KWD
KUPPLUNGSWERK DRESDEN

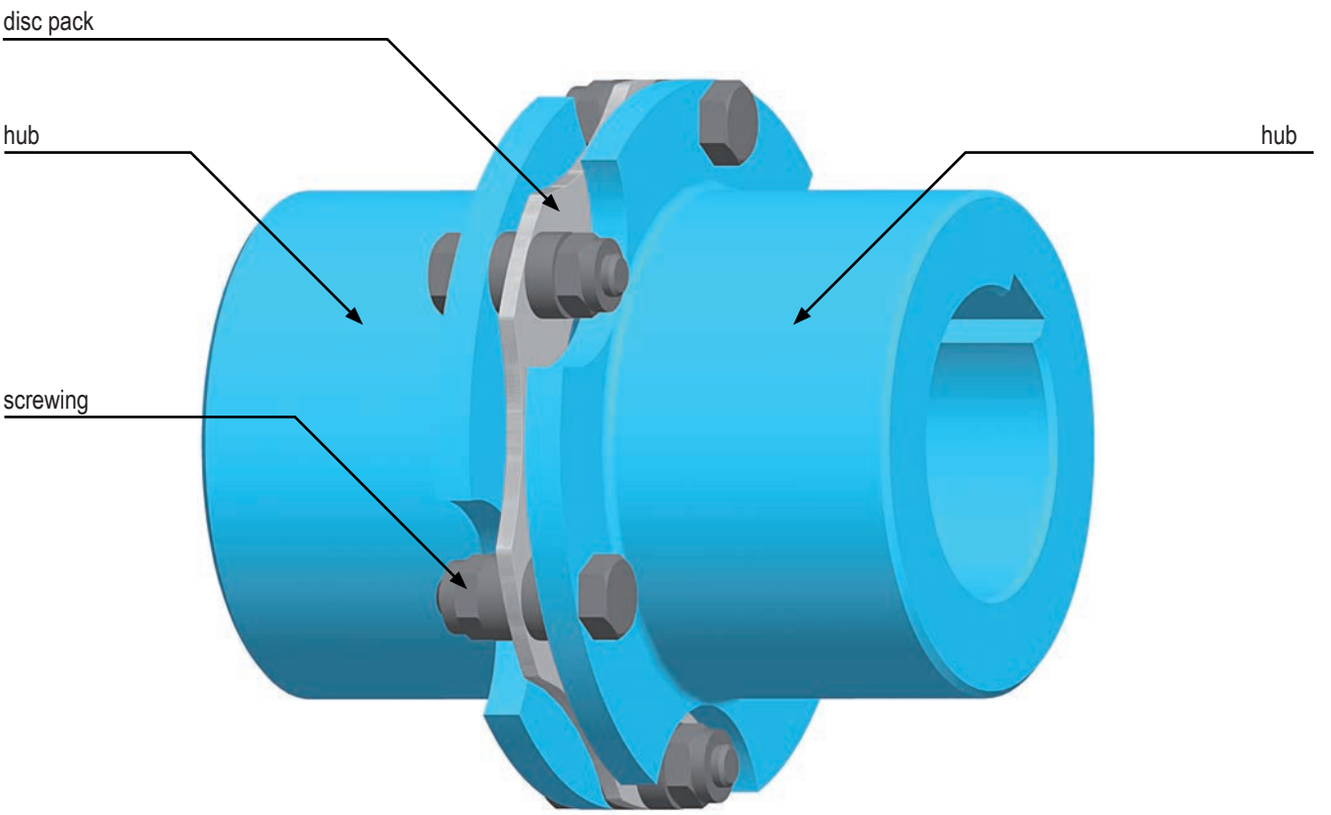
Torsional stiff all steel couplings GMK

KWN 21016

Couplings from Dresden/Germany

By specialists – for specialists

all steel couplings

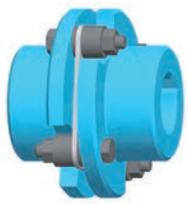


Technical features

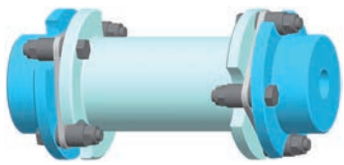
All steel couplings of the type GMK are torsional stiff and bending flexible couplings.

All coupling parts are made of high quality steel. The torque range as well as the wide variety of types guarantees a wide range of applications for many industrial purposes.

- All steel couplings are torsional stiff and backlash free, at correct application and assembly free of wear, with a high service life
- Useable for ambient temperatures up to 250 °C.
- All steel couplings can compensate axial and angular shaft displacement in single element design (SE) and additional radial shaft displacements in double element design (DE).
- All steel couplings lead to slight restoring reactions in case of proper alignment.
- All steel couplings can be combined with a lot of other coupling types, for example BOKU-N, TK-N and so on can be combined.

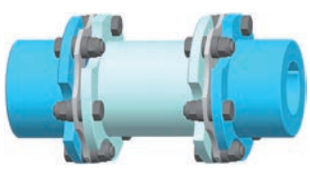


with single element

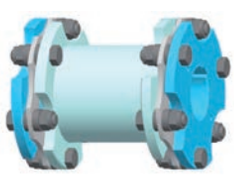


with double element

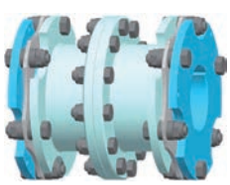
with single element



with double element



with double element inside located hubs nonparted sleeve



with double element inside located hubs parted sleeve

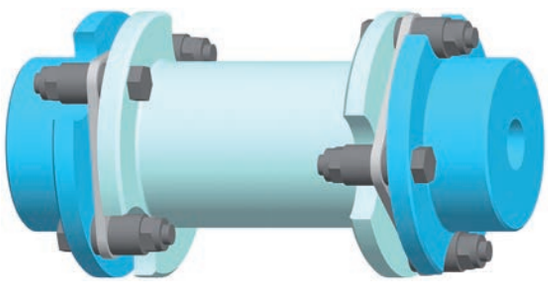
■ standard □ available on request

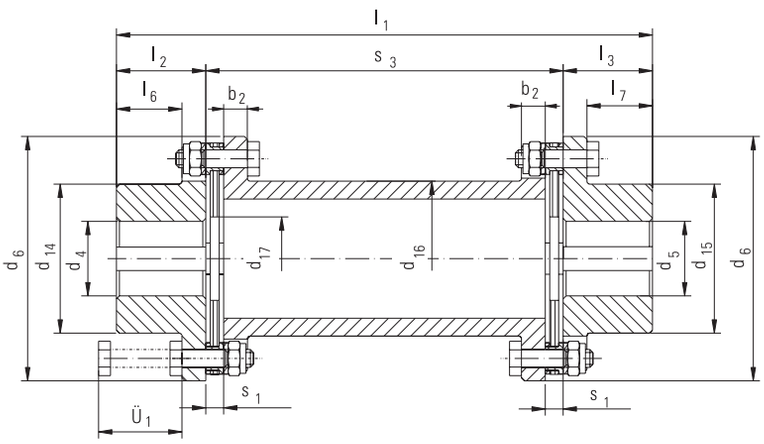
Table 1 **features of the types**

required features	GMK 4 SE	GMK 4 DE	GMK 6 SE	GMK 6 DE	GMK 6 DE II	GMK 6 DE IIG	GMK 4 DE K
low torques up to 630 Nm	■	■					■
medium up to high torques to 100000 Nm			■	■	■	■	□
high speed up to 20000 rpm	■	■					■
medium up to high speed to 6700 rpm			■	■	■	■	
axial and angular displacement ability	■		■				
axial, angular and radial displacement ability		■		■	■	■	■
variable spacer length		■		■			
spacer radial removeable		■		■			
for short distance between shaft ends					■	■	
for shortest distance between shaft ends							■
for vertical installation	□	□	□	□			
backlash free shaft/hub connection clamping unit or shrink disk	□	□	□	□	□	□	□
with device for limiting axial play		□		□			
spacer and flexible elements mounted as an unit		□		□			

type DE-AA

standard type - with two elements as well as spacer and outside located hubs





Ordering example: **GMK 25 - 4 DE - AA - 46 - 30 H7P1[4] (x30)[3] - 35 H7P1[4] (x30)[3] dy KWN 21016**

Designation of an all steel coupling type 4 DE-AA, nominal size, 25 with outside located hubs, distance between shaft ends s_3 = 46 mm, one hub with bore d_4 = 30 mm, tolerance H7 (hub length l_2 = 30 mm) and one keyway according to DIN 6885 sheet 1 as well as one hub with bore d_5 = 35 mm, tolerance H7 (hub length l_3 = 30 mm) and one keyway according to DIN 6885 sheet 1 with dynamic balancing.

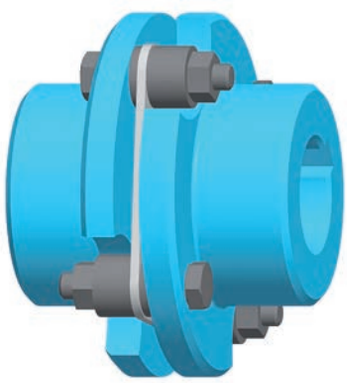
Footnotes see page 13.

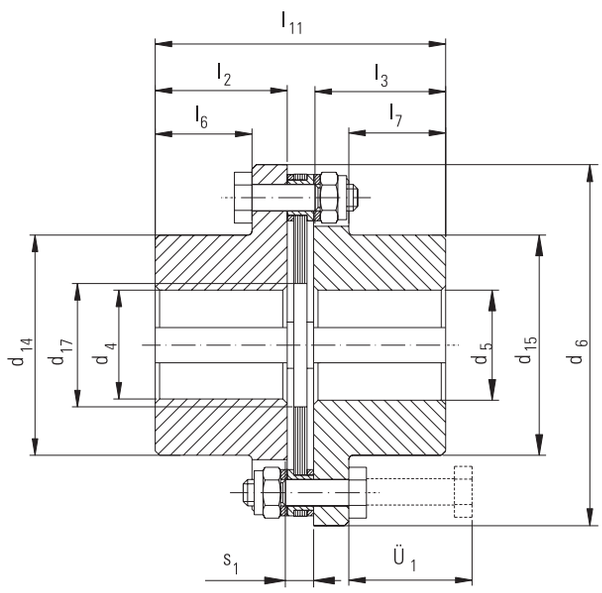
main dimensions Table 2

size	pilot bore [2]	$d_{4,5}$ finished bore [1] min	$d_{4,5}$ finished bore [1] max	d_6 h_8	d_{14}, d_{15}	d_{16}	d_{17}	l_1	l_{11}	l_2 [3]	l_3 [3]	l_6	l_7	s_1	s_3 [5]	b_2	$Ü_1$
4 - 4	-	7	22	56	32	30	20	74	45	20	20	15	15	5	34	5	27
6,3 - 4	-	7	28	68	40	40	24	88	56	25	25	19	19	6	38	6	31
16 - 4	-	12	38	82	54	50	28	98	66	30	30	22	22	6	38	8	35
25 - 4	-	12	40	94	58	55	32	106	68	30	30	21	21	8	46	9	44
40 - 4	10	15	48	104	68	65	48	118	80	35	35	26	26	10	48	9	44
63 - 4	10	19	55	128	78	75	40	140	91	40	40	29	29	11	60	11	57

type SE-AA

with one element and outside located hubs





The inside diameter of the flexible element, stated in table 2, has to be allowed for.

In case of larger, than the indicated values for the distance between shaft ends s_3, the checking of the critical bending speed should be carried out. In those cases we ask for consultation.

All shown sizes can be used for vertical installation. In such cases it has to be considered that for type SE-AA the hubs have to be fixed on the shafts as well as for type DE-AA additional the spacer should be supported vertically.

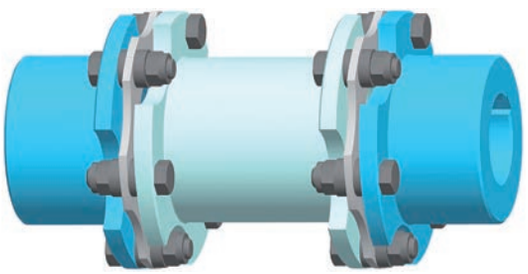
Footnotes see page 13.

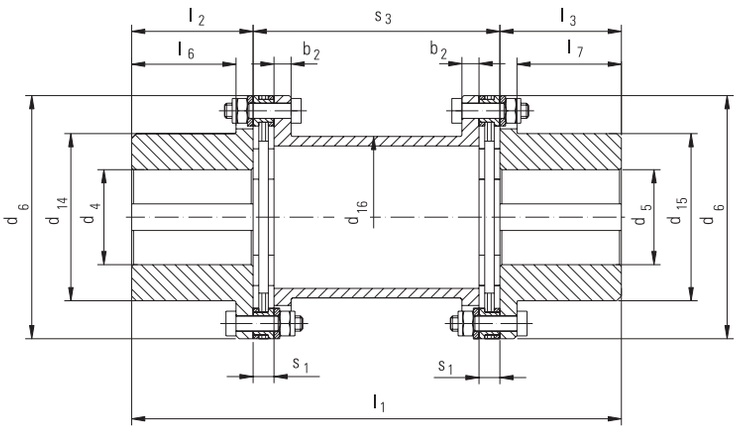
Table 3 **characteristic values**

size	nominal torque T_{KN} [Nm]	maximum torque T_{Kmax} [Nm]	maximum speed n_{max} [min^{-1}]	angular displacement ΔK_w [6)] [°]	axial displacement ΔK_a [6)] [mm]	radial displacement ΔK_r [7) 8)] [mm]	axial stiffness C_a [9)] [N/mm]	torsional spring sitffness C_T [10)] 10^{6*} [Nm/rad]	torsional spring stiffness C_T [11)] 10^{6*} [Nm/rad]	angular spring stiffness C_W [13)] 10^3 [Nm/rad]	type DE mass m [12)] [kg]	type DE mass m. of inertia J [12)] [kgm²]•10^{-3}	type SE mass m [12)] [kg]	type SE mass m. of inertia J [12)] [kgm²]•10^{-3}
4 - 4	40	80	20 000	0,5	0,6	0,25	42	0,008	0,016	0,006	0,5	0,20	0,3	0,11
6,3 - 4	63	126	16 000	0,5	0,8	0,28	44	0,014	0,029	0,003	1,1	0,55	0,6	0,30
16 - 4	160	320	13 000	0,5	1,0	0,28	60	0,040	0,083	0,15	1,7	1,5	1,0	0,87
25 - 4	250	500	12 000	0,5	1,2	0,33	122	0,080	0,170	0,29	2,4	2,9	1,4	1,6
40 - 4	400	800	10 000	0,5	1,4	0,33	160	0,120	0,250	0,6	3,3	4,6	2,1	2,6
63 - 4	630	1 260	8 000	0,5	1,6	0,43	196	0,204	0,430	1,5	5,8	11,8	3,4	6,5

type DE-AA

standard type - with two elements as well as spacer and outside located hubs





Ordering example: **GMK 200 - 6 DE - AA - 150 - 70 H7P1[4] (x75)[3] - 60 H7P1[4] (x80)[3] dy KWN 21016**

Designation of an all steel coupling type 6 DE-AA, nominal size 200 with two elements, six bolt design and outside located hubs, distance between shaft ends s_3 = 150 mm, one hub with bore d_4 = 70 mm, tolerance H7 (hub length l_2 = 75 mm) and one keyway according to DIN 6885 sheet 1 as well as one hub with bore d_5 = 60 mm, tolerance H7 (hub length l_3 = 80 mm) and one keyway according to DIN 6885 sheet 1 with dynamic balancing.

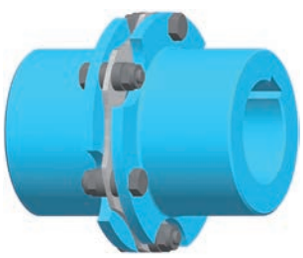
Footnotes see page 13.

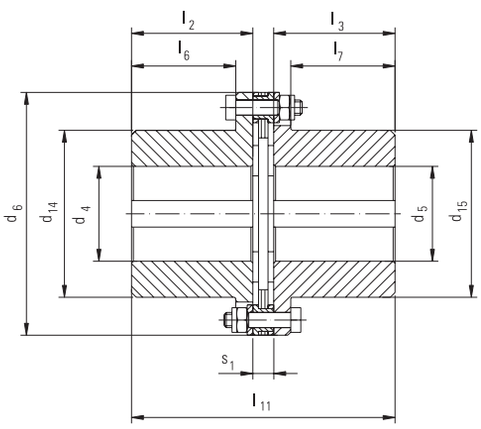
main dimensions Table 4

size	pilot bore [2]	$d_{4,5}$ finished bore [1] min	$d_{4,5}$ finished bore [1] max	d_6 h_8	d_{14}, d_{15}	d_{16}	l_1	l_{11}	l_2 [3]	l_3 [3]	l_6	l_7	s_1	s_3 [5]	b_2
100 - 6	-	25	62	128	88	85	310	171	80	80	71	71	11	150	9
140 - 6	-	30	73	145	103	100	310	171	80	80	71	71	11	150	9
200 - 6	-	35	83	168	117	110	310	174	80	80	71	71	14	150	9
250 - 6	-	35	90	180	125	120	430	235	110	110	98	98	15	210	12
400 - 6	-	40	95	200	134	130	430	235	110	110	97	97	15	210	13
630 - 6	-	45	105	215	147	140	550	300	140	140	127	127	20	270	13
1 000 - 6	40	50	115	250	164	160	665	363	170	170	152	152	23	325	18
1 250 - 6	50	60	130	280	184	180	665	365	170	170	151	151	25	325	19
1 400 - 6	55	65	140	305	198	190	665	367	170	170	150	150	27	325	20
1 600 - 6	70	80	150	335	214	210	820	450	210	210	188	188	30	400	22
2 000 - 6	70	80	160	372	225	220	815	452	210	210	185	185	32	395	25
2 500 - 6	80	90	180	407	250	245	815	455	210	210	183	183	35	395	27
4 000 - 6	90	100	190	442	270	265	970	538	250	250	220	220	38	470	30
5 000 - 6	110	120	215	487	305	300	965	541	250	250	217	217	41	465	33
6 300 - 6	120	130	230	522	325	320	960	544	250	250	214	214	44	460	36
8 000 - 6	130	140	255	572	360	355	1 155	647	300	300	262	262	47	555	38
10 000 - 6	150	160	270	602	380	375	1 150	650	300	300	259	259	50	550	41

type SE-AA

with one element and outside located hubs





The inside diameter of the flexible element is larger than the maximum permissible diameter of the shaft in all cases.

In case of larger, than the indicated values for the distance between the shaft ends s_3, the checking of the critical bending speed should be carried out. In those cases we ask for consultation.

All shown sizes can be used for vertical installation. In such cases it has to be considered that for type SE-AA the hubs have to be fixed on the shafts as well as for type DE-AA additional the spacer should be suported vertically.

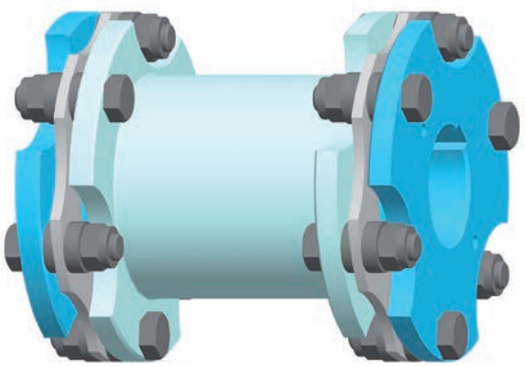
Footnotes see page 13.

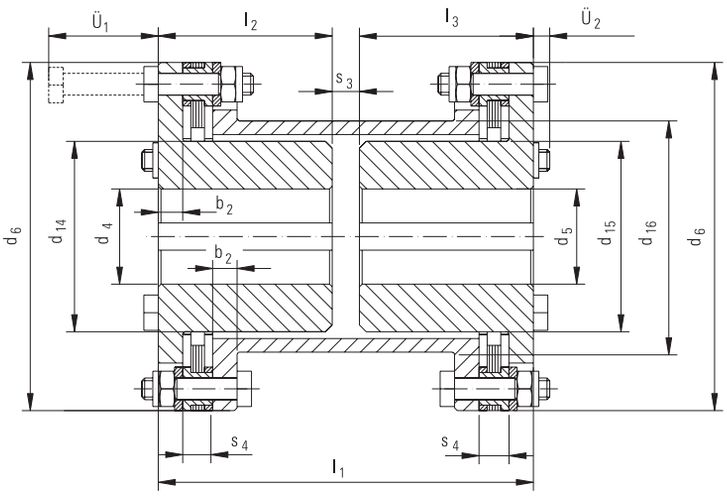
Table 5 — **characteristic values**

size	nominal torque T_{KN} [Nm]	maximum torque T_{Kmax} [Nm]	maximum speed n_{max} [min^{-1}]	angular displacement ΔK_w [6)] [°]	axial displacement ΔK_a [6)] [mm]	radial displacement ΔK_r [7) 8)] [mm]	axial stiffness C_a [9)] [N/mm]	torsional spring stiffness C_T [10)] 10^6* [Nm/rad]	torsional spring stiffness C_T [11)] 10^6* [Nm/rad]	angular spring stiffness C_W [13)] 10^3 [Nm/rad]	type DE		type SE	
											mass m [12)] [kg]	mass m. of inertia J [12)] [kgm²]•10^{-3}	mass m [12)] [kg]	mass m. of inertia J [12)] [kgm²]•10^{-3}
100 - 6	1 000	2 000	6 700	0,5	1,0	1,2	120	0,17	0,36	0,41	8,1	0,016	2,7	0,005
140 - 6	1 400	2 800	5 900	0,5	1,1	1,2	120	0,21	0,44	0,62	10,4	0,027	3,6	0,009
200 - 6	2 000	4 000	5 100	0,5	1,3	1,2	110	0,34	0,72	0,38	13,4	0,046	4,8	0,016
250 - 6	2 500	5 000	4 750	0,5	1,3	1,7	120	0,42	0,91	1,67	20,3	0,08	7,2	0,028
400 - 6	4 000	8 000	4 300	0,5	1,0	1,7	250	0,61	1,38	1,68	26,1	0,127	9,6	0,046
630 - 6	6 300	12 600	4 000	0,5	1,2	2,2	220	1,01	2,06	4,12	37,6	0,205	13,5	0,073
1 000 - 6	10 000	20 000	3 800	0,5	1,4	2,6	300	1,31	3,10	3,80	59,9	0,434	21,7	0,155
1 250 - 6	12 500	25 000	3 750	0,7	2,1	3,7	825	1,45	3,46	11,9	77,7	0,713	27,7	0,252
1 400 - 6	14 000	28 000	3 400	0,7	2,2	3,6	791	2,64	6,64	11,8	93,0	1,02	33,8	0,371
1 600 - 6	16 000	32 000	3 100	0,7	2,4	4,5	754	3,44	8,98	15,2	131	1,69	48,1	0,615
2 000 - 6	20 000	40 000	2 800	0,7	2,5	4,4	731	5,17	13,50	30,2	158	2,47	56,3	0,877
2 500 - 6	25 000	50 000	2 550	0,7	2,8	4,4	686	6,75	17,00	46,7	191	3,8	71,4	1,393
4 000 - 6	40 000	80 000	2 350	0,7	3,0	5,3	1 154	8,99	23,80	22,4	272	6,08	98,6	2,187
5 000 - 6	50 000	100 000	2 150	0,7	3,4	5,2	1 122	11,22	27,20	61,1	342	9,66	126	3,491
6 300 - 6	63 000	126 000	2 000	0,7	3,6	5,1	1 122	13,54	32,40	61,5	412	13,62	151	4,948
8 000 - 6	80 000	160 000	1 800	0,7	3,9	6,2	1 025	16,99	41,40	113	557	21,68	206	7,855
10 000 - 6	100 000	200 000	1 700	0,7	4,1	6,1	1 274	20,32	49,00	166	657	29,16	244	10,69

type DE-II

with two elements and inside located hubs, sleeve not radial removeable





Ordering example: **GMK 200 - 6 DE - II - 8 - 65 H7P1[4] (x80)[3] - 60 H7P1[4] (x80) dy KWN 21016**

Designation of an all steel coupling type 6 DE-II, nominal size 200 with two elements, six bolt design and inside located hubs, distance between the shaft ends s_3 = 8 mm, one hub with bore d_4 = 65 mm, tolerance H7 (hub length l_2 = 80 mm) and one keyway according to DIN 6885 sheet 1 as well as one hub with bore d_5 = 60 mm, tolerance H7 (hub length l_3 = 80 mm) and one keyway according to DIN 6885 sheet 1 with dynamic balancing.

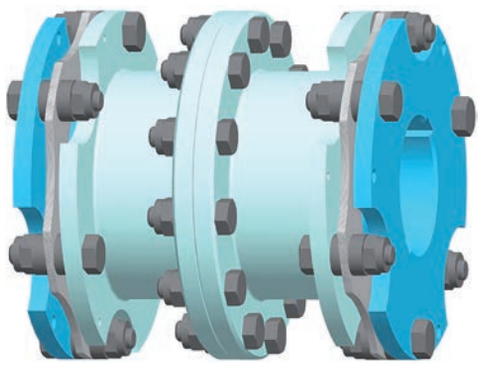
Footnotes see page 13.

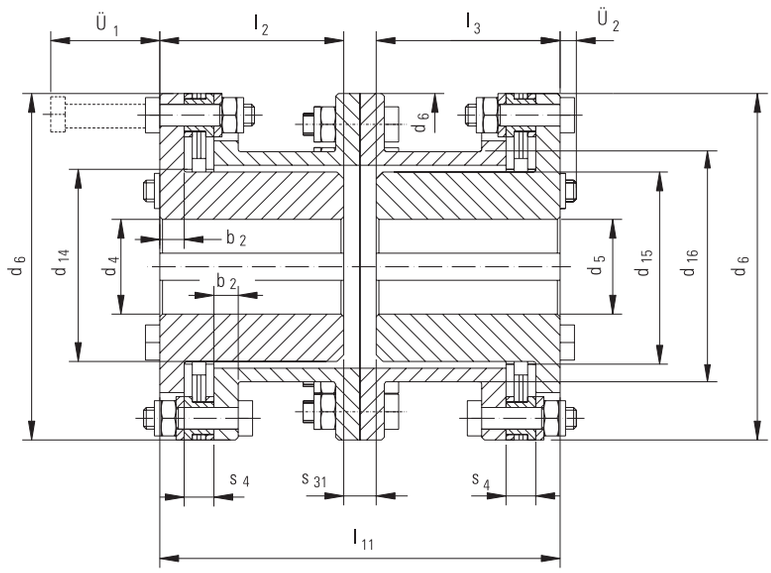
main dimensions Table 6

size	pilot bore [2]	$d_{4,5}$ finished bore [1] min	$d_{4,5}$ finished bore [1] max	d_6 h_8	d_{14}, d_{15}	d_{16}	l_1	l_{11}	l_2 [3]	l_3 [3]	s_3 [5]	s_{31} [5]	s_4	b_2	$Ü_1$	$Ü_2$
100 - 6	-	25	46	128	65	85	168	170	80	80	8	10	11	9	42	12
140 - 6	-	30	55	145	80	100	168	170	80	80	8	10	11	9	42	12
200 - 6	-	35	65	168	90	110	168	180	80	80	8	20	14	9	46	14
250 - 6	-	35	70	180	100	120	234	240	110	110	14	20	15	12	54	16
400 - 6	-	40	78	200	110	130	236	250	110	110	16	30	15	13	61	20
630 - 6	-	45	80	215	115	140	296	310	140	140	16	30	20	13	66	20
1 000 - 6	40	50	95	250	132	160	361	370	170	170	21	30	23	18	83	24
1 250 - 6	50	60	105	280	147	180	363	370	170	170	23	30	25	19	85	24
1 400 - 6	55	65	110	305	157	190	365	380	170	170	25	40	27	20	95	28
1 600 - 6	70	80	125	335	177	210	444	460	210	210	24	40	30	22	105	32
2 000 - 6	70	80	130	372	182	220	445	460	210	210	25	40	32	25	110	32
2 500 - 6	80	90	150	407	212	245	449	460	210	210	29	40	35	27	125	35
4 000 - 6	90	100	155	442	220	265	530	550	250	250	30	50	38	30	140	41
5 000 - 6	110	120	180	487	255	300	531	580	250	250	31	80	41	33	145	41
6 300 - 6	120	130	190	522	270	320	532	620	250	250	32	120	44	36	160	48
8 000 - 6	130	140	215	572	305	355	631	720	300	300	31	120	47	38	165	48
10 000 - 6	150	160	230	602	320	375	632	720	300	300	32	120	50	41	185	54

type DE-IIG

with two elements, inside located hubs and parted sleeve, sleeve not radial removeable





Please allow for that for the types DE-II as well as DE-IIG space for mounting of the fit bolts and for the tightening by mean of a torque wrench is required.

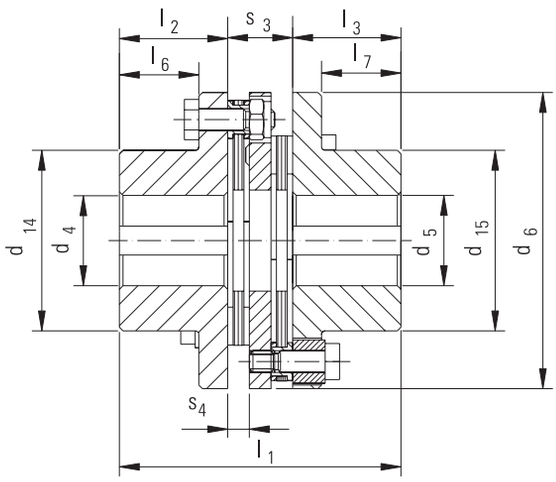
Footnotes see page 13.

Table 7 — **characteristic values**

size	nominal torque T_{KN} [Nm]	maximum torque T_{Kmax} [Nm]	maximum speed n_{max} [min^{-1}]	angular displacement ΔK_w 6) 16) [°]	axial displacement ΔK_a 6) 17) [mm]	radial displacement ΔK_r 7) [mm]	axial stiffness C_a 9) [N/mm]	torsional spring stiffness C_T 14) 10^6* [Nm/rad]	torsional spring stiffness C_T 15) 10^6* [Nm/rad]	angular spring stiffness C_W 13) 10^3 [Nm/rad]	type DE-II mass m 12) [kg]	type DE-II mass m. of inertia J 12) [kgm²]•10^{-3}	type DE-IIG mass m 12) [kg]	type DE-IIG mass m. of inertia J 12) [kgm²]•10^{-3}
100 - 6	1 000	2 000	6 700	0,5	2,0	1,2	60	0,35	0,35	0,41	6,2	0,011	7,8	0,02
140 - 6	1 400	2 800	5 900	0,5	2,2	1,2	60	0,42	0,42	0,62	8,2	0,02	10,2	0,034
200 - 6	2 000	4 000	5 100	0,5	2,6	1,2	55	0,69	0,52	0,38	10,9	0,034	13,7	0,061
250 - 6	2 500	5 000	4 750	0,5	2,6	1,7	60	0,89	0,87	1,67	16,5	0,061	20,6	0,106
400 - 6	4 000	8 000	4 300	0,5	2,0	1,7	125	1,29	1,29	1,68	23,0	0,104	27,3	0,172
630 - 6	6 300	12 600	4 000	0,5	2,4	2,2	110	2,09	1,95	4,12	31,5	0,156	36,5	0,248
1 000 - 6	10 000	20 000	3 800	0,5	2,8	2,6	150	3,44	3,3	3,8	52,5	0,343	61,7	0,578
1 250 - 6	12 500	25 000	3 750	0,7	4,2	3,7	423	4,13	4,01	11,9	65,1	0,565	76,7	0,965
1 400 - 6	14 000	28 000	3 400	0,7	4,4	3,6	396	4,68	4,65	11,8	79,0	0,821	94,7	1,412
1 600 - 6	16 000	32 000	3 100	0,7	4,8	4,5	377	6,32	6,01	15,2	112	1,39	133	2,318
2 000 - 6	20 000	40 000	2 800	0,7	5,0	4,4	366	10,1	9,86	30,2	135	2,04	166	3,805
2 500 - 6	25 000	50 000	2 550	0,7	5,6	4,4	343	13,3	13,7	46,7	173	3,29	210	5,936
4 000 - 6	40 000	80 000	2 350	0,7	6,0	5,3	577	10,3	10,2	22,4	235	5,06	287	9,038
5 000 - 6	50 000	100 000	2 150	0,7	6,8	5,2	561	20,5	20,4	61,1	301	8,18	370	14,82
6 300 - 6	63 000	126 000	2 000	0,7	7,2	5,1	561	24,5	24,5	61,5	366	11,64	459	21,1
8 000 - 6	80 000	160 000	1 800	0,7	7,8	6,2	513	38,7	36,8	113	495	18,52	609	33,21
10 000 - 6	100 000	200 000	1 700	0,7	8,2	6,1	637	51,1	50,5	166	589	25,15	726	43,9

type DE-K

with two elements, outside located hubs for short design



Ordering example: **GMK 2,5 - 4 DE - K - 15 - 10 H7P1[4] (x20)[3] - 15 H7P1[4] (x20)[3] dy KWN 21016**

Designation of an all steel coupling type 4 DE-K, nominal size 2,5 with two elements, four bolt design and outside located hubs, distance between the shaft ends s_3 = 15 mm, one hub with bore d_4 = 1 0 mm, tolerance H7 (hub length l_2 = 20 mm) and one keyway according to DIN 6885 sheet 1 as well as one hub with bore d_5 = 15 mm, tolerance H7 (hub length l_3 = 20 mm) and one keyway according to 6885 sheet 1 with dynamic balancing.

Footnotes see page 13.

main dimensions

Table 8

size	$d_{4,5}$ finished bore [1] min	$d_{4,5}$ finished bore [1] max	d_6 h_8	d_{14}, d_{15}	l_1	l_2 [3]	l_3 [3]	l_6	l_6	s_3 [5]	s_4	b_2	$\ddot{U}_2$
2,5 - 4	12	17	56	32	55	20	20	15	15	15	5	5	20
4 - 4	12	22	68	40	68	25	25	19	19	18	6	6	24
6,3 - 4	19	32	82	54	78	30	30	22	22	18	6	8	26
10 - 4	20	32	94	58	86	30	30	21	21	26	8	9	35
14 - 4	30	35	104	68	98	35	35	26	26	28	10	9	35
25 - 4	32	40	128	78	112	40	40	29	29	32	11	11	44

characteristic values

Table 9

size	nominal torque T_{KN} [Nm]	maximum torque T_{Kmax} [Nm]	maximum speed n_{max} [min^{-1}]	angular displacement ΔK_w [6) 16)] [°]	axial displacement ΔK_a [6) 17)] [mm]	radial displacement ΔK_r [7)] [mm]	axial stiffness C_a [9)] [N/mm]	torsional spring stiffness C_T 10^{6*} [Nm/rad]	angular spring stiffness C_W [13)] 10^3 [Nm/rad]	mass m [12)] [kg]	mass moment of inertia J [12)] [kgm²]•10^{-3}
2,5 - 4	25	25	20 000	0,5	1,2	0,1	21	0,006	0,008	0,4	0,15
4 - 4	40	40	16 000	0,5	1,6	0,2	22	0,003	0,01	0,7	0,42
6,3 - 4	63	63	13 000	0,5	2,0	0,2	30	0,15	0,18	1,2	1,1
10 - 4	100	100	12 000	0,5	2,4	0,3	61	0,29	0,3	1,8	2,2
14 - 4	140	140	10 000	0,5	2,8	0,3	80	0,6	2,17	2,5	3,6
25 - 4	250	250	8 000	0,5	3,2	0,4	98	1,5	4,23	4,6	9,2

selection of the coupling

The coupling must be selected in accordance with DIN 740 sheet 2. The coupling must be sufficently dimensioned for the loads occuring not to exceed the permissible values in any operating condition.

The coupling selection can be done in 3 ways depending on the knowledge about the drive system:

1. Coupling selection by a rough estimation method

1.1. Continuous operation: $T_{KN} \geq T_N \bullet s_b$

T_{KN} nominal torque of the coupling
T_N nominal torque of the drive system
s_b service factor

Table 10 **service factors** (extract of KWN 90026)

drive machine	steady	driven machine medium shocks	heavy shocks
e-motor hydraulical motor	1,4	1,6	2,0
engine 6 cylinder and more	1,6	2,0	2,6
engine till 5 cylinder	2,0	2,4	3,0

1.2. Shock torques: $T_{KN} \geq \frac{T_S}{2}$ T_S peak value for torque shocks

2. Rough estimation for a two-mass system according to DIN 740 sheet 2

3. Calculation of the loads by using of a higher method of calculation for example by using simulation X

Please contact us for support.

For the coupling selection is to allow for furthermore:
- permissible ambient temperature -20 °C up to 250 °C, other ambient temperatures on request
- for longer spacer the permissible speed is limited by the weight and the critical bending speed
- by occuring of periodic occilating torques the ratio between occilating frequency and natural frequency may not be in the range of 0,7 up to 1,4.

Material

hubs: C45, St 52-3
spacer: C45, St 52-3
flexible elements: spring steel, corrosion protected

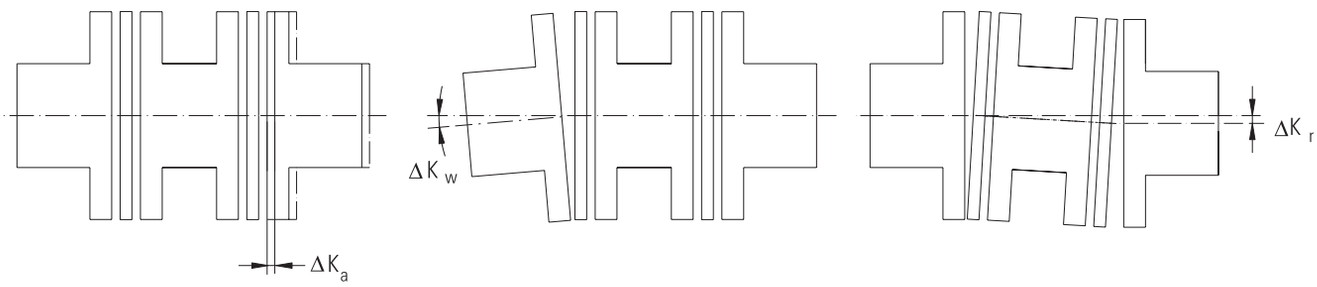
Table 11 **type of hub bore**

hub bore	pilot bore	without hub keyway	tolerance zone H7, with hub keyway to DIN 6885 sheet 1 type A dimension tolerance JS 9		
			for one keyway	for two keyways 120° staggered	for two keyways 180° staggered
symbol	v	-	P1	P2	P3

permissible shaft displacements

All steel couplings can compensate axial and angular shaft displacments for designs with one element and for designs with two elements axial, radial and angular shaft displacements. The designation of the different displacements is done according to DIN 740 sheet 2.

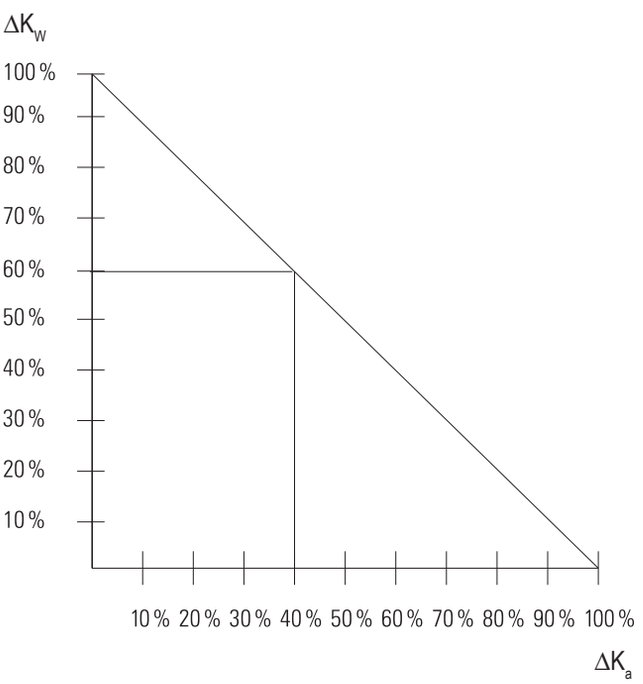
axial displacement **angular displacement** **radial displacement**



The in the tables „Characteristic values“ stated permissible values for the axial displacement ΔK_a, the angular displacement ΔK_w as well as the radial displacement ΔK_r are the maximum possible values in the case of occuring of only one type of shaft displacement. In case of occuring of angular and axial displacement at the same time, the permissible values have to be calculated corresponding to its shares of the total displacement ability.

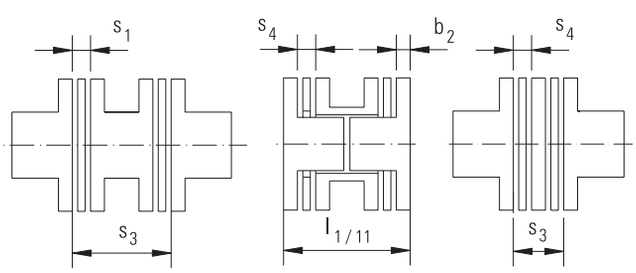
At occuring of an axial shaft displacement ΔW_a of 40 % of the axial displacement ability ΔK_a the additional possible angular shaft displacement ΔW_w may be 60 % of the angular displacement ability ΔK_w. The in the tables stated values of the radial displacement ability ΔK_r refer to a 100 % using of the angular displacement ability ΔK_w.

If angular shaft displacement ΔW_w and radial shaft displacement ΔW_r occur together, the whole angular displacement ability ΔK_w has to be shared. The resulting permissible radial displacement ΔK_r* can be calculated as follow:



GMK 6 DE-AA
GMK 4 DE-AA

GMK 6 DE-II/IIG **GMK 4 DE-K**



s_1, s_3, s_4, $l_{1/11}$ and b_2 see tables „main dimensions“

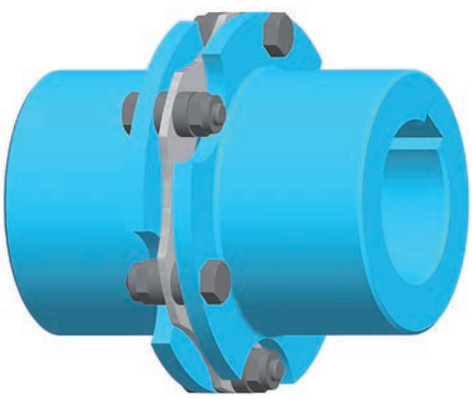
- for type GMK 6 DE-AA/GMK 4 DE-AA
  $\Delta K_r^* = \tan \Delta K_w^* \bullet (s_3 - s_1)$
- for type GMK 4 DE-K
  $\Delta K_r^* = \tan \Delta K_w^* \bullet (s_3 - s_4)$
- for type GMK 6 DE-II/IIG
  $\Delta K_r^* = \tan \Delta K_w^* \bullet [l_{1/11} - (s_4 + (2*b_2))]$

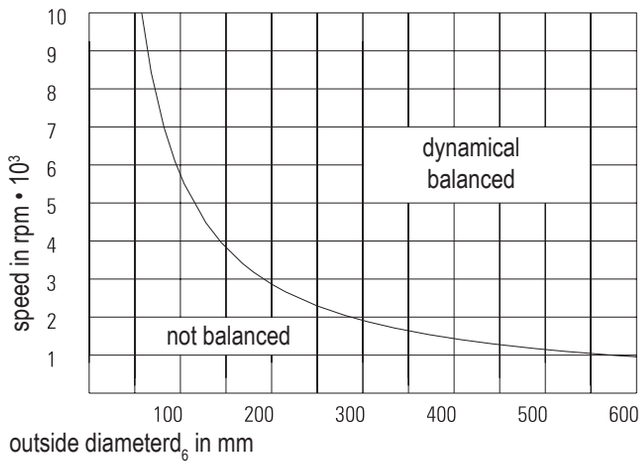
$\Delta K_w^* = \Delta K_w - \Delta W_w$

balance

All steel couplings will be delivered without balancing in general. In case of ordering with dynamic balancing (dy) the coupling parts will be balanced with a balancing quality Q 6,3 at 1500 rpm according to VDI 2060 with inserted half key (half key balancing). Other balancing qualities can be realized on request.

necessity for dynamical balancing





assembly of the couplings

mounting of the hubs

According to the standard keys will be used for the hub/shaft connection. For the mounting of the hubs proceed like follow:

- check whether the prescribed combination of fits (hub/shaft) are followed
- clean hub bores and shafts
- the hubs have to be pushed on the shaft by using a suitable device, mounting by beating is not allowed
- in order to facilitate the mounting, the hubs may be warmed up to 200 °C

alignment of drive/driven side

Drive - and driven side have to be aligned axially, angulary and radially. The alignment has to be done in such a way that remaining shaft displacements caused by assembly and operation are smaller or equal than the permissible values stated in the tables „characteristic values“.

The remaining shaft displacements should be as small as possible caused by its influence to the service life of the elements and the restoring reactions.

1) finished bore to ISO-fit H7, tolerance shaft diameter k6 up to 50 mm, tolerance m6 for larger diameters valid for keyways according to DIN 6885 sheet 1
2) without keyway, pilot bore - untoleranced dimension „average“ to DIN ISO 2768
3) deviating hub lengths are possible on consultation with the manufacturer, the length required has to be specified in parenthesis
4) see page 11 „type of hub bore“
5) minimum dimension, other distances of shaft ends are possible on request
6) valid per element, by occuring at the same time decreasing corresponding to its shares necessary
7) at complete using of the angular misalignment ability
8) only for type DE
9) for type SE, for type DE half of the values, valid for low displacements
10) for type DE
11) for type SE
12) valid for maximum bores
13) valid per element
6) values valid for single occuring, by occuring at the same time decreasing corresponding to its shares necessary
7) at complete using of the angular misalignment ability
9) valid for the coupling, valid for low displacements
12) valid for maximum bores
13) valid per element
14) for type DE-II
15) for type DE-II G
16) valid per element
17) valid for the coupling

align the couplings

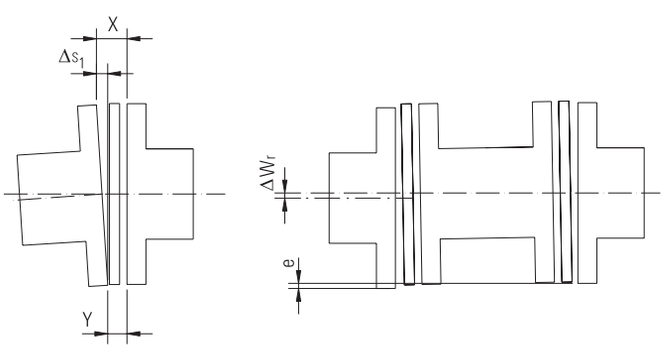
axial alignment

Drive- and driven side have to be aligned axially in such a way that the actual dimension

$s_{1\,ist} = s_1 \pm \Delta K_a$ $s_{1\,ist}$ actual dimension of the distance s_1 - s_1 see tables „main dimensions“

For the types GMK 6 DE-II, GMK 6 DE-IIG as well as GMK 4 DE-K corresponds the dimension s_1 with the dimension s_4.

The alignment is done by checking of the dimension s_1 at least 3 about 120° staggered places. Thermical expandation has to be allowed for accordingly.



angular alignment

The existing angular shaft displacement will be checked by measurement of the dimension s_1 (for types GMK 6 DE-II, GMK 6 DE-IIG as well as GMK 4 DE-K corresponds the dimension s_1 with the dimension s_4), calculated out of the smallest and largest value of the dimension s_1 at a complete turn of the coupling. The difference of both measured dimensions X and Y has to be equal or smaller than $\Delta s_{1\,zul}$. The maximum and minimum values have to lay within $s_1 \pm \Delta K_a$.

$s_1 \pm \Delta K_a$

$$\Delta s_{1\,zul} = \sin \Delta K_w \bullet d_6 \geq (X\text{-}Y)$$

$$\Delta W_w = \arcsin \frac{X\text{-}Y}{d_6} \leq \Delta K_w$$

At occuring of radial displacement ΔW_r the value of ΔK_w has to be decreased accordingly (see „permissible displacement“). The measurement of the dimension X and Y can be done in dependance on the required accuracy by a venier caliper or a dial gauge. the required accuracy the measurement can be done by a straight gauge or at higher demands by a dial gauge.e values ΔK_r given in the table „characterisitc values“. At occuring of angular displacement ΔW_w the value ΔK_r has to be decreased like under „permissible shaft displacement“ described.

radial alignment

The existing radial shaft displacement ΔW_r can be figured out by measurement of the dimension e. In dependance on the required accuracy the measurement can be done by a straight gauge or at higher demands by a dial gauge. The existing value ΔW_r has to be equal or smaller than the values ΔK_r given in the table „characterisitc values“. At occuring of angular displacement ΔW_w the value ΔK_r has to be decreased like under „permissible shaft displacement“ described.

assembly of the elements

The screw connections of the elements and the flange screw connection is realized by fit bolts, which are tightened so that a non-positive locking torque transmission is guaranteed. That´s why the screws have to be tightened with the in the following table stated tightening torques M_A. The tightening has to be done by a torque wrench. The tightening torque is valid for unlubricated screws (μ = 0,15). For lubricated screws the tightening torque has to be adapted ccording to the changing of the friction coefficient.

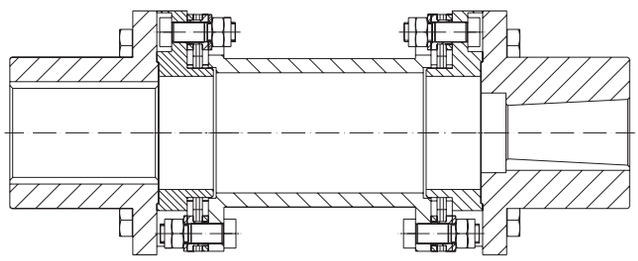
characteristic values Table 12

size	M_A [Nm]	SW	size	M_A [Nm]	SW	size	M_A [Nm]	SW	size	M_A [Nm]	SW
4 - 4	5,5	8	100 - 6	33	13	1 000 - 6	550	30	4 000 - 6	250/170	24/24
6,3 - 4	13	10	140 - 6	33	13	1 250 - 6	60/41	16/16	5 000 - 6	350/235	27/27
16 - 4	13	10	200 - 6	65	17	1 400 - 6	60/41	16/16	6 300 - 6	350/235	27/27
25 - 4	33	13	250 - 6	115	19	1 600 - 6	100/70	18/18	8 000 - 6	350/235	27/27
40 - 4	33	13	400 - 6	280	24	2 000 - 6	100/70	18/18	10 000 - 6	480/330	30/30
63 - 4	65	17	630 - 6	280	24	2 500 - 6	250/170	24/24			

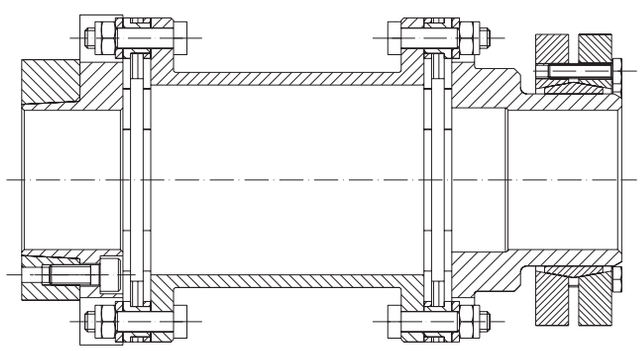
special designs of all steel couplings

The all steel coupling can be delivered in many different special designs according to the customers requirements.

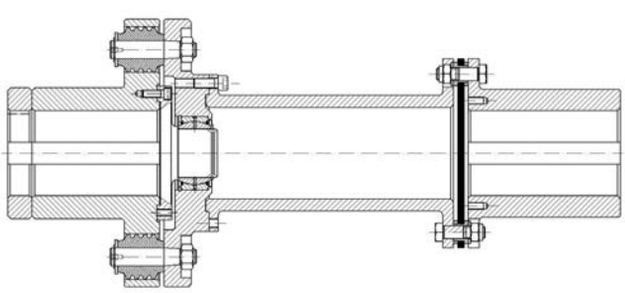
all steel coupling
designed according to API 671



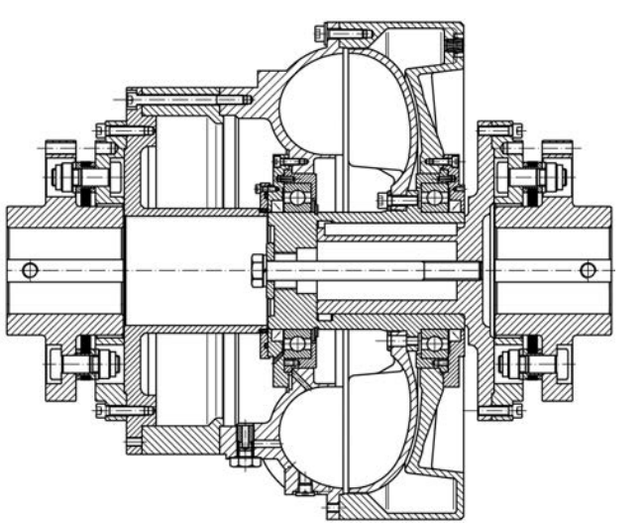
all steel coupling
with backlash free hub/shaft connection



all steel coupling
combined with pin type coupling BOKU-N



all steel coupling
combined with hydrodynamic coupling TK-N



KWD
KUPPLUNGSWERK DRESDEN

Löbtauer Straße 45, D-01159 Dresden
Postfach 27 01 44, D-01171 Dresden
Tel.: +49 (0) 351/49 99-0, Fax: +49 (0) 351/49 99-2 33
E-mail: kwd@kupplungswerk-dresden.de

www.kupplungswerk-dresden.de

Certified in accordance with ISO 9001: 2008
Scope development, manufacture, sale and servicing of couplings in the drive technology field

Certified Welding Company / GSI SLV

Ausgabe: 10/2015