

Backlash-free Servo-insert Coupling Technical Description

The couplings can be fine tuned to the specific application requirements in terms of torsional stiffness and vibration behavior by selecting from various color coded elastomeric spiders having different grades of shore hardness.

Spider durometer (shore hardness)	Colour code	Material	Allowable temperature range °C		Available for type	Typical applications
			continuous temperature	max. temp. short term		
80 SH A	blue	polyurethane	-50 till +80	-60 till +120	5-19	Drives in electronic measuring systems; backlash free when pre-compressed
92 SH A	yellow	polyurethane	-40 till +90	-50 till +120	5-48	Central spindle drives; backlash free when pre-compressed
98 SH A	red	polyurethane	-30 till +90	-40 till +120	5-48	Positioning drives; backlash free when pre-compressed
64 SH D-H	green	hytel	-50 till +120	-60 till +150	7-38	Machine tool spindles, control drives, feed units, planetary gearboxes; Heavy loads, torsionally stiff, high ambient temperature, water proof
64 SH D	green	polyurethane	-20 till +110	-30 till +120	42-48	

Technical terms for the coupling design

Pre-Compression: The curved jaw couplings are designed to have an interference fit between the coupling hubs and elastomer element for true backlash free operation. Therefore, the flexible spider needs to be pre-compressed for proper seating during the assembly procedure. The amount of pre-compression varies widely depending on the shore harness of the spider, the size of the coupling and the machining tolerances. A light force is necessary to pre-compress the torsionally soft spiders while a large force is required to pre-compress a torsionally stiff spider.

TkN – Nominal Torque of coupling (Nm): Continuous torque which can be transmitted throughout the entire speed range, taking into consideration operational factors such as ambient temperature and torsional stiffness.

Tkmax – Maximum Torque of coupling (Nm): Torque to be transmitted 1×10^5 times as a peak load or 0.5×10^4 times as an alternating load during the entire life of the coupling taking into consideration factors such as temperature, torsional stiffness and shock loading.

Type	Servo insert	Shore-scale	Max. speed (min ⁻¹) for type				Torque (Nm)		Static torsional stiffness (Nm/rad)	Dynamic torsional stiffness (Nm/rad) ¹⁾	Axial stiffness (Nm/mm)	
			DK/GS ADS ADS/R	EK/GS	ASS/A	ASS/A-P	DMK/ADS DXK/ADS	T _{kN}				T _{kmax}
5	80	A						0,3	0,6	3,2	10	82
	92	A	38000	47500				0,5	1,0	5,2	16	154
	98	A						0,9	1,7	8,3	25	296
7	80	A						0,7	1,4	8,6	26	114
	92	A	27000	34000				1,2	2,4	14,3	43	219
	98	A						2,0	4,0	23	69	421
	64	D						2,4	4,8	34	103	630
9	80	A						1,8	3,6	17	52	125
	92	A	19000	24000				3	6	31	95	262
	98	A						5	10	51	155	518
	64	D						6	12	74	224	769
14	80	A						4	8	60	180	153
	92	A	13000	16000	25400	31800	11450	7,5	15	115	344	336
	98	A									12,5	25
	64	D						16	32	234	702	856
19	80	A						5	10	340	1030	582
	92	A	10000	12000	19000	23800	8950	10	20	570	1720	1120
	98	A									17	34
	64	D						21	42	1240	3720	2930
24	92	A						35	70	1430	4296	1480
	98	A	7000	8500	13800	17300	7000	60	120	2060	6189	2560
	64	D									75	150
28	92	A						95	190	2290	6876	1780
	98	A	6000		11700	14700	6000	160	320	3440	10314	3200
	64	D									200	400
38	92	A						190	380	4580	13752	2350
	98	A	5000		9550	11900	5000	325	650	7160	21486	4400
	64	D									405	810
42	92	A						265	530	6300	2430	2430
	98	A	4000		8050	10000	4000	450	900	19200	5570	5570
	64	D									560	1120
48	92	A						310	620	7850	2580	2580
	98	A	3600		7200	9100		525	1050	22370	5930	5930
	64	D									655	1310

¹⁾ Dynamic torsional stiffness at 0.5 x TkN
Dynamic balancing is required for speeds exceeding V=30m/s

