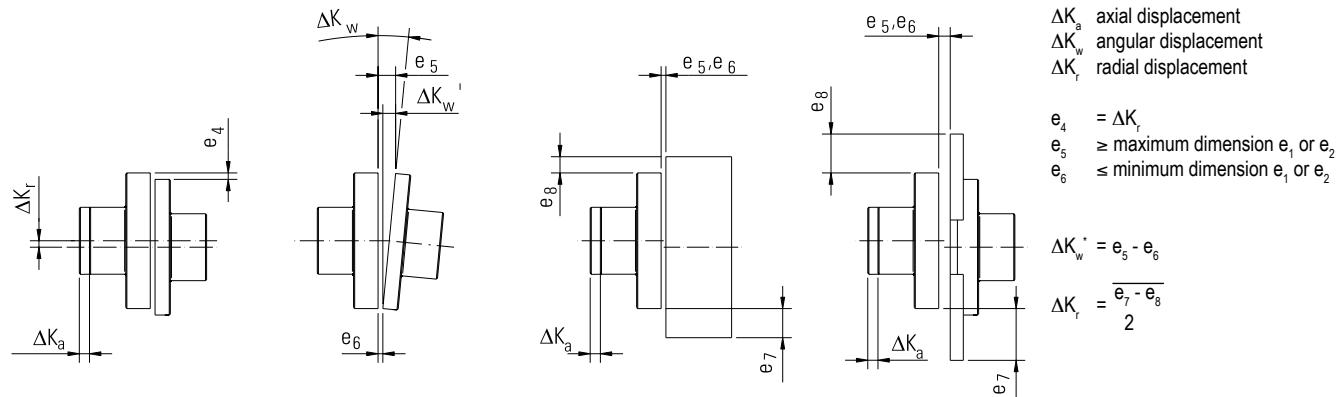
The tolerances for the dimensions e_1 respectively e_2 specified in the dimension tables of the individual designs constitute the sum of sum of alignment errors and operational displacements.

The values for the radial displacement (dimension ΔK_r) and the angular displacement (dimension ΔK_w and ΔK_w^*) depend on the rotational speed.

For rotational speeds > 600 rpm , the permissible values of the radial displacement as well as of the angular displacement will change. The permissible values are decreasing with an increasing rotational speed due to an increasing variation in stress in the buffer.

The values each assigned to the rotational speed and/or nominal size are indicated in the following table:

permissible shaft misalignment and alignment dimension													Table 9
coupling size		4	6,3	10	16	25	40	63	100	160	250	400	630
	n [rpm]												
perm. radial displacement ΔK_r [mm] at speed n	600	0,3	0,3	0,4	0,6	0,6	0,6	0,6	0,9	1,1	1,1	1,3	1,3
	1 000	0,2	0,2	0,3	0,4	0,4	0,4	0,4	0,5	0,7	0,7	0,8	0,8
	3 000	0,1	0,1	0,2	0,3	0,3	0,3	0,3	0,4	0,5	0,5	0,5	
	5 000	0,1	0,1	0,2	0,2	0,2							
	n [rpm]												
perm. angular displacement ΔK_w^* [mm] at speed n	600	0,8	1,0	1,1	1,3	1,4	1,5	1,7	2,2	2,7	3,1	3,3	3,8
	1 000	0,5	0,6	0,7	0,8	0,9	0,9	1,1	1,4	1,7	1,9	2,1	2,4
	3 000	0,4	0,4	0,5	0,6	0,6	0,7	0,8	1,0	1,2	1,3	1,4	
	5 000	0,3	0,3	0,4	0,5	0,5							
	n [rpm]												
perm. angular displacement ΔK_w [°] at speed n	600	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,7	0,7	0,7	0,7
	1 000	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,4	0,4
	3 000	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3		
	5 000	0,2	0,2	0,2	0,2	0,2							
coupling size		1 000	1 600	2 500	4 000	6 300	10 000	16 000	25 000	40 000	63 000	100 000	
	n [rpm]												
perm. radial displacement ΔK_r [mm] at speed n	600	1,7	1,7	2,1	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	
	1 000	1,1	-	-	-	-	-	-	-	-	-	-	
	n [rpm]												
perm. angular displacement ΔK_w^* [mm] at speed n	600	4,0	4,0	5,0	4,3	4,6	5,4	6,5	7,9	8,0	8,0	8,0	
	1 000	2,7	-	-	-	-	-	-	-	-	-	-	
	n [rpm]												
perm. angular displacement ΔK_w [°] at speed n	600	0,6	0,6	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	
	1 000	0,4	-	-	-	-	-	-	-	-	-	-	

Table 10			type of hub bore		
			tolerance zone H7 with hub keyway to DIN 6885 type A, dimension tolerance JS 9		
hub bore	pilot bore	without hub keyway	for one keyway	for two keyways 120° staggered	for two keyways 180° staggered
symbol	v	-	P1	P2	P3

balancing condition

In general, the couplings with finish bore correspond to a balance quality of Q 16 at n = 1 500 rpm according to VDI 2060, balanced in one level without feather key groove.

According to the requirements of the user, the balancing is done in two levels with quality class Q 6.3 at n = 1 500 rpm with finish bore.

In doing so, please indicate whether the balancing shall be done without feather key groove or with feather key groove however, without feather key.

rotational speed depending on utilization

Flexible pin type couplings design A can run in special cases with a rotational speed larger than the indicated rotational speed n_{max}. In such cases please consult the manufacturer.

material

buffer part and bolt part:
steel type (St)
• up to nominal size 250   steel C 45 DIN EN 10083-2
• from nominal size 400   EN-GJS-400-15U DIN EN 1563

welded type (St)   S355J2+N DIN EN 10025-2
cast-iron type (G)   EN-GJL-250-DIN EN 1561

brake drum:
depending on size   EN-GJL-250-DIN EN 1561,
    EN-GJS-400-15U DIN EN 1563
    GE 300 DIN EN 10293
welded construction (St)   S355J2+N DIN EN 10025-2

spacer: S355J2+N DIN EN 10025-2
    EN-GJS-400-15U DIN EN 1563

brake disk: S355J2+N DIN EN 10025-2

buffer:
    NR-SBR 75 ±5 Shore A, grooved, standard
    (grooved buffers are available in more rubber mixtures
    with other Shore hardness)
    PUR (Elastopal) 85 ±5 Shore A, barrel-shaped

| Table 11	recommended materials for brake drums and brake disks	
material	remark	recommended utilization case
EN-GJL-250-DIN EN 1561	high friction coefficient, low permissible speed, low wear	holding and service brakes
EN-GJS-400-15U DIN EN 1563 EN-GJS-700-2U DIN EN 1563	low frictional coefficient, very good wearing properties	service brake
GE 300 DIN EN 10293 hard chromium plate	minimum of 300 Brinell hardness decrease in frictional coefficient at high temperatures very low wear, average frictional coefficient	service brake
GE 300 DIN EN 10293 untreated	average frictional coefficient, low surface solidity leeds to pickup and thus to a high level of wear	holding brake
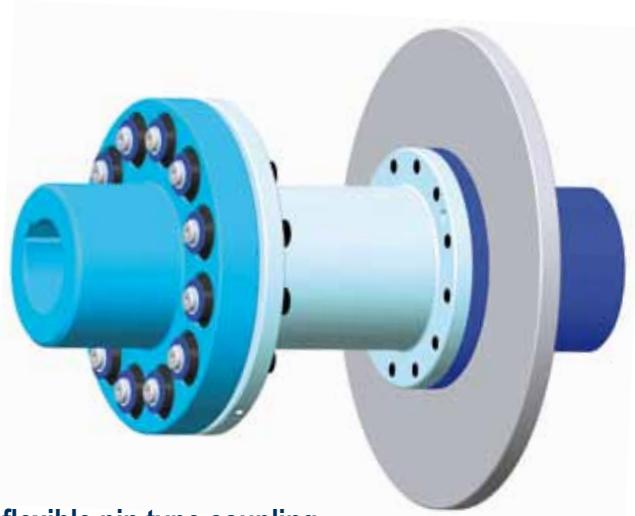
flexible pin type coupling
with spacer and brake disk
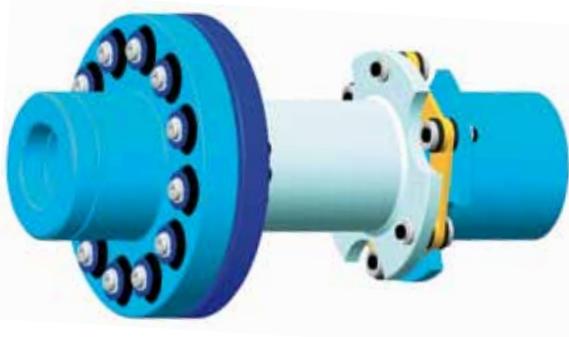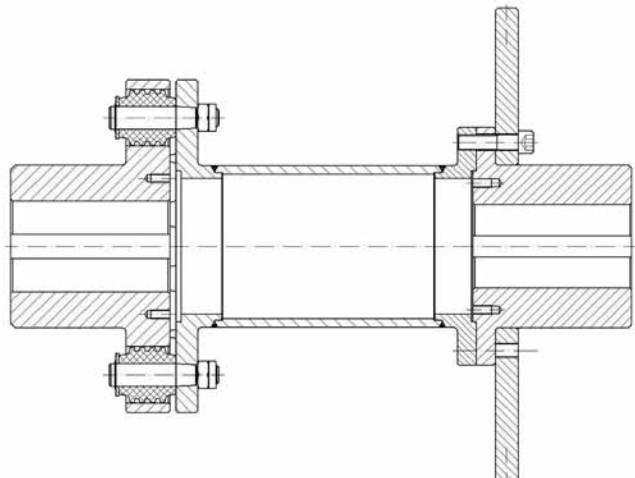
flexible pin type coupling
with spacer and allsteel coupling
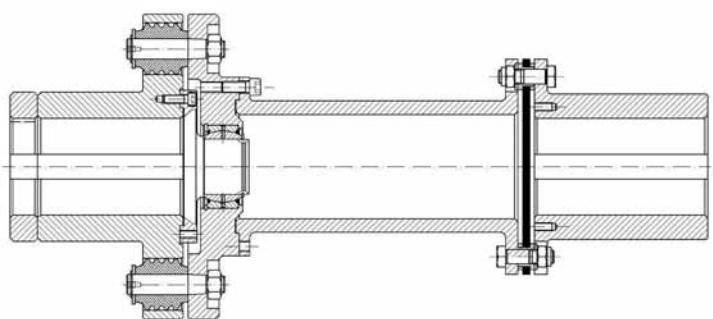
flexible pin type coupling
shiftable at standstill, buffers prestressed and electrically
insulating, bolts hydraulically demountable

KWD
KUPPLUNGSWERK DRESDEN
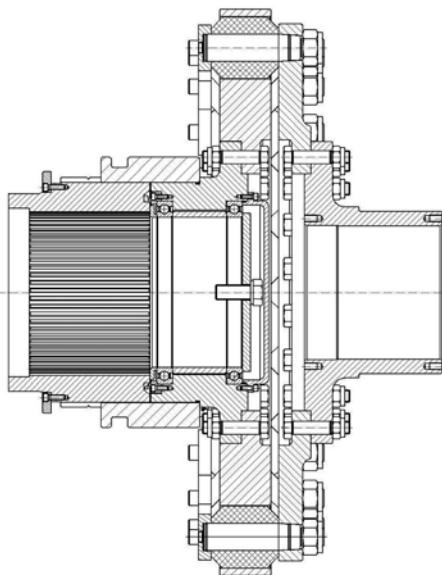
model series BOKU-N
inquiry flexible couplings

Fax: +49 351 4999 233 • E-mail: info@kupplungswerk-dresden.de

company		
	made by	date
	phone	fax
	E-mail	
	inquiry no.	project	no.of pieces

installation conditions

☐ indoor	☐ oceanic	min. ambient temperature	☐ °C
☐ outdoor		max. ambient temperature	☐ °C
☐ roofed	remarks		
☐ corrosive atmosphere			
☐ ex zone			
☐ electrically isolated			
☐ axial tolerance restrict	☐ mm		

type

☐ BOKU-N A - standard	☐ BOKU-N P - with brake drum
☐ BOKU-N S1 - with brake disk	☐ BOKU-N S2 - with brake disk radial removable
☐ BOKU-N H - with spacer	☐ special design remarks

characteristic values

rated speed	[rpm]	type of machine	
rated power	[kW]	service factor	

technical connection values

	drive shaft	driven shaft
fit		
shaft diameter	[mm]	[mm]
lenght of shaft	[mm]	[mm]
distance between shaft ends	[mm]	

shaft-hub-connection

	drive shaft	driven shaft
parallel key DIN 6885 / sheet 1		
press fit		
press fit (hydraulically dismantlable)		
others		

date / sign