

Couplings

Versatilely adapted to the specific requirements

Whether used for a reliable product, harmonic continuously running system or as a monitoring unit with quick reaction, couplings are an essential part of modern drive technology. Count on our couplings for reliable and precise performance across a multitude of different requirements.

Perfectionist

Metal bellows couplings have been designed to meet the greatest requirements in servo drive technology. High torsional rigidity enables accurate results and great dynamics.





Continuously running system

Through high-quality manufactured hubs and attachable intermediate elements, elastomer couplings ensure a maximum true-running accuracy in the drive train. Torque shocks and vibrations are significantly absorbed and ensure very smooth running.



Monitoring unit

Torque limiters with integrated mechanic switching mechanism combine a dynamic, quickly reacting transmission with torque limitation.

Elastomer couplings

Plug-in, backlash free, electrically insulating

The core element of elastomer couplings is the elastomer insert. This insert is responsible for the properties of the entire coupling and/or of the entire drive train. Through different degrees of hardness, the rigidity and the dampening behavior can be optimized. By default, they are implemented with the degree of hardness B to meet the torsional rigidity requirements. Thanks to the simple plug-in assembly of the hubs, the coupling assembly is extremely user friendly. A variety of connection options for the shaft and hub ensure that customer-specific requirements are met. Interacting with the precisely manufactured hubs and with the correct selection of elastomer inserts, the torsional oscillations, shocks and axial misalignments can be compensated. When properly applied, they are maintenance-free and fatigue enduring. Elastomer couplings are available as corrosion-resistant and ATEX versions.

PRODUCT HIGHLIGHTS

Vibration dampening and individually adaptable

through freely selectable elastomer inserts.

Durable and maintenance-free for their entire service life

through precisely manufactured components.

Compensation for shaft misalignment

through the excellent damping of the elastomer inserts within the drive.



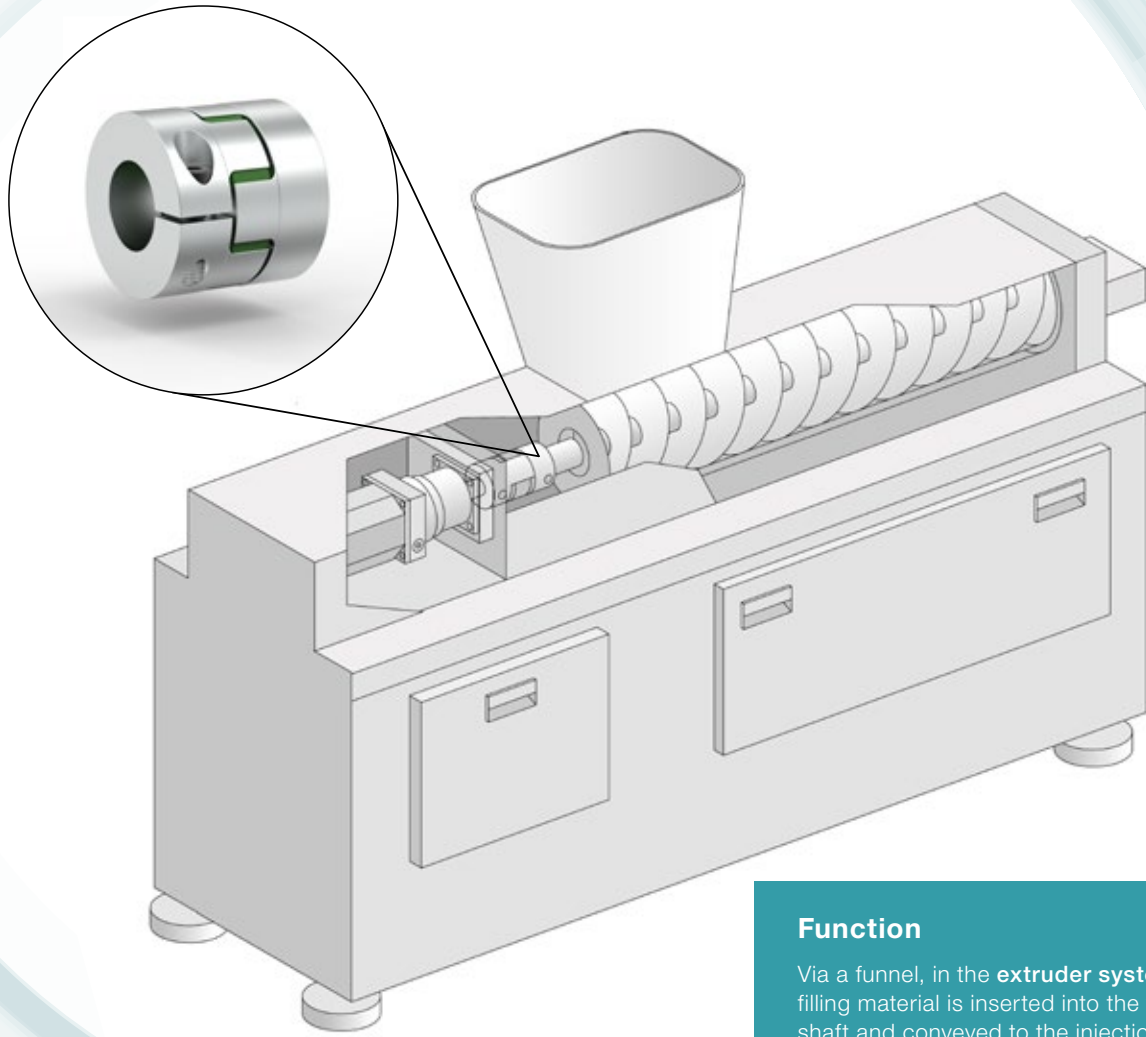
C: Shore hardness 80 Sh A
Excellent damping

A Shore hardness 98Sh A
Good damping

B: Shore hardness 64Sh D
High torsional rigidity

Torque limiter

	Elastomer material	Hub material	Permitted temperature range		
			Red: Elastomer insert A 98Sh A	Green: Elastomer insert B 64Sh D	Yellow: Elastomer insert C 80Sh A
ELT	Thermoplastic polyurethane TPU	High-strength aluminum	-	-30 to +120° C	-
EL6	Thermoplastic polyurethane TPU	High-strength aluminum, as of size 800: Steel	-30 to +100° C	-30 to +120° C	-30 to +100° C
ELC	Thermoplastic polyurethane TPU	High-strength aluminum, as of size 800: Steel	-30 to +100° C	-30 to +120° C	-30 to +100° C
ECS	Thermoplastic polyurethane TPU	High-strength aluminum	-30 to +100° C	-30 to +120° C	-30 to +100° C



Function

Via a funnel, in the **extruder system**, filling material is inserted into the worm gear shaft and conveyed to the injection molding nozzle under high pressure. Here, the drive consists of an electric motor and a gearbox unit.

The intermediate elastomer coupling absorbs any occurring shocks and vibration and thus increases the service life of the drive.



Application

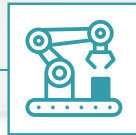
Example applications



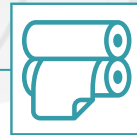
Machine tools



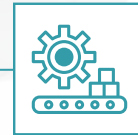
Servo drive technology



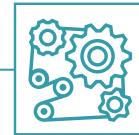
Automation



Printing presses



Packaging machines



General mechanical engineering



Benefits

User friendly through radial assembly.

Emergency run features through positive connection, even if the elastomer fails.

Maintenance-free and fatigue endurable if the technical specifications are observed.

Properties

Compensation of external impacts, such as temperature differences or misalignment due to the assembly.

Reduction in heavy vibrations and oscillations in the drive train.

Precise and backlash-free torque transmission through pre-tensioned elastomer inserts.

Compensation of misalignments due to assembly



Axial

Angular

Lateral

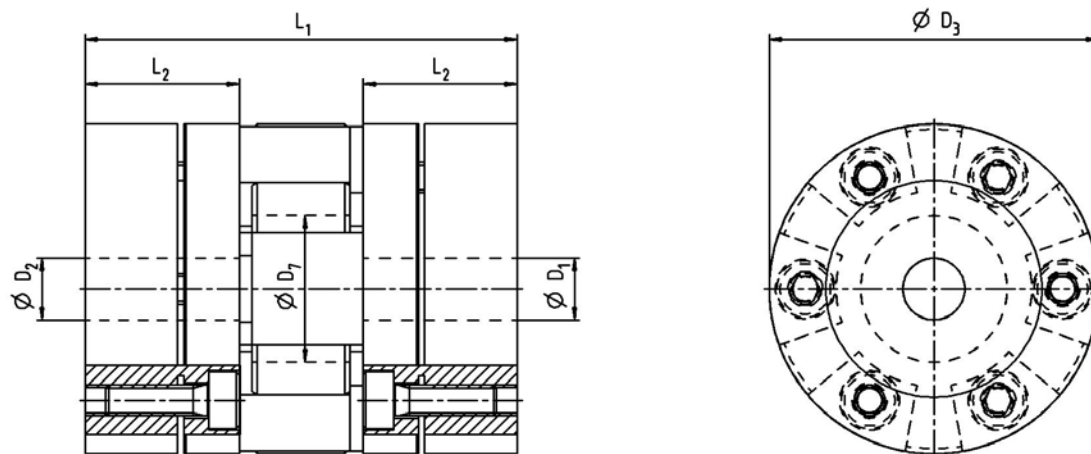
EL6 Elastomer coupling / tapered clamping ring, plug in

Size			10			20			60			150		
Hardness elastomer insert			A	B	C	A	B	C	A	B	C	A	B	C
Nominal torque	T_N	Nm	12.6	16	4	17	21	6	60	75	20	160	200	42
		lbf.in	112	142	35	150	186	53	531	664	177	1416	1770	372
Max. acceleration torque ^{a)} (max. 1000 cycles per hour)	T_B	Nm	22.7	28.8	6	30.6	37.8	10.8	108	135	35	288	360	75.6
		lbf.in	201	255	53	271	335	96	956	1195	310	2549	3186	669
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	25	32	6	34	42	12	120	150	35	320	400	85
		lbf.in	221	283	53	301	372	106	1062	1328	310	2832	3540	752
Max. speed	n_{Max}	rpm	20000			19000			14000			13000		
		mm	1			2			2			2		
Axial misalignment	±	in	0.039			0.079			0.079			0.079		
		°	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2
Lateral misalignment	±	mm	0.1	0.08	0.22	0.1	0.08	0.25	0.12	0.1	0.25	0.15	0.12	0.3
		in	0.004	0.003	0.009	0.004	0.003	0.01	0.005	0.004	0.01	0.006	0.005	0.012
Static torsional rigidity (at 50 % TB)	C_{Tstat}	Nm/arcmin	0.076	0.175	0.026	0.332	0.728	0.151	0.957	2.837	0.407	1.446	3.085	0.582
		lbf.in/arcmin	0.67	1.5	0.23	2.9	6.4	1.3	8.5	25	3.6	13	27	5.2
Dynamic torsional rigidity (at TB)	C_{Tdyn}	Nm/arcmin	0.157	0.48	0.065	0.739	1.292	0.255	2.31	3.463	0.603	3.899	8.526	1.045
		lbf.in/arcmin	1.4	4.2	0.58	6.5	11	2.3	20	31	5.3	35	75	9.2
Mass moment of inertia	J	kgcm ²	0.08			0.3			1			2		
		lbf.in.s ²	0.07			0.27			0.89			1.8		
Weight	m	kg	0.08			0.12			0.3			0.5		
		lb	0.18			0.26			0.66			1.1		

Dimensions

Total length	L_1	mm	42	56	64	76
		in	1.7	2.2	2.5	3
Fitting length	L_2	mm	15	20	23	28.5
		in	0.59	0.79	0.91	1.1
Inner diameter input (Tolerance H7)	D_1	mm	6 - 16	8 - 24	12 - 32	19 - 35
		in	0.24 - 0.63	0.31 - 0.94	0.47 - 1.3	0.75 - 1.4
Inner diameter output (Tolerance H7)	D_2	mm	6 - 16	8 - 24	12 - 32	19 - 35
		in	0.24 - 0.63	0.31 - 0.94	0.47 - 1.3	0.75 - 1.4
Outer diameter hub	D_3	mm	32	43	56	66.5
		in	1.3	1.7	2.2	2.6
Mounting screws (ISO 4762 / 12.9)			3x M3	6x M4	4x M5	8x M5
Inner diameter elastomer insert	D_7	mm	14.2	19.2	26.2	29.2
		in	0.56	0.76	1	1.1

a) Performance reduction possible with small clamping hub diameters: Technical data available on request



Size			300			450			800		
Hardness elastomer insert			A	B	C	A	B	C	A	B	C
Nominal torque	T_N	Nm	325	405	84	530	660	95	950	1100	240
		lbf.in	2877	3585	743	4691	5842	841	8408	9736	2124
Max. acceleration torque ^{a)} (max. 1000 cycles per hour)	T_B	Nm	585	729	151.2	954	1188	171	1710	1980	400
		lbf.in	5178	6452	1338	8444	10515	1513	15135	17525	3540
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	650	810	170	1060	1350	190	1900	2150	400
		lbf.in	5753	7169	1505	9382	11949	1682	16817	19029	3540
Max. speed	n_{Max}	rpm	10000			9000			4000		
		mm	2			2			2		
Axial misalignment	\pm	in	0.079			0.079			0.079		
		$^\circ$	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2
Angular misalignment	\pm	mm	0.18	0.14	0.35	0.2	0.18	0.35	0.25	0.2	0.4
		in	0.007	0.006	0.014	0.008	0.007	0.014	0.01	0.008	0.016
Lateral misalignment	\pm	Nm/arcmin	3.608	5.238	0.873	4.394	7.857	1.199	12.018	19.229	3.003
		lbf.in/arcmin	32	46	7.7	39	70	11	106	170	27
Static torsional rigidity (at 50 % TB)	C_{Tstat}	Nm/arcmin	6.897	11.756	1.772	16.121	23.629	3.376	24.037	52.424	8.323
		lbf.in/arcmin	61	104	16	143	209	30	213	464	74
Dynamic torsional rigidity (at TB)	C_{Tdyn}	kgcm ²	6			17			184		
		lbf.in.s ²	5.3			15			163		
Mass moment of inertia	J	kg	0.9			1.5			9.6		
		lb	2			3.3			21		
Weight	m	kg	0.9			1.5			9.6		
		lb	2			3.3			21		

Dimensions

Total length	L_1	mm	96			110			138		
		in	3.8			4.3			5.4		
Fitting length	L_2	mm	36			42			53.5		
		in	1.4			1.7			2.1		
Inner diameter input (Tolerance H7)	D_1	mm	20 - 45			28 - 55			32 - 80		
		in	0.79 - 1.8			1.1 - 2.2			1.3 - 3.1		
Inner diameter output (Tolerance H7)	D_2	mm	20 - 45			28 - 55			32 - 80		
		in	0.79 - 1.8			1.1 - 2.2			1.3 - 3.1		
Outer diameter hub	D_3	mm	82			102			136.5		
		in	3.2			4			5.4		
Mounting screws (ISO 4762 / 12.9)			8x M6			8x M8			8x M10		
Inner diameter elastomer insert	D_7	mm	36.2			46.2			60.5		
		in	1.4			1.8			2.4		

a) Performance reduction possible with small clamping hub diameters: Technical data available on request

Elastomer coupling EL6



For the ordering code, please refer to page 72

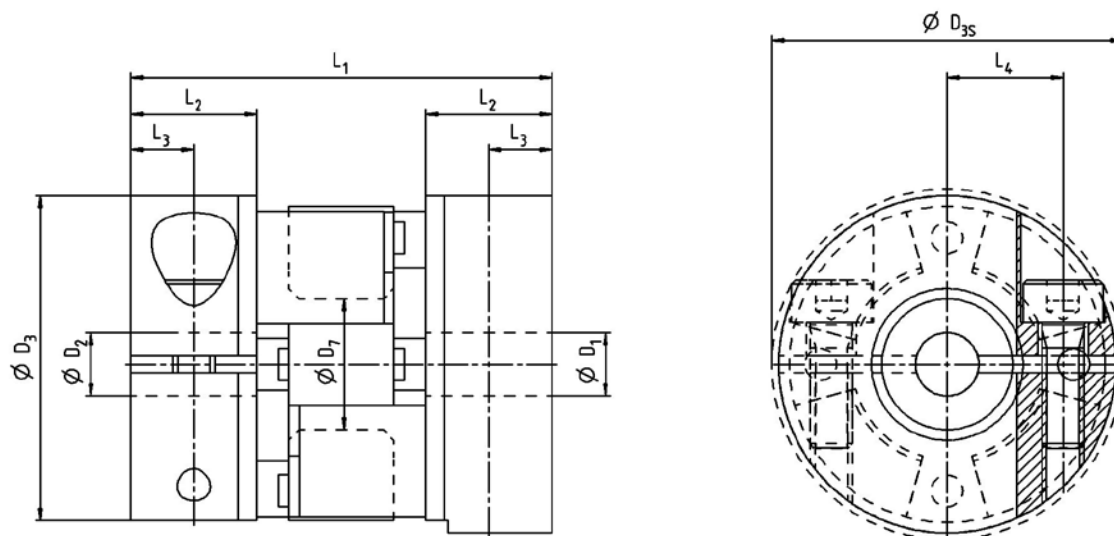
ELC Elastomer coupling / compact with clamping hub

Size		2			5			10			20			60			
Hardness elastomer insert		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
Nominal torque	T_N	Nm	2	2.4	0.5	9	12	2	12.5	16	4	17	21	6	60	75	20
		lbf.in	18	21	4.4	80	106	18	111	142	35	150	186	53	531	664	177
Max. acceleration torque ^{a)} (max. 1000 cycles per hour)	T_B	Nm	3.6	4.32	0.9	16.2	21.6	3.6	22.5	28.8	6	30.6	37.8	10.8	108	135	35
		lbf.in	32	38	8	143	191	32	199	255	53	271	335	96	956	1195	310
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	4	4.8	1	18	24	4	25	32	6	34	42	12	120	150	35
		lbf.in	35	42	8.9	159	212	35	221	283	53	301	372	106	1062	1328	310
Max. speed	n_{Max}	rpm	15000			15000			13000			12500			11000		
Axial misalignment	\pm	mm	1			1			1			2			2		
		in	0.039			0.039			0.039			0.079			0.079		
Angular misalignment	\pm	$^\circ$	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
Lateral misalignment	\pm	mm	0.08	0.06	0.2	0.08	0.06	0.2	0.1	0.08	0.22	0.1	0.08	0.25	0.12	0.1	0.25
		in	0.003	0.002	0.008	0.003	0.002	0.008	0.004	0.003	0.009	0.004	0.003	0.01	0.005	0.004	0.01
Static torsional rigidity (at 50 % TB)	C_{Tstat}	Nm/arcmin	0.015	0.033	0.005	0.044	0.102	0.015	0.076	0.175	0.026	0.332	0.728	0.151	0.957	2.837	0.407
		lbf.in/arcmin	0.13	0.29	0.04	0.39	0.9	0.13	0.67	1.5	0.23	2.9	6.4	1.3	8.5	25	3.6
Dynamic torsional rigidity (at TB)	C_{Tdyn}	Nm/arcmin	0.029	0.067	0.01	0.087	0.204	0.031	0.157	0.48	0.065	0.739	1.292	0.255	2.31	3.463	0.603
		lbf.in/arcmin	0.26	0.59	0.09	0.77	1.8	0.27	1.4	4.2	0.58	6.5	11	2.3	20	31	5.3
Mass moment of inertia	J	kgcm ²	0.006			0.04			0.06			0.2			0.8		
		lbf.in.s ²	0.01			0.04			0.05			0.18			0.71		
Weight	m	kg	0.008			0.02			0.05			0.12			0.3		
		lb	0.02			0.04			0.11			0.26			0.66		

Dimensions

Total length	L_1	mm	20		26		32		50		58	
		in	0.79		1		1.3		2		2.3	
Fitting length	L_2	mm	6		8		10.3		17		20	
		in	0.24		0.31		0.41		0.67		0.79	
Distance	L_3	mm	3		4		5		8.5		10	
		in	0.12		0.16		0.2		0.33		0.39	
Centre distance	L_4	mm	5.5		8		10.5		15.5		21	
		in	0.22		0.31		0.41		0.61		0.83	
Inner diameter input (Tolerance H7)	D_1	mm	3 - 8		4 - 12.7		4 - 16		8 - 25		12 - 32	
		in	0.12 - 0.31		0.16 - 0.5		0.16 - 0.63		0.31 - 0.98		0.47 - 1.3	
Inner diameter output (Tolerance H7)	D_2	mm	3 - 8		4 - 12.7		4 - 16		8 - 25		12 - 32	
		in	0.12 - 0.31		0.16 - 0.5		0.16 - 0.63		0.31 - 0.98		0.47 - 1.3	
Outer diameter hub	D_3	mm	16		25		32		42		56	
		in	0.63		0.98		1.3		1.7		2.2	
Outer diameter with screw head	D_{3S}	mm	17		25.5		32		44.5		57	
		in	0.67		1		1.3		1.8		2.2	
Inner diameter elastomer insert	D_7	mm	6.2		10.2		14.2		19.2		26.2	
		in	0.24		0.4		0.56		0.76		1	

a) Performance reduction possible with small clamping hub diameters: Technical data available on request



Size		150			300			450			800			
Hardness elastomer insert		A	B	C	A	B	C	A	B	C	A	B	C	
Nominal torque	T_N	Nm	160	200	42	325	405	84	530	660	95	950	1100	240
		lbf.in	1416	1770	372	2877	3585	743	4691	5842	841	8408	9736	2124
Max. acceleration torque ^{a)} (max. 1000 cycles per hour)	T_B	Nm	288	360	75.6	585	729	151.2	954	1188	171	1710	1980	400
		lbf.in	2549	3186	669	5178	6452	1338	8444	10515	1513	15135	17525	3540
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	320	400	85	650	810	170	1060	1350	190	1900	2150	400
		lbf.in	2832	3540	752	5753	7169	1505	9382	11949	1682	16817	19029	3540
Max. speed	n_{Max}	rpm	10000			9000			8000			4000		
Axial misalignment	\pm	mm	2			2			2			2		
		in	0.079			0.079			0.079			0.079		
Angular misalignment	\pm	$^\circ$	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2	1	0.8	1.2
Lateral misalignment	\pm	mm	0.15	0.12	0.3	0.18	0.14	0.35	0.2	0.18	0.35	0.25	0.2	0.4
		in	0.006	0.005	0.012	0.007	0.006	0.014	0.008	0.007	0.014	0.01	0.008	0.016
Static torsional rigidity (at 50 % TB)	C_{Tstat}	Nm/arcmin	1.446	3.085	0.582	3.608	5.238	0.873	4.394	7.857	1.199	12.018	19.229	3.003
		lbf.in/arcmin	13	27	5.2	32	46	7.7	39	70	11	106	170	27
Dynamic torsional rigidity (at TB)	C_{Tdyn}	Nm/arcmin	3.899	8.526	1.045	6.897	11.756	1.772	16.121	23.629	3.376	24.037	52.424	8.323
		lbf.in/arcmin	35	75	9.2	61	104	16	143	209	30	213	464	74
Mass moment of inertia	J	kgcm ²	1.6			6			13.2			160		
		lbf.in.s ²	1.4			5.3			12			142		
Weight	m	kg	0.5			0.9			1.5			8.5		
		lb	1.1			2			3.3			19		

Dimensions

Total length	L_1	mm	62			86			94			123		
		in	2.4			3.4			3.7			4.8		
Fitting length	L_2	mm	21			31			34			46		
		in	0.83			1.2			1.3			1.8		
Distance	L_3	mm	11			15			17			23		
		in	0.43			0.59			0.67			0.91		
Centre distance	L_4	mm	24			29			38			50.5		
		in	0.94			1.1			1.5			2		
Inner diameter input (Tolerance H7)	D_1	mm	19 - 36			20 - 45			28 - 60			35 - 80		
		in	0.75 - 1.4			0.79 - 1.8			1.1 - 2.4			1.4 - 3.1		
Inner diameter output (Tolerance H7)	D_2	mm	19 - 36			20 - 45			28 - 60			35 - 80		
		in	0.75 - 1.4			0.79 - 1.8			1.1 - 2.4			1.4 - 3.1		
Outer diameter hub	D_3	mm	66.5			82			102			136.5		
		in	2.6			3.2			4			5.4		
Outer diameter with screw head	D_{3S}	mm	68			85			105			139.5		
		in	2.7			3.3			4.1			5.5		
Inner diameter elastomer insert	D_7	mm	29.2			36.2			46.2			60.5		
		in	1.1			1.4			1.8			2.4		

a) Performance reduction possible with small clamping hub diameters: Technical data available on request

Elastomer coupling ELC



For the ordering code, please refer to page 72

ELT Elastomer coupling / flange

Size			20	60	150
Hardness elastomer insert			B	B	B
Nominal torque	T_N	Nm	7.8	31	69
		lbf.in	69	270	615
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	14	55	125
		lbf.in	124	487	1106
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	26	75	190
		lbf.in	230	664	1682
Max. speed	n_{Max}	rpm	10000	10000	8000
Axial misalignment	\pm	mm	2	2	2
		in	0.079	0.079	0.079
Angular misalignment	\pm	°	0.8	0.8	0.8
		mm	0.08	0.1	0.12
Lateral misalignment	\pm	in	0.003	0.004	0.005
		Nm/arcmin	0.73	2.84	3.08
Static torsional rigidity (at 50 % TB)	C_{Tstat}	lbf.in/arcmin	6.5	25	27
		Nm/arcmin	1.29	3.46	8.53
Dynamic torsional rigidity (at TB)	C_{Tdyn}	lbf.in/arcmin	11	31	75
		kgcm ²	0.28	1.1	2.4
Mass moment of inertia	J	lbf.in.s ²	0.25	0.98	2.1
		kg	0.11	0.24	0.37
Weight	m	lb	0.24	0.53	0.82

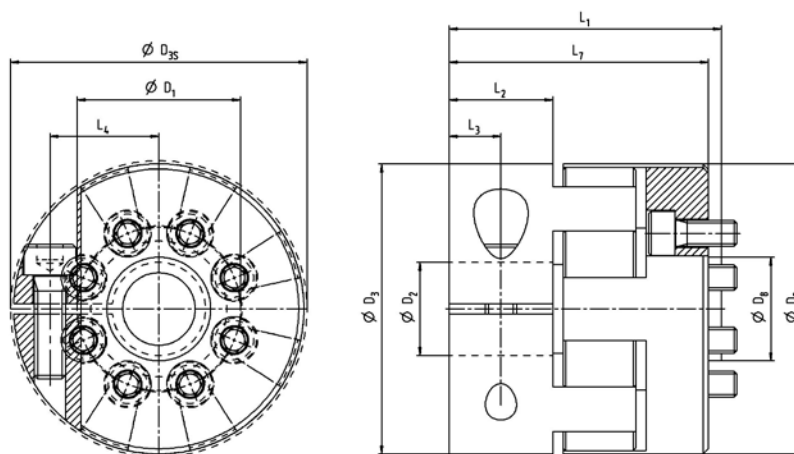
Mountable to

NPT, NPTK	005	015	025
Gearbox model	MF	MF / MA	MF / MA

Dimensions

Total length (Tolerance ± 2)	L_1	mm	44	52.5	57
		in	1.7	2.1	2.2
Fitting length	L_2	mm	17	20	21
		in	0.67	0.79	0.83
Distance	L_3	mm	8.5	10	11
		in	0.33	0.39	0.43
Centre distance	L_4	mm	15.5	21	24
		in	0.61	0.83	0.94
Length of mounting space (Tolerance ± 2)	L_7	mm	42	50	54
		in	1.7	2	2.1
Pitch circle input ^{a)}	D_1	mm	25	31.5	50
		in	0.98	1.2	2
Mounting screws (ISO 4762 / 12.9) (input)			4 x M4	8 x M5	8 x M6
Inner diameter output (Tolerance H7)	D_2	mm	8 - 25	18 - 32	24 - 36
		in	0.31 - 0.98	0.71 - 1.3	0.94 - 1.4
Outer diameter hub	D_3	mm	42	56	66.5
		in	1.7	2.2	2.6
Outer diameter with screw head	D_{3S}	mm	44.5	57	68
		in	1.8	2.2	2.7
Outer diameter flange (Tolerance -0,2)	D_5	mm	42	56	66.5
		in	1.7	2.2	2.6
Inner diameter elastomer insert	D_7	mm	19.2	26.2	29.2
		in	0.76	1	1.1
Centering diameter (Tolerance h7)	D_8	mm	16	20	31.5
		in	0.63	0.79	1.2

a) Screws contained in scope of delivery



Size			300	450
Hardness elastomer insert			B	B
Nominal torque	T_N	Nm	169	278
		lbf.in	1500	2459
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	305	500
		lbf.in	2699	4425
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	480	1000
		lbf.in	4248	8851
Max. speed	n_{Max}	rpm	7000	6000
Axial misalignment	\pm	mm	2	2
		in	0.079	0.079
Angular misalignment	\pm	°	0.8	0.8
Lateral misalignment	\pm	mm	0.14	0.18
		in	0.006	0.007
Static torsional rigidity (at 50 % TB)	C_{Tstat}	Nm/arcmin	5.24	7.86
		lbf.in/arcmin	46	70
Dynamic torsional rigidity (at TB)	C_{Tdyn}	Nm/arcmin	11.76	23.63
		lbf.in/arcmin	104	209
Mass moment of inertia	J	kgcm ²	6.7	16.3
		lbf.in.s ²	5.9	14
Weight	m	kg	0.67	1.15
		lb	1.5	2.5

Mountable to

NPT, NPTK	035	045
Gearbox model	MF / MA	MF

Dimensions

Total length (Tolerance ± 2)	L_1	mm	72	82
		in	2.8	3.2
Fitting length	L_2	mm	31	34
		in	1.2	1.3
Distance	L_3	mm	15	17.5
		in	0.59	0.69
Centre distance	L_4	mm	29	38
		in	1.1	1.5
Length of mounting space (Tolerance ± 2)	L_7	mm	68	78
		in	2.7	3.1
Pitch circle input ^{a)}	D_1	mm	63	80
		in	2.5	3.1
Mounting screws (ISO 4762 / 12.9) (input)			10 x M6	8 x M8
Inner diameter output (Tolerance H7)	D_2	mm	35 - 45	42 - 60
		in	1.4 - 1.8	1.7 - 2.4
Outer diameter hub	D_3	mm	82	102
		in	3.2	4
Outer diameter with screw head	D_{3S}	mm	85	105
		in	3.3	4.1
Outer diameter flange (Tolerance -0,2)	D_5	mm	82	102
		in	3.2	4
Inner diameter elastomer insert	D_7	mm	36.2	46.2
		in	1.4	1.8
Centering diameter (Tolerance h7)	D_8	mm	40	50
		in	1.6	2

a) Screws contained in scope of delivery

Elastomer coupling ELT



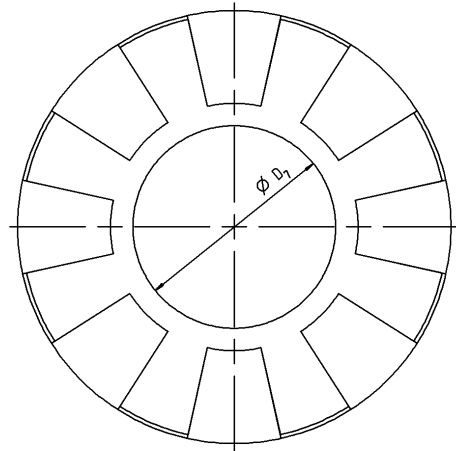
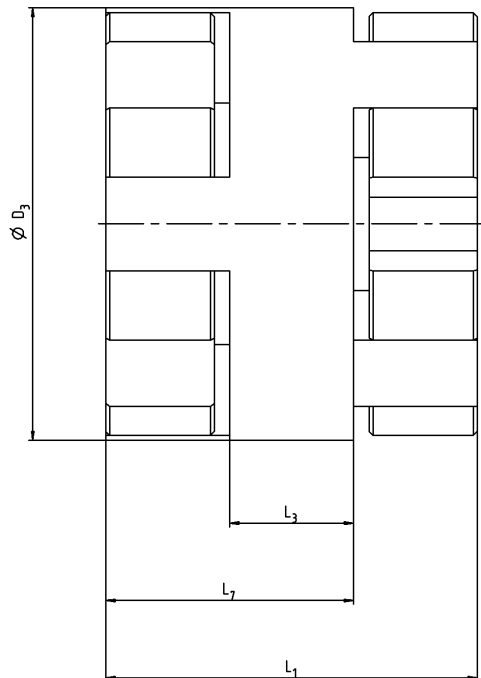
For the ordering code, please refer to page 73

ECS Elastomer coupling / intermediate spacer

Size			2			5			10			20		
Hardness elastomer insert			A	B	C	A	B	C	A	B	C	A	B	C
Nominal torque	T_N	Nm	2.0	2.4	0.50	9.0	12	2.0	13	16	4.0	17	21	6.0
		lbf.in	18	21	4.4	80	106	18	111	142	35	150	186	53
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	3.6	4.3	0.90	16	22	3.6	23	29	6.0	31	38	11
		lbf.in	32	38	8	143	191	32	199	255	53	271	335	96
Max. speed	n_{Max}	rpm	15000			15000			13000			12500		
Mass moment of inertia	J	kgcm ²	0.001			0.005			0.02			0.08		
		lbf.in.s ²	0			0			0.02			0.07		
Weight	m	kg	0.007			0.02			0.04			0.09		
		lb	0.02			0.04			0.09			0.2		

Dimensions

Total length	L_1	mm	20	26	30	39
		in	0.79	1	1.2	1.5
Distance	L_9	mm	9	9	9	10
		in	0.35	0.35	0.35	0.39
Length of mounting space (Tolerance ± 2)	L_7	mm	14.5	17.5	19.5	24.5
		in	0.57	0.69	0.77	0.96
Outer diameter hub	D_3	mm	16	25	32	42
		in	0.63	0.98	1.3	1.7
Inner diameter elastomer insert	D_7	mm	6.2	10.2	14.2	19.2
		in	0.24	0.4	0.56	0.76

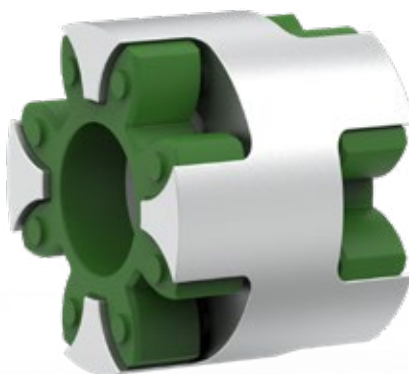


Size			60			150			300			450			800		
Hardness elastomer insert			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Nominal torque	T_N	Nm	60	75	20	160	200	42	325	405	84	530	660	95	950	1100	240
		lbf.in	531	664	177	1416	1770	372	2877	3585	743	4691	5842	841	8408	9736	2124
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	108	135	35	288	360	76	585	729	151	954	1188	171	1710	1980	400
		lbf.in	956	1195	310	2549	3186	669	5178	6452	1338	8444	10515	1513	15135	17525	3540
Max. speed	n_{Max}	rpm	11000			10000			9000			8000			4000		
Mass moment of inertia	J	kgcm ²	0.30			0.50			1.0			6.0			11		
		lbf.in.s ²	0.27			0.44			0.89			5.3			9.8		
Weight	m	kg	0.21			0.33			0.58			1.4			2.1		
		lb	0.46			0.73			1.3			3			4.6		

Dimensions

Total length	L_1	mm	48			53			62			86			81		
		in	1.9			2.1			2.4			3.4			3.2		
Distance	L_9	mm	16			18			20			40			25		
		in	0.63			0.71			0.79			1.6			0.98		
Length of mounting space (Tolerance ± 2)	L_7	mm	32.0			35.5			41			63			53		
		in	1.3			1.4			1.6			2.5			2.1		
Outer diameter hub	D_3	mm	56			66.5			82			102			136.5		
		in	2.2			2.6			3.2			4			5.4		
Inner diameter elastomer insert	D_7	mm	26.2			29.2			36.2			46.2			60.5		
		in	1			1.1			1.4			1.8			2.4		

Elastomer coupling ECS



For the ordering code, please refer to page 73

Metal bellows couplings

Torsionally rigid, reliable, for dynamic applications

Metal bellows couplings mainly consist of two components: The stainless steel metal bellows and the hubs. Depending on the application, the hubs can be designed as flange, expanding mandrel, clamping hub or as cone clamping set. Aluminum, steel or stainless steel can be used as hub material. The core element of the coupling is the metal bellows. The stainless steel metal bellows transfers the rotational motion of the coupling and compensates any design-related misalignment, such as lateral, axial and angular shaft misalignment with low restoring forces. Low-backlash, torsionally rigid metal bellows couplings guarantee an accurate positioning. However, the vibration damping is not as pronounced as it is with elastomer couplings.

PRODUCT HIGHLIGHTS

High positioning accuracy and torsional rigidity

thanks to the thin-walled metal bellows, which also compensate smaller misalignments.

Backlash-free

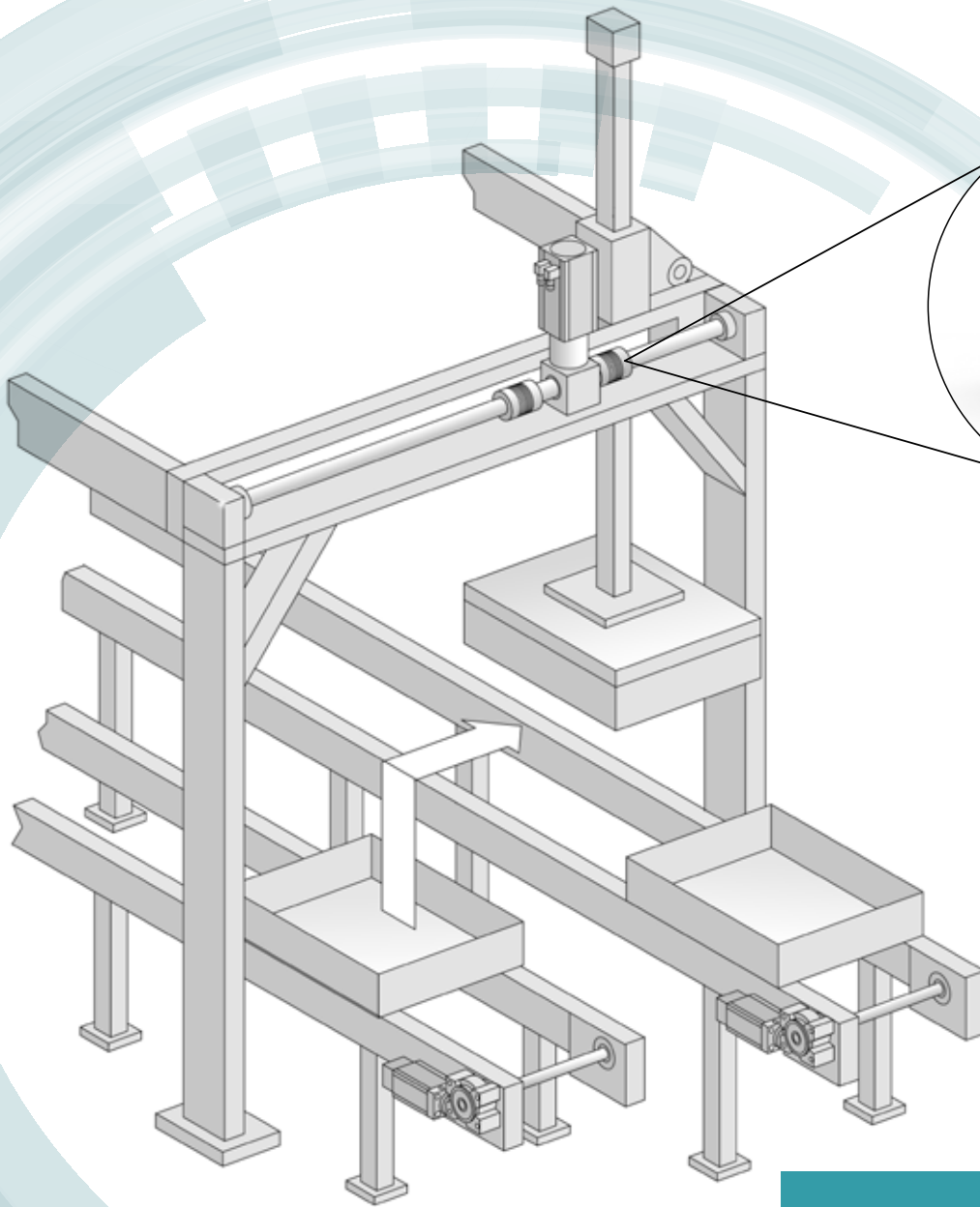
thanks to the accurately manufactured components and comprehensive testing.

Durable and maintenance-free for their entire service life

thanks to precisely manufactured components.



	Bellows material	Hub material	Permitted temperature range
BC2	Highly elastic stainless steel	High-strength aluminum, as of size 150: Steel	-30 to +100° C, as of size 800: -30 to +300° C
BC3	Highly elastic stainless steel	Steel	-30 to +100° C, as of size 800: -30 to +300° C
BCL	Highly elastic stainless steel	High-strength aluminum, as of size 150: Steel	-30 to +100° C
BCH	Highly elastic stainless steel	High-strength aluminum, as of size 150: Steel	-30 to +100° C, as of size 800: -30 to +300° C
BCT	Highly elastic stainless steel	High-strength aluminum, as of size 1500: Steel	-30 to +100° C, as of size 1500: -30 to +300° C
BCT HT	Highly elastic stainless steel	Steel	-30 to +300° C



Function

Handling systems support the placement of workpieces or products from one manufacturing step to another automatically, significantly increasing productivity and quality. To ensure the highest quality performance, it is essential that the processes are implemented precisely and consistently, to ensure torques are transmitted without any backlash.

Thanks to their great torsional rigidity, metal bellows couplings support the transmission of movements without any backlash and, if applicable, compensate production-related misalignments and light shocks. Thanks to their robust design, they are maintenance-free.

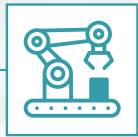


Application

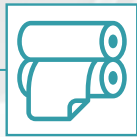
Example applications



Machine tools



Automation



Printing presses



Packaging machines



General mechanical engineering



Benefits

Transmission of torques without backlash thanks to the high torsional rigidity.

Minimal installation space required thanks to the very compact design.

High rotational speeds possible thanks to low moments of inertia.

Properties

Dimensional accuracy thanks to the use of highly elastic stainless steel bellows.

Compensation of external impacts, such as temperature differences and misalignment due to the assembly.

Extremely smooth running thanks to the high true-running accuracy and symmetric components.

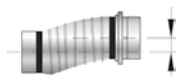
Compensation of misalignments due to assembly



Axial



Angular



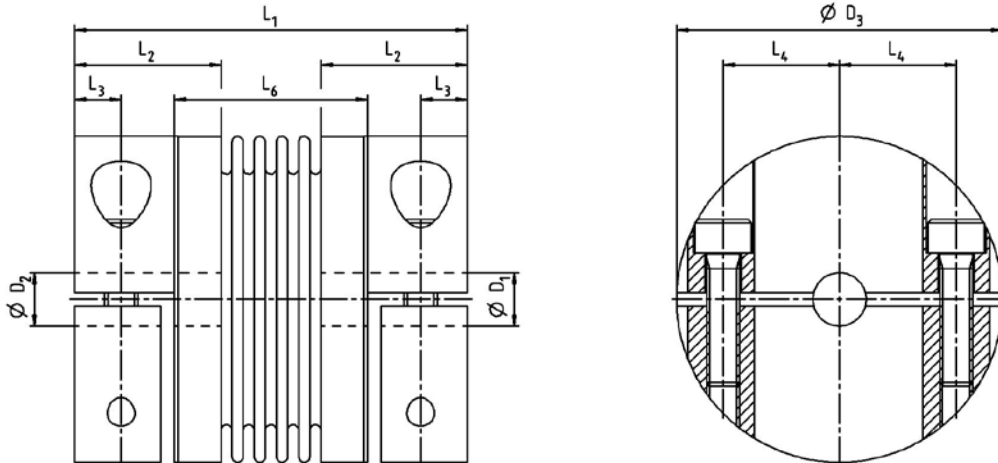
Lateral

BCH Metal bellows coupling / split clamping hub

Size			15		30		60		80		150	
Overall length			A	B	A	B	A	B	A	B	A	B
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	15		30		60		80		150	
		lbf.in	133		266		531		708		1328	
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	22.5		45		90		120		225	
		lbf.in	199		398		797		1062		1991	
Max. speed	n_{Max}	rpm	10000									
Axial misalignment	±	mm	1	2	1	2	1.5	2	2	3	2	3
		in	0.039	0.079	0.039	0.079	0.059	0.079	0.079	0.118	0.079	0.118
Angular misalignment	±	°	1	1.5	1	1.5	1	1.5	1	1.5	1	1.5
Lateral misalignment	±	mm	0.15	0.2	0.2	0.25	0.2	0.25	0.2	0.25	0.2	0.25
		in	0.006	0.008	0.008	0.01	0.008	0.01	0.008	0.01	0.008	0.01
Axial spring rigidity	C_a	N/mm	25	15	50	30	72	48	48	32	82	52
		lbf/in	143	86	286	171	411	274	274	183	468	297
Lateral spring rigidity	C_l	N/mm	475	137	900	270	1200	420	920	290	1550	435
		lbf/in	2712	782	5139	1542	6852	2398	5253	1656	8851	2484
Torsional rigidity	C_T	Nm/arcmin	5.8	4.4	11	8.1	22	16	38	25	51	32
		lbf.in/arcmin	51	39	97	72	195	142	336	221	451	283
Mass moment of inertia	J	kgcm ²	0.7	0.8	1.4	1.5	2.3	2.6	6.5	6.7	25	32
		lbf.in.s ²	0.62	0.71	1.2	1.3	2	2.3	5.8	5.9	22	28
Weight	m	kg	0.15		0.3		0.4		0.8		1.7	
		lb	0.33		0.66		0.88		1.8		3.7	

Dimensions

Total length (Tolerance -2)	L_1	mm	59	66	69	77	83	93	94	106	95	107
		in	2.3	2.6	2.7	3	3.3	3.7	3.7	4.2	3.7	4.2
Fitting length	L_2	mm	22		26.5		31		35.5		35.5	
		in	0.87		1		1.2		1.4		1.4	
Distance	L_3	mm	7		7.5		9.5		12		12	
		in	0.28		0.3		0.37		0.47		0.47	
Centre distance	L_4	mm	17.5		19		23		27		27	
		in	0.69		0.75		0.91		1.1		1.1	
Insert length (Tolerance -2)	L_6	mm	29	36	35	43	41	51	47	59	48	60
		in	1.1	1.4	1.4	1.7	1.6	2	1.9	2.3	1.9	2.4
Inner diameter input (Tolerance H7)	D_1	mm	8 - 28		10 - 30		12 - 35		14 - 42		19 - 42	
		in	0.31 - 1.1		0.39 - 1.2		0.47 - 1.4		0.55 - 1.7		0.75 - 1.7	
Inner diameter output (Tolerance H7)	D_2	mm	8 - 28		10 - 30		12 - 35		14 - 42		19 - 42	
		in	0.31 - 1.1		0.39 - 1.2		0.47 - 1.4		0.55 - 1.7		0.75 - 1.7	
Outer diameter hub	D_3	mm	49		55		66		81		81	
		in	1.9		2.2		2.6		3.2		3.2	

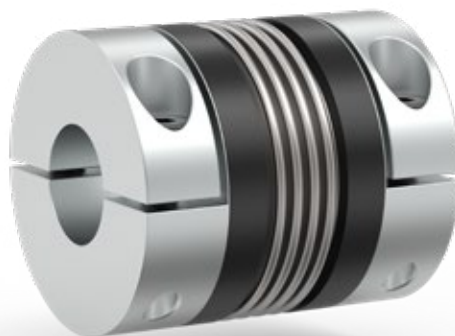


Size			200		300		500		800	1500	4000
Overall length			A	B	A	B	A	B	A	A	A
Max. acceleration torque (max. 1000 cycles per hour)	T _B	Nm	200		300		500		800	1500	4000
		lbf.in	1770		2655		4425		7081	13276	35403
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T _{Not}	Nm	300		450		750		1200	2250	6000
		lbf.in	2655		3983		6638		10621	19914	53105
Max. speed	n _{Max}	rpm	10000								
Axial misalignment	±	mm	2	3	2.5	3.5	2.5	3.5	3.5	3.5	3.5
		in	0.079	0.118	0.098	0.138	0.098	0.138	0.138	0.138	0.138
Angular misalignment	±	°	1	1.5	1	1.5	1	1.5	1.5	1.5	1.5
Lateral misalignment	±	mm	0.25	0.3	0.25	0.3	0.3	0.35	0.35	0.35	0.4
		in	0.01	0.012	0.01	0.012	0.012	0.014	0.014	0.014	0.016
Axial spring rigidity	C _a	N/mm	90	60	105	71	70	48	100	320	565
		lbf/in	514	343	600	405	400	274	571	1827	3226
Lateral spring rigidity	C _l	N/mm	2040	610	3750	1050	2500	840	2000	3600	6070
		lbf/in	11648	3483	21413	5996	14275	4796	11420	20556	34660
Torsional rigidity	C _T	Nm/arcmin	56	41	131	102	148	146	227	379	989
		lbf.in/arcmin	496	363	1159	903	1310	1292	2009	3354	8753
Mass moment of inertia	J	kgcm ²	45	54	85	105	173	196	243	492	1650
		lbf.in.s ²	40	48	75	93	153	174	215	436	1463
Weight	m	kg	2.5		4		7.5		7	12	28
		lb	5.5		8.8		17		15	26	62

Dimensions

Total length (Tolerance -2)	L ₁	mm	104	116	111	125	132	146	141	167	229
		in	4.1	4.6	4.4	4.9	5.2	5.7	5.6	6.6	9
Fitting length	L ₂	mm	40.5		42.5		50.5		45	55.5	85
		in	1.6		1.7		2		1.8	2.2	3.3
Distance	L ₃	mm	12.5		14		16.5		17.5	22.5	28.5
		in	0.49		0.55		0.65		0.69	0.89	1.1
Centre distance	L ₄	mm	30.5		39		41		48	55	65
		in	1.2		1.5		1.6		1.9	2.2	2.6
Insert length (Tolerance -2)	L ₆	mm	51	62	55	69	61	75	66	71	109
		in	2	2.4	2.2	2.7	2.4	3	2.6	2.8	4.3
Inner diameter input (Tolerance H7)	D ₁	mm	22 - 45		24 - 60		35 - 60		40 - 75	50 - 80	50 - 90
		in	0.87 - 1.8		0.94 - 2.4		1.4 - 2.4		1.6 - 3	2 - 3.1	2 - 3.5
Inner diameter output (Tolerance H7)	D ₂	mm	22 - 45		24 - 60		35 - 60		40 - 75	50 - 80	50 - 90
		in	0.87 - 1.8		0.94 - 2.4		1.4 - 2.4		1.6 - 3	2 - 3.1	2 - 3.5
Outer diameter hub	D ₃	mm	90		110		124		133	157	200
		in	3.5		4.3		4.9		5.2	6.2	7.9

Metal bellows couplings BCH



For the ordering code, please refer to page 74

BCT Metal bellows coupling / standard

Size			15	60	150
Overall length			A	A	A
Max. acceleration torque ^{a)} (max. 1000 cycles per hour)	T _B	Nm	50	210	380
		lbf.in	443	1859	3363
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T _{Not}	Nm	75	315	570
		lbf.in	664	2788	5045
Max. speed	n _{Max}	rpm		6000	
Axial misalignment	±	mm	1	1.5	2
		in	0.039	0.059	0.079
Angular misalignment	±	°	1	1	1
Lateral misalignment	±	mm	0.25	0.25	0.25
		in	0.01	0.01	0.01
Axial spring rigidity	C _a	N/mm	30	67	77
		lbf/in	171	383	440
Lateral spring rigidity	C _l	N/mm	315	679	960
		lbf/in	1799	3877	5482
Torsional rigidity	C _T	Nm/arcmin	6.7	21	41
		lbf.in/arcmin	59	186	363
Mass moment of inertia	J	kgcm ²	1.5	6.5	13
		lbf.in.s ²	1.3	5.8	12
Weight	m	kg	0.3	0.7	1
		lb	0.66	1.5	2.2

Dimensions

Total length (Tolerance -2)	L ₁	mm	51.5	72.5	77.5
		in	2	2.9	3.1
Fitting length	L ₂	mm	16.5	23	27.5
		in	0.65	0.91	1.1
Distance	L ₃	mm	6.5	9.5	11
		in	0.26	0.37	0.43
Centre distance	L ₄	mm	1 x 17.5	1 x 23.5	1 x 27
		in	1 x 0.69	1 x 0.93	1 x 1.1
Length of mounting space (Tolerance -2)	L ₇	mm	48.5	67	71.5
		in	1.9	2.6	2.8
Pitch circle input ^{c)}	D ₁	mm	31.5	50	63
		in	1.2	2	2.5
Mounting screws (ISO 4017 / 10.9) (input)			8 x M5	8 x M6	12 x M6
Inner diameter output (Tolerance H7)	D ₂	mm	12 - 28	14 - 35	19 - 42
		in	0.47 - 1.1	0.55 - 1.4	0.75 - 1.7
Outer diameter hub	D ₃	mm	49	66	82
		in	1.9	2.6	3.2
Outer diameter flange (Tolerance -0,2)	D ₅	mm	63.5	86.5	108
		in	2.5	3.4	4.3
Pitch circle intermediate flange ^{b)}	D ₆	mm	56.5	76	97
		in	2.2	3	3.8
Mounting screws (ISO 4762 / 12.9) (Intermediate flange)			10 x M4	10 x M5	10 x M6

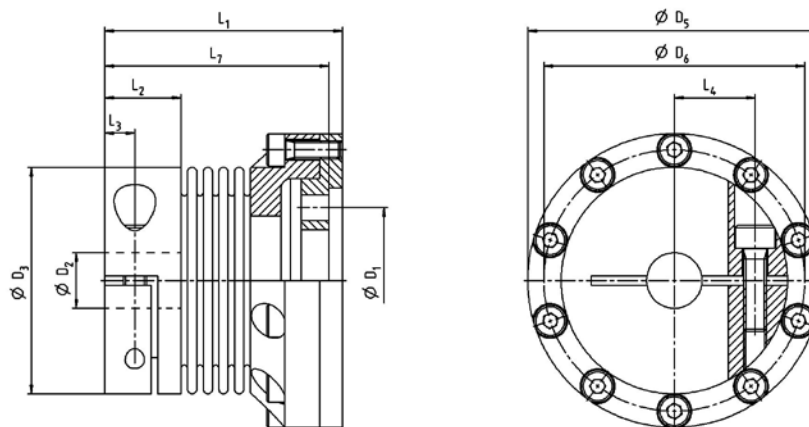
Mountable to

TP ⁺ , TK ⁺ , TPC ⁺ , TPM ⁺ DYNAMIC, TPM ⁺ POWER	004	010	025
TPK ⁺	-	010	025
VT ⁺	-	050	063
premo [®] TP Line	1	2	3

a) Performance reduction possible with small clamping hub diameters: Technical data available on request

b) Intermediate flange incl. screws contained in scope of delivery

c) Screws contained in scope of delivery



Size			300	1500
Overall length			A	A
Max. acceleration torque ^{a)} (max. 1000 cycles per hour)	T _B	Nm	750	2600
		lbf.in	6638	23012
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T _{Not}	Nm	1125	3900
		lbf.in	9957	34518
Max. speed	n _{Max}	rpm	6000	
Axial misalignment	±	mm	2.5	3
		in	0.098	0.118
Angular misalignment	±	°	1	1
Lateral misalignment	±	mm	0.25	0.25
		in	0.01	0.01
Axial spring rigidity	C _a	N/mm	112	320
		lbf/in	640	1827
Lateral spring rigidity	C _l	N/mm	2940	3600
		lbf/in	16787	20556
Torsional rigidity	C _T	Nm/arcmin	45.7	379
		lbf.in/arcmin	404	3354
Mass moment of inertia	J	kgcm ²	55	450
		lbf.in.s ²	49	399
Weight	m	kg	2.8	10
		lb	6.2	22

Dimensions

Total length (Tolerance -2)	L ₁	mm	95.5	148.5
		in	3.8	5.8
Fitting length	L ₂	mm	34	55.5
		in	1.3	2.2
Distance	L ₃	mm	12.5	22.5
		in	0.49	0.89
Centre distance	L ₄	mm	1 x 39	2 x 55
		in	1 x 1.5	2 x 2.2
Length of mounting space (Tolerance -2)	L ₇	mm	89	141
		in	3.5	5.6
Pitch circle input ^{c)}	D ₁	mm	80	125
		in	3.1	4.9
Mounting screws (ISO 4017 / 10.9) (input)			12 x M8	12 x M10
Inner diameter output (Tolerance H7)	D ₂	mm	24 - 60	50 - 80
		in	0.94 - 2.4	2 - 3.1
Outer diameter hub	D ₃	mm	110	157
		in	4.3	6.2
Outer diameter flange (Tolerance -0,2)	D ₅	mm	132	188.5
		in	5.2	7.4
Pitch circle intermediate flange ^{b)}	D ₆	mm	120	170.5
		in	4.7	6.7
Mounting screws (ISO 4762 / 12.9) (Intermediate flange)			12 x M6	16 x M8

Mountable to

TP*, TK*, TPC*, TPM* DYNAMIC, TPM* POWER	050	110
TPK*	050	110
VT*	080	100
premo® TP Line	-	-

a) Performance reduction possible with small clamping hub diameters: Technical data available on request

b) Intermediate flange incl. screws contained in scope of delivery

c) Screws contained in scope of delivery

Metal bellows coupling BCT



For the ordering code, please refer to page 74

BCT Metal bellows coupling / HIGH TORQUE

Size			150	300		1500
Overall length			A	A	A	A
Max. acceleration torque (max. 1000 cycles per hour)	T _B	Nm	230	530	1000	3100
		lbf.in	2036	4691	8851	27437
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T _{Not}	Nm	345	795	1500	4650
		lbf.in	3054	7036	13276	41156
Max. speed	n _{Max}	rpm	6000	6000	5000	4500
Axial misalignment	±	mm	2	2.5	2.5	1.5
		in	0.079	0.098	0.098	0.059
Angular misalignment	±	°	1	1	1	0.7
		mm	0.25	0.25	0.25	0.15
Lateral misalignment	±	in	0.01	0.01	0.01	0.006
		N/mm	85	110	240	1000
Axial spring rigidity	C _a	lbf/in	485	628	1370	5710
		N/mm	1620	3860	6600	21000
Lateral spring rigidity	C _l	lbf/in	9250	22041	37686	119910
		Nm/arcmin	49.5	101.9	139.7	815
Torsional rigidity	C _T	lbf.in/arcmin	438	902	1236	7213
		kgcm ²	22	71	74	370
Mass moment of inertia	J	lbf.in.s ²	20	63	66	328
		kg	1.8	3.6	3.6	8.7
Weight	m	lb	4	7.9	7.9	19

Dimensions

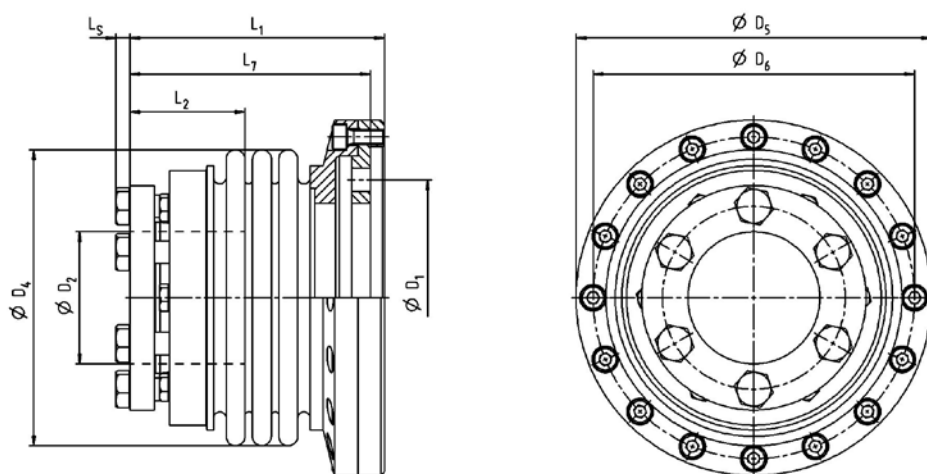
Total length (without LS / Tolerance -2)	L ₁	mm	75	93	95	135
		in	3	3.7	3.7	5.3
Fitting length	L ₂	mm	32	41	41	61
		in	1.3	1.6	1.6	2.4
Length of mounting space (without LS / Tolerance -2)	L ₇	mm	69	87	88.5	127.5
		in	2.7	3.4	3.5	5
Screw head length	L _s	mm	4	5.3	5.3	7.5
		in	0.16	0.21	0.21	0.3
Pitch circle input ^{b)}	D ₁	mm	50	63	80	125
		in	2	2.5	3.1	4.9
Mounting screws (ISO 4017 / 10.9) (input)			12 x M6	12 x M8	12 x M10	12 x M12
Inner diameter output (Tolerance H7)	D ₂	mm	16 - 38	30 - 56	45 - 56	55 - 70
		in	0.63 - 1.5	1.2 - 2.2	1.8 - 2.2	2.2 - 2.8
Outer diameter bellows	D ₄	mm	81	110	110	157
		in	3.2	4.3	4.3	6.2
Outer diameter flange (Tolerance -0,2)	D ₅	mm	108	132	132	188.5
		in	4.3	5.2	5.2	7.4
Pitch circle intermediate flange ^{a)}	D ₆	mm	97	120	120	170.5
		in	3.8	4.7	4.7	6.7
Mounting screws (ISO 4762 / 12.9) (intermediate flange)			10 x M6	12 x M6	12 x M6	16 x M8

Mountable to

TP*	010	025	050	110
TPK*	010	025	050	110
TPM* HIGH TORQUE	010	025	050	110

a) Screws contained in scope of delivery

b) Intermediate flange incl. screws contained in scope of delivery



Size			4000	6000	10000
Overall length			A	A	A
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	6000	9000	12000
		lbf.in	53105	79657	106210
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	9000	13500	18000
		lbf.in	79657	119486	159314
Max. speed	n_{Max}	rpm	3500	3500	3500
Axial misalignment	\pm	mm	3.5	3	3
		in	0.138	0.118	0.118
Angular misalignment	\pm	°	1.5	1.5	1.5
Lateral misalignment	\pm	mm	0.4	0.4	0.4
		in	0.016	0.016	0.016
Axial spring rigidity	C_a	N/mm	1100	1050	980
		lbf/in	6281	5996	5596
Lateral spring rigidity	C_l	N/mm	7750	19200	21800
		lbf/in	44253	109632	124478
Torsional rigidity	C_T	Nm/arcmin	1484	2735	3172
		lbf.in/arcmin	13135	24207	28075
Mass moment of inertia	J	kgcm ²	1680	4330	7000
		lbf.in.s ²	1489	3839	6206
Weight	m	kg	22.5	41	55
		lb	50	90	121

Dimensions

Total length (without LS / Tolerance -2)	L_1	mm	209	214	211
		in	8.2	8.4	8.3
Fitting length	L_2	mm	80	85	92
		in	3.1	3.3	3.6
Length of mounting space (without LS / Tolerance -2)	L_7	mm	197	201	198
		in	7.8	7.9	7.8
Screw head length	L_S	mm	10	10	10
		in	0.39	0.39	0.39
Pitch circle input ^{b)}	D_1	mm	145	166	166
		in	5.7	6.5	6.5
Mounting screws (ISO 4017 / 10.9) (input)			12 x M20	12 x M24	12 x M24
Inner diameter output (Tolerance H7)	D_2	mm	70 - 100	95 - 140	80 - 180
		in	2.8 - 3.9	3.7 - 5.5	3.1 - 7.1
Outer diameter bellows	D_4	mm	200	253	303
		in	7.9	10	12
Outer diameter flange (Tolerance -0,2)	D_5	mm	244	299	345
		in	9.6	12	14
Pitch circle intermediate flange ^{a)}	D_6	mm	221	276	322
		in	8.7	11	13
Mounting screws (ISO 4762 / 12.9) (Intermediate flange)			20 x M12	20 x M12	24 x M12

Mountable to

TP*	300	500	500
TPK*	300	500	500
TPM* HIGH TORQUE	-	-	-

a) Screws contained in scope of delivery

b) Intermediate flange incl. screws contained in scope of delivery

Metal bellows coupling BCT



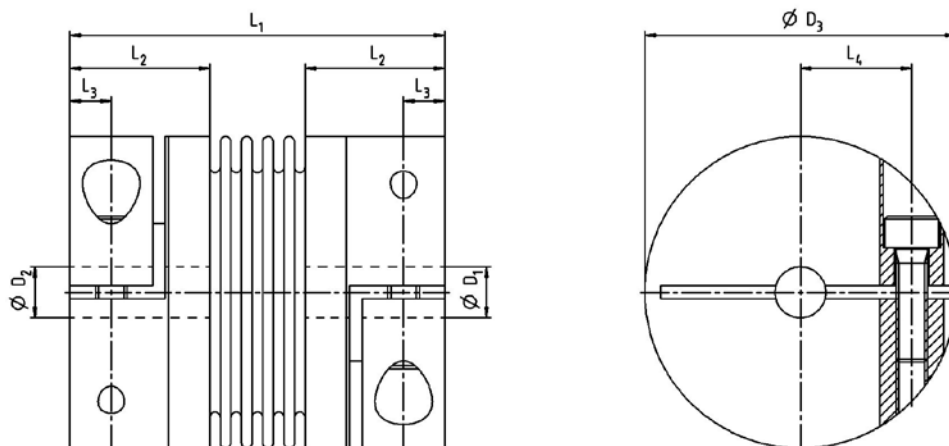
For the ordering code, please refer to page 74

BC2 Metal bellows coupling / clamping hub

Size			15		30		60		80		150		200		300	
Overall length			A	B	A	B	A	B	A	B	A	B	A	B	A	B
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	15		30		60		80		150		200		300	
		lbf.in	133		266		531		708		1328		1770		2655	
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	22.5		45		90		120		225		300		450	
		lbf.in	199		398		797		1062		1991		2655		3983	
Max. speed	n_{Max}	rpm	10000													
Axial misalignment	\pm	mm	1	2	1	2	1.5	2	2	3	2	3	2	3	2.5	3.5
		in	0.039	0.079	0.039	0.079	0.059	0.079	0.079	0.118	0.079	0.118	0.079	0.118	0.098	0.138
Angular misalignment	\pm	$^\circ$	1	1.5	1	1.5	1	1.5	1	1.5	1	1.5	1	1.5	1	1.5
Lateral misalignment	\pm	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
		in	0.006	0.008	0.008	0.01	0.008	0.01	0.008	0.01	0.008	0.01	0.01	0.012	0.01	0.012
Axial spring rigidity	C_a	N/mm	25	15	50	30	72	48	48	32	82	52	90	60	105	71
		lbf/in	143	86	286	171	411	274	274	183	468	297	514	343	600	405
Lateral spring rigidity	C_l	N/mm	475	137	900	270	1200	420	920	290	1550	435	2040	610	3750	1050
		lbf/in	2712	782	5139	1542	6852	2398	5253	1656	8851	2484	11648	3483	21413	5996
Torsional rigidity	C_T	Nm/arcmin	5.8	4.4	11.3	8.1	22.1	16	37.5	24.7	50.9	32	55.6	40.7	131	102
		lbf.in/arcmin	51	39	100	72	196	142	332	219	451	283	492	360	1159	903
Mass moment of inertia	J	kgcm ²	0.6	0.7	1.2	1.3	3.2	3.5	8	8.5	19	20	32	34	76	79
		lbf.in.s ²	0.53	0.62	1.1	1.2	2.8	3.1	7.1	7.5	17	18	28	30	67	70
Weight	m	kg	0.16		0.26		0.48		0.8		1.85		2.65		4	
		lb	0.35		0.57		1.1		1.8		4.1		5.8		8.8	

Dimensions

Total length (Tolerance -2)	L_1	mm	59	66	69	77	83	93	94	106	95	107	104	116	111	125
		in	2.3	2.6	2.7	3	3.3	3.7	3.7	4.2	3.7	4.2	4.1	4.6	4.4	4.9
Fitting length	L_2	mm	22		26.5		31		35.5		35.5		40.5		42.5	
		in	0.87		1		1.2		1.4		1.4		1.6		1.7	
Distance	L_3	mm	6.5		7.5		9.5		11		11		12.5		13	
		in	0.26		0.3		0.37		0.43		0.43		0.49		0.51	
Centre distance	L_4	mm	17.5		19		23		27		27		30.5		39	
		in	0.69		0.75		0.91		1.1		1.1		1.2		1.5	
Inner diameter input (Tolerance H7)	D_1	mm	8 - 28		10 - 30		12 - 35		14 - 42		19 - 42		22 - 45		24 - 60	
		in	0.31 - 1.1		0.39 - 1.2		0.47 - 1.4		0.55 - 1.7		0.75 - 1.7		0.87 - 1.8		0.94 - 2.4	
Inner diameter output (Tolerance H7)	D_2	mm	8 - 28		10 - 30		12 - 35		14 - 42		19 - 42		22 - 45		24 - 60	
		in	0.31 - 1.1		0.39 - 1.2		0.47 - 1.4		0.55 - 1.7		0.75 - 1.7		0.87 - 1.8		0.94 - 2.4	
Outer diameter hub	D_3	mm	49		55		66		81		81		90		110	
		in	1.9		2.2		2.6		3.2		3.2		3.5		4.3	



Size			500		800		1500		4000	6000	10000
Overall length			A	B	A	B	A	B	A	A	A
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	500		800		1500		4000	6000	10000
		lbf.in	4425		7081		13276		35403	53105	88508
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	750		1200		2250		6000	9000	15000
		lbf.in	6638		10621		19914		53105	79657	132762
Max. speed	n_{Max}	rpm	10000								
Axial misalignment	\pm	mm	2.5	3.5	3.5	4.5	3.5	4.5	3.5	3	3
		in	0.098	0.138	0.138	0.177	0.138	0.177	0.138	0.118	0.118
Angular misalignment	\pm	$^\circ$	1	1.5	1.5	2	1.5	2	1.5	1.5	1.5
Lateral misalignment	\pm	mm	0.3	0.35	0.35	1	0.35	1	0.4	0.4	0.4
		in	0.012	0.014	0.014	0.039	0.014	0.039	0.016	0.016	0.016
Axial spring rigidity	C_a	N/mm	70	48	100	285	320	440	565	1030	985
		lbf/in	400	274	571	1627	1827	2512	3226	5881	5624
Lateral spring rigidity	C_l	N/mm	2500	840	2000	1490	3600	1700	6070	19200	21800
		lbf/in	14275	4796	11420	8508	20556	9707	34660	109632	124478
Torsional rigidity	C_T	Nm/arcmin	148	145.5	227	207	379	343	989	1659	3186
		lbf.in/arcmin	1310	1288	2009	1832	3354	3036	8753	14683	28199
Mass moment of inertia	J	kgcm ²	143	146	162	170	430	450	1650	4950	12140
		lbf.in.s ²	127	129	144	151	381	399	1463	4388	10762
Weight	m	kg	6.3		5.7		11.5		28.8	49.4	80.9
		lb	14		13		25		64	109	178

Dimensions

Total length (Tolerance -2)	L_1	mm	132	146	140	178	167	231	229	252	288
		in	5.2	5.7	5.5	7	6.6	9.1	9	9.9	11
Fitting length	L_2	mm	50.5		45		55.5		85	107	129
		in	2		1.8		2.2		3.3	4.2	5.1
Distance	L_3	mm	16.5		17.5		22.5		28.5	35.5	42
		in	0.65		0.69		0.89		1.1	1.4	1.7
Centre distance ^{a)}	L_4	mm	41		2 x 48		2 x 55		2 x 65	2 x 90	2 x 117
		in	1.6		2 x 1.9		2 x 2.2		2 x 2.6	2 x 3.5	2 x 4.6
Inner diameter input (Tolerance H7)	D_1	mm	35 - 60		40 - 75		50 - 80		50 - 90	60 - 140	70 - 180
		in	1.4 - 2.4		1.6 - 3		2 - 3.1		2 - 3.5	2.4 - 5.5	2.8 - 7.1
Inner diameter output (Tolerance H7)	D_2	mm	35 - 60		40 - 75		50 - 80		50 - 90	60 - 140	70 - 180
		in	1.4 - 2.4		1.6 - 3		2 - 3.1		2 - 3.5	2.4 - 5.5	2.8 - 7.1
Outer diameter hub	D_3	mm	124		134		157		200	253	303
		in	4.9		5.3		6.2		7.9	10	12

a) Starting at size 800, two screws per clamping hub offset by 180°.

Metal bellows coupling BC2



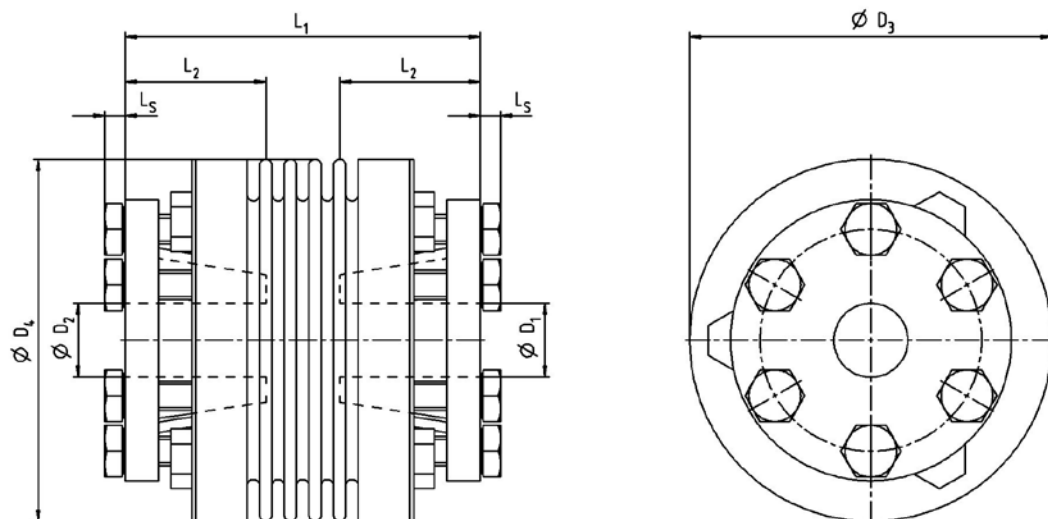
For the ordering code, please refer to page 74

BC3 Metal bellows coupling / tapered clamping hub

Size		15		30		60		150		200		300		
Overall length		A	B	A	B	A	B	A	B	A	B	A	B	
Max. acceleration torque ¹⁾ (max. 1000 cycles per hour)	T _B	Nm	15		30		60		150		200		300	
		lbf.in	133		266		531		1328		1770		2655	
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T _{Not}	Nm	22.5		45		90		225		300		450	
		lbf.in	199		398		797		1991		2655		3983	
Max. speed	n _{Max}	rpm 10000												
Axial misalignment	±	mm	1	2	1	2	1.5	2	2	3	2	3	2.5	3.5
		in	0.039	0.079	0.039	0.079	0.059	0.079	0.079	0.118	0.079	0.118	0.098	0.138
Angular misalignment	±	°	1	1.5	1	1.5	1	1.5	1	1.5	1	1.5	1	1.5
Lateral misalignment	±	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
		in	0.006	0.008	0.008	0.01	0.008	0.01	0.008	0.01	0.01	0.012	0.01	0.012
Axial spring rigidity	C _a	N/mm	25	15	50	30	72	48	82	52	90	60	105	71
		lbf/in	143	86	286	171	411	274	468	297	514	343	600	405
Lateral spring rigidity	C _l	N/mm	475	137	900	270	1200	420	1500	435	2040	610	3750	1050
		lbf/in	2712	782	5139	1542	6852	2398	8565	2484	11648	3483	21413	5996
Torsional rigidity	C _T	Nm/arcmin	5.8	4.4	11.3	8.1	22.1	16	50.9	32	55.6	40.7	131	101.9
		lbf.in/arcmin	51	39	100	72	196	142	451	283	492	360	1159	902
Mass moment of inertia	J	kgcm ²	0.7	0.8	1.5	1.6	3.9	4.1	12	16	17	25	51	59
		lbf.in.s ²	0.62	0.71	1.3	1.4	3.5	3.6	11	14	15	22	45	52
Weight	m	kg	0.25		0.4		0.7		1.2		1.8		3	
		lb	0.55		0.88		1.5		2.6		4		6.6	

Dimensions

Parameter	Symbol	mm	48	55	55	63	66	76	73	85	76	88	89	103
Total length (without LS / Tolerance -2)	L ₁	in	1.9	2.2	2.2	2.5	2.6	3	2.9	3.3	3	3.5	3.5	4.1
		mm	19		21.5		27.5		32		32		41.5	
Fitting length	L ₂	in	0.75		0.85		1.1		1.3		1.3		1.6	
		mm	2.8		3.5		3.5		4		4		5.3	
Screw head length	L _S	in	0.11		0.14		0.14		0.16		0.16		0.21	
		mm	10 - 22		12 - 23		12 - 29		15 - 38		15 - 44		24 - 56	
Inner diameter input (Tolerance H7)	D ₁	in	0.39 - 0.87		0.47 - 0.91		0.47 - 1.1		0.59 - 1.5		0.59 - 1.7		0.94 - 2.2	
		mm	10 - 22		12 - 23		12 - 29		15 - 38		15 - 44		24 - 56	
Inner diameter output (Tolerance H7)	D ₂	in	0.39 - 0.87		0.47 - 0.91		0.47 - 1.1		0.59 - 1.5		0.59 - 1.7		0.94 - 2.2	
		mm	49		55		66		81		90		110	
Outer diameter hub	D ₃	in	1.9		2.2		2.6		3.2		3.5		4.3	
		mm	49		55		66		81		90		110	
Outer diameter bellows	D ₄	in	1.9		2.2		2.6		3.2		3.5		4.3	



Size		500		800	1500	4000	6000	10000	
Overall length		A	B	A	A	A	A	A	
Max. acceleration torque ^{a)} (max. 1000 cycles per hour)	T _B	Nm	500	800	1500	4000	6000	10000	
		lbf.in	4425	7081	13276	35403	53105	88508	
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T _{Not}	Nm	750	1200	2250	6000	9000	15000	
		lbf.in	6638	10621	19914	53105	79657	132762	
Max. speed	n _{Max}	rpm 10000							
Axial misalignment	±	mm	2.5	3.5	3.5	3.5	3.5	3	3
		in	0.098	0.138	0.138	0.138	0.138	0.118	0.118
Angular misalignment	±	°	1	1.5	1.5	1.5	1.5	1.5	
Lateral misalignment	±	mm	0.3	0.35	0.35	0.35	0.4	0.4	0.4
		in	0.012	0.014	0.014	0.014	0.016	0.016	0.016
Axial spring rigidity	C _a	N/mm	70	48	100	320	565	1030	985
		lbf/in	400	274	571	1827	3226	5881	5624
Lateral spring rigidity	C _l	N/mm	2500	840	2000	3600	6070	19200	21800
		lbf/in	14275	4796	11420	20556	34660	109632	124478
Torsional rigidity	C _T	Nm/arcmin	148	145.5	227	379	989	1659	3186
		lbf.in/arcmin	1310	1288	2009	3354	8753	14683	28199
Mass moment of inertia	J	kgcm ²	91	99	132	349	855	2540	6290
		lbf.in.s ²	81	88	117	309	758	2252	5576
Weight	m	kg	4.2		5.6	8.2	23	32.6	45.5
		lb	9.3		12	18	51	72	100

Dimensions

Total length (without LS / Tolerance -2)	L ₁	mm	96	110	115	140	198	210	217
		in	3.8	4.3	4.5	5.5	7.8	8.3	8.5
Fitting length	L ₂	mm	41.5		50	61	80.5	85	93.5
		in	1.6		2	2.4	3.2	3.3	3.7
Screw head length	L _S	mm	5.3	6.4	7.5	10	10	10	10
		in	0.21	0.25	0.3	0.39	0.39	0.39	0.39
Inner diameter input (Tolerance H7)	D ₁	mm	24 - 56		30 - 60	35 - 70	50 - 100	60 - 140	70 - 180
		in	0.94 - 2.2		1.2 - 2.4	1.4 - 2.8	2 - 3.9	2.4 - 5.5	2.8 - 7.1
Inner diameter output (Tolerance H7)	D ₂	mm	24 - 56		30 - 60	35 - 70	50 - 100	60 - 140	70 - 180
		in	0.94 - 2.2		1.2 - 2.4	1.4 - 2.8	2 - 3.9	2.4 - 5.5	2.8 - 7.1
Outer diameter hub	D ₃	mm	122		116	135	180	246	295
		in	4.8		4.6	5.3	7.1	9.7	12
Outer diameter bellows	D ₄	mm	124		133	157	200	253	303
		in	4.9		5.2	6.2	7.9	10	12

a) Performance reduction possible with small clamping hub diameters: Technical data available on request

Metal bellows coupling BC3



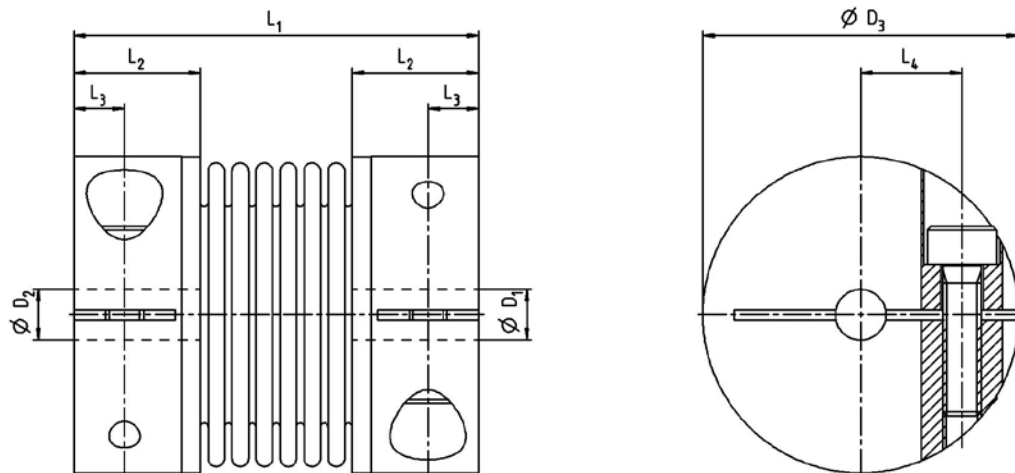
For the ordering code, please refer to page 74

BCL Metal bellows coupling / Economy

Size			2	4.5	10	15	30
Overall length			A	A	A	A	A
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	2	4.5	10	15	30
		lbf.in	18	40	89	133	266
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	3	6.75	15	22.5	45
		lbf.in	27	60	133	199	398
Max. speed	n_{Max}	rpm	10000				
Axial misalignment	\pm	mm	0.5	1	1	1	1
		in	0.02	0.039	0.039	0.039	0.039
Angular misalignment	\pm	$^\circ$	1	1	1	1	1
Lateral misalignment	\pm	mm	0.2	0.2	0.2	0.2	0.2
		in	0.008	0.008	0.008	0.008	0.008
Axial spring rigidity	C_a	N/mm	8	35	30	30	50
		lbf/in	46	200	171	171	286
Lateral spring rigidity	C_l	N/mm	50	350	320	315	366
		lbf/in	286	1999	1827	1799	2090
Torsional rigidity	C_T	Nm/arcmin	0.44	2	2.6	6.7	9
		lbf.in/arcmin	3.9	18	23	59	80
Mass moment of inertia	J	kgcm ²	0.02	0.07	0.16	0.65	1.2
		lbf.in.s ²	0.02	0.06	0.14	0.58	1.1
Weight	m	kg	0.02	0.05	0.06	0.16	0.25
		lb	0.04	0.11	0.13	0.35	0.55

Dimensions

Total length (Tolerance -2)	L_1	mm	32	40	44	58	68
		in	1.3	1.6	1.7	2.3	2.7
Fitting length	L_2	mm	10	13	13	21.5	26
		in	0.39	0.51	0.51	0.85	1
Distance	L_3	mm	4	5	5	6.5	7.5
		in	0.16	0.2	0.2	0.26	0.3
Centre distance	L_4	mm	8	11	14.5	17.5	20
		in	0.31	0.43	0.57	0.69	0.79
Inner diameter input (Tolerance H7)	D_1	mm	4 - 12.7	6 - 16	6 - 24	8 - 28	10 - 32
		in	0.16 - 0.5	0.24 - 0.63	0.24 - 0.94	0.31 - 1.1	0.39 - 1.3
Inner diameter output (Tolerance H7)	D_2	mm	4 - 12.7	6 - 16	6 - 24	8 - 28	10 - 32
		in	0.16 - 0.5	0.24 - 0.63	0.24 - 0.94	0.31 - 1.1	0.39 - 1.3
Outer diameter hub	D_3	mm	25	32	40	49	56
		in	0.98	1.3	1.6	1.9	2.2



Size			60	80	150	300	500
Overall length			A	A	A	A	A
Max. acceleration torque (max. 1000 cycles per hour)	T_B	Nm	60	80	150	300	500
		lbf.in	531	708	1328	2655	4425
Emergency stop torque (permitted 1000 times during the service life of the gearbox)	T_{Not}	Nm	90	120	225	450	750
		lbf.in	797	1062	1991	3983	6638
Max. speed	n_{Max}	rpm	10000				
Axial misalignment	\pm	mm	1.5	2	2	2	2.5
		in	0.059	0.079	0.079	0.079	0.098
Angular misalignment	\pm	$^\circ$	1	1	1	1	1
Lateral misalignment	\pm	mm	0.2	0.2	0.2	0.2	0.2
		in	0.008	0.008	0.008	0.008	0.008
Axial spring rigidity	C_a	N/mm	67	44	77	112	72
		lbf/in	383	251	440	640	411
Lateral spring rigidity	C_l	N/mm	679	590	960	2940	1450
		lbf/in	3877	3369	5482	16787	8280
Torsional rigidity	C_T	Nm/arcmin	21	23.3	41	45.7	84.4
		lbf.in/arcmin	186	206	363	404	747
Mass moment of inertia	J	kgcm ²	3	7.5	18	75	117
		lbf.in.s ²	2.7	6.6	16	66	104
Weight	m	kg	0.4	0.7	1.7	3.8	4.9
		lb	0.88	1.5	3.7	8.4	11

Dimensions

Total length (Tolerance -2)	L_1	mm	79	92	92	108	114
		in	3.1	3.6	3.6	4.3	4.5
Fitting length	L_2	mm	28	32.5	32.5	41	41.5
		in	1.1	1.3	1.3	1.6	1.6
Distance	L_3	mm	9.5	11	11	13.5	17
		in	0.37	0.43	0.43	0.53	0.67
Centre distance	L_4	mm	23	27	27	39	41
		in	0.91	1.1	1.1	1.5	1.6
Inner diameter input (Tolerance H7)	D_1	mm	14 - 35	16 - 42	19 - 42	24 - 60	35 - 62
		in	0.55 - 1.4	0.63 - 1.7	0.75 - 1.7	0.94 - 2.4	1.4 - 2.4
Inner diameter output (Tolerance H7)	D_2	mm	14 - 35	16 - 42	19 - 42	24 - 60	35 - 62
		in	0.55 - 1.4	0.63 - 1.7	0.75 - 1.7	0.94 - 2.4	1.4 - 2.4
Outer diameter hub	D_3	mm	66	82	82	110	123
		in	2.6	3.2	3.2	4.3	4.8

Metal bellows coupling BCL



For the ordering code, please refer to page 74

Torque limiters

Torque limiters with integrated switching mechanism combine the dynamic and precise transmission with torque limitation.

Torque limiters are mainly backlash-, wear- and maintenance-free. They are positioned directly in the interface between the drive and output side. In the event of overload, they react quickly to separate the interfaces and protect the machines against damage.

Depending on the requirements, different re-engagement designs are used for torque limiters. Please note, the functional systems presented below only re-engage during a standstill or with very low rotational speeds and after a reduction in the overload. Variable shaft connections are available as special versions.

PRODUCT HIGHLIGHTS

Compact and completely backlash-free

thanks to accurately manufactured components.

Ideal utilization of the entire system

thanks to the maintenance-free and accurate torque limitation.

Fast shut-off within milliseconds

due to the use of high-performance positioning springs.



	Bellows material	Hub material	Permitted temperature range
TL1	-	Size 1.5 to 10: Aluminum; size 15 to 2500: Steel	-30 to +120° C
TL2	Highly elastic stainless steel	High-strength aluminum, as of size 150: Steel	-30 to +100° C, as of size 800: -30 to +300° C
TL3	Highly elastic stainless steel	Steel	-30 to +100° C, as of size 800: -30 to +300° C

Selectable functions – re-engagement after overload has been secured

Single position re-engagement (W) (standard)



- Re-engagement after exactly 360°
- Guaranteed synchrony
- Switch signal in the event of overload*

Application:

- Packaging machines
- Machine tools
- Automation systems

Multi-position (D)



- Re-engagement after exactly 60° (standard)
- Optionally after 30, 45, 60, 90, 120°
- System is immediately available again
- Switch signal in the event of overload*

Application:

- Packaging machines
- Machine tools
- Automation systems

Full engagement (F)



- Permanent separation of drive and output
- Free deceleration of centrifugal masses
- Manual re-engagement (every 60°)
- Switch signal in the event of overload*

Application:

- Applications with extremely high speeds and kinetic energy

Blocked version (G)



- None and/or limited separation of drive and output
- Only slow rotation possible during overload
- Re-engagement after torque drop
- Guaranteed load safety
- Switch signal in the event of overload*

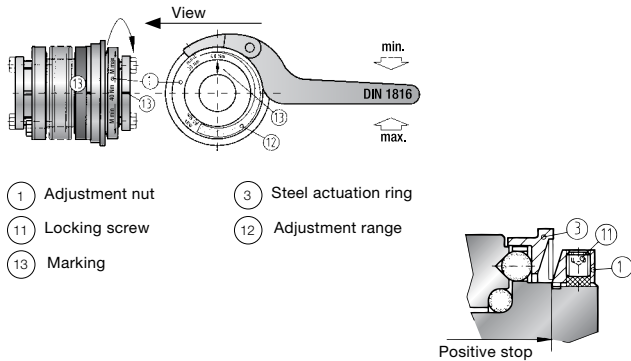
Application:

- Ideal for vertical axles, such as presses or load lifting equipment

* For suitable switches, see Page 44

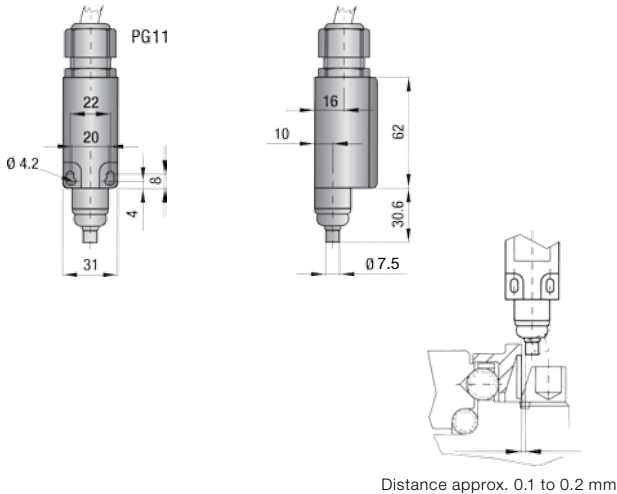
Accessories for TL – torque limiters

WITTENSTEIN alpha torque limiters are factory adjusted to your specified disengagement torque. Thanks to the installed disc springs with special degressive spring characteristics, it is also possible to adjust the preset disengagement torque using a cant dog key.



Torque adjusting wrench for DIN 1816 nuts

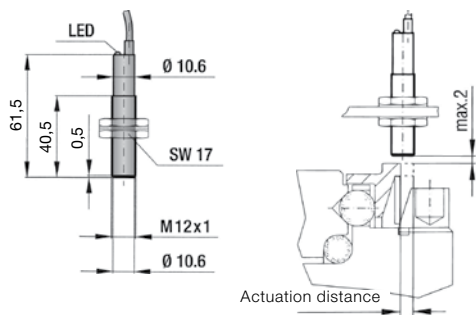
Smaller coupling sizes do not require the use of a cant dog key. The adjusting nut for the 1.5/2/4.5/10 series can be adjusted with a stud or pin.



Mechanical end switch (EMERGENCY STOP function)

Caution:
The switch function must always be checked 100% after the assembly in every instance.

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



Proximity switch (EMERGENCY STOP function)

Caution:
The switch function must always be checked by 100% after the assembly in any case.

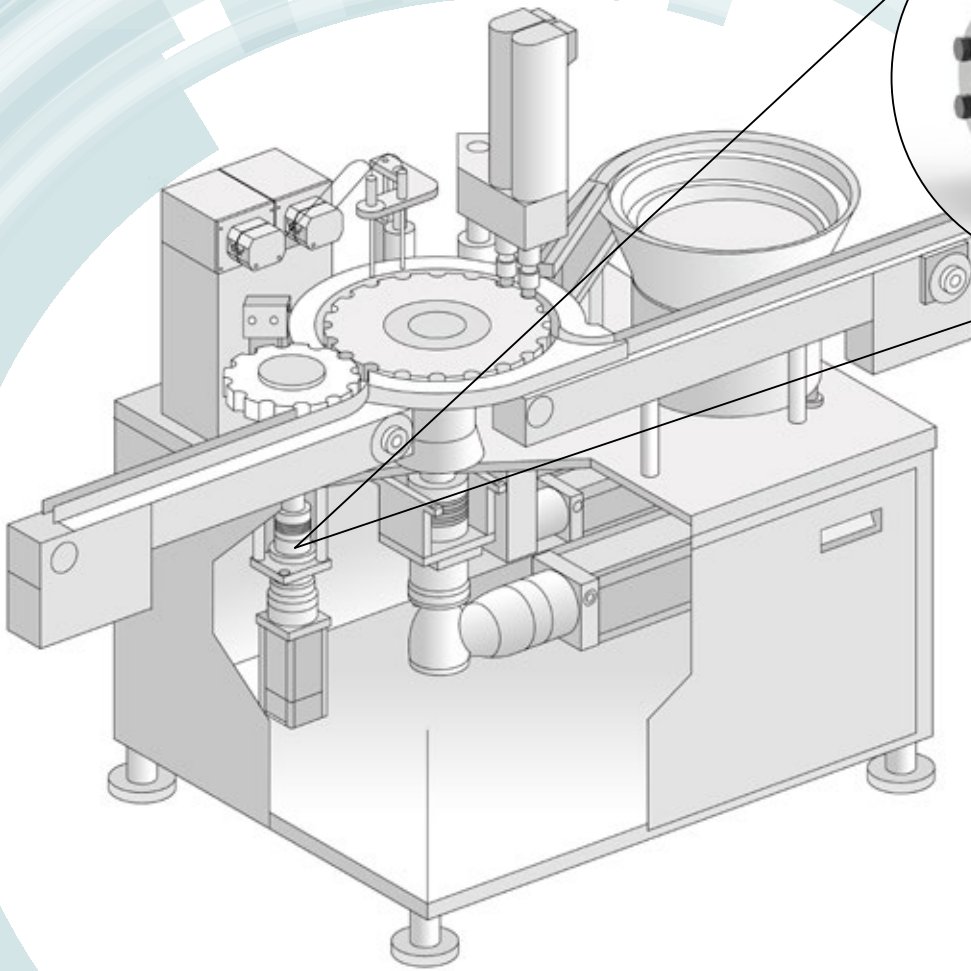
Torque adjusting wrench			
Size	Designation	Material number according to the function systems	
		W, D, G*	F*
15	GHS 15	20047730	20047730
30	GHS 30	20047731	20047731
60	GHS 60	20047732	20047732
80	GHS 80	20047733	20047733
150	GHS 150	20047733	20047733
200	GHS 200	20047734	20047750
300	GHS 300	20047735	20047735
500	GHS 500	20047736	20047736
800	GHS 800	20047737	20047751
1500	GHS 1500	20047738	20047738
2500	GHS 2500	20047739	20047752

* Function systems: Single position (W), re-engaging (D), blocked (G), full disengagement (F)

Technical data	ME TL Material number: 20022999
Max. voltage	500 V AC
Max. constant current	10 A
Protection class	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.

Technical data	NAS TL Material number: 20022998
Voltage range	10 to 30 V DC
Max. output current	200 mA
Max. switching frequency	800 Hz
Temperature range	-25 °C to +70 °C
Protection class	IP 67
Switch type	PNP NC contact
Detection gap	max. 2 mm
Circuit symbol	



Function

The **filling and closing machine** is used for quick and automatic filling of e.g. liquid pharmaceutical products and the subsequent secure closure of the containers.

Torque limiters protect the system against major damage in the event of malfunctions since they can be placed directly at the axis and are triggered within milliseconds. Therefore, more complex monitoring systems are obsolete.

The torque limiter can transmit the error message directly to the control unit by means of a sensor. They fulfill their tasks in a backlash-, wear- and maintenance-free manner and are thus a cost-efficient alternative to more complex control concepts.



Application

Example applications



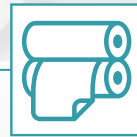
Machine tools



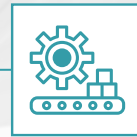
Servo drive technology



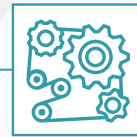
Automation



Printing presses



Packaging machines



General mechanical engineering



Benefits

Extremely high machine availability and dynamics thanks to the quickly reacting feedback in the event of error messages.

Low maintenance effort thanks to maintenance-free torque limiters.

Protection against machine damage due to overload.

Properties

Torsional rigidity and backlash-free design analogously to the metal bellows couplings.

Fast shut-off within milliseconds through the use of high-performance positioning springs.

Accurate torque limitation through simple re-adjustment of the setting ring at the application axis.

Compensation of misalignments due to assembly



Axial



Angular



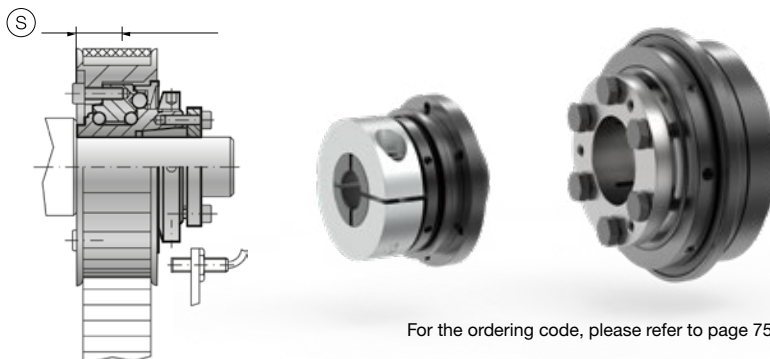
Lateral

Size		200	300	500	800	1500	2500		
Overall length		A	A	A	A	A	A		
Release torque (Adjustable)	A	T _{Dis}	Nm	30 - 90	100 - 200	80 - 200	400 - 650	600 - 800	1500 - 2000
			lbf.in	266 - 797	885 - 1770	708 - 1770	3540 - 5753	5310 - 7081	13276 - 17702
	B	Nm	60 - 160	150 - 240	200 - 350	500 - 800	700 - 1200	2000 - 2500	
		lbf.in	531 - 1416	1328 - 2124	1770 - 3098	4425 - 7081	6196 - 10621	17702 - 22127	
	C	Nm	140 - 280	220 - 440	320 - 650	650 - 950	1000 - 1800	2300 - 2800	
		lbf.in	1239 - 2478	1947 - 3894	2832 - 5753	5753 - 8408	8851 - 15931	20357 - 24782	
	D	Nm	-	-	-	-	-	-	
		lbf.in	-	-	-	-	-	-	
Max. speed		n _{Max}	2000		1000				
Max. lateral force (Belt pretension)	F _R	N	3400	4400	5600	8000	10000	14000	
		lbf	764	989	1259	1798	2248	3147	
Distance (Relating to the force application point)	S	mm	12 - 26	12 - 28	16 - 38	16 - 42	20 - 50	28 - 60	
		in	0.47 - 1	0.47 - 1.1	0.63 - 1.5	0.63 - 1.7	0.79 - 2	1.1 - 2.4	
Mass moment of inertia	J	kgcm ²	27	52	86	200	315	2100	
		lbf.in.s ²	24	46	76	177	279	1862	
Weight	m	kg	2	3	4	5.5	10	28	
		lb	4.4	6.6	8.8	12	22	62	

Dimensions

Total length (without LS)	L ₁	mm	63	70	84	95	109	146
		in	2.5	2.8	3.3	3.7	4.3	5.7
Fitting length	L ₂	mm	32	41.5	41.5	49	61	80.5
		in	1.3	1.6	1.6	1.9	2.4	3.2
Distance	L ₃	mm	-	-	-	-	-	-
		in	-	-	-	-	-	-
Centre distance	L ₄	mm	-	-	-	-	-	-
		in	-	-	-	-	-	-
Actuation distance	L ₈	mm	2.2	2.2	2.2	2.2	3	3
		in	0.09	0.09	0.09	0.09	0.12	0.12
Distance	L ₉	mm	44	47	59	67	82	112
		in	1.7	1.9	2.3	2.6	3.2	4.4
Distance	L ₁₀	mm	12	15	21	19	25	34
		in	0.47	0.59	0.83	0.75	0.98	1.3
Centering length (Tolerance -0,2)	L ₁₁	mm	5	6	9	10	13.5	20
		in	0.2	0.24	0.35	0.39	0.53	0.79
Thread			6xM6	6xM8	6xM8	6xM10	6xM12	6xM16
Thread length	L ₁₂	mm	10	10	12	15	16	24
		in	0.39	0.39	0.47	0.59	0.63	0.94
Distance	L ₁₃	mm	3	3	4	4	4.5	6
		in	0.12	0.12	0.16	0.16	0.18	0.24
Screw head length	L _S	mm	6	8	8	10	12	16
		in	0.24	0.31	0.31	0.39	0.47	0.63
Inner diameter input (Tolerance H7)	D ₁	mm	20 - 44	25 - 56	25 - 56	30 - 60	35 - 70	50 - 100
		in	0.79 - 1.7	0.98 - 2.2	0.98 - 2.2	1.2 - 2.4	1.4 - 2.8	2 - 3.9
Pitch circle belt pulley (Tolerance ±0,2)	D ₂	mm	85	98	110	120	148	202
		in	3.3	3.9	4.3	4.7	5.8	8
Outer diameter hub	D ₃	mm	-	-	-	-	-	-
		in	0	0	0	0	0	0
Outer diameter flange (Tolerance -0,2)	D ₅	mm	98	112	128	140	165	240
		in	3.9	4.4	5	5.5	6.5	9.4
Centering diameter (Tolerance h7)	D ₈	mm	75	82	90	100	125	168
		in	3	3.2	3.5	3.9	4.9	6.6
Outer diameter actuation ring	D ₉	mm	99	120.5	135	152.5	174	243
		in	3.9	4.7	5.3	6	6.9	9.6
Diameter (Tolerance h7)	D ₁₀	mm	55	65	72	75	92	128
		in	2.2	2.6	2.8	3	3.6	5
Diameter	D ₁₁	mm	67	75	84	91	112	152
		in	2.6	3	3.3	3.6	4.4	6

Torque limiter TL1



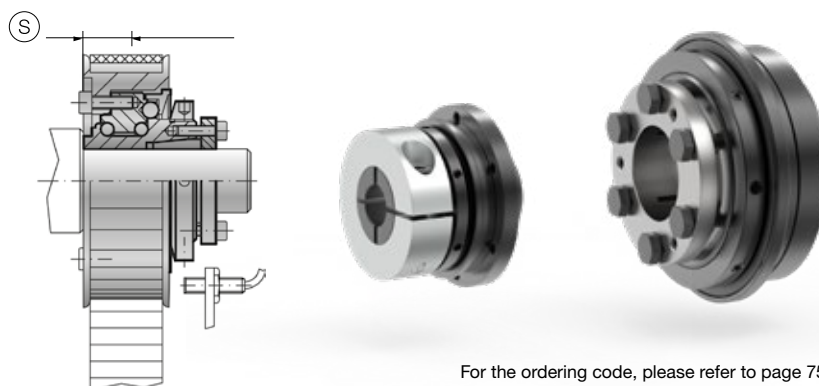
For the ordering code, please refer to page 75

Size			200	300	500	800	1500	2500	
Overall length			A	A	A	A	A	A	
Release torque (Adjustable)	A	T_{Dis}	Nm	80 - 140	120 - 180	50 - 150	200 - 400	1000 - 1250	1400 - 2200
			lbf.in	708 - 1239	1062 - 1593	443 - 1328	1770 - 3540	8851 - 11064	12391 - 19472
	B		Nm	130 - 200	160 - 300	100 - 300	450 - 850	12500 - 15000	1800 - 2700
			lbf.in	1151 - 1770	1416 - 2655	885 - 2655	3983 - 7523	110635 - 132762	15931 - 23897
C	Nm	-	300 - 450	250 - 500	-	-	-		
	lbf.in	-	2655 - 3983	2213 - 4425	-	-	-		
Max. speed			n_{Max}		rpm			2000	
Max. lateral force (Belt pretension)			F_R		N			3400	
					lbf			764	
Distance (Relating to the force application point)			S		mm			12 - 26	
					in			0.47 - 1	
Mass moment of inertia			J		kgcm ²			27	
					lbf.in.s ²			24	
Weight			m		kg			2	
					lb			4.4	

Dimensions

Total length (Tolerance -2)	L_1	mm	66	73	88	95	117	152
		in	2.6	2.9	3.5	3.7	4.6	6
Fitting length	L_2	mm	32	41.5	41.5	49	61	80.5
		in	1.3	1.6	1.6	1.9	2.4	3.2
Distance	L_3	mm	-	-	-	-	-	-
		in	-	-	-	-	-	-
Centre distance	L_4	mm	-	-	-	-	-	-
		in	-	-	-	-	-	-
Actuation distance	L_8	mm	2.2	2.2	2.2	2.2	3	3
		in	0.09	0.09	0.09	0.09	0.12	0.12
Distance	L_9	mm	47	51.5	62	75	94	120
		in	1.9	2	2.4	3	3.7	4.7
Distance	L_{10}	mm	12	15	21	19	25	34
		in	0.47	0.59	0.83	0.75	0.98	1.3
Centering length (Tolerance ± 0.2)	L_{11}	mm	5	6	9	10	13.5	20
		in	0.2	0.24	0.35	0.39	0.53	0.79
Thread			6xM6	6xM8	6xM8	6xM10	6xM12	6xM16
Thread length	L_{12}	mm	10	10	12	15	16	24
		in	0.39	0.39	0.47	0.59	0.63	0.94
Distance	L_{13}	mm	3	3	4	4	4.5	6
		in	0.12	0.12	0.16	0.16	0.18	0.24
Screw head length	L_S	mm	6	8	8	10	12	16
		in	0.24	0.31	0.31	0.39	0.47	0.63
Inner diameter input (Tolerance $H7$)	D_1	mm	20 - 44	25 - 56	25 - 56	30 - 60	35 - 70	50 - 100
		in	0.79 - 1.7	0.98 - 2.2	0.98 - 2.2	1.2 - 2.4	1.4 - 2.8	2 - 3.9
Pitch circle belt pulley (Tolerance ± 0.2)	D_2	mm	85	98	110	120	148	202
		in	3.3	3.9	4.3	4.7	5.8	8
Outer diameter hub	D_3	mm	-	-	-	-	-	-
		in	-	-	-	-	-	-
Outer diameter flange (Tolerance ± 0.2)	D_5	mm	98	112	128	140	165	240
		in	3.9	4.4	5	5.5	6.5	9.4
Centering diameter (Tolerance $h7$)	D_8	mm	75	82	90	100	125	168
		in	3	3.2	3.5	3.9	4.9	6.6
Outer diameter actuation ring	D_9	mm	117	132	155	176	187	258
		in	4.6	5.2	6.1	6.9	7.4	10
Diameter (Tolerance $h7$)	D_{10}	mm	55	65	72	75	92	128
		in	2.2	2.6	2.8	3	3.6	5
Diameter	D_{11}	mm	67	75	84	91	112	152
		in	2.6	3	3.3	3.6	4.4	6

Torque limiter TL1



For the ordering code, please refer to page 75

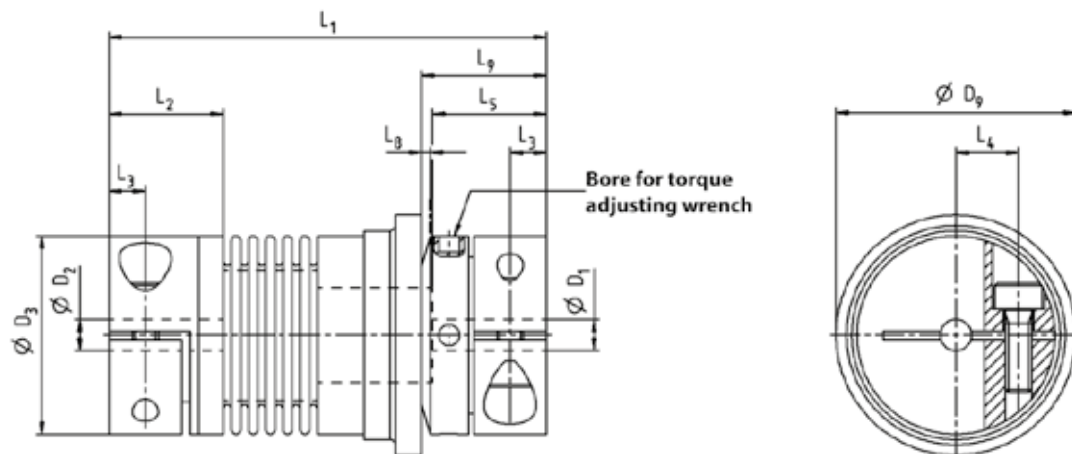
TL2 Torque limiter / clamping hub

Size				1.5		2		4.5		10		15		30		60	
Overall length				A		A B		A B		A B		A B		A B		A B	
Release torque (Adjustable)	A	T _{Dis}	Nm	0.1 - 0.6		0.2 - 1.5		1 - 3		2 - 6		5 - 10		10 - 25		10 - 30	
			lbf.in	0.89 - 5.3		1.8 - 13		8.9 - 27		18 - 53		44 - 89		89 - 221		89 - 266	
	B		Nm	0.4 - 1		0.5 - 2		3 - 6		4 - 12		8 - 20		20 - 40		25 - 80	
			lbf.in	3.5 - 8.9		4.4 - 18		27 - 53		35 - 106		71 - 177		177 - 354		221 - 708	
	C		Nm	0.8 - 1.5		-		-		-		-		-		-	
			lbf.in	7.1 - 13		-		-		-		-		-		-	
Max. speed			n _{Max}	rpm													
Angular misalignment			±	°													
Lateral misalignment			±	mm													
Lateral spring rigidity			C _i	N/mm													
Torsional rigidity				C _T	Nm/arcmin												
Mass moment of inertia			J		kgcm ²												
Weight				m	kg												
					lb												

Dimensions

Total length (Tolerance -2)	L ₁	mm	42	46	51	57	65	65	75	75	82	87	95	102	112
		in	1.7	1.8	2	2.2	2.6	2.6	3	3	3.2	3.4	3.7	4	4.4
Fitting length	L ₂	mm	11	13	16	16	16	16	22	22	26.5	26.5	31	31	31
		in	0.43	0.51	0.63	0.63	0.63	0.63	0.87	0.87	1	1	1.2	1.2	1.2
Distance	L ₃	mm	3.5	4	5	5	5	5	6.5	6.5	7.5	7.5	9.5	9.5	9.5
		in	0.14	0.16	0.2	0.2	0.2	0.2	0.26	0.26	0.3	0.3	0.37	0.37	0.37
Centre distance a) b)	L ₄	mm	6.7 / 6	8 / 8.5	10.3 / 11.5	10.3 / 11.5	15	15	17.5	17.5	19	19	23	23	23
		in	0.26 / 0.24	0.31 / 0.33	0.41 / 0.45	0.41 / 0.45	0.59	0.59	0.69	0.69	0.75	0.75	0.91	0.91	0.91
Fitting length	L ₅	mm	11	13	16	16	16	16	21.5	21.5	26.5	26.5	31.5	31.5	31.5
		in	0.43	0.51	0.63	0.63	0.63	0.63	0.85	0.85	1	1	1.2	1.2	1.2
Actuation distance	L ₈	mm	0.7	0.8	0.8	0.8	1.2	1.2	1.5	1.5	1.5	1.5	1.7	1.7	1.7
		in	0.03	0.03	0.03	0.03	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07
Distance	L ₉	mm	12	13	15	15	17	17	19	19	24	24	28	28	28
		in	0.47	0.51	0.59	0.59	0.67	0.67	0.75	0.75	0.94	0.94	1.1	1.1	1.1
Inner diameter input (Tolerance H7)	D ₁	mm	3 - 8	4 - 12	5 - 14	5 - 14	6 - 16	6 - 16	10 - 26	10 - 26	12 - 30	12 - 30	15 - 32	15 - 32	15 - 32
		in	0.12 - 0.31	0.16 - 0.47	0.2 - 0.55	0.2 - 0.55	0.24 - 0.63	0.24 - 0.63	0.39 - 1	0.39 - 1	0.47 - 1.2	0.47 - 1.2	0.59 - 1.3	0.59 - 1.3	0.59 - 1.3
Inner diameter output (Tolerance H7)	D ₂	mm	3 - 8	4 - 12	5 - 14	5 - 14	6 - 16	6 - 16	10 - 26	10 - 26	12 - 30	12 - 30	15 - 32	15 - 32	15 - 32
		in	0.12 - 0.31	0.16 - 0.47	0.2 - 0.55	0.2 - 0.55	0.24 - 0.63	0.24 - 0.63	0.39 - 1	0.39 - 1	0.47 - 1.2	0.47 - 1.2	0.59 - 1.3	0.59 - 1.3	0.59 - 1.3
Outer diameter hub	D ₃	mm	19	25	32	32	40	40	49	49	55	55	66	66	66
		in	0.75	0.98	1.3	1.3	1.6	1.6	1.9	1.9	2.2	2.2	2.6	2.6	2.6
Outer diameter actuation ring	D ₉	mm	23	29	35	35	45	45	55	55	65	65	73	73	73
		in	0.91	1.1	1.4	1.4	1.8	1.8	2.2	2.2	2.6	2.6	2.9	2.9	2.9

- a) Starting at size 800, two screws per clamping hub offset by 180°.
b) Valid up to size 4.5, two different values for output/input.



Size				80		150		200		300		500		800	1500		
Overall length				A	B	A	B	A	B	A	B	A	B	A	A		
Release torque (Adjustable)	A	T _{Dis}	Nm	20 - 70		20 - 70		30 - 90		100 - 200		80 - 200		400 - 650	650 - 800		
			lbf.in	177 - 620		177 - 620		266 - 797		885 - 1770		708 - 1770		3540 - 5753	5753 - 7081		
	B		Nm	30 - 90		45 - 150		60 - 160		150 - 240		200 - 350		500 - 800	700 - 1200		
			lbf.in	266 - 797		398 - 1328		531 - 1416		1328 - 2124		1770 - 3098		4425 - 7081	6196-10621		
	C		Nm	-		80 - 180		120 - 240		200 - 320		300 - 500		650 - 850	1000 - 1800		
			lbf.in	-		708 - 1593		1062 - 2124		1770 - 2832		2655 - 4425		5753 - 7523	8851-15931		
Max. speed				n _{Max}		rpm		2000						1000			
Angular misalignment				±		°		1	1.5	1	1.5	2	1.5	2	2	2.5	
Lateral misalignment				±		mm		0.2	0.25	0.2	0.25	0.25	0.3	0.25	0.3	0.35	
Lateral spring rigidity				C _I		N/mm		920	255	1550	435	2040	610	3750	1050	2500	840
						lbf/in		5253	1456	8851	2484	11648	3483	21413	5996	14275	4796
Torsional rigidity				C _T		Nm/arcmin		37.5	24.7	50.9	32	55.6	40.7	122	102	148	146
						lbf.in/arcmin		332	219	451	283	492	360	1080	903	1310	1292
Mass moment of inertia				J		kgcm ²		18	19	25	28	51	53	115	118	228	230
						lbf.in.s ²		16	17	22	25	45	47	102	105	202	204
Weight				m		kg		2		2.4		4		5.9		9.6	
						lb		4.4		5.3		8.8		13		21	

Dimensions

Total length (Tolerance -2)	L ₁	mm	115	127	116	128	128	140	139	153	163	177	190	223
		in	4.5	5	4.6	5	5	5.5	5.5	6	6.4	7	7.5	8.8
Fitting length	L ₂	mm	35.5		35.5		40.5		42.5		50.5		48	55.5
		in	1.4		1.4		1.6		1.7		2		1.9	2.2
Distance	L ₃	mm	11		11		12.5		13		16.5		17.5	22.5
		in	0.43		0.43		0.49		0.51		0.65		0.69	0.89
Centre distance a) b)	L ₄	mm	27		27		30.5		39		41		2 x 48	2 x 55
		in	1.1		1.1		1.2		1.5		1.6		2 x 1.9	2 x 2.2
Fitting length	L ₅	mm	35		35		42		42		52.5		48	67
		in	1.4		1.4		1.7		1.7		2.1		1.9	2.6
Actuation distance	L ₈	mm	1.9		1.9		2.2		2.2		2.2		2.2	3
		in	0.07		0.07		0.09		0.09		0.09		0.09	0.12
Distance	L ₉	mm	31		31		35		35		45		50	63
		in	1.2		1.2		1.4		1.4		1.8		2	2.5
Inner diameter input (Tolerance H7)	D ₁	mm	19 - 42		19 - 42		24 - 45		30 - 60		35 - 60		40 - 75	50 - 80
		in	0.75 - 1.7		0.75 - 1.7		0.94 - 1.8		1.2 - 2.4		1.4 - 2.4		1.6 - 3	2 - 3.1
Inner diameter output (Tolerance H7)	D ₂	mm	19 - 42		19 - 42		24 - 45		30 - 60		35 - 60		40 - 75	50 - 80
		in	0.75 - 1.7		0.75 - 1.7		0.94 - 1.8		1.2 - 2.4		1.4 - 2.4		1.6 - 3	2 - 3.1
Outer diameter hub	D ₃	mm	81		81		90		110		123		134	157
		in	3.2		3.2		3.5		4.3		4.8		5.3	6.2
Outer diameter actuation ring	D ₉	mm	92		92		99		120.5		135		152.5	174
		in	3.6		3.6		3.9		4.7		5.3		6	6.9

a) Starting at size 800, two screws per clamping hub offset by 180°.
 b) Valid up to size 4.5, two different values for output/input.

Torque limiter TL2



For the ordering code, please refer to page 75

TL2 Torque limiter / clamping hub

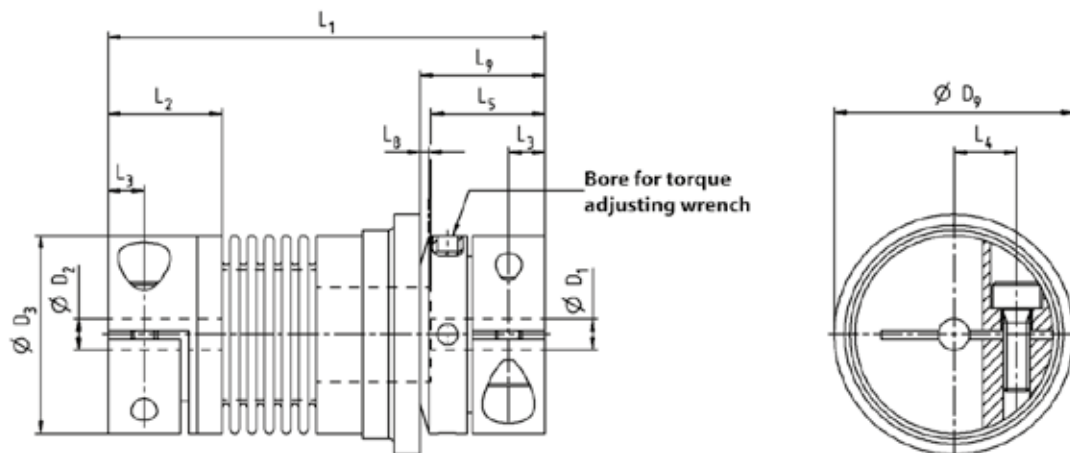
Size			1.5		2		4.5		10		15		30		60		
Overall length			A		A	B	A	B	A	B	A	B	A	B	A	B	
Release torque (Adjustable)	A	T _{Dis}	Nm	0.3 - 0.8		0.2 - 1		2.5 - 4.5		2 - 5		7 - 15		8 - 20		20 - 40	
			lbf.in	2.7 - 7.1		1.8 - 8.9		22 - 40		18 - 44		62 - 133		71 - 177		177 - 354	
	B		Nm	0.6 - 1.3		0.7 - 2		-		5 - 10		-		16 - 30		30 - 60	
			lbf.in	5.3 - 12		6.2 - 18		-		44 - 89		-		142 - 266		266 - 531	
	C		Nm	-		-		-		-		-		-		-	
			lbf.in	-		-		-		-		-		-		-	
Max. speed		n _{Max}	rpm														
Angular misalignment		±	°														
Lateral misalignment		±	mm														
Lateral spring rigidity		C _l	N/mm														
Torsional rigidity			C _T	Nm/arcmin													
Mass moment of inertia		J		kgcm ²													
Weight			m	kg													
				lb													

Dimensions

Total length (Tolerance -2)	L ₁	mm	42	46	51	57	65	65	75	75	82	87	95	102	112
		in	1.7	1.8	2	2.2	2.6	2.6	3	3	3.2	3.4	3.7	4	4.4
Fitting length	L ₂	mm	11	13	16	16	16	16	16	16	22	26.5	31	31	31
		in	0.43	0.51	0.63	0.63	0.63	0.63	0.63	0.63	0.87	1	1.2	1.2	1.2
Distance	L ₃	mm	3.5	4	5	5	5	5	5	5	6.5	7.5	9.5	9.5	9.5
		in	0.14	0.16	0.2	0.2	0.2	0.2	0.2	0.2	0.26	0.3	0.37	0.37	0.37
Centre distance ^{a) b)}	L ₄	mm	6.7 / 6	8 / 8.5	10.3 / 11.5	15	15	15	15	15	17.5	19	23	23	23
		in	0.26 / 0.24	0.31 / 0.33	0.41 / 0.45	0.59	0.59	0.59	0.59	0.59	0.69	0.75	0.91	0.91	0.91
Fitting length	L ₅	mm	11	13	16	16	16	16	16	16	21.5	26.5	31.5	31.5	31.5
		in	0.43	0.51	0.63	0.63	0.63	0.63	0.63	0.63	0.85	1	1.2	1.2	1.2
Actuation distance	L ₈	mm	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.2	1.5	1.5	1.7	1.7
		in	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.06	0.06	0.07	0.07
Distance	L ₉	mm	11.5	12	14	14	14	14	14	14	16	19	22	29	29
		in	0.45	0.47	0.55	0.55	0.55	0.55	0.55	0.55	0.63	0.75	0.87	1.1	1.1
Inner diameter input (Tolerance H7)	D ₁	mm	3 - 8	4 - 12	5 - 14	5 - 14	5 - 14	5 - 14	5 - 14	5 - 14	6 - 16	10 - 26	12 - 30	15 - 32	15 - 32
		in	0.12 - 0.31	0.16 - 0.47	0.2 - 0.55	0.2 - 0.55	0.2 - 0.55	0.2 - 0.55	0.2 - 0.55	0.2 - 0.55	0.24 - 0.63	0.39 - 1	0.47 - 1.2	0.59 - 1.3	0.59 - 1.3
Inner diameter output (Tolerance H7)	D ₂	mm	3 - 8	4 - 12	5 - 14	5 - 14	5 - 14	5 - 14	5 - 14	5 - 14	6 - 16	10 - 26	12 - 30	15 - 32	15 - 32
		in	0.12 - 0.31	0.16 - 0.47	0.2 - 0.55	0.2 - 0.55	0.2 - 0.55	0.2 - 0.55	0.2 - 0.55	0.2 - 0.55	0.24 - 0.63	0.39 - 1	0.47 - 1.2	0.59 - 1.3	0.59 - 1.3
Outer diameter hub	D ₃	mm	19	25	32	32	32	32	32	32	40	49	55	66	66
		in	0.75	0.98	1.3	1.3	1.3	1.3	1.3	1.3	1.6	1.9	2.2	2.6	2.6
Outer diameter actuation ring	D ₉	mm	24	32	42	42	42	42	42	42	51.5	61.5	70	83	83
		in	0.94	1.3	1.7	1.7	1.7	1.7	1.7	1.7	2	2.4	2.8	3.3	3.3

a) Starting at size 800, two screws per clamping hub offset by 180°.

b) Valid up to size 4.5, two different values for output/input.



Size			80		150		200		300		500		800	1500	
Overall length			A	B	A	B	A	B	A	B	A	B	A	A	
Release torque (Adjustable)	A	T_{Dis}	Nm	20 - 60		20 - 60		80 - 140		120 - 180		60 - 150		200 - 400	1000-1250
			lbf.in	177 - 531		177 - 531		708 - 1239		1062 - 1593		531 - 1328		1770 - 3540	8851-11064
	B		Nm	40 - 80		40 - 80		130 - 200		160 - 300		100 - 300		450 - 800	1250-1500
			lbf.in	354 - 708		354 - 708		1151 - 1770		1416 - 2655		885 - 2655		3983 - 7081	11064-13276
	C		Nm	-		80 - 150		-		-		250 - 500		-	-
			lbf.in	-		708 - 1328		-		-		2213 - 4425		-	-
Max. speed			n_{Max}	rpm											
Angular misalignment			\pm	$^{\circ}$											
Lateral misalignment			\pm	mm											
Lateral spring rigidity			C_l	N/mm											
Torsional rigidity			C_T	Nm/arcmin											
Mass moment of inertia			J	kgcm ²											
Weight			m	kg											

Dimensions

Total length (Tolerance -2)	L_1	mm	117	129	118	130	131	143	142	156	167	181	201	232
		in	4.6	5.1	4.6	5.1	5.2	5.6	5.6	6.1	6.6	7.1	7.9	9.1
Fitting length	L_2	mm	35.5		35.5		40.5		42.5		50.5		48	55.5
		in	1.4		1.4		1.6		1.7		2		1.9	2.2
Distance	L_3	mm	11	11		12.5		13		16.5		17.5	22.5	
		in	0.43	0.43		0.49		0.51		0.65		0.69	0.89	
Centre distance ^{a) b)}	L_4	mm	27	27		30.5		39		41		2 x 48	2 x 55	
		in	1.1	1.1		1.2		1.5		1.6		2 x 1.9	2 x 2.2	
Fitting length	L_5	mm	35	35		42		42		52.5		48	67	
		in	1.4	1.4		1.7		1.7		2.1		1.9	2.6	
Actuation distance	L_8	mm	1.9	1.9		2.2		2.2		2.2		2.2	3	
		in	0.07	0.07		0.09		0.09		0.09		0.09	0.12	
Distance	L_9	mm	31	30		33		35		43		54	61	
		in	1.2	1.2		1.3		1.4		1.7		2.1	2.4	
Inner diameter input (Tolerance H7)	D_1	mm	19 - 42		19 - 42		24 - 45		30 - 60		35 - 60		40 - 75	50 - 80
		in	0.75 - 1.7		0.75 - 1.7		0.94 - 1.8		1.2 - 2.4		1.4 - 2.4		1.6 - 3	2 - 3.1
Inner diameter output (Tolerance H7)	D_2	mm	19 - 42		19 - 42		24 - 45		30 - 60		35 - 60		40 - 75	50 - 80
		in	0.75 - 1.7		0.75 - 1.7		0.94 - 1.8		1.2 - 2.4		1.4 - 2.4		1.6 - 3	2 - 3.1
Outer diameter hub	D_3	mm	81		81		90		110		123		134	157
		in	3.2		3.2		3.5		4.3		4.8		5.3	6.2
Outer diameter actuation ring	D_9	mm	98		98		117		132		155		177	187
		in	3.9		3.9		4.6		5.2		6.1		7	7.4

a) Starting at size 800, two screws per clamping hub offset by 180°.

b) Valid up to size 4.5, two different values for output/input.

Torque limiter TL2



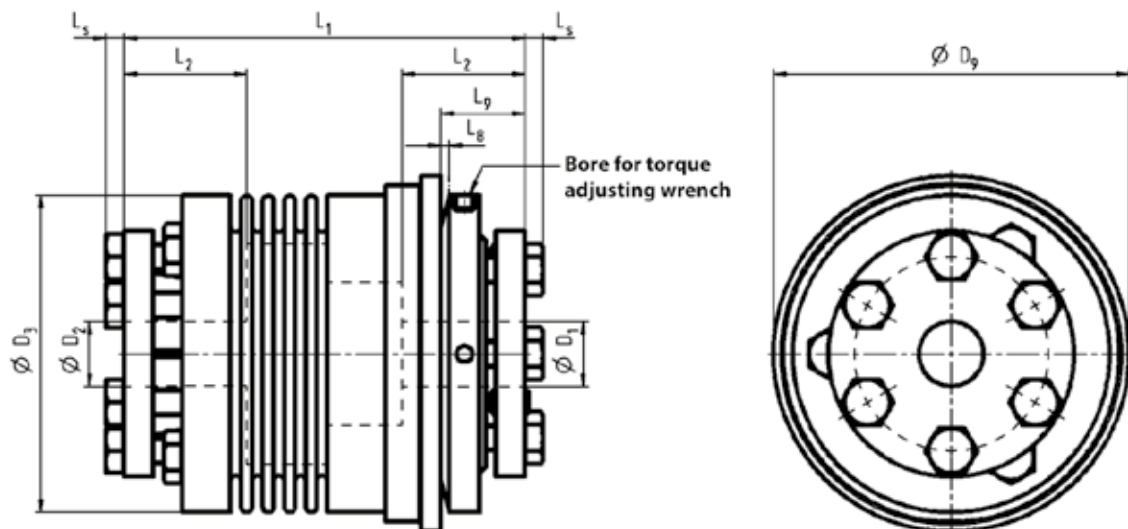
For the ordering code, please refer to page 75

TL3 Torque limiter / tapered clamping hub

Size			15		30		60		150		200		
Overall length			A	B	A	B	A	B	A	B	A	B	
Release torque (Adjustable)	A	T_{Dis}	Nm	5 - 10	10 - 25	10 - 30	20 - 70	30 - 90					
			lbf.in	44 - 89	89 - 221	89 - 266	177 - 620	266 - 797					
	B		Nm	8 - 20	20 - 40	25 - 80	45 - 150	60 - 160					
			lbf.in	71 - 177	177 - 354	221 - 708	398 - 1328	531 - 1416					
	C		Nm	-	-	-	80 - 200	140 - 280					
			lbf.in	-	-	-	708 - 1770	1239 - 2478					
Max. speed		n_{Max}	rpm						3000				
Angular misalignment		\pm	°		1		1.5		1		1.5		
Lateral misalignment		\pm	mm		0.15		0.2		0.2		0.25		
			in		0.006		0.008		0.008		0.01		
Lateral spring rigidity		C_l	N/mm	475	137	900	270	1200	380	1550	435	2040	610
			lbf/in	2712	782	5139	1542	6852	2170	8851	2484	11648	3483
Torsional rigidity		C_T	Nm/arcmin	5.8	4.4	11.3	8.1	22.1	16	50.9	32	55.6	40.7
			lbf.in/arcmin	51	39	100	72	196	142	451	283	492	360
Mass moment of inertia		J	kgcm ²	1	1.5	2.8	3	7.5	8	19	20	28	30
			lbf.in.s ²	0.89	1.3	2.5	2.7	6.6	7.1	17	18	25	27
Weight		m	kg	0.3		0.4		1.2		2.3		3	
			lb	0.66		0.88		2.6		5.1		6.6	

Dimensions

Total length (without LS)	L_1	mm	62	69	72	80	84	94	93	105	99	111
		in	2.4	2.7	2.8	3.1	3.3	3.7	3.7	4.1	3.9	4.4
Fitting length	L_2	mm	19		21.5		27.5		32		32	
		in	0.75		0.85		1.1		1.3		1.3	
Actuation distance	L_8	mm	1.5		1.5		1.7		1.9		2.2	
		in	0.06		0.06		0.07		0.07		0.09	
Distance	L_9	mm	13		16		18		19		19	
		in	0.51		0.63		0.71		0.75		0.75	
Screw head length	L_s	mm	2.8		3.5		3.5		4		4	
		in	0.11		0.14		0.14		0.16		0.16	
Inner diameter input (Tolerance H7)	D_1	mm	10 - 22		12 - 23		12 - 29		15 - 37		20 - 44	
		in	0.39 - 0.87		0.47 - 0.91		0.47 - 1.1		0.59 - 1.5		0.79 - 1.7	
Inner diameter output (Tolerance H7)	D_2	mm	10 - 22		12 - 23		12 - 29		15 - 37		20 - 44	
		in	0.39 - 0.87		0.47 - 0.91		0.47 - 1.1		0.59 - 1.5		0.79 - 1.7	
Outer diameter hub	D_3	mm	49		55		66		81		90	
		in	1.9		2.2		2.6		3.2		3.5	
Outer diameter actuation ring	D_9	mm	55		65		73.5		92		99	
		in	2.2		2.6		2.9		3.6		3.9	



Size			300		500		800	1500	2500
Overall length			A	B	A	B	A	A	A
Release torque (Adjustable)	A	T_{Dis}	Nm	100 - 200	80 - 200		400 - 650	650 - 850	1500 - 2000
			lbf.in	885 - 1770	708 - 1770		3540 - 5753	5753 - 7523	13276 - 17702
	B		Nm	150 - 240	200 - 350		500 - 800	700 - 1200	2000 - 2500
			lbf.in	1328 - 2124	1770 - 3098		4425 - 7081	6196 - 10621	17702 - 22127
	C		Nm	220 - 400	300 - 500		600 - 900	1000 - 1800	2300 - 2800
			lbf.in	1947 - 3540	2655 - 4425		5310 - 7966	8851 - 15931	20357 - 24782
Max. speed			n_{Max}	rpm		2000			
Angular misalignment			\pm	$^{\circ}$	1.5	2	2	2.5	2.5
Lateral misalignment			\pm	mm	0.25	0.3	0.3	0.35	0.35
Lateral spring rigidity			C_l	N/mm	3750	1050	2500	840	2000
				lbf/in	21413	5996	14275	4796	11420
Torsional rigidity			C_T	Nm/arcmin	122	102	148	146	227
				lbf.in/arcmin	1080	903	1310	1292	2009
Mass moment of inertia			J	kgcm ²	55	60	110	128	200
				lbf.in.s ²	49	53	98	113	177
Weight			m	kg	5		6.5		9
				lb	11		14		20

Dimensions

Total length (without LS)	L_1	mm	114	128	123	137	151	175	246
		in	4.5	5	4.8	5.4	5.9	6.9	9.7
Fitting length	L_2	mm	41.5		41.5		49	61	80.5
		in	1.6		1.6		1.9	2.4	3.2
Actuation distance	L_8	mm	2.2		2.2		2.2	3	3
		in	0.09		0.09		0.09	0.12	0.12
Distance	L_9	mm	23		25		31	30	34
		in	0.91		0.98		1.2	1.2	1.3
Screw head length	L_s	mm	5.3		5.3		6.4	7.5	10
		in	0.21		0.21		0.25	0.3	0.39
Inner diameter input (Tolerance H7)	D_1	mm	25 - 56		25 - 60		30 - 60	35 - 70	50 - 100
		in	0.98 - 2.2		0.98 - 2.4		1.2 - 2.4	1.4 - 2.8	2 - 3.9
Inner diameter output (Tolerance H7)	D_2	mm	25 - 56		25 - 60		30 - 60	35 - 70	50 - 100
		in	0.98 - 2.2		0.98 - 2.4		1.2 - 2.4	1.4 - 2.8	2 - 3.9
Outer diameter hub	D_3	mm	110		123		133	157	200
		in	4.3		4.8		5.2	6.2	7.9
Outer diameter actuation ring	D_9	mm	120.5		135		152.5	174	243
		in	4.7		5.3		6	6.9	9.6

Torque limiter TL3

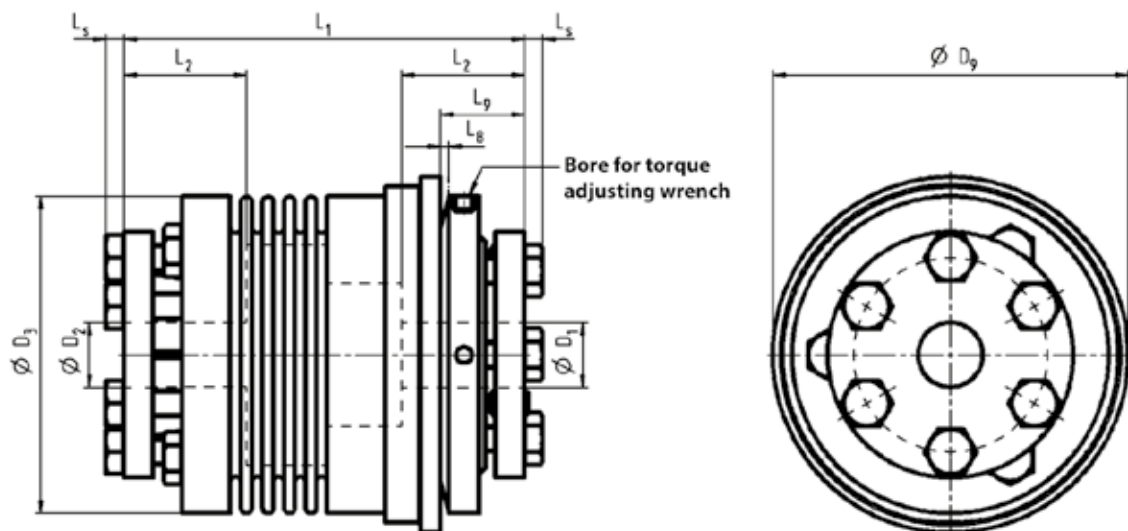

For the ordering code, please refer to page 75

TL3 Torque limiter / tapered clamping hub

Size			15		30		60		150		200	
Overall length			A	B	A	B	A	B	A	B	A	B
Release torque (Adjustable)	A	T_{Dis}	Nm	7 - 15	8 - 20	20 - 40	20 - 60	80 - 140				
			lbf.in	62 - 133	71 - 177	177 - 354	177 - 531	708 - 1239				
	B		Nm	-	16 - 30	30 - 60	40 - 80	130 - 200				
			lbf.in	-	142 - 266	266 - 531	354 - 708	1151 - 1770				
	C		Nm	-	-	-	80 - 150	-				
			lbf.in	-	-	-	708 - 1328	-				
Max. speed		n_{Max}	rpm						3000		2000	
Angular misalignment		\pm	$^{\circ}$		1	1.5	1	1.5	1	1.5	1	2
Lateral misalignment		\pm	mm		0.15	0.2	0.2	0.25	0.2	0.25	0.2	0.25
Lateral spring rigidity		C_l	N/mm		475	137	900	270	1200	380	1550	435
			lbf/in		2712	782	5139	1542	6852	2170	8851	2484
Torsional rigidity		C_T	Nm/arcmin		5.8	4.4	11.3	8.1	22.1	16	50.9	32
			lbf.in/arcmin		51	39	100	72	196	142	451	283
Mass moment of inertia		J	kgcm ²		1	1.5	2.8	3	7.5	8	19	20
			lbf.in.s ²		0.89	1.3	2.5	2.7	6.6	7.1	17	18
Weight		m	kg		0.3		0.4		1.2		2.3	
			lb		0.66		0.88		2.6		5.1	

Dimensions

Total length (without LS)	L_1	mm	62	69	72	80	84	94	93	105	102	114
		in	2.4	2.7	2.8	3.1	3.3	3.7	3.7	4.1	4	4.5
Fitting length	L_2	mm	19		21.5		27.5		32		32	
		in	0.75		0.85		1.1		1.3		1.3	
Actuation distance	L_8	mm	1.5		1.5		1.7		1.9		2.2	
		in	0.06		0.06		0.07		0.07		0.09	
Distance	L_9	mm	13		16		17		18		17	
		in	0.51		0.63		0.67		0.71		0.67	
Screw head length	L_s	mm	2.8		3.5		3.5		4		4	
		in	0.11		0.14		0.14		0.16		0.16	
Inner diameter input (Tolerance H7)	D_1	mm	10 - 22		12 - 23		12 - 29		15 - 37		20 - 44	
		in	0.39 - 0.87		0.47 - 0.91		0.47 - 1.1		0.59 - 1.5		0.79 - 1.7	
Inner diameter output (Tolerance H7)	D_2	mm	10 - 22		12 - 23		12 - 29		15 - 37		20 - 44	
		in	0.39 - 0.87		0.47 - 0.91		0.47 - 1.1		0.59 - 1.5		0.79 - 1.7	
Outer diameter hub	D_3	mm	49		55		66		81		90	
		in	1.9		2.2		2.6		3.2		3.5	
Outer diameter actuation ring	D_9	mm	61.5		70		83		98		117	
		in	2.4		2.8		3.3		3.9		4.6	



Size			300		500		800	1500	2500		
Overall length			A	B	A	B	A	A	A		
Release torque (Adjustable)	A	T_{Dis}	Nm	120 - 180	60 - 150	200 - 400	1000 - 1250	1400 - 2200			
			lbf.in	1062 - 1593	531 - 1328	1770 - 3540	8851 - 11064	12391 - 19472			
	B		Nm	160 - 300	100 - 300	450 - 800	1250 - 1500	1800 - 2700			
			lbf.in	1416 - 2655	885 - 2655	3983 - 7081	11064 - 13276	15931 - 23897			
			Nm	-	250 - 500	-	-	-			
C	lbf.in	-	2213 - 4425	-	-	-					
Max. speed			n_{Max}	rpm	2000	1000					
Angular misalignment			\pm	$^{\circ}$	1.5	2	2	2.5	2.5		
Lateral misalignment			\pm	mm	0.25	0.3	0.3	0.35	0.35		
				in	0.01	0.012	0.012	0.014	0.014		
Lateral spring rigidity			C_l	N/mm	3750	1050	2500	840	2000	3600	6070
				lbf/in	21413	5996	14275	4796	11420	20556	34660
Torsional rigidity			C_T	Nm/arcmin	122	102	148	146	227	379	989
				lbf.in/arcmin	1080	903	1310	1292	2009	3354	8753
Mass moment of inertia			J	kgcm ²	55	60	110	128	200	420	2570
				lbf.in.s ²	49	53	98	113	177	372	2278
Weight			m	kg	5	6.5	9	16.3	35		
				lb	11	14	20	36	77		

Dimensions

Total length (without LS)	L_1	mm	117	131	127	141	151	184	252
		in	4.6	5.2	5	5.6	5.9	7.2	9.9
Fitting length	L_2	mm	41.5	41.5	49	61	80.5		
		in	1.6	1.6	1.9	2.4	3.2		
Actuation distance	L_8	mm	2.2	2.2	2.2	3	3		
		in	0.09	0.09	0.09	0.12	0.12		
Distance	L_9	mm	20	22	20	26	31		
		in	0.79	0.87	0.79	1	1.2		
Screw head length	L_s	mm	5.3	5.3	6.4	7.5	10		
		in	0.21	0.21	0.25	0.3	0.39		
Inner diameter input (Tolerance H7)	D_1	mm	25 - 56	25 - 60	30 - 60	35 - 70	50 - 100		
		in	0.98 - 2.2	0.98 - 2.4	1.2 - 2.4	1.4 - 2.8	2 - 3.9		
Inner diameter output (Tolerance H7)	D_2	mm	25 - 56	25 - 60	30 - 60	35 - 70	50 - 100		
		in	0.98 - 2.2	0.98 - 2.4	1.2 - 2.4	1.4 - 2.8	2 - 3.9		
Outer diameter hub	D_3	mm	110	123	133	157	200		
		in	4.3	4.8	5.2	6.2	7.9		
Outer diameter actuation ring	D_9	mm	132	155	176	187	258		
		in	5.2	6.1	6.9	7.4	10		

Torque limiter TL3



For the ordering code, please refer to page 75