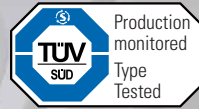


Optional:

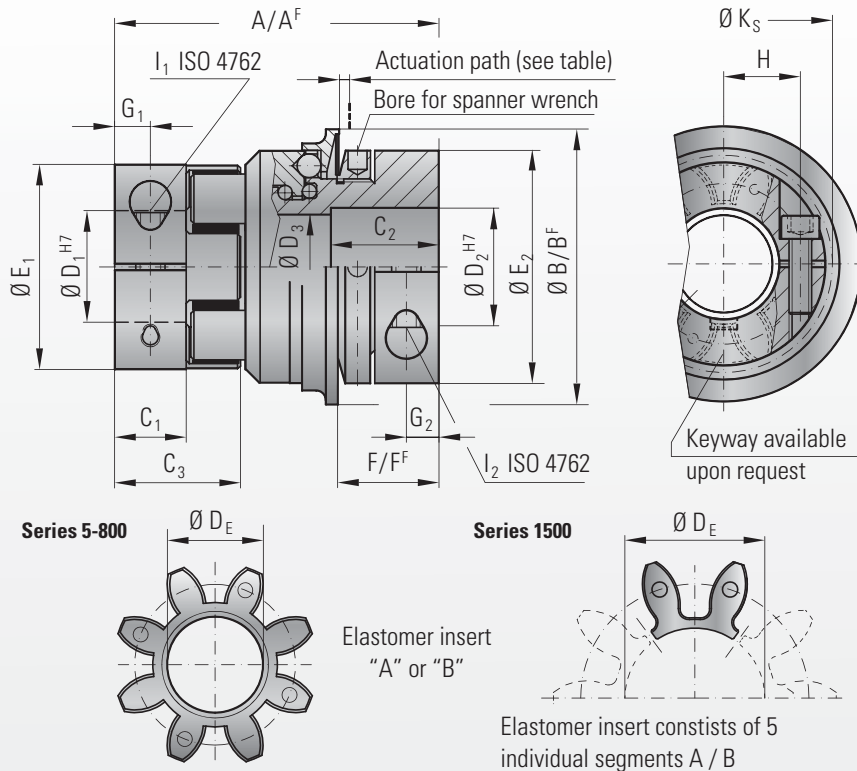


single-position
multi-position
load holding
full disengagement



MODEL ES2

BACKLASH FREE TORQUE LIMITER



Ordering specifications

ES2 / 10 / A / W / 14 / 12 / 8 / 4-12 / XX

Model
Series
Type Elastomer insert
Function system
Bore Ø D1 H7
Bore Ø D2 H7
Disengagement torque Nm
Adjustment range Nm
Non-standard e.g. Stainless steel

All data is subject to change without notice.

Specification of the Elastomer inserts

Type	Shore hardness	Color	Material	Relative damping (ψ)	Temperature range	Features
A	98 Sh A	red	TPU	0.4 - 0.5	-30°C to +100°C	high damping
B	64 Sh D	green	TPU	0.3 - 0.45	-30°C to +120°C	high torsional stiffness
D	65 Sh D	black	TPU	0.3 - 0.45	-10°C to + 70°C	electrically conductive

Relative damping values were determined at 10 Hz and +20°C.

Model ES		Series																	
		5		10		20		60		150		300		450		800		1500	
Elastomer type		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Static torsional stiffness (Nm/rad)	C_T	150	350	260	600	1140	2500	3290	9750	4970	10600	12400	18000	15100	27000	41300	66080	87600	109000
Dynamic torsional stiffness (Nm/rad)	C_{Tdyn}	300	700	541	1650	2540	4440	7940	11900	13400	29300	23700	40400	55400	81200	82600	180150	175000	216000
lateral ± (mm)	Max. values	0.08	0.06	0.1	0.08	0.1	0.08	0.12	0.1	0.15	0.12	0.18	0.14	0.2	0.18	0.25	0.2	0.5	0.3
angular ± (degrees)		1	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1.5	1
axial (mm)		±1		±1		±2		±2		±2		±2		±2		±2		±3	



with clamping hubs

Material:

Torque limiting portion: high-strength, hardened steel with rust protection (nitro-carburized)

- a. Clamping hub D1: up to size 450, high strength aluminum; size 800 and up, steel
- b. Clamping hub D2: up to size 60, high strength aluminum; size 150 and up, steel

Design:

Two coupling hubs concentrically machined with concave driving jaws

One side with an integrated torque limiter
Available in single-position, multi-position, load holding, and full disengagement versions.

Temperature range:

See table below

Fit tolerance:

Tolerance between hub and shaft 0.01 – 0.05 mm

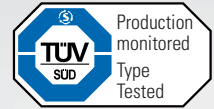
Optional sealed version for food-grade applications (see page 26)

Optional ATEX Certification (see page 19)

Possible versions

- W = Single-position re-engagement (standard)
- D = Multi-position re-engagement
- G = Load holding
- F = Full disengagement

MODEL ES2



BACKLASH FREE TORQUE LIMITER

MODEL ES 2		Series																	
		5		10		20		60		150		300		450		800		1500	
Type (Elastomer insert)		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Rated torque (Nm)	T_{KN}	9	12	12.5	16	17	21	60	75	160	200	325	405	530	660	950	1100	1950	2450
Max. torque* (Nm)	T_{Kmax}	18	24	25	32	34	42	120	150	320	400	650	810	1060	1350	1900	2150	3900	4900
Adjustment range possible from -to (Nm)	T_{KN}	1-3 or 3-6		2-6 or 4-12		10-25 or 20-40		10-30 or 25-80		20-70 45-150 80-180		100-200 150-240 200-320		80-200 200-350 300-500		400-650 500-800 600-900		600-850 700-1200 1000-1800	
Adjustment range ("F" Version) possible from -to (Nm)	T_{KN}^F	2.5 - 4.5		2-5 or 5-10		8-20 or 16-30		20-40 or 30-60		20-60 40-80 80-150		120-180 or 180-300		60-150 100-300 250-500		200-400 or 450-800		1000-1250 or 1250-1500	
Overall length (mm)	A	50		60		86		96		106		140		164		179		245	
Overall length ("F" Version) (mm)	A _F	50		60		86		96		108		143		168		190		257	
Outside diameter of actuation ring (mm)	B	35		45		65		73		92		120		135		152		174	
Outside diameter of actuation ring ("F" Version) (mm)	B _F	42		51.5		70		83		98		132		155		177		187	
Clamping fit length (mm)	C ₁	8		10.3		17		20		21		31		34		46		88	
Fit length (mm)	C ₂	14		16		27		31		35		42		51		45		86	
Length of hub (mm)	C ₃	16.7		20.7		31		36		39		52		57		74		120	
Inside diameter from Ø to Ø H7 (mm)	D ₁	4 - 12.7		5 - 16		8 - 25		12 - 32		19 - 36		20 - 45		28 - 60		35 - 80		35 - 90	
Inside diameter from Ø to Ø H7 (mm)	D ₂	6 - 14		6 - 20		12 - 30		15 - 32		19 - 42		30 - 60		35 - 60		40 - 75		50 - 80	
Diameter (mm)	D ₃	14.1		20.1		24.1		32.1		36.1		58.1		60.1		60.1		68.1	
Inside diameter (Elastomer insert) (mm)	D _E	10.2		14.2		19.2		26.2		29.2		36.2		46.2		60.5		79	
Diameter of the hub (mm)	E ₁	25		32		42		56		66.5		82		102		136.5		160	
Diameter of the hub (mm)	E ₂	19		40		55		66		81		110		123		132		157	
Distance (mm)	F	15		17		24		28		31		35		45		50		63	
Distance ("F" Version) (mm)	F _F	14		16		22		29		30		35		43		54		61	
Distance (mm)	G ₁	4		5		8.5		10		11		15		17.5		23		36	
Distance (mm)	G ₂	5		5		7.5		9.5		11		13		17		18		22.5	
Distance between centers (mm)	H ₁	8		10.5		15		21		24		29		38		50.5		2x 57	
Screws (ISO 4762)	I ₁	M3		M4		M5		M6		M8		M10		M12		M16		2x M16	
Tightening torque (Nm)		2		4.5		8		15		35		70		120		290		300	
Distance between centers D ₂ side (mm)	H ₂	10		15		19		23		27		39		41		48		2x 55	
Screws (ISO 4762)	I ₂	M4		M4		M6		M8		M10		M12		M16		2x M16		2x M20	
Tightening torque (Nm)		4		4.5		15		40		70		130		200		250		470	
Diameter with screwhead (mm)	K _S	25		32		44.5		57		68		85		105		139		155	
Approx. weight (kg)		0.2		0.3		0.6		1.0		2.4		5.8		9.3		14.3		26	
Moment of inertia (10 ⁻³ kgm ²)	J _{ges}	0.02		0.06		0.25		0.7		2.3		11		22		33.5		185	
Actuation path (mm)		0.8		1.2		1.5		1.7		1.9		2.2		2.2		2.2		3.0	

Information about static and dynamic torsional stiffness as well as max. possible misalignment see page 16

A^F, B^F, F^F = Full disengagement version

Maximum transmittable torque (Nm) of clamping hub based on bore diameter (mm)

Series	Ø 4	Ø 5	Ø 8	Ø 16	Ø 19	Ø 25	Ø 30	Ø 32	Ø 35	Ø 45	Ø 50	Ø 55	Ø 60	Ø 65	Ø 70	Ø 75	Ø 80	Ø 85	Ø 90
5	1,5	2	8																
10		4	12	32															
20			20	35	45	60													
60				50	80	100	110	120											
150					120	160	180	200	220										
300					200	230	300	350	380	420									
450							420	480	510	600	660	750	850						
800									700	750	800	835	865	900	925	950	1000		
1500									1900	2600	2900	3200	3500	3800	4000	4300	4600	4900	5200

Higher torque values possible through additional keyway