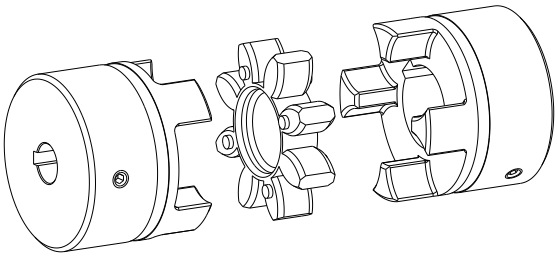
ROTEX® GS

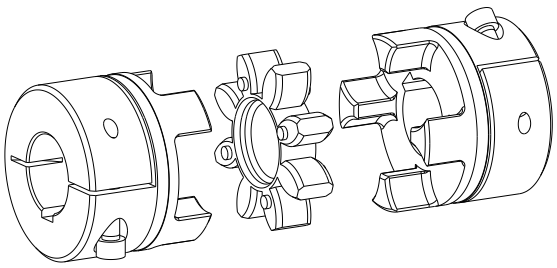
Torsionally flexible jaw-type couplings

shaft coupling,
clamping hubs,
Compact,
clamping ring hubs light,
clamping ring hubs,
DKM and their combinations

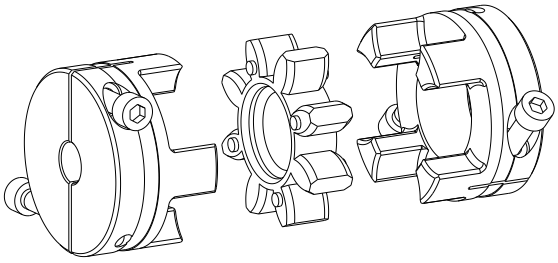
according to directive 2014/34/EU
and UK directive SI 2016 No. 1107



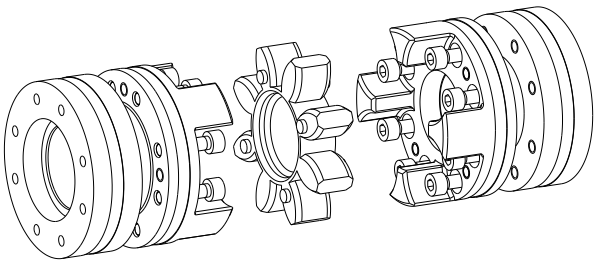
ROTEX® GS, shaft coupling



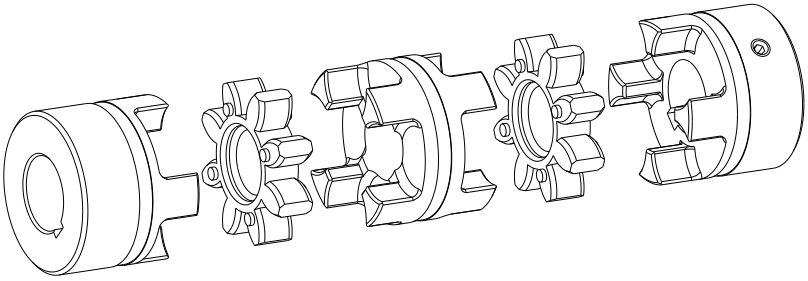
ROTEX® GS, clamping hubs



ROTEX® GS, Compact



ROTEX® GS, clamping ring hubs light
ROTEX® GS, clamping ring hubs steel
ROTEX® GS, clamping ring hubs



ROTEX® GS, DKM

ROTEX® GS is a plug-in shaft coupling for measuring technology and automatic control engineering. It is able to compensate for shaft misalignment, for example caused by manufacturing inaccuracies, thermal expansion, etc.

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1 Technical data

1.1 Types of hubs

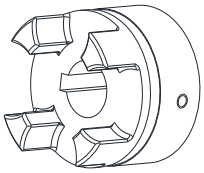
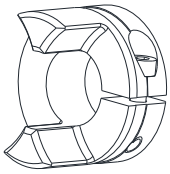
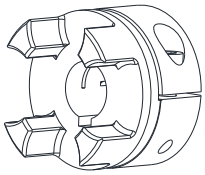
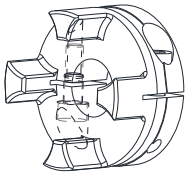
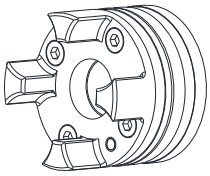
 Type 1.0 Hub with feather keyway and setscrew Type 1.1 [1] Hub without feather keyway, with setscrew Type 1.2 [2] Hub without feather keyway, without setscrew	 Type 2.0 [1] Clamping hub single slot without feather keyway (up to size 14 standard) Type 2.1 Clamping hub single slot with feather keyway (up to size 14 standard)	 Type 2.5 [1] Clamping hub double slot without feather keyway (from size 19 standard) Type 2.6 Clamping hub double slot with feather keyway (from size 19 standard)
 Type 2.8 *(Compact)* [1] Short clamping hub C with axial slot, without feather keyway (from size 24 standard) (size 7 - 19 single slot) Type 2.9 *(Compact)* Short clamping hub C with axial slot, with feather keyway (from size 24 standard) (size 7 - 19 single slot)	 Type 6.0 light Clamping ring hub light (size 14 - 48) Type 6.0 (steel) Clamping ring hub steel (size 19 - 90) Type 6.0 [3] Clamping ring hub (size 14 - 38)	

Illustration 1: Types of hubs

1) **Hubs, clamping hubs or similar types without feather keyway may be used in category 3 only and are marked with category 3 accordingly.**

2) **Hub type 1.2 is not approved for potentially explosive atmospheres!**

3) Hub material - aluminium (Al-H); clamping ring material - steel

1 Technical data

1.2 Torques and finish bores

Table 1: Torques of spiders

Size	Spider [1] (component 2) Rated torque in Nm					
	80 ShA-GS	92 ShA-GS	98 ShA-GS	57 ShD-GS	64 ShD-GS	72 ShD-GS [2]
5	0.3	0.5	0.9	-	-	-
7	0.7	1.2	2.0	-	2.4	-
8	0.7	-	2.0	-	2.4	-
9	1.8	3.0	5.0	-	6.0	-
12	3.0	5.0	9.0	-	12.0	-
13	3.6	-	11.0	-	14.5	-
14	4.0	7.5	12.5	-	16.0	-
16	5.0	-	15.0	-	19.0	-
19	6	12	21	23	26	-
24	-	35	60	68	75	97
28	-	95	160	180	200	260
38	-	190	325	365	405	525
42	-	265	450	495	560	728
48	-	310	525	590	655	852
55	-	410	685	-	825	1072
65	-	-	940	-	1175	1527
75	-	-	1920	-	2400	3120
90	-	-	3600	-	4500	5850

1) Maximum torque of the coupling $T_{Kmax.}$ = rated torque of the coupling T_{KN} x 2
For coupling selection see catalogue drive technology "ROTEX® GS"
2) When using the spider 72 ShD, we recommend to use hubs made of steel.

Table 2: Finish bores

Size	Unbo-red	Finish bore in mm										
		$D_{min.}$	$D_{max.}$ for hub type									
			1.0	1.1	1.2	2.0	2.1	2.5	2.6	2.8	2.9	6.0 light	6.0
5	-	2	-	6	5	5	-	-	-	-	-	-	-
7	-	3	7	7	7	7	7	-	-	7	7	-	-
8	-	-	-	-	-	-	-	-	-	8	8	-	-
9	-	4	10	11	11	11	11	-	-	9	9	-	-
12	-	4	12	12	12	12	12	-	-	12	12	-	-
13	-	-	-	-	-	-	-	-	-	12.7	12.7	-	-
14	-	5	16	16	16	16	16	-	-	16	16	14	-
16	-	-	-	-	-	-	-	-	-	16	16	-	-
19	x	6	24	-	-	-	-	24	24	27	27	20	20
24	x	8	28	-	-	-	-	28	28	32	32	32	28
28	x	10	38	-	-	-	-	38	38	35	35	38	38
38	x	12	45	-	-	-	-	45	45	45	45	48	48
42	x	14	55	-	-	-	-	50	45	-	-	51	51
48	x	15	62	-	-	-	-	55	55	-	-	55	55
55	x	20	74	-	-	-	-	68	68	-	-		70
65	x	22	80	-	-	-	-	70	70	-	-		70
75	x	30	95	-	-	-	-	80	80	-	-		80
90	-	40	110	-	-	-	-	90	90	-	-		105

1 Technical data

1.3 Coupling dimensions

Standard shaft coupling

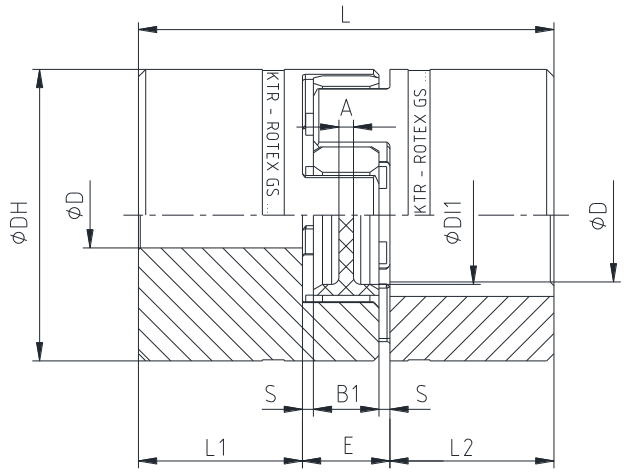


Illustration 2: ROTEX® GS (size 5 - 38)

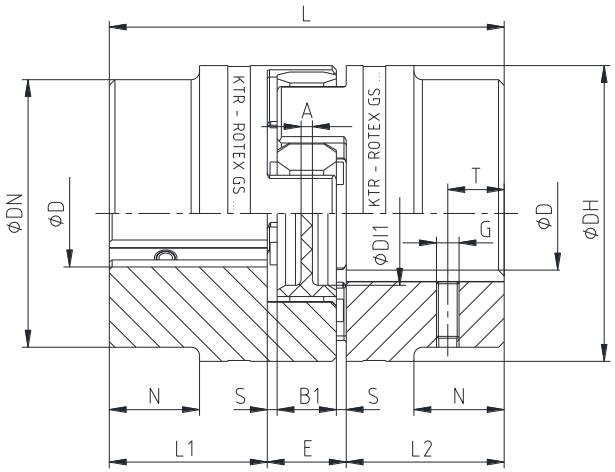


Illustration 3: ROTEX® GS (size 42 - 90)

☞ **Please refer to table 1 for torques and table 2 for finish bores.**

Table 3: Dimensions - Standard shaft coupling

Size	Dimensions in mm										Setscrew DIN EN ISO 4029	
	DN	DH	DI1	L	L1, L2	N	E	B1	S	A	G	T
Hub material - aluminium												
5	-	10	-	15	5	-	5	4	0.5	4.0	M2	2.5
7	-	14	-	22	7	-	8	6	1.0	6.0	M3	3.5
9	-	20	7.2	30	10	-	10	8	1.0	1.5	M4	5.0
12	-	25	8.5	34	11	-	12	10	1.0	3.5	M4	5.0
14	-	30	10.5	35	11	-	13	10	1.5	2.0	M4	5.0
19	-	40	18	66	25	-	16	12	2.0	3.0	M5	10
24	-	55	27	78	30	-	18	14	2.0	3.0	M5	10
28	-	65	30	90	35	-	20	15	2.5	4.0	M8	15
38	-	80	38	114	45	-	24	18	3.0	4.0	M8	15
Hub material - steel												
42	85	95	46	126	50	28	26	20	3.0	4.0	M8	20
48	95	105	51	140	56	32	28	21	3.5	4.0	M8	20
55	110	120	60	160	65	37	30	22	4.0	4.5	M10	20
65	115	135	68	185	75	47	35	26	4.5	4.5	M10	20
75	135	160	80	210	85	53	40	30	5.0	5.0	M10	25
90	160	200	104	245	100	62	45	34	5.5	6.5	M12	30

1 Technical data

1.3 Coupling dimensions

Clamping hubs

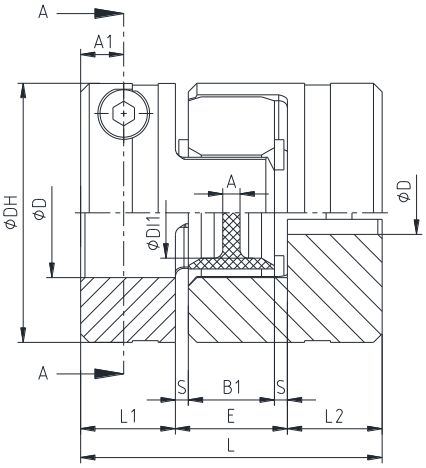


Illustration 4: ROTEX® GS
hub type 2.0 (from size 5 - 14)

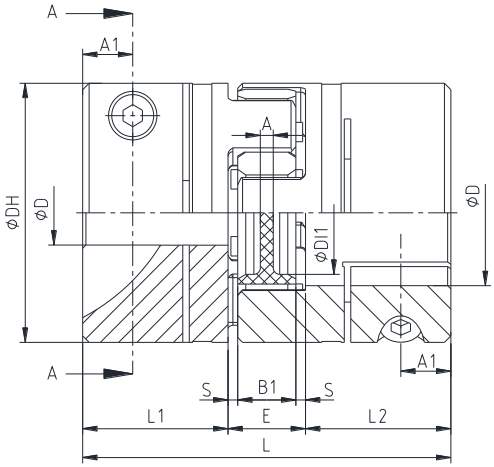
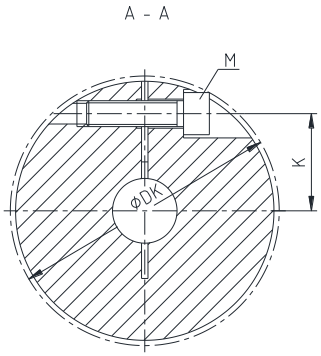


Illustration 5: ROTEX® GS
hub type 2.5 (from size 19 - 90)



Please refer to table 1 for torques and table 2 for finish bores.

Table 4: Dimensions - clamping hubs

Size	Dimensions [3] in mm										Clamping screw DIN EN ISO 4762 (ROTEX® GS 5 - DIN EN ISO 1207)				
	DN	DH	DI1	L	L1, L2	N	E	B1	S	A	M	A1	K	DK	T_A in Nm
Hub material - aluminium															
5	-	10	-	15	5	-	5	4	0.5	4.0	M1.2	2.5	3.5	11.4	- [1]
7	-	14	-	22	7	-	8	6	1.0	6.0	M2	3.5	5.0	16.5	0.37
9	-	20	7.2	30	10	-	10	8	1.0	1.5	M2.5	5.0	7.5	23.4	0.76
12	-	25	8.5	34	11	-	12	10	1.0	3.5	M3	5.0	9.0	27.5	1.34
14	-	30	10.5	35	11	-	13	10	1.5	2.0	M3	5.0	11.5	32.2	1.34
19	-	40	18	66	25	-	16	12	2.0	3.0	M6 [2]	11.0	14.5 [2]	46.0	10.5 [2]
24	-	55	27	78	30	-	18	14	2.0	3.0	M6	10.5	20.0	57.5	10.5
28	-	65	30	90	35	-	20	15	2.5	4.0	M8	11.5	25.0	73.0	25
38	-	80	38	114	45	-	24	18	3.0	4.0	M8	15.5	30.0	83.5	25
Hub material - steel															
42	85	95	46	126	50	28	26	20	3.0	4.0	M10	18	32.0	93.5	69
48	95	105	51	140	56	32	28	21	3.5	4.0	M12	21	36.0	105.0	120
55	110	120	60	160	65	37	30	22	4.0	4.5	M12	26	42.5	119.5	120
65	115	135	68	185	75	47	35	26	4.5	4.5	M12	33	45.0	124.0	120
75	135	160	80	210	85	53	40	30	5.0	5.0	M16	36	51.0	147.5	295
90	160	200	104	245	100	62	45	34	5.5	6.5	M20	40	60.0	176.0	580

1) Slotted screw, tightening torque not defined
2) Size 19: Bore Ø22 - Ø24 with 2-off clamping screws M4, T_A = 2.9 Nm and dimension K = 15.0
3) Transmittable friction torques of clamping hubs see table 5

1 Technical data

1.3 Coupling dimensions

Table 5: Friction torques and surface pressure of clamping hubs (hub type 2.0 and 2.5)

Size	5	7	9	12	14	19	24	28	38	42	48	55	65	75	90
Bore Ø	Transmittable friction torque T_R of clamping hub in Nm surface pressure in N/mm2														
Ø2	-														
Ø3	-	0.7													
		90													
Ø4	-	0.9	1.6	2.4											
		65	82	113											
Ø5	-	1.1	1.9	2.9	3.1										
		51	64	88	93										
Ø6		1.2	2.2	3.4	3.6										
		41	52	72	76										
Ø7		1.4	2.6	3.9	4.2										
		34	44	61	64										
Ø8			2.9	4.4	4.7	19									
			38	53	56	142									
Ø9			3.2	4.9	5.2	21									
			33	46	49	125									
Ø10			3.5	5.4	5.7	23	24								
			29	41	43	111	98								
Ø11			3.8	5.8	6.2	25	26								
			26	37	39	100	88								
Ø12				6.3	6.7	27	28								
				33	35	91	80								
Ø14					7.6	31	33	63							
					29	76	68	116							
Ø15					8.0	33	35	67	67						
					27	70	63	108	80						
Ø16					8.5	35	37	71	71						
					25	65	58	100	75						
Ø18						39	41	79	79						
						57	51	88	66						
Ø19						41	43	82	83	188					
						54	48	83	62	129					
Ø20						42	45	86	87	197					
						51	45	78	59	122					
Ø22							48	94	95	214					
							41	70	53	110					
Ø24							52	101	102	231					
							37	63	48	100					
Ø25							54	105	106	240	356				
							35	61	46	95	130				
Ø28							59	115	117	264	394				
							31	53	40	84	115				
Ø30								122	124	281	418				
								49	37	78	106				
Ø32								129	131	297	442	456			
								46	34	72	99	84			
Ø35								139	142	320	478	493	499		
								41	31	65	89	76	64		
Ø38								148	152	343	513	529	536		
								37	28	59	81	69	58		
Ø40									158	358	536	553	560		
									27	56	76	65	55		
Ø42									165	373	558	577	584	1107	1764
									25	53	72	62	52	89	116
Ø45									175	395	592	611	620	1175	1876
									23	49	67	57	48	82	107

* Hub type 2.0 only

Clamping hubs without feather keyway may be used in category 3 only and are marked with category 3 accordingly.

1 Technical data

1.3 Coupling dimensions

Table 5 continued: Friction torques and surface pressure of clamping hubs (hub type 2.0 and 2.5)

Size	5	7	9	12	14	19	24	28	38	42	48	55	65	75	90
Bore Ø	Transmittable friction torque T_R of clamping hub in Nm surface pressure in N/mm2														
Ø48										417	624	646	655	1242	1985
										45	62	53	45	76	100
Ø50										431	646	668	677	1287	2057
										43	59	51	43	73	95
Ø55											699	724	734	1396	2235
											53	45	38	65	86
Ø60												778	789	1503	2409
												41	34	59	77
Ø65												830	842	1607	2579
												37	31	54	71
Ø70												882	895	1709	2746
												34	29	49	65
Ø75													946	1810	2911
													26	45	60
Ø80														1908	3072
														42	56
Ø85														2005	3231
														39	52
Ø90															3387
															48

Clamping hubs without feather keyway may be used in category 3 only and are marked with category 3 accordingly.

1 Technical data

1.3 Coupling dimensions

Compact

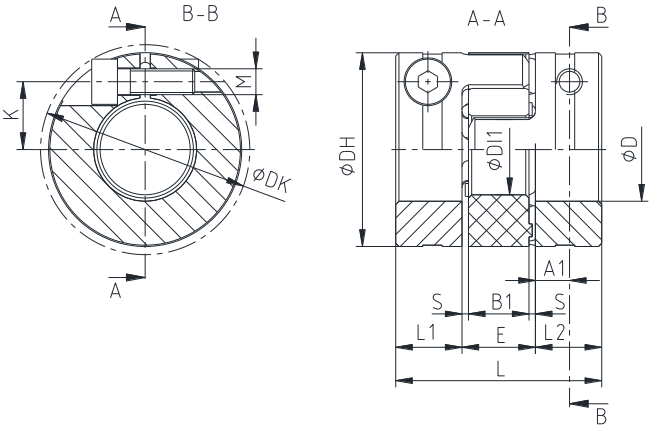


Illustration 6: ROTEX® GS 8, 13 and 16 Compact single slot (hub type 2.8/2.9)

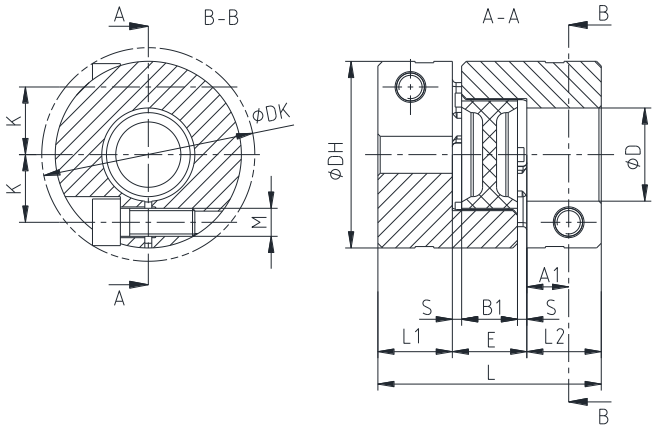


Illustration 7: ROTEX® GS 7, 9, 12, 14 and 19 Compact single slot (hub type 2.8/2.9)

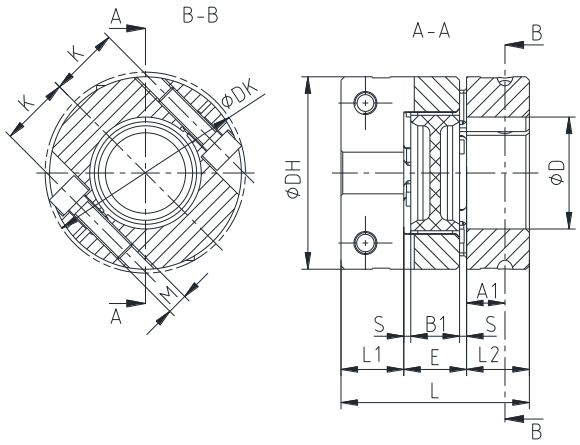


Illustration 8: ROTEX® GS 24 to 38 Compact axial slot (hub type 2.8/2.9)

Please refer to table 1 for torques and table 2 for finish bores.

Table 6: Dimensions - Compact

Size	Dimensions [3] in mm								Clamping screw DIN EN ISO 4762			
	DH	DK	L	L1, L2	E	B1	S	Dl1	A1	K	M	T_A in Nm
7	14	16.6	18	5	8	6	1	-	2.5	5.0	M2	0.37
8	15	17.3	20	7	6	5	0.5	6.2	4.0	5.4	M2	0.52
9	20	21.3	24	7	10	8	1	-	3.5	6.7	M2.5	0.76
12	25	26.2	26	7	12	10	1	-	3.5	8.3	M3	1.34
13	25	25.7	26	8	10	8	1	10	4.0	8.0	M3	1.9
14	30	31.6 [1]	32	9.5	13	10	1.5	-	4.5	10.0 [1]	M4 [1]	2.9 [1]
16	30	-	32	10.3	11.4	9.4	1	14	5.3	10.5	M4	4.1
19	40	45.5 [2]	50	17	16	12	2	-	9.0	14.0 [2]	M6 [2]	10 [2]
24	55	57.5	54	18	18	14	2	-	11.0	20.0	M6	10
28	65	69.0	62	21	20	15	2.5	-	12.0	23.8	M8	25
38	80	86.0	76	26	24	18	3	-	15.0	29.5	M10	49

1) Bores from Ø14 with clamping screw M3, T_A = 1.34 Nm, dimension K = 10.4 and dimension DK = 30.5
2) Bores from Ø21 with clamping screw M5, T_A = 6 Nm, dimension K = 15.5 and dimension DK = 47.0
3) Transmittable friction torques of type Compact see table 7

1 Technical data

1.3 Coupling dimensions

Table 7: Friction torques and surface pressure of type Compact (hub type 2.8)

Size	7	8	9	12	13	14	16	19	24	28	38
Bore Ø	Transmittable friction torque T_R of clamping hub in Nm surface pressure in N/mm2										
Ø3	0.7	1.0									
	126	127									
Ø4	0.9	1.2	1.5	2.3	3.1						
	91	92	110	169	204						
Ø5	1.1	1.5	1.8	2.8	3.9	5.0	7.2				
	71	72	86	133	161	176	233				
Ø6	1.2	1.8	2.1	3.3	4.6	5.9	8.5				
	58	58	70	109	132	144	191				
Ø7	1.4	2.0	2.4	3.8	5.2	6.8	9.8				
	48	49	59	92	111	122	161				
Ø8		2.3	2.7	4.3	5.9	7.7	11.0	18.7			
		42	51	79	96	105	139	143			
Ø9			3.0	4.7	6.5	8.5	12.2	20.8			
			44	69	84	92	122	126			
Ø10				5.2	7.1	9.4	13.4	22.9	34		
				62	74	82	108	112	100		
Ø11				5.6	7.8	10.2	14.6	24.9	37		
				55	67	74	97	101	91		
Ø12				6.0	8.4	11.0	15.7	26.9	41		
				50	60	67	88	92	83		
Ø14						7.2	17.9	30.8	48	87	
						32	74	77	71	112	
Ø15						7.7	19.0	32.7	51	93	148
						30	68	71	67	105	134
Ø16						8.1	20.0	34.6	54	100	158
						28	63	66	63	98	126
Ø18								38.2	61	112	178
								58	56	87	112
Ø19								40.0	64	118	188
								54	53	53	106
Ø20								41.8	68	124	198
								51	50	50	101
Ø24								36.0	81	149	237
								31	42	65	84
Ø25									85	156	247
									40	63	81
Ø28									95	174	277
									36	56	72
Ø30									102	187	296
									33	52	67
Ø32									109	199	316
									31	49	63
Ø35										218	346
										45	58
Ø38											375
											53
Ø40											395
											50
Ø42											415
											48
Ø45											444
											45

1 Technical data

1.3 Coupling dimensions

Clamping ring hubs 6.0 light, 6.0 steel and 6.0

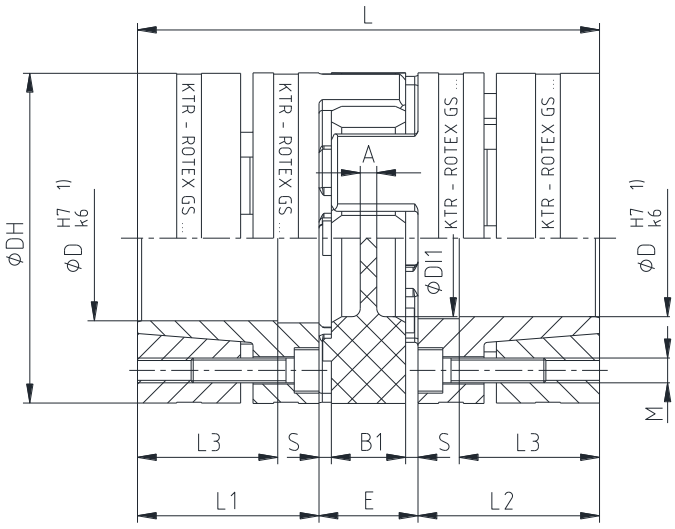


Illustration 9: ROTEX® GS, clamping ring hubs

Extraction thread M_1 between clamping screws.

Clamping ring hub 6.0 light with block mounting
(hub and clamping ring mounted as a block)

1) From Ø55 tolerance G7/m6

☞ **Please refer to table 1 for torques and table 2 for finish bores.**

Table 8: Dimensions - Clamping ring hubs 6.0 light, 6.0 steel and 6.0

Size	Dimensions [4] in mm									Clamping screws DIN EN ISO 4762			
	DH [2]	DI1	L	L1, L2	L3	E	B1	S	A	M	Z [3]	T_A in Nm	M1
	6.0 light (size 14 - 48) Material of hub/clamping ring - aluminium **6.0 (size 14 - 38)** Hub material - aluminium/clamping ring material - steel												
14	30	10.5	50	18.5	13.5	13	10	1.5	2.0	M3	4	1.34	M3
19	40	18	66	25	18	16	12	2.0	3.0	M4	6	3	M4
24	55	27	78	30	22	18	14	2.0	3.0	M5	4	6	M5
28	65	30	90	35	27	20	15	2.5	4.0	M5	8	6	M5
38	80	38	114	45	35	24	18	3.0	4.0	M6	8	10	M6
42	95	46	126	50	35	26	20	3.0	4.0	M8	4	25	M8
48	105	51	140	56	41	28	21	3.5	4.0	M10	4	49	M10
	6.0 steel (size 19 - 90) Material of hub and clamping ring - steel												
19	40	18	66	25	18	16	12	2.0	3.0	M4	6	4.1	M4
24	55	27	78	30	22	18	14	2.0	3.0	M5	4	8.5	M5
28	65	30	90	35	27	20	15	2.5	4.0	M5	8	8.5	M5
38	80	38	114	45	35	24	18	3.0	4.0	M6	8	14	M6
42	95	46	126	50	35	26	20	3.0	4.0	M8	4	41	M8
48	105	51	140	56	41	28	21	3.5	4.0	M10	4	69	M10
55	120	60	160	65	45	30	22	4.0	4.5	M10	4	69	M10
65	135	68	185	75	55	35	26	4.5	4.5	M12	4	120	M12
75	160	80	210	85	63	40	30	5.0	5.0	M12	5	120	M12
90	200	104	245	100	75	45	34	5.5	6.5	M16	5	295	M16

2) ØDH + 2 mm with high speeds for expansion of spider
3) Z = Number each clamping ring hub
4) Consider transmittable friction torques of the respective clamping ring hubs 6.0 light, 6.0 steel and 6.0 (see table 9 to 11)

1 Technical data

1.3 Coupling dimensions

Table 9: Friction torque and surface pressure of clamping ring hubs 6.0 light

Size		14		19		24		28		38		42		48	
Bore Ø		Transmittable friction torque T_R of clamping ring hub in Nm / surface pressure in N/mm2													
		Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²
Ø6	H7/k6	8.2	194												
	H7/h6	5.8	160												
Ø8	H7/k6	13.1	176												
	H7/h6	9.5	147												
Ø9	H7/k6	18.7	166												
	H7/h6	15.7	147												
Ø10	H7/k6	20.5	155	33	178										
	H7/h6	16.6	135	27	157										
Ø11	H7/k6	25.9	151	41	174										
	H7/h6	21.6	134	35	156										
Ø14	H7/k6	36.2	121	59	152	84	179								
	H7/h6	24.7	111	52	138	75	164								
Ø15	H7/k6			71	147	99	173								
	H7/h6			65	137	92	163								
Ø16	H7/k6			51	121	93	166	140	184						
	H7/h6			39	103	79	147	121	165						
Ø19	H7/k6			80	114	139	157	207	175						
	H7/h6			68	102	125	144	187	162						
Ø20	H7/k6			92	111	157	153	188	164	290	184				
	H7/h6			81	101	145	143	157	144	247	164				
Ø24	H7/k6					160	126	289	152	439	172				
	H7/h6					119	115	263	141	403	160				
Ø25	H7/k6					177	123	316	149	480	169				
	H7/h6					136	114	293	140	447	159				
Ø28	H7/k6					232	116	355	134	567	158	651	169	765	173
	H7/h6					190	111	318	125	530	149	574	160	678	164
Ø30	H7/k6							414	130	656	153	752	165	822	166
	H7/h6							381	124	626	147	681	158	760	156
Ø32	H7/k6							324	110	617	143	747	159	927	164
	H7/h6							245	101	499	133	613	149	837	154
Ø35	H7/k6							404	105	759	137	916	153	1121	158
	H7/h6							324	99	636	130	774	146	1047	151
Ø38	H7/k6							422	94	733	120	1001	141	1220	149
	H7/h6							343	89	606	113	881	134	1085	141
Ø40	H7/k6									825	117	1115	138	1357	145
	H7/h6									696	111	1001	132	1231	140
Ø42	H7/k6									922	114	1044	126	1318	136
	H7/h6									792	110	888	119	1128	129
Ø45	H7/k6									808	95	1218	122	1536	132
	H7/h6									678	90	1058	117	1339	127
Ø48	H7/k6									937	92	1404	118	1768	128
	H7/h6									809	89	1241	115	1566	125
Ø50	H7/k6											1432	111	1535	113
	H7/h6											1295	107	1331	108
Ø55	G7/m6													1823	109
	G7/h6													1475	104

The transmittable friction torques of the clamping connection consider the max. fitting tolerance with shaft tolerance k6 resp. h6/bore H7, from Ø55 G7/m6 or G7/h6. The friction torque is reduced with bigger fitting tolerance and use of a hollow shaft (see chapter 4.6).
The surface pressure of the clamping connection specified considers the minimum fitting tolerance with shaft fit k6 resp. h6/bore H7, from Ø55 G7/m6 resp. G7/h6.

A calculation of the hollow shaft strength is necessary if hollow shafts are used (see chapter 4.6)!

1 Technical data

1.3 Coupling dimensions

Table 10: Friction torques and surface pressure of clamping ring hubs 6.0 steel

Size		19		24		28		38		42		48		55		65		75		90	
Bore Ø		Transmittable friction torque T_R of clamping ring hub in Nm / surface pressure in N/mm2																			
		Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²
Ø10	H7/k6	27	335	25	296																
	H7/h6	15	262	10	223																
Ø11	H7/k6	32	334	30	296																
	H7/h6	18	262	12	223																
Ø14	H7/k6	69	298	70	260																
	H7/h6	57	262	55	223																
Ø15	H7/k6	84	288	87	250	108	296														
	H7/h6	74	262	74	223	74	243														
Ø16	H7/k6	57	241	56	212	131	289														
	H7/h6	38	197	32	168	97	243														
Ø19	H7/k6	94	228	97	200	207	277														
	H7/h6	76	197	72	168	172	243														
Ø20	H7/k6	110	221	114	193	148	237	208	248												
	H7/h6	94	197	93	168	94	190	136	200												
Ø24	H7/k6			116	157	253	217	353	229												
	H7/h6			84	130	207	190	290	200												
Ø25	H7/k6			133	153	285	213	395	120	445	246										
	H7/h6			103	130	242	190	337	200	387	221										
Ø28	H7/k6			192	141	315	190	439	200	495	219										
	H7/h6			173	130	267	168	373	178	429	197										
Ø30	H7/k6					382	184	531	194	595	213	616	217								
	H7/h6					343	168	476	178	540	197	513	191								
Ø32	H7/k6					330	168	463	177	526	194	704	216								
	H7/h6					260	144	367	152	429	169	590	191								
Ø35	H7/k6					433	160	603	169	677	185	899	208	863	179						
	H7/h6					377	144	525	152	600	169	806	191	750	161						
Ø38	H7/k6					503	150	593	152	671	166	896	186	856	161						
	H7/h6					453	137	491	133	569	148	775	167	710	141						
Ø40	H7/k6							689	148	775	162	1030	182	991	157	1446	178				
	H7/h6							601	134	687	148	924	167	863	141	1275	161				
Ø42	H7/k6							793	144	718	149	962	167	918	145	1355	163	1710	180		
	H7/h6							721	133	599	131	822	149	750	126	1135	144	1460	160		
Ø45	H7/k6							776	132	872	144	1160	162	1119	140	1637	158	2053	175		
	H7/h6							677	119	773	131	1042	149	976	126	1447	144	1836	160		
Ø48	H7/k6									1043	140	1379	158	1110	129	1635	145	2059	160		
	H7/h6									970	131	1290	149	934	114	1404	130	1797	145		
Ø50	H7/k6									1061	133	1222	143	1247	126	1827	143	2294	158	3845	221
	H7/h6									978	125	1073	130	1089	114	1619	130	2056	145	3445	200
Ø55	G7/m6											1543	138	1277	115	1887	130	2384	144	4249	205
	G7/h6											1373	125	972	95	1488	110	1929	123	3556	178
Ø60	G7/m6													1665	110	2429	125	3040	138	4795	191
	G7/h6													1454	98	2142	113	2708	126	4080	168
Ø65	G7/m6													1605	99	2368	112	2983	124	5859	186
	G7/h6													1287	84	1949	97	2507	108	5260	170
Ø70	G7/m6													2008	95	2930	108	3664	120	5906	168
	G7/h6													1792	86	2635	99	3323	110	5153	150
Ø80	G7/m6																	4293	106	7036	150
	G7/h6																	3945	98	6253	136
Ø90	G7/m6																			8047	136
	G7/h6																			7104	123
Ø95	G7/m6																			9247	134
	G7/h6																			8484	124

The transmittable friction torques of the clamping connection consider the max. fitting tolerance with shaft tolerance k6 resp. h6/bore H7, from Ø55 G7/m6 or G7/h6. The friction torque is reduced with bigger fitting tolerance and use of a hollow shaft (see chapter 4.6).
The surface pressure of the clamping connection specified considers the minimum fitting tolerance with shaft fit k6 resp. h6/bore H7, from Ø55 G7/m6 resp. G7/h6.

A calculation of the hollow shaft strength is necessary if hollow shafts are used (see chapter 4.6)!

1 Technical data

1.3 Coupling dimensions

Table 10 continued: Friction torques and surface pressure of clamping ring hubs 6.0 steel

Size		19		24		28		38		42		48		55		65		75		90	
Bore Ø		Transmittable friction torque T_R of clamping ring hub in Nm / surface pressure in N/mm2																			
		Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²	Nm	N/mm²
Ø100	G7/m6																			9575	126
	G7/h6																			8722	117
Ø105	G7/m6																			10845	124
	G7/h6																			10202	118

The transmittable friction torques of the clamping connection consider the max. fitting tolerance with shaft tolerance k6/bore H7, from Ø55 G7/m6. The friction torque is reduced with bigger fitting tolerance and use of a hollow shaft (see chapter 4.6).
The surface pressure of the clamping connection specified considers the minimum clearance with shaft fit k6/bore H7, from Ø55 G7/m6.

A calculation of the hollow shaft strength is necessary if hollow shafts are used (see chapter 4.6)!

Table 11: Friction torque and surface pressure of clamping ring hubs 6.0

Size	14	19	24	28	38
Bore Ø	Transmittable friction torque T_R of clamping ring hub in Nm surface pressure in N/mm2				
Ø6	8.6				
	225				
Ø10	13.8	41			
	130	272			
Ø11	14.7	45	48		
	118	248	214		
Ø14	22.7	62	67		
	108	211	182		
Ø15		68	74	142	
		203	175	243	
Ø16		67	72	154	
		171	148	231	
Ø19		83	90	189	
		153	132	203	
Ø20		90	97	188	269
		149	129	178	196
Ø22			99	212	307
			107	167	183
Ø24			112	237	337
			102	157	172
Ø25			120	250	356
			100	153	167
Ø28			143	280	398
			96	136	148
Ø30				307	436
				131	142
Ø32				310	442
				115	126
Ø35				353	501
				110	120
Ø38				389	533
				103	107
Ø40					572
					104
Ø42					615
					102
Ø45					644
					92

The transmittable friction torques of the clamping connection consider the max. fitting tolerance with shaft tolerance k6/bore H7. The friction torque is reduced with bigger fitting tolerance and use of a hollow shaft (see chapter 4.6).
The surface pressure of the clamping connection specified considers the minimum fitting tolerance with shaft fit k6/bore H7.

A calculation of the hollow shaft strength is necessary if hollow shafts are used (see chapter 4.6)!

1 Technical data

1.3 Coupling dimensions

DKM

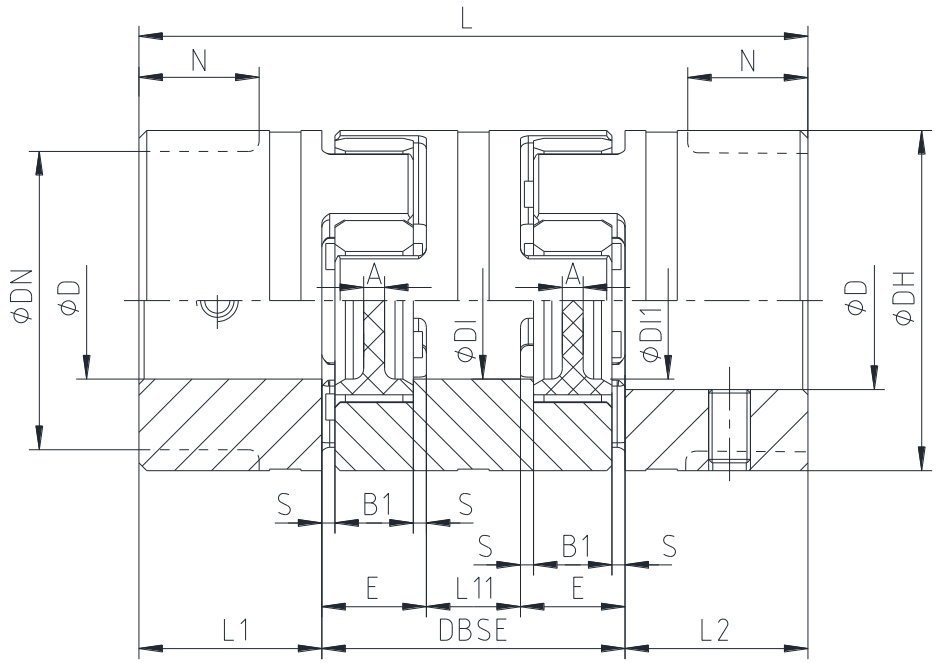


Illustration 10: ROTEX® GS DKM

☞ **Please refer to table 1 for torques and table 2 for finish bores.**

Table 12: Dimensions - DKM

Size	Dimensions in mm												
	DN	DH	DI1	DI	L1, L2	N	L11	DBSE	L	E	B1	S	A
Spacer material - aluminium/hub material depends on hub type													
5	-	10	-	-	5	-	3	13	23	5	4	0.5	4.0
7	-	14	-	-	7	-	4	20	34	8	6	1.0	6.0
9	-	20	7.2	-	10	-	5	25	45	10	8	1.0	1.5
12	-	25	8.5	-	11	-	6	30	52	12	10	1.0	3.5
14	-	30	10.5	-	11	-	8	34	56	13	10	1.5	2.0
19	-	40	18	18	25	-	10	42	92	16	12	2.0	3.0
24	-	55	27	27	30	-	16	52	112	18	14	2.0	3.0
28	-	65	30	30	35	-	18	58	128	20	15	2.5	4.0
38	-	80	38	38	45	-	20	68	158	24	18	3.0	4.0
42	85	95	46	46	50	28	22	74	174	26	20	3.0	4.0
48	95	105	51	51	56	32	24	80	192	28	21	3.5	4.0
55	110	120	60	60	65	37	28	88	218	30	22	4.0	4.5

2 Advice

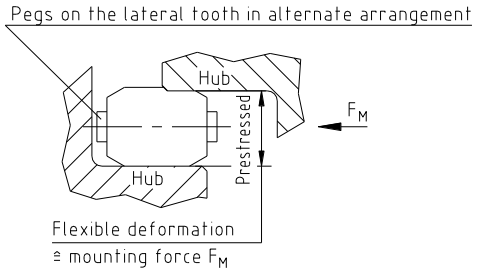


Illustration 11: Prestress of spider

The **ROTEX® GS** coupling was developed for a backlash-free power transmission and easy plug-in assembly. This backlash-free power transmission arises in the area of prestress (see illustration 11).
The big concave surface contact results in a lower surface pressure on the involute tooth. Consequently the tooth can be overloaded many times over with no wear/deformation.
Safe operation in the range of prestress is ensured, because the coupling operates according to the principle of positive-locking rubber spring prestress with high damping features. The star-shape coupling spider is inserted in the cams of the hubs which are machined specifically accurately with a small amount of prestress, resulting in the necessary backlash-free power transmission.
The axial insertion force varies depending on the coupling size, different kinds of Shore hardness and production tolerances.
The flexible teeth compensating for misalignment are radially supported in the internal diameter by a web. An external deformation is limited by the concave shape of the cams, ensuring smooth operation even with bigger masses to be accelerated (e. g. machine tables, articulated arms, etc.).
The flexible spiders for the GS series are available in five different kinds of Shore hardness, injected in different colours, either as a torsionally soft or hard material.

2.1 General advice

Please read carefully through these operating/assembly instructions before you start up the coupling.
Pay special attention to the safety instructions!

The **ROTEX® GS** coupling is suitable and approved for the use in potentially explosive atmospheres. When using the coupling in potentially explosive atmospheres, observe the special advice and instructions regarding safety in enclosure A.

In order to ensure the operating principle of **ROTEX® GS** and avoid early wear of the coupling, a respective operating factor „S_B“ has to be considered with the selection, each depending on the application (see catalogue "Drive Technology"). Temperatures and shocks are provided with the corresponding factors, too (see catalogue "Drive Technology").

The operating/assembly instructions are part of your product. Please store them carefully and close to the coupling. The copyright for these operating/assembly instructions remains with KTR.

2 Advice

2.2 Safety and advice symbols

	**Warning of potentially explosive atmospheres**	This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death caused by explosion.
	**Warning of personal injury**	This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death.
	**Warning of product damages**	This symbol indicates notes which may contribute to preventing material or machine damage.
	**General advice**	This symbol indicates notes which may contribute to preventing adverse results or conditions.
	**Warning of hot surfaces**	This symbol indicates notes which may contribute to preventing burns with hot surfaces resulting in light to serious bodily injuries.

2.3 General hazard warnings

With assembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is secured against accidental switch-on. You may be seriously hurt by rotating parts. Make absolutely sure to read through and observe the following safety indications.

- All operations on and with the coupling have to be performed taking into account "safety first".
- Make sure to switch off the power pack before you perform your work on the coupling.
- Secure the power pack against accidental switch-on, e. g. by providing warning signs at the place of switch-on or removing the fuse for current supply.
- Do not reach into the operating area of the coupling as long as it is in operation.
- Secure the coupling against accidental contact. Provide for the necessary protection devices and covers.

2.4 Proper use

You may only assemble, operate and maintain the coupling if you

- have carefully read through the operating/assembly instructions and understood them
- are technically qualified and specifically trained (e. g. safety, environment, logistics)
- are authorized by your company

The coupling may only be used in accordance with the technical data (see chapter 1). Unauthorized modifications on the coupling design are not admissible. We will not assume liability for any damage that may arise. In the interest of further development we reserve the right for technical modifications.
The **ROTEX® GS** described in here corresponds to the technical status at the time of printing of these operating/assembly instructions.

2 Advice

2.5 Coupling selection

For a long-lasting and failure-free operation of the coupling it must be selected according to the selection instructions (following DIN 740, part 2 with specific factors) for the particular application (see catalogue drive technology "ROTEX® GS").
If the operating conditions (performance, speed, modifications on engine and machine) change, the coupling selection must be reviewed.
Make sure that the technical data regarding torque refer to the spider only. The transmittable torque of the shaft-hub-connection must be reviewed by the customer and is subject to his responsibility.

For drives subjected to torsional vibrations (drives with cyclic stress due to torsional vibrations) it is necessary to perform a torsional vibration calculation to ensure a reliable selection. Typical drives subjected to torsional vibrations are e. g. drives with diesel engines, piston pumps, piston compressors etc. If requested, KTR will perform the coupling selection and the torsional vibration calculation.

2.6 Reference to EC Machinery Directive 2006/42/EC

The couplings supplied by KTR should be considered as components, not machines or partly completed machines according to EC Machinery Directive 2006/42/EC. Consequently KTR does not have to issue a declaration of incorporation. For details about safe assembly, start-up and safe operation refer to the present operating/assembly instructions considering the warnings.

3 Storage, transport and packaging

3.1 Storage

The coupling hubs made of steel are supplied in preserved condition and can be stored in a dry and roofed place for 6 - 9 months.
The coupling hubs made of aluminium can be stored at a dry and roofed place for several years.

The features of the coupling spiders (elastomers) remain unchanged for up to 5 years with favourable storage conditions.

The storage rooms must not include any ozone-generating devices like e. g. fluorescent light sources, mercury-vapour lamps or electrical high-voltage appliances.
Humid storage rooms are not suitable.
Make sure that condensation is not generated. The best relative air humidity is less than 65 %.

3.2 Transport and packaging

In order to avoid any injuries and any kind of damage always make use of proper transport and lifting equipment.

The couplings are packed differently each depending on size, number and kind of transport. Unless otherwise contractually agreed, packaging will follow the in-house packaging specifications of KTR.

4 Assembly

The coupling is generally supplied in individual parts. Before assembly the coupling has to be inspected for completeness.

4.1 Components of the coupling

Features of standard spiders

Spider hardness (Shore)	Increasing hardness →							
	80 ShA-GS (blue)	92 ShA-GS (yellow)	98 ShA-GS (red)	57 ShD-GS (sky blue)	64 ShD-H-GS (green)	64 ShD-GS (green)	72 ShD-H-GS (grey)	72 ShD-GS (grey)
Size	5 - 24	5 - 55	5 - 90	19 - 48	7 - 38	42 - 90	24 - 38	42 - 90
Material	Polyurethane	Polyurethane	Polyurethane	Polyurethane	Hytrel	Polyurethane	Hytrel	Polyurethane
Marking (colour)								

Components of ROTEX® GS, hub type 1.0, 1.1 or 1.2

Component	Quantity	Description
1	2	Hub
2	1	Spider
3	2	Setscrew DIN EN ISO 4029

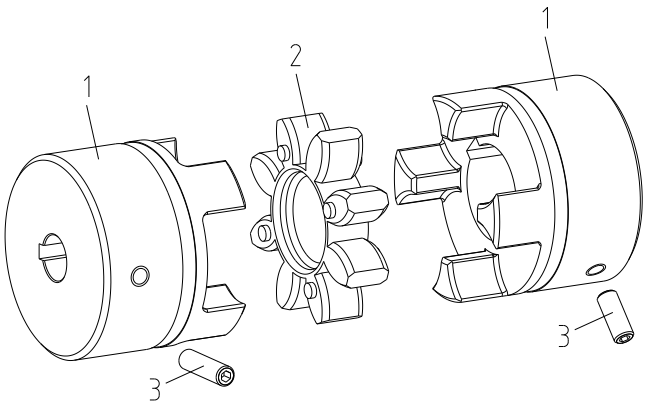


Illustration 12: ROTEX® GS (size 5 - 38)

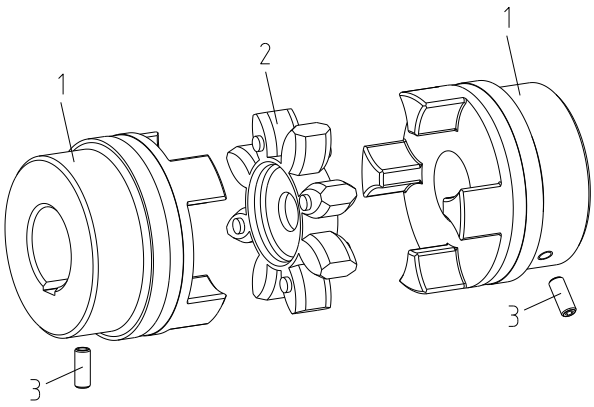


Illustration 13: ROTEX® GS (size 42 - 90)

Hubs, clamping hubs or similar types without feather keyway may be used in category 3 only and are marked with category 3 accordingly.
Hub type 1.2 is not approved for potentially explosive atmospheres!

4 Assembly

4.1 Components of the coupling

Components of ROTEX® GS clamping hubs, hub type 2.0, 2.1, 2.5 or 2.6

Component	Quantity	Description
1	2	Clamping hub
2	1	Spider
3	2	Cap screw DIN EN ISO 4762

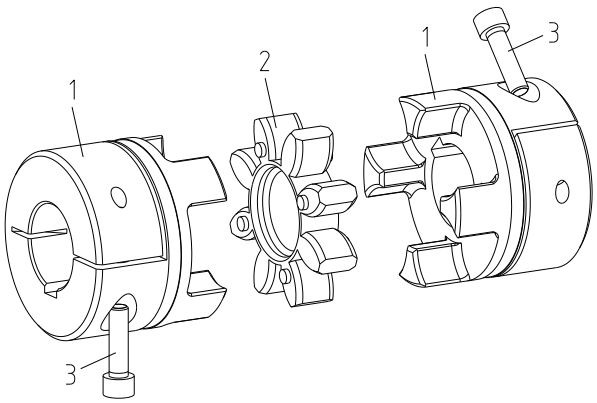


Illustration 14: ROTEX® GS clamping hub

Hubs, clamping hubs or similar types without feather keyway may be used in category 3 only and are marked with category 3 accordingly.

Components of ROTEX® GS Compact, hub type 2.8 or 2.9

Component	Quantity	Description
1	2	Clamping hub C
2	1	Spider
3	2 / 4	Cap screw DIN EN ISO 4762

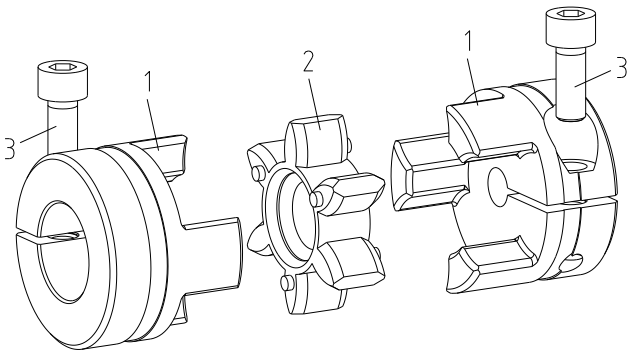


Illustration 15: ROTEX® GS Compact (size 7 - 19)

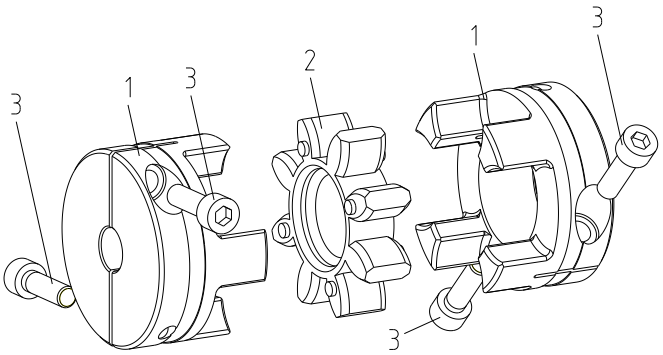


Illustration 16: ROTEX® GS Compact (size 24 - 38)

Hubs, clamping hubs or similar types without feather keyway may be used in category 3 only and are marked with category 3 accordingly.

4 Assembly

4.1 Components of the coupling

Components of ROTEX® GS clamping ring hubs, hub type 6.0 light, 6.0 steel or 6.0

Component	Quantity	Description
1.1	2	Clamping ring
1.2	2	Clamping ring hub
2	1	Spider
3	see table 5, 6 and 7	Cap screw DIN EN ISO 4762

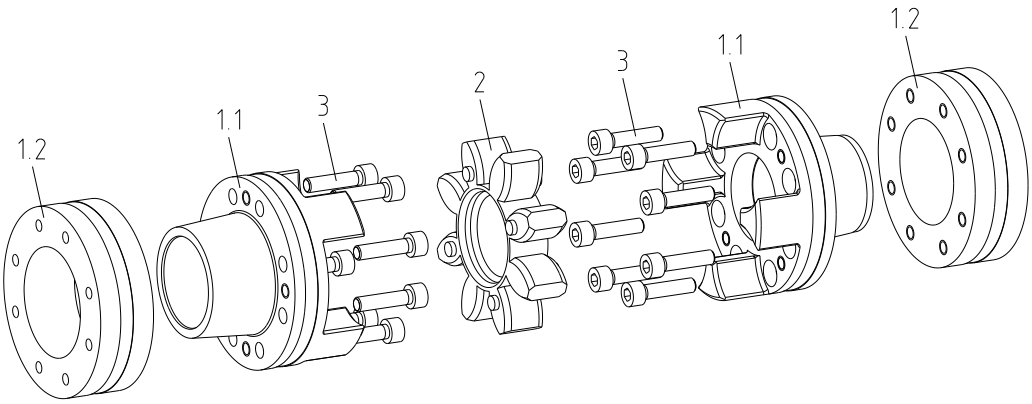


Illustration 17: ROTEX® GS clamping ring hub

Components of ROTEX® GS DKM

Component	Quantity	Description
1	2	Hub
2	2	Spider
3	1	DKM spacer
4	2	Setscrew DIN EN ISO 4029

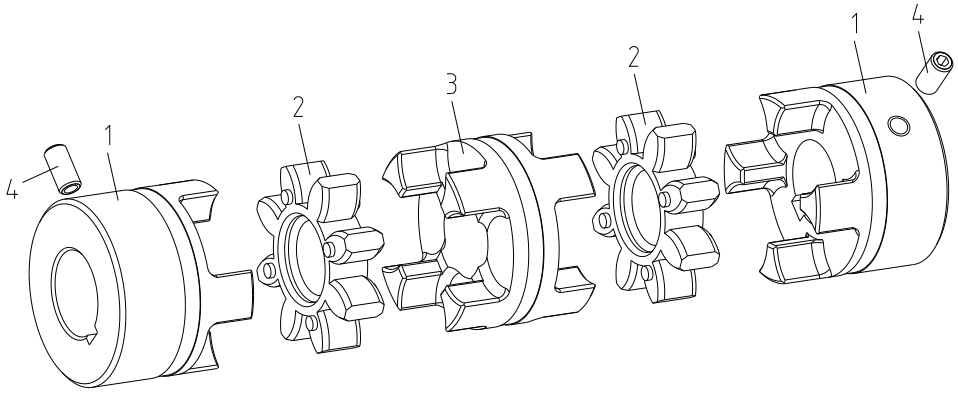


Illustration 18: ROTEX® GS DKM

Hubs, clamping hubs or similar types without feather keyway may be used in category 3 only and are marked with category 3 accordingly.
Hub type 1.2 is not approved for potentially explosive atmospheres!

4 Assembly

4.2 Advice for assembly

Subject to its design **ROTEX® GS** allows to axially plug in the coupling having assembled the hubs onto the shaft journal. Consequently there is no need for subsequent screwing and the respective mounting holes in the housing.

The pegs on the spider arranged reciprocally prevent contact of the spider on the hubs over the full surface. Observing the distance dimension E, the ability for displacement of the coupling is ensured in this way. All teeth are chamfered on the face which allows for blind assembly. When the coupling hubs are pushed together with the **ROTEX® GS** spider an axial assembly force is generated resulting from the flexible prestress of the star-shape elastomer. This assembly force varies depending on the coupling size, spider hardness and machining tolerances.
The axial insertion force is offset after having pushed together the hubs and consequently does not mean any risk of axial load affecting adjacent bearings.
The mounting force can be reduced by lightly greasing or lubricating the elastomer or the hubs. For this purpose please only use oils and greases on a mineral oil basis without any additives. Lubricants on a silicone basis or vaseline have proven their worth, too.

4.3 Advice for finish bore

STOP

The maximum permissible bore diameters D (see chapter 1 - technical data) must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause danger to life.

- Hub bores machined by the customer have to observe concentricity resp. axial runout (see illustration 19).
- Make absolutely sure to observe the figures for ØD.
- Carefully align the hubs when the finish bores are drilled.
- Provide for a setscrew according to DIN EN ISO 4029 with a cup point or an end plate to fasten the hubs axially.

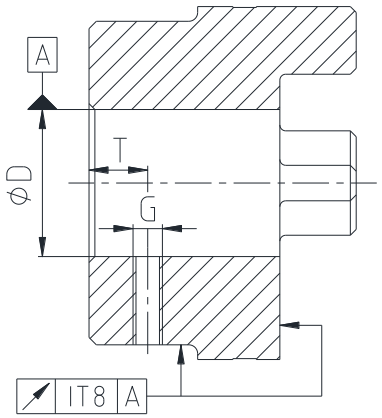


Illustration 19: Concentricity and axial runout

The customer bears the sole responsibility for all machining processes performed subsequently on unbored or pilot bored as well as finish machined coupling components and spare parts. KTR does not assume any warranty claims resulting from insufficient remachining.

KTR supplies unbored or pilot bored coupling components and spare parts only upon explicit request of the customer. These parts are additionally marked with the symbol Ⓤ.

<u>Reference to unbored resp. pilot bored coupling components with explosion protection marking:</u>
Basically the company KTR Systems GmbH supplies couplings resp. coupling hubs with explosion protection marking as an unbored or pilot bored type only on explicit request of the customer. The prerequisite is a declaration of exemption submitted by the customer assuming any responsibility and liability for respective remachining performed on the product of KTR Systems GmbH.

Table 13: Setscrew DIN EN ISO 4029

Size	5	7	9	12	14	19	24	28	38	42	48	55	65	75	90
Dimension G in mm	M2	M3	M4	M4	M4	M5	M5	M8	M8	M8	M8	M10	M10	M10	M12
Dimension T in mm	2.5	3.5	5	5	5	10	10	15	15	20	20	20	20	25	30
Tightening torque T_A in Nm	0.35	0.6	1.5	1.5	1.5	2	2	10	10	10	10	17	17	17	40

4 Assembly

4.4 Assembly of the coupling (general)

We recommend to inspect bores, shaft, keyway and feather key for dimensional accuracy before assembly.

Before starting with the assembly preserving agents have to be removed from the bores. Moreover, the shaft ends have to be cleaned carefully, too.

Please note the manufacturer's instructions regarding the use of detergents.

Heating the hubs lightly (approx. 80 °C) allows for an easier mounting on the shaft.

Pay attention to the ignition risk in potentially explosive atmospheres!

Touching the heated hubs causes burns.
Please wear safety gloves.

With the assembly make sure that the distance dimension E (see table 3 and 12) is observed to allow for axial clearance of the spider when in operation.
Disregarding this advice may cause damage to the coupling.

If used in potentially explosive atmospheres the setscrews to fasten the hubs as well as all screw connections must be secured against working loose additionally, e. g. conglutinating with Loctite (average strength).

4.5 Assembly of the hubs (hub type 1.0, 1.1 and 1.2)

- Mount the hubs on the shaft of driving and driven side.
- Insert the spider into the cam section of the hub on the driving or driven side.
- Shift the power packs in axial direction until the distance dimension E is achieved.
- If the power packs are already firmly assembled, shifting the hubs axially on the shafts allows for setting the distance dimension E.
- **Applies with hub type 1.0 and 1.1 only:**
  Fasten the hubs by tightening the setscrews DIN EN ISO 4029 with a cup point (tightening torques see table 13).

If the shaft diameters with inserted feather key are smaller than dimension DI1 (see table 3 and 12) of the spider, one or two shaft ends may protrude into the spider.

Hubs, clamping hubs or similar types without feather keyway may be used in category 3 only and are marked with category 3 accordingly.
Hub type 1.2 is not approved for potentially explosive atmospheres!

4 Assembly

4.6 Assembly of the clamping hubs (hub types 2.0, 2.1, 2.5, 2.6, 2.8 and 2.9)

The power transmission of ROTEX® GS clamping hubs (hub type 2.0, 2.5 and 2.8) is frictionally engaged. With hub type 2.1, 2.6 and 2.9 a feather key additionally provides for positive locking power transmission.

If used in potentially explosive atmospheres all screw connections must be secured against working loose additionally, e. g. conglutinating with Loctite (average strength).

- Clean and degrease the hub bore and the shaft.
- Lightly unscrew the clamping screws.
- Slip the hub onto the shaft. Please observe dimension L1 or L2.
- Tighten the clamping screws at the tightening torques specified in table 4.
  With hub type 2.8 or 2.9 (with feather keyway) the screws have to be tightened alternately in equal steps at the tightening torques specified in table 6.

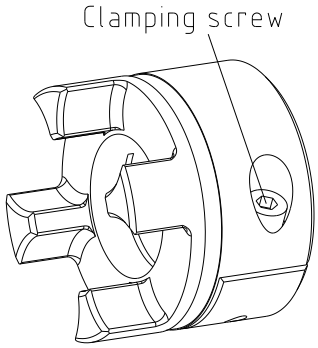


Illustration 20: Assembly of clamping hub

Please note: hub type 2.8 or 2.9 have 2 clamping screws

The transmittable friction torques of the clamping hubs depend on the bore diameter.

Hubs, clamping hubs or similar types without feather keyway may be used in category 3 only and are marked with category 3 accordingly.

If the clamping screws are not tightened at the correct tightening torque, there is the risk of
a) a fracture of the hub and plastic deformation with a too high tightening torque T_A
b) early slippling, untightening of the screws with a too low tightening torque T_A

4.7 Assembly of clamping ring hubs (hub type 6.0 light, 6.0 steel and 6.0)

The power transmission of **ROTEX® GS** clamping hubs is frictionally engaged. The necessary surface pressure is transmitted via the clamping ring with internal taper to the taper hub and consequently to the shaft. The friction torques specified in table 5 to 7 consider a fit pair H7/k6, from Ø55 G7/m6. With a bigger fitting tolerance the friction torques specified in table 9 to 11 are reduced.

The strength and dimensions of the shafts (specifically hollow shafts) have to be defined such that sufficient safety against plastic deformation is ensured. This may roughly be reviewed as per the following criterion.

4 Assembly

4.7 Assembly of clamping ring hubs (hub type 6.0 light, 6.0 steel and 6.0)

For clamping connections with hollow shafts the required internal diameter of the hollow shaft d_{iW} is calculated based on the following formula:

$$d_{iW} \leq d \cdot \sqrt{\frac{R_{p0,2} - 2 \cdot p_W}{R_{p0,2}}} \quad [mm]$$

Shear stress on the internal shaft diameter for hollow shaft:

$$\sigma_{tiW} \approx - \frac{2 \cdot p_W}{1 - C_W^2} \quad [N / mm^2]$$

Shear stress for solid shaft:

$$\sigma_{tW} = - p_W \quad [N / mm^2]$$

$R_{p0.2}$ = yield strength of shaft material in N/mm²
p_W = surface pressure of hub/shaft in N/mm²
d_{iW} = internal diameter of hollow shaft in mm
d = shaft diameter in mm
C_W = d_{iW} / d

The strength required is not provided if the hollow shaft bore is bigger than the max. internal bore calculated or if the shear stress exceeds the yield strength of the material.
For a detailed calculation please contact KTR.

If used in potentially explosive atmospheres all screw connections must be secured against working loose additionally, e. g. conglutinating with Loctite (average strength).

- Clean the hub bore and shaft and review for dimensional accuracy, afterwards lubricate with a thin oil (e. g. Castrol 4 in 1, Klüber Quietsch-Ex or WD-40).

Oils and greases containing molybdenum disulfide or other high-pressure additives as well as internal lubricants must not be used.

- Lightly untighten the clamping screw and pull the clamping ring from the hub only marginally to make sure that the clamping ring is fitted loosely.
- Shift the clamping ring hub onto the shaft. Dimension L3 should be observed at the minimum (see table 8).
- Tighten the clamping screws evenly crosswise gradually to the tightening torque specified in table 8. Repeat this process until all clamping screws have reached the tightening torque.

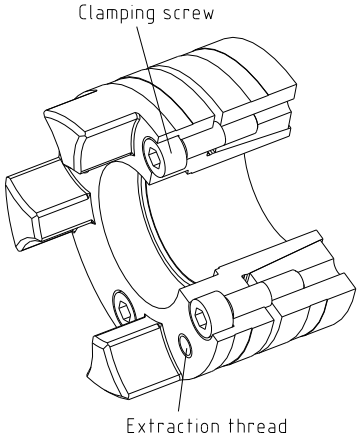


Illustration 21: Assembly of clamping ring hub with clamping ring

If the clamping screws are not tightened at the correct tightening torque, there is the risk of
a) a fracture of the hubs/cams and plastic deformation with a too high tightening torque T_A
b) early slippling, untightening of the screws with a too low tightening torque T_A

- **<u>Applies with hub type 6.0 light only:</u>**
  Tighten the clamping screws evenly gradually and crosswise at 1/3 or 2/3 tightening torque T_A, respectively (see table 8) until the ring gets in contact. Afterwards tighten the screws at the tightening torque mentioned in table 8 one after another.

4 Assembly

4.8 Disassembly of clamping ring hubs (hub type 6.0 light, 6.0 steel and 6.0)

Unscrew the clamping screws evenly one after another. During each revolution every screw may only be unscrewed by half a turn. Unscrew all clamping screws by 3 - 4 pitches.

Remove the screws located next to the extraction threads and screw them into the intended extraction threads until they fit.

The clamping ring is released by tightening the screws in the extraction threads evenly gradually and crosswise.

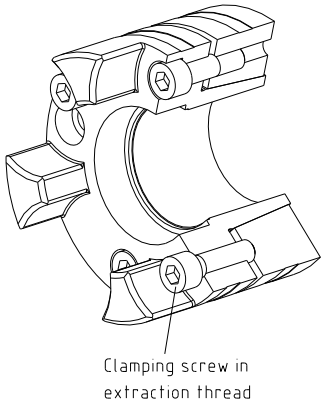


Illustration 22: Disassembly of clamping ring hub with clamping ring

If these hints are not observed, the operation of the coupling may be affected.

If the assembly is repeated the bore of the hub and shaft have to be cleaned and afterwards lubricated with a thin oil (e. g. Castrol 4 in 1, Klüber Quietsch-Ex or WD-40). The same applies for the taper surfaces of clamping ring hub and clamping ring.

Oils and greases containing molybdenum disulfide or other high-pressure additives as well as internal lubricants must not be used.

Applies with hub type 6.0 light only:

With reassembly the taper surfaces, bores of the hub and the shaft have to be cleaned. The bore of the hub and shaft have to be lubricated with thin oil (e. g. Castrol 4 in 1, Klüber Quietsch-Ex or WD-40). Lightly paint the taper surfaces of the clamping ring hub or clamping ring with the grease Gleitmo 800, afterwards twist the components against one another by one revolution in order to spread the grease evenly.

4.9 Displacements - alignment of the couplings

The displacement figures specified in tables 14 and 15 provide for sufficient safety to compensate for external influences like, for example, thermal expansion or foundation settling.

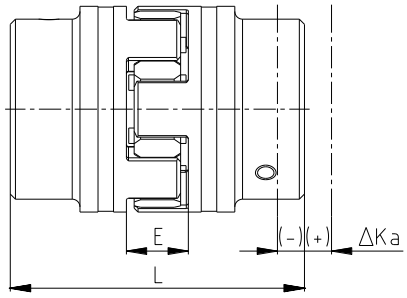
In order to ensure a long service life of the coupling and avoid hazards with the use in potentially explosive atmospheres, the shaft ends must be accurately aligned.
Please absolutely observe the displacement figures specified (see tables 14 and 15). If the figures are exceeded, the coupling will be damaged.
The more accurate the alignment of the coupling, the longer is its service life.
If used in potentially explosive atmospheres for explosion group IIC, only half of the displacement figures (see tables 14 and 15) is permissible.

Please note:

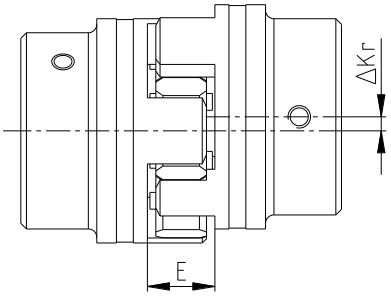
- The displacement figures specified in tables 14 and 15 are maximum figures which must not arise in parallel. If radial and angular displacements arise simultaneously, the permissible displacement figures may only be used proportionally (see illustration 24).
- Inspect with a dial gauge, ruler or feeler whether the permissible displacement figures of tables 14 and 15 can be observed.

4 Assembly

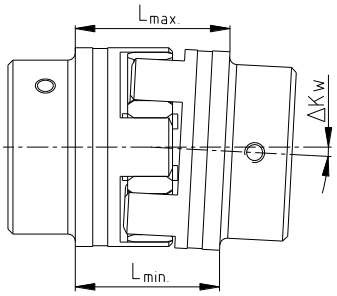
4.9 Displacements - alignment of the couplings



Axial displacements



Radial displacements



Angular displacements

$L_{max} = L +/- \Delta K_a$

$\Delta K_w \text{ in mm} = L_{1max} - L_{1min}$

Illustration 23: Displacements

Examples of the displacement combinations specified in illustration 24:

Example 1:
$\Delta K_r = 30\ \%$
$\Delta K_w = 70\ \%$

Example 2:
$\Delta K_r = 60\ \%$
$\Delta K_w = 40\ \%$

$\Delta K_{total} = \Delta K_r + \Delta K_w \leq 100\ \%$

Illustration 24: Combinations of displacement

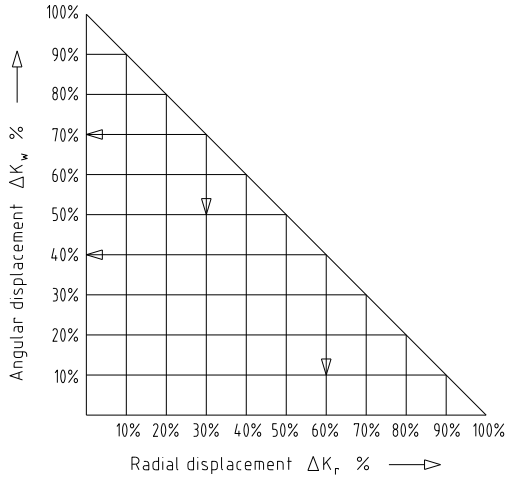


Table 14: Displacement figures

Size	Max. axial displacement DKa in mm	Max. radial displacement ΔK_r in mm						Max. angular displacement ΔK_w in degree											
		80 ShA-GS	92 ShA-GS	98 ShA-GS	57 ShD-GS	64 ShD-GS	72 ShD-GS	80 ShA-GS		92 ShA-GS		98 ShA-GS		57 ShD-GS		64 ShD-GS		72 ShD-GS	
								Degree	mm	Degree	mm	Degree	mm	Degree	mm	Degree	mm	Degree	mm
5	+0.4 / -0.2	0.12	0.06	0.04	-	-	-	1.1	0.2	1.0	0.15	0.9	0.15	-	-	-	-	-	-
7	+0.6 / -0.3	0.15	0.10	0.06	-	0.04	-	1.1	0.25	1.0	0.2	0.9	0.2	-	-	0.8	0.2	-	-
8	+0.6 / -0.5	0.15	-	0.08	-	0.06	-	1.1	0.4	-	-	0.9	0.3	-	-	0.8	0.3	-	-
9	+0.8 / -0.4	0.19	0.13	0.08	-	0.05	-	1.1	0.5	1.0	0.35	0.9	0.3	-	-	0.8	0.3	-	-
12	+0.9 / -0.4	0.20	0.14	0.08	-	0.05	-	1.1	0.5	1.0	0.45	0.9	0.4	-	-	0.8	0.35	-	-
13	+0.9 / -0.8	0.20	-	0.08	-	0.05	-	1.1	0.5	-	-	0.9	0.4	-	-	0.8	0.35	-	-
14	+1.0 / -0.5	0.21	0.15	0.09	-	0.06	-	1.1	0.6	1.0	0.5	0.9	0.5	-	-	0.8	0.4	-	-
16	+1.0 / -0.8	0.21	-	0.10	-	0.08	-	1.1	0.6	-	-	0.9	0.5	-	-	0.8	0.4	-	-
19	+1.2 / -0.5	0.15	0.10	0.06	0.05	0.04	-	1.1	0.75	1.0	0.7	0.9	0.6	0.85	0.59	0.8	0.55	-	-
24	+1.4 / -0.5	-	0.14	0.10	0.08	0.07	0.04	-	-	1.0	1.0	0.9	0.85	0.85	0.80	0.8	0.75	0.7	0.65
28	+1.5 / -0.7	-	0.15	0.11	0.09	0.08	0.05	-	-	1.0	1.1	0.9	1.0	0.85	0.95	0.8	0.9	0.7	0.8
38	+1.8 / -0.7	-	0.17	0.12	0.10	0.09	0.06	-	-	1.0	1.4	0.9	1.25	0.85	1.18	0.8	1.1	0.7	1.0
42	+2.0 / -1.0	-	0.19	0.14	0.12	0.10	0.07	-	-	1.0	1.65	0.9	1.5	0.85	1.4	0.8	1.3	0.7	1.1
48	+2.1 / -1.0	-	0.23	0.16	0.13	0.11	0.08	-	-	1.0	1.85	0.9	1.65	0.85	1.55	0.8	1.45	0.7	1.3
55	+2.2 / -1.0	-	0.24	0.17	-	0.12	0.09	-	-	1.0	2.1	0.9	1.85	-	-	0.8	1.7	0.7	1.4
65	+2.6 / -1.0	-	-	0.18	-	0.13	0.10	-	-	-	-	0.9	2.1	-	-	0.8	1.9	0.7	1.6
75	+3.0 / -1.5	-	-	0.21	-	0.15	0.11	-	-	-	-	0.9	2.5	-	-	0.8	2.2	0.7	2.0
90	+3.4 / -1.5	-	-	0.23	-	0.17	0.13	-	-	-	-	0.9	3.1	-	-	0.8	2.8	0.7	2.4

The permissible displacement figures of the flexible **ROTEX® GS** couplings specified are general standard values taking into account the load of the coupling up to the rated torque T_{KN} of the coupling and an ambient temperature of +30 °C.

4 Assembly

4.9 Displacements - alignment of the couplings

Table 15: Displacement figures - type DKM

Size	Max. axial displacement DKa in mm	Max. radial displacement ΔK_r in mm						Max. angular displacement ΔK_w in degree					
		80 ShA-GS	92 ShA-GS	98 ShA-GS	57 ShD-GS	64 ShD-GS	72 ShD-GS	80 ShA-GS	92 ShA-GS	98 ShA-GS	57 ShD-GS	64 ShD-GS	72 ShD-GS
5	+0.4 / -0.4	0.15	0.14	0.13	-	-	-	1.1	1.0	0.9	-	-	-
7	+0.6 / -0.6	0.23	0.21	0.19	-	0.17	-	1.1	1.0	0.9	-	0.8	-
9	+0.8 / -0.8	0.29	0.26	0.24	-	0.21	-	1.1	1.0	0.9	-	0.8	-
12	+0.9 / -0.9	0.35	0.32	0.29	-	0.25	-	1.1	1.0	0.9	-	0.8	-
14	+1.0 / -1.0	0.40	0.37	0.33	-	0.29	-	1.1	1.0	0.9	-	0.8	-
19	+1.2 / -1.0	0.49	0.45	0.41	0.39	0.36	-	1.1	1.0	0.9	0.85	0.8	-
24	+1.4 / -1.0	-	0.59	0.53	0.50	0.47	0.42	-	1.0	0.9	0.85	0.8	0.7
28	+1.5 / -1.4	-	0.66	0.60	0.56	0.53	0.46	-	1.0	0.9	0.85	0.8	0.7
38	+1.8 / -1.4	-	0.77	0.69	0.65	0.61	0.54	-	1.0	0.9	0.85	0.8	0.7
42	+2.0 / -2.0	-	0.84	0.75	0.71	0.67	0.59	-	1.0	0.9	0.85	0.8	0.7
48	+2.1 / -2.0	-	0.91	0.82	0.77	0.73	0.64	-	1.0	0.9	0.85	0.8	0.7
55	+2.2 / -2.0	-	1.01	0.91	-	0.81	0.71	-	1.0	0.9	-	0.8	0.7

The permissible displacement figures of the flexible **ROTEX® GS** couplings specified are general standard values taking into account the load of the coupling up to the rated torque T_{KN} of the coupling and an ambient temperature of +30 °C.

5 Start-up

Before start-up of the coupling, inspect the tightening of the setscrews in the hubs, the alignment and the distance dimension E and adjust, if necessary, and also inspect all screw connections for the tightening torques specified.

If used in potentially explosive atmospheres the setscrews to fasten the hubs as well as all screw connections must be secured against working loose additionally, e. g. conglutinating with Loctite (average strength).

Finally the coupling protection against accidental contact must be fitted. It is required in accordance with DIN EN ISO 12100 (Safety of Machinery) and directives 2014/34/EU and SI 2016 No. 1107 and must protect against

- access with a little finger
- falling down of solid foreign objects.

The coupling protection is not part of KTR's scope of delivery and is the customer's responsibility. It must have sufficient distance to the rotating components to safely avoid contact. Depending on the outside diameter DH of the coupling, we recommend the following minimum distance:
ØDH to 50 mm = 6 mm, ØDH 50 mm to 120 mm = 10 mm, ØDH from 120 mm = 15 mm.

Please check if a proper enclosure (ignition protection, coupling protection, contact protection) has been mounted and the operation of the coupling is not affected by the enclosure. The same applies for test runs and rotational direction inspections.

The cover may provide for openings intended for necessary heat dissipation. These openings have to comply with DIN EN ISO 13857.
The cover must be electrically conductive and included in the equipotential bonding. Bellhousings (magnesium share below 7.5 %) made of aluminium and damping rings (NBR) can be used as connecting element between pump and electric motor. The cover may only be taken off with standstill of the unit.

5 Start-up

If the couplings are used in locations subject to dust explosion and in mining the user must make sure that there is no accumulation of dust in a dangerous volume between the cover and the coupling. The coupling must not operate in an accumulation of dust.

For covers with unlocked openings on the top face no light metals must be used if the couplings are used as equipment of equipment group II (*if possible, from stainless steel*).
If the couplings are used in mining (equipment group I M2), the cover must not be made of light metal. In addition, it must be resistant to higher mechanical loads than with use as equipment of equipment group II.

During operation of the coupling, please pay attention to

- different operating noise
- vibrations occurring.

If you note any irregularities with the coupling during operation, the drive unit must be switched off immediately. The cause of the breakdown must be specified by means of the table „Breakdowns“ and, if possible, be eliminated according to the proposals. The potential breakdowns specified can be hints only. To find out the cause all operating factors and machine components must be considered.

Coating of coupling:

If coated (priming, paintings, etc.) couplings are used in potentially explosive atmospheres, the requirements on conductibility and coating thickness must be considered. With paintings up to 200 µm electrostatic load does not have to be expected. If thicker paintings resp. coatings up to a layer thickness of a maximum of 2.0 mm are applied, the couplings are not permissible for gases and vapours of category IIC in potentially explosive areas, but only for gases and vapours of category IIA and IIB.
This also applies for multiple coatings exceeding an overall thickness of 200 µm. Make sure with painting or coating that the coupling components are conductively connected with the device/devices to be connected so that the equipotential bonding is not impeded by the paint or coat applied. Basically painting of the spider is not admitted to ensure an equipotential bonding.
In addition, make sure that the marking of the coupling remains legible.

6 Breakdowns, causes and elimination

The below-mentioned failures can lead to a use of the **ROTEX® GS** coupling other than intended. In addition to the specifications given in these operating/assembly instructions make sure to avoid such failures.
The errors listed can only be clues to search for the failures. When searching for the failure the adjacent components must generally be considered.

The coupling can become a source of ignition with improper use.
Directive 2014/34/EU and UK directive SI 2016 No. 1107 require special care by the manufacturer and the user.

6 Breakdowns, causes and elimination

General failures with improper use:

- Important data for the coupling selection are not forwarded.
- The calculation of the shaft-hub-connection is not considered.
- Coupling components with damage occurred during transport are assembled.
- If the heated hubs are assembled, the permissible temperature is exceeded.
- The clearance of the components to be assembled is not coordinated with one another.
- Tightening torques are fallen below/exceeded.
- Components are mixed up by mistake/assembled incorrectly.
- A wrong or no spider is inserted in the coupling.
- No original **KTR** components (purchased parts) are used.
- Old/already worn out spiders or spiders stored for too long are used.
- Maintenance intervals are not observed.

Breakdowns	Causes	Hazard notes for potentially explosive atmospheres	Elimination
Different operating noise and/or vibrations occuring	Misalignment	Increased temperature on the spider surface; ignition risk by hot surfaces	1) Set the unit out of operation 2) Eliminate the reason for the misalignment (e. g. loose foundation bolts, fracture of the engine mount, heat expansion of unit components, modification of the installation dimension E of the coupling) 3) For inspection of wear see chapter 10.2
	Wear of spider, short-term torque transmission due to metal contact	Ignition risk due to sparking	1) Set the unit out of operation 2) Disassemble the coupling and remove residues of the spider 3) Inspect coupling components and replace coupling components that have been damaged 4) Insert spider, assemble coupling components 5) Inspect alignment, adjust if necessary
	Screws for axial fastening of hubs working loose	Ignition risk due to hot surfaces and sparking	1) Set the unit out of operation 2) Inspect alignment of coupling 3) Tighten the screws to fasten the hubs and secure against working loose 4) For inspection of wear see chapter 10.2
Breaking of cams	Wear of spider, torque transmission due to metal contact	Ignition risk due to sparking	1) Set the unit out of operation 2) Replace complete coupling 3) Inspect alignment
	Breaking of the cams due to high impact energy/overload		1) Set the unit out of operation 2) Replace complete coupling 3) Inspect alignment 4) Find out the reason for overload
	Operating parameters do not meet with the performance of the coupling		1) Set the unit out of operation 2) Review the operating parameters and select a bigger coupling (consider mounting space) 3) Assemble new coupling size 4) Inspect alignment
	Operating error of the unit		1) Set the unit out of operation 2) Replace complete coupling 3) Inspect alignment 4) Instruct and train the service staff

6 Breakdowns, causes and elimination

Breakdowns	Causes	Hazard notes for potentially explosive atmospheres	Elimination
Early wear of spider or reverse backlash	Misalignment	Increased temperature on the spider surface; ignition risk by hot surfaces	1) Set the unit out of operation 2) Eliminate the reason for the misalignment (e. g. loose foundation bolts, fracture of the engine mount, heat expansion of unit components, modification of the installation dimension E of the coupling) 3) For inspection of wear see chapter 10.2
	e. g. contact with aggressive liquids/oils, ozone influence, too high/low ambient temperatures etc. causing physical modification of the spider	Ignition risk due to sparking with metallic contact of the cams	1) Set the unit out of operation 2) Disassemble the coupling and remove residues of the spider 3) Inspect coupling components and replace coupling components that have been damaged 4) Insert spider, assemble coupling components 5) Inspect alignment, adjust if necessary 6) Make sure that further physical modifications of the spider are excluded
Early wear of spider or reverse backlash	excessively high/low ambient/contact temperatures for the spider, max. permissible -30 °C/+90 °C	Ignition risk due to sparking with metallic contact of the cams	1) Set the unit out of operation 2) Disassemble the coupling and remove residues of the spider 3) Inspect coupling components and replace coupling components that have been damaged 4) Insert spider, assemble coupling components 5) Inspect alignment, adjust if necessary 6) Inspect and adjust ambient/contact temperature (correct by using other spider materials, if necessary)
Early wear of spider (liquefaction of material inside the spider cam)	Vibrations of drive		1) Set the unit out of operation 2) Disassemble the coupling and remove residues of the spider 3) Inspect coupling components and replace coupling components that have been damaged 4) Insert spider, assemble coupling components 5) Inspect alignment, adjust if necessary 6) Find out the reason for the vibrations (possibly corrective by spider with lower or higher Shore hardness)

When operating with a worn spider (see chapter 10.3) proper operation is not ensured.

7 Disposal

In respect of environmental protection we would ask you to dispose of the packaging resp. products on termination of their service life in accordance with the legal regulations resp. standards that apply.

- **Metal**
  Any metal components have to be cleaned and disposed of by scrap metal.
- **Nylon materials**
  Nylon materials have to be collected and disposed of by a waste disposal company.

8 Maintenance and service

ROTEX® GS is a low-maintenance coupling. We recommend to perform a visual inspection on the coupling **at least once a year**. Please pay special attention to the condition of the coupling spiders.

- Since the flexible machine bearings of the driving and driven side settle during the course of load, inspect the alignment of the coupling and re-align the coupling, if necessary.
- The coupling components have to be inspected for damages.
- The screw connections have to be visually inspected.

With the use in potentially explosive atmospheres observe chapter 10.2 "Inspection intervals for couplings in potentially explosive atmospheres".

9 Spares inventory, customer service addresses

We recommend to store major spare parts on site to ensure the readiness for use of the machine in case if a coupling fails.

Contact addresses of the KTR partners for spare parts and orders can be obtained from the KTR homepage at www.ktr.com.

KTR does not assume any liability or warranty for the use of spare parts and accessories which are not provided by KTR and for the damages which may incur as a result.

KTR Systems GmbH
Carl-Zeiss-Str. 25
D-48432 Rheine
Phone: +49 5971 798-0
E-mail: mail@ktr.com

10 Enclosure A

Advice and instructions regarding the use in potentially explosive atmospheres

Applicable hub designs/types:

a) Hubs that may be used in group II, category 2 and 3 :
(hubs with feather keyway and hubs with CLAMPEX® clamping set or clamping ring hubs)

- 1.0 Hub with feather keyway and setscrew
- 2.1 Clamping hub single slot with feather keyway
- 2.6 Clamping hub double slot with feather keyway
- 2.9 Clamping hub with axial slot with feather keyway
- 6.0 Clamping ring hub light
- 6.0 Clamping ring hub
- 6.5 Clamping ring hub
  (hub type as 6.0, but external clamping screws only)
- Type DKM with hubs corresponding to the aforementioned details

b) Hubs which may be used in group II, category 3 only:
(hubs without feather keyway)

- 1.1 Hub without feather keyway, with setscrew
- 2.0 Clamping hub single slot without feather keyway
- 2.5 Clamping hub double slot without feather keyway
- 2.8 Clamping hub with axial slot without feather keyway
- Type DKM with hubs corresponding to the aforementioned details

ROTEX® GS type DKM only with spacer made of steel or aluminium wrought products with a yield stress $R_{p0.2} \geq 250$ N/mm².

Hubs, clamping hubs or similar types without feather keyway may be used in category 3 only and are marked with category 3 accordingly.
Hub type 1.2 is not approved for potentially explosive atmospheres!

10 Enclosure A

Advice and instructions regarding the use in Ex potentially explosive atmospheres

10.1 Intended use in Ex potentially explosive atmospheres

Conditions of operation in Ex potentially explosive atmospheres

The **ROTEX® GS** couplings are suitable for the use according to directives 2014/34/EU and SI 2016 No. 1107.

- Protection against hazards arising from lightning must follow the lightning protection concept of the machine or plant. The relevant regulations and policy for lightning protection must be observed.
- The equipotential bonding of the couplings is made by metal contact between coupling hub and shaft. This equipotential bonding must not be affected.

1. Industry (with the exception of mining)

- Equipment group II of category 2 and 3 (*coupling is not approved/not suitable for equipment group 1*)
- Substance group G (*gases, fogs, vapours*), zone 1 and 2 (*coupling is not approved/not suitable for zone 0*)
- Substance group D (*dusts*), zone 21 and 22 (*coupling is not approved/not suitable for zone 20*)
- Explosion group IIC (*gases, fogs, vapours*) *(explosion groups IIA and IIB are included in IIC)* and explosion group IIIC (*dusts*) *(explosion groups IIIA and IIIB are included in IIIC)*

Temperature class:

Temperature class	Ambient or operating temperature T_a 1)	Max. surface temperature 2)
T4	-30 °C to +90 °C	+110 °C
T5	-30 °C to +75 °C	+95 °C
T6	-30 °C to +60 °C	+80 °C

Explanation:
The maximum surface temperatures each result from the maximum permissible ambient or operating temperature T_a plus the maximum temperature increase ΔT of 20 K to be considered. For the temperature class a safety margin subject to standard of 5 K is added.

1) The ambient or operating temperature T_a is limited to +90 °C due to the permissible permanent operating temperature of the elastomers used.
2) The maximum surface temperature of +110 °C applies for the use in locations which are potentially subject to dust explosion.

In potentially explosive atmospheres

- the ignition temperature of dusts generated must at least be 1.5 times the surface temperature to be considered
- the glow temperature must at least be the surface temperature to be considered plus a safety distance of 75 K.
- the gases and vapours generated must amount to the temperature class specified.

2. Mining

Equipment group I of category M2 (*coupling is not approved/not suitable for equipment group M1*).
Permissible ambient temperature -30 °C to +90 °C.

In mining for equipment group I of category M2 coupling hubs and DKM spacers made of steel only are permissible.

10 Enclosure A

Advice and instructions regarding the use in potentially explosive atmospheres

10.2 Inspection intervals for couplings in potentially explosive atmospheres

Equipment category	Inspection intervals
3G 3D	For couplings operated in zone 2 or zone 22 the inspection and maintenance intervals of the usual operating/assembly instructions for standard operation apply. During the standard operation which has to be taken as a basis of the ignition risk analysis the couplings are free from any ignition source. For gases, vapours and dusts generated the permissible glow and ignition temperatures specified in chapter 10.1 have to be considered and observed.
M2 2G 2D No gases and vapours of explosion group IIC	An inspection of the torsional backlash and a visual inspection of the flexible spider must be performed after 3,000 operating hours for the first time, at the latest after 6 months after start-up of the coupling. If you note insignificant or no wear on the spider upon this initial inspection, further inspections can each be performed after 6,000 operating hours or at the latest after 18 months, provided that the operating parameters remain the same. If you note significant wear during the initial inspection so that it would be recommendable to replace the spider, please find out the cause according to the table „Breakdowns“, if possible. The maintenance intervals must be adjusted to the modified operating parameters without fail.
M2 2G 2D Gases and vapours of explosion group IIC	An inspection of the torsional backlash and a visual inspection of the flexible spider must be performed after 2,000 operating hours for the first time, at the latest after 3 months after start-up of the coupling. If you note insignificant or no wear on the spider upon this initial inspection, further inspections can each be performed after 4,000 operating hours or at the latest after 12 months, provided that the operating parameters remain the same. If you note significant wear during the initial inspection so that it would be recommendable to replace the spider, please find out the cause according to the table „Breakdowns“, if possible. The maintenance intervals must be adjusted to the modified operating parameters without fail.

Hubs, clamping hubs or similar types without feather keyway may be used in category 3 only and are marked with category 3 accordingly.

ROTEX® GS backlash-free shaft couplings

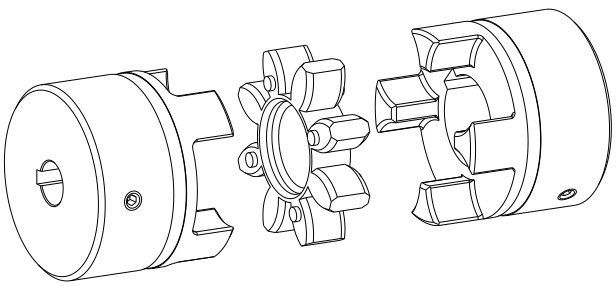


Illustration 25: ROTEX® GS backlash-free shaft coupling

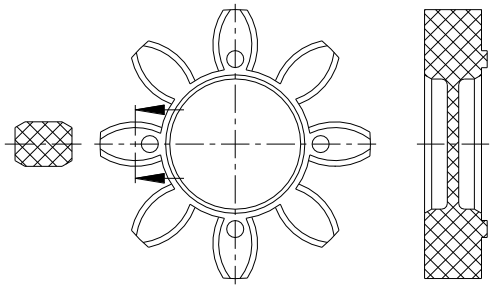


Illustration 26: ROTEX® GS spider

If the drive allows for, backlash between the cams of the coupling and the flexible spider has to be measured by means of a feeler gauge.
When reaching the wear limit ***maximum friction***, the spider must be replaced immediately, irrespective of the inspection intervals.

10 Enclosure A

Advice and instructions regarding the use in potentially explosive atmospheres

10.3 Standard values of wear

In case of backlash > X mm, the flexible spider must be replaced.

Monitoring of the general condition of the coupling can be done both at standstill and during operation. If the coupling is tested during operation, the operator must ensure an appropriate and proven test procedure (e. g. stroboscopic lamp, high-speed camera, etc.) which is definitely comparable to testing at standstill. If any distinctive features occur, an inspection must be made with the machine stopped.

Reaching the limits for replacing depends on the operating conditions and the existing operating parameters.

In order to ensure a long service life of the coupling and avoid hazards with the use in potentially explosive atmospheres, the shaft ends must be accurately aligned.
Please absolutely observe the displacement figures specified (see tables 14 and 15). If the figures are exceeded, the coupling will be damaged.

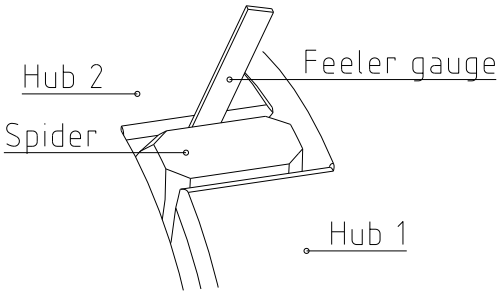


Illustration 27: Inspection of the limit of wear

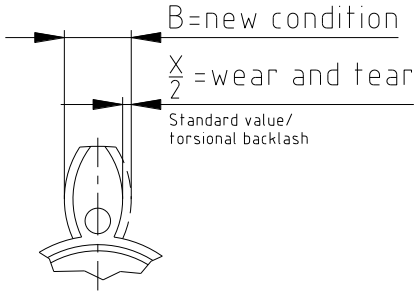


Illustration 28: Wear of spider

For backlash-free applications no wear is permitted, since otherwise the operating principle of the coupling (backlash-free condition) is no longer ensured. If a backlash-free operation is not required, the following figures apply:

Table 16:

Size	Limits of wear (friction) $X_{max\ in\ mm}$	Size	Limits of wear (friction) $X_{max\ in\ mm}$
5	0.4	24	1.0
7	0.5	28	1.4
8	0.4	38	1.7
9	0.9	42	2.0
12	0.6	48	2.25
13	0.5	55	2.50
14	1.25	65	2.75
16	0.7	75	3.00
19	0.9	90	3.25

10 Enclosure A

Advice and instructions regarding the use in potentially explosive atmospheres

10.4 marking of coupling for potentially explosive atmospheres

The explosion protection marking of the ROTEX® GS coupling is applied on the outer sheath or on the front side. The flexible spider is not marked.

For the complete marking refer to the operating/assembly instructions and/or the delivery note/package.

The following marking applies for the products:

- Type without aluminium, with feather keyway and/or clamping ring hub (Category 2)

	I M2	Ex h	I				Mb	X
	II 2G	Ex h	IIC	T6	…	T4	Gb	X
	II 2D	Ex h	IIIC	T80 °C	…	T110 °C	Db	X
<Year>		-30 °C ≤ T_a ≤	+60 °C		…	+90 °C		

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- Type without aluminium, without feather keyway (Category 3)

	I M2	Ex h	I				Mb	X
	II 3G	Ex h	IIC	T6	…	T4	Gc	X
	II 3D	Ex h	IIIC	T80 °C	…	T110 °C	Dc	X
<Year>		-30 °C ≤ T_a ≤	+60 °C		…	+90 °C		

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- Type with aluminium, with feather keyway and/or clamping ring hub (Category 2)

	II 2G	Ex h	IIC	T6	…	T4	Gb	X
	II 2D	Ex h	IIIC	T80 °C	…	T110 °C	Db	X
<Year>		-30 °C ≤ T_a ≤	+60 °C		…	+90 °C		

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- Type with aluminium, without feather keyway (Category 3)

	II 3G	Ex h	IIC	T6	…	T4	Gc	X
	II 3D	Ex h	IIIC	T80 °C	…	T110 °C	Dc	X
<Year>		-30 °C ≤ T_a ≤	+60 °C		…	+90 °C		

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Short marking:

(A short marking is only made if not possible differently for reason of space or functioning.)

ROTEX® GS
<Year>

10 Enclosure A

Advice and instructions regarding the use in potentially explosive atmospheres

10.4 marking of coupling for potentially explosive atmospheres

Deviating marking applied until 31st October 2019:

Short marking:

II 2GD c IIC T X/I M2 c X

Category 3:

II 3G c IIC T6, T5 resp. T4 -30 °C ≤ T_a ≤ +65 °C, +80 °C resp. +90 °C
II 3D c T 110 °C
-30 °C ≤ T_a ≤ +90 °C

Complete marking:

II 2G c IIC T6, T5 resp. T4 -30 °C ≤ T_a ≤ +65 °C, +80 °C resp. +90 °C
II 2D c T 110 °C
I M2 c -30 °C ≤ T_a ≤ +90 °C

Comments on marking

Equipment group I	Mining
Equipment group II	Non-mining
Equipment category 2G	Equipment ensuring a high level of safety, suitable for zone 1
Equipment category 3G	Equipment ensuring a normal level of safety, suitable for zone 2
Equipment category 2D	Equipment ensuring a high level of safety, suitable for zone 21
Equipment category 3D	Equipment ensuring a normal level of safety, suitable for zone 22
Equipment category M2	Equipment ensuring a high level of safety must be able to be switched off when an explosive atmosphere occurs
D	Dust
G	Gases and vapours
Ex h	Nonelectrical explosion protection
IIC	Gases and vapours of class IIC (including IIA and IIB)
IIIC	Electrically conductive dusts of class IIIC (including IIIA and IIIB)
T6 … T4	Temperature class to be considered, depending on the ambient temperature
T80 °C … T110 °C	Maximum surface temperature to be considered, depending on the ambient temperature
-30 °C ≤ T_a ≤ +60 °C … +90 °C or -30 °C ≤ T_a ≤ +90 °C	Permissible ambient temperature from -30 °C to +60 °C resp. -30 °C to +90 °C
Gb, Db, Mb	Equipment protection level, high level of safety, analogous to the equipment category
Gc, Dc	Equipment protection level, normal level of safety, analogous to the equipment category
X	For a safe use of the couplings particular conditions apply

If the symbol Ⓤ was punched in addition to marking Ⓤ, the coupling component was supplied by KTR as an unbored or pilot bored version (see chapter 4.3 of the present operating/assembly instructions).

10 Enclosure A

Advice and instructions regarding the use in Ex potentially explosive atmospheres

10.5 EU Certificate of conformity

EU Declaration of Conformity resp. Certificate of Conformity

corresponding to EU directive 2014/34/EU dated 26 February 2014
and to the legal regulations adopted for its implementation

The manufacturer - KTR Systems GmbH, Carl-Zeiss-Str. 25, D-48432 Rheine - states that the

ROTEX® GS backlash-free shaft couplings

in an explosion-proof design described in these assembly instructions are equipment resp. components corresponding to article 2, 1. of directive 2014/34/EU and comply with the general safety and health specifications according to enclosure II of directive 2014/34/EU.
This declaration of conformity is issued under the sole responsibility of the manufacturers KTR Systems GmbH.

The coupling described in here complies with the specifications of the following standards/rules:

EN ISO 80079-36:2016-12
EN ISO 80079-37:2016-12
EN ISO/IEC 80079-38:2017-10
IEC/TS 60079-32-1:2020-01-24

The ROTEX® GS is in accordance with the specifications of directive 2014/34/EU.

According to article 13 (1) b) ii) of directive 2014/34/EU the technical documentation is deposited with the notified body (type examination certificate IBExU03ATEXB002_05 X):

IBExU
Institut für Sicherheitstechnik GmbH
Identification number: 0637
Fuchsmühlenweg 7

09599 Freiberg

Rheine,	2022-03-21	i. V.	i. V.
Place	Date	Reinhard Wibbeling Engineering/R&D	Johannes Deister Product Manager

10 Enclosure A

Advice and instructions regarding the use in potentially explosive atmospheres

10.6 UK Declaration of conformity

UK Declaration of Conformity resp. Certificate of Conformity

corresponding to UK directive SI 2016 No. 1107 dated 26 February 2014
and to the legal provisions adopted for its implementation

The manufacturer - KTR Systems GmbH, Carl-Zeiss-Str. 25, D-48432 Rheine - states that the

ROTEX® GS backlash-free shaft couplings

in an explosion-proof design described in these assembly instructions are equipment resp. components corresponding to directive SI 2016 No. 1107 and comply with the general safety and health requirements according to directive SI 2016 No. 1107.
This declaration of conformity resp. certificate of conformity is issued under the sole responsibility of the manufacturer KTR Systems GmbH.

The coupling described in here complies with the specifications of the following standards/rules:

EN ISO 80079-36:2016-12
EN ISO 80079-37:2016-12
EN ISO/IEC 80079-38:2017-10
IEC/TS 60079-32-1:2020-01-24

The ROTEX® GS is in accordance with the specifications respectively the applicable specifications of directive SI 2016 No. 1107.

According to directive SI 2016 No. 1107 the technical documentation is deposited with the notified body:

Eurofins CML
Identification number: 2503

Rheine,	2022-03-21	i. V.	i. V.
Place	Date	Reinhard Wibbeling Engineering/R&D	Johannes Deister Product Manager