

ROTEX® GS

Backlash-free jaw couplings

Spiders

The flexible spiders for the GS series are available in seven 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 to the individual conditions of an application considering the torsional spring stiffness and the vibration characteristics. The flexible prestress varies depending on the coupling size, the spiders/materials and the production tolerances. Resulting from it is the axial plug-in force starting from low as a close sliding fit resp. with torsionally soft spider to heavy with big prestress resp. torsionally rigid spider (see operating/assembly instruction KTR-N 45510 at www.ktr.com).

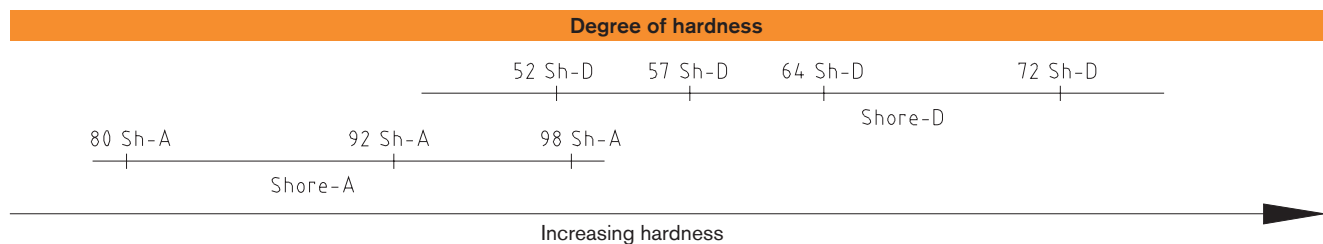
Along with an increasing hardness of the spider the torques to be transmitted and the stiffness of the spider increase, too. Along with reduced hardness of the spider, the ability of compensating for displacements and damping of the spider increases.

Properties of ROTEX® GS spiders						
Description of spider hardness [Shore]	Marking of colour	Material	Perm. temperature range [°C]		Available for coupling size	Typical applications
			Permanent temperature ¹⁾	Max. temperature (short-time) ¹⁾		
80 ShA-GS		Polyurethane	-50 to +80	-60 to +120	Size 5 to 19	– drives of electrical measuring systems
92 ShA-GS		Polyurethane	-40 to +90	-50 to +120	Size 5 to 38	– drives of electrical 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
52 ShD-S-GS ²⁾		Polyurethane	-40 to +120	-50 to +150	Size 24 to 42	– Positioning drives with increased temperature – 40 % of torque benefit from 60 ° C – Permanently pressure-resistant up to 120 °C
57 ShD-GS		Polyurethane	-30 to +90	-40 to +120	Size 19 to 65	– Positioning drives – main spindle drives – high load
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
		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 – very high load
		Polyurethane	-20 to +110	-30 to +120	Size 42 to 90	– very high torsion spring stiffness – very high load

Properties of ROTEX® GS HP tooth elements						
Description of spider hardness [Shore]	Marking of colour	Material	Perm. temperature range [°C]		Available for coupling size	Typical applications
			Permanent temperature	Max. temperature (short-time)		
98 ShA-GS 52 ShD-GS		Polyurethane	-30 to +90	-40 to +120	Size 24 to 65 (for ROTEX® GS HP only)	– HSC main spindle drives – test benches with severely high speeds
65 ShD-GS		Polyurethane	-30 to +90	-40 to +120	Size 24 to 65 (for ROTEX® GS HP only)	– HSC main spindle drives – test benches with severely high speeds – higher load – higher torsion spring stiffness

¹⁾ The temperature factors specified on page 23 must be considered.

²⁾ Torques and displacements same as with 98 ShA-GS spider



Spider material	Polyurethane					Hytrel
Degree of hardness	92 Shore A	98 Shore A	52 Shore D	57 Shore D	64 Shore D	64 Shore D
Relative damping ψ [-] ¹⁾	0.80	0.80	0.75	0.75	0.75	0.60
Resonance factor V_R [-] ¹⁾	7.90	7.90	8.50	8.50	8.50	10.5

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

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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 spring stiffness C _r [N/mm]	Weight [kg]		Mass moment of inertia J [kgm ²]	
			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}				Per hub ⁵⁾	Spider	Per hub ⁵⁾	Spider
5	80	A	38000	38000	47700			57300	0.3	0.6	3.15	10	82	0.001	0.2 x 10 ⁻³	0.015 x 10 ⁻⁶	0.002 x 10 ⁻⁶
	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				
8	64	D		23800					2.4	4.8	34.3	103	630	0.003	0.5 x 10 ⁻³	0.117 x 10 ⁻⁶	0.0124 x 10 ⁻⁶
	80	A							0.7	1.4	8.8	27	117				
	98	A							2.0	4.0	23.5	71	433				
9	64	D	19000	19000	23800			28600	2.4	4.8	35.3	106	648	0.01	1.7 x 10 ⁻³	0.48 x 10 ⁻⁶	0.085 x 10 ⁻⁶
	80	A							1.8	3.6	17.2	52	125				
	92	A							3.0	6.0	31.5	95	262				
12	98	A	15200	15200	19100			22900	5.0	10.0	51.6	155	518	0.02	2.3 x 10 ⁻³	1.5 x 10 ⁻⁶	0.139 x 10 ⁻⁶
	64	D							6.0	12.0	74.6	224	739				
	80	A							3.0	6.0	84.3	252	274				
13	92	A		12700		38200			5.0	10.0	160.4	482	470	0.01	2.0 x 10 ⁻³	1.1 x 10 ⁻⁶	0.155 x 10 ⁻⁶
	98	A							9.0	18.0	240.7	718	846				
	64	D							12.0	24.0	327.9	982	1198				
14	80	A	12700	12700	15900	32000	47700	19100	3.6	7.2	111	330	359	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				
16	64	D	12000						16.0	32.0	234.2	702	856	0.02	3.6 x 10 ⁻³	2.8 x 10 ⁻⁶	0.435 x 10 ⁻⁶
	80	A							5.0	10.0	157	471	400				
	98	A							15.0	30.0	450	1341	1710				
19	64	D	9550	9550	11900	24000 19000 ⁴⁾	35800	14300	19.0	38.0	612	1835	2238	0.09	7.6 x 10 ⁻³	19.5 x 10 ⁻⁶	1.35 x 10 ⁻⁶
	80	A							6.0	12.0	618	1065	582				
	92	A							12.0	24.0	1090	1815	1120				
24	98	A	6950	10400	8650	17000 14000 ⁴⁾	26000	10400	21.0	42.0	1512	2540	2010	0.2	0.02	81.9 x 10 ⁻⁶	6.7 x 10 ⁻⁶
	57	D							23.0	46.0	2036	3175	2470				
	64	D							26.0	52.0	2560	3810	2930				
28	92	A	5850	8800	7350	15000 12000 ⁴⁾	22000	8800	35	70	2280	4010	1480	0.3	0.03	184.2 x 10 ⁻⁶	14.85 x 10 ⁻⁶
	98	A							60	120	3640	5980	2560				
	52	D							60	120	3640	5980	2560				
38	57	D	4750	7150	5950	12000 9600 ⁴⁾	17900	7150	68	136	4335	8438	3128	0.6	0.05	542.7 x 10 ⁻⁶	39.4 x 10 ⁻⁶
	64	D							75	150	5030	10896	3696				
	72 ³⁾	D							97	194	9944	17095	5799				
42	92	A	4000	5000	10000 8050 ⁴⁾	15000	6000		95	190	4080	6745	1780	2.4	0.08	2802 x 10 ⁻⁶	85 x 10 ⁻⁶
	98	A							160	320	6410	9920	3200				
	52	D							160	320	6410	9920	3200				
48	57	D	3600	4550	9100 7200 ⁴⁾	13600	5450		180	360	8335	15050	3775	3.3	0.09	4709 x 10 ⁻⁶	135 x 10 ⁻⁶
	64	D							200	400	10260	20177	4348				
	72 ³⁾	D							260	520	21526	36547	7876				
55	92	A	3150	3950	6350 ⁴⁾	11900	4750		190	380	6525	11050	2350	5.1	0.12	9460 x 10 ⁻⁶	229 x 10 ⁻⁶
	98	A							325	650	11800	17160	4400				
	52	D							325	650	11800	17160	4400				
65	64	D	2800	3500	5650 ⁴⁾	11000			365	730	19050	28745	5437	6.7	0.2	15143 x 10 ⁻⁶	437 x 10 ⁻⁶
	72 ³⁾	D							405	810	26300	40335	6474				
	98	A							525	1050	44584	71180	11425				
75	92	A	2350	2950	4750 ⁴⁾	8950			450	900	21594	37692	5570	10.5	0.3	32750 x 10 ⁻⁶	1179 x 10 ⁻⁶
	64	D							450	900	21594	37692	5570				
	72 ³⁾	D							495	990	29225	53760	6420				
90	98	A	1900	2380	3800 ⁴⁾	7150			560	1120	36860	69825	7270	18.2	0.6	87099 x 10 ⁻⁶	3362 x 10 ⁻⁶
	64	D							728	1456	58600	93800	9766				
	72 ³⁾	D							525	1050	25759	45620	5930				