

Shrink discs – Clamping element for attachment of our shaft-mount gearhead with your load shaft



Highly loadable shaft/hub connection: whether for continuous hollow shafts or load shafts, always perfectly adapted to your drive.

Couplings – High-tech components for the harmonious transmission of power and movement. – in all applications where improved performance means progress.



Accessories

Details



Couplings

Accessories

Shrink disc

Our shrink discs ensure a frictional hub/shaft connection between the hollow shaft and your load shaft. Perfectly matched to our gearheads, they enable the transmission of high torques.

The shrink disc is not included in the scope of delivery for the gearhead (except V-Drive, see order code) and must be ordered separately as an accessory (see table).

Gearhead type	Article code			d	D	A	H*	H2*	J [kgcm ²]
	Standard	Chemically nickel plated	Stainless steel						
SP+ 060 SPK+ 060 HG+ 060	20000744	20048496	20048491	18	44	30	15	19	0,393
SP+ 075 SPK+ 075 HG+ 075	20001389	20047957	20043198	24	50	36	18	22	0,753
SP+ 100 SPK+ 100 HG+ 100	20001391	20048497	20035055	36	72	52	22	27,3	3,94
SP+ 140 SPK+ 140 HG+ 140	20001394	20048498	20047937	50	90	68	26	31,3	11,1
SP+ 180 SPK+ 180 HG+ 180	20001396	20048499	20048492	68	115	86	29	35,4	31,1

* in unclamped state

Gearhead type	Article code			d	D	A	H*	H2*	J [kgcm ²]
	Standard	Chemically nickel plated	Stainless steel						
VDH 040	20001389	20047957	20043198	24	50	36	18	22	0,753
VDH 050	20020687	20047934	20047885	30	60	44	20	24	1,82
VDH 063	20020688	20047530	20035055	36	72	52	22	27,3	3,94
VDH 080	20020689	20047935	20047937	50	90	68	26	31,3	11,1
VDH 100	20020690	20047927	20047860	62	110	80	29	34,3	27

* in unclamped state

One shrink disc per gearhead is sufficient.

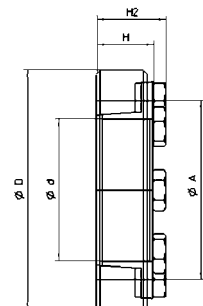
Please refer to the operating instructions for information on correct shrink disc installation. The instructions are enclosed with the order.

Recommendation for the load shaft:

Tolerance h6

Surface roughness $\leq R_z 10$

Minimum yield strength $R_p 0,2 \geq 360 \text{ N/mm}^2$



Couplings portfolio – Always well connected

Wherever high demands need to be met regarding precision, reliability, balance and safety.

Metal bellows couplings



Precision transmission of torques

- 2-10,000 Nm
- Shaft diameter: 4-180 mm

For precise, backlash-free and torsionally-rigid torque transmission and simultaneous compensation of lateral, angular and axial misalignment.

Elastomer couplings



Backlash-free and vibration-damping torque transmission

- 2-2,150 Nm
- Shaft diameter: 3-80 mm

For the damping of torque peaks and vibration in the drive system and simultaneous compensation of lateral, angular and axial misalignment. Plug-in and electrically insulating couplings with selectable elastomer rings to maintain the required damping and torsional rigidity.

Torque limiters



Safe torque limitation

- 0.1-2,800 Nm
- Shaft diameter: 3-100 mm
- 4 available function systems: single position, multi-position, load holding, full disengagement

Separation of input and output in the event of unexpected overload. Precisely-adjustable disengagement torque for protection of drive and application

BCT – Bellows coupling

			Series				
			15	60	150	300	1500
Gearhead output type			TP• 004	TP• 010	TP• 025	TP• 050	TP• 110
Centering diameter	D_2	mm	40 h7	63 h7	80 h7	100 h7	160 h7
TP flange hole circle diameter / thread	D_3	mm	31.5 8 x M5	50 8 x M6	63 12 x M6	80 12 x M8	125 12 x M10
Nominal torque	T_{KN}	Nm	40	140	220	400	1570
		in.lb	354	1239	1947	3540	13895
Max. torque ^{a)}	T_{Kmax}	Nm	50	210	380	750	2600
		in.lb	443	1859	3363	6638	23010
Length ⁻²	A_1	mm	49	67	72	90	140
Length installation space ⁻²	A_2	mm	68	97	101	128	190
Hub diameter	B_1	mm	49	66	82	110	157
Flange diameter	B_2	mm	63.5	86.5	108	132	188
Fit length	C_1	mm	16.5	23	27.5	34	55
Possible inner diameter from Ø to Ø H7	D_1	mm	12 - 28	14 - 35	19 - 42	24 - 60	50 - 80
Hole circle diameter / Thread	DL	mm	56.5 10 x M4	76 10 x M5	97 10 x M6	120 12 x M6	170 16 x M8
Screws to ISO 4762 ^{b)}	E		1 x M5	1 x M8	1 x M10	1 x M12	2 x M20
Tightening torque of fastening screw	E	Nm	8	45	80	120	470
		in.lb	71	399	708	1062	4160
Distance	G	mm	6.5	9.5	11	13	22.5
Approx. weight	I	kg	0.3	0.7	1	2.8	10
		lb	0.67	1.55	2.21	6.18	22.05
Torsional rigidity	C_r	Nm/arcmin	6,7	21	41	156	379
		in.lb/arcmin	59	185	363	1380	3357
Moment of inertia	J	10 ⁻⁸ kgm ²	0.15	0.65	1.3	5.5	45
		10 ⁻⁹ in.lb.s ²	0.14	0.58	1.16	4.87	39.83
Axial misalignment 	Max. values mm		1	1.5	2	2.5	3
Lateral misalignment 	Max. values mm		0.25	0.25	0.25	0.25	0.2

a) Maximum torque transmitted briefly in case of large bore diameters

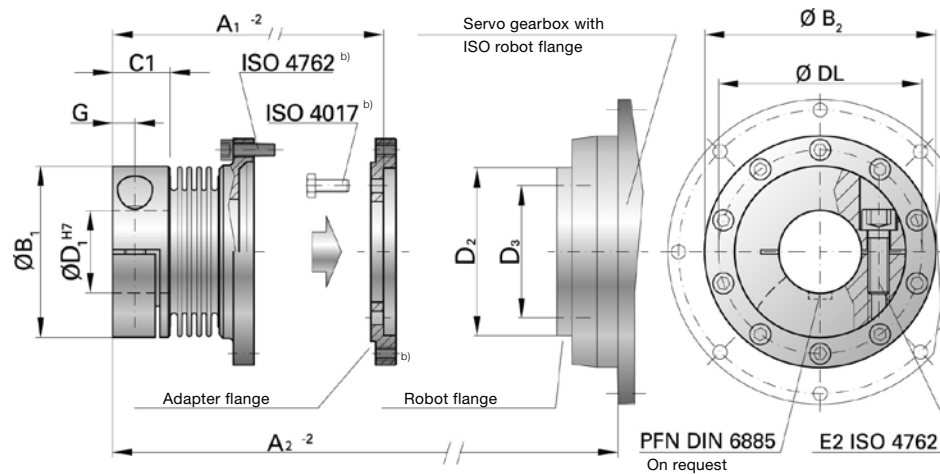
b) Included in scope of delivery

Max. angular misalignment 1°

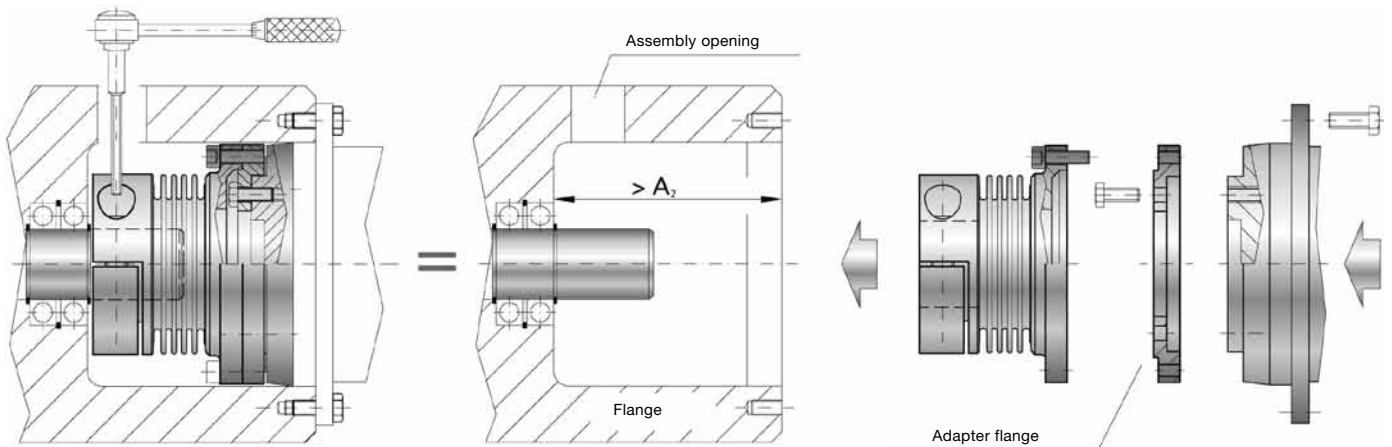


Low backlash metal bellows coupling BCT

With flange connection



Installation and removal



Bellows coupling for direct drives

Material:

Hub: Series 15-150 high-strength alu,
Series: 300-1500 steel,
Bellows: High-strength stainless steel,
Adapter flange: Steel
Stainless steel version available on request.

Design:

Load side: With clamping hubs and a single lateral screw to ISO 4762.
Gearbox side: With flange connection and separate adapter flange.

Temperature range: -30 °C to +120°C, (-22 °F to 248°F)

Fit tolerance:

Tolerance between shaft and hub 0.01–0.05 mm

Speeds:

Up to 10000 rpm

Non-standard applications:

Custom designs with different tolerances, keyways, non-standard material, bellows are available at short notice. High-torque connection available on request.

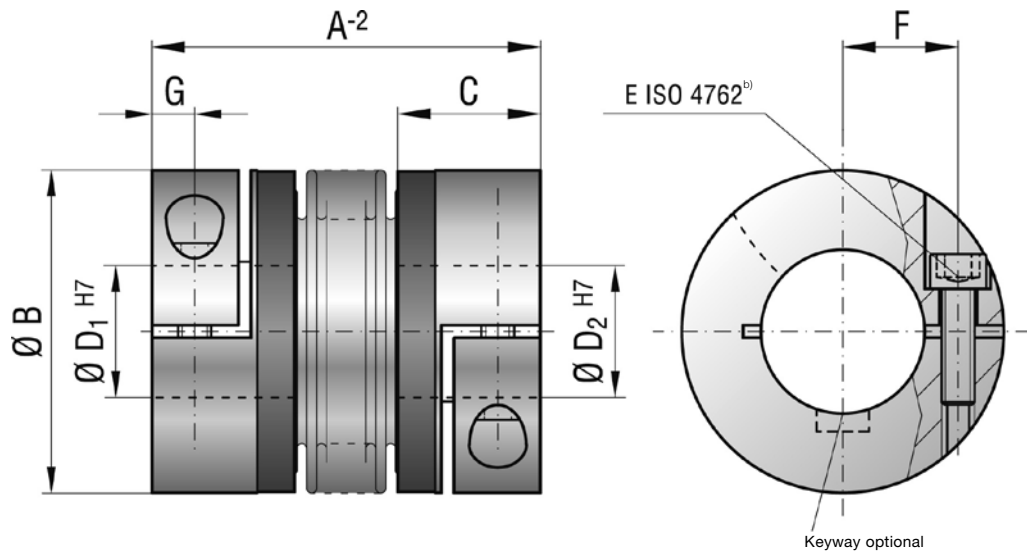
BC2 – Bellows coupling

			Series																	
			15		30		60		80		150		200		300		500		800	1500
Length options (see ordering code)			A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	A
Rated torque	T_{KN}	Nm	15		30		60		80		150		200		300		500		800	1500
		in.lb	133		266		531		708		1328		1770		2655		4425		7080	13275
Overall length	A	mm	59	66	69	77	83	93	94	106	95	107	105	117	111	125	133	146	140	166
Outer diameter	B	mm	49		55		66		81		81		90		110		124		134	157
Fit length	C	mm	22		27		31		36		36		41		43		51		45	55
Inner diameter from Ø to Ø H7	D_1/D_2	mm	8–28		10–30		12–32		14–42		19–42		22–45		24–60		35–60		40–75	50–80
Fastening screws to ISO 4762	E		M5		M6		M8		M10		M10		M12		M12		M16		2xM16 [®]	2xM20 [®]
Tightening torque of fastening screws	E	Nm	8		15		40		50		70		120		130		200		250	470
		in.lb	71		133		354		443		620		1062		1151		1770		2213	4160
Distance between centers	F	mm	17		19		23		27		27		31		39		41		2x48	2x55
Distance	G	mm	6.5		7.5		9.5		11		11		12.5		13		16.5		18	22.5
Moment of inertia	J	10 ⁻³ kgm ²	0.05	0.07	0.12	0.13	0.32	0.35	0.8	0.85	1.9	2	3.2	3.4	7.6	7.9	14.3	14.6	16.2	43.5
		10 ⁻³ in.lb.s ²	0.0443	0.0620	0.1062	0.1151	0.2832	0.3098	0.7081	0.7523	1.68	1.77	2.83	3.01	6.73	6.99	12.66	12.92	14.34	38.50
Hub material (standard) (steel on request)			Al		Al		Al		Al		Steel		Steel		Steel		Steel		Steel	Steel
Approx. weight		kg	0.16		0.26		0.48		0.8		1.85		2.65		4		6.3		5.7	11.5
		lb	0.353		0.573		1.764		1.764		4.079		5.842		8.818		13.889		12.566	25.353
Torsional rigidity	C_r	Nm/arcmin	5,8	4,4	11	8,1	22	16	38	25	51	32	56	41	131	102	148	145	227	379
		in.lb/arcmin	51	39	100	72	196	142	332	219	451	283	492	360	1158	901	1313	1287	2008	3357
Axial misalignment 	<i>max. values</i>	mm	1	2	1	2	1.5	2	2	3	2	3	2	3	2.5	3.5	2.5	3.5	3.5	3.5
Lateral misalignment 	<i>max. values</i>	mm	0.15	0.2	0.2	0.25	0.2	0.25	0.2	0.25	0.2	0.25	0.25	0.3	0.25	0.3	0.3	0.35	0.35	0.35
Axial spring stiffness	C_a	N/mm	25	15	50	30	72	48	48	32	82	52	90	60	105	71	70	48	100	320
Lateral spring stiffness	C_r	N/mm	475	137	900	270	1200	420	920	290	1550	435	2040	610	3750	1050	2500	840	2000	3600

b) Included in scope of delivery

Bellows coupling BC2

With clamping hub



Bellows coupling for direct drives

Material:

Bellows made of highly flexible stainless steel.
Hub material: see table below.
Stainless steel version available on request.

Design:

With clamping hubs and a single lateral screw to ISO 4762.
Any imbalance of the clamping hubs due to the design is compensated by balancing bores located on the hub interior.

Temperature range:

-30 °C to +120 °C (-22 °F to 248 °F)

Backlash:

Completely backlash-free as a result of the frictional clamp connection.

Service life:

These torque limiters are permanent and maintenance-free as long as the performance limits are not exceeded.

Fit tolerance:

Tolerance between shaft and hub 0.01–0.05 mm

Speeds:

Up to 10,000 rpm / in excess of 10,000 rpm with finely balanced version.

Brief overload:

Acceptable up to 1.5 times the value specified.

BC3 – Bellows coupling

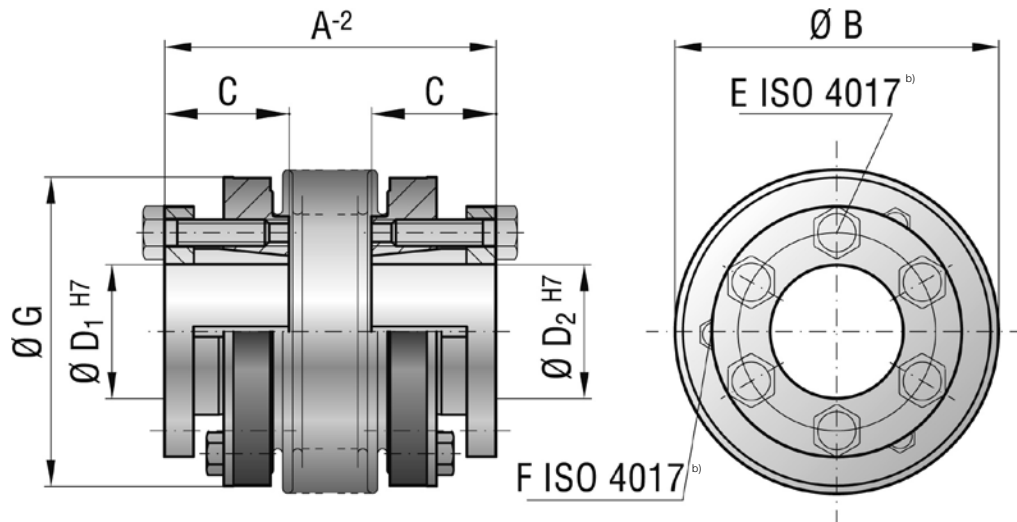
			Series																		
			15		30		60		150		200		300		500		800	1500	4000	6000	10000
Length options (see ordering code)			A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	A	A	A	A
Rated torque	T_{KN}	Nm	15		30		60		150		200		300		500		800	1500	4000	6000	10000
		in.lb	133		266		531		1328		1770		2655		4425		7080	13275	35400	53100	88500
Overall length without screw head	A	mm	48	55	57	65	66	76	75	87	78	90	89	103	97	110	114	141	195	210	217
Outer diameter	B	mm	49		55		66		81		90		110		124		133	157	200	253	303
Fit length	C	mm	19		22		27		32		32		41		41		50	61	80	85	92
Inner diameter from Ø to Ø H7	D_1/D_2	mm	10–22		12–23		12–29		15–38		15–44		24–56		24–60		30–60	35–70	50–100	60–140	70–180
6x fastening screws to ISO 4017	E		M4		M5		M5		M6		M6		M8		M8		M10	M12	M16	M16	8xM16
Tightening torque of fastening screws	E	Nm	4		6		8		12		14		18		25		40	70	120	150	160
		in.lb	36		54		71		107		124		160		222		354	620	1062	1328	1416
3x jack screws to ISO 4017	F		M4		M4		M5		M5		M6		M6		M6		M6	6xM8	6xM10	6xM10	8xM10
Outer diameter of hub	G	mm	49		55		66		81		90		110		122		116	135	180	246	295
Moment of inertia	J	10^{-3}kgm^2	0.08	0.08	0.15	0.16	0.39	0.41	1.2	1.6	1.7	2.5	5.1	5.9	9.1	9.9	13.2	34.9	85.5	254	629
		10^{-3}in.lb.s^2	0.071	0.073	0.13	0.14	0.35	0.36	1.06	1.42	1.5	2.21	4.51	5.22	8.05	8.76	11.7	30.9	75.7	224.8	556.7
Approx. weight		kg	0.26	0.27	0.42	0.44	0.71	0.74	1.2		1.8		3		4.2		5.6	8.2	23	32.6	45.5
		lb	0.57	0.60	0.93	0.97	1.57	1.63	2.65		3.97		6.61		9.33		12.3	18.1	50.7	71.9	100.3
Torsional rigidity	C_T	Nm/arcmin	5,8	4,4	11	8,1	22	16	51	32	56	41	131	102	148	145	227	379	989	1658	3185
		in.lb/arcmin	51	39	100	72	196	142	451	283	492	360	1158	901	1313	1287	2008	3357	8753	14674	28189
Axial misalignment 	<i>max. values</i>	mm	1	2	1	2	1.5	2	2	3	2	3	2.5	3.5	2.5	3.5	3.5	3.5	3.5	3	3
Lateral misalignment 	<i>max. values</i>	mm	0.15	0.2	0.2	0.25	0.2	0.25	0.2	0.25	0.25	0.3	0.25	0.3	0.3	0.35	0.35	0.35	0.4	0.4	0.4
Axial spring stiffness	C_a	N/mm	25	15	50	30	72	48	82	52	90	60	105	71	70	48	100	320	565	1030	985
Lateral spring stiffness	C_r	N/mm	475	137	900	270	1200	420	1500	435	2040	610	3750	1050	2500	840	2000	3600	6070	19200	21800

b) Included in scope of delivery

Max. angular misalignment 1.5°

Bellows coupling BC3

With conical connection



Bellows coupling for direct drives

Material:

Bellows made of highly flexible stainless steel.
Hub material: steel.
Stainless steel version available on request.

Design:

With split conical clamping hubs and strong, captive jack screws to ISO 4017.

Temperature range:

-30 °C to +120°C (-22 °F to 248°F)

Backlash:

Completely backlash-free as a result of the frictional clamp connection.

Service life:

These torque limiters are permanent and maintenance-free as long as the performance limits are not exceeded.

Fit tolerance:

Tolerance between shaft and hub 0.01-0.05 mm

Speeds:

Up to 10000 rpm / in excess of 10000 rpm with finely balanced version.

Brief overload:

Acceptable up to 1.5 times the value specified.

EC2 – Bellows coupling

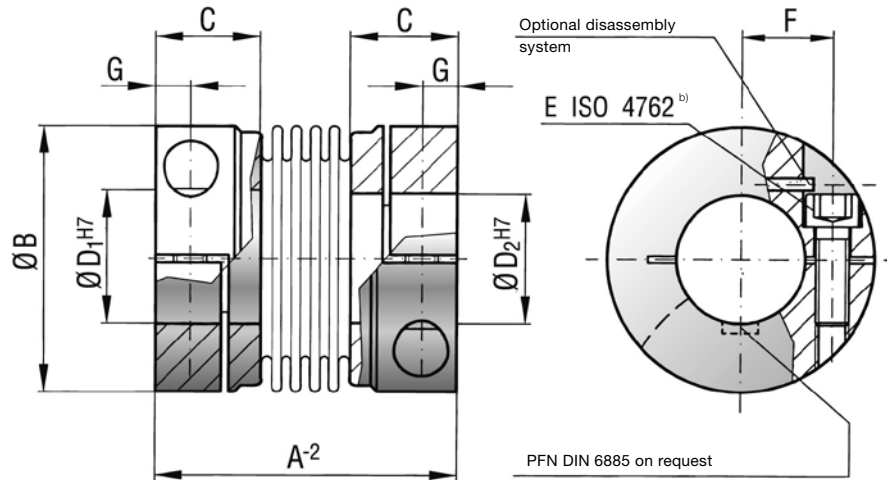
			Series												
			2	4.5	10	15	30	60	80	150		300		500	
Length options see ordering code			A	A	A	A	A	A	A	A	B	A	B	A	B
Rated torque	T_{KN}	Nm	2	4.5	10	15	30	60	80	150		300		500	
		in.lb	18	40	89	133	266	531	708	1328		2655		4425	
Overall length	A	mm	30	40	44	58	68	79	92	92		109		114	
Outer diameter	B	mm	25	32	40	49	56	66	82	82		110		123	
Fit length	C	mm	10.5	13	13	21.5	26	28	32.5	32.5		41		42.5	
Inner diameter from Ø to Ø H7	D_f/D_2	mm	4–12.7	6–16	6–24	8–28	12–32	14–35	16–42	19–42		24–60		35–62	
Fastening screws to ISO 4762	E		M3	M4	M4	M5	M6	M8	M10	M10		M12		M16	
Tightening torque of fastening screw	E	Nm	2.3	4	4.5	8	15	40	70	85		120		200	
		in.lb	21	36	40	71	133	354	620	753		1062		1770	
Distance between centers	F	mm	8	11	14	17	20	23	27	27		39		41	
Distance	G	mm	4	5	5	6.5	7.5	9.5	11	11		13		17	
Moment of inertia	J	10^{-3} kgm^2	0.002	0.007	0.016	0.065	0.12	0.3	0.75	1.8	0.8	7.5	3.8	11.7	4.9
		$10^{-3} \text{ in.lb.s}^2$	0.0018	0.0062	0.0142	0.0575	0.1062	0.2655	0.6638	1.59	0.71	6.64	3.36	10.36	4.34
Hub material			Al	Al	Al	Al	Al	Al	Al	Steel	Al	Steel	Al	Steel	Al
Approx. weight		kg	0.02	0.05	0.06	0.16	0.25	0.4	0.7	1.7	0.75	3.8	1.6	4.9	2.1
		lb	0.044	0.110	0.132	0.353	0.551	0.882	1.54	3.75	1.65	8.38	3.53	10.80	4.63
Torsional rigidity	C_r	Nm/arcmin	0,44	2,0	2,6	6,7	9,0	21	23	41		46		84	
		in.lb/arcmin	3,9	18	23	59	80	185	206	363		404		747	
Axial misalignment 	$\max. \text{ values}$	mm	0.5	1	1	1	1	1.5	2	2		2		2.5	
Lateral misalignment 	$\max. \text{ values}$	mm	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		0.2		0.2	
Axial spring stiffness	C_a	N/mm	8	35	30	30	50	67	44	77		112		72	
Lateral spring stiffness	C_r	N/mm	50	350	320	315	366	679	590	960		2940		1450	

b) Included in scope of delivery

Max. angular misalignment 1°

Bellows coupling EC2

With clamping hub



Bellows coupling for direct drives

Material:

Bellows made of highly flexible stainless steel.
Hub material: see table below.

Design:

With clamping hubs and a single lateral screw to ISO 4762.

Temperature range: -30 °C to +100°C (-22 °F to 212 °F)

Backlash:

Completely backlash-free as a result of the frictional clamp connection.

Service life:

These torque limiters are permanent and maintenance-free as long as the performance limits are not exceeded.

Fit tolerance: Tolerance between shaft and hub 0.01 – 0.05 mm

Optional self-opening clamp system:

For expanding the bore hole during assembly or dismantling.

ELC – Elastomer coupling

ELC model			Series																										
			2			5			10			20			60			150			300			450			800		
Type (elastomer ring)			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Rated torque	T _{KN}	Nm	2	2.4	0.5	9	12	2	12.5	16	4	17	21	6	60	75	20	160	200	42	325	405	84	530	660	95	950	1,100	240
Max. torque**	T _{Kmax}	Nm	4	4.8	1	18	24	4	25	32	6	34	42	12	120	150	35	320	400	85	650	810	170	1,060	1,350	190	1,900	2,150	400
Installation length	A	mm	20			26			32			50			58			62			86			94			123		
Outer diameter	B	mm	16			25			32			42			56			66.5			82			102			136.5		
Outer diameter of screw head	B _S	mm	17			25			32			44.5			57			68			85			105			139		
Fit length	C	mm	6			8			10.3			17			20			21			31			34			46		
Possible inner diameter from Ø to Ø H7	D _{1/2}	mm	3 to 8			4 to 12.7			4 to 16			8 to 25			12 to 32			19 to 36			20 to 45			28 to 60			35 to 80		
Max. inner diameter (elastomer ring)	D _E	mm	6.2			10.2			14.2			19.2			26.2			29.2			36.2			46.2			60.5		
Fastening screw (ISO 4762/12.9)	E		M2			M3			M4			M5			M6			M8			M10			M12			M16		
Tightening torque of fastening screw		Nm	0.6			2			4			8			15			35			70			120			290		
Distance between centers	F	mm	5.5			8			10.5			15.5			21			24			29			38			50.5		
Distance	G	mm	3			4			5			8.5			10			11			15			17.5			23		
Hub length	H	mm	12			16.7			20.7			31			36			39			52			57			74		
Moment of inertia per hub	J1/J2 10 ⁻³ kgm²		0.0003			0.002			0.003			0.01			0.04			0.08			0.3			0.66			8		
Coupling weight		kg	0.008			0.02			0.05			0.12			0.3			0.5			0.9			1.5			8.5		
Speed*		rpm	28,000			22,000			20,000			19,000			14,000			11,500			9,500			8,000			4,000		

** Maximum torque transmitted T_{Kmax} by clamping hub dependent upon bore diameter

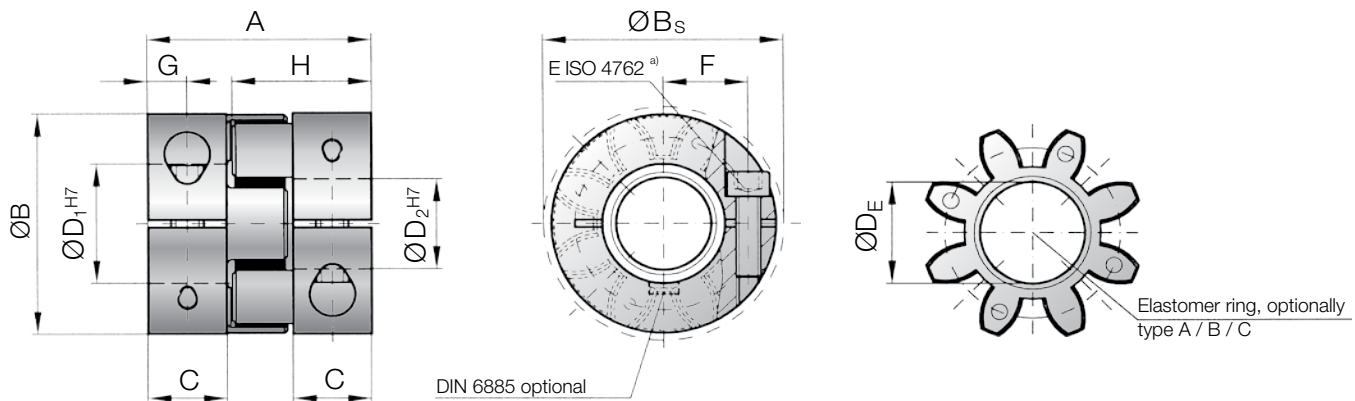
Model series EL		Series																										
		2			5			10			20			60			150			300			450			800		
Elastomer ring type		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Static torsional rigidity	C _T Nm/arcmin	0.015	0.033	0.0049	0.044	0.10	0.015	0.076	0.17	0.026	0.33	0.73	0.15	0.96	2.8	0.41	1.4	3.1	0.33	3.6	5.2	0.37	4.4	7.9	1.2	12	19	3.0
Dynamic torsional rigidity	C _{Tdy} Nm/arcmin	0.029	0.067	0.010	0.087	0.20	0.031	0.16	0.48	0.065	0.74	1.3	0.25	2.3	3.5	0.39	3.9	8.5	1.0	6.9	12	1.8	16	24	3.4	24	52	8.3
Lateral 	Max. values mm	0.08	0.06	0.1	0.08	0.06	0.1	0.1	0.08	0.12	0.1	0.08	0.15	0.12	0.1	0.15	0.15	0.12	0.2	0.18	0.14	0.25	0.2	0.18	0.25	0.25	0.2	0.3
Angular 	Max. values Degrees	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2
Axial 	Max. values mm	±1			±1			±1			±2			±2			±2			±2			±2			±2		

Static torsional rigidity at 50% T_{KN}

Dynamic torsional rigidity at T_{KN}

Series	dia. 3	dia. 4	dia. 5	dia. 8	dia. 16	dia. 19	dia. 25	dia. 30	dia. 32	dia. 35	dia. 45	dia. 50	dia. 55	dia. 60	dia. 65	dia. 70	dia. 75	dia. 80
2	0.2	0.8	1.5	2.5														
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	1,000	

Higher torques possible by means of additional keys.



a) included in scope of delivery

Features:

- Short design
- Easy installation
- Vibration damping
- Backlash-free
- Plug-in

Material:

Coupling hubs: up to series 450 high-strength aluminum, from series 800 and up steel
Elastomer ring: precision molded, wear-resistant, and thermally-stable polymer

Design:

Two coupling hubs are concentrically machined with concave driving jaws

*Speeds:

Over 4,000 rpm, a finely balanced version is available

Tolerance:

On the hub/shaft connection, 0.01 to 0.05 mm

Function of elastomer ring

The equalizing element of an EK coupling is the elastomer ring. It transmits the torque without backlash or vibration. The elastomer ring defines the features of the entire coupling and/or of the entire drive train.

The backlash-free nature of the coupling is due to pre-tensioning of the elastomer ring between the two coupling halves. The alpha coupling compensates for lateral, angular and axial misalignment.



Version A
Shore hardness 98 Sh A



Version B
Shore hardness 64 Sh D



Version C
Shore hardness 80 Sh A

Specification of the elastomer rings

Version	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	Good damping
B	64 Sh D	Green	TPU	0.3-0.45	-30°C to +120°C	High torsional rigidity
C	80 Sh A	Yellow	TPU	0.3-0.4	-30°C to +100°C	Very good damping

The values for proportional damping were determined at 10 Hz and +20°C.

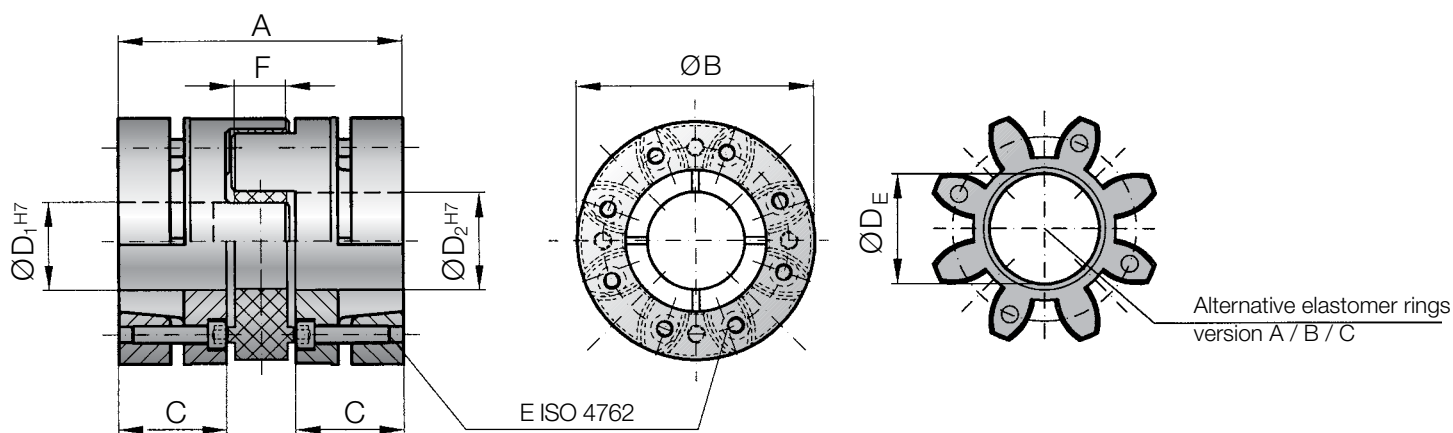
EL6 – Elastomer coupling

EL6 model			Series																				
			10			20			60			150			300			450			800		
Type (elastomer ring)			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Rated torque	T_{KN}	Nm	12.6	16	4	17	21	6	60	75	20	160	200	42	325	405	84	530	660	95	950	1,100	240
Max. torque	T_{Kmax}	Nm	25	32	6	34	42	12	120	150	35	320	400	85	650	810	170	1,060	1,350	190	1,900	2,150	400
Installation length	A	mm	42			56			64			76			96			110			138		
Outer diameter	B	mm	32			43			56			66			82			102			136.5		
Fit length	C	mm	15			20			23			28			36			42			53		
Possible inner diameter from $\varnothing$ to $\varnothing$ H7	$D_{1/2}$	mm	6 to 16			8 to 24			12 to 32			19 to 35			20 to 45			28 to 55			32 to 80		
Max. inner diameter (elastomer ring)	D_E	mm	14.2			19.2			26.2			29.2			36.2			46.2			60.5		
Fastening screw (ISO 4762/12.9)	E		3x M3			6x M4			4x M5			8x M5			8x M6			8x M8			8x M10		
Tightening torque of fastening screw		Nm	2			3			6			7			12			35			55		
Elastomer ring width	F	mm	9.5			12			14			15			18			20			25		
Moment of inertia per hub	J1/J2	10 ⁻³ kgm ²	0.004			0.015			0.05			0.1			0.3			0.85			9.2		
Coupling weight		kg	0.08			0.12			0.3			0.5			0.9			1.5			9.6		
Speed		rpm	20,000			19,000			14,000			11,500			9,500			8,000			4,000		

Model series EL			Series																				
			10			20			60			150			300			450			800		
Elastomer ring type			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Static torsional rigidity	C_T	Nm/arcmin	0.076	0.17	0.026	0.33	0.73	0.15	0.96	2.8	0.41	1.4	3.1	0.33	3.6	5.2	0.37	4.4	7.9	1.2	12	19	3.0
Dynamic torsional rigidity	C_{Tdyn}	Nm/arcmin	0.16	0.48	0.065	0.74	1.3	0.25	2.3	3.5	0.39	3.9	8.5	1.0	6.9	12	1.8	16	24	3.4	24	52	8.3
Lateral	Max. values	mm	0.1	0.08	0.12	0.1	0.08	0.15	0.12	0.1	0.15	0.15	0.12	0.2	0.18	0.14	0.25	0.2	0.18	0.25	0.25	0.2	0.3
Angular	Max. values	Degrees	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2
Axial	Max. values	mm	±1			±2			±2			±2			±2			±2			±2		

Static torsional rigidity at 50% T_{KN}

Dynamic torsional rigidity at T_{KN}



Features:

- High clamping force
- Very high true-running accuracy
- Easy installation
- Vibration damping
- Backlash free
- Plug in
- Axial installation

Material:

Coupling hubs and conical clamping ring: up to series 450 high-strength aluminum, from series 800 and up steel
Elastomer ring: precision molded, wear-resistant, and thermally-stable polymer

Design:

Two coupling hubs are concentrically machined with concave driving jaws

Tolerance:

On the hub/shaft connection, 0.01 to 0.05 mm

Function of elastomer ring

The equalizing element of an EK coupling is the elastomer ring. It transmits the torque without backlash or vibration. The elastomer ring defines the features of the entire coupling and/or of the entire drive train.

The backlash-free nature of the coupling is due to pre-tensioning of the elastomer ring between the two coupling halves. The alpha coupling compensates for lateral, angular and axial misalignment.



Version A
Shore hardness 98 Sh A



Version B
Shore hardness 64 Sh D



Version C
Shore hardness 80 Sh A

Specification of the elastomer rings

Version	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	Good damping
B	64 Sh D	Green	TPU	0.3-0.45	-30°C to +120°C	High torsional rigidity
C	80 Sh A	Yellow	TPU	0.3-0.4	-30°C to +100°C	Very good damping

The values for proportional damping were determined at 10 Hz and +20°C.

TL – Torque limiters

Safe torque limitation

Single position re-engagement – standard version

After the overload has been removed, the torque limiter can be re-engaged precisely 360 degrees from the original disengagement position.

A proven principle that guarantees synchronism. Signal in the event of an overload. Suitable for use in machine tools, packaging machines and automation systems.

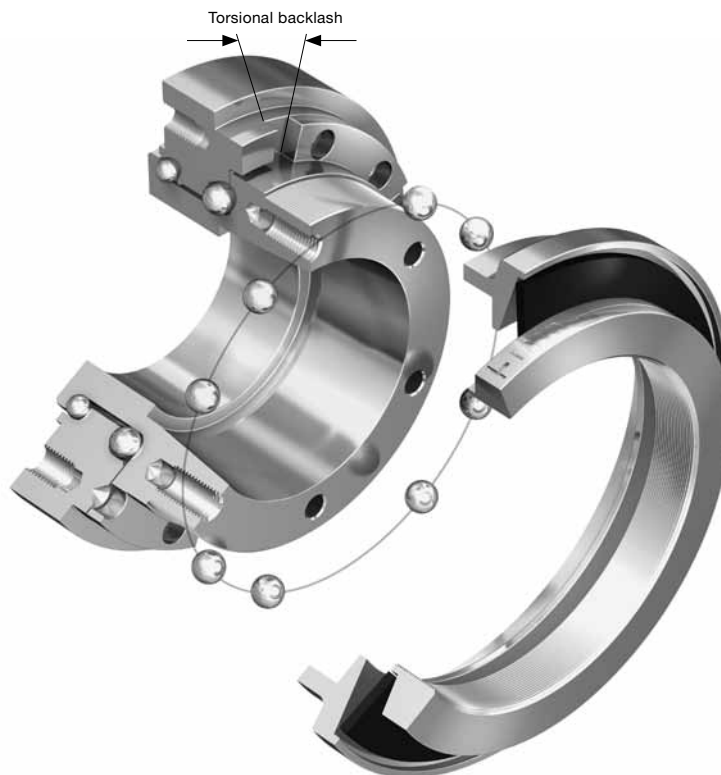
Order code: W



Load holding version

In the event of an overload, the drive and the drive elements are not separated or are only allowed limited rotation. Guaranteed load safety. Automatic engagement of the torque limiter after the torque level has dropped. Signal in the event of an overload. Suitable for use on presses or load-lifting equipment.

Order code: G



Multi-position version

Coupling re-engages automatically at the very next ball detent. The coupling is immediately ready for operation again at several points after an overload. Immediate availability of the machine or plant as soon as the overload has been removed. Signal in the event of an overload. Standard engagement after 60 degrees. Optional engagement after 30, 45, 60, 90 and 120 degrees.

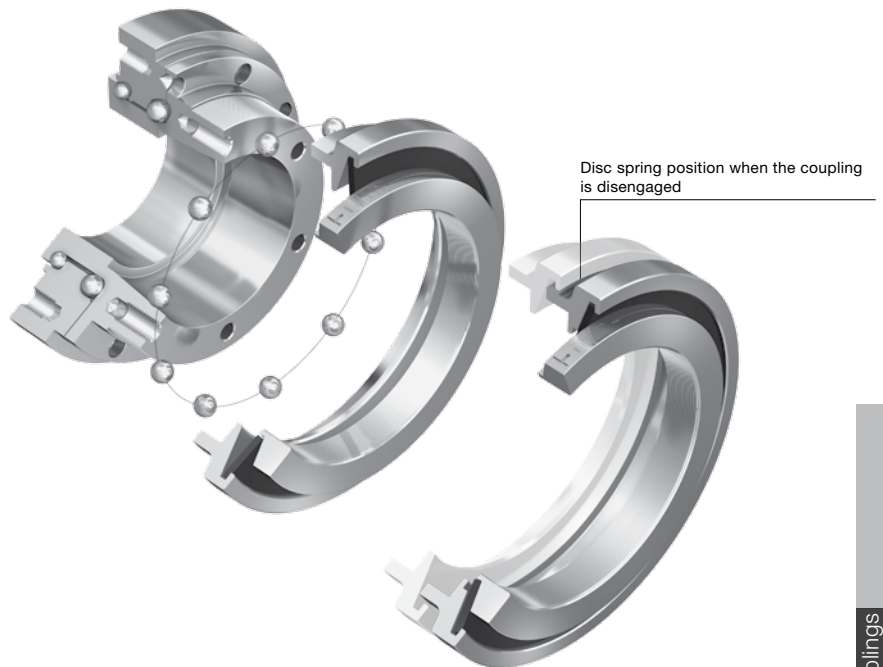
Order code: D



Full disengagement version

Permanent separation of the drive and the drive elements in the event of an overload. Spring flips over completely. No residual friction. Torque limiter can be re-engaged manually (re-engagement possible every 60 degrees).

Order code: F



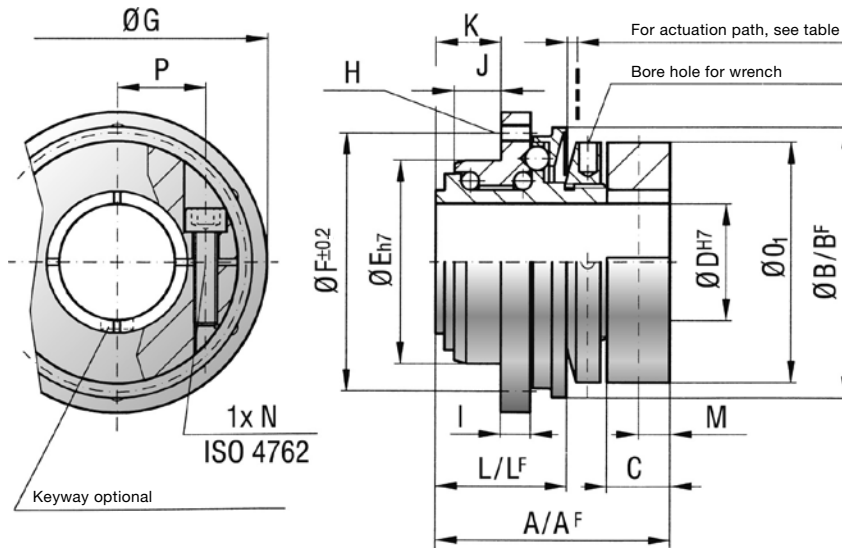
TL1 – Torque limiter

				Series													
				Miniature design series													
				1.5	2	4.5	10	15	30	60	150	200	300	500	800	1500	2500
Adjustment range from – to (approx. values)	T_{KN}	Nm	A	0.1–0.6	0.2–1.5	1–3	2–6	5–15	5–20	10–30	20–70	30–90	100–200	80–200	400–650	600–800	1500–2000
				1-6	2-14	9-27	18-54	45-133	45-177	89-266	177-620	266-797	885-1770	708-1770	3540-5753	5310-7080	13275-17700
		in.lb	B	0.4–1	0.5–2.2	2–4.5	4–12	12–25	10–30	25–80	45–150	60–160	150–240	200–350	500–800	700–1200	2000–2500
				4-9	5-20	18-40	36-107	107-222	89-266	222-708	399-1328	531-1416	1328-2124	1770-3098	4425-7080	6195-10620	17700-22125
		Nm	C	0.8–2	1.5–3.5	3–7	7–18	20–40	20–60	50–115	80–225	140–280	220–440	320–650	650–950	1000–1800	2300–2800
				8-18	14-31	27-62	62-160	177-354	177-531	443-1018	708-1992	1239-2478	1947-3894	2832-5753	5753-8408	8850-15930	20355-24780
		in.lb	D	–	–	–	–	35–70	50–100	–	–	250–400	–	–	–	–	–
				–	–	–	–	310-620	443-885	–	–	222-3540	–	–	–	–	–
Adjustment range from – to (approx. values), full disengagement	T_{KN}	Nm	A	0.3–0.8	0.5–2	2.5–4.5	2–5	7–15	8–20	10–30	20–60	80–140	120–180	50–150	200–400	1000–1250	1400–2200
				3-8	5-18	23-40	18-45	62-133	71-177	89-266	177-531	708-1239	1062-1593	443-1328	1770-3540	8850-11063	12390-19470
		in.lb	B	0.6–1.3	–	–	4–10	16–30	20–40	40–80	130–200	160–300	100–300	450–850	1250–1500	1800–2700	–
				6-12	–	–	36-89	142-266	177-354	354-708	1151-1770	1416-2655	885-2655	3983-7523	11063-13275	15930-23895	–
		Nm	C	–	–	–	8–15	–	–	30–60	80–150	–	–	250–500	–	–	–
				–	–	–	71-133	–	–	266-531	708-1328	–	–	2213-4425	–	–	–
		in.lb	D	–	–	–	–	–	–	–	–	–	–	–	–	–	–
				–	–	–	–	–	–	–	–	–	–	–	–	–	–
Overall length	A	mm		23	28	32	39	40	50	54	58	63	70	84	95	109	146
Overall length, full disengagement	A ^F	mm		23	28	32	39	40	50	54	58	66	73	88	95	117	152
Outer diameter of actuation ring	B	mm		23	29	35	45	55	65	73	92	99	120	135	152	174	242
Actuation ring Ø, full disengagement	B ^F	mm		24	32	42	51.5	62	70	83	98	117	132	155	177	187	258
Clamping fit length	C	mm		7	8	11	11	19	22	27.5	32	32	41	41	49	61	80
Inner diameter from Ø to Ø H7	D	mm		4–8	4–12	5–14	6–20	8–22	12–22	12–29	15–37	20–44	25–56	25–56	30–60	35–70	50–100
Centering diameter h7	E	mm		14	22	25	34	40	47	55	68	75	82	90	100	125	168
Hole circle diameter ±0.2	F	mm		22	28	35	43	47	54	63	78	85	98	110	120	148	202
Flange diameter – 0.2	G	mm		26	32	40	50	53	63	72	87	98	112	128	140	165	240
Thread	H			4xM2	4xM2.5	6xM2.5	6xM3	6xM4	6xM5	6xM5	6xM6	6xM6	6xM8	6xM8	6xM10	6xM12	6xM16
Thread length	I	mm		3	4	4	5	6	8	9	10	10	10	12	15	16	24
Centering length – 0.2	J	mm		2.5	3.5	5	8	3	5	5	5	5	6	9	10	13.5	20
Distance	K	mm		5	6	8	11	8	11	11	12	12	15	21	19	25	34
Distance	L	mm		11	15	17	22	27	35	37	39	44	47	59	67	82	112
Distance, full disengagement	L ^F	mm		11.5	16	18	24	27	37	39	41.5	47	51.5	62	75	91	120
Distance	M			2.5	4	4	5	–	–	–	–	–	–	–	–	–	–
Screws to ISO 4762	N			M2.5	M3	M4	M4	M4	M5	M5	M6	M6	M8	M8	M10	M12	M16
Tightening torque	N	Nm		1	2	4	4.5	4	6	8	12	14	18	25	40	70	120
		in.lb		9	18	36	40	36	54	71	107	124	160	222	354	620	1062
Outer diameter of clamping ring	O ₁	mm		20	25	32	40	–	–	–	–	–	–	–	–	–	–
Diameter	O ₂	mm		13	18	21	30	35	42	49	62	67	75	84	91	112	154
Diameter h7	O ₃	mm		11	14	17	24	27	32	39	50	55	65	72	75	92	128
Distance between centers	P	mm		6.5	8	10	15	–	–	–	–	–	–	–	–	–	–
Distance	R	mm		1	1.3	1.5	1.5	2.5	2.5	2.5	2.5	3	3	4	4	4.5	6
Moment of inertia	J	10 ³ kgm ²		0.01	0.02	0.05	0.07	0.15	0.25	0.50	1.60	2.70	5.20	8.60	20	31.5	210
		in.lb.s ² .10 ³		0.0089	0.0177	0.0443	0.0620	0.1328	0.2213	0.4425	1.4161	2.3897	4.6024	7.6116	17.7014	27.8797	185.86
Approx. weight		kg		0.03	0.065	0.12	0.22	0.4	0.7	1.0	1.3	2.0	3.0	4.0	5.5	10	28
		lb		0.066	0.143	0.265	0.485	0.882	1.543	2.205	2.866	4.409	6.614	8.818	12.125	22.046	61.729
Actuation path		mm		0.7	0.8	0.8	1.2	1.5	1.5	1.7	1.9	2.2	2.2	2.2	2.2	3.0	3.0

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

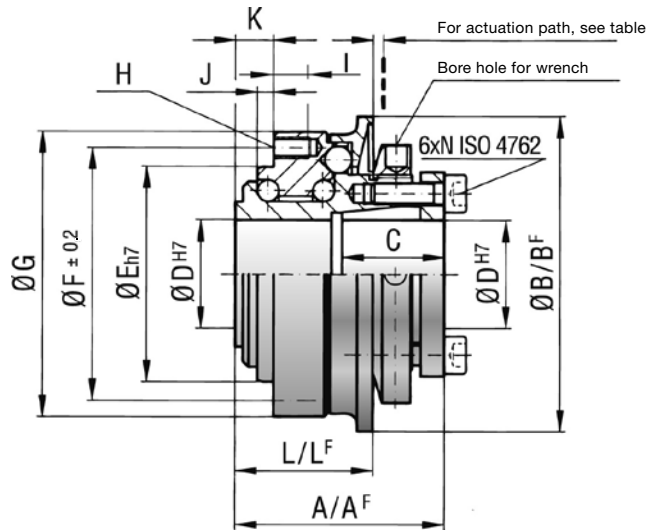
Torque limiter TL1 (1.5–10)

With clamping hub



Torque limiter TL1 (15–2500)

With conical clamping hub



Torque limiter for timing belt and sprocket applications

Material:

High-strength, hardened steel.

Design:

Model TL1: 1.5–10 Nm (13.3 – 88.5 in.lb)
with split clamping hub.

Model TL1: 15–2500 Nm (132.8 – 22125 in.lb)
with conical clamping hub.

Temperature range: -30 °C to +120°C (-22 °F to 248°F)

Temperature peaks:

up to +150°C (302°F)

Backlash:

Completely backlash-free as a result of the
frictional clamp connection and patented preload.

Service life:

These torque limiters are permanent and
maintenance-free as long as the performance limits are not
exceeded.

Fit tolerance:

Tolerance between shaft and hub 0.01–0.05 mm

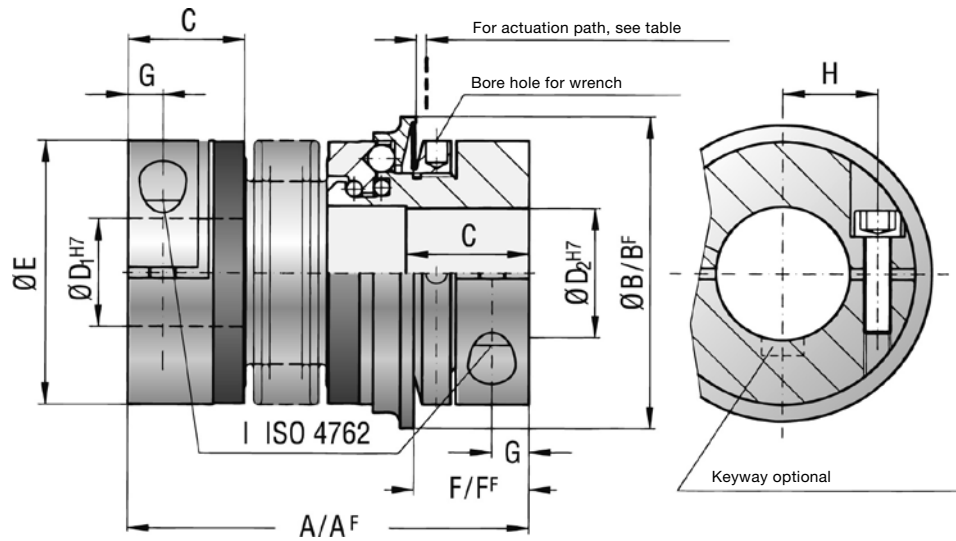


TL2 – Torque limiter

				Series																											
				1.5		2		4.5		10		15		30		60		80		150		200		300		500		800		1500	
Length options (see ordering code)				A		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	A		
Adjustment range from – to (approx. values)		T _{KN}	Nm	A	0.1–0.6		0.2–1.5		1–3		2–6		5–10		10–25		10–30		20–70		20–70		30–90		100–200		80–200		400–650		650–800
			in.lb		1–6		2–14		9–27		18–54		45–89		89–222		89–266		177–620		177–620		266–797		885–1770		708–1770		3540–5753		5753–7080
			Nm	B	0.4–1		0.5–2		3–6		4–12		8–20		20–40		25–28		30–90		45–150		60–160		150–240		200–350		500–800		700–1200
			in.lb		4–9		5–18		27–54		36–107		71–177		177–354		222–248		266–797		399–1328		531–1416		1328–2124		1770–3098		4425–7080		6195–10620
			Nm	C	0.8–1.5		–		–		–		–		–		–		–		80–180		120–240		200–320		300–500		650–850		1000–1800
in.lb	8–14		708–1593		1062–2124																1770–2832		2655–4425		5753–7523		8850–15930				
Adjustment range from – to (approx. values), full disengagement		T _{KN}	Nm	A	0.3–0.8		0.5–2		2.5–4.5		2–5		7–15		8–20		20–40		20–60		20–60		80–140		120–180		60–150		200–400		1000–1250
			in.lb		3–8		5–18		23–40		18–45		62–133		71–177		177–354		177–531		177–531		708–1239		1062–1593		531–1328		1770–3540		8850–11063
			Nm	B	0.6–1.3		–		–		5–10		–		16–30		30–60		40–80		40–80		130–200		180–300		100–300		450–800		1250–1500
			in.lb		6–12						45–89				142–266		266–531		354–708		354–708		1151–1770		1593–2655		885–2655		3983–7080		11063–13275
			Nm	C	–		–		–		–		–		–		–		–		80–150		–		–		250–500		–		–
in.lb	708–1328		2213–4425																												
Overall length	A	mm	42	46	51	57	65	65	74	75	82	87	95	102	112	115	127	116	128	128	140	139	153	163	177	190	223				
Overall length, full disengagement	A ^F	mm	42	46	51	57	65	65	74	75	82	87	95	102	112	117	129	118	130	131	143	142	156	167	181	201	232				
Actuation ring Ø	B	mm	23	29		35		45		55		65		73		92		92		99		120		135		152		174			
Actuation ring Ø, full disengagement	B ^F	mm	24	32		42		51.5		62		70		83		98		98		117		132		155		177		187			
Fit length	C	mm	11	13		16		16		22		27		31		35		35		40		42		51		48		67			
Inner diameter from Ø to Ø H7	D _r /D ₂	mm	3–8	4–12		5–14		6–20		10–26		12–30		15–32		19–42		19–42		24–45		30–60		35–60		40–75		50–80			
Outer diameter of coupling	E	mm	19	25		32		40		49		55		66		81		81		90		110		123		134		157			
Distance	F	mm	12	13		15		17		19		24		30		31		31		35		35		45		50		65			
Distance, full disengagement	F ^F	mm	11.5	12		14		16		19		22		29		31		30		33		35		43		54		61			
Distance	G	mm	3.5	4		5		5		6.5		7.5		9.5		11		11		12.5		13		17		18		22.5			
Distance between centers	H	mm	6	8		10		15		17		19		23		27		27		31		39		41		2x48		2x55			
Screws to ISO 4762	I		M2.5	M3		M4		M4		M5		M6		M8		M10		M10		M12		M12		M16		2xM16		2xM20			
Tightening torque	I	Nm in.lb	1	2		4		4.5		8		15		40		50		70		120		130		200		250		470			
			9	18		36		40		71		133		354		443		620		1062		1151		1770		2213		4160			
Approx. weight		kg lb	0.035	0.07		0.2		0.3		0.4		0.6		1.0		2.0		2.4		4.0		5.9		9.6		14		21			
			0.08	0.15		0.44		0.66		0.88		1.32		2.21		4.41		5.30		8.82		13.1		21.2		30.9		46.3			
Moment of inertia	J	10 ⁻³ kgm ² 10 ⁻³ in.lb.s ²	0.01	0.01	0.01	0.02	0.02	0.06	0.07	0.10	0.15	0.27	0.32	0.75	0.80	1.80	1.90	2.50	2.80	5.10	5.30	11.5	11.8	22.8	23.0	42.0	83.0				
			0.0089	0.0089	0.0089	0.0177	0.0177	0.0531	0.0620	0.0885	0.1328	0.2390	0.2832	0.6638	0.7081	1.59	1.68	2.21	2.48	45.1	46.9	10.2	10.4	20.2	20.4	37.2	73.5				
Torsional rigidity	C _T	Nm/arcmin	0,20	0,35	0,38	2,0	1,5	2,6	2,3	5,8	4,4	11	8,1	22	16	38	25	51	32	56	41	122	102	148	145	227	379				
Lateral misalignment		mm	0.15	0.15	0.20	0.20	0.25	0.20	0.30	0.15	0.20	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.25	0.30	0.25	0.30	0.30	0.35	0.35	0.35				
Angular misalignment		degrees	1	1	1.5	1.5	2	1.5	2	1	1.5	1	1.5	1	1.5	1	1.5	1	1.5	1.5	2	1.5	2	2	2.5	2.5	2.5				
Lateral spring stiffness		N/mm	70	40	30	290	45	280	145	475	137	900	270	1200	420	920	255	1550	435	2040	610	3750	1050	2500	840	2000	3600				
Actuation path		mm	0.7	0.8		0.8		1.2		1.5		1.5		1.7		1.9		1.9		2.2		2.2		2.2		2.2		3.0			

Torque limiter TL2

With clamping hub



Torque limiter for direct drives

Material:

Bellows made of highly flexible stainless steel. Safety section made of high-strength, hardened steel. Clamping hub material: up to series 80 aluminum and from series 150 steel.

Design:

With clamping hubs and a single lateral screw to ISO 4762.

Temperature range:

-30 °C to +120°C (-22 °F to 248 °F)

Backlash:

Completely backlash-free as a result of the frictional clamp connection and patented preload.

Service life:

These torque limiters are permanent and maintenance-free as long as the performance limits are not exceeded.

Fit tolerance:

Tolerance between shaft and hub 0.01 – 0.05 mm

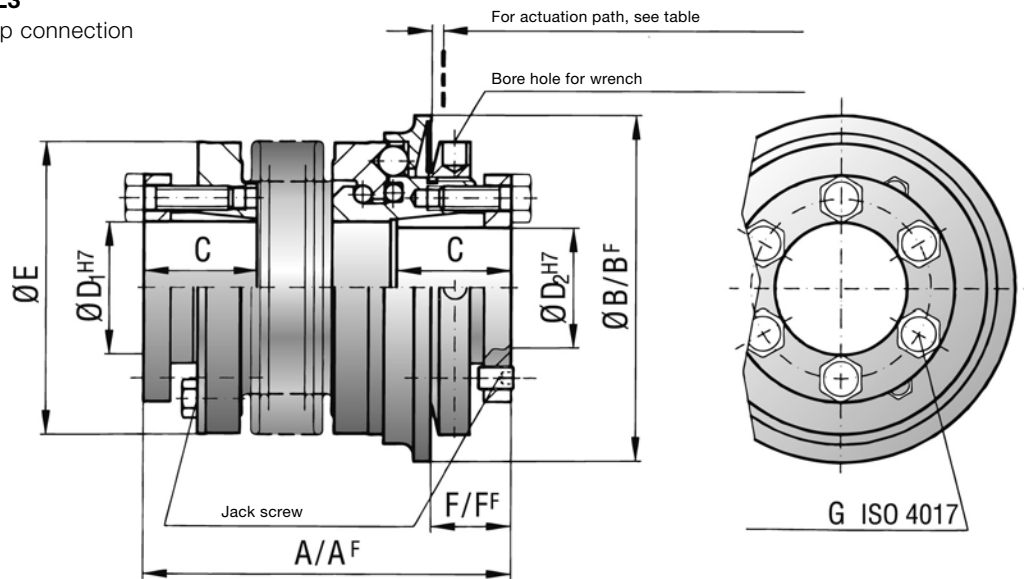
TL3 – Torque limiter

				Series																			
				15		30		60		150		200		300		500		800		1500		2500	
Length options (see ordering code)				A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	A		
Adjustment range from – to (approx. values)	T_{KN}	Nm	A	5–10		10–25		10–30		20–70		30–90		100–200		80–200		400–650		650–850		1500–2000	
		in.lb		45-89		89-222		89-266		177-620		266-797		885-1770		708-1770		3540-5753		5753-7523		13275-17700	
		Nm	B	8–20		20–40		25–80		45–150		60–160		150–240		200–350		500–800		700–1200		2000–2500	
		in.lb		71-177		177-354		222-708		399-1328		531-1416		1328-2124		1770-3098		4425-7080		6195-10620		17700-22125	
		Nm	C	–		–		–		80–200		140–280		220–400		300–500		600–900		1000–1800		2300–2800	
		in.lb		–		–		–		708-1770		1239-2478		1947-3540		2655-4425		5310-7965		8850-15930		20355-24780	
Adjustment range from to (approx. values), full engagement	T_{KN}	Nm	A	7–15		8–20		20–40		20–60		80–140		120–180		60–150		200–400		1000–1250		1400–2200	
		in.lb		62-133		71-177		177-354		177-531		708-1239		1062-1593		531-1328		1770-3540		8850-11063		12390-19470	
		Nm	B	–		16–30		30–60		40–80		130–200		180–300		100–300		450–800		1250–1500		1800–2700	
		in.lb		–		142-266		266-531		354-708		1151-1770		1593-2655		885-2655		3983-7080		11063-13275		15930-23895	
		Nm	C	–		–		–		80–150		–		–		250–500		–		–		–	
		in.lb		–		–		–		708-1328		–		–		2213-4425		–		–		–	
Overall length	A	mm	62	69	72	80	84	94	93	105	99	111	114	128	123	136	151		175		246		
Overall length, full disengagement	A ^F	mm	62	69	72	80	84	94	93	105	102	114	117	131	127	140	151		184		252		
Actuation ring Ø	B	mm	55		65		73		92		99		120		135		152		174		243		
Actuation ring Ø, full disengagement	B ^F	mm	62		70		83		98		117		132		155		177		187		258		
Fit length	C	mm	19		22		27		32		32		41		41		49		61		80		
Inner diameter from Ø to Ø H7	D ₁ /D ₂	mm	10–22		12–23		12–29		15–37		20–44		25–56		25–60		30–60		35–70		50–100		
Outer diameter of coupling	E	mm	49		55		66		81		90		110		123		133		157		200		
Distance	F	mm	13		16		18		19		19		23		25		31		30		34		
Distance, full disengagement	F ^F	mm	13		14		17		18		17		20		22		20		26		31		
6 x screws to ISO 4017	I		M4		M5		M5		M6		M6		M8		M8		M10		M12		M16		
Tightening torque	I	Nm	4		6		8		12		14		18		25		40		70		120		
		in.lb	36		54		71		107		124		160		222		354		620		1062		
Approx. weight		kg	0.3		0.4		1.2		2.3		3.0		5.0		6.5		9.0		16.3		35		
		lb	0.66		0.88		2.65		5.07		6.61		11.0		14.3		19.8		35.9		77.2		
Moment of inertia	J	10 ⁻³ kgm²	0.10	0.15	0.28	0.30	0.75	0.80	1.90	2.00	2.80	3.00	5.50	6.00	11.0	12.8	20.00		42.00		257		
		10 ⁻³ in.lb.s²	0.0885	0.1328	0.2478	0.2655	0.6638	0.7081	1.68	1.77	2.48	2.66	4.87	5.31	9.74	11.3	17.7		37.2		227.5		
Torsional rigidity	C _T	Nm/arcmin	5,8	4,4	11	8,1	22	16	51	32	56	41	122	102	148	145	227		379		989		
		in.lb/arcmin	51	39	100	72	196	142	451	283	492	360	1081	901	1313	1287	2008		3357		8753		
Lateral misalignment		mm	0.15	0.20	0.20	0.25	0.20	0.25	0.20	0.25	0.25	0.30	0.25	0.30	0.30	0.35	0.35		0.35		0.35		
Angular misalignment		degrees	1	1.5	1	1.5	1	1.5	1	1.5	1.5	2	1.5	2	2	2.5	2.5		2.5		2.5		
Lateral spring stiffness		N/mm	475	137	900	270	1200	380	1550	435	2040	610	3750	1050	2500	840	2000		3600		6070		
Actuation path		mm	1.5		1.5		1.7		1.9		2.2		2.2		2.2		2.2		3		3		

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

Torque limiter TL3

With conical clamp connection



Torque limiter for direct drives

Material:

Bellows made of highly flexible stainless steel. Safety section made of high-strength, hardened steel. Hub material: steel.

Design:

With split conical clamping hubs and captive jack screws.

Temperature range: -30 °C to +120°C (-22 °F to 248 °F)

Backlash:

Completely backlash-free as a result of the frictional clamp connection and patented preload.

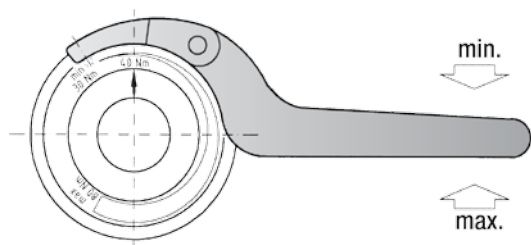
Service life:

These torque limiters are permanent and maintenance-free as long as the performance limits are not exceeded.

Fit tolerance: Tolerance between shaft and hub 0.01 – 0.05 mm

Accessories and supplementary instructions

Torque adjusting wrench for DIN 1816 nuts

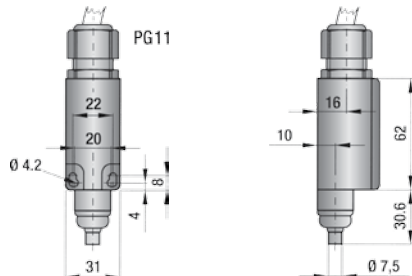


Smaller coupling sizes do not require a torque adjusting wrench. The adjusting nuts for the 1.5/2/4.5/10 series can be adjusted with a bolt or pin.

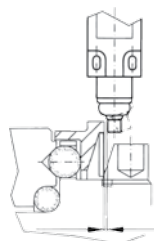
Series	Torque adjusting wrench	
	Standard version	Full disengagement version
15	AC 20047730	AC 20047730
30	AC 20047731	AC 20047731
60	AC 20047732	AC 20047749
80/150	AC 20047733	AC 20047733
200	AC 20047734	AC 20047750
300	AC 20047735	AC 20047735
500	AC 20047736	AC 20047736
800	AC 20047737	AC 20047751
1500	AC 20047738	AC 20047738
2500	AC 20047739	AC 20047752

Mechanical limit switch (emergency cut-off)

Dimension drawings



Important:
Always carry out a 100 % test of the switch function after assembly.



The actuation tappet should be positioned as close as possible to the actuation ring of the torque limiter (approx. 0.1 – 0.2 mm).

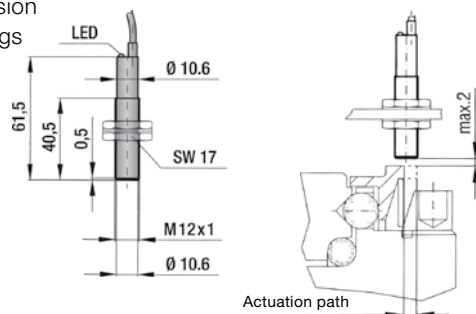
Distance approx. 0.1 – 0.2 mm

Technical data	
Max. voltage:	500 V AC
Max. constant current:	10 A
Degree of protection:	IP 65
Contact type:	NC contact (positive opening)
Ambient temperature:	-30 °C to +80 °C
Actuation:	Tappet (metal)
Circuit symbol:	

The mechanical limit switch is suitable for size 30 and above.

Proximity switch (emergency cut-off)

Dimension drawings



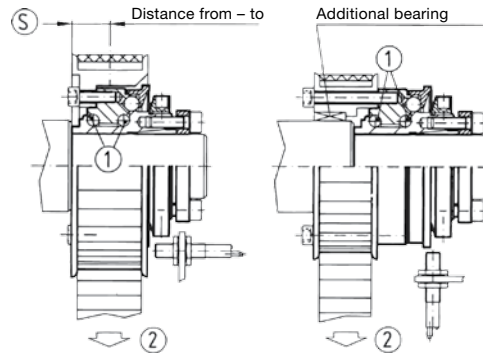
Important:
Always carry out a 100 % test of the switch function after assembly.

Technical data	
Voltage range:	10 to 30 V DC
Max. output current:	200 mA
Max. switching frequency:	800 Hz
Temperature range:	-25 °C to +70 °C
Degree of protection:	IP 67
Switch type:	PNP NC contact
Detection gap:	max. 2 mm
Circuit symbol:	

Assembly instructions for low backlash torque limiters

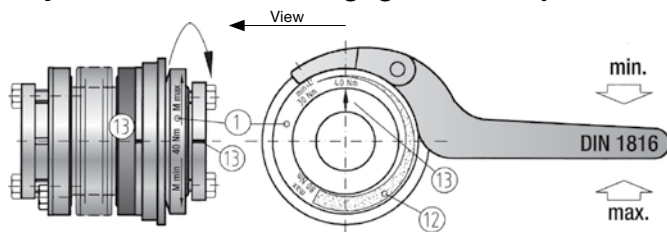
For the TL 1 – TL 3 models, the fit tolerance between the shaft and hub must be between 0.01 and 0.05 mm. Ensure that the coupling hub mounts smoothly on the shaft prior to assembly. Lightly oil the shaft prior to assembly. Do not use oils or grease with sliding additives (for example, MoS₂). Any keyways in the shaft will not affect the functioning of the clamp connection.

Model TL1 has an integrated **bearing (1)** for the attached component (for example, a pulley or sprocket wheel). Do not exceed the **maximum radial force (2)**, (see table). By centering the load between the **dimension (S)**, sufficient force is applied between the two balls and no separate bearings are required. Additional bearings are required for offset mounting. This is recommended, for example, if the attached component has a very small diameter or a very large width. Ball bearings, needle bearings or bushings can be used depending on the installation situation.

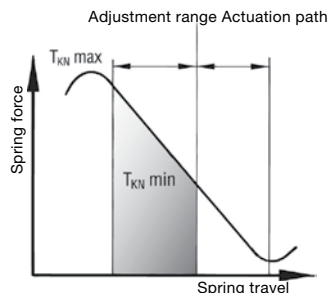
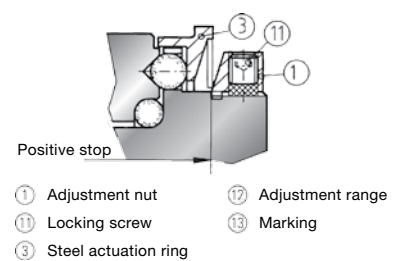


Series	1.5	2	4.5	10	15	30	60	150	200	300	500	800	1500	2500
Max. radial load capacity (N)	50	100	200	500	1400	1800	2300	3000	3500	4500	5600	8000	12000	20000
(S) from – to	3–6	5–8	5–11	6–14	7–17	10–24	10–24	12–24	12–26	12–28	16–38	16–42	20–50	28–60

Adjustment of the disengagement torque



WITTENSTEIN alpha torque limiters are factory adjusted to the specified disengagement torque, which is marked on the coupling. The adjustment range (min./max.) is indicated on the **adjustment nut (1)**. The customer can adjust the disengagement torque infinitely within the **adjustment range (12)** by varying the pretension of the disc springs. The adjustment range must not be exceeded during the adjustment process. After loosening the **lock screw (11)**, the disengagement torque can be adjusted using a suitable tool, e.g. a torque adjusting wrench to DIN 1816. The three locking screws **(11)** should then be tightened again.



Important!

WITTENSTEIN alpha torque limiters incorporate disc springs with special spring characteristics. Never exceed the max./min. range of the disengagement torque, which is located along the downward slope of this characteristic curve.