

Type DSF/EX | friction torque limiters

Friction torque limiters are simple low cost devices that remove shock loads and protect machinery from overload damage.



- Easy torque setting and wide torque range
- Bi-directional overload protection
- Fully machined, production certified ISO9001-2000
- Broad range of models & options
- Can be supplied assembled & torque preset

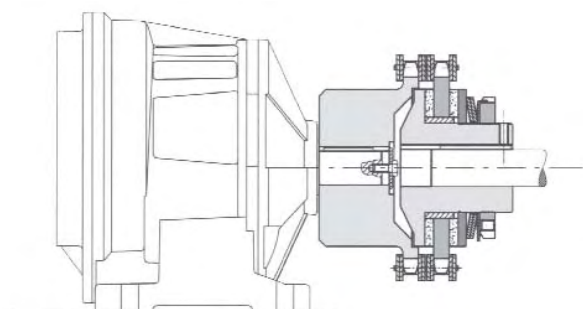


	DSF/EX	Standard model for offset drives by chainwheel, sprocket or gear.	2 to 23000Nm up to 140mm	Page 5
	DSF/EX/TAC	Chain coupling adaptor for in-line drives, simple & compact	2 to 23000Nm up to 140mm	Page 6
	DSF/EX/GAS	Curved jaw coupling adaptor for in-line drives, torsionally soft, high misalignment capacity, backlash free coupling	2 to 2600Nm up to 110mm	Page 7
	DSF/SI	Friction torque limiter with switch ring to allow microswitch detection of overload	2 to 8000Nm up to 100mm	Page 7
	DSF/EX/PR	Extended shaft torque limiter for mounting direct into hollow shaft gearboxes.	2 to 2600Nm 11 to 55mm	Page 8
	Platowheel	Standard range of simplex platowheels to suit DSF/EX.	3/8 Z = 12 to 1 1/4 Z = 20	Page 9

Construction & operation

DSF/EX limiters are fully machined in steel with phosphated surface treatment. Anti-rust treatment and zinc plating available on request. Optional finish bores and keyways to DIN6885.

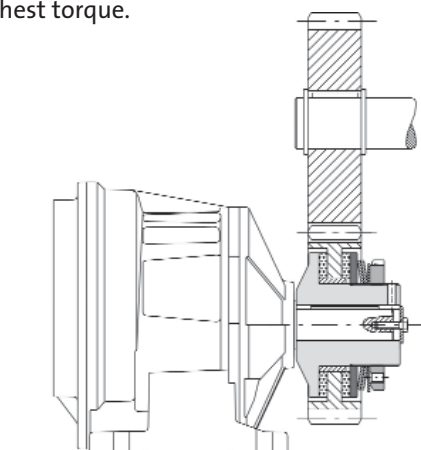
Torque is transmitted from input to output by spring force which compresses two friction discs onto a chainwheel, sprocket or gear. On overload these faces slip whilst the set drive torque is maintained. Alternative spring sets are offered.



Application

Friction torque limiters are best located on low speed shafts e.g. at the gearbox output. Maximum speeds are high but wear and damage can occur quickly if slipping is prolonged. Consider motion sensors to stop the drive.

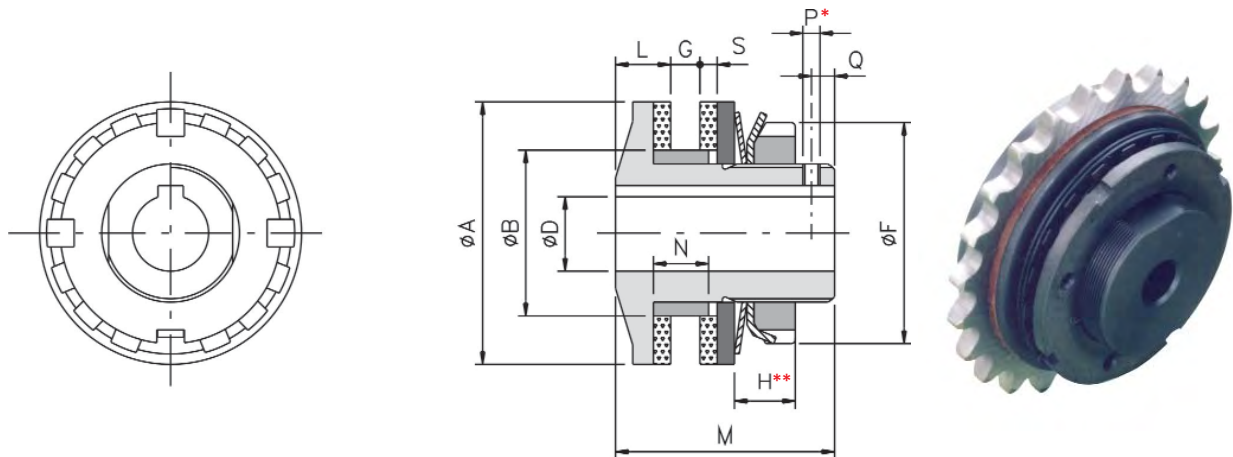
Allow for torque peaks in normal operation e.g. on-line starting of motors. We suggest a reserve of 25% above the highest torque.



Type DSF/EX Type DSF

friction torque limiters (sizes 25 to 170)

friction torque limiters (sizes 205 to 400)



Size A	Spring sets and torque ranges (Nm)				A	B h7	DH7 ØMax	F	G		L	M	N	S	Weight kg
	Low	Medium	High	Maximum					Min	Max					
00.25	A1S1 2-8	-	A2S2 2-12	A3S3 2-20	25	14	8	22	1	3	5	26	5.5	2	0.1
00.38	A1S1 2-14	-	A2S3 2-22	A3S3 15-34	38	24	12	32	1	5	8	33	8	2.5	0.2
0.50	A1S1 2-12	A1G1 4-40	A3G3 17-70	A3G3 23-100	50	36	20	44	1	6	10	35	10	3	0.4
1.70	A1S1 3-18	A1M1 9-35	A2G2 20-120	A3G3 60-210	70	45	25	63	1	10	15	55	15	4	1.1
2.90	A1S1 12-38	A1M1 13-105	A2G2 90-280	A3G3 185-450	90	60	38	82	3	12	16	60	17	4	2.2
3.115	A1S1 26-100	A1M1 65-280	A1G1 120-360	A3G3 210-950	115	72	45	105	5	16	18	70	21	4	3.7
4.140	A1S1 80-140	A1M1 100-240	A1G1 210-550	A3G3 390-1200	140	85	55	130	8	19	20	80	25	5	6.6
5.170	A1M1 150-250	A1G1 240-700	A2G2 300-1450	A3G3 1000-2600	170	98	65	158	10	22	22.5	95	28	5	10.9

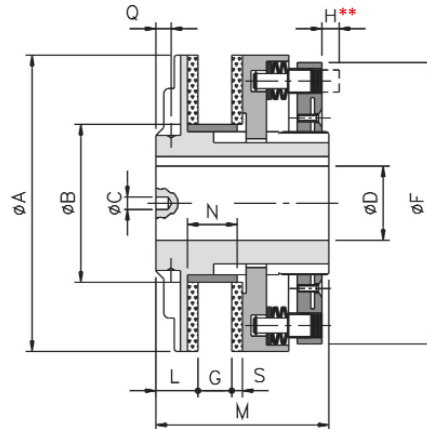
* grubscrews only with finished bores

** torque setting dimension, see page 9

Often torque limiters are available from stock with the highest torque setting.

Bores for C spanner

C	
Ø	Pcd
10	135
10	165
10	210
12	220
12	270



Size A	Spring sets and torque ranges (Nm)			A	B h7	DH7		F	G		L	M	N	Q	S	Weight kg
	A4M1 Low	A4G1 Medium	A4G2 High			ØPilot	ØMax		Min	Max						
6.205	300-1200	500-2400	1000-4800	205	120	40	80	193	18	26	27	110	32	8.5-M8	5	20.1
7.240	500-2000	1000-4000	2000-8000	240	145	50	100	230	21	29	27	116	35	8.5-M10	5	30.9
8.300	800-3500	1500-7000	3000-14000	300	175	60	120	287	21	33	29	123	40	8.5-M10	6	49.1
9.340	1000-4500	2000-9000	4000-18000	340	205	60	130	325	23	33	41	158	40	12-M12	6	85.5
10.400	1500-5000	3000-11000	5000-23000	400	230	60	140	388	23	35	46	167	42	13-M13	6	124.5

Ordering example

Qty 5 friction torque limiters size 2.90 with A1M1 springs for torque range 13-105Nm, finish bored 38mm with keyway.

Type code: **DSF/EX_2.90_A1M1_38H7+keyway**

Torque limiters can be supplied with pilot bores or finished bores to H7 tolerance and keyway to DIN6885 with H9 tolerance. Grub screws on request

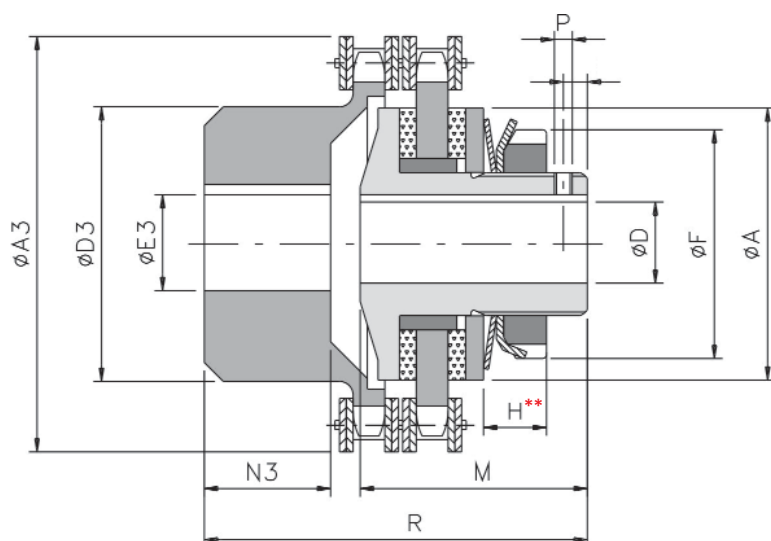
Note: These weights refer to the torque limiter with pilot bore.

Type DSF/EX/TAC

Type DSF/TAC

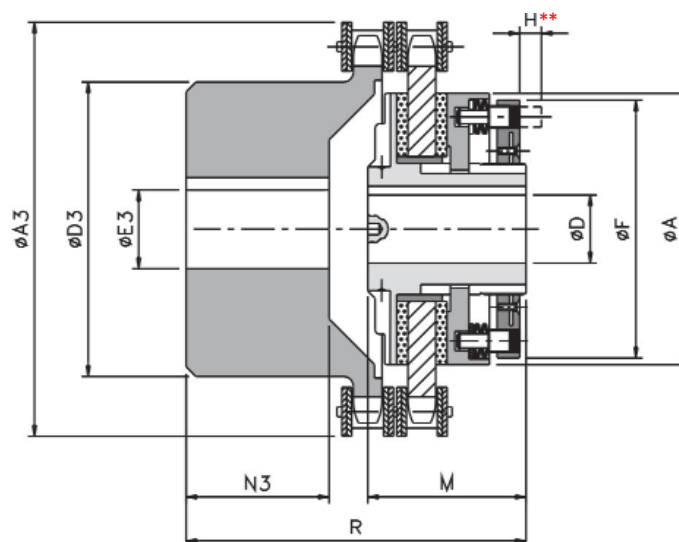
chain type coupling (size 25 to 170)

chain type coupling (size 205 to 400)



Size	Torque Nm	M	R	A3	D3	E3 H7 øPilot	øMax	N3	P	Q	Weight Kg
00.25	2-20	26	39	45	23	8	12	9	M3	3	0.2
00.38	2-34	33	56	57	37	10	20	20	M3	3	0.6
0.50	2-100	35	59	75	50	12	24	19	M4	4	1.1
1.70	2-210	55	87	101	70	16	30	29	M6	6	2.8
2.90	6-450	60	103	126	90	20	42	38	M6	6	5.9
3.115	12-950	70	131	159	110	20	50	56	M6	6	11.1
4.140	80-1200	80	147	184	130	28	60	59	M8	8	20.3
5.170	150-2600	95	189	216	130	30	68	88	M8	8	31.0

** torque setting dimension, see page 9



Size	Torque Nm	M	R	A3	D3	E3 H7 øPilot	øMax	N3	Weight Kg
6.205	300-4800	110	219	291	150	40	90	103	54.6
7.240	500-8000	116	244	312	170	50	110	124	76.7
8.300	800-14000	123	273	374	200	50	140	147	125.5
9.340	1000-18000	158	329	423	210	60	150	165	165
10.400	1500-23000	167	357	475	240	60	160	191	240

** torque setting dimension, see page 9

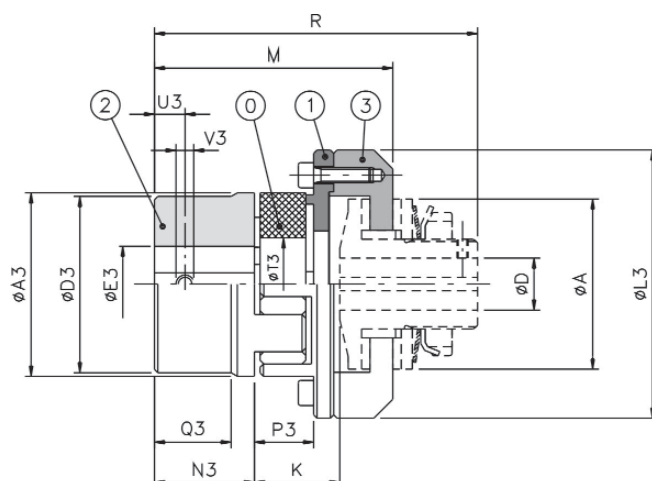
Ordering example

Coupling parts only, order torque limiter from page 5.

Qty 5 chain type couplings for friction torque limiters size 1.70, finish bore 25mm H7 with keyway.

Type code: **DSF/EX/TAC_1.70_25H7+keyway**

Type DSF/EX/GAS | curved jaw coupling



- 0 - elastic element (std. red, 98 shore - A)
- 1 - flange
- 2 - hub
- 3 - connection flange

Torque limiter size	GAS coupling size	Nominal torque (Nm)	Max torque (Nm)	K	R	W	A3	D3	E3 øMax	L3	N3	Q3	T3	U3	V3
00.38	00 (19)	17	34	26	85	64	40	40	25	58	25	-	18	10	M5
0.50	0 (24)	60	120	28.5	96	74.5	55	53	35	74	30	24	27	10	M5
1.70	2 (38)	325	650	35	135	104	80	78	48	107	45	37	38	15	M8
2.90	3 (42)	450	900	40	151	115.5	95	93	55	132	50	40	46	20	M8
3.115	5 (55)	685	1370	48	184	143.5	120	118	74	164	65	52	60	20	M10
4.140	7 (75)	1465	2930	61	232	181	160	158	95	208	85	69	80	25	M10
5.170	8 (90)	3600	7200	67.5	265	207.5	200	180	110	248	100	81	100	30	M12

Ordering example

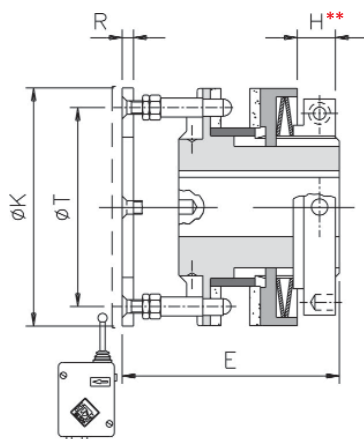
Coupling parts only, order torque limiter from page 5.

Qty 5 curved jaw couplings for friction torque limiters size 1.70, coupling size 2 (38), finish bore 42mm H7 with keyway.

Type code: **DSF/EX/GAS_2 (38)_42H7+keyway**

GAS coupling size	Misalignment		
	Angular	Axial	Radial
00	1° 18'	1	0.4
0	1° 18'	1	0.8
2	1° 18'	1.4	1
3	1° 18'	1.6	1
5	1° 18'	1.8	1.4
7	1° 18'	2.5	1.8
8	1° 18'	2.8	1.8

Type DSF/SI | friction torque limiter with switch ring

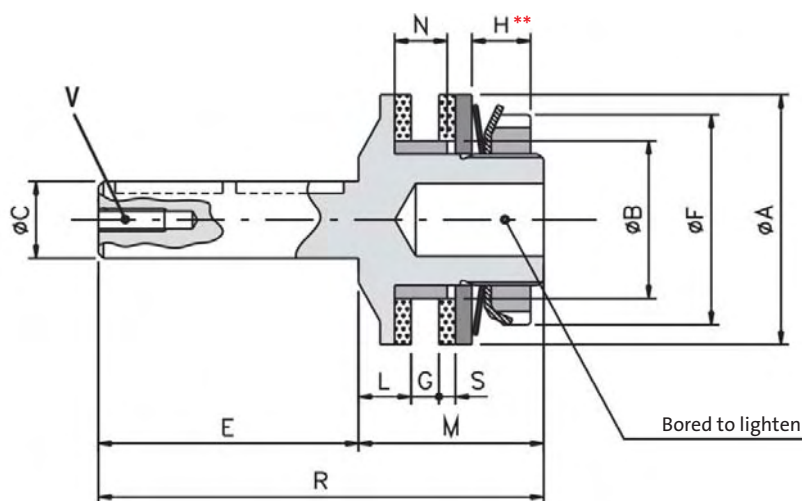


Size	E	K	R	T
1.70	75	70	3	56
2.90	80	90	3	72
3.115	89	115	4	90
4.140	103	140	4	104
5.170	116	170	4	120
6.205	124	205	4	150
7.240	131	240	6	190

The switch ring ØK allows overloads to be detected by a microswitch such as the EM1 on page 13. The DSF/SI requires plate wheels that are modified to accept the sensor pins.

Other dimensions and torque ranges are the same as type DSF/EX on page 5.

Type DSF/EX/PR | friction torque limiter for hollow shaft gearboxes



Grand Size	Spring sets and torque ranges (Nm)				A	B h7	C h7	E	G		M	R	V	Weight (kg)
	Low	Medium	High	Maximum					Min	Max				
00.38	A1S1 2-14	-	A2S2 2-22	A3S3 15-34	38	24	11	48	2.5	5	33	81	M4x10	0.2
0.50	A1S1 2-12	A1G1 4-40	A2G2 17-70	A3S3 23-100	50	36	14	53	3.5	6	35	88	M5x13	0.4
1.70	A1S1 3-18	A1M1 9-35	A2G2 20-120	A3G3 60-210	70	45	18	62	5	10	55	117	M6x16	1.1
							19	78				133		1.1
							24	90				145		1.3
							25	80				135		1.2
2.90	A1S1 12-38	A1M1 13-105	A2G2 90-280	A3G3 185-450	90	60	25	90	7	12	60	150	M8x20	2.1
							28	110				170		2.3
3.115	A1S1 26-100	A1G1 65-280	A1G1 120-360	A3G3 210-950	115	72	32	120	9	16	70	190	M10x25	3.7
							38	138				208		3.9
4.140	A1S1 80-140	A1G1 100-240	A1G1 210-550	A3G3 390-1200	140	85	42	152	13	19	80	232	M12x32	6.9
							45	163				243		7.2
							48	178				258		7.7
5.170	A1M1 150-250	A1G1 240-700	A2G2 300-1450	A3G3 1000-2600	170	98	50	173	15	22	95	268	M16x40	11.5
							55	208				303		12.7

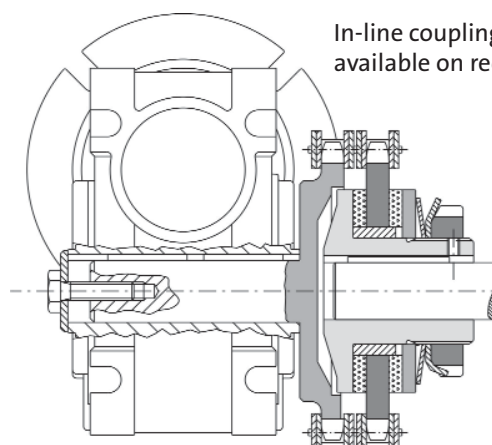
** torque setting dimension, see page 9

For other dimensions see model DSF/EX on page 5.

Ordering example

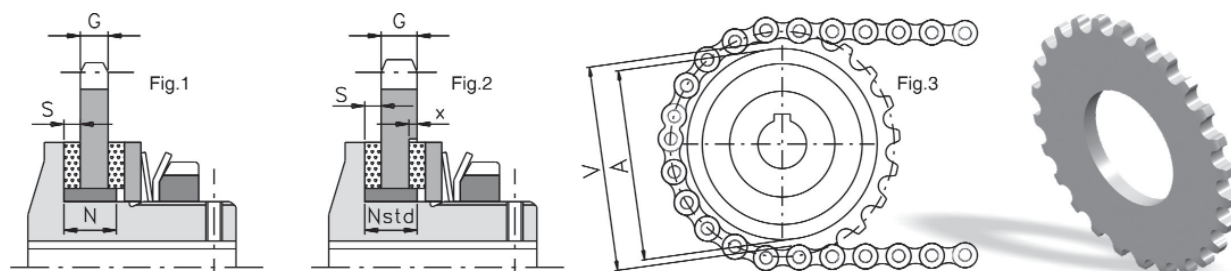
Qty 2 friction torque limiters for hollow shaft gearboxes size 3.115 with A1S1 springs for torque range 26-100Nm and suiting gearbox bore diameter 32mm.

Type code: **DSF/EX/PR_3.115_A1S1_32H7+keyway**



In-line coupling versions available on request.

Platewheels | selection



Platewheels or the support bushing will sometimes require modification.

For thinner platewheels (Fig.1) apply the rule $N=S+G+1$. Machine down the bushing if required.

For thicker platewheels, to make $N=S+G+1$ it may be necessary to reduce the thickness of the platewheel (Fig.2).

Observe the clearance between chain inside diameter V and the torque limiter body A.

Size	Pitch	G	z	dp	S	N Std	A	V	Std platewheel part number
00.25	3/8	5.1	12	36.80	2	5.5	25	28	580419851P05
00.38	3/8	5.1	16	48.82	2.5	8	38	41	580406900P05
0.50	3/8	5.1	20	60.89	3	10	50	53	580406400P05
		7.0	16	65.10					580406500P05
1.70	3/8	5.1	28	85.07	4	15	70	73	580404000P05
		7.0	22	89.24					580403700P05
		8.9	19	96.45					580404200P05
2.90	1/2	7.0	26	105.36	4	17	90	94	580404700P05
		8.9	22	111.55					580404600P05
		10.9	18	109.71					580440700P05
3.115	5/8	8.9	38	192.24	4	21	115	119	580404800P05
		10.9	23	139.90					580404900P05
		16.0	17	138.22					580440200P05
4.140	1"	16.0	20	162.38	5	25	140	140	580440300P05
5.170	1"	16.0	24	194.59	5	28	170	175	580440400P05
		18.3	20	202.98					580417200P05

Other sizes of platewheels are available on request for volume applications.

Torque setting | pre-setting

We recommend setting the torque by finding the slip point in actual operation and then increasing the torque until slip ceases.

However the slip torque can be pre-set by positioning the adjuster nut (or the guide pins on sizes 6.205, 7.240) to dimension H, details supplied on our instruction sheets.

Complete torque limiter assemblies can be supplied preset in the factory.

