

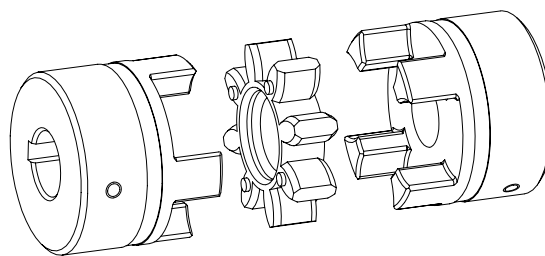


ROTEX® GS

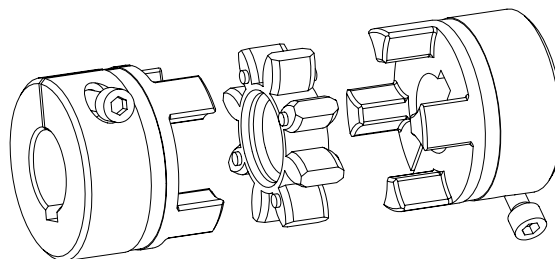
Torsionally flexible jaw
couplings
types

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

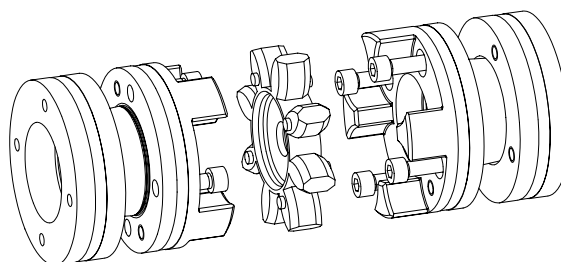
in accordance with standard
94/9/EC (ATEX 95)
for finish bored and
pilot bored/unbored
couplings



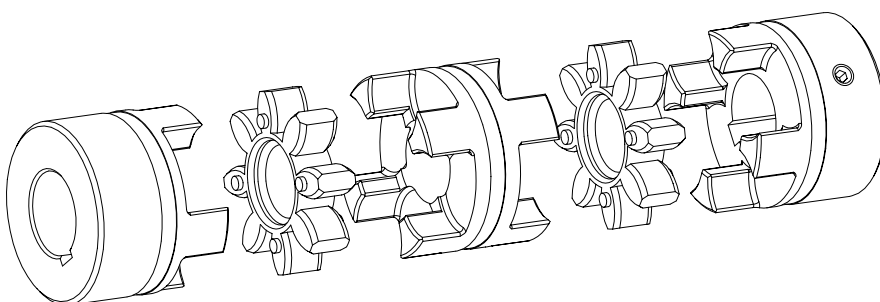
ROTEX® GS, shaft coupling



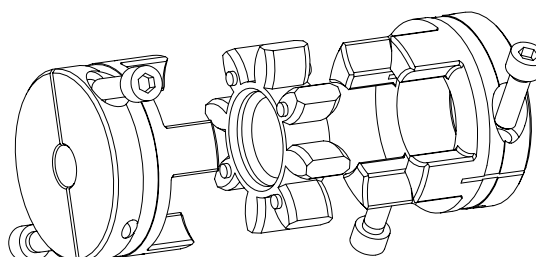
ROTEX® GS, clamping hubs



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



ROTEX® GS, DKM



ROTEX® GS, Compact



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

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dated 23.03.1994



1 Technical Data

Standard shaft coupling

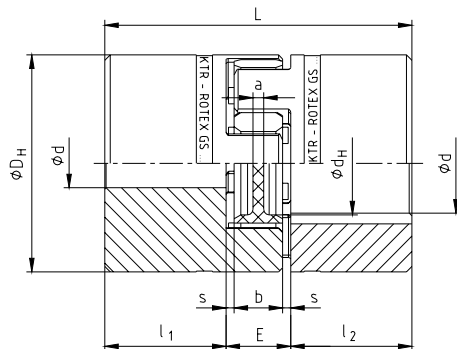


illustration 1: ROTEX® GS, size 5 - 38

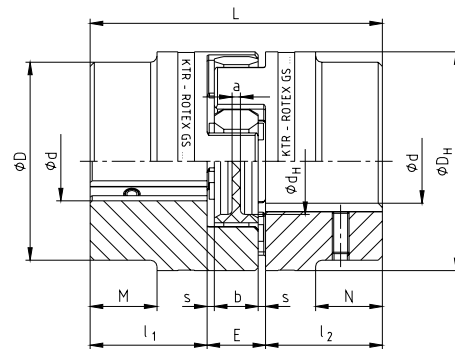


illustration 2: ROTEX® GS, size 42 - 75

Table 1: Dimensions

ROTEX® GS Size	Dimensions [mm]										Setscrew ¹⁾	
	D	D _H	d _H	L	l ₁ ; l ₂	M / N	E	b	s	a	G	t
Hub material - Aluminium (Al-H)												
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 (St-H)												
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

1)



ATTENTION!

For the applications in hazardous areas the setscrews to fasten the hubs as well as all screw connections have to be secured against self-slackening additionally, e. g. by glueing with Loctite (medium-tight).

Table 2: Torques and finish bores

ROTEX® GS Size	Spider (part 2) ¹⁾ Rated torque [Nm]					Unbored	Finish bore [mm] – Hub type			
	80 Sh A-GS	92 Sh A-GS	98 Sh A-GS	64 Sh D-GS	72 Sh D-GS		d _{min.}	1.0 d _{max.}	1.1, 1.2 d _{max.}	2.0, 2.1 d _{max.}
5	0,3	0,5	0,9	0,2 ²⁾	-	-	2	-	6	5
7	0,7	1,2	2,0	2,4	-	-	3	7	7	7
9	1,8	3,0	5,0	6,0	-	-	4	10	11	11
12	3,0	5,0	9,0	12,0	-	-	4	12	12	12
14	4,0	7,5	12,5	16,0	-	-	5	15	16	16
								1.0, 1.1 d _{max.}	2.5 d _{max.}	2.6 d _{max.}
19	4,9	10,0	17,0	21	-	x	6	24	24	24
24	-	35	60	75	97 ⁴⁾	x	8	28	28	28
28	-	95	160	200	260 ⁴⁾	x	10	38	38	38
38	-	190	325	405	525 ⁴⁾	x	12	45	45	45
42	-	265	450	560	728 ⁴⁾	x	14	55	50	45
48	-	310	525	655	852 ⁴⁾	x	15	62	55	55
55	-	410	685	825	7072 ⁴⁾	x	20	74	68	68
65	-	-	940 ³⁾	1175	1527 ⁴⁾	x	22	80	70	70
75	-	-	1920 ³⁾	2400	-	x	30	95	80	80

1) Maximum torque of coupling $T_{Kmax.}$ = Rated torque of coupling $T_{KNenn.}$ x 2

with the exception of clamping hubs types 2.0 and 2.5 (see table 3)

2) Figures for spider 70 Sh A-GS

3) Figures for spider 95 Sh A-GS

4) When using the 72 Sh D spider, we recommend to use hubs in steel.

Schutzvermerk ISO 16016 beachten.	Gezeichnet:	08.02.12 Kb/De	Ersatz für:	KTR-N vom 18.08.11
	Geprüft:	08.02.12 Kb	Ersetzt durch:	



1 Technical Data

Clamping hubs

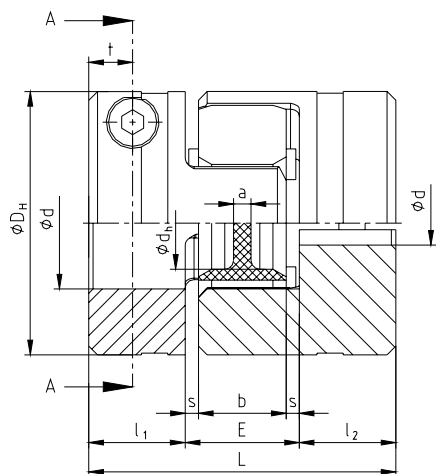


illustration 3: ROTEX® GS, size 5 – 14
(type 2.0)

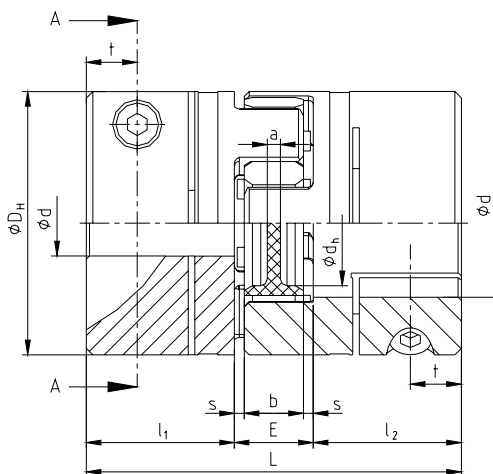


illustration 4: ROTEX® GS, size 19 – 75
(type 2.5)

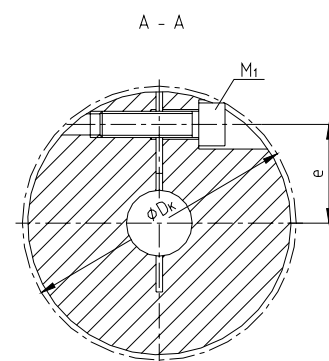


Table 3: Torques and surface pressure of clamping hubs types 2.0 / 2.5

ROTEX® GS Size	5	7	9	12	14	19	24	28	38	42	48	55	65	75
Clamping screw M ₁ ¹⁾	M1,2	M2	M2,5	M3	M3	M6	M6	M8	M8	M10	M12	M12	M12	M16
Dimension t ₁	2,5	3,5	5,0	5,0	5,0	11,0	10,5	11,5	15,5	18	21	26	33	36
Dimension e	3,5	5,0	7,5	9,0	11,5	14,5	20	25	30	32	36	42,5	45	51
Dimension ØD _K	11,4	16,5	23,4	27,5	32,2	46	57,5	73	83,5	93,5	105	119,5	124	147,5
Tightening torque T _A [Nm]	-	0,37	0,76	1,34	1,34	10,5	10,5	25	25	69	120	120	120	295
Bore Ø	transmittable torque of Clamping hub [Nm]													
	Surface pressure [N/mm ²]													
Ø2	-													
Ø3	-	0,84												
		71,02												
Ø4	-	0,91	2,07	3,65	4,48									
		43,02	68,51	109,9	134,9									
Ø5	-	0,97	2,18	3,81	4,64									
		29,50	46,15	73,5	89,5									
Ø6		1,04	2,28	3,98	4,81	23,6								
		21,85	33,65	53,3	64,4	139,3								
Ø7		1,10	2,39	4,14	4,97	24,3								
		17,06	25,90	40,8	48,9	105,2								
Ø8		1,17	2,50	4,31	5,14	25,0	32,4							
		13,83	20,73	32,5	38,7	82,8	131,0							
Ø9			2,61	4,48	5,30	25,7	33,1							
			17,09	26,6	31,6	67,2	105,7							
Ø10			2,72	4,64	5,47	26,3	33,8	74,3						
			14,42	22,4	26,4	55,9	87,3	171,3						
Ø11			2,83	4,81	5,64	27,0	34,4	75,5						
			12,40	19,2	22,5	47,4	73,6	143,9						
Ø12				4,97	5,80	27,7	35,1	76,7	89,1					
				16,7	19,4	40,8	63,1	122,9	105,9					

1)



ATTENTION!

For the applications in hazardous areas the setscrews to fasten the hubs as well as all screw connections have to be secured against self-slackening additionally, e. g. by glueing with Loctite (medium-tight).



1 Technical Data

Continuation of table 3: Torques and surface pressure of clamping hubs types 2.0 / 2.5

ROTEX® GS Size	5	7	9	12	14	19	24	28	38	42	48	55	65	75
Clamping ¹⁾ screw M ₁	M1,2	M2	M2,5	M3	M3	M6	M6	M8	M8	M10	M12	M12	M12	M16
Dimension t ₁	2,5	3,5	5,0	5,0	5,0	11,0	10,5	11,5	15,5	18	21	26	33	36
Dimension e	3,5	5,0	7,5	9,0	11,5	14,5	20	25	30	32	36	42,5	45	51
Dimension ØD _K	11,4	16,5	23,4	27,5	32,2	46	57,5	73	83,5	93,5	105	119,5	124	147,5
Tightening torque T _A [Nm]	-	0,37	0,76	1,34	1,34	10,5	10,5	25	25	69	120	120	120	295
Bore Ø	transmittable torque of Clamping hub [Nm]													
	Surface pressure [N/mm ²]													
Ø14					6,13	29,0	36,5	79,2	91,6	216				
					15,1	31,4	48,1	93,2	80,0	172				
Ø15					6,30	29,7	37,1	80,4	92,8	219	352			
					13,5	28,0	42,7	82,5	70,6	152	225			
Ø16					6,46	30,4	37,8	81,7	94,1	221	356			
					12,2	25,2	38,2	73,6	62,9	135	200			
Ø19						32,4	39,8	85,4	97,8	230	369			
						19,0	28,5	54,6	46,3	99	149			
Ø20						33,1	40,5	86,6	99,0	232	373	425		
						17,5	26,2	50,0	42,4	91	134	128		
Ø22						30,4*	41,9	89,1	101,5	238	381	433		
						13,3*	22,4	42,5	35,9	77	113	108		
Ø24						31,59*	43,2	91,6	104,0	244	389	441	462	964
						11,6*	19,4	36,7	30,9	66	97	92	80	150
Ø25							43,9	92,8	105,2	246	393	446	466	972
							18,2	34,3	28,8	61	90	86	75	140
Ø28							45,9	96,5	108,9	255	405	458	478	995
							15,2	28,4	23,8	51	74	70	61	114
Ø30								99,0	111,4	260	413	466	486	1010
								25,4	21,2	45	66	62	54	101
Ø32								101,5	113,9	266	421	474	494	1025
								22,9	19,0	40	59	56	48	90
Ø35								105,2	117,6	274	433	486	506	1048
								19,8	16,4	35	51	48	41	77
Ø38								108,9	121,3	282	446	498	518	1071
								17,4	14,4	31	44	42	36	67
Ø40									123,8	288	454	506	527	1086
									13,2	28	41	38	33	61
Ø42									126,2	293	462	514	535	1102
									12,2	26	38	35	30	56
Ø45									129,9	302	474	527	547	1125
									11,0	23	34	31	27	50
Ø48										310	486	539	559	1148
										21	30	28	24	45
Ø50										315	494	547	567	1163
										20	28	26	23	42
Ø55											514	567	587	1201
											24	23	19	36
Ø60												587	608	1239
												20	17	31
Ø65												608	626	1278
												17	15	27
Ø70													648	1316
													13	24
Ø75														1354
														22
Ø80														1392
														20

* only type 2.0

■ = 2 x Clamping screw M4; T_A = 2,9 Nm

1)



ATTENTION!

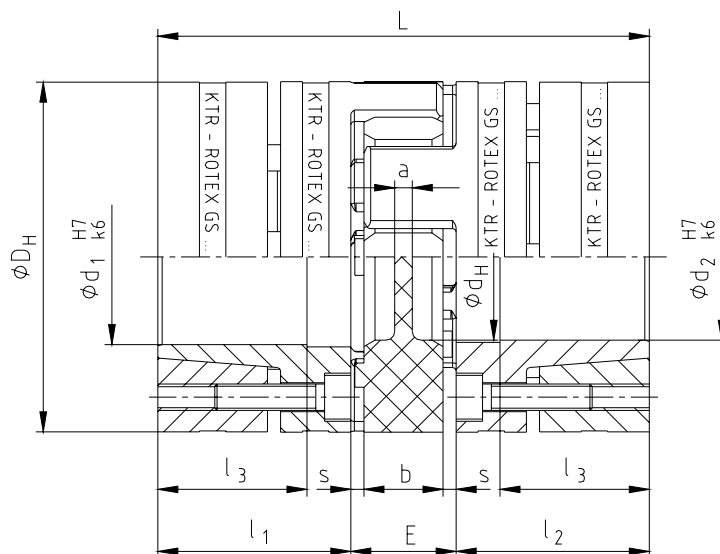
For the applications in hazardous areas the setscrews to fasten the hubs as well as all screw connections have to be secured against self-slackening additionally, e. g. by glueing with Loctite (medium-tight).

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 08.02.12 Kb/De	Ersatz für: KTR-N vom 18.08.11
	Geprüft: 08.02.12 Kb	Ersetzt durch:



1 Technical Data

Clamping ring hubs 6.0, 6.0 steel and 6.0 light



Pull-off thread M₁ between clamping screws.

illustration 5: ROTEX® GS clamping ring hubs

Table 4: dimensions

ROTEX® GS Size	Spider (part 2) ¹⁾ Torques [Nm]	Dimensions [mm]									
		D _H ²⁾	d _H	L	l ₁ ; l ₂	l ₃	E	b	s	a	M ₁ ³⁾
6.0 light (size 14 – 48) Hub/Clamping ring material - Aluminium (Al-H)											
14	Figures see table 2	30	10,5	50	18,5	13,5	13	10	1,5	2,0	M3
19		40	18	66	25	18	16	12	2,0	3,0	M4
24		55	27	78	30	22	18	14	2,0	3,0	M5
28		65	30	90	35	27	20	15	2,5	4,0	M5
38		80	38	114	45	35	24	18	3,0	4,0	M6
42		95	46	126	50	35	26	20	3,0	4,0	M8
48		105	51	140	56	41	28	21	3,5	4,0	M10
6.0 steel (size 19 – 75) Hub and clamping ring material - Steel (St-H)											
6.0 (size 14 – 38) Hub material – Aluminium (Al-H)/clamping ring material – steel (St-H)											
19	Figures see table 2	40	18	66	25	18	16	12	2,0	3,0	M4
24		55	27	78	30	22	18	14	2,0	3,0	M5
28		65	30	90	35	27	20	15	2,5	4,0	M5
38		80	38	114	45	35	24	18	3,0	4,0	M6
42		95	46	126	50	35	26	20	3,0	4,0	M8
48		105	51	140	56	41	28	21	3,5	4,0	M10
55		120	60	160	65	45	30	22	4,0	4,5	M10
65		135	68	185	75	55	35	26	4,5	4,5	M12
75		160	80	210	85	63	40	30	5,0	5,0	M12

1) For coupling selection please see ROTEX® GS catalogue.

Please note transmittable torques of clamping connections (see table 5 and 6)

2) ØD_H + 2 mm with high speeds for expansion of spider

3)



ATTENTION!

For the applications in hazardous areas the setscrews to fasten the hubs as well as all screw connections have to be secured against self-slackening additionally, e. g. by glueing with Loctite (medium-tight).



1 Technical Data

Table 5: Torques and surface pressure of clamping ring hubs 6.0 light

ROTEX® GS Size	14	19	24	28	38	42	48
Clamping screw M ¹⁾	M3	M4	M5	M5	M6	M8	M10
Number z (for each clamping ring hub)	4	6	4	8	8	4	4
Tightening torque T _A [Nm]	Hub/Clamping ring material – Aluminium (Al-H)						
	1,34	3	6	6	10	25	49
Bore Ø d ₁	transmittable torque of clamping ring hub [Nm]						
	Surface pressure [N/mm ²]						
Ø6	5,4 49,4						
Ø10	7,5 39,3	17 65,9					
Ø11	11,3 49,7	20 67,3					
Ø14	24,5 57,6	41 87,9	47 80,6				
Ø15		49 92,5	57 85,3				
Ø16		36 55,3	67 89,4	99 102			
Ø19		56 64	98 96,6	145 109			
Ø20		64 67	110 99	133 88	203 102,9		
Ø22			135 102,8	165 92,4	252 107		
Ø24			127 76,3	201 95,7	304 110		
Ø25			139 77,9	219 97	331 110,2		
Ø28			175 81,5	248 86,9	394 104,9	444 113,6	
Ø30				285 88,6	452 106,3	508 114,8	572 108
Ø32				253 66,5	453 91	535 103,5	638 107,2
Ø35				307 69,3	543 93,2	638 105,4	762 108,9
Ø38				329 63,6	550 78,4	692 95	842 100
Ø40					609 79,5	763 95,8	929 101,1
Ø42					669 80,3	754 83,4	943 91
Ø45					634 63,6	858 84,6	1074 91,9
Ø48						964 85,2	1208 92,3
Ø50						976 79	1136 77,3
Ø55							1336 77,4

The transmittable torques of the clamping connection consider the max. clearance with bore H7/k6 shaft fit.
The torque is reduced in case of bigger fit clearance.

1)



ATTENTION!

For the applications in hazardous areas the setscrews to fasten the hubs as well as all screw connections have to be secured against self-slackening additionally, e. g. by glueing with Loctite (medium-tight).



CAUTION!

An calculation is necessary if hollow shafts are used!



1 Technical Data

Table 6: Torques and surface pressure of clamping ring hubs 6.0 steel

ROTEX® GS Size	19	24	28	38	42	48	55	65	75
Clamping screw M ¹⁾	M4	M5	M5	M6	M8	M10	M10	M12	M12
Number z (for each clamping ring hub)	6	4	8	8	4	4	4	4	5
Tightening torque T _A [Nm]	Hub and clamping ring material – Steel								
	4,1	8,5	8,5	14	35	69	69	120	120
Bore Ø d ₁	Transmittable torque of clamping ring hub [Nm]								
	Surface pressure [N/mm ²]								
Ø10	27	25							
	160	119							
Ø11	32	30							
	160	119							
Ø14	69	70							
	211	170							
Ø15	84	87	108						
	225	184	168						
Ø16	57	56	131						
	134	104	178						
Ø19	94	97	207						
	157	127	200						
Ø20	110	114	148	208					
	166	135	129	138					
Ø22		86	197	275					
		84	142	151					
Ø24		116	253	253					
		96	154	163					
Ø25		133	285	395	358	489			
		101	159	168	152	179			
Ø28		192	315	439	398	658			
		116	141	149	135	192			
Ø30			382	531	483	616			
			148	157	143	157			
Ø32			330	463	416	704			
			79	120	108	158			
Ø35			433	603	547	899	863		
			123	131	119	168	138		
Ø38			503	593	536	896	856		
			122	118	99	142	116		
Ø40				689	625	1030	991	1446	
				114	104	147	121	140	
Ø42				793	571	962	918	1355	1710
				119	86	125	102	119	134
Ø45				776	704	1160	1119	1637	2053
				102	92	131	108	125	141
Ø48					851	1379	1110	1635	2059
					98	137	94	110	124
Ø50					865	1222	1247	1827	2294
					92	112	97	113	127
Ø55						1543	1277	1887	2384
						117	83	97	109
Ø60							1672	2429	3040
							91	104	117
Ø65							1605	2368	2983
							74	87	98
Ø70							2008	2930	3664
							80	92	104
Ø80									4148
									92

The transmittable torques of the clamping connection consider the max. clearance with bore H7/k6 shaft fit.
The torque is reduced in case of bigger fit clearance.

1)



ATTENTION!

For the applications in hazardous areas the setscrews to fasten the hubs as well as all screw connections have to be secured against self-slackening additionally, e. g. by glueing with Loctite (medium-tight).



CAUTION!

An calculation is necessary if hollow shafts are used!



1 Technical Data

Table 7: Torques and surface pressure of clamping ring hubs 6.0

ROTEX® GS Size	14	19	24	28	38
Clamping screw M ¹⁾	M3	M4	M5	M5	M6
Number z (for each clamping ring hub)	4	6	4	8	8
Tightening torque T _A [Nm]	Hub material – Aluminium (Al-H); Clamping ring material - steel				
	1,34	3	6	6	10
Bore Ø d _i	Transmittable torque of clamping ring hub [Nm]				
	Surface pressure [N/mm ²]				
Ø6	8,6 225				
Ø10	13,8 130	41 272			
Ø11	14,7 118	45 248	48 214		
Ø14	22,7 108	62 211	67 182		
Ø15		68 203	74 175	142 243	
Ø16		67 171	72 148	154 231	
Ø19		83 153	90 132	189 203	
Ø20		90 149	97 129	188 178	269 196
Ø22			99 107	212 167	307 183
Ø24			112 102	237 157	337 172
Ø25			120 100	250 153	356 167
Ø28			143 96	280 136	398 148
Ø30				307 131	436 142
Ø32				310 115	442 126
Ø35				353 110	501 120
Ø38				389 103	533 107
Ø40					572 104
Ø42					615 102
Ø45					644 92

The transmittable torques of the clamping connection consider the max. clearance with bore H7/k6 shaft fit.
The torque is reduced in case of bigger fit clearance.

1)



ATTENTION!

For the applications in hazardous areas the setscrews to fasten the hubs as well as all screw connections have to be secured against self-slackening additionally, e. g. by glueing with Loctite (medium-tight).



CAUTION!

An calculation is necessary if hollow shafts are used!



1 Technical Data

DKM

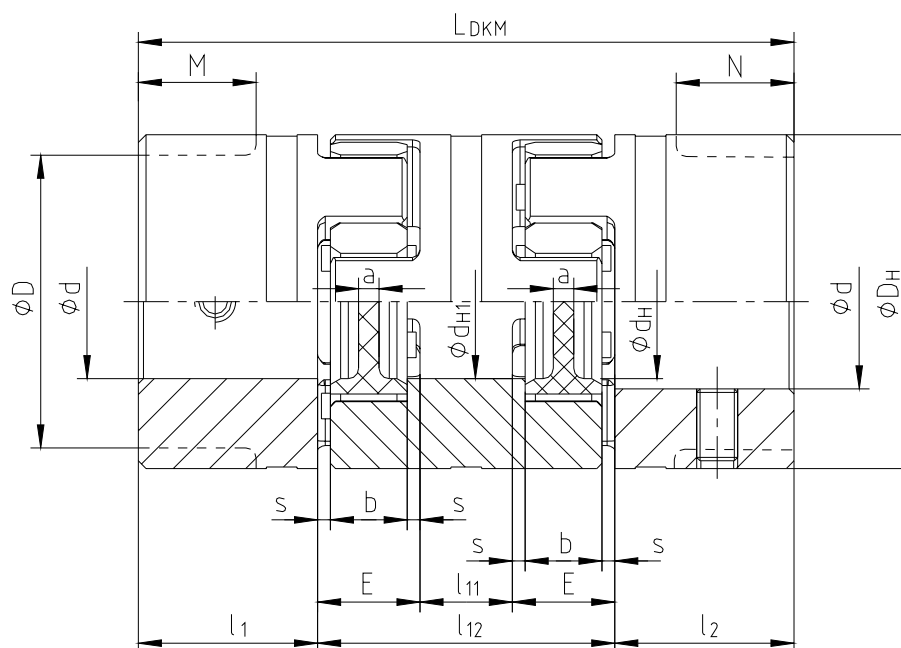


illustration 6: ROTEX® GS, DKM

Table 8: Dimensions

ROTEX® GS Size	Finish bore	Dimensions [mm]													
	d _{max.} ¹⁾	D	D _H	d _H	d _{H1}	l ₁ ; l ₂	M; N	l ₁₁	l ₁₂	L _{DKM}	E	b	s	a	
Hub material - Aluminium (Al-H)		Spacer material - Aluminium (Al-H)													
5	5	-	10	-	-	5	-	3	13	23	5	4	0,5	4,0	
7	7	-	14	-	-	7	-	4	20	34	8	6	1,0	6,0	
9	11	-	20	7,2	-	10	-	5	25	45	10	8	1,0	1,5	
12	12	-	25	8,5	-	11	-	6	30	52	12	10	1,0	3,5	
14	16	-	30	10,5	-	11	-	8	34	56	13	10	1,5	2,0	
19	24	-	40	18	18	25	-	10	42	92	16	12	2,0	3,0	
24	28	-	55	27	27	30	-	16	52	112	18	14	2,0	3,0	
28	38	-	65	30	30	35	-	18	58	128	20	15	2,5	4,0	
38	45	-	80	38	38	45	-	20	68	158	24	18	3,0	4,0	
Hub material - Steel (St-H)		Spacer material - Aluminium (Al-H)													
42	55	85	95	46	46	50	28	22	74	174	26	20	3,0	4,0	
48	62	95	105	51	51	56	32	24	80	192	28	21	3,5	4,0	
55	74	110	120	60	60	65	37	28	88	218	30	22	4,0	4,5	

1) depend on hub type



1 Technical Data

Compact

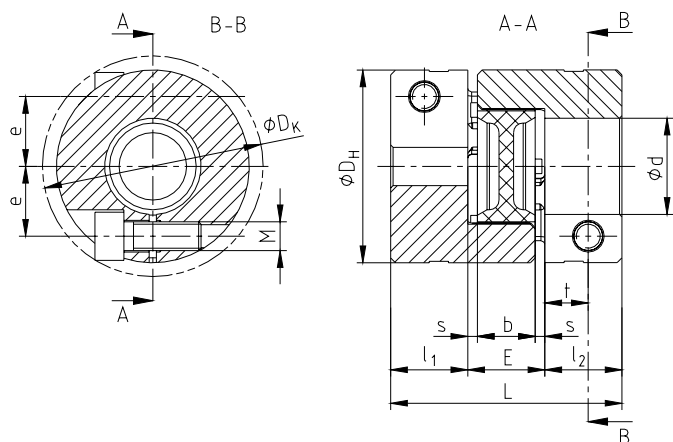


illustration 7: ROTEX® GS 7 - 19 Compact
single slotted ¹⁾ type 2.0

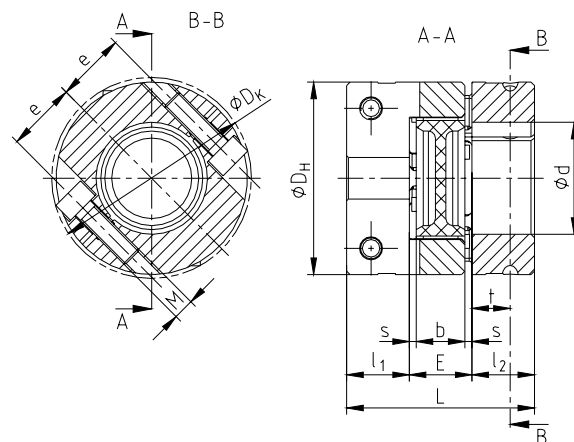


illustration 8: ROTEX® GS 24 - 38 Compact
axially slotted type 2.8

Table 9: Dimensions

ROTEX® GS Compact Size	Spider (part 2) Torques [Nm]	Dimensions [mm]											T _A [Nm]
		d _{max.}	D _H	D _K	L	l ₁ /l ₂	E	b	s	t	e	M	
7	Figures see table 2	7	14	16,6	18	5	8	6	1	2,5	5,0	M2	0,37
9		9	20	21,3	24	7	10	8	1	3,5	6,7	M2,5	0,76
12		12	25	26,2	26	7	12	10	1	3,5	8,3	M3	1,34
14		16 ¹⁾	30	30,5	32	9,5	13	10	1,5	4,5	9,6	M4	2,9
19		24 ¹⁾	40	45,0	50	17	16	12	2	9	14,0	M6	10
24		32	55	57,5	54	18	18	14	2	11	20,0	M6	10
28		35	65	69,0	62	21	20	15	2,5	12	23,8	M8	25
38		45	80	86,0	76	26	24	18	3	16	30,5	M10	49

1) Size 14 with screw M3 and dimension e=10,4; size 19 with screw M5 and dimension e=15,5



1 Technical Data

Table 10: Torques and surface pressure of clamping hubs 2.0 (shortened) / 2.8

ROTEX® GS Compact Size	7	9	12	14	19	24	28	38
Clamping screw M ₁ ⁴⁾	M2,5	M3	M3	M4	M6	M6	M8	M8
Dimension t ₁	3,5	3,5	5,0	4,5	14,0	11	12	16
Dimension e	6,7	8,3	9,6	11,5	14,5	20	23,8	30,5
Dimension ØD _K	21,3	26,2	30,5	32,2	45	57,5	69	86
Tightening torque T _A [Nm]	0,76	1,34	2,9	1,34	10	10	25	49
Bore Ø	transmittable torque of clamping hub [Nm]							
	Surface pressure [N/mm ²]							
Ø3	0,8							
	173,5							
Ø4	0,9	1,9	3,4					
	105,1	151,6	273,6					
Ø5	1,0	2,0	3,6	7,1				
	72,1	102,6	183,6	262,2				
Ø6	1,0	2,1	3,7	7,4				
	53,4	75,1	133,4	189,6				
Ø7	1,1	2,2	3,9	7,7				
	41,7	58	102,3	144,8				
Ø8		2,3	4,1	8,0	24,3			
		46,6	81,7	115,1	191,8			
Ø9		2,4	4,2	8,2	25,0			
		38,6	67,2	94,3	155,7			
Ø10			4,4	8,5	25,7	21,2		
			56,5	79,1	129,5	82,3		
Ø11			4,6	8,8	26,3	23,3		
			48,5	67,6	109,9	74,8		
Ø12			4,7	9,1	27,0	25,4		
			42,2	58,7	94,7	68,6		
Ø14				5,5	28,4	29,7	54,4	
				26,0	73,1	58,8	92,0	
Ø15				5,7	29,0	31,8	58,3	92,6
				23,3	65,2	54,9	85,9	109,6
Ø16				5,8	29,7	33,9	62,2	98,8
				21,1	58,6	51,4	80,5	102,7
Ø18					31,1	38,2	70,0	111,1
					34,4	45,7	71,5	91,3
Ø19					31,7	40,3	73,9	117,3
					31,6	43,3	67,8	86,5
Ø20					32,4	42,4	77,8	123,5
					29,1	41,1	64,4	82,2
Ø22					24,0	46,7	85,5	135,8
					25	37,4	58,5	74,7
Ø24					25,0	50,9	93,3	148,2
					21,9	34,3	53,7	68,5
Ø25						53,0	97,2	154,3
						32,9	51,5	65,8
Ø28						59,4	108,9	172,9
						29,4	46,0	58,7
Ø30						63,6	116,6	185,2
						27,4	42,9	54,8
Ø32						67,9	124,4	197,5
						25,7	40,2	51,4
Ø35							136,1	216,1
							36,8	47,0
Ø38								234,6
								43,3
Ø40								246,9
								41,1
Ø42								259,3
								39,1
Ø45								277,8
								36,5

 = ROTEX® GS 14: 1 x clamping screw M3, T_A = 1,34 Nm
 ROTEX® GS 19: 1 x clamping screw M5, T_A = 6 Nm



2 Hints

The **ROTEX® GS** coupling was developed for a backlash-free power transmission and easy plug-in assembly. This backlash-free power transmission is realized in the range of prestress (see illustration 9). 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.

The safe operation in the range of prestress is ensured, because the coupling operates according to the principle of the positive-locking rubber spring prestress with high damping features. The star-shape coupling spider is inserted into 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 flexible teeth compensating for misalignments are radially supported in the internal diameter by means of a web. An external deformation is limited by the concave shape of the cams, ensuring a smooth operation even with bigger masses (e. g. steel mills, articulated arms, etc.). The flexible spiders for the GS series are available in three different kinds of Shore hardness, injected in different colours, either as a torsionally soft or hard material.

pegs on the lateral tooth in alternate arrangement

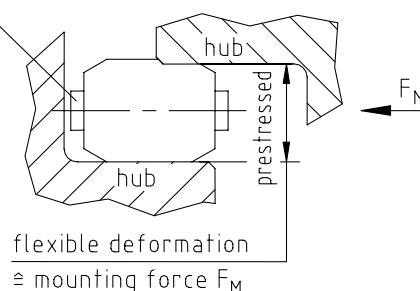


illustration 9: prestress of spider

2.1 Coupling Selection



CAUTION!

For a long-term smooth operation of the coupling the coupling has to be selected based on the selection standards applying for the application (in accordance with DIN 740, part 2) (see **ROTEX® GS** catalogue).

In case that the operating conditions change (power, speed, modifications on engine and machine) it is absolutely necessary to verify the coupling selection.

Please note that the technical details concerning the torque refer to the spider only. The transmittable torque of the shaft-hub-connection has to be reviewed by the customer and is subject to his responsibility.

For drives subject to dangerous torsional vibrations (drives with periodical torsional vibration load) it is necessary to perform a torsional vibration calculation to ensure a safe operation. Typical examples of drives subject to dangerous torsional vibrations are drives with diesel engines, piston pumps, piston compressors, etc. If requested, KTR will perform the coupling selection and torsional vibration calculation.

2.2 General Hints

Please read through these mounting instructions carefully before you set the coupling into operation. Please pay special attention to the safety instructions.



The **ROTEX® GS** coupling is suitable and approved for the application in hazardous areas. For the use of couplings in hazardous areas please note the special safety hints and regulations as per appendix A.

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

The mounting instructions are part of your product. Please keep them carefully and close to the coupling. The copyright for these mounting instructions remains with **KTR Kupplungstechnik GmbH**.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 08.02.12 Kb/De Geprüft: 08.02.12 Kb	Ersatz für: KTR-N vom 18.08.11 Ersetzt durch:
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2 Hints

2.3 Safety and Advice Hints



DANGER!

Danger of injury to persons



CAUTION!

Damages on the machine possible



ATTENTION!

Pointing to important items



ATTENTION!

Pointing to explosion-proof applications

2.4 General Hint to Danger



DANGER!

With the assembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is protected against unintentional engagement. You may be seriously hurt by rotating parts. Please make absolutely sure to read through and observe the following safety instructions.

- All operations on and with the coupling have to be performed taking into account „safety first“.
- Please make sure to disengage the power pack before you perform your work on the coupling.
- Protect the power pack against unintentional engagement, e. g. by providing hints at the place of engagement or removing the fuse for current supply.
- Do not touch the operation area of the coupling as long as it is in operation.
- Please protect the coupling against unintentional touch. Please provide for the necessary protection devices and caps.

2.5 Proper Use

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

- have carefully read through the mounting instructions and understood them
- had technical training
- are authorized to do so by your company

The coupling may only be used in accordance with the technical details (see tables 1 to 9, chapter 1). Unauthorized modifications on the coupling type are not admissible. We do not take any warranty for resulting damages. To further develop the product 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 mounting instructions.



3 Storage

The couplings are supplied in preserved condition and can be stored in a dry place with a roof up to 6 – 9 months.

With favourable storage conditions the coupling spiders (elastomers) keep their characteristics unchanged up to 5 years.



CAUTION!

The storage rooms must not contain any equipment producing ozone, e. g. fluorescent light sources, mercury lamps, electric high-voltage devices. Humid storage rooms are not suitable.

Please make sure that no condensation is produced. It is best to keep the relative air moisture beneath 65 %.

4 Assembly

Generally the coupling is delivered in parts. Before the assembly, the coupling has to be inspected regarding its completeness.

4.1 Hub Types

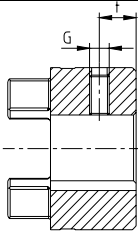
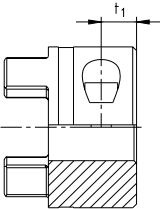
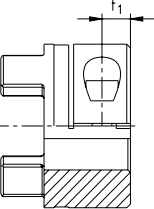
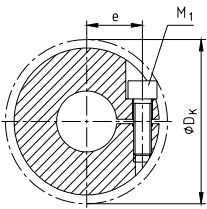
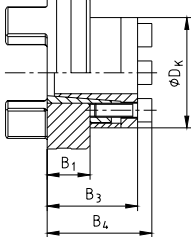
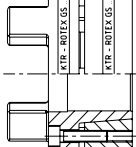
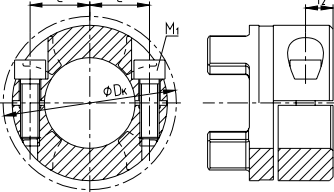
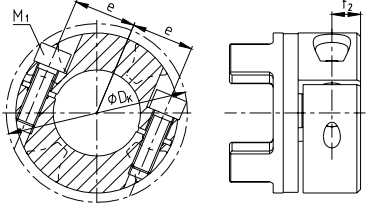
 Type 1.0 with keyway and thread 1.1 without keyway with thread 1.2 without keyway without thread	 Type up to size 14 standard/ Compact up to size 19 2.0 single slotted without keyway 2.1 single slotted with keyway	 Type from size 19 standard 2.5 double slotted without keyway 2.6 double slotted with keyway	 Type 2.8 with ROTEX® GS Compact from size 24 standard 2.8 axially slotted without keyway 2.9 axially slotted with keyway
 Type 4.2 ¹⁾ with CLAMPEX® KTR 250	 Type 6.0/6.0 steel/ 6.0 light Clamping ring hub	 Type 7.5 (without keyway) and 7.6 (with keyway) Split clamping hub for DKM/ZR3	 Type 7.8 (without keyway) and 7.9 (with keyway) Please note: Subject to the position of the clamping screws the application is recommended for single-cardanic couplings only.

illustration 10: Hub types

1)



ATTENTION!

Selection of clamping sets

With the use in explosion-proof areas the clamping hubs have to be selected in a way that the difference between the peak torque of the machine including all operation parameters and the rated torque of the clamping hub is at least a service factor of $s = 2$.



ATTENTION!

Hub types 1.1, 2.0, 2.5, 2.8, 7.5 and 7.8 (without feather key) may only be used in category 3.

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4 Assembly

4.2 Coupling Components

Standard spiders

Spider hardness (Shore)	Identification (Colour)	Spider hardness (Shore)	Identification (Colour)
80 Sh A-GS	blue	64 Sh D-GS	green size 7 - 38
92 Sh A-GS	yellow		pale green size 42 - 75
95/98 Sh A-GS	red	72 Sh D-GS	grey size 24 - 55

Components of ROTEX® GS, backlash-free shaft couplings

Component	Quantity	Description
1	2	hub
2	1	spider
3	2	setscrew DIN EN ISO 4029

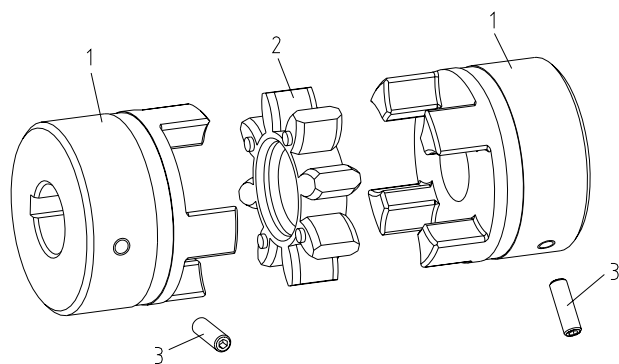


illustration 11: ROTEX® GS, size 5 - 38

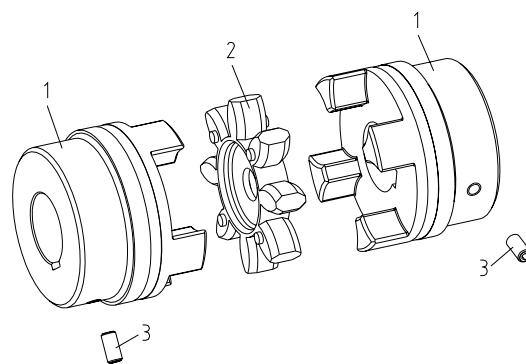


illustration 12: ROTEX® GS, size 42 - 75

Components of ROTEX® GS, clamping hubs

Component	Quantity	Description
1	2	clamping hub (hub type 2.0, 2.1, 2.5 or 2.6)
2	1	spider
3	2	cap screws DIN EN ISO 4762

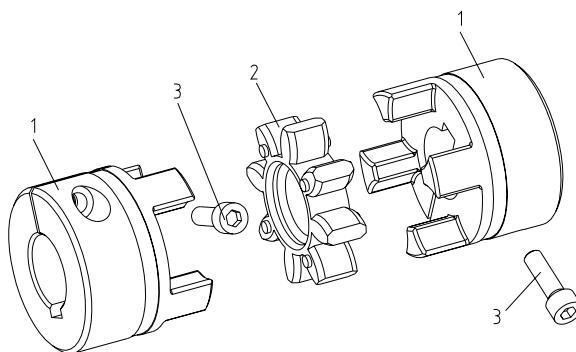


illustration 13: ROTEX® GS, clamping hub



4 Assembly

4.2 Coupling Components

Components of ROTEX® GS, clamping ring hubs (types 6.0, 6.0 steel, 6.0 light and type 6.5)

Component	Quantity	Description
1	2	clamping ring
2	2	clamping ring hub
3	1	spider
4	see table 5 6 and 7	cap screws DIN EN ISO 4762

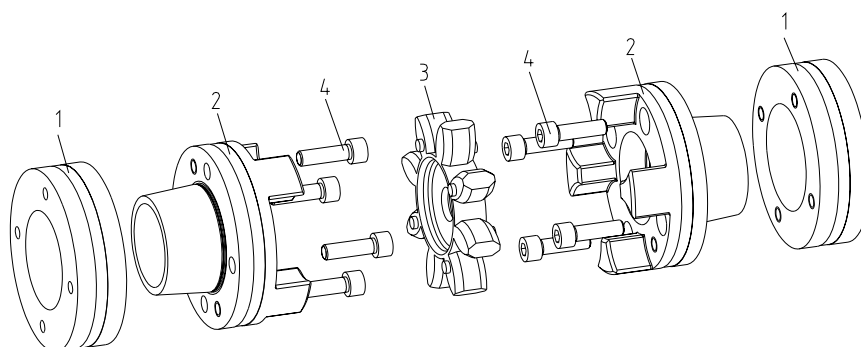


illustration 14: ROTEX® GS, clamping ring hub



ATTENTION!

Selection of clamping hubs

With the use in explosion-proof areas the clamping hubs have to be selected in a way that the difference between the peak torque of the machine including all operation parameters and the frictionally engaged torque of the clamping hub is at least a service factor of $s = 2$.

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

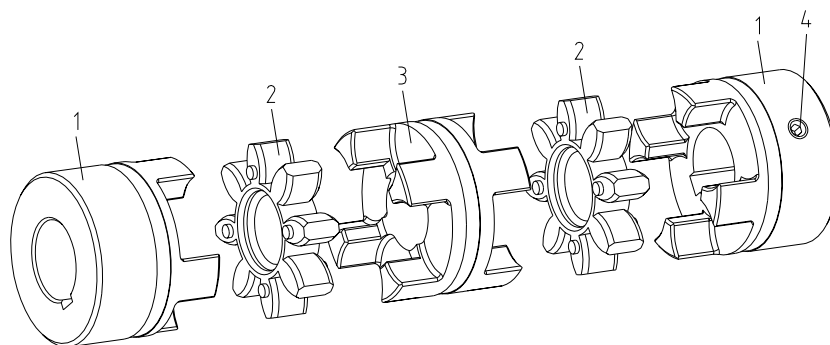


illustration 15: ROTEX® GS, DKM



4 Assembly

4.2 Coupling Components

Components of ROTEX® GS Compact, clamping hubs

Component	Quantity	Description
1	2	clamping hub (hub types 2.0, 2.1, 2.8 or 2.9)
2	1	spider
3	2 / 4	cap screws DIN EN ISO 4762

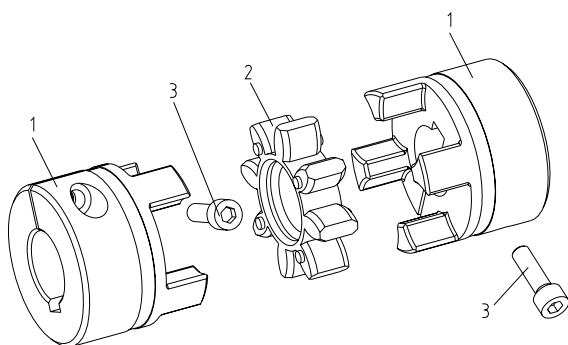


illustration 16: ROTEX® GS Compact, size 7 - 19

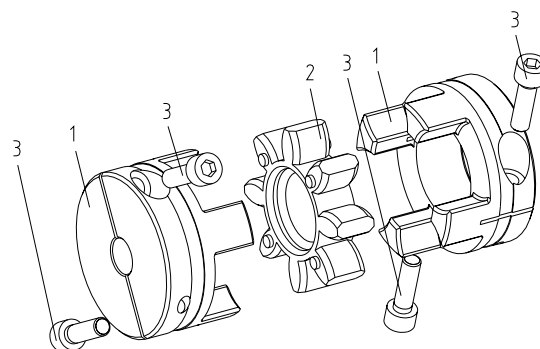


illustration 17: ROTEX® GS Compact, size 24 - 38



ATTENTION!

Hub types 1.1, 2.0, 2.5, 2.8, 7.5 and 7.8 (without feather key) may be used in category 3 only.



ATTENTION!

Selection of clamping hubs

With the use in explosion-proof areas the clamping hubs have to be selected in a way that the difference between the peak torque of the machine including all operation parameters and the frictionally engaged torque of the clamping ring hub is at least a service factor of $s = 2$.

4.3 Hints for Assembly

Subject to its type **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 corresponding mounting holes in the housing.

The pegs on the spider arranged reciprocally avoid a contact between the spider and 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 a blind assembly. When the coupling hubs are combined with the **ROTEX® GS** spider an axial mounting force is produced resulting from the flexible prestress of the star-shape elastomer. This mounting force varies depending on the coupling size, the spider hardness and the machining tolerances. The axial mounting force is compensated for after assembly of the hubs and consequently does not mean any danger of axial load onto adjacent bearings.

The mounting force can be reduced by slightly greasing or oiling 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 (e. g. Optimol Optisit WX) or vaseline have proven their worth, too.



4 Assembly

4.4 Hint for Finish Bore



DANGER!

The maximum permissible bore diameters d (see tables 1 to 10 in chapter 1 – Technical Data) must not be exceeded. If these figures are not observed, the coupling may tear. Rotating fragments may be hazardous.

- If the hub bore is machined by the customer, the accuracy in concentric running or run-out, respectively (see illustration 18) has to be observed.
- Please make absolutely sure to observe the figures for $\varnothing d_{\max.}$.
- Align the hubs carefully when machining the finish bore.
- Please use a setscrew according to DIN EN ISO 4029 with cup point or an end plate to secure the hubs axially.

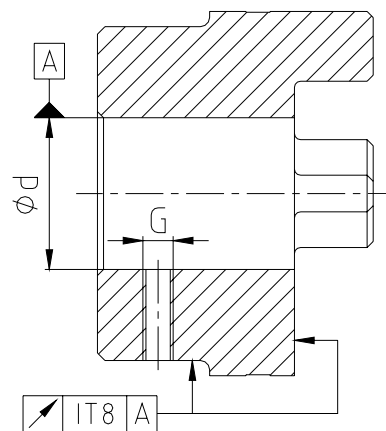


illustration 18: accuracy in concentric running or run-out



CAUTION!

The customer is responsible for all machinings made subsequently to unbored or pilot bored and to finish machined coupling parts and spare parts. KTR does not assume any warranty claims resulting from insufficient machining.



ATTENTION!

Any mechanical remachining on couplings which are to be used in hazardous areas requires an explicit release by KTR. The customer has to provide KTR with a production drawing which the production is based on. KTR will investigate this drawing and return it to the customer along with a corresponding approval note. KTR will supply unbored or pilot bored coupling components and spare parts on special request by the customer only. Such components are marked with the symbol  additionally.

Table 11: Setscrews DIN EN ISO 4029

ROTEX® GS Size	5	7	9	12	14	19	24	28	38	42	48	55	65	75
Dimension G	M2	M3	M4	M4	M4	M5	M5	M8	M8	M8	M8	M10	M10	M10
Tightening torque T_A [Nm]	-	-	1,5	1,5	1,5	2	2	10	10	10	10	17	17	17



4 Assembly

4.5 Assembly of Hubs (Types 1.0, 1.1 and 1.2)



ATTENTION!

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

Before mounting preservatives have to be removed from the bores. Moreover, the shaft ends have to be cleaned carefully, too.



CAUTION!

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

If the hubs are slightly heated (approx. 80 °C) they can be assembled onto the shaft more easily.



ATTENTION!

Please note the danger of ignition in hazardous areas.



DANGER!

Touching the heated hubs causes burns. For that reason we recommend to wear safety gloves.



CAUTION!

Please observe the dimension E (see tables 1 to 9) for the assembly to make sure that the spider can be moved axially during the operation. The coupling may be damaged if this recommendation is not followed.

- Please assemble the hubs onto the shaft of driving and driven side.
- Please shift the power pack into axial direction until the dimension E is reached.
- If the power packs have already been mounted firmly, the dimension E has to be adjusted by shifting the hubs on the shafts axially.
- Secure the hubs by tightening the setscrews DIN EN ISO 4029 at the tightening torques T_A mentioned in table 10.



ATTENTION!

If the shaft diameters with inserted feather key fall below the dimension d_H of the spider (see tables 1 to 10), one or both shaft ends may protrude into the spider.



CAUTION!

Hub type 1.1 (without feather key) may be used in category 3 only.



4 Assembly

4.6 Assembly of Clamping Hubs (Types 2.0, 2.1, 2.5, 2.6, 2.8, 2.9, 7.5, 7.6, 7.8 and 7.9)

The power transmission of ROTEX® GS clamping hubs (types 2.0, 2.5, 2.8, 7.5 and 7.8) is done frictionally engaged. With types 2.1, 2.6, 2.9, 7.6 and 7.9 a feather key additionally provides for positive locking power transmission.

The following process should be noted for the assembly:

- Clean and degrease the hub bore and the shaft.
- Slightly detach the clamping screw.
- Slip the hub onto the shaft. Please observe the dimension l_1/l_2 .
- Tighten the clamping screws at the tightening torques mentioned in table 3. For types 2.8, 7.5, 7.8 or 2.9, 7.6, 7.9 (with keyway) the screws have to be tightened alternately at the tightening torques mentioned in table 3.



ATTENTION!

For the applications in hazardous areas the setscrews to fasten the hubs as well as all screw connections have to be secured against self-slackening additionally, e. g. by glueing with Loctite (medium-tight).

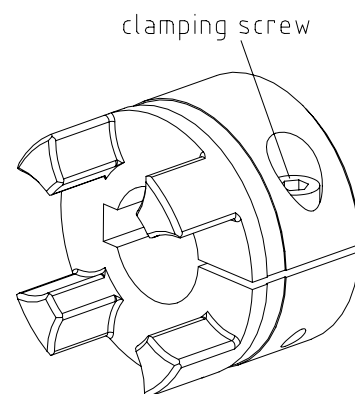


illustration 19: Assembly clamping hub

Please note: types 2.8, 2.9, 7.5, 7.6, 7.8 or 7.9 have 2 clamping screws



CAUTION!

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



ATTENTION!

Hub types 2.0, 2.5, 2.8, 7.5 and 7.8 (without feather key) may be used in category 3 only.

4.7 Assembly of Clamping Ring Hubs (Types 6.0, 6.0 steel, 6.0 light and 6.5)

The power transmission of ROTEX® GS clamping ring 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 torques mentioned in tables 5 - 7 take into account a combination of fit H7/k6 from Ø55 G7/m6. With a higher backlash of fit the torques mentioned in tables 5 - 7 are reduced.

The stiffness and dimensions of the shafts (here specifically hollow shafts) have to be selected in a way that sufficient safety against plastic deformation is ensured. This may roughly be reviewed as per the following criterion.



ATTENTION!

For the use in hazardous areas the setscrews/capscrews and setscrews to fasten the hubs additionally have to be secured against slackening, e. g. by conglutinating with Loctite (average joint strength).



4 Assembly

4.7 Assembly of Clamping Ring Hubs (Types 6.0, 6.0 steel, 6.0 light and 6.5)

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

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

Shearing stress on the internal shaft diameter for hollow shaft:

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

Shearing stress for solid shaft:

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

$R_{p0,2}$ = proof stress of shaft material $[\text{Nmm}^2]$
 p_W = surface pressure hub/shaft $[\text{N/mm}^2]$

d_{iW} = internal diameter of hollow shaft $[\text{mm}]$
 d = shaft diameter $[\text{mm}]$
 C_W = d_{iW} / d

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

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



CAUTION!

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

- Slightly detach the clamping screw and pull the clamping ring from the hub only marginally to make sure that the clamping ring is loosened.
- Slip the clamping ring hub onto the shaft. The dimension L_3 should be adhered to at least.
- Tighten the clamping screws evenly stepwise and crosswise to the tightening torque mentioned in table 6 or 7. This process has to be repeated until the tightening torque is reached for all clamping screws.

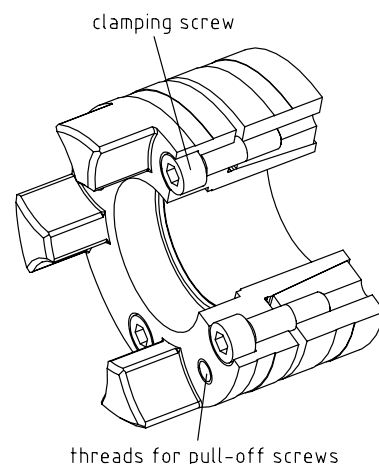


illustration 20: Assembly of clamping ring hub with clamping ring

- Assembly of the clamping ring hub 6.0 light:
Tighten the clamping screws evenly stepwise and crosswise at 1/3 or 2/3 tightening torque T_A , respectively (see table 6) until the ring gets in contact. Afterwards tighten the screws at the tightening torque mentioned in table 6 one after another.



ATTENTION!

For the applications in hazardous areas the setscrews to fasten the hubs as well as all screw connections have to be secured against self-slackening additionally, e. g. by glueing with Loctite (medium-tight).



ATTENTION!

Selection of clamping hubs

With the use in explosion-proof areas the clamping hubs have to be selected in a way that the difference between the peak torque of the machine including all operation parameters and the frictionally engaged torque of the clamping hub is at least a service factor of $s = 2$.



4 Assembly

4.7 Assembly of Clamping Ring Hubs (Types 6.0, 6.0 steel, 6.0 light and 6.5)

Disassembly:

Untighten the clamping screws evenly one after the other. Each screw may only be untightened by half a revolution for each cycle. Unscrew all clamping screws by 3 – 4 convolutions.

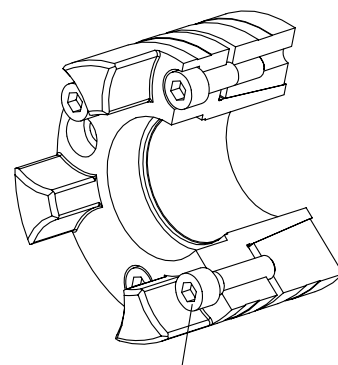
Remove the screws situated next to the pull-off threads and screw them into the respective pull-off threads.

The clamping ring is untightened if the screws in the pull-off threads are tightened evenly stepwise and crosswise.



CAUTION!

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



clamping screw in the
thread for pull-off screws

illustration 21: Disassembly of
clamping ring hub with clamping ring

In case of a repeated assembly the hub bore and shaft have to be cleaned and afterwards lubricated with a thin-bodied oil (e. g. Castrol 4 in 1 or Klüber Quitsch EX). The same applies for the taper surfaces of clamping ring hub and clamping ring.



CAUTION!

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

For type 6.0 light only:



ATTENTION!

In case of re-assembly the taper surfaces, hub bores and the shaft have to be cleaned. The hub bore and shaft have to be lubricated with thin-bodied oil (e. g. Castrol 4 in 1 or Klüber Quitsch-Ex). Lightly paint the taper surfaces of the clamping ring hub or clamping ring with the grease Gleitmo 800, afterwards turn the parts by one revolution in order to spread the grease evenly.

4.8 Displacements – Alignment of the Couplings

The displacement figures mentioned in table 12 and 13 provide for safety in order to compensate for external influences like, for example, thermal expansion or sinking of basement.



CAUTION!

In order to ensure a long lifetime of the coupling and avoid danger with the use in hazardous areas, the shaft ends have to be aligned accurately. Please make absolutely sure to observe the displacement figures indicated (see table 12 and 13). If these figures are exceeded, the coupling will be damaged.

The more precisely the coupling is aligned, the higher is its service life.

For the use in hazardous areas for explosion class IIC (designation II 2GD c IIC T X) only the displacement figures (see table 12 and 13) have to be carefully reviewed and adhered to.

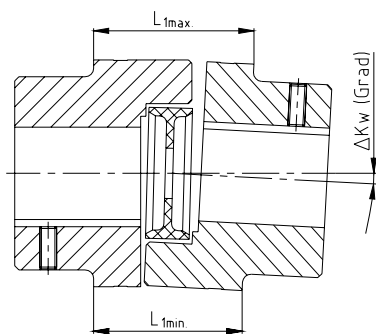
Please note:

- The displacement figures mentioned in table 12 and 13 are maximum figures which must not arise in parallel. If radial and angular displacements arise at the same time, the permissible displacement figures may only be used proportionally.
- Please review by means of a metering clockwork, ruler or feeler gauge if the permissible displacement figures mentioned in table 12 and 13 are observed.



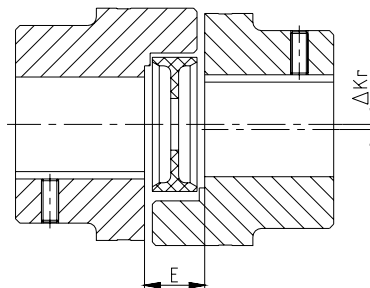
4 Assembly

4.8 Displacements – Alignment of the Couplings

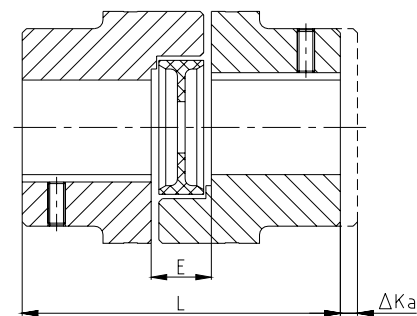


Angular displacements

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



Radial displacements



Axial displacements

$$L_{\text{max}} = L + \Delta K_a$$

illustration 22: displacements

Examples of the combinations of displacements shown in picture 15:

Example 1:

$$\Delta K_R = 30\%$$

$$\Delta K_W = 70\%$$

Example 2:

$$\Delta K_R = 60\%$$

$$\Delta K_W = 40\%$$

$$\Delta K_{\text{total}} = \Delta K_R + \Delta K_W \leq 100\%$$

illustration 15:
combination of
displacements

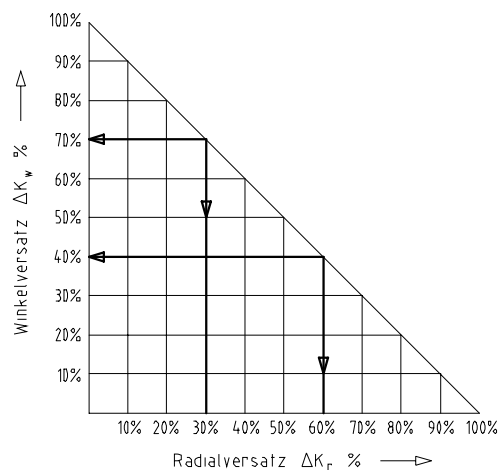


Table 12: Displacements

Size	max. axial displacement ΔK_a [mm]	max. radial displacement ΔK_r [mm]					max. angular displacement ΔK_w [degrees]				
		80 ShA-GS	92 ShA-GS	95/98 ShA-GS	64 ShD-GS	72 ShD-GS	80 ShA-GS	92 ShA-GS	95/98 ShA-GS	64 ShD-GS	72 ShD-GS
5	+0,4 / -0,2	0,12	0,06	0,04	-	-	1,1	1,0	0,9	-	-
7	+0,6 / -0,3	0,15	0,10	0,06	0,04	-	1,1	1,0	0,9	0,8	-
9	+0,8 / -0,4	0,19	0,13	0,08	0,05	-	1,1	1,0	0,9	0,8	-
12	+0,9 / -0,4	0,20	0,14	0,08	0,05	-	1,1	1,0	0,9	0,8	-
14	+1,0 / -0,5	0,21	0,15	0,09	0,06	-	1,1	1,0	0,9	0,8	-
19	+1,2 / -0,5	0,15	0,10	0,06	0,04	-	1,1	1,0	0,9	0,8	-
24	+1,4 / -0,5	-	0,14	0,10	0,07	0,04	-	1,0	0,9	0,8	0,7
28	+1,5 / -0,7	-	0,15	0,11	0,08	0,05	-	1,0	0,9	0,8	0,7
38	+1,8 / -0,7	-	0,17	0,12	0,09	0,06	-	1,0	0,9	0,8	0,7
42	+2,0 / -1,0	-	0,19	0,14	0,10	0,07	-	1,0	0,9	0,8	0,7
48	+2,1 / -1,0	-	0,23	0,16	0,11	0,08	-	1,0	0,9	0,8	0,7
55	+2,2 / -1,0	-	0,24	0,17	0,12	0,09	-	1,0	0,9	0,8	0,7
65	+2,6 / -1,0	-	-	0,18	0,13	0,10	-	-	0,9	0,8	0,7
75	+3,0 / -1,5	-	-	0,21	0,15	-	-	-	0,9	0,8	-



4 Assembly

4.8 Displacements – Alignment of the Couplings

Table 13: Displacements – Type DKM

Size	max. axial displacement ΔK_a [mm]	max. radial displacement ΔK_r [mm]					max. angular displacement ΔK_w [degrees]				
		80 ShA-GS	92 ShA-GS	95/98 ShA-GS	64 ShD-GS	72 ShD-GS	80 ShA-GS	92 ShA-GS	95/98 ShA-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	0,36	-	1,1	1,0	0,9	0,8	-
24	+1,4 / -1,0	-	0,59	0,53	0,47	0,42	-	1,0	0,9	0,8	0,7
28	+1,5 / -1,4	-	0,66	0,60	0,53	0,46	-	1,0	0,9	0,8	0,7
38	+1,8 / -1,4	-	0,77	0,69	0,61	0,54	-	1,0	0,9	0,8	0,7
42	+2,0 / -2,0	-	0,84	0,75	0,67	0,59	-	1,0	0,9	0,8	0,7
48	+2,1 / -2,0	-	0,91	0,82	0,73	0,64	-	1,0	0,9	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 mentioned are general standard values taking into account the load of the coupling until the rated torque T_{KN} of the coupling and an ambient temperature of +30 °C.

Spares Inventory, Customer Service Addresses

A basic requirement to guarantee the operational readiness of the coupling is a stock of the most important spare parts on site.

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

5 Enclosure A

Hints and Instructions Regarding the Use in Hazardous Areas

Current types:

a) Hubs with feather key or CLAMPEX® clamping set or clamping ring hubs

- 1.0 Hub with feather key and thread for setscrews
- 2.1 Clamping hub single slot with feather key
- 2.6 Clamping hub double slot with feather key
- 2.9 Clamping hub with axial slot with feather key
- 4.1 with CLAMPEX® clamping set KTR 200
- 4.2 with CLAMPEX® clamping set KTR 250
- 6.0 Clamping ring hub
- 6.0 Clamping ring hub light
- 6.0 P Precision clamping ring hub
- 6.5 Clamping ring hub
(Please note: external clamping screws)
- 7.6 Split clamping hub with feather key for double-cardanic combinations
- 7.9 Split clamping hub with feather key for single-cardanic combinations
- Type DKM with hubs corresponding to the aforementioned details

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 08.02.12 Kb/De	Ersatz für: KTR-N vom 18.08.11
	Geprüft: 08.02.12 Kb	Ersetzt durch:



5 Enclosure A

Hints and Instructions Regarding the Use in Hazardous Areas

Current types:

b) Hubs without feather key (category 3 only)

- 1.1 Hub without feather key, with thread for setscrews
- 2.0 Clamping hub single slot without feather key
- 2.5 Clamping hub double slot without feather key
- 2.8 Clamping hub with axial slot without feather key
- 7.5 Split clamping hub without feather key for double-cardanic combinations
- 7.8 Split clamping hub without feather key for single-cardanic combinations
- Type DKM with hubs corresponding to the aforementioned details

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

5.1 Use in Hazardous Areas According to the Regulations

Conditions of operation in hazardous locations

ROTEX® GS couplings are suitable for the use according to EC standard 94/9/EC.

1. Industry (with the exception of mining)

- device class II of category 2 and 3 (*coupling is not approved for device class 1*)
- media class G (*gases, fogs, steams*), zone 1 and 2 (*coupling is not approved for zone 0*)
- media class D (*dusts*), zone 21 and 22 (*coupling is not approved for zone 20*)
- explosion class IIC (*explosion class IIA and IIB are included in IIC*)

Temperature class:

Temperature class	ambient or operating temperature T_a	max. surface temperature
T4, T3, T2, T1	- 30 °C to + 90 °C ¹⁾	110 °C ²⁾
T5	- 30 °C to + 80 °C	100 °C
T6	- 30 °C to + 65 °C	85 °C

Explanation:

The maximum surface temperatures result from each the maximum permissible ambient or operating temperature T_a plus the maximum temperature increase ΔT of 20 K which has to be taken into account.

- 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, too.



5 Enclosure A

Hints and Instructions Regarding the Use in  Hazardous Areas

5.1 Use in Hazardous Areas According to the Regulations

Operating temperature (spider):

Description of spider hardness [Shore]	Permissible temperature range [°C]	
	Permanent temperature	Max. temperature shore-term
80 Sh A-GS	-50 to +80	-60 to +120
92 Sh A-GS	-40 to +90	-50 to +120
95/98 Sh A-GS	-30 to +90	-40 to +120
64 Sh D-H-GS	-50 to +120	-60 to +150
64 Sh D-GS	-20 to +110	-30 to +120
72 Sh D-H-GS	-50 to +120	-60 to +150
72 Sh D-GS	-20 to +110	-30 to +120



CAUTION!

In case that the operating temperature change it is absolutely necessary to verify the coupling selection (see ROTEX® GS catalogue).

2. Mining

Device class I of category M2 (coupling is not approved for device category M1).

Permissible ambient temperature - 30 °C to + 90 °C.

5.2 Control Intervals for Couplings in Hazardous Areas

explosion group	control intervals
3G 3D	For couplings which are classified in category 3G or 3D the operating and assembly instructions that are usual for standard operation apply. During the standard operation which has to be subject to the analysis of danger of ignition the couplings are free from any ignition source. Merely the temperature increase produced by proper heating and depending on the coupling type has to be considered: for ROTEX® GS: $\Delta T = 20 \text{ K}$
II 2GD c IIB T4, T5, T6	A checking of the circumferential backlash and a visual check of the flexible spider must be effected after 3,000 operating hours for the first time, after 6 months at the latest. Except for centered, stiff connecting flanges (e. g. bellhousings). If you note an unconsiderable or no wear at the spider after this first inspection, the further inspections can be effected, in case of the same operating parameters, respectively after 6,000 operating hours or after 18 months at the latest. If you note a considerable wear during the first inspection, so that a change of the spider would be recommended, please find out the cause according to the table „Breakdowns“, as far as possible. The maintenance intervals must be adjusted according to the changed operating parameters.
II 2GD c IIC T4, T5, T6	A checking of the circumferential backlash and a visual check of the flexible spider must be effected after 2,000 operating hours for the first time, after 3 months at the latest. Except for centered, stiff connecting flanges (e. g. bellhousings). If you note an unconsiderable or no wear at the spider after this first inspection, the further inspections can be effected, in case of the same operating parameters, respectively after 4,000 operating hours or after 12 months at the latest. If you note a considerable wear during the first inspection, so that a change of the spider would be recommended, please find out the cause according to the table „Breakdowns“, as far as possible. The maintenance intervals must be adjusted according to the changed operating parameters.



5 Enclosure A

Hints and Instructions Regarding the Use in  Hazardous Areas

5.2 Control Intervals for Couplings in Hazardous Areas



ATTENTION!

Hub types 1.1, 2.0, 2.5, 2.8, 7.5 and 7.8 (without feather key) may be used in category 3 only.

ROTEX® GS backlash-free shaft coupling

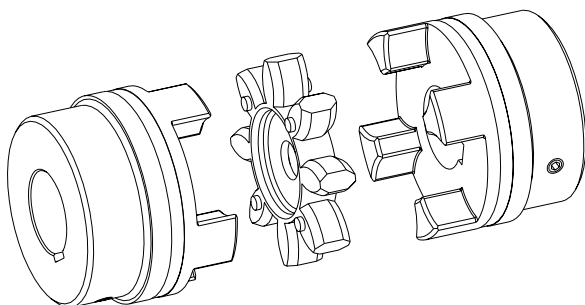


illustration 24: ROTEX® GS backlash-free shaft coupling

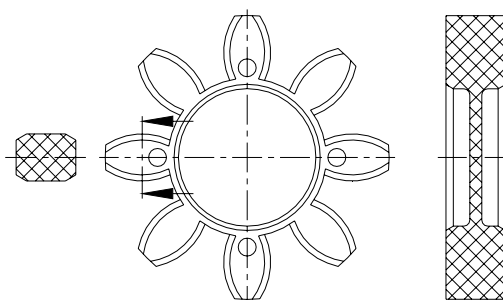


illustration 25: ROTEX® GS spider

If the drive allows, the backlash between the cams of the coupling and the flexible spider has to be measured by means of a feeler gauge. Regardless of the inspection intervals, the spider has to be replaced immediately if the wear limit **maximum wear** has been achieved.

5.3 Approximate Values of Wear

In case of a backlash of more than x mm, the flexible spider must be exchanged.

Whether the limit for replacement has been achieved or not depends on the conditions of operation and the existing operating parameters.



CAUTION!

In order to ensure a long lifetime of the coupling and avoid danger with the use in hazardous areas, the shaft ends have to be aligned accurately. Please make absolutely sure to adhere to the displacement figures mentioned (see table 12 and 13). If these figures are exceeded, the coupling will be damaged.

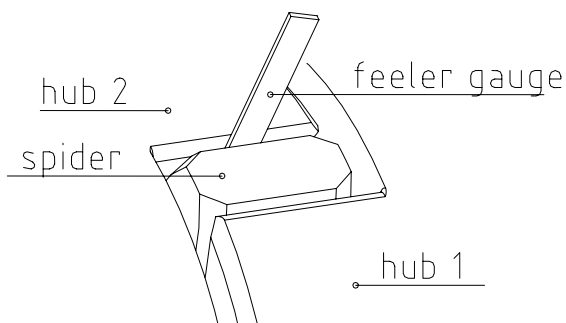


illustration 18: checking of the limit of wear

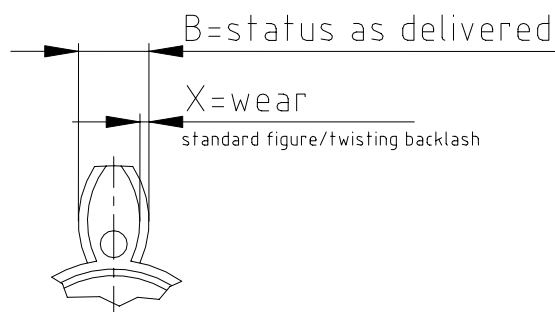


illustration 19: wear of spider



ATTENTION!

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:

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5 Enclosure A

Hints and Instructions Regarding the Use in  Hazardous Areas

5.3 Approximate Values of Wear

Table 14:

ROTEX® GS Size	Wear limits	ROTEX® GS Size	Wear limits
	X _{max.} [mm]		X _{max.} [mm]
5	0,4	28	1,4
7	0,5	38	1,7
9	0,9	42	2,0
12	0,6	48	2,25
14	1,25	55	2,50
19	0,9	65	2,75
24	1,0	75	3,00

5.4 Permissible Coupling Materials in the Hazardous Area

In the Explosion Groups **IIA**, **IIB** and **IIC** the following materials may be combined:

steel
stainless steel
aluminium wrought products

Semifinished products from aluminium with a magnesium part of up to 7,5 % and a yield point of $R_{p0,2} \geq 250 \text{ N/mm}^2$ are permitted for the use in hazardous areas.

Aluminium diecast is generally excluded for hazardous areas.

5.5 Marking of Coupling for the Hazardous Area

Couplings for the use in hazardous areas are marked on at least one component completely and on the remaining components at the outside diameter of the hub or on the front side with an  label for the respectively permitted conditions of use. The flexible spider is excluded.

For reason of the limited space only the symbol  is stamped up to size 19.

Complete labelling:



II 2G c IIC T6, T5 bzw. T4 - $30^\circ\text{C} \leq T_a \leq +65^\circ\text{C}$, +80 °C bzw. +90 °C
II 2D c T 110 °C/I M2 c - $30^\circ\text{C} \leq T_a \leq +90^\circ\text{C}$

Category 3:



II 3G c IIC T6, T5 bzw. T4 - $30^\circ\text{C} \leq T_a \leq +65^\circ\text{C}$, +80 °C bzw. +90 °C
II 3D c T 110 °C - $30^\circ\text{C} \leq T_a \leq +90^\circ\text{C}$

Short labelling:



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

The former marking
remains valid:



II 2G c IIC T4/T5/T6 - $30^\circ\text{C} \leq T_a \leq +80/60/45^\circ\text{C}$
II 2D c T 110 °C/I M2 c - $30^\circ\text{C} \leq T_a \leq +80^\circ\text{C}$

The labelling with Explosion Group IIC includes the Explosion Groups IIA and IIB.

If the coupling part is labelled with  in addition to , KTR supplied it unbored or pilot bored.



5 Enclosure A

Hints and Instructions Regarding the Use in  Hazardous Areas

5.5 Marking of Coupling for the Hazardous Area



CAUTION!

Any mechanical rework to couplings that are used in hazardous areas require an explicit release by KTR.

The orderer must send a drawing to KTR acc. to which the manufacture must be made. KTR checks this drawing and returns it to the orderer with approval.

5.6 Starting

Before putting the coupling into operation, check the tightness of the setscrews in the hubs, the alignment and the distance dimension E and correct, if necessary, and also check all screw connections regarding the stipulated tightening torques dependent on the type of coupling.



If used in hazardous areas the grub screws to fix the hub as well as all screw connections must be additionally secured against self-loosening, e. g. glue with Loctite (medium strength).

Last but not least, the coupling protection against unintended contact must be fixed.

The cover must be electrically conductive and be included in the equipotential bonding. Bell housings (magnesium part below 7,5 %) made from aluminium and damping rings (NBR) can be used as connecting element between pump and electro motor. The cover may only be taken off after having stopped the unit.

During operation, please pay attention to

- strange running noises
- occurring vibrations.

If the couplings are used in dust explosive areas and in mining the user must make sure that there is no accumulation of dust in a critical quantity between the cover and the coupling. The coupling must not operate in an accumulation of dust.

For covers with unlocked openings on the upper side no light metals may be used if the couplings are used as appliances of appliance group II (*if possible, from stainless steel*).

If the couplings are used in mining (appliance group I M2), the cover must not be made from light metal. In addition, it must be resistant to higher mechanical loads than if it is used as appliance of appliance group II.

The minimum distance "Sr" of the protection device of the rotating parts must be at least the values listed below.

If the protection device is used as cover, regular openings complying with the explosion protection demands can be made that must not exceed the following dimensions:

openings	covering		
	top surface	side parts	distance „Sr“
circular – max. diameter	4	8	≥ 10
rectangular – max. side length	4	8	≥ 10
Straight or bended slot – max. side length/height	prohibited	8	≥ 20

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 08.02.12 Kb/De	Ersatz für: KTR-N vom 18.08.11
	Geprüft: 08.02.12 Kb	Ersetzt durch:



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Hints and Instructions Regarding the Use in Hazardous Areas

5.6 Starting



CAUTION!

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

Coupling layer:



If coated (priming, painting etc.) couplings are used in hazardous areas, the requirements to conductivity and layer thickness must be considered. In case of paintings up to 200 µm no electrostatic load can be expected. Multiple coatings that are thicker than 200 µm are prohibited for explosion group IIC.

5.7 Breakdowns, Causes and Elimination

The below-mentioned errors can lead to an incorrect use of the **ROTEX®** coupling. In addition to the stipulations in these operating and mounting instructions please make sure to avoid these errors.

The errors listed can only be clues to search for the errors. When searching for the error the adjacent components must be generally included.



Due to incorrect use the coupling can become a source of ignition.
EC Standard 94/9/EC requires a special care from the manufacturer and the user.

General errors incorrect use

- Important data for the coupling selection was not forwarded.
- The calculation of the shaft/hub connection was not considered.
- Coupling parts with damage occurred during transport are assembled.
- If the heated hubs are assembled, the permissible temperature is exceeded.
- The fits of the parts to be assembled are not coordinated with each other.
- Tightening torques are below/exceeded.
- Components are exchanged by mistake/put together incorrectly.
- A wrong or no spider is inserted into the coupling.
- No original KTR parts (purchased parts) are used.
- Old/already worn out spiders or spiders stored too long are used.
- The coupling used/the coupling protection used is not suitable for the operation in hazardous areas and does not correspond to EC Standard 94/9/EC, respectively.
- Maintenance intervals are not observed.



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Hints and Instructions Regarding the Use in Hazardous Areas

5.7 Breakdowns, Causes and Elimination

breakdowns	causes	danger hints for hazardous areas	elimination
change of the running noises and/or occurring vibrations	misalignment	increased temperature the the spider surface; danger of ignition by hot surfaces	1) put the unit out of operation 2) eliminate the reason for the misalignment (e. g. loose foundation bolts, break of the engine fixing, heat expansion of unit components, change of the assembly dimension E of the coupling) 3) checking of wear see under point Control
	wear of spider, short-term torque transmission due to metal contact	danger of ignition due to sparking	1) put the unit out of operation 2) disassemble the coupling and remove rests of the spider 3) check coupling parts and exchange damaged coupling parts 4) insert spider, assemble coupling parts 5) check alignment, correct if necessary
	loose screws for axial securement of hubs	danger of ignition due to hot surfaces and sparking	1) put the unit out of operation 2) check alignment of coupling 3) tighten the screws to secure the hubs and secure against self-loosening 4) checking of wear see under point Control
break of cam	wear of spider, torque transmission due to metal contact	danger of ignition due to sparking	1) put the unit out of operation 2) change complete coupling 3) check alignment
	break of the cams due to high shock energy/overload	danger of ignition due to sparking	1) put the unit out of operation 2) change complete coupling 3) check alignment 4) find out the reason of overload
	operating parameters do not correspond to the performance of the coupling	danger of ignition due to sparking	1) put the unit out of operation 2) check the operating parameters and select a larger coupling (consider installation space) 3) assemble new coupling size 4) check alignment
	mistake in service of the unit	danger of ignition due to sparking	1) put the unit out of operation 2) change complete coupling 3) check alignment 4) instruct and train the service staff



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Hints and Instructions Regarding the Use in Hazardous Areas

5.7 Breakdowns, Causes and Elimination

breakdowns	causes	danger hints for hazardous areas	elimination
Early wear of spider or reverse backlash	misalignment	increased temperature the the spider surface; danger of ignition by hot surfaces	1) put the unit out of operation 2) eliminate the reason for the misalignment (e. g. loose foundation bolts, break of the engine fixing, heat expansion of unit components, change of the assembly dimension E of the coupling) 3) checking of wear see under point Control
	e. g. contact with aggressive liquids/oils, ozone-influence, too high/low ambient temperatures etc. effecting a physical change of the spider	danger of ignition due to sparking in case of metallic contact of the cams	1) put the unit out of operation 2) disassemble the coupling and remove rests of the spider 3) check coupling parts and exchange damaged coupling parts 4) insert spider, assemble coupling parts 5) check alignment, correct if necessary 6) make sure that further physical changes of the spider are excluded
	Excessively high/low ambient/contact temperatures for the spider; max. permissible e. g. T4 = - 30 °C/+ 90 °C	danger of ignition due to sparking in case of metallic contact of the cams	1) put the unit out of operation 2) disassemble the coupling and remove rests of the spider 3) check coupling parts and exchange damaged coupling parts 4) insert spider, assemble coupling parts 5) check alignment, correct if necessary 6) check and regulate ambient/contact temperature (eventually even elimination by using other spider materials)
premature wear of spider (liquefaction of material inside the spider cam)	drive vibrations	danger of ignition due to sparking in case of metallic contact of the cams	1) put the unit out of operation 2) disassemble the coupling and remove rests of the spider 3) check coupling parts and exchange damaged coupling parts 4) insert spider, assemble coupling parts 5) check alignment, correct if necessary 6) find out the reason for the vibrations (eventually elimination by spider with lower or higher shore hardness)



If you operate with a worn spider (see item 5.2) and the subsequent contact of metal parts a due operation meeting the explosion protection requirements and acc. to Standard 94/9/EC is not ensured.



ATTENTION!

KTR does not assume any liabilities or guarantees regarding the use of spare parts and accessories which are not provided by KTR and for the damages resulting herefrom.



KTR Kupplungstechnik
GmbH
D-48407 Rheine

ROTEX® GS
Operating/mounting instructions

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5.8 EC Certificate of Conformity

EC Certificate of Conformity

Corresponding to EC Standard 94/9/EC dated 23 March 1994
and to the legal regulations

The manufacturer - KTR Kupplungstechnik GmbH, D-48432 Rheine – states that the

ROTEX® GS backlash-free shaft couplings

described in these mounting instructions and explosion-proof designed correspond to Article 1 (3) b) of Standard 94/9/EC and comply with the general Safety and Health Requirements according to enclosure II of Standard 94/9/EC.

According to article 8 (1) b) ii) of Standard 94/9/EC the technical documentation is desposited with the:

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Fuchsmühlenweg 7

09599 Freiberg

Rheine,

08.01.09
Date

i. V.


Reinhard Wibbeling
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i. V.


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Product Manager