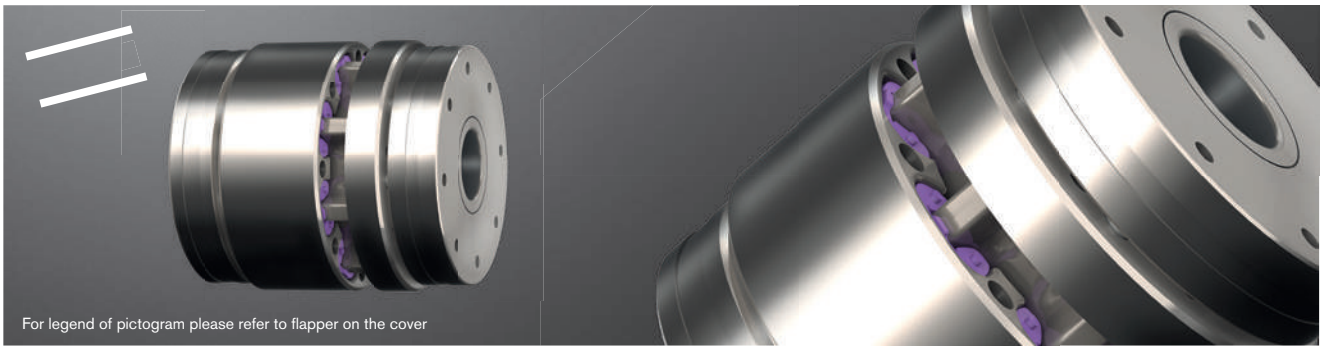
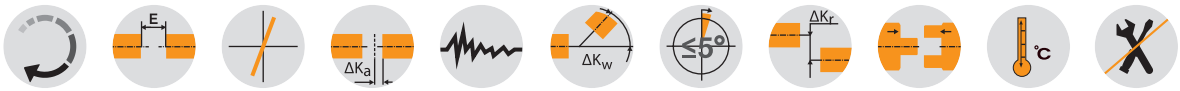
ROTEX® GS HP
Backlash-free shaft coupling

Highly accurate closed coupling system





ROTEX® GS HP - clamping ring hubs/clamping ring material steel

Size	Spider GS [1] torque T_{KN} [Nm] for 98 ShA-GS/52 ShD-GS		Max. speed [rpm]	Dimensions [mm]										Clamping screws DIN EN ISO 4762			Weight per hub with max. bore [kg]	Mass moment of inertia of coupling with max. bore [kgm²]
	T_{KN}	$T_{K\ max}$		Max. d1, d2	D_H	D	L	l_1, l_2	l_3, l_4	N	E	b	s	M	z = number	T_A [Nm]		
24	100	200	59,000	25	55	48	73	25	18	15	24	20	2	5	5	7.7	0.74	0.000317
28	160	320	47,000	35	65	58	78	27	17	17	24	20	2	5	6	7.7	1.02	0.000653
38	400	800	39,000	45	80	76	82	29	18	18	24	20	2	5	8	7.7	1.54	0.001534
42	475	950	35,000	51	95	82	99	36	24	24	27	22	2.5	6	8	13	2.59	0.003441
48	550	1100	30,000	55	105	92	101	37	25	25	27	22	2.5	6	9	13	3.39	0.005481
55	725	1450	26,000	60	120	105	103	38	26	26	27	22	2.5	6	10	13	6.84	0.009172

[1] For selections see page 22 et seqq/other spiders see page 123 and following

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub design 6.0 steel

Size		Ø12	Ø15	Ø18	Ø19	Ø20	Ø22	Ø25	Ø28	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55 *	Ø60 *
24	H6/k6	55	102	165	115	133	172	241											
28	H6/k6		125	199	226	158	202	280	246	340	432								
38	H6/k6					216	274	376	374	508	635	586	666	752	649				
42	H6/k6									665	830	1015	770	871	1035	1215	1153		
48	H6/k6													957	1135	1330	1132	1424	
55	H6/k6													1220	1440	1455	1604	1635	2026

* From Ø55 G6/m6.
The torque is reduced with bigger fitting tolerances. For the strength calculation of shaft/hollow shaft see KTR standard 45710 on our homepage www.ktr.com.

Displacements

Size	Spider GS	Displacements		
		Axial ΔKa [mm]	Radial ΔKr [mm]	Angular ΔKw [degree]
24	98 ShA			0.9
28	98 ShA	+1.0/-0.8	0.10	
38	98 ShA			
42	52 ShD			
48	52 ShD	+1.4/-1.0	0.14	
55	52 ShD			

The displacement figures may only be used one by one, if they appear simultaneously, they must be limited in proportion. Care should be taken to maintain the distance dimension E accurately in order to allow for axial clearance of the coupling while in operation. Detailed mounting instructions are shown on our homepage www.ktr.com.

Ordering example:

ROTEX® GS 24 HP	98 ShA-GS	6.0 - Ø25		6.0 - Ø25	
Coupling size	Spider hardness	Hub design	Finish bore	Hub design	Finish bore

Any questions? Please contact us.

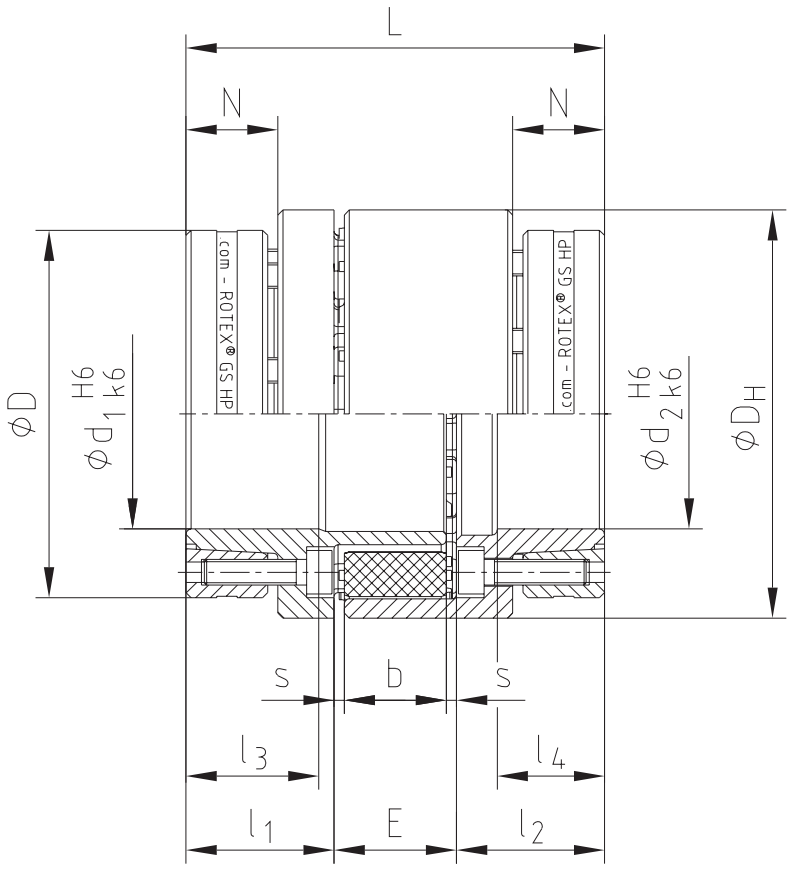
Morskate Aandrijvingen BV
Oosterveldsingel 47A
7558 PJ Hengelo (Ov)
The Netherlands

NL
T +31 (0)74 - 760 11 11
info@morskateaandrijvingen.nl
www.morskateaandrijvingen.nl

DE
T +49 692 - 222 34 95
info@morskateantriebstechnik.de
www.morskateantriebstechnik.de

EN
T +31 (0)74 - 760 11 11
info@morskatedrivetechnology.com
www.morskatedrivetechnology.com

Components


L
N
N
com - ROTEX® GS HP
com - ROTEX® GS HP
ϕD
H6
ϕd1 k6
H6
ϕd2 k6
ϕDH
s
b
s
l3
l4
l1
E
l2

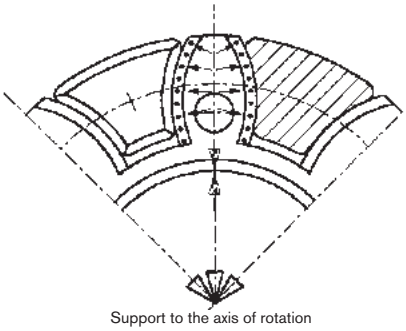
ROTEX® GS
Backlash-free jaw couplings

Technical description

ROTEX® GS is a three-part, axial plug-in coupling backlash-free under prestress. It impresses even with critical applications by its backlash-free power transmission, its stiffness which is each adapted to the application and its optimum damping of vibrations. Using this principle provides for significant options of assembly optimizing the assembly times in production.

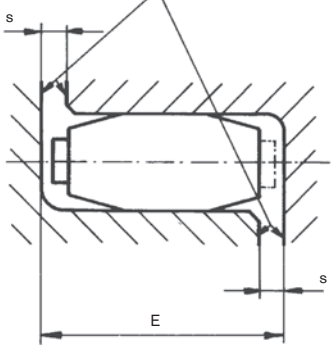
The straight spline of the spider mounted under prestress results in a lower surface pressure and consequently higher stiffness of the coupling system. The flexible teeth compensating for misalignment are radially supported in the internal diameter by means of a web. This avoids too high internal or external deformation with high acceleration or high speeds. This is vital for a smooth operation and long service life of the coupling.
The pegs on the spider arranged reciprocally prevent a contact of the spider on the hubs over the full surface. Observing the distance dimension E ensures the ability of the coupling to compensate for displacements.
By observing the gap dimension „s“ the electrical insulation is ensured, as well as a high service life of the coupling. This fact is gaining more and more importance, due to the increasing precision of shaft encoders and the existing demand for electromagnetic compatibility (EMC).

Limitation by concave cams with too high speeds/ centrifugal forces and prestress of elastomer parts



Support to the axis of rotation

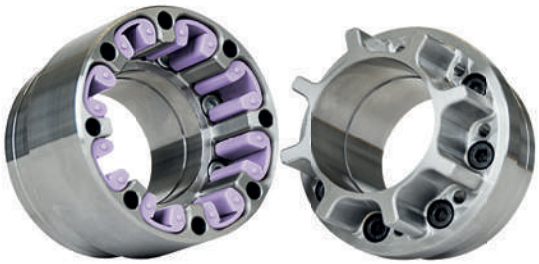
Electrical insulation due to gap dimension „s“



Technical description

ROTEX® GS HP is a backlash-free, axial plug-in, flexible jaw coupling developed for high-speed drives.

In contrast to the ROTEX® GS coupling this type has got individual elastomers instead of a complete spider.
This allows to design the hubs as a completely enclosed shape so that both the cam section and the pocket part feature higher stiffness against loads in direction of rotation (torque shocks), but also in tangential direction (centrifugal force). The elastomers are embedded in the pocket part such that the high loads resulting from centrifugal forces do not have any negative influence on them and consequently do not have any negative influence on the overall drive system.



Instead of torques with circumferential speeds of a maximum of 100 m/s for ROTEX® GS P couplings, circumferential speeds up to 175 m/s can be reached with the new ROTEX® GS HP system.

Any questions? Please contact us.

Morskate Aandrijvingen BV
Oosterveldsingel 47A
7558 PJ Hengelo (Ov)
The Netherlands

NL
T +31 (0)74 - 760 11 11
info@morskateaandrijvingen.nl
www.morskateaandrijvingen.nl

DE
T +49 692 - 222 34 95
info@morskateantriebstechnik.de
www.morskateantriebstechnik.de

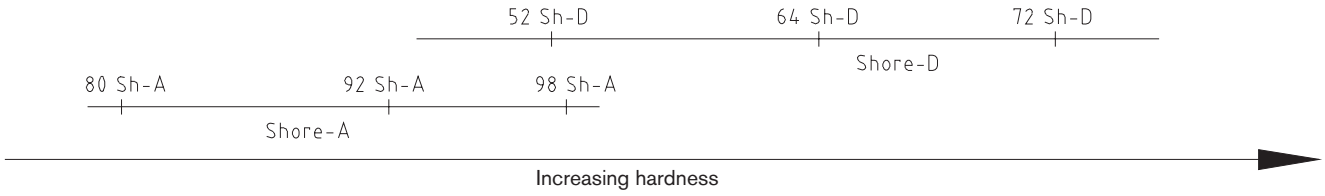
EN
T +31 (0)74 - 760 11 11
info@morskatedrivetechnology.com
www.morskatedrivetechnology.com

Spiders

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. These five spiders with different kinds of Shore hardness allow to easily adjust the ROTEX® GS with regard to torsional stiffness and the vibration behaviour to the individual conditions of an application. The flexible prestress varies depending on the coupling size, the spiders/material and the production tolerances. Resulting from it is the axial plug-in force starting from low as a close sliding fit or with torsionally soft spider to heavy with big prestress or torsionally rigid spider (see mounting instruction KTR-N 45510 at www.ktr.com).
Along with an increasing hardness of the spider the torques to be transmitted and the stiffness of the spider increase, too. Along with reduced hardness of the spider the ability of compensating for displacements and damping the spider is increased.

Features						
Description of spider Hardness [Shore]	Marking Colour	Material	Perm. temperature range [°C]		Available for coupling size	Typical applications
			Permanent temperature	Max. temperature (short-time)		
80 ShA-GS		Polyurethane	-50 to +80	-60 to +120	Size 5 to 24	– drives of electric measuring systems
92 ShA-GS		Polyurethane	-40 to +90	-50 to +120	Size 5 to 55	– drives of electric measuring and control systems – main spindle drives
98 ShA-GS		Polyurethane	-30 to +90	-40 to +120	Size 5 to 90	– Positioning drives – main spindle drives – high load
98 ShA-GS 52 ShD-GS		Polyurethane	-30 to +90	-40 to +120	Size 24 to 55 (for ROTEX® GS HP only)	– HSC main spindle drives – test benches with severely high speeds
64 ShD-H-GS 64 ShD-GS		Hytrel	-50 to +120	-60 to +150	Size 7 to 38	– planetary gears/backlash-free gears – higher torsion spring stiffness/high ambient temperatures
		Polyurethane	-20 to +110	-30 to +120	Size 42 to 90	– higher load – higher torsion spring stiffness
72 ShD-H-GS 72 ShD-GS		Hytrel	-50 to +120	-60 to +150	Size 24 to 38	– very high torsion spring stiffness/high ambient temperature – very high load
		Polyurethane	-20 to +110	-30 to +120	Size 42 to 90	– very high torsion spring stiffness – very high load

Degree of hardness



Spider material	Polyurethane			Hytrel
Degree of hardness	92 Shore A	98 Shore A	64 Shore D	64 Shore D
Relative damping ψ [-] [1]	0.80	0.80	0.75	0.60
Resonance factor V_R [-] [1]	7.90	7.90	8.50	10.5

[1] Special figures apply for ROTEX® GS HP, please contact us.

Advice

- Feather keyways available from a bore ≥Ø6. Feather keyways according to DIN 6885 sheet 1, tolerance JS9.
- Finish bore tolerance H7 (except for clamping hubs), from Ø55 G7 with clamping ring hubs
- Finish bore tolerance H6 for ROTEX® GS P and ROTEX® GS HP
- Recommended insertion dimension of shafts into coupling hubs: l_1/l_2; for clamping ring hubs the minimum insertion dimension l_3 applies
- Spider with bore available on request. Please specify in the order as shown in the example on page 130.

Use in potentially explosive atmospheres

ROTEX® GS couplings are suitable for power transmission in drives in potentially explosive atmospheres. The couplings are assessed and approved according to EU directive 2014/34/EU as units of category 2G/2D and thus suitable for the use in potentially explosive atmospheres of zone 1, 2, 21 and 22. Please read through our information included in the respective Type Examination Certificate and the operating and assembly instructions at www.ktr.com.
Selection: If used in potentially explosive atmospheres the clamping ring hubs (clamping hubs without feather keyway only for use in category 3) must be selected in a way that there is a minimum safety factor of s = 2 between the peak torque of the machine including all operating parameters and the nominal torque and frictional locking torque of the coupling.

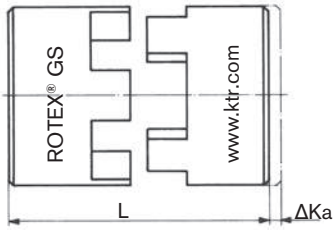
Technical data

Size	Spider GS Shore hardness	Shore scale	Max. speed [rpm] for type						Torque [Nm]		Static torsion spring stiffness [1] [Nm/rad]	Dynamic torsion spring stiffness [1] [Nm/rad]	Radial torsion spring stiffness C_r [N/mm]	Weight [kg]		Mass moment of inertia J [kgm²]	
			2.0 / 2.1 2.5 / 2.6	2.8 2.9	1.0 1.1	6.0 light [2]	6.0 P [2]	DKM	T_{KN}	$T_{K\,max}$				Each hub [5]	Spider	Each hub [5]	Spider
5	70	A	38000	38000	47700			57300	0.2	0.3	1.78	5	43	0.001	0.2 x 10⁻³	0.015 x 10⁻⁶	0.002 x 10⁻⁶
	80	A							0.3	0.6	3.15	10	82				
	92	A							0.5	1.0	5.16	16	154				
	98	A							0.9	1.7	8.3	25	296				
7	80	A	27000	27000	34100			40900	0.7	1.4	8.6	26	114	0.003	0.7 x 10⁻³	0.085 x 10⁻⁶	0.01 x 10⁻⁶
	92	A							1.2	2.4	14.3	43	219				
	98	A							2.0	4.0	22.9	69	421				
	64	D							2.4	4.8	34.3	103	630				
8	80	A		23800					0.7	1.4	8.8	27	117	0.003	0.5 x 10⁻³	0.117 x 10⁻⁶	0.0124 x 10⁻⁶
	98	A							2.0	4.0	23.5	71	433				
	64	D							2.4	4.8	35.3	106	648				
9	80	A	19000	19000	23800			28600	1.8	3.6	17.2	52	125	0.01	1.7 x 10⁻³	0.48 x 10⁻⁶	0.085 x 10⁻⁶
	92	A							3.0	6.0	31.5	95	262				
	98	A							5.0	10.0	51.6	155	518				
	64	D							6.0	12.0	74.6	224	739				
12	80	A	15200	15200	19100			22900	3.0	6.0	84.3	252	274	0.02	2.3 x 10⁻³	1.5 x 10⁻⁶	0.139 x 10⁻⁶
	92	A							5.0	10.0	160.4	482	470				
	98	A							9.0	18.0	240.7	718	846				
	64	D							12.0	24.0	327.9	982	1198				
13	80	A		12700					3.6	7.2	111	330	359	0.01	2.0 x 10⁻³	1.1 x 10⁻⁶	0.155 x 10⁻⁶
	98	A							11.0	22.0	316	941	1109				
	64	D							14.5	29.0	430	1287	1570				
14	80	A	12700	12700	15900	32000	47700	19100	4.0	8.0	60.2	180	153	0.02	4.7 x 10⁻³	2.8 x 10⁻⁶	0.509 x 10⁻⁶
	92	A							7.5	15.0	114.6	344	336				
	98	A							12.5	25.0	171.9	513	654				
	64	D							16.0	32.0	234.2	702	856				
16	80	A		12000					5.0	10.0	157	471	400	0.02	3.6 x 10⁻³	2.8 x 10⁻⁶	0.435 x 10⁻⁶
	98	A							15.0	30.0	450	1341	1710				
	64	D							19.0	38.0	612	1835	2238				
19	80	A	9550	9550	11900	24000	35800	14300	6.0	12.0	618	1065	582	0.09	7.6 x 10⁻³	19.5 x 10⁻⁶	1.35 x 10⁻⁶
	92	A							12.0	24.0	1090	1815	1120				
	98	A							21.0	42.0	1512	2540	2010				
	64	D							26.0	52.0	2560	3810	2930				
24	92	A	6950	10400	8650	17000	26000	10400	35	70	2280	4010	1480	0.2	0.02	81.9 x 10⁻⁶	6.7 x 10⁻⁶
	98	A							60	120	3640	5980	2560				
	64	D							75	150	5030	10896	3696				
	72 [3]	D							97	194	9944	17095	5799				
28	92	A	5850	8800	7350	15000	22000	8800	95	190	4080	6745	1780	0.3	0.03	184.2 x 10⁻⁶	14.85 x 10⁻⁶
	98	A							160	320	6410	9920	3200				
	64	D							200	400	10260	20177	4348				
	72 [3]	D							260	520	21526	36547	7876				
38	92	A	4750	7150	5950	12000	17900	7150	190	380	6525	11050	2350	0.6	0.05	542.7 x 10⁻⁶	39.4 x 10⁻⁶
	98	A							325	650	11800	17160	4400				
	64	D							405	810	26300	40335	6474				
	72 [3]	D							525	1050	44584	71180	11425				
42	92	A	4000		5000	10000	15000	6000	265	530	10870	15680	2430	2.4	0.08	2802 x 10⁻⁶	85 x 10⁻⁶
	98	A				8050 [4]			450	900	21594	37692	5570				
	64	D							560	1120	36860	69825	7270				
	72 [3]	D							728	1456	58600	93800	9766				
48	92	A	3600		4550	9100	13600	5450	310	620	12968	18400	2580	3.3	0.09	4709 x 10⁻⁶	135 x 10⁻⁶
	98	A				7200 [4]			525	1050	25759	45620	5930				
	64	D							655	1310	57630	99750	8274				
	72 [3]	D							852	1704	80000	136948	11359				
55	92	A	3150		3950	6350 [4]	11900	4750	410	820	15482	21375	2980	5.1	0.12	9460 x 10⁻⁶	229 x 10⁻⁶
	98	A							685	1370	42117	61550	6686				
	64	D							825	1650	105730	130200	9248				
	72 [3]	D							1072	2144	150000	209530	12762				
65	98	A	2800		3500	5650 [4]	11000		940	1880	48520	71660	6418	6.7	0.2	15143 x 10⁻⁶	437 x 10⁻⁶
	64	D							1175	2350	118510	189189	8870				
	72 [3]	D							1527	3054	160000	310000	11826				
75	98	A	2350		2950	4750 [4]	8950		1920	3840	79150	150450	8650	10.5	0.3	32750 x 10⁻⁶	1179 x 10⁻⁶
	64	D							2400	4800	182320	316377	11923				
	72 [3]	D							3120	6240	360540	586429	16454				
90	98	A	1900		2380	3800 [4]	7150		3600	7200	204500	302900	10700	18.2	0.6	87099 x 10⁻⁶	3362 x 10⁻⁶
	64	D							4500	9000	429450	908700	14700				
	72 [3]	D							5850	11700	847440	1308852	20290				

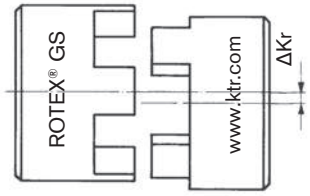
[1] Static and dynamic torsion spring stiffness with 0.5 x T_{KN}
[2] For higher speeds see ROTEX® GS HP
[3] When using the spider 72 ShD, we recommend to use hubs made of steel
[4] Clamping ring hubs 6.0 made of steel
[5] Hubs with an average bore type 1.0
The coupling has to be dimensioned in a way that the permissible coupling load is not exceeded during any operating condition (see coupling selection on page 22 et seqq.).
The torques specified T_{KN}/$T_{K\,max}$ refer to the spider. The shaft-hub-connection needs to be inspected by the customer.
For technical data of type HP see page 138.

Notes for displacements

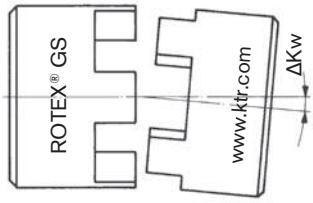
Axial displacement



Radial displacement



Angular displacement



Due to its design the ROTEX® GS is able to absorb axial, angular and radial displacement, without causing any wear or premature failure of the coupling. As the spider is only stressed under pressure it is ensured that the coupling will remain backlash-free even after a longer operation period.

As an example, axial displacement may be generated by different tolerances of the connecting elements with assembly or by alteration of the shaft lengths if fluctuation of temperature occurs. As the shaft bearings usually cannot be axially stressed to a big extent, it is the task of the coupling to compensate for this axial displacement and keep the reaction forces low.

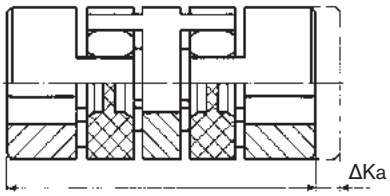
In case of pure angular displacement the imaginary bisecting lines of the shafts intersect in the center of the coupling. Within a permissible range this displacement can be absorbed by the coupling without extensive restoring forces being generated.

Radial displacement results from parallel displacement of the shafts towards each other, caused by different tolerances on the centerings or by mounting the power packs on different levels. Due to the kind of displacement the largest restoring forces are generated here, consequently causing the highest stresses on adjacent components.

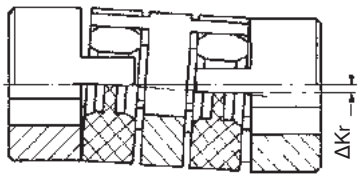
In case of larger displacements (especially radial displacements) the ROTEX® GS type DKM should be used in order to avoid excessive restoring forces.

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 TKN of the coupling and an ambient temperature of +30 °C. The displacement figures may only be used one by one, if they appear simultaneously, they must be limited in proportion. The ROTEX® GS couplings are able to compensate for axial, radial and angular displacements. Careful and accurate alignment of the shafts increases the service life of the coupling.

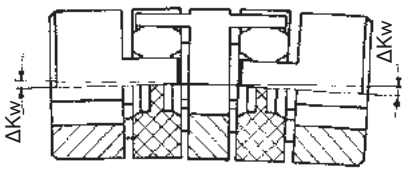
Axial displacement



Radial displacement



Angular displacement



Shaft misalignment of ROTEX® GS type DKM

This design reduces the restoring forces arising with radial displacement to a minimum, due to the double-jointed operation, additionally the coupling is able to compensate for higher axial and angular misalignment.

Displacements

Displacements							
Size	Spider GS	Standard displacements			DKM displacements		
		Axial ΔKa [1] [mm]	Radial ΔKr [mm]	Angular ΔKw [degree]	Axial ΔKa [1] [mm]	Radial ΔKr [mm]	Angular ΔKw [degree]
5	70 ShA	+0.4 -0.2	0.14	1.2°	+0.4 -0.4	0.17	1.2°
	80 ShA		0.12	1.1°		0.15	1.1°
	92 ShA		0.06	1.0°		0.14	1.0°
	98 ShA		0.04	0.9°		0.13	0.9°
7	80 ShA	+0.6 -0.3	0.15	1.1°	+0.6 -0.6	0.23	1.1°
	92 ShA		0.10	1.0°		0.21	1.0°
	98 ShA		0.06	0.9°		0.19	0.9°
	64 ShD		0.04	0.8°		0.17	0.8°
8	80 ShA	+0.6 -0.5	0.15	1.1°	—	—	—
	98 ShA		0.08	0.9°			
	64 ShD		0.06	0.8°			
9	80 ShA	+0.8 -0.4	0.19	1.1°	+0.8 -0.8	0.29	1.1°
	92 ShA		0.13	1.0°		0.26	1.0°
	98 ShA		0.08	0.9°		0.24	0.9°
	64 ShD		0.05	0.8°		0.21	0.8°
12	80 ShA	+0.9 -0.4	0.20	1.1°	+0.9 -0.9	0.35	1.1°
	92 ShA		0.14	1.0°		0.32	1.0°
	98 ShA		0.08	0.9°		0.29	0.9°
	64 ShD		0.05	0.8°		0.25	0.8°
13	80 ShA	+0.9 -0.8	0.20	1.1°	—	—	—
	98 ShA		0.08	0.9°			
	64 ShD		0.05	0.8°			
14	80 ShA	+1.0 -0.5	0.21	1.1°	+1.0 -1.0	0.40	1.1°
	92 ShA		0.15	1.0°		0.37	1.0°
	98 ShA		0.09	0.9°		0.33	0.9°
	64 ShD		0.06	0.8°		0.29	0.8°
16	80 ShA	+1.0 -0.8	0.21	1.1°	—	—	—
	98 ShA		0.10	0.9°			
	64 ShD		0.08	0.8°			
19	80 ShA	+1.2 -0.5	0.15	1.1°	+1.2 -1.0	0.49	1.1°
	92 ShA		0.10	1.0°		0.45	1.0°
	98 ShA		0.06	0.9°		0.41	0.9°
	64 ShD		0.04	0.8°		0.36	0.8°
24	92 ShA	+1.4 -0.5	0.14	1.0°	+1.4 -1.0	0.59	1.0°
	98 ShA		0.10	0.9°		0.53	0.9°
	64 ShD		0.07	0.8°		0.47	0.8°
	72 ShD		0.04	0.7°		0.42	0.7°
28	92 ShA	+1.5 -0.7	0.15	1.0°	+1.5 -1.4	0.66	1.0°
	98 ShA		0.11	0.9°		0.60	0.9°
	64 ShD		0.08	0.8°		0.53	0.8°
	72 ShD		0.05	0.7°		0.46	0.7°
38	92 ShA	+1.8 -0.7	0.17	1.0°	+1.8 -1.4	0.77	1.0°
	98 ShA		0.12	0.9°		0.69	0.9°
	64 ShD		0.09	0.8°		0.61	0.8°
	72 ShD		0.06	0.7°		0.54	0.7°
42	92 ShA	+2.0 -1.0	0.19	1.0°	+2.0 -2.0	0.84	1.0°
	98 ShA		0.14	0.9°		0.75	0.9°
	64 ShD		0.10	0.8°		0.67	0.8°
	72 ShD		0.07	0.7°		0.59	0.7°
48	92 ShA	+2.1 -1.0	0.23	1.0°	+2.1 -2.0	0.91	1.0°
	98 ShA		0.16	0.9°		0.82	0.9°
	64 ShD		0.11	0.8°		0.73	0.8°
	72 ShD		0.08	0.7°		0.64	0.7°
55	92 ShA	+2.2 -1.0	0.24	1.0°	+2.2 -2.0	1.01	1.0°
	98 ShA		0.17	0.9°		0.91	0.9°
	64 ShD		0.12	0.8°		0.81	0.8°
	72 ShD		0.09	0.7°		0.71	0.7°
65	98 ShA	+2.6 -1.0	0.18	0.9°	—	—	—
	64 ShD		0.13	0.8°			
	72 ShD		0.10	0.7°			
75	98 ShA	+3.0 -1.5	0.21	0.9°	—	—	—
	64 ShD		0.15	0.8°			
	72 ShD		0.11	0.7°			
90	98 ShA	+3.4 -1.5	0.23	0.9°	—	—	—
	64 ShD		0.17	0.8°			
	72 ShD		0.13	0.7°			

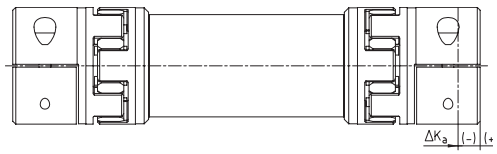
[1] The Ka figures specified above have to be added to the length of the respective coupling type.
The displacement figures may only be used one by one, if they appear simultaneously, they must be limited in proportion. Care should be taken to maintain the distance dimension E accurately in order to allow for axial clearance of the coupling while in operation. Detailed mounting instructions are shown on our homepage www.ktr.com.
For technical data of type HP see page 134.

Displacements of intermediate shaft coupling

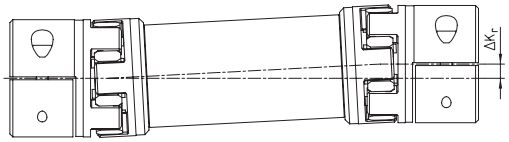
Displacements of intermediate shaft couplings			
ROTEX® GS size (with 98 ShA-GS)	Axial ΔKa [mm]	Radial ΔKr [1] [mm]	Angular ΔKw [degree]
14	+1.0 / -1.0	15	0.9°
19	+1.2 / -1.0	14	0.9°
24	+1.4 / -1.0	14	0.9°
28	+1.5 / -1.4	14	0.9°
38	+1.8 / -1.4	14	0.9°
42	+2.0 / -2.0	14	0.9°
48	+2.1 / -2.0	13	0.9°
55	+2.2 / -2.0	13	0.9°
65	+2.6 / -2.0	13	0.9°

[1] Radial displacements based on a coupling length L_{ZR} = 1000 mm

Axial displacement

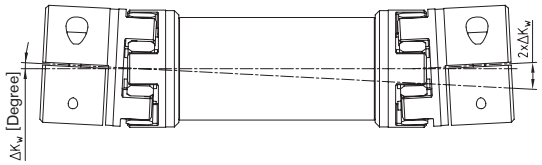


Radial displacement



$$\Delta Kr = (L_{ZR} - 2 \bullet l_1 - E) \cdot \tan \Delta Kw$$

Angular displacement



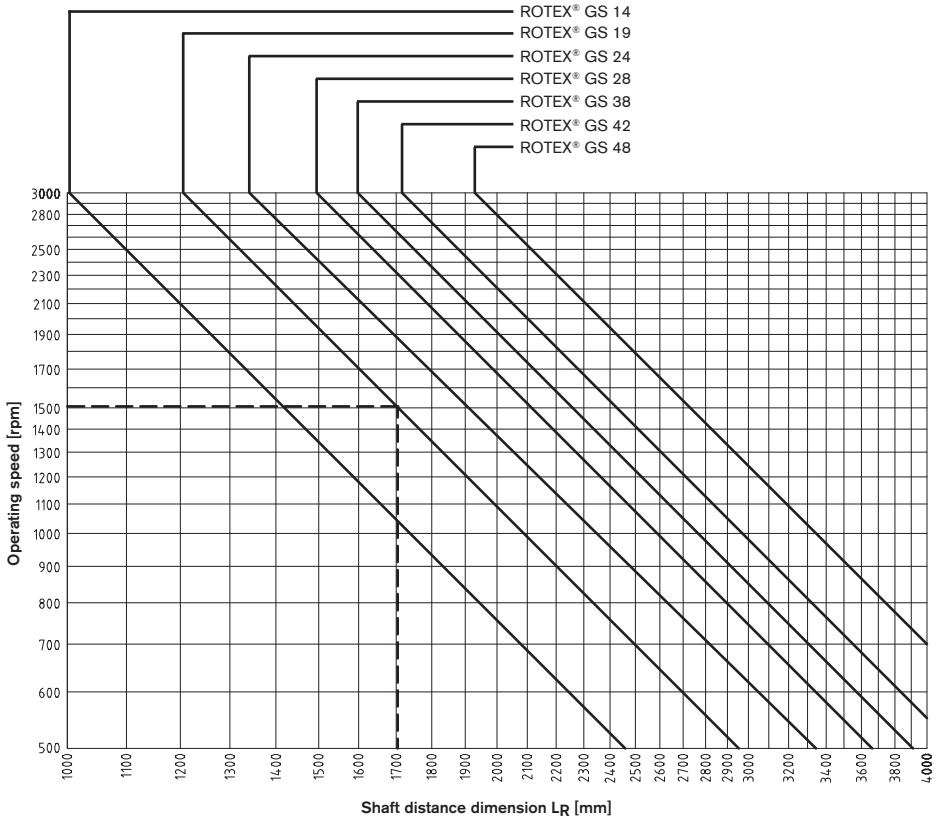
Calculation of overall torsion spring stiffness:

$$C_{tot.} = \frac{1}{2 \bullet \frac{1}{C_1} + \frac{L_{pipe}}{C_2}} \text{ [Nm/rad]}$$

$$\text{with } L_{pipe} = \frac{L_{ZR} - 2 \bullet L}{1000 \text{ [m]}}$$

C_1 = torsion spring stiffness for spider see page 120
C_2 = from table on page 146 - 148

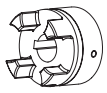
Chart of critical bending speeds for type ZR3



Example:
ROTEX® GS 19
Operating speed: 1500 rpm
Max. perm. shaft distance dimension: 1700 mm
Operating speed = n_{crit}/1.4

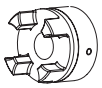
Types of hubs

Due to the numerous applications of ROTEX® GS for many different mounting situations, this coupling system is available with various hub types. The different hub types can be combined optionally within one size.



Type 1.0
with feather keyway and setscrew

Positive-locking power transmission, permissible torque depending on the permissible surface pressure. Not suitable for backlash-free power transmission with heavily reversing operation.



Type 1.1
without feather keyway, with setscrew

Non-positive torque transmission. Suitable for backlash-free transmission of very small torques.
(For ATEX category 3 only)

Type 1.5
with hydraulic clamping system

Integrated frictionally engaged shaft-hub-connection for transmitting high torques with easy assembly by means of a screw.

Type 2.0 clamping hub
single slot without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depending on bore diameter. Type 2.0 up to size 14 as standard.
(For ATEX category 3 only)

Type 2.1 clamping hub
single slot with feather keyway

Positive-locking power transmission with additional friction fit. The friction fit avoids or reduces reverse backlash. Surface pressure of the keyway connection is reduced. Type 2.1 up to size 14 as standard.

Type 2.5 clamping hub
double slotted, without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depending on bore diameter. Type 2.5 from size 19 as standard.
(For ATEX category 3 only)

Type 2.6 clamping hub
double slotted, with feather keyway

Positive-locking power transmission with additional friction fit. The friction fit avoids or reduces reverse backlash. Surface pressure of the keyway connection is reduced. Type 2.6 from size 19 as standard.

Type 2.8 short-type clamping hub C
with axial slot, without feather keyway

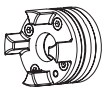
Frictionally engaged, backlash-free shaft-hub-connection, good properties of concentric running. Transmittable torques depending on bore diameter. Type 2.8 from size 24 as standard; size 7 - 19 type 2.8 single slotted.
(For ATEX category 3 only)

Type 2.8 short-type clamping hub C
with axial slot, with feather keyway

Positive-locking power transmission with additional friction fit. Surface pressure of the keyway connection is reduced. Type 2.9 from size 24 as standard;
size 7 - 19 type 2.9 single slotted.

Type 6.0 clamping ring hub

Integrated frictionally engaged shaft-hub-connection for the transmission of higher torques. Screwing on elastomer side. For details about torque and dimensions see page 134/135 and HP page 138. Suitable for high speeds.



Type 6.0 precision clamping ring hub
Type 6.0 high-precision clamping ring hub

Operating principle equal to type 6.0, but highly accurate machining with slight modifications of design. See page 136/138.

Type 7.5 clamping hub type DH
without feather keyway for double-cardanic connections

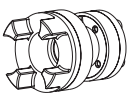
Frictionally engaged, backlash-free shaft-hub-connection for radial assembly of coupling. Transmittable torques depending on bore diameter. For torques see page 146.

Type 7.6 clamping hub type DH
with feather keyway for double-cardanic connections

Positive shaft-hub-connection with additional friction fit for radial assembly of coupling. The friction fit avoids or reduces reverse backlash. Surface pressure of the keyway connection is reduced.

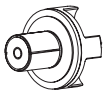
Type 7.8 clamping hub type H
without feather keyway for single-cardanic connection

Type 7.9 clamping hub type H
with feather keyway for single-cardanic connection



Type 4.2 with CLAMPEX KTR 250

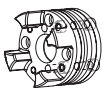
Frictionally engaged shaft-hub-connection to transmit high torques with clamping screws externally.



Type 9.0 expansion hub

Frictionally engaged connection for hollow shaft. Transmittable torques depend on bore diameter and hollow shaft.

Special designs on request of customers



Type 6.5 clamping ring hub

Design equal to 6.0, but only clamping screws externally. As an example for radial disassembly of intermediate pipe (special design).

Stock programme

Finish bore [mm] according to ISO fit H7 / feather keyway with thread according to DIN 6885 sheet 1 - JS9																																
Size	Hub design	un/pilot bored	Ø2	Ø3	Ø4	Ø5	Ø6	Ø 6.35	Ø7	Ø8	Ø9	Ø9.5	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
	1.1	●			●	●	●																									
7	2.0	●		●	●	●	●	●	●																							
	2.8	●																														
8	2.8	●		●	●	●	●		●	●																						
	1.0	●					●			●	●		●																			
	1.1	●			●	●	●		●	●			●																			
9	2.0	●		●	●	●	●	●	●	●	●	●	●	●																		
	2.1	●					●			●	●		●																			
	2.8	●																														
	1.0	●													●																	
	1.1	●																														
12	2.0	●			●	●	●	●		●	●		●	●	●																	
	2.1	●											●		●																	
	2.8	●																														
13	2.8	●					●			●			●	●	●																	
	1.0	●					●			●	●		●	●	●	●	●	●														
	1.1	●					●			●			●	●	●	●																
	2.0	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●														
14	2.1	●								●	●		●	●	●	●	●	●														
	2.8	●								●	●		●	●	●	●		●														
	6.0 light						●			●	●		●	●	●	●																
	6.0 P															●																
16	2.8	●								●	●		●		●	●		●														
	1.0	●											●	●	●	●	●	●	●	●	●	●	●									
	2.5	●				■				●		●	●	●	●	●	●	●	●	●	●	●[1]	●[1]									
	2.6	●								●			●	●	●	●	●	●	●	●	●		●[1]									
19	2.8	●									●		●	●		●	●	●	●	●	●		●									
	6.0 light												●	●	●	●	●	●	●	●	●											
	6.0 steel															●		●		●	●											
	6.0 P37.5																	●														
	6.0 P																			●												
	1.0	●													●	●	●	●	●	●	●	●	●	●	●							
	2.5	●								■					●	●	●	●	●	●	●	●	●	●	●							
	2.6	●													●	●		●	●	●	●	●	●	●	●							
24	2.8															●	●	●		●	●		●	●	●	●						
	6.0 light													●		●	●	●	●	●	●	●	●	●	●							
	6.0 steel																					●	●	●	●							
	6.0 P 50																						●									
	6.0 P																							●								
	1.0	●																		●	●	●	●	●	●	●	●	●				
	2.5	●											■						●	●	●	●	●	●	●	●	●	●				
	2.6	●																●			●	●	●	●	●	●	●	●				
28	2.8																			●		●	●	●	●	●		●				
	6.0 light																		●	●	●	●	●	●	●	●	●	●				
	6.0 steel																					●	●	●	●	●	●	●				
	6.0 P																					●						●	●	●		
	1.0	●																			●			●	●	●	●	●	●	●		
	2.5	●												■										●				●	●	●		
	2.6	●																			●			●	●	●	●	●	●			
38	2.8																				●			●	●		●	●		●		
	6.0 light																				●	●	●	●	●	●	●	●	●	●	●	●
	6.0 steel																							●	●	●	●	●	●	●		●
	6.0 P																										●	●	●	●		

Taper bores for Fanuc motors:
GS 19 1:10 Ø11
GS 24 1:10 Ø16
[1] Type 2.0/2.1

Finish bores [mm]																	
Size	Hub design	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø80
42	6.0 light	●		●	●	●		●	●		●					
	6.0 steel	●	●	●	●	●	●	●	●	●	●					
48	6.0 light			●			●		●	●		●				
	6.0 steel			●	●	●	●	●	●	●	●	●				
55	6.0 steel					●	●	●	●	●	●	●	●			
65	6.0 steel						●	●	●	●	●	●	●	●	●	
75	6.0 steel										●	●	●	●	●	●
90	6.0 steel	Bores on request														

■ = Pilot bored clamping hubs
● = Standard bore from stock
Unbored hubs up to size 65 available from stock
Other dimensions on request

Morskate®

Any questions? Please contact us.

Morskate Aandrijvingen BV
Oosterveldsingel 47A
7558 PJ Hengelo (Ov)
The Netherlands

NL
T +31 (0)74 - 760 11 11
info@morskateaandrijvingen.nl
www.morskateaandrijvingen.nl

DE
T +49 692 - 222 34 95
info@morskateantriebstechnik.de
www.morskateantriebstechnik.de

EN
T +31 (0)74 - 760 11 11
info@morskatedrivetechnology.com
www.morskatedrivetechnology.com